

FCC TEST REPORT

for

47 CFR, Part 15, Subpart C

Equipment : FOLLOW ME

Model No. : DX147

FCC ID : OLA-DX147

Filing Type : Certification

Applicant : **WELLMIKE ENTERPRISE CO., LTD.**
3FL., NO. 2, LANE 497, CHUNG CHENG ROAD,
HSIN TIEN, TAIPEI HSIEN, TAIWAN, R.O.C.

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SPORTON International Inc.

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

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

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History of this test report

Original Report Issue Date: Dec. 20, 2003

- ☒ No additional attachment.
☐ Additional attachment were issued as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

for

47 CFR, Part 15, Subpart C

Equipment : FOLLOW ME
Model No. : DX147
FCC ID : OLA-DX147
Filing Type : Certification
Applicant : **WELLMIKE ENTERPRISE CO., LTD.**
3FL., NO. 2, LANE 497, CHUNG CHENG ROAD,
HSIN TIEN, TAIPEI HSIEN, TAIWAN, R.O.C.

I **HEREBY** CERTIFY THAT:

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 2001** and the energy emitted by this equipment was ***passed*** both radiated and conducted emission limits. Testing was carried out on Dec. 11, 2003 at **SPORTON International Inc.** LAB.



Alex Chen
Manager

SPORTON International Inc.

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

1. General Description of Equipment under Test

1.1. Applicant

WELLMIKE ENTERPRISE CO., LTD.
3FL., NO. 2, LANE 497, CHUNG CHENG ROAD,
HSIN TIEN, TAIPEI HSIEN, TAIWAN, R.O.C.

1.2. Manufacturer

WELLMIKE INDUSTRIES (Shen Zhen) LTD.
NO. 7, LANE 1, DAN FENG STREET, SILI ROAD, GUANLAN TOWN,
SHEN ZHEN CITY, GUANG DONG, CHINA

1.3. Basic Description of Equipment under Test

Equipment	: FOLLOW ME
Model No.	: DX147
FCC ID	: OLA-DX147
Trade Name	: WELLMIKE
Power Supply Type	: Linear for charger, Battery for EUT
AC Power Input	: Wall-mount, 2pin for charger DC 3.6V for EUT
DC Power Cable	: Non-Shielded, 2m

1.4. Feature of Equipment under Test

Product Feature & Specification	
1. Type of Modulation	ASK
2. Carrier Frequency of each channel	433.92MHz
3. Bandwidth of each channel	1MHz
4. Maximum Output Power to Antenna	-30dBm
5. IF & L.O. frequency	IF: 1.2~1.8MHz, LOF: 315MHz
6. Function Type	Transceiver, Receiver
7. Power Rating (DC/AC, Voltage)	NI-MH 1.5V x 3= 4.5V
8. Duty Cycle	1:30
9. Basic function of product	Personal Luggage Security
10. Adapter	DV-9100-3508

2. Test Configuration of Equipment under Test

2.1. Test Manner

- a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2001 and configuration operated in a manner which tended to maximize its emission characteristics in a typical application.
- b. The complete test system included WELLMIKE Receiver and EUT for EMI test.
- c. The following test mode was performed for conduction test: Charger
- d. The following test modes were performed for radiation test:
 - Mode 1: EUT Only, X axes
 - Mode 2: EUT Only, Y axes
 - Mode 3: EUT Only, Z axes
 - Mode 4: Charger
- e. Frequency range investigated: conduction 150 KHz to 30 MHz, radiation 30 MHz to 5000MHz.

2.2. Description of Test System

Support Unit 1. – Receiver (WELLMIKE)

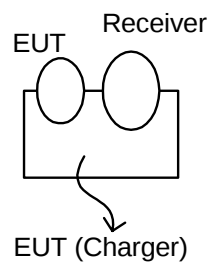
FCC ID	: N/A
Model No.	: DX147

2.3. Connection Diagram of Test System

<Mode 1~3>



<Mode 4>



3. Test Software

During the test, the EUT kept sending signals.

4. General Information of Test

4.1. Test Facility

Test Site Location : No. 52, Hwa Ya 1St Road, Hwa Ya Technology Park,
Kwei-Shan Hsiang, TaoYuan Hsien, Taiwan, R.O.C.
TEL : 886-3-3273456
FAX : 886-3-3180055
Test Site No. : CO01-HY, 03CH03-HY

4.2. Test Voltage

DC 3.6V, 110V/60Hz

4.3. Standard for Methods of Measurement

ANSI C63.4-2001

4.4. Test in Compliance with

FCC Part 15, Subpart C 15.209

4.5. Frequency Range Investigated

- a. Conduction: from 150 KHz to 30 MHz
- b. Radiation: from 30 MHz to 5000 MHz

4.6. Test Distance

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

5. Test of Conducted Powerline

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz and return leads of the EUT according to the methods defined in ANSI C63.4-2001 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 5.3. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

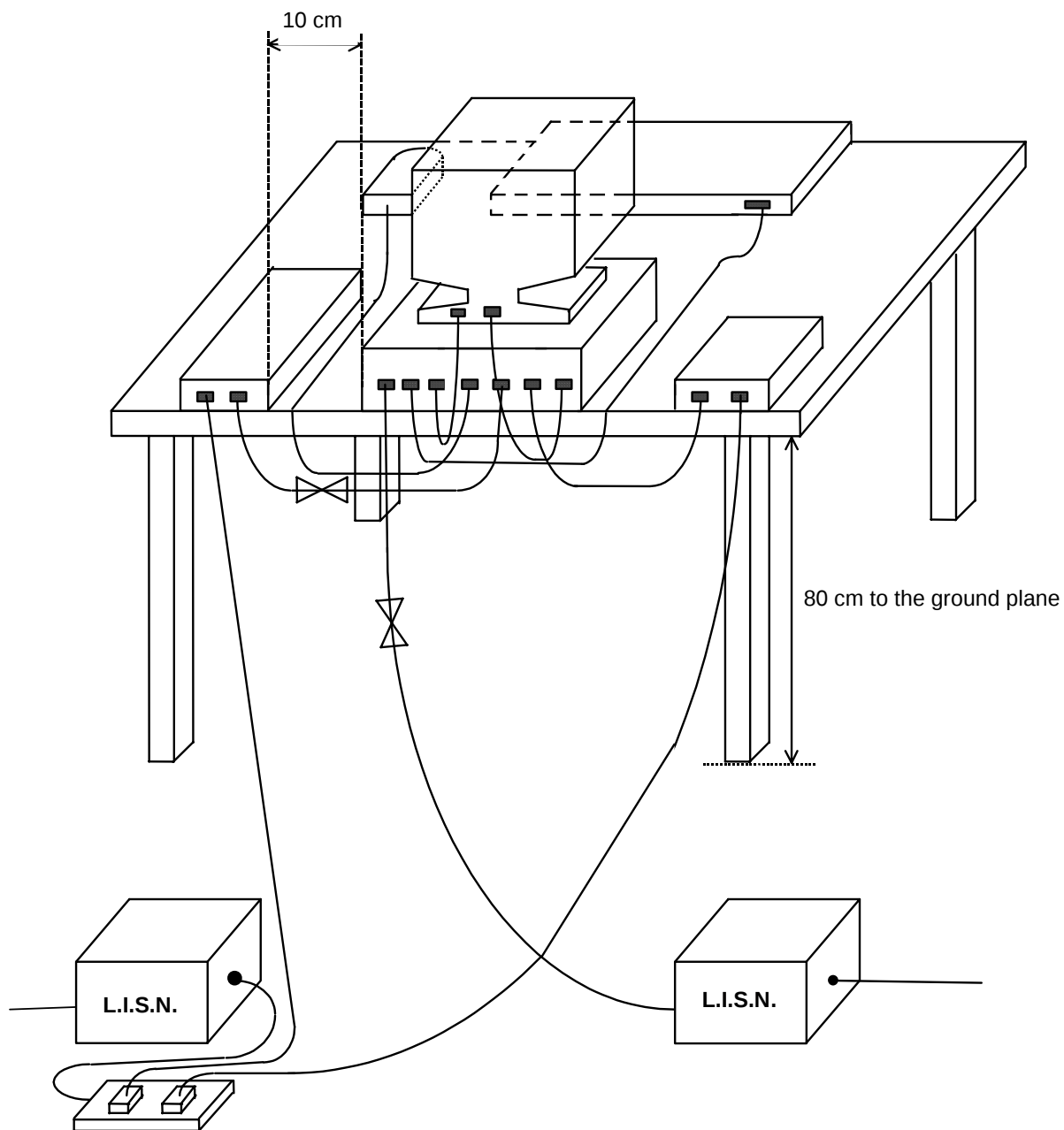
5.1. Major Measuring Instruments

- Test Receiver (R&S ESCS 30)
 - Attenuation 10 dB
 - Start Frequency 0.15 MHz
 - Stop Frequency 30 MHz
 - IF Bandwidth 9 KHz

5.2. 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 mains through a line impedance stabilization network (LISN).
- c. All the support units are connect 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.

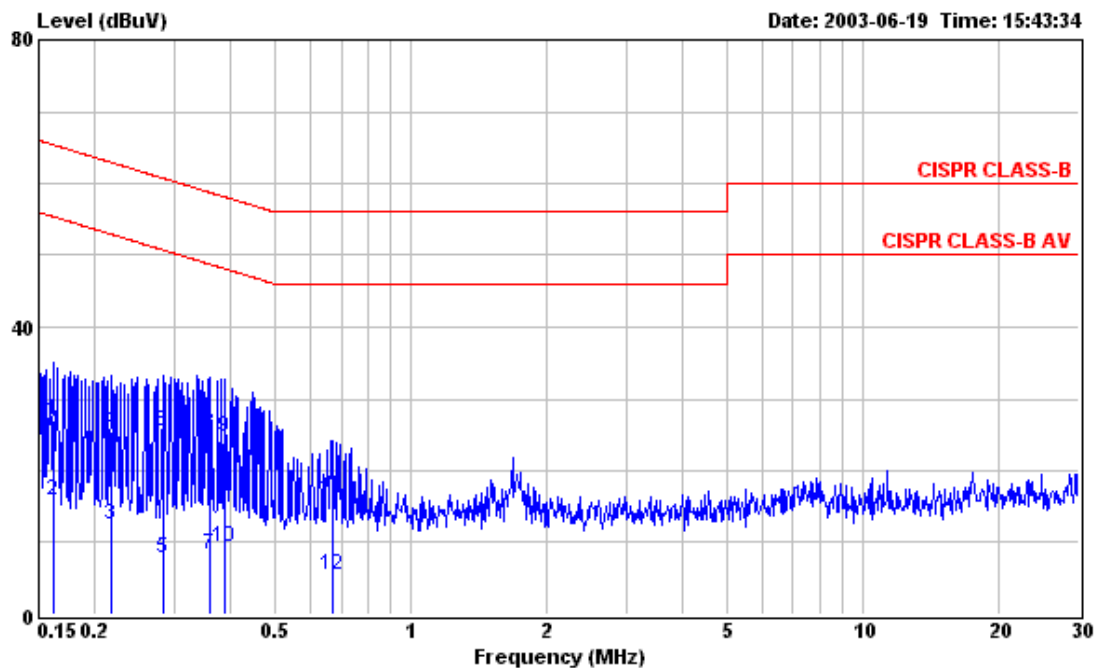
5.3. Typical Test Setup Layout of Conducted Powerline



5.4. Test Result of AC Powerline Conducted Emission

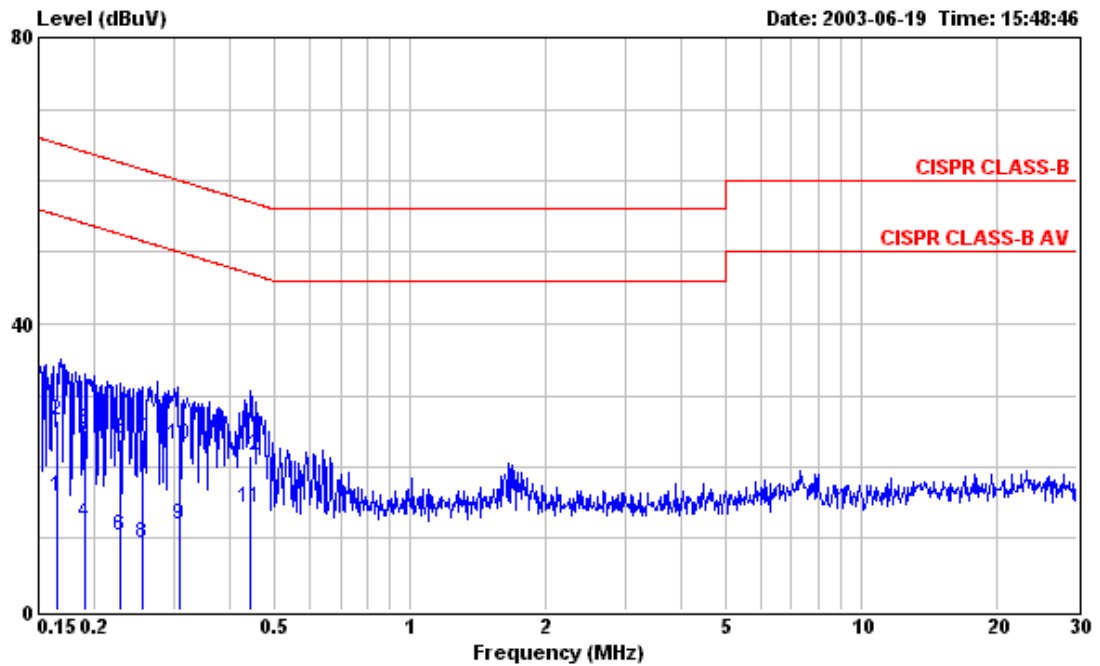
- Frequency Range of Test: from 0.15 MHz to 30 MHz
- Temperature: 25.6 °C
- Relative Humidity: 58 %
- All emissions not reported here are more than 10 dB below the prescribed limit.

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



Site : C001-HY
 Condition : CISPR CLASS-B 2003 2001/008 LINE
 EUT : FOLLOW ME
 Power : 110V/60Hz
 Model : DX147
 Memo :

	Freq	Level	Over	Limit	Read	Probe	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.162	27.10	-38.26	65.36	26.92	0.10	0.08	QP
2	0.162	15.74	-39.62	55.36	15.56	0.10	0.08	Average
3	0.217	12.35	-40.58	52.93	12.21	0.10	0.04	Average
4	0.217	25.50	-37.43	62.93	25.36	0.10	0.04	QP
5	0.282	7.87	-42.89	50.76	7.72	0.10	0.05	Average
6	0.282	25.43	-35.33	60.76	25.28	0.10	0.05	QP
7	0.360	8.28	-40.45	48.73	8.12	0.10	0.06	Average
8	0.360	25.29	-33.44	58.73	25.13	0.10	0.06	QP
9	0.387	24.56	-33.57	58.13	24.40	0.10	0.06	QP
10	0.387	9.47	-38.66	48.13	9.31	0.10	0.06	Average
11	0.672	16.19	-39.81	56.00	16.02	0.10	0.07	QP
12	0.672	5.50	-40.50	46.00	5.33	0.10	0.07	Average



Site : C001-HY
 Condition : CISPR CLASS-B 2003 2001/008 NEUTRAL
 EUT : FOLLOW ME
 Power : 110V/60Hz
 Model : DX147
 Memo :

	Freq	Level	Over	Limit	Read	Probe	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.165	15.92	-39.30	55.22	15.74	0.10	0.08	Average
2	0.165	26.49	-38.73	65.22	26.31	0.10	0.08	QP
3	0.190	25.18	-38.86	64.04	25.03	0.10	0.05	QP
4	0.190	12.29	-41.75	54.04	12.14	0.10	0.05	Average
5	0.227	23.94	-38.63	62.57	23.80	0.10	0.04	QP
6	0.227	10.30	-42.27	52.57	10.16	0.10	0.04	Average
7	0.255	24.00	-37.59	61.59	23.85	0.10	0.05	QP
8	0.255	9.35	-42.24	51.59	9.20	0.10	0.05	Average
9	0.307	11.88	-38.17	50.05	11.73	0.10	0.05	Average
10	0.307	23.04	-37.01	60.05	22.89	0.10	0.05	QP
11	0.442	14.24	-32.78	47.02	14.08	0.10	0.06	Average
12	0.442	21.49	-35.53	57.02	21.33	0.10	0.06	QP

Test Engineer:

John Huang

6. Test of Radiated Emission

Radiated emissions from 30 MHz to 5000 MHz were measured with a bandwidth of 120 kHz for 30MHz to 1 GHz and 1MHz for above 1GHz according to the methods defines in ANSI C63.4-2001. The EUT was placed on a nonmetallic stand, 0.8 meter above the ground plane, as shown in section 6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

6.1. Major Measuring Instruments

- Amplifier (HP 8447D)
 - RF Gain 30 dB
 - Signal Input 100 KHz to 1.3 GHz

- Amplifier (MITEQ AFS44)
 - RF Gain 40 dB
 - Signal Input 100 MHz to 26.5 GHz

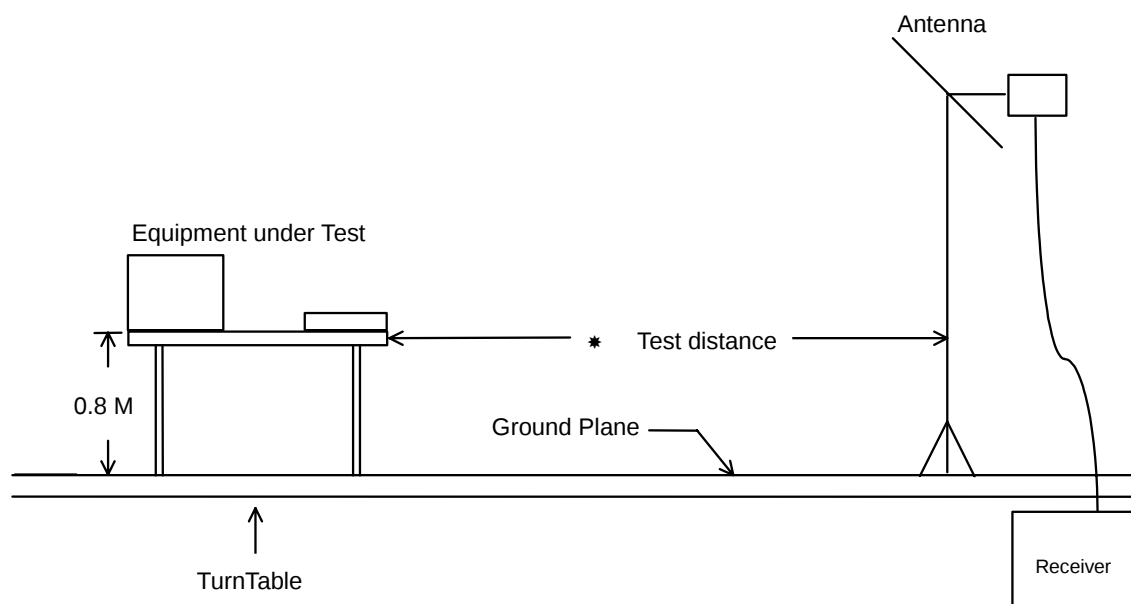
- Spectrum analyzer (R&S FSP40)
 - Attenuation 10 dB
 - Start Frequency 1 GHz
 - Stop Frequency 5 GHz
 - Resolution Bandwidth 1 MHz
 - Video Bandwidth 1 MHz
 - Signal Input 9 KHz to 40 GHz

- Test Receiver (SCHAFFNER SCR3501)
 - Resolution Bandwidth 120 KHz
 - Frequency Band 30 M – 1 GHz
 - Quasi-Peak Detector ON for Quasi-Peak Mode
OFF for Peak Mode

6.2. Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. 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 turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. 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 which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- h. For testing above 1GHz, the emission level of the EUT in peak mode was more 20dB lower than average limit (that means the emission level in peak 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.

6.3. Typical Test Setup Layout of Radiated Emission

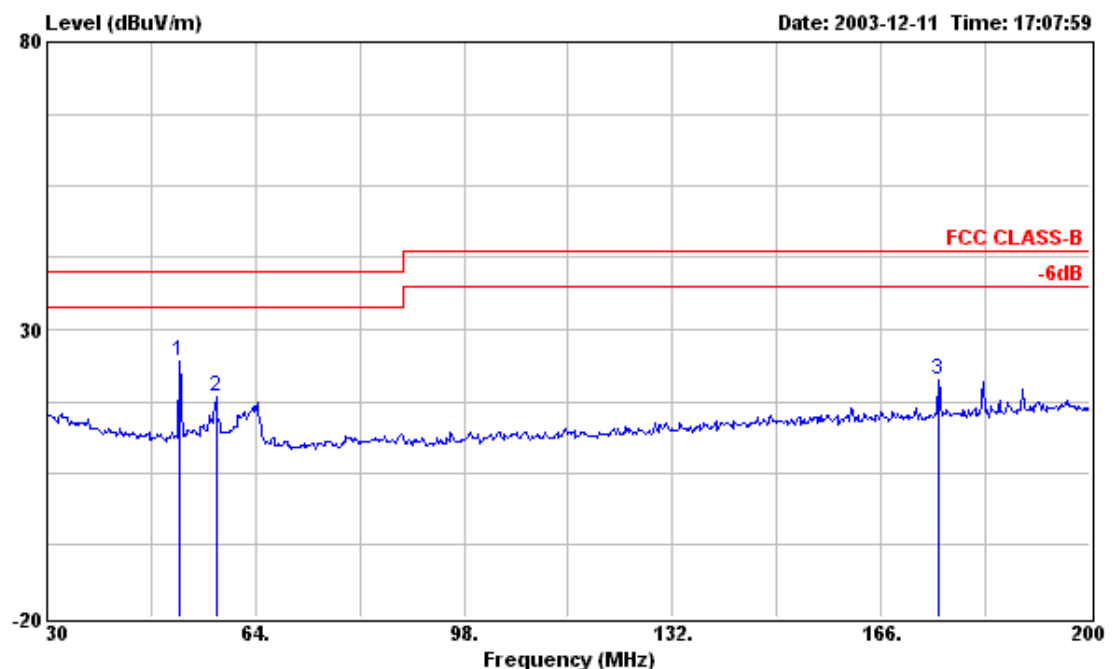


6.4. Test Result of Radiated Emission

6.4.1. Test Mode: Mode 1

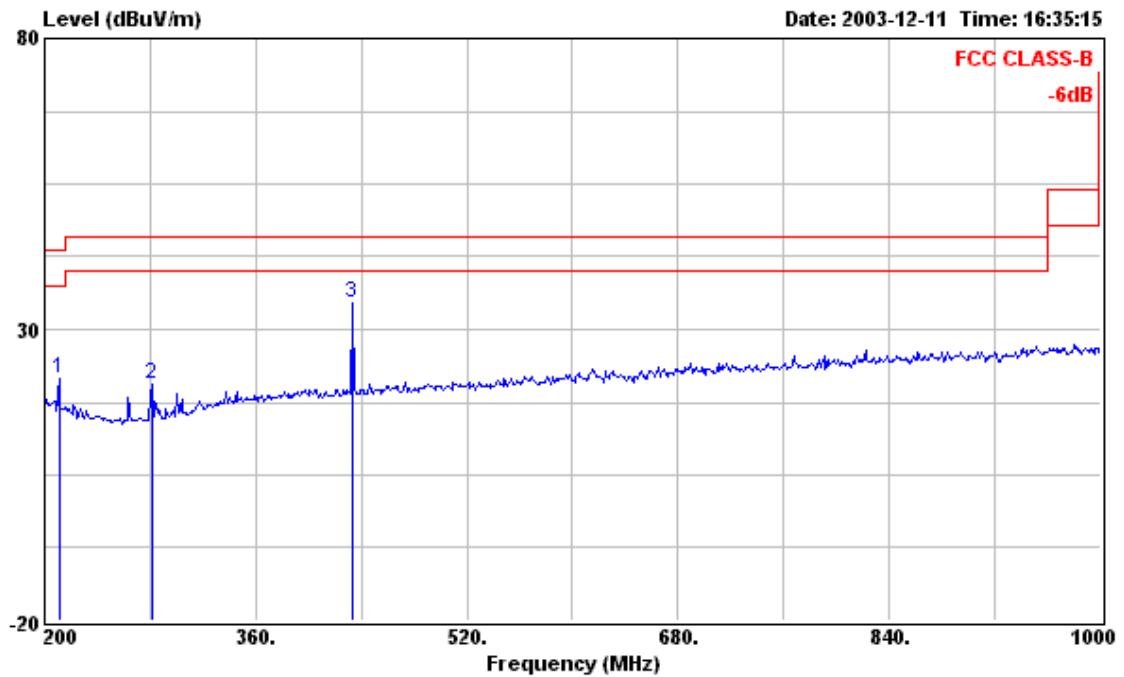
- Test Distance: 3 M
- Temperature: 26°C
- Relative Humidity: 64 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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



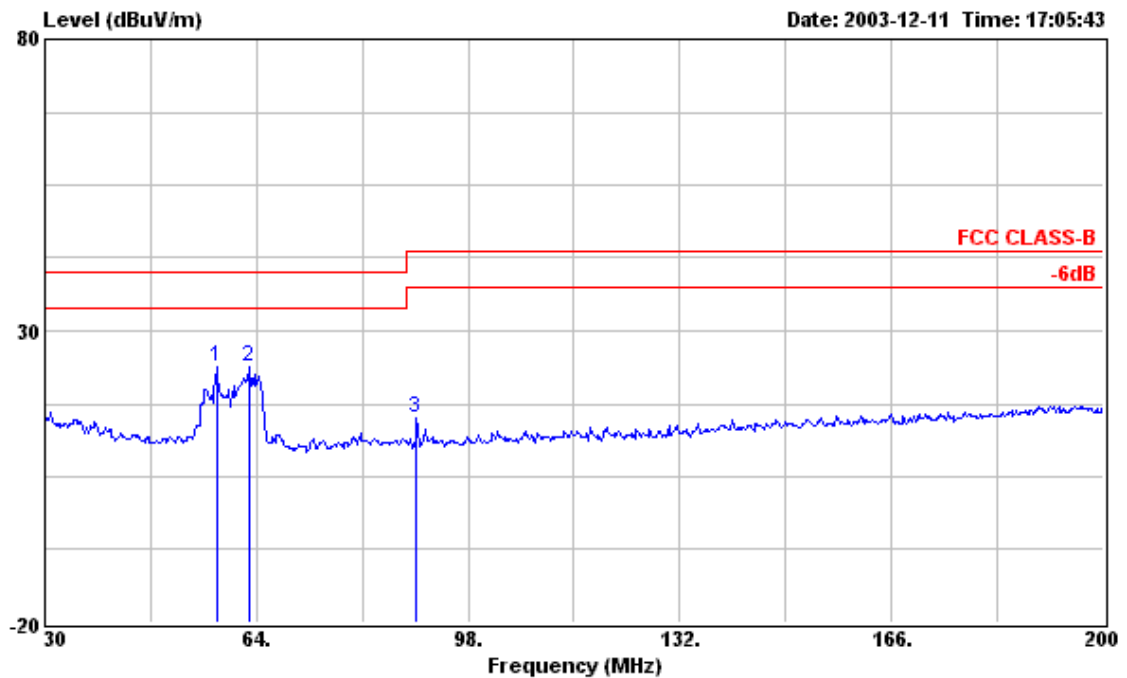
Site : 03CH03-HY
 Condition : 3m BIC-9124--301 HORIZONTAL
 EUT : FOLLOW ME
 Power : DC 3.6V
 MODEL : DX147
 MEMO : TX-X
 : F361107

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	51.590	24.41	-15.59	40.00	40.80	10.13	1.47	27.99	Peak	---	---
2	57.540	18.23	-21.77	40.00	34.37	10.39	1.45	27.98	Peak	---	---
3	175.350	21.20	-22.30	43.50	33.30	13.42	2.23	27.75	Peak	---	---



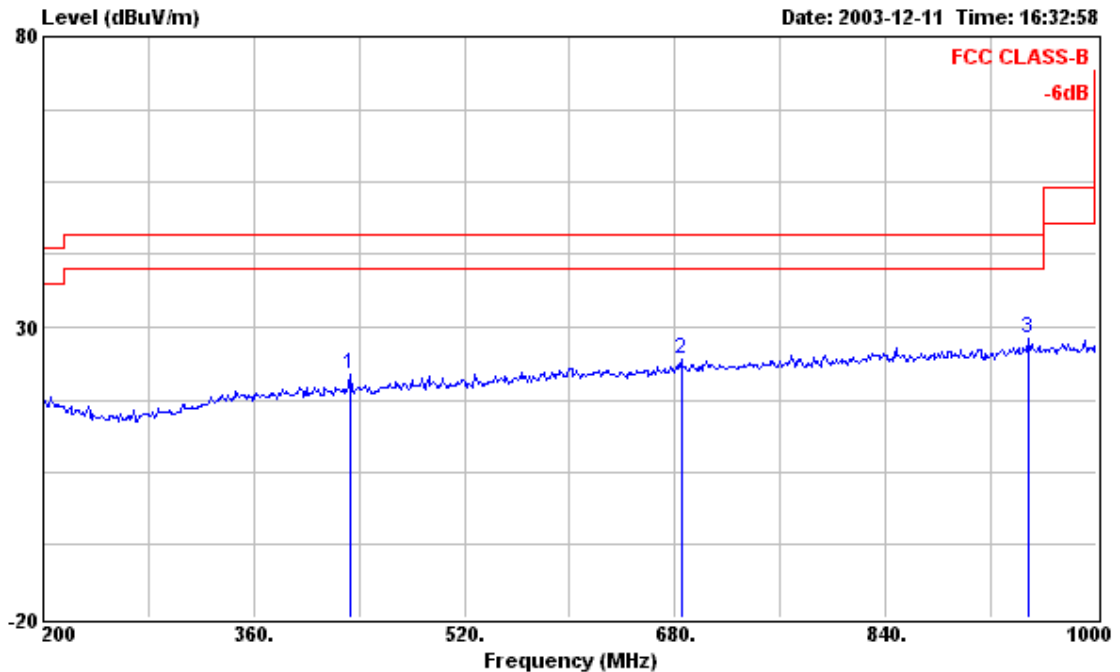
Site : 03CH03-HY
 Condition : 3m LOG-9111-221 HORIZONTAL
 EUT : FOLLOW ME
 Power : DC 3.6V
 MODEL : DX147
 MEMO : TX-X
 : F361107

	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	211.200	21.44	-22.06	43.50	31.87	14.70	2.53	27.66	Peak	---	---
2	281.600	20.52	-25.48	46.00	32.05	12.91	2.93	27.37	Peak	---	---
3	432.800	34.44	-11.56	46.00	42.68	16.25	3.60	28.09	Peak	100	125



Site : 03CH03-HY
 Condition : 3m BIC-9124--301 VERTICAL
 EUT : FOLLOW ME
 Power : DC 3.6V
 MODEL : DX147
 MEMO : TX-X
 : F361107

	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	57.540	23.81	-16.19	40.00	39.95	10.39	1.45	27.98	Peak	---	---
2	62.980	23.74	-16.26	40.00	40.79	9.58	1.34	27.97	Peak	---	---
3	89.670	15.10	-28.40	43.50	32.02	9.31	1.69	27.92	Peak	---	---



Site : 03CH03-HY
Condition : 3m LOG-9111-221 VERTICAL
EUT : FOLLOW ME
Power : DC 3.6V
MODEL : DX147
MEMO : TX-X
F361107

	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	432.800	21.78	-24.22	46.00	30.02	16.25	3.60	28.09	Peak	---	---
2	684.800	24.37	-21.63	46.00	28.84	19.49	4.75	28.71	Peak	---	---
3	948.000	28.05	-17.95	46.00	29.00	21.80	5.50	28.25	Peak	---	---

➤ For 1GHz ~ 5GHz

Remark: Frequency from 1000MHz to 5000MHz, the emission emitted by the EUT is too low to be measured

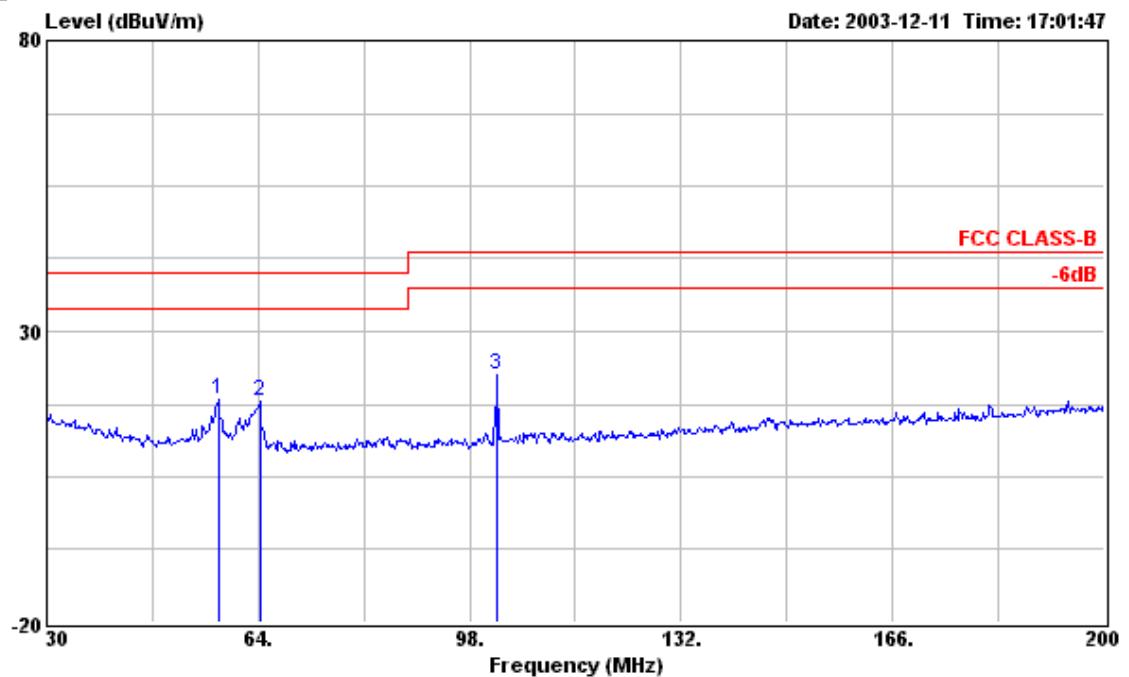
Test Engineer:

Steve Chen
Steve Chen

6.4.2. Test Mode: Mode 2

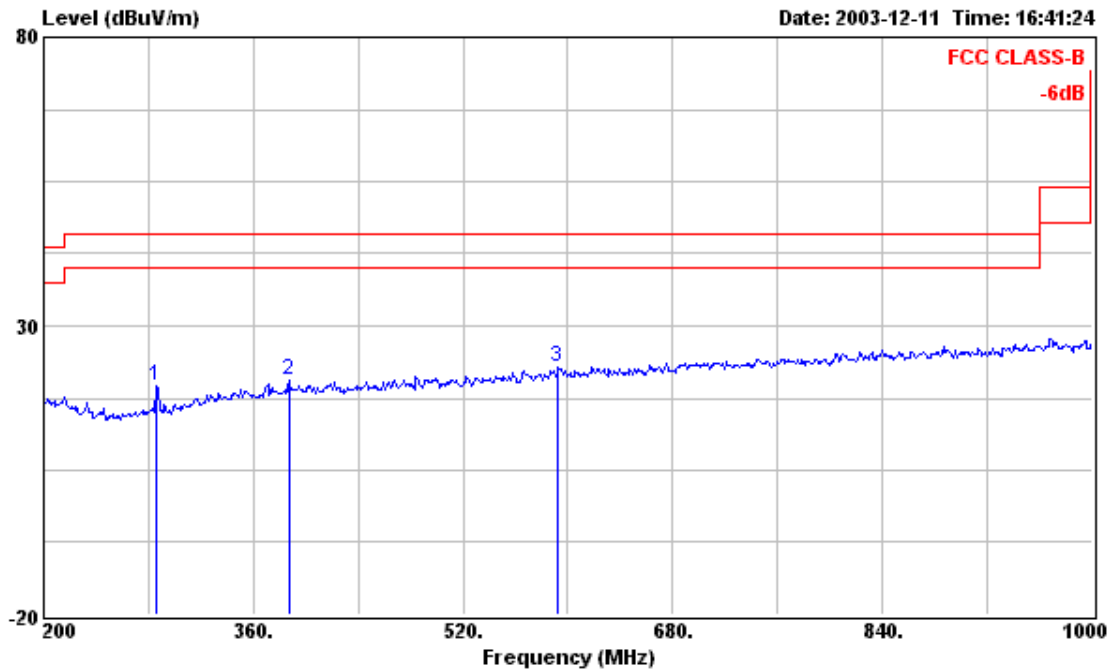
- Test Distance: 3 M
- Temperature: 26°C
- Relative Humidity: 64 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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



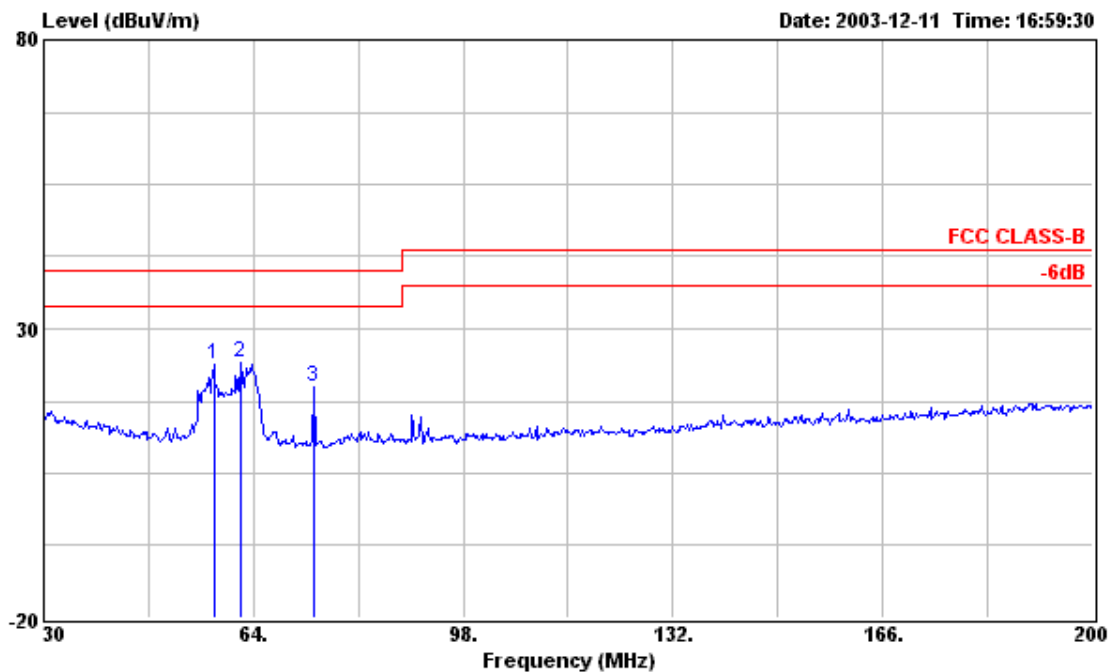
Site : 03CH03-HY
 Condition : 3m BIC-9124--301 HORIZONTAL
 EUT : FOLLOW ME
 Power : DC 3.6V
 MODEL : DX147
 MEMO : TX-Y
 : F361107

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	57.540	18.39	-21.61	40.00	34.53	10.39	1.45	27.98	Peak	---	---
2	64.340	17.87	-22.13	40.00	35.05	9.43	1.36	27.97	Peak	---	---
3	102.420	22.68	-20.82	43.50	38.85	9.95	1.77	27.89	Peak	---	---



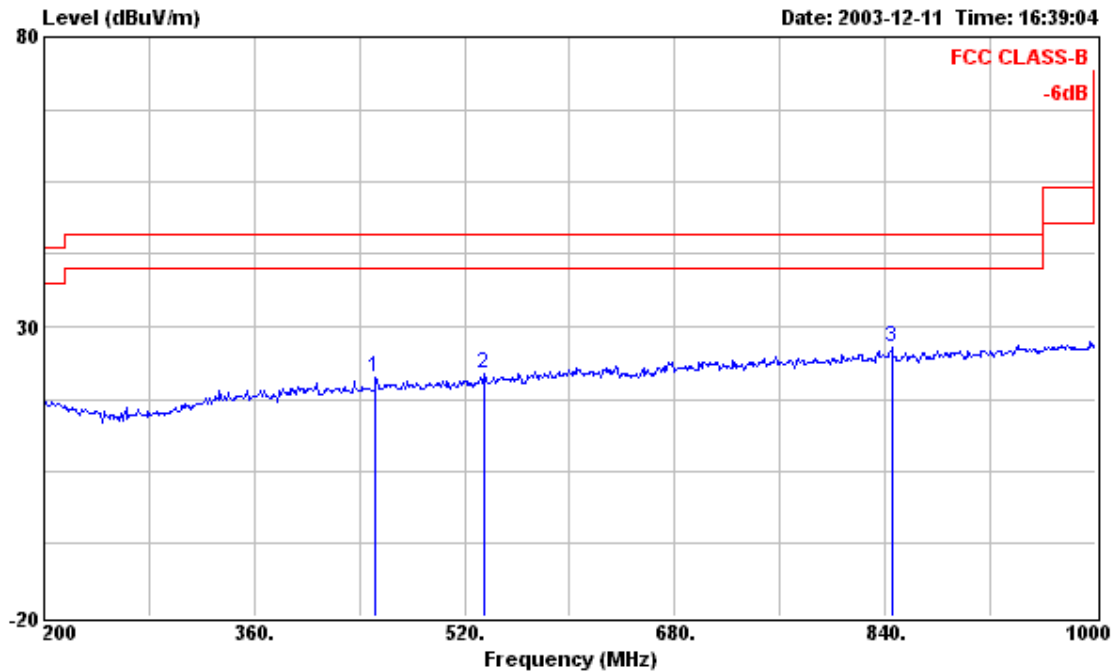
Site : 03CH03-HY
 Condition : 3m LOG-9111-221 HORIZONTAL
 EUT : FOLLOW ME
 Power : DC 3.6V
 MODEL : DX147
 MEMO : TX-Y
 : F361107

	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
			dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	285.600	19.62	-26.38	46.00	31.14	12.90	2.94	27.36	Peak	---	---
2	387.200	20.74	-25.26	46.00	29.15	15.53	3.80	27.74	Peak	---	---
3	592.800	22.73	-23.27	46.00	28.30	18.82	4.40	28.79	Peak	---	---



Site : 03CH03-HY
 Condition : 3m BIC-9124--301 VERTICAL
 EUT : FOLLOW ME
 Power : DC 3.6V
 MODEL : DX147
 MEMO : TX-Y
 : F361107

	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	57.540	23.94	-16.06	40.00	40.08	10.39	1.45	27.98	Peak	---	---
2	61.790	24.15	-15.85	40.00	41.00	9.80	1.32	27.97	Peak	100	134
3	73.860	19.86	-20.14	40.00	37.28	9.06	1.47	27.95	Peak	---	---



Site : 03CH03-HY
 Condition : 3m LOG-9111-221 VERTICAL
 EUT : FOLLOW ME
 Power : DC 3.6V
 MODEL : DX147
 MEMO : TX-Y
 : F361107

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamplifier	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	452.000	21.15	-24.85	46.00	29.15	16.57	3.70	28.27	Peak	---	---
2	535.200	21.74	-24.26	46.00	28.66	17.65	4.17	28.74	Peak	---	---
3	844.800	26.36	-19.64	46.00	28.96	20.81	5.16	28.57	Peak	---	---

➤ For 1GHz ~ 5GHz

Remark: Frequency from 1000MHz to 5000MHz, the emission emitted by the EUT is too low to be measured

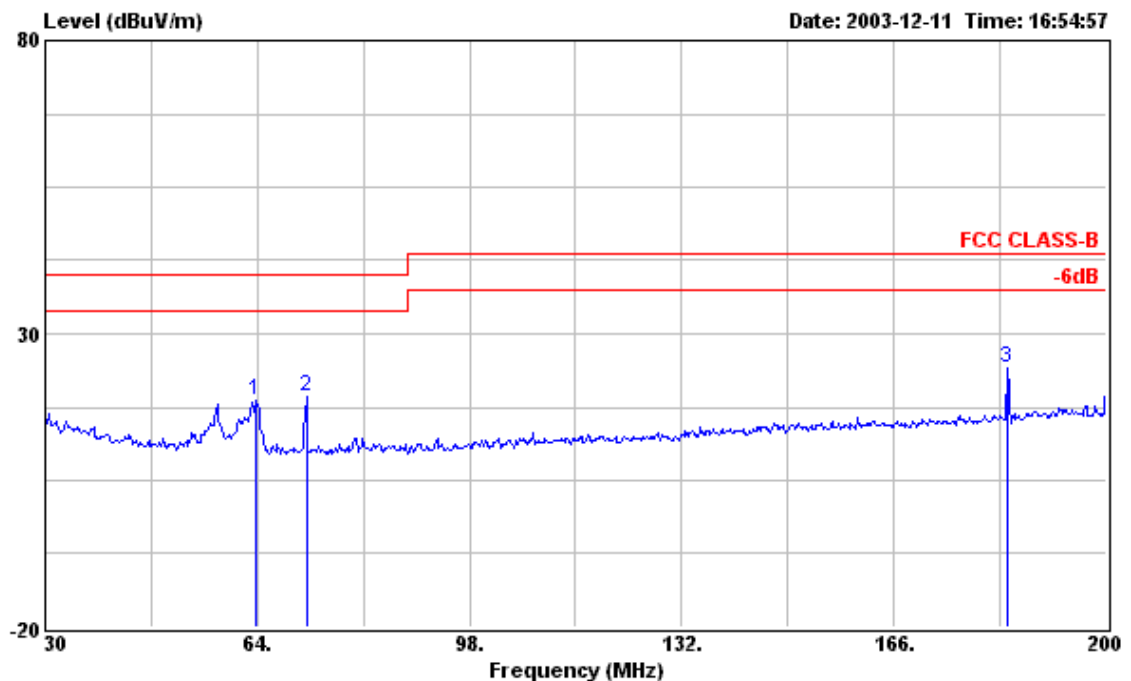
Test Engineer:

Steve Chen
Steve Chen

6.4.3. Test Mode: Mode 3

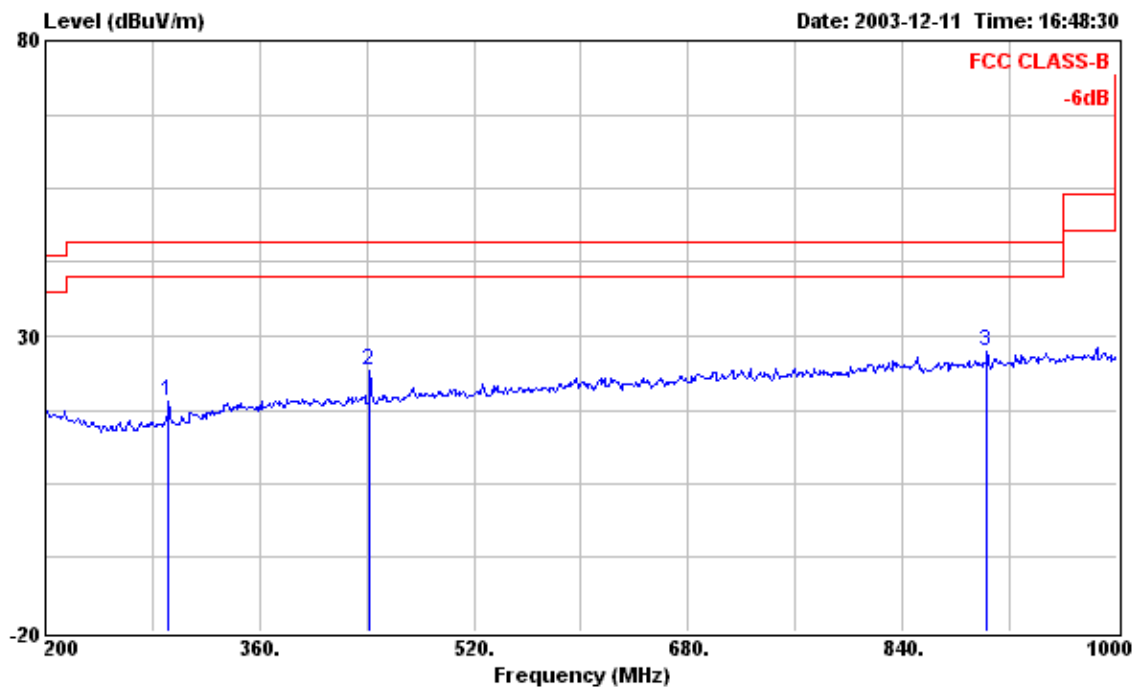
- Test Distance: 3 M
- Temperature: 26°C
- Relative Humidity: 64 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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



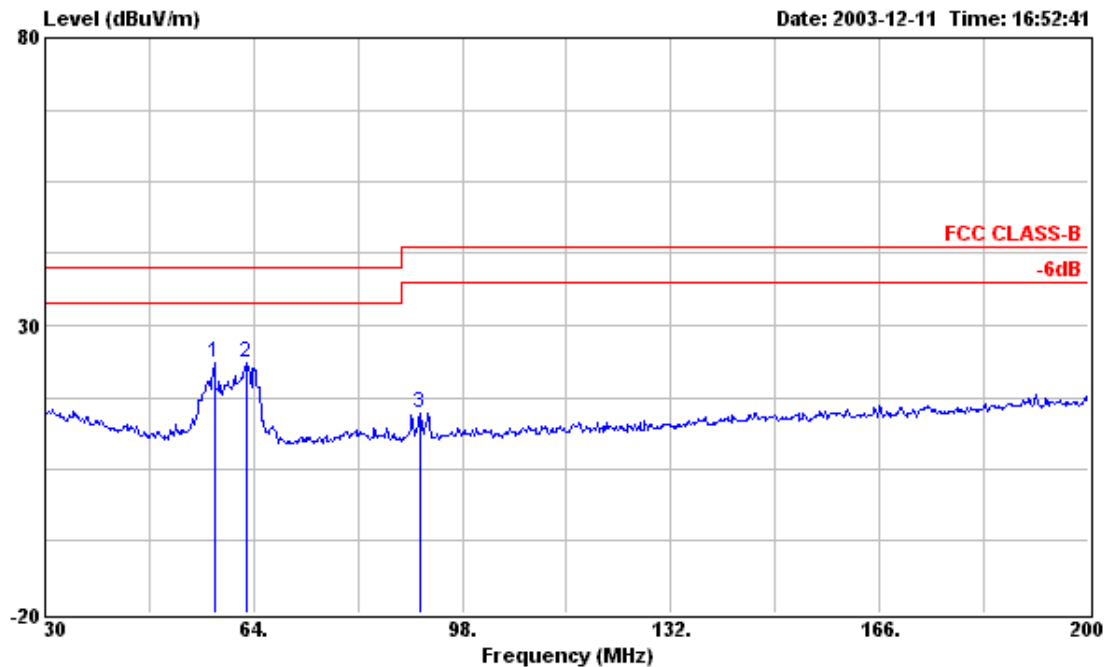
Site : 03CH03-HY
 Condition : 3m BIC-9124--301 HORIZONTAL
 EUT : FOLLOW ME
 Power : DC 3.6V
 MODEL : DX147
 MEMO : TX-Z
 : F361107

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	63.830	18.53	-21.47	40.00	35.66	9.49	1.35	27.97	Peak	---	---
2	71.820	19.19	-20.81	40.00	36.71	8.98	1.45	27.95	Peak	---	---
3	184.190	24.01	-19.49	43.50	35.36	13.99	2.39	27.73	Peak	---	---



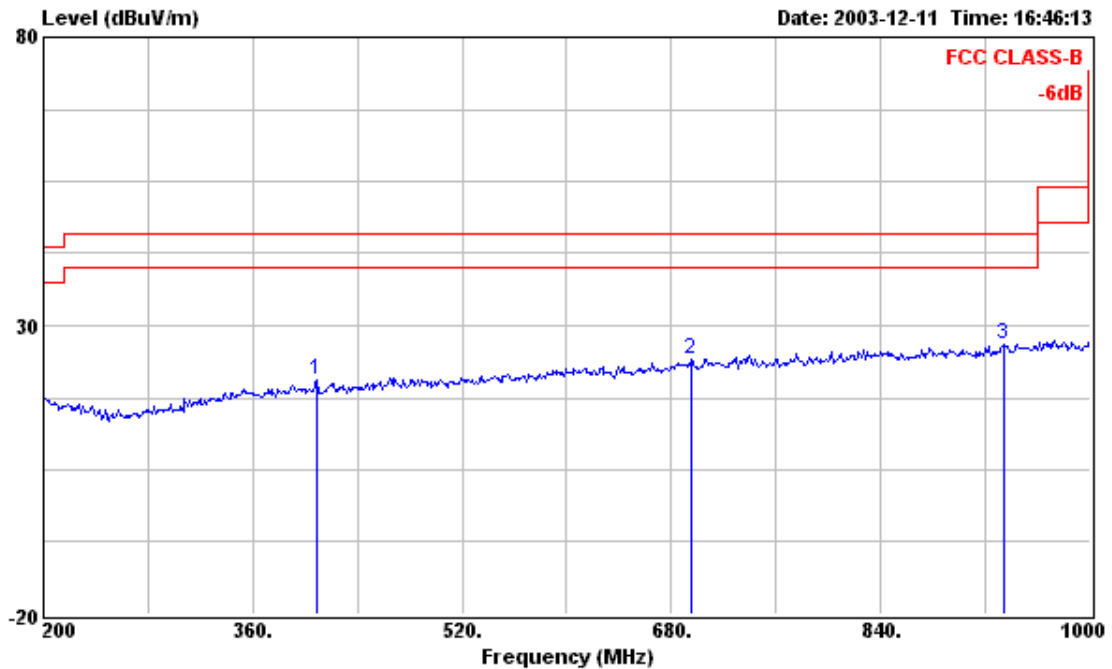
Site : 03CH03-HY
 Condition : 3m LOG-9111-221 HORIZONTAL
 EUT : FOLLOW ME
 Power : DC 3.6V
 MODEL : DX147
 MEMO : TX-Z
 : F361107

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	292.000	18.85	-27.15	46.00	30.26	12.96	2.96	27.33	Peak	---	---
2	442.400	24.01	-21.99	46.00	32.16	16.37	3.66	28.18	Peak	---	---
3	903.200	27.32	-18.68	46.00	29.23	21.13	5.26	28.30	Peak	---	---



Site : 03CH03-HY
 Condition : 3m BIC-9124--301 VERTICAL
 EUT : FOLLOW ME
 Power : DC 3.6V
 MODEL : DX147
 MEMO : TX-Z
 : F361107

	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	57.540	23.52	-16.48	40.00	39.66	10.39	1.45	27.98	Peak	---	---
2	62.980	23.56	-16.44	40.00	40.61	9.58	1.34	27.97	Peak	100	125
3	91.030	14.86	-28.64	43.50	31.80	9.30	1.68	27.92	Peak	---	---



Site : 03CH03-HY
 Condition : 3m LOG-9111-221 VERTICAL
 EUT : FOLLOW ME
 Power : DC 3.6V
 MODEL : DX147
 MEMO : TX-Z
 : F361107

	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	409.600	20.54	-25.46	46.00	28.81	15.95	3.66	27.88	Peak	---	---
2	695.200	24.14	-21.86	46.00	28.25	19.70	4.89	28.70	Peak	---	---
3	934.400	26.83	-19.17	46.00	28.08	21.60	5.41	28.26	Peak	---	---

➤ For 1GHz ~ 5GHz

Remark: Frequency from 1000MHz to 5000MHz, the emission emitted by the EUT is too low to be measured

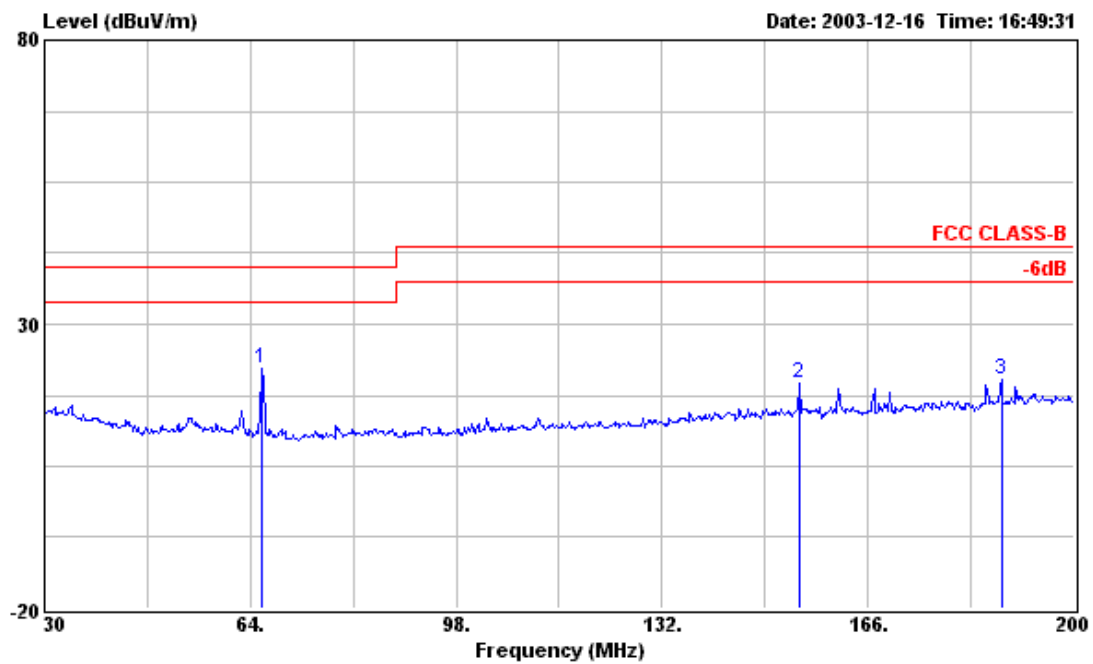
Test Engineer:

Steve
Steve Chen

6.4.4. Test Mode: Mode 4

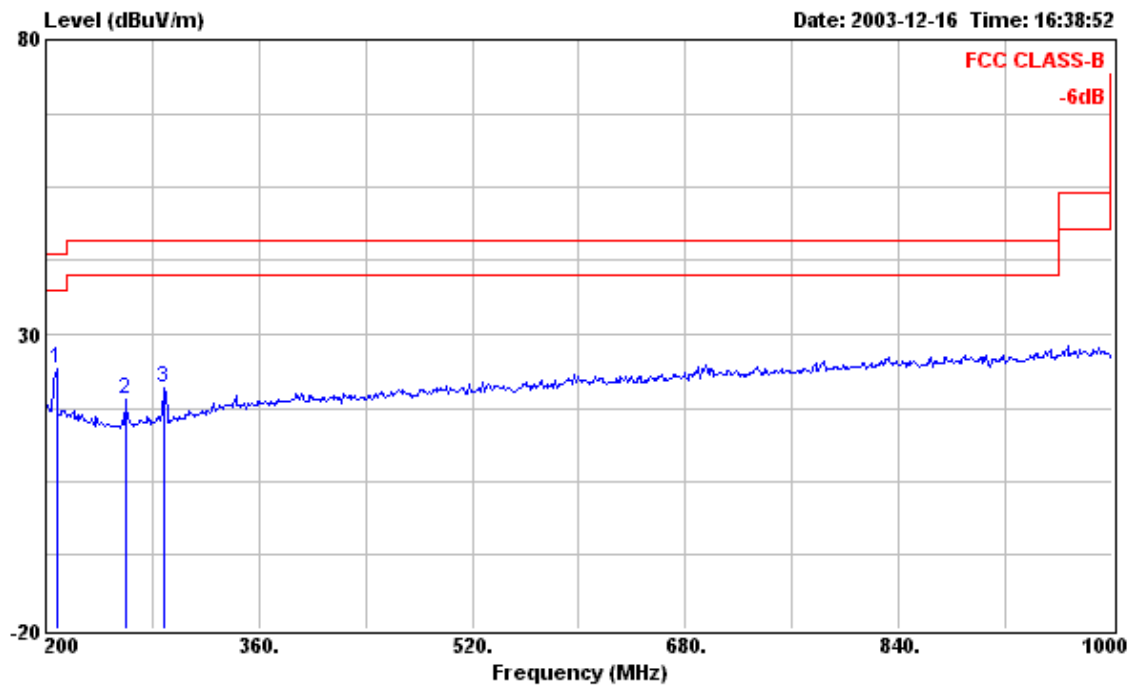
- Test Distance: 3M
- Temperature: 26°C
- Relative Humidity: 64 %
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

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



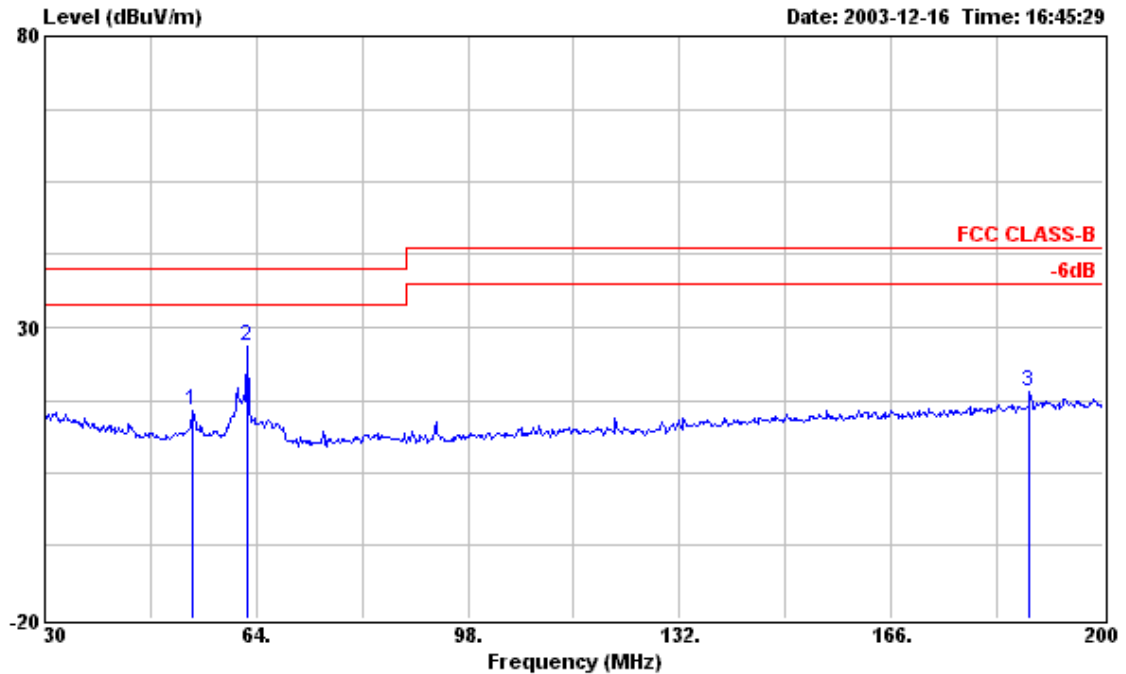
Site : 03CH03-HY
 Condition : 3m BIC-9124--301 HORIZONTAL
 EUT : FOLLOW ME
 Power : 110V/60Hz
 MODEL : DX147
 MEMO : CHARGER

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	65.870	22.24	-17.76	40.00	39.61	9.22	1.38	27.97	Peak	---	---
2	154.780	19.51	-23.99	43.50	32.61	12.53	2.16	27.79	Peak	---	---
3	188.100	20.37	-23.13	43.50	31.33	14.38	2.38	27.72	Peak	---	---



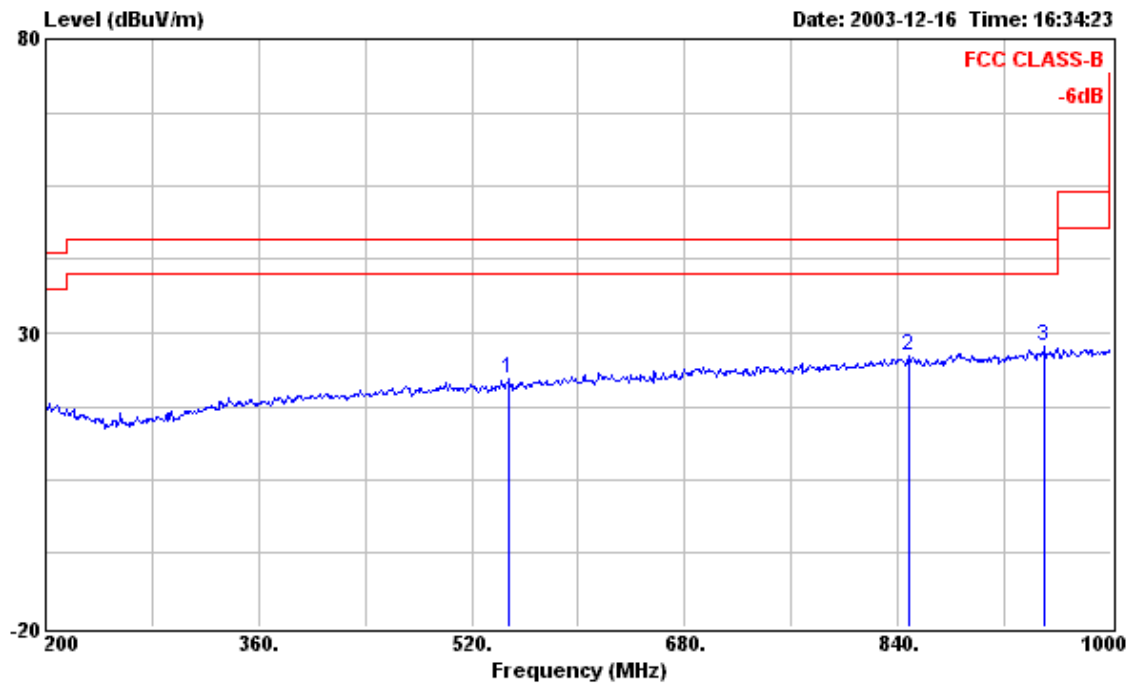
Site : 03CH03-HY
 Condition : 3m LOG-9111-221 HORIZONTAL
 EUT : FOLLOW ME
 Power : 110V/60Hz
 MODEL : DX147
 MEMO : CHARGER

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamplifier	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	208.000	24.02	-19.48	43.50	34.27	14.91	2.51	27.67	Peak	---	---
2	260.000	18.81	-27.19	46.00	30.90	12.46	2.91	27.46	Peak	---	---
3	288.800	20.94	-25.06	46.00	32.45	12.89	2.95	27.35	Peak	---	---



Site : 03CH03-HY
 Condition : 3m BIC-9124--301 VERTICAL
 EUT : FOLLOW ME
 Power : 110V/60Hz
 MODEL : DX147
 MEMO : CHARGER

	Freq	Level	Over	Limit	Read	Probe	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Remark	Pos	Pos
			dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	53.630	15.73	-24.27	40.00	31.98	10.17	1.57	27.99	Peak	---	---
2	62.470	26.83	-13.17	40.00	43.83	9.64	1.33	27.97	Peak	100	125
3	188.270	18.84	-24.66	43.50	29.79	14.39	2.38	27.72	Peak	---	---



Site : 03CH03-HY
 Condition : 3m LOG-9111-221 VERTICAL
 EUT : FOLLOW ME
 Power : 110V/60Hz
 MODEL : DX147
 MEMO : CHARGER

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	547.200	22.23	-23.77	46.00	29.01	17.75	4.22	28.75	Peak	---	---
2	848.000	26.02	-19.98	46.00	28.64	20.84	5.10	28.56	Peak	---	---
3	950.400	27.60	-18.40	46.00	28.51	21.84	5.50	28.25	Peak	---	---

Test Engineer: Steve Chen

Steve Chen

7. EMI Suppression Component List

No EMI suppression components.

8. Antenna Factor & Cable Loss

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30	14.47	0.92
35	13.08	1.05
40	11.70	1.08
45	10.64	1.15
50	10.14	1.29
55	10.21	1.63
60	10.21	1.30
65	9.35	1.36
70	8.91	1.43
75	9.12	1.48
80	9.50	1.53
85	9.71	1.61
90	9.30	1.69
95	9.36	1.67
100	9.80	1.76
110	10.44	1.80
120	10.58	1.90
130	11.37	1.61
140	11.74	2.14
150	12.38	2.16
160	12.68	2.16
170	13.26	1.99
180	13.56	2.39
190	14.57	2.38
200	14.80	2.46
220	15.39	2.46
240	14.08	2.59
260	12.85	2.68
280	12.46	2.91
300	12.91	2.92
320	13.21	2.99
340	14.37	3.03
360	15.31	3.22
380	15.23	3.28
400	15.39	3.80
450	15.79	3.80
500	16.52	3.69
550	17.35	3.93
600	17.77	3.56
650	19.00	4.15
700	18.78	4.58
750	19.80	4.73
800	20.01	4.71
850	20.38	4.99
900	20.86	5.24
950	21.08	5.38
1000	21.83	5.57
1000	24.10	1.92
2000	27.40	2.65
3000	30.00	2.85
4000	32.60	4.07
5000	33.40	4.20

9. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100132	9 KHz – 2.75 GHz	Jun. 12, 2003	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001-008	9 KHz – 30 MHz	Apr. 29, 2003	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001-009	9 KHz – 30 MHz	Apr. 29, 2003	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450 Hz	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 ~ 60 Hz	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9KHz~30MHz	Jan. 07, 2003	Conduction (CO01-HY)
50 ohm BNC type Terminal	NOBLE	50ohm	TM013	50 ohm	Apr. 24, 2003	Conduction (CO01-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	Jun. 21, 2003	Radiation (03CH03-HY)
Spectrum analyzer	R&S	FSP40	100004	9KHZ~40GHz	Aug. 23, 2003	Radiation (03CH03-HY)
Amplifier	HP	8447D	2944A09072	100KHz – 1.3GHz	Nov. 05, 2003	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2687	30MHz –2GHz	Dec. 21, 2002	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz~1GHz	Jan. 02, 2003	Radiation (03CH03-HY)
Amplifier	MITEQ	AFS44	879981	100MHz~26.5GHz	Jul. 23, 2003	Radiation (03CH03-HY)
Horn Antenna	COM-POWER	3115	6741	1GHz – 18GHz	Apr. 08, 2003	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
Horn Antenna	Schwarzbeck	BBHA9170	154	15GHz~40GHz	Jun. 02, 2003	Radiation (03CH03-HY)
RF Cable-HIGH	Jye Bao	RG142	CB030-HIGH	1GHz~29.5GHz	Mar. 14, 2003	Radiation (03CH03-HY)

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

Calibration Interval of Horn Antenna, BBHA9170, is three years.

10. Uncertainty of Test Site

Uncertainty of Radiated Emission Measurement

Contribution	Probability Distribution	3m
Antenna factor calibration	normal(k=2)	±1
cable loss calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2
Antenna Directivity	rectangular	±3
Antenna Factor V.S. Height	rectangular	±2
Antenna Factor Interpolation for Frequency	rectangular	±0.25
site imperfection	rectangular	±2
Mismatch Receiver VSWR $\Gamma_1=0.09$ Antenna VSWR $\Gamma_2=0.67$ Uncertainty= $20\log(1-\Gamma_1\Gamma_2)$	U-shaped	±0.54
combined standard uncertainty $U_e(y)$	normal	±2.7
Measuring uncertainty for a level of confidence of 95% $U=2U_e(y)$	normal (k=2)	±5.4

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

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

Uncertainty of Conducted Emission Measurement

Contribution	Probability Distribution	150KHz – 30MHz
Cable and I/P attenuator calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2
LISN coupling specification	rectangular	±1.5
Transducer factor frequency interpolation	rectangular	±0.2
Mismatch Receiver VSWR $\Gamma_1=0.09$ LISN VSWR $\Gamma_2=0.33$ Uncertainty= $20\log(1-\Gamma_1\Gamma_2)$	U-shaped	0.2
combined standard uncertainty $U_e(y)$	normal	±1.66
Measuring uncertainty for a level of confidence of 95% $U=2U_e(y)$	normal (k=2)	±3.32

$U = \sqrt{\{(0.3/2)^2 + (2^2 + 1.5^2 + 0.2^2)/3 + (0.2)^2/2\}} = 1.66$