

EMI TEST REPORT FOR FCC VERIFICATION
For
Proximiant, Inc.
NFC Dongle

Model No. : PX136U01

Brand : Proximiant

Prepared for

Proximiant, Inc.
800 West El Camino Real, Ste 180 Mountain View, CA94094

Prepared by

Audix Technology (Wujiang) Co., Ltd. EMC Dept.
No. 1289 Jiangxing East Road, the Part of Wujiang Economic Development Zone
Jiangsu China 215200

Tel : +86-512-63403993
Fax : +86-512-63403339

Report Number : ACWE-F1307007
Date of Test : Jun.15~16, 2013
Date of Report : Jul.30, 2013

TABLE OF CONTENTS

<u>Description</u>	<u>Page</u>
TEST REPORT CERTIFICATION	4
1. SUMMARY OF MEASUREMENTS AND RESULTS	4
2. GENERAL INFORMATION.....	5
2.1.Description of Device (EUT).....	5
2.2.Operating Condition of EUT	5
2.3.Tested Supporting System Details	6
2.4.Description of Test Facility	7
2.5.Measurement Uncertainty	7
3. CONDUCTED EMISSION MEASUREMET	8
3.1.Test Equipment	8
3.2.Block Diagram of Test Setup.....	8
3.3.Limits for Conducted Disturbance Voltage	8
3.4.Test Procedure	9
3.5.Conducted Emission Measurement Results	9
4. RADIATED EMISSION MEASUREMENT	12
4.1.Test Equipment	12
4.2.Block Diagram of Test Setup.....	12
4.3.Radiation Emission Limit	13
4.4.Test Procedure	13
4.5.Measurement Results	14
5. DEVIATION TO TEST SPECIFICATIONS	17
6. PHOTOGRAPHS	18
6.1.Photos of Conducted Disturbance Measurement	18
6.2.Radiated Disturbance Measurement	19
7. PHOTOS OF EUT	20

TEST REPORT CERTIFICATION

Applicant	:	Proximant, Inc.
Manufacturer	:	Shanghai HANK Connection Co., Ltd.
Factory	:	Shanghai HANK Connection Co., Ltd.
EUT Description	:	NFC Dongle
FCC ID	:	2AAJH-PX136U01
(A) Model No.	:	PX136U01
(B) Brand	:	Proximant
(C) Power Supply	:	DC 5V/ 230mA
(D) Test Voltage	:	AC 120V, 60Hz

Applicable Standards:

FCC 47 CFR Part 15 Subpart B/Oct. 2012 and
ANSI C63.4-2009

The device described above was tested by Audix Technology (Wujiang) Co., Ltd. EMC Dept. to determine the maximum emission levels emanating from the device. The maximum emission levels were compared with the requirements in section§ 15.107(a) & § 15.109(a) of FCC Part 15 regulation.

The measurement results are contained in this test report and Audix Technology (Wujiang) Co., Ltd. EMC Dept. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC limits.

This report applies to above tested sample only and which shall not be reproduced in part without written approval of Audix Technology (Wujiang) Co., Ltd. EMC Dept.

Date of Test: Jun.15~16, 2013

Date of Report: Jul.30, 2013

Prepared by

: 
(Tina Zhang/Assistant)

Reviewer

: 
(Jingo Lin/Section Manager)

Approved & Authorized Signer

: 
(Allen Wang/ Deputy General Manager)

1. SUMMARY OF MEASUREMENTS AND RESULTS

The EUT has been tested according to the applicable standards and test results are referred as below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted Emission	FCC 47 CFR Part 15 Subpart B/Oct. 2012	§ 15.107 (a) Class B	PASS
Radiated Emission	FCC 47 CFR Part 15 Subpart B/Oct. 2012	§ 15.109 (a) Class B	PASS

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Description	:	NFC Dongle
Model No.	:	PX136U01
FCC ID	:	2AAJH-PX136U01
Brand	:	Proximiant
Applicant	:	Proximiant, Inc. 800 West El Camino Real, Ste 180 Mountain View, CA94094
Manufacturer	:	Shanghai HANK Connection Co., Ltd. No.9655 TingWei RD, Tinglin Town, JinShan Zone, Shanghai City, China
Factory	:	Shanghai HANK Connection Co., Ltd. No.9655 TingWei RD, Tinglin Town, JinShan Zone, Shanghai City, China
Highest Working Frequency	:	13.56 MHz
Date of Receipt of Sample	:	Jun.16, 2013
Date of Test	:	Jun.15~16, 2013

2.2. Operating Condition of EUT

- 2.2.1. Set up the EUT as showed in respective block diagram of test setup.
- 2.2.2. Turn on the power of all equipment.
- 2.2.3. Connect the EUT to notebook computer, then the notebook computer drives test software “Proximiant FCC Tool. Version for 2.0.4882.33064”.
- 2.2.4. The other peripheral devices were driven and operated in turn during all testing.

2.3. Tested Supporting System Details

2.3.1. Printer

Manufacturer	:	HP
Model Number	:	DESKJET3918
Serial Number	:	CN64S1N0T6
USB Cable	:	Shielded, Detachable, 2.0m
AC Adapter	:	HP/090-4397 I/P:100-240V, 50-60Hz, 500mA, O/P: +32Vdc, 500mA max +15Vdc, 530mA max BSMI No.: R33160 AC Cord: Unshielded, Detachable, 1.8m DC Cord: Shielded, Undetectable, 1.8m, bonded 1 ferrite core

2.3.2. USB HDD

Manufacturer	:	BUFFALO
Model Number	:	HD-PCU2
Serial Number	:	75293916858283
Data Cable	:	Shielded, Undetectable, 1.5m, bonded 1 ferrite core

2.3.3. Notebook Computer

Manufacturer	:	MEDION
Model Number	:	M10B1
AC Adapter	:	KSAFK1900474T1M2 I/P:100-240V, 50/60Hz, 1.2A, O/P: +19Vdc, 4.74A AC Cord: Unshielded, Detachable, 1.8m DC Cord: Shielded, Undetectable, 1.8m, bonded 1 ferrite core

2.4. Description of Test Facility

Name of Firm	:	Audix Technology (Wujiang) Co., Ltd. EMC Dept.
Site Location	:	No. 1289 Jiangxing East Road, the Eastern Part of Wujiang Economic Development Zone Jiangsu China 215200
Test Facilities	:	No.1 10m Semi-anechoic Chamber No.1 Conducted Shielding Enclosure
NVLAP Lab Code	:	200786-0 (NVLAP is a NATA accredited body under Mutual Recognition Agreement) Valid until on Sep.30, 2013

2.5. Measurement Uncertainty

Test Item	Range Frequency	Uncertainty
Conducted Disturbance Measurement	0.15MHz ~ 30MHz	± 2.36dB
Radiated Disturbance Measurement (At 10m Chamber)	30MHz ~ 1000MHz	± 3.06dB (Horizontal)
		± 3.10dB (Vertical)

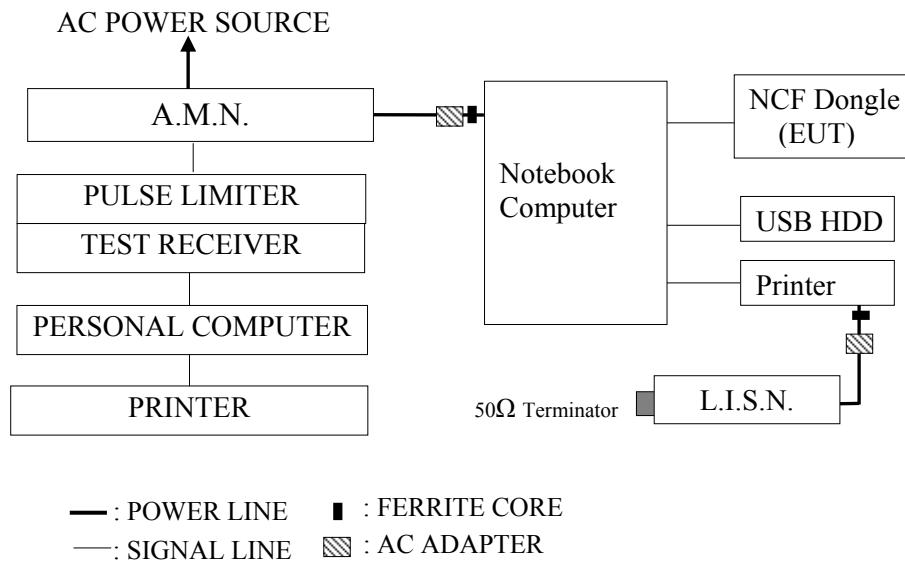
Remark: Uncertainty = $k_u(y)$

3. CONDUCTED EMISSION MEASUREMET

3.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R & S	ESCI	100839	2013-01-05	2014-01-04
2.	A.M.N.	R & S	ESH2-Z5	100153	2013-05-17	2014-05-16
3.	L.I.S.N	Kyoritsu	KNW-407	8-1793-3	2012-08-06	2013-08-05
4.	Pulse Limiter	R & S	ESH3-Z2	100605	2013-01-05	2014-01-04
5.	50Ω Terminator	Tektronis	MS4630B	001-con	2013-01-05	2014-01-04
6.	RF Cable	Harbour Industries	RG400	003	2013-03-24	2014-03-23

3.2. Block Diagram of Test Setup



3.3. Limits for Conducted Disturbance Voltage

(§15.107, Class B)

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB μ V	56 ~ 46 dB μ V
500kHz ~ 5MHz	56 dB μ V	46 dB μ V
5MHz ~ 30MHz	60 dB μ V	50 dB μ V

Remark 1. If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.
 2. The lower limit applies at the band edges.

3.4. Test Procedure

The measuring process is according to ANSI C63.4 and laboratory internal procedure TKC-301-015.

In the conducted disturbance measurement, the EUT and all peripheral devices were set up on an insulating support which was 0.1 meters height above the ground plane, and 0.4 meters far away from the vertical plane. The EUT was powered by AC power source through Line Impedance Stabilization Network. All cables or wires placement were verified to find out the maximum emission.

The bandwidth of measuring receiver was set at 9 kHz.

The required frequency band (0.15 MHz ~ 30 MHz) was pre-scanned with peak detector; the final measurement was measured with quasi-peak detector and average detector. (If the average limit is met when using a quasi-peak detector, the average detector is unnecessary).

The emission level is calculated automatically by the test system which uses the following equation:

Emission level (dB μ V) = Meter-Reading (dB μ V) + A.M.N factor (dB) + Cable loss (dB).
(Cable loss include pulse limiter loss)

3.5. Conducted Emission Measurement Results

PASSED.

(All the emissions not reported below are too low against the prescribed limits.)

EUT was performed during this section testing and all the test results are attached in next pages.

Test Date : Jun.16, 2013 Temperature : 20.2 Humidity : 35%

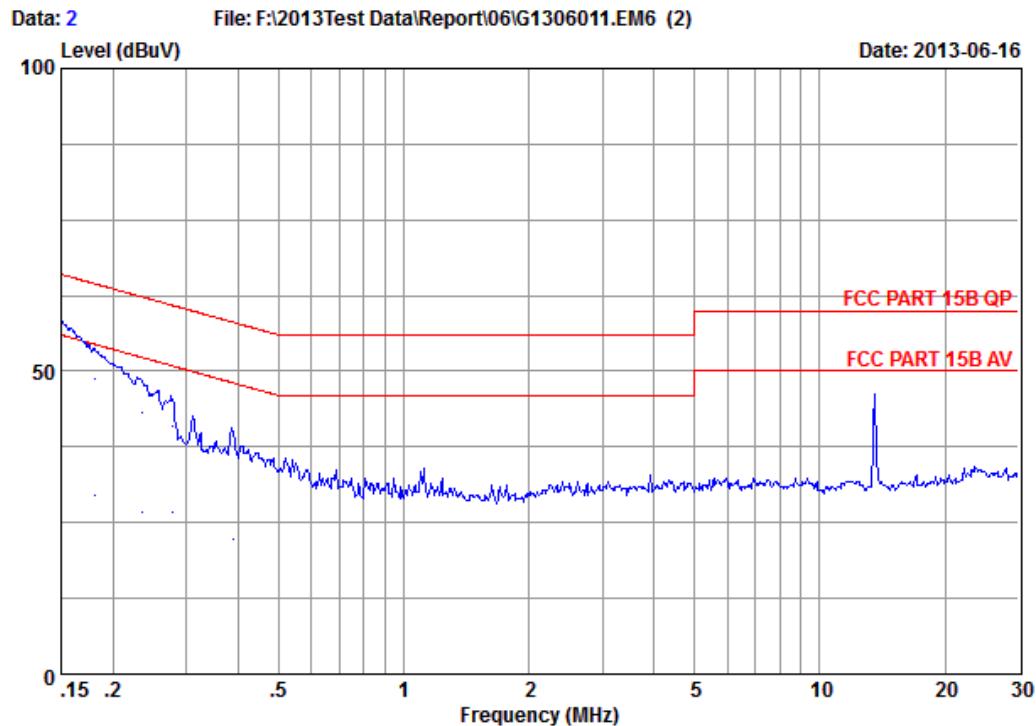
Mode	Test Condition	Reference Test Data No.	
		Neutral	Line
1	Operating	# 1	# 2

NOTE 1- ' ' means the worst test mode.

NOTE 2- The worst emission is detected at 13.56 MHz with emission level of 44.44 dB (μ V) and with AV detector (Limit is 50.00 dB (μ V)), when the Line of the EUT is connected to AMN.



Audix Technology (Wu Jiang) Co.,Ltd
 No.1289, Jiang Xing East Road, The Eastern Part of WuJiang
 Economic Development Zone, JiangSu, China
 Tel : (0512) 63403993 Fax: (0512) 63403339



Site no. : No.1 Conducted shielding Enclosure Data no. : 2
 AMN/LISN : ESH2-Z5-1205 Phase : NEUTRAL
 Limit : FCC PART 15B QP
 Env. / Ins. : 20.2*C&35%/ESCI Engineer : KM Tong
 EUT : NFC Dongle
 M/N : PX136U01
 Power Rating : 120Vac/60Hz
 Test mode : Operating
 Memo :

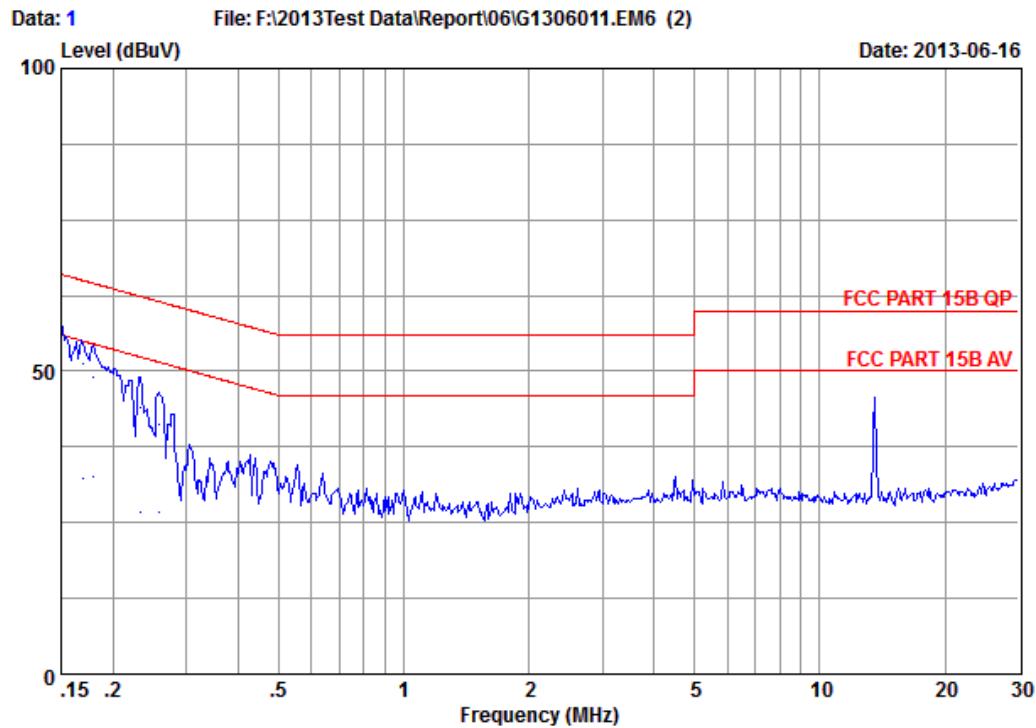
Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15	0.17	9.86	42.81	52.84	66.00	QP
2	0.15	0.17	9.86	23.91	33.94	56.00	Average
3	0.18	0.17	9.87	19.60	29.64	54.44	Average
4	0.18	0.17	9.87	38.60	48.64	64.44	QP
5	0.23	0.17	9.87	33.20	43.24	62.31	QP
6	0.23	0.17	9.87	16.60	26.64	52.31	Average
7	0.28	0.18	9.86	30.90	40.94	60.91	QP
8	0.28	0.18	9.86	16.60	26.64	50.91	Average
9	0.39	0.18	9.87	12.10	22.15	48.11	Average
10	0.39	0.18	9.87	29.20	39.25	58.11	QP
11	13.56	0.58	10.04	33.10	43.72	50.00	Average
12	13.56	0.58	10.04	34.10	44.72	60.00	QP

1. Emission Level = AMN Factor + Cable Loss + Reading.

2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



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 No.1289, Jiang Xing East Road, The Eastern Part of WuJiang
 Economic Development Zone, JiangSu, China
 Tel : (0512) 63403993 Fax: (0512) 63403339



Site no. : No.1 Conducted shielding Enclosure Data no. : 1
 AMN/LISN : ESH2-Z5-1205 Phase : LINE
 Limit : FCC PART 15B QP
 Env. / Ins. : 20.2*C&35%/ESCI Engineer : KM Tong
 EUT : NFC Dongle
 M/N : PX136U01
 Power Rating : 120Vac/60Hz
 Test mode : Operating
 Memo :

Freq. (MHz)	AMN (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15	0.23	9.86	43.30	53.39	66.00	QP
2	0.15	0.23	9.86	25.20	35.29	56.00	Average
3	0.17	0.23	9.87	22.10	32.20	55.01	Average
4	0.17	0.23	9.87	41.10	51.20	65.01	QP
5	0.18	0.24	9.87	38.89	49.00	64.53	QP
6	0.18	0.24	9.87	22.59	32.70	54.53	Average
7	0.23	0.25	9.87	33.90	44.02	62.34	QP
8	0.23	0.25	9.87	16.60	26.72	52.34	Average
9	0.26	0.26	9.86	16.60	26.72	51.50	Average
10	0.26	0.26	9.86	31.20	41.32	61.50	QP
11	13.56	0.70	10.04	33.60	44.34	60.00	QP
12	13.56	0.70	10.04	33.70	44.44	50.00	Average

1. Emission Level = AMN Factor + Cable Loss + Reading.

2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

4. RADIATED EMISSION MEASUREMENT

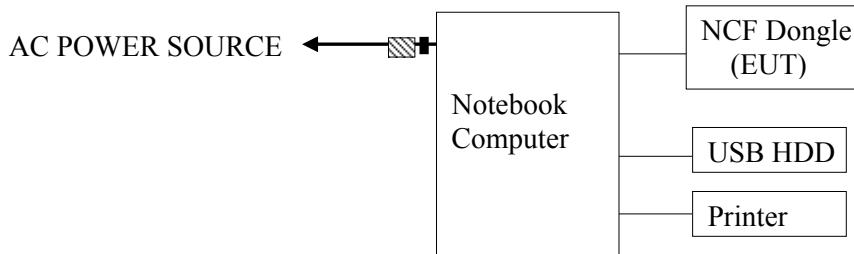
4.1. Test Equipment

The following test equipment was used during the radiated emission measurement:
At 10m Semi-Anechoic Chamber

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY45107028	2013-01-05	2014-01-04
2.	Spectrum Analyzer	Agilent	E7405A	MY45107030	2013-01-05	2014-01-04
3.	Pre-Amplifier	Agilent	8447D	2944A10923	2012-08-14	2013-08-13
4.	Pre-Amplifier	Agilent	8447D	2944A10922	2012-08-14	2013-08-13
5.	Bi-log Antenna (Horizontal)	Schaffner	CBL6112D	22251	2013-04-27	2014-04-26
6.	Bi-log Antenna (Vertical)	Schaffner	CBL6112D	22252	2012-10-18	2013-10-17
7.	Test Receiver	R&S	ESCI	100351	2013-01-05	2014-01-04
8.	50Ω Coaxial Switch # 1	ANRITSU	MP59B	6200547935	2013-03-24	2014-03-23
9.	50Ω Coaxial Switch # 2	ANRITSU	MP59B	6200547937	2013-03-24	2014-03-23
10.	50Ω Coaxial Switch # 3	ANRITSU	MP59B	6200547934	2013-03-24	2014-03-23
11.	RF Cable	Yuhang	CSYH	001	2012-08-14	2013-08-13
12.	RF Cable	Yuhang	CSYH	002	2012-08-14	2013-08-13
13.	RF Cable	Yuhang	CSYH	003	2012-08-14	2013-08-13
14.	RF Cable	Yuhang	CSYH	004	2012-08-14	2013-08-13
15.	RF Cable	Yuhang	CSYH	005	2013-03-24	2014-03-23
16.	RF Cable	Yuhang	CSYH	006	2013-03-24	2014-03-23
17.	RF Cable	Yuhang	CSYH	008	2013-03-24	2014-03-23
18.	RF Cable	Yuhang	CSYH	009	2013-03-24	2014-03-23

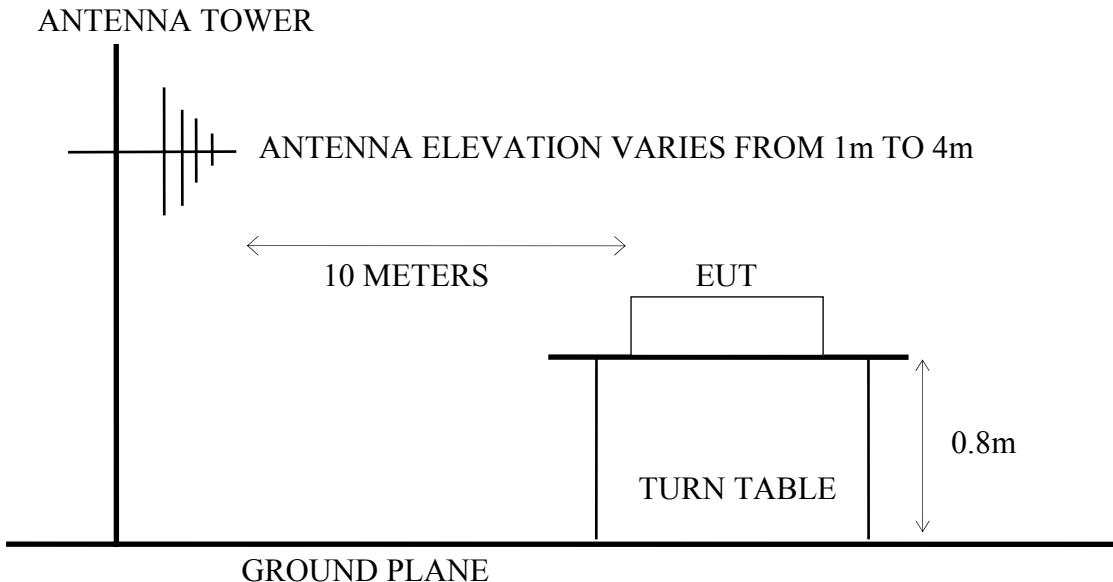
4.2. Block Diagram of Test Setup

4.2.1. Block Diagram of Test Setup between EUT and simulators



— : POWER LINE ■ : FERRITE CORE
— : SIGNAL LINE ■■ : AC ADAPTER

4.2.2. No. 1 10m Semi-Anechoic Chamber Setup Diagram (Test distance:10m) for 30-1000MHz



4.3. Radiation Emission Limit

(FCC part 15 Subpart B §15.109, Class B)

All emanations from receiver shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS	
		(μ V/m)	(dB μ V/m)
30 ~ 88	3	100	40
88~216	3	150	43.5
216~960	3	200	46
Above 960	3	500	54

Notes: (1) The tighter limit applies at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4. Test Procedure

The measuring process is according to ANSI C63.4 clause12 and laboratory internal procedure TKC-301-024.

In the radiated emission measurement, the EUT and all simulators were set up on a non-metallic turn table which was 0.8 meters above the ground plane. Measurement distance between EUT and receiving antennas was set at 3 meters. The specified distance is the distance between the antennas and the closest periphery of EUT. During the radiated measurement one receiving antenna was moved from 1 ~ 4 meters for finding maximum emission and used for both horizontal and vertical polarization detection at the same time. All cables or wires placement were verified to find out the maximum emission.

The bandwidth of measuring receiver was set to RBW (120 kHz).

The required frequency band (30 MHz ~1000 MHz) was pre-scanned with peak detector; all final measurements were measured with quasi-peak detector.

The emission level is calculated automatically by the test system which uses the following equation :

$$\text{Emission Level (dB}\mu\text{V/m)} = \text{Meter-Reading (dB}\mu\text{V)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)}$$

4.5. Measurement Results

PASSED

(All the emissions not reported below are too low against the prescribed limits.)

Test Date : Jun.15, 2013 Temperature : 22.9 Humidity : 47%

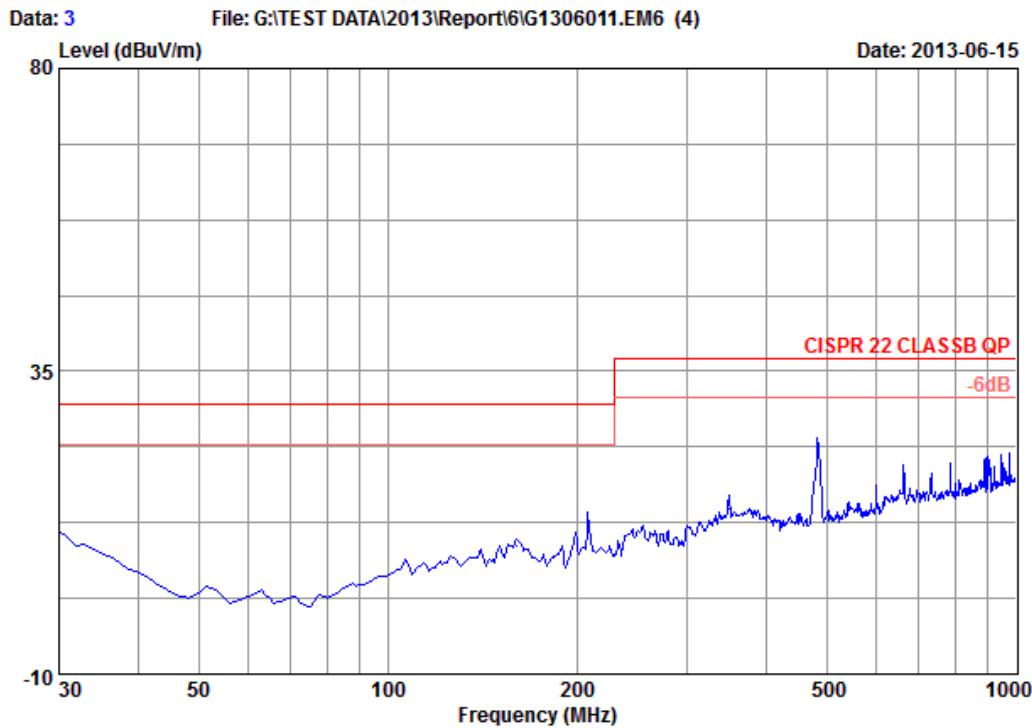
Mode	Test Condition	Reference Test Data No.	
		Neutral	Line
1	Operating	# 3	# 4

NOTE 1 - 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 2 - The worst emission at horizontal polarization was detected at 482.99 MHz with emission level of 22.98 dB μ V/m (limit is 37.00 dB μ V/m), when the antenna was 2.1 m height and the turntable was at 175°. The worst emission at vertical polarization was detected at 31.94 MHz with emission level of 16.04 dB μ V/m (limit is 30.00 dB μ V/m), when the antenna was 1.0m height and the turntable was at 180°.



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No.1289, Jiang Xing East Road, Eastern Part of WuJiang
Economic Development Zone, JiangSu, China
Tel:0512-63403993 Fax:0512-63403339



Site No. : NO.1 10m Semi-Anechoic Chamber Data NO. : 3
Dis./Ant. : 10m . 6112D(51)-1304-H-10M Ant. pol : HORIZONTAL
Env./Ins. : 22.9°C 47%ESCI Engineer : Kevin
EUT. : NFC Dongle
M/N : PX136U01
Power Rating: 120Vac/60Hz
Test Mode : Operating
Memo :

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	159.98	10.00	2.15	-2.98	9.17	30.00	20.83	QP
2	208.48	9.50	2.49	0.01	12.00	30.00	18.00	QP
3	349.13	14.42	3.30	-3.11	14.61	37.00	22.39	QP
4	482.99	17.26	3.90	1.82	22.98	37.00	14.02	QP
5	662.44	19.63	4.66	-4.25	20.04	37.00	16.96	QP
6	785.63	19.99	5.16	-5.88	19.27	37.00	17.73	QP

Remarks: 1. Emission Level= Antenna factor + Cable loss + Reading
2. The emission level that are 20dB below the official
limit are not reported



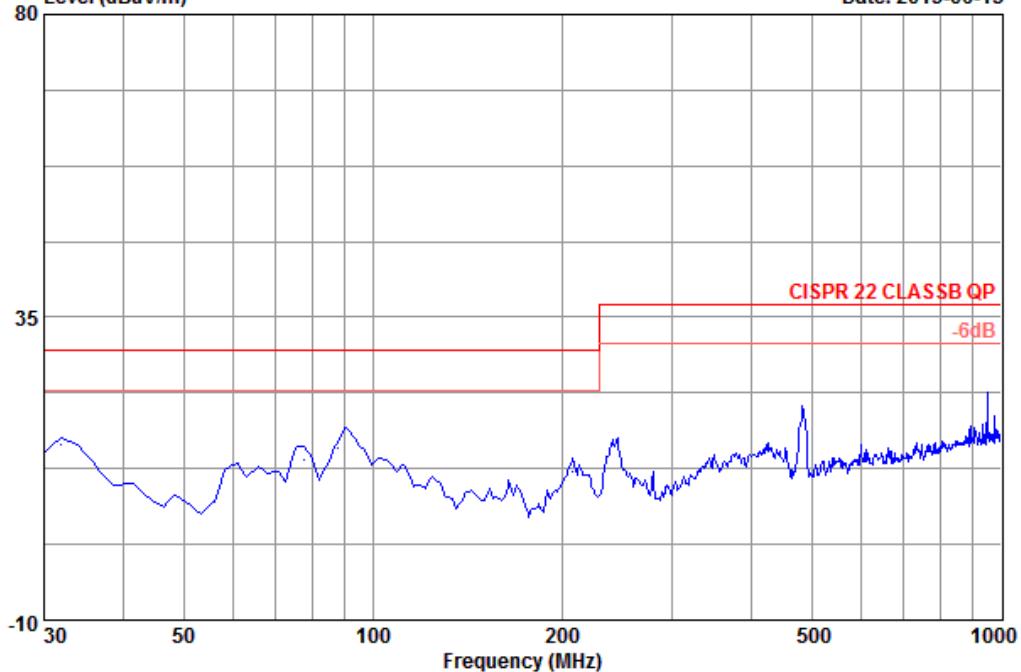
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No.1289, Jiang Xing East Road, Eastern Part of WuJiang
Economic Development Zone, JiangSu, China
Tel:0512-63403993 Fax:0512-63403339

Data: 4

File: G:\TEST DATA\2013\Report\6\G1306011.EM6 (4)

Date: 2013-06-15

Level (dBuV/m)



Site No. : NO.1 10m Semi-Anechoic Chamber Data NO. : 4
 Dis./Ant. : 10m . 6112D(52)-1210-V-10M Ant. pol : VERTICAL
 Env./Ins. : 22.9°C 47%ESCI Engineer : Kevin
 EUT. : NFC Dongle
 M/N : PX136U01
 Power Rating: 120Vac/60Hz
 Test Mode : Operating
 Memo :

Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 31.94	18.50	0.76	-3.22	16.04	30.00	13.96	QP
2 77.53	6.80	1.18	5.94	13.92	30.00	16.08	QP
3 88.02	8.90	1.30	5.40	15.60	30.00	14.40	QP
4 208.48	9.00	2.07	1.08	12.15	30.00	17.85	QP
5 245.34	12.00	2.27	1.79	16.06	37.00	20.94	QP
6 482.99	17.47	3.36	-0.05	20.78	37.00	16.22	QP

Remarks: 1. Emission Level= Antenna factor + Cable loss + Reading
 2. The emission level that are 20dB below the official
 limit are not reported

5. DEVIATION TO TEST SPECIFICATIONS

【NONE】

6. PHOTOGRAPHS

6.1. Photos of Conducted Disturbance Measurement



Front View of Conducted Disturbance Measurement



Side View of Conducted Disturbance Measurement

6.2. Radiated Disturbance Measurement



Front View of Radiated Disturbance Measurement



Back View of Radiated Disturbance Measurement

7. PHOTOS OF EUT

Figure 1
General Appearance (Front View)



Figure 2
General Appearance (Back View)



Figure 3
Internal View



Figure 4
Internal View (Main Board Remove)



Figure 5
Internal View (Glass Cover Remove)



Figure 6
Copper Foil

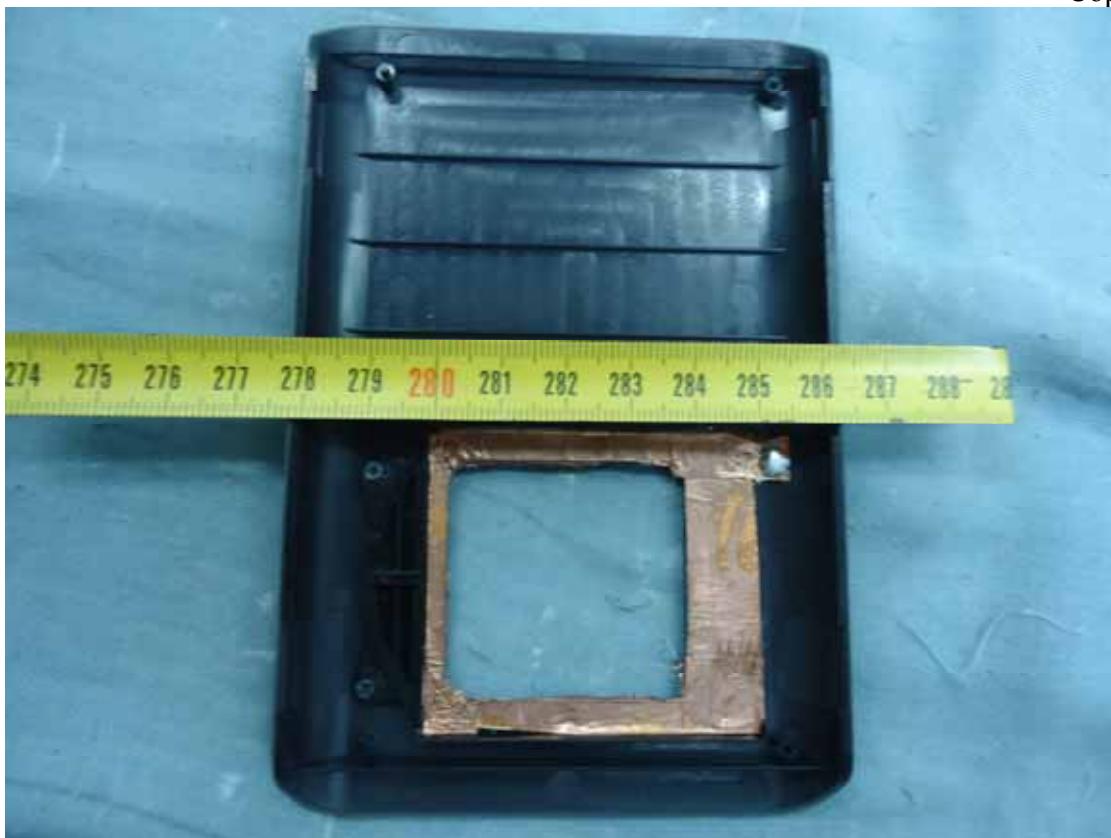


Figure 7
Alumi
num F
oil

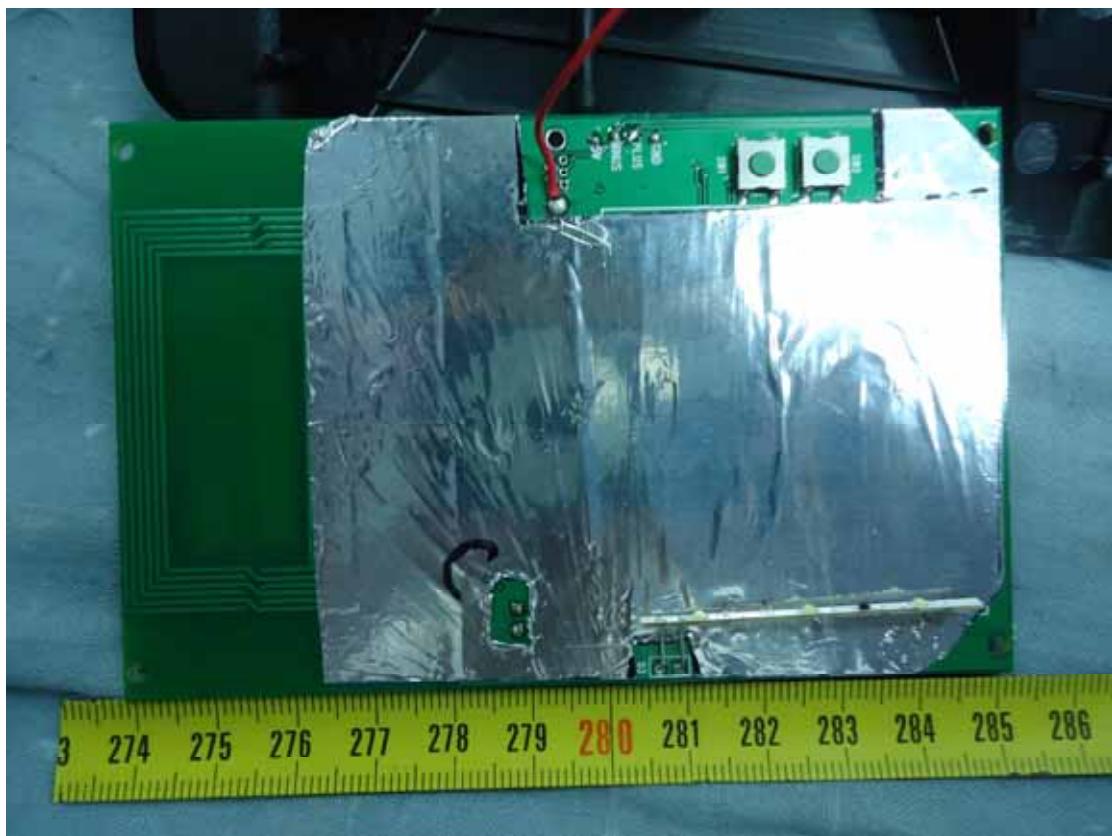


Figure 8
Main Board (Component Side)

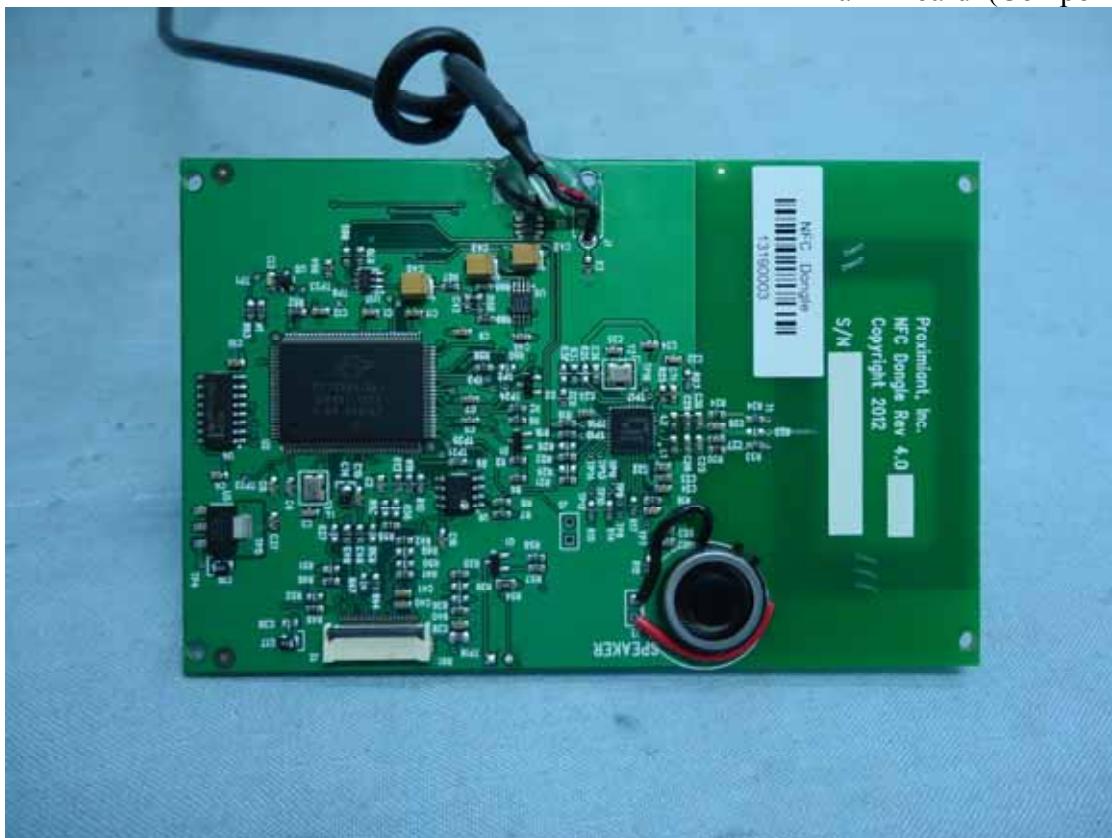


Figure 9
Main Board (Solder Side)

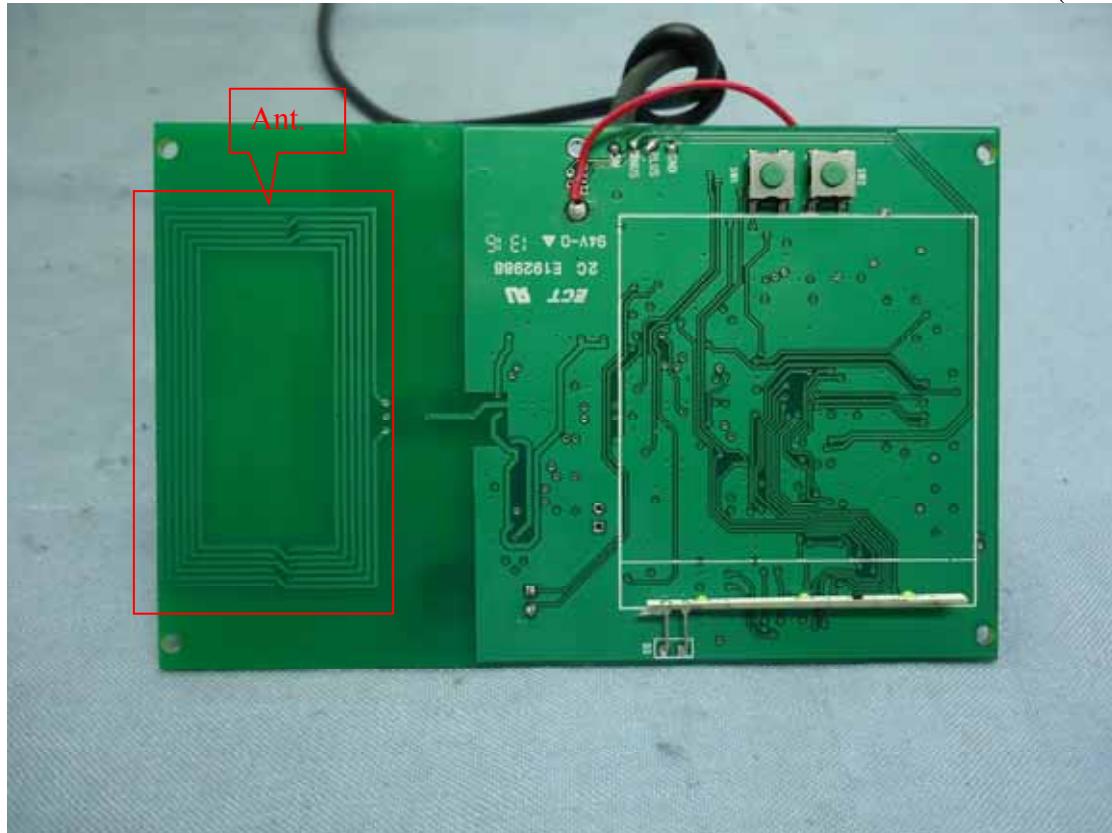


Figure 11
Main Board (Crystal Oscillator)

