



FCC TEST REPORT (RFID)

according to

FCC Rules and Regulations Part 15 Subpart C

Applicant	: Partner Tech Corp.
Address	: 10FL, 233-2, Baoqiao Road, Xindian, New Taipei City, Taiwan
Equipment	: Handheld Terminal
Model No.	: OT-110
FCC ID	: NDPOT-110
Trade Name	: Partner

- The test result refers exclusively to the test presented test model / sample.,
- Without written approval of **Cerpass Technology Corp.** the test report shall not be reproduced except in full.
- The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



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CERTIFICATE OF COMPLIANCE

according to

FCC Rules and Regulations Part 15 Subpart C


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Equipment	: Handheld Terminal
Model No.	: OT-110
FCC ID	: NDPOT-110

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4** The equipment was ***passed*** the test performed according to **FCC Rules and Regulations Part 15 Subpart C (2010)**.

The test was carried out on Jul. 12, 2011 at ***Cerpass Technology Corp.***

Signature


Clark Lin
EMC/RF B.U. Deputy Manager



1. Report of Measurements and Examinations

1.1 List of Measurements and Examinations

FCC Rule	Description of Test	Result
15.207	. Conducted Emission	Pass
15.225(d)	. Radiated Emission	Pass
15.225(a)	. Peak Power Output	Pass
15.225(e)	. Frequency Stability	Pass



2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

CPU	CPU Samsung S3C 6410 667MHz
Memory	Mobile DDR 128MB, NAND flash 256MB
LCD	4.3" widescreen (resolution 272*480)
WiFi	802.11 b/g
Frequency	2412-2462MHz
Bluetooth	Class 2
Connection Interface	WLAN 802.11 b/g, Mini USB 2.0 (Client) / 1.1 (Host)
Numbers of channel	WLAN: 11channels; Bluetooth: 79channels
Modulation	DSSS, OFDM, FHSS
Audio	Speaker, Internal microphone, earphone jack, microphone jack
Storage	Micro SD Card (support SDHC)
Special features	Vibrator motor (for alerts) 4-way direction sensor Ambient light sensor Backup restore utility
Battery	Li-ion 2200mAh (with Gas Gauge)
Ruggedness	IP54, 1.2 meter drop test
Operating System	Windows CE 6.0
Dimensions	133 * 82 * 19 mm(H x W x D)
Option	Sunlight-readable panel with power-saving function MSR Track 1, 2, 3 Barcode Scanner 1D/2D RFID 13.56MHz (Mifare)
Weight	Approx. 220g with battery
Adapter	Touch \ M8-10US05R CWT \ KPC-010B

Bluetooth:

Transmit Power	GFSK: -0.04dBm, $\pi/4$ -DQPSK: -4.33dBm, 8DPSK: -3.87dBm
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RFID:

Type of Modulation	FSK
Number of Channels	1
Frequency Band	13.56MHz
Carrier Frequency of each channel	13.56MHz



2.2 Test Manner

- a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
- b. The complete test system included EUT and Earphone for EMI test.
- c. The result of the test as follow:
Test Mode 1: RFID, Adapter: CWT \ KPC-010B
Test Mode 2: RFID, Adapter: Touch \ M8-10US05R
- d. The EUT was executed to keep transmitting and receiving data via Wireless.

2.3 Description of Test System

Device	Manufacturer	Model No.	Description
Earphone	MIC	MIC-4	Audio Cable, Unshielding 1.35 m



2.4 General Information of Test

Test Site :	Cerpass Technology Corp. 2F-11, No. 3, Yuan Qu St., (Nankang Software Park), Taipei, Taiwan 115, R.O.C.
Test Site Location (OATS2-SD) :	No.68-1, Shihbachongsi, Shihding Township, Taipei City 223, Taiwan, R.O.C.
FCC Registration Number :	TW1049, TW1061, 488071, 390316
IC Registration Number :	4934B-1, 4934D-1
VCCI Registration Number :	T-543 for Telecommunication Test C-3328 for Conducted emission test R-3013 for Radiated emission test G-97 for radiated disturbance above 1GHz
Test Voltage:	AC 120V
Test in Compliance with:	ANSI C63.4-2009 FCC Part 15 Subpart C
Frequency Range Investigated:	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 1,000MHz
Test Distance:	The test distance of radiated emission from antenna to EUT is 30 M.

2.5 Measurement Uncertainty

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	9 kHz ~ 30 MHz	LINE/NEUTRAL	2.71 dB
Radiated Emission	30 MHz ~ 1GHz	Vertical	4.11 dB
		Horizontal	4.10 dB
6 dB Bandwidth	---	---	7500 Hz
Maximum Peak Output Power	---	---	1.4 dB
100kHz Bandwidth of Frequency Band Edges	---	---	2.2 dB
Power Spectral Density	---	---	2.2 dB

2.6 History of this test report

■ ORIGINAL.

☐ Additional attachment as following record:

[illegible]



3. Test of Conducted Emission

3.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2003 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 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

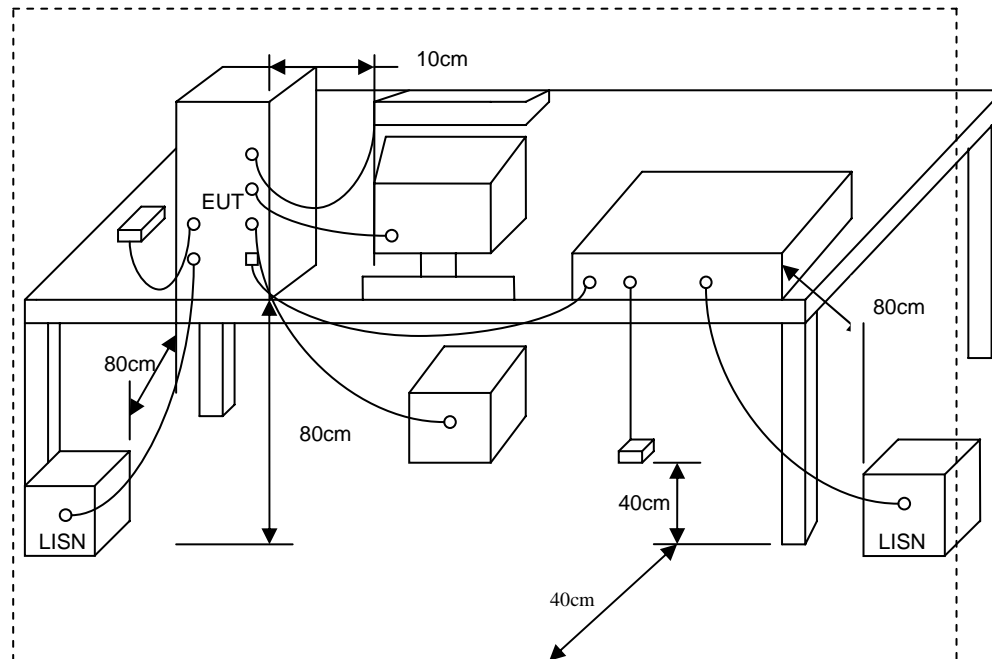
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

3.2 Test Procedures

- 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.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

3.3 Typical Test Setup



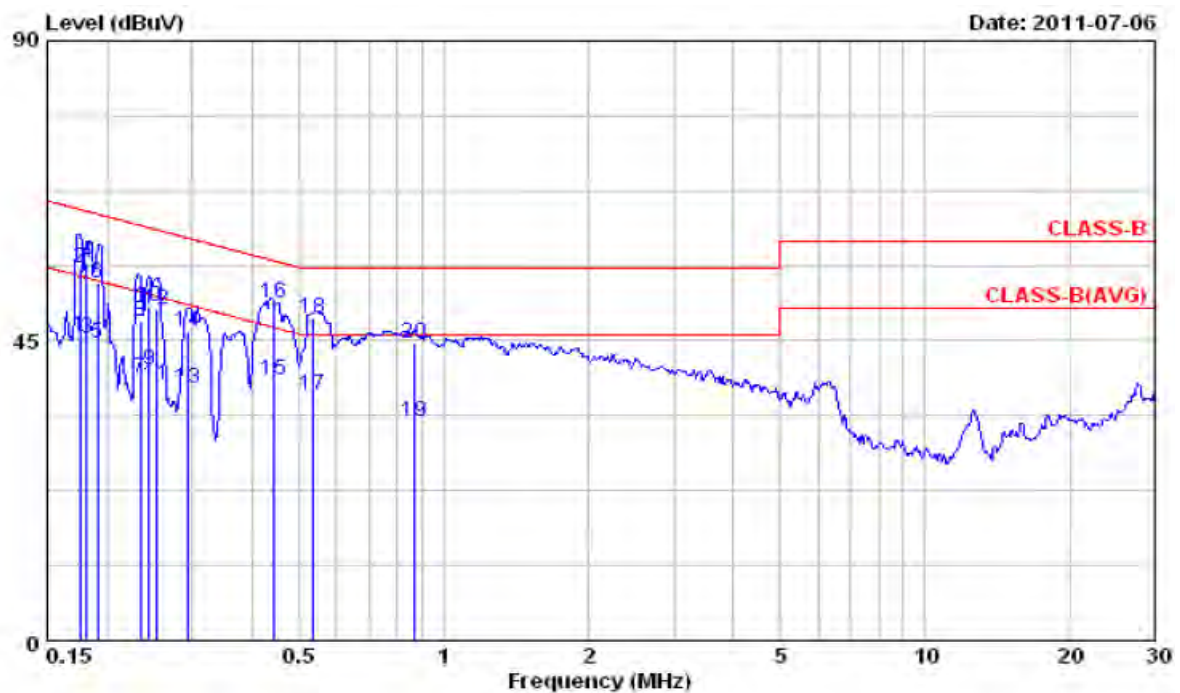
3.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
EMI Receiver	R&S	ESCI	100443	2011/02/08	2012/02/07
LISN	Schwarzbeck	NSLK 8127	8127-516	2011/05/05	2012/05/04
LISN	MessTec	NNS-2/16L	02/10191	2010/07/19	2011/07/18



3.5 Test Result and Data

Power	: AC 110V	Pol/Phase	: LINE
Test Mode 1	: RFID	Temperature	: 25 °C
Memo	: Adapter: CWT \ KPC-010B	Humidity	: 50 %



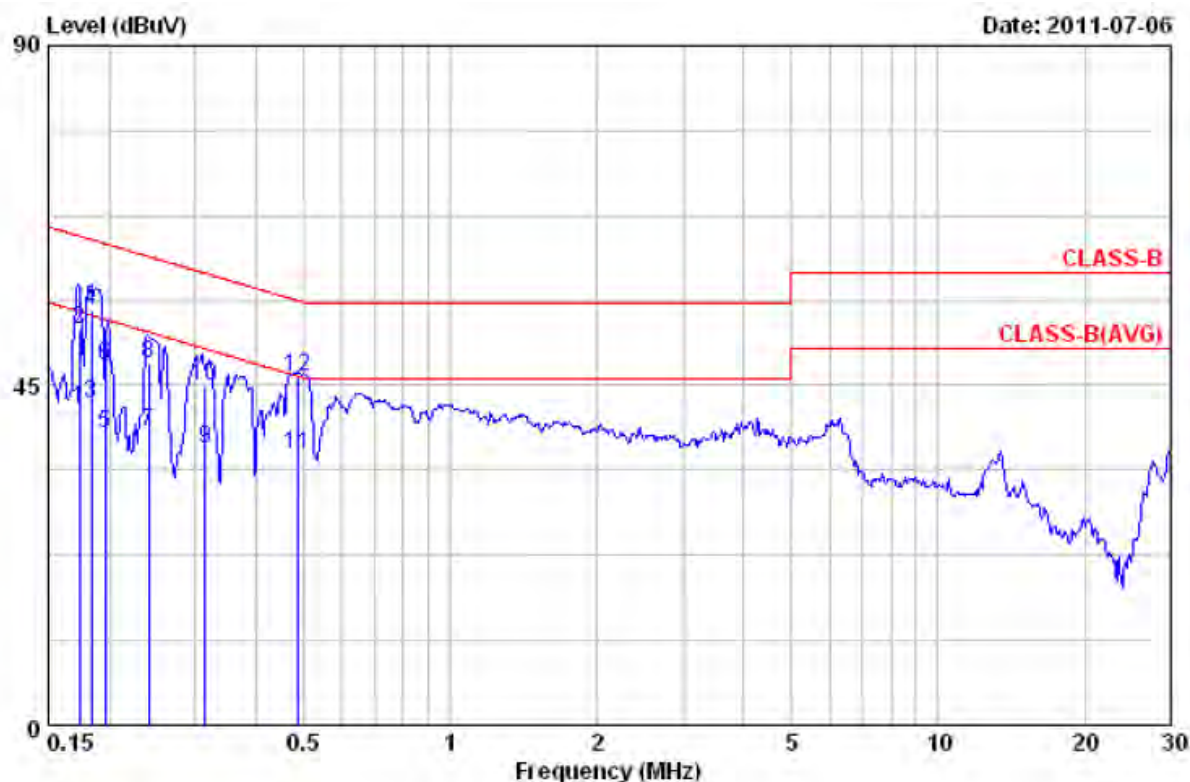
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	0.18	45.68	0.07	45.75	54.70	-8.95	Average
2	0.18	55.83	0.07	55.90	64.70	-8.80	QP
3	0.18	45.30	0.07	45.37	54.41	-9.04	Average
4	0.18	56.59	0.07	56.66	64.41	-7.75	QP
5	0.19	44.63	0.07	44.70	54.01	-9.31	Average
6	0.19	53.64	0.07	53.71	64.01	-10.30	QP
7	0.23	39.28	0.07	39.35	52.30	-12.95	Average
8	0.23	47.86	0.07	47.93	62.30	-14.37	QP
9	0.24	40.63	0.07	40.70	51.95	-11.25	Average
10	0.24	50.15	0.07	50.22	61.95	-11.73	QP
11	0.25	38.30	0.07	38.37	51.69	-13.32	Average
12	0.25	49.47	0.07	49.54	61.69	-12.15	QP
13	0.30	37.86	0.08	37.94	50.38	-12.44	Average
14	0.30	46.39	0.08	46.47	60.38	-13.91	QP
15	0.44	39.00	0.08	39.08	46.99	-7.91	Average
16	0.44	50.57	0.08	50.65	56.99	-6.34	QP
17	0.53	36.88	0.09	36.97	46.00	-9.03	Average
18	0.53	48.29	0.09	48.38	56.00	-7.62	QP
19	0.87	32.73	0.10	32.83	46.00	-13.17	Average
20	0.87	44.41	0.10	44.51	56.00	-11.49	QP

Notes:

1. Result = Read Value + Factor
2. Factor = LISN Factor + Cable Loss
3. The data is worse case.



Power	: AC 110V	Pol/Phase	: NEUTRAL
Test Mode 1	: RFID	Temperature	: 25 °C
Memo	: Adapter: CWT \ KPC-010B	Humidity	: 50 %



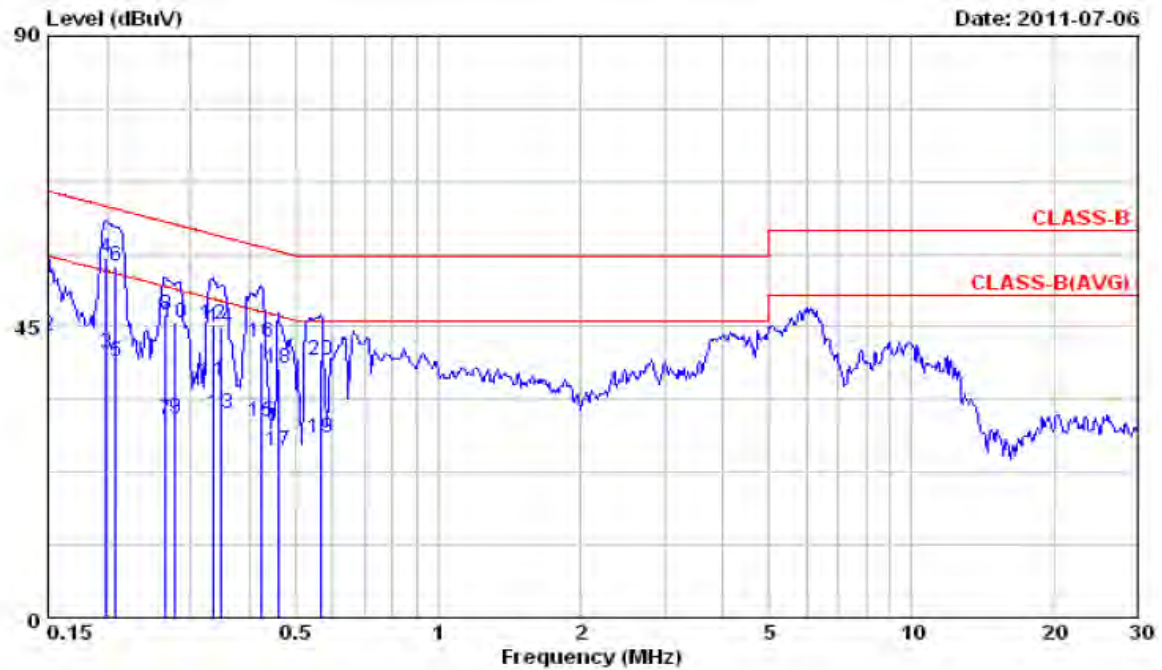
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	0.17	41.69	0.07	41.76	54.76	-13.00	Average
2	0.17	52.33	0.07	52.40	64.76	-12.36	QP
3	0.18	42.63	0.07	42.70	54.33	-11.63	Average
4	0.18	54.87	0.07	54.94	64.33	-9.39	QP
5	0.20	38.56	0.07	38.63	53.77	-15.14	Average
6	0.20	47.52	0.07	47.59	63.77	-16.18	QP
7	0.24	38.82	0.07	38.89	52.07	-13.18	Average
8	0.24	47.81	0.07	47.88	62.07	-14.19	QP
9	0.31	36.43	0.08	36.51	49.87	-13.36	Average
10	0.31	44.69	0.08	44.77	59.87	-15.10	QP
11	0.49	35.65	0.08	35.73	46.21	-10.48	Average
12	0.49	45.96	0.08	46.04	56.21	-10.17	QP

Notes:

1. Result = Read Value + Factor
2. Factor = LISN Factor + Cable Loss
3. The data is worse case.



Power	: AC 110V	Pol/Phase	: LINE
Test Mode 2	: RFID	Temperature	: 25 °C
Memo	: Adapter: Touch \ M8-10US05R	Humidity	: 50 %



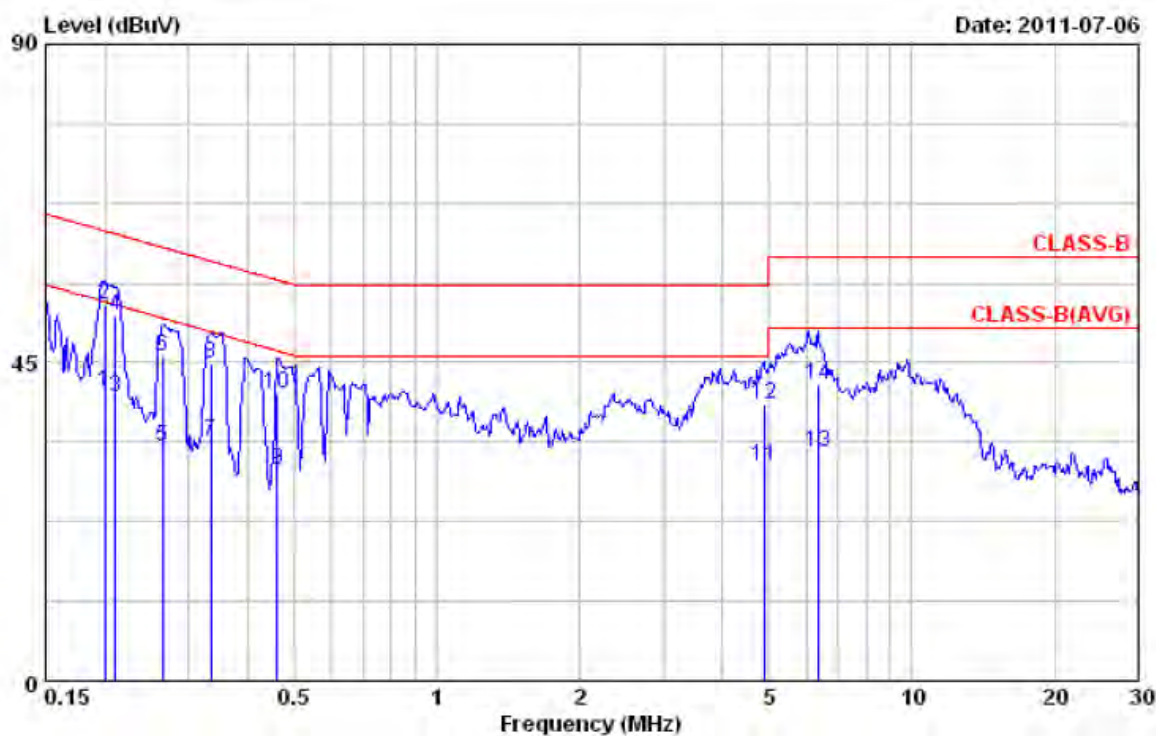
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	0.15	27.30	0.07	27.37	55.99	-28.62	Average
2	0.15	43.66	0.07	43.73	65.99	-22.26	QP
3	0.20	40.70	0.07	40.77	53.64	-12.87	Average
4	0.20	55.48	0.07	55.55	63.64	-8.09	QP
5	0.21	39.60	0.07	39.67	53.27	-13.60	Average
6	0.21	54.42	0.07	54.49	63.27	-8.78	QP
7	0.27	30.49	0.07	30.56	51.25	-20.69	Average
8	0.27	46.79	0.07	46.86	61.25	-14.39	QP
9	0.28	30.87	0.07	30.94	50.87	-19.93	Average
10	0.28	45.45	0.07	45.52	60.87	-15.35	QP
11	0.33	36.47	0.08	36.55	49.36	-12.81	Average
12	0.33	45.20	0.08	45.28	59.36	-14.08	QP
13	0.35	31.58	0.08	31.66	48.99	-17.33	Average
14	0.35	44.77	0.08	44.85	58.99	-14.14	QP
15	0.42	30.27	0.08	30.35	47.37	-17.02	Average
16	0.42	42.58	0.08	42.66	57.37	-14.71	QP
17	0.46	25.76	0.08	25.84	46.65	-20.81	Average
18	0.46	38.52	0.08	38.60	56.65	-18.05	QP
19	0.56	27.72	0.09	27.81	46.00	-18.19	Average
20	0.56	39.82	0.09	39.91	56.00	-16.09	QP

Notes:

1. Result = Read Value + Factor
2. Factor = LISN Factor + Cable Loss
3. The data is worse case.



Power	: AC 110V	Pol/Phase	: NEUTRAL
Test Mode 2	: RFID	Temperature	: 25 °C
Memo	: Adapter: Touch \ M8-10US05R	Humidity	: 50 %



Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	0.20	40.69	0.07	40.76	53.63	-12.87	Average
2	0.20	53.19	0.07	53.26	63.63	-10.37	QP
3	0.21	40.08	0.07	40.15	53.18	-13.03	Average
4	0.21	51.57	0.07	51.64	63.18	-11.54	QP
5	0.26	32.92	0.07	32.99	51.29	-18.30	Average
6	0.26	45.70	0.07	45.77	61.29	-15.52	QP
7	0.33	33.65	0.08	33.73	49.33	-15.60	Average
8	0.33	44.89	0.08	44.97	59.33	-14.36	QP
9	0.46	29.86	0.08	29.94	46.66	-16.72	Average
10	0.46	40.65	0.08	40.73	56.66	-15.93	QP
11	4.88	29.98	0.23	30.21	46.00	-15.79	Average
12	4.88	38.85	0.23	39.08	56.00	-16.92	QP
13	6.38	32.13	0.27	32.40	50.00	-17.60	Average
14	6.38	41.57	0.27	41.84	60.00	-18.16	QP

Notes:

1. Result = Read Value + Factor
2. Factor = LISN Factor + Cable Loss
3. The data is worse case.

Test engineer: Ben



4. Test of Radiated Emission

4.1 Test Limit

Radiated emissions from 13.553 MHz to 13.567 MHz were measured according to the 15.225(a), the field strength of any emissions within the band 13.553 – 13.567 MHz shall not exceed 15.848 microvolts/meter at 30 meters.

The field strength of any emissions which appear outside of the 13.110 – 14.010 MHz band shall not exceed the general radiated emission limits in Section 15.209.

Frequency (MHz)	Distance Meters	Radiated ($\mu\text{V} / \text{M}$)	Radiated (dB $\mu\text{V} / \text{M}$)
13.553-13.567	30	15848	84.0
13.410-13.553 13.567-13.710	30	334	50.5
13.110-13.410 13.710-14.010	30	106	40.5

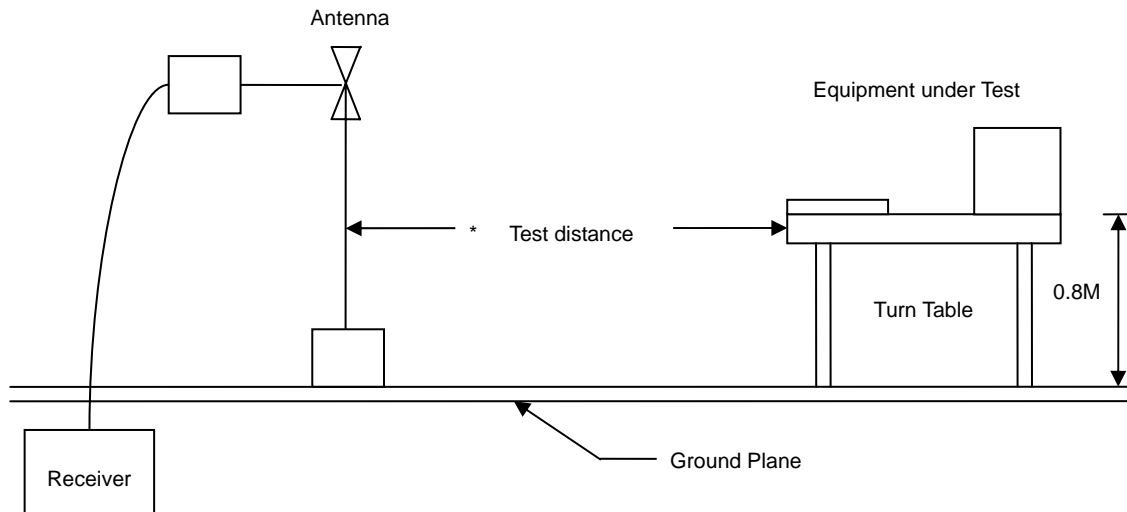
Frequency (MHz)	Distance Meters	Radiated ($\mu\text{V} / \text{M}$)	Radiated (dB $\mu\text{V} / \text{M}$)
1.705 to 30	30	30	29.5
30-88	3	100	40.0
88-216	3	150	43.5
216-960	3	200	46.0
Above 960	3	500	54.0

4.2 Test Procedures

- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- 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.
- Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- 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.
- For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in 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.



4.3 Typical Test Setup



4.4 Measurement equipment

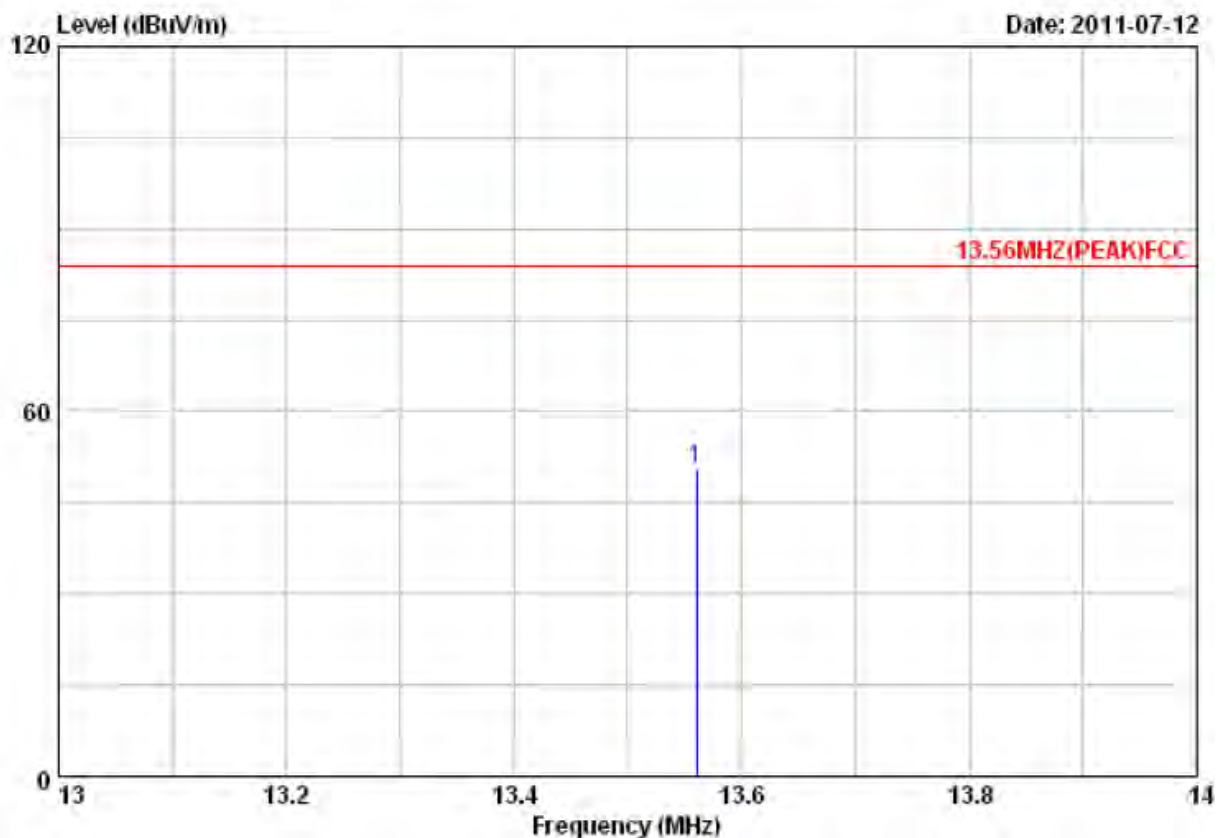
Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Amplifier	Agilent	8447D	2944A10531	2011/01/21	2012/01/20
Bilog Antenna	Schaffner	CBL6112D	22242	2011/02/09	2012/02/08
EMI Receiver	HP	8546A	3807A00454	2010/09/27	2011/09/26
RF Filter Section	HP	85460A	3704A00386	2010/09/27	2011/09/26
SPECTRUM ANALYZER	R&S	FSP40	100219	2010/11/05	2011/11/04
HORN ANTENNA	EMCO	3115	31589	2011/05/02	2012/05/01
Preamplifier	Agilent	8449B	3008A01954	2011/03/02	2012/03/01



4.5 Test Result and Data

4.5.1 Test Result of Fundamental Emission

Power	:	AC 120V	Pol/Phase	:	VERTICAL
Test Mode 1	:	Transmit / Receive, Adapter: CWT \ KPC-010B	Temperature	:	25 °C
Atmospheric Pressure	:	1020 hPa	Humidity	:	65 %



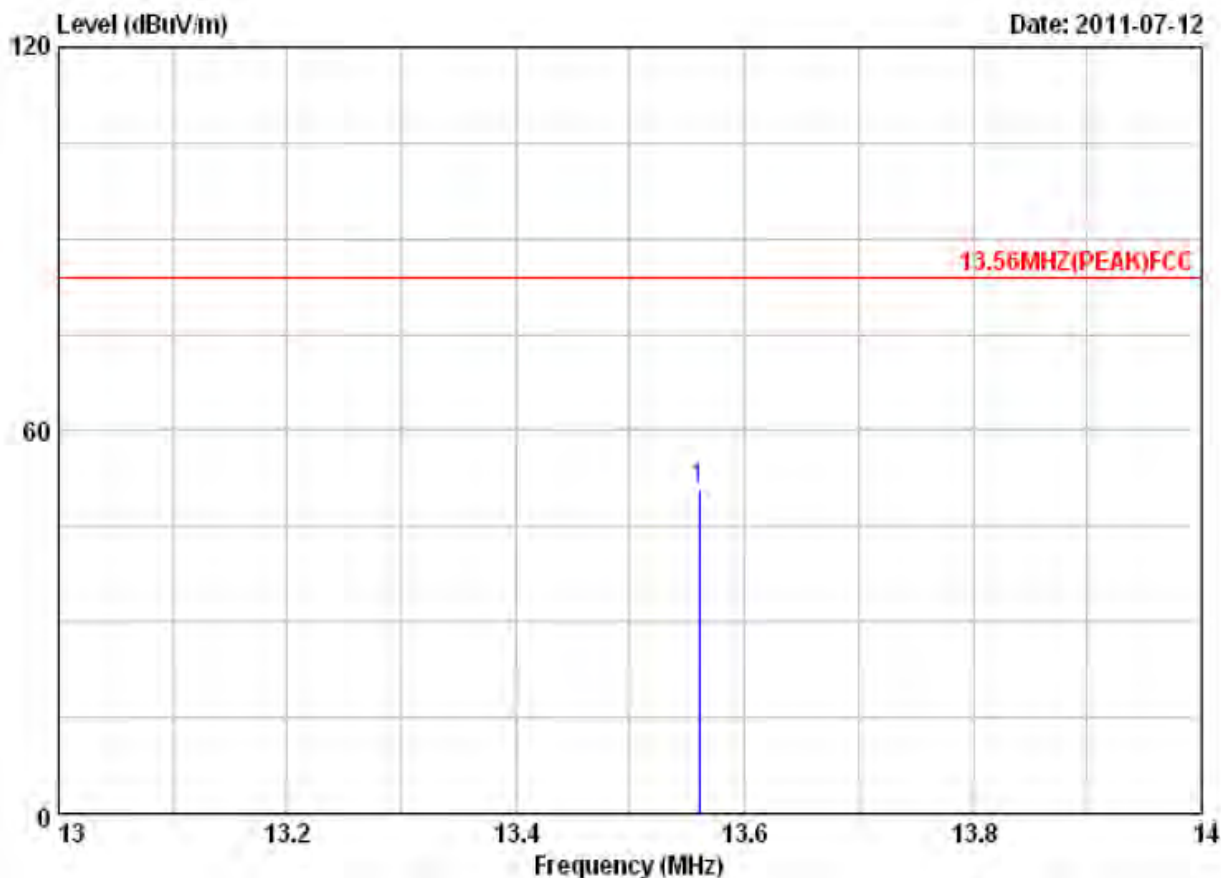
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark	Ant Pos	Tab Pos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	Deg
1	13.56	52.36	-1.94	50.42	84.00	-33.58	Peak	100	0

Notes:

1. Result = Read Value + Factor
2. Factor = Antenna Factor - Distance Correction(30m to 3m) + Cable Loss
3. The resolution bandwidth of test receiver/spectrum analyzer is 9KHz and video bandwidth is 120KHz for Peak detection at frequency below 30MHz.
4. The data is worse case.



Power	:	AC 120V	Pol/Phase	:	HORIZONTAL
Test Mode 1	:	Transmit / Receive, Adapter: CWT \ KPC-010B	Temperature	:	25 °C
Atmospheric Pressure	:	1020 hPa	Humidity	:	65 %



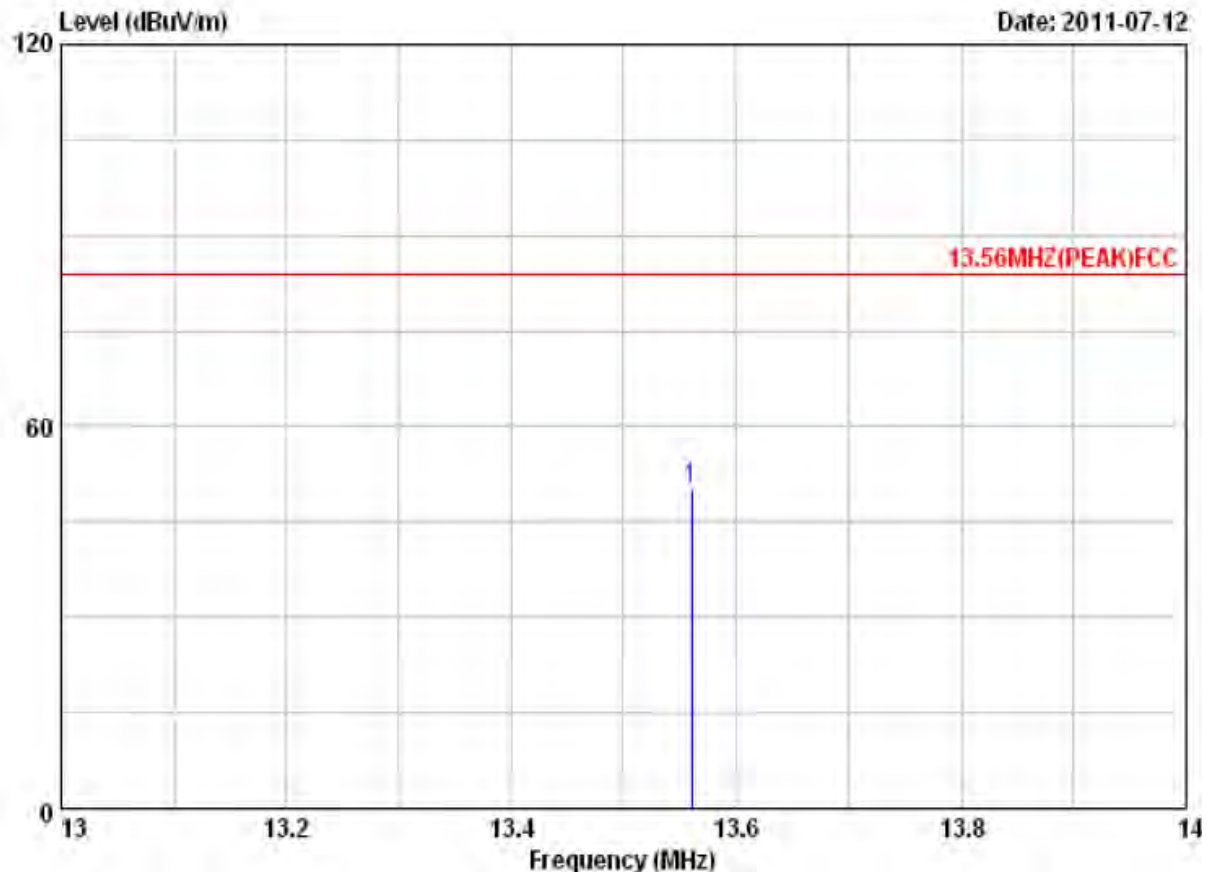
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark	Ant Pos	Tab Pos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	Deg
1	13.56	52.58	-1.94	50.64	84.00	-33.36	Peak	100	0

Notes:

1. Result = Read Value + Factor
2. Factor = Antenna Factor - Distance Correction(30m to 3m) + Cable Loss
3. The resolution bandwidth of test receiver/spectrum analyzer is 9KHz and video bandwidth is 120kHz for Peak detection at frequency below 30MHz.
4. The data is worse case.



Power	:	AC 120V	Pol/Phase	:	VERTICAL
Test Mode 2	:	Transmit / Receive, Adapter: Touch \ M8-10US05R	Temperature	:	25 °C
Atmospheric Pressure	:	1020 hPa	Humidity	:	65 %



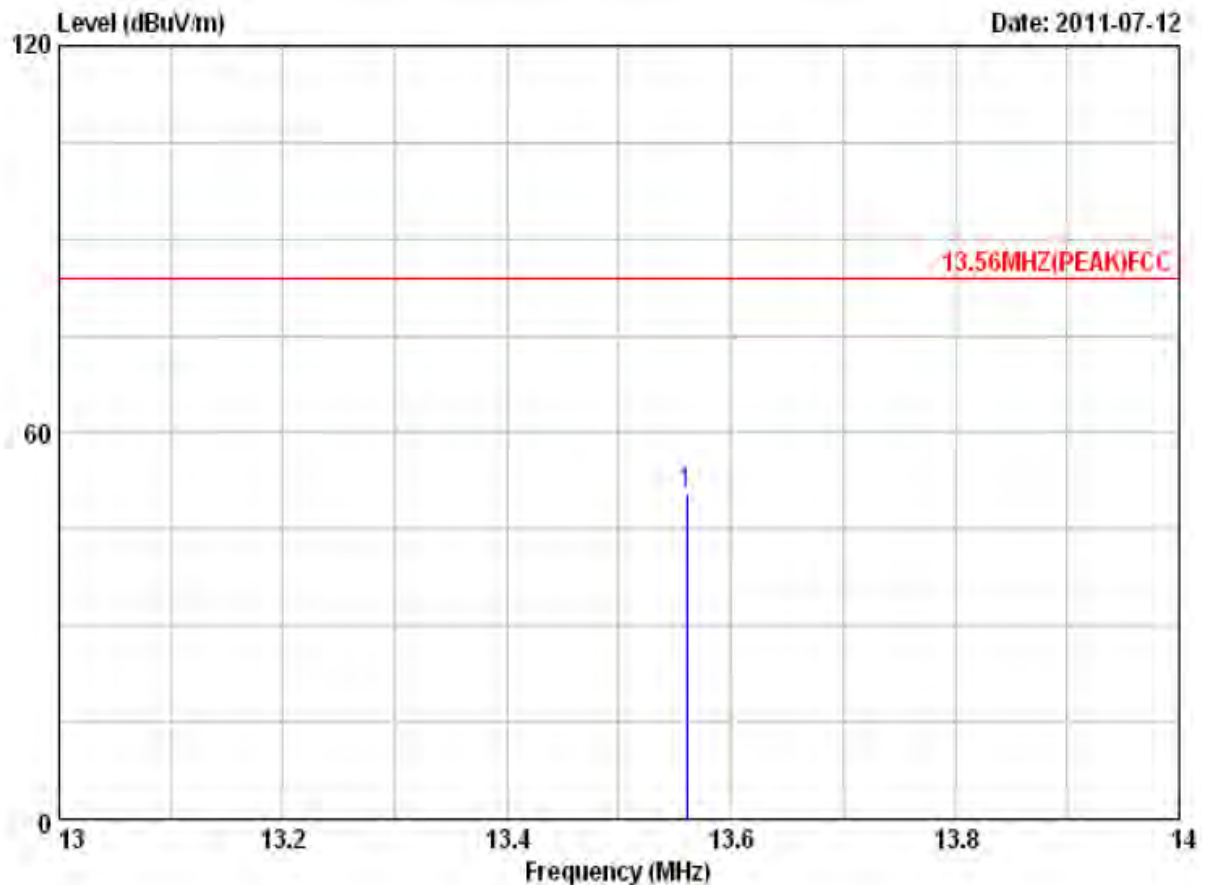
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark	Ant Pos	Tab Pos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	Deg
1	13.56	52.19	-1.94	50.25	84.00	-33.75	Peak	100	0

Notes:

1. Result = Read Value + Factor
2. Factor = Antenna Factor - Distance Correction(30m to 3m) + Cable Loss
3. The resolution bandwidth of test receiver/spectrum analyzer is 9KHz and video bandwidth is 120KHz for Peak detection at frequency below 30MHz.
4. The data is worse case.



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode 2	: Transmit / Receive, Adapter: Touch \ M8-10US05R	Temperature	: 25 °C
Atmospheric Pressure	: 1020 hPa	Humidity	: 65 %



Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark	Ant Pos	Tab Pos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	Deg
1	13.56	52.48	-1.94	50.54	84.00	-33.46	Peak	100	0

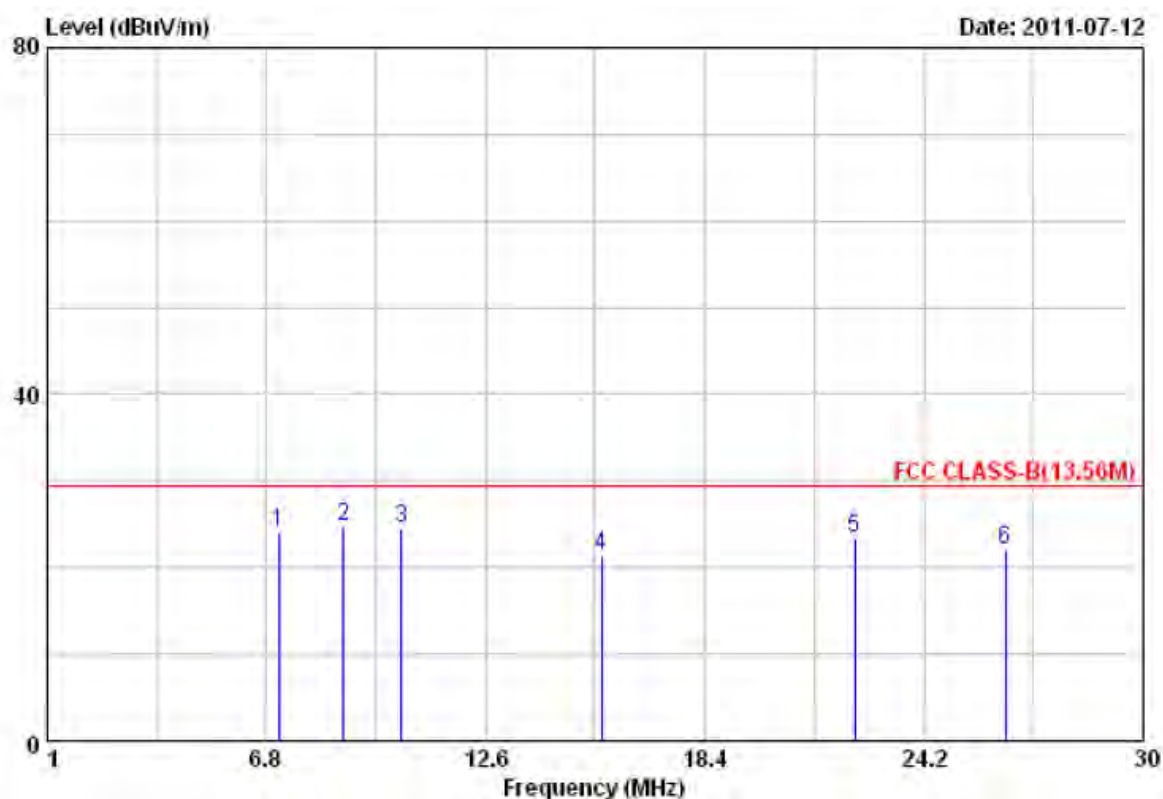
Notes:

1. Result = Read Value + Factor
2. Factor = Antenna Factor - Distance Correction(30m to 3m) + Cable Loss
3. The resolution bandwidth of test receiver/spectrum analyzer is 9KHz and video bandwidth is 120kHz for Peak detection at frequency below 30MHz.
4. The data is worse case.



4.5.2 Test Result of Spurious emission

Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode 1	: Transmit / Receive, Adapter: CWT \ KPC-010B	Temperature	: 25 °C
Atmospheric Pressure	: 1020 hPa	Humidity	: 65 %



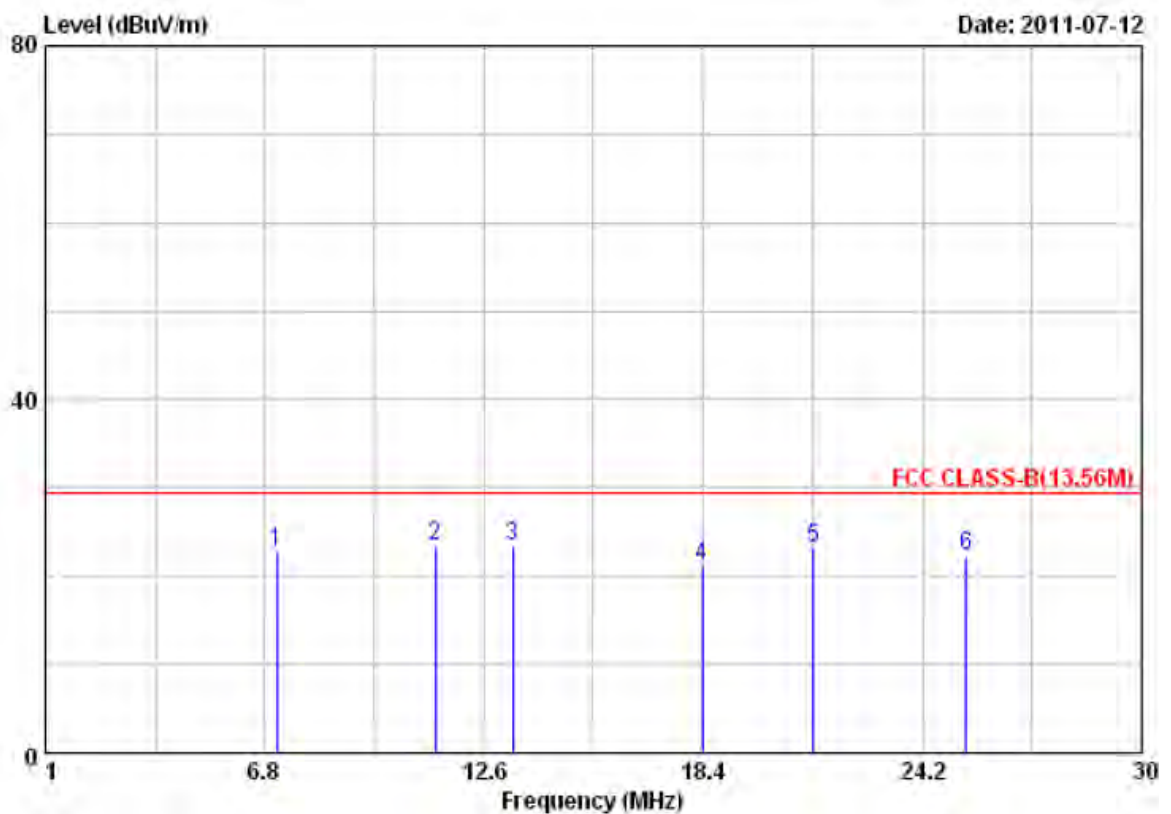
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark	Ant Pos	Tab Pos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	Deg
1	7.13	25.66	-1.51	24.15	29.50	-5.35	Peak	100	0
2	8.83	26.32	-1.68	24.64	29.50	-4.86	Peak	100	0
3	10.37	26.33	-1.81	24.52	29.50	-4.98	Peak	100	0
4	15.67	23.33	-2.01	21.32	29.50	-8.18	Peak	100	0
5	22.37	25.65	-2.24	23.41	29.50	-6.09	Peak	100	0
6	26.35	24.65	-2.48	22.17	29.50	-7.33	Peak	100	0

Notes:

1. Result = Read Value + Factor
2. Factor = Antenna Factor - Distance Correction(30m to 3m) + Cable Loss
3. The resolution bandwidth of test receiver/spectrum analyzer is 9KHz and video bandwidth is 120kHz for Peak detection at frequency below 30MHz.
4. The data is worse case.



Power	:	AC 120V	Pol/Phase	:	HORIZONTAL
Test Mode 1	:	Transmit / Receive, Adapter: CWT \ KPC-010B	Temperature	:	25 °C
Atmospheric Pressure	:	1020 hPa	Humidity	:	65 %



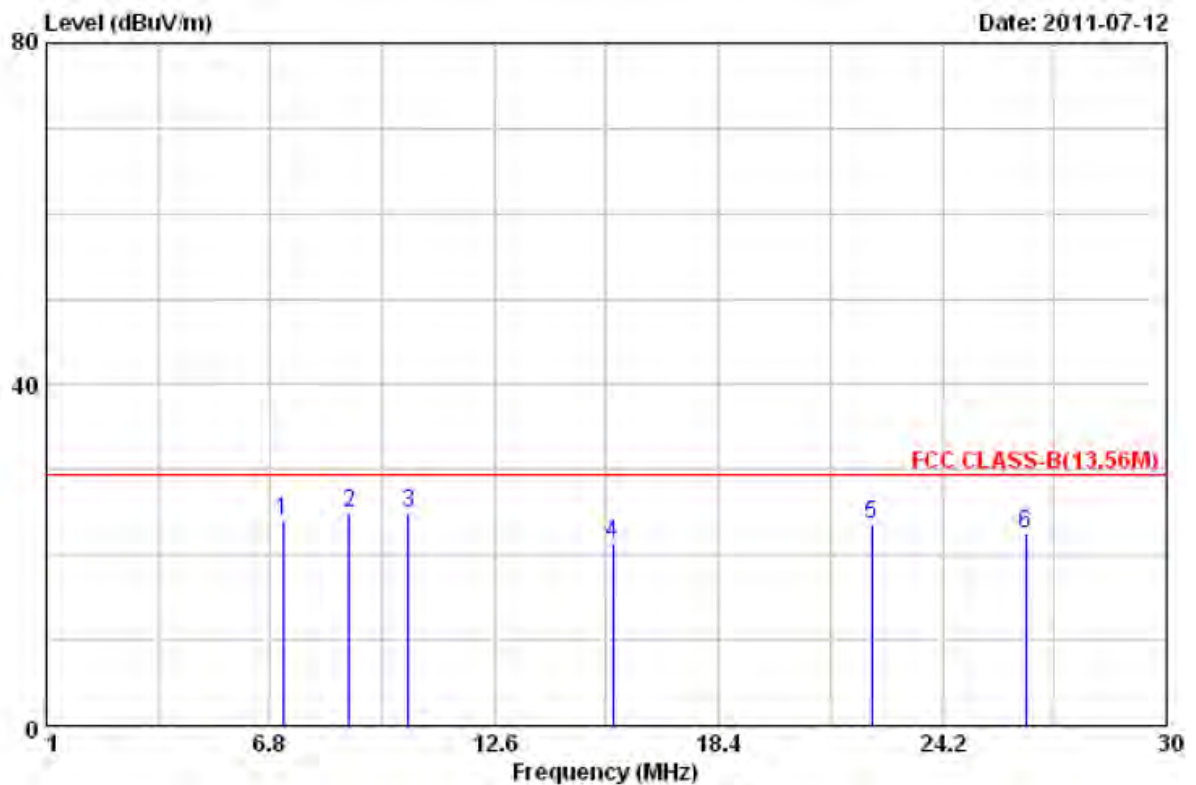
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark	Ant Pos	Tab Pos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	Deg
1	7.12	24.33	-1.51	22.82	29.50	-6.68	Peak	100	0
2	11.33	25.32	-1.85	23.47	29.50	-6.03	Peak	100	0
3	13.37	25.24	-1.93	23.31	29.50	-6.19	Peak	100	0
4	18.37	23.33	-2.07	21.26	29.50	-8.24	Peak	100	0
5	21.32	25.37	-2.18	23.19	29.50	-6.31	Peak	100	0
6	25.37	24.70	-2.42	22.28	29.50	-7.22	Peak	100	0

Notes:

1. Result = Read Value + Factor
2. Factor = Antenna Factor - Distance Correction(30m to 3m) + Cable Loss
3. The resolution bandwidth of test receiver/spectrum analyzer is 9KHz and video bandwidth is 120kHz for Peak detection at frequency below 30MHz.
4. The data is worse case.



Power	:	AC 120V	Pol/Phase	:	VERTICAL
Test Mode 2	:	Transmit / Receive, Adapter: Touch \ M8-10US05R	Temperature	:	25 °C
Atmospheric Pressure	:	1020 hPa	Humidity	:	65 %



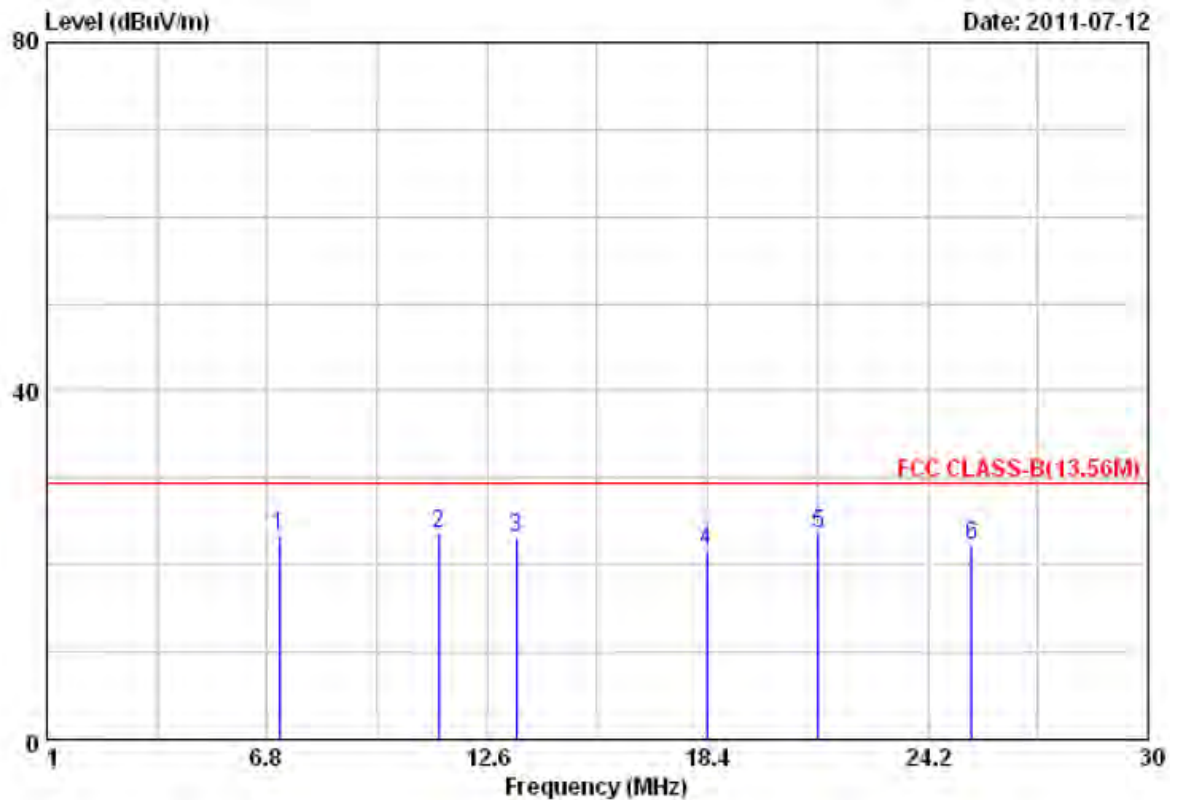
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark	Ant Pos	Tab Pos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	Deg
1	7.13	25.65	-1.51	24.14	29.50	-5.36	Peak	100	0
2	8.83	26.55	-1.68	24.87	29.50	-4.63	Peak	100	0
3	10.37	26.66	-1.81	24.85	29.50	-4.65	Peak	100	0
4	15.67	23.36	-2.01	21.35	29.50	-8.15	Peak	100	0
5	22.37	25.85	-2.24	23.61	29.50	-5.89	Peak	100	0
6	26.35	24.89	-2.48	22.41	29.50	-7.09	Peak	100	0

Notes:

1. Result = Read Value + Factor
2. Factor = Antenna Factor - Distance Correction(30m to 3m) + Cable Loss
3. The resolution bandwidth of test receiver/spectrum analyzer is 9KHz and video bandwidth is 120kHz for Peak detection at frequency below 30MHz.
4. The data is worse case.



Power	:	AC 120V	Pol/Phase	:	HORIZONTAL
Test Mode 2	:	Transmit / Receive, Adapter: Touch \ M8-10US05R	Temperature	:	25 °C
Atmospheric Pressure	:	1020 hPa	Humidity	:	65 %



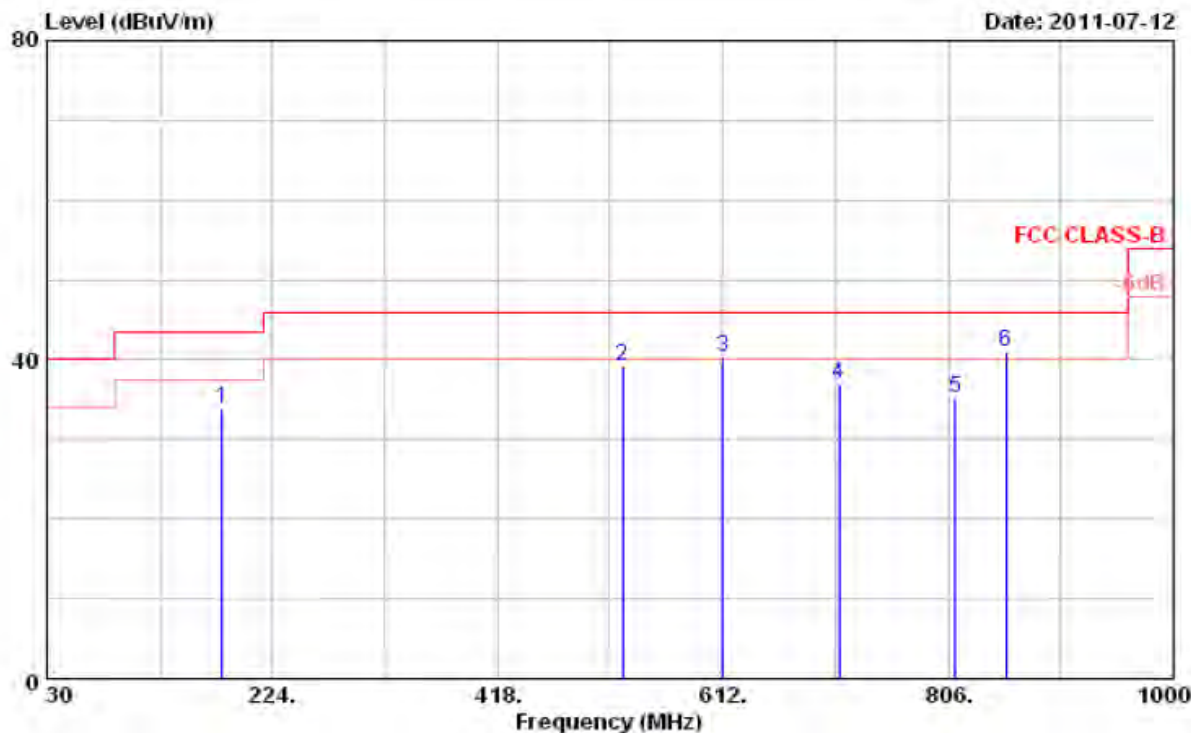
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark	Ant Pos	Tab Pos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	Deg
1	7.12	24.98	-1.51	23.47	29.50	-6.03	Peak	100	0
2	11.33	25.56	-1.85	23.71	29.50	-5.79	Peak	100	0
3	13.37	25.21	-1.93	23.28	29.50	-6.22	Peak	100	0
4	18.37	23.66	-2.07	21.59	29.50	-7.91	Peak	100	0
5	21.32	25.88	-2.18	23.70	29.50	-5.80	Peak	100	0
6	25.37	24.68	-2.42	22.26	29.50	-7.24	Peak	100	0

Notes:

1. Result = Read Value + Factor
2. Factor = Antenna Factor - Distance Correction(30m to 3m) + Cable Loss
3. The resolution bandwidth of test receiver/spectrum analyzer is 9KHz and video bandwidth is 120kHz for Peak detection at frequency below 30MHz.
4. The data is worse case.



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode 1	: Transmit / Receive, Adapter: CWT \ KPC-010B	Temperature	: 25 °C
Atmospheric Pressure	: 1020 hPa	Humidity	: 65 %



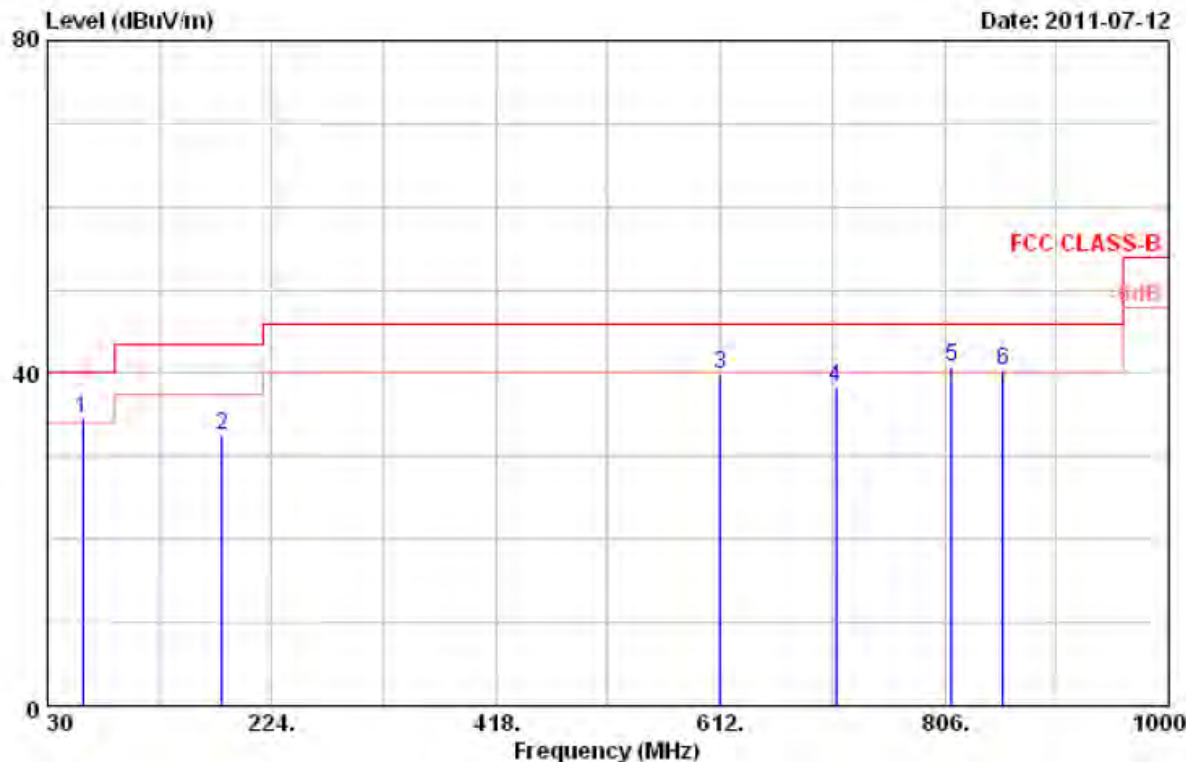
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark	Ant Pos	Tab Pos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	Deg
1	181.25	48.65	-14.67	33.98	43.50	-9.52	Peak	100	0
2	525.36	45.65	-6.41	39.24	46.00	-6.76	Peak	100	0
3	612.28	46.66	-6.26	40.40	46.00	-5.60	QP	100	0
4	712.39	37.63	-0.54	37.09	46.00	-8.91	Peak	100	0
5	812.28	36.33	-1.06	35.27	46.00	-10.73	Peak	100	0
6	856.24	37.24	3.76	41.00	46.00	-5.00	QP	100	0

Notes:

1. Result = Read Value + Factor
2. Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too low to be measured.



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode 1	: Transmit / Receive, Adapter: CWT \ KPC-010B	Temperature	: 25 °C
Atmospheric Pressure	: 1020 hPa	Humidity	: 65 %



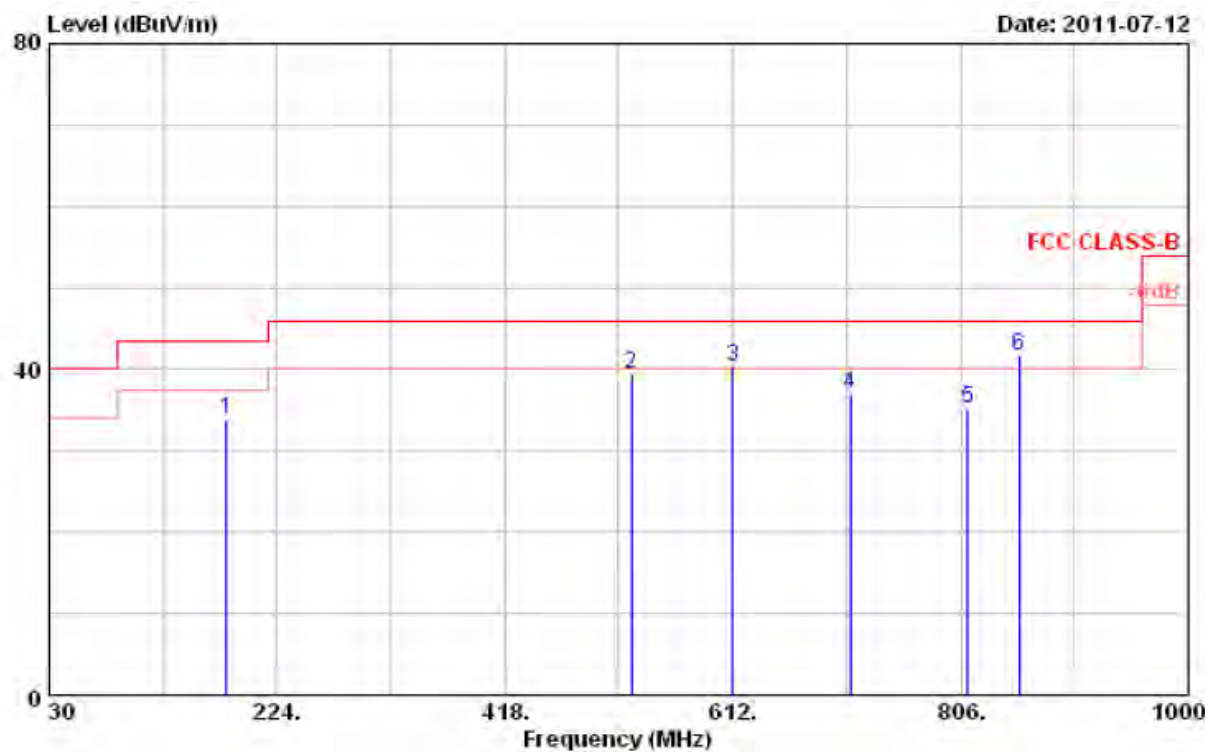
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark	Ant Pos	Tab Pos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	Deg
1	60.25	56.36	-21.93	34.43	40.00	-5.57	QP	100	0
2	181.38	53.36	-20.80	32.56	43.50	-10.94	Peak	100	0
3	612.28	39.34	0.55	39.89	46.00	-6.11	Peak	100	0
4	711.93	36.37	1.92	38.29	46.00	-7.71	Peak	100	0
5	812.24	37.66	3.11	40.77	46.00	-5.23	QP	100	0
6	856.45	35.36	4.95	40.31	46.00	-5.69	QP	100	0

Notes:

1. Result = Read Value + Factor
2. Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too low to be measured.



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode 2	: Transmit / Receive, Adapter: Touch \ M8-10US05R	Temperature	: 25 °C
Atmospheric Pressure	: 1020 hPa	Humidity	: 65 %



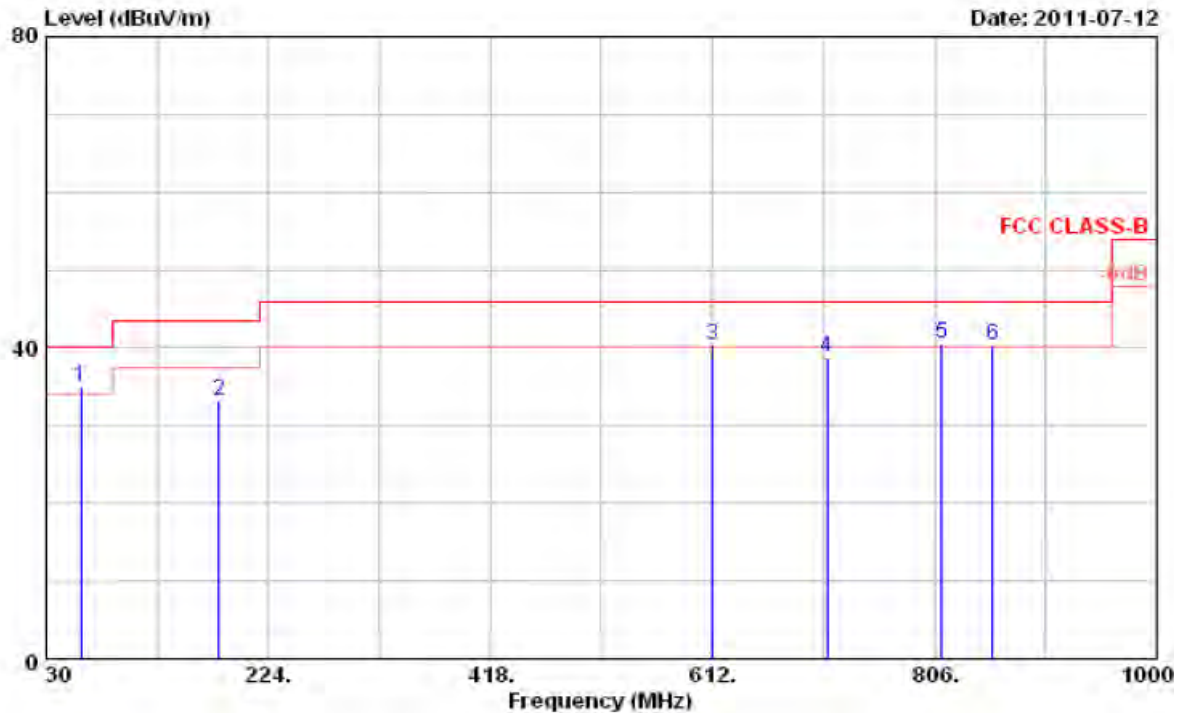
Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark	Ant Pos	Tab Pos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	Deg
1	181.25	48.48	-14.67	33.81	43.50	-9.69	Peak	100	0
2	525.36	45.84	-6.41	39.43	46.00	-6.57	Peak	100	0
3	612.28	46.56	-6.26	40.30	46.00	-5.70	QP	100	0
4	712.39	37.48	-0.54	36.94	46.00	-9.06	Peak	100	0
5	812.28	36.37	-1.06	35.31	46.00	-10.69	Peak	100	0
6	856.24	37.89	3.76	41.65	46.00	-4.35	QP	100	0

Notes:

1. Result = Read Value + Factor
2. Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too low to be measured.



Power	:	AC 120V	Pol/Phase	:	HORIZONTAL
Test Mode 2	:	Transmit / Receive, Adapter: Touch \ M8-10US05R	Temperature	:	25 °C
Atmospheric Pressure	:	1020 hPa	Humidity	:	65 %



Item	Freq	Read Value	Factor	Result	Limit	Margin	Remark	Ant Pos	Tab Pos
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	Deg
1	60.25	56.85	-21.93	34.92	40.00	-5.08	QP	100	0
2	181.38	53.89	-20.80	33.09	43.50	-10.41	Peak	100	0
3	612.28	39.87	0.55	40.42	46.00	-5.58	QP	100	0
4	711.93	36.86	1.92	38.78	46.00	-7.22	Peak	100	0
5	812.24	37.50	3.11	40.61	46.00	-5.39	QP	100	0
6	856.45	35.29	4.95	40.24	46.00	-5.76	QP	100	0

Notes:

1. Result = Read Value + Factor
2. Factor = Antenna Factor + Cable Loss - Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 120KHz and video bandwidth is 300kHz for Peak detection and Quasi-peak detection at frequency below 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
5. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.
6. The other emissions is too low to be measured.

Test engineer: Ben



5. Frequency Stability

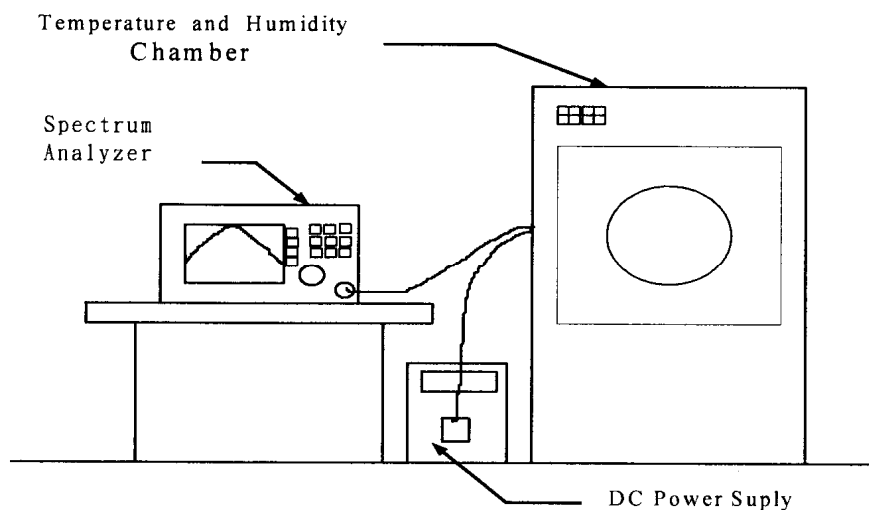
5.1 Test Limit

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of $-20\text{ }^{\circ}\text{C}$ to $+50\text{ }^{\circ}\text{C}$ at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of $20\text{ }^{\circ}\text{C}$. For battery operated equipment, the equipment tests shall be performed using a new battery.

5.2 Test Procedure

1. The EUT was placed inside the Temperature and Humidity chamber.
2. The transmitter output was connected to spectrum analyzer.
3. Turn the EUT on and couple its output to a spectrum analyzer.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
6. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
7. The test chamber was allowed to stabilize at $+20\text{ }^{\circ}\text{C}$ for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

5.3 Test Setup Layout



5.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Spectrum Analyzer	R&S	FSP40	100047	2011/05/05	2012/05/04
TEMPERATURE CHAMBER	T MACHINE	TMJ-9712	T-12-040111	2011/01/03	2012/01/02
DC Power Supply	GPD-3030	GM	7020936	N/A	N/A
AC Power Converter	AFC-11005	APC	F103120008	N/A	N/A

**5.5 Test Result and Data**

Operating frequency: 13.56 MHz					
Temperature (°C)	Power supply (V)	Observe Time	Read Frequency (MHz)	Tolerance (%)	Limit
50	120	Start	13.56119	0.008776	±0.01 %
		2 minute	13.56087	0.006416	±0.01 %
		5 minute	13.56099	0.007301	±0.01 %
		10 minute	13.56120	0.008850	±0.01 %
40	120	Start	13.56077	0.005678	±0.01 %
		2 minute	13.56124	0.009145	±0.01 %
		5 minute	13.56100	0.007375	±0.01 %
		10 minute	13.56119	0.008776	±0.01 %
30	120	Start	13.56120	0.008850	±0.01 %
		2 minute	13.56085	0.006268	±0.01 %
		5 minute	13.56079	0.005826	±0.01 %
		10 minute	13.56089	0.006563	±0.01 %
20	120	Start	13.56105	0.007743	±0.01 %
		2 minute	13.56088	0.006490	±0.01 %
		5 minute	13.56122	0.008997	±0.01 %
		10 minute	13.56074	0.005457	±0.01 %
20	102	Start	13.56119	0.008776	±0.01 %
		2 minute	13.56087	0.006416	±0.01 %
		5 minute	13.56133	0.009808	±0.01 %
		10 minute	13.56089	0.006563	±0.01 %
20	138	Start	13.56099	0.007301	±0.01 %
		2 minute	13.56120	0.008850	±0.01 %
		5 minute	13.56085	0.006268	±0.01 %
		10 minute	13.56079	0.005826	±0.01 %
10	120	Start	13.56089	0.006563	±0.01 %
		2 minute	13.56124	0.009145	±0.01 %
		5 minute	13.56122	0.008997	±0.01 %
		10 minute	13.56105	0.007743	±0.01 %
0	120	Start	13.56124	0.009145	±0.01 %
		2 minute	13.56100	0.007375	±0.01 %
		5 minute	13.56124	0.009145	±0.01 %
		10 minute	13.56100	0.007375	±0.01 %
-10	120	Start	13.56089	0.006563	±0.01 %
		2 minute	13.56124	0.009145	±0.01 %
		5 minute	13.56133	0.009808	±0.01 %
		10 minute	13.56099	0.007301	±0.01 %
-20	120	Start	13.56120	0.008850	±0.01 %
		2 minute	13.56085	0.006268	±0.01 %
		5 minute	13.56079	0.005826	±0.01 %
		10 minute	13.56077	0.005678	±0.01 %



6. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

6.1 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.