FCC C2PC Test Report

FCC ID	:	**2ACF3NETTIEASY**
Equipment	:	**NETTI-EASY**
Model No.	:	**NETTI-EASY**
Brand Name	:	**Blackloud Inc.**
Applicant	:	**Blackloud Inc.**
Address	:	**42 Corporate Park #250 Irvine, CA 92606 USA**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Jun. 01, 2015**
Tested Date	:	**Jun. 03 ~ Jun. 04, 2015**

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:

Gary Chang / Manager

Testing Laboratory
2732

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Release Record

Report No.	Version	Description	Issued Date
FR472202-03	Rev. 01	Initial issue	Jun. 16, 2015

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.544MHz 42.97 (Margin -3.03dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 956.35MHz 43.63 (Margin -2.37dB) - QP	Pass

1 General Description

1.1 Information

This report is prepared for FCC class II permissive change.
This report is issued as a supplementary report to original ICC report no. FR472202-01. No hardware and software change for this device. The modification is only adding 2 AC adapters, and 1 RJ45 cable, therefore conducted emission and radiated emission below 1GHz is performed for this C2PC.

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	**IEEE Std. 802.11**	**Ch. Freq. (MHz)**	**Channel Number**	**Transmit Chains (N_{TX})**	**Data Rate / MCS**
2400-2483.5	b	2412-2462	1-11 [11]	2	1-11 Mbps
2400-2483.5	g	2412-2462	1-11 [11]	2	6-54 Mbps
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	2	MCS 0-15
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	2	MCS 0-15
Note 1: RF output power specifies that Maximum Peak Conducted Output Power. Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation. Note 3: 802.11g/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.					

1.1.2 Antenna Details

Ant. No.	Type	Gain (dBi)	Connector	Remark
1	PIFA	2.5	---	---

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	5Vdc from AC adapter

1.1.4 Accessories (additional accessories are marked as boldface.)

Accessories		
No.	**Equipment**	**Description**
1	AC adapter 1	Brand Name: Phihong Model Name: PSAA10A-050Q I/P: 100-240Vac, 50-60Hz, 0.5A O/P: 5Vdc, 2A
2	AC adapter 2	Brand Name: Leader Model Name: MU10-Q050200-A1 I/P: 100-240Vac, 50-60Hz, 0.3A O/P: 5Vdc, 2A
3	**AC adapter 3**	**Brand Name: I.T.E Power Supply** **Model Name: F12L6-050150SPAU** **I/P: 100-240Vac, 50-60Hz, 0.3A** **O/P: 5Vdc, 1.5A**
4	**AC adapter 4**	**Brand Name: TEN PAO INTERNATIONAL LTD.** **Model Name: S008ADU0500150** **I/P: 100-240Vac, 50-60Hz, 0.2A** **O/P: 5Vdc, 1.5A**
5	RJ45 Cable 1	Brand: YongHao Model: 210-200-0909R 1.4m non-shielded cable w/o core
6	RJ45 Cable 2	Brand: EEKSONG Model: 21K-200-0909R 1.4m non-shielded cable w/o core
7	**RJ45 Cable 3**	**Brand: EKSONG** **Model: ZP01-C033** **0.92m non-shielded cable w/o core**
8	USB Cable	Model: 210-200-0914R 1.4m non-shielded cable w/o core

1.1.5 Channel List

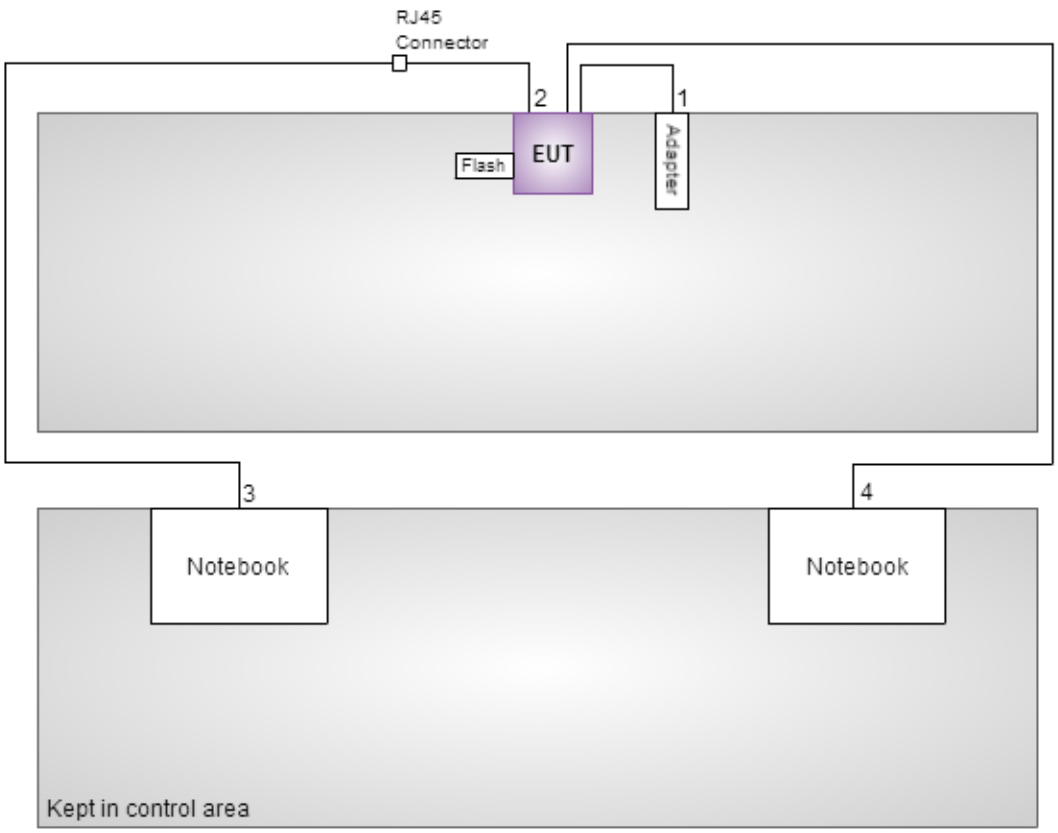
Frequency band (MHz)		2400~2483.5	
802.11 b / g / n HT20		802.11n HT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	3	2422
2	2417	4	2427
3	2422	5	2432
4	2427	6	2437
5	2432	7	2442
6	2437	8	2447
7	2442	9	2452
8	2447	---	---
9	2452	---	---
10	2457	---	---
11	2462	---	---

1.2 Local Support Equipment List

Support Equipment List						
No.	**Equipment**	**Brand**	**Model**	**S/N**	**FCC ID**	**Signal cable / Length (m)**
1	Notebook	DELL	Latitude E6440	8VXMD12	DoC	RJ45, 10m non-shielded w/o core.
2	Notebook	DELL	Latitude E6440	2PXMD12	DoC	RJ45, 10m non-shielded w/o core.
3	USB 2.0 flash	Transcend	JetFlash V85	B02855 2096	---	---

1.3 Test Setup Chart

Test Setup Diagram



1. USB, 1.4m non-shielded w/o core
2. RJ45, 1.4m non-shielded w/o core
3. RJ45, 10m non-shielded w/o core
4. RJ45, 10m non-shielded w/o core

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
EMC Receiver	R&S	ESCS 30	100169	Oct. 17, 2014	Oct. 16, 2015
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 17, 2014	Nov. 16, 2015
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 31, 2014	Dec. 30, 2015
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber 3 / (03CH03-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 16, 2014	Sep. 15, 2015
Receiver	Agilent	N9038A	MY53290044	Oct. 21, 2014	Oct. 20, 2015
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-562	Jan. 19, 2015	Jan. 18, 2016
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Feb. 03, 2015	Feb. 02, 2016
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 10, 2014	Nov. 09, 2015
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 10, 2014	Nov. 09, 2015
Preamplifier	EMC	EMC02325	980187	Sep. 26, 2014	Sep. 25, 2015
Preamplifier	Agilent	83017A	MY53270014	Sep. 17, 2014	Sep. 16, 2015
Preamplifier	EMC	EMC184045B	980192	Aug. 26, 2014	Aug. 25, 2015
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Feb. 09, 2015	Feb. 08, 2016
RF cable-8M	HUBER+SUHNER	SUCOFLEX104	MY22601/4	Feb. 09, 2015	Feb. 08, 2016
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Feb. 09, 2015	Feb. 08, 2016
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Feb. 09, 2015	Feb. 08, 2016
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Feb. 09, 2015	Feb. 08, 2016
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Feb. 09, 2015	Feb. 08, 2016
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247
ANSI C63.10-2009
FCC KDB 558074 D01 DTS Meas Guidance v03r03
FCC KDB 662911 D01 Multiple Transmitter Output v02r01

1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Uncertainty	
Parameters	**Uncertainty**
AC conducted emission	±2.92 dB
Radiated emission ≤ 1GHz	±3.99 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	22°C / 67%	Kevin Ma
Radiated Emissions	03CH03-WS	26°C / 64%	Felix Sung

- FCC site registration No.: 390588
- IC site registration No.: 10807C-1

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps) / MCS	Test Configuration
Conducted Emissions	11g	2437	6 Mbps	---
Radiated Emissions ≤1GHz	11g	2437	6 Mbps	---

NOTE:

1. Adapter 3 and Adapter 4 had been pretested and found that **Adapter 3** was the worst case and was selected for final testing. (Adapter 3: I.T.E Power Supply ; Adapter 4: TEN PAO INTERNATIONAL LTD.).

3 Transmitter Test Results

3.1 Conducted Emissions

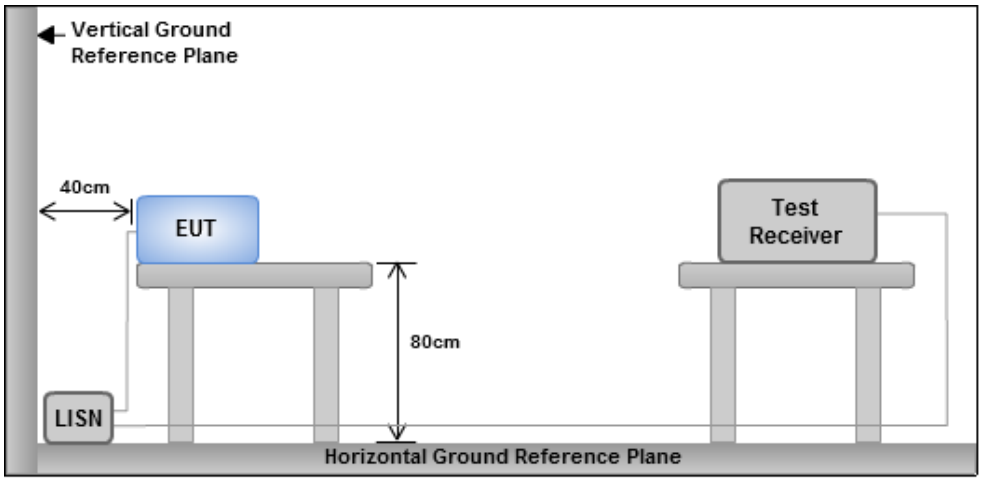
3.1.1 Limit of Conducted Emissions

Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

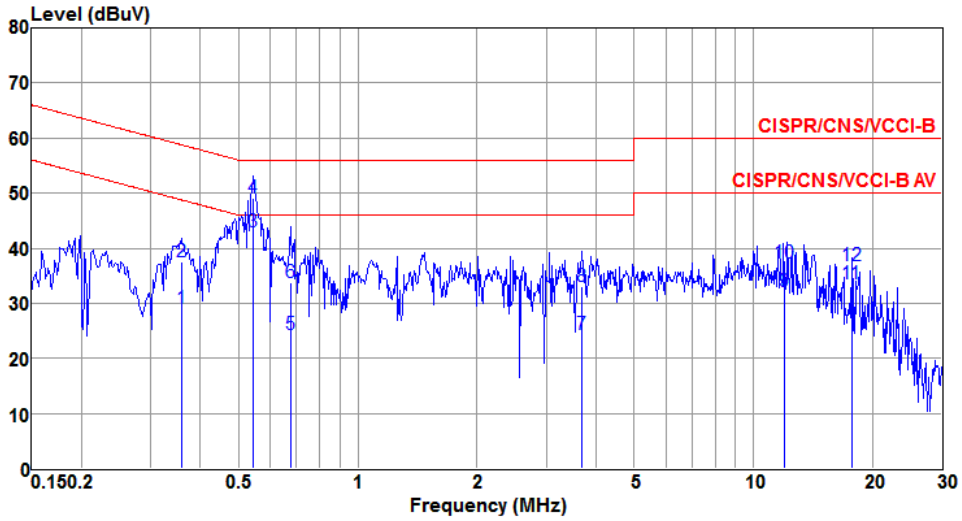
3.1.3 Test Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

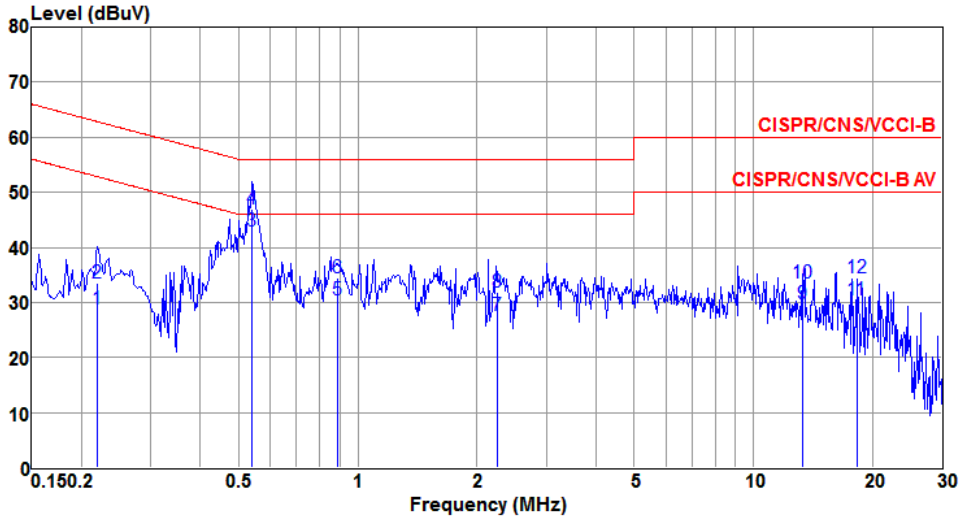
Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Line		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.358	29.03	48.78	-19.75	28.73	0.19	0.11	Average
2	0.358	37.63	58.78	-21.15	37.33	0.19	0.11	QP
3*	0.544	42.97	46.00	-3.03	42.69	0.15	0.13	Average
4	0.544	49.08	56.00	-6.92	48.80	0.15	0.13	QP
5	0.675	24.24	46.00	-21.76	23.97	0.13	0.14	Average
6	0.675	33.84	56.00	-22.16	33.57	0.13	0.14	QP
7	3.681	24.36	46.00	-21.64	23.75	0.31	0.30	Average
8	3.681	33.16	56.00	-22.84	32.55	0.31	0.30	QP
9	11.952	32.02	50.00	-17.98	31.06	0.70	0.26	Average
10	11.952	37.36	60.00	-22.64	36.40	0.70	0.26	QP
11	17.693	33.57	50.00	-16.43	32.72	0.75	0.10	Average
12	17.693	36.87	60.00	-23.13	36.02	0.75	0.10	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	11g	Test Freq. (MHz)	2437
Power Phase	Neutral		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.220	28.72	52.83	-24.11	28.41	0.22	0.09	Average
2	0.220	33.60	62.83	-29.23	33.29	0.22	0.09	QP
3*	0.541	42.89	46.00	-3.11	42.58	0.18	0.13	Average
4	0.541	46.96	56.00	-9.04	46.65	0.18	0.13	QP
5	0.890	30.33	46.00	-15.67	29.93	0.25	0.15	Average
6	0.890	34.54	56.00	-21.46	34.14	0.25	0.15	QP
7	2.249	27.53	46.00	-18.47	26.97	0.31	0.25	Average
8	2.249	31.86	56.00	-24.14	31.30	0.31	0.25	QP
9	13.358	29.63	50.00	-20.37	28.79	0.61	0.23	Average
10	13.358	33.54	60.00	-26.46	32.70	0.61	0.23	QP
11	18.243	30.44	50.00	-19.56	29.65	0.71	0.08	Average
12	18.243	34.53	60.00	-25.47	33.74	0.71	0.08	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

3.2 Unwanted Emissions into Restricted Frequency Bands

3.2.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.2.2 Test Procedures

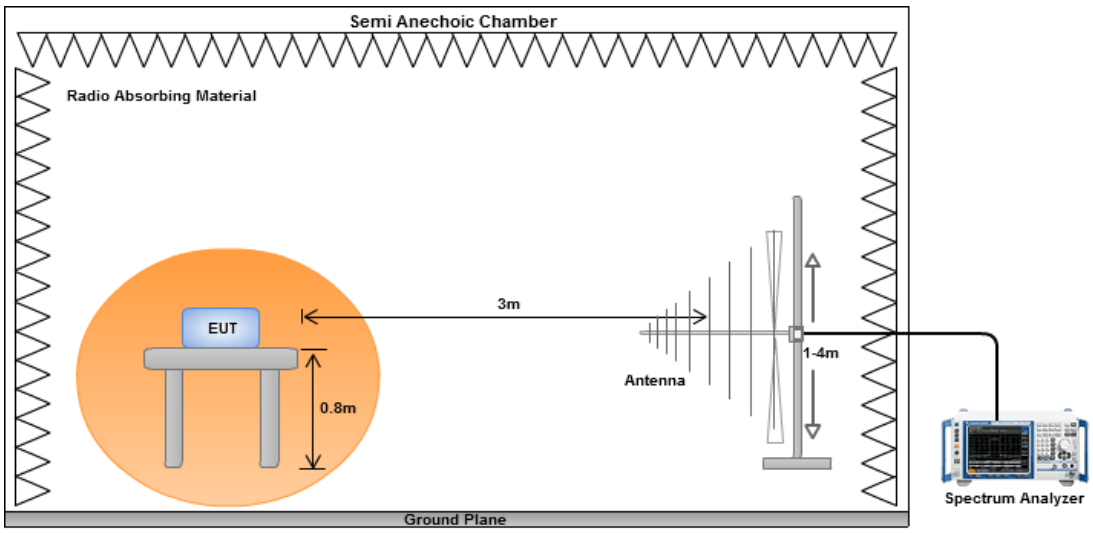
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane.
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.

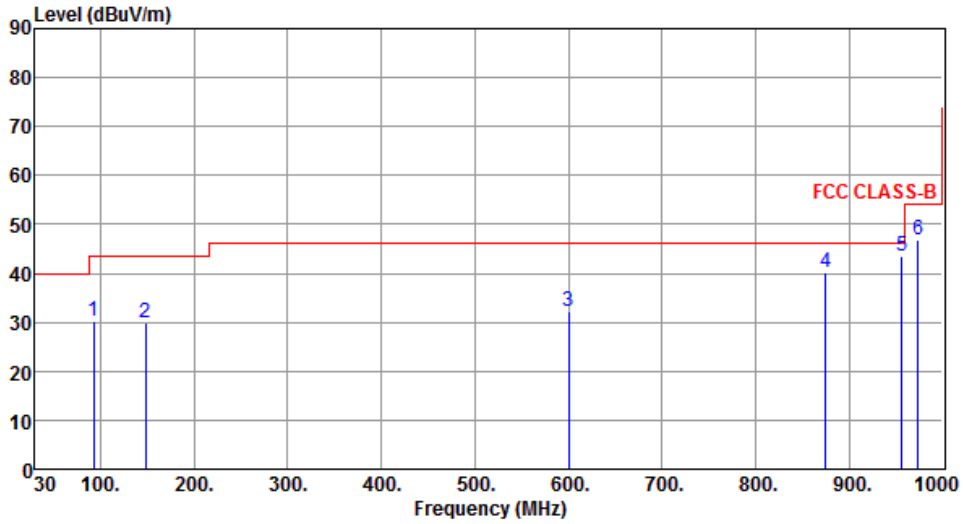
3.2.3 Test Setup

Radiated Emissions below 1 GHz



3.2.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

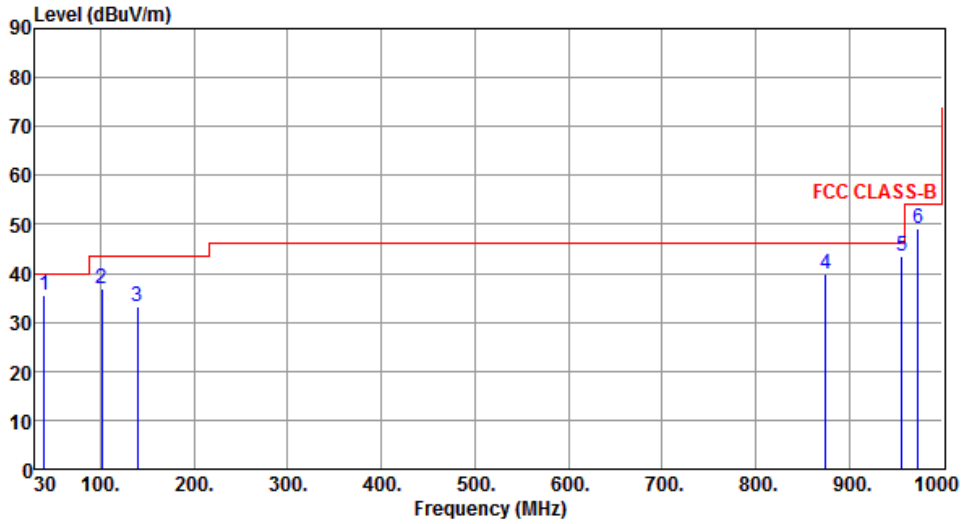
Polarization	Horizontal	Test Freq. (MHz)	2437



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	93.05	30.11	43.50	-13.39	49.27	-19.16	Peak	---	---
2	148.34	30.05	43.50	-13.45	43.52	-13.47	Peak	---	---
3	600.36	32.24	46.00	-13.76	37.96	-5.72	Peak	---	---
4	874.87	40.18	46.00	-5.82	41.38	-1.20	Peak	---	---
5	956.35	43.35	46.00	-2.65	43.02	0.33	QP	---	---
6	973.81	46.71	54.00	-7.29	46.24	0.47	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Polarization	Vertical	Test Freq. (MHz)	2437



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	39.70	35.47	40.00	-4.53	48.66	-13.19	QP	---	---
2	101.78	37.02	43.50	-6.48	55.12	-18.10	Peak	---	---
3	139.61	33.30	43.50	-10.20	47.06	-13.76	Peak	---	---
4	874.87	39.84	46.00	-6.16	41.04	-1.20	Peak	---	---
5	956.35	43.63	46.00	-2.37	43.30	0.33	QP	---	---
6	973.81	49.01	54.00	-4.99	48.54	0.47	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m)

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp, it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan Hsiang. Location map can be found on our website http://www.icertifi.com.tw.

Linkou	**Kwei Shan**	**Kwei Shan Site II**
Tel: 886-2-2601-1640	Tel: 886-3-271-8666	Tel: 886-3-271-8640
No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan, R.O.C.	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information

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Email: ICC_Service@icertifi.com.tw

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