



FCC PART 15 CLASS B

MEASUREMENT AND TEST REPORT

For

UTStarcom Inc.

1732 N, First Street, Suit 220, San Jose, CA

FCC ID: 2ACKN-VIEW2000

Model Number: UT-view2000

Report Type: Original Report	Equipment Name: Network Management system
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Report Number: RSC150326001	
Report Date: 2015-03-31	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The **UTStarcom Inc.**’s product, model number: **UT-view2000 (FCC ID: 2ACKN-VIEW2000)** or the "EUT" as referred to in this report was the **Network Management system**, which has the plastic enclosure.

Mechanical Description of EUT

The EUT was measured approximately 500mm L x 430mm W x 44mm H.

Rated input voltage: AC120V/60Hz.

** All measurement and test data in this report were gathered from final production sample, serial number: 4062014070300001 (Assigned by the applicant). It may have deviation from other sample. The EUT supplied by the applicant was received on 2015-03-25, and the EUT complied with test requirement.*

Objective

The following Class B report was prepared on behalf of **UTStarcom Inc.**, in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to demonstrate compliance with FCC Part 15 Class B limits.

Related Submittal(s)/Grant(s)

No Related Submittals.

Test Methodology

All measurements contained in this report are conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. All radiated and conducted emissions measurement is performed at BACL. The radiated testing is performed at an antenna-to-EUT distance of 3 Meters.

Test Facility

The test site used by BACL to collect test data is located in the 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China

Test site at BACL has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on July 31, 2009. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Justification

The system is configured for testing in a typical fashion (as a normally used by a typical user).

EUT Exercise Software

OS, Linux,
Software rev.: UT-View v1.2.

Special Accessories

No special accessories were supplied by BACL.

Equipment Modifications

No modification to the EUT was made by BACL to make sure the EUT comply with applicable limits.

Local Support Equipment List and Details

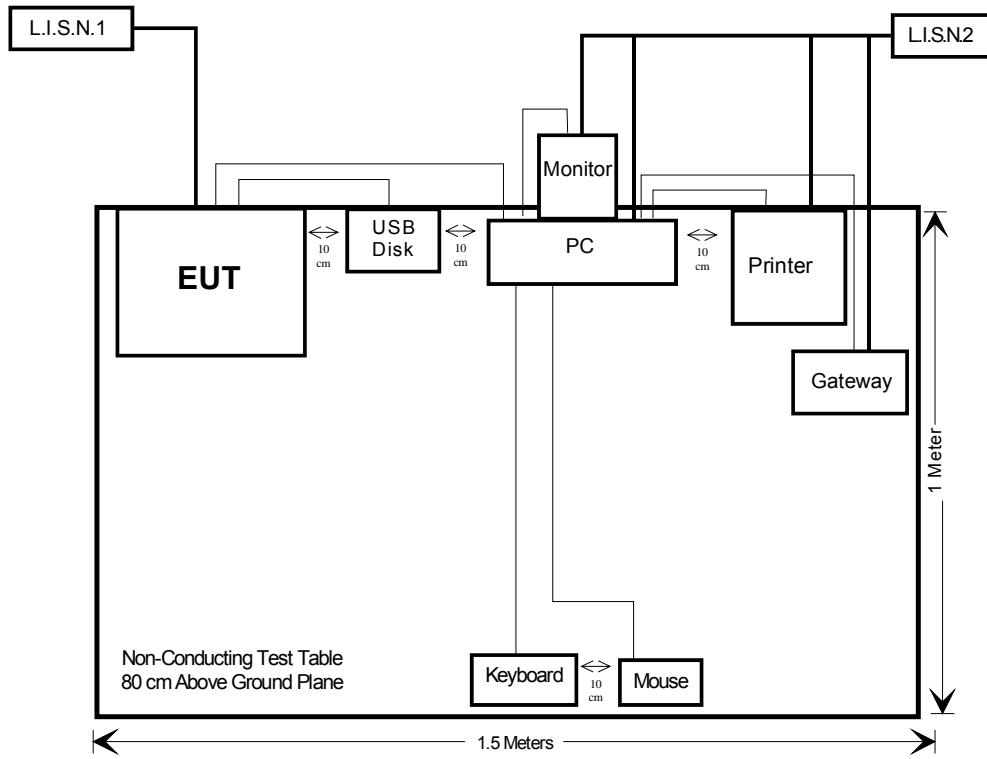
Manufacturer	Description	Model Number	Serial Number
LG	Display	L15NS-7	511NTTQ25137
IBM	PC	817	99Y7315
IBM	Keyboard	SK8815	89P8800
IBM	Mouse	M028VO	None
EPSON	Printer	PHOTO700	A2V0002196
ANTER	Gateway	EWG802	0508350054-1B
TOSHIBA	USB Disk	None	None

External I/O Cable

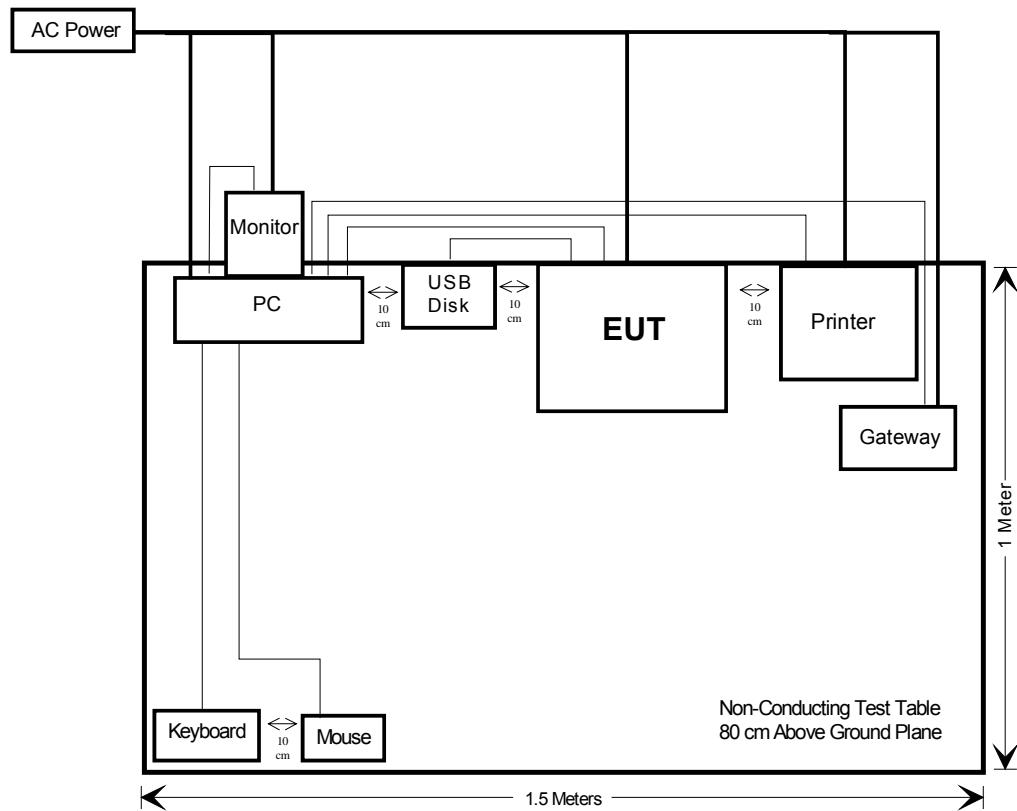
Cable Description	Length (m)	From	To
Unshielded USB Cable	0.5	EUT/USB Port	USB Disk
Unshielded RJ45 Cable	2	EUT / RJ45 Port	PC
Unshielded VGA Cable	1	PC/ VGA Port	Display
Unshielded USB Cable	1	PC/ USB Port	Keyboard
Unshielded USB Cable	1	PC/ USB Port	Mouse
Unshielded LPT Cable	1	PC/ LPT Port	Printer
Unshielded RS232 Cable	1	PC/ RS232 Port	Gateway

Block Diagram of Test Setup

Conducted emission:



Radiated emission:



Bay Area Compliance Laboratories Corp. (Chengdu)

SUMMARY OF TEST RESULTS

Standard	Description	Result
FCC §15.107	Conducted Emission	Compliance
FCC §15.109	Radiated Emission	Compliance

FCC §15.107 CONDUCTED EMISSION TEST

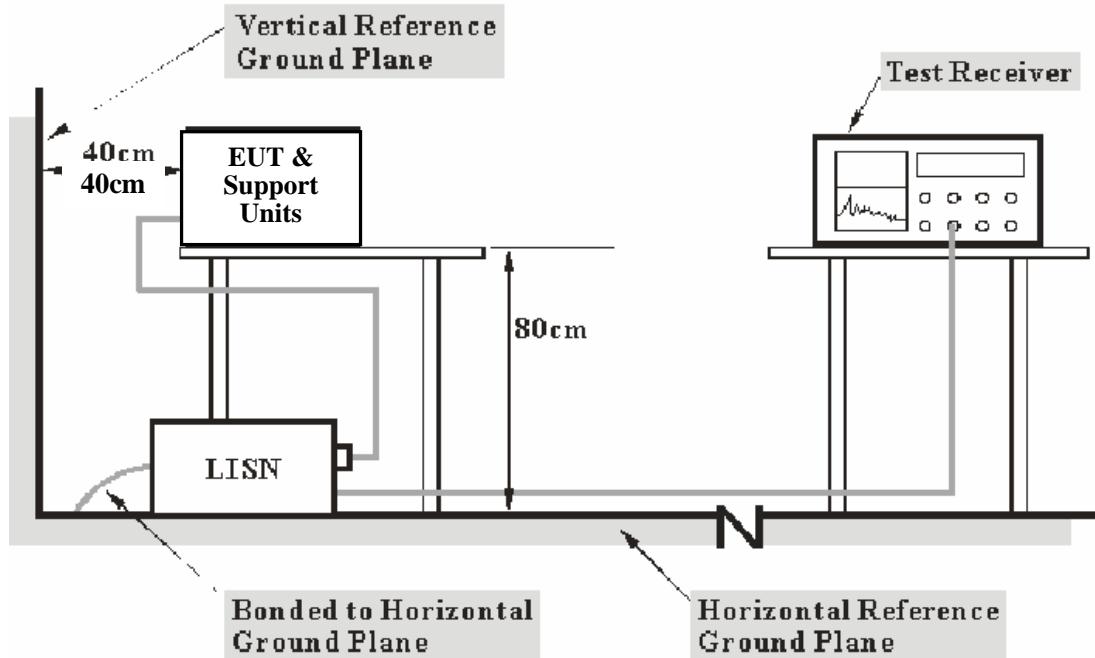
Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMI. The factors contributing to uncertainties are EMI Test Receiver, cable loss, and L.I.S.N.

Based on CISPR 16-4-2, the Treatment of Uncertainty in EMI Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Chengdu) is ± 3.17 dB.

EUT Setup

The setup of EUT was in accordance with ANSI C63.4-2003 measurement procedure. The specification used was the FCC Part 15 Class B limits.



Note:

1. Support units were connected to second LISN.
2. Both of LISNs (AMIN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The power cables and excess cables shall be folded at the cable center into a bundle no longer than 40 cm.

The spacing between the peripherals unit & EUT was 10 cm.

AC 120V/60Hz power source was provided to EUT.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combination.

All data are recorded in the Quasi-peak and Average detection mode. Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with an "AV".

The EUT is in the normal operating mode during the final qualification test to represent the worst cases results.

Test Equipment List and Details

Description	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due Date
EMI Test Receiver	Rohde & Schwarz	ESCS 30	836858/0016	2014-06-23	2015-06-22
L.I.S.N.	Rohde & Schwarz	ENV216	3560.6550.06	2014-06-23	2015-06-22
AMN	Rohde & Schwarz	ENV216	3560.6550.12	2015-02-08	2016-02-07

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Environment Conditions

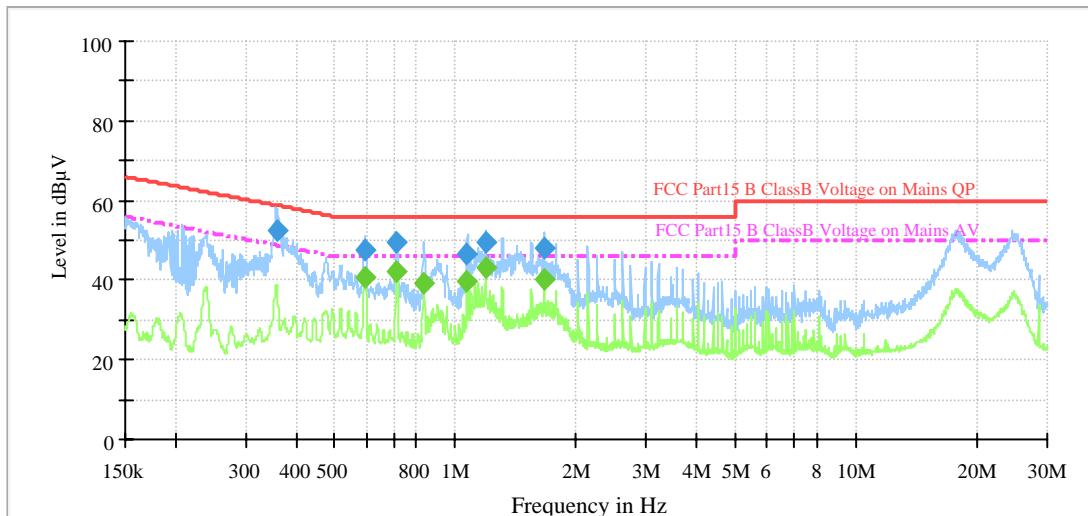
Temperature:	22 °C
Relative Humidity:	66 %
ATM Pressure:	98.1 kPa

The testing was performed by Wei Fan on 2015-03-26.

Summary of Test Results

According to the data in the following, the EUT complied with the FCC Part 15 for a Class B device, with the *worst* margin reading of:

3.0 dB at 1.190360 MHz in the L1 conductor mode

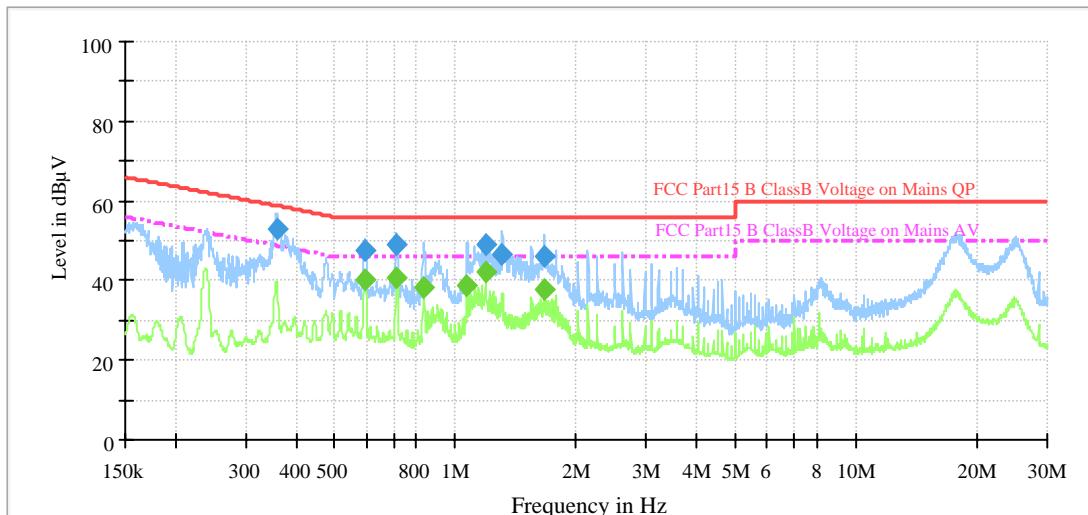
Conducted Emission Test Data and Plots**0.15 MHz – 30 MHz
Line**

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.358029	52.3	9.000	L1	20.0	6.5	58.8
0.593831	47.7	9.000	L1	20.1	8.3	56.0
0.713316	49.6	9.000	L1	20.2	6.4	56.0
1.070325	46.6	9.000	L1	20.2	9.4	56.0
1.190360	49.3	9.000	L1	20.2	6.7	56.0
1.667064	48.0	9.000	L1	20.3	8.0	56.0

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.595019	40.5	9.000	L1	20.1	5.5	46.0
0.713316	42.2	9.000	L1	20.2	3.8	46.0
0.833242	39.3	9.000	L1	20.2	6.7	46.0
1.070325	39.5	9.000	L1	20.2	6.5	46.0
1.190360	43.0	9.000	L1	20.2	*3.0	46.0
1.667064	40.1	9.000	L1	20.3	5.9	46.0

* Within Measurement Uncertainty

0.15 MHz – 30 MHz
Neutral



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.357418	52.8	9.000	N	19.9	6.0	58.8
0.596112	47.5	9.000	N	20.1	8.5	56.0
0.713316	49.1	9.000	N	20.2	6.9	56.0
1.190360	48.9	9.000	N	20.2	7.1	56.0
1.309542	46.6	9.000	N	20.2	9.4	56.0
1.663737	46.3	9.000	N	20.3	9.7	56.0

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.595019	40.0	9.000	N	20.1	6.0	46.0
0.713316	40.8	9.000	N	20.2	5.2	46.0
0.833242	38.1	9.000	N	20.2	7.9	46.0
1.070325	38.6	9.000	N	20.2	7.4	46.0
1.190360	42.3	9.000	N	20.2	3.7	46.0
1.667064	37.9	9.000	N	20.3	8.1	46.0

FCC §15.109 RADIATED EMISSION TEST

Measurement Uncertainty

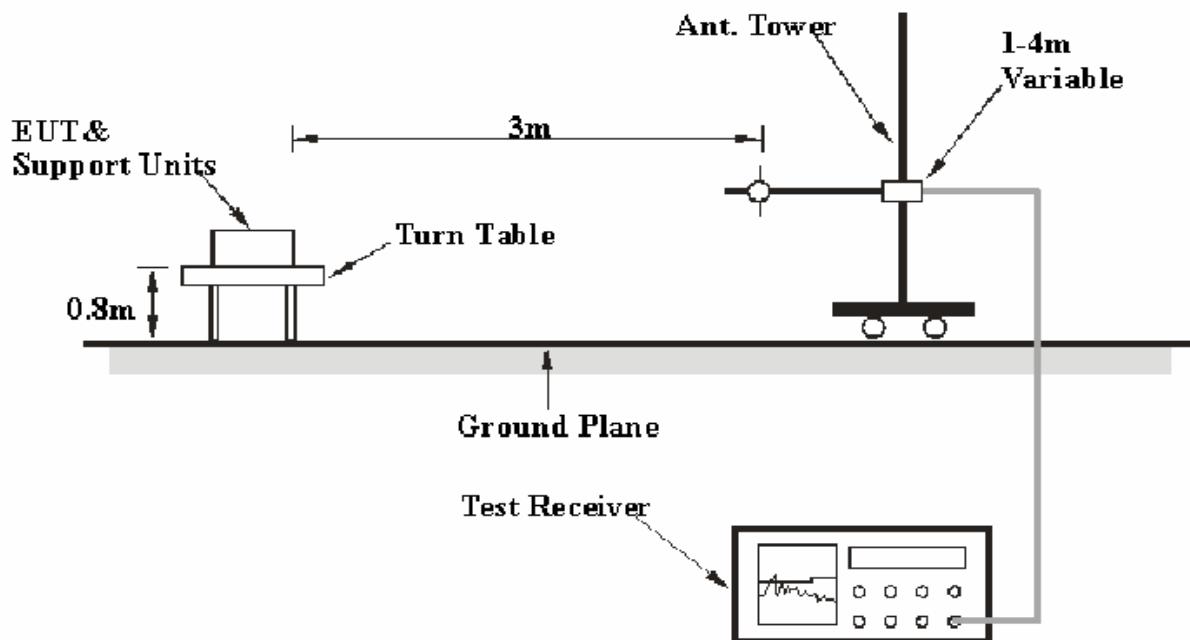
All measurements involve certain levels of uncertainties, especially in the field of EMI. The factors contributing to uncertainties are EMI Test Receiver, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2, the Treatment of Uncertainty in EMI Measurements, the best estimate of the uncertainty of a radiation emissions measurement at BACL is 30M~200MHz: ± 4.7 dB ; 200M~1GHz: ± 6.0 dB ; 1G-6GHz: ± 5.13 dB.

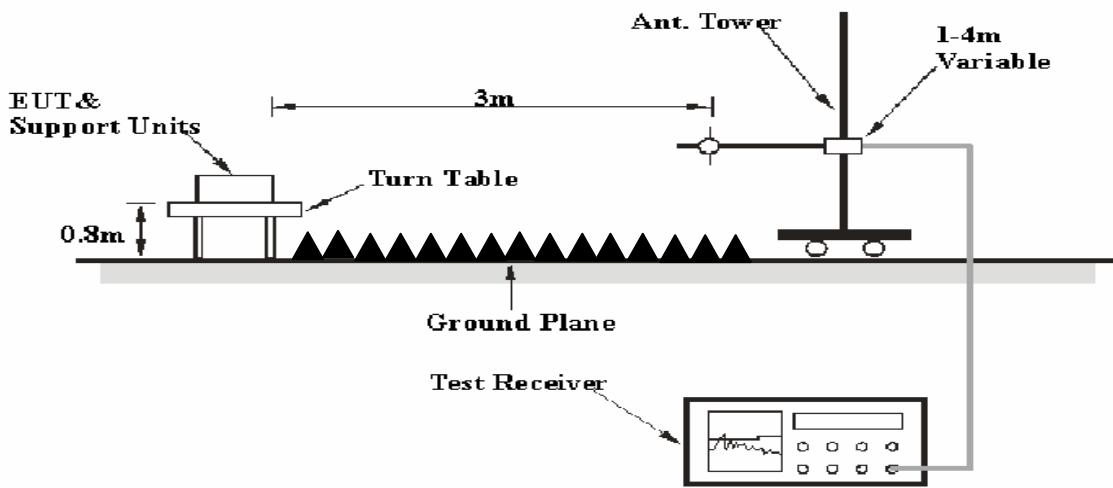
EUT Setup

The radiated emission tests were performed in the 3 meter Semi Anechoic Chamber, using the setup in accordance with the ANSI C63.4-2003. The specification used was the FCC Part 15 Class B limits.

Below 1GHz:



Above 1GHz:



The excess cables shall be folded at the cable center into a bundle no longer than 40 cm.

The spacing between the peripherals unit & EUT was 10 cm.

AC 120V/60Hz power source was provided to EUT.

EMI Test Receiver Setup

According to FCC Rules, the highest frequency in the device is 3.2 GHz, so the frequency range to be tested from 30 MHz to 16 GHz.

During the radiated emission test, the EMI test receiver is set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.

All data were recorded in the quasi-peak detection mode from 30 MHz to 1 GHz. Peak and average detection mode above 1 GHz.

The EUT was in the normal operating mode during the final qualification test to represent the worst case results.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7 dB μ V/m below the maximum limit for FCC Part 15 Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{FCC Part 15 Class B Limit} - \text{Corr. Ampl.}$$

Test Equipment List and Details

Description	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due Date
Amplifier	Agilent	8447D	2944A10442	2014-06-23	2015-06-22
EMI Test Receiver	Rohde & Schwarz	ESCI	100028	2014-06-23	2015-06-22
Broadband Antenna	Sunol Sciences	JB3	A101808	2013-04-10	2016-04-09
Semi-Anechoic Chamber	EMCT	966	N/A	2013-03-13	2016-03-12
Spectrum Analyzer	Rohde & Schwarz	FSL18	100180	2014-06-23	2015-06-22
Horn Antenna	EM TEST	3115	003-6076	2013-04-09	2016-04-08
Amplifier	HP	8449B	3008A00277	2014-06-23	2015-06-22

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Software

Description	Manufacturer	Version
EMC32	R&S	V 8.52.0

Summary of Test Results

According to the data in the following, the EUT complied with the FCC Part 15 Class B standards, and had the worst margin of:

3.2 dB at 215.557137 MHz in the **Vertical** polarization for Normal Operating Mode, 30 MHz to 1000 MHz, 3 meters

Radiated Emission Test

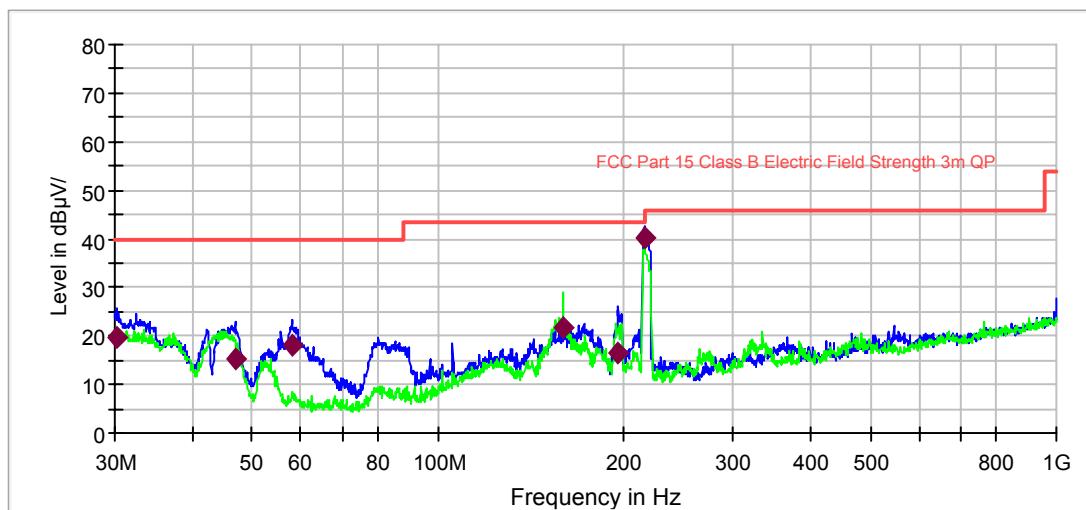
Test Environment Conditions

Temperature:	22 °C
Relative Humidity:	62 %
ATM Pressure:	97.2 kPa

The testing was performed by Wei Fan on 2015-03-27.

30 MHz-1000 MHz:

Electric Field Strength with Auto Test



Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
30.120120	19.9	120.000	115.0	V	190.0	-4.9	20.1	40.0
47.028226	15.4	120.000	100.0	V	205.0	-17.1	24.6	40.0
58.005525	18.2	120.000	141.0	V	76.0	-19.7	21.8	40.0
159.099470	21.8	120.000	150.0	H	115.0	-14.2	21.7	43.5
195.844677	16.5	120.000	150.0	V	25.0	-13.6	27.0	43.5
215.557137	40.3	120.000	100.0	V	25.0	-14.9	*3.2	43.5

* Within Measurement Uncertainty

1GHz-16 GHz:

Frequency (MHz)	Result (dB μ V/m)	Polarity V/H	Detector PK/Ave.	Corrected factor (dB)	Limit (dB μ V/m)	Antenna Height (cm)	Turntable Position (deg)	Margin (dB)
10985.000	62.31	V	PK	26.49	74	130	190	11.69
10985.000	48.40	V	Ave.	26.49	54	130	190	5.60
12452.000	61.53	V	PK	26.25	74	120	205	12.47
12452.000	48.96	V	Ave.	26.25	54	120	205	*5.04
12632.000	62.57	H	PK	23.86	74	120	152	11.43
12632.000	49.03	H	Ave.	23.86	54	120	152	*4.97

* Within Measurement Uncertainty

Test Result: Compliance

******END OF REPORT******