



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Smart Home Gateway

Model: NA301-ZWxxxxxxxx; G150xxxxxxxx; Edgexxxxxxxxx (The “x” in model name can be 0 to 9, A to Z, blank or “-“ , for marking purpose)

Trade Name: Sercomm; MiOS Limited; Vera Control, Ltd.

Issued to

Sercomm Corporation

8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C.

Issued by

Compliance Certification Services Inc.

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Revision History

Rev.	Issue Date		Revisions	Effect Page	Revised By
00	August 18, 2014		Initial Issue	ALL	Landy Huang



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1. TEST RESULT CERTIFICATION

Applicant: Sercomm Corporation
8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan,
R.O.C.

Manufacturer: Sercomm Corporation
8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan,
R.O.C.

Equipment Under Test: Smart Home Gateway

Trade Name: Sercomm; MiOS Limited; Vera Control, Ltd.

Model: NA301-ZWxxxxxxxx; G150xxxxxxxx; Edgexxxxxxxxx (The
"x" in model name can be 0 to 9, A to Z, blank or "-", for
marking purpose)

Date of Test: July 24 ~ August 11, 2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements emission limits of FCC Rules Part 15.107, 15.109, 15.207, 15.209 and 15.249. The test results of this report relate only to the tested sample identified in this report.

Approved by:

Stan Lin
Section Manager

Reviewed by:

Angel Hu
Section Manager



2. EUT DESCRIPTION

Product	Smart Home Gateway		
Trade Name	Sercomm; MiOS Limited; Vera Control, Ltd.		
Model Number	NA301-ZWxxxxxxxx; G150xxxxxxxx; Edgexxxxxxxxx (The “x” in model name can be 0 to 9, A to Z, blank or “-” , for marking purpose)		
Model Discrepancy	1. All the model numbers (list on this report) are identical, just formarketing purpose only except Brand.		
	Model Number		Brand
	NA301-ZWxxxxxxxx (The “x” in model name can be 0 to 9, A to Z, blank or “-” , for marking purpose)		Sercomm
	G150xxxxxxxx (The “x” in model name can be 0 to 9, A to Z, blank or “-” , for marking purpose)		MiOS Limited
	Edgexxxxxxxxx (The “x” in model name can be 0 to 9, A to Z, blank or “-” , for marking purpose)		Vera Control, Ltd.
	2. The means of “x” (The “x” in model name can be 0 to 9, A to Z, blank or “-” , for marking purpose) on model number are identical, just for marketing purpose only. 3. Client consigns only one model sample (Model number: NA301-ZW-US) to test. Therefore testing Lab. just guarantees the units, which have been tested.		
EUT Power Rating	12VDC, 1.0A		
Power Adapter	Asia power Device Inc.	Model	WA-12M12FU
	Sunny	Model	SYS-1381-1212-W2
Power Adapter Rating	I/P: 100-240VAC, 50/60HZ, 0.5A O/P: 12VDC, 1.0A		
RF Module Manufacturer		Model	SD3502A-CNE3
Frequency Range	908.40MHz		
Modulation Technique	FSK		
Antenna Gain	0.56dBi		
Antenna Designation	PIFA Antenna		

Remark:

1. The sample selected for test was production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **P27NA301ZW** filing to comply with Section 15.207, 15.209, 15.249.



3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2009 and FCC CFR 47 Part 15.207, 15.209, 15.247 and DA00-705.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.107 and 15.109 under the FCC Rules Part 15 Subpart B and Section 15.207, 15.209, 15.249 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.



3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

- (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(²)
13.36 - 13.41	322 - 335.4		

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

² Above 38.6

- (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



3.5 DESCRIPTION OF TEST MODES

The EUT (model: NA301-ZW-US) had been tested under operating condition and had been reported as worst case on this test report.

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode.

WA-12M12FU & SYS-1381-1212-W2 have been pre-scanned during the test, and the model WA-12M12FU was selected as the worst case for final test.



4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	01/01/2015
Spectrum Analyzer	Agilent	N9010A	MY52220817	03/20/2015
Spectrum Analyzer	R&S	FSL	100837	11/11/2014
Power meter	Anritsu	ML2495A	1033009	09/29/2014
Power Sensor	Anritsu	MA2411B	0917221	09/29/2014

3MSemi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	01/01/2015
Spectrum Analyzer	R&S	FSL	100837	11/11/2014
Pre-Amplifier	HP	8447D	2944A06530	05/02/2015
Pre-Amplifier	EMEC	EM01M26G	060570	07/28/2015
Pre-Amplifier	MITEQ	AMF-6F-260400-4 0-8P	985646	06/12/2015
Pre-Amplifier	Agilent	8449B	3008A01738	08/11/2015
EMI Test Receiver	SCHAFFNER	SCR 3501	430	03/30/2015
Loop Antenna	EMCO	6502	8905-2356	08/20/2014
Bilog Antenna	TESEQ	CBL 6112D	35378	09/11/2014
Horn Antenna	EMCO	3115	00022250	08/05/2015
Horn Antenna	EMCO	3116	00026370	12/29/2014
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Test S/W	EZ-EMC			

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. N.C.R = No Calibration Request.



Powerline Conducted Emissions Test Site#3				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCI	101300	09/06/2014
LISN	R&S	ENV216	100069	06/09/2015
LISN	FCC	FCC-LISN-50/250-16-2-07	06013	11/20/2014
ISN	TESEQ	ISN-T8	30842	07/30/2015
Current Probe	FCC	F-35	506	07/13/2015
ISN	FCC	FCC-TLISN-T2-02	20587	07/28/2015
Test S/W	EZ-EMC			

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Request.

4.3 MEASUREMENT UNCERTAINTY

Parameter	Uncertainty
Powerline Conducted Emission #3	± 2.1876
3M Semi Anechoic Chamber / 30MHz ~ 200MHz	± 3.5921
3M Semi Anechoic Chamber / 200MHz ~ 1GHz	± 3.5657
3M Semi Anechoic Chamber / 1 ~ 8GHz	± 2.5873
3M Semi Anechoic Chamber / 8 ~ 18GHz	± 2.6646
3M Semi Anechoic Chamber / 18 ~ 26GHz	± 2.9617
3M Semi Anechoic Chamber / 26 ~ 40GHz	± 3.4250

Remark: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No. 163-1, Jhongsheng Rd., Sindien District, Taipei City 23151, Taiwan

☐ No 11, Wugong 6th Rd, Wugu District, New Taipei City 24891, Taiwan (R.O.C)

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☒ No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, Taiwan, R.O.C.

Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."



5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	CFR 47, FCC Part15/18, CISPR 22, EN 55022, ICES-003, AS/NZS CISPR 22, VCCI V-3, EN 55011, CISPR 11, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 61000-6-1/2/3/4, EN 55024, CISPR 24, AS/NZS CISPR 24, AS/NZS 61000.6.2, EN 55014-1/-2, ETSI EN 300 386 v1.3.2/v1.3.3, IEC/EN 61000-3-2, AS/NZS 61000.3.2, IEC/EN 61000-3-3, AS/NZS 61000.3.3	 TESTING CERT #0824.01
USA	FCC MRA	3 meter Open Area Test Sites to perform FCC Part 15/18 measurements	
Japan	VCCI	3/10 meter Open Area Test Sites and conducted test sites to perform radiated/conducted measurements	VCCI R-2882/2541/2798/725/1868 C-402/747/912 T-1930/1646
Taiwan	TAF	EN 55014-1, CISPR 14, CNS 13781-1, EN 55013, CISPR 13, CNS 13439, EN 55011, CISPR 11, CNS 13803, PLMN09, IS2045-0, LP0002 FCC Part 27/90, Part 15B/C/D/E, RSS-192/193/210/310 ETSI EN 300 328/ 300 220-1/ 300 220-2/ 301 893/ 301 489-01/ 301 489-03/ 301 489-07 / 301 489-17/ 300 440-1/ 300 440-2 AS/NZS 4268, AS/NZS 4771 CISPR 22, EN 55022, CNS 13438, AS/NZS CISPR 22, VCCI, IEC/EN 61000-4-2/3/4/5/6/8/11, CNS 14676-2/3/4/5/6/8, CNS 14934-2/3, CNS 13783-1, CNS 13439, CNS 13803	 Testing Laboratory 0363
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	SL2-IS-E-0014 / IN-E-0014 /A1-E-0014 /R1-E-0014 /R2-E-0014 /L1-E-0014
Canada	Industry Canada	RSS-Gen Issue 3	

Note:No part of this report may be used to claim or imply product endorsement by A2LA, TAF or other government agency.



6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

For Power line conducted emission measurement:							
No.	Device Type	Model	Series No.	FCC ID	Brand	Data Cable	Power Cord
1.	Traveling Disk	LuxMini 720	N/A	FCC DoC	SILICON POWER	Shielded,1.8m	N/A
2.	Notebook PC (Remote)	1706-A78	LV-L1870 06/09	FCC DOC	IBM	LAN Cable: Unshielded,10m	AC I/P: Unshielded,1.8m DC O/P: Shielded,1.8m
3.	Notebook PC (Remote)	ThinkPad T430u	PB-VZLGG 12/09	FCC DOC	LENOVO	N/A	AC I/P: Unshielded,1.8m DC O/P: Unshielded,1.8m with a core

For Radiated Emission measurement:							
No.	Device Type	Model	Series No.	FCC ID	Brand	Data Cable	Power Cord
	N/A						

For Conducted emission measurement:							
No.	Device Type	Model	Series No.	FCC ID	Brand	Data Cable	Power Cord
1.	Notebook PC	D400	0932RY	E2K24GBRL	DELL	LAN Cable: Unshielded,10m	AC I/P: Unshielded,1.8m DC O/P: Unshielded,1.8m with a core

Remark: Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



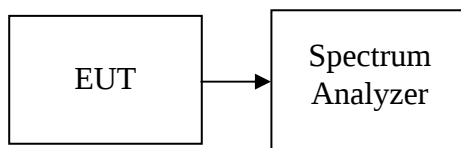
7. FCC PART 15.249 REQUIREMENTS

7.1 20 DB BANDWIDTH

LIMIT

None; for reporting purposes only.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=100kHz, VBW = 300kHz, Span = 1MHz, Sweep = auto.
4. Mark the peak frequency and 20dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

TEST RESULTS

No non-compliance noted

Test Data

Frequency (MHz)	20dB Bandwidth (kHz)
908	306



Test Plot





7.2 SPURIOUS EMISSION

LIMIT

1. In the section 15.249(a):

Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental Field Strength (mV/m)	Field Strength of Harmonics (μV/m)
902-928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500
24.0 - 24.25 GHz	250	2500

2. Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

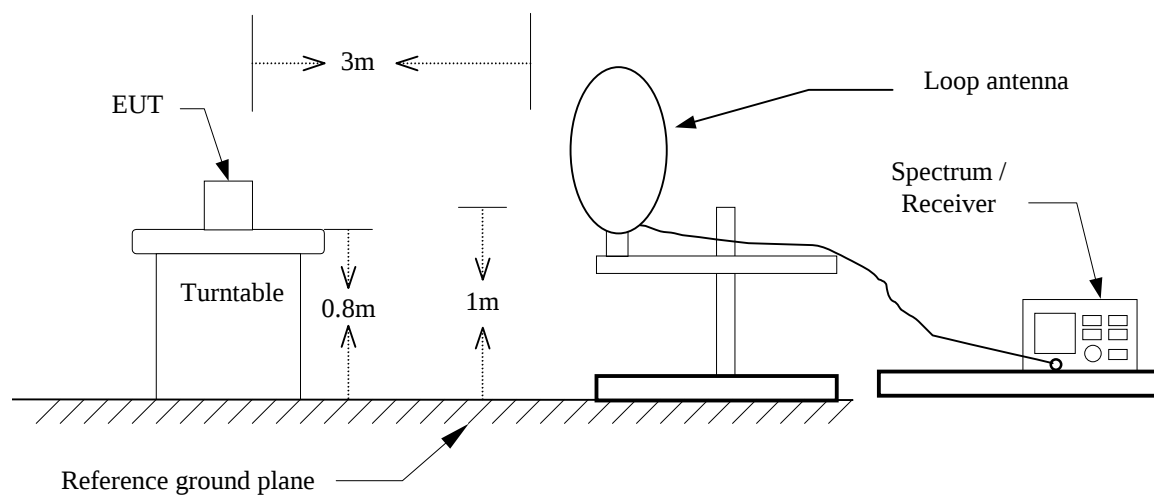
3. In the above emission table, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

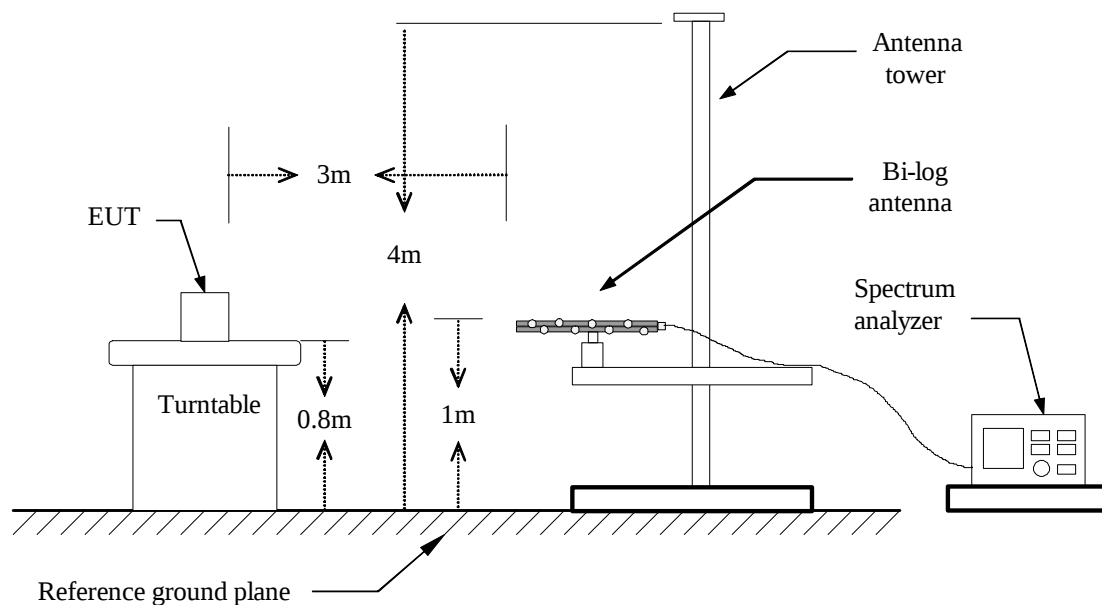


Test Configuration

9kHz ~ 30MHz

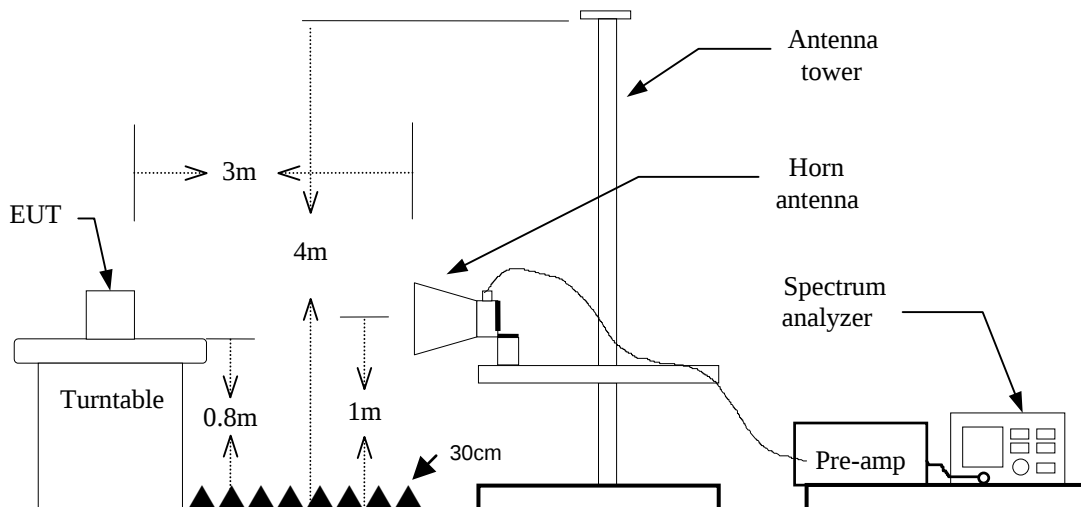


30MHz ~ 1GHz





Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 30MHz

RBW=10kHz / VBW=30kHz / Sweep=AUTO

30 ~ 1000MHz:

RBW=100kHz / VBW=300KHz / Sweep=AUTO

Above 1GHz:

- a) PEAK: RBW=1MHz / VBW=3MHz / Sweep=AUTO
- b) AVERAGE: RBW=1MHz / VBW=300Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

No non-compliance noted.

**TEST DATA****Below 1GHz****Operation Mode:** Normal Link**Test Date:** 2014/8/5**Temperature:** 26°C**Tested by:** Francis Lee**Humidity:** 56% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol. (H/V)	Remark
908.4200	100.48	-3.84	96.64	114.00	-17.36	V	peak
908.4200	86.64	-3.84	82.80	94.00	-11.20	V	AVG
35.8200	43.10	-12.13	30.97	40.00	-9.03	V	peak
116.3299	41.93	-15.41	26.52	43.50	-16.98	V	peak
250.1899	39.92	-13.46	26.46	46.00	-19.54	V	peak
479.1100	40.72	-9.56	31.16	46.00	-14.84	V	peak
500.4499	42.77	-9.23	33.54	46.00	-12.46	V	peak
741.0099	37.02	-6.22	30.80	46.00	-15.20	V	peak
908.4460	107.17	-3.84	103.33	114.00	-10.67	H	peak
908.4460	93.33	-3.84	89.49	94.00	-4.51	H	AVG
123.1200	39.60	-15.24	24.36	43.50	-19.14	H	peak
222.0600	41.43	-16.05	25.38	46.00	-20.62	H	peak
250.1900	46.39	-13.46	32.93	46.00	-13.07	H	peak
330.7000	39.88	-11.60	28.28	46.00	-17.72	H	peak
773.0200	38.87	-5.91	32.96	46.00	-13.04	H	peak
834.1300	36.81	-4.85	31.96	46.00	-14.04	H	peak

Remark:

1. No emission found between lowest internal used / generated frequency to 30 MHz. (9kHz ~ 30MHz)
2. Measuring frequencies from 9 kHz to the 1GHz.
3. Radiated emissions measured in the measured frequency range were made with an instrument using peak detector or quasi-peak detector mode.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.

**Above 1 GHz****Operation Mode:** Tx**Test Date:** 2014/8/7**Temperature:** 26°C**Tested by:** Francis Lee**Humidity:** 56% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
1300.000	46.58	-9.50	37.08	74.00	-36.92	peak	V
2130.000	44.43	-4.68	39.75	74.00	-34.25	peak	V
2725.000	49.67	-3.01	46.66	74.00	-27.34	peak	V
3440.000	42.96	-0.39	42.57	74.00	-31.43	peak	V
4540.000	42.55	2.87	45.42	74.00	-28.58	peak	V
5595.000	38.51	6.36	44.87	74.00	-29.13	peak	V
1545.000	45.56	-8.51	37.05	74.00	-36.95	peak	H
1960.000	45.57	-5.27	40.30	74.00	-33.70	peak	H
2130.000	54.36	-4.68	49.68	74.00	-24.32	peak	H
2415.000	52.76	-4.08	48.68	74.00	-25.32	peak	H
2725.000	50.20	-3.01	47.19	74.00	-26.81	peak	H
5645.000	39.69	6.39	46.08	74.00	-27.92	peak	H

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m). Peak detector mode and average detector mode of the emission shown in Result column.



7.3 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

Test Configuration

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

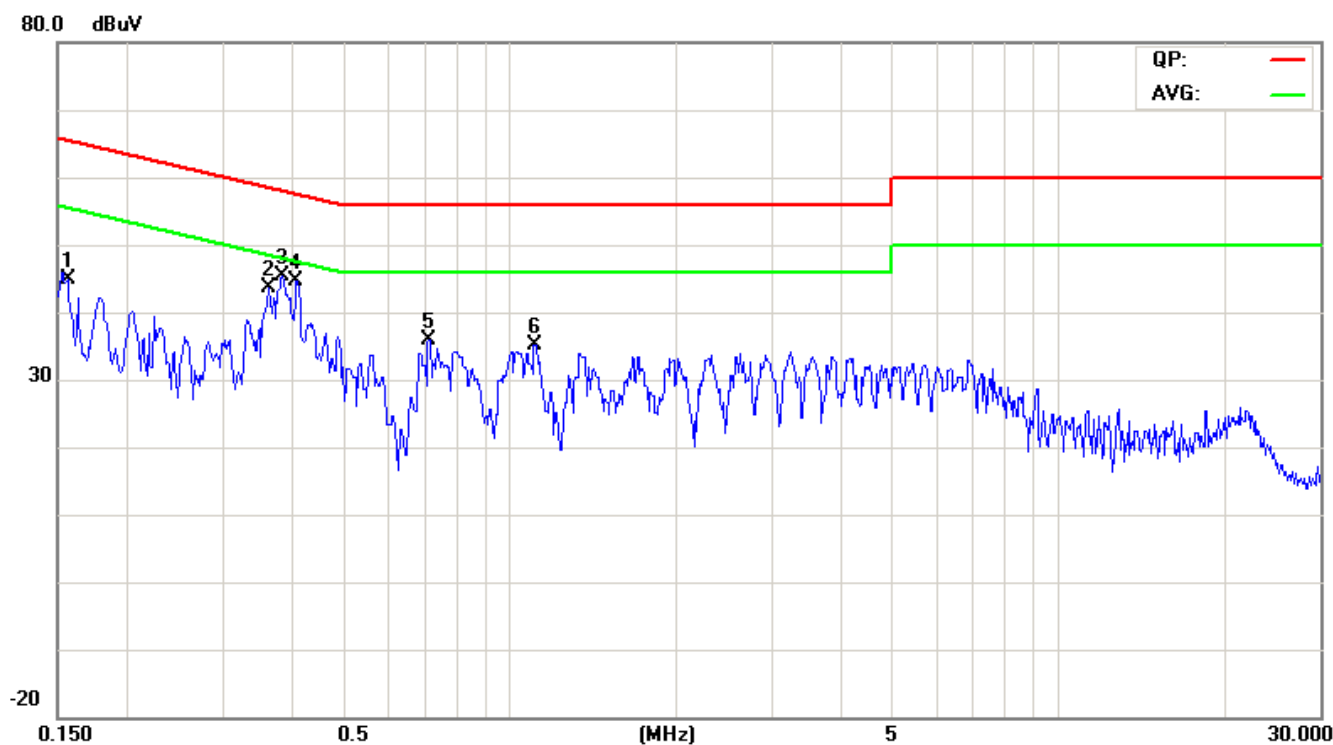
TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.



TEST DATA

Test Mode	Normal Link	6dB Bandwidth	9 kHz
Environmental Conditions	25°C, 57% RH	Test Date:	2014/8/11
Tested By	Johnny Chen	Line	L1

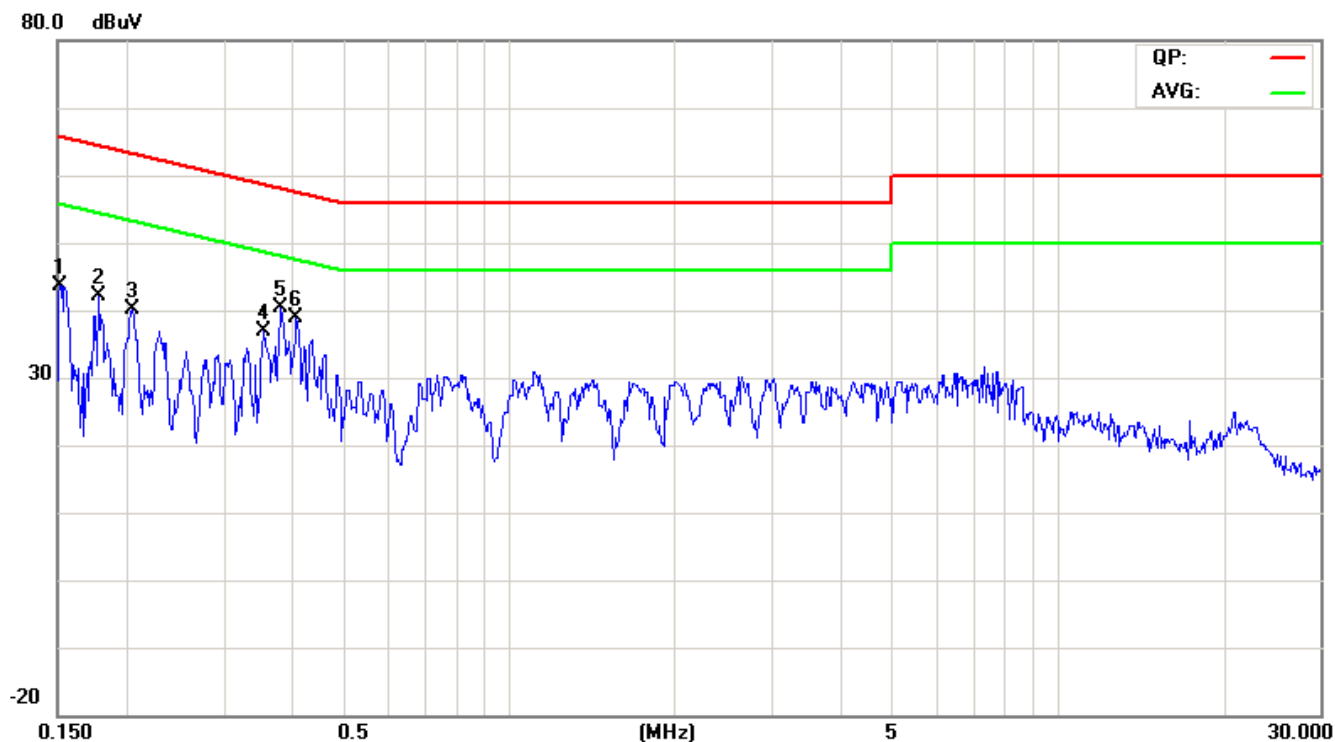


NO.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	(Pass/Fail)
1	0.1549	31.91	23.05	9.79	41.70	32.84	65.73	55.73	-24.03	-22.89	Pass
2	0.3664	25.67	16.03	9.74	35.41	25.77	58.58	48.58	-23.17	-22.81	Pass
3*	0.3848	32.08	29.48	9.75	41.83	39.23	58.18	48.18	-16.35	-8.95	Pass
4	0.4075	31.58	28.74	9.75	41.33	38.49	57.70	47.70	-16.37	-9.21	Pass
5	0.7140	24.71	21.16	9.74	34.45	30.90	56.00	46.00	-21.55	-15.10	Pass
6	1.1115	24.00	19.05	9.73	33.73	28.78	56.00	46.00	-22.27	-17.22	Pass

REMARKS: L1 = Line One (Live Line)



Test Mode	Normal Link	6dB Bandwidth	9 kHz
Environmental Conditions	25°C, 57% RH	Test Date:	2014/8/11
Tested By	Johnny Chen	Line	L2



NO.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	(Pass/Fail)
1	0.1517	31.88	20.14	9.77	41.65	29.91	65.91	55.91	-24.26	-26.00	Pass
2	0.1780	30.88	21.08	9.74	40.62	30.82	64.58	54.58	-23.96	-23.76	Pass
3	0.2041	29.07	21.31	9.72	38.79	31.03	63.44	53.44	-24.65	-22.41	Pass
4	0.3569	27.27	22.49	9.72	36.99	32.21	58.80	48.80	-21.81	-16.59	Pass
5*	0.3814	28.55	24.94	9.73	38.28	34.67	58.25	48.25	-19.97	-13.58	Pass
6	0.4077	27.35	23.83	9.73	37.08	33.56	57.70	47.70	-20.62	-14.14	Pass

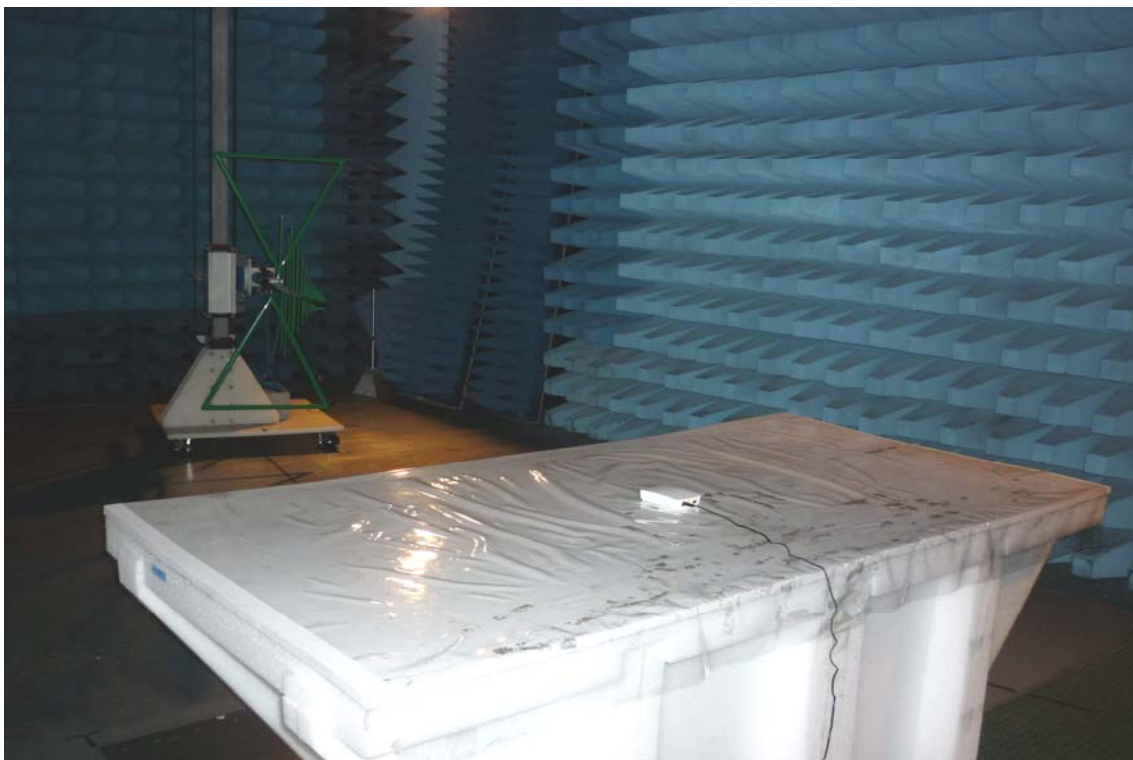
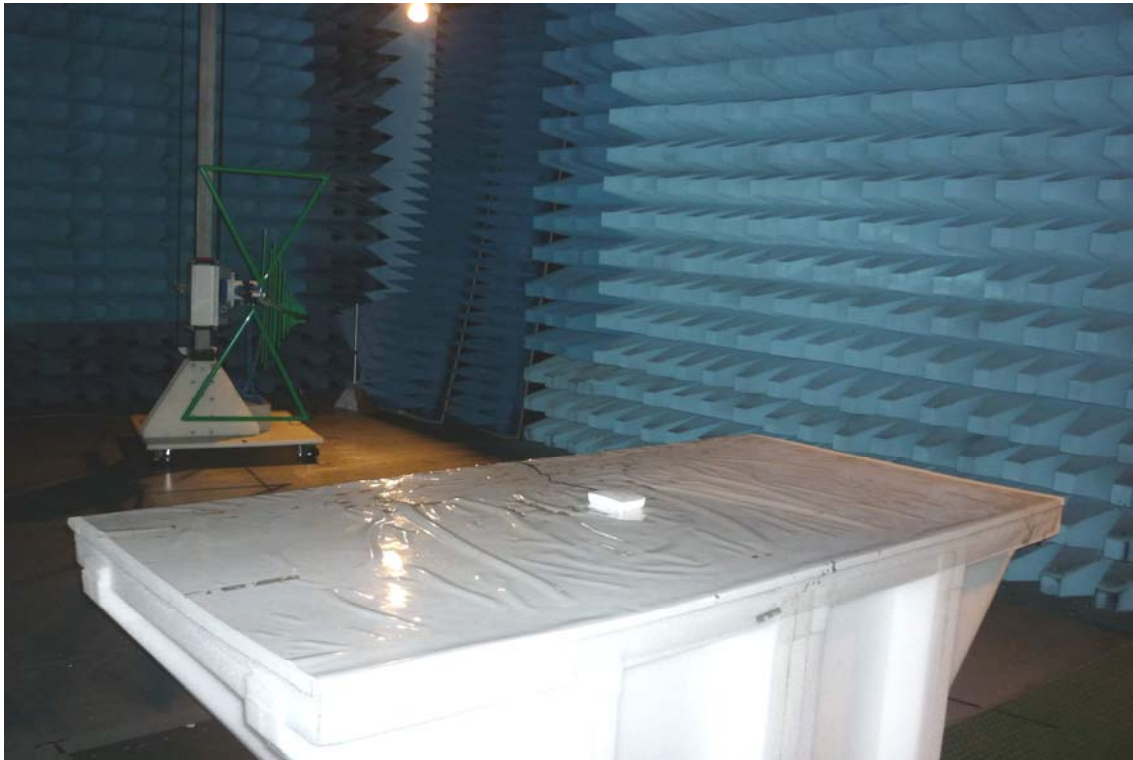
REMARKS: L2 = Line Two (Neutral Line)



8. APPENDIX IPHOTOGRAPHS OF TEST SETUP

Radiated Emission Set up Photos

Below 1GHz



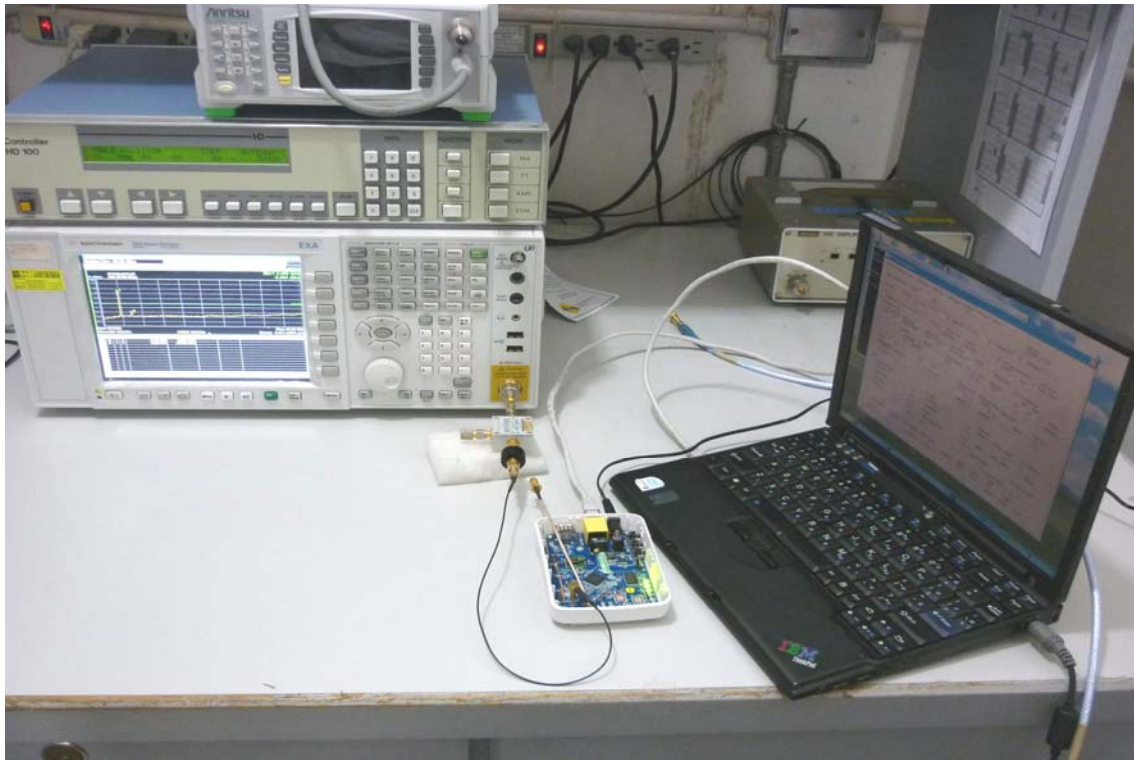


Above 1GHz





Conducted Emission Setup Photos





Powerline Conducted Emissions Setup Photos





APPENDIX 1: PHOTOGRAPHS OF EUT

Refer to T140708D15 Photographs.