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Report No.: 1407RSU04104
Report Version: V01
Issue Date: 08-22-2014

MEASUREMENT REPORT

EN 301 489-1 & EN 301 489-17

Applicant: Compex Systems Pte Ltd

Address: 135, Joo Seng Road, #08-01 Singapore 368363

Product: WIRELESS ACCESS POINT

Model No.: WPJ344HV, WPJ344LV, MMZ344LV, MMZ344HV,
MMJ344LV, MMJ344HV, MMS344LV, MMS344HV

Brand Name: COMPEX

Standards: ETSI EN 301 489 - 1 V1.9.2 (2011-09)
ETSI EN 301 489 - 17 V2.2.1 (2012-09)

Result: Complies

Test Date: Jul. 30 ~ Aug. 20, 2014

Reviewed By : Robin Wu
(Robin Wu)

Approved By : Marlin Chen
(Marlin Chen)



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date
1407RSU04104	Rev. 01	Initial report	08-22-2014

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1. General Information

1.1. Applicant

Compex Systems Pte Ltd
135 Joo Seng Road #08-01, Singapore 368363

1.2. Manufacturer

Compex Systems Pte Ltd
135 Joo Seng Road #08-01, Singapore 368363

1.3. Testing Facility

Test Site

MRT Technology (Suzhou) Co., Ltd

Test Site Location

D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

Radio-frequency Electromagnetic Field Test Site

CQC Intime (Suzhou) Testing Technology Co., Ltd.

Test Site Location

East Taihu Technology and Finance City, No. 1368, Wuzhong Dadao Road, Wuzhong District, Suzhou, Jiangsu, P.R. China

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, EU and TELEC Rules.
- MRT facility is a FCC registered (MRT Reg. No. 809388) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (11384A-1).
- MRT facility is an IC registered (11384A-1) test laboratory with the site description on file at Industry Canada.



1.4. Feature of Product

Product Name	WIRELESS ACCESS POINT
Model No.	WPJ344HV, WPJ344LV, MMZ344LV, MMZ344HV, MMJ344LV, MMJ344HV, MMS344LV, MMS344HV
Brand Name	COMPEX
Frequency Range	802.11b/g/n-HT20: 2412 ~ 2472MHz 802.11n-HT40: 2422 ~ 2462MHz
Channel Number	802.11b/g/n-HT20: 13 802.11n-HT40: 9
Type of Modulation	802.11b: DSSS 802.11g/n: OFDM
Data Rate	802.11b: 1/2/5.5/11Mbps 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 300Mbps
Adapter 1#	Power Over Ethernet (Gigabit) M/N: HS36-2401250EU Input: 100-240V ~ 50/60Hz 1.0A Output: +24V ~ 1.25A
Adapter 2#	Gigabit POE Injector Manufacturer: KANG PEI M/N: POEGP2408 Input: 100-240V ~ 50/60Hz 1.0A Output: +24V ~ 0.8A

Note: The difference of models is for different marketing requirement.

1.5. Description of Available Antennas

Antenna Type	Frequency Band (GHz)	Manufacturer	Tx Paths	Max Directional Gain (dBi)
Panel Antenna 1#	2.45	Compex Systems Pte Ltd	2	11
Panel Antenna 2#	2.45	Kenbotong Communication LTD	2	10
Panel Antenna 3#	2.45	Compex Systems Pte Ltd	2	7
Panel Antenna 4#	2.45	Smart Ant Inc	2	7
Panel Antenna 5#	2.45	Compex Systems Pte Ltd	2	5
Panel Antenna 6#	2.45	Compex Systems Pte Ltd	2	5
Dipole Antenna 1#	2.45	Kunshan Wavelink Electronic Co., Ltd.	2	2

Note 1: We selected dipole antenna 1# for all EMC testing.

1.6. Standards Applicable for Testing

The EUT complies with the requirements of EN 3014 89-1 V1.9.2 & EN 301 489-17 V2.2.1.

EMI Test:

EN 55022 2010 (Conducted Emission)

EN 55022 2010(Radiated Emission)

EN 61000-3-2 2006+A1:2009+A2:2009 (Harmonic)

EN 61000-3-3: 2008 (Flicker)

EMS Test:

EN 61000-4-2: 2009 (ESD)

EN 61000-4-3: 2006+A1:2008+A2:2010 (RS)

EN 61000-4-4: 2012 (EFT)

EN 61000-4-5: 2006 (Surge)

EN 61000-4-6: 2009 (CS)

EN 61000-4-11: 2004 (Dips)

1.7. Performance Criteria

General Requirements (ETSI EN 301489-1):

The performance criteria are used to take a decision on whether radio equipment passes or fails immunity tests.

For the purpose of the present document four categories of performance criteria apply:

- performance criteria for continuous phenomena applied to transmitters;
- performance criteria for transient phenomena applied to transmitters;
- performance criteria for continuous phenomena applied to receivers;
- performance criteria for transient phenomena applied to receivers.

Normally, the performance criteria depend on the type of radio equipment. Thus, the present document only contains general performance criteria commonly used for the assessment of radio equipment. More specific and product-related performance criteria for a dedicated type of radio equipment may be found in the part of EN 301 489 series dealing with the particular type of radio equipment.

Performance criteria for continuous phenomena applied to transmitters and receivers

If no further details are given in the relevant part of EN 301 489 series dealing with the particular type of radio equipment, the following general performance criteria for continuous phenomena shall apply.

During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

During the test the EUT shall not unintentionally transmit or change its actual operating state and stored data.

If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criteria for transient phenomena applied to transmitters and receivers

If no further details are given in the relevant part of EN 301 489 series dealing with the particular type of radio equipment, the following general performance criteria for transient phenomena shall apply.

After the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer, when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

During the EMC exposure to an electromagnetic phenomenon, a degradation of performance is, however, allowed. No change of the actual mode of operation (e.g. unintended transmission) or stored data is allowed.

If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criteria for equipment which does not provide a continuous communication link

For radio equipment which does not provide a continuous communication link, the performance criteria described in clauses (1) and (2) are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests. The performance specification shall be included in the product description and documentation. The related specifications set out in clause 5.3 of EN 301 489-1 V1.9.2 (2010-09) have also to be taken into account.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in clauses (1) and (2).

Performance criteria for ancillary equipment tested on a stand-alone basis

If ancillary equipment is intended to be tested on a stand-alone basis, the performance criteria described in clauses (1) and (2) are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests. The performance specification shall be included in the product description and documentation. The related specifications set out in clause 5.3 of EN 301 489-1 V1.9.2 (2010-09) have also to be taken into account.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in clauses (1) and (2).

Special Performance Requirements (ETSI EN 301489-17):

The performance criteria are:

- performance criteria A for immunity tests with phenomena of a continuous nature;
- performance criteria B for immunity tests with phenomena of a transient nature;
- performance criteria C for immunity tests with power interruptions exceeding a certain time.

The equipment shall meet the minimum performance criteria as specified in the following clauses.

Performance criteria for Continuous phenomena applied to Transmitters (CT)

The performance criteria A shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an ACKnowledgement (ACK) or Not ACKnowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Transient phenomena applied to Transmitters (TT)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5000 ms duration, for which performance criteria C shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or not-acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Continuous phenomena applied to Receivers (CR)

The performance criteria A shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Transient phenomena applied to Receivers (TR)

The performance criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5000 ms duration for which performance criteria C shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

EN 301 489 -17 Performance criteria		
Criteria	During Test	After test
A	Shall operate as intended May show degradation of performance (see note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (see note 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (see note 1) No unintentional transmission	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (see note 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (see note 2)

Note 1: Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance.

If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

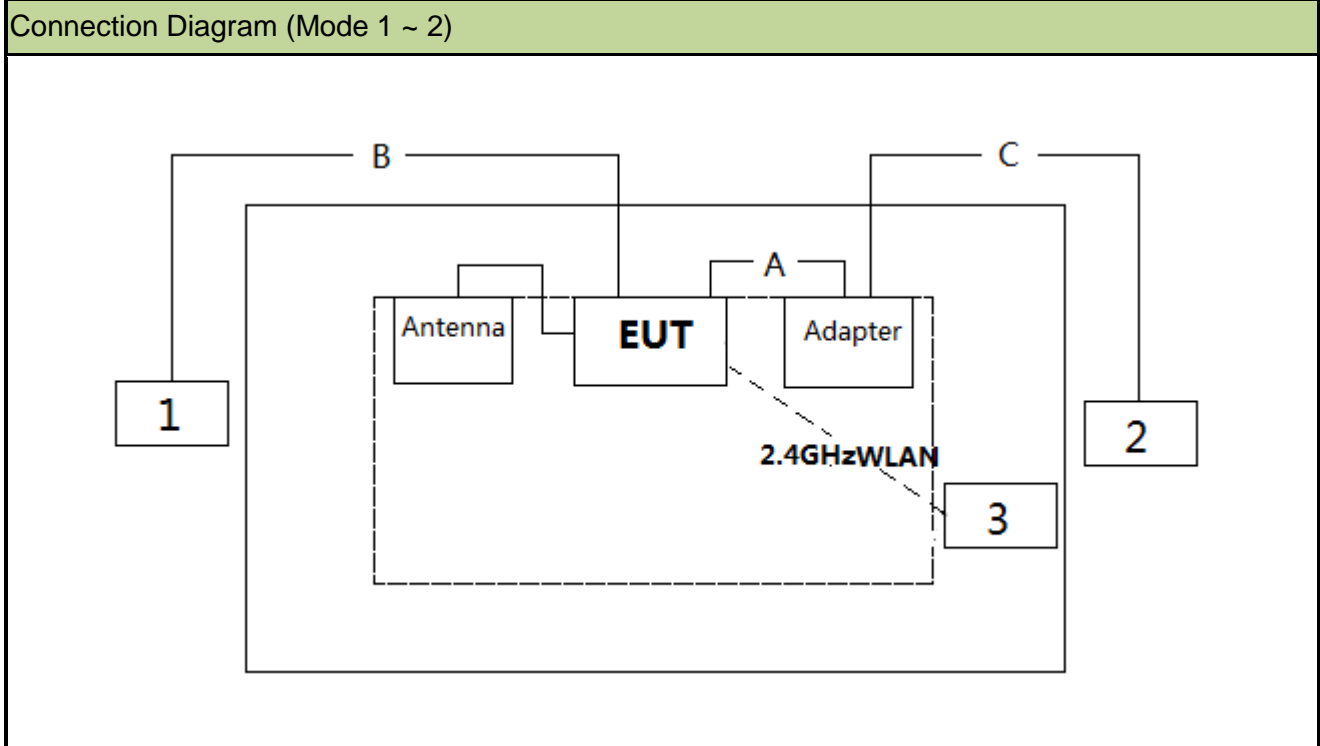
Note 2: No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

2. Test Configuration of Equipment under Test

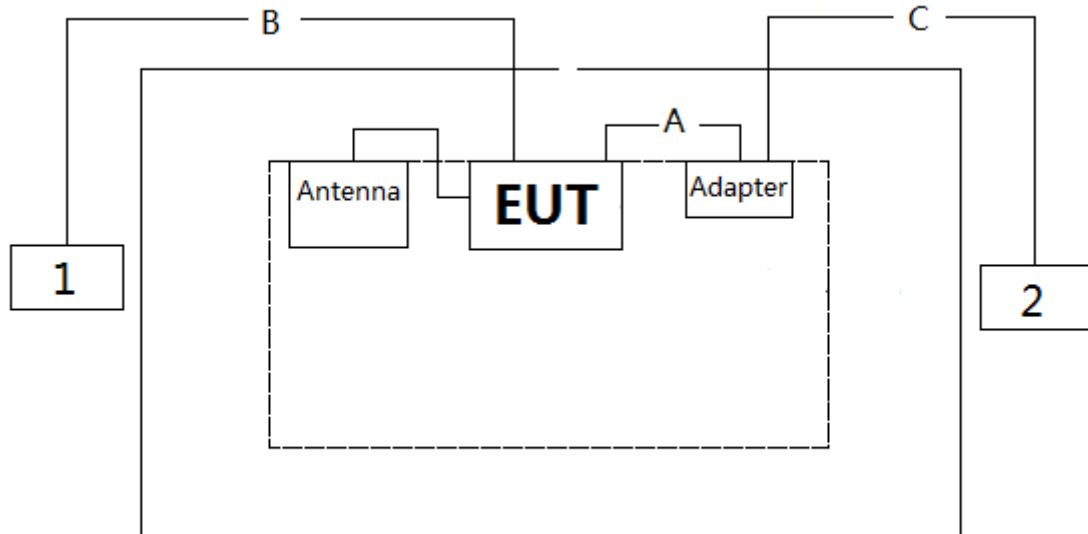
2.1. Test Mode

EMI Test Mode	Mode 1: Communication (Powered by Adapter 1#)
	Mode 2: Communication (Powered by Adapter 2#)
EMS Test Mode	Mode 1: Communication (Powered by Adapter 1#)
	Mode 2: Communication (Powered by Adapter 2#)
	Mode 3: Standby

2.2. Configuration of Tested System



Connection Diagram (Mode 3)



Signal Cable Type		Signal Cable Description
A	LAN Cable	Non-shielding, 0.5m
B	LAN Cable	Non-shielding, >10m
C	LAN Cable	Non-shielding, >10m

2.3. Test System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Personal Computer	DELL	Vostro270	N/A	Non-Shielded, 1.8m
2	Personal Computer	DELL	Vostro270	N/A	Non-Shielded, 1.8m
3	Notebook	Lenovo	E430c	MP-4CFX213/10	Non-Shielded, 1.8m

2.4. Test Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	Making EUT communicate with PC by LAN cable and communicate with notebook by Wi-Fi.

3. Test Summary

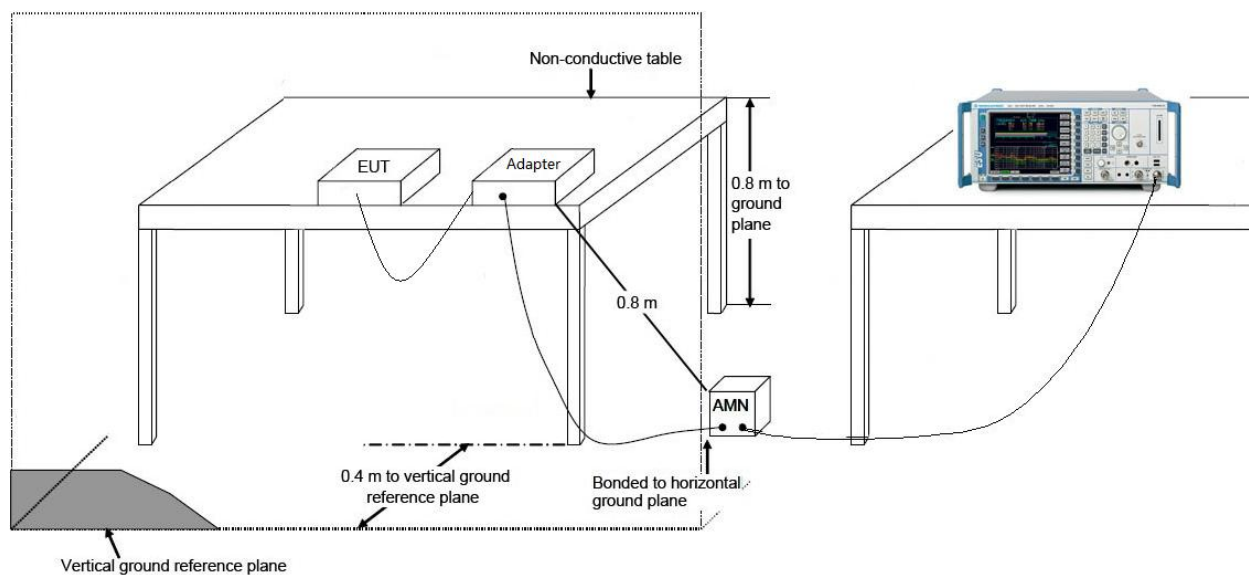
Clause	Test Item	Test Standard	Result (Pass/Fail)	Remark
Emission Measurements				
EN 301489-1 Clause 8.4	Conducted Emission	EN 55022	Pass	---
EN 301489-1 Clause 8.2	Radiated Emission	EN 55022	Pass	---
EN 301489-1 Clause 8.5	Harmonic current emissions	EN 61000-3-2	Pass	---
EN 301489-1 Clause 8.6	Voltage fluctuations and flicker	EN 61000-3-3	Pass	---
Immunity Measurements				
EN 301489-1 Clause 9.3	Electrostatic discharge	EN 61000-4-2	Pass	---
EN 301489-1 Clause 9.2	Radio-frequency electromagnetic field	EN 61000-4-3	Pass	---
EN 301489-1 Clause 9.4	Fast transients, common mode	EN 61000-4-4	Pass	---
EN 301489-1 Clause 9.8	Surges	EN 61000-4-5	Pass	---
EN 301489-1 Clause 9.5	Radio-frequency common mode	EN 61000-4-6	Pass	---
EN 301489-1 Clause 9.7	Voltage dips and interruptions	EN 61000-4-11	Pass	---

4. Conducted Emission

4.1. Limit of Conducted Emission

Limits of conducted emission for AC mains power input/output ports				
Frequency range MHz	Limits dB(μV)			
	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	
Limits of conducted emission for telecommunication ports				
Frequency range MHz	Voltage Limits dB(μV)		Current limits dB(μA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 to 0.50	84 to 74	74 to 64	40 to 30	30 to 20
0.50 to 30	74	64	30	20

4.2. Test Setup



4.3. Test Procedure

The receiver or associated equipment under measurement and the artificial mains network are disposed as shown in 3.2. Measurements shall be carried out using a selective voltmeter having a quasi-peak detector for broadband measurements and an average detector for narrow-band measurements in accordance with CISPR 16-1.

The mains lead shall be arranged to follow the shortest possible path between the receiver and artificial mains network on the ground. The mains lead in excess of 0,8 m separating the equipment under test from the artificial mains network shall be folded back and forth parallel to the lead so as to form a bundle with a length of 0,3 m to 0,4 m.

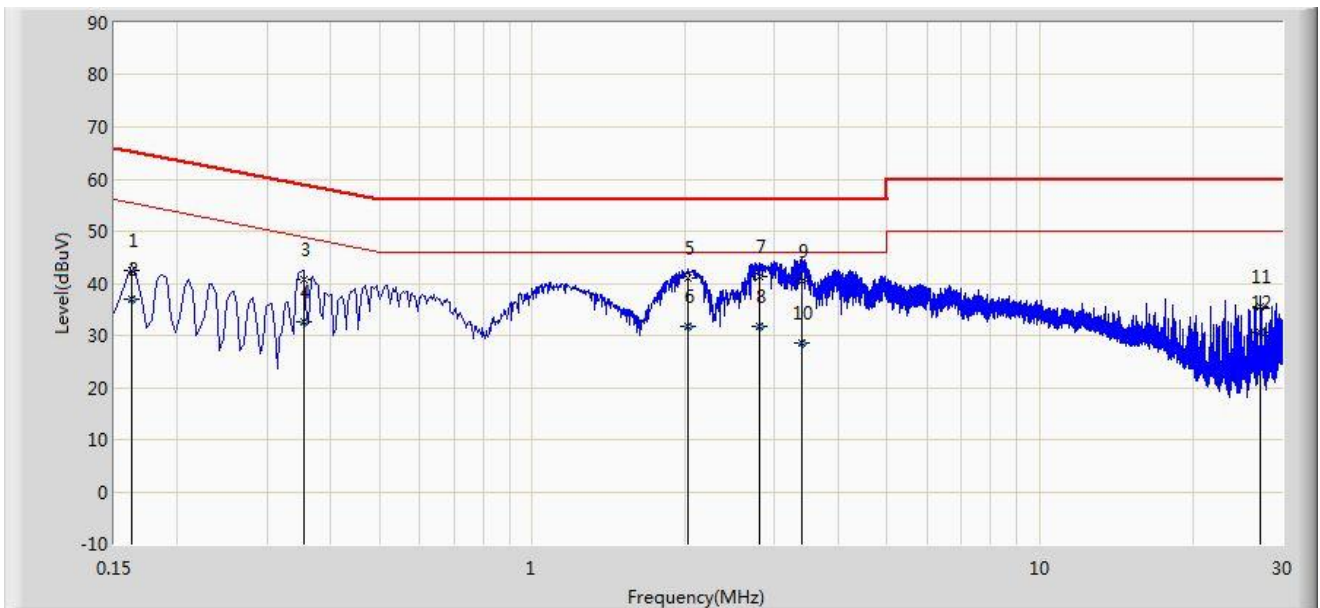
Earthing of the equipment under test if provided with a safety earth connection, shall be made to the earth terminal provided on the artificial mains network with the shortest possible lead.

If the equipment under test has a coaxial RF input connector, tests shall be performed with and without an earth connection made to the outer conductor screen of the coaxial RF input connector. When these tests are being carried out, no other earth connections shall be made to any additional earth terminal whatever.

If the equipment under test has no coaxial RF input connector and if it has an earth terminal, tests shall be performed with this terminal earthed.

4.4. Test Result

Engineer: Milo Li	
Site: SR2	Time: 2014/08/09 - 19:51
Limit: EN55022_CE_Mains_ClassB	Margin: 0
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.162	42.570	32.473	-22.790	65.361	10.097	QP
2			0.162	36.908	26.811	-18.453	55.361	10.097	AV
3			0.354	40.710	30.663	-18.158	58.868	10.048	QP
4			0.354	32.666	22.618	-16.202	48.868	10.048	AV
5			2.022	40.884	31.014	-15.116	56.000	9.871	QP
6			2.022	31.614	21.744	-14.386	46.000	9.871	AV
7			2.806	41.223	31.376	-14.777	56.000	9.848	QP
8			2.806	31.822	21.974	-14.178	46.000	9.848	AV
9			3.390	40.367	30.468	-15.633	56.000	9.899	QP
10			3.390	28.649	18.750	-17.351	46.000	9.899	AV
11			27.158	35.525	25.278	-24.475	60.000	10.247	QP
12			27.158	30.541	20.294	-19.459	50.000	10.247	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Engineer: Milo Li

Site: SR2

Time: 2014/08/09 - 19:55

Limit: EN55022_CE_Mains_ClassB

Margin: 0

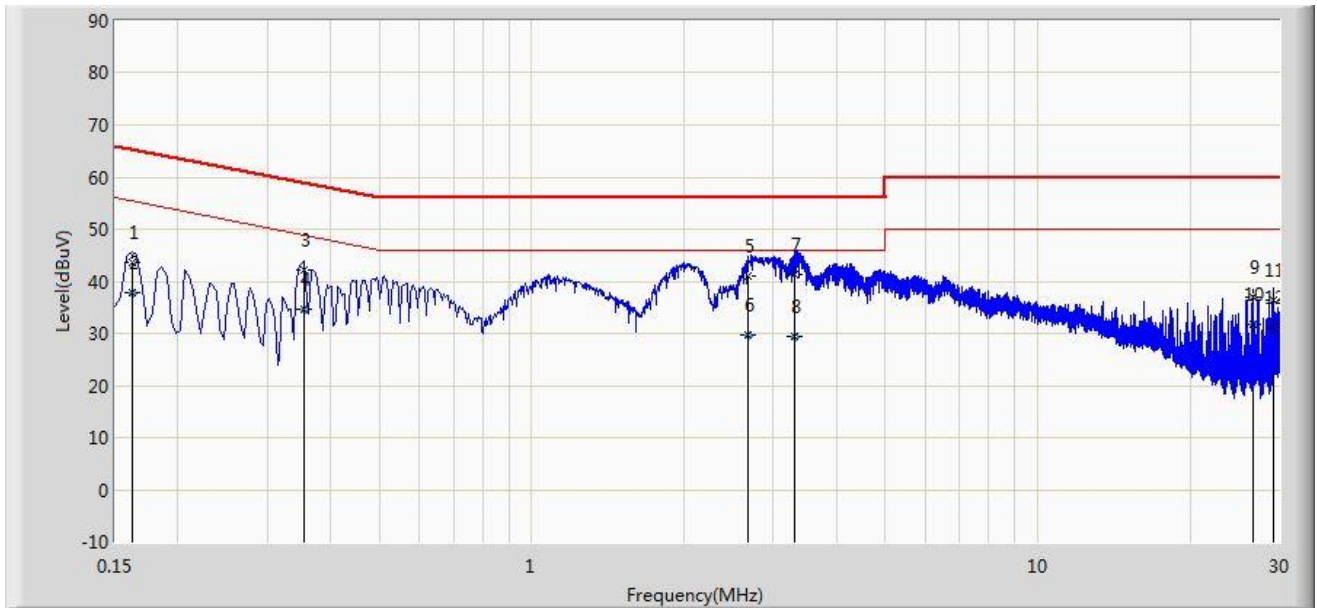
Probe: ENV216_101683_Filter On

Polarity: Neutral

EUT: WIRELESS ACCESS POINT

Power: AC 230V/50Hz

Note: Mode 1

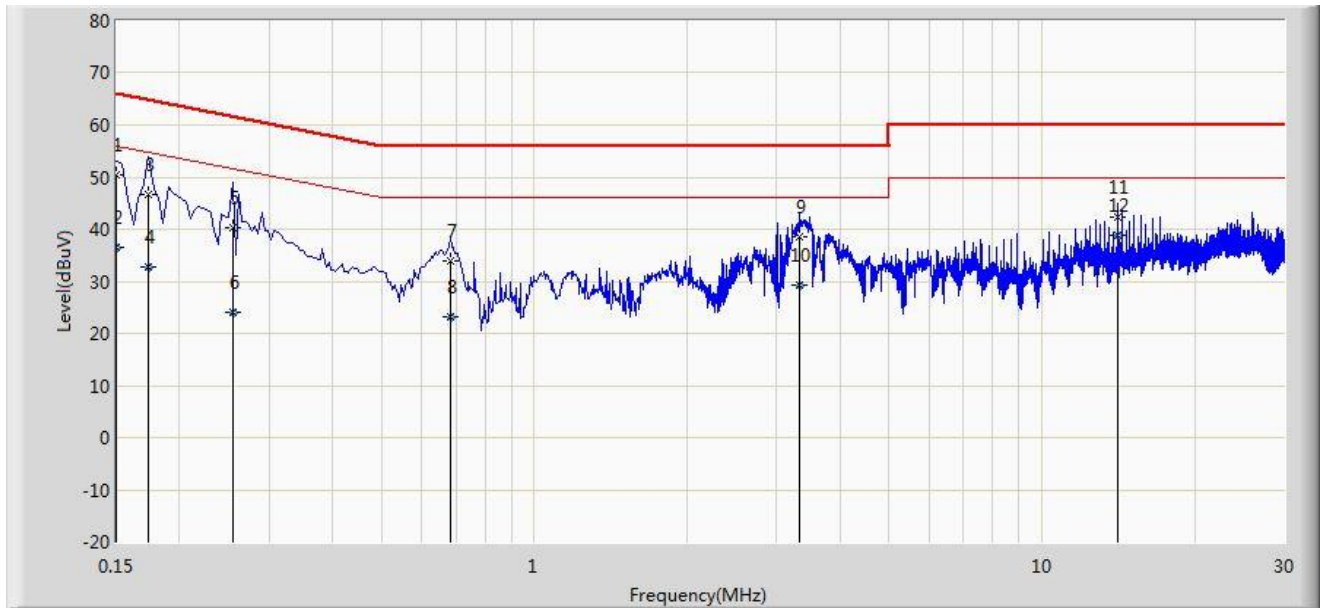


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.162	43.578	33.500	-21.782	65.361	10.078	QP
2			0.162	37.789	27.711	-17.572	55.361	10.078	AV
3			0.354	42.277	32.199	-16.591	58.868	10.078	QP
4			0.354	34.594	24.516	-14.274	48.868	10.078	AV
5			2.682	41.147	31.291	-14.853	56.000	9.856	QP
6			2.682	29.743	19.888	-16.257	46.000	9.856	AV
7			3.310	41.239	31.340	-14.761	56.000	9.899	QP
8			3.310	29.473	19.574	-16.527	46.000	9.899	AV
9			26.610	36.829	26.469	-23.171	60.000	10.360	QP
10			26.610	31.796	21.436	-18.204	50.000	10.360	AV
11			29.234	36.365	25.936	-23.635	60.000	10.429	QP
12			29.234	31.194	20.765	-18.806	50.000	10.429	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Engineer: Milo Li	
Site: SR2	Time: 2014/08/14 - 11:50
Limit: EN55022_CE_Mains_ClassB	Margin: 0
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 2	

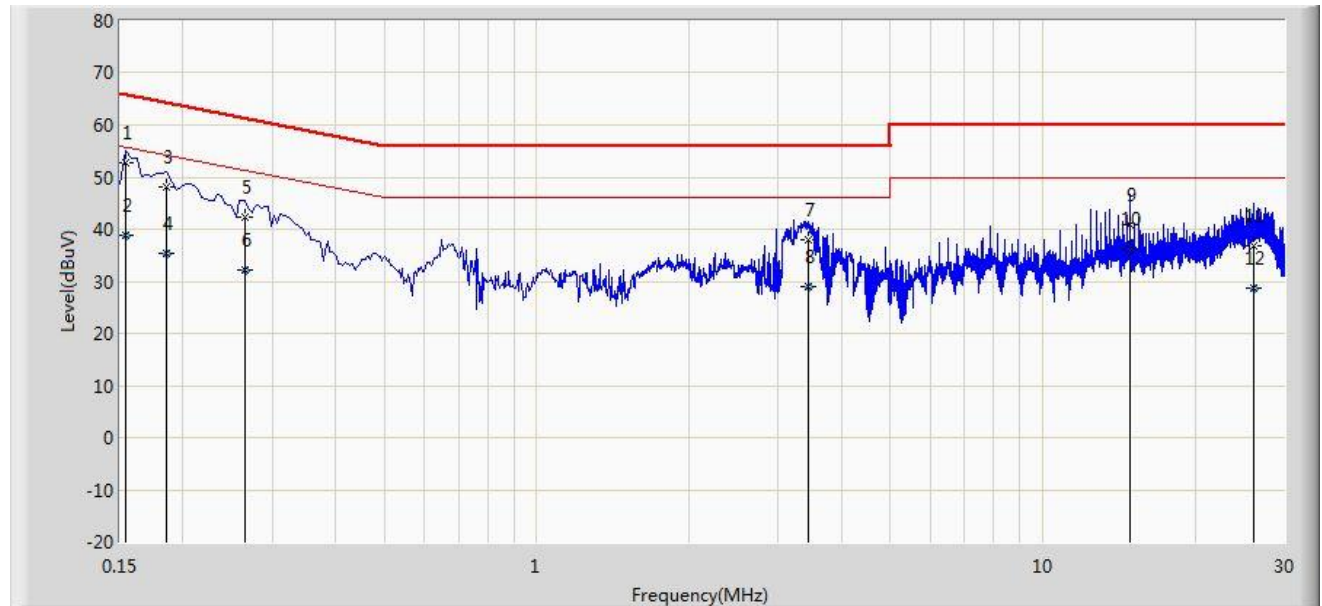


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.150	50.334	39.165	-15.666	66.000	11.168	QP
2			0.150	36.522	25.354	-19.478	56.000	11.168	AV
3			0.174	46.691	36.623	-18.076	64.767	10.068	QP
4			0.174	32.758	22.690	-22.009	54.767	10.068	AV
5			0.254	40.295	30.328	-21.330	61.625	9.967	QP
6			0.254	24.149	14.181	-27.477	51.625	9.967	AV
7			0.682	33.824	23.751	-22.176	56.000	10.072	QP
8			0.682	23.114	13.041	-22.886	46.000	10.072	AV
9			3.338	38.680	28.784	-17.320	56.000	9.896	QP
10			3.338	29.389	19.493	-16.611	46.000	9.896	AV
11			14.094	42.218	32.157	-17.782	60.000	10.062	QP
12			14.094	38.858	28.796	-11.142	50.000	10.062	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Engineer: Milo Li	
Site: SR2	Time: 2014/08/14 - 11:55
Limit: EN55022_CE_Mains_ClassB	Margin: 0
Probe: ENV216_101683_Filter On	Polarity: Neutral
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 2	

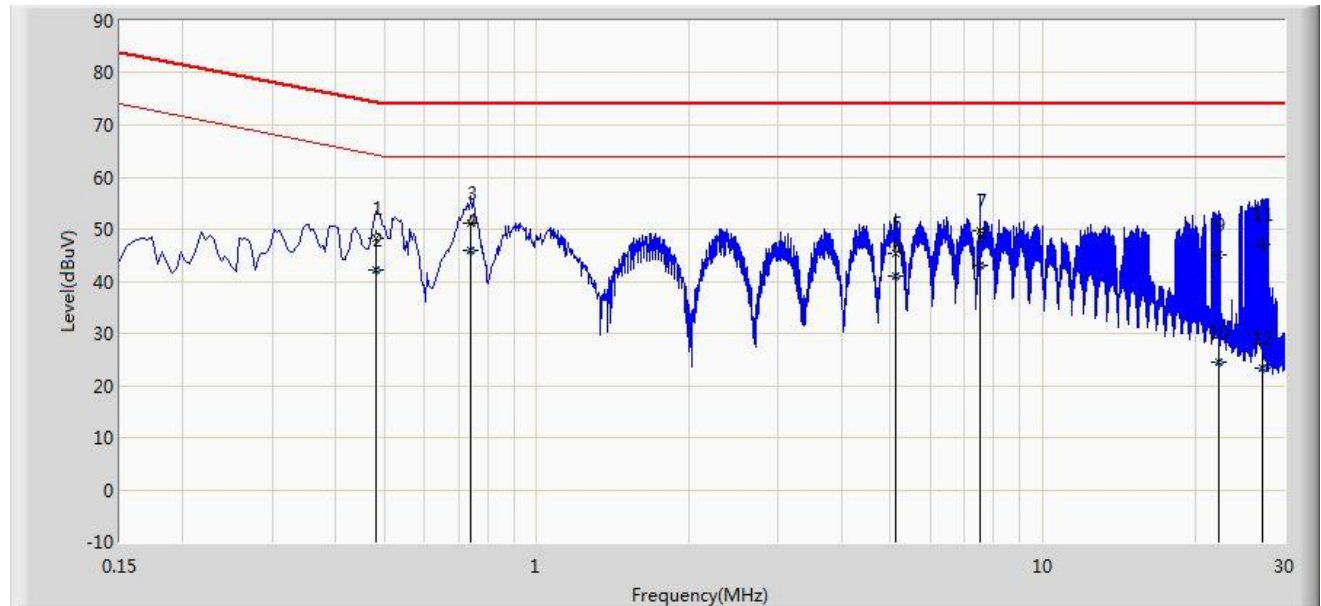


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.154	52.655	41.939	-13.126	65.781	10.716	QP
2			0.154	38.828	28.112	-16.954	55.781	10.716	AV
3			0.186	48.121	38.086	-16.092	64.213	10.035	QP
4			0.186	35.405	25.370	-18.808	54.213	10.035	AV
5			0.266	42.434	32.422	-18.807	61.242	10.013	QP
6			0.266	32.081	22.068	-19.161	51.242	10.013	AV
7			3.430	38.043	28.135	-17.957	56.000	9.908	QP
8			3.430	29.114	19.206	-16.886	46.000	9.908	AV
9			14.906	40.938	30.832	-19.062	60.000	10.106	QP
10			14.906	36.217	26.111	-13.783	50.000	10.106	AV
11			26.122	36.772	26.434	-23.228	60.000	10.338	QP
12			26.122	28.708	18.370	-21.292	50.000	10.338	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).

Engineer: Milo Li	
Site: SR2	Time: 2014/08/14 - 19:28
Limit: EN55022_CE_ISN(Voltage)_Class B	Margin: 0
Probe: TESEQ-ISN-T800-Cat 5_24811	Polarity:
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1: LAN-10Mbps	

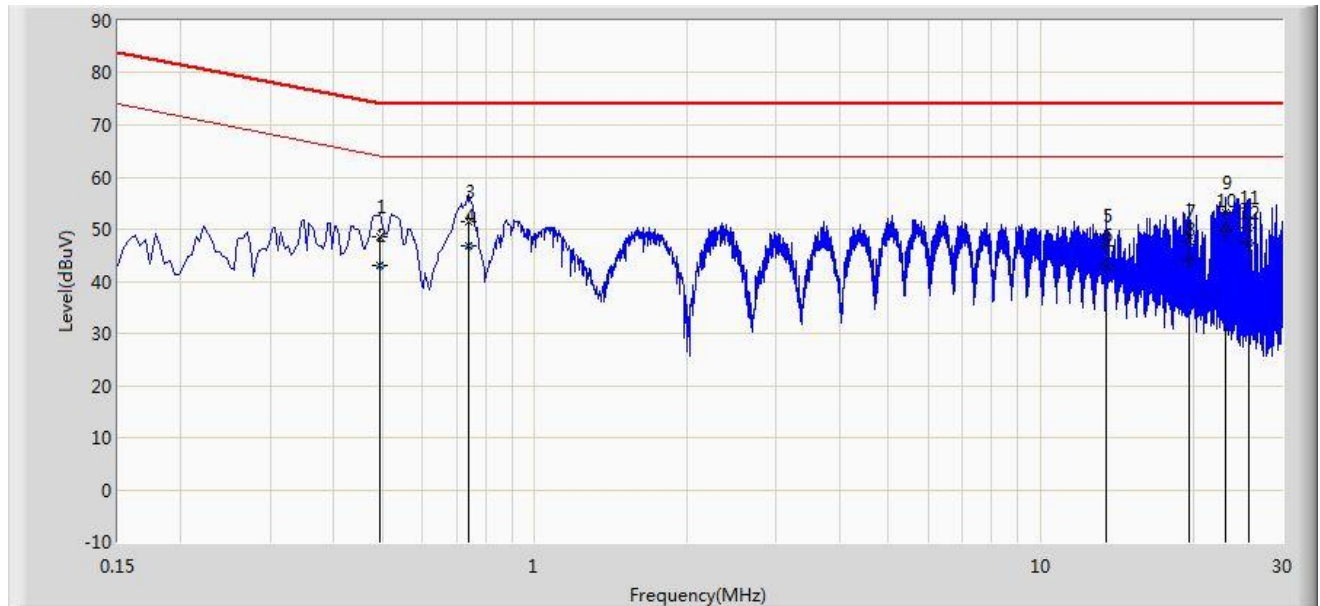


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.482	48.266	38.512	-26.038	74.305	9.755	QP
2			0.482	42.273	32.519	-22.031	64.305	9.755	AV
3			0.742	51.222	41.514	-22.778	74.000	9.708	QP
4			0.742	46.038	36.330	-17.962	64.000	9.708	AV
5		*	5.118	45.504	35.646	-28.496	74.000	9.858	QP
6			5.118	41.134	31.277	-22.866	64.000	9.858	AV
7			7.498	49.624	39.664	-24.376	74.000	9.960	QP
8			7.498	43.125	33.165	-20.875	64.000	9.960	AV
9			22.250	45.201	35.011	-28.799	74.000	10.189	QP
10			22.250	24.634	14.445	-39.366	64.000	10.189	AV
11			27.074	47.182	36.678	-26.818	74.000	10.504	QP
12			27.074	23.237	12.733	-40.763	64.000	10.504	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + ISN Factor (dB).

Engineer: Milo Li	
Site: SR2	Time: 2014/08/14 - 19:22
Limit: EN55022_CE_ISN(Voltage)_Class B	Margin: 0
Probe: TESEQ-ISN-T800-Cat 5_24811	Polarity:
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1: LAN-100Mbps	

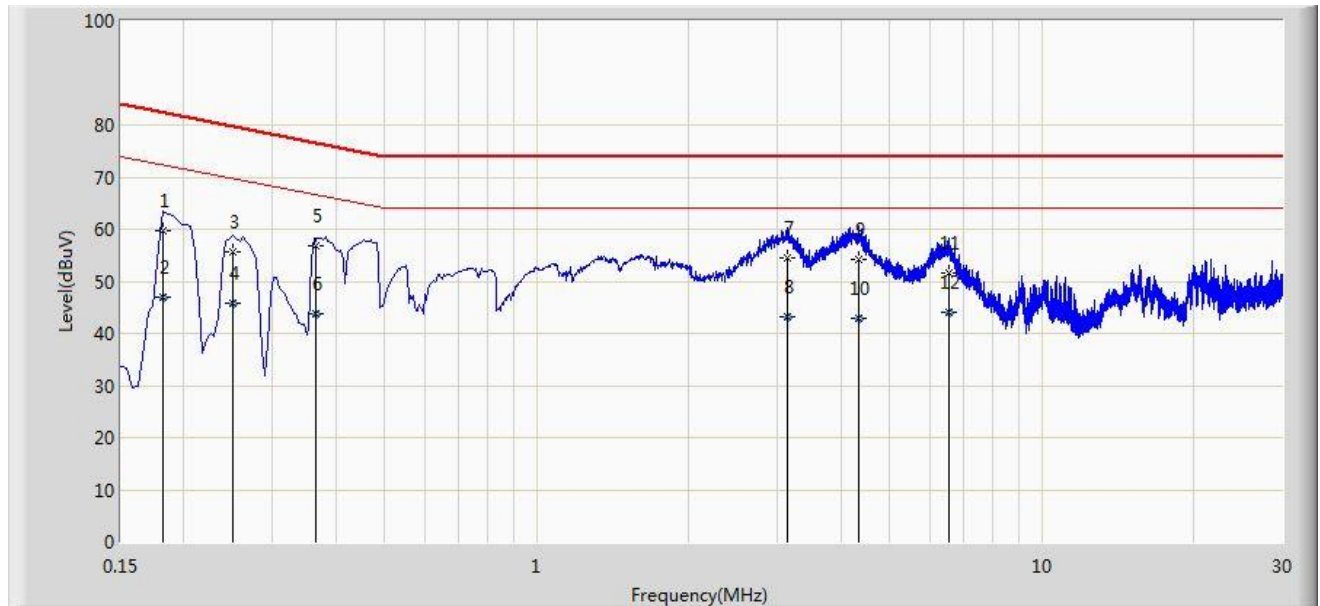


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.494	48.497	38.746	-25.604	74.100	9.750	QP
2			0.494	43.111	33.361	-20.989	64.100	9.750	AV
3			0.738	51.546	41.837	-22.454	74.000	9.709	QP
4			0.738	46.727	37.019	-17.273	64.000	9.709	AV
5		*	13.482	46.727	36.878	-27.273	74.000	9.849	QP
6			13.482	42.996	33.147	-21.004	64.000	9.849	AV
7			19.586	47.695	37.653	-26.305	74.000	10.042	QP
8			19.586	44.099	34.057	-19.901	64.000	10.042	AV
9			23.126	53.246	42.992	-20.754	74.000	10.254	QP
10			23.126	49.853	39.600	-14.147	64.000	10.254	AV
11			25.694	50.408	40.001	-23.592	74.000	10.406	QP
12			25.694	47.397	36.990	-16.603	64.000	10.406	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + ISN Factor (dB).

Engineer: Milo Li	
Site: SR2	Time: 2014/08/14 - 19:16
Limit: EN55022_CE_ISN(Voltage)_Class B	Margin: 0
Probe: TESEQ-ISN-T800-Cat 5_24811	Polarity:
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1: LAN-1000Mbps	

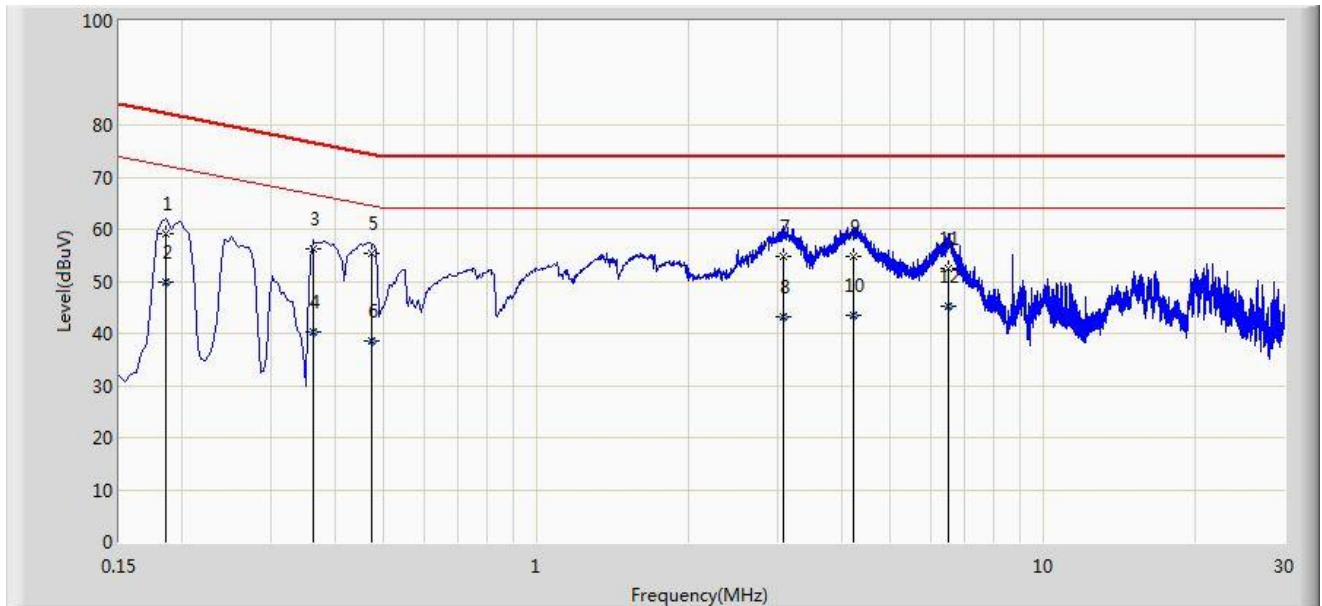


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.182	59.594	49.533	-22.800	82.394	10.061	QP
2		*	0.182	46.879	36.818	-25.515	72.394	10.061	AV
3			0.250	55.676	45.745	-24.081	79.757	9.931	QP
4			0.250	45.751	35.820	-24.006	69.757	9.931	AV
5			0.366	56.682	46.878	-19.909	76.591	9.805	QP
6			0.366	43.650	33.845	-22.941	66.591	9.805	AV
7			3.130	54.520	44.895	-19.480	74.000	9.625	QP
8			3.130	43.187	33.562	-20.813	64.000	9.625	AV
9			4.338	54.200	44.425	-19.800	74.000	9.775	QP
10			4.338	43.042	33.268	-20.958	64.000	9.775	AV
11			6.566	51.498	41.559	-22.502	74.000	9.938	QP
12			6.566	44.065	34.126	-19.935	64.000	9.938	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + ISN Factor (dB).

Engineer: Milo Li	
Site: SR2	Time: 2014/08/14 - 18:37
Limit: EN55022_CE_ISN(Voltage)_Class B	Margin: 0
Probe: TESEQ-ISN-T800-Cat 5_24811	Polarity:
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 2: LAN-10Mbps	

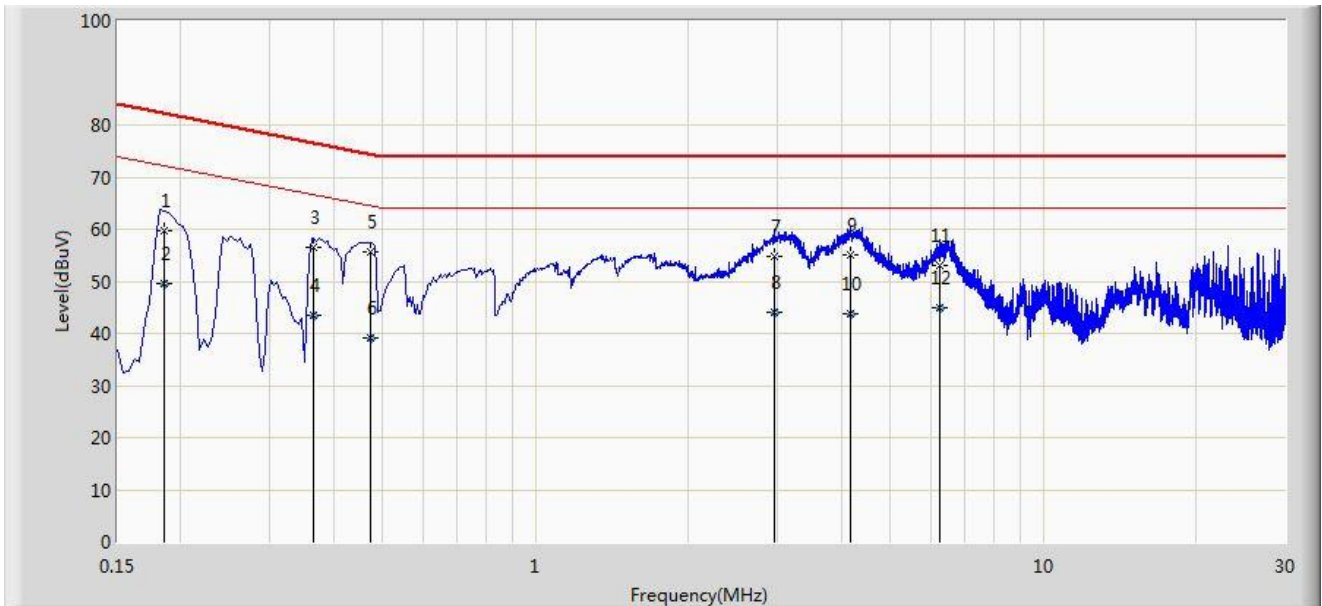


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.186	59.246	49.192	-22.968	82.213	10.053	QP
2			0.186	49.713	39.660	-22.500	72.213	10.053	AV
3		*	0.362	56.169	46.363	-20.513	76.682	9.807	QP
4			0.362	40.412	30.605	-26.271	66.682	9.807	AV
5			0.474	55.423	45.665	-19.020	74.444	9.758	QP
6			0.474	38.508	28.750	-25.936	64.444	9.758	AV
7			3.070	54.691	45.064	-19.309	74.000	9.627	QP
8			3.070	43.199	33.572	-20.801	64.000	9.627	AV
9			4.226	54.708	44.939	-19.292	74.000	9.769	QP
10			4.226	43.550	33.780	-20.450	64.000	9.769	AV
11			6.530	52.468	42.538	-21.532	74.000	9.931	QP
12			6.530	45.108	35.178	-18.892	64.000	9.931	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + ISN Factor (dB).

Engineer: Milo Li	
Site: SR2	Time: 2014/08/14 - 18:44
Limit: EN5022_CE_ISN(Voltage)_Class B	Margin: 0
Probe: TESEQ-ISN-T800-Cat 5_24811	Polarity:
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 2: LAN-100Mbps	

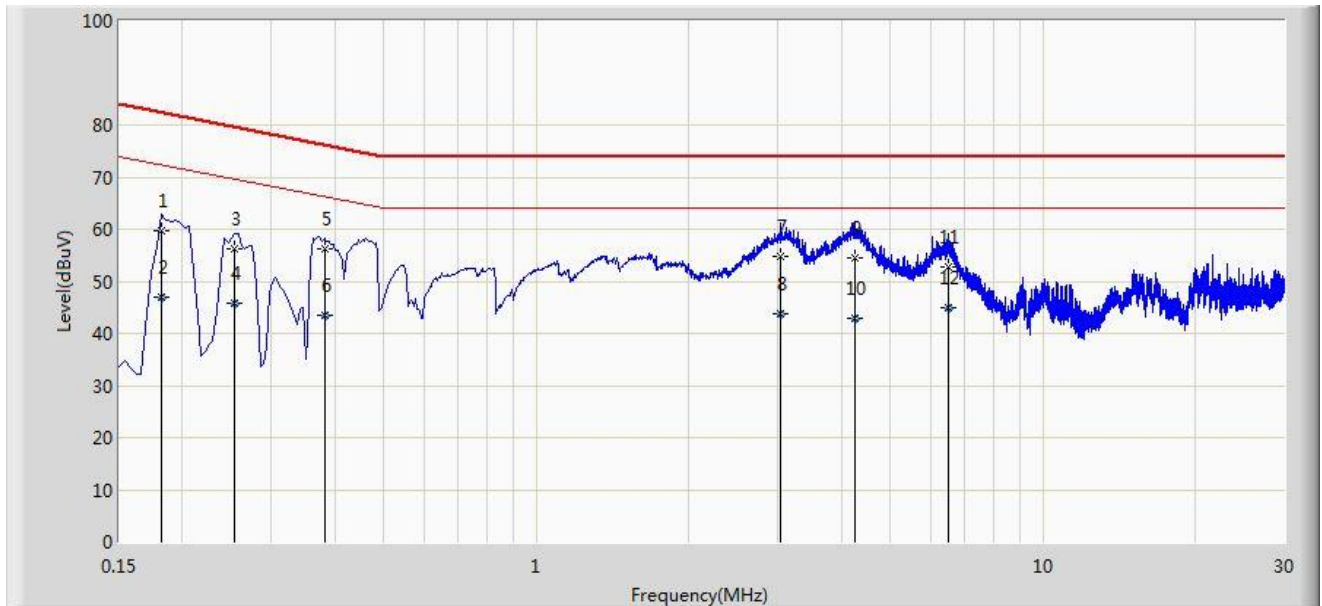


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.186	59.589	49.536	-22.624	82.213	10.053	QP
2			0.186	49.704	39.651	-22.509	72.213	10.053	AV
3			0.366	56.488	46.683	-20.103	76.591	9.805	QP
4			0.366	43.496	33.691	-23.095	66.591	9.805	AV
5			0.474	55.689	45.931	-18.755	74.444	9.758	QP
6			0.474	39.218	29.460	-25.226	64.444	9.758	AV
7			2.958	54.908	45.287	-19.092	74.000	9.622	QP
8			2.958	44.033	34.411	-19.967	64.000	9.622	AV
9			4.166	55.206	45.441	-18.794	74.000	9.765	QP
10			4.166	43.733	33.968	-20.267	64.000	9.765	AV
11			6.274	52.918	42.990	-21.082	74.000	9.928	QP
12			6.274	44.948	35.020	-19.052	64.000	9.928	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + ISN Factor (dB).

Engineer: Milo Li	
Site: SR2	Time: 2014/08/14 - 19:04
Limit: EN55022_CE_ISN(Voltage)_Class B	Margin: 0
Probe: TESEQ-ISN-T800-Cat 5_24811	Polarity:
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 2: LAN-1000Mbps	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.182	59.854	49.793	-22.540	82.394	10.061	QP
2		*	0.182	47.073	37.012	-25.321	72.394	10.061	AV
3			0.254	56.100	46.177	-23.526	79.625	9.923	QP
4			0.254	45.883	35.960	-23.742	69.625	9.923	AV
5			0.382	56.306	46.508	-19.930	76.236	9.798	QP
6			0.382	43.398	33.600	-22.838	66.236	9.798	AV
7			3.034	54.659	45.030	-19.341	74.000	9.628	QP
8			3.034	43.720	34.092	-20.280	64.000	9.628	AV
9			4.270	54.594	44.822	-19.406	74.000	9.772	QP
10			4.270	42.835	33.063	-21.165	64.000	9.772	AV
11			6.522	52.738	42.809	-21.262	74.000	9.929	QP
12			6.522	44.918	34.989	-19.082	64.000	9.929	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + ISN Factor (dB).

4.5. Test Photograph

Test Mode: Mode 1

Description: Front View Conducted Emission Test Setup for Main Port



Test Mode: Mode 1

Description: Back View Conducted Emission Test Setup for Main Port



Test Mode: Mode 2

Description: Front View Conducted Emission Test Setup for Main Port



Test Mode: Mode 2

Description: Back View Conducted Emission Test Setup for Main Port



Test Mode: Mode 1

Description: Front View Conducted Emission Test Setup for Signal Port



Test Mode: Mode 1

Description: Back View Conducted Emission Test Setup for Signal Port



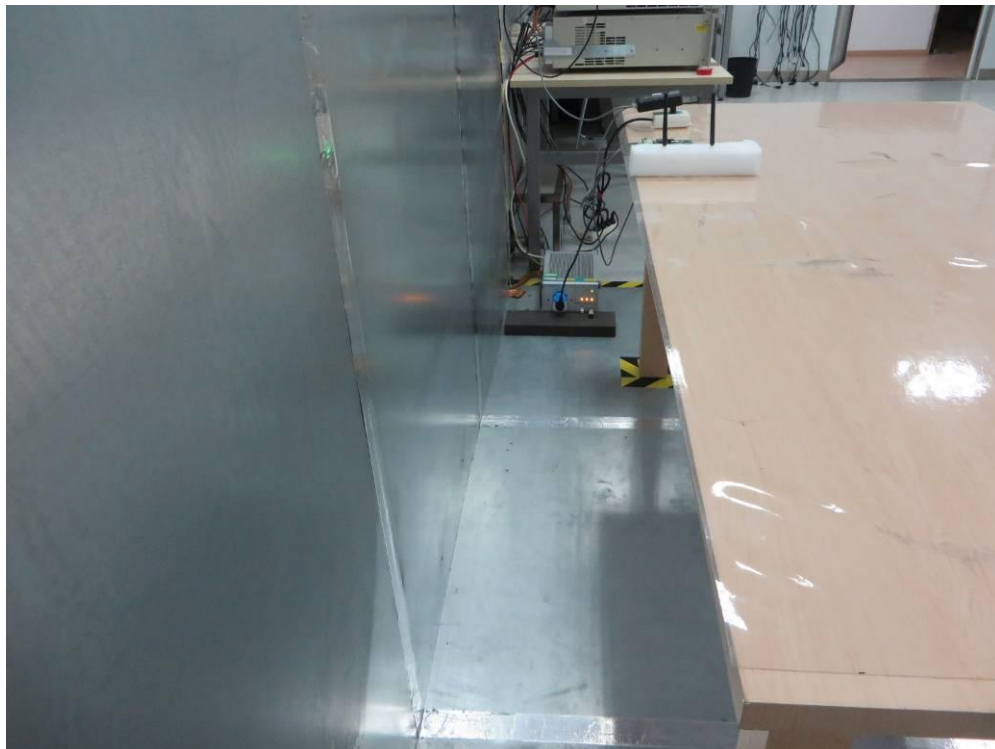
Test Mode: Mode 2

Description: Front View Conducted Emission Test Setup for Signal Port



Test Mode: Mode 2

Description: Back View Conducted Emission Test Setup for Signal Port



5. Radiated Emission

5.1. Limit of Radiated Emission

Frequency range MHz	Quasi-peak limits dB(μ V/m)
30 to 230	40
230 to 1000	47

Note 1: The lower limit shall apply at the transition frequency.

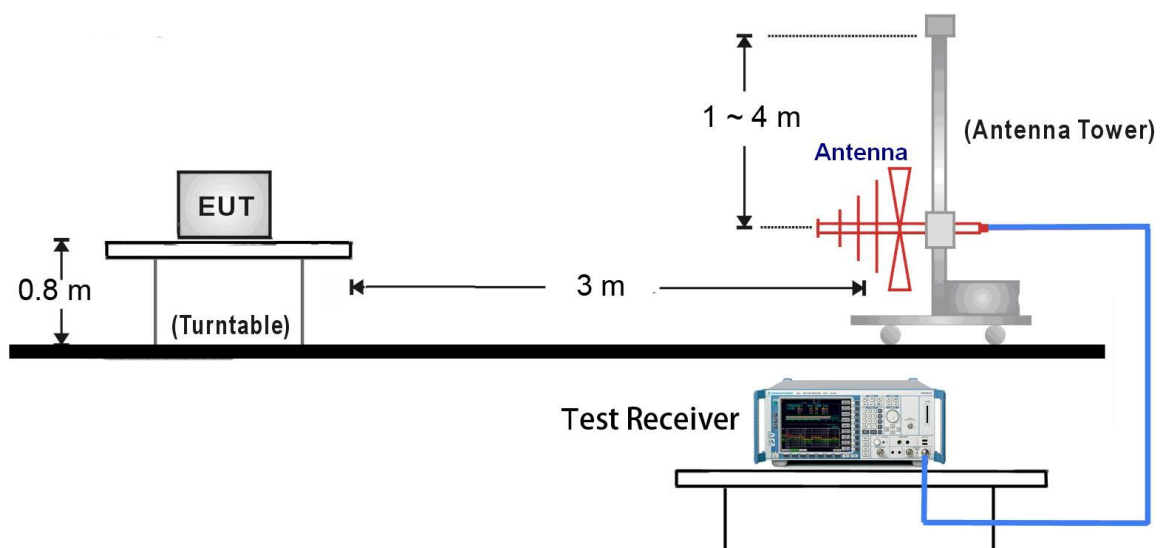
Note 2: Additional provisions may be required for cases where interference occurs.

Frequency range GHz	Average limit dB(μ V/m)	Peak limit dB(μ V/m)
1 to 3	50	70
3 to 6	54	74

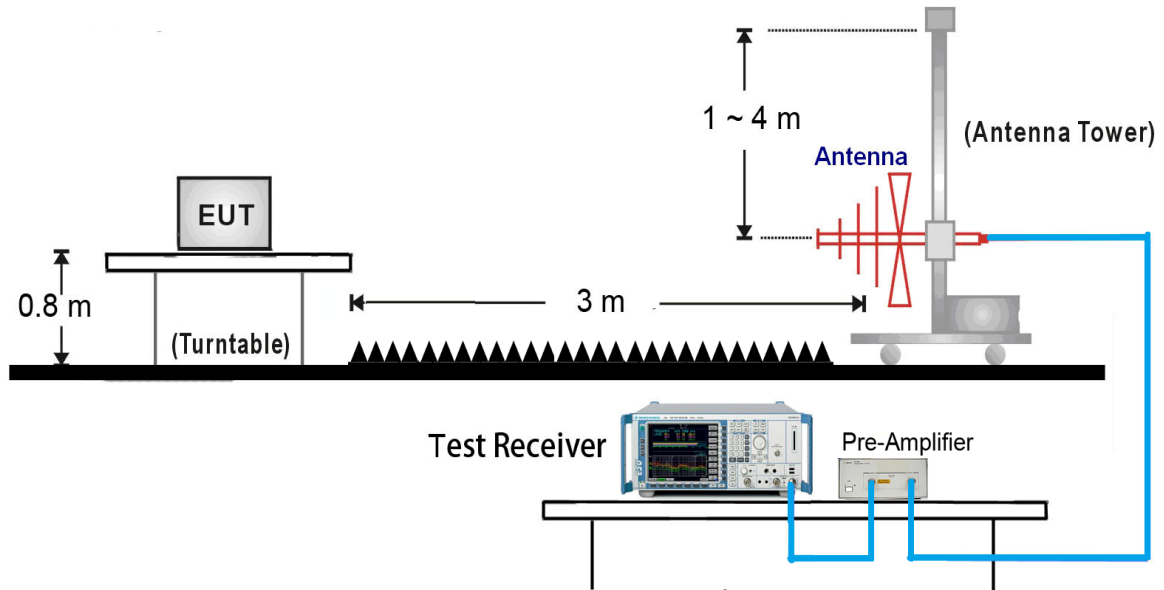
Note: The lower limit applies at the transition frequency.

5.2. Test Setup

30 MHz ~ 1000 MHz



1000 MHz ~ 6000 MHz



5.3. Test Procedure

Starting with the front of the receiver under test facing the measuring antenna, the measuring antenna is adjusted for horizontal polarization measurement and its height varied between 1 m and 4 m until the maximum reading is obtained.

The receiver under test is then rotated about its centre until the maximum meter reading is obtained, after which the measuring antenna height is again varied between 1 m and 4 m and the maximum reading noted.

The procedure is repeated for vertical polarization of the measuring antenna.

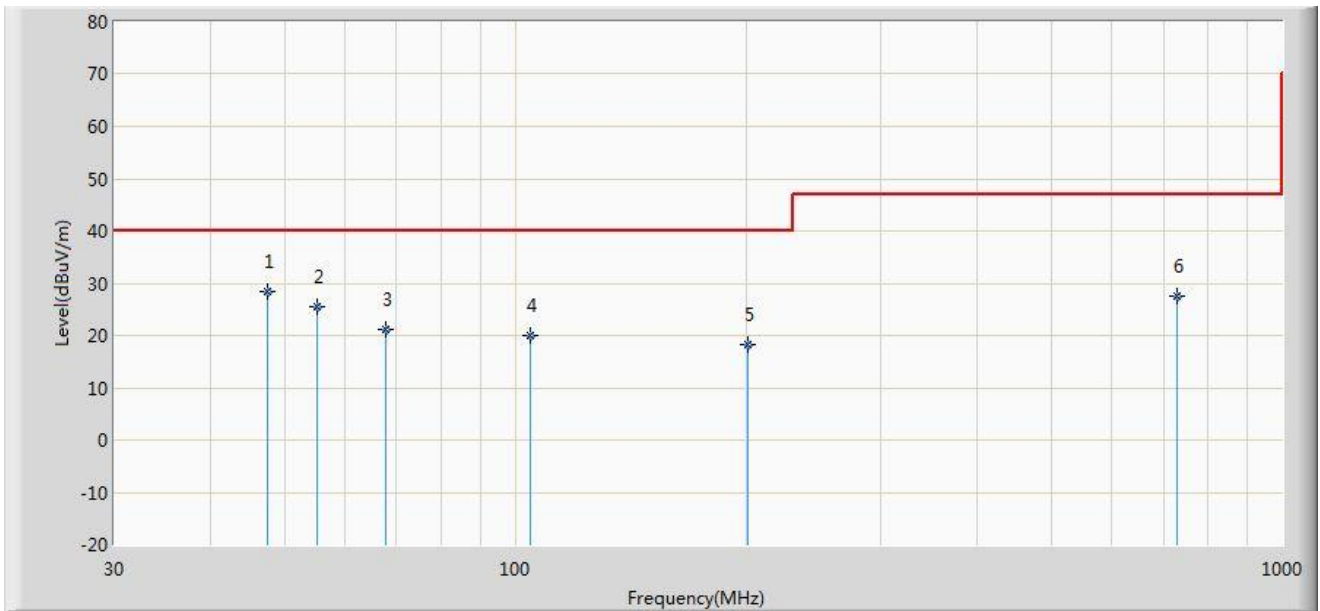
The highest value found, following this procedure, is defined as the radiation figure of the receiver.

If at certain frequencies the ambient signal field strength is high at the position of the receiving antenna, one of the following methods may be used to show compliance of the equipment under test.

- a) For small frequency bands with high ambient signals, the disturbance value may be interpolated from the adjacent values. The interpolated value shall lie on the curve describing a continuous function of the disturbance values adjacent to the ambient noise.
- b) Another possibility is to use the method described in annex C of CISPR 11.

5.4. Test Result

Engineer: Roy Cheng	
Site: AC1	Time: 2014/08/16 - 19:27
Limit: EN55022_RE(3m)_Class B	Margin: 0
Probe: VULB9162_0.03-8GHz	Polarity: Horizontal
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1	

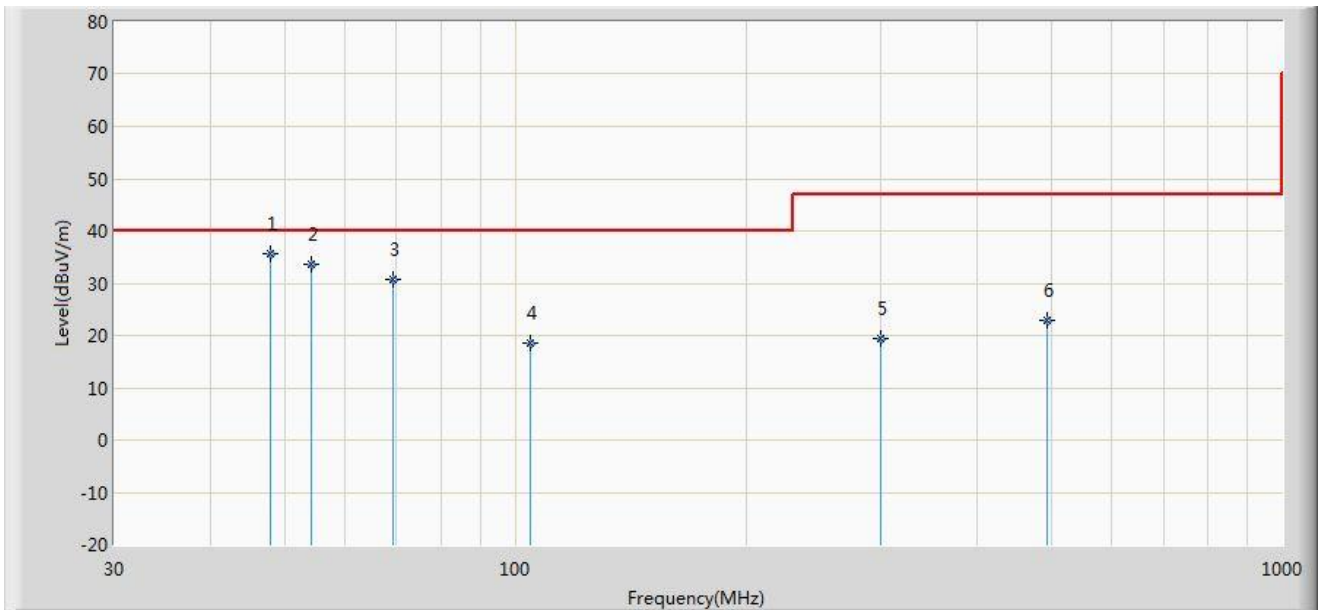


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			47.456	28.340	13.540	-11.660	40.000	14.800	QP
2			55.220	25.492	11.025	-14.508	40.000	14.467	QP
3			67.830	21.249	9.846	-18.751	40.000	11.403	QP
4			104.680	19.881	7.021	-20.119	40.000	12.860	QP
5		*	201.205	18.261	6.320	-21.739	40.000	11.941	QP
6			729.370	27.626	6.350	-19.374	47.000	21.276	QP

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Engineer: Roy Cheng	
Site: AC1	Time: 2014/08/16 - 19:27
Limit: EN55022_RE(3m)_Class B	Margin: 0
Probe: VULB9162_0.03-8GHz	Polarity: Vertical
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1	

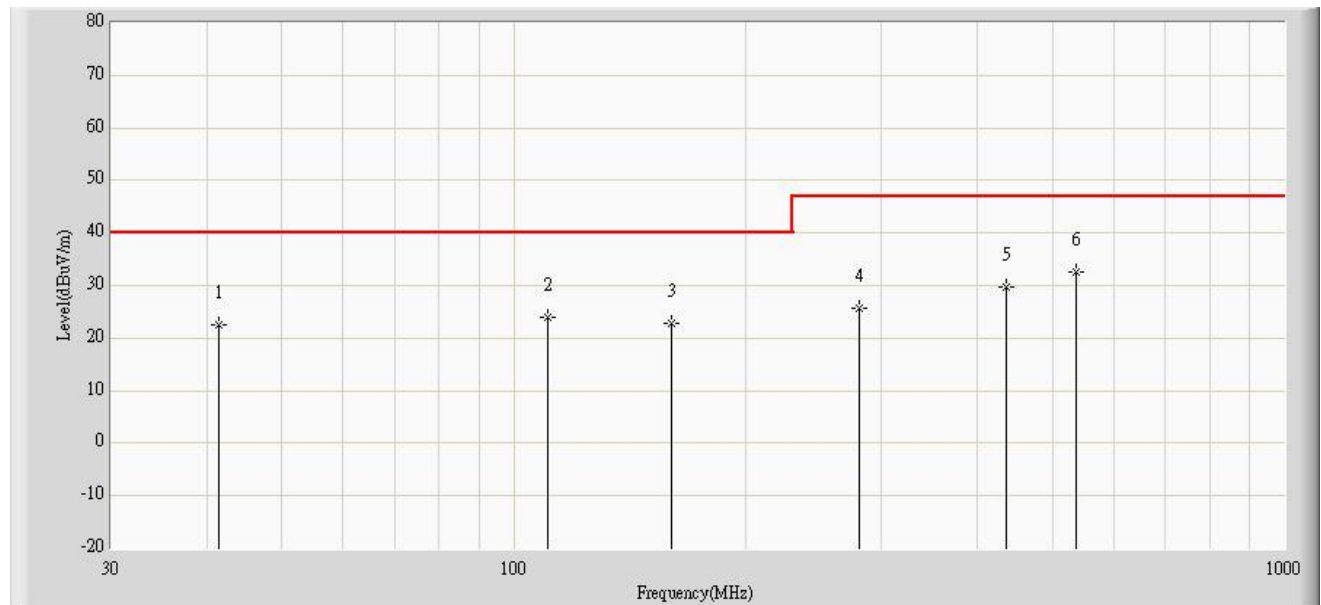


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			47.882	35.692	20.900	-4.308	40.000	14.792	QP
2			54.250	33.577	18.952	-6.423	40.000	14.625	QP
3			69.285	30.868	19.950	-9.132	40.000	10.918	QP
4			104.660	18.542	5.681	-21.458	40.000	12.861	QP
5		*	300.145	19.483	5.355	-27.517	47.000	14.128	QP
6			493.660	22.998	5.365	-24.002	47.000	17.633	QP

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Engineer: Roy Cheng	
Site: AC1	Time: 2014/08/16 - 19:28
Limit: EN55022_RE(3m)_Class B	Margin: 0
Probe: VULB9162_0.03-8GHz	Polarity: Horizontal
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 2	

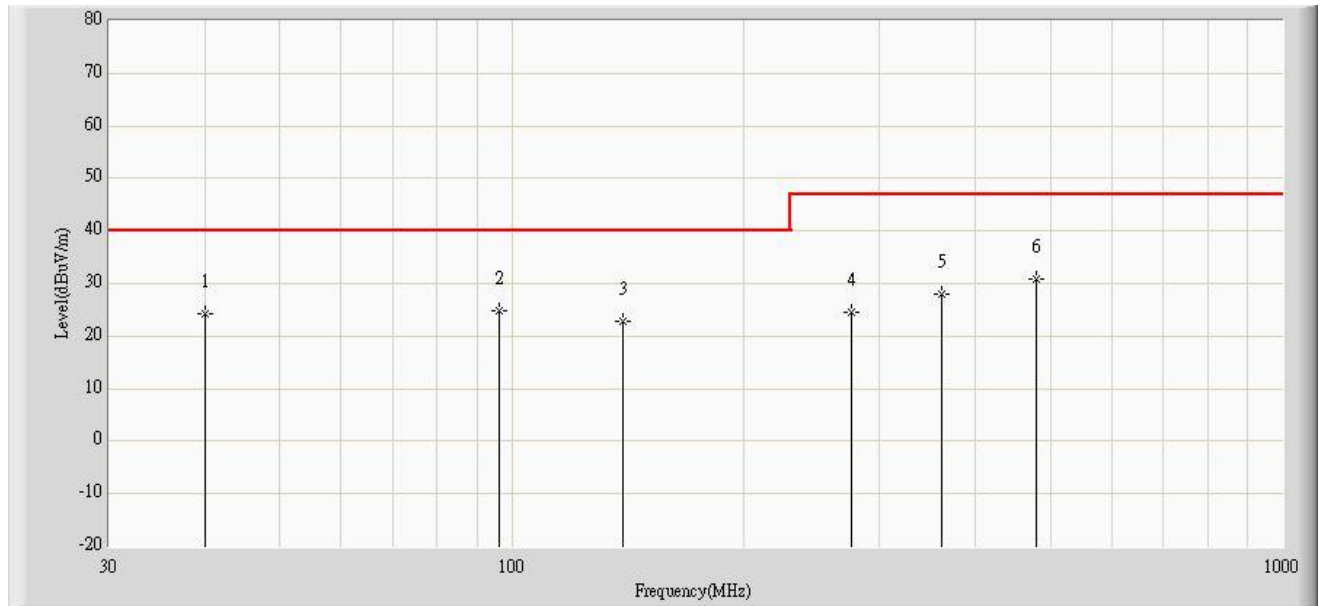


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			41.397	22.423	4.578	-17.577	40.000	17.845	QP
2			110.510	23.830	5.370	-16.170	40.000	18.460	QP
3			159.980	22.738	6.265	-17.262	40.000	16.473	QP
4			280.866	25.552	5.562	-21.448	47.000	19.990	QP
5			435.703	29.742	5.554	-17.258	47.000	24.188	QP
6		*	537.795	32.570	6.312	-14.430	47.000	26.258	QP

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Engineer: Roy Cheng	
Site: AC1	Time: 2014/08/16 - 19:28
Limit: EN55022_RE(3m)_Class B	Margin: 0
Probe: VULB9162_0.03-8GHz	Polarity: Vertical
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 2	

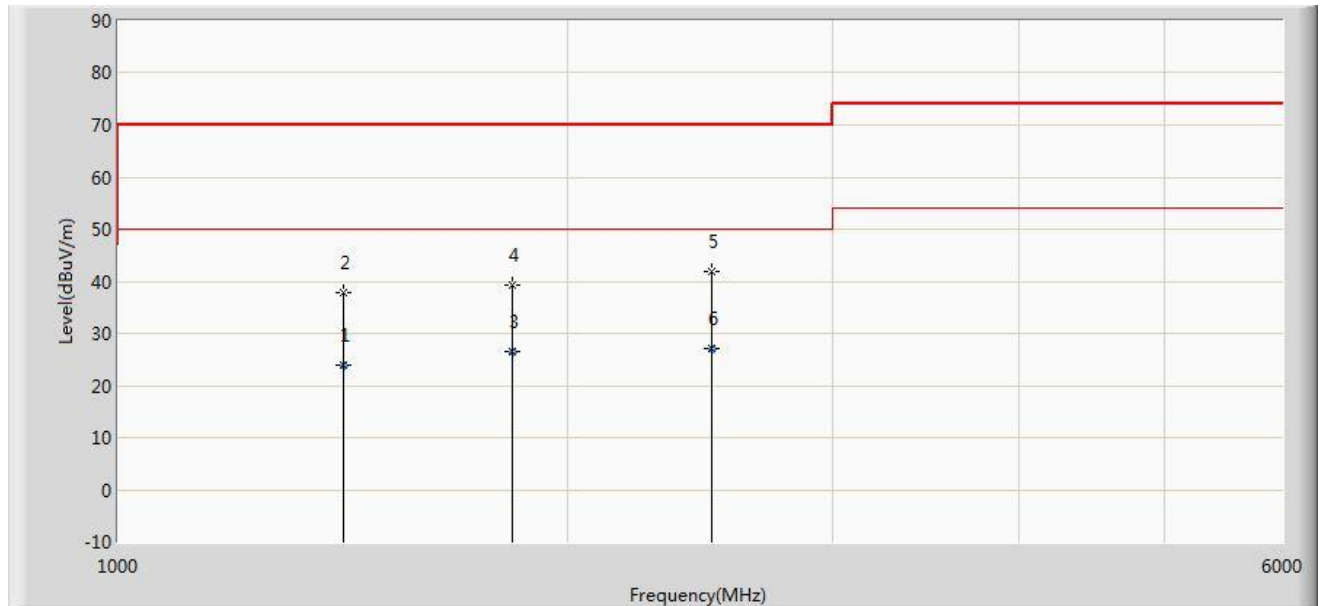


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	39.943	24.390	5.791	-15.610	40.000	18.599	QP
2			96.445	24.804	8.087	-15.196	40.000	16.717	QP
3			139.246	22.840	5.026	-17.160	40.000	17.814	QP
4			276.016	24.664	4.877	-22.336	47.000	19.786	QP
5			361.740	27.952	5.624	-19.048	47.000	22.328	QP
6			479.959	30.996	5.803	-16.004	47.000	25.194	QP

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Engineer: Milo Li	
Site: AC1	Time: 2014/08/16 - 14:51
Limit: EN55022_RE(3m)_Class B	Margin: 0
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1	

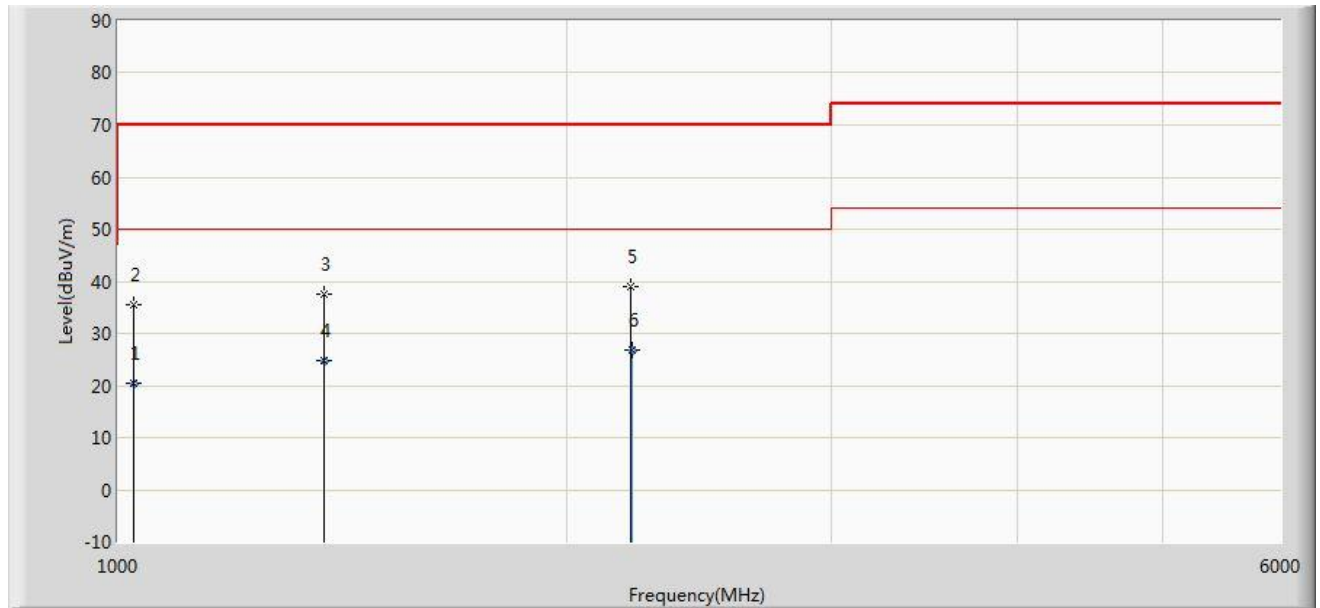


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			1416.350	23.857	25.365	-26.143	50.000	-1.508	AV
2			1416.500	37.963	39.471	-32.037	70.000	-1.508	PK
3			1836.440	26.573	26.355	-23.427	50.000	0.217	AV
4			1836.540	39.339	39.120	-30.661	70.000	0.219	PK
5			2496.000	41.881	39.200	-28.119	70.000	2.681	PK
6		*	2496.350	27.047	24.365	-22.953	50.000	2.681	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Engineer: Milo Li	
Site: AC1	Time: 2014/08/16 - 14:51
Limit: EN55022_RE(3m)_ClassB	Margin: 0
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 1	

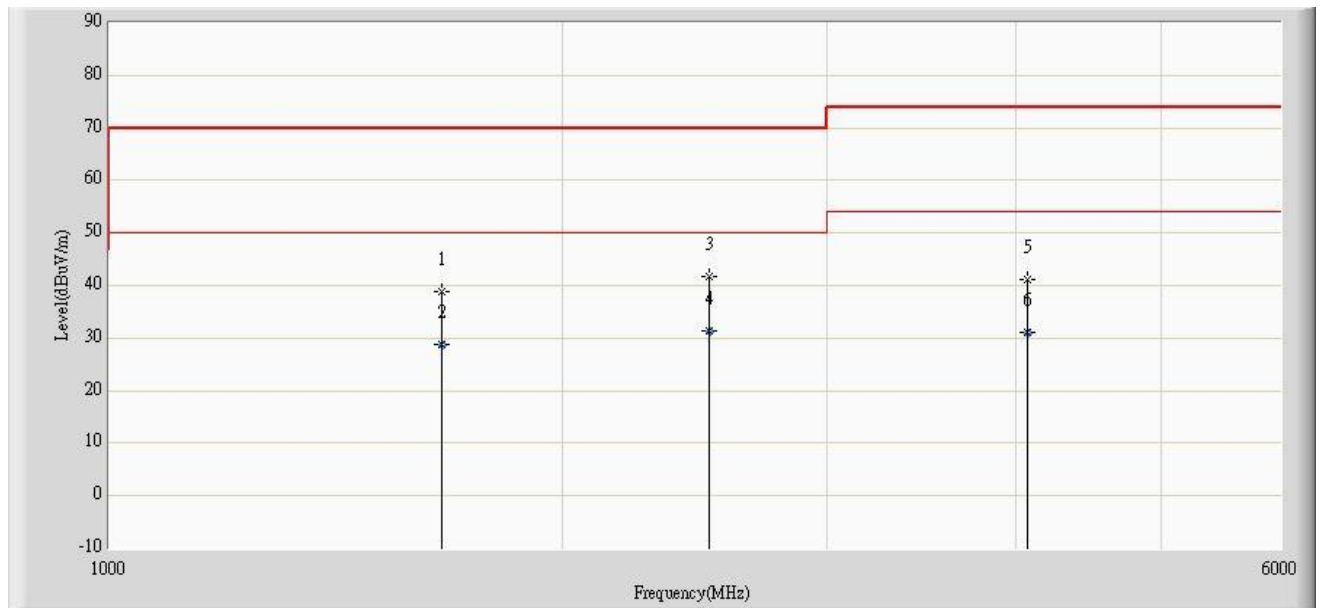


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			1024.250	20.411	23.650	-29.589	50.000	-3.240	AV
2			1024.350	35.416	38.655	-34.584	70.000	-3.240	PK
3			1374.000	37.419	38.876	-32.581	70.000	-1.457	PK
4			1374.500	24.891	26.350	-25.109	50.000	-1.458	AV
5			2207.000	39.086	36.041	-30.914	70.000	3.045	PK
6		*	2207.250	26.695	23.650	-23.305	50.000	3.046	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Engineer: Milo Li	
Site: AC1	Time: 2014/07/28 - 14:50
Limit: EN55022_RE(3m)_ClassB	Margin: 0
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 2	

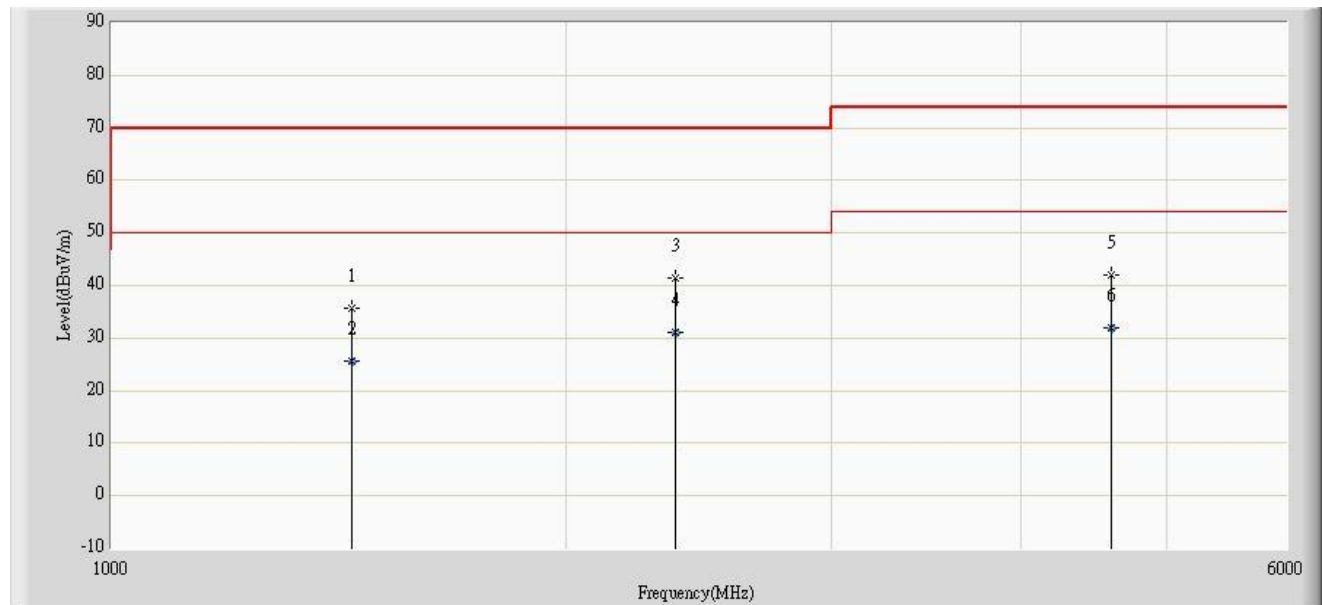


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			1662.500	38.711	52.626	-31.289	70.000	-13.916	PK
2			1662.500	28.795	42.711	-21.205	50.000	-13.916	AV
3			2505.000	41.645	51.605	-28.355	70.000	-9.960	PK
4			2505.000	31.384	41.344	-18.616	50.000	-9.960	AV
5			4077.500	41.147	49.955	-32.853	74.000	-8.807	PK
6		*	4077.500	31.089	39.897	-22.911	54.000	-8.807	AV

Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Engineer: Milo Li	
Site: AC1	Time: 2014/07/28 - 14:51
Limit: EN55022_RE(3m)_ClassB	Margin: 0
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: WIRELESS ACCESS POINT	Power: AC 230V/50Hz
Note: Mode 2	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			1442.500	35.813	52.809	-34.187	70.000	-16.995	PK
2			1442.500	25.769	42.765	-24.231	50.000	-16.995	AV
3			2365.000	41.352	52.992	-28.648	70.000	-11.640	PK
4			2365.000	31.201	42.841	-18.799	50.000	-11.640	AV
5			4600.000	41.923	50.051	-32.077	74.000	-8.127	PK
6		*	4600.000	31.999	40.127	-22.001	54.000	-8.127	AV

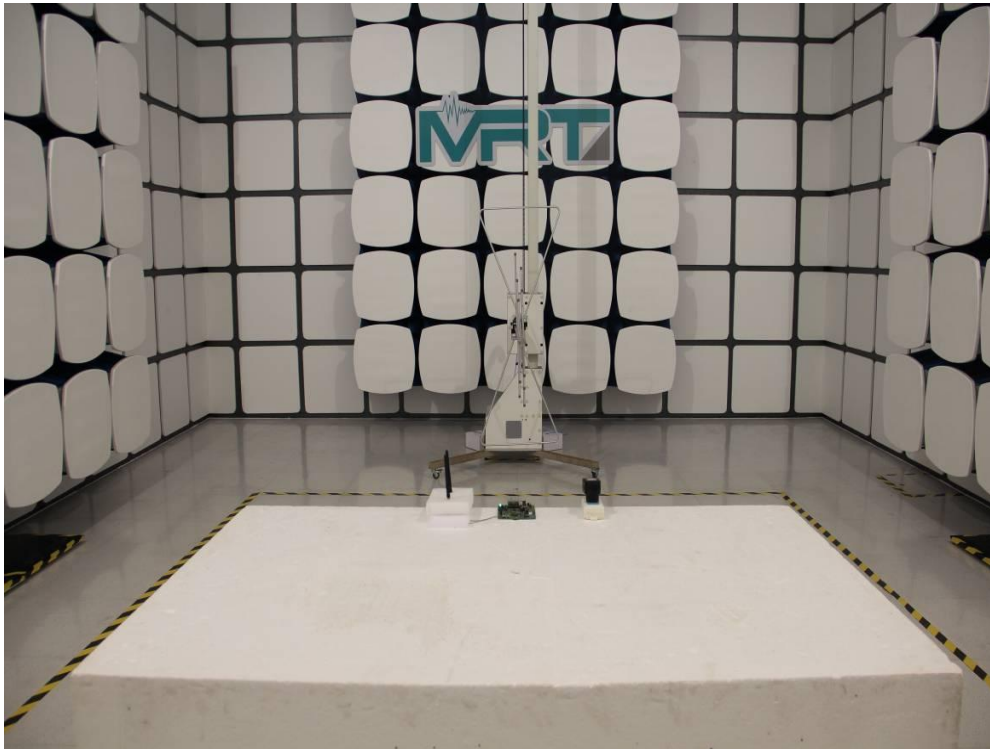
Note: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

5.5. Test Photograph

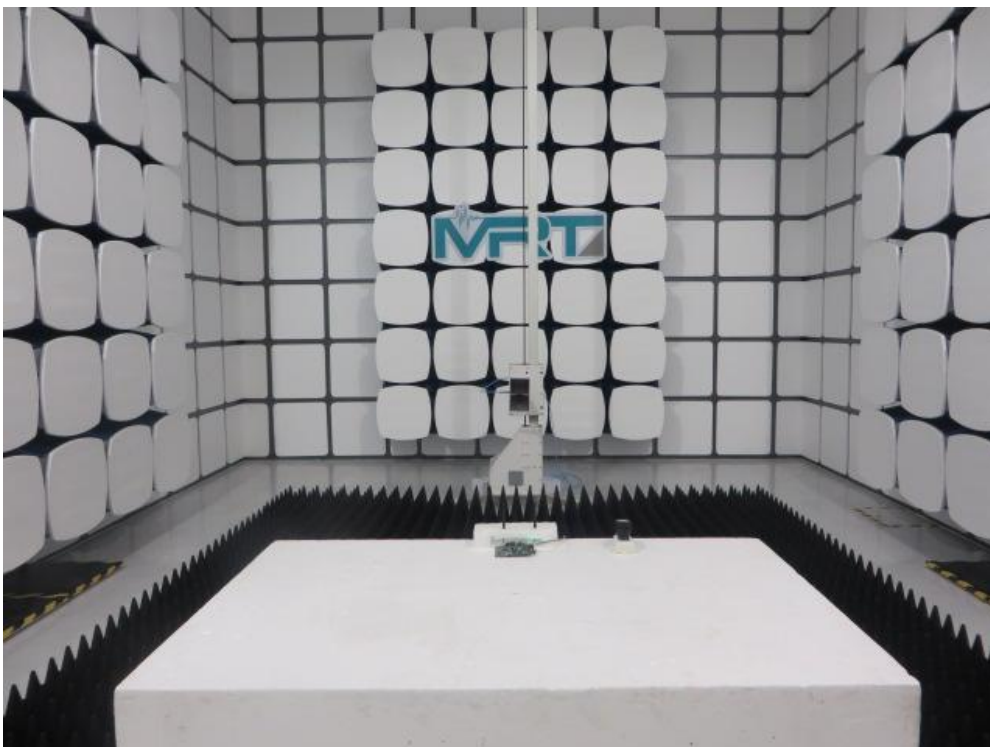
Test Mode: Mode 1

Description: Radiated Emission Test Setup (30MHz ~ 1GHz)



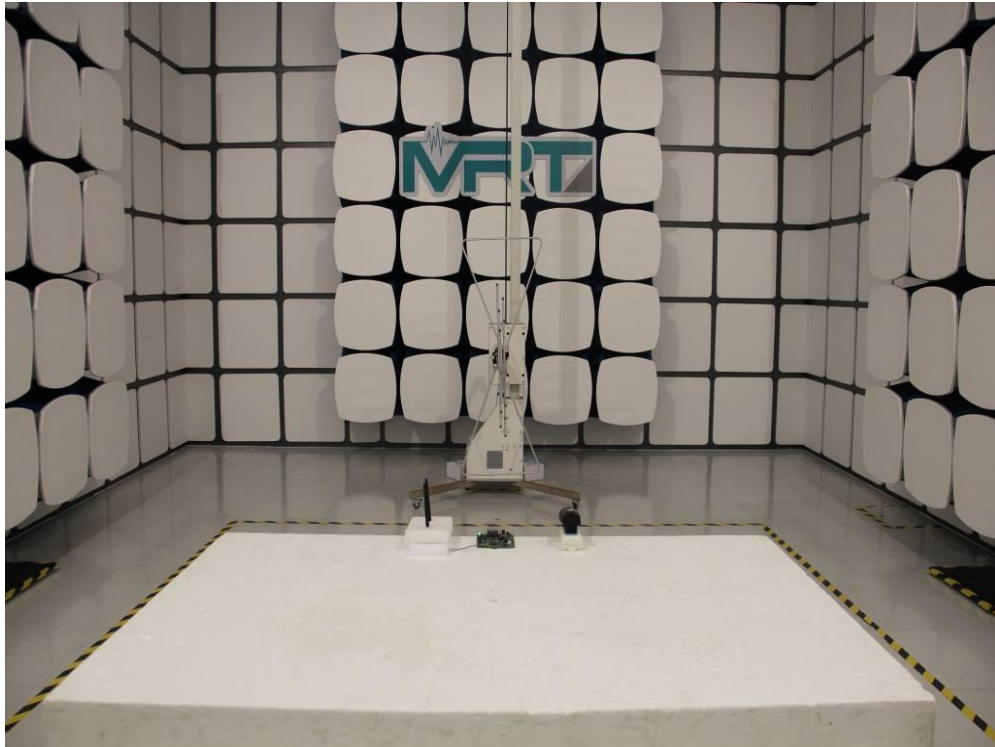
Test Mode: Mode 1

Description: Radiated Emission Test Setup (1GHz ~ 6GHz)



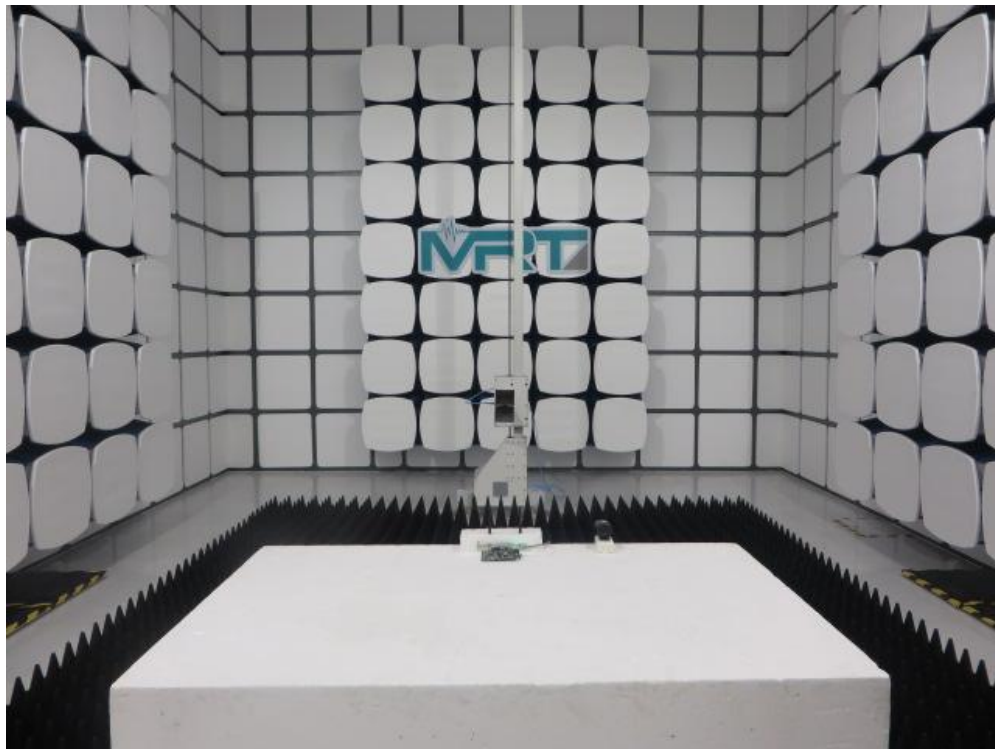
Test Mode: Mode 2

Description: Radiated Emission Test Setup (30MHz ~ 1GHz)



Test Mode: Mode 2

Description: Radiated Emission Test Setup (1GHz ~ 6GHz)



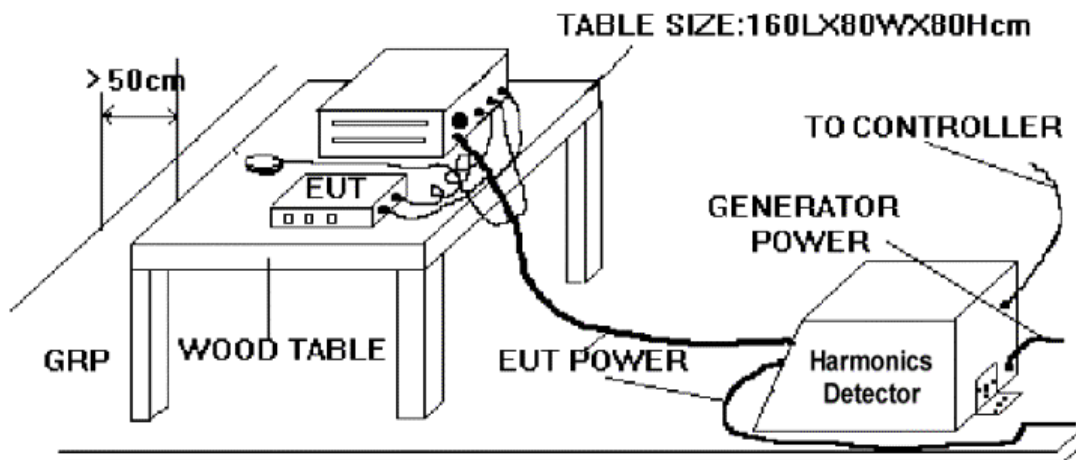
6. Harmonic Current Emissions

6.1. Limit of Harmonic Current Emissions

Limits of Class A Harmonics Currents

Harmonics Order n	Maximum Permissible harmonic current A	Harmonics Order n	Maximum Permissible harmonic current A
Odd harmonics		Even harmonics	
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.30
9	0.40	$8 \leq n \leq 40$	$0.23 * 8/n$
11	0.33	--	--
13	0.21	--	--
$15 \leq n \leq 39$	$0.15 * 15/n$	--	--

6.2. Test Setup



6.3. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.98 times and 1.02 times shall be performed.

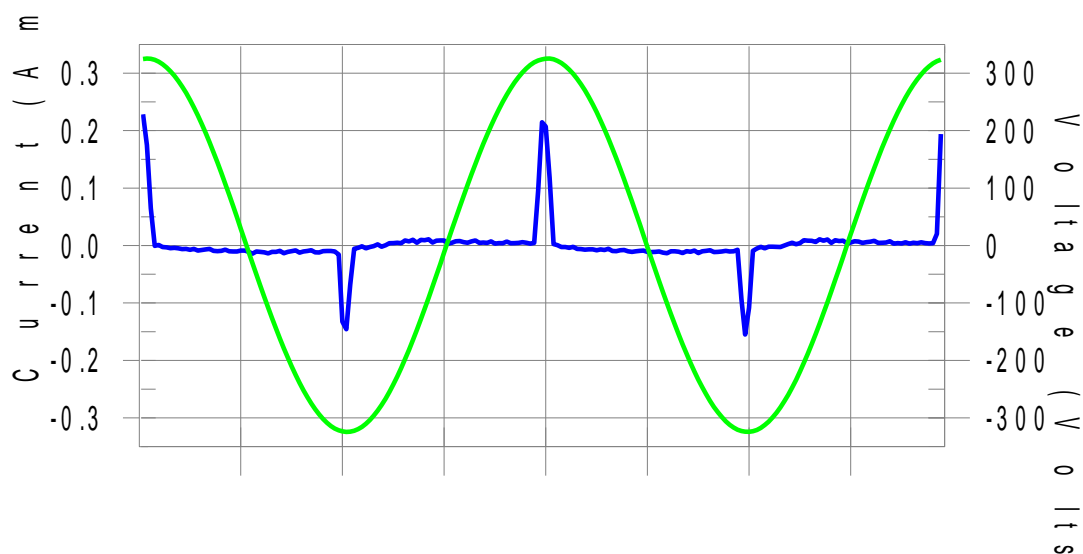
6.4. Test Result

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Milo Li	Relative Humidity	54%
Test Mode	Mode 1	Date of Test	2014/08/19

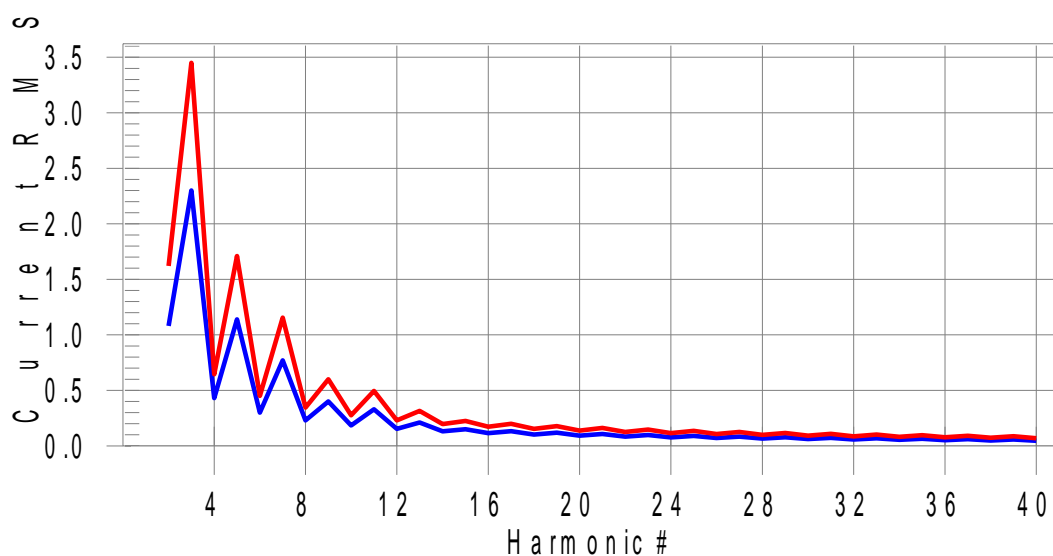
Test Result: Pass

Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line European Limits



Test result: Pass Worst harmonic was #17 with 6.25% of the limit.

Test Result: Pass

Source qualification: Normal

THC(A): 0.03

I-THD(%): 194.73

POHC(A): 0.008

POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts): 229.90

Frequency(Hz): 50.00

I_Peak (Amps): 0.240

I_RMS (Amps): 0.040

I_Fund (Amps): 0.018

Crest Factor: 6.022

Power (Watts): 3.8

Power Factor: 0.411

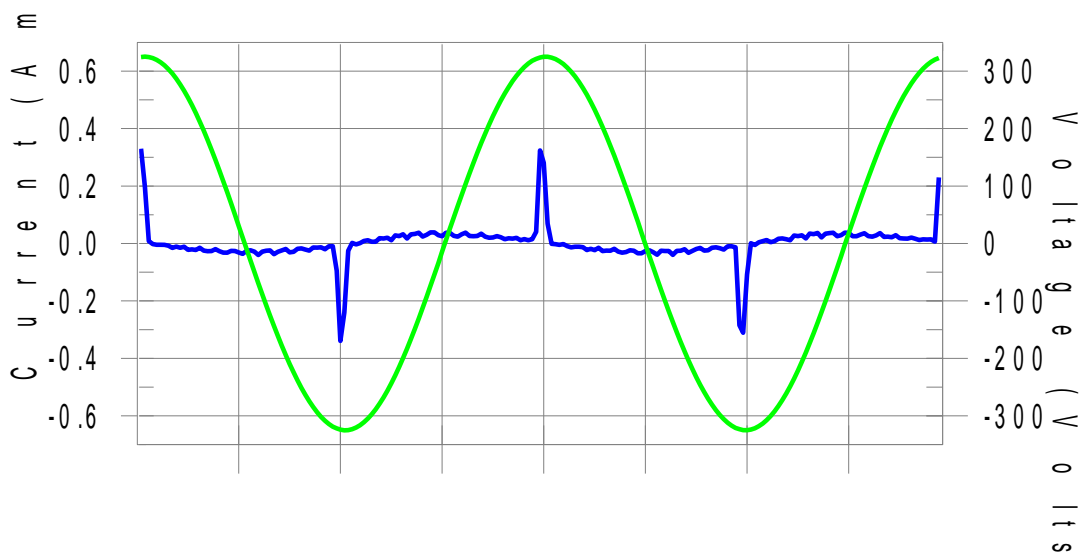
Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.004	1.080	0.3	0.004	1.620	0.27	Pass
3	0.013	2.300	0.6	0.014	3.450	0.41	Pass
4	0.004	0.430	0.9	0.004	0.645	0.64	Pass
5	0.013	1.140	1.1	0.013	1.710	0.76	Pass
6	0.004	0.300	1.2	0.004	0.450	0.84	Pass
7	0.012	0.770	1.6	0.013	1.155	1.10	Pass
8	0.003	0.230	1.5	0.003	0.345	1.00	Pass
9	0.012	0.400	2.9	0.012	0.600	1.96	Pass
10	0.003	0.184	1.7	0.003	0.276	1.18	Pass
11	0.011	0.330	3.3	0.011	0.495	2.23	Pass
12	0.003	0.153	1.9	0.003	0.230	1.29	Pass
13	0.010	0.210	4.8	0.010	0.315	3.23	Pass
14	0.003	0.131	2.0	0.003	0.197	1.35	Pass
15	0.009	0.150	6.2	0.009	0.225	4.12	Pass
16	0.002	0.115	2.0	0.002	0.173	1.35	Pass
17	0.008	0.132	6.2	0.008	0.199	4.16	Pass
18	0.002	0.102	1.9	0.002	0.153	1.34	Pass
19	0.007	0.118	6.1	0.007	0.178	4.08	Pass
20	0.002	0.092	1.9	0.002	0.138	1.29	Pass
21	0.006	0.107	5.8	0.006	0.161	3.87	Pass
22	0.001	0.084	1.7	0.002	0.125	1.21	Pass
23	0.005	0.098	5.3	0.005	0.147	3.57	Pass
24	0.001	0.077	1.6	0.001	0.115	1.14	Pass
25	0.004	0.090	4.7	0.004	0.135	3.18	Pass
26	0.001	0.071	1.5	0.001	0.106	1.08	Pass
27	0.003	0.083	4.0	0.003	0.125	2.71	Pass
28	0.001	0.066	1.5	0.001	0.099	1.07	Pass
29	0.003	0.078	3.3	0.003	0.116	2.21	Pass
30	0.001	0.061	1.6	0.001	0.092	1.11	Pass
31	0.002	0.073	2.5	0.002	0.109	1.67	Pass
32	0.001	0.058	1.7	0.001	0.086	1.18	Pass
33	0.001	0.068	1.7	0.001	0.102	1.15	Pass
34	0.001	0.054	1.8	0.001	0.081	1.23	Pass
35	0.001	0.064	1.0	0.001	0.096	0.68	Pass
36	0.001	0.051	1.8	0.001	0.077	1.29	Pass
37	0.000	0.061	0.5	0.000	0.091	0.34	Pass
38	0.001	0.048	1.9	0.001	0.073	1.33	Pass
39	0.000	0.058	0.6	0.000	0.087	0.41	Pass
40	0.001	0.046	1.9	0.001	0.069	1.35	Pass

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Milo Li	Relative Humidity	54%
Test Mode	Mode 2	Date of Test	2014/08/19

Test Result: Pass

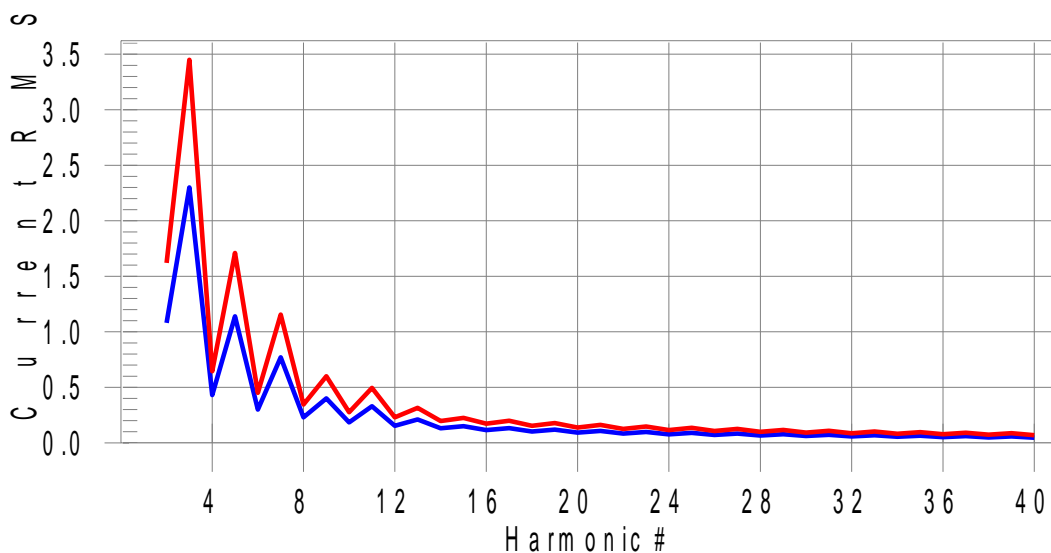
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonic was #23 with 8.99% of the limit.

Test Result: Pass

Source qualification: Normal

THC(A): 0.04

I-THD(%): 151.40

POHC(A): 0.020

POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts): 229.91

Frequency(Hz): 50.00

I_Peak (Amps): 0.354

I_RMS (Amps): 0.063

I_Fund (Amps): 0.029

Crest Factor: 6.145

Power (Watts): 4.2

Power Factor: 0.330

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	0.1	0.001	1.620	0.07	Pass
3	0.014	2.300	0.6	0.014	3.450	0.42	Pass
4	0.001	0.430	0.1	0.001	0.645	0.13	Pass
5	0.013	1.140	1.2	0.014	1.710	0.81	Pass
6	0.000	0.300	0.1	0.001	0.450	0.13	Pass
7	0.013	0.770	1.7	0.014	1.155	1.21	Pass
8	0.000	0.230	0.1	0.000	0.345	0.13	Pass
9	0.013	0.400	3.2	0.013	0.600	2.22	Pass
10	0.000	0.184	0.2	0.000	0.276	0.18	Pass
11	0.012	0.330	3.8	0.013	0.495	2.62	Pass
12	0.000	0.153	0.2	0.000	0.230	0.21	Pass
13	0.012	0.210	5.7	0.012	0.315	3.96	Pass
14	0.000	0.131	0.2	0.000	0.197	0.22	Pass
15	0.011	0.150	7.6	0.012	0.225	5.26	Pass
16	0.000	0.115	0.3	0.000	0.173	0.25	Pass
17	0.011	0.132	8.2	0.011	0.199	5.64	Pass
18	0.000	0.102	0.3	0.000	0.153	0.29	Pass
19	0.010	0.118	8.6	0.011	0.178	5.94	Pass
20	0.000	0.092	0.3	0.000	0.138	0.32	Pass
21	0.009	0.107	8.9	0.010	0.161	6.10	Pass
22	0.000	0.084	0.3	0.000	0.125	0.32	Pass
23	0.009	0.098	9.0	0.009	0.147	6.17	Pass
24	0.000	0.077	0.4	0.000	0.115	0.33	Pass
25	0.008	0.090	9.0	0.008	0.135	6.17	Pass
26	0.000	0.071	0.4	0.000	0.106	0.35	Pass
27	0.007	0.083	8.8	0.008	0.125	6.00	Pass
28	0.000	0.066	0.4	0.000	0.099	0.40	Pass
29	0.007	0.078	8.5	0.007	0.116	5.83	Pass
30	0.000	0.061	0.4	0.000	0.092	0.36	Pass
31	0.006	0.073	8.1	0.006	0.109	5.52	Pass
32	0.000	0.058	0.5	0.000	0.086	0.40	Pass
33	0.005	0.068	7.6	0.005	0.102	5.15	Pass
34	0.000	0.054	0.4	0.000	0.081	0.37	Pass
35	0.005	0.064	7.0	0.005	0.096	4.75	Pass
36	0.000	0.051	0.4	0.000	0.077	0.36	Pass
37	0.004	0.061	6.4	0.004	0.091	4.29	Pass
38	0.000	0.048	0.4	0.000	0.073	0.35	Pass
39	0.003	0.058	5.6	0.003	0.087	3.78	Pass
40	0.000	0.046	0.3	0.000	0.069	0.34	Pass

6.5. Test Photograph

Test Mode: Mode 1

Description: Harmonic current emissions Test Setup



Test Mode: Mode 2

Description: Harmonic current emissions Test Setup



7. Voltage Fluctuations and Flicker

7.1. Limit of Voltage Fluctuations and Flicker

The following limits apply:

- the value of P_{st} shall not be greater than 1.0;
- the value of P_{lt} shall not be greater than 0.65;
- the value of $d(t)$ during a voltage change shall not exceed 3.3% for more than 500ms;
- the relative steady-state voltage change, d_c , shall not exceed 3.3%;
- the maximum relative voltage change, d_{max} , shall not exceed:
 - a) 4% without additional conditions;
 - b) 6% for equipment which is:
 - switched manually, or
 - switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.

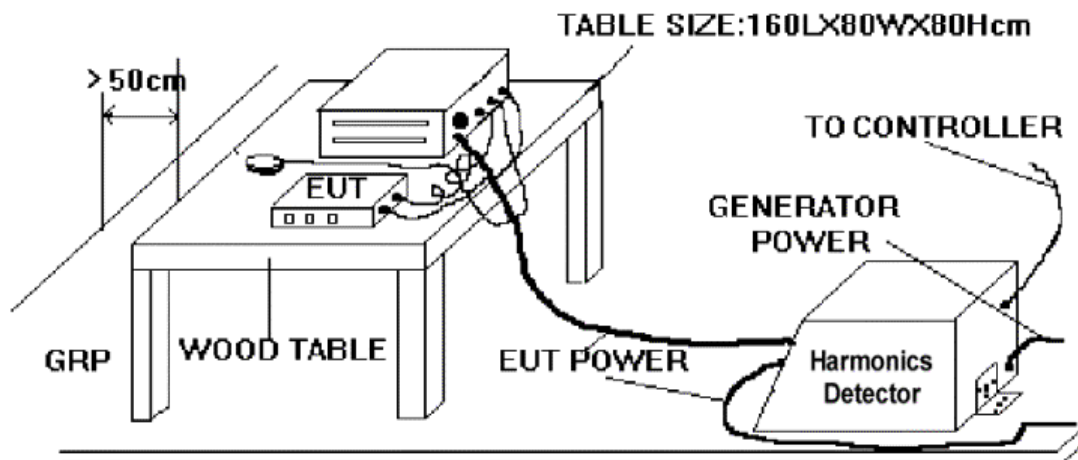
NOTE: The cycling frequency will be further limited by the P_{st} and P_{lt} limit.

For example: a d_{max} of 6% producing a rectangular voltage change characteristic twice per hour will give a P_{lt} of about 0.65.

- c) 7% for equipment which is:
 - attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
 - switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

P_{st} and P_{lt} requirements shall not be applied to voltage changes caused by manual switching.

7.2. Test Setup



7.3. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.98 times and 1.02 times shall be performed.

7.4. Test Result

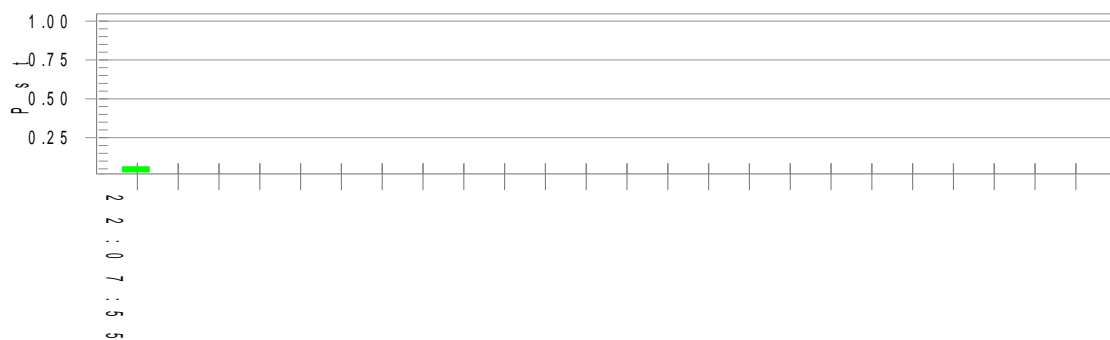
Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Milo Li	Relative Humidity	54%
Test Mode	Mode 1	Date of Test	2014/08/19

Test Result: Pass

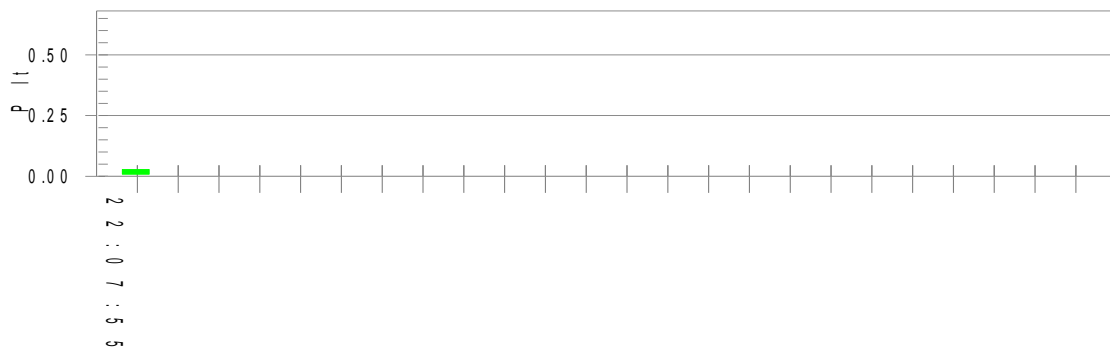
Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.95			
Highest dt (%):	0.00	Test limit (%):	3.30	Pass
Time(mS) > dt:	0.0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.00	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650	Pass

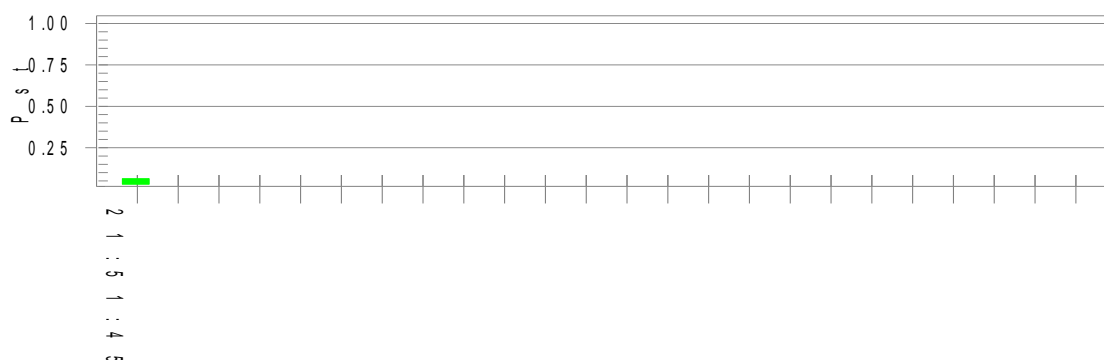
Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Milo Li	Relative Humidity	54%
Test Mode	Mode 2	Date of Test	2014/08/19

Test Result: Pass

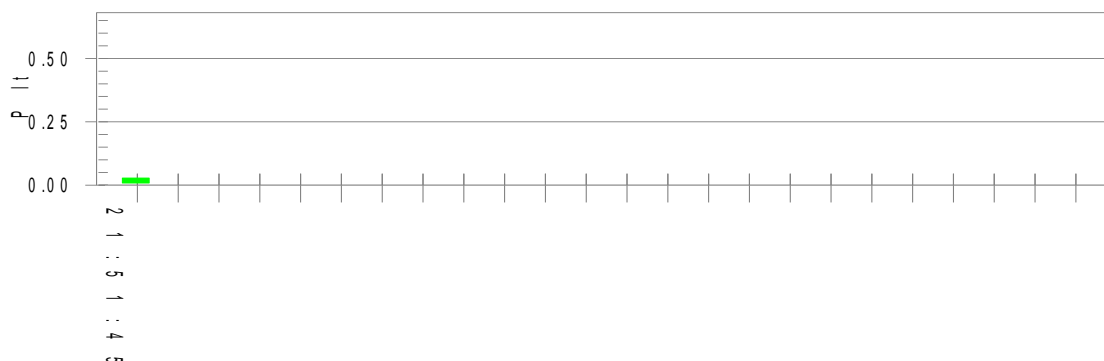
Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.86

Highest dt (%): 0.00

Time(mS) > dt: 0.0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.064

Highest Plt (2 hr. period): 0.028

Test limit (%): 3.30 Pass

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

Test limit: 0.650 Pass

7.5. Test Photograph

Test Mode: Mode 1

Description: Voltage Fluctuation and Flicker Test Setup



Test Mode: Mode 2

Description: Voltage Fluctuation and Flicker Test Setup



8.3. Test Procedure

Direct application of discharges to the EUT:

Contact discharge was applied only to conductive surfaces of the EUT.

Air discharges were applied only to non-conductive surfaces of the EUT.

During the test, it was performed with single discharges. For the single discharge time between successive single discharges will be keep longer 1 second. It was at least twenty-five single discharges with positive and negative at the same selected point.

The selected point, which was performed with electrostatic discharge, was marked on the red label of the EUT.

Indirect application of discharges to the EUT:

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least twenty-five single discharges with positive and negative at the same selected point.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least twenty-five single discharges with positive and negative at the same selected point.

8.4. Test Result

EUT	WIRELESS ACCESS POINT	Temperature	23°C
Test Engineer	Milo Li	Relative Humidity	54%
Test Mode	Mode 1	Date of Test	2014/08/17

Direct Application		Test Result	
Test Location	Test Level	Air Discharge	Contact Discharge
1 ~ 4	±4kV	Pass	N/A
11 ~ 12	±2kV, ±4kV, ±8kV	N/A	Pass

Indirect Application		Test Result	
Test Location	Test Level	Horizontal Coupling	Vertical Coupling
Front, Rear Left, Right	±4kV	Pass	Pass

Note: There is no any degradation of performance and function.

EUT	WIRELESS ACCESS POINT	Temperature	23°C
Test Engineer	Milo Li	Relative Humidity	54%
Test Mode	Mode 2	Date of Test	2014/08/17

Direct Application		Test Result	
Test Location	Test Level	Air Discharge	Contact Discharge
5 ~ 10	±4kV	Pass	N/A
11 ~ 12	±2kV, ±4kV, ±8kV	N/A	Pass

Indirect Application		Test Result	
Test Location	Test Level	Horizontal Coupling	Vertical Coupling
Front, Rear Left, Right	±4kV	Pass	Pass

Note: There is no any degradation of performance and function.

EUT	WIRELESS ACCESS POINT	Temperature	23°C
Test Engineer	Milo Li	Relative Humidity	54%
Test Mode	Mode 3	Date of Test	2014/08/17

Direct Application		Test Result	
Test Location	Test Level	Air Discharge	Contact Discharge
1 ~ 4	±4kV	Pass	N/A
11 ~ 12	±2kV, ±4kV, ±8kV	N/A	Pass

Indirect Application		Test Result	
Test Location	Test Level	Horizontal Coupling	Vertical Coupling
Front, Rear Left, Right	±4kV	Pass	Pass

Note: There is no any degradation of performance and function.

8.5. Test Photograph

Test Mode: Mode 1 & 3

Description: Electrostatic discharge Test Setup



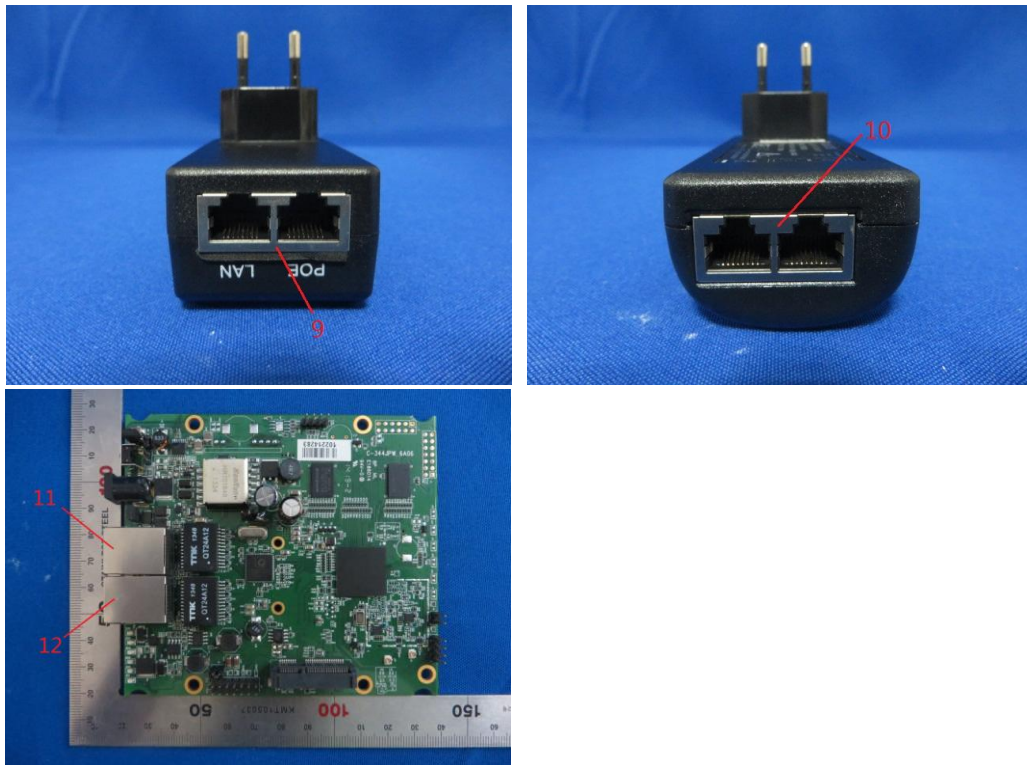
Test Mode: Mode 2

Description: Electrostatic discharge Test Setup



Electrostatic discharge Test Location



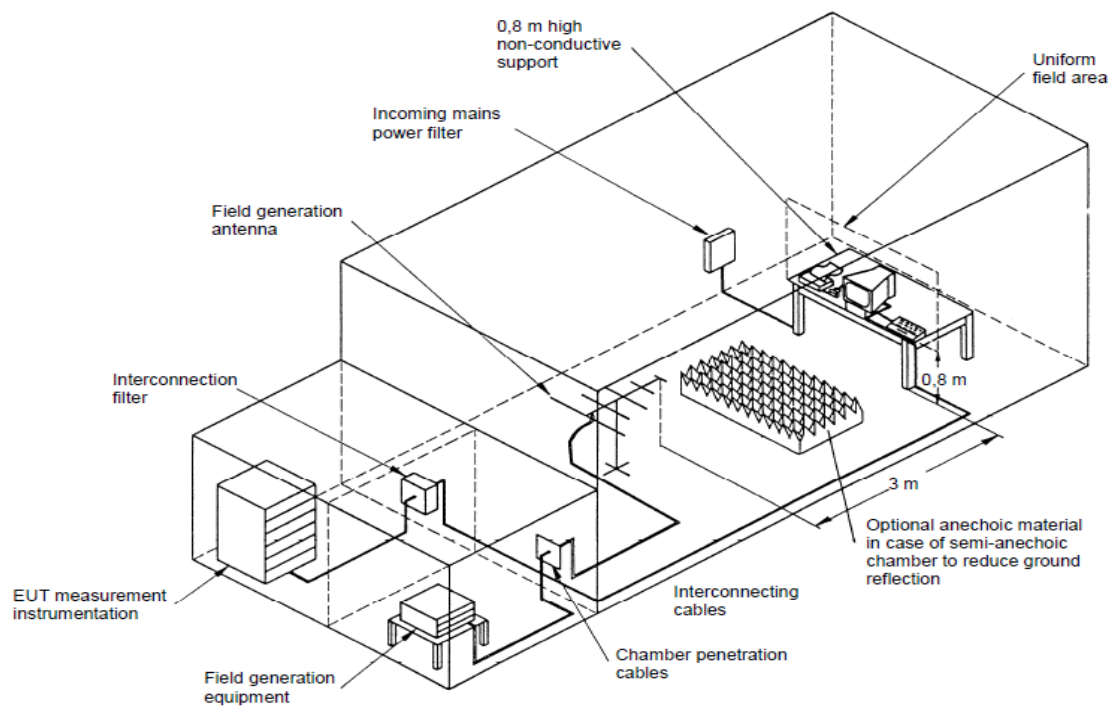


9. Radio-frequency electromagnetic field

9.1. Limit of Radio-frequency electromagnetic field

Environmental phenomenon	Test specification	Units	Performance criterion
Enclosure port			
Radio frequency electromagnetic field	80 - 1000, 1400 - 2700	MHz	A
	3	V/m (unmodulated, r.m.s)	
	80	% AM (1kHz)	
Note 1: If the wanted signal is modulated at 1000Hz, then an audio signal of 400Hz shall be used. Note 2: The test shall be performed over the frequency range 80MHz to 1000MHz and 1400MHz to 2700MHz with the exception of the exclusion band for transmitters, receivers and duplex transceivers [see clause 4 of EN 301 489-1 V1.9.2 (2010-09)], as appropriate.			

9.2. Test Setup



9.3. Test Procedure

The EUT and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with the calibration plane such that the distance from antenna to the EUT was 3 meters. Both horizontal and vertical polarization of the antenna and four sides of the EUT are set on measurement.

In order to judge the EUT performance, a CCD camera is used to monitor EUT screen.

All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	3V/m
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	80 - 1000MHz, 1.4GHz - 2.7GHz
4.	Dwell Time	3 Seconds
5.	Frequency Step Size Δf	1%

9.4. Test Result

EUT	WIRELESS ACCESS POINT	Temperature	23°C
Test Engineer	Milo Li	Relative Humidity	54%
Test Mode	Mode 1	Date of Test	2014/08/19

Frequency (MHz)	Polarity	Test Position	Field Strength (V/m)	Test Result
80-1000	Horizontal/Vertical	Front	3	Pass
		Rear		Pass
		Left		Pass
		Right		Pass
1400-2700	Horizontal/Vertical	Front	3	Pass
		Rear		Pass
		Left		Pass
		Right		Pass

Note: There is no any degradation of performance and function.

EUT	WIRELESS ACCESS POINT	Temperature	23°C
Test Engineer	Milo Li	Relative Humidity	54%
Test Mode	Mode 2	Date of Test	2014/08/19

Frequency (MHz)	Polarity	Test Position	Field Strength (V/m)	Test Result
80-1000	Horizontal/Vertical	Front	3	Pass
		Rear		Pass
		Left		Pass
		Right		Pass
1400-2700	Horizontal/Vertical	Front	3	Pass
		Rear		Pass
		Left		Pass
		Right		Pass

Note: There is no any degradation of performance and function.

EUT	WIRELESS ACCESS POINT	Temperature	23°C
Test Engineer	Milo Li	Relative Humidity	54%
Test Mode	Mode 3	Date of Test	2014/08/19

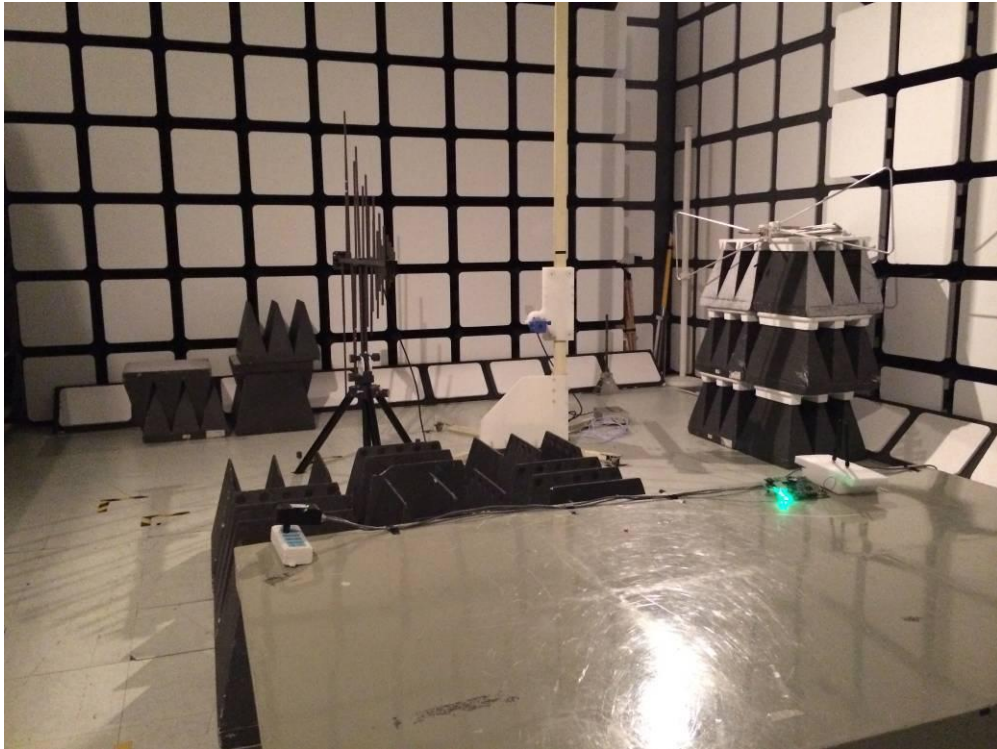
Frequency (MHz)	Polarity	Test Position	Field Strength (V/m)	Test Result
80-1000	Horizontal/Vertical	Front	3	Pass
		Rear		Pass
		Left		Pass
		Right		Pass
1400-2700	Horizontal/Vertical	Front	3	Pass
		Rear		Pass
		Left		Pass
		Right		Pass

Note: There is no any degradation of performance and function.

9.5. Test Photograph

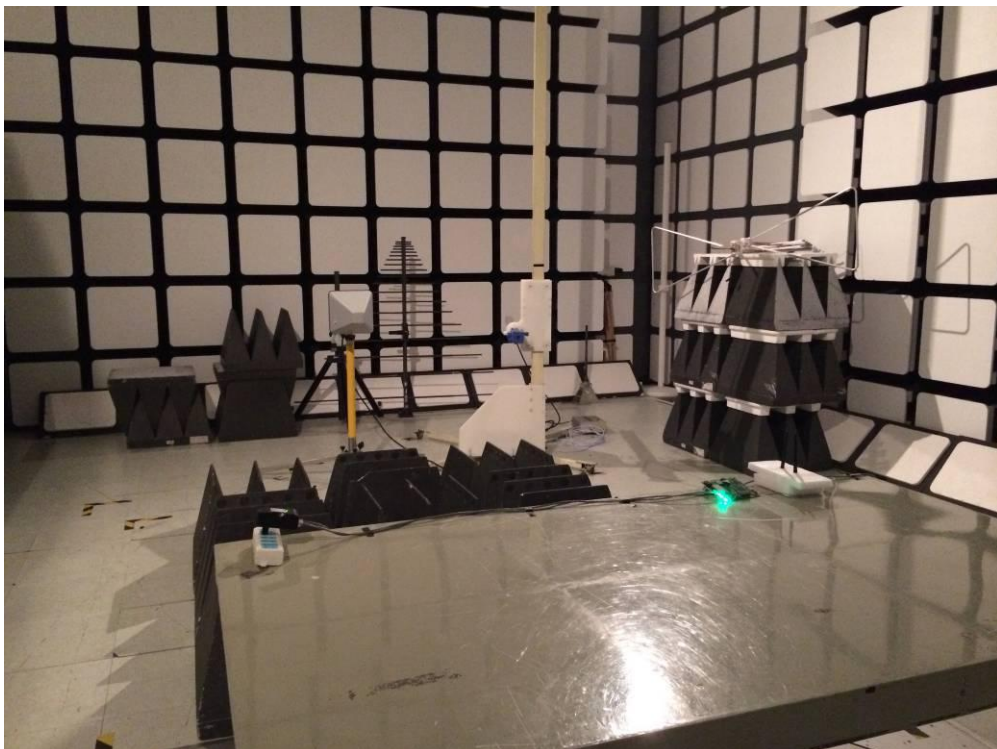
Test Mode: Mode 1 & 3

Description: Radio-frequency Electromagnetic Field Test Setup (80-1000MHz)



Test Mode: Mode 1 & 3

Description: Radio-frequency Electromagnetic Field Test Setup (1400-2700MHz)



Test Mode: Mode 2

Description: Radio-frequency Electromagnetic Field Test Setup (80-1000MHz)



Test Mode: Mode 2

Description: Radio-frequency Electromagnetic Field Test Setup (1400-2700MHz)

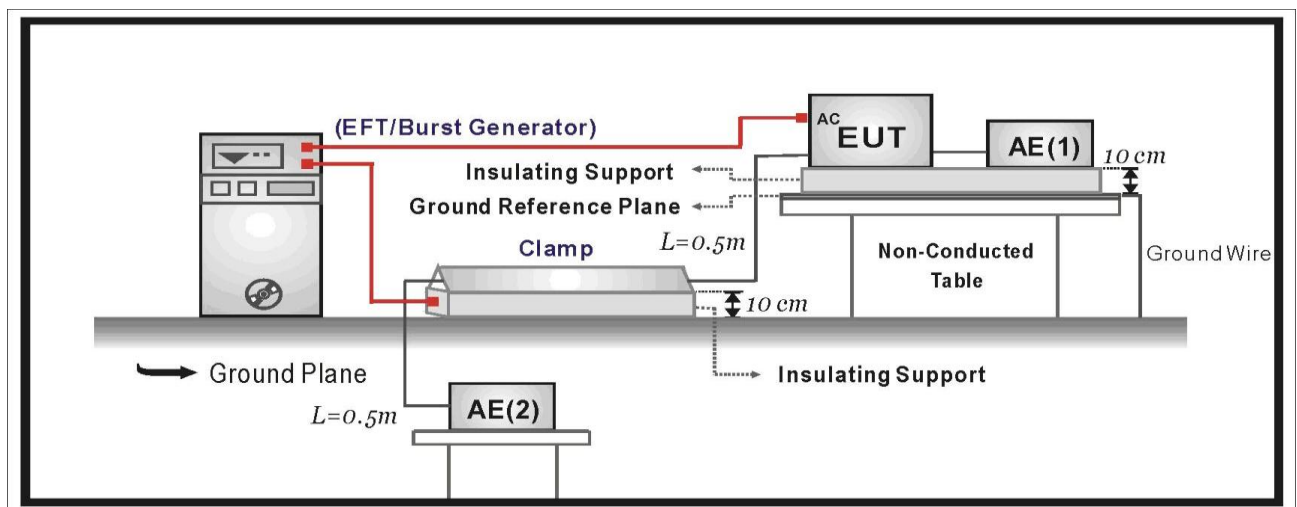


10. Electrical fast transients

10.1. Limit of Electrical fast transients

Environmental phenomenon	Test specification	Units	Performance criterion
Input AC power ports			
Electrical fast transients	± 1 5/50 5	kV (open circuit test voltage) Tr/Th (ns) Repetition frequency (kHz)	B
Signal ports, telecommunication ports, and control ports (See Note)			
Fast transients common mode	± 0.5 5/50 5	kV (peak) Tr/Th ns Repetition frequency (kHz)	B
NOTE: This test shall be additionally performed on signal ports, telecommunication ports, control ports, and DC power ports, of radio equipment and associated ancillary equipment, if the cables may be longer than 3m.			

10.2. Test Setup



10.3. Test Procedure

The EUT is placed on a table that is 0.8 meter height. A ground reference plane is placed on the table, and uses a 0.1m insulation between the EUT and ground reference plane.

The minimum area of the ground reference plane is 1m*1m, and 0.65mm thick min, and projected beyond the EUT by at least 0.1m on all sides.

For input AC power ports:

The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal.

Each of the line conductors is impressed with burst noise for 1 minute.

The length of the power lines between the coupling device and the EUT is 0.5m.

For signal ports, telecommunication ports, and control ports:

The EFT interference signal is through a coupling clamp device couples to the signal of the EUT with burst noise for 1 minute.

The length of the signal lines between the coupling device and the EUT is 0.5m.

10.4. Test Result

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Line Chen	Relative Humidity	54%
Test Mode	Mode 1	Date of Test	2014/08/17

Inject Line	Polarity	Test Level (kV)	Test Duration (second)	Inject Method	Observation	Result
L	+	1	60	Direct	Note	Pass
L	-	1	60	Direct	Note	Pass
N	+	1	60	Direct	Note	Pass
N	-	1	60	Direct	Note	Pass
L+N	+	1	60	Direct	Note	Pass
L+N	-	1	60	Direct	Note	Pass
Signal Cable	+	0.5	60	Clamp	Note	Pass
Signal Cable	-	0.5	60	Clamp	Note	Pass

Note: There is no any degradation of performance and function.

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Line Chen	Relative Humidity	54%
Test Mode	Mode 2	Date of Test	2014/08/17

Inject Line	Polarity	Test Level (kV)	Test Duration (second)	Inject Method	Observation	Result
L	+	1	60	Direct	Note	Pass
L	-	1	60	Direct	Note	Pass
N	+	1	60	Direct	Note	Pass
N	-	1	60	Direct	Note	Pass
L+N	+	1	60	Direct	Note	Pass
L+N	-	1	60	Direct	Note	Pass
Signal Cable	+	0.5	60	Clamp	Note	Pass
Signal Cable	-	0.5	60	Clamp	Note	Pass

Note: There is no any degradation of performance and function.

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Line Chen	Relative Humidity	54%
Test Mode	Mode 3	Date of Test	2014/08/17

Inject Line	Polarity	Test Level (kV)	Test Duration (second)	Inject Method	Observation	Result
L	+	1	60	Direct	Note	Pass
L	-	1	60	Direct	Note	Pass
N	+	1	60	Direct	Note	Pass
N	-	1	60	Direct	Note	Pass
L+N	+	1	60	Direct	Note	Pass
L+N	-	1	60	Direct	Note	Pass
Signal Cable	+	0.5	60	Clamp	Note	Pass
Signal Cable	-	0.5	60	Clamp	Note	Pass

Note: There is no any degradation of performance and function.

10.5. Test Photograph

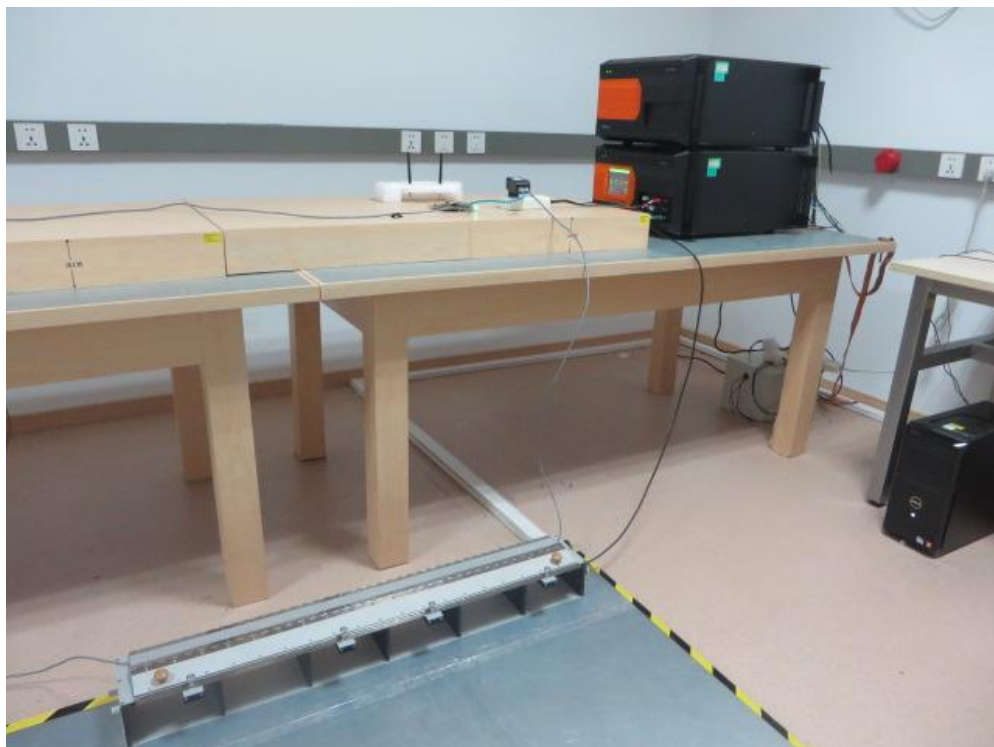
Test Mode: Mode 1 & 3

Description: Electrical fast transients Test Setup for Main Port



Test Mode: Mode 1 & 3

Description: Electrical fast transients Test Setup for Signal Port



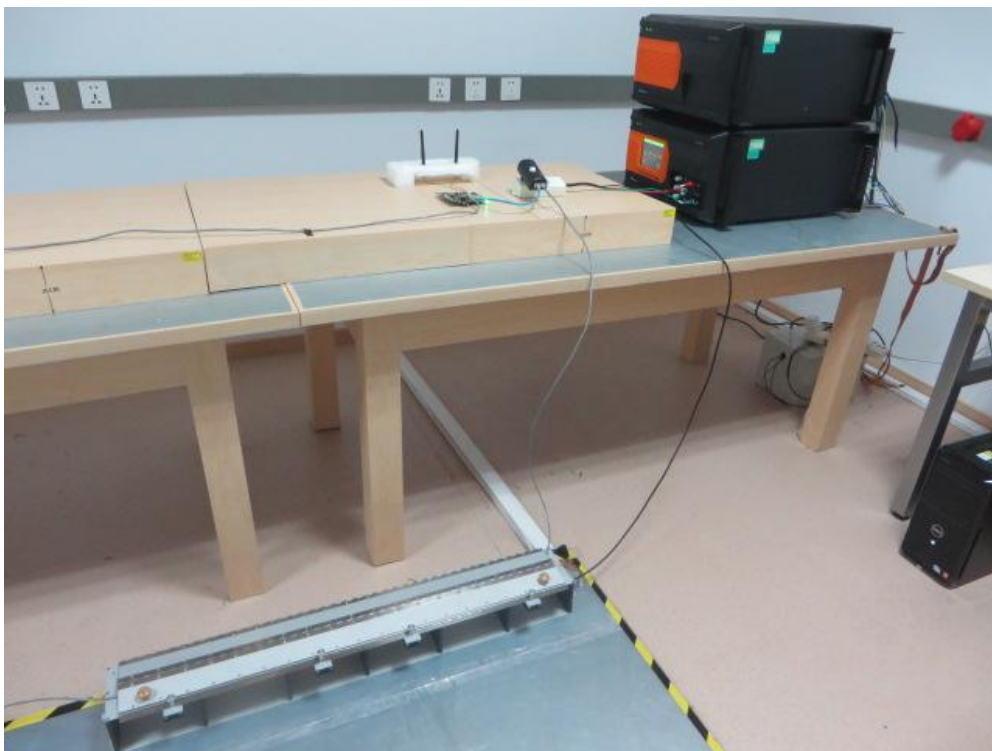
Test Mode: Mode 2

Description: Electrical fast transients Test Setup for Main Port



Test Mode: Mode 2

Description: Electrical fast transients Test Setup for Signal Port

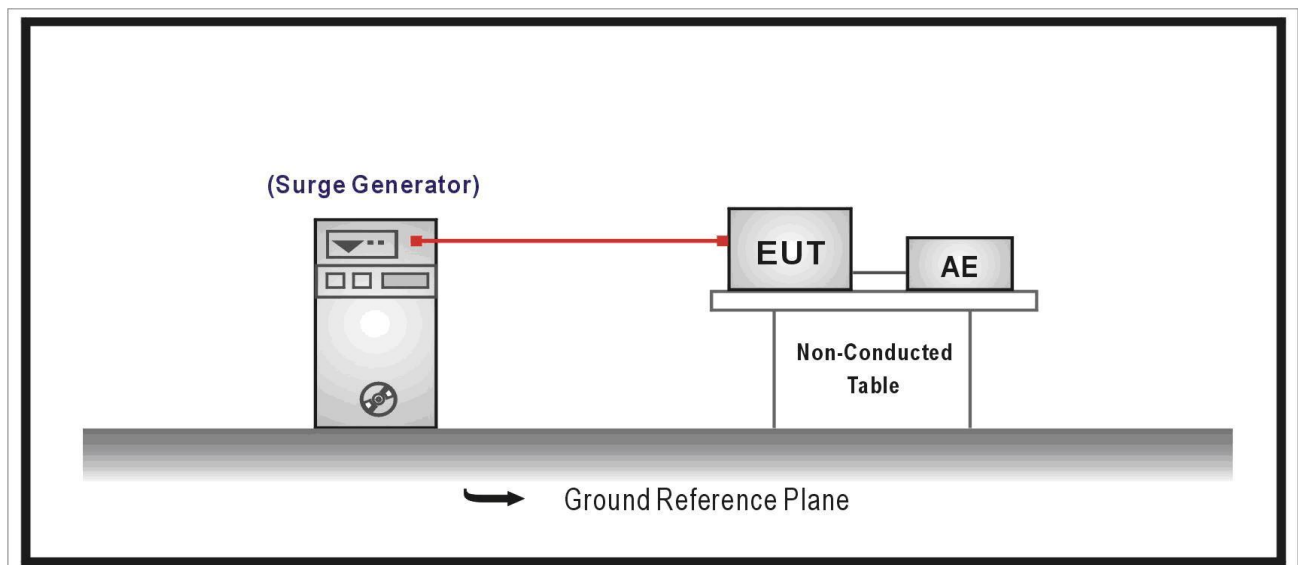


11. Surges

11.1. Limit of Surges

Environmental phenomenon	Test specification	Units	Performance criterion
Input AC power ports (See Note 1)			
Surges	1.2/50 (8/20) ±1 line to line ±2 line to earth	Tr/Th (us) kV (open circuit test voltage) kV (open circuit test voltage)	B
Telecommunication ports directly connected to indoor cables (See Note 1 and 2)			
Surges	1.2/50 (8/20) 0.5 line to ground	Tr/Th us kV (peak)	B
NOTE 1: Where normal functioning cannot be achieved because of the impact of the CDN on the EUT, no test shall be required.			
NOTE 2: The test level for telecommunication ports, intended to be connected to indoor cables (longer than 10m) shall be 0.5kV line to ground.			

11.2. Test Setup



11.3. Test Procedure

The EUT is placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m minimum and 0.65mm thick minimum and projected beyond the EUT by at least 0.1m on all sides. The length of power cord between the coupling device and the EUT shall be 2m or less.

For input AC power ports:

The EUT is connected to the power mains through a coupling device that directly couples the surge interference signal.

The surge noise shall be applied synchronized to the voltage phase at 0° , 90° , 180° , 270° and the peak value of the AC voltage wave. (Positive and negative)

Each of Line to Earth and Line to Line is impressed with a sequence of five surge voltages with interval of 1 minute.

For telecommunication ports:

The signal line of EUT is connected to coupling and decoupling network that directly couples the surge interference signal.

Only Line to ground is impressed with a sequence of five surge voltages with interval of 1 minute.

11.4. Test Result

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Line Chen	Relative Humidity	54%
Test Mode	Mode 1	Date of Test	2014/08/16

Inject Line	Polarity	Angle (degree)	Test Level (kV)	Test Interval (second)	Observation	Result
L+N	+	0	1	60	Note	Pass
L+N	-	0	1	60	Note	Pass
L+N	+	90	1	60	Note	Pass
L+N	-	90	1	60	Note	Pass
L+N	+	180	1	60	Note	Pass
L+N	-	180	1	60	Note	Pass
L+N	+	270	1	60	Note	Pass
L+N	-	270	1	60	Note	Pass
LAN (Line to Ground)	+	N/A	0.5	60	Note	Pass
LAN (Line to Ground)	-	N/A	0.5	60	Note	Pass

Note: There is no any degradation of performance and function.

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Line Chen	Relative Humidity	54%
Test Mode	Mode 2	Date of Test	2014/08/16

Inject Line	Polarity	Angle (degree)	Test Level (kV)	Test Interval (second)	Observation	Result
L+N	+	0	1	60	Note	Pass
L+N	-	0	1	60	Note	Pass
L+N	+	90	1	60	Note	Pass
L+N	-	90	1	60	Note	Pass
L+N	+	180	1	60	Note	Pass
L+N	-	180	1	60	Note	Pass
L+N	+	270	1	60	Note	Pass
L+N	-	270	1	60	Note	Pass
LAN (Line to Ground)	+	N/A	0.5	60	Note	Pass
LAN (Line to Ground)	-	N/A	0.5	60	Note	Pass

Note: There is no any degradation of performance and function.

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Line Chen	Relative Humidity	54%
Test Mode	Mode 3	Date of Test	2014/08/16

Inject Line	Polarity	Angle (degree)	Test Level (kV)	Test Interval (second)	Observation	Result
L+N	+	0	1	60	Note	Pass
L+N	-	0	1	60	Note	Pass
L+N	+	90	1	60	Note	Pass
L+N	-	90	1	60	Note	Pass
L+N	+	180	1	60	Note	Pass
L+N	-	180	1	60	Note	Pass
L+N	+	270	1	60	Note	Pass
L+N	-	270	1	60	Note	Pass
LAN (Line to Ground)	+	N/A	0.5	60	Note	Pass
LAN (Line to Ground)	-	N/A	0.5	60	Note	Pass

Note: There is no any degradation of performance and function.

11.5. Test Photograph

Test Mode: Mode 1 & 3

Description: Surge Test Setup for Main Port



Test Mode: Mode 1 & 3

Description: Surge Test Setup for Signal Port



Test Mode: Mode 2

Description: Surge Test Setup for Main Port



Test Mode: Mode 2

Description: Surge Test Setup for Signal Port



12. Radio-frequency common mode

12.1. Limit of Radio-frequency common mode

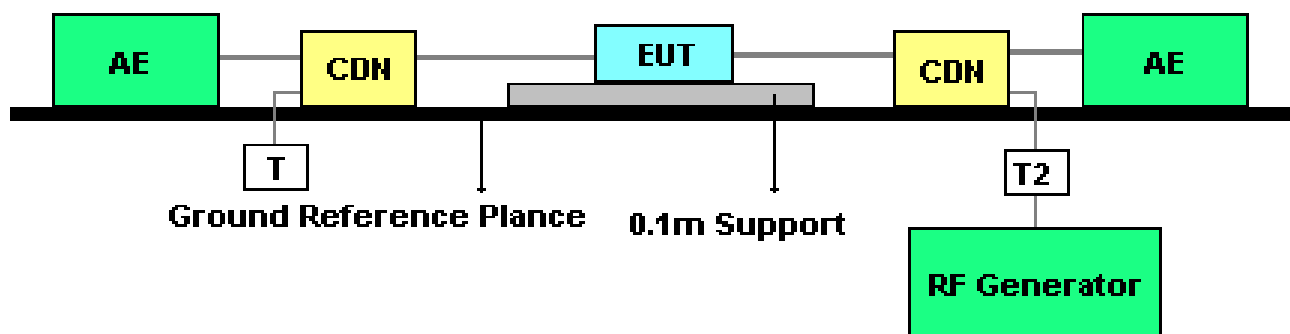
Environmental phenomenon	Test specification	Units	Performance criterion
Input AC power ports (See Note 1 and 2)			
Radio-frequency common mode	0.15 - 80	MHz	A
	3	V (unmodulated, r.m.s)	
	80	% AM (1kHz)	
Signal ports, telecommunication ports, and control ports (See Note 1, 2 and 3)			
Radio frequency common mode	0.15 - 80	MHz	A
	3	V (unmodulated, r.m.s)	
	80	% AM (1kHz)	
NOTE 1: If the wanted signal is modulated at 1000Hz, then an audio signal of 400Hz shall be used. NOTE 2: The test shall be performed over the frequency range 150kHz to 80MHz with the exception of the exclusion band for transmitters, and for receivers and duplex transceivers [see clause 4 of EN 301 489-1 V1.9.2 (2011-09)]. NOTE 3: This test shall be additionally performed on signal ports, telecommunication ports, control ports, and DC power ports, of radio equipment and associated ancillary equipment, if the cables may be longer than 3m.			

12.2. Test Setup

CDN Test Setup

T : 50 ohm

T2: Power attenuator(6dB)



12.3. Test Procedure

The EUT is placed on a table that is 0.8 meter height, and a ground reference plane on the table, EUT is placed upon table and use 0.1m insulation between the EUT and ground reference plane.

For input AC power ports:

The EUT is connected to the power mains through a coupling and decoupling networks for power supply lines. And directly couples the disturbances signal into EUT.

For signal ports, telecommunication ports, and control ports:

The disturbance signal is through a coupling and decoupling networks (CDN) or EM-clamp device couples to the signal and telecommunication lines of the EUT.

	Condition of Test	Remarks
1.	Field Strength	3V
2.	Radiated Signal	AM 80% Modulated with 1kHz
3.	Scanning Frequency	0.15 - 80MHz
4	Dwell Time	3 Seconds
5.	Frequency Step Size Δf	1%

12.4. Test Result

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Line Chen	Relative Humidity	54%
Test Mode	Mode 1	Date of Test	2014/08/17

Frequency (MHz)	Inject Voltage (V)	Inject Ports	Inject Method	Observation	Result
0.15-80	3	AC Mains	CDN	Note	Pass
0.15-80	3	Signal Cable	CDN	Note	Pass

Note: There is no any degradation of performance and function.

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Line Chen	Relative Humidity	54%
Test Mode	Mode 2	Date of Test	2014/08/17

Frequency (MHz)	Inject Voltage (V)	Inject Ports	Inject Method	Observation	Result
0.15-80	3	AC Mains	CDN	Note	Pass
0.15-80	3	Signal Cable	CDN	Note	Pass

Note: There is no any degradation of performance and function.

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Line Chen	Relative Humidity	54%
Test Mode	Mode 3	Date of Test	2014/08/17

Frequency (MHz)	Inject Voltage (V)	Inject Ports	Inject Method	Observation	Result
0.15-80	3	AC Mains	CDN	Note	Pass
0.15-80	3	Signal Cable	CDN	Note	Pass

Note: There is no any degradation of performance and function.

12.5. Test Photograph

Test Mode: Mode 1 & 3

Description: Radio-frequency Common Mode Test Setup for Main Port



Test Mode: Mode 1 & 3

Description: Radio-frequency Common Mode Test Setup for Signal Port



Test Mode: Mode 2

Description: Radio-frequency Common Mode Test Setup for Main Port



Test Mode: Mode 2

Description: Radio-frequency Common Mode Test Setup for Signal Port

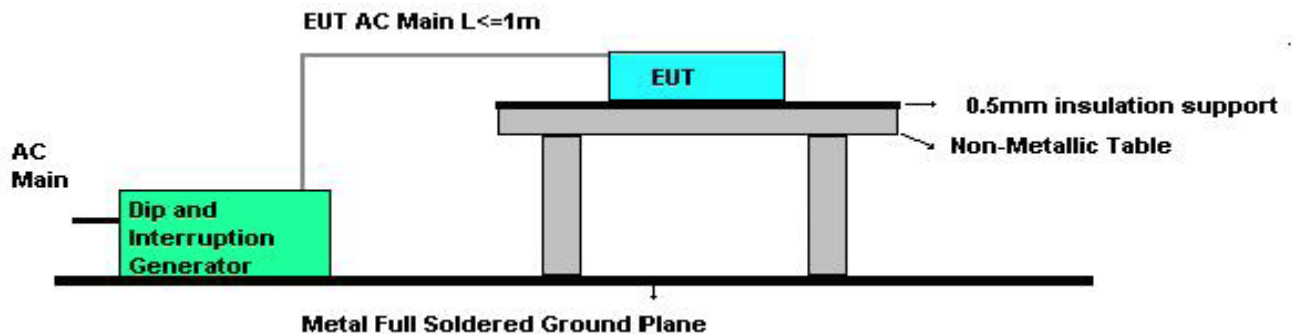


13. Voltage dips and interruptions

13.1. Limit of Voltage dips and interruptions

Environmental phenomenon	Test specification	Units	Performance criterion
Input AC power ports			
Voltage dips	0	% residual	B
	0.5	cycle	
	0	% residual	B
	1	cycle	
	70	% residual	C
	25	cycle	
Voltage interruptions	0	% residual	C
	250	cycle	

13.2. Test Setup



13.3. Test Procedure

The EUT is placed on a table which is 0.8 meter above a metal ground plane measured 1m*1m minimum, and 0.65mm thick minimum, and projected beyond the EUT by at least 0.1m on all sides. The power cord shall be used the shortest power cord as specified by the manufacturer.

For Voltage dips and interruptions test:

The selection of test voltage is based on the rated power range. If the operation range is large than 20% of lower power range, both end of specified voltage shall be tested. Otherwise, the typical voltage specification is selected as test voltage.

The EUT is connected to the power mains through a coupling device that directly couples to the voltage dips and interruption generator.

13.4. Test Result

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Line Chen	Relative Humidity	54%
Test Mode	Mode 1	Date of Test	2014/08/19

Voltage % Residual	Test Duration (ms)	Observation	Result
0	10	Note 1	Pass
0	20	Note 1	Pass
70	500	Note 1	Pass
0	5000	Note 1, 2	Pass

Note 1: There is no any degradation of performance and function.

Note 2: The power consumption of EUT has shut down, but self-recoverable after the test

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Line Chen	Relative Humidity	54%
Test Mode	Mode 2	Date of Test	2014/08/19

Voltage % Residual	Test Duration (ms)	Observation	Result
0	10	Note 1	Pass
0	20	Note 1	Pass
70	500	Note 1	Pass
0	5000	Note 1, 2	Pass

Note 1: There is no any degradation of performance and function.

Note 2: The power consumption of EUT has shut down, but self-recoverable after the test

Product	WIRELESS ACCESS POINT	Temperature	26°C
Test Engineer	Line Chen	Relative Humidity	54%
Test Mode	Mode 3	Date of Test	2014/08/19

Voltage % Residual	Test Duration (ms)	Observation	Result
0	10	Note 1	Pass
0	20	Note 1	Pass
70	500	Note 1	Pass
0	5000	Note 1, 2	Pass

Note 1: There is no any degradation of performance and function.

Note 2: The power consumption of EUT has shut down, but self-recoverable after the test

13.5. Test Photograph

Test Mode: Mode 1 & 3

Description: Voltage dips and interruptions Test Setup



Test Mode: Mode 2

Description: Voltage dips and interruptions Test Setup



14. Uncertainty Measurement

Conducted Emission
<p>The maximum measurement uncertainty is evaluated as:</p> <p>9kHz~150kHz: 3.84dB</p> <p>150kHz~30MHz: 3.46dB</p>
Radiated disturbance
<p>The maximum measurement uncertainty is evaluated as:</p> <p>Horizontal: 30MHz~300MHz: 4.07dB</p> <p>300MHz~1GHz: 3.63 dB</p> <p>Vertical: 30MHz~300MHz: 4.18 dB</p> <p>300MHz~1GHz: 3.60 dB</p>
Radiated disturbance
<p>The maximum measurement uncertainty is evaluated as:</p> <p>Horizontal: 1GHz~18GHz: 4.16 dB</p> <p>Vertical: 1GHz~18GHz: 4.76 dB</p>
Harmonic current emissions
<p>The maximum measurement uncertainty is evaluated as $\pm 0.2\%$.</p>
Voltage fluctuation and flicker
<p>The maximum measurement uncertainty is evaluated as d_c and d_{max}: $\pm 0.095\%$, P_{st} and P_{lt}: $\pm 4\%$, $d_{(t)}$: $\pm 1.5\%$.</p>
Electrostatic discharge
<p>The maximum measurement uncertainty is evaluated as Voltage: $\pm 1\%$, Time: $\pm 6.4\%$.</p>
Radio-frequency electromagnetic field
<p>The maximum measurement uncertainty is evaluated as $\pm 2.72\text{dB}$.</p>
Fast transients
<p>The maximum measurement uncertainty is evaluated as Voltage: $\pm 4\%$, Time: $\pm 3\%$.</p>
Surges
<p>The maximum measurement uncertainty is evaluated as Voltage: $\pm 4\%$, Time: $\pm 2\%$.</p>
Radio-frequency common mode
<p>The maximum measurement uncertainty is evaluated as $\pm 3.72\text{dB}$.</p>
Voltage dips and interruptions
<p>The maximum measurement uncertainty is evaluated as Voltage: $\pm 4\%$, Time: $\pm 1\%$.</p>

15. List of Measuring Instrument

Conducted Emission

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	1 year	2014/11/08
Two-Line V-Network	R&S	ENV216	1 year	2014/11/08
Two-Line V-Network	R&S	ENV216	1 year	2014/11/08
Temperature/Humidity Meter	Anymetre	TH101B	1 year	2014/11/15

Radiated disturbance

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	1 year	2014/11/08
Bilog Period Antenna	Schwarzbeck	VULB 9162	1 year	2014/11/24
Horn Antenna	Schwarzbeck	BBHA 9120D	1 year	2014/11/24
Preamplifier	MRT	AP01G18	1 year	2014/12/14
Temperature/Humidity Meter	Anymetre	TH101B	1 year	2014/11/15

Harmonic current emissions

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
Power Analyzer	California	PACS-1	1 year	2015/01/02
AC Power Source	California	3001iX	1 year	2015/01/02

Voltage fluctuation and flicker

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
Power Analyzer	California	PACS-1	1 year	2015/01/02
AC Power Source	California	3001iX	1 year	2015/01/02

Electrostatic discharge

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
ESD Simulator	Teseq GmbH	NSG 435 / INA 402	1 year	2014/11/13
Barometer	BaoPing	DYM3	1 year	2014/11/18
Temperature/Humidity Meter	Anymetre	TH101B	1 year	2014/11/15

Radio-frequency electromagnetic field

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
Signal Generator	R&S	SML03	1 year	2014.09.16
Power Meter	Boonton	4231A	1 year	2014.09.16
Power Sensor	Boonton	51011-EMC	1 year	2014.09.16
Power Meter	Agilent	E4416A	1 year	2014.09.16
Power Sensor	Agilent	E9304A	1 year	2014.09.16
RF Switch	MF	SW1072	1 year	N/A
Power Amplifier	Schaffner	CBA9413B	1 year	NA
Power Amplifier	Schaffner	CBA9428	1 year	NA
Directional Coupler	Schaffner	CHA 9652B	1 year	N/A
Directional Coupler	A&R	DC7144A	1 year	N/A
E-Field Probe Type 8.3	Narda	2244/90.21	1 year	2015.03.28
EMR-20C Radiation Meter	Narda	BN 2244/70	1 year	2015.03.28
Bilog Antenna	Schaffner	CBL6141A	1 year	N/A
Horn Antenna	A&R	AT4002A	1 year	N/A
Temperature/Humidity Meter	Zhicheng	ZC1-2	1 year	2015.01.11

Fast transients

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
Compact Immunity Test System	3cTest	CCS 600	1 year	2015/04/11
Capacitive coupling clamp	3cTest	EFTC	1 year	2015/04/11
Temperature/Humidity Meter	Anymetre	TH101B	1 year	2014/11/15

Surges

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
Compact Immunity Test System	3cTest	CCS 600	1 year	2015/04/11
Combination wave Surge simulator	3cTest	CWS 600T	1 year	2015/04/11
CDN	3cTest	CDN-405T8	1 year	2015/04/11
Temperature/Humidity Meter	Anymetre	TH101B	1 year	2014/11/15

Radio-frequency common mode

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
Conducted Immunity Tester	Frankonia	CIT-10/75	1 year	2014/11/08
CDN	Frankonia	CDN M2+M3	1 year	2014/12/14
Temperature/Humidity Meter	Anymetre	TH101B	1 year	2014/11/15
Audio Analyzer	R&S	UPV	1 year	2015/03/04
Radio Communication Tester	R&S	CMU200	1 year	2014/12/14
Sound Calibration	B&K	4231	1 year	2015/03/11
Conditioning Amplifier	B&K	2690-OS2	1 year	2015/03/11
Microphone	B&K	2669	1 year	2015/03/11
Microphone	B&K	4192	1 year	2015/03/11
Probe Microphone	B&K	4182	1 year	2015/03/11
Mouth Simulator	B&K	4227	1 year	2015/03/11
Telephone Test Head	B&K	4602B	1 year	N/A

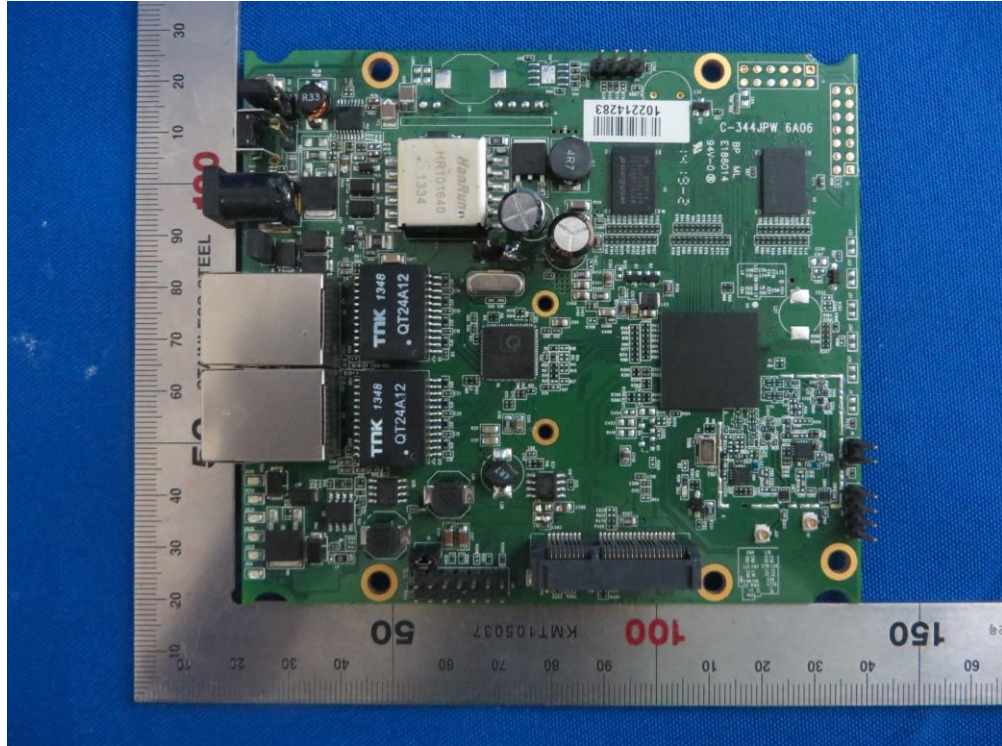
Voltage dips and interruptions

Instrument	Manufacturer	Type No.	Cali. Interval	Cali. Due Date
Compact Immunity Test System	3cTest	CCS 600	1 year	2015/04/11
CDN	3cTest	VMT 2612S	1 year	2015/04/11
Temperature/Humidity Meter	Anymetre	TH101B	1 year	2014/11/15

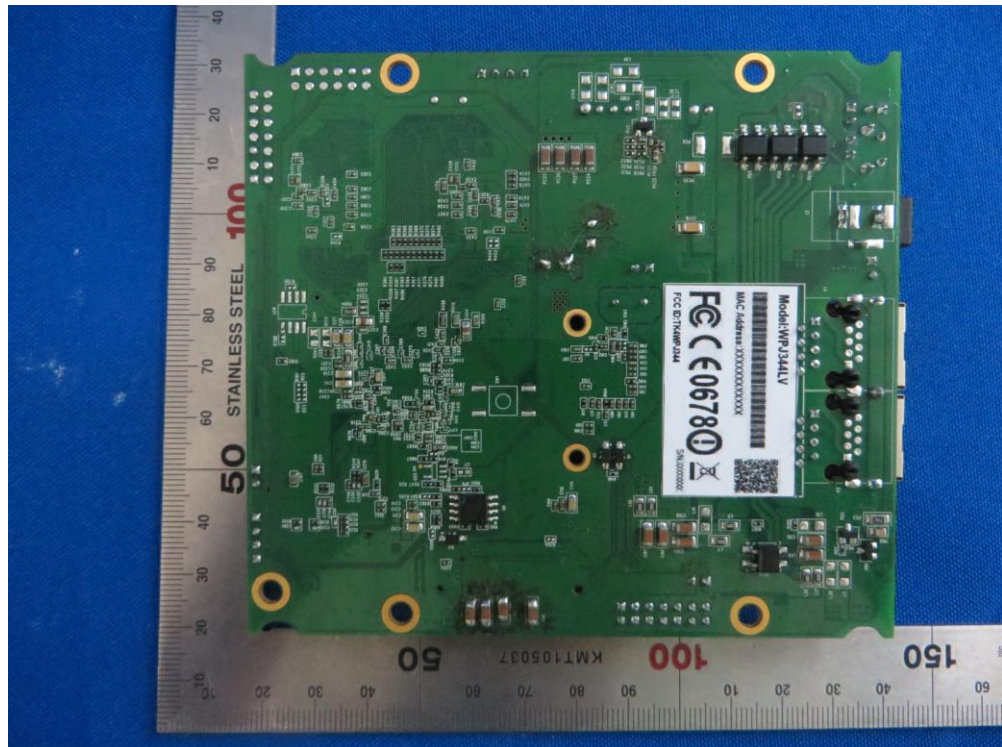
Appendix

EUT Photograph

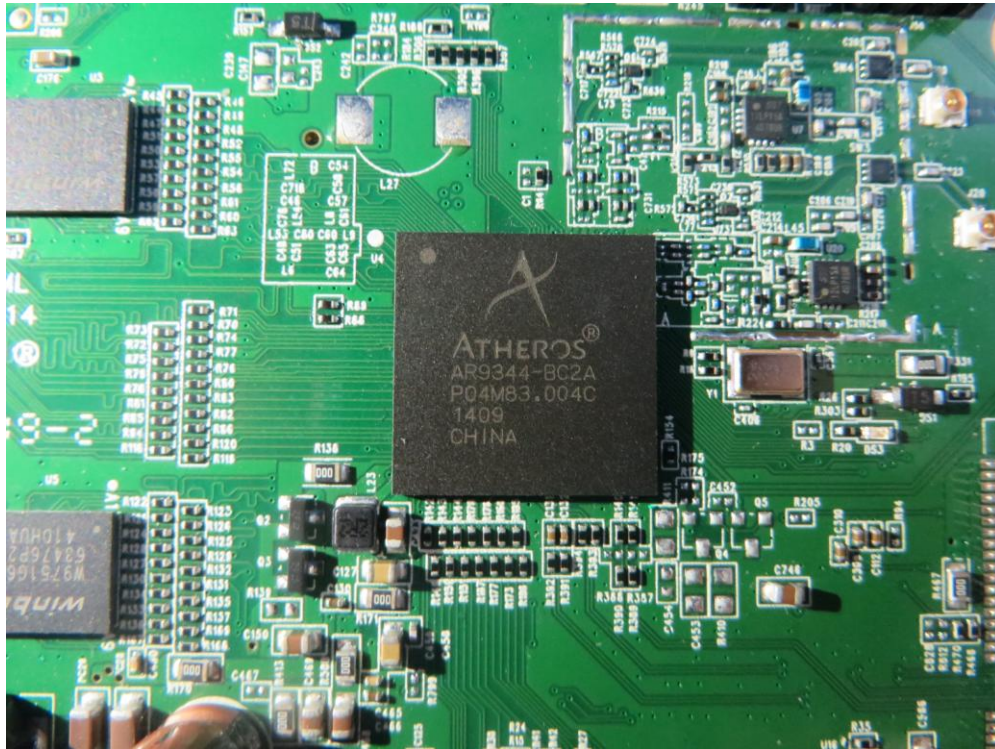
(1) EUT Photo



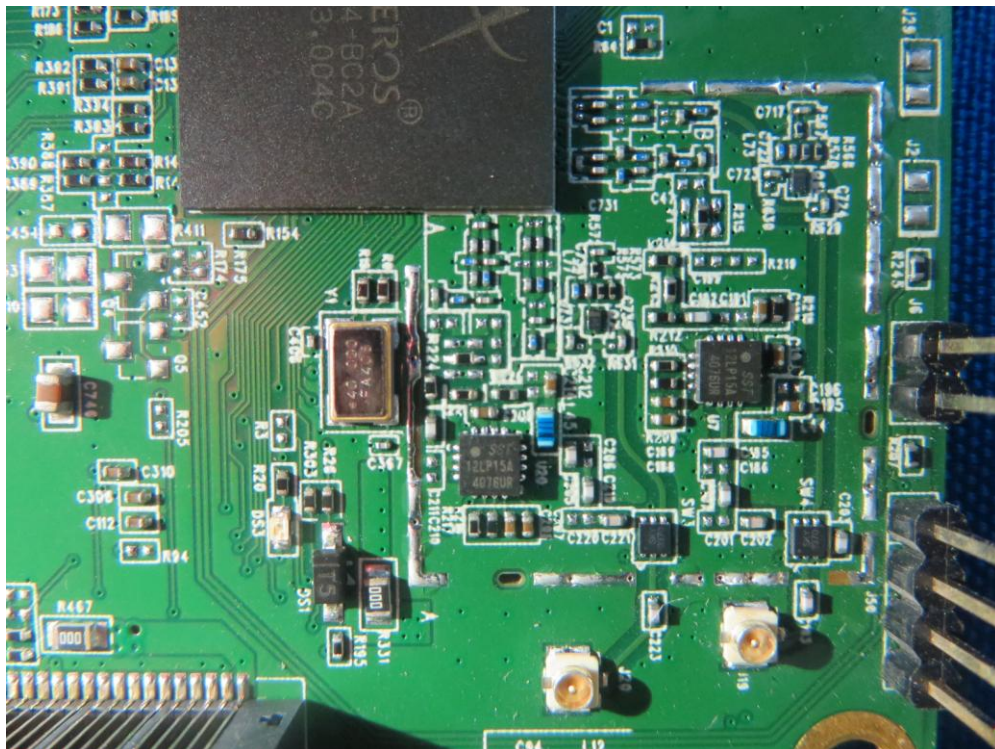
(2) EUT Photo



(3) EUT Photo



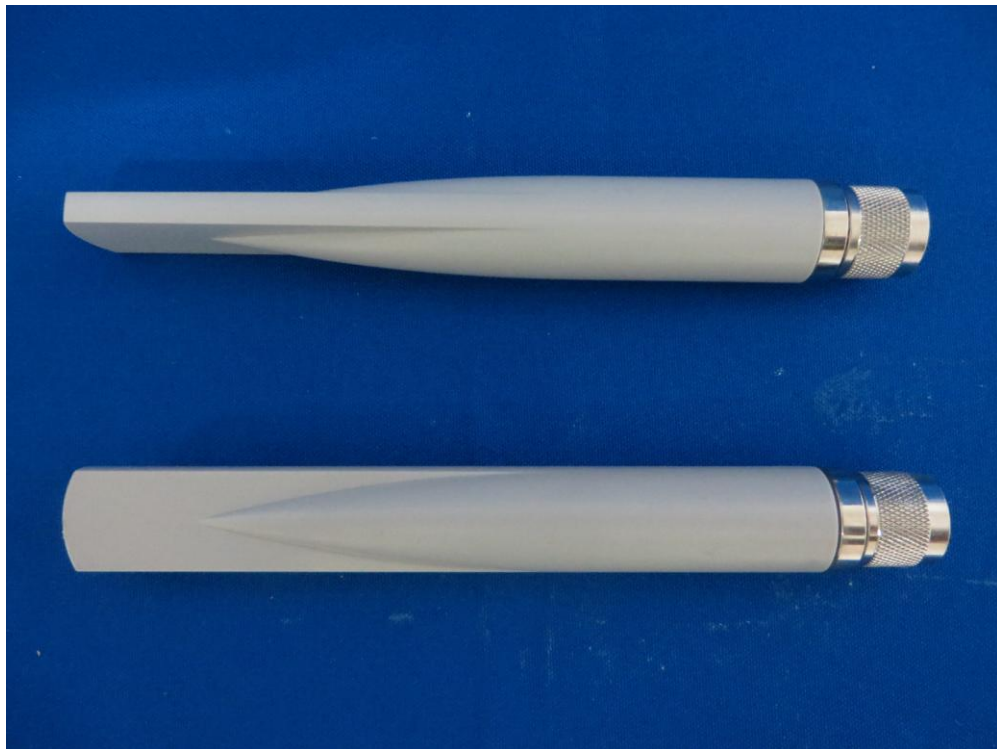
(4) EUT Photo



(5) EUT Photo (Dipole Antenna 1#)



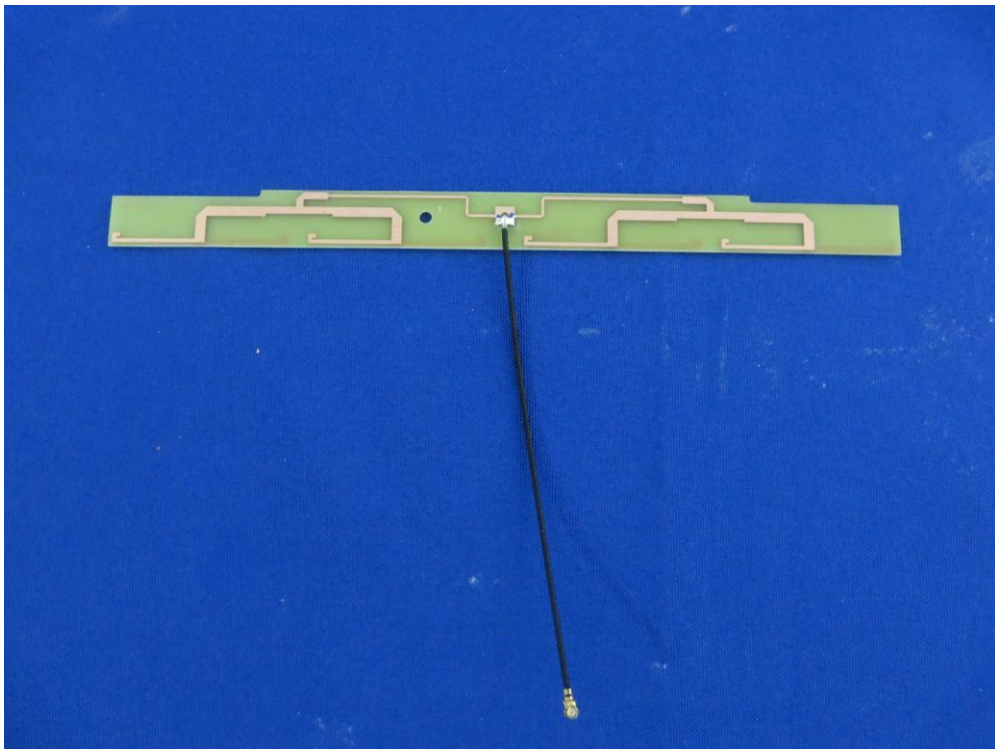
(6) EUT Photo (Panel Antenna 4#)



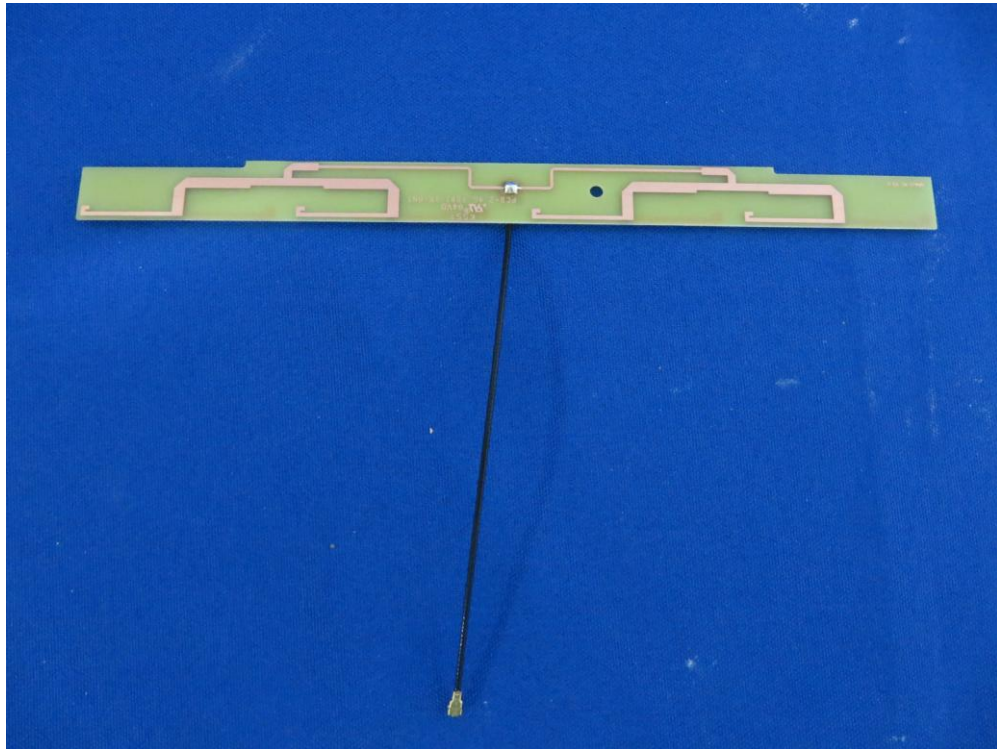
(7) EUT Photo (Panel Antenna 2#)



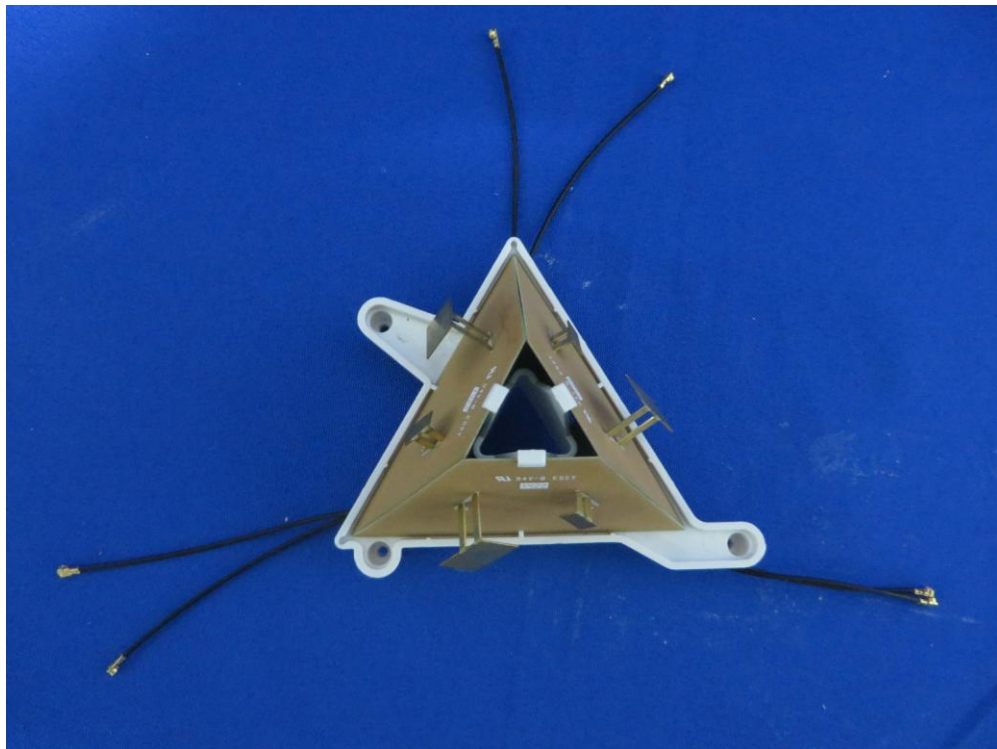
(8) EUT Photo (Panel Antenna 3#)



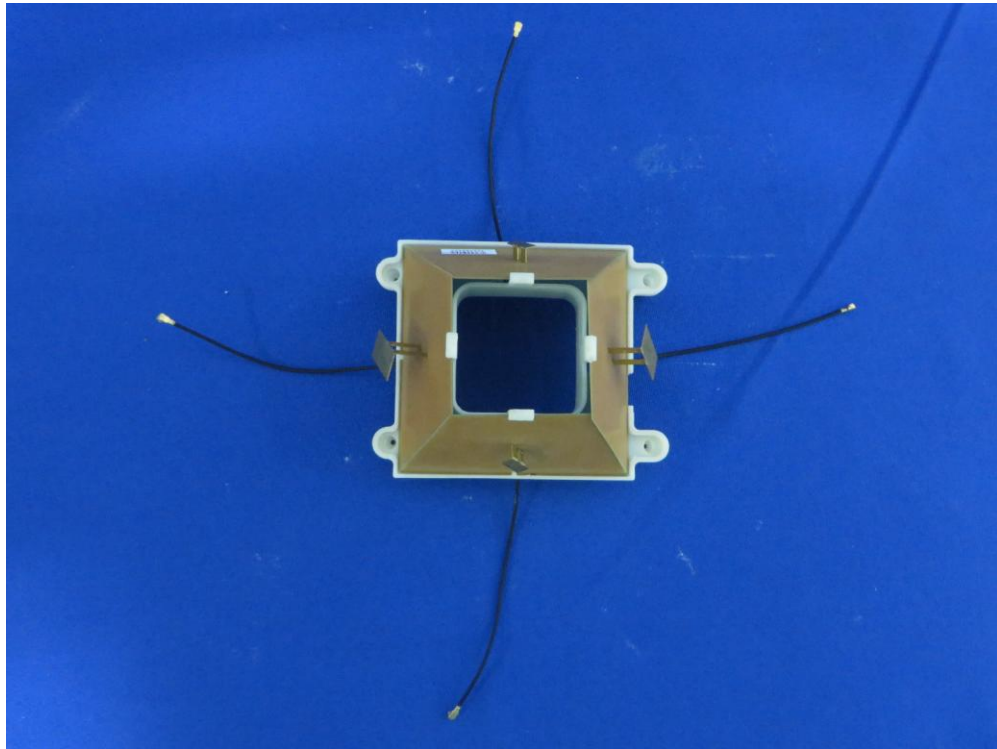
(9) EUT Photo (Panel Antenna 3#)



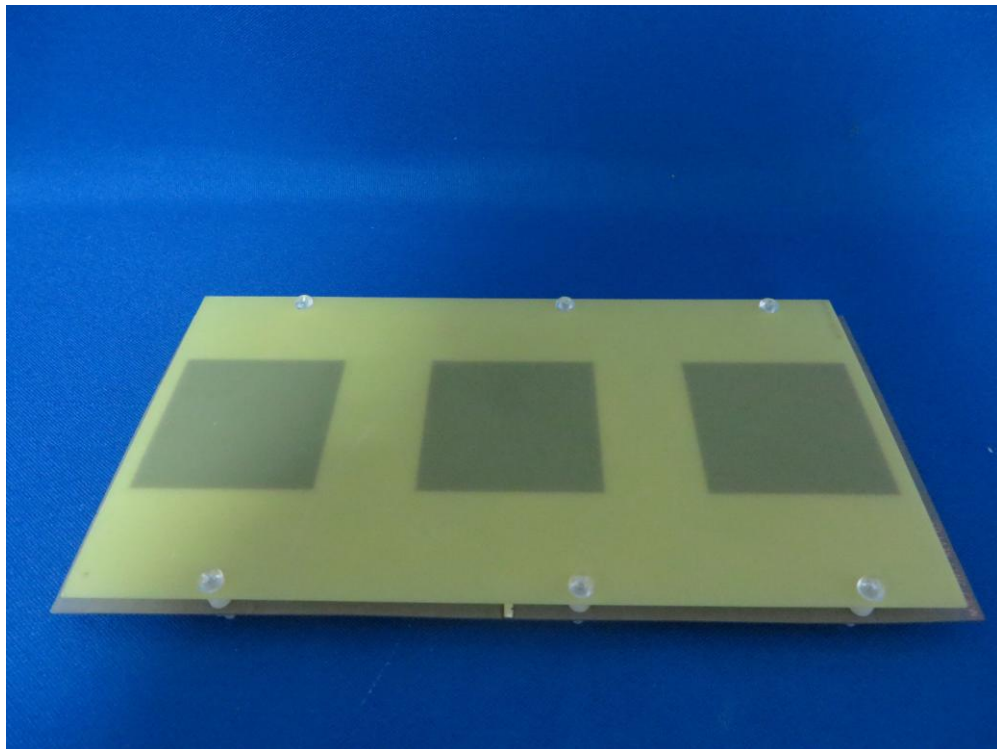
(10) EUT Photo (Panel Antenna 5#)



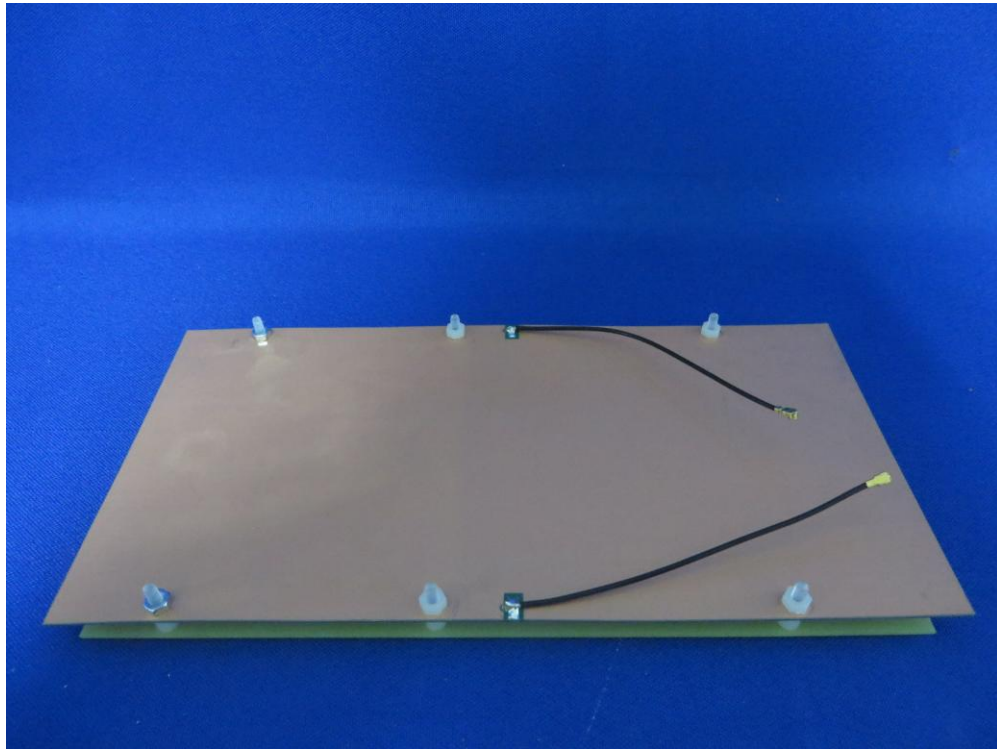
(11) EUT Photo (Panel Antenna 6#)



(12) EUT Photo (Panel Antenna 1#)



(13) EUT Photo (Panel Antenna 1#)



(14) EUT Photo (Adapter 1#)



(15) EUT Photo (Adapter 1#)



(16) EUT Photo (Adapter 1#)



(17) EUT Photo (Adapter 2#)



(18) EUT Photo (Adapter 2#)



(19) EUT Photo (Adapter 2#)



(20) EUT Photo (Adapter 2#)



The End