



TEST REPORT

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

Report Reference No......: **TRE1303013506 R/C: 59940**

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Date of issue.....: May 22, 2013

Testing Laboratory Name: **Shenzhen Huatongwei International Inspection Co., Ltd**

Address.....: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

Applicant's name: **RICON TECHNOLOGIES FZE**

Address.....: Ras Al Khaimah, UAE P.O. Box 16111

Test specification:

Standard: **ETSI EN 301 489-1 V1.9.2: 2011-09**

ETSI EN 301 489-17 V2.2.1: 2012-09

TRF Originator.....: Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF.....: Dated 2006-06

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Test item description : Cellular Router

Trade Mark: **RICON**

Manufacturer: **RICON TECHNOLOGIES FZE**

Model/Type reference.....: S9922

List Model: /

Modulation: CCK, OFDM

Operation Frequency.....: From 2412MHz to 2472MHz

Ratings.....: DC12.0V adapter from AC 230V/50Hz

Result.....: **Positive**

TEST REPORT

Test Report No. :	TRE1303013506	May 22, 2013
		Date of issue

Equipment under Test : Cellular Router

Model /Type : S9922

Listed Models : /

Applicant : **RICON TECHNOLOGIES FZE**

Address : Ras Al Khaimah,UAE P.O. Box 16111

Manufacturer : **RICON TECHNOLOGIES FZE**

Address : Ras Al Khaimah,UAE P.O. Box 16111

Test Result according to the standards on page 4:	Positive
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The test report merely corresponds to the test sample.
 It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

[ETSI EN 301 489-1 V1.9.2 \(2011-09\)](#)–Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

[ETSI EN 301 489-17 V2.2.1 \(2012-09\)](#)–Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment; Part 17: Specific conditions for wideband transmission systems

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Mar 26, 2013
Testing commenced on	:	Mar 26, 2013
Testing concluded on	:	May 22, 2013

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	<input type="radio"/> 120V / 60 Hz	<input type="radio"/> 115V / 60Hz
		<input type="radio"/> 12 V DC	<input type="radio"/> 24 V DC
		<input checked="" type="radio"/> Other (specified in blank below)	

DC 12V from AC Adapter

2.3. Short description of the Equipment under Test (EUT)

2.4GHz (Cellular Router (M/N:S9922))

For more details, refer to the user's manual of the EUT. Serial number: Prototype

2.4. EUT operation mode

The EUT has been tested under typical operating condition. No software used to control the EUT for staying in transmitting and receiving mode for testing.

2.5. Configuration of Tested System

Fig. 2-1 Configuration of Tested System

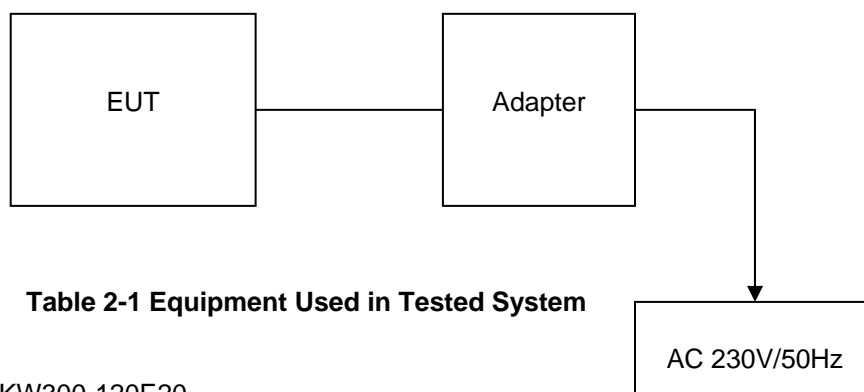


Table 2-1 Equipment Used in Tested System

Adapter:

Model: KW300-120E20
 Input:100-240V~50/60Hz 0.8A
 Output: +12V DC 2.0A
 Power Cable: 120cm
 ◇ Shielded ◆ Unshielded

2.6. Performance level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test relative to a performance criteria defined by its manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product. Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

- essential operational modes and states;
- tests of all peripheral access(hard disks, floppy disks, printers, keyboard, mouse, etc.);
- quality of software execution
- quality of data display and transmission
- quality of speech transmission

General performance criteria

- based on the used product standard
 - based on the declaration of the manufacturer, requestor or purchaser
- 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 table

Table 1: 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 transmissions.	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).
<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>		

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 5 000 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 5 000 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.

2.7. Modifications

No modifications were implemented to meet testing criteria.

2.8. NOTE

The EUT is an 802.11b/g/n Cellular Router ,The functions of the EUT listed as below:

	Test Standards	Reference Report
Radio-WCDMA	ETSI EN 301 908-1 V5.2.1: 2011-05 ETSI EN 301 908-2 V4.2.1: 2010-03	TRE1303013501
Radio-GSM	ETSI EN 301 511 V9.0.2: 2003-03	TRE1303013502
Radio-WLAN	ETSI EN 300 328 V1.7.1: 2006-10	TRE1303013503
EMC-GSM	ETSI EN 301 489-1 V1.9.2: 2011-09 ETSI EN 301 489-7 V1.3.1: 2005-11	TRE1303013504
EMC-WCDMA	ETSI EN 301 489-1 V1.9.2: 2011-09 ETSI EN 301 489-24 V1.5.1: 2010-10	TRE1303013505
EMC-WLAN	ETSI EN 301 489-1 V1.9.2: 2011-09 ETSI EN 301 489-17 V2.2.1: 2012-09	TRE1303013506
EMC	EN 55022:2010 EN 55024:2010	TRE1303013507
EMF	EN62311:2008	TRE1303013508

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Huatongwei International Inspection Co., Ltd
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Phone: 86-755-26715686 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: Mar. 01, 2012. Valid time is until Feb 28, 2015.

A2LA-Lab Cert. No. 2243.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until Sept. 30, 2013.

FCC-Registration No.: 662850

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date Jun. 01, 2012, valid time is until Jun. 01, 2015.

IC-Registration No.: 5377A

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Jan. 25, 2011, valid time is until Jan. 24, 2014.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

NEMKO-Aut. No.: ELA125

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10, the authorization is valid through July 07, 2013

VCCI

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2010. Valid time is until Dec. 23, 2013.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2012. Valid time is until Dec. 19, 2015.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2013. Valid time is until May 06, 2016.

DNV

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2013.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

3.4. Test Description

ETSI EN 301 489-1/-17 requirements		
Radiated emission	ETSI EN301 489-1 V1.9.2 Clause 7.1	PASS
Conducted emission(AC Mains)	ETSI EN301 489-1 V1.9.2 Clause 7.1	PASS
Conducted emission(Communication Ports)	ETSI EN301 489-1 V1.9.2 Clause 7.1	N/A
Harmonic current emissions	ETSI EN301 489-1 V1.9.2 Clause 7.1	N/A
Voltage fluctuations and flicker	ETSI EN301 489-1 V1.9.2 Clause 7.1	PASS
Conducted emission (telecommunication)	ETSI EN301 489-1 V1.9.2 Clause 7.1	N/A
Electrostatic discharge	ETSI EN301 489-1 V1.9.2 Clause 7.2	PASS
RF electromagnetic field	ETSI EN301 489-1 V1.9.2 Clause 7.2	PASS
Fast transients common mode	ETSI EN301 489-1 V1.9.2 Clause 7.2	PASS
RF common mode 0,15 MHz to 80 MHz	ETSI EN301 489-1 V1.9.2 Clause 7.2	PASS
Transients and surges	ETSI EN301 489-1 V1.9.2 Clause 7.2	N/A
Voltage dips and interruptions	ETSI EN301 489-1 V1.9.2 Clause 7.2	PASS
Surges, line to line and line to ground	ETSI EN301 489-1 V1.9.2 Clause 7.2	PASS

Remark: The measurement uncertainty is not included in the test result.

3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.22dB	(1)
Radiated Emission	1~12.75GHz	4.35dB	(1)
Conducted Disturbance	0.15~30MHz	3.29dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6. Equipments Used during the Test

Harmonic current emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Purified Power Source	CALIFORNIA INSTRUMENTS	HFS500	54513	2012/10/27
2	Harmonic And Flicker Analyzer	EM TEST	DPA503S1	0500-10	2012/10/27

Conducted emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100106	2012/10/27
2	Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	100028	2012/10/27
3	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100044	2012/10/27
4	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2012/10/27
5	Single Balanced Telecom Pair ISN	FCC	FCC-TLISN-T2-02	20371	2012/10/27
6	Two Balanced Telecom Pairs ISN	FCC	FCC-TLISN-T4-02	20373	2012/10/27

Electrostatic Discharge					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ESD Simulator	EM TEST	DITOC0103Z	0301-04	2012/10/27

Voltage Fluctuation and Flicker					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Purified Power Source	CALIFORNIA INSTRUMENTS	HFS500	54513	2012/10/27
2	Harmonic And Flicker Analyzer	EM TEST	DPA503S1	0500-10	2012/10/27

RF Electromagnetic Field					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Signal Generator	IFR	2032	203002/100	2012/10/27
2	AMPLIFIER	AR	150W1000	301584	2012/10/27
3	DUAL DIRECTIONAL COUPLER	AR	DC6080	301508	2012/10/27
4	POWER HEAD	AR	PH2000	301193	2012/10/27
5	POWER METER	AR	PM2002	302799	2012/10/27
6	TRANSMITTING AERIAL	AR	AT1080	28570	2012/10/27
7	POWER AMPLIFIER	AR	25S1G4A	0325511	2012/10/27
8	DUAL DIRECTIONAL COUPLER	AR	DC7144A	0325100	2012/10/27
9	TRANSMITTING AERIAL	AR	AT4002A	0324848	2012/10/27

Fast transients common mode					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Ultra Compact Simulator	EM TEST	UCS500M6	0500-19	2012/10/27
2	Coupling Clamp	EM TEST	HFK	1501-14	2012/10/27

Surges, line to line and line to ground					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA COMPACT SIMULATOR	EM TEST	UCS500M6	0500-19	2012/10/27

RF common mode 0,15 MHz to 80 MHz					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Signal Generator	IFR	2023A	202304/060	2012/10/27
2	Amplifier	AR	75A250	302205	2012/10/27
3	Dual Directional Coupler	AR	DC2600	302389	2012/10/27
4	6db Attenuator	EMTEST	ATT6/75	0010230A	2012/10/27
5	EM CLAMP	LÜTHI	EM101	335625	2012/10/27
6	CDN	EMTEST	CDN M3	0802-03	2012/10/27

Voltage Dips and Interruptions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Ultra Compact Simulator	EM TEST	UCS500M6	0500-19	2012/10/27
2	Motor Driven Voltage Transformer	EM TEST	MV2616	0301-11	2012/10/27

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Ultra-Broadband Antenna	Rohde&Schwarz	HL562	100015	2012/10/27
2	EMI Test Receiver	Rohde&Schwarz	ESI 26	100009	2012/10/27
3	RF Test Panel	Rohde&Schwarz	TS / RSP	335015/ 0017	2012/10/27
4	Turetable	ETS	2088	2149	2012/10/27
5	Antenna Mast	ETS	2075	2346	2012/10/27
6	EMI Test Software	Rohde&Schwarz	ESK1	N/A	2012/10/27
7	Horn Antenna	Rohde&Schwarz	HF906	100039	2012/10/27
8	Universal Radio Communication Tester	Rohde&Schwarz	CMU200	112012	2012/10/27
9	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2012/10/27
10	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	539	2012/10/27
11	HORN ANTENNA	ShwarzBeck	9120D	1011	2012/10/27
12	TURNTABLE	MATURO	TT2.0	----	2012/10/27
13	ANTENNA MAST	MATURO	TAM-4.0-P	----	2012/10/27

The Calibration was one year.

4. TEST CONDITIONS AND RESULTS

4.1. ETSI EN 301 489-1/-17 REQUIREMENTS

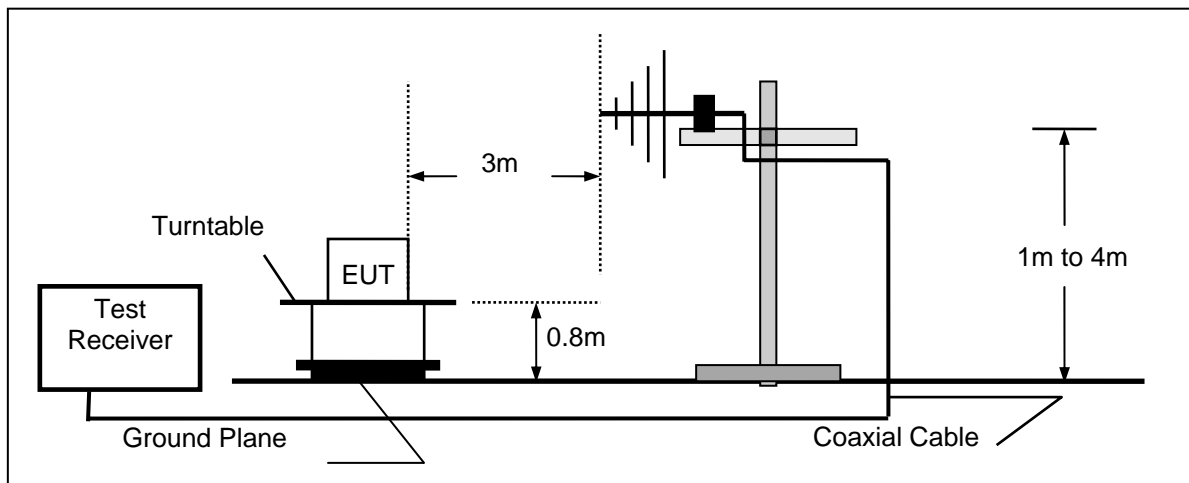
4.1.1. Radiated Emission

LIMIT

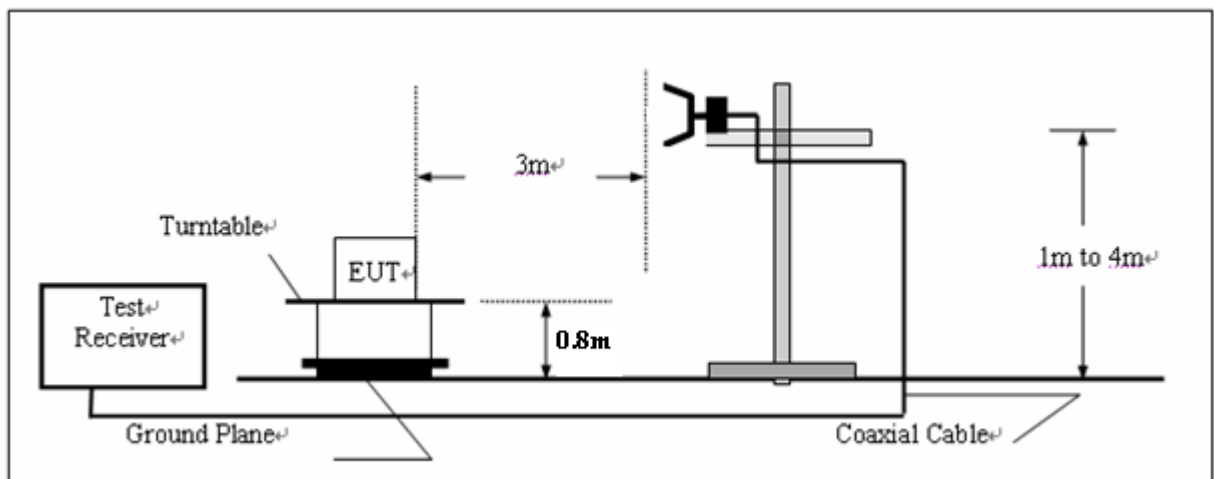
Please refer to ETSI EN 301 489-1 Clause 8.2.3, Table 4 and EN 55022 Clause 6, Table 6, and Class B

TEST CONFIGURATION

(b) Radiated Emission Test Set-Up, Frequency below 1000MHz



(c) Radiated Emission Test Set-Up, Frequency above 1000MHz



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 8.2.3 and EN 55022 Clause 6 for the measurement methods.

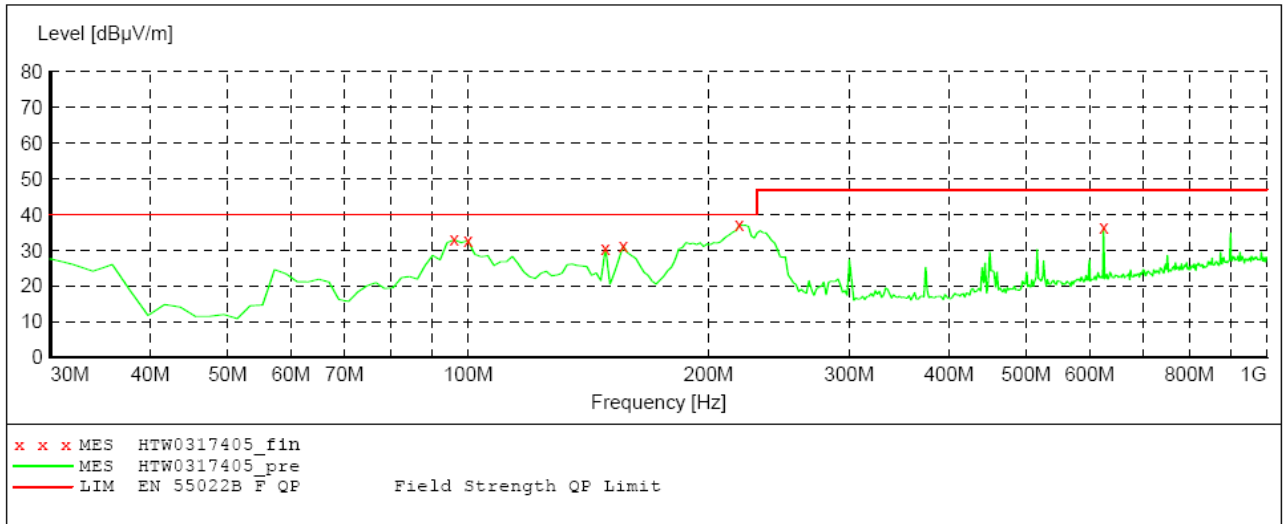
TEST RESULTS

Remark:1.We tested both WLAN transmitter and receiver mode and recorded worst case at transmitter mode.

Below 1000MHz

SCAN TABLE: "test Field (30M-1G) QP"

Short Description:			Field Strength (30M-1G)			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
30.0 MHz	1.0 GHz	60.0 kHz	QuasiPeak	1.0 s	120 kHz	HL562



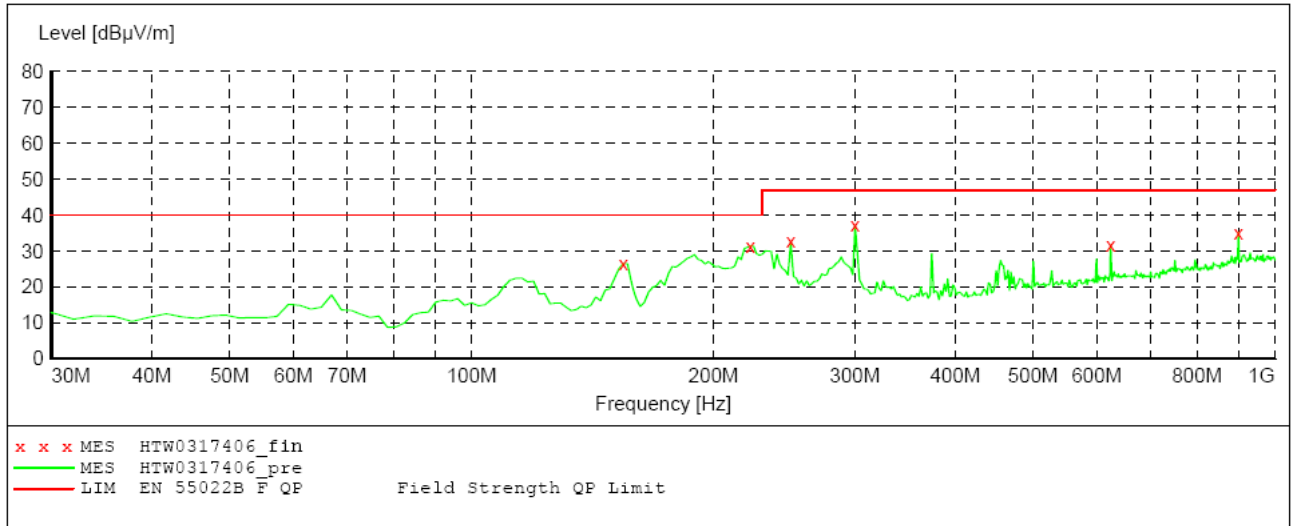
MEASUREMENT RESULT: "HTW0317405_fin"

5/17/2013 6:11PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
96.092184	33.00	-15.9	40.0	7.0	QP	100.0	130.00	HORIZONTAL
99.979960	32.70	-15.7	40.0	7.3	QP	100.0	110.00	HORIZONTAL
148.577154	30.70	-19.8	40.0	9.3	QP	100.0	29.00	HORIZONTAL
156.352705	31.20	-19.3	40.0	8.8	QP	100.0	74.00	HORIZONTAL
218.557114	37.10	-15.6	40.0	2.9	QP	100.0	3.00	HORIZONTAL
624.829659	36.40	-5.7	47.0	10.6	QP	100.0	94.00	HORIZONTAL

SCAN TABLE: "test Field (30M-1G) QP"

Short Description: Field Strength (30M-1G)
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 30.0 MHz 1.0 GHz 60.0 kHz QuasiPeak 1.0 s 120 kHz HL562



MEASUREMENT RESULT: "HTW0317406_fin"

5/17/2013 6:13PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
154.408818	26.50	-19.4	40.0	13.5	QP	100.0	137.00	VERTICAL
222.444890	31.40	-15.4	40.0	8.6	QP	100.0	0.00	VERTICAL
249.659319	32.60	-14.3	47.0	14.4	QP	100.0	180.00	VERTICAL
300.200401	37.20	-13.1	47.0	9.8	QP	100.0	20.00	VERTICAL
624.829659	31.70	-5.7	47.0	15.3	QP	100.0	3.00	VERTICAL
900.861723	35.10	-2.1	47.0	11.9	QP	100.0	93.00	VERTICAL

REMARKS:

- * Undetectable
- The IF bandwidth of EMI Test Receiver was 120 KHz for measuring from 30 MHz to 1 GHz and 1 MHz for measuring above 1 GHz

1000-6000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M									
No.	Freq. (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1320.25	35.90	PK	70.00	34.10	1.00 H	120	44.60	-8.70
1	1320.25	23.50	AV	50.00	26.50	1.00 H	120	31.60	-8.10
2	1756.58	38.60	PK	70.00	31.40	1.00 H	26	44.60	-6.00
2	1756.58	25.90	AV	50.00	24.10	1.00 H	26	32.60	-6.70
3	*2412.00	102.50	PK			1.00 H	264	105.80	-3.30
3	*2412.00	99.70	AV			1.00 H	264	103.00	-3.30
4	3200.45	40.70	PK	70.00	29.30	1.00 H	165	42.70	-2.00
4	3200.45	32.50	AV	50.00	17.50	1.00 H	165	34.50	-2.00
5	4824.00	56.23	PK	74.00	17.77	1.00 H	96	54.43	1.80
5	4824.00	45.52	AV	54.00	8.48	1.00 H	96	43.22	2.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M									
No.	Freq. (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1320.55	34.53	PK	70.00	35.47	1.00 V	230	42.73	-8.20
1	1320.55	24.53	AV	50.00	25.47	1.00 V	230	32.53	-8.00
2	1742.14	39.74	PK	70.00	30.26	1.00 V	120	45.74	-6.00
2	1742.14	26.36	AV	50.00	23.64	1.00 V	120	32.36	-6.00
3	*2412.00	105.25	PK			1.00 V	215	108.65	-3.40
3	*2412.00	100.25	AV			1.00 V	215	103.65	-3.40
4	3025.54	41.55	PK	70.00	28.45	1.00 V	88	43.25	-1.70
4	3025.54	33.22	AV	50.00	16.78	1.00 V	88	34.92	-1.70
5	4824.00	56.53	PK	74.00	17.47	1.00 V	60	53.13	3.40
5	4824.00	45.53	AV	54.00	8.47	1.00 V	60	42.13	3.40

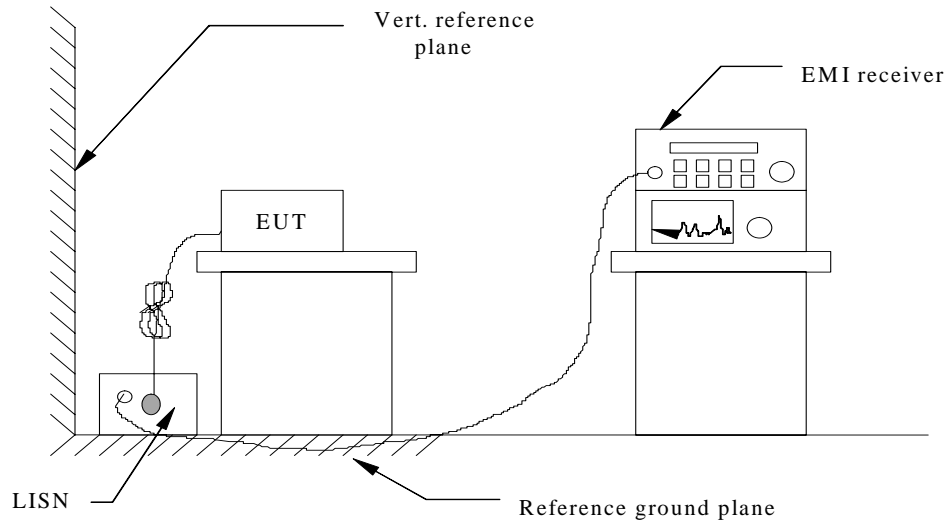
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “* “: Fundamental frequency
 6. The IF bandwidth of EMI Test Receiver was 120 KHz for measuring from 30 MHz to 1 GHz and 1 MHz for measuring above 1 GHz

4.1.2. Conducted Emission (AC Mains)

LIMIT

Please refer to ETSI EN 301 489-1 Clause 8.4.3, Table 8 and EN 55022 Clause 5, Table 2, and Class B

TEST CONFIGURATION



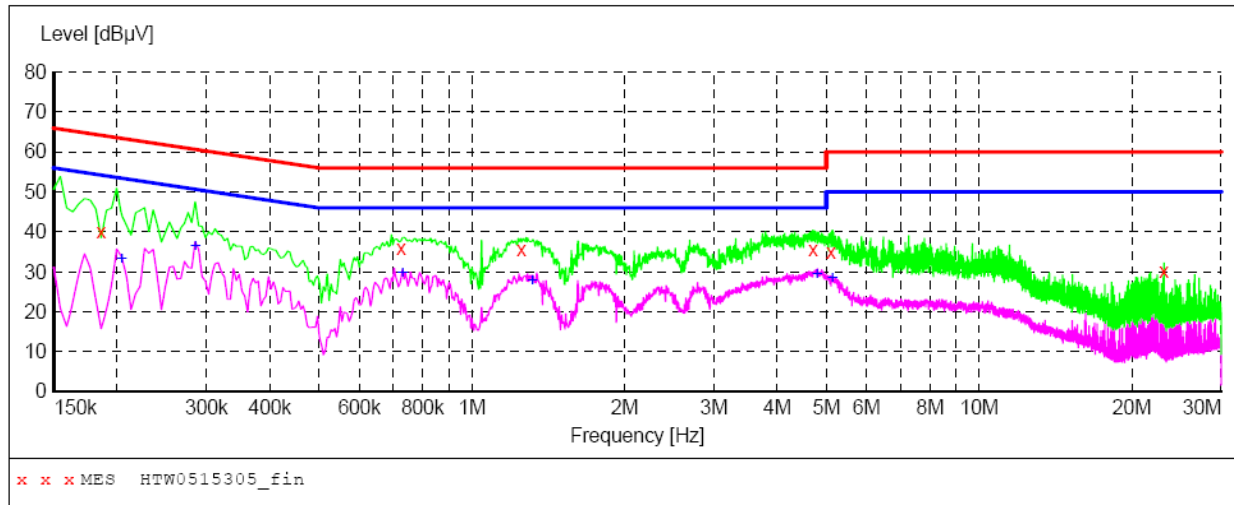
TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 8.4.3 and EN 55022 Clause 5 for the measurement methods.

TEST RESULTS

*Remark:*1. We tested both WLAN transmitter and receiver mode and recorded worst case at transmitter mode.

SCAN TABLE: "Voltage (9K-30M) FIN"
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "HTW0515305_fin"

5/15/2013 9:29AM

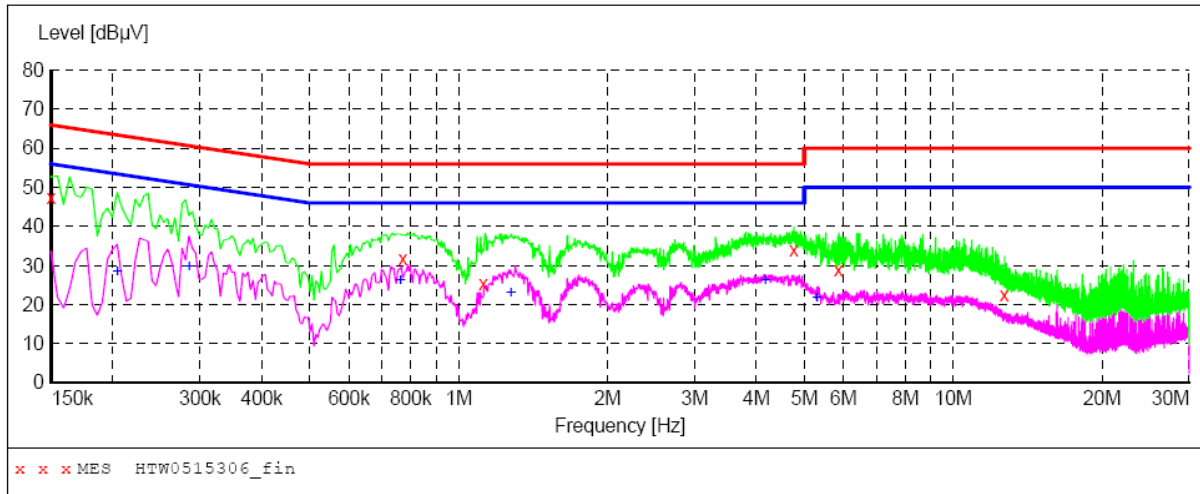
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.186000	39.90	10.2	64	24.3	QP	N	GND
0.726000	36.00	10.1	56	20.0	QP	N	GND
1.252500	35.60	10.2	56	20.4	QP	N	GND
4.708500	35.60	10.2	56	20.4	QP	N	GND
5.104500	35.00	10.2	60	25.0	QP	N	GND
23.127000	30.20	10.5	60	29.8	QP	N	GND

MEASUREMENT RESULT: "HTW0515305_fin2"

5/15/2013 9:29AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.204000	33.30	10.2	53	20.1	AV	N	GND
0.285000	36.50	10.3	51	14.2	AV	N	GND
0.730500	29.70	10.1	46	16.3	AV	N	GND
1.315500	28.00	10.2	46	18.0	AV	N	GND
4.794000	29.40	10.2	46	16.6	AV	N	GND
5.140500	28.50	10.2	50	21.5	AV	N	GND

SCAN TABLE: "Voltage (9K-30M) FIN"
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "HTW0515306_fin"

5/15/2013 9:32AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	47.40	10.2	66	18.6	QP	L1	GND
0.771000	31.90	10.1	56	24.1	QP	L1	GND
1.122000	25.40	10.2	56	30.6	QP	L1	GND
4.767000	33.90	10.2	56	22.1	QP	L1	GND
5.860500	28.80	10.2	60	31.2	QP	L1	GND
12.687000	22.50	10.3	60	37.5	QP	L1	GND

MEASUREMENT RESULT: "HTW0515306_fin2"

5/15/2013 9:32AM

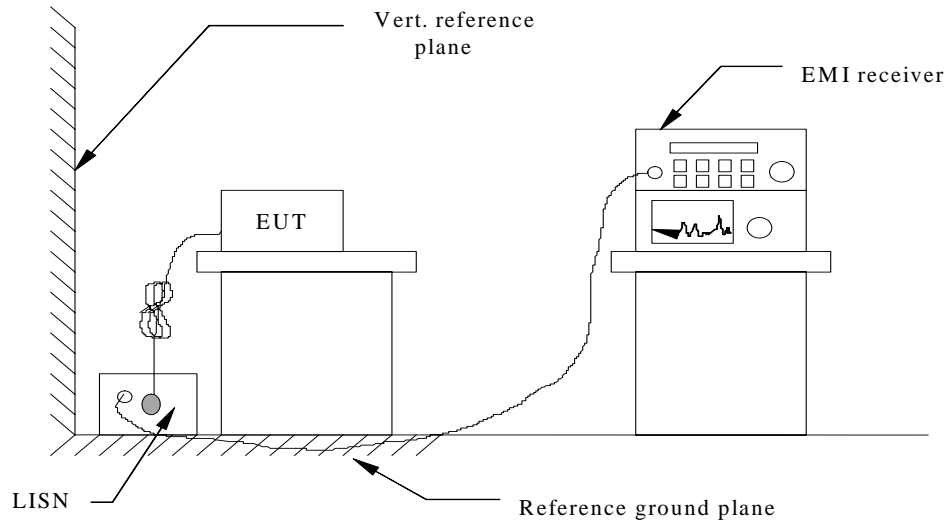
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.204000	28.60	10.2	53	24.8	AV	L1	GND
0.285000	29.80	10.3	51	20.9	AV	L1	GND
0.762000	26.20	10.1	46	19.8	AV	L1	GND
1.275000	23.20	10.2	46	22.8	AV	L1	GND
4.168500	26.20	10.2	46	19.8	AV	L1	GND
5.307000	21.80	10.2	50	28.2	AV	L1	GND

4.1.3. Conducted Emission (Communication Ports)

LIMIT

Please refer to ETSI EN 301 489-1 Clause 8.3.3, Table 6 and EN 55022 Clause 5, Table 4, and Class B

TEST CONFIGURATION



TEST PROCEDURE

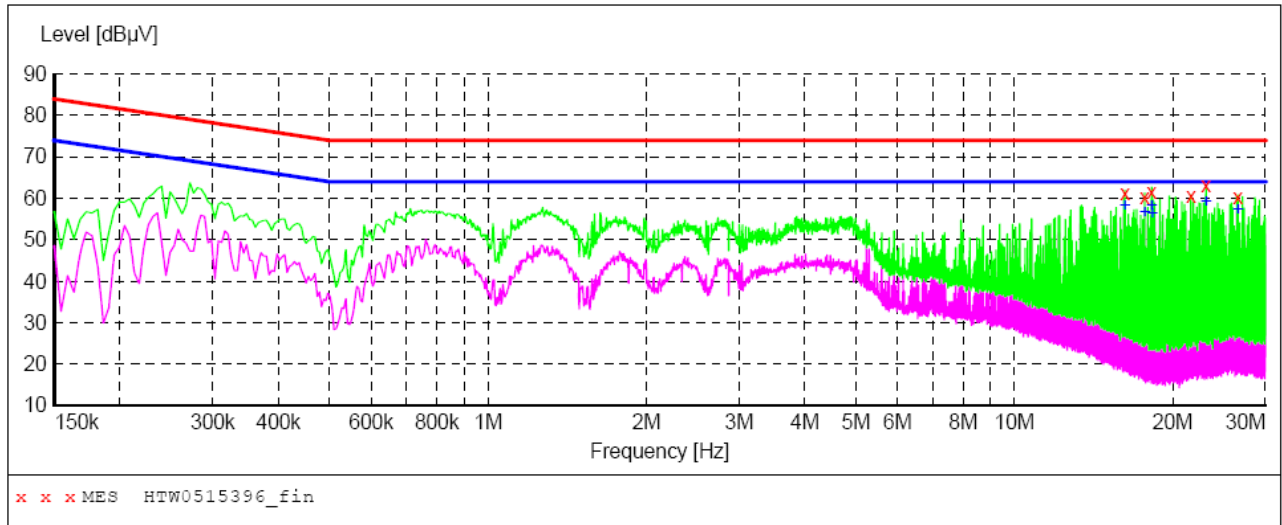
Please refer to ETSI EN 301 489-1 Clause 8.3.2 and EN 55022 Clause 5 for the measurement methods.

TEST RESULTS

*Remark:*1. We tested both WLAN transmitter and receiver mode and recorded worst case at transmitter mode.

LAN port

SCAN TABLE: "EN 22 T Voltage FIN"
 Short Description: 150K-30MHz Voltage



MEASUREMENT RESULT: "HTW0515396_fin"

5/15/2013 10:02AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
16.228500	61.30	19.9	74	12.7	QP	LAN	GND
17.695500	60.20	19.9	74	13.8	QP	LAN	GND
18.244500	61.50	19.9	74	12.5	QP	LAN	GND
21.664500	60.50	19.9	74	13.5	QP	LAN	GND
23.127000	63.20	20.0	74	10.8	QP	LAN	GND
26.610000	60.20	20.0	74	13.8	QP	LAN	GND

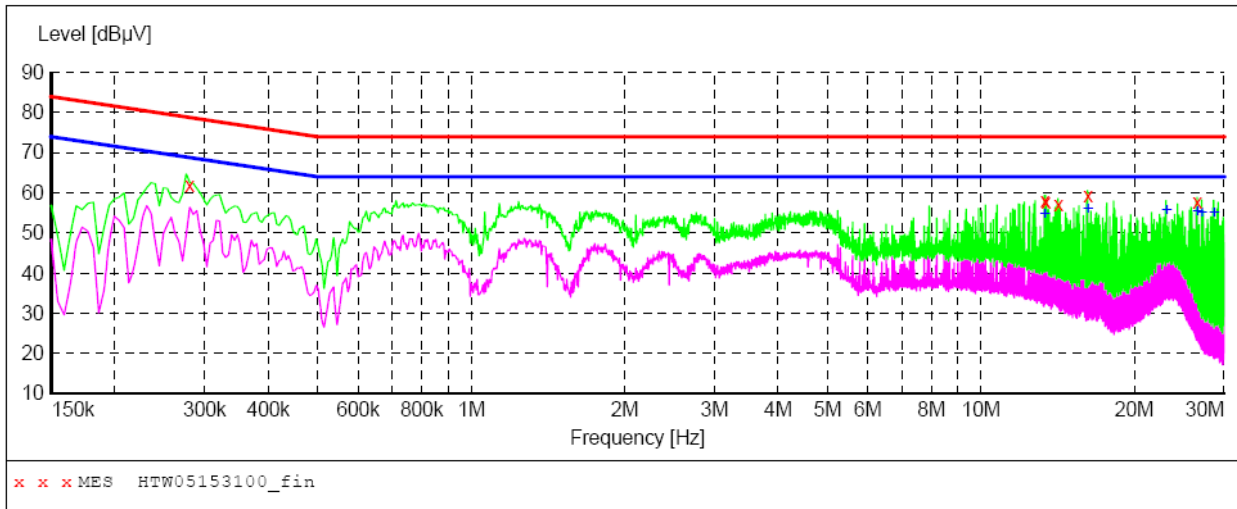
MEASUREMENT RESULT: "HTW0515396_fin2"

5/15/2013 10:02AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
16.228500	58.30	19.9	64	5.7	AV	LAN	GND
17.695500	56.80	19.9	64	7.2	AV	LAN	GND
18.244500	58.50	19.9	64	5.5	AV	LAN	GND
18.303000	56.40	19.9	64	7.6	AV	LAN	GND
23.127000	59.30	20.0	64	4.7	AV	LAN	GND
26.610000	57.30	20.0	64	6.7	AV	LAN	GND

WAN port

SCAN TABLE: "EN 22 T Voltage FIN"
 Short Description: 150K-30MHz Voltage



MEASUREMENT RESULT: "HTW05153100_fin"

5/15/2013 10:21AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.280500	61.90	19.5	79	16.9	QP	WAN	GND
13.357500	58.00	19.9	74	16.0	QP	WAN	GND
13.420500	57.70	19.9	74	16.3	QP	WAN	GND
14.212500	57.10	19.9	74	16.9	QP	WAN	GND
16.228500	59.20	19.9	74	14.8	QP	WAN	GND
26.610000	57.80	20.0	74	16.2	QP	WAN	GND

MEASUREMENT RESULT: "HTW05153100_fin2"

5/15/2013 10:21AM

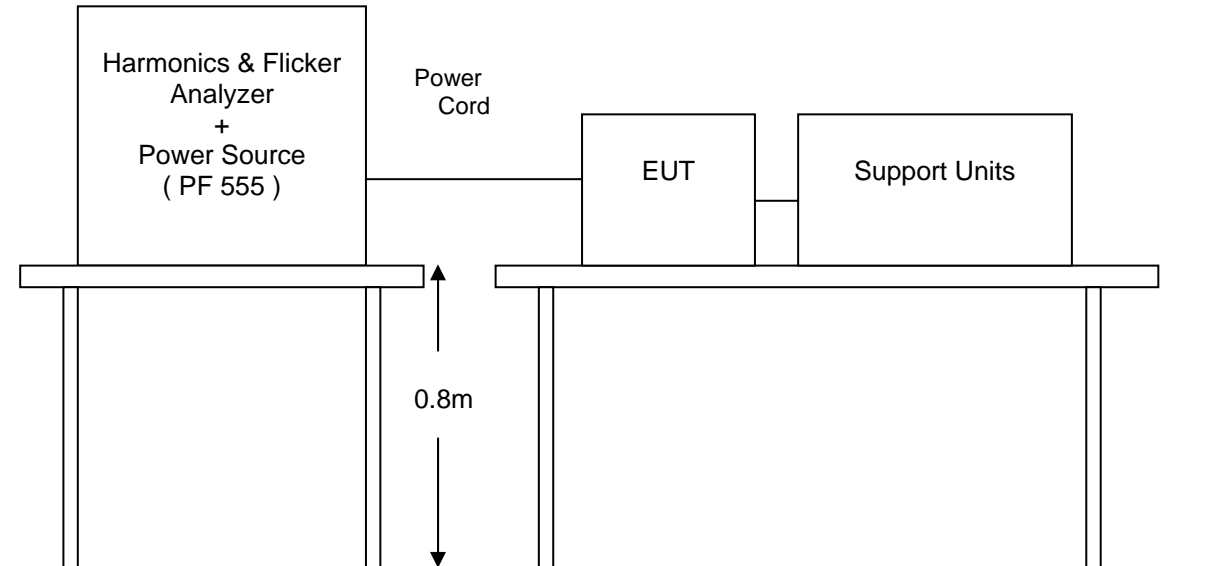
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
13.357500	54.90	19.9	64	9.1	AV	WAN	GND
16.228500	56.20	19.9	64	7.8	AV	WAN	GND
23.127000	55.90	20.0	64	8.1	AV	WAN	GND
26.610000	55.40	20.0	64	8.6	AV	WAN	GND
27.159000	55.00	20.0	64	9.0	AV	WAN	GND
28.684500	55.00	20.0	64	9.0	AV	WAN	GND

4.1.4. AC Mains Harmonic Current Emission (Not Applicable)

LIMIT

Please refer to EN 61000-3-2

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-3-2 for the measurement methods.

TEST RESULTS

*Remark:*1. We tested both WLAN transmitter and receiver mode and recorded worst case at transmitter mode.

Report title:	HTW0425205
Company Name:	HTW
Date of test:	14.15 25.Apr 2013
Measurement file name:	Harmonics_3_2_Ed3.rsd
Tester:	Eric
Standard used:	EN/IEC 61000-3-2 Ed.3 Quasi-stationary Equipment class A <= 150% of the limit
Observation time:	150s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2002 + A1:2008)
Customer:	Hongdian Corporation
E. U. T.:	S9922 AC 230V/50Hz

Test Result	
E. U. T.:	PASS
Power Source:	PASS

Check harmonics 2..40 [exception odd 21..39]:**Harmonic(s) > 150%:**

Order (n): None

Harmonic(s) with average > 100%:

Order (n): None

Check odd harmonics 21..39:**All Partial Odd Harmonics below partial limits.****Harmonic(s) > 150%:**

Order (n): None

Harmonic(s) with average > 150%:

Order (n): None

Power Source Result**First dataset out of limit:**

DS (time): None

Harmonic(s) out of limit:

Order (n): None

Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	1.450			
2	778.949E-6	0.072	1.08	PASS
3	76.305E-3	3.318	2.30	PASS
4	286.323E-6	0.067	430.00E-3	PASS
5	15.797E-3	1.386	1.14	PASS
6	297.280E-6	0.099	300.00E-3	PASS
7	7.557E-3	0.981	770.00E-3	PASS
8	227.996E-6	0.099	230.00E-3	PASS
9	3.087E-3	0.772	400.00E-3	PASS
10	243.686E-6	0.132	184.00E-3	PASS
11	363.283E-6	0.110	330.00E-3	PASS
12	225.785E-6	0.147	153.33E-3	PASS
13	2.642E-3	1.258	210.00E-3	PASS
14	276.534E-6	0.210	131.43E-3	PASS
15	3.589E-3	2.393	150.00E-3	PASS
16	259.389E-6	0.226	115.00E-3	PASS
17	3.549E-3	2.682	132.35E-3	PASS
18	237.454E-6	0.232	102.22E-3	PASS
19	3.232E-3	2.729	118.42E-3	PASS
20	240.622E-6	0.262	92.00E-3	PASS
21	3.217E-3	2.002	160.71E-3	PASS
22	231.872E-6	0.277	83.64E-3	PASS
23	3.333E-3	2.271	146.74E-3	PASS
24	235.811E-6	0.308	76.66E-3	PASS
25	3.533E-3	2.617	135.00E-3	PASS
26	243.646E-6	0.344	70.77E-3	PASS
27	3.458E-3	2.767	124.99E-3	PASS
28	223.315E-6	0.340	65.71E-3	PASS
29	3.360E-3	2.887	116.39E-3	PASS
30	229.453E-6	0.374	61.33E-3	PASS
31	3.323E-3	3.053	108.87E-3	PASS
32	226.200E-6	0.393	57.50E-3	PASS
33	3.335E-3	3.261	102.27E-3	PASS
34	215.721E-6	0.399	54.12E-3	PASS
35	3.125E-3	3.240	96.44E-3	PASS
36	222.674E-6	0.436	51.11E-3	PASS
37	3.064E-3	3.359	91.21E-3	PASS
38	210.192E-6	0.434	48.42E-3	PASS
39	3.024E-3	3.494	86.53E-3	PASS
40	287.152E-6	0.624	46.00E-3	PASS

Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	1.454			
2	1.054E-3	0.065	1.62	PASS
3	76.746E-3	2.225	3.45	PASS
4	465.538E-6	0.072	645.00E-3	PASS
5	15.968E-3	0.934	1.71	PASS
6	382.571E-6	0.085	450.00E-3	PASS
7	7.764E-3	0.672	1.15	PASS
8	289.849E-6	0.084	345.00E-3	PASS
9	3.228E-3	0.538	600.00E-3	PASS
10	321.876E-6	0.117	276.00E-3	PASS
11	536.956E-6	0.108	495.00E-3	PASS
12	321.135E-6	0.140	229.99E-3	PASS
13	2.760E-3	0.876	315.00E-3	PASS
14	351.993E-6	0.179	197.15E-3	PASS
15	3.697E-3	1.643	225.00E-3	PASS
16	327.473E-6	0.190	172.50E-3	PASS
17	3.641E-3	1.834	198.52E-3	PASS
18	285.397E-6	0.186	153.33E-3	PASS
19	3.333E-3	1.876	177.63E-3	PASS
20	314.884E-6	0.228	138.00E-3	PASS
21	3.312E-3	2.061	160.71E-3	PASS
22	320.075E-6	0.255	125.46E-3	PASS
23	3.418E-3	2.329	146.74E-3	PASS
24	301.983E-6	0.263	114.99E-3	PASS
25	3.611E-3	2.675	135.00E-3	PASS
26	348.052E-6	0.328	106.16E-3	PASS
27	3.585E-3	2.868	124.99E-3	PASS
28	301.428E-6	0.306	98.57E-3	PASS
29	3.482E-3	2.992	116.39E-3	PASS
30	281.878E-6	0.306	92.00E-3	PASS
31	3.478E-3	3.195	108.87E-3	PASS
32	329.808E-6	0.382	86.25E-3	PASS
33	3.459E-3	3.382	102.27E-3	PASS
34	253.041E-6	0.312	81.18E-3	PASS
35	3.191E-3	3.309	96.44E-3	PASS
36	269.118E-6	0.351	76.66E-3	PASS
37	3.196E-3	3.504	91.21E-3	PASS
38	261.535E-6	0.360	72.63E-3	PASS
39	3.121E-3	3.606	86.53E-3	PASS
40	425.894E-6	0.617	69.00E-3	PASS

Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.23	100.099		
2	162.50E-3	0.071	0.2	PASS
3	452.48E-3	0.197	0.9	PASS
4	54.47E-3	0.024	0.2	PASS
5	24.17E-3	0.011	0.4	PASS
6	39.94E-3	0.017	0.2	PASS
7	23.26E-3	0.010	0.3	PASS
8	26.56E-3	0.012	0.2	PASS
9	18.37E-3	0.008	0.2	PASS
10	26.22E-3	0.011	0.2	PASS
11	14.91E-3	0.006	0.1	PASS
12	16.60E-3	0.007	0.1	PASS
13	19.33E-3	0.008	0.1	PASS
14	18.05E-3	0.008	0.1	PASS
15	13.23E-3	0.006	0.1	PASS
16	23.55E-3	0.010	0.1	PASS
17	17.64E-3	0.008	0.1	PASS
18	15.56E-3	0.007	0.1	PASS
19	13.74E-3	0.006	0.1	PASS
20	14.38E-3	0.006	0.1	PASS
21	12.90E-3	0.006	0.1	PASS
22	14.05E-3	0.006	0.1	PASS
23	9.63E-3	0.004	0.1	PASS
24	14.48E-3	0.006	0.1	PASS
25	15.45E-3	0.007	0.1	PASS
26	13.87E-3	0.006	0.1	PASS
27	10.73E-3	0.005	0.1	PASS
28	12.66E-3	0.006	0.1	PASS
29	13.46E-3	0.006	0.1	PASS
30	12.09E-3	0.005	0.1	PASS
31	10.79E-3	0.005	0.1	PASS
32	13.90E-3	0.006	0.1	PASS
33	14.99E-3	0.007	0.1	PASS
34	9.65E-3	0.004	0.1	PASS
35	8.30E-3	0.004	0.1	PASS
36	9.29E-3	0.004	0.1	PASS
37	12.40E-3	0.005	0.1	PASS
38	8.60E-3	0.004	0.1	PASS
39	12.96E-3	0.006	0.1	PASS
40	13.92E-3	0.006	0.1	PASS

4.1.5. AC Mains Voltage Fluctuation and Flicker

LIMIT

Please refer to EN 61000-3-3

TEST CONFIGURATION

Same as the configuration of the AC MAINS HARMONIC CURRENT EMISSIONS TEST

TEST PROCEDURE

Please refer to EN 61000-3-3 for the measurement methods.

TEST RESULTS

*Remark:*1. We tested both WLAN transmitter and receiver mode and recorded worst case at transmitter mode.

Report title:	HTW0425206
Company Name:	HTW
Date of test:	15:28 25.Apr 2013
Tester:	Eric
Standard used:	EN/IEC 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	120 min (12 Flicker measurements)
Flickermeter:	230V / 50Hz
Flicker Impedance:	Zref (IEC 60725)
Customer:	Hongdian Corporation
E. U. T.:	S9922
	AC 230V/50Hz
Test Result	PASS

Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.074	4.00	PASS
dt [s]	0.000	0.50	PASS

Detail Flicker data

Flicker measurement 1	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.074	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 2	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.073	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 3	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.073	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 4	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.071	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 5	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.074	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 6	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.074	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 7	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.074	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 8	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.073	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 9	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.068	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 10	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.068	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 11	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.073	4.00	PASS
dt [s]	0.000	0.50	PASS

Flicker measurement 12	EUT values	Limit	Result
Pst	0.028	1.00	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.068	4.00	PASS
dt [s]	0.000	0.50	PASS

4.1.6. Electrostatic Discharge

LIMIT

Please refer to EN 61000-4-2

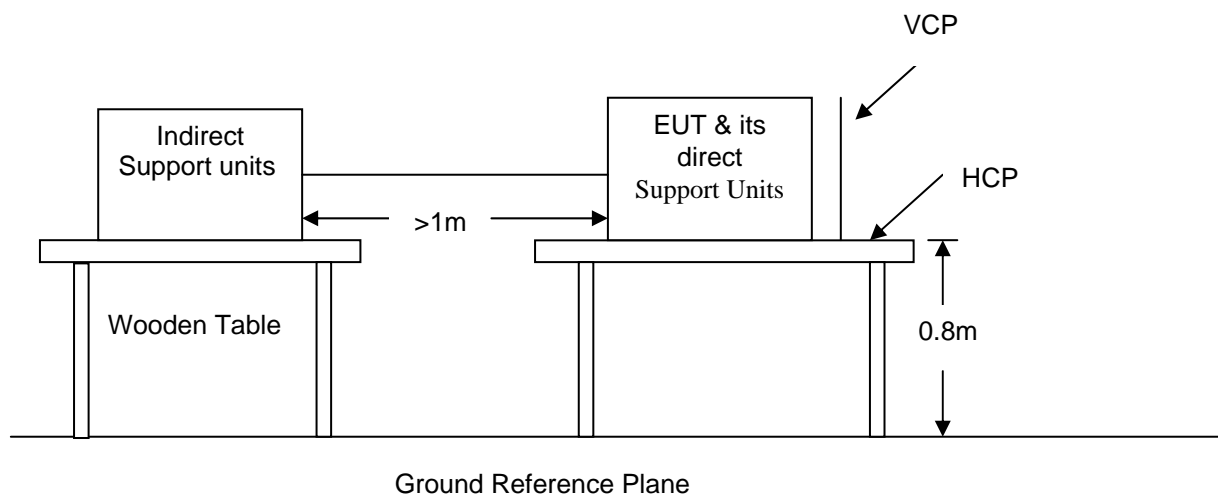
SEVERITY LEVELS OF ELECTROSTATIC DISCHARGE

Severity level: Contact Discharge at $\pm 4\text{KV}$ Air Discharge at $\pm 8\text{KV}$

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1	2	2
2	4	4
3	6	8
4	8	15
X	Special	Special

Performance criterion: **B**

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.3.2 and EN 61000-4-2 for the measurement methods.

TEST RESULTS

Contact Discharge:

The ESD generator is held perpendicular to the surface to which the discharge is applied and the tip of the discharge electrode touch the surface of EUT. Then turn the discharge switch. The generator is then re-triggered for a new single discharge and repeated at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Air Discharge:

Air discharge is used where contact discharge can't be applied. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Indirect discharge for horizontal coupling plane:

At least 10 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT.

Indirect discharge for vertical coupling plane:

At least 10 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

Climatic conditions

- ambient temperature : 25 °C
- relative humidity: 55%
- atmospheric pressure: 960 mbar

Description of the Electrostatic Discharges (ESD)

Result of Final Tests (Both WLAN Operating Mode & Standby (Receiving) Mode)

Point of Discharge	Applied Voltage (KV)	Total No. of Discharge (Each Point)	Results	Criteria Level	Remark
Air Test Point	±2	50	PASS	B	-
	±4	50	PASS	B	-
	±8	50	PASS	B	-
Contact Discharge Test Points	±2	50	PASS	B	
	±4	50	PASS	B	
VCP (4 sides)	±2	50	PASS	B	-
	±4	50	PASS	B	-
HCP (4 sides)	±2	50	PASS	B	-
	±4	50	PASS	B	-

The requirements are **Fulfilled**

Performance Criterion: **B**

Description of Discharge Point

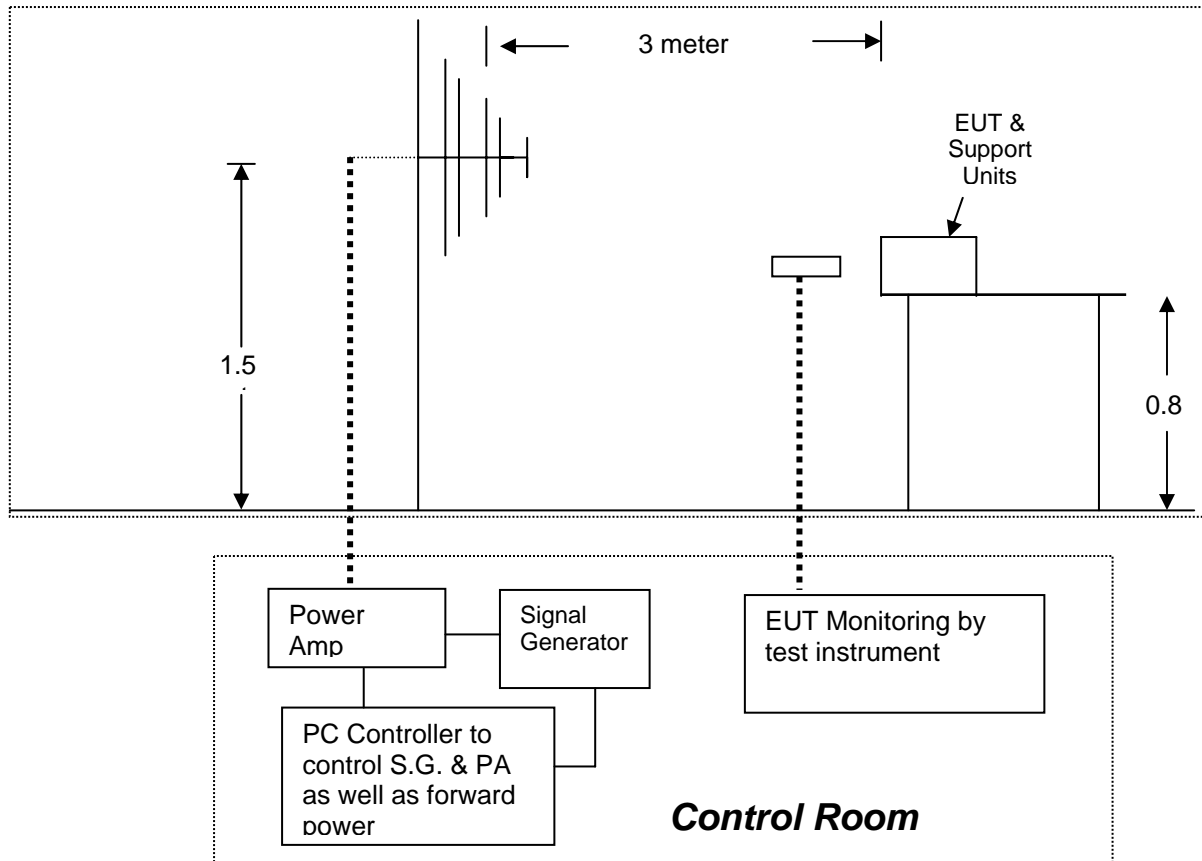
Contact Discharge 5 Test points		Air Discharge	
●	Metallic Screws	○	Plastic Screws
●	Metallic Case	○	Plastic Case(gap)
●	Metallic Connect ports	○	Plastic Connect Ports
●	Metallic Junctions	○	Plastic Junctions
●	Others (Antenna Port)	○	Others

4.1.7. RF Electromagnetic Field

LIMIT

Please refer to EN 61000-4-3

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.2.2, ETSI EN 301 489-17 Clause 7.2.2 and EN 61000-4-3 for the measurement methods.

TEST RESULTS

Result of Tests (Both WLAN Operating Mode & Standby (Receiving) Mode)

	Freq. Range (MHz)	Field	Modulation	Polarity	Position (°)	Selection for the final test
1	80-1000	6V/m	Yes	H / V	Front	PASS
	1400-2700	6V/m	Yes	H / V	Front	PASS
2	80-1000	6V/m	Yes	H / V	Right	PASS
	1400-2700	6V/m	Yes	H / V	Right	PASS
3	80-1000	6V/m	Yes	H / V	Back	PASS
	1400-2700	6V/m	Yes	H / V	Back	PASS
4	80-1000	6V/m	Yes	H / V	Left	PASS
	1400-2000	6V/m	Yes	H / V	Left	PASS

Result of Final Tests (Both WLAN Operating Mode & Standby (Receiving) Mode)

Freq. Range (MHz)	Field	Modulation	Polarity	Position	Mode	Result (Pass/Fail)
1400-2700	3V/m	Yes	H / V	Right	Normal Operating	PASS
80-1000	3V/m	Yes	H / V	Right		PASS

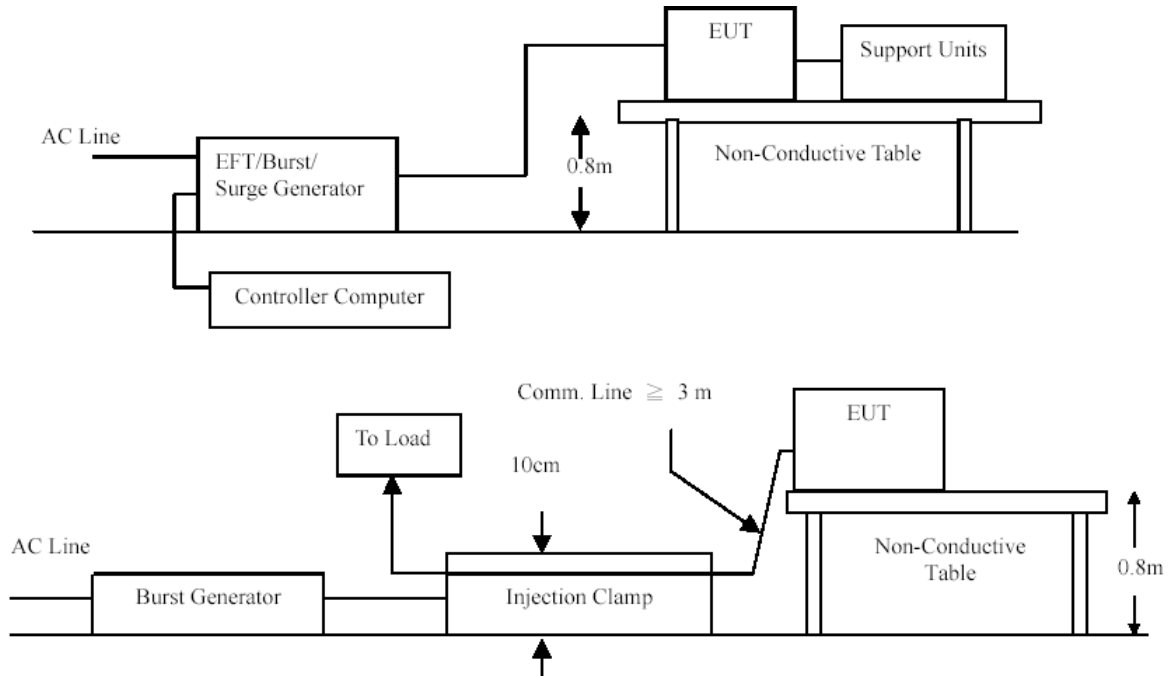
PERFORMANCE CRITERIA	
Criteria requested	<input checked="" type="checkbox"/> A / <input type="checkbox"/> B / <input type="checkbox"/> C
Criteria meet	<input checked="" type="checkbox"/> A / <input type="checkbox"/> B / <input type="checkbox"/> C

4.1.8. Fast Transients- Common Mode

LIMIT

Please refer to EN 61000-4-4

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.4.2 and EN 61000-4-4 for the measurement methods.

TEST RESULTS

Result of Final Tests (Both WLAN Operating Mode & Standby (Receiving) Mode)

Impulse Frequency: 5 kHz
 Tr/Th: 5/50ns
 Burst Duration: 15ms
 Burst Period: 3Hz

Injection Line	Voltage (kV)	Injected Method	Result (Pass / Fail)
<input checked="" type="checkbox"/> Line	±1	Direct	PASS
<input checked="" type="checkbox"/> Neutral	±1	Direct	PASS
<input type="checkbox"/> PE	± 1	Direct	PASS
<input checked="" type="checkbox"/> Line + Neutral	±1	Direct	PASS
<input type="checkbox"/> L + PE	± 1	Direct	PASS
<input type="checkbox"/> N + PE	± 1	Direct	PASS
<input type="checkbox"/> L + N + PE	± 1	Direct	PASS
<input checked="" type="checkbox"/> RJ45 port (LAN cable)	±0.5	Clamp	PASS
<input type="checkbox"/> RJ11 port (Line cable)	±0.5	Clamp	PASS

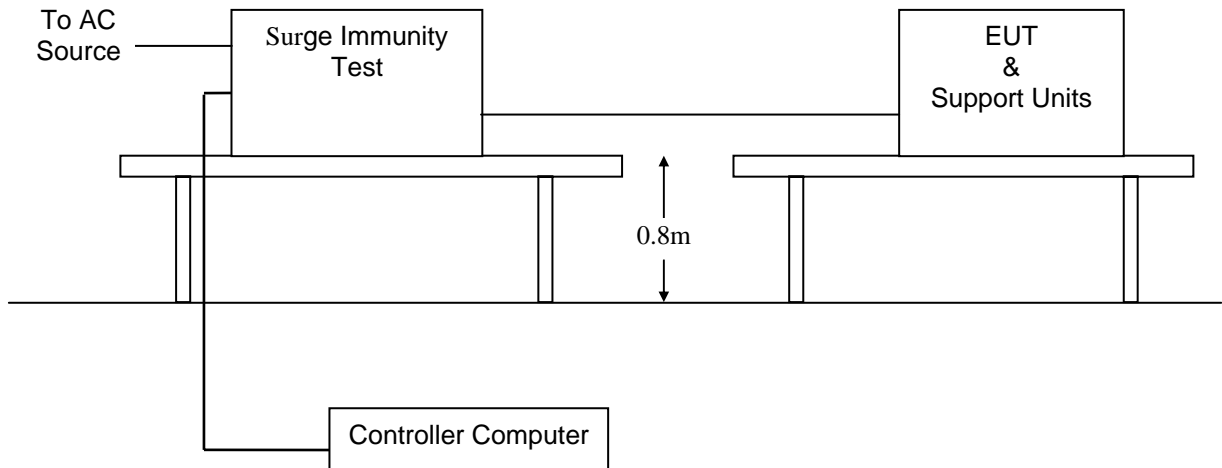
PERFORMANCE CRITERIA	
Criteria requested	<input checked="" type="checkbox"/> A / <input type="checkbox"/> B / <input type="checkbox"/> C
Criteria meet	<input checked="" type="checkbox"/> A / <input type="checkbox"/> B / <input type="checkbox"/> C

4.1.9. Surge

LIMIT

Please refer to EN 61000-4-5

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.4.2 and EN 61000-4-5 for the measurement methods.

TEST RESULTS

Result of Final Tests (Both WLAN Operating Mode & Standby (Receiving) Mode)

Voltage Waveform: 1.2/50 us
 Current Waveform: 8/20 us
 Polarity: Positive/Negative
 Phase angle: 0°, 90°, 180°, 270°

Coupling Line	Voltage (kV)	Polarity	Coupling Method	Result (Pass/Fail)
<input checked="" type="checkbox"/> Line + Neutral	1	Pos./ Neg.	Capacitive	PASS
<input type="checkbox"/> L + PE	2	Pos./ Neg.	Capacitive	PASS
<input type="checkbox"/> N + PE	2	Pos./ Neg.	Capacitive	PASS
<input type="checkbox"/> T, R-Ground	0.5	Pos./ Neg.	Capacitive	PASS
<input checked="" type="checkbox"/> RJ45 port (LAN)	0.5	Pos./ Neg.	Capacitive	PASS
<input type="checkbox"/> RJ11 port (Line cable)	0.5	Pos./ Neg.	Capacitive	PASS

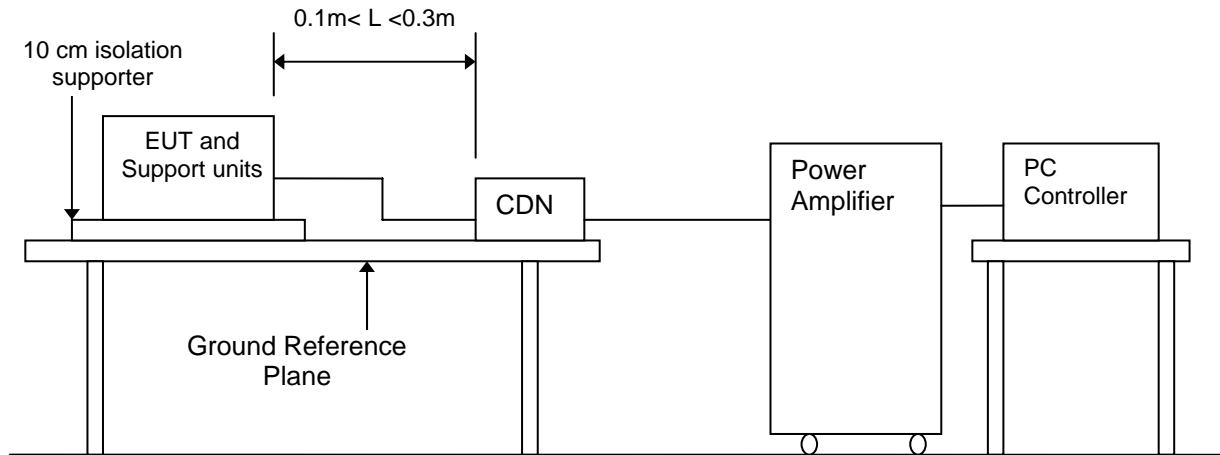
PERFORMANCE CRITERIA	
Criteria requested	<input checked="" type="checkbox"/> A / <input type="checkbox"/> B / <input type="checkbox"/> C
Criteria meet	<input checked="" type="checkbox"/> A / <input type="checkbox"/> B / <input type="checkbox"/> C

4.1.10. RF- Common Mode

LIMIT

Please refer to EN 61000-4-6

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.5.2, ETSI EN 301 489-17 Clause 7.2.2 and EN 61000-4-6 for the measurement methods.

TEST RESULTS

Test conditions

Result of Final Tests (Both WLAN Operating Mode & Standby (Receiving) Mode)

Frequency Range: 0.15MHz~80MHz

Frequency Step: 1% of fundamental

Dwell time: 1 Sec.

80% A.M., 1 kHz Sine wave (Field Strength: 3 V/m)

Coupling type: **CDN** / **RF Current Probe** / **EM CLAMP (LÜTHI)**

Range (MHz)	Field	Modulation	Injected Position	Result (Pass/Fail)
0.15-80	3V	Yes	AC Main/RJ45	PASS

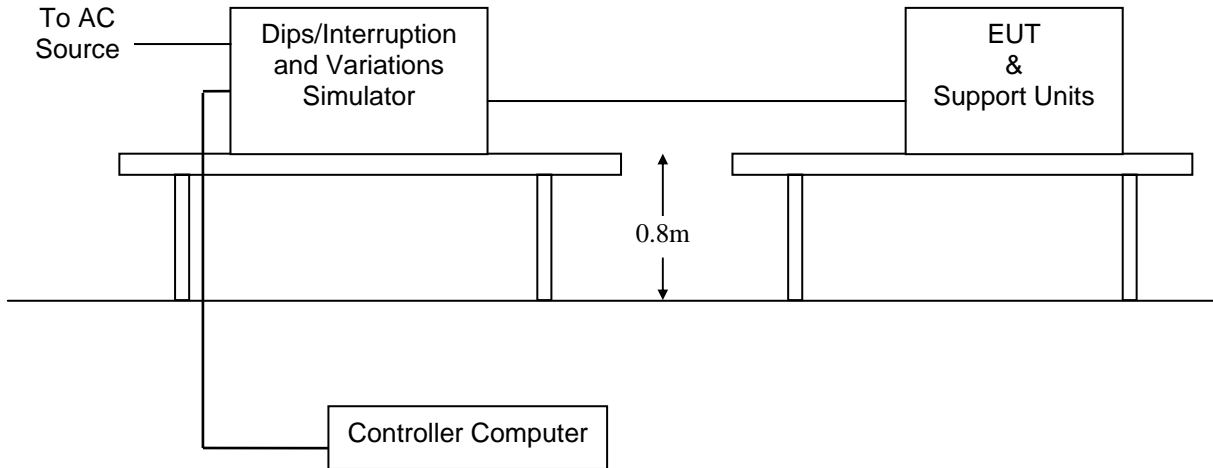
PERFORMANCE CRITERIA	
Criteria requested	<input checked="" type="checkbox"/> A / <input type="checkbox"/> B / <input type="checkbox"/> C
Criteria meet	<input checked="" type="checkbox"/> A / <input type="checkbox"/> B / <input type="checkbox"/> C

4.1.11. Voltage Dips and Interruptions

LIMIT

Please refer to EN 61000-4-11

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.7.2 and EN 61000-4-11 for the measurement methods

TEST RESULTS

Test conditions

Interruption at phase angles of 0, 45, 90, 135, 180, 225, 270 and 315 degree in a 10 sec-interval.

	Test Level (% UT)	Reduction (%)	Duration (ms)	Criterion
Voltage Dips	0	100%	10	B
	0	100%	20	B
	70	30%	500	B
Voltage Interruption	0	100%	5000	C

Note: The duration with a sequence of three dips/interruptions with a minimum interval of 10 s between each test event. The test level is U=100V and 240V.

Result of Final Tests (Both WLAN Operating Mode & Standby (Receiving) Mode)

Voltage Dips

Test Level (% UT)	Reduction (%)	Duration (ms)	Observation	Criterion
0	100%	10	Normal	A
0	100%	20	Normal	A
70	30%	500	Normal	A

Voltage Interruption

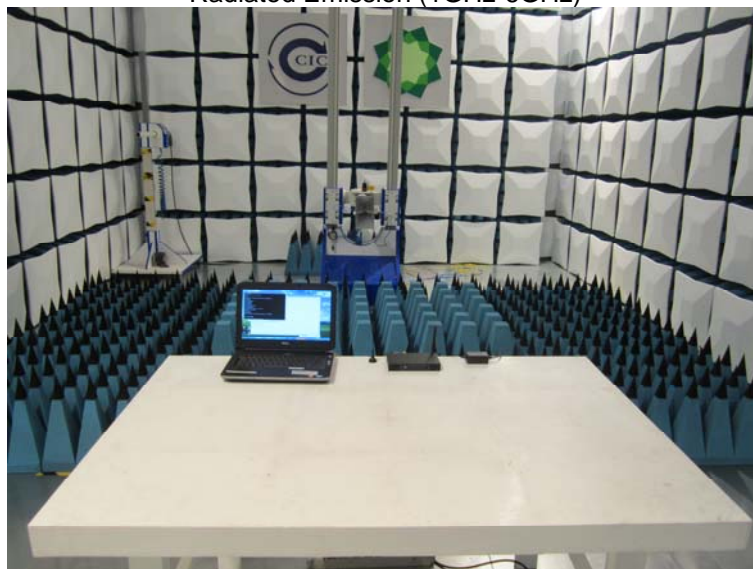
Test Level (% UT)	Reduction (%)	Duration (ms)	Observation	Criterion
0	100%	5000	Normal	C

5. Test Set-up Photos of the EUT

Radiated Emission (30MHz-1GHz)



Radiated Emission (1GHz-6GHz)



Conducted Emission (AC Mains)



Conducted Emission (RJ45)



AC Mains Voltage Fluctuation and Flicker/ Voltage Dips and Interruptions



Electrostatic Discharge



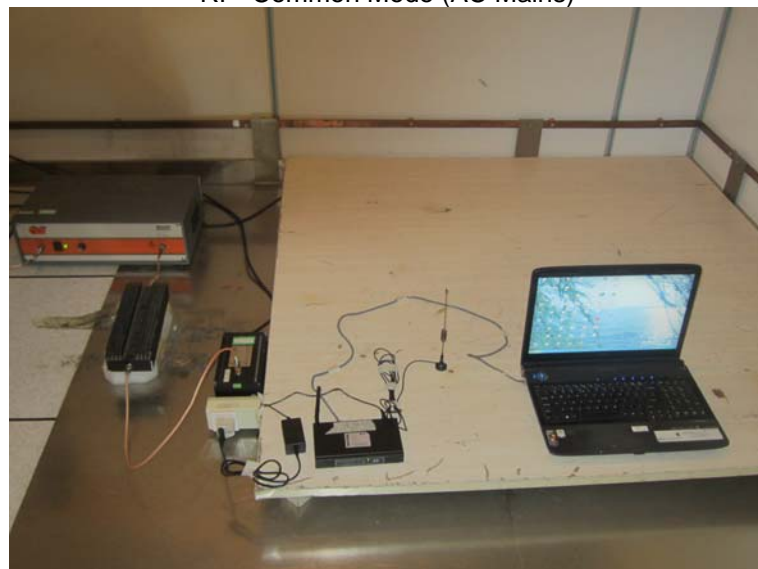
Surge /Fast Transients- Common Mode (AC Mains)



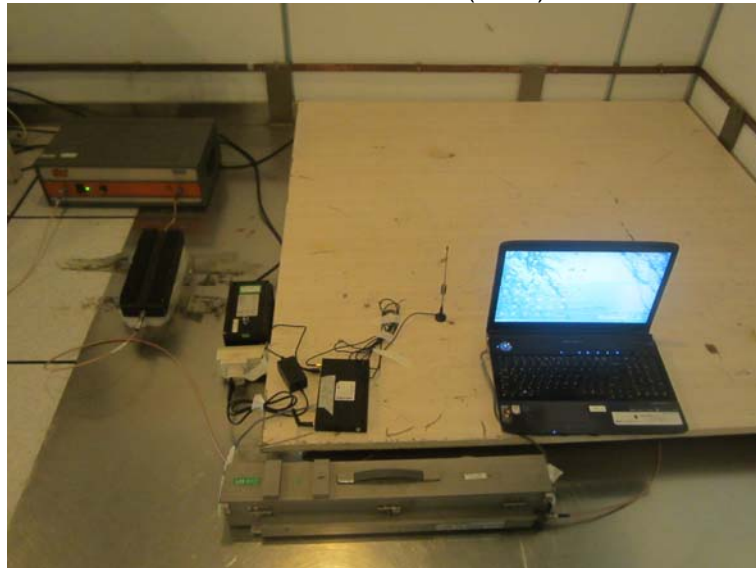
Surge (RJ45)



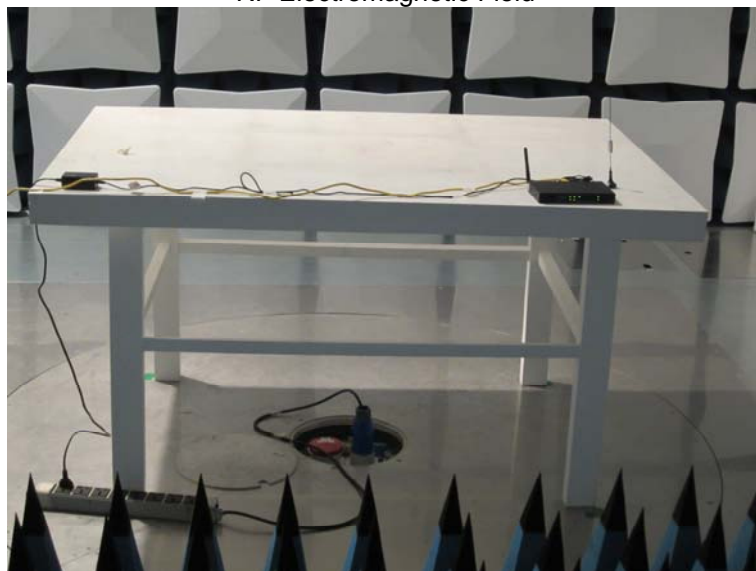
RF- Common Mode (AC Mains)



RF- Common Mode (RJ45)



RF Electromagnetic Field



.....End of Report.....