EMC Test Report

Report No.:	RM170816E06G
Test Model:	WLT674
Received Date:	Jan. 26, 2015
Test Date:	Jan. 26, 2015 and Mar. 02 to 06, 2017
Issued Date:	Oct. 04, 2018
Applicant:	Compex Systems Pte. Ltd.
Address:	No. 9 Harrison Road, #05-01 Singapore 369651
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (1):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
RM170816E06G	Original release.	Oct. 04, 2018

1 Certificate of Conformity

Product:	Wireless M.2 Type A/E with BLE Module
Brand:	Compex
Test Model:	WLT674
Sample Status:	ENGINEERING SAMPLE
Applicant:	Compex Systems Pte. Ltd.
Test Date:	Jan. 26, 2015 and Mar. 02 to 06, 2017
Standards:	EN 301 489-1 V2.1.1 (2017-02) EN 301 489-17 V3.1.1 (2017-02) EN 55032:2015 +AC:2016, Class B CISPR 32:2012, Class B AS/NZS CISPR 32:2013, Class B EN 61000-3-2:2014 (Not Applicable) EN 61000-3-3:2013 (Not Applicable) EN 61000-4-2:2009 EN 61000-4-3:2006 +A1:2008 +A2:2010 EN 61000-4-4:2012 (Not Applicable) EN 61000-4-5:2014 +A1: 2017 (Not Applicable) EN 61000-4-6:2014 (Not Applicable) EN 61000-4-11:2004 +A1: 2017 (Not Applicable)

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Wendy Wu , **Date:** Oct. 04, 2018

Wendy Wu / Specialist

Approved by : Ken Lu , **Date:** Oct. 04, 2018

Ken Lu / Manager

2 Summary of Test Results

EN 301 489-series, Emission					
Clause	Basic Standard	Phenomenon	Application	Result/Remarks	Verdict
8.2	EN 55032:2012 +AC:2013	Radiated emission 30-1000 MHz	Enclosure of ancillary equipment measured on a stand alone basis	Minimum passing Class B margin is -3.10 dB at 99.62 MHz	Pass
		Radiated emission 1-6 GHz		Minimum passing Class B margin is -11.00 dB at 1992.12 MHz	Pass
8.3	EN 55032:2012 +AC:2013	Conducted emission 150 kHz - 30 MHz	DC power input/output ports (fixed)	Test not applicable because port does not exists.	N/A
		Conducted emission 150 kHz - 30 MHz	DC power input ports (vehicular)	Test not applicable because port does not exist.	N/A
8.4	EN 55032:2012 +AC:2013	Conducted emission 150 kHz - 30 MHz	AC mains input/output ports	Minimum passing Class B margin is -11.00 dB at 2.71094MHz	Pass
8.5	EN 61000-3-2:2014	Harmonic current emissions	AC mains input port	Test not applicable because the port does not exists	N/A
8.6	EN 61000-3-3:2013	Voltage fluctuations and flicker	AC mains input port	Test not applicable because the port does not exists	N/A
8.7	EN 55032:2012 +AC:2013	Conducted disturbance 150 kHz - 30 MHz	Wired network ports	Test not applicable because port does not exist.	N/A

EN 301 489-series, Immunity					
Clause	Basic Standard	Phenomenon	Application	Result/Remarks	Verdict
9.2	EN 61000-4-3:2006 +A1:2008 +A2:2010	RF Electromagnetic Field (80 MHz to 6000 MHz) (RS)	Enclosure	Performance Criterion A	Pass
9.3	EN 61000-4-2:2009	Electrostatic Discharges (ESD)	Enclosure	Performance Criterion A	Pass
9.4	EN 61000-4-4:2012	Fast Transients Common Mode (EFT)	Signal, Wired networks and control ports, DC and AC power ports	Refer below Note	N/A
9.5	EN 61000-4-6:2014	RF Common Mode 150 kHz to 80 MHz (CS)	Signal, Wired networks and control ports, DC and AC power ports	Refer below Note	N/A
9.6	ISO 7637-2:2011	Transients and Surges	DC power input ports (Vehicular)	Not applicable, because the port is absent in the EUT	N/A
9.7	EN61000-4-11:2004 +A1: 2017	Voltage Dips and Interruptions	AC mains power input ports	Voltage Dips: 1. 0% residual – 0.5 cycle Performance Criterion A 2. 0% residual – 1 cycle Performance Criterion A 3. 70% residual – 25 cycles Performance Criterion A Voltage Interruptions: 1. 0% residual – 250 cycles Performance Criterion B is required for EUT without battery back-up.	N/A
9.8	EN61000-4-5:2014+ A1: 2017	Surges	AC mains power input ports, line to line and line to ground Wired networkports, line to ground	Refer below Note	N/A

N/A: Not Applicable

Note:

1. There is no deviation to the applied test methods and requirements covered by the scope of this report.
2. The EUT is not appointed by clause 9.4 of EN 301 489-1, therefore the standard, EN 61000-4-4, is not applicable.
3. The EUT is not appointed by clause 9.8 of EN 301 489-1, therefore the standard, EN 61000-4-5, is not applicable.
4. The EUT is not appointed by clause 9.5 of EN 301 489-1, therefore the standard, EN 61000-4-6, is not applicable.
5. The EUT is not appointed by clause 9.7 of EN 301 489-1, therefore the standard, EN 61000-4-11, is not applicable.
6. The EUT is not appointed by clause 9.6 of EN 301 489-1, therefore the standard, ISO 7637-2, is not applicable.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Expanded Uncertainty (k=2) (±)	Maximum allowable uncertainty (±)
Conducted disturbance at mains port using AMN, 150kHz ~ 30MHz	1.84 dB	3.4 dB (U_{cispr})
Radiated disturbance, 30MHz ~ 1GHz	3.91 dB	6.3 dB (U_{cispr})
Radiated disturbance, 1GHz ~ 6GHz	4.39 dB	5.2 dB (U_{cispr})

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 Features of EUT

The tests reported herein were performed according to the method specified by Compex Systems Pte. Ltd., for detailed feature description, please refer to the manufacturer's specifications or user's manual.

3.2 General Description of EUT

Product	Wireless M.2 Type A/E with BLE Module	
Brand	Compex	
Test Model	WLT674	
Sample Status	ENGINEERING SAMPLE	
Operating Software	NA	
Power Supply rating	3.3Vdc from host equipment	
Modulation Type	WLAN	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and 11n (BW20), 11n (BW40) mode of 2.4GHz Band
	BT-EDR	GFSK, π/4-DQPSK, 8DPSK
	BT-LE	DTS
	BT-HS	16QAM, QPSK, BPSK
Operating Frequency	WLAN	2.4GHz: 2412 ~ 2472MHz 5GHz: 5180MHz ~ 5240MHz, 5260MHz ~ 5320MHz, 5500MHz ~ 5700MHz
	BT-EDR, BT-LE	2402MHz ~ 2480MHz
	BT-HS	2412MHz ~ 2472MHz
Antenna Type	See item 3.3	
I/O Ports	Refer to user's manual	
Accessory Device	NA	
Data Cable Supplied	NA	

Note:

1. There are Bluetooth technology and WLAN technology used for the EUT.
2. The EUT incorporates a 2T2R function.

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	2TX	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20) (2.4GHz)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40) (2.4GHz)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
VHT20 (2.4GHz)	MCS 0~8, Nss=1	2TX	2RX
	MCS 0~8, Nss=2	2TX	2RX
VHT40 (2.4GHz)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX

5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	2TX	2RX
802.11n (HT20) (5GHz)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40) (5GHz)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20) (5GHz)	MCS 0~8, Nss=1	2TX	2RX
	MCS 0~8, Nss=2	2TX	2RX
802.11ac (VHT40) (5GHz)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX
802.11ac (VHT80) (5GHz)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX

3. The antenna gain was declared by client; please refer to the following table:

Transmitter Circuit	Brand	Model	Ant. Type	2.4GHz Gain with cable loss (dBi)	5GHz Gain with cable loss (dBi)	2.4GHz Cable Loss (dBi)	5G Cable Loss (dBi)	Connector Type	Cable Length (mm)
Chain (0)	WNC	81-EBJ15.005	PIFA	3.00	Band 1&2: 2.56	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 4.76		Band 3: 1.74		
					Band 4: 4.76		Band 4: 1.79		
Chain (1)	WNC	81-EBJ15.005	PIFA	3.62	Band 1&2: 3.08	1.15	Band 1&2: 1.70	IPEX	300
					Band 3: 3.31		Band 3: 1.74		
					Band 4: 2.42		Band 4: 1.79		

Note: 1. Above antenna gains of antenna are Total (H+V).

3.3 Operating Modes of EUT and Determination of Worst Case Operating Mode

For radiated emission test, the EUT has been pre-tested under following test modes, and test mode A was the worst case for final test.

Test Condition		
Radiated emission test		
Mode	Description	Remark
A	**WLAN (5GHz) + BT mode**	**Normal operation**
B	WLAN (5GHz) + BT mode	Standby mode

Test modes are presented in the report as below

Test Condition		
Conducted emission /Radiated emission test		
Mode	Description	Remark
1	WLAN (5GHz) + BT mode	Normal operation
Test Condition		
Immunity tests		
Mode	Description	Remark
1	WLAN (5GHz) + BT mode	Normal operation
2	WLAN (5GHz) + BT mode	Standby mode

3.4 Test Program Used and Operation Descriptions

For Conducted / Radiated emission tests

1 Turn on the power of all equipment.
2 The support unit A (Laptop) runs “Ping.exe” program to link with support unit G (Laptop) & support unit F (Wireless AP) via EUT by wireless & BT.
3 Support unit A (Laptop) runs ‘Color bar’

For ESD test

1. Turn on the power of all equipment.
2. Support unit A (NOTEBOOK COMPUTER) runs test program “Ping.exe” to link with support unit C (WiFi AP) via EUT by Wireless.
3. Support unit A (NOTEBOOK COMPUTER) links to support unit B (NOTEBOOK COMPUTER) via EUT by BT.

For RS tests

1 Turn on the power of all equipment.
2 The support unit A (Laptop) runs “Ping.exe” program to link with support unit F (Wireless AP) via EUT by wireless & BT.
3 The support unit A (Laptop) link with support unit G (Laptop) via EUT by BT

3.5 Primary Clock Frequencies of Internal Source

The EUT is a WLAN and BT technology device, provided by Compex Systems Pte. Ltd., for detailed internal source, please refer to the manufacturer's specifications.

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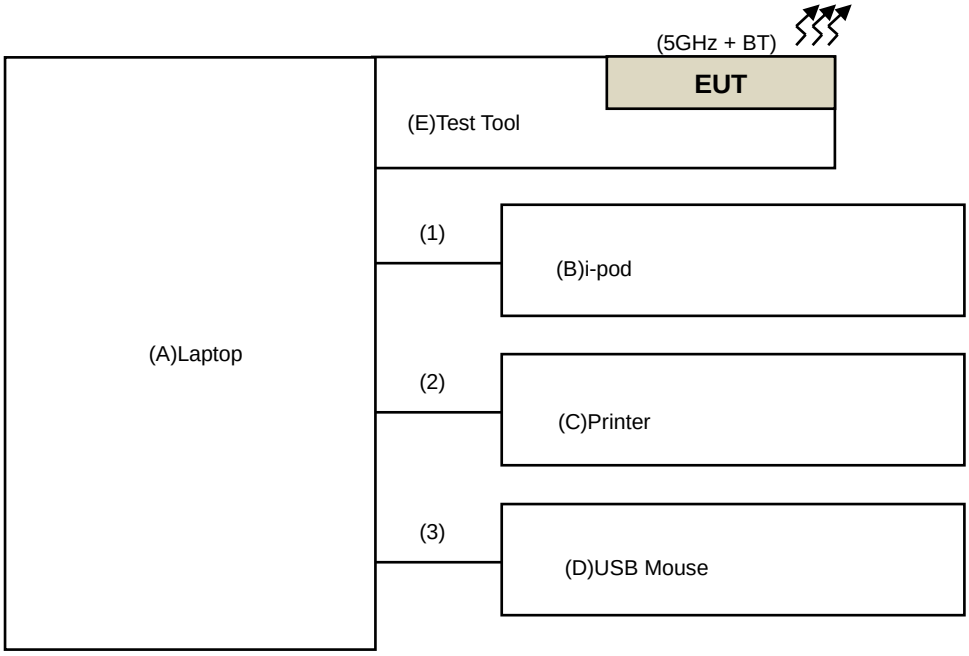
4 Configuration and Connections with EUT

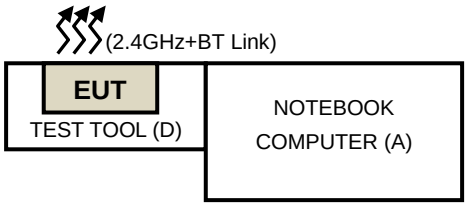
4.1 Connection Diagram of EUT and Peripheral Devices

For Conducted / Radiated emission tests

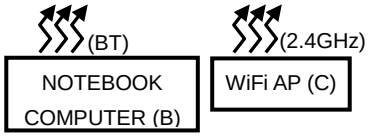


Remote Site

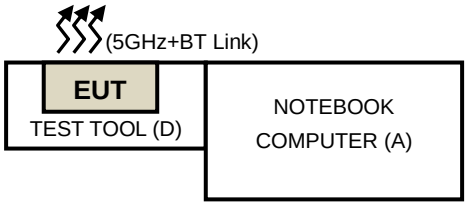
For ESD Mode 1 test



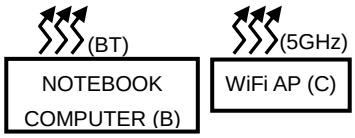
Remote site



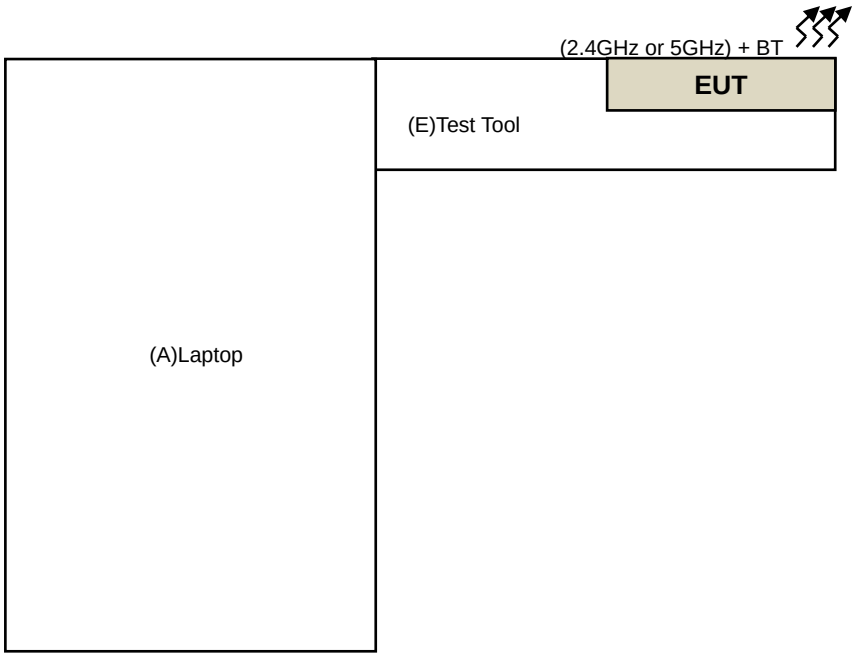
For ESD Mode 2 test



Remote site



For RS test



Remote Site

4.2 Configuration of Peripheral Devices and Cable Connections

For Conducted / Radiated emission tests

For RS test

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5420	CHHYLQ1	FCC DoC	Provided by Lab
B.	i-pod	Apple	MD778TA/A	CC4JMFL0F4T1	NA	Provided by Lab
C.	Printer	HP	6000ProMT	SGH110SGNF	FCC DoC Approved	Provided by Lab
D.	USB Mouse	DELL	MOC5UO	l1401LVG	FCC DoC	Provided by Lab
E.	Test Tool	NA	NA	NA	NA	Supplied by client
F.	Wireless AP	Linksys	NA	NA	NA	Provided by Lab
G.	Laptop	DELL	PP32LA	HSLB32S	FCC DoC	Provided by Lab

Note:

1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB cable	1	0.1	Yes	0	Provided by Lab
2.	USB cable	1	1.8	Yes	0	Provided by Lab
3.	USB cable	1	1.8	Yes	0	Provided by Lab

For ESD test

No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	NOTEBOOK COMPUTER	DELL	E5420	CHHYLQ1	FCC DoC	Provided by Lab
B	NOTEBOOK COMPUTER	DELL	PP32LA	HSLB32S	FCC DoC	Provided by Lab
C	WiFi AP	Linksys	NA	NA	NA	Provided by Lab
D	TEST TOOL	Compex	NA	NA	NA	Supplied by Client

NOTE:

1. All power cords of the above support units are non-shielded (1.8 m).

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	USB	1	0.1	Yes	0	Provided by Lab
2	USB	1	1.8	Yes	0	Provided by Lab
3	USB	1	1.8	Yes	0	Provided by Lab

5 Conducted Disturbance at Mains Ports

5.1 Limits

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Notes: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	100375	May 09, 2016	May 08, 2017
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Aug. 31, 2016	Aug. 30, 2017
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 13, 2016	June 12, 2017
RF Cable	5D-FB	COACAB-002	Mar. 03, 2017	Mar. 02, 2018
10 dB PAD Mini-Circuits	HAT-10+	CONATT-003	Sep. 13, 2016	Sep. 12, 2017
50 ohms Terminator	N/A	EMC-03	Sep. 29, 2016	Sep. 28, 2017
50 ohms Terminator	N/A	EMC-02	Sep. 29, 2016	Sep. 28, 2017
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date:Mar. 06, 2017

5.3 Test Arrangement

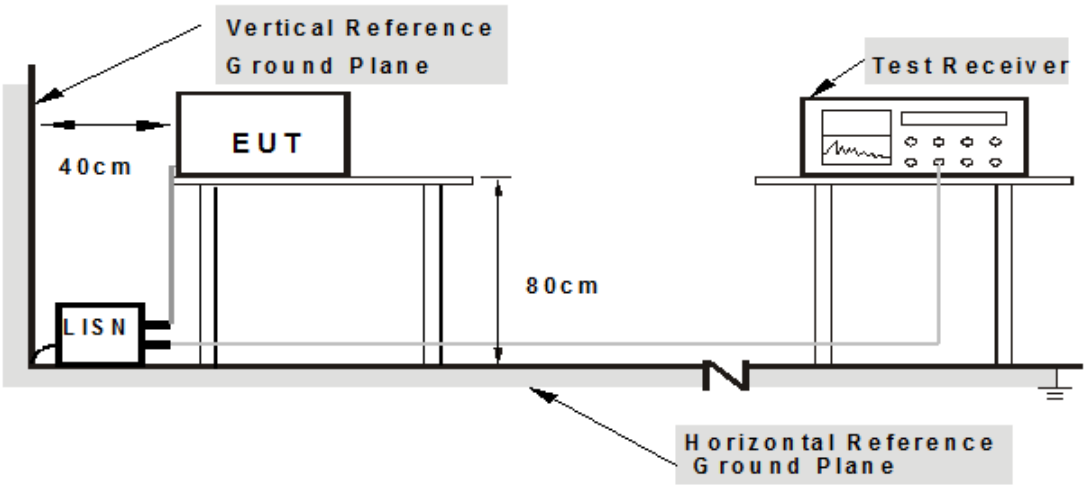
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The test results of conducted disturbance at mains ports are recorded of six worst margins for quasi-peak (mandatory) [and average (if necessary)] values against the limits at frequencies of interest unless the margin is 20 dB or greater.

Note:

The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

5.4 Supplementary Information

There is not any deviation from the test standards for the test method.

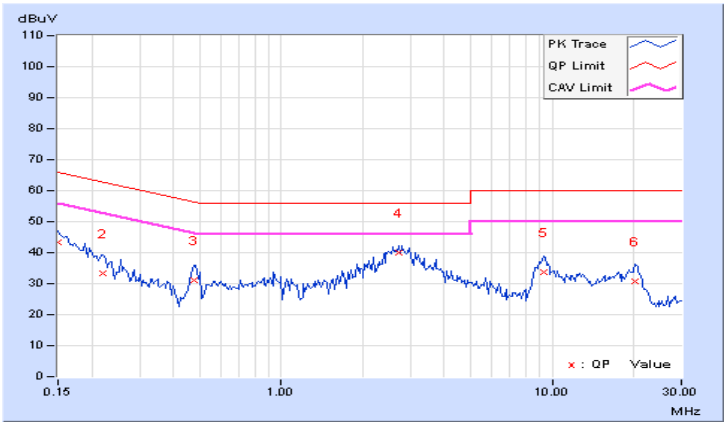
5.5 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	230Vac, 50Hz	Environmental Conditions	25℃, 75%RH
Tested by	Mike Hsieh		
Test Mode	Mode 1		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.14	33.06	17.80	43.20	27.94	66.00	56.00	-22.80	-28.06
2	0.22031	10.12	23.24	11.77	33.36	21.89	62.81	52.81	-29.45	-30.92
3	0.47422	10.11	21.15	14.94	31.26	25.05	56.44	46.44	-25.18	-21.39
4	**2.71094**	**10.27**	**29.70**	**24.73**	**39.97**	**35.00**	**56.00**	**46.00**	**-16.03**	**-11.00**
5	9.30078	10.42	23.33	17.68	33.75	28.10	60.00	50.00	-26.25	-21.90
6	20.26172	10.82	20.08	14.42	30.90	25.24	60.00	50.00	-29.10	-24.76

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

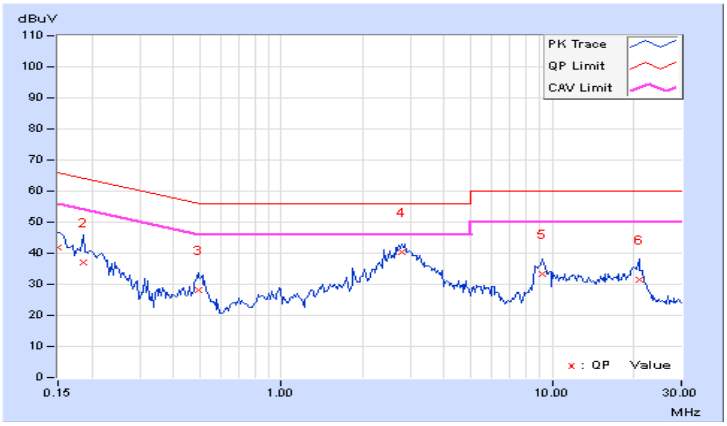


Frequency Range	150kHz ~ 30MHz	**Detector Function & Bandwidth**	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	230Vac, 50Hz	**Environmental Conditions**	25℃, 75%RH
Tested by	Mike Hsieh		
Test Mode	Mode 1		

Phase Of Power : Neutral (N)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15000	10.19	31.70	16.77	41.89	26.96	66.00	56.00	-24.11	-29.04
2	0.18516	10.11	26.94	13.74	37.05	23.85	64.25	54.25	-27.20	-30.40
3	0.49375	10.11	18.15	12.44	28.26	22.55	56.10	46.10	-27.84	-23.55
4	2.77344	10.22	30.14	24.70	40.36	34.92	56.00	46.00	-15.64	-11.08
5	9.21094	10.46	22.98	17.27	33.44	27.73	60.00	50.00	-26.56	-22.27
6	20.88672	10.87	20.44	14.92	31.31	25.79	60.00	50.00	-28.69	-24.21

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



6 Radiated Disturbance up to 1 GHz

6.1 Limits

Frequency (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30 - 230	40	30
230 - 1000	47	37

Notes: 1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

6.2 Test Instruments

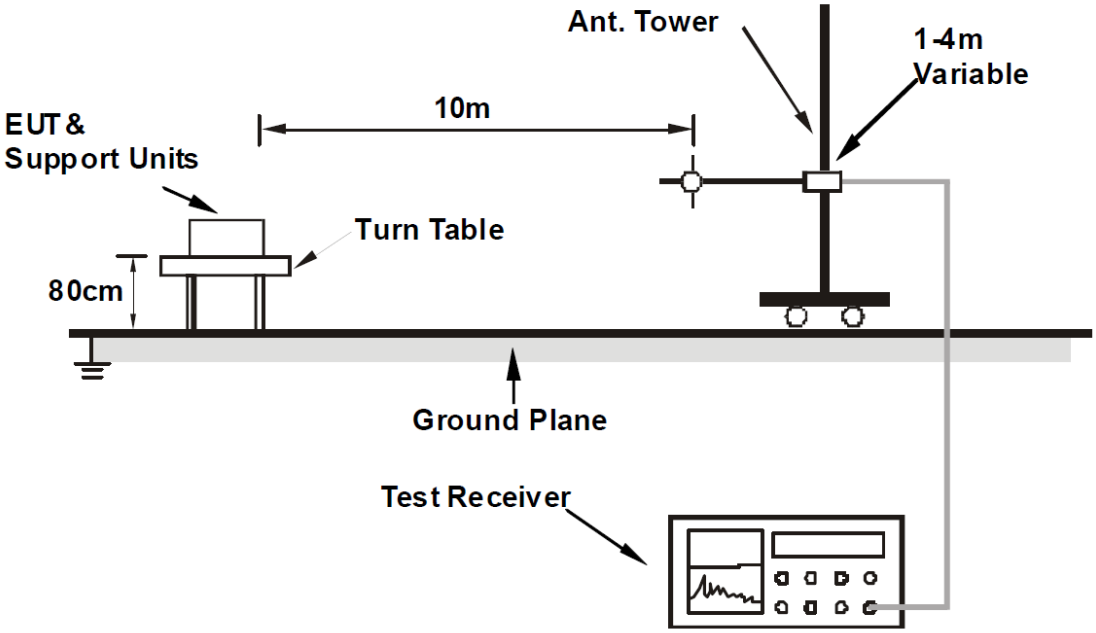
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010125	Apr. 16, 2016	Apr. 15, 2017
	N9038A	MY50010132	June 28, 2016	June 27, 2017
Pre-Amplifier Sonoma	310N	352925	Aug. 29, 2016	Aug. 28, 2017
	310N	352926	Aug. 29, 2016	Aug. 28, 2017
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-359	Dec. 28, 2016	Dec. 27, 2017
	VULB 9168	9168-358	Dec. 16, 2016	Dec. 15, 2017
Fixed attenuator Mini-Circuits	UNAT-5+	CHF-001	Sep. 9, 2016	Sep. 08, 2017
	UNAT-5+	CHF-002	Sep. 9, 2016	Sep. 08, 2017
RF Cable	8D-FB	CHFCAB-001-1 CHFCAB-001-3 CHFCAB-001-4	Sep. 22, 2016	Sep. 21, 2017
		CHFCAB-002-1 CHFCAB-002-3 CHFCAB-002-4	Sep. 22, 2016	Sep. 21, 2017
Software BVADT	ADT_Radiated_V 8.7.08	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 10m Chamber No. F.
3. The FCC Site Registration No. is 928149.
4. The VCCI Site Registration No. is R-3252.
5. The CANADA Site Registration No. is IC 7450H-1.
6. Tested Date:Mar. 05, 2017

6.3 Test Arrangement

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is up to 1 GHz.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency up to 1GHz.



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

6.4 Supplementary Information

There is not any deviation from the test standards for the test method.

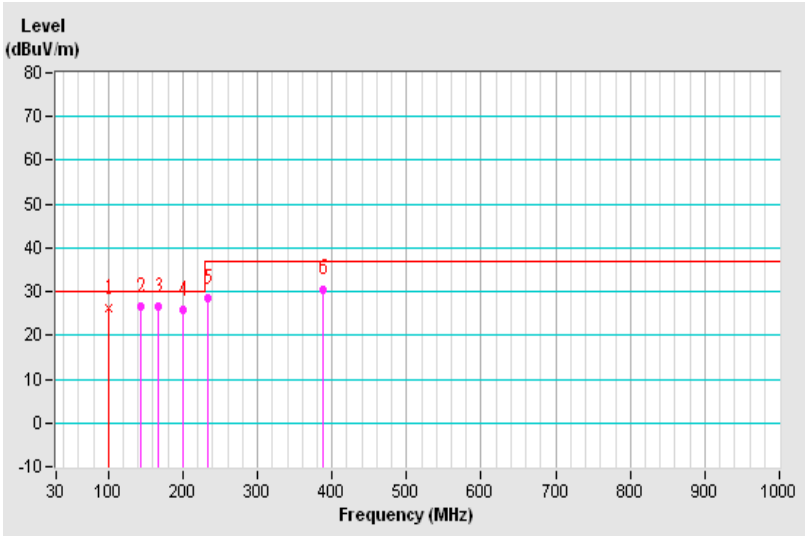
6.5 Test Results

Frequency Range	30MHz ~ 1GHz	Detector Function & Bandwidth	Quasi-Peak (QP), 120kHz
Input Power	230Vac, 50Hz	Environmental Conditions	24℃, 69%RH
Tested by	Scott Chen		
Test Mode	Mode 1		

Antenna Polarity & Test Distance : Horizontal at 10 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	99.92	26.21 QP	30.00	-3.79	4.00 H	113	43.17	-16.96
2	143.97	26.46 QP	30.00	-3.54	4.00 H	5	38.99	-12.53
3	166.02	26.75 QP	30.00	-3.25	4.00 H	0	39.41	-12.66
4	199.19	25.95 QP	30.00	-4.05	4.00 H	29	41.32	-15.37
5	233.24	28.39 QP	37.00	-8.61	3.00 H	339	42.79	-14.40
6	388.20	30.60 QP	37.00	-6.40	2.00 H	248	39.83	-9.23

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) – Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value

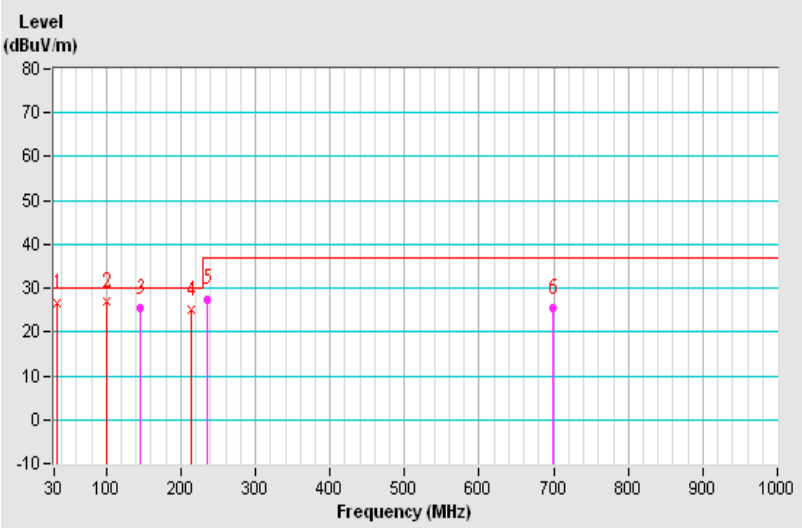


Frequency Range	30MHz ~ 1GHz	Detector Function & Bandwidth	Quasi-Peak (QP), 120kHz
Input Power	230Vac, 50Hz	Environmental Conditions	24℃, 69%RH
Tested by	Scott Chen		
Test Mode	Mode 1		

Antenna Polarity & Test Distance : Vertical at 10 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	33.32	26.46 QP	30.00	-3.54	1.00 V	144	40.55	-14.09
2	**99.62**	**26.90 QP**	**30.00**	**-3.10**	**2.00 V**	**164**	**44.17**	**-17.27**
3	145.26	25.42 QP	30.00	-4.58	1.00 V	329	37.89	-12.47
4	213.02	25.10 QP	30.00	-4.90	1.00 V	235	40.72	-15.62
5	234.45	27.55 QP	37.00	-9.45	1.00 V	107	41.81	-14.26
6	699.47	25.54 QP	37.00	-11.46	4.00 V	269	28.00	-2.46

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) – Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value



7 Radiated Disturbance above 1 GHz

7.1 Limits

Frequency (GHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	Average	Peak	Average	Peak
1 to 3	56	76	50	70
3 to 6	60	80	54	74

Notes: 1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

Frequency Range of Radiated Measurement (For unintentional radiators)

Highest frequency generated or used in the EUT or on which the EUT operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 108	1000
108-500	2000
500-1000	5000
Above 1000	Up to 5 times of the highest frequency or 6 GHz, whichever is less

7.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010125	Apr. 16, 2016	Apr. 15, 2017
Pre-Amplifier Agilent	8449B	3008A01975	Feb. 26, 2017	Feb. 25, 2018
Horn Antenna SCHWARZBECK	BBHA 9120D	D123	Dec. 15, 2016	Dec. 14, 2017
RF Cable	SUCOFLEX104	RF-104-209	Dec. 09, 2016	Dec. 08, 2017
RF Cable	EMC104-SM-SM -6000	150325	Jan. 16, 2017	Jan. 15, 2018
RF Cable	104 RF cable	131221	Dec. 09, 2016	Dec.08, 2017
Software BVADT	ADT_Radiated_ V8.7.08	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

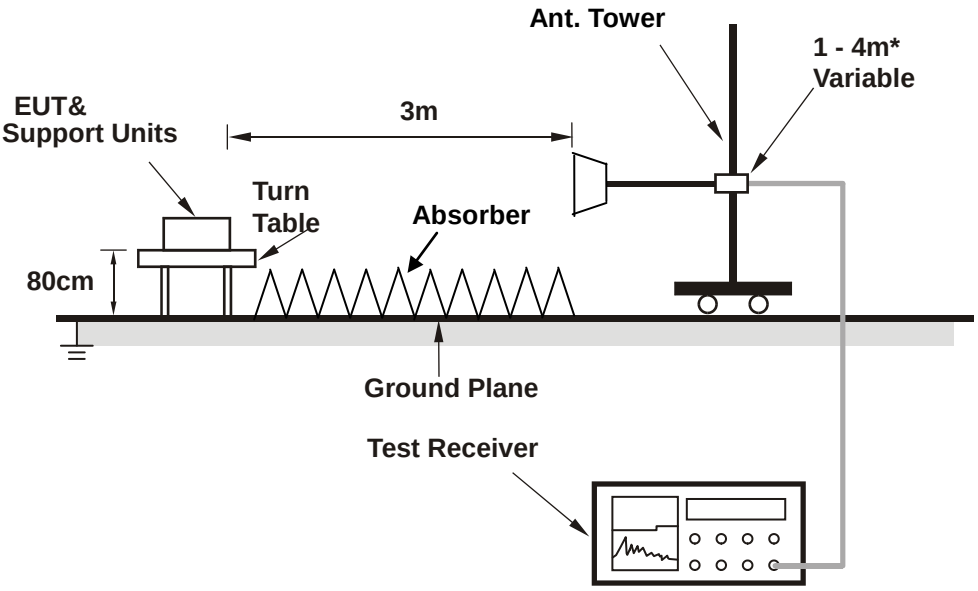
Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 10m Chamber No. F.
3. The VCCI Site Registration No. is G-136.
4. The 3dB beamwidth of the horn antenna is minimum 30 degree (or w = 1.6m at 3m distance) for 1~6 GHz.
5. Tested Date:Mar. 04, 2017

7.3 Test Arrangement

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The height of antenna can be varied from one meter to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The spectrum analyzer system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

Note:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection (PK) at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.



* : depends on the EUT height and the antenna 3dB beamwidth both.
For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

7.4 Supplementary Information

Added -- applicable for the radio equipment(s)

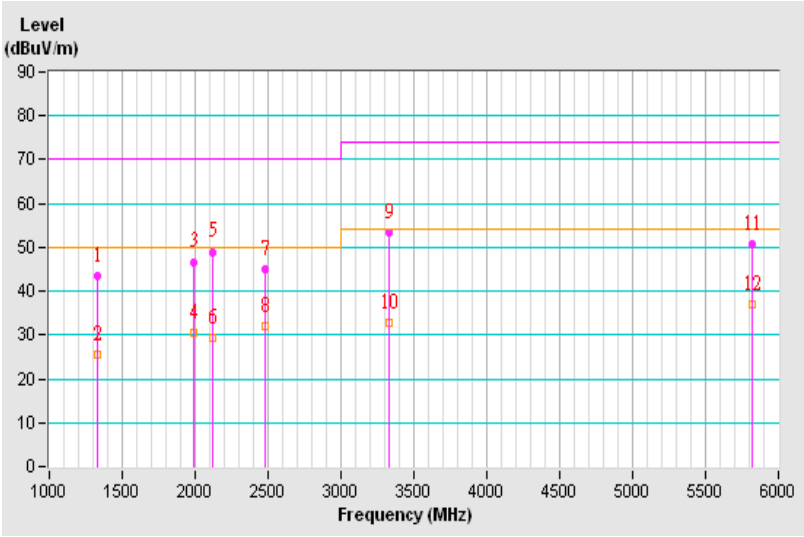
7.5 Test Results

Frequency Range	1GHz~6GHz	Detector Function & Bandwidth	Peak (PK) / Average (AV), 1MHz
Input Power	230Vac, 50Hz	Environmental Conditions	24℃, 69%RH
Tested by	Scott Chen		
Test Mode	Mode 1		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1330.62	43.37 PK	70.00	-26.63	1.00 H	137	43.65	-0.28
2	1330.62	25.43 AV	50.00	-24.57	1.00 H	137	25.71	-0.28
3	1991.87	46.71 PK	70.00	-23.29	1.00 H	270	43.37	3.34
4	1991.87	30.34 AV	50.00	-19.66	1.00 H	270	27.00	3.34
5	2117.12	48.99 PK	70.00	-21.01	1.00 H	360	44.81	4.18
6	2117.12	29.21 AV	50.00	-20.79	1.00 H	360	25.03	4.18
7	2476.62	45.01 PK	70.00	-24.99	1.00 H	184	39.79	5.22
8	2476.62	32.16 AV	50.00	-17.84	1.00 H	184	26.94	5.22
9	3328.87	53.32 PK	74.00	-20.68	1.00 H	360	45.30	8.02
10	3328.87	32.65 AV	54.00	-21.35	1.00 H	360	24.63	8.02
11	5823.87	50.68 PK	74.00	-23.32	1.00 H	250	36.07	14.61
12	5823.87	37.09 AV	54.00	-16.91	1.00 H	250	22.48	14.61

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) – Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value

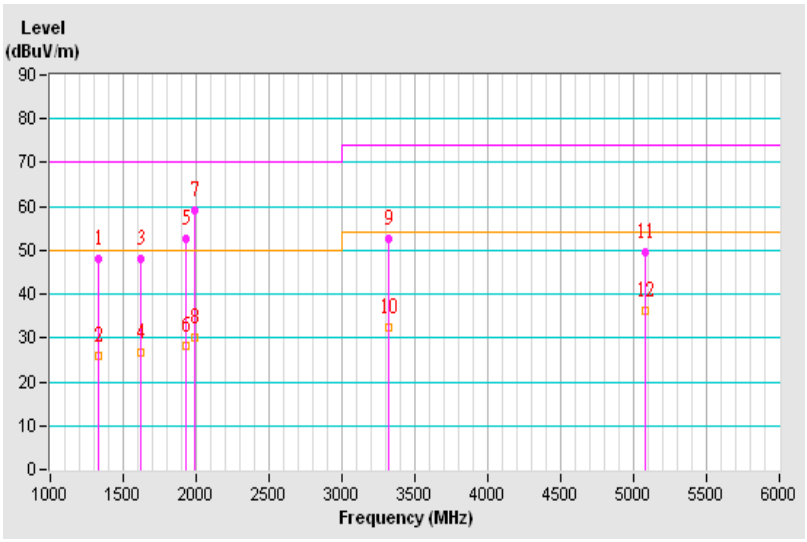


Frequency Range	1GHz~6GHz	Detector Function & Bandwidth	Peak (PK) / Average (AV), 1MHz
Input Power	230Vac, 50Hz	Environmental Conditions	24℃, 69%RH
Tested by	Scott Chen		
Test Mode	Mode 1		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1327.25	47.86 PK	70.00	-22.14	1.00 V	178	48.16	-0.30
2	1327.25	25.98 AV	50.00	-24.02	1.00 V	178	26.28	-0.30
3	1617.37	48.05 PK	70.00	-21.95	1.00 V	187	46.58	1.47
4	1617.37	26.58 AV	50.00	-23.42	1.00 V	187	25.11	1.47
5	1932.37	52.70 PK	70.00	-17.30	1.00 V	326	49.80	2.90
6	1932.37	28.18 AV	50.00	-21.82	1.00 V	326	25.28	2.90
7	**1992.12**	**59.00 PK**	**70.00**	**-11.00**	**1.00 V**	**314**	**55.66**	**3.34**
8	1992.12	30.09 AV	50.00	-19.91	1.00 V	314	26.75	3.34
9	3321.50	52.58 PK	74.00	-21.42	1.00 V	311	44.58	8.00
10	3321.50	32.56 AV	54.00	-21.44	1.00 V	311	24.56	8.00
11	5084.50	49.43 PK	74.00	-24.57	1.00 V	360	35.96	13.47
12	5084.50	36.31 AV	54.00	-17.69	1.00 V	360	22.84	13.47

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) – Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value



8 General Immunity requirements

EN 301 489-series, Immunity requirements			
Clause	Reference standard	Test specification	Performance Criterion
9.3	EN 61000-4-2 ESD	Enclosure port: ±8kV Air discharge, ±4kV Contact discharge	B
9.2	EN 61000-4-3 RS	Enclosure port: 80% AM (1kHz) 80-6000 MHz, 3V/m	A
9.4	EN 61000-4-4 EFT	Signal ports,wired network ports and control ports: ±0.5kV 5/50 T_r/T_h ns, 5kHz xDSL equipment: ±0.5kV, 5/50 (T_r/T_h) ns, 100kHz Input DC power ports: ±0.5kV, 5/50 T_r/T_h ns, 5kHz Input AC Power ports: ±1kV, 5/50 T_r/T_h ns, 5kHz	B
9.8	EN 61000-4-5 Surge	Wired network ports(directly connected to outdoor cables): Symmetrically operated : ±1kV, 10/700 T_r/T_h μs Non-symmetrically operated : line to line: ±0.5kV, 1.2/50 T_r/T_h μs line to ground: ±1kV, 1.2/50 T_r/T_h μs Wired network ports(indoor cables, longer than 30 m): ±0.5kV, 1.2/50 T_r/T_h μs	B
		Input AC Power ports: Telecom centres: line to line: ±0.5kV, 1.2/50 T_r/T_h μs line to ground: ±1kV, 1.2/50 T_r/T_h μs Others: line to line: ±1kV, 1.2/50 T_r/T_h μs line to ground: ±2kV, 1.2/50 T_r/T_h μs	B
9.5	EN 61000-4-6 CS	Signal ports, wired network ports, control ports and DC power ports(if cables length > 3m): 0.15-80 MHz, 3V, 80% AM (1kHz) AC Power ports: 0.15-80 MHz, 3V, 80% AM (1kHz)	A
9.7	EN 61000-4-11 Dips & Interruptions	AC Power ports: Voltage Dips: 0% residual, 0.5 cycle 0% residual, 1 cycle 70% residual, 25 cycles (at 50Hz) Voltage Interruptions: 0% residual, 250 cycles (at 50 Hz) EUT with battery back-up EUT without battery back-up	 B B B B C

8.2 Performance Criteria

General Performance Criteria

- Performance criteria for continuous phenomena applied to transmitters and receivers (CT/CR)

During and after the test, the equipment 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 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 (TT/TR)

After the test, the equipment 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 CT/CR and TT/TR 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 criteria specified by the manufacturer shall give the same degree of immunity protection as called for in CT/CR and TT/TR.

- 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 CT/CR and TT/TR 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 criteria specified by the manufacturer shall give the same degree of immunity protection as called for in CT/CR and TT/TR.

Product Specific Performance Criteria

The particular performance criteria which are specified in the relevant part of EN 301 489 series dealing with the particular type of radio equipment, take precedence over the corresponding parts of the general performance criteria.

Where particular performance criteria for specific functions are not given, then the general performance criteria shall apply.

EN 301 489-17, Broadband Data Transmission Systems

The performance criteria are:

- performance criteria A for immunity tests with phenomena of a continuous nature (CT/CR);
- performance criteria B for immunity tests with phenomena of a transient nature (TT/TR);
- performance criteria C for immunity tests with power interruptions exceeding a certain time.

Special conditions for EN 301489-17		
Criteria	During test	After test
A	Shall operate as intended. May show degradation of performance (see note1). 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).

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.

9 Electrostatic Discharge Immunity Test (ESD)

9.1 Test Specification

Basic Standard:	EN 61000-4-2
Discharge Impedance:	330 ohm / 150 pF
Discharge Voltage:	Air Discharge : NA Contact Discharge : ±2, ±4kV (Indirect
Number of Discharge:	Minimum 20 times at each test point
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

9.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ESD Simulator NoiseKen	ESS-100L(A)	0189C01491	May 29, 2014	May 28, 2015

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in ESD room A .
3 Tested Date: Jan. 26, 2015

9.3 Test Arrangement

a. Electrostatic discharges were applied only to those points and surfaces of the EUT that are accessible to users during normal operation.

b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.

c. The time interval between two successive single discharges was at least 1 second.

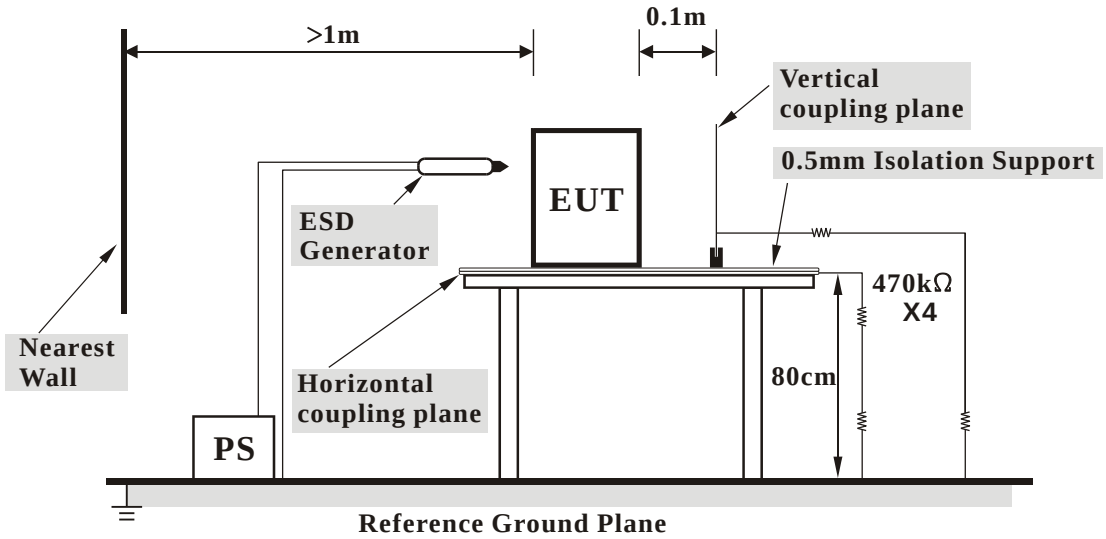
d. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the EUT.

e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.

f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator was removed from the EUT and re-triggered for a new single discharge. The test was repeated until all discharges were complete.

g. At least ten single discharges (in the most sensitive polarity) were applied to the **H**orizontal **C**oupling **P**lane at points on each side of the EUT. The ESD generator was positioned at a distance of 0.1 meters from the EUT with the discharge electrode touching the **HCP.**

h. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the **V**ertical **C**oupling **P**lane in sufficiently different positions that the four faces of the EUT were completely illuminated. The **VCP** (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the EUT.



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

NOTE:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the **G**round **R**eference **P**lane. The **GRP** consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A **H**orizontal **C**oupling **P**lane (1.6m x 0.8m) was placed on the table and attached to the **GRP** by means of a cable with 940kΩ total impedance. The equipment under test, was installed in a representative system as described in section 7 of EN/IEC 61000-4-2, and its cables were placed on the **HCP** and isolated by an insulating support of 0.5mm thickness. A distance of 1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

9.4 Supplementary Information

There is not any deviation from the test standards for the test method.

9.5 Test Results (Mode 1 & 2)

Input Power	3.3Vdc from host equipment	Tested by	Ping Liu
Enviromental conditions	23 °C, 49% RH 1014 mbar	Test mode	Mode 1 & 2

Note: No direct discharge surfaces found, therefore no direct discharge was executed.

Test Results of Indirect Application					
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling Plane	Vertical Coupling Plane	Performance Criterion
2, 4	+/-	Four Sides	Note 1	Note 1	A

Description of test points of indirect application:

1. Front side 2. Rear side 3. Right side 4. Left side

Note: 1. The EUT function was correct during the test.

10 Radiated, Radio-frequency, Electromagnetic Field Immunity Test (RS)

10.1 Test Specification

Basic Standard:	EN 61000-4-3
Frequency Range:	80 MHz ~ 6000 MHz,
Field Strength:	3 V/m
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of preceding frequency value
Polarity of Antenna:	Horizontal and Vertical
Antenna Height:	1.5m
Dwell Time:	3 seconds

10.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Signal Generator KEYSIGHT	N5182B	MY53051971	Sep.26, 2016	Sep.25, 2017
Power Amplifier ETS-LINGREN	8100-002	00163537	NA	NA
Power Amplifier ETS-LINGREN	8100-008	00163547	NA	NA
RF Voltage Meter KEYSIGHT	N1914A	MY55326005	Sep.29, 2016	Sep. 28, 2017
Electric Field Sensor ETS-LINGREN	HI-6105	00203614	Oct. 07, 2016	Oct. 06, 2017
LOG ANTENNA ETS-LINGREN	AT5080ANT	309740	NA	NA
HORN ANTENNA ETS-LINGREN	3119	00203652	NA	NA
TILE!(Software) ETS-LINGREN	7.1.3.34	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Chamber Room No. H.
3 The transmit antenna was located at a distance of 3 meters from the EUT.
4. Tested Date:Mar. 02, 2017

10.3 Test Arrangement

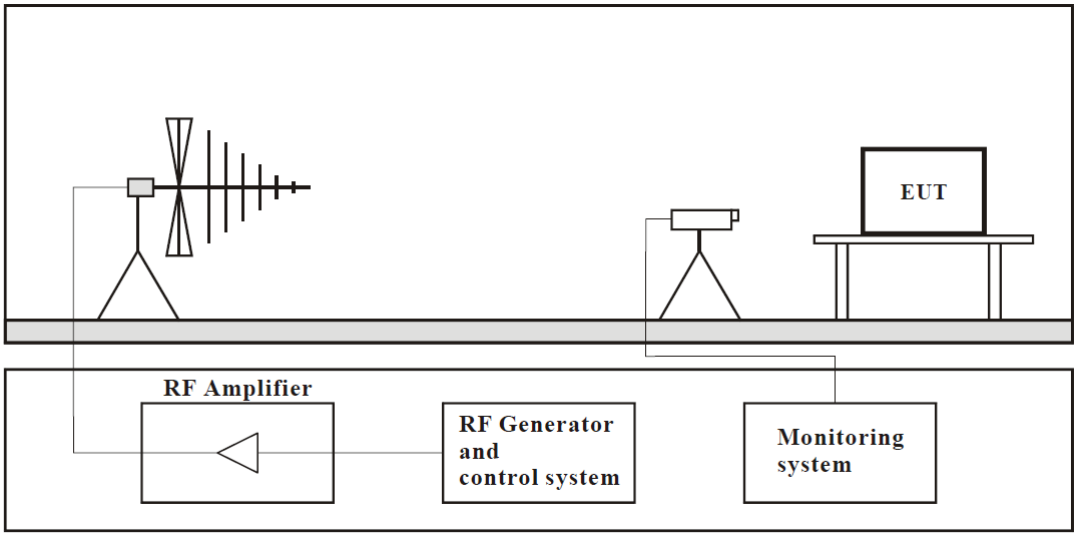
The test procedure was in accordance with EN 61000-4-3.

a. The testing was performed in a modified semi-anechoic chamber.

b. The frequency range is swept from 80 MHz to 6000 MHz, with the signal 80% amplitude modulated with a 1kHz sine wave.

c. The field strength level was 3 V/m.

d. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

NOTE:

TABLETOP EQUIPMENT
The EUT installed in a representative system as described in section 7 of EN/IEC 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR STANDING EQUIPMENT
The EUT installed in a representative system as described in section 7 of EN/IEC 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

10.4 Supplementary Information

There is not any deviation from the test standards for the test method

10.5 Test Results (Mode 1)

Input Power	3.3Vdc from host equipment	Tested by	Kevin Ko
Enviromental conditions	25 °C, 58% RH	Test mode	Mode 1

Frequency (MHz)	Polarity	Azimuth(°)	Applied Field Strength		Observation	Remarks	Performance Criterion
			(V/m)	Modulation			
80 - 6000	V&H	0, 90, 180, 270	3	80% AM (1kHz)	Note 1*	PASS	A

Note: 1. The EUT function was correct during the test..

* The EUT had request time out message from 2419.934MHz to 2444.134MHz during the test, but this band is exclusion band in EN 301 489-17, the test result (request time out) is acceptable under this condition.

10.6 Test Results (Mode 2)

Input Power	3.3Vdc from host equipment	Tested by	Kevin Ko
Enviromental conditions	25 °C, 58% RH	Test mode	Mode 2

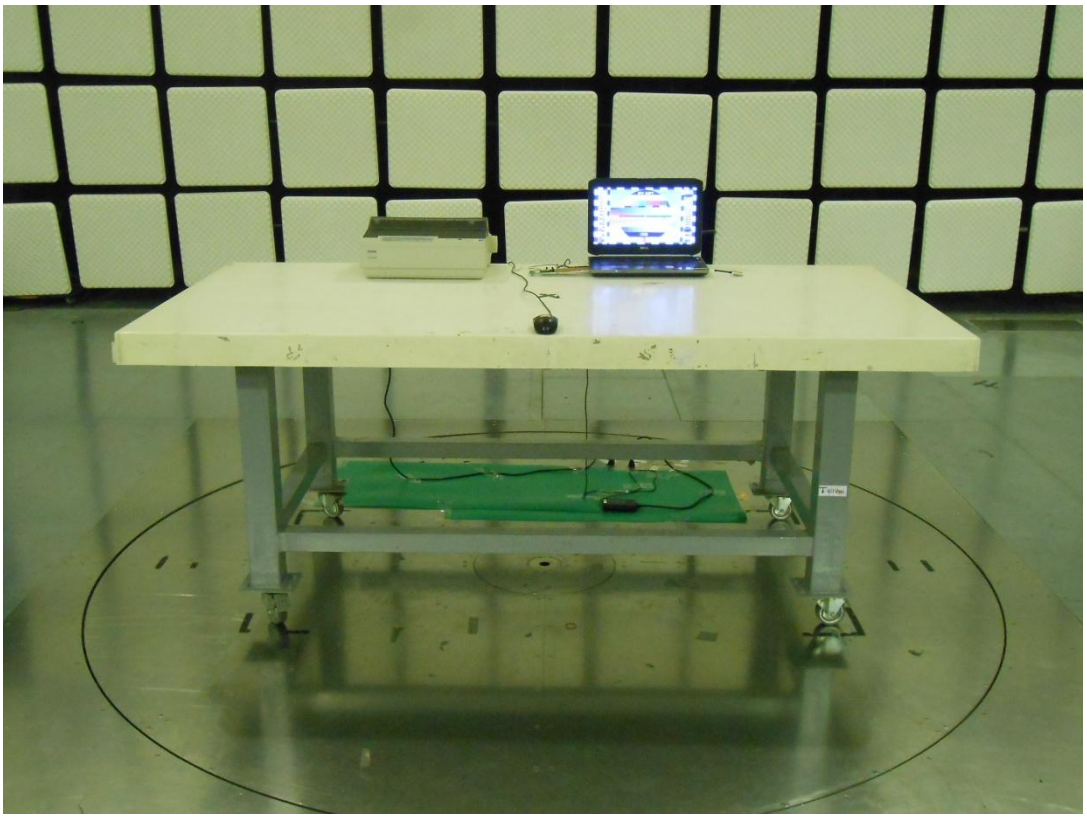
Frequency (MHz)	Polarity	Azimuth(°)	Applied Field Strength		Observation	Remarks	Performance Criterion
			(V/m)	Modulation			
80 - 6000	V&H	0, 90, 180, 270	3	80% AM (1kHz)	Note 1	PASS	A

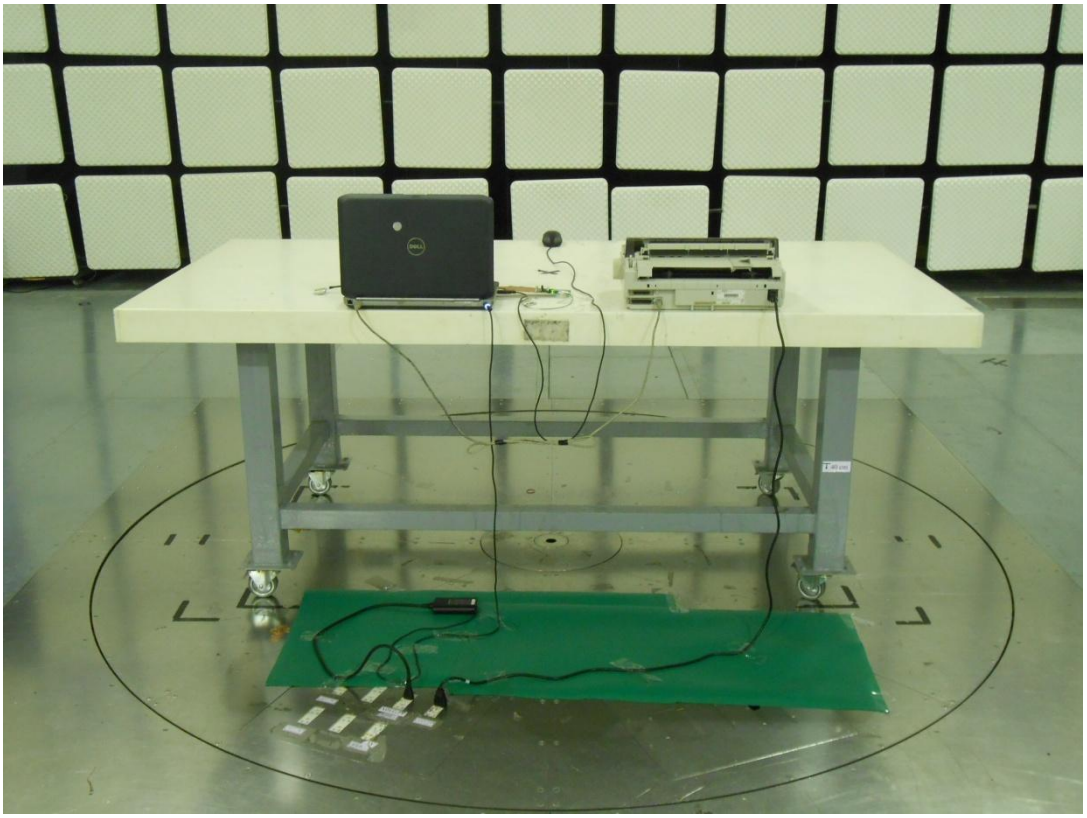
Note: 1. The EUT function was correct during the test..

11 Pictures of Test Arrangements

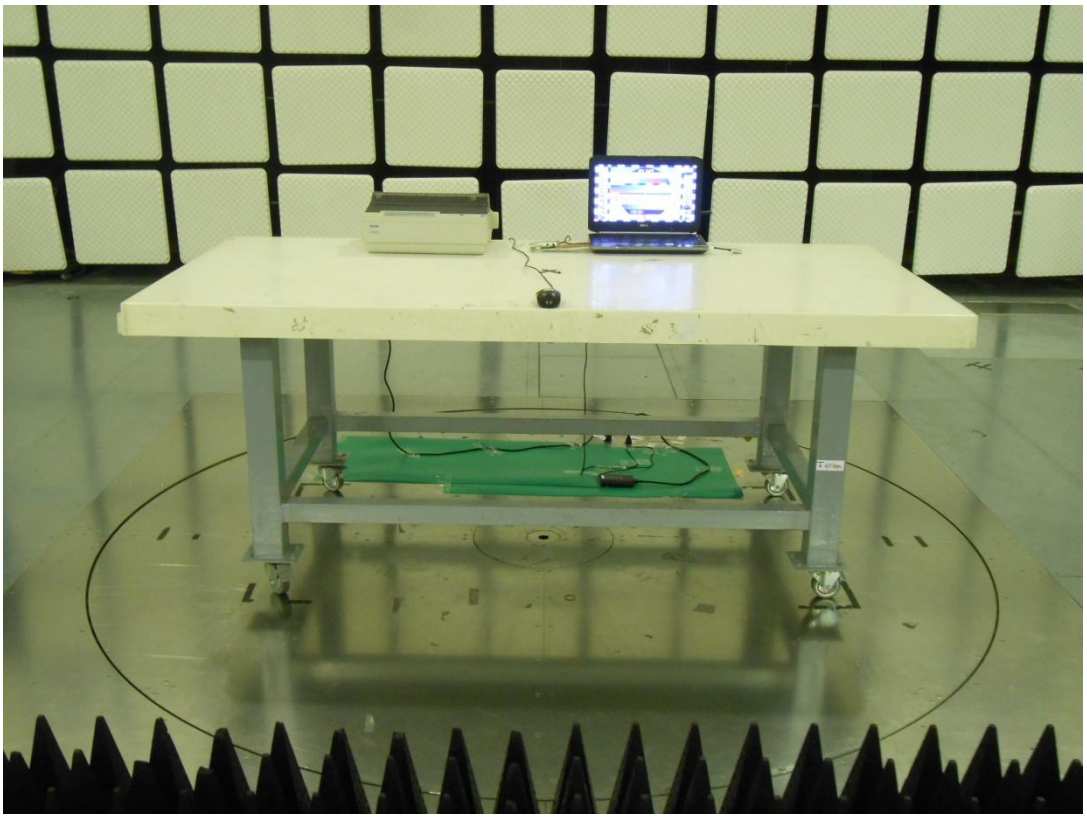
11.1 Conducted Disturbance at Mains Ports

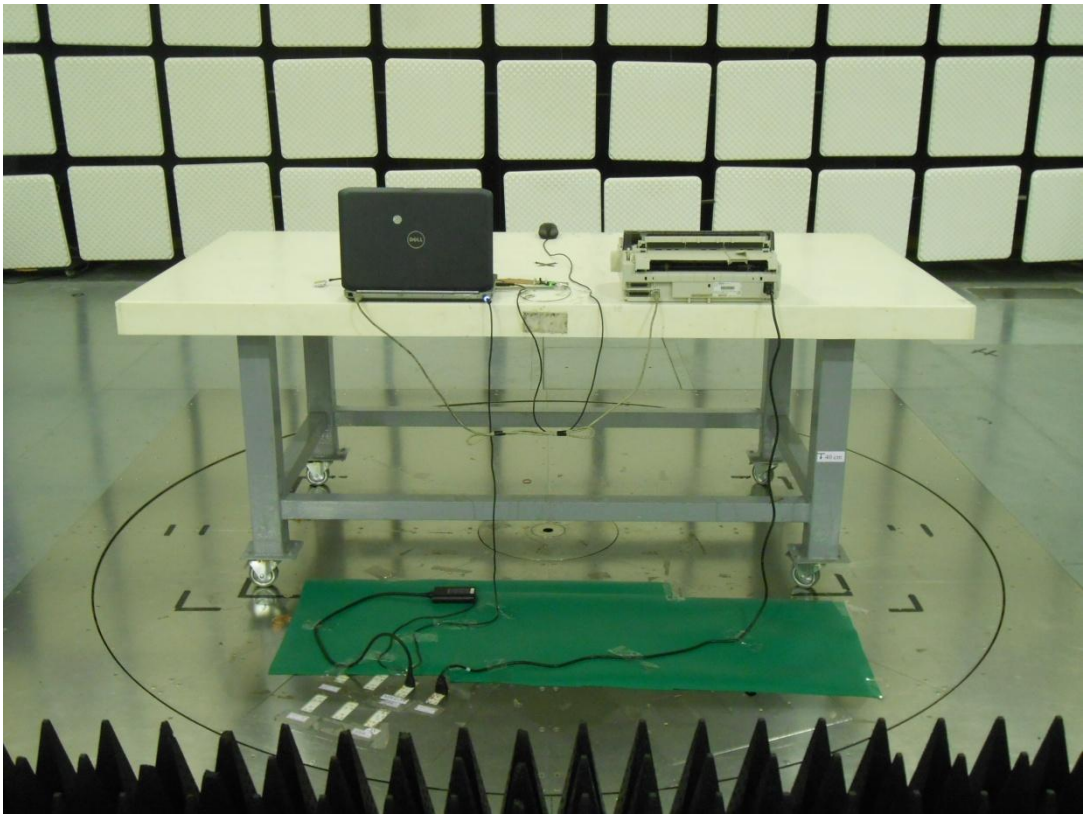
11.2 Radiated Disturbance up to 1 GHz





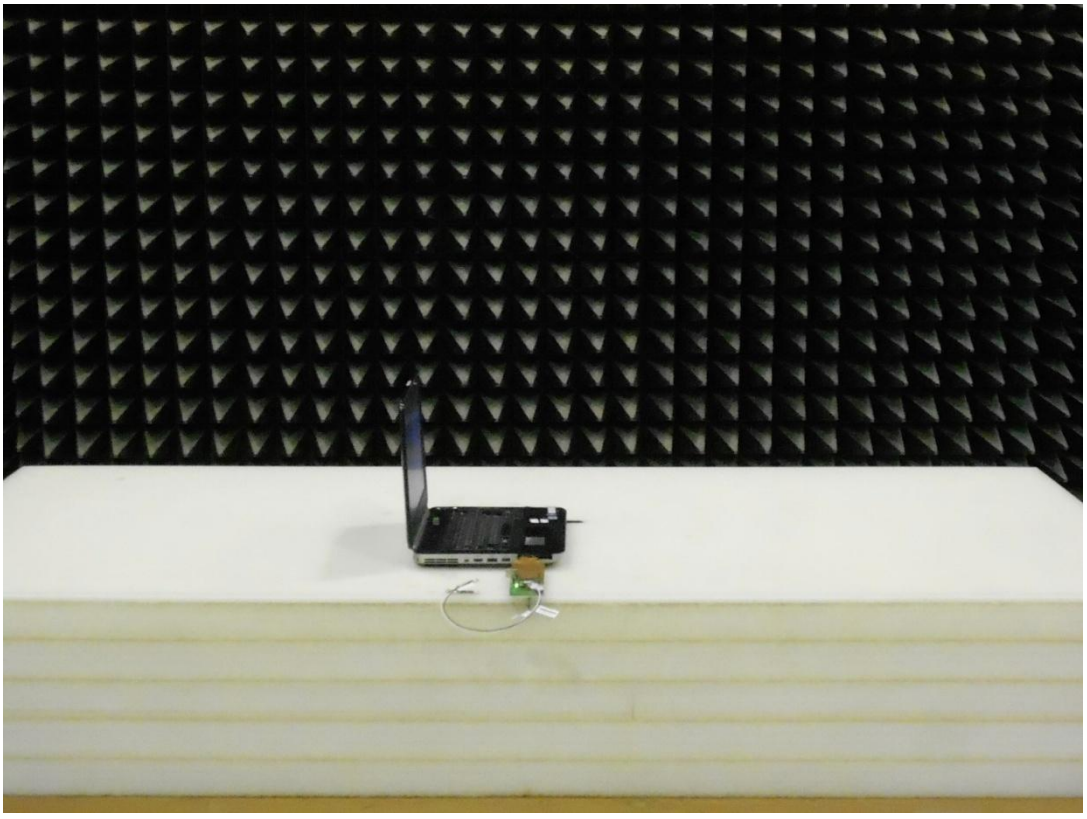
11.3 Radiated Disturbance above 1 GHz





11.4 Electrostatic Discharge Immunity Test (ESD)

11.5 Radio-frequency, Electromagnetic Field Immunity Test (RS)



Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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