SPORTON LAB.

Project No : FD992302-03

VERIFICATION OF COMPLIANCE

Equipment : **USB-C to 4-Port HDMI Multi-Monitor Adapter**
Model No. : **JCA366 , JCA366HC , JCA366HB , JUA366 , JUA366HC , JUA366HB**
Applicant : **KAIJET TECHNOLOGY INTERNATIONAL CORPORATION**
8F., No.109, Zhongcheng Rd., Tucheng Dist.,
New Taipei City 236, Taiwan, R.O.C.

SPORTON LAB.

I HEREBY **DECLARE THAT :**

The equipment is in accordance with the procedures are given in **ANSI C63.4-2014** and the energy emitted by this equipment was **Passed by CISPR PUB. 22, FCC Part 15 Subpart B, Canada Standard ICES-003 Issue 6**. Radiated and conducted emissions are compliance in **Class B** limits.
The test was carried out on **Dec. 16, 2019** at **SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**.

William Li

FCC EMI TEST REPORT

Filing Type	:	Supplier's Declaration Of Conformity
Equipment	:	USB-C to 4-Port HDMI Multi-Monitor Adapter
Brand Name	:	J5create
Model Name	:	JCA366 , JCA366HC , JCA366HB , JUA366 , JUA366HC , JUA366HB
Applicant	:	KAIJET TECHNOLOGY INTERNATIONAL CORPORATION 8F., No.109, Zhongcheng Rd., Tucheng Dist., New Taipei City 236, Taiwan, R.O.C.
Manufacturer	:	Magic Control Technology Corporation 10F., No.123, Zhongcheng Rd., Tucheng Dist., New Taipei City 236, Taiwan R.O.C.
Standard	:	47 CFR FCC Rules and Regulations Part 15 Subpart B, Class B Digital Device ICES-003 Issue 6, Class B

The product was received on Sep. 24, 2019, and testing was started from Sep. 29, 2019 and completed on Dec. 16, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2014 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: William Li

SDoC by:

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)
TEL : 886-3-327-3456
FAX : 886-3-327-0973

Table of Contents

History of this test report

Report No.	Version	Description	Issued Date
FD992302-03	01	Initial issue of report	Jan. 09, 2020

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
4	15.107	Conducted Emissions of Powerline	PASS	Under limit 0.27dB at 0.46MHz
5.1	15.109	Radiated Emissions below 1GHz	PASS	Under limit 2.78dB at 108.100MHz
5.2	15.109	Radiated Emissions above 1GHz	PASS	Under limit 4.66dB at 2.376GHz
Note : From Sporton Project No.:FD992302-02.				

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
None

Reviewed by: Mark Ma

Report Producer: Jenny Yang

1. General Description of Equipment under Test

1.1. Basic Description of Equipment under Test

Equipment	:	USB-C to 4-Port HDMI Multi-Monitor Adapter
Model No.	:	JCA366 , JCA366HC , JCA366HB , JUA366 , JUA366HC , JUA366HB
Power Supply Type	:	From Power Adapter
AC Power Cord	:	Wall-Mount, 2 pin
MICRO USB DC Power Cable	:	D-Shielded, 1.0 m
TYPE C USB DC Power Cable	:	D-Shielded, 1.0 m

The maximum operating frequency : 500 MHz

1.2. Feature of Equipment under Test

For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

1.3. Modification of EUT

No modifications to the EUT were made.

1.4. Model Number Details, information from manufacturer

	Type-C interface		USB interface	
Power supply	JCA366	JCA366HC JCA366HB	JUA366	JUA366HC JUA366HB
Micro USB	N/A	V	N/A	V
Type-C		V		V

2. Test Configuration of Equipment under Test

2.1. Details of EUT Test Modes

From the above models, Model: JCA366HC, JCA366, JUA366HC, JUA366 was selected as representative model for the test and its data was recorded in this report. The equipment under test were performed the following test modes:

Test Items	Description of test modes
Conducted Emission	Mode 1. JCA366HC HDMI*4:1920*1080 60Hz,USB R/W (power by micro usb) Mode 2. JCA366HC HDMI*4:1680*1050 60Hz,USB R/W (power by micro usb) Mode 3. JCA366HC HDMI*4:1920*1080 60Hz,USB R/W (power by type-c) Mode 4. JCA366 HDMI*4:1920*1080 60Hz (power by nb) Mode 5. JUA366HC HDMI*4:1920*1080 60Hz (power by micro usb) Mode 6. JUA366HC HDMI*4:1920*1080 60Hz (power by type-c) Mode 7. JUA366 HDMI*4:1920*1080 60Hz (power by nb) cause “mode 1” generated the worst test result; it was reported as final data.
Radiated Emissions <below 1GHz>	Mode 1. JCA366HC HDMI*4:1920*1080 60Hz,USB R/W Mode 2. JCA366HC HDMI*4:1680*1050 60Hz,USB R/W Mode 3. JCA366 HDMI*4:1920*1080 60Hz Mode 4. JUA366HC HDMI*4:1920*1080 60Hz Mode 5. JUA366 HDMI*4:1920*1080 60Hz cause “mode 1” generated the worst test result; it was reported as final data.
Radiated Emissions <above 1GHz>	Mode 1. JCA366HC HDMI*4:1920*1080 60Hz,USB R/W

2.2. Description of Test System

Conducted emission and radiated emission below 1GHz

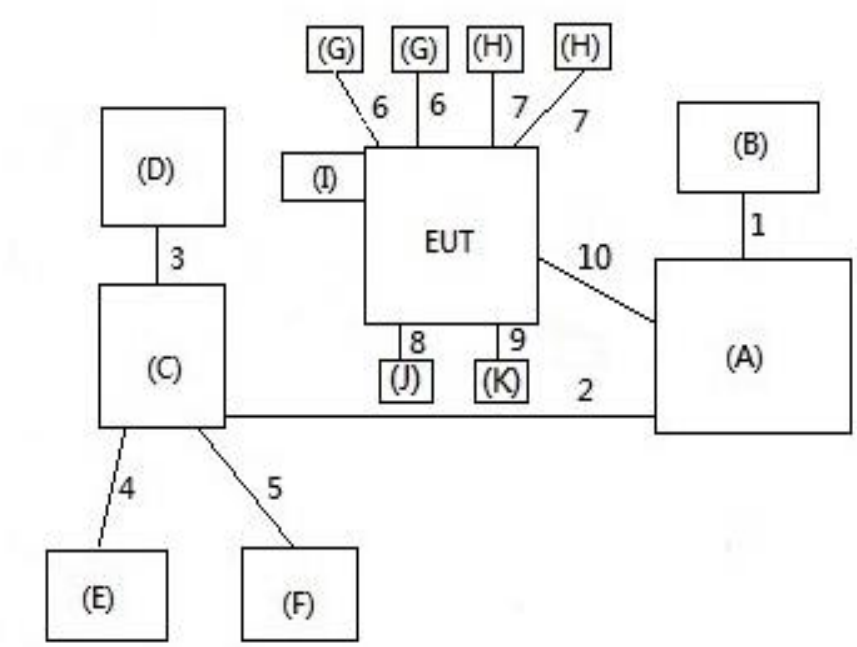
No.	Peripheral	Manufacturer	Model Number	FCC ID	Remarks
For Local					
A	Notebook	Lenovo	TP00088c	DoC	-
B	Notebook Adaptor	Lenovo	ADLX65YLC3A	DoC	-
C	USB HUB	j5create	JUH377	DoC	-
D	Printer	Fuji Xerox	Phaser 3121	DoC	-
E	iPod nano	Apple	A1137	DoC	-
F	Mouse	ASUS	MOBTUO	DoC	-
G	LCD Monitor*2	ASUS	PB27U	DoC	-
H	LCD Monitor*2	DELL	UltraSharp U2410f	DoC	-
I	USB Flash Drive*2	Transcend	JetFlash 700	DoC	-
J	Adaptor	APPLE	A1385	N/A	-
K	Adaptor	APD	WA-10K05R	N/A	-

Radiated emission above 1GHz

No.	Peripheral	Manufacturer	Model Number	FCC ID	Remarks
For Local					
A	Notebook	Lenovo	TP00088c	DoC	-
B	Notebook Adaptor	Lenovo	ADLX65YLC3A	DoC	-
C	USB HUB	j5create	JUH377	DoC	-
D	Printer	EPSON	C61	N/A	-
E	iPod nano	Apple	A1137	DoC	-
F	Mouse	Microsoft	1113	DoC	-
G	LCD Monitor*2	ASUS	VP28UQG	DoC	-
H	LCD Monitor	DELL	P2715Qt	DoC	-
I	LCD Monitor	DELL	U2713HMt	DoC	-
J	USB Flash Drive*2	HP	x750w	DoC	-
K	Adaptor	SAMSUNG	ETAOU60JBE	N/A	-
L	Adaptor	SAMSUNG	EP-TA10CBC	N/A	-
M	MIC+Earphon*3	APPLE	MD827FE/A	N/A	-

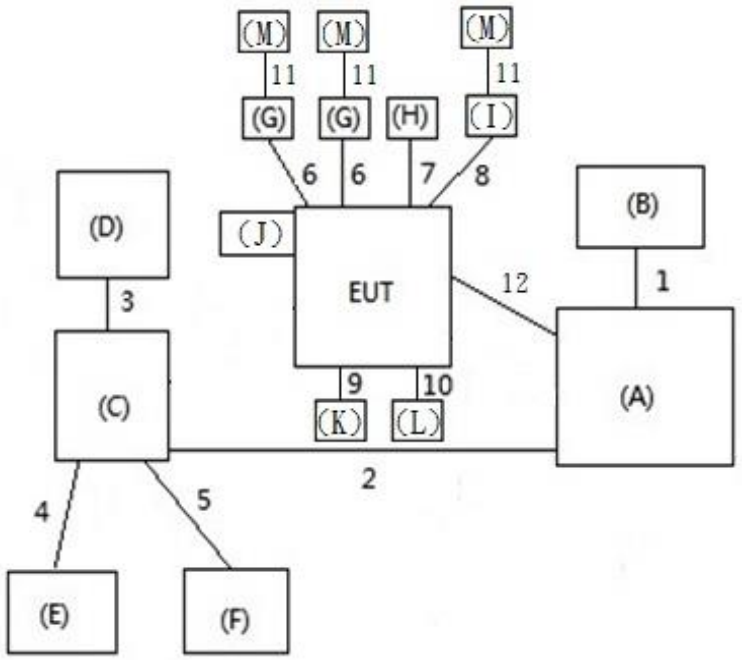
2.3. Connection Diagram of Test System

Test Setup Diagram - Conducted emission and radiated emission below 1GHz



No.	Types of Cables	Shielding on Cable	Length (m)	Remarks
1	DC	B-Shielded	1.8	-
2	USB	D-Shielded	1	-
3	USB	D-Shielded	1.8	-
4	USB	D-Shielded	1	-
5	USB	AL-F-Shielded	1.5	-
6	HDMI*2	D-Shielded	1.8	-
7	HDMI*2	D-Shielded	1.8	-
8	TYPE C to USB TYPE A	D-Shielded	1	-
9	Micro USB to USB TYPE A	D-Shielded	1	-
10	TYPE C	D-Shielded	1	EUT

Test Setup Diagram - Radiated emission above 1GHz



No.	Types of Cables	Shielding on Cable	Length (m)	Remarks
1	DC	B-Shielded	1.8	-
2	USB	D-Shielded	1	-
3	USB	D-Shielded	1.8	-
4	USB	D-Shielded	1	-
5	USB	AL-F-Shielded	1.8	-
6	HDMI	D-Shielded	1.8	-
7	HDMI	D-Shielded	1.8	-
8	HDMI	D-Shielded	1.8	-
9	TYPE C to USB TYPE A	D-Shielded	1	-
10	Micro USB to USB TYPE A	D-Shielded	1	-
11	Audio cable	Non-Shielded	1.1	-
12	TYPE C	D-Shielded	1	EUT

2.4. Test Manner

During the test, the program under Win 10 was executed:

- Turn on the power of all equipment.
- The Notebook reads the test program from the hard disk drive and runs it.
- The Notebook executed "BurnInTest" to send "H" pattern to the monitor, and the monitor displays "H" patterns on the screen via EUT.
- The Notebook executed "WINTHRAX" to send signal messages to the iPod, and the iPod reads and writes the message.
- The Notebook executed "Media player" to play audio via EUT from earphone or speaker of Monitor.
- The Notebook opened “Word” to send "H" messages to the printer, and then the printer prints them on the paper.
- The Notebook executed "WINTHRAX" to send signal messages to the USB Flash Drive, and the USB Flash Drive reads and writes the message via EUT.

3. General Information of Test

3.1. Test Facilities

Test Site：SPORTON INTERNATIONAL INC.	
☒ HUA YA	ADD: No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: 886-3-327-3456 FAX: 886-3-318-0055 FCC Designation Number: TW1093
☒ DONG HU	ADD: No. 3, Ln. 238, Kangle St., Neihu Dist., Taipei City, Taiwan (R.O.C.) TEL: 886-2-2631-5551 FAX: 886-2-2631-9740 FCC Designation Number: TW1094
☐ LIN KOU	ADD: No. 30-2, Dingfu Vil., Linkou Dist., New Taipei City, Taiwan (R.O.C.) TEL: 886-2-2601-1640 FAX: 886-2-2601-1695 FCC Designation Number: TW1095

Test Items	Test Site No.	Test Engineer	Test Environment		Test Date	Remark
			temp °C	hum %		
Conducted Emissions of Powerline	CO01-NH	Willy Lee	24.5~24.8	55.2~55.5	01/Oct/2019	-
Radiated Emissions below 1GHz	OS03-NH	Louis Lin	25.4~25.6	53.8~53.9	30/Sep/2019	-
Radiated Emissions above 1GHz	03CH04-HY	Alan Chen	26.1~26.3	59~60	29/Sep/2019	-

3.2. Test Standards

Test items	Test Standards and Test Procedures
Radiated and Conducted Emissions	ANSI C63.4:2014 with FCC Method 47 CFR Part 15, Subpart B, Class B Digital Device, CISPR PUB. 22 and Canada Standard ICES-003 Issue 6, Class B

3.3. Test Voltage/Frequencies

Power Supply Type	Voltage/Frequencies
AC Power Supply	120V / 60Hz

3.4. Test Distance and Frequency Range Investigated

Test Items	Frequency Range	Remark
Powerline Conducted Emissions	150 kHz to 30 MHz	-
Radiated Emissions (below 1GHz)	30 MHz to 1,000 MHz	Measurement distance is 10 m.
Radiated Emissions (above 1GHz)	1,000 MHz to 5,000 MHz	Measurement distance is 3 m.

3.5. Operating Condition

- Full system.

3.6. Labelling requirements

3.6.1. FCC Labelling requirements

The devices shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

3.6.2. ICES Labelling requirements

The manufacturer, importer or supplier shall meet the labelling requirements set out in this section and in Notice 2014-DRS1003 for electronic labelling for every unit:

(i) prior to marketing in Canada, for ITE manufactured in Canada and
(ii) prior to importation into Canada, for imported ITE.

Each unit of an ITE model shall bear a label (see below) that represents the manufacturer's or the importer's SDoC with Innovation, Science and Economic Development Canada's ICES-003. This label shall be permanently affixed to the ITE or displayed electronically and its text must be clearly legible. If the dimensions of the device are too small or if it is not practical to place the label on the ITE and electronic labelling has not been implemented, the label shall be, upon agreement with Innovation, Science and Economic Development Canada, placed in a prominent location in the user manual supplied with the ITE. The user manual may be in an electronic format and must be readily available.

Innovation, Science and Economic Development Canada ICES-003 Compliance Label:
CAN ICES-3 (*)/NMB-3(*)
* Insert either "A" or "B" but not both to identify the applicable Class of ITE.

3.7. User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

4. Conducted Emissions Measurement

Conducted Emissions were measured according to the methods defined in ANSI C63.4-2014 Section 7.
The EUT is which satisfies the Class B disturbance limits.

4.1. Limit

Limits for conducted disturbance at the mains ports of class B			
Frequency range MHz	**Coupling device**	**Detector type / bandwidth**	**Class B limits** dB(μV)
0,15 – 0,5	AMN	Quasi-peak / 9 kHz	66 - 56
0,5 – 5			56
5 – 30			60
0,15 – 0,5	AMN	Average / 9 kHz	56 - 46
0,5 – 5			46
5 – 30			50
Note 1: The lower limit shall apply at the transition frequencies. Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.			

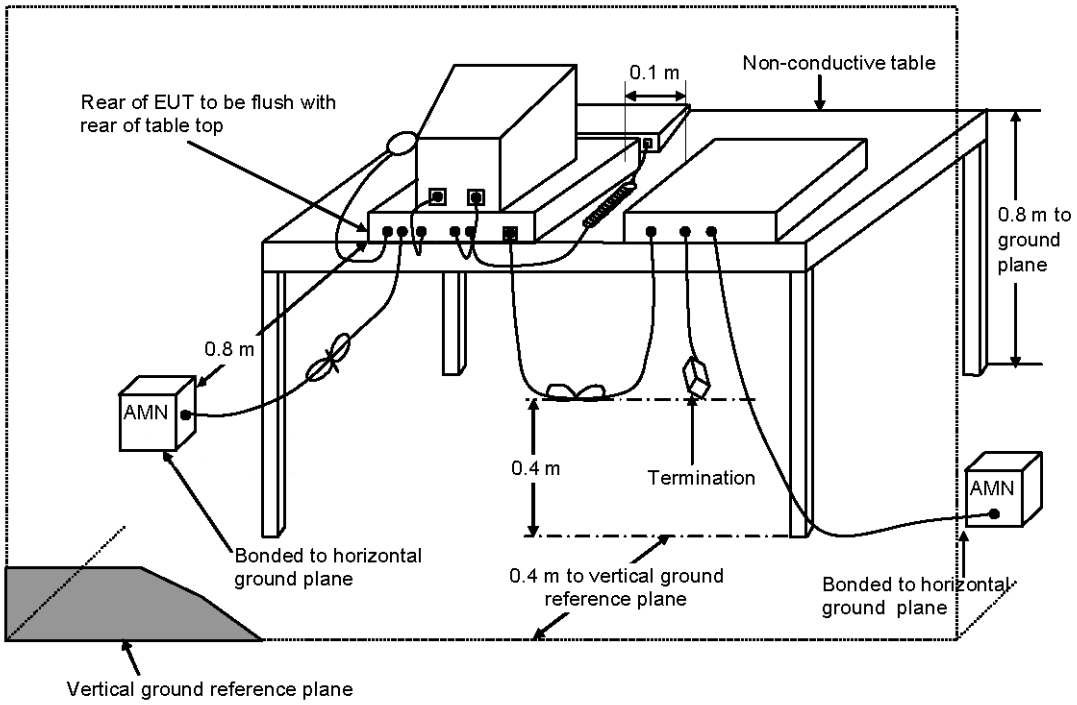
4.2. Test Procedures

a). The EUT was warmed up for 15 minutes before testing started.
b). The EUT was placed on a desk 0.8 meter height from the metal ground plane and 0.4 meter from the conducting wall of the shielding room and it was kept at least 0.8 meter from any other grounded conducting surface.
c). Connect EUT to the power mains through a line impedance stabilization network (LISN).
d). All the support units are connect to the other LISN.
e). The LISN provides 50 ohm, coupling impedance for the measuring instrument.
f). The FCC states that a 50 ohm, 50 microhenry LISN should be used.
g). Both sides of AC line were checked for maximum conducted interference.
h). The frequency range from 150 kHz to 30 MHz was searched.
i). Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
j). All emissions not reported here are more than 10 dB below the prescribed limit.

4.3. Measurement Results Calculation

The measurand Level is calculated using:
Corrected Reading (dBμV) = LISN Factor + Cable Loss + Read Level
For example at 0.3 MHz if the LISN Factor is 10.48 dB, the cable loss is 0.10 dB, the measured voltage is 36.39 dBμV, the signal strength would be calculated:
Corrected Reading (dBμV) = 10.48 dB + 0.10 dB + 36.39 dBμV = 46.97 dBμV

4.4. Typical Test Setup Layout

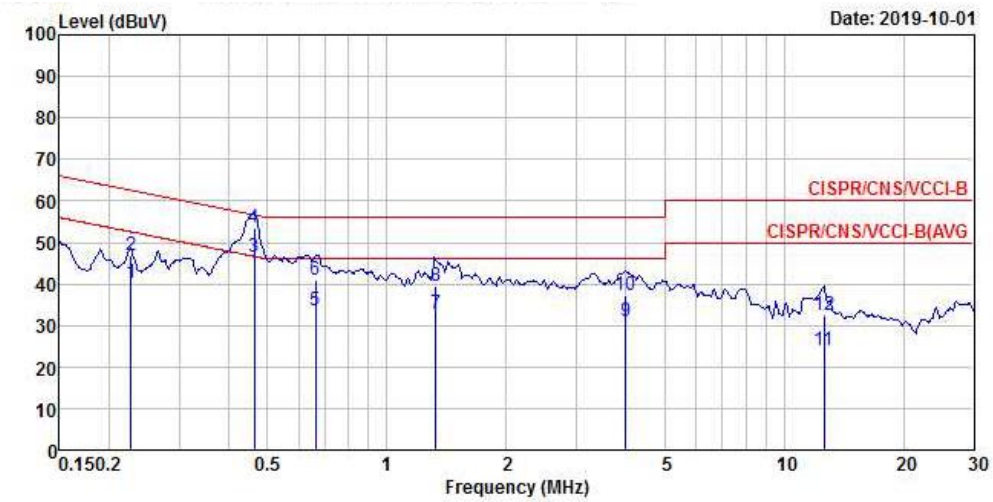


a). AMN is 80 cm from the EUT and at least 80 cm from other units and other metal planes.
b). EUT is connected to one artificial mains network (AMN).
c). All other units of a system are powered from a second AMN. A multiple outlet strip can be used for multiple mains cords.
d). Rear of EUT to be flushed with rear of table top.
e). Peripherals shall be placed at a distance of 10 cm from each other and from the controller, except for the monitor which, if this is an acceptable installation practice, shall be placed directly on the top of the controller.
f). If cables, which hang closer than 40 cm to the horizontal metal ground plane, cannot be shortened to appropriate length, the excess shall be folded back and forth forming a bundle 30 cm to 40 cm long.
g). Mains cords and signal cables shall be positioned for their entire lengths, as far as possible, at 40 cm from the vertical reference plane.
h). Cables of hand operated devices, such as keyboards, mice, etc. shall be placed as for normal usage.

4.5. Test Result

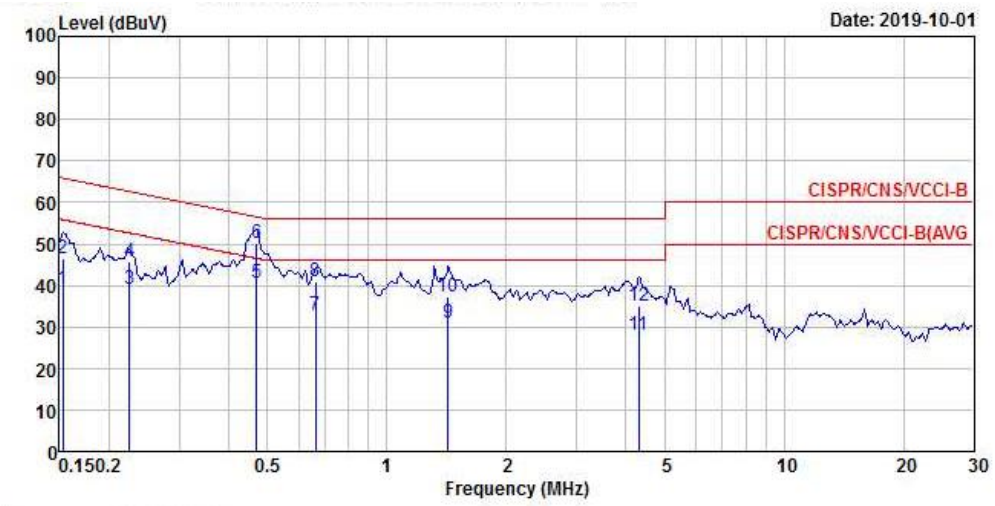
Test Mode	Mode 1		
Test Frequency	0.15 MHz ~ 30 MHz	Test Voltage	AC 120V / 60Hz
■ The test was passed at the minimum margin that marked by the frame in the following data			

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.23	40.18	-12.39	52.57	29.88	10.20	0.10	Average
2	0.23	47.03	-15.54	62.57	36.73	10.20	0.10	QP
3 @	0.46	46.36	-0.27	46.63	36.06	10.20	0.10	Average
4	0.46	53.61	-3.02	56.63	43.31	10.20	0.10	QP
5	0.66	33.48	-12.52	46.00	23.18	10.20	0.10	Average
6	0.66	40.80	-15.20	56.00	30.50	10.20	0.10	QP
7	1.33	32.73	-13.27	46.00	22.38	10.21	0.14	Average
8	1.33	39.59	-16.41	56.00	29.24	10.21	0.14	QP
9	3.99	30.94	-15.06	46.00	20.49	10.25	0.20	Average
10	3.99	37.32	-18.68	56.00	26.87	10.25	0.20	QP
11	12.58	24.12	-25.88	50.00	13.40	10.42	0.30	Average
12	12.58	32.45	-27.55	60.00	21.73	10.42	0.30	QP

Neutral



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.15	39.08	-16.74	55.82	28.82	10.16	0.10	Average
2	0.15	46.32	-19.50	65.82	36.06	10.16	0.10	QP
3	0.23	38.96	-13.67	52.63	28.70	10.16	0.10	Average
4	0.23	45.74	-16.89	62.63	35.48	10.16	0.10	QP
5 @	0.47	40.66	-5.84	46.50	30.41	10.15	0.10	Average
6	0.47	50.07	-6.43	56.50	39.82	10.15	0.10	QP
7	0.66	32.70	-13.30	46.00	22.44	10.16	0.10	Average
8	0.66	40.85	-15.15	56.00	30.59	10.16	0.10	QP
9	1.43	30.93	-15.07	46.00	20.61	10.17	0.15	Average
10	1.43	37.35	-18.65	56.00	27.03	10.17	0.15	QP
11	4.31	28.18	-17.82	46.00	17.75	10.22	0.21	Average
12	4.31	35.14	-20.86	56.00	24.71	10.22	0.21	QP

5. Radiated Emissions Measurement

Radiated Emissions were measured according to the methods defined in ANSI C63.4-2014 Section 8.
The EUT is which satisfies the Class B disturbance limits.

5.1. Radiated Emission below 1GHz

5.1.1. Limit

radiated emissions at frequencies up to 1 GHz for Class B equipment			
Frequency range MHz	**Measurement**		**Class B limits**
	Distance (m)	**Detector type / bandwidth**	**dB(μV/m)**
30 – 230	10	Quasi Peak / 120 kHz	30
230 – 1000			37

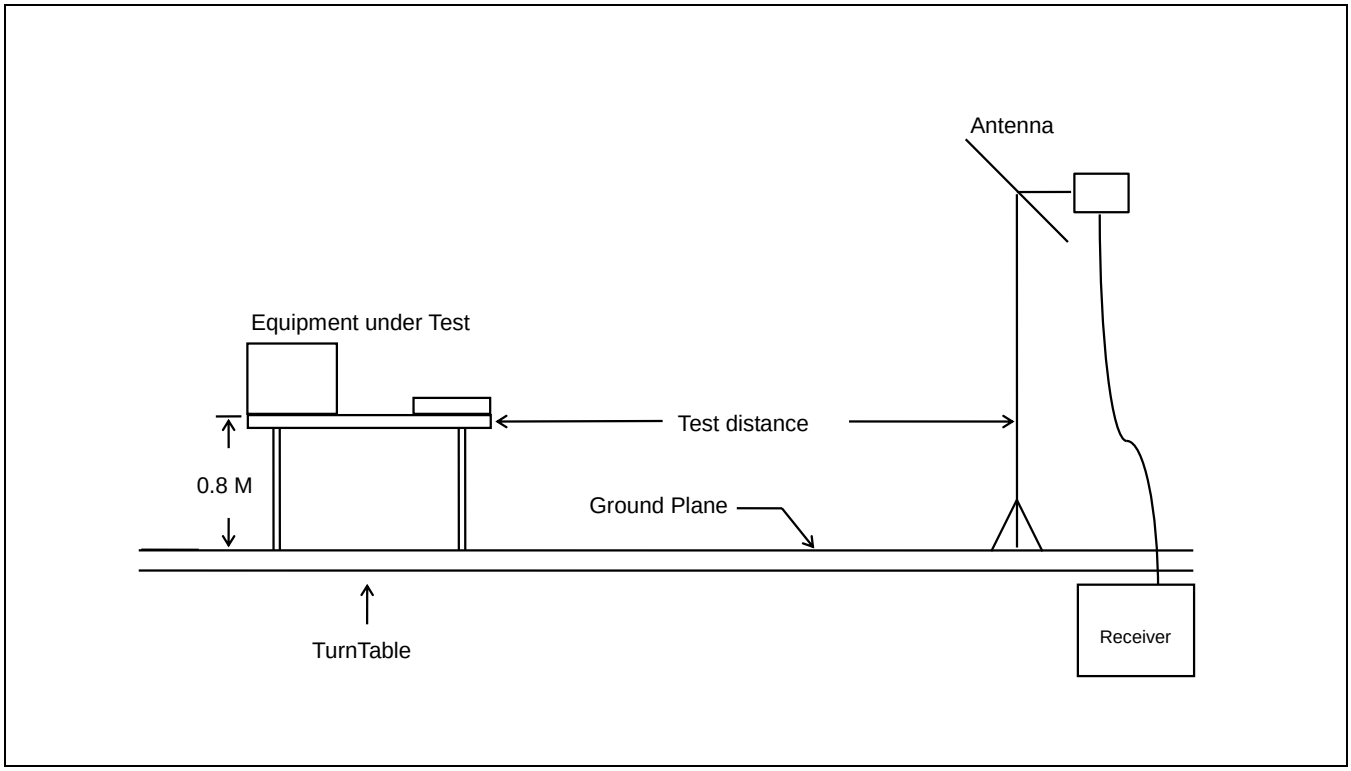
5.1.2. Test Procedures

a). The EUT was placed on a rotatable table top 0.8 meter above ground.
b). The EUT was set 10 meters from the interference-receiving antenna which was mounted on the top of a variable height antenna tower.
c). The table was rotated 360 degrees to determine the position of the highest radiation.
d). The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
e). For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
f). Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
g). If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
h). The FCC Part 15.109(g) permit parties seeking to authorize a digital device to choose to demonstrate that the device complies with either the Part 15 standards or the international standards found in Publication 22 of the International Special Committee on Radio Interference (CISPR).

5.1.3. Measurement Results Calculation

The measurand Level is calculated using:
Corrected Reading (dBμV/m) = Antenna Factor + Cable Loss + Read Level – Preamp Factor
For example at 125 MHz if the Antenna Factor is 17.24 dB/m, the cable loss is 1.20 dB, the measured voltage is 35.80 dBμV and the Preamp Factor is 27.18 dB, the signal strength would be calculated:
Corrected Reading (dBμV/m) = 17.24 dB/m + 1.20 dB + 35.80 dBμV - 27.18 dB = 27.06 dBμV/m
Note: If a hybrid antenna is used, the antenna factor shell be the sum of the Antenna Factor + Attenuator Factor.

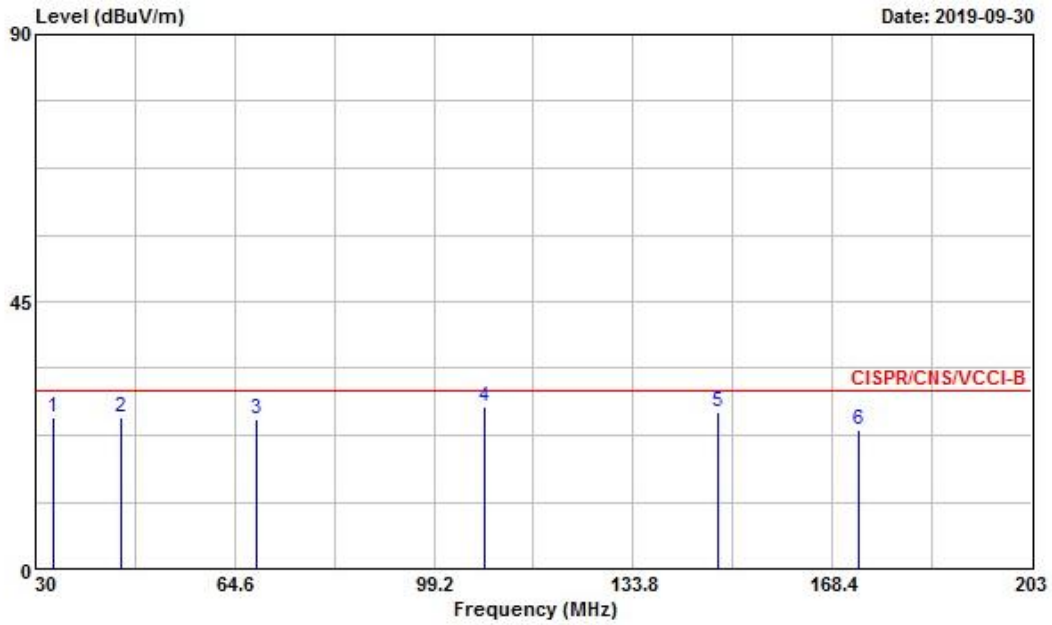
5.1.4. Typical Test Setup Layout



5.1.5. Test Result

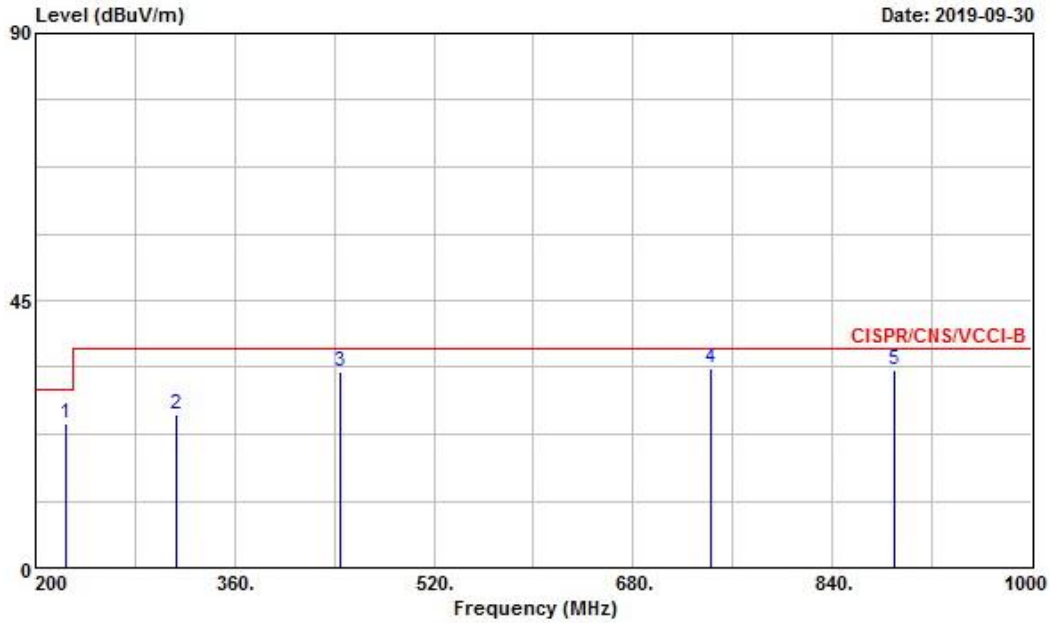
Test mode	Mode 1		
Test frequency	30 MHz ~ 1000 MHz	Test Voltage	AC 120V / 60Hz
■ The test was passed at the minimum margin that marked by the frame in the following data			

Vertical



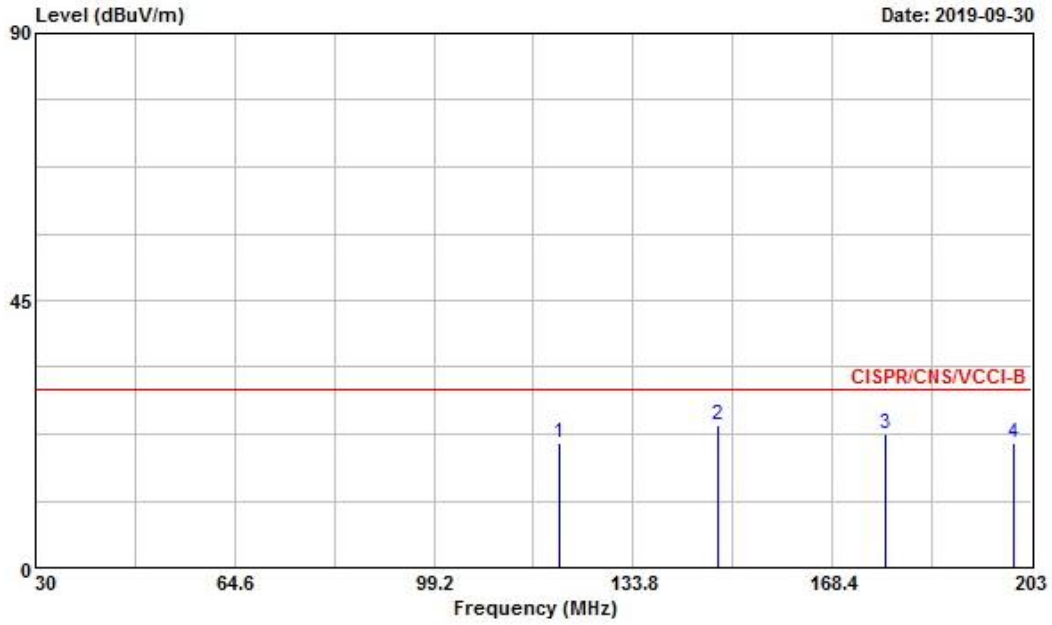
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	33.110	25.44	-4.56	30.00	31.49	21.39	0.99	28.43	QP	---	---
2 @	44.880	25.58	-4.42	30.00	37.54	15.29	1.17	28.42	Peak	---	---
3 @	68.410	25.20	-4.80	30.00	40.51	11.61	1.45	28.37	Peak	---	---
4 @	108.100	27.22	-2.78	30.00	36.61	17.10	1.79	28.28	QP	100	172
5 @	148.680	26.26	-3.74	30.00	36.31	15.94	2.14	28.13	QP	---	---
6	173.070	23.30	-6.70	30.00	34.14	14.82	2.37	28.03	Peak	---	---

Vertical



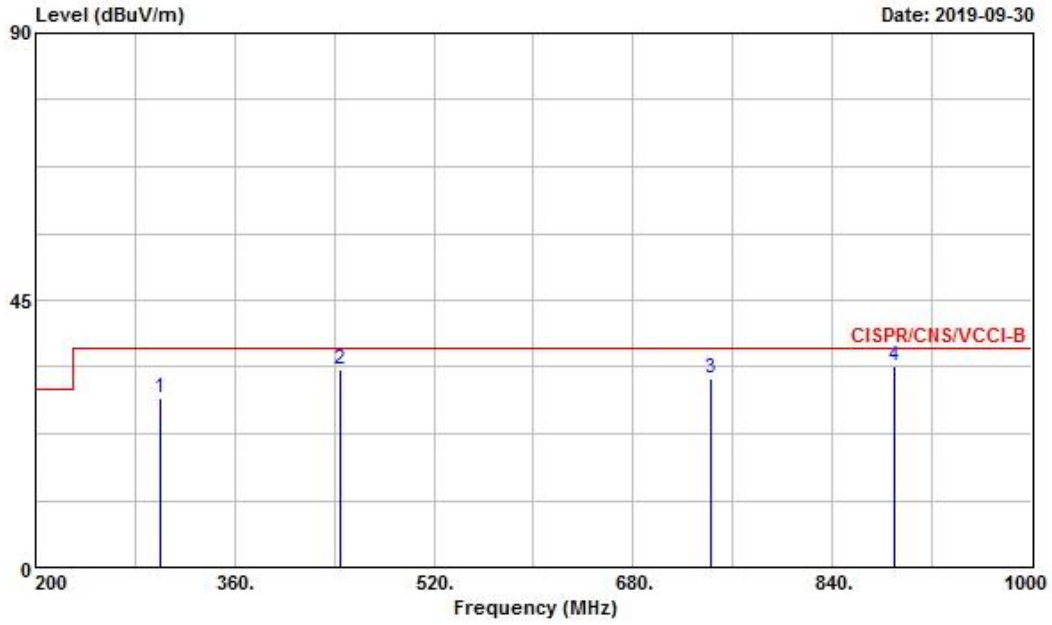
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	224.800	24.18	-5.82	30.00	33.91	15.34	2.83	27.90	Peak	---	---
2	313.600	25.87	-11.13	37.00	31.53	18.91	3.33	27.90	Peak	---	---
3 @	444.800	33.11	-3.89	37.00	35.71	22.03	4.12	28.75	Peak	---	---
4 @	742.400	33.58	-3.42	37.00	32.29	24.87	5.51	29.09	QP	---	---
5 @	890.400	33.25	-3.75	37.00	29.60	26.11	6.26	28.72	QP	---	---

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	121.000	20.92	-9.08	30.00	29.38	17.87	1.90	28.23	Peak	---	---
2	148.680	23.95	-6.05	30.00	34.00	15.94	2.14	28.13	Peak	---	---
3	177.740	22.40	-7.60	30.00	33.32	14.67	2.42	28.01	Peak	---	---
4	199.890	21.12	-8.88	30.00	31.71	14.69	2.65	27.93	Peak	---	---

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	300.800	28.45	-8.55	37.00	34.30	18.69	3.27	27.81	Peak	---	---
2 @	444.800	33.40	-3.60	37.00	36.00	22.03	4.12	28.75	Peak	---	---
3 @	742.400	31.69	-5.31	37.00	30.40	24.87	5.51	29.09	Peak	---	---
4 @	890.400	33.95	-3.05	37.00	30.30	26.11	6.26	28.72	QP	---	---

5.2. Radiated Emission above 1GHz

5.2.1. Limit

radiated emissions at frequencies above 1 GHz for Class B equipment			
Frequency range GHz	**Measurement**		**Class B limits**
	Distance (m)	**Detector type / RBW / VBW**	**dB(μV/m)**
1 – 5	3	Average / 1MHz / 1Hz	54
1 – 5		Peak / 1MHz / 3MHz	74

Required highest frequency for radiated measurement	
Highest internal frequency (F_x)	**Highest measured frequency**
$F_x \leq 108$ MHz	1 GHz
108 MHz < $F_x \leq 500$ MHz	2 GHz
500 MHz < $F_x \leq 1$ GHz	5 GHz
$F_x > 1$ GHz	5 x F_x up to a maximum of 40 GHz

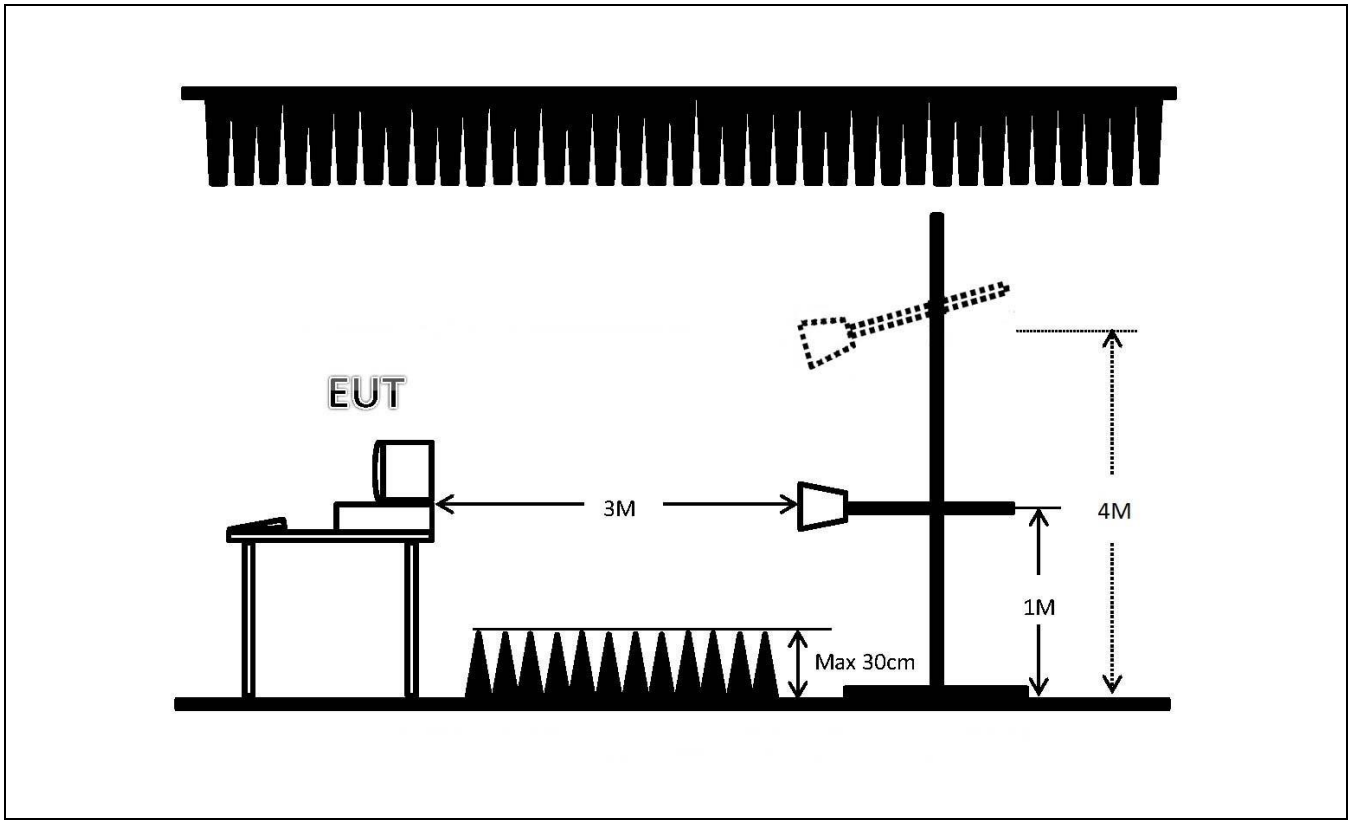
5.2.2. Test Procedures

a). Same test set up as below 1GHz radiated testing.
b). The EUT was set 3m (1 – 5GHz) from the interference-receiving antenna which was mounted on the top of a variable height antenna tower.
c). There should be absorber placed between the EUT and Antenna and its located size should let the test site meet CISPR16-1-4 requirement.
d). The table was rotated 360 degrees to determine the position of the highest radiation.
e). The measured using a test-receiver system with both a peak and CISPR average detector.
f). If the EUT is having a Wireless or Bluetooth modular, install the filter at the input connector of test-receiver system.
g). Set the DRG Horn Antenna at 1M height, then run the turn table to get the maximum noise reading from Horizontal and Vertical polarity separately.t the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
h). When EUT locating on the turn-table, and its height is over 172cm (Antenna's 3dB beam width of 6GHz is 27∘), the DRG Horn Antenna must be raised up and descended down, then turning around the turn-table to get the maximum noise reading of the Horizontal and Vertical polarity separately. Note the maximum raise up height is same as the top of EUT.
i). If emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.2.3. Measurement Results Calculation

The measurand Level is calculated using:
Corrected Reading (dBμV/m) = Raw(Read Level)+AF(Antenna Factor)+CL(Cable Loss)-PA(Preamp Factor)
For example at 1980 MHz if the Antenna Factor is 26.19 dB/m, the cable loss is 4.08 dB, the measured voltage is 51.30 dBμV and the Preamp Factor is 33.34 dB, the signal strength would be calculated:
Corrected Reading (dBμV/m) = 51.30 dBμV + 26.19 dB/m + 4.08 dB + - 33.34 dB = 48.23 dBμV/m

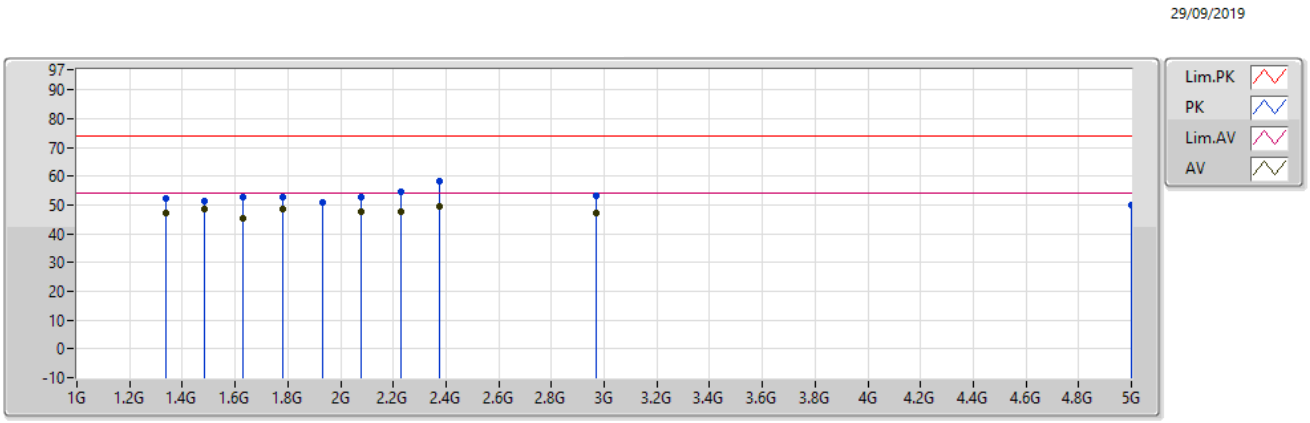
5.2.4. Typical Test Setup Layout



5.2.5. Test Result

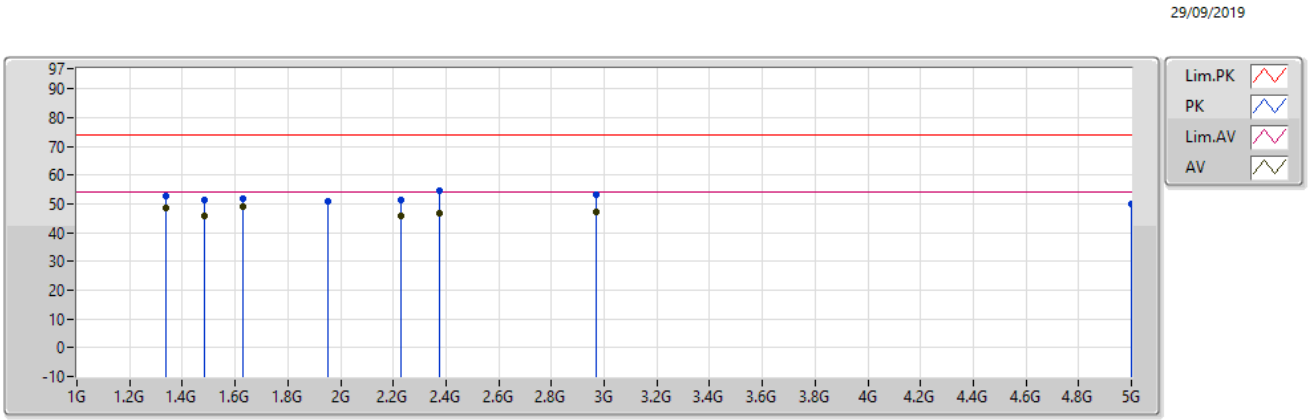
Test mode	Mode 1		
Test frequency	Above 1GHz	Test Voltage	AC 120V / 60Hz
■ The test was passed at the minimum margin that marked by the frame in the following data			

Vertical



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	1.336G	52.24	74.00	-21.76	-4.72	3	Vertical	250	1	-	56.96	26.20	2.78	33.70
AV	1.336G	47.00	54.00	-7.00	-4.72	3	Vertical	250	1	-	51.72	26.20	2.78	33.70
PK	1.484G	51.35	74.00	-22.65	-4.65	3	Vertical	180	1	-	56.00	25.95	2.91	33.51
AV	1.484G	48.41	54.00	-5.59	-4.65	3	Vertical	180	1	-	53.06	25.95	2.91	33.51
PK	1.632G	52.64	74.00	-21.36	-5.10	3	Vertical	210	1	-	57.74	25.34	3.04	33.48
AV	1.632G	45.19	54.00	-8.81	-5.10	3	Vertical	210	1	-	50.29	25.34	3.04	33.48
PK	1.78G	52.61	74.00	-21.39	-4.92	3	Vertical	200	1	-	57.53	25.36	3.19	33.47
AV	1.78G	48.74	54.00	-5.26	-4.92	3	Vertical	200	1	-	53.66	25.36	3.19	33.47
PK	1.932G	50.95	74.00	-23.05	-4.21	3	Vertical	-	-	-	55.16	25.92	3.33	33.46
PK	2.08G	52.66	74.00	-21.34	-2.97	3	Vertical	350	1	-	55.63	27.04	3.47	33.48
AV	2.08G	47.83	54.00	-6.17	-2.97	3	Vertical	350	1	-	50.80	27.04	3.47	33.48
PK	2.228G	54.67	74.00	-19.33	-1.87	3	Vertical	176	1	-	56.54	28.07	3.60	33.54
AV	2.228G	47.88	54.00	-6.12	-1.87	3	Vertical	176	1	-	49.75	28.07	3.60	33.54
PK	2.376G	58.13	74.00	-15.87	-2.16	3	Vertical	160	1	-	60.29	27.70	3.74	33.60
AV	2.376G	49.34	54.00	-4.66	-2.16	3	Vertical	160	1	"Worst"	51.50	27.70	3.74	33.60
PK	2.968G	53.27	74.00	-20.73	-1.07	3	Vertical	168	1	-	54.34	28.54	4.32	33.93
AV	2.968G	46.98	54.00	-7.02	-1.07	3	Vertical	168	1	-	48.05	28.54	4.32	33.93
PK	5G	50.05	74.00	-23.95	3.12	3	Vertical	-	-	-	46.93	31.60	5.42	33.90

Horizontal



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	1.336G	52.77	74.00	-21.23	-4.72	3	Horizontal	245	1	-	57.49	26.20	2.78	33.70
AV	1.336G	48.45	54.00	-5.55	-4.72	3	Horizontal	245	1	-	53.17	26.20	2.78	33.70
PK	1.484G	51.28	74.00	-22.72	-4.65	3	Horizontal	235	1	-	55.93	25.95	2.91	33.51
AV	1.484G	45.98	54.00	-8.02	-4.65	3	Horizontal	235	1	-	50.63	25.95	2.91	33.51
PK	1.632G	51.82	74.00	-22.18	-5.10	3	Horizontal	240	1	-	56.92	25.34	3.04	33.48
AV	1.632G	49.20	54.00	-4.80	-5.10	3	Horizontal	240	1	"Worst"	54.30	25.34	3.04	33.48
PK	1.952G	50.86	74.00	-23.14	-4.03	3	Horizontal	-	-	-	54.89	26.06	3.36	33.45
PK	2.228G	51.23	74.00	-22.77	-1.87	3	Horizontal	340	1	-	53.10	28.07	3.60	33.54
AV	2.228G	45.76	54.00	-8.24	-1.87	3	Horizontal	340	1	-	47.63	28.07	3.60	33.54
PK	2.376G	54.53	74.00	-19.47	-2.16	3	Horizontal	210	1	-	56.69	27.70	3.74	33.60
AV	2.376G	46.83	54.00	-7.17	-2.16	3	Horizontal	210	1	-	48.99	27.70	3.74	33.60
PK	2.972G	53.07	74.00	-20.93	-1.08	3	Horizontal	160	1	-	54.15	28.54	4.32	33.94
AV	2.972G	47.42	54.00	-6.58	-1.08	3	Horizontal	160	1	-	48.50	28.54	4.32	33.94
PK	5G	50.01	74.00	-23.99	3.12	3	Horizontal	-	-	-	46.89	31.60	5.42	33.90

6. Uncertainty of Test Site

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2).

6.1. Emission Test Measurement Uncertainty

Test Items	Test Site No.	U_{LAB}
Conducted Emissions	CO01-NH	2.7 dB
Radiated Emissions below 1GHz	OS03-NH	5.9 dB
Radiated Emissions above 1GHz	03CH04-HY	6.47 dB

7. List of Measuring Equipment Used

Conducted Emission - Test Date: 01/Oct/2019

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Receiver	R&S	ESR3	102318	9K Hz – 3.6 GHz	30/Jul/2019	Conduction (CO01-NH)
LISN	SCHAFFNER	NNB41	06/10024	9kHz - 30MHz	02/Jan/2019	Conduction (CO01-NH)
LISN	ROLF HEINE	NNB-2/16Z	99079	9kHz - 30MHz	21/Jan/2019	Conduction (CO01-NH)
Power Filter	CORCOM	MR12030	N/A	30A*2	NCR	Conduction (CO01-NH)
RF Cable-CON	Suhner Switzerland	RG223/U	CB004	9kHz - 30MHz	27/Dec/2018	Conduction (CO01-NH)
software	Audix	E3	6.12160806	-	NCR	Conduction (CO01-NH)

Note: Calibration Interval of instruments listed above is one year. NCR: No Calibration Request.

Radiated Emission below 1GHz - Test Date: 30/Sep/2019

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Open Area Test Site	SPORTON	OATS-10	OS03-NH	30 MHz - 1 GHz 10m, 3m	23/Oct/2018	Radiation (OS03-NH)
Amplifier	HP	8447D	2944A08292	0.1 MHz - 1.3 GHz	04/Jul/2019	Radiation (OS03-NH)
Spectrum Analyzer	R&S	FSP7	838858/038	9 kHz – 7GHz	12/Nov/2018	Radiation (OS03-NH)
Receiver	R&S	ESCS30	838251/002	9 kHz –2.75 GHz	05/Jul/2019	Radiation (OS03-NH)
Bilog Antenna With 5dB Attenuator	CHASE	CBL6112D	25234	30 MHz - 2 GHz	27/Apr/2019	Radiation (OS03-NH)
Turn Table	EMCO	2080	9805-2065	0 - 360 degree	NCR	Radiation (OS03-NH)
Antenna Mast	EMCO	2075	9804-2151	1 m - 4 m	NCR	Radiation (OS03-NH)
RF Cable-R10m	HSCN	RG213U	2X11N	30 MHz - 1 GHz	22/Jul/2019	Radiation (OS03-NH)
Software	Audix	E3	Ver.4	-	NCR	Radiation (OS03-NH)

Note: Calibration Interval of instruments listed above is one year. NCR: No Calibration Request.

Radiated Emission above 1GHz - Test Date: 29/Sep/2019

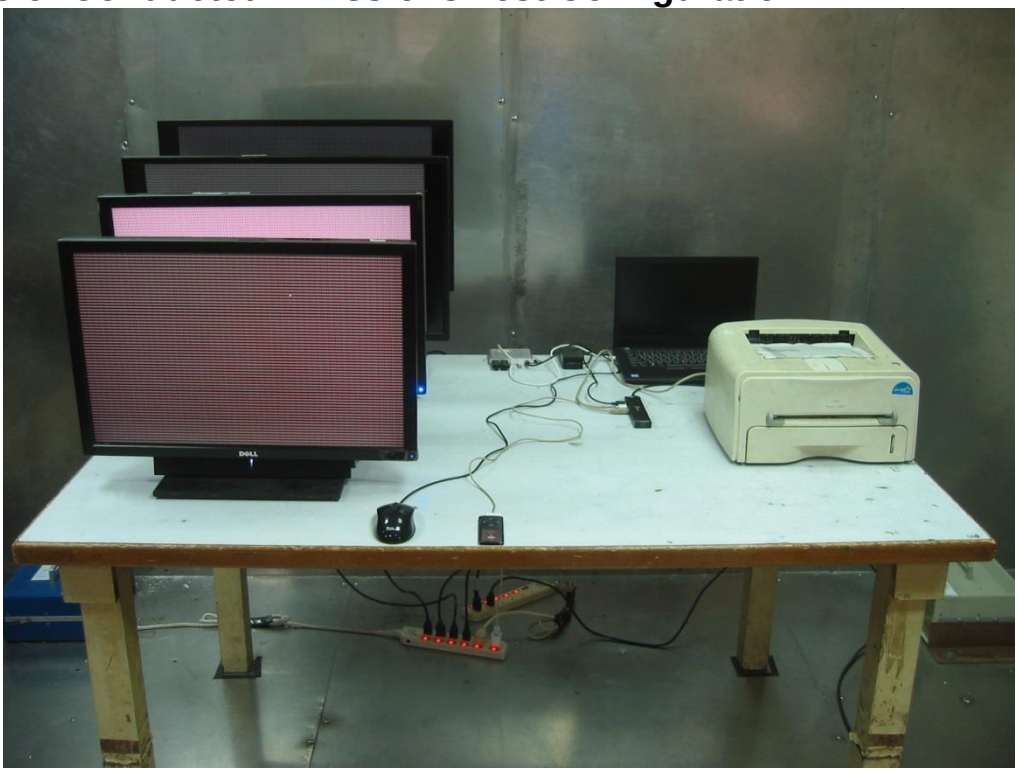
Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Test Receiver	R&S	ESU-26	100422	20Hz ~ 26.5GHz	25/Oct/2018	24/Oct/2019	Radiation (03CH04-HY)
Turn Table	Chaintek	3000	MF7802056	0 ~ 360 degree	NCR	NCR	Radiation (03CH04-HY)
Antenna Mast	MF	MF-7802	MF780208163	1 m ~ 4 m	NCR	NCR	Radiation (03CH04-HY)
3m Semi Anechoic Chamber (Site V.S.W.R)	RIKEN	3m SAC	03CH04-HY	1 GHz ~ 18 GHz 3m	09/Mar/2019	08/Mar/2020	Radiation (03CH04-HY)
Microwave Preamplifier	Agilent	8449B	3008A02364	1GHz ~ 26.5GHz	13/Dec/2018	12/Dec/2019	Radiation (03CH04-HY)
Horn Antenna	SCHWARZBECK	BBHA9120	BBHA 9120 D-1130	1 GHz ~ 18 GHz	26/Oct/2018	25/Oct/2019	Radiation (03CH04-HY)
RF Cable-HIGH	HUBER+SUHNER	SUOFLEX 104	SN805197/4+MY39495	1 GHz ~ 26 GHz	13/Mar/2019	12/Mar/2020	Radiation (03CH04-HY)
Software	Sporton	SENSE-EMI	V5.10.5	-	NCR	NCR	Radiation (03CH04-HY)

NCR: No Calibration Request.

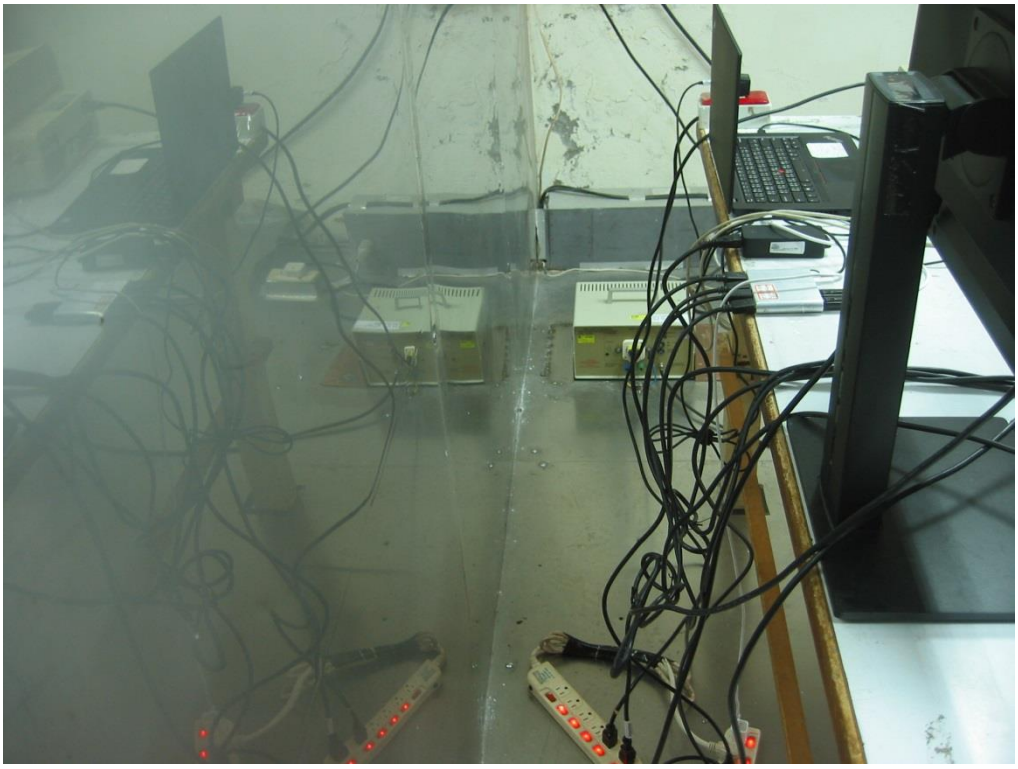
Appendix A. Test Photos

1. Photographs of Conducted Emissions Test Configuration

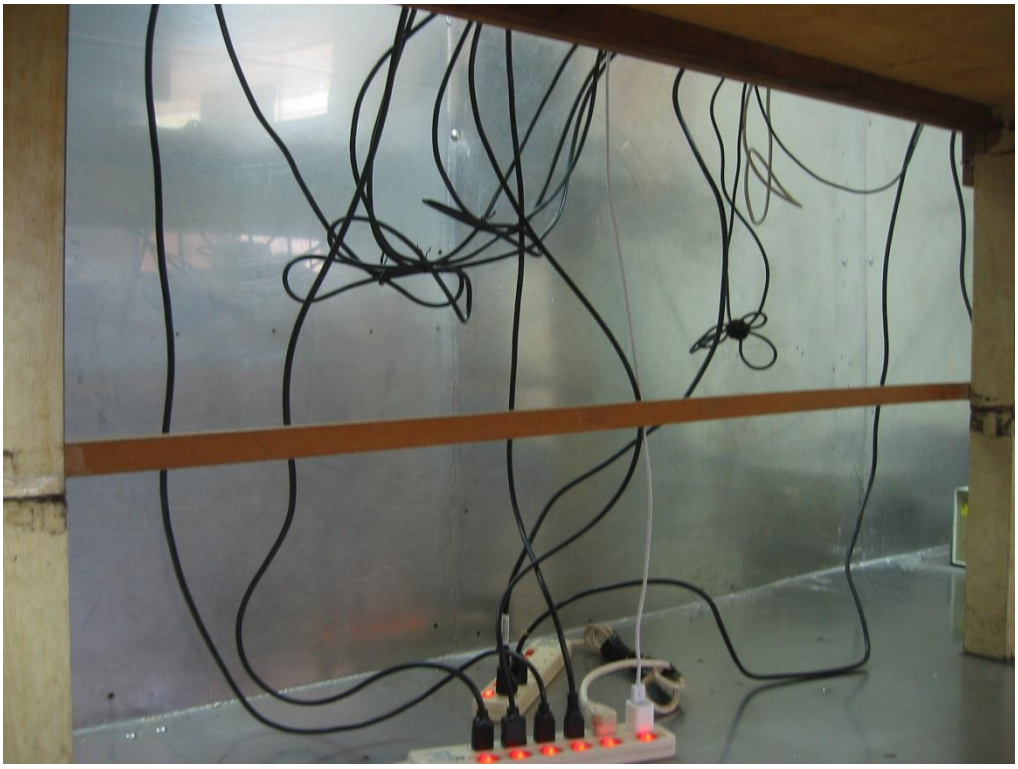
Front View



Side View



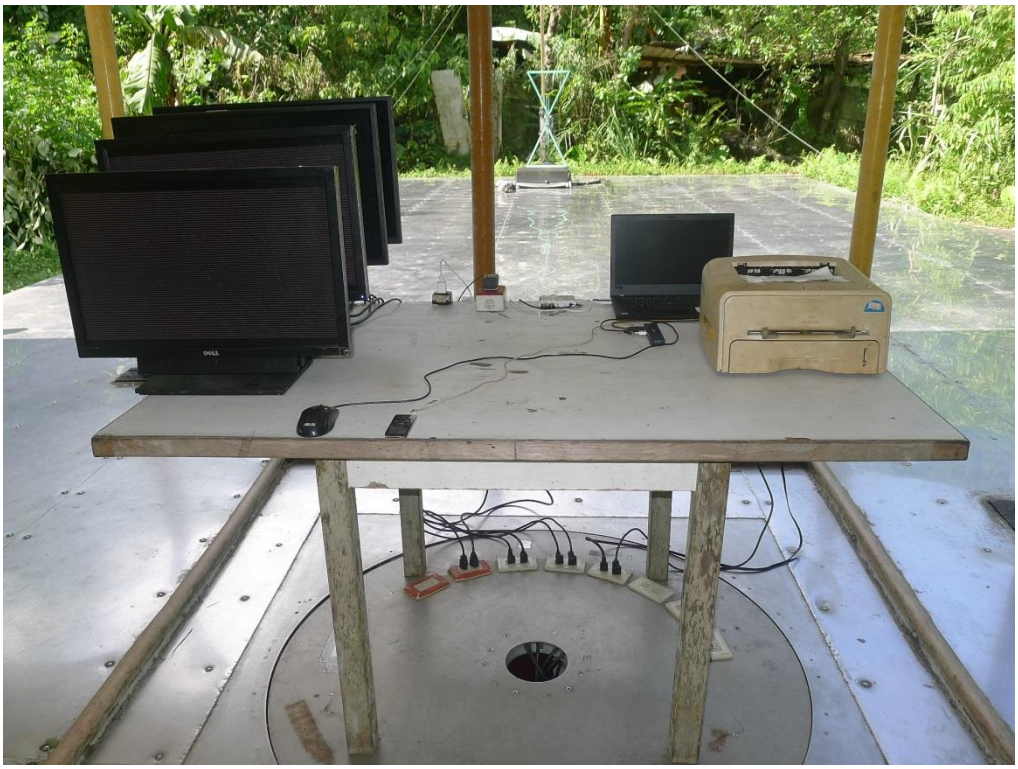
Under Table View



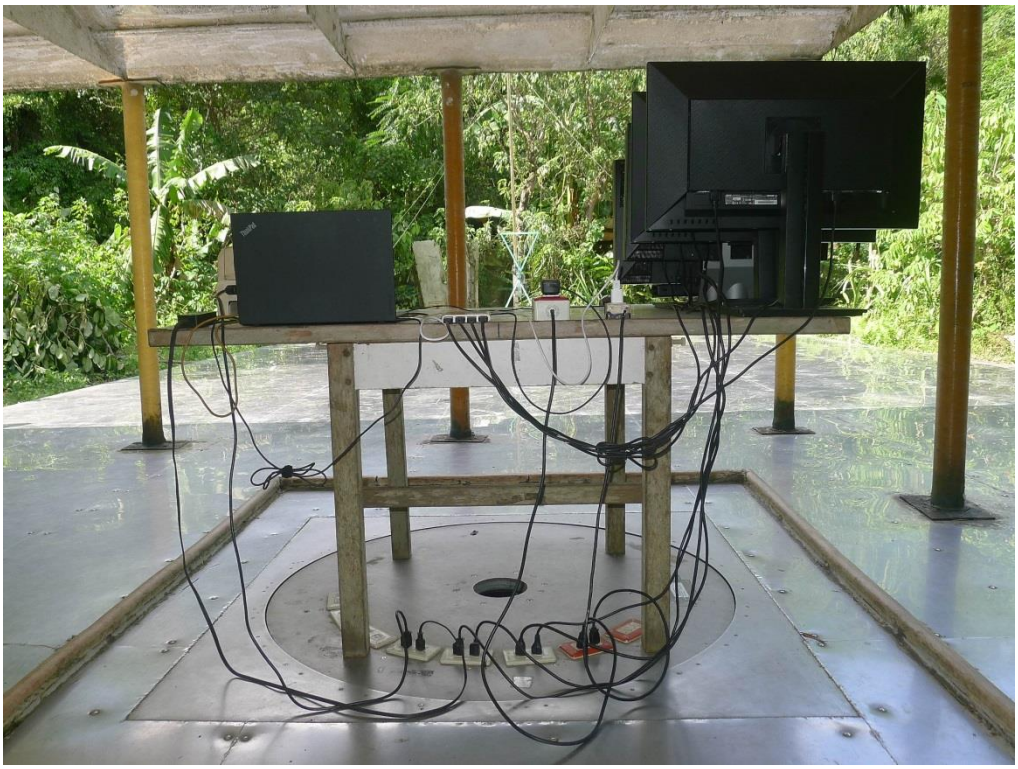
2. Photographs of Radiated Emissions Test Configuration

For radiated emissions below 1GHz

Front View

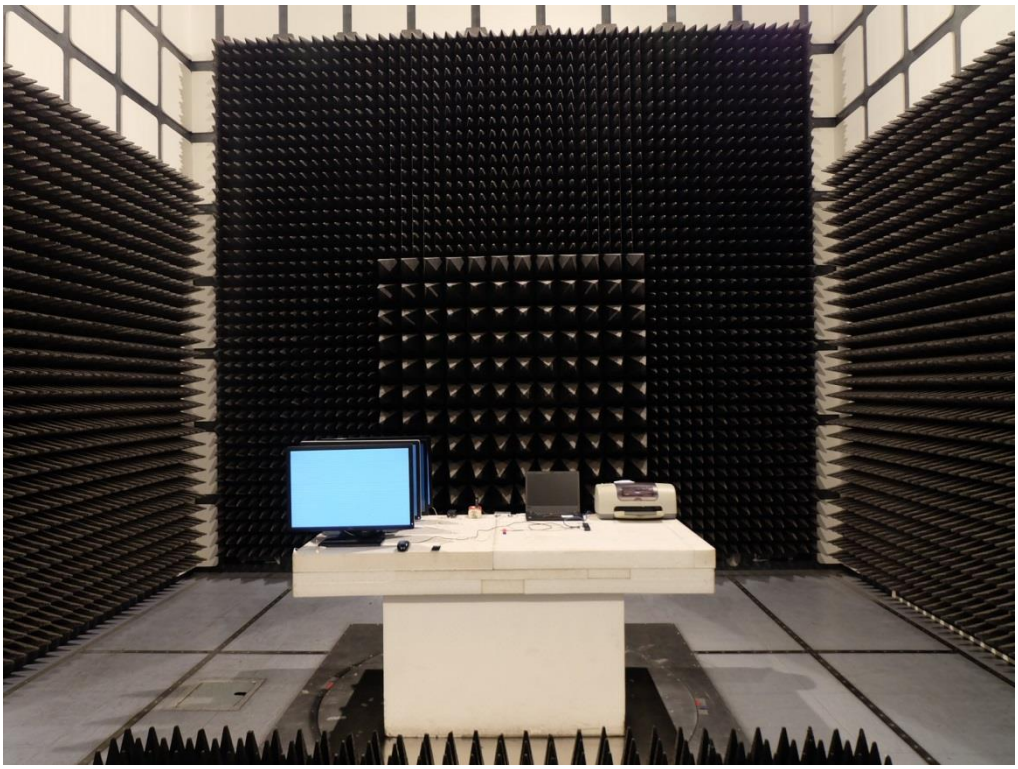


Rear View

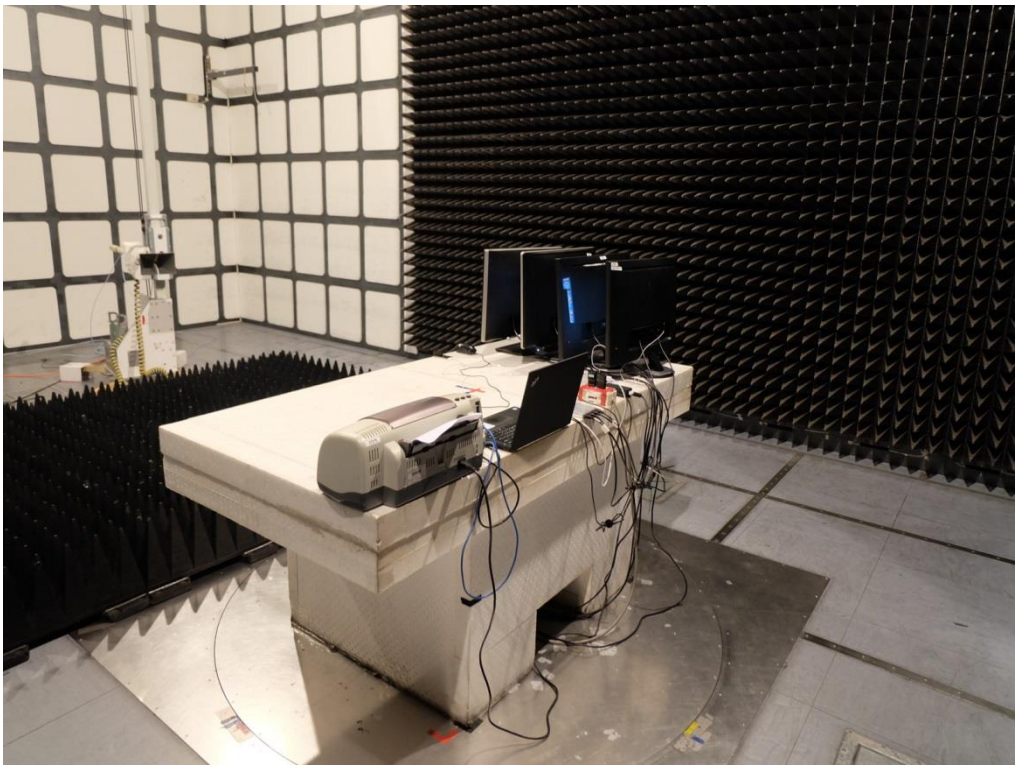


For radiated emissions above 1GHz

Front View



Rear View



THE END