VCCI-CISPR 32

TEST REPORT

For

USB Flash Drives

MODEL NUMBER: ACE

REPORT NUMBER: 4790869091.1-3

ISSUE DATE: June 29, 2023

Prepared for

Flashbay Electronics

Building2, Jixun Industrial Park, Xinjiao, Dong'ao Village, Shatian Town, Huiyang District, Huizhou City, Guangdong Province, P.R.China

Prepared by

UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	6/29/2023	Initial Issue	

Summary of Test Results				
Standard	**Test Item**	**Limit**	**Result**	**Remark**
VCCI-CISPR 32:2016	Conducted emissions from the AC mains power ports	Class B	Pass	
	Asymmetric mode conducted emissions	Class B	N/A	NOTE (1)
	Radiated emissions at frequencies up to 1 GHz	Class B	Pass	
	Radiated emissions at frequencies above 1 GHz	Class B	Pass	NOTE (2)

Note:

(1) “N/A” denotes test is not applicable in this Test Report

(2) If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 6 GHz, whichever is less.

(3) This test report is only published to and used by the applicant, and it is not for evidence purpose in China.

(4) The measurement result for the sample received is <Pass> according to < VCCI-CISPR 32:2016 > when <Accuracy Method> decision rule is applied.

CONTENTS

1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	Flashbay Electronics
Address:	Building2, Jixun Industrial Park, Xinjiao, Dong'ao Village, Shatian Town, Huiyang District, Huizhou City, Guangdong Province, P.R.China

Manufacturer Information

Company Name:	Flashbay Electronics
Address:	Building2, Jixun Industrial Park, Xinjiao, Dong'ao Village, Shatian Town, Huiyang District, Huizhou City, Guangdong Province, P.R.China

EUT Information

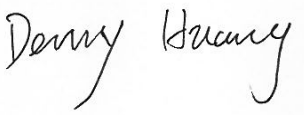
EUT Name:	USB Flash Drives
Model:	ACE
Brand:	/
Sample Received Date:	June 12, 2023
Sample Status:	Normal
Sample ID:	6170594
Date of Tested:	June 14, 2023 ~ June 27, 2023

APPLICABLE STANDARDS	
STANDARDS	**TEST RESULTS**
VCCI-CISPR 32:2016	**PASS**

Prepared By:

Andy Xiong
Engineer Project Associate

Checked By:



Denny Huang
Senior Project Engineer

Approved By:

Stephen Guo
Laboratory Manager

2. TEST METHODOLOGY

All tests were performed in accordance with the standard VCCI-CISPR 32:2016.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4102.01)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. **FCC (FCC Recognized No.: CN1187)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules **IC(Company No.: 21320)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with Industry Canada. The Company Number is 21320. **VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B , the VCCI registration No. is C-20012 and T-20011

Note: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, No. 1, Li Bin Road, Song Shan Lake Hi-Tech Development Zone Dongguan, 523808, People's Republic of China

4. CALIBRATION AND UNCERTAINTY

4.1. Measuring Instrument Calibration

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Measurement Frequency Range	K	U(dB)
Conducted emissions from the AC mains power ports	0.009 MHz ~ 0.15 MHz	2	4.00
Conducted emissions from the AC mains power ports	0.15 MHz ~ 30 MHz	2	3.62
Asymmetric mode conducted emissions – Asymmetric Artificial Network	0.15 MHz ~ 30 MHz	2	5.04
Asymmetric mode conducted emissions – current probe	0.15 MHz ~ 30 MHz	2	3.48
Radiated emissions	30 MHz ~ 1G Hz	2	4.00
Radiated emissions	1 GHz ~ 18 GHz	2	5.78
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.			

5. EQUIPMENT UNDER TEST

5.1. Description of EUT

EUT Name	USB Flash Drives
Model	ACE
Ratings	Input: 5 Vdc

5.2. Test Mode

Test Mode	Description
Mode 1	Data Transfer & USB Port Connected
Mode 2	Data Transfer & Type-C Port Connected

5.3. EUT Accessory

Item	Accessory	Brand Name	Model Name	Description
/	/	/	/	/

5.4. Support Units or Accessories for System Test

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Specification	Series No.
E-1	Laptop	Lenovo	Thinkpad T14 Gen 1	N/A	PF-39TXGN
E-2	PC	Alienware	R12	N/A	1Z4FYF3
E-3	Monitor	Dell	U2720Q	N/A	CN-09MRJJ-WSL00-1BQ-CMPL-A11
E-4	Keyboard	Lenovo	KU-0025	N/A	1S41A52891000484E
E-5	Mouse	Dell	MS116C	N/A	CN-0DMV3P-CH400-030-0JQ8-A00

The following cables were used to form a representative test configuration during the tests.

Item	Type of cable	Shielded Type	Ferrite Core	Specification
E-1	HDMI Cable	Shielded	NO	1.5 m

6. MEASURING EQUIPMENT AND SOFTWARE USED

Conducted Emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
EMI Test Receiver	ROHDE & SCHWARZ	ESR3	101961	Oct. 17, 2022	Oct. 16, 2023
Two-Line V-Network	ROHDE & SCHWARZ	ENV216	101983	Oct. 17, 2022	Oct. 16, 2023
Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Oct. 17, 2022	Oct. 16, 2023
Software					
Description			Manufacturer	Name	Version
Test Software for Conducted Emissions			Farad	EZ-EMC	Ver. UL-3A1
Radiated Emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Oct. 17, 2022	Oct. 16, 2023
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Aug. 2, 2021	Aug. 1, 2024
Preamplifier	HP	8447D	2944A09099	Oct. 17, 2022	Oct. 16, 2023
EMI Measurement Receiver	ROHDE & SCHWARZ	ESR26	101377	Oct. 17, 2022	Oct. 16, 2023
Horn Antenna	TDK	HRN-0118	130940	Jul. 20, 2021	Jul. 19, 2024
Preamplifier	TDK	PA-02-0118	TRS-305-00067	Oct. 17, 2022	Oct. 16, 2023
Software					
Description			Manufacturer	Name	Version
Test Software for Radiated Emissions			Farad	EZ-EMC	Ver. UL-3A1

Other Instrument					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Temperature humidity probe	OMEGA	ITHX-SD-5	18470007	Oct. 22, 2022	Oct. 21, 2023
Barometer	Yiyi	Baro	N/A	Oct. 22, 2022	Oct. 21, 2023

7. EMISSION TEST

7.1. Conducted Emissions Measurement

7.1.1. Limits of Conducted Emissions

(a.) Limits of conducted emissions from the AC mains power ports of Class A equipment

Frequency range MHz	Coupling device	Detector type / bandwidth	Class A voltage limits dB(uV)
0.15 to 0.5	AMN	Quasi Peak / 9 kHz	79
0.5 to 30			73
0.15 to 0.5	AMN	Average / 9 kHz	66
0.5 to 30			60

(b.) Limits of conducted emissions from the AC mains power ports of Class B equipment

Frequency range MHz	Coupling device	Detector type / bandwidth	Class B voltage limits dB(uV)
0.15 to 0.5	AMN	Quasi Peak / 9 kHz	66 to 56
0.5 to 5			56
5 to 30			60
0.15 to 0.5	AMN	Average / 9 kHz	56 to 46
0.5 to 5			46
5 to 30			50

(c.) Limits of asymmetric mode conducted emissions of Class A equipment

Frequency range MHz	Coupling device	Detector type / bandwidth	Class A voltage limits dB(uV)	Class A current limits dB(uA)
0.15 -0.5	AAN	Quasi Peak / 9 kHz	97 to 87	n/a
0.5 -30			87	n/a
0.15 -0.5	AAN	Average / 9 kHz	84 to 74	n/a
0.5 -30			74	n/a
0.15 -0.5	Current Probe	Quasi Peak / 9 kHz	n/a	53 to 43
0.5 -30			n/a	43
0.15 -0.5	Current Probe	Average / 9 kHz	n/a	40 to 30
0.5 -30			n/a	30

(d.) Limits of asymmetric mode conducted emissions of Class B equipment

Frequency range MHz	Coupling device	Detector type / bandwidth	Class B voltage limits dB(uV)	Class B current limits dB(uA)
0.15 -0.5	AAN	Quasi Peak / 9 kHz	84 to 74	n/a
0.5 -30			74	n/a
0.15 -0.5	AAN	Average / 9 kHz	74 to 64	n/a
0.5 -30			64	n/a
0.15 -0.5	Current Probe	Quasi Peak / 9 kHz	n/a	40 to 30
0.5 -30			n/a	30
0.15 -0.5	Current Probe	Average / 9 kHz	n/a	30 to 20
0.5 -30			n/a	20

Note:

(1)The tighter limit applies at the band edges.

(2)The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

7.1.2. Test Procedure

a. The EUT was placed 0.8 meters from the horizontal ground plane

b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

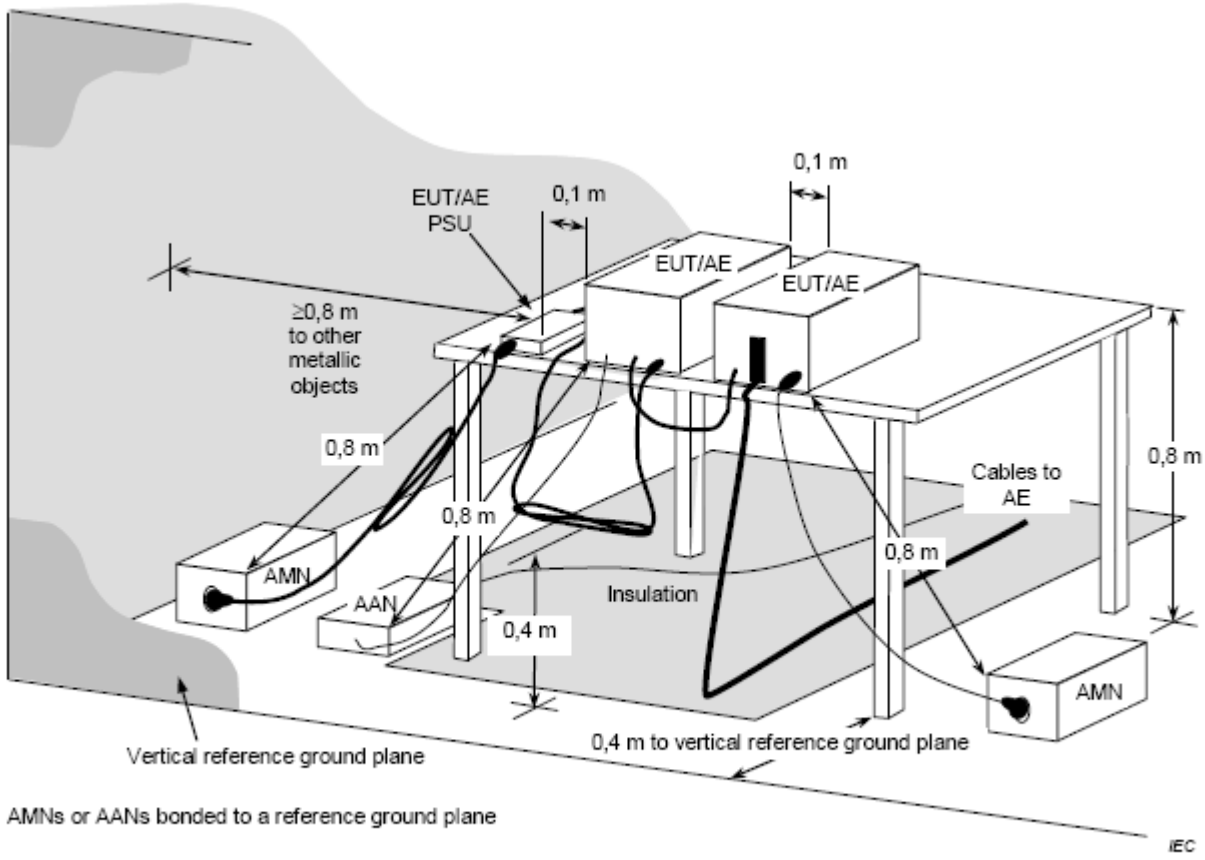
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

d. AMN/ANN at least 80 cm from nearest part of EUT chassis.

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

7.1.3. Test Setup

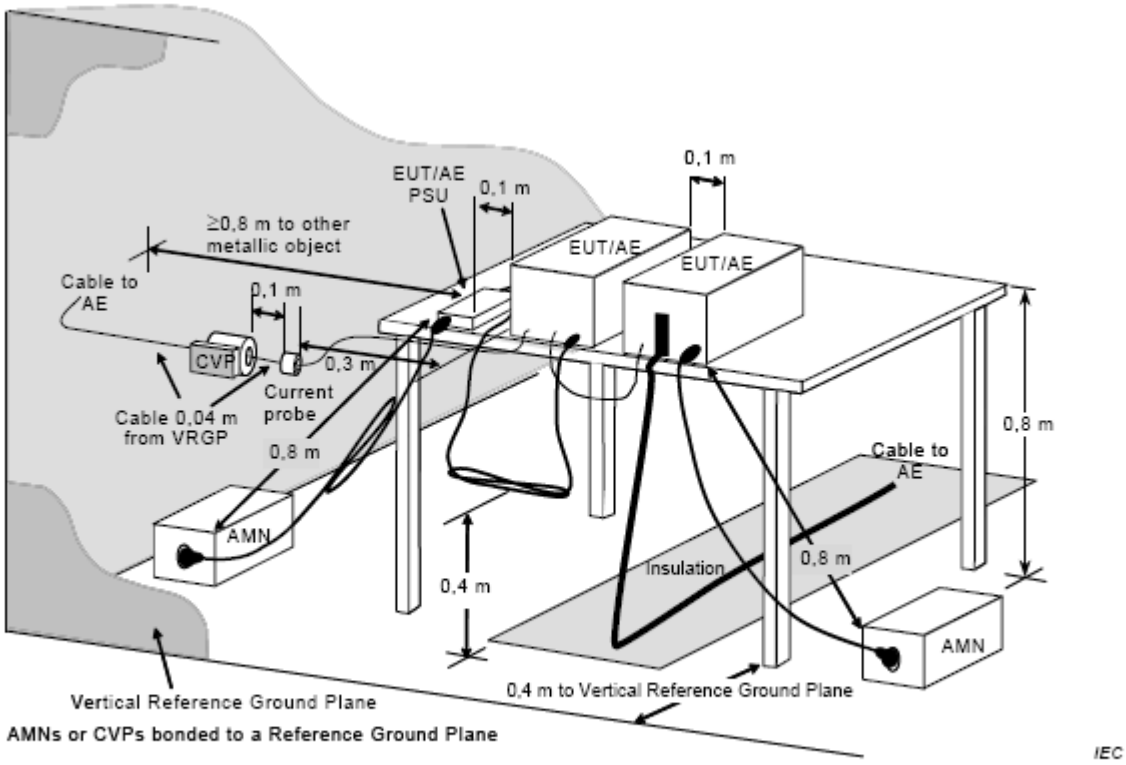
(a.) Example measurement arrangement for table-top EUT (alternative 1)



The 0,8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be ≥0,8 m.

For the actual test configuration, please refer to Appendix I: Photographs of Test Configuration

(b.) Example measurement arrangement for table-top EUT measuring in accordance with C.4.1.6.4



The 0,8 m distance specified between EUT/local AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be ≥0,8 m.

For the actual test configuration, please refer to Appendix I: Photographs of Test Configuration

7.1.4. Test Environment

Temperature:	25.2 ℃
Humidity:	51.3 %
ATM pressure:	101 kPa

7.1.5. Test Mode

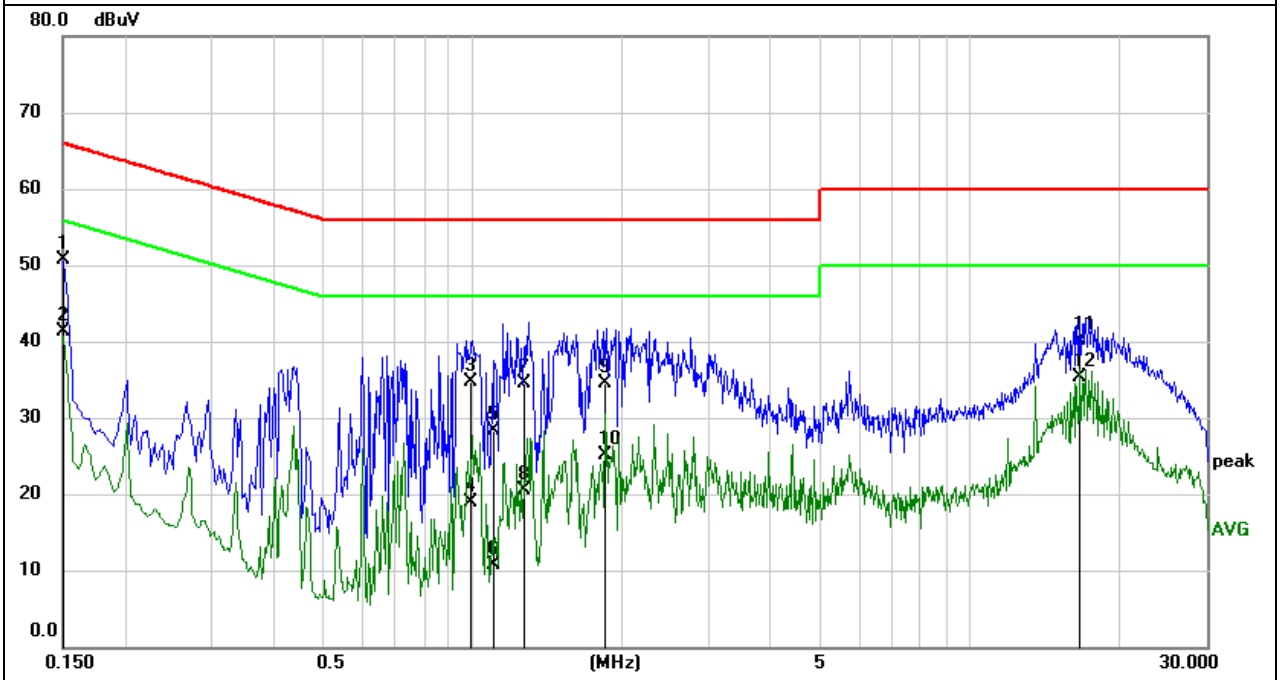
Pre-test Mode:	Mode 1 & Mode 2
Final Test Mode:	Mode 2

Note: All test modes have been tested, but only the worst case data recorded in the report.

7.1.6. Test Results - AC mains power ports

Test Mode:	Mode 2
Test Voltage:	AC 100V/60 Hz

Phase: Line

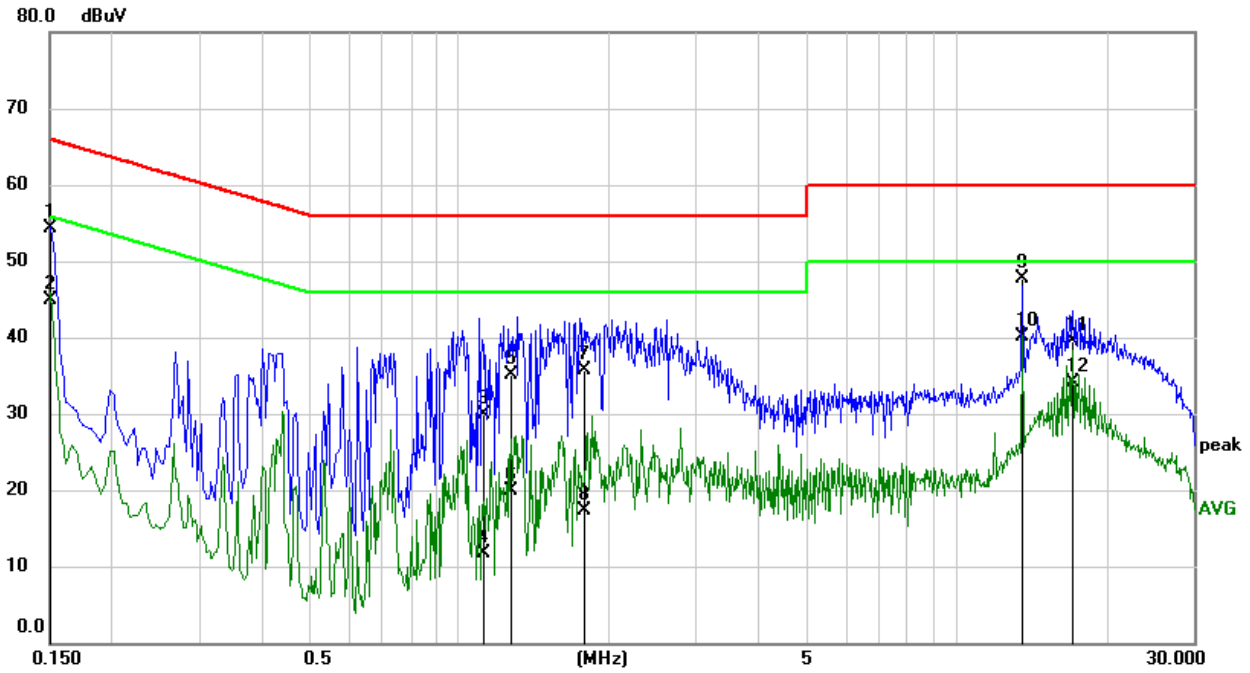


No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	41.05	9.59	50.64	66.00	-15.36	QP
2	0.1500	31.71	9.59	41.30	56.00	-14.70	AVG
3	0.9887	25.05	9.61	34.66	56.00	-21.34	QP
4	0.9887	9.24	9.61	18.85	46.00	-27.15	AVG
5	1.1110	18.73	9.61	28.34	56.00	-27.66	QP
6	1.1110	1.12	9.61	10.73	46.00	-35.27	AVG
7	1.2693	24.97	9.61	34.58	56.00	-21.42	QP
8	1.2693	10.87	9.61	20.48	46.00	-25.52	AVG
9	1.8512	24.89	9.62	34.51	56.00	-21.49	QP
10	1.8512	15.49	9.62	25.11	46.00	-20.89	AVG
11	16.7004	30.36	9.77	40.13	60.00	-19.87	QP
12	16.7004	25.52	9.77	35.29	50.00	-14.71	AVG

Remark:
Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
Margin = Result - Limit

Test Mode:	Mode 2
Test Voltage:	AC 100V/60 Hz

Phase: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	40.84	9.59	50.43	66.00	-15.57	QP
2	0.1500	31.31	9.59	40.90	56.00	-15.10	AVG
3	0.9871	25.35	9.61	34.96	56.00	-21.04	QP
4	0.9871	8.78	9.61	18.39	46.00	-27.61	AVG
5	1.2009	23.38	9.61	32.99	56.00	-23.01	QP
6	1.2009	8.68	9.61	18.29	46.00	-27.71	AVG
7	1.5245	24.98	9.62	34.60	56.00	-21.40	QP
8	1.5245	8.09	9.62	17.71	46.00	-28.29	AVG
9	1.8079	27.05	9.62	36.67	56.00	-19.33	QP
10	1.8079	15.56	9.62	25.18	46.00	-20.82	AVG
11	16.4629	29.23	9.76	38.99	60.00	-21.01	QP
12	16.4629	24.45	9.76	34.21	50.00	-15.79	AVG

Remark:
Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
Margin = Result - Limit

7.2. Radiated Emissions Measurement

7.2.1. Limits of Radiated Emissions Measurement

(a). **Limits up to 1 GHz**

FREQUENCY (MHz)	Class A		Class B	
	At 10m	At 3m	At 10m	At 3m
	dBµV/m	dBµV/m	dBµV/m	dBµV/m
30 – 230	40	50	30	40
230 – 1000	47	57	37	47

(b). **Limits above 1 GHz**

FREQUENCY (MHz)	Class A (at 3m) dBµV/m		Class B (at 3m) dBµV/m	
	Peak	Avg	Peak	Avg
1000-3000	76	56	70	50
3000-6000	80	60	74	54

Note:

(1) The limit for radiated test was performed according to CISPR 32.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBµV/m)=20log Emission level (uV/m).

(4) If the highest frequency of the internal sources of the EUT is less than 108 MHz, themeasurement shall only be made up to 1 GHz.If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz.If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz,measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 6 GHz, whichever is less.

7.2.2. Test Procedure

a. The measuring distance at 3 m shall be used for measurements.

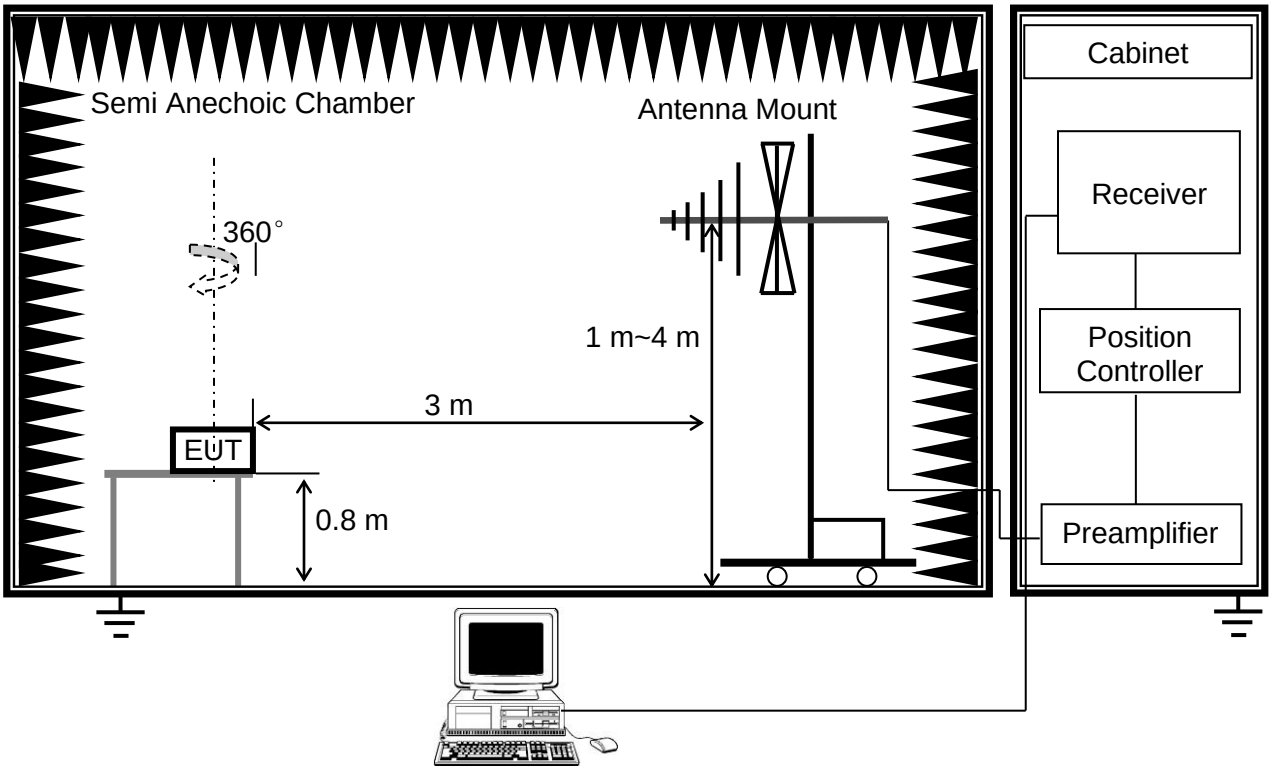
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The height of the equipment shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

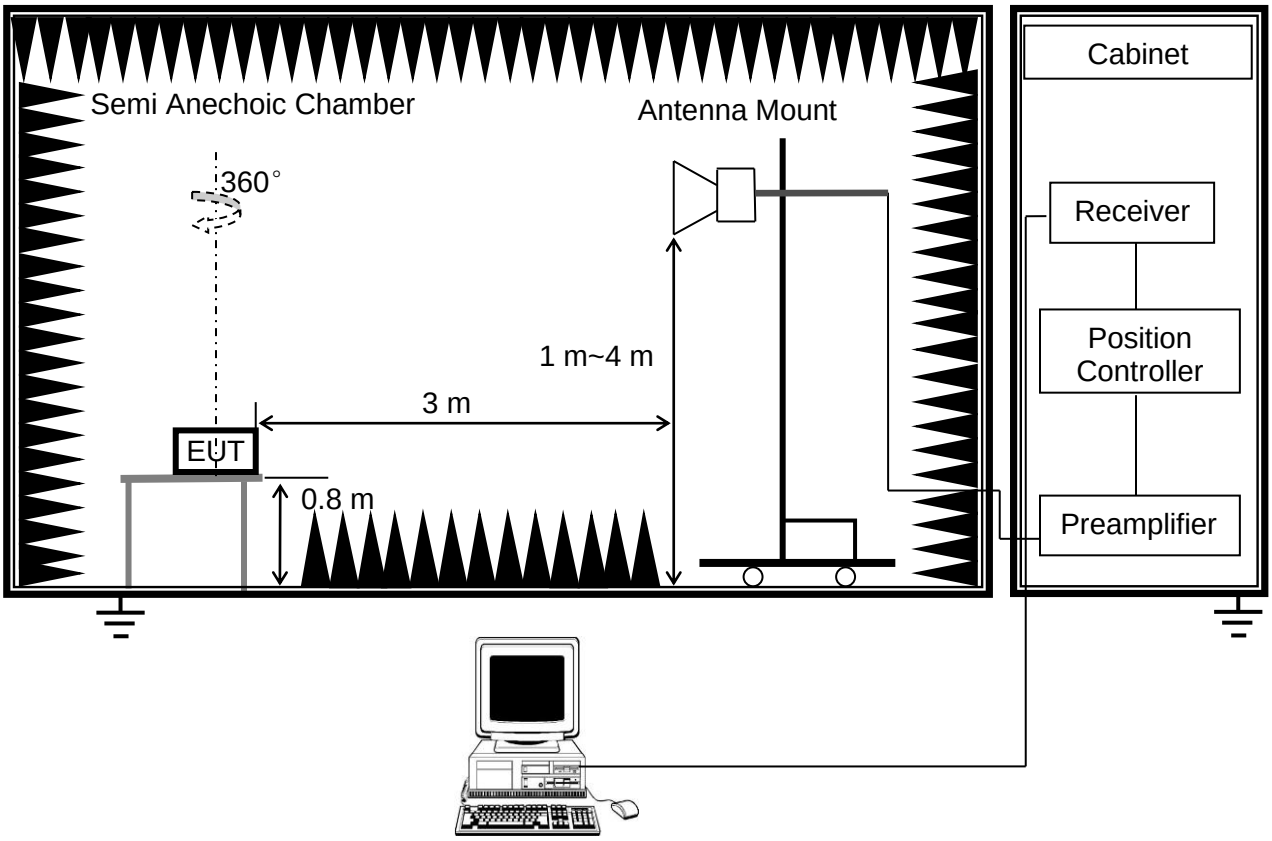
d. For the actual test configuration, please refer to the related Item: Photographs of Test Configuration.

7.2.3. Test Setup

(a) Radiated Emissions Test Set-Up Frequency 30 MHz-1 GHz



(b) Radiated Emissions Test Set-Up Frequency above 1 GHz



For the actual test configuration, please refer to Appendix I: Photographs of Test Configuration

7.2.4. Test Environment

Radiated Emissions up to 1 GHz		Radiated Emissions above 1 GHz	
Temperature:	23.2 °C	Temperature:	25.1 °C
Humidity:	58.7 %	Humidity:	63.0 %
Atmosphere Pressure	101 kPa	Atmosphere Pressure	101 kPa

7.2.5. Test Mode

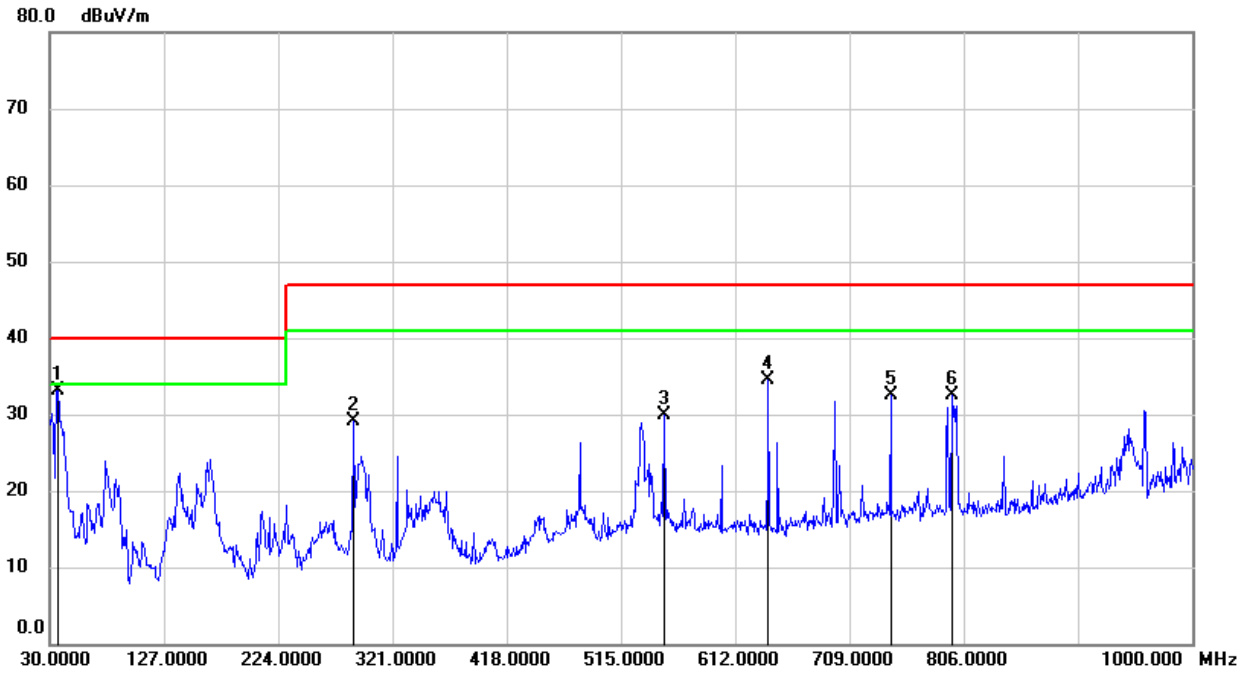
Radiated Emissions up to 1 GHz		Radiated Emissions above 1 GHz	
Pre-test Mode:	Mode 1 & Mode 2	Pre-test Mode:	Mode 1 & Mode 2
Final Test Mode:	Mode 2	Final Test Mode:	Mode 2

Note: All test modes have been tested, but only the worst case data recorded in the report.

7.2.6. Test Results– up to 1 GHz

Test Mode:	Mode 2
Test Voltage:	AC 100V/60 Hz

Polarization: Vertical

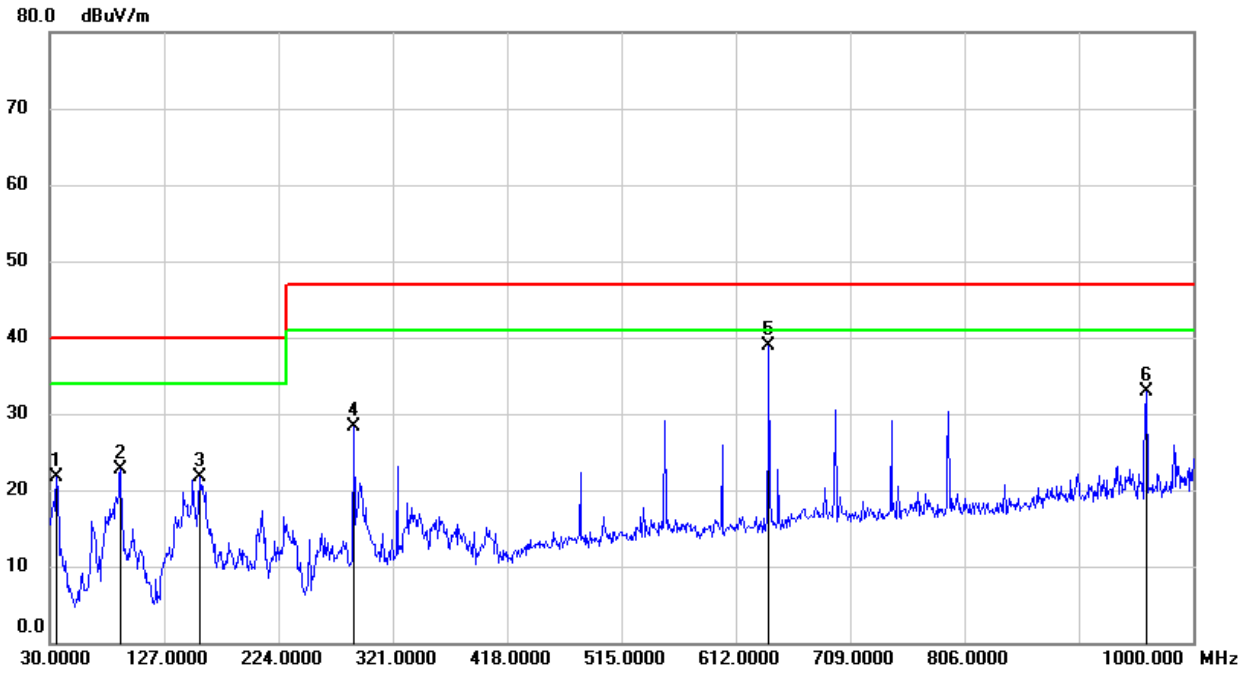


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	36.7900	52.47	-19.30	33.17	40.00	-6.83	QP
2	288.0200	45.08	-16.01	29.07	47.00	-17.93	QP
3	551.8600	40.38	-10.50	29.88	47.00	-17.12	QP
4	640.1300	43.94	-9.41	34.53	47.00	-12.47	QP
5	743.9200	39.73	-7.17	32.56	47.00	-14.44	QP
6	796.3000	39.05	-6.64	32.41	47.00	-14.59	QP

Remark:
Result = Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor)
Margin = Result - Limit

Test Mode:	Mode 2
Test Voltage:	AC 100V/60 Hz

Polarization: Horizontal



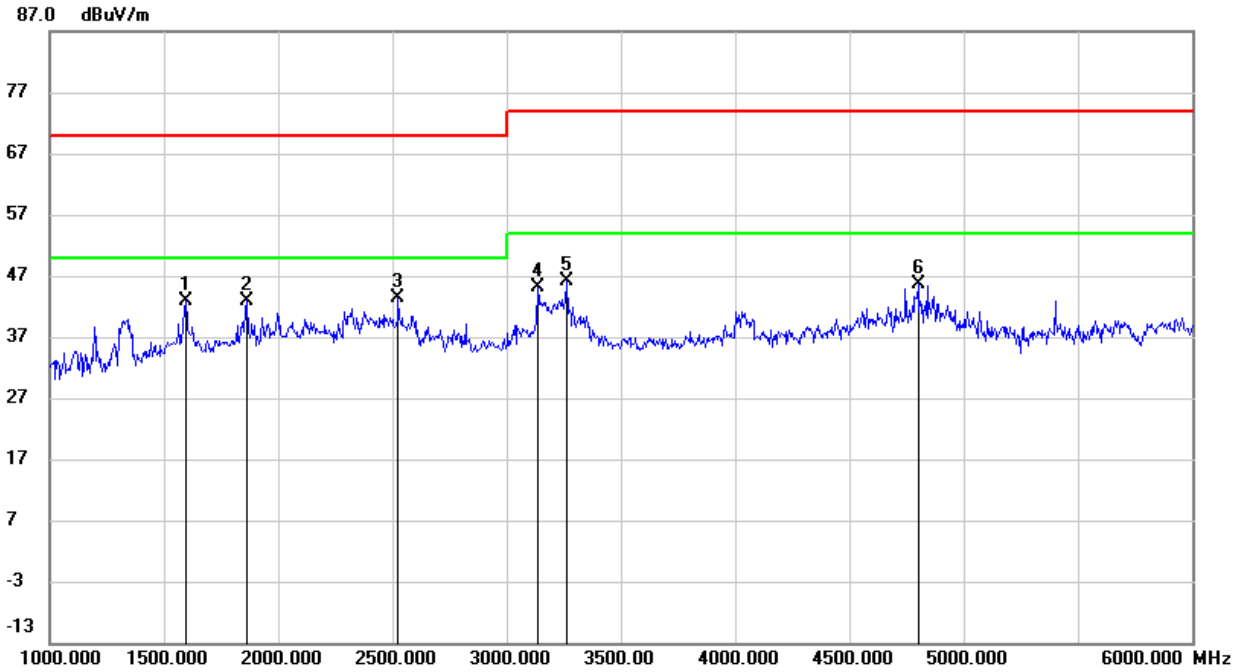
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	35.8200	40.76	-19.15	21.61	40.00	-18.39	QP
2	90.1400	44.82	-22.15	22.67	40.00	-17.33	QP
3	157.0700	39.55	-17.80	21.75	40.00	-18.25	QP
4	288.0200	44.38	-16.01	28.37	47.00	-18.63	QP
5	640.1300	48.22	-9.41	38.81	47.00	-8.19	QP
6	960.2300	37.62	-4.70	32.92	47.00	-14.08	QP

Remark:
Result = Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor)
Margin = Result - Limit

7.2.7. Test Results – above 1 GHz

Test Mode:	Mode 2
Test Voltage:	AC 100V/60 Hz

Polarization: Vertical

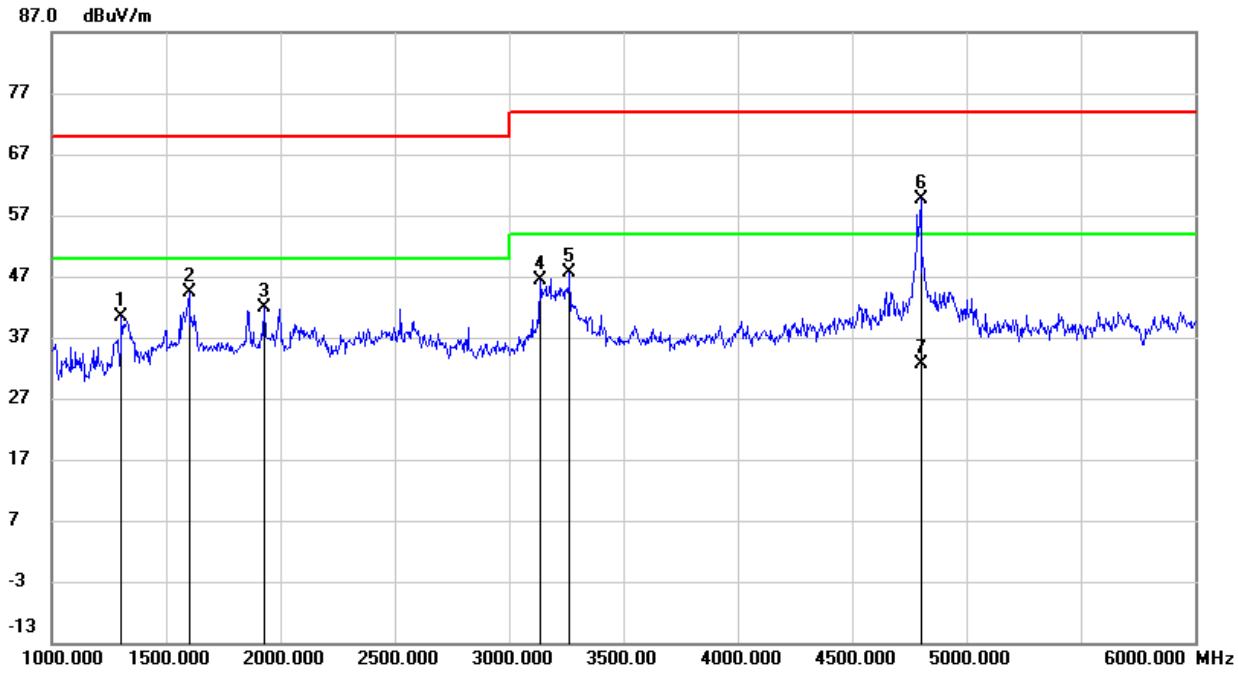


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1595.000	55.20	-12.39	42.81	70.00	-27.19	peak
2	1860.000	54.46	-11.53	42.93	70.00	-27.07	peak
3	2525.000	51.73	-8.42	43.31	70.00	-26.69	peak
4	3135.000	51.84	-6.67	45.17	74.00	-28.83	peak
5	3265.000	52.46	-6.39	46.07	74.00	-27.93	peak
6	4800.000	46.66	-0.95	45.71	74.00	-28.29	peak

Remark:
Result = Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor)
Margin = Result - Limit

Test Mode:	Mode 2
Test Voltage:	AC 100V/60 Hz

Polarization: Horizontal

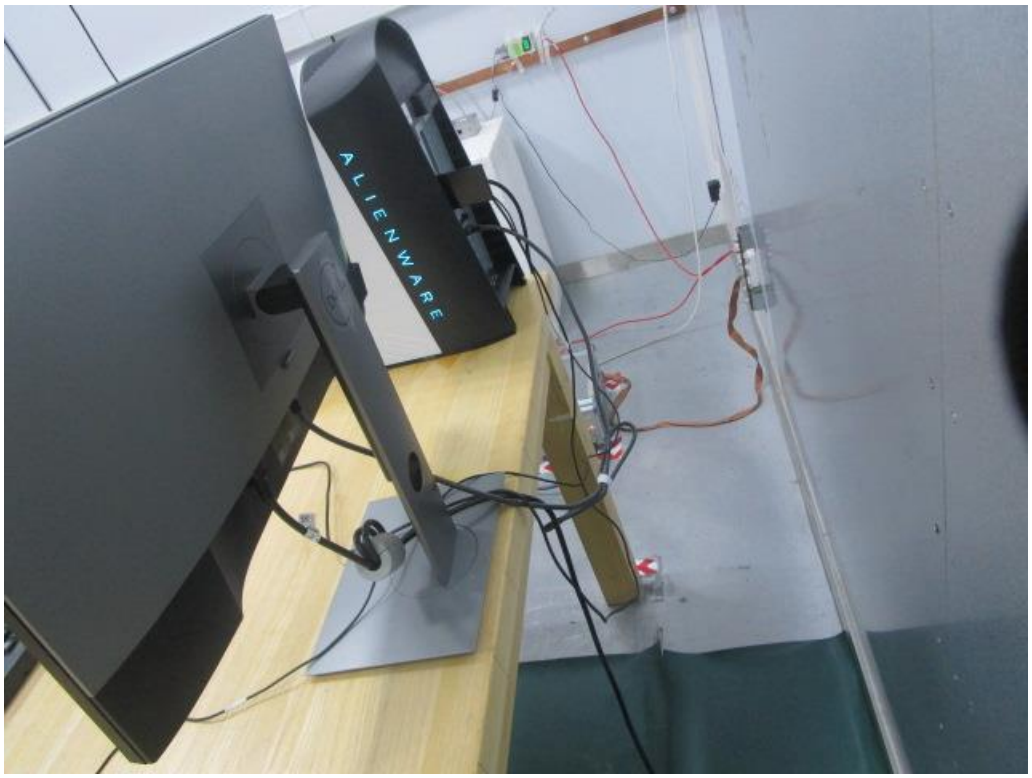


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1305.000	54.01	-13.61	40.40	70.00	-29.60	peak
2	1600.000	56.72	-12.38	44.34	70.00	-25.66	peak
3	1930.000	53.29	-11.29	42.00	70.00	-28.00	peak
4	3135.000	53.12	-6.67	46.45	74.00	-27.55	peak
5	3265.000	53.93	-6.39	47.54	74.00	-26.46	peak
6	4800.000	60.61	-0.95	59.66	74.00	-14.34	peak
7	4800.000	33.55	-0.95	32.60	54.00	-21.40	AVG

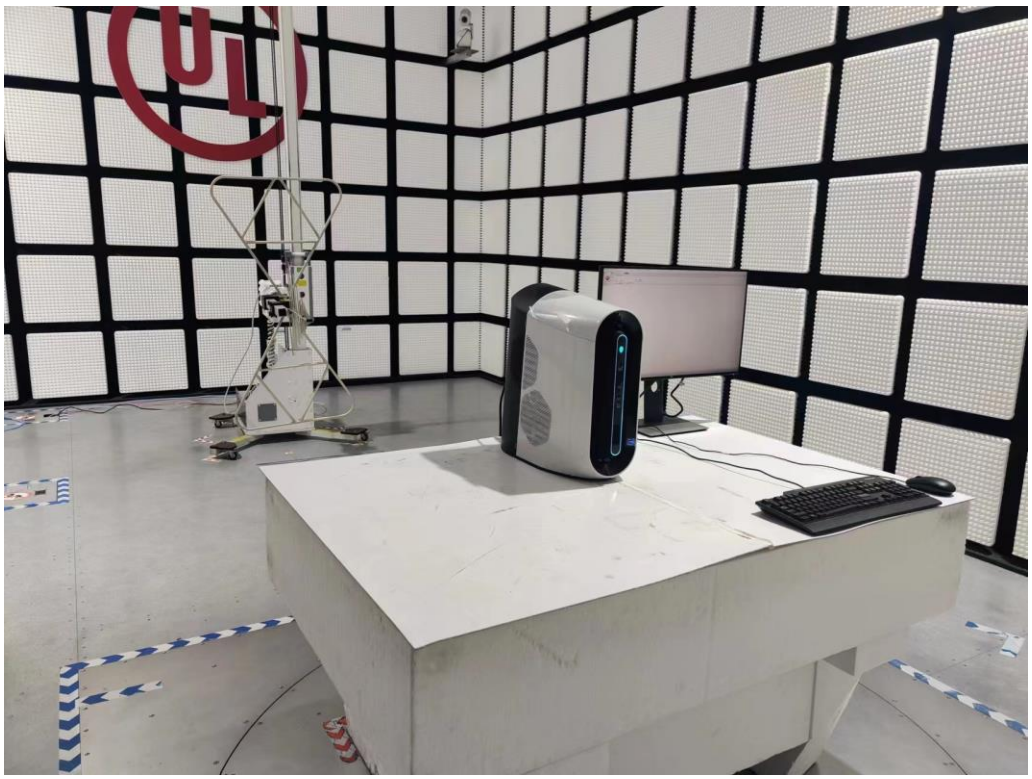
Remark:
Result = Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor)
Margin = Result - Limit

Appendix I: Photographs of Test Configuration

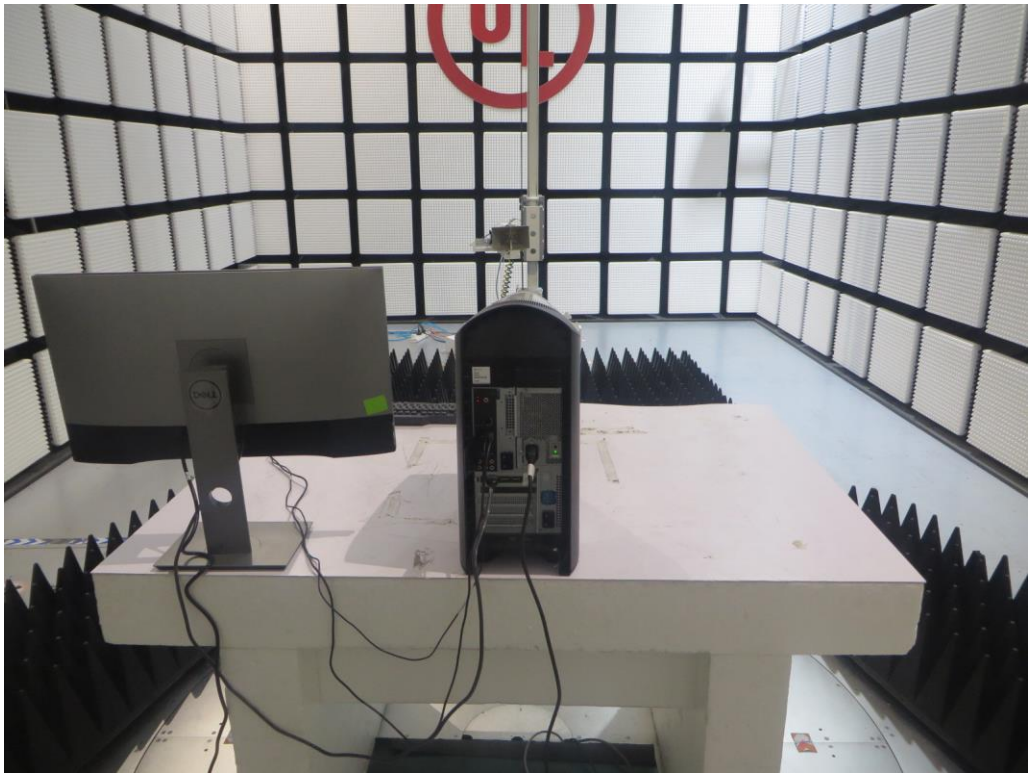
Conducted Emissions test setup photo



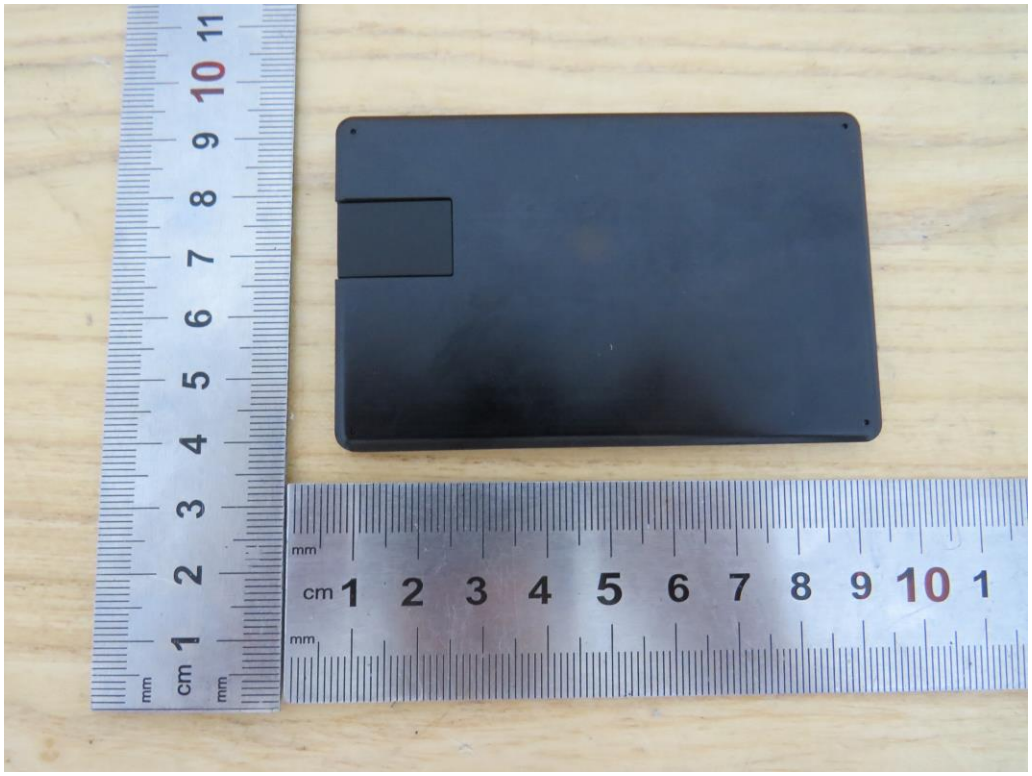
Radiated Emissions below 1 GHz test setup photo

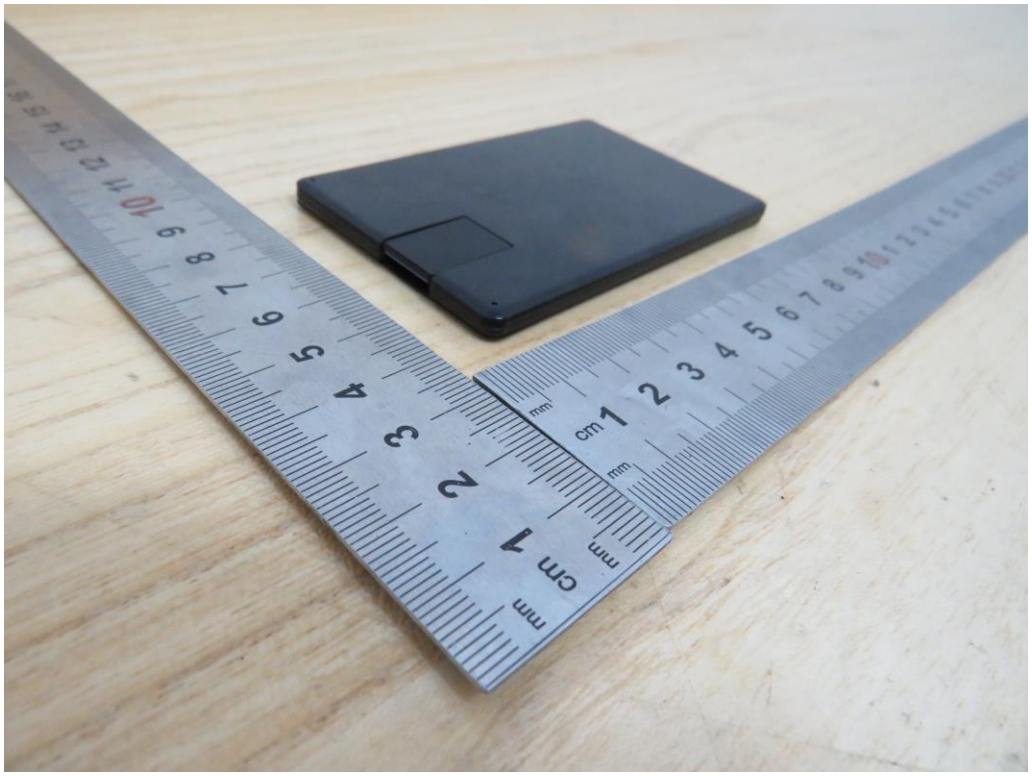


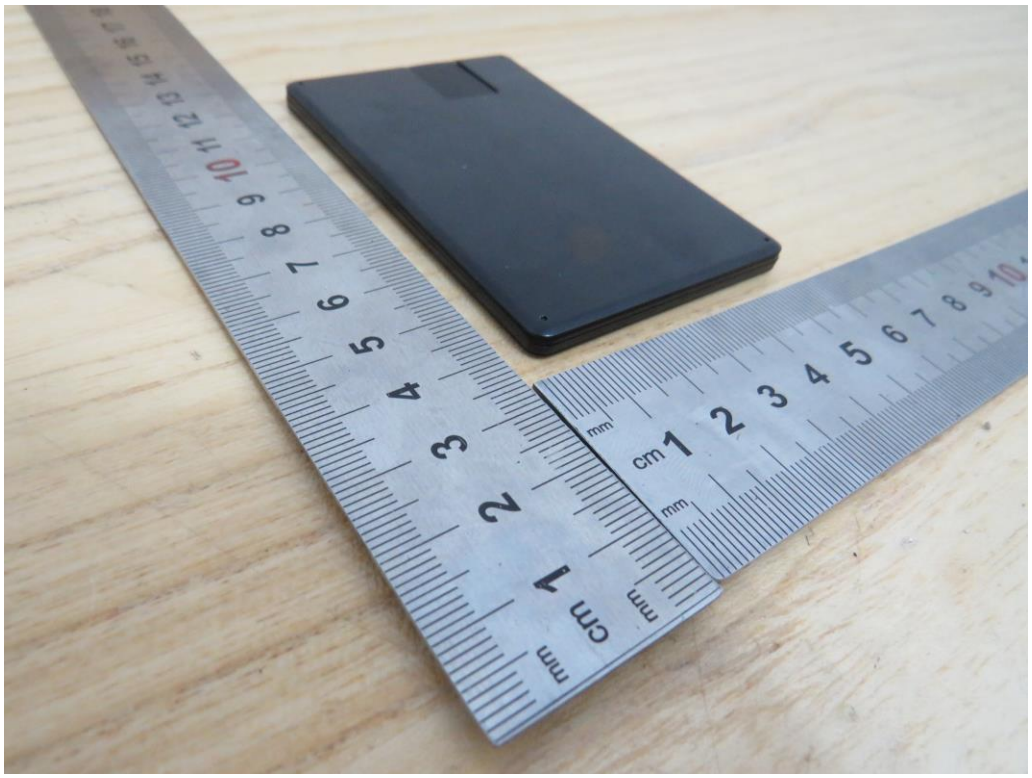
Radiated Emissions above 1 GHz test setup photo

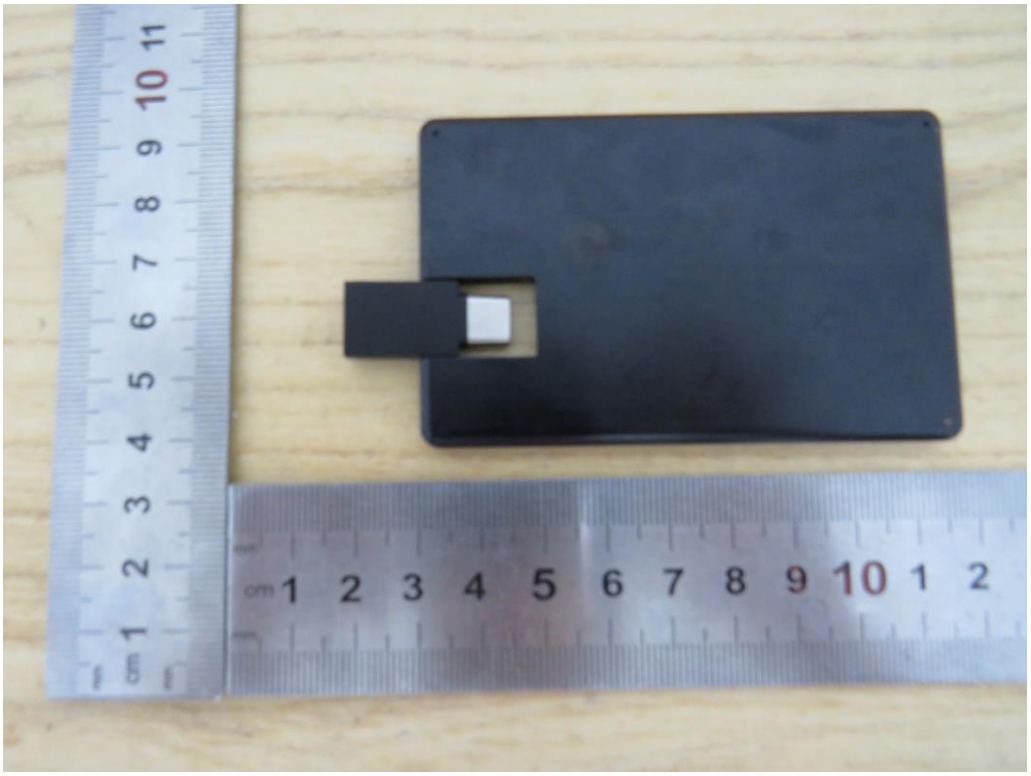


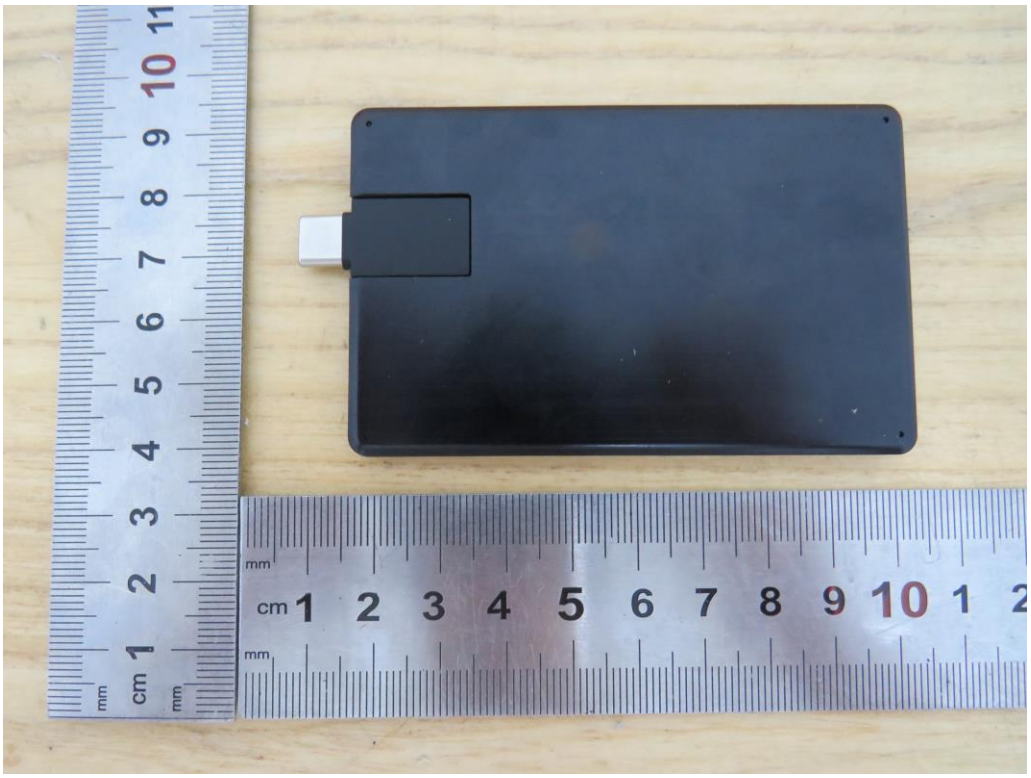
Appendix II: Photographs of the EUT

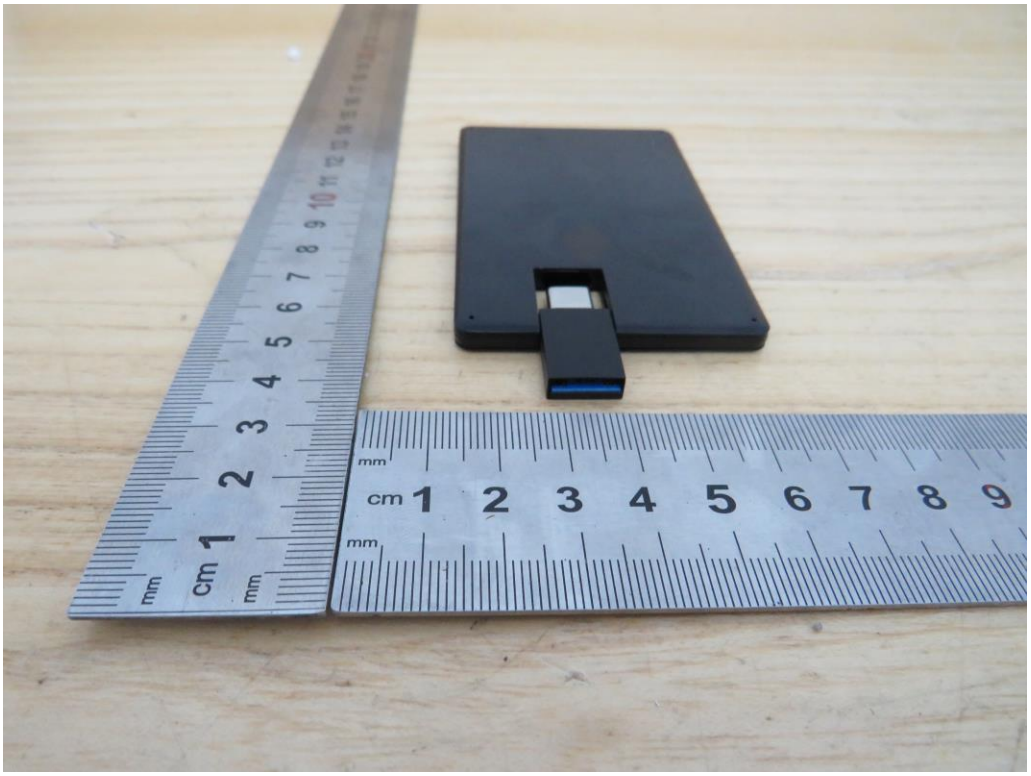












END OF REPORT