

TEST REPORT

**This laboratory is accredited by National Radio Research
Agency Laboratory and National Voluntary Laboratory
Accreditation Program.**

The tests reported herein have been performed in accordance with
its terms of accreditation.

Test Report No. : LR500122411U
Issue Date : November 28, 2024
Applied Standard : FCC Part 15, Subpart B
Trade Name : Dot Incorporation
Equipment Name : Dot 12-cell Braille Module
Model Name : KM3-12A
Additional Model name : -
Serial Number : Identification

**This test result only responds to the tested sample. It is not allowed to copy this report even partly without the
allowance of the test laboratory.**

This test report is not related to KS Q ISO/IEC 17025 and KOLAS accreditation.

Revision history

Revision	Date of issue	Test report No.	Description
0	28.11.2024	LR500122411U	Initial

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LTA Certification**Applicant / Manufacturer**

Company name : Dot Incorporation
Address : 401~405, 146, Gasan digital 1-ro, Geumcheon-gu, Seoul, Republic of Korea
Telephone / Facsimile : +82-2-864-1113 / +82-2-864-1989

Factory

Company name : Dot Incorporation
Address : 401~405, 146, Gasan digital 1-ro, Geumcheon-gu, Seoul, Republic of Korea

Equipment Under Test (EUT)

Equipment Name : Dot 12-cell Braille Module
Model name : KM3-12A
Additional Model name : -
Serial number : Identification
Intended environment : Industrial area
Date of receipt : November 20, 2024
EUT condition : Pre-production, not damaged
Test Mode : Operating mode
Interface ports : DC IN, DATA IN
Power rating : DC 5 V
Test Voltage : AC 120 V / 60 Hz

Model Description

- NONE

Model Specification

- NONE

*** To be continued next page ***

LTA Certification –cont.-**Test Performed**

Test started & completed : November 21 - 23, 2024
Location : LTA Co., Ltd.

Test Specification

Purpose of the test : Compliance test to the following standard
Applied standard : FCC Part 15, Subpart B
Classification : Class B
Deviations from Standard Test Method : N/A

Test Results

Measurement	Results*	Test method
Conducted Emissions	Complies	ANSI C 63.4-2014
Radiated Emissions	Complies	ANSI C 63.4-2014

* : The compliance statement is based on nominal value only.

Modification performed by the lab.:

- N/A

Laboratory's Certificate

Project number : 241120-1710
Issue date : November 28, 2024

This test report is issued under the authority of:

The test was supervised by:



Young Kyu Shin, Technical Manager



Min Su Han, Test Engineer

The results in this report apply only to the sample(s) tested.

It is not allowed to copy this report even partly without the allowance of the test laboratory.

General information's

Purpose

This document is based on the Electromagnetic Interference (EMI) tests performed on the “**KM3-12A**”. The measurements were performed according to the measurement procedure described in ANSI C 63.4-2014. The tests were carried out in order to confirm whether the electromagnetic emissions from the EUT(Equipment Under Test), are within the Class A limits defined in FCC Part 15, Subpart B- “Section 15.107- Conducted limits” and “Section 15.109-Radiated emission limits”.

Test Performed

Company name : **LTA Co., Ltd.**
Address : 34, Songju-ro 236Beon-gil, Yangji-myeon, Cheoin-gu Yongin-si, Gyeonggi-do 449-822, Korea
Telephone : +82-31-323-6008
Facsimile : +82-31-323-6010

Measurement uncertainty

Conducted Emissions (0.15 to 30 MHz) : ± 2.81 [dB] (k=2)
Radiated Emissions (30 to 1,000 MHz) : H : ± 4.65 [dB] (k=2) V : ± 4.85 [dB] (k=2)
(1 GHz to 6 GHz) : H : ± 5.78 [dB] (k=2) V : ± 5.67 [dB] (k=2)
(6 GHz to 18 GHz) : H : ± 5.72 [dB] (k=2) V : ± 5.73 [dB] (k=2)

The coverage factor k=2 yields approx. a 95% level of confidence for near-normal distribution typical of most measurement results.

Accredited agencies

LTA Co., Ltd. is approved to perform EMC testing by the following agencies:

Agency	Country	Accreditation No.	Validity	Reference
RRA	KOREA		-	RRA accredited Lab.
	U.S.A	KR0049	2025-03-29	
	CANADA		2026-08-05	
VCCI	JAPAN	C-14948	2026-09-10	VCCI registration
		T-12416	2026-09-10	
		R-14483	2026-10-15	
		G-10847	2024-12-13	
KOLAS	KOREA	KT551	2025-10-12	KOLAS accredited Lab.

1- Brief Information

1-1 Test Summary

Parameter	Applied Standard	Status (note 1)
I. Emission		
Conducted Emissions	FCC Part 15.107	C
Radiated Emissions	FCC Part 15.109	C
Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable * The data in this test report are traceable to the national or international standards.		

Frequency range to be scanned:

0.15 MHz - 30 MHz as conducted measurement

30 MHz to 5th harmonic of the highest frequency or 40 GHz, whichever is lower as radiated measurement.

Bandwidth:

Measured by the CISPR quasi-peak function Bandwidth is 9 kHz in the frequency 0.15 MHz to 30 MHz and 120 kHz in the frequency 30 MHz to 1,000 MHz.

Measured by the Peak function Bandwidth is 1 MHz in the frequency 1 GHz to 40 GHz.

1-2 Test mode of the EUT

The tests have been conducted with the following operational mode(s) of the EUT.

Operating mode

1-3 Modification

- NONE

1-4 List of EUT and ACCESSORY

EUT				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
Dot 12-cell Braille Module	KM3-12A	N/A	Dot Incorporation	-
ACCESSORY				
Equipment Name	Model Name	Serial No.	Manufacturer	Remarks
Adapter	EP-T4510 001	N/A	SOLUM VINA COMPANY LIMITED	-
Notebook	Lenovo V15 G3 IAP	N/A	Lenovo Information Products (ShenZhen) Co., Ltd.	-

1-5 Cable List

Cable List					
From		To		Length (m)	Shied
Type	I/O Port	Type	I/O Port		
EUT	DC IN	Adapter	DC OUT	1.6	NO
	DATA IN	Notebook	DATA OUT	1.6	NO

2- Test Site Description

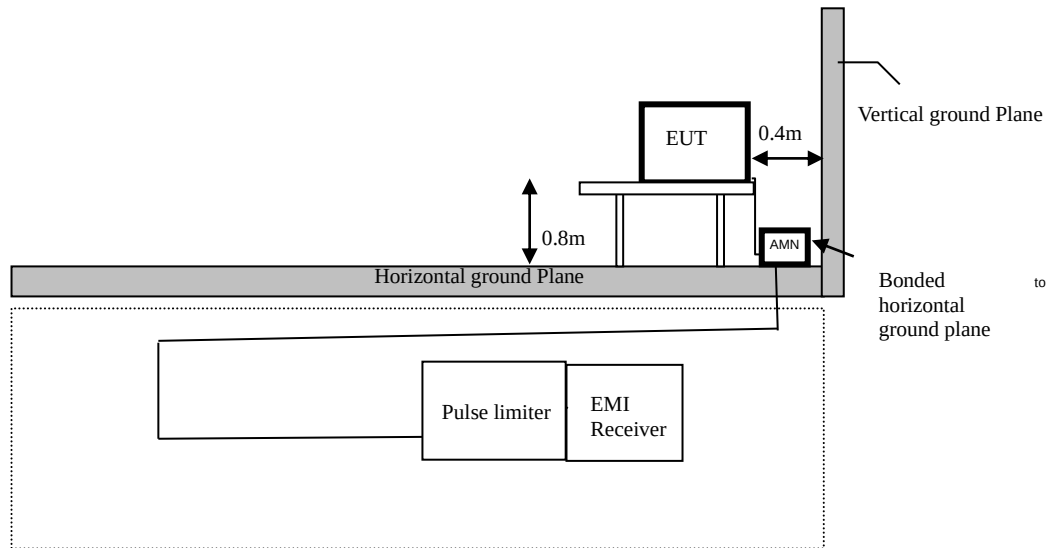
1-Facility

All the testing facilities are periodically serviced as a daily check for equipment and cables systems, an every 1 year facility check for the facilities and annual calibration for testing equipment according to ISO/IEC 17025. All the testing facilities are used as the same specifications shown below. There are descriptions both for radiated disturbance measurement and conducted disturbance measurement conformed by ANSI C 63.4.

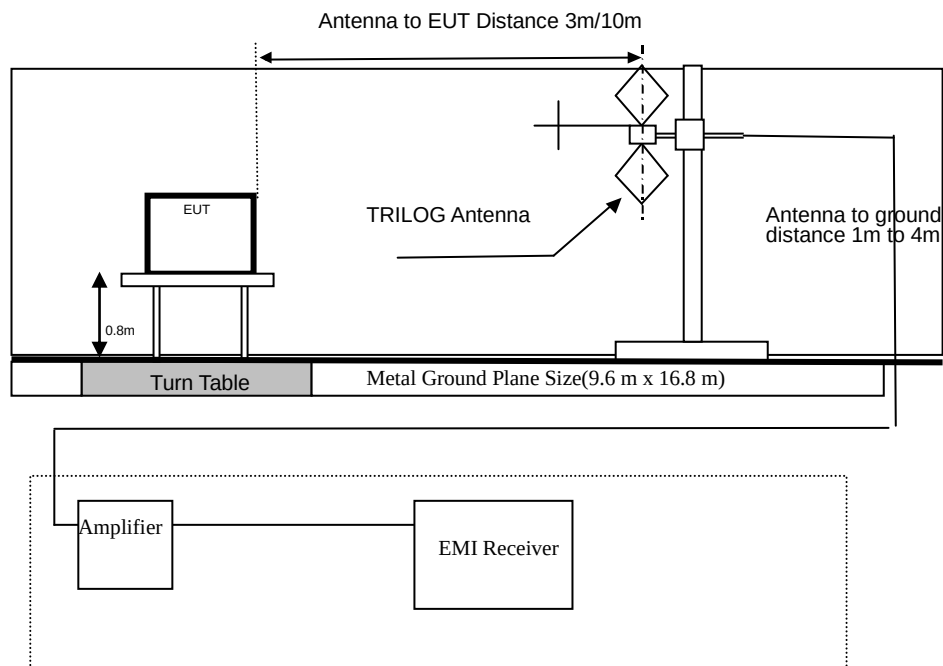
The NSA measurement of the 10 m chamber was performed on January 13, 2024 according to ANSI C 63.4.

The SVSWR measurement of the 10 m chamber was performed on October 16, 2024 according to ANSI C 63.4.

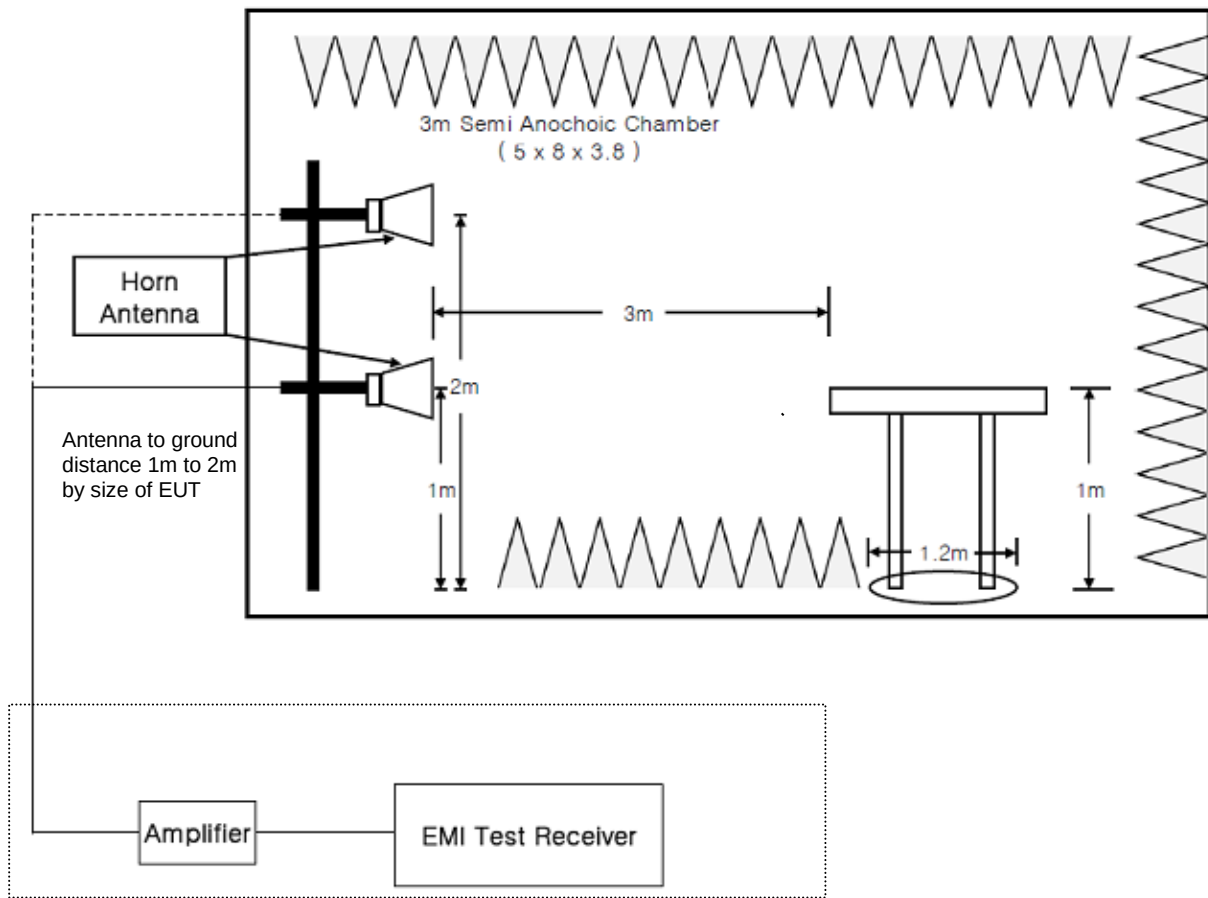
2-1 Conducted Emissions



2-2 Radiated Emissions – Below 1 GHz



2-3 Radiated Emissions – Above 1 GHz



3- Test Procedure

3-1 Conducted Emissions

- The measurement is carried out on an open site with horizontal and metallic ground plane.
- An AMN(Artificial Mains Network) with a nominal impedance ($50\ \Omega$ / $50\ \mu\text{H}$) as defined in ANSI C 63.4, shall be utilized.
- The AMN is grounded on a horizontal metal ground plane.
- Measurement is carried out using an EMI receiver with quasi-peak detectors and average detector.
(Refer to the List of test equipment used for the test.)
- The shortest distance between the EUT and the AMN is 0.8 m.
- The EUT is placed on the non-conducting table with 0.8 m height.
- Refer to "Brief Information"(page 7-8) about details of the EUT and configuration of the cables.
- Measurement is carried out as manual operation.
 - searching the maximum frequency point of the disturbance wave in each frequency range.
 - reading the disturbance level of quasi-peak, average and Line (L) and Neutral (N) in 9 kHz bandwidth by the EMI receiver.
 - calculating the measurement result with the following formula or equation.
(Result = Reading + Cor.F.(LISN Factor + Cable Loss + Pulse Limiter)
(ex) = $13.23\ \text{dB}\mu\text{V} + (9.63\ \text{dB} + 0.01\ \text{dB} + 9.86\ \text{dB})$
 = $32.73\ \text{dB}\mu\text{V}$

3-2 Radiated Emissions – Below 1 GHz

- Test site is met the requirements of ANSI C 63.4 and the distance between the EUT and the antenna is adjusted 3 m or 10 m.
 - The turntable can be rotated 360 degrees.
 - The antenna can be adjusted between 1 m and 4 m in height above the ground.
 - The EUT is placed on the non-conducting table with 0.8 m height on the turntable.
 - Measurements are carried out using an EMI receiver with quasi-peak detectors (120 kHz bandwidth).
 - Refer to the list of test equipment used for the test.
 - The TRILOG antenna are used as wideband antenna.
 - The TRILOG antenna is used in the frequency range of 30 MHz to 1 000 MHz.
 - A variable attenuator is used for verifying amplifier's linearity.
 - Rotating the turntable and adjusting the height of the antenna are carried out by control buttons on the console.
 - Refer to "Brief Information"(page 7-8) about details of the EUT and configuration of the cables.
 - Measurement is carried out by a LTA operator as manual operation.
- searching the worst direction with the maximum level of the disturbance wave in rotating the turntable 360 degrees at each searched frequency point.
- setting the height of the antenna with the maximum level of the disturbance wave from 1 m to 4 m.
- reading the disturbance level by the EMI receiver with quasi-peak detectors (120 kHz bandwidth) according to ANSI C 63.4.
- measuring to vertical and horizontal polarization.
- calculating the measurement result with the following formula or equation:
(Result = Reading + Cor.F (antenna factor + cable loss - PreAmp Gain)
- (ex) = 50.6 dB μ V/m + (11.08 dB(1/m) + 1.31 dB - 27.32 dB)
 = 35.67 dB μ V/m

3-3 Radiated Emissions – Above 1 GHz

- Test site is met the requirements of ANSI C 63.4 and the distance between the EUT and the antenna is adjusted 3 m.
- The turntable can be rotated 360 degrees.
- The antenna can be adjusted between 1 m and 4 m in height above the ground.
- The EUT is placed on the non-conducting table with 1 m height on the turntable.
- Measurements are carried out using an EMI receiver with peak and average detectors(1 MHz bandwidth).
- Refer to the list of test equipment used for the test.
- The HORN antenna are used as wideband antenna.
- The HORN antenna is used in the frequency range of 1 GHz to 18 GHz.
- A variable attenuator is used for verifying amplifier's linearity.
- Rotating the turntable and adjusting the height of the antenna are carried out by control buttons on the console.
- Refer to "Brief Information"(page 7-8) about details of the EUT and configuration of the cables.
- Measurement is carried out by a LTA operator as manual operation.
 - searching the worst direction with the maximum level of the disturbance wave in rotating the turntable 360 degrees at each searched frequency point.
 - setting the height of the antenna with the maximum level of the disturbance wave from 1 m to 4 m
 - reading the disturbance level by the EMI receiver with peak and average detectors (1 MHz bandwidth) according to ANSI C 63.4.
 - measuring to vertical and horizontal polarization.
 - calculating the measurement result with the following formula or equation:
(Result = Reading + Cor.F (antenna factor + cable loss + Measure distance – PreAmp Gain)
(ex) = 35.9 dBμV/m + (23.92 dB(1/m) + 7.01 dB + 1.50 dB - 28.33 dB)
= 40.0 dBμV/m

4- List of Equipment Used For the Tests

Conducted Emissions

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	EMI TEST Receiver	ESR	Rohde & Schwarz	101499	2025.03.08	1 year
☒	Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100710	2025.03.08	1 year
☐	LISN	ESH3-Z6	Rohde & Schwarz	100378	2025.08.19	1 year
☐	LISN	ESH3-Z6	Rohde & Schwarz	101468	2025.08.19	1 year
☒	LISN(main)	ENV216	Rohde & Schwarz	102872	2025.08.19	1 year
☐	LISN(sub)	LT32C/10	AFJ	32031518210	2025.08.19	1 year
☒	TEST PROGRAM	e3_ce 20181212a (V9)	AUDIX	-	-	-

Radiated Emissions – Below 1 GHz

	Item	Model Name	Manufacturer	Serial No.	Next Cal.	Interval
☒	EMI TEST Receiver	ESCI7	Rohde & Schwarz	100772	2025.08.19	1 year
☒	Amplifier	8447D	HP	1937A03453	2025.08.19	1 year
☒	BILOG Antenna	VULB 9168	SCHWARZBECK	749	2025.03.29	2 year
☒	TEST PROGRAM	e3 20181212a (V9)	AUDIX	-	-	-

5- EMISSION

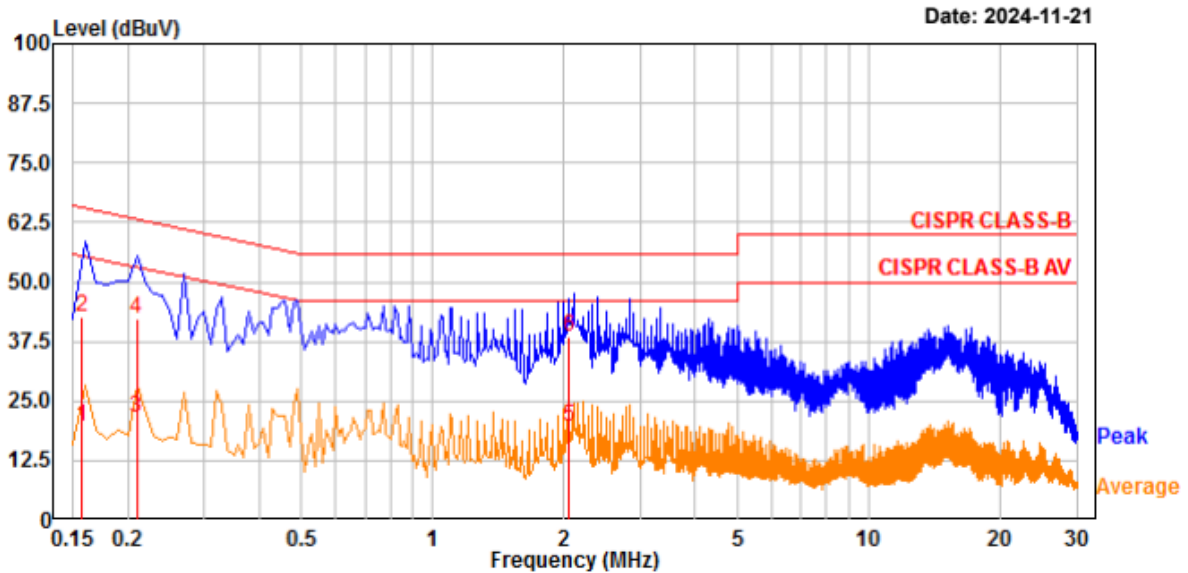
5-1 Conducted Emissions

(LINE)



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Project No.	: 241120-1710	Phase	: Line
Test Mode	: Operating	Test Power	: AC 120 V / 60 Hz
Temp./ Humi.	: 21 'C / 42 % R.H.	Test Engineer	: HAN M S



No.	Freq MHz	RD QP dBuV	RD AV dBuV	C.F dB	Result QP dBuV	Result AV dBuV	Limit QP dBuV	Limit AV dBuV	Margin QP dB	Margin AV dB	Phase
2.	0.157	23.04	-0.03	19.56	42.60	19.53	65.63	55.63	23.03	36.10	Line
4.	0.210	22.77	2.12	19.56	42.33	21.68	63.22	53.22	20.89	31.54	Line
6.	2.048	18.74	0.01	19.67	38.41	19.68	56.00	46.00	17.59	26.32	Line

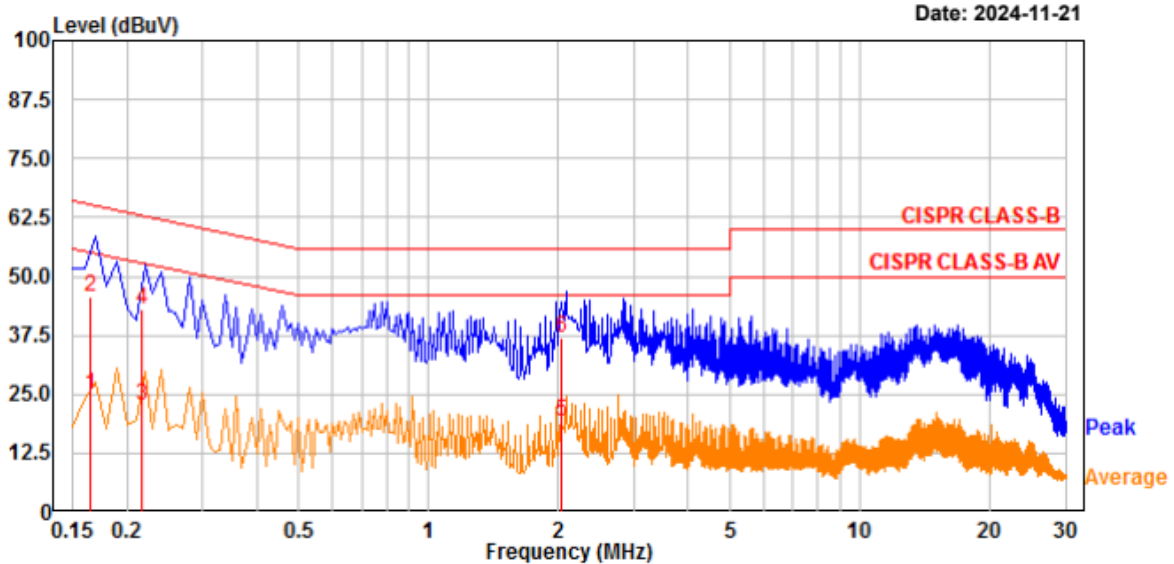
Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

(NEUTRAL)



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Project No.	: 241120-1710	Phase	: Neutral
Test Mode	: Operating	Test Power	: AC 120 V / 60 Hz
Temp./ Humi.	: 21 'C / 42 % R.H.	Test Engineer	: HAN M S



No.	Freq MHz	RD QP dBuV	RD AV dBuV	C.F dB	Result QP dBuV	Result AV dBuV	Limit QP dBuV	Limit AV dBuV	Margin QP dB	Margin AV dB	Phase
2.	0.165	26.16	5.49	19.54	45.70	25.03	65.21	55.21	19.51	30.18	neutral
4.	0.217	23.61	2.93	19.54	43.15	22.47	62.92	52.92	19.77	30.45	neutral
6.	2.036	17.27	-0.24	19.66	36.93	19.42	56.00	46.00	19.07	26.58	neutral

Remarks: C.F (Correction Factor) = Insertion loss + Cable loss + Pulse Limiter

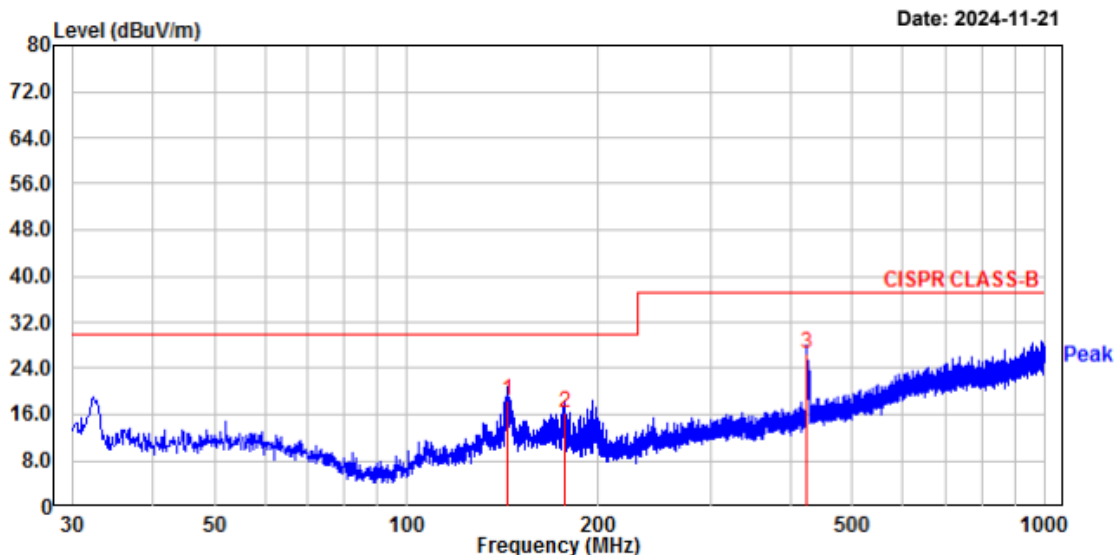
5-2 Radiated Emissions

(Below 1 GHz) / H



4, Songjuro 236Beon-gil, yanggi-myeon,
Yongin-si, Gyeonggi-do, Korea
Tel : +82-31-3236008,9
Fax : +82-31-3236010
www.ltalab.com

Project No. : 241120-1710 Temp/Humi: 21 'C / 40 % R.H.
Test Mode : Operating Tested by: HAN M S
Power : AC 120 V / 60 Hz



No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	143.98	29.20	-10.88	18.32	30.00	11.68	315	23	horizontal
2.	176.83	28.01	-11.77	16.24	30.00	13.76	104	221	horizontal
3.	424.43	33.19	-6.62	26.57	37.00	10.43	225	83	horizontal

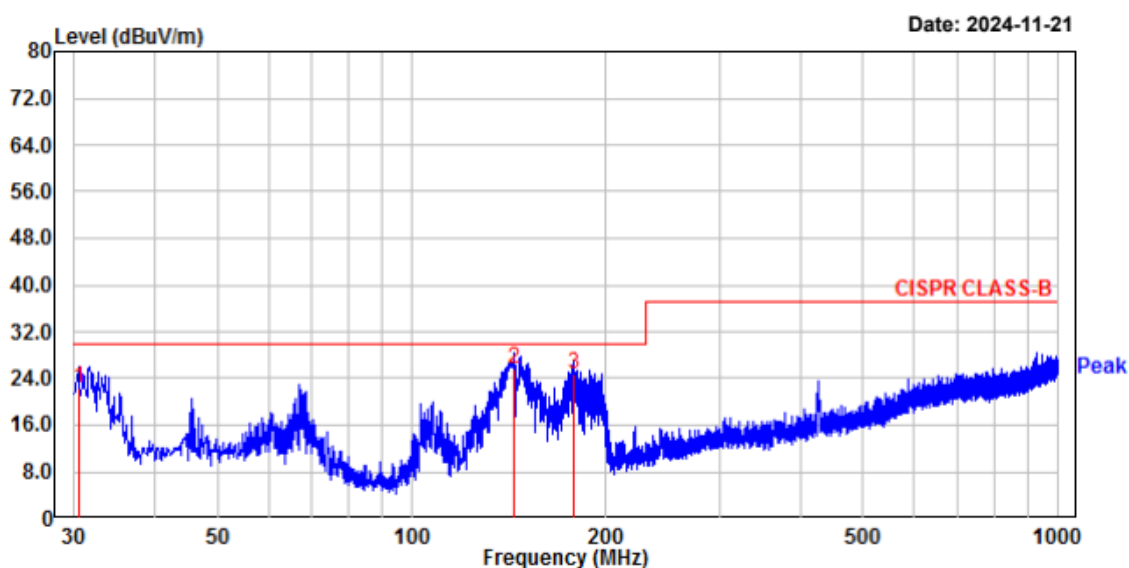
Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain

(Below 1 GHz) / V



4, Songjuro 236Beon-gil, yanggi-myeon,
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Project No. : 241120-1710 Temp/Humi: 21 'C / 40 % R.H.
Test Mode : Operating Tested by: HAN M S
Power : AC 120 V / 60 Hz



No.	Freq MHz	Reading dBμV	C.F dB	Result QP dBμV/m	Limit dBμV/m	Margin dB	Height cm	Angle deg	Polarity
1.	30.49	35.80	-13.40	22.40	30.00	7.60	101	145	vertical
2.	144.10	36.50	-10.87	25.63	30.00	4.37	120	178	vertical
3.	178.05	36.50	-11.86	24.64	30.00	5.36	130	217	vertical

Remarks: C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain