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TEST REPORT

Report Number	190100082SEL-EMC1(R1)
Applicant Name/Address	Deepscent Inc. E19 Nano Fab 9F, KAIST, Daehak-ro 291, Yuseong-gu, Daejeon, South Korea
Test Sample Description	
- Product ..... :	AromaStyler
- Model and/or Brand name ..... :	ABV01WDAA / Deepscent
- Manufacturer Name / Address .. :	Ionics 606~608, 24, Gasan digital 1-ro, Geumcheon-gu, Seoul, Republic of Korea
- Rating(s) ..... :	AC 120 V, 60 Hz
Receipt of sample(s)	24 Jan. 2019
Date of Test	26 Feb. 2019 ~ 27 Feb. 2019
Test Method(s)	FCC Part 15 Subpart B
Test Results & Uncertainty	See EMC Results Conclusion
Issue date	29 Sep. 2020

Note 1. The results shown in this test report refer only to the sample(s) tested.

Note 2: This report shall not be reproduced except in full, without the written approval of Intertek.

Note 3: This laboratory is not accredited for the test results marked as *.

Tested by;

Name: Harry Jeon
EMC Engineer

Approved by;

Name: Rina Bae
EMC Technical Manager

Intertek ETL SEMKO Korea Ltd.

SECTION 1 CONTENTS

SECTION 2 EMC RESULTS CONCLUSION (WITH JUSTIFICATION)

We tested the AromaStyler, Model: ABV01WDAA, to determine if it was in compliance with the relevant US standards as marked on the test report.
We found that the unit met the requirement of FCC Part 15 Subpart B standards when tested as received.

Test Items	Applied Standards	Results			
		Comply	Not Comply	N/A	See Note
Disturbance Voltage	FCC Part 15 Subpart B	☒	☐	☐	☒
Radiated disturbance (Below 1 GHz)	FCC Part 15 Subpart B	☒	☐	☐	☒
Radiated disturbance (Above 1 GHz)	FCC Part 15 Subpart B	☒	☐	☐	☒
Note 1) When determining the test conclusion, the Measurement Uncertainty of test has been considered.					

Measurement Uncertainty

Disturbance Voltage	*U* = 3.30 [dB] (Confidence level approximately 95 %, *k* = 2)	
Radiated disturbance	9 kHz – 30 MHz	*U* = 4.50 [dB]
	30 MHz – 1 000 MHz	Horizontal: *U* = 4.30 [dB] Vertical: *U* = 4.60 [dB]
	1 GHz – 6 GHz	Horizontal: *U* = 5.70 [dB] Vertical: *U* = 5.70 [dB]
	6 GHz – 18 GHz	Horizontal: *U* = 5.70 [dB] Vertical: *U* = 5.80 [dB]
	(Confidence level approximately 95 %, *k* = 2)	

SECTION 3 TEST ENVIRONMENT AND CONDITIONS

Test Environment

Test Item	Test Site	Test date (MM-DD)	Temp (℃)	Humidity (% R.H.)	Pressure (kPa)
Disturbance Voltage	Shielded Room #2	02-27	22.8 ± 1.0	37.2 ± 1.0	-
Radiated disturbance (Below 1 GHz)	10 m chamber	02-26	22.3 ± 1.0	39.8 ± 1.0	
Radiated disturbance (Above 1 GHz)	10 m chamber	02-26	22.3 ± 1.0	39.8 ± 1.0	

SECTION 4 EUT INFORMATION

Equipment Under Test (EUT): AromaStyler

Model: ABV01WDAA

Serial No.: -

Rated Voltage: AC 120 V, 60 Hz

Maximum clock frequency: 2 480 MHz

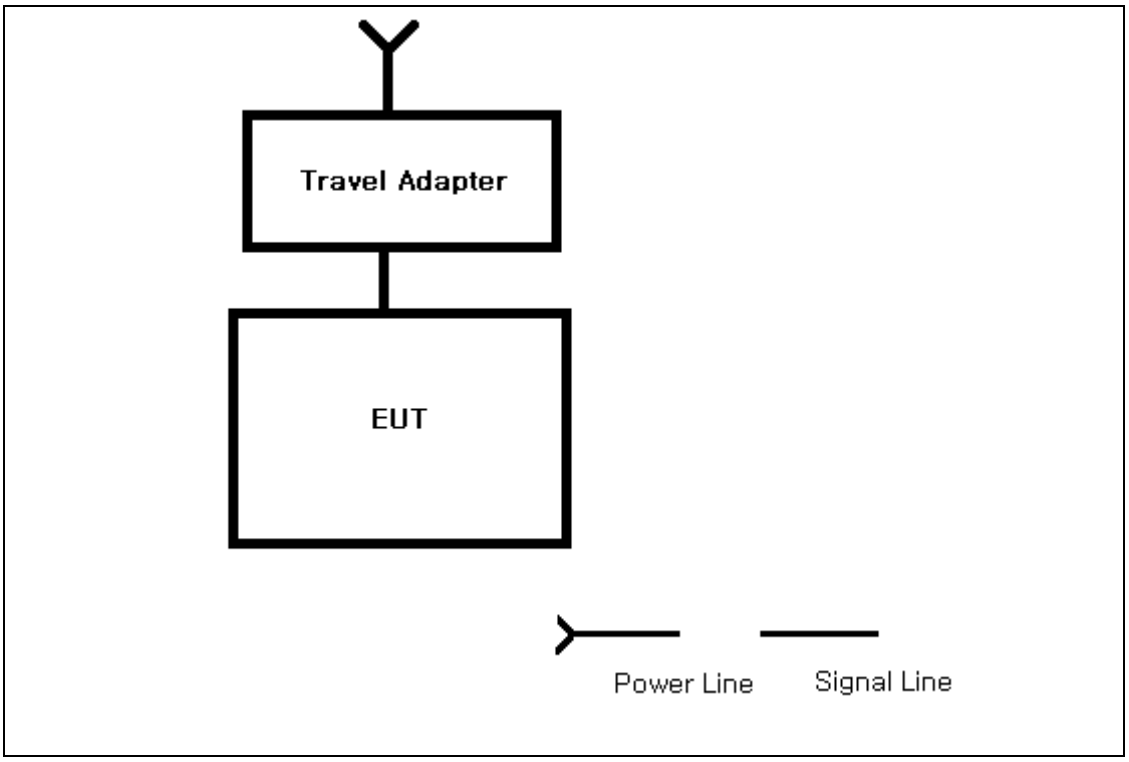
SECTION 5 TEST CONFIGURATION, OPERATION MODE AND SET-UP

Equipment	Model No.	Serial No.	Manufacturer	Connect type	CABLE Length (m)	Shield
AromaStyler	ABV01WDAA	-	Ionics	Micro USB	1.5	Shielded
Travel Adapter	EP-TA20KWK	R37J75L9YE2HM3	HAEM VINA Co., Ltd.	AC IN	-	-

Test Setup

Test Operation Mode

Operating Mode : Continuous normal operation and lighting states.



SECTION 6 EMISSION

Radiated disturbance test

Test Method and Summary

Test standard: FCC Part 15 Subpart B

Used Test Equipment

Control No.	Equipment	Manufacturer	Model No.	Serial No.	Next Cal.	Cal Int.
EMC002	EMI Test Receiver	R & S	ESU26	100590	2020.01.04	1Y
EMC026	Biconilog (Type7)	ETS-Lindgren	3142E	00203548	2021.02.25	2Y
EMC075	AMP	R & S	SCU-08	100737	2020.01.04	1Y
EMC028	DRG Horn (Medium)	ETS-Lindgren	3117	00201915	2019.11.16	2Y
EMC077	AMP	R & S	SCU-18D	1952128	2019.06.26	1Y
EMC031	Standard Gain Horn	ETS-Lindgren	3160-09	LM9860	2019.04.27	1Y
EMC079	AMP	R & S	SCU-26D	1879069	2019.06.26	1Y

Operating Environment

Test Voltage: AC 120 V, 60 Hz

Test Setup and Procedure

The EUT along with its peripherals were placed on a non-conducted table with a height of 0.8 m in height table above the reference ground plane.
Rotate the EUT from 0° to 360° and position the receiving antenna at heights from 1 m to 4 m above the reference ground plane continuously to determine associated with higher emission levels and record them.
The measurement was made in both the vertical and horizontal polarization, and the maximum value is presented in the report.
For measurements above 1 GHz, place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.
The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal.
The final measurement antenna elevation shall be that which maximizes the emissions.

Limits

- The test frequency range of Radiated Disturbance measurements are listed below.

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 108	1 000
108 – 500	2 000
500 – 1 000	5 000
Above 1 000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

(1) Limit for Radiated Emission below 1 000 MHz

Frequency range (MHz)	Class A Equipment (10 m distance) Quasi-peak (dBµV/m)	Class B Equipment (3 m distance) Quasi-peak (dBµV/m)
30 to 88	39.0	40
88 to 216	43.5	43.5
216 to 960	46.4	46
960 to 1 000	49.5	54

Note 1) The lower limit shall apply at the transition frequency.
Note 2) Additional provisions may be required for cases where interference occurs.
Note 3) According to 15.109(g), as an alternative to the radiated emission limit shown above, digital devices may be shown to comply with the standards (CISPR), Pub. 22 shown as below.
Note 4) Result (dBµV/m) = Reading (dBµV) + Corr. (Ant. Factor (dB/m) + Cable Loss (dB) – Amp. Gain (dB))
Result: QuasiPeak, Reading: Receiver reading value, Corr.: Correction Factor
Margin = Limit – Result

Frequency range (MHz)	Class A Equipment (10 m distance) Quasi-peak (dBµV/m)	Class B Equipment (10 m distance) Quasi-peak (dBµV/m)
30 to 230	40	30
230 to 1 000	47	37

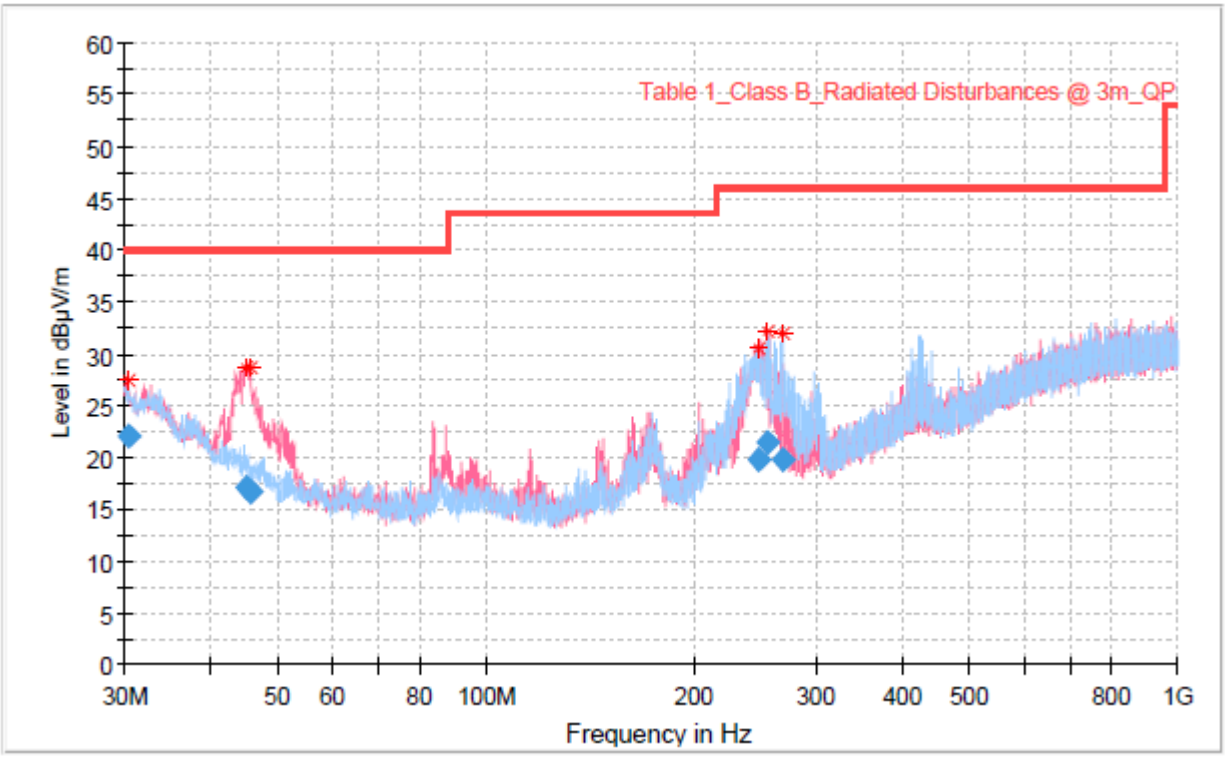
(2) Limits for Radiated Emission above 1 000 MHz at a measuring distance of 3 m

Frequency (GHz)	Class A Equipment		Class B Equipment	
	Peak (dBµV/m)	Average (dBµV/m)	Peak (dBµV/m)	Average (dBµV/m)
1 to 40	80	60	74	54

Note 1) Result (dBµV/m) = Reading (dBµV) + Corr. (Ant. Factor (dB/m) + Cable Loss (dB) – Amp. Gain (dB))
Result: Final value, Reading: Receiver reading value, Corr.: Correction Factor
Margin = Limit – Result
Note 2) If measured at a distance other than 3 m, apply the following formula to compensate the measured value.
Em = Edm + 20*log(d/3) (d: Measured distance)
Em: Result of measured distance correction, Edm: Measured value

Test Data

[Below 1 GHz]

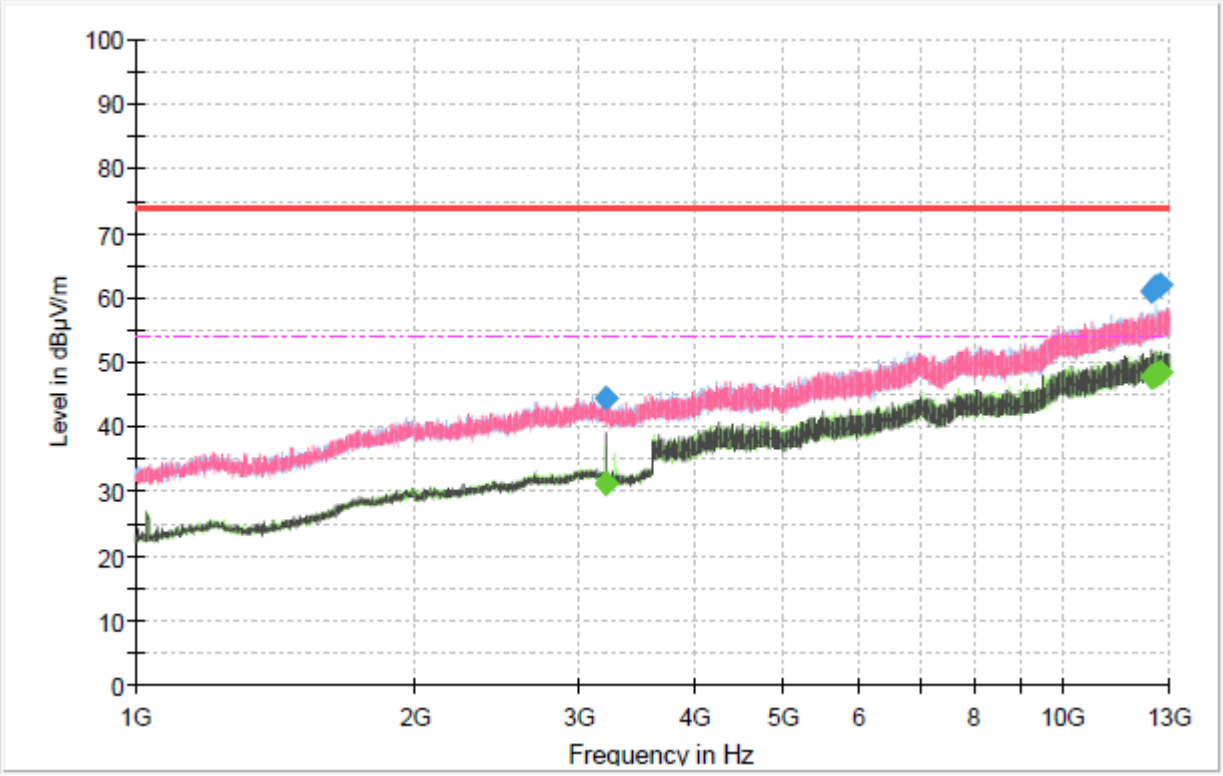


Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.548142	22.12	40.00	17.88	150.0	V	143.0	-14.3
45.009500	17.11	40.00	22.89	104.0	V	155.0	-20.7
45.805938	16.64	40.00	23.36	104.0	V	30.0	-20.9
247.994500	19.70	46.00	26.30	172.0	V	192.0	-14.9
254.818313	21.45	46.00	24.55	150.0	V	191.0	-14.8
267.778875	19.83	46.00	26.17	106.0	H	118.0	-14.5

[Above 1 GHz]

Test distance : 4.5 m



Frequency [MHz]	MaxPeak [dB(uV)/m]	CAverage [dB(uV)/m]	Limit [dB(uV/m)]	Margin [dB]	Height [cm]	Pol.	Azimuth [deg]	Corr. [dB]
3210.353	48.05		74.0	25.95	100.0	H	153.0	6.1
3210.353		34.59	54.0	19.41	100.0	H	153.0	6.1
12444.789		51.15	54.0	54.00	250.0	V	302.0	20.7
12444.789	64.45		74.0	74.00	250.0	V	302.0	20.7
12501.694		51.19	54.0	54.00	100.0	V	0.0	20.8
12501.694	61.31		74.0	74.00	100.0	V	0.0	20.8
12578.876	65.17		74.0	8.83	251.0	H	157.0	21.0
12578.876		51.39	54.0	2.61	251.0	H	157.0	21.0
12597.635	65.05		74.0	8.95	151.0	V	0.0	21.1
12597.635		51.42	54.0	2.58	151.0	V	0.0	21.1
12693.356	65.61		74.0	8.39	100.0	H	0.0	21.2
12693.356		51.75	54.0	2.25	100.0	H	0.0	21.2

Disturbance Voltage Test

Test Method and Summary

Test standard : FCC Part 15 Subpart B

Used Test Equipment

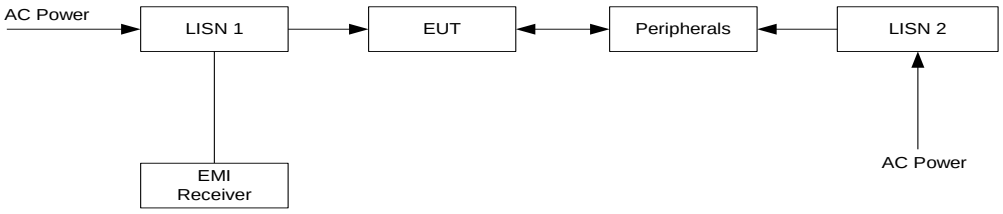
Control No.	Equipment	Manufacturer	Model No.	Serial No.	Next Cal.	Cal Int.
EMC004	EMI Test Receiver	R & S	ESR7	101560	2020.01.02	1Y
EMC007	Two-Line V-Network	R & S	ENV216	101982	2019.10.31	1Y

Operating Environment

Test Voltage: AC 120 V, 60 Hz

Test Setup and Procedure

Disturbance Voltage Test at Mains Terminal:



The EUT along with its peripherals were placed on a 0.8 m in height wooden table and the EUT was adjusted to maintain a 0.4 m space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN), which provided 50 characteristic coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. The excess power cable between the EUT and the LISN was bundled.

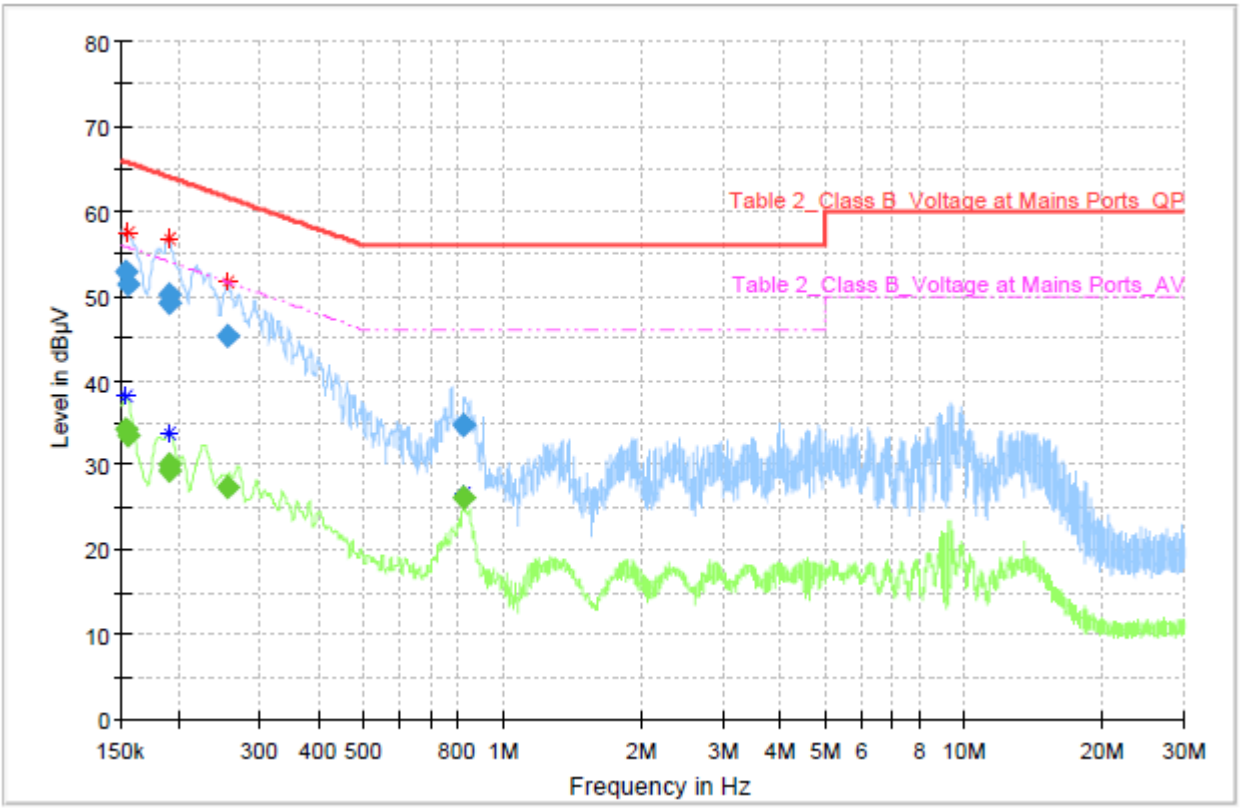
Limits

Frequency range (MHz)	Limits dB(µV)			
	Quasi-peak		Average	
	Class A	Class B	Class A	Class B
0.15 to 0.50	79	66 to 56	66	56 to 46
0.50 to 5	73	56	60	46
5 to 30		60		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 ~ 0.5) MHz.
Note 3) Result (dBµV) = Reading (dBµV) + Corr. (Insertion Loss (dB) + Cable Loss (dB))
Result: QuasiPeak/CAverage, Reading: Receiver reading value, Corr.: Correction Factor
Margin = Limit – Result

Test Data

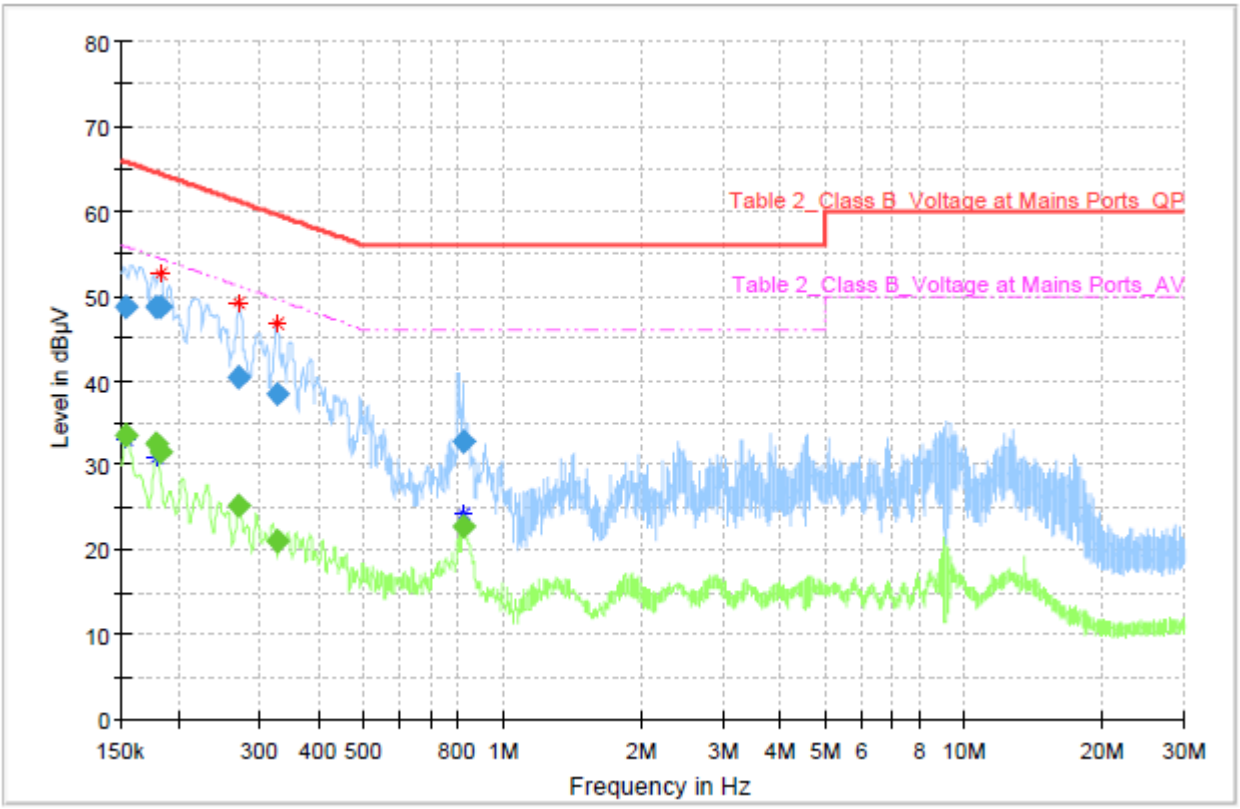
[Live]



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.152985	---	34.34	55.84	21.50	15000.0	9.000	L1	ON	10.0
0.152985	52.76	---	65.84	13.08	15000.0	9.000	L1	ON	10.0
0.154975	---	33.43	55.73	22.30	15000.0	9.000	L1	ON	10.0
0.154975	51.33	---	65.73	14.40	15000.0	9.000	L1	ON	10.0
0.189800	---	30.07	54.05	23.98	15000.0	9.000	L1	ON	10.1
0.189800	50.04	---	64.05	14.00	15000.0	9.000	L1	ON	10.1
0.190795	---	29.46	54.00	24.55	15000.0	9.000	L1	ON	10.1
0.190795	49.22	---	64.00	14.79	15000.0	9.000	L1	ON	10.1
0.255470	---	27.48	51.58	24.10	15000.0	9.000	L1	ON	9.9
0.255470	45.25	---	61.58	16.33	15000.0	9.000	L1	ON	9.9
0.828590	---	26.08	46.00	19.92	15000.0	9.000	L1	ON	10.1
0.828590	34.70	---	56.00	21.30	15000.0	9.000	L1	ON	10.1

[Neutral]

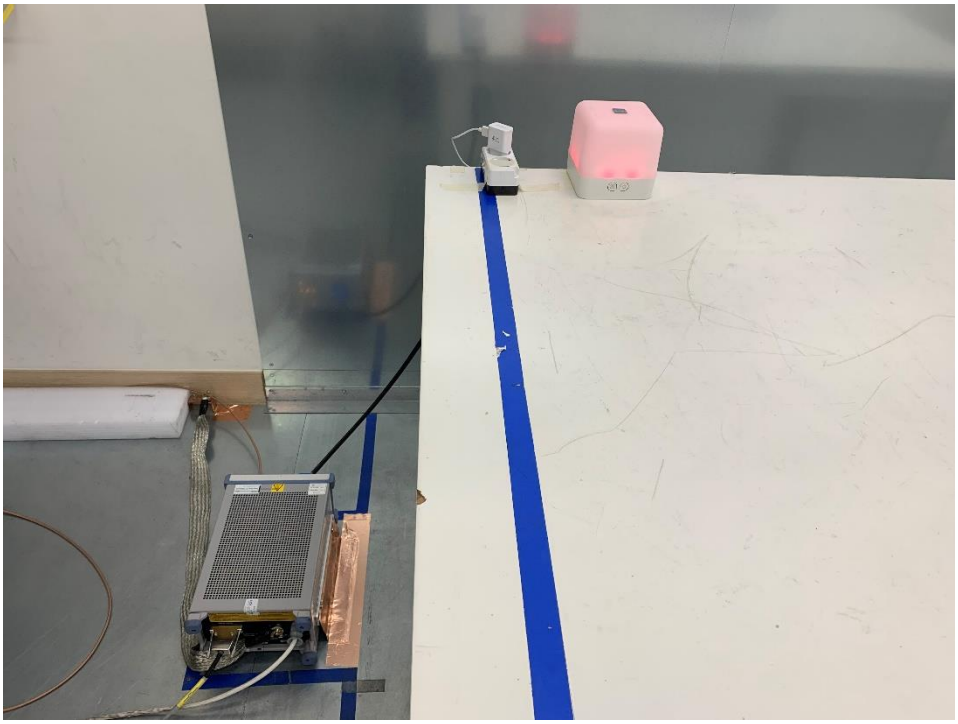


Final_Result

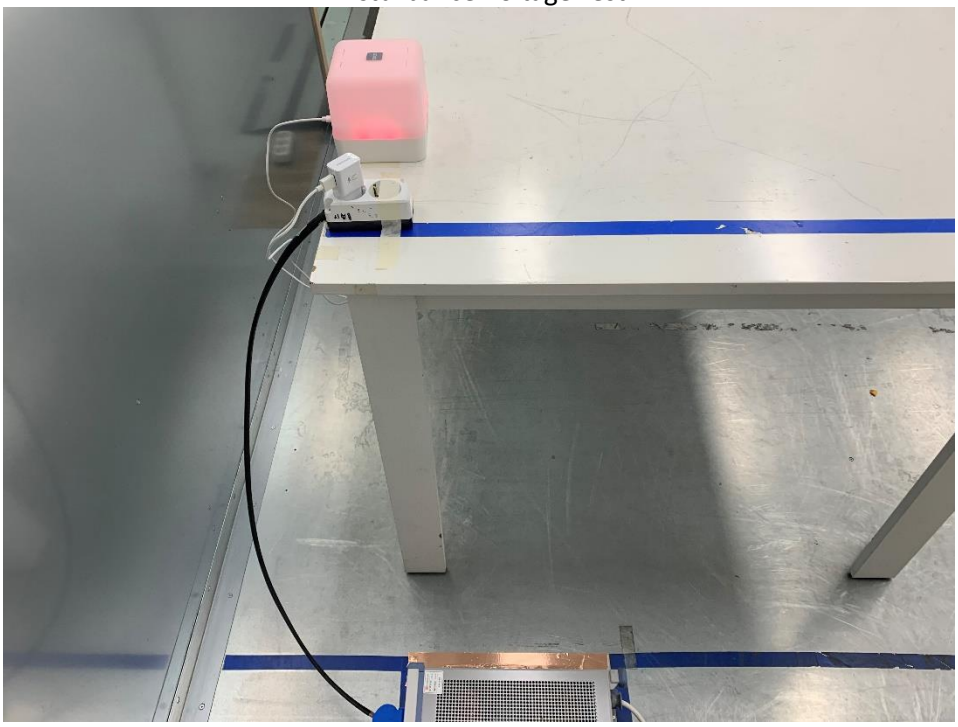
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.153980	---	33.42	55.78	22.36	15000.0	9.000	N	ON	10.0
0.153980	48.67	---	65.78	17.12	15000.0	9.000	N	ON	10.0
0.178855	---	32.51	54.54	22.03	15000.0	9.000	N	ON	10.1
0.178855	48.70	---	64.54	15.84	15000.0	9.000	N	ON	10.1
0.181840	---	31.56	54.40	22.84	15000.0	9.000	N	ON	10.1
0.181840	48.59	---	64.40	15.81	15000.0	9.000	N	ON	10.1
0.269400	---	25.18	51.14	25.96	15000.0	9.000	N	ON	10.0
0.269400	40.37	---	61.14	20.76	15000.0	9.000	N	ON	10.0
0.325120	---	21.09	49.58	28.49	15000.0	9.000	N	ON	10.1
0.325120	38.48	---	59.58	21.09	15000.0	9.000	N	ON	10.1
0.825605	---	22.79	46.00	23.21	15000.0	9.000	N	ON	10.1
0.825605	32.72	---	56.00	23.28	15000.0	9.000	N	ON	10.1

SECTION 7 APPENDIX I

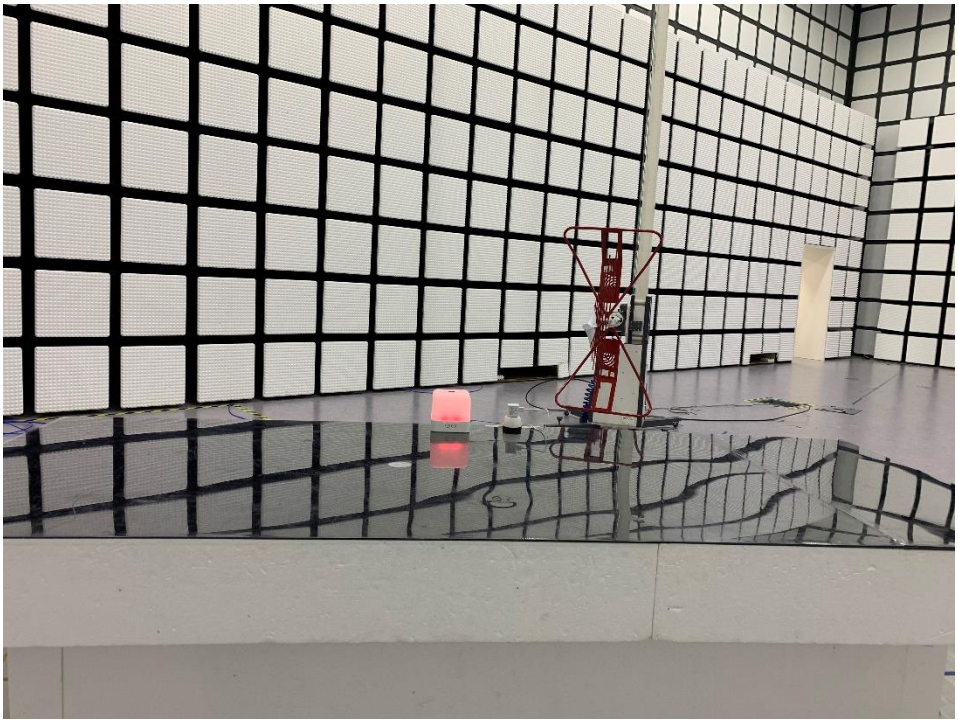
Photographs of Test Configurations



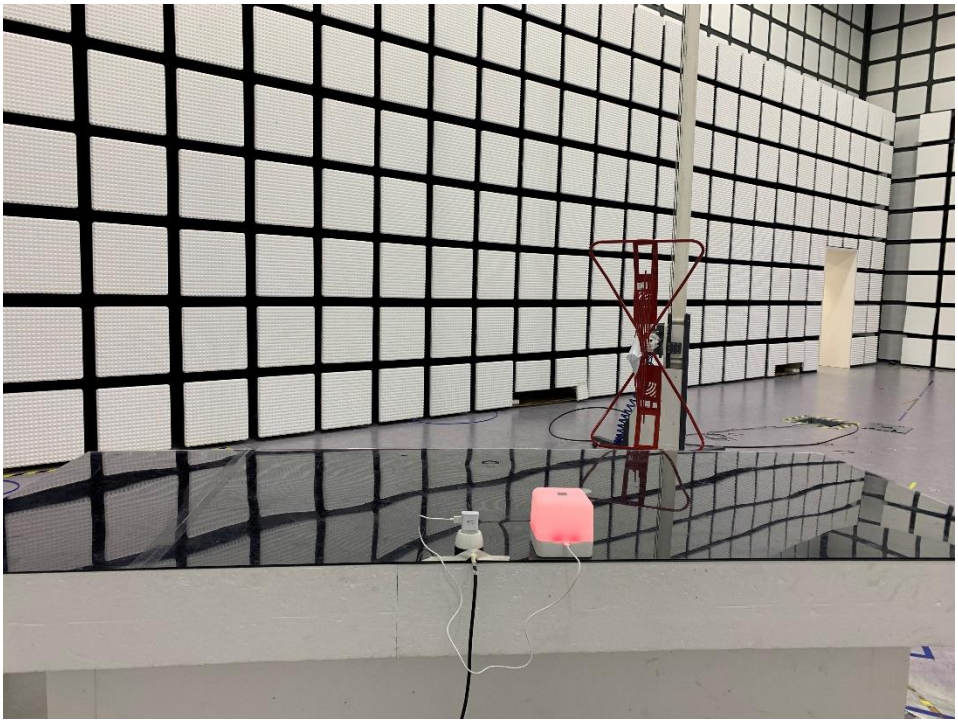
Disturbance Voltage Test



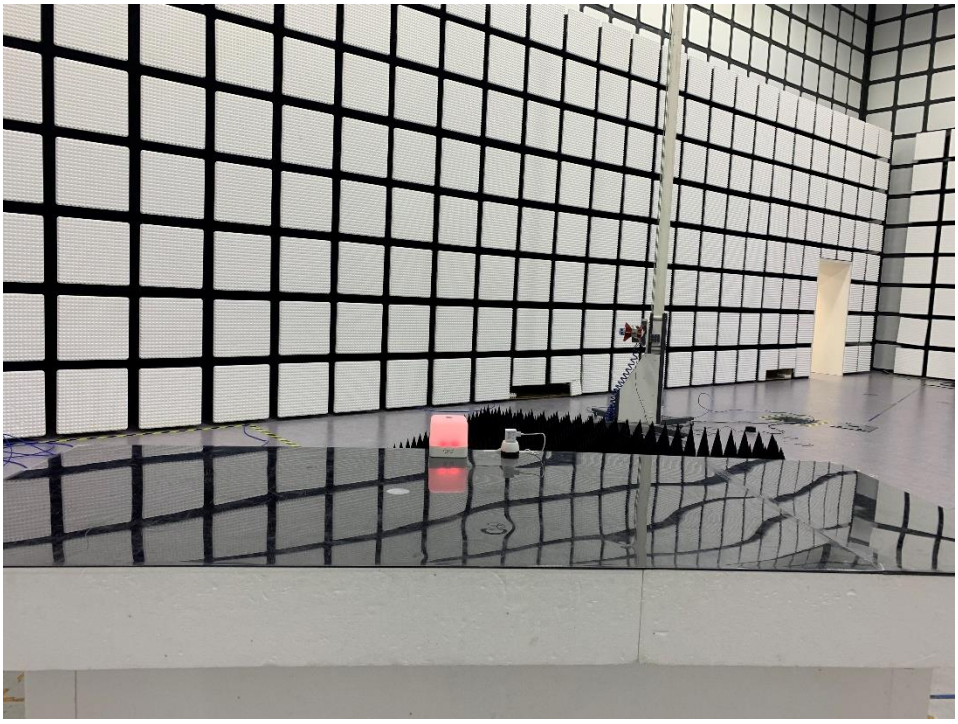
Disturbance Voltage Test



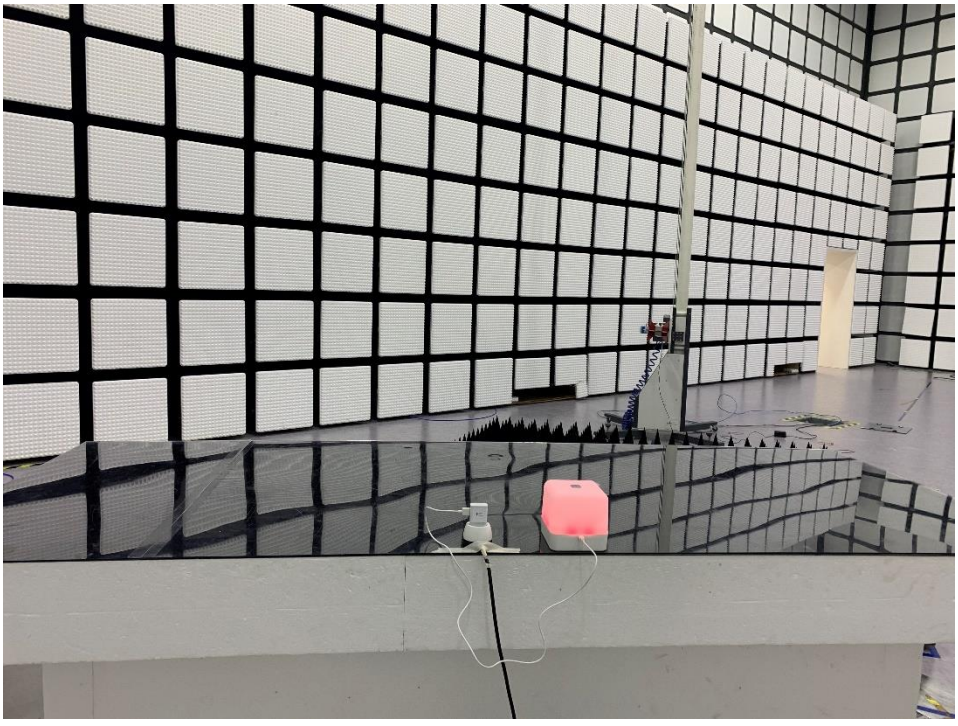
Radiated disturbance (Below 1 GHz)



Radiated disturbance (Below 1 GHz)



Radiated disturbance (Above 1 GHz)



Radiated disturbance (Above 1 GHz)

SECTION 8 APPENDIX II

Photographs of EUT

Front

Rear

SECTION 9 APPENDIX III

REVISION HISTORY

No.	Date	Description of Revision	Revised by
1	29 Sep. 20	It has been revised from the report number 190100082SEL-EMC1 as below. 1. The product name and model name have been changed. 2. The brand name has been added.	Rina Bae

- E N D -