

Test Report

Report No. : CE2023-00079(R1)

Company : CSE Co.,Ltd

Representative : Ei Jea, Sung

Address : 3Ra 814 Shiwa Industrial Complex, 11, Mayu-ro 118beon-gil, Siheung-si,
Gyeonggi-do, Republic of Korea (15110)

1. Product Name : FLEXIBLE AHA MAT
- Type and Model : AHA-MUSE1
2. Use of Report : Evaluation of EMC test
3. Date of Receipt : 2023-08-16
4. Date of test : 2023-08-16 ~ 2023-08-28
5. Testing Method : FCC 47 CFR Part 15 Subpart B
ANSI C 63.4-2014
6. Test Results : as stated in the annexed paper

Tested by : Seok Hyeon, Woo

Seok Hyeon, Woo

Approved by : Sung Ryul, Kim

Sung Ryul Kim

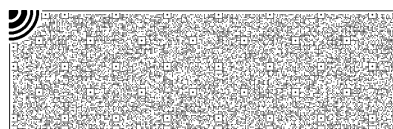
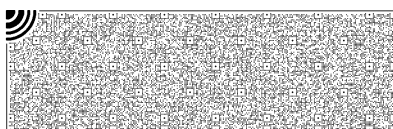
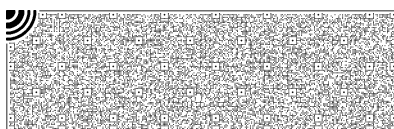
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2. This report should not be used for advertising, lawsuit, etc. without any official permission of KTC.
It is only used for the purpose of the quality test.
3. The authenticity of the report is available on the website (www.ktc.re.kr).

2023-09-12



Korea Testing Certification institute

www.ktc.re.kr [15809] 22 Heungan-daero27beon-gil, Gunpo-si, Gyeonggi-Do, Korea
TEL : +82-1899-7654, FAX : +82-31-428-2926

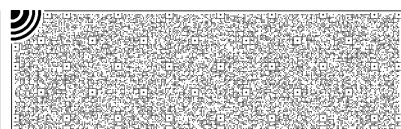
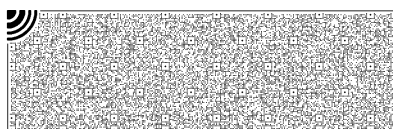
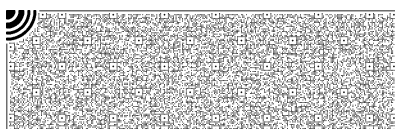


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1.0 Testing Program Details

Testing procedure and testing location	
Testing Laboratory	KTC (Korea Testing Certification)
Testing location / address	[15809] 22 Heungan-daero27beon-gil, Gunpo-si, Gyeonggi-Do, Republic of Korea
Tested by (name)	Seok Hyeon, Woo
Approved by (name)	Sung Ryul, Kim
Test item description	FLEXIBLE AHA MAT
Applicant	CSE Co.,Ltd
Applicant Address	3Ra 814 Shiwa Industrial Complex, 11, Mayu-ro 118beon-gil, Siheung-si, Gyeonggi-do, Republic of Korea (15110)
Manufacturer	CSE Co.,Ltd
Manufacturer Address	3Ra 814 Shiwa Industrial Complex, 11, Mayu-ro 118beon-gil, Siheung-si, Gyeonggi-do, Republic of Korea (15110)
Factory	CSE Co.,Ltd
Factory Address	3Ra 814 Shiwa Industrial Complex, 11, Mayu-ro 118beon-gil, Siheung-si, Gyeonggi-do, Republic of Korea (15110)
Model / Type reference	AHA-MUSE1
Ratings	3.7 Vdc
Clock frequencies	240 MHz
Hardware / Software version	H/W(V1.4) / S/W(V1.4)
FCC ID	2BCOG-AHAMUSE1
Test site MRA or registration number	KR0006



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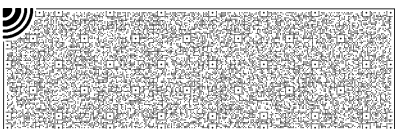
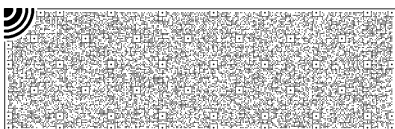
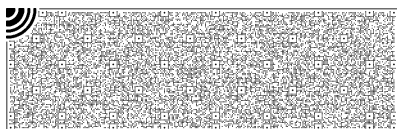
Possible test case verdicts	
- test case does not apply to test object	N/A
- test object does meet requirement	P (Pass)
- test object does not meet requirement	F (Fail)
Testing	
Date of receipt of test item	2023-08-16
Date(s) of performance of tests	2023-08-16 ~ 2023-08-28

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

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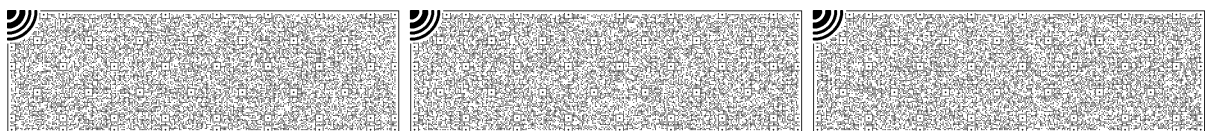
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1.1 Applicant Information

Name	CSE Co.,Ltd
Address	3Ra 814 Shiwa Industrial Complex, 11, Mayu-ro 118beon-gil, Siheung-si, Gyeonggi-do, Republic of Korea (15110)

1.2 Supporting Equipment Used During Test

Use	Product Type	Manufacturer	Model	Comments
EUT	BIO VAULT	ECOCAR.Inc	BV22-001R1A	-
AE	AC/DC Adapter	Shenzhen Flypower Technology Co.,Ltd	PS10J050K2000KD	-

Supplementary information: EUT = Equipment Under Test, AE = Auxiliary / Associated Equipment, SIM = Simulator (Not Subjected to Test).

1.3 Input / Output Ports

Port No.	Name	Type	Cable Max. > 3 m	Cable Shielded	Comments
1	Power port	AC	1.2	N	AC/DC Adapter Input

Supplementary information: AC = AC Power Port, DC = DC Power Port, N/E = Non-Electrical, TP = Telecommunication Ports, I/O = Signal Input or Output Port (Not Involved in Process Control).

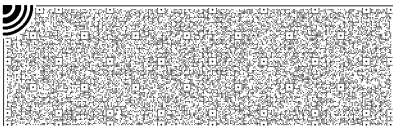
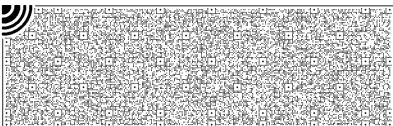
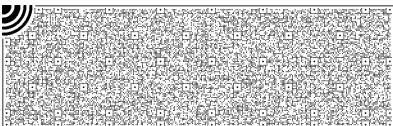
1.4 Power Interface

Mode No.	Voltage (V)	Current (A)	Power (W)	Frequency (Hz)	Phases (No.)	Comments
1	120	-	-	60	1	-
2	3.7 Vdc	-	-	-	-	-

Supplementary information : -

1.5 EUT Operation Modes

Mode No.	Description
1	Operating Mode



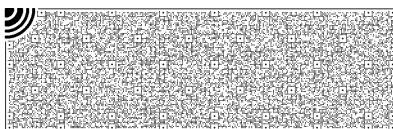
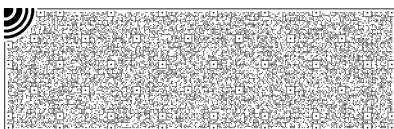
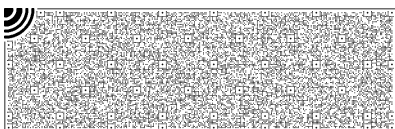
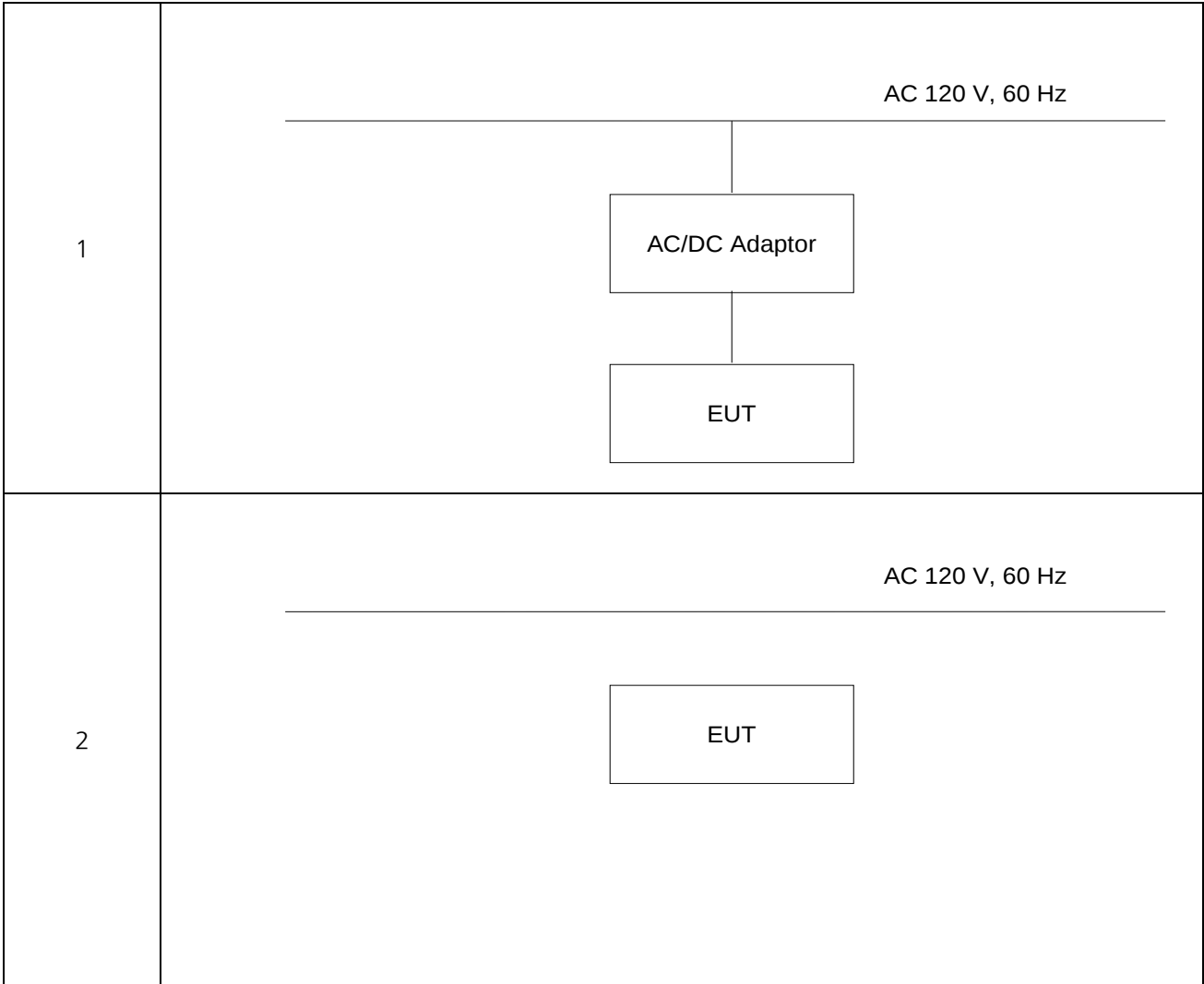
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1.6 EUT Configuration Modes

Mode No.	Description
1	The EUT was operated with connected AC/DC Adaptor.
2	The EUT was operated with own battery.

1.7 Test System Layout



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1.8 Applicable Standards for Testing

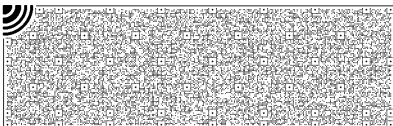
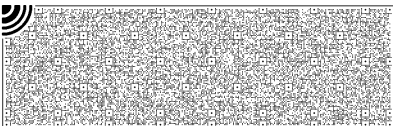
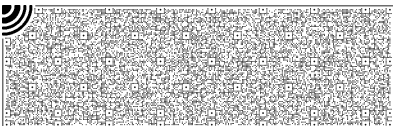
Standards	Status	Deviation
FCC 47 CFR Part 15 Subpart B ANSI C 63.4-2014	Applicable	No Deviation

1.9 Summary of Test Results

Requirement - Test	Result	Remark
Conducted Emission	Pass	
Radiated Emissions(Below 1GHz)	Pass	
Radiated Emissions(Above 1GHz)	Pass	

1.10 Series Models

-



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2.1 Conducted Emission

The initial preliminary exploratory scans were performed over the measuring frequency range(0.15 MHz to 30 MHz) using a max hold mode incorporating a Peak detector and Average detector and using the software of EP5/CE (Version 5.4.12 from TOYO). The final test data was measured using a Quasi-Peak detector and Average detector.

2.1.1 Limits of radiated emission measurement

Frequency Range	Limits (dB(μ V))		Class
	Quasi-peak	Average	
0.15 MHz ~ 0.5 MHz	66 ~ 56	56 ~ 46	Class B
0.5 MHz ~ 5 MHz	56	46	
5 MHz ~ 30 MHz	60	50	

2.1.2 Environment Conditions

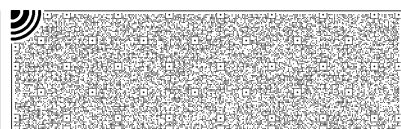
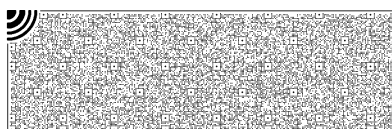
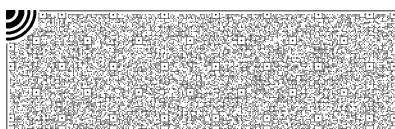
Temperature : 22 °C
Humidity : 46 %R.H.
Atmospheric Pressure : 101.2 kPa

2.1.3 Test Site

EMI Test Room 1 in KTC Laboratory

2.1.4 Test Equipment

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	N9038A	Agilent	MY51100116	2023-07-12	2024-07-12
LISN	ENV4200	Rohde & Schwarz	100212	2022-10-13	2023-10-13

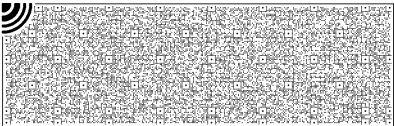
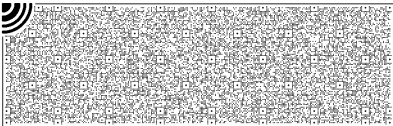
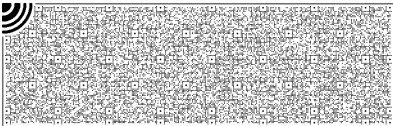
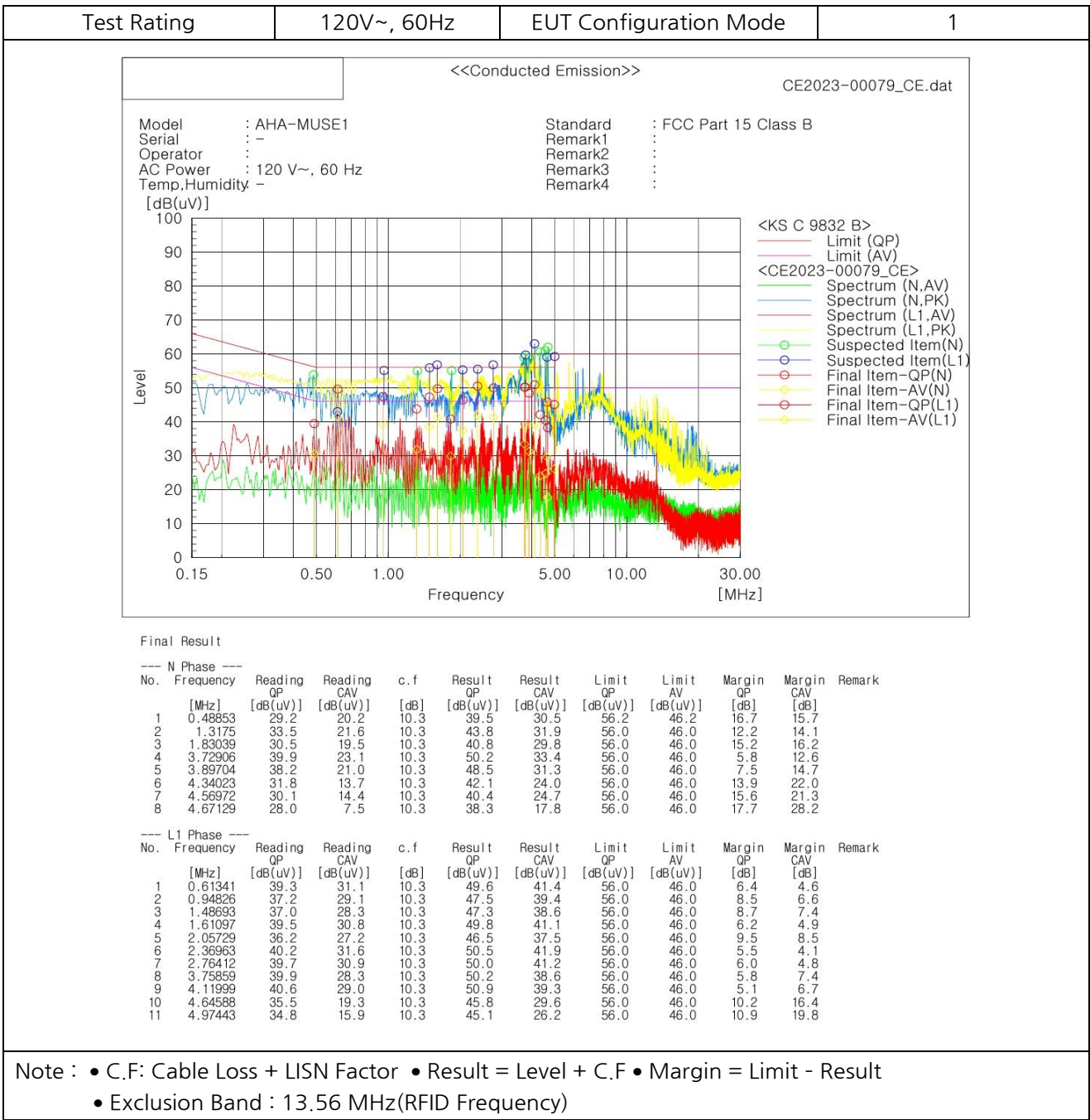


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2.1.5 Test Results

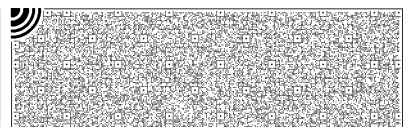
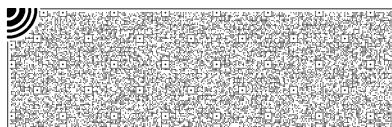
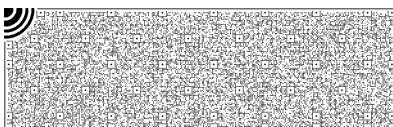
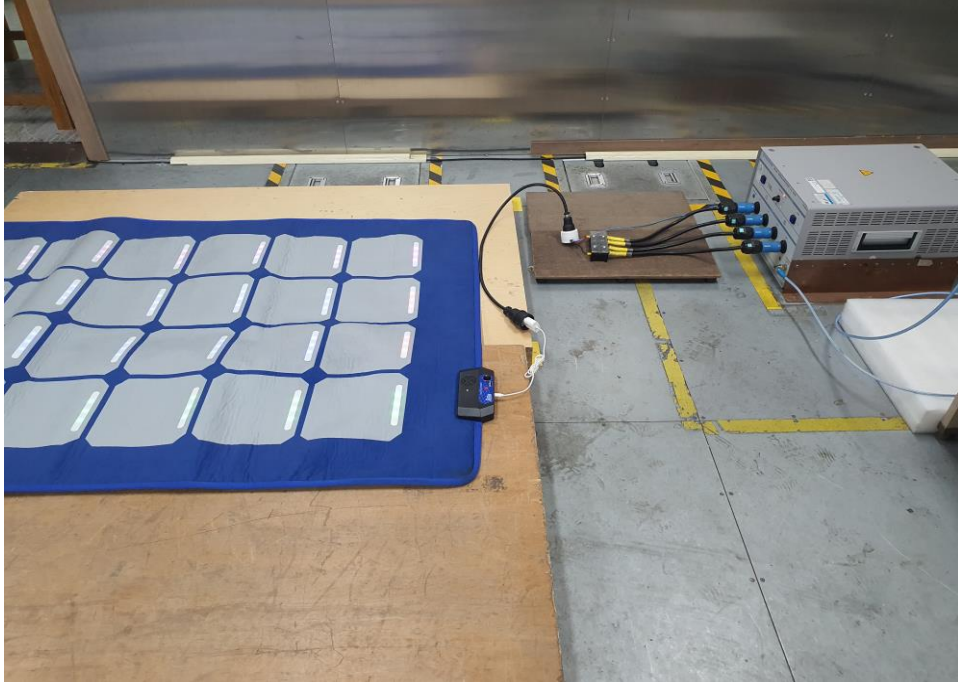
Test Date : 2023.08.24



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2.1.6 Photographs of test setup



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2.2 Radiated Emission

The initial preliminary exploratory scans were performed over the measuring frequency range(30 MHz to 6 GHz) using a max hold mode incorporating a Peak detector and using the software of Radiated Emission Measurement Software EP5/RE(Version 6.0.10 from TOYO). The final test data was measured using a Quasi-Peak detector below 1 GHz and a Peak and Average detector above 1 GHz. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

2.2.1 Limits of radiated emission measurement

- Below 1 GHz

Frequency Range [MHz]	Limits ($\mu\text{V}/\text{m}$)	Measuring Distance
	Quasi-peak	
30 ~ 88	100	Class B 3 m
88 ~ 216	150	
216 ~ 960	200	
960 ~ 1 000	500	

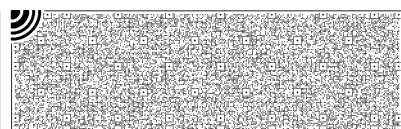
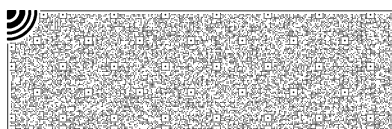
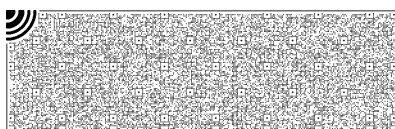
- Above 1 GHz

Frequency Range [GHz]	Detector type	Limits ($\mu\text{V}/\text{m}$)	Measuring Distance
1 ~ 6	Average	54	Class B 3m
1 ~ 6	Peak	74	

2.2.2 Environment Conditions

- Below 1 GHz

Temperature : 22 °C
Humidity : 47 %R.H.
Atmospheric Pressure : 101.3 kPa



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- Above 1 GHz

Temperature : 23 ℃
Humidity : 47 %R.H.
Atmospheric Pressure : 101.3 kPa

2.2.3 Test Site

10 m Semi-Anechoic Chamber in KTC Laboratory

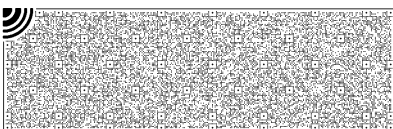
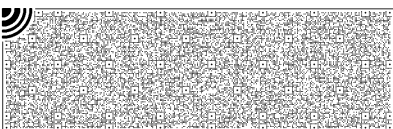
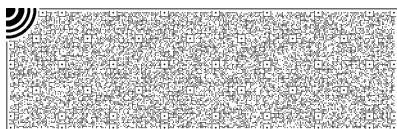
2.2.4 Test Equipment

- Below 1GHz

Description	Model	Manufacturer	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	ESR 7	Rohde & Schwarz	101368	2023-07-14	2024-07-14
Pre Amplifier	310N	SONOMA	340214	2023-01-04	2024-01-04
Bilog Antenna	VULB9168	Schwarzbeck	1043	2023-08-21	2025-08-21
Antenna Master	innco systems	MA 4640-XP-ET-0800	7150519	-	-
Turn Table	innco systems	DT3000-3t	-	-	-

- Above 1 GHz

Description	Model	Manufacturer	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	ESR 7	Rohde & Schwarz	101368	2023-07-14	2024-07-14
RF Amplifier	SCU-18	Rohde & Schwarz	10142	2023-07-14	2024-07-14
Horn Antenna	HF907	Rohde & Schwarz	102641	2023-03-17	2024-03-17
Antenna Master	AM2.0	Maturo GmbH	-	-	-
Turn Table	DT3000-3t	innco systems	-	-	-



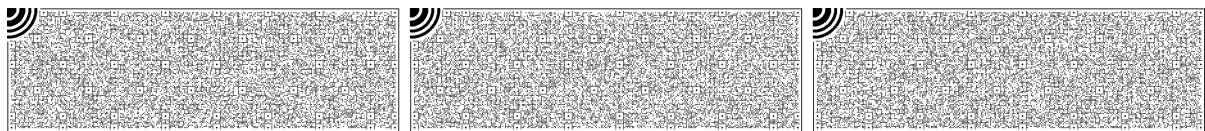
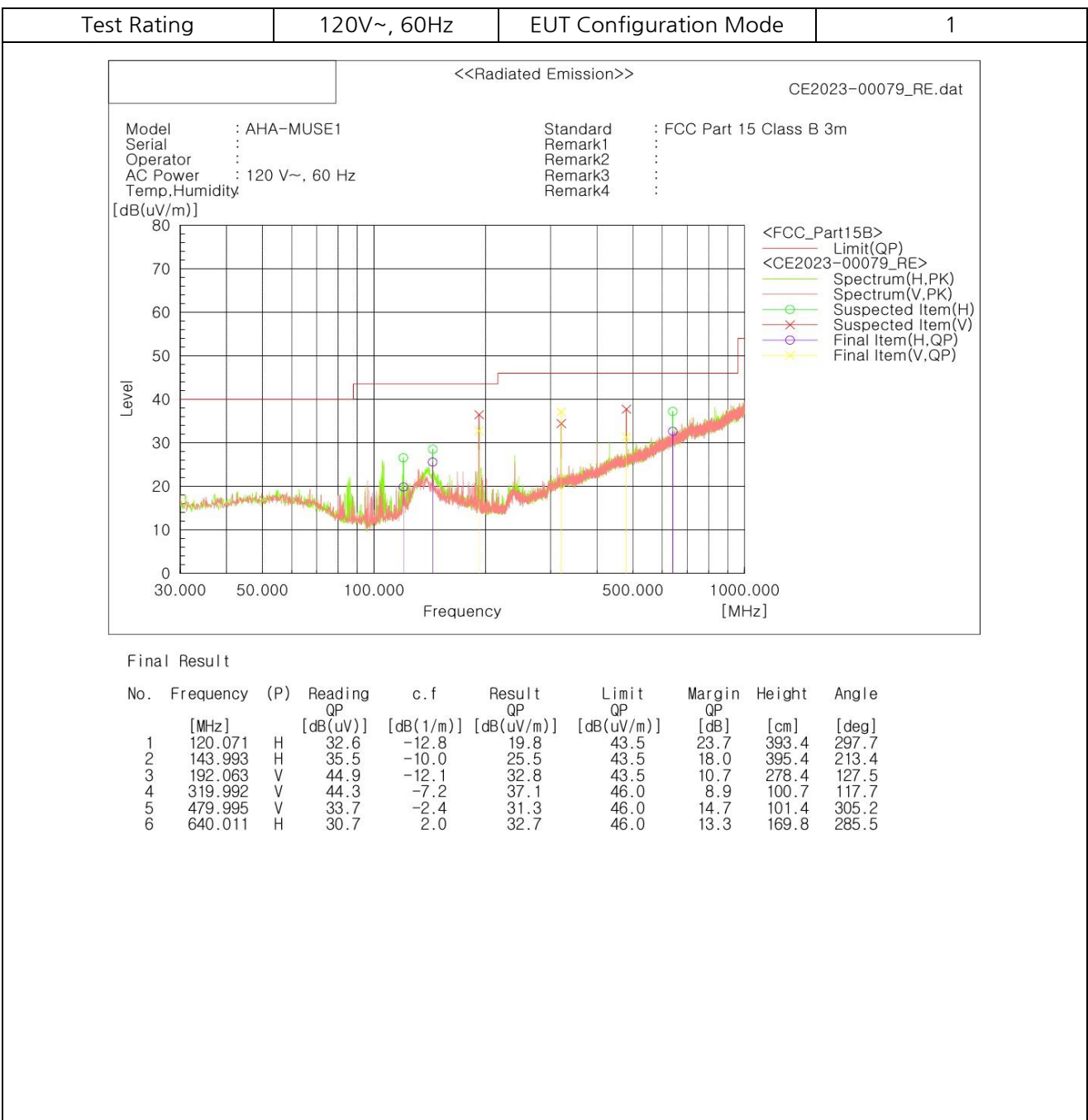
Test Result

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2.2.5 Test Results

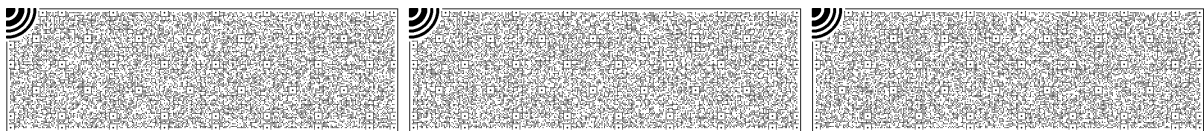
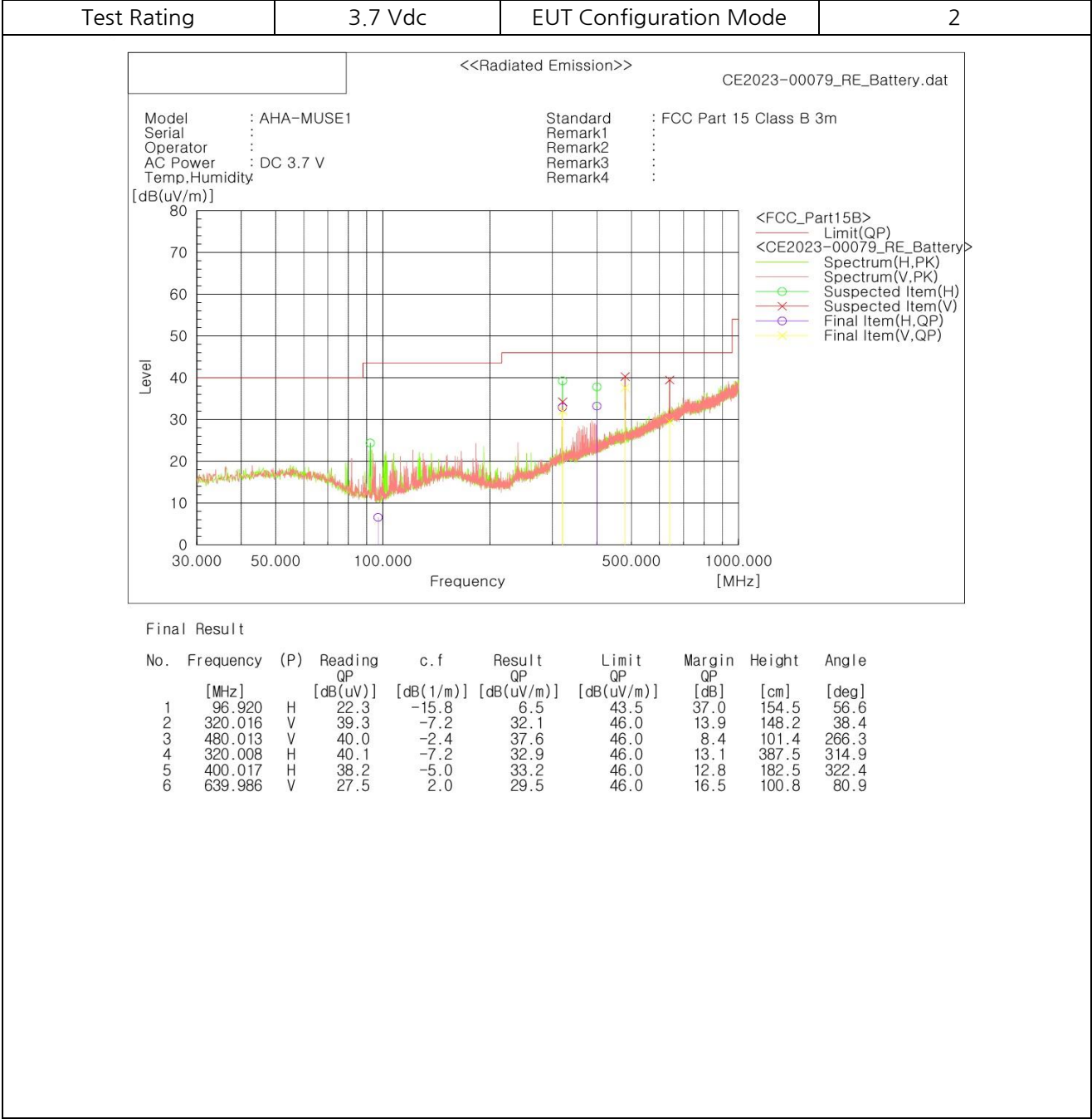
- Below 1GHz

Test Date : 2023. 08. 22



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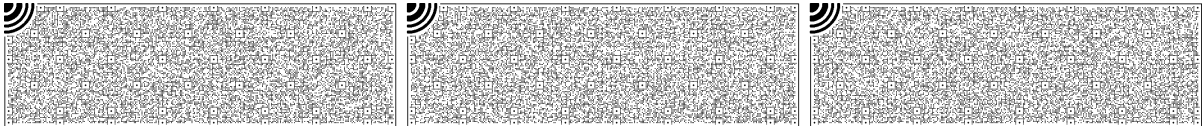
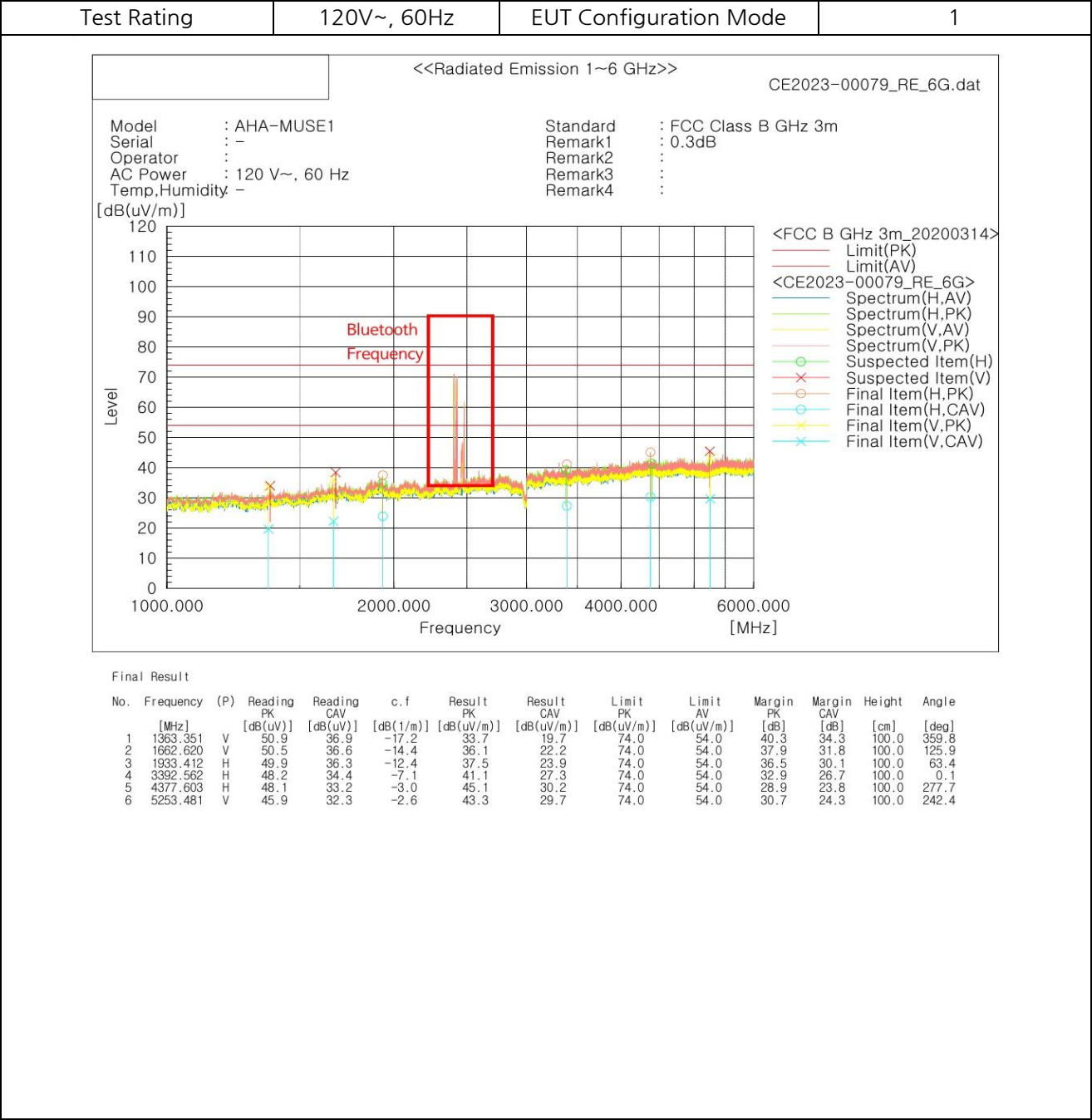


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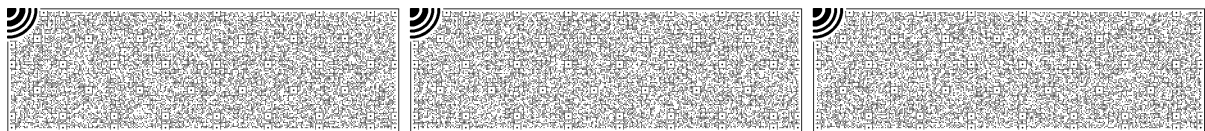
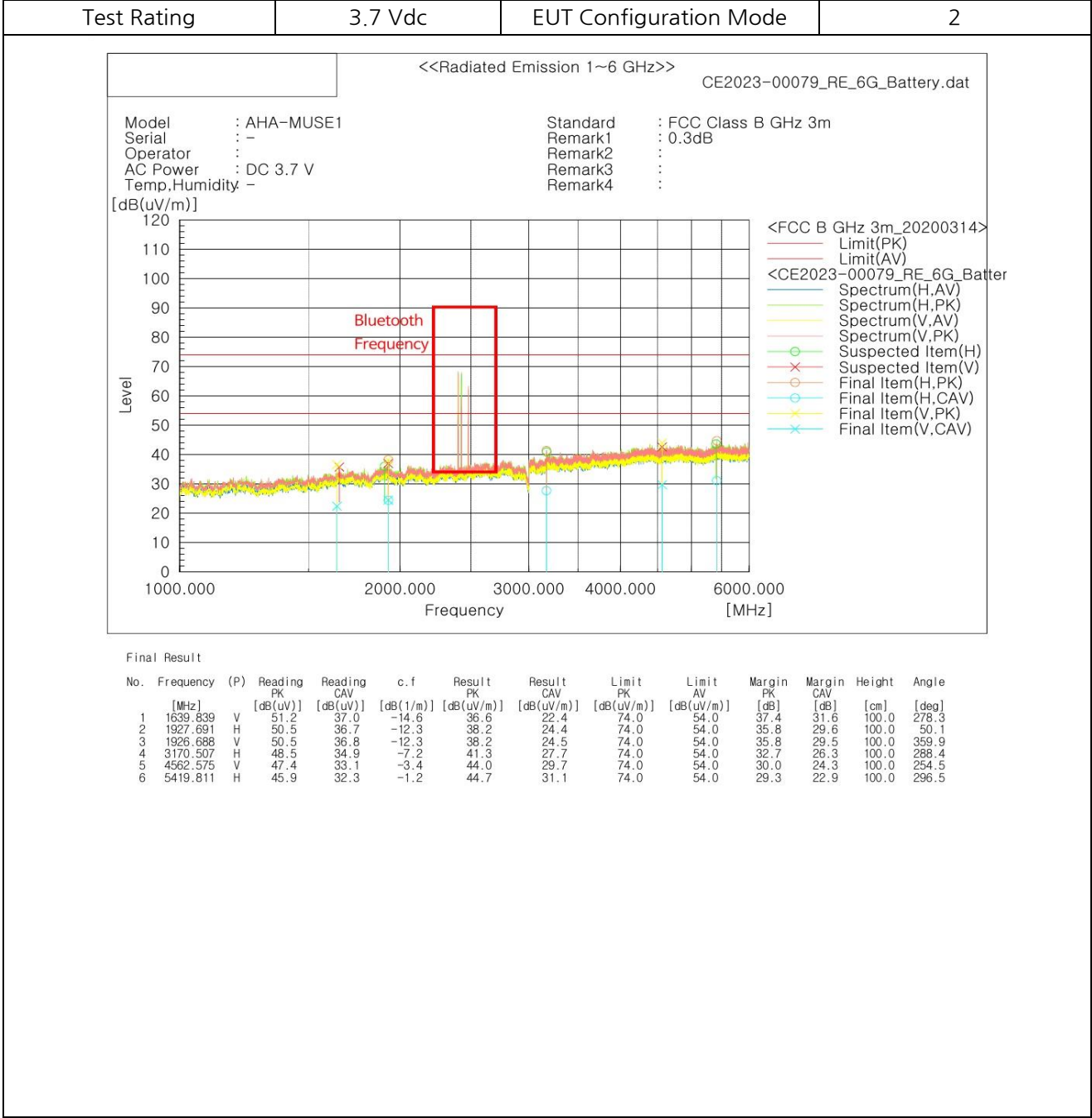
- Above 1GHz

Test Date : 2023. 08. 23



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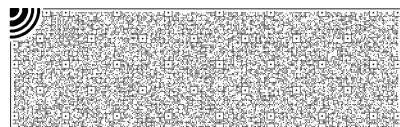
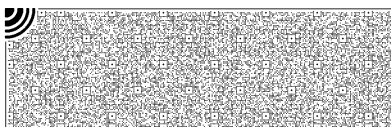
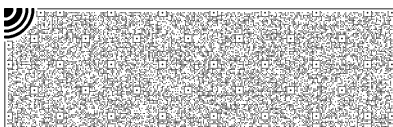
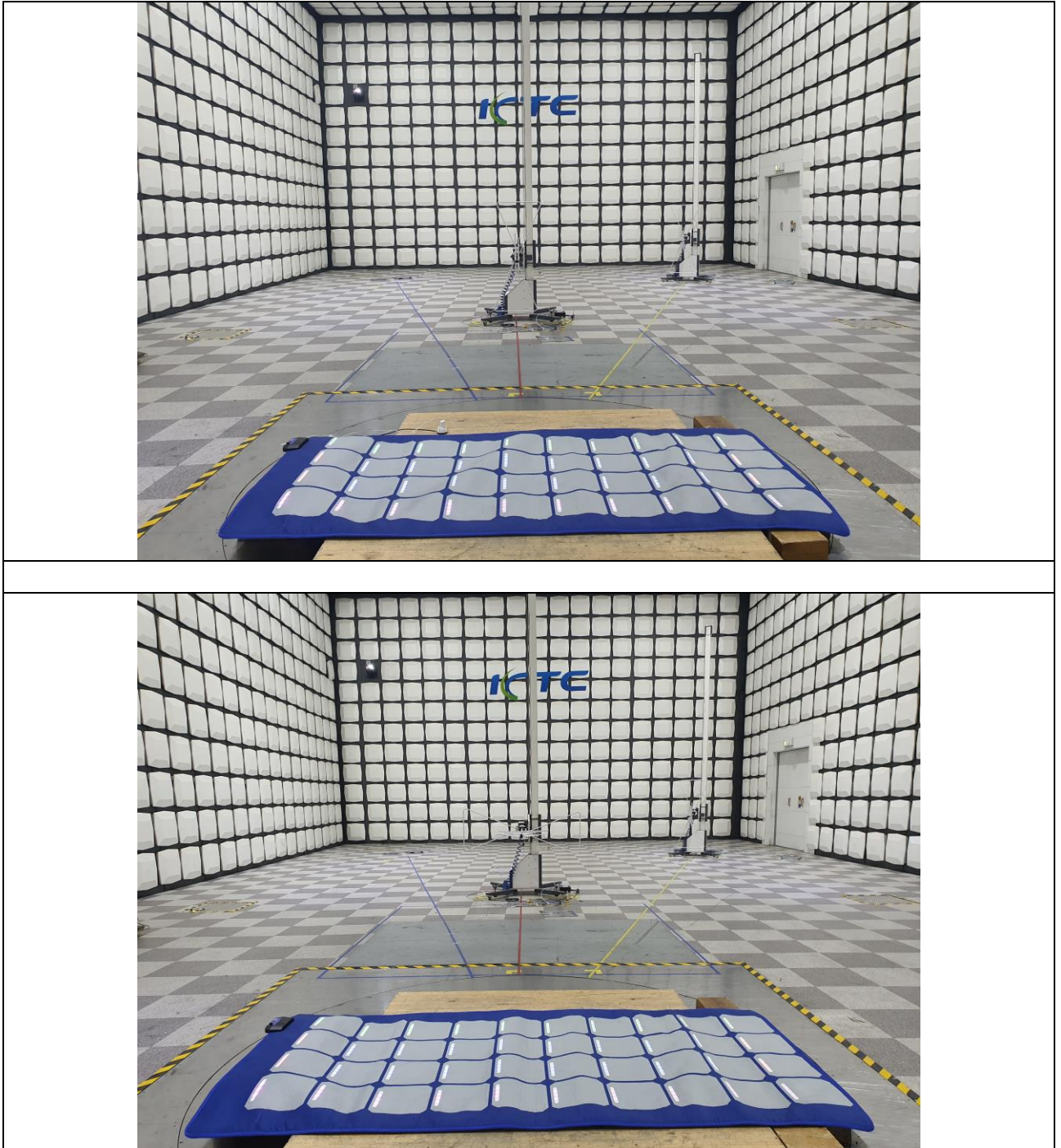


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2.2.6 Photographs of test setup

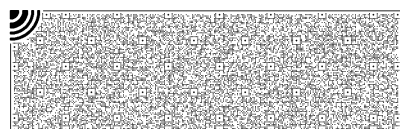
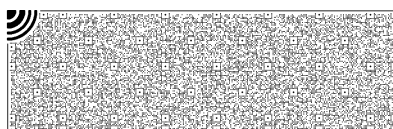
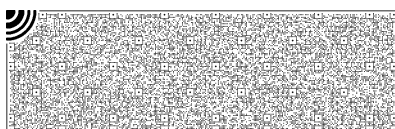
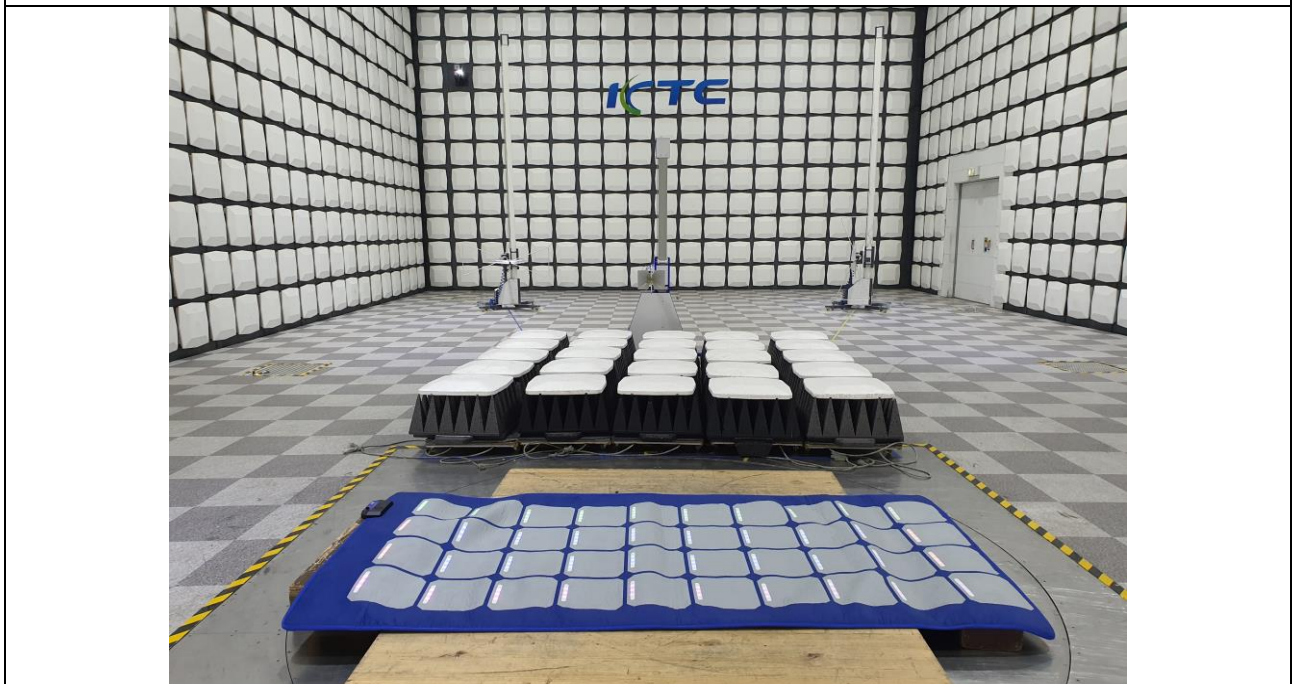
- Below 1GHz



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- Above 1GHz



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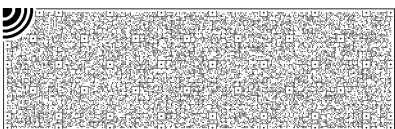
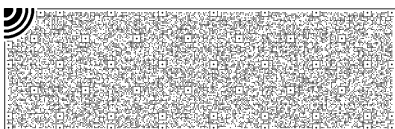
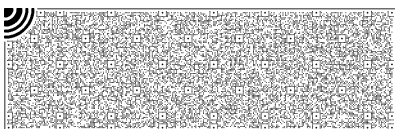
Report No. : CE2023-00079(R1)

3.1 Photographs of EUT

Top Side



Controller



Test Result

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AC / DC Adaptor



End.

