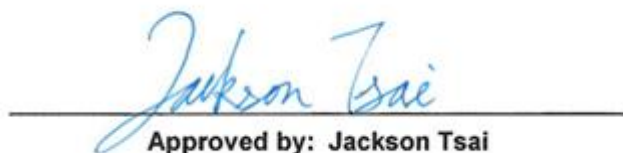


FCC TEST REPORT

FCC ID : AZ489FT7173
Equipment : WM800
Brand Name : Motorola
Model Name : PMMN4156A
Applicant : Motorola Solutions, Inc.
8000 West Sunrise Blvd
Ft Lauderdale, FL 33322
United States
Manufacturer : Motorola Solutions Malaysia Sdn. Bhd.
Plot 2A, Medan Bayan Lepas
Bayan Lepas Technoplex Industrial Park,
Mukim 12, S.W.D. 11900 Bayan Lepas, Malaysia.
Standard : 47 CFR FCC Part 15.209

The product was received on Aug. 11, 2023, and testing was started from Aug, 15. 2023 and completed on Aug, 15. 2023. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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


Approved by: Jackson Tsai

SPORTON INTERNATIONAL INC. Hsinhua Laboratory

No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)



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TEL : 886-3-327-3456
FAX : 886-3-327-0973
Report Template No.: HE1-C4 Ver4.0
FCC ID: AZ489FT7173

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
-	15.207	AC Power-line Conducted Emissions	Not Required	Only employ battery power.
3.1	15.209	Transmitter Radiated Emissions	PASS	[dBuV/m at 3m]: 47.46MHz 34.95 (Margin 5.05dB) - PK
3.2	15.215(c)	Emission Bandwidth	PASS	-

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: Ryan Hsiao

Report Producer: Amber Chiu

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information				
Modulation	Ch. Frequency (kHz)	Channel Number	Emission Designator	Field Strength (dBuV/m)
ASK	125	1	4K81A1D	61.87
Note 1: Field strength performed peak level at 1m.				

1.1.2 Antenna Information

No.	Brand	Model Name	Ant. Cat.	Ant. Type
1	coilcraft	CP-H0114-C	Integral	transponder coil

1.1.3 Type of EUT

Operational Condition	
EUT Power Type	From Battery
Type of EUT	
☒	Stand-alone
☐	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.:
☐	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.:
☐	Other:

1.1.4 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle	
☐	Operated normal mode for worst duty cycle
☒	Operated test mode for worst duty cycle
Test Signal Duty Cycle (x)	
☒	100.00%

1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF:

- KDB 414788 D01 v01r01

1.3 Testing Location Information

Test Lab. : Sporton International Inc. Hsinhua Laboratory				
☒ Hsinhua (TAF: 3785)	ADD: No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.) TEL: 886-3-327-3456 FAX: 886-3-327-0973			
Test site Designation No. TW3785 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-HY	Luby hsu	22.2~23.4°C / 50~51%	15/Aug/2023
Radiated	03CH02-HY	Vasari Huang	23.4~24.1°C / 52~54%	15/Aug/2023
☐ Wen 33rd.St. (TAF: 3785)	ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: 886-3-318-0787 FAX: 886-3-318-0287			
Test site Designation No. TW0008 with FCC.				

1.4 Measurement Uncertainty

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))

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	0.9 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.7 dB	Confidence levels of 95%
Conducted Emission	1.0 dB	Confidence levels of 95%
Temperature	0.41 °C	Confidence levels of 95%
Humidity	3.4 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Condition

Condition Item	Abbreviation/Remark	Remark
TnomVnom	Tnom	20°C
	Vnom	3.88V

2.2 The Worst Case Modulation Configuration

Transmitter Mode	Test Channel Frequencies(kHz)	Field Strength (dBuV/m@1m)	Field Strength (dBuV/m@3m)
SRD	125	61.87	42.79

2.3 The Worst Case Measurement Configuration

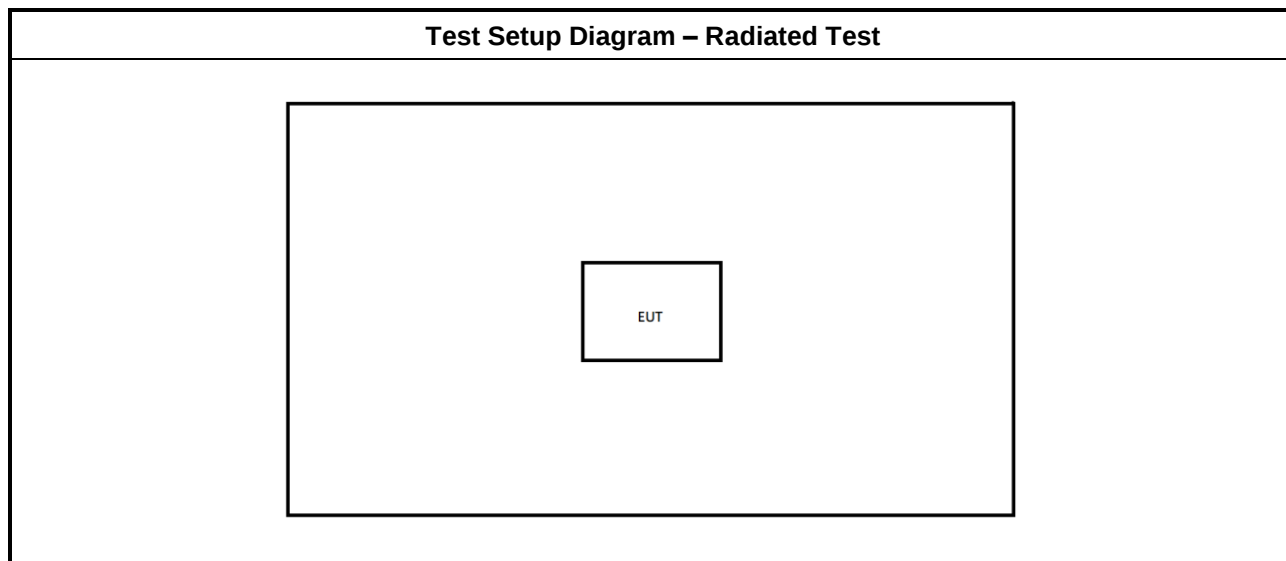
The Worst Case Mode for Following Conformance Tests			
Tests Item	Emission Bandwidth, Field Strength of Fundamental Emissions Transmitter Radiated Unwanted Emissions		
Test Condition	Radiated measurement		
User Position	☐ EUT will be placed in fixed position.		
	☐ EUT will be placed in mobile position and operating multiple positions. EUT shall be performed three orthogonal planes.		
	☒ EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions.		
Operating Mode	CTX		
1	Battery Mode		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT		V	

2.4 Accessory

Accessories Information				
Battery	Brand Name	Motorola	Model Name	PMNN4846A
	Power Rating	3.88 Vdc, 2150 mAh	Type	LITHIUM ION

Reminder: Regarding to more detail and other information, please refer to user manual.

2.5 Test Setup Diagram



3 Transmitter Test Result

3.1 Transmitter Radiated Emissions

3.1.1 Transmitter Radiated Emissions Limit

Transmitter Radiated Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: the frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 1GHz measurements employing a CISPR quasi-peak detector.

3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

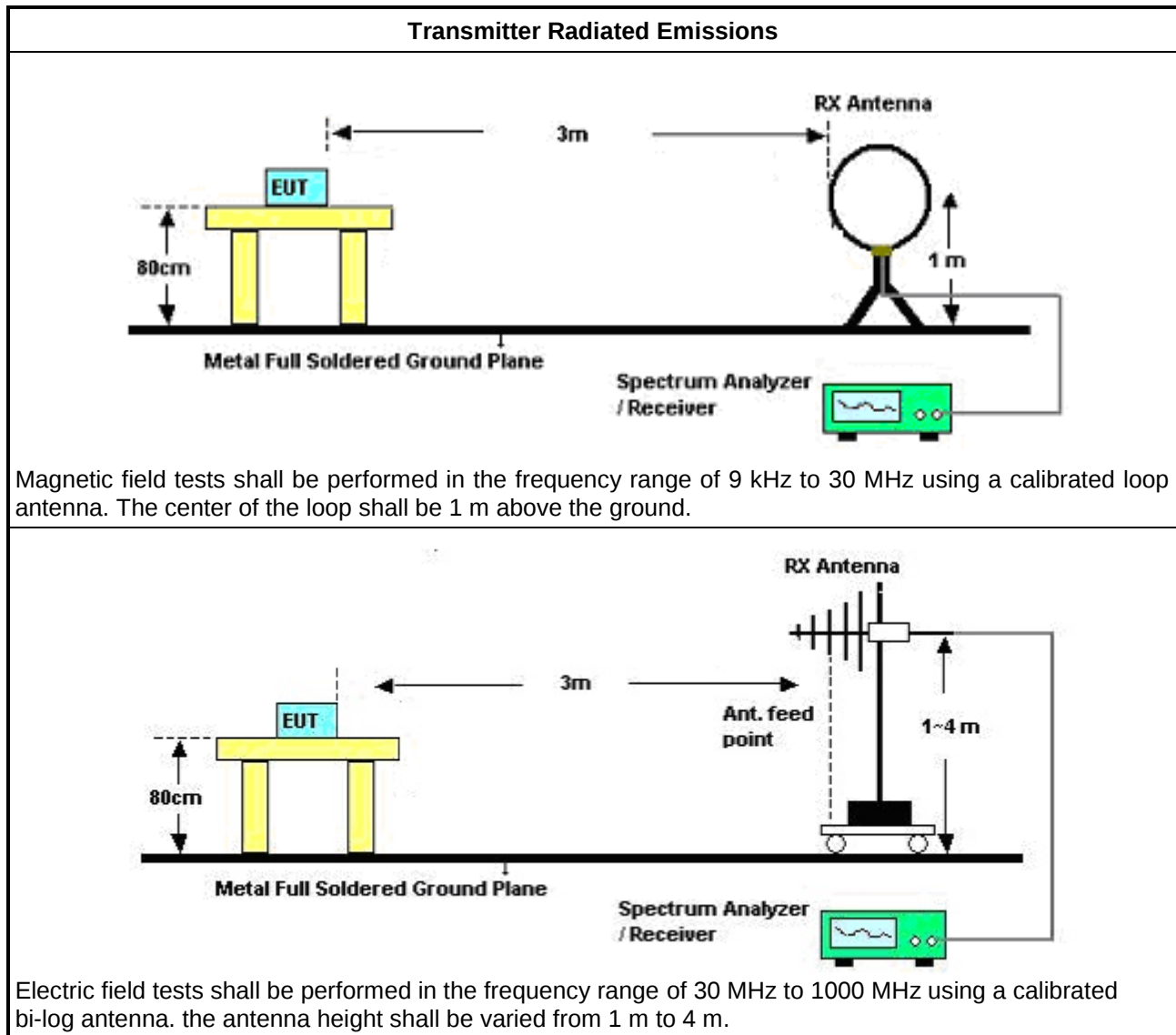
Test Method	
☒	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1 GHz and test distance is 3m.
☒	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz. The frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 30MHz measurements employing a CISPR quasi-peak detector. Test distance is 3m.
☒	At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the requirements; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be following below methods. Note: If fundamental emission level is smaller than noise at 3m, we will change distance to 1m.
☐	The results shall be extrapolated to the specified distance by making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor.
☒	The results shall be by using the square of an inverse linear distance extrapolation factor (40 dB/decade).
☒	For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level.
☒	The any unwanted emissions level shall not exceed the fundamental emission level.
☒	All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.
☒	KDB 414788 Open-Field Test Sites and Chamber Correlation Justification.
☐	Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in regulations; however, an attempt should be made to avoid making measurements in the near field.
☐	Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

3.1.4 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamplifier Factor)

3.1.5 Test Setup



3.1.6 Test Result of Transmitter Radiated Emissions (Below 30MHz)

Refer as Appendix A

3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

Emission Bandwidth Limit
N/A

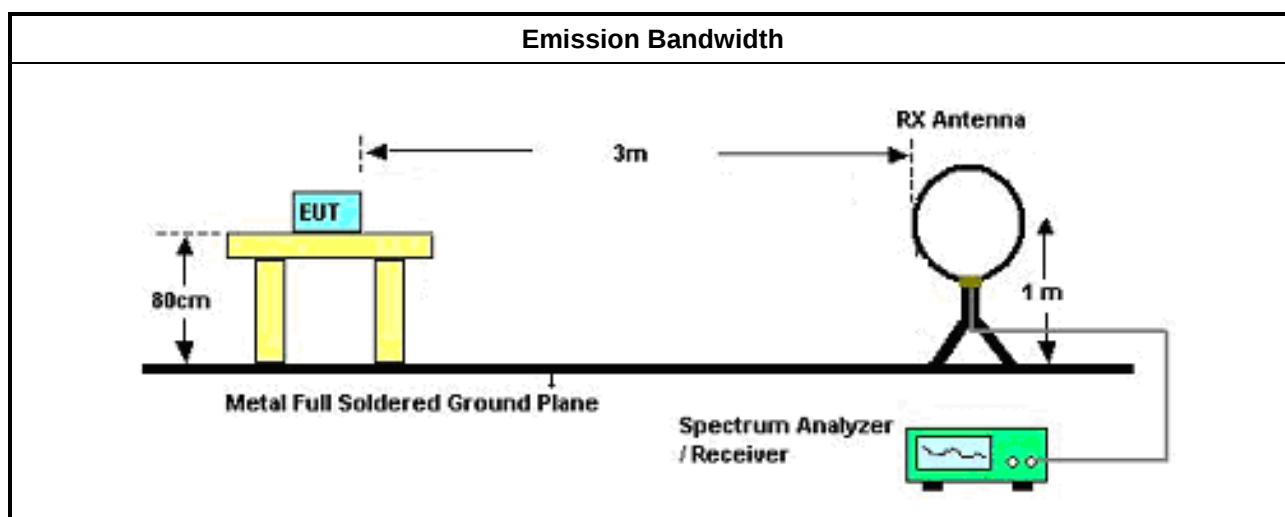
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method
☒ Because the measured signal is CW or CW-like adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.
☒ For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level.

3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

4 Test Equipment and Calibration Data

Instrument for Conducted Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV 40	101013	10Hz~40GHz	10/Apr/2023	09/Apr/2024
SENSE-NFC	Sporton	V5.11.0	N/A	N/A	N/A	N/A

Instrument for Radiated Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz~1GHz 3m	29/Jul/2023	28/Jul/2024
Amplifier	Agilent	8447D	2944A11149	100kHz~1.3GHz	27/Jun/2023	26/Jun/2024
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz~1GHz	28/Aug/2022	27/Aug/2023
RF Cable	MVE	400LL+SN 200207	03CH02-cable-02	9kHz~30MHz	20/Dec/2022	19/Dec/2023
RF Cable	MVE	400LL+SN 200207	03CH02-cable-02	30MHz~1GHz	20/Dec/2022	19/Dec/2023
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	23/Mar/2023	22/Mar/2024
EMI Test Receiver	R&S	ESR3	102052	9kHz~3.6GHz	26/May/2023	25/May/2024
Signal Analyzer	R&S	FSP 40	100305	9kHz~40GHz	25/Mar/2023	24/Mar/2024
SENSE-303417	Sporton	V5.10.7	N/A	N/A	N/A	N/A



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
SRD	-	-	-	-	-	-	-	-	-	-	-
SRD	Pass	PK	5.105M	31.08	88.63	-57.55	21.02	1	Vertical	0	1.00



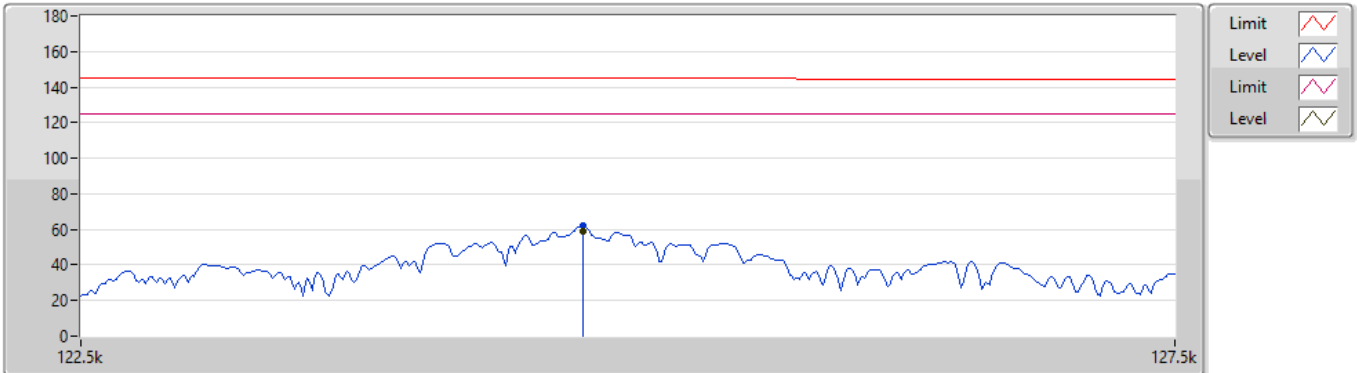
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
SRD	-	-	-	-	-	-	-	-	-	-	-
0.125MHz_Battery	Pass	AV	124.77k	59.05	124.76	-65.71	19.89	1	Vertical	135	1.00
0.125MHz_Battery	Pass	PK	124.77k	61.87	144.76	-82.89	19.89	1	Vertical	135	1.00
0.125MHz_Battery	Pass	PK	9.846k	35.54	166.82	-131.28	18.63	1	Vertical	360	1.00
0.125MHz_Battery	Pass	PK	34.098k	39.09	156.02	-116.93	20.81	1	Vertical	360	1.00
0.125MHz_Battery	Pass	PK	43.122k	41.02	153.98	-112.96	20.46	1	Vertical	360	1.00
0.125MHz_Battery	Pass	PK	490k	30.34	132.89	-102.55	20.54	1	Vertical	0	1.00
0.125MHz_Battery	Pass	PK	866.4k	29.44	87.93	-58.49	20.32	1	Vertical	0	1.00
0.125MHz_Battery	Pass	PK	5.105M	31.08	88.63	-57.55	21.02	1	Vertical	0	1.00

SRD

15/08/2023

0.125MHz_Battery

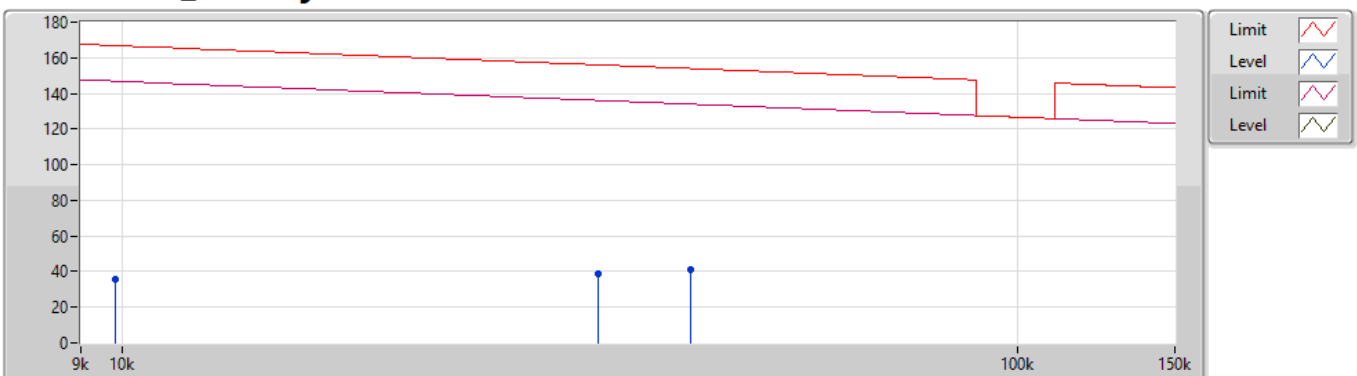


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	124.77k	59.05	124.76	-65.71	19.89	1	Vertical	135	1.00	39.16	19.73	0.16	-
PK	124.77k	61.87	144.76	-82.89	19.89	1	Vertical	135	1.00	41.98	19.73	0.16	-

SRD

15/08/2023

0.125MHz_Battery

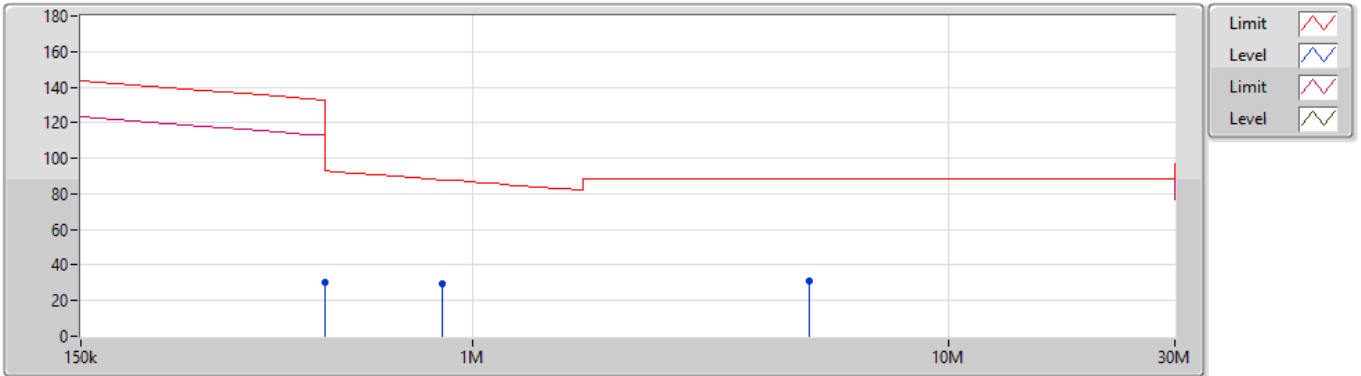


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	9.846k	35.54	166.82	-131.28	18.63	1	Vertical	360	1.00	16.91	18.56	0.07	-
PK	34.098k	39.09	156.02	-116.93	20.81	1	Vertical	360	1.00	18.28	20.70	0.11	-
PK	43.122k	41.02	153.98	-112.96	20.46	1	Vertical	360	1.00	20.56	20.34	0.12	-

SRD

15/08/2023

0.125MHz_Battery



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)	
PK	490k	30.34	132.89	-102.55	20.54	1	Vertical	0	1.00	9.80	20.31	0.23	-	
PK	866.4k	29.44	87.93	-58.49	20.32	1	Vertical	0	1.00	9.12	20.07	0.25	-	
PK	5.105M	31.08	88.63	-57.55	21.02	1	Vertical	0	1.00	10.06	20.35	0.67	-	



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
SRD	-	-	-	-	-	-	-	-	-	-	-
SRD	Pass	PK	47.46M	34.95	40.00	-5.05	-10.96	3	Horizontal	0	1.00

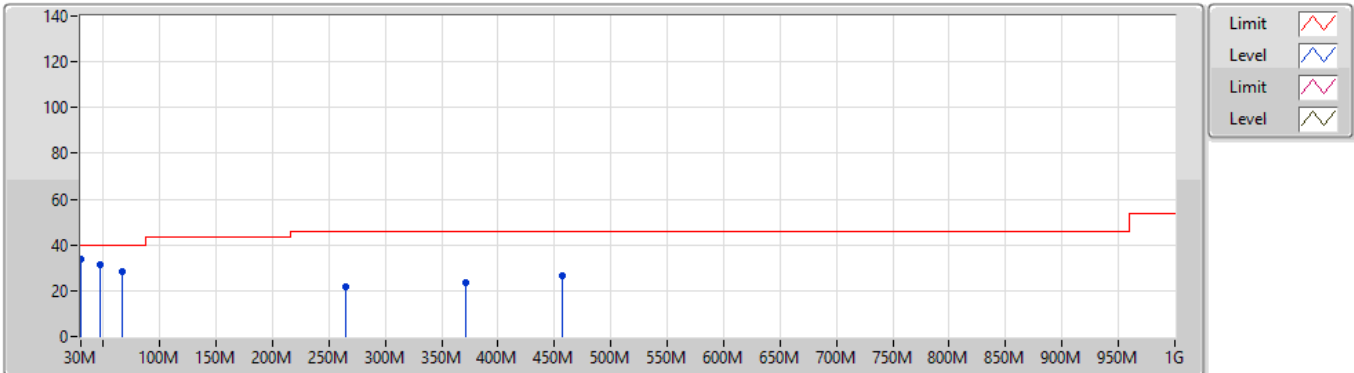
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
SRD	-	-	-	-	-	-	-	-	-	-	-
0.125MHz_Battery	Pass	PK	30M	33.84	40.00	-6.16	-3.05	3	Vertical	360	1.00
0.125MHz_Battery	Pass	PK	47.46M	31.50	40.00	-8.50	-10.96	3	Vertical	360	1.00
0.125MHz_Battery	Pass	PK	66.86M	28.35	40.00	-11.65	-14.39	3	Vertical	360	1.00
0.125MHz_Battery	Pass	PK	264.74M	21.82	46.00	-24.18	-5.48	3	Vertical	360	1.00
0.125MHz_Battery	Pass	PK	371.44M	23.72	46.00	-22.28	-3.95	3	Vertical	360	1.00
0.125MHz_Battery	Pass	PK	456.8M	26.85	46.00	-19.15	-1.99	3	Vertical	360	1.00
0.125MHz_Battery	Pass	PK	30M	25.93	40.00	-14.07	-3.05	3	Horizontal	0	1.00
0.125MHz_Battery	Pass	PK	47.46M	34.95	40.00	-5.05	-10.96	3	Horizontal	0	1.00
0.125MHz_Battery	Pass	PK	270.56M	21.14	46.00	-24.86	-6.02	3	Horizontal	0	1.00
0.125MHz_Battery	Pass	PK	443.22M	26.05	46.00	-19.95	-2.26	3	Horizontal	0	1.00
0.125MHz_Battery	Pass	PK	577.08M	27.16	46.00	-18.84	-0.08	3	Horizontal	0	1.00
0.125MHz_Battery	Pass	PK	623.64M	28.74	46.00	-17.26	0.55	3	Horizontal	0	1.00

SRD

15/08/2023

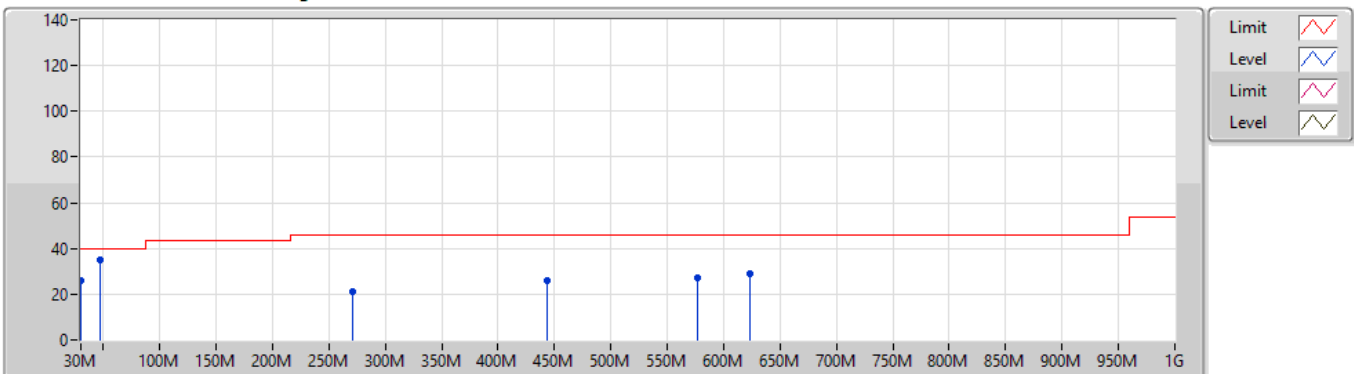
0.125MHz_Battery



SRD

15/08/2023

0.125MHz_Battery



Summary

Mode	20dB (Hz)	FI-20dB (Hz)	Fh-20dB (Hz)	99% OBW (Hz)	ITU-Code	Limit (Range)
SRD	-	-	-	-		-
0.125M	5k	122.50000k	127.50000k	4.808k	4K81A1D	-

Result

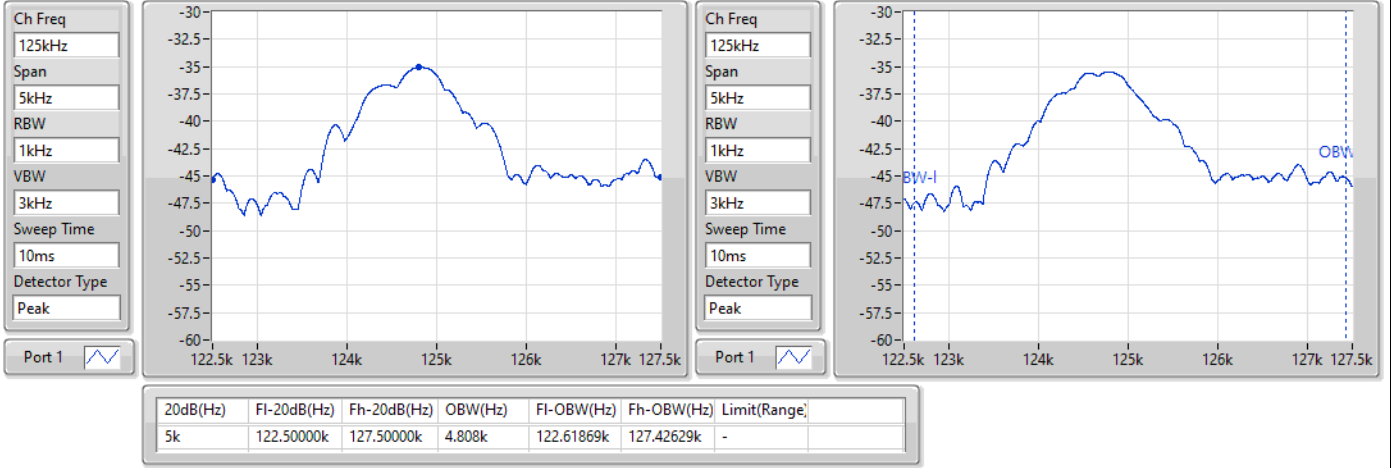
Mode	Result	20dB (Hz)	FI-20dB (Hz)	Fh-20dB (Hz)	99% OBW (Hz)	FI-OBW (Hz)	Fh-OBW (Hz)	Limit (Range)
SRD	-	-	-	-	-	-	-	-
0.125MHz_Battery	Pass	5k	122.50000k	127.50000k	4.808k	122.61869k	127.42629k	-

SRD

0.125MHz_Battery

EBW

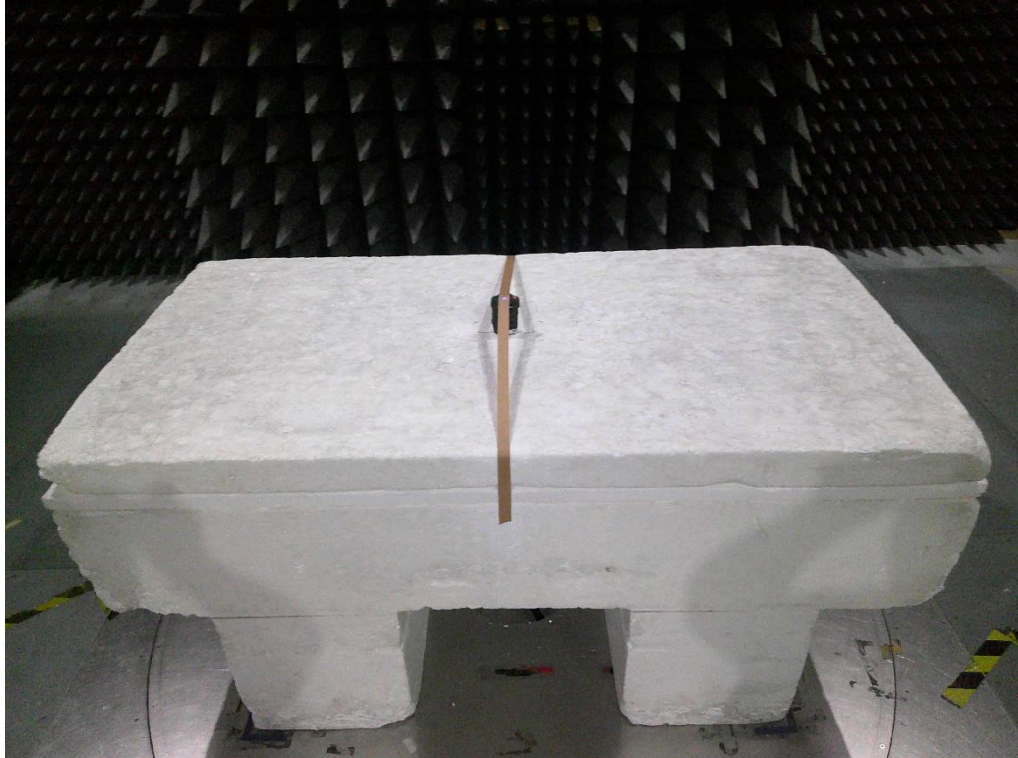
15/08/2023



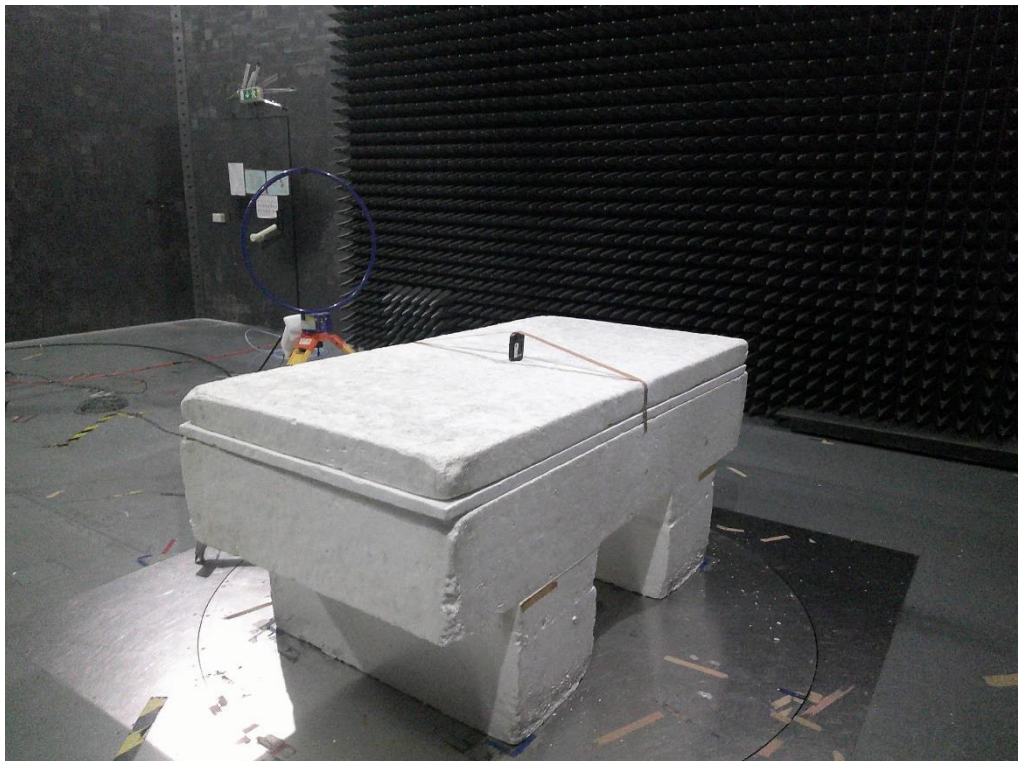
1. Photographs of Radiated Emissions Test Configuration

For radiated emissions 9kHz~30MHz

Front view

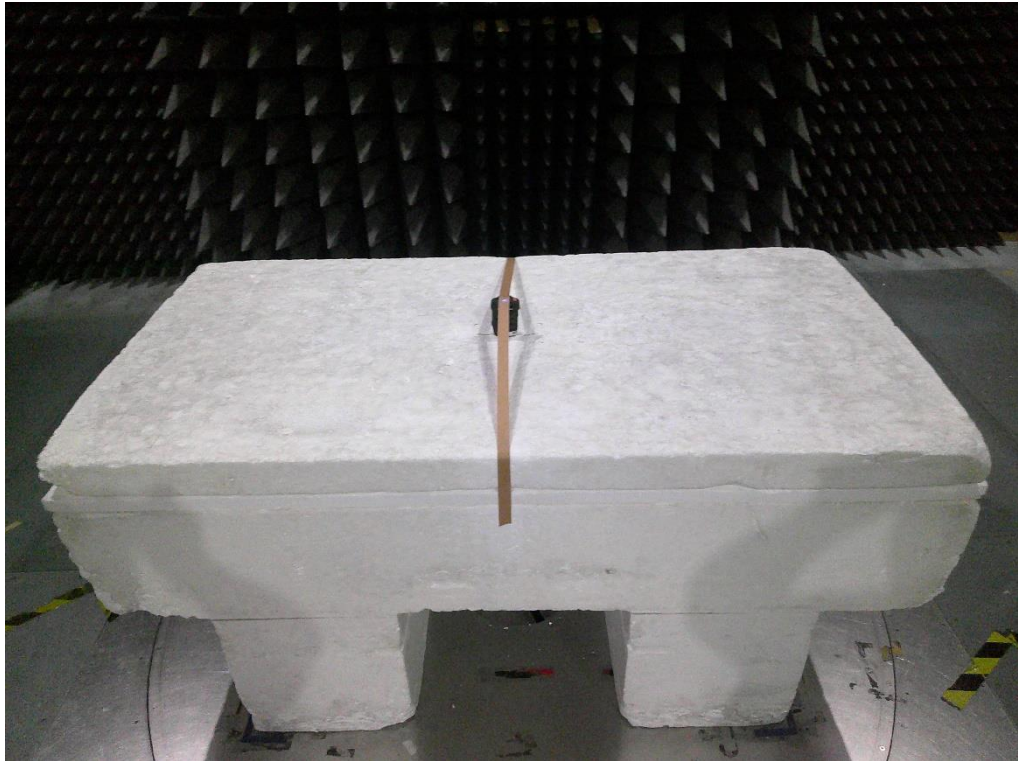


Rear view

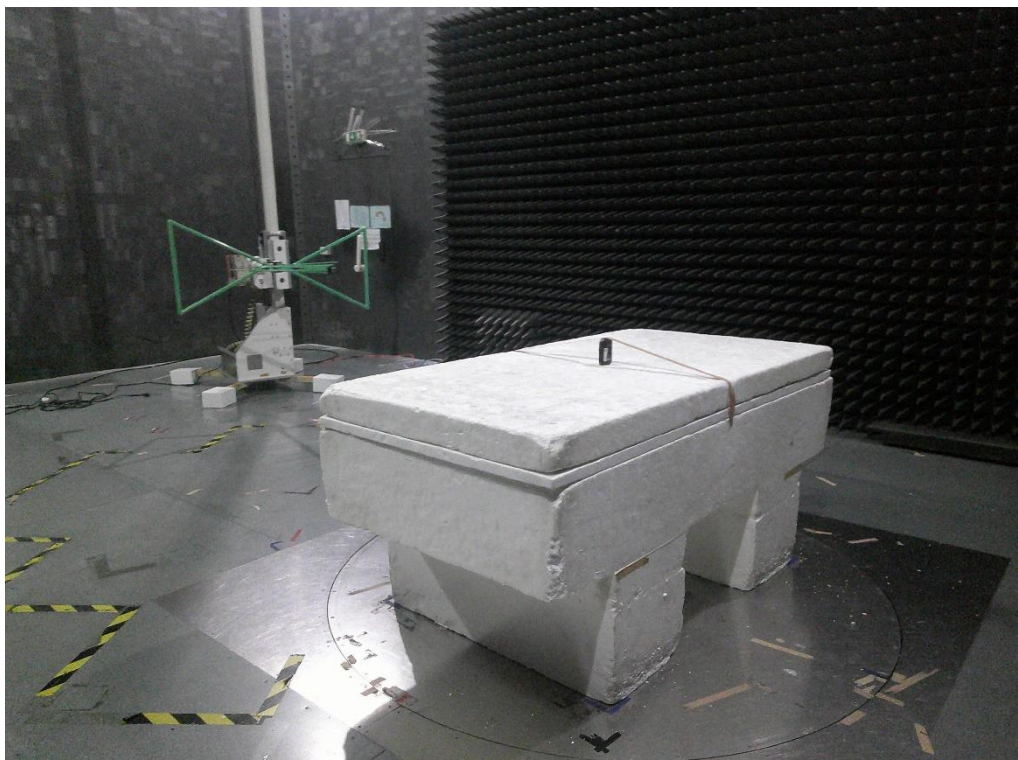


For radiated emissions 30MHz~1GHz

Front view



Rear view



————THE END————