

Report No.: FR381056AO



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.

: 47 CFR FCC Part 15.209 Standard

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.)

TEL: 886-3-327-3456 FAX: 886-3-327-0973

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History of this test report

Report No.	Version	Description	Issued Date
FR381056AO	01	Initial issue of report	Sep. 06, 2023

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Summary of Test Result

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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

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General Description 1

Information 1.1

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			
EU	T Power Type	From Battery		
	Type of EUT			
\boxtimes	Stand-alone			
	Combined (EUT where	the radio part is fully integrated within another device)		
	Combined Equipment -	Brand Name / Model No.:		
	Plug-in radio (EUT inte	nded for a variety of host systems)		
	Host System - Brand N	ame / Model No.:		
	Other:			

1.1.4 Test Signal Duty Cycle

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

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1.2 **Testing Applied Standards**

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

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- 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					
	ADD: No.52, H	ADD: No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)			
(TAF: 3785)	TEL: 886-3-327-3456				
	Test site Design	nation No. TW378	5 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.	Wen 33rd.St. ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)				
(TAF: 3785)	(TAF: 3785) TEL: 886-3-318-0787 FAX: 886-3-318-0287				
	Test site Designation No. TW0008 with FCC.				

Measurement Uncertainty 1.4

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%

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2 Test Configuration of EUT

2.1 Test Condition

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

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

Th	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	Radiated measurement			
	☐ EUT will be placed in	EUT will be placed in fixed position.			
User Position	EUT will be placed in mobile position and operating multiple positions. EUT shall be performed three orthogonal planes.				
	wered devices and				
Operating Mode	СТХ				
1	Battery Mode	Battery Mode			
	X Plane	Y Plane	Z Plane		
Orthogonal Planes of EUT					
Worst Planes of EUT		V			

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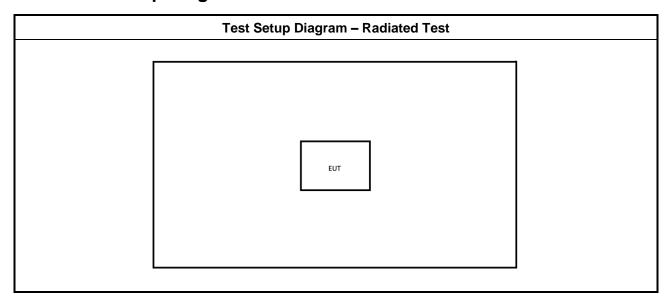
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2.4 **Accessory**

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

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

2.5 **Test Setup Diagram**



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Transmitter Test Result 3

3.1 **Transmitter Radiated Emissions**

3.1.1 **Transmitter Radiated Emissions Limit**

	Transmitter Radiat	ed 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

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- 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 guasi-peak detector.

3.1.2 **Measuring Instruments**

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

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3.1.3 Test Procedures

		Test Method
	Refe	er as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1 GHz and test distance is 3m.
\boxtimes	9-90	er as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz. The frequency bands kHz, 110-490 kHz measurements employing an average detector and other below 30MHz surements employing a CISPR quasi-peak detector. Test distance is 3m.
	in th field belo follo	equencies below 30 MHz, measurements may be performed at a distance closer than that specified e requirements; however, an attempt should be made to avoid making measurements in the near. Pending the development of an appropriate measurement procedure for measurements performed w 30 MHz, when performing measurements at a closer distance than specified, the results shall be wing below methods. Et 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.
	\boxtimes	The results shall be by using the square of an inverse linear distance extrapolation factor (40 dB/decade).
	equi	radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the pment to be measured and the test antenna shall be oriented to obtain the maximum emitted field ngth level.
\boxtimes	The	any unwanted emissions level shall not exceed the fundamental emission level.
		mplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value no need to be reported.
\boxtimes	KDE	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.

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3.1.4 Measurement Results Calculation

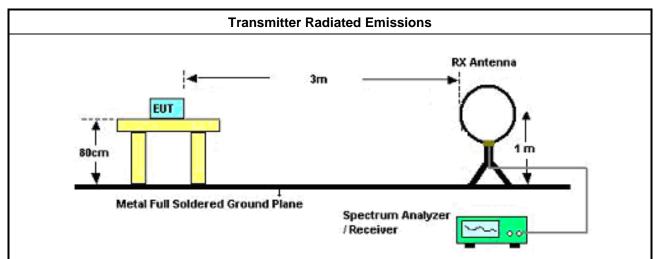
The measured Level is calculated using: Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

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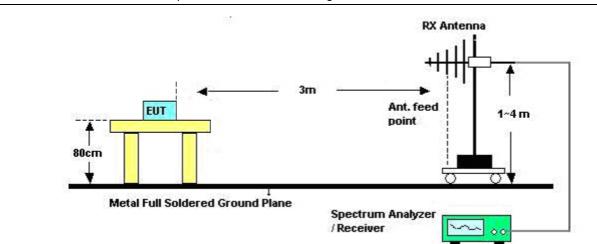
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3.1.5 **Test Setup**



Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. The center of the loop shall be 1 m above the ground.



Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna. the antenna height shall be varied from 1 m to 4 m.

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

Refer as Appendix A

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3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

Emission Bandwidth I	imit
N/A	

3.2.2 Measuring Instruments

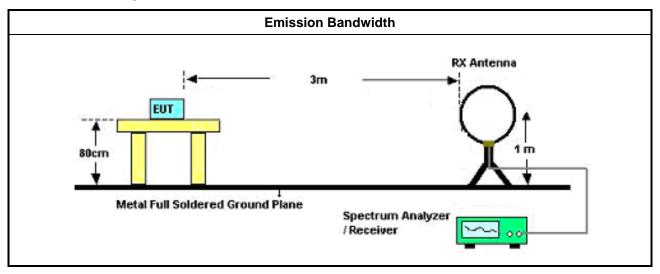
Refer a test equipment and calibration data table in this test report.

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

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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

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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

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RSE TX below 30MHz

Appendix A.1

Summary

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

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RSE TX below 30MHz

Appendix A.1

Result

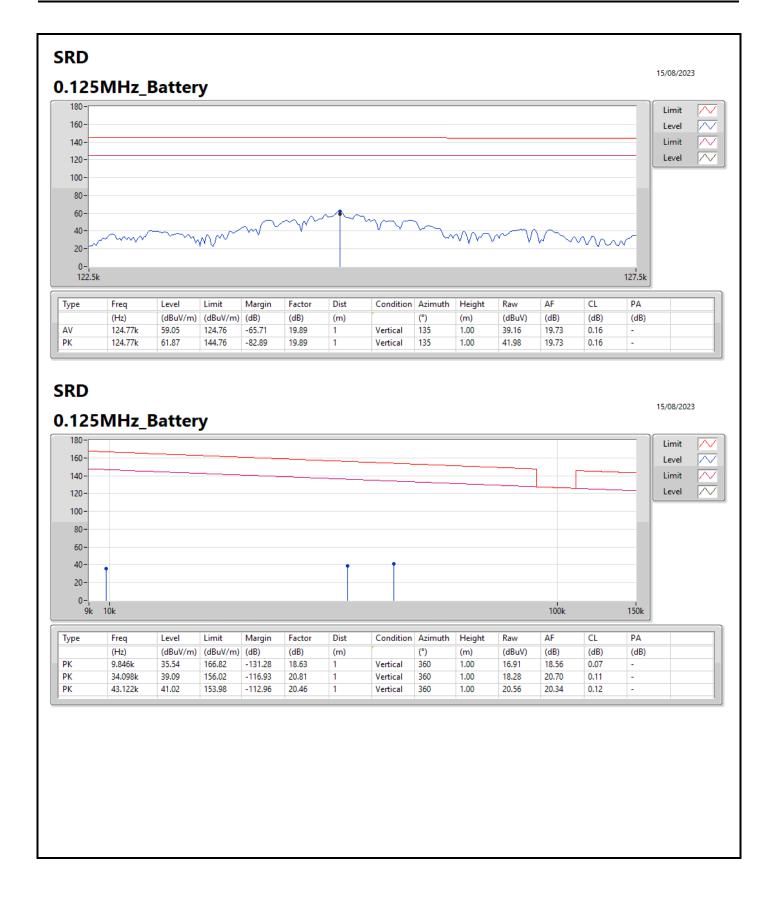
Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
SRD	-	-	-	-	-	-	-	-	-	-	-
0.125MHz_Battery	Pass	AV	124.77k	59.05	124.76	-65.71	19.89	1	Vertical	135	1.00
0.125MHz_Battery	Pass	PK	124.77k	61.87	144.76	-82.89	19.89	1	Vertical	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

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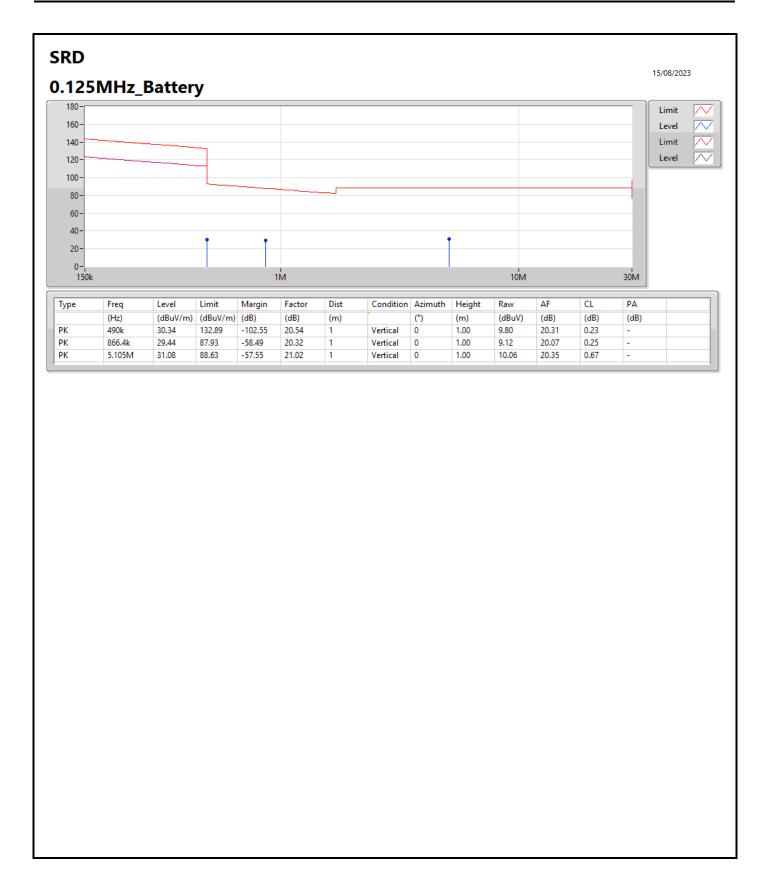
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RSE TX above 30MHz

Appendix A.2

Summary

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

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RSE TX above 30MHz

Appendix A.2

Result

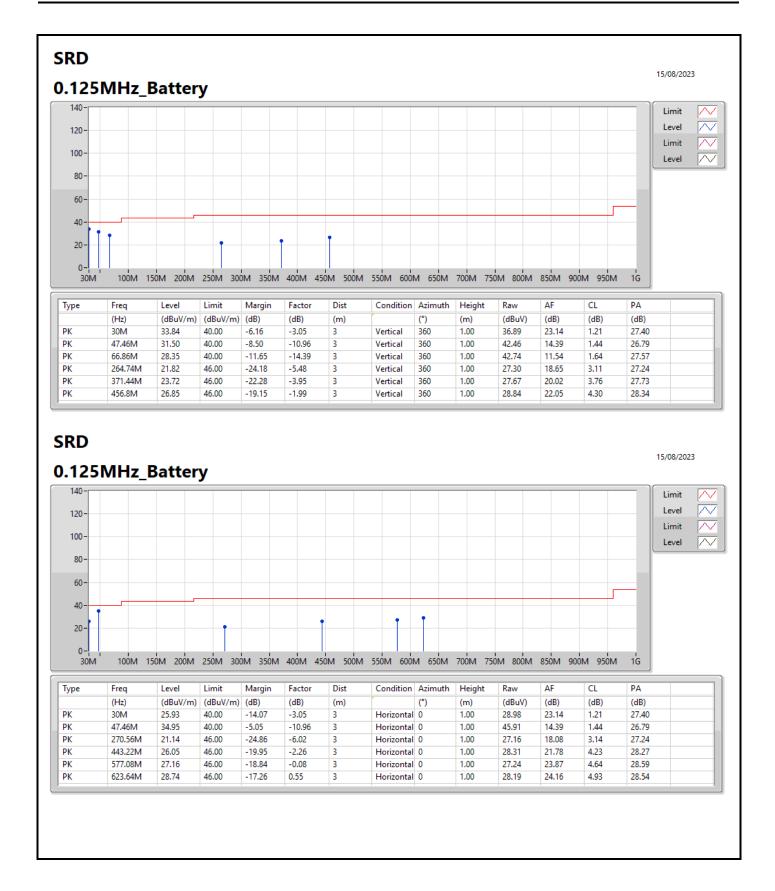
Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)
SRD	-	-	-	-	-	-	-	-	-	-	-
0.125MHz_Battery	Pass	PK	30M	33.84	40.00	-6.16	-3.05	3	Vertical	360	1.00
0.125MHz_Battery	Pass	PK	47.46M	31.50	40.00	-8.50	-10.96	3	Vertical	360	1.00
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

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EBW Appendix B

Summary

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

Result

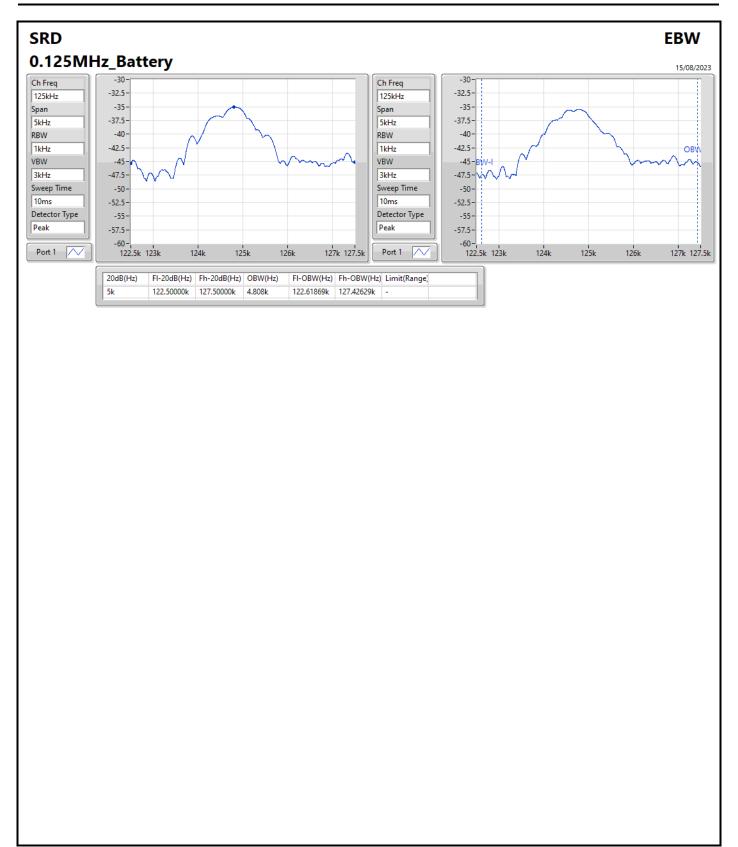
Mode	Result	20dB	FI-20dB	Fh-20dB	99% OBW	FI-OBW	Fh-OBW	Limit
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(Range)
SRD	-	-	-	-	-	-	-	=
0.125MHz_Battery	Pass	5k	122.50000k	127.50000k	4.808k	122.61869k	127.42629k	=

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Appendix B **EBW**

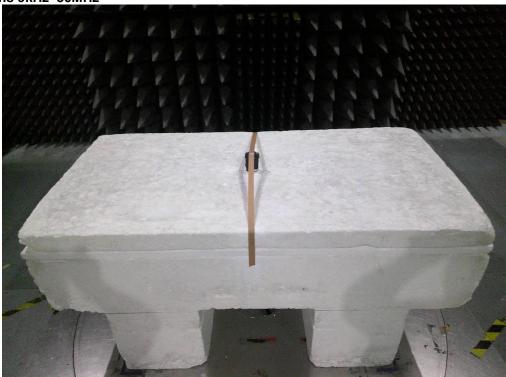


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Appendix C **Test Photos**

1. Photographs of Radiated Emissions Test Configuration For radiated emissions 9kHz~30MHz



Front view

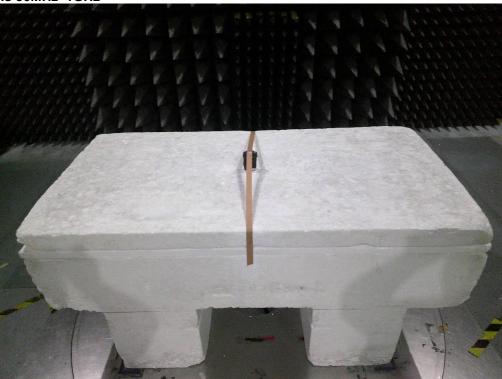


Rear view

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Test Photos Appendix C

For radiated emissions 30MHz~1GHz



Front view



Rear view

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