

FCC Radio Test Report

FCC ID : 2BGZ3-WPTT15ABJ
Equipment : WIRELESS CHARGER
Brand Name : Innergie
Model Name : WPTT-15AB J
Applicant : DELTA ELECTRONICS, INC.
No. 3, Tungyuan Road, Chungli Industrial Zone,
Taoyuan City 32063, Taiwan, R.O.C
Manufacturer : DELTA ELECTRONICS, INC.
No. 3, Tungyuan Road, Chungli Industrial Zone,
Taoyuan City 32063, Taiwan, R.O.C
Standard : 47 CFR FCC Part 15, Subpart C

The product was received on Mar. 26, 2024, and testing was started from Apr. 19, 2024 and completed on May 16, 2024. 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.)



Table of Contents

HISTORY OF THIS TEST REPORT	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Information.....	5
1.2 Testing Applied Standards	7
1.3 Testing Location Information	7
1.4 Measurement Uncertainty	7
2 TEST CONFIGURATION OF EUT.....	8
2.1 Test Channel Mode	8
2.2 The Worst Case Configuration	8
2.3 The Worst Case Measurement Configuration	9
2.4 Support Equipment.....	10
2.5 Test Setup Diagram	11
3 TRANSMITTER TEST RESULT	14
3.1 AC Power-line Conducted Emissions	14
3.2 Transmitter Radiated Emissions	16
3.3 Emission Bandwidth	19
4 TEST EQUIPMENT AND CALIBRATION DATA	20
APPENDIX A. TEST RESULT OF AC POWER-LINE CONDUCTED EMISSIONS	
APPENDIX B. TEST RESULT OF TRANSMITTER RADIATED EMISSIONS	
APPENDIX C. TEST RESULT OF EMISSION BANDWIDTH	
APPENDIX D. TEST PHOTOS	
PHOTOGRAPHS OF EUT v01	



TEL : 886-3-327-3456
FAX : 886-3-327-0973
Report Template No.: HE1-C5 Ver4.1
FCC ID: 2BGZ3-WPTT15ABJ



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.209	Transmitter Radiated Emissions	PASS	-
3.3	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: Terry Chang

Report Producer: Amber Chiu

1 General Description

1.1 Information

1.1.1 General Information

Wireless Power Transfer General Information < 5W >			
Frequency Range	Modulation	Operating Freq. (kHz)	Field Strength (dBuV/m)
112-400 kHz	FSK	126.934	-15.13
Power Transfer Method	Output power from each primary coil	That may have multiple primary coils	Operating Method
Magnetic induction and only single primary coil	≤ 15W	No	Client directly contact
Note 1: Field strength performed peak level at 300m.			

Wireless Power Transfer General Information < 15W >			
Frequency Range	Modulation	Operating Freq. (kHz)	Field Strength (dBuV/m)
112-400 kHz	FSK	361.2	-18.40
Power Transfer Method	Output power from each primary coil	That may have multiple primary coils	Operating Method
Magnetic induction and only single primary coil	≤ 15W	No	Client directly contact
Note 1: Field strength performed peak level at 300m.			

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	3L ELECTRONIC	WPT4202-8R4K-PWM-PT	Wireless charging antenna coils	N/A

1.1.3 EUT Information

Operational Condition	
EUT Power Type	From AC Adapter
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 normally mode for worst duty cycle
☐ Operated test mode for worst duty cycle
Test Signal Duty Cycle (x)
☒ 100%

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:

- ♦ KDB680106 D01 Wireless Power Transfer v04
- ♦ 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
AC Conduction	CO04-HY	Ivan Chung	21.3~22.5°C / 53~55%	19/Apr/2024, 16/May/2024
RF Conducted	TH01-HY	Jin Jing	23.1~23.6°C / 52~55%	22/Apr/2024~16/May/2024
Radiated	03CH03-HY	Rian Zhong	20.3~21.2°C / 53~56%	19/Apr/2024~15/May/2024
☐ 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
AC Power-line Conducted Emissions	4.53 dB	Confidence levels of 95%
Transmitter Radiated Emissions	4.8 dB	Confidence levels of 95%
Temperature	0.7 °C	Confidence levels of 95%
Humidity	2.30 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

Test Software Version	N/A
------------------------------	-----

Note: The EUT transmits RF signal continuously by itself

< 5W >

Mode	Power Setting
112-400kHz_Nss1_1TX	-
0.1269MHz	default

< 15W >

Mode	Power Setting
112-400kHz_Nss1_1TX	-
0.36MHz	default

2.2 The Worst Case Configuration

Mode	Field Strength (dBuV/m at 300 m)	Charger Frequencies (kHz)
WPC < 5W >	-15.13	126.934
WPC <15W >	-18.40	361.2

Note.1: Wireless charger were performed all charging conditions including variable loading and non-charging operation, the worst mode is full charging loading.

Note.2: Wireless charger frequencies are variable frequency range (112-400 kHz) and depend on charging loading.

2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests		
Tests Item	AC power-line conducted emissions	
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz	
Operating Mode	CTX	
	5W	1. Adapter Mode; TX
	15W	1. Adapter Mode; TX

The Worst Case Mode for Following Conformance Tests		
Tests Item	Transmitter Radiated Emissions, Emission Bandwidth	
Test Condition	Radiated measurement	
Operating Mode	CTX	
	1. Adapter Mode; 5W	
	2. Adapter Mode; 15W	
Orthogonal Planes of EUT	Z Plane	
		



2.4 Support Equipment

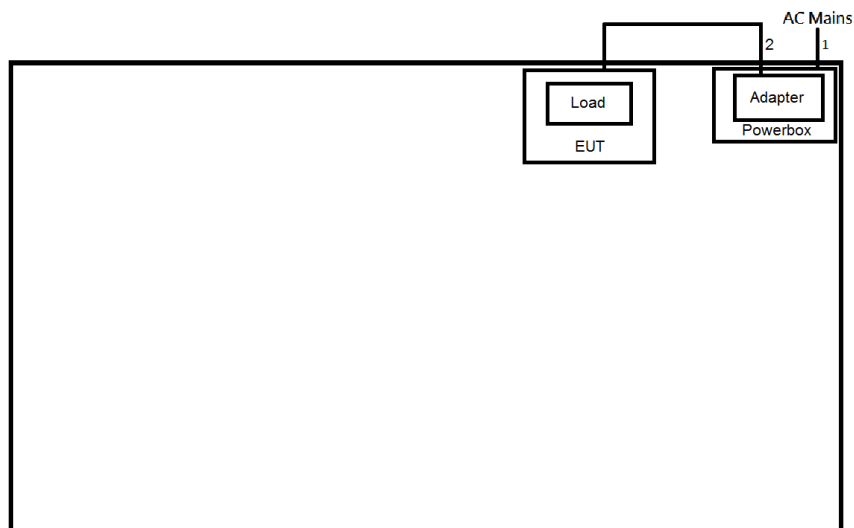
Support Equipment – AC Conduction					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Adapter	Innergie	ADP-45HW	-	Provided by Customer
2	USB cable	Innergie	A1	-	Provided by Customer
3	RX 15W Load	EESON	A1	-	Provided by Customer
4	Cell phone	APPLE	MGJA3TA/A	-	Provided by Customer

Support Equipment – Conducted					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Adapter	Innergie	ADP-45HW	-	Provided by Customer
2	USB cable	Innergie	A1	-	Provided by Customer
3	RX 15W Load	EESON	A1	-	Provided by Customer
4	Cell phone	APPLE	MGJA3TA/A	-	Provided by Customer

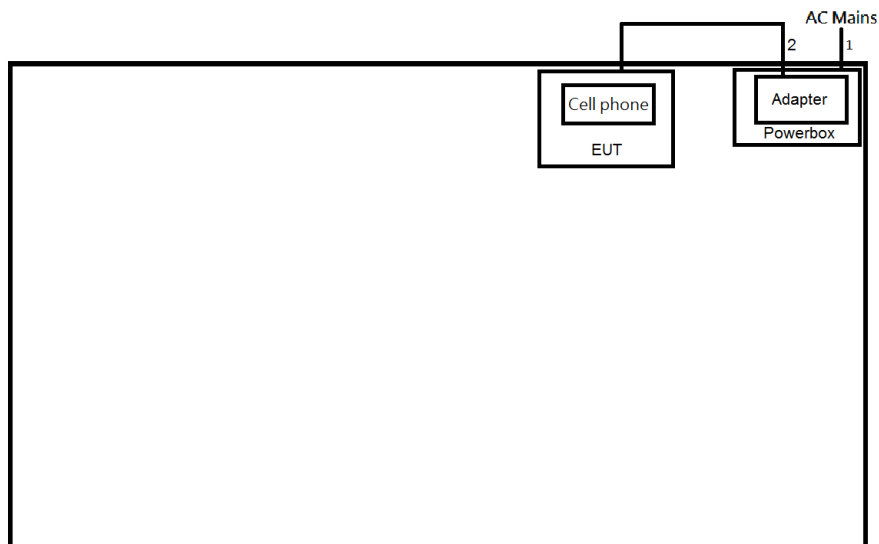
Support Equipment – Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	USB cable	Innergie	A1	-	Provided by Customer
2	Adapter	Innergie	ADP-45HW	-	Provided by Customer
3	Cell phone	APPLE	MGJA3TA/A	-	Provided by Customer
4	RX 15W Load	EESON	A1	-	Provided by Customer

2.5 Test Setup Diagram

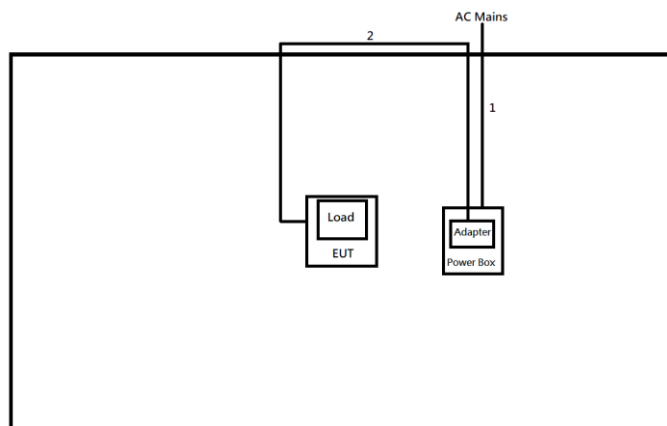
Test Setup Diagram – AC Line Conducted Emission Test_5W (TX)



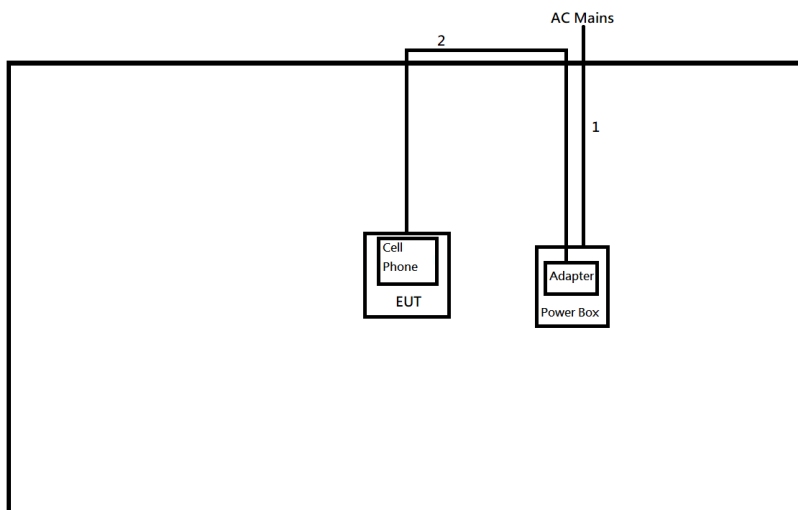
Item	Connection	Shielded	Length(m)	Remark
1	AC Power Cable	No	1.0	-
2	USB Cable	No	1.0	-

Test Setup Diagram – AC Line Conducted Emission Test_15W (TX)


Item	Connection	Shielded	Length(m)	Remark
1	AC Power Cable	No	1.0	-
2	USB Cable	No	1.0	-

Test Setup Diagram - Radiated Test_5W (TX)


Item	Connection	Shielded	Length(m)	Remark
1	AC Power Cable	No	1.8	-
2	DC Power Cable	No	1.0	-

Test Setup Diagram - Radiated Test_15W (TX)


Item	Connection	Shielded	Length(m)	Remark
1	AC Power Cable	No	1.8	-
2	DC Power Cable	No	1.0	-

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

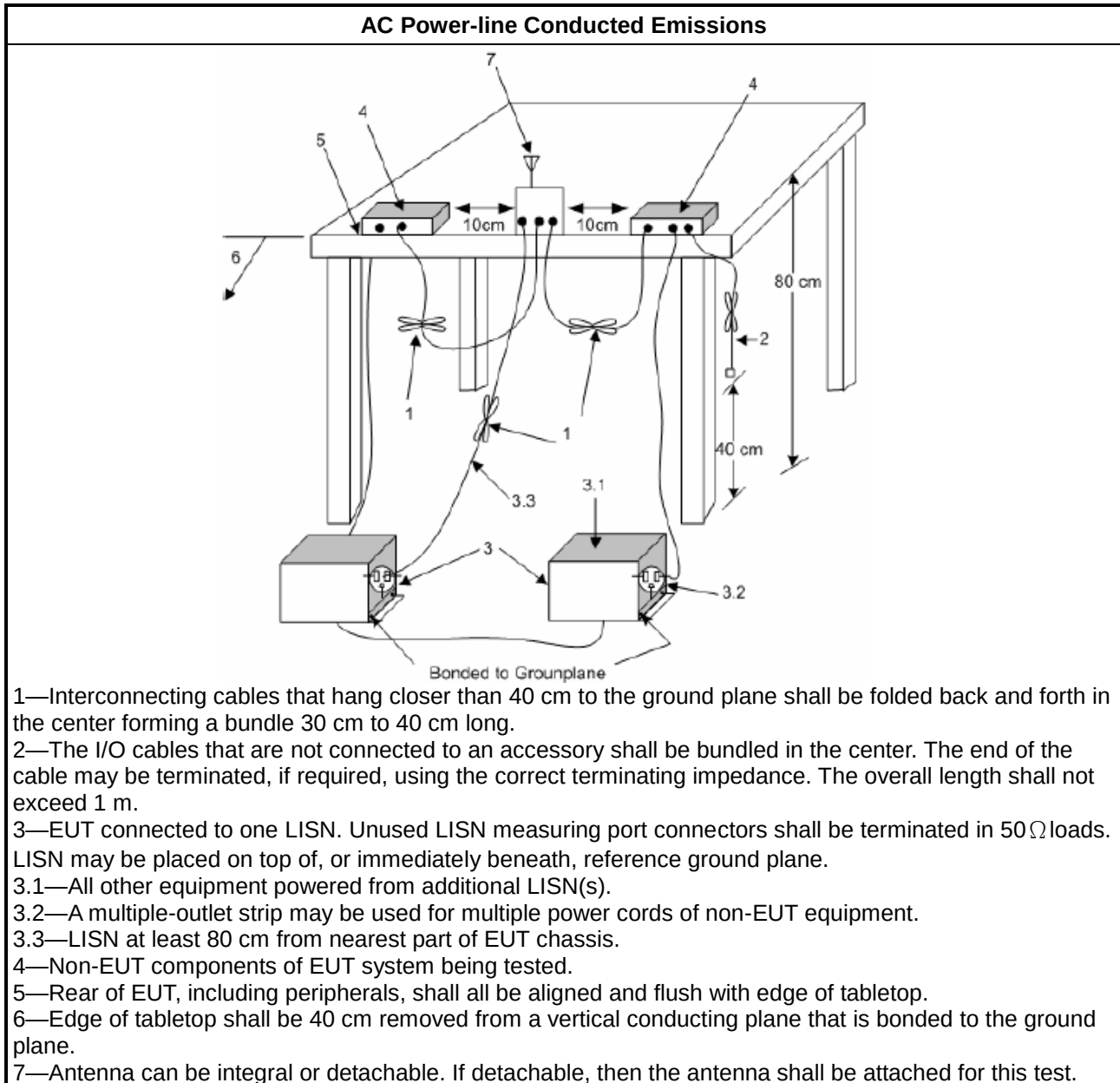
Test Method	
☒	Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.
☒	If AC conducted emissions fall in operating band, then following below test method confirm final result.
☐	Accept measurements done with a suitable dummy load replacing the antenna under the following conditions: (1) Perform the AC line conducted tests with the antenna connected to determine compliance with FCC 15.207 limits outside the transmitter's fundamental emission band; (2) Retest with a dummy load to determine compliance with FCC 15.207 limits within the transmitter's fundamental emission band.
☒	For a device with a permanent antenna operating at or below 30 MHz, accept measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions: (1) Perform the AC line conducted tests with the permanent antenna to determine compliance with the FCC 15.207 limits outside the transmitter's fundamental emission band; (2) Retest with a dummy load in lieu of the permanent antenna to determine compliance with the FCC 15.207 limits within the transmitter's fundamental emission band.

3.1.4 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Raw(Read Level) + LISN(LISN Factor) + CL(Cable Loss) + AT(Attenuator).

3.1.5 Test Setup



3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 Transmitter Radiated Emissions

3.2.1 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.

3.2.2 Measuring Instruments

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

**3.2.3 Test Procedures**

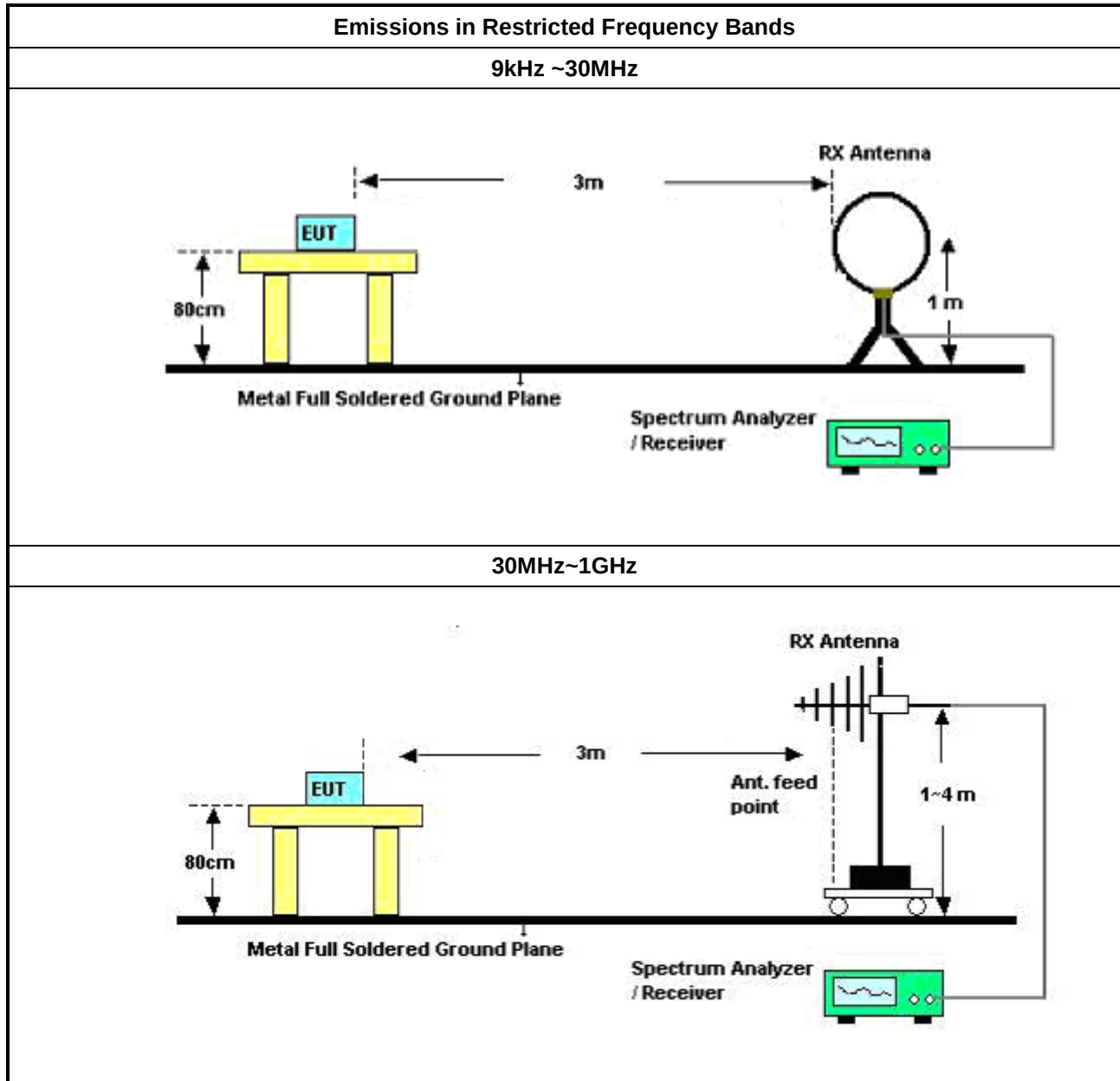
Test Method	
☒	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1 GHz and test distance is 3m.
☒	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz the frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 30MHz measurements employing a CISPR quasi-peak detector. Test distance is 3 m.
☒	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.
☐	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.

3.2.4 Measurement Results Calculation

The measured Level is calculated using:

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

3.2.5 Test Setup



3.2.6 Test Result of Transmitter Radiated Emissions

Refer as Appendix B

3.3 Emission Bandwidth

3.3.1 Emission Bandwidth Limit

Emission Bandwidth Limit
N/A

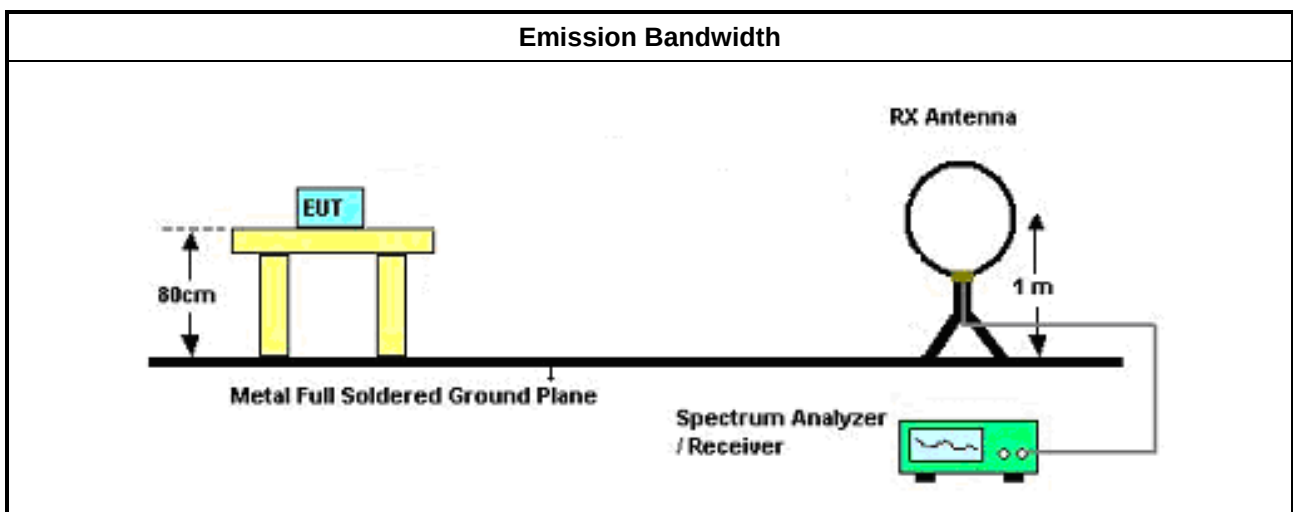
3.3.2 Measuring Instruments

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

3.3.3 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.

3.3.4 Test Setup



3.3.5 Test Result of Emission Bandwidth

Refer as Appendix C



4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer / Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMI Test Receiver	ROHDE & SCHWARZ	ESR	102318	9kHz ~ 3.6GHz	27/Dec/2023	26/Dec/2024
LISN(Artificial Mains Network)	SCHWARZBECK	NSLK 8127	8127477	9kHz ~ 30MHz	12/Apr/2024	11/Apr/2025
RF Cable 5m	TITAN	TITAN	CO04-cable-01	9 kHz~200MHz	27/Feb/2024	26/Feb/2025
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	18/Oct/2023	17/Oct/2024
Software	Sporton	SENSE-EMI	V5.11.3	-	NCR	NCR

NCR: No Calibration Required

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/2024	09/Apr/2025
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	03CH03-HY	30MHz~1GHz 3m	30/Jul/2023	29/Jul/2024
Signal Analyzer	R&S	FSV40	101500	10Hz~40GHz	26/Oct/2023	25/Oct/2024
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	19/Mar/2024	18/Mar/2025
Bilog Antenna & 6dB Attenuator	SCHAFFNER / EMC	CBL6112B / N-6-05	22237 / AT-N-0603	30MHz~1GHz	15/Oct/2023	14/Oct/2024
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz~30MHz	13/Jun/2023	12/Jun/2024
RF Cable-R03m	Jye Bao	RG142	03CH03-cable-02	30MHz~1GHz	13/Jun/2023	12/Jun/2024
Amplifier	Aglient	8447D	2944A08033	10kHz~1.3GHz	14/Sep/2023	13/Sep/2024
SENSE-303417	N/A	N/A	N/A	N/A	N/A	N/A



Conducted Emissions at Powerline_5W

Appendix A.1

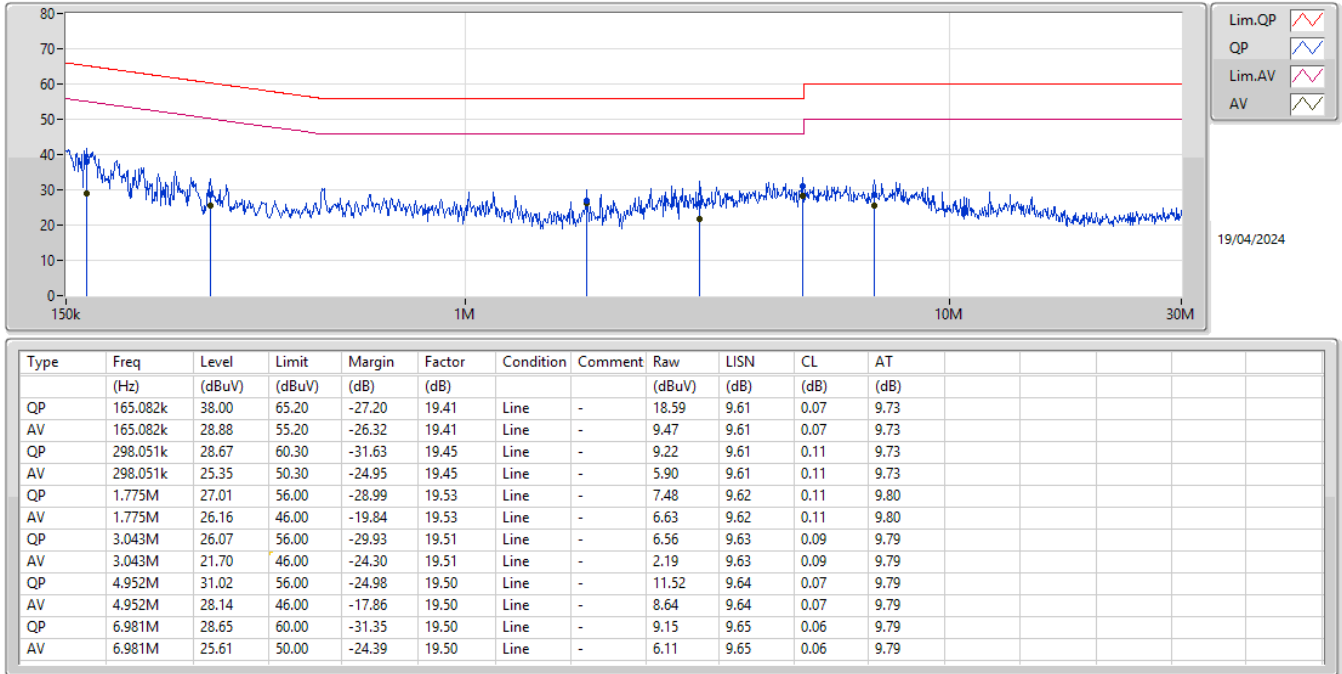
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	4.952M	28.14	46.00	-17.86	Line

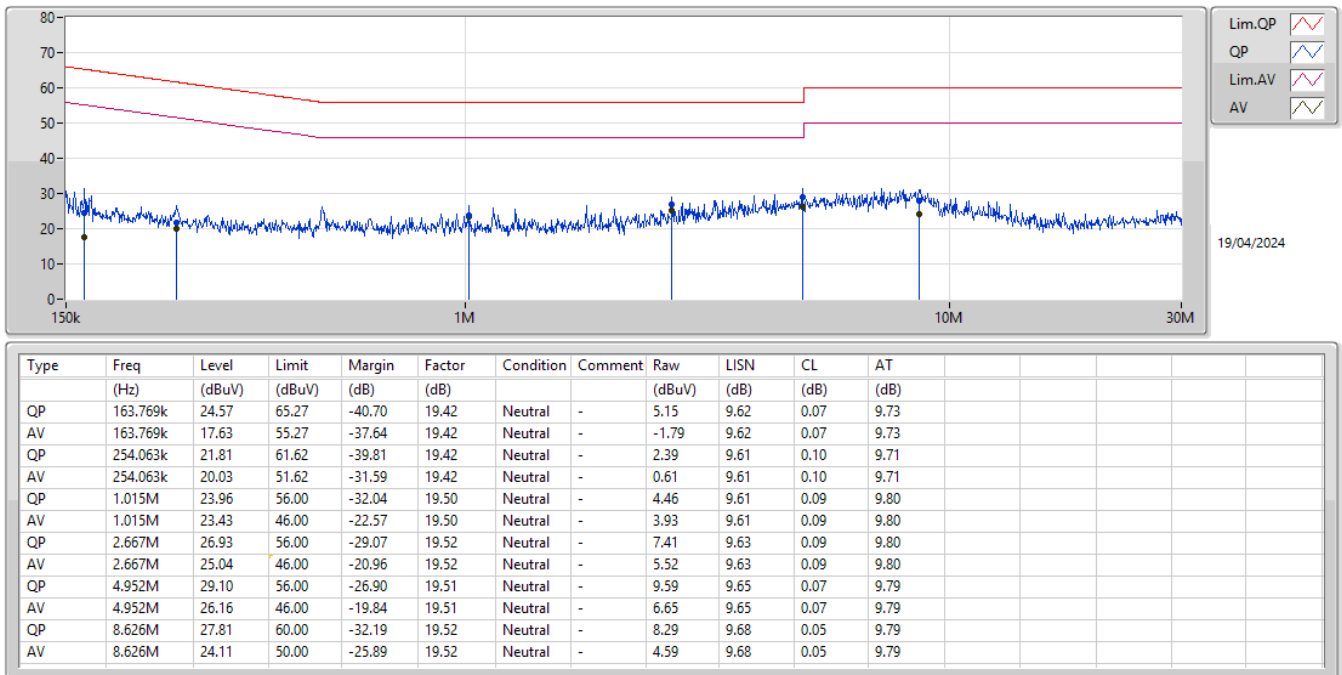
Result

Mode	Result	Type	Freq (Hz)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	165.082k	38.00	65.20	-27.20	Line	-
Mode 1	Pass	AV	165.082k	28.88	55.20	-26.32	Line	-
Mode 1	Pass	QP	298.051k	28.67	60.30	-31.63	Line	-
Mode 1	Pass	AV	298.051k	25.35	50.30	-24.95	Line	-
Mode 1	Pass	QP	1.775M	27.01	56.00	-28.99	Line	-
Mode 1	Pass	AV	1.775M	26.16	46.00	-19.84	Line	-
Mode 1	Pass	QP	3.043M	26.07	56.00	-29.93	Line	-
Mode 1	Pass	AV	3.043M	21.70	46.00	-24.30	Line	-
Mode 1	Pass	QP	4.952M	31.02	56.00	-24.98	Line	-
Mode 1	Pass	AV	4.952M	28.14	46.00	-17.86	Line	-
Mode 1	Pass	QP	6.981M	28.65	60.00	-31.35	Line	-
Mode 1	Pass	AV	6.981M	25.61	50.00	-24.39	Line	-
Mode 1	Pass	QP	163.769k	24.57	65.27	-40.70	Neutral	-
Mode 1	Pass	AV	163.769k	17.63	55.27	-37.64	Neutral	-
Mode 1	Pass	QP	254.063k	21.81	61.62	-39.81	Neutral	-
Mode 1	Pass	AV	254.063k	20.03	51.62	-31.59	Neutral	-
Mode 1	Pass	QP	1.015M	23.96	56.00	-32.04	Neutral	-
Mode 1	Pass	AV	1.015M	23.43	46.00	-22.57	Neutral	-
Mode 1	Pass	QP	2.667M	26.93	56.00	-29.07	Neutral	-
Mode 1	Pass	AV	2.667M	25.04	46.00	-20.96	Neutral	-
Mode 1	Pass	QP	4.952M	29.10	56.00	-26.90	Neutral	-
Mode 1	Pass	AV	4.952M	26.16	46.00	-19.84	Neutral	-
Mode 1	Pass	QP	8.626M	27.81	60.00	-32.19	Neutral	-
Mode 1	Pass	AV	8.626M	24.11	50.00	-25.89	Neutral	-

Conducted Emissions at Powerline_Mode 1



Conducted Emissions at Powerline_Mode 1





Conducted Emissions at Powerline_15W

Appendix A.2

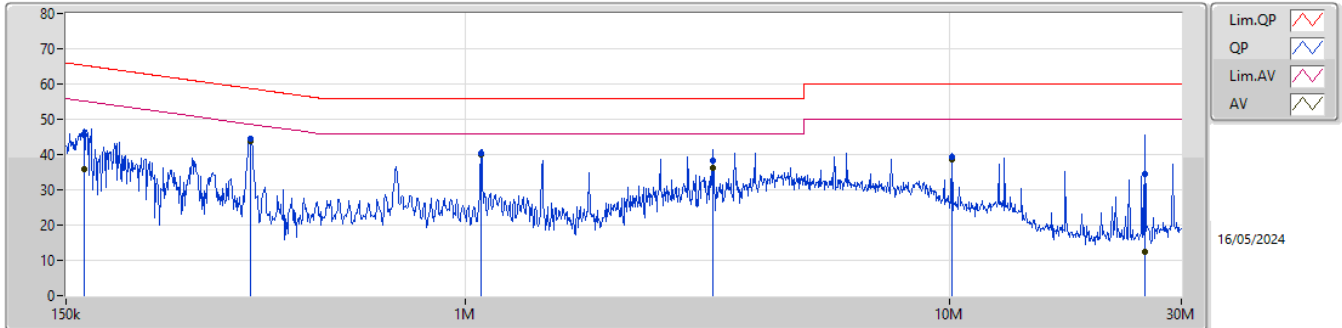
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	359.562k	43.95	48.73	-4.78	Line

Result

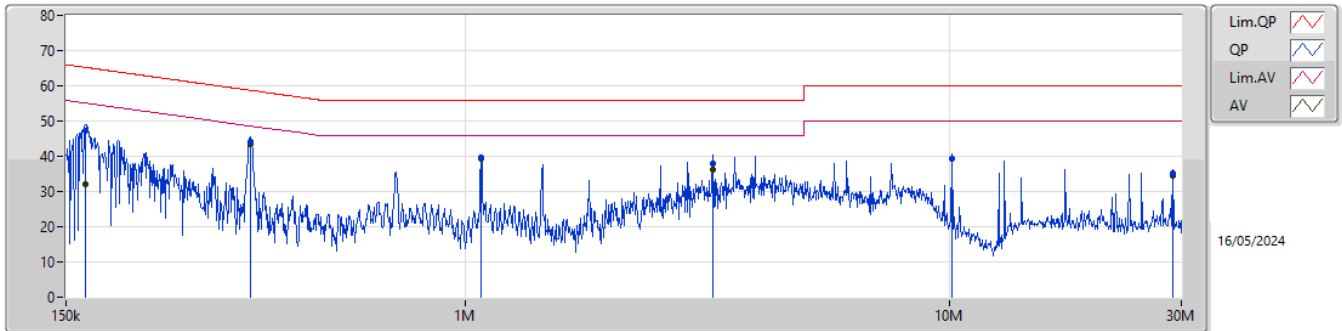
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	163.117k	45.45	65.31	-19.86	Line	-
Mode 1	Pass	AV	163.117k	35.98	55.31	-19.33	Line	-
Mode 1	Pass	QP	359.562k	44.39	58.73	-14.34	Line	-
Mode 1	Pass	AV	359.562k	43.95	48.73	-4.78	Line	-
Mode 1	Pass	QP	1.078M	40.31	56.00	-15.69	Line	-
Mode 1	Pass	AV	1.078M	39.93	46.00	-6.07	Line	-
Mode 1	Pass	QP	3.244M	38.37	56.00	-17.63	Line	-
Mode 1	Pass	AV	3.244M	36.36	46.00	-9.64	Line	-
Mode 1	Pass	QP	10.079M	39.48	60.00	-20.52	Line	-
Mode 1	Pass	AV	10.079M	38.77	50.00	-11.23	Line	-
Mode 1	Pass	QP	25.245M	34.40	60.00	-25.60	Line	-
Mode 1	Pass	AV	25.245M	12.41	50.00	-37.59	Line	-
Mode 1	Pass	QP	164.425k	47.19	65.24	-18.05	Neutral	-
Mode 1	Pass	AV	164.425k	32.16	55.24	-23.08	Neutral	-
Mode 1	Pass	QP	359.562k	44.00	58.73	-14.73	Neutral	-
Mode 1	Pass	AV	359.562k	43.62	48.73	-5.11	Neutral	-
Mode 1	Pass	QP	1.078M	39.53	56.00	-16.47	Neutral	-
Mode 1	Pass	AV	1.078M	39.24	46.00	-6.76	Neutral	-
Mode 1	Pass	QP	3.244M	37.81	56.00	-18.19	Neutral	-
Mode 1	Pass	AV	3.244M	36.05	46.00	-9.95	Neutral	-
Mode 1	Pass	QP	10.079M	39.47	60.00	-20.53	Neutral	-
Mode 1	Pass	AV	10.079M	39.16	50.00	-10.84	Neutral	-
Mode 1	Pass	QP	28.8M	35.14	60.00	-24.86	Neutral	-
Mode 1	Pass	AV	28.8M	34.44	50.00	-15.56	Neutral	-

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	163.117k	45.45	65.31	-19.86	9.85	Line	-	35.60	0.04	0.07	9.74						
AV	163.117k	35.98	55.31	-19.33	9.85	Line	-	26.13	0.04	0.07	9.74						
QP	359.562k	44.39	58.73	-14.34	9.92	Line	-	34.47	0.05	0.12	9.75						
AV	359.562k	43.95	48.73	-4.78	9.92	Line	-	34.03	0.05	0.12	9.75						
QP	1.078M	40.31	56.00	-15.69	9.95	Line	-	30.36	0.06	0.09	9.80						
AV	1.078M	39.93	46.00	-6.07	9.95	Line	-	29.98	0.06	0.09	9.80						
QP	3.244M	38.37	56.00	-17.63	9.96	Line	-	28.41	0.09	0.08	9.79						
AV	3.244M	36.36	46.00	-9.64	9.96	Line	-	26.40	0.09	0.08	9.79						
QP	10.079M	39.48	60.00	-20.52	10.05	Line	-	29.43	0.21	0.05	9.79						
AV	10.079M	38.77	50.00	-11.23	10.05	Line	-	28.72	0.21	0.05	9.79						
QP	25.245M	34.40	60.00	-25.60	10.36	Line	-	24.04	0.38	0.14	9.84						
AV	25.245M	12.41	50.00	-37.59	10.36	Line	-	2.05	0.38	0.14	9.84						

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	164.425k	47.19	65.24	-18.05	9.86	Neutral	-	37.33	0.06	0.07	9.73						
AV	164.425k	32.16	55.24	-23.08	9.86	Neutral	-	22.30	0.06	0.07	9.73						
QP	359.562k	44.00	58.73	-14.73	9.94	Neutral	-	34.06	0.07	0.12	9.75						
AV	359.562k	43.62	48.73	-5.11	9.94	Neutral	-	33.68	0.07	0.12	9.75						
QP	1.078M	39.53	56.00	-16.47	9.97	Neutral	-	29.56	0.08	0.09	9.80						
AV	1.078M	39.24	46.00	-6.76	9.97	Neutral	-	29.27	0.08	0.09	9.80						
QP	3.244M	37.81	56.00	-18.19	9.99	Neutral	-	27.82	0.12	0.08	9.79						
AV	3.244M	36.05	46.00	-9.95	9.99	Neutral	-	26.06	0.12	0.08	9.79						
QP	10.079M	39.47	60.00	-20.53	10.10	Neutral	-	29.37	0.26	0.05	9.79						
AV	10.079M	39.16	50.00	-10.84	10.10	Neutral	-	29.06	0.26	0.05	9.79						
QP	28.8M	35.14	60.00	-24.86	10.57	Neutral	-	24.57	0.52	0.28	9.77						
AV	28.8M	34.44	50.00	-15.56	10.57	Neutral	-	23.87	0.52	0.28	9.77						



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
WPT	-	-	-	-	-	-	-	-	-	-	-
112-400kHz	Pass	PK	2.001M	8.98	29.54	-20.56	-19.79	30	Horizontal	360	1.00

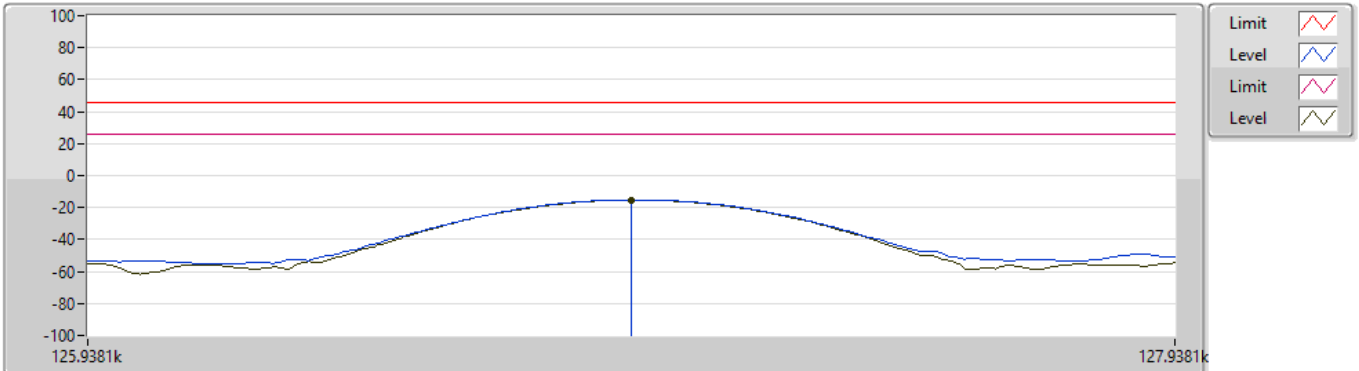
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
112-400kHz	-	-	-	-	-	-	-	-	-	-	-
0.127MHz_Adapter	Pass	AV	126.934k	-15.29	25.52	-40.81	-59.98	300	Horizontal	149	1.00
0.127MHz_Adapter	Pass	PK	126.934k	-15.13	45.52	-60.65	-59.98	300	Horizontal	149	1.00
0.127MHz_Adapter	Pass	PK	18.306k	-26.77	62.34	-89.11	-58.93	300	Horizontal	360	1.00
0.127MHz_Adapter	Pass	PK	41.712k	-25.05	55.20	-80.25	-59.02	300	Horizontal	360	1.00
0.127MHz_Adapter	Pass	QP	99.804k	-18.75	27.62	-46.37	-60.12	300	Horizontal	360	1.00
0.127MHz_Adapter	Pass	PK	269.4k	-24.36	39.00	-63.36	-59.70	300	Horizontal	0	1.00
0.127MHz_Adapter	Pass	PK	209.7k	-28.75	41.16	-69.91	-59.71	300	Horizontal	0	1.00
0.127MHz_Adapter	Pass	PK	388.8k	-34.42	35.80	-70.22	-59.69	300	Horizontal	0	1.00
0.127MHz_Adapter	Pass	PK	2.001M	8.98	29.54	-20.56	-19.79	30	Horizontal	360	1.00
0.127MHz_Adapter	Pass	PK	8.15M	2.37	29.54	-27.17	-17.85	30	Horizontal	360	1.00
0.127MHz_Adapter	Pass	PK	12.269M	-3.06	29.54	-32.60	-17.00	30	Horizontal	360	1.00

112-400kHz

19/04/2024

0.127MHz_Adapter

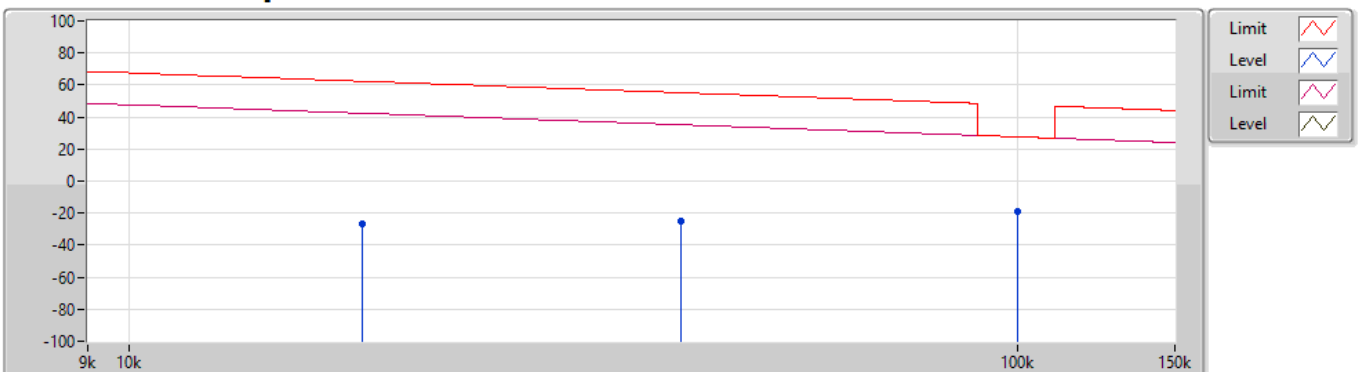


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	126.934k	-15.29	25.52	-40.81	-59.98	300	Horizontal	149	1.00	44.69	19.94	0.08	-
PK	126.934k	-15.13	45.52	-60.65	-59.98	300	Horizontal	149	1.00	44.85	19.94	0.08	-

112-400kHz

19/04/2024

0.127MHz_Adapter



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	18.306k	-26.77	62.34	-89.11	-58.93	300	Horizontal	360	1.00	32.16	20.98	0.09	-
PK	41.712k	-25.05	55.20	-80.25	-59.02	300	Horizontal	360	1.00	33.97	20.90	0.08	-
QP	99.804k	-18.75	27.62	-46.37	-60.12	300	Horizontal	360	1.00	41.37	19.80	0.08	-

112-400kHz

19/04/2024

0.127MHz_Adapter

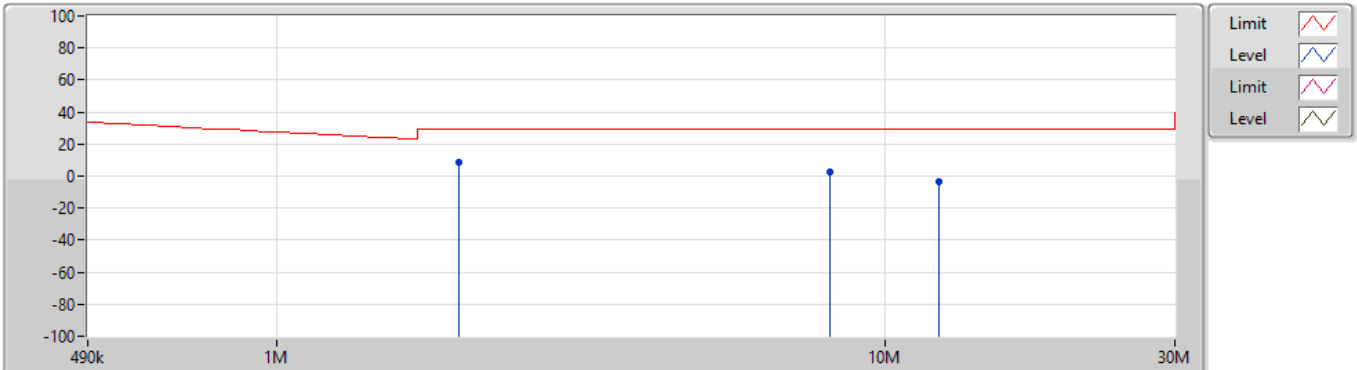


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)	
PK	269.4k	-24.36	39.00	-63.36	-59.70	300	Horizontal	0	1.00	35.34	20.20	0.10	-	
PK	209.7k	-28.75	41.16	-69.91	-59.71	300	Horizontal	0	1.00	30.96	20.20	0.09	-	
PK	388.8k	-34.42	35.80	-70.22	-59.69	300	Horizontal	0	1.00	25.27	20.20	0.11	-	

112-400kHz

19/04/2024

0.127MHz_Adapter



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	2.001M	8.98	29.54	-20.56	-19.79	30	Horizontal	360	1.00	28.77	20.00	0.21	-	
PK	8.15M	2.37	29.54	-27.17	-17.85	30	Horizontal	360	1.00	20.22	21.70	0.45	-	
PK	12.269M	-3.06	29.54	-32.60	-17.00	30	Horizontal	360	1.00	13.94	22.44	0.56	-	



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
WPT	-	-	-	-	-	-	-	-	-	-	-
112-400kHz	Pass	PK	31.94M	28.87	40.00	-11.13	-4.03	3	Vertical	0	1.00

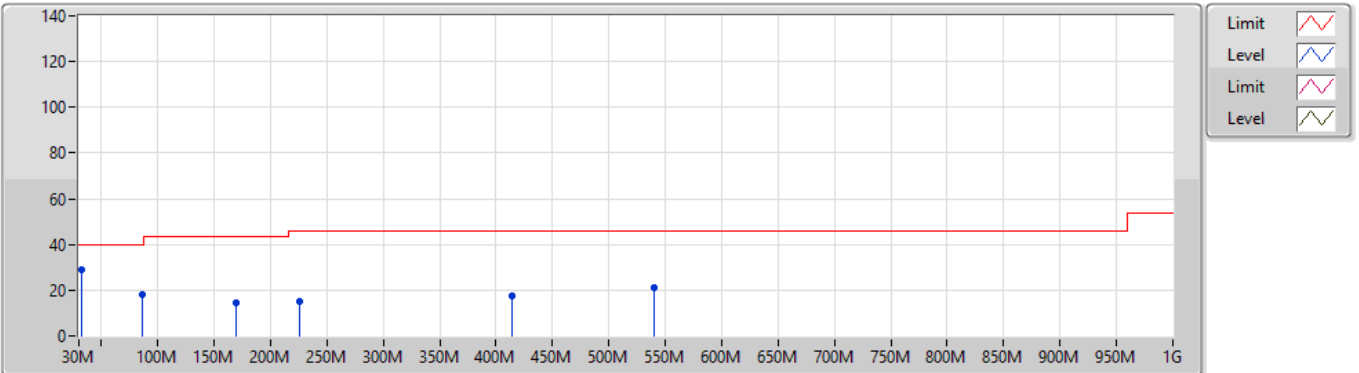
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
112-400kHz	-	-	-	-	-	-	-	-	-	-	-
0.127MHz_Adapter	Pass	PK	31.94M	28.87	40.00	-11.13	-4.03	3	Vertical	0	1.00
0.127MHz_Adapter	Pass	PK	86.26M	18.29	40.00	-21.71	-12.54	3	Vertical	0	1.00
0.127MHz_Adapter	Pass	PK	169.68M	14.71	43.50	-28.79	-10.20	3	Vertical	0	1.00
0.127MHz_Adapter	Pass	PK	225.94M	15.12	46.00	-30.88	-9.72	3	Vertical	0	1.00
0.127MHz_Adapter	Pass	PK	414.12M	17.71	46.00	-28.29	-2.33	3	Vertical	0	1.00
0.127MHz_Adapter	Pass	PK	540.22M	20.94	46.00	-25.06	0.43	3	Vertical	0	1.00
0.127MHz_Adapter	Pass	PK	31.94M	17.32	40.00	-22.68	-4.03	3	Horizontal	0	1.00
0.127MHz_Adapter	Pass	PK	138.64M	16.87	43.50	-26.63	-8.65	3	Horizontal	0	1.00
0.127MHz_Adapter	Pass	PK	169.68M	17.10	43.50	-26.40	-10.20	3	Horizontal	0	1.00
0.127MHz_Adapter	Pass	PK	225.94M	21.09	46.00	-24.91	-9.72	3	Horizontal	0	1.00
0.127MHz_Adapter	Pass	PK	394.72M	16.54	46.00	-29.46	-3.32	3	Horizontal	0	1.00
0.127MHz_Adapter	Pass	PK	485.9M	19.46	46.00	-26.54	-1.43	3	Horizontal	0	1.00

112-400kHz

0.127MHz_Adapter

15/05/2024

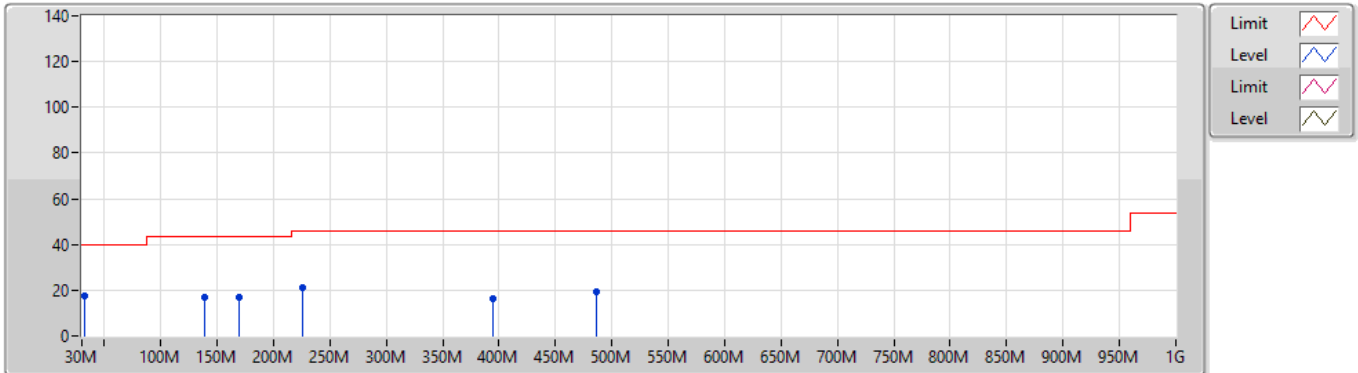


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)	
PK	31.94M	28.87	40.00	-11.13	-4.03	3	Vertical	0	1.00	32.90	22.60	0.95	27.58	
PK	86.26M	18.29	40.00	-21.71	-12.54	3	Vertical	0	1.00	30.83	13.41	1.51	27.46	
PK	169.68M	14.71	43.50	-28.79	-10.20	3	Vertical	0	1.00	24.91	14.84	2.15	27.19	
PK	225.94M	15.12	46.00	-30.88	-9.72	3	Vertical	0	1.00	24.84	14.85	2.50	27.07	
PK	414.12M	17.71	46.00	-28.29	-2.33	3	Vertical	0	1.00	20.04	21.74	3.44	27.51	
PK	540.22M	20.94	46.00	-25.06	0.43	3	Vertical	0	1.00	20.51	24.67	3.96	28.20	

112-400kHz

0.127MHz_Adapter

15/05/2024



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	31.94M	17.32	40.00	-22.68	-4.03	3	Horizontal	0	1.00	21.35	22.60	0.95	27.58	
PK	138.64M	16.87	43.50	-26.63	-8.65	3	Horizontal	0	1.00	25.52	16.71	1.94	27.30	
PK	169.68M	17.10	43.50	-26.40	-10.20	3	Horizontal	0	1.00	27.30	14.84	2.15	27.19	
PK	225.94M	21.09	46.00	-24.91	-9.72	3	Horizontal	0	1.00	30.81	14.85	2.50	27.07	
PK	394.72M	16.54	46.00	-29.46	-3.32	3	Horizontal	0	1.00	19.86	20.70	3.35	27.37	
PK	485.9M	19.46	46.00	-26.54	-1.43	3	Horizontal	0	1.00	20.89	22.70	3.79	27.92	



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
WPT	-	-	-	-	-	-	-	-	-	-	-	-
112-400kHz	Pass	PK	1.198M	17.03	26.03	-9.00	-19.76	30	Horizontal	360	1.00	-



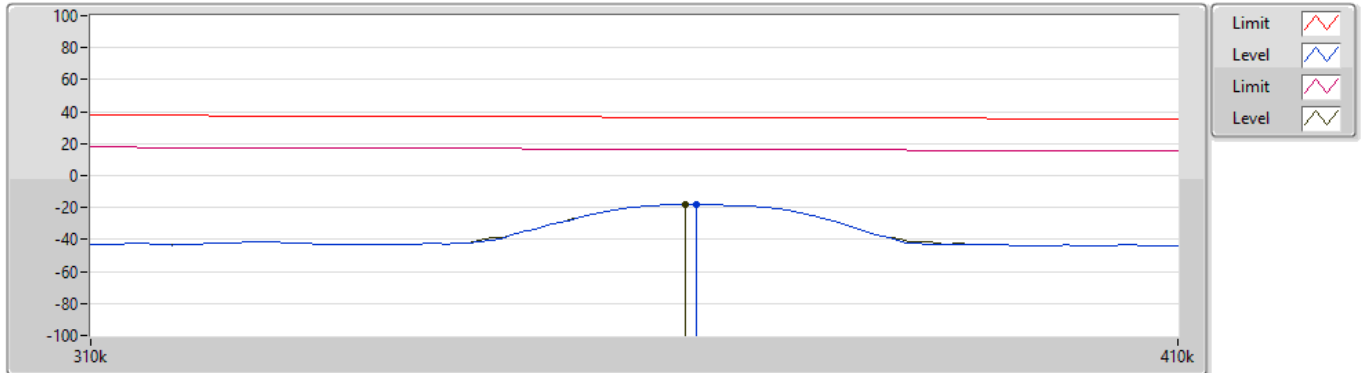
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
112-400kHz	-	-	-	-	-	-	-	-	-	-	-	-
0.360MHz_TX	Pass	PK	362.2k	-18.40	36.42	-54.82	-59.69	300	Horizontal	0	1.00	-
0.360MHz_TX	Pass	AV	361.2k	-18.51	16.44	-34.95	-59.69	300	Horizontal	0	1.00	-
0.360MHz_TX	Pass	PK	24.228k	-32.08	59.92	-92.00	-58.66	300	Horizontal	360	1.00	-
0.360MHz_TX	Pass	PK	41.712k	-23.86	55.20	-79.06	-59.02	300	Horizontal	360	1.00	-
0.360MHz_TX	Pass	PK	103.47k	-41.16	27.30	-68.46	-60.10	300	Horizontal	360	1.00	-
0.360MHz_TX	Pass	PK	192.16k	-38.38	41.92	-80.30	-59.73	300	Horizontal	360	1.00	-
0.360MHz_TX	Pass	PK	277.16k	-36.50	38.74	-75.24	-59.70	300	Horizontal	360	1.00	-
0.360MHz_TX	Pass	PK	435.6k	-43.21	34.82	-78.03	-59.69	300	Horizontal	360	1.00	-
0.360MHz_TX	Pass	PK	1.198M	17.03	26.03	-9.00	-19.76	30	Horizontal	360	1.00	-
0.360MHz_TX	Pass	PK	2.025M	11.25	29.54	-18.29	-19.79	30	Horizontal	360	1.00	-
0.360MHz_TX	Pass	PK	3.382M	1.91	29.54	-27.63	-19.72	30	Horizontal	360	1.00	-

112-400kHz

14/05/2024

0.360MHz_TX

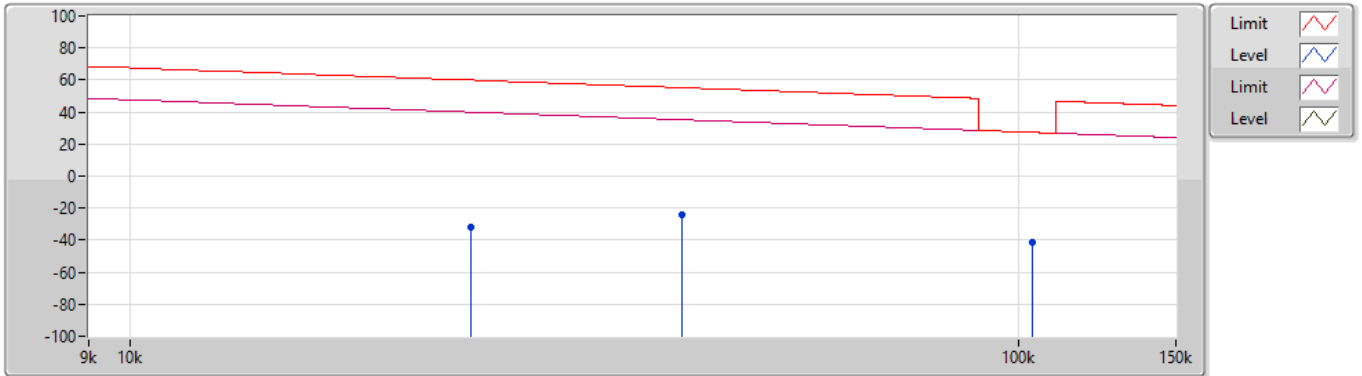


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)	
PK	362.2k	-18.40	36.42	-54.82	-59.69	300	Horizontal	0	1.00	41.29	20.20	0.11	-	
AV	361.2k	-18.51	16.44	-34.95	-59.69	300	Horizontal	0	1.00	41.18	20.20	0.11	-	

112-400kHz

14/05/2024

0.360MHz_TX



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	24.228k	-32.08	59.92	-92.00	-58.66	300	Horizontal	360	1.00	26.58	21.25	0.09	-	
PK	41.712k	-23.86	55.20	-79.06	-59.02	300	Horizontal	360	1.00	35.16	20.90	0.08	-	
PK	103.47k	-41.16	27.30	-68.46	-60.10	300	Horizontal	360	1.00	18.94	19.82	0.08	-	

112-400kHz

14/05/2024

0.360MHz_TX

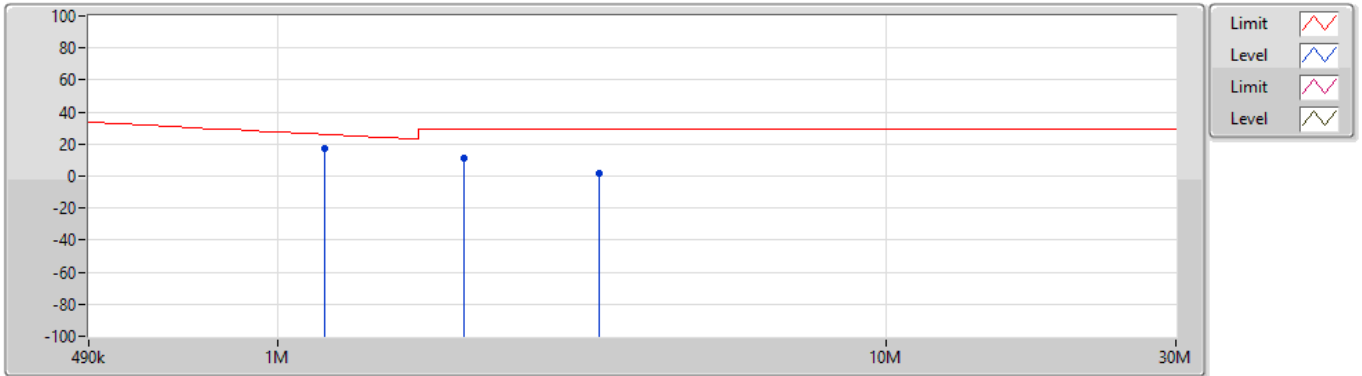


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)	
PK	192.16k	-38.38	41.92	-80.30	-59.73	300	Horizontal	360	1.00	21.35	20.18	0.09	-	
PK	277.16k	-36.50	38.74	-75.24	-59.70	300	Horizontal	360	1.00	23.20	20.20	0.10	-	
PK	435.6k	-43.21	34.82	-78.03	-59.69	300	Horizontal	360	1.00	16.48	20.20	0.11	-	

112-400kHz

14/05/2024

0.360MHz_TX



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	1.198M	17.03	26.03	-9.00	-19.76	30	Horizontal	360	1.00	36.79	20.07	0.17	-	
PK	2.025M	11.25	29.54	-18.29	-19.79	30	Horizontal	360	1.00	31.04	20.00	0.21	-	
PK	3.382M	1.91	29.54	-27.63	-19.72	30	Horizontal	360	1.00	21.63	20.02	0.26	-	



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
WPT	-	-	-	-	-	-	-	-	-	-	-
112-400kHz	Pass	PK	39.7M	34.66	40.00	-5.34	-8.26	3	Vertical	360	1.00

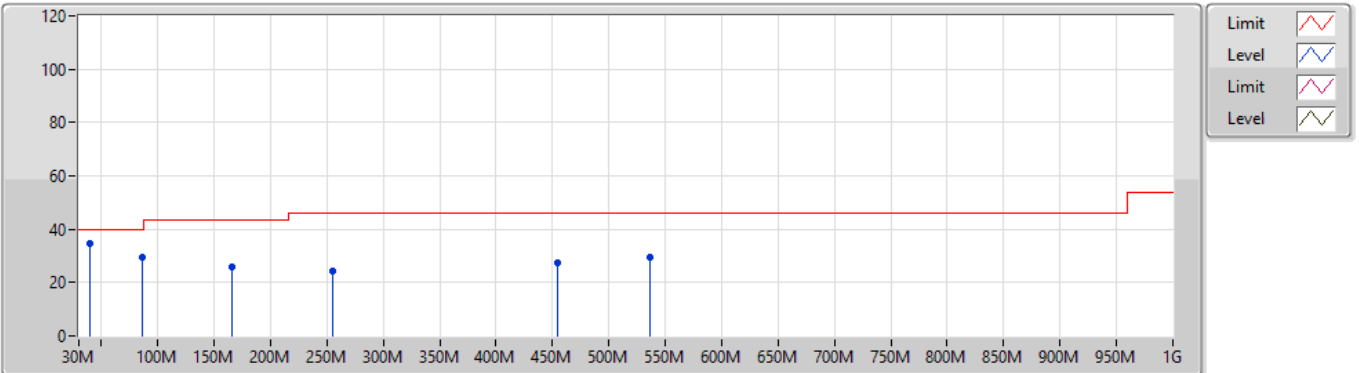
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
112-400kHz	-	-	-	-	-	-	-	-	-	-	-
0.360MHz_TX	Pass	PK	39.7M	34.66	40.00	-5.34	-8.26	3	Vertical	360	1.00
0.360MHz_TX	Pass	PK	86.26M	29.42	40.00	-10.58	-12.54	3	Vertical	360	1.00
0.360MHz_TX	Pass	PK	165.8M	25.98	43.50	-17.52	-10.15	3	Vertical	360	1.00
0.360MHz_TX	Pass	PK	255.04M	24.44	46.00	-21.56	-6.24	3	Vertical	360	1.00
0.360MHz_TX	Pass	PK	454.86M	27.29	46.00	-18.71	-1.77	3	Vertical	360	1.00
0.360MHz_TX	Pass	PK	536.34M	29.36	46.00	-16.64	0.07	3	Vertical	360	1.00
0.360MHz_TX	Pass	PK	30M	26.64	40.00	-13.36	-3.18	3	Horizontal	0	1.00
0.360MHz_TX	Pass	PK	146.4M	28.42	43.50	-15.08	-9.42	3	Horizontal	0	1.00
0.360MHz_TX	Pass	PK	243.4M	28.45	46.00	-17.55	-7.57	3	Horizontal	0	1.00
0.360MHz_TX	Pass	PK	313.24M	28.22	46.00	-17.78	-5.36	3	Horizontal	0	1.00
0.360MHz_TX	Pass	PK	435.46M	29.53	46.00	-16.47	-2.09	3	Horizontal	0	1.00
0.360MHz_TX	Pass	PK	716.76M	39.18	46.00	-6.82	1.04	3	Horizontal	0	1.00

112-400kHz

15/05/2024

0.360MHz_TX

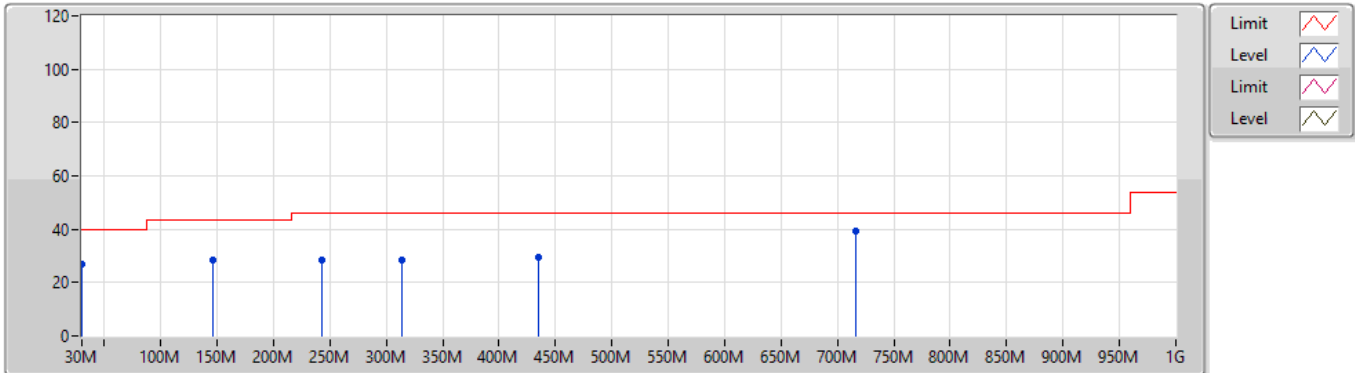


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)	
PK	39.7M	34.66	40.00	-5.34	-8.26	3	Vertical	360	1.00	42.92	18.31	1.01	27.58	
PK	86.26M	29.42	40.00	-10.58	-12.54	3	Vertical	360	1.00	41.96	13.41	1.51	27.46	
PK	165.8M	25.98	43.50	-17.52	-10.15	3	Vertical	360	1.00	36.13	14.92	2.13	27.20	
PK	255.04M	24.44	46.00	-21.56	-6.24	3	Vertical	360	1.00	30.68	18.14	2.66	27.04	
PK	454.86M	27.29	46.00	-18.71	-1.77	3	Vertical	360	1.00	29.06	22.41	3.64	27.82	
PK	536.34M	29.36	46.00	-16.64	0.07	3	Vertical	360	1.00	29.29	24.30	3.95	28.18	

112-400kHz

15/05/2024

0.360MHz_TX



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	30M	26.64	40.00	-13.36	-3.18	3	Horizontal	0	1.00	29.82	23.49	0.92	27.59	
PK	146.4M	28.42	43.50	-15.08	-9.42	3	Horizontal	0	1.00	37.84	15.86	1.99	27.27	
PK	243.4M	28.45	46.00	-17.55	-7.57	3	Horizontal	0	1.00	36.02	16.90	2.59	27.06	
PK	313.24M	28.22	46.00	-17.78	-5.36	3	Horizontal	0	1.00	33.58	18.65	2.98	26.99	
PK	435.46M	29.53	46.00	-16.47	-2.09	3	Horizontal	0	1.00	31.62	22.04	3.55	27.68	
PK	716.76M	39.18	46.00	-6.82	1.04	3	Horizontal	0	1.00	38.14	24.49	4.65	28.10	

Summary

Mode	20dB (Hz)	FI-20dB (Hz)	Fh-20dB (Hz)	OBW (Hz)	Limit (Range)
112-400kHz	-	-	-	-	-
0.1269MHz_TnomVnom	2.572k	125.64875k	128.22125k	2.186k	-

Result

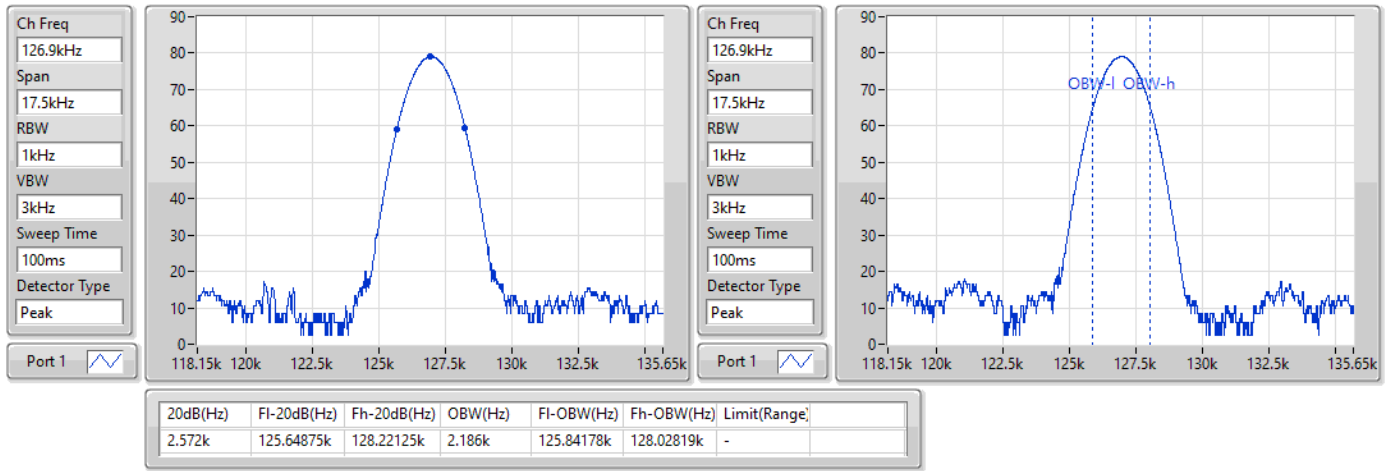
Mode	Result	20dB (Hz)	FI-20dB (Hz)	Fh-20dB (Hz)	OBW (Hz)	FI-OBW (Hz)	Fh-OBW (Hz)	Limit (Range)
112-400kHz	-	-	-	-	-	-	-	-
0.1269MHz_TnomVnom	Pass	2.572k	125.64875k	128.22125k	2.186k	125.84178k	128.02819k	-

112-400kHz

EBW

0.1269MHz_TnomVnom

22/04/2024



Summary

Mode	20dB (Hz)	FI-20dB (Hz)	Fh-20dB (Hz)	OBW (Hz)	Limit (Range)
0.36M	-	-	-	-	-
112-400kHz	2.572k	358.71375k	361.28625k	2.186k	inf

Result

Mode	Result	20dB (Hz)	FI-20dB (Hz)	Fh-20dB (Hz)	OBW (Hz)	FI-OBW (Hz)	Fh-OBW (Hz)	Limit (Range)
112-400kHz	-	-	-	-	-	-	-	-
0.36MHz_TnomVnom	Pass	2.572k	358.71375k	361.28625k	2.186k	358.90680k	361.09320k	inf

112-400kHz

0.36MHz_TnomVnom

EBW

15/05/2024

