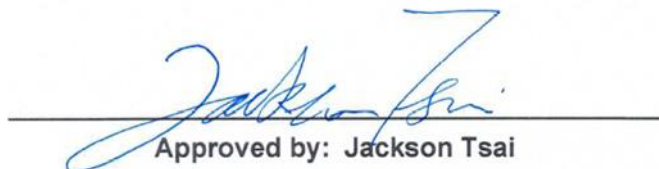


FCC Radio Test Report

FCC ID : 2BUT5LEG4IT
Contains FCC ID : J9C-QCNFA765, RI7FN920C04WW
Equipment : Liebherr Edge Gateway
Brand Name : LIEBHERR
Model Name : LEG4IT
Applicant : Liebherr-Electronics and Drives GmbH
Peter-Dornier-Str. 11
88131 Lindau
Germany
Manufacturer : Liebherr-Electronics and Drives GmbH
Peter-Dornier-Str. 11
88131 Lindau
Germany
Standard : 47 CFR FCC Part 15.225

The product was received on Dec. 10, 2025, and testing was started from Dec. 18, 2025 and completed on Dec. 23, 2025. 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 C63.10-2020 + Cor.1-2023 + C63.10a-2024 + Errata to C63.10a-2024 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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History of this test report

[illegible]

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	15.215(c)	Emission Bandwidth	PASS	-
3.3	15.225(e)	Frequency Stability	PASS	-
3.4	15.225(a)~(d)	Field Strength of Fundamental Emissions and Spectrum Mask	PASS	-
3.5	15.225(d)	Transmitter Radiated Unwanted Emissions	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: Ben Tseng

Report Producer: Debby Hung

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information						
Frequency Range (MHz)	Type	Mode	Ch. Frequency (MHz)	Channel Number	Field Strength @3m (dBuV/m)	Field Strength @30m (dBuV/m)
13.553 – 13.567	NFC-A (ISO 14443-3A) NFC-B (ISO 14443-3B) NFC-F (ISO 18092)	NFC	13.56	1	80.88	40.88

Note :

- ♦ Field strength performed peak level at 3m.
- ♦ Uses a ASK modulation.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Support
1	INPAQ	GPSLX5GWIFI09S22W-B6-01-A	PIFA	MINI FAKRA	WWAN
2	INPAQ	GPSLX5GWIFI09S22W-B6-01-A	WLAN BT: PIFA GPS: PATCH	MINI FAKRA	2.4G/5G/6G/ BT/GPS
3	INPAQ	NF-C-F9-R0-02-017-A	Loop	SMA	NFC

Ant.	Port	Gain (dBi)											
		2.4G	5G					6G				BT	GPS
			UNII-1	UNII-2A	UNII-2C	UNII-3	UNII-4	UNII-5	UNII-6	UNII-7	UNII-8		
1	1	-	-	-	-	-	-	-	-	-	-	-	-
2	1	2.38	1.02	1.02	1.63	1.88	1.85	2.31	1.67	2.28	1.74	2.38	-
2	2	2.58	1.03	1.03	1.64	1.88	1.85	1.85	1.78	2.62	1.8	-	-
2	3	-	-	-	-	-	-	-	-	-	-	-	1.65

Note 1: The EUT has three antennas.

For 2.4GHz function:

For IEEE 802.11 b/g/n/VHT/ax mode (2TX/2RX)

Ant. 2 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Ant. 2 (port 1) could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax mode (2TX/2RX)

Ant. 2 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

**Note 2**

Operating Band	Freq. (MHz)	Antenna Gain
☒ LTE Band 2	1850 - 1910	2.18
☒ LTE Band 4	1710 - 1755	2.62
☒ LTE Band 5	824 - 849	0.22
☒ LTE Band 7	2500 - 2570	0.52
☒ LTE Band 12	699 - 716	1.74
☒ LTE Band 13	777 - 787	1.73
☒ LTE Band 14	788 - 798	0.75
☒ LTE Band 17	704 - 716	1.42
☒ LTE Band 25	1850 - 1915	2.18
☒ LTE Band 26	814 - 849	0.22
☒ LTE Band 26 Part 90	814.7	1.02
☒ LTE Band 30	2305 - 2315	0.38
☒ LTE Band 38	2570 - 2620	0.04
☒ LTE Band 41	2496 - 2690	0.73
☒ LTE Band 41(HPUE)	2498.5	0.73
☒ LTE Band 42	3450 - 3550	1.81
☒ LTE Band 42	3550 - 3600	1.72
☒ LTE Band 43	3600 - 3700	2.61
☒ LTE Band 43	3600 - 3700	0.72
☒ LTE Band 48	3550 - 3700	1.64
☒ LTE Band 66	1710 - 1780	2.62
☒ LTE Band 70	1710 - 1780	2.62
☒ LTE Band 71	663 - 698	0.76
☒ LTE Band 106	901	-0.02
☒ 5G Band n2	1850 - 1910	2.18
☒ 5G Band n5	824- 849	0.22
☒ 5G Band n7	2500 - 2570	0.52
☒ 5G Band n12	699 - 716	1.74
☒ 5G Band n13	777 - 787	1.73
☒ 5G Band n14	788 - 798	0.75
☒ 5G Band n25	1850 - 1915	2.18



☒ 5G Band n26	814 - 849	0.22
☒ 5G Band n26 Part 90	814.7	1.02
☒ 5G Band n30	2305 - 2315	0.38
☒ 5G Band n38	2570 - 2620	0.04
☒ 5G Band n41_PC3	2496 - 2690	0.73
☒ 5G Band n48	3550 - 3700	1.64
☒ 5G Band n53	2495	0.63
☒ 5G Band n66	1710 - 1780	2.62
☒ 5G Band n70	1710	2.62
☒ 5G Band n71	663 - 698	0.76
☒ 5G Band n77_PC3	3450 - 3980	0.89
☒ 5G Band n78_PC3	3450 - 3800	0.72

1.1.3 EUT Information

Operational Condition	
EUT Power Type	From Power 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**

Duty Cycle Operation Restriction	
The transmitter is used for	The transmitter is operated
☒ Inductive applications	☒ Automatically triggered
☐ Duty cycle fixed mode	☒ Duty cycle random mode
☒ Duty cycle mode - NFC-A (ISO 14443-3A)	
Declare transmitter duty cycle / 1 hour =	100%
☒ Duty cycle mode - NFC-B (ISO 14443-3B)	
Declare transmitter duty cycle / 1 hour =	100%
☒ Duty cycle mode - NFC-F (ISO 18092)	
Declare transmitter duty cycle / 1 hour =	100%
☐ Duty cycle mode - NFC-V (ISO 15693)	
Declare transmitter duty cycle / 1 hour =	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 C63.10-2020 + Cor.1-2023 + C63.10a-2024 + Errata to C63.10a-2024

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
AC Conduction	CO04-HY	Daniel Lin	20.1~21.5°C / 54~54%	23/Dec/2025
RF Conducted	TH01-HY	Sonic Li	23.5~23.7°C / 54~57%	18/Dec/2025
Radiated	03CH03-HY	Simon Cheng	21.3~23.7°C / 51~53%	18/Dec/2025
☐ 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	3.44 dB	Confidence levels of 95%
Emission Bandwidth	0.05 MHz	Confidence levels of 95%
Field Strength of Fundamental Emissions and Spectrum Mask	2.9 dB	Confidence levels of 95%
Radiated Emission (9 kHz ~ 30 MHz)	2.9 dB	Confidence levels of 95%
Radiated Emission (30 MHz ~ 1 GHz)	5.64 dB	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	120V
Freq. Stability	Abbreviation	Remark
-20°C	-	-
-10°C	-	-
0°C	-	-
10°C	-	-
20°C	-	-
30°C	-	-
40°C	-	-
50°C	-	-
20°C-138V	-	-
20°C-120V	-	-
20°C-102V	-	-

2.2 Test Channel Mode

Test Software Version	Dos 6.1
-----------------------	---------

Mode	Power Setting
NFC	-
13.56MHz	default

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
	Adapter Mode

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emission Bandwidth, Frequency Stability
Test Condition	Conducted measurement

The Worst Case Mode for Following Conformance Tests	
Tests Item	Field Strength of Fundamental Emissions and Spectrum Mask Transmitter Radiated Unwanted Emissions
Test Condition	Radiated measurement
Pretest Mode	☒ 1. NFC-A (ISO 14443-3A)
	☒ 2. NFC-B (ISO 14443-3B)
	☒ 3. NFC-F (ISO 18092)
	☐ 4. NFC-V (ISO 15693)
Mode 2 configuration was pretested and found to be the worst case and measured during the test.	
Operating Mode	CTX
	1. Adapter Mode
Orthogonal Planes of EUT	Z Plane
	
Worst Planes of EUT	V

2.4 Accessories

Accessories				
5-IN-1 Combo Antenna	Brand Name	INPAQ	Model Name	GPSLX5GWIFI09S22W-B6-01-A
NFC Antenna	Brand Name	INPAQ	Model Name	NF-C-F9-R0-02-017-A
AC Adapter (optional)	Brand Name	MOSO	Model Name	MSS-Z5000WR240-120C0-P
AC PWR CORD(US Plug) (optional)	Brand Name	WELLSHIN	Model Name	K086-0245
AC PWR CORD(EU Plug) (optional)	Brand Name	WELLSHIN	Model Name	K086-0244
CAN BUS CABLE (optional)	Brand Name	TUNG-LI	Model Name	TL211-014
ETHERNET CABLE (optional)	Brand Name	TUNG-LI	Model Name	TL211-013
HDMI CABLE (optional)	Brand Name	TUNG-LI	Model Name	HD001-023
USB-C CABLE (optional)	Brand Name	TUNG-LI	Model Name	UB122-001

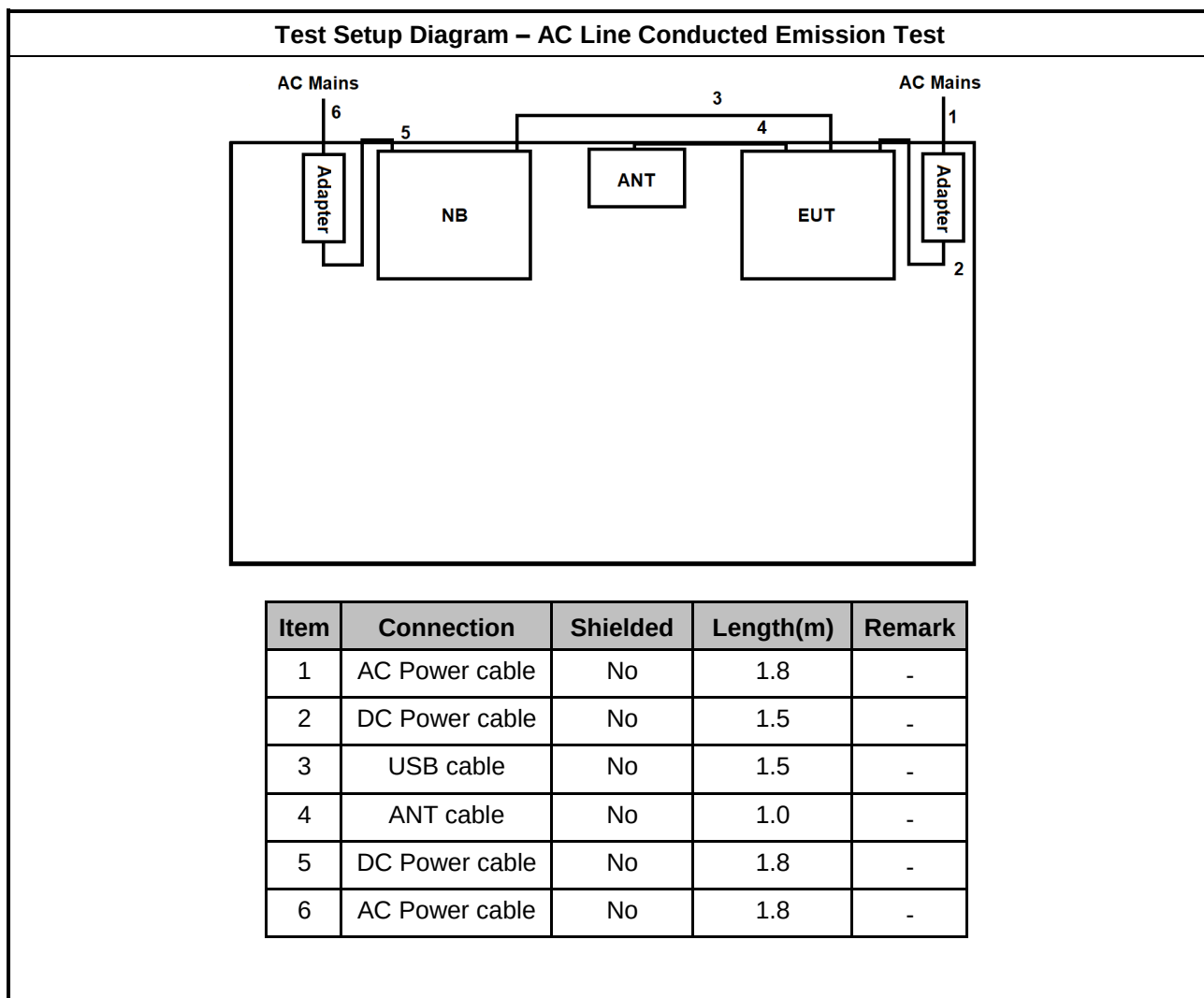
Reminder: Regarding to more detail and other information, please refer to user manual.

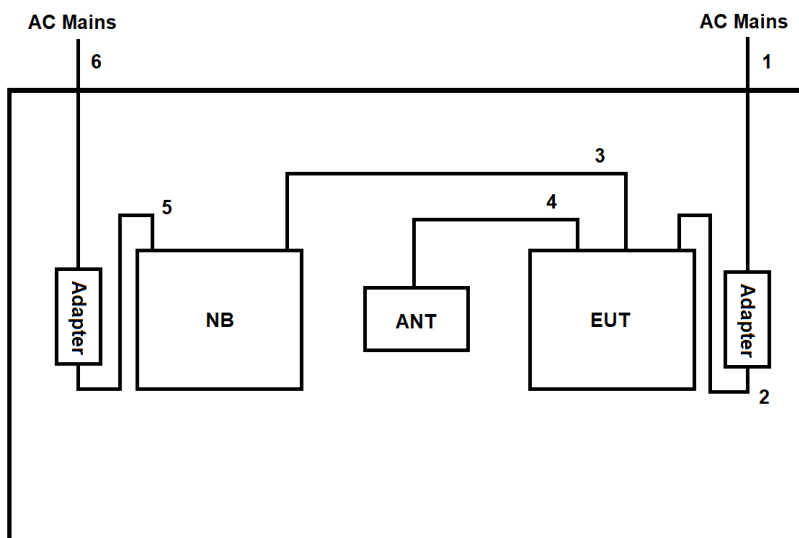
2.5 Support Equipment

Support Equipment – AC Conduction and Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	NB	HP	HSTNN-142C	-	-
2	Adapter (For NB)	HP	HSTNN-LA40	-	-
3	USB cable	UGREEN	US288	-	-

Support Equipment – Conducted					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	DELL	E5410	-	-
2	Adapter for NB	DELL	HA65NM130	-	-

2.6 Test Setup Diagram



Test Setup Diagram - Radiated Test


Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	DC Power cable	No	1.5	-
3	USB cable	No	1.5	-
4	ANT cable	No	1.0	-
5	DC Power cable	No	1.8	-
6	AC Power cable	No	1.8	-

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

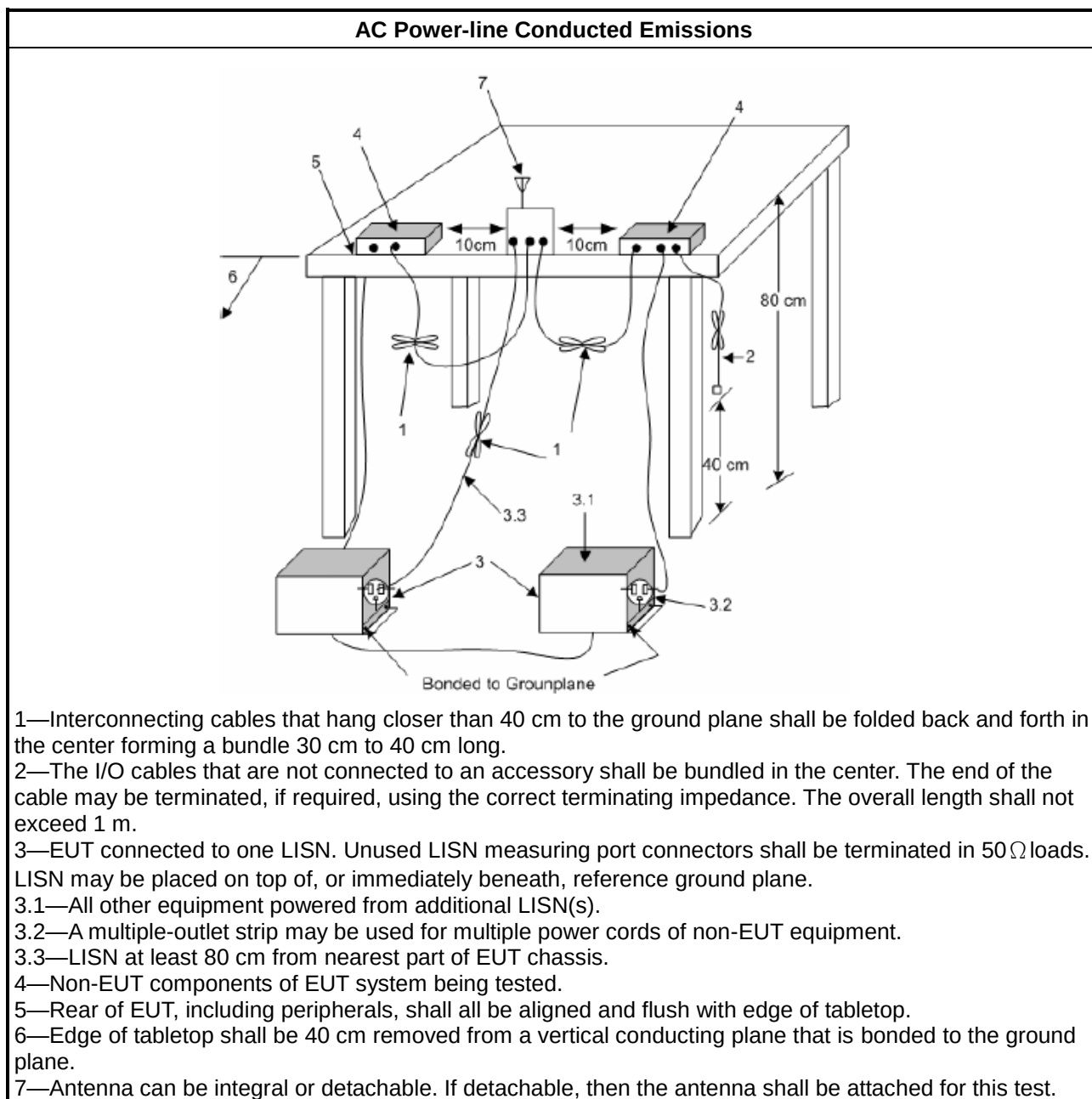
Test Method	
☒	Refer as ANSI C63.10, clause 6.2 for AC power-line conducted emissions.
☒	If AC conducted emissions fall in operating band, then following below test method confirm final result.
☐	Accept measurements done with a suitable dummy load replacing the antenna under the following conditions: (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 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

20dB Bandwidth Limit	
☒	Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band (13.553 – 13.567).

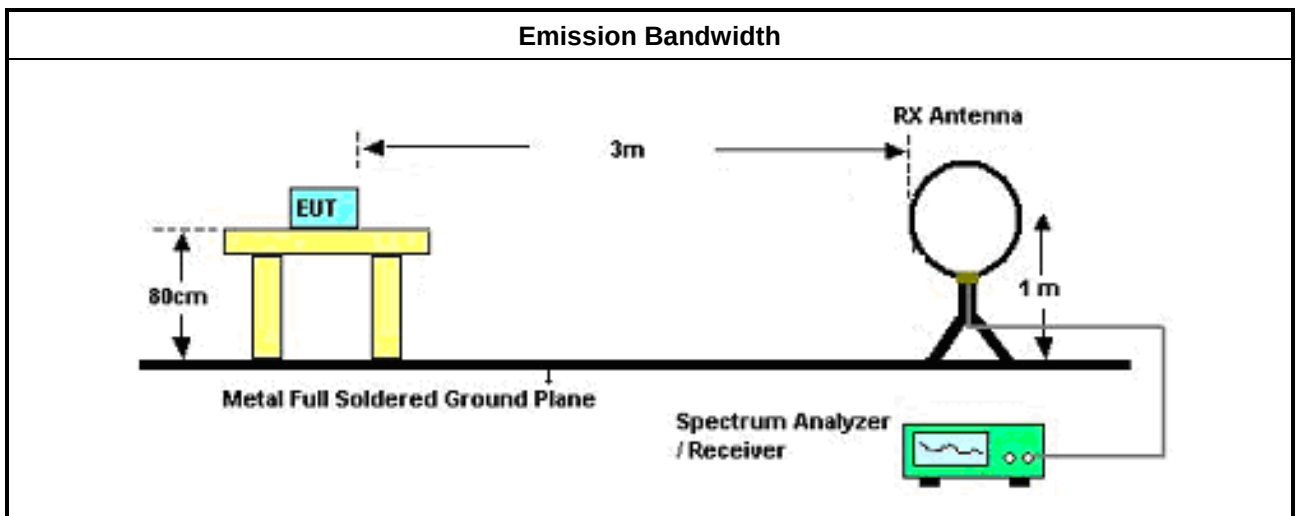
3.2.2 Measuring Instruments

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

3.3 Frequency Stability

3.3.1 Frequency Stability Limit

Frequency Stability Limit	
☒	Carrier frequency stability shall be maintained to $\pm 0.01\%$ (± 100 ppm).

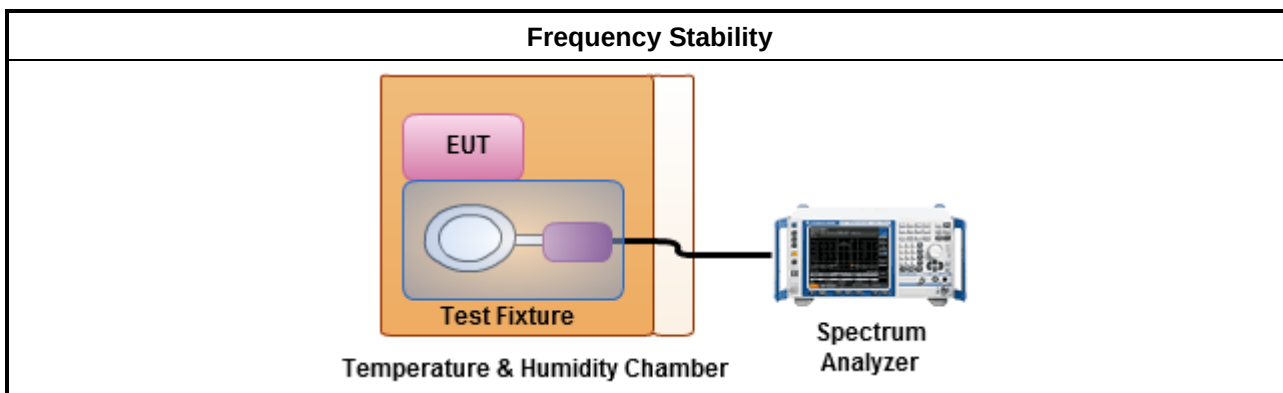
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
☒	Refer as ANSI C63.10, clause 6.8 for frequency stability tests
☒	Frequency stability with respect to ambient temperature
☒	Frequency stability when varying supply voltage
☐	For conducted measurement.
☒	For radiated measurement. The equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted power level.

3.3.4 Test Setup



3.3.5 Test Result of Frequency Stability

Refer as Appendix C

3.4 Field Strength of Fundamental Emissions and Spectrum Mask

3.4.1 Field Strength of Fundamental Emissions and Spectrum Mask Limit

Field Strength of Fundamental Emissions and Spectrum Mask					
Emissions	(uV/m)@30m	(dBuV/m)@30m	(dBuV/m)@10m	(dBuV/m)@3m	(dBuV/m)@1m
fundamental	15848	84.0	103.1	124.0	143.1
Quasi peak measurement of the fundamental.					

3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

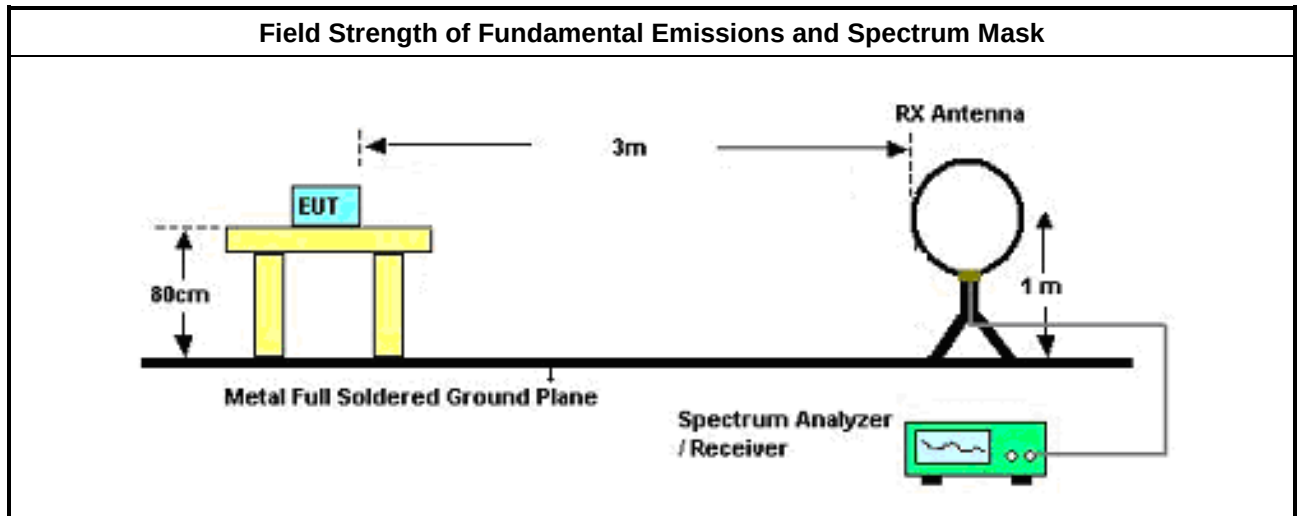
Test Method	
☒	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz and test distance is 3m.
☒	At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the requirements; however, an attempt should be made to avoid making measurements 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.
☐	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.

3.4.4 Measurement Results Calculation

The measured Level is calculated using:

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

3.4.5 Test Setup



3.4.6 Test Result of Field Strength of Fundamental Emissions and Spectrum Mask

Refer as Appendix D

3.5 Transmitter Radiated Unwanted Emissions

3.5.1 Transmitter Radiated Unwanted Emissions Limit

Transmitter Radiated Unwanted 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.

3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

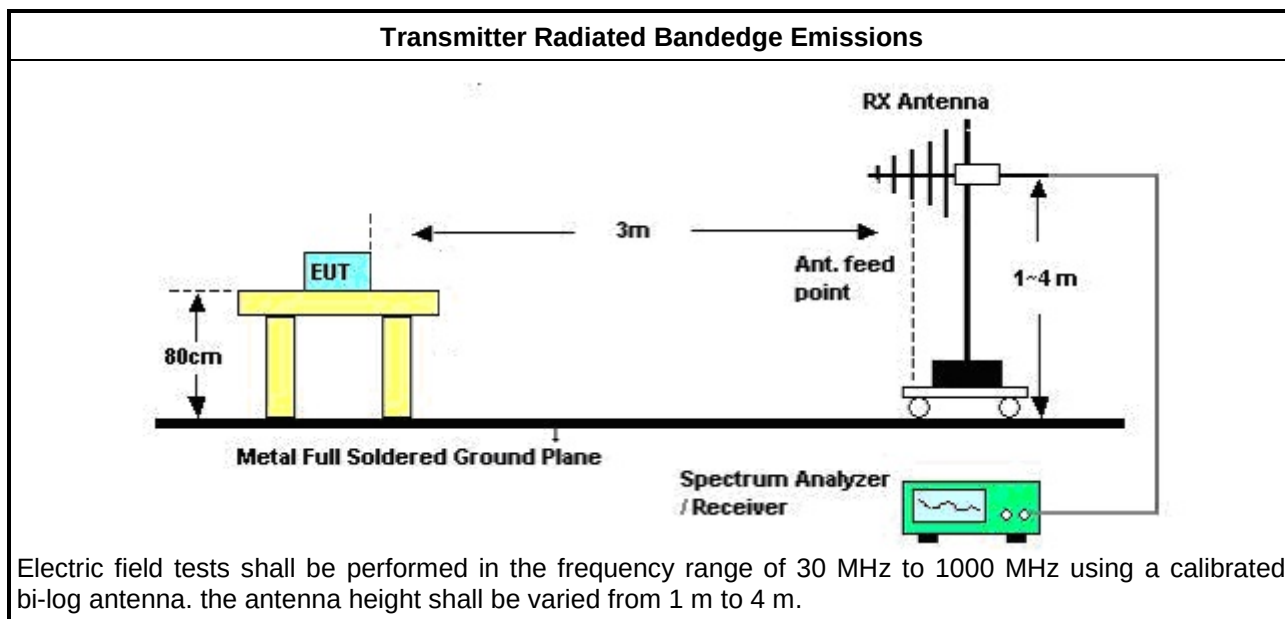
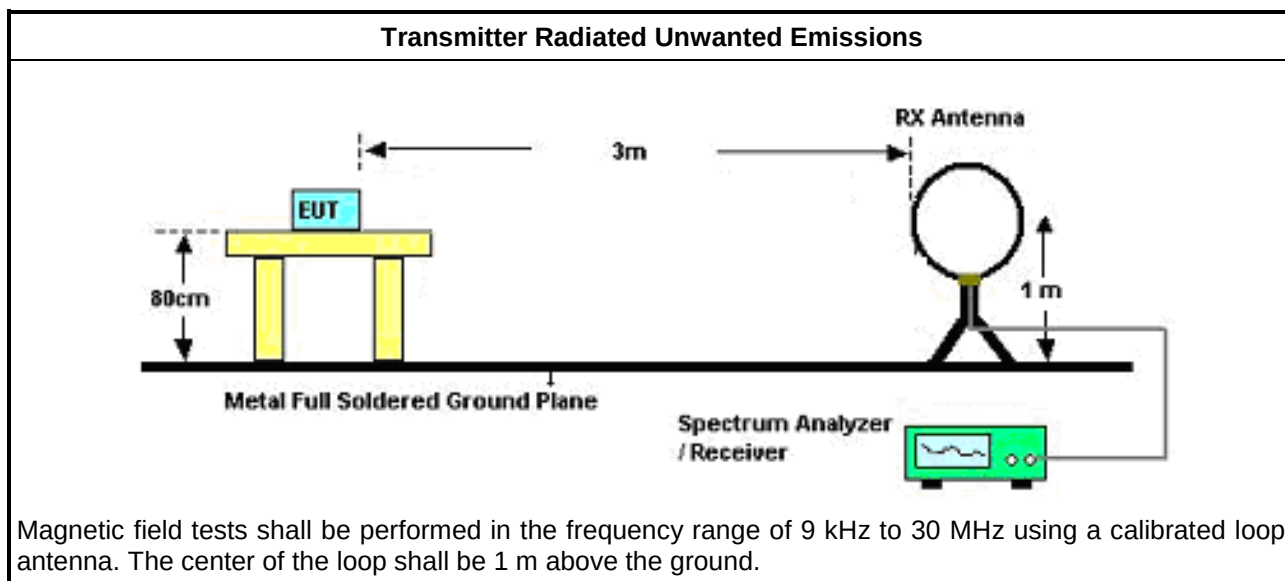
Test Method	
☒	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1 GHz and test distance is 3m.
☒	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz and test distance is 3m.
☒	At frequencies below 30 MHz, measurements may be performed at a distance closer than 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.
☐	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 D01 v01r01 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.

3.5.4 Measurement Results Calculation

The measured Level is calculated using:

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

3.5.5 Test Setup



3.5.6 Transmitter Radiated Unwanted Emissions

Refer as Appendix D

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer / Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
EMI Test Receiver	ROHDE & SCHWARZ	ESR3	102051	9kHz ~ 3.6GHz	21/May/2025	20/May/2026
Two-Line V-Network	ROHDE & SCHWARZ	ENV 216	101578	9kHz ~ 30MHz	24/Aug/2025	23/Aug/2026
Two-Line V-Network	ROHDE & SCHWARZ	ENV 216	100003	9kHz ~ 30MHz	18/Apr/2025	17/Apr/2026
Pulse Limiter	SCHWARZBECK	VTSD 9561F-N	1056	9kHz ~ 30MHz	25/Jun/2025	24/Jun/2026
Software	Sporton	SENSE-EMI	V5.11.6	-	NCR	NCR
Software	Audix	E3	6.12 160809	-	NCR	NCR

NCR: No Calibration Required

Instrument for Conducted Test

Instrument	Manufacturer / Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV3044	101438	10Hz~44GHz	14/Oct/2025	13/Oct/2026
Programmable Temp. & Humi. Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20~100℃	14/May/2025	13/May/2026
SENSE-NFC	Sporton	V5.11.14	N/A	N/A	N/A	N/A

Instrument for Radiated Test

Instrument	Manufacturer / Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	13/Jul/2025	12/Jul/2026
EMI Test Receiver	R&S	ESR	102052	9kHz~3.6GHz	14/May/2025	13/May/2026
Signal Analyzer	ROHDE&SCHWARZ	FSV3044	101748	10Hz~44GHz	10/Apr/2025	09/Apr/2026
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	20/Mar/2025	19/Mar/2026
Bilog Antenna & 6dB Attenuator	SCHAFFNER / EMC	CBL6112B / N-6-05	22237 / AT-N-0603	30MHz~1GHz	11/Oct/2025	10/Oct/2026
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz~30MHz	10/Jun/2025	09/Jun/2026
RF Cable-R03m	Jye Bao	RG142	03CH03-cable-02	30MHz~1GHz	10/Jun/2025	09/Jun/2026
Amplifier	Aglient	8447D	2944A08033	100kHz~1.3GHz	12/Sep/2025	11/Sep/2026
SENSE-NFC	Sporton	V5.11	NA	NA	NA	NA



Conducted Emissions at Powerline

Appendix A

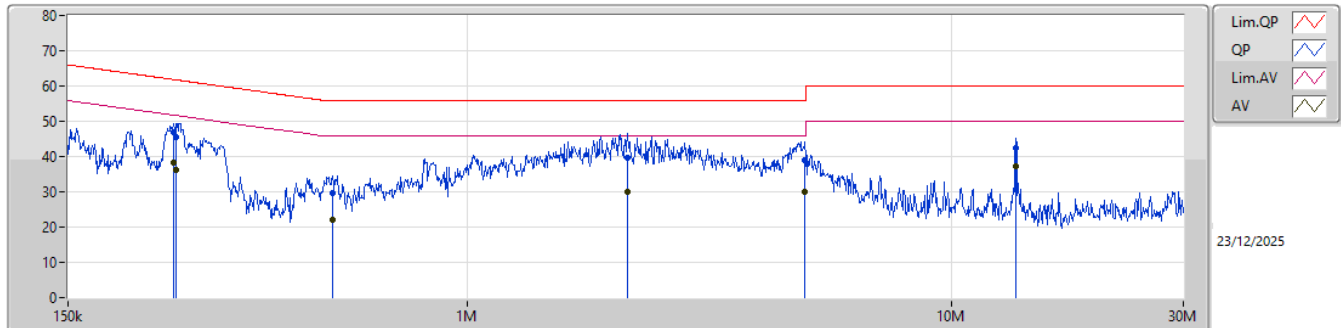
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	13.54M	37.51	50.00	-12.49	Neutral

Result

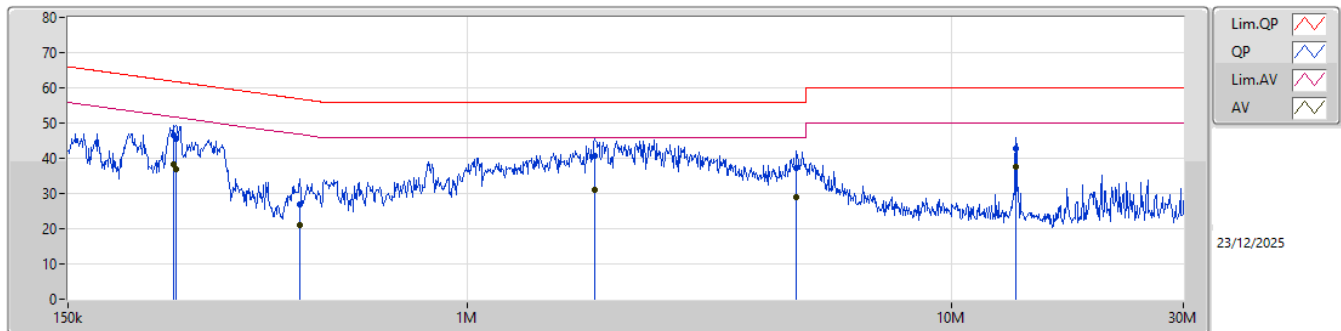
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	QP	247.06k	46.88	61.85	-14.97	Line
Mode 1	Pass	AV	247.06k	38.36	51.85	-13.49	Line
Mode 1	Pass	QP	251.04k	45.49	61.72	-16.23	Line
Mode 1	Pass	AV	251.04k	36.31	51.72	-15.41	Line
Mode 1	Pass	QP	527.49k	29.56	56.00	-26.44	Line
Mode 1	Pass	AV	527.49k	22.11	46.00	-23.89	Line
Mode 1	Pass	QP	2.14M	39.80	56.00	-16.20	Line
Mode 1	Pass	AV	2.14M	29.88	46.00	-16.12	Line
Mode 1	Pass	QP	4.97M	39.05	56.00	-16.95	Line
Mode 1	Pass	AV	4.97M	30.10	46.00	-15.90	Line
Mode 1	Pass	QP	13.54M	42.38	60.00	-17.62	Line
Mode 1	Pass	AV	13.54M	37.28	50.00	-12.72	Line
Mode 1	Pass	QP	248.05k	46.68	61.81	-15.13	Neutral
Mode 1	Pass	AV	248.05k	38.17	51.81	-13.64	Neutral
Mode 1	Pass	QP	251.04k	45.50	61.72	-16.22	Neutral
Mode 1	Pass	AV	251.04k	36.73	51.72	-14.99	Neutral
Mode 1	Pass	QP	451.44k	26.96	56.84	-29.88	Neutral
Mode 1	Pass	AV	451.44k	20.95	46.84	-25.89	Neutral
Mode 1	Pass	QP	1.83M	40.54	56.00	-15.46	Neutral
Mode 1	Pass	AV	1.83M	30.99	46.00	-15.01	Neutral
Mode 1	Pass	QP	4.78M	37.30	56.00	-18.70	Neutral
Mode 1	Pass	AV	4.78M	28.85	46.00	-17.15	Neutral
Mode 1	Pass	QP	13.54M	42.62	60.00	-17.38	Neutral
Mode 1	Pass	AV	13.54M	37.51	50.00	-12.49	Neutral

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)								
QP	247.06k	46.88	61.85	-14.97	19.78	Line	27.10	9.64	0.02	10.12								
AV	247.06k	38.36	51.85	-13.49	19.78	Line	18.58	9.64	0.02	10.12								
QP	251.04k	45.49	61.72	-16.23	19.78	Line	25.71	9.64	0.02	10.12								
AV	251.04k	36.31	51.72	-15.41	19.78	Line	16.53	9.64	0.02	10.12								
QP	527.49k	29.56	56.00	-26.44	19.79	Line	9.77	9.63	0.04	10.12								
AV	527.49k	22.11	46.00	-23.89	19.79	Line	2.32	9.63	0.04	10.12								
QP	2.14M	39.80	56.00	-16.20	19.81	Line	19.99	9.65	0.03	10.13								
AV	2.14M	29.88	46.00	-16.12	19.81	Line	10.07	9.65	0.03	10.13								
QP	4.97M	39.05	56.00	-16.95	19.90	Line	19.15	9.67	0.10	10.13								
AV	4.97M	30.10	46.00	-15.90	19.90	Line	10.20	9.67	0.10	10.13								
QP	13.54M	42.38	60.00	-17.62	20.06	Line	22.32	9.66	0.27	10.13								
AV	13.54M	37.28	50.00	-12.72	20.06	Line	17.22	9.66	0.27	10.13								

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)								
QP	248.05k	46.68	61.81	-15.13	19.77	Neutral	26.91	9.63	0.02	10.12								
AV	248.05k	38.17	51.81	-13.64	19.77	Neutral	18.40	9.63	0.02	10.12								
QP	251.04k	45.50	61.72	-16.22	19.77	Neutral	25.73	9.63	0.02	10.12								
AV	251.04k	36.73	51.72	-14.99	19.77	Neutral	16.96	9.63	0.02	10.12								
QP	451.44k	26.96	56.84	-29.88	19.78	Neutral	7.18	9.63	0.03	10.12								
AV	451.44k	20.95	46.84	-25.89	19.78	Neutral	1.17	9.63	0.03	10.12								
QP	1.83M	40.54	56.00	-15.46	19.81	Neutral	20.73	9.65	0.03	10.13								
AV	1.83M	30.99	46.00	-15.01	19.81	Neutral	11.18	9.65	0.03	10.13								
QP	4.78M	37.30	56.00	-18.70	19.89	Neutral	17.41	9.67	0.09	10.13								
AV	4.78M	28.85	46.00	-17.15	19.89	Neutral	8.96	9.67	0.09	10.13								
QP	13.54M	42.62	60.00	-17.38	20.10	Neutral	22.52	9.70	0.27	10.13								
AV	13.54M	37.51	50.00	-12.49	20.10	Neutral	17.41	9.70	0.27	10.13								

Summary

Mode	20dB (Hz)	Fl-20dB (Hz)	Fh-20dB (Hz)	OBW (Hz)	Limit (Range)
13.553-13.567MHz	-	-	-	-	-
NFC	2.686k	13.55916M	13.56185M	2.459k	13.553-13.567

Max-N dB = Maximum 20dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 20dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

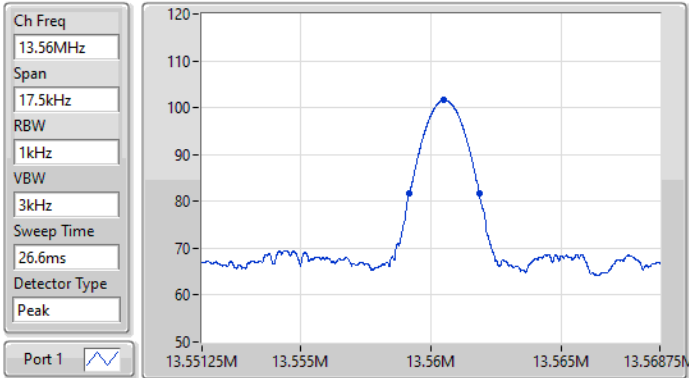
Result

Mode	Result	20dB (Hz)	Fl-20dB (Hz)	Fh-20dB (Hz)	OBW (Hz)	Fl-OBW (Hz)	Fh-OBW (Hz)	Limit (Range)
NFC	-	-	-	-	-	-	-	-
13.56MHz_TnomVnom	Pass	2.686k	13.55916M	13.56185M	2.459k	13.55928M	13.56174M	13.553-13.567

Port X-N dB = Port X 20dB down bandwidth;

NFC

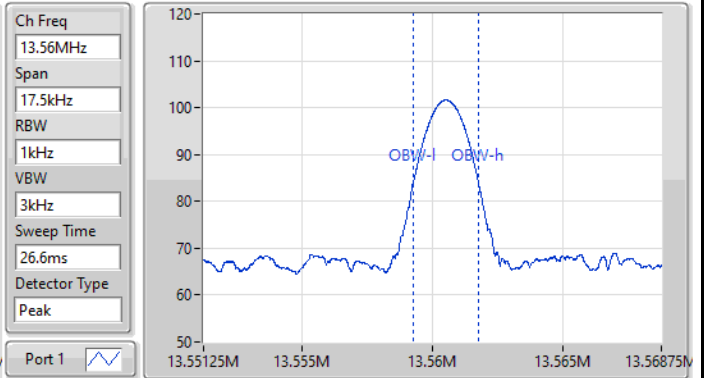
13.56MHz_TnomVnom



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Range)
2.686k	13.55916M	13.56185M	2.459k	13.55928M	13.56174M	13.553-13.56

EBW

18/12/2025



Port X-OBW = Port X 99% occupied bandwidth



Summary

Mode	Result	Ch (Hz)	Center (Hz)	ppm	Limit (ppm)	Port	Remark
13.553-13.567MHz	-	-	-	-	-	-	-
NFC	Pass	13.56M	13.56057M	42.034	100	1	0 min

Result

Mode	Result	Ch (Hz)	Center (Hz)	ppm	Limit (ppm)	Port	Remark
NFC	-	-	-	-	-	-	-
13.56MHz_-20°C	Pass	13.56M	13.560553M	40.7478	100	1	0 min
13.56MHz_-20°C	Pass	13.56M	13.56055M	40.5901	100	1	2 min
13.56MHz_-20°C	Pass	13.56M	13.560555M	40.9325	100	1	5 min
13.56MHz_-20°C	Pass	13.56M	13.560553M	40.7804	100	1	10 min
13.56MHz_-10°C	Pass	13.56M	13.56057M	42.034	100	1	0 min
13.56MHz_-10°C	Pass	13.56M	13.560565M	41.6769	100	1	2 min
13.56MHz_-10°C	Pass	13.56M	13.560563M	41.5062	100	1	5 min
13.56MHz_-10°C	Pass	13.56M	13.560567M	41.8226	100	1	10 min
13.56MHz_0°C	Pass	13.56M	13.560558M	41.1299	100	1	0 min
13.56MHz_0°C	Pass	13.56M	13.560559M	41.2379	100	1	2 min
13.56MHz_0°C	Pass	13.56M	13.560559M	41.2493	100	1	5 min
13.56MHz_0°C	Pass	13.56M	13.560561M	41.3665	100	1	10 min
13.56MHz_10°C	Pass	13.56M	13.560549M	40.5087	100	1	0 min
13.56MHz_10°C	Pass	13.56M	13.560547M	40.3717	100	1	2 min
13.56MHz_10°C	Pass	13.56M	13.560549M	40.4592	100	1	5 min
13.56MHz_10°C	Pass	13.56M	13.56055M	40.5272	100	1	10 min
13.56MHz_20°C	Pass	13.56M	13.560511M	37.6653	100	1	0 min
13.56MHz_20°C	Pass	13.56M	13.560508M	37.4603	100	1	2 min
13.56MHz_20°C	Pass	13.56M	13.56051M	37.599	100	1	5 min
13.56MHz_20°C	Pass	13.56M	13.560511M	37.6866	100	1	10 min
13.56MHz_30°C	Pass	13.56M	13.560547M	40.3722	100	1	0 min
13.56MHz_30°C	Pass	13.56M	13.560544M	40.1411	100	1	2 min
13.56MHz_30°C	Pass	13.56M	13.560546M	40.2372	100	1	5 min
13.56MHz_30°C	Pass	13.56M	13.560544M	40.1463	100	1	10 min
13.56MHz_40°C	Pass	13.56M	13.560512M	37.7928	100	1	0 min
13.56MHz_40°C	Pass	13.56M	13.560511M	37.6702	100	1	2 min
13.56MHz_40°C	Pass	13.56M	13.560515M	37.9688	100	1	5 min
13.56MHz_40°C	Pass	13.56M	13.560512M	37.7669	100	1	10 min
13.56MHz_50°C	Pass	13.56M	13.560499M	36.7847	100	1	0 min
13.56MHz_50°C	Pass	13.56M	13.560504M	37.1451	100	1	2 min
13.56MHz_50°C	Pass	13.56M	13.560499M	36.8256	100	1	5 min
13.56MHz_50°C	Pass	13.56M	13.560503M	37.0958	100	1	10 min
13.56MHz_20°C-138V	Pass	13.56M	13.560517M	38.1242	100	1	0 min
13.56MHz_20°C-138V	Pass	13.56M	13.560522M	38.5266	100	1	2 min
13.56MHz_20°C-138V	Pass	13.56M	13.560516M	38.023	100	1	5 min
13.56MHz_20°C-138V	Pass	13.56M	13.560517M	38.1194	100	1	10 min
13.56MHz_20°C-120V	Pass	13.56M	13.560511M	37.6787	100	1	0 min
13.56MHz_20°C-120V	Pass	13.56M	13.56051M	37.575	100	1	2 min
13.56MHz_20°C-120V	Pass	13.56M	13.560511M	37.6976	100	1	5 min
13.56MHz_20°C-120V	Pass	13.56M	13.56051M	37.5981	100	1	10 min
13.56MHz_20°C-102V	Pass	13.56M	13.560524M	38.6112	100	1	0 min
13.56MHz_20°C-102V	Pass	13.56M	13.560523M	38.5786	100	1	2 min
13.56MHz_20°C-102V	Pass	13.56M	13.560526M	38.7561	100	1	5 min
13.56MHz_20°C-102V	Pass	13.56M	13.560525M	38.71	100	1	10 min



Summary

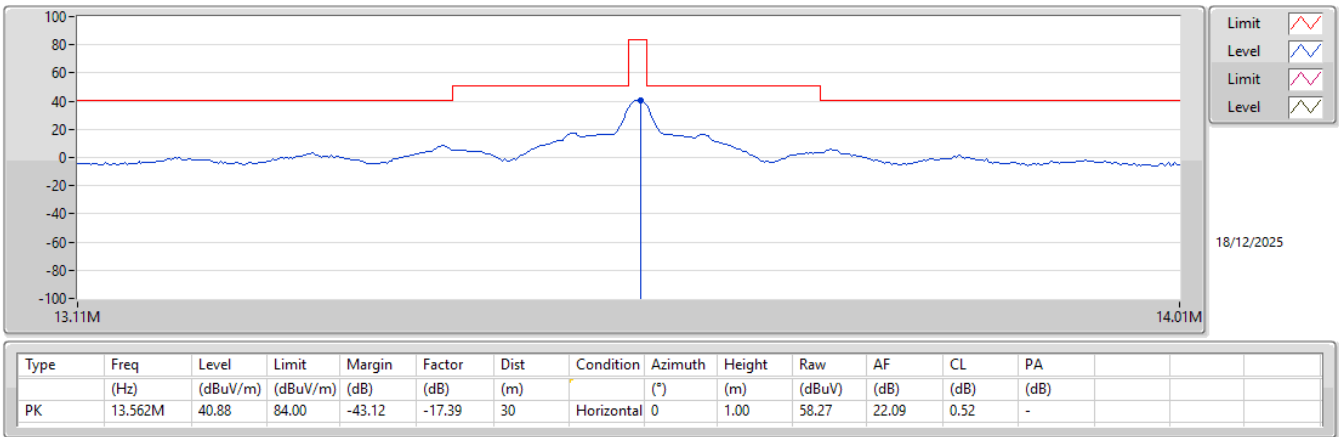
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Azimuth (°)	Height (m)
13.553-13.567MHz	-	-	-	-	-	-	-	-	-
NFC	Pass	PK	2.025M	5.40	29.54	-24.14	30	360	1.00

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Azimuth (°)	Height (m)
NFC	-	-	-	-	-	-	-	-	-
13.56MHz_TX	Pass	PK	13.562M	40.88	84.00	-43.12	30	0	1.00
13.56MHz_TX	Pass	PK	62.862k	-34.41	51.64	-86.05	300	360	1.00
13.56MHz_TX	Pass	PK	99.522k	-30.34	27.64	-57.98	300	360	1.00
13.56MHz_TX	Pass	PK	124.902k	-36.43	45.66	-82.09	300	360	1.00
13.56MHz_TX	Pass	PK	245.2k	-34.32	39.80	-74.12	300	0	1.00
13.56MHz_TX	Pass	PK	339.72k	-32.88	36.98	-69.86	300	0	1.00
13.56MHz_TX	Pass	PK	464.84k	-30.30	34.26	-64.56	300	0	1.00
13.56MHz_TX	Pass	PK	2.025M	5.40	29.54	-24.14	30	360	1.00
13.56MHz_TX	Pass	PK	5.271M	0.07	29.54	-29.47	30	360	1.00
13.56MHz_TX	Pass	PK	24.334M	-2.58	29.54	-32.12	30	360	1.00

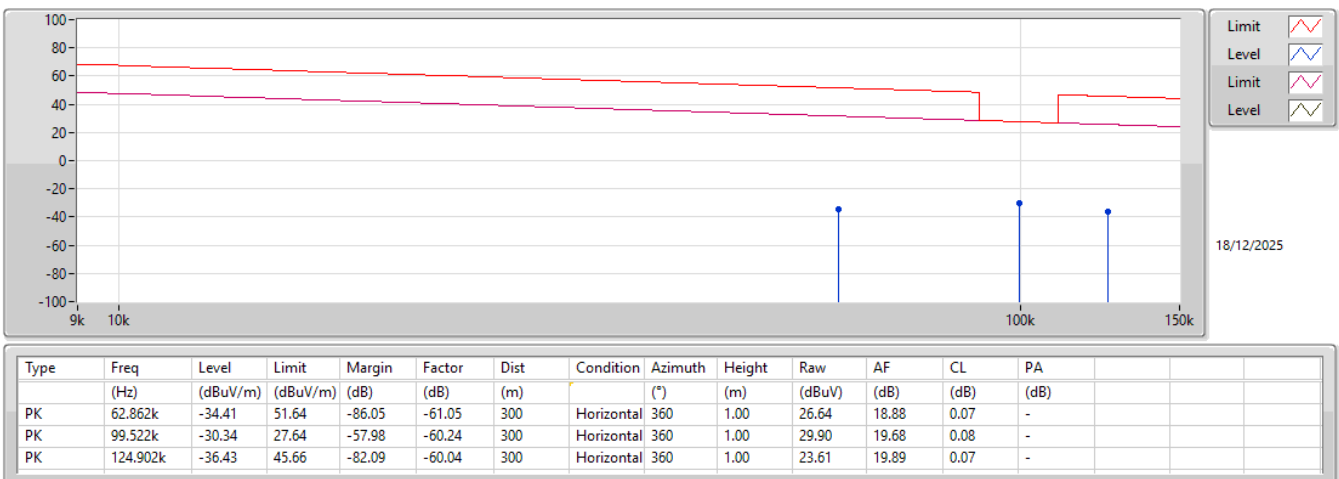
13.553-13.567MHz_NFC

13.56MHz_TX



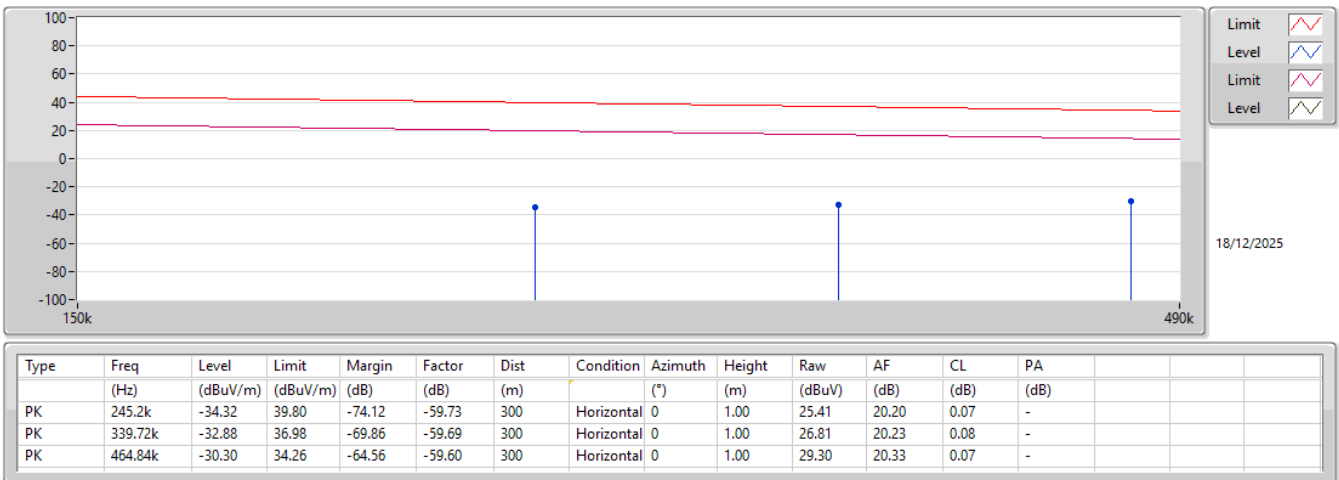
13.553-13.567MHz_NFC

13.56MHz_TX



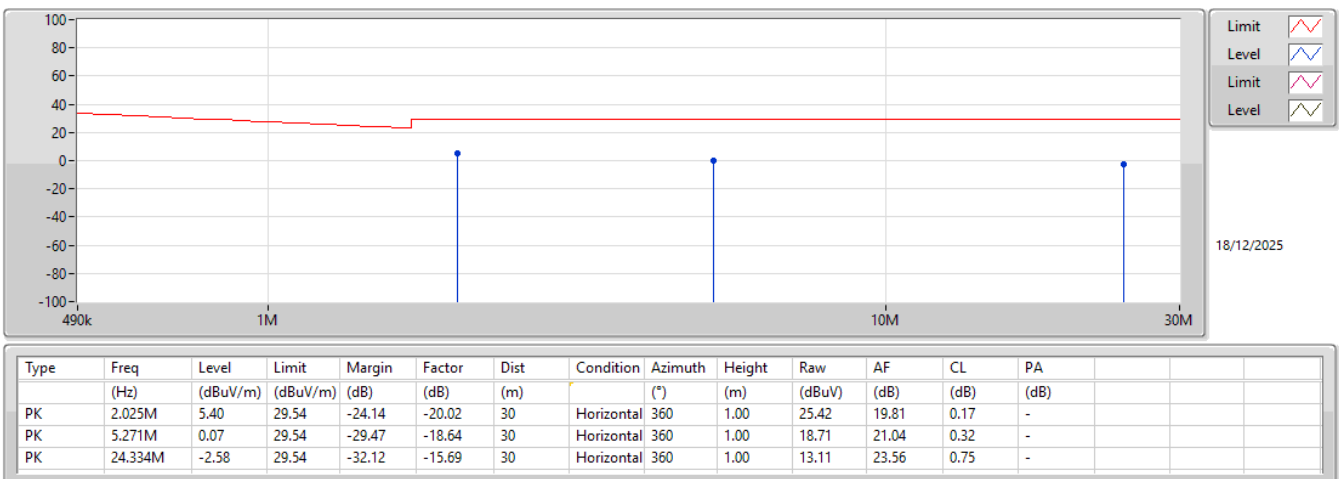
13.553-13.567MHz_NFC

13.56MHz_TX



13.553-13.567MHz_NFC

13.56MHz_TX





Summary

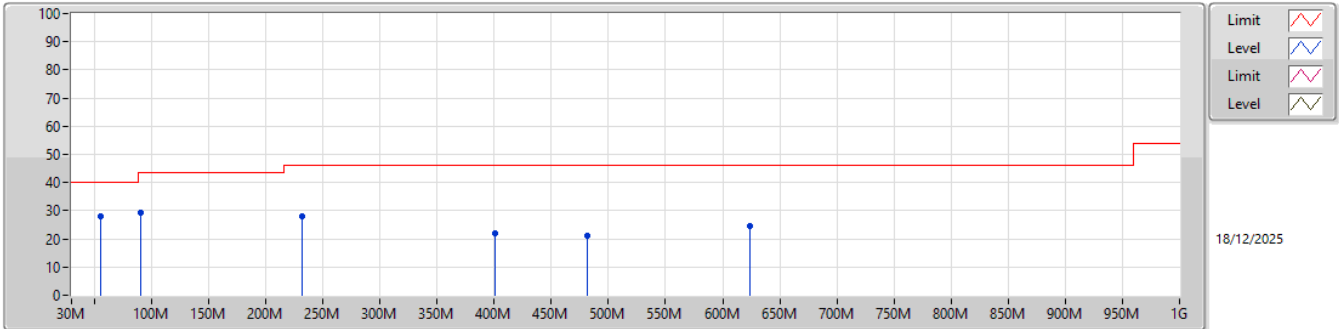
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Azimuth (°)	Height (m)
13.553-13.567MHz	-	-	-	-	-	-	-	-	-
NFC	Pass	PK	55.22M	27.85	40.00	-12.15	3	360	1.00

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Azimuth (°)	Height (m)
NFC	-	-	-	-	-	-	-	-	-
13.56MHz_TX	Pass	PK	55.22M	27.85	40.00	-12.15	3	360	1.00
13.56MHz_TX	Pass	PK	90.14M	29.28	43.50	-14.22	3	360	1.00
13.56MHz_TX	Pass	PK	231.76M	28.10	46.00	-17.90	3	360	1.00
13.56MHz_TX	Pass	PK	400.54M	22.17	46.00	-23.83	3	360	1.00
13.56MHz_TX	Pass	PK	482.02M	20.92	46.00	-25.08	3	360	1.00
13.56MHz_TX	Pass	PK	623.64M	24.51	46.00	-21.49	3	360	1.00
13.56MHz_TX	Pass	PK	66.86M	26.71	40.00	-13.29	3	0	1.00
13.56MHz_TX	Pass	PK	92.08M	29.74	43.50	-13.76	3	0	1.00
13.56MHz_TX	Pass	PK	245.34M	27.36	46.00	-18.64	3	0	1.00
13.56MHz_TX	Pass	PK	350.1M	21.84	46.00	-24.16	3	0	1.00
13.56MHz_TX	Pass	PK	476.2M	20.34	46.00	-25.66	3	0	1.00
13.56MHz_TX	Pass	PK	623.64M	25.87	46.00	-20.13	3	0	1.00

13.553-13.567MHz_NFC

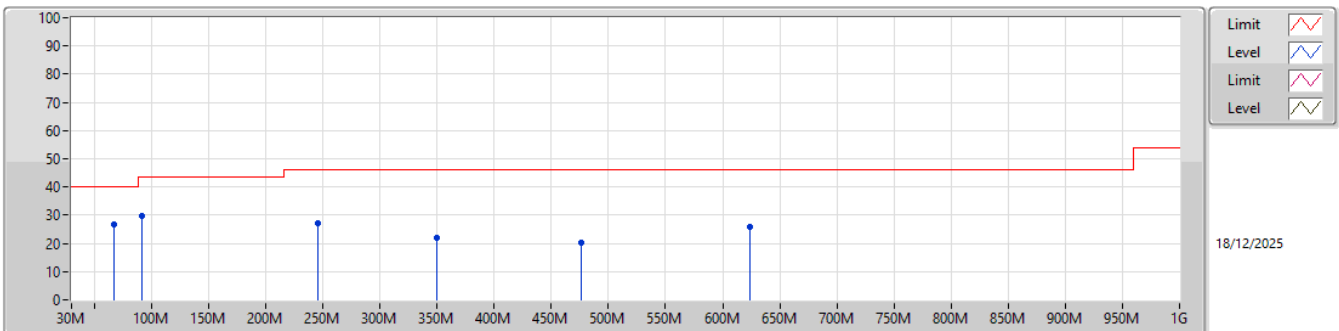
13.56MHz_TX



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	55.22M	27.85	40.00	-12.15	-12.43	3	Vertical	360	1.00	40.28	12.78	1.25	26.46				
PK	90.14M	29.28	43.50	-14.22	-9.30	3	Vertical	360	1.00	38.58	15.44	1.57	26.31				
PK	231.76M	28.10	46.00	-17.90	-7.82	3	Vertical	360	1.00	35.92	16.60	2.55	26.97				
PK	400.54M	22.17	46.00	-23.83	-3.51	3	Vertical	360	1.00	25.68	21.87	3.35	28.73				
PK	482.02M	20.92	46.00	-25.08	-2.21	3	Vertical	360	1.00	23.13	23.22	3.71	29.14				
PK	623.64M	24.51	46.00	-21.49	1.09	3	Vertical	360	1.00	23.42	24.91	4.33	28.15				

13.553-13.567MHz_NFC

13.56MHz_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	66.86M	26.71	40.00	-13.29	-12.45	3	Horizontal	0	1.00	39.16	12.64	1.26	26.35				
PK	92.08M	29.74	43.50	-13.76	-8.93	3	Horizontal	0	1.00	38.67	15.76	1.62	26.31				
PK	245.34M	27.36	46.00	-18.64	-6.39	3	Horizontal	0	1.00	33.75	18.02	2.64	27.05				
PK	350.11M	21.84	46.00	-24.16	-4.36	3	Horizontal	0	1.00	26.20	20.57	3.19	28.12				
PK	476.2M	20.34	46.00	-25.66	-2.12	3	Horizontal	0	1.00	22.46	23.34	3.69	29.15				
PK	623.64M	25.87	46.00	-20.13	1.09	3	Horizontal	0	1.00	24.78	24.91	4.33	28.15				