FCC RADIO TEST REPORT

FCC ID	:	2AW3A-1NAC21ACUCM
Equipment	:	EV Charger
Brand Name	:	RIVIAN
Model Name	:	PT0057322, PT00340197, PT00261633, PT00401761, 1NAC21ACUCM
Marketing Name	:	RIVIAN WAYPOINTS CHARGER RIVIAN FLEET AC DISPENSER
Applicant	:	Rivian Automotive LLC. 14600 Myford Road, Irvine CA 92606
Manufacturer	:	Lite-On Technology Corporation 22F., No. 392, Ruey Kuang Road, Neihu District, Taipei City 114, Taiwan (R.O.C.)
Standard	:	FCC Part 15 Subpart C §15.225

The product was received on Apr. 09, 2025 and testing was performed from Apr. 22, 2025 to May 15, 2025. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issue Date
FR230116-01D	01	Initial issue of report	Jun. 11, 2025
FR230116-01D	02	Revise Marketing Name This report is an updated version, replacing the report issued on Jun. 11, 2025.	Jun. 16, 2025
FR230116-01D	03	Revising Product Feature of Equipment Under Test and Test Mode This report is an updated version, replacing the report issued on Jun. 16, 2025.	Jun. 18, 2025

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.207	AC Power Line Conducted Emissions	Pass	0.70 dB under the limit at 0.30MHz
3.2	15.215(c)	20dB Spectrum Bandwidth	Pass	-
	2.1049	99% OBW Spectrum Bandwidth	Reporting only	-
3.3	15.225(e)	Frequency Stability	Pass	-
3.4	15.225(a)(b)(c)	Field Strength of Fundamental Emissions	Pass	Max level 25.82 dBμV/m at 13.56 MHz Max level
3.5	15.225(d) 15.209	Radiated Spurious Emissions	Pass	6.20 dB under the limit at 179.85MHz
3.6	15.203	Antenna Requirements	Pass	-

Note: This is a variant report by updating standards version and adding SKU. The difference between Model Name: 1NAC21ACUCM and Model Name: PT00057322, PT00261633, PT00401761, PT00340197 is NFC position and Model Name: 1NAC21ACUCM execute all test cases. All the test cases were performed on original report which can be referred to Sporton Report Number FR230116C. Based on the original report, the test cases were verified.

Conformity Assessment Condition:
1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”.
Disclaimer:
The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Yun Huang

Report Producer: Jessie Ho

1. General Description

1.1 Product Feature of Equipment Under Test

GSM/LTE, Bluetooth - LE, Wi-Fi 2.4GHz 802.11b/g/n and NFC.

Product Feature	
Sample 1	SKU 1
Sample 2	SKU 2
Sample 3	SKU 3
Sample 4	SKU 4
Sample 5	SKU 5
Antenna Type	WWAN: Fixed External Antenna WLAN: FPC Antenna Bluetooth: Internal Antenna NFC: PCB Loop Antenna

Remark: The EUT's information above is declared by manufacturer. Please refer to Comments and Explanations in report summary.

	SKU 1	SKU 2	SKU 3	SKU 4	SKU 5
	Public	Fleet	Fleet	Fleet	Public
	LITEON: W1-UC166-0TH1ER	LITEON: W1-UC16A-00H1ER	LITEON: W1-UC168-00H1ER	LITEON: W1-UC166-00H1ER	LITEON: W1-UC166-0TH1ER
	RIVIAN: PT00057322	RIVIAN:PT00261633	RIVIAN: PT00340197	RIVIAN:PT00401761	RIVIAN: 1NAC21ACUCM
LCD Panel	Yes	NO	NO	NO	YES
LTE module	YES	YES	YES	YES	YES
BLE module	YES	YES	YES	YES	YES
Wi-Fi module	YES	YES	YES	YES	YES
RFID module	YES	YES	YES	YES	YES
Holster	YES	NO	NO	NO	YES
Holster cover	YES	YES	YES	YES	YES

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory	
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	**Sporton Site No.**	
	TH03-HY	CO05-HY
Test Engineer	Eric Wu	Brian Chen
Temperature	19.9~21.9℃	23~26℃
Relative Humidity	43.8~45.8%	45~55%

Note: The test site complies with ANSI C63.4 2014 requirement.

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	03CH11-HY (TAF Code: 3786)
Test Engineer	Troye Hsieh
Temperature	19.2~20.3℃
Relative Humidity	52.3~63.1%
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory.

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW1190 and TW3786

1.4 Applicable Standards

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

- FCC Part 15 Subpart C §15.225
- FCC KDB 414788 D01 Radiated Test Site v01r01
- ANSI C63.10-2013

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.

2. Test Configuration of Equipment Under Test

2.1 Descriptions of Test Mode

Investigation has been done on all the possible configurations.

The following table is a list of the test modes shown in this test report.

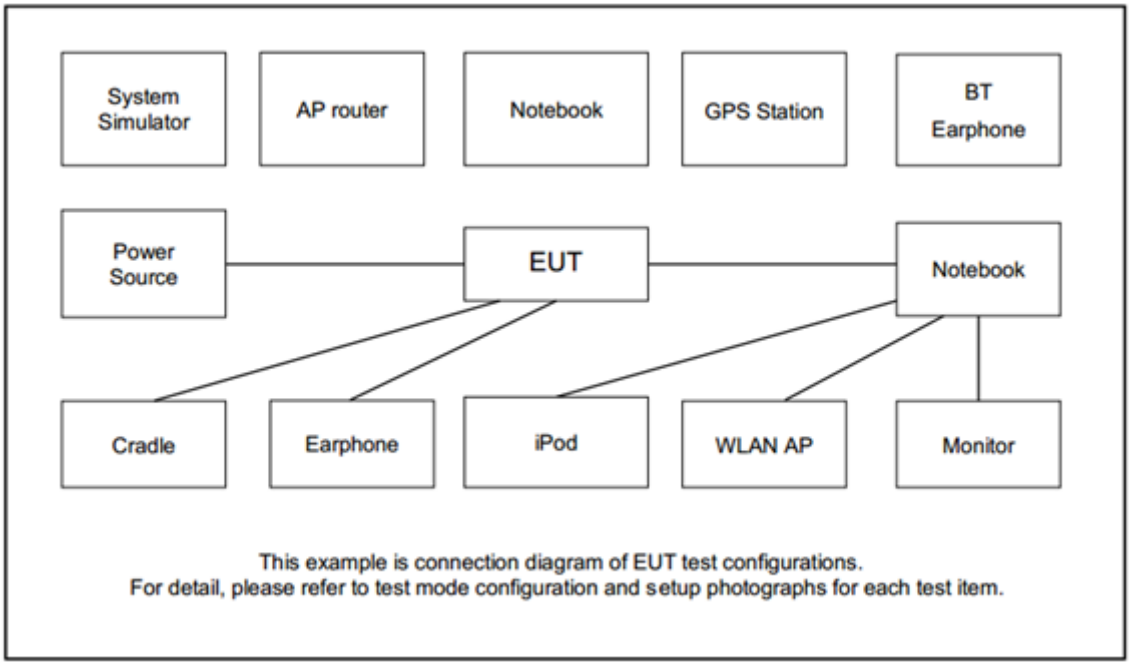
Test Items	
AC Power Line Conducted Emissions	Field Strength of Fundamental Emissions
20dB Spectrum Bandwidth	Frequency Stability
Radiated Emissions 9kHz~30MHz	Radiated Emissions 30MHz~1GHz

The EUT pre-scanned in reader mode with NFC tag (four NFC type A, B, F) and without reading tag. Based on the highest field strength of fundamental and spurious emissions, the worst case type (type F) was recorded in this report.

The measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.

Test Cases	
AC Conducted Emission	Mode 1 : NFC Link + Power Cable (240 Vac) for Sample 5
Remark: For Radiated Test Cases, the tests were performed with Sample 5	

2.2 Connection Diagram of Test System



2.3 Table for Supporting Units

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	NFC Card	N/A	N/A	N/A	N/A	N/A

2.4 EUT Operation Test Setup

The EUT is programmed to be in continuously transmitting mode.

The ancillary equipment, NFC card, is used to make the EUT (NFC) continuously transmitting signal (Power Level: Default) at 13.56MHz and is placed around 0 cm gap to the EUT.

3. Test Results

3.1 AC Power Line Conducted Emissions Measurement

3.1.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

For terminal test result, the testing follows FCC KDB 174176.

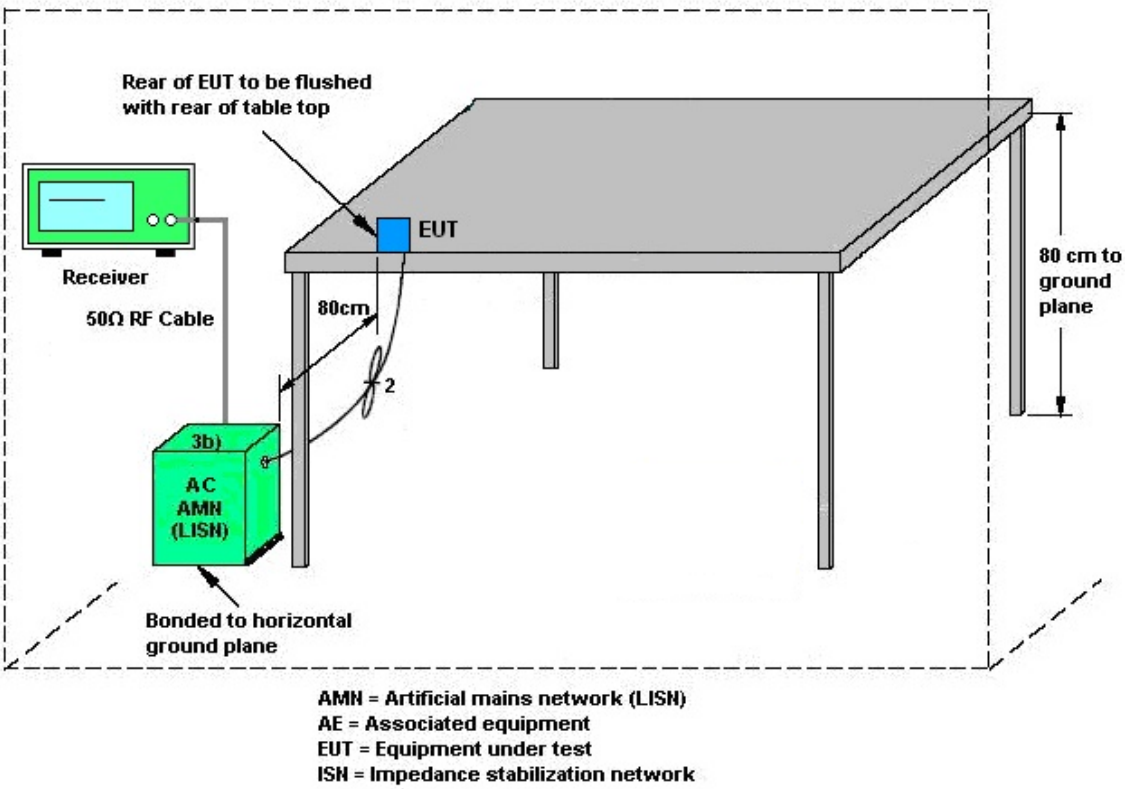
3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.1.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9 kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

3.1.4 Test setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.1.5 Test Result of AC Conducted Emission

Please refer to Appendix A.

Note:

(1) with antenna

Remark: 13.56MHz is the NFC RF fundamental signal.

(2) with dummy load

Remark: Only the fundamental NFC signal needs to be retested per C63.4.

3.2 20dB and 99% OBW Spectrum Bandwidth Measurement

3.2.1 Limit

Intentional radiators must be designed to ensure that the 20 dB and 99% emission bandwidth in the specific band 13.553~13.567 MHz.

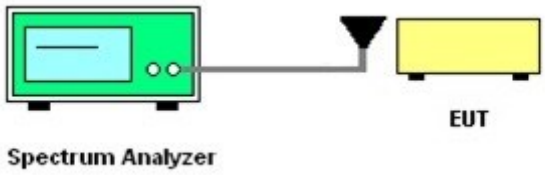
3.2.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.2.3 Test Procedures

1. The spectrum analyzer connected via a receive antenna placed near the EUT in peak Max Hold Mode.
2. The resolution bandwidth of 1 kHz and the video bandwidth of 3 kHz were used.
3. Measured the spectrum width with power higher than 20 dB below carrier.
4. Measured the 99% OBW.

3.2.4 Test Setup



3.2.5 Test Result of Near Field Test Items

Please refer to Appendix B.

3.3 Frequency Stability Measurement

3.3.1 Limit

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% (100ppm) of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed by using a new battery.

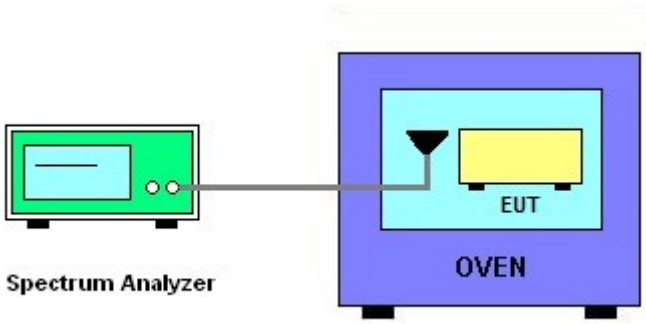
3.3.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.3.3 Test Procedures

1. The spectrum analyzer connected via a receive antenna placed near the EUT.
2. EUT has transmitted signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire emissions bandwidth.
4. Set RBW = 1 kHz, VBW = 3 kHz with peak detector and maxhold settings.
5. The fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10^6 ppm and the limit is less than ±100ppm.
6. Extreme temperature rule is -20°C~50°C.

3.3.4 Test Setup



3.3.5 Test Result of Near Field Test Items

Please refer to Appendix B.

3.4 Field Strength of Fundamental Emissions and Mask Measurement

3.4.1 Limit

Rules and specifications	FCC CFR 47 Part 15 section 15.225			
Description	Compliance with the spectrum mask is tested with RBW set to 9kHz.			
Freq. of Emission (MHz)	Field Strength (μV/m) at 30m	Field Strength (dBμV/m) at 30m	Field Strength (dBμV/m) at 10m	Field Strength (dBμV/m) at 3m
1.705~13.110	30	29.5	48.58	69.5
13.110~13.410	106	40.5	59.58	80.5
13.410~13.553	334	50.5	69.58	90.5
13.553~13.567	15848	84.0	103.08	124.0
13.567~13.710	334	50.5	69.58	90.5
13.710~14.010	106	40.5	59.58	80.5
14.010~30.000	30	29.5	48.58	69.5

Remark:

1. The field strength test result is in 3m test distance, follow test rules the test data use distance extrapolation factor and reported in this report at 30m test result.
2. Distance extrapolation factor = 40 log (specific distance / test distance) (dB)

3.4.2 Measuring Instruments

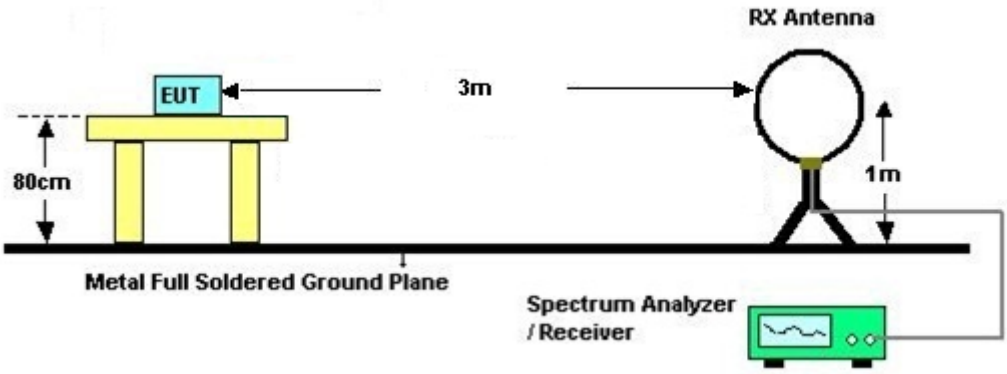
Please refer to the measuring equipment list in this test report.

3.4.3 Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT is placed on the top of the turntable 0.8 meter above ground. The phase center of the loop receiving antenna mounted antenna tower is placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable is rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the receiving antenna is fixed at one meter above ground to find the maximum emissions field strength.
4. For Fundamental emissions, use the receiver to measure QP reading.
5. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
6. Compliance with the spectrum mask is tested with RBW set to 9 kHz.
   Note: Emission level (dBμV/m) = 20 log Emission level (μV/m).

3.4.4 Test Setup

For radiated test below 30MHz



3.4.5 Test Result of Field Strength of Fundamental Emissions and Mask

Please refer to Appendix C.

3.5 Radiated Emissions Measurement

3.5.1 Limit

The field strength of any emissions which appear outside of 13.110 ~14.010MHz band shall not exceed the general radiated emissions limits.

Frequencies (MHz)	Field Strength (μV/m)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

3.5.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.5.3 Measuring Instrument Setting

The following table is the setting of receiver:

Receiver Parameter	Setting
Attenuation	Auto
Frequency Range: 9kHz~150kHz	RBW 200Hz for QP
Frequency Range: 150kHz~30MHz	RBW 9kHz for QP
Frequency Range: 30MHz~1000MHz	RBW 120kHz for Peak

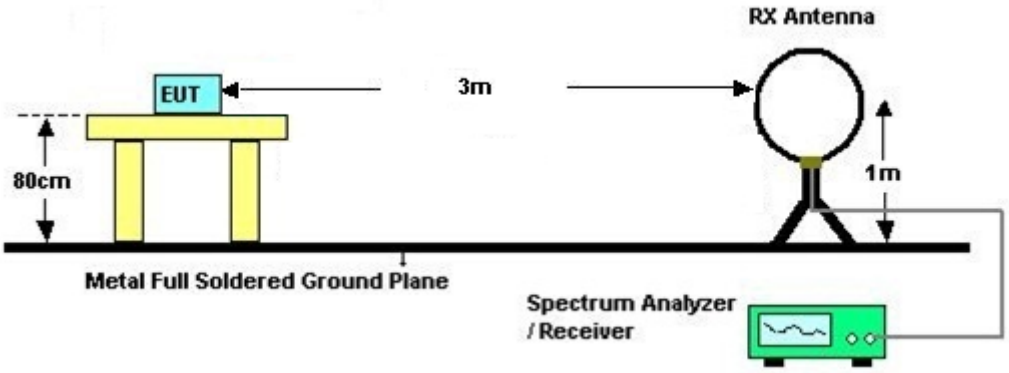
Note: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz and 110-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

3.5.4 Test Procedures

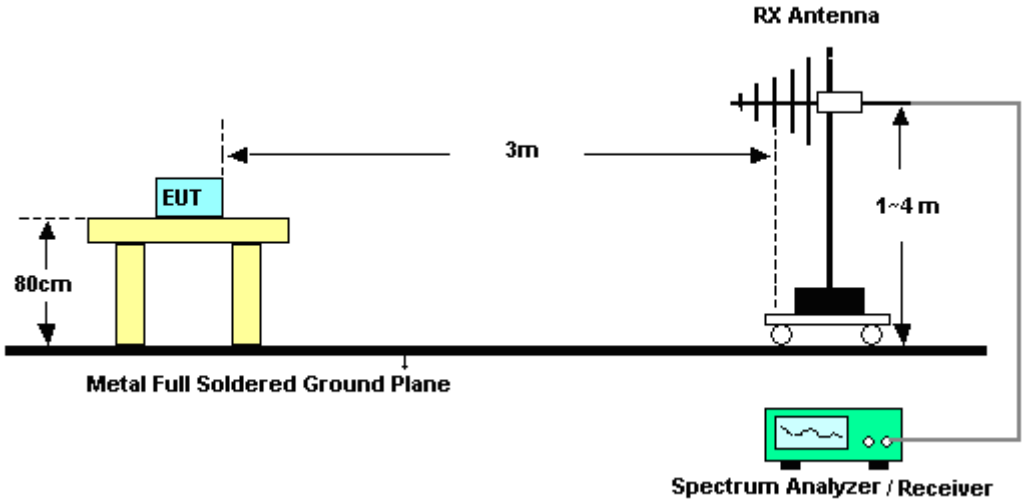
1. Configure the EUT according to ANSI C63.10. The EUT is placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower is placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable is rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna is varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower is scanned (from 1 M to 4 M) and then the turntable is rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
7. In case the emission is lower than 30 MHz, loop antenna has to be used for measurement and the recorded data shall be QP measured by receiver.

3.5.5 Test Setup

For radiated test below 30MHz



For radiated test above 30MHz



3.5.6 Test Result of Radiated Emissions Measurement

Please refer to Appendix C.

Remark:

1. There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.
2. After pre-scan three receiving antenna orientations parallel (horizontal), perpendicular(vertical), and ground-parallel for Loop Antenna, the worst case is receiving antenna parallel.

3.6 Antenna Requirements

3.6.1 Standard Applicable

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

4. List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSP30	101329	9kHz~30GHz	Sep. 25, 2024	Apr. 22, 2025	Sep. 24, 2025	Conducted (TH03-HY)
AC Power Source	AC POWER	AFC-500W	F104070011	50Hz~60Hz	Sep. 26, 2024	Apr. 22, 2025	Sep. 25, 2025	Conducted (TH03-HY)
Temperature & Humidity Cabinet Chamber	ESPEC	SH-641	92013720	-40℃~90℃	Sep. 06, 2024	Apr. 22, 2025	Sep. 05, 2025	Conducted (TH03-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 01, 2024	Apr. 22, 2025	Oct. 31, 2025	Conducted (TH03-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	May 05, 2025~ May 15, 2025	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 10, 2024	May 05, 2025~ May 15, 2025	Dec. 09, 2025	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Oct. 14, 2024	May 05, 2025~ May 15, 2025	Oct. 13, 2025	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 14, 2024	May 05, 2025~ May 15, 2025	Nov. 13, 2025	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	May 05, 2025~ May 15, 2025	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	N/A	Jul. 30, 2024	May 05, 2025~ May 15, 2025	Jul. 29, 2025	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	MQT24082501	N/A	Oct. 15, 2024	May 05, 2025~ May 15, 2025	Oct. 14, 2025	Conduction (CO05-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	37059 & 01	30MHz~1GHz	Nov. 27, 2024	May 08, 2025	Nov. 26, 2025	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2E	101108	9 kHz~30 MHz	Dec. 18, 2024	May 08, 2025	Dec. 17, 2025	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-01620	1GHz~18GHz	Aug. 28, 2024	May 08, 2025	Aug. 27, 2025	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 07, 2024	May 08, 2025	Dec. 06, 2025	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 14, 2024	May 08, 2025	Oct. 13, 2025	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY55420170	20MHz~8.4GHz	Jul. 19, 2024	May 08, 2025	Jul. 18, 2025	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	May 08, 2025	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	May 08, 2025	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	May 08, 2025	N/A	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	May 08, 2025	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz~40GHz	Mar 05, 2025	May 08, 2025	Mar. 04, 2026	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9K~30M	Mar 05, 2025	May 08, 2025	Mar. 04, 2026	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	30M~40G	Mar 05, 2025	May 08, 2025	Mar. 04, 2026	Radiation (03CH11-HY)
Filter	Wainwright	WHK20/1000C 7/40SS	SN2	20MHz High Pass Filter	Sep. 10, 2024	May 08, 2025	Sep. 09, 2025	Radiation (03CH11-HY)

5. Measurement Uncertainty

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.7 dB**

Uncertainty of Radiated Emission Measurement (9 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.3 dB**

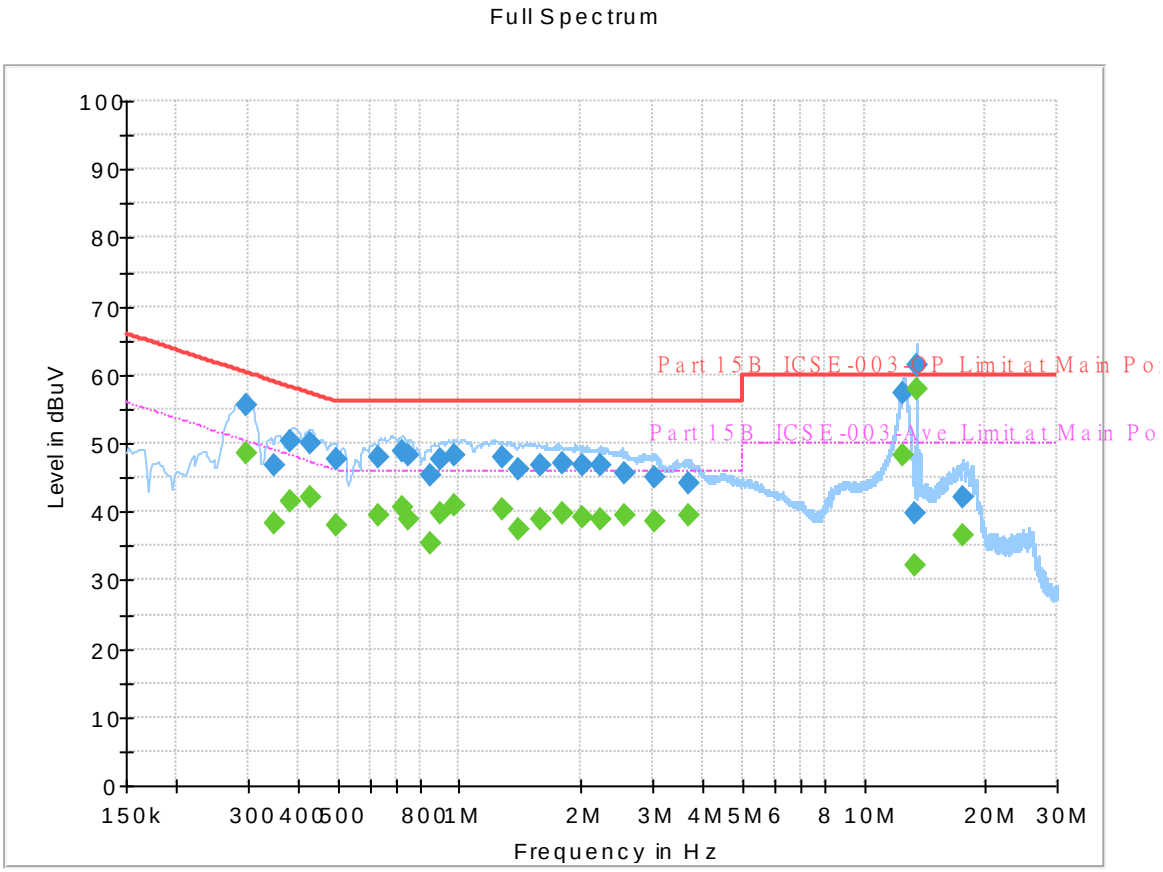
Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**6.4 dB**

Appendix A. Test Results of Conducted Emission Test

Original

Report NO :	230116-01
Test Mode :	Mode 1
Test Voltage :	240Vac/60Hz
Phase :	Line



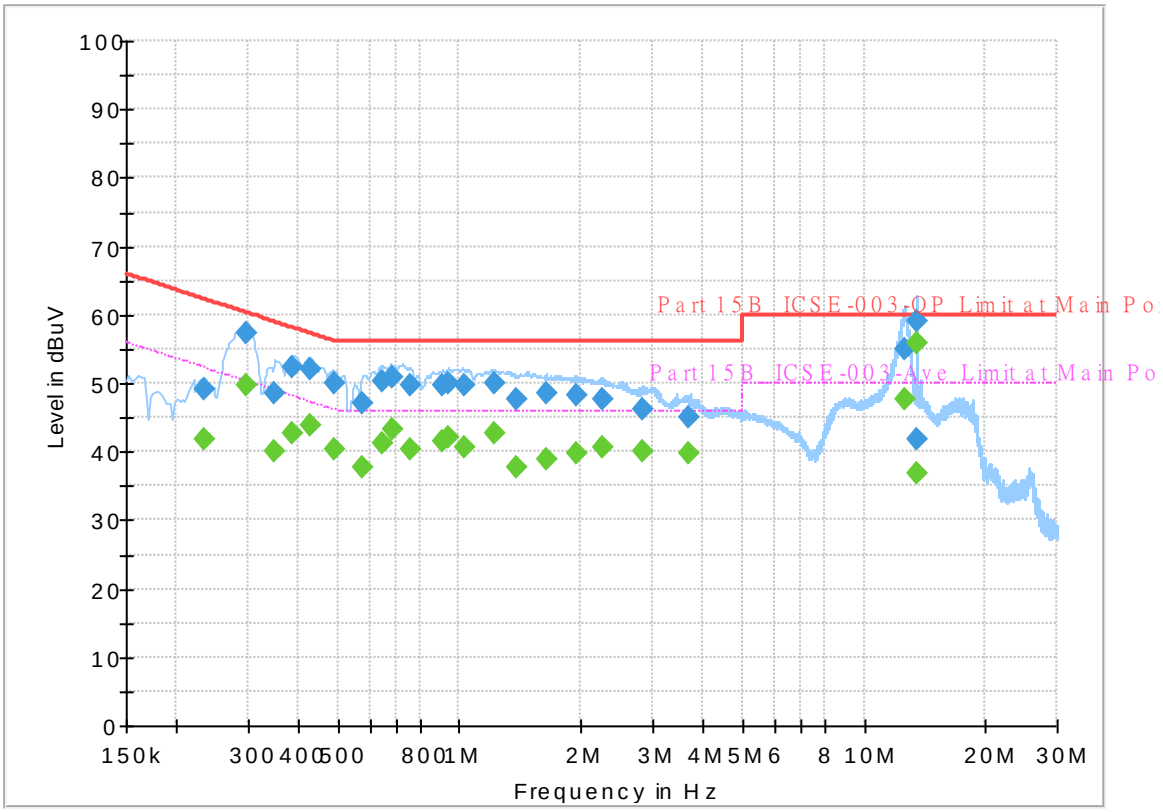
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.298500	---	48.64	50.28	1.64	L1	OFF	19.9
0.298500	55.52	---	60.28	4.76	L1	OFF	19.9
0.350250	---	38.34	48.96	10.62	L1	OFF	19.9
0.350250	46.81	---	58.96	12.15	L1	OFF	19.9
0.384000	---	41.47	48.19	6.72	L1	OFF	19.9
0.384000	50.18	---	58.19	8.01	L1	OFF	19.9
0.429000	---	42.09	47.27	5.18	L1	OFF	19.9
0.429000	50.08	---	57.27	7.19	L1	OFF	19.9
0.494250	---	37.97	46.10	8.13	L1	OFF	19.9
0.494250	47.65	---	56.10	8.45	L1	OFF	19.9
0.633750	---	39.59	46.00	6.41	L1	OFF	19.9
0.633750	47.94	---	56.00	8.06	L1	OFF	19.9
0.726000	---	40.78	46.00	5.22	L1	OFF	19.9
0.726000	48.97	---	56.00	7.03	L1	OFF	19.9
0.750750	---	38.98	46.00	7.02	L1	OFF	19.9
0.750750	48.23	---	56.00	7.77	L1	OFF	19.9
0.845250	---	35.40	46.00	10.60	L1	OFF	19.9
0.845250	45.41	---	56.00	10.59	L1	OFF	19.9
0.897000	---	39.63	46.00	6.37	L1	OFF	19.9
0.897000	47.66	---	56.00	8.34	L1	OFF	19.9
0.971250	---	41.02	46.00	4.98	L1	OFF	19.9

0.971250	48.38	---	56.00	7.62	L1	OFF	19.9
1.272750	---	40.39	46.00	5.61	L1	OFF	19.9
1.272750	47.83	---	56.00	8.17	L1	OFF	19.9
1.405500	---	37.36	46.00	8.64	L1	OFF	19.9
1.405500	46.32	---	56.00	9.68	L1	OFF	19.9
1.585500	---	38.81	46.00	7.19	L1	OFF	19.9
1.585500	46.91	---	56.00	9.09	L1	OFF	19.9
1.799250	---	39.88	46.00	6.12	L1	OFF	20.0
1.799250	47.08	---	56.00	8.92	L1	OFF	20.0
2.006250	---	39.11	46.00	6.89	L1	OFF	20.0
2.006250	46.67	---	56.00	9.33	L1	OFF	20.0
2.222250	---	38.88	46.00	7.12	L1	OFF	20.0
2.222250	46.66	---	56.00	9.34	L1	OFF	20.0
2.550750	---	39.40	46.00	6.60	L1	OFF	20.0
2.550750	45.71	---	56.00	10.29	L1	OFF	20.0
3.045750	---	38.66	46.00	7.34	L1	OFF	20.0
3.045750	44.99	---	56.00	11.01	L1	OFF	20.0
3.705000	---	39.44	46.00	6.56	L1	OFF	20.0
3.705000	44.26	---	56.00	11.74	L1	OFF	20.0
12.525000	---	48.18	50.00	1.82	L1	OFF	20.5
12.525000	57.20	---	60.00	2.80	L1	OFF	20.5
13.346250	---	32.06	50.00	17.94	L1	OFF	20.5
13.346250	39.65	---	60.00	20.35	L1	OFF	20.5
13.560000	---	57.98	50.00	-7.98	L1	OFF	20.5
13.560000	61.46	---	60.00	-1.46	L1	OFF	20.5
17.632500	---	36.57	50.00	13.43	L1	OFF	20.5
17.632500	42.10	---	60.00	17.90	L1	OFF	20.5

Report NO :	230116-01
Test Mode :	Mode 1
Test Voltage :	240Vac/60Hz
Phase :	Neutral

Full Spectrum



Final_Result

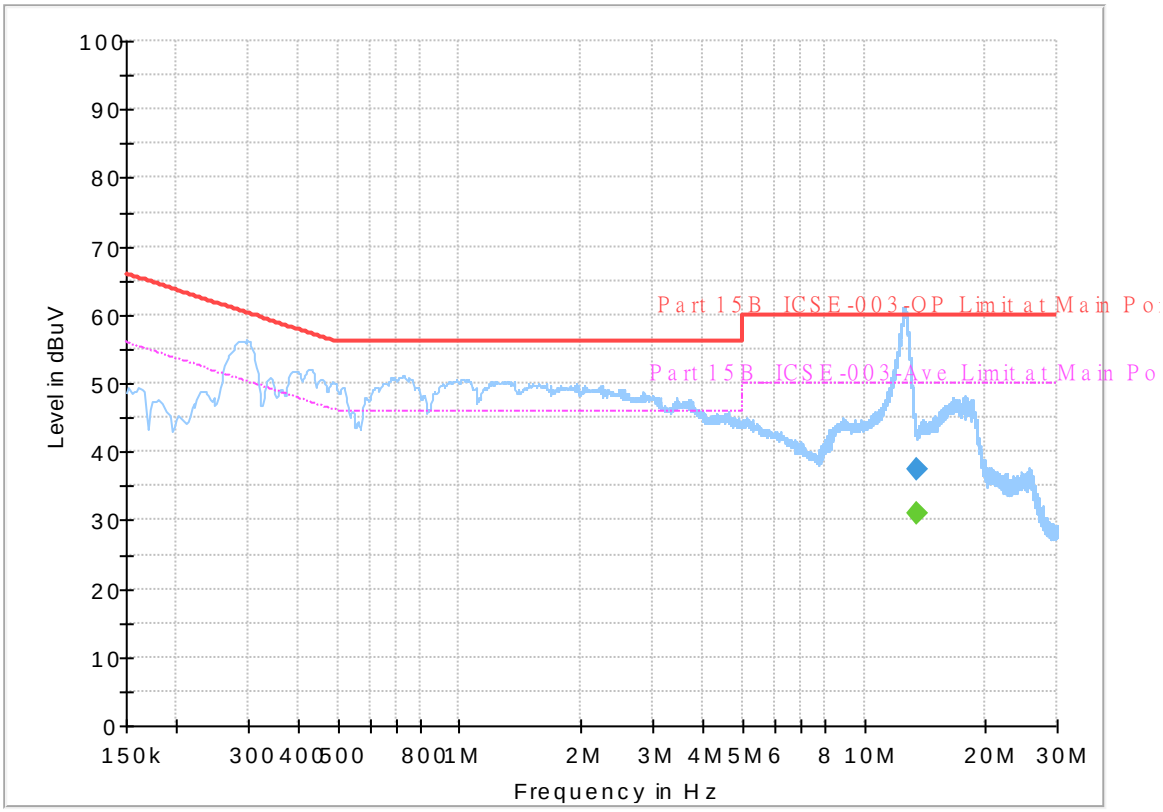
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.233250	---	41.90	52.33	10.43	N	OFF	19.9
0.233250	49.20	---	62.33	13.13	N	OFF	19.9
0.298500	---	49.58	50.28	0.70	N	OFF	19.9
0.298500	57.45	---	60.28	2.83	N	OFF	19.9
0.350250	---	40.09	48.96	8.87	N	OFF	19.9
0.350250	48.65	---	58.96	10.31	N	OFF	19.9
0.386250	---	42.68	48.14	5.46	N	OFF	19.9
0.386250	52.28	---	58.14	5.86	N	OFF	19.9
0.429000	---	43.86	47.27	3.41	N	OFF	19.9
0.429000	51.95	---	57.27	5.32	N	OFF	19.9
0.492000	---	40.21	46.13	5.92	N	OFF	19.9
0.492000	49.94	---	56.13	6.19	N	OFF	19.9
0.577500	---	37.59	46.00	8.41	N	OFF	19.9
0.577500	47.15	---	56.00	8.85	N	OFF	19.9
0.642750	---	41.27	46.00	4.73	N	OFF	19.9
0.642750	50.26	---	56.00	5.74	N	OFF	19.9
0.683250	---	43.39	46.00	2.61	N	OFF	19.9
0.683250	50.92	---	56.00	5.08	N	OFF	19.9
0.753000	---	40.37	46.00	5.63	N	OFF	19.9
0.753000	49.85	---	56.00	6.15	N	OFF	19.9
0.906000	---	41.44	46.00	4.56	N	OFF	19.9

0.906000	49.62	---	56.00	6.38	N	OFF	19.9
0.942000	---	42.16	46.00	3.84	N	OFF	19.9
0.942000	50.15	---	56.00	5.85	N	OFF	19.9
1.025250	---	40.64	46.00	5.36	N	OFF	19.9
1.025250	49.68	---	56.00	6.32	N	OFF	19.9
1.225500	---	42.59	46.00	3.41	N	OFF	19.9
1.225500	49.88	---	56.00	6.12	N	OFF	19.9
1.383000	---	37.63	46.00	8.37	N	OFF	19.9
1.383000	47.65	---	56.00	8.35	N	OFF	19.9
1.646250	---	39.02	46.00	6.98	N	OFF	19.9
1.646250	48.63	---	56.00	7.37	N	OFF	19.9
1.947750	---	39.64	46.00	6.36	N	OFF	19.9
1.947750	48.30	---	56.00	7.70	N	OFF	19.9
2.249250	---	40.58	46.00	5.42	N	OFF	20.0
2.249250	47.59	---	56.00	8.41	N	OFF	20.0
2.852250	---	40.18	46.00	5.82	N	OFF	20.0
2.852250	46.16	---	56.00	9.84	N	OFF	20.0
3.702750	---	39.90	46.00	6.10	N	OFF	20.0
3.702750	44.94	---	56.00	11.06	N	OFF	20.0
12.565500	---	47.54	50.00	2.46	N	OFF	20.6
12.565500	55.00	---	60.00	5.00	N	OFF	20.6
13.454250	---	36.95	50.00	13.05	N	OFF	20.6
13.454250	41.95	---	60.00	18.05	N	OFF	20.6
13.560000	---	55.77	50.00	-5.77	N	OFF	20.6
13.560000	59.17	---	60.00	0.83	N	OFF	20.6

Terminal

Report NO :	230116-01
Test Mode :	Mode 1
Test Voltage :	240Vac/60Hz
Phase :	Line

Full Spectrum

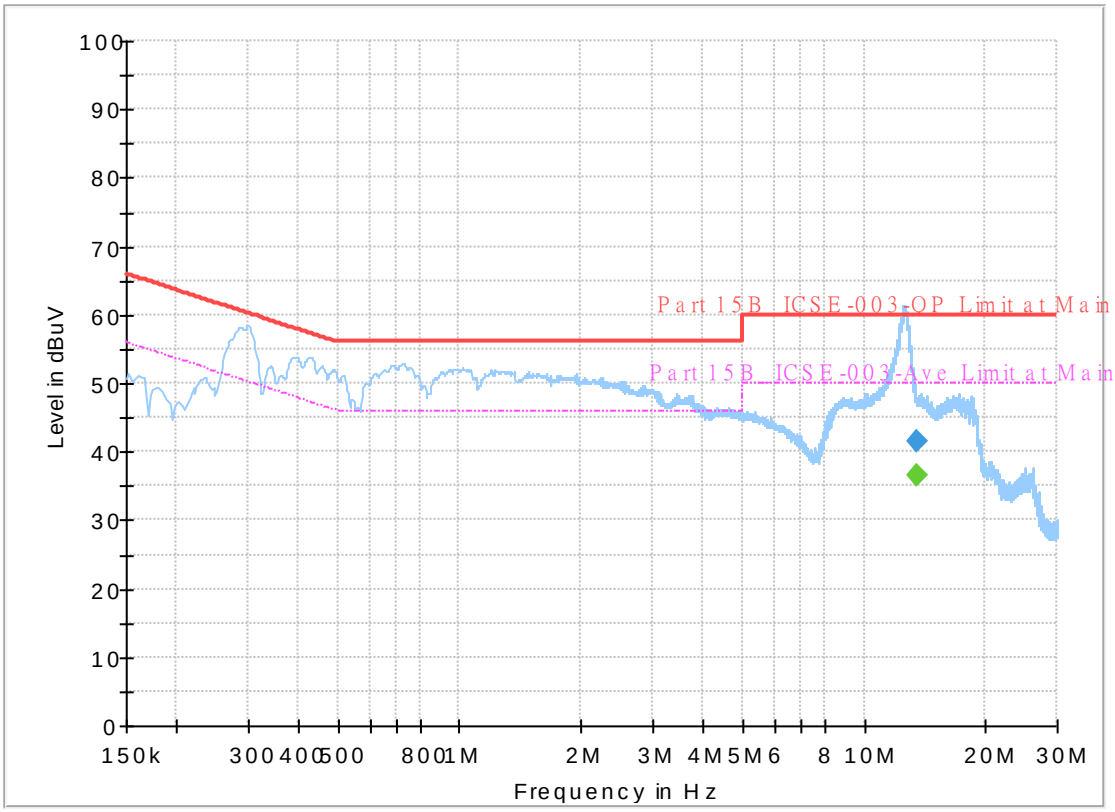


Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
13.560000	---	31.13	50.00	18.87	L1	OFF	20.5
13.560000	37.38	---	60.00	22.62	L1	OFF	20.5

Report NO :	230116-01
Test Mode :	Mode 1
Test Voltage :	240Vac/60Hz
Phase :	Neutral

Full Spectrum

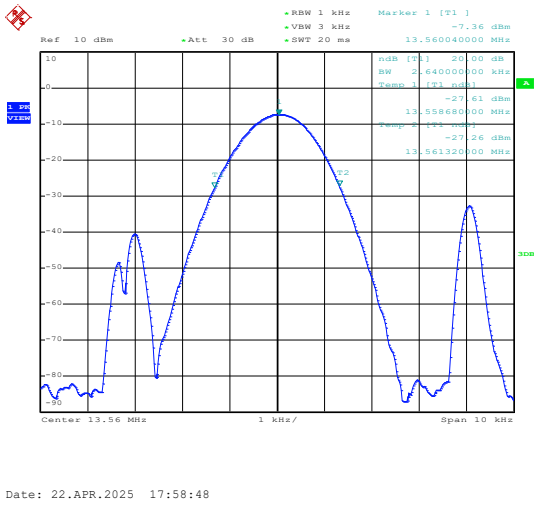
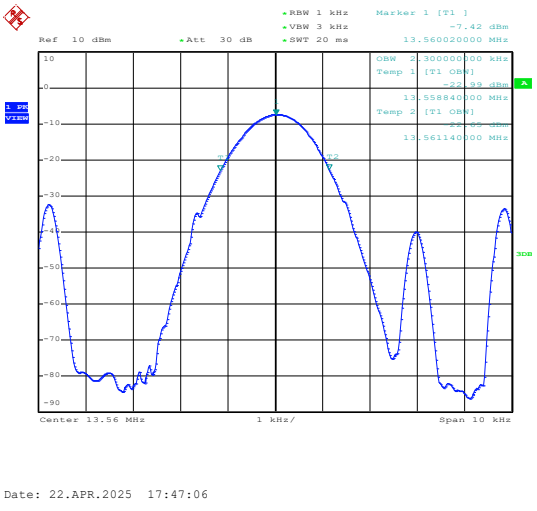


Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
13.560000	---	36.53	50.00	13.47	N	OFF	20.6
13.560000	41.40	---	60.00	18.60	N	OFF	20.6

Appendix B. Test Results of Near Field Test Items

B1. Test Result of 20dB Spectrum Bandwidth

Test mode	NFC Tx	Test Frequency (MHz)	13.56
			
20dB Bandwidth (kHz)	2.64	**99% OccupiedBW(kHz)**	2.30
Frequency range (MHz)	**f_L > 13.553**	13.55868	**Test Result**
	f_H < 13.567	13.56132	**Complies**

Remark: Because the measured signal is CW 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.

B2. Test Result of Frequency Stability

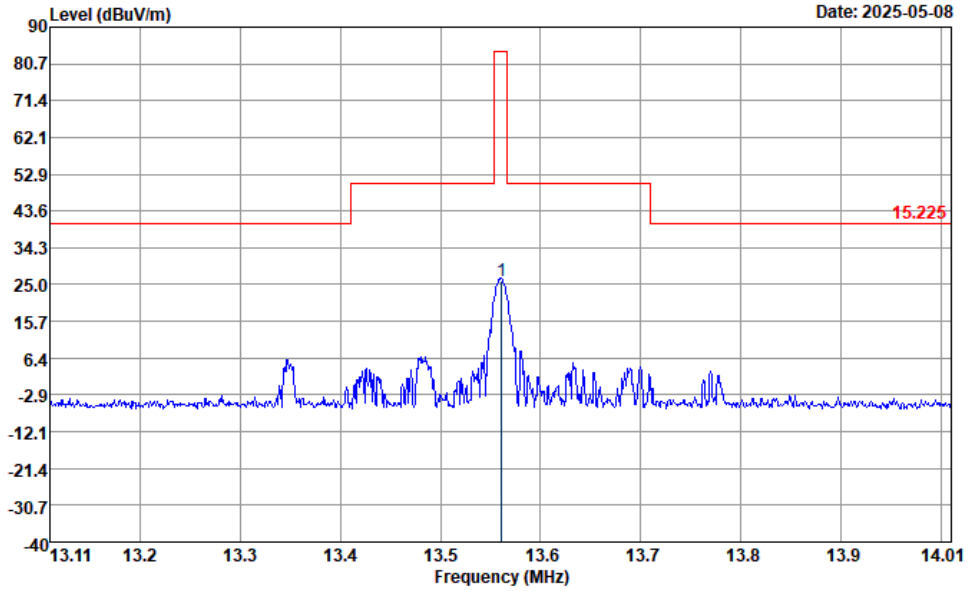
Voltage vs. Frequency Stability		Temperature vs. Frequency Stability		
Voltage (Vac)	Measurement Frequency (MHz)	Temperature (℃)	Time	Measurement Frequency (MHz)
240	13.559990	**-20**	**0**	13.559980
204	13.560000		**2**	13.559980
270	13.560000		**5**	13.559980
			10	13.559960
		-10	**0**	13.560020
			2	13.560060
			5	13.560020
			10	13.560020
		0	**0**	13.560020
			2	13.560020
			5	13.560020
			10	13.560020
		10	**0**	13.560030
			2	13.560030
			5	13.560030
			10	13.560030
		20	**0**	13.560020
			2	13.560020
			5	13.560020
			10	13.560020
		30	**0**	13.560010
			2	13.560000
			5	13.560000
			10	13.560010
		40	**0**	13.559980
			2	13.559980
			5	13.559980
			10	13.559980

Voltage vs. Frequency Stability		Temperature vs. Frequency Stability		
Voltage (Vac)	Measurement Frequency (MHz)	Temperature (℃)	Time	Measurement Frequency (MHz)
		50	0	13.559980
			2	13.559980
			5	13.559970
			10	13.559970
Max.Deviation (MHz)	-0.000010	Max.Deviation (MHz)		-0.000060
Max.Deviation (ppm)	-0.7375	Max.Deviation (ppm)		-4.4248
Limit	FS < ±100 ppm	Limit		FS < ±100 ppm
Test Result	PASS	Test Result		PASS

Appendix C. Test Results of Radiated Test Items

C1. Test Result of Field Strength of Fundamental Emissions

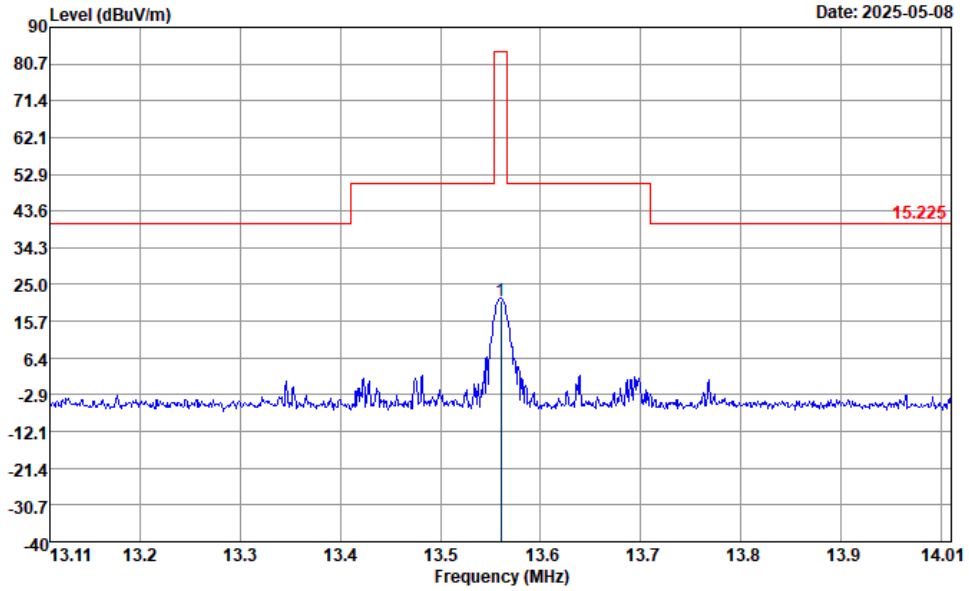
Test Mode :	NFC Tx	Test Frequency (MHz)	13.56



Site : 03CH11-HY
Condition : 15.225 3m LOOP_101108_241218 HORIZONTAL
: RBW:9.000KHz VBW:9.000KHz SWT:Auto
: .
Project : 230116-01
Card distance : 0 cm

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	13.561	25.82	-58.18	84.00	45.25	20.31	0.26	100	0	QP

Test Mode :	NFC Tx	Test Frequency (MHz)	13.56



Site : 03CH11-HY
Condition : 15.225 3m LOOP_101108_241218 VERTICAL
: RBW:9.000KHz VBW:9.000KHz SWT:Auto
: .
Project : 230116-01
Card distance : 0 cm

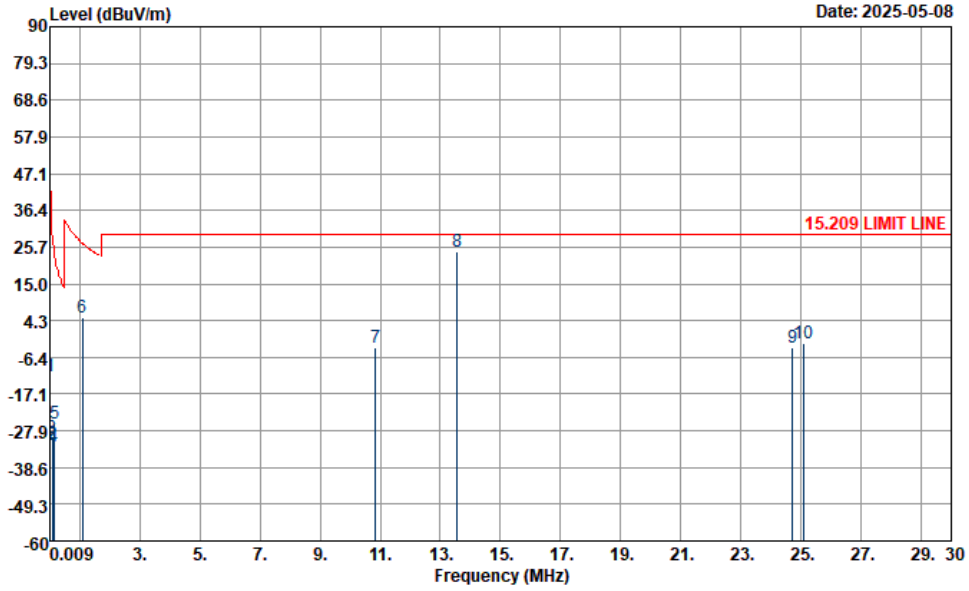
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	13.560	20.93	-63.07	84.00	40.36	20.31	0.26	100	99	QP

Note :

1. Distance extrapolation factor = 40 log (specific distance / test distance) (dB) = 40 log (30/3) = 40 (dB)
2. Level = Antenna Factor + Cable Loss + Read Level - Distance extrapolation factor.

C2. Results of Radiated Spurious Emissions (9 kHz~30MHz)

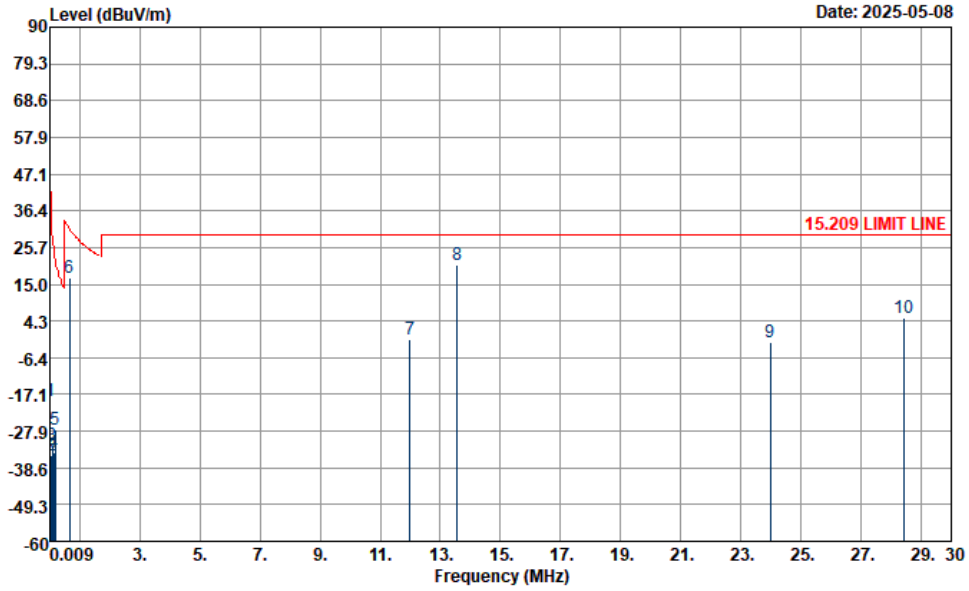
Test Mode :	NFC Tx	Polarization :	Horizontal



Site : 03CH11-HY
Condition : 15.209 LIMIT LINE 3m LOOP_101108_241218 HORIZONTAL
: .
Project : 230116-01
Card distance : 0 cm

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	0.012	-11.79	-57.88	46.09	48.43	19.73	0.05	---	---	Average
2	0.081	-32.19	-61.58	29.39	27.36	20.38	0.07	---	---	Average
3	0.096	-30.05	-57.97	27.92	29.51	20.36	0.08	---	---	QP
4	0.145	-32.28	-56.68	24.40	27.34	20.30	0.08	---	---	Average
5	0.152	-25.84	-49.79	23.95	33.76	20.31	0.09	---	---	Average
6	1.098	5.35	-21.44	26.79	25.08	20.20	0.07	---	---	QP
7	10.840	-3.50	-33.00	29.50	15.99	20.25	0.26	---	---	QP
8	13.560	24.25	-5.25	29.50	43.68	20.31	0.26	---	---	QP
9	24.721	-3.50	-33.00	29.50	15.35	20.96	0.19	---	---	QP
10	25.100	-2.52	-32.02	29.50	16.29	21.00	0.19	---	---	QP

Test Mode :	NFC Tx	Polarization :	Vertical



Site : 03CH11-HY
Condition : 15.209 LIMIT LINE 3m LOOP_101108_241218 VERTICAL
: .
Project : 230116-01
Card distance : 0 cm

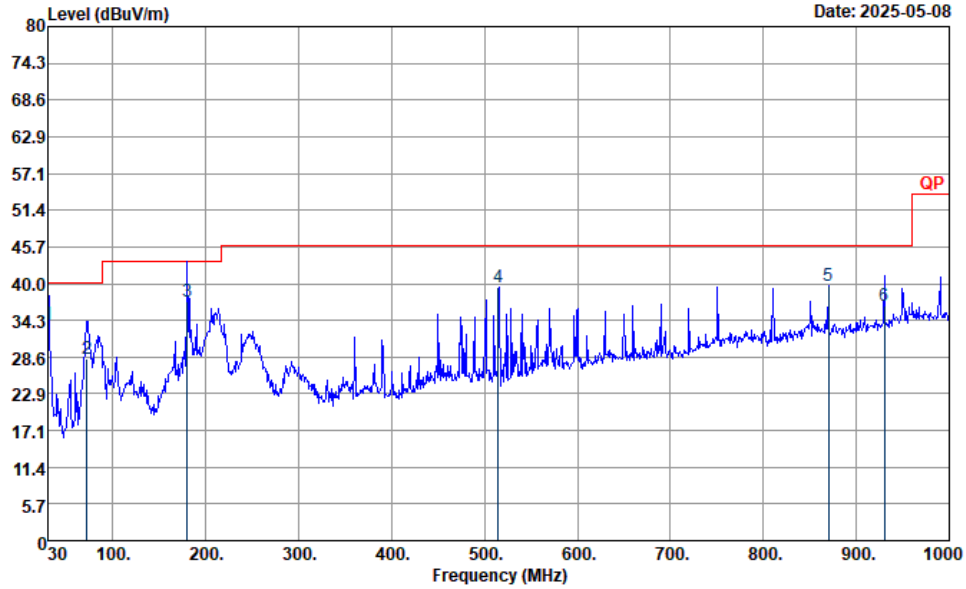
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	0.009	-19.20	-67.67	48.47	41.58	19.17	0.05	---	---	Average
2	0.080	-34.83	-64.35	29.52	24.72	20.38	0.07	---	---	Average
3	0.096	-31.87	-59.79	27.92	27.69	20.36	0.08	---	---	QP
4	0.145	-34.04	-58.44	24.40	25.58	20.30	0.08	---	---	Average
5	0.191	-27.40	-49.39	21.99	32.22	20.29	0.09	---	---	Average
6	0.655	17.02	-14.26	31.28	36.73	20.21	0.08	---	---	QP
7	12.000	-1.18	-30.68	29.50	18.28	20.28	0.26	---	---	QP
8	13.560	20.60	-8.90	29.50	40.03	20.31	0.26	---	---	QP
9	23.992	-2.01	-31.51	29.50	16.91	20.89	0.19	---	---	QP
10	28.445	5.17	-24.33	29.50	23.55	21.38	0.24	---	---	QP

Note :

1. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. Distance extrapolation factor = 40 log (specific distance / test distance) (dB)
   EX.:
   For below 490kHz Distance extrapolation factor = 40 log (300/3) = 80 (dB)
   For 490kHz to 30MHz Distance extrapolation factor = 40 log (30/3) = 40 (dB)
1. Level = Antenna Factor + Cable Loss + Read Level - Distance extrapolation factor.
2. 13.56 MHz is fundamental signal which can be ignored

C3. Results of Radiated Spurious Emissions (30MHz~1GHz)

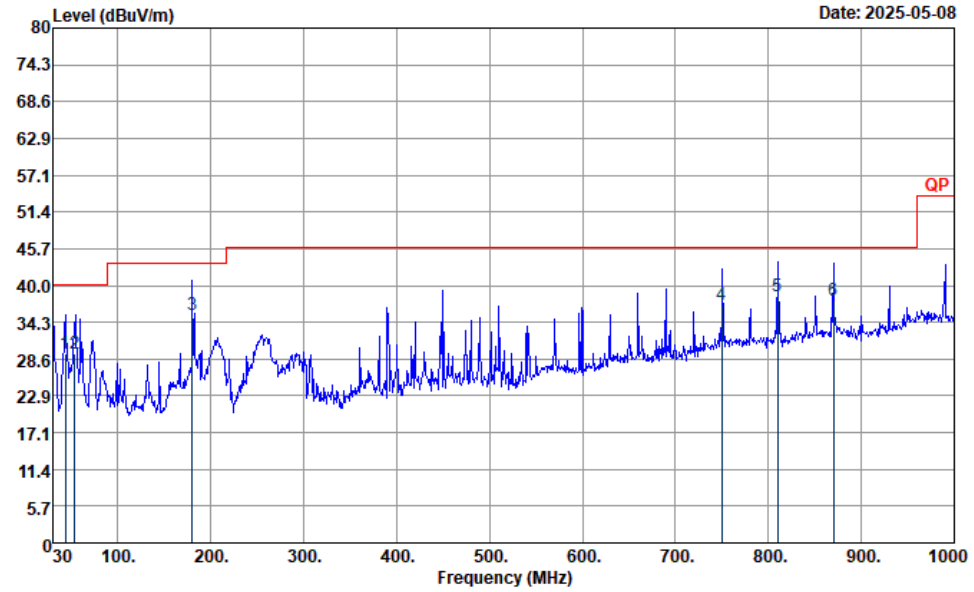
Test Mode :	NFC Tx	Polarization :	Horizontal



Site : 03CH11-HY
Condition : QP 3m 2_BILOG_37059_241127 HORIZONTAL
: .
Project : 230116-01
Card distance : 0 cm

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.000	33.59	-6.41	40.00	40.22	24.51	0.86	32.43	100	334	QP
2	71.850	28.29	-11.71	40.00	46.35	12.73	1.30	32.32	200	270	QP
3	179.850	37.30	-6.20	43.50	52.09	15.29	1.98	32.22	150	69	QP
4	514.900	39.35	-6.65	46.00	43.71	24.26	3.31	32.19	---	---	Peak
5	869.800	39.59	-6.41	46.00	36.24	29.37	4.23	31.57	---	---	Peak
6	930.000	36.47	-9.53	46.00	32.12	29.94	4.44	31.09	100	260	QP

Test Mode :	NFC Tx	Polarization :	Vertical



Site : 03CH11-HY
Condition : QP 3m 2_BILOG_37059_241127 VERTICAL
: .
Project : 230116-01
Card distance : 0 cm

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	43.500	29.41	-10.59	40.00	42.59	17.89	1.04	32.34	100	69	QP
2	53.490	29.47	-10.53	40.00	47.35	13.13	1.15	32.34	100	137	QP
3	179.850	35.44	-8.06	43.50	50.23	15.29	1.98	32.22	200	11	QP
4	750.100	36.96	-9.04	46.00	35.96	28.38	3.99	32.10	100	176	QP
5	809.600	38.39	-7.61	46.00	36.53	28.21	4.14	31.89	100	198	QP
6	869.800	37.59	-8.41	46.00	34.24	29.37	4.23	31.57	100	184	QP

Note:

1. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. Emission level (dBμV/m) = 20 log Emission level (μV/m).
3. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor= Level.
4. The emission position marked as "-" means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.