FCC RADIO TEST REPORT

FCC ID	:	**UZ7ZEC500**
Equipment	:	**Enterprise Computer**
Brand Name	:	**Zebra**
Model Name	:	**ZEC500**
Applicant	:	**Zebra Technologies Corporation** **3 Overlook Point, Lincolnshire, IL 60069 USA**
Manufacturer	:	**Zebra Technologies Corporation** **3 Overlook Point, Lincolnshire, IL 60069 USA**
Standard	:	**FCC Part 15 Subpart C §15.225**

The product was received on Apr. 30, 2025 and testing was performed from May 12, 2025 to Jun. 17, 2025. We, Sporton International Inc. Wensan 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 report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issue Date
FR522804D	01	Initial issue of report	Jun. 20, 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	5.20 dB under the limit at 13.06MHz
3.2	15.215(c)	20dB Spectrum Bandwidth	Pass	-
	2.1049	99% OBW Spectrum Bandwidth	Pass	-
3.3	15.225(e)	Frequency Stability	Pass	-
3.4	15.225(a)(b)(c)	Field Strength of Fundamental Emissions	Pass	Max level 25.89 dBμV/m at 13.56 MHz
3.5	15.225(d) 15.209	Radiated Spurious Emissions	Pass	5.08 dB under the limit at 742.40MHz
3.6	15.203	Antenna Requirement	Pass	-

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: Josie Hsu

1. General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Enterprise Computer
Brand Name	Zebra
Model Name	ZEC500
FCC ID	UZ7ZEC500
Sample 1	Premium SKU with FAN, with POE
Sample 2	Premium SKU w/o FAN, with POE
Sample 3	Value SKU with FAN, w/o POE
Sample 4	Value SKU w/o FAN, w/o POE
EUT supports Radios application	NFC WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80/VHT160 WLAN 11ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE
HW Version	EV1
SW Version	14-28-18.00-UG-U00-PRD-ATH-04
OS Version	Android 14
MFD	11APR25
EUT Stage	Identical Prototype

Remark: The EUT's information above is declared by manufacturer.

Specification of Accessories				
Adapter	**Brand Name**	ZEBRA	**Model Name**	PWR-BGA24V78W4WW
Power Cable	**Brand Name**	ZEBRA	**Model Name**	23844-00-00R

Supported Unit Used in Test Configuration and System				
Earphone 1	**Brand Name**	ZEBRA	**Model Name**	HDST-USBC-PTT1-01
USB C to C cable	**Brand Name**	ZEBRA	**Part Number**	CBL-ECX-USBC3A-01
USB A to C cable	**Brand Name**	ZEBRA	**Part Number**	CBL-TC5X-USBC2A-01
Scanner_USB cable 1 (RJ50 to USB-A)	**Brand Name**	ZEBRA	**Part Number**	CBA-UF0-S07PAR
Scanner_USB cable 2 (RJ50 to USB-A)	**Brand Name**	ZEBRA	**Part Number**	CBA-U42-S07PAR
Printer	**Brand Name**	ZEBRA	**Model Name**	ZD230t
2nd display	**Brand Name**	ZEBRA	**Model Name**	TD50-15F00
Scanner	**Brand Name**	ZEBRA	**Part Number**	DS3678
POE	**Brand Name**	ZEBRA	**Part Number**	POE90U-BTAX460-R
USB Cable for printer	**Brand Name**	ZEBRA	**Part Number**	300283-002
Adapter 2	**Brand Name**	ZEBRA	**Model Name**	PWR-BGA12V50W0WW
Cradle	**Brand Name**	ZEBRA	**Part Number**	STB3678

1.2 Product Specification of Equipment Under Test

Product Specification is subject to this standard	
Tx/Rx Frequency Range	13.553 ~ 13.567MHz
Channel Number	1
20dBW	2.64 KHz
99%OBW	2.24 KHz
Antenna Type	Loop Antenna
Type of Modulation	ASK

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

1.3 Modification of EUT

No modifications made to the EUT during the testing.

1.4 Testing Location

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.**		
	TH05-HY	CO07-HY	03CH11-HY
Test Engineer	Eric Wu	Louis Chung	Fu Chen and Troye Hsieh
Temperature	17.8~19.8℃	23.5~26.1℃	20.2~23.5℃
Relative Humidity	40.9~42.9%	52.3~62.7%	53.1~61.2%

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

FCC designation No.: TW3786

1.5 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.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

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

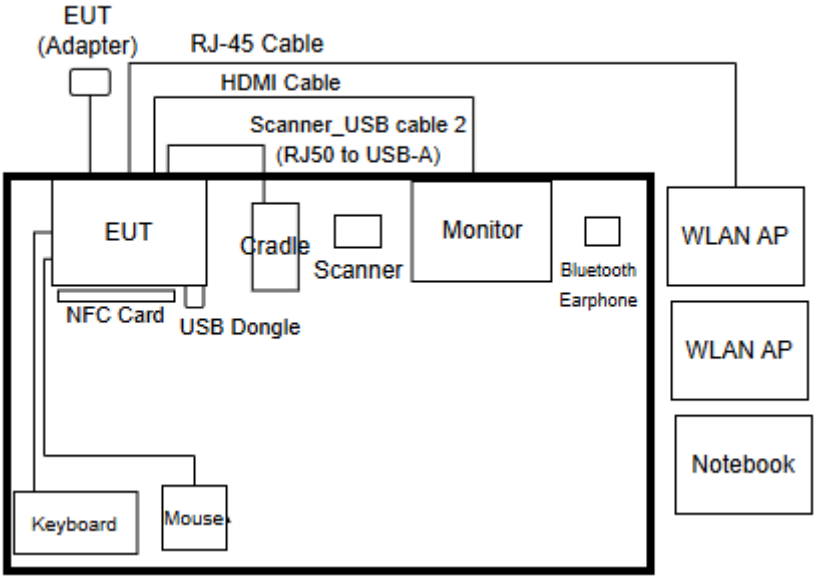
The EUT pre-scanned in reader mode with NFC tag (four NFC type A, B, F, V) and without reading tag. Based on the highest field strength of fundamental and spurious emissions, the worst case type (type F) was recorded in this report.

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 accessory (Adapter or POE) and three receiving antenna orientations (parallel, perpendicular, and ground-parallel) for Loop Antenna, and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.

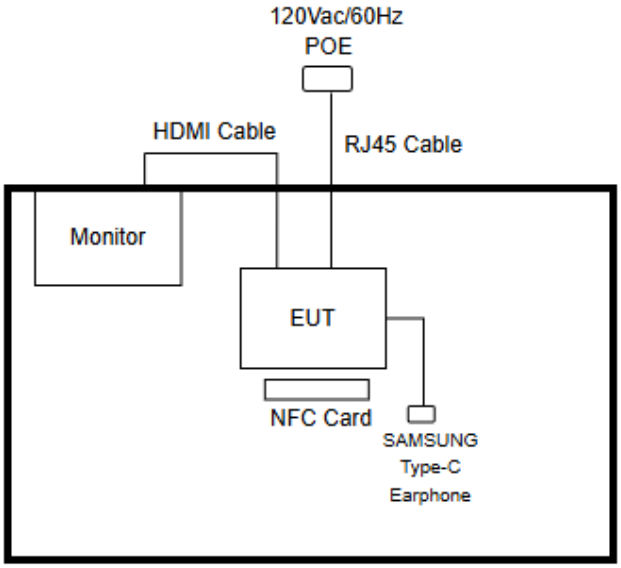
Test Cases	
AC Conducted Emission	Mode 1: WLAN (6GHz) Link + Bluetooth Link + NFC Link + Scan Bar Code + HDMI Display with Monitor + USB-C Data link with USB Dongle (SD Card to Dongle) + USB-A (1) with Cradle (Scanner) + USB-A (2) with Mouse + USB-A (3) with Keyboard + LAN link with WLAN AP and Notebook + Adapter 1 for Sample 1
Remark: 1. For Radiated Test Cases, the tests were performed with Sample 1. 2. Data Link with USB Dongle means data application transferred mode between EUT and USB Dongle.	

2.2 Connection Diagram of Test System

<AC Conducted Emission Mode>



<NFC Tx Mode>



2.3 Table for Supporting Units

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	Netgear	RAXE500	PY320300508	N/A	Unshielded, 1.8 m
2.	WLAN AP	ASUS	RT-AC52	MSQ-RTAC4A00	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Latitude 3420	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	Keyboard	ACER	PR1101U	FCC DoC	Shielded, 1.55m	N/A
5.	Mouse	Lenovo	MOC9ULA	FCC DoC	Shielded, 1.7m	N/A
6.	Monitor	LG	29W0600	N/A	Shielded, 1.6 m	Unshielded, 1.8 m
7.	LCD Monitor	DELL	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
8.	SAMSUNG Type-C Earphone	SAMSUNG	SOUND BY AKG	N/A	N/A	Unshielded, 1.8 m
9.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
10.	USB Dongle	SanDisk	jetflesh	FCC DoC	N/A	N/A
11.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
12.	NFC Card A	N/A	N/A	N/A	N/A	N/A
13.	NFC Card B	N/A	N/A	N/A	N/A	N/A
14.	NFC Card V	N/A	N/A	N/A	N/A	N/A
15.	NFC Card F	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.

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.

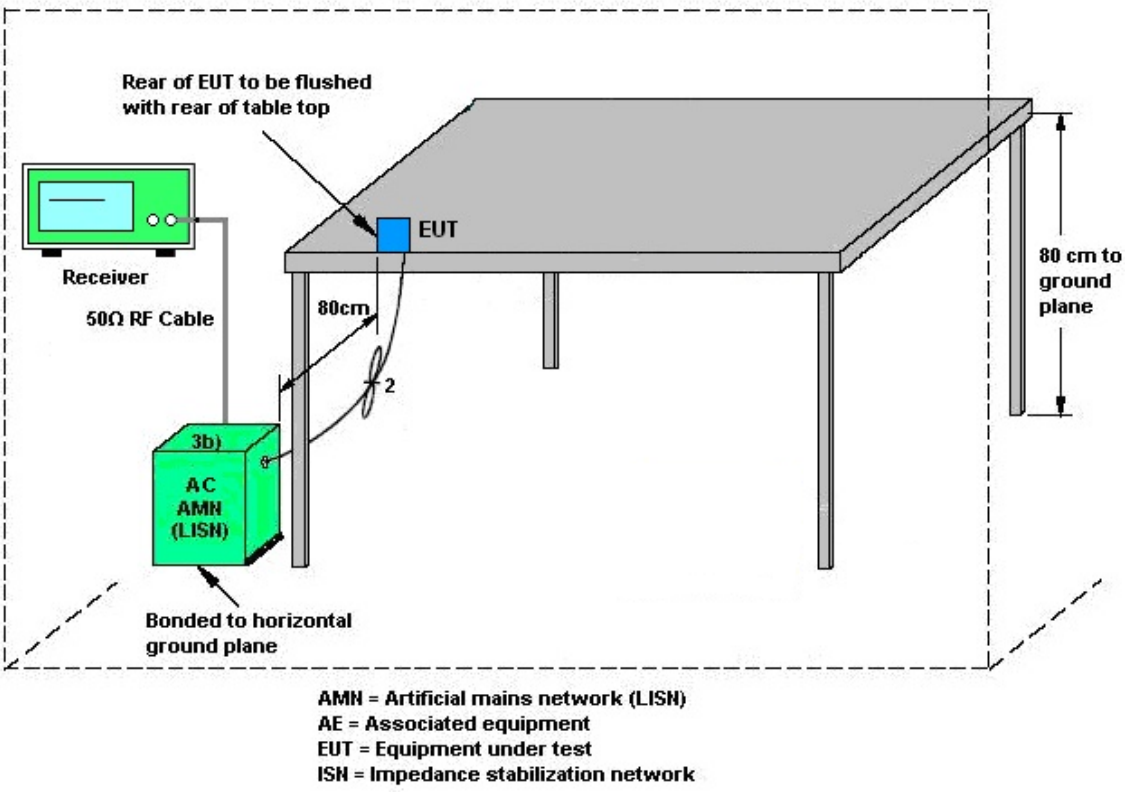
3.1.2 Measuring Instruments

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.

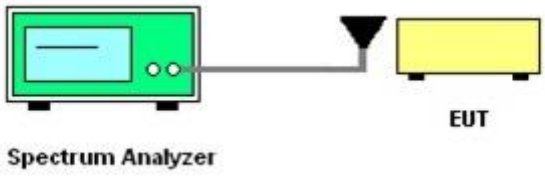
3.2.2 Measuring Instruments

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.

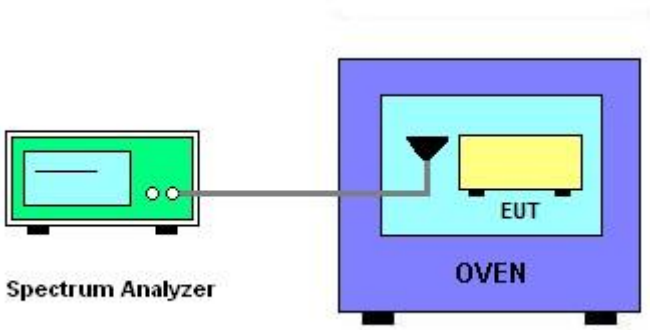
3.3.2 Measuring Instruments

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

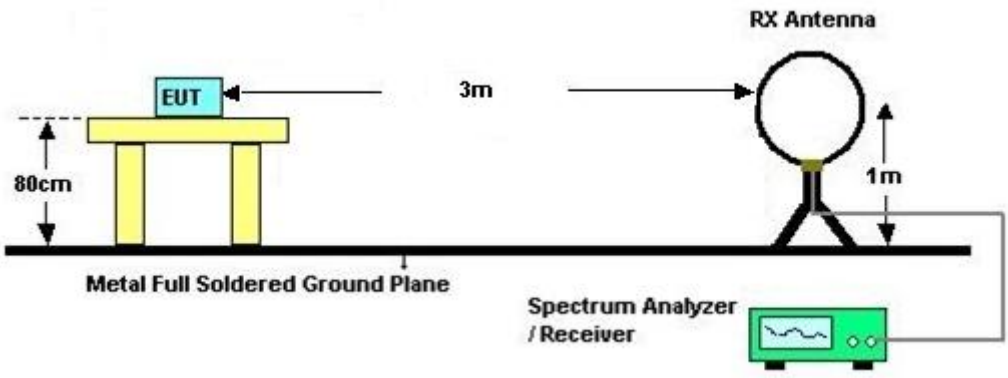
Please refer to the measuring equipment list in this test report.

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

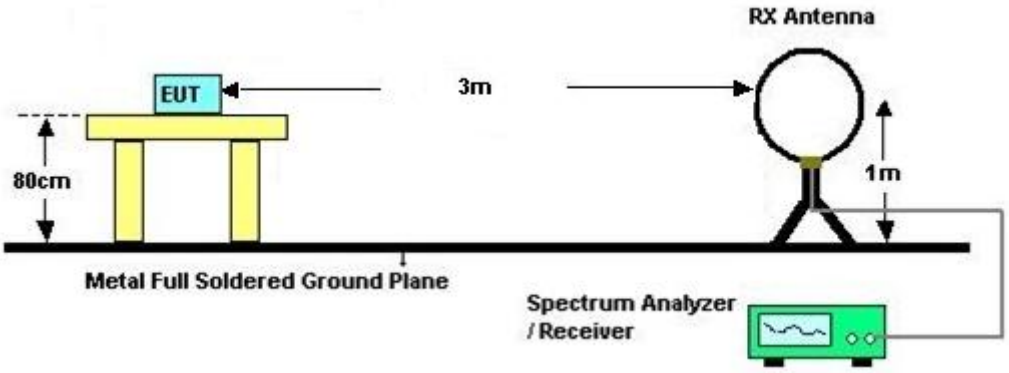
Note: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz and 110-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

3.5.4 Test Procedures

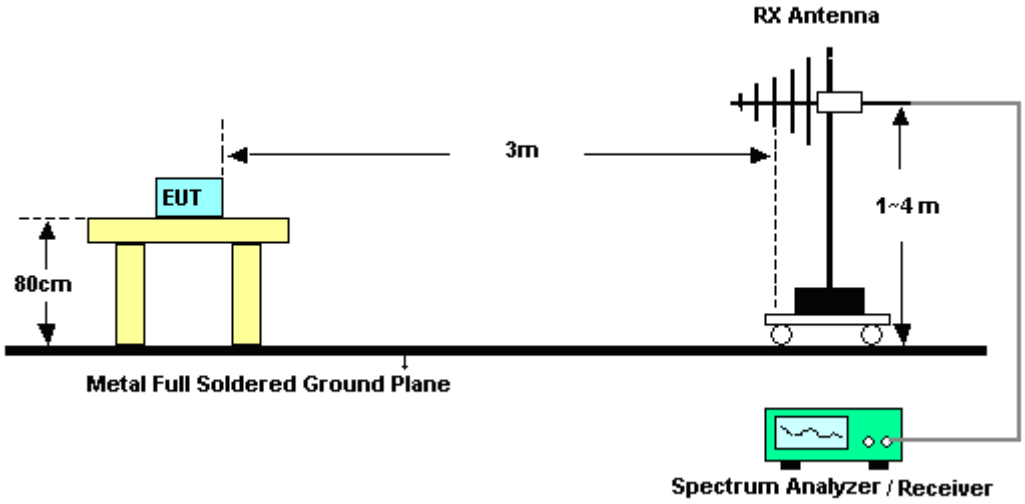
1. Configure the EUT according to ANSI C63.10. The EUT is placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower is placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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.
8. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-“.

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

Unique (non-standard) antenna connector.

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	May 12, 2025~ May 13, 2025	Sep. 24, 2025	Near Field (TH05-HY)
AC Power Source	AC POWER	AFC-500W	F104070011	50Hz~60Hz	Sep. 26, 2024	May 12, 2025~ May 13, 2025	Sep. 25, 2025	Near Field (TH05-HY)
Temperature & Humidity Cabinet Chamber	ESPEC	SH-641	92013720	-40℃~90℃	Sep. 06, 2024	May 12, 2025~ May 13, 2025	Sep. 05, 2025	Near Field (TH05-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 01, 2024	May 12, 2025~ May 13, 2025	Oct. 31, 2025	Near Field (TH05-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	37059 & 01	30MHz~1GHz	Nov. 27, 2024	Jun. 14, 2025	Nov. 26, 2025	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2E	101108	9 kHz~30 MHz	Dec. 18, 2024	Jun. 14, 2025	Dec. 17, 2025	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 07, 2024	Jun. 14, 2025	Dec. 06, 2025	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 14, 2024	Jun. 14, 2025	Oct. 13, 2025	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY55420170	20MHz~8.4GHz	Jul. 19, 2024	Jun. 14, 2025	Jul. 18, 2025	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Jun. 14, 2025	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Jun. 14, 2025	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Jun. 14, 2025	N/A	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	Jun. 14, 2025	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9K~30M	Mar. 05, 2025	Jun. 14, 2025	Mar. 04, 2026	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	30M~40G	Mar. 05, 2025	Jun. 14, 2025	Mar. 04, 2026	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	805139 2	30M~40G	May 10, 2025	Jun. 14, 2025	May 09, 2026	Radiation (03CH11-HY)
Filter	Wainwright	WHK20/1000C 7/40SS	SN2	20MHz High Pass Filter	Sep. 10, 2024	Jun. 14, 2025	Sep. 09, 2025	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTM-303B	TP200880	N/A	Aug. 29, 2024	Jun. 14, 2025	Aug. 28,2025	Radiation (03CH11-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Jun. 17, 2025	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jun. 17, 2025	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Oct. 23, 2024	Jun. 17, 2025	Oct. 22, 2025	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 03, 2025	Jun. 17, 2025	Mar. 02, 2026	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Mar. 24, 2025	Jun. 17, 2025	Mar. 23, 2026	Conduction (CO07-HY)
Four-Line V-Network	TESEQ	NNB 52	36122	N/A	Mar. 26, 2025	Jun. 17, 2025	Mar. 25, 2026	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 23, 2024	Jun. 17, 2025	Sep. 22, 2025	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI7	100724	9kHz~7GHz	Feb. 20, 2024	Jun. 17, 2025	Feb. 19, 2025	Conduction (CO07-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))	**3.30 dB**

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

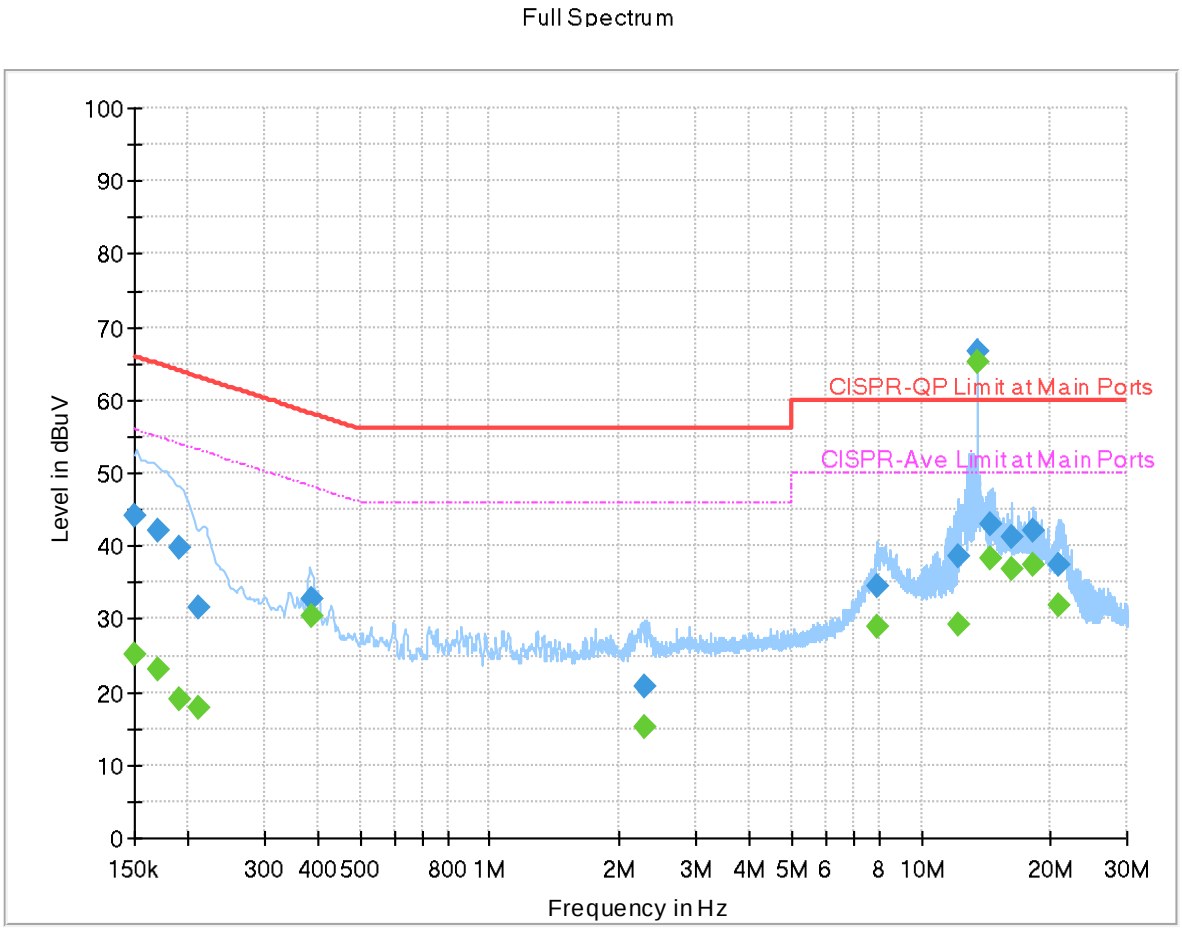
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**6.40 dB**

Appendix A. Test Results of Conducted Emission Test

<Original>

EUT Information

Report NO :	522804
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line



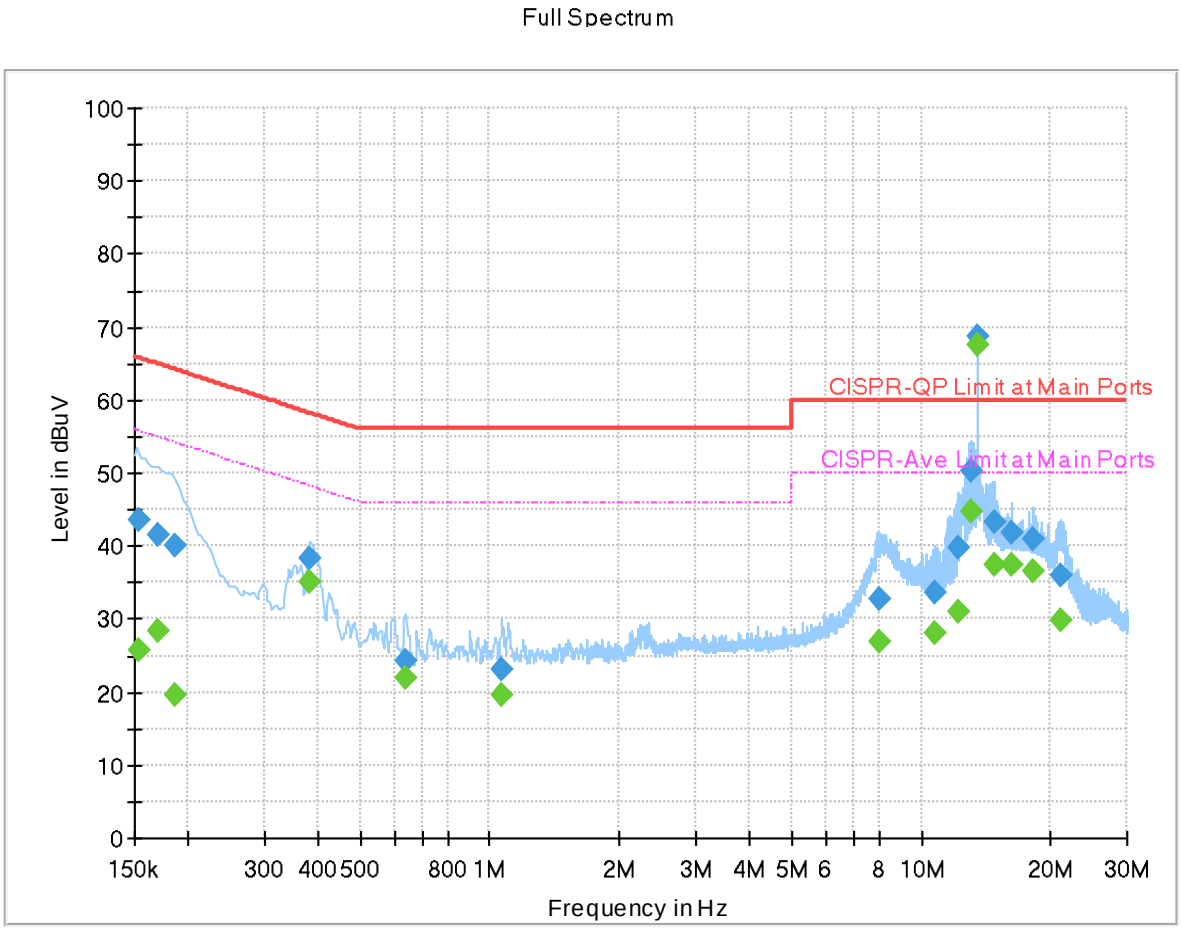
Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	PE	Corr. (dB)
0.150338	---	25.17	55.98	30.81	L1	FLO	20.0
0.150338	44.17	---	65.98	21.81	L1	FLO	20.0
0.170250	---	23.13	54.95	31.82	L1	FLO	20.0
0.170250	42.20	---	64.95	22.75	L1	FLO	20.0
0.189510	---	19.14	54.06	34.92	L1	FLO	20.0
0.189510	39.74	---	64.06	24.32	L1	FLO	20.0
0.210750	---	17.83	53.18	35.35	L1	FLO	20.0
0.210750	31.49	---	63.18	31.69	L1	FLO	20.0
0.384450	---	30.31	48.18	17.87	L1	FLO	20.0
0.384450	32.78	---	58.18	25.40	L1	FLO	20.0
2.296590	---	15.23	46.00	30.77	L1	FLO	20.1
2.296590	20.90	---	56.00	35.10	L1	FLO	20.1
7.923570	---	29.08	50.00	20.92	L1	FLO	20.3
7.923570	34.38	---	60.00	25.62	L1	FLO	20.3
12.144750	---	29.34	50.00	20.66	L1	FLO	20.5
12.144750	38.64	---	60.00	21.36	L1	FLO	20.5
13.560180	---	65.26	50.00	-15.26	L1	FLO	20.5
13.560180	66.62	---	60.00	-6.62	L1	FLO	20.5
14.550900	---	38.20	50.00	11.80	L1	FLO	20.6

14.550900	**43.04**	**---**	**60.00**	**16.96**	**L1**	**FLO**	**20.6**
16.228140	**---**	**36.85**	**50.00**	**13.15**	**L1**	**FLO**	**20.6**
16.228140	**41.37**	**---**	**60.00**	**18.63**	**L1**	**FLO**	**20.6**
18.242250	**---**	**37.52**	**50.00**	**12.48**	**L1**	**FLO**	**20.7**
18.242250	**42.02**	**---**	**60.00**	**17.98**	**L1**	**FLO**	**20.7**
20.929200	**---**	**31.73**	**50.00**	**18.27**	**L1**	**FLO**	**20.8**
20.929200	**37.50**	**---**	**60.00**	**22.50**	**L1**	**FLO**	**20.8**

EUT Information

Report NO :	522804
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral



Final_Result

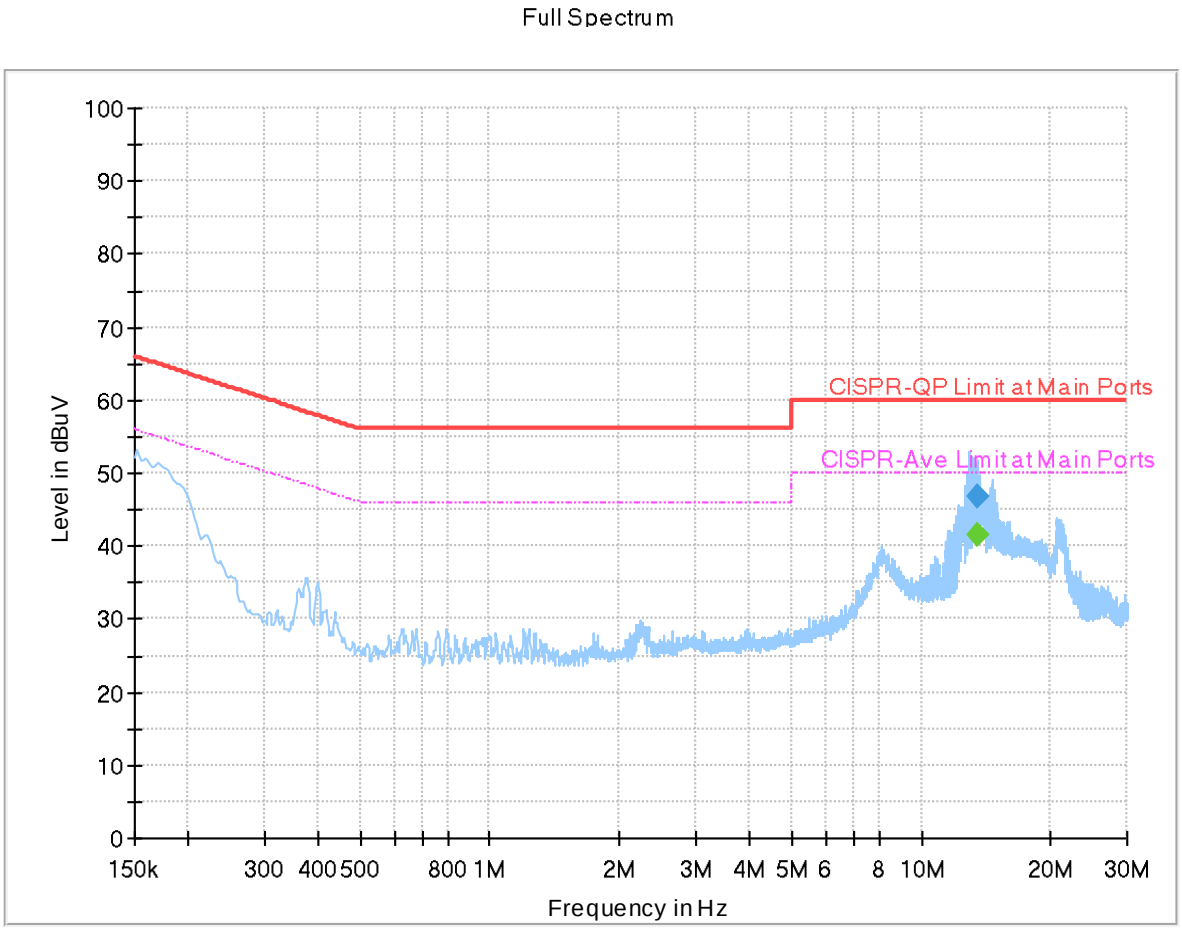
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	PE	Corr. (dB)
0.153173	43.44	---	65.83	22.39	N	FLO	20.0
0.153173	---	25.76	55.83	30.07	N	FLO	20.0
0.170250	41.66	---	64.95	23.29	N	FLO	20.0
0.170250	---	28.31	54.95	26.64	N	FLO	20.0
0.186000	40.13	---	64.21	24.08	N	FLO	20.0
0.186000	---	19.52	54.21	34.69	N	FLO	20.0
0.383190	38.34	---	58.21	19.87	N	FLO	20.0
0.383190	---	35.13	48.21	13.08	N	FLO	20.0
0.639690	24.20	---	56.00	31.80	N	FLO	20.0
0.639690	---	21.82	46.00	24.18	N	FLO	20.0
1.068000	23.04	---	56.00	32.96	N	FLO	20.0
1.068000	---	19.60	46.00	26.40	N	FLO	20.0
8.025090	32.79	---	60.00	27.21	N	FLO	20.3
8.025090	---	26.89	50.00	23.11	N	FLO	20.3
10.756500	33.57	---	60.00	26.43	N	FLO	20.4
10.756500	---	28.02	50.00	21.98	N	FLO	20.4
12.140250	39.75	---	60.00	20.25	N	FLO	20.5
12.140250	---	31.13	50.00	18.87	N	FLO	20.5
13.056450	50.36	---	60.00	9.64	N	FLO	20.5

13.056450	**---**	**44.80**	**50.00**	**5.20**	**N**	**FLO**	**20.5**
13.560180	**68.68**	**---**	**60.00**	**-8.68**	**N**	**FLO**	**20.5**
13.560180	**---**	**67.64**	**50.00**	**-17.64**	**N**	**FLO**	**20.5**
14.732250	**43.21**	**---**	**60.00**	**16.79**	**N**	**FLO**	**20.6**
14.732250	**---**	**37.56**	**50.00**	**12.44**	**N**	**FLO**	**20.6**
16.227690	**41.76**	**---**	**60.00**	**18.24**	**N**	**FLO**	**20.7**
16.227690	**---**	**37.35**	**50.00**	**12.65**	**N**	**FLO**	**20.7**
18.245130	**41.06**	**---**	**60.00**	**18.94**	**N**	**FLO**	**20.8**
18.245130	**---**	**36.45**	**50.00**	**13.55**	**N**	**FLO**	**20.8**
21.135120	**36.11**	**---**	**60.00**	**23.89**	**N**	**FLO**	**20.9**
21.135120	**---**	**29.83**	**50.00**	**20.17**	**N**	**FLO**	**20.9**

<Terminal>

EUT Information

Report NO :	522804
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

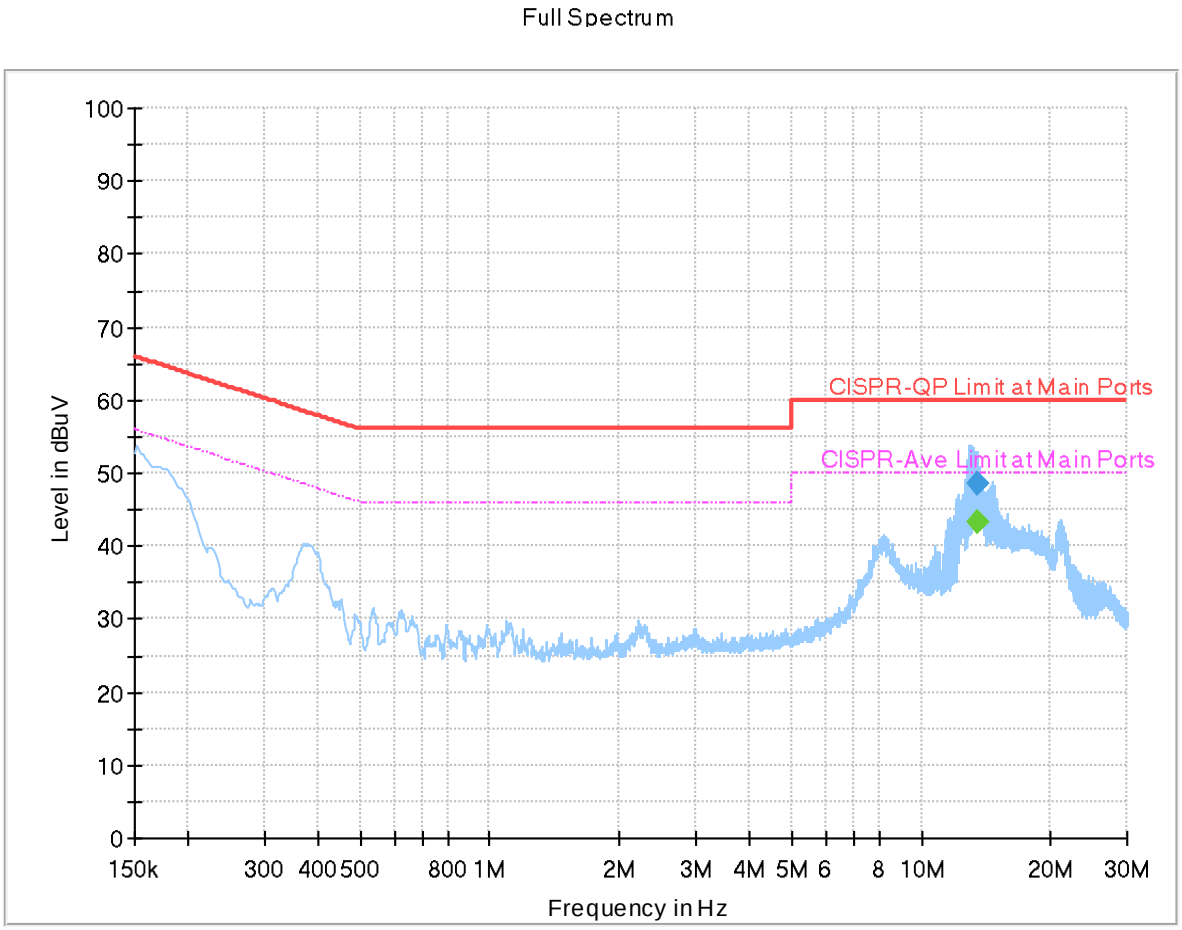


Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	PE	Corr. (dB)
13.558470	---	41.43	50.00	8.57	L1	FLO	20.5
13.558470	46.72	---	60.00	13.28	L1	FLO	20.5

EUT Information

Report NO :	522804
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral



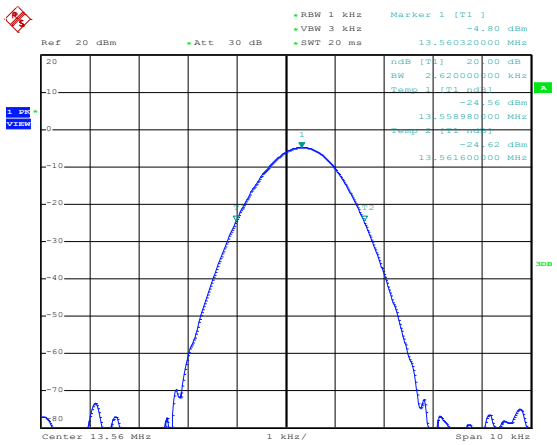
Final_Result

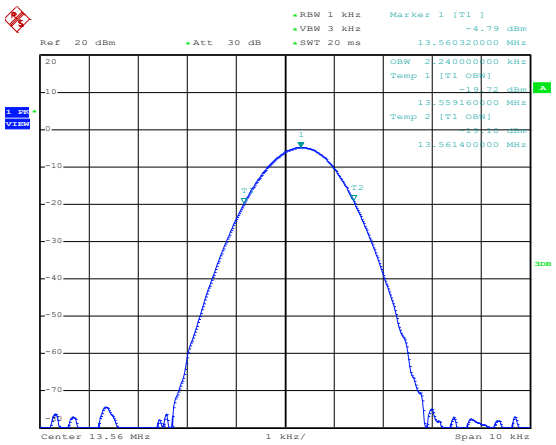
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	PE	Corr. (dB)
13.558740	---	43.24	50.00	6.76	N	FLO	20.5
13.558740	48.46	---	60.00	11.54	N	FLO	20.5

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)	2.24
Frequency range (MHz)	**f_L > 13.553**	13.558980	**Test Result**
	f_H < 13.567	13.56160	**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

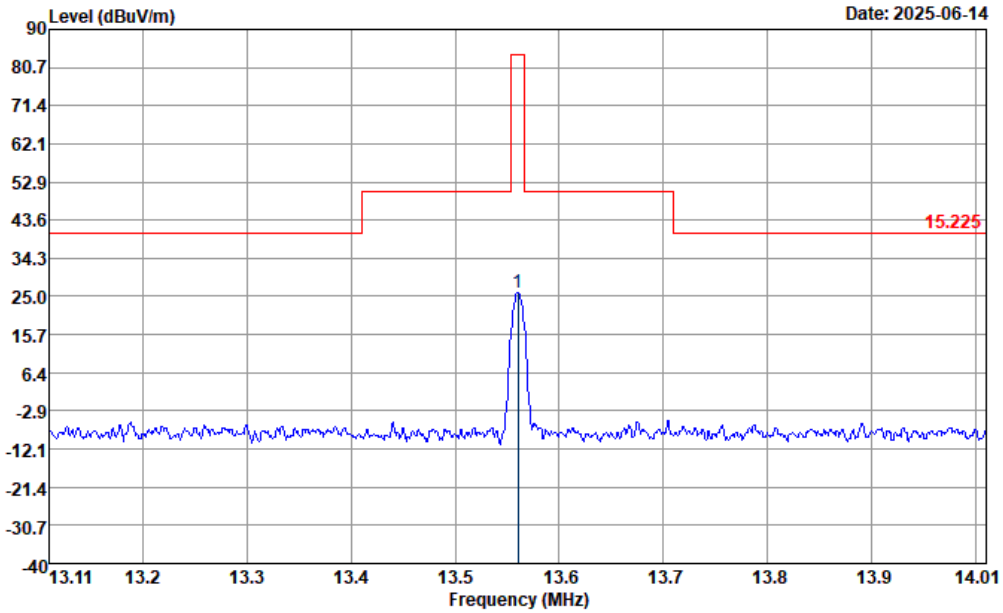
Voltage vs. Frequency Stability		Temperature vs. Frequency Stability		
Voltage (Vac)	Measurement Frequency (MHz)	Temperature (℃)	Time (min)	Measurement Frequency (MHz)
120	13.560290	**-20**	**0**	13.560400
102	13.560280		**2**	13.560380
138	13.560280		**5**	13.560390
			10	13.560390
		-10	**0**	13.560380
			2	13.560380
			5	13.560390
			10	13.560390
		0	**0**	13.560380
			2	13.560380
			5	13.560380
			10	13.560380
		10	**0**	13.560360
			2	13.560360
			5	13.560350
			10	13.560350
		20	**0**	13.560280
			2	13.560280
			5	13.560280
			10	13.560280
		30	**0**	13.560280
			2	13.560280
			5	13.560280
			10	13.560280
		40	**0**	13.560300
			2	13.560300
			5	13.560300
			10	13.560300

Voltage vs. Frequency Stability		Temperature vs. Frequency Stability		
Voltage (Vac)	Measurement Frequency (MHz)	Temperature (℃)	Time (min)	Measurement Frequency (MHz)
		50	0	13.560310
			2	13.560310
			5	13.560310
			10	13.560320
Max.Deviation (MHz)	0.000290	Max.Deviation (MHz)		0.000400
Max.Deviation (ppm)	21.3864	Max.Deviation (ppm)		29.4985
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

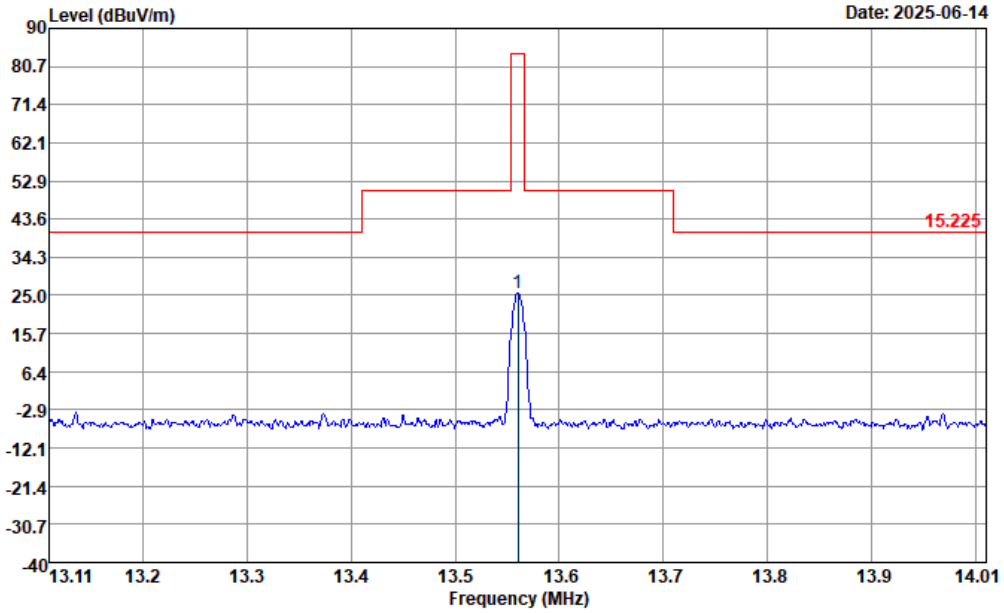
Test Mode :	NFC Tx	Test Frequency (MHz)	13.56



Site : 03CH11-HY
Condition : 15.225 3m LOOP_101108_241218 HORIZONTAL
Project : 522804
Type : F
Card distance : 2.5cm

	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	13.560	25.89	-58.11	84.00	45.32	20.31	0.26	0.00	100	165	QP

Test Mode :	NFC Tx	Test Frequency (MHz)	13.56



Site : 03CH11-HY
Condition : 15.225 3m LOOP_101108_241218 VERTICAL
Project : 522804
Type : F
Card distance : 2.5cm

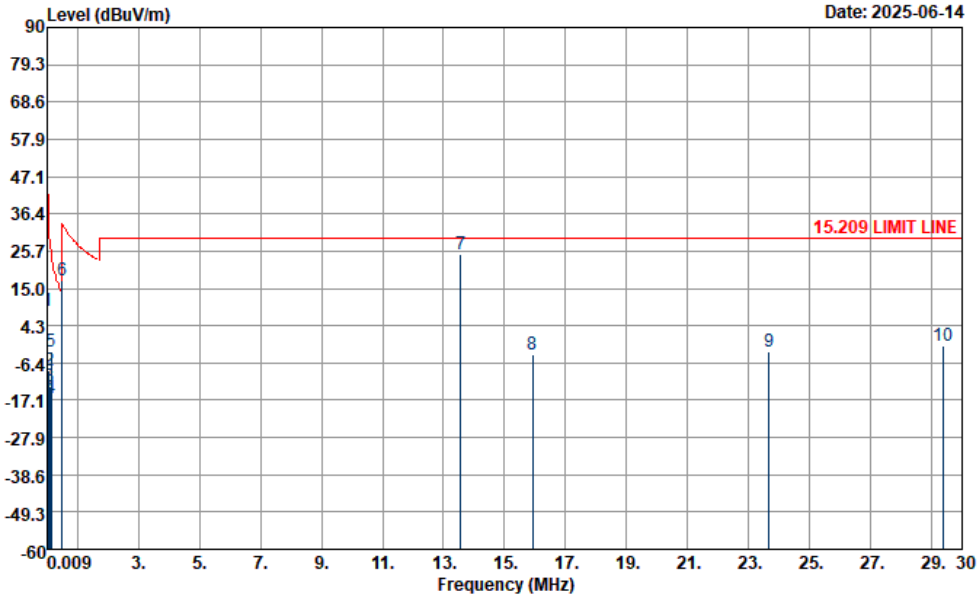
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	13.560	25.58	-58.42	84.00	45.01	20.31	0.26	0.00	100	253	QP

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)

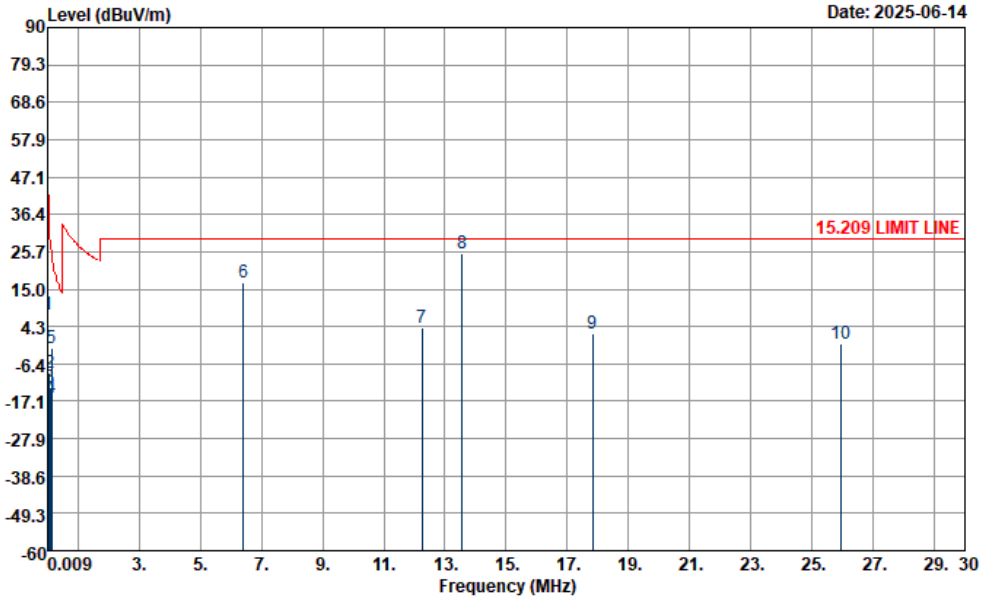
Test Mode :	NFC Tx	Polarization :	Horizontal



Site : 03CH11-HY
Condition : 15.209 LIMIT LINE 3m LOOP_101108_241218 HORIZONTAL
Project : 522804
Type : F
Card distance : 2.5cm

	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	0.030	8.37	-29.72	38.09	67.82	20.49	0.06	0.00	---	---	Average
2	0.063	-8.67	-40.35	31.68	50.85	20.41	0.07	0.00	---	---	Average
3	0.091	-13.16	-41.57	28.41	46.39	20.37	0.08	0.00	---	---	QP
4	0.111	-16.66	-43.39	26.73	42.91	20.35	0.08	0.00	---	---	Average
5	0.150	-3.31	-27.39	24.08	56.29	20.31	0.09	0.00	---	---	Average
6	0.505	17.11	-16.43	33.54	36.80	20.22	0.09	0.00	---	---	QP
7	13.560	24.88	-4.62	29.50	44.31	20.31	0.26	0.00	---	---	QP
8	15.912	-3.94	-33.44	29.50	15.45	20.36	0.25	0.00	---	---	QP
9	23.659	-3.34	-32.84	29.50	15.61	20.86	0.19	0.00	---	---	QP
10	29.370	-1.41	-30.91	29.50	16.86	21.48	0.25	0.00	---	---	QP

Test Mode :	NFC Tx	Polarization :	Vertical



Site : 03CH11-HY
Condition : 15.209 LIMIT LINE 3m LOOP_101108_241218 VERTICAL
Project : 522804
Type : F
Card distance : 2.5cm

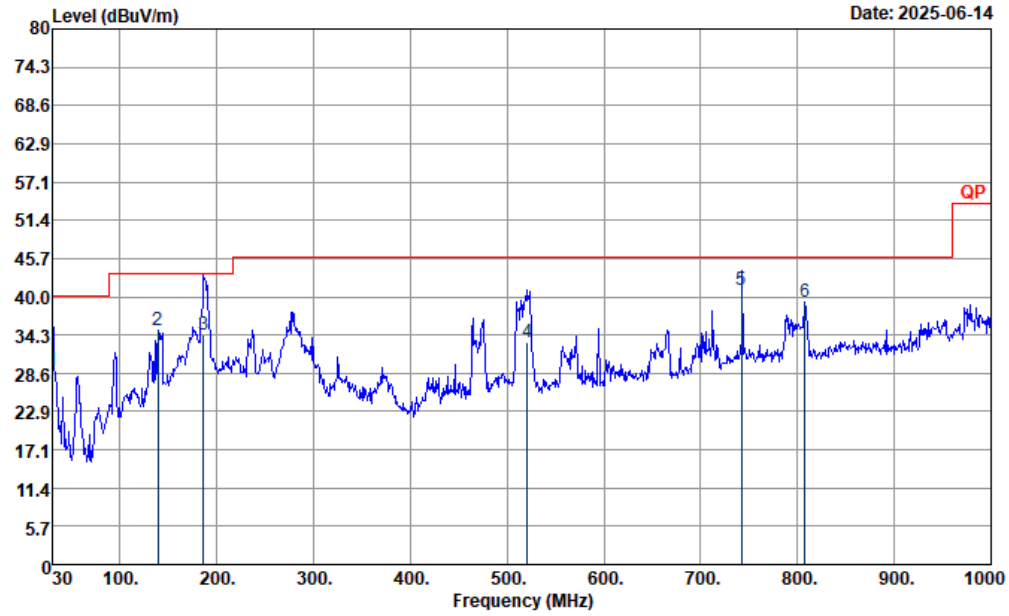
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	0.009	7.59	-40.78	48.37	68.33	19.21	0.05	0.00	---	---	Average
2	0.068	-8.99	-40.00	31.01	50.54	20.40	0.07	0.00	---	---	Average
3	0.090	-13.20	-41.71	28.51	46.35	20.37	0.08	0.00	---	---	QP
4	0.119	-16.20	-42.27	26.07	43.39	20.33	0.08	0.00	---	---	Average
5	0.152	-1.84	-25.81	23.97	57.76	20.31	0.09	0.00	---	---	Average
6	6.415	16.72	-12.78	29.50	36.37	20.20	0.15	0.00	---	---	QP
7	12.256	3.99	-25.51	29.50	23.44	20.29	0.26	0.00	---	---	QP
8	13.560	25.33	-4.17	29.50	44.76	20.31	0.26	0.00	---	---	QP
9	17.836	2.40	-27.10	29.50	21.74	20.43	0.23	0.00	---	---	QP
10	25.945	-0.72	-30.22	29.50	17.99	21.09	0.20	0.00	---	---	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)

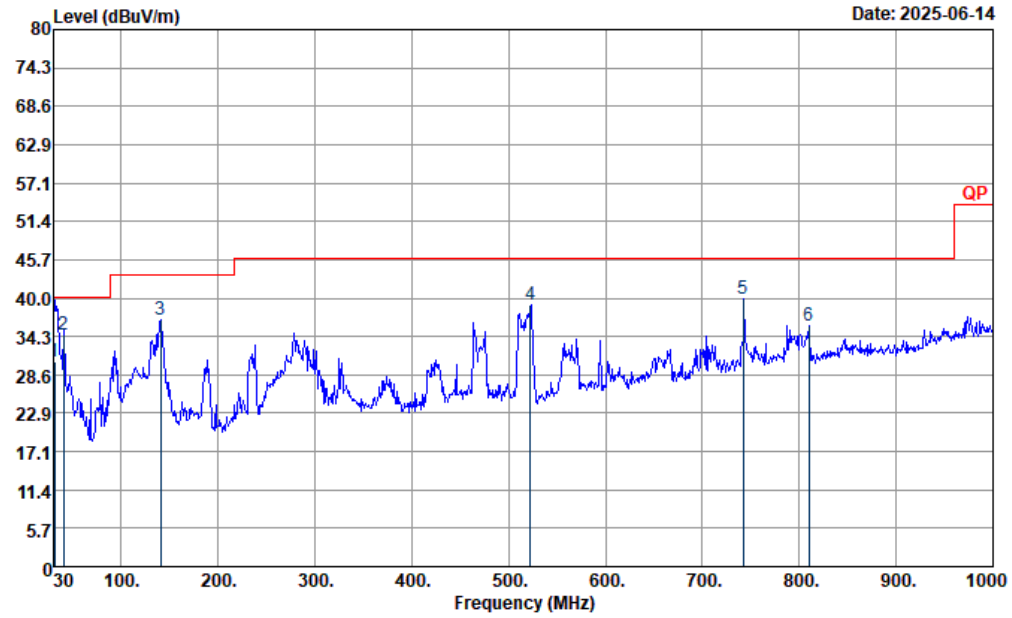
Test Mode :	NFC Tx	Polarization :	Horizontal



Site : 03CH11-HY
Condition : QP 3m 2_BILOG_37059_241127 HORIZONTAL
: .
Project : 522804
Card distance : 2.5cm

	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	30.270	28.93	-11.07	40.00	35.68	24.43	0.82	32.42	150	238	QP
2	139.080	34.97	-8.53	43.50	47.85	17.57	1.67	32.26	---	---	Peak
3	186.060	34.40	-9.10	43.50	49.45	15.08	1.92	32.21	117	346	QP
4	520.500	33.19	-12.81	46.00	37.70	24.25	3.18	32.19	150	302	QP
5	742.400	40.92	-5.08	46.00	40.21	28.34	3.77	32.11	150	316	QP
6	807.500	39.12	-6.88	46.00	37.45	28.24	3.93	31.90	---	---	Peak

Test Mode :	NFC Tx	Polarization :	Vertical



Site : 03CH11-HY
Condition : QP 3m 2_BILOG_37059_241127 VERTICAL
: .
Project : 522804
Card distance : 2.5cm

	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	31.350	30.51	-9.49	40.00	37.71	24.00	0.83	32.40	100	303	QP
2	40.530	34.58	-5.42	40.00	46.23	19.52	0.93	32.33	100	278	QP
3	140.970	36.84	-6.66	43.50	49.57	17.70	1.69	32.26	---	---	Peak
4	522.600	38.97	-7.03	46.00	43.45	24.27	3.19	32.19	---	---	Peak
5	742.400	39.99	-6.01	46.00	39.28	28.34	3.77	32.11	---	---	Peak
6	809.600	35.87	-10.13	46.00	34.21	28.21	3.94	31.89	---	---	Peak

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.