

Test Report

Applicant : INTEGRATED TECHNICAL VISION LTD
Address : 12 CHIGORINA STR., KYIV 01042, UKRAINE
Product Name : U-Prox access control system
Brand Mark : U-Prox
Model : Universal reader U-Prox SE mini
FCC ID : 2BLQF-482026137EOM
Report Number : BLA-EMC-202411-A1701
Date of Receipt : Nov. 8, 2024
Date of Test : Feb. 13, 2025 to May 20, 2025
Test Standard : 47 CFR Part 15, Subpart C
Test Result : Pass

Compiled by: *Hugh*

Review by: *Sueelle*

Approved by: *Blue Zheng*

Issued Date: May 20, 2025



BlueAsia of Technical Services(Shenzhen) Co.,Ltd.

Address: Building C, No. 107, Shihuan Road, Shiyan Sub-District, Bagan District,
Shenzhen, Guangdong Province, China



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Revise Record

Version No.	Date	Description
01	May 20, 2025	Original

BlueAsia

1 General information

1.1 General information

Applicant	INTEGRATED TECHNICAL VISION LTD
Address	12 CHIGORINA STR., KYIV 01042, UKRAINE
Manufacturer	INTEGRATED TECHNICAL VISION LTD
Address	5, kurganny side street, Chernihiv 14013, Ukraine
Factory	INTEGRATED TECHNICAL VISION LTD
Address	5, kurganny side street, Chernihiv 14013, ukraine

1.2 General description of EUT

Product name	U-Prox access control system
Model no.	Universal reader U-Prox SE mini
Series model	N/A
Operation Frequency	13.56MHz
Modulation type	ASK
Antenna Type	PCB Antenna
Antenna Gain:	4 dBi(Provided by customer)
Power supply or adapter information	DC12V
Hardware Version	N/A
Software Version	N/A

Note: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

2 Test summary

No.	Test item	FCC Part Section(s)	Test Method(Clause)	Result
1	Antenna Requirement	§15.203	N/A	Pass
2	Conducted emissions at AC power line (150 kHz-30 MHz)	§15.207	ANSI C63.10 (2013) Section 6.2	N/A
3	Field Strength of the Fundamental Signal	§15.225(a)	ANSI C63.10 (2013) Section 6.4	Pass
4	Frequency Stability	§15.225(e)	ANSI C63.10 (2013) Section 6.8	Pass
5	Emission Bandwidth	§15.215(c)	ANSI C63.10 (2013) Section 6.9	Pass
6	Radiated Emission	§15.209	ANSI C63.10 (2013) Section 6.4&6.5	Pass
7	Out of Band Emission	§15.225(b)	ANSI C63.10 (2013) Section 6.10	Pass

N/A: Not Applicable

3 Test Configuration

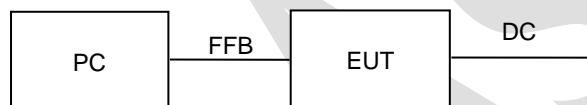
3.1 Test mode

Test Mode	Description
Transmitting mode:	Keep the EUT in continuously transmitting mode with modulation

3.2 Test channel

Channel	Frequency
Test channel	13.56MHz

3.3 Configuration diagram of EUT



3.4 Auxiliary equipment

Device Type	Manufacturer	Model Name	Serial No.	Remark
Rechargeable battery	OUTDO	UTX7L-BS	N/A	From lab (No.BLA-ZC-PJ-2023005)
Note:				
"--" mean no any auxiliary device during testing.				

3.5 Test environment

Environment	Temperature	Voltage
Normal	25°C	DC 12V

4 Laboratory information

4.1 Laboratory and accreditations

The test facility is recognized, certified, or accredited by the following organizations:

Company name:	BlueAsia of Technical Services(Shenzhen) Co., Ltd.
Address:	Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China
CNAS accredited No.:	L9788
A2LA Cert. No.:	5071.01
FCC Designation No.:	CN1252
ISED CAB identifier No.:	CN0028
Telephone:	+86-755-28682673
FAX:	+86-755-28682673

4.2 Measurement uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=1.96$.

Parameter	Expanded Uncertainty
Radiated Emission(9kHz-30MHz)	$\pm 4.34\text{dB}$
Radiated Emission(30Mz-1000MHz)	$\pm 4.24\text{dB}$
Radiated Emission(1GHz-18GHz)	$\pm 4.68\text{dB}$
AC Power Line Conducted Emission(150kHz-30MHz)	$\pm 3.45\text{dB}$
Occupied Channel Bandwidth	$\pm 5\%$
RF output power, conducted	$\pm 1.5\text{ dB}$
Power Spectral Density, conducted	$\pm 3.0\text{ dB}$
Unwanted Emissions, conducted	$\pm 3.0\text{ dB}$
Temperature	$\pm 3\text{ }^{\circ}\text{C}$
Supply voltages	$\pm 3\%$
Time	$\pm 5\%$

5 Test equipment

Radiated Spurious Emissions (Below 1GHz)

Equipment	Name	Model	Manufacture	S/N	Cal. Date	Due. Date
BLA-EMC-002-01	Anechoic chamber	9*6*6 chamber	SKET	N/A	2024/3/27	2027/3/26
BLA-EMC-002-02	Control room	966 control room	SKET	N/A	2024/3/27	2027/3/26
BLA-EMC-009	EMI receiver	ESR7	R&S	101199	2024/08/08	2025/08/07
BLA-EMC-043	Loop antenna	FMZB1519B	Schwarzbeck	00102	2024/06/29	2026/06/28
BLA-EMC-065	Broadband antenna	VULB9168	Schwarzbeck	01065P	2024/06/29	2026/06/27
BLA-XC-01	Coaxial Cable	N/A	BlueAsia	V01	N/A	N/A
BLA-XC-02	Coaxial Cable	N/A	BlueAsia	V02	N/A	N/A

Radiated Spurious Emissions (Above 1GHz)

Equipment	Name	Model	Manufacture	S/N	Cal. Date	Due. Date
BLA-EMC-001-01	Anechoic chamber	9*6*6 chamber	SKET	N/A	2023/11/16	2026/11/15
BLA-EMC-001-02	Control Room	966 control room	SKET	N/A	2023/11/16	2025/11/15
BLA-EMC-008	Spectrum	FSP40	R&S	100817	2024/08/08	2025/08/07
BLA-EMC-012	Broadband antenna	VULB9168	Schwarzbeck	00836 P:00227	2022/10/12	2025/10/11
BLA-EMC-013	Horn Antenna	BBHA9120D	Schwarzbeck	01892	2024/06/29	2026/06/28
BLA-EMC-014	Amplifier	PA_000318G-45	SKET	PA201804 3003	2024/08/08	2025/08/07
BLA-EMC-046	Filter bank	2.4G/5G Filter bank	SKET	N/A	2024/06/28	2025/06/27
BLA-EMC-061	Receiver	ESPI7	R&S	101477	2024/06/28	2025/06/27
BLA-EMC-066	Amplifier	LNPA_30M01 G-30	SKET	SK202106 0801	2024/06/28	2025/06/27
BLA-EMC-086	Amplifier	LNPA_18G40 G-50dB	SKET	SK202207 1301	2024/06/28	2025/06/27
BLA-EMC-087	Horn Antenna	BBHA 9170	Schwarzbeck	1106	2024/06/29	2026/06/28
BLA-XC-03	Coaxial Cable	N/A	BlueAsia	V03	N/A	N/A
BLA-XC-04	Coaxial Cable	N/A	BlueAsia	V04	N/A	N/A

RF conducted

Equipment	Name	Model	Manufacture	S/N	Cal. Date	Due. Date
BLA-EMC-003-003	Shield room	5*3*3	SKET	N/A	2023/11/16	2025/11/15
BLA-EMC-016	Signal Generator	N5182A	Agilent	MY52420567	2024/06/28	2025/06/27
BLA-EMC-038	Spectrum	N9020A	Agilent	MY49100060	2024/08/08	2025/08/07
BLA-EMC-042	Power sensor	RPR3006W	DARE	14I00889SN042	2024/08/08	2025/08/07
BLA-EMC-044	Radio communication tester	CMW500	R&S	132429	2024/08/08	2025/08/07
BLA-EMC-064	Signal Generator	N5182B	KEYSIGHT	MY58108892	2024/06/28	2025/06/27
BLA-EMC-079	Spectrum	N9020A	Agilent	MY54420161	2024/08/08	2025/08/07
BLA-EMC-088	Audio Analyzer	ATS-1	Audio Precision	ATS141094	2024/06/28	2025/06/27

Test software

Software No.	Software Name	Manufacture	Software version	Test site
BLA-EMC-S001	EZ-EMC	EZ	EEMC-3A1+	RE(Below 1GHz)
BLA-EMC-S002	EZ-EMC	EZ	EEMC-3A1+	RE(Above 1GHz)

6 Test result

6.1 Antenna requirement

Test Standard	47 CFR Part 15, Subpart C 15.203
Test Method	N/A

6.1.1 Requirement

According to FCC Part 15.203, 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.

6.1.2 Test Result

This product has an integral antenna, fulfill the requirement of this section.

6.2 Field Strength of the Fundamental Signal

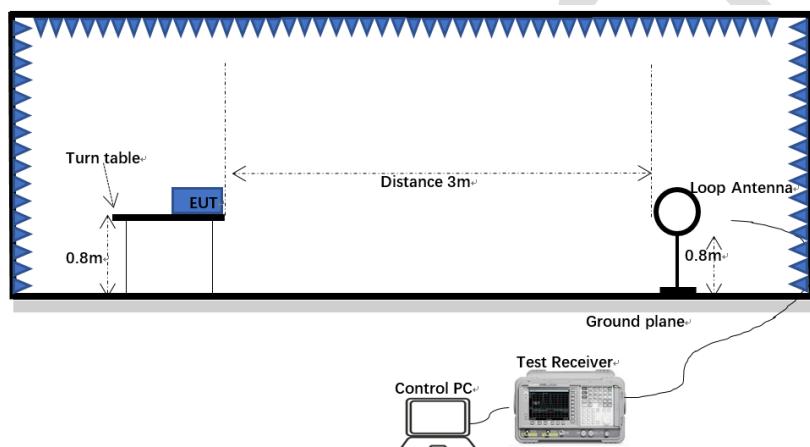
Test Requirement	FCC Part15 C Section 15.225
Test Method	ANSI C63.10:2013 6.4

6.2.1 Limit

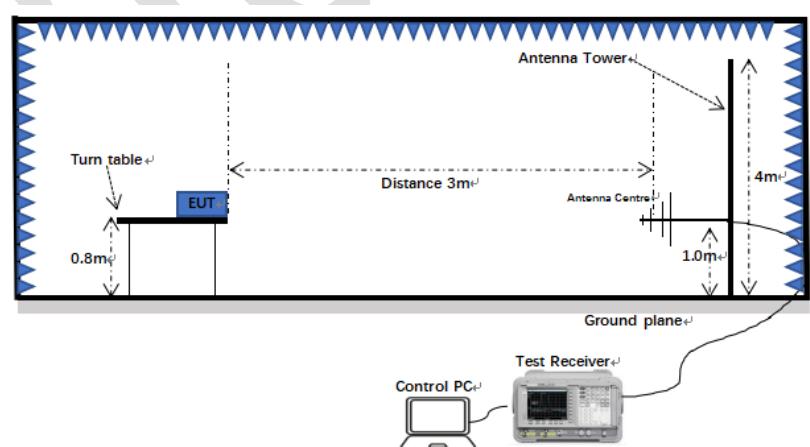
The field strength of any emission within the band 1.705-10.0 MHz shall not exceed 100 microvolts/meter at a distance of 30 meters.

6.2.2 Test setup

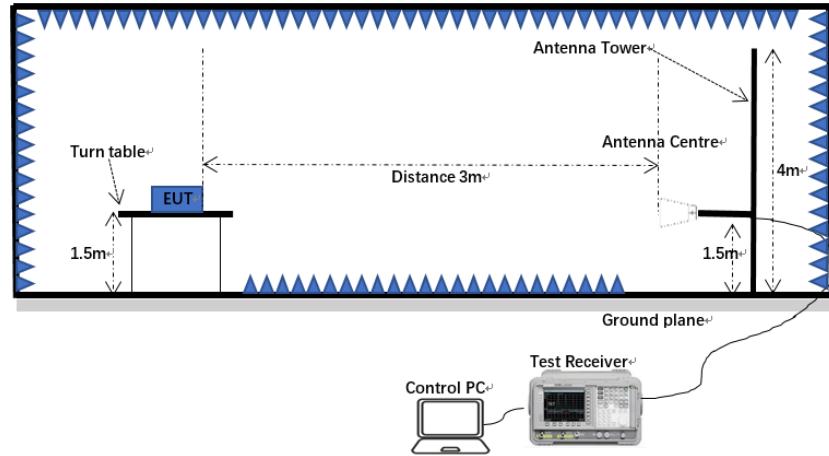
Below 1GHz:



30MHz-1GHz:



Above 1GHz:



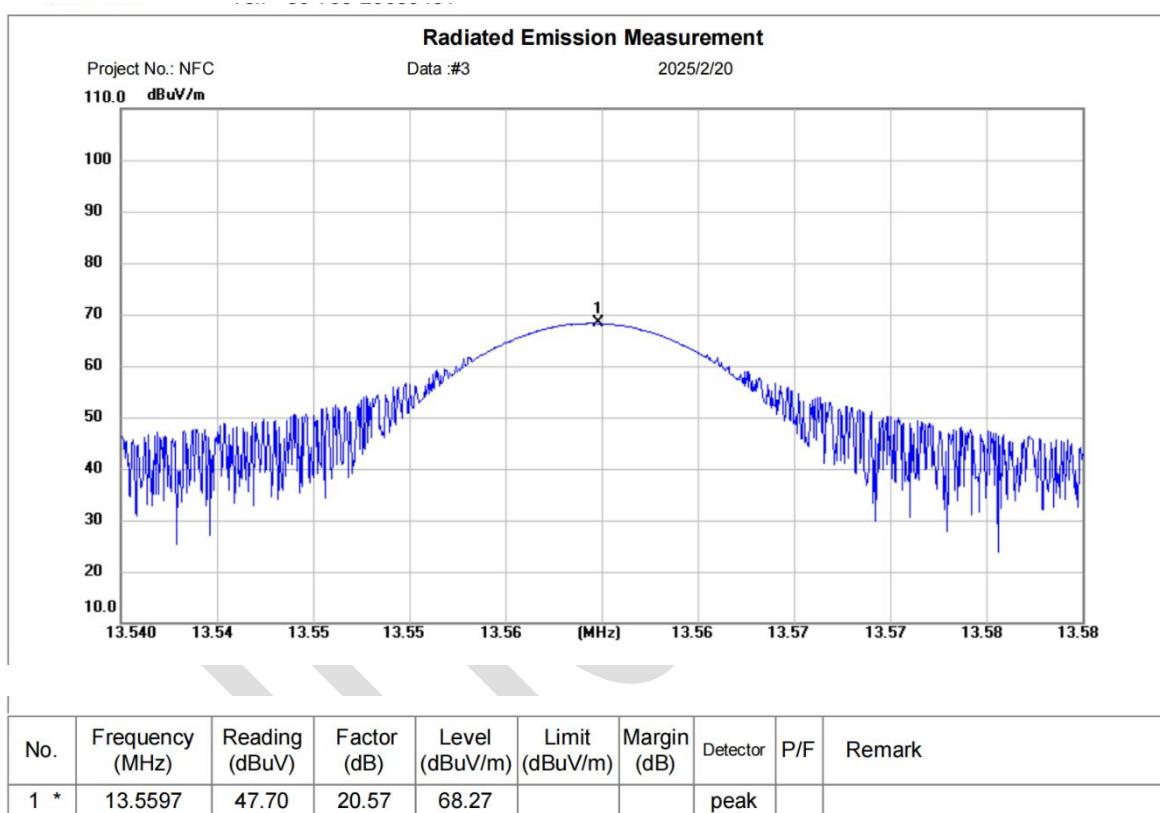
6.2.3 Procedure

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamplifier Factor

6.2.4 Test data

Frequency (MHz)	Read Level (dBuV)	Correct Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
13.56MHz	47.70	20.57	68.27	124	-55.73	<input checked="" type="checkbox"/> (Worst case)



6.3 Frequency Stability

Test Standard	47 CFR Part 15, Subpart C 15.225
Test Method	ANSI C63.10 (2013) 6.8
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.3.1 Limit

According to 15.225(e) the frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ 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 using a new battery.

6.3.2 Test procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure.

6.3.3 Test results

Environment Temperature (°C)	Power Supplied (VDC)	Frequency Error		Limit	Result
		Error (Hz)	Error (ppm)		
50	12.0	114	8.41	100ppm	Pass
40	12.0	112	8.26	100ppm	Pass
30	12.0	111	8.19	100ppm	Pass
20	12.0	112	8.26	100ppm	Pass
10	12.0	121	8.92	100ppm	Pass
0	12.0	120	8.85	100ppm	Pass
-10	12.0	115	8.48	100ppm	Pass
-20	12.0	111	8.19	100ppm	Pass

Environment Temperature (°C)	Power Supplied (VDC)	Frequency Error		Limit	Result
		Error (Hz)	Error (ppm)		
20	10.8	104	7.67	100ppm	Pass
	12.0	111	8.19	100ppm	Pass
	13.2	115	8.48	100ppm	Pass

6.4 Emission bandwidth

6.4.1 Limit

According to 15.215 (c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

6.4.2 Test Procedure

According to the ANSI 63.10-2013, the emission bandwidth test method as follows.

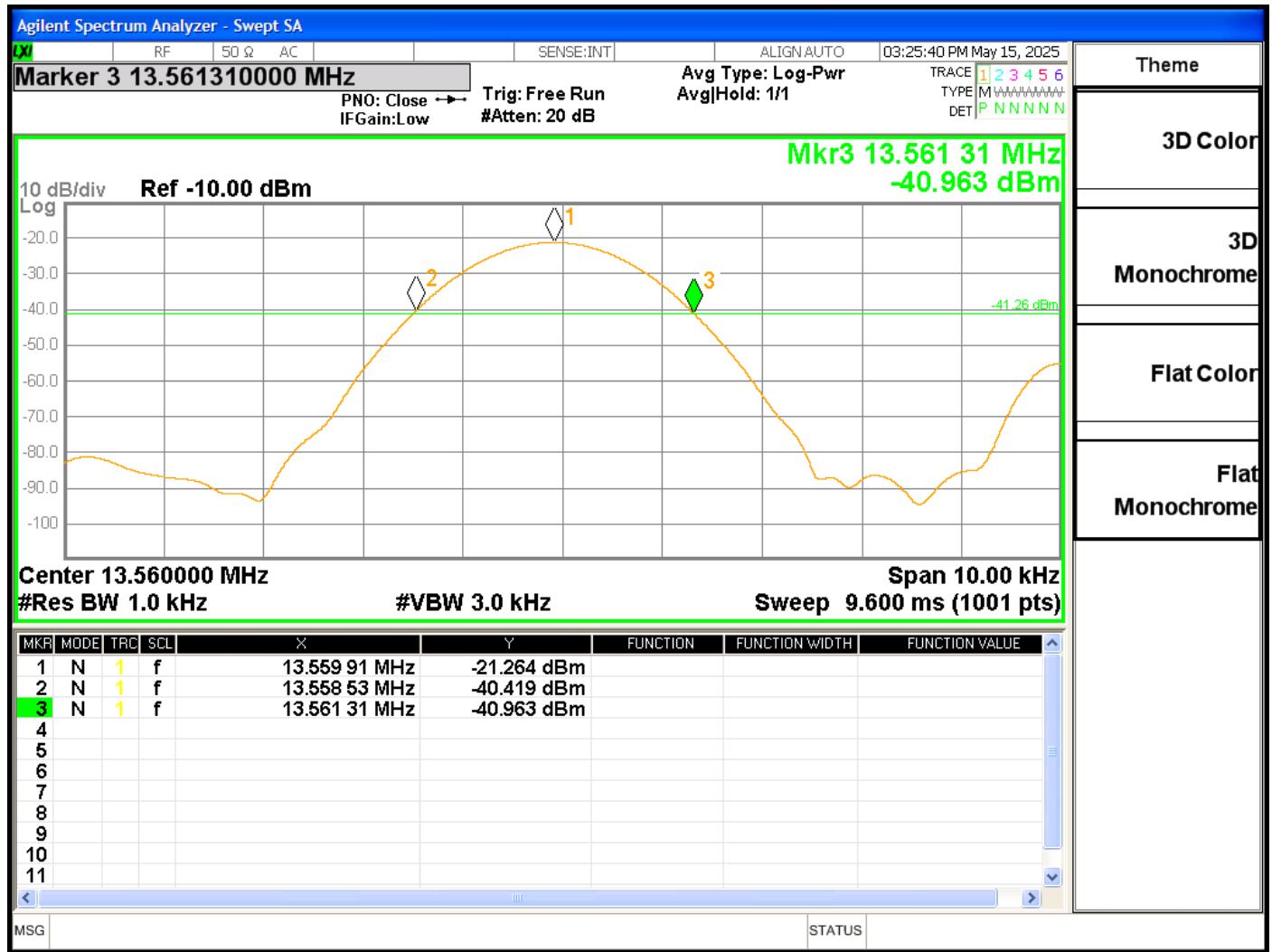
- Set span = 10kHz, centered on a transmitting channel
- RBW \geq 1% 20dB Bandwidth, VBW \geq RBW
- Sweep = auto
- Detector function = peak
- Trace = max hold

All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down of the emission.

6.4.3 Test Result

TX Frequency	20dB Emission bandwidth
13.56MHz	2.78KHz

Please refer to the test plots as below:



6.5 Radiated Emissions

6.5.1 Limit

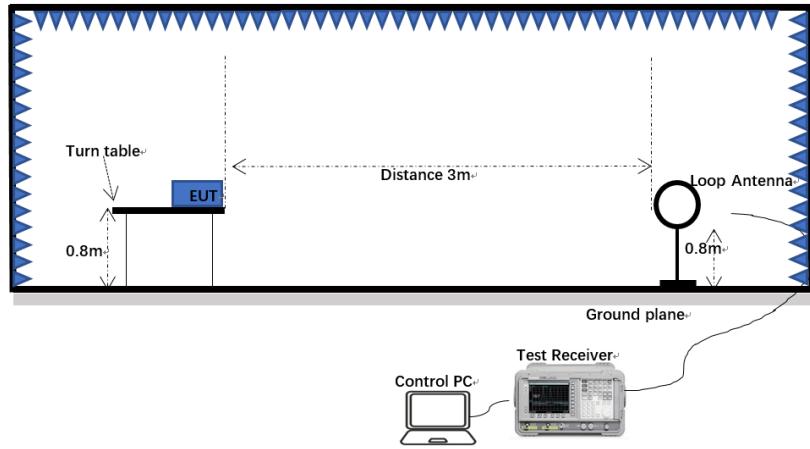
According to §15.225(a), the field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

According to §15.225(d) the field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in §15.209.

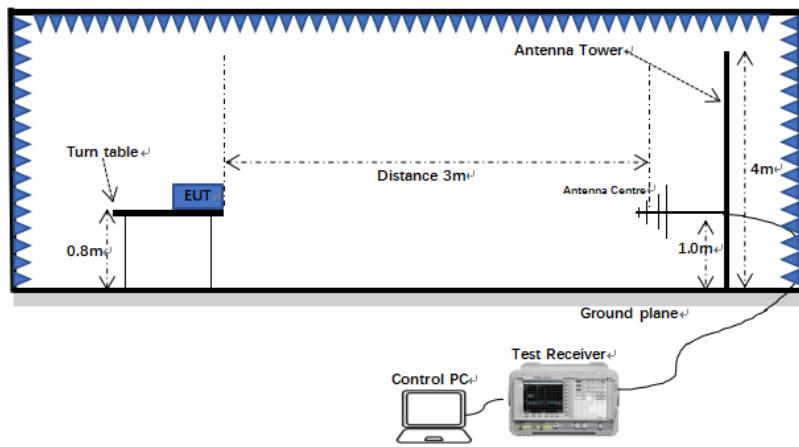
Note: Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

6.5.2 Test setup

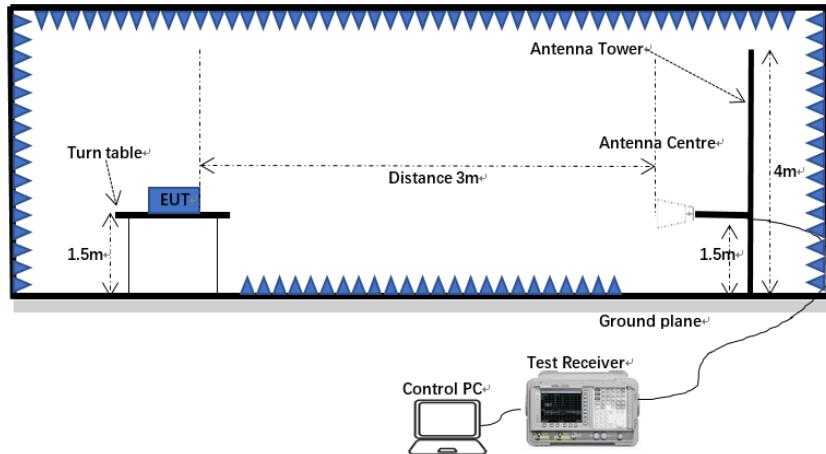
Below 1GHz:



30MHz-1GHz:



Above 1GHz:



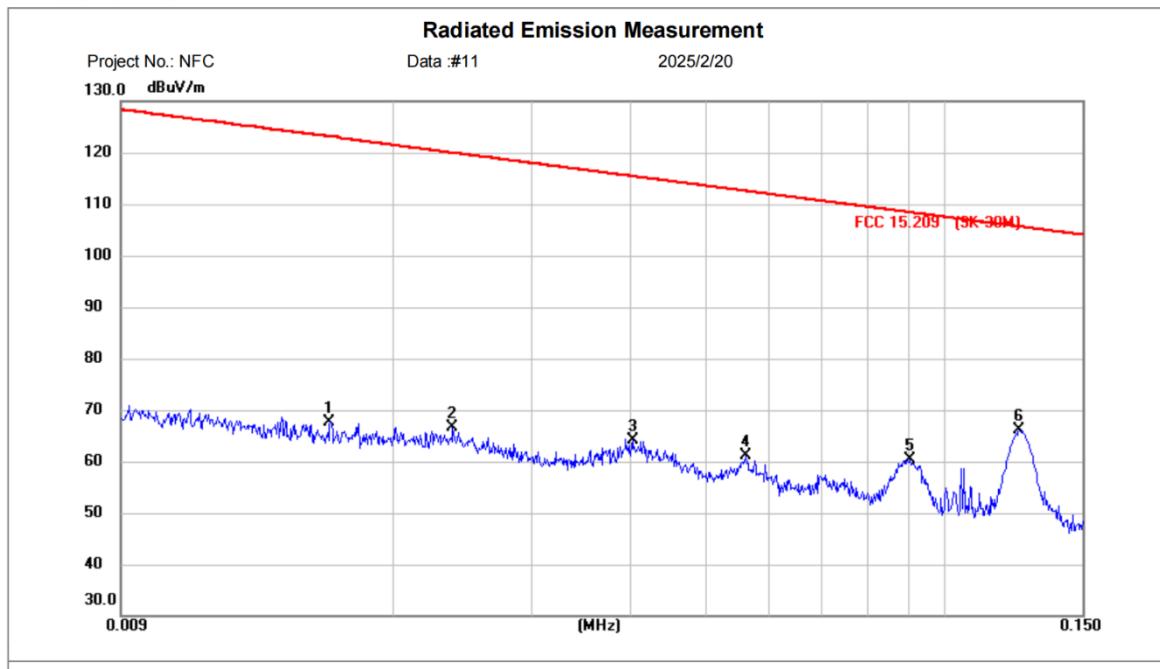
6.5.3 Procedure

- i) For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- j) For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- k) The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- l) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- m) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- n) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- o) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- p) The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

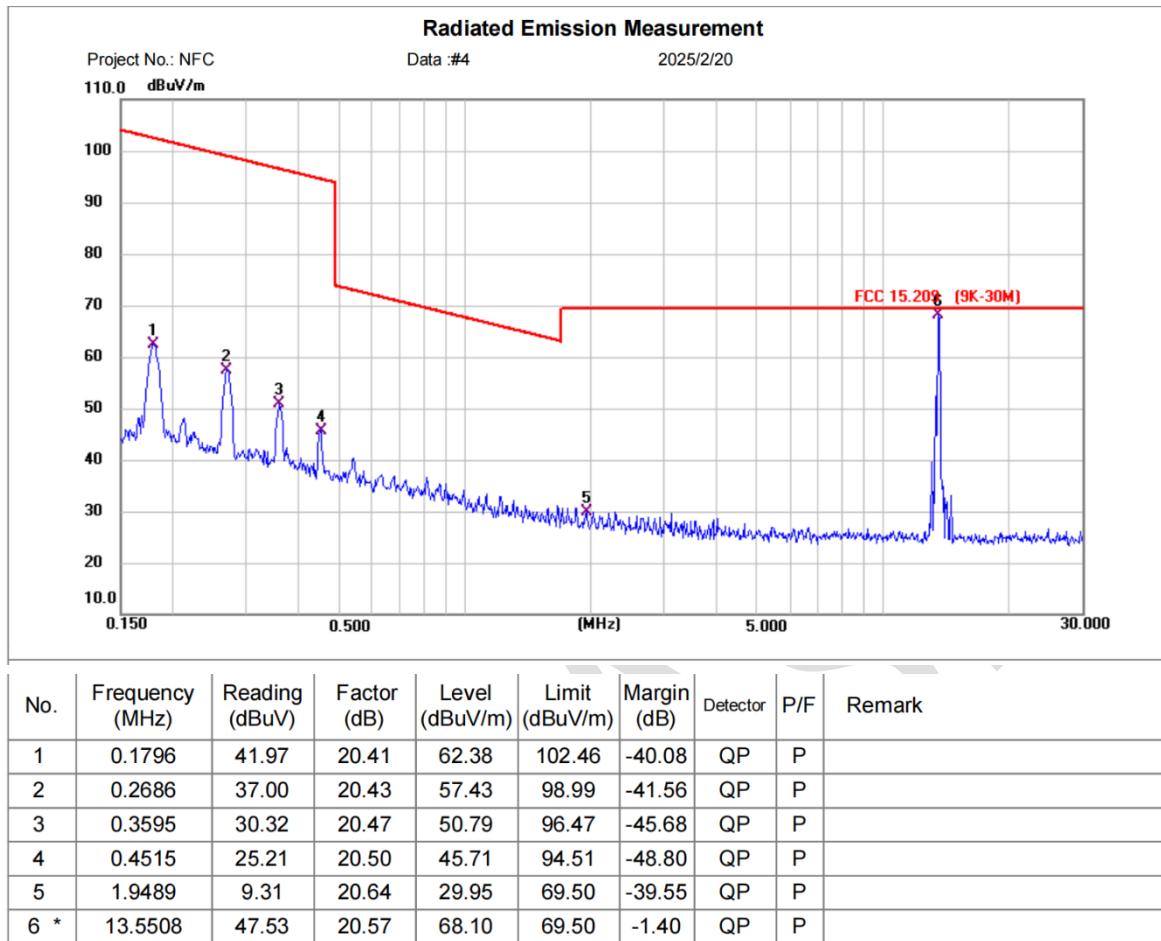
Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

6.5.4 Test Result

■ 9 kHz ~ 30 MHz

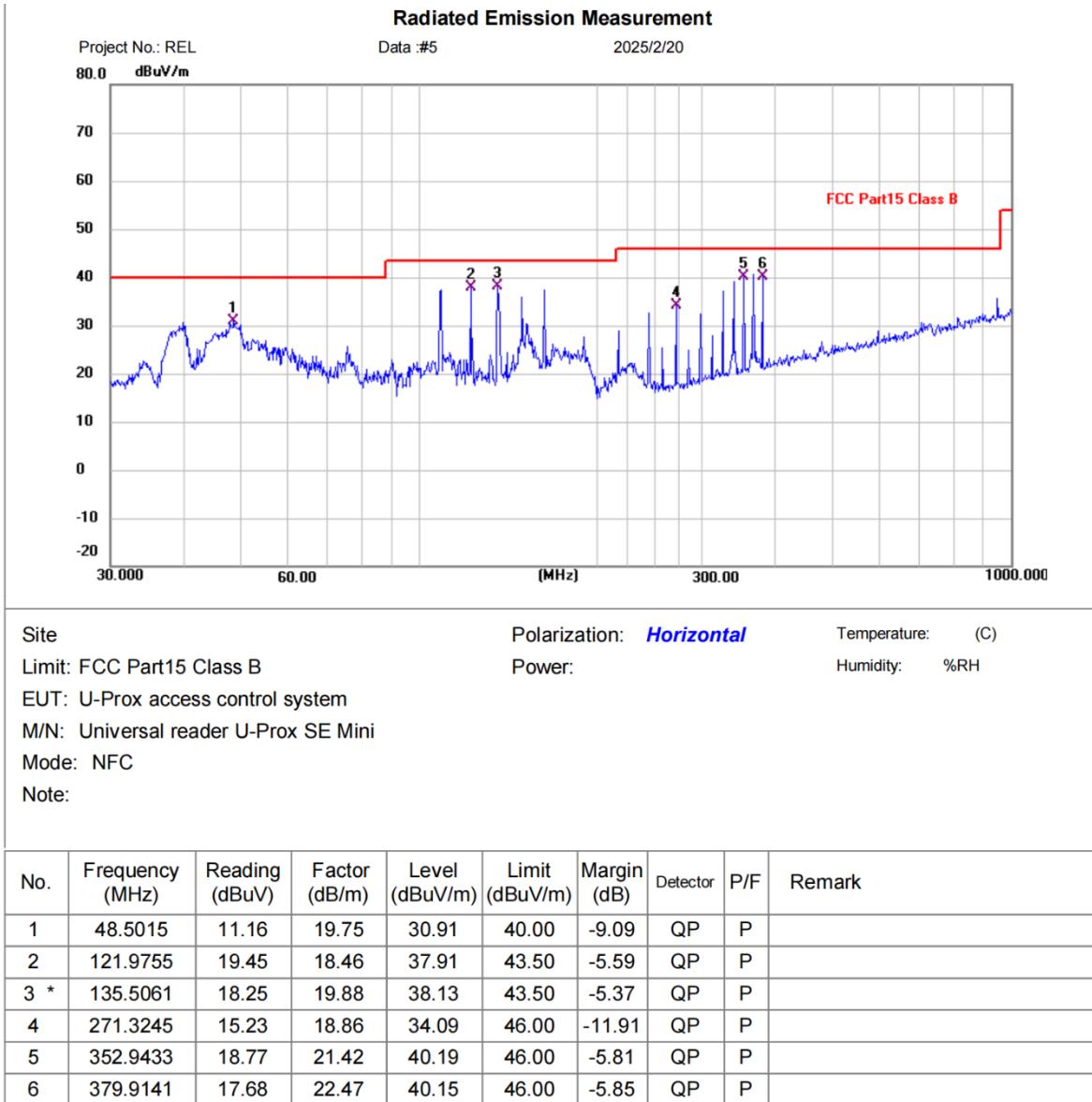


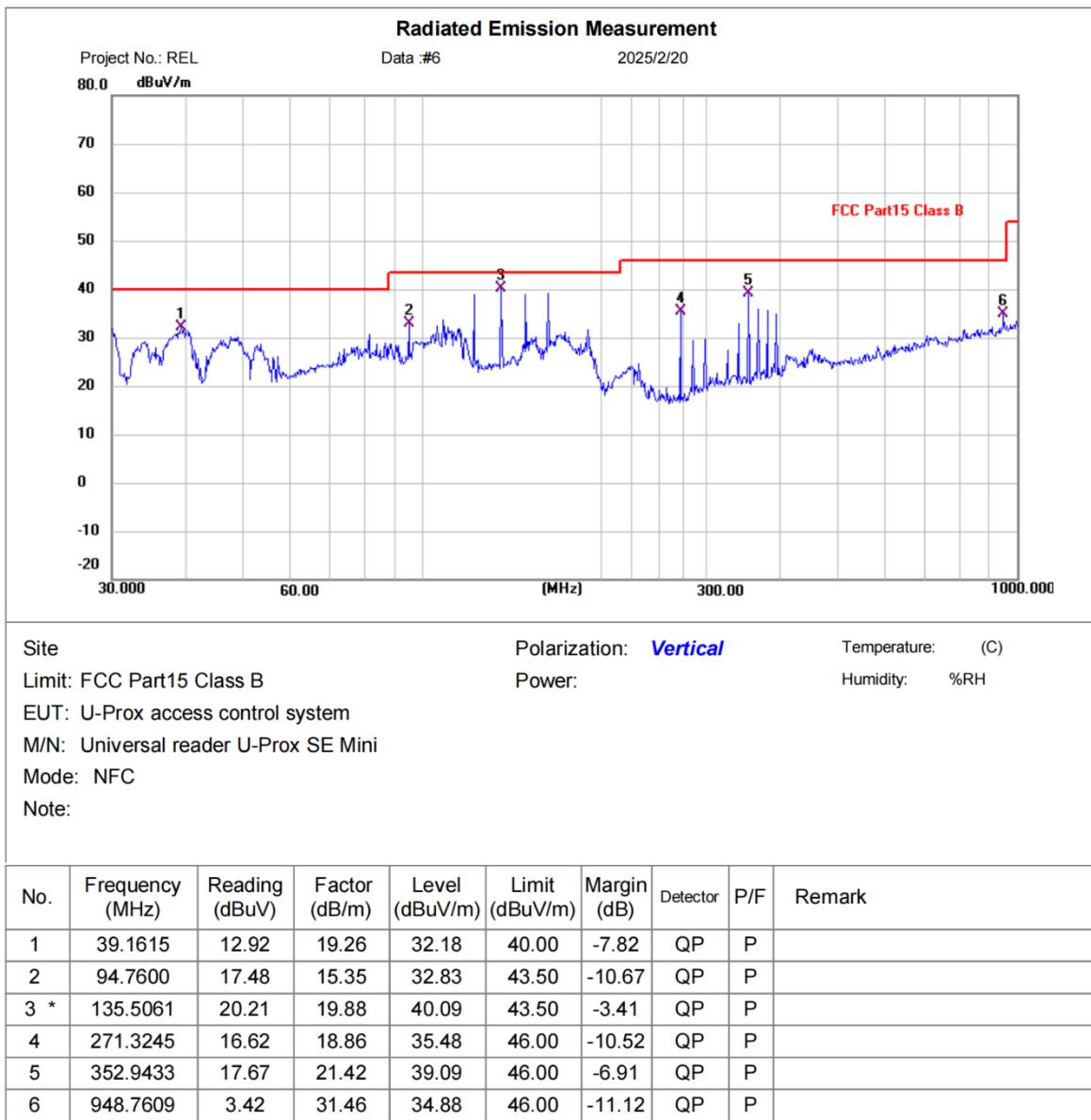
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.0165	47.12	20.58	67.70	123.07	-55.37	peak	P	
2	0.0236	46.00	20.58	66.58	119.98	-53.40	peak	P	
3	0.0401	43.71	20.54	64.25	115.41	-51.16	peak	P	
4	0.0560	40.66	20.49	61.15	112.52	-51.37	peak	P	
5	0.0905	39.86	20.59	60.45	108.38	-47.93	peak	P	
6 *	0.1246	45.64	20.42	66.06	105.62	-39.56	peak	P	



■ Below 1GHz

Horizontal:



Vertical:

Remark:

1. Final Level = Receiver Read level + Correct factor
2. “*”, means this data is the too weak instrument of signal is unable to test.
3. Correct factor = Antenna Factor + Cable Loss – Preamplifier Factor

6.6 Out of band emissions

6.6.1 Limit

According to FCC 15.225 (b) within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters. (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

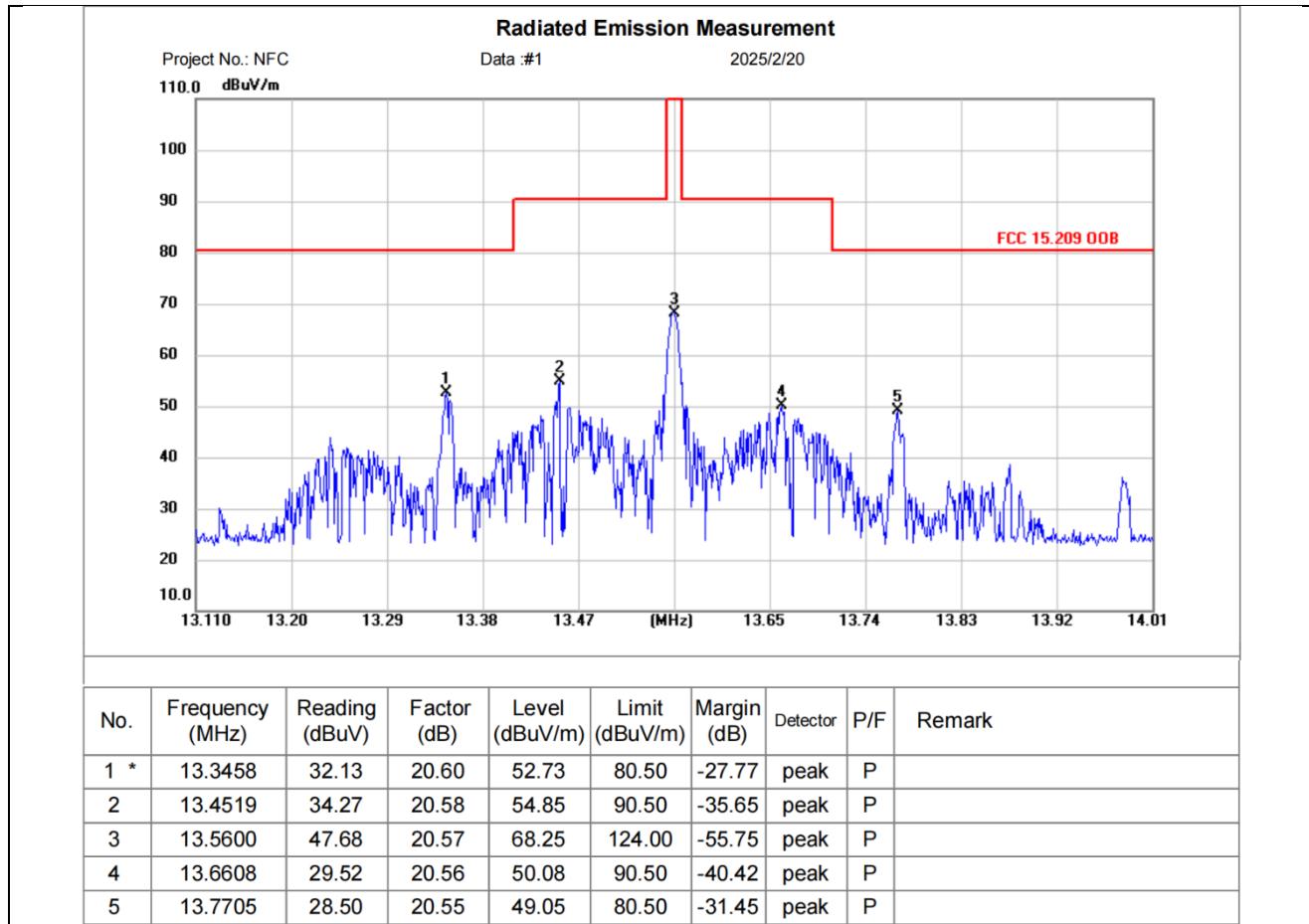
6.6.2 Test Procedure

As the radiation test, set the RBW=10kHz VBW=30kHz, observed the outside band of 13.11MHz to 14.01MHz, than mark the higher-level emission for comparing with the FCC rules.

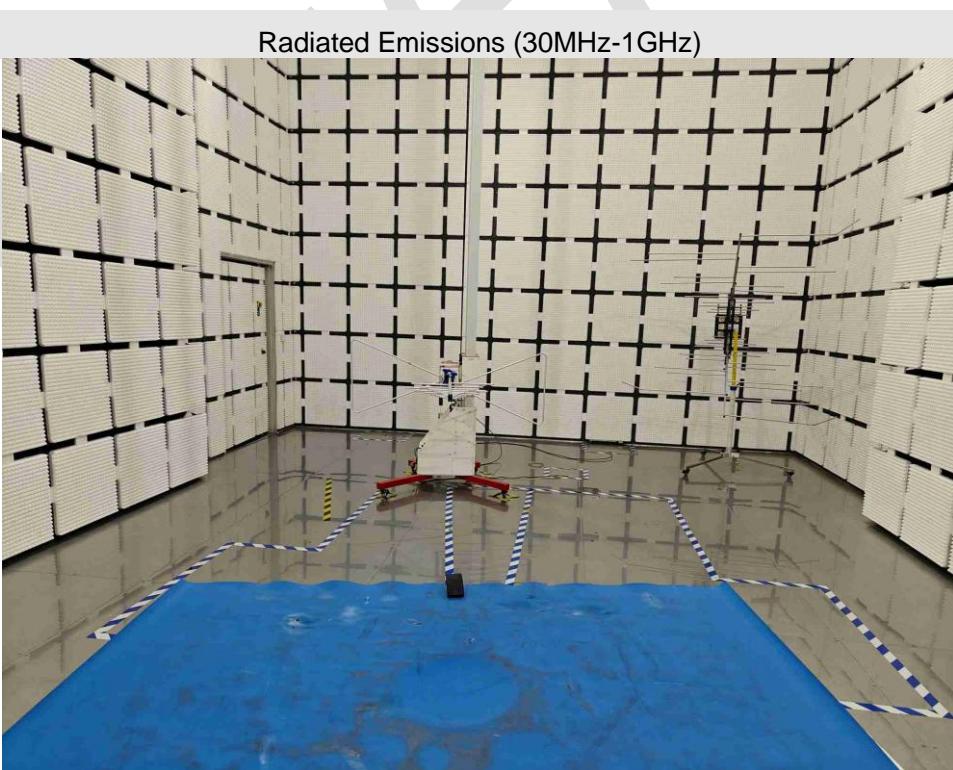
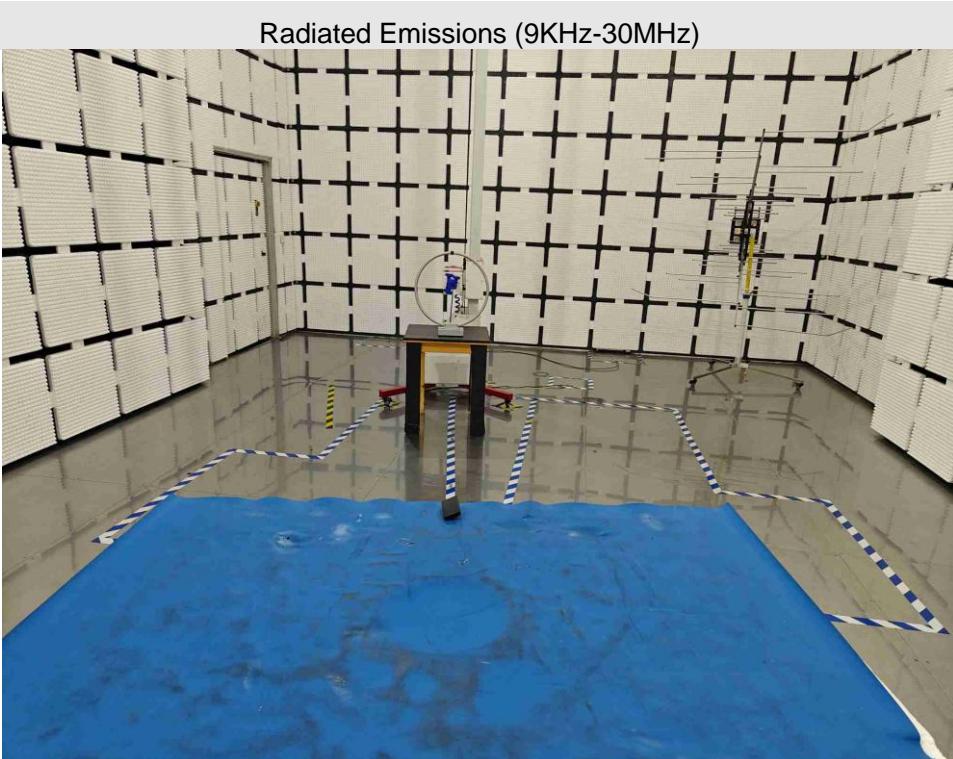
6.6.3 Test Result

Out of band emission

Vertical (Worst case)



7 Appendix A photographs of test setup



8 Appendix B: photographs of EUT

Reference to the test report no. BLA-EMC-202411-A1701

----END OF REPORT----

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