

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 with a keypad U-Prox SE keypad
FCC ID : 2BLQF-482026137ECX
Report Number : BLA-EMC-202402-A2503
Date of Receipt : Feb. 23, 2024
Date of Test : Feb. 23, 2024 to Dec. 31, 2024
Test Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.225
Test Result : Pass

Compiled by:



Review by:



Approved by:



Issued Date: Dec. 31, 2024

BlueAsia of Technical Services(Shenzhen) Co.,Ltd.Address: Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen,
Guangdong Province, China

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Revise Record

Version No.	Date	Description
01	Dec. 31, 2024	Original

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	12 CHIGORINA STR., KYIV 01042, 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 with a keypad U-Prox SE keypad
Test Model No.:	Universal reader with a keypad U-Prox SE keypad
Sample(s) Status	Engineer sample
Hardware:	N/A
Software:	N/A
Operation Frequency:	13.56MHz
Channel Numbers:	1
Modulation Type:	ASK
Antenna Type:	Internal Antenna
Antenna Gain:	4dBi
Power Supply:	DC12V
Remark: The Antenna Gain is supplied by the customer	

2 Test Summary

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

Pass: The EUT complies with the essential requirements in the standard.

3 Test Configuration

3.1 Test mode

Transmitting mode:	Keep the EUT in continuously transmitting mode with modulation
Remark: Only the data of the worst mode would be recorded in this report.	

3.2 Description of Support Units

Manufacturer	Description	Model	Serial Number
Rechargeable battery	OUTDO	UTX7L-BS	N/A

4 Laboratory information

4.1 Test Facility

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

• **FCC — Designation No.: CN1252**

BlueAsia of Technical Services(Shenzhen) Co., Ltd has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Designation CN1252.

• **ISED — CAB identifier No.: CN0028**

BlueAsia of Technical Services(Shenzhen) Co., Ltd has been registered by Certification and Engineering Bureau of ISED for radio equipment testing with CAB identifier CN0028

4.2 Test Location

All tests were performed at:

All tests were performed at:

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

Building C, No. 107, Shihuan Road, Shiyuan Sub-District, Baoan District, Shenzhen, Guangdong Province, China

Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673

No tests were sub-contracted.

4.3 Test Location

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	± 4.34dB	(1)
Radiated Emission	30MHz ~ 1000MHz	± 4.24dB	(1)
Radiated Emission	1GHz ~ 26.5GHz	± 4.68dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.45dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 Test Instruments list

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

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	00836P: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	PA2018043003	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_30M01G-30	SKET	SK2021060801	2024/06/28	2025/06/27
BLA-EMC-086	Amplifier	LNPA_18G40G-50dB	SKET	SK2022071301	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

Test Software Record:

Software No.	Software Name	Manufacture	Software version	Test site
BLA-EMC-S001	EZ-EMC	EZ	EEMC-3A1+	RE
BLA-EMC-S002	EZ-EMC	EZ	EEMC-3A1+	RE
BLA-EMC-S010	MTS 8310	MW	2.0.0.0	RF

6 Antenna Requirement

6.1 Standard Applicable

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.

6.2 Test Result

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

7 Radiated Emissions

7.1 Standard Applicable

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.

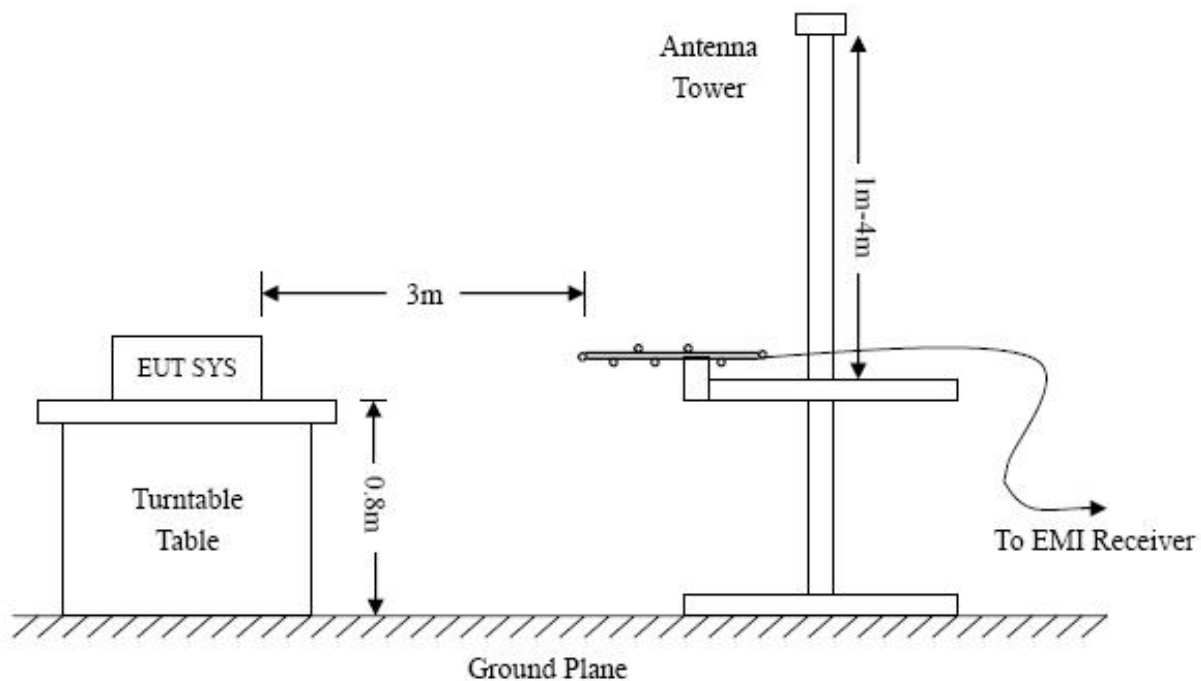
According to §15.225(d) The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in §15.209.

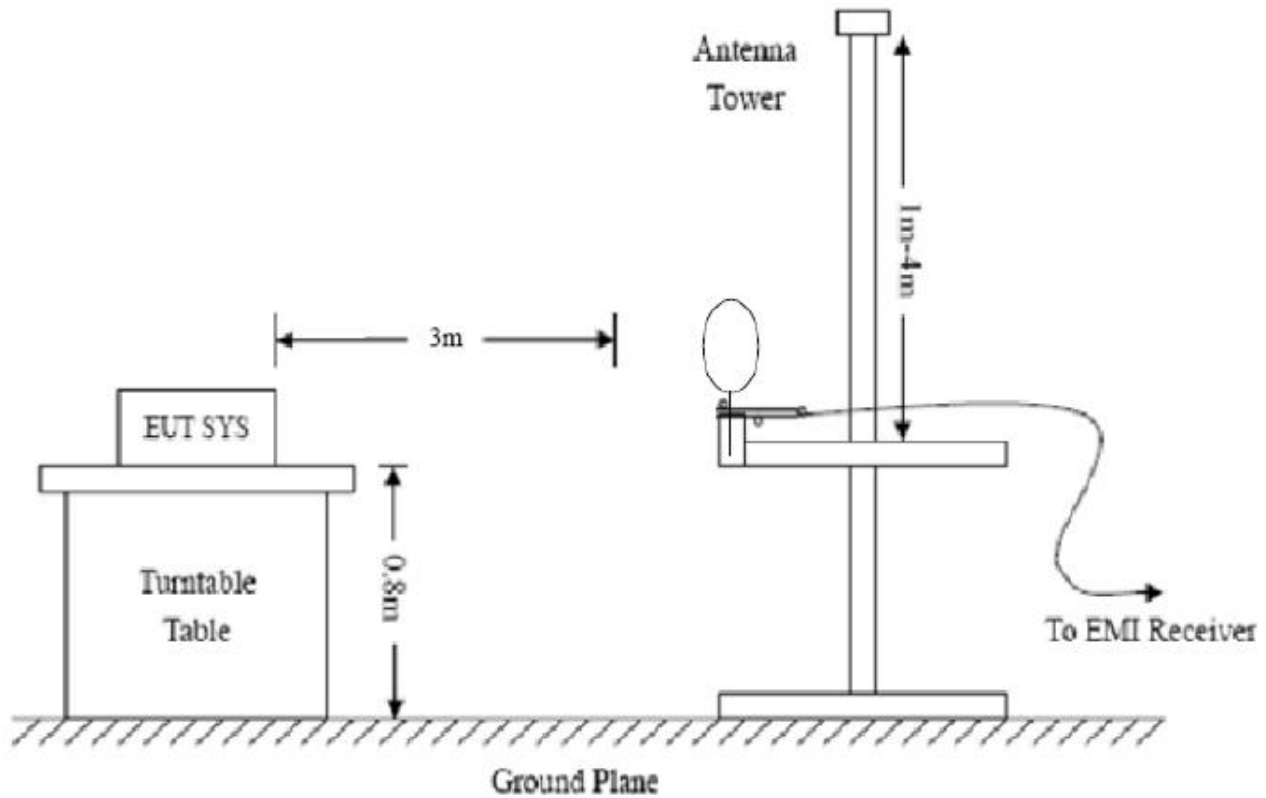
Note: Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

7.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.225(d) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.





Frequency :9kHz-30MHz
RBW=10KHz,
VBW =30KHz
Sweep time= Auto
Trace = max hold
Detector function = peak

Frequency :30MHz-1GHz
RBW=120KHz,
VBW=300KHz
Sweep time= Auto
Trace = max hold
Detector function = peak, QP

Frequency :Above 1GHz
RBW=1MHz,
VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto
Trace = max hold
Detector function = peak, AV

7.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

7.4 Environmental Conditions

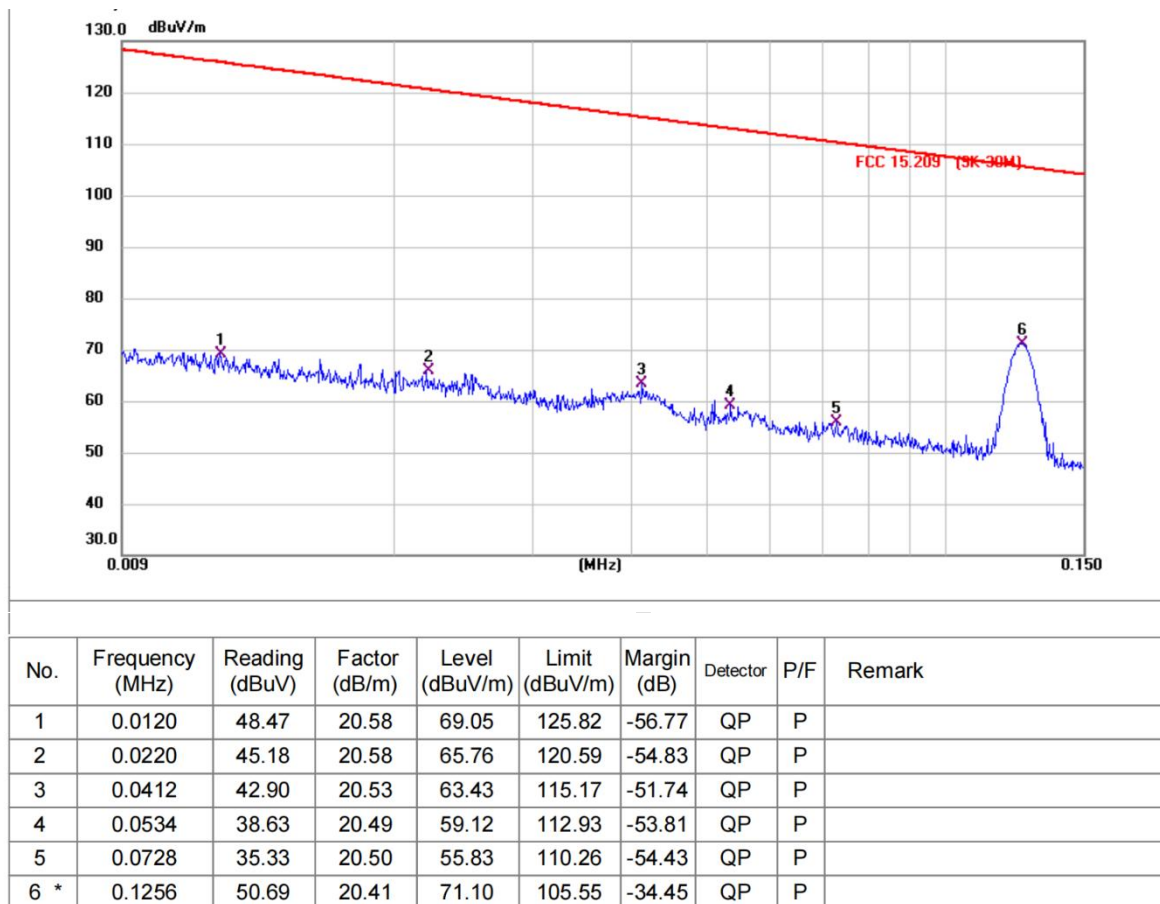
Temperature:	26° C
Relative Humidity:	52%
ATM Pressure:	1022 mbar

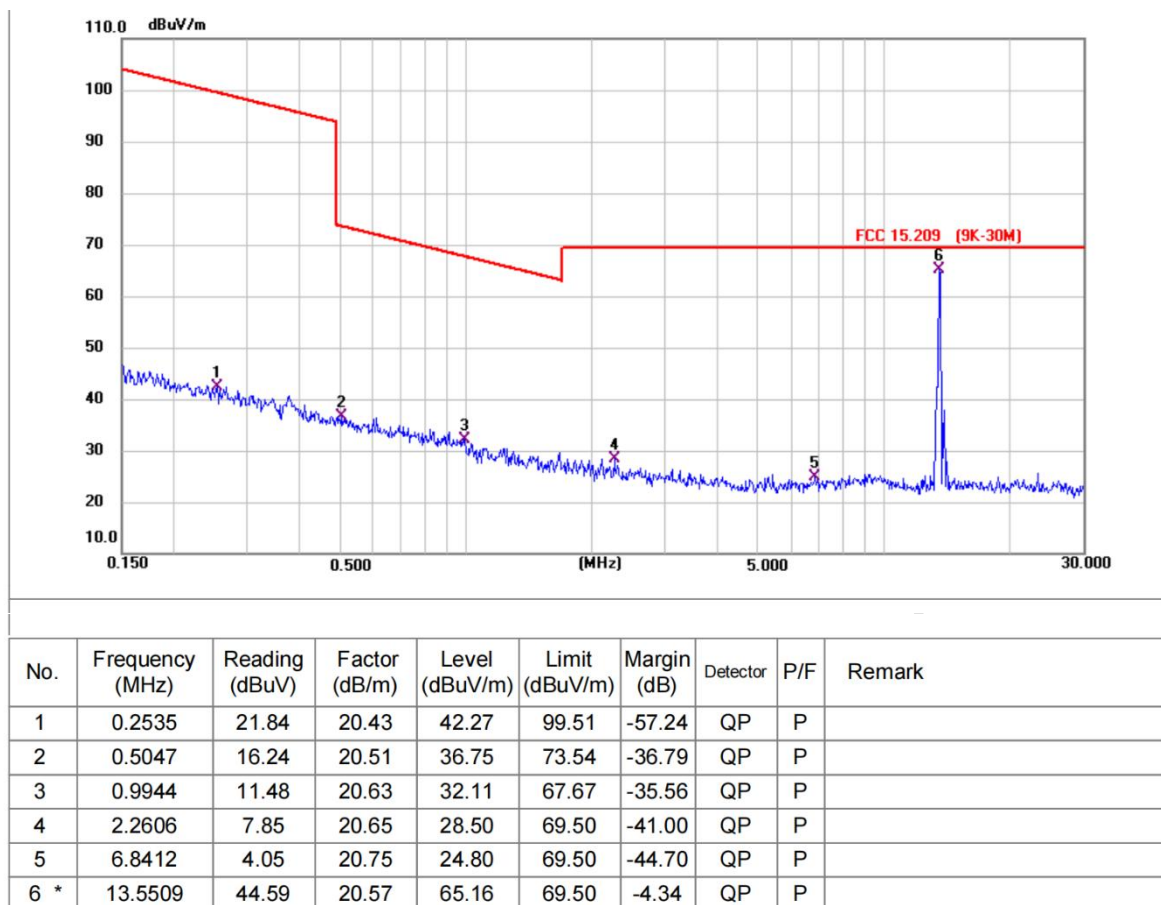
7.5 Summary of Test Results/Plots

Measurement Data

■ 9 kHz ~ 30 MHz

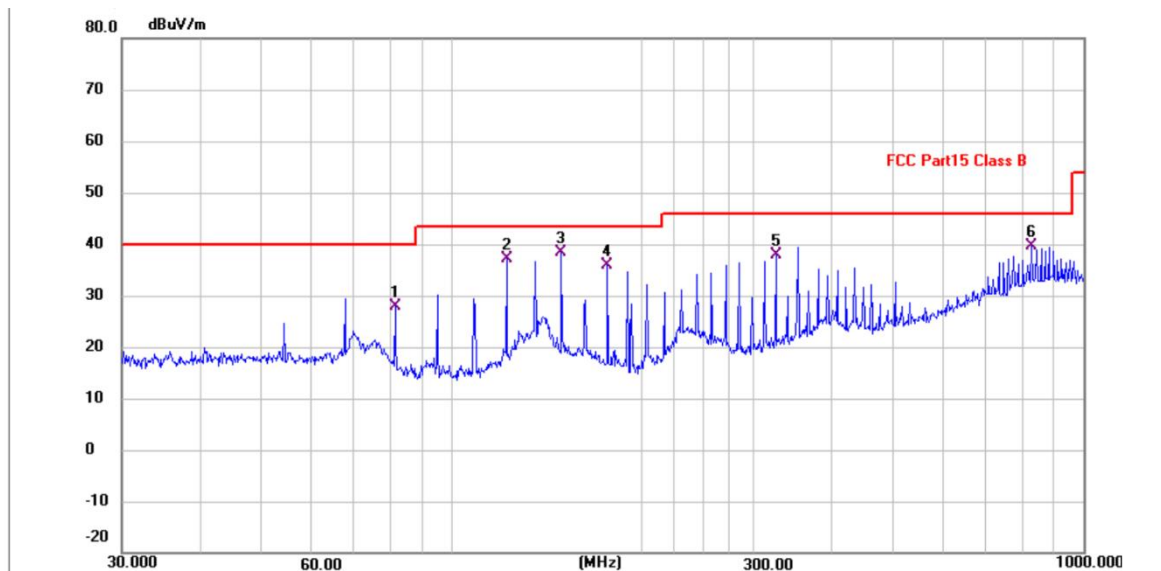
Coplanar: (Worst case)





Below 1GHz

Horizontal:



Site

Polarization: **Horizontal**

Temperature: (C)

Limit: FCC Part15 Class B

Power:

Humidity: %RH

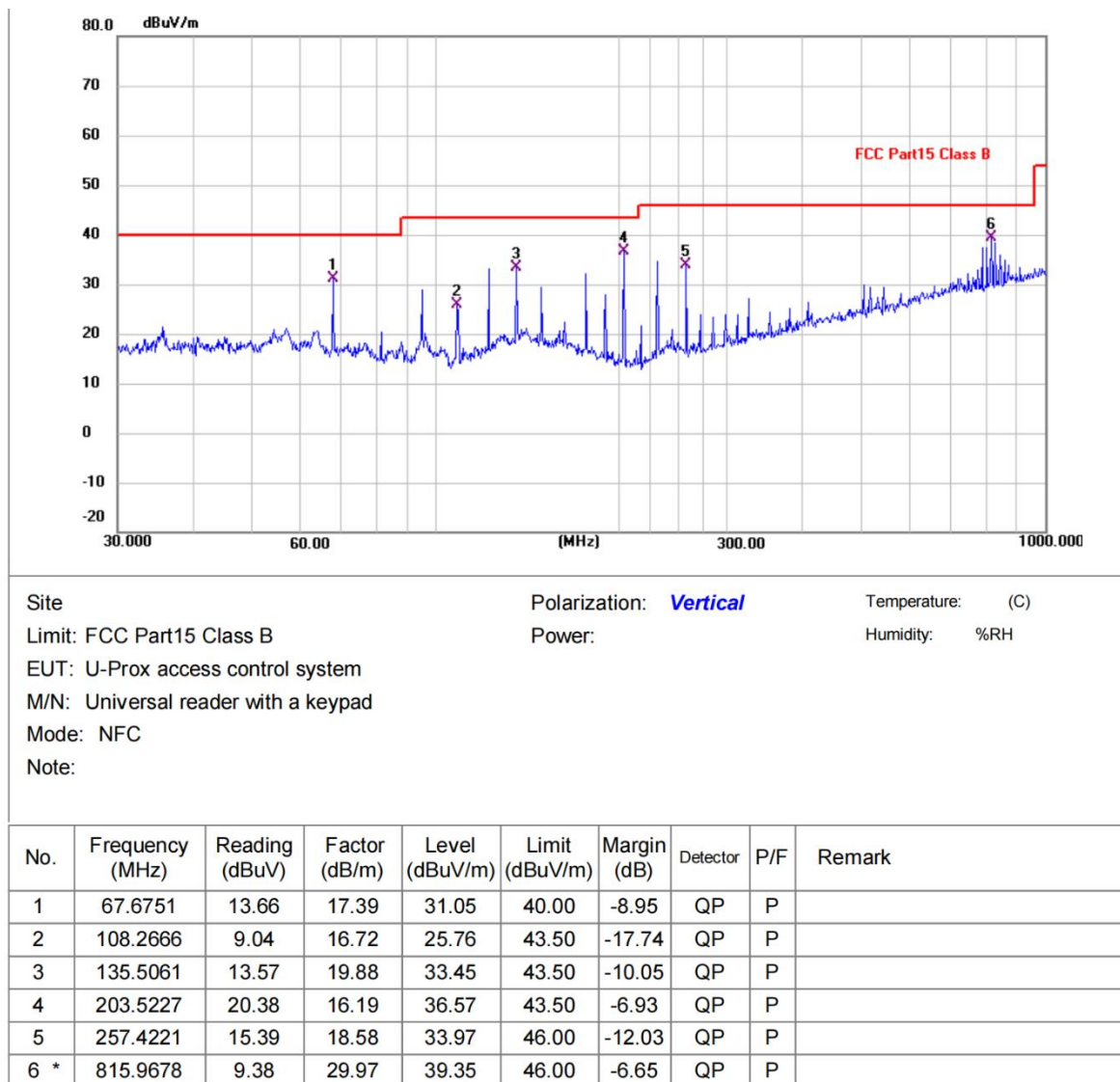
EUT: U-Prox access control system

M/N: Universal reader with a keypad

Mode: NFC

Note:

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	81.2117	12.71	15.22	27.93	40.00	-12.07	QP	P	
2	121.9755	18.73	18.46	37.19	43.50	-6.31	QP	P	
3 *	148.9624	17.71	20.76	38.47	43.50	-5.03	QP	P	
4	176.2686	17.40	18.40	35.80	43.50	-7.70	QP	P	
5	325.5958	16.66	21.11	37.77	46.00	-8.23	QP	P	
6	827.4934	9.61	29.94	39.55	46.00	-6.45	QP	P	

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

8 OUT OF BAND EMISSIONS

8.1 Standard Applicable

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.

8.2 Test Procedure

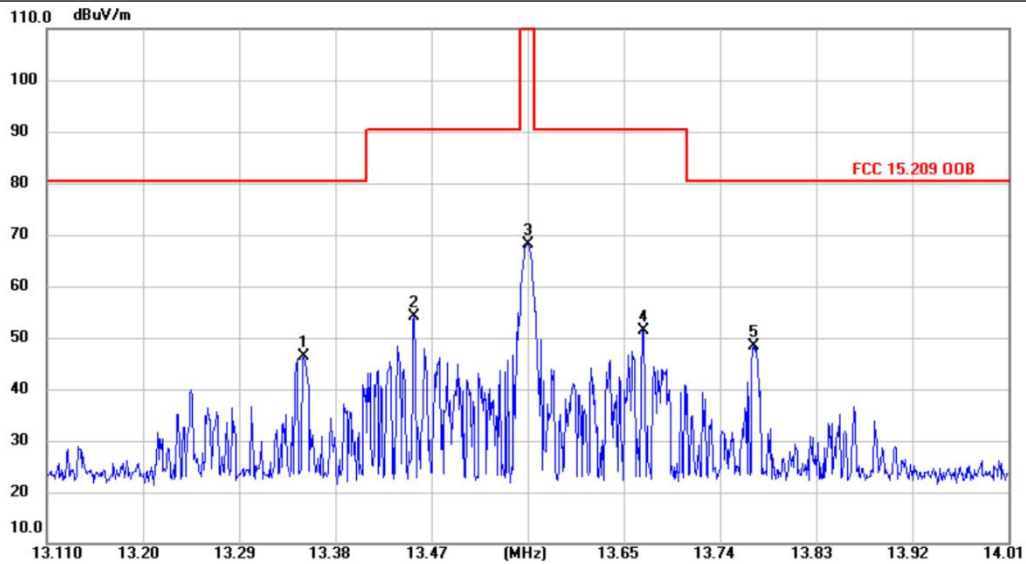
As the radiation test, set the RBW=10kHz VBW=30kHz, observed the outside band of 13.11MHz to 14.01MHz, than mark the higher-level emission for comparing with the FCC rules.

8.3 Environmental Conditions

Temperature:	26° C
Relative Humidity:	57%
ATM Pressure:	1022 mbar

8.4 5.4 Summary of Test Results/Plots

Out of band emission
Coplane: (Worst case)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	13.3503	25.82	20.60	46.42	80.50	-34.08	peak	P	
2	13.4538	33.43	20.58	54.01	90.50	-36.49	peak	P	
3	13.5600	47.68	20.57	68.25	124.00	-55.75	peak	P	
4	13.6680	30.84	20.56	51.40	90.50	-39.10	peak	P	
5 *	13.7715	27.93	20.55	48.48	80.50	-32.02	peak	P	

9 Frequency Stability

9.1 Standard Applicable

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.

9.2 Test Procedure

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

9.3 Environmental Conditions

Relative Humidity:	55%
ATM Pressure:	1015 mbar

9.4 Summary of Test Results/Plots

Reference Frequency: 13.56MHz, Limit: 100ppm			
Environment Temperature (°C)	9.4.1.1.1 Power Supplied (VDC)	Frequency Error	
		Error (Hz)	Error (ppm)
50	12.0	113	8.33
40	12.0	114	8.41
30	12.0	119	8.78
20	12.0	120	8.85
10	12.0	114	8.41
0	12.0	115	8.48
-10	12.0	114	8.41
-20	12.0	117	8.63

Reference Frequency: 13.56MHz, Limit: 100ppm			
Environment Temperature (°C)	Power Supplied (VDC)	Frequency Error	
		Error (Hz)	Error (ppm)
20	10.8	115	8.48
	12.0	114	8.41
	13.2	117	8.63

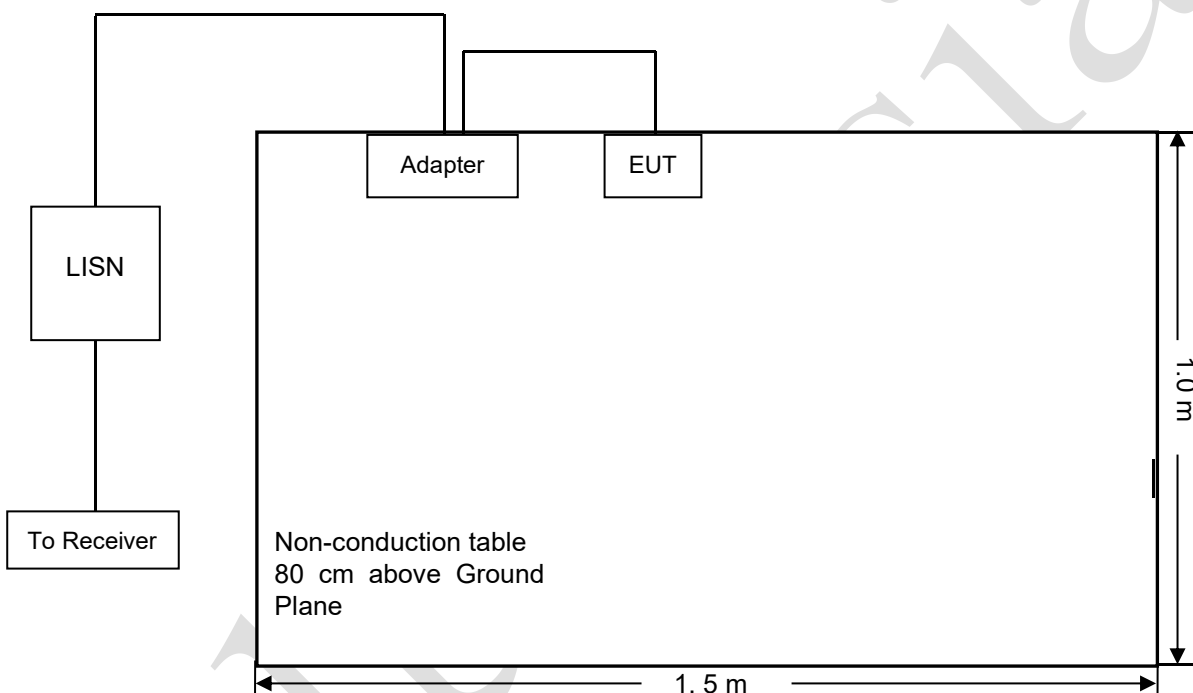
10 Conducted Emissions

10.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

10.2 Basic Test Setup Block Diagram



10.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

10.4 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency 150 kHz
 Stop Frequency 30 MHz
 Sweep Speed Auto
 IF Bandwidth 10 kHz
 Quasi-Peak Adapter Bandwidth 9 kHz
 Quasi-Peak Adapter Mode Normal

10.5 Summary of Test Results/Plots

N/A

11 EMISSION BANDWIDTH

11.1 Applicable Standard

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.

11.2 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.

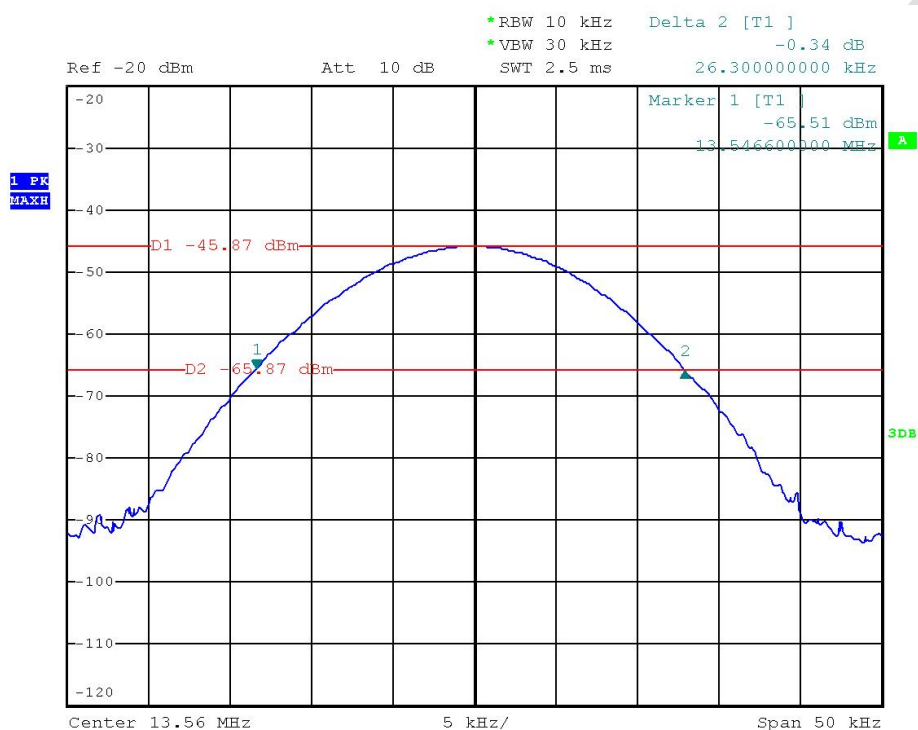
11.3 Environmental Conditions

Temperature:	26 °C
Relative Humidity:	45%
ATM Pressure:	1019 mbar

11.4 Summary of Test Results/Plots

Tx Frequency	20dB Emission bandwidth
13.56MHz	26.30KHz

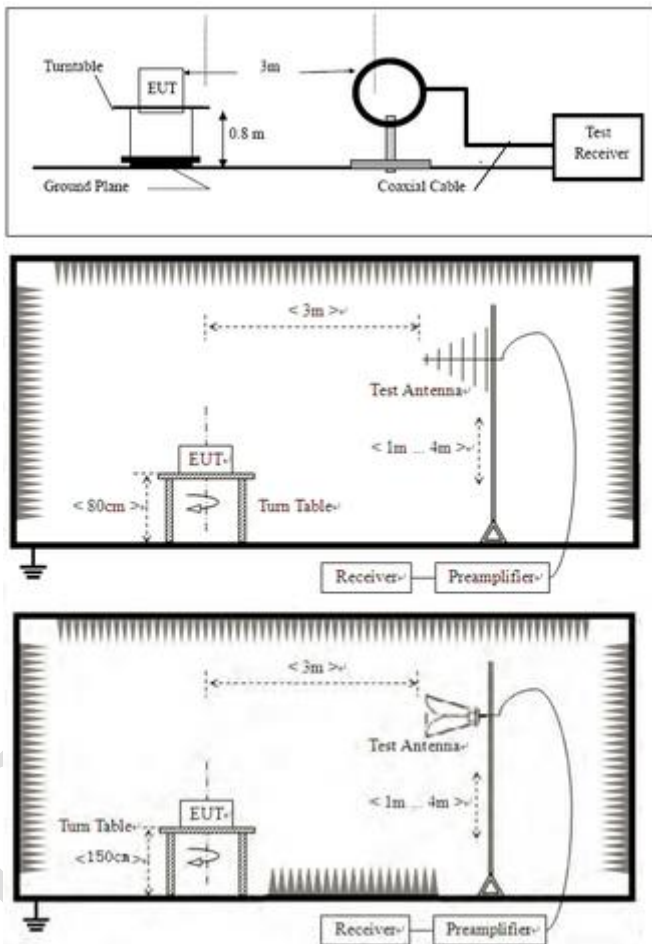
Please refer to the test plots as below:



jjjj

Date: 19.DEC.2024 03:44:31

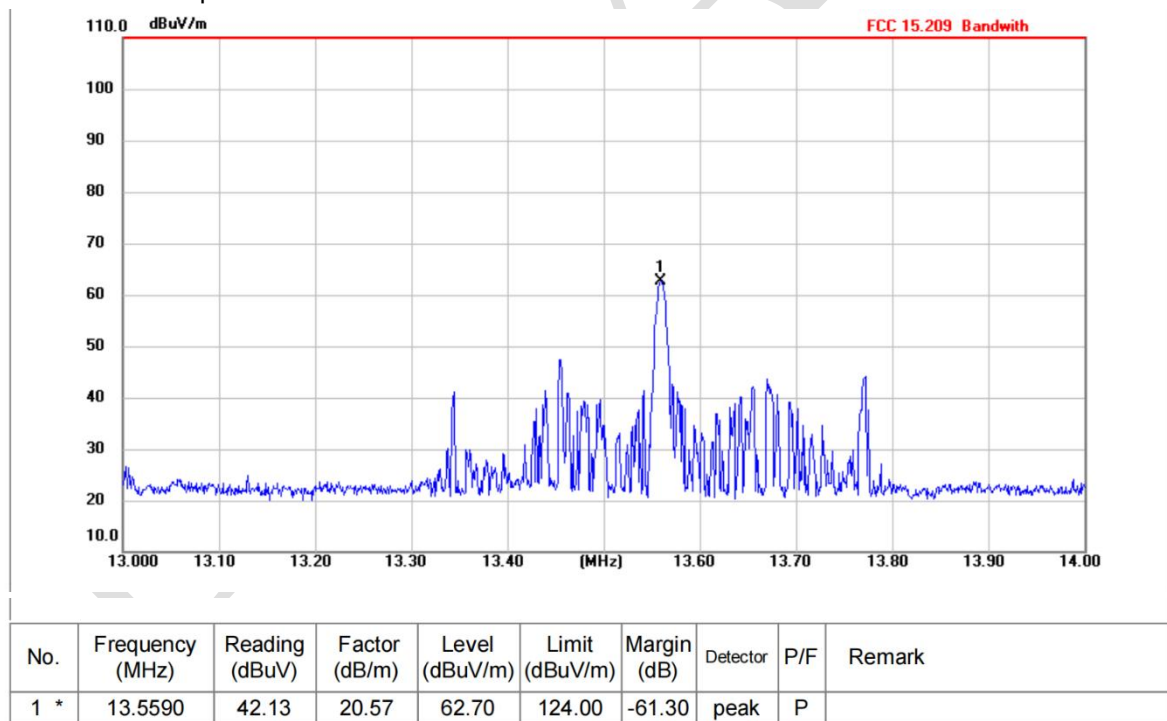
12 Field Strength of the Fundamental Signal

Test Requirement:	FCC Part15 C Section 15.225(a)
Test Method:	ANSI C63.10:2013
Limit:	(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.
Test setup:	 <p>a. 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.</p> <p>b. 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.</p> <p>c. 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.</p> <p>d. 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.</p> <p>e. 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</p>

	<p>tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>g. 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> <p>h. 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.</p> <p>Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

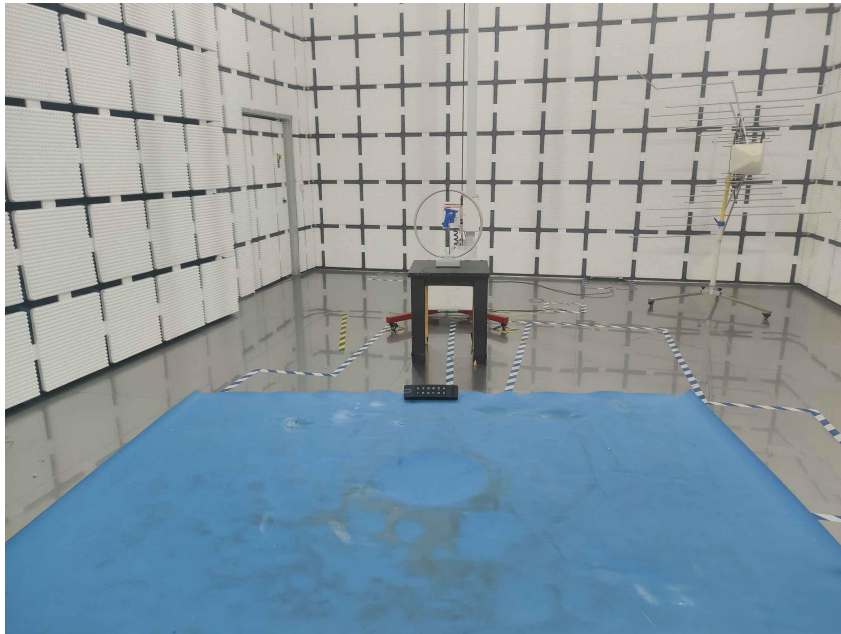
Polarization: Coaxial plane



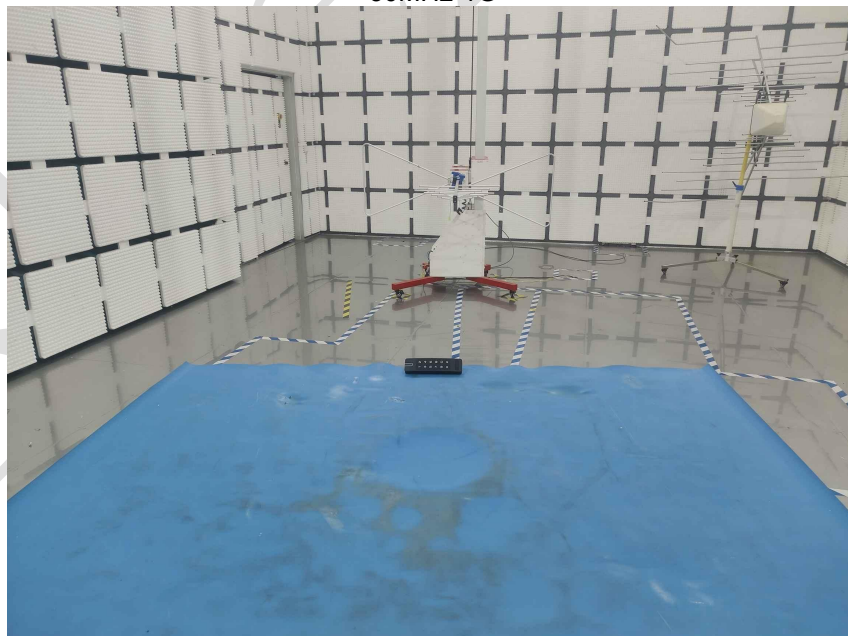
13 Test Setup Photo

Radiated Emission

9KHz-30MHz



30MHz-1G



14 EUT Constructional Details

Reference to the test report No. BLA-EMC-202402-A2501

*** End of Report ***

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