

Sargent Manufacturing Company

TEST REPORT

SCOPE OF WORK

Emissions Testing – Electronic access control system with RF Module, Model PC428D0089SA00CX

REPORT NUMBER

105838170BOX-001.1356MHz.1

ISSUE DATE

December 19, 2024

[REVISED DATE]

June 23, 2025

DOCUMENT CONTROL NUMBER

Non-Specific Radio Report Shell Rev. October 2022
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EMISSIONS TEST REPORT

(FULL COMPLIANCE)

Report Number: 105838170BOX-001.1356MHz.1
Project Number: G105838170

Report Issue Date: December 19, 2024
Report Revision Date: June 23, 2025

Model(s) Tested: PC428D0089SA00CX

Model(s) Partially Tested: None

Model(s) Not Tested but declared equivalent by the client: None

Standards: CFR47 FCC Part 15 Subpart C, Section 15.225: 10/2024
CFR47 FCC Part 15 Subpart C, Section 15.205: 10/2024
CFR47 FCC Part 15 Subpart B, Section 15.109: 10/2024
RSS-210 Issue 11 June 25, 2024
ISED ICES-003 Issue 7 October 2020
RSS-Gen Issue 5 April 2018 +Amendment 1 March 2019

Host ID: FCC: U4A-MODBLE9163K
IC:6982A-MODBLE9163K

The product contains the following radio modules:
The Limited Module FCC ID containing all 4 radios:
OMNIKEY SE Reader Core Mini
FCC ID: JQ6-RCS5510
IC: 2236B- RCS5510

Tested by:

Intertek Testing Services NA, Inc.
70 Codman Hill Road
Boxborough, MA 01719
USA

Client:

Sargent Manufacturing Company
100 Sargent Drive
New Haven, CT 6511
USA

Report prepared by



Kouma Sinn / Senior Staff Engineer

Report reviewed by



Vathana Ven / Senior Staff Engineer

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Section	Test full name	Result
3	Client Information	--
4	Description of Equipment Under Test and Variant Models	--
5	System Setup and Method	--
6	Fundamental Field Strength CFR47 FCC Part 15 Subpart C, Section 15.225: 10/2024 RSS-210 Issue 11 June 25, 2024	Pass
7	Occupied Bandwidth No limit, Data For Report Purpose Only	Pass
8	Band Edge Compliance CFR47 FCC Part 15 Subpart C, Section 15.225: 10/2024 RSS-210 Issue 11 June 25, 2024	Pass
9	Transmitter spurious emissions CFR47 FCC Part 15 Subpart C, Section 15.225: 10/2024 CFR47 FCC Part 15 Subpart B, Section 15.109: 10/2024 RSS-210 Issue 11 June 25, 2024 ISED ICES-003 Issue 7 October 2020	Pass
10	AC Mains Conducted Emissions FCC 47CFR Part 15.107: 10/2024 ISED ICES-003 Issue 7 October 2020	Pass
11	Revision History	--

Notes: The EUT is battery powered. The radio does not transmit simultaneously with other radio within the electronic access control system in normal operation.

3 Client Information

This EUT was tested at the request of:

Client: Sargent Manufacturing Company
100 Sargent Drive
New Haven, CT 6511
USA

Contact: Manuel Medeiros
Telephone: 1 862 221-6491
Email: manny.medeiros@assaabloy.com

4 Description of Equipment Under Test and Variant Models

Manufacturer: Sargent Manufacturing Company
100 Sargent Drive
New Haven, CT 6511
USA

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Electronic access control system with RF Module BLE (Metal Enclosure With Keypad)	Sargent Manufacturing Company	IN-BIKP	PC428D0089SA00CX
Electronic access control system with RF Module BLE (Plastic Enclosure With Keypad)	Sargent Manufacturing Company	IN-BIKP	PC428D0089SA00CX
Electronic access control system with RF Module BLE (Metal Enclosure Without Keypad)	Sargent Manufacturing Company	IN-BIKP	PC428D0089SA00CX
Electronic access control system with RF Module BLE (Plastic Enclosure Without Keypad)	Sargent Manufacturing Company	IN-BIKP	PC428D0089SA00CX

Receive Date:	10/24/2024
Received Condition:	Good
Type:	Production

Description of Equipment Under Test (provided by client)
Electronic access control system. It contains the radio modules as below.
Host ID: FCC: U4A-MODBLE9163K
IC:6982A-MODBLE9163K
The product contains the following radio modules:
The Limited Module FCC ID containing all 4 radios:
<u>OMNIKEY SE Reader Core Mini</u>
FCC ID: JQ6-RCS5510
IC: 2236B- RCS5510

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
9 V (6 x 1.5 V Batteries)	1.5 A	DC	N/A
POE Powered	N/A	DC	N/A

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	RFID – Programmed to transmit continuously with modulation at Low, Mid, and High channels

Software used by the EUT:

No.	Descriptions of EUT Exercising
1	None – Preprogrammed to transmit continuously with modulation

13.56 MHz RFID Radio/Receiver Characteristics	
Frequency Band(s)	13.56 MHz
Modulation Type(s)	ASK
Maximum Field Strength	63.84 dB μ V/m (Worst case: Plastic Enclosure With Keypad)
Test Channels	13.56 MHz
Occupied Bandwidth	1949 kHz (Worst-case: Plastic Enclosure with Keypad)
Frequency Hopper: Number of Hopping Channels	N/A
Frequency Hopper: Channel Dwell Time	N/A
Frequency Hopper: Max interval between two instances of use of the same channel	N/A
MIMO Information (# of Transmit and Receive antenna ports)	N/A
Equipment Type	Limited Module
Antenna Type and Gain	Three Loop PCB Trace Antenna 1dBi

Variant Models:

The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

None

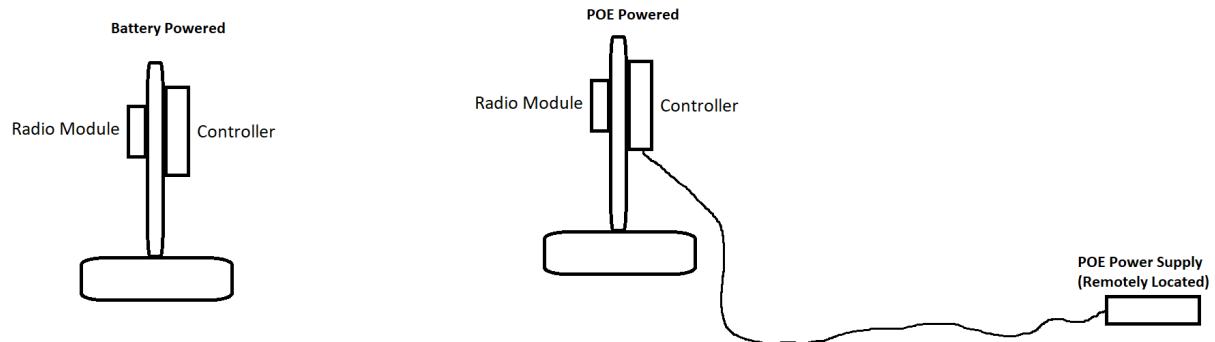
5 System Setup and Method

Cables					
ID	Description	Length	Shielding	Ferrites	Termination
--	POE	30 ft	N/A	N/A	Remotely Located POE Power Supply

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
Power Supply*	None	None	None
POE Power Supply	None	None	None

5.1 Method:

Configuration as required by ANSI C63.10-2013, RSS-Gen Issue 5 April 2018, and ANSI C63.4:2014.

5.2 EUT Block Diagram:

6 Fundamental Field Strength

6.1 Method

Tests are performed in accordance with ANSI C63.10 and RSS-Gen.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

6.2 Limits:

Limits – FCC Part §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.

Notes: The limits for RSS-210 are the same as the FCC limits above.

6.3 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV007'	Weather Station Vantage Vue	Davis	6250	MS191212003	03/27/2024	03/27/2025
ROS014'	Receiver 1Hz-44GHz	Rhode & Schwarz	ESW 44	103232	06/10/2024	06/10/2025
145-420'	Receiver to floor cable	Ultiflex	UFB311A-2-0591-70070	145-420	02/27/2024	02/27/2025
145-414'	Cable 145-414	Huber + Suhner	3m Track A cable	145-414	07/15/2024	07/15/2025
145-422'	10Amp Pre-amps to under floor	Ultiflex	UFB311A-0-2756-70070	145-422	03/26/2024	03/26/2025
IV003'	8.4 meter cable	Insulated Wire	2800-NPS	003	01/17/2024	01/17/2025
ETS003'	9kHz-30MHz Active Loop Antenna	ETS Lindgren	6502	00143396	01/25/2024	01/25/2025
CBL053'	BNC cable 7.62 meters	MookEERF	RG58U	cbI053	11/20/2023	11/20/2024
145019'	Active Loop Antenna (9 KHz to 30 MHz)	EMCO	6502/1	9902-3267	03/05/2024	03/05/2025

Software Utilized:

Name	Manufacturer	Version
BAT-EMC	Nexio	2023.0.9.0

6.4 Results:

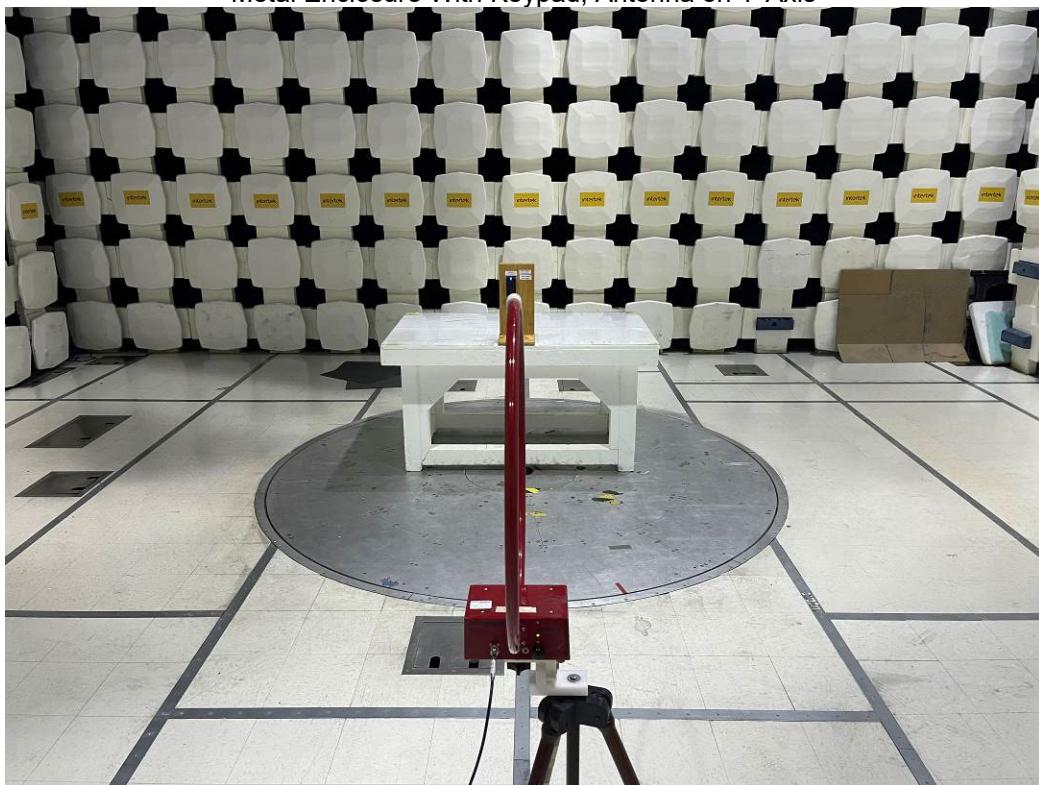
The sample tested was found to Comply.

6.5 Setup Photographs:**====Battery Powered====**

Metal Enclosure With Keypad, Antenna on X-Axis



Metal Enclosure With Keypad, Antenna on Y-Axis



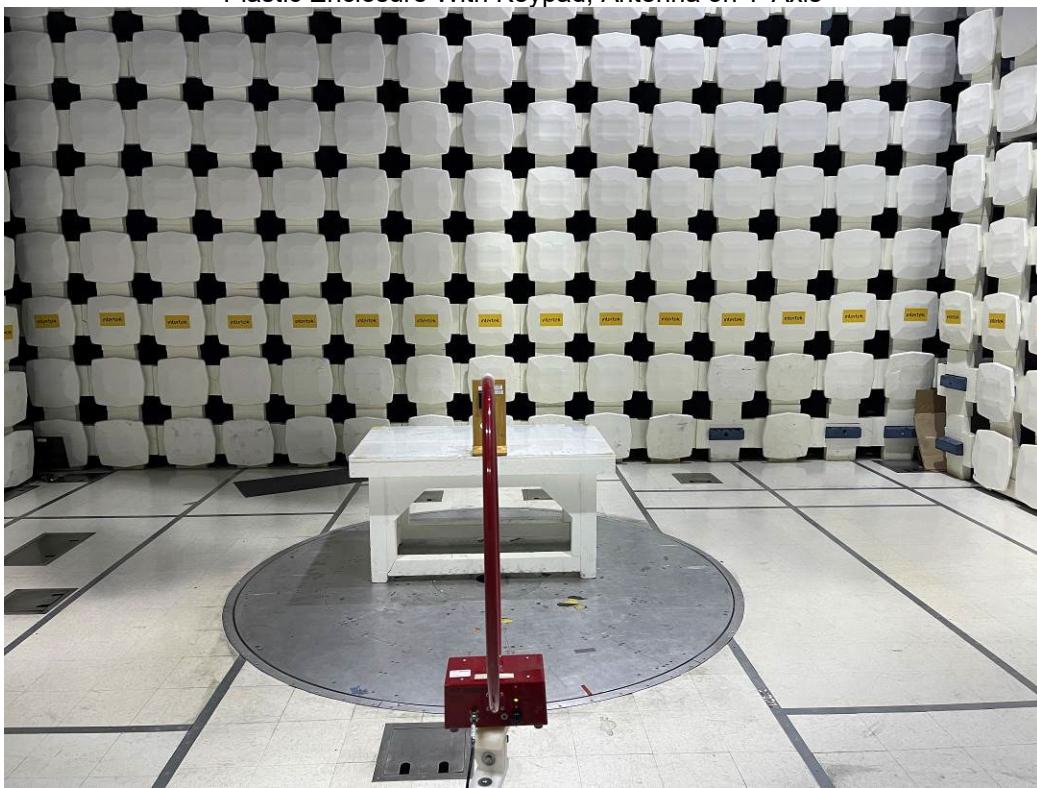
Metal Enclosure With Keypad, Antenna on Z-Axis



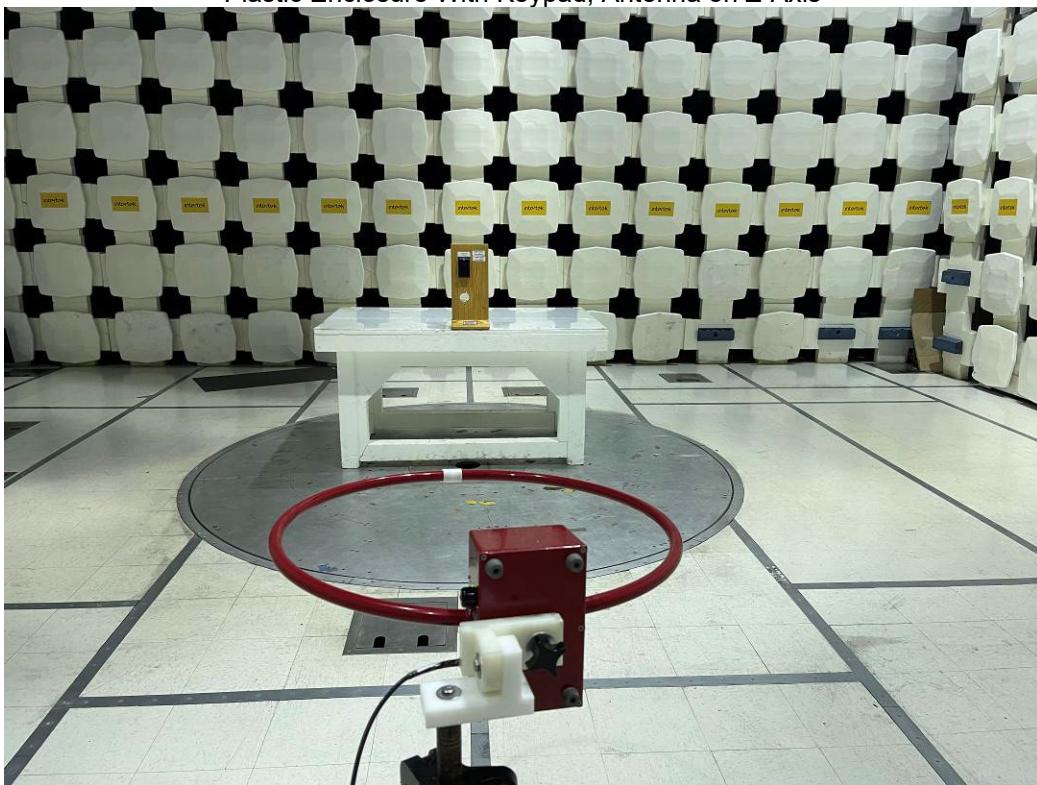
Plastic Enclosure With Keypad, Antenna on X-Axis



Plastic Enclosure With Keypad, Antenna on Y-Axis



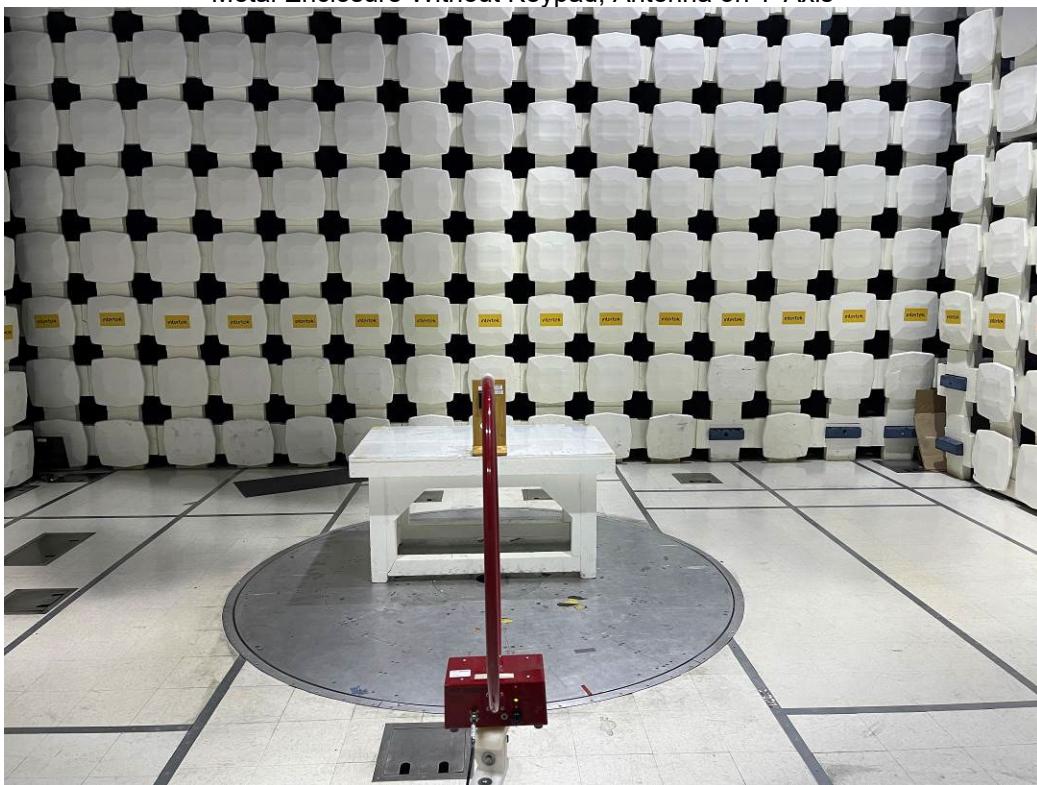
Plastic Enclosure With Keypad, Antenna on Z-Axis



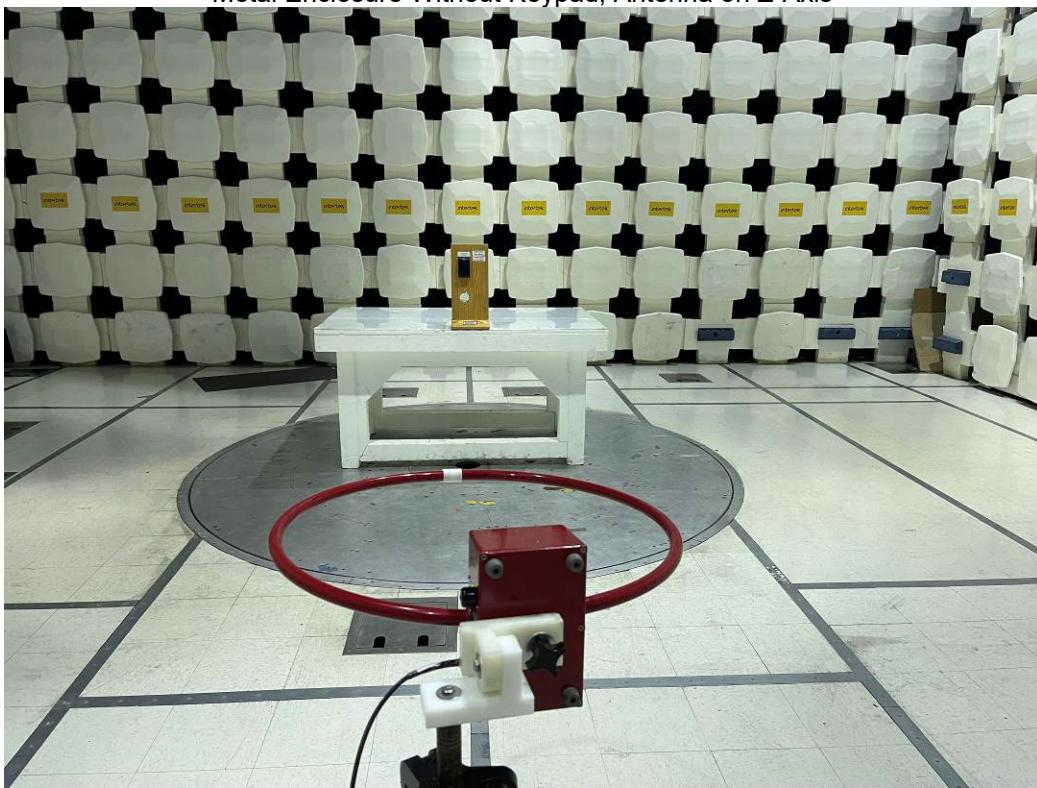
Metal Enclosure Without Keypad, Antenna on X-Axis



Metal Enclosure Without Keypad, Antenna on Y-Axis



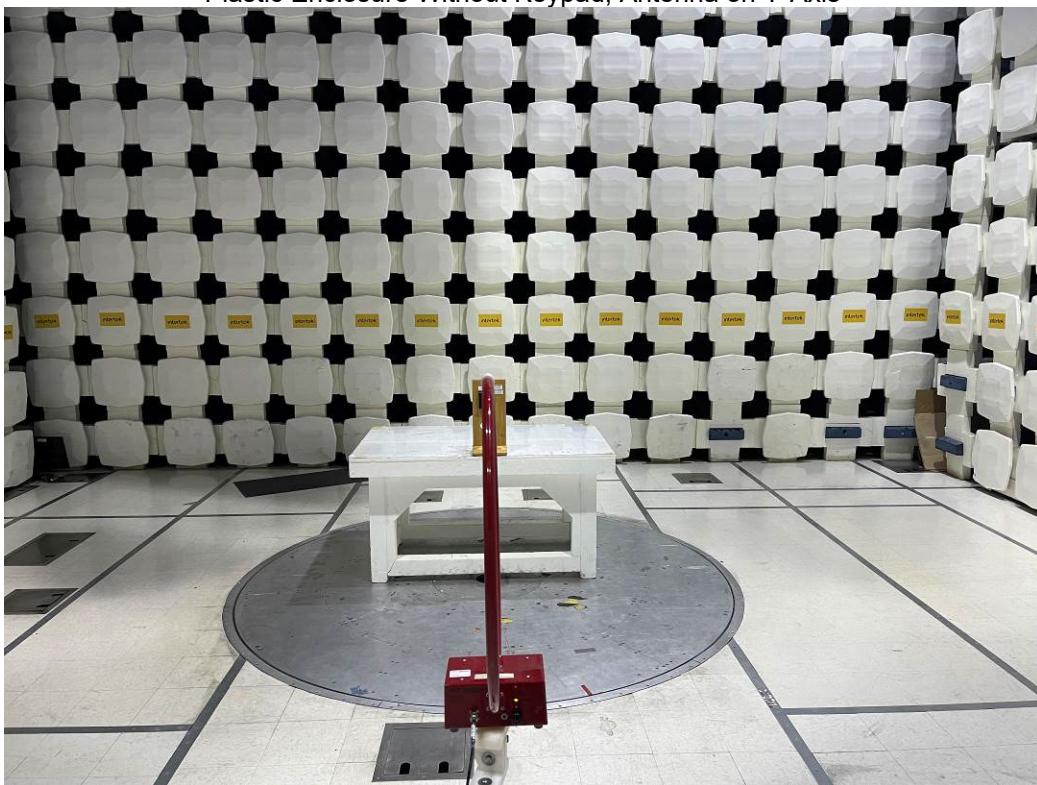
Metal Enclosure Without Keypad, Antenna on Z-Axis



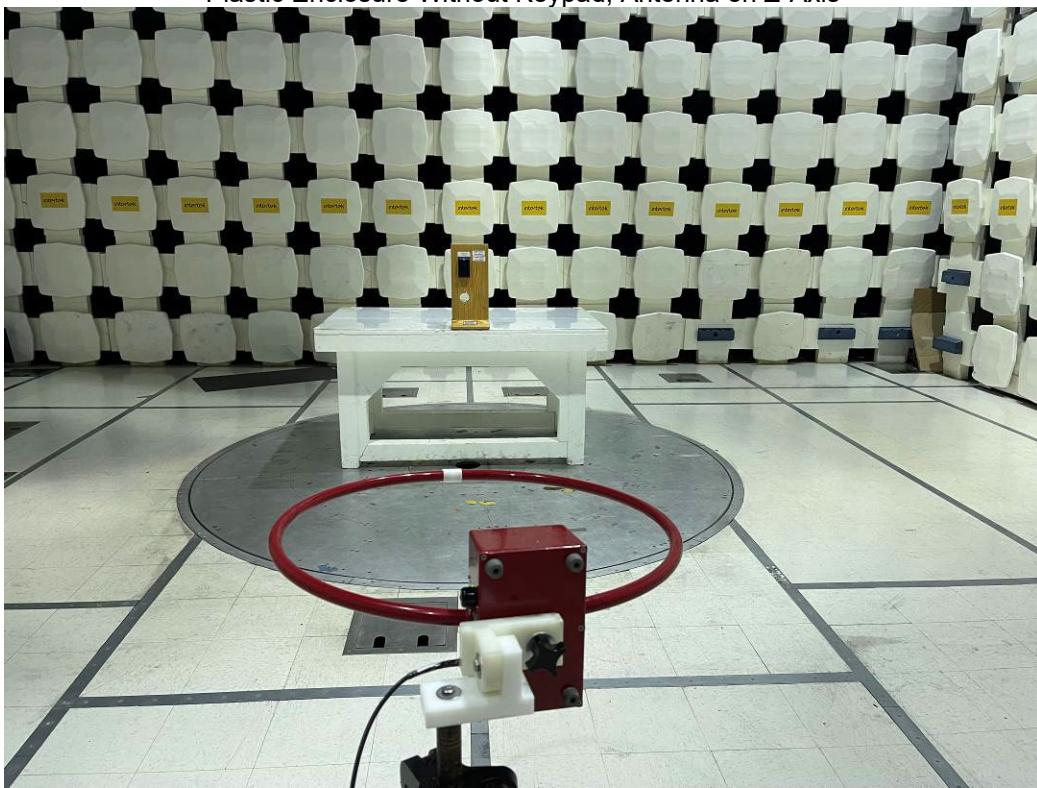
Plastic Enclosure Without Keypad, Antenna on X-Axis



Plastic Enclosure Without Keypad, Antenna on Y-Axis



Plastic Enclosure Without Keypad, Antenna on Z-Axis

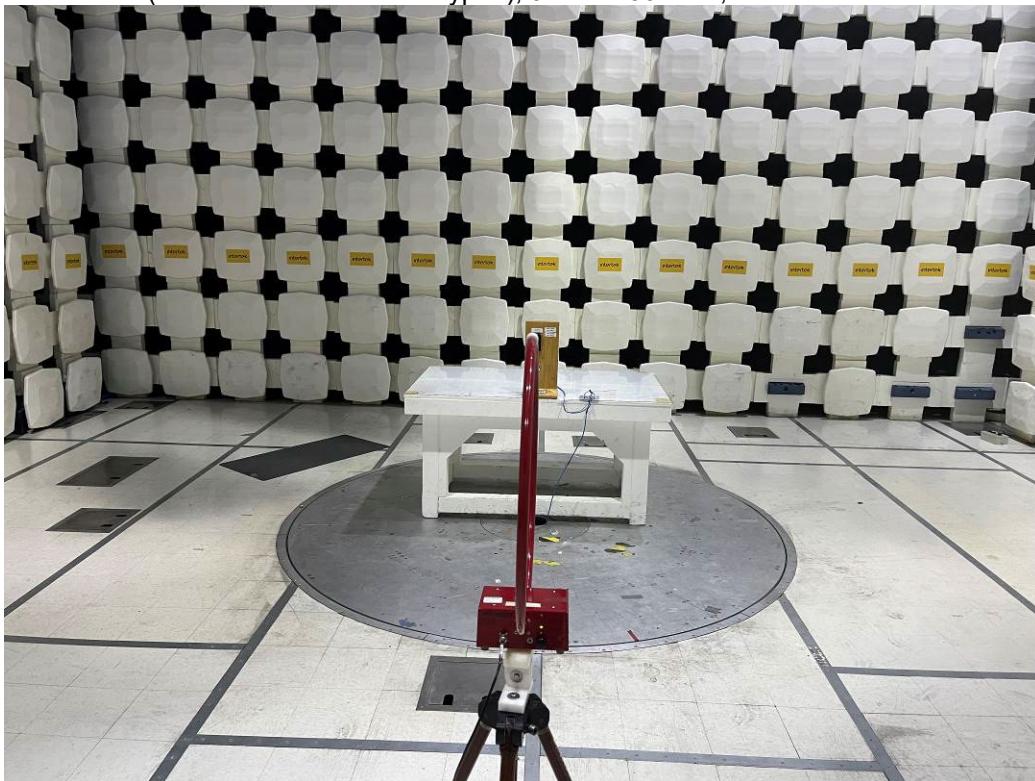


====POE Powered====

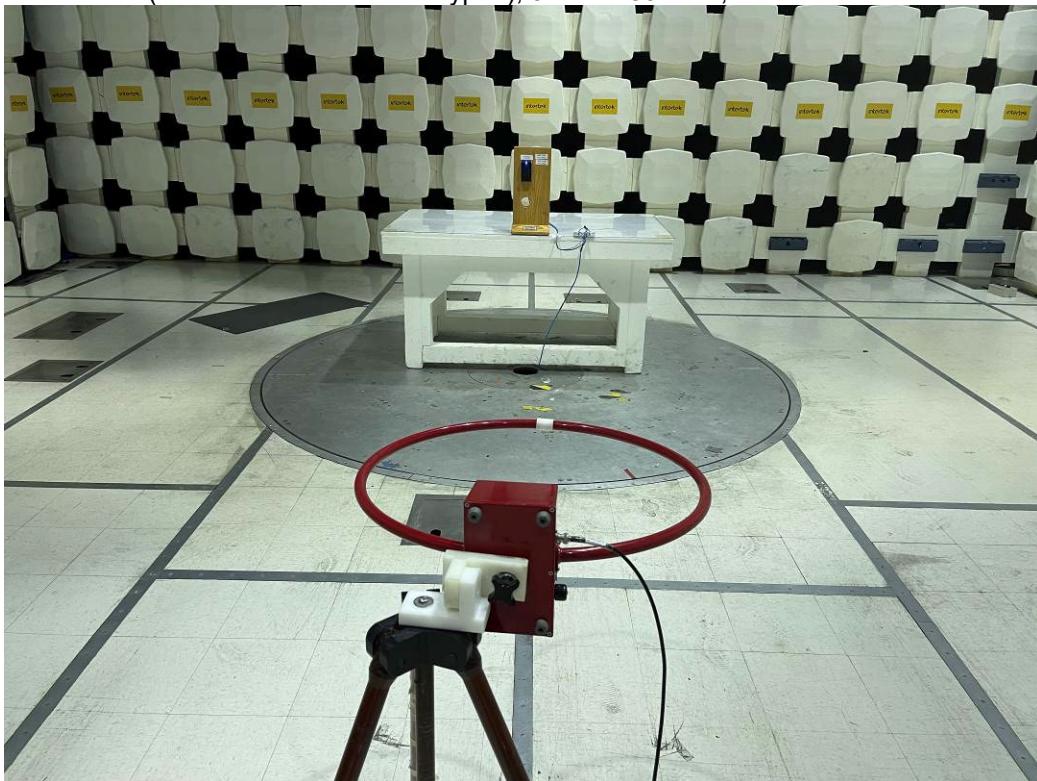
BLE (Metal Enclosure With Keypad), 9 kHz – 30 MHz, Antenna on X-Axis

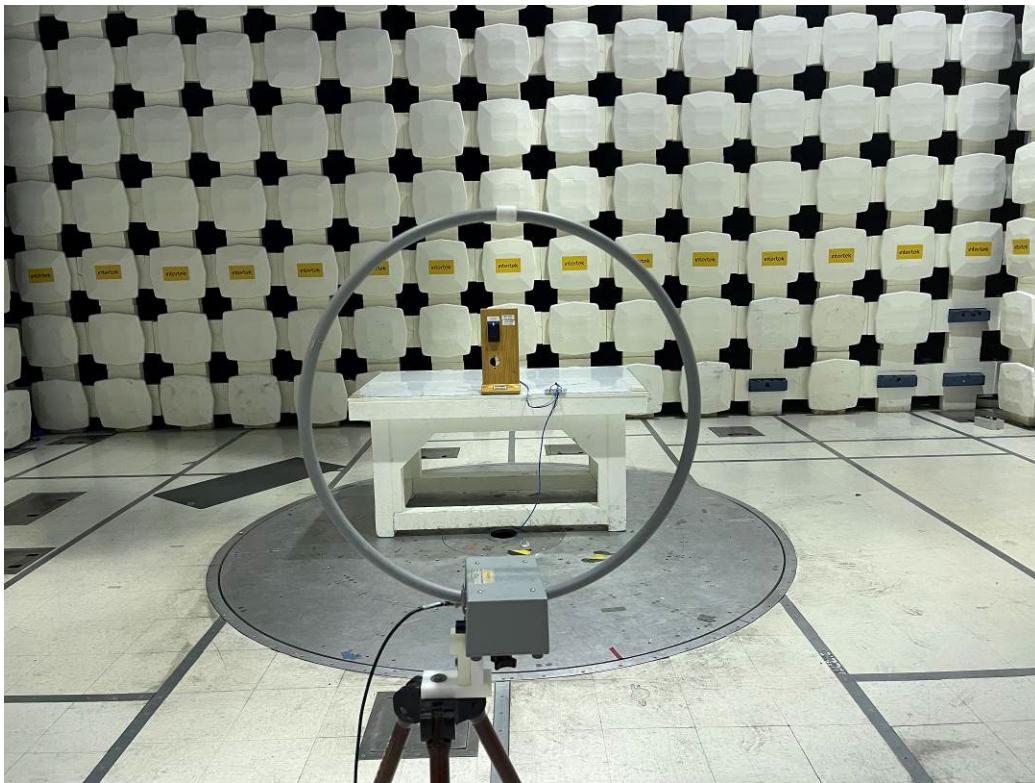
Photo was not taken

BLE (Metal Enclosure With Keypad), 9 kHz – 30 MHz, Antenna on Y-Axis

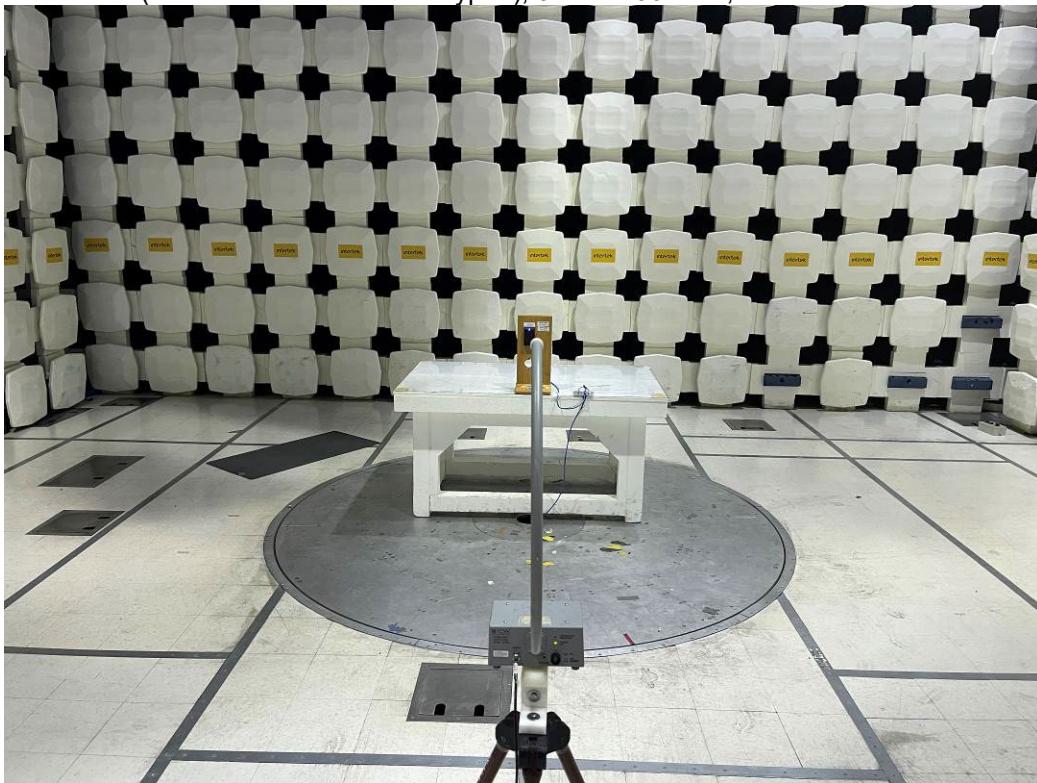


BLE (Metal Enclosure With Keypad), 9 kHz – 30 MHz, Antenna on Z-Axis

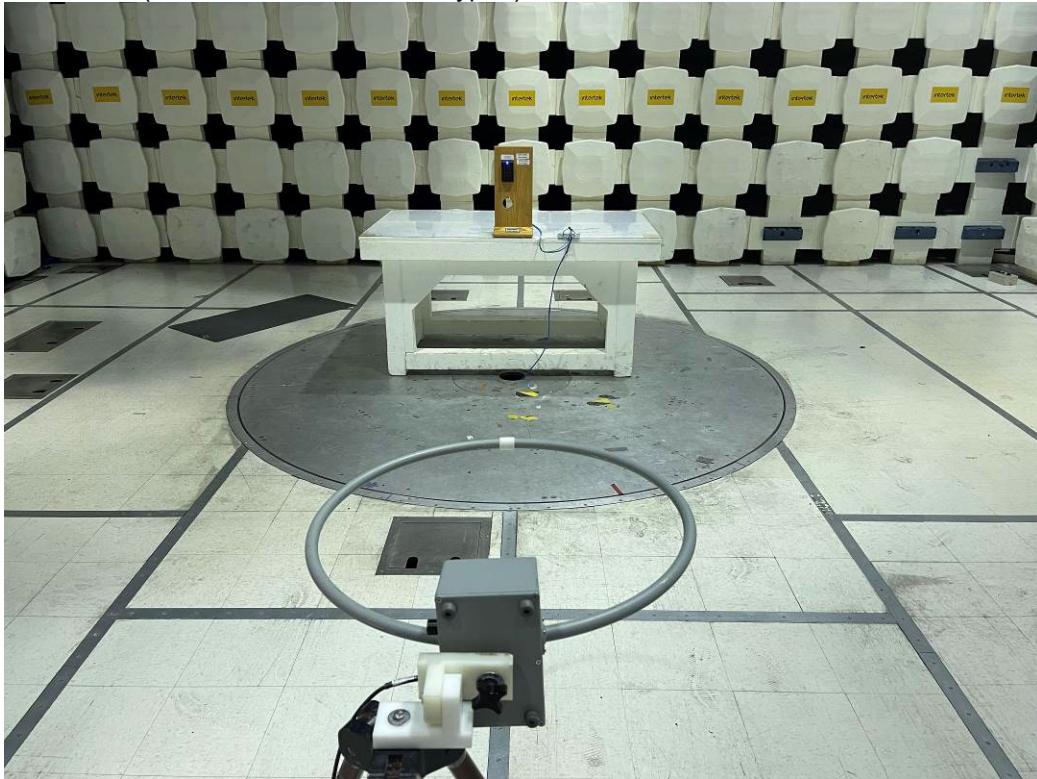


BLE (Plastic Enclosure With Keypad), 9 kHz – 30 MHz, Antenna on X-Axis

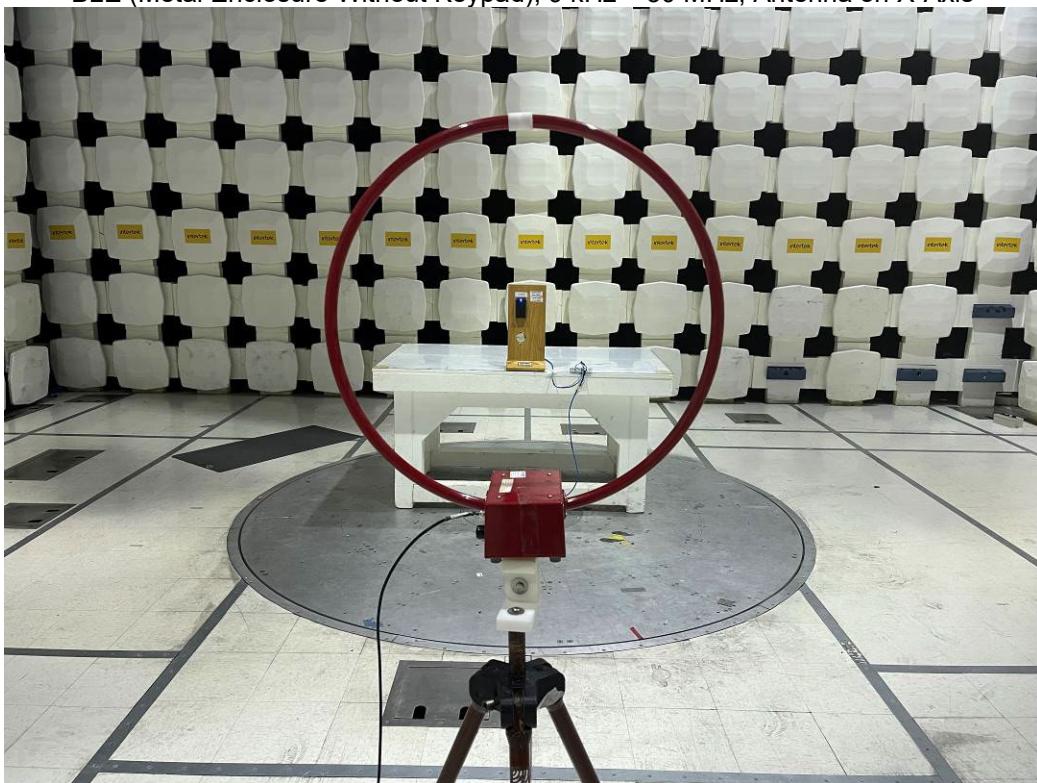
BLE (Plastic Enclosure With Keypad), 9 kHz – 30 MHz, Antenna on Y-Axis



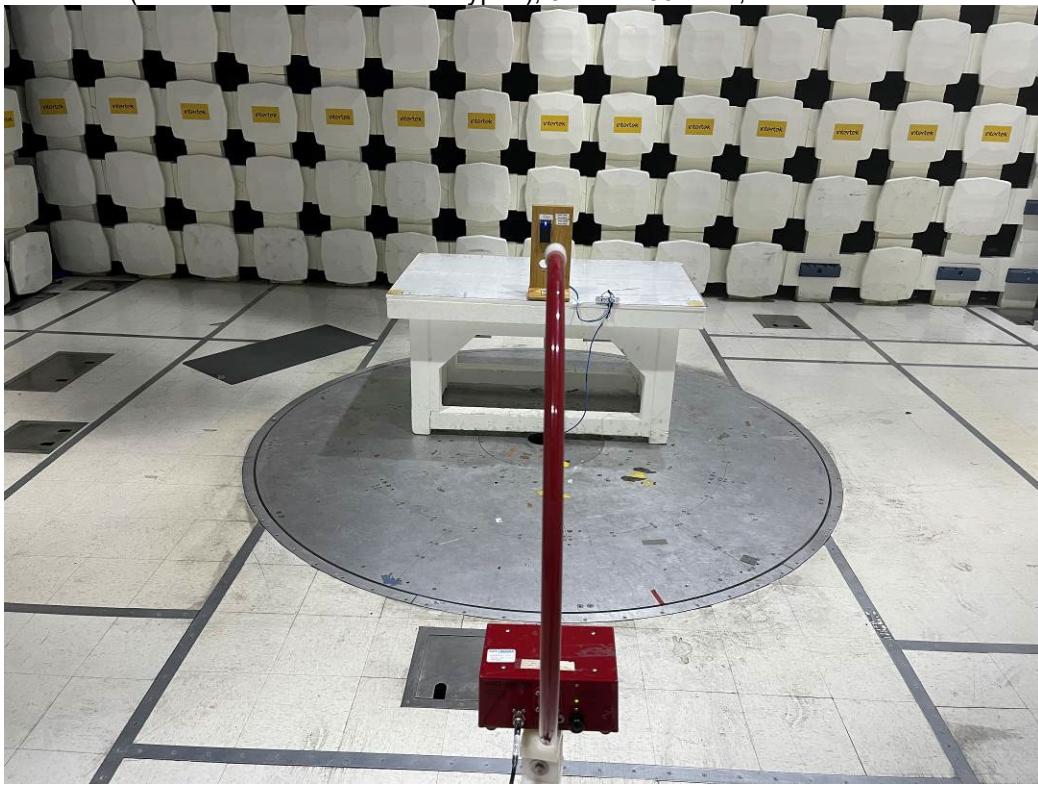
BLE (Plastic Enclosure With Keypad), 9 kHz – 30 MHz, Antenna on Z-Axis



BLE (Metal Enclosure Without Keypad), 9 kHz – 30 MHz, Antenna on X-Axis



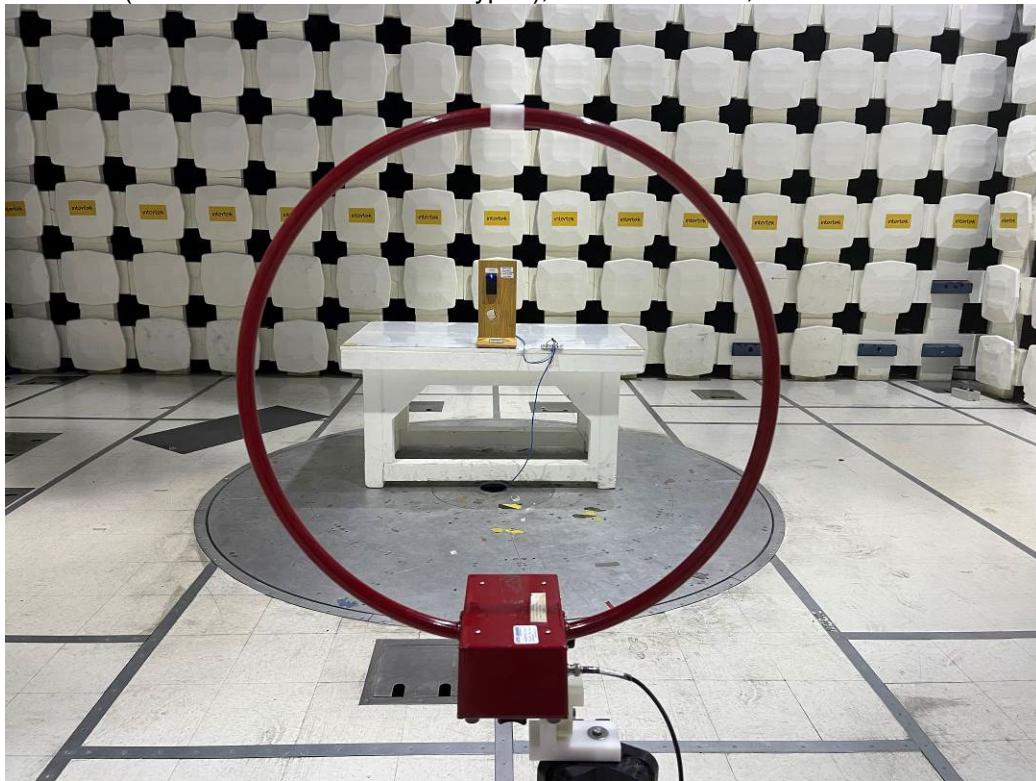
BLE (Metal Enclosure Without Keypad), 9 kHz – 30 MHz, Antenna on Y-Axis



BLE (Metal Enclosure Without Keypad), 9 kHz – 30 MHz, Antenna on Z-Axis



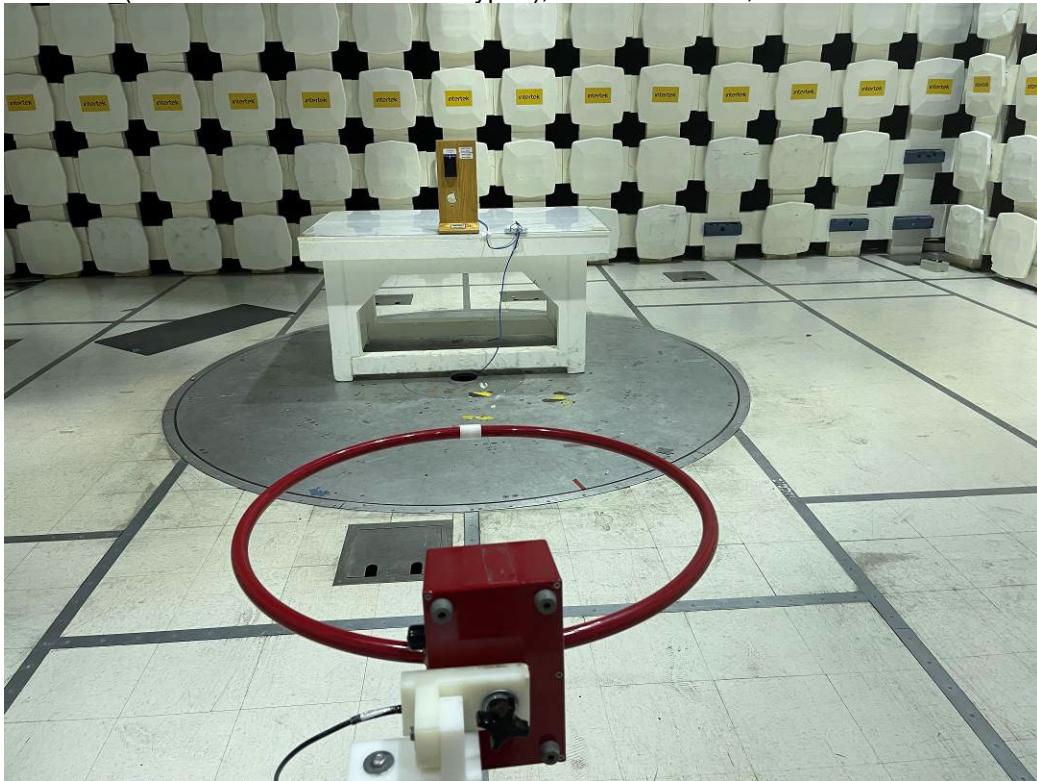
BLE (Plastic Enclosure Without Keypad), 9 kHz – 30 MHz, Antenna on X-Axis



BLE (Plastic Enclosure Without Keypad), 9 kHz – 30 MHz, Antenna on Y-Axis



BLE (Plastic Enclosure Without Keypad), 9 kHz – 30 MHz, Antenna on Z-Axis



6.6 Test Data:

13.56 MHz RFID Field Strength (Battery Powered)

EUT Configurations	Frequency (MHz)	Field Strength at 3 meters (dBuV/m)	Field Strength Limit at 3 meters (dBuV/m)	Results
Plastic Enclosure With Keypad	13.56	63.84	84	Compliance
Metal Enclosure With Keypad	13.56	62.86	84	Compliance
Plastic Enclosure Without Keypad	13.56	65.09	84	Compliance
Metal Enclosure Without Keypad	13.56	62.85	84	Compliance

Notes: The field strength was measured using Quasi-peak detector.

Limit at 13.56 MHz is 15,848 uV/m or 84 dBuV/m at 30 meter with distance factor of $40 \cdot \log(3/30)$ or 40 dB. The limit at 3 meters = 84 dBuV/m + 40 dB or 84 dBuV/m.

13.56 MHz RFID Field Strength (POE Powered)

EUT Configurations	Frequency (MHz)	Field Strength at 3 meters (dBuV/m)	Field Strength Limit at 3 meters (dBuV/m)	Results
Plastic Enclosure With Keypad	13.56	55.33	84	Compliance
Metal Enclosure With Keypad	13.56	52.68	84	Compliance
Plastic Enclosure Without Keypad	13.56	55.34	84	Compliance
Metal Enclosure Without Keypad	13.56	53.51	84	Compliance

Notes: The field strength was measured using Quasi-peak detector.

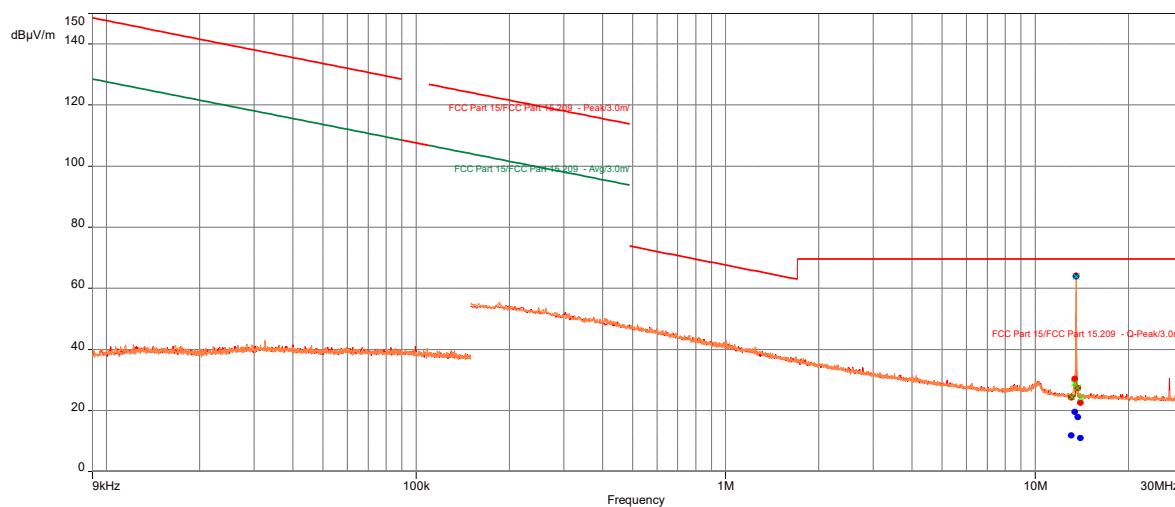
Limit at 13.56 MHz is 15,848 uV/m or 84 dBuV/m at 30 meter with distance factor of $40 \cdot \log(3/30)$ or 40 dB. The limit at 3 meters = 84 dBuV/m + 40 dB or 84 dBuV/m.

====Battery Powered====

13.56 MHz RFID (Plastic Enclosure, With Keypad), Field Strength at 3m, (X, Y, Z Polarities)

Test Information:

Date and Time	9/20/2024 12:10:36 PM
Client and Project Number	Sargent Assa Abloy
Engineer	Kouma Sinn
Temperature	24 deg C
Humidity	52 %
Atmospheric Pressure	1006 mbar
Comments	Scan 19_13.56MHz RFID With Modulation (Plastic Enclosure - With Keypad), RE 9kHz-30MHz Loop antenna, Electric Field, 3M Location (FCC 15.209)

Graph:**Results:**

QuasiPeak (PASS) (5)

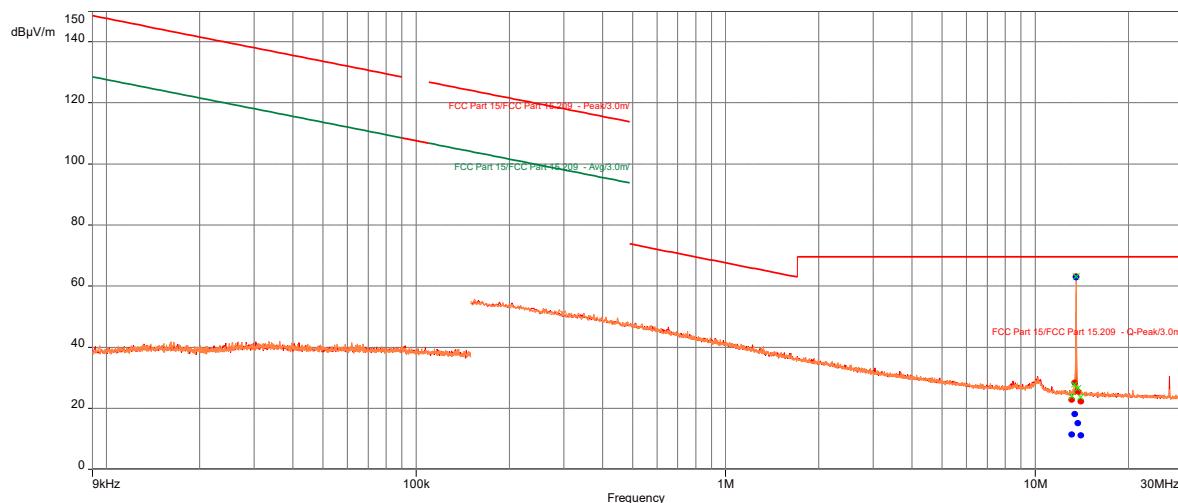
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	RBW	Meas.Time(s)	Correction (dB)
13.09968	11.90	69.54	-57.64	185.40	Vertical	9k	0.10	10.78
13.4455	19.55	69.54	-49.99	0.00	Vertical	9k	0.10	10.79
13.55989	63.84	69.54	-5.70	0.00	Vertical	9k	0.10	10.79
13.72051	17.77	69.54	-51.77	6.60	Vertical	9k	0.10	10.79
14.00237	11.01	69.54	-58.53	136.30	Vertical	9k	0.10	10.80

Notes: The fundamental frequency signal at 13.56 MHz meets the FCC Part 15.209 limit, it deems to meet the FCC 15.225 limit since the FCC Part 15.209 limit is lower than FCC Part 15.255 limit.

13.56 MHz RFID (Metal Enclosure, With Keypad), Field Strength at 3m, (X, Y, Z Polarities)

Test Information:

Date and Time	9/20/2024 11:36:48 AM
Client and Project Number	Sargent Assa Abloy
Engineer	Kouma Sinn
Temperature	24 deg C
Humidity	52 %
Atmospheric Pressure	1006 mbar
Comments	Scan 18_13.56MHz RFID With Modulation (Metal Enclosure - With Keypad), RE 9kHz-30MHz Loop antenna, Electric Field, 3M Location (FCC 15.209)

Graph:Results:

QuasiPeak (PASS) (5)

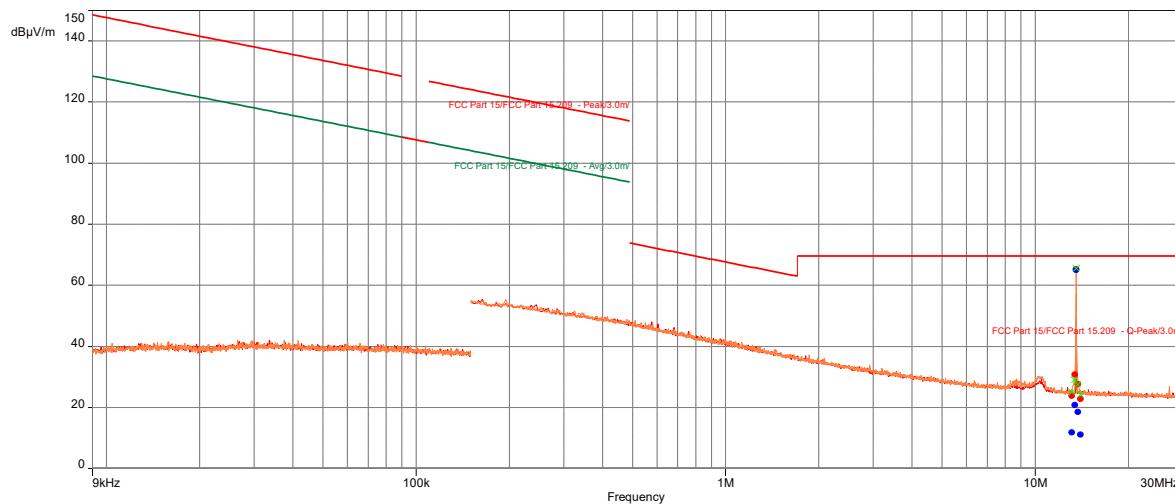
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	RBW	Meas.Time(s)	Correction (dB)
13.11382	11.36	69.54	-58.18	50.10	Vertical	9k	0.10	10.78
13.44213	18.07	69.54	-51.47	1.40	Vertical	9k	0.10	10.79
13.55989	62.86	69.54	-6.68	0.00	Vertical	9k	0.10	10.79
13.71726	15.10	69.54	-54.44	23.00	Vertical	9k	0.10	10.79
14.03491	11.20	69.54	-58.34	212.90	Vertical	9k	0.10	10.79

Notes: The fundamental frequency signal at 13.56 MHz meets the FCC Part 15.209 limit, it deems to meet the FCC 15.225 limit since the FCC Part 15.209 limit is lower than FCC Part 15.255 limit.

13.56 MHz RFID (Plastic Enclosure, Without Keypad), Field Strength at 3m, (X, Y, Z Polarities)

Test Information:

Date and Time	9/20/2024 8:32:02 AM
Client and Project Number	Sargent Assa Abloy
Engineer	Kouma Sinn
Temperature	24 deg C
Humidity	52 %
Atmospheric Pressure	1006 mbar
Comments	Scan 13_ 13.56 MHz RFID With Modulation (Plastic Enclosure - Without Keypad), RE 9kHz-30MHz Loop antenna, Electric Field, 3M Location (FCC 15.209)

Graph:**Results:**

QuasiPeak (PASS) (5)

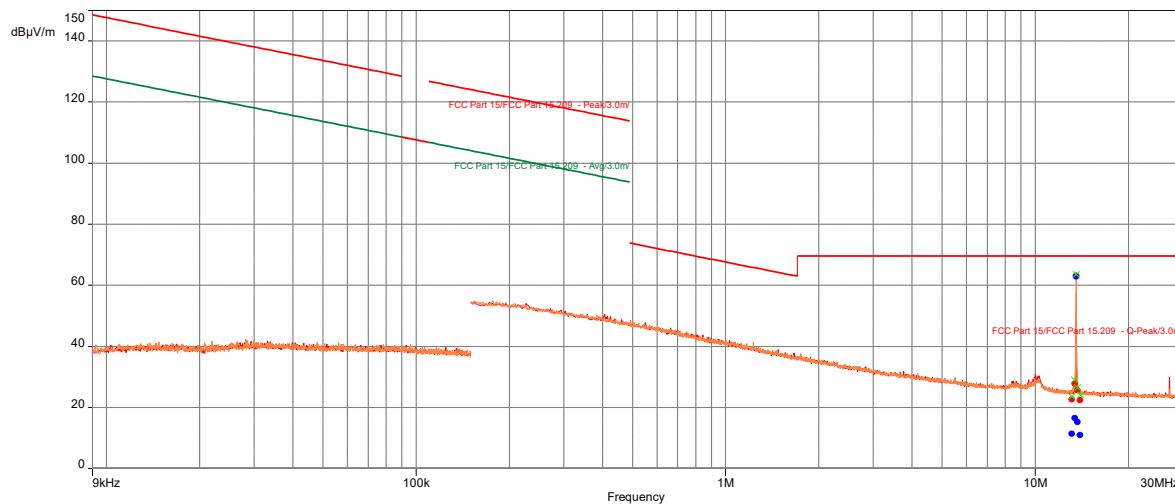
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	RBW	Meas.Time(s)	Correction (dB)
13.12302	11.79	69.54	-57.75	358.40	Vertical	9k	0.10	10.78
13.44943	20.85	69.54	-48.69	1.30	Vertical	9k	0.10	10.79
13.56	65.09	69.54	-4.45	0.00	Vertical	9k	0.10	10.79
13.7195	18.57	69.54	-50.97	12.00	Vertical	9k	0.10	10.79
13.99272	11.17	69.54	-58.37	23.10	Vertical	9k	0.10	10.80

Notes: The fundamental frequency signal at 13.56 MHz meets the FCC Part 15.209 limit, it deems to meet the FCC 15.225 limit since the FCC Part 15.209 limit is lower than FCC Part 15.255 limit.

13.56 MHz RFID (Metal Enclosure, Without Keypad), Field Strength at 3m, (X, Y, Z Polarities)

Test Information:

Date and Time	9/20/2024 9:52:06 AM
Client and Project Number	Sargent Assa Abloy
Engineer	Kouma Sinn
Temperature	24 deg C
Humidity	52 %
Atmospheric Pressure	1006 mbar
Comments	Scan 15_ 13.56 MHz RFID With Modulation (Metal Enclosure - Without Keypad), RE 9kHz-30MHz Loop antenna, Electric Field, 3M Location (FCC 15.209)

Graph:**Results:****QuasiPeak (PASS) (5)**

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	RBW	Meas.Time(s)	Correction (dB)
13.11853	11.42	69.54	-58.12	218.40	Vertical	9k	0.10	10.78
13.44022	16.49	69.54	-53.05	336.80	Vertical	9k	0.10	10.78
13.56011	62.85	69.54	-6.69	0.00	Vertical	9k	0.10	10.79
13.69179	15.22	69.54	-54.32	336.80	Vertical	9k	0.10	10.79
13.98127	10.94	69.54	-58.60	66.40	Vertical	9k	0.10	10.80

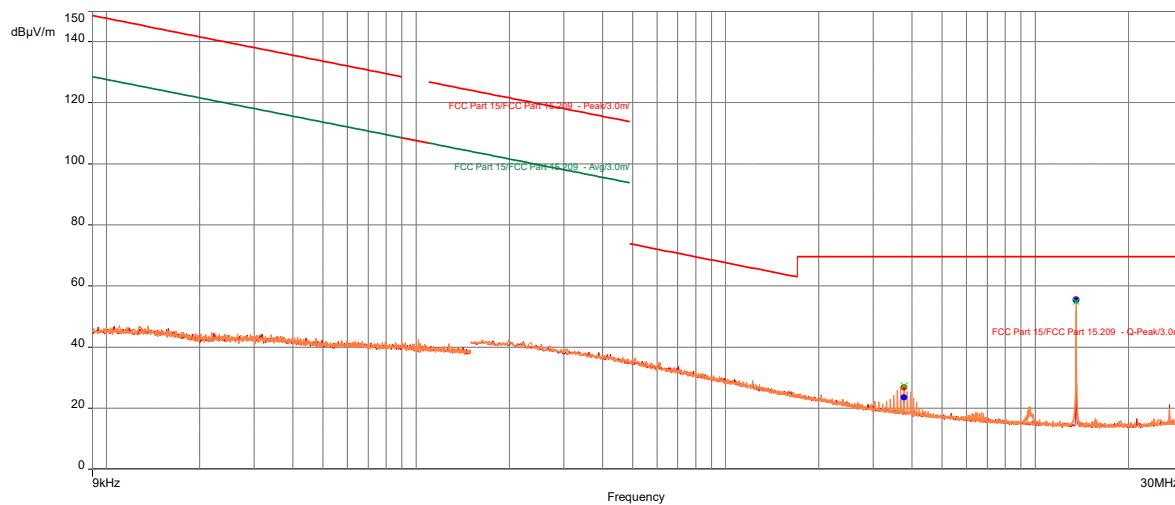
Notes: The fundamental frequency signal at 13.56 MHz meets the FCC Part 15.209 limit, it deems to meet the FCC 15.225 limit since the FCC Part 15.209 limit is lower than FCC Part 15.255 limit.

==POE Powered==

13.56 MHz RFID (Plastic Enclosure, With Keypad), Field Strength at 3m, (X, Y, Z Polarities)

Test Information:

Date and Time	11/18/2024 2:51:55 PM
Client and Project Number	Sargent Assa Abloy
Engineer	Kouma Sinn
Temperature	22 deg C
Humidity	22 %
Atmospheric Pressure	1000 mbars
Comments	Scan 56_RID 13.56 MHz (Plastic With Keypad), POE Powered, RE 9 kHz-30 MHz, 3m

Graph:**Results:**

QuasiPeak (PASS) (2)

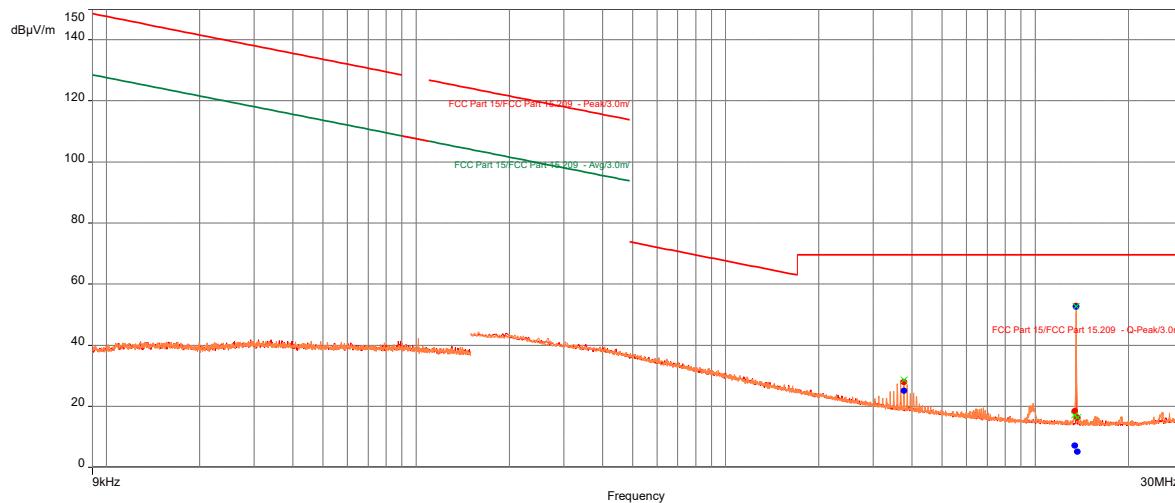
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	RBW	Meas.Time (s)	Correction (dB)
3.76868	23.55	69.54	-45.99	55.70	Vertical	9k	0.10	0.20
13.55989	55.33	69.54	-14.21	271.00	Vertical	9k	0.10	0.33

Notes: The fundamental frequency signal at 13.56 MHz meets the FCC Part 15.209 limit, it deems to meet the FCC 15.225 limit since the FCC Part 15.209 limit is lower than FCC Part 15.225 limit.

13.56 MHz RFID (Metal Enclosure, With Keypad), Field Strength at 3m, (X, Y, Z Polarities)

Test Information:

Date and Time	11/18/2024 12:55:41 PM
Client and Project Number	Sargent Assa Abloy
Engineer	Kouma Sinn
Temperature	22 deg C
Humidity	22 %
Atmospheric Pressure	1000 mbars
Comments	Scan 53_RID 13.56 MHz, (Metal- With Keypad), POE Powered, RE 9 kHz-30 MHz, 3m

Graph:**Results:**

QuasiPeak (PASS) (4)

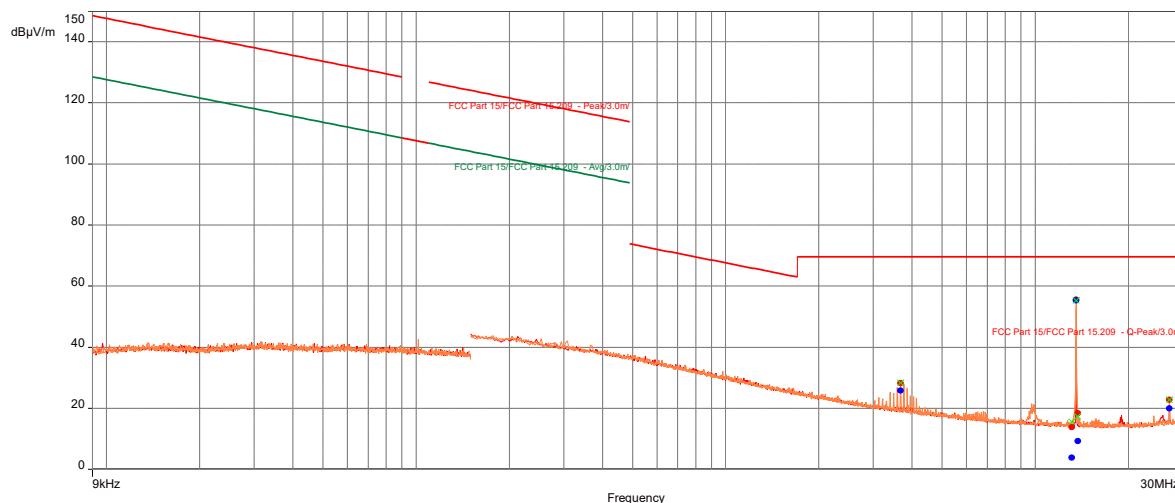
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Azimuth (°)	Pol.	RBW	Meas.Time (s)	Correction (dB)
13.44662	7.12	69.54	-62.42	28.50	Vertical	9k	0.10	0.33
13.56	52.68	69.54	-16.86	6.60	Vertical	9k	0.10	0.33
13.68808	5.12	69.54	-64.42	22.60	Vertical	9k	0.10	0.33
3.76755	25.07	69.54	-44.47	82.50	Vertical	9k	0.10	0.20

Notes: The fundamental frequency signal at 13.56 MHz meets the FCC Part 15.209 limit, it deems to meet the FCC 15.225 limit since the FCC Part 15.209 limit is lower than FCC Part 15.255 limit.

13.56 MHz RFID (Plastic Enclosure, Without Keypad), Field Strength at 3m, (X, Y, Z Polarities)

Test Information:

Date and Time	11/18/2024 11:20:41 AM
Client and Project Number	Sargent Assa Abloy
Engineer	Kouma Sinn
Temperature	22 deg C
Humidity	22 %
Atmospheric Pressure	1000 mbars
Comments	Scan 50_RID 13.56 MHz (Plastic- No Keypad), POE Powered, RE 150 kHz-30 MHz, 3m

Graph:**Results:**

QuasiPeak (PASS) (5)

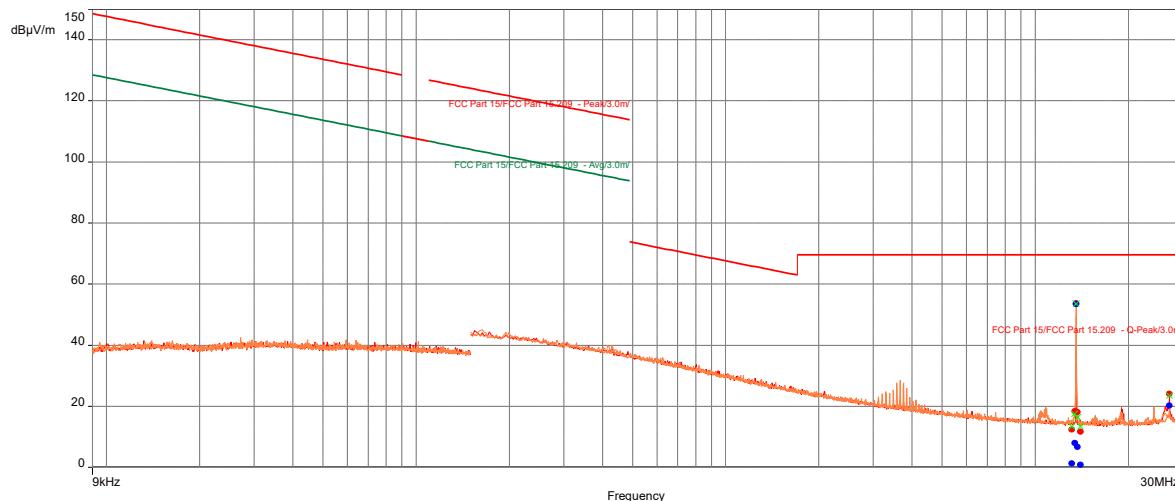
Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Azimuth (°)	Pol.	RBW	Meas.Time (s)	Correction (dB)
3.67439	25.83	69.54	-43.71	55.60	Vertical	9k	0.10	0.19
13.11034	3.85	69.54	-65.69	249.30	Vertical	9k	0.10	0.33
13.56	55.34	69.54	-14.20	271.10	Vertical	9k	0.10	0.33
13.71782	9.25	69.54	-60.29	281.60	Vertical	9k	0.10	0.33
27.11973	19.94	69.54	-49.60	87.90	Horizontal	9k	0.10	0.45

Notes: The fundamental frequency signal at 13.56 MHz meets the FCC Part 15.209 limit, it deems to meet the FCC 15.225 limit since the FCC Part 15.209 limit is lower than FCC Part 15.255 limit.

13.56 MHz RFID (Metal Enclosure, Without Keypad), Field Strength at 3m, (X, Y, Z Polarities)

Test Information:

Date and Time	11/18/2024 9:27:01 AM
Client and Project Number	Sargent Assa Abloy
Engineer	Kouma Sinn
Temperature	22 deg C
Humidity	22 %
Atmospheric Pressure	1000 mbars
Comments	Scan 47_RID 13.56 MHz (Metal- No Keypad), POE Powered, RE 150 kHz-30 MHz, 3m

Graph:**Results:**

QuasiPeak (PASS) (6)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	RBW	RBW	Meas.Time (s)	Correction (dB)
13.10932	1.25	69.54	-68.29	23.00	X-axis	9000.00	9k	0.10	0.33
13.42788	8.05	69.54	-61.49	353.50	X-axis	9000.00	9k	0.10	0.33
13.56011	53.51	69.54	-16.03	360.00	X-axis	9000.00	9k	0.10	0.33
13.67495	6.67	69.54	-62.87	6.70	X-axis	9000.00	9k	0.10	0.33
14.00798	0.83	69.54	-68.71	6.60	X-axis	9000.00	9k	0.10	0.34
27.11861	20.27	69.54	-49.27	325.20	Z-axis	9000.00	9k	0.10	0.45

Notes: The fundamental frequency signal at 13.56 MHz meets the FCC Part 15.209 limit, it deems to meet the FCC 15.225 limit since the FCC Part 15.209 limit is lower than FCC Part 15.255 limit.

Product Standard: CFR47 FCC Part 15.247, RSS-247				Limit applied: See Report Section 6.2			
Test Date	Test Personnel/ Initials	Supervising Engineer/ Initials	Input Voltage	Mode	Atmospheric Data		
					Temp C°	Relative Humidity %	Atmospheric Pressure mbar
09/20/2024	Kouma Sinn <i>KPS</i>	N/A	Battery Powered	Continuous Transmitting	24	52	10061
11/18/2024	Kouma Sinn <i>KPS</i>	N/A	POE Powered	Continuous Transmitting	22	22	1000

Deviations, Additions, or Exclusions: None

7 Occupied Bandwidth

7.1 Method

Tests are performed in accordance with CFR47 FCC Part 15.247, RSS-247, and ANSI C63.10.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

7.2 Limit

No limit, Data For Report Purpose Only

7.3 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV007'	Weather Station Vantage Vue	Davis	6250	MS191212003	03/27/2024	03/27/2025
ROS014'	Receiver 1Hz-44GHz	Rhode & Schwarz	ESW 44	103232	06/10/2024	06/10/2025
145-420'	Receiver to floor cable	Ultiflex	UFB311A-2-0591-70070	145-420	02/27/2024	02/27/2025
145-414'	Cable 145-414	Huber + Suhner	3m Track A cable	145-414	07/15/2024	07/15/2025
145-422'	10Amp Pre-amp to under floor	Ultiflex	UFB311A-0-2756-70070	145-422	03/26/2024	03/26/2025
IVW003'	8.4 meter cable	Insulated Wire	2800-NPS	003	01/17/2024	01/17/2025
ETS003'	9kHz-30MHz Active Loop Antenna	ETS Lindgren	6502	00143396	01/25/2024	01/25/2025
CBL053	BNC cable 7.62 meters	MookEERF	RG58U	cbl053	11/20/2023	11/20/2024
145019'	Active Loop Antenna (9 KHz to 30 MHz)	EMCO	6502/1	9902-3267	03/05/2024	03/05/2025

Software Utilized:

Name	Manufacturer	Version
BAT-EMC	Nexio	2023.0.9.0

7.4 Results:

The sample tested was found to Comply.

7.5 Setup Photographs:

See Section 6.5

7.6 Test Data:**13.56 MHz RFID Occupied Bandwidth (Battery Powered)**

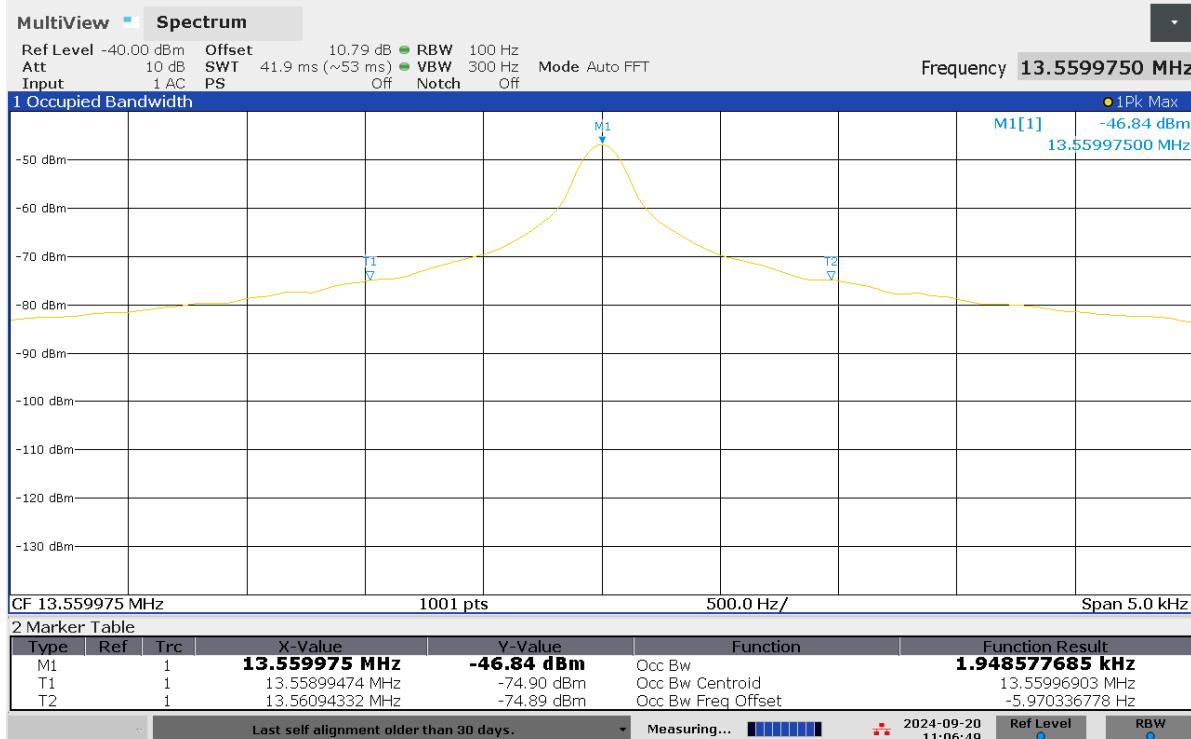
EUT Configurations	Frequency (MHz)	Occupied Bandwidth (kHz)	Occupied Bandwidth Limit (kHz)	Results
Plastic Enclosure With Keypad	13.56	1.949	N/A	Compliance
Metal Enclosure With Keypad	13.56	1.944	N/A	Compliance
Plastic Enclosure Without Keypad	13.56	1.938	N/A	Compliance
Metal Enclosure Without Keypad	13.56	1.941	N/A	Compliance

13.56 MHz RFID Occupied Bandwidth (POE Powered)

EUT Configurations	Frequency (MHz)	Occupied Bandwidth (kHz)	Occupied Bandwidth Limit (kHz)	Results
Plastic Enclosure With Keypad	13.56	2.182	N/A	Compliance
Metal Enclosure With Keypad	13.56	2.171	N/A	Compliance
Plastic Enclosure Without Keypad	13.56	2.169	N/A	Compliance
Metal Enclosure Without Keypad	13.56	2.170	N/A	Compliance

==Battery Powered==

13.56 MHz RFID Plastic Enclosure Keypad), Occupied Bandwidth



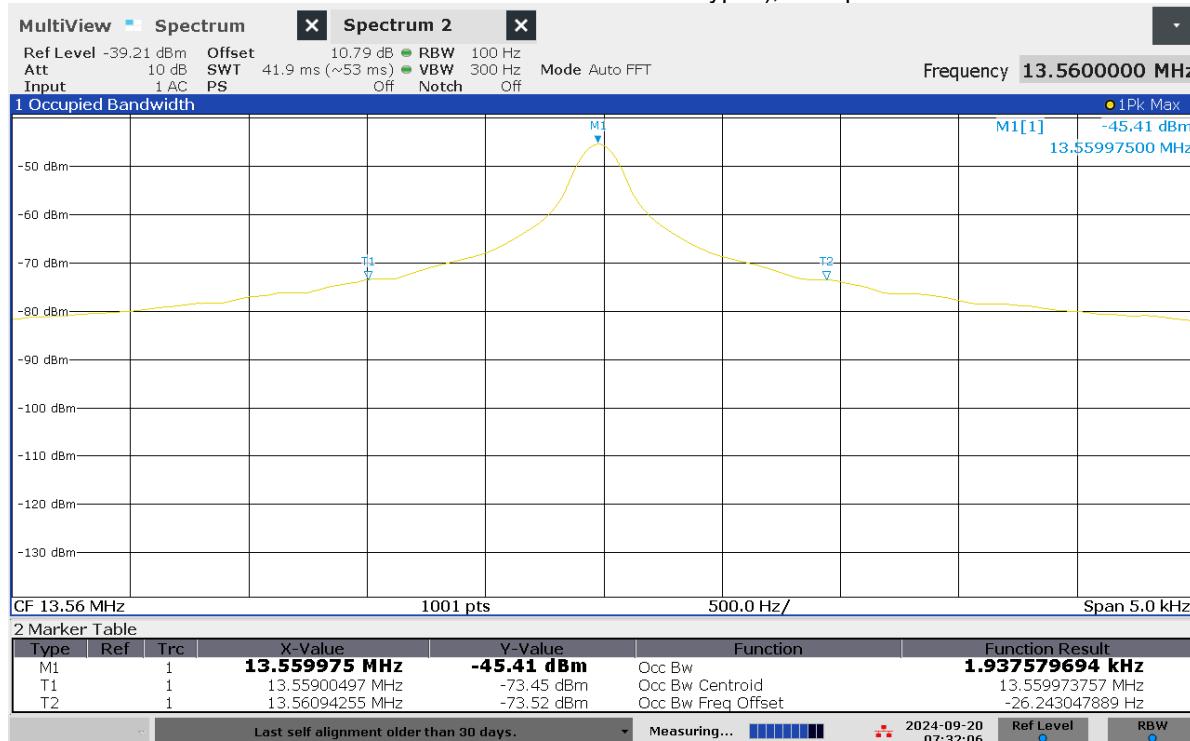
11:06:50 AM 09/20/2024

13.56 MHz RFID (Metal Enclosure Keypad), Occupied Bandwidth



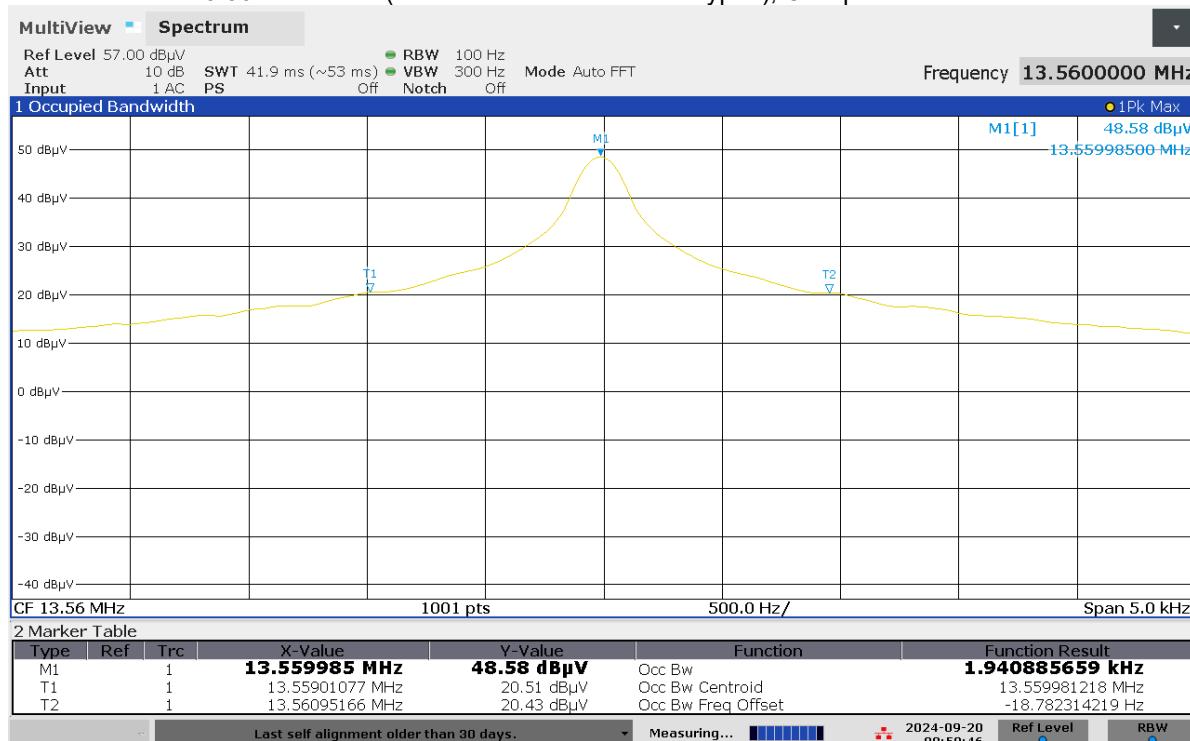
10:26:35 AM 09/20/2024

13.56 MHz RFID Plastic Enclosure Without Keypad), Occupied Bandwidth



07:32:08 AM 09/20/2024

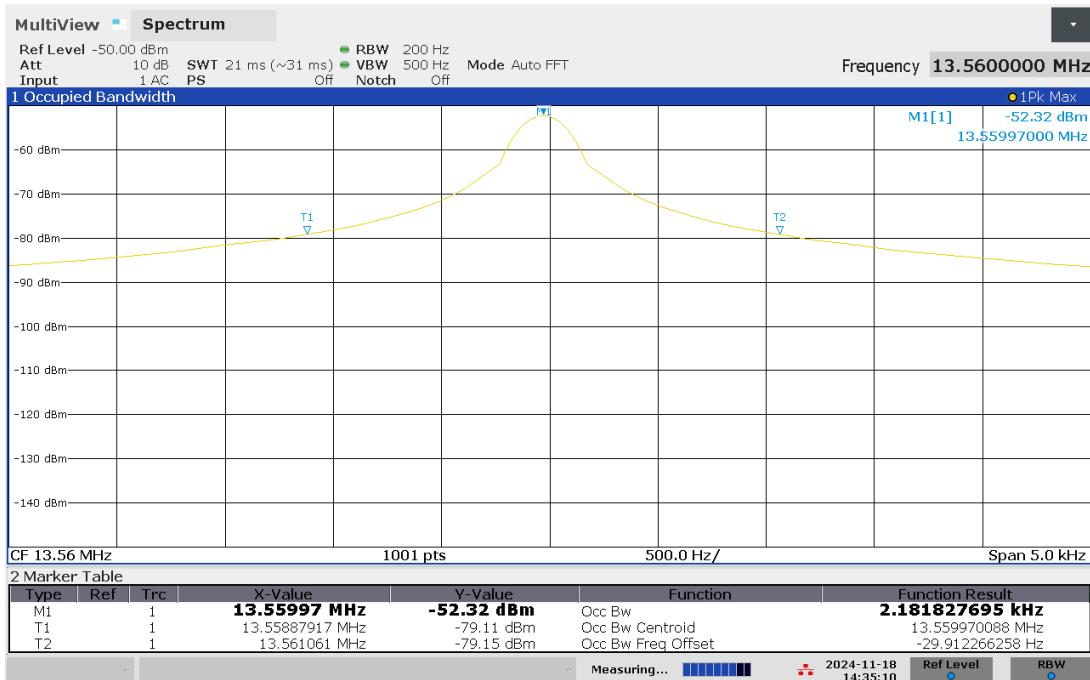
13.56 MHz RFID (Metal Enclosure Without Keypad), Occupied Bandwidth



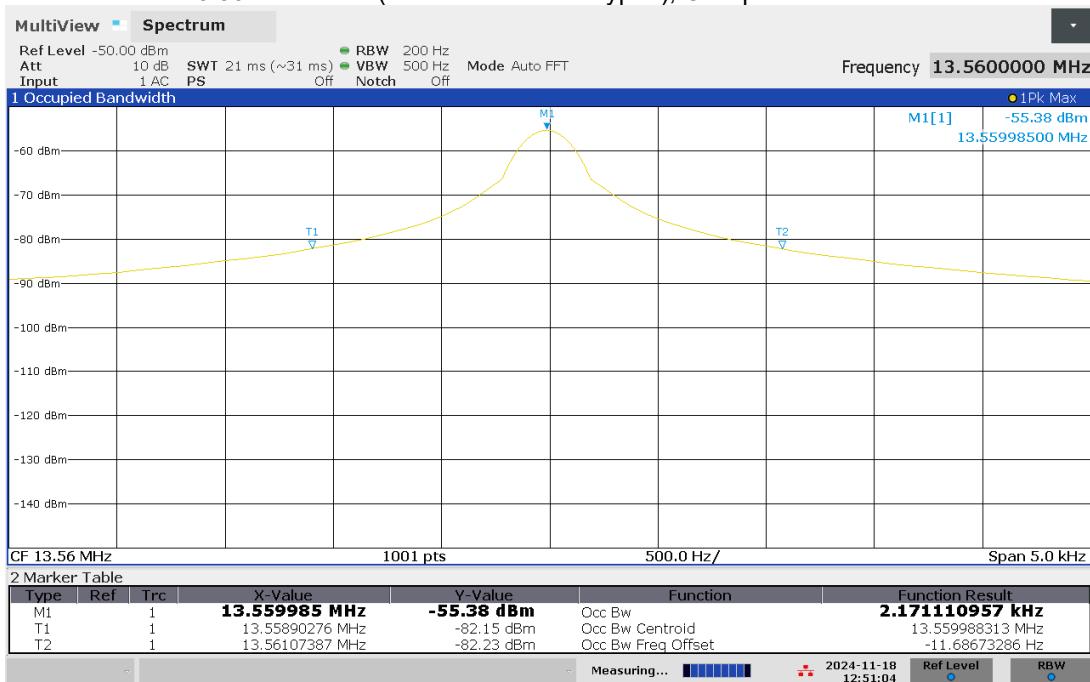
08:58:46 AM 09/20/2024

==POE Powered==

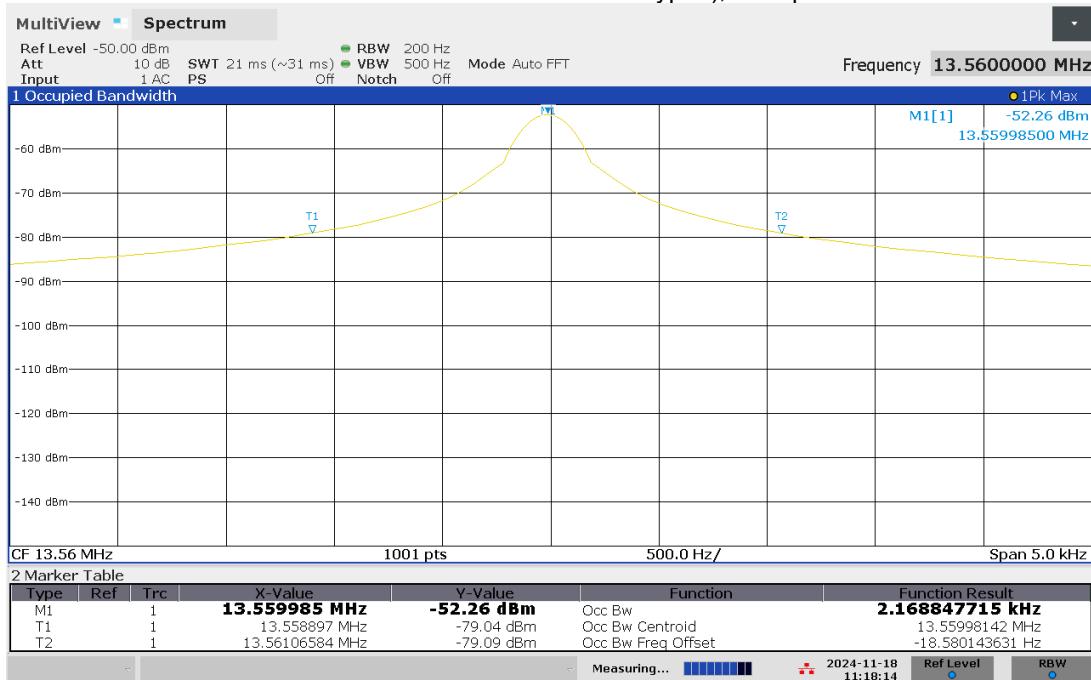
13.56 MHz RFID Plastic Enclosure Keypad), Occupied Bandwidth



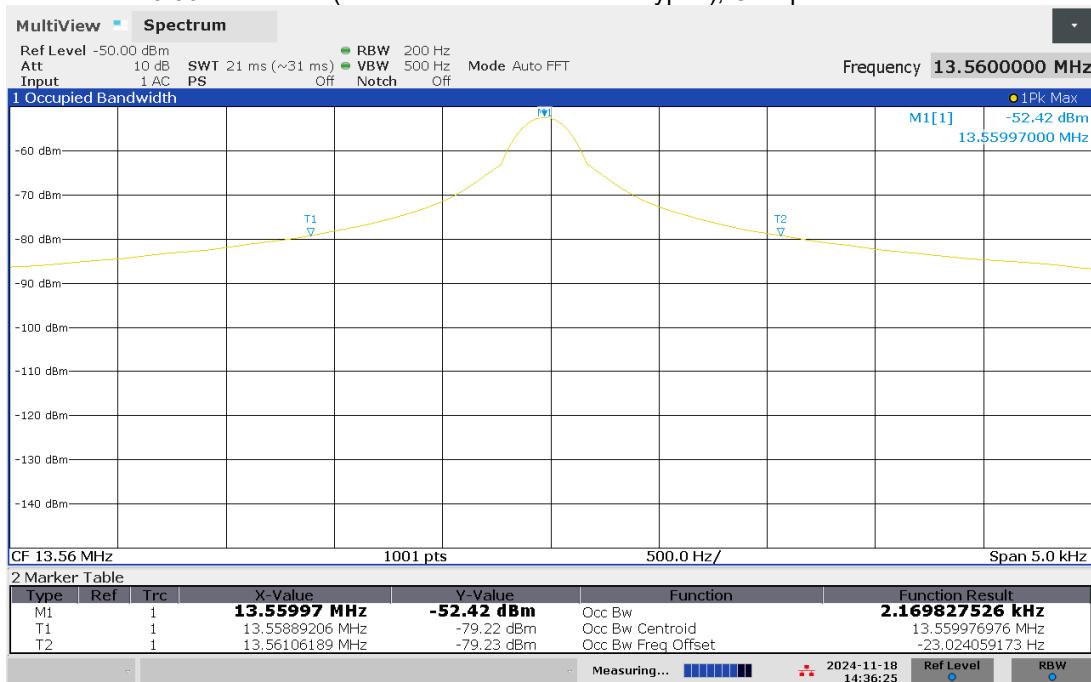
13.56 MHz RFID (Metal Enclosure Keypad), Occupied Bandwidth



13.56 MHz RFID Plastic Enclosure Without Keypad), Occupied Bandwidth



13.56 MHz RFID (Metal Enclosure Without Keypad), Occupied Bandwidth



Product Standard: CFR47 FCC Part 15.247, RSS-247				Limit applied: See Report Section 7.2			
Test Date	Test Personnel/ Initials	Supervising Engineer/ Initials	Input Voltage	Mode	Atmospheric Data		
					Temp C°	Relative Humidity %	Atmospheric Pressure mbar
09/20/2024	Kouma Sinn <i>KPS</i>	N/A	Battery Powered	Continuous Transmitting	24	52	1006
11/18/2024	Kouma Sinn <i>KPS</i>	N/A	POE Powered	Continuous Transmitting	22	22	1000

Deviations, Additions, or Exclusions: None

8 Band Edge Compliance

8.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C 15.225, RSS 210, and ANSI C 63.10.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

8.2 Limit

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, (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the filed 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 field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters, (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emissions limits in 15.209.

Notes: The limits for RSS-210 are the same as the FCC limits above.

8.3 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV007'	Weather Station Vantage Vue	Davis	6250	MS191212003	03/27/2024	03/27/2025
ROS014'	Receiver 1Hz-44GHz	Rhode & Schwarz	ESW 44	103232	06/10/2024	06/10/2025
145-420'	Receiver to floor cable	Utiflex	UFB311A-2-0591-70070	145-420	02/27/2024	02/27/2025
145-414'	Cable 145-414	Huber + Suhner	3m Track A cable	145-414	07/15/2024	07/15/2025
145-422'	10Amp Pre-amp to under floor	Utiflex	UFB311A-0-2756-70070	145-422	03/26/2024	03/26/2025
IVW003'	8.4 meter cable	Insulated Wire	2800-NPS	003	01/17/2024	01/17/2025
ETS002	1-18GHz DRG Horn Antenna	ETS Lindgren	3117	00143260	09/04/2024	09/04/2025

Software Utilized:

Name	Manufacturer	Version
None	N/A	N/A

8.4 Results:

The sample tested was found to Comply.

8.5 Setup Photographs:

See Section 6.5