

# Sargent Manufacturing Company

## TEST REPORT

### SCOPE OF WORK

Emissions Testing – Electronic access control system with RF Module, Model NTD and NTC Series

### REPORT NUMBER

105779772BOX-006.1356MHz

### ISSUE DATE

January 16, 2025

### [REVISED DATE]

Original issue

### DOCUMENT CONTROL NUMBER

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

(Class II Permissive Change)

**Report Number:** 105779772BOX-006.1356MHz

**Project Number:** G105779772

**Report Issue Date:** January 16, 2025

**Model(s) Tested:** NTD623-ACC, NTC623-ACC

**Model(s) Partially Tested:** None

**Model(s) Not Tested but declared equivalent by the client:** See Section 4.0

**Standards:** CFR47 FCC Part 15 Subpart C, Section 15.225: 05/2024  
CFR47 FCC Part 15 Subpart C, Section 15.205: 05/2024  
CFR47 FCC Part 15 Subpart B, Section 15.109: 05/2024  
RSS-210 Issue 10 December 2019  
ISED ICES-003 Issue 7 October 2020  
RSS-Gen Issue 5 April 2018 +Amendment 1 March 2019

(NTD623-ACC, NTD643-ACC, NTC643-ACC)

FCC: U4A-YRD642BLEV1

IC: 6982A-YRD642BLEV1

(NTC623-ACC)

FCC: U4A-YRD622BLEV1

IC: 6982A-YRD622BLEV1

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

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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 products tested **comply** 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	Transmitter spurious emissions CFR47 FCC Part 15 Subpart C, Section 15.225: 05/2024 CFR47 FCC Part 15 Subpart B, Section 15.109: 05/2024 RSS-210 Issue 10 December 2019 ISED ICES-003 Issue 7 October 2020	Pass
7	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:** Dave Debiase  
**Telephone:** 203-821-5724  
**Email:** dave.debiase@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 RFID (NTD)	Sargent Manufacturing Company	NTD623-ACC	14-D623 A16XNC00083
Electronic access control system with RF Module BLE (NTD)	Sargent Manufacturing Company	NTD623-ACC	14-D623 A16XNC0080
Electronic access control system with RF Module RFID (NTC)	Sargent Manufacturing Company	NTC623-ACC	NTC623 A13X0100913
Electronic access control system with RF Module BLE (NTC)	Sargent Manufacturing Company	NTC623-ACC	YRC622 A13XNB00985

<b>Receive Date:</b>	05/06/2024 (NTD), 06/24/2024 (NTC)
<b>Received Condition:</b>	Good
<b>Type:</b>	Production

Description of Equipment Under Test (provided by client)
Electronic access control system. It contains the radio modules as below.  (NTD623-ACC, NTD643-ACC, NTC643-ACC) FCC: U4A-YRD642BLEV1 IC: 6982A-YRD642BLEV1  (NTC623-ACC) FCC: U4A-YRD622BLEV1 IC: 6982A-YRD622BLEV1

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
6 V (4 x 1.5 V Batteries)	N/A	DC	N/A

**Operating modes of the EUT:**

No.	Descriptions of EUT Exercising
1	RFID – Pre-programmed to transmit continuously with modulation

**Software used by the EUT:**

No.	Descriptions of EUT Exercising
1	None – Pre-programmed 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	Not cover in this report
Test Channels	13.56 MHz
Occupied Bandwidth	Not cover in this report
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	3 Loop Pattern Antenna, Gain = 1 dBi

**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.

Models Declared Equivalent: NTD643-ACC, NTC643-ACC (Same as tested with Emergency Battery Jump Terminals)

## 5 System Setup and Method

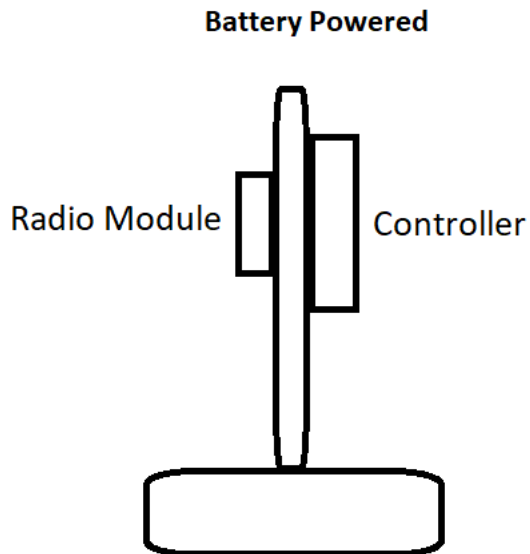
Cables					
ID	Description	Length	Shielding	Ferrites	Termination
--	None	N/A	N/A	N/A	N/A

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
None	N/A	N/A	N/A

### 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 Transmitter spurious emissions

### 6.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C 15.225, FCC Part 15 Subpart B, RSS 210, ISED ICES 003, ANSI C 63.10, and ANSI C 63.4.

**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.

#### Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucisp
Radiated Emissions, 10m	30-1000 MHz	4.6dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	5.3 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.5 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.2 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	5.0 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	5.0 dB	5.5 dB

As shown in the table above our radiated emissions  $U_{lab}$  is less than the corresponding  $U_{CISPR}$  reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

#### Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB $\mu$ V/m
- RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB $\mu$ V/m. This



value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

RA = 52.0 dB $\mu$ V

AF = 7.4 dB/m

CF = 1.6 dB

AG = 29.0 dB

FS = 32 dB $\mu$ V/m

To convert from dB $\mu$ V to  $\mu$ V or mV the following was used:

$UF = 10^{(NF / 20)}$  where UF = Net Reading in  $\mu$ V  
NF = Net Reading in dB $\mu$ V

**Example:**

FS = RA + AF + CF – AG = 52.0 + 7.4 + 1.6 – 29.0 = 32.0

UF =  $10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$

Alternately, when BAT-EMC Emission Software is used, the “Level” includes all losses and gains and is compared directly in the “Margin” column to the “Limit”. The “Correction” includes Antenna Factor, Preamp, and Cable Loss. These are already accounted for in the “Level” column.

## 6.2 Limits

Limits – FCC Part §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, (d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in FCC Part §15.209.

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

### 6.3 Test Equipment Used:

Test equipment used from 9 kHz-30 MHz on 05/06/2024

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
IW003'	8.4 meter cable	Insulated Wire	2800-NPS	003	01/17/2024	01/17/2025
CBL053'	BNC cable 7.62 meters	MookEERF	RG58U	cbi053	11/20/2023	11/20/2024
145-019'	Active Loop Antenna (9 KHz to 30 MHz)	EMCO	6502/1	9902-3267	03/05/2024	03/05/2025

Test equipment used from 30-1000 MHz 05/06/2024

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
HS003'	10m under floor cable	Huber-Schuner	10m-1	HS003	02/27/2024	02/27/2025
IW006'	DC-18GHz cable 8.4m long	Insulated Wire	2800-NPS	IW006	05/23/2024	05/23/2025
HS001'	DC-18GHz cable 1.5m long	Huber & Suhner	SucoFlex 106A	HS001	01/30/2024	01/30/2025
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	07/11/2024	07/11/2025
PRE10'	30-1000MHz pre-amp	ITS	PRE10	PRE10	02/27/2024	02/27/2025

#### Software Utilized:

Name	Manufacturer	Version
BAT-EMC	Nexio	2023.0.9.0

Test equipment used from 9 kHz-30 MHz on 12/15/2024

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
IW003'	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
CBL052'	9kHz-1GHz BNC cable 25 ft long	Belden	RG58A/U	CBL052	01/09/2024	01/09/2025

Test equipment used from 30-1000 MHz 12/15/2024

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
HS003'	10m under floor cable	Huber-Schuner	10m-1	HS003	02/27/2024	02/27/2025
IW006'	DC-18GHz cable 8.4m long	Insulated Wire	2800-NPS	IW006	05/23/2024	05/23/2025
HS001'	DC-18GHz cable 1.5m long	Huber & Suhner	SucoFlex 106A	HS001	01/30/2024	01/30/2025
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	07/11/2024	07/11/2025
PRE10'	30-1000MHz pre-amp	ITS	PRE10	PRE10	02/27/2024	02/27/2025

#### Software Utilized:

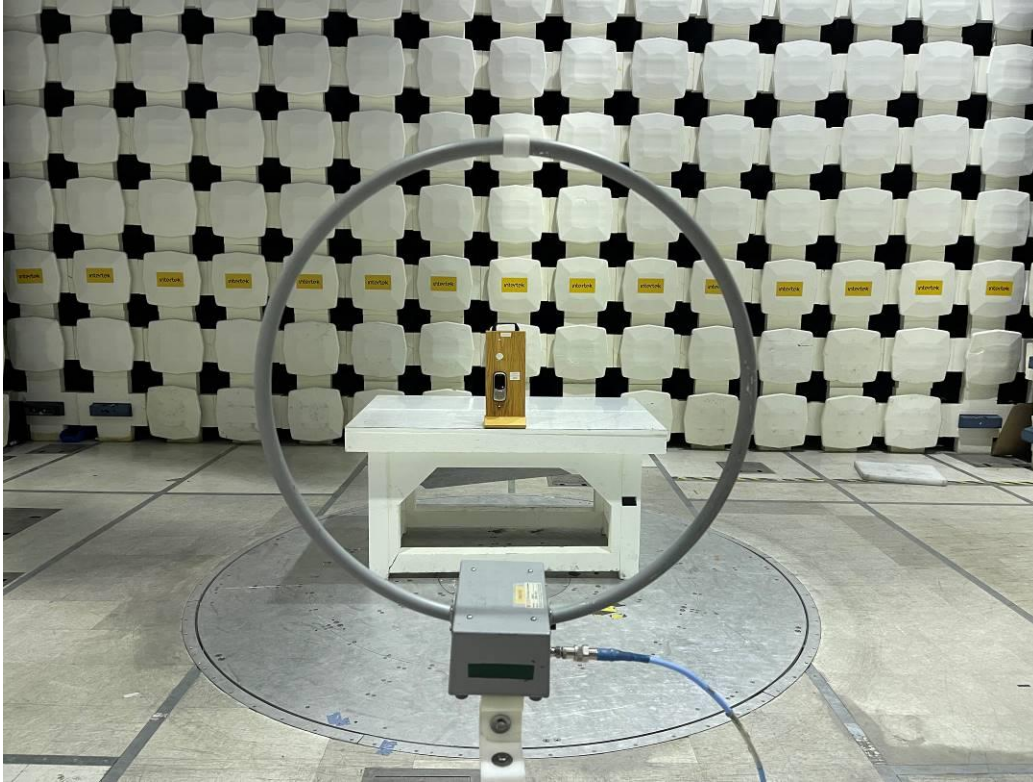
Name	Manufacturer	Version
BAT-EMC	Nexio	2023.0.9.0

### 6.4 Results:

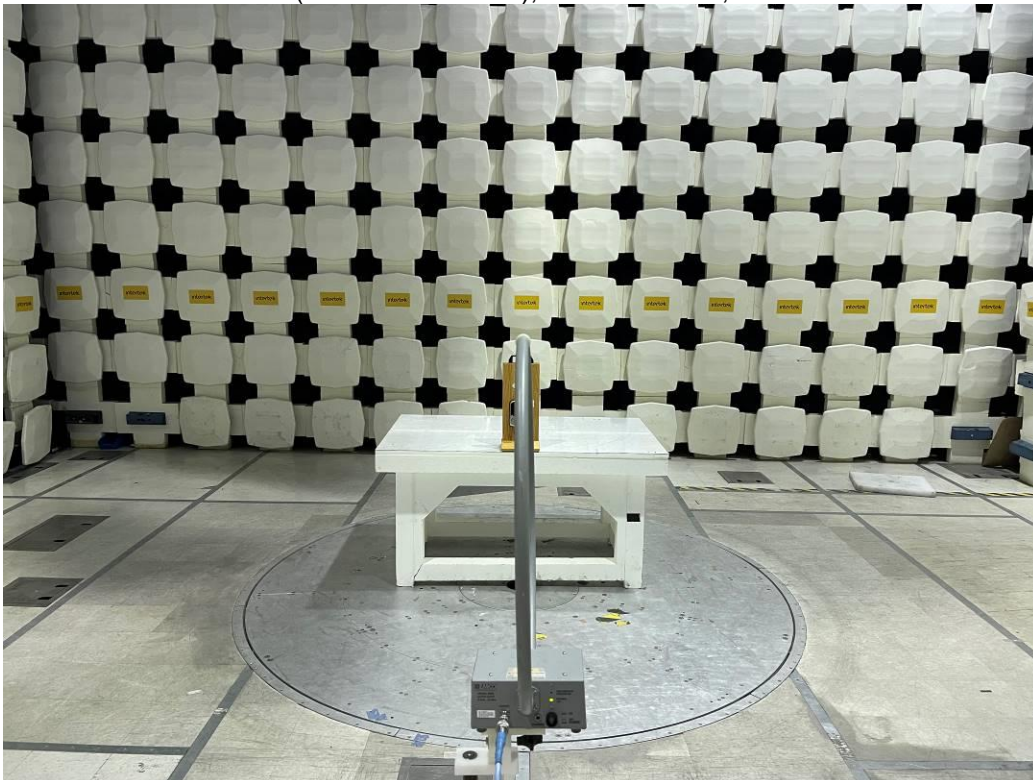
The sample tested was found to Comply.

## 6.5 Setup Photographs:

13.56 MHz RFID (NTD-Touchscreen), 9 kHz- 30 MHz, Antenna on X-axis



13.56 MHz RFID (NTD-Touchscreen), 9 kHz- 30 MHz, Antenna on Y-axis



13.56 MHz RFID (NTD-Touchscreen), 9 kHz- 30 MHz, Antenna on Z-axis





13.56 MHz RFID (NTD-Touchscreen), 30-1000 MHz



13.56 MHz RFID (NTC-Touchscreen), 9 kHz- 30 MHz, Antenna on X-axis



13.56 MHz RFID (NTC-Touchscreen), 9 kHz- 30 MHz, Antenna on Y-axis





13.56 MHz RFID (NTC-Touchscreen), 9 kHz- 30 MHz, Antenna on Z-axis



13.56 MHz RFID (NTC-Touchscreen), 30-1000 MHz





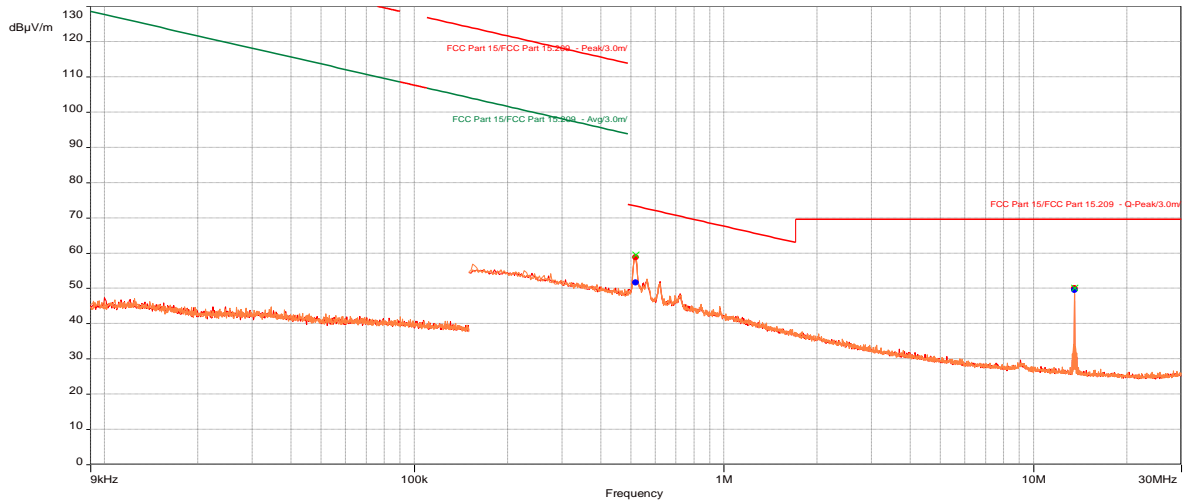
## 6.6 Plots/Data:

13.56 MHz RFID (NTD-Touchscreen), 9 kHz- 30 MHz, Test Distance at 3m, (X, Y, Z Polarities)

### Test Information:

Date and Time	5/6/2024 3:37:42 PM
Client and Project Number	Sargent Assa Abloy
Engineer	Kouma Sinn
Temperature	23 deg C
Humidity	45 %
Atmospheric Pressure	1007 mbars
Comments	Scan 12_13.56 MHz RFID (NTD-Touchscreen), RE 9 kHz-30 MHz

### Graph:



### Results:

QuasiPeak (PASS) (2)

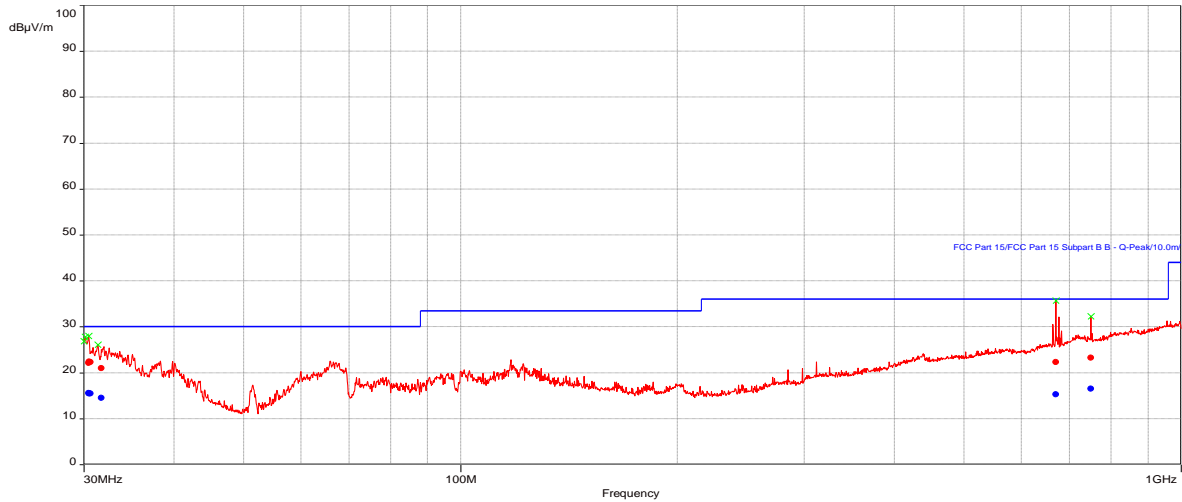
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	RBW	RBW	Meas.Time(s)	Correction (dB)
0.51911	51.64	73.30	-21.66	71.70	X-axis	9000.00	9k	0.10	13.24
13.55966	49.58	N/A	N/A	360.00	X-axis	9000.00	9k	0.10	12.01

13.56 MHz RFID (NTD-Touchscreen), 30-1000 MHz, Test Distance at 10 m, (Vertical & Horizontal Polarities)

**Test Information:**

Date and Time	5/6/2024 2:45:17 PM
Client and Project Number	Sargent Assa Abloy
Engineer	Kouma Sinn
Temperature	23 deg C
Humidity	45 %
Atmospheric Pressure	1007 mbars
Comments	Scan 11_13.56 MHz RFID (NTD-Touchscreen), RE 30-1000 MHz

**Graph:**



**Results:**

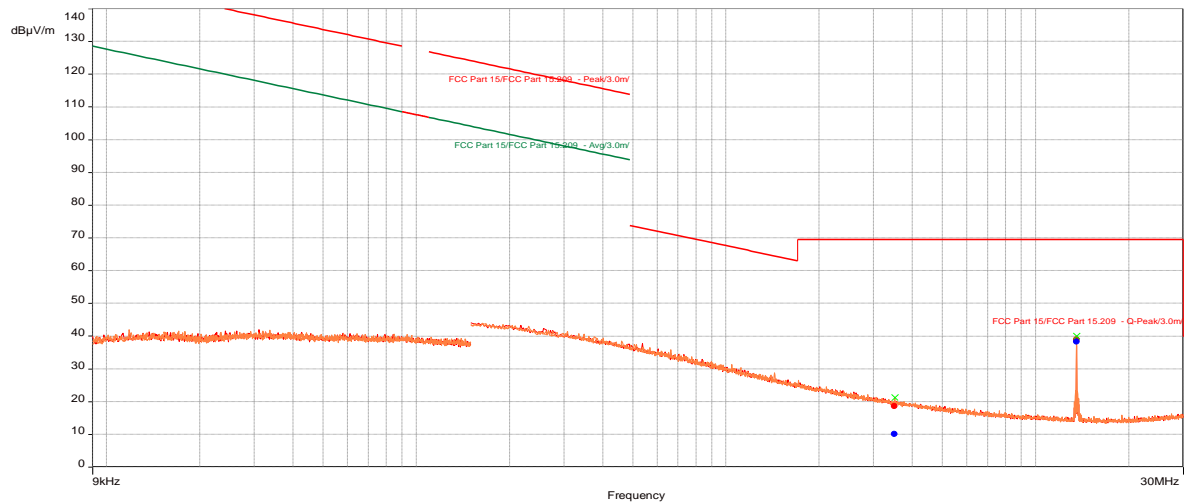
**QuasiPeak (PASS) (6)**

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Height (m)	Pol.	RBW	Meas.Time(s)	Correction (dB)
30.4621	15.58	30.00	-14.42	125.80	3.52	Horizontal	120k	0.10	-12.88
30.4975	15.54	30.00	-14.46	137.00	2.70	Horizontal	120k	0.10	-12.90
30.6276	15.46	30.00	-14.54	338.30	3.44	Horizontal	120k	0.10	-12.98
31.7242	14.59	30.00	-15.41	158.60	2.67	Horizontal	120k	0.10	-13.69
670.7436	15.34	36.00	-20.66	360.00	4.00	Vertical	120k	0.10	-10.14
749.8788	16.52	36.00	-19.48	321.40	3.89	Vertical	120k	0.10	-8.65

13.56 MHz RFID (NTC-Touchscreen), 9 kHz- 30 MHz, Test Distance at 3m, (X, Y, Z Polarities)

**Test Information:**

Date and Time	12/15/2024 10:17:33 AM
Client and Project Number	Sargent_G105779772
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	15 %
Atmospheric Pressure	1036 mbars
Comments	Scan #6_RE 9kHz-30MHz Loop antenna, Electric Field, 3M Location (FCC 15.209)_13.56 MHz RFID_NTC - Touch Screen

**Graph:****Results:**

QuasiPeak (PASS) (2)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Azimuth (°)	Pol.	RBW	Meas.Time(s)	Correction (dB)
3.49656	10.11	69.54	-59.43	0.00	X-axis	9k	0.10	0.19
13.56	38.39	N/A	N/A	17.40	X-axis	9k	0.10	0.33



**7 Revision History**

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	01/16/2025	105779772BOX-006.1356MHz	KPS <i>KPS</i>	VFV <i>VFV</i>	Original Issue