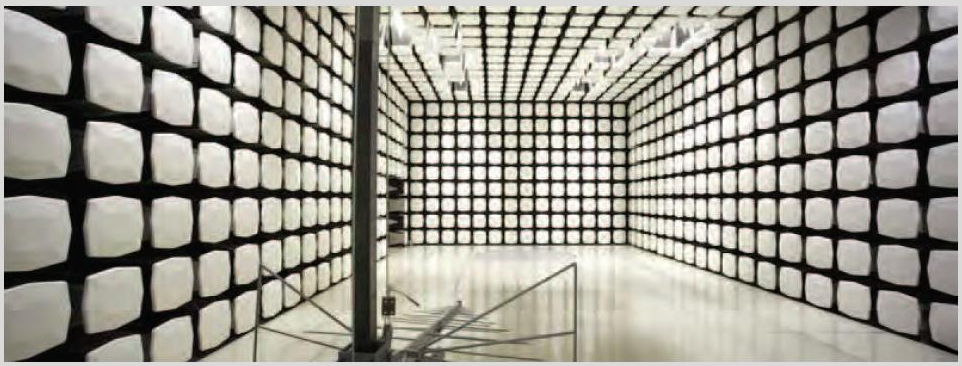
Boston Scientific

AngioJet AutoElite

FCC 15.225:2023
FCC 15.207:2024
RSS-210 Issue 10:2019

13.56 MHz radio using RFID

Report: GALI0049.0 Rev. 1, Issue Date: March 6, 2024



CERT #3310.05

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element
2023.04.17

Section	Page Number

CERTIFICATE OF TEST

Last Date of Test: February 23, 2024
Boston Scientific
EUT: AngioJet AutoElite

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2024	ANSI C63.10:2013
FCC 15.225:2023	
RSS-210 Issue 10:2019+A1:2020	
RSS-Gen Issue 5:2018+A1:2019+A2:2021	

Results

Test Description	Result	FCC Section(s)	RSS Section(s)	ANSI C63.10 Section(s)	Comments
Powerline Conducted Emissions	Pass	15.207	RSS-Gen 8.8	6.2	
Emissions Bandwidth (20 dB)	Pass	15.215(c)	N/A	6.9.2	
Field Strength of Fundamental	Pass	15.225(a)-(c)	RSS-210 B.6(a)(i-iv)	6.4	
Field Strength of Spurious Emissions (Less Than 30 MHz)	Pass	15.225(d), 15.209	RSS-210 B.6(a)(iv)	6.4	
Field Strength of Spurious Emissions (Greater Than 30 MHz)	Pass	15.225(d), 15.209	RSS-210 B.6(a)(iv)	6.5	
Frequency Stability	Pass	15.225(e), 15.31(e), 15.215(c), 2.1055	RSS-210 B.6(b)	6.8	
Occupied Bandwidth (99%)	Evaluated	N/A	RSS-Gen 6.7	6.9.3	No pass/fail criteria specified for this test

Deviations From Test Standards

None

Approved By:

James E Morris

James Morris, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
01	Photos removed	2024-02-28	Throughout
	Updated Specifications		Cover, 3
	Data Rate added		12
	Updated last day of testing		3, 11, 14
	Updated Configurations		13
	Updated data		26-28, 29, 35-38

ACCREDITATIONS AND AUTHORIZATIONS

element
2021.09.01

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Each laboratory is accredited by A2LA to ISO / IEC 17025, and as a product certifier to ISO / IEC 17065 which allows Element to certify transmitters to FCC and IC specifications.

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

European Commission – Recognized as an EU Notified Body validated for the EMCD and RED Directives.

United Kingdom

BEIS – Recognized by the UK as an Approved Body under the UK Radio Equipment and UK EMC Regulations.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

For details on the Scopes of our Accreditations, please visit:

California Minnesota Oregon Texas Washington

FACILITIES

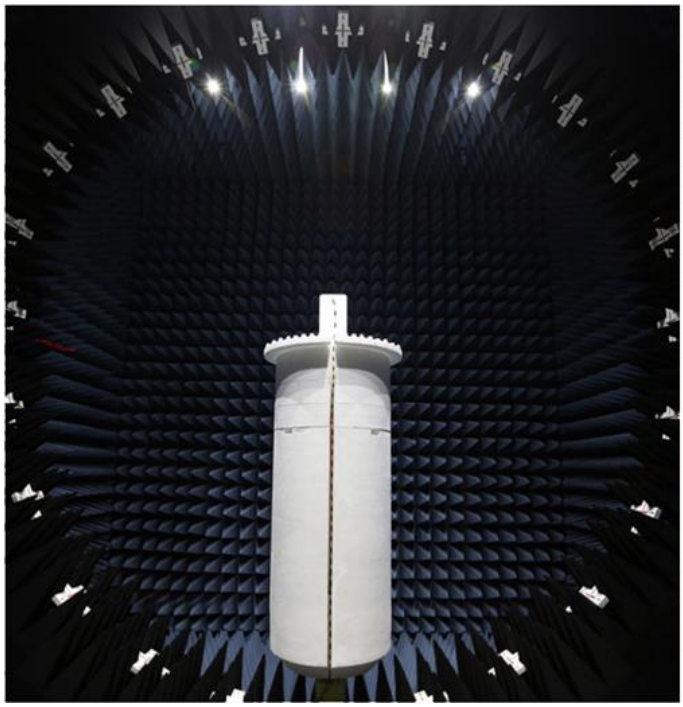
element
2023.09.21

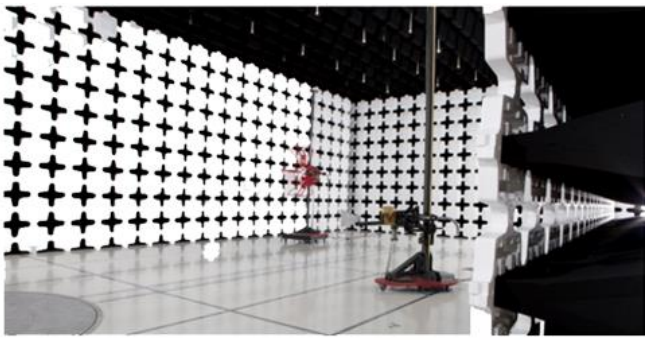
Testing was performed at the following location(s)

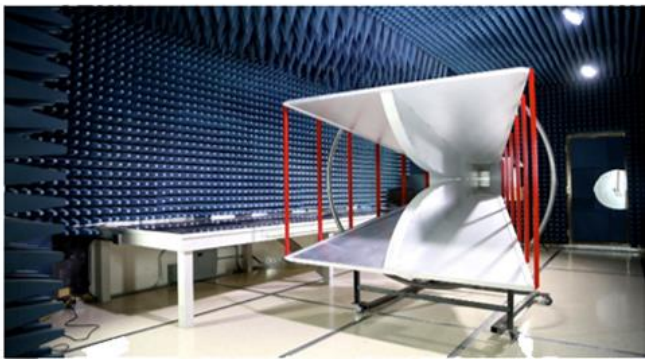
	Location	Labs (1)	Address	A2LA (2)	ISED (3)	BSMI (4)	VCCI (5)	CAB (6)	FDA (7)
☐	California	OC01-17	41 Tesla Irvine, CA 92618 (949) 861-8918	3310.04	2834B	SL2-IN-E-1154R	A-0029	US0158	TL-55
☒	Minnesota	MN01-11	9349 W Broadway Ave. Brooklyn Park, MN 55445 (612) 638-5136	3310.05	2834E	SL2-IN-E-1152R	A-0109	US0175	TL-57
☐	Oregon	EV01-12	6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	3310.02	2834D	SL2-IN-E-1017	A-0108	US0017	TL-56
☐	Texas	TX01-09	3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	3310.03	2834G	SL2-IN-E-1158R	A-0201	US0191	TL-54
☐	Washington	NC01-05	19201 120th Ave NE Bothell, WA 98011 (425) 984-6600	3310.06	2834F	SL2-IN-E-1153R	A-0110	US0157	TL-67
☐	Offsite	N/A	See Product Description	N/A	N/A	N/A	N/A	N/A	N/A

See data sheets for specific labs

(1) The lab designations denote individual rooms within each location. (OC01, OC02, OC03, etc.)
(2) A2LA Certificate No.
(3) ISED Company No.
(4) BSMI No.
(5) VCCI Site Filing No.
(6) CAB Identifier. Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA
(7) FDA ASCA No.







MEASUREMENT UNCERTAINTY

element
TMU.2015.07.10

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found in the table below. A lab specific value may also be found in the applicable test description section. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	0	0
AC Powerline Conducted Emissions (dB)	0	0

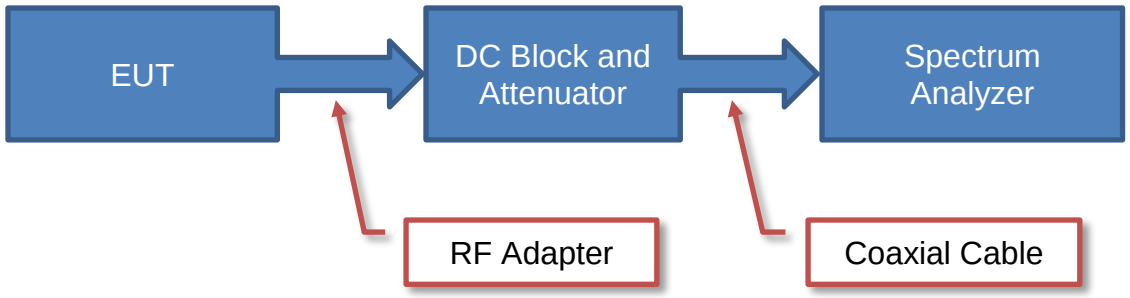
TEST SETUP BLOCK DIAGRAMS

Measurement Bandwidths

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Unless otherwise stated, measurements were made using the bandwidths and detectors specified. No video filter was used.

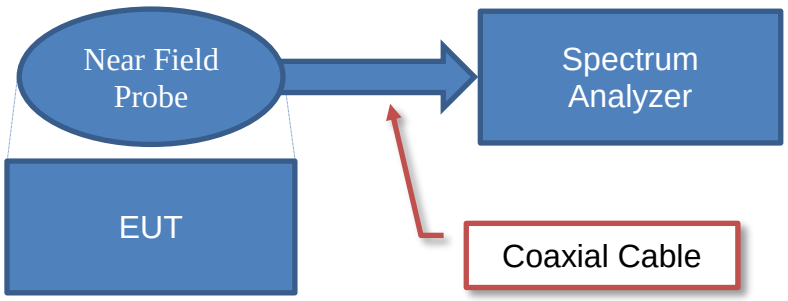
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

Near Field Test Fixture Measurements

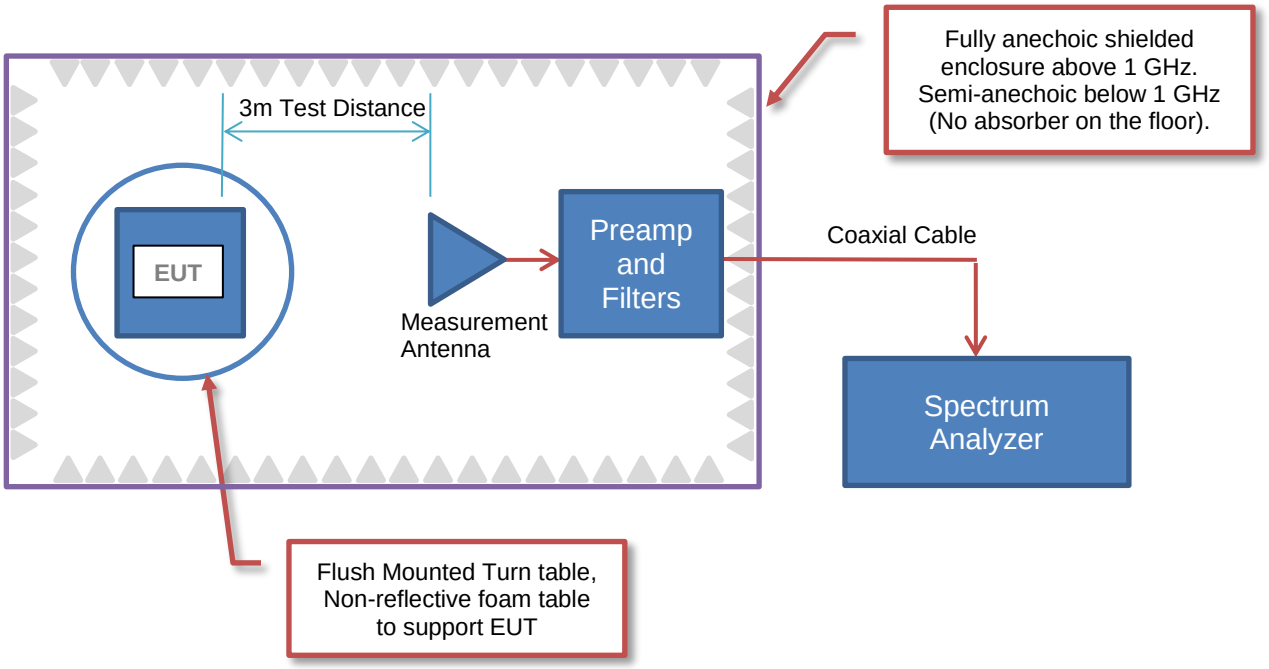


Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

TEST SETUP BLOCK DIAGRAMS

Emissions Measurements



Sample Calculation (logarithmic units)

Radiated Emissions:

Measured Level (Amplitude)		Factor: Antenna Factor		Factor: Cable Factor		Factor: Amplifier Gain		Distance Adjustment Factor		External Attenuation		Field Strength
42.6	+	28.6	+	3.1	-	40.8	+	0.0	+	0.0	=	**33.5**

Conducted Emissions:

Measured Level (Amplitude)		Factor: Transducer Factor		Factor: Cable Factor		External Attenuation		Adjusted Level
26.7	+	0.3	+	0.1	+	20.0	=	**47.1**

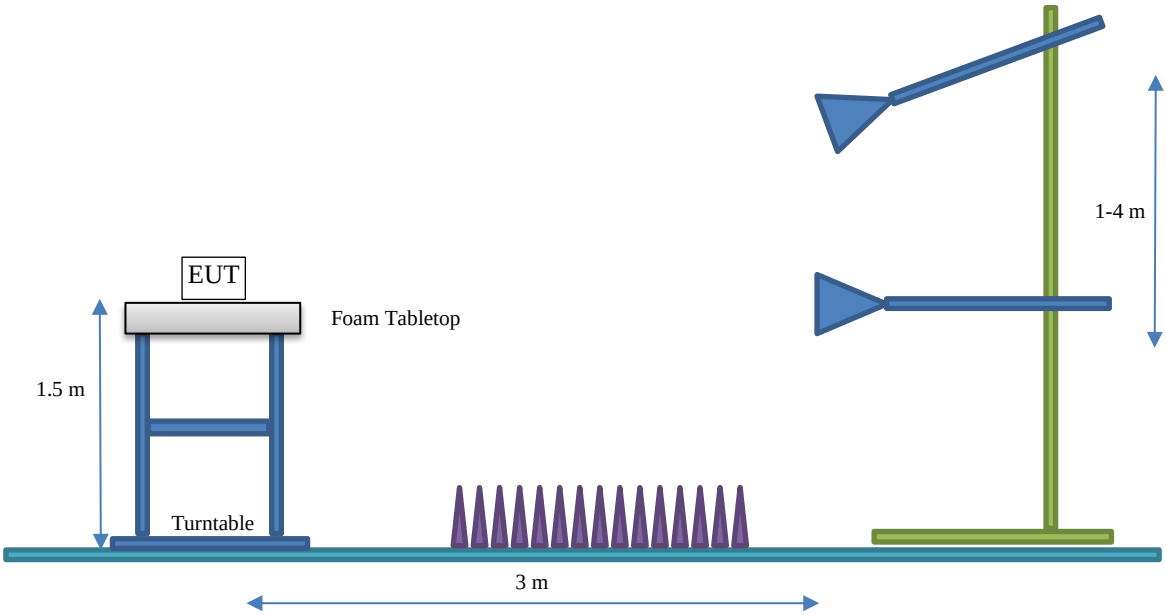
Radiated Power (ERP/EIRP) – Substitution Method:

Measured Level into Substitution Antenna (Amplitude dBm)		Substitution Antenna Factor (dBi)		EIRP to ERP (if applicable)		Measured power (dBm ERP/EIRP)
10.0	+	6.0	-	2.15	=	**13.9/16.0**

TEST SETUP BLOCK DIAGRAMS

Bore Sighting (>1GHz)

The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. Above 1 GHz, when required by the measurement standard, the antenna is pointed for both azimuth and elevation to maintain the receive antenna within the cone of radiation from the EUT. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.



PRODUCT DESCRIPTION

Client and Equipment under Test (EUT) Information

Company Name:	Boston Scientific
Address:	1 Scimed Pl
City, State, Zip:	Maple Grove, MN 55311
Test Requested By:	Szymon Rzeszowski
EUT:	AngioJet AutoElite
First Date of Test:	November 14, 2023
Last Date of Test:	February 23, 2024
Receipt Date of Samples:	November 14, 2023
Equipment Design Stage:	DV Prototype
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
The AngioJet AutoElite Console is a durable, mobile, multiple use, medical device that generates the energy and motion required to operate and control the AngioJet Thrombectomy Set (Catheter, pump, and waste tubing/collection bag in one combined unit). The mechanical, electrical, and software components for operating and controlling the AngioJet Thrombectomy System are contained in the Console. The AngioJet AutoElite Console drives the pump, regulates the fluid inflow and outflow, and provides the operator with system set-up prompts, total infused saline volume, and system malfunction warnings. The Console is designed to be operated outside of the sterile field and does not make contact directly or indirectly with the patient, or fluids that are administered or returned to the patient.

Testing Objective:
To demonstrate compliance of the 13.56 MHz radio to FCC 15.225 requirements. and RSS-210 Annex B.6 specifications.

POWER SETTINGS AND ANTENNAS

The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information. The power settings below reflect the maximum power that the EUT is allowed to transmit at during normal operation.

ANTENNA GAIN (dBi)

Type	Provided by:	Frequency Range (MHz)	Loop Dimensions
Molex 1462360001 Rectangular NFC Antenna	Boston Scientific	13.56 MHz	7 turns 15mm x 25mm Wire harness 21 inch long twisted pair, 26 AWG.

The EUT was tested using the power settings provided by the manufacturer which were based upon:

☐ Test software settings
☒ Rated power settings

Test software/firmware installed on EUT:
SW Ver 0.5.0-375
FW Ver 00.03.03
FPGA Ver 00.39.07.03

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types	Power Setting
ISO 15693 ASK Modulation 26.48 kbps	100 mW

CONFIGURATIONS

Configuration GALI0049-1

Software/Firmware Running During Test	
Description	**Version**
Software	0.5.0-375
Firmware	00.03.03

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AngioJet AutoElite	Boston Scientific	M001AJAEC0100	DV00008
AngioJet Solent Proxi Catheter	Boston Scientific	109676-001	201936112-117

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable	No	3.7 m	No	AngioJet AutoElite	AC Mains
Foot Pedal Cable	No	3.7 m	No	AngioJet AutoElite	Foot Pedal

Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Foot Pedal	Boston Scientific	51565620	J410716

Configuration GALI0049-2

Software/Firmware Running During Test	
Description	**Version**
Software	0.9.2
Firmware	00.09.02

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AngioJet AutoElite	Boston Scientific	M001AJAEC0100	DV00013
AngioJet Solent Proxi Catheter	Boston Scientific	109676-001	201936112-117

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable	No	3.7 m	No	AngioJet AutoElite	AC Mains
Foot Pedal Cable	No	3.7 m	No	AngioJet AutoElite	Foot Pedal

Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Foot Pedal	Boston Scientific	51565620	J410716

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2023-11-14	Field Strength of Fundamental	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2023-11-14	Field Strength of Spurious Emissions (Less Than 30 MHz)	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2023-11-15	Field Strength of Spurious Emissions (Greater Than 30 MHz)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2023-11-17	Emissions Bandwidth (20 dB)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2023-11-17	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2023-11-20	Frequency Stability	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	2024-02-23	Powerline Conducted Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

element
WTD.2023.11.13.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.04.25.0

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT.

The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10.

In the event that the operating frequency of 13.56 MHz is causing the product to fail the FCC 15.207 limits, the following guidance can be used:

FCC KDB 174176 D01 AC Conducted FAQ v01r01, June 3, 2015 Section Q5:

> For a device with a permanent or detachable antenna operating at or below 30 MHz, the FCC will accept measurements performed with a suitable dummy load in lieu of the antenna under the following conditions:
>
> (1) perform the AC power-line conducted tests with the antenna connected to determine compliance with Section 15.207 limits outside the transmitter's fundamental emission band;
>
> (2) retest with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network which simulates the antenna in the fundamental frequency band.
>
> All measurements must be performed as specified in clause 6.2 of ANSI C63.10-2013.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Gauss Instruments	TDEMI 30M	ARS	2023-04-26	2024-04-26
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	2023-04-02	2024-04-02
Cable - Conducted Cable Assembly	Northwest EMC	MNC, HGN, TYK, VAE	MNCA	2023-03-09	2024-03-09

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	3.6 dB	-3.6 dB

CONFIGURATIONS INVESTIGATED

GALI0049-2

MODES INVESTIGATED

RFID transmitting active

POWERLINE CONDUCTED EMISSIONS

element
WTD.2023.11.13.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.04.25.0

EUT:	AngioJet AutoElite	Work Order:	GALI0049
Serial Number:	DV00013	Date:	2024-02-23
Customer:	Boston Scientific	Temperature:	21°C
Attendees:	Szymon Rzeszowski	Relative Humidity:	29.9%
Customer Project:	None	Bar. Pressure (PMSL):	1007 mb
Tested By:	Ko Vorasarn	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	GALI0049-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2024	ANSI C63.10:2013
RSS-210 Issue 10:2019+A1:2020	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	7	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

Connect to normal transmit antenna. Firmware version 00.09.02, Software version 0.9.2

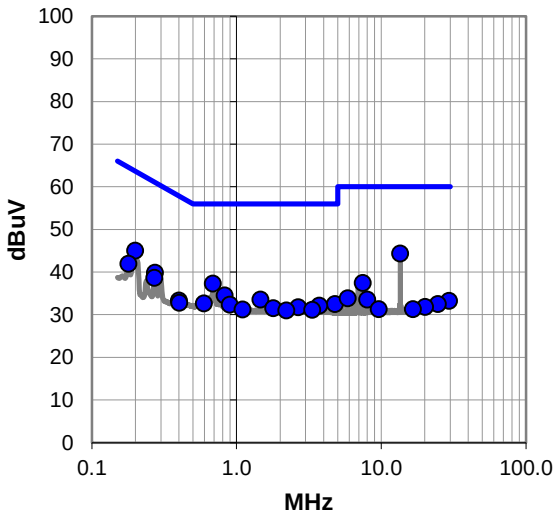
EUT OPERATING MODES

RFID transmitting active

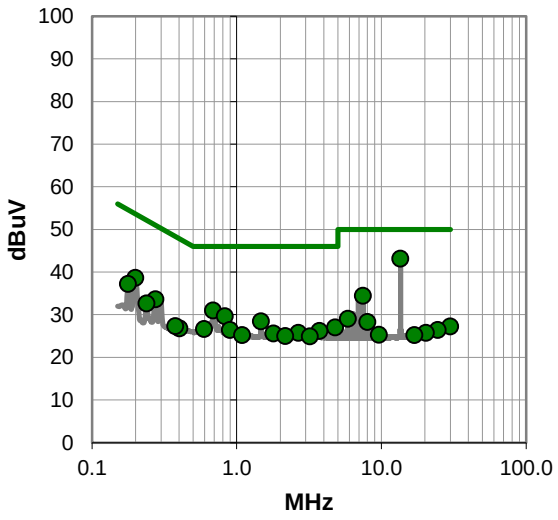
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

element
WTD.2023.11.13.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.04.25.0

RESULTS - Run #7

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	23.5	20.8	44.3	60.0	-15.7
0.199	25.0	20.0	45.0	63.7	-18.7
0.686	17.5	19.8	37.3	56.0	-18.7
0.274	19.9	19.9	39.8	61.0	-21.2
0.831	14.7	19.8	34.5	56.0	-21.5
0.271	18.7	19.9	38.6	61.1	-22.5
1.468	13.6	19.9	33.5	56.0	-22.5
7.472	17.1	20.3	37.4	60.0	-22.6
0.179	21.8	20.1	41.9	64.5	-22.6
0.596	12.9	19.7	32.6	56.0	-23.4
4.802	12.3	20.2	32.5	56.0	-23.5
0.898	12.5	19.8	32.3	56.0	-23.7
3.737	11.9	20.2	32.1	56.0	-23.9
2.668	11.6	20.1	31.7	56.0	-24.3
0.400	13.6	19.7	33.3	57.8	-24.5
1.796	11.6	19.9	31.5	56.0	-24.5
1.099	11.4	19.8	31.2	56.0	-24.8
3.334	10.9	20.2	31.1	56.0	-24.9
0.402	13.1	19.7	32.8	57.8	-25.0
2.207	10.9	20.1	31.0	56.0	-25.0
5.869	13.6	20.2	33.8	60.0	-26.2
8.005	13.1	20.4	33.5	60.0	-26.5
29.453	10.1	23.1	33.2	60.0	-26.8
24.627	10.1	22.4	32.5	60.0	-27.5
20.103	10.2	21.6	31.8	60.0	-28.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	22.3	20.8	43.1	50.0	-6.9
0.686	11.2	19.8	31.0	46.0	-15.0
0.199	18.6	20.0	38.6	53.7	-15.1
7.471	14.1	20.3	34.4	50.0	-15.6
0.831	9.8	19.8	29.6	46.0	-16.4
0.177	17.1	20.1	37.2	54.6	-17.4
0.275	13.7	19.9	33.6	51.0	-17.4
1.470	8.5	19.9	28.4	46.0	-17.6
4.804	6.8	20.2	27.0	46.0	-19.0
0.596	6.9	19.7	26.6	46.0	-19.4
0.238	12.6	20.0	32.6	52.1	-19.5
0.898	6.6	19.8	26.4	46.0	-19.6
3.736	6.0	20.2	26.2	46.0	-19.8
2.668	5.6	20.1	25.7	46.0	-20.3
1.795	5.7	19.9	25.6	46.0	-20.4
1.091	5.4	19.8	25.2	46.0	-20.8
0.402	7.1	19.7	26.8	47.8	-21.0
2.172	4.9	20.1	25.0	46.0	-21.0
5.870	8.8	20.2	29.0	50.0	-21.0
0.376	7.6	19.7	27.3	48.4	-21.1
3.202	4.8	20.1	24.9	46.0	-21.1
8.003	7.9	20.4	28.3	50.0	-21.7
29.893	4.1	23.1	27.2	50.0	-22.8
24.496	4.0	22.4	26.4	50.0	-23.6
20.367	4.0	21.7	25.7	50.0	-24.3

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2023.11.13.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.04.25.0

EUT:	AngioJet AutoElite	Work Order:	GALI0049
Serial Number:	DV00013	Date:	2024-02-23
Customer:	Boston Scientific	Temperature:	21°C
Attendees:	Szymon Rzeszowski	Relative Humidity:	29.9%
Customer Project:	None	Bar. Pressure (PMSL):	1007 mb
Tested By:	Ko Vorasarn	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	GALI0049-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2024	ANSI C63.10:2013
RSS-210 Issue 10:2019+A1:2020	ANSI C63.10:2013
RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	8	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

Connect to normal transmit antenna. Firmware version 00.09.02, Software version 0.9.2

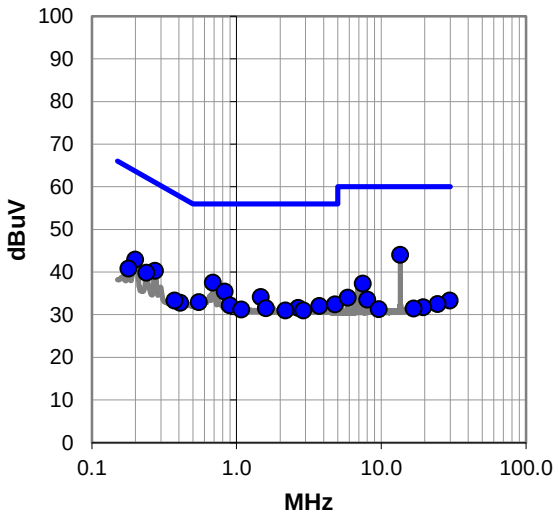
EUT OPERATING MODES

RFID transmitting active

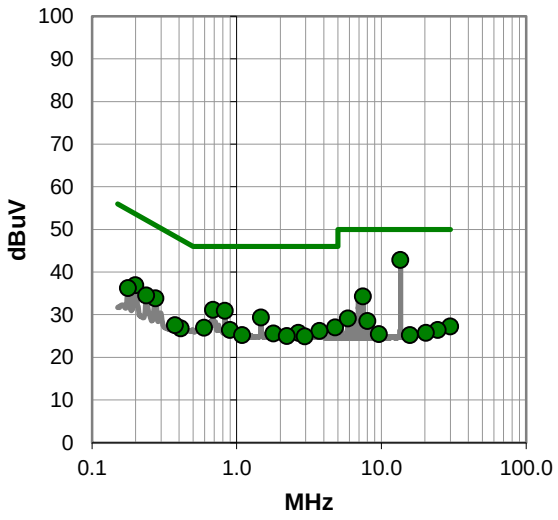
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

element
WTD.2023.11.13.0
EmiR5 2023.08.29.0
PSA-ESCI 2023.04.25.0

RESULTS - Run #8

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	23.2	20.8	44.0	60.0	-16.0
0.686	17.7	19.8	37.5	56.0	-18.5
0.829	15.6	19.8	35.4	56.0	-20.6
0.274	20.4	19.9	40.3	61.0	-20.7
0.199	22.9	20.0	42.9	63.7	-20.8
1.470	14.2	19.9	34.1	56.0	-21.9
0.238	19.8	20.0	39.8	62.1	-22.3
7.466	17.0	20.3	37.3	60.0	-22.7
0.548	13.2	19.7	32.9	56.0	-23.1
4.801	12.2	20.2	32.4	56.0	-23.6
0.179	20.7	20.1	40.8	64.5	-23.7
0.898	12.4	19.8	32.2	56.0	-23.8
3.733	11.8	20.2	32.0	56.0	-24.0
2.666	11.5	20.1	31.6	56.0	-24.4
1.600	11.6	19.9	31.5	56.0	-24.5
1.079	11.4	19.8	31.2	56.0	-24.8
0.409	13.1	19.7	32.8	57.7	-24.9
2.175	10.9	20.1	31.0	56.0	-25.0
2.903	10.9	20.1	31.0	56.0	-25.0
0.373	13.6	19.7	33.3	58.4	-25.1
5.866	13.8	20.2	34.0	60.0	-26.0
8.002	13.1	20.4	33.5	60.0	-26.5
29.850	10.2	23.1	33.3	60.0	-26.7
24.513	10.1	22.4	32.5	60.0	-27.5
19.560	10.1	21.6	31.7	60.0	-28.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	22.0	20.8	42.8	50.0	-7.2
0.686	11.3	19.8	31.1	46.0	-14.9
0.829	11.1	19.8	30.9	46.0	-15.1
7.468	14.0	20.3	34.3	50.0	-15.7
1.470	9.4	19.9	29.3	46.0	-16.7
0.199	16.9	20.0	36.9	53.7	-16.8
0.275	13.9	19.9	33.8	51.0	-17.2
0.237	14.5	20.0	34.5	52.2	-17.7
0.177	16.1	20.1	36.2	54.6	-18.4
4.799	6.8	20.2	27.0	46.0	-19.0
0.594	7.2	19.7	26.9	46.0	-19.1
0.898	6.6	19.8	26.4	46.0	-19.6
3.733	6.0	20.2	26.2	46.0	-19.8
2.666	5.6	20.1	25.7	46.0	-20.3
1.795	5.7	19.9	25.6	46.0	-20.4
0.411	7.1	19.7	26.8	47.6	-20.8
1.093	5.4	19.8	25.2	46.0	-20.8
0.374	7.8	19.7	27.5	48.4	-20.9
5.867	8.9	20.2	29.1	50.0	-20.9
2.222	4.9	20.1	25.0	46.0	-21.0
2.956	4.8	20.1	24.9	46.0	-21.1
8.000	8.1	20.4	28.5	50.0	-21.5
29.946	4.1	23.1	27.2	50.0	-22.8
24.494	4.0	22.4	26.4	50.0	-23.6
20.346	4.0	21.7	25.7	50.0	-24.3

CONCLUSION

Pass

Tested By

EMISSIONS BANDWIDTH (20 DB)

element
TbtTx 2023.10.30.0
WTD.2023.10.23.0

TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

As defined in FCC 15.215 Part (c), intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise by specified in the specific rule section under which the equipment operates, is contained within the frequency band designed in the rule section under which the equipment is operated.

The 20 dB bandwidth must be contained within the band 13.110-14.010 MHz. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) of the spectrum analyzer was set to the range of 1% to 5% of the emissions bandwidth (EBW) and video bandwidth (VBW) bandwidth was set to at least 3 times the resolution bandwidth. The analyzer sweep time was set to auto and a peak detector was used.

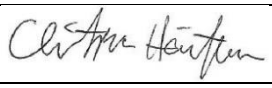
The spectrum analyzer bandwidth measurement function was used to measure the 20 dB bandwidth.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2023-05-01	2024-05-01
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2023-09-05	2024-09-05
Block - DC	Fairview Microwave	SD3379	ANH	2023-09-05	2024-09-05
Probe - Near Field Set	ETS Lindgren	7405	IPO	NCR	NCR

EMISSIONS BANDWIDTH (20 DB)

element
TbtTx 2023.10.30.0
WTD.2023.10.23.0

EUT:	AngioJet AutoElite	Work Order:	GALI0049
Serial Number:	DV00008	Date:	2023-11-17
Customer:	Boston Scientific	Temperature:	21.6°C
Attendees:	Szymon Rzeszowski	Relative Humidity:	31.4%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN02
Power:	110VAC/60Hz	Configuration:	GALI0049-1
Signature:			

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019+A1:2020	ANSI C63.10:2013

COMMENTS

100mW power setting (labeled 'half power' in firmware)

DEVIATIONS FROM TEST STANDARD

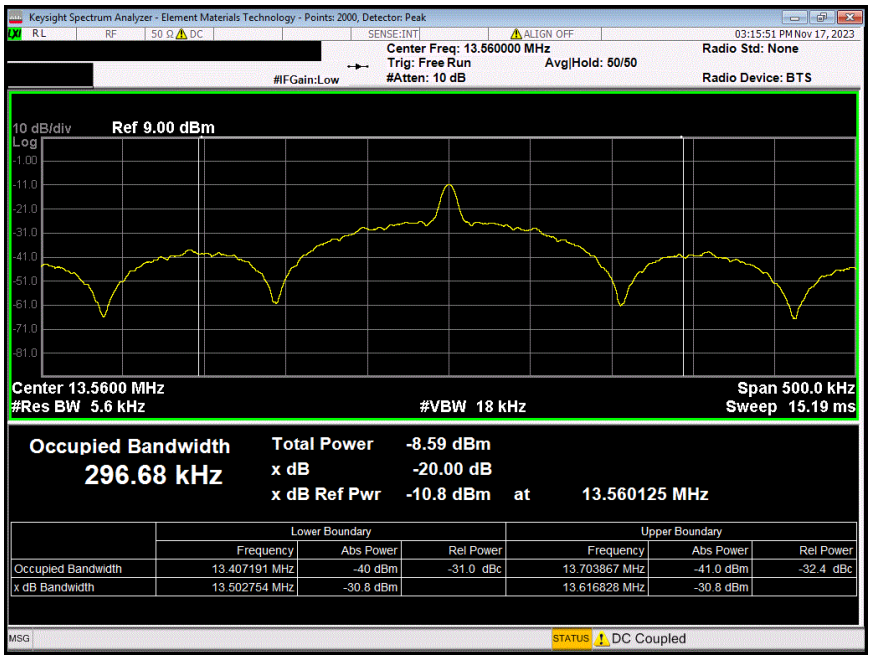
None

TEST RESULTS

	Value	Limit	Result
13.56 MHz RFID, ISO/IEC 15693			
Normal Conditions	114.074 kHz	Within Band	Pass

EMISSIONS BANDWIDTH (20 DB)

element
TbtTx 2023.10.30.0
WTD.2023.10.23.0



	Lower Boundary			Upper Boundary		
	Frequency	Abs Power	Rel Power	Frequency	Abs Power	Rel Power
Occupied Bandwidth	13.407191 MHz	-40 dBm	-31.0 dBc	13.703867 MHz	-41.0 dBm	-32.4 dBc
x dB Bandwidth	13.502754 MHz	-30.8 dBm		13.616828 MHz	-30.8 dBm	

13.56 MHz RFID, ISO/IEC 15693

Normal Conditions

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2023.10.23.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.04.25.0

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

The fundamental carrier of the EUT was maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A calibrated active loop antenna was used for this test in order to provide sufficient measurement sensitivity. The reference point of the loop antenna was maintained at 1m above the ground plane during the testing.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.5, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

The limits in CFR 47, Part 15C 15.209(a) are identical to those is RSS-Gen section 8.9 Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohms. For example, an E-Field measurement in dBuV/m can be converted to dBuA/m via the following formula: dBuV/m - 51.5 dB = dBuA/m. E-Field measurements have the same margin in dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limits

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Loop	ETS Lindgren	6502	AOB	2023-06-12	2025-06-12
Cable	ESM Cable Corp.	Antenna Loop Cable	MNE	2023-01-30	2024-01-30
Receiver	Rohde & Schwarz	ESR26	ARP	2023-05-10	2024-05-10

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	1.8 dB	-1.8 dB

FREQUENCY RANGE INVESTIGATED

12.6 MHz TO 14.6 MHz

POWER INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

GALI0049-1

MODES INVESTIGATED

Transmitting RFID 13.56 MHz, 100 mW power setting.

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2023.10.23.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.04.25.0

EUT:	AngioJet AutoElite	Work Order:	GALI0049
Serial Number:	DV00008	Date:	2023-11-14
Customer:	Boston Scientific	Temperature:	21.8°C
Attendees:	Szymon Rzeszowski	Relative Humidity:	29.9%
Customer Project:	None	Bar. Pressure (PMSL):	1017 mb
Tested By:	Christopher Heintzelman	Job Site:	MN04
Power:	110VAC/60Hz	Configuration:	GALI0049-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019+A1:2020 RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	4	Test Distance (m):	3	Ant. Height(s) (m):	1(m)

COMMENTS

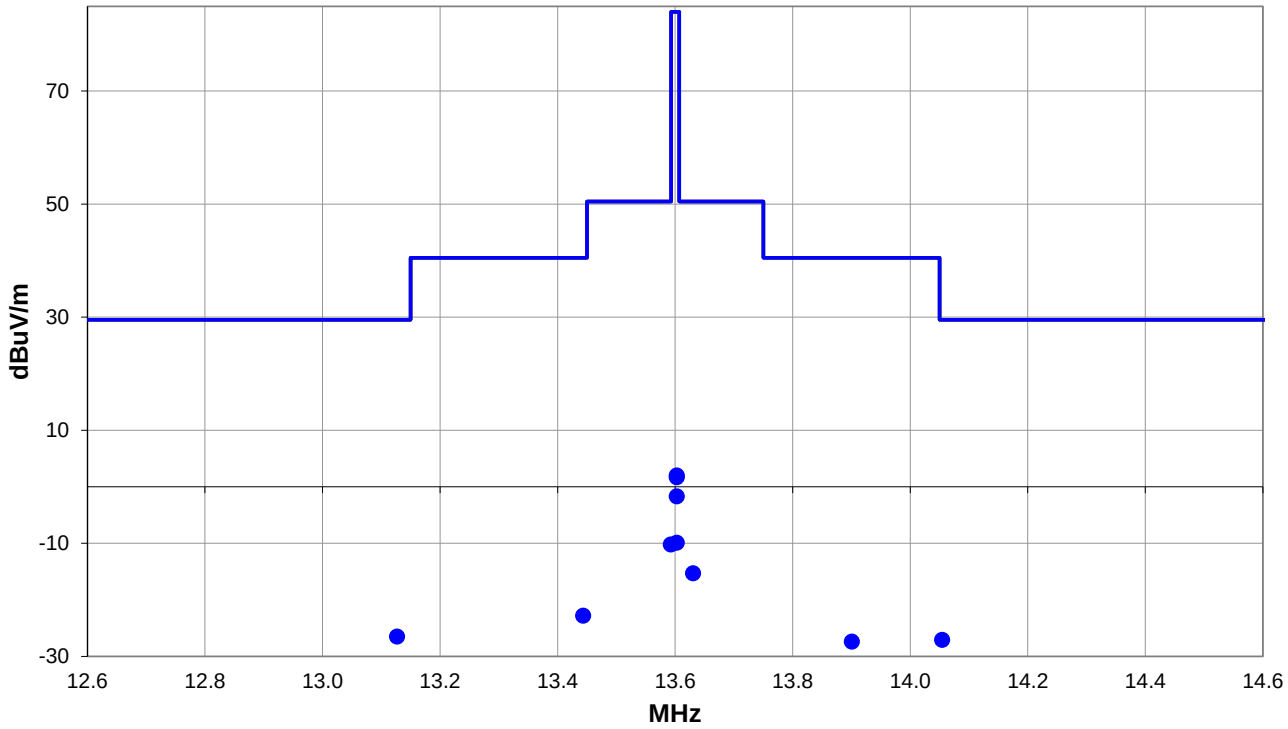
40 dB/decade distance correction applied.

EUT OPERATING MODES

Transmitting RFID 13.56 MHz, 100 mW power setting.

DEVIATIONS FROM TEST STANDARD

None



Run #: 4 ■ PK ◆ AV ● QP

FIELD STRENGTH OF FUNDAMENTAL

element
WTD.2023.10.23.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.04.25.0

RESULTS - Run #4

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
13.087	2.5	11.0	1.0	303.0	3.0	0.0	Para to EUT	QP	-40.0	-26.5	29.5	-56.0	Floor Standing
14.014	1.9	11.0	1.0	300.0	3.0	0.0	Para to EUT	QP	-40.0	-27.1	29.5	-56.6	Floor Standing
13.553	18.8	11.0	1.0	289.0	3.0	0.0	Para to EUT	QP	-40.0	-10.2	50.5	-60.7	Floor Standing
13.403	6.2	11.0	1.0	295.0	3.0	0.0	Para to EUT	QP	-40.0	-22.8	40.5	-63.3	Floor Standing
13.590	13.7	11.0	1.0	297.0	3.0	0.0	Para to EUT	QP	-40.0	-15.3	50.5	-65.8	Floor Standing
13.860	1.6	11.0	1.0	298.0	3.0	0.0	Para to EUT	QP	-40.0	-27.4	40.5	-67.9	Floor Standing
13.563	31.0	11.0	1.0	294.0	3.0	0.0	Para to EUT	QP	-40.0	2.0	84.0	-82.0	Floor Standing
13.563	30.7	11.0	1.0	289.0	3.0	0.0	Para to EUT	QP	-40.0	1.7	84.0	-82.3	Floor Standing
13.563	27.3	11.0	1.0	205.0	3.0	0.0	Perp to EUT	QP	-40.0	-1.7	84.0	-85.7	Floor Standing
13.563	19.1	11.0	1.0	276.0	3.0	0.0	Para to GND	QP	-40.0	-9.9	84.0	-93.9	Floor Standing

CONCLUSION

Pass

Tested By

FIELD STRENGTH OF SPURIOUS EMISSIONS (<30MHZ)

element
WTD.2023.10.23.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.04.25.0

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). An active loop antenna was used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.5, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

The limits in CFR 47, Part 15C 15.209(a) are identical to those is RSS-Gen section 8.9 Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohms. For example, an E-Field measurement in dBuV/m can be converted to dBuA/m via the following formula: dBuV/m - 51.5 dB = dBuA/m. E-Field measurements have the same margin in dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limits.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Loop	ETS Lindgren	6502	AOB	2023-06-12	2025-06-12
Cable	ESM Cable Corp.	Antenna Loop Cable	MNE	2023-01-30	2024-01-30
Receiver	Rohde & Schwarz	ESR26	ARP	2023-05-10	2024-05-10

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	1.8 dB	-1.8 dB

FREQUENCY RANGE INVESTIGATED

10 kHz TO 30 MHz

POWER INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

GALI0049-1

MODES INVESTIGATED

Transmitting RFID 13.56 MHz, 100 mW power setting.

FIELD STRENGTH OF SPURIOUS EMISSIONS (<30MHZ)

element
WTD.2023.10.23.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.04.25.0

EUT:	AngioJet AutoElite	Work Order:	GALI0049
Serial Number:	DV00008	Date:	2023-11-14
Customer:	Boston Scientific	Temperature:	21.7°C
Attendees:	Szymon Rzeszowski	Relative Humidity:	30.7%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mb
Tested By:	Christopher Heintzelman	Job Site:	MN04
Power:	110VAC/60Hz	Configuration:	GALI0049-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019+A1:2020 RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	8	Test Distance (m):	3	Ant. Height(s) (m):	1(m)

COMMENTS

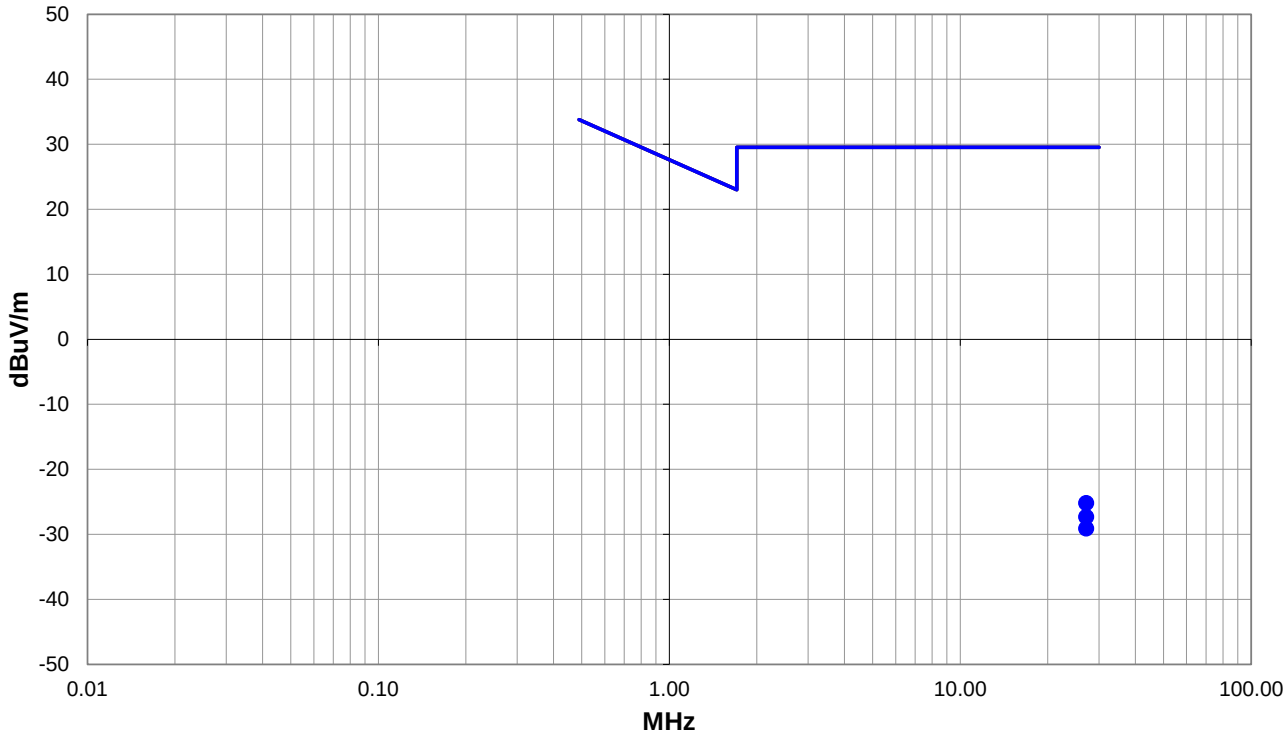
40 dB/decade distance correction applied.

EUT OPERATING MODES

Transmitting RFID 13.56 MHz, 100 mW power setting.

DEVIATIONS FROM TEST STANDARD

None



Run #: 8 ■ PK ◆ AV ● QP

FIELD STRENGTH OF SPURIOUS EMISSIONS (<30MHZ)

element
WTD.2023.10.23.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.04.25.0

RESULTS - Run #8

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
27.101	5.2	9.6	1.0	62.0	3.0	0.0	Para To GND	QP	-40.0	-25.2	29.5	-54.7	Floor Standing
27.102	3.1	9.6	1.0	288.0	3.0	0.0	Para To EUT	QP	-40.0	-27.3	29.5	-56.8	Floor Standing
27.100	1.3	9.6	1.0	203.0	3.0	0.0	Perp To EUT	QP	-40.0	-29.1	29.5	-58.6	Floor Standing

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS (GREATER THAN 30 MHZ)

element
WTD.2023.10.23.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.04.25.0

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting while set at the operating channel.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Biconilog	Ametek	CBL 6141B	AYS	2023-03-28	2025-03-28
Cable	ESM Cable Corp.	Bilog Cables	MNH	2023-10-08	2024-10-08
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	2023-10-08	2024-10-08
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	2023-08-23	2024-08-23
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	2023-02-06	2024-02-06
Antenna - Double Ridge	ETS Lindgren	3115	AIP	2022-07-20	2024-07-20
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	2023-01-14	2024-01-14
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	2023-01-14	2024-01-14

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	5.2 dB	-5.2 dB

FREQUENCY RANGE INVESTIGATED

30 MHz TO 8200 MHz

POWER INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

GALI0049-1

MODES INVESTIGATED

Transmitting RFID 13.56 MHz, 100 mW power setting

EUT:	AngioJet AutoElite	Work Order:	GALI0049
Serial Number:	DV00008	Date:	2023-11-15
Customer:	Boston Scientific	Temperature:	21.8°C
Attendees:	Szymon Rzeszowski	Relative Humidity:	34.1%

SPURIOUS RADIATED EMISSIONS (GREATER THAN 30 MHZ)

element
WTD.2023.10.23.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.04.25.0

Customer Project:	None	Bar. Pressure (PMSL):	1020 mb
Tested By:	Marcelo Aguayo	Job Site:	MN05
Power:	110VAC/60Hz	Configuration:	GALI0049-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019+A1:2020 RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	2	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

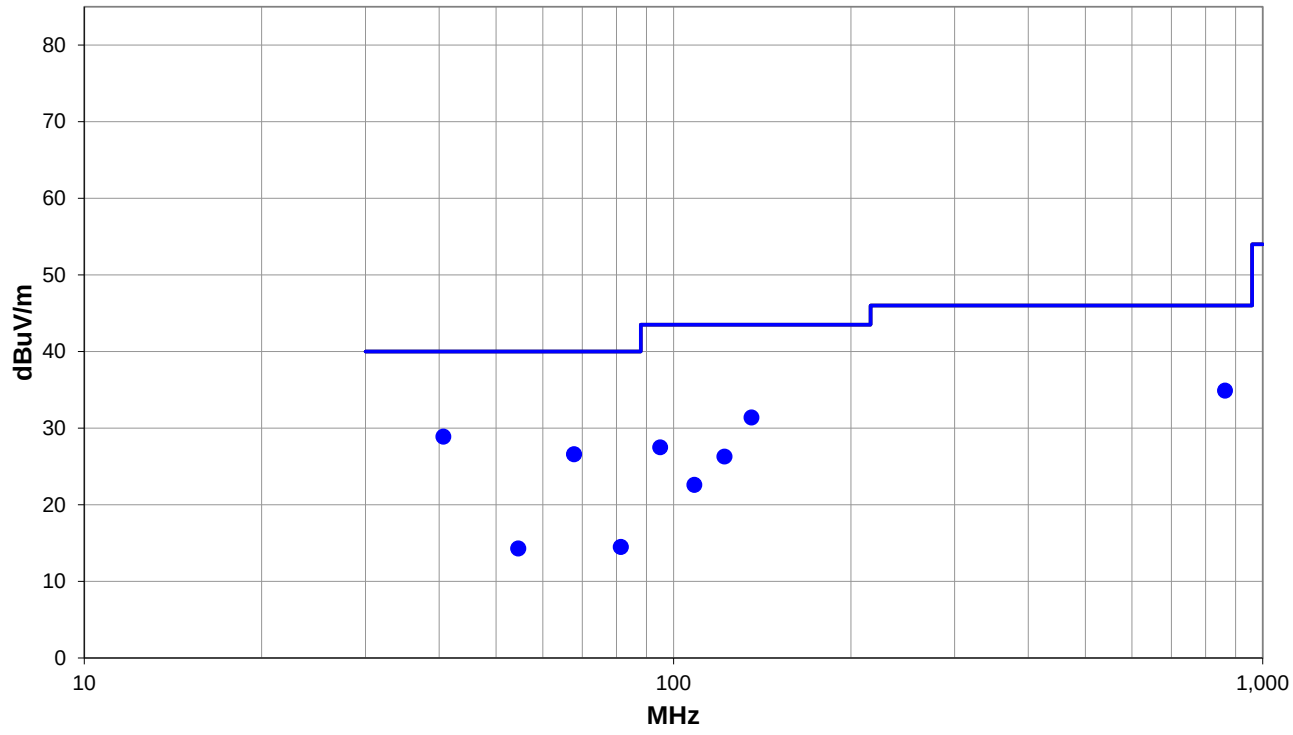
None

EUT OPERATING MODES

Transmitting RFID 13.56 MHz, 100 mW power setting

DEVIATIONS FROM TEST STANDARD

None



Run #: 2 PK AV QP

SPURIOUS RADIATED EMISSIONS (GREATER THAN 30 MHZ)

element
WTD.2023.10.23.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.04.25.0

RESULTS - Run #2

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
40.682	28.5	0.4	1.0	95.0	3.0	0.0	Vert	QP	0.0	28.9	40.0	-11.1
863.157	22.3	12.6	1.0	314.0	3.0	0.0	Vert	QP	0.0	34.9	46.0	-11.1
135.603	35.7	-4.3	1.47	270.0	3.0	0.0	Horz	QP	0.0	31.4	43.5	-12.1
67.794	35.7	-9.1	1.0	192.9	3.0	0.0	Vert	QP	0.0	26.6	40.0	-13.4
94.922	35.2	-7.7	3.86	293.0	3.0	0.0	Horz	QP	0.0	27.5	43.5	-16.0
122.041	31.1	-4.8	1.0	337.9	3.0	0.0	Vert	QP	0.0	26.3	43.5	-17.2
108.481	28.5	-5.9	2.4	119.0	3.0	0.0	Horz	QP	0.0	22.6	43.5	-20.9
81.379	23.8	-9.3	1.0	181.9	3.0	0.0	Vert	QP	0.0	14.5	40.0	-25.5
54.508	19.8	-5.5	2.4	189.9	3.0	0.0	Horz	QP	0.0	14.3	40.0	-25.7

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS (GREATER THAN 30 MHZ)

element
WTD.2023.10.23.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.04.25.0

EUT:	AngioJet AutoElite	Work Order:	GALI0049
Serial Number:	DV00008	Date:	2023-11-15
Customer:	Boston Scientific	Temperature:	21.8°C
Attendees:	Szymon Rzeszowski	Relative Humidity:	34.1%
Customer Project:	None	Bar. Pressure (PMSL):	1020 mb
Tested By:	Marcelo Aguayo	Job Site:	MN05
Power:	110VAC/60Hz	Configuration:	GALI0049-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.209:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019+A1:2020 RSS-Gen Issue 5:2018+A1:2019+A2:2021	ANSI C63.10:2013

TEST PARAMETERS

Run #:	3	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)

COMMENTS

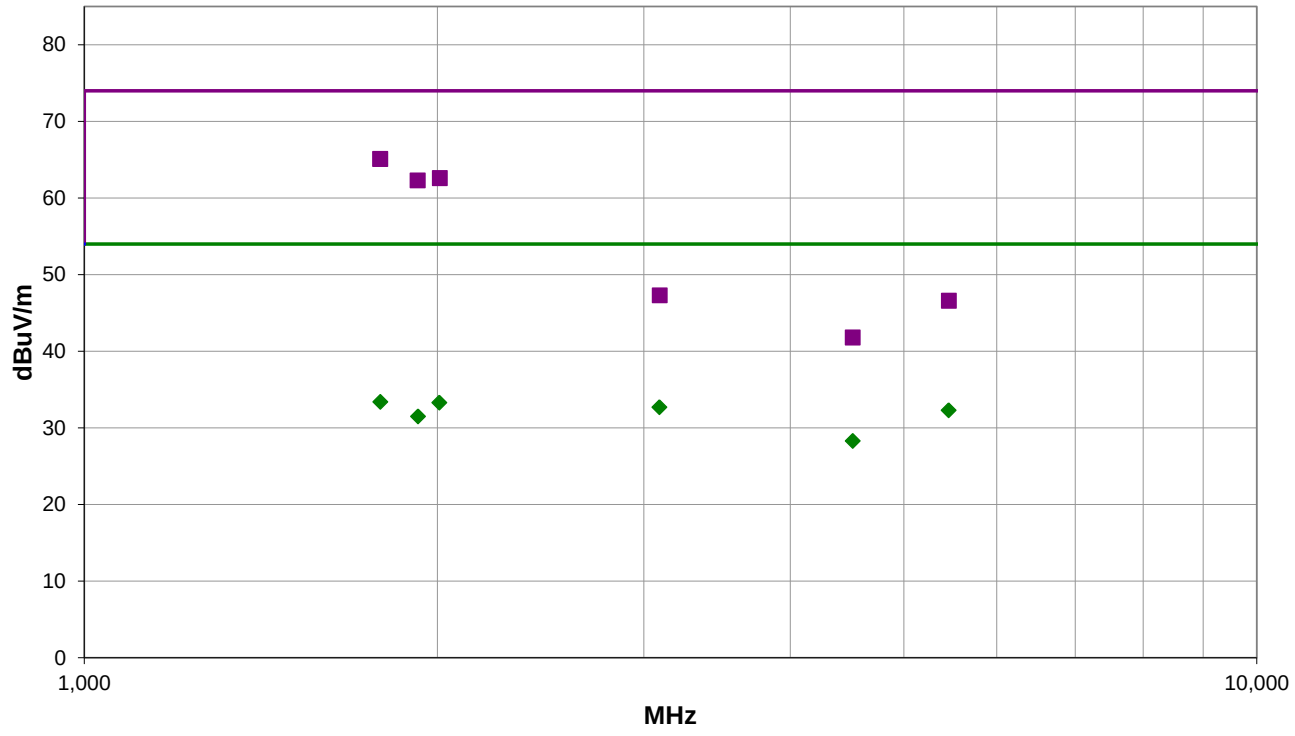
None

EUT OPERATING MODES

Transmitting RFID 13.56 MHz, 100 mW power setting

DEVIATIONS FROM TEST STANDARD

None



Run #: 3 ■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS (GREATER THAN 30 MHZ)

element
WTD.2023.10.23.0
EmiR5 2022.07.06.0
PSA-ESCI 2023.04.25.0

RESULTS - Run #3

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
1787.742	69.5	-4.4	1.49	0.0	3.0	0.0	Vert	PK	0.0	65.1	74.0	-8.9
2010.100	63.3	-0.7	1.5	228.9	3.0	0.0	Vert	PK	0.0	62.6	74.0	-11.4
1924.258	65.0	-2.7	1.5	18.0	3.0	0.0	Vert	PK	0.0	62.3	74.0	-11.7
1788.267	37.8	-4.4	1.49	0.0	3.0	0.0	Vert	AV	0.0	33.4	54.0	-20.6
2007.917	34.0	-0.7	1.5	228.9	3.0	0.0	Vert	AV	0.0	33.3	54.0	-20.7
3093.592	35.6	-2.9	1.5	322.9	3.0	0.0	Horz	AV	0.0	32.7	54.0	-21.3
5459.692	26.8	5.5	3.02	347.0	3.0	0.0	Vert	AV	0.0	32.3	54.0	-21.7
1925.625	34.2	-2.7	1.5	18.0	3.0	0.0	Vert	AV	0.0	31.5	54.0	-22.5
4522.358	26.8	1.5	1.21	335.0	3.0	0.0	Vert	AV	0.0	28.3	54.0	-25.7
3095.775	50.2	-2.9	1.5	322.9	3.0	0.0	Horz	PK	0.0	47.3	74.0	-26.7
5462.208	41.1	5.5	3.02	347.0	3.0	0.0	Vert	PK	0.0	46.6	74.0	-27.4
4522.383	40.3	1.5	1.21	335.0	3.0	0.0	Vert	PK	0.0	41.8	74.0	-32.2

CONCLUSION

Pass

Tested By

FREQUENCY STABILITY

element
TbtTx 2023.10.30.0
WTD.2023.10.23.0

TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the spectrum analyzer.

The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

Measurements were made on the single transmit frequency as called out on the data sheets. Testing was done while the EUT was continuously polling.

The primary supply voltage was varied from 85 % to 115% of the nominal voltage while at ambient temperature. Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range of -20 ° to +50° C and at 10°C intervals.

The requirement of a frequency tolerance of ±0.01% is equivalent to 100 ppm
The formula to check for compliance is:

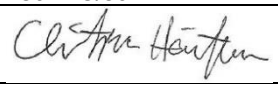
ppm = (Measured Frequency / Measured Nominal Frequency - 1) * 1,000,000

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2023-05-01	2024-05-01
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2023-09-05	2024-09-05
Probe - Near Field Set	ETS Lindgren	7405	IPO	NCR	NCR
Chamber - Temperature/Humidity	Weiss Technik	MCBH-1.2-.33-.33-H/AC	MTC	NCR	NCR
Thermometer	Omegaette	HH311	DUY	2023-03-02	2024-03-02
Meter - Multimeter	Fluke	114	MMU	2023-01-13	2024-01-13

FREQUENCY STABILITY

element
TbtTx 2023.10.30.0
WTD.2023.10.23.0

EUT:	AngioJet AutoElite	Work Order:	GALI0049
Serial Number:	DV00008	Date:	2023-11-20
Customer:	Boston Scientific	Temperature:	21.8°C
Attendees:	Szymon Rzeszowski	Relative Humidity:	33.8%
Customer Project:	None	Bar. Pressure (PMSL):	1022 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN11
Power:	230VAC/50Hz	Configuration:	GALI0049-1
Signature:			

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019+A1:2020	ANSI C63.10:2013

COMMENTS

100mW power setting (labeled 'half power' in firmware).
No reference level offset applied because this is a frequency measurement only.

DEVIATIONS FROM TEST STANDARD

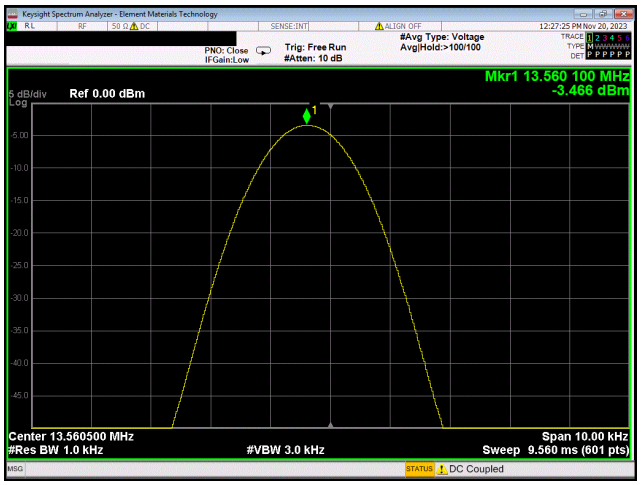
None

TEST RESULTS

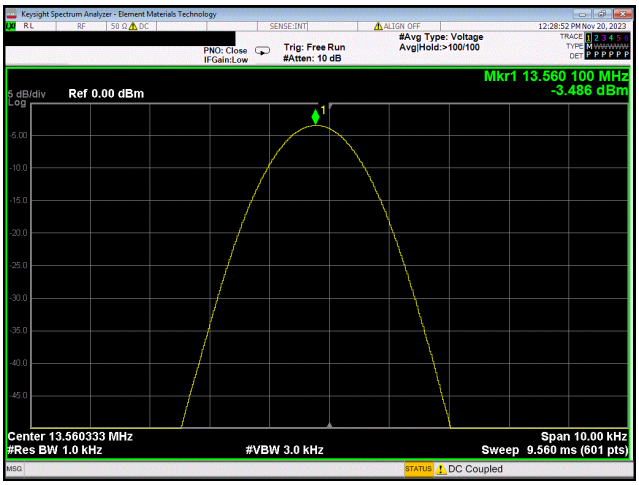
	Measured Value (MHz)	Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results
13.56 MHz RFID, ISO/IEC 15693					
Normal Conditions	13.5601	13.5601	0	100	Pass
Extreme Voltage 115%	13.56009967	13.5601	-0.02434	100	Pass
Extreme Voltage 85%	13.56009967	13.5601	-0.02434	100	Pass
Extreme Temperature +50°C	13.55993267	13.5601	-12.3399	100	Pass
Extreme Temperature +40°C	13.55999967	13.5601	-7.39891	100	Pass
Extreme Temperature +30°C	13.56004967	13.5601	-3.71162	100	Pass
Extreme Temperature +20°C	13.56013333	13.5601	2.457946	100	Pass
Extreme Temperature +10°C	13.56018333	13.5601	6.145235	100	Pass
Extreme Temperature +0°C	13.56021667	13.5601	8.603919	100	Pass
Extreme Temperature -10°C	13.56023333	13.5601	9.832523	100	Pass
Extreme Temperature -20°C	13.5602	13.5601	7.374577	100	Pass

FREQUENCY STABILITY

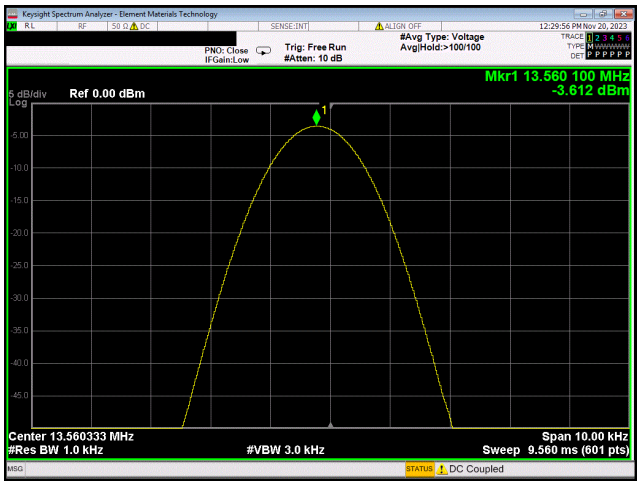
element
TbtTx 2023.10.30.0
WTD.2023.10.23.0



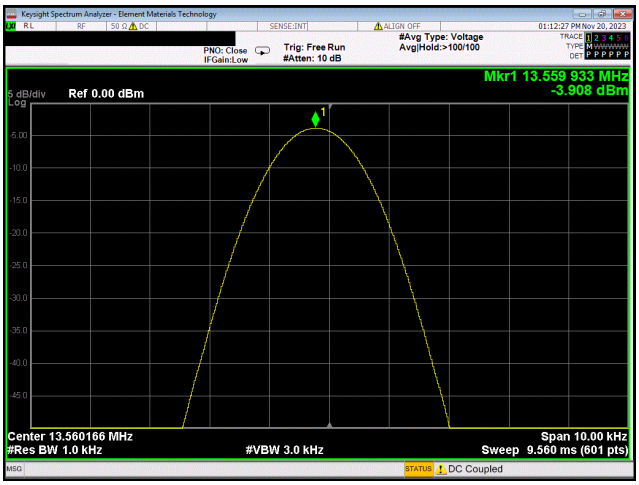
13.56 MHz RFID, ISO/IEC 15693
Normal Conditions



13.56 MHz RFID, ISO/IEC 15693
Extreme Voltage 115%



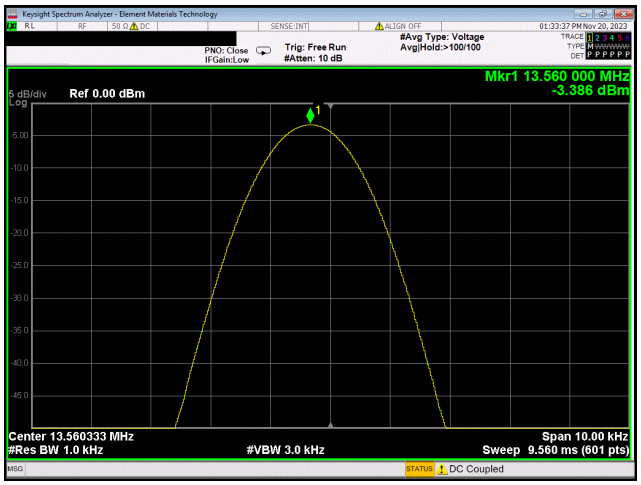
13.56 MHz RFID, ISO/IEC 15693
Extreme Voltage 85%



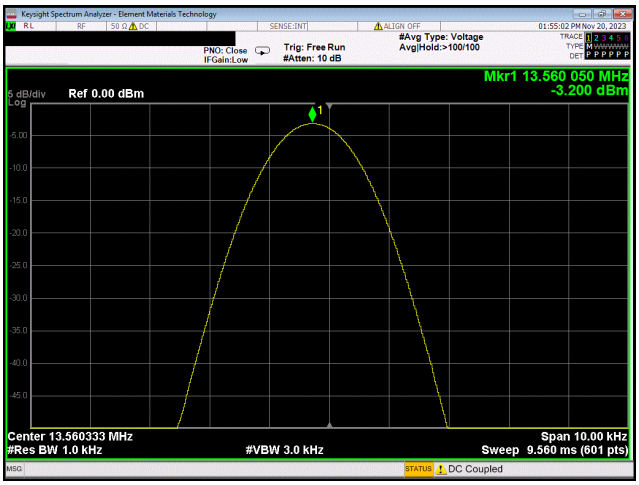
13.56 MHz RFID, ISO/IEC 15693
Extreme Temperature +50°C

FREQUENCY STABILITY

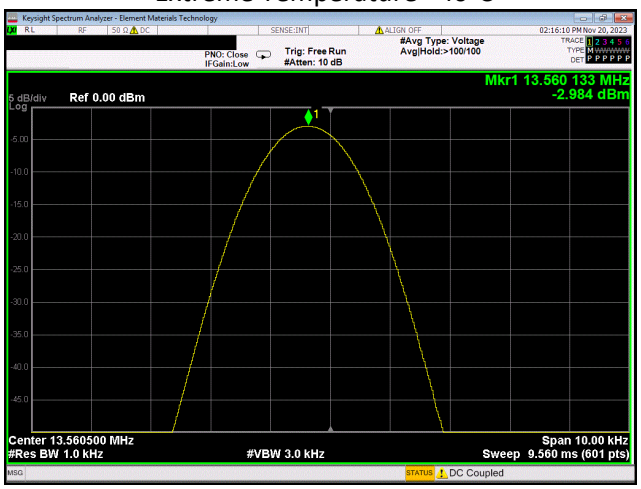
element
TbtTx 2023.10.30.0
WTD.2023.10.23.0



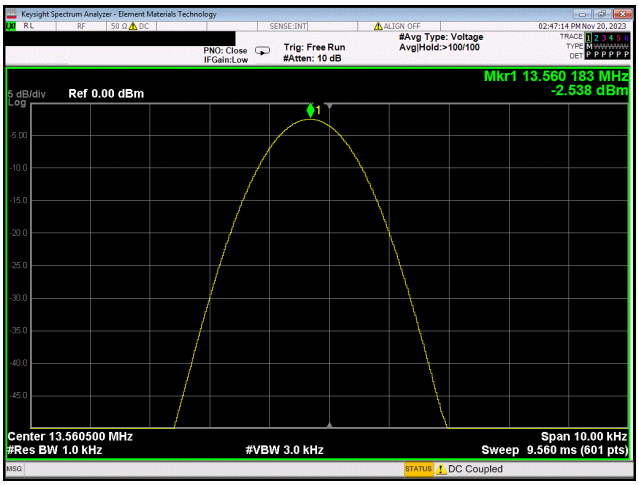
13.56 MHz RFID, ISO/IEC 15693
Extreme Temperature +40°C



13.56 MHz RFID, ISO/IEC 15693
Extreme Temperature +30°C



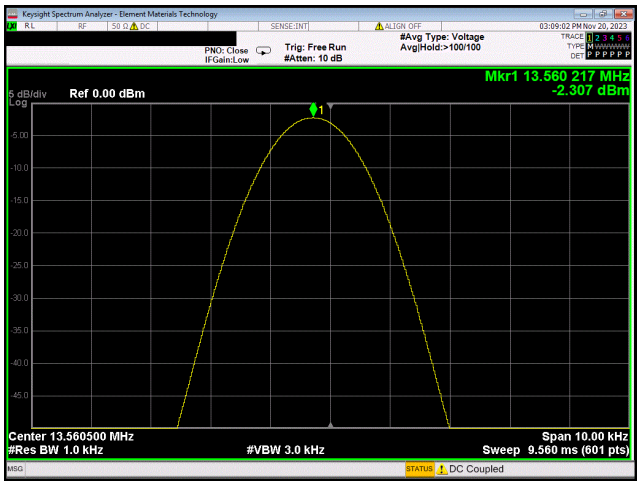
13.56 MHz RFID, ISO/IEC 15693
Extreme Temperature +20°C



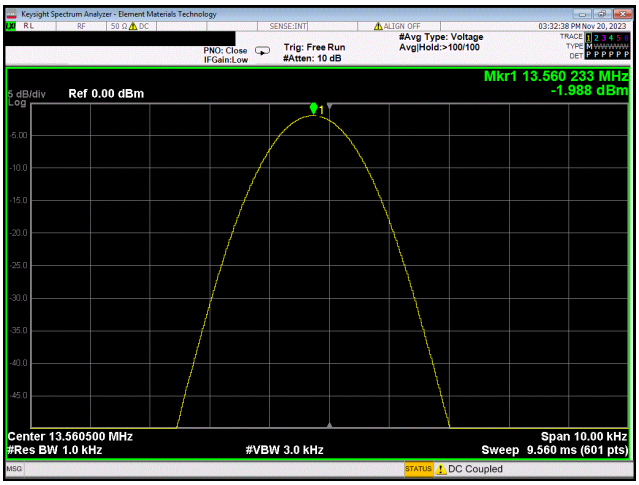
13.56 MHz RFID, ISO/IEC 15693
Extreme Temperature +10°C

FREQUENCY STABILITY

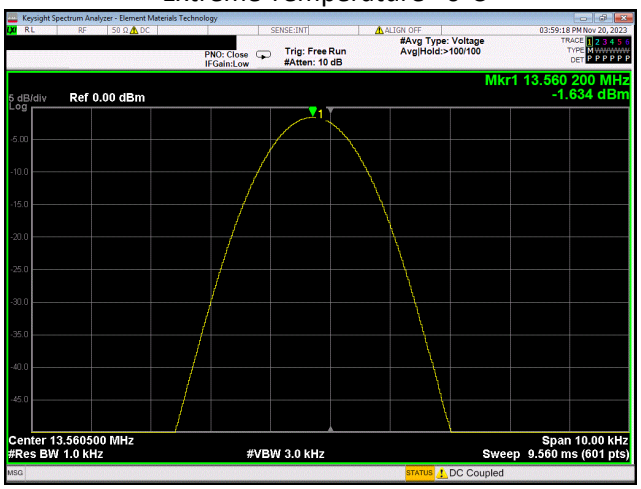
element
TbtTx 2023.10.30.0
WTD.2023.10.23.0



13.56 MHz RFID, ISO/IEC 15693
Extreme Temperature +0°C



13.56 MHz RFID, ISO/IEC 15693
Extreme Temperature -10°C



13.56 MHz RFID, ISO/IEC 15693
Extreme Temperature -20°C

OCCUPIED BANDWIDTH (99%)

element
TbtTx 2023.10.30.0
WTD.2023.10.23.0

TEST DESCRIPTION

When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth as defined in RSS-Gen.

The 99% occupied bandwidth was measured with the EUT configured for continuous modulated operation.

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) of the spectrum analyzer was set to the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) bandwidth was set to at least 3 times the resolution bandwidth. The analyzer sweep time was set to auto to prevent video filtering or averaging. A sample detector was used unless the device was not able to be operated in a continuous transmit mode, in which case a peak detector was used.

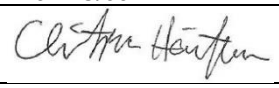
The spectrum analyzer occupied bandwidth measurement function was used to sum the power of the transmission in linear terms to obtain the 99% bandwidth.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	2023-05-01	2024-05-01
Generator - Signal	Agilent	N5183A	TIK	2022-01-24	2025-01-24
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2023-09-05	2024-09-05
Block - DC	Fairview Microwave	SD3379	ANH	2023-09-05	2024-09-05
Probe - Near Field Set	ETS Lindgren	7405	IPO	NCR	NCR

OCCUPIED BANDWIDTH (99%)

element
TbtTx 2023.10.30.0
WTD.2023.10.23.0

EUT:	AngioJet AutoElite	Work Order:	GALI0049
Serial Number:	DV00008	Date:	2023-11-17
Customer:	Boston Scientific	Temperature:	21.6°C
Attendees:	Szymon Rzeszowski	Relative Humidity:	31.4%
Customer Project:	None	Bar. Pressure (PMSL):	1016 mbar
Tested By:	Christopher Heintzelman	Job Site:	MN02
Power:	110VAC/60Hz	Configuration:	GALI0049-1
Signature:			

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.225:2023	ANSI C63.10:2013
RSS-210 Issue 10:2019+A1:2020	ANSI C63.10:2013

COMMENTS

100mW power setting (labeled 'half power' in firmware)

DEVIATIONS FROM TEST STANDARD

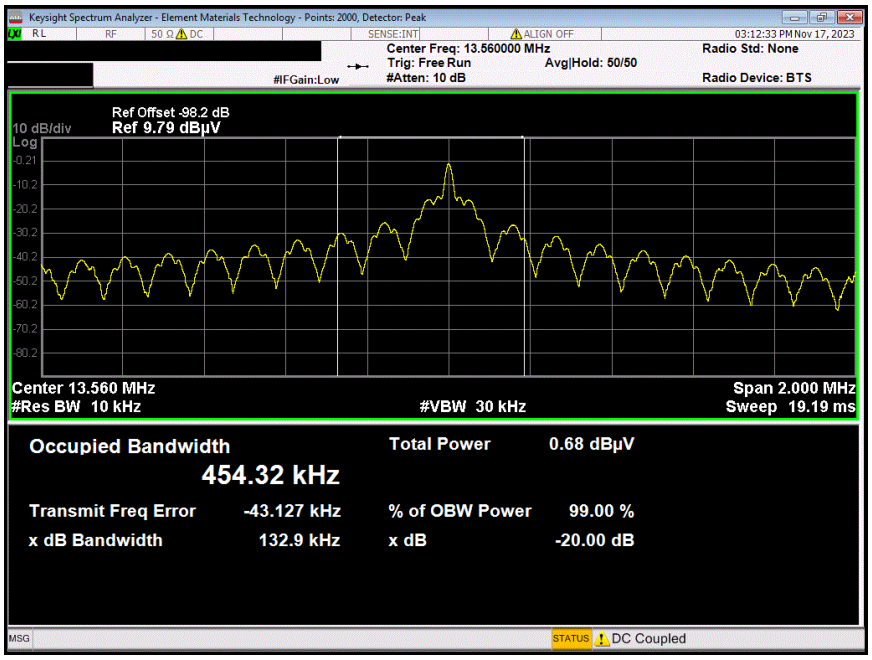
None

TEST RESULTS

	Value	Limit	Result
13.56 MHz RFID, ISO/IEC 15693			
Normal Conditions	454.32 kHz	N/A	N/A

OCCUPIED BANDWIDTH (99%)

element
TbtTx 2023.10.30.0
WTD.2023.10.23.0



13.56 MHz RFID, ISO/IEC 15693

Normal Conditions

End of Test Report