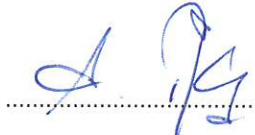


EMC TEST REPORT FCC Title 47 CFR Part 15B, ISED ICES-003 Issue 7	
Report Reference No	G0M-2112-1198-EF0115B-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	    A2LA - Registration number: 1983.01 (ISED) ISED wireless device testing laboratory: CN 3470A DAKKS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	AiSight GmbH
Address	Gertraudenstraße 10-12 10178 Berlin GERMANY
Test Specification Standard(s)	Title 47 CFR Part 15 Subpart B ISED ICES-003 Issue 7 ANSI C63.4:2014+A1:2017
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
Model(s)	Aion
Additional Model(s)	None
Brand Name(s)	None
Hardware Version(s)	V4R8
Software Version(s)	v0.7.0-margherita
FCC-ID	2A34W-V4R8
IC	28248-V4R8
Test Result	PASSED

Possible test case verdicts:		
required by standard but not tested	N/T	
not required by standard	N/R	
required by standard but not appl. to test object	N/A	
test object does meet the requirement	P(PASS)	
test object does not meet the requirement	F(FAIL)	
Testing:		
Date of receipt of test item	2021-03-17	
Report:		
Compiled by	Manuel Engel	
Tested by (+ signature) (Responsible for Test)	Manuel Engel	
Approved by (+ signature) (Senior Test Lab Technician)	Andreas Pflug	
Date of Issue	2022-05-17	
Total number of pages	43	
General Remarks:		
The test results presented in this report relate only to the object tested. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.		
Additional Comments:		

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
FCC	Federal Communications Commission
ISED	Innovation, Science and Economic Development Canada
T _{NOM}	Nominal operating temperature
V _{NOM}	Nominal supply voltage

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2022-05-17	Initial Release	

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1 Equipment (Test Item) Under Test

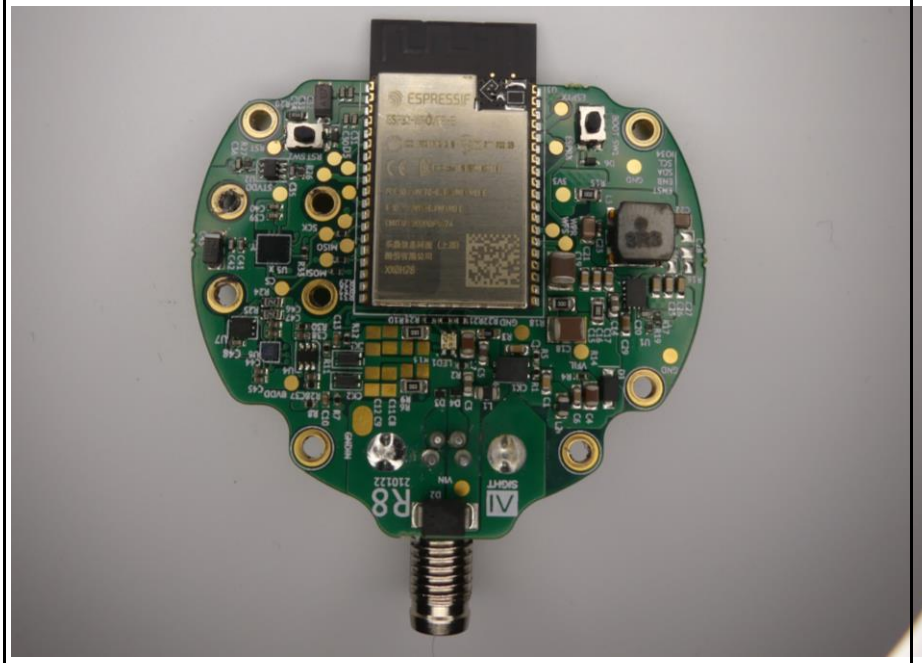
Description	Industrial vibration, geomagnetic and temperature sensor node for condition monitoring	
Model	Aion	
Additional Model(s)	None	
Brand Name(s)	None	
Serial Number(s)	Configuration 1: dc4a9e901964 Configuration 2: dc4a9e90192c	
Sample ID:	Configuration 1: 39130 Configuration 2: 39129	
Hardware Version(s)	V4R8	
Software Version(s)	v0.7.0-margherita	
EUT Dimensions [cm]	7.2 x 6.1 x 3.9	
FCC-ID	2A34W-V4R8	
IC	28248-V4R8	
Class	Class B	
Equipment type	Table top	
Highest internal frequency [MHz]	2483	
Radio Module	Type	Bluetooth low energy and IEEE 802.11
	Model	WROVER-E
	Manufacturer	Espressif
	FCC-ID	2AC7Z-ESP32WROVERE
	IC	21098-ESPWROVERE
Supply Voltage	V _{NOM}	24 VDC
AC/DC-Adaptor	Model	TRE25R240
	Vendor	CINCON
	Input	100-240 V AC, 47-63 Hz
	Output	24 VDC
Manufacturer	AiSight GmbH Gertraudenstraße 10-12 10178 Berlin GERMANY	

1.1 Equipment Ports

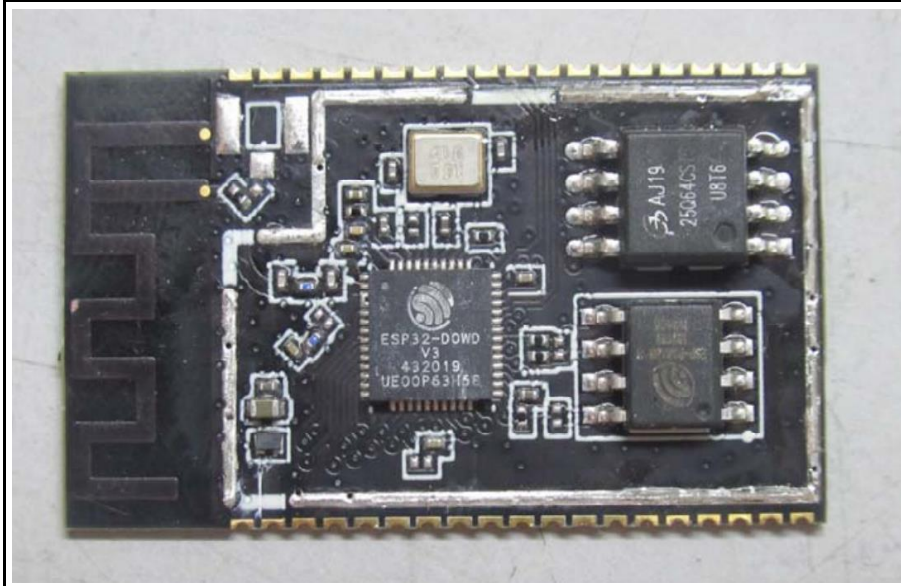
Name	Type	Attributes	Comment
DC IN	DC	Count: 1 Cable length [m]: 3 Direction: IN Service only: No Shielded: No	-
Description:			
AC	AC mains power input/output port		
DC	DC power input/output port		
BAT	DC power input port connected to external battery		
IO	Input/Output port		
TP	Telecommunication port		
NE	Non-electrical port		

1.2 Equipment Photos - Internal

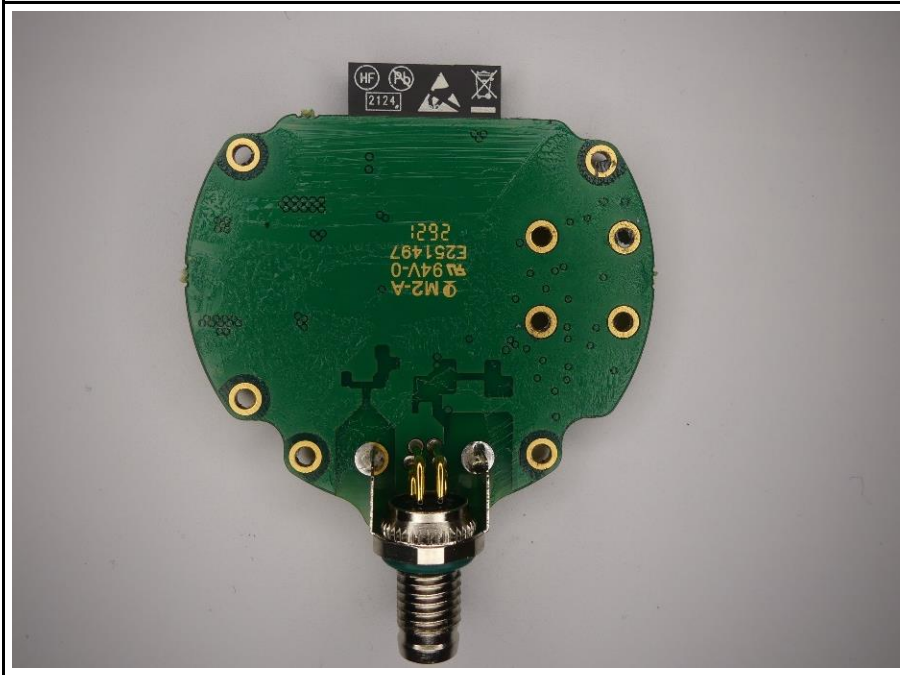
PCB top view



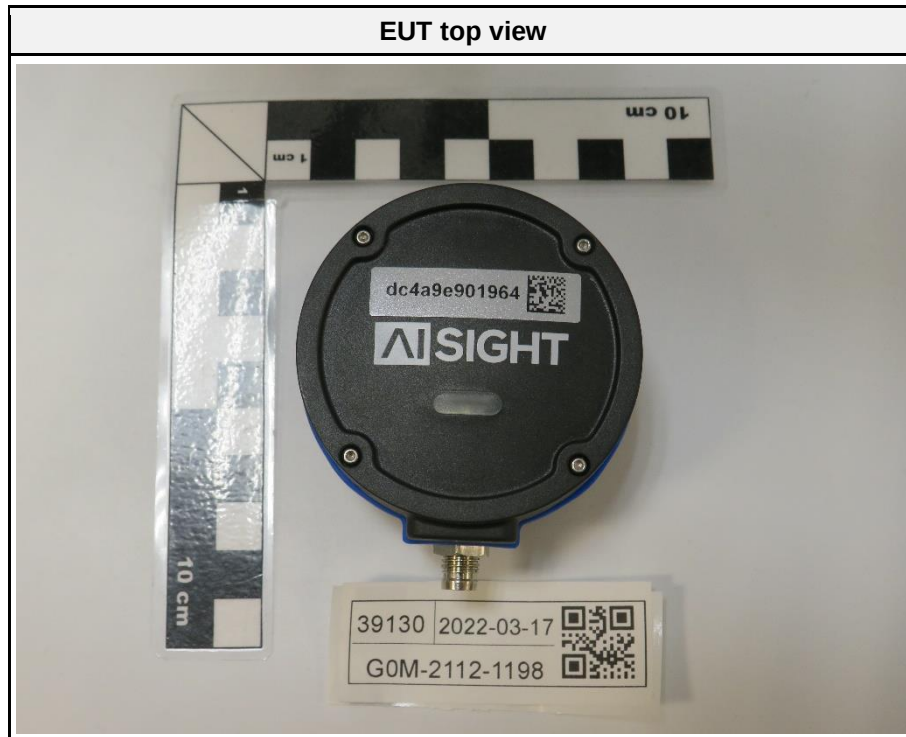
PCB top view module open



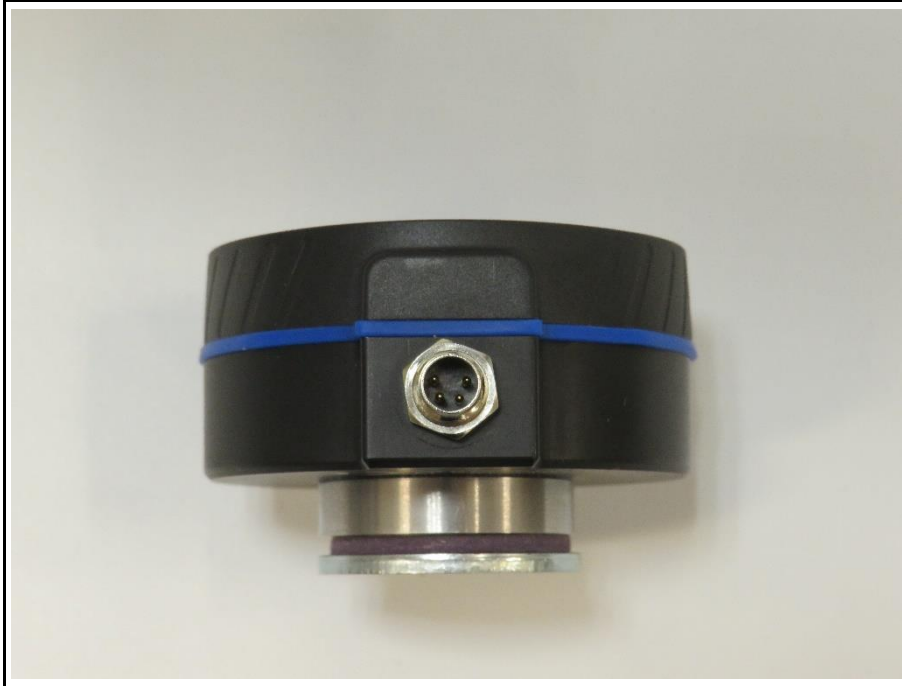
PCB rear view



1.3 Equipment Photos - External



EUT front view



EUT back view



EUT Label



EUT with dedicated AC/DC adaptor



Label AC/DC-adapter



Auxiliary equipment



1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
AE	Mini PC	RASPBERRY	pi 400	Customer device, WIFI / BLE monitoring device
AE	Evaluation board	ESPRESSIF	ESP32-PICO-DevKitM-2	Wi-Fi and Bluetooth development board
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
MON	Monitoring Equipment			
CBL	Connecting Cable			
Comment:				

1.5 Operational Modes

Mode #	Description
1	The sensor node processes the data from the vibration, temperature and magnetic sensors and sends the data package using Wi-Fi 2.4~2.5GHz.
2	The sensor node processes the data from the vibration, temperature and magnetic sensors and sends the data package using Bluetooth LE
Comment: In both cases, a testing firmware was implemented to prevent the stand-by status of the sensor node. The mentioned firmware establishes the connection with a companion node (that acts as a Wi-Fi gateway in mode 1 and Bluetooth LE gateway in mode 2). In case of successful communication (data package sent correctly), the LED of the device (EUT) is green.	

1.6 EUT Configuration

Configuration #	Description
1	Test sample 39130 powered via dedicated AC/DC adaptor with V_{Nom} 120 V 60 Hz. Wireless connection via evaluation board to Mini-PC outside the test site.
2	Test sample 39129 powered via dedicated AC/DC adaptor with V_{Nom} 120 V 60 Hz. Wireless connection via evaluation board to Mini-PC outside the test site.
Comment: -	

1.7 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyser in dBµV. Any external preamplifiers used are taken into account through internal analyser settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyser. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

$$\text{Reading on Analyser (dB}\mu\text{V)} + \text{A.F. (dB/m)} = \text{Net field strength (dB}\mu\text{V/m)}$$

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dBµV/m). The FCC limits are given in units of µV/m. The following formula is used to convert the units of µV/m to dBµV/m:

$$\text{Limit (dB}\mu\text{V/m)} = 20 \cdot \log(\mu\text{V/m})$$

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

Reading + AF	= Net Reading	:	Net reading - FCC limit	= Margin
+21.5 dBµV + 26 dB/m	= 47.5 dBµV/m	:	47.5 dBµV/m - 57.0 dBµV/m	= -9.5 dB

2 Result Summary

Title 47 CFR Part 15B, ISED ICES-003 Issue 7				
Reference	Requirement	Reference Method	Result	Remarks
Emission				
FCC 15.109 ICES-003, 3.2.2	Radiated emissions	ANSI C63.4:2014 +A1:2017	PASS	-
FCC 15.107 ICES-003, 3.2.1	AC power line conducted emissions	ANSI C63.4:2014 +A1:2017	PASS	-
Comment: -				

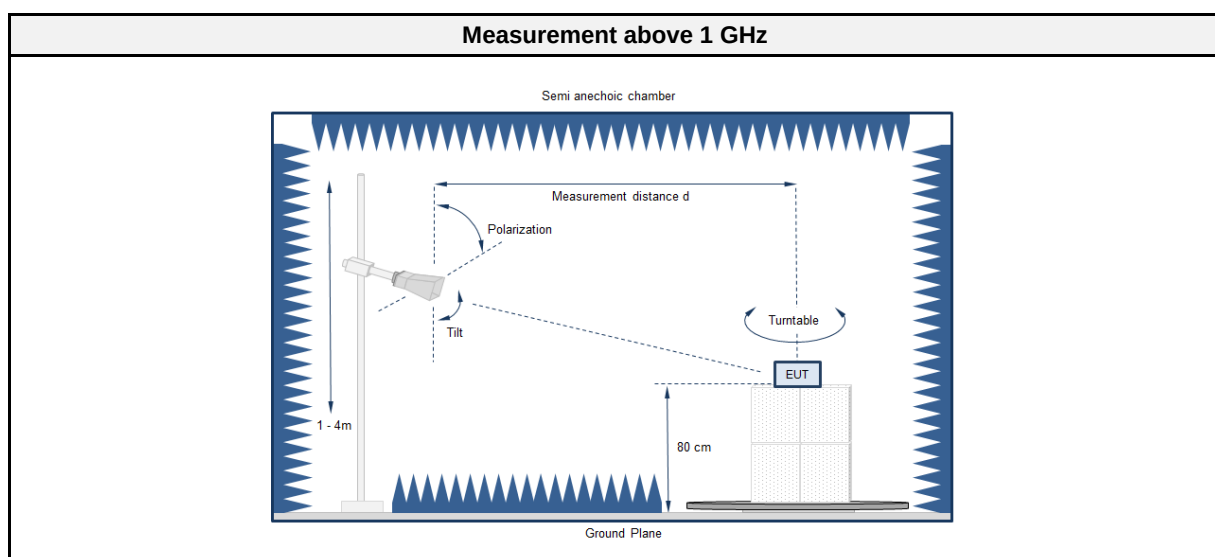
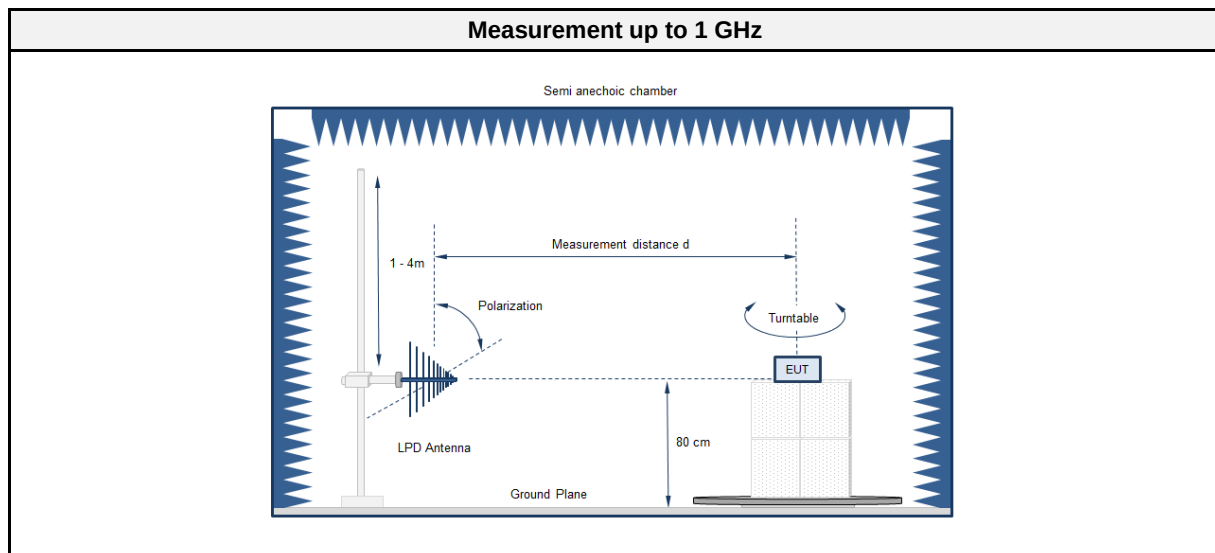
Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

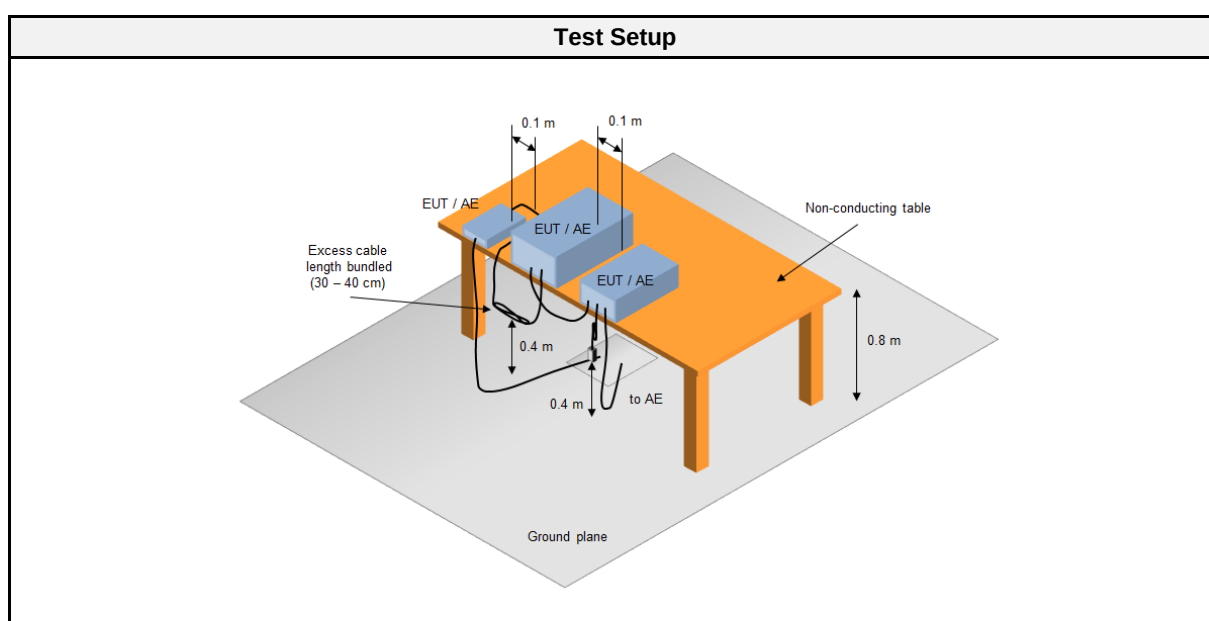
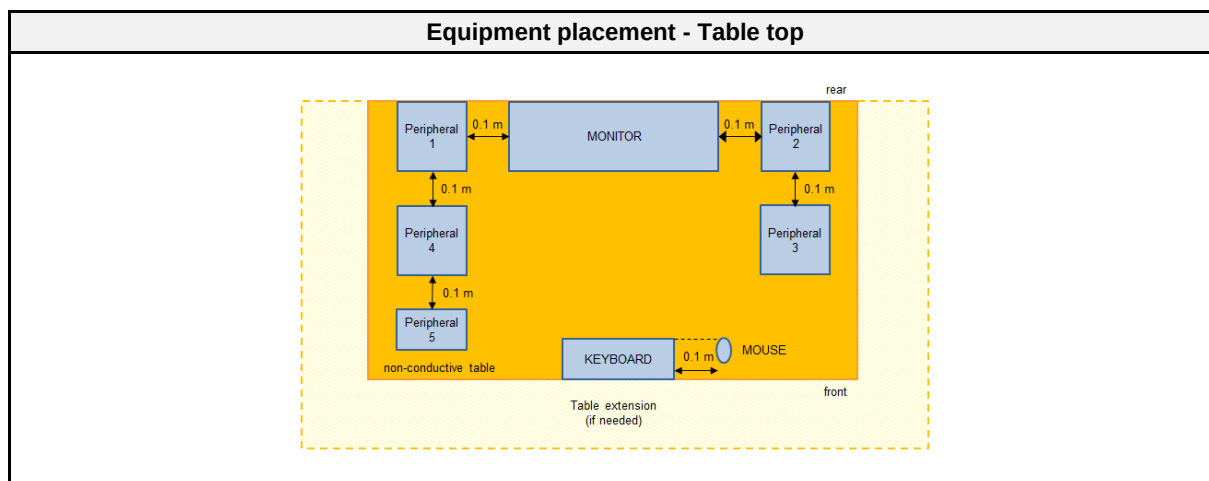
2.1 Test Conditions and Results - Radiated emissions acc. to ANSI C63.4

2.1.1 Information

Test Information	
Reference	FCC 15.109, ICES-003, 3.2.2
Reference method	ANSI C63.4:2014+A1:2017 Section 8
Equipment class	Class B
Equipment type	Table top
Highest internal frequency [MHz]	2483
Measurement range	30 MHz to 13000 MHz
Temperature [°C]	21 ± 1
Humidity [%]	32 ± 2
Operator	Manuel Engel
Date	2022-03-17

2.1.2 Setup





2.1.3 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	Radimation	2020.1.8

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic chamber (NSA)	Frankonia	AC1	EF00062	2021-02	2024-02
Anechoic chamber (SVSWR)	Frankonia	AC 1	EF01011	2019-06	2022-06
Programmable AC Source	Chroma ATE Inc.	61604	EF01068	2021-07	2022-07
EMI Test Receiver	Keysight	N9038A-526/WXP	EF01070	2021-07	2022-07
Biconical Antenna	R&S	HK 116	EF00030	2021-05	2024-05
LPD Antenna	R&S	HL 223	EF00187	2019-05	2022-05
Horn Antenna	Schwarzbeck	BBHA9120D	EF00018	2019-10	2022-10
Climatic Sensor	Embedded Data Systems, LLC.	2800100000254 17E	EF01054	2021-03	2022-03

Test Report No.: G0M-2112-1198-EF0115B-V01

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

2.1.4 Procedure

Exploratory measurement	
1.	The EUT was placed on a non-conductive table at a height of 0.8m.
2.	The EUT and support equipment, if needed, were set up to simulate typical usage.
3.	Cables, of type and length specified by the manufacturer, were connected to at least one port of each type and were terminated by a device or simulating load of actual usage.
4.	The antenna was placed at a distance of 3 or 10 m.
5.	The received signal was monitored at the measurement receiver.
6.	This procedure has to be performed in both antenna polarizations, horizontal and vertical.
7.	The arrangement of the equipment with the maximum emission level is shown on the setup picture at item 2.1.2

Final measurement	
1.	The EUT was placed on a 0.8 m non-conductive table at a 3 m distance from the receive antenna. The antenna output was connected to the measurement receiver.
2.	A biconical antenna was used for the frequency range 30 – 200 MHz, a logarithmic periodical antenna was used for the frequency range from 200 – 1000 MHz. Above one 1 GHz a Double Ridged Broadband Horn antenna was used. The antenna was placed on an adjustable height antenna mast.
3.	The EUT and cable arrangement were based on the exploratory measurement results.
4.	Emissions were maximized at each frequency by rotating the EUT and adjusting the receive antenna height and polarization. The maximum values were recorded.
5.	The test data of the worst-case conditions were recorded and shown on the next pages.

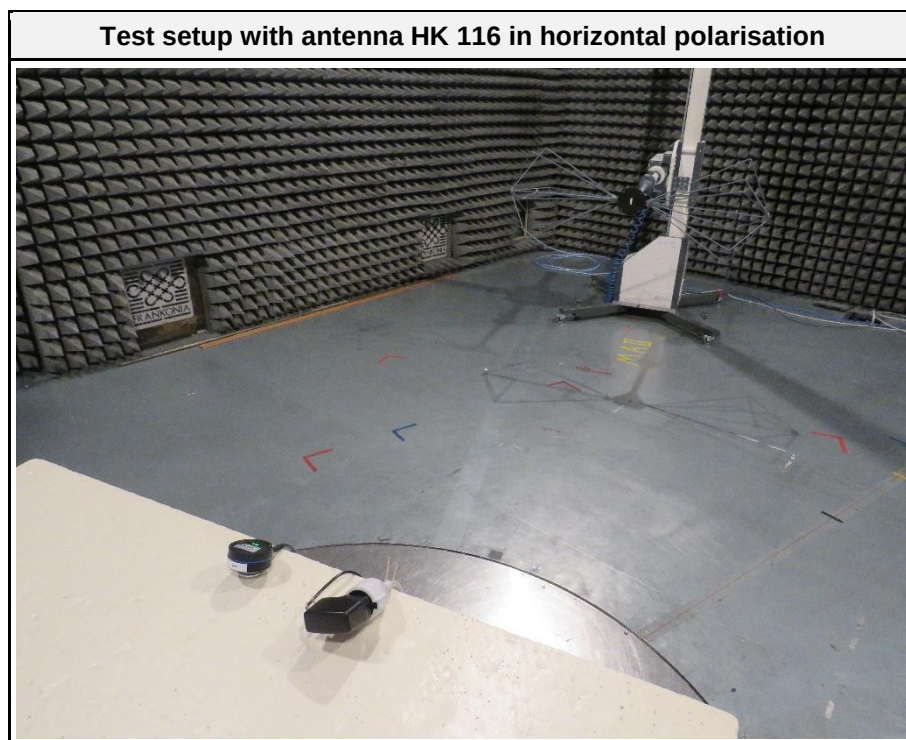
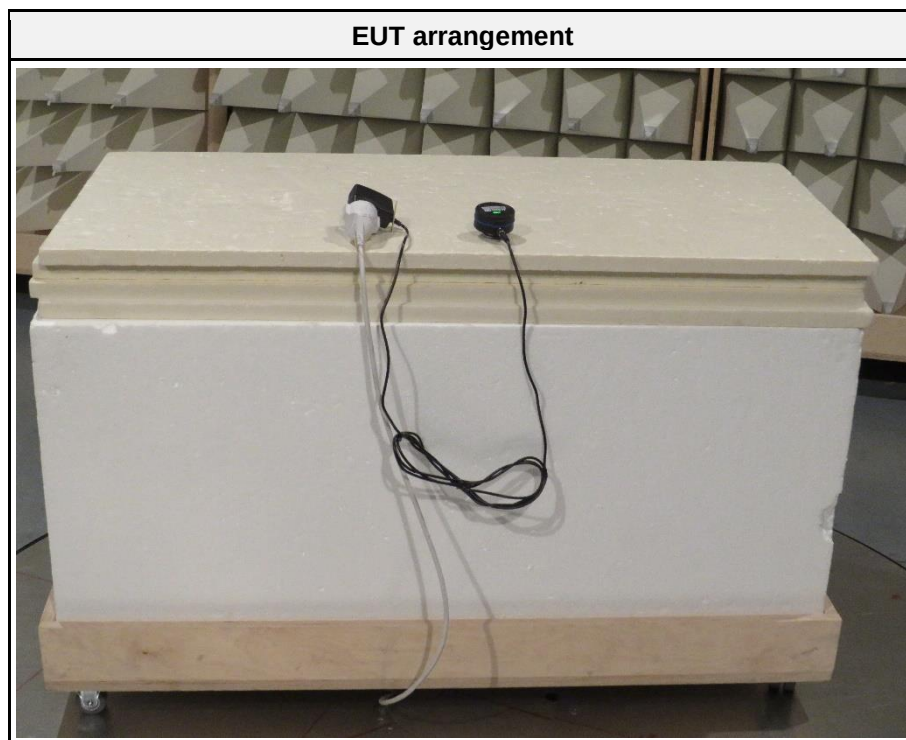
2.1.5 Limits

Class B @ 3 m		
Frequency [MHz]	Detector	Limit [dBμV/m]
30 - 88	Quasi-peak	40
88 - 216	Quasi-peak	43.5
216 - 960	Quasi-peak	46
960 - 1000	Quasi-peak	54
> 1000	Peak	74
	Average	54

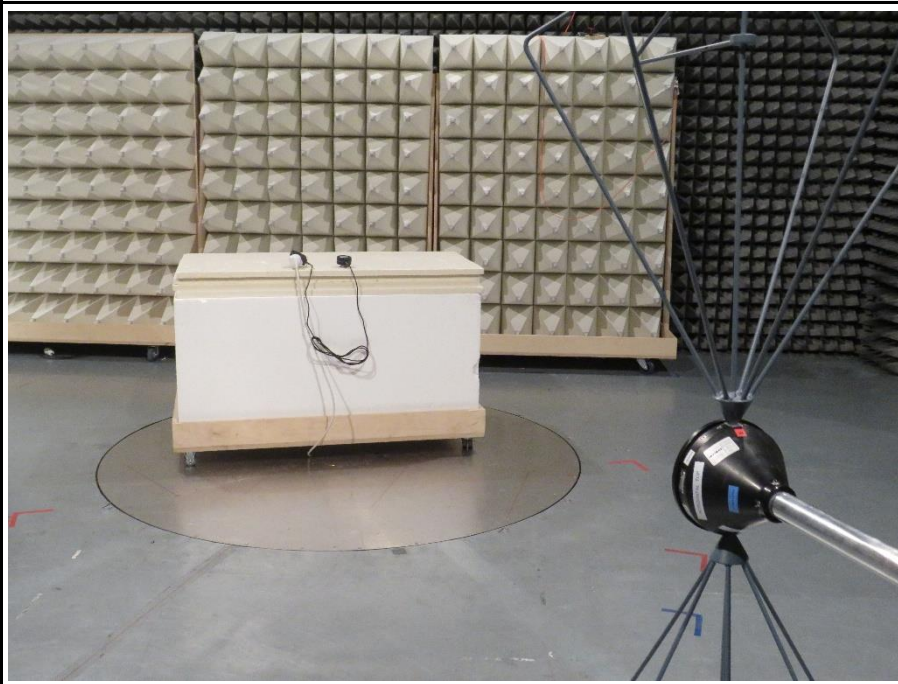
2.1.6 Results

Test Results			
Operational mode	EUT Configuration	Verdict	Remark
1	1	PASS	-
2	2	PASS	-

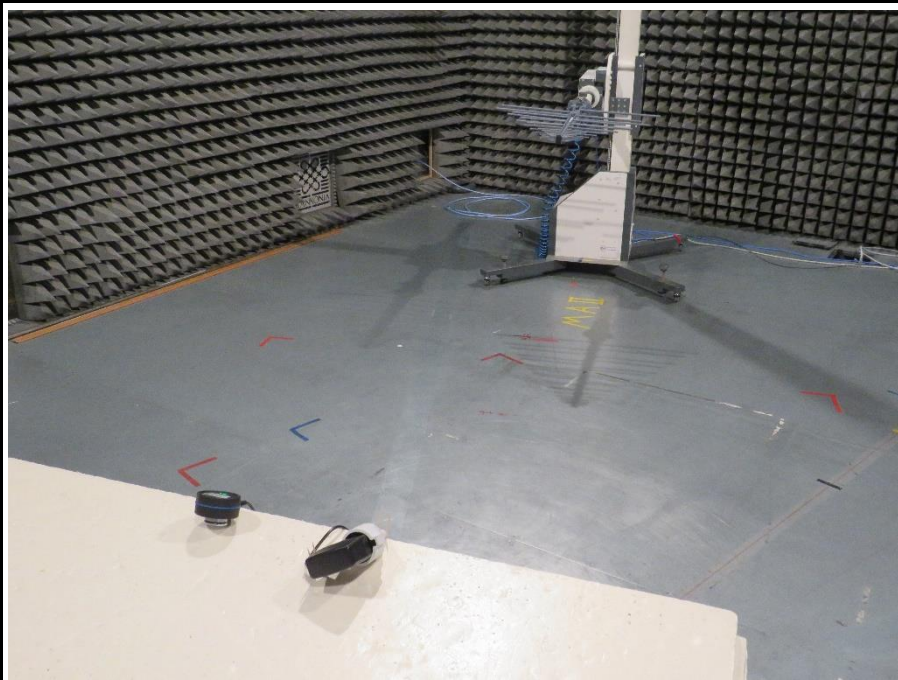
2.1.7 Setup Photos



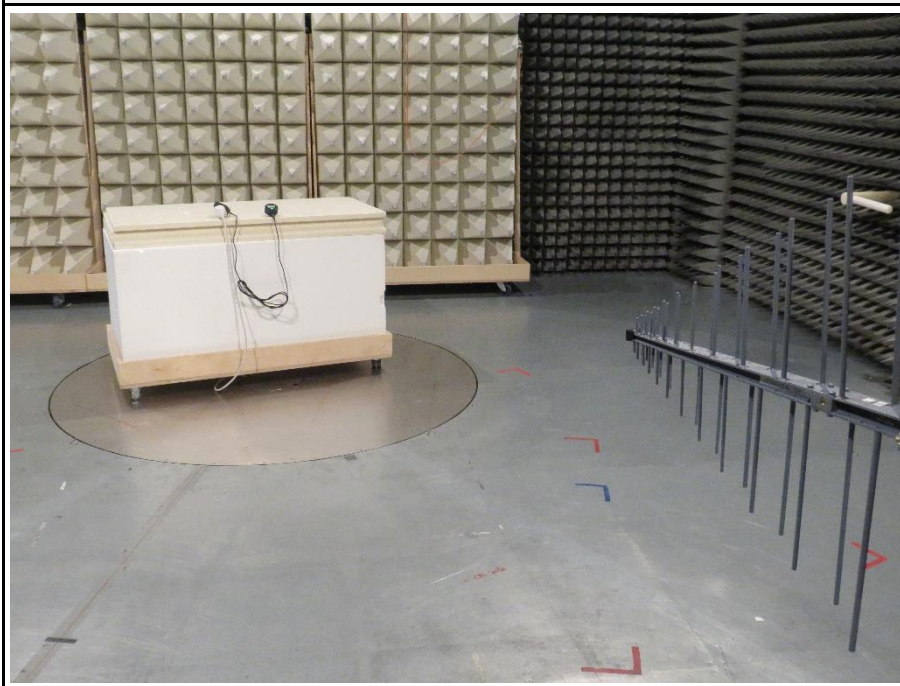
Test setup with antenna HK 116 in vertical polarisation



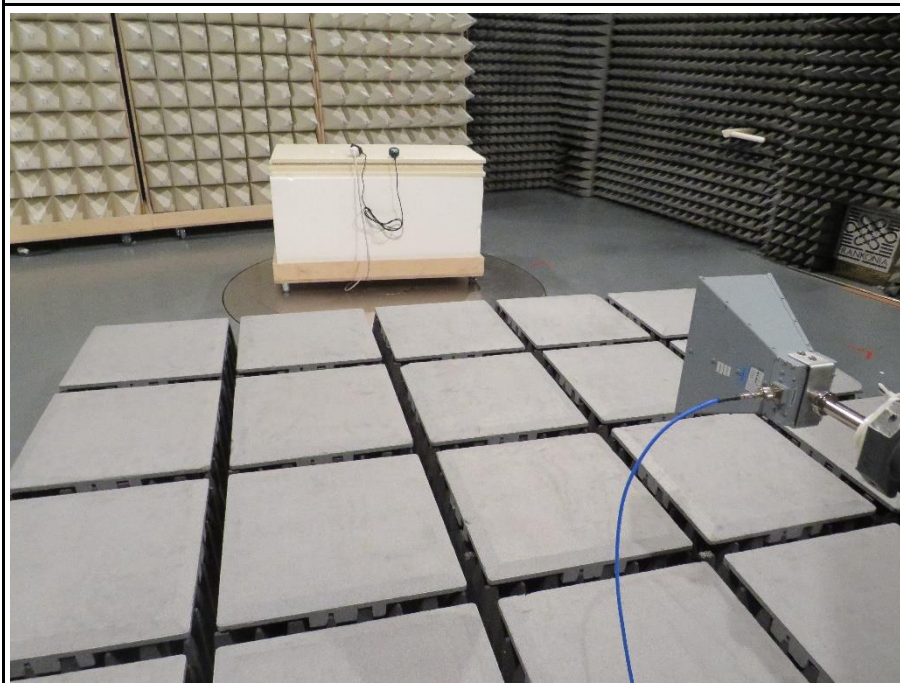
Test setup with antenna HL 223 in horizontal polarisation



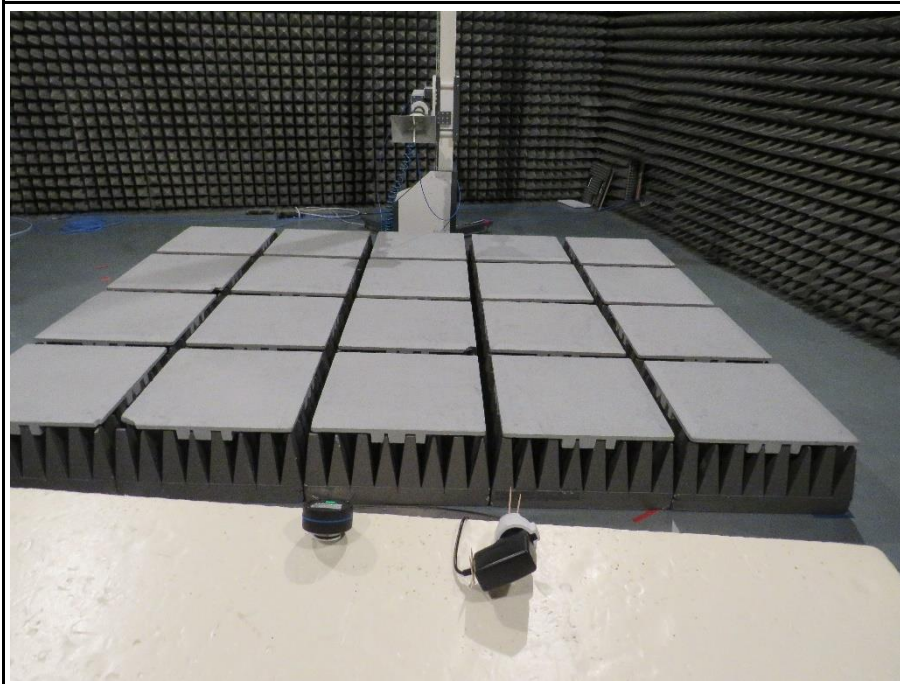
Test setup with antenna HL 223 in vertical polarisation



Test setup with antenna BBHA9120D in horizontal polarisation



Test setup with antenna BBHA9120D in vertical polarisation



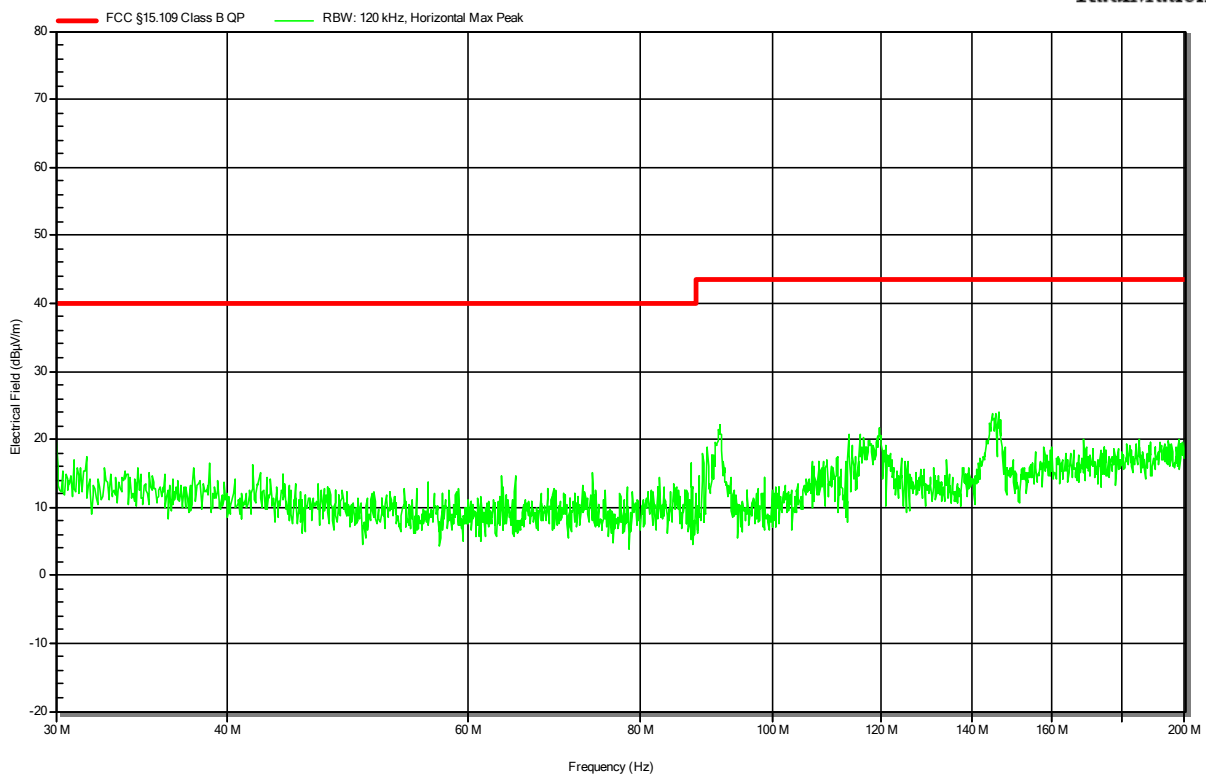
2.1.8 Records

Radiated emissions according to FCC part 15B

Project Number:	G0M-2112-1198
Applicant:	AiSight GmbH
Model Description:	Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
Model:	Aion
Test Sample ID:	39130, 39131
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Engel
Test Date:	2022-03-17
Operating Conditions:	ambient temperature: 20 °Celsius power input: 120 V 60 Hz
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement Distance:	3 m
Operational Mode:	Mode 1
EUT Configuration:	Configuration 1
Note 1:	Height 2.2 m, angle 40°

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RadiMation

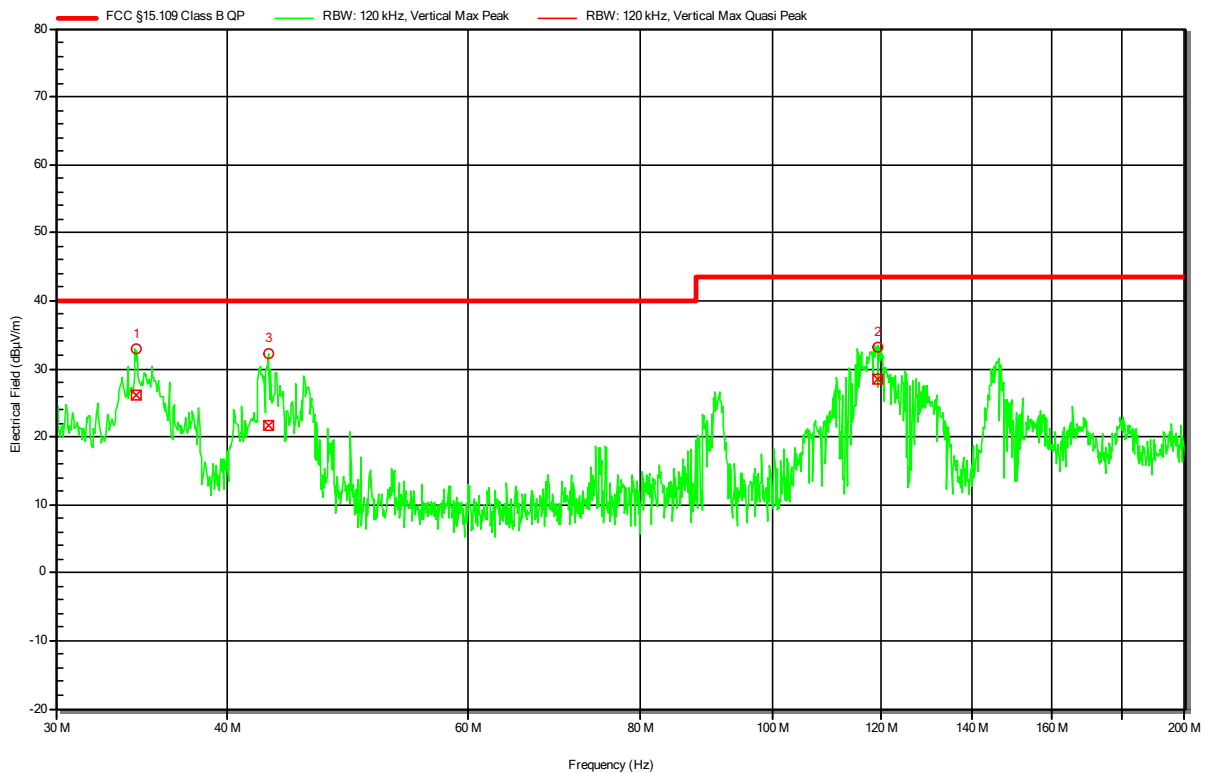


Radiated emissions according to FCC part 15B

Project Number: G0M-2112-1198
Applicant: AiSight GmbH
Model Description: Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
Model: Aion
Test Sample ID: 39130, 39131
Test Site: Eurofins Product Service GmbH
Operator: Mr. Engel
Test Date: 2022-03-17
Operating Conditions: ambient temperature: 21 °Celsius
power input: 120 V 60 Hz
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement Distance: 3 m
Operational Mode: Mode 1
EUT Configuration: Configuration 1

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RadiMation



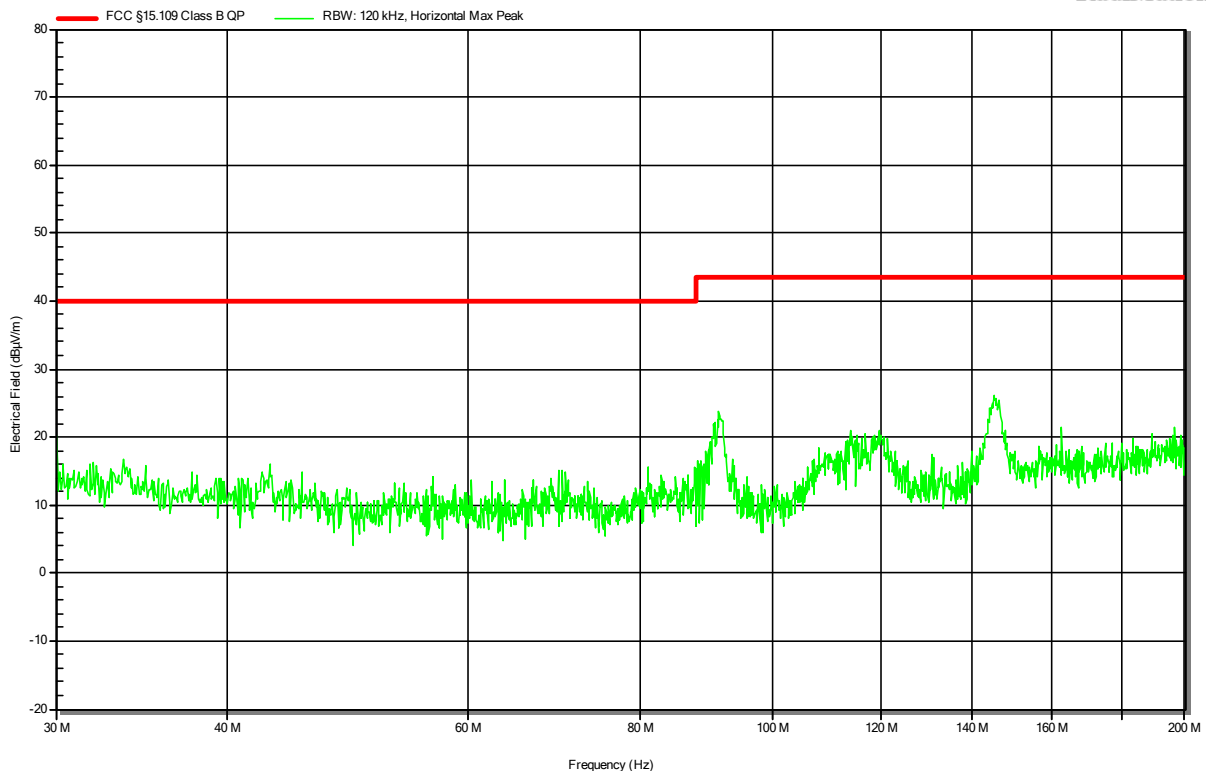
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	34.374 MHz	26.24 dBμV/m	40 dBμV/m	-13.76 dB	Pass	0 degrees	1 m
2	119.531 MHz	28.37 dBμV/m	43.52 dBμV/m	-15.15 dB	Pass	0 degrees	1 m
3	42.847 MHz	21.67 dBμV/m	40 dBμV/m	-18.33 dB	Pass	0 degrees	1 m

Radiated emissions according to FCC part 15B

Project Number:	G0M-2112-1198
Applicant:	AiSight GmbH
Model Description:	Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
Model:	Aion
Test Sample ID:	39129, 39131
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Engel
Test Date:	2022-03-17
Operating Conditions:	ambient temperature: 20 °Celsius power input: 120 V 60 Hz
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement Distance:	3 m
Operational Mode:	Mode 2
EUT Configuration:	Configuration 2
Note 1:	Height 2.2 m, angle 0°

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RadiMation

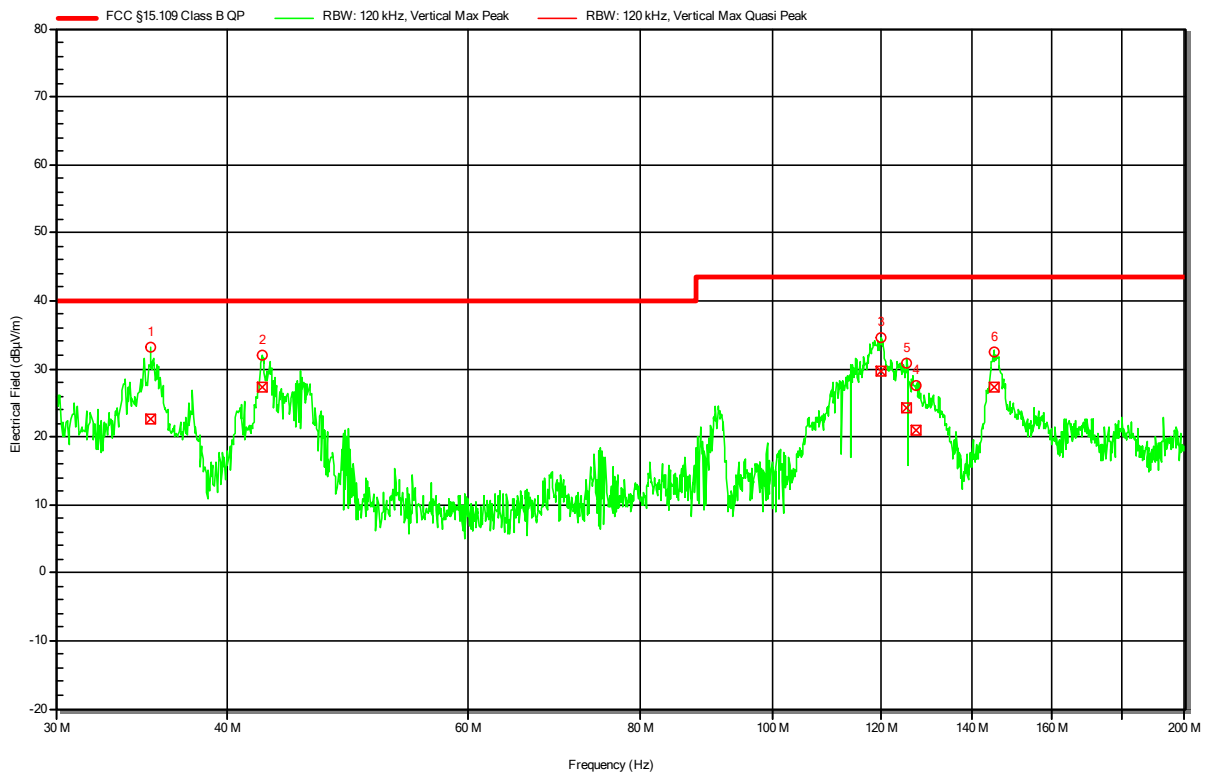


Radiated emissions according to FCC part 15B

Project Number: G0M-2112-1198
Applicant: AiSight GmbH
Model Description: Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
Model: Aion
Test Sample ID: 39129, 39131
Test Site: Eurofins Product Service GmbH
Operator: Mr. Engel
Test Date: 2022-03-17
Operating Conditions: ambient temperature: 20 °Celsius
power input: 120 V 60 Hz
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement Distance: 3 m
Operational Mode: Mode 2
EUT Configuration: Configuration 2

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RadiMation



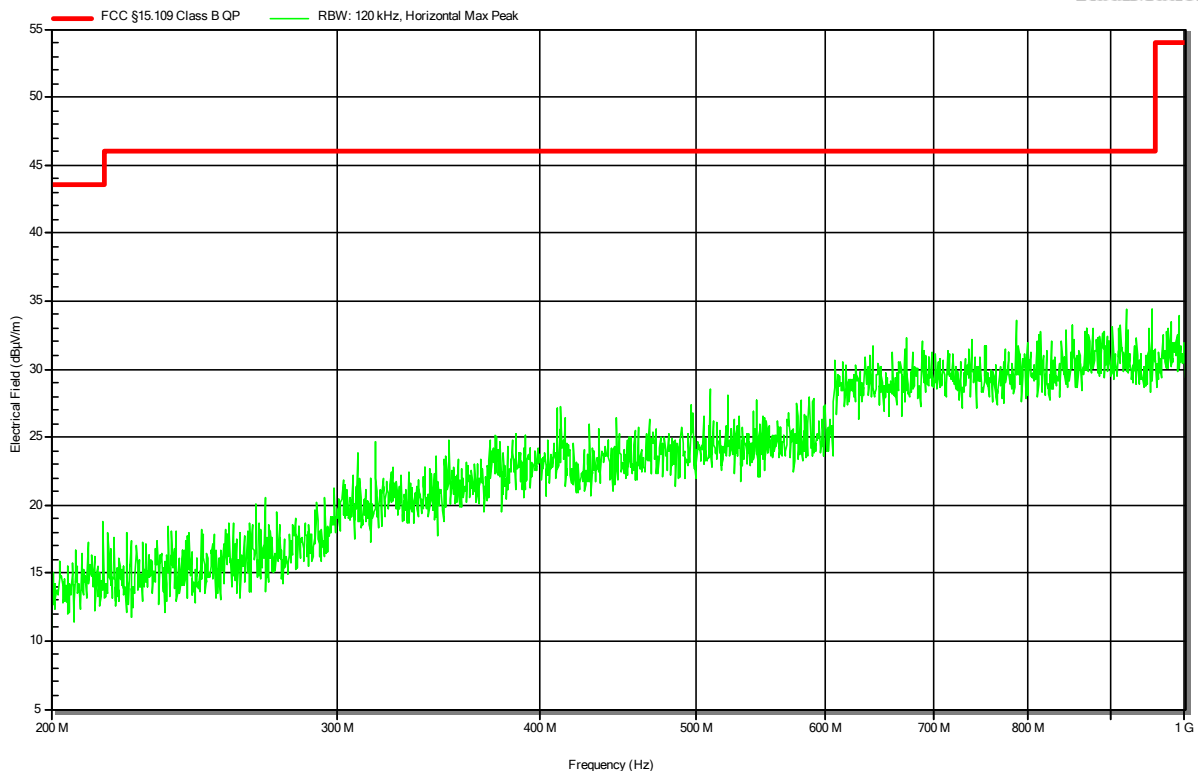
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	35.161 MHz	22.62 dBμV/m	40 dBμV/m	-17.38 dB	Pass	0 degrees	1 m
2	42.457 MHz	27.22 dBμV/m	40 dBμV/m	-12.78 dB	Pass	0 degrees	1 m
3	120.125 MHz	29.68 dBμV/m	43.52 dBμV/m	-13.85 dB	Pass	0 degrees	1 m
4	127.457 MHz	21.02 dBμV/m	43.52 dBμV/m	-22.5 dB	Pass	0 degrees	1 m
5	125.267 MHz	24.15 dBμV/m	43.52 dBμV/m	-19.37 dB	Pass	0 degrees	1 m
6	145.064 MHz	27.28 dBμV/m	43.52 dBμV/m	-16.24 dB	Pass	0 degrees	1 m

Radiated emissions according to FCC part 15B

Project Number:	G0M-2112-1198
Applicant:	AiSight GmbH
Model Description:	Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
Model:	Aion
Test Sample ID:	39130, 39131
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Engel
Test Date:	2022-03-17
Operating Conditions:	ambient temperature: 21 °Celsius power input: 120 V 60 Hz
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement Distance:	3 m
Operational Mode:	Mode 1
EUT Configuration:	Configuration 1
Note 1:	Height 1 m, angle 0°

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RadiMation

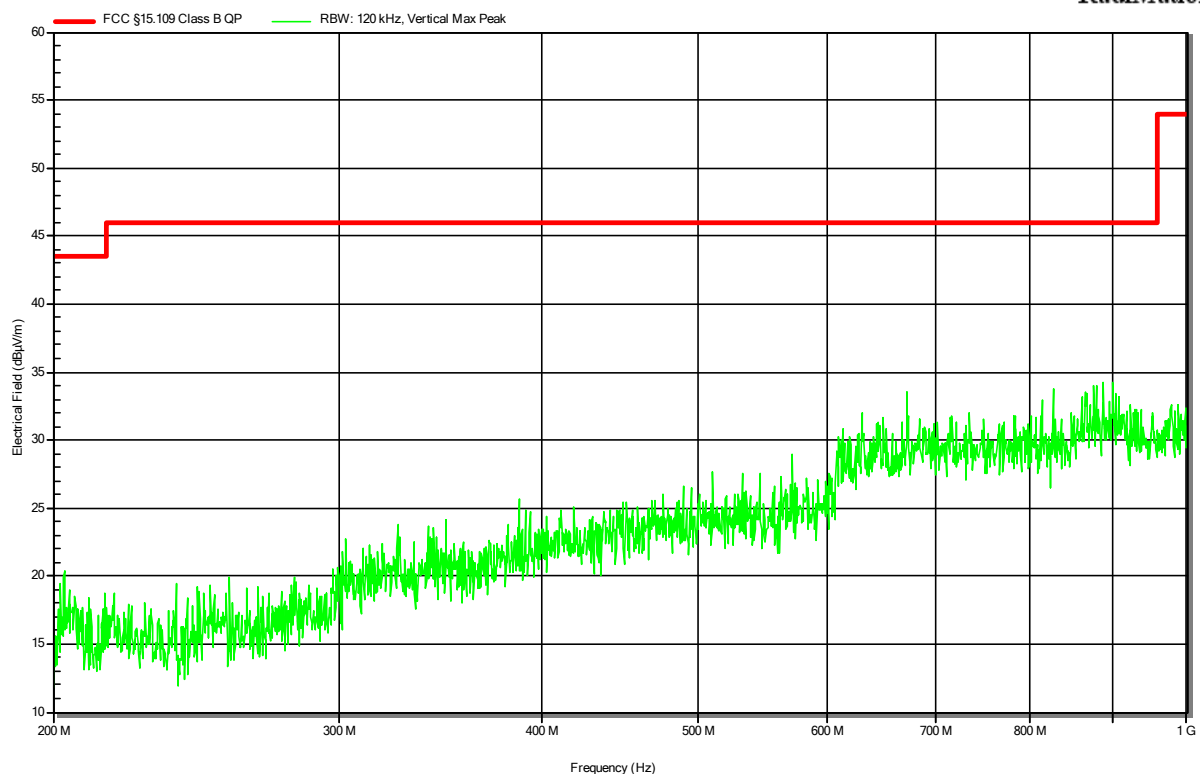


Radiated emissions according to FCC part 15B

Project Number:	G0M-2112-1198
Applicant:	AiSight GmbH
Model Description:	Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
Model:	Aion
Test Sample ID:	39130, 39131
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Engel
Test Date:	2022-03-17
Operating Conditions:	ambient temperature: 21 °Celsius power input: 120 V 60 Hz
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement Distance:	3 m
Operational Mode:	Mode 1
EUT Configuration:	Configuration 1
Note 1:	Height 1 m, angle 0°

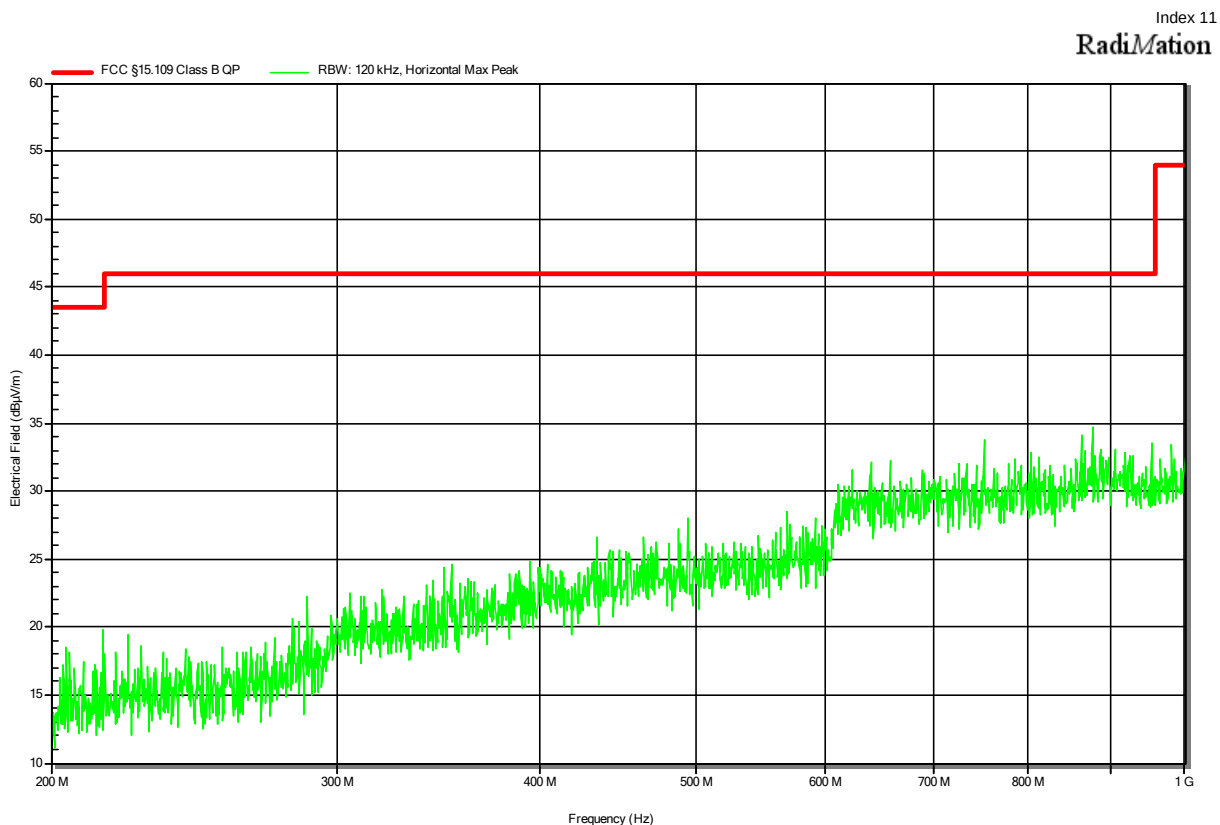
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RadiMation



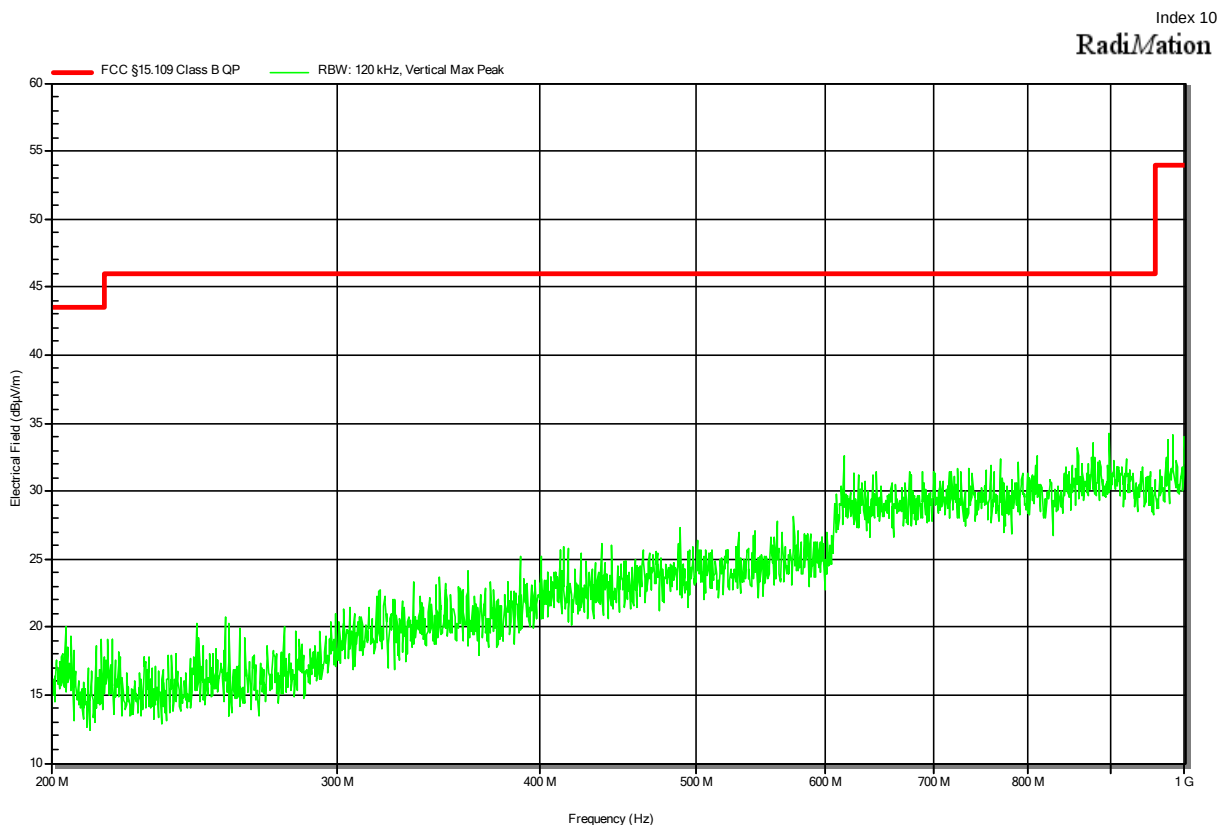
Radiated emissions according to FCC part 15B

Project Number:	G0M-2112-1198
Applicant:	AiSight GmbH
Model Description:	Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
Model:	Aion
Test Sample ID:	39129, 39131
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Engel
Test Date:	2022-03-17
Operating Conditions:	ambient temperature: 21 °Celsius power input: 120 V 60 Hz
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement Distance:	3 m
Operational Mode:	Mode 2
EUT Configuration:	Configuration 2
Note 1:	Height 1 m, angle 0°



Radiated emissions according to FCC part 15B

Project Number:	G0M-2112-1198
Applicant:	AiSight GmbH
Model Description:	Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
Model:	Aion
Test Sample ID:	39129, 39131
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Engel
Test Date:	2022-03-17
Operating Conditions:	ambient temperature: 21 °Celsius power input: 120 V 60 Hz
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement Distance:	3 m
Operational Mode:	Mode 2
EUT Configuration:	Configuration 2
Note 1:	Height 1 m, angle 0°

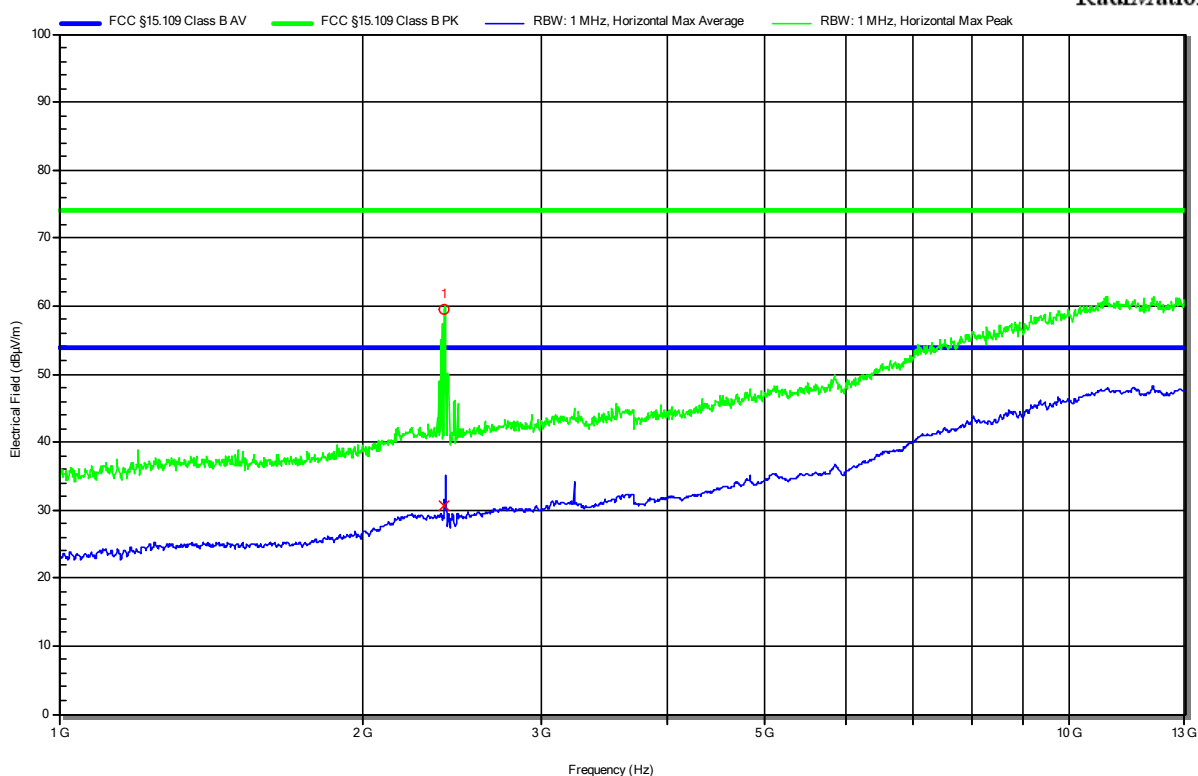


Radiated emissions according to FCC part 15B

Project Number: G0M-2112-1198
Applicant: AiSight GmbH
Model Description: Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
Model: Aion
Test Sample ID: 39130, 39131
Test Site: Eurofins Product Service GmbH
Operator: Mr. Engel
Test Date: 2022-03-17
Operating Conditions: ambient temperature: 22 °Celsius
power input: 120 V 60 Hz
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement Distance: 3 m
Operational Mode: Mode 1
EUT Configuration: Configuration 1
Note 1: Height 1 m, angle 0°

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RadiMation



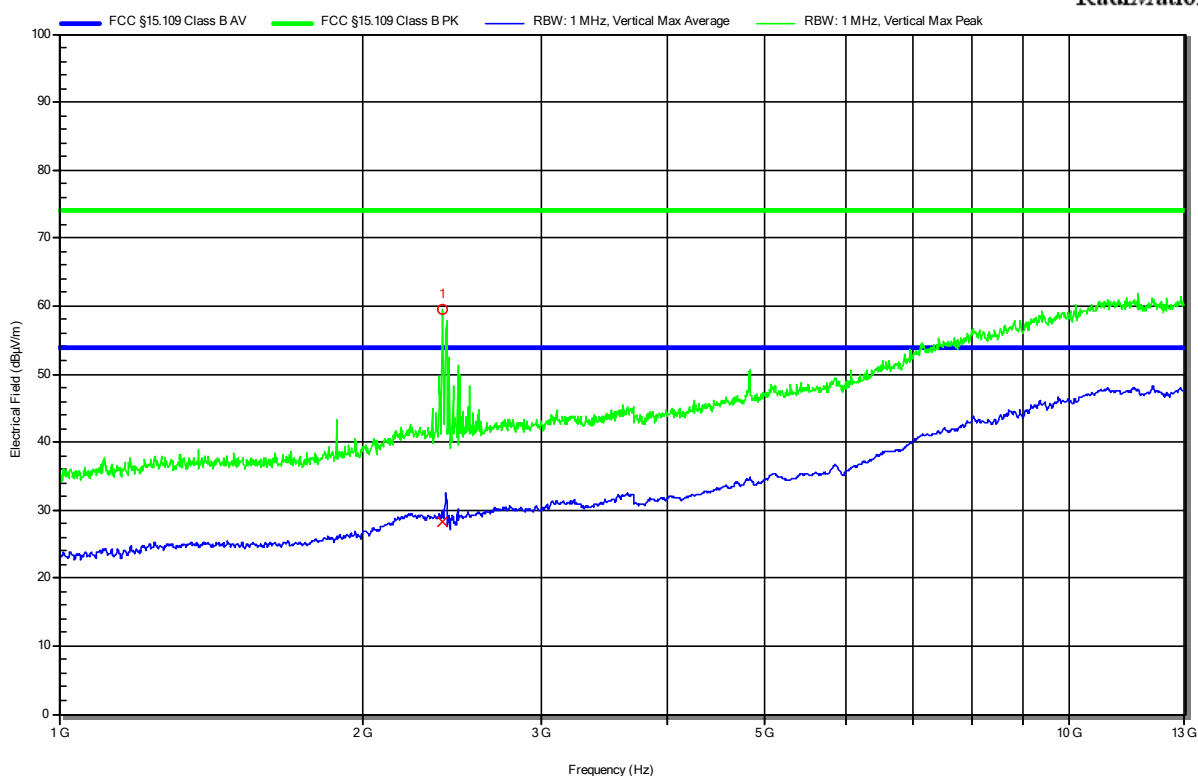
Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	2.405 GHz	59.5 dBµV/m	73.98 dBµV/m	-14.47 dB	Carrier signal WIFI		
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	2.405 GHz	30.52 dBµV/m	53.98 dBµV/m	-23.45 dB	Carrier signal WIFI		

Radiated emissions according to FCC part 15B

Project Number: G0M-2112-1198
Applicant: AiSight GmbH
Model Description: Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
Model: Aion
Test Sample ID: 39130, 39131
Test Site: Eurofins Product Service GmbH
Operator: Mr. Engel
Test Date: 2022-03-17
Operating Conditions: ambient temperature: 22 °Celsius
power input: 120 V 60 Hz
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement Distance: 3 m
Operational Mode: Mode 1
EUT Configuration: Configuration 1
Note 1: Height 1 m, angle 0°

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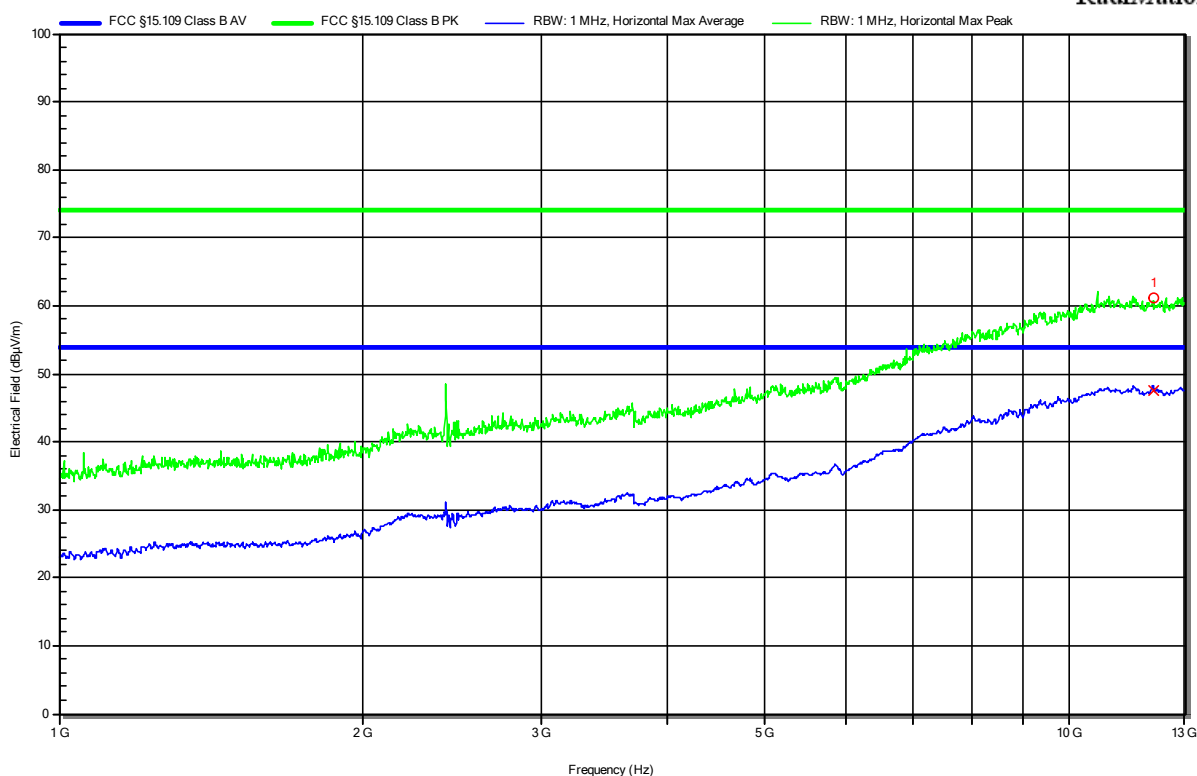
Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	2.398 GHz	59.4 dBµV/m	73.98 dBµV/m	-14.58 dB	Carrier signal WIFI		
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	2.398 GHz	28.19 dBµV/m	53.98 dBµV/m	-25.79 dB	Carrier signal WIFI		

Radiated emissions according to FCC part 15B

Project Number: G0M-2112-1198
 Applicant: AiSight GmbH
 Model Description: Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
 Model: Aion
 Test Sample ID: 39129, 39131
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Engel
 Test Date: 2022-03-17
 Operating Conditions: ambient temperature: 22 °Celsius
 power input: 120 V 60 Hz
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement Distance: 3 m
 Operational Mode: Mode 2
 EUT Configuration: Configuration 2

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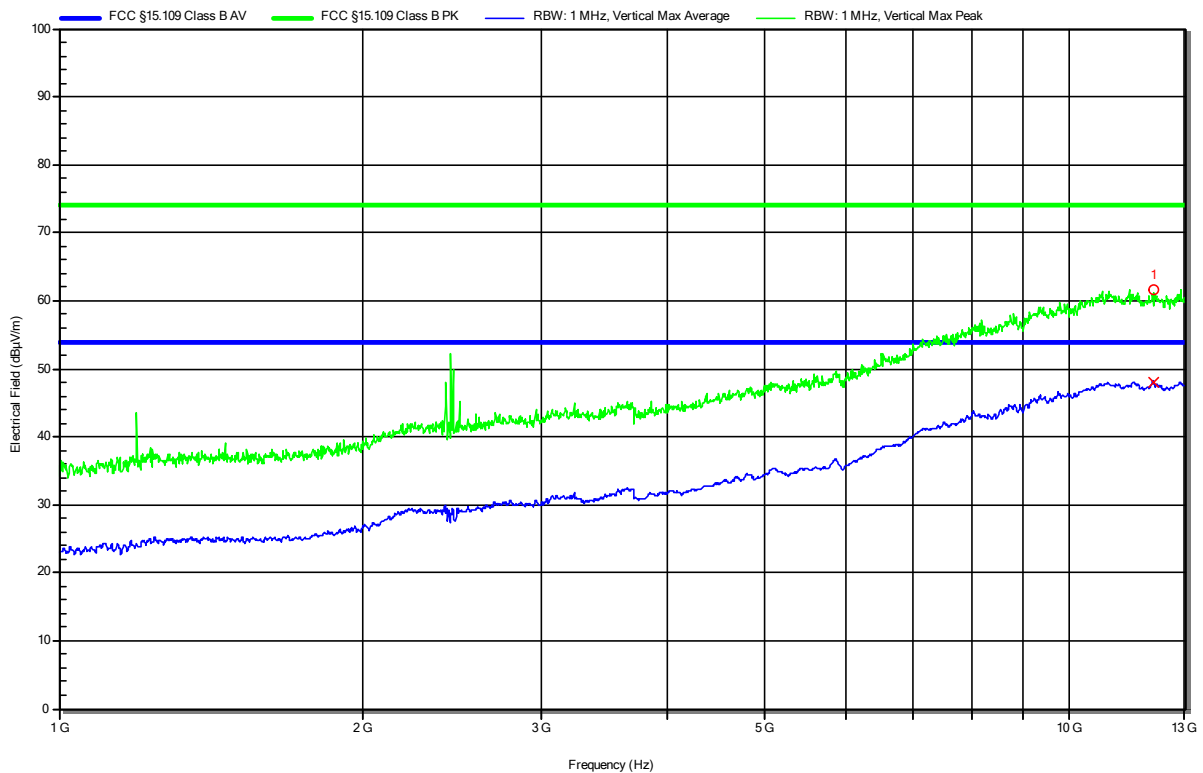
Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	12.125 GHz	61.03 dBµV/m	73.98 dBµV/m	-12.94 dB	Pass	0 degrees	1 m
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	12.125 GHz	47.64 dBµV/m	53.98 dBµV/m	-6.33 dB	Pass	0 degrees	1 m

Radiated emissions according to FCC part 15B

Project Number: G0M-2112-1198
 Applicant: AiSight GmbH
 Model Description: Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
 Model: Aion
 Test Sample ID: 39129, 39131
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Engel
 Test Date: 2022-03-17
 Operating Conditions: ambient temperature: 22 °Celsius
 power input: 120 V 60 Hz
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement Distance: 3 m
 Operational Mode: Mode 2
 EUT Configuration: Configuration 1

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RadiMation



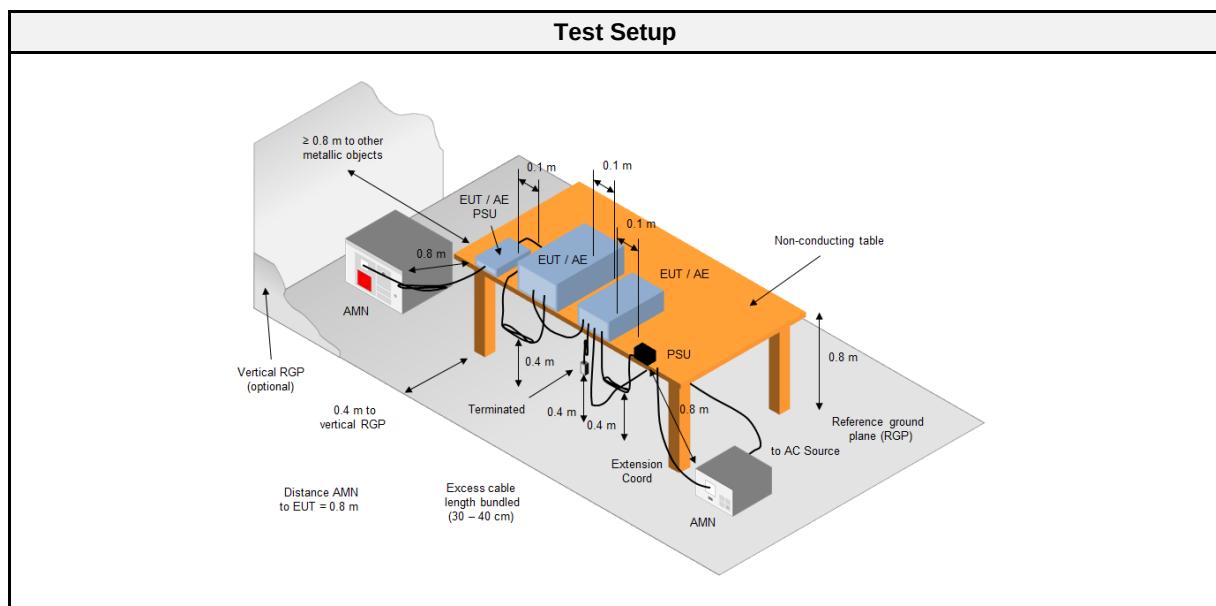
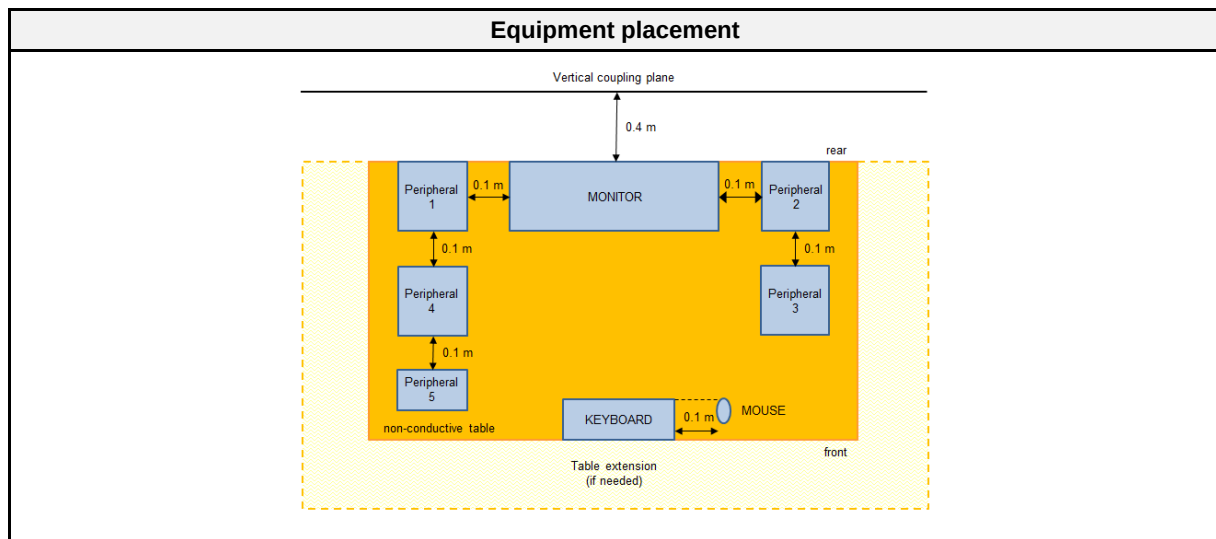
Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	12.106 GHz	61.66 dBμV/m	73.98 dBμV/m	-12.32 dB	Pass	0 degrees	1 m
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	12.106 GHz	47.89 dBμV/m	53.98 dBμV/m	-6.09 dB	Pass	0 degrees	1 m

2.2 Test Conditions and Results - Conducted emissions acc. to ANSI C63.4

2.2.1 Information

Test Information	
Reference	FCC 15.107, ICES-003, 3.2.1
Reference method	ANSI C63.4:2014+A1:2017 Section 12
Measurement range	150 kHz to 30 MHz
Equipment class	Class B
Equipment type	Table top
Temperature [°C]	22 ± 1
Humidity [%]	33 ± 2
Operator	Manuel Engel
Date	2022-03-17

2.2.2 Setup



2.2.3 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	Radimation	2020.1.8

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	Schwarzbeck	NSLK 8127	EF01592	2021-07	2022-07
Pulse Limiter	R&S	ESH3-Z2	EF01063	2021-07	2022-07
EMI Test Receiver	R&S	ESR 7	EF00943	2021-08	2022-08
Programmable AC Source	Chroma ATE Inc.	61604	EF01068	2021-07	2022-07
Climatic Sensor	Embedded Data Systems, LLC.	2800100000254 17E	EF01054	2021-03	2022-03

2.2.4 Procedure

Exploratory measurement	
1.	The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1)
2.	The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
3.	The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
4.	The LISN measurement port was connected to a measurement receiver
5.	I/O cables were bundled not longer than 0.4 m
6.	Measurement was performed in the frequency range 0.15 – 30MHz on each current-carrying conductor
7.	To maximize the emissions the cable positions were manipulated
8.	The worst configuration of EUT and cables is shown on a test setup picture at item 2.2.2

Final measurement	
1.	The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1)
2.	The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
3.	The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
4.	The LISN measurement port was connected to a measurement receiver
5.	The EUT and cable arrangement were based on the exploratory measurement results
6.	The test data of the worst-case conditions were recorded and shown on the next pages

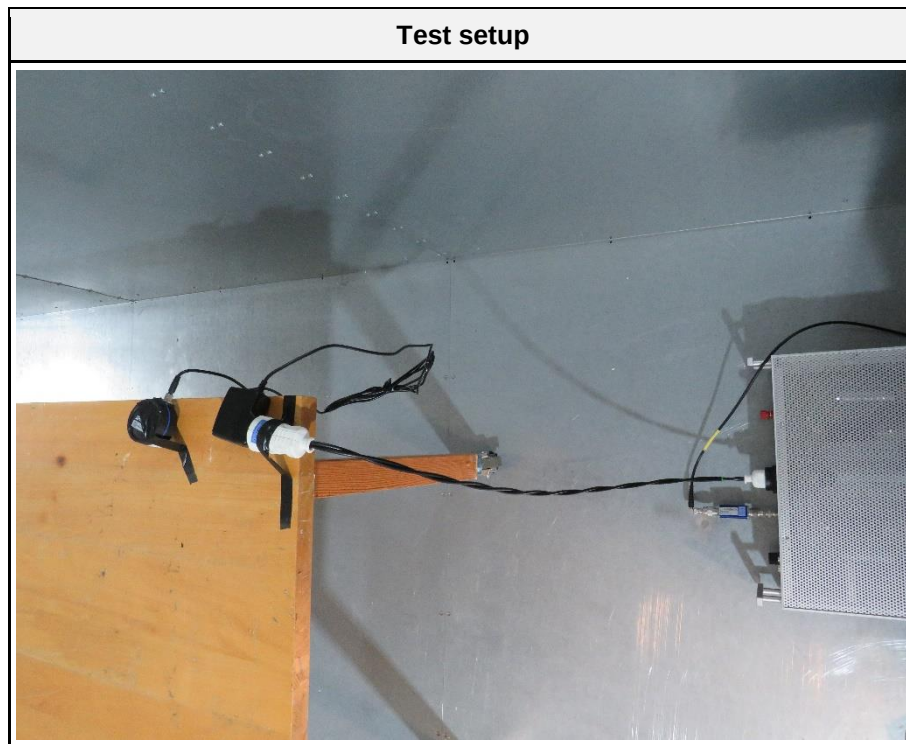
2.2.5 Limits

Class B		
Frequency [MHz]	Quasi-peak Limit [dBμV]	Average Limit [dBμV]
0.15 - 0.5	66 - 56 *	56 - 46 *
0.5 - 5	56	46
5 - 30	60	50
* Decreases with the logarithm of the frequency		

2.2.6 Results

AC power line conducted emissions					
Port	Coupling	Operational mode	EUT Configuration	Verdict	Remark
AC Mains	AMN	1	1	PASS	-
		2	2	PASS	-

2.2.7 Setup Photos

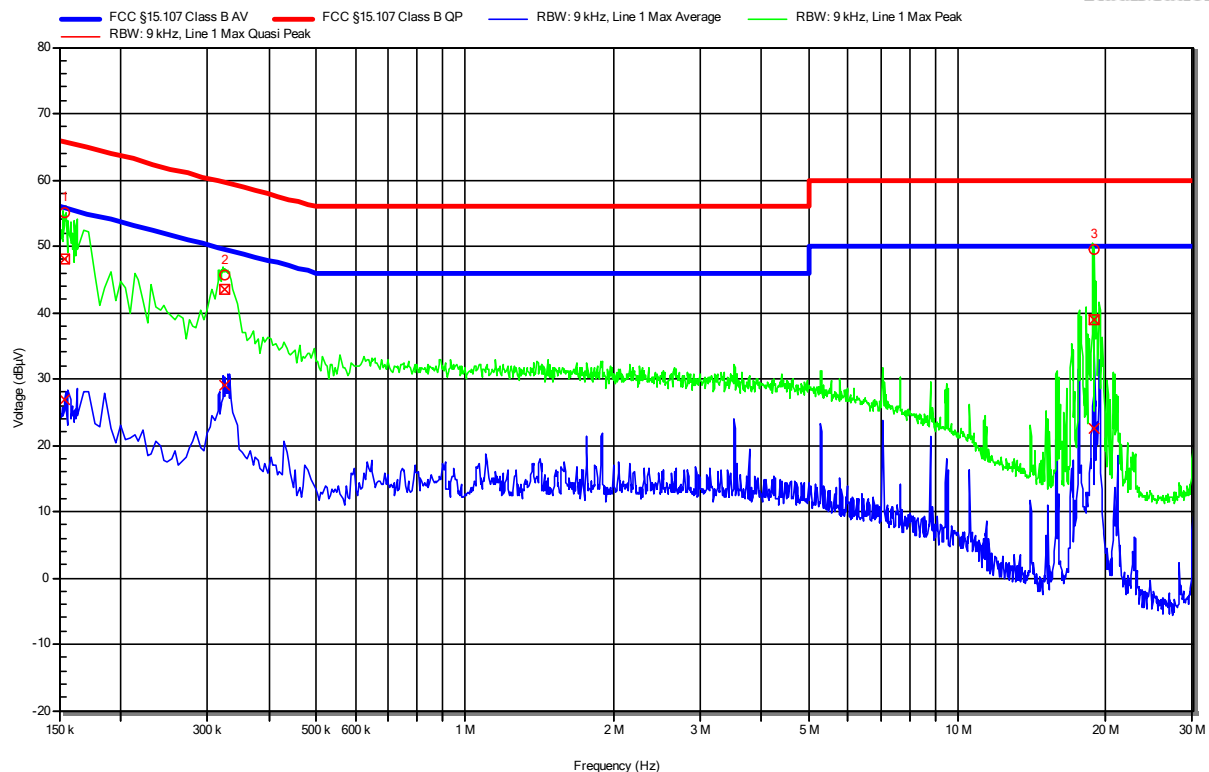


2.2.8 Records

Conducted emissions at the mains power port according to FCC part 15B

Project Number: G0M-2112-1198
 Applicant: AiSight GmbH
 Model Description: Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
 Model: Aion
 Test Sample ID: 39130, 39131
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Engel
 Test Date: 2022-03-17
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 120 V 60 Hz
 LISN: Schwarzbeck NSLK 8127 RC L
 Operational Mode: Mode 1
 EUT Configuration: Configuration 1
 Applied to Port: AC Mains

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RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	154.5 kHz	48.15 dBµV	65.75 dBµV	-17.61 dB	Pass	Line 1
2	325.5 kHz	43.43 dBµV	59.57 dBµV	-16.13 dB	Pass	Line 1
3	18.911 MHz	38.83 dBµV	60 dBµV	-21.17 dB	Pass	Line 1

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	154.5 kHz	26.86 dBµV	55.75 dBµV	-28.9 dB	Pass	Line 1
2	325.5 kHz	29.11 dBµV	49.57 dBµV	-20.45 dB	Pass	Line 1
3	18.911 MHz	22.55 dBµV	50 dBµV	-27.45 dB	Pass	Line 1

Test Report No.: G0M-2112-1198-EF0115B-V01

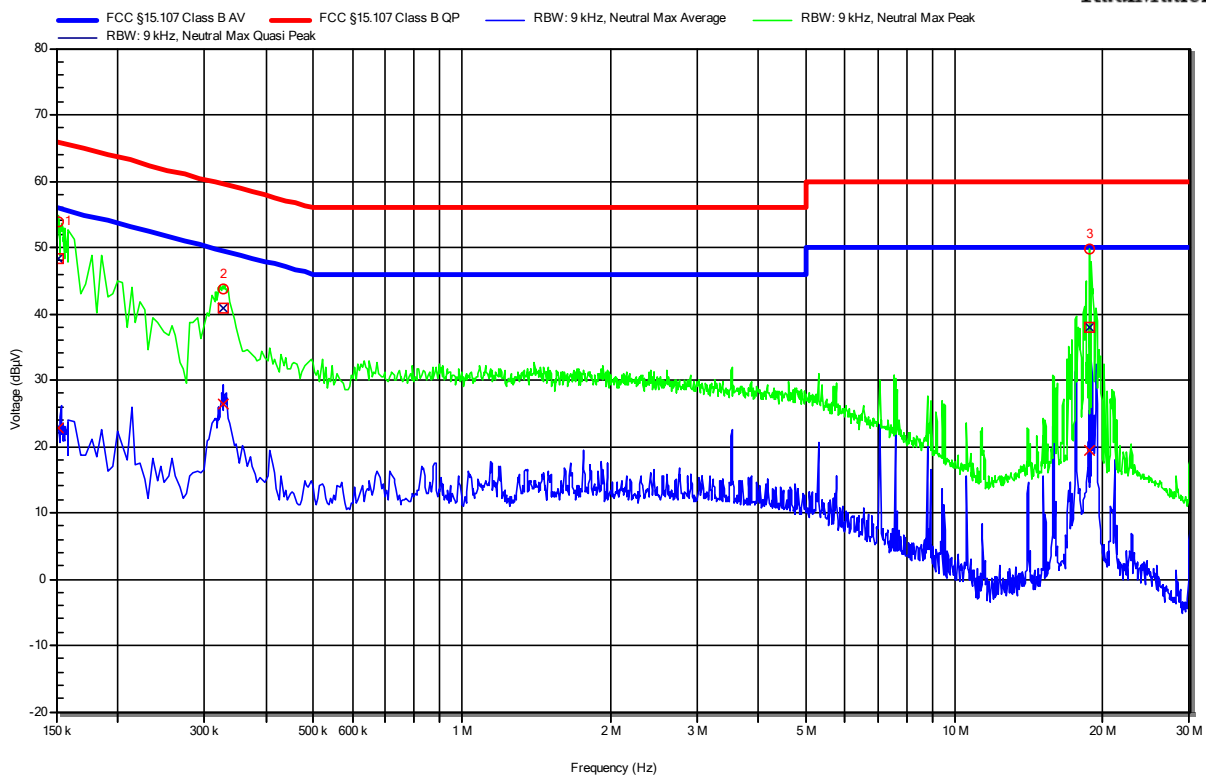
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Conducted emissions at the mains power port according to FCC part 15B

Project Number: G0M-2112-1198
 Applicant: AiSight GmbH
 Model Description: Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
 Model: Aion
 Test Sample ID: 39130, 39131
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Engel
 Test Date: 2022-03-17
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 120 V 60 Hz
 LISN: Schwarzbeck NSLK 8127 RC N
 Operational Mode: Mode 1
 EUT Configuration: Configuration 1
 Applied to Port: AC Mains

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Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	151.35 kHz	48.31 dBμV	65.93 dBμV	-17.62 dB	Pass	Neutral
2	327.75 kHz	40.96 dBμV	59.51 dBμV	-18.55 dB	Pass	Neutral
3	18.84 MHz	37.88 dBμV	60 dBμV	-22.12 dB	Pass	Neutral

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	151.35 kHz	22.75 dBμV	55.93 dBμV	-33.17 dB	Pass	Neutral
2	327.75 kHz	26.42 dBμV	49.51 dBμV	-23.08 dB	Pass	Neutral
3	18.84 MHz	19.39 dBμV	50 dBμV	-30.61 dB	Pass	Neutral

Test Report No.: G0M-2112-1198-EF0115B-V01

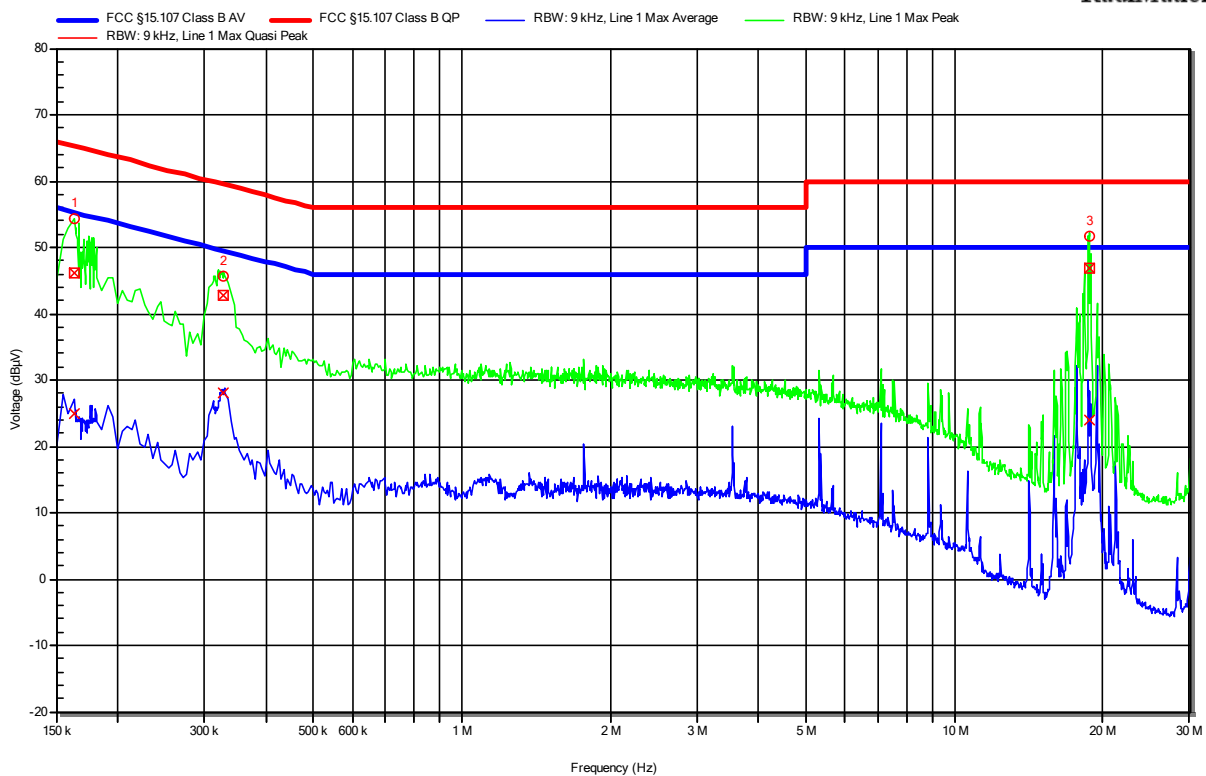
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Conducted emissions at the mains power port according to FCC part 15B

Project Number: G0M-2112-1198
 Applicant: AiSight GmbH
 Model Description: Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
 Model: Aion
 Test Sample ID: 39129, 39131
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Engel
 Test Date: 2022-03-17
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 120 V 60 Hz
 LISN: Schwarzbeck NSLK 8127 RC L
 Operational Mode: Mode 2
 EUT Configuration: Configuration 2
 Applied to Port: AC Mains

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Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	163.5 kHz	46.15 dBμV	65.28 dBμV	-19.13 dB	Pass	Line 1
2	327.75 kHz	42.86 dBμV	59.51 dBμV	-16.65 dB	Pass	Line 1
3	18.726 MHz	46.76 dBμV	60 dBμV	-13.24 dB	Pass	Line 1

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	163.5 kHz	24.89 dBμV	55.28 dBμV	-30.4 dB	Pass	Line 1
2	327.75 kHz	28.07 dBμV	49.51 dBμV	-21.43 dB	Pass	Line 1
3	18.726 MHz	24.08 dBμV	50 dBμV	-25.92 dB	Pass	Line 1

Test Report No.: G0M-2112-1198-EF0115B-V01

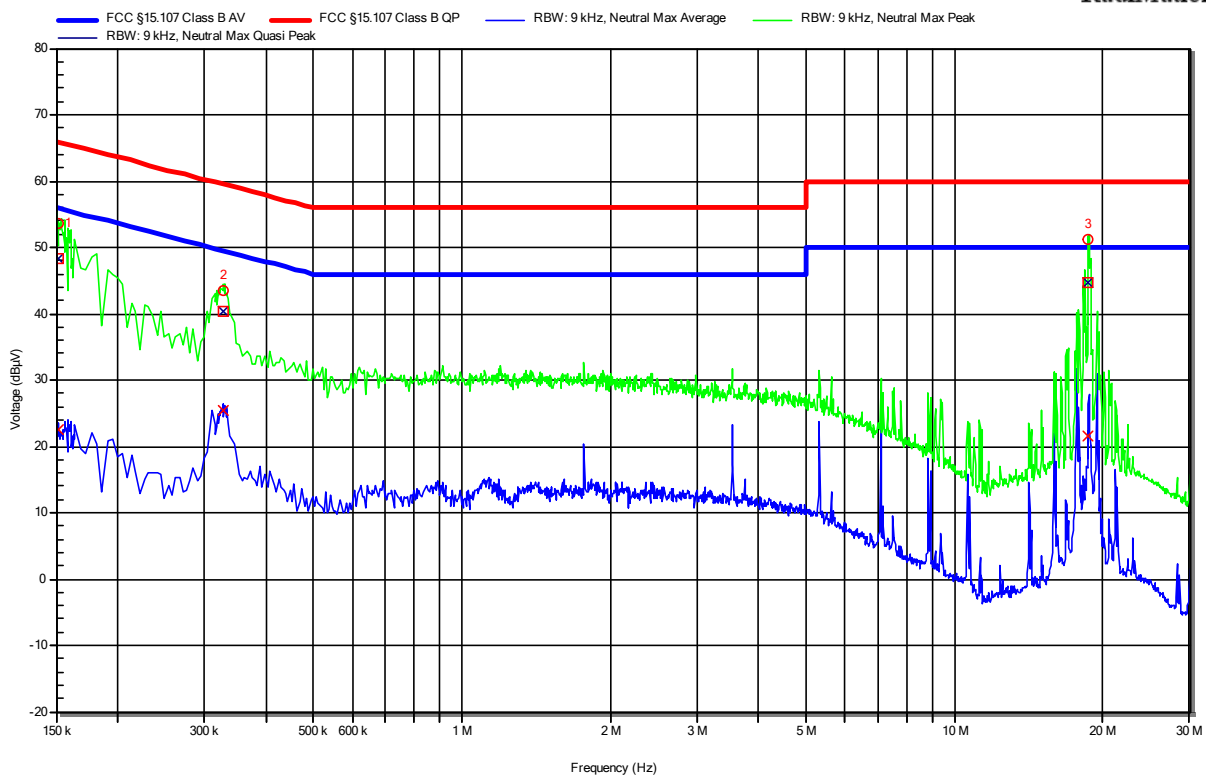
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Conducted emissions at the mains power port according to FCC part 15B

Project Number: G0M-2112-1198
 Applicant: AiSight GmbH
 Model Description: Industrial vibration, geomagnetic and temperature sensor node for condition monitoring
 Model: Aion
 Test Sample ID: 39129, 39131
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Engel
 Test Date: 2022-03-17
 Operating Conditions: ambient temperature: 21 °Celsius
 power input: 120 V 60 Hz
 LISN: Schwarzbeck NSLK 8127 RC N
 Operational Mode: Mode 2
 EUT Configuration: Configuration 2
 Applied to Port: AC Mains

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RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	152.25 kHz	48.25 dBµV	65.88 dBµV	-17.63 dB	Pass	Neutral
2	327.3 kHz	40.39 dBµV	59.52 dBµV	-19.13 dB	Pass	Neutral
3	18.701 MHz	44.76 dBµV	60 dBµV	-15.24 dB	Pass	Neutral

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	152.25 kHz	22.42 dBµV	55.88 dBµV	-33.45 dB	Pass	Neutral
2	327.3 kHz	25.44 dBµV	49.52 dBµV	-24.08 dB	Pass	Neutral
3	18.701 MHz	21.61 dBµV	50 dBµV	-28.39 dB	Pass	Neutral

Test Report No.: G0M-2112-1198-EF0115B-V01

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

3 Measurement Uncertainty

All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95%, with a coverage factor of 2.

Test Name	Measurement Uncertainty
Conducted emissions at the mains power port	150kHz to 30MHz, 3.35dB
Radiated Emission	30MHz to 200MHz @ 3m, 5.1dB 200MHz to 1GHz @ 3m, 5.3dB >1GHz to 6GHz @3m, 5.95dB