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TEST REPORT

N°: 30751252-821349-A (FILE#13835214)

Version: 01

Subject

Radio spectrum tests according to the standards:
FCC CFR 47 Part 15.225^{fr}
ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024
RSS 210 & RSS-Gen

Issued to

VEGA GRIESHABER KG
Am Hohenstein 113
D-77761 – SCHILTACH
GERMANY

Apparatus under test

- ↗ Product
- ↗ Trade mark
- ↗ Manufacturer
- ↗ Family range
- ↗ Model under test
- ↗ Serial number
- ↗ FCCID
- ↗ IC

VEGAMET-Air-141-142
VEGAMET Air
Vega
VEGAMET Air 141 / VEGAMET Air 142
VEGAMET Air 142
14200009
O6QMETA14X
3892A-META14X

Conclusion

See Test Program chapter

Test date
Test location
FCC Test site
ISED Test site
Sample receipt date
Composition of document
Document issued on

March 10, 2026 to March 18, 2026
LCIE Grenoble
FR0008 - 918017 (MOI)
6500A – FR0008 (MOI)
March 10, 2026
46 pages
April 23, 2026

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PUBLICATION HISTORY

Version	Date	Author	Modification
01	April 23, 2026	Majid MOURZAGH	Creation of the document

Each new edition of this test report replaces and cancels the previous edition. The control of the old editions of report is under responsibility of client.



SUMMARY

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1. TEST PROGRAM

References

- 47 CFR Part 15.407 (March 05, 2026) [🔗](#)
- RSS 210 Issue 11
- RSS Gen Issue 5.2
- ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 + Errata to C63.10a-2024

Radio requirement:

Clause - Test Description		Test result - Comments
Occupied Bandwidth	<i>ISED</i>	PASS
20dB Bandwidth	<i>FCC & ISED</i>	PASS
Frequency Tolerance	<i>FCC & ISED</i>	PASS
Field strength within the band [13.110-14.010] MHz	<i>FCC & ISED</i>	PASS
Field strength outside of the bands [13.110-14.010] MHz	<i>FCC & ISED</i>	PASS
Receiver Radiated Emissions	<i>ISED</i>	PASS(2)
This table is a summary of test report, see conclusion of each clause of this test report for detail.		

(1) Limited program

(2) Testing covered the receive mode, and receiver spurious emissions are considered to be the same as transmitter.

PASS: EUT complies with standard's requirement

FAIL: EUT does not comply with standard's requirement

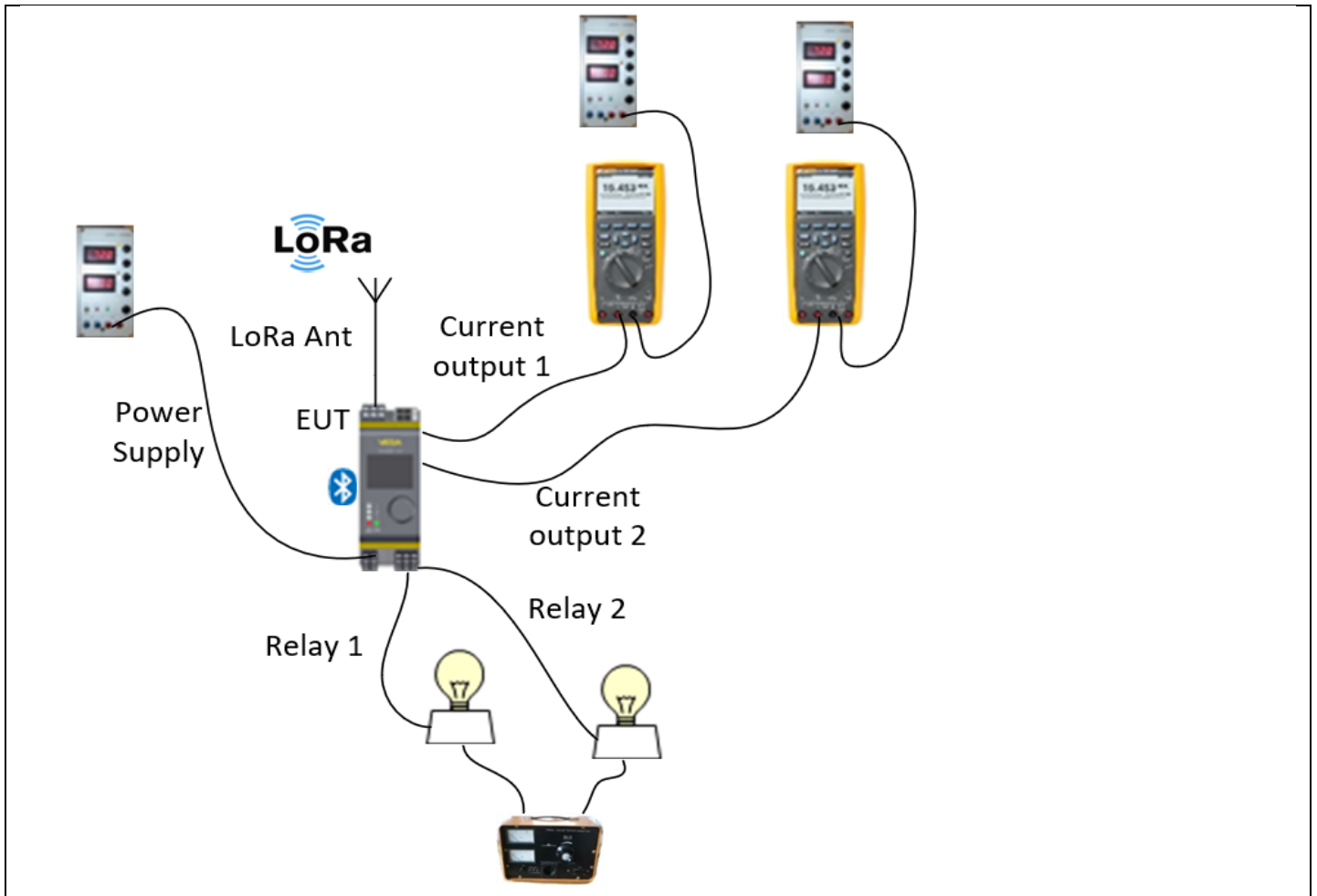
NA: Not Applicable

NP: Test Not Performed

2. EQUIPMENT UNDER TEST: CONFIGURATION (DECLARED BY PROVIDER)

2.1. INFORMATIONS

All tests are performed on the product VEGAMET Air 142 which is the full options product.



Family range : 141 / 142

Important :

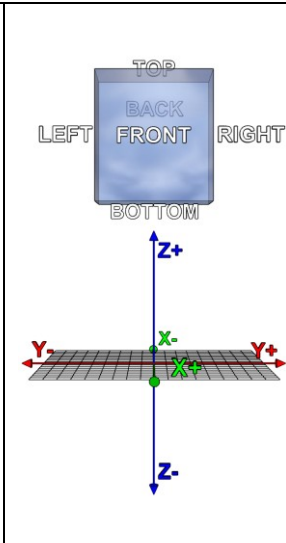
No radio communication performances was requested in the test specification TP_2025-032-AIRBASE-analog-MET_Air_142-F1-Eng

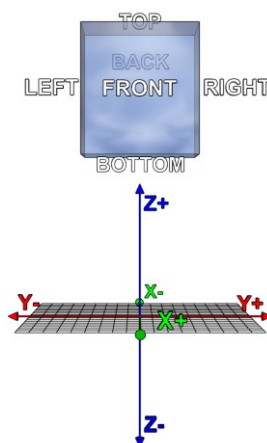
As Lora communication doesn't allow transmitting continuous current measurements as inputs to the Vegamet Air, the current outputs have been simulated as 12mA per current output.

The Lora Radio interface of the Vegamet Air is continuously in reception mode.

2.2. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES)

Equipment under test (EUT):

Model under test :	VEGAMET Air 142		
Serial Number:	14200009		
  			
Dimensions:	4cm x 11cm x 12cm (Length x Width x Height)		
Type :	DIN rail / Cabinet (considered like table-top)		



Power supply:

Name	Type	Rating	Reference / Sn	Comments
Supply1	AC	100-240 VAC 50-60	/	/
Supply2	DC	24VDC	/	/

NC: Not communicated by provider

Inputs/outputs - Cable:

Access	Type	Length used (m)	Declared <3m	Shielded	Comments
Supply1	2 wires: L+N	3	No	No	/
Relay_cable 1	2 wires	3	No	No	/
Relay_cable 2	2 wires	3	No	No	/
4-20mA_cable 1	2 wires	3	No	No	/
4-20mA_cable 1	2 wires	3	No	No	/
External antenna	Coaxial	3	No	Yes	Ref:2J3915 M-915 P/N:SI304101790

NC: Not communicated by provider

Auxiliary equipment used during test:

Type	Reference	Sn	Comments
NFC TAG	/	/	Provided by customer

NC: Not communicated by provider

Equipment information (declaration of provider):

Type:	RFID	
Chipset / RF Module	ST25R3916B-AQET	
Frequency band:	[13.553 to 13.567] MHz	
Number of Channel:	1	
Antenna Type:	Internal	
Transmit chains:	1	
Receiver chains	1	
Operating temperature range:	T _{min} :	-40 °C
	T _{nom} :	20°C
	T _{max} :	+60 °C
Operating voltage:	V _{min} (85% V _{nom}):	20VDC or 85VAC
	V _{nom} :	24VDC or 230VAC
	V _{max} (115% V _{nom}):	65VDC or 253VAC

Antenna Characteristic		
Antenna reference Gain (dBi)	Frequency Band (MHz)	Impedance(Ω)
Flex PCB FXC.30.52.0075X.B.dg Gain : (loop ø30*0.3 mm)	13.56	50

Modulation Type
Reader to tag : ASK, data rate 1.6 kbit/s using the 1/256 pulse coding mode (ISO/IEC 15693)
Tag to reader : load variation Manchester coding with subcarrier frequencies at 423 and 484 kHz. 6.6 Kbit/s in low data rate mode, at 26 Kbit/s in high data rate mode

Hardware information			
Highest internal frequency (PLL, Quartz, Clock, Microprocessor...):	F _{Highest} :	1	MHz
Firmware (if applicable):	V:	EMC_Tests_2026_CW08	
Software (if applicable):	V:	N/A	

NC: Not communicated by provider

2.3. EQUIPMENT LABELLING

Label	
	

2.4. RUNNING MODE

Test mode	Description of test mode
Test mode 1	Permanent emission with modulation on a fixed channel in the data rate that produced the highest power. Tests are performed with or without "TAG", worst case presented.
Test mode 2	Permanent reception

Test	Running mode
Occupied Bandwidth	Test mode 1
20dB Emission Bandwidth	Test mode 1
Frequency Tolerance	Test mode 1
Field strength within the band 13.110-14.010MHz	Test mode 1
Field strength outside of the bands 13.110-14.010 MHz	Test mode 1
Receiver Radiated Emissions	Test mode 2 (1)

(1) The test can't be performed because the transmitter and receiver are operating at the same frequency and the transmitter cannot be switched off as the carrier is used as receiver injection signal

2.5. EQUIPMENT MODIFICATIONS DURING THE TESTS

None



3. LABORATORY EQUIPMENT AND METHODOLOGY

3.1. CALIBRATION DATE

The calibration intervals are extended at +4 months. This extended interval is based on the fact that there is sufficient calibration data to statistically establish a trend or based on experience of use of the test equipment to assure good measurement results for a longer period. The symbol -/- replaces the date for equipment checking before test or that have none impact on the test or that have no calibration required by the standard.

3.2. FIELD STRENGTH 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 follow:

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

Where:

FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Factor

AG = Amplifier Gain

Example:

Assume a receiver reading of 52.5dB μ V is obtained. The antenna factor of 7.4 and a cable factor of 1.1 are added. The amplifier gain of 29dB is subtracted, giving a field strength of 32 dB μ V/m.

$$FS = 52.5 + 7.4 + 1.1 - 29 = 32 \text{ dB}\mu\text{V/m}$$

The 32 dB μ V/m value can be mathematically converted to its corresponding level in μ V/m.

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32\text{dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}.$$

3.3. TEST DISTANCE EXTRAPOLATION – FCC

The field strength is extrapolated to the new measurement distance using formula from §6.4.4 de l'ANSI C63.10 and FCC Part15.31 (p), the choice of equation is made according to the distances of the limit and the measurement,

$$FS_{\text{limit}} = FS_{\text{max}} - 40 \log \left(\frac{d_{\text{near field}}}{d_{\text{measure}}} \right) - 20 \log \left(\frac{d_{\text{limit}}}{d_{\text{near field}}} \right) \quad (2)$$

$$FS_{\text{limit}} = FS_{\text{max}} - 20 \log \left(\frac{d_{\text{limit}}}{d_{\text{measure}}} \right) \quad (3)$$

$$FS_{\text{limit}} = FS_{\text{max}} - 40 \log \left(\frac{d_{\text{limit}}}{d_{\text{measure}}} \right) \quad (4)$$

where

FS_{limit}	is the calculation of field strength at the limit distance, expressed in dBμV/m
FS_{max}	is the measured field strength, expressed in dBμV/m
$d_{\text{near field}}$	is the $\lambda/2\pi$ distance
d_{measure}	is the distance of the measurement point from the EUT
d_{limit}	is the reference limit distance

3.4. TEST DISTANCE EXTRAPOLATION – ISED

The field strength is extrapolated to the new measurement distance using formula from §6.5-6.6 RSS-GEN:

Below 30MHz,

$$FS_{\text{limit}} = FS_{\text{max}} - 40 \log \left(\frac{d_{\text{limit}}}{d_{\text{measure}}} \right)$$

Above 30MHz,

$$FS_{\text{limit}} = FS_{\text{max}} - 20 \log \left(\frac{d_{\text{limit}}}{d_{\text{measure}}} \right)$$

Where:

FS_{limit} is the calculation of field strength at the limit distance, expressed in dBμV/m

FS_{max} is the measured field strength, expressed in dBμV/m

d_{measure} is the distance of the measurement point from the EUT

d_{limit} is the reference limit distance

4. OCCUPIED BANDWIDTH

4.1. TEST CONDITIONS

Date of test	: March 16, 2026	March 18, 2026
Test performed by	: Majid MOURZAGH / Marlon BOUBY	Majid MOURZAGH / Marlon BOUBY
Relative humidity (%)	: 38	36
Ambient temperature (°C)	: 22	22

4.2. TEST SETUP

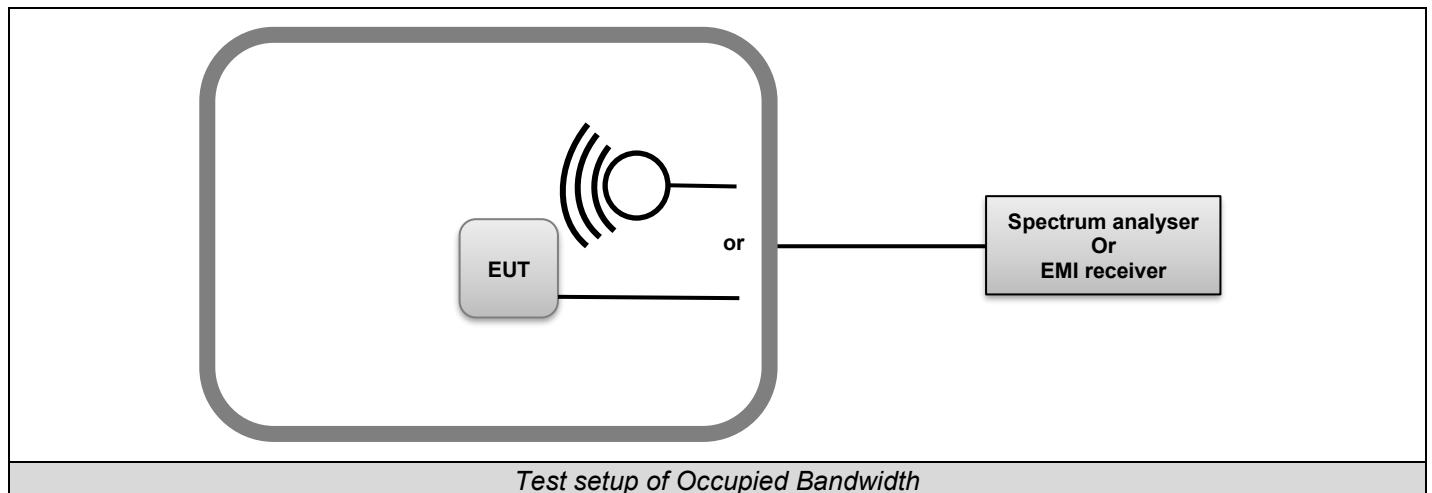
The Equipment Under Test is installed in a climatic chamber.
Measurement is performed with a spectrum analyzer in radiated method.

The EUT is turned ON, the center frequency of the spectrum analyzer is set to the fundamental frequency. The captured power is measured and recorded; the measurement is repeated until all frequencies required were complete.

Test Procedure:

RSS-Gen Issue 5 § 6.7

- RBW used in the range of 1% to 5% of the anticipated emission bandwidth
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- Detector = Peak.
- Trace mode = Max Hold.
- Sweep = Auto couple.
- Allow the trace to stabilize.
- OBW 99% function of spectrum analyzer used



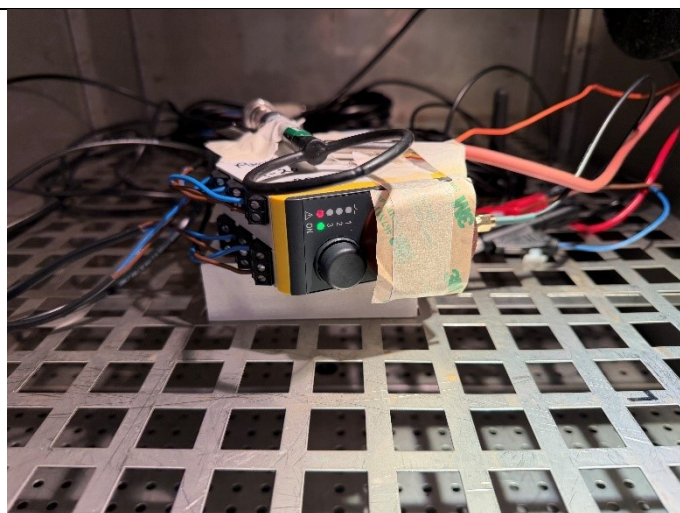
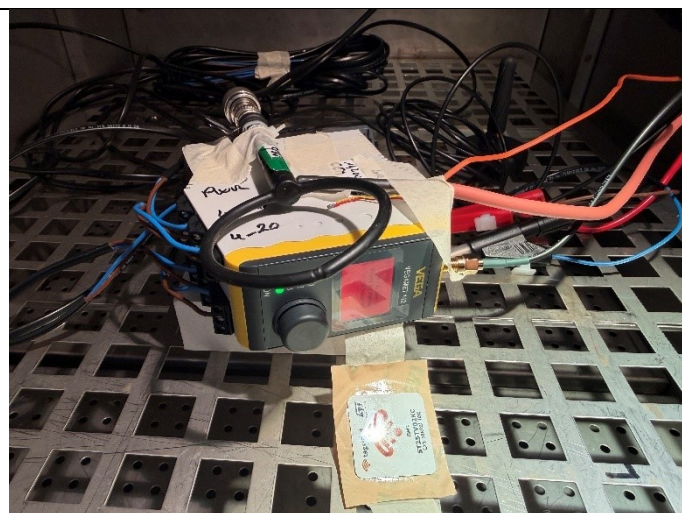
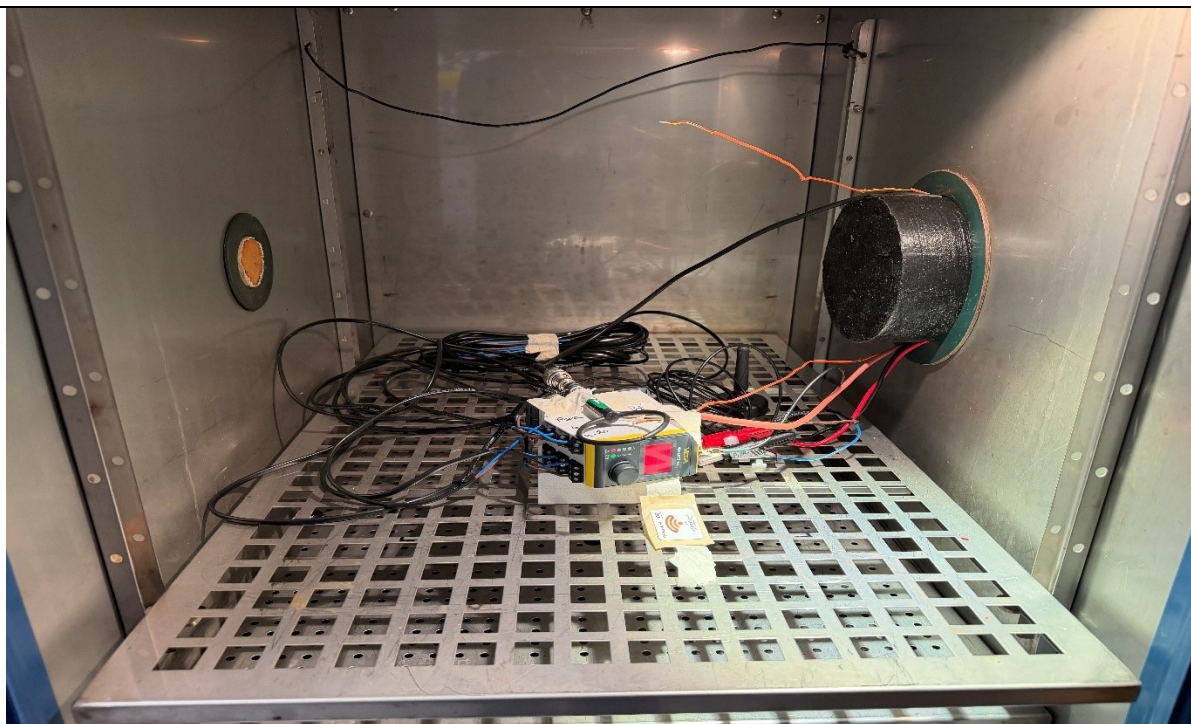


Photo of Occupied bandwidth

4.3. LIMIT

None



4.4. TEST EQUIPMENT LIST

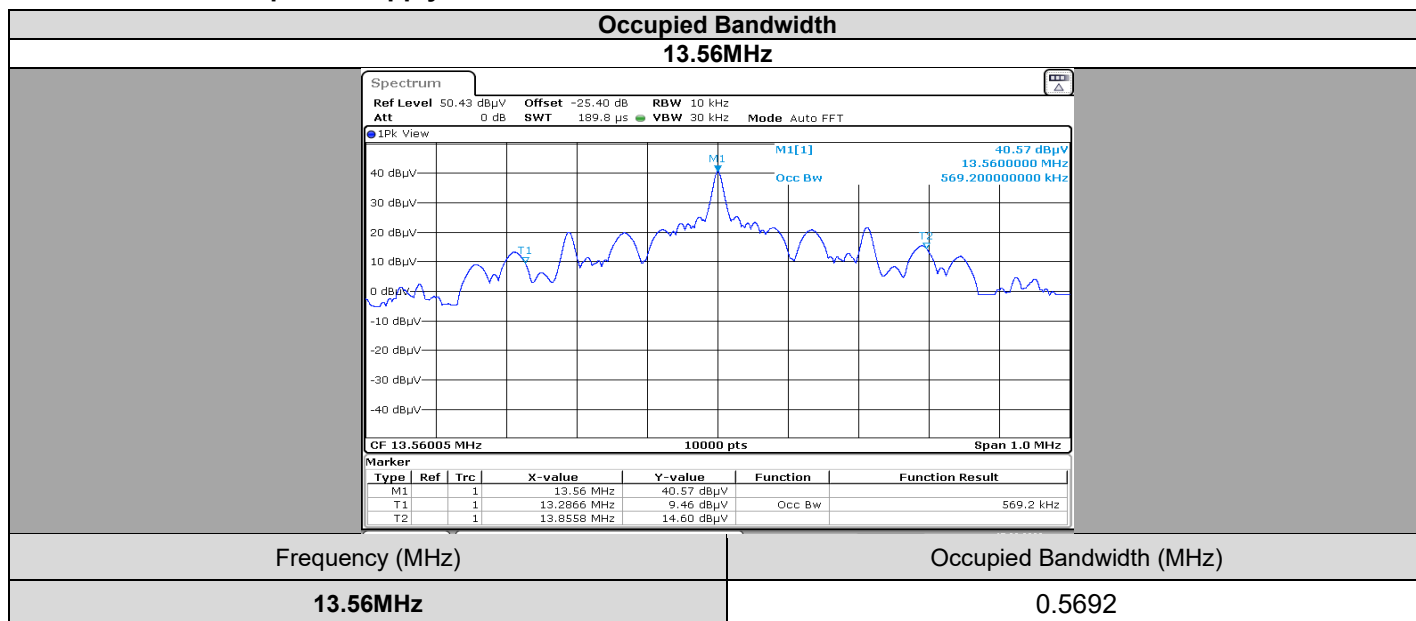
TEST EQUIPMENT USED on climatic chamber					
Description	Manufacturer	Model	Identifiant	Cal_Date	Cal_Due
Multimeter	FLUKE	289	A1241119	05/2025	05/2027
Spectrum Analyzer 9kHz - 6GHz	ROHDE & SCHWARZ	FSL6	A2642020	01/2025	01/2027
Cable SMA 2m	—	6GHz	A5329635	09/2024	09/2026
Data Logger (CEM1)	AGILENT	34970A	A6440083	11/2025	11/2027
AC source 1kW	KEYSIGHT	AC6802A	A7042305	-/-	-/-
Attenuator 10dB	AEROFLEX	—	A7122268	08/2025	08/2027
Thermo-hygrometer	TESTO	608-H2	B4204121	05/2025	05/2027
Thermocouple K (radio)	FLUKE	Type K	B4045004	01/2026	01/2028
Thermocouple K (radio)	FLUKE	Type K	B4045005	10/2023	10/2025
Antenna Loop (near field)	ELECTRO-METRICS	EM-6993	C2040215	01/2026	01/2029
Climatic chamber	BIA CLIMATIC	CL 6-25	D1022117	01/2023	-/-
Mesure_300330-FCC-ISED	LCIE SUD EST	v1.1	L2000064	NA	NA

4.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

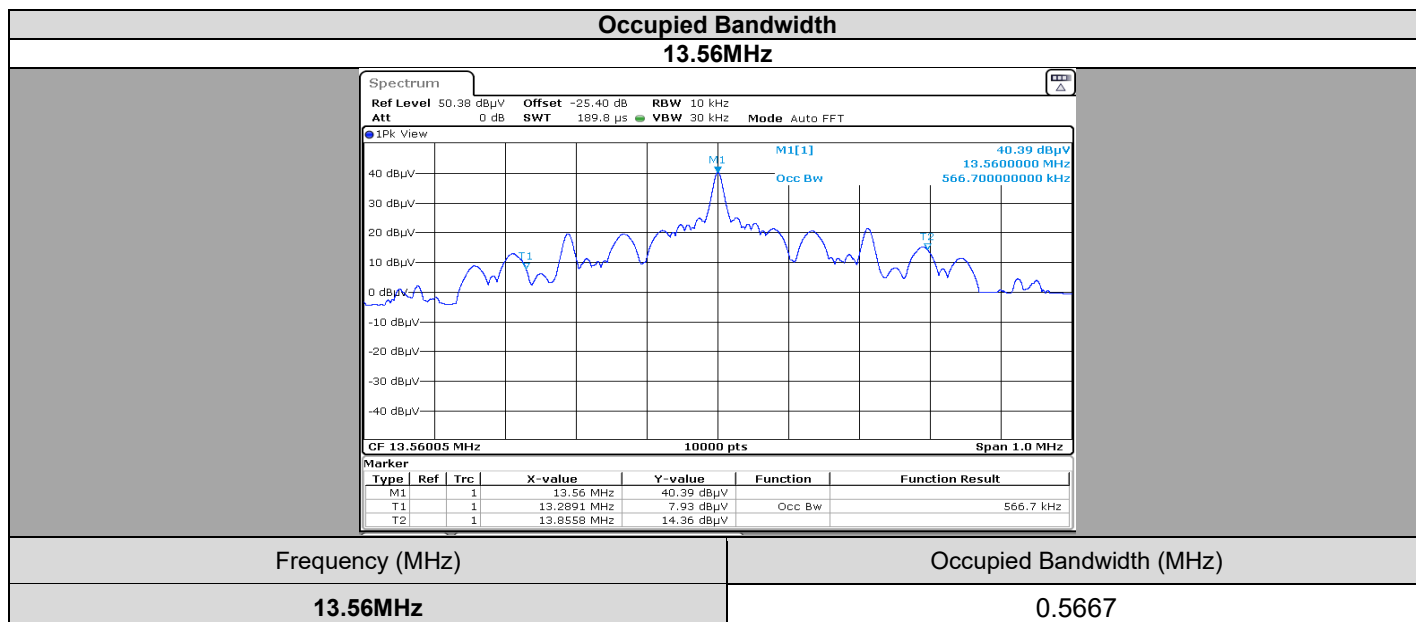
None

4.6. RESULTS

4.6.1. With DC power supply mode



4.6.2. With AC power supply mode



4.7. CONCLUSION

Occupied Channel Bandwidth measurement performed on the sample of the product **VEGAMET Air 142**, Sn: **14200009**, in configuration and description presented in this test report, show levels **compliant** to the **RSS-GEN** limits.

5. 20dB EMISSION BANDWIDTH

5.1. TEST CONDITIONS

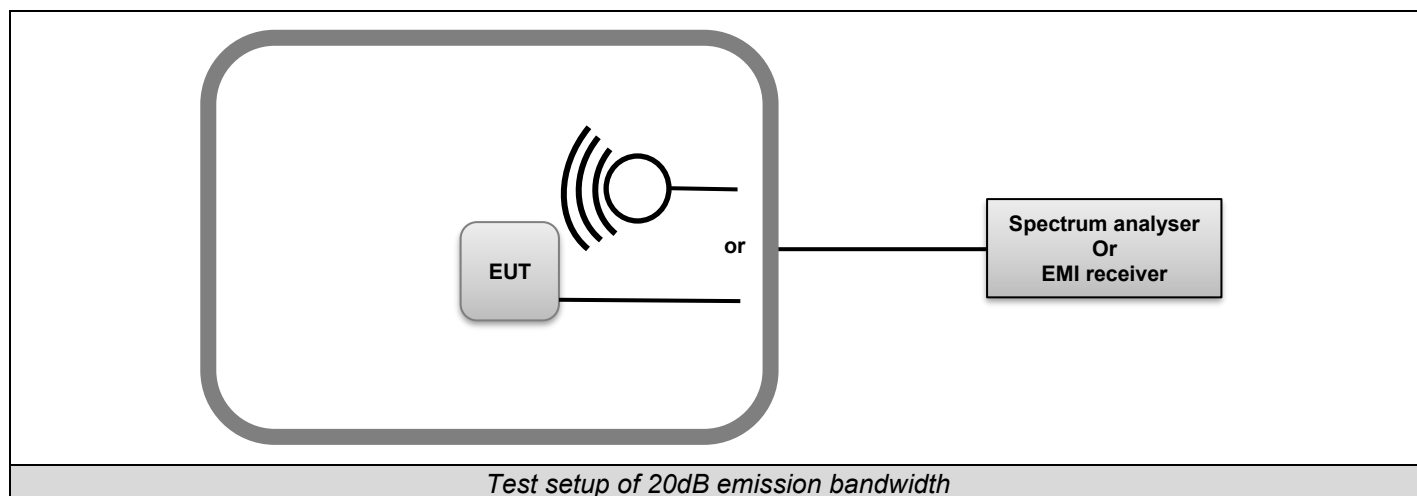
Date of test	: March 16, 2026	March 18, 2026
Test performed by	: Majid MOURZAGH / Marlon BOUBY	Majid MOURZAGH / Marlon BOUBY
Relative humidity (%)	: 38	36
Ambient temperature (°C)	: 22	22

5.2. TEST SETUP

The Equipment Under Test is installed **in a climatic chamber**.
Measurement is performed with a spectrum analyzer in **radiated method**.

Test Procedure:
ANSI C63.10 § 6.9.2:

The EUT is turn ON; levels have been corrected to be in compliant with the Peak Output Power measured; and using the MaxHold function, the frequency separation of two frequencies that were attenuated 20dB from the Peak Output Power level. A delta marker is used to measure the frequency difference as the emission bandwidth.



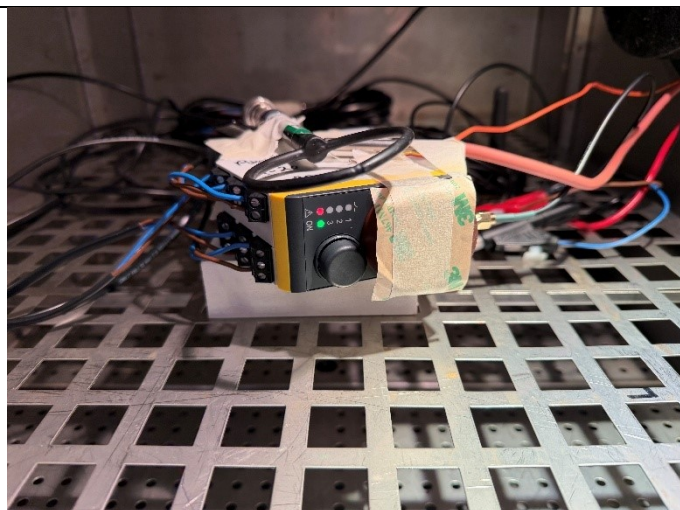
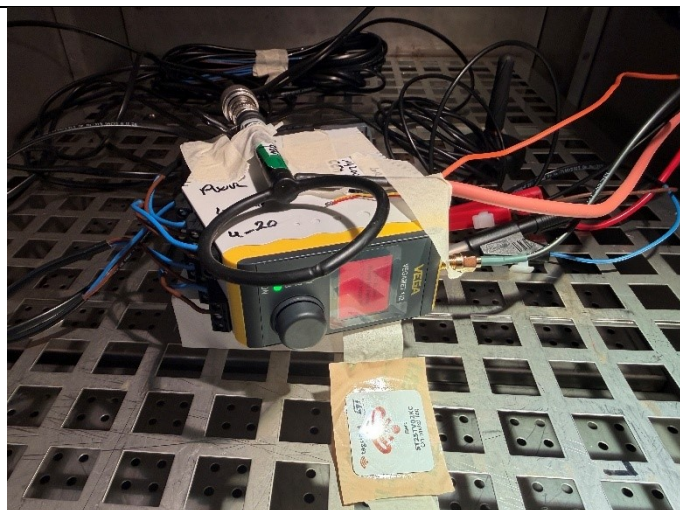
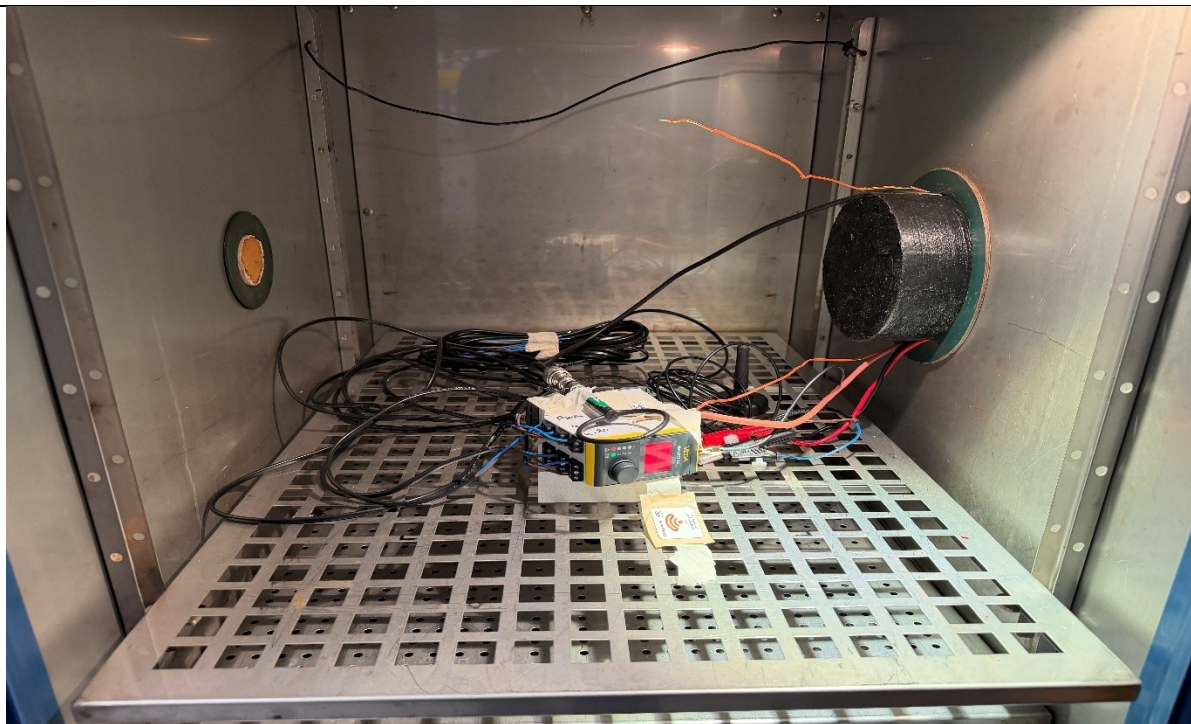


Photo of 20dB emission bandwidth

5.3. LIMIT

No Limit



5.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED on climatic chamber					
Description	Manufacturer	Model	Identifiant	Cal_Date	Cal_Due
Multimeter	FLUKE	289	A1241119	05/2025	05/2027
Spectrum Analyzer 9kHz - 6GHz	ROHDE & SCHWARZ	FSL6	A2642020	01/2025	01/2027
Cable SMA 2m	—	6GHz	A5329635	09/2024	09/2026
Data Logger (CEM1)	AGILENT	34970A	A6440083	11/2025	11/2027
AC source 1kW	KEYSIGHT	AC6802A	A7042305	-/-	-/-
Attenuator 10dB	AEROFLEX	—	A7122268	08/2025	08/2027
Thermo-hygrometer	TESTO	608-H2	B4204121	05/2025	05/2027
Thermocouple K (radio)	FLUKE	Type K	B4045004	01/2026	01/2028
Thermocouple K (radio)	FLUKE	Type K	B4045005	10/2023	10/2025
Antenna Loop (near field)	ELECTRO-METRICS	EM-6993	C2040215	01/2026	01/2029
Climatic chamber	BIA CLIMATIC	CL 6-25	D1022117	01/2023	-/-
Mesure_300330-FCC-ISED	LCIE SUD EST	v1.1	L2000064	NA	NA

5.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

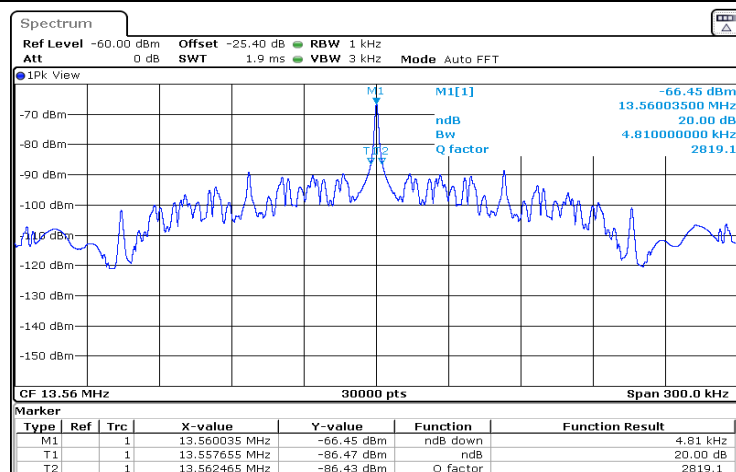
None

5.6. RESULTS – FCC

5.6.1. With DC power supply mode

Frequency (MHz)	20 dB Bandwidth (kHz)
13.56	4.81

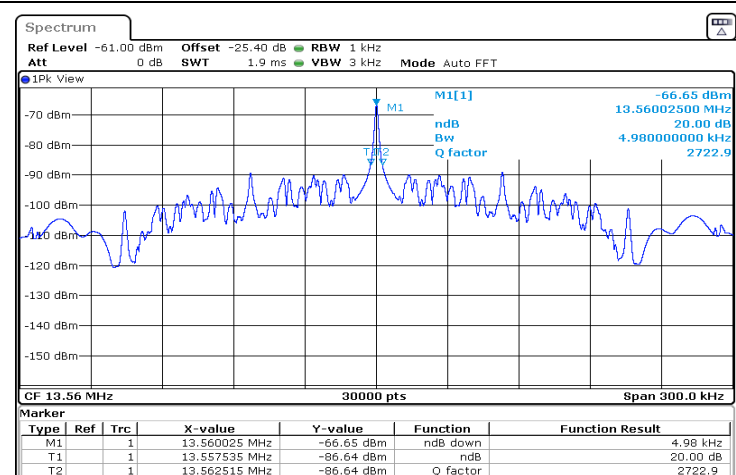
Graph



5.6.2. With AC power supply mode

Frequency (MHz)	20 dB Bandwidth (kHz)
13.56	4.98

Graph

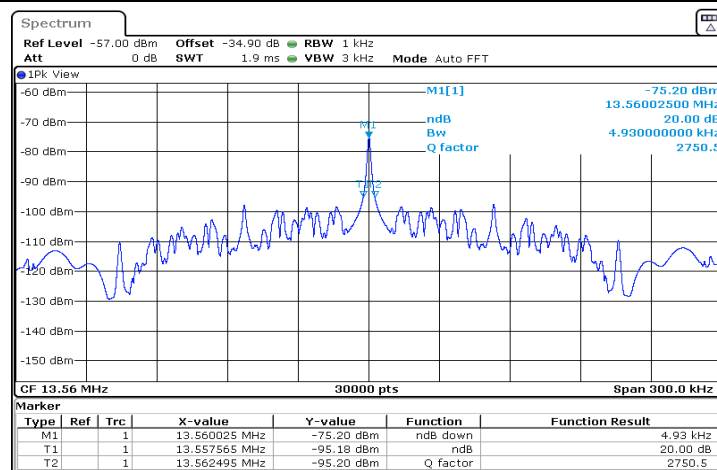


5.7. RESULTS – ISED

5.7.1. With DC power supply mode

Frequency (MHz)	20 dB Bandwidth (kHz)
13.56	4.81

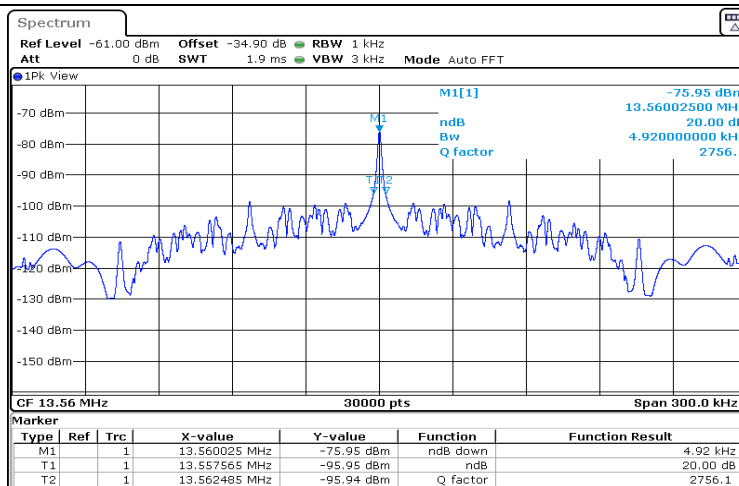
Graph



5.7.2. With AC power supply mode

Frequency (MHz)	20 dB Bandwidth (kHz)
13.56	4.98

Graph



5.8. CONCLUSION

20dB Emission Bandwidth measurement performed on the sample of the product **VEGAMET Air 142**, Sn: **14200009**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.225 & RSS 210** limits.

6. FREQUENCY TOLERANCE

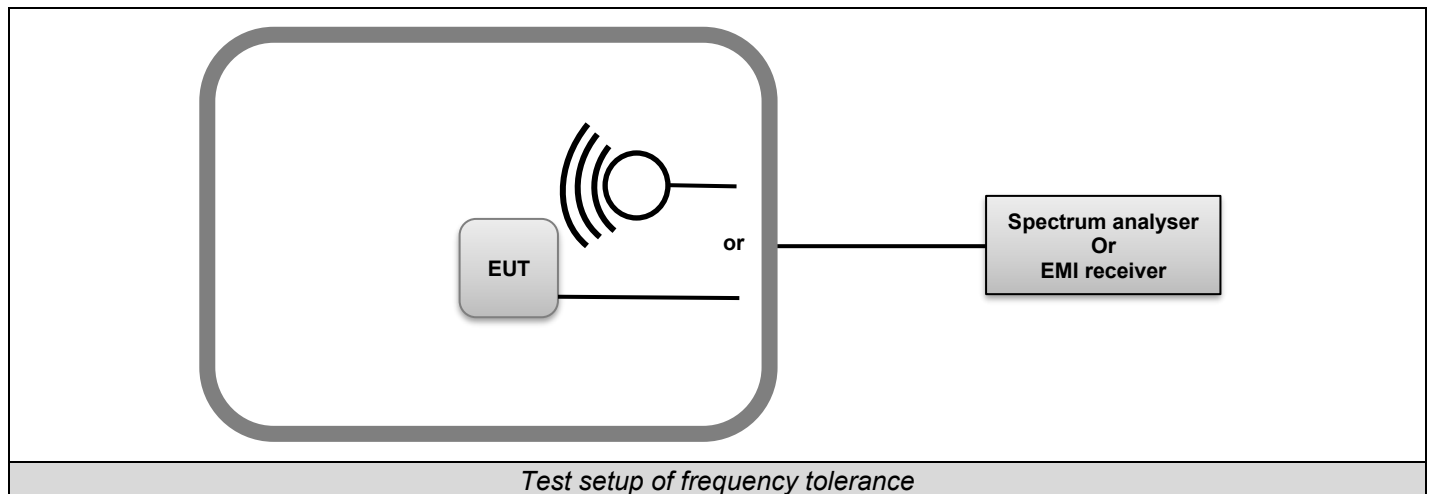
6.1. TEST CONDITIONS

Date of test	: March 16, 2026	March 18, 2026
Test performed by	: Majid MOURZAGH / Marlon BOUBY	Majid MOURZAGH / Marlon BOUBY
Relative humidity (%)	: 38	36
Ambient temperature (°C)	: 22	22

6.2. TEST SETUP

The Equipment Under Test is installed **in a climatic chamber**.
Measurement is performed with a spectrum analyzer in **radiated method**.

Test Procedure:
ANSI C63.10 § 6.8



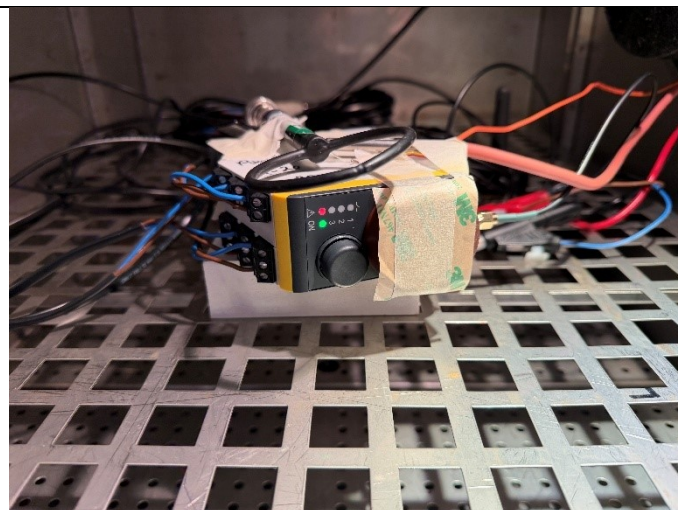
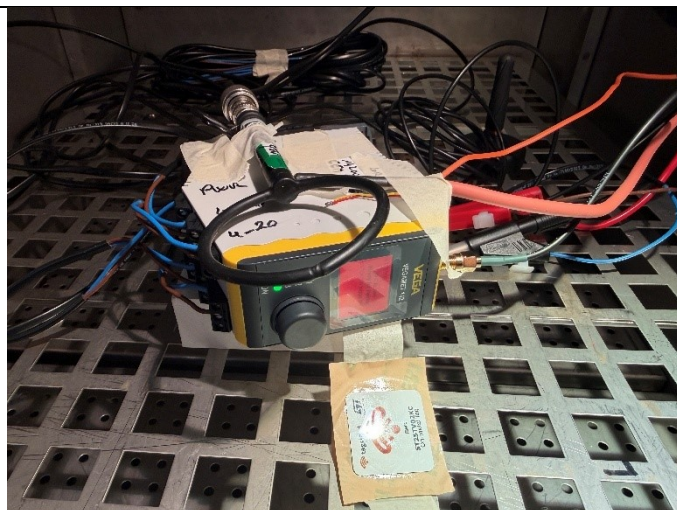
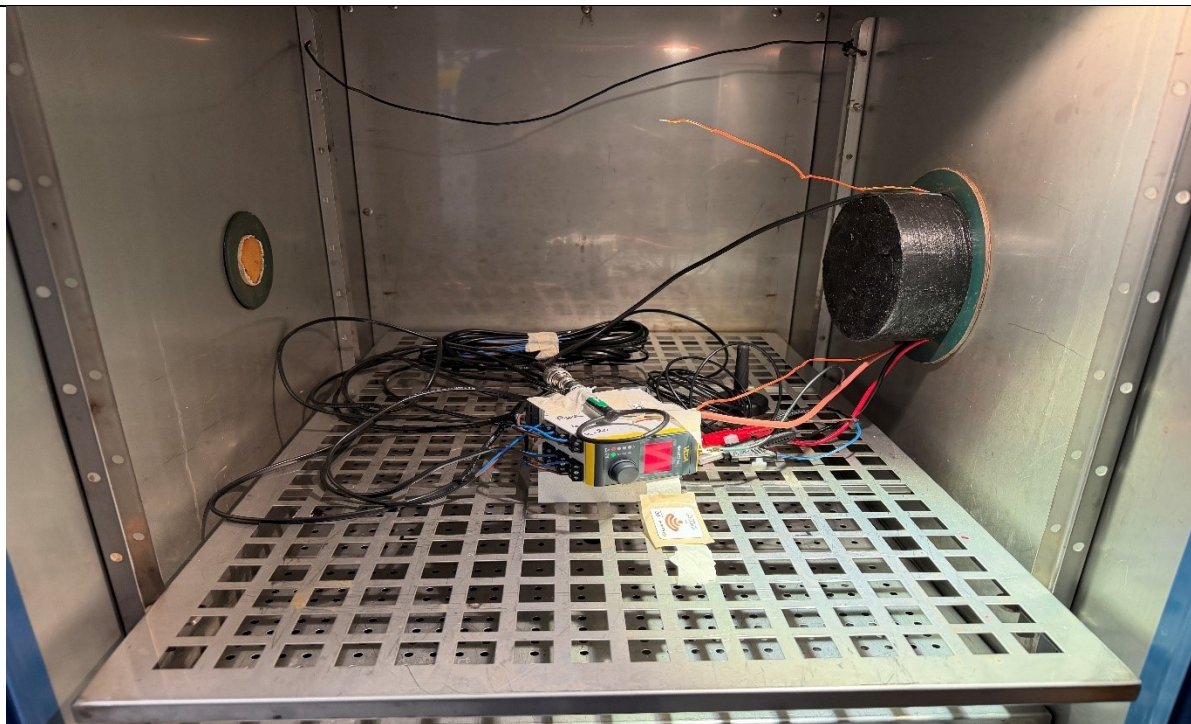


Photo of frequency tolerance

6.3. **LIMIT**

$\pm 0.01\%$ ($\pm 100\text{ppm}$)



6.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED on climatic chamber					
Description	Manufacturer	Model	Identifiant	Cal_Date	Cal_Due
Multimeter	FLUKE	289	A1241119	05/2025	05/2027
Spectrum Analyzer 9kHz - 6GHz	ROHDE & SCHWARZ	FSL6	A2642020	01/2025	01/2027
Cable SMA 2m	—	6GHz	A5329635	09/2024	09/2026
Data Logger (CEM1)	AGILENT	34970A	A6440083	11/2025	11/2027
AC source 1kW	KEYSIGHT	AC6802A	A7042305	-/-	-/-
Attenuator 10dB	AEROFLEX	—	A7122268	08/2025	08/2027
Thermo-hygrometer	TESTO	608-H2	B4204121	05/2025	05/2027
Thermocouple K (radio)	FLUKE	Type K	B4045004	01/2026	01/2028
Thermocouple K (radio)	FLUKE	Type K	B4045005	10/2023	10/2025
Antenna Loop (near field)	ELECTRO-METRICS	EM-6993	C2040215	01/2026	01/2029
Climatic chamber	BIA CLIMATIC	CL 6-25	D1022117	01/2023	-/-
Mesure_300330-FCC-ISED	LCIE SUD EST	v1.1	L2000064	NA	NA

6.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

6.6. RESULTS

6.6.1. With DC power supply mode

EUT activation:	Startup										
Voltage:	V _{nom}										
Temperature	-40	-30	-20	-10	0	10	20	30	40	50	60
Frequency (MHz)	13.56043205	13.56035	13.560255	13.56012352	13.56022509	13.56014589	13.56013489	13.56009809	13.559958	13.55998682	13.55994328
Frequency Drift (%)	0.0032%	0.0026%	0.0019%	0.0009%	0.0017%	0.0011%	0.0010%	0.0007%	-0.0003%	-0.0001%	-0.0004%
EUT ACTIVATION	2min										
Voltage	V _{nom}										
Frequency (MHz)	13.5604298	13.560361	13.5602419	13.56009954	13.56020309	13.56013849	13.56012369	13.56007769	13.559955	13.55997458	13.5599358
Frequency Drift (%)	0.0032%	0.0027%	0.0018%	0.0007%	0.0015%	0.0010%	0.0009%	0.0006%	-0.0003%	-0.0002%	-0.0005%
EUT ACTIVATION	5min										
Voltage	V _{nom}										
Frequency (MHz)	13.56043455	13.560366	13.5602429	13.56007446	13.56017709	13.56013289	13.56011449	13.56003169	13.559949	13.55995265	13.5599372
Frequency Drift (%)	0.0032%	0.0027%	0.0018%	0.0005%	0.0013%	0.0010%	0.0008%	0.0002%	-0.0004%	-0.0003%	-0.0005%
EUT ACTIVATION	10min										
Voltage	V _{nom}										
Frequency (MHz)	13.56043191	13.56041	13.5602489	13.56004608	13.56017149	13.56012909	13.56010753	13.56001129	13.559946	13.55994429	13.5599422
Frequency Drift (%)	0.0032%	0.0030%	0.0018%	0.0003%	0.0013%	0.0010%	0.0008%	0.0001%	-0.0004%	-0.0004%	-0.0004%

Temperature	T _{nom}		
Voltage:	V _{min}	V _{nom}	V _{max}
Frequency (MHz)	13.56004387	13.56004608	13.56004139
Frequency Drift (%)	0.0003%	0.0003%	0.0003%



6.6.2. With AC power supply mode

EUT activation:	Startup										
Voltage:	V _{nom}										
Temperature	-40	-30	-20	-10	0	10	20	30	40	50	60
Frequency (MHz)	13.56043329	13.56042502	13.56036577	13.5603314	13.56030069	13.56019009	13.56003671	13.56002589	13.5600356	13.55996083	13.55995568
Frequency Drift (%)	0.0032%	0.0031%	0.0027%	0.0024%	0.0022%	0.0014%	0.0003%	0.0002%	0.0003%	-0.0003%	0.0002%
EUT ACTIVATION	2min										
Voltage	V _{nom}										
Frequency (MHz)	13.56043246	13.56042861	13.5603632	13.5603225	13.56025829	13.56017529	13.56002954	13.5600139	13.56	13.5599419	13.5599631
Frequency Drift (%)	0.0032%	0.0032%	0.0027%	0.0024%	0.0019%	0.0013%	0.0002%	0.0001%	0.0000%	-0.0004%	-0.0003%
EUT ACTIVATION	5min										
Voltage	V _{nom}										
Frequency (MHz)	13.56043274	13.56043109	13.56036025	13.5603185	13.56022149	13.56016609	13.56003092	13.55998649	13.559902	13.55993666	13.5599684
Frequency Drift (%)	0.0032%	0.0032%	0.0027%	0.0023%	0.0016%	0.0012%	0.0002%	-0.0001%	-0.0007%	-0.0005%	-0.0002%
EUT ACTIVATION	10min										
Voltage	V _{nom}										
Frequency (MHz)	13.56043329	13.56043329	13.5603607	13.5603165	13.56019009	13.56015309	13.56002238	13.55998009	13.55995099	13.5599629	13.55997552
Frequency Drift (%)	0.0032%	0.0032%	0.0027%	0.0023%	0.0014%	0.0011%	0.0002%	-0.0001%	-0.0004%	-0.0005%	-0.0002%

Temperature	T _{nom}		
Voltage:	V _{min}	V _{nom}	V _{max}
Frequency (MHz)	13.56001356	13.56002238	13.56004139
Frequency Drift (%)	0.0001%	0.0002%	0.0003%

6.7. CONCLUSION

Frequency tolerance measurement performed on the sample of the product **VEGAMET Air 142**, Sn: **14200009**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.225 & RSS 210** limits.



7. FIELD STRENGTH WITHIN THE BAND 13.110-14.010MHz

7.1. TEST CONDITIONS

Date of test : March 13, 2026
Test performed by : Majid MOURZAGH / Marlon BOUBY
Relative humidity (%) : 39
Ambient temperature (°C) : 23

7.2. TEST SETUP

The Equipment Under Test is installed in a climatic chamber, related to measure from OATS..
Measurement is performed with a spectrum analyzer in radiated method.

Test Procedure:
ANSI C63.10

The EUT is placed on an open area test site. Distance between measuring antenna and the EUT is 10m. Test is performed in parallel, perpendicular, and ground parallel axis with a loop antenna below 30MHz. Measurement bandwidth was 9kHz between 150kHz & 30MHz. The level has been maximized by the turntable rotation of 360 degrees range on all axis of EUT used in normal configuration. Antenna height search was performed from 1 to 4m. The EUT is place at 0.8m.

Ambient temperature: 14 °C
Relative humidity: 38 %

Note: It is impracticable to carry out tests under normal condition as specified in standard.

When measurement with test fixture is used, the power level calibration of the spectrum analyzer shall then be related to the power level or field strength measured with temperature during OATS measure taking in consideration in climatic chamber. The calculation will be used to calculate the absolute level of the sideband power.

Frequency band 13.110-14.010MHz

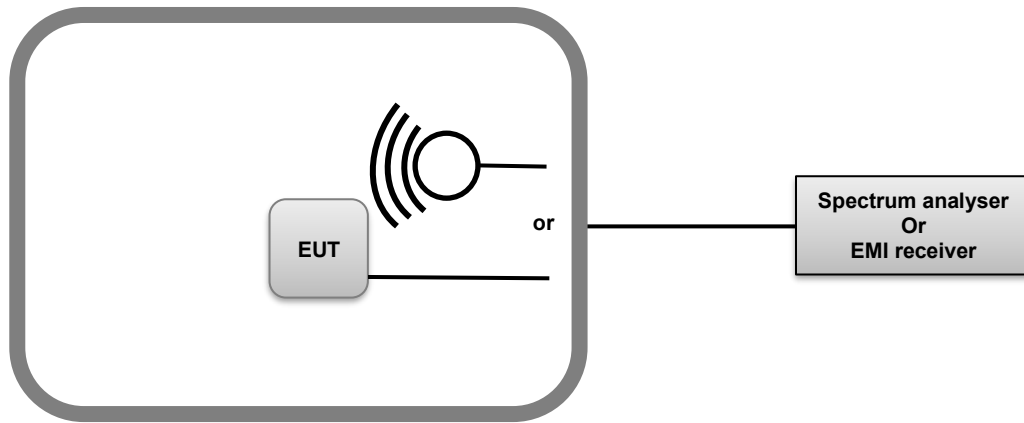
Following plots show radiated emission level in the frequency band 13.110-14.010MHz with a RBW of 9kHz and a quasi-peak detector. The graphs are obtained with a measuring receiver.



Test setup of Field strength within the band 13.110-14.010MHz in OATS



Photo of Field strength within the band 13.110-14.010MHz in OATS



Test setup of Field strength within the band 13.110-14.010MHz in Climatic Chamber

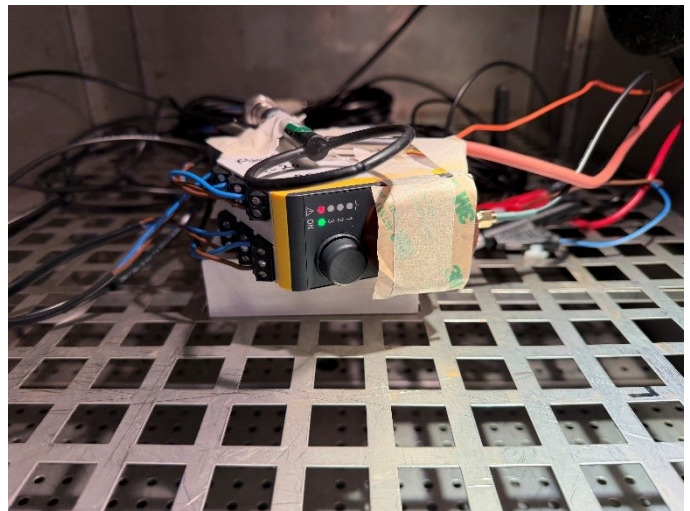
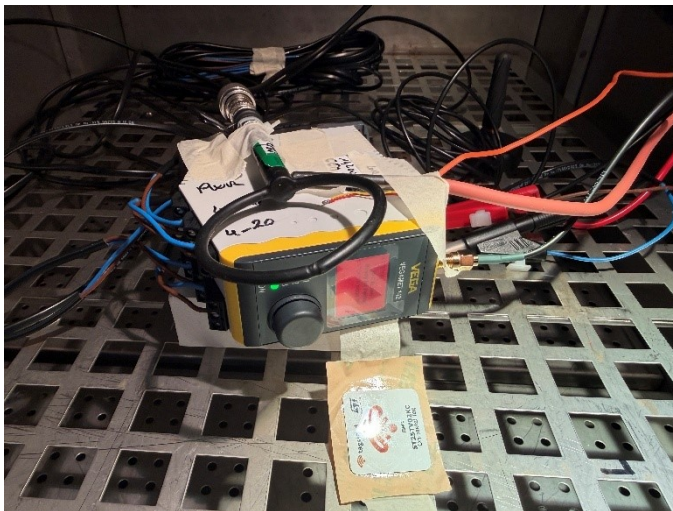


Photo of Field strength within the band 13.110-14.010MHz in Climatic Chamber

7.3. LIMIT

Frequency (MHz)	Field strength ($\mu\text{V/m}$) @30m	Field strength (dB $\mu\text{V/m}$) @30m
13.553-13.567	15 848	84.0
13.410-13.553 13.567-13.710	334.0	50.5
13.110-13.410 13.710-14.010	106.0	40.5
Below 13.110MHz Above 14.010MHz	30.0	29.5

7.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED ON OATS						
Description	Manufacturer	Model	Identifier	Cal_Date	Cal_Due	Location
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	11/2025	11/2027	Défaut
EMR comb generator	BARDET	—	A3169050	NA	NA	Défaut
Cable (OATS)	—	1GHz	A5329623	08/2025	08/2026	Défaut
Emission Cable	MICRO-COAX	1GHz	A5329656	08/2025	08/2026	Défaut
Antenna loop	ELECTRO-METRICS	EM-6879	C2040294	11/2024	11/2026	Défaut
Antenna Bi-log	CHASE	CBL6111A	C2040172	07/2024	07/2026	Défaut
Biconic Antenna	EATON	94455-1	C2040234	11/2025	11/2027	Défaut
Turntable / Mast controller (OATS)	ETS Lingren	Model 2066	F2000372	-/-	-/-	Défaut
Antenna Mat (OATS)	ETS Lingren	2071-2	F2000392	-/-	-/-	Défaut
Turntable (OATS)	ETS Lingren	Model 2187	F2000403	-/-	-/-	Défaut
OATS	—	—	F2000409	10/2025	10/2026	Défaut
Table C1/OATS	LCIE	—	F2000445	-/-	-/-	Défaut
Rehausse Table C1/OATS	LCIE	—	F2000512	-/-	-/-	Défaut
CALCUL_FACTEURS	LCIE SUD EST	v4	L2000035	NA	NA	Défaut
Emission Cable	CABELTEL	6GHz	A5329069	08/2025	08/2026	Défaut

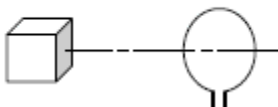
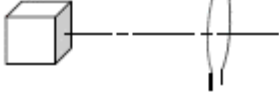
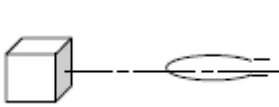
TEST EQUIPMENT USED on climatic chamber					
Description	Manufacturer	Model	Identifier	Cal_Date	Cal_Due
Multimeter	FLUKE	289	A1241119	05/2025	05/2027
Spectrum Analyzer 9kHz - 6GHz	ROHDE & SCHWARZ	FSL6	A2642020	01/2025	01/2027
Cable SMA 2m	—	6GHz	A5329635	09/2024	09/2026
Data Logger (CEM1)	AGILENT	34970A	A6440083	11/2025	11/2027
AC source 1kW	KEYSIGHT	AC6802A	A7042305	-/-	-/-
Attenuator 10dB	AEROFLEX	—	A7122268	08/2025	08/2027
Thermo-hygrometer	TESTO	608-H2	B4204121	05/2025	05/2027
Thermocouple K (radio)	FLUKE	Type K	B4045004	01/2026	01/2028
Thermocouple K (radio)	FLUKE	Type K	B4045005	10/2023	10/2025
Antenna Loop (near field)	ELECTRO-METRICS	EM-6993	C2040215	01/2026	01/2029
Climatic chamber	BIA CLIMATIC	CL 6-25	D1022117	01/2023	-/-
Mesure_300330-FCC-ISED	LCIE SUD EST	v1.1	L2000064	NA	NA

7.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

None

7.6. RESULTS - FCC

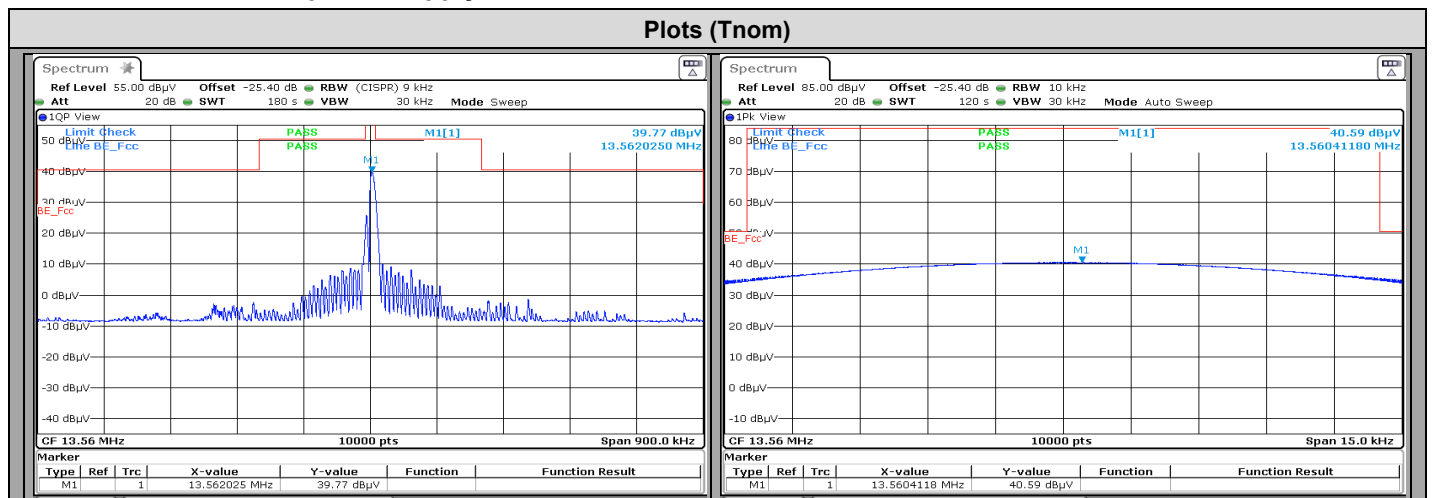
7.6.1. Results on OATS test conditions - FCC

Frequency (MHz)	QPeak Limit (dBμV/m) @ 30m	QPeak (dBμV/m) @ 30m	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. Factor (dB)	Comments
13.56	84	40.6	-45.4	0	0°	160	35.7	Worst case on DC power supply mode
 Parallel Axis (0°)  Perpendicular Axis (90°)  Ground Parallel Axis (180°)								

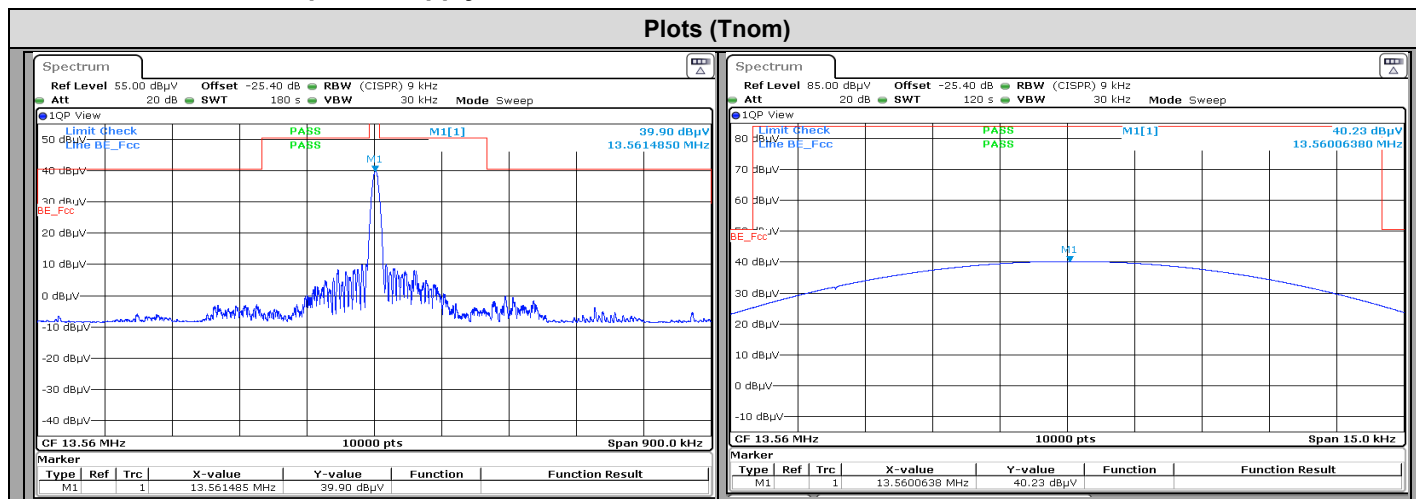
Note: Measure have been done at 10m distance and corrected according to requirements of § test distance extrapolation.

7.6.2. Results under Normal condition – FCC

7.6.2.1. With DC power supply mode

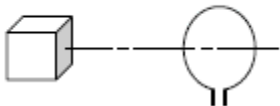
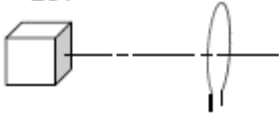
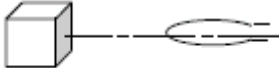


7.6.2.2. With AC power supply mode



7.7. RESULTS - ISED

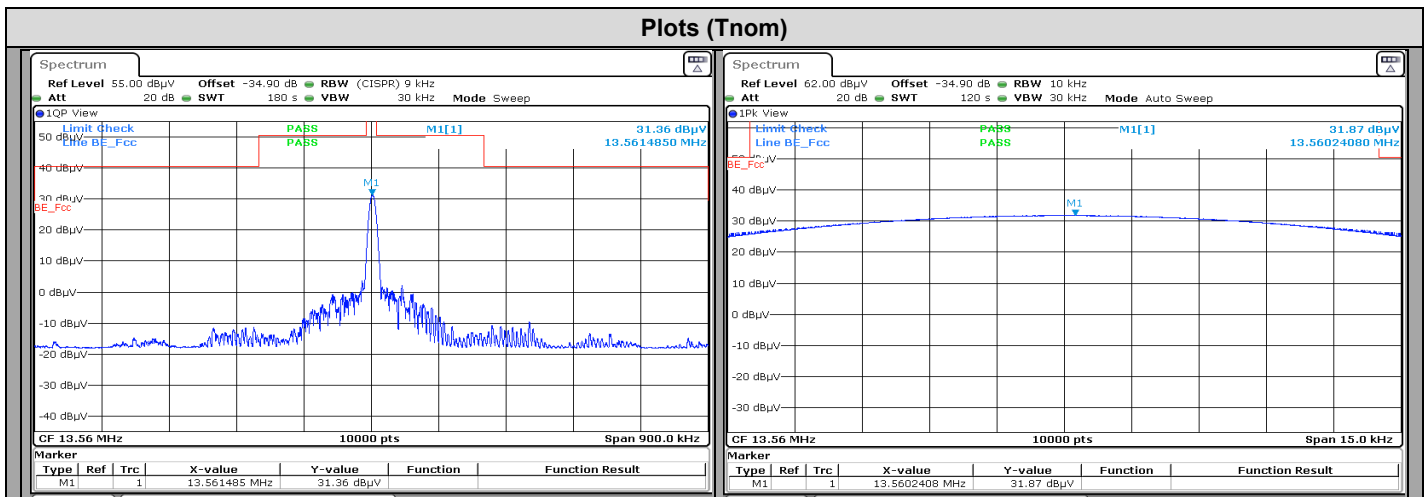
7.7.1. Results on OATS test conditions - ISED

Frequency (MHz)	QPeak Limit (dBμV/m) @ 30m	QPeak (dBμV/m) @ 30m	Margin (Mes-Lim) (dB)	Angle Table (deg)	Pol Ant.	Ht Ant. (cm)	Correc. Factor (dB)	Comments
13.56	84	31.9	52.1	0	0°	160	35.7	Worst case on DC power supply mode
 Parallel Axis (0°)  Perpendicular Axis (90°)  Ground Parallel Axis (180°)								

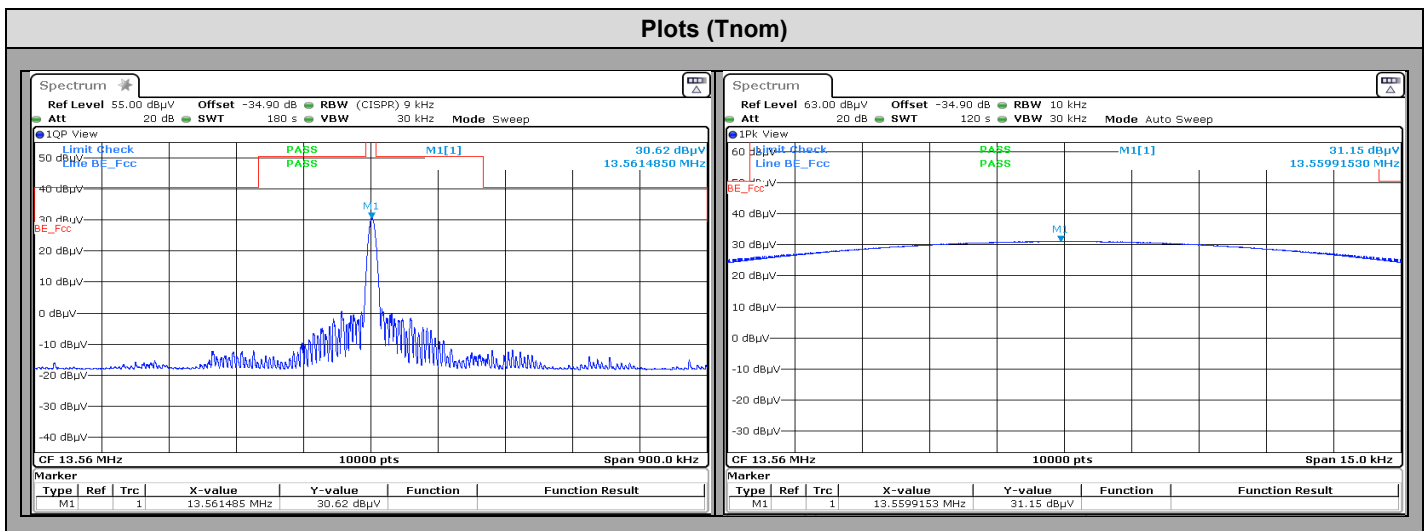
Note: Measure have been done at 10m distance and corrected according to requirements of 15.209.e) ($M@30m = M@10m - 19.1dB$)

7.7.2. Results under Normal condition – ISED

7.7.2.1. With DC power supply mode



7.7.2.2. With AC power supply mode



7.8. CONCLUSION

Field strength within the band 13.110-14.010MHz measurement performed on the sample of the product **VEGAMET Air 142**, Sn: **14200009**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.225 & RSS 210** limits.



8. FIELD STRENGTH OUTSIDE OF THE BANDS 13.110-14.010 MHz

8.1. TEST CONDITIONS

Date of test	: March 13, 2026	March 16, 2026
Test performed by	: Majid MOURZAGH / Marlon BOUBY	Majid MOURZAGH / Marlon BOUBY
Relative humidity (%)	: 39	38
Ambient temperature (°C)	: 23	22

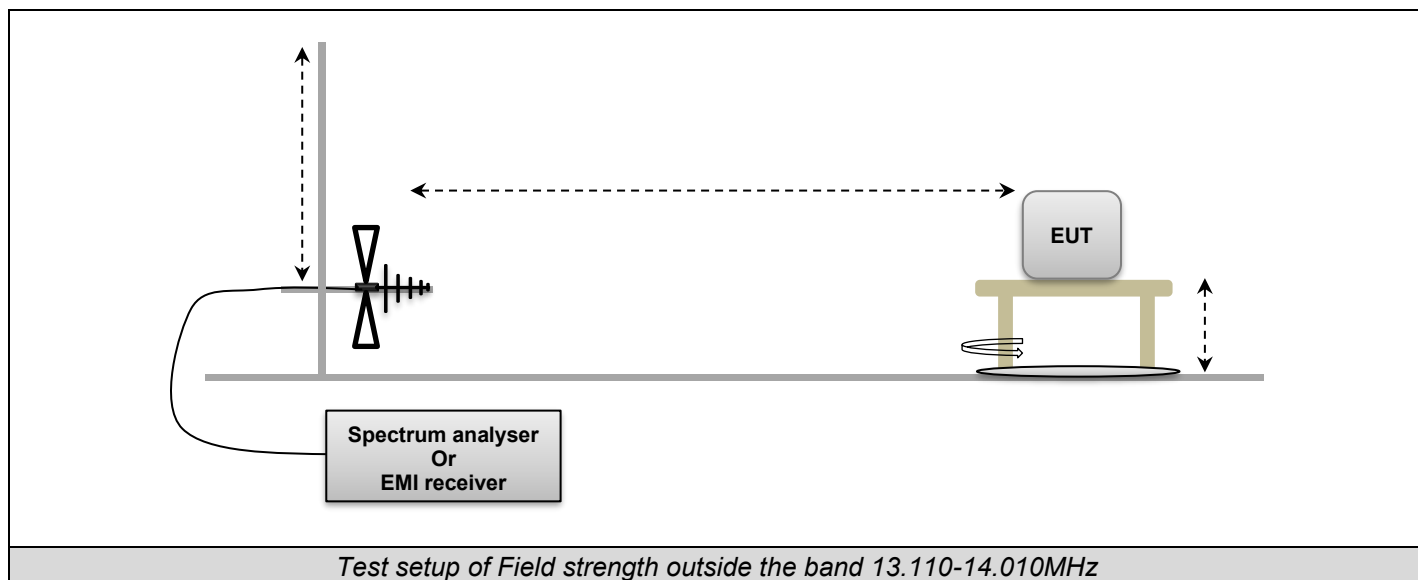
8.2. TEST SETUP

Test procedure:
ANSI C63.10 & FCC Part 15 subpart C

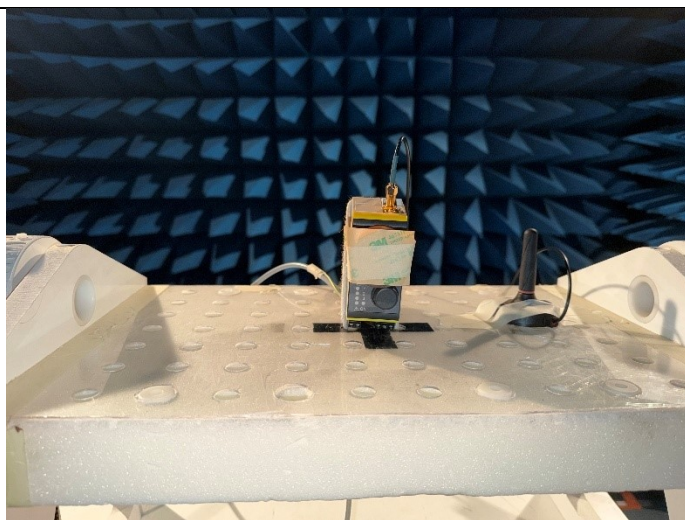
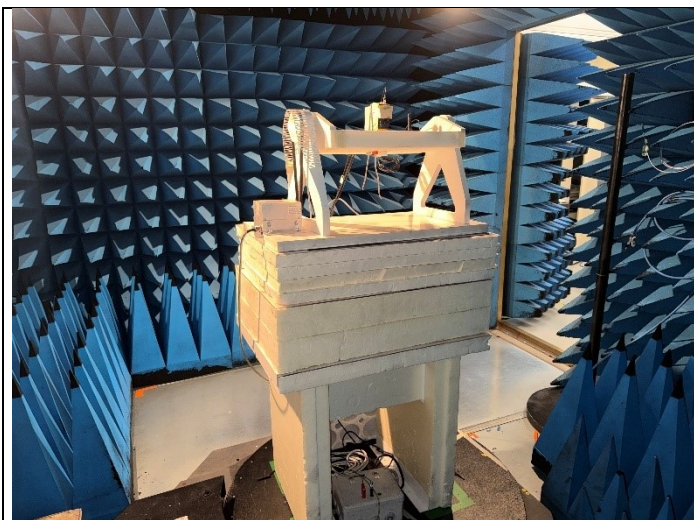
Following frequency ranges, test setup parameters are different and specified in this table:

Frequency range:	9kHz to 30MHz	
Test:	Pre-Characterization	Qualification
Antenna Polarization:	Parallel, Perpendicular and Ground parallel	
Antenna Height:	Centered on EUT (§6.6.5 ANSI C63-10)	1m
Antenna Type:	Loop	
RBW Filter:	200Hz below 150kHz / 9kHz above 150kHz	
Maximization:	Turntable rotation of 360 degrees range	
EUT height:	1.5m	1.5m
Test site:	Full Anechoic Chamber	Open Aera Test Site
Distance EUT - Antenna:	3m	10m
Detector:	Peak	QPeak

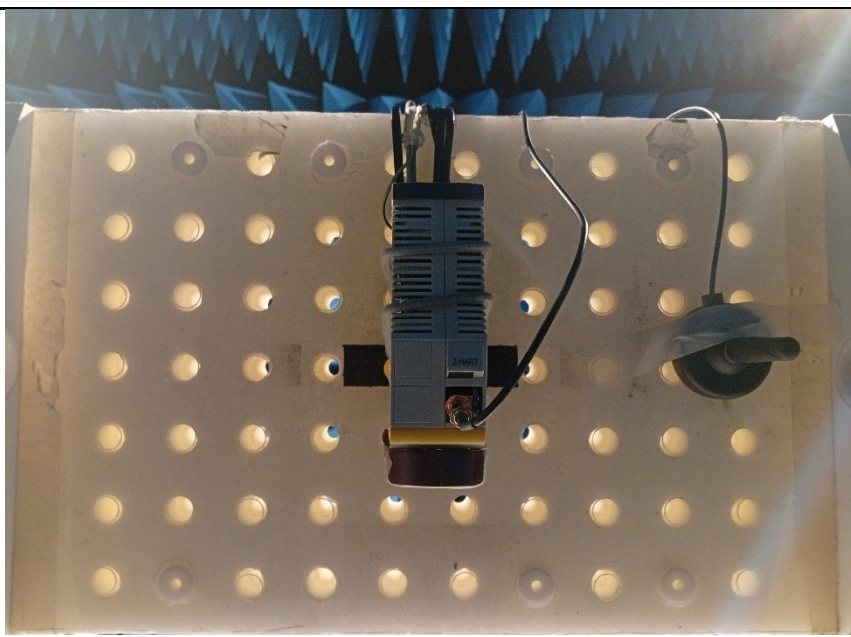
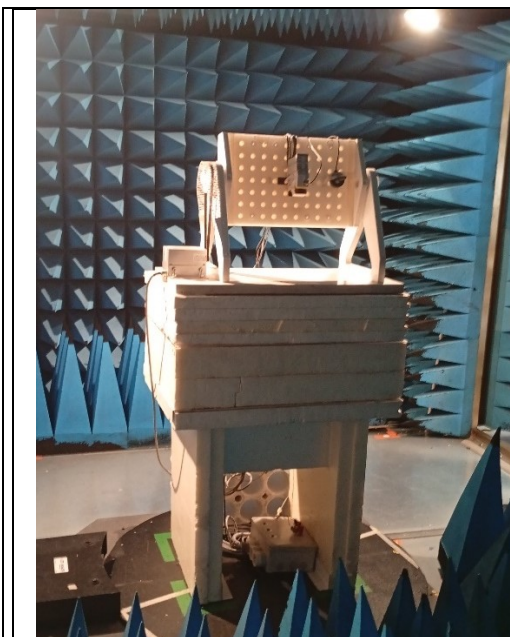
Frequency range:	30MHz to 1GHz	
Test:	Pre-Characterization	Qualification
Antenna Polarization:	Horizontal and Vertical	
Antenna Height:	Centered on EUT (§6.6.5 ANSI C63-10)	Varied from 1m to 4m
Antenna Type:	Biconical & Logperiodic	
RBW Filter:	120kHz	
Maximization:	Turntable rotation of 360 degrees range	
EUT height:	1.5m	1.5m
Test site:	Full Anechoic Chamber	Open Aera Test Site
Distance EUT - Antenna:	3m	10m
Detector:	Peak	QPeak



Same setup is used in semi anechoic chamber during pre-characterization, with a distance of 3m between EUT and antenna.



Axis XY



Axis Z

Photo of Field strength outside the band 13.110-14.010MHz on FAR



Photo of Field strength outside the band 13.110-14.010MHz on OATS

8.3. LIMIT

Measure at 300m		
Frequency range	Level	Detector
9kHz-490kHz	67.6dB μ V/m /F(kHz)	QPeak
Measure at 30m		
Frequency range	Level	Detector
490kHz-1.705MHz	87.6dB μ V/m /F(kHz)	QPeak
1.705MHz-30MHz	29.5dB μ V/m	QPeak
Measure at 3m		
Frequency range	Level	Detector
30MHz to 88MHz	40dB μ V/m	QPeak
88MHz to 216MHz	43.5dB μ V/m	QPeak
216MHz to 960MHz	46B μ V/m	QPeak
960MHz to 1000MHz	54dB μ V/m	QPeak
Above 1000MHz	74dB μ V/m	Peak
	54dB μ V/m	Average



8.4. TEST EQUIPMENT LIST

TEST EQUIPMENT USED ON FAR						
Description	Manufacturer	Model	Identifier	Cal_Date	Cal_Due	Location
Multimeter	FLUKE	289	A1241119	05/2025	05/2027	Défaut
EMR comb generator	BARDET	—	A3169050	NA	NA	Défaut
HF EMR comb generator	LCIE SUD EST	—	A3169088	NA	NA	Défaut
Spectrum analyzer	ROHDE & SCHWARZ	FSU 26	A4060058	01/2026	01/2028	Défaut
Cable 0.75m	-	18GHz	A5329900	08/2025	08/2026	Défaut
SMA Cable 18GHz 0.6m	TELEDYNE	18GHz	A5330055	08/2025	08/2026	Défaut
SMA Cable 18GHz 3.5m	TELEDYNE	18GHz	A5330058	08/2025	08/2026	Défaut
SMA Cable 18GHz 0.5m	TELEDYNE	18GHz	A5330059	01/2025	01/2026	Défaut
Pre-Amplifier	LCIE SUD EST	1-13GHz	A7085029	08/2025	08/2027	Défaut
Amplifier 10MHz - 18GHz	LCIE SUD EST	—	A7102082	03/2025	03/2027	Défaut
Filter Matrice	LCIE SUD EST	Combined filters	A7484078	08/2025	08/2027	Défaut
Thermo-hygrometer	TESTO	608-H1	B4204120	05/2025	05/2027	Défaut
Horn Antenna	ELECTRO-METRICS	EM-6969	C2040286	06/2025	06/2028	Défaut
Antenna horn 18GHz	AINFO	LB	C2042055	11/2024	11/2027	Défaut
Semi-Anechoic chamber #3 (BF)	SIEPEL	—	D3044017_BF	09/2025	09/2026	Défaut
Semi-Anechoic chamber #3 (VSWR)	SIEPEL	—	D3044017_VSWR	09/2025	09/2028	Défaut
Turntable chamber (Cage#3)	ETS Lingren	Model 2165	F2000371	-/-	-/-	Défaut
Turntable controller (Cage#3)	ETS Lingren	Model 2090	F2000444	-/-	-/-	Défaut
Table C3	LCIE	—	F2000461	-/-	-/-	Défaut
Rehausse Table C3	LCIE	—	F2000507	-/-	-/-	Défaut
Rehausse Table C3	LCIE	—	F2000511	-/-	-/-	Défaut
Mat Controler	LCIE	MAT Controler	F2000523	-/-	-/-	Défaut
Cable SMA 40cm	WITHWAVE	W101-SM1-0.4M	A5329979	03/2025	03/2026	Défaut
SMA Cable 18GHz 6m	TELEDYNE	18GHz	A5330057	01/2025	01/2026	Défaut
BAT EMC	NEXIO	v3.21.0.32	L1000115-MOI	-/-	-/-	Défaut
Antenna Bi-log	AH System	SAS-521-7	C2040180	11/2025	11/2027	Défaut
SMA Cable 18GHz 0.5m	TELEDYNE	18GHz	A5330060	01/2025	01/2026	Défaut

TEST EQUIPMENT USED ON OATS						
Description	Manufacturer	Model	Identifier	Cal_Date	Cal_Due	Location
Receiver 20Hz – 8GHz	ROHDE & SCHWARZ	ESU8	A2642019	11/2025	11/2027	Défaut
EMR comb generator	BARDET	—	A3169050	NA	NA	Défaut
Cable (OATS)	—	1GHz	A5329623	08/2025	08/2026	Défaut
Emission Cable	MICRO-COAX	1GHz	A5329656	08/2025	08/2026	Défaut
Antenna loop	ELECTRO-METRICS	EM-6879	C2040294	11/2024	11/2026	Défaut
Antenna Bi-log	CHASE	CBL6111A	C2040172	07/2024	07/2026	Défaut
Biconic Antenna	EATON	94455-1	C2040234	11/2025	11/2027	Défaut
Turntable / Mast controller (OATS)	ETS Lingren	Model 2066	F2000372	-/-	-/-	Défaut
Antenna Mat (OATS)	ETS Lingren	2071-2	F2000392	-/-	-/-	Défaut
Turntable (OATS)	ETS Lingren	Model 2187	F2000403	-/-	-/-	Défaut
OATS	—	—	F2000409	10/2025	10/2026	Défaut
Table C1/OATS	LCIE	—	F2000445	-/-	-/-	Défaut
Rehausse Table C1/OATS	LCIE	—	F2000512	-/-	-/-	Défaut
CALCUL_FACTEURS	LCIE SUD EST	v4	L2000035	NA	NA	Défaut
Emission Cable	CABELTEL	6GHz	A5329069	08/2025	08/2026	Défaut

8.5. DIVERGENCE, ADDITION OR SUPPRESSION ON THE TEST SPECIFICATION

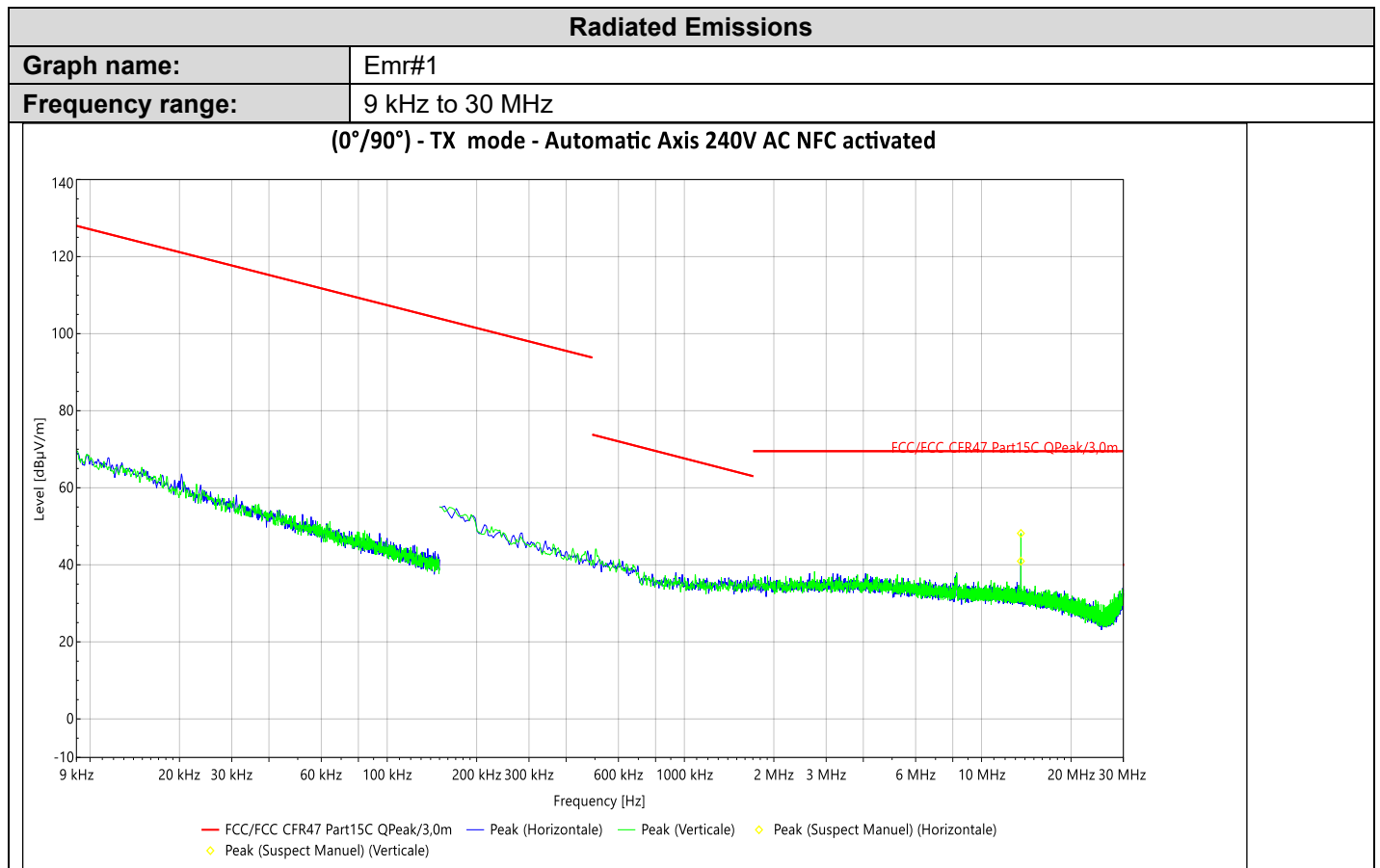
None

8.6. RESULTS

8.6.1. 9kHz to 30MHz

Graphs – Pre characterization:

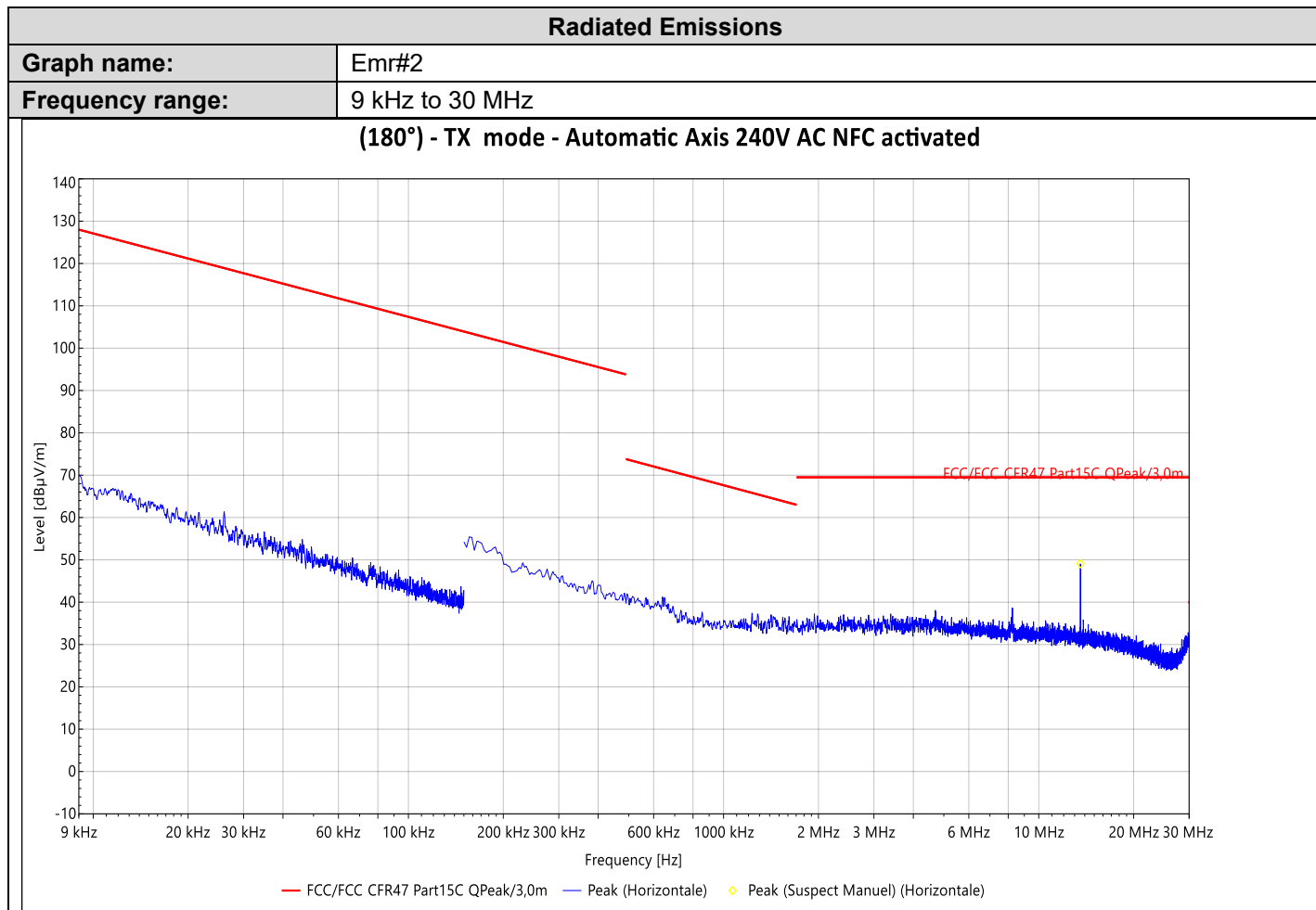
Graph identifier	Polarization	Mode	Channel	Power supply	EUT position	Comments
Emr# 1	0°/90°	TX	Single	240 VAC	Axis XY	NFC activated
Emr# 2	180°	TX	Single	240 VAC	Axis XY	NFC activated
Emr# 3	0°/90°	TX	Single	24 VDC	Axis XY	NFC activated
Emr# 4	180°	TX	Single	24 VDC	Axis XY	NFC activated



Pre-Characterization:

Frequency	PK Level (dBµV/m)	Lim.QP (dBµV/m)	Angle (°)	Polar.	Correct. (dB)
13.562 MHz*	40.94	69.50	6	H	41.90
13.562 MHz*	48.18	69.50	91	V	41.90

*Carrier frequency



Pre-Characterization:

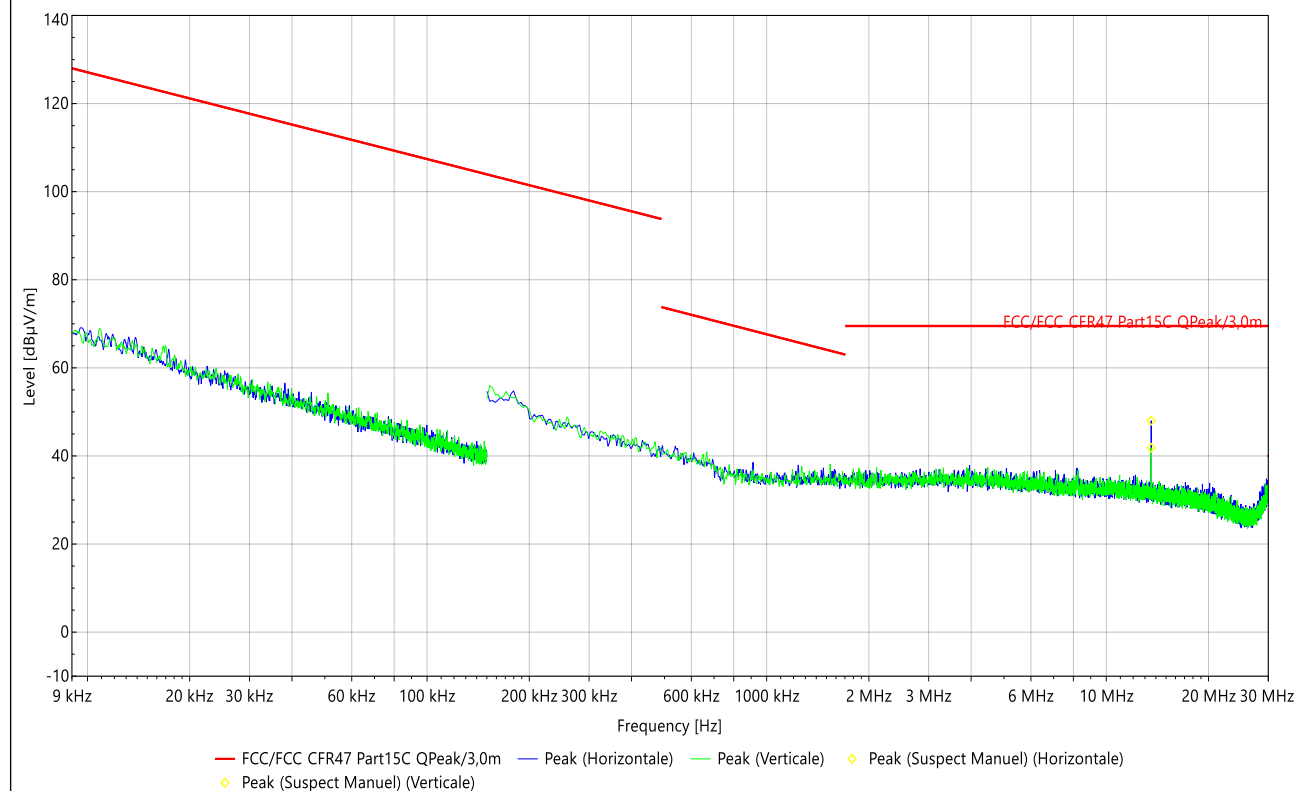
Frequency	PK Level (dBµV/m)	Lim.QP (dBµV/m)	Angle (°)	Polar.	Correct. (dB)
13.559 MHz*	49.06	69.50	1	H	41.90

*Carrier frequency

Radiated Emissions

Graph name: Emr#3
Frequency range: 9 kHz to 30 MHz

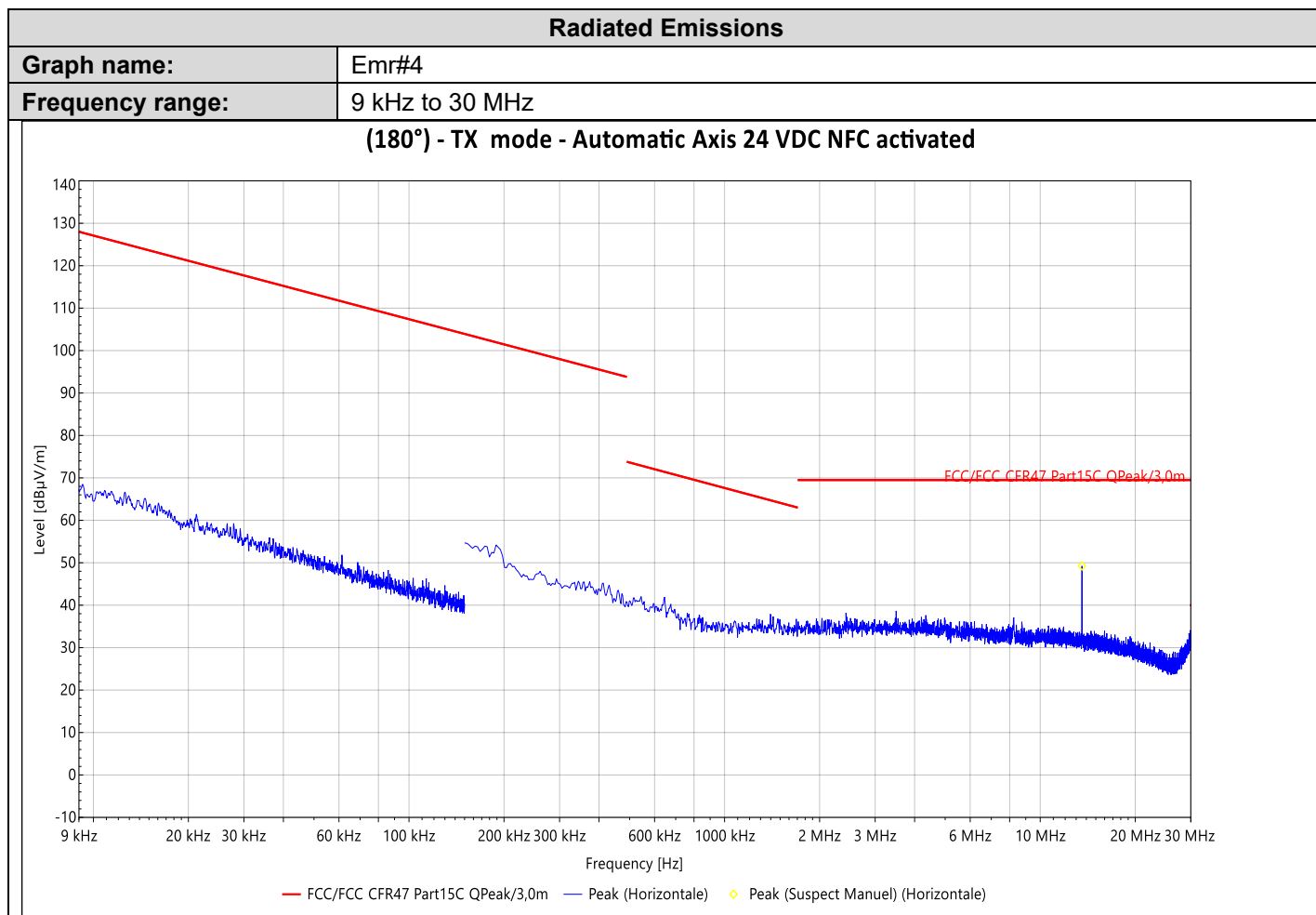
(0°/90°) - TX mode - Automatic Axis 24 VDC NFC activated



Pre-Characterization:

Frequency	PK Level (dBμV/m)	Lim.QP (dBμV/m)	Angle (°)	Polar.	Correct. (dB)
13.562 MHz*	48.01	69.50	69	H	41.90
13.562 MHz*	41.84	69.50	28	V	41.90

*Carrier frequency



Pre-Characterization:

Frequency	PK Level (dBµV/m)	Lim.QP (dBµV/m)	Angle (°)	Polar.	Correct. (dB)
13.562 MHz*	49.25	69.50	0	H	41.90

*Carrier frequency

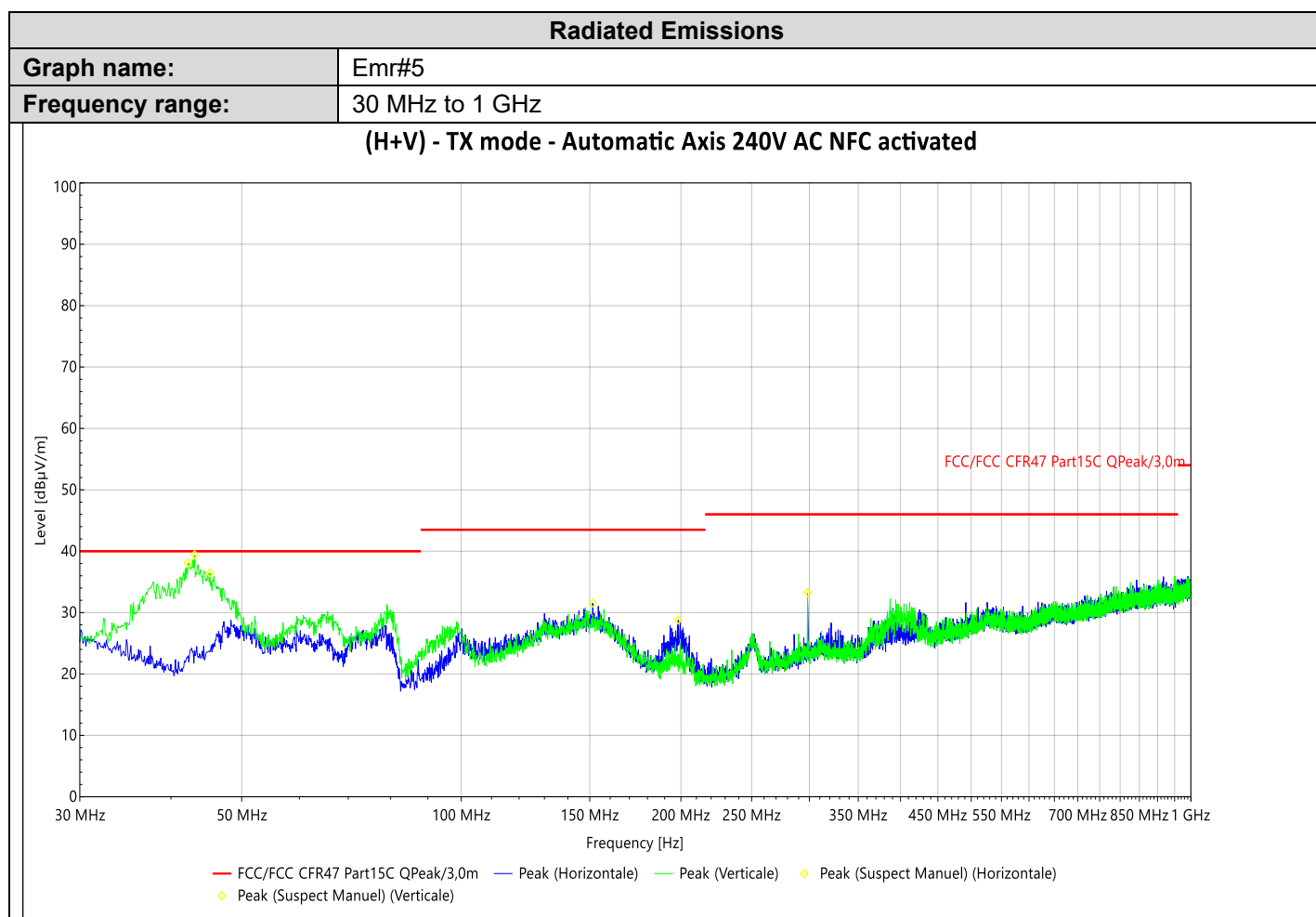
Final measurement:

No significant frequency observed

8.6.2. 30MHz to 1GHz

Graphs – Pre characterization:

Graph identifier	Polarization	Mode	Channel	Power supply	EUT position	Comments
Emr# 5	H/V	TX	Single	240 VAC	Axis XY	NFC activated
Emr# 6	H/V	TX	Single	24 VDC	Axis XY	NFC activated



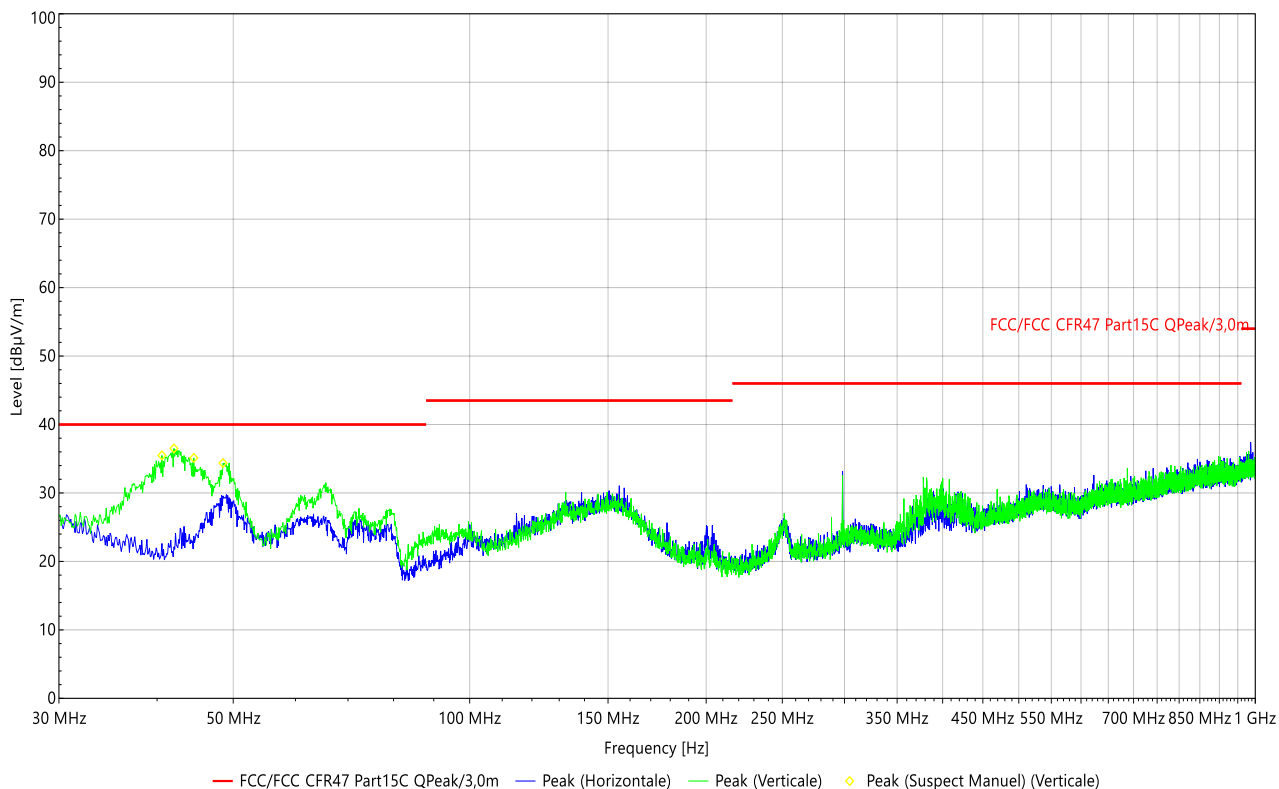
Pre-Characterization:

Frequency	PK Level (dBμV/m)	Lim.QP (dBμV/m)	Angle (°)	Polar.	Correct. (dB)
151.347 MHz	31.54	43.50	181	H	26.30
198.295 MHz	28.80	43.50	145	H	17.47
42.222 MHz	38.07	40.00	234	V	18.11
43.095 MHz	39.42	40.00	122	V	17.69
45.229 MHz	36.47	40.00	142	V	16.67
298.302 MHz	33.24	46.00	294	V	20.14

Radiated Emissions

Graph name: Emr#6
Frequency range: 30 MHz to 1 GHz

(H+V) - TX mode - Automatic Axis 24 VDC NFC activated



Pre-Characterization:

Frequency	PK Level (dBμV/m)	Lim.QP (dBμV/m)	Angle (°)	Polar.	Correct. (dB)
40.573 MHz	35.49	40.00	147	V	18.93
42.028 MHz	36.51	40.00	133	V	18.20
44.550 MHz	35.12	40.00	350	V	16.98
48.527 MHz	34.37	40.00	88	V	15.20



Final measurement:

Test Frequency (MHz)	Meter Reading dB(μV)	Detector (Pk/QP/Av)	Polarity (V/H)	Azimuth (Degrees)	Antenna Height (cm)	Transducer Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
38.1000	19.6	QP	V	0	180	14.7	34.3	40.0	-5.7	/
40.5000	19.7	QP	V	30	160	14.5	34.2	40.0	-5.8	/
41.8000	17.5	QP	V	0	145	14.4	31.9	40.0	-8.1	/
42.0200	16.5	QP	V	60	155	14.3	30.8	40.0	-9.2	/
42.2000	19.7	QP	V	330	140	14.3	34.0	40.0	-6.0	/
43.1000	17.1	QP	V	350	170	14.2	31.3	40.0	-8.7	/
44.1600	19.5	QP	V	0	150	14.0	33.5	40.0	-6.5	/
44.2000	19.5	QP	V	0	150	14.0	33.5	40.0	-6.5	/
44.5500	21.7	QP	V	0	145	13.9	35.6	40.0	-4.4	/
45.2300	22.6	QP	V	30	140	13.8	36.4	40.0	-3.6	/
47.1700	22.2	QP	V	20	155	13.4	35.6	40.0	-4.4	/
48.5200	18.5	QP	V	30	160	13.1	31.6	40.0	-8.4	/

8.7. CONCLUSION

Field strength outside of the bands 13.110-14.010 MHz measurement performed on the sample of the product **VEGAMET Air 142**, Sn: **14200009**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.225 & RSS-Gen** limits.

9. UNCERTAINTIES CHART

Kind of test	Wide uncertainty laboratory ($k=1.96$) $\pm x (y)$
Occupied Bandwidth	1.35 %
Humidity	4.84 %
Power Spectral Density, Conducted	1.95 dB
Radio frequency until 30MHz	0.09 ppm
Radio frequency from 30MHz	0.31 ppm
RF power, conducted	1.49 dB
RF power, radiated (Full Anechoic Chamber)	4.84 dB
RF power, radiated (Semi Anechoic Chamber)	5.65 dB
RF power, radiated (Open Area Test Site)	5.27 dB
Spurious emission, conducted	2.47 dB
Spurious emission radiated (Full Anechoic Chamber)	4.84 dB
Spurious emission radiated (Semi Anechoic Chamber)	5.65 dB
Spurious emission radiated (Open Area Test Site)	5.27 dB
Generated signal levels, conducted	2.94 dB
Generated signal levels, radiated	Not used in laboratory
Adaptivity & Dynamic Frequency Selection	3.59 dB, 2.77 %, 2.53 %
Receiver blocking or desensitization	3.59 dB
RF level uncertainty for a given BER	1.49 dB
Temperature	0.75 °C
Time	4.08 %
Voltage	0.91 %
Conducted disturbances in voltage on the power port - 9kHz - 150kHz	3.64 dB
Conducted disturbances in voltage on the power port - 150kHz - 30MHz	3.21 dB
Radiated disturbances OATS & SAC @3m - 9kHz - 30MHz, Loop antenna	4.90 dB
Radiated disturbances OATS & SAC @3m - 30MHz - 200MHz, Biconical antenna	5.74 dB
Radiated disturbances OATS & SAC @3m - 30MHz - 1GHz, Hybrid antenna	5.65 dB
Radiated disturbances OATS @10m - 9kHz - 30MHz, Loop antenna	4.90 dB
Radiated disturbances OATS @10m - 30MHz - 200MHz, Biconical antenna	5.72 dB
Radiated disturbances OATS @10m - 30MHz - 1GHz, Hybrid antenna	5.91 dB
Radiated disturbances FAC @3m - 1GHz - 6GHz, Horn or hybrid antenna	5.02 dB
Radiated disturbances FAC @3m - 6GHz - 18GHz, Horn antenna	5.41 dB
Radiated disturbances FAC @3m - 18GHz - 40GHz, Horn antenna	7.81 dB

Ce tableau regroupe l'ensemble des incertitudes maximales pour les essais réalisables dans le laboratoire, qu'ils aient été ou non réalisés dans le cadre du présent rapport. / This table includes all uncertainties maximum feasible for testing in the laboratory, whether or not made in this report.

Note - L'incertitude de mesure instrumentale est déterminée selon la CISPR 16-4-2, les ETSI TR 100 028 et les ETSI TR 102 273. / The instrumentation measurement uncertainty is determined according to CISPR16-4-2, ETSI TR 100 028 and ETSI TR 102 273.



----- **END OF REPORT** -----