

Registration number

STS 0001

Swiss testing service



Report:	Radio spectrum matters	Report no:	23CH-00972.R04
Test item description:	Door operator		
Applicant:	Gilgen Doors Systems AG, Freiburgstrasse 34, 3150 Schwarzenburg, SWITZERLAND		
Manufacturer:	Gilgen Doors Systems AG, Freiburgstrasse 34, 3150 Schwarzenburg, SWITZERLAND		
Model/Type reference:	Control Panel +	Serial no:	072510011.24030001
Trade mark:	Gilgen Door Systems	Date of tests:	2024-03-06 to 2024-03-11

Standards		Result
47 CFR, Part 15, Subpart C	Code of Federal Regulations - Title 47 - Telecommunication, Part 15 - Radio frequency devices §15.209 and §15.247	Pass
Industry Canada	RSS-Gen, General Requirements and Information for the Certification of Radio Apparatus	Pass
	RSS-247, Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence.Exempt Local Area Network (LE-LAN) Device	Pass

These results were achieved without any modification of the EUT

Test performed by

Mr O. Cardou and Ms C. Clément
EMC test-engineers




Report prepared by

Mr O. Cardou and Ms C. Clément
EMC test-engineers




Report controlled and approved by

Mr T. Houriet
EMC test-engineer



Rossens, 2025-05-27

Main language : English

The present document results from tests on one specimen and does not prejudice to the conformity of all the manufactured products.

23CH-00972.R04

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1. Summary of test results

§	Test Type	Result
6	Transmitter	CFR 47 Part 15 Subpart C ICES-003, RSS-247 issue 3 Industry Canada
6.1	RF Output Power (radiated)	Pass
6.2	RF Output Power (conducted)	Pass
6.3	Antenna pattern	Pass

2. Abbreviations

Electromagnetic compatibility and radio spectrum matters:

AC	Alternating current	L1,L2,L3	Phase
AFA	Adaptive Frequency Agility	LBT	Listen Before Talk
AM	Amplitude Modulation	LISN	Line impedance stabilization network
AN	Artificial Network	MDS	Absorbing measuring clamp
AV	Average	MU	Master Unit
BB	Broad Band	N	Neutral
BW	Bandwidth	NB	Narrow Band
CDN	Coupling Decoupling Network	NRI	National Radio Interfaces
CW	Continuous Wave	N/A	Not Aplicable
d(t)	Relative voltage change characteristic	PE	Protective earth
DAA	Detect And Avoid spectrum access technique	PK	Peak
dB	Decibel	Plt	Long-term flicker indicator
dBi	Gain in decibels relative to an isotropic antenna	PM	Pulse Modulation
DC	Direct current	Pst	Short-term flicker Indicator
DL	Downlink	QFE	Local atmospheric pressure (Field Elevation)
dmax	Maximum relative voltage change	QP	Quasi-Peak
DS	Defined State	R&TTE	Radio and Telecommunications Terminal Equipment
DSSS	Direct Sequence Spread Spectrum	RF	Radio Frequency
e.i.r.p.	equivalent isotropic radiated power	RFID	Radio Frequency Identification
EMC	ElectroMagnetic Compatibility	RU	Remote Unit
ERC	European Radiocommunication Committee	Rx	Receiver
ESA	Electrical/electronic sub-assembly	SAC	Semi-Anechoic chamber
ESD	Electro Static Discharge	SCU	System Control Unit
EUT	Equipment under Test	SF-CW	Step Frequency Continuous Wave (spread spectrum)
FHSS	Frequency Hopping Spread Spectrum	SND/ND	Signal + Noise + Distortion divided by Noise + Distortion
FS	Functional Safety	SRD	Short Range Device
GBSAR	Ground Based Synthetic Aperture Radar	TEM	Transverse ElectroMagnetic cell
GRP	Ground reference plane	TETRA	Terrestrial Trunked Radio
ICNIRP	International Commission on Non-Ionizing Radiation Protection	THD	Total Harmonic Distorsion
ISM	Industrial Scientific Medical (frequency band)	Tx	Transmitter
ITU	International Telecommunications Union	UL	Uplink
ITU-R	International Telecommunications Union, Radio Sector	UWB	Ultra Wide Band
ITU-T	International Telecommunications Union, Telecommunications Sector	VSWR	Voltage Standing Wave Ratio

Date & Time Fomat: yyyy-MM-dd, HH:mm

General vocabulary: <http://www.electropedia.org>

3. Applicant

Applicant name and address	Gilgen Doors Systems AG Freiburgstrasse 34 3150 Schwarzenburg SWITZERLAND
Contact Person	Mr. Martin Liechti
Telephone	+41 31 734 46 85
E-mail	martin.liechti@gilgends.com

4. Equipment under test

4.1 Identification

Manufacturer name and address	Gilgen Doors Systems AG Freiburgstrasse 34 3150 Schwarzenburg SWITZERLAND
Name and address of factory (ies)	Gilgen Doors Systems AG Freiburgstrasse 34 3150 Schwarzenburg SWITZERLAND
Production country	Switzerland
Trade mark	Gilgen Door Systems
Test item description	Door operator
Use description	The Gilgen Control Panel enables to set the operating mode of the door. A second control level enables the access to the most common additional functions. Gilgen Control Panel communicates via Bluetooth with a Smartphone or with Gilgen Connect Mobile (app). Full access to all door parameters is possible via the app.
Model/Type reference	Control Panel + 45-0725-100/12 (Frontend black) 45-0725-100/11 (Frontend white)
FCC ID	2BLJF-CONNECTCP
ISED ID	ISED Certification No.: 33110-CONNECTCP HVIN: 072510011, 072510012 PMN: Connect Control Panel white, Connect Control Panel black FVIN: n/a HMN: n/a
Serial no	072510011.24030001 See §4.3
Software version	V0.8.12d
Highest frequency	2480 MHz
Supply	U = 9 – 26 VDC / I = 171 mA / 500 mA / P = 4.5 W
Dimension	~ 5.5 cm x 5.5 cm x 3 cm (l x w x h)
Weight	~ 0.2 kg
EUT photos and setup	See document 23CH-00972.R04_Annex1.pdf (dated 2025-05-27), 6 pages
Technical documentation	None. The equipment is completely identified by the above-mentioned information. Gilgen Doors Systems AG assures the traceability of the documentation and is responsible for the product identification.

The information in this table are provided by the customer and not verified by Eurofins Electric & Electronic Product Testing AG

4.2 Radio service

Technology tested	Bluetooth Low Energy (BLE)		
Type	☐ Transmitter ☐ Receiver ☒ Transceiver		
Transmitter frequency range	2402 MHz to 2480 MHz		
Tested channels	BOT channel	MID channel	TOP channel
	2402 MHz	2440 MHz	2480 MHz
Modulation	GFSK		
Data rate	1 Mbps		
Max Output Power	Declared by Applicant: 0 dBm		
Antenna gain	See §6.2 Value measured: 2.402 GHz (BOT): -6.02 dBi 2.440 GHz (MID): -4.89 dBi 2.480 GHz (TOP): -3.91 dBi		
Antenna type	PCB trace		
Power supply	ext. DC supply: + 12 VDC or + 24 VDC		

The information in this table is provided by the customer and not verified by Eurofins Electric & Electronic Product Testing AG

4.3 Tested equipment list

Tested equip.	S/N	Explanation*
GILGEN Control Pannel +	RADIO #1	Equipment with openings in the casing
GILGEN Control Pannel +	RADIO #2	Equipment with coaxial cable to antenna (test antenna)

* The information in this table are provided by the customer and not verified by Eurofins Electric & Electronic Product Testing AG

4.4 Ports

Port	Cable			Remark
	Max. length	Type	Screen	
X200	≤ 30 m	None	None	Power supply: + 24VDC, 0V CAN communication

5. Test conditions

5.1 Climatic conditions, location and date

Location	Date	Temp	Pressure (QFE)	Rel. humidity
Eurofins Electric & Electronic Product Testing AG Route de Montena 75 1728 Rossens SWITZERLAND	2024-03-07 to 2024-05-23			See § 6

5.2 Test facility and methodology

The alternate test site is accepted by FCC:

- Test Firm Registration Number: 683197
- Designation Number: CH5001

The test center of Rossens is for Canadian certification bodies recognized by Foreign Mutual Recognition Arrangement/Agreement partners:

- ISED Company number. 3625A (ICES-003, RSS-Gen, RSS-210, RSS-310 RSS-247)

Conducted and radiated measurements are performed according to the ANSI C63.4 (2014) + C63.4a (2017) and ANSI C63.10 (2020) procedures.

5.3 Attendant persons

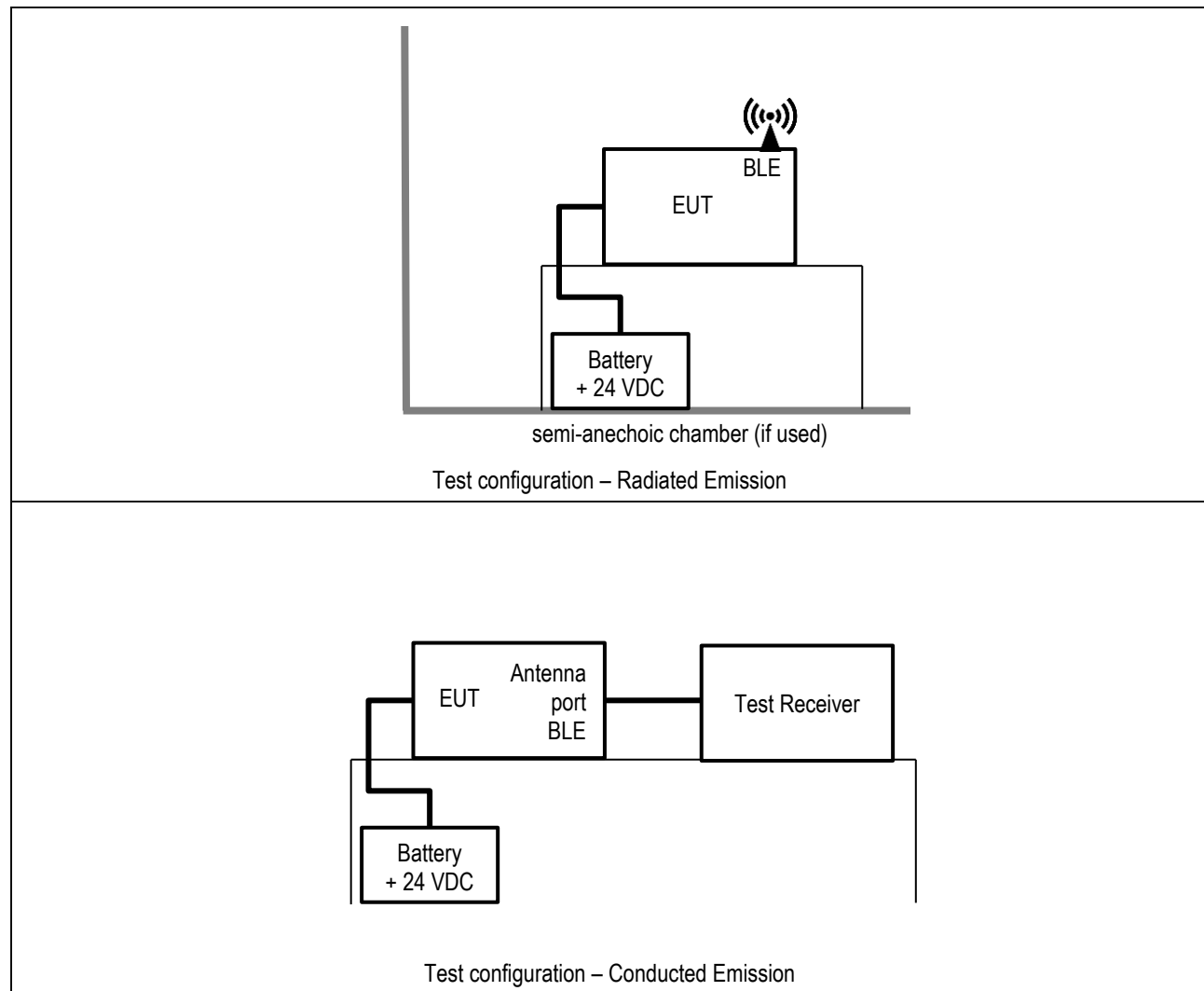
Test Engineer(s):

Mr O. Cardou and Ms C. Clément

Other(s):

Name	Company
Mr Martin Liechti	Gilgen Doors Systems AG
Mr. Bruno Frei	Gilgen Doors Systems AG

5.4 Test configuration



5.5 Operating conditions

Power supply during tests: + 24 VDC from external battery

- Continuous TX
- Duty cycle 100 %
- Max power set to 9 (0 dBm)
- GFSK Modulated Carrier with PRBS9
- Data rate 1 Mbps

5.6 Monitoring of the EUT

The performance of the EUT during the test is monitored as following:

The EUT is monitored (setup of frequency) with a software installed on a portable PC.
Software used : SmartSnippets Toolbox v5.0.24.4128

5.7 Auxiliary equipment

The following pieces of equipment are used for the monitoring of the EUT or are necessary for the EUT but they are not part of the EUT.

Product	Brand	Model No.	ID	Remark
Portable PC	DELL	Vostro 3750	H2M20Q1	Eurofins equipment

5.8 General remarks

"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Compliance assessment

The statements of conformity are made on the basis of the testing standards and by applying the measurement uncertainties according to the rules in the applied standards as follows:

- Compliance is deemed to occur if no measured value exceeds the respective limit.
- Non-compliance is deemed to occur if any measured value exceeds the respective limit.

No additional margin to the limit is considered under the condition that the measurement instruments fulfil the requirements of the IEC 61010-1 and the measurement uncertainty does not exceed the limits given in the relevant standards (e.g. U_{CISPR} as per CISPR 16-4-2, IEC 61000-4 series or product standards).

6. Transmitter parameters

6.1 Effective radiated power (radiated)

Introduction: The RF output power is defined as the mean equivalent isotropically radiated power (e.i.r.p.) of the equipment during a transmission burst.

Test site: ☒ SAC3 ☐ SAC5 ☐ SAC10
☐ Laboratory ☐ Shielded room ☐ Open test site

Distance: ☒ 3 m ☐ 10 m ☐ 30 m

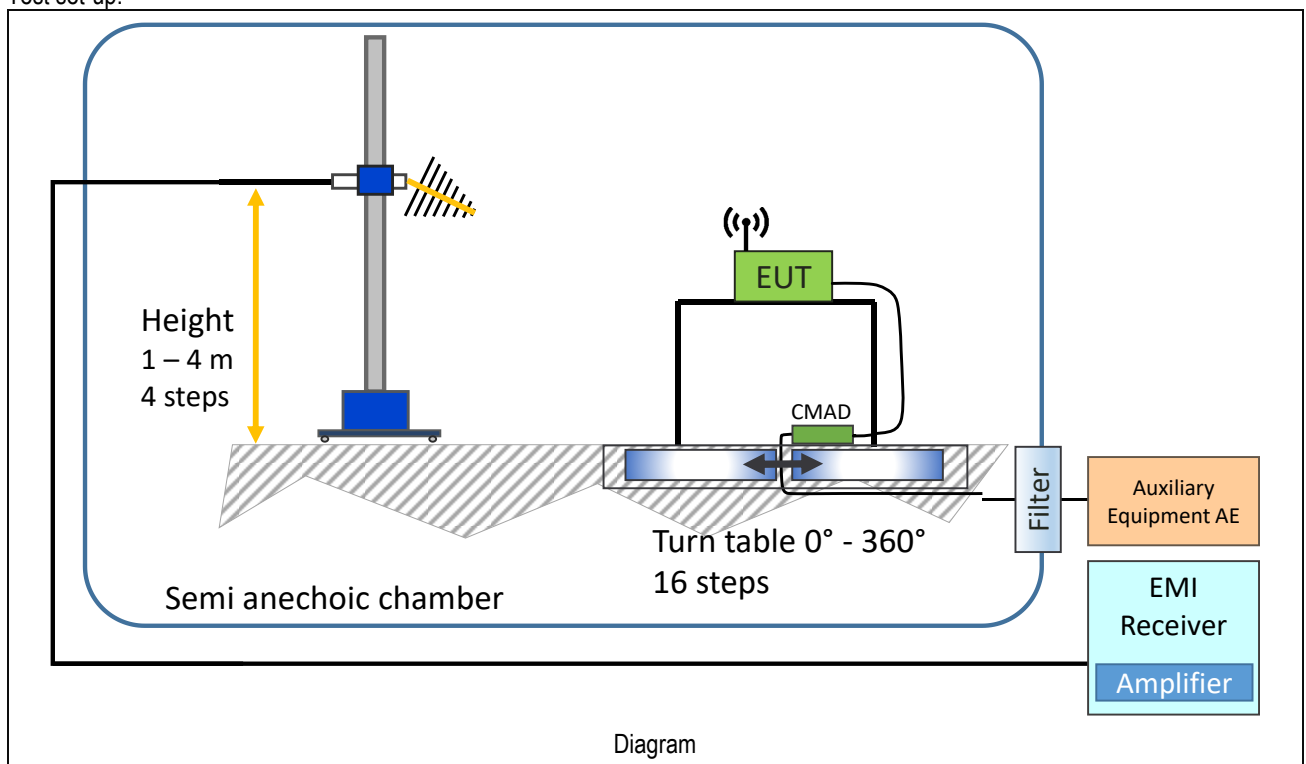
Position of EUT: 1.5 m (height of the equipment under test above floor)

Measuring method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyser (max. hold mode, peak detector) and a wide band antenna. The ERP / EIRP values are determined replacing the EUT by a substitution antenna (dipole or other). The limits on the plots represent the equivalent field levels for the required power limits.

Modifications: ☒ None ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Climatic conditions : Temperature: 23 °C Humidity: 30 % Pressure QFE: 933 hPa

Test set-up:



Result: ☒ pass ☐ fail ☐ not applicable ☐ partly tested

Results of the test

Client: Gilgen Doors Systems AG
 Equipment: Control Panel +
 Operating mode: Tx (f = 2.402 / 2.440 / 2.480 GHz), modulated, max. power (setting 0 dBm)
 Cables connected: X200
 Remarks: Measured under normal test conditions. Analyser RBW = 5 MHz

Results – EUT is standing

		Measurement with EUT		Power at subst ant.		Meas. With subst.	Parameters of subst. ant.			Result	
f [MHz]	U [dBuV]	Pol.	Preamp [dB]	P [dBm]	Factor [dB]	U [dBuV]	Gain [dB]	Att. Cable [dB]	Corr. [dB]	Peirp [dBm]	Peirp [W]
2402	56.11	Ver.	0	0	0	66.22	2.15	0	-64.07	-7.96	159.96
2402	56.10	Hor.	0	0	0	68.06	2.15	0	-65.91	-9.81	104.47
2440	56.80	Ver.	0	0	0	65.83	2.15	0	-63.68	-6.88	205.12
2400	56.77	Hor.	0	0	0	66.76	2.15	0	-64.61	-7.84	164.44
2480	56.76	Ver.	0	0	0	66.32	2.15	0	-64.17	-7.41	181.55
2480	58.39	Hor.	0	0	0	66.58	2.15	0	-64.43	-6.04	248.89

Results – EUT is lying

		Measurement with EUT		Power at subst ant.		Meas. With subst.	Parameters of subst. ant.			Result	
f [MHz]	U [dBuV]	Pol.	Preamp [dB]	P [dBm]	Factor [dB]	U [dBuV]	Gain [dB]	Att. Cable [dB]	Corr. [dB]	Peirp [dBm]	Peirp [W]
2402	53.44	Ver.	0	0	0	66.22	2.15	0	-64.07	-7.96	159.96
2402	55.18	Hor.	0	0	0	68.06	2.15	0	-65.91	-9.81	104.47
2440	54.44	Ver.	0	0	0	65.83	2.15	0	-63.68	-6.88	205.12
2400	56.89	Hor.	0	0	0	66.76	2.15	0	-64.61	-7.84	164.44
2480	55.98	Ver.	0	0	0	66.32	2.15	0	-64.17	-7.41	181.55
2480	58.14	Hor.	0	0	0	66.58	2.15	0	-64.43	-6.04	248.89

Place and date of test:
 Operator:

Rossens, 2024-03-07
 Ms C. Clément

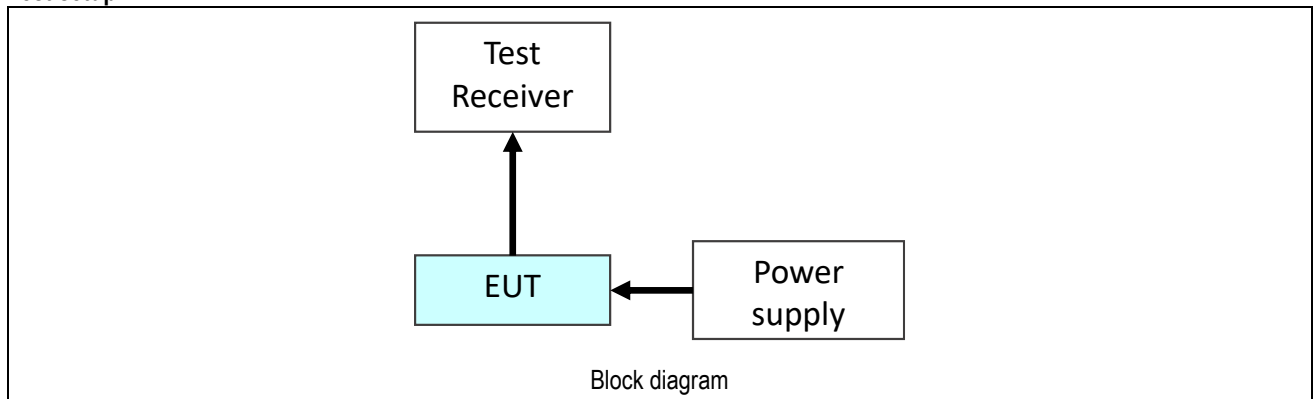
6.2 Effective radiated power (conducted)

Introduction: The effective radiated power is the power radiated by the antenna of an interrogator in its direction of maximum gain under specified conditions of measurement.
For EUT's with integral antenna the variations of the conducted power under extreme conditions are measured and expressed relatively to the measurements of the radiated measurement.

Test site: ☐ SAC3 ☐ SAC5 ☐ SAC10
☒ Laboratory ☐ Shielded room ☐ Open test site

Test method: Measurement of the conducted power on the antenna connector or a test fixture.

Test setup



Result: ☒ pass ☐ fail ☐ not applicable ☐ partly tested

Results of the test

Client: Gilgen Doors Systems AG

Equipment: Control Panel +

Operating mode: Tx (f = 2.402 / 2.440 / 2.480 GHz), modulated, max. power (setting 0 dBm)

Cables connected: USB cable

Remarks:

- Referenced to the effective radiated power under normal conditions (see § 8.1)
- Measured on temporary antenna connector
- RBW = 3 MHz; Span = 140 MHz; ST = 10 s; RefLev = 10 dBm; Detector = Peak; Nb points = 1401
- The variation of supply voltage is not required by the standard, and the RF module is powered through the USB cable

Modifications: ☒ None ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Climatic conditions: Room temperature: 23 °C Humidity: 32 % Pressure QFE: 908 hPa

Results

F [MHz]	Temperature [°C]	P measured [dBm]	Peirp* [dBm]	Limit [dBm]	Result	Antenna gain [dBi]
2402	-14.6	-1.38	-7.40	20	Pass	-6.02
2402	23.9	-1.94	-7.96	20	Pass	
2402	50	-2.09	-8.11	20	Pass	
2440	-14.6	-1.37	-6.26	20	Pass	-4.89
2440	23.9	-1.99	-6.88	20	Pass	
2440	50	-2.16	-7.05	20	Pass	
2480	-14.6	-1.47	-5.38	20	Pass	-3.91
2480	23.9	-2.13	-6.04	20	Pass	
2480	50	-2.32	-6.23	20	Pass	

(*): Peirp values taken from §6.1 at ambient temperature

Place and date of test:
Operator:

Rossens, 2024-03-08
Mr. O. Cardou

6.3 Antenna pattern (radiated, 1 GHz to 6 GHz)

Test site: ☒ SAC3 ☐ SAC5 ☐ SAC10
☐ Laboratory ☐ Shielded room ☐ Open test site

Distance: ☐ 1 m ☒ 3 m ☐ 10 m ☐ 30 m

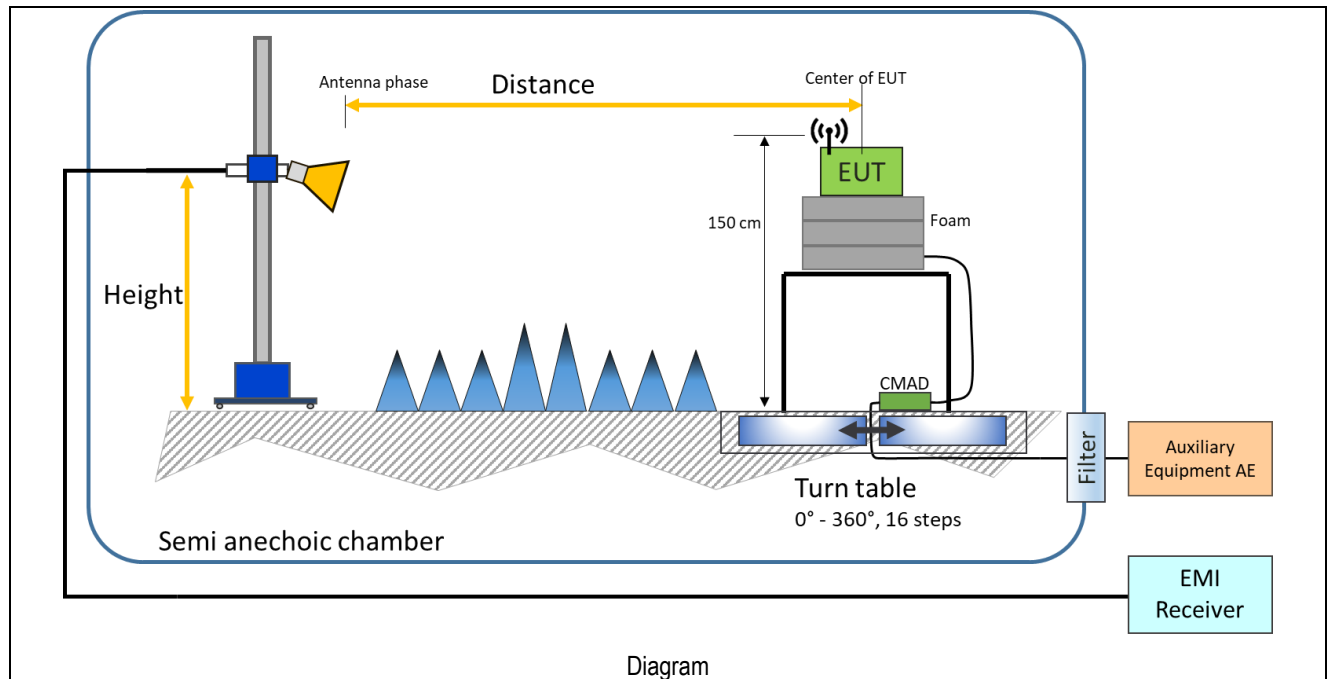
Position of EUT: 1.5 m (height of the equipment under test above floor)

Measuring method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyser and a wide band antenna. The max hold levels values are recorded on the graph. The values exceeding a limit are remeasured manually using a receiver. The limits on the plots represent the equivalent field levels for the required power limits.

Modifications: ☒ None ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Climatic conditions : Temperature: 23 °C Humidity: 30 % Pressure QFE: 933 hPa

Test set-up:



Remarks: Limits calculated with $E_{[V/m]} = \frac{\sqrt{30 P_{[W]} G}}{d_{[m]}}$ with $G = \text{numeric gain of Tx antenna}$
 $= 1$ (for isotropic radiator, $P_{W \text{ EIRP}}$)
 $= 1.64$ (for dipole antenna, $P_{W \text{ ERP}}$)

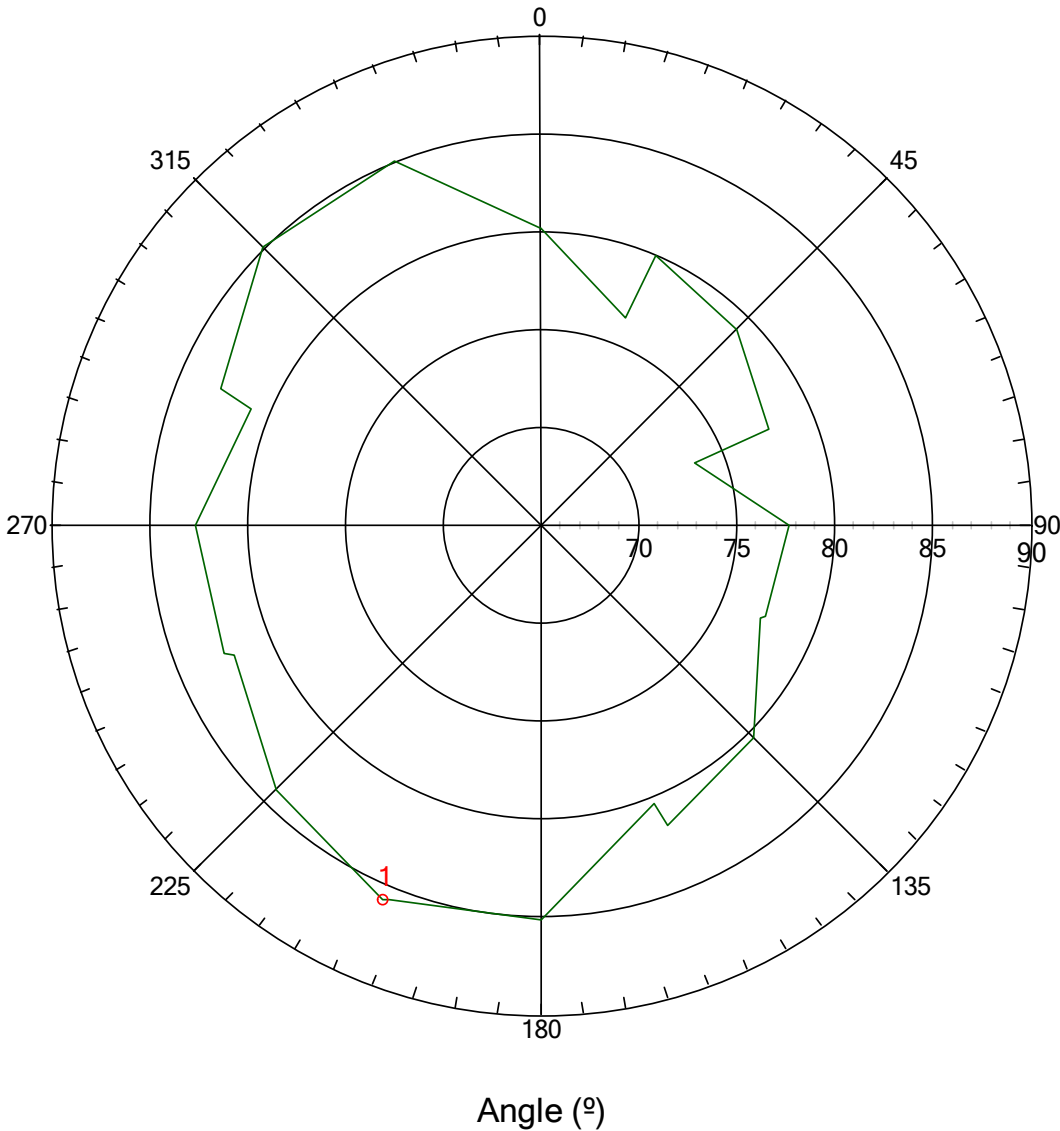
Result: ☒ pass ☐ fail ☐ not applicable ☐ partly tested

Measurement	RE 1 GHz to 6 GHz	Test ID	#2	Date and time	2024-05-23 14:30:55	Operator	C. Clément
EUT	CP+	Order			23CH-00972	Verdict	Pass
Notes	EUT: CP+ Operating mode: Continuous duty (100 %), TX, BOT (2.402 GHz), Power level set to 9 (0 dBm) Power supply: 24 VDC from battery Connected cables: Power supply Modifications: None Remarks: EUT is standing						
Antenna Height	1 m to 4 m, 4 step(s)	Polarization	Both	Table Angle	0 ° to 360 °, 16 step(s)	Distance	3 m
Test Place	ROS-SAC3	Software			Radimation 2023.2.5 (RE FCC 1-6G ESW26 Schwarzbeck 9120D SAC3)		
Settings	Band(s): 1 GHz - 6 GHz, Reference Level: 100 dBµV RBW: 1 MHz, VBW: 3 MHz, Sweep time: 200 ms, Number of Sweeps: 10 Step freq: Fixed step count: 5001 steps per Band, Attenuator: 0.0 dB, Internal preamp: 0 dB, Measure time: 2 s Final Measurement/Observation Time: PK 1 s / 10 s, QP 1 s / 5 s, AVG 1 s / 10 s						

47 CFR §15.209 / RSS-Gen §8.9

RadiMation

RBW: 1 MHz, Both Max Peak for peak 1



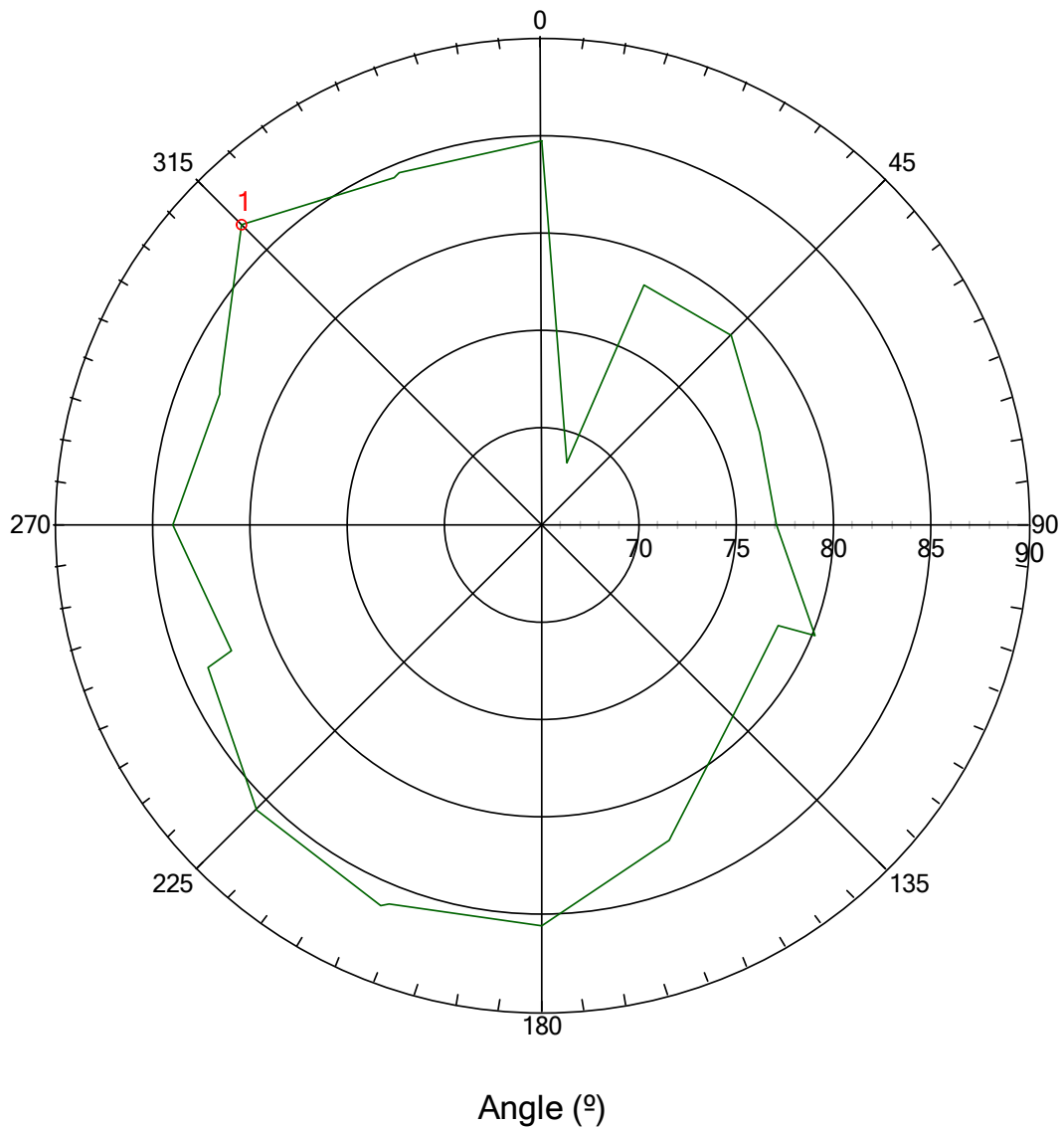
Peak Number	Frequency (MHz)	Peak (dBµV/m)	Peak Difference (dB)	Angle (°)	Height (m)	Polarization
1	2402	85.8	11.8	203	1	Horizontal

Measurement	RE 1 GHz to 6 GHz	Test ID	#3	Date and time	2024-05-23 14:59:58	Operator	C. Clément
EUT	CP+			Order	23CH-00972	Verdict	Pass
Notes	EUT: CP+ Operating mode: Continuous duty (100 %), TX, MID (2.44 GHz), Power level set to 9 (0 dBm) Power supply: 24 VDC from battery Connected cables: Power supply Modifications: None Remarks: EUT is standing						
Antenna Height	1 m to 4 m, 4 step(s)	Polarization	Both	Table Angle	0 ° to 360 °, 16 step(s)	Distance	3 m
Test Place	ROS-SAC3	Software		Radimation 2023.2.5 (RE FCC 1-6G ESW26 Schwarzbeck 9120D SAC3)			
Settings	Band(s): 1 GHz - 6 GHz, Reference Level: 100 dBµV RBW: 1 MHz, VBW: 3 MHz, Sweep time: 200 ms, Number of Sweeps: 10 Step freq: Fixed step count: 5001 steps per Band, Attenuator: 0.0 dB, Internal preamp: 0 dB, Measure time: 2 s Final Measurement/Observation Time: PK 1 s / 10 s, QP 1 s / 5 s, AVG 1 s / 10 s						

47 CFR §15.209 / RSS-Gen §8.9

RadiMation

RBW: 1 MHz, Both Max Peak for peak 1



Detected peaks

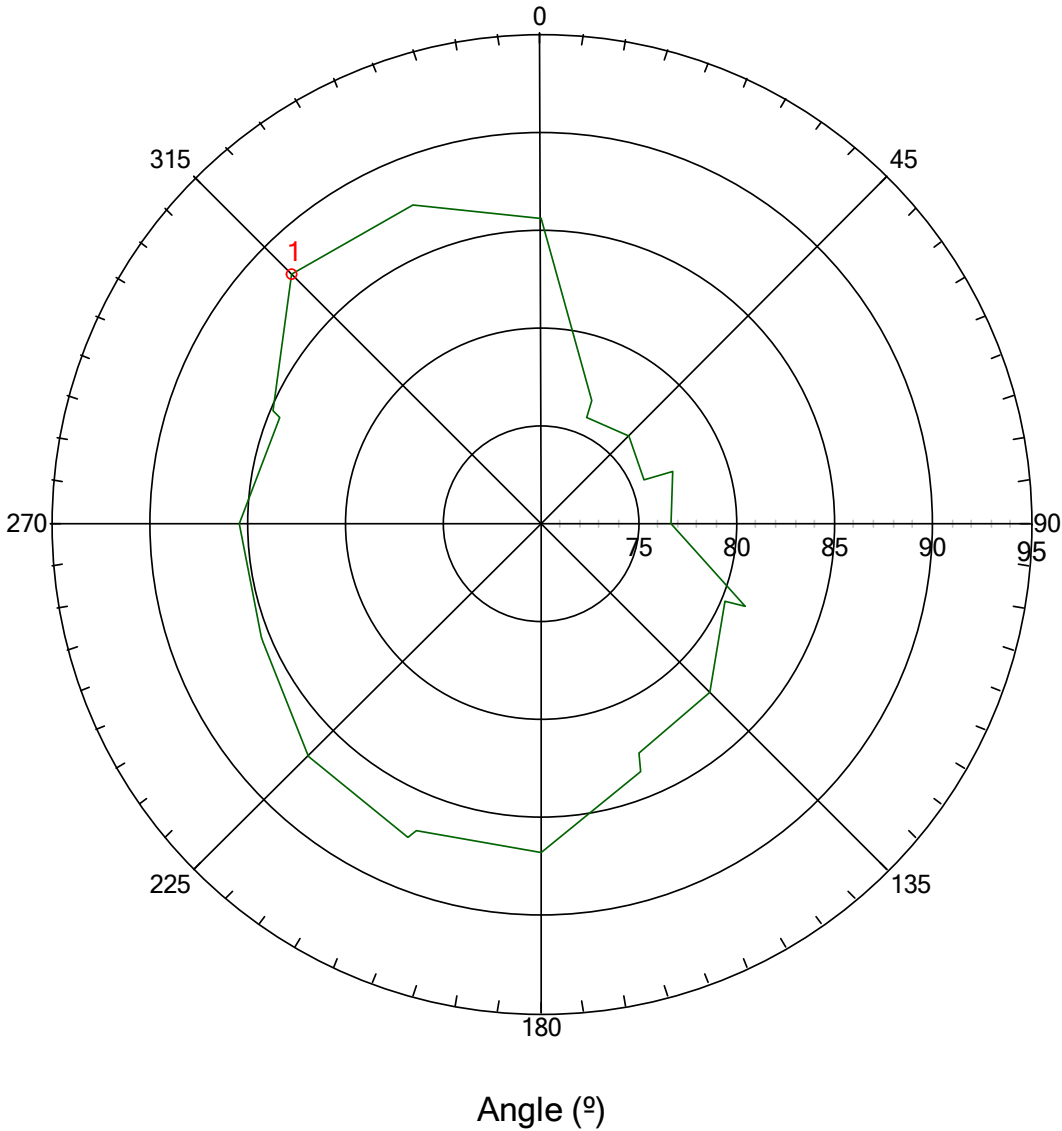
Peak Number	Frequency (MHz)	Peak (dBμV/m)	Peak Difference (dB)	Angle (°)	Height (m)	Polarization
1	2440	86.7	12.8	315	1	Horizontal

Measurement	RE 1 GHz to 6 GHz		Test ID	#4	Date and time	2024-05-23 15:30:40		Operator	C. Clément
EUT	CP+				Order	23CH-00972		Verdict	Pass
Notes	EUT: CP+ Operating mode: Continuous duty (100 %), TX, TOP (2.48 GHz), Power level set to 9 (0 dBm) Power supply: 24 VDC from battery Connected cables: Power supply Modifications: None Remarks: EUT is standing								
Antenna Height	1 m to 4 m, 4 step(s)	Polarization	Both		Table Angle	0 ° to 360 °, 16 step(s)		Distance	3 m
Test Place	ROS-SAC3		Software		Radimation 2023.2.5 (RE FCC 1-6G ESW26 Schwarzbeck 9120D SAC3)				
Settings	Band(s): 1 GHz - 6 GHz, Reference Level: 100 dBµV RBW: 1 MHz, VBW: 3 MHz, Sweeptime: 200 ms, Number of Sweeps: 10 Step freq: Fixed step count: 5001 steps per Band, Attenuator: 0.0 dB, Internal preamp: 0 dB, Measure time: 2 s Final Measurement/Observation Time: PK 1 s / 10 s, QP 1 s / 5 s, AVG 1 s / 10 s								

47 CFR §15.209 / RSS-Gen §8.9

RadiMation

RBW: 1 MHz, Both Max Peak for peak 1



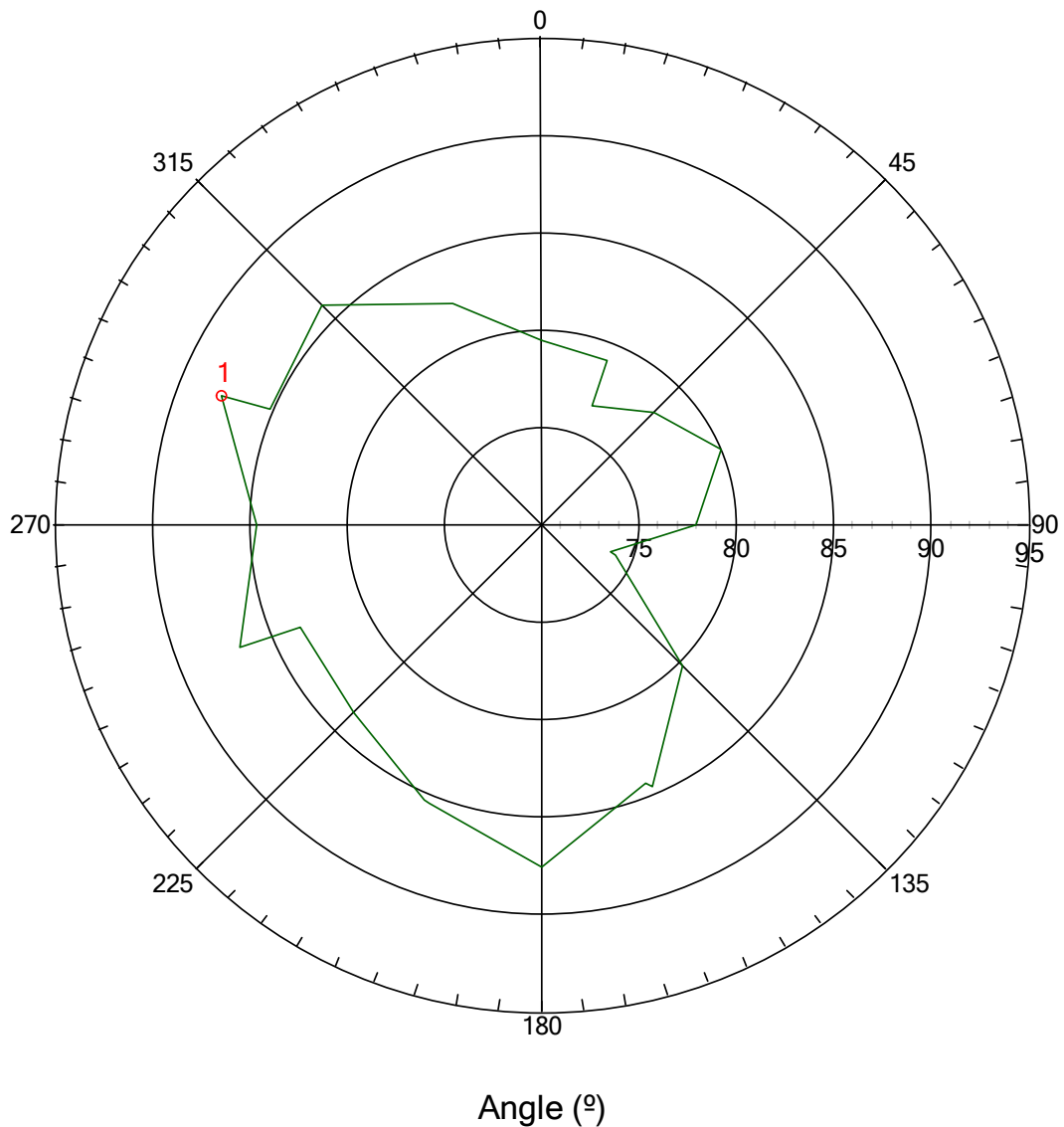
Detected peaks						
Peak Number	Frequency (MHz)	Peak (dBµV/m)	Peak Difference (dB)	Angle (°)	Height (m)	Polarization
1	2480	88	14.0	315	1	Horizontal

Measurement	RE 1 GHz to 6 GHz	Test ID	#5	Date and time	2024-05-23 15:59:41	Operator	C. Clément
EUT	CP+			Order	23CH-00972	Verdict	Pass
Notes	EUT: CP+ Operating mode: Continuous duty (100 %), TX, TOP (2.48 GHz), Power level set to 9 (0 dBm) Power supply: 24 VDC from battery Connected cables: Power supply Modifications: None Remarks: EUT is lying						
Antenna Height	1 m to 4 m, 4 step(s)	Polarization	Both	Table Angle	0 ° to 360 °, 16 step(s)	Distance	3 m
Test Place	ROS-SAC3	Software		Radimation 2023.2.5 (RE FCC 1-6G ESW26 Schwarzbeck 9120D SAC3)			
Settings	Band(s): 1 GHz - 6 GHz, Reference Level: 100 dBµV RBW: 1 MHz, VBW: 3 MHz, Sweep time: 200 ms, Number of Sweeps: 10 Step freq: Fixed step count: 5001 steps per Band, Attenuator: 0.0 dB, Internal preamp: 0 dB, Measure time: 2 s Final Measurement/Observation Time: PK 1 s / 10 s, QP 1 s / 5 s, AVG 1 s / 10 s						

47 CFR §15.209 / RSS-Gen §8.9

RadiMation

—— RBW: 1 MHz, Both Max Peak for peak 1



Detected peaks

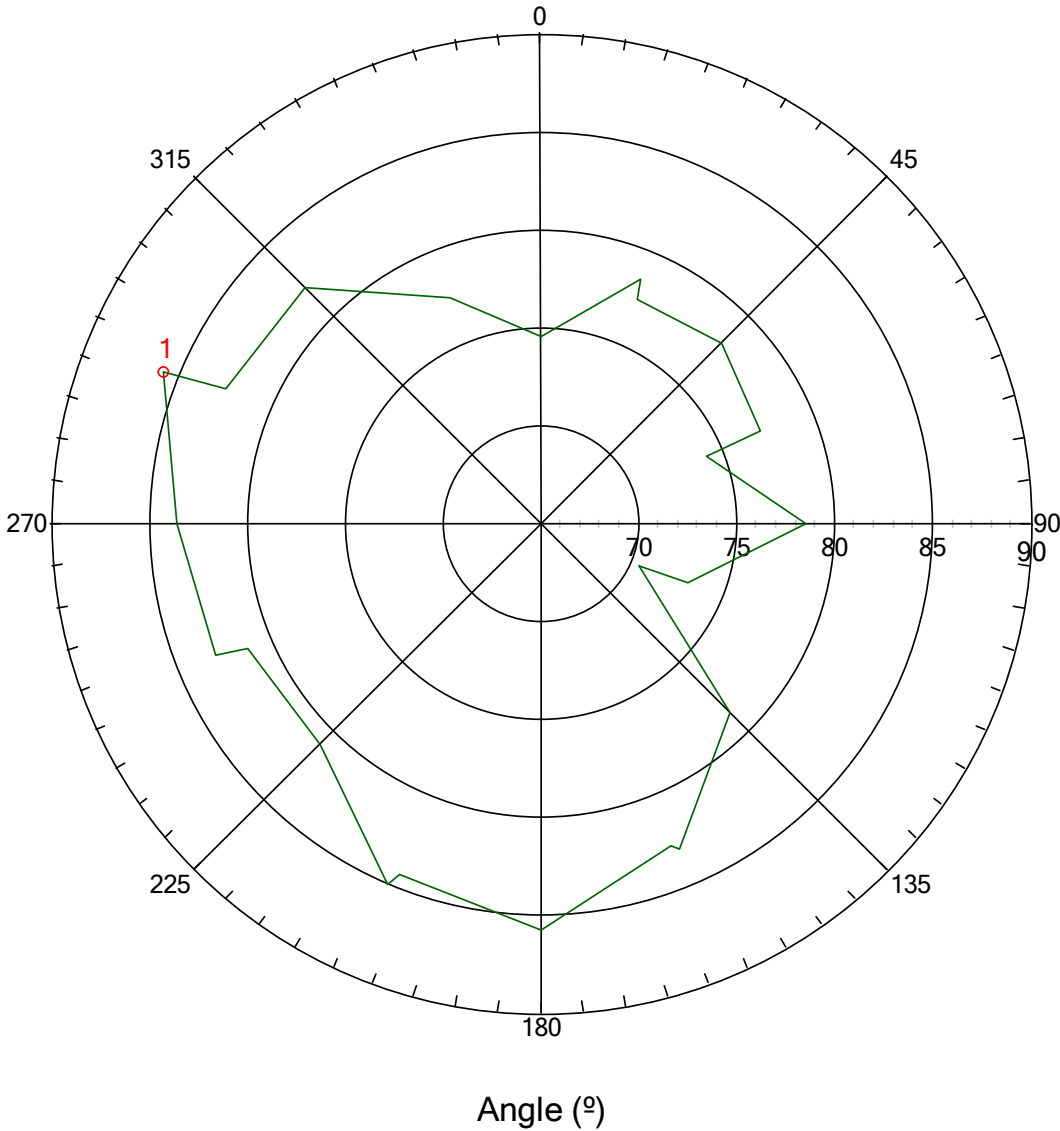
Peak Number	Frequency (MHz)	Peak (dBμV/m)	Peak Difference (dB)	Angle (°)	Height (m)	Polarization
1	2480	87.7	13.8	292	4	Horizontal

Measurement	RE 1 GHz to 6 GHz		Test ID	#6	Date and time	2024-05-23 16:26:17		Operator	C. Clément	
EUT	CP+				Order	23CH-00972		Verdict	Pass	
Notes	EUT: CP+ Operating mode: Continuous duty (100 %), TX, MID (2.44 GHz), Power level set to 9 (0 dBm) Power supply: 24 VDC from battery Connected cables: Power supply Modifications: None Remarks: EUT is lying									
Antenna Height	1 m to 4 m, 4 step(s)		Polarization	Both		Table Angle	0 ° to 360 °, 16 step(s)		Distance	3 m
Test Place	ROS-SAC3			Software		Radimation 2023.2.5 (RE FCC 1-6G ESW26 Schwarzbeck 9120D SAC3)				
Settings	Band(s): 1 GHz - 6 GHz, Reference Level: 100 dBµV RBW: 1 MHz, VBW: 3 MHz, Sweeptime: 200 ms, Number of Sweeps: 10 Step freq: Fixed step count: 5001 steps per Band, Attenuator: 0.0 dB, Internal preamp: 0 dB, Measure time: 2 s Final Measurement/Observation Time: PK 1 s / 10 s, QP 1 s / 5 s, AVG 1 s / 10 s									

47 CFR §15.209 / RSS-Gen §8.9

RadiMation

RBW: 1 MHz, Both Max Peak for peak 1



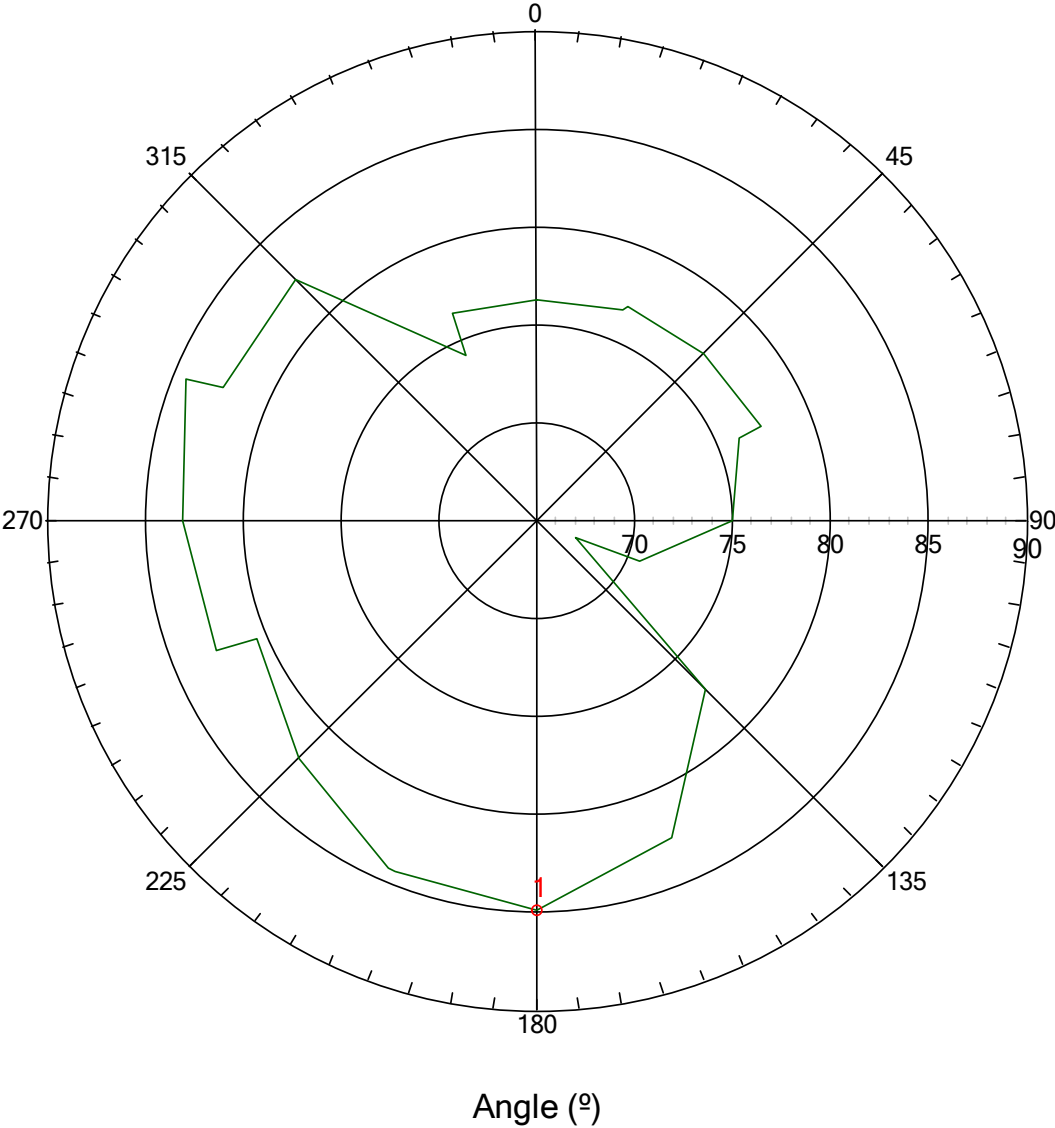
Detected peaks						
Peak Number	Frequency (MHz)	Peak (dBµV/m)	Peak Difference (dB)	Angle (°)	Height (m)	Polarization
1	2440	85.8	11.8	292	4	Horizontal

Measurement	RE 1 GHz to 6 GHz		Test ID	#7	Date and time	2024-05-23 16:53:29		Operator	C. Clément
EUT	CP+				Order	23CH-00972		Verdict	Pass
Notes	EUT: CP+ Operating mode: Continuous duty (100 %), TX, BOT (2.402 GHz), Power level set to 9 (0 dBm) Power supply: 24 VDC from battery Connected cables: Power supply Modifications: None Remarks: EUT is lying								
Antenna Height	1 m to 4 m, 4 step(s)	Polarization	Both		Table Angle	0 ° to 360 °, 16 step(s)		Distance	3 m
Test Place	ROS-SAC3		Software		Radimation 2023.2.5 (RE FCC 1-6G ESW26 Schwarzbeck 9120D SAC3)				
Settings	Band(s): 1 GHz - 6 GHz, Reference Level: 100 dBμV RBW: 1 MHz, VBW: 3 MHz, Sweeptime: 200 ms, Number of Sweeps: 10 Step freq: Fixed step count: 5001 steps per Band, Attenuator: 0.0 dB, Internal preamp: 0 dB, Measure time: 2 s Final Measurement/Observation Time: PK 1 s / 10 s, QP 1 s / 5 s, AVG 1 s / 10 s								

47 CFR §15.209 / RSS-Gen §8.9

RadiMation

RBW: 1 MHz, Both Max Peak for peak 1



Detected peaks						
Peak Number	Frequency (MHz)	Peak (dBμV/m)	Peak Difference (dB)	Angle (°)	Height (m)	Polarization
1	2402	84.9	10.9	180	4	Horizontal

7. List of test equipment

Remark: Calibration interval may be extended based on sufficient calibration data and experience of use (see IECEE OD-5011:2019 clause 8.2.5)

Equipment	Type	Inventory no.	Manufacturer	Last calibration date	Calibration due date
Test stand: Radio Conducted Emission					
Signal Analyzer	N9020B MXA	2018-01	Keysight	2021-04-15	2022-04-15
Matériel laboratoire; Etuve -40 °C à + 60 °C	VTK 04 / 125	2006-66	Ernst Vötsch	Supervised by temperature Probe	
Cable	SF104	2011-13	Huber&Suhner	2023-08-30	2025-02-28

*

Equipment	Type	Inventory no.	Manufacturer	Last calibration date	Calibration due date
Test stand: Radiated disturbances - 1000 MHz to 6000 MHz					
SAC3					
Semi Anechoic Chamber	SAC 3 m	2019-00	Albatross Projects	2023-07-13	2026-07-13
EMI Test Receiver	ESW26	2021-07	Rohde & Schwarz	2024-03-22	2025-03-22
Horn Antenna 1 - 18 GHz / 200W	BBHA 9120 D	2022-07	Schwarzbeck	2023-09-08	2025-03-08
Preamplifier	AFS42-00101800-25-S-42	2014-27	MITEQ	2023-02-09	2024-08-09
Coax Cable	Sucoflex 104A	2015-16	Huber+Suhner	2023-08-17	2025-02-17
Cable Sucoflex 18 GHz	SF106PA	2011-61	Huber & Suhner	2023-08-17	2025-02-17
Coax Cable	Sucoflex 104A	2015-15	Huber+Suhner	2023-08-17	2026-08-17
Coaxial Cable	Sucoflex 106	2021-03A	Huber+Suhner	2023-08-16	2025-02-16
Comb Generator 10 MHz to 6 GHz	YRS03	2023-05	York	2023-02-01	2024-08-01
Half-wave Dipole	UHA 9125 D	2000-52	Schwarzbeck	2022-08-12	2025-08-12
Power probe; -50 to 30 dBm / 9kHz - 18 GHz	E9304A H19	2009-04	Agilent	2022-05-23	2023-11-23
Signalgenerator	APSIN20G	2013-16	AnaPico	2022-05-20	2023-11-20
Cable Sucoflex 18 GHz	SF106PA	2011-61	Huber & Suhner	2023-08-17	2025-02-17
NCD HDcon6102	Controller NCD	2017-02	Maturo	No Cal.	No Cal.
EMC hardened Camera	HDCam6E130	2019-12	Pontis	No Cal.	No Cal.
Antenna Mast	TAM4.5-E-Bus	2017-10	Maturo	No Cal.	No Cal.
Turntable 150 cm	TT1.5SI-1t	2019-18	Maturo	No Cal.	No Cal.
Thermo - Hygro & Barometer	T7511	2014-35	Comet System	2023-09-28	2024-09-28
Software	RadiMation 2023.2.5			No Cal.	No Cal.

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*Calibration interval extended, based on sufficient calibration data and experience of use (see IECEE OD-5011:2019 clause 8.2.5)

8. Measurement instrumentation uncertainties

The reported uncertainty of measurement is stated as combined standard uncertainty multiplied by a coverage factor $k = 2$ (if not stated otherwise).

The measured value (y) and the associated expanded uncertainty (U) represent the interval ($y \pm U$) which contains the value of the measured quantity with a probability of approximately 95 %. The uncertainty was estimated according the standard applying on the test conducted and base also by following the guidelines of the ISO (GUM:1995).

The measurement uncertainty contains contributions originating from the standard for the measurement equipment used, from the calibration method and the standard applying to the EUT (with own dedicated chapters).

See clause 4.8 in OD 2020 and document AA-ST5 41.01-09 measurement uncertainty, dated 2021-06-02 for more details.

	Measurements According to CISPR 16-4-2:2011+AMD1:2014+AMD2:2018	normal distribution	Estimated uncertainty of the measurement results: U_{lab}	Maximum uncertainty defined by the standard: U_{CISPR}
Radiated disturbance	Magnetic field for ERA/ERTMS/033281 (X, Y & Z axis) 27 kHz – 1250 kHz	$k = 2$	± 3.0 dB	Not given
	Disturbance current in a LLAS 9 kHz – 30 MHz: acc. table F.1	$k=2$	N/A	± 3.3 dB
	Electric field strength in a SAC @ 3 m, 5 m and 10 m 30 – 1000 MHz, acc. table D.1 to D.4	$k=2$	± 4.24 dB (30-300 MHz) ± 3.59 dB (200-1000 MHz)	± 6.3 dB
	Electric field strength in a FAR @ 3 m 1 – 6 GHz, acc. table E.1	$k=2$	± 4.94 dB	± 5.2 dB
	Electric field strength in a FAR @ 3 m 6 – 18 GHz, acc. table E.2	$k=2$	± 3.79 dB	± 5.5 dB

* The MU of the probe used for calibration of the homogenous field is already near 2.0 dB