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- The RvA is a signatory to the EA MLA.
- The RvA is a signatory to the ILAC MRA.
- The RvA is a signatory to the IAF MLA.
- FCC Registration Number: NL0002 / 375449
- ISED CABid: NL0003 / Company number: 27051

Test report No:
2295112.0501-RSM

Test Report (Partial)
USA FCC Part 15.247, 15.209
CANADA RSS-247, RSS-Gen

(*)	Identification of item tested	Battery powered LoRaWAN transmitter with multifunctional input/output
(*)	Trademark	TWTG
(*)	Model and /or type reference	Model: XT01 Type reference: XT-01-00
(*)	Features, other identification of the product	LoRa FCC ID: 2ATYF-XT01 IC: 28385-XT01
	Other identification of the product	N/A
(*)	Applicant´s name / address	TWTG
	Test method requested, standard	USA FCC Part 15.247 (10-1-23) Edition: Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz. USA FCC Part 15.209 (10-1-23) Edition: Radiated emission limits; general requirements. Guidance for Performing Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid Systems Devices Operating Under Section 15.247 of the FCC Rules. 558074 D01 Meas Guidance v05r02 dated April 2, 2019. CANADA RSS-247 Issue 3 (August 2023). CANADA RSS-Gen Issue 5 Amendment 1 (March 2019) and Amendment 2 (February 2021). ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
	Verdict Summary	IN COMPLIANCE
	Tested by (name / position & signature)	Alberto Serrano Criado Technical Professional EMC&Wireless
	Supervised by (name / position & signature)	Jose Carlos Luque Technical Professional EMC&Wireless
	Approved by (name / position & signature)	Sedat Eser Technical Professional EMC&Wireless
	Date of issue	2025-06-17
	Report template No	TRF_RSM_FCC R1.0 (*) “Data provided by the applicant”

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COMPETENCES AND GUARANTEES

The DEKRA is a testing laboratory competent to carry out the tests described in this report.
In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

GENERAL CONDITIONS

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.

UNCERTAINTY

Uncertainties have been calculated according to the DEKRA internal document AM#2224. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. Refer to the Annex 1 for furter information.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%
Atmospheric pressure	86 kPa – 106 kPa

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

☒ Indicates that the listed condition, standard or equipment is applicable for this report/test/EUT.				
☐ Indicates that the listed condition, standard or equipment is not applicable for this report/test/EUT.				
Decimal separator used in this report	☐	Comma (,)	☒	Point (.)

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT : Equipment Under Test
DUT : Device Under Test
QP : Quasi-Peak
PK : Peak
AV : Average
SAC : Semi-Anechoic Chamber
OATS : Open Area Test Site
RBW : Resolution Bandwidth
VBW : Video Bandwidth
*T*x : Transmitter
*R*x : Receiver
N/A : Not Applicable
N/M : Not Measured
RGP : Reference Ground Plane
TX : Transmission
RX : Reception

DATA PROVIDED BY THE APPLICANT

The following data has been provided by the client:

1. Information relating to the description of the sample('Identification of the item tested', 'Trademark', 'Model and/ or type reference tested' and 'Features').

DEKRA Certification B.V. declines any responsibility with respect to the information provided by the applicant and that may affect the validity of results.

DOCUMENT HISTORY

Report nr.	Date	Description
2295112.0501-RSM	2025-06-17	First release.

CONCLUSION, REMARKS AND COMMENTS

The equipment under test (EUT) does meet the requirements of the stated standard(s)/test(s).

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Description of the item .....:	Battery powered LoRaWAN transmitter with multifunctional input/output
Model / Type number .....:	Model: XT01 Type reference: XT-01-00
Serial number .....:	XT-01-00-ES-00006 / XT-01-00-ES-00007 Where: XT-01-00-ES-EEEEE EEEEE where E is incrementing ES = batch, AA-ZZ
Trademark .....:	TWTG
Manufacturer.....:	TWTG
Address .....:	Schaardijk 386, 2909 LA Capelle aan den IJssel

Operating frequency range(s) – Tx and RX:	US915 (902-928 MHz, all 64 + 8 channels)
Number of channel..... :	US915: 64 * 125 kHz, 8 * 500 kHz
Type of modulation ..... :	FHSS / DTS
Antenna type ..... :	Chip antenna
Antenna gain ..... :	0.58 dBi peak
Channel bandwidth	125 kHz (FHSS), 500 kHz (DTS)
Channel spacing	200 kHz / 1.6 MHz

Rated power supply .....:	Voltage and Frequency		Power connection type				
			L1	L2	L3	N	PE
	☐	AC: 220 – 240 V, 50/60 Hz	☐	☐	☐	☐	☐
	☐	AC: 100 – 240 V, 50/60 Hz	☐	☐	☐	☐	☐
	☒	Battery: 3.6 V LiSOCl2 battery					
Rated Power.....:	0.36 W						
Clock frequencies .....:	LoRa: 48 MHz MCU MSI: 12 MHz MCU LSE: 32.768 kHz						
Other parameters.....:	LoRa, 868 Mhz, 915 Mhz, 923 MHz						
Software version .....:	V1.0						
Hardware version.....:	A2 PCB, A3 PCBA						
Dimensions in cm (W x H x D)....:	11.0 x 7.2 x 5.4						
Mounting position.....:	☐	Table top equipment					
	☐	Wall/Ceiling mounted equipment					
	☐	Floor standing equipment					
	☐	Hand-held equipment					
	☒	Other: Mounted to pole, pipe					

Intended use of the Equipment Under Test (EUT)
Battery powered industrial LoRaWAN transmitter to with multi-input connector to be used in combination with different sensors such as temperature sensors, ratiometric sensors, digital sensors or TWTG designed sensors.

Different connector options may be attached to the device, but only one connection type can be used simultaneously per use case.

No	Documents as provided by the applicant - Description	File name	Issue date
1	General information form	01 General information form v1.2_XT01	2025-05-01
2	Application form	04 EN 300 220 Application Form v1.0-XT-01-00_A3	2025-04-04
3	RF Exposure Application form	03 Application form - RF_Exposure Assessment v1.0_XT01	2025-03-10

Modifications to the test item during testing .....:	☒	N/A	☐	

Copy of marking plate:

1.2 Test data

Test Location	DEKRA Certification B.V., Netherlands
Date (start)	2025-04-02
Date (finish)	2025-04-10

2 DESCRIPTION OF TEST SETUP

2.1 Sample(s) used for tests

During the tests the following sample(s) has(have) been used.

Sample	Logistics number	Model number	Serial number	Remark(s) / Changes
01	109351 / 1-1	XT01	XT-01-00-ES-00006	See 1
02	109351 / 1-9	XT01	XT-01-00-ES-00007	See 2
Suplementary information: 1. Radiated Sample. 2. Conducted Sample.				

2.2 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

Operating mode	Description of the operating mode	Used for testing
1	EUT ON. MS in TX continuous modulated carrier at 902.3 MHz, 908.5 MHz and 914.6 MHz. FHSS modulation (125 kHz bandwidth). Setting of power 22.	☒
2	EUT ON. MS in TX continuous modulated carrier at 903 MHz, 907.8 MHz and 914.2 MHz. DTS modulation (500 kHz bandwidth). Setting of power 22.	☒
Supplemental information: ---		

2.3 Port(s) of the EUT

Port name and description	Connected to / Termination	Cable		
		Length used during test [m]	Attached during test	Shielded
(fitted, worst case) LVDS: M12 connector female 4-pin Used for LVDS communication	TWTG sensor (DS-VBXX-00)	More than 3 meters but no more than 30 meters	☒	☒
(optional) Ratiometric: M12 connector female 4-pin Used for ratiometric analog sensors	Can be ratiometric TWTG or OEM sensor	More than 3 meters but no more than 30 meters	☐	☒
(optional) Temperature: M12 connector male 4-pin Used for analog temperature sensors	Can be thermocouple or RTD sensor	More than 3 meters but no more than 30 meters	☐	☒
(optional) Digital: M12 connector male or female 4 to 6 pin Used for digital sensors / low speed communication	Can be used with digital input / output signals	More than 3 meters but no more than 30 meters	☐	☒
Supplemental information: ---				

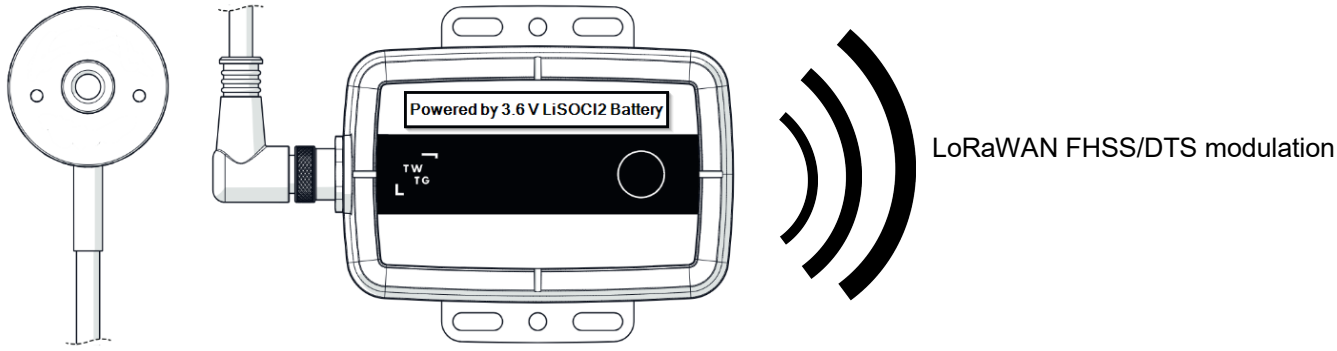
2.4 Support / Auxiliary equipment / unit / software for the EUT

The EUT has been tested with the following auxiliary equipment / unit / software:

Auxiliary equipment / unit / software	Type / Version	Manufacturer	Supplied by
--	--	--	--
Supplemental information: ---			

2.5 Test Configuration / Block diagram used for tests

The following block diagram has been used during the tests:



The sensor had attached the auxiliary cable (M12 connector) during the radiated tests.

2.6 Test conditions

Temperature (C):
Tn = +15 to +35.
Tmin= N/A
Tmax= N/A

The XT-01-00 is placed inside an anechoic chamber on a turntable.

TEST Setup

All radiated tests were performed in a semi-anechoic chamber. The used measurement antenna's are:

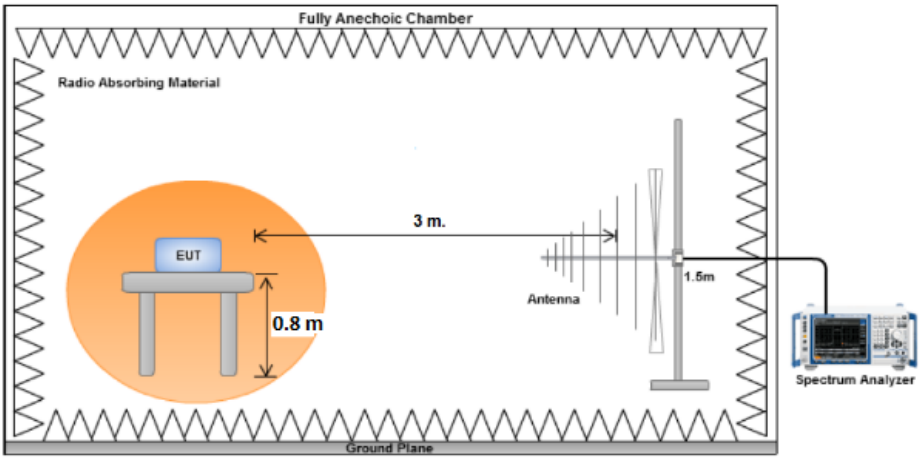
- Ultralog antenna situated at a distance of 3 m for the range between 30 MHz to 1000 MHz.
- Double ridge horn antenna is situated at a distance of 3 m for the frequency range of 1 GHz to 10 GHz.

The equipment under test was set up on a non-conductive platform at a height of 1,5 m above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360º and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission. The antenna is used in TILT mode for measurements above 1 GHz.

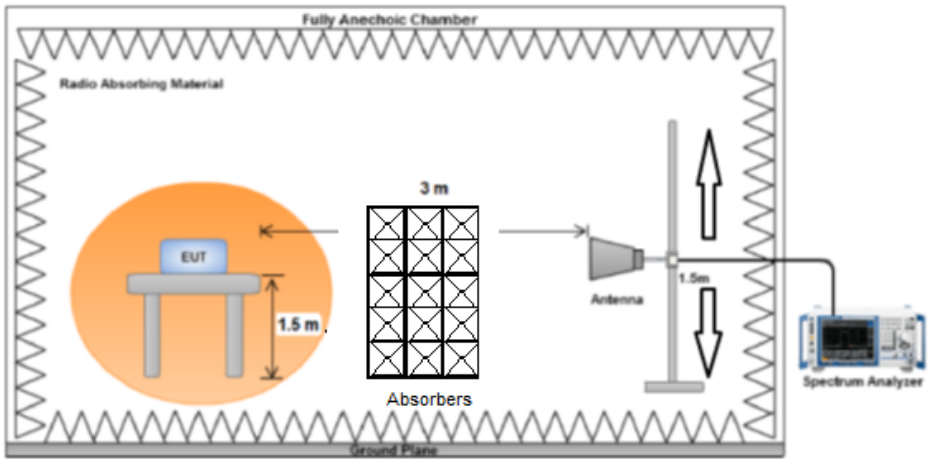
Measurements were made in both horizontal and vertical planes of polarization.

A resolution bandwidth / video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

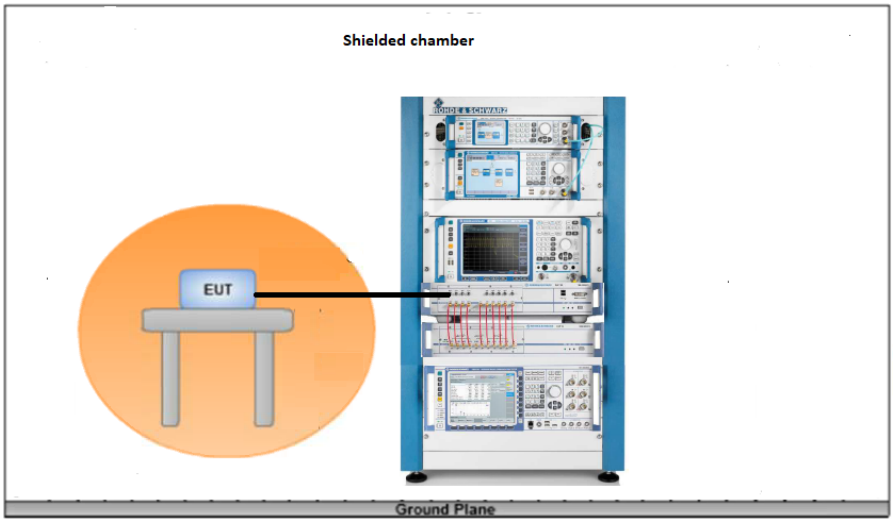
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 10 GHz (tilting of the antenna is not shown):



Conducted measurement setup:



3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
FCC Rules & Regulations 47 CFR Chapter I - Part 15 Subpart C Clause 15.247	2023-01	Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.
RSS-247	2023-08	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.

3.2 Overview of results – FHHS equipment

Test case	Standard	Verdict	Remarks
Maximum output power and antenna gain	FCC 15.247 (b) (2) / RSS-247 Clause 5.4 (a)	Pass	--
20 dB Bandwidth and Carrier frequency separation	FCC 15.247 Subclause (a) (1) / RSS-247 5.1. (b)	N/M	See 1
Number of hopping channels	FCC 15.247 Subclause (a)(1)(i) / RSS-247 Clause 5.1 (c)	N/M	See 1
Time of occupancy (Dwell Time)	FCC 15.247 Subclause (a)(1)(i) / RSS-247 Clause 5.1 (c)	N/M	See 1
Band-edge emissions compliance (Transmitter)	FCC 15.247 (d) / RSS-247 Clause 5.5	N/M	See 1
Emission limitations conducted (Transmitter)	FCC 15.247 (d) / RSS-247 Clause 5.5	N/M	See 1
Emission limitations radiated (Transmitter)	FCC 15.247 (d) / RSS-247 Clause 5.5	Pass	--

Supplementary information:

1. Test not requested.

3.3 Overview of results – DTS equipment

Test case	Standard	Verdict	Remarks
6 dB Bandwidth	FCC 15.247 (a) (2) / RSS-247 5.2. (a)	N/M	See 1
Maximum output power and antenna gain	FCC 15.247 Subclause (b) (3) / RSS-247 5.4. (d)	Pass	--
Band-edge emissions compliance (Transmitter)	FCC 15.247 (d) / RSS-247 Clause 5.5	N/M	See 1
Power spectral density	FCC 15.247 (e) / RSS-247 5.2. (b)	N/M	See 1
Emission limitations conducted (Transmitter)	FCC 15.247 (d) / RSS-247 Clause 5.5	N/M	See 1
Emission limitations radiated (Transmitter)	FCC 15.247 (d) / RSS-247 Clause 5.5	Pass	--
Supplementary information: 1. Test not requested.			

3.4 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards:
N/A.

4 TEST RESULTS FHSS

4.1 Product Information

The following information is provided by the supplier, in accordance with clause 5.3.1:

Information	Description
Modulation	FHSS
Frequency band/Range	US915 (902-928 MHz, all 64 + 8 channels)
Maximum RF Output Power (e.i.r.p.)	+22 dBm limited by software setting
Operation mode 1: Single Antenna Equipment	Equipment with one antenna
- Operating Frequency Range	US915 (902-928 MHz, all 64 + 8 channels)
- Channel Spacing	200 kHz
- Number of Channels	US915 (902-928 MHz, all 64 + 8 channels)
Extreme operating conditions	
- Temperature range	-40°C to +80°C
Antenna type	Chip antenna
Antenna gain “Antenna port 1”	0.58 dBi peak
Nominal Voltage	
- Supply Voltage	3.6 V
- Type of power source	LiSOCl2 battery
Equipment type	Mounted to pole, pipe

Note:

- **LORA (FHSS) 125 KHz / Channel lowest : /lora/modulatedtx on 902.3 22 125 7**
- **LORA (FHSS) 125 KHz / Channel middle : /lora/modulatedtx on 908.5 22 125 7**
- **LORA (FHSS) 125 KHz / Channel highest : /lora/modulatedtx on 914.6 22 125 7**

4.2 FCC Section 15.247 (b) (2) / / RSS-247 Clause 5.4 (a). Maximum output power and antenna gain

SPECIFICATION:

For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels. Hybrid systems shall comply with the 1 W limit.

Additionally for RSS-247:
For FHSs operating in the band 902-928 MHz, the e.i.r.p. shall not exceed 4 W if the hopset uses 50 or more hopping channels; the e.i.r.p. shall not exceed 1 W if the hopset uses less than 50 hopping channels.

RESULTS:

The maximum conducted output power was measured using the method “Output power test procedure for frequency-hopping spread-spectrum (FHSS) devices” according to point 7.8.5 of ANSI C.63.10-2013.

The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power.

Maximum Declared Antenna Gain: 0.58 dBi

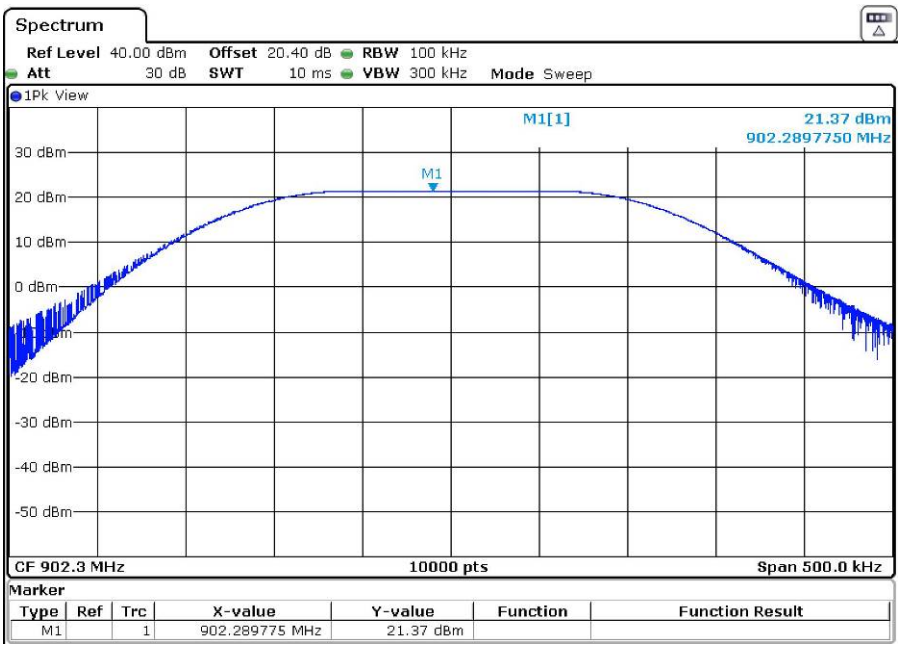
The maximum directional gain of the antenna is less than 6 dBi and therefore the maximum output power is not required to be reduced from the stated values.

MAXIMUM OUTPUT POWER. See next plots.

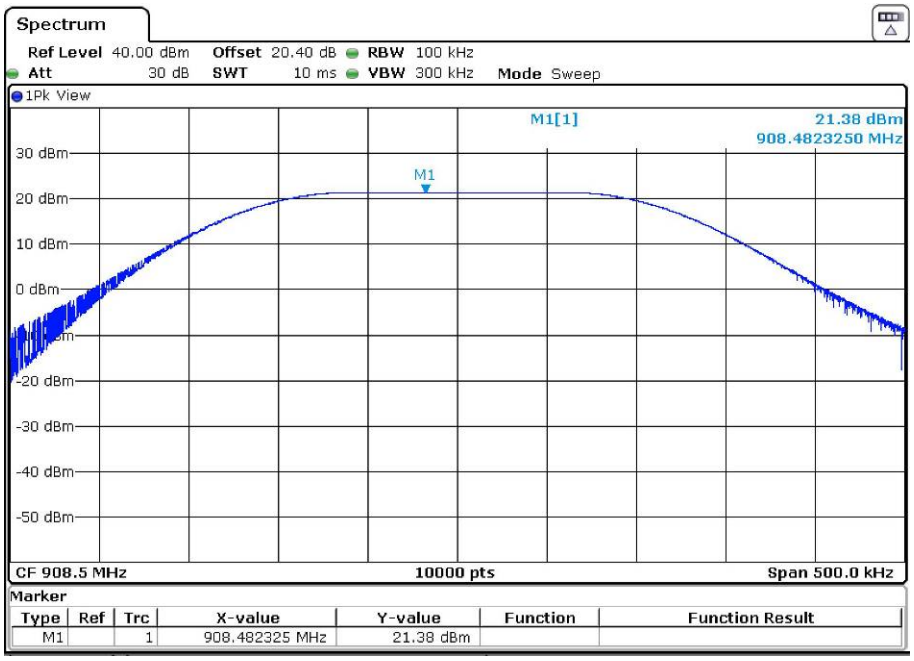
	Low Channel 902.3 MHz	Middle Channel 908.5 MHz	Highest Channel 914.6 MHz
Maximum conducted power (dBm)	21.37	21.38	21.40
Maximum EIRP power (dBm)	21.95	21.96	21.98

CONDUCTED POWER.

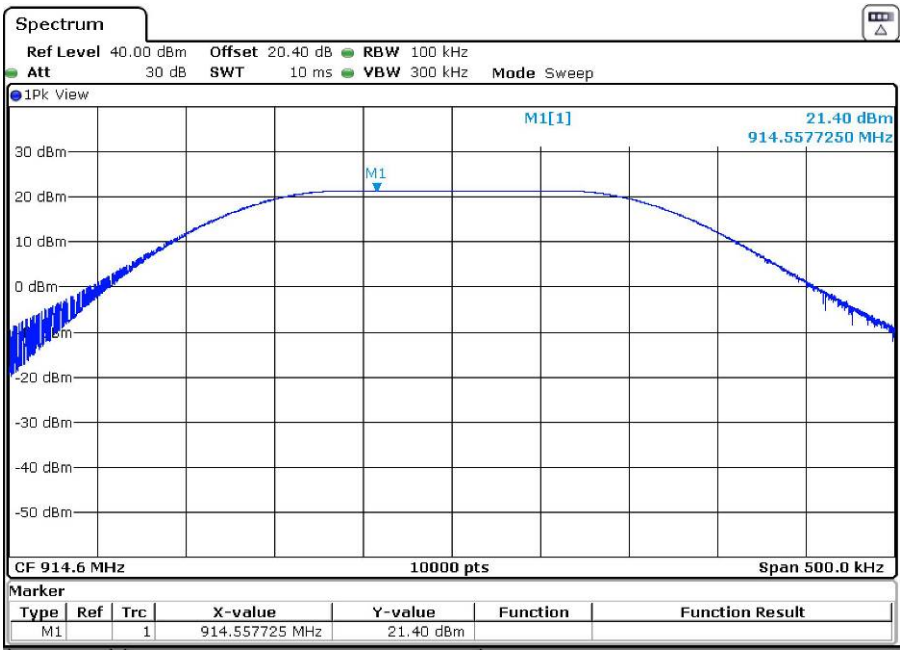
- Low Channel:



- Middle Channel:



- Highest Channel:



Verdict: PASS

4.3 FCC Section 15.247 Subclause (d). Emission limitations radiated (Transmitter)

SPECIFICATION:

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c) / RSS-Gen):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

RESULTS:

The situation and orientation was varied to find the maximum radiated emission. It was also rotated 360º and the antenna height was varied (in TILT mode) from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

The EUT was set up on a non-conductive platform at a height of 0.8m for measurements below 1 GHz and 1.5m for over 1 GHz

All tests were performed in a semi-anechoic chamber at a distance of 3 m for the frequency range 30 MHz-10 GHz.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

Performed measurements

The following configuration(s) and parameter(s) was/were used for testing:

Port under test	Enclosure (with cabling)		
Test method	X	Semi Anechoic Chamber	
		Open Area Test Site (OATS)	
		In-Situ (at user/manufacturer premises)	
		GTEM cell	
		Other:	---
Test set-up		Equipment on a table of 80 cm height	
		Equipment on the floor (insulated from the reference ground plane)	
	X	Other:	The EUT is installed on a support of 0.8m. above the ground plane below 1 GHz measurements and above 1.5m for above 1 GHz.

Technology	Sample	Mode / Modulation	Channel / Freq.	Frequency range	Antenna Polar. / axis	P/F	Sup. Info / Remark
LoRa	01	01 / 125KHz (FHSS)	0 / 902.3 MHz	30 - 300 MHz	H/V	P	1
LoRa	01	01 / 125KHz (FHSS)	31 / 908.5 MHz	30 - 300 MHz	H/V	P	1
LoRa	01	01 / 125KHz (FHSS)	63 / 914.6 MHz	30 - 300 MHz	H/V	P	1
LoRa	01	01 / 125KHz (FHSS)	0 / 902.3 MHz	300 - 1000 MHz	H/V	P	---
LoRa	01	01 / 125KHz (FHSS)	31 / 908.5 MHz	300 - 1000 MHz	H/V	P	---
LoRa	01	01 / 125KHz (FHSS)	63 / 914.6 MHz	300 - 1000 MHz	H/V	P	---
LoRa	01	01 / 125KHz (FHSS)	0 / 902.3 MHz	1 – 3 GHz	H/V	P	---
LoRa	01	01 / 125KHz (FHSS)	31 / 908.5 MHz	1 – 3 GHz	H/V	P	---
LoRa	01	01 / 125KHz (FHSS)	63 / 914.6 MHz	1 – 3 GHz	H/V	P	---
LoRa	01	01 / 125KHz (FHSS)	0 / 902.3 MHz	3 – 10 GHz	H/V	P	---
LoRa	01	01 / 125KHz (FHSS)	31 / 908.5 MHz	3 – 10 GHz	H/V	P	---
LoRa	01	01 / 125KHz (FHSS)	63 / 914.6 MHz	3 – 10 GHz	H/V	P	---

Suplementary information / Remark:

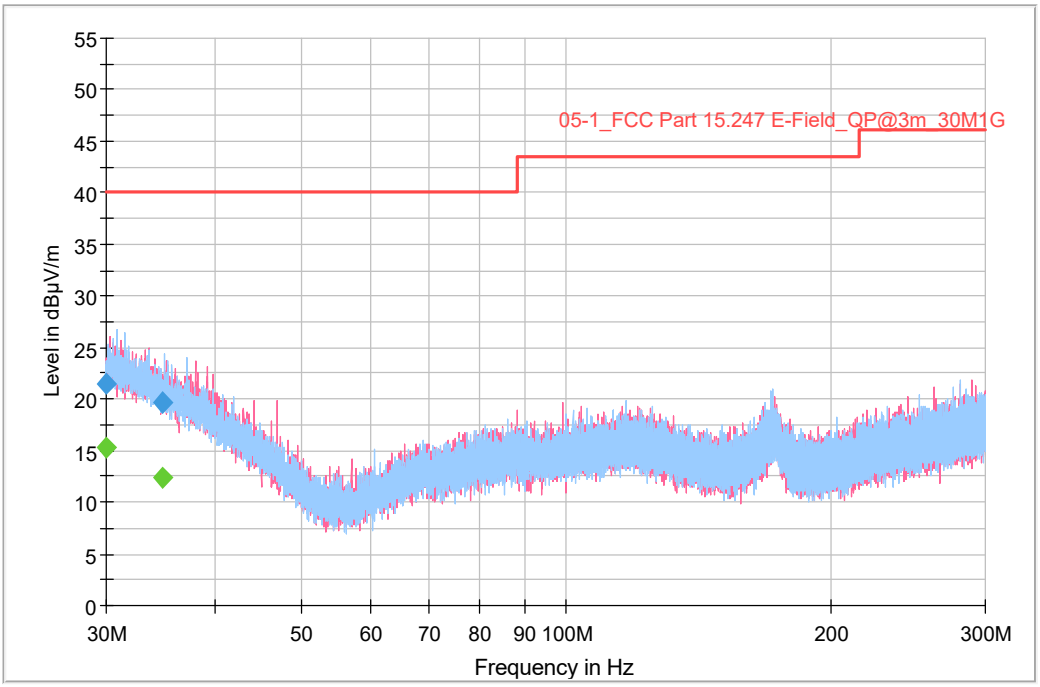
1) The spurious frequencies do not depend neither on the operating channel. Valid for all channels.

FREQUENCY RANGE 30 MHz - 1 GHz:

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX (Valid for all channels)		

Common Information

EUT/Sample # / OM# : XT-01-00 / 01 / 01
Voltage/Frequency : 3.6 Vdc
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. TX modulated carrier at 902.3 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
05-1_FCC Part 15.247 E-Field_QP@3m_30M1G
Final_Result QPK
Preview Result 1V-PK+
Preview Result 1H-PK+
Final_Result PK+

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.017619	15.34	2000.0	120.000	342.0	H	109.0
34.832333	19.71	2000.0	120.000	123.0	H	308.0

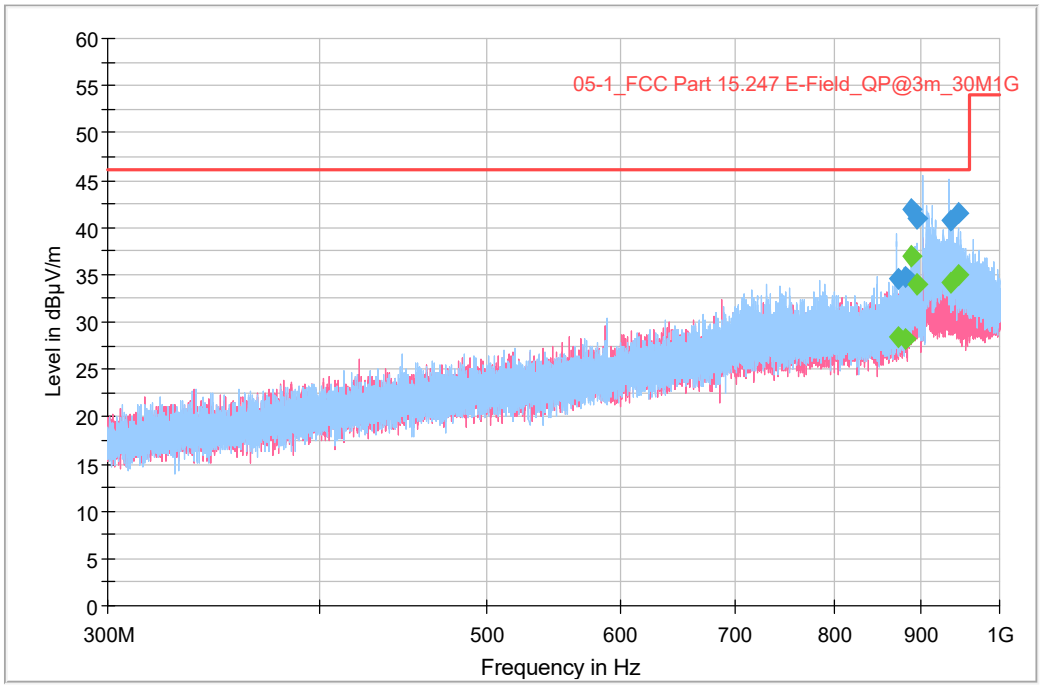
Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

FREQUENCY RANGE 300MHz - 1 GHz:

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel Low 902.3 MHz		

Common Information

EUT/Sample # / OM# : XT-01-00 / 01 / 01
Voltage/Frequency : 3.6 Vdc
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. TX modulated carrier at 902.3 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
05-1_FCC Part 15.247 E-Field_QP@3m_30M1G
Final_Result QPK
Preview Result 1V-PK+
Preview Result 1H-PK+
Final_Result PK+

Final_Result_QPK

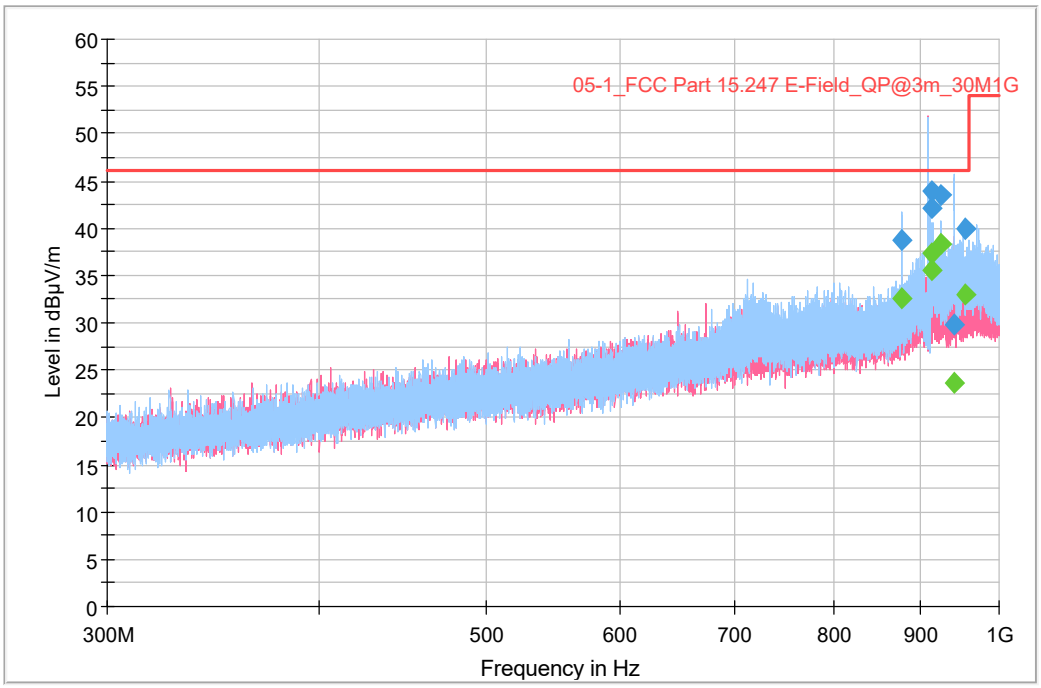
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
872.229667	28.38	46.02	17.64	2000.0	120.000	162.0	H	84.0
881.212333	28.23	46.02	17.79	2000.0	120.000	149.0	H	285.0
886.904167	37.03	46.02	8.99	2000.0	120.000	100.0	H	94.0
895.130167	33.94	46.02	12.08	2000.0	120.000	100.0	H	94.0
935.434833	34.13	46.02	11.89	2000.0	120.000	139.0	H	311.0
945.156666	34.87	46.02	11.15	2000.0	120.000	145.0	H	260.0

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The peak close to the limit was the carrier frequency LoRa lowest channel.

Measurement data	☒	Horizontal	☒	Vertical
Operating mode / Info		Mode 1 / TX Channel Middle 908.5 MHz		

Common Information

EUT/Sample # / OM# : XT-01-00 / 01 / 01
Voltage/Frequency : 3.6 Vdc
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. TX modulated carrier at 908.5 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
05-1_FCC Part 15.247 E-Field_QP@3m_30M1G
Final_Result QPK
Preview Result 1V-PK+
Preview Result 1H-PK+
Final_Result PK+

Final_Result_QPK

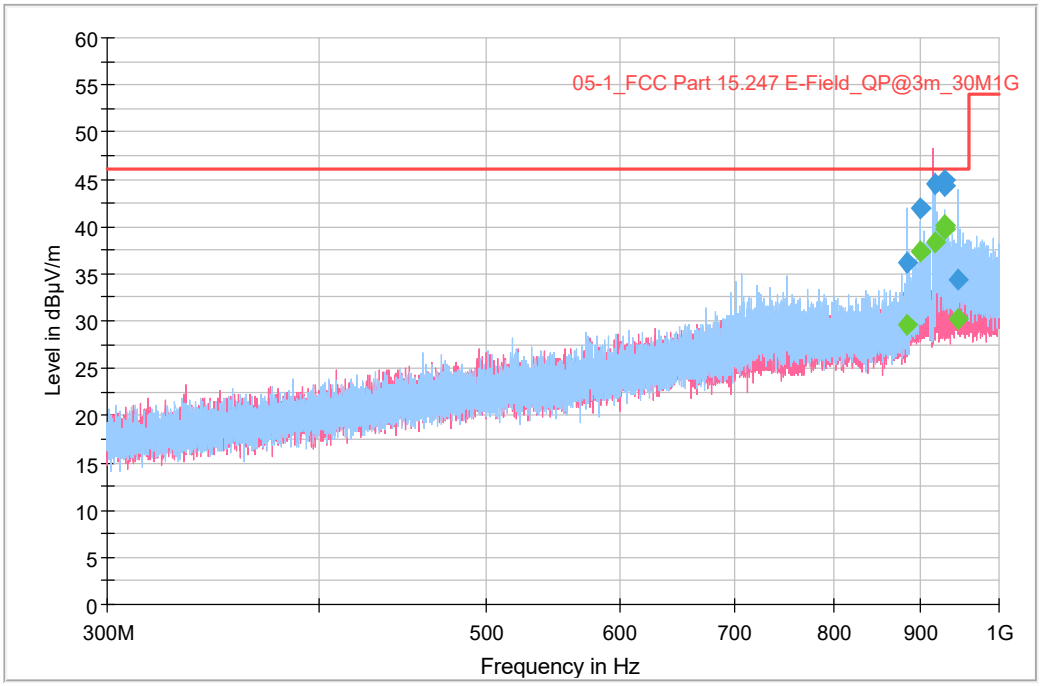
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
876.632500	32.62	46.02	13.40	2000.0	120.000	100.0	H	83.0
911.846500	35.49	46.02	10.53	2000.0	120.000	100.0	H	184.0
913.703666	37.31	46.02	8.71	2000.0	120.000	100.0	H	281.0
923.319666	38.39	46.02	7.63	2000.0	120.000	100.0	H	272.0
940.787667	23.70	46.02	22.32	2000.0	120.000	136.0	H	316.0
954.601500	32.92	46.02	13.10	2000.0	120.000	138.0	H	298.0

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The peak above the limit was the carrier frequency LoRa middle channel.

Measurement data	☒	Horizontal	☒	Vertical
Operating mode / Info		Mode 1 / TX Channel high 914.6 MHz		

Common Information

EUT/Sample # / OM# : XT-01-00 / 01 / 01
Voltage/Frequency : 3.6 Vdc
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. TX modulated carrier at 914.6 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
05-1_FCC Part 15.247 E-Field_QP@3m_30M1G
Final_Result QPK
Preview Result 1V-PK+
Preview Result 1H-PK+
Final_Result PK+

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
882.298333	29.52	46.02	16.50	2000.0	120.000	100.0	H	279.0
899.747834	37.36	46.02	8.66	2000.0	120.000	100.0	H	261.0
917.425167	38.33	46.02	7.69	2000.0	120.000	139.0	H	290.0
929.463167	40.05	46.02	5.97	2000.0	120.000	100.0	H	276.0
929.570667	39.65	46.02	6.37	2000.0	120.000	100.0	H	269.0
946.634334	30.27	46.02	15.75	2000.0	120.000	139.0	H	270.0

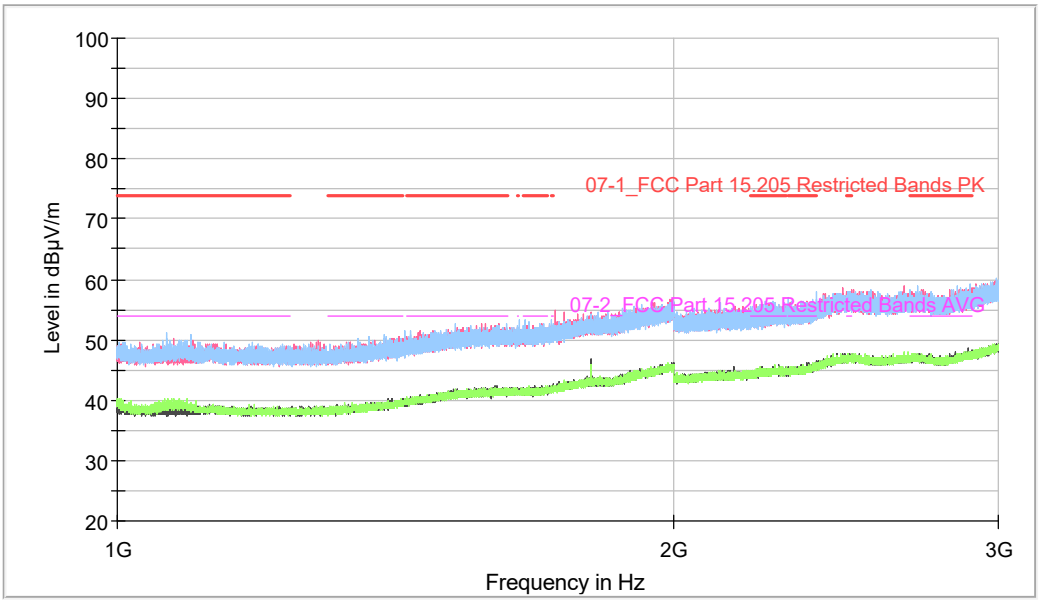
Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The peak above the limit was the carrier frequency LoRa highest channel.

FREQUENCY RANGE 1GHz - 3 GHz:

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel Low 902.3 MHz		

Common Information

EUT/Sample # / OM#	: XT-01-00 / 01 / 01
Voltage/Frequency	: 3.6 Vdc
Port/Terminal under test	: Enclosure
Remark/Comment	: EUT ON. TX modulated carrier at 902.3 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

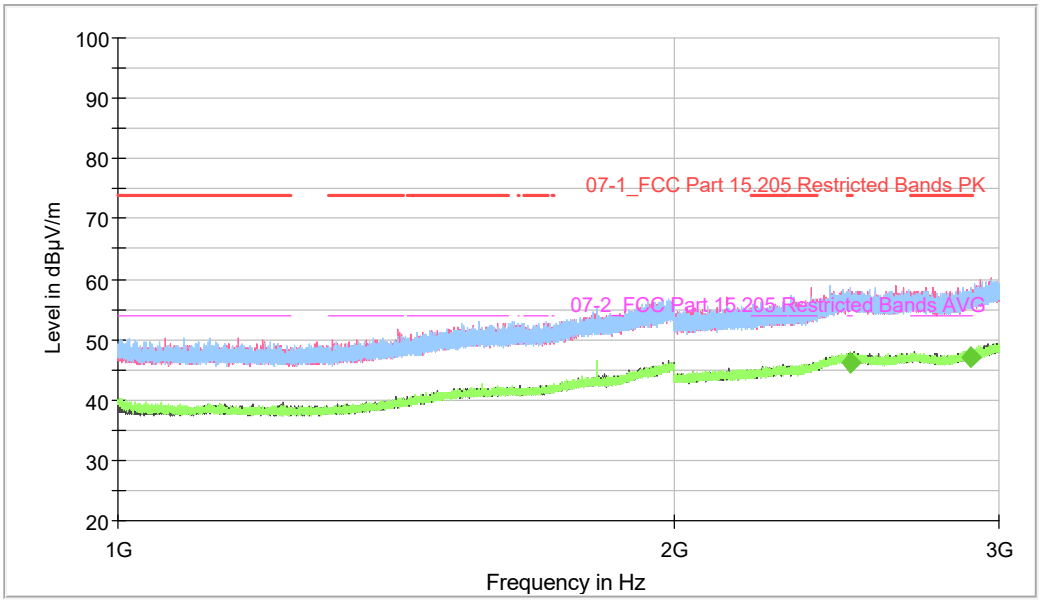
No significant values were measured.

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

Measurement data	☒	Horizontal	☒	Vertical
Operating mode / Info		Mode 1 / TX Channel Middle 908.5 MHz		

Common Information

EUT/Sample # / OM# : XT-01-00 / 01 / 01
Voltage/Frequency : 3.6 Vdc
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. TX modulated carrier at 908.5 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

Final_Result

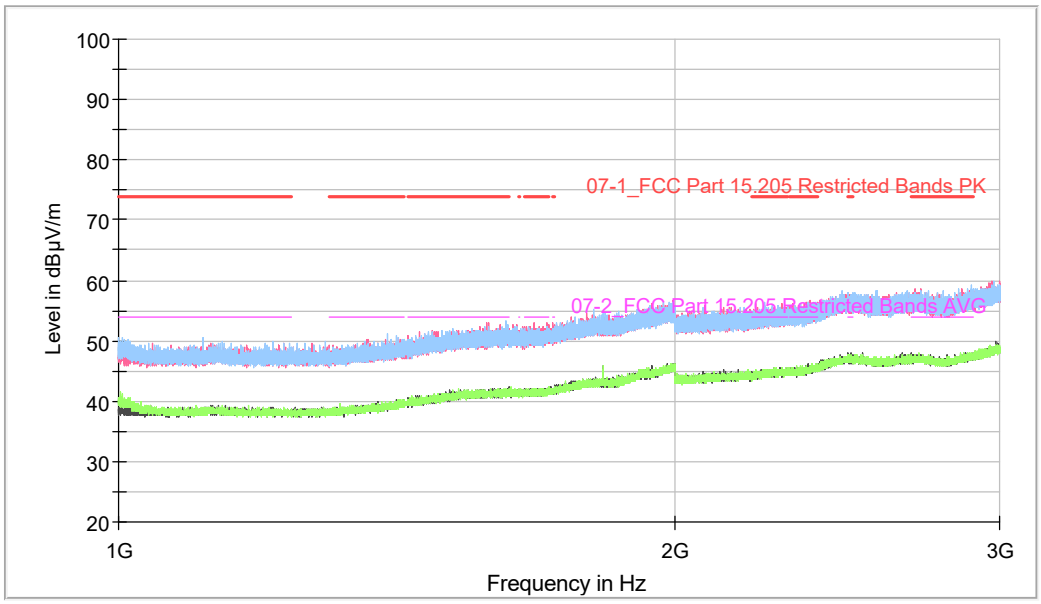
Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
2495.400000	46.30	54.00	7.70	154.0	H	223.0
2899.200000	46.98	54.00	7.02	291.0	H	315.0

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel high 914.6 MHz		

Common Information

EUT/Sample # / OM#	: XT-01-00 / 01 / 01
Voltage/Frequency	: 3.6 Vdc
Port/Terminal under test	: Enclosure
Remark/Comment	: EUT ON. TX modulated carrier at 914.6 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

No significant values were measured.

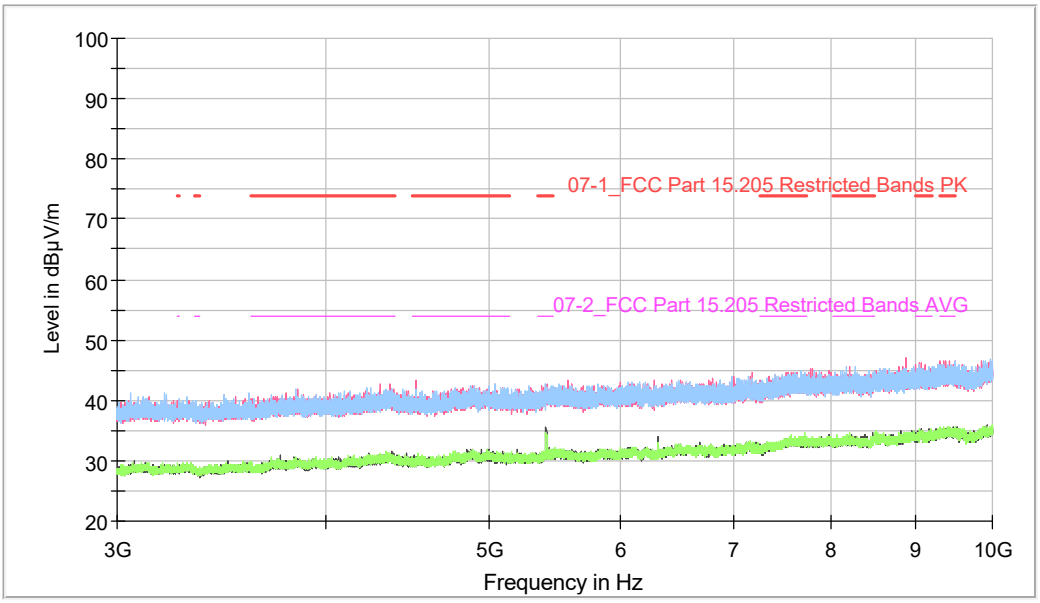
Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

FREQUENCY RANGE 3 - 10 GHz:

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel Low 902.3 MHz		

Common Information

EUT/Sample # / OM# : XT-01-00 / 01 / 01
Voltage/Frequency : 3.6 Vdc
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. TX modulated carrier at 902.3 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

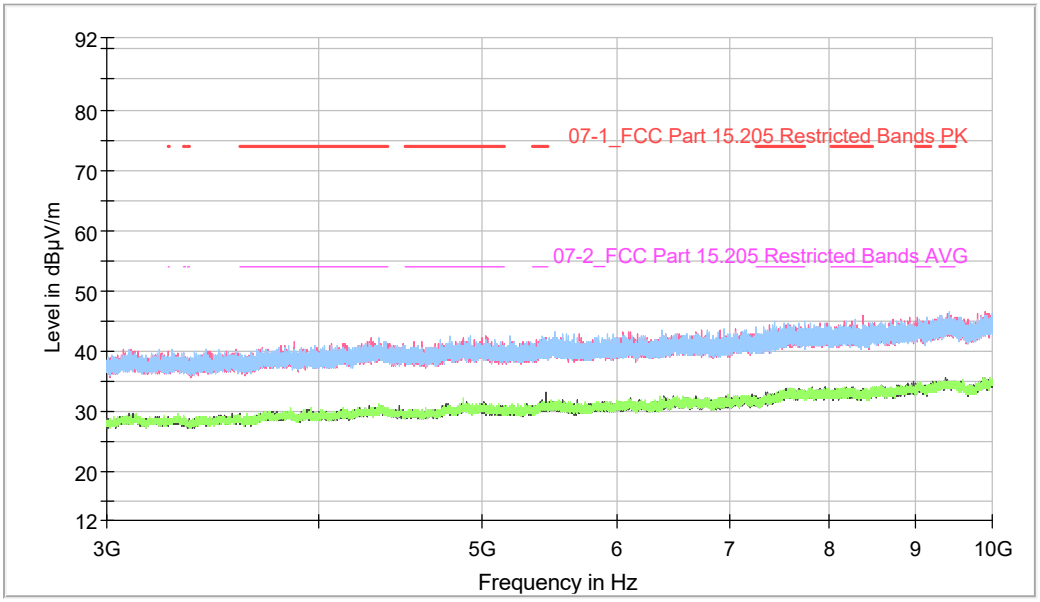
No significant values were measured.

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel Middle 908.5 MHz		

Common Information

EUT/Sample # / OM#	: XT-01-00 / 01 / 01
Voltage/Frequency	: 3.6 Vdc
Port/Terminal under test	: Enclosure
Remark/Comment	: EUT ON. TX modulated carrier at 908.5 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

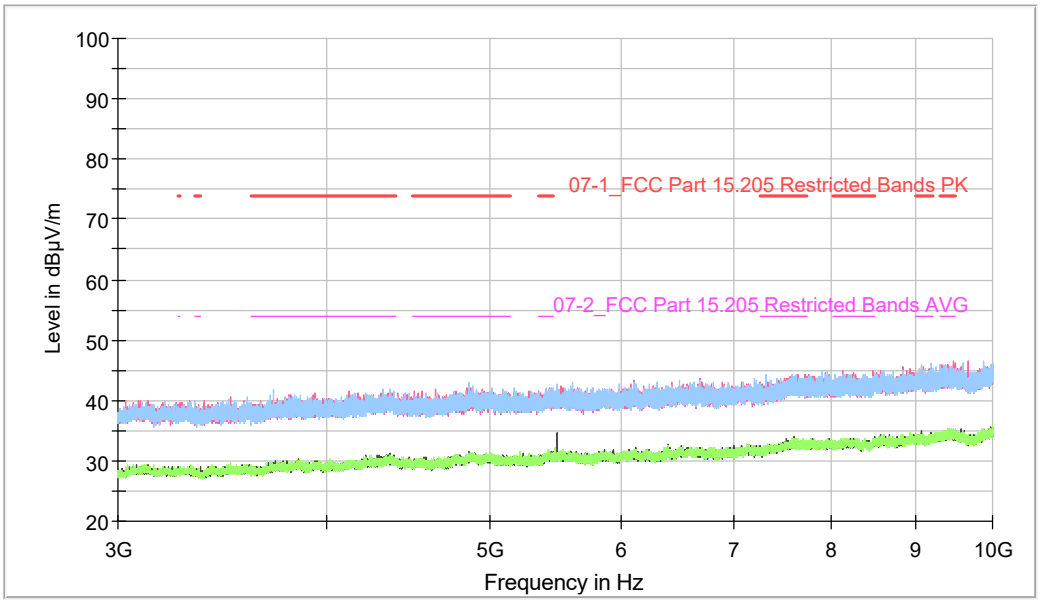
No significant values were measured.

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel high 914.6 MHz		

Common Information

EUT/Sample # / OM#	: XT-01-00 / 01 / 01
Voltage/Frequency	: 3.6 Vdc
Port/Terminal under test	: Enclosure
Remark/Comment	: EUT ON. TX modulated carrier at 914.6 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

No significant values were measured.

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

5 TEST RESULTS DTS

5.1 Product Information

The following information is provided by the supplier, in accordance with clause 5.3.1:

Information	Description
Modulation	DTS
Frequency band/Range	US915 (902-928 MHz, all 64 + 8 channels)
Maximum RF Output Power (e.i.r.p.)	+22 dBm limited by software setting
Operation mode 1: Single Antenna Equipment	Equipment with one antenna
- Operating Frequency Range	US915 (902-928 MHz, all 64 + 8 channels)
- Channel Spacing	1.6 MHz
- Number of Channels	US915 (902-928 MHz, all 64 + 8 channels)
Extreme operating conditions	
- Temperature range	-40°C to +80°C
Antenna type	Chip antenna
Antenna gain “Antenna port 1”	0.58 dBi peak
Nominal Voltage	
- Supply Voltage	3.6 V
- Type of power source	LiSOCl2 battery
Equipment type	Mounted to pole, pipe

Note:

- **LORA (DTS) 500 KHz / Channel lowest : /lora/modulatedtx on 903.0 22 500 8**
- **LORA (DTS) 500 KHz / Channel middle : /lora/modulatedtx on 907.8 22 500 8**
- **LORA (DTS) 500 KHz / Channel highest : /lora/modulatedtx on 914.2 22 500 8**

5.2 FCC Section 15.247 (b) (3) / / RSS-247 Clause 5.4 (a). Maximum output power and antenna gain

SPECIFICATION:

For systems using digital modulation in the 902-928 MHz band with a 6 dB bandwidth of at least 500 kHz: the maximum conducted output power shall not exceed 1 watt (30 dBm).

Additionally for RSS-247:

For DTS operating in the band 902-928 MHz, the e.i.r.p. shall not exceed 4 W (36 dBm).

RESULTS:

The maximum conducted output power was measured using the method “Maximum peak conducted output power” according to point 11.9.1 of ANSI C63.10-2013.

The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power.

Maximum Declared Antenna Gain: 0.58 dBi

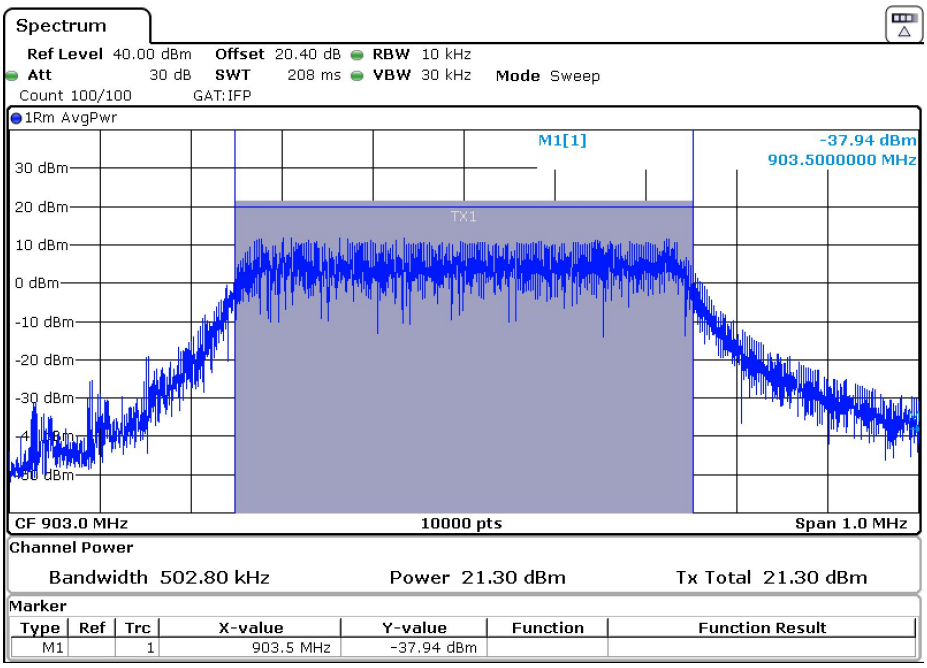
The maximum directional gain of the antenna is less than 6 dBi, and therefore the maximum output power is not required to be reduced from the stated values.

MAXIMUM OUTPUT POWER: See next plots.

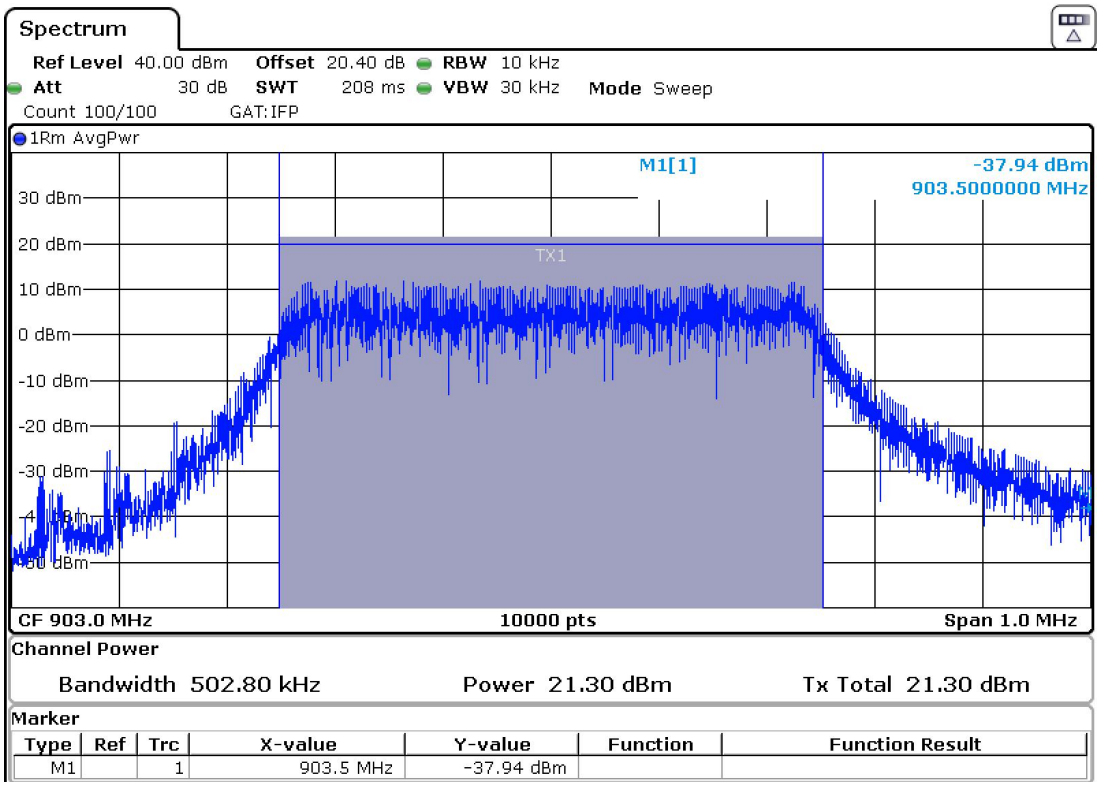
	Low Channel 903 MHz	Middle Channel 907.8 MHz	Highest Channel 914.2 MHz
Maximum conducted power (dBm)	21.30	21.35	21.31
Maximum EIRP power (dBm)	21.88	21.93	21.89

CONDUCTED POWER.

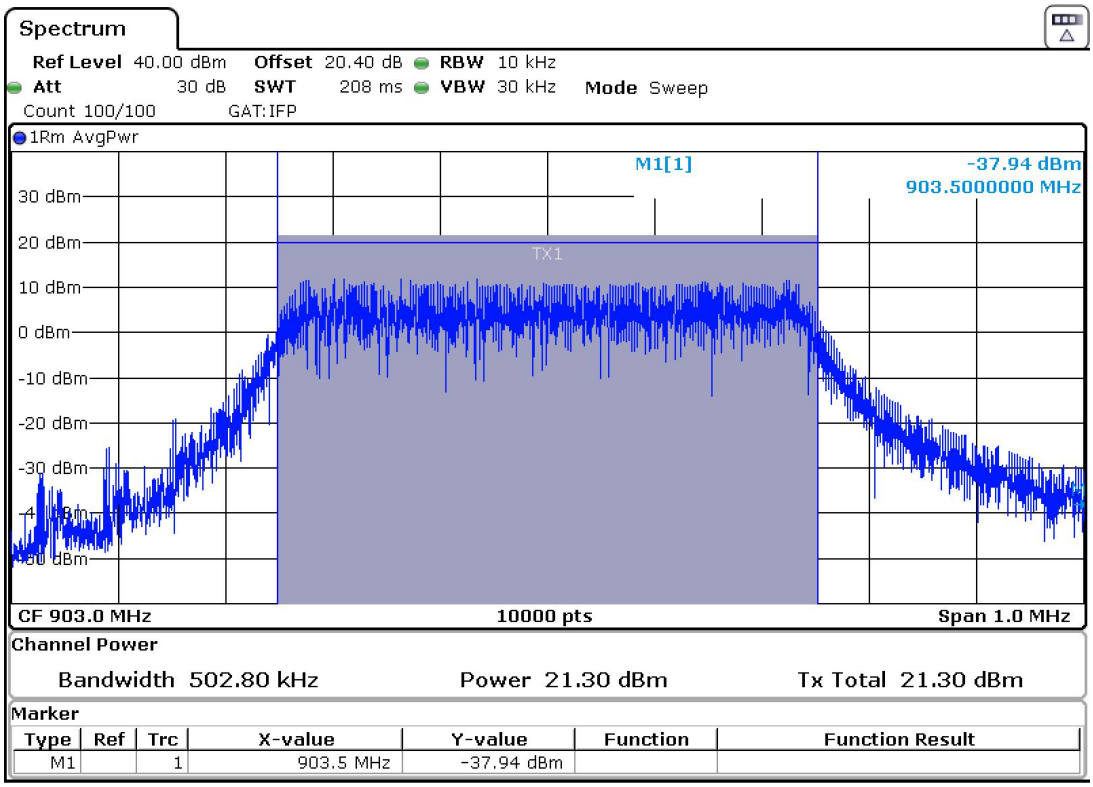
- Low Channel:



- Middle Channel:



- Highest Channel:



Verdict: PASS

5.3 FCC Section 15.247 Subclause (d). Emission limitations radiated (Transmitter)

SPECIFICATION:

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c) / RSS-Gen):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

RESULTS:

The situation and orientation was varied to find the maximum radiated emission. It was also rotated 360º and the antenna height was varied (in TILT mode) from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

The EUT was set up on a non-conductive platform at a height of 0.8m for measurements below 1 GHz and 1.5m for over 1 GHz

All tests were performed in a semi-anechoic chamber at a distance of 3 m for the frequency range 30 MHz-10 GHz.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

Performed measurements

The following configuration(s) and parameter(s) was/were used for testing:

Port under test	Enclosure (with cabling)		
Test method	X	Semi Anechoic Chamber	
		Open Area Test Site (OATS)	
		In-Situ (at user/manufacturer premises)	
		GTEM cell	
		Other:	---
Test set-up		Equipment on a table of 80 cm height	
		Equipment on the floor (insulated from the reference ground plane)	
	X	Other:	The EUT is installed on a support of 0.8m. above the ground plane below 1 GHz measurements and above 1.5m for above 1 GHz.

Technology	Sample	Mode / Modulation	Channel / Freq.	Frequency range	Antenna Polar. / axis	P/F	Sup. Info / Remark
LoRa	01	02 / 500KHz (DTS)	64 / 903 MHz	30 - 300 MHz	H/V	P	1
LoRa	01	02 / 500KHz (DTS)	67 / 907.8 MHz	30 - 300 MHz	H/V	P	1
LoRa	01	02 / 500KHz (DTS)	71 / 914.2 MHz	30 - 300 MHz	H/V	P	1
LoRa	01	02 / 500KHz (DTS)	64 / 903 MHz	300 - 1000 MHz	H/V	P	---
LoRa	01	02 / 500KHz (DTS)	67 / 907.8 MHz	300 - 1000 MHz	H/V	P	---
LoRa	01	02 / 500KHz (DTS)	71 / 914.2 MHz	300 - 1000 MHz	H/V	P	---
LoRa	01	02 / 500KHz (DTS)	64 / 903 MHz	1 – 3 GHz	H/V	P	---
LoRa	01	02 / 500KHz (DTS)	67 / 907.8 MHz	1 – 3 GHz	H/V	P	---
LoRa	01	02 / 500KHz (DTS)	71 / 914.2 MHz	1 – 3 GHz	H/V	P	---
LoRa	01	02 / 500KHz (DTS)	64 / 903 MHz	3 – 10 GHz	H/V	P	---
LoRa	01	02 / 500KHz (DTS)	67 / 907.8 MHz	3 – 10 GHz	H/V	P	---
LoRa	01	02 / 500KHz (DTS)	71 / 914.2 MHz	3 – 10 GHz	H/V	P	---

Suplementary information / Remark:

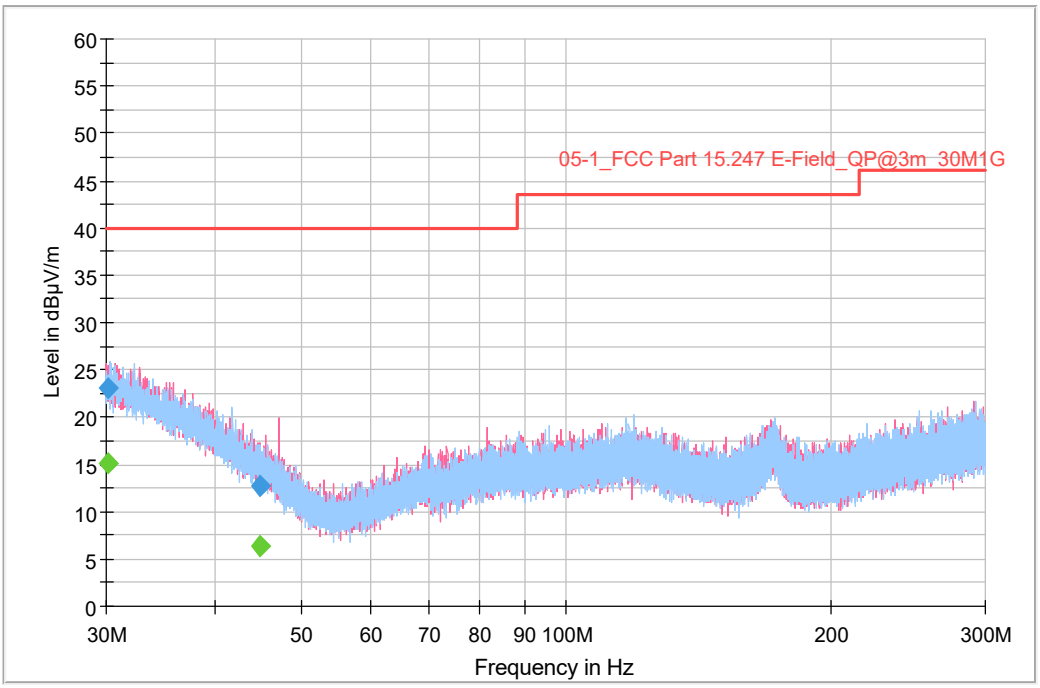
1) The spurious frequencies do not depend neither on the operating channel. Valid for all channels.

FREQUENCY RANGE 30 MHz - 1 GHz:

Measurement data	☒	Horizontal	☒	Vertical
Operating mode / Info		Mode 1 / TX (Valid for all channels)		

Common Information

EUT/Sample # / OM# : XT-01-00 / 01 / 02
Voltage/Frequency : 3.6 Vdc
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. TX (valid for all channels)



Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.218367	15.12	2000.0	120.000	336.0	H	165.0
44.804167	6.43	2000.0	120.000	201.0	V	344.0

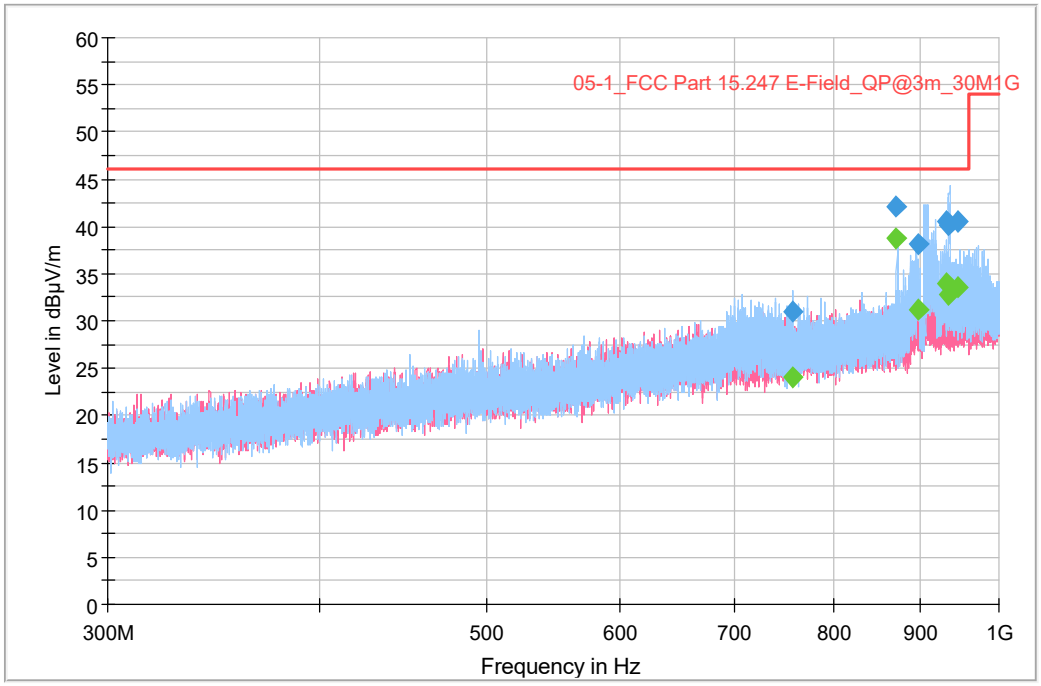
Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

FREQUENCY RANGE 300MHz - 1 GHz:

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel Low 903 MHz		

Common Information

EUT/Sample # / OM# : XT-01-00 / 01 / 02
Voltage/Frequency : 3.6 Vdc
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. TX modulated carrier at 903 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
05-1_FCC Part 15.247 E-Field_QP@3m_30M1G
Final_Result QPK
Preview Result 1V-PK+
Preview Result 1H-PK+
Final_Result PK+

Final_Result_QPK

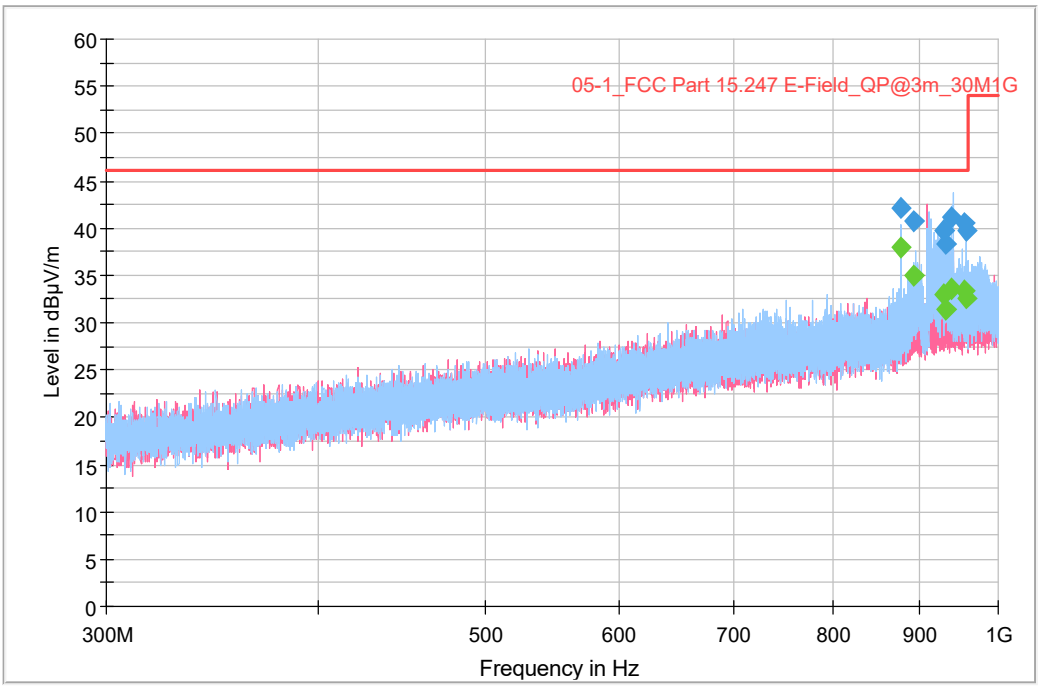
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
755.944000	24.06	46.02	21.96	2000.0	120.000	100.0	H	260.0
870.933166	38.71	46.02	7.31	2000.0	120.000	100.0	H	75.0
896.843833	31.22	46.02	14.80	2000.0	120.000	148.0	H	272.0
931.290333	33.90	46.02	12.12	2000.0	120.000	100.0	H	265.0
934.405000	32.77	46.02	13.25	2000.0	120.000	138.0	H	266.0
946.746000	33.57	46.02	12.45	2000.0	120.000	152.0	H	286.0

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The peak close to the limit was the carrier frequency LoRa lowest channel.

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel Middle 907.8 MHz		

Common Information

EUT/Sample # / OM#	: XT-01-00 / 01 / 02
Voltage/Frequency	: 3.6 Vdc
Port/Terminal under test	: Enclosure
Remark/Comment	: EUT ON. TX modulated carrier at 907.8 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
05-1_FCC Part 15.247 E-Field_QP@3m_30M1G
Final_Result QPK
Preview Result 1V-PK+
Preview Result 1H-PK+
Final_Result PK+

Final_Result_QPK

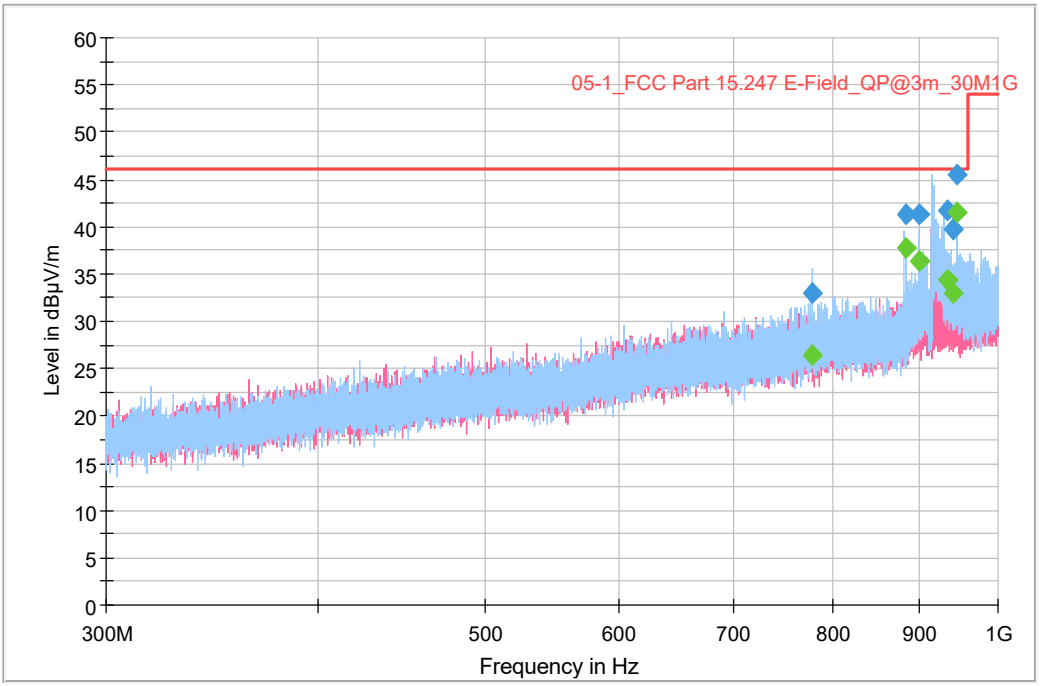
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
876.056666	38.04	46.02	7.98	2000.0	120.000	100.0	H	63.0
893.059667	35.01	46.02	11.01	2000.0	120.000	100.0	H	76.0
929.914500	32.89	46.02	13.13	2000.0	120.000	100.0	H	88.0
930.769000	31.31	46.02	14.71	2000.0	120.000	139.0	H	260.0
938.990167	33.67	46.02	12.35	2000.0	120.000	150.0	H	306.0
954.813167	33.31	46.02	12.71	2000.0	120.000	150.0	H	292.0
956.635334	32.56	46.02	13.46	2000.0	120.000	138.0	H	305.0

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The peak above the limit was the carrier frequency LoRa middle channel.

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel high 914.2 MHz		

Common Information

EUT/Sample # / OM# : XT-01-00 / 01 / 02
Voltage/Frequency : 3.6 Vdc
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. TX modulated carrier at 914.2 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
05-1_FCC Part 15.247 E-Field_QP@3m_30M1G
Final_Result QPK
Preview Result 1V-PK+
Preview Result 1H-PK+
Final_Result PK+

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
778.931333	26.34	46.02	19.68	2000.0	120.000	104.0	H	88.0
882.374500	37.67	46.02	8.35	2000.0	120.000	100.0	H	75.0
899.177833	36.42	46.02	9.60	2000.0	120.000	100.0	H	81.0
933.912166	34.42	46.02	11.60	2000.0	120.000	150.0	H	279.0
940.117167	33.05	46.02	12.97	2000.0	120.000	148.0	H	299.0
946.121166	41.49	46.02	4.53	2000.0	120.000	136.0	H	279.0

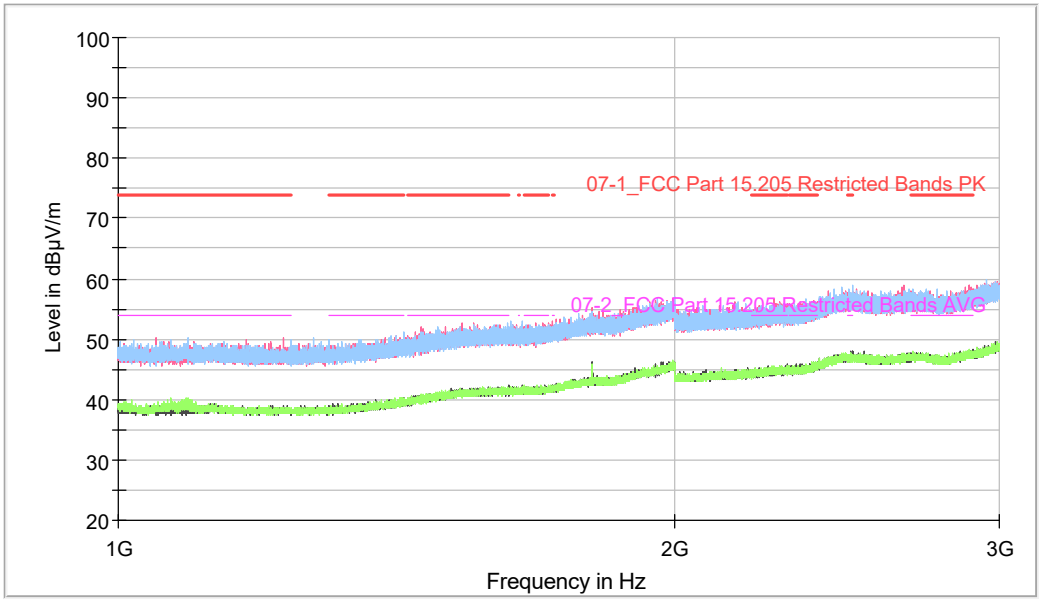
Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.
- The peak above the limit was the carrier frequency LoRa highest channel.

FREQUENCY RANGE 1GHz - 3 GHz:

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel Low 903 MHz		

Common Information

EUT/Sample # / OM#	: XT-01-00 / 01 / 02
Voltage/Frequency	: 3.6 Vdc
Port/Terminal under test	: Enclosure
Remark/Comment	: EUT ON. TX modulated carrier at 903 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

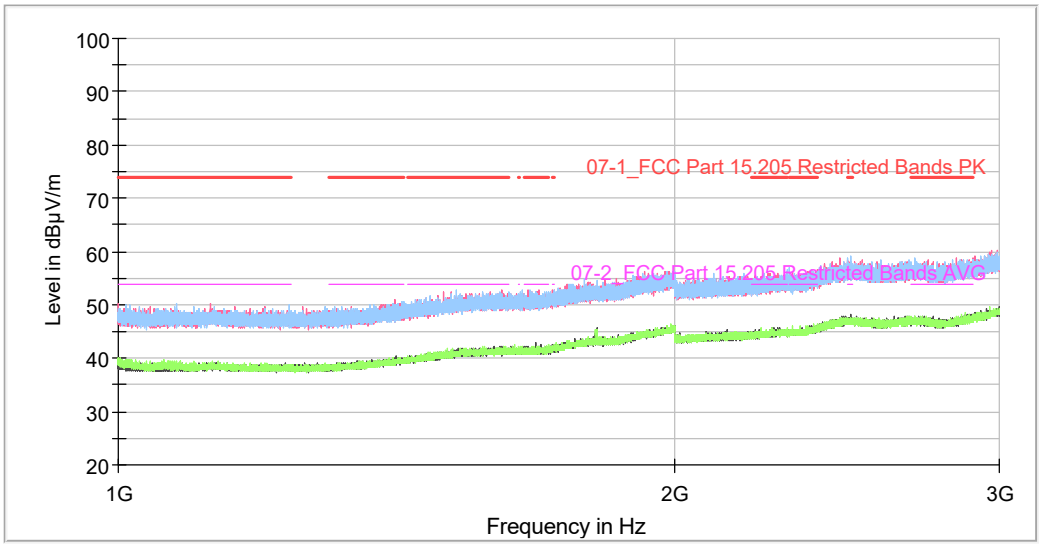
No significant values were measured.

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel Middle 907.8 MHz		

Common Information

EUT/Sample # / OM#	: XT-01-00 / 01 / 02
Voltage/Frequency	: 3.6 Vdc
Port/Terminal under test	: Enclosure
Remark/Comment	: EUT ON. TX modulated carrier at 907.8 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

Comment

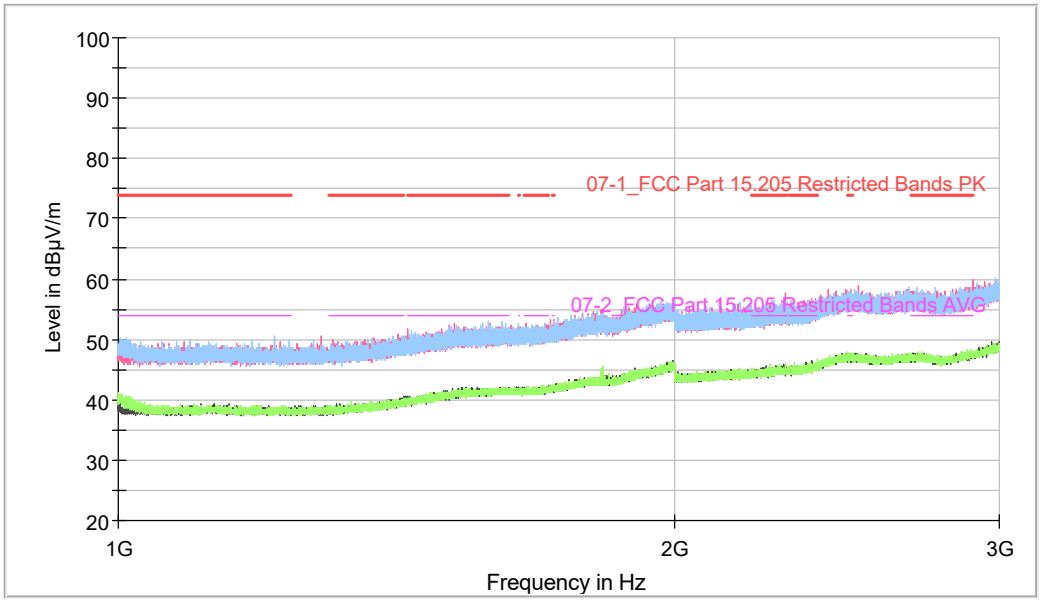
No significant values were measured.

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel high 914.2 MHz		

Common Information

EUT/Sample # / OM#	: XT-01-00 / 01 / 02
Voltage/Frequency	: 3.6 Vdc
Port/Terminal under test	: Enclosure
Remark/Comment	: EUT ON. TX modulated carrier at 914.2 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

No significant values were measured.

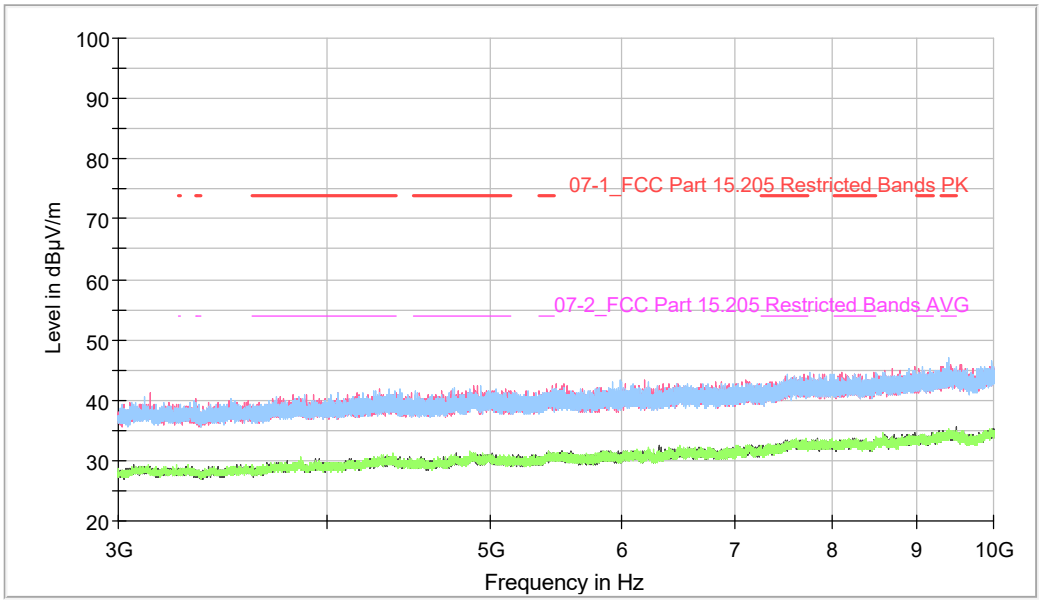
Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

FREQUENCY RANGE 3 - 10 GHz:

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel Low 903 MHz		

Common Information

EUT/Sample # / OM# : XT-01-00 / 01 / 02
Voltage/Frequency : 3.6 Vdc
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. TX modulated carrier at 903 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

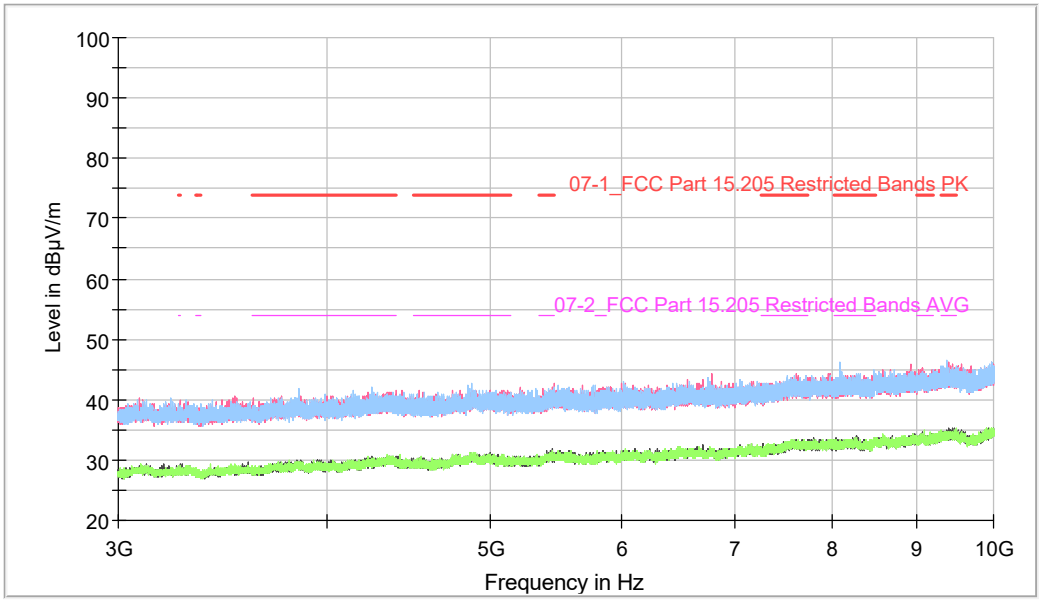
No significant values were measured.

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel Middle 907.8 MHz		

Common Information

EUT/Sample # / OM#	: XT-01-00 / 01 / 02
Voltage/Frequency	: 3.6 Vdc
Port/Terminal under test	: Enclosure
Remark/Comment	: EUT ON. TX modulated carrier at 907.8 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

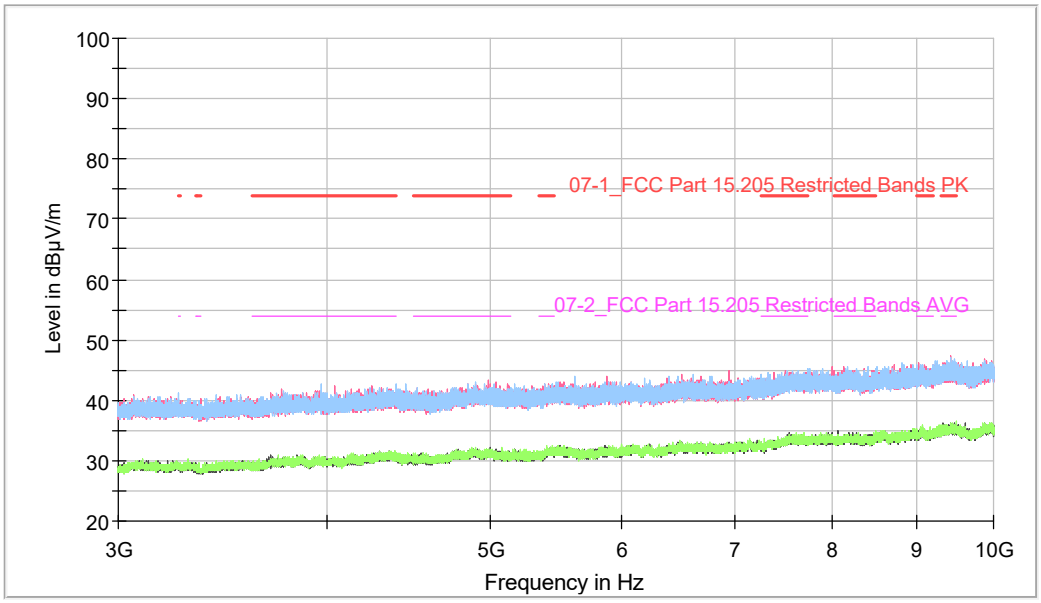
No significant values were measured.

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 1 / TX Channel high 914.2 MHz		

Common Information

EUT/Sample # / OM#	: XT-01-00 / 01 / 02
Voltage/Frequency	: 3.6 Vdc
Port/Terminal under test	: Enclosure
Remark/Comment	: EUT ON. TX modulated carrier at 914.2 MHz



Preview Result 2V-AVG
Preview Result 2H-AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

No significant values were measured.

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

7 ANNEX 1 - MEASUREMENT UNCERTAINTIES

The table(s) below show(s) measurment uncertainties of the EMC test set-ups. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Emission tests	**Uncertainty**
Radiated emissions; 30 MHz – 180 MHz (Horz./Vert)	3.82 dB
Radiated emissions; 180 MHz – 1000 MHz (Horz./Vert)	2.61 dB
Radiated emissions; 1000 MHz – 18000 MHz (Horz./Vert)	2.92 dB
Radiated emissions; 18000 MHz – 26000 MHz (Horz./Vert)	2.15 dB
Emission tests	**Uncertainty**
Maximum output power and antenna gain	1.00 dB
Occupied Bandwidth/20dB Bandwidth	0.75 KHz
Dwell Time	0.85 ms
Band-edge emissions compliance	0.8 dB

8 ANNEX 2: USED EQUIPMENT

Test equipment used - Radiated Spurious Emissions (30MHz - 10 GHz)				
Equipment	Manufacturer	Model	Dekra ID	Cal. Due
EMI Test Receiver	Rohde-Schwarz	ESU26	126351	2025-52
Anechoic Chamber	Comtest	SAC-5m	129683	2025-13
Coaxial cable (5m)	Huber&Suhner	SUCOFLEX 126EA	134187	2025-51
Antenna	Rohde-Schwarz	HL562E	134929	2025-29
Notch filter	K&L Microwave	3TNF-500/1000-N/N	132550	2025-39
Coaxial cable (1m)	Huber&Suhner	SUCOFLEX 126EA	134185	2025-40
Double Horn Ridge antenna	Rohde-Schwarz	HF 907	134928	2025-27
Pre-Amplifier (1- 18 GHz)	BONN	BLMA 1-18-5G	134808	2025-40
Test-Control Software	Rohde-Schwarz	EMC32 V10.60.20	500005	---

Test equipment used – Conducted measurements				
Equipment	Manufacturer	Model	Dekra ID	
Signal analyser	Rohde & Schwarz	FSV40	132392	2025-03
Coaxial cable	Huber Suhner	Sucoflex 102EA	132524	2025-40
20 dB Attenuator	Narda	4776-20	132583-C	2025-06
Shielded Chamber	ETS Lindgren	RFD-100	135657	--