

ISED CABid: ES1909
Lab. Company Number: 4621A

Test Report No:
83899RRF.005A1

Partial Test Report

USA FCC Part 15.31(h), 15.247, 15.225, 15.209
CANADA RSS-247, RSS-210, RSS-Gen

(*) Identification of item tested	Salto Keo Fob
(*) Trademark	Salto
(*) Model and /or type reference	FKR01 (type reference: A2545)
Other identification of the product	FCC ID: UKCFKR01; Contains FCC ID: YCP-32WB5MMGH02 IC ID: 10088A-FKR01; Contains IC: 8976A-32WB5MMGH02
(*) Features	RFID and Bluetooth LE HW version: 1.0 SW version: 0223 (Control FW) + 0186 (FUS FW) + 0187 (Bluetooth LE FW) + 0197 (SE FW)
Applicant	SALTO SYSTEMS S.L. Arkotz 9, Polígono Lanbarren 20180, Oiartzun (Guipuzcoa), Spain
Test method requested, standard	USA FCC Part 15.31(h) (10-1-24 Edition): Measurement standards. USA FCC Part 15.247 (10-1-24) Edition: Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz. USA FCC Part 15.209 (10-1-24) Edition: Radiated emission limits; general requirements. CANADA RSS-247 Issue 4 (July 2025). CANADA RSS-Gen Issue 5 amendment 2 (February 2021). 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. ANSI C63.10-2020 + Cor.1-2023 + C63.10a-2024 + Errata to C63.10a-2024: American National Standard for Testing Unlicensed Wireless Devices. Transmitter out of band radiated emissions with simultaneous transmissions.
Approved by (name / position & signature)	José Manuel Gómez Galván EMC Consumer & RF Lab. Manager 
Date of issue	2026-06-19
Report template No.	FDT08_27 (*) "Data provided by the client"

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Competences and guarantees

DEKRA Testing and Certification S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC - Entidad Nacional de Acreditación) to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification is an FCC-recognized accredited testing laboratory with appropriate scope of accreditation that covers the performed tests in this report.

DEKRA Testing and Certification is an ISED-recognized accredited testing laboratory, CABid: ES1909, Company Number: 4621A, with the appropriate scope of accreditation that covers the performed tests in this report.

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DEKRA Testing and Certification S.A.U. 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 on the report and it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. 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.

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General conditions

1. This report is only referred to the item that has undergone the test.
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Uncertainty

Uncertainty (factor $k=2$) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

The total uncertainty of the measurement system for the radiated emissions of EUT from 30 MHz to 1 GHz is:
Measurement uncertainty $\leq \pm 5,35$ dB (with factor $k = 2$).

The total uncertainty of the measurement system for the radiated emissions of EUT from 1 GHz to 17 GHz is:
Measurement uncertainty $\leq \pm 4,32$ dB (with factor $k = 2$).

The total uncertainty of the measurement system for the radiated emissions of EUT from 17 GHz to 26.5 GHz is:
Measurement uncertainty $\leq \pm 5,51$ dB (with factor $k = 2$).

Data provided by the client

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").
2. The sample consists of a Salto Keo fob with RFID Mifare (ISO 14443A and ISO 15693 standard based) and Bluetooth LE technology.

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results. The laboratory is not responsible for such information and it is not covered by accreditation.

Usage of samples

Samples undergoing test have been selected by: The client.

Id	Control Number	Description	Model	Serial N°	Date of Reception	Application
S/01	83899C_7.1	Salto Keo Fob	FKR01	-	2025-10-24	Element Under Test

Notes referenced to samples during the project:

Id	Type
S/01	Samples used for testing

Test sample description

Ports..... :	Port name and description	Cable					
		Specified max length [m]	Attached during test	Shielded			
	USB-C	< 3m	X	-			
Supplementary information to the ports..... :	-						
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
		AC:					
	X	DC: Fob-not charging: Nom.3.7V dc max. 4.2V dc min 3.3Vdc Fob when charging: Vmin: 4,75Vdc - Vmax: 5,25Vdc					
Rated Power	N/A						
Clock frequencies..... :	27.12 MHz						
Other parameters	N/A						
Software version	0223 (Control FW) + 0186 (FUS FW) + 0187 (Bluetooth LE FW) + 0197 (SE FW)						
Hardware version	1.0						
Dimensions in cm (W x H x D)	5.4 x 4. x 1.5 cm						
Mounting position		Table top equipment					
		Wall/Ceiling mounted equipment					
		Floor standing equipment					
	X	Hand-held equipment					
		Other:					
Modules/parts..... :	Module/parts of test item		Type		Manufacturer		
	Module STM32WB5MMG		BLE		ST		
Accessories (not part of the test item)	Description		Type		Manufacturer		
	-		-		-		
Documents as provided by the applicant	Description		File name		Issue date		
	User Manual		-		-		
	FW Explanation		-		-		

Identification of the client

SALTO SYSTEMS, S.L.
Arkotz 9, Polígono Lanbarren 20180, Oiartzun (Guipúzcoa), Spain

Testing period and place

Test Location	DEKRA TESTING AND CERTIFICATION S.A.U. C/ Severo Ochoa, 6 - Parque Tecnológico de Andalucía; 29590 Campanillas (Málaga) (Location B)
Date (start)	2026-02-17
Date (finish)	2026-02-18

Document history

Report number	Date	Description
83899RRF.005	2026-05-18	First release.
83899RRF.005A1	2026-06-19	Second release. Modification due to typo. This test report cancels and replaces to 83899RRF.005 test report

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

Remarks and comments

The tests have been performed by the technical personnel: Valentín Andarias.

Used instrumentation:

Control No.	Equipment	Model	Manufacturer	Next Calibration
06791	SEMIANECHOIC ABSORBER LINED CHAMBER IV	FACT 3 200 STP	ETS LINDGREN	N/A
06792	SHIELDED ROOM	S101	ETS LINDGREN	N/A
06609	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2027-04-21
06615	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2027-05-12
07817	EMI TEST RECEIVER 2Hz-44GHz	ESW44	ROHDE AND SCHWARZ	2026-07-01
06142	PRE-AMPLIFIER G>38dB 30MHz-6GHz	BLNA 0360-01N	BONN ELEKTRONIK	2026-07-30
06143	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2027-01-22
06496	HORN ANTENNA 1-18GHz	BBHA 9120 D	SCHWARZBECK	2026-12-01
03783	PRE-AMPLIFIER G>30dB 1GHz-18GHz	BLMA 0118-3A	BONN ELEKTRONIK	2027-04-07
06157	SIGNAL AND SPECTRUM ANALYZER 10 Hz - 40 GHz	FSV40	ROHDE AND SCHWARZ	2027-03-17

Testing verdicts

Not applicable:	N/A
Pass:	P
Fail:	F
Not measured:	N/M

Summary

FCC PART 15 PARAGRAPH / RSS-247, RSS-Gen			
Requirement – Test case	Verdict	Remark	Test Location
FCC 15.31 (h), 15.209 (a), 15.247 (d) / RSS-Gen 8.9, RSS-247 6.6: - Emission limitations radiated (Transmitter)	P	(1)	Location B
<u>Supplementary information and remarks:</u> (1) Only Radiated Spurious Simultaneous Transmission test was requested.			

Appendix A: Test results

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FCC 15.31 (h), 15.209 (a), 15.247 (d) / RSS-Gen 8.9, RSS-247 6.6 Emission limitations radiated
(Transmitter) 15

TEST CONDITIONS

(*): Declared by the Applicant.

POWER SUPPLY (*):

Vnominal:	3.7 Vdc
Type of Power Supply:	Li-Po batteries

ANTENNA (*):

Modulation	Maximum Declared Antenna Gain	Type of Antenna
Bluetooth Low Energy	+2 dBi	Integral, chip
RFID	N/A	Integral, PCB

RADIOS AND CHANNELS TESTED (worst cases):

Bluetooth Low Energy / DTS		
Mode:	1Mbit/s	
Channel Spacing:	1 MHz	
Frequency Range:	2402 MHz to 2480 MHz	
Transmit Channel:	Channel	Channel Frequency (MHz)
	Low	2402

RFID		
Mode:	RFID	
Channel Spacing:	902 MHz to 928 MHz	
Frequency Range:	13.56 MHz	
Transmit Channel:	Channel	Channel Frequency (MHz)
	Single	13.56

The modulations and channels configured for each technology are the worst-case combinations in terms of spurious emissions, based on preliminary testing.

The test set-up was made in accordance to the general provisions of FCC DTS Measurement 558074 D01 DTS Meas Guidance v05r2 dated April 2, 2019 and FCC Unlicensed National Information Infrastructure (U-NII) Devices 789033 D02 General U-NII Test Procedures New Rules v02r01 dated Dec 14, 2017.

The EUT was tested in the following operating mode:

- Continuous transmission with a modulated carrier at maximum power in all required channels selecting the supported data rates/modulations types.

TEST FREQUENCIES FOR SIMULTANEOUS TRANSMISSION MODE RADIATED TESTS:

- **Operation mode 1:**

Simultaneously transmitting Bluetooth Low Energy and RFID, with the EUT configured to simultaneously transmit these signals at maximum output power:

Bluetooth Low Energy:
RFID :

Low Channel 2402 MHz. GFSK 1Mbit/s.
Single Channel 13.56 MHz.

RADIATED MEASUREMENTS:

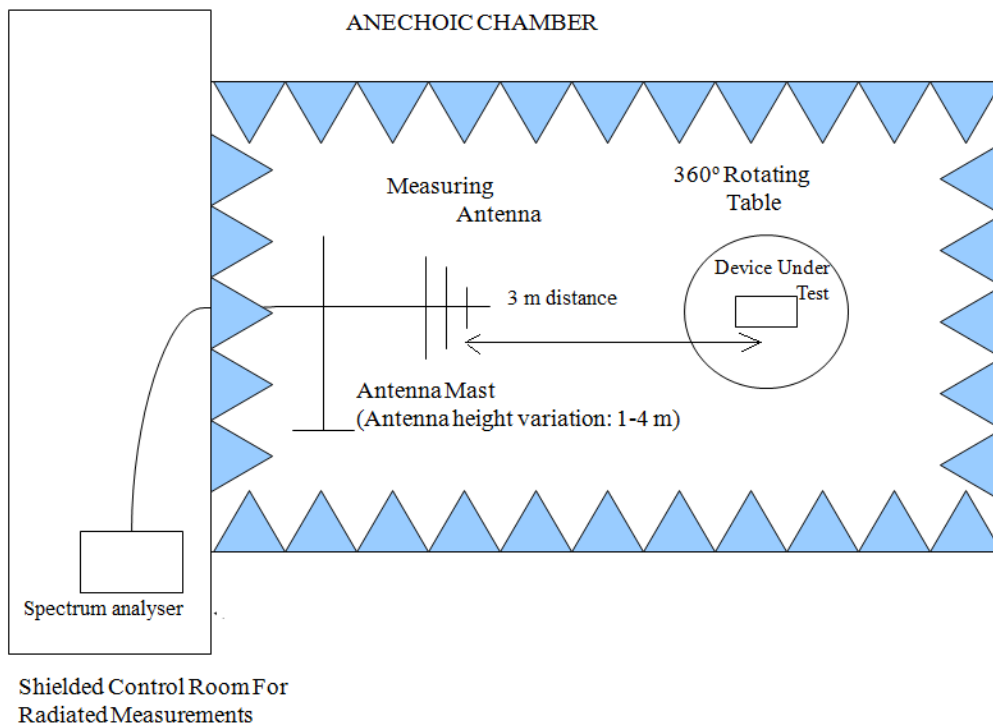
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1 GHz and 1 GHz-17 GHz Double ridge horn antenna) is situated at a distance of 3 m and at a distance of 1.5 m for the frequency range 17 GHz-26 GHz (17 GHz-40 GHz horn antenna).

For radiated emissions in the range 17 GHz-40 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

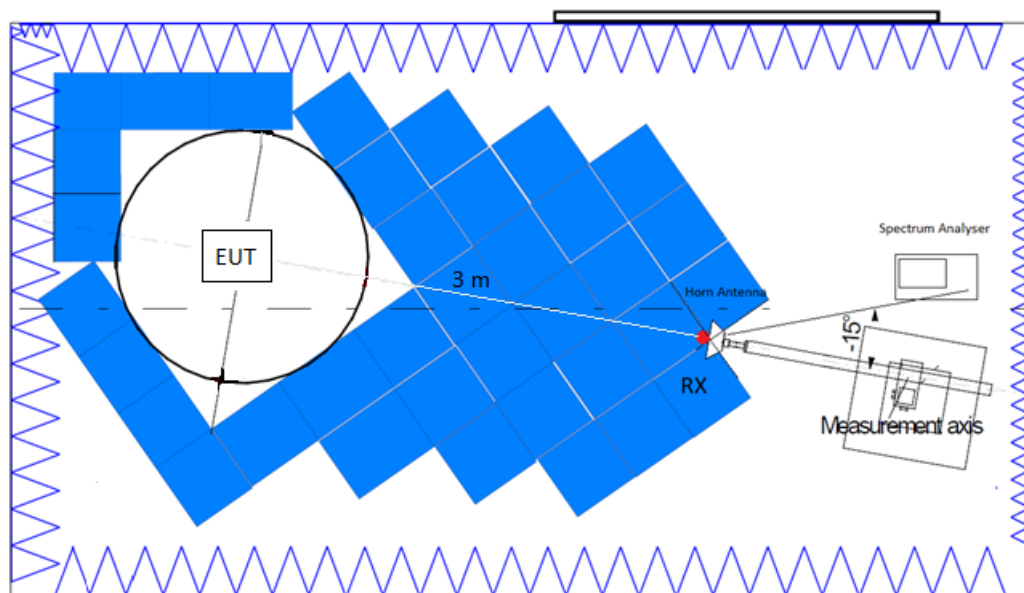
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission.

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

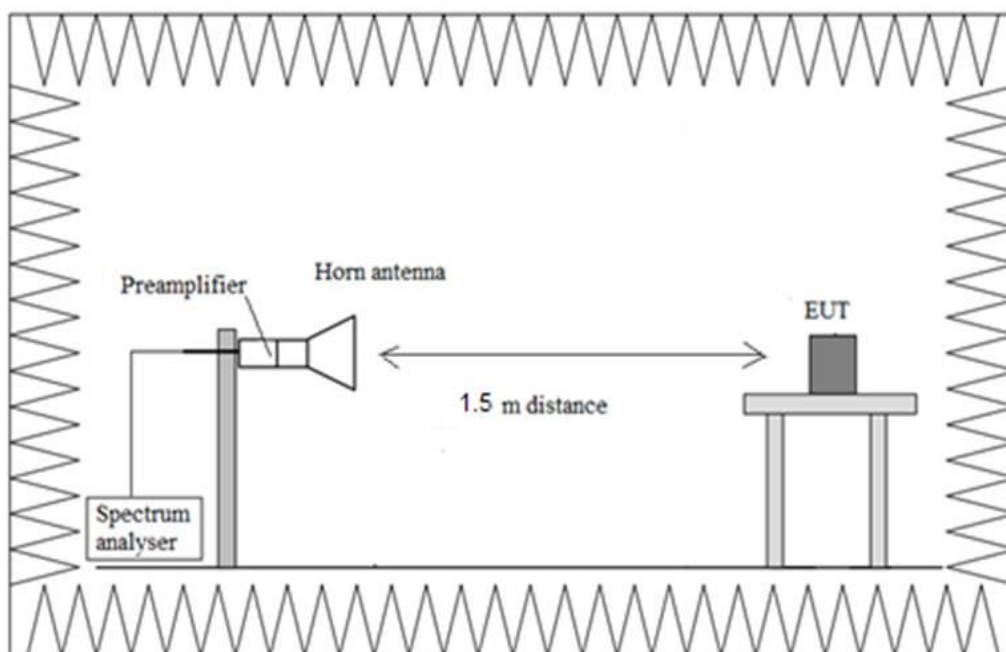
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



Sample Calculation

For radiated measurements:

Values measures by the test receiver / analyzer are converted to field strength, in dBuV/m, at the regulatory distance using the following calculation:

$$\text{Unwanted Lvl (dBuV/m)} = \text{Raw Rec (dBuV)} + \text{Preamp (dB)} + \text{Trd Corre. (dB/m)} + \text{SigPath (dB)}$$

Where,

Raw Rec (dBuV): Measured voltage in the receiver / spectrum analyzer in dBuV

Preamp (dB): Path losses due to preamplifier

Trd Corr. (dB/m): Antenna factor in dB/m

SigPath (dB) = Cable loss (dB) – External Gain amplifier (dB) – Distance factor (dB)

Cable loss (dB): Cable loss

External Gain amplifier (dB): Gain from external amplifier (when used)

Distance factor (dB): Distance factor in dB. When measurement distance is different to limit distance

The field strength, calculated by this way is compared with the regulatory limit.

FCC 15.31 (h), 15.209 (a), 15.247 (d) / RSS-Gen 8.9, RSS-247 6.6 Emission limitations radiated (Transmitter)

Limits

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), appearing outside of the band 13.110 MHz - 14.010 MHz band 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	29.54	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 40000	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.

RSS-247. Attenuation below the general field strength limits specified in RSS-Gen is not required.

Frequency range tested for Radiated emissions:

Start frequency: no radiofrequency signal generated in the device found below 10th sub-harmonic, no further investigation required.

Stop frequency: it has been performed the radiated spurious emissions until 10th harmonic.

Results:

The situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

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

All tests were performed in a semi-anechoic chamber at a distance of 3 m for the frequency range 30 MHz-17 GHz and at distance of 1.5 m for the frequency range 17 GHz-26 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.

Test performed on the following worst-cases in all relevant tests channels:

- **Operation mode 1:**

Frequency range 9 kHz - 30 MHz:

No spurious frequencies at less than 20 dB below the limit.

Frequency range 30 - 200 MHz:

Spurious frequencies at less than 20 dB below the limit:

Frequency (MHz)	QuasiPeak (dBµV/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)
38.576500	7.13	-37.3	0.0	11.13	33.3
47.688500	6.01	-37.2	0.0	7.57	35.6
49.244000	18.92	-37.2	0.0	7.14	49.0

Frequency range 200 MHz - 1 GHz:

No spurious frequencies at less than 20 dB below the limit.

Frequency range 1 - 26 GHz:

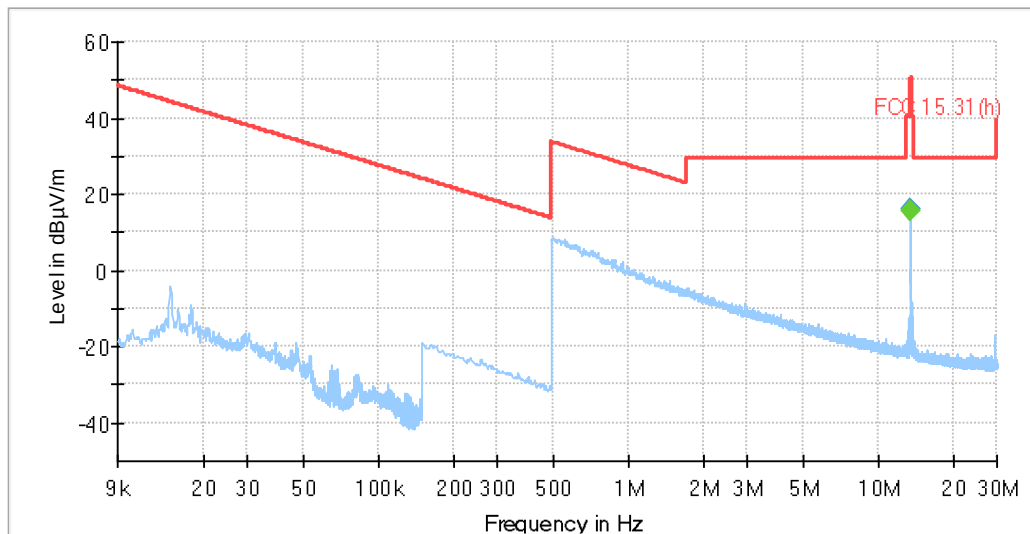
No spurious frequencies at less than 20 dB below the limit.

Verdict

Pass

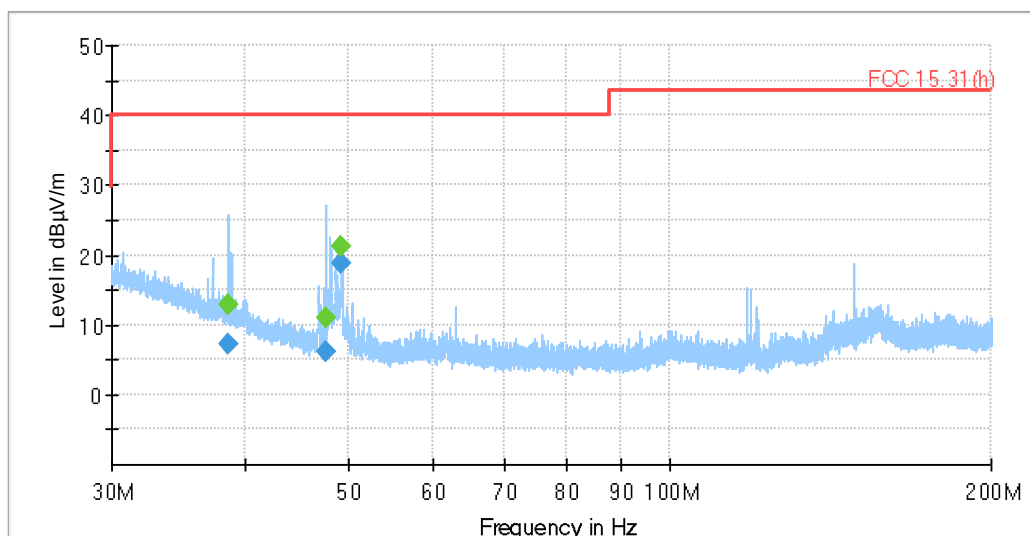
Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
9 kHz - 150 kHz	50 Hz	PK+	200 Hz	0,1 s	0 dB
150 kHz - 30 MHz	2,25 kHz	PK+	9 kHz	0,1 s	0 dB
30 MHz - 200 MHz	8,5 kHz	PK+	100 kHz	1 s	0 dB
200 MHz - 1 GHz	30,312 kHz	PK+	100 kHz	1 s	0 dB
1 GHz - 3 GHz	30,769 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
3 GHz - 17 GHz	140 kHz	PK+ ; AVG	1 MHz	1 s	30 dB
17 GHz - 26 GHz	300 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

FREQUENCY RANGE 9 kHz - 30 MHz:

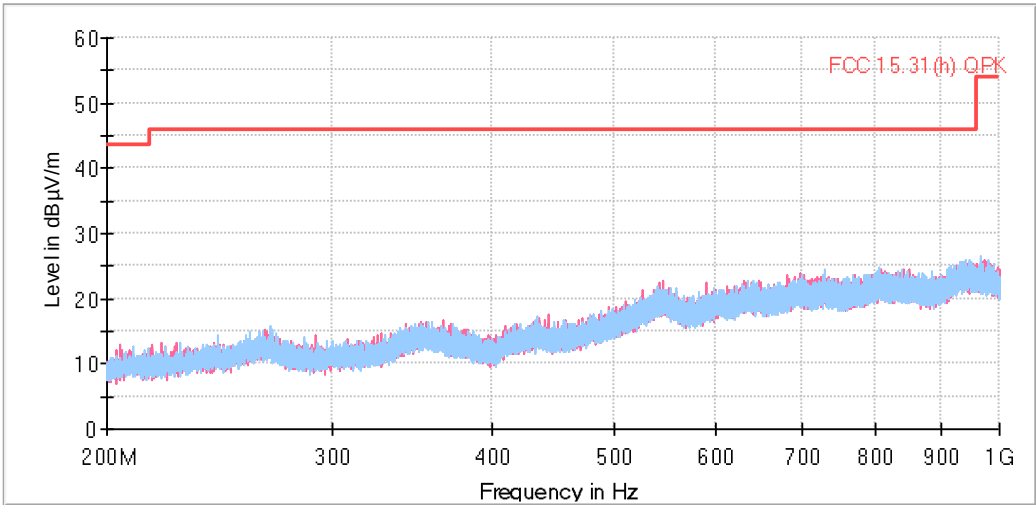


The highest peak on the right is the RFID carrier frequency.

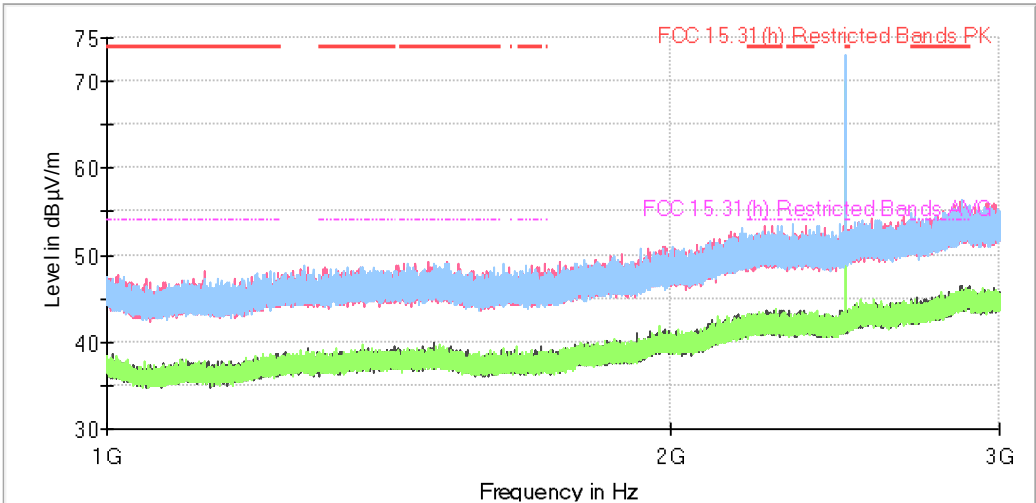
FREQUENCY RANGE 30 - 200 MHz:



FREQUENCY RANGE 200 MHz - 1 GHz:



FREQUENCY RANGE 1 - 26 GHz:



The highest peak is the Bluetooth Low Energy carrier frequency.

