



Test report No:  
 NIE: 63682RRF.001

**Partial Test report**  
**USA FCC Part 15.249 & 15.209**  
**CANADA RSS-210, RSS-Gen**  
 Radio Frequency Devices. Operation within the bands 902 - 928 MHz,  
 2400 -2483.5 MHz, 5725 - 5875 MHz, and 24.0 – 24.25 GHz.

(*) Identification of item tested	Safety edge wireless receiver
(*) Trademark	JCM
(*) Model and /or type reference	RB-P-RX10C
Other identification of the product	FCC ID: U5Z-RB-P-RX10C HW Version: S-RB3OSE916-EL SW Version: RB3ROSER_ULMEX_02.04.11.01
(*) Features	Power supply: 12/24V ac/dc Power supply range: 9-35Vdc / 8-28Vac Frequency: Multifrequency system 916MHz auto-adjustable Operating consumption: Max 100mA Radiated power < 25mW Range (in open field): 50m
Applicant	JCM TECHNOLOGIES, S.A. C/Costa d'en paratge, 6B, 08500, Vic, Barcelona (SPAIN)
Test method requested, standard	USA FCC Part 15.249 10-1-18 Edition: Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, 5725 - 5875 MHz, and 24.0 – 24.25 GHz. USA FCC Part 15.209 10-1-18 Edition: Radiated emission limits; general requirements. CANADA RSS-210 Issue 9 (August 2016). CANADA RSS-Gen Issue 5 (April 2018). ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

Approved by (name / position & signature)	Jose Carlos Luque RF Lab. Supervisor
Date of issue	2020-02-24
Report template No	FDT08_22 (* ) "Data provided by the client"

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## Competences and guarantees

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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 a FCC-recognized accredited testing laboratory with appropriate scope of accreditation that include testing performed in this test report.

DEKRA Testing and Certification is an ISED-recognized accredited testing laboratory with appropriate scope of accreditation that include testing performed in this test report

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification S.A.U. has a calibration and maintenance program for its measurement equipment.

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. **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 Testing and Certification S.A.U.

## General conditions

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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 Testing and Certification.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification and the Accreditation Bodies.

## Uncertainty

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

## Data provided by the client

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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 is a 916MHz multifrequency receiver for working with a safety edge wireless transmitter.

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.

## Usage of samples

Samples undergoing test have been selected by: the client.

Sample S/01 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
63682/002	Receiver	RB-P-RX10C	---	2020-01-16

- Sample S/01 has undergone the following test(s):  
 All radiated tests indicated in Appendix A except the duty cycle.

Sample S/02 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
63682/003	Receiver	RB-P-RX10C	---	2020-01-16

- Auxiliary elements used with the sample S/02:

Control Nº	Description	Model	Serial Nº	Date of reception
63682/001	Transceiver	RB-P-TX10C	---	2020-01-16

- Sample S/02 has undergone the following test(s):  
 The duty cycle test indicated in Appendix A.

## Test sample description

Ports..... :	Port name and description	Cable				
		Specified length [m]	Attached during test	Shielded		
	PSE_13f – not used	Not specified	<input type="checkbox"/>	<input type="checkbox"/>		
	OSE1_2FA pulse input	Not specified	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
	OSE1_2FB common pulse input	Not specified	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
	NC2 output	Not specified	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Supplementary information to the ports..... :	N/A					
Rated power supply .....	Voltage and Frequency	Reference poles				
		L1	L2	L3	N	PE

	<input checked="" type="checkbox"/>	AC: 12V	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	AC: 24V	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	DC: 12V					
	<input checked="" type="checkbox"/>	DC: 24V					
Rated Power .....	Max 100mA						
Internal operating frequencies .....	CLK SOURCE 1: 16MHz CLK SOURCE 2: 32,768kHz						
Other parameters .....	Not provided data						
Software version .....	RB3ROSER_ULMEX_02.04.11.01						
Hardware version .....	S-RB3OSE916-EL						
Dimensions in cm (L x W x D).....	9,347 x 15,062 x 4,750 cm						
Mounting position .....	<input type="checkbox"/>	Table top equipment					
	<input checked="" type="checkbox"/>	Wall mounted equipment					
	<input type="checkbox"/>	Floor standing equipment					
	<input type="checkbox"/>	Hand-held equipment					
	<input type="checkbox"/>	Other:					
Modules/parts.....	Module/parts of test item		Type			Manufacturer	
	N/A						
Accessories (not part of the test item) .....	Description		Type			Manufacturer	
	RB-TX10C transmitter (already FCC certified)		RB-TX10C			JCM	
Documents as provided by the applicant .....	Description		File name			Issue date	
	Layout		RG10.5_S-RB3OSE916-EL_Rev02.PDF			19/07/2016	
	Schematics		RG10.7_S-RB3OSE916-EL_Rev01.PDF			19/07/2016	
	Block diagram		RB-P-RX10C_Block diagram_REV00.pdf			15/01/2020	
	Internal photographs		INTERNAL PHOTOS RB-P-RX10C.pdf			15/01/2020	
	External photographs		EXTERNAL PHOTOS RB-P-RX10C.pdf			15/01/2020	
	User's manual		UM_3200923_RB-P-RX10C_Rev00_DRA FT.pdf			15/01/2020	
	Marking information		RG10.6_RB-P-RX10C-SERI-BOTTOM_MEI_Rev0 0.pdf			15/01/2020	

## Identification of the client

JCM TECHNOLOGIES, S.A.  
C/Costa d'en paratge, 6B,  
08500, Vic, Barcelona (SPAIN).

## Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2020-01-17
Date (finish)	2020-01-21

## Document history

Report number	Date	Description
63682RRF.001	2020-02-24	First release

## 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 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

## Remarks and comments

The tests have been performed by the technical personnel: José Gabriel Pendón and Nicolás Salguero.

Used instrumentation:

### Radiated Measurements

		Last Cal. date	Cal. due date
1.	Semianechoic Absorber Lined Chamber ETS FACT3 200STP	N.A.	N.A.
2.	Hybrid Bilog Antenna 30Mhz-6GHz ETS LINDGREN 3142E	2017/04	2020/04
3.	RF pre-amplifier 30MHz-6GHz Bonn Elektronik BLNA 0360-01N	2019/09	2020/09
4.	EMI Test Receiver 9kHz-7GHz ROHDE AND SCHWARZ ESR7	2019/10	2021/10
5.	Horn Antenna 1-18GHz SCHWARZBECK MESS-ELEKTRONIK BBHA 9120 D	2019/11	2022/11
6.	RF pre-amplifier 1-18 GHz Bonn Elektronik BLMA 0118-3A	2019/04	2020/04
7.	Spectrum analyser Rohde & Schwarz FSW50	2018/02	2020/02
8.	AC power supply CHROMA 6490	2018/09	2020/09

## Testing verdicts

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

## Summary

FCC PART 15 / RSS-210 PARAGRAPH		
Requirement – Test case	Verdict	Remark
FCC 15.249 Subclause (a) / RSS-210 B.10. (a) Field strength of fundamental and harmonics emissions	P	
FCC 15.249 Subclause (d) / RSS-210 B.10. (b) Emissions radiated outside of the specific frequency bands	P	
<u>Supplementary information and remarks:</u>		
None.		



## Appendix A: Test results

## INDEX

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## TEST CONDITIONS

Power supply (V): External power supply

Vnominal = 12/24 V

Type of antenna = Pluggable.

Declared Gain for antenna = 0 dB

### TEST FREQUENCIES:

Lowest channel: 902.30 MHz

Middle channel: 915.65 MHz

Highest channel: 927.70 MHz

### RADIATED MEASUREMENTS

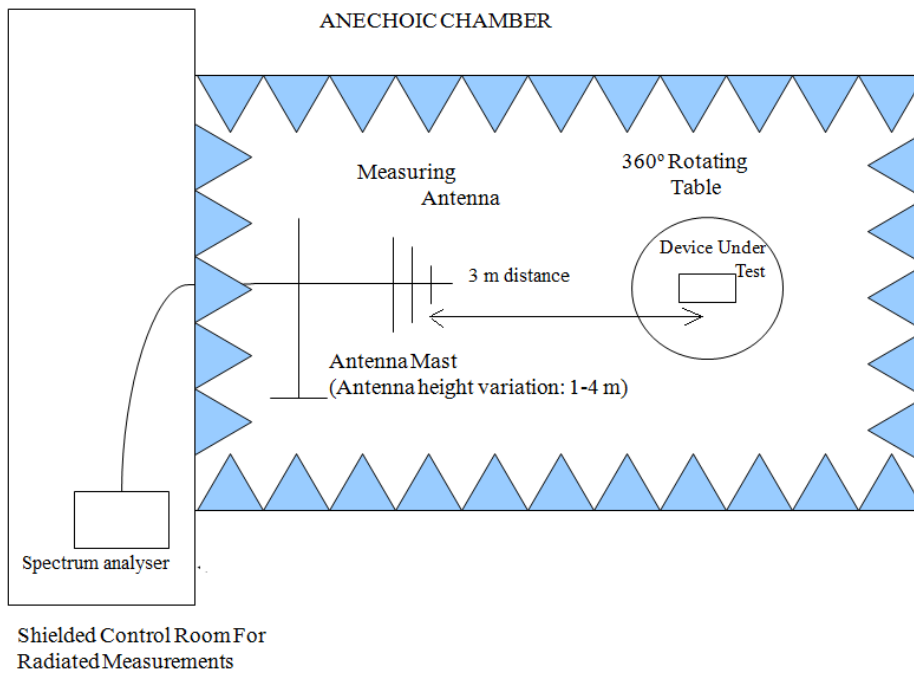
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m for the frequency range 30 MHz-1000 MHz (30 MHz-1000 MHz Bilog antenna) and at a distance of 1m for the frequency range 1 GHz-10 GHz (1 GHz-18 GHz Double ridge horn antenna).

For radiated emissions in the range 1 GHz-10 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.

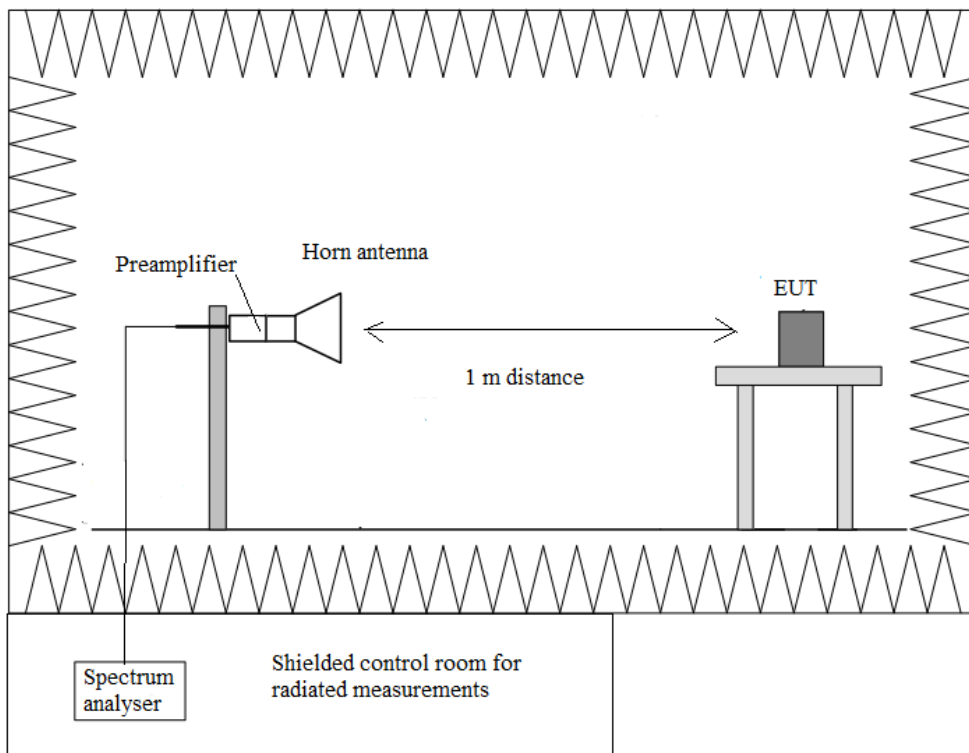
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

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

### Radiated measurements setup $f < 1$ GHz



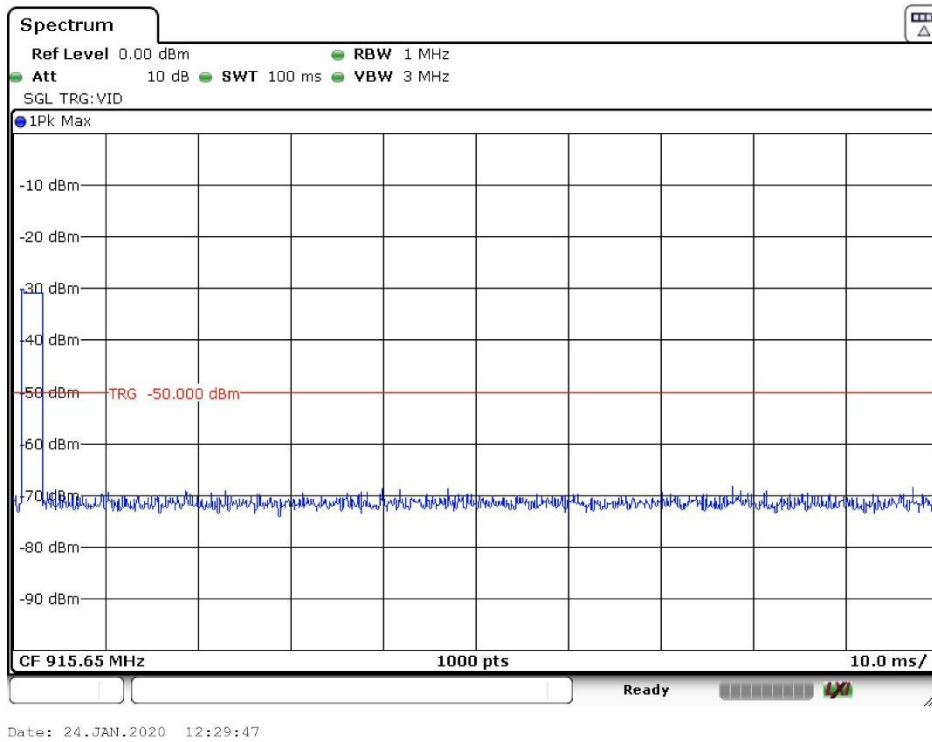
### Radiated measurements setup $f > 1$ GHz



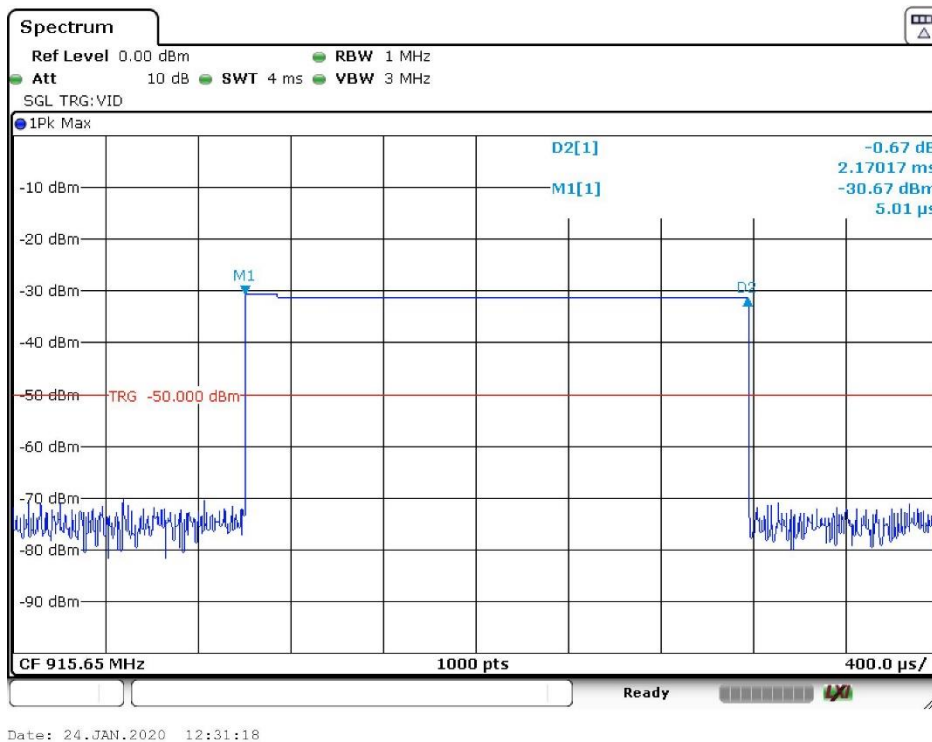
## Duty cycle

### Computation of duty-cycle correction factor

Number of pulses within 100 ms: 1



Pulse duration: 2.170 ms.



Duty-cycle correction factor calculation.

Sub-pulse	Duration (ms)	Number of pulses	Sub-pulse "On Time" (ms)
1	2.170	1	2.170
		TOTAL ON TIME	2.170

Duty cycle correction factor  $\delta = 2.170/100 = 0.0217$

$\delta = 20 \log (0.0217) = -33.27 \text{ dB}$

## Section 15.249 Subclause (a) / RSS-210 B.10. (a) Field strength of Fundamental.

### SPECIFICATION

The field strength of emissions from intentional radiators shall comply with the following

Fundamental frequency (MHz)	Field strength of fundamental (mV/m)	Field strength (dB $\mu$ V/m)	Measurement distance (m)
902 - 928	50	93.98	3
2400 – 2483.5	50	93.98	3
5725 - 5875	50	93.98	3
24000-24250	250	107.96	3

For frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

### RESULTS

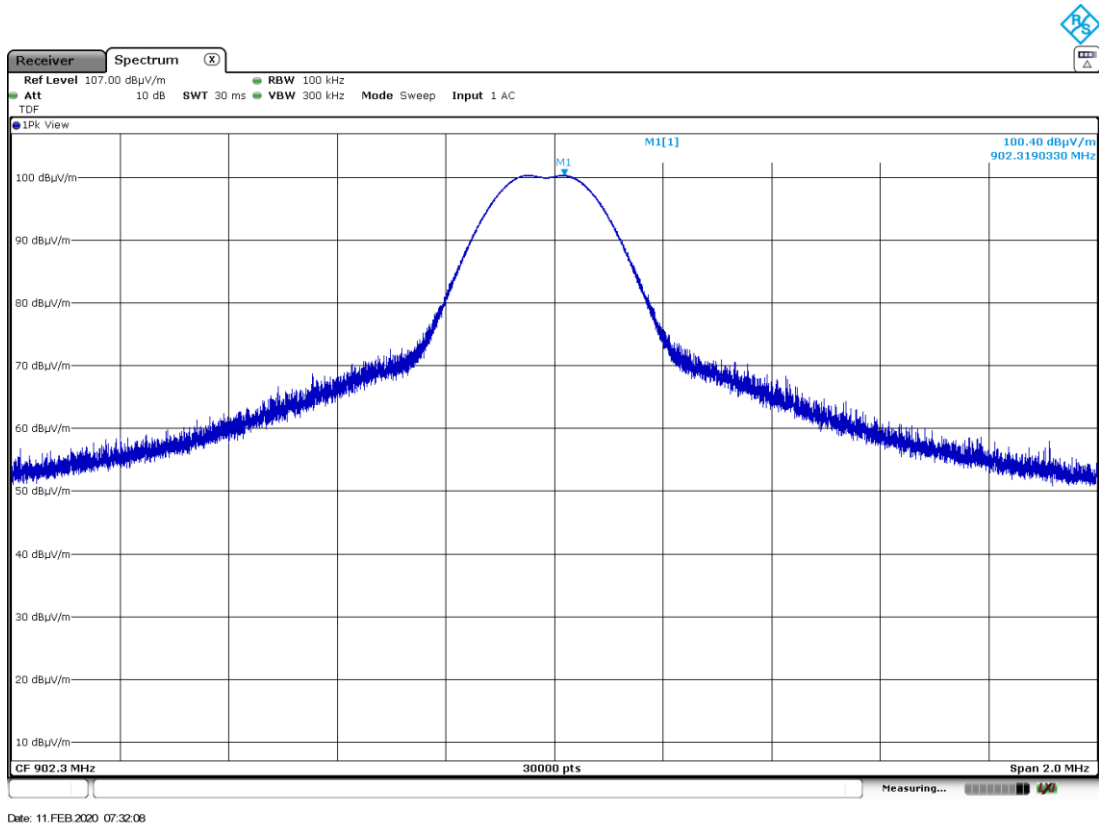
The transmission is pulsed so the average values of transmitter fundamental emissions are calculated from the measured peak values using the duty cycle correction factor  $\delta$  as indicated in standard ANSI C63.10-2013.

	Lowest frequency 902.30 MHz	Middle frequency 915.65 MHz	Highest frequency 927.70 MHz
Field strength (dB $\mu$ V/m) peak	100.40	99.02	98.64
Duty cycle correction factor $\delta$	-33.27	-33.27	-33.27
Field strength (dB $\mu$ V/m) average	67.13	65.75	65.37
Measurement uncertainty (dB)	< $\pm$ 3.43		

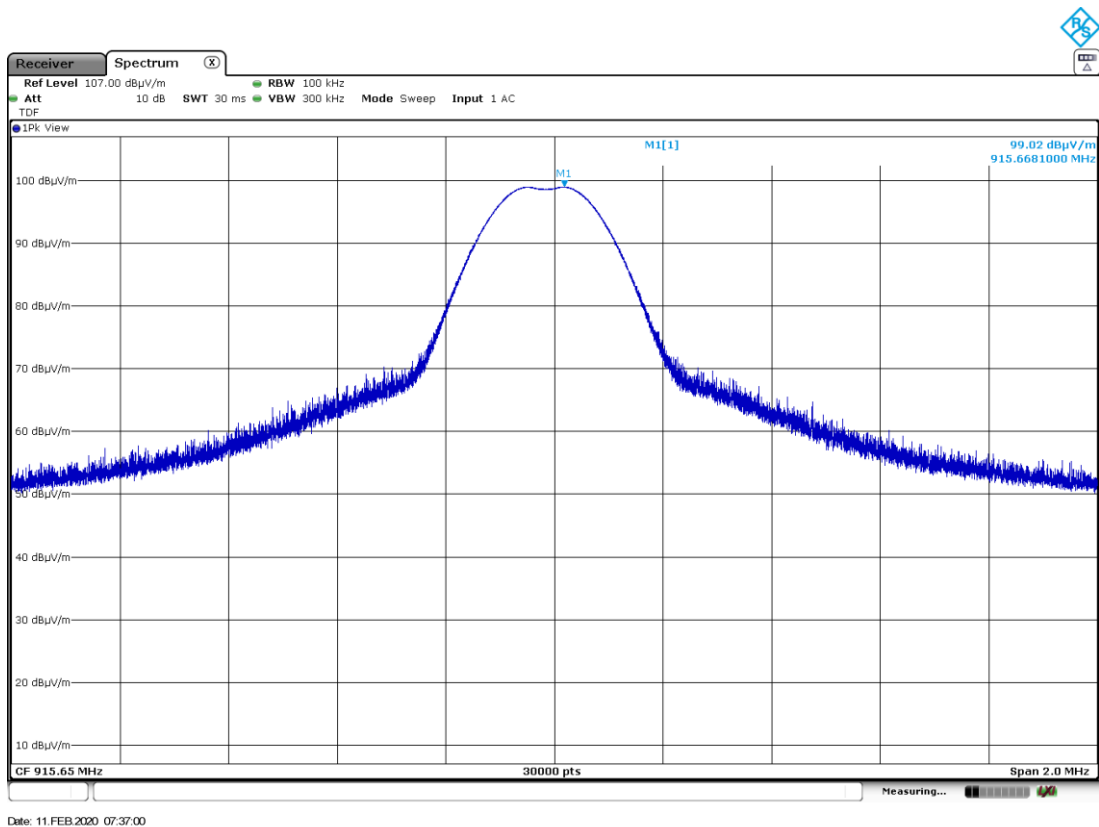
Verdict: PASS

## FIELD STRENGTH

### Lowest Channel

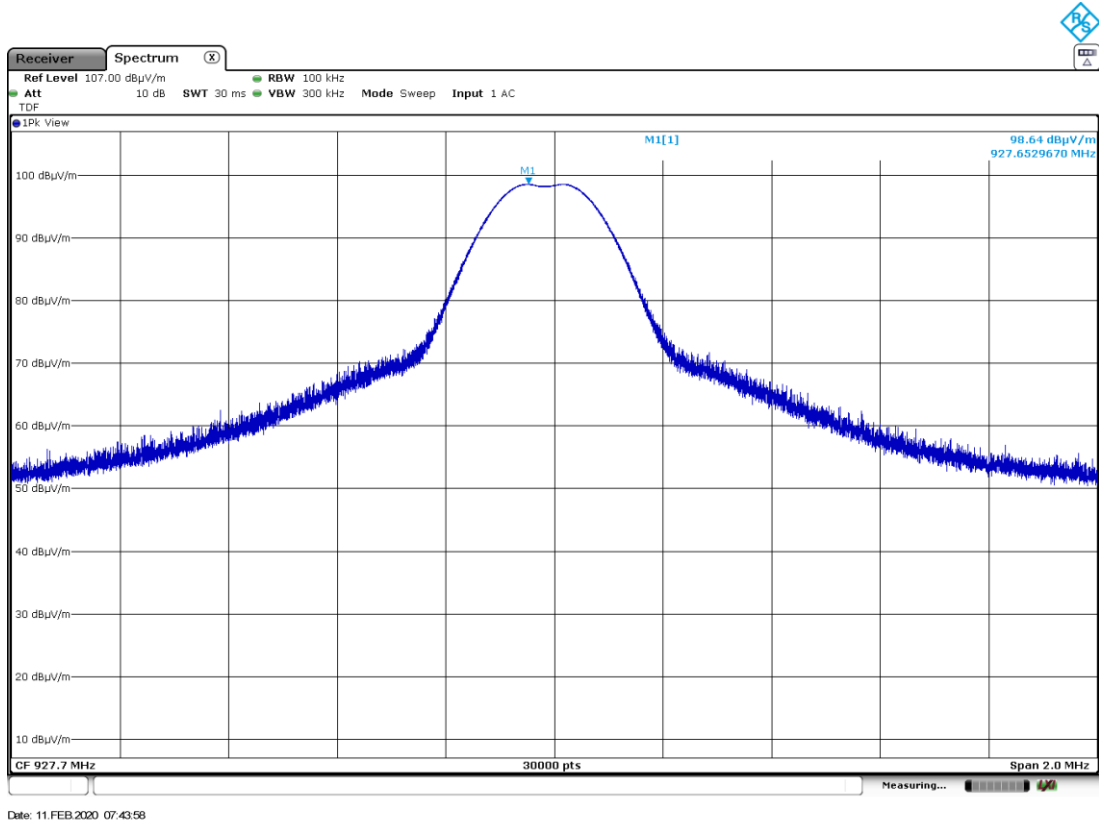


### Middle Channel





## Highest Channel



## Section 15.249 Subclause (a) and (d) / RSS-210 B.10 (b) Emissions limitations radiated (Transmitter).

### SPECIFICATION

The field strength of harmonics from intentional radiators shall comply with the following

Fundamental frequency (MHz)	Field strength of harmonics ( $\mu\text{V/m}$ )	Field strength of harmonics ( $\text{dB}\mu\text{V/m}$ )	Measurement distance (m)
902 - 928	500	54	3
2400 – 2483.5	500	54	3
5725 - 5875	500	54	3
24000-24250	2500	67.96	3

Emissions radiated outside of the specific frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of fundamental or to the general radiated emission limits specified in section 15.209:

Frequency Range (MHz)	Field strength ( $\mu\text{V/m}$ )	Field strength ( $\text{dB}\mu\text{V/m}$ )	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

Whichever is the lesser attenuation.

### 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-1000 MHz and at distance of 1m for the frequency range 1 GHz-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.

The transmission is pulsed so the average values of spurious emissions are calculated from the measured peak values using the duty cycle correction factor  $\delta$  as indicated in standard ANSI C63.10-2013.

## Frequency range 30 MHz-1000 MHz.

### 1. CHANNEL: LOWEST (902.30 MHz).

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dB $\mu$ V/m)	Measurement Uncertainty (dB)
142.892	V	Quasi-Peak	29.2	< $\pm$ 3.81
157.539	V	Quasi-Peak	28.6	< $\pm$ 3.81
184.052	V	Quasi-Peak	32.9	< $\pm$ 3.81
225.601	V	Quasi-Peak	31.4	< $\pm$ 3.81
244.516	V	Quasi-Peak	37.1	< $\pm$ 3.81
280.823	V	Quasi-Peak	32.1	< $\pm$ 3.81
338.735	H	Quasi-Peak	29.1	< $\pm$ 3.81
560.121	V	Quasi-Peak	23.0	< $\pm$ 3.81
589.771	V	Quasi-Peak	26.6	< $\pm$ 3.81
642.313	V	Quasi-Peak	22.5	< $\pm$ 3.81

### 2. CHANNEL: MIDDLE (915.65 MHz).

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dB $\mu$ V/m)	Measurement Uncertainty (dB)
160.578	V	Quasi-Peak	22.3	< $\pm$ 3.81
188.223	V	Quasi-Peak	27.9	< $\pm$ 3.81
242.608	V	Quasi-Peak	29.1	< $\pm$ 3.81
279.436	H	Quasi-Peak	33.8	< $\pm$ 3.81
378.861	H	Quasi-Peak	29.1	< $\pm$ 3.81
594.395	V	Quasi-Peak	25.9	< $\pm$ 3.81
746.620	V	Quasi-Peak	24.4	< $\pm$ 3.81

### 3. CHANNEL: HIGHEST (927.70 MHz).

Spurious frequency (MHz)	Polarization	Detector	Emission Level (dB $\mu$ V/m)	Measurement Uncertainty (dB)
153.303	V	Quasi-Peak	22.6	< $\pm$ 3.81
188.385	V	Quasi-Peak	28.8	< $\pm$ 3.81
243.287	V	Quasi-Peak	29.4	< $\pm$ 3.81
279.306	H	Quasi-Peak	32.3	< $\pm$ 3.81
323.280	H	Quasi-Peak	25.4	< $\pm$ 3.81
390.145	H	Quasi-Peak	22.5	< $\pm$ 3.81
593.716	V	Quasi-Peak	24.6	< $\pm$ 3.81

### Frequency range 1 GHz-10 GHz

All detected signals are harmonics of the fundamental emission.

#### 1. CHANNEL: LOWEST (902.30 MHz).

Spurious frequency (GHz)	Polarization	Detector	Emission Level (dB $\mu$ V/m)	Measurement Uncertainty (dB)
1.80443	V	Peak	54.11	< $\pm$ 4.72
		Average (*)	20.84	< $\pm$ 4.72
5.41372	V	Peak	69.02	< $\pm$ 4.72
		Average (*)	35.75	< $\pm$ 4.72

(\*): The average values are calculated from the measured peak values using the duty cycle correction factor  $\delta$ .

All other peaks are more than 20 dB below the limit.

2. CHANNEL: MIDDLE (915.65 MHz).

Spurious frequency (GHz)	Polarization	Detector	Emission Level (dB $\mu$ V/m)	Measurement Uncertainty (dB)
5.49352	V	Peak	59.06	< $\pm$ 4.72
		Average (*)	25.79	< $\pm$ 4.72

(\*): The average values are calculated from the measured peak values using the duty cycle correction factor  $\delta$ .

All other peaks are more than 20 dB below the limit.

3. CHANNEL: HIGHEST (927.70 MHz).

Spurious frequency (GHz)	Polarization	Detector	Emission Level (dB $\mu$ V/m)	Measurement Uncertainty (dB)
5.56655	V	Peak	56.07	< $\pm$ 4.72
		Average (*)	22.8	< $\pm$ 4.72
6.49382	V	Peak	57.49	< $\pm$ 4.72
		Average (*)	24.22	< $\pm$ 4.72
7.42132	V	Peak	54.43	< $\pm$ 4.72
		Average (*)	21.16	< $\pm$ 4.72

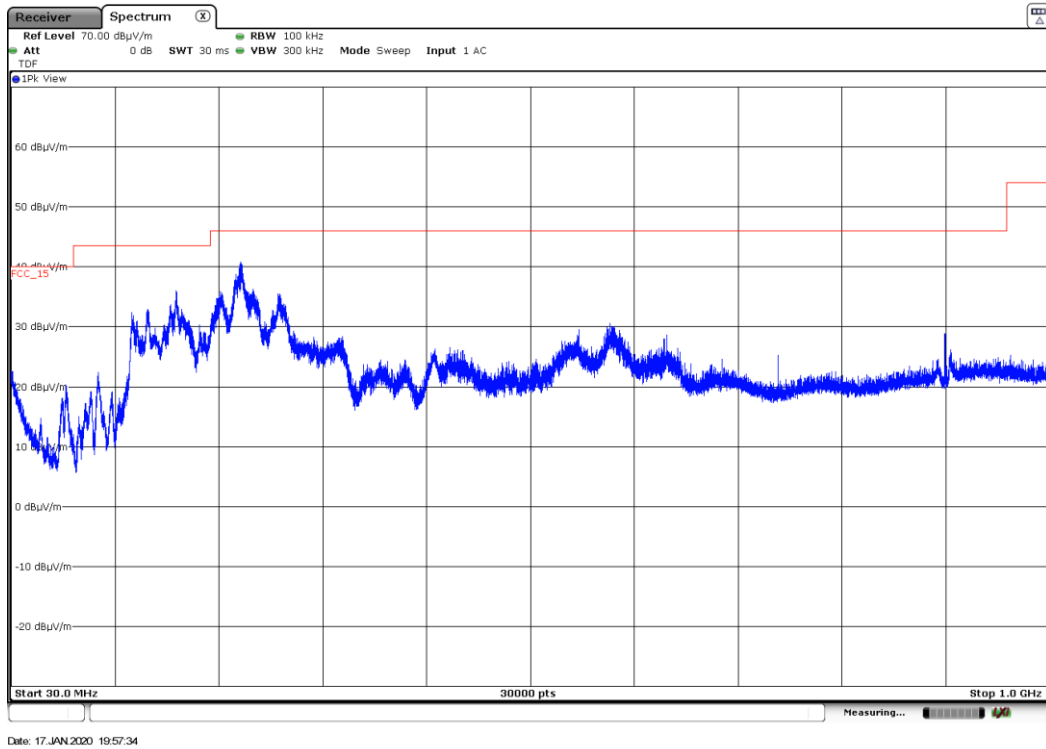
(\*): The average values are calculated from the measured peak values using the duty cycle correction factor  $\delta$ .

All other peaks are more than 20 dB below the limit.

Verdict: PASS

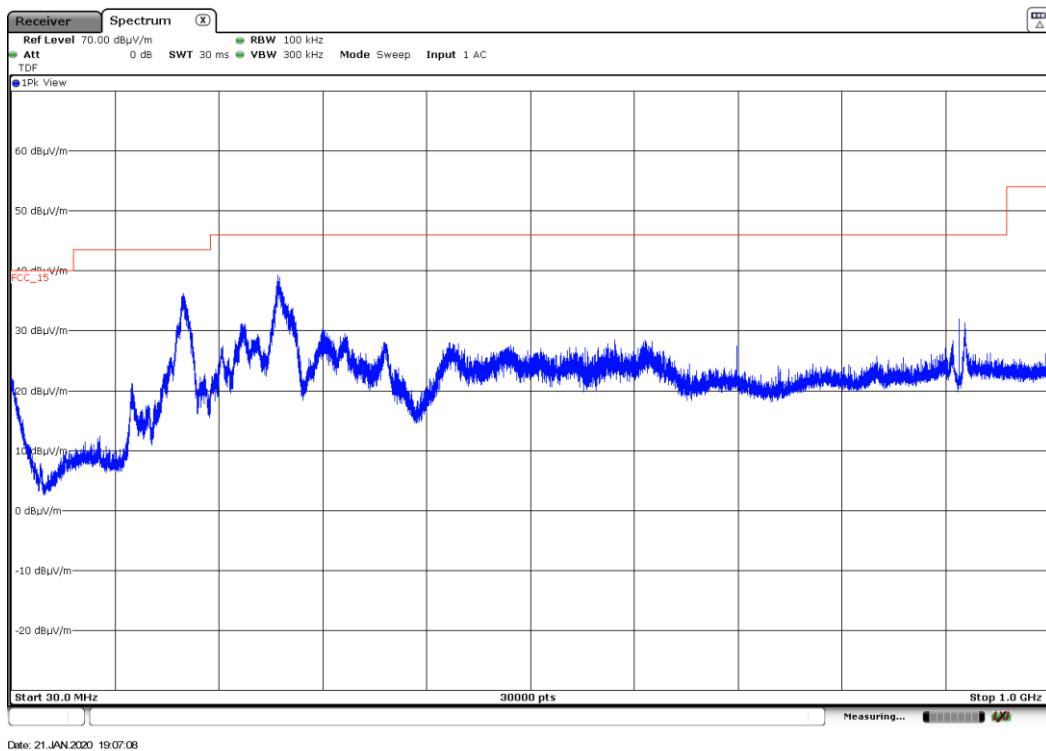
### FREQUENCY RANGE 30 MHz-1000 MHz.

CHANNEL: Lowest (902.30 MHz).



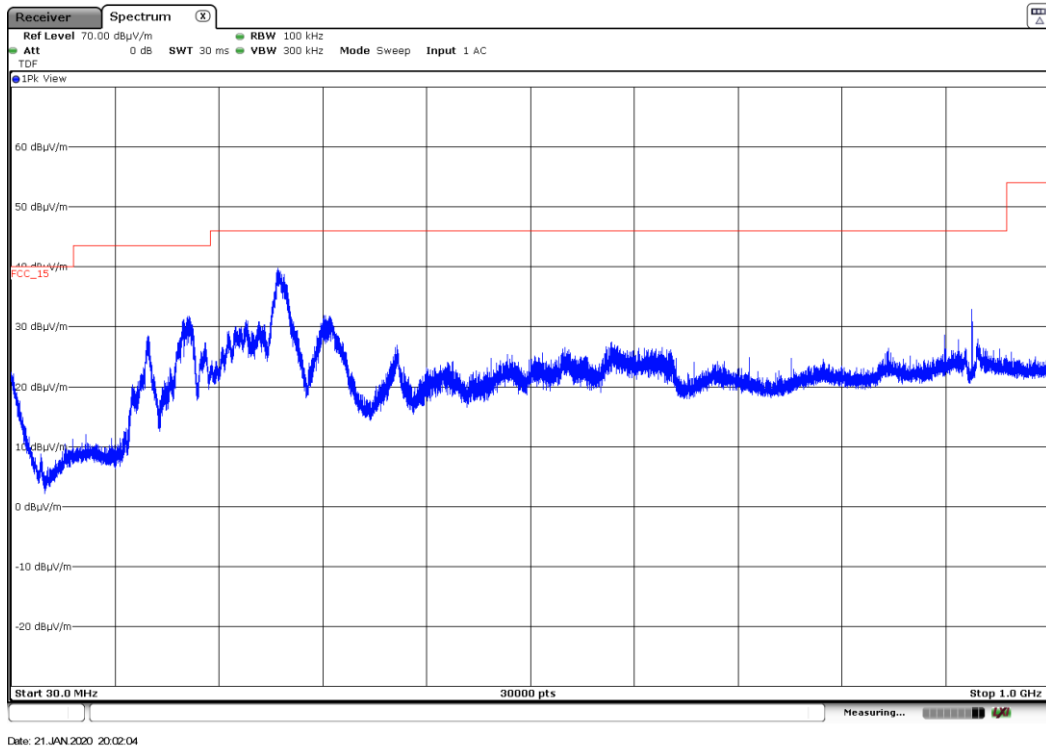
Note: The carrier was attenuated using a notch filter.

CHANNEL: Middle (915.65 MHz).



Note: The carrier was attenuated using a notch filter.

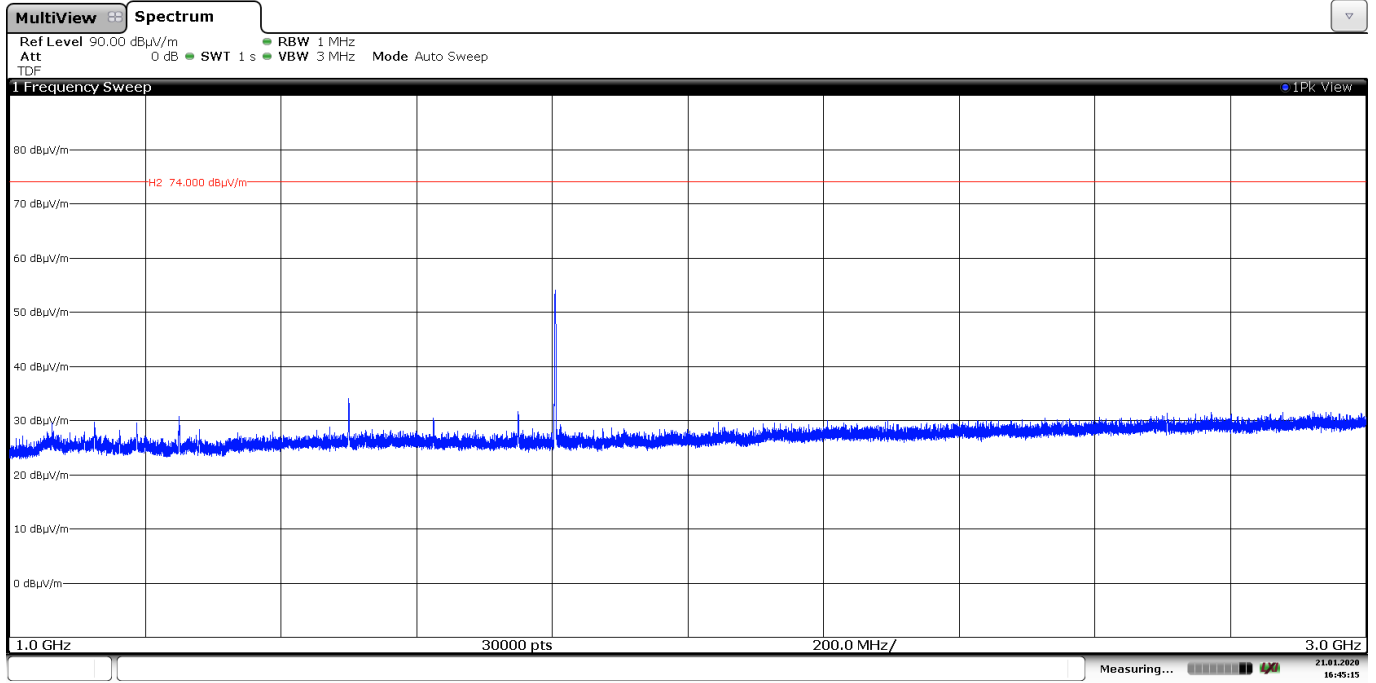
CHANNEL: Highest (927.70 MHz).



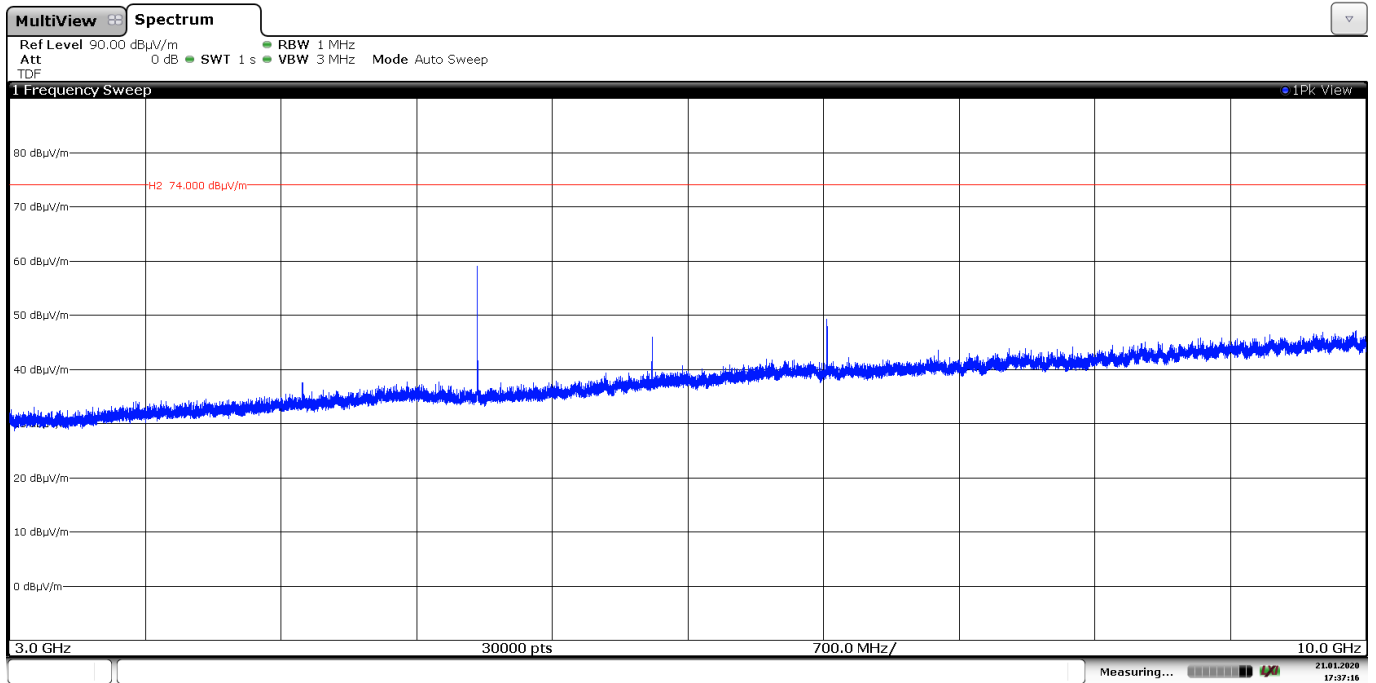
Note: The carrier was attenuated using a notch filter.

## FREQUENCY RANGE 1 GHz to 10 GHz.

CHANNEL: Lowest (902.30 MHz).



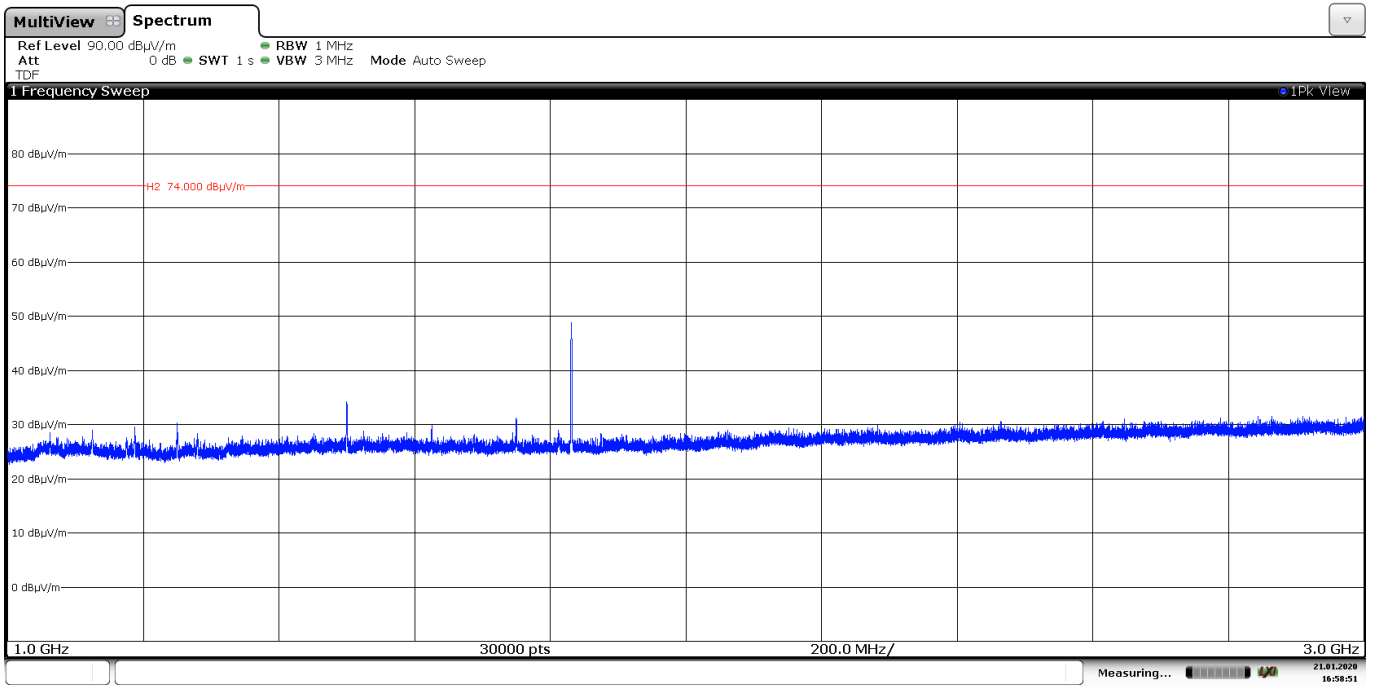
Date: 21 JAN 2020 16:45:14



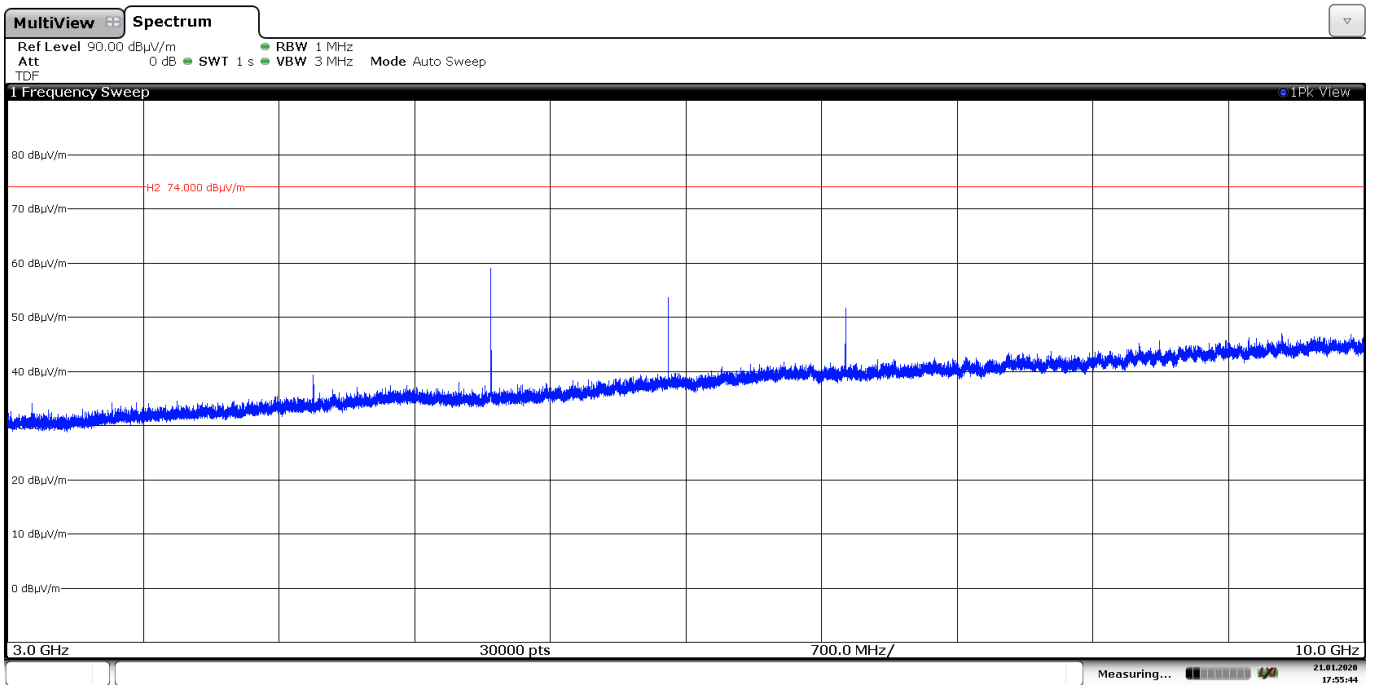
Date: 21 JAN 2020 17:37:16



CHANNEL: Middle (915.65 MHz).



Date: 21 JAN 2020 16:58:51



Date: 21 JAN 2020 17:55:43

CHANNEL: Highest (927.70 MHz).

