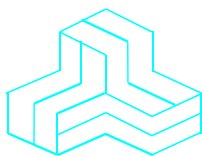


# ENGINEERING TEST REPORT



**914 MHz Transceiver Module**

**Model: 60068203**

**FCC ID: WB4-60068201**

*Applicant:*

**Atlas Polar Company Limited**

**60 Northline Road**

**Toronto, ON**

**Canada M4B 3E5**

*In Accordance With*

**Federal Communications Commission (FCC)**

**Part 15, Subpart C, Section 15.247 Frequency Hopping Spread Spectrum (FHSS)**

**UltraTech's File No.: 21ATLP014\_FCC15C247**

This Test report is Issued under the Authority of  
Tri M. Luu  
Vice President of Engineering  
UltraTech Group of Labs

Date: May 25, 2021

Report Prepared by: Dan Huynh

Tested by: Hung Trinh

Issued Date: May 25, 2021

Test Dates: November 13 & 15, 2019

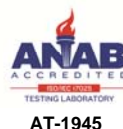
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## EXHIBIT 1. INTRODUCTION

### 1.1. SCOPE

<b>Reference:</b>	FCC Part 15, Subpart C, Section 15.247
<b>Title:</b>	Code of Federal Regulations (CFR), Title 47 – Telecommunication, Part 15
<b>Purpose of Test:</b>	Class II Permissive Change filing
<b>Test Procedures:</b>	<ul style="list-style-type: none"><li>ANSI C63.4</li><li>ANSI C63.10</li><li>FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02</li></ul>
<b>Environmental Classification:</b>	[ x ] Commercial, industrial or business environment [ x ] Residential environment

### 1.2. RELATED SUBMITTAL(S)/GRANT(S)

None.

### 1.3. NORMATIVE REFERENCES

Publication	Year	Title
47 CFR Parts 0-19	2019	Code of Federal Regulations (CFR), Title 47 – Telecommunication
ANSI C63.4	2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40 GHz
ANSI C63.10	2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
FCC Public Notice DA 00-705	2000	Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems
FCC ET Docket No. 99-231	2002	Amendment to FCC Part 15 of the Commission's Rules Regarding to Spread Spectrum Devices
FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02	2019	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES
FCC KDB Publication No. 447498 D01 General RF Exposure Guidance v06	2015	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES

## EXHIBIT 2. PERFORMANCE ASSESSMENT

### 2.1. CLIENT INFORMATION

APPLICANT	
<b>Name:</b>	Atlas Polar Company Limited
<b>Address:</b>	60 Northline Road Toronto, ON Canada M4B 3E5
<b>Contact Person:</b>	Mr. Sanjay Sood Phone #: 416 751-7744 Fax #: 416 751-2094 Email Address: sanjaysood@atlaspolar.com

MANUFACTURER	
<b>Name:</b>	Atlas Polar Company Limited
<b>Address:</b>	60 Northline Road Toronto, ON Canada M4B 3E5
<b>Contact Person:</b>	Mr. Sanjay Sood Phone #: 416 751-7744 Fax #: 416 751-2094 Email Address: sanjaysood@atlaspolar.com

### 2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

<b>Brand Name:</b>	Atlas Polar Company Limited
<b>Product Name:</b>	914 MHz Transceiver Module
<b>Model Name or Number:</b>	60068203
<b>Serial Number:</b>	Test Sample
<b>Type of Equipment:</b>	Spread Spectrum Transmitter
<b>Input Power Supply Type:</b>	External DC Sources
<b>Primary User Functions of EUT:</b>	Spread Spectrum OEM Transceiver Module

### 2.3. EUT'S TECHNICAL SPECIFICATIONS

Transmitter	
Equipment Type:	<ul style="list-style-type: none"><li>▪ Portable</li><li>▪ Mobile</li><li>▪ Base Station (fixed use)</li></ul>
Intended Operating Environment:	Residential Commercial, industrial or business environment
Power Supply Requirement:	3.5 to 6.5 VDC
RF Output Power Rating:	8.93 dBm Conducted
Operating Frequency Range:	902.805 – 924.855 MHz
RF Output Impedance:	50 $\Omega$
Duty Cycle:	Continuous
Modulation Type:	FHSS
Antenna Connector Type:	Permanently Soldered to Wire Antennas or RP-SMA connector

### 2.4. ASSOCIATED ANTENNA DESCRIPTIONS

Laird EXC902BNX 902-928 MHz  $\frac{1}{4}$  Wave Whip Antenna, -1.1 dBi gain  
Antenna Factor ANT-916-CW-RCL 840-990 MHz  $\frac{1}{4}$  Wave Whip Antenna, 4.2 dBi gain

### 2.5. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
1	RF IN/OUT Port	1	RP-SMA	Direct connection
2	DC Supply & I/O Port	1	8 Pin Header	Non-shielded cable

### 2.6. ANCILLARY EQUIPMENT

The EUT was tested while connected to the following representative configuration of ancillary equipment necessary to exercise the ports during tests:

Ancillary Equipment # 1	
Description:	Test Control Station
Brand name:	Atlas Polar Company Limited
Model Name or Number:	N/A
Connected to EUT's Port:	DC Supply & I/O Port

## EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

### 3.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21 to 23 °C
Humidity:	45 to 58%
Pressure:	102 kPa
Power Input Source:	5 VDC via Test Control Station

### 3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TESTS

<b>Operating Modes:</b>	Each of lowest, middle and highest channel frequencies transmits continuously for emissions measurements.
<b>Special Test Software &amp; Hardware:</b>	Test software provided by the Applicant is installed to allow the EUT to operate in hopping mode or at each channel frequency continuously. For example, the transmitter will be operated at each of lowest, middle and highest frequencies individually continuously during testing.
<b>Transmitter Test Antenna:</b>	The EUT is tested with the antenna fitted in a manner typical of normal intended use as integral and non-integral antenna equipment as described with the test results.

Transmitter Test Signals	
<b>Frequency Band(s):</b>	902.805 – 924.855 MHz
<b>Frequency(ies) Tested:</b> (Near lowest, near middle & near highest frequencies in the frequency range of operation.)	902.805, 913.605 and 924.855 MHz
<b>RF Power Output:</b> (measured maximum output power at antenna terminals)	8.88 dBm (conducted)
<b>Normal Test Modulation:</b>	FHSS
<b>Modulating Signal Source:</b>	Internal

## EXHIBIT 4. SUMMARY OF TEST RESULTS

### 4.1. LOCATION OF TESTS

All of the measurements described in this report were performed at Ultratech Group of Labs located in the city of Oakville, Province of Ontario, Canada.

- AC Power Line Conducted Emissions were performed in UltraTech's shielded room, 24'(L) by 16'(W) by 8'(H).
- Radiated Emissions were performed at the Ultratech's 3-10 TDK Semi-Anechoic Chamber situated in the Town of Oakville, province of Ontario. This test site been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville 3-10 TDK Semi-Anechoic Chamber has been filed with ANAB File No.: AT-1945.

### 4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC Section(s)	Test Requirements	Compliance (Yes/No)
15.203	Antenna requirements	Yes
15.207(a)	AC Power Line Conducted Emissions	N/A
15.247(a)	Provisions for Frequency Hopping Systems	N/A
15.247(b)(2)	Peak Conducted Output Power	Yes
15.247(d), 15.209 & 15.205	Transmitter Spurious Radiated Emissions	Yes
15.247(i), 1.1307, 1.1310, 2.1091	RF Exposure	Yes*

\*SAR evaluation for general population exposure conditions is not required when the SAR Test Exclusion Threshold condition(s) is (are) satisfied. The maximum power of the EUT at 8 mW and a minimum of 5mm separation distance satisfied the 3.0 numeric threshold for head or body exposure condition (refer to Appendix A of 447498 D01 General RF Exposure Guidance v06).

### 4.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None.

## EXHIBIT 5. TEST DATA

### 5.1. PEAK CONDUCTED OUTPUT POWER [§ 15.247(b)(2)]

#### 5.1.1. Limits

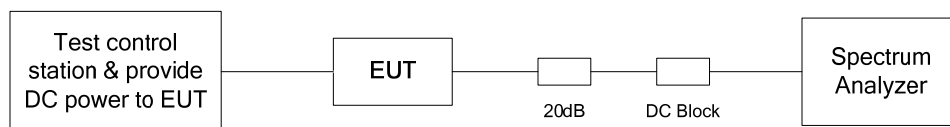
**§15.247(b)(2):** For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

**§15.247(b)(4):** The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 5.1.2. Method of Measurements

KDB 558074 D01 15.247 Meas Guidance v05r02, ANSI C63.10, section 7.8.5

#### 5.1.3. Test Arrangement

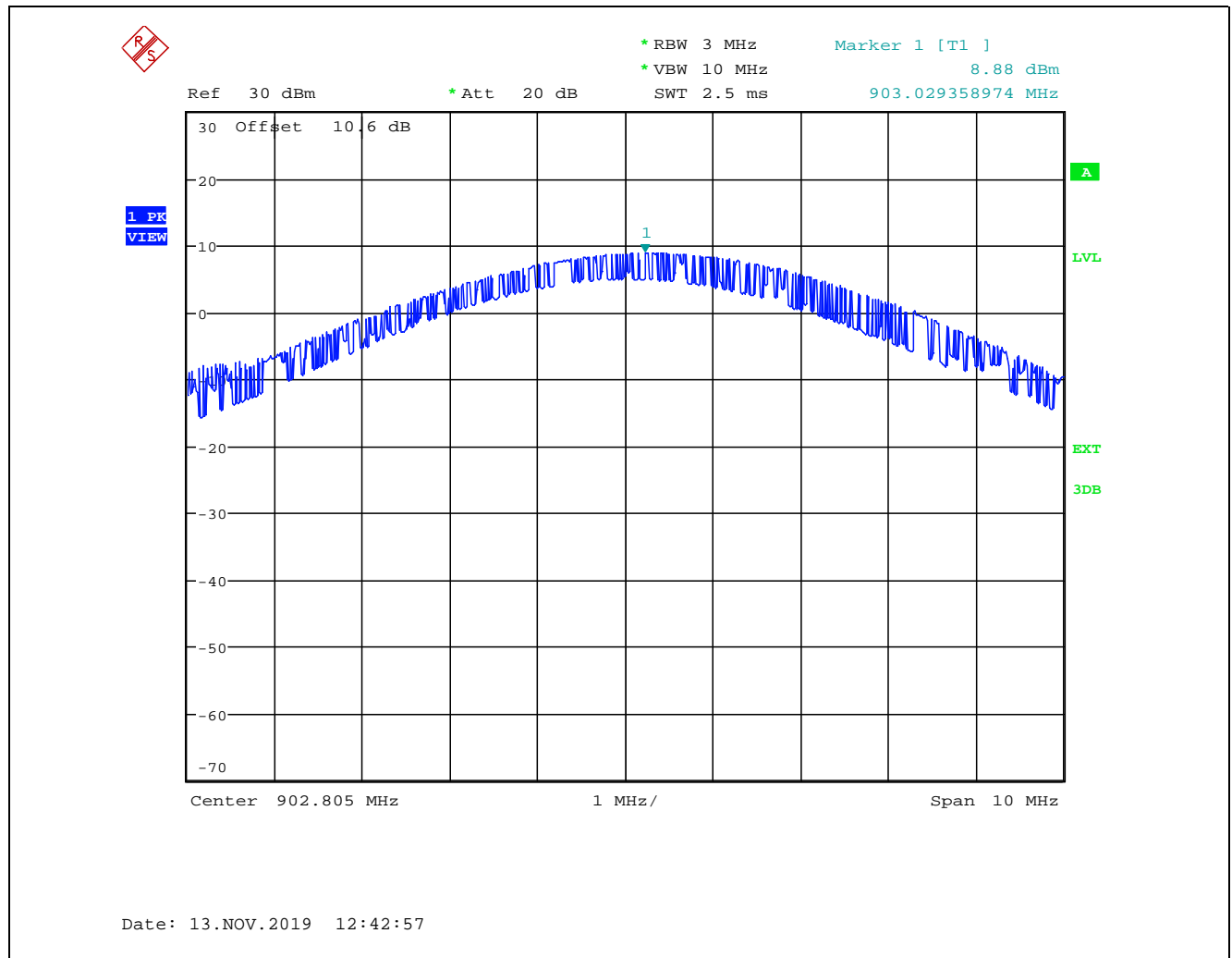


#### 5.1.4. Test Data

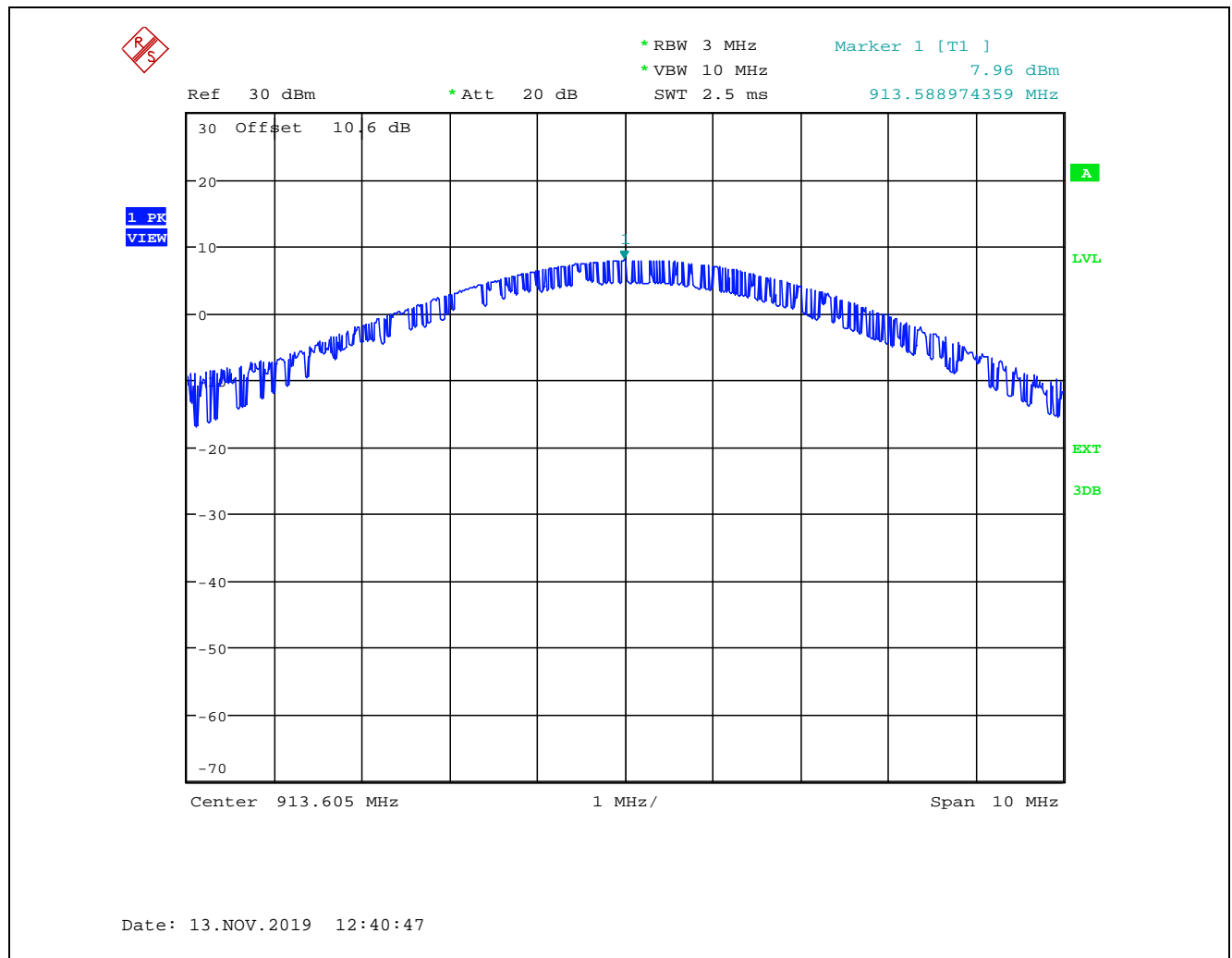
Frequency (MHz)	Maximum Peak Conducted Output Power		Antenna Assembly Gain (dBi)	EIRP (dBm)	Peak Conducted Output Power Limit (dBm)	EIRP Limit (dBm)
	(dBm)	(W)				
920.805	8.88	0.0077	4.2	13.08	30	36
913.605	7.96	0.0063	4.2	12.16	30	36
924.855	7.14	0.0052	4.2	11.34	30	36



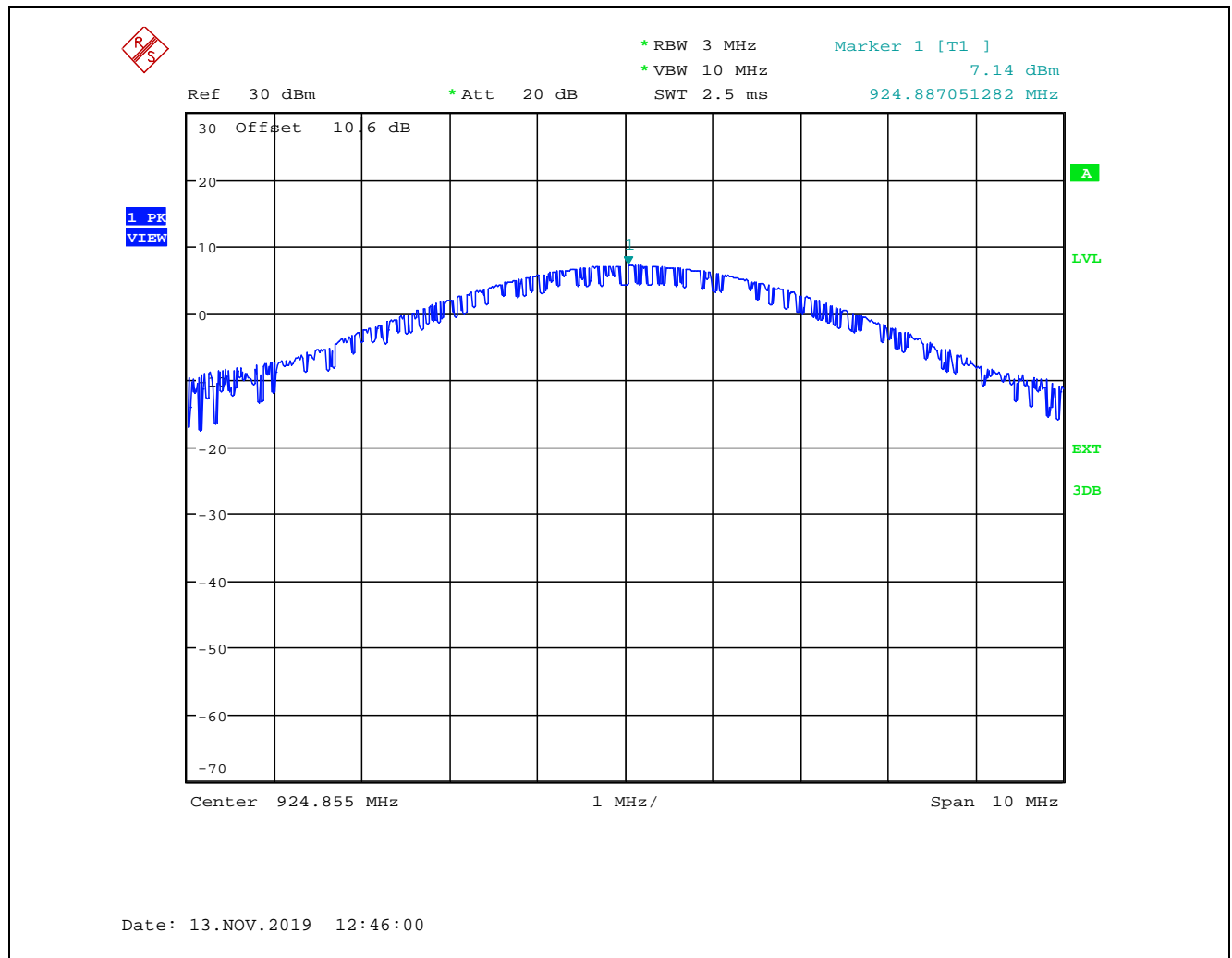
**Plot 5.1.4.1.** Maximum Peak Conducted Output Power, Power Setting Max, 920.805 MHz



**Plot 5.1.4.2.** Maximum Peak Conducted Output Power, Power Setting Max, 913.605 MHz



**Plot 5.1.4.3. Maximum Peak Conducted Output Power, Power Setting Max, 924.855 MHz**



## 5.2. TRANSMITTER SPURIOUS RADIATED EMISSIONS AT 3 METERS [§§ 15.247(d), 15.209 & 15.205]

### 5.2.1. Limit

**§ 15.247 (d):** In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, 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)).

### Section 15.205(a) - Restricted Bands of Operation

MHz	MHz	MHz	GHz
0.090–0.110 .....	16.42–16.423	399.9–410	4.5–5.15
<sup>1</sup> 0.495–0.505 .....	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905 .....	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128 .....	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775 .....	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775 .....	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218 .....	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825 .....	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225 .....	123–138	2200–2300	14.47–14.5
8.291–8.294 .....	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366 .....	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675 .....	156.7–156.9	2655–2900	22.01–23.12
8.41425–8.41475 .....	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293 .....	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025 .....	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725 .....	322–335.4	3600–4400	( <sup>2</sup> )
13.36–13.41.			

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490–0.510 MHz.

<sup>2</sup> Above 38.6

### Section 15.209(a) - Field Strength Limits within Restricted Frequency Bands

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2,400 / F (kHz)	300
0.490 - 1.705	24,000 / F (kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

#### ULTRATECH GROUP OF LABS

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File #: 21ATLP014\_FCC15C247

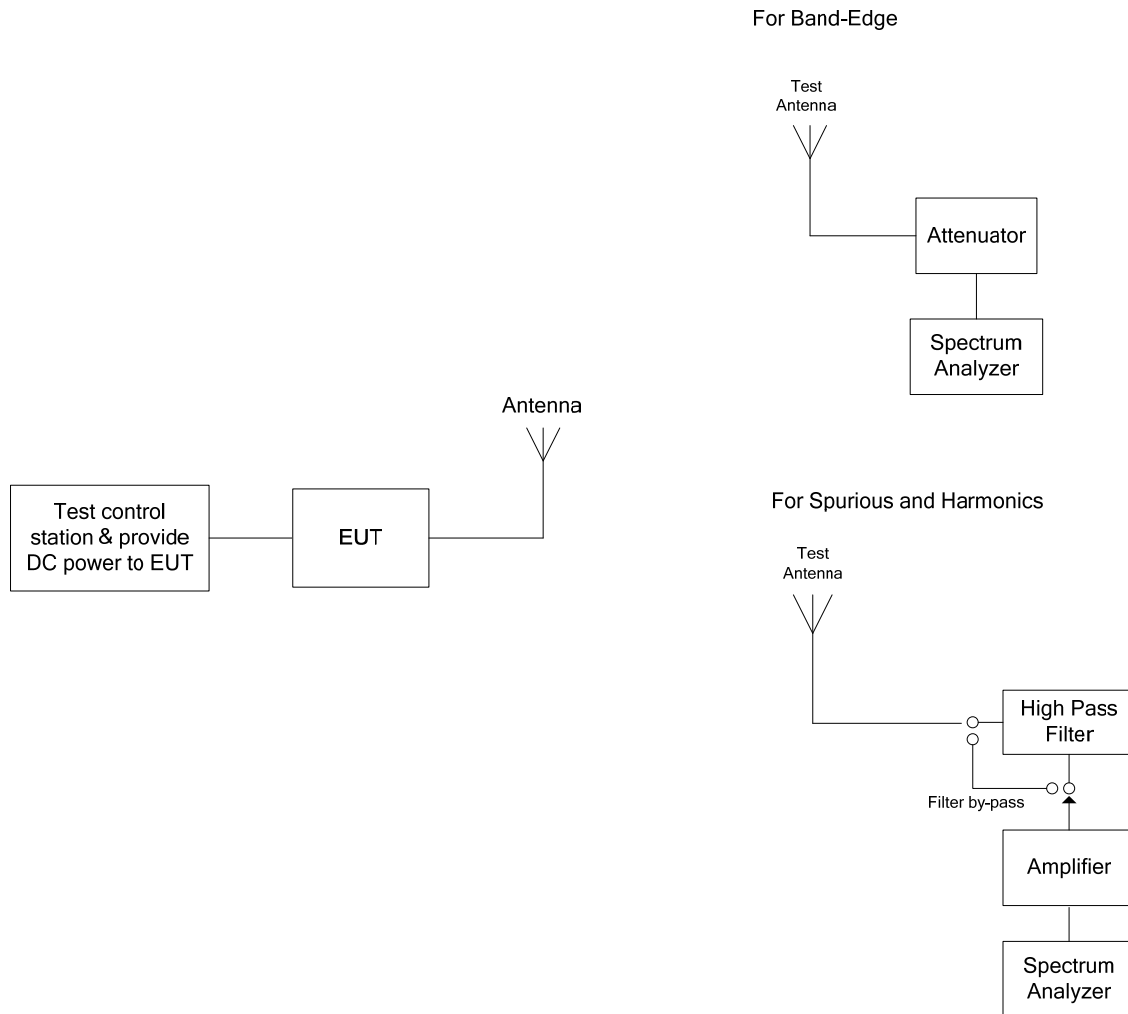
May 25, 2021

*All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

### 5.2.2. Method of Measurements

ANSI C63.10 and ANSI 63.4 procedures.

### 5.2.3. Test Arrangement



## 5.2.4. Test Data

### Remark(s):

- All spurious emissions that are in excess of 20 dB below the specified limit shall be recorded.
- EUT shall be tested in three orthogonal positions.
- The following test data represent the worst-case derived from exploratory tests.

### 5.2.4.1. EUT with Laird EXC902BNX ¼ Wave Whip Antenna

#### 5.2.4.1.1. Spurious Radiated Emission

Fundamental Frequency:		902.805 MHz					
Power Setting:		Maximum power setting					
Frequency Test Range:		30 MHz – 10 GHz					
Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/Fail
902.805	101.71	--	V	--	--	--	--
902.805	97.55	--	H	--	--	--	--
2708.415	47.92	35.50	V	54.0	81.7	-18.5	Pass*
2708.415	49.34	40.35	H	54.0	81.7	-13.7	Pass*
3611.220	47.88	34.78	V	54.0	81.7	-19.2	Pass*
3611.220	48.82	39.81	H	54.0	81.7	-14.2	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

\*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

Fundamental Frequency:		913.605 MHz					
Raw Power Setting:		Maximum power setting					
Frequency Test Range:		30 MHz – 10 GHz					
Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/Fail
913.605	99.38	--	V	--	--	--	--
913.605	98.10	--	H	--	--	--	--
2740.815	47.97	36.40	V	54.0	79.4	-17.6	Pass*
2740.815	52.58	39.82	H	54.0	79.4	-14.2	Pass*
3654.420	49.40	38.73	H	54.0	79.4	-15.3	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

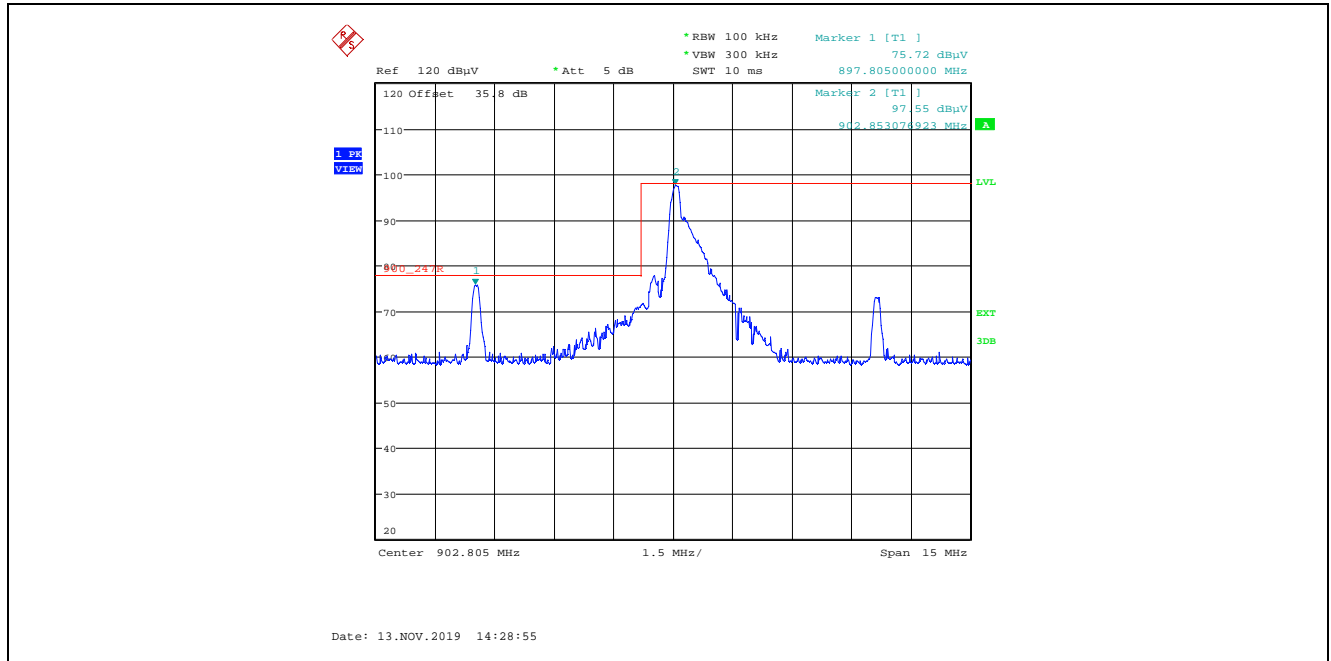
\*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

Fundamental Frequency:		924.855 MHz					
Power Setting:		Maximum power setting					
Frequency Test Range:		30 MHz – 10 GHz					
Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/Fail
924.855	96.86	--	V	--	--	--	--
924.855	96.72	--	H	--	--	--	--
2774.565	48.31	36.30	V	54.0	76.9	-17.7	Pass*
2774.565	56.14	42.81	H	54.0	76.9	-11.2	Pass*
3699.420	48.82	37.74	H	54.0	76.9	-16.3	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

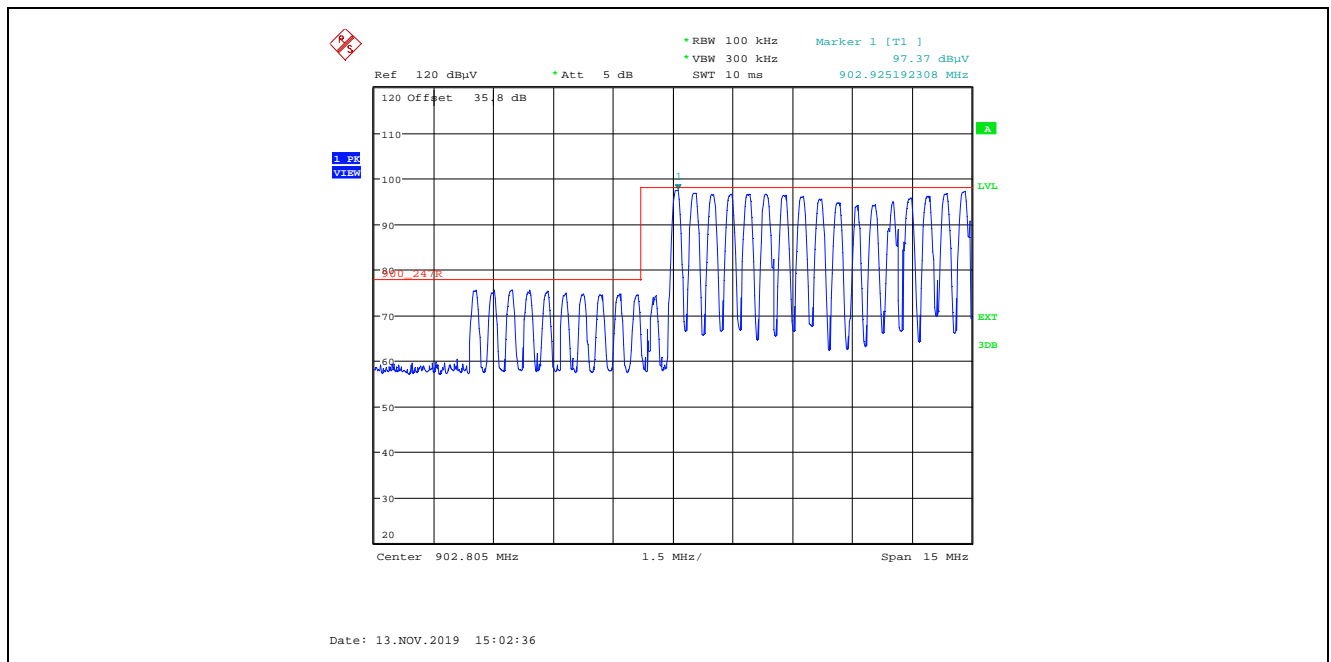
\*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

### 5.2.4.1.2. Band –Edge RF Radiated Emissions

**Plot 5.2.4.1.2.1.** Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization  
Single Frequency Mode, Low End of Frequency Band

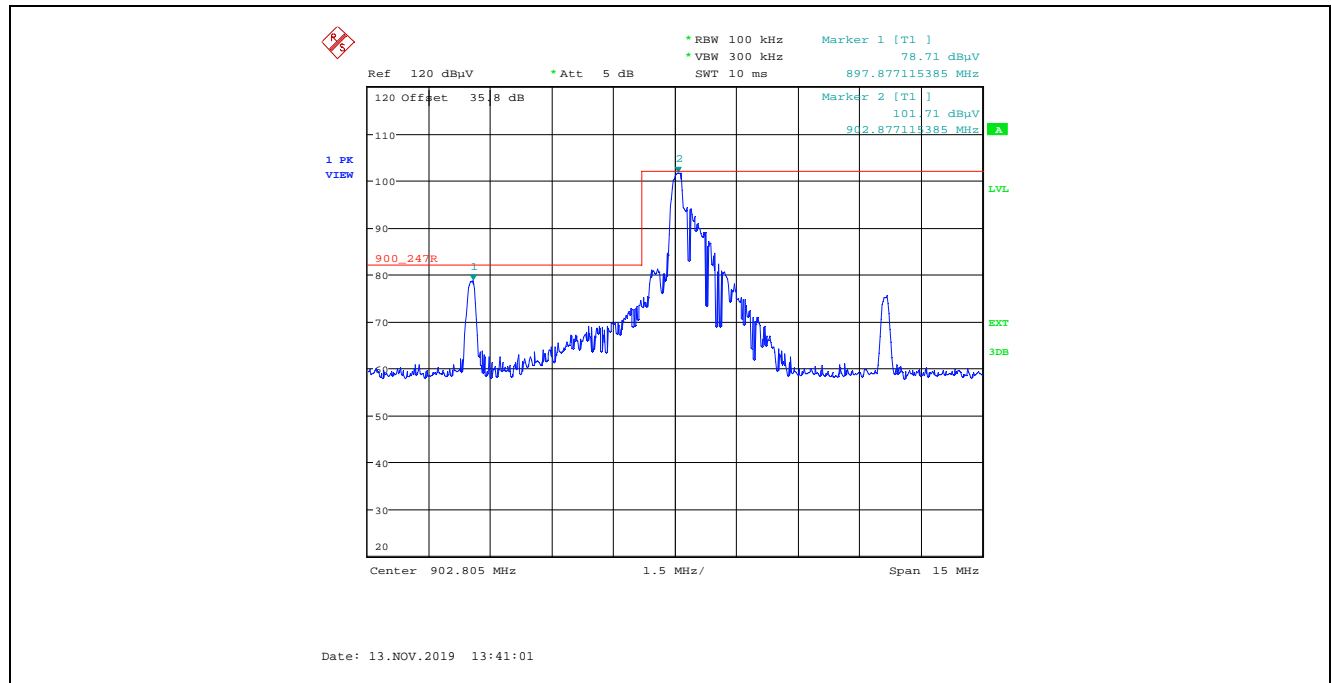


**Plot 5.2.4.1.2.2.** Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization  
Pseudorandom Channel Hopping Mode, Low End of Frequency Band

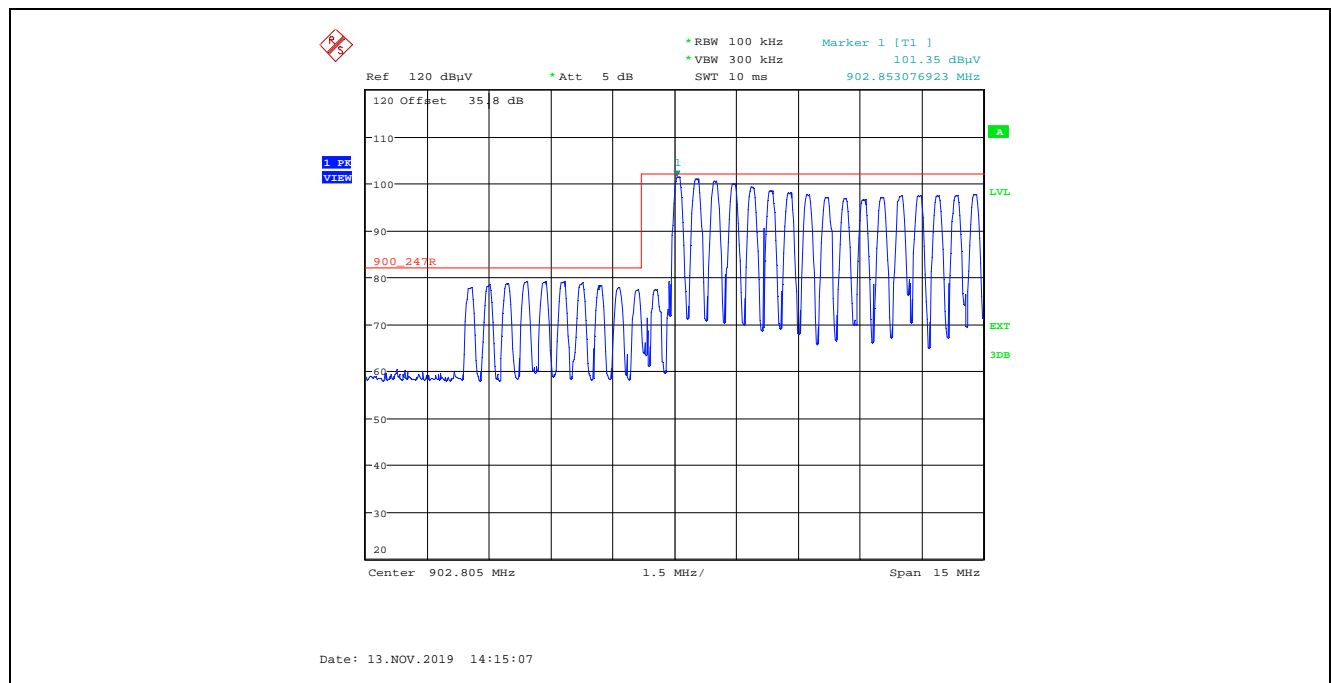




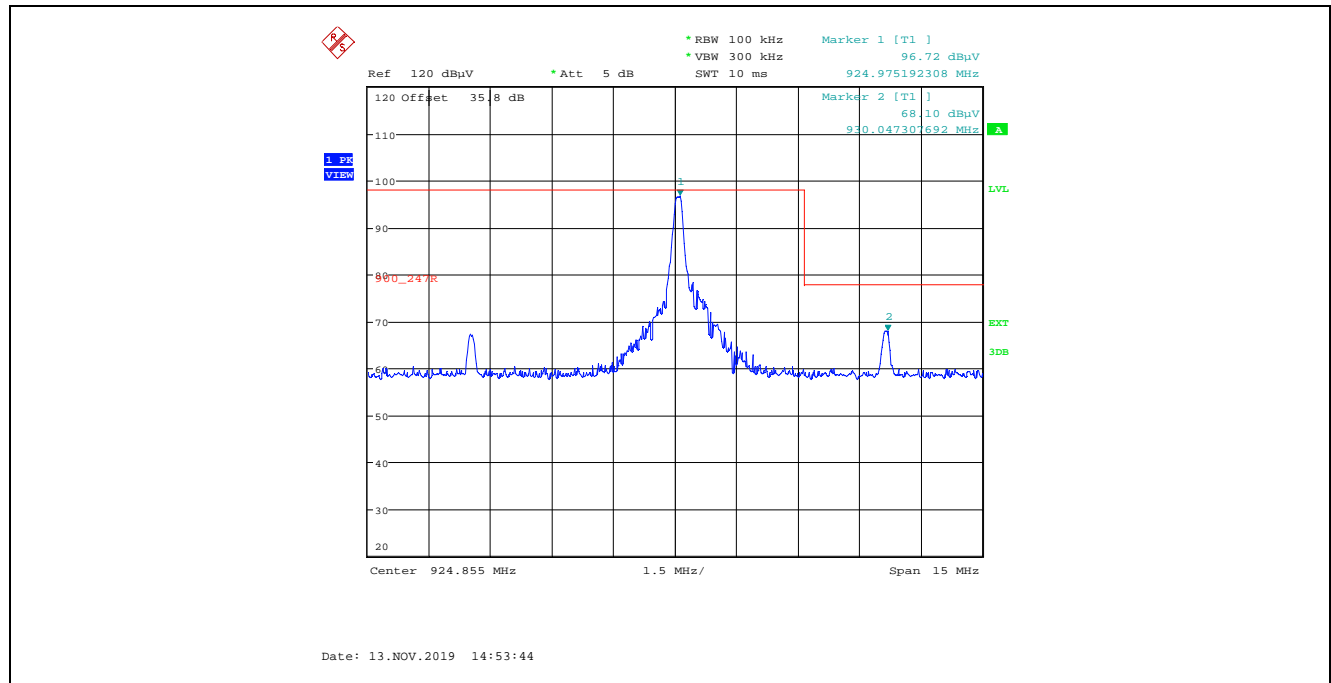
**Plot 5.2.4.1.2.3.** Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization  
Single Frequency Mode, Low End of Frequency Band



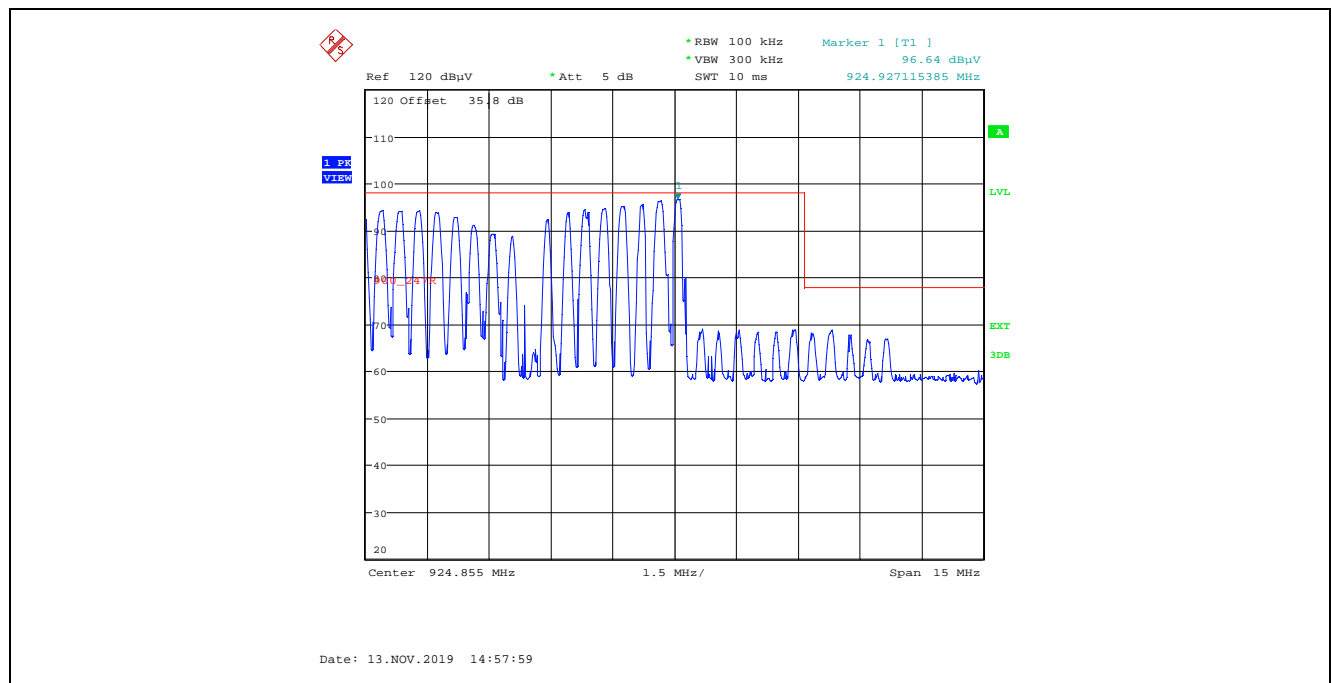
**Plot 5.2.4.1.2.4.** Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization  
Pseudorandom Channel Hopping Mode, Low End of Frequency Band



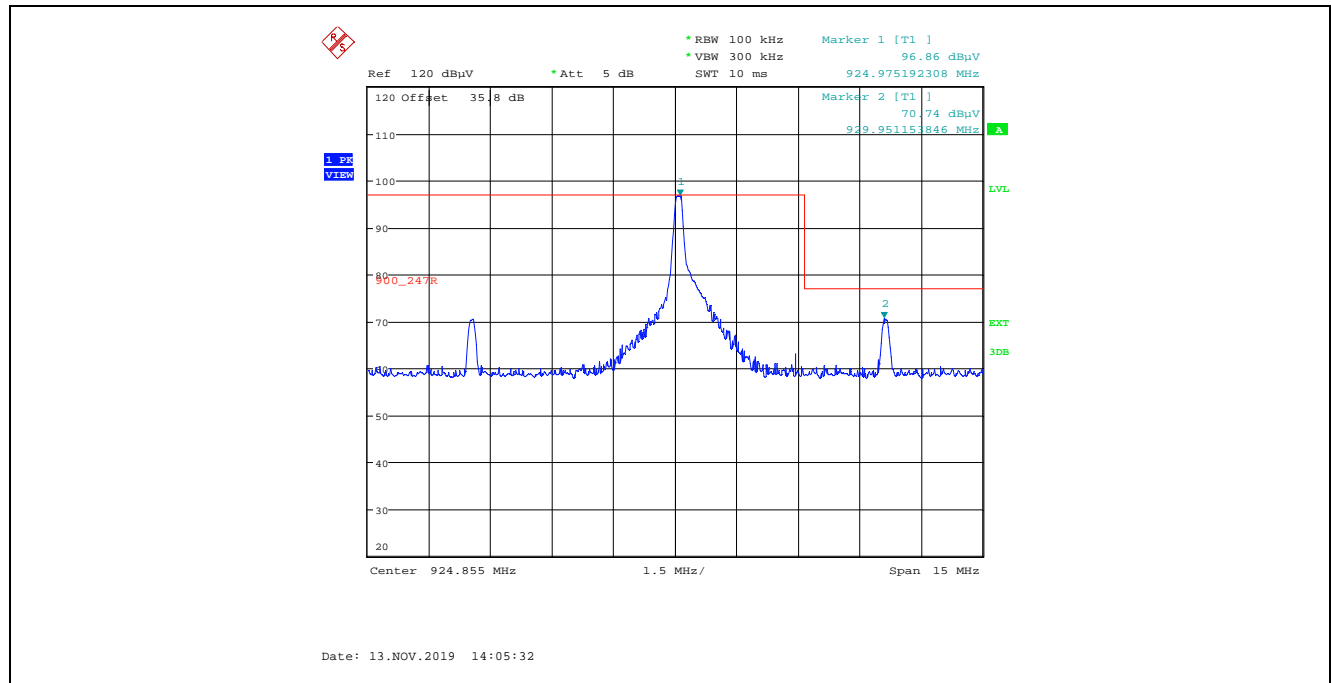
**Plot 5.2.4.1.2.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization**  
Single Frequency Mode, High End of Frequency Band



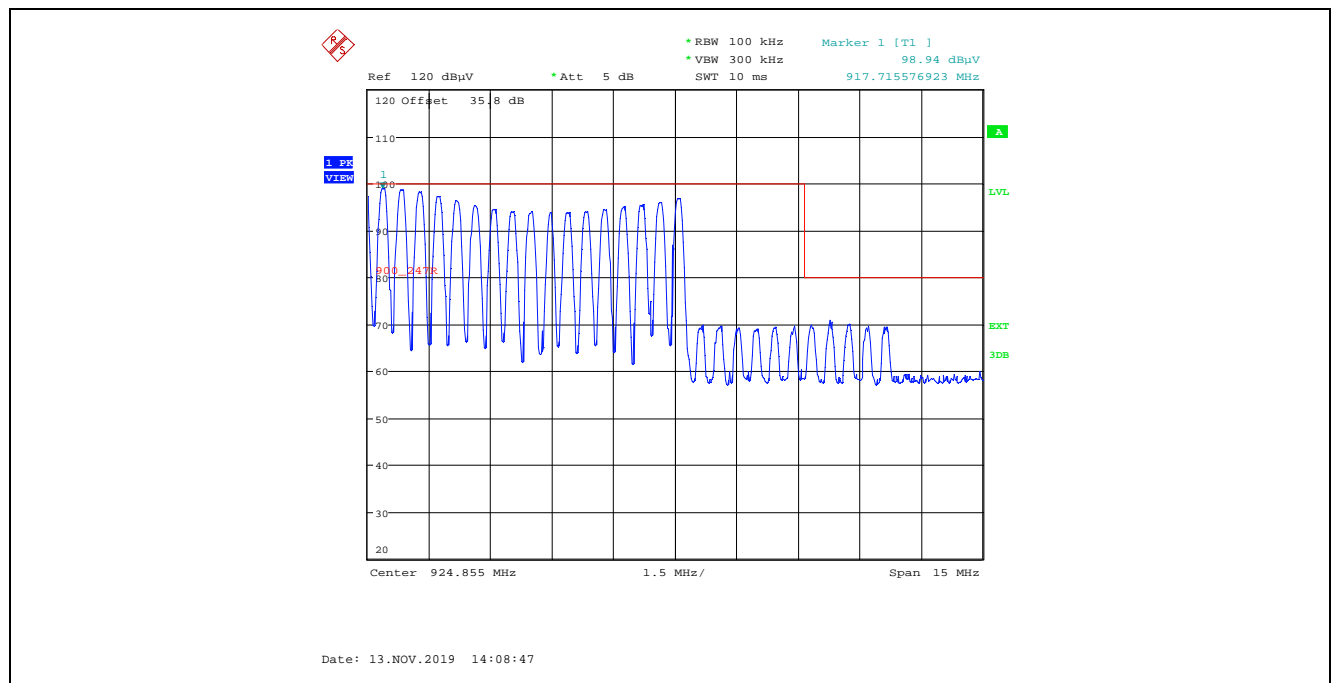
**Plot 5.2.4.1.2.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization**  
Pseudorandom Channel Hopping Mode, High End of Frequency Band



**Plot 5.2.4.1.2.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization  
Single Frequency Mode, High of Frequency Band**



**Plot 5.2.4.1.2.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization  
Pseudorandom Channel Hopping Mode, High End of Frequency Band**



## 5.2.4.2. EUT with Antenna Factor ANT-916-CW-RCL ¼ Wave Whip Antenna

### 5.2.4.2.1. Spurious Radiated Emissions

Fundamental Frequency:		902.805 MHz					
Raw Power Setting:		Maximum power setting					
Frequency Test Range:		30 MHz – 10 GHz					
Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/Fail
902.805	104.23	--	V	--	--	--	--
902.805	104.90	--	H	--	--	--	--
2708.415	48.13	36.67	V	54.0	84.9	-17.3	Pass*
2708.415	53.61	41.80	H	54.0	84.9	-12.2	Pass*
3611.220	47.36	34.19	V	54.0	84.9	-19.8	Pass*
3611.220	48.51	38.05	H	54.0	84.9	-16.0	Pass*
4514.025	48.29	34.27	V	54.0	84.9	-19.7	Pass*
4514.025	50.28	36.12	H	54.0	84.9	-17.9	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

\*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

Fundamental Frequency:		913.605 MHz					
Raw Power Setting:		Maximum power setting					
Frequency Test Range:		30 MHz – 10 GHz					
Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/Fail
913.605	103.83	--	V	--	--	--	--
913.605	102.36	--	H	--	--	--	--
2740.815	49.76	38.85	V	54.0	83.8	-15.2	Pass*
2740.815	53.61	44.46	H	54.0	83.8	-9.5	Pass*
3654.420	47.52	34.20	V	54.0	83.8	-19.8	Pass*
3654.420	49.61	38.40	H	54.0	83.8	-15.6	Pass*
4568.025	48.22	34.80	V	54.0	83.8	-19.2	Pass*
4568.025	49.28	35.93	H	54.0	83.8	-18.1	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

\*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

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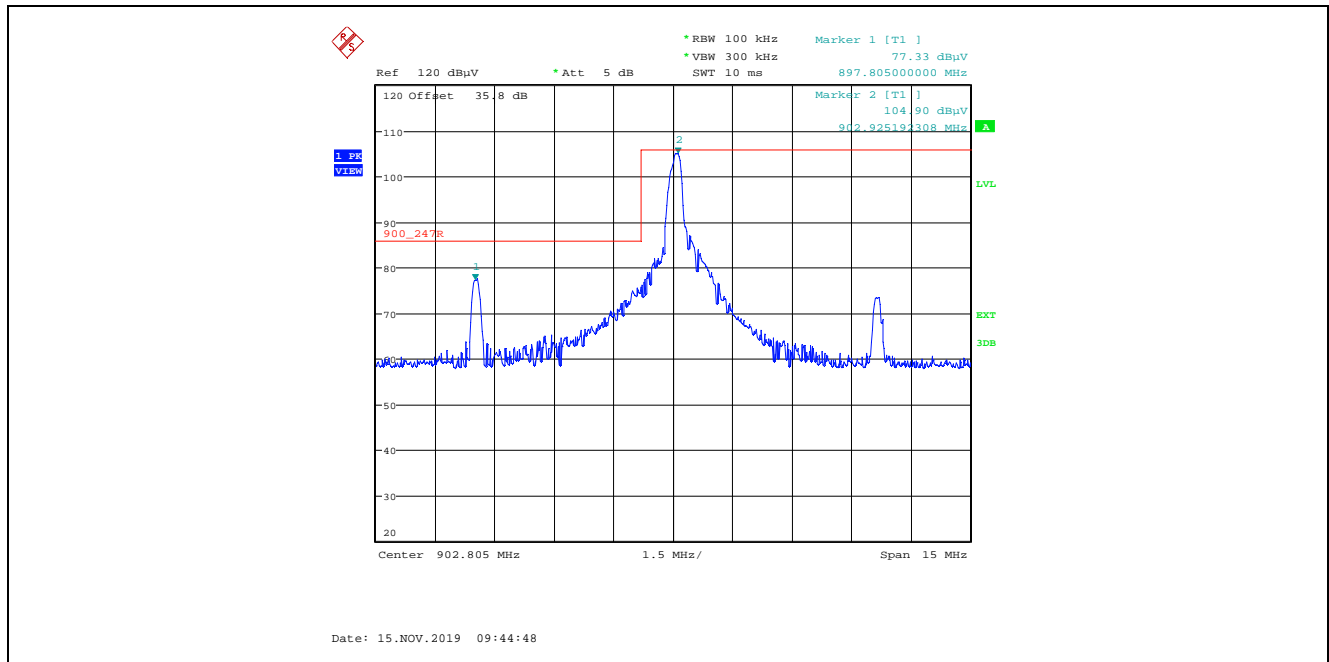
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Fundamental Frequency:		924.855 MHz					
Raw Power Setting:		Maximum power setting					
Frequency Test Range:		30 MHz – 10 GHz					
Frequency (MHz)	RF Peak Level (dBμV/m)	RF Avg Level (dBμV/m)	Antenna Plane (H/V)	Limit 15.209 (dBμV/m)	Limit 15.247 (dBμV/m)	Margin (dB)	Pass/Fail
924.855	103.37	--	V	--	--	--	--
924.855	97.57	--	H	--	--	--	--
2774.565	47.26	37.10	V	54.0	83.4	-16.9	Pass*
2774.565	53.79	43.57	H	54.0	83.4	-10.4	Pass*
3699.420	48.60	37.54	H	54.0	83.4	-16.5	Pass*
4624.275	48.38	34.76	V	54.0	83.4	-19.2	Pass*
4624.275	49.05	35.90	H	54.0	83.4	-18.1	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

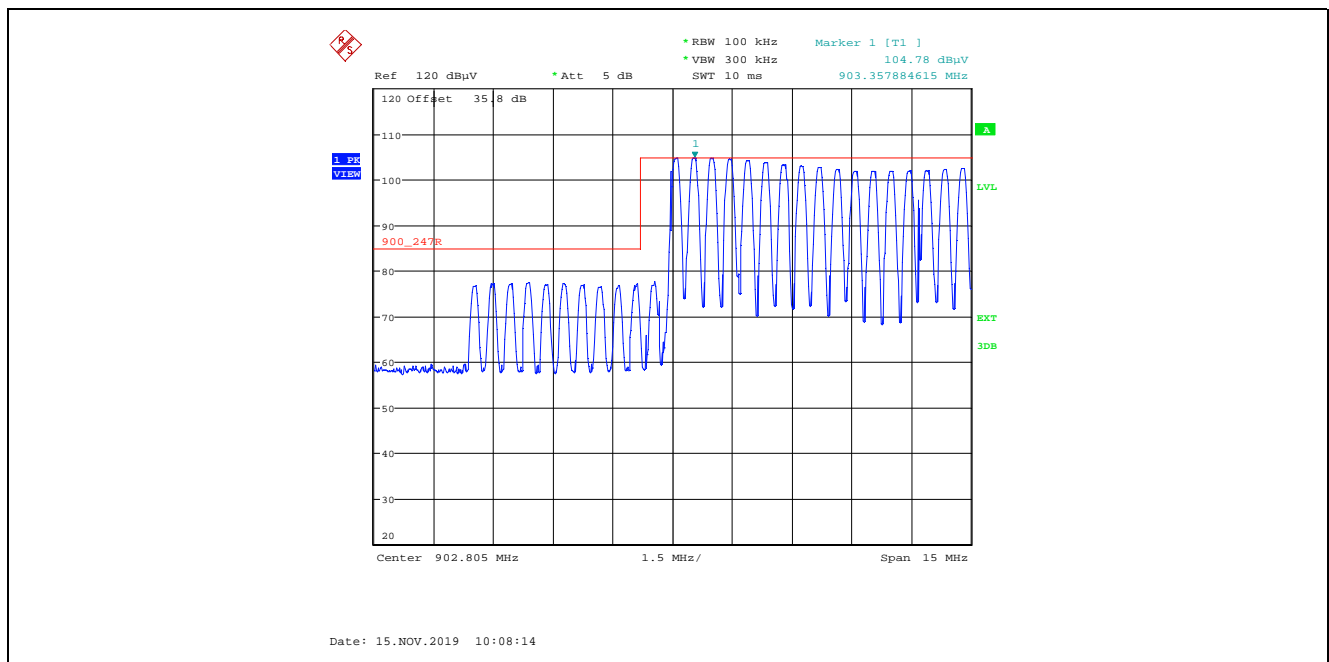
\*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

## 5.2.4.2.2. Band –Edge RF Radiated Emissions

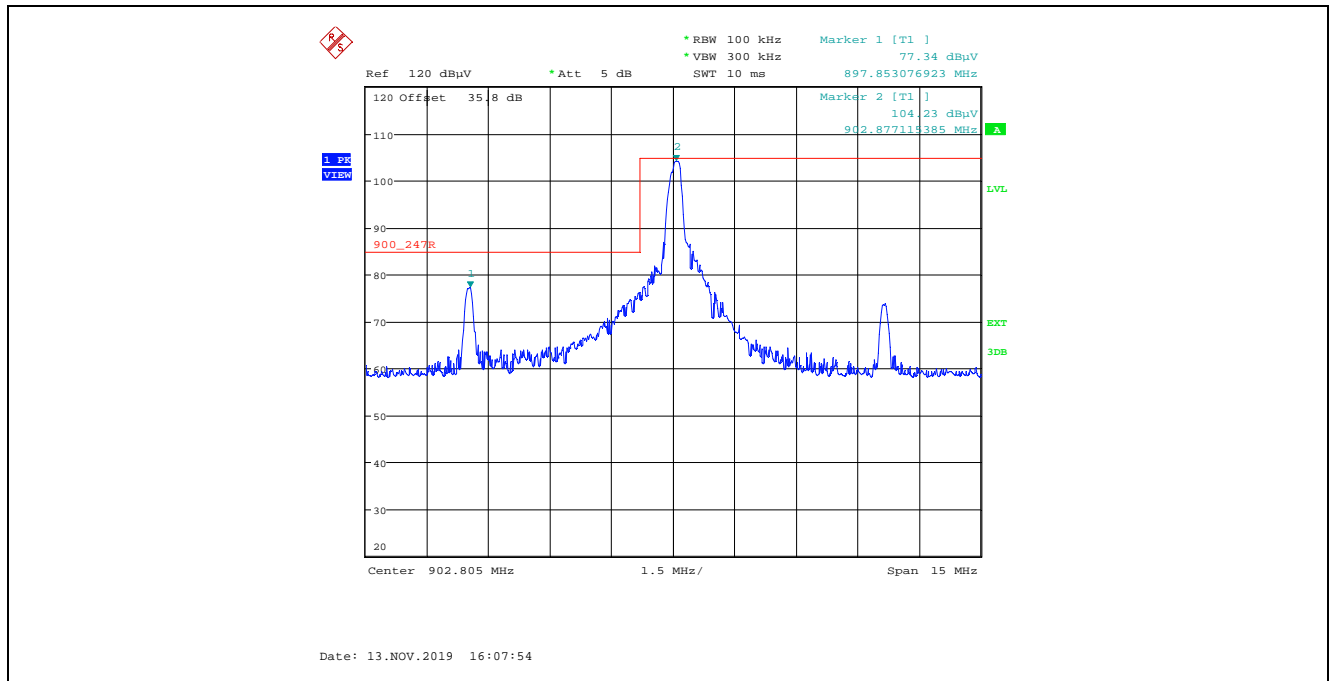
**Plot 5.2.4.2.2.1.** Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization  
Single Frequency Mode, Low End of Frequency Band



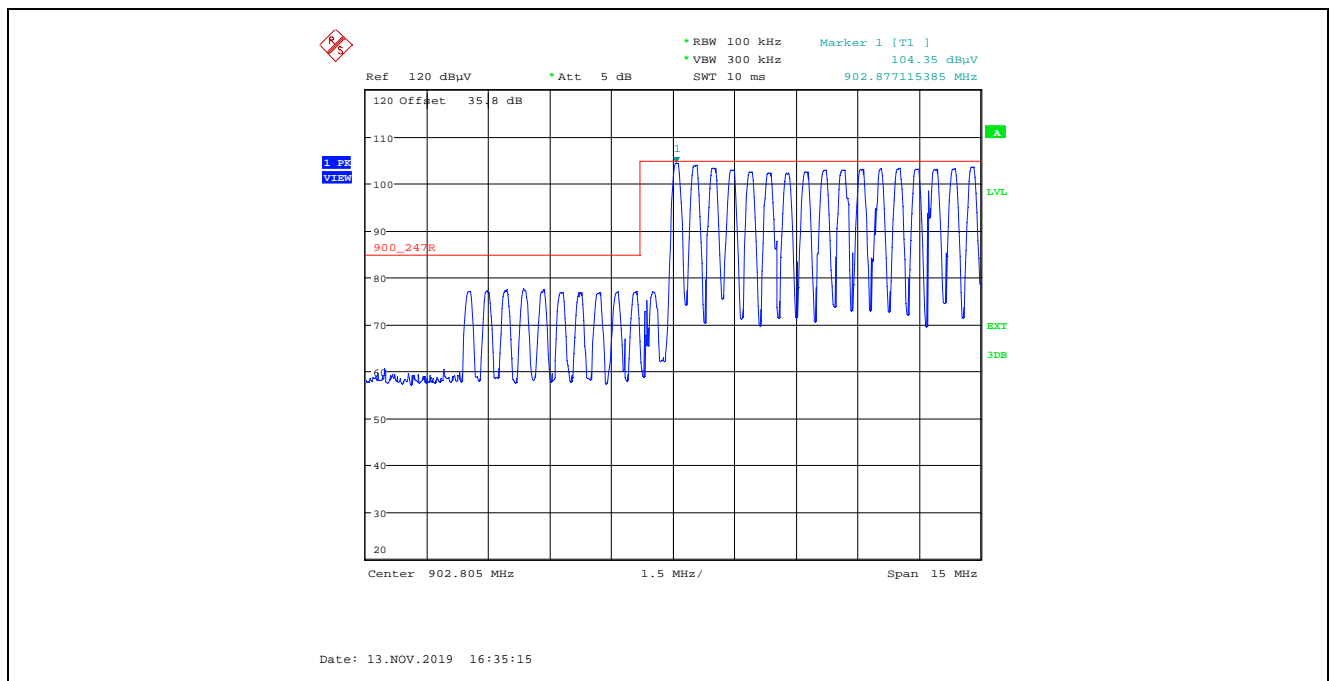
**Plot 5.2.4.2.2.2.** Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization  
Pseudorandom Channel Hopping Mode, Low End of Frequency Band



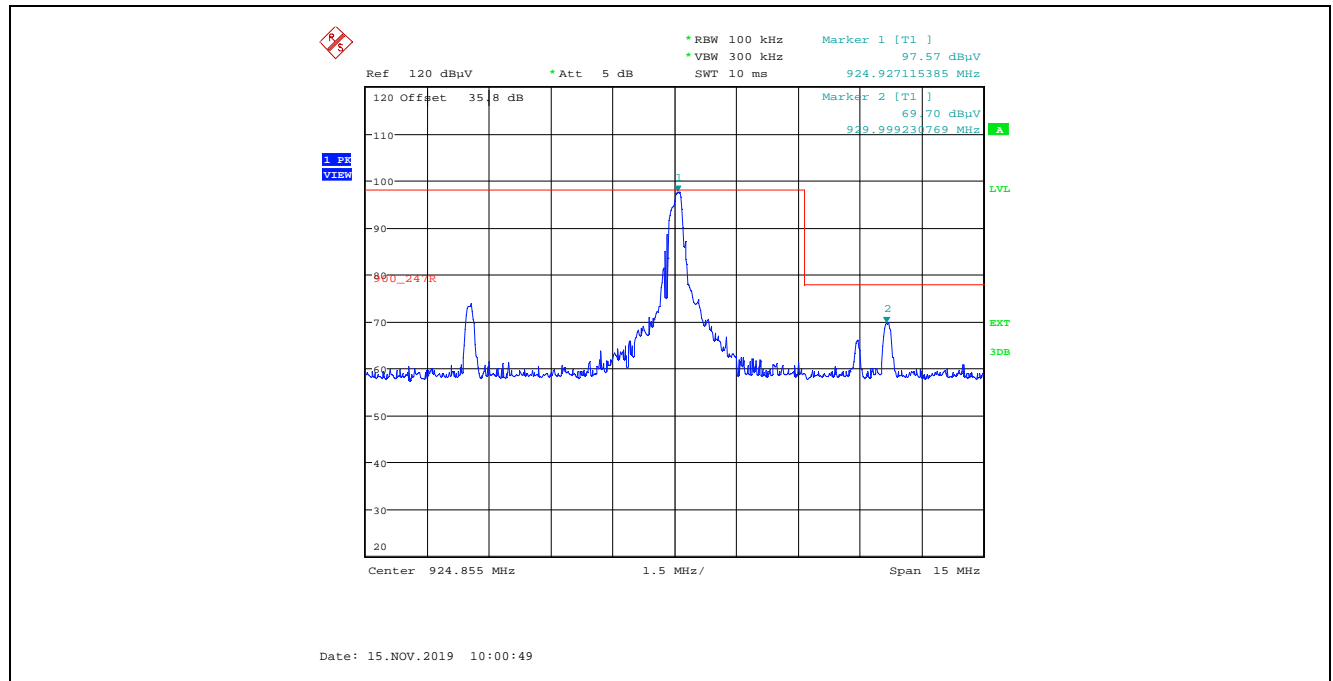
**Plot 5.2.4.2.2.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization  
Single Frequency Mode, Low End of Frequency Band**



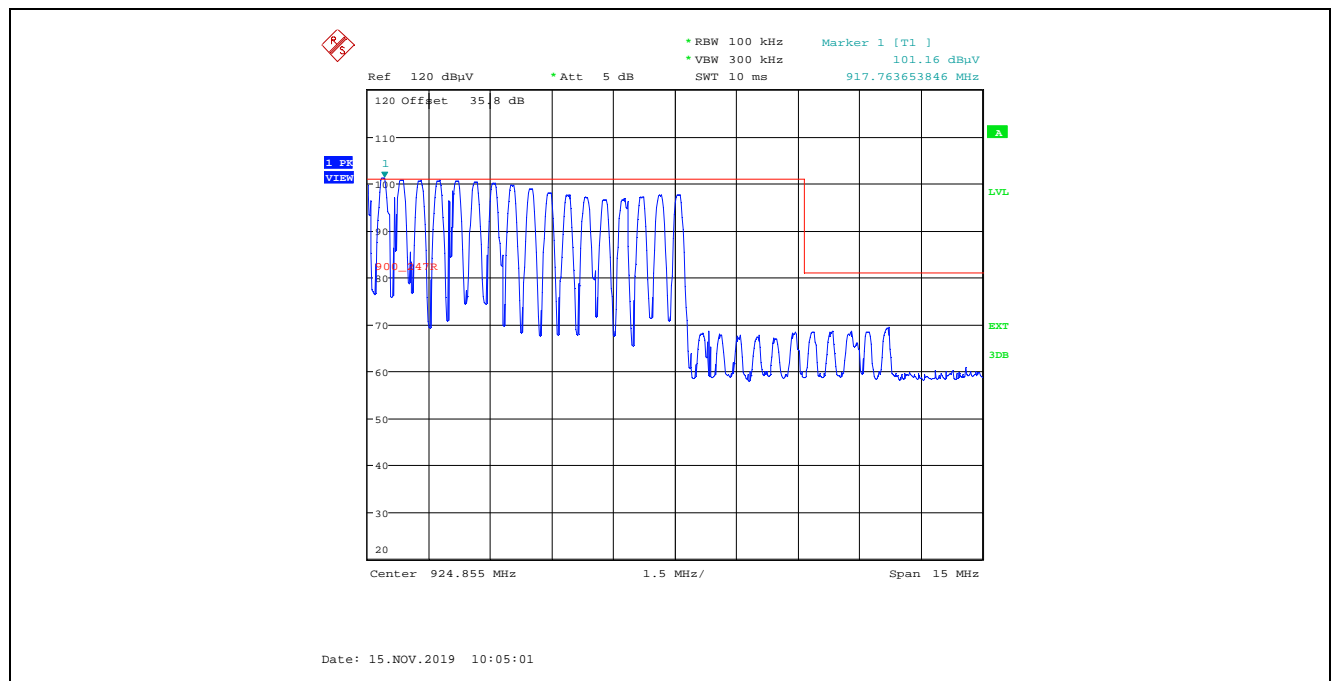
**Plot 5.2.4.2.2.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization  
Pseudorandom Channel Hopping Mode, Low End of Frequency Band**



**Plot 5.2.4.2.2.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization**  
Single Frequency Mode, High End of Frequency Band

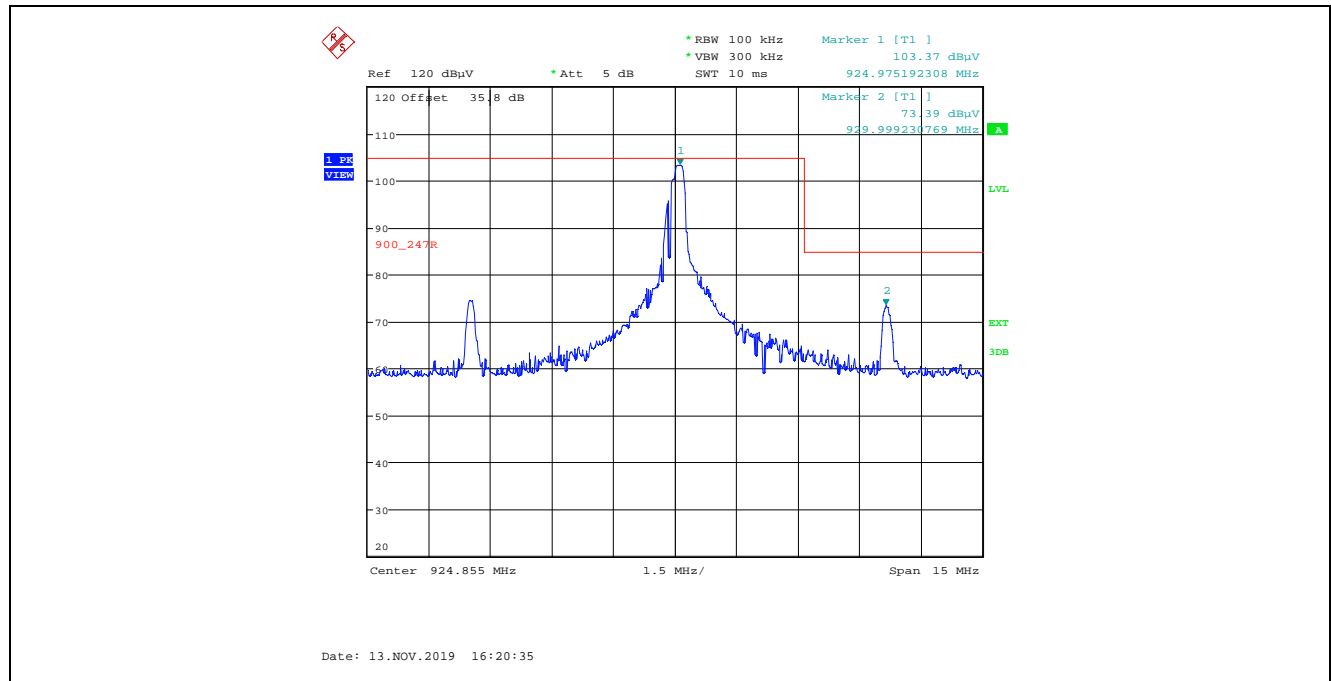


**Plot 5.2.4.2.2.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization**  
Pseudorandom Channel Hopping Mode, High End of Frequency Band

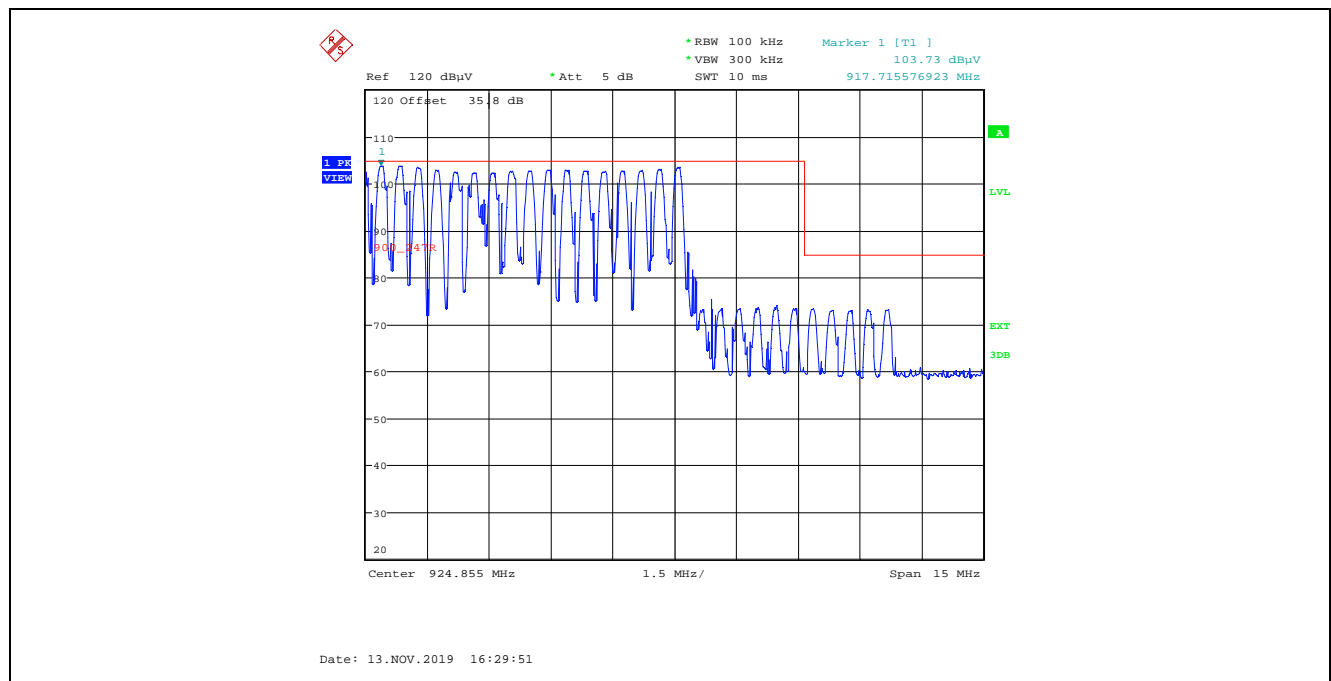




**Plot 5.2.4.2.2.7.** Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization  
Single Frequency Mode, High of Frequency Band



**Plot 5.2.4.2.2.8.** Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization  
Pseudorandom Channel Hopping Mode, High End of Frequency Band



## EXHIBIT 6. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSEK30	100077	20 Hz - 40 GHz	30 Nov 2020
Attenuator	Hewlett Packard	8493C	0465	DC - 26.5 GHz	See Note 1
DC Block	Hewlett Packard	11742A	12460	0.045 - 26.5 GHz	See Note 1
Spectrum Analyzer	Rohde & Schwarz	FSU26	200946	20Hz–26.5 GHz	25 Jul 2020
Log Periodic	ETS-Lindgren	3148	23845	200-2000 MHz	02 Aug 2020
EMI Receiver	Rohde & Schwarz	ESU40	100037	20Hz–40 GHz	15 Mar 2020
RF Amplifier	Com-Power	PAM-0118A	551052	0.5 – 18 GHz	24 Jul 2020
RF Amplifier	Hewlett Packard	84498	3008A00769	1 – 26.5 GHz	15 May 2020
Biconilog	EMCO	3142B	1575	26-2000 MHz	10 May 2020
Horn Antenna	EMCO	3155	6570	1 – 18 GHz	11 Oct 2020
High Pass Filter	K & L	11SH10-1500/T8000	2	Cut off 900 MHz	See Note 1
Band-Reject Filter	Micro-Tronics	BRC50722	001	Cut off 900 MHz	See Note 1
Note 1: Internal Verification/Calibration Check					

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## EXHIBIT 7. MEASUREMENT UNCERTAINTY

The measurement uncertainties stated were calculated in accordance with the requirements of CISPR 16-4-2 @ IEC:2003 and JCGM 100:2008 (GUM 1995) – Guide to the Expression of Uncertainty in Measurement.

Test Description		Expanded Uncertainty, K=2 for 95% Confidence Level (dB)
Conducted Output Power		$\pm 0.62$
Radiated Spurious Emissions	30 MHz – 1 GHz	$\pm 4.20$
	1 – 18 GHz	$\pm 2.70$

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