ENGINEERING TEST REPORT

Eddy H2O Sensor v2.0
Model: Eddy H2O Sensor v2.0 (NA)
FCC ID: 2AKHG-H2OV2

Applicant:

Eddy Home Inc.
1600-25 Sheppard Avenue West
Toronto, Ontario
Canada M2N 6S6

In Accordance With

Federal Communications Commission (FCC)
Part 15, Subpart C, Section 15.247
Digital Modulation Systems (DTS) Operating in 2400 – 2483.5 MHz Band

UltraTech's File No.: 17EDDY003_FCC15C247DTS

This Test report is Issued under the Authority of Tri M. Luu Vice President of Engineering UltraTech Group of Labs Date: August 9, 2017	
Report Prepared by: Dan Huynh Issued Date: August 9, 2017	Tested by: Hung Trinh Test Dates: December 8-9, 2016 August 8, 2017

- *The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.*
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91038 | 1309 | 46390-2049 | AT-1945 | SL2-IN-E-1119R | Korea KCC-RRA CA2049

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EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	FCC Part 15, Subpart C, Section 15.247
Title:	Code of Federal Regulations (CFR), Title 47 – Telecommunication, Part 15 – Radio Frequency Devices
Purpose of Test:	Equipment Certification
Test Procedures:	▪ ANSI C63.4 ▪ ANSI C63.10 ▪ FCC KDB Publication No. 558074 D01 DTS Meas Guidance v03r05
Environmental Classification:	[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	2016	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
CISPR 22 & EN 55022	2008-09, Edition 6.0 2006	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
CISPR 16-1-1 +A1 +A2	2006 2006 2007	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-1: Measuring Apparatus
CISPR 16-1-2 +A1 +A2	2003 2004 2006	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-2: Conducted disturbances
FCC, KDB Publication No. 558074 D01 DTS Meas Guidance v03r05	2016	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

APPLICANT	
Name:	Eddy Home Inc.
Address:	1600-25 Sheppard Avenue West Toronto, Ontario Canada M2N 6S6
Contact Person:	Mr. Joe Deu-Ngoc Phone #: 647-955-3061 Fax #: N/A Email Address: jdeungoc@eddyhome.com

MANUFACTURER	
Name:	Eddy Home Inc.
Address:	1919 Leslie Street Toronto, Ontario Canada M3B 2M3
Contact Person:	Mr. Joe Deu-Ngoc Phone #: 647-955-3061 Fax #: N/A Email Address: jdeungoc@eddyhome.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.

Brand Name:	Eddy Home Inc.
Product Name:	Eddy H2O Sensor v2.0
Model:	Eddy H2O Sensor v2.0 (NA)
Serial Number:	Test Sample
Type of Equipment:	Digital Transmission System (DTS)
Input Power Supply Type:	3V LiMnO2 Battery
Primary User Functions of EUT:	Leak detection, temperature measurement, humidity measurement, wireless event reporting.

2.3. EUT'S TECHNICAL SPECIFICATIONS

Transmitter	
Equipment Type:	Mobile
Intended Operating Environment:	▪ Commercial, industrial or business environment ▪ Residential environment
Power Supply Requirement:	3 V LiMnO2 Battery
RF Output Power Rating:	18.35 dBm Average Power
Operating Frequency Range:	903.0 - 927.5 MHz
RF Output Impedance:	50 Ω
Duty Cycle:	Continuous
Modulation Type:	LoRa™ (CSS)
Antenna Connector Types:	Spring contact

2.4. ASSOCIATED ANTENNA DESCRIPTIONS

Manufacturer:	Eddy Home Inc.
Type:	PIFA
Model:	ANT-100102-002
Frequency Range:	863-928 MHz
Gain (dBi):	-5.0

2.5. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
No I/O ports.				

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:

None.

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 ^{o}C
Humidity:	45 to 58%
Pressure:	102 kPa
Power Input Source:	3 VDC

3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TESTS

Operating Modes:	The transmitter was operated in a continuous transmission mode with the carrier modulated as specified in the Test Data.
Special Test Software:	Test software provided by the Applicant to operate the EUT at each channel frequency continuously and in the range of typical modes of operation.
Special Hardware Used:	N/A
Transmitter Test Antenna:	The EUT is tested with the antenna fitted in a manner typical of normal intended use, antenna is enclosed in the chassis of the EUT.

Transmitter Test Signals	
Frequency Band(s):	903.0 - 927.5 MHz
Frequency(ies) Tested:	903.0 MHz, 915.0 MHz and 927.5 MHz
RF Power Output: (measured maximum output power at antenna terminals)	18.35 dBm (68.39 mW)
Normal Test Modulation:	LoRa™ (CSS)
Modulating Signal Source:	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)(2)	6 dB Bandwidth	Yes
15.247(b)(3)	Maximum Conducted Output Power - DTS	Yes
15.247(d)	Band-Edge and RF Conducted Spurious Emissions at the Transmitter Antenna Terminal	N/A
15.247(d), 15.209 & 15.205	Transmitter Spurious Radiated and Band-Edge Emissions	Yes
15.247(e)	Power Spectral Density	Yes
15.247(i), 1.1307, 1.1310, 2.1091	RF Exposure	Yes

4.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None.

EXHIBIT 5. TEST DATA

5.1. OCCUPIED BANDWIDTH [§ 15.247(a)(2)]

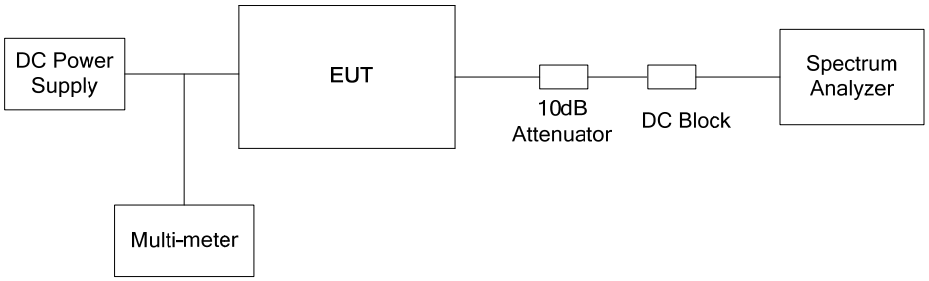
5.1.1. Limit(s)

The minimum 6 dB bandwidth shall be at least 500 kHz.

5.1.2. Method of Measurements

KDB 558074 D01 DTS Meas Guidance V03r05, Section 8.2 Option 2

5.1.3. Test Arrangement

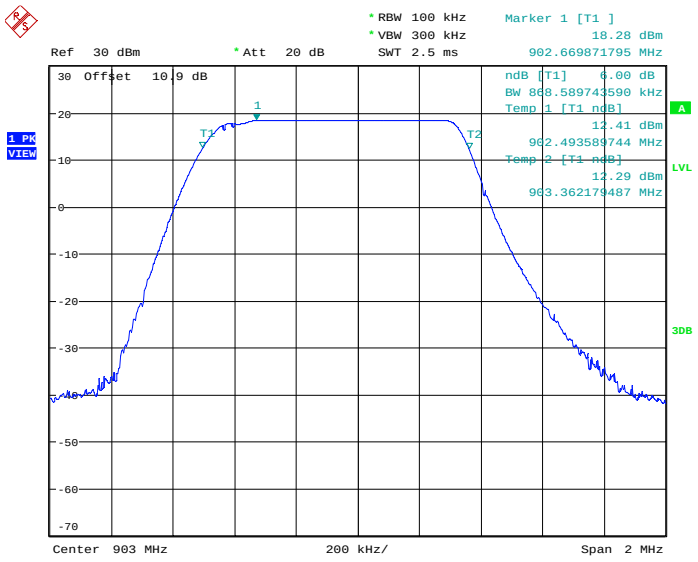


5.1.4. Test Data

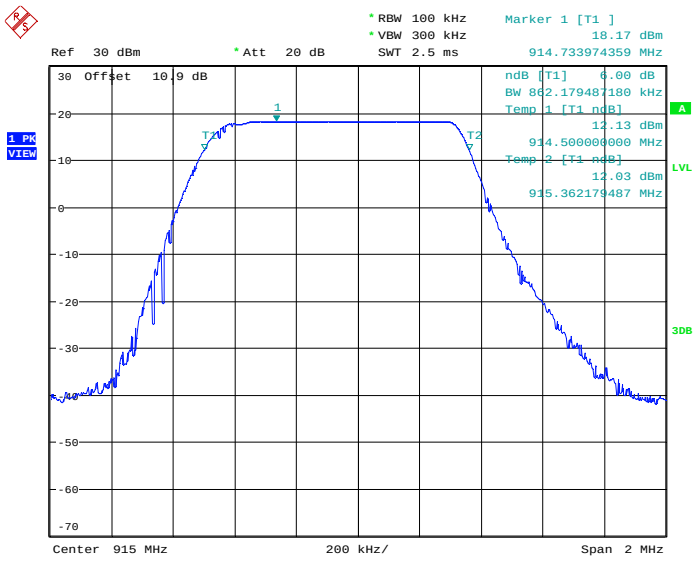
Remark: The following test results represent the worst-case test configurations.

Modulation	Data Rate (bps)	Frequency (MHz)	6dB BW (kHz)	Min. Limit (kHz)
LoRa (CSS)	980	903.0	868.590	500
		915.0	862.179	500
		927.5	858.974	500
	7000	903.0	858.974	500
		915.0	849.359	500
		927.5	839.744	500
	21900	903.0	826.923	500
		915.0	823.718	500
		927.5	817.308	500

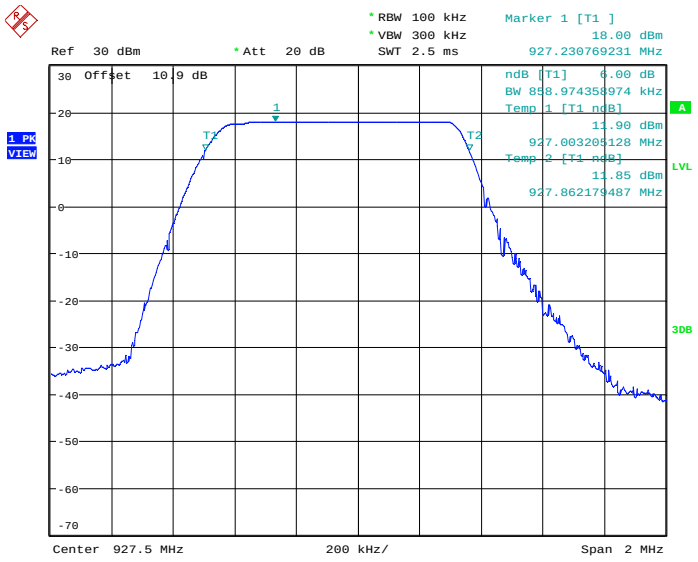
Plot 5.1.4.1. 6 dB Bandwidth, 903.0 MHz, 980 bps,



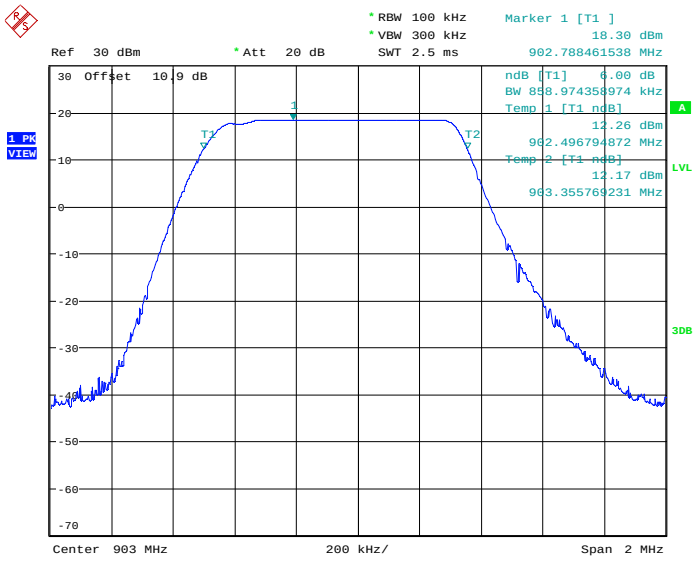
Plot 5.1.4.2. 6 dB Bandwidth, 915.0 MHz, 980 bps



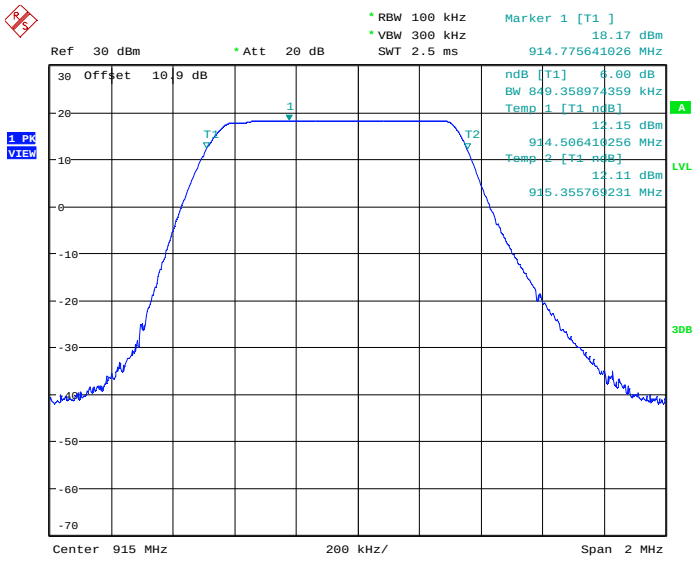
Plot 5.1.4.3. 6 dB Bandwidth, 927.5 MHz, 980 bps



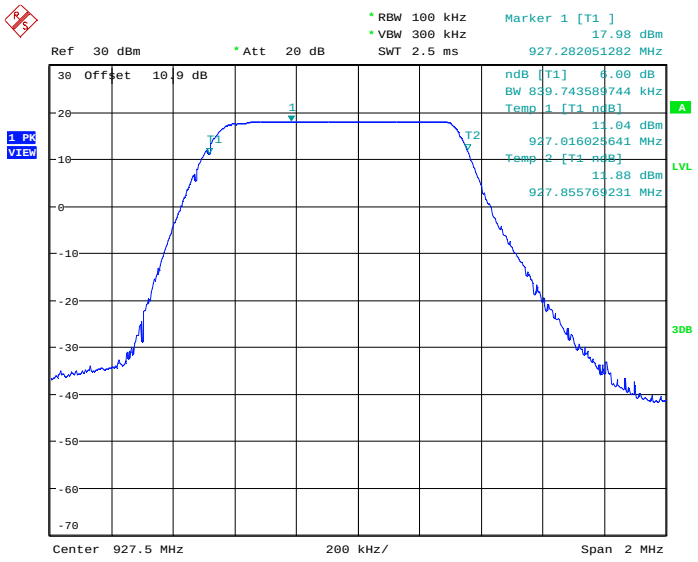
Plot 5.1.4.4. 6 dB Bandwidth, 903.0 MHz, 7000 bps



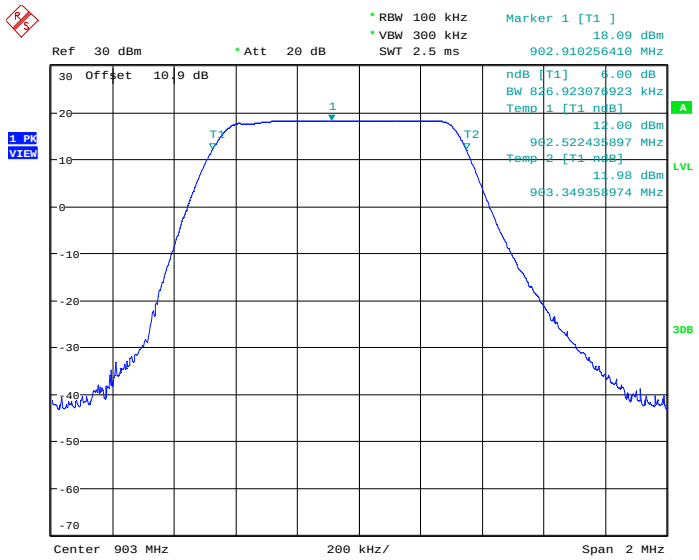
Plot 5.1.4.5. 6 dB Bandwidth, 915.0 MHz, 7000 bps



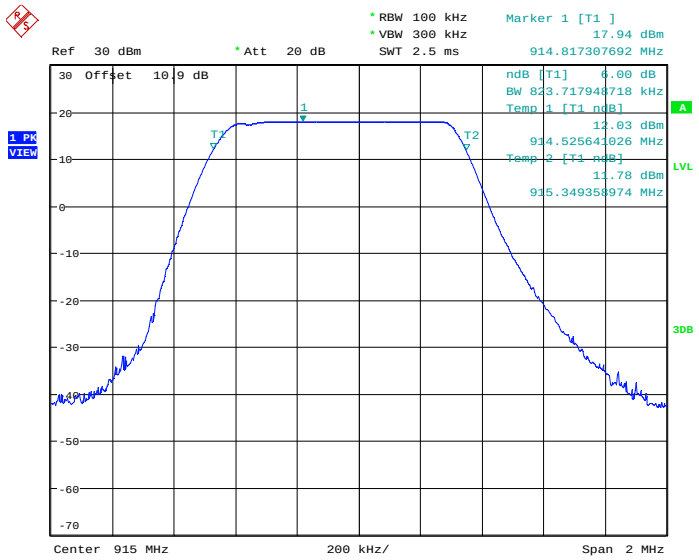
Plot 5.1.4.6. 6 dB Bandwidth, 927.5 MHz, 7000 bps



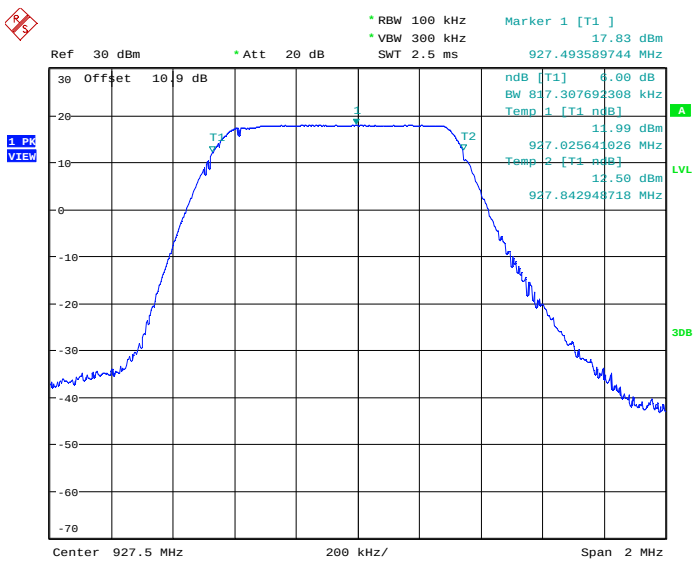
Plot 5.1.4.7. 6 dB Bandwidth, 903.0 MHz, 21900 bps



Plot 5.1.4.8. 6 dB Bandwidth, 915.0 MHz, 21900 bps



Plot 5.1.4.9. 6 dB Bandwidth, 927.5 MHz, 21900 bps



5.2. MAXIMUM CONDUCTED OUTPUT POWER - DTS [§ 15.247(b)(3)]

5.2.1. Limit(s)

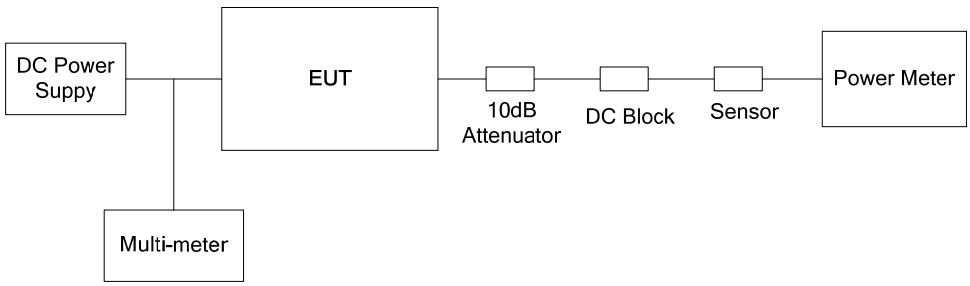
§ 15.247(b)(3): For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the *maximum conducted output power* is the highest total transmit power occurring in any mode.

§ 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.

5.2.2. Method of Measurements & Test Arrangement

KDB 558074 D01 DTS Meas Guidance v03r05, Section 9.2.3.1 method AVGPM

5.2.3. Test Arrangement



5.2.4. Test Data

Remark: The following test results represent the worst-case test configurations.

Modulation	Data Rate (bps)	Frequency (MHz)	Average Conducted Output Power (dBm)	Limit (dBm)
LoRa (CSS)	980	903.0	18.35	30
		915.0	18.24	30
		927.5	18.05	30
	7000	903.0	18.34	30
		915.0	18.24	30
		927.5	18.05	30
	21900	903.0	18.34	30
		915.0	18.23	30
		927.5	18.05	30

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

5.3.1. Limit(s)

§ 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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 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
[1] 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	([2])
13.36–13.41.			

[1] Until February 1, 1999, this restricted band shall be 0.490–0.510 MHz.
[2] Above 38.6

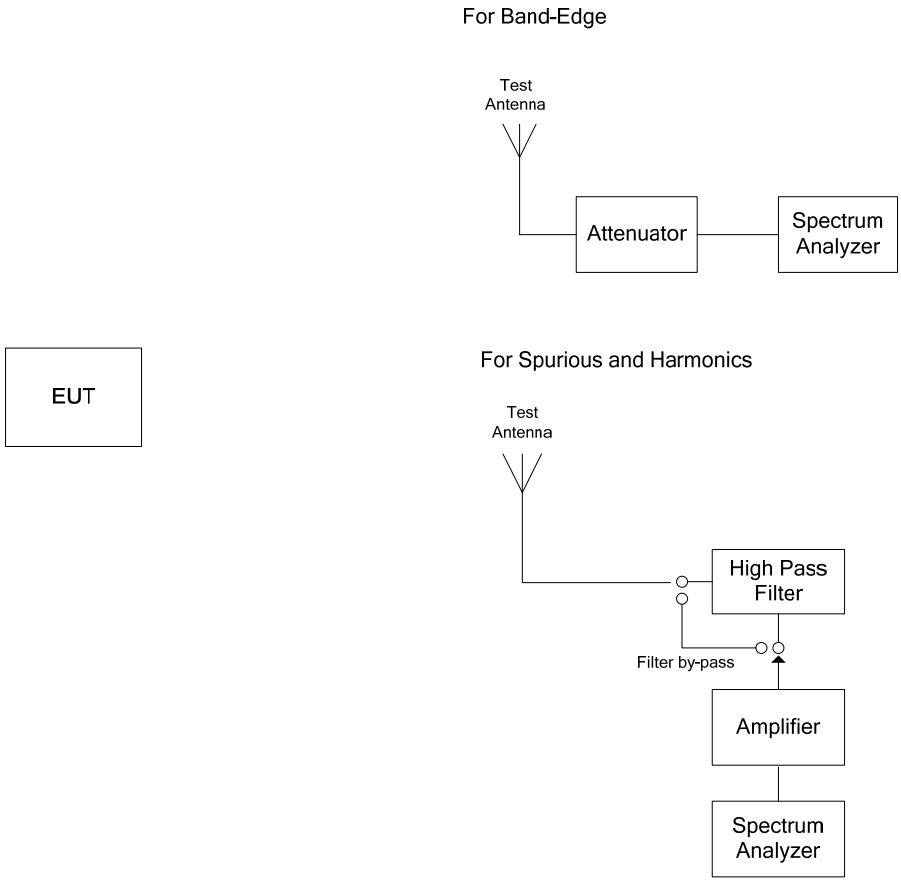
Section 15.209(a) - Field Strength Limits within Restricted Frequency Bands

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

5.3.2. Method of Measurements

- ANSI C63.10-2013
- KDB 558074 D01 DTS Meas Guidance V03r05, Section 13 Band-Edge measurements

5.3.3. Test Arrangement



5.3.4. 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.
- Exploratory tests performed to determine worst-case test configurations, the following test results with the EUT operating at 980 bps data rate, represent the worst-case.

5.3.4.1. Spurious Radiated Emissions

Fundamental Frequency:	903.0 MHz						
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**
903.0	105.04	--	V	--	--	--	--
903.0	104.16	--	H	--	--	--	--
3612.0	47.76	37.23	V	54.0	75.0	-16.8	Pass*
3612.0	48.26	37.36	H	54.0	75.0	-16.6	Pass*
5418.0	49.51	35.22	V	54.0	75.0	-18.8	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:	915.0 MHz						
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**
915.0	105.47	--	V	--	--	--	--
915.0	104.92	--	H	--	--	--	--
3660.0	46.24	38.84	H	54.0	75.5	-15.2	Pass*
4575.0	46.47	33.47	V	54.0	75.5	-20.5	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

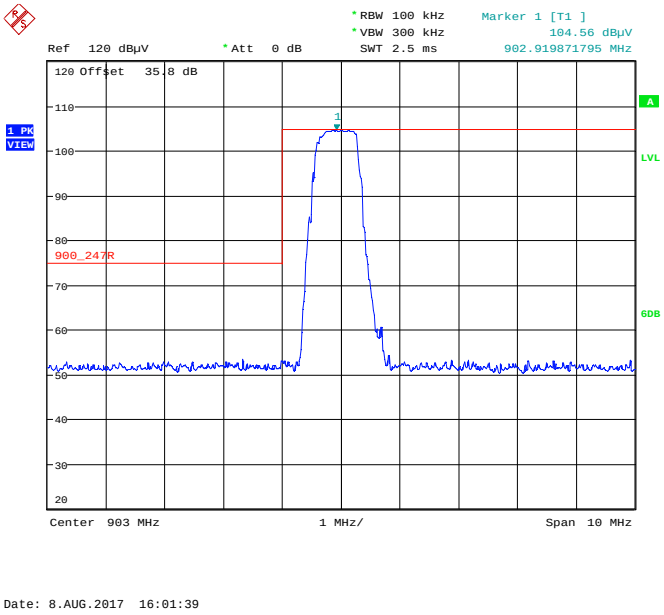
*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

Fundamental Frequency:	927.5 MHz						
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**
927.5	106.71	--	V	--	--	--	--
927.5	105.10	--	H	--	--	--	--
3710.0	49.19	40.20	V	54.0	76.7	-13.8	Pass*
3710.0	49.79	40.50	H	54.0	76.7	-13.5	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

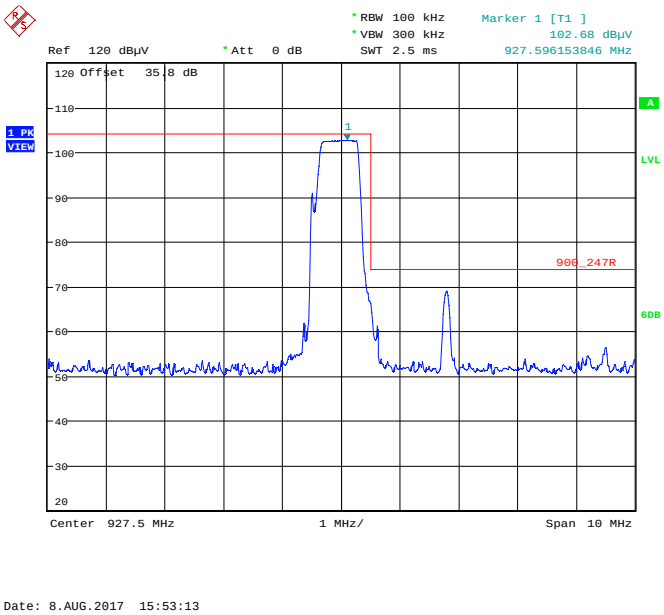
*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

5.3.4.2. Band –Edge RF Radiated Emissions

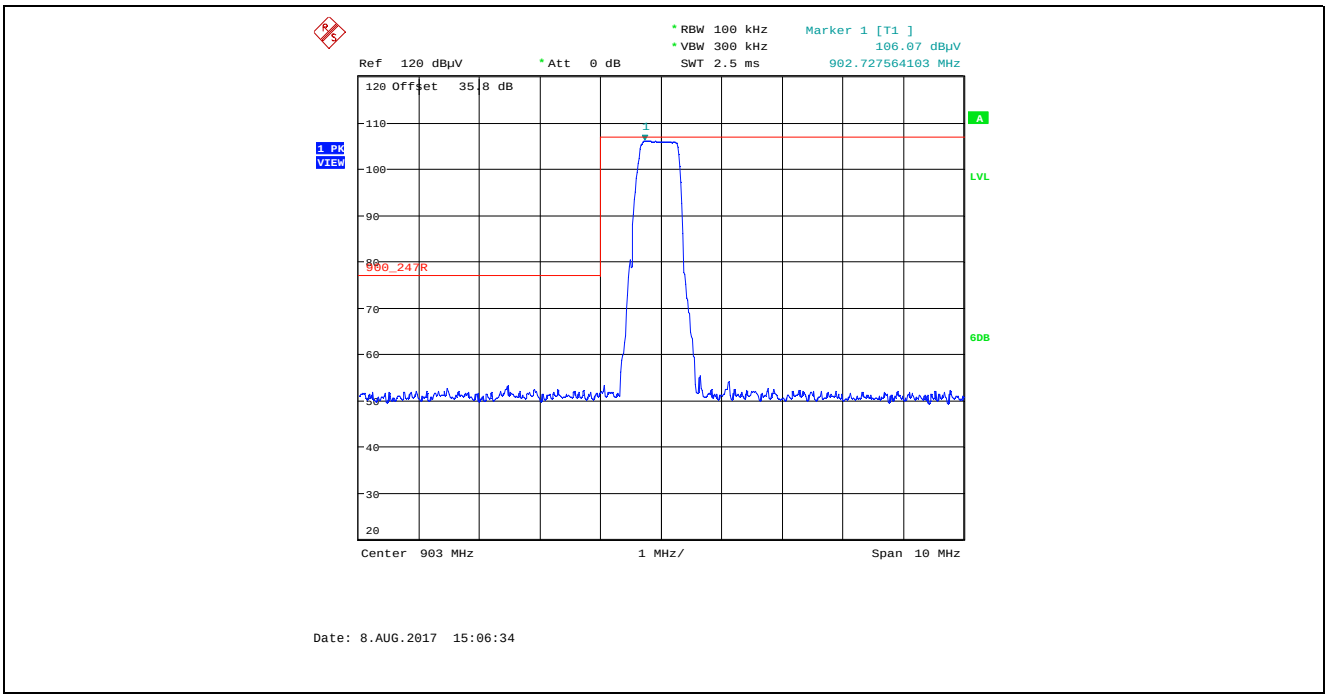
Plot 5.3.4.2.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, 980 bps Data Rate
Low End of Frequency Band



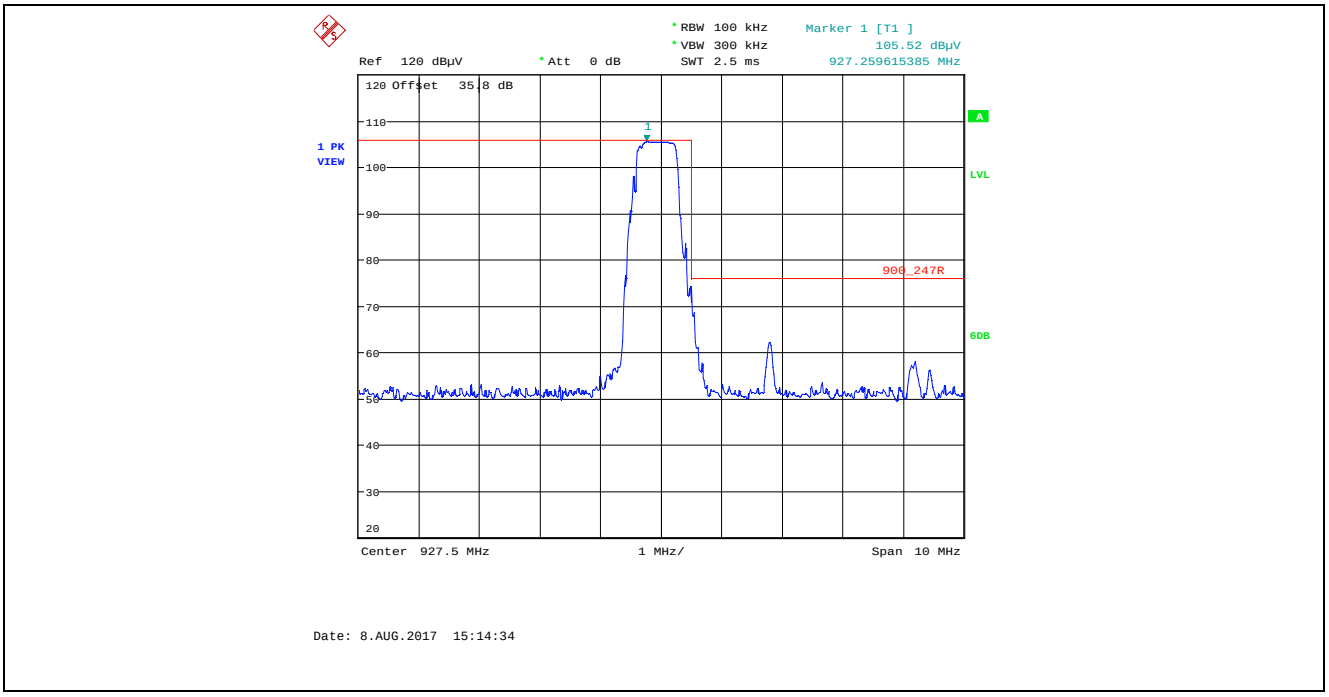
Plot 5.3.4.2.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, 980 bps Data Rate
High End of Frequency Band



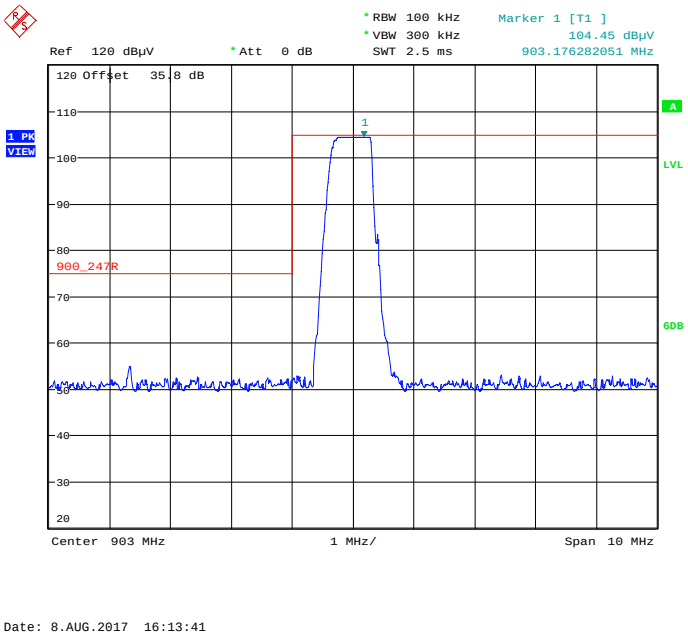
Plot 5.3.4.2.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, 980 bps Data Rate
Low End of Frequency Band



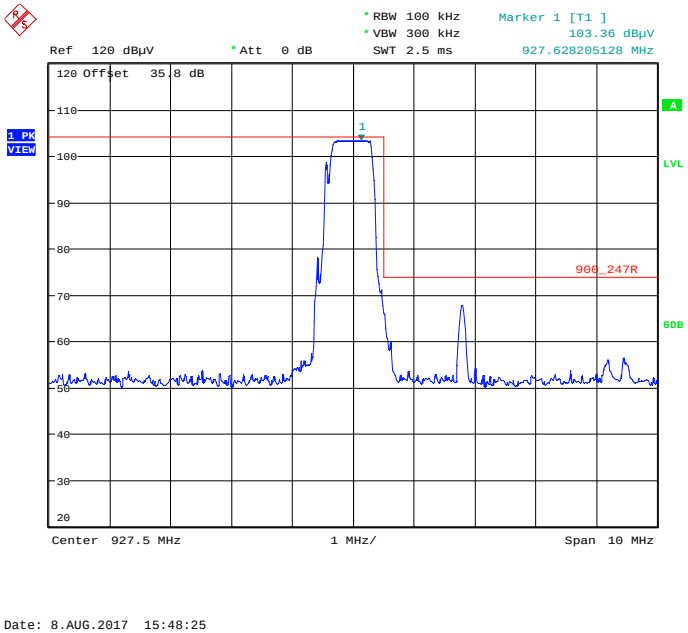
Plot 5.3.4.2.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, 980 bps Data Rate
High of Frequency Band



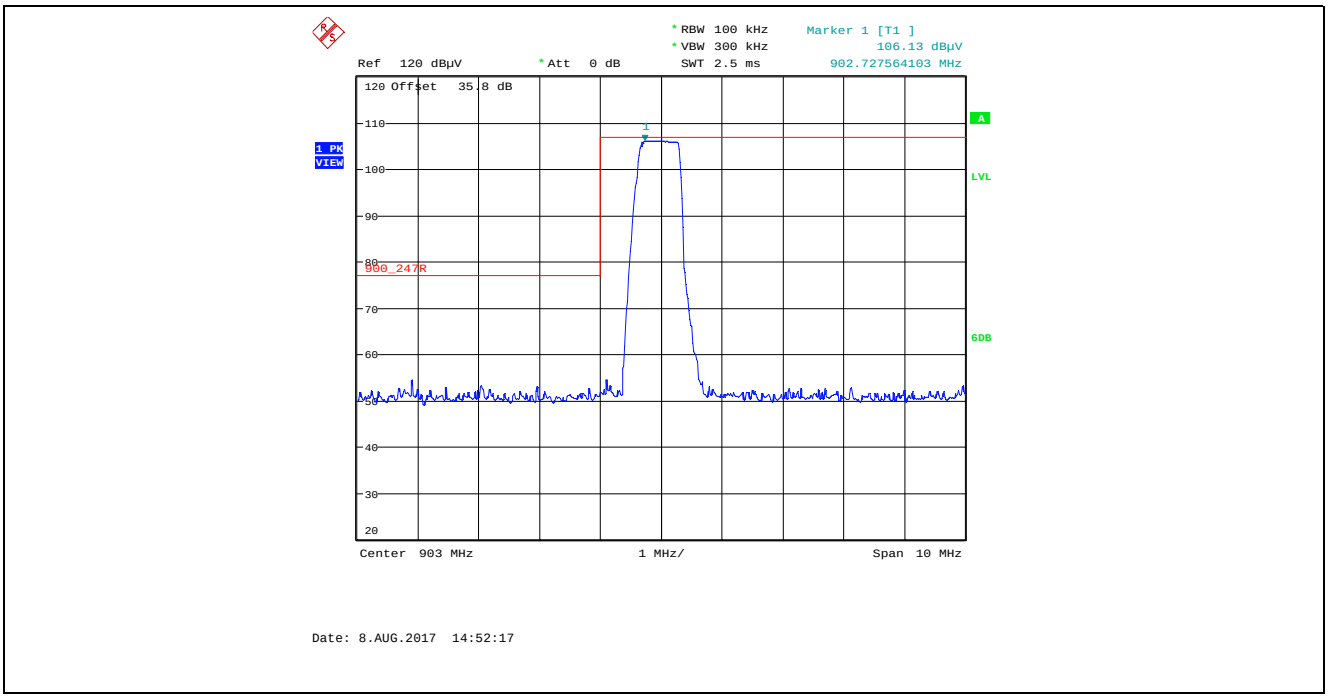
Plot 5.3.4.2.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, 7000 bps Data Rate
Low End of Frequency Band



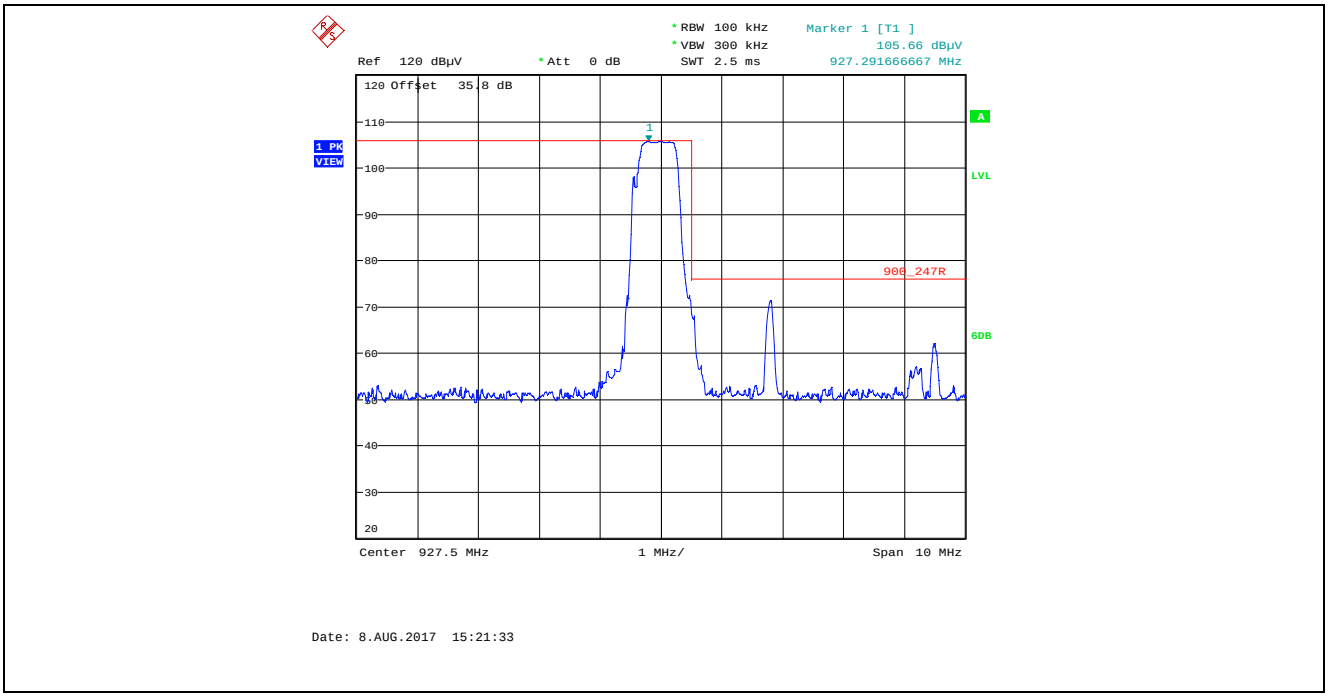
Plot 5.3.4.2.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, 7000 bps Data Rate
High End of Frequency Band



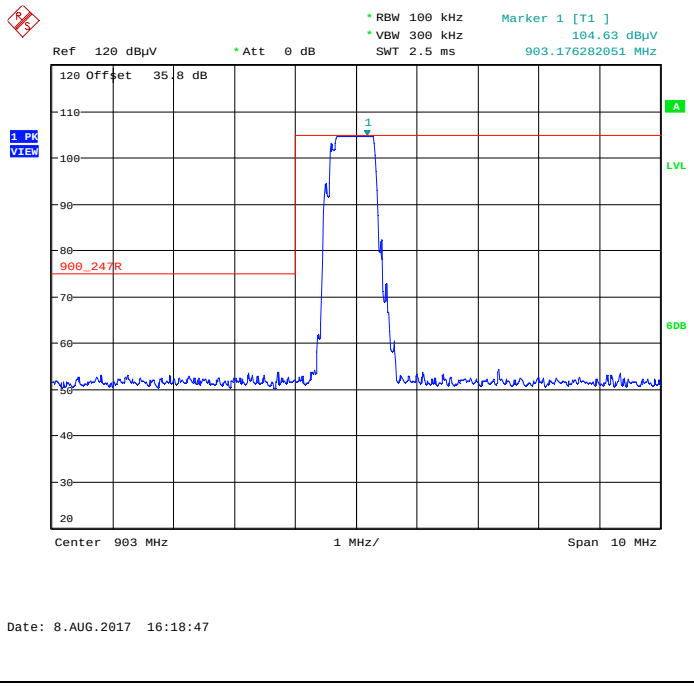
Plot 5.3.4.2.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, 7000 bps Data Rate
Low End of Frequency Band



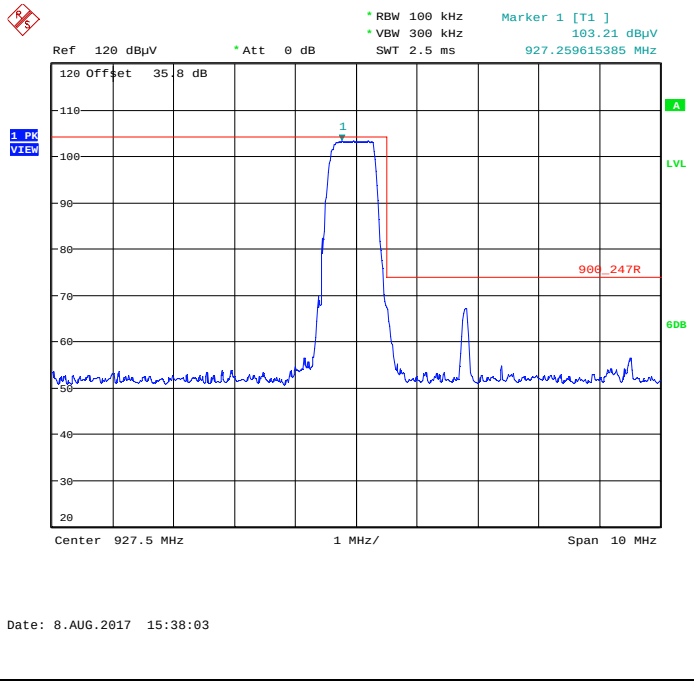
Plot 5.3.4.2.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, 7000 bps Data Rate
High of Frequency Band



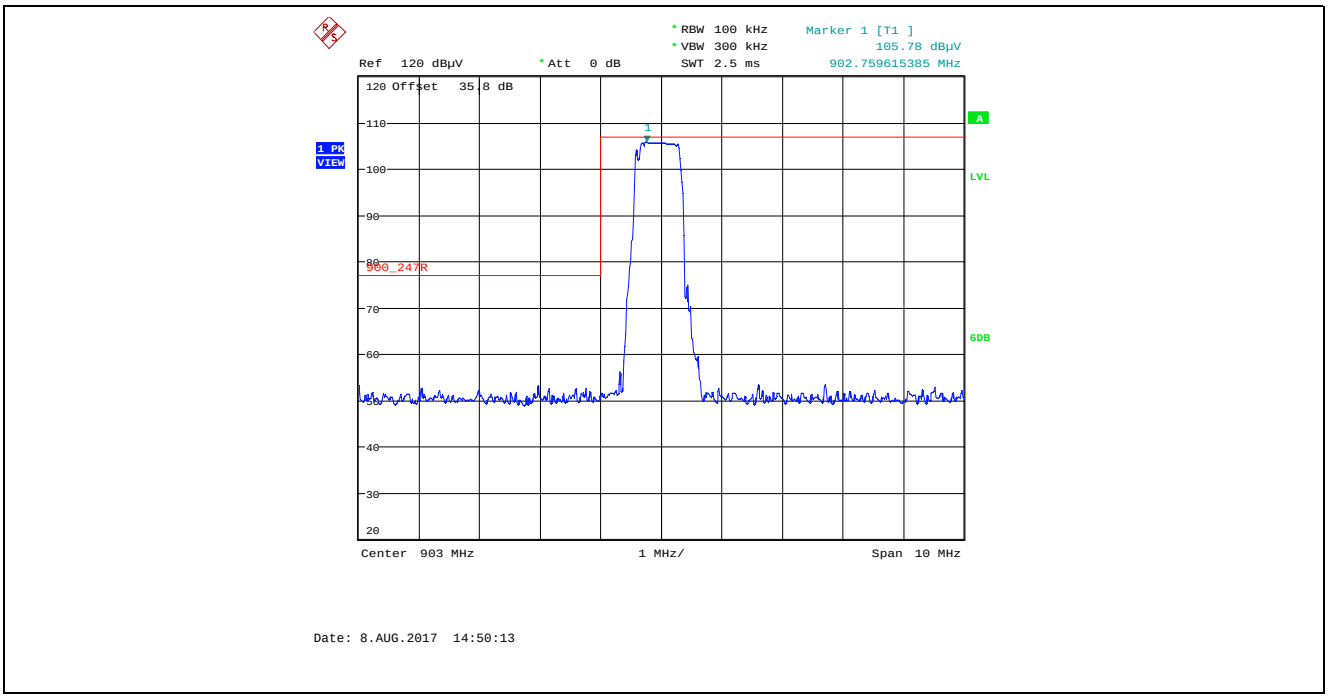
Plot 5.3.4.2.9. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, 21900 bps Data Rate
Low End of Frequency Band



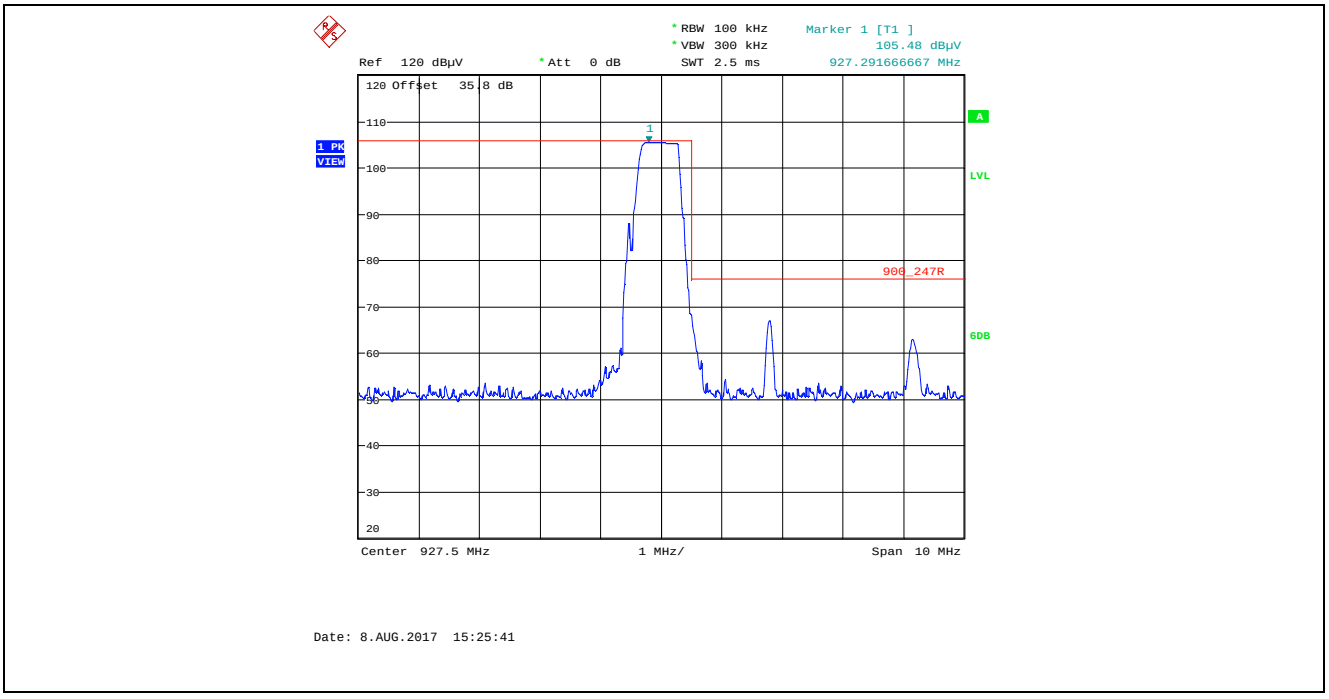
Plot 5.3.4.2.10. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization, 21900 bps Data Rate
High End of Frequency Band



Plot 5.3.4.2.11. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, 21900 bps Data Rate
Low End of Frequency Band



Plot 5.3.4.2.12. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization, 21900 bps Data Rate
High of Frequency Band



5.4. POWER SPECTRAL DENSITY [§ 15.247(e)]

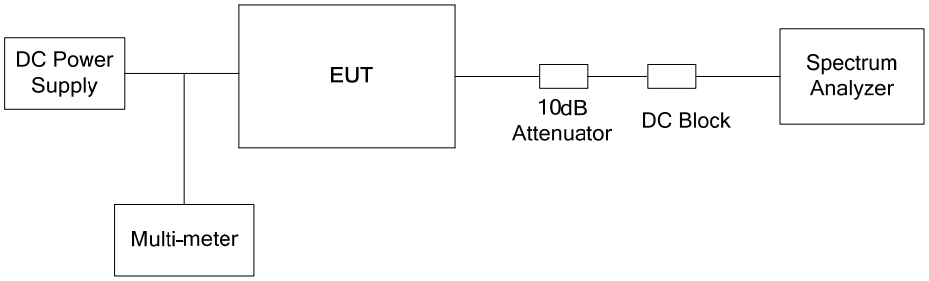
5.4.1. Limit(s)

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.4.2. Method of Measurements

KDB 558074 D01 DTS Meas Guidance v03r05, Section 10.3 Method AVGPSD-1

5.4.3. Test Arrangement

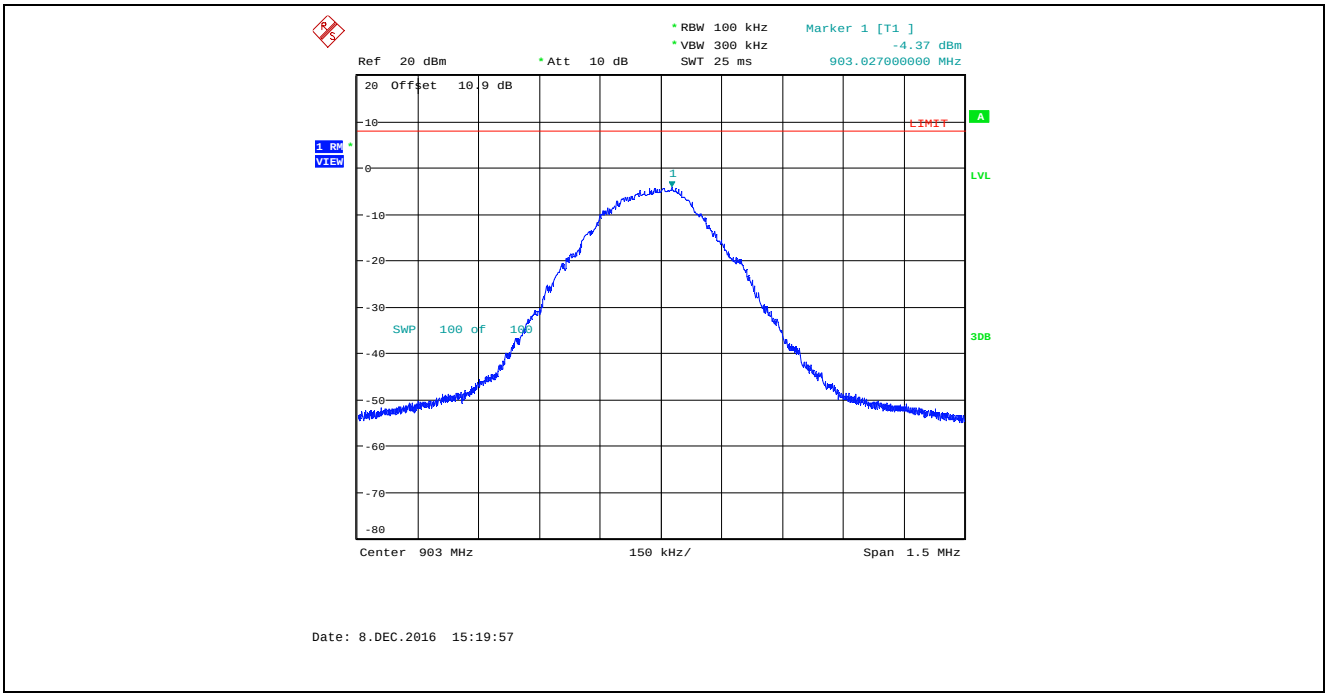


5.4.4. Test Data

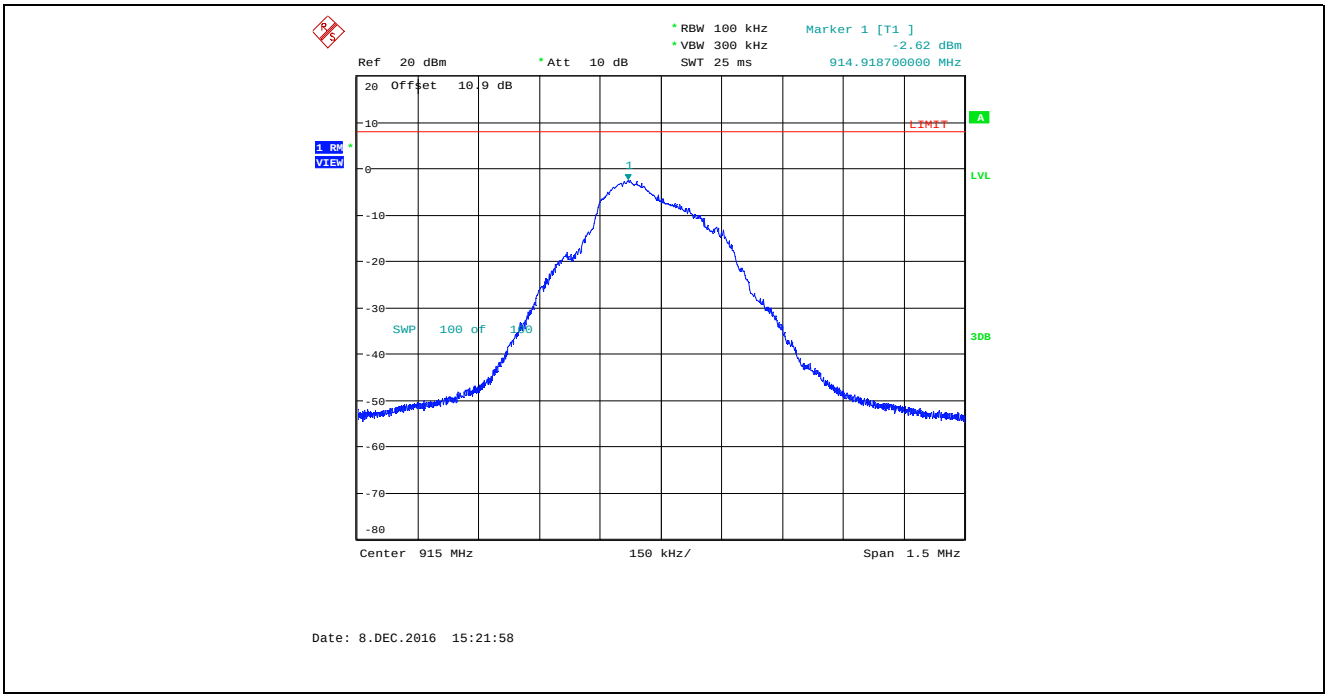
Remark: The following test results represent the worst-case test configurations.

Modulation	Data Rate (bps)	Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dBm)
LoRa (CSS)	980	903.0	-4.37	8	-12.37
		915.0	-2.62	8	-10.62
		927.5	-4.54	8	-12.54
	7000	903.0	-1.15	8	-9.15
		915.0	-1.74	8	-9.74
		927.5	-1.57	8	-9.57
	21900	903.0	1.49	8	-6.51
		915.0	0.72	8	-7.28
		927.5	0.12	8	-7.88

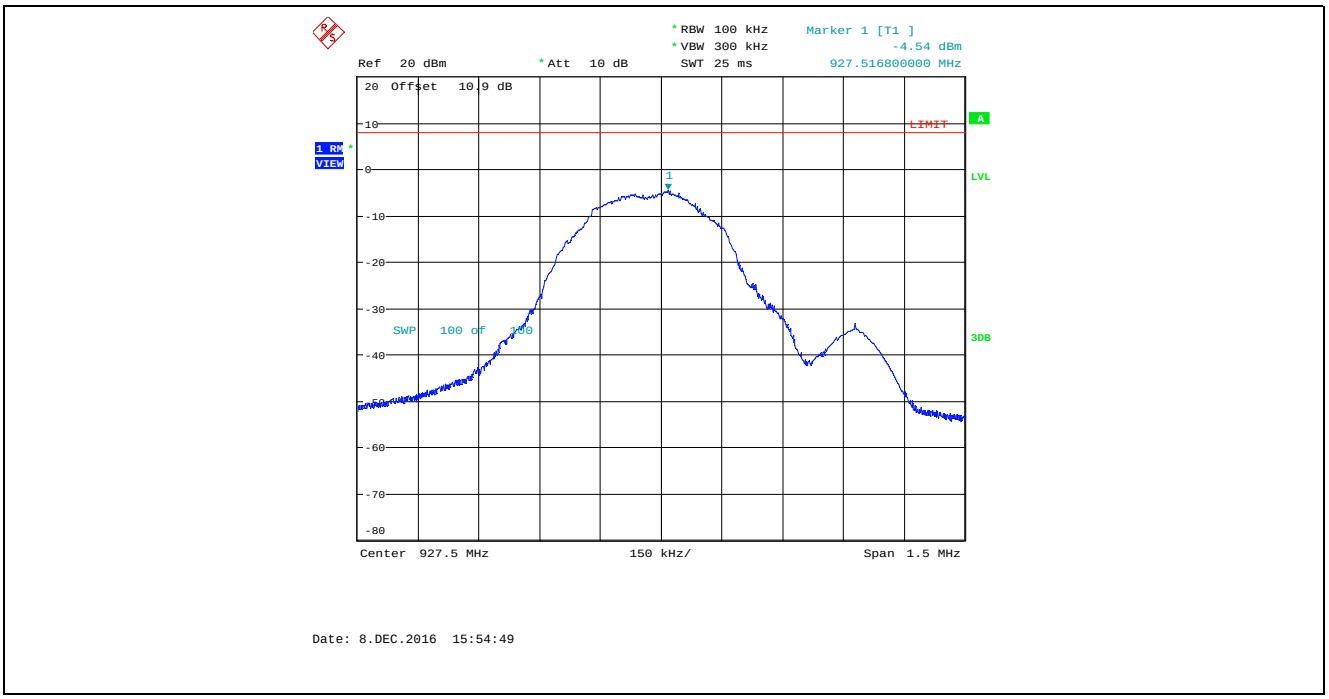
Plot 5.4.4.1. Power Spectral Density, 903.0 MHz, 980 bps
Detector RMS, Sweep points 5000, Trace averaging with 100 traces



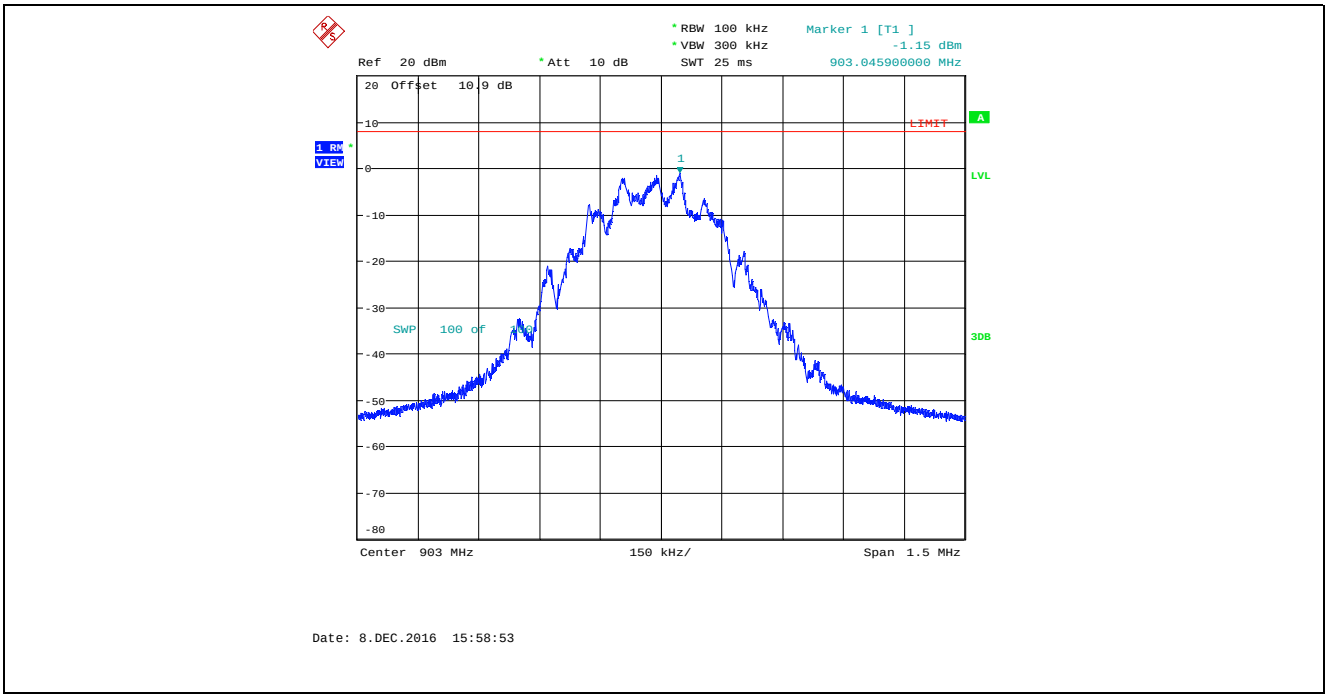
Plot 5.4.4.2. Power Spectral Density, 915.0 MHz, 980 bps
Detector RMS, Sweep points 5000, Trace averaging with 100 traces



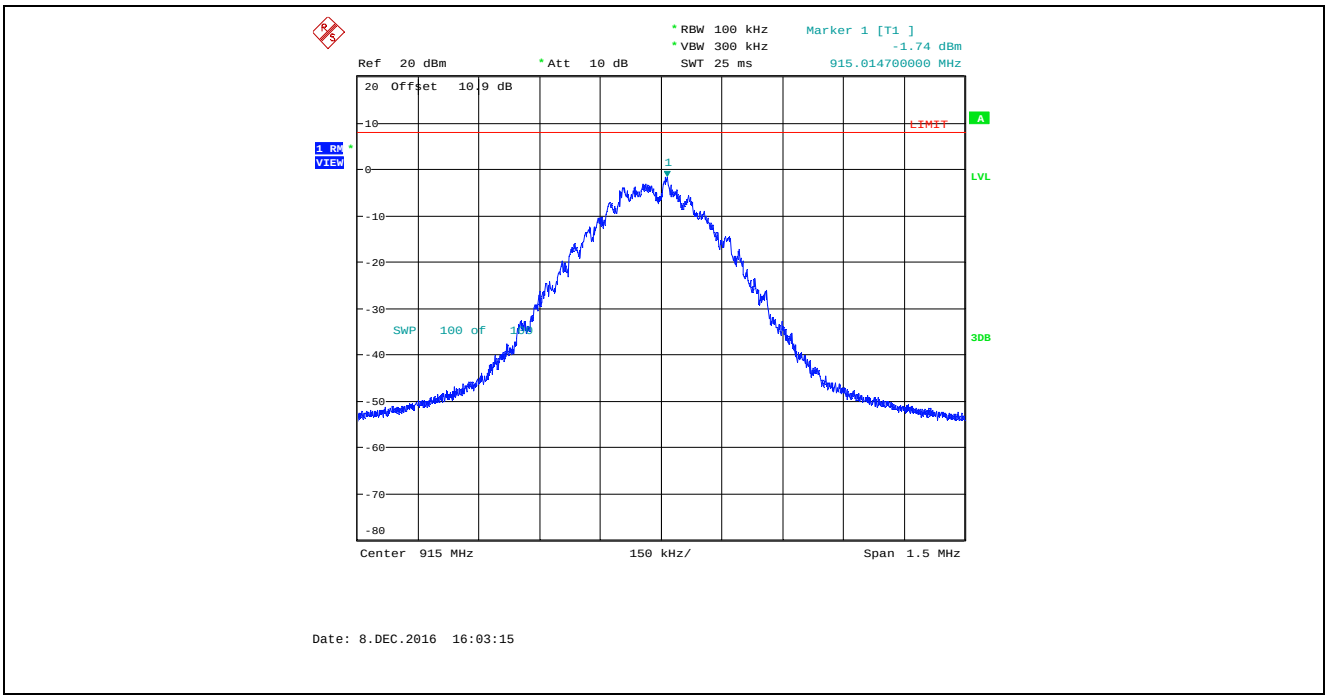
Plot 5.4.4.3. Power Spectral Density, 927.5 MHz, 980 bps
Detector RMS, Sweep points 5000, Trace averaging with 100 traces



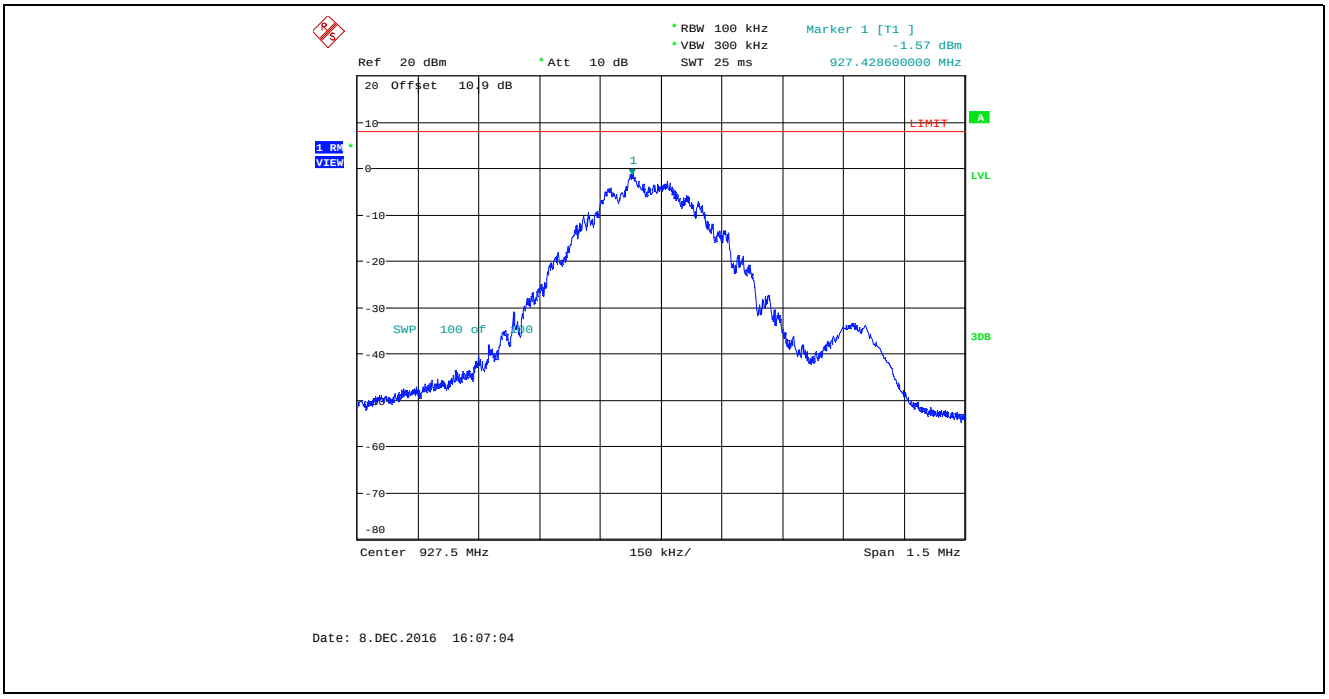
Plot 5.4.4.4. Power Spectral Density, 903.0 MHz, 7000 bps
Detector RMS, Sweep points 5000, Trace averaging with 100 traces



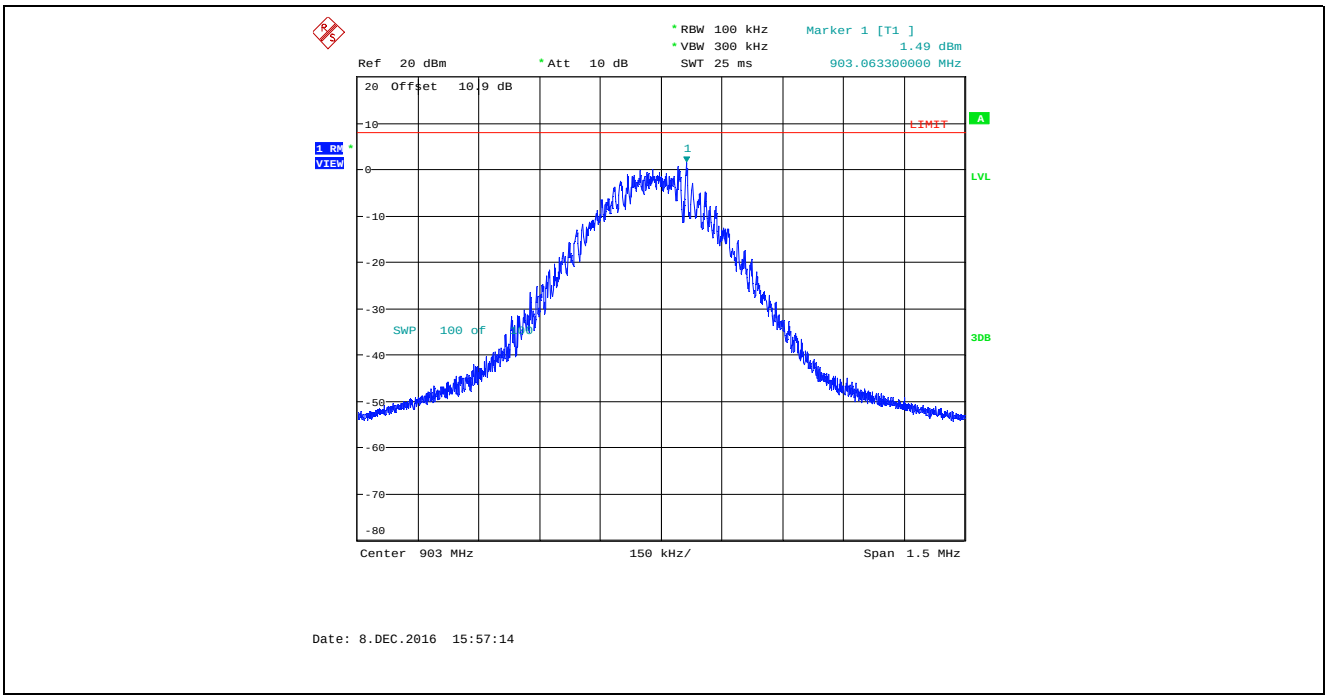
Plot 5.4.4.5. Power Spectral Density, 915.0 MHz, 7000 bps
Detector RMS, Sweep points 5000, Trace averaging with 100 traces



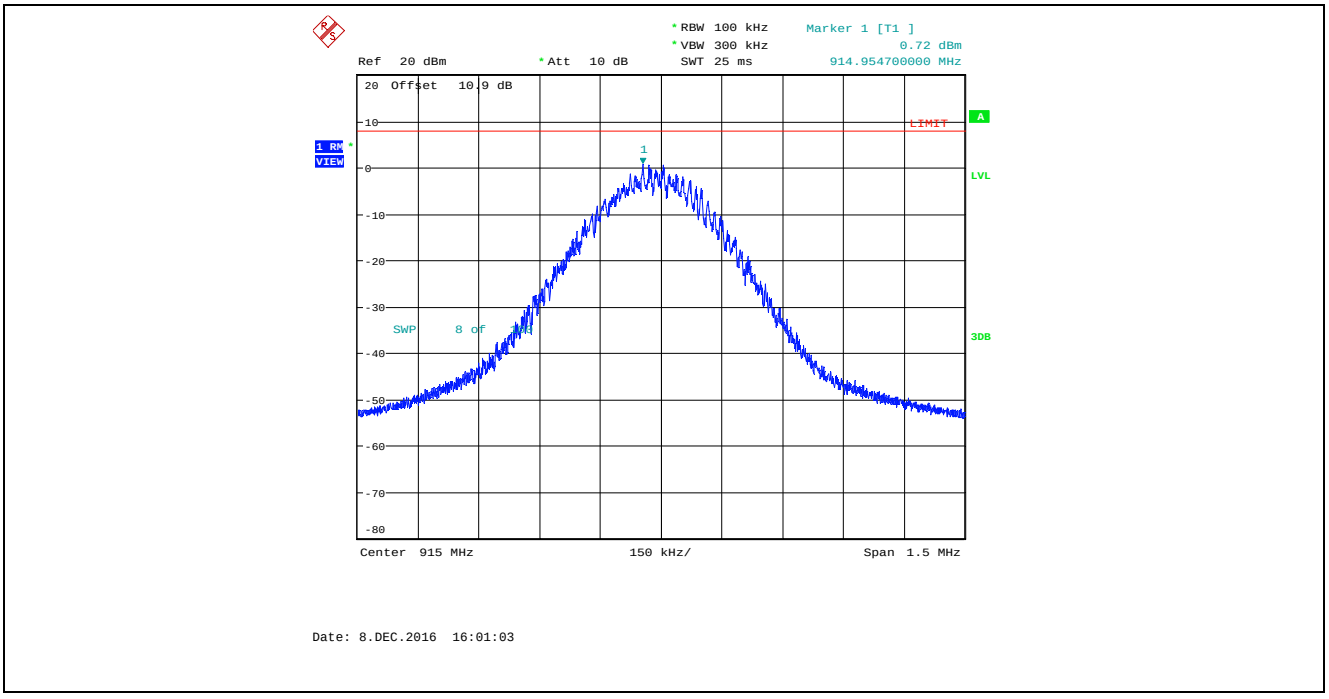
Plot 5.4.4.6. Power Spectral Density, 927.5 MHz, 7000 bps
Detector RMS, Sweep points 5000, Trace averaging with 100 traces



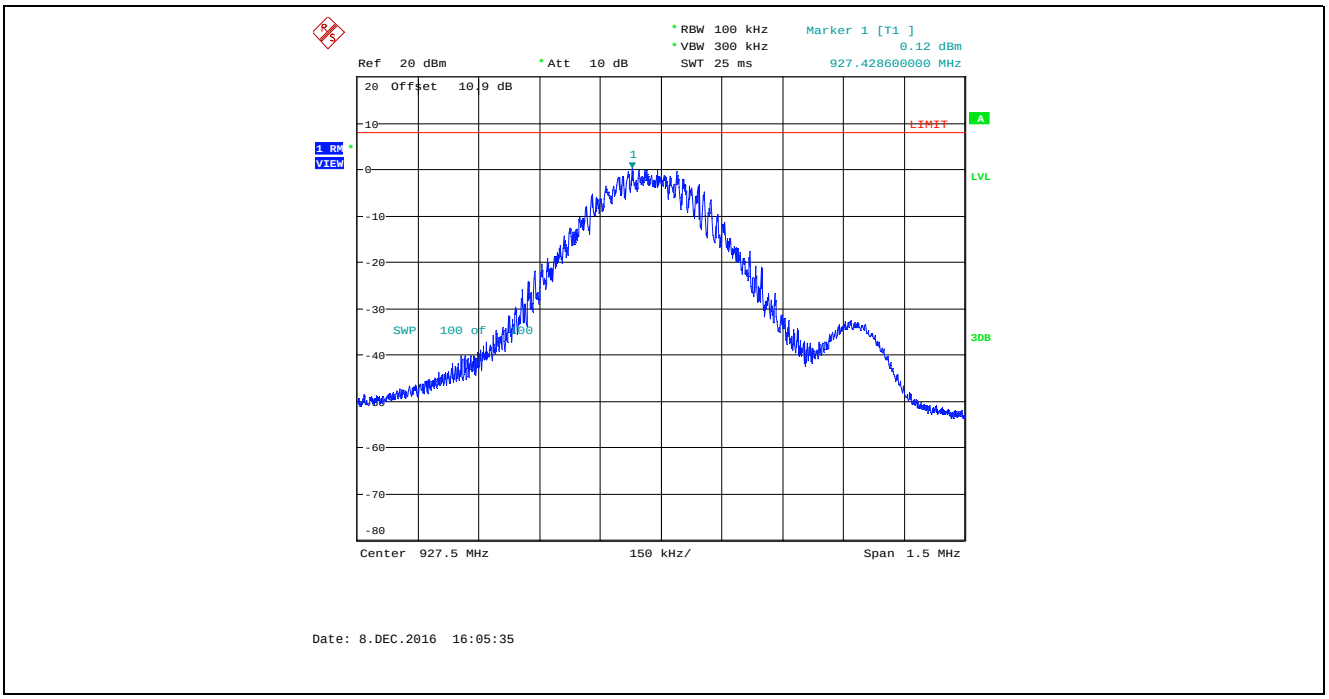
Plot 5.4.4.7. Power Spectral Density, 903.0 MHz, 21900 bps
Detector RMS, Sweep points 5000, Trace averaging with 100 traces



Plot 5.4.4.8. Power Spectral Density, 915.0 MHz, 21900 bps
Detector RMS, Sweep points 5000, Trace averaging with 100 traces



Plot 5.4.4.9. Power Spectral Density, 927.5 MHz, 21900 bps
Detector RMS, Sweep points 5000, Trace averaging with 100 traces



5.5. RF EXPOSURE REQUIRMENTS [§§ 15.247(i), 1.1310 & 2.1091]

5.5.1. Limits

§ **1.1310:** The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b).

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*($900/f^2$)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

Note 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

Note 2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

5.5.2. Method of Measurements

Calculation Method of Power Density/RF Safety Distance:

$$S = \frac{PG}{4\pi \cdot r^2} = \frac{EIRP}{4\pi \cdot r^2}$$

Where, P: power input to the antenna in mW
EIRP: Equivalent (effective) isotropic radiated power.
S: power density mW/cm^2
G: numeric gain of antenna relative to isotropic radiator
r: distance to centre of radiation in cm

5.5.3. RF Evaluation

Frequency (MHz)	Max. Conducted Power (dBm)	Antenna Gain (dBi)	EUT EIRP (dBm)	EUT EIRP (mW)	Evaluation Distance (cm)	Power Density (mW/cm^2)	FCC MPE Limit (mW/cm^2)	Margin (mW/cm^2)
903.0	18.35	-5.0	13.35	21.627	20	0.004	0.602	-0.598

EXHIBIT 6. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSU26	200946	20Hz–26.5 GHz	21 Jul 2018
Attenuator	Pasternack	7024-10	4	DC–26.5 GHz	Cal on use
DC Block	Hewlett Packard	11742A	12460	0.045 – 26.5 GHz	Cal on use
DC Power Supply	Xantrex	HPD 60-5SX	63903	0-60 VDC	-
Multi-meter	Extech	EX530	12070737	0.01mV - 1kV	14 May 2017
Power Meter	Hewlett Packard	436A	2709A27515	100K--50G sensor dependent	05 May 2017
Power Sensor	Hewlett Packard	8481A	2237A33409	10MHz-18GHZ	12 Apr 2018
EMI Receiver	Rohde & Schwarz	ESU40	100037	20Hz–40 GHz	08 May 2017
Spectrum Analyzer	Rohde & Schwarz	FSEK30	100077	20Hz–40 GHz	05 Dec 2018
RF Amplifier	Com-Power	PAM-0118A	551016	0.5 – 18 GHz	14 Jul 2017
RF Amplifier	Hewlett Packard	84498	3008A00769	1 – 26.5 GHz	05 May 2017
Biconilog	EMCO	3142	9601-1005	26-1000 MHz	12 May 2018
Horn Antenna	EMCO	3155	5955	1 – 18 GHz	21 Apr 2017
High Pass Filter	K & L	11SH10-1500/T8000	2	Cut off 900 MHz	Cal on use
Log Periodic	ETS-Lindgren	3148	23845	200 – 2000 MHz	20 Jul 2018

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.

7.1. LINE CONDUCTED EMISSION MEASUREMENT UNCERTAINTY

	Line Conducted Emission Measurement Uncertainty (9 kHz – 30 MHz):	**Measured**	**Limit**
u_c	**Combined standard uncertainty:** $u_c(y) = \sqrt{\sum_{I=1}^{m} u_i^2(y)}$	**± 1.44**	**± 1.8**
U	**Expanded uncertainty U:** $U = 2u_c(y)$	**± 2.89**	**± 3.6**

7.2. RADIATED EMISSION MEASUREMENT UNCERTAINTY

	Radiated Emission Measurement Uncertainty @ 3m, Horizontal (30-1000 MHz):	**Measured (dB)**	**Limit (dB)**
u_c	**Combined standard uncertainty:** $u_c(y) = \sqrt{\sum_{I=1}^{m} u_i^2(y)}$	**± 2.39**	**± 2.6**
U	**Expanded uncertainty U:** $U = 2u_c(y)$	**± 4.79**	**± 5.2**

	Radiated Emission Measurement Uncertainty @ 3m, Vertical (30-1000 MHz):	**Measured (dB)**	**Limit (dB)**
u_c	**Combined standard uncertainty:** $u_c(y) = \sqrt{\sum_{I=1}^{m} u_i^2(y)}$	**± 2.39**	**± 2.6**
U	**Expanded uncertainty U:** $U = 2u_c(y)$	**± 4.78**	**± 5.2**

	Radiated Emission Measurement Uncertainty @ 3 m, Horizontal & Vertical (1 – 18 GHz):	**Measured (dB)**	**Limit (dB)**
u_c	**Combined standard uncertainty:** $u_c(y) = \sqrt{\sum_{I=1}^{m} u_i^2(y)}$	**± 1.87**	**Under consideration**
U	**Expanded uncertainty U:** $U = 2u_c(y)$	**± 3.75**	**Under consideration**