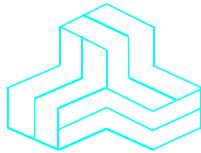


ENGINEERING TEST REPORT



G2SC 900MHz FHSS Transceiver

Model: G2SC1

FCC ID: ZTL-G2SC1

Applicant:

Monnit Corporation
7304 S Cottonwood, Suite 204
Midvale, UT
USA 84047

In Accordance With

Federal Communications Commission (FCC)
Part 15, Subpart C, Section 15.247 Frequency Hopping Spread Spectrum (FHSS)

UltraTech's File No.: 16MONN026_FCC15C247

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

Date: January 22, 2016

Report Prepared by: Dharmajit Solanki

Tested by: Hung Trinh

Issued Date: January 22, 2016

Test Dates: Dec 21, 2015 to Jan 21, 2016

- The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.
- This report must not be used by the client to claim product endorsement by NVLAP or any agency of the US Government.

UltraTech

3000 Bristol Circle, Oakville, Ontario, Canada, L6H 6G4

Tel.: (905) 829-1570 Fax.: (905) 829-8050

Website: www.ultratech-labs.com, Email: vic@ultratech-labs.com, Email: tri@ultratech-labs.com



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1309



Industry Canada
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NVLAP LAB
CODE 200093-0



AT-1945



SL2-IN-E-
1119R



Korea
KCC-RRA

CA2049



TL363_B



TPTDP
DA1300

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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
Purpose of Test:	Equipment Certification for Frequency Hopping Spread Spectrum (FHSS) Transmitter.
Test Procedures:	▪ ANSI C63.4 ▪ ANSI C63.10 ▪ FCC Public Notice DA 00-705
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 for Testing Unlicensed Wireless Devices
CISPR 22 & EN 55022	2008-09, Ed 6 2006	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
FCC Public Notice DA 00-705	2000	Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

File #: 16MONN026_FCC15C247

January 22, 2016

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

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

APPLICANT	
Name:	Monnit Corporation
Address:	7304 S Cottonwood, Suite 204 Midvale, UT USA 84047
Contact Person:	Mr. Kelly Lewis Phone #: 801-561-5555 Fax #: 801-561-5575 Email Address: kellyl@monnit.com

MANUFACTURER	
Name:	Monnit Corporation
Address:	7304 S Cottonwood, Suite 204 Midvale, UT USA 84047
Contact Person:	Mr. Kelly Lewis Phone #: 801-561-5555 Fax #: 801-561-5575 Email Address: kellyl@monnit.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:	Monnit Corporation
Product Name:	G2SC 900MHz FHSS Transceiver
Model Name or Number:	G2SC1
Serial Number:	Test Samples
Type of Equipment:	FHSS Transmitter
Input Power Supply Type:	External Regulated DC Sources
Primary User Functions of EUT:	Wireless Data transmission

2.3. EUT'S TECHNICAL SPECIFICATIONS

Transmitter	
Equipment Type:	- Mobile - Base Station (fixed use)
Intended Operating Environment:	- Commercial, industrial or business environment - Residential environment
Power Supply Requirement:	2.0 to 3.6VDC
RF Output Power Rating:	-11.25 to 14.26 dBm
Operating Frequency Range:	902.2 - 927.8 MHz
Channel Spacing:	25 to 500 kHz
RF Output Impedance:	50 Ω
Modulation Type:	GFSK (5 Configurations at 400 Kbps; GFSK, DSSS1, DSSS2, DSSS4, DSSS8) FSK (5 Configurations at 10 Kbps; FSK, DSSS1, DSSS2, DSSS4, DSSS8)
Data Rates:	FSK: 10 Kb/s GFSK: 400 Kb/s
Oscillator Frequency(ies):	24MHz
Antenna Connector Type:	Permanently Soldered or U.FL to RPSMA pigtail for external antenna

2.4. ASSOCIATED ANTENNA DESCRIPTIONS

Antenna Type	Maximum Gain allowed (dBi)	Required Assembly & Cable Loss for the Max Gain of Antenna (dB)
Wire Antenna	1.0	0.00
Dipole Antenna	5.0	0.30
Omni-directional Antenna	8.0	0.86
Flat Panel Antenna	9.0	0.86
Yagi Antenna	14.0	0.86

The highest gain antenna from each of the above antenna types were selected for testing to represents the worst-case. Refer to the antennas list in the User Manual for detailed specifications.

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	Antenna	1	U.FL	Shielded, No minimum length
2	DC power	1	Castellated Pad	Non-shielded

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File #: 16MONN026_FCC15C247
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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:	Laptop
Brand name:	HP ProBook
Model Name or Number:	6455b, S/N: CNU1163L8Z
Connected to EUT's Port:	Test Jig of the EUT

Ancillary Equipment # 2	
Description:	DC Power Supply
Brand name:	Xantrex
Model Name or Number:	HPD 60-5SX, S/N: 63903
Connected to EUT's Port:	Test Jig of the EUT

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:	41 to 55%
Pressure:	102 kPa
Power Input Source:	3.6 VDC

3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TESTS

Operating Modes:	- Each of lowest, middle and highest channel frequencies transmits continuously for emissions measurements. - The EUT operates in normal Frequency Hopping mode for occupancy duration, and frequency separation.
Special Test Software & Hardware:	Special 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.
Transmitter Test Antenna:	The EUT is tested with the antenna fitted in a manner typical of normal intended use as non-integral antenna equipment as described with the test results.

Transmitter Test Signals	
Frequency Band(s):	902.2 - 927.8 MHz 902.5 - 927.5 MHz
Frequency(ies) Tested: (Near lowest, near middle & near highest frequencies in the frequency range of operation.)	902.2, 915.0, 927.8 MHz 902.5, 915.0, 927.5 MHz
RF Power Output: (measured maximum output power at antenna terminals)	0.0267 Watt (Conducted)
Normal Test Modulation:	FSK & GFSK with data rates as per Sec 2.3
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 FCC office (FCC File No.: 91038) and Industry Canada office (Industry Canada File No.: 2049A-3). Expiry Date: 2017-04-02.

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	Yes
15.247(a)(1) & (1)(i)	Provisions for Frequency Hopping Systems	Yes*
15.247(b)(2)	Peak Conducted Output Power	Yes
15.247(c)	Operation with directional antenna gains greater than 6 dBi	Yes
15.247(d)	Band-Edge and RF Conducted Spurious Emissions at the Transmitter Antenna Terminal	Yes
15.247(d), 15.209 & 15.205	Transmitter Spurious Radiated Emissions	Yes
15.247 (g) & (h)	Requirements for FHSS	Yes*
15.247(i), 1.1307, 1.1310, 2.1091	RF Exposure	Yes

* Refer to the Operational Description

4.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

Laird-Signal Integrity Products made Ferrite 28A2005-0A2 was used to 1.5 turns wrap DC power line cables connected to the DC power supply to pass the Radiated emissions test while testing this module.

EXHIBIT 5. MEASUREMENTS, EXAMINATIONS & TEST DATA FOR EMC EMISSIONS

5.1. POWER LINE CONDUCTED EMISSIONS [§15.207(a)]

5.1.1. Limit(s)

The equipment shall meet the limits of the following table:

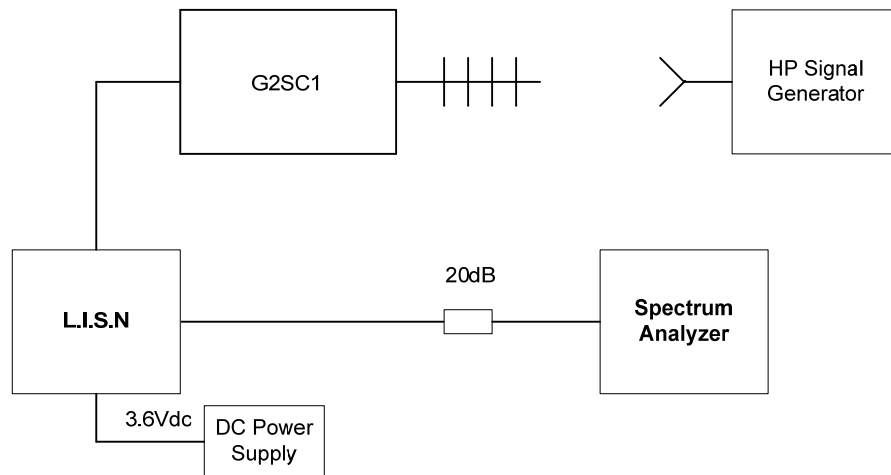
Frequency of emission (MHz)	Conducted Limits (dB μ V)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases linearly with the logarithm of the frequency

5.1.2. Method of Measurements

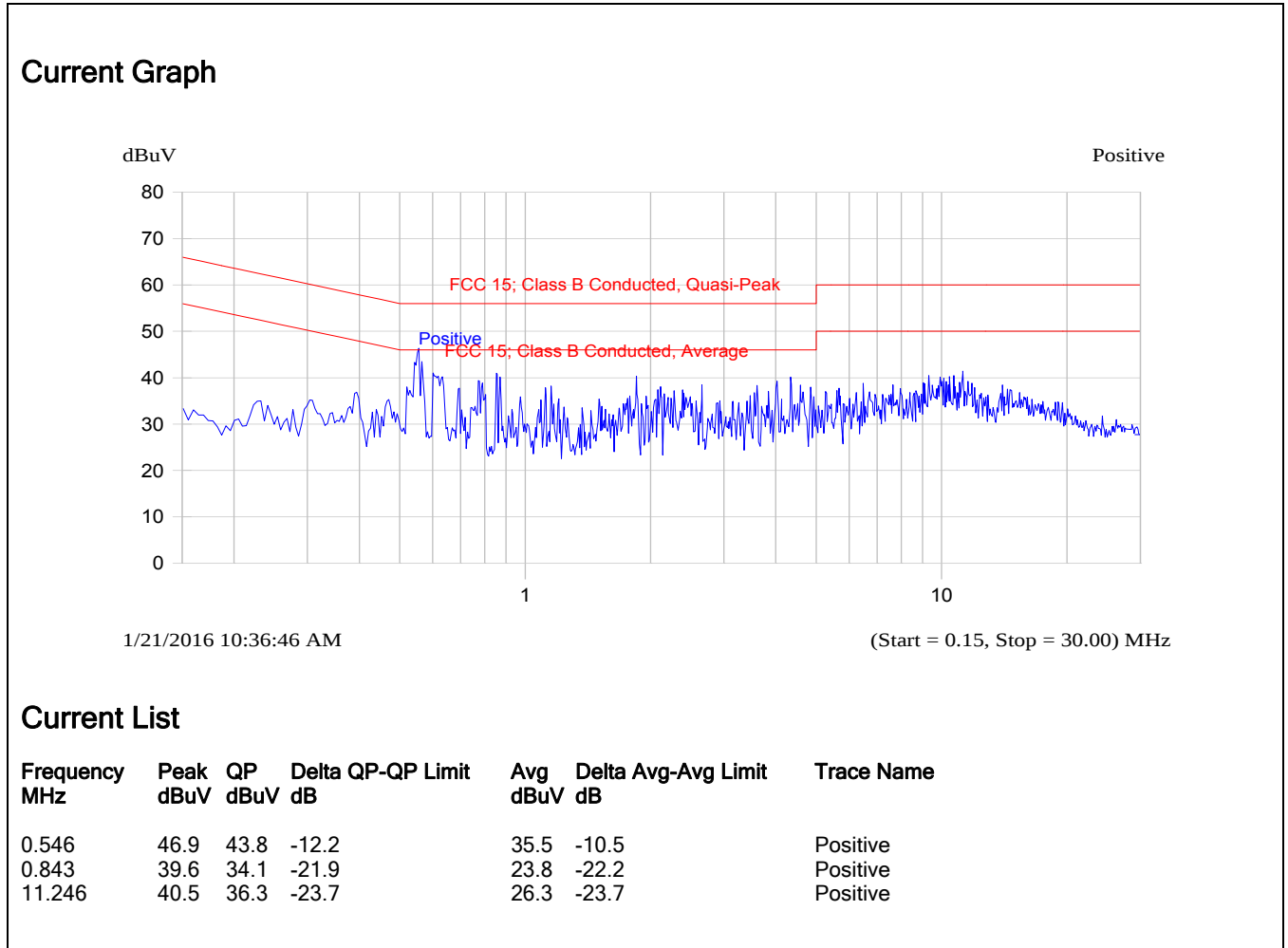
ANSI C63.4-2009

5.1.3. Test Arrangement



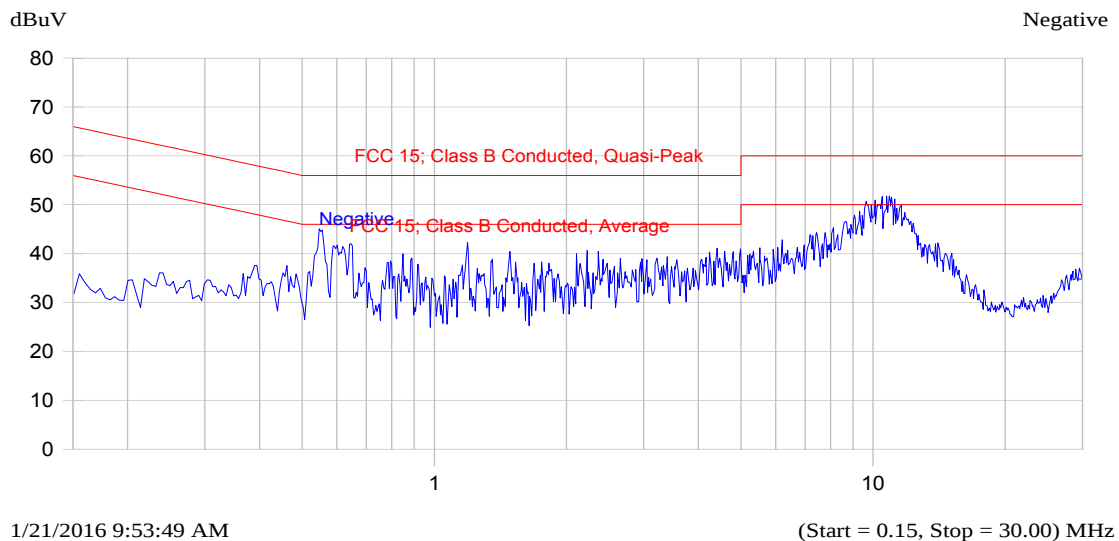
5.1.4. Test Data

Plot 5.1.4.1. Power Line Conducted Emissions (Tx Mode)
Line Voltage: 120 VAC; Line Tested: Hot



Plot 5.1.4.2. Power Line Conducted Emissions (Tx Mode)
Line Voltage: 120 VAC; Line Tested: Neutral

Current Graph

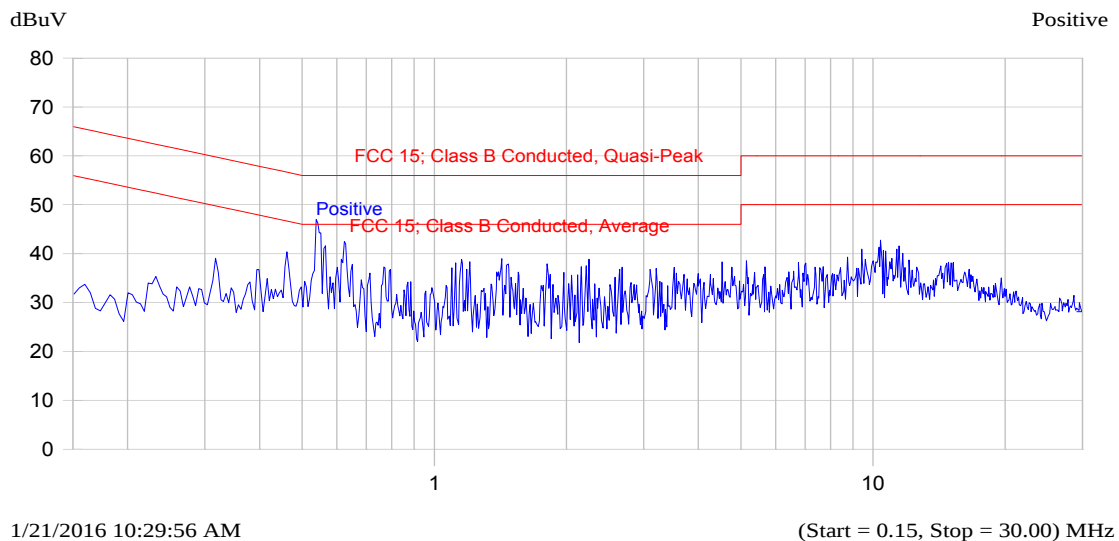


Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta dB	QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.542	46.5	43.6	-12.4		35.4	-10.6	Negative
0.639	42.1	39.0	-17.0		26.9	-19.1	Negative
1.182	41.2	36.3	-19.7		23.7	-22.3	Negative
10.481	51.9	45.5	-14.5		36.0	-14.0	Negative

Plot 5.1.4.3. Power Line Conducted Emissions (Rx Mode)
Line Voltage: 120 VAC; Line Tested: Hot

Current Graph

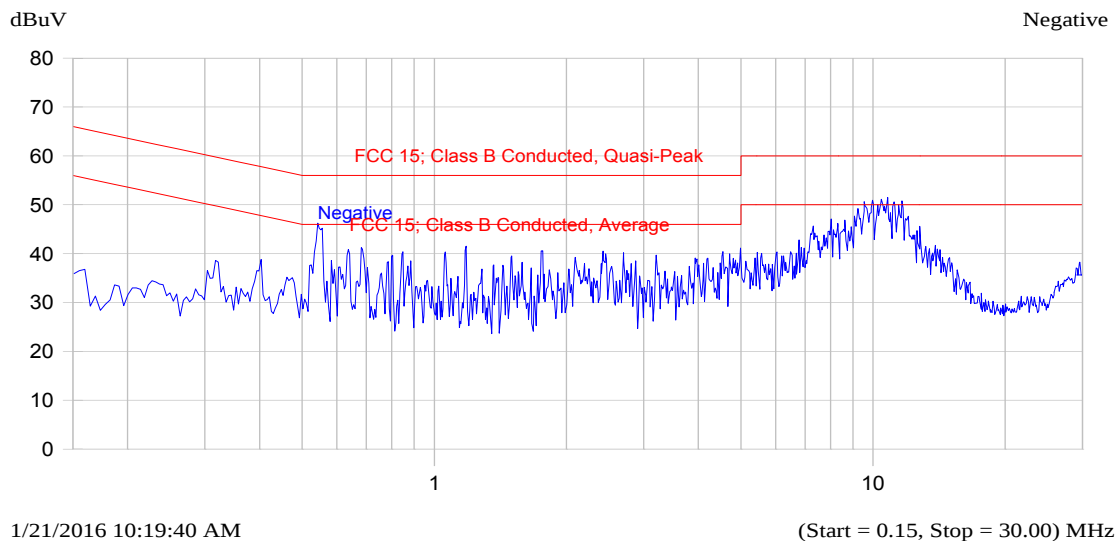


Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP dB	Limit	Avg dBuV	Delta Avg-Avg dB	Limit	Trace Name
0.542	46.8	43.6	-12.4		35.4	-10.6		Positive
0.625	42.2	38.3	-17.7		29.1	-16.9		Positive
10.392	40.6	35.3	-24.7		25.2	-24.8		Positive

Plot 5.1.4.4. Power Line Conducted Emissions (Rx Mode)
Line Voltage: 120 VAC; Line Tested: Neutral

Current Graph



Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta dB	QP-QP Limit	Avg dBuV	Delta Avg-Avg Limit	Trace Name
0.543	46.9	44.1	-11.9		35.7	-10.3	Negative
1.178	41.1	36.5	-19.5		23.8	-22.2	Negative
10.797	52.9	46.8	-13.2		37.1	-12.9	Negative

5.2. COMPLIANCE WITH FCC PART 15 – GENERAL TECHNICAL REQUIREMENTS

FCC Section	FCC Rules	Manufacturer's Clarification
15.31	The hopping function must be disabled for tests, which should be performed with the EUT transmitting on the number of frequencies specified in this Section. The measurements made at the upper and lower ends of the band of operation should be made with the EUT tuned to the highest and lowest available channels.	See Operational Description
15.203	Described how the EUT complies with the requirement that either its antenna is permanently attached, or that it employs a unique antenna connector, for every antenna proposed for use with the EUT. The exception is in those cases where EUT must be professionally installed. In order to demonstrate that professional installation is required, the following 3 points must be addressed: ➤ The application (or intended use) of the EUT ➤ The installation requirements of the EUT ➤ The method by which the EUT will be marketed	The antenna employs a unique antenna connector.
15.204	Provided the information for every antenna proposed for use with the EUT: ➤ type (e.g. Yagi, patch, grid, dish, etc...), ➤ manufacturer and model number ➤ gain with reference to an isotropic radiator	See proposed antenna list.
15.247(a)	Description of how the EUT meets the definition of a frequency hopping spread spectrum, found in Section 2.1. Based on the technical description.	See Operational Description
15.247(a)	Pseudo Frequency Hopping Sequence: Describe how the hopping sequence is generated. Provide an example of the hopping sequence channels, in order to demonstrate that the sequence meets the requirements specified in the definition of a frequency hopping spread spectrum system, found in Section 2.1	See Operational Description

FCC Section	FCC Rules	Manufacturer's Clarification
15.247(a)	<u>Equal Hopping Frequency Use:</u> Describe how each individual EUT meets the requirement that each of its hopping channels is used equally on average (e.g. that each new transmission event begins on the next channel in the hopping sequence after final channel used in the previous transmission events).	See Operational Description
15.247(g)	Describe how the EUT complies with the requirement that it be designed to be capable of operating as a true frequency hopping system	See Operational Description
15.247(h)	Describe how the EUT complies with the requirement that it not have the ability to coordinated with other FHSS is an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitters	See Operational Description
Public Notice DA 00-705	<u>System Receiver Input Bandwidth:</u> Describe how the associated receiver(s) complies with the requirement that its input bandwidth (either RF or IF) matches the bandwidth of the transmitted signal.	See Operational Description
Public Notice DA 00-705	<u>System Receiver Hopping Capability:</u> Describe how the associated receiver(s) has the ability to shift frequencies in synchronization with the transmitted signals	See Operational Description

5.3. PROVISIONS FOR FREQUENCY HOPPING SYSTEMS [§ 15.247(a)(1)]

5.3.1. Limits

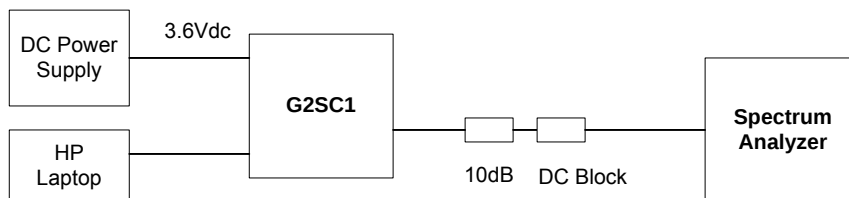
§ 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

§ 15.247(a)(1)(i): For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

5.3.2. Method of Measurements

FCC Public Notice DA 00-705 and ANSI C63.10

5.3.3. Test Arrangement



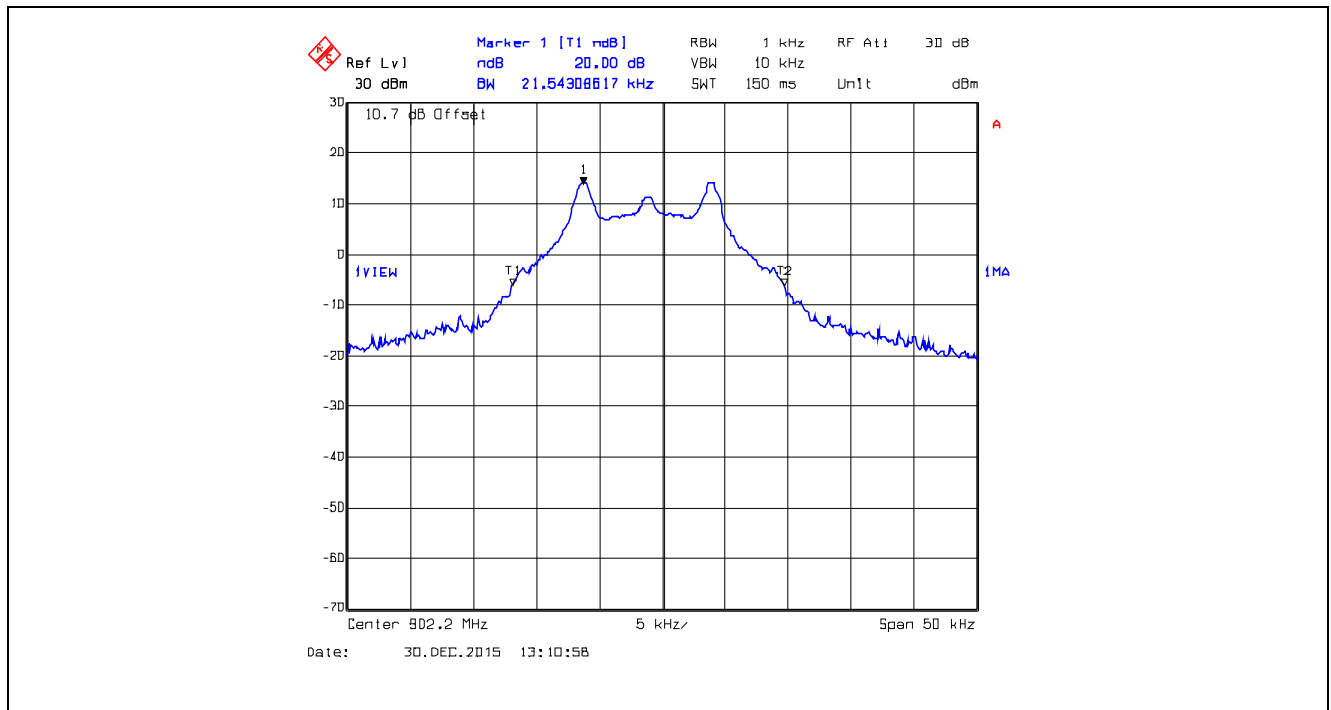
5.3.4. Test Data

Test Description	FCC Specification	Measured Values	Comments
Frequency Hopping Systems Requirements	The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.	--	See Note 1
20 dB BW of the hopping channel	The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz	DSSS8 10kbps: 21.5 kHz DSSS8 400kbps: 485.0 kHz	See Note 2
Channel Hopping Frequency Separation	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.	DSSS8 10kbps: 50.1 kHz DSSS8 400kbps: 505.0 kHz	See Note 2
Number hopping frequencies	If the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies. If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies.	DSSS8 10kbps: 513 Hopping Frequencies DSSS8 400kbps: 51 Hopping Frequencies	See Note 1 and 2
Average Time of Occupancy	If the 20 dB bandwidth of the hopping channel is less than 250 kHz, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period. If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.	DSSS8 10kbps: 354.71 ms <400 ms in 20s DSSS8 400kbps: 150.30 ms <400 ms in 10s	See Note 2

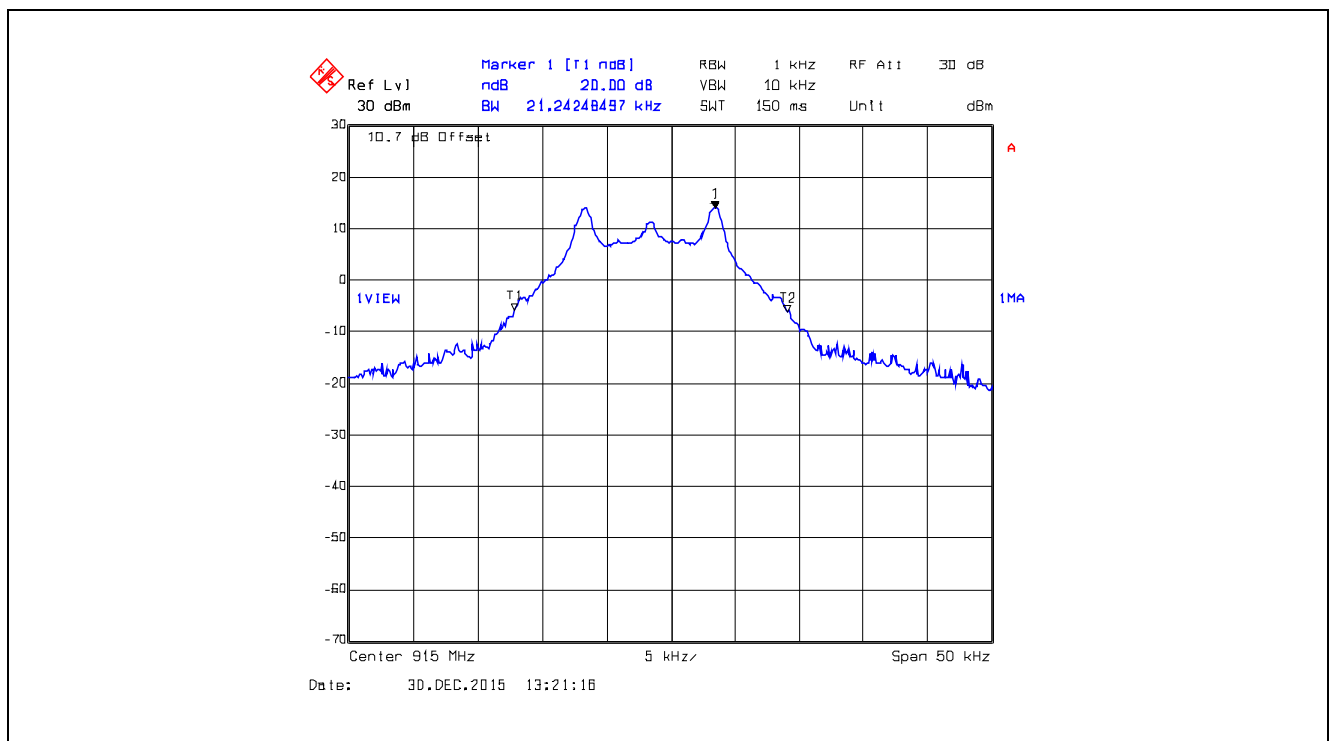
Note 1: See operational description exhibit for details.

Note 2: See the following plots for details.

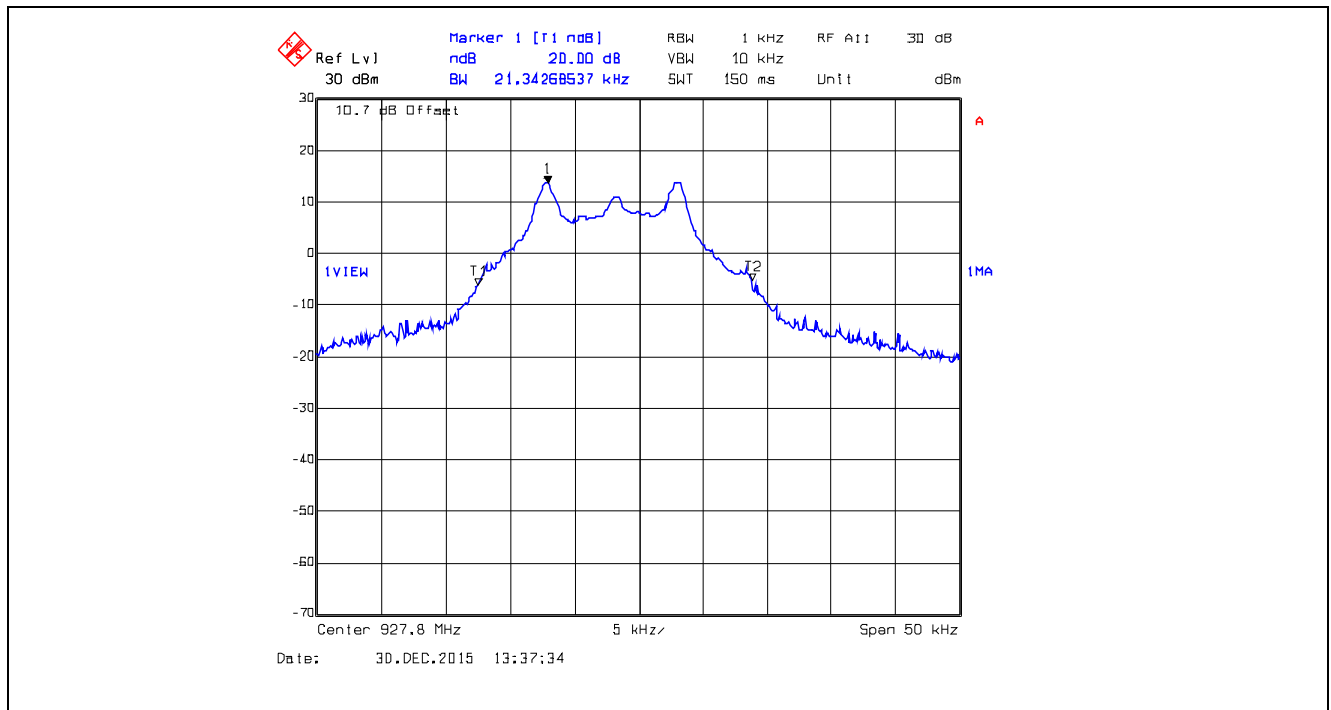
Plot 5.3.4.1. 20 dB Bandwidth, 902.2 MHz, FSK, Data rate at 10 Kbps



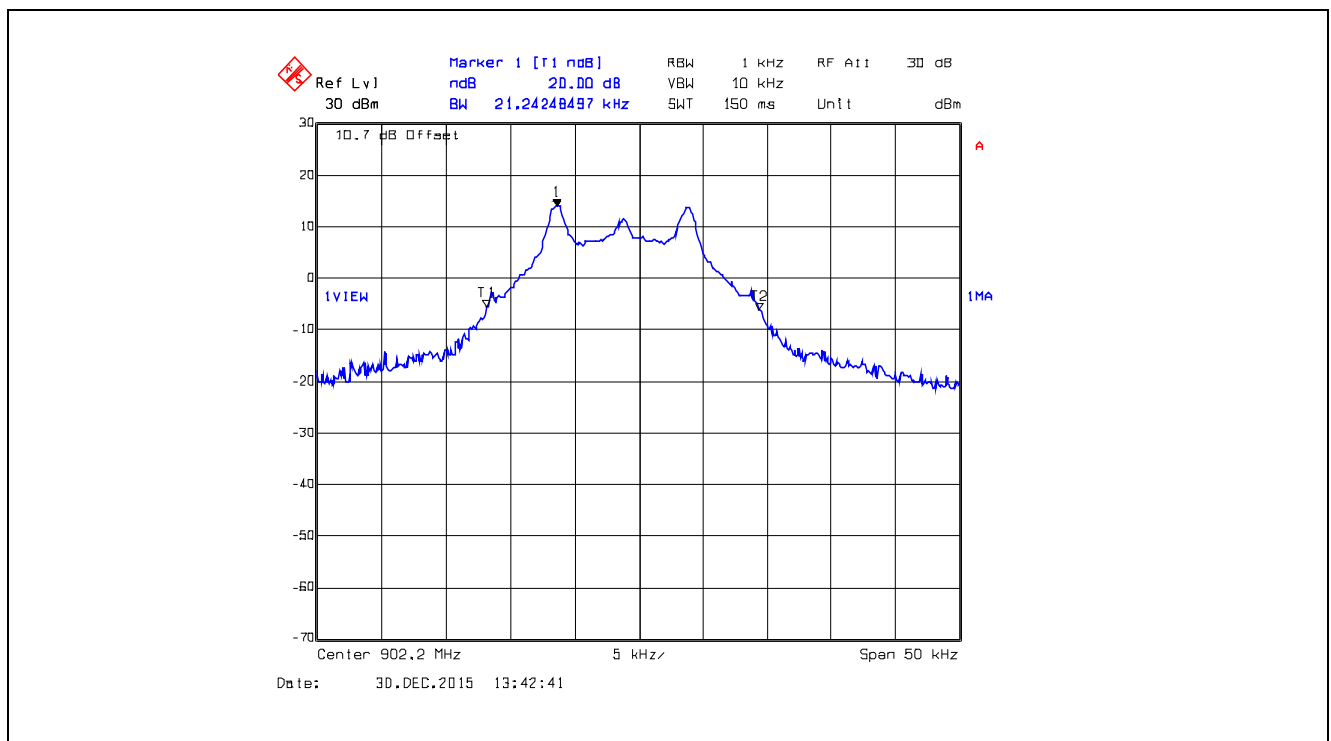
Plot 5.3.4.2. 20 dB Bandwidth, 915 MHz, FSK, Data rate at 10 Kbps



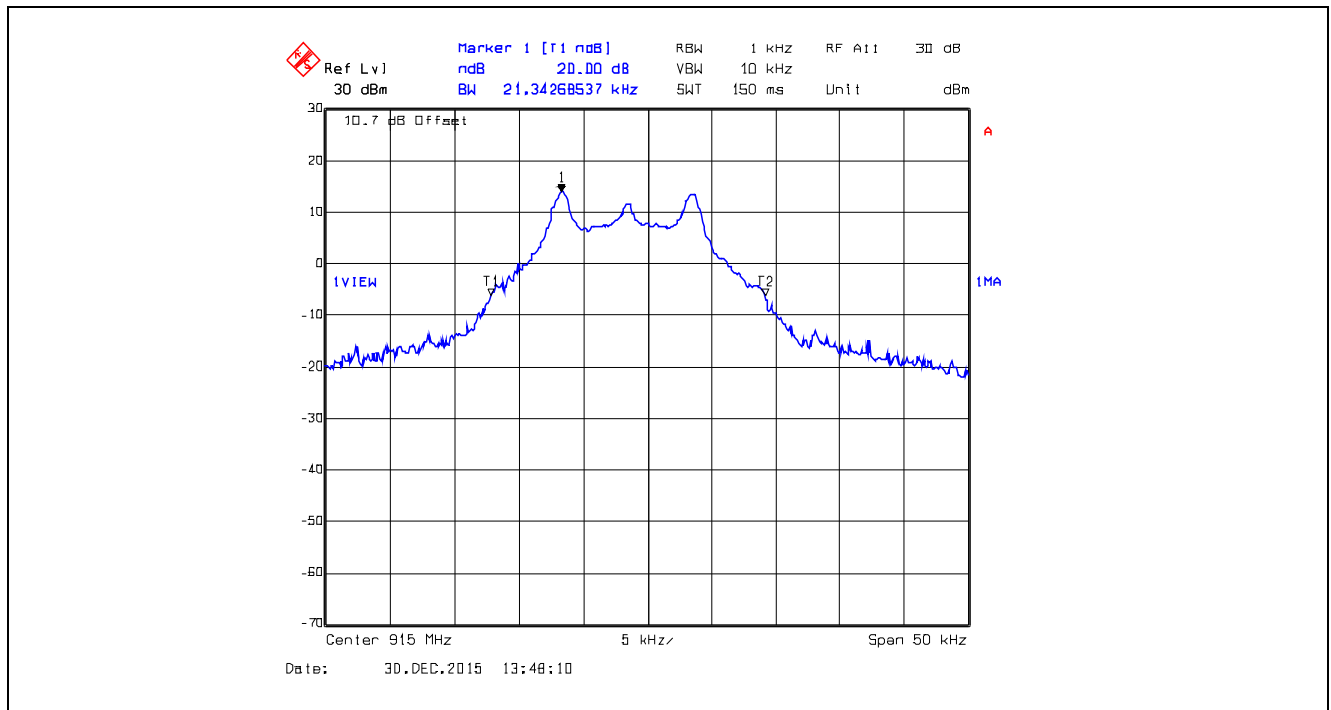
Plot 5.3.4.3. 20 dB Bandwidth, 927.8 MHz, FSK, Data rate at 10 Kbps



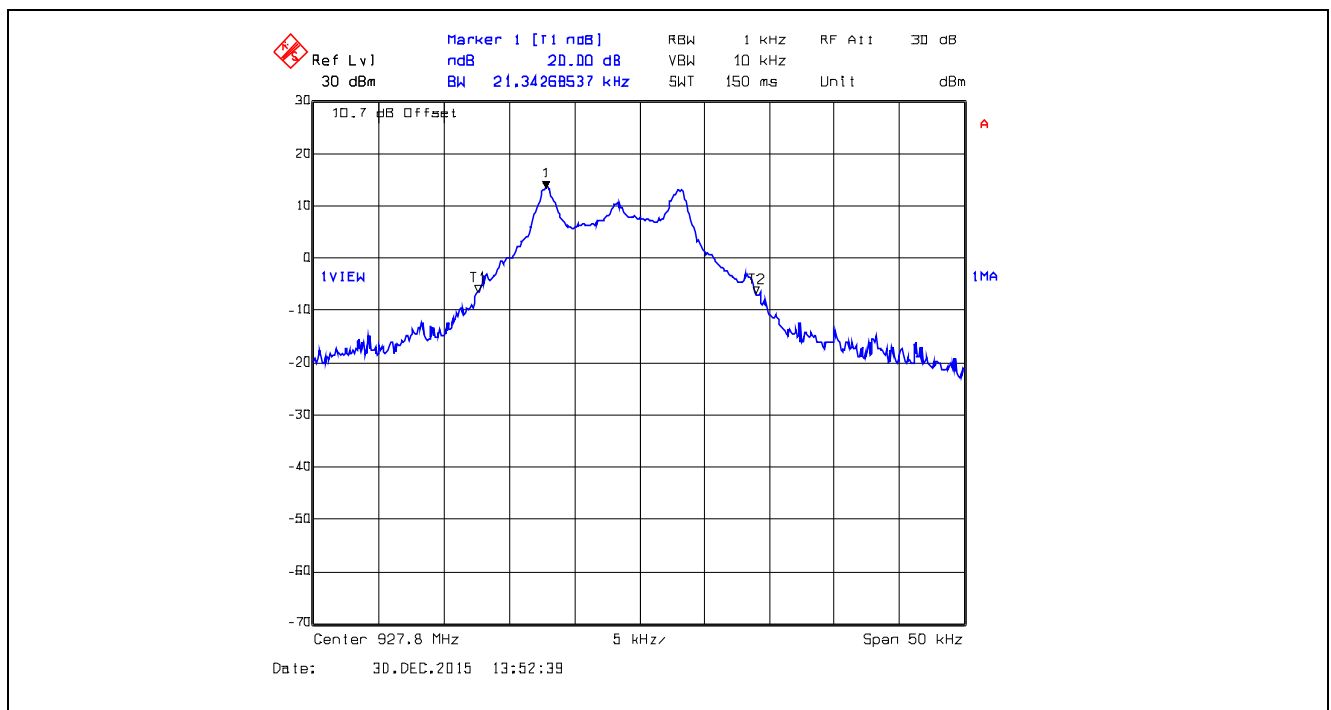
Plot 5.3.4.4. 20 dB Bandwidth, 902.2 MHz, DSSS1, Data Rate at 10 kbps



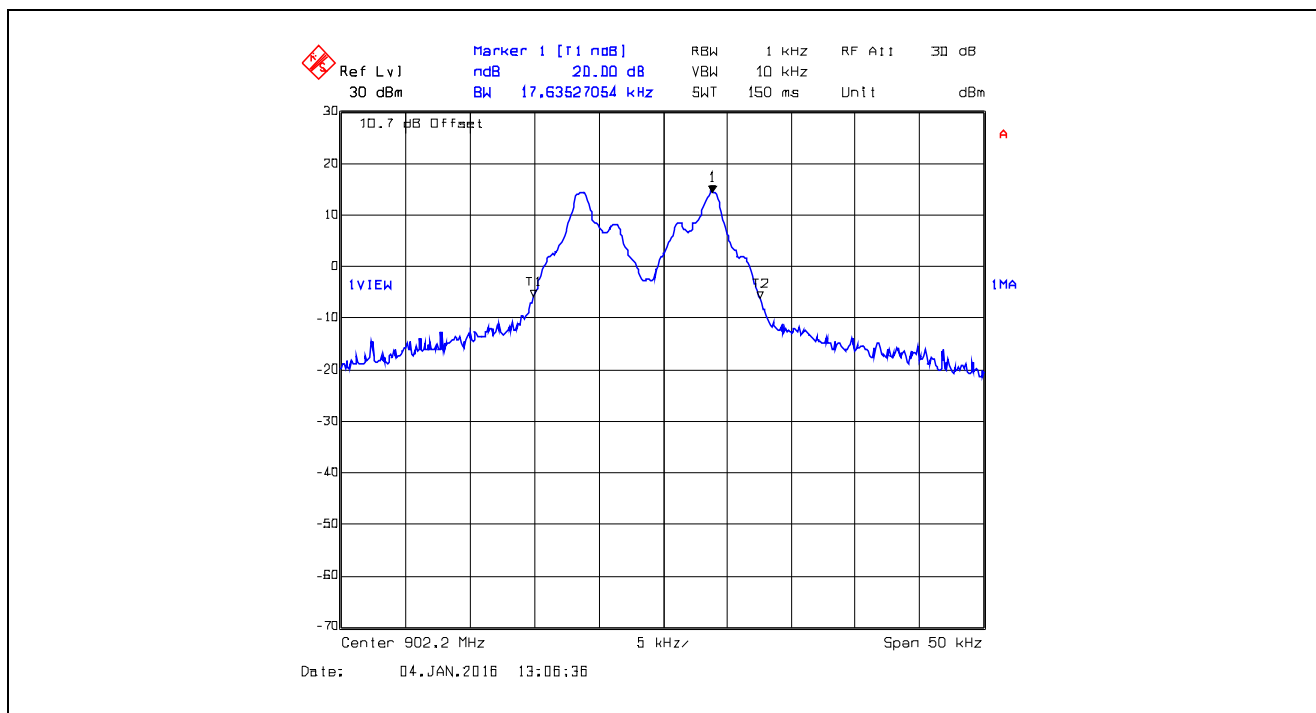
Plot 5.3.4.5. 20 dB Bandwidth, 915.0 MHz, DSSS1, Data Rate at 10 kbps



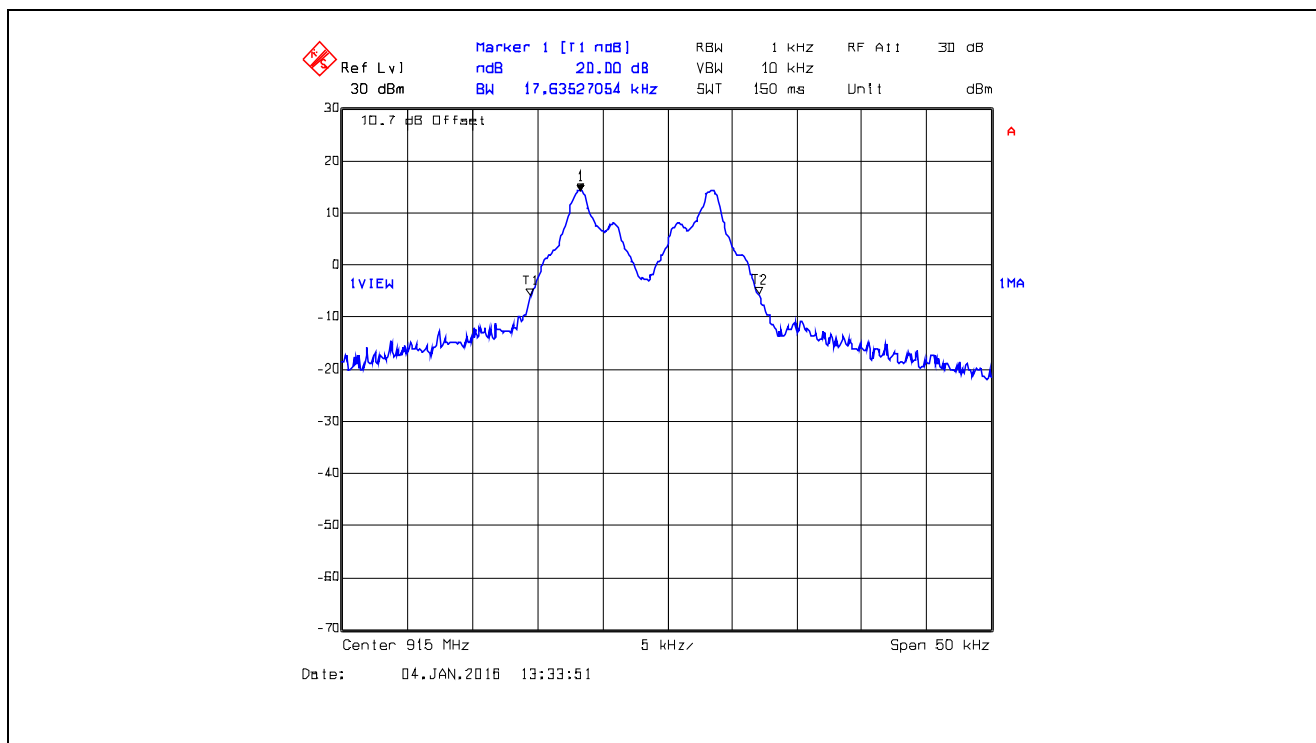
Plot 5.3.4.6. 20 dB Bandwidth, 927.8 MHz, DSSS1, Data Rate at 10 kbps



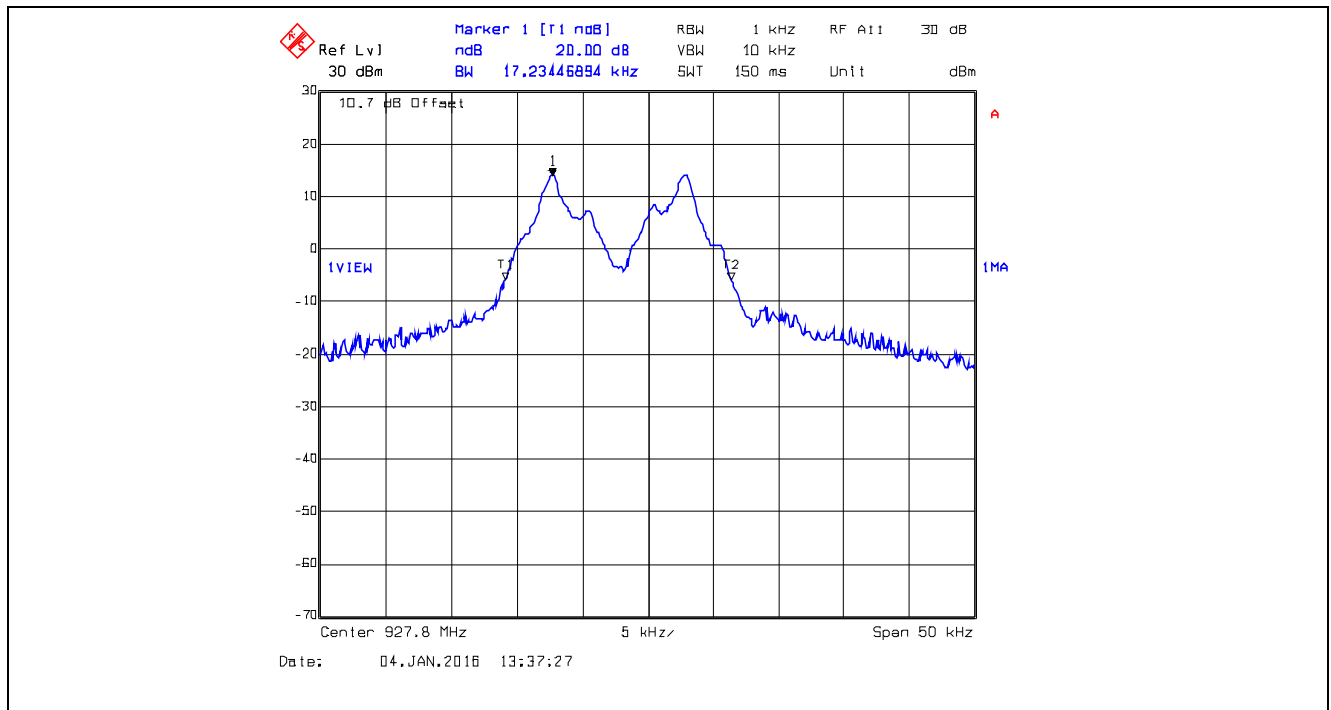
Plot 5.3.4.7. 20 dB Bandwidth, 902.2 MHz, DSSS2, Data Rate at 10 kbps



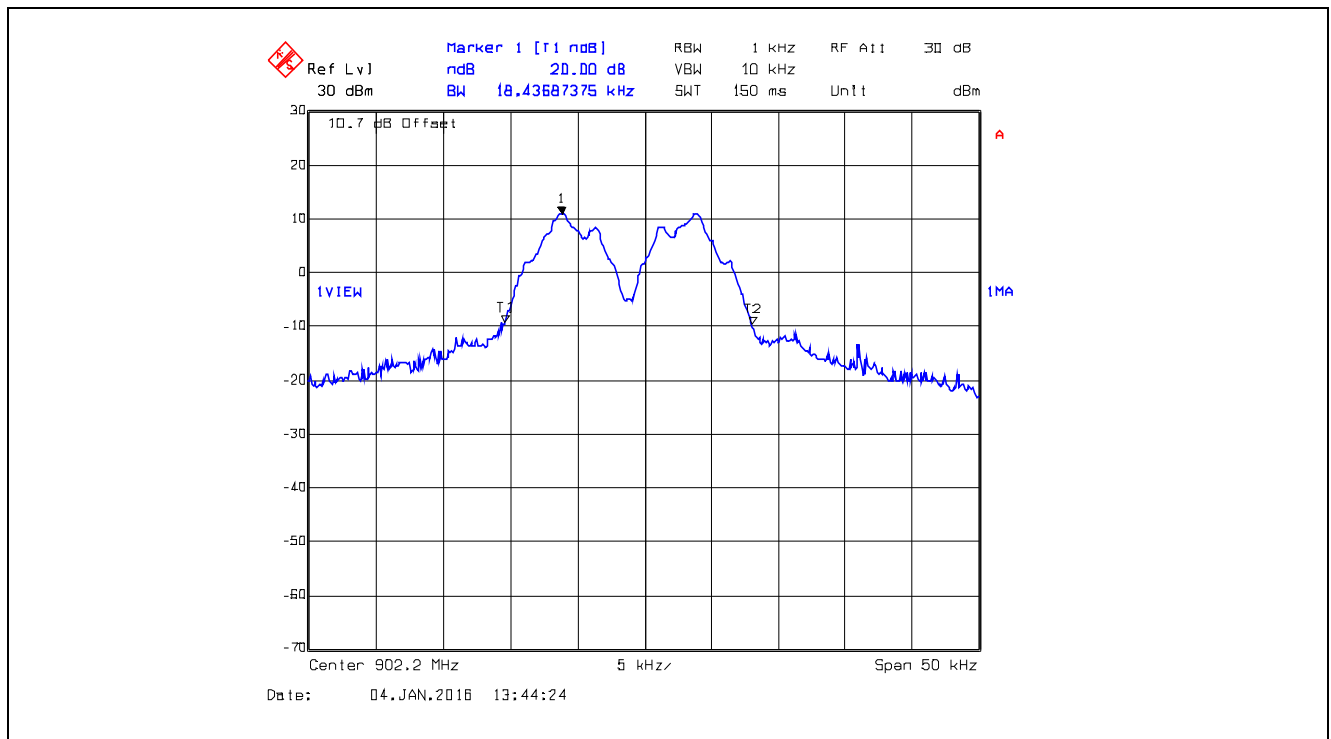
Plot 5.3.4.8. 20 dB Bandwidth, 915.0 MHz, DSSS2, Data Rate at 10 kbps



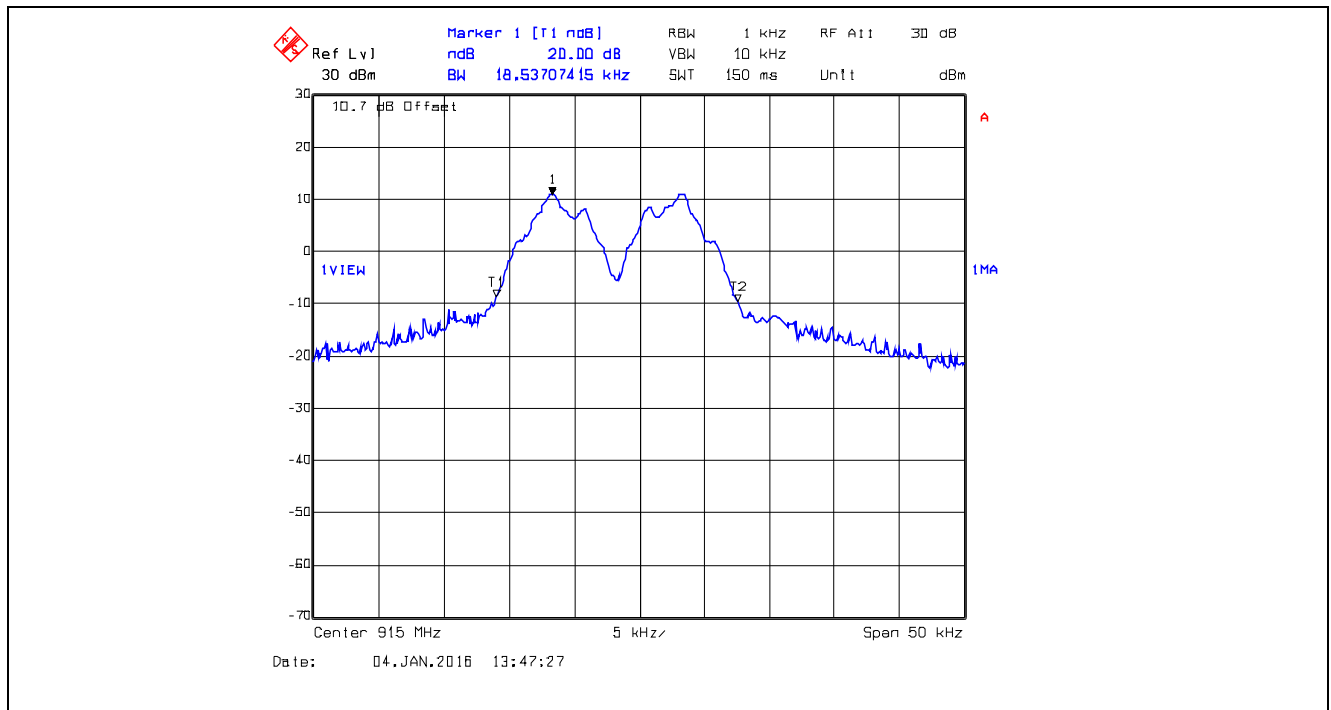
Plot 5.3.4.9. 20 dB Bandwidth, 927.8 MHz, DSSS2, Data Rate at 10 kbps



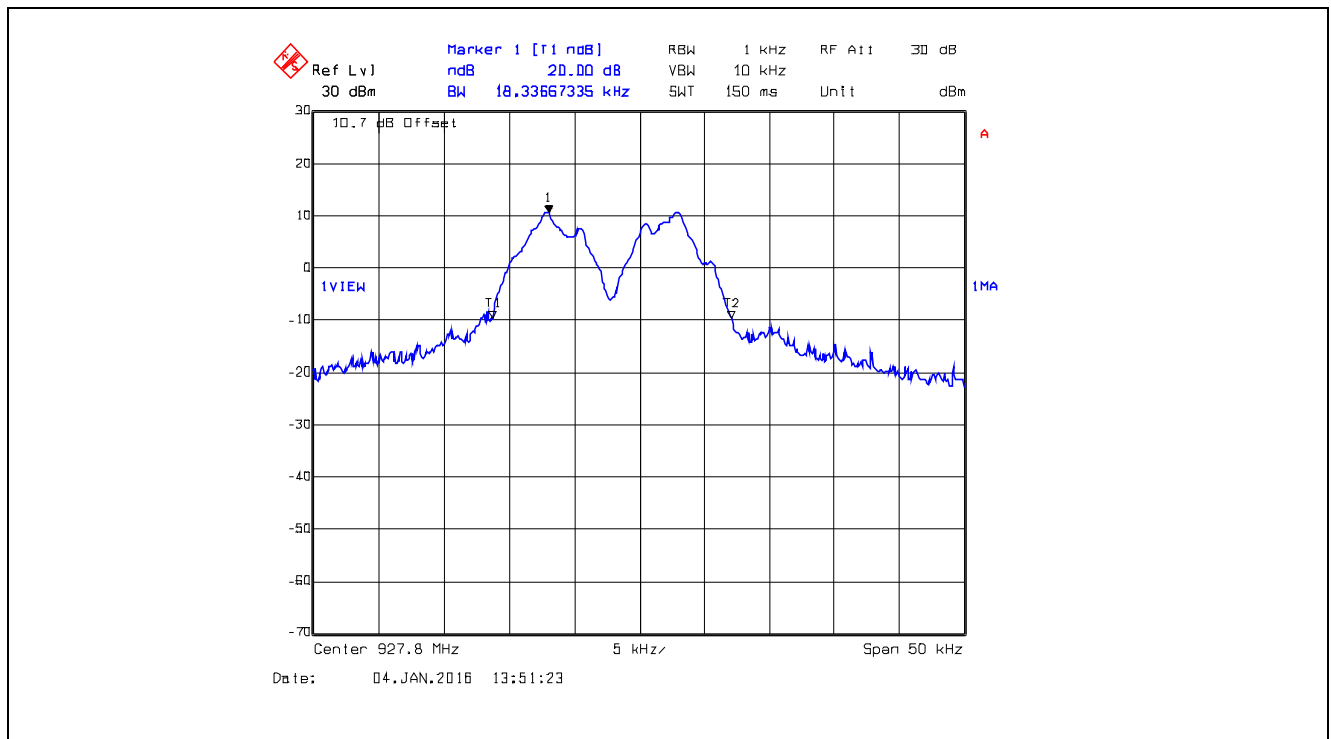
Plot 5.3.4.10. 20 dB Bandwidth, 902.2 MHz, DSSS4, Data Rate at 10 kbps



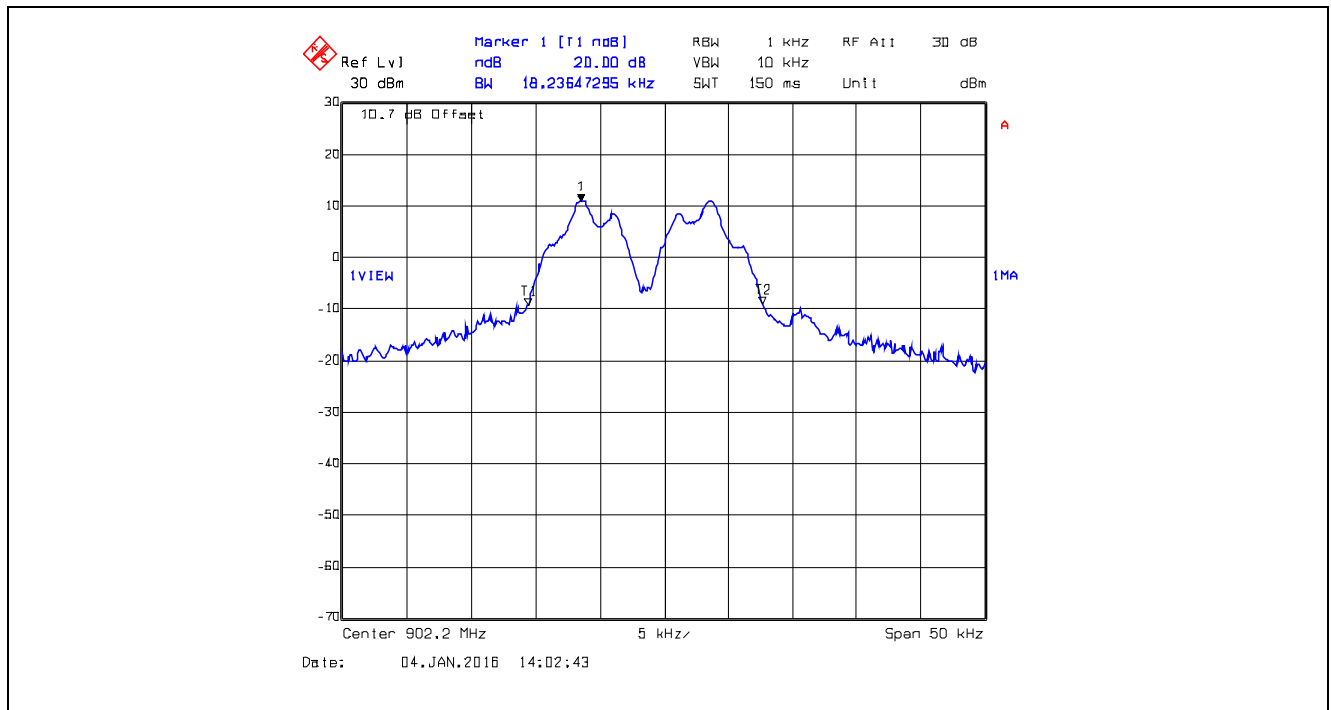
Plot 5.3.4.11. 20 dB Bandwidth, 915.0 MHz, DSSS4, Data Rate at 10 kbps



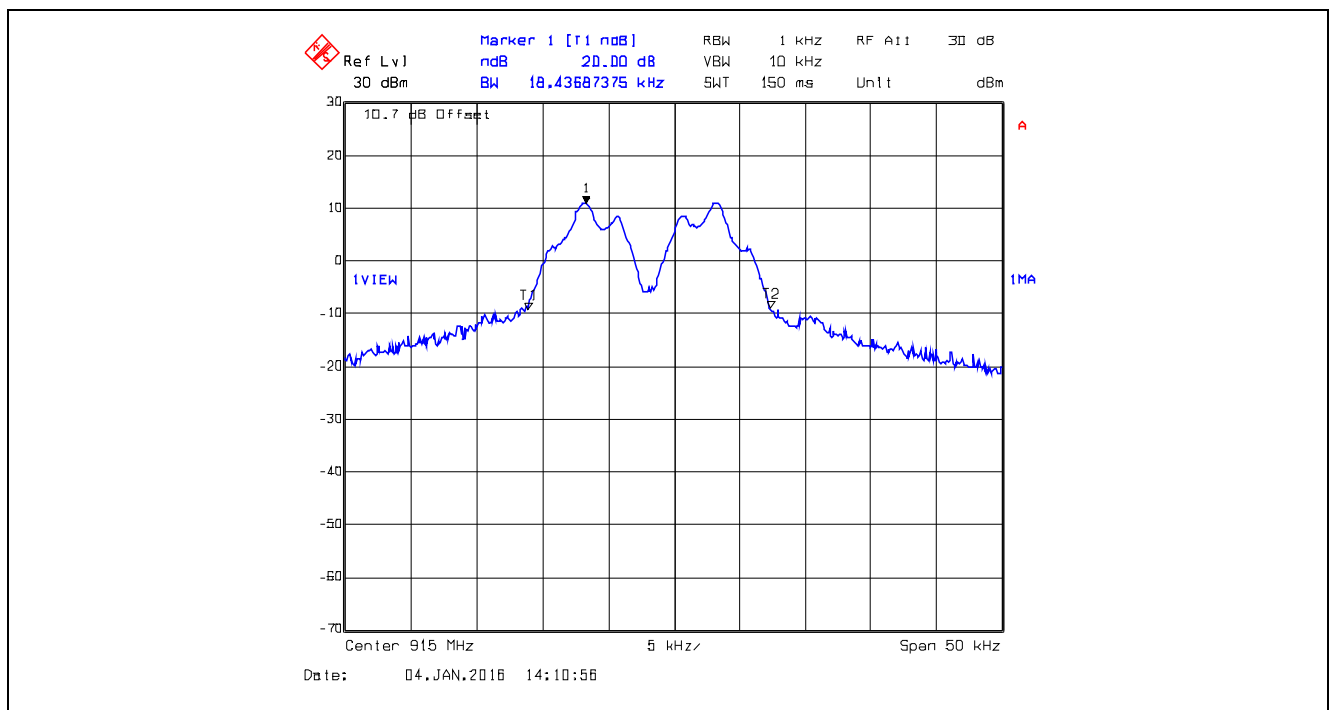
Plot 5.3.4.12. 20 dB Bandwidth, 927.8 MHz, DSSS4, Data Rate at 10 kbps



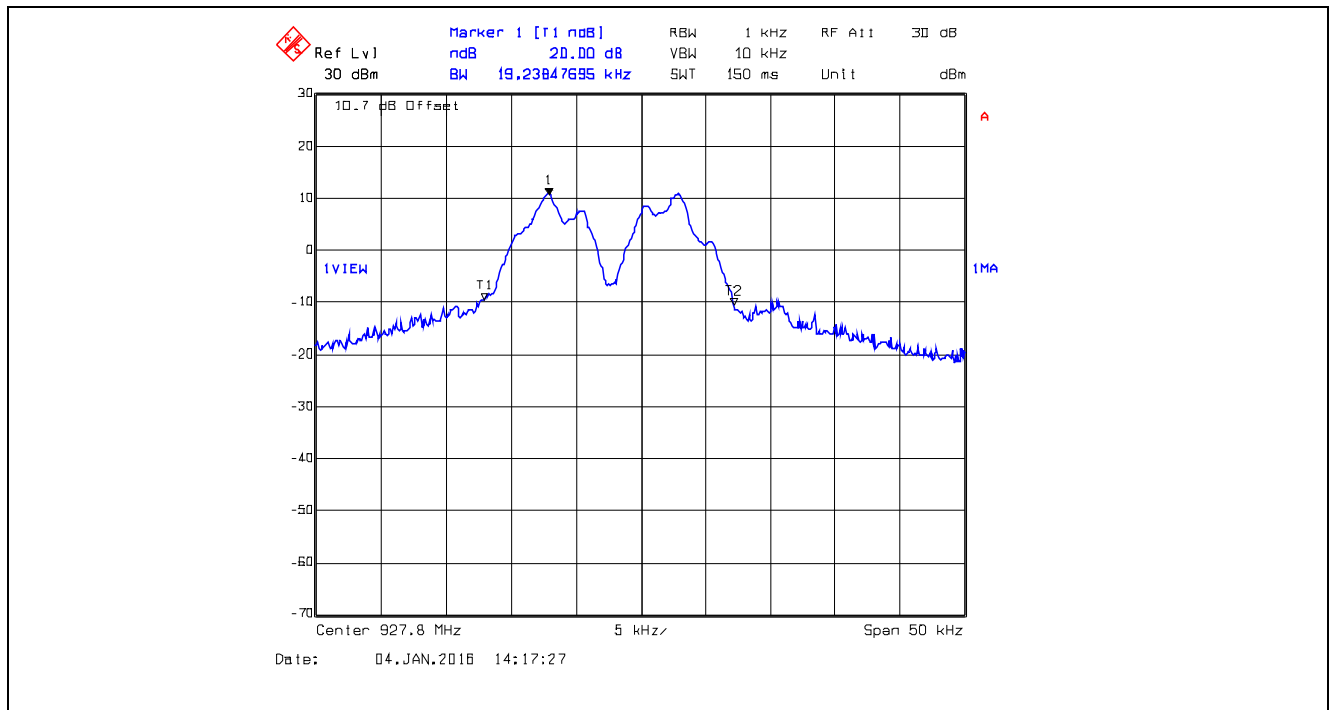
Plot 5.3.4.13. 20 dB Bandwidth, 902.2 MHz, DSSS8, Data Rate at 10 kbps



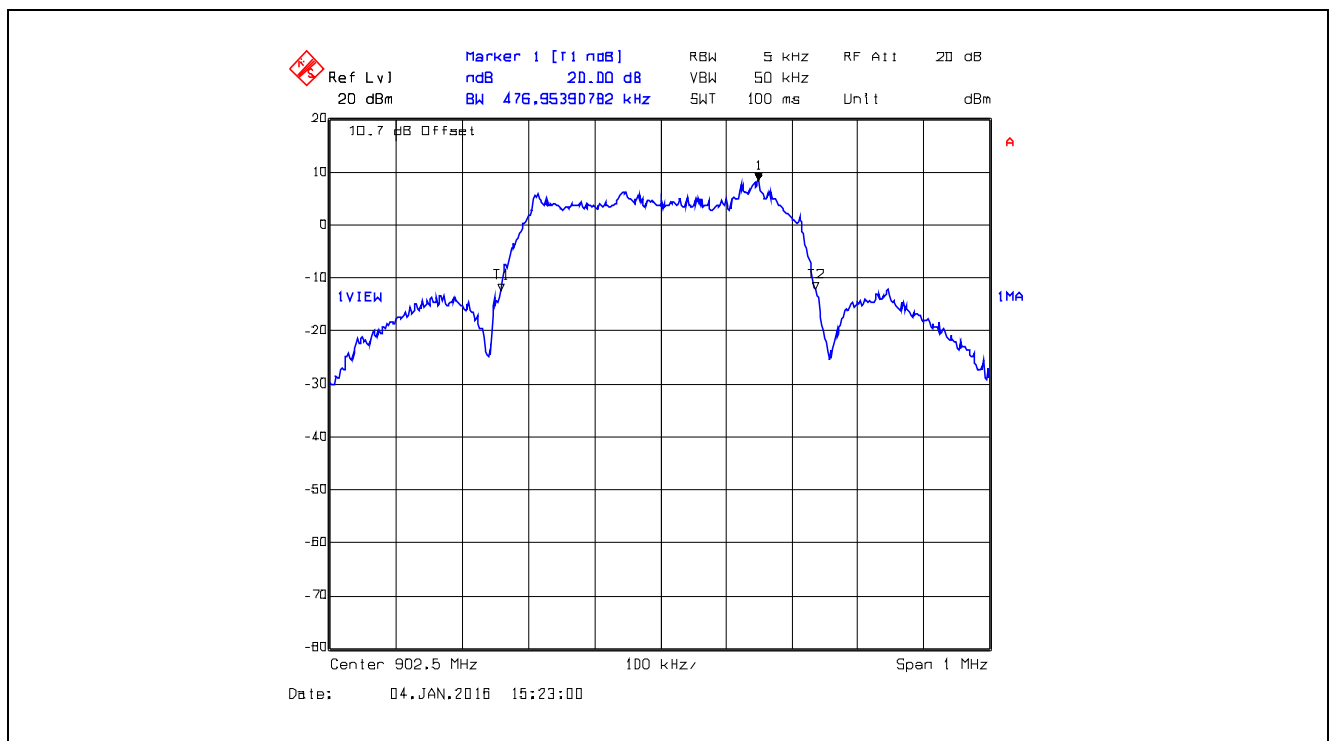
Plot 5.3.4.14. 20 dB Bandwidth, 915.0 MHz, DSSS8, Data Rate at 10 kbps



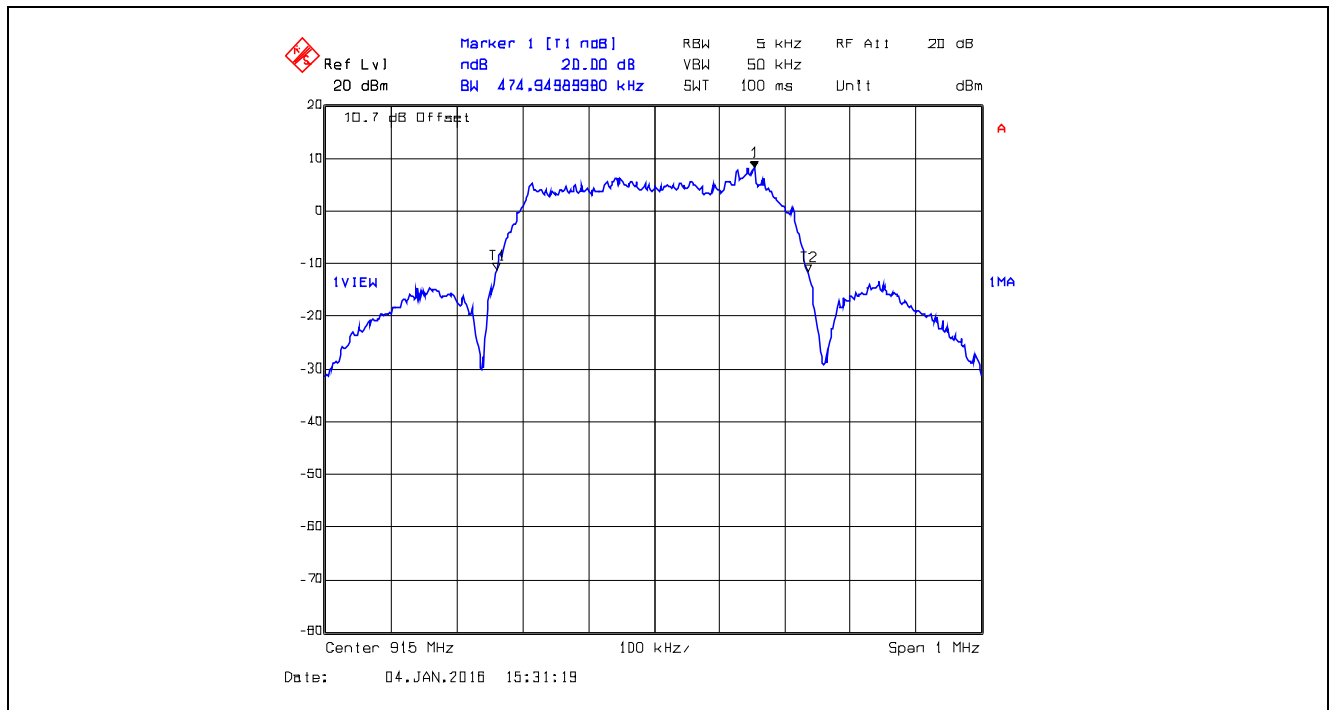
Plot 5.3.4.15. 20 dB Bandwidth, 927.8 MHz, DSSS8, Data Rate at 10 kbps



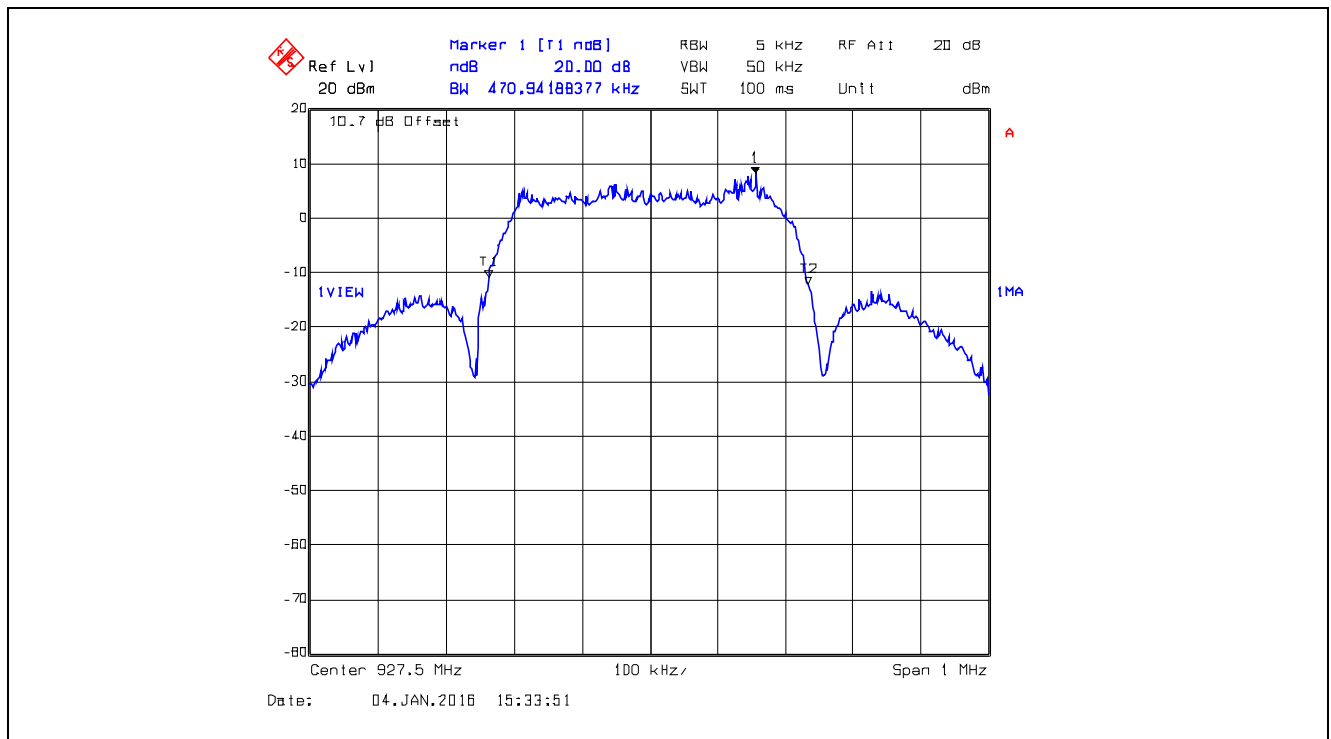
Plot 5.3.4.16. 20 dB Bandwidth, 902.5 MHz, GFSK, Data Rate at 400 kbps



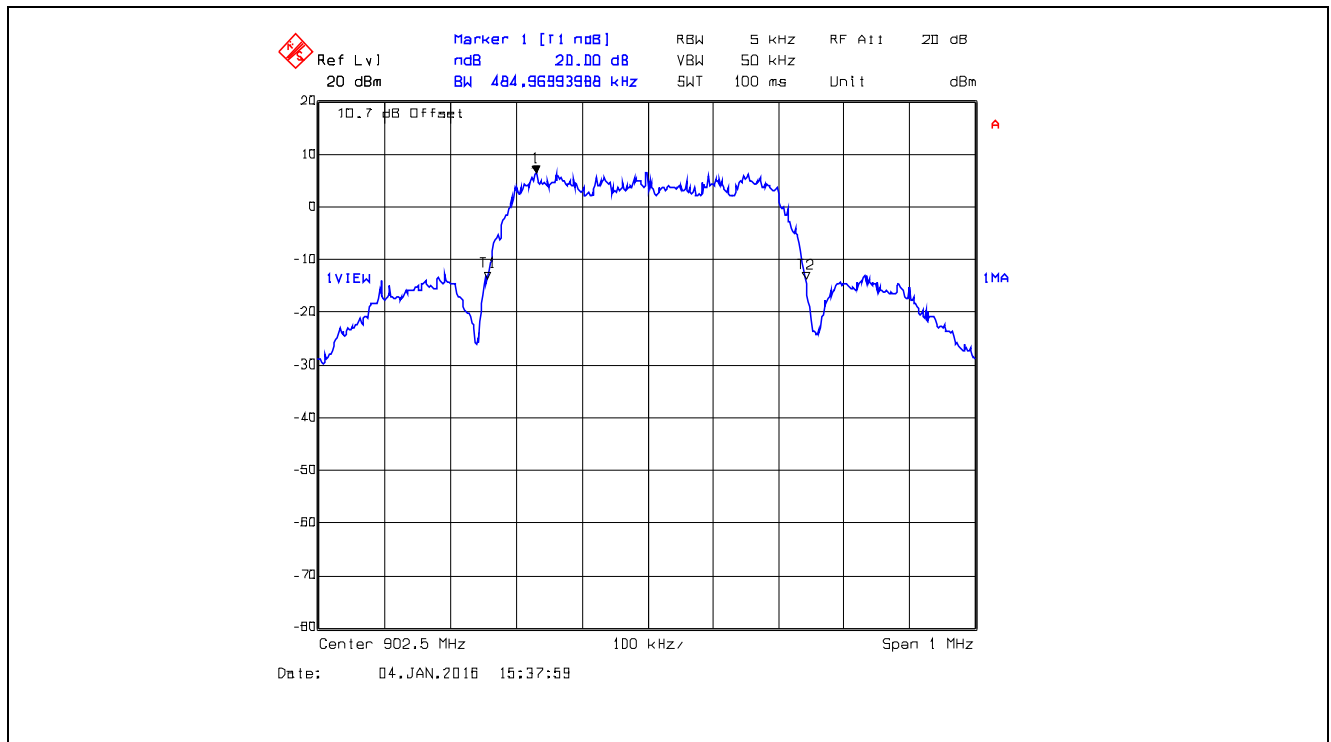
Plot 5.3.4.17. 20 dB Bandwidth, 915.0 MHz, GFSK, Data Rate at 400 kbps



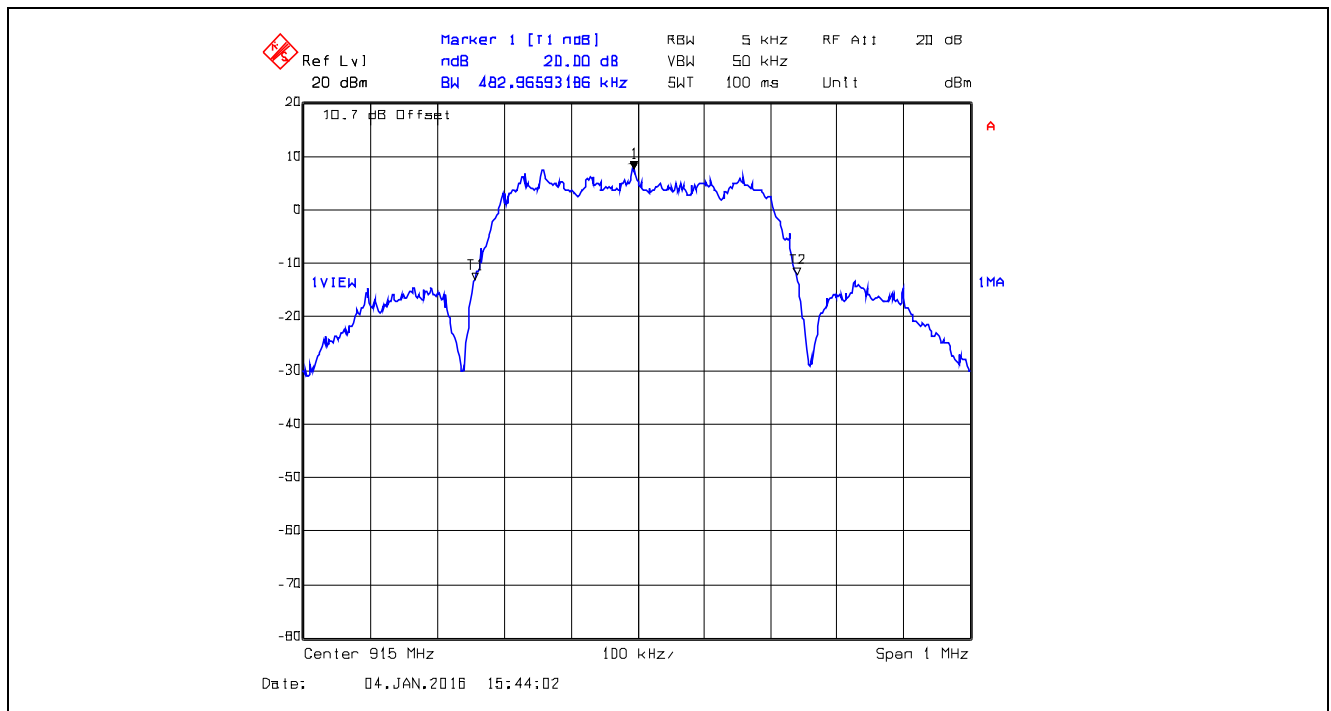
Plot 5.3.4.18. 20 dB Bandwidth, 927.5 MHz, GFSK, Data Rate at 400 kbps



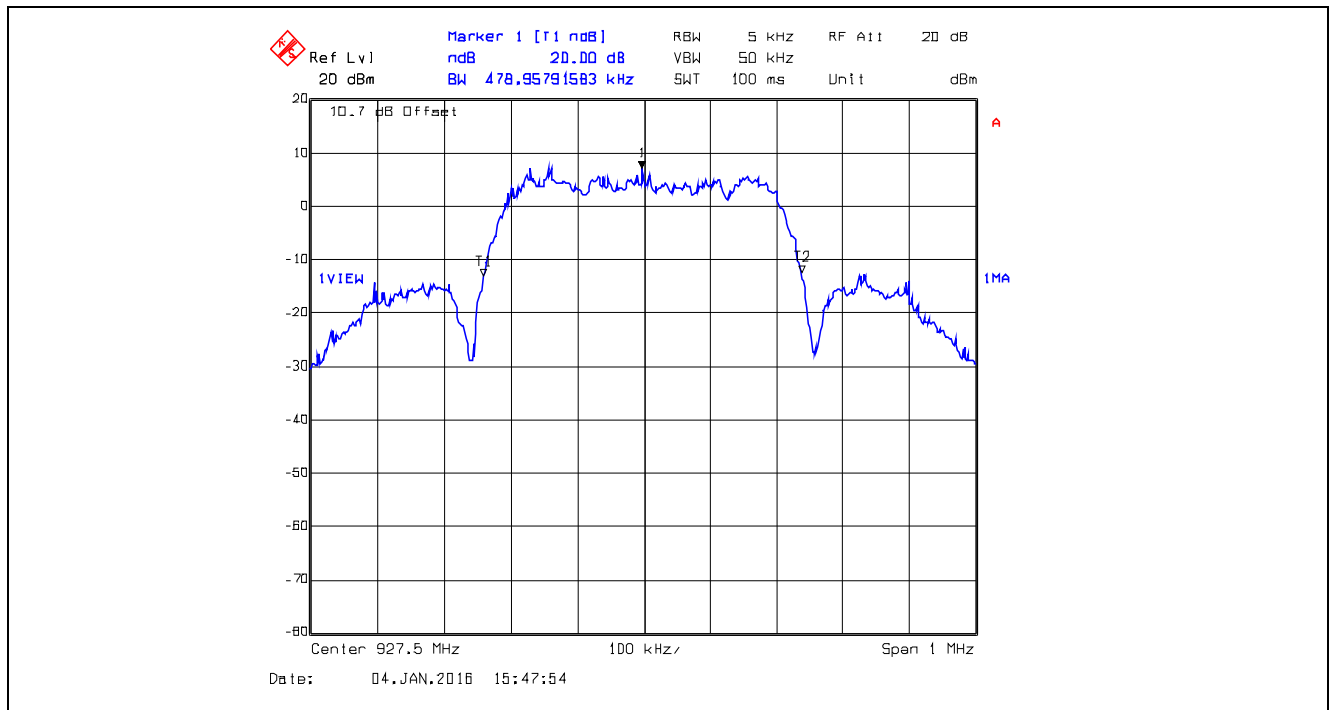
Plot 5.3.4.19. 20 dB Bandwidth, 902.5 MHz, DSSS1, Data Rate at 400 kbps



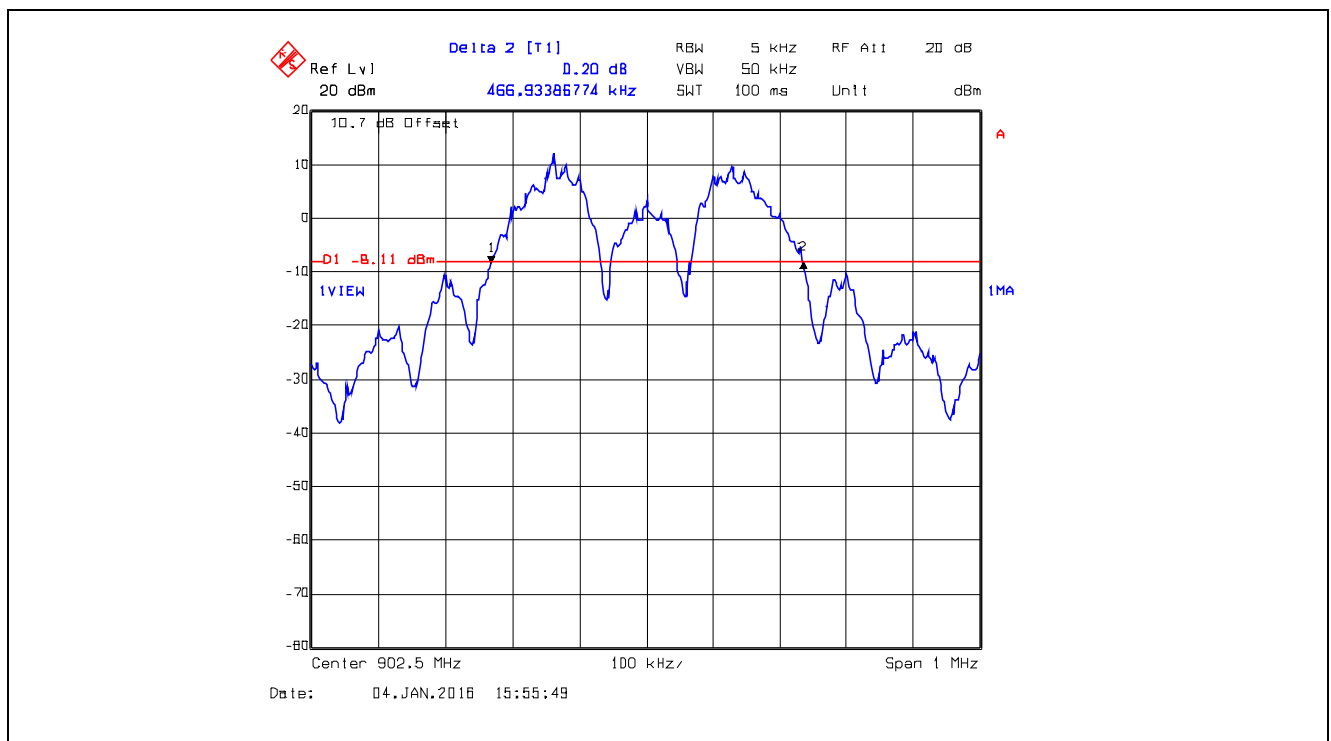
Plot 5.3.4.20. 20 dB Bandwidth, 915.0 MHz, DSSS1, Data Rate at 400 kbps



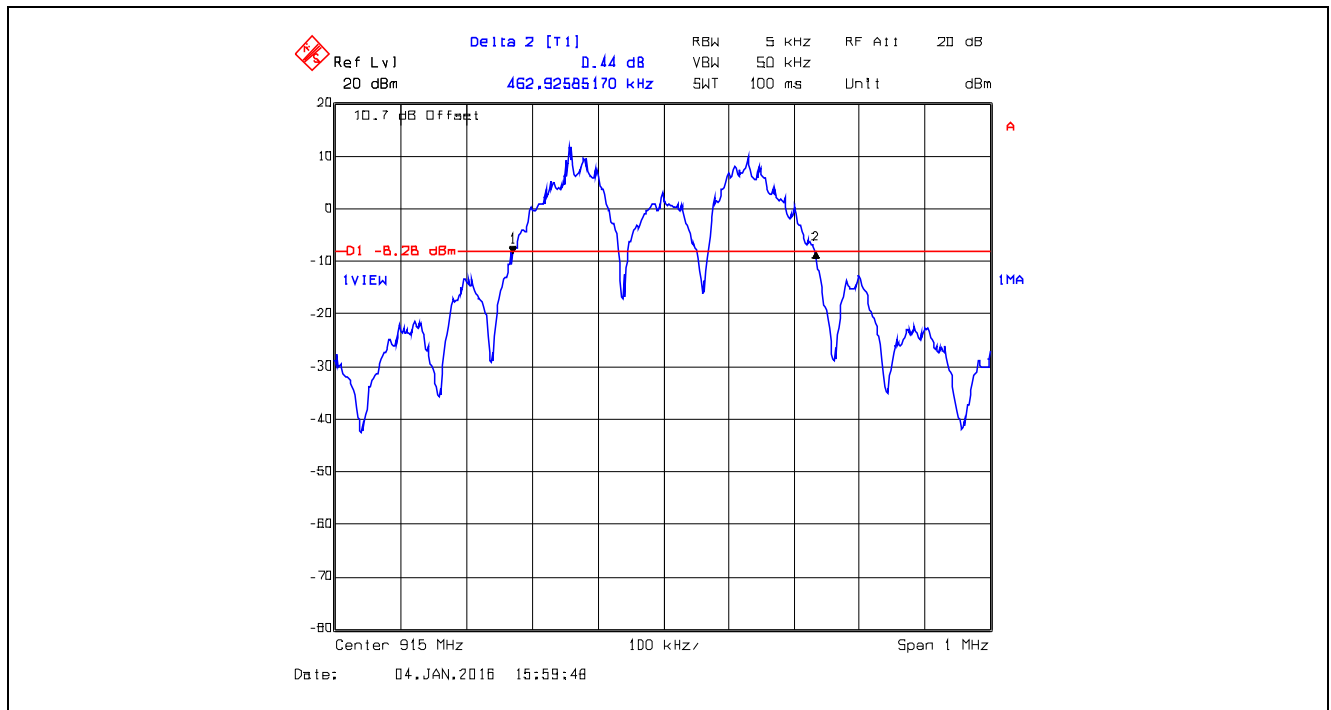
Plot 5.3.4.21. 20 dB Bandwidth, 927.5 MHz, DSSS1, Data Rate at 400 kbps



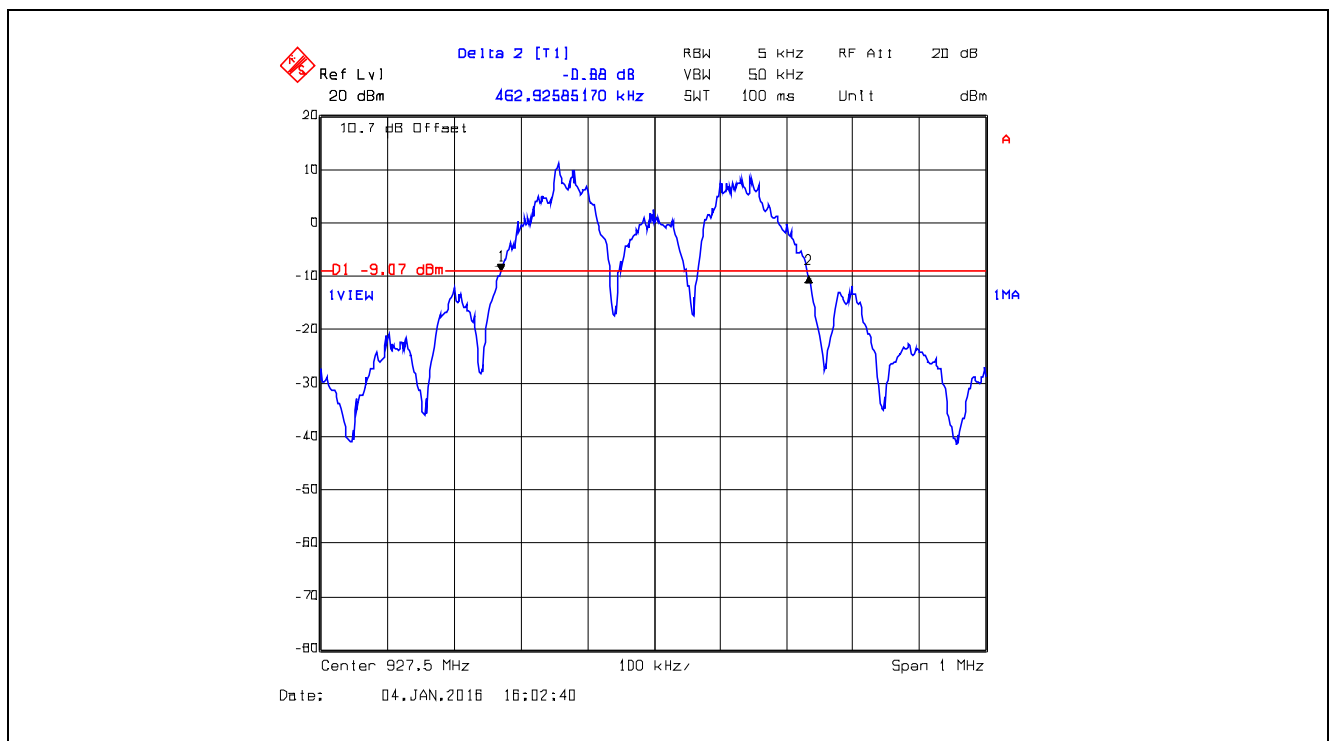
Plot 5.3.4.22. 20 dB Bandwidth, 902.5 MHz, DSSS2, Data Rate at 400 kbps



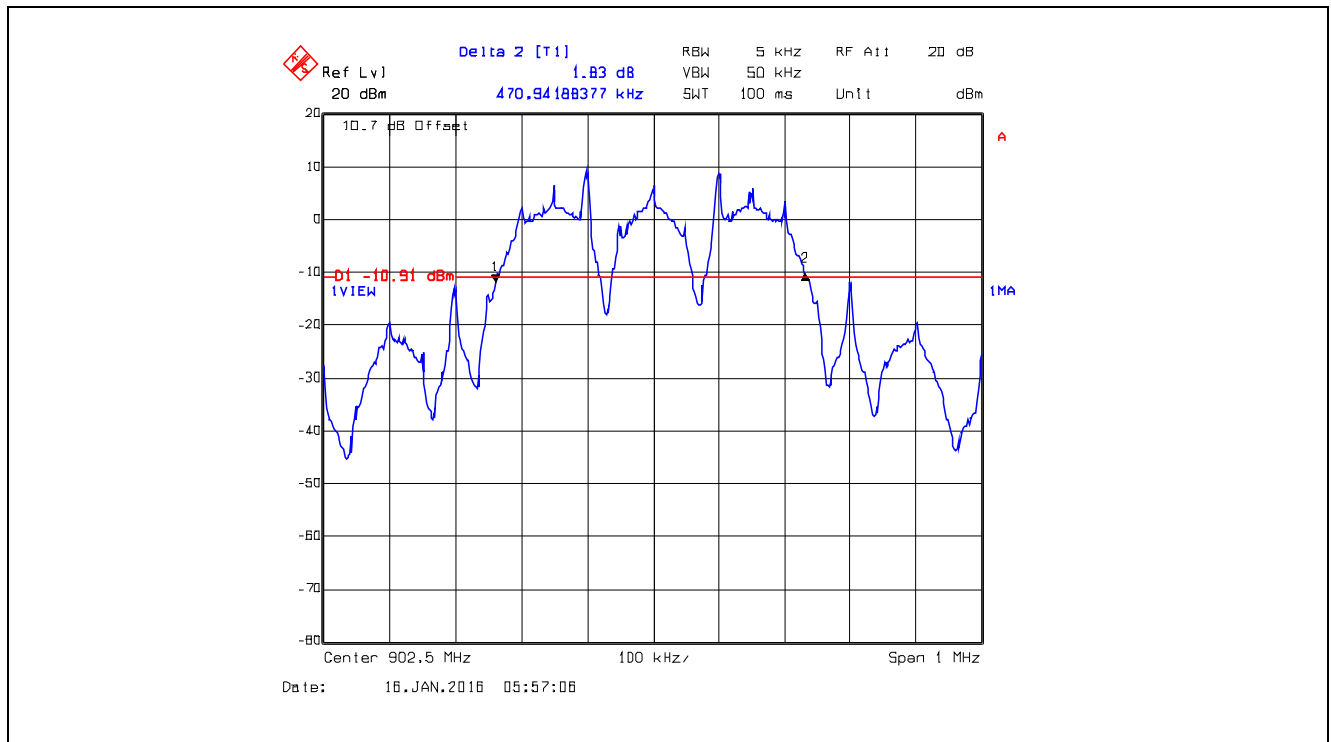
Plot 5.3.4.23. 20 dB Bandwidth, 915.0 MHz, DSSS2, Data Rate at 400 kbps



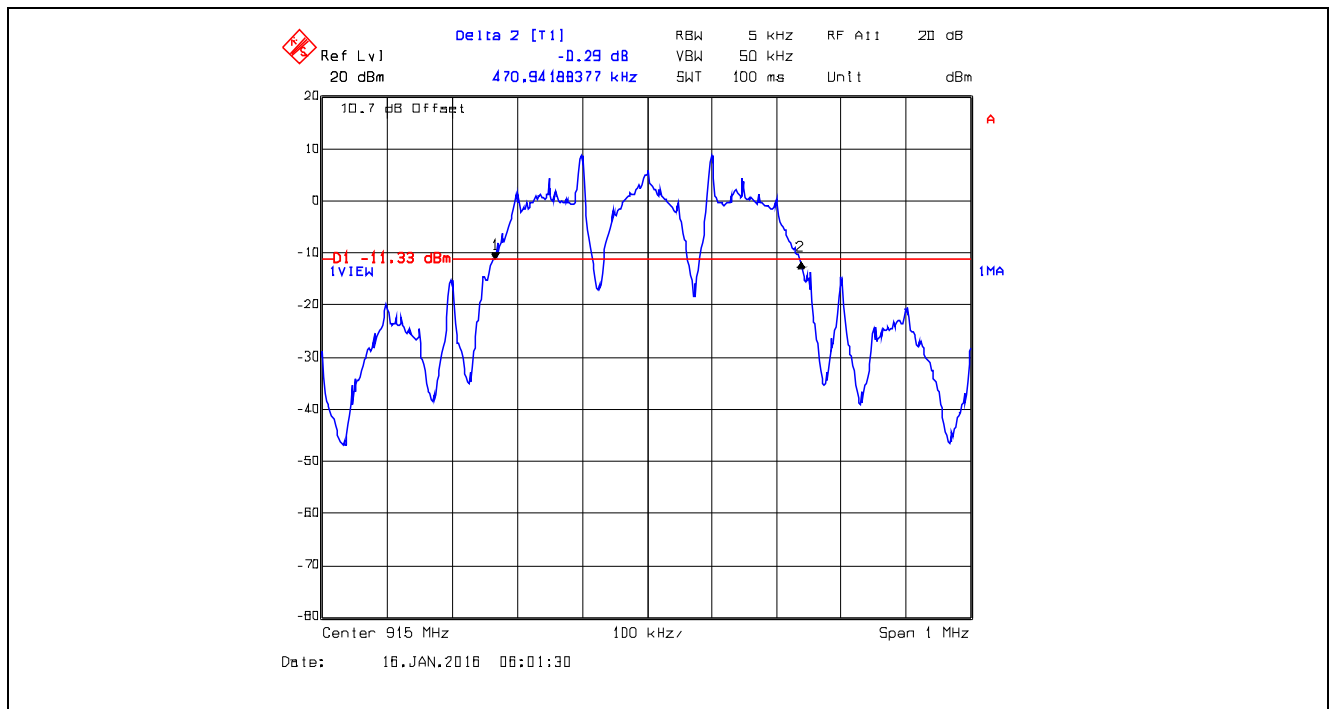
Plot 5.3.4.24. 20 dB Bandwidth, 927.5 MHz, DSSS2, Data Rate at 400 kbps



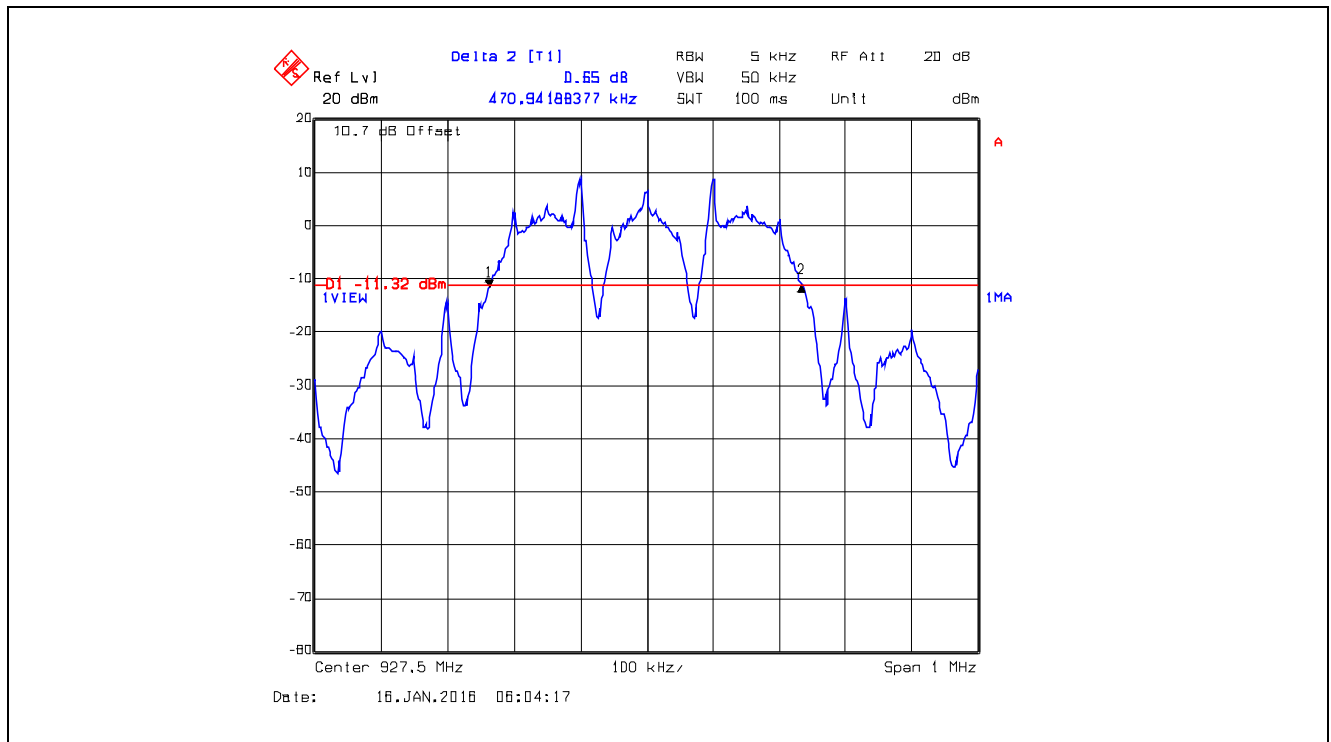
Plot 5.3.4.25. 20 dB Bandwidth, 902.5 MHz, DSSS4, Data Rate at 400 kbps



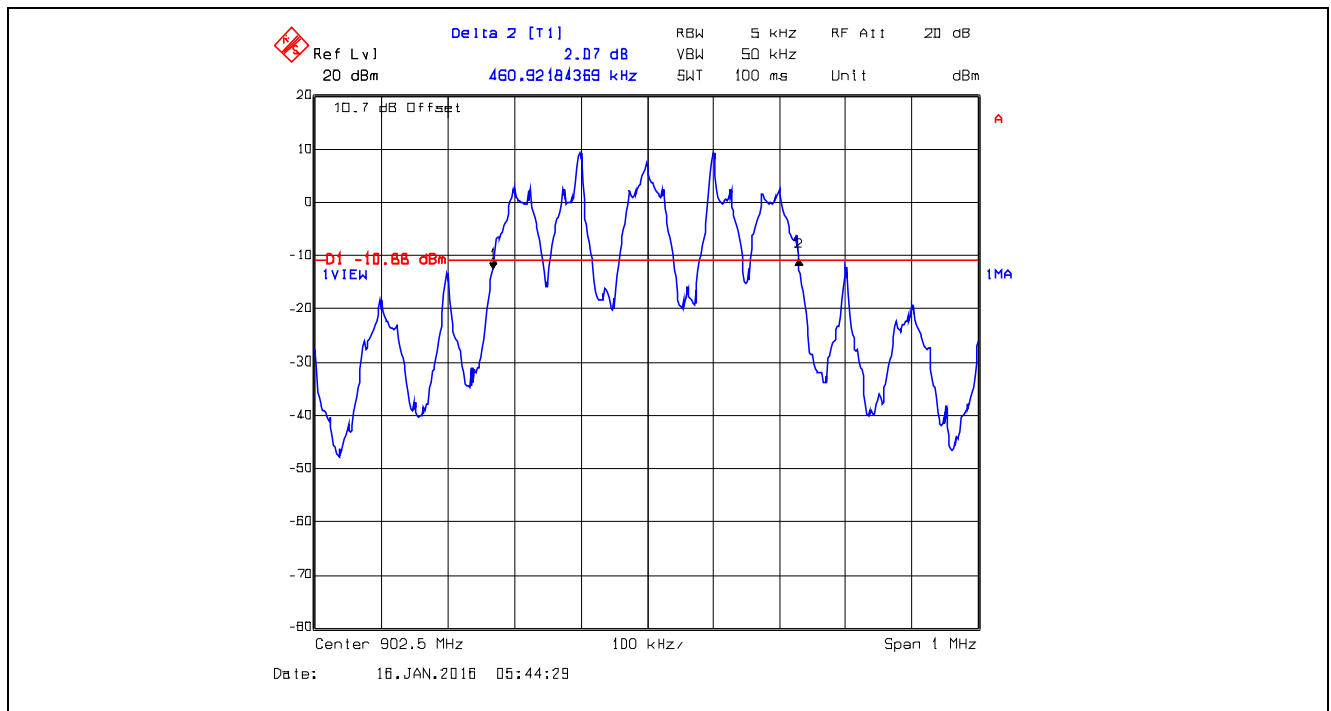
Plot 5.3.4.26. 20 dB Bandwidth, 915.0 MHz, DSSS4, Data Rate at 400 kbps



Plot 5.3.4.27. 20 dB Bandwidth, 927.5 MHz, DSSS4, Data Rate at 400 kbps



Plot 5.3.4.28. 20 dB Bandwidth, 902.5 MHz, DSSS8, Data Rate at 400 kbps



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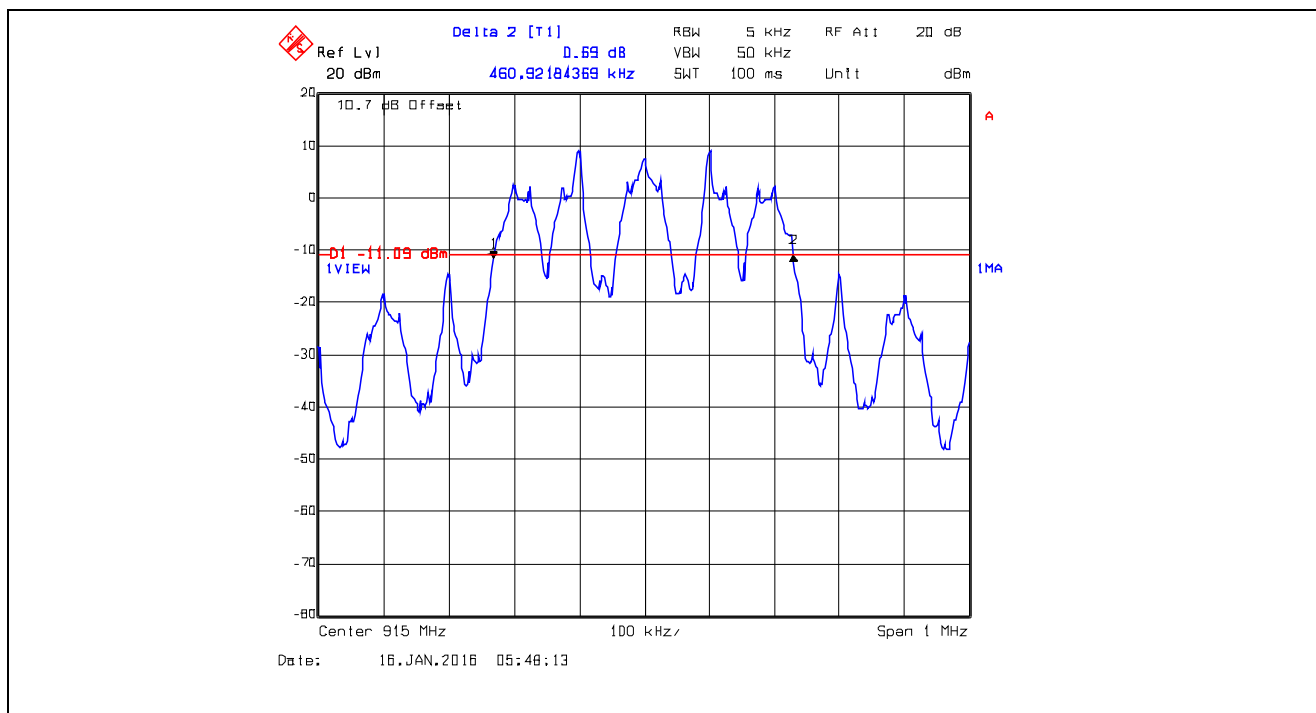
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

File #: 16MONN026_FCC15C247

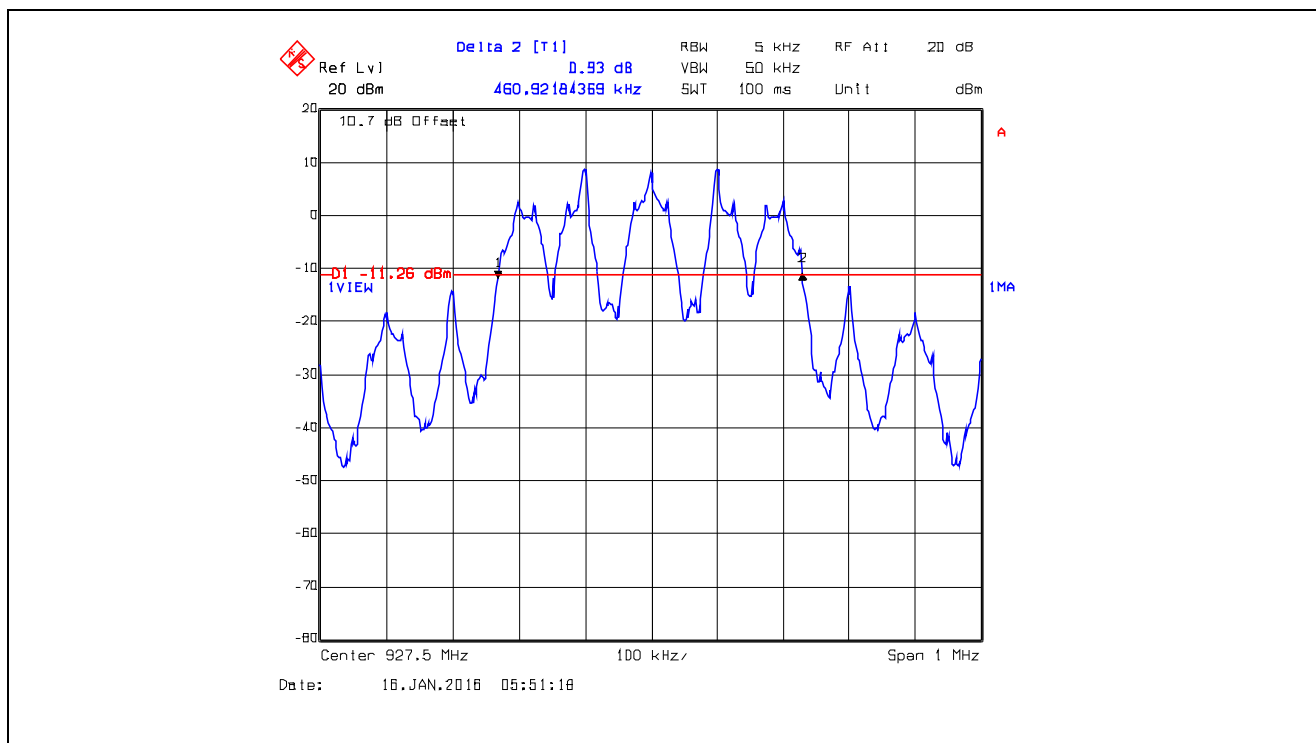
January 22, 2016

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

Plot 5.3.4.29. 20 dB Bandwidth, 915.0 MHz, DSSS8, Data Rate at 400 kbps



Plot 5.3.4.30. 20 dB Bandwidth, 927.5 MHz, DSSS8, Data Rate at 400 kbps



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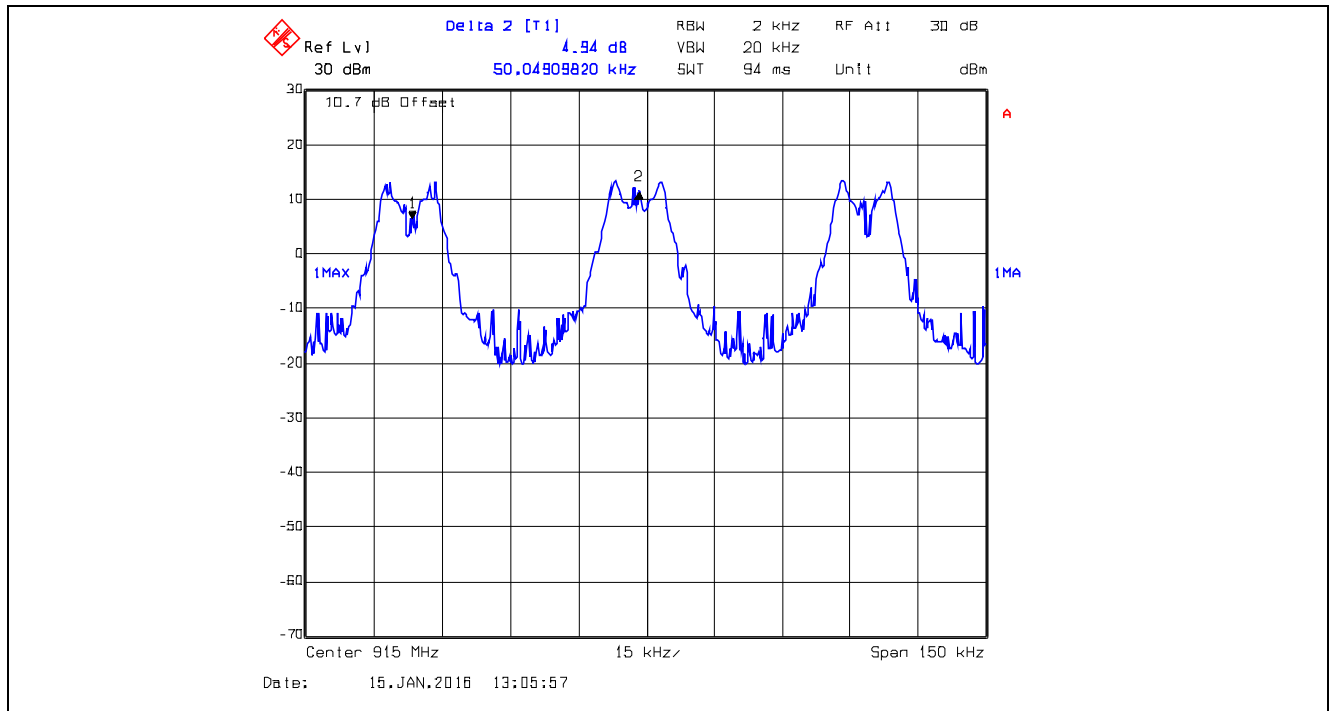
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

File #: 16MONN026_FCC15C247

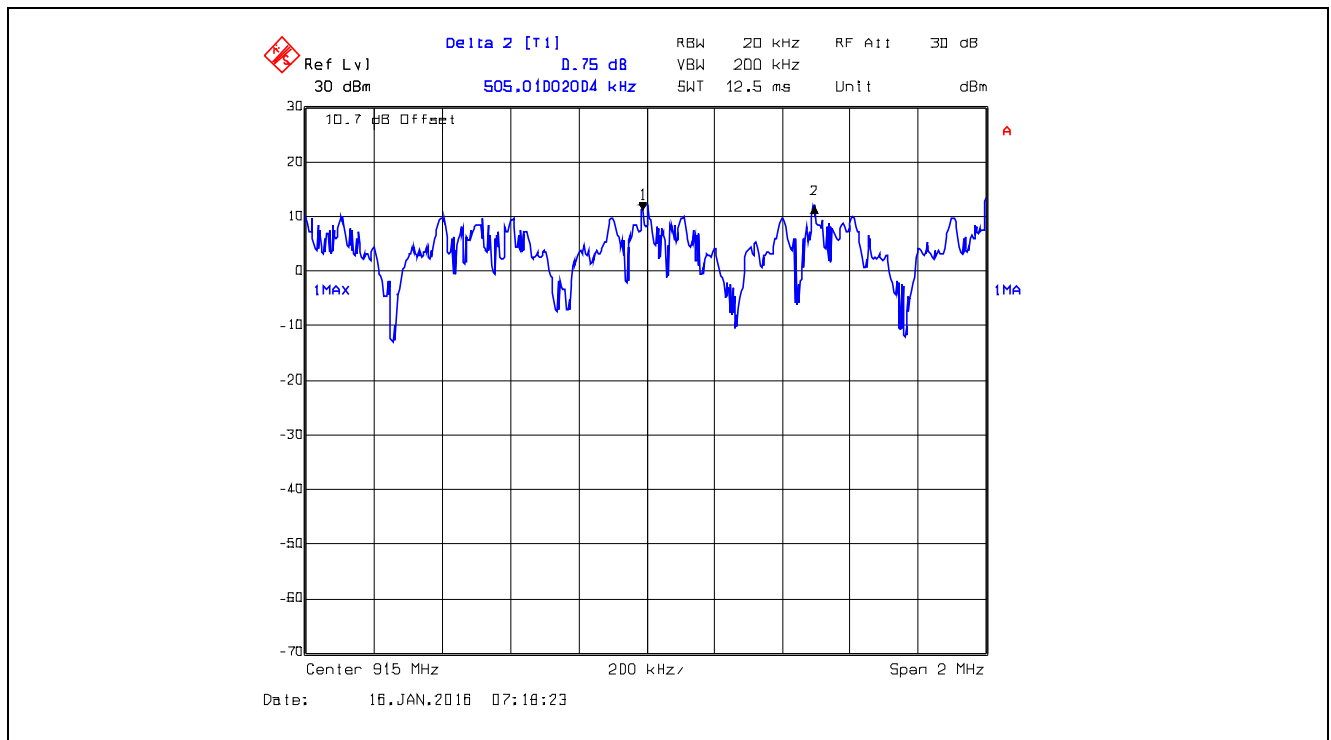
January 22, 2016

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

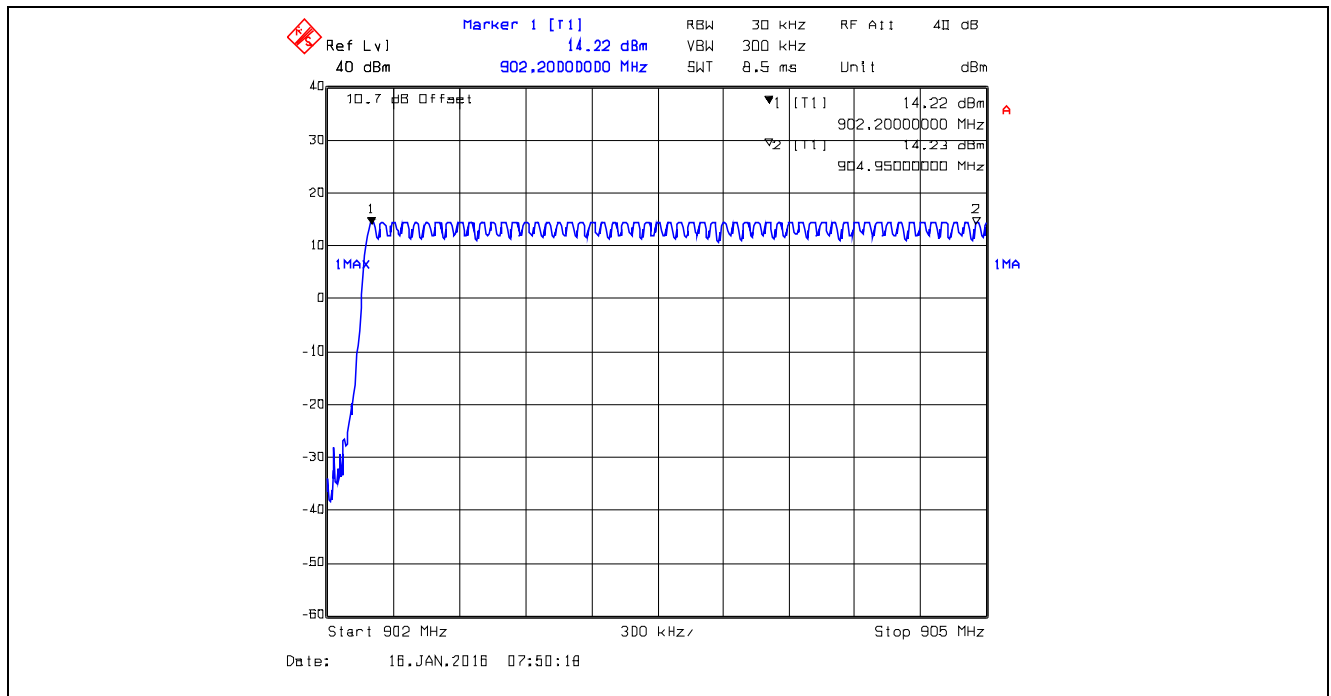
Plot 5.3.4.31. Carrier Frequency Separation, FSK, Data rate at 10 Kbps



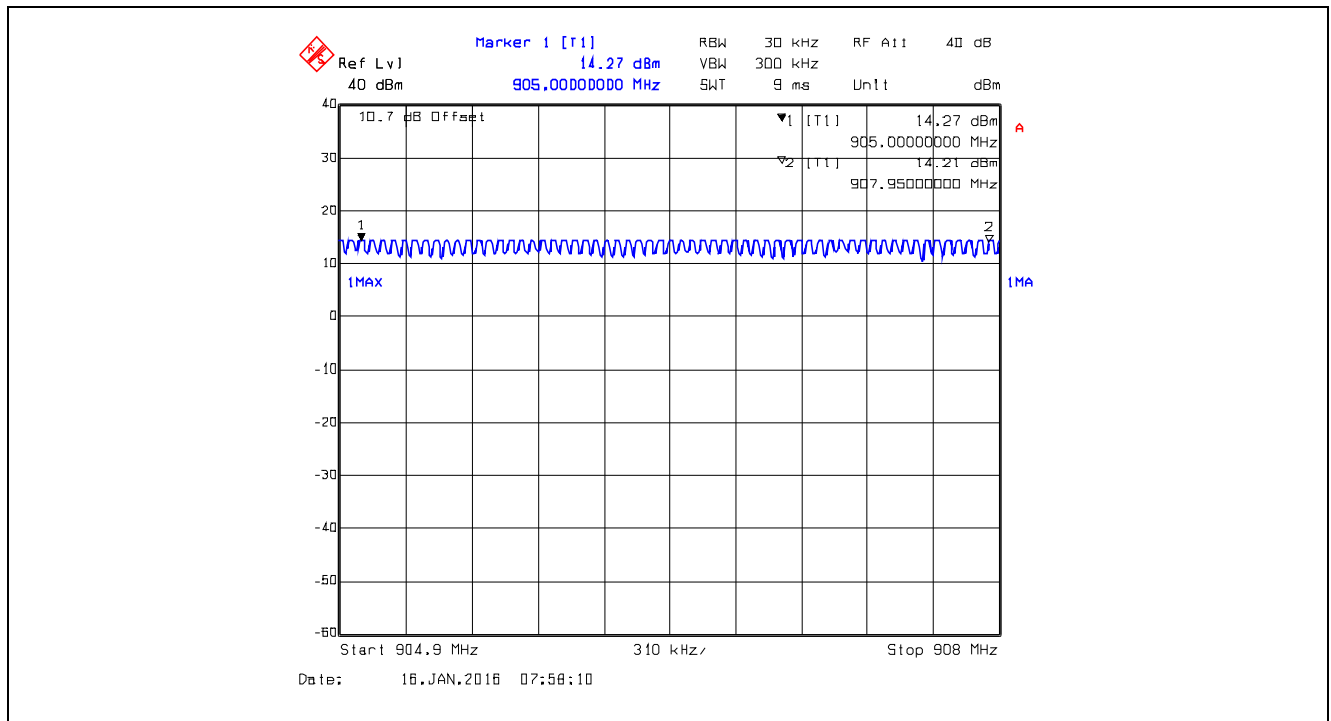
Plot 5.3.4.32. Carrier Frequency Separation, GFSK, Data Rate at 400 kbps



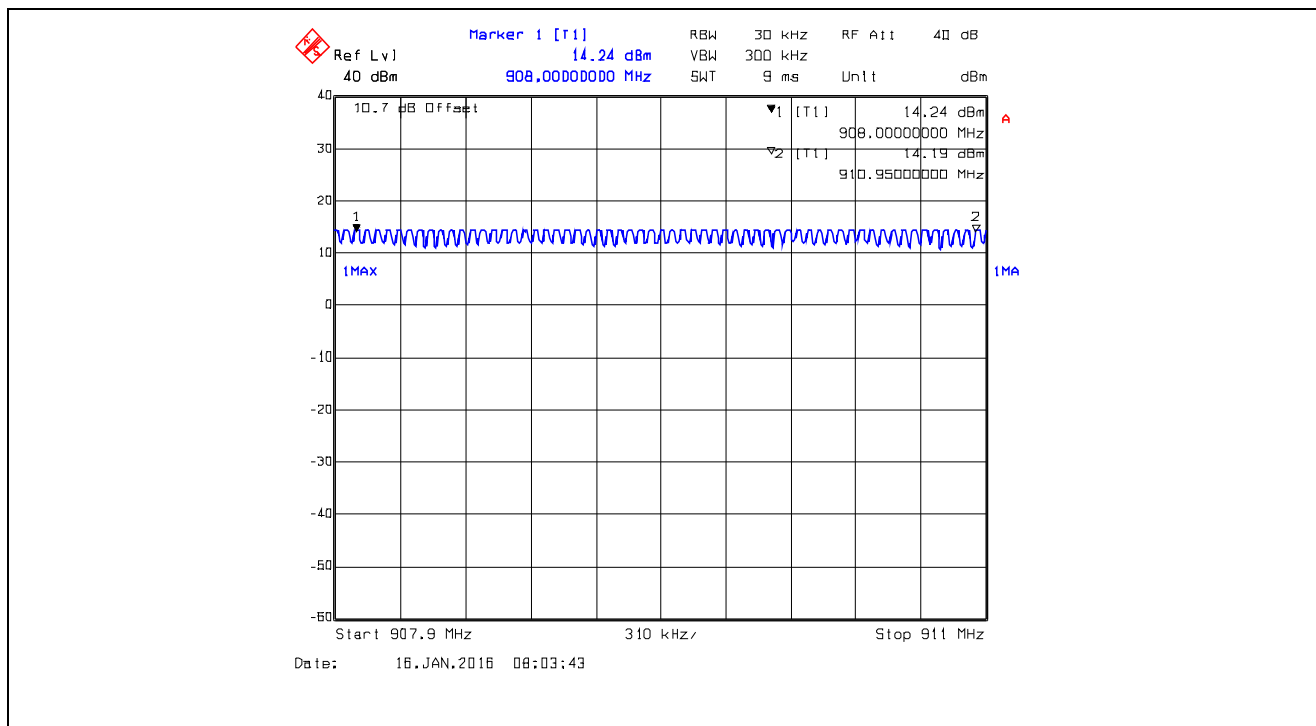
Plot 5.3.4.33. Number of Hopping Frequencies, DSSS8, Data Rate at 10 kbps
56 Hopping Channels from 902 – 904.95 MHz



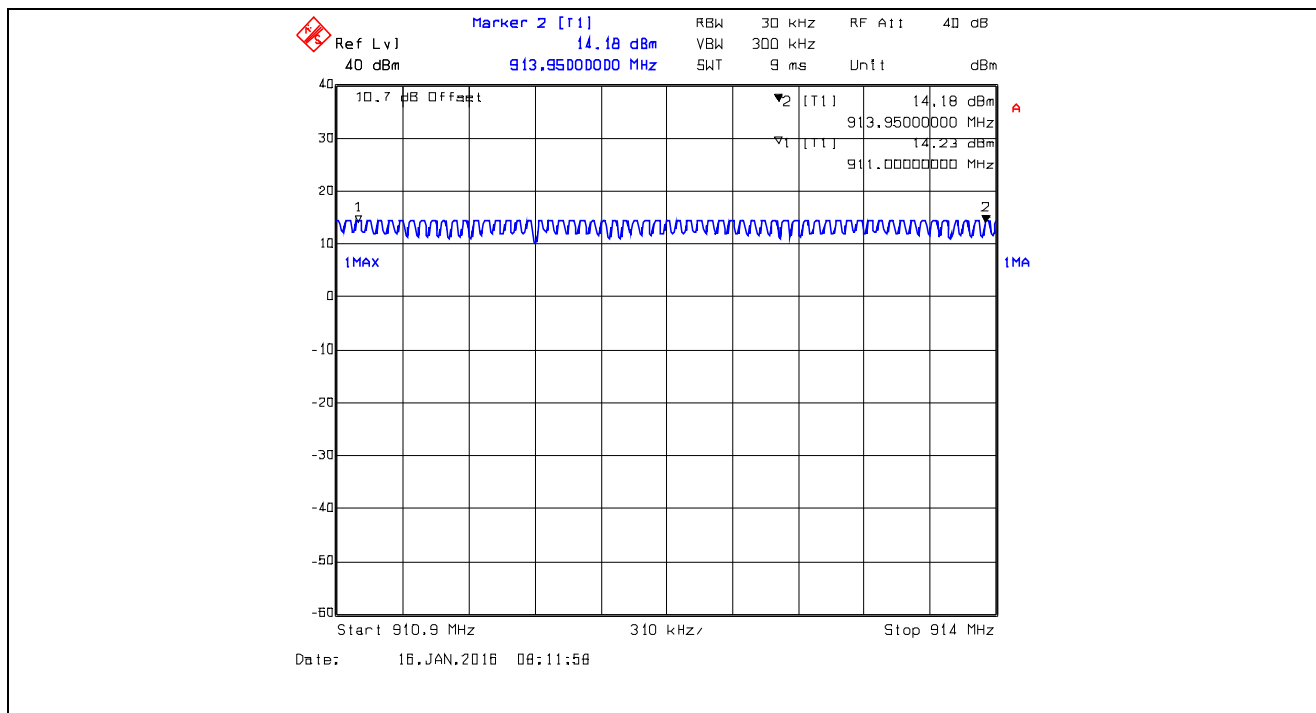
Plot 5.3.4.34. Number of Hopping Frequencies, DSSS8, Data Rate at 10 kbps
60 Hopping Channels from 905 – 908 MHz



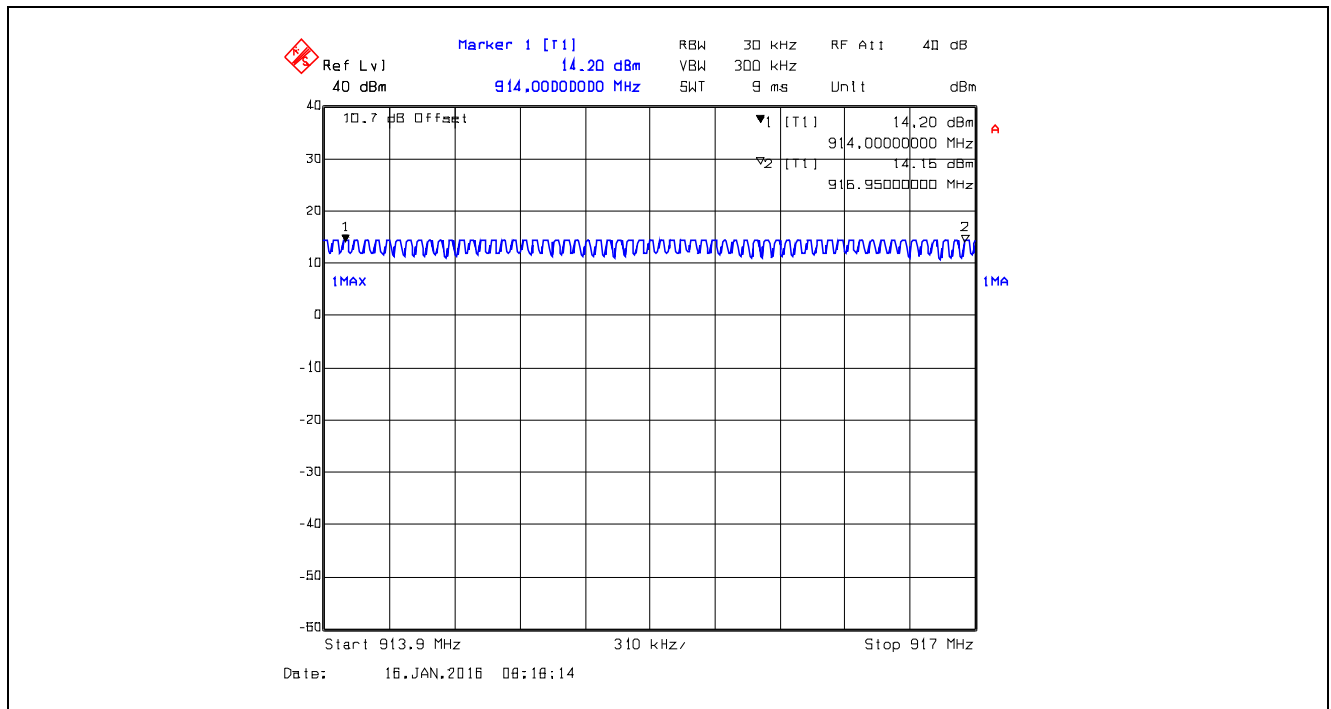
Plot 5.3.4.35. Number of Hopping Frequencies, DSSS8, Data Rate at 10 kbps
60 Hopping Channels from 908 - 911 MHz



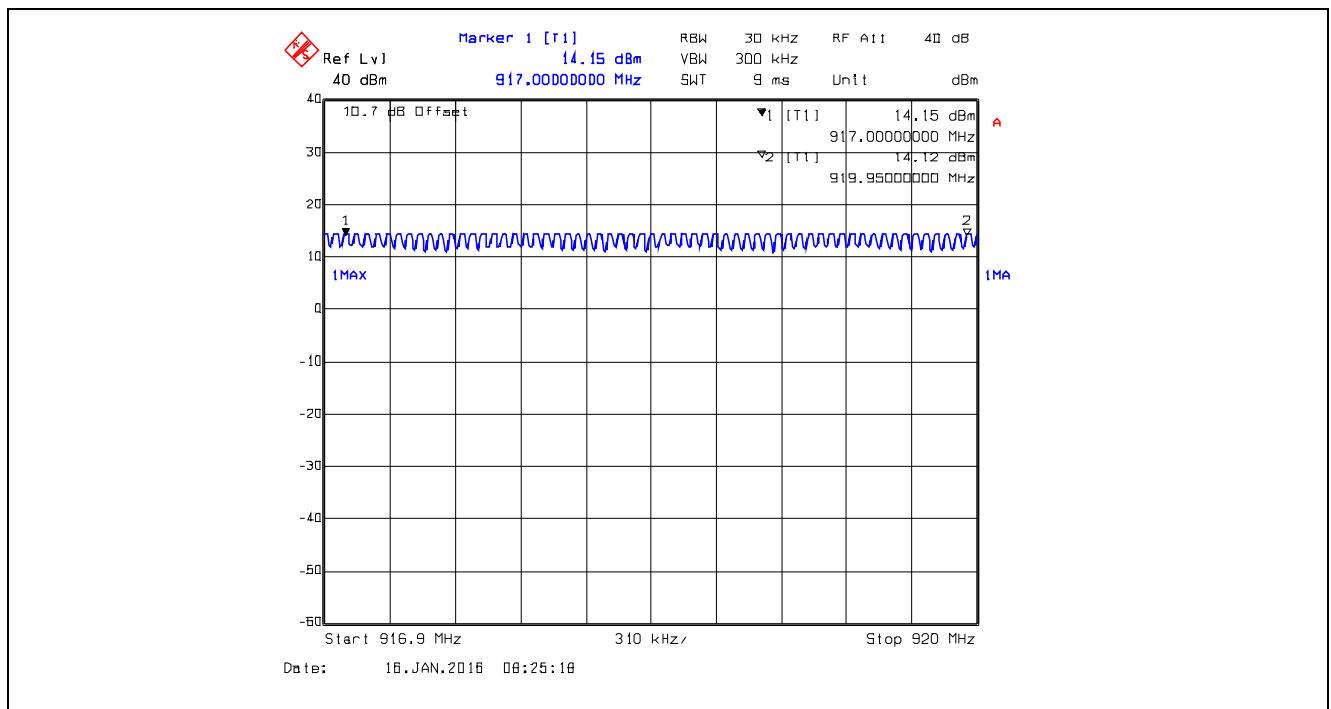
Plot 5.3.4.36. Number of Hopping Frequencies, DSSS8, Data Rate at 10 kbps
60 Hopping Channels from 911 – 914 MHz



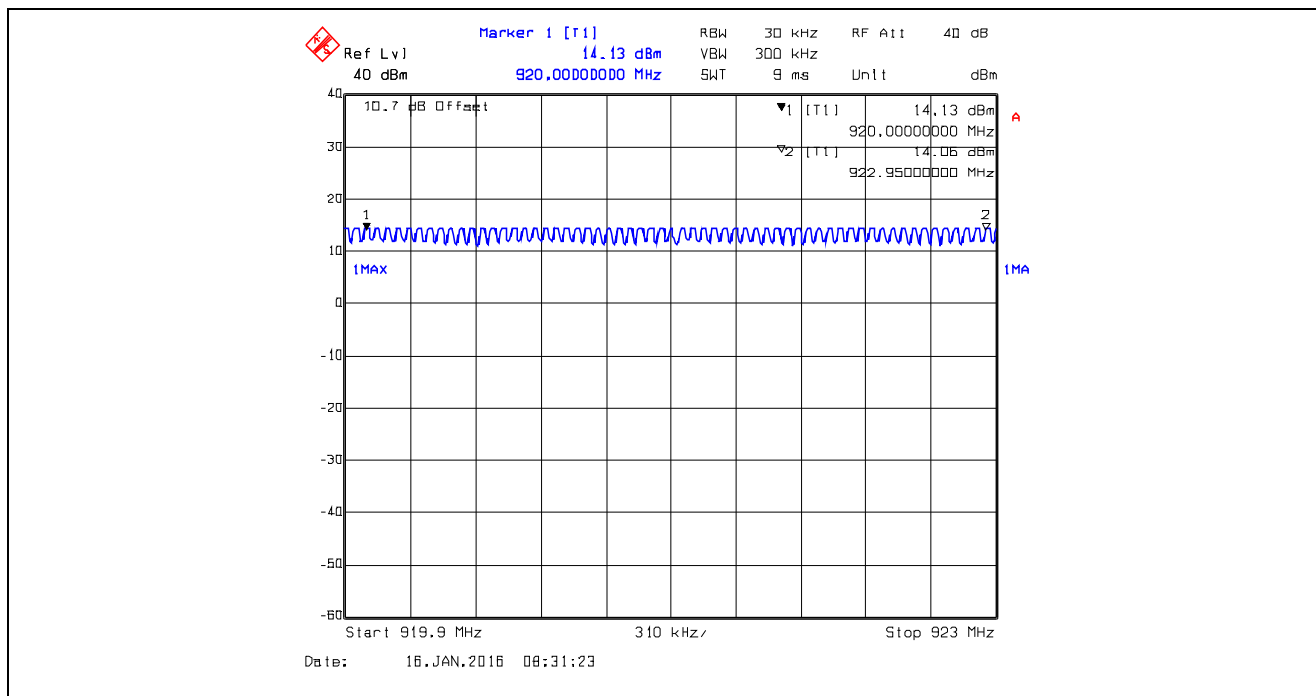
Plot 5.3.4.37. Number of Hopping Frequencies, DSSS8, Data Rate at 10 kbps
60 Hopping Channels from 914 – 917 MHz



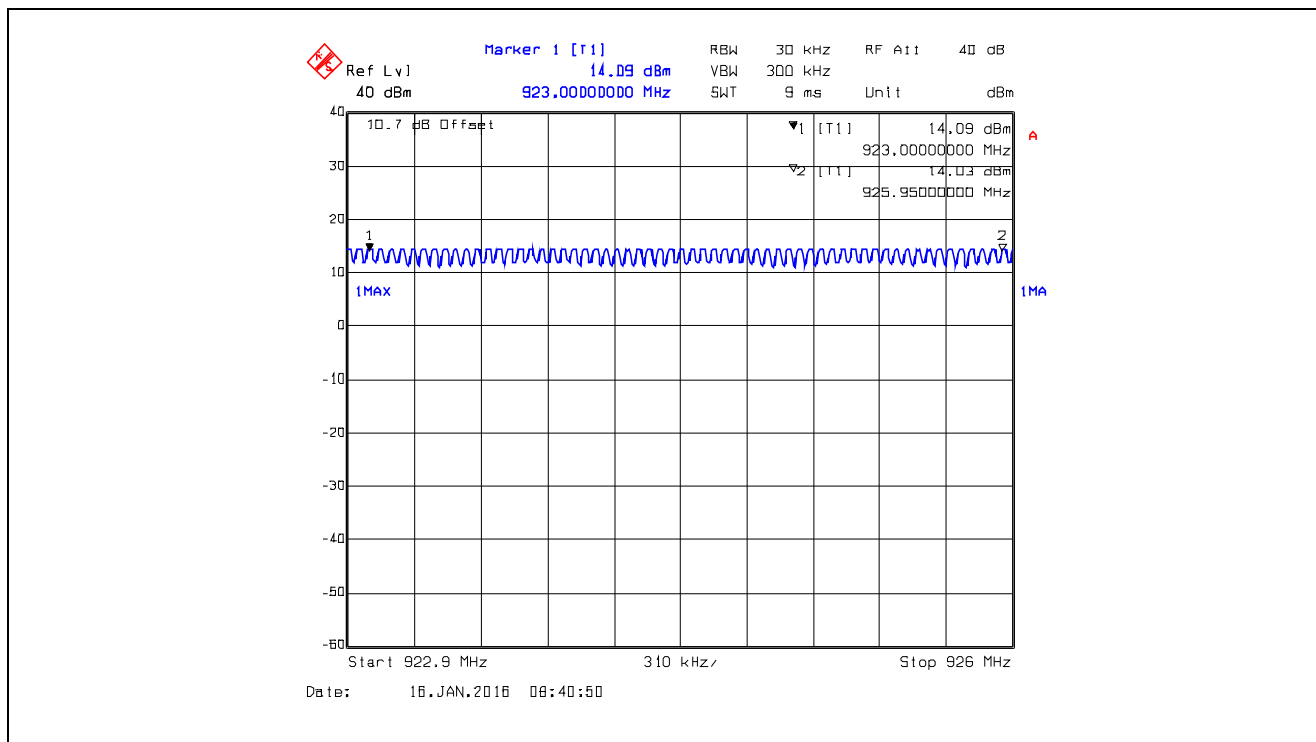
Plot 5.3.4.38. Number of Hopping Frequencies, DSSS8, Data Rate at 10 kbps
60 Hopping Channels from 917 – 920 MHz



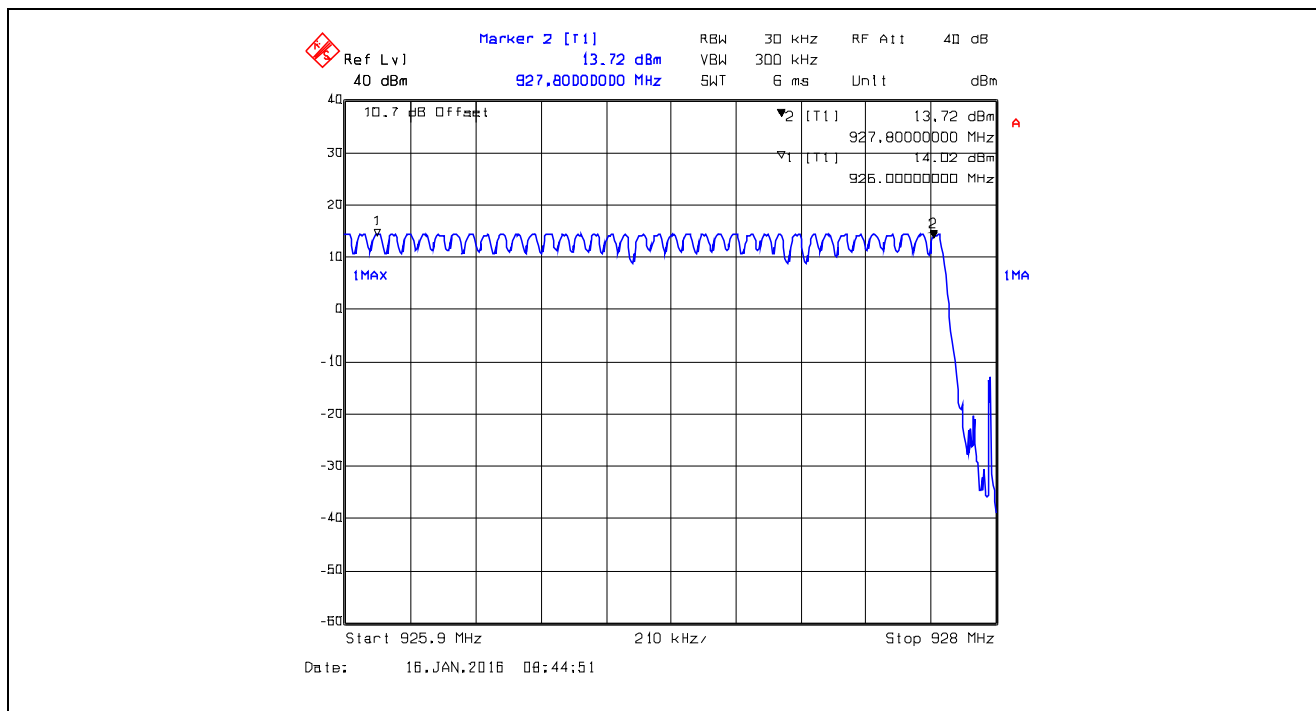
Plot 5.3.4.39. Number of Hopping Frequencies, DSSS8, Data Rate at 10 kbps
60 Hopping Channels from 920 – 923 MHz



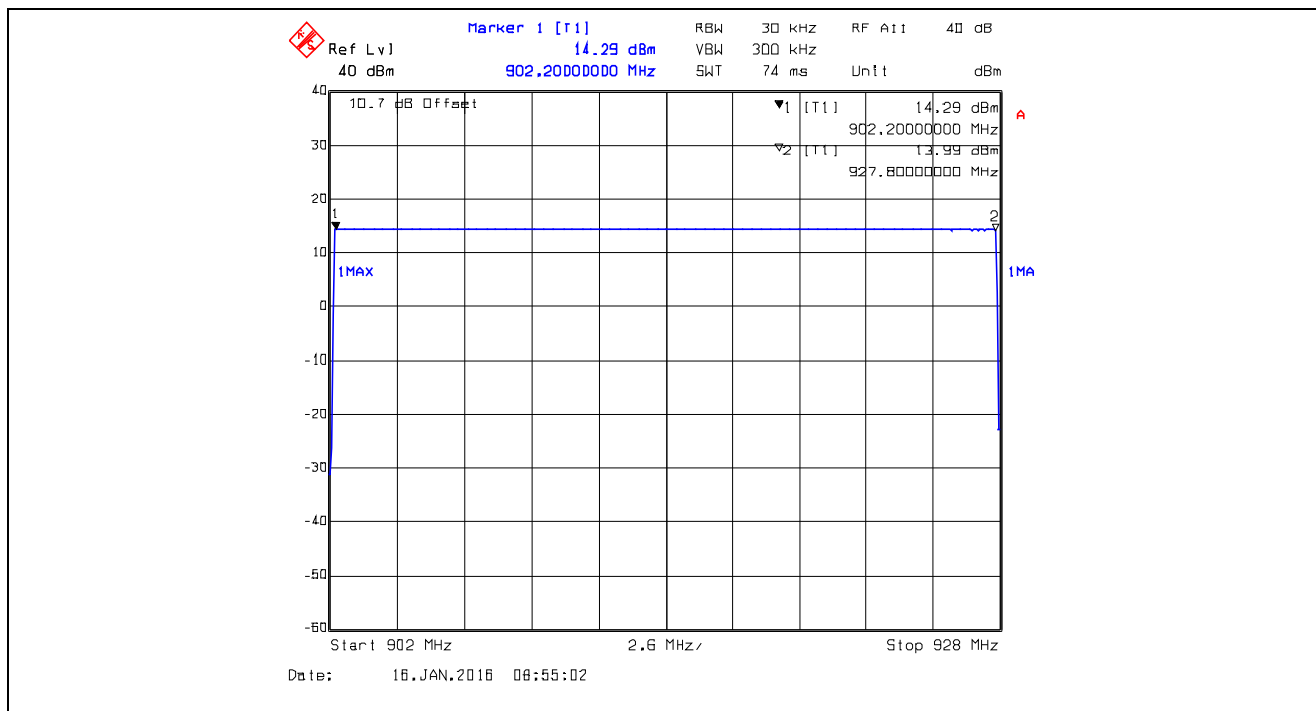
Plot 5.3.4.40. Number of Hopping Frequencies, DSSS8, Data Rate at 10 kbps
60 Hopping Channels from 923 – 926 MHz



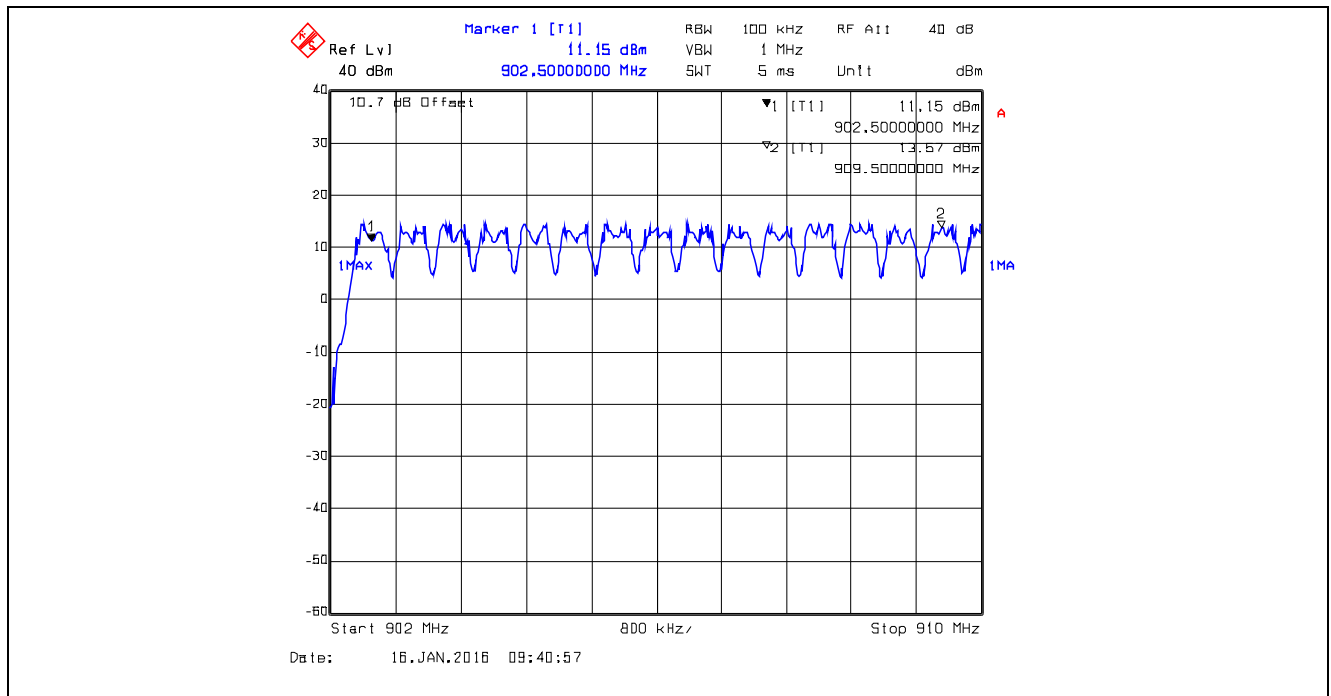
Plot 5.3.4.41. Number of Hopping Frequencies, DSSS8, Data Rate at 10 kbps
37 Hopping Channels from 926 – 927.8 MHz



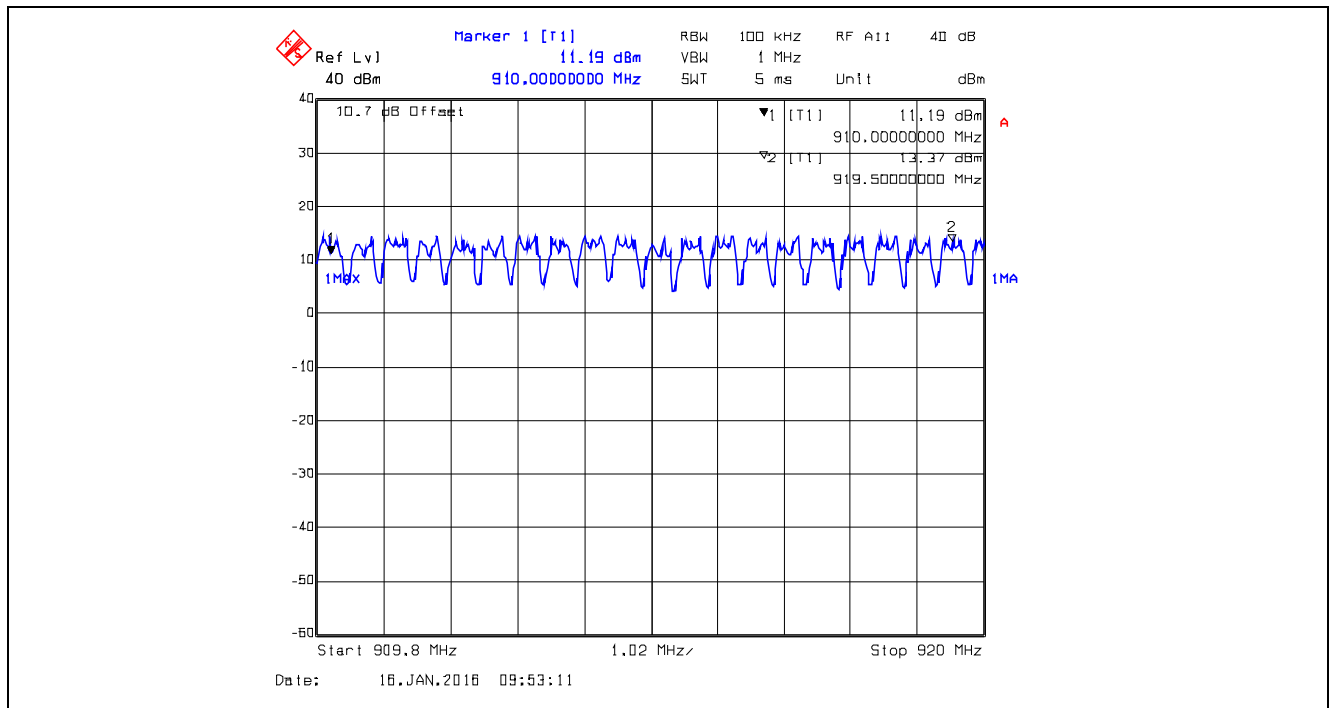
Plot 5.3.4.42. Total Number of Hopping Frequencies, DSSS8, Data Rate at 10 kbps
513 Hopping Channels from 922 – 928 MHz (56+ 7x60 +37 = 513)



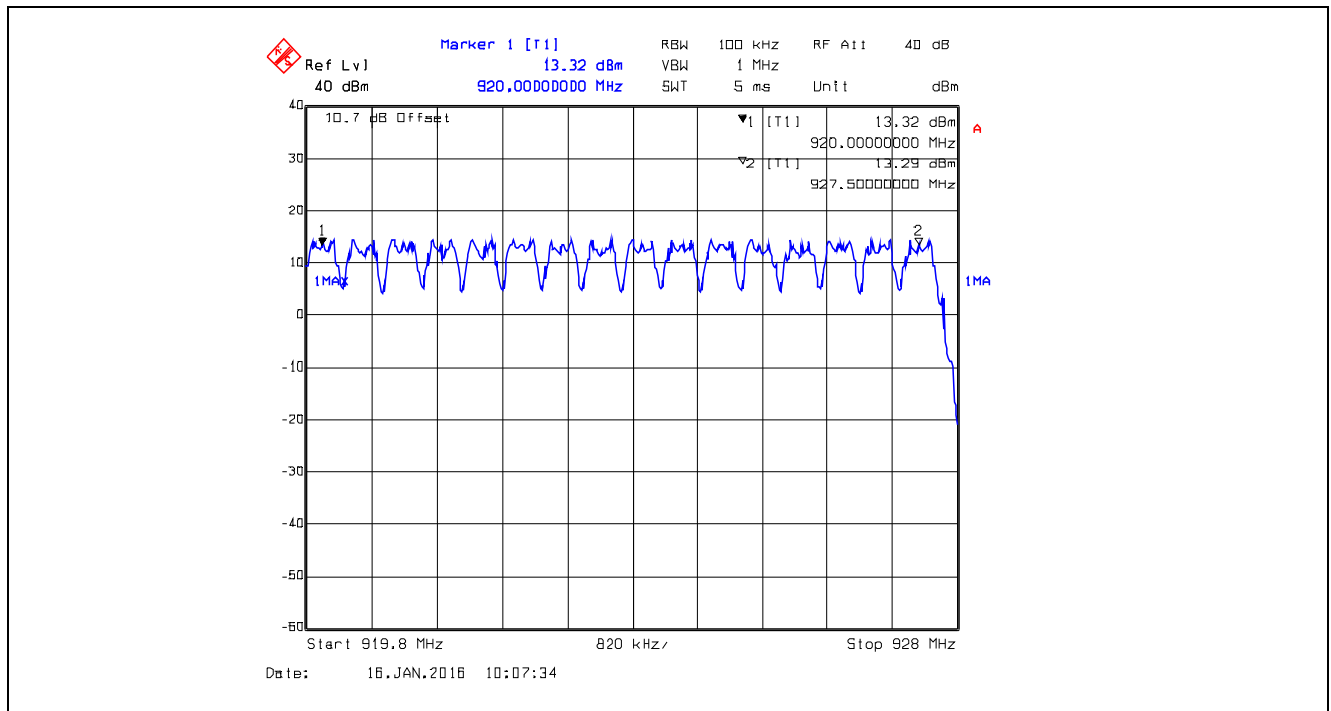
Plot 5.3.4.43. Number of Hopping Frequencies, DSSS8, Data Rate at 400 kbps
15 Hopping Channels from 902.5 – 909.5 MHz



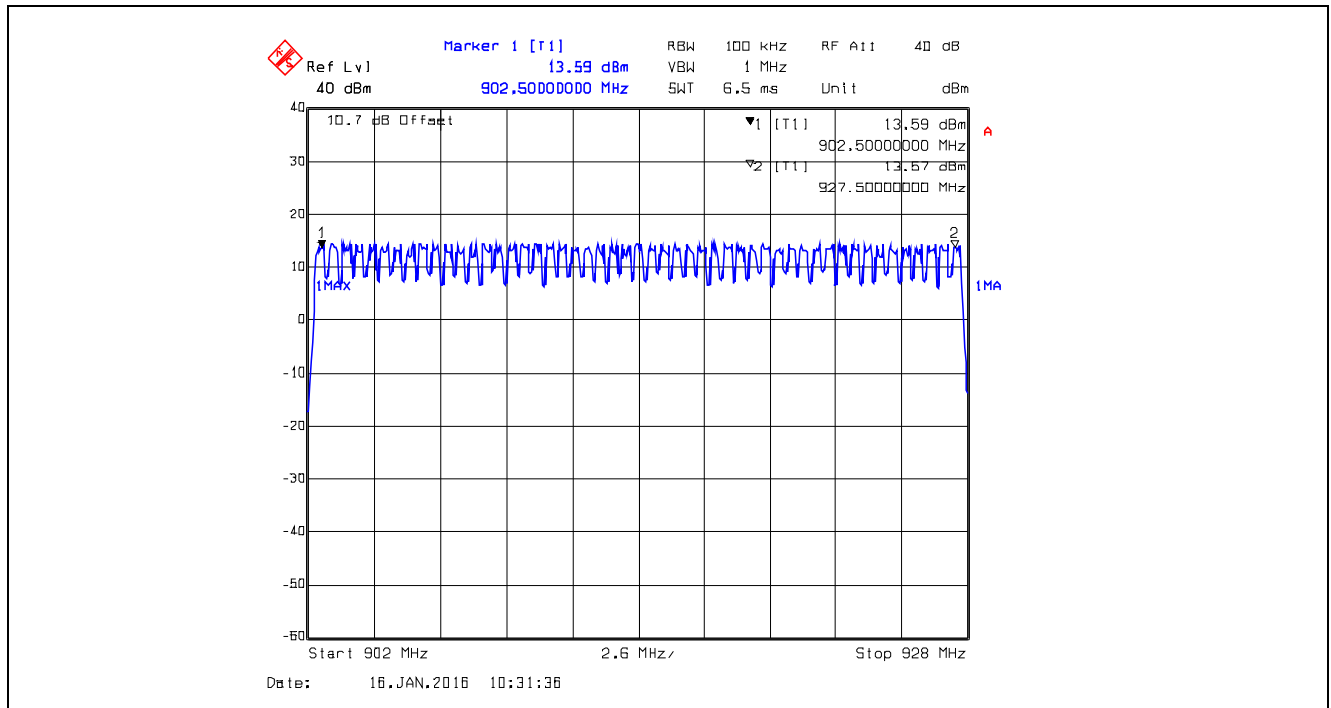
Plot 5.3.4.44. Number of Hopping Frequencies, DSSS8, Data Rate at 400 kbps
20 Hopping Channels from 910 – 919.5 MHz



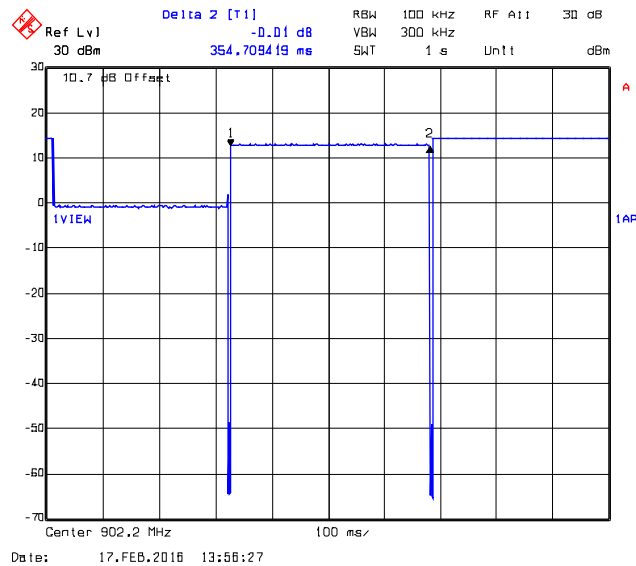
Plot 5.3.4.45. Number of Hopping Frequencies, DSSS8, Data Rate at 400 kbps
16 Hopping Channels from 920 – 927.5 MHz



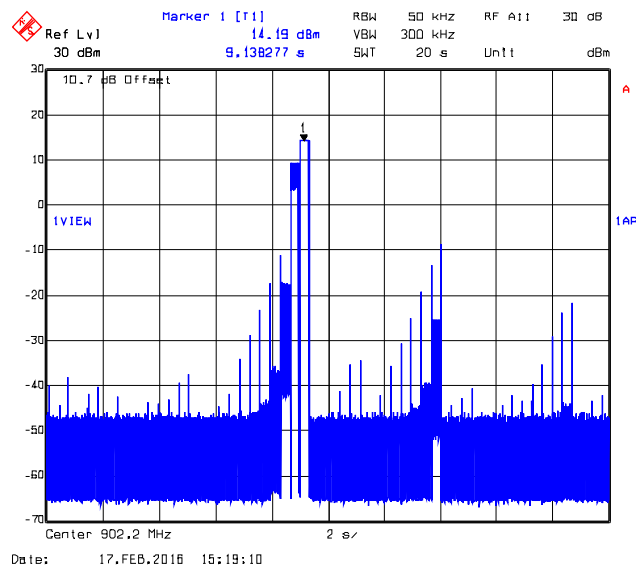
Plot 5.3.4.46. Total Number of Hopping Frequencies, DSSS8, Data Rate at 400 kbps
51 Hopping Channels from 902 – 928 MHz (15+20+16 = 51)



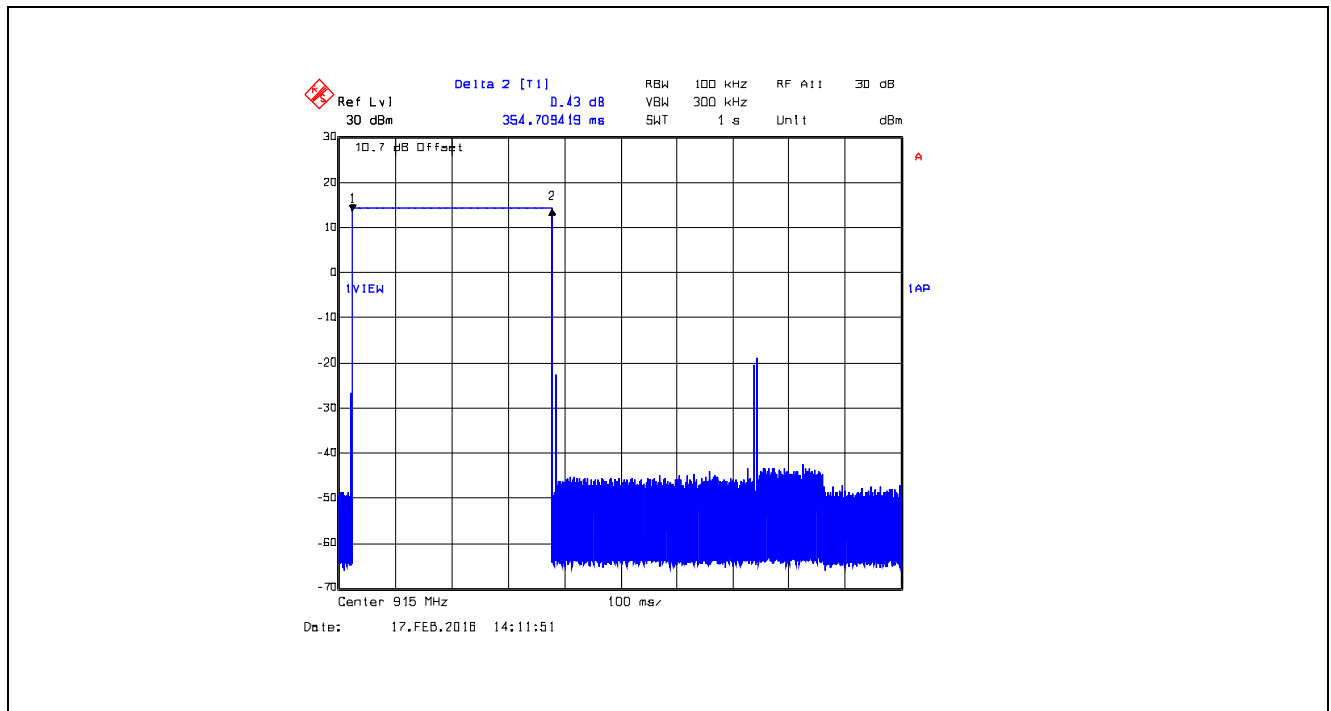
Plot 5.3.4.47. Time of Occupancy, 902.2 MHz, DSSS8, Data Rate at 10 kbps
Dwell Time @ 902.2 MHz = 354.71 ms



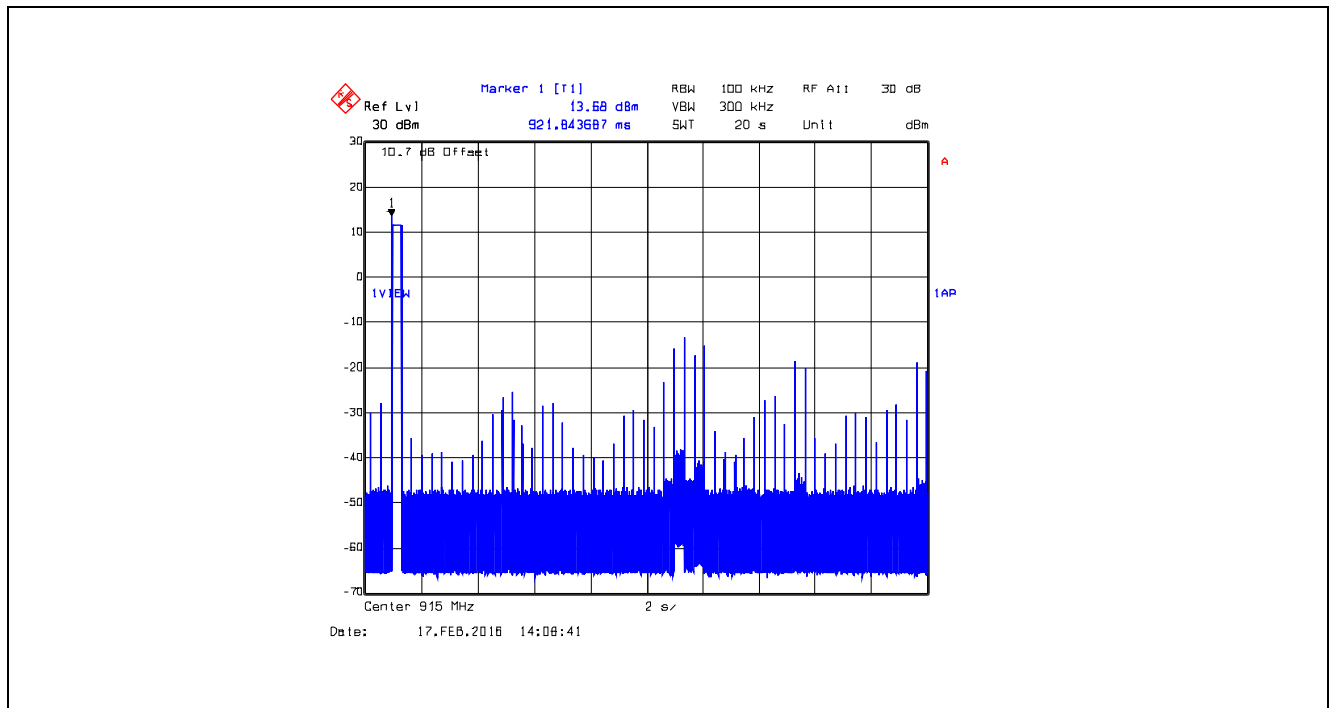
Plot 5.3.4.48. Time of Occupancy, 902.2 MHz DSSS8, Data Rate at 10 kbps
Average time of occupancy = $1 \times (T_{on})$ in 20 seconds = 354.71ms < 400ms



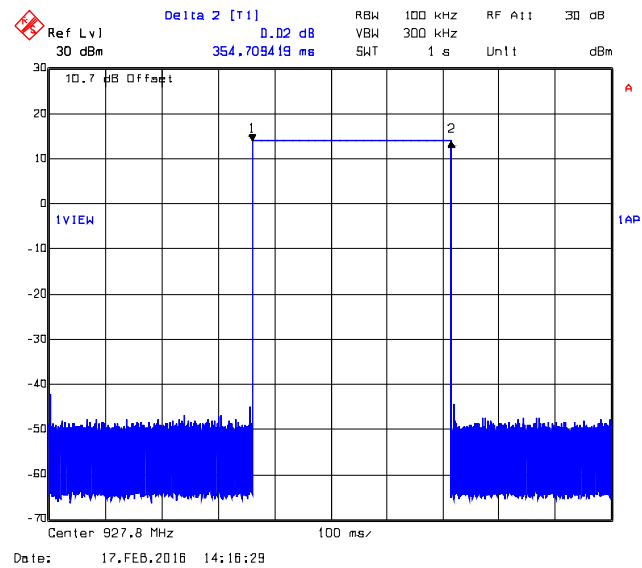
Plot 5.3.4.49. Time of Occupancy, 915 MHz, DSSS8, Data Rate at 10 kbps
Dwell Time @ 915 MHz = 354.71 ms



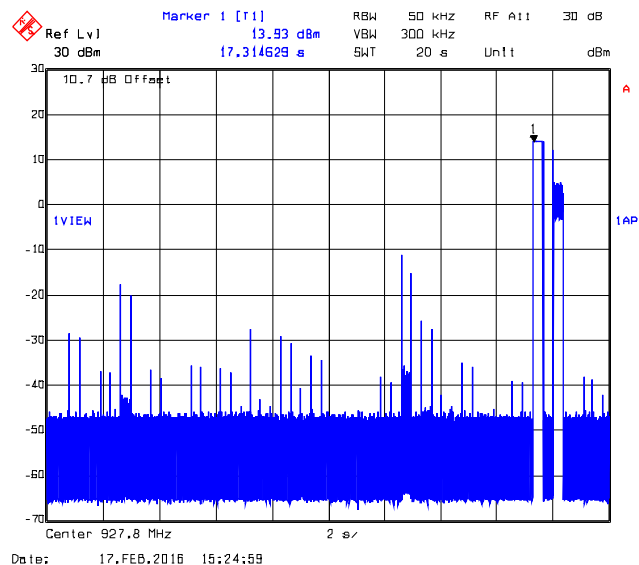
Plot 5.3.4.50. Time of Occupancy, 915 MHz DSSS8, Data Rate at 10 kbps
Average time of occupancy = $1 \times (T_{on})$ in 20 seconds = 354.71 ms < 400ms



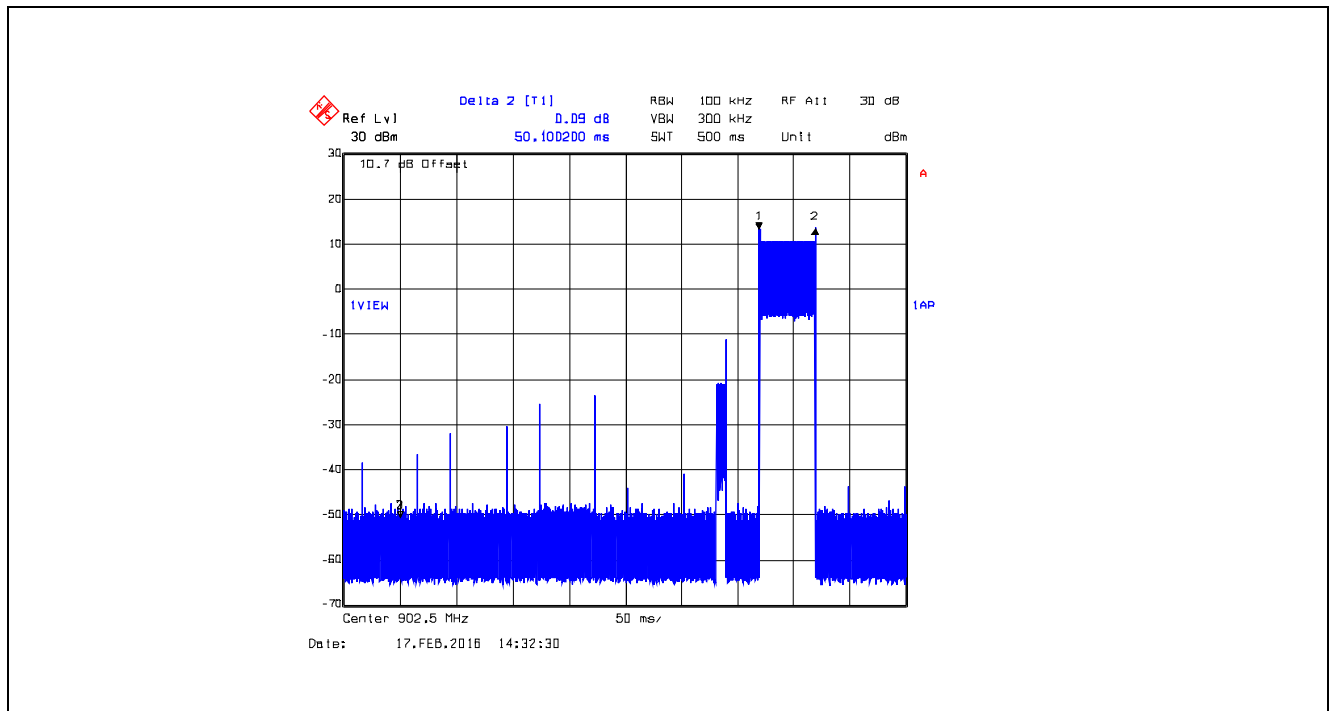
Plot 5.3.4.51. Time of Occupancy, 927.8 MHz, DSSS8, Data Rate at 10 kbps
Dwell Time @ 927.8 MHz = 354.71 ms



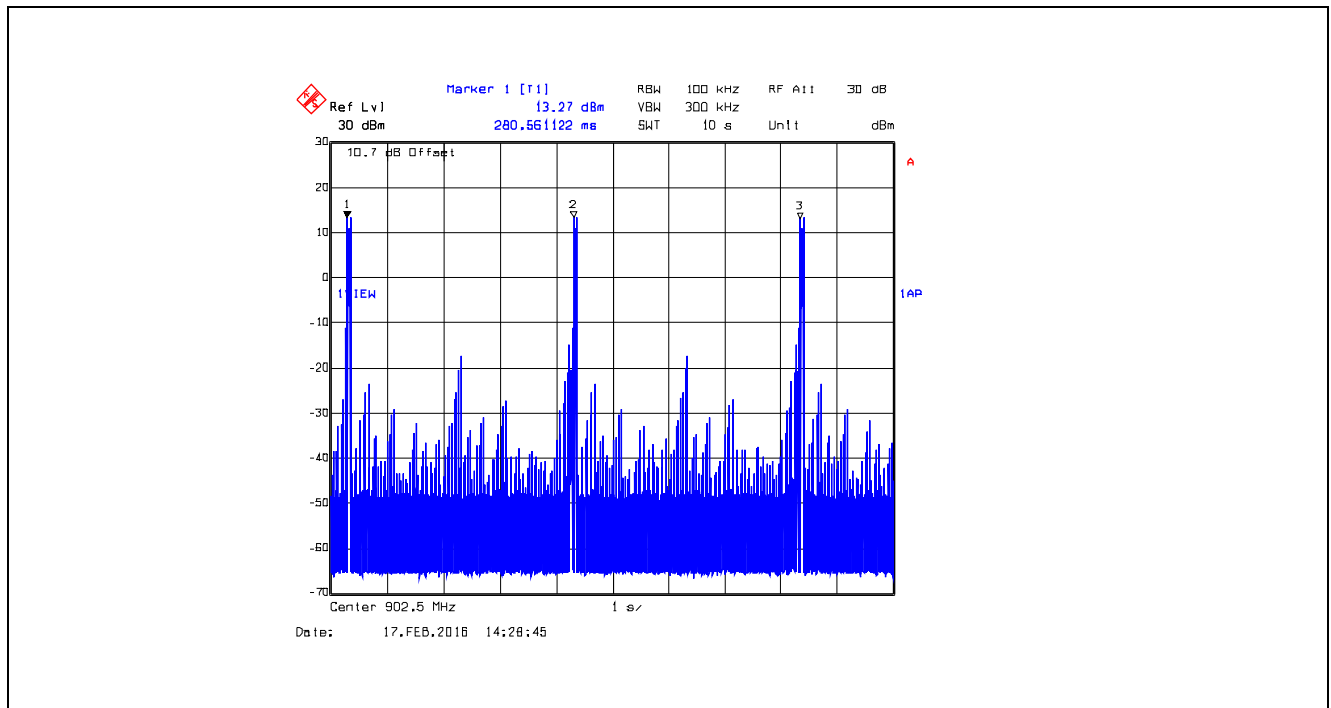
Plot 5.3.4.52. Time of Occupancy, 927.8 MHz DSSS8, Data Rate at 10 kbps
Average time of occupancy = 1 x (T on) in 20 seconds = 354.71 ms < 400ms



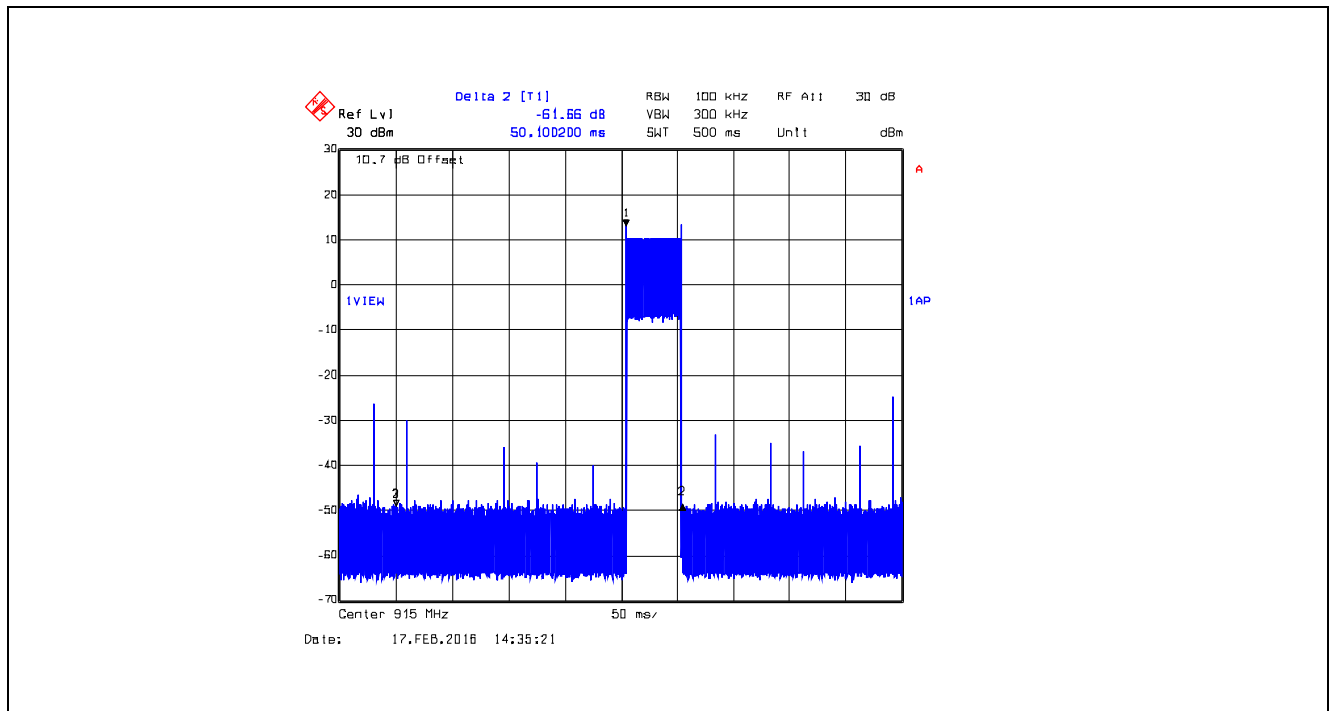
Plot 5.3.4.53. Time of Occupancy, 902.5 MHz, DSSS8, Data Rate at 400 kbps
Dwell Time @ 902.5 MHz = 50.10 ms



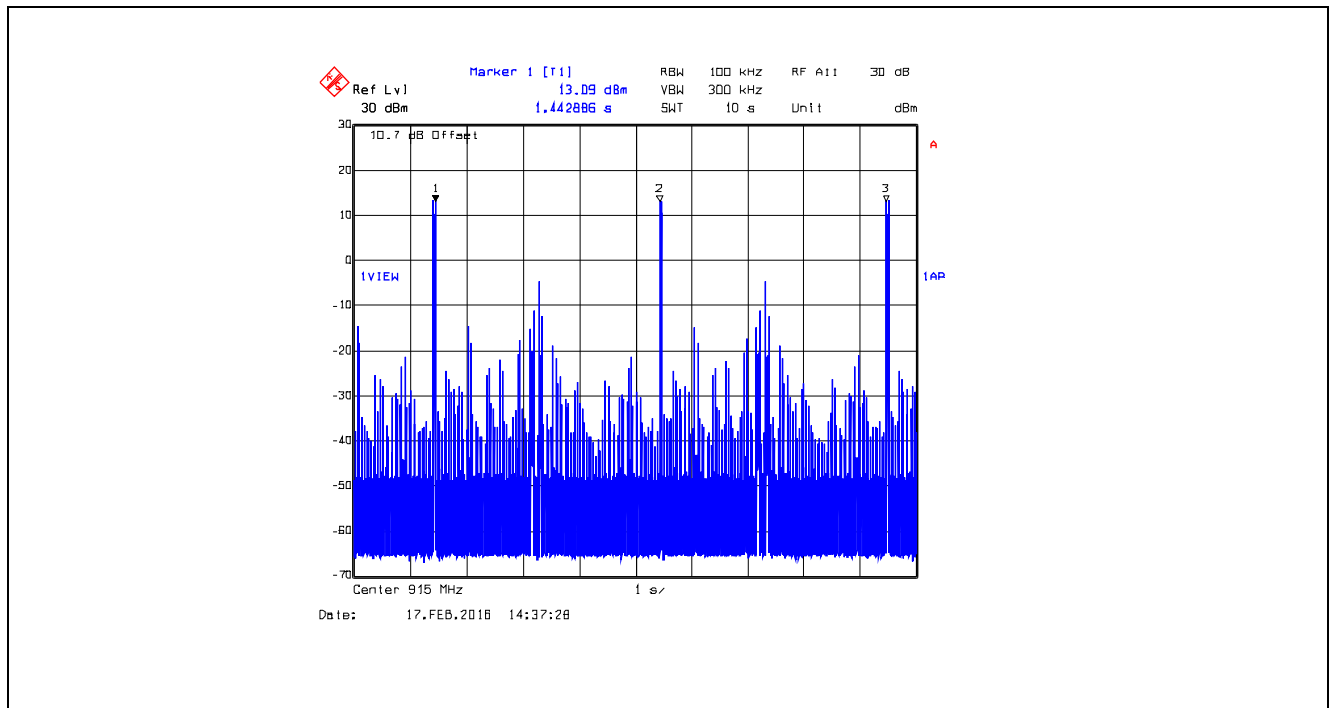
Plot 5.3.4.54. Time of Occupancy, 902.5 MHz, DSSS8, Data Rate at 400 kbps
Average time of occupancy = $3 \times (T_{on})$ in 10 seconds = $3 \times 50.10 = 150.3 \text{ ms} < 400 \text{ ms}$



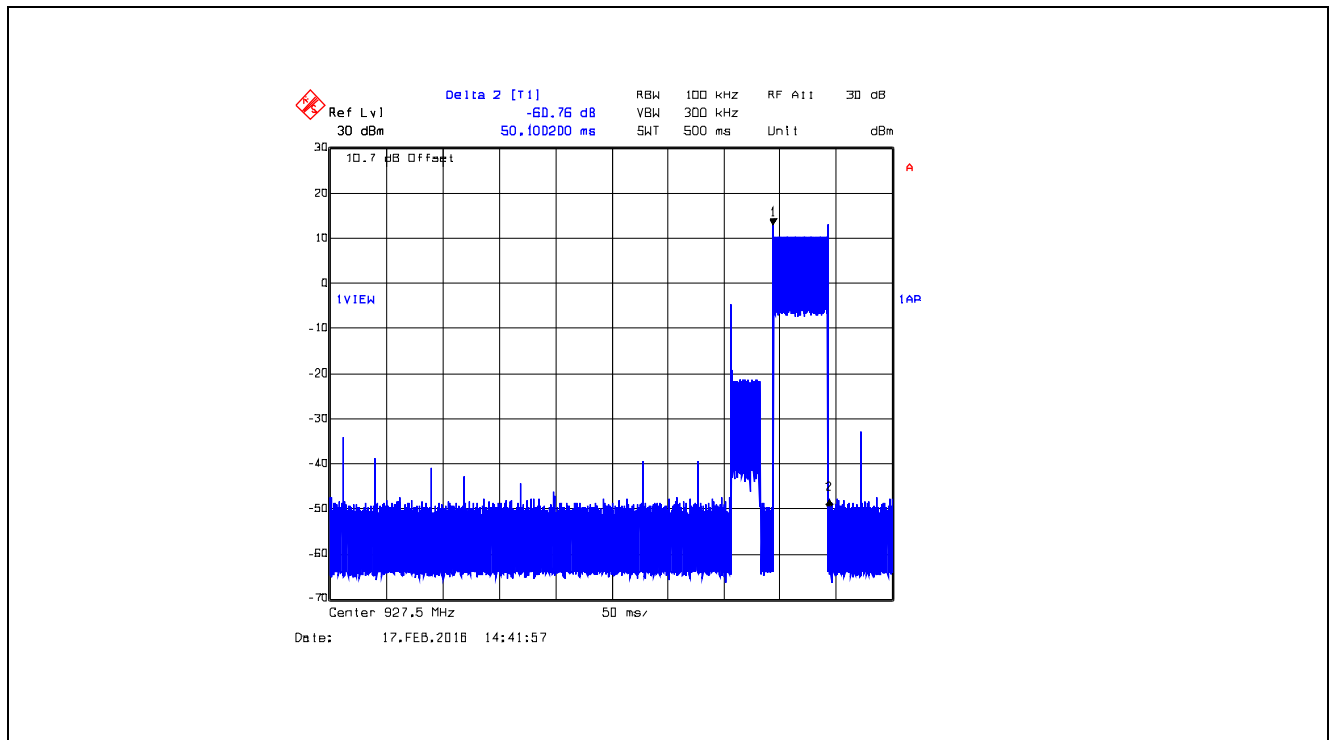
Plot 5.3.4.55. Time of Occupancy, 915.0 MHz, DSSS8, Data Rate at 400 kbps
Dwell Time @ 915.0 MHz = 50.10 ms



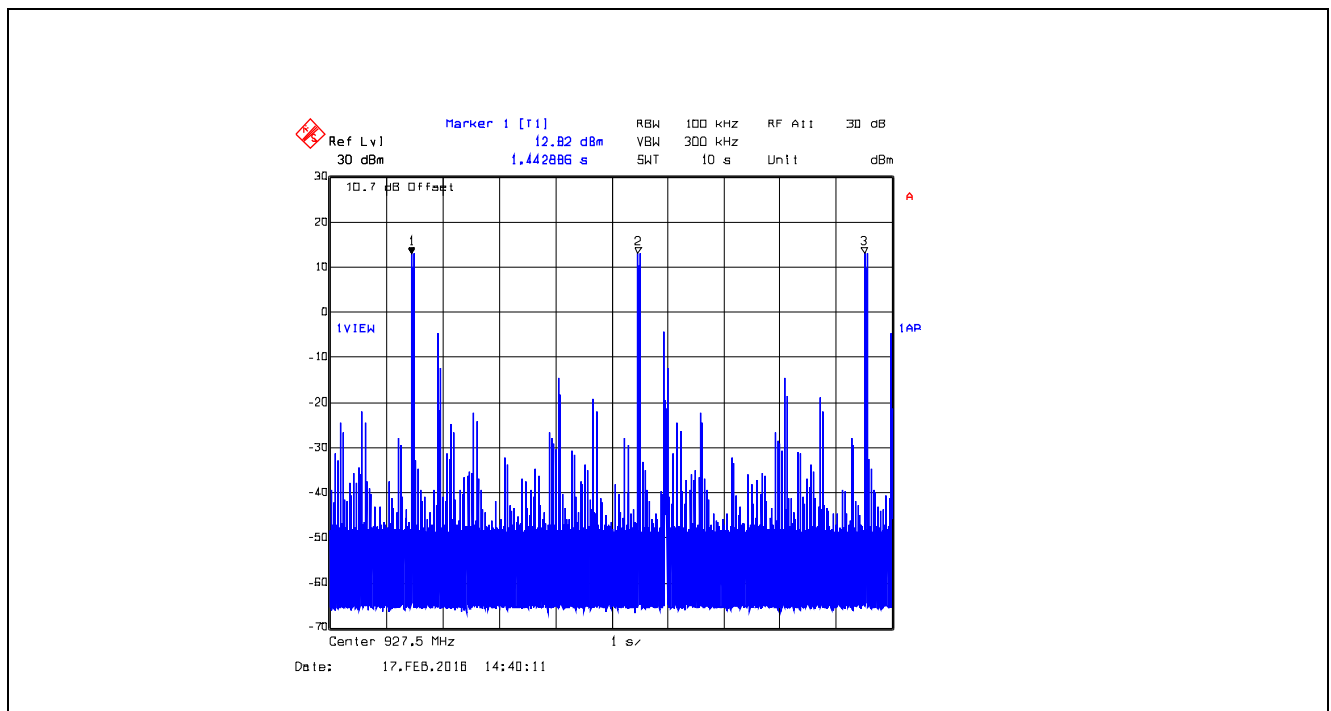
Plot 5.3.4.56. Time of Occupancy, 915.0 MHz, DSSS8, Data Rate at 400 kbps
Average time of occupancy = $3 \times (T_{on})$ in 10 seconds = $2 \times 50.10 \text{ ms} = 150.30 \text{ ms} < 400 \text{ ms}$



Plot 5.3.4.57. Time of Occupancy, 927.5 MHz, DSSS8, Data Rate at 400 kbps
Dwell Time @ 927.5 MHz = 50.10 ms



Plot 5.3.4.58. Time of Occupancy, 927.5 MHz, DSSS8, Data Rate at 400 kbps
Average time of occupancy = 3 x (T on) in 10 seconds = 3* 50.10 ms = 150.30 ms < 400ms



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

5.4.1. Limits

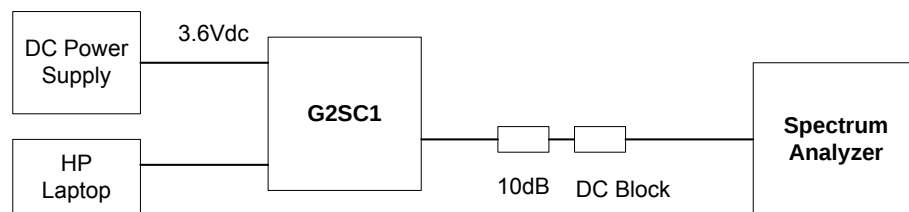
§15.247(b)(2): For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

§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.

5.4.2. Method of Measurements

FCC Public Notice DA 00-705 and ANSI C63.10.

5.4.3. Test Arrangement



5.4.4. Test Data

Remarks:

1. All configuration & data rates employ minimum 50 hopping frequencies, so conducted output power limit is 1W
2. The EIRP shall be calculated based on the transmitter antenna gain (G_{dBi}), cable loss (CL_{dB}) and peak output power at antenna terminal (P_{dBm}). Calculated EIRP = $P_{dBm} + G_{dBi} - CL_{dB}$. EIRP shall not exceed 36 dBm for the below conducted output power.

(a) Peak Conducted Output (High Power)

Configuration Modulation	Data Rate (kbps)	Frequency (MHz)	Peak Output Power at Antenna Terminal (dBm)	Peak Conducted Output Power Limit (dBm)
GFSK	10	902.2	14.26	30
		915.0	14.18	30
		927.8	13.97	30
GFSK DSSS1		902.2	14.20	30
		915.0	14.20	30
		927.8	13.97	30
GFSK DSSS2		902.2	14.21	30
		915.0	14.14	30
		927.8	13.97	30
GFSK DSSS4		902.2	14.20	30
		915.0	14.13	30
		927.8	13.92	30
GFSK DSSS8		902.2	14.20	30
		915.0	14.13	30
		927.8	13.92	30
GFSK	400	902.5	14.20	30
		915.0	14.14	30
		927.5	13.97	30
GFSK DSSS1		902.5	14.26	30
		915.0	14.14	30
		927.5	13.98	30
GFSK DSSS2		902.5	14.21	30
		915.0	14.19	30
		927.5	14.00	30
GFSK DSSS4		902.5	14.26	30
		915.0	14.19	30
		927.5	14.00	30
GFSK DSSS8		902.5	14.26	30
		915.0	14.19	30
		927.5	14.01	30

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4

Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

File #: 16MONN026_FCC15C247

January 22, 2016

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(b) Peak Conducted Output Low Power

Configuration Modulation	Data Rate (kbps)	Frequency (MHz)	Peak Output Power at Antenna Terminal (dBm)	Peak Conducted Output Power Limit (dBm)
GFSK	10	902.2	-9.49	30
		915.0	-10.28	30
		927.8	-11.25	30
GFSK DSSS1		902.2	-9.13	30
		915.0	-10.21	30
		927.8	-11.18	30
GFSK DSSS2		902.2	-9.20	30
		915.0	-10.21	30
		927.8	-11.25	30
GFSK DSSS4		902.2	-9.22	30
		915.0	-10.22	30
		927.8	-11.25	30
GFSK DSSS8		902.2	-9.20	30
		915.0	-10.22	30
		927.8	-11.20	30
GFSK	400	902.5	-9.14	30
		915.0	-10.07	30
		927.5	-11.04	30
GFSK DSSS1		902.5	-9.05	30
		915.0	-10.07	30
		927.5	-11.04	30
GFSK DSSS2		902.5	-8.99	30
		915.0	-9.94	30
		927.5	-11.04	30
GFSK DSSS4		902.5	-8.99	30
		915.0	-10.07	30
		927.5	-11.05	30
GFSK DSSS8		902.5	-9.06	30
		915.0	-10.08	30
		927.5	-11.05	30

1. EIRP for 1.0 dBi Wire Antenna directly mounted on PCB

Configuration Modulation	Data Rate (kbps)	Frequency (MHz)	Peak O/p Power at Antenna Terminal (dBm)	Calculated EIRP* (dBm)	EIRP Limit (dBm)	
GFSK	10	902.2	14.26	15.26	36	
		915.0	14.18	15.18	36	
		927.8	13.97	14.97	36	
GFSK DSSS1		902.2	14.20	15.20	36	
		915.0	14.20	15.20	36	
		927.8	13.97	14.97	36	
GFSK DSSS2		902.2	14.21	15.21	36	
		915.0	14.14	15.14	36	
		927.8	13.97	14.97	36	
GFSK DSSS4		902.2	14.20	15.20	36	
		915.0	14.13	15.13	36	
		927.8	13.92	14.92	36	
GFSK DSSS8		902.2	14.20	15.20	36	
		915.0	14.13	15.13	36	
		927.8	13.92	14.92	36	
GFSK	400	902.5	14.20	15.20	36	
		915.0	14.14	15.14	36	
		927.5	13.97	14.97	36	
GFSK DSSS1		902.5	14.26	15.26	36	
		915.0	14.14	15.14	36	
		927.5	13.98	14.98	36	
GFSK DSSS2		902.5	14.21	15.21	36	
		915.0	14.19	15.19	36	
		927.5	14.00	15.00	36	
GFSK DSSS4		902.5	14.26	15.26	36	
		915.0	14.19	15.19	36	
		927.5	14.00	15.00	36	
GFSK DSSS8		902.5	14.26	15.26	36	
		915.0	14.19	15.19	36	
		927.5	14.01	15.01	36	

* EIRP = $P_{dBm} + G_{dBi} - CL_{dB}$

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3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4

Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

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January 22, 2016

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2. EIRP for 5.0 dBi Dipole Antenna with 0.30 dB (12cm) Assembly Cable Loss (Net 4.7 dBi)

Configuration Modulation	Data Rate (kbps)	Frequency (MHz)	Peak O/p Power at Antenna Terminal (dBm)	Calculated EIRP* (dBm)	EIRP Limit (dBm)	
GFSK	10	902.2	14.26	18.96	36	
		915.0	14.18	18.88	36	
		927.8	13.97	18.67	36	
GFSK DSSS1		902.2	14.20	18.90	36	
		915.0	14.20	18.90	36	
		927.8	13.97	18.67	36	
GFSK DSSS2		902.2	14.21	18.91	36	
		915.0	14.14	18.84	36	
		927.8	13.97	18.67	36	
GFSK DSSS4		902.2	14.20	18.90	36	
		915.0	14.13	18.83	36	
		927.8	13.92	18.62	36	
GFSK DSSS8		902.2	14.20	18.90	36	
		915.0	14.13	18.83	36	
		927.8	13.92	18.62	36	
GFSK	400	902.5	14.20	18.90	36	
		915.0	14.14	18.84	36	
		927.5	13.97	18.67	36	
GFSK DSSS1		902.5	14.26	18.96	36	
		915.0	14.14	18.84	36	
		927.5	13.98	18.68	36	
GFSK DSSS2		902.5	14.21	18.91	36	
		915.0	14.19	18.89	36	
		927.5	14.00	18.70	36	
GFSK DSSS4		902.5	14.26	18.96	36	
		915.0	14.19	18.89	36	
		927.5	14.00	18.70	36	
GFSK DSSS8		902.5	14.26	18.96	36	
		915.0	14.19	18.89	36	
		927.5	14.01	18.71	36	

* EIRP = $P_{dBm} + G_{dBi} - CL_{dB}$

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Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

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3. EIRP for 8.0 dBi Omni Directional Antenna with 0.86 dB Assembly Cable Loss (Net 7.14 dBi)

Configuration Modulation	Data Rate (kbps)	Frequency (MHz)	Peak O/p Power at Antenna Terminal (dBm)	Calculated EIRP* (dBm)	EIRP Limit (dBm)	
GFSK	10	902.2	14.26	21.40	36	
		915.0	14.18	21.32	36	
		927.8	13.97	21.11	36	
GFSK DSSS1		902.2	14.20	21.34	36	
		915.0	14.20	21.34	36	
		927.8	13.97	21.11	36	
GFSK DSSS2		902.2	14.21	21.35	36	
		915.0	14.14	21.28	36	
		927.8	13.97	21.11	36	
GFSK DSSS4		902.2	14.20	21.34	36	
		915.0	14.13	21.27	36	
		927.8	13.92	21.06	36	
GFSK DSSS8		902.2	14.20	21.34	36	
		915.0	14.13	21.27	36	
		927.8	13.92	21.06	36	
GFSK	400	902.5	14.20	21.34	36	
		915.0	14.14	21.28	36	
		927.5	13.97	21.11	36	
GFSK DSSS1		902.5	14.26	21.40	36	
		915.0	14.14	21.28	36	
		927.5	13.98	21.12	36	
GFSK DSSS2		902.5	14.21	21.35	36	
		915.0	14.19	21.33	36	
		927.5	14.00	21.14	36	
GFSK DSSS4		902.5	14.26	21.40	36	
		915.0	14.19	21.33	36	
		927.5	14.00	21.14	36	
GFSK DSSS8		902.5	14.26	21.40	36	
		915.0	14.19	21.33	36	
		927.5	14.01	21.40	36	

* EIRP = $P_{dBm} + G_{dBi} - CL_{dB}$

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3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4

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4. EIRP for 9.0 dBi Flat Panel Antenna with 0.86dB Assembly Cable Loss (Net 8.14 dBi)

Configuration Modulation	Data Rate (kbps)	Frequency (MHz)	Peak O/p Power at Antenna Terminal (dBm)	Calculated EIRP* (dBm)	EIRP Limit (dBm)	
GFSK	10	902.2	14.26	22.40	36	
		915.0	14.18	22.32	36	
		927.8	13.97	22.11	36	
GFSK DSSS1		902.2	14.20	22.34	36	
		915.0	14.20	22.34	36	
		927.8	13.97	22.11	36	
GFSK DSSS2		902.2	14.21	22.35	36	
		915.0	14.14	22.28	36	
		927.8	13.97	22.11	36	
GFSK DSSS4		902.2	14.20	22.34	36	
		915.0	14.13	22.27	36	
		927.8	13.92	22.06	36	
GFSK DSSS8		902.2	14.20	22.34	36	
		915.0	14.13	22.27	36	
		927.8	13.92	22.06	36	
GFSK	400	902.5	14.20	22.34	36	
		915.0	14.14	22.28	36	
		927.5	13.97	22.11	36	
GFSK DSSS1		902.5	14.26	22.40	36	
		915.0	14.14	22.28	36	
		927.5	13.98	22.12	36	
GFSK DSSS2		902.5	14.21	22.35	36	
		915.0	14.19	22.33	36	
		927.5	14.00	22.14	36	
GFSK DSSS4		902.5	14.26	22.40	36	
		915.0	14.19	22.33	36	
		927.5	14.00	22.14	36	
GFSK DSSS8		902.5	14.26	22.40	36	
		915.0	14.19	22.33	36	
		927.5	14.01	22.15	36	

* EIRP = $P_{dBm} + G_{dBi} - CL_{dB}$

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5. EIRP for 14.0 dBi Yagi Antenna with 0.86dB Assembly Cable Loss (Net 13.14 dBi)

Configuration Modulation	Data Rate (kbps)	Frequency (MHz)	Peak O/p Power at Antenna Terminal (dBm)	Calculated EIRP* (dBm)	EIRP Limit (dBm)	
GFSK	10	902.2	14.26	27.40	36	
		915.0	14.18	27.32	36	
		927.8	13.97	27.11	36	
GFSK DSSS1		902.2	14.20	27.34	36	
		915.0	14.20	27.34	36	
		927.8	13.97	27.11	36	
GFSK DSSS2		902.2	14.21	27.35	36	
		915.0	14.14	27.28	36	
		927.8	13.97	27.11	36	
GFSK DSSS4		902.2	14.20	27.34	36	
		915.0	14.13	27.27	36	
		927.8	13.92	27.06	36	
GFSK DSSS8		902.2	14.20	27.34	36	
		915.0	14.13	27.27	36	
		927.8	13.92	27.06	36	
GFSK	400	902.5	14.20	27.34	36	
		915.0	14.14	27.28	36	
		927.5	13.97	27.11	36	
GFSK DSSS1		902.5	14.26	27.40	36	
		915.0	14.14	27.28	36	
		927.5	13.98	27.12	36	
GFSK DSSS2		902.5	14.21	27.35	36	
		915.0	14.19	27.33	36	
		927.5	14.00	27.14	36	
GFSK DSSS4		902.5	14.26	27.40	36	
		915.0	14.19	27.33	36	
		927.5	14.00	27.14	36	
GFSK DSSS8		902.5	14.26	27.40	36	
		915.0	14.19	27.33	36	
		927.5	14.01	27.15	36	

* EIRP = $P_{dBm} + G_{dBi} - CL_{dB}$

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

5.5.1. 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
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

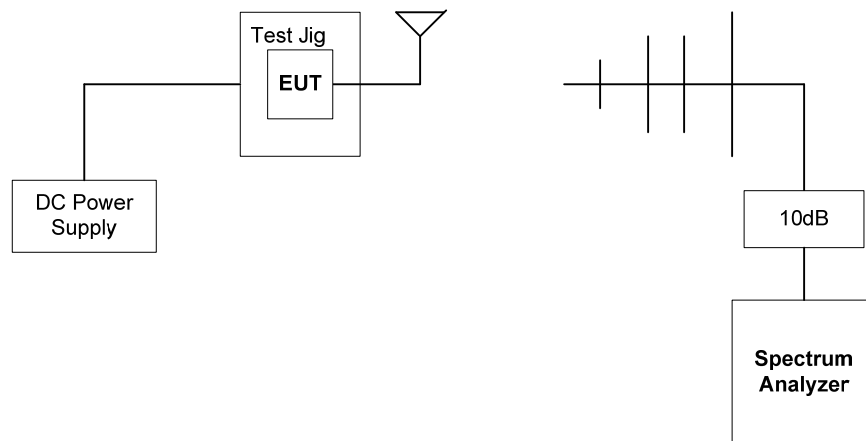
Section 15.209(a) - Field Strength Limits within Restricted Frequency Bands

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

5.5.2. Method of Measurements

FCC Public Notice DA 00-705, ANSI C63.10 and ANSI 63.4 procedures.

5.5.3. Test Arrangement



5.5.4. 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.
- All 5 modulations GFSK, DSSS1, DSSS2, DSSS4 & DSSS8 and both data rates 10 Kbps & 400 Kbps were pre-scanned to find out GFSK with 10 Kbps has the highest worst-case field strength and spurious emission levels.
- The following test results are the final worst-case measurements derived from above exploratory tests, performed with EUT.

5.5.4.1. EUT with 1.0 dBi Wire Antenna and 0dB Assembly Cable Loss

5.5.4.1.1. Spurious Radiated Emissions

Fundamental Frequency:		902.2 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		14.26 dBm					
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
902.2	115.15	--	V	--	--	--	--
902.2	115.47	--	H	--	--	--	--
2706.6	51.40	47.50	V	54.0	95.5	-6.5	Pass*
2706.6	54.00	51.40	H	54.0	95.5	-2.6	Pass*
3608.8	50.10	40.24	V	54.0	95.5	-13.8	Pass*
3608.8	49.35	40.06	H	54.0	95.5	-13.9	Pass*
4511.0	54.29	48.11	V	54.0	95.5	-5.9	Pass*
4511.0	55.26	50.76	H	54.0	95.5	-3.2	Pass*
5413.2	50.25	39.97	V	54.0	95.5	-14.0	Pass*
5413.2	51.97	39.05	H	54.0	95.5	-14.9	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:		915.0 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		14.18 dBm					
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	114.36	--	V	--	--	--	--
915.0	115.22	--	H	--	--	--	--
2745.0	51.60	48.70	V	54.0	95.2	-5.3	Pass*
2745.0	54.40	52.10	H	54.0	95.2	-1.9	Pass*
3660.0	48.72	39.42	V	54.0	95.2	-14.6	Pass*
3660.0	47.80	38.44	H	54.0	95.2	-15.6	Pass*
4575.0	53.07	46.91	V	54.0	95.2	-7.1	Pass*
4575.0	54.47	49.09	H	54.0	95.2	-4.9	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.

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4

Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

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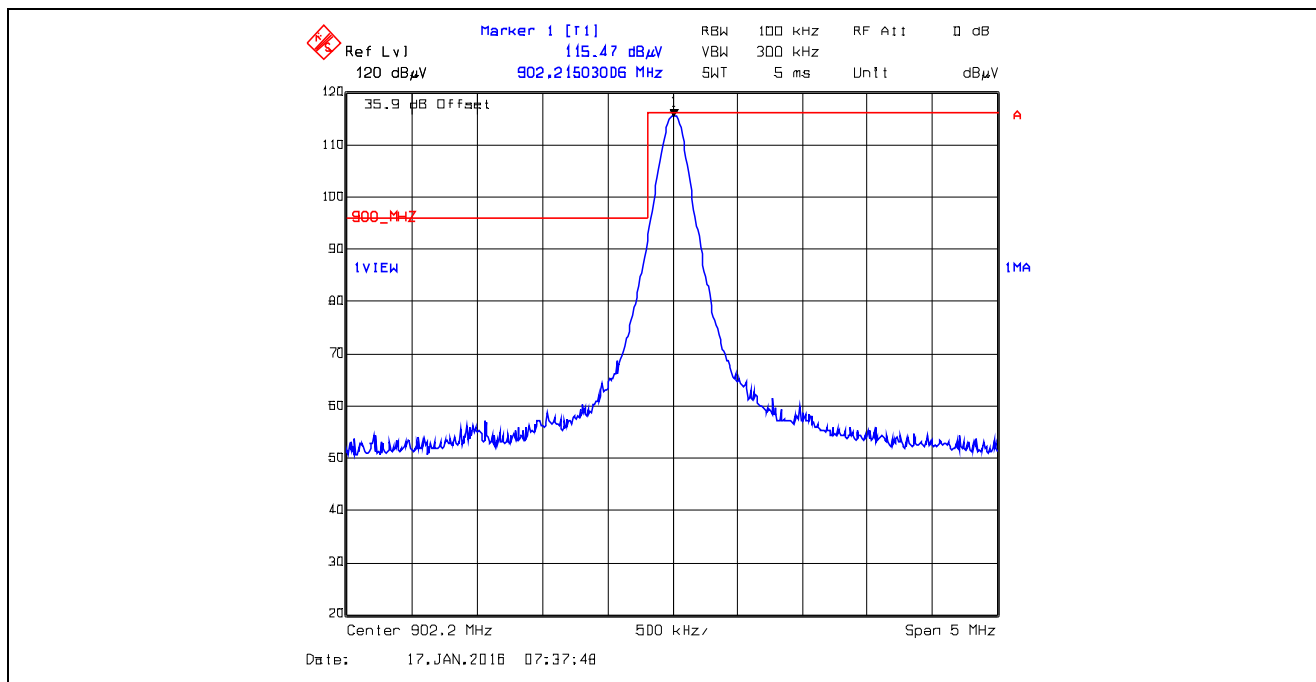
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Fundamental Frequency:		927.8 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		13.97 dBm					
Frequency Test Range:		30 MHz – 10 GHz					
Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/Fail
927.8	113.93	--	V	--	--	--	--
927.8	114.71	--	H	--	--	--	--
2783.4	52.32	49.00	V	54.0	94.7	-5.0	Pass*
2783.4	52.99	49.76	H	54.0	94.7	-4.2	Pass*
3711.2	49.67	40.67	V	54.0	94.7	-13.3	Pass*
3711.2	49.14	41.06	H	54.0	94.7	-12.9	Pass*
4639.0	52.74	46.76	V	54.0	94.7	-7.2	Pass*
4639.0	54.28	49.02	H	54.0	94.7	-5.0	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

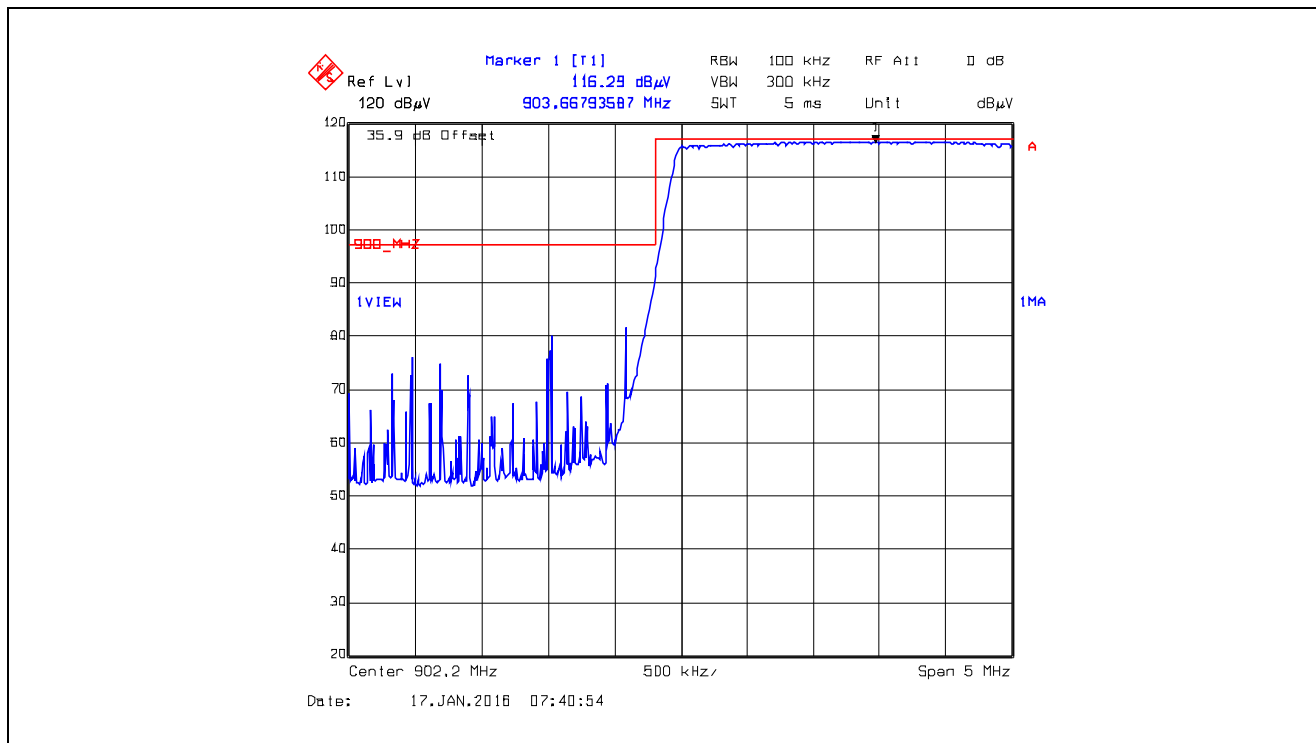
5.5.4.1.2. Band-Edge RF Radiated Emissions

Refer to the following plots.

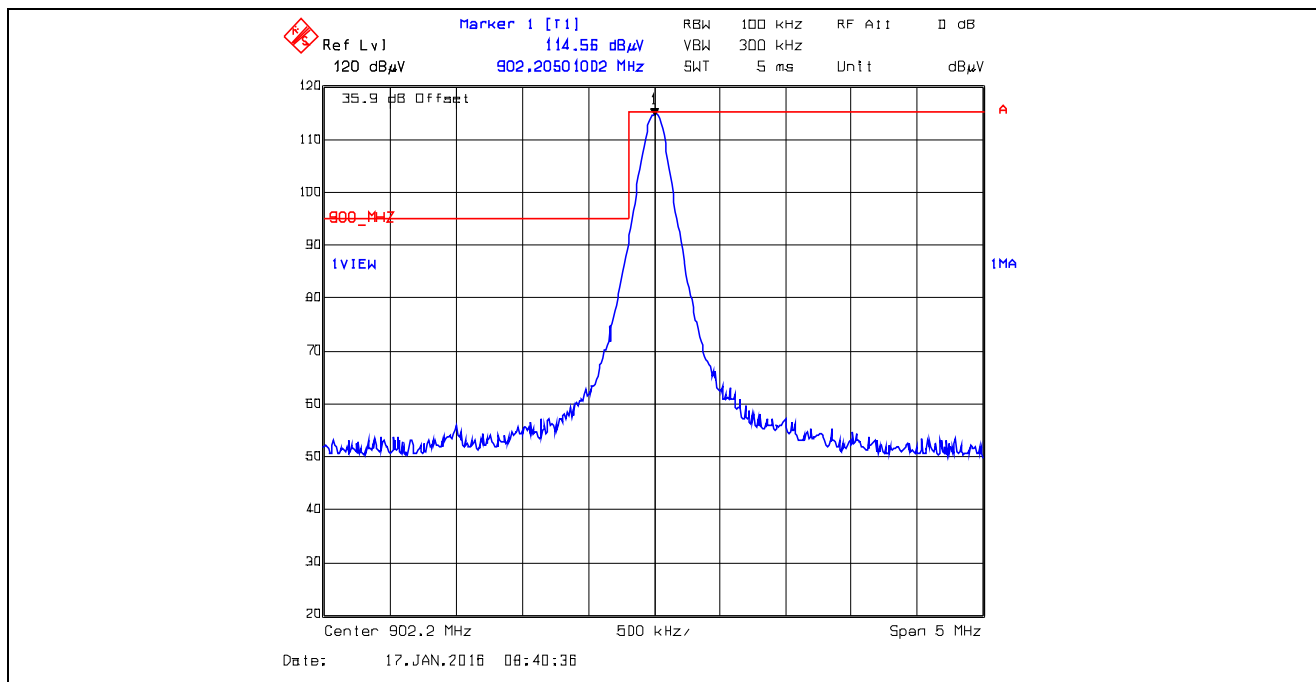
Plot 5.5.4.1.2.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



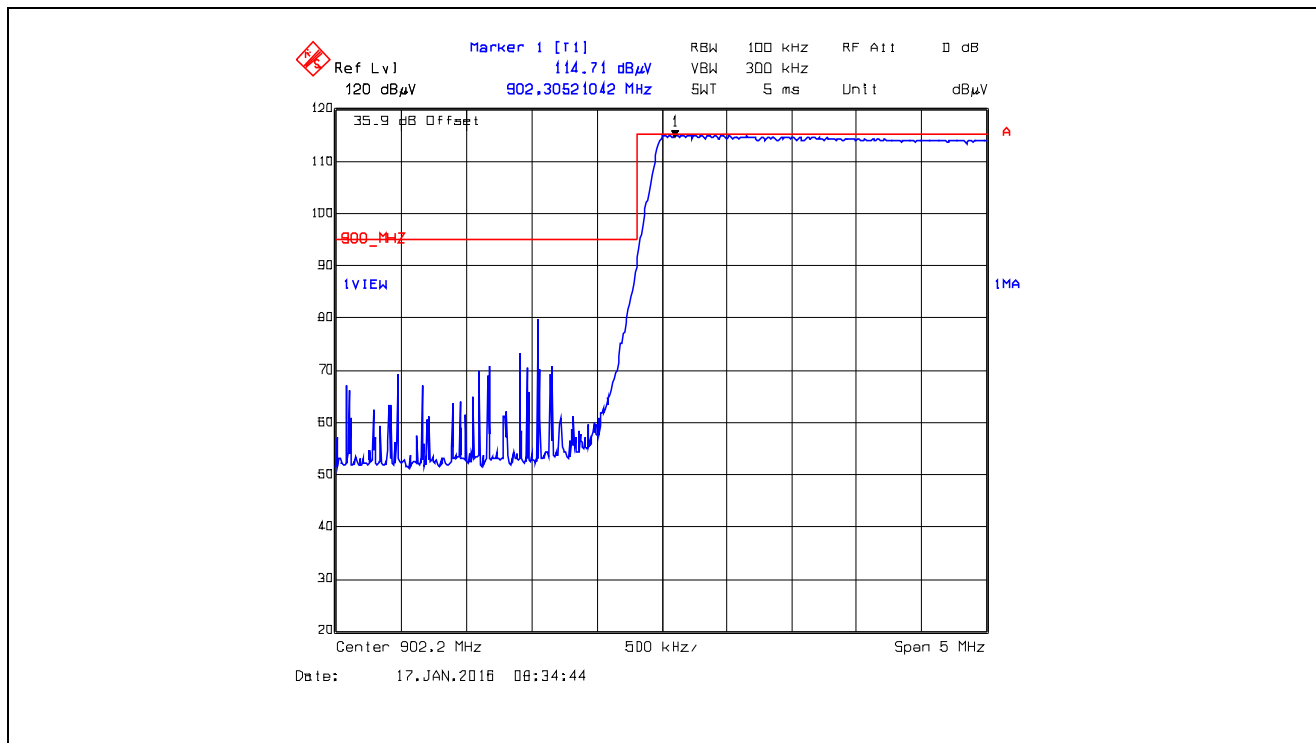
Plot 5.5.4.1.2.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



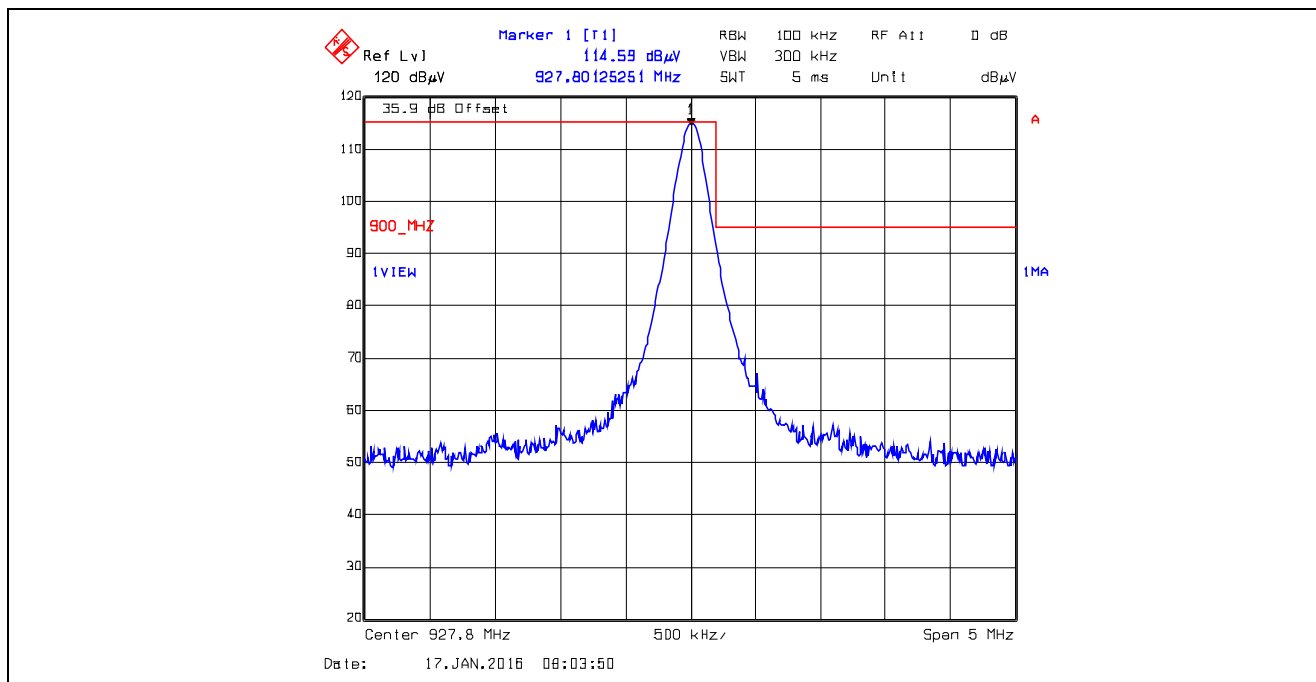
Plot 5.5.4.1.2.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



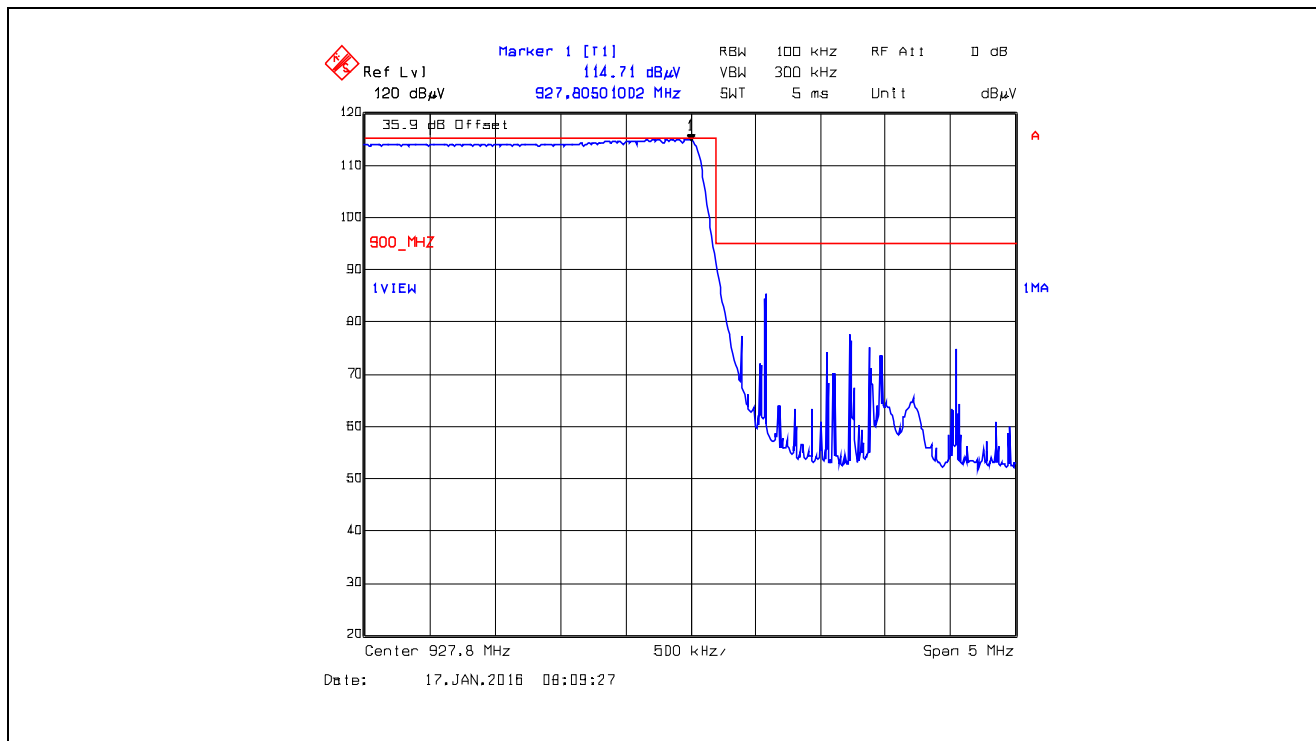
Plot 5.5.4.1.2.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz FSK, Data rate at 10 Kbps



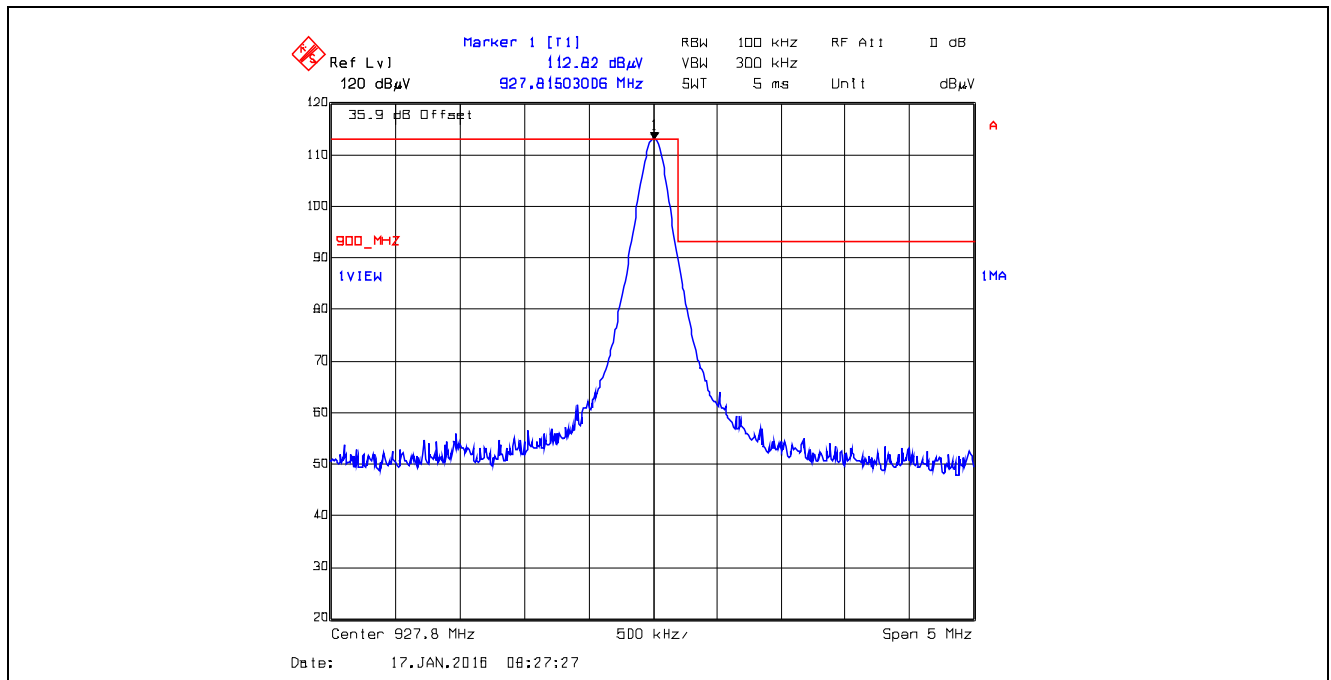
Plot 5.5.4.1.2.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



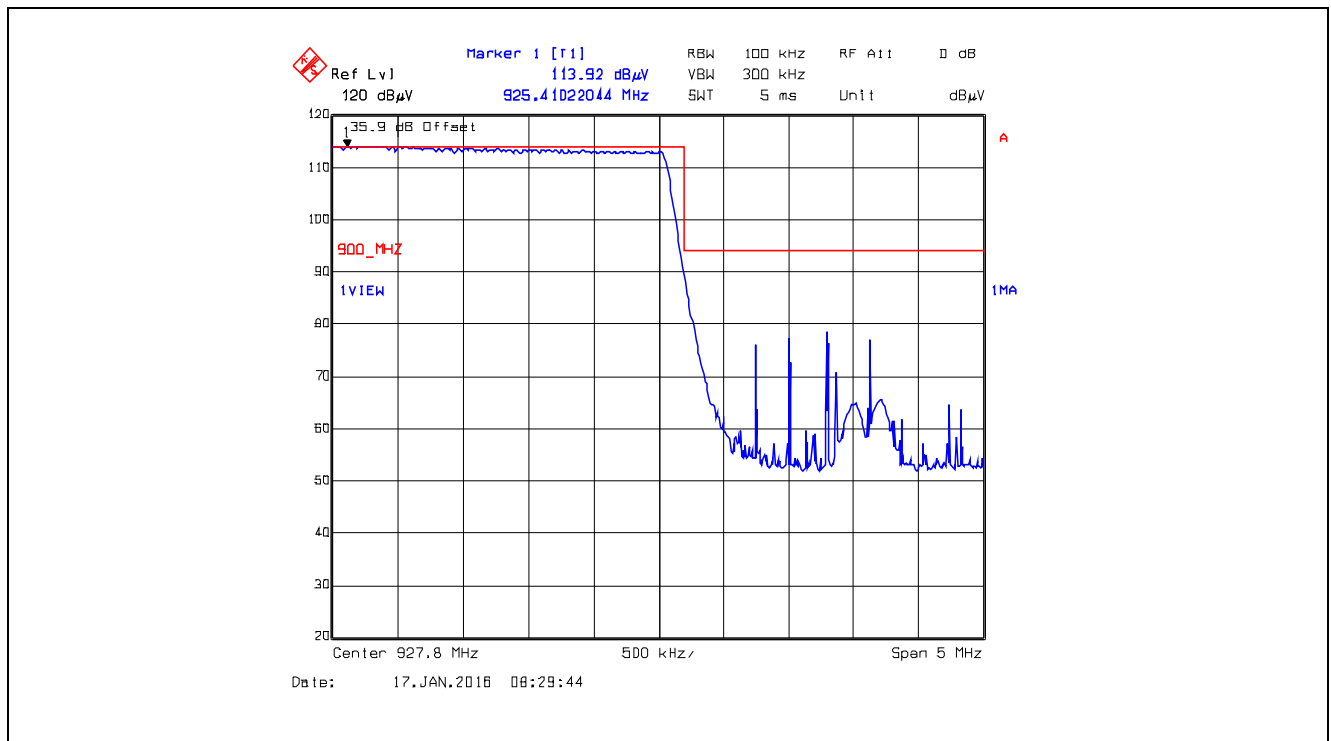
Plot 5.5.4.1.2.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



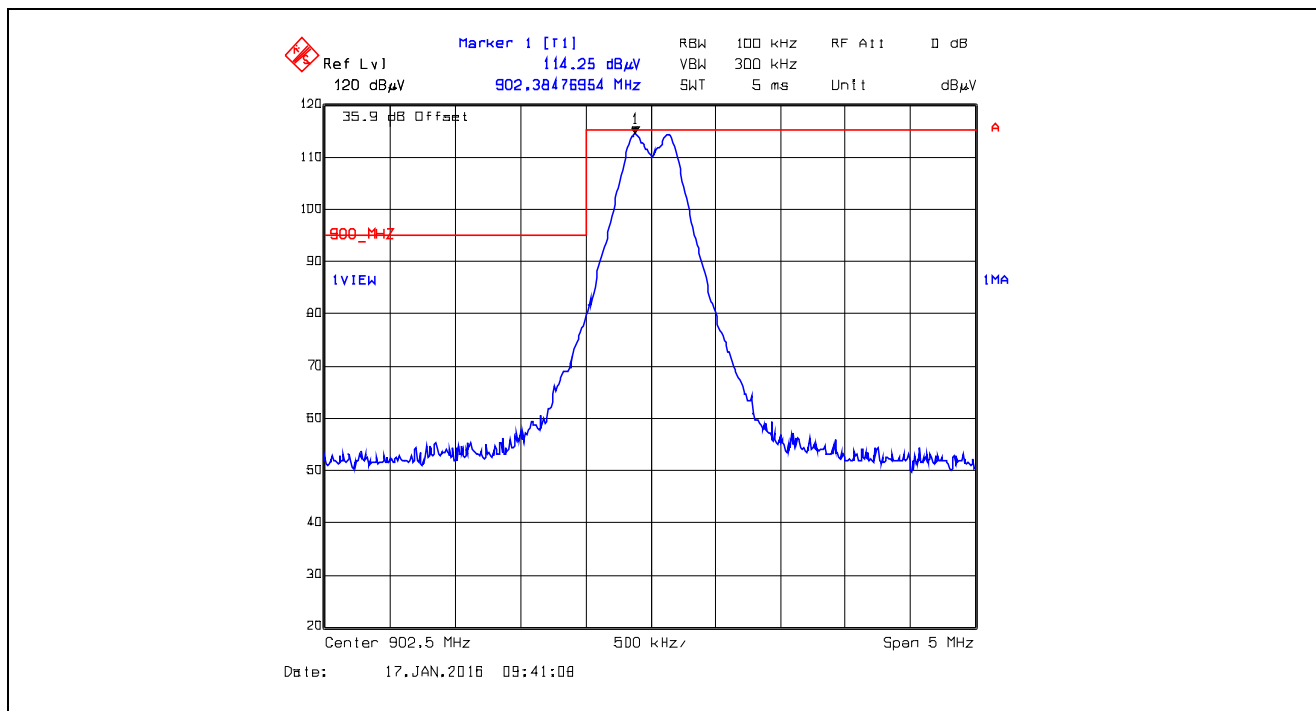
Plot 5.5.4.1.2.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



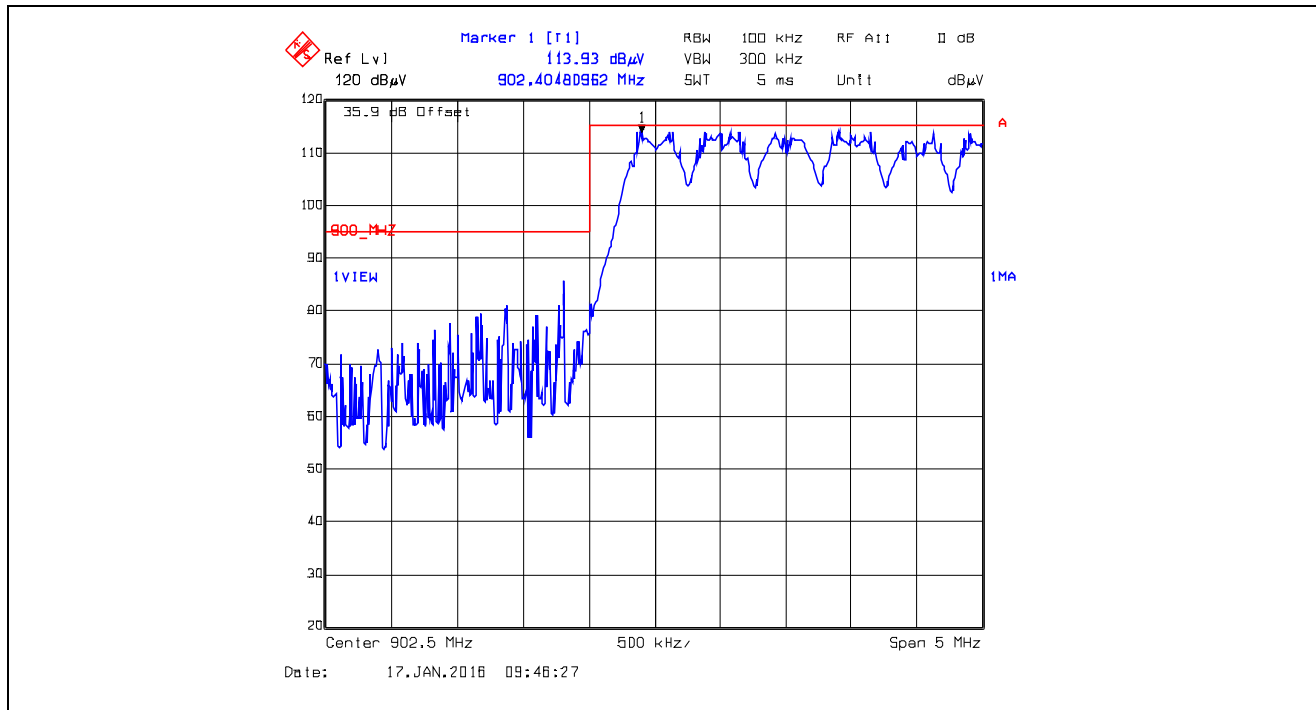
Plot 5.5.4.1.2.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



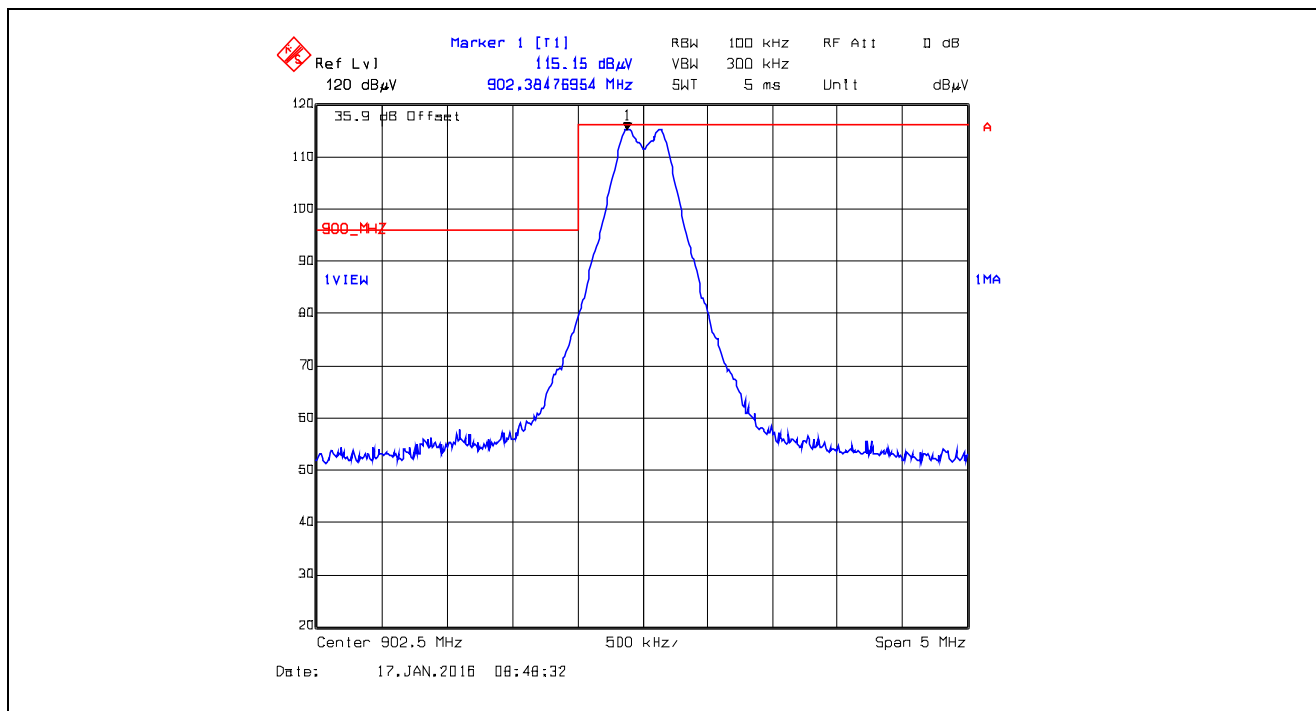
Plot 5.5.4.1.2.9. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



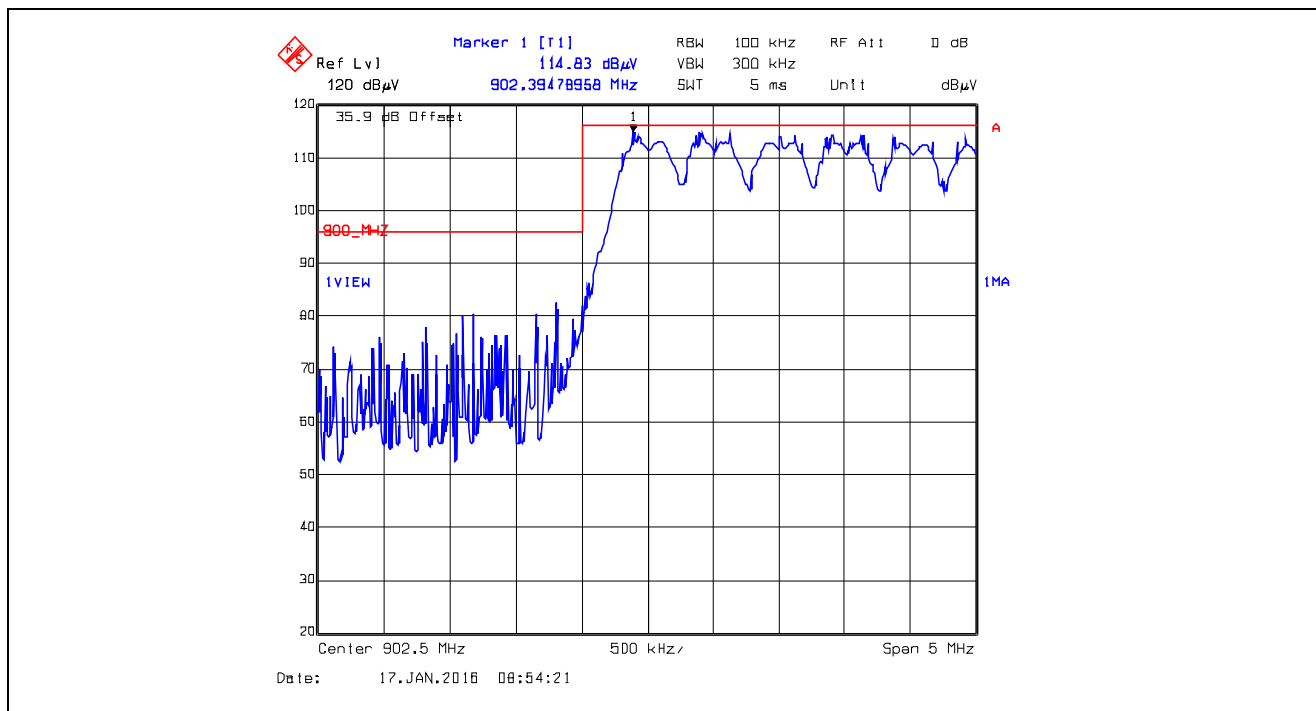
Plot 5.5.4.1.2.10. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



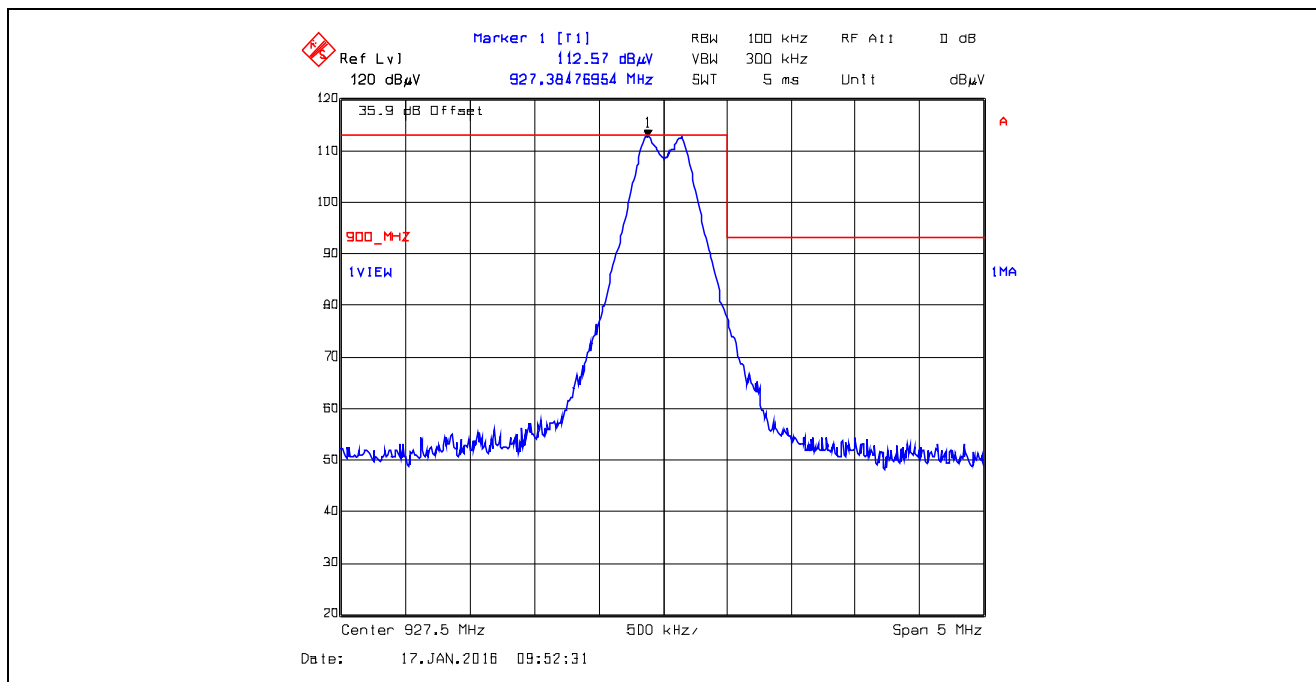
Plot 5.5.4.1.2.11. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



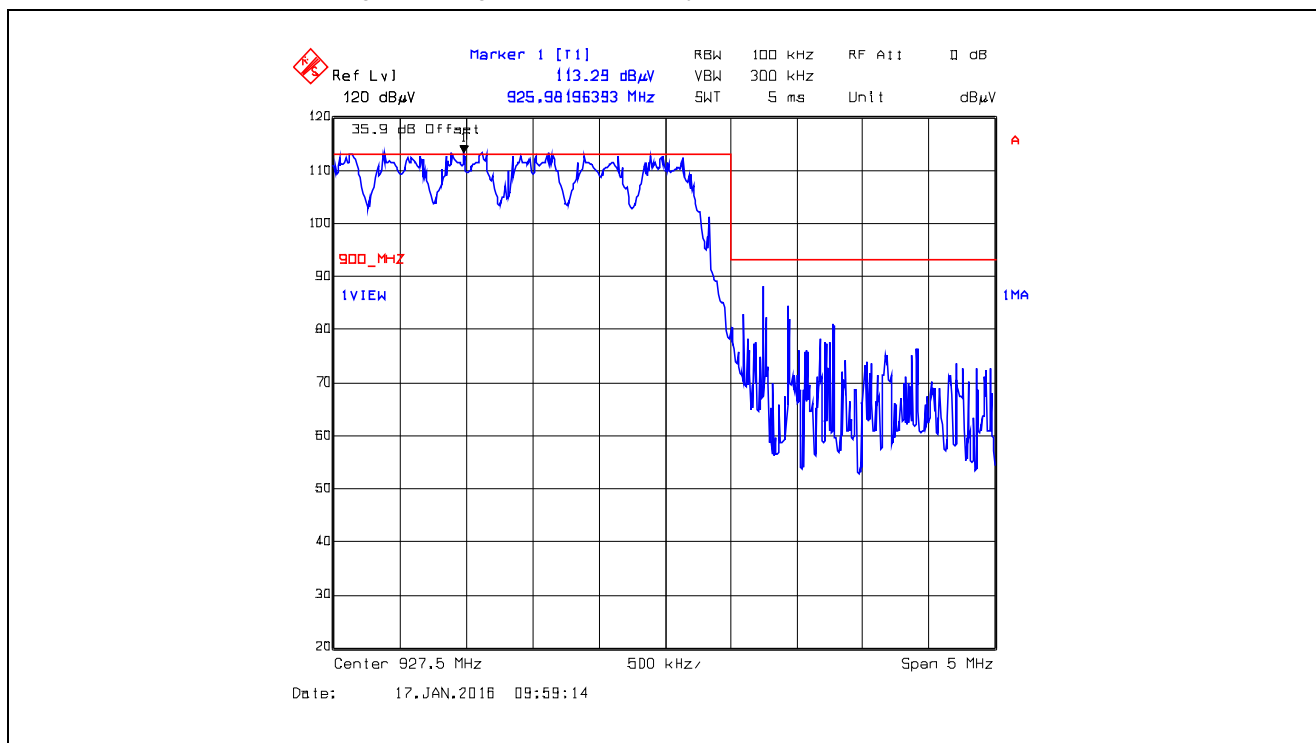
Plot 5.5.4.1.2.12. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



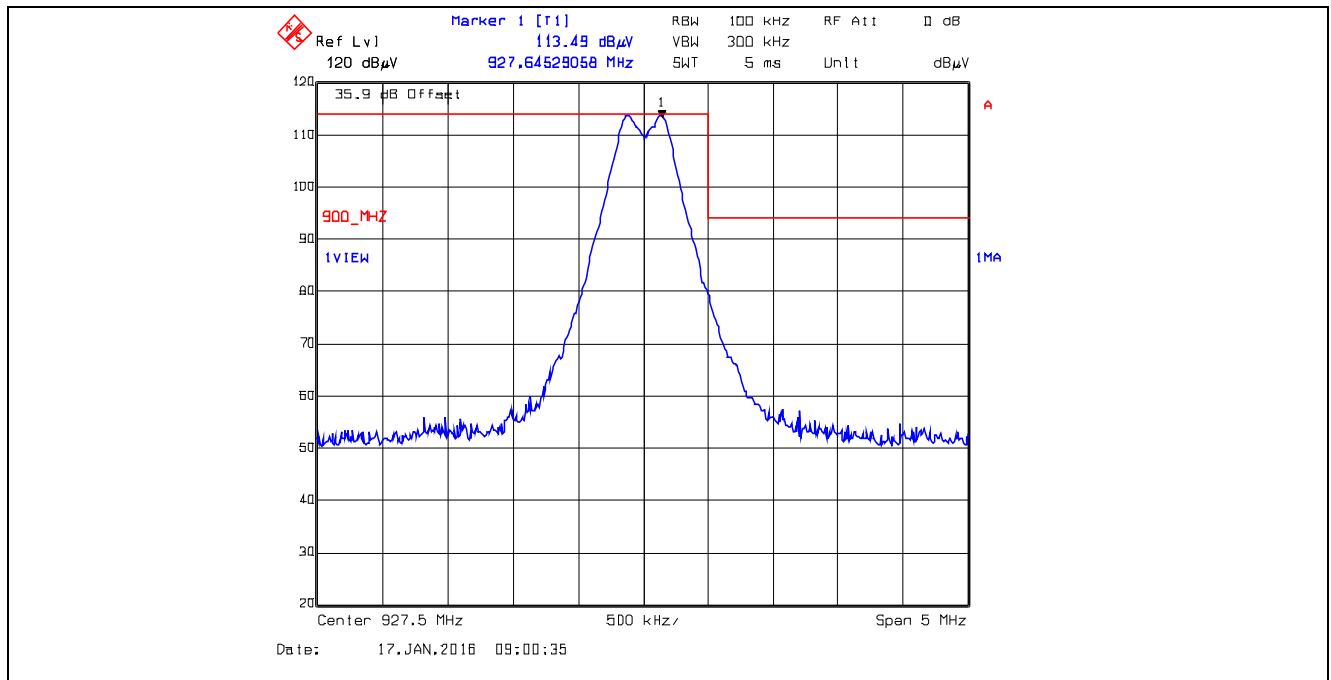
Plot 5.5.4.1.2.13. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



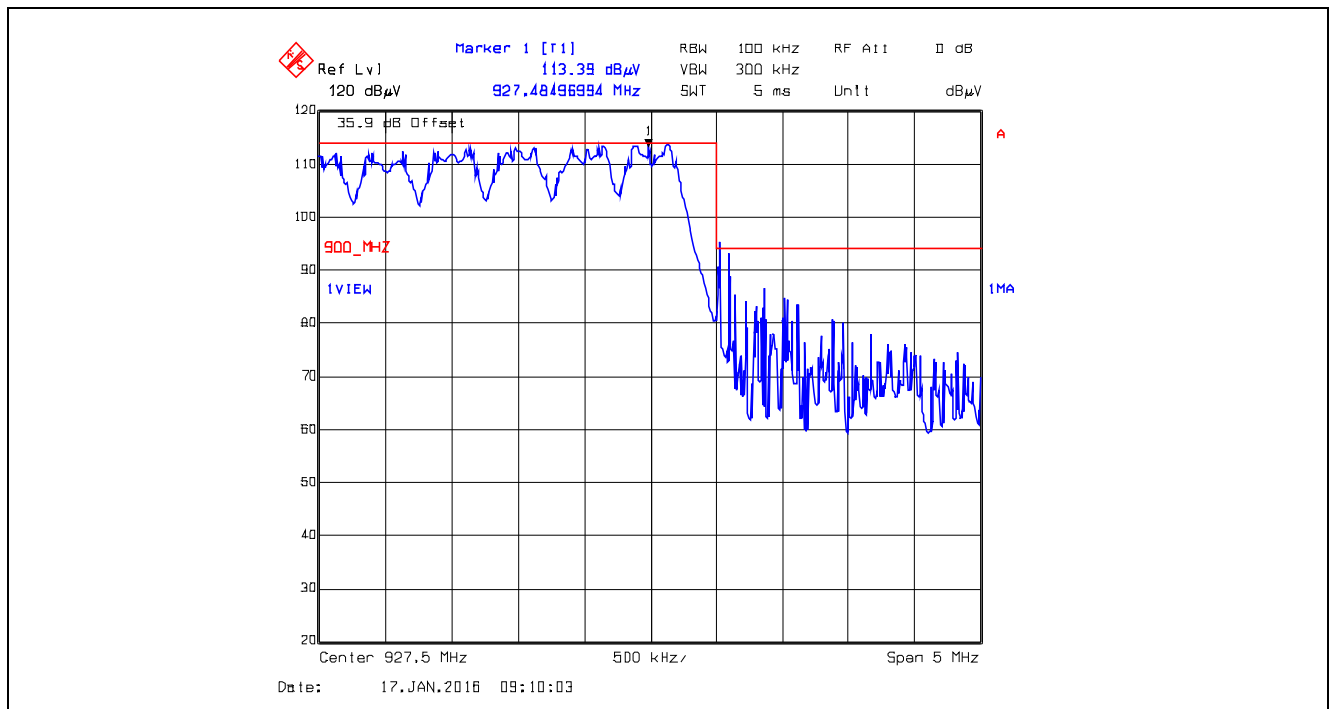
Plot 5.5.4.1.2.14. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



Plot 5.5.4.1.2.15. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



Plot 5.5.4.1.2.16. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



5.5.4.2. EUT with 5 dBi Dipole Antenna and 0.30 dB Assembly Cable Loss

5.5.4.2.1. Spurious Radiated Emissions

Fundamental Frequency:		902.2 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		14.26 dBm					
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
902.2	108.76	--	V	--	--	--	--
902.2	113.23	--	H	--	--	--	--
2706.6	53.50	51.00	V	54.0	93.2	-3.0	Pass*
2706.6	54.30	52.00	H	54.0	93.2	-2.0	Pass*
3608.8	50.75	44.33	V	54.0	93.2	-9.7	Pass*
3608.8	52.20	46.43	H	54.0	93.2	-7.6	Pass*
4511.0	52.29	45.98	V	54.0	93.2	-8.0	Pass*
4511.0	53.81	48.91	H	54.0	93.2	-5.1	Pass*
5413.2	54.32	48.03	V	54.0	93.2	-6.0	Pass*
5413.2	53.86	46.72	H	54.0	93.2	-7.3	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:		915.0 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		14.18 dBm					
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	107.38	--	V	--	--	--	--
915.0	114.19	--	H	--	--	--	--
2745.0	54.20	51.70	V	54.0	94.2	-2.3	Pass*
2745.0	54.00	51.90	H	54.0	94.2	-2.1	Pass*
3660.0	52.23	44.15	V	54.0	94.2	-9.8	Pass*
3660.0	51.35	44.40	H	54.0	94.2	-9.6	Pass*
4575.0	54.50	49.30	V	54.0	94.2	-4.7	Pass*
4575.0	54.90	49.10	H	54.0	94.2	-4.9	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.

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4

Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

File #: 16MONN026_FCC15C247

January 22, 2016

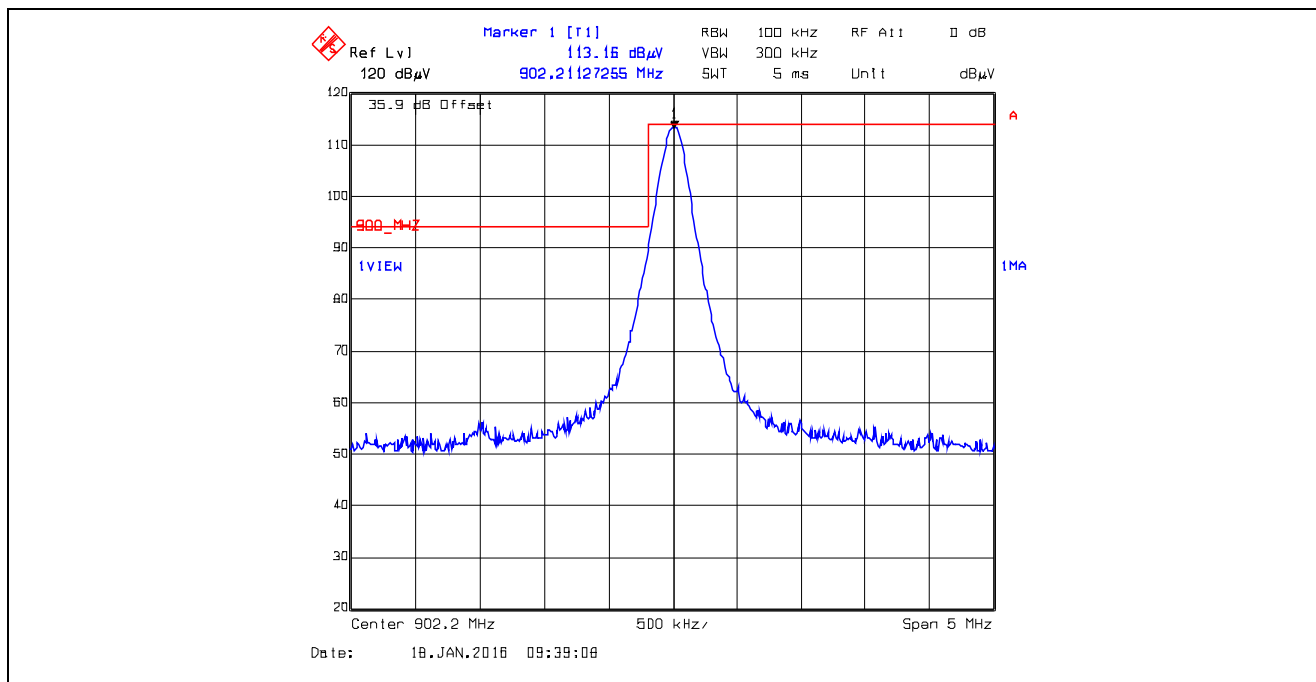
All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

Fundamental Frequency:		927.8 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		13.97 dBm					
Frequency Test Range:		30 MHz – 10 GHz					
Frequency (MHz)	RF Peak Level (dB μ V/m)	RF Avg Level (dB μ V/m)	Antenna Plane (H/V)	Limit 15.209 (dB μ V/m)	Limit 15.247 (dB μ V/m)	Margin (dB)	Pass/Fail
927.8	106.58	--	V	--	--	--	--
927.8	115.25	--	H	--	--	--	--
2783.4	54.30	52.10	V	54.0	95.3	-1.9	Pass*
2783.4	54.00	51.80	H	54.0	95.3	-2.2	Pass*
3711.2	50.95	43.70	V	54.0	95.3	-10.3	Pass*
3711.2	50.45	42.60	H	54.0	95.3	-11.4	Pass*
4639.0	55.10	50.10	V	54.0	95.3	-3.9	Pass*
4639.0	55.20	49.80	H	54.0	95.3	-4.2	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

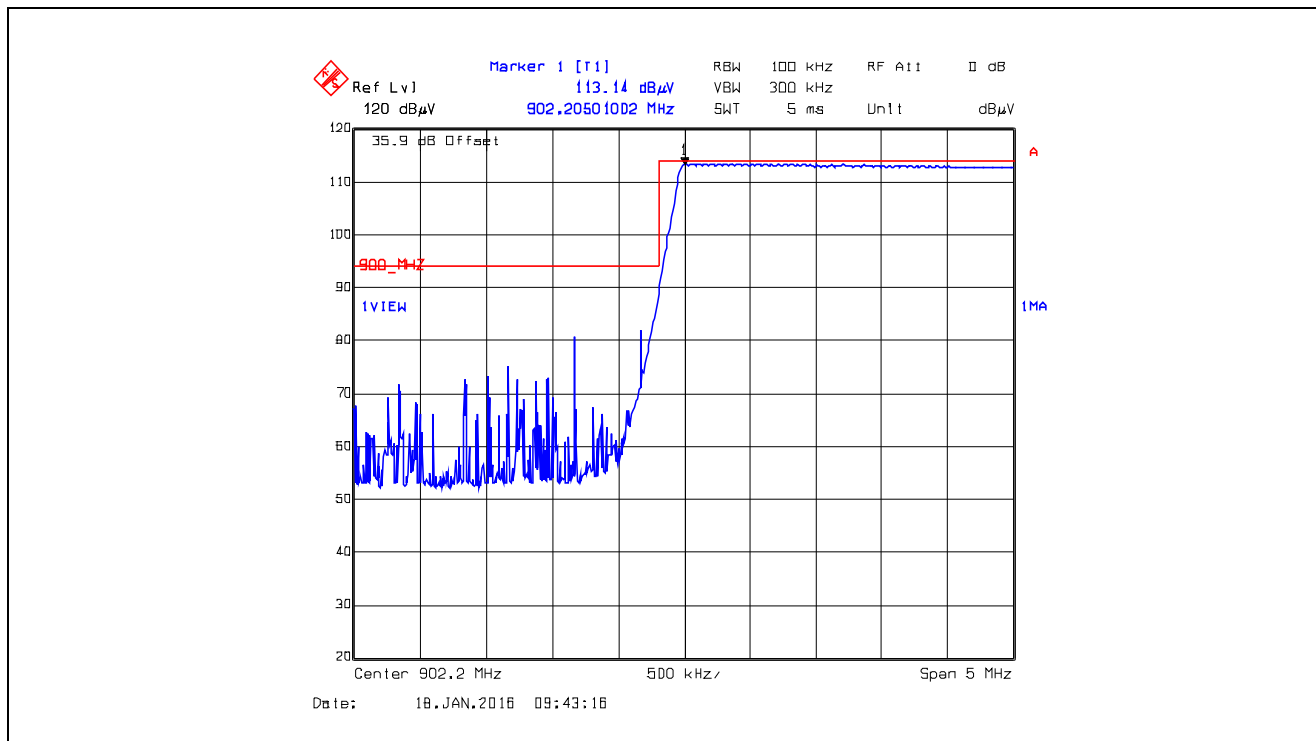
5.5.4.2.2. Band-Edge RF Radiated Emissions

Refer to the following plots.

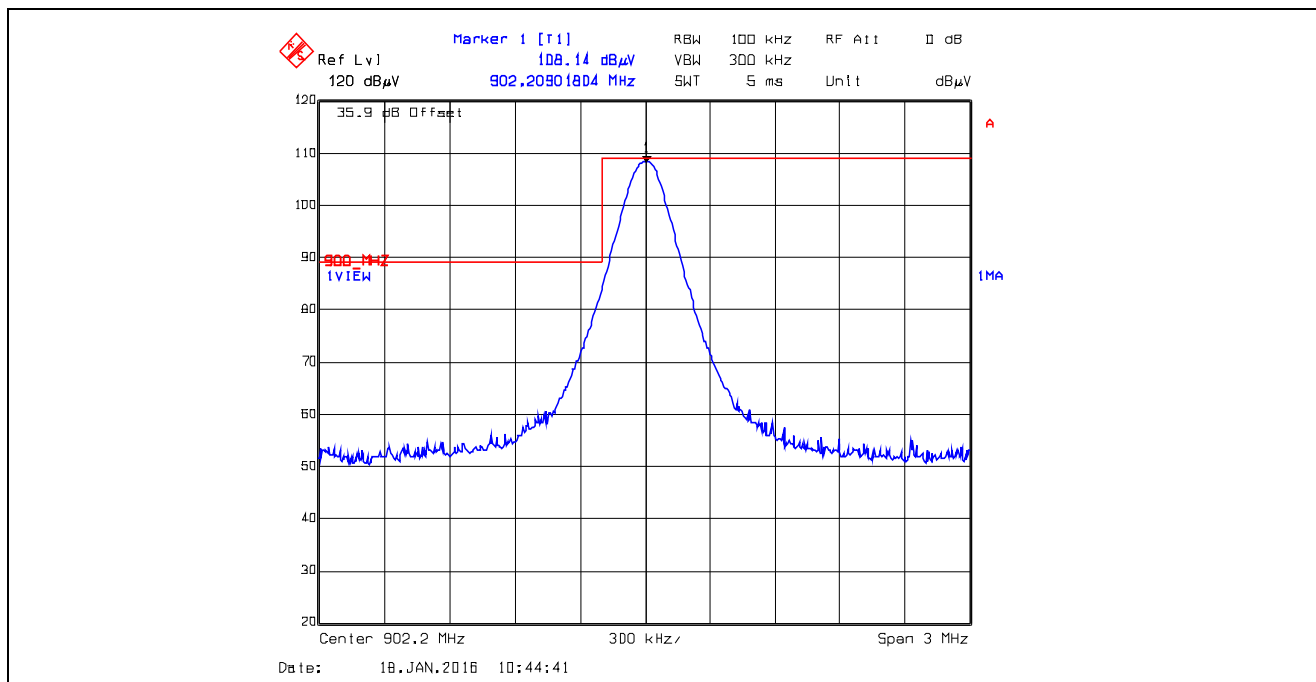
Plot 5.5.4.2.2.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



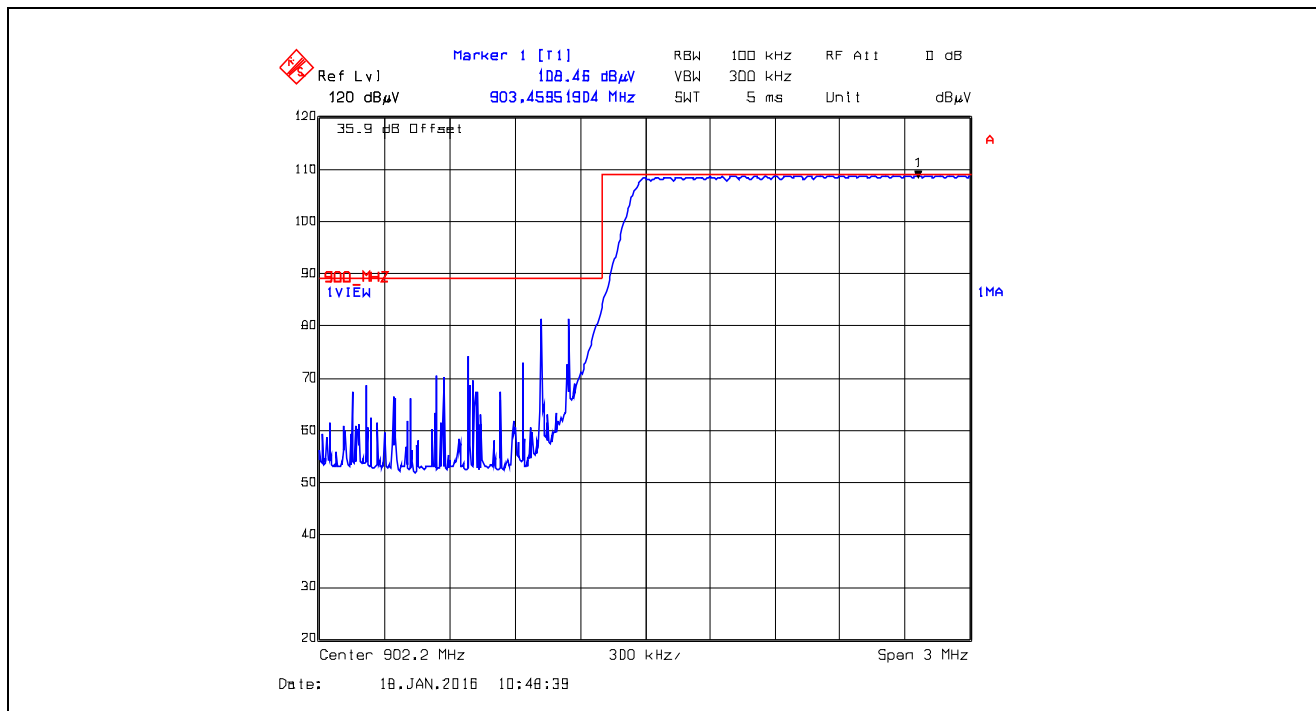
Plot 5.5.4.2.2.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



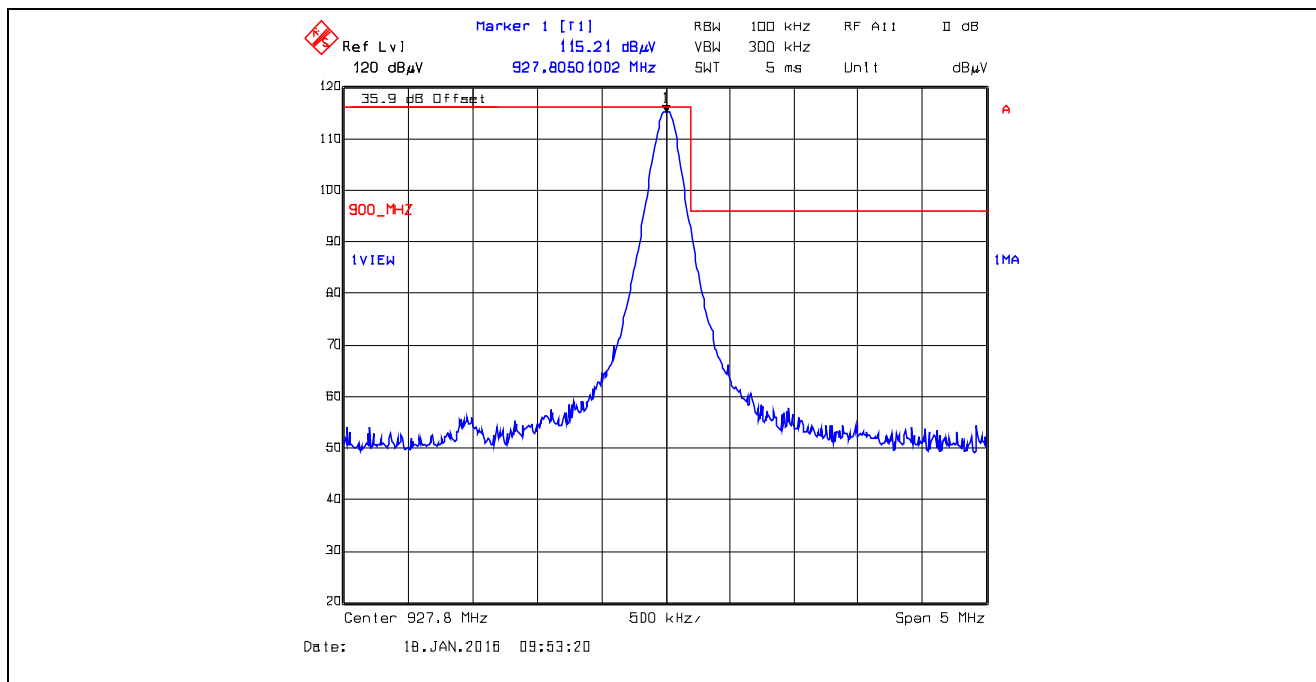
Plot 5.5.4.2.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



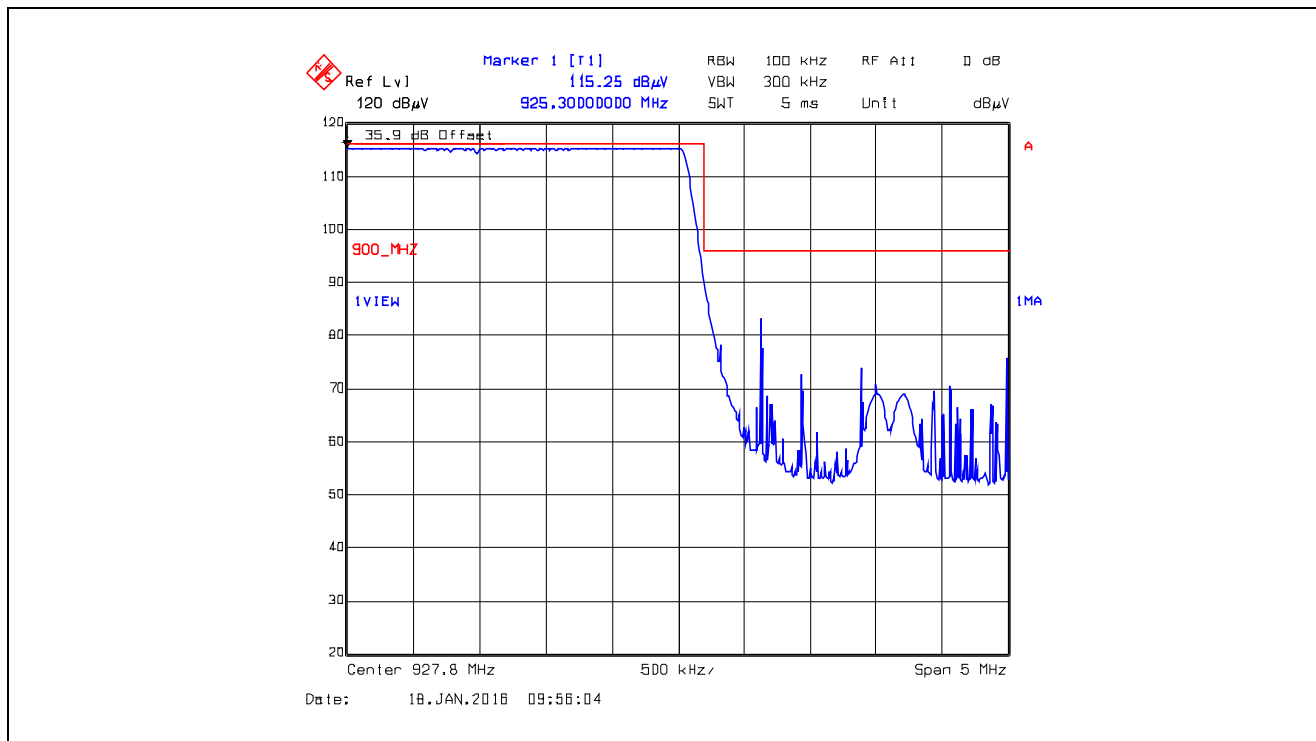
Plot 5.5.4.2.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz FSK, Data rate at 10 Kbps



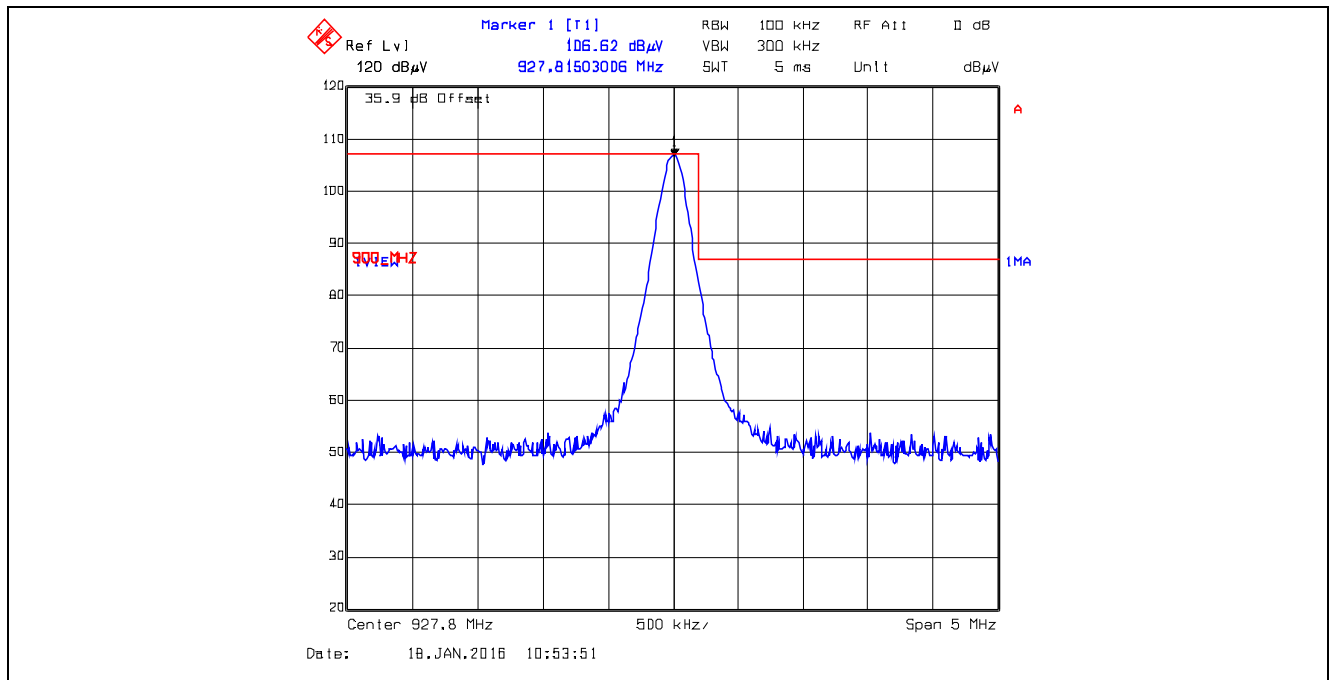
Plot 5.5.4.2.2.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



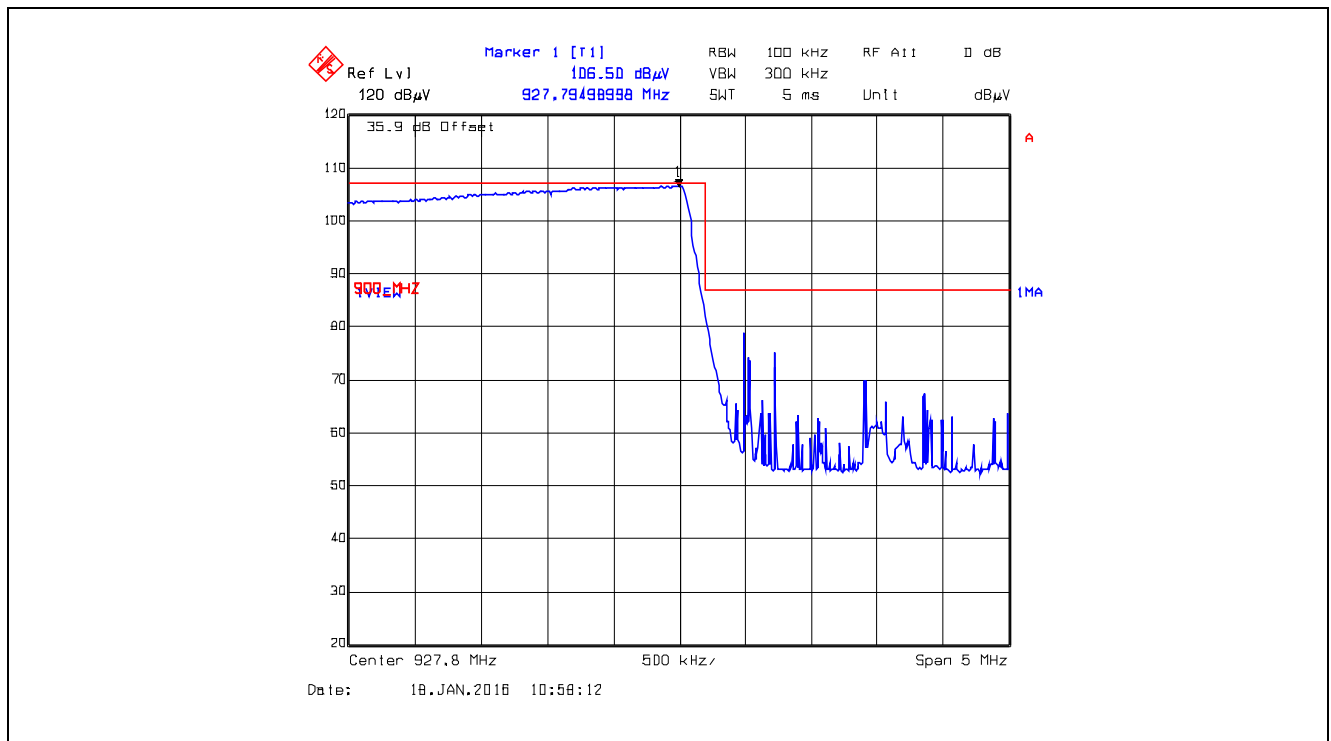
Plot 5.5.4.2.2.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



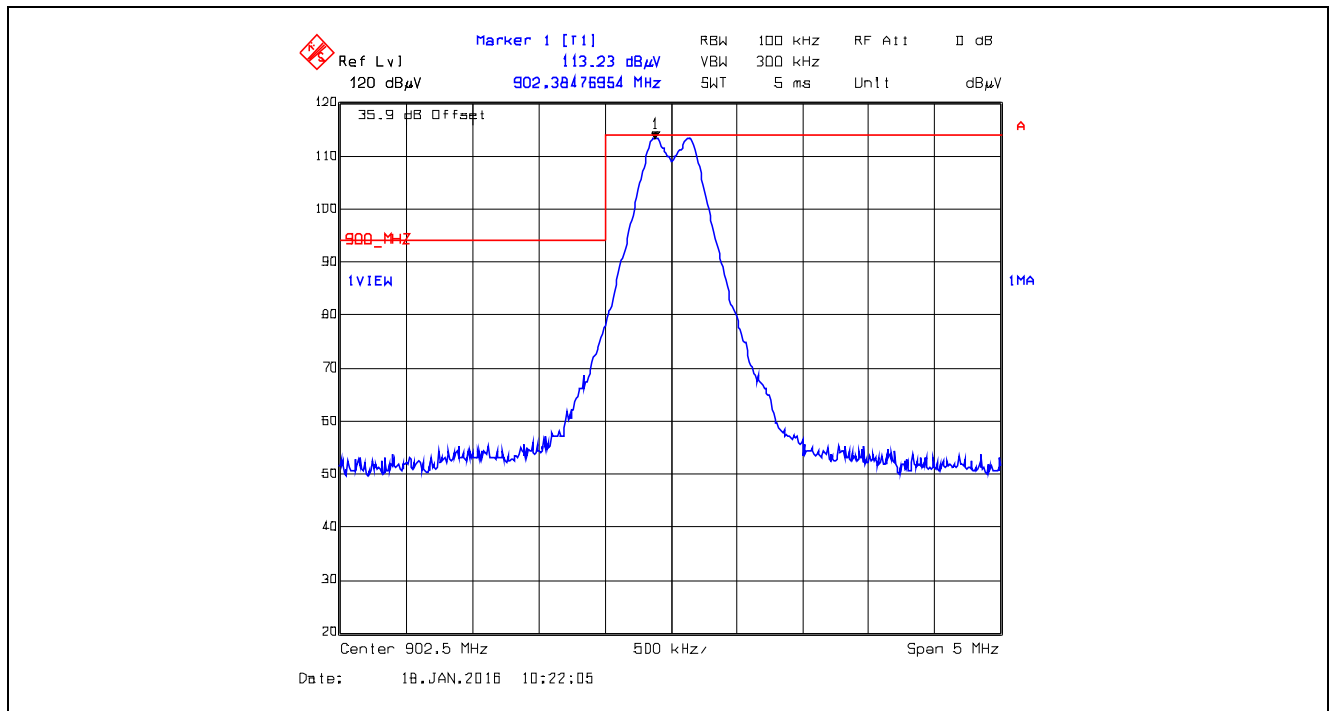
Plot 5.5.4.2.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



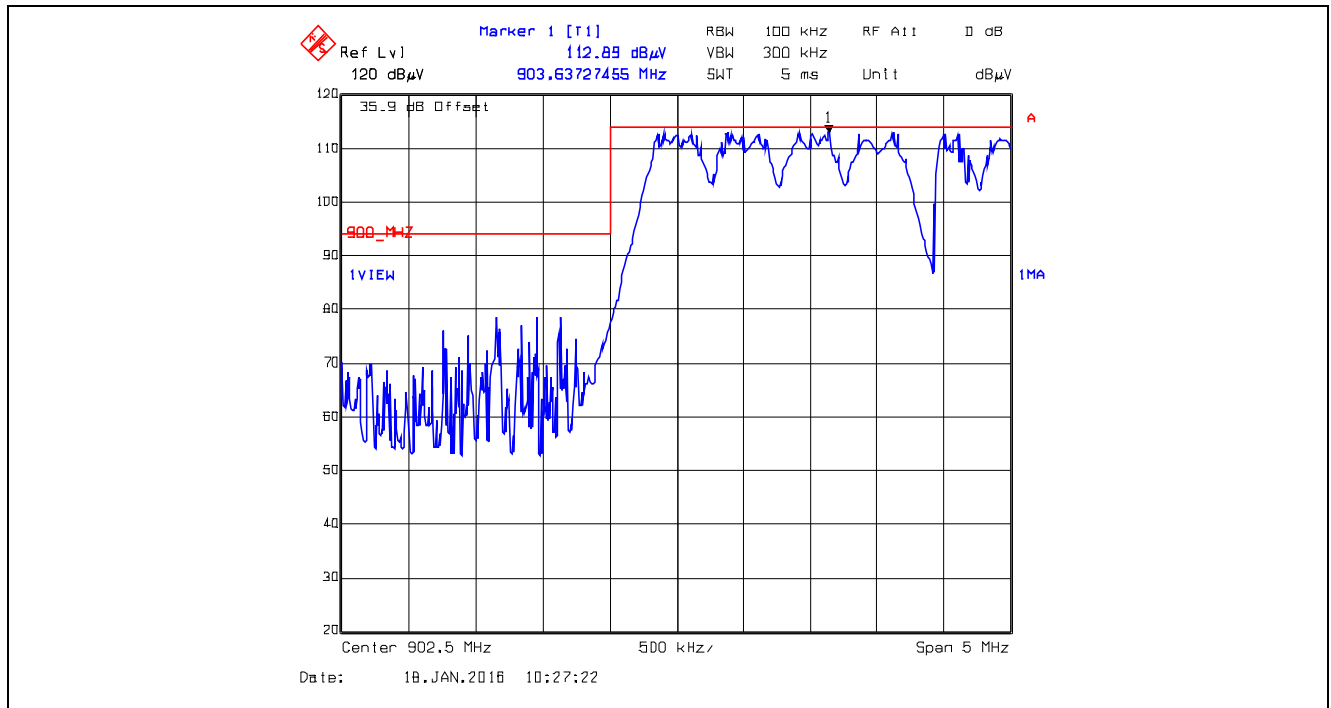
Plot 5.5.4.2.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



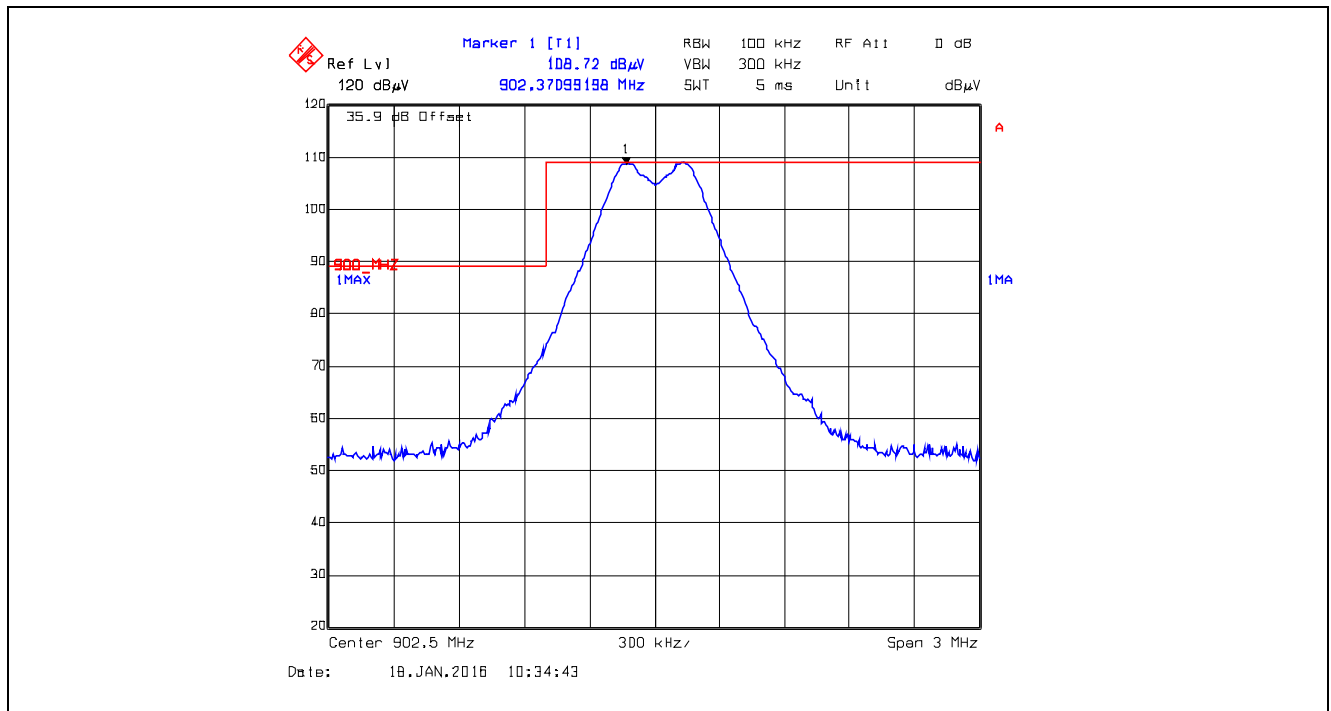
Plot 5.5.4.2.2.9. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



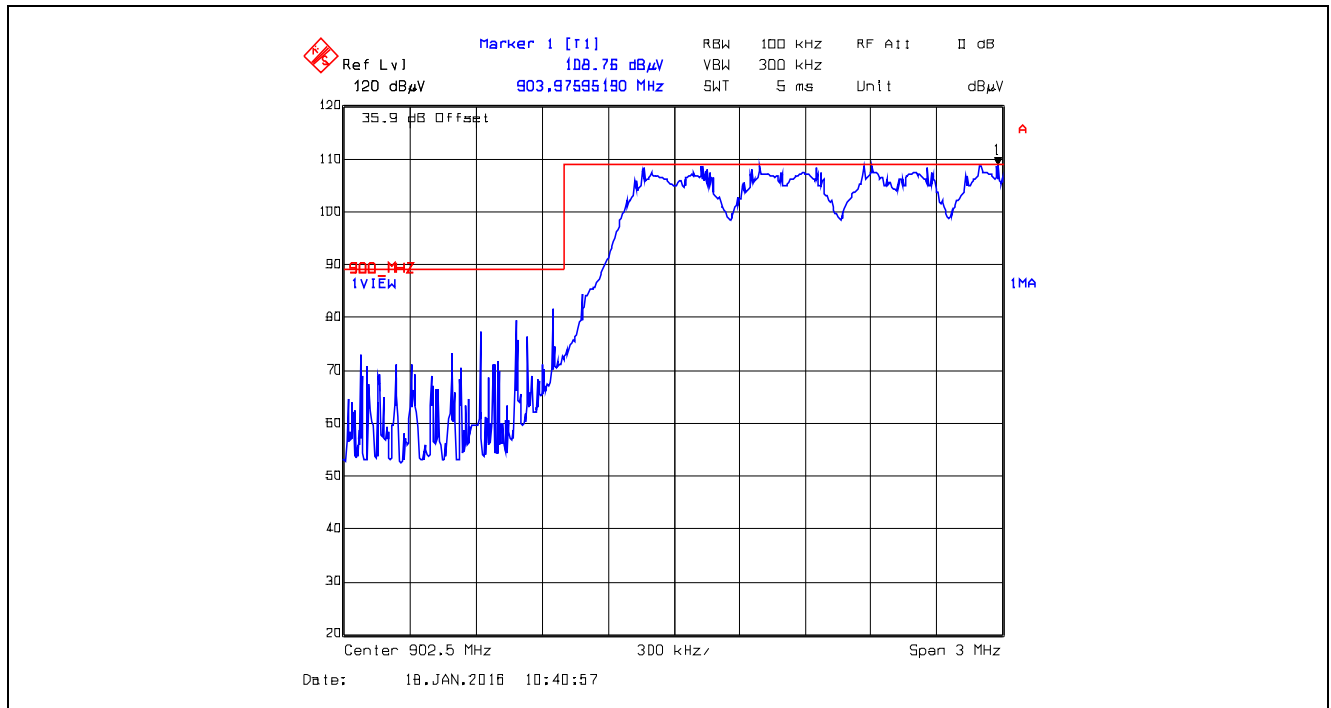
Plot 5.5.4.2.2.10. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



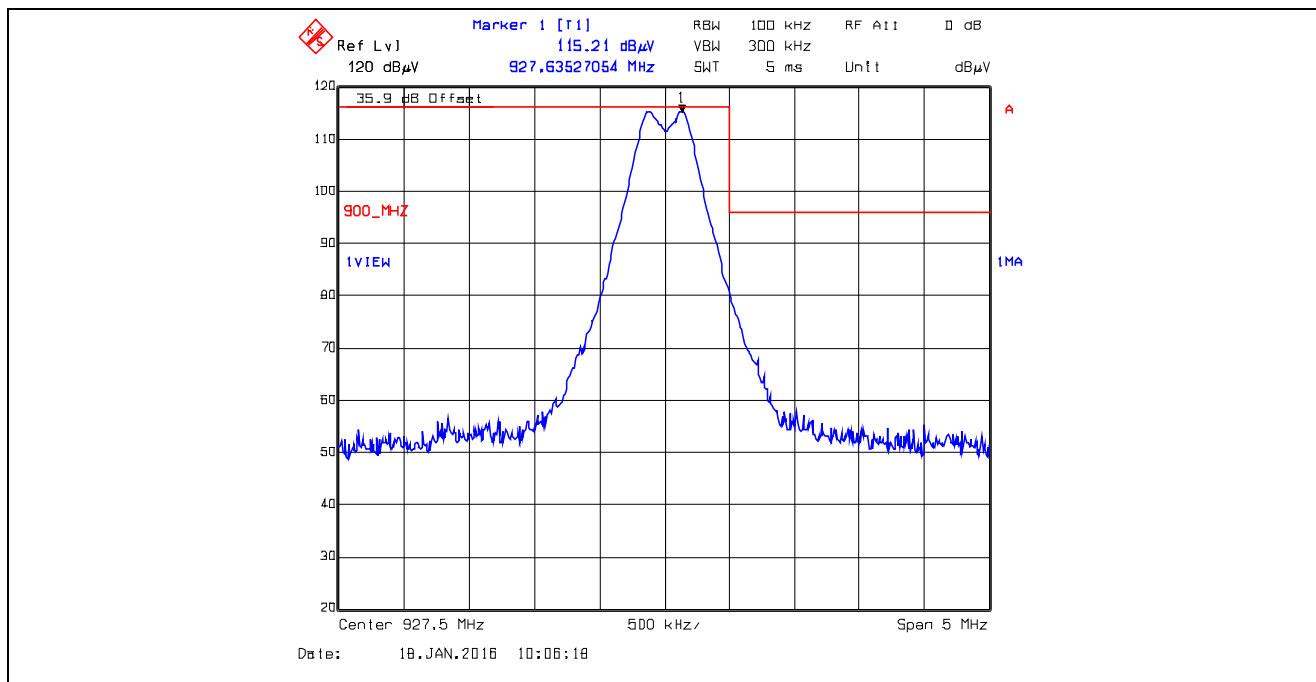
Plot 5.5.4.2.2.11. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



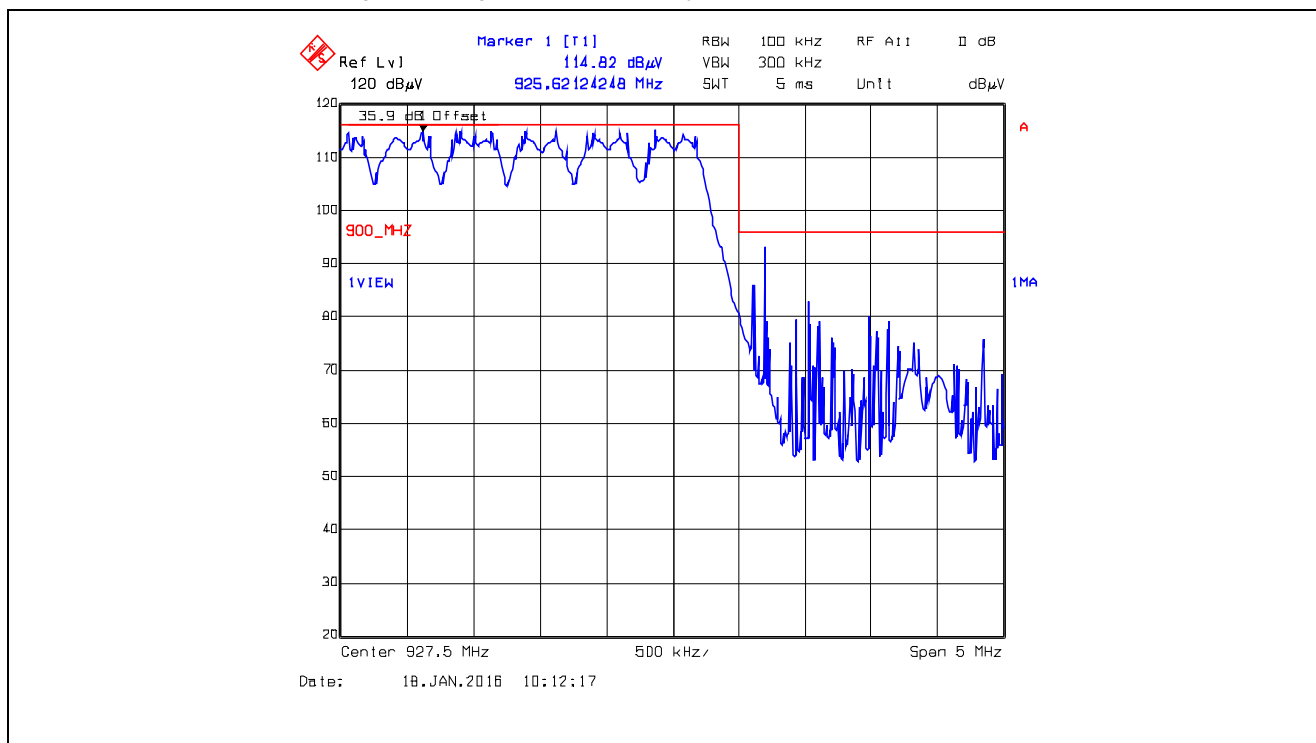
Plot 5.5.4.2.2.12. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



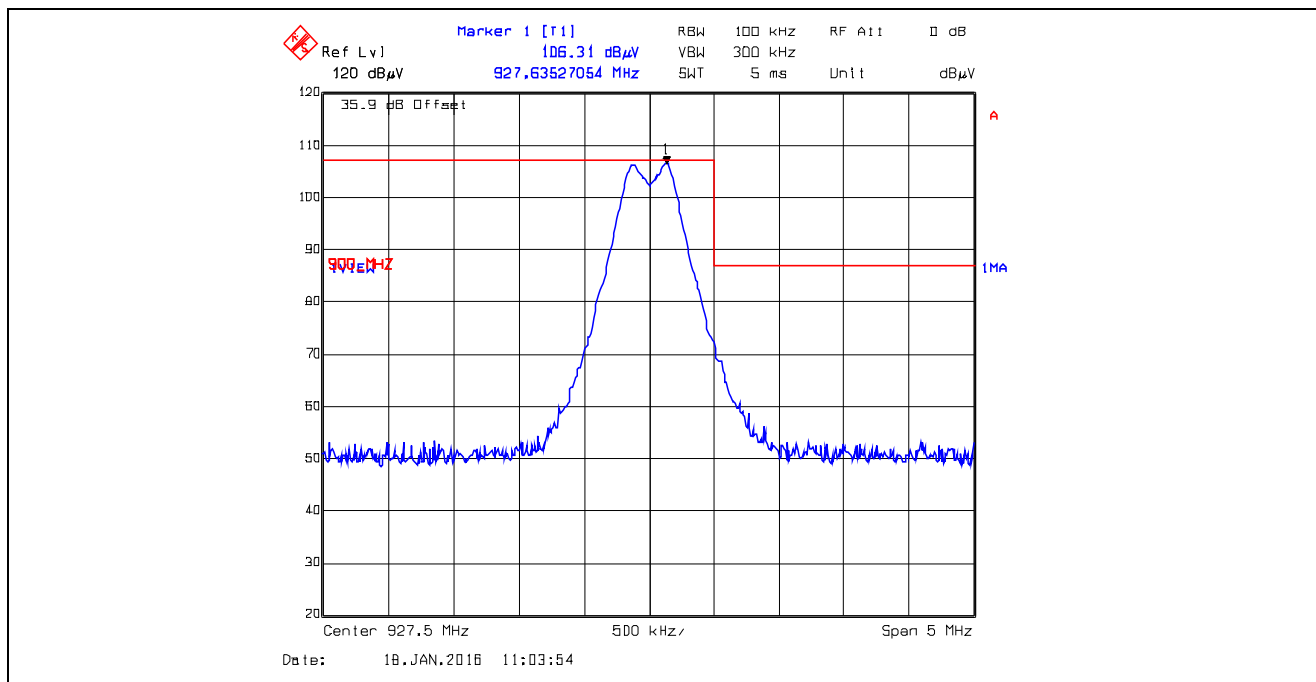
Plot 5.5.4.2.2.13. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



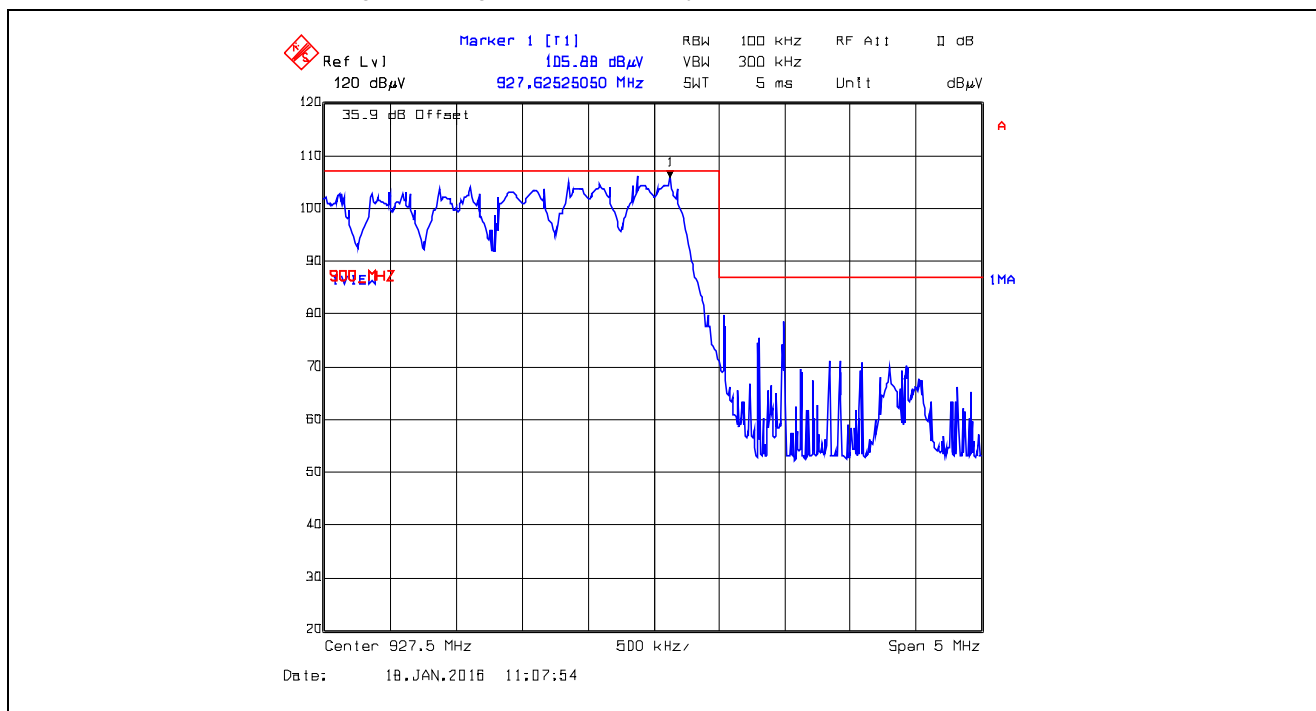
Plot 5.5.4.2.2.14. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



Plot 5.5.4.2.15. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



Plot 5.5.4.2.16. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



5.5.4.3. EUT with 8.0 dBi Omni-Directional Antenna and 0.86 dB Assembly Cable Loss

5.5.4.3.1. Spurious Radiated Emissions

Fundamental Frequency:		902.2 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		14.26 dBm					
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
902.2	119.21	--	V	--	--	--	--
902.2	119.11	--	H	--	--	--	--
2706.6	53.89	51.05	V	54.0	99.2	-2.9	Pass*
2706.6	56.72	53.60	H	54.0	99.2	-0.4	Pass*
3608.8	50.60	43.58	V	54.0	99.2	-10.4	Pass*
3608.8	49.72	39.53	H	54.0	99.2	-14.5	Pass*
4511.0	53.52	47.77	V	54.0	99.2	-6.2	Pass*
4511.0	52.72	46.26	H	54.0	99.2	-7.7	Pass*
5413.2	57.17	51.97	V	54.0	99.2	-2.0	Pass*
5413.2	52.91	42.86	H	54.0	99.2	-11.1	Pass*
8119.8	52.68	42.04	V	54.0	99.2	-12.0	Pass*
8119.8	50.69	41.70	H	54.0	99.2	-12.3	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:		915.0 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		14.18 dBm					
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	118.97	--	V	--	--	--	--
915.0	119.22	--	H	--	--	--	--
2745.0	52.87	50.34	V	54.0	99.2	-5.3	Pass*
2745.0	55.40	53.40	H	54.0	99.2	-1.9	Pass*
3660.0	50.49	44.20	V	54.0	99.2	-14.6	Pass*
3660.0	49.63	39.80	H	54.0	99.2	-15.6	Pass*
4575.0	53.97	48.33	V	54.0	99.2	-7.1	Pass*
4575.0	53.35	47.21	H	54.0	99.2	-4.9	Pass*
7320.0	54.90	44.96	V	54.0	99.2	-9.0	Pass*
7320.0	51.24	41.06	H	54.0	99.2	-13.9	Pass*

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4

Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

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8235.0	52.39	42.78	V	54.0	99.2	-11.2	Pass*
8235.0	50.81	41.71	H	54.0	99.2	-12.3	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:		927.8 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		13.97 dBm					
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
927.8	118.74	--	V	--	--	--	--
927.8	119.75	--	H	--	--	--	--
2783.4	51.47	47.99	V	54.0	99.8	-6.0	Pass*
2783.4	54.37	52.26	H	54.0	99.8	-1.7	Pass*
3711.2	50.89	43.76	V	54.0	99.8	-10.2	Pass*
3711.2	49.32	39.72	H	54.0	99.8	-14.3	Pass*
4639.0	55.89	51.32	V	54.0	99.8	-2.7	Pass*
4639.0	53.92	48.07	H	54.0	99.8	-5.9	Pass*
7422.4	55.90	44.40	V	54.0	99.8	-9.6	Pass*
7422.4	51.92	42.33	H	54.0	99.8	-11.7	Pass*
8350.2	55.83	44.58	V	54.0	99.8	-9.4	Pass*
8350.2	50.76	42.14	H	54.0	99.8	-11.9	Pass*

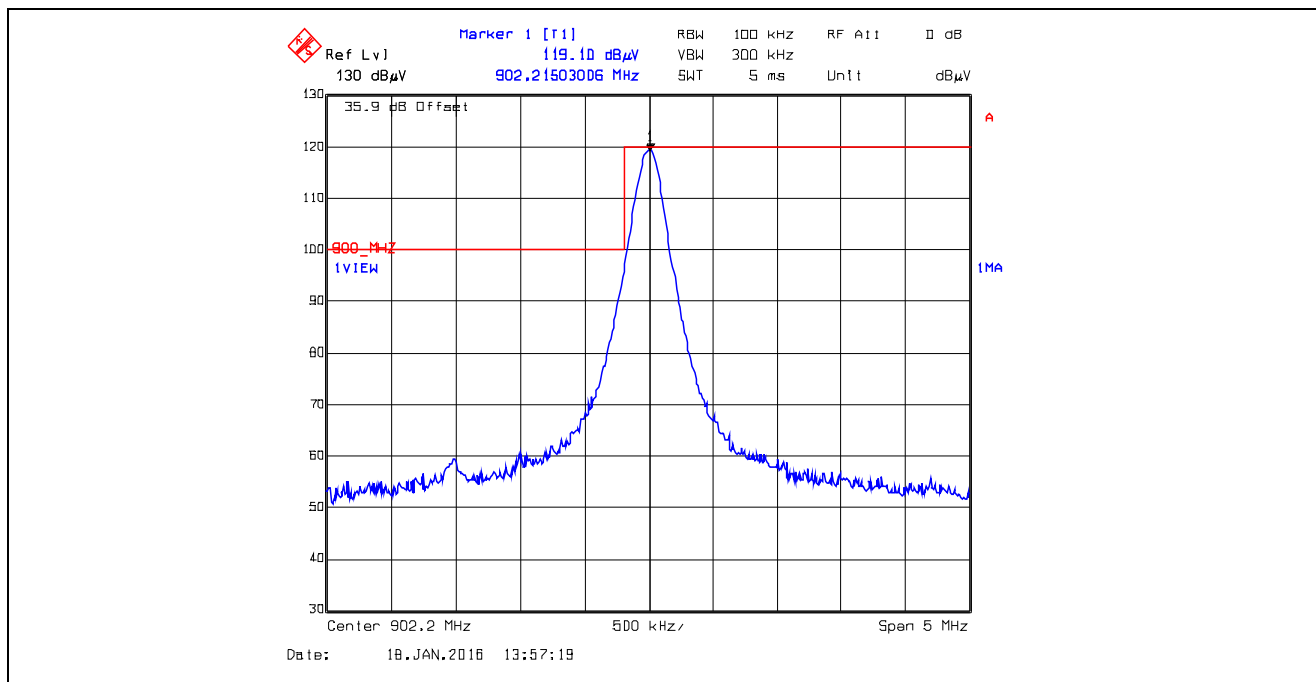
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.

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

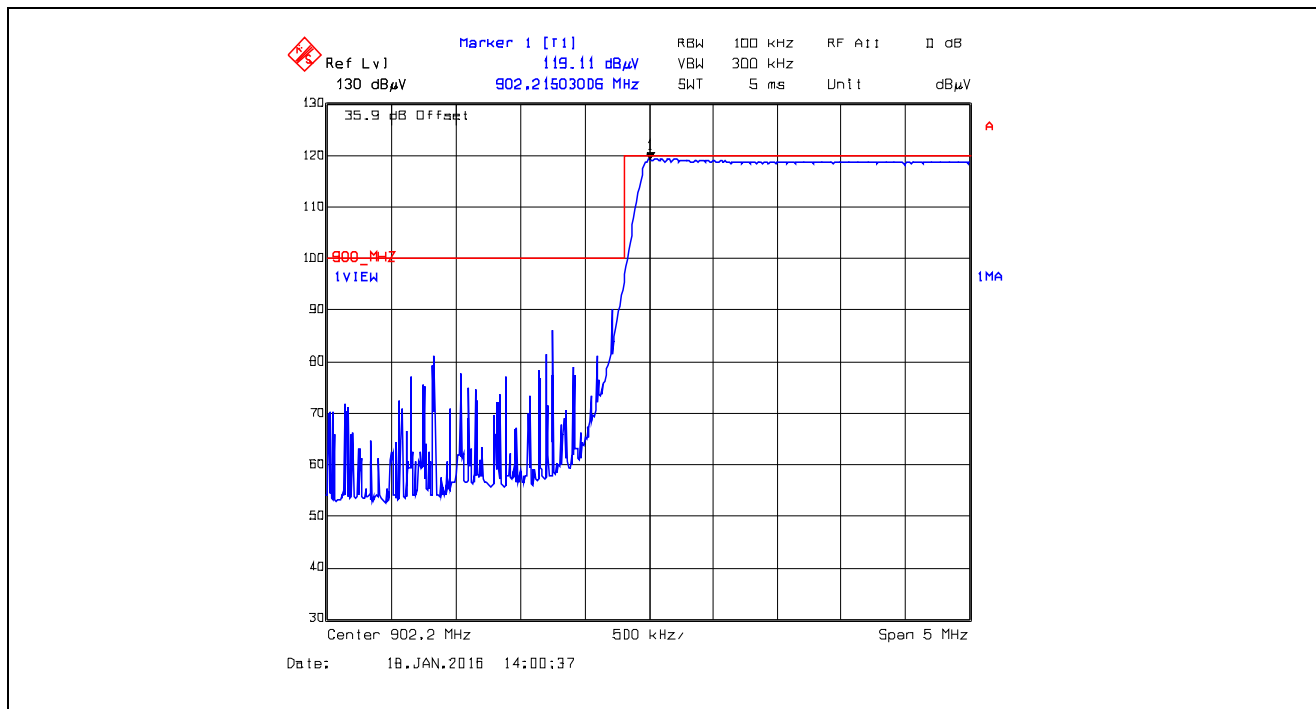
5.5.4.3.2. Band-Edge RF Radiated Emissions

Refer to the following plots.

Plot 5.5.4.3.2.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



Plot 5.5.4.3.2.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



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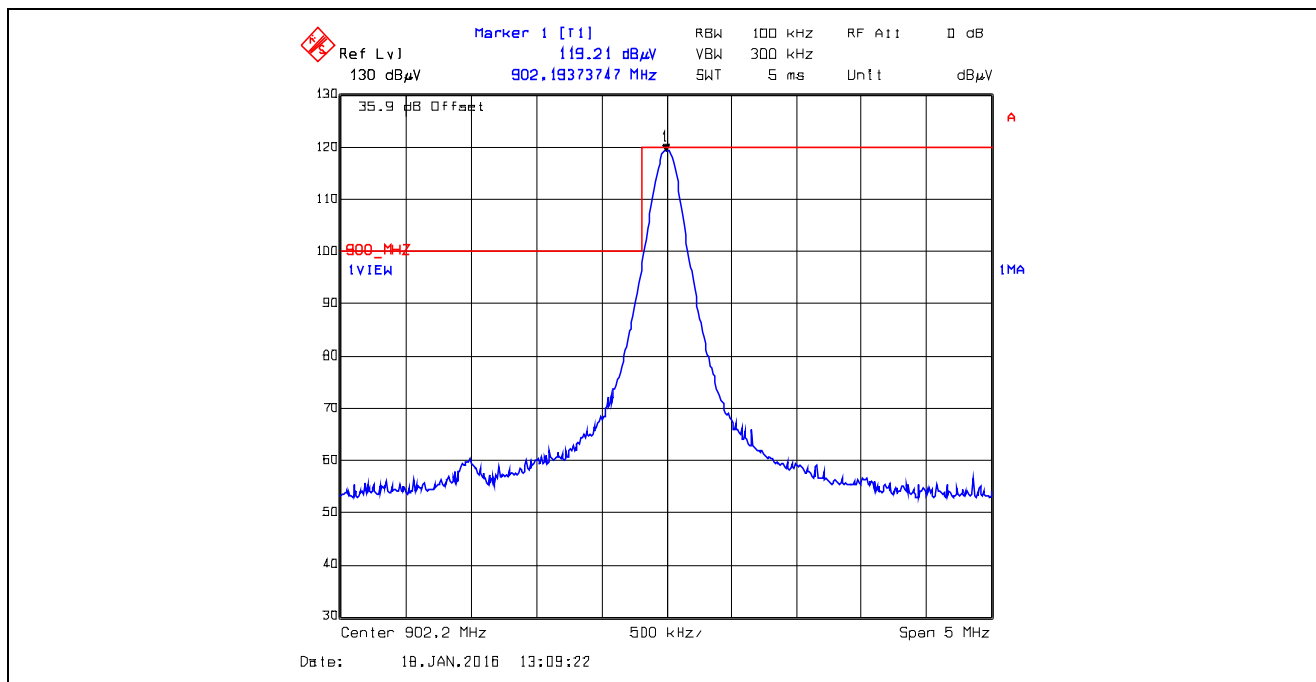
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

File #: 16MONN026_FCC15C247

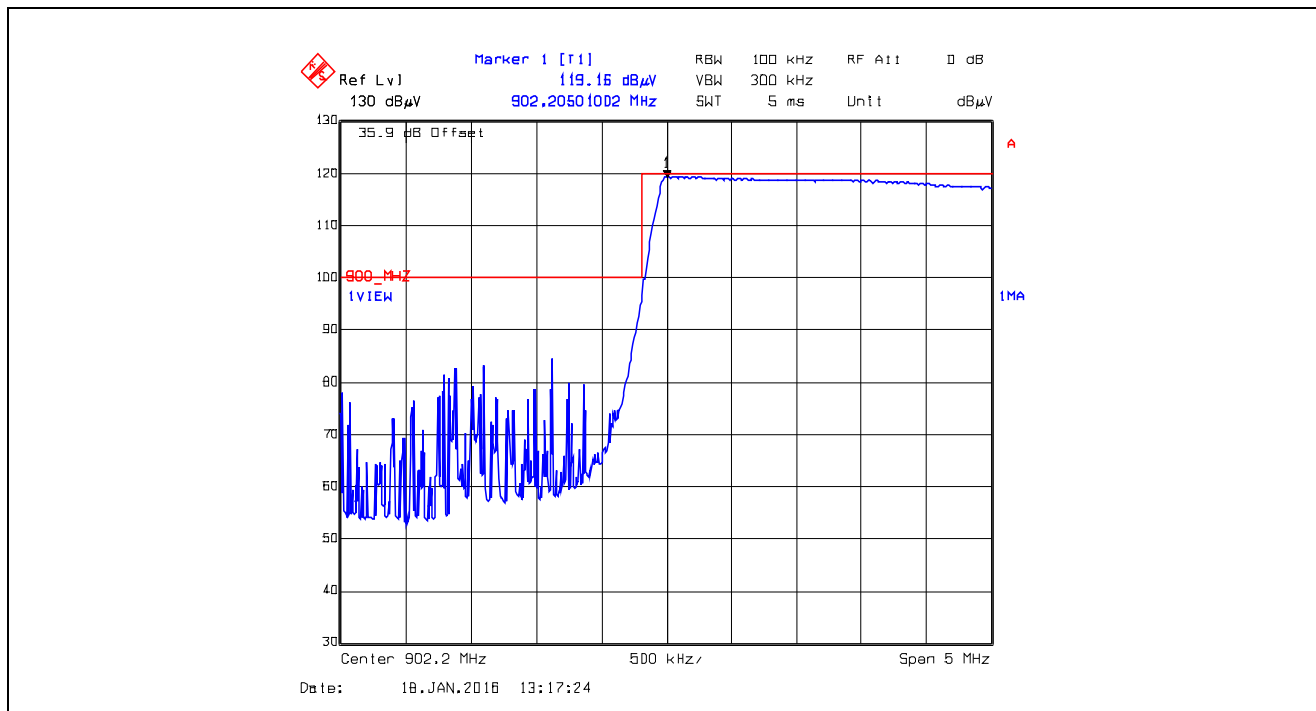
January 22, 2016

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

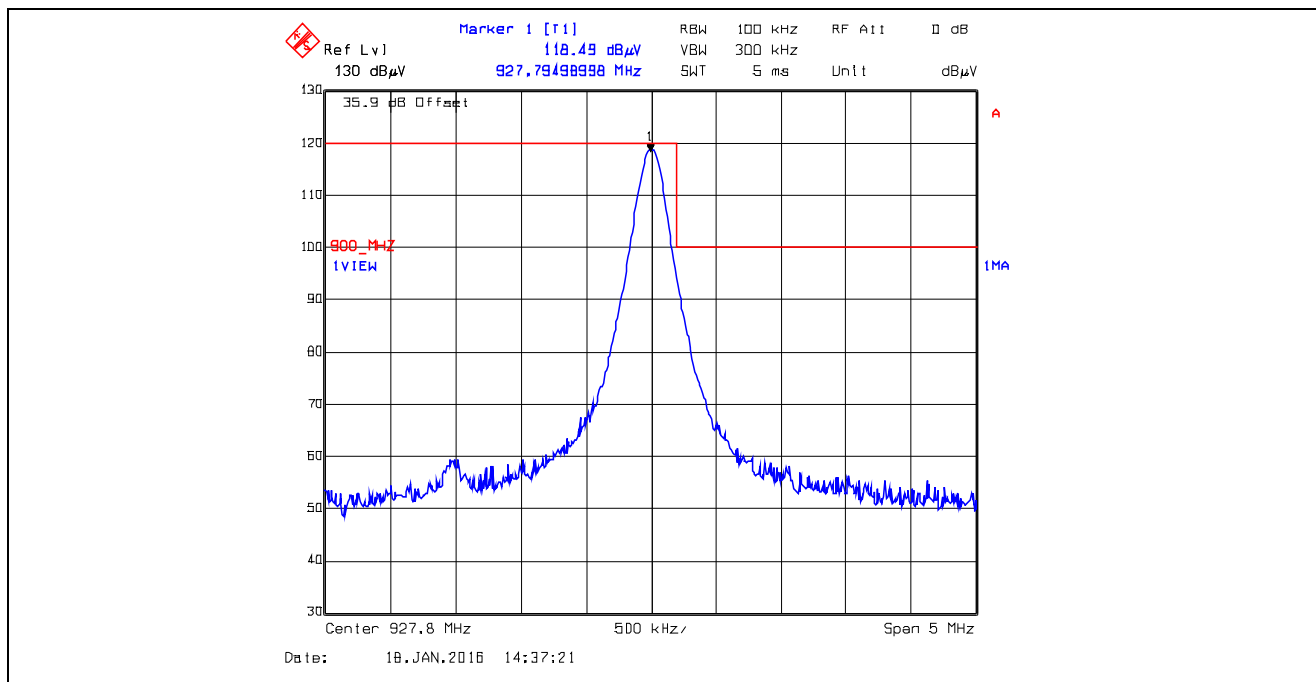
Plot 5.5.4.3.2.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



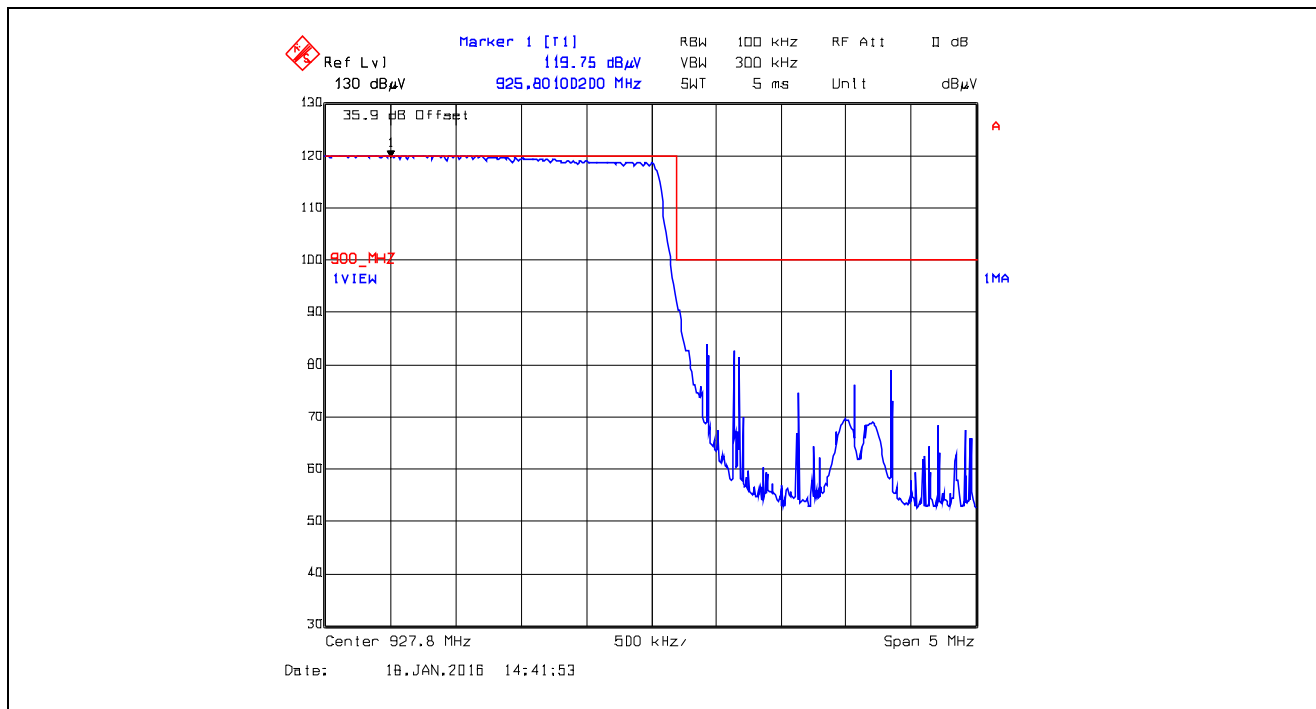
Plot 5.5.4.3.2.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz FSK, Data rate at 10 Kbps



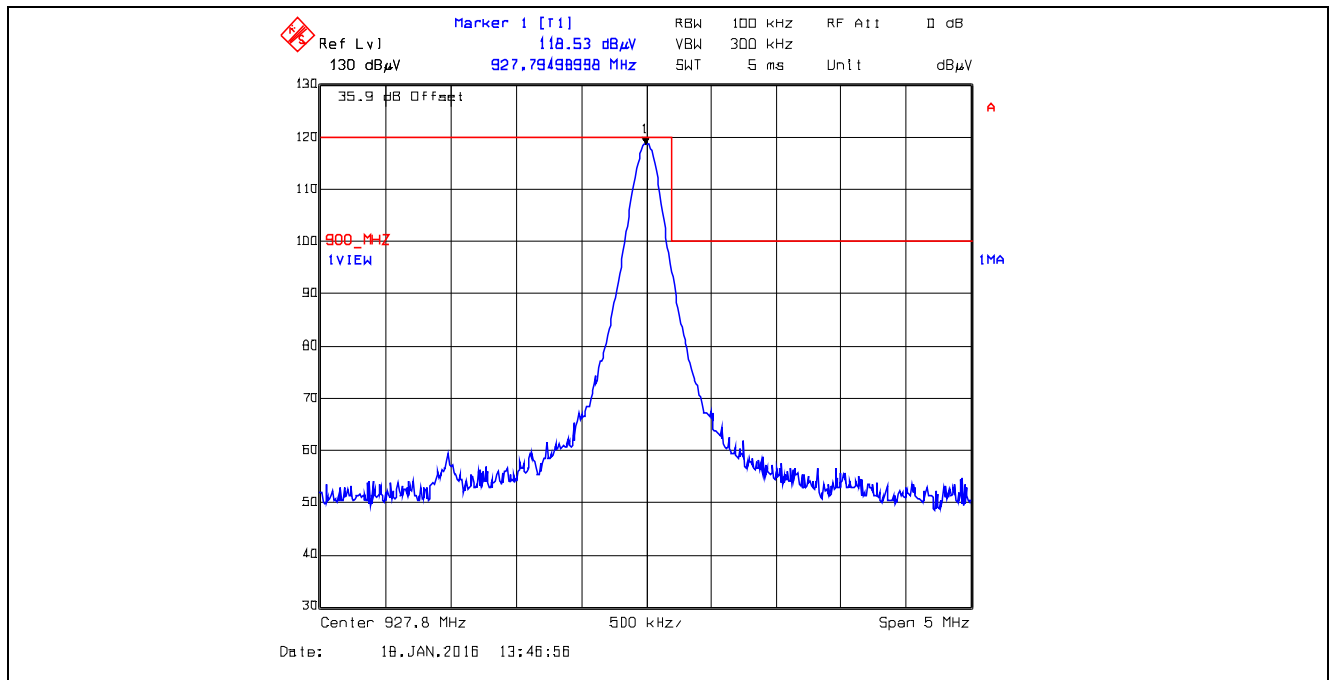
Plot 5.5.4.3.2.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



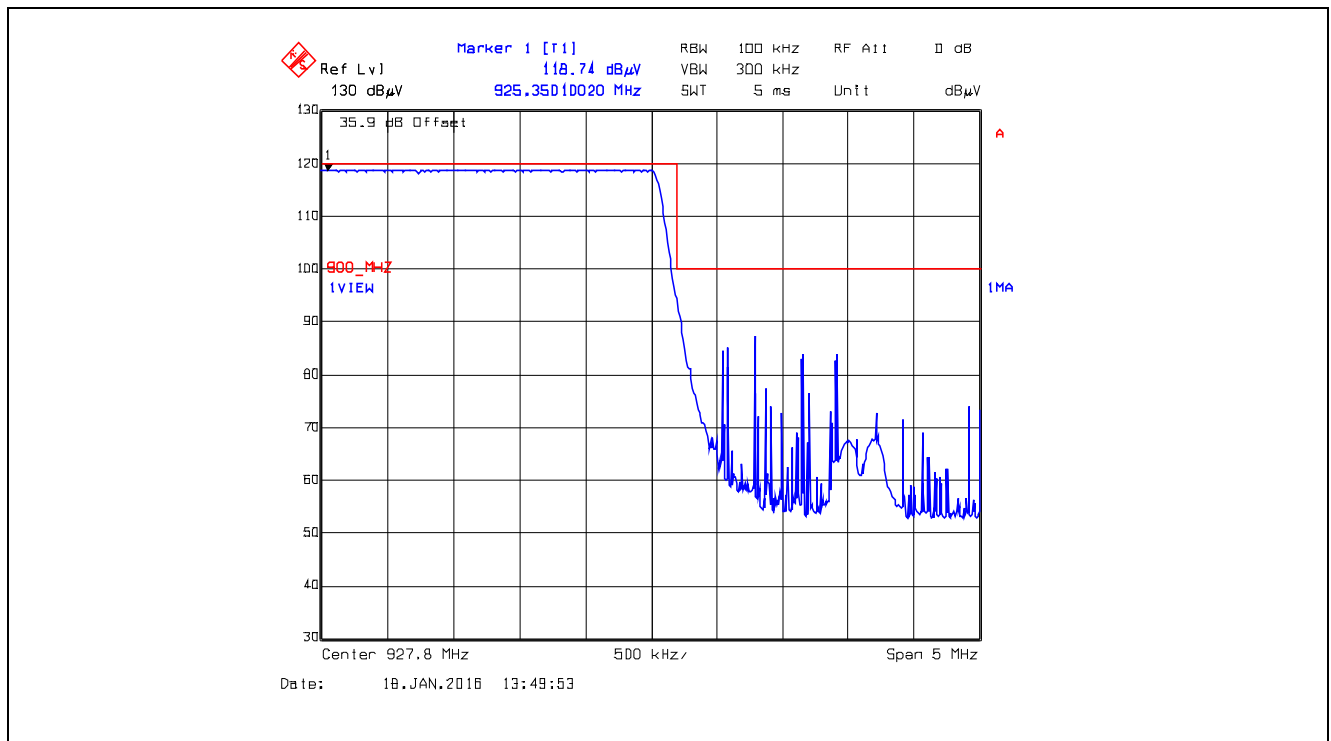
Plot 5.5.4.3.2.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



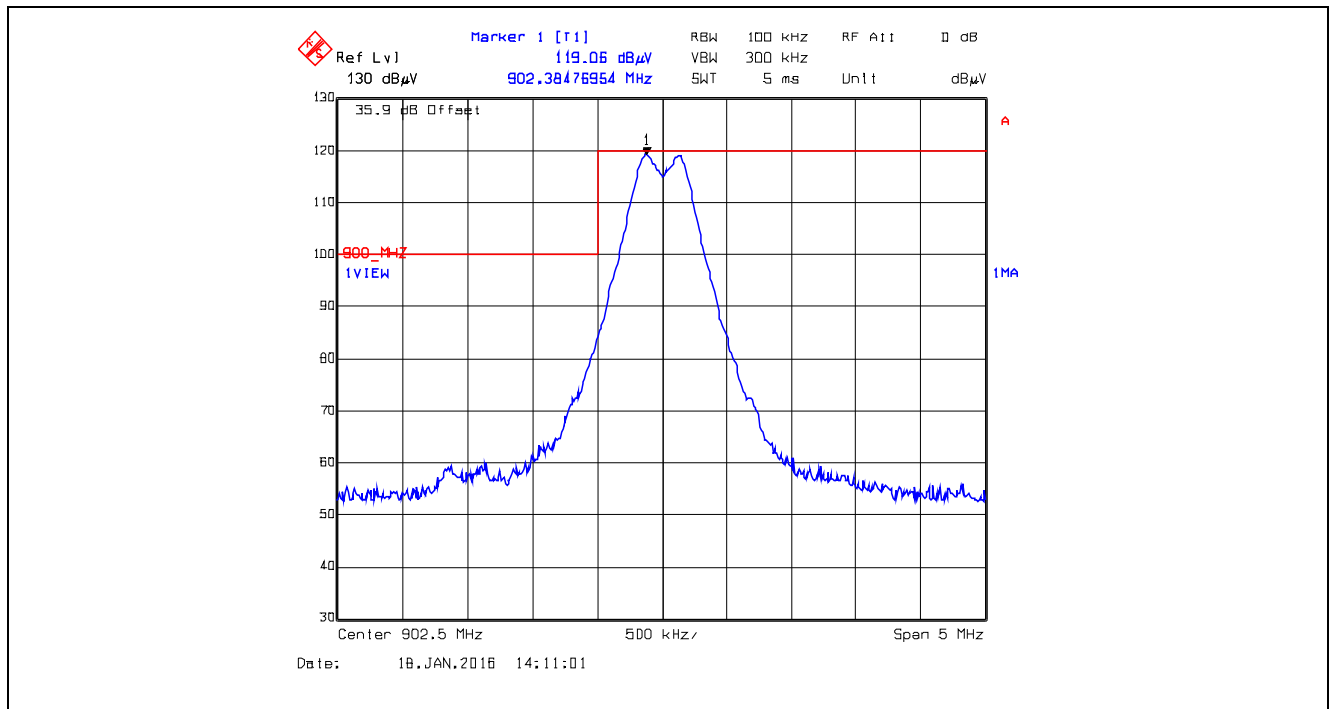
Plot 5.5.4.3.2.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



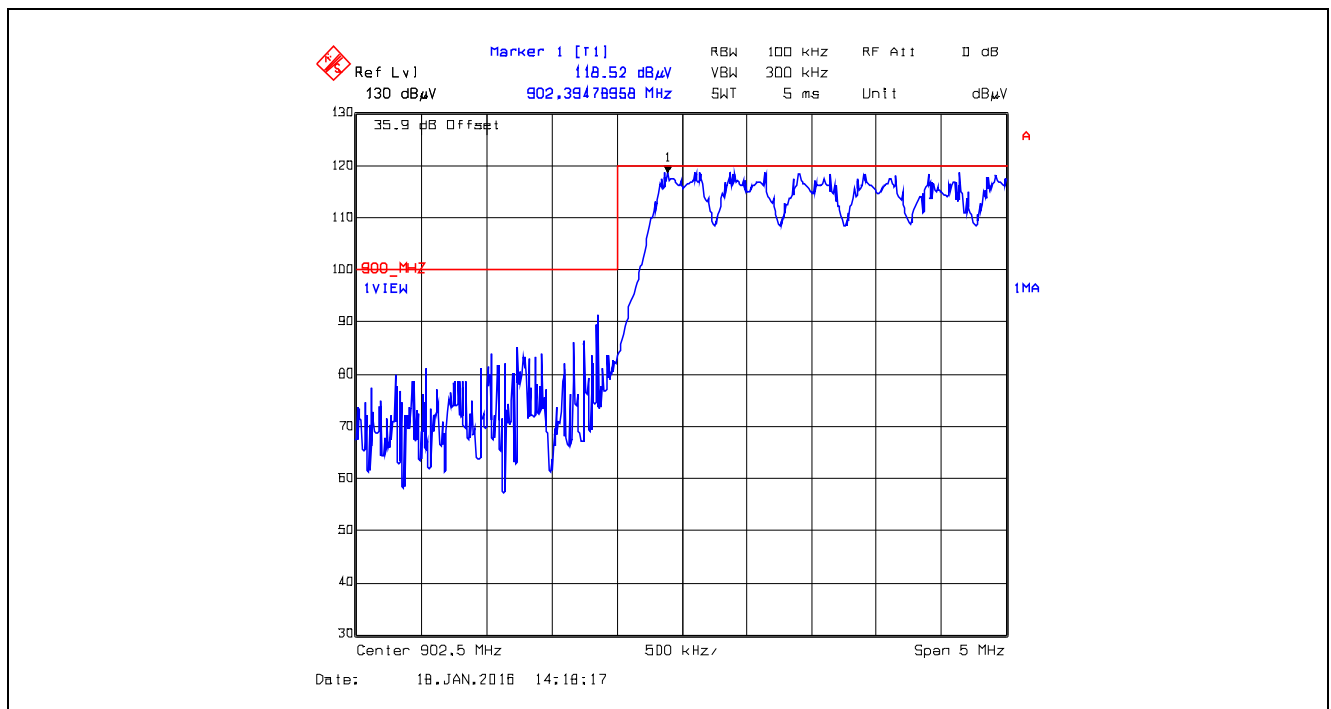
Plot 5.5.4.3.2.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



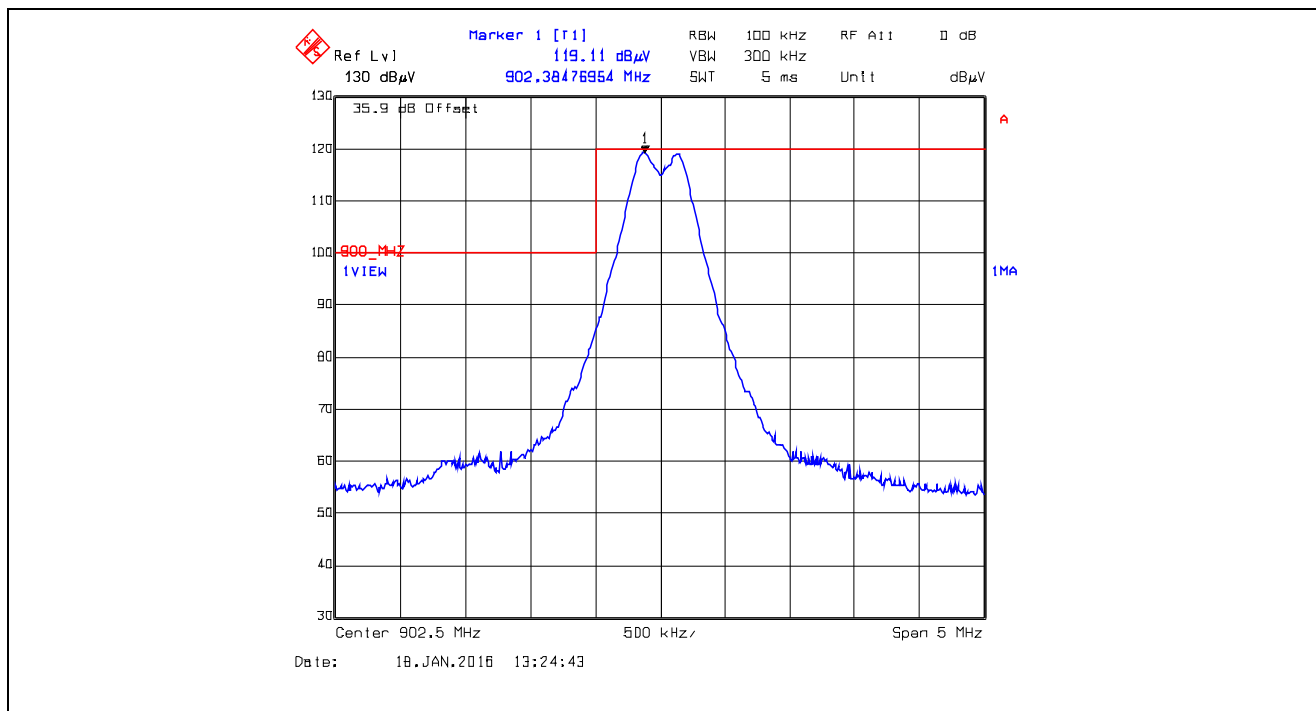
Plot 5.5.4.3.2.9. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



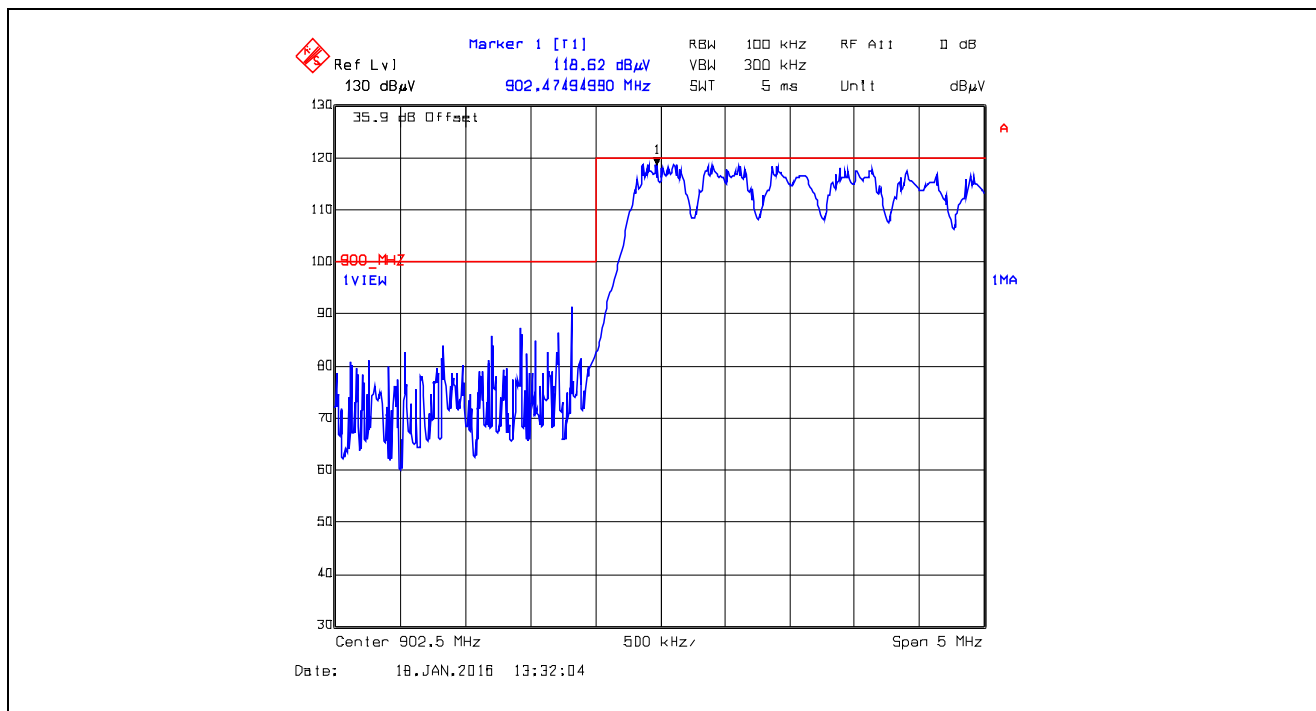
Plot 5.5.4.3.2.10. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



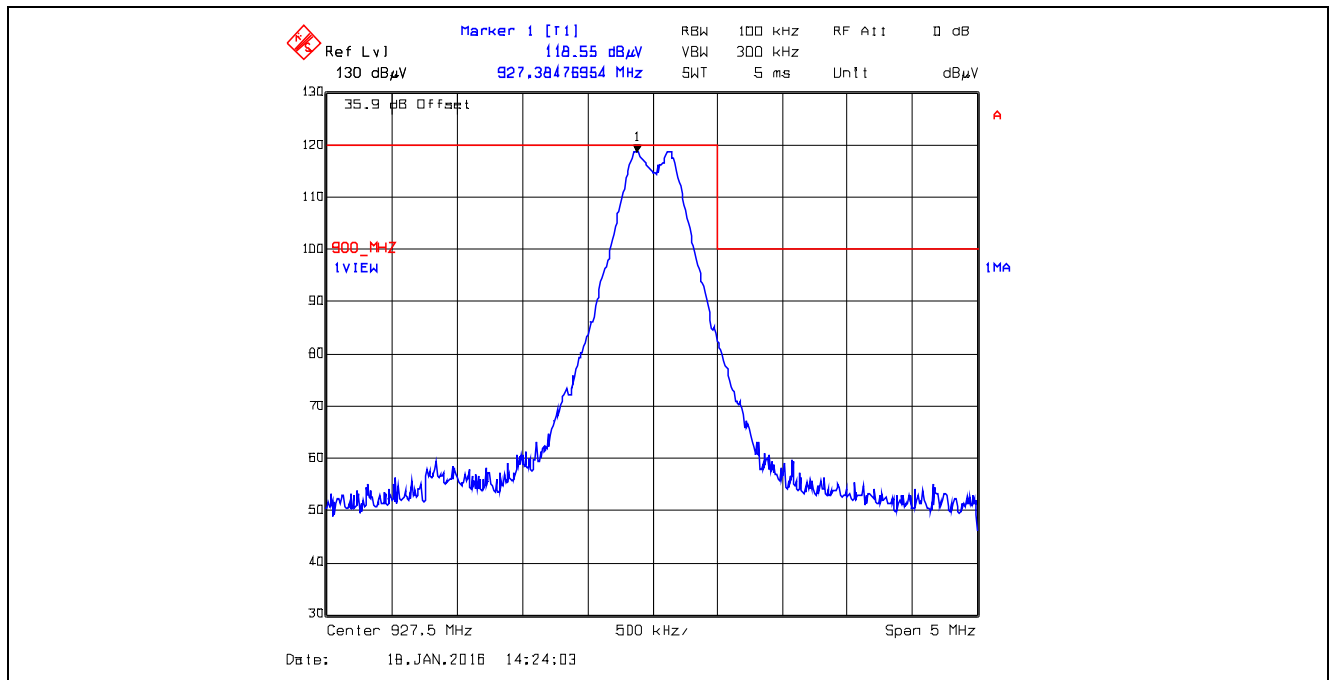
Plot 5.5.4.3.2.11. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



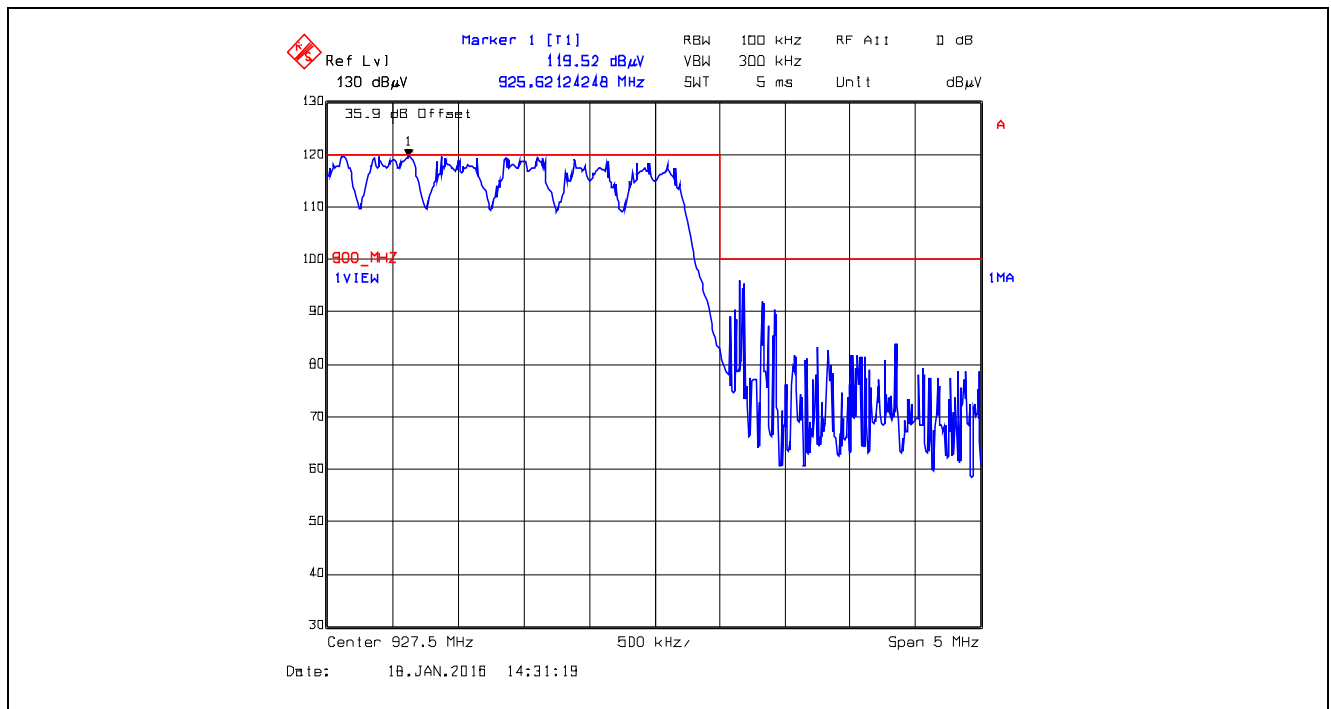
Plot 5.5.4.3.2.12. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



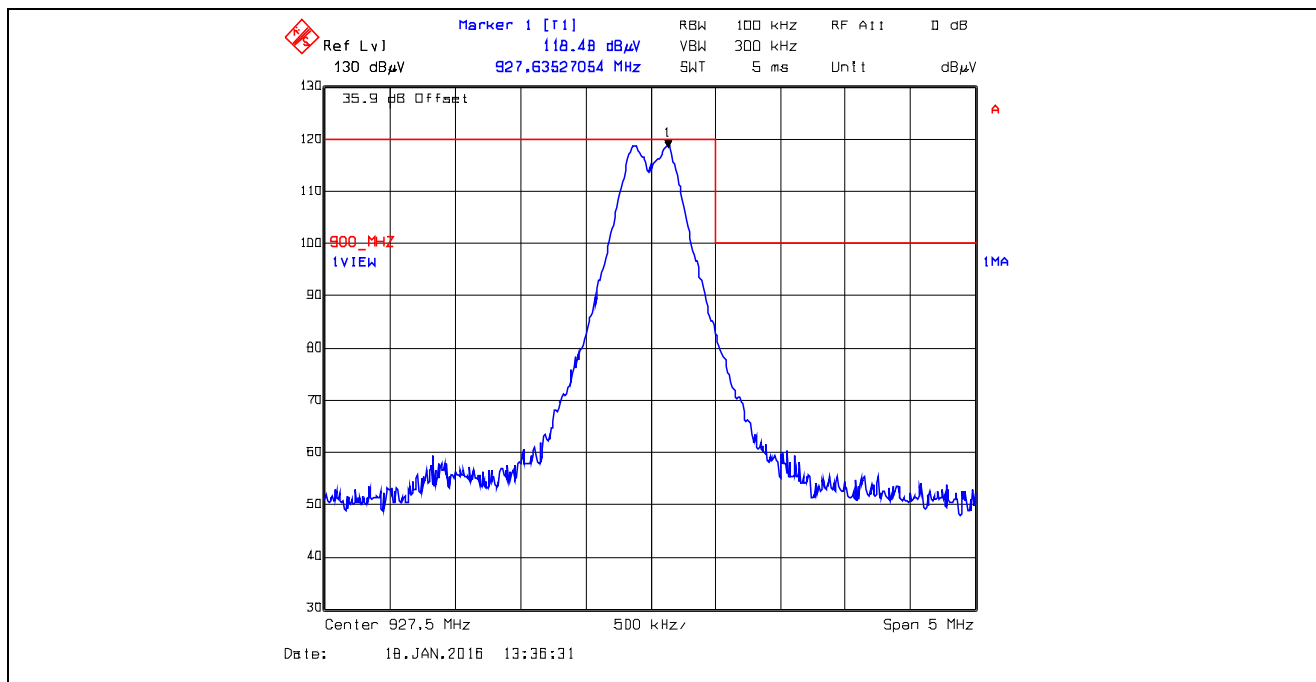
Plot 5.5.4.3.2.13. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



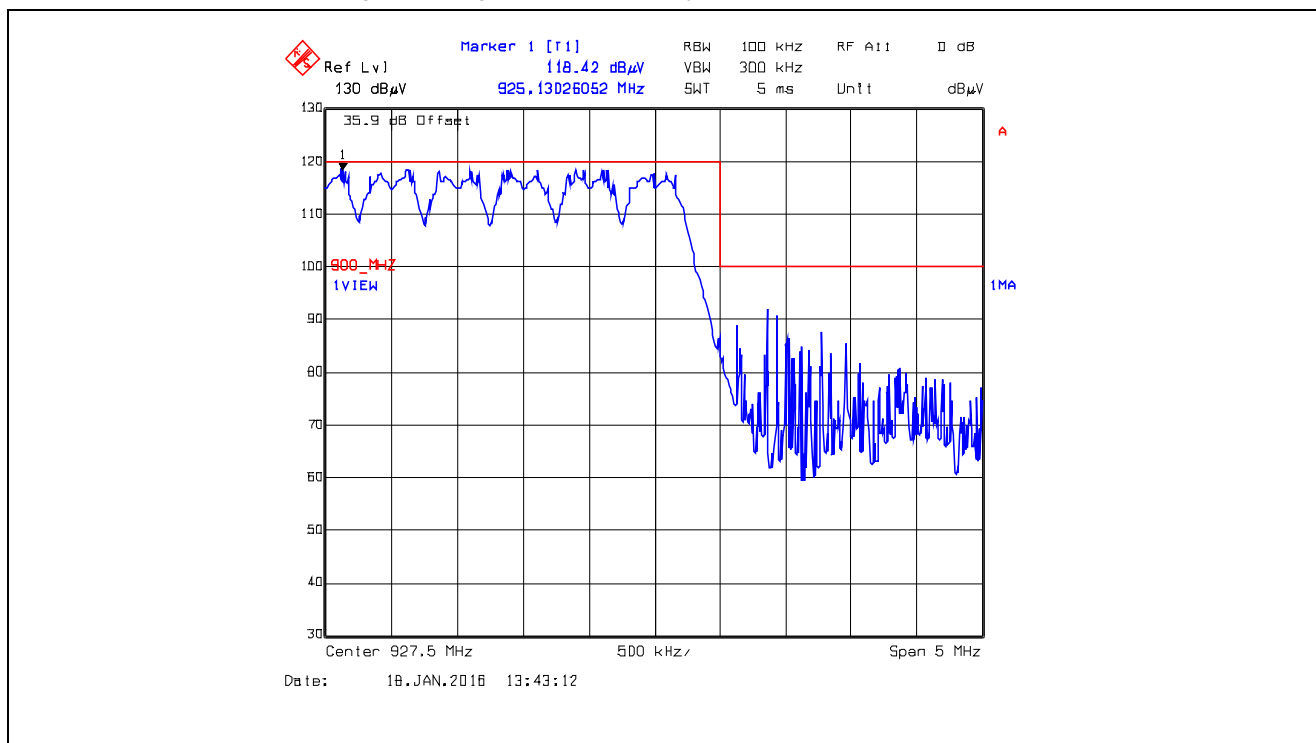
Plot 5.5.4.3.2.14. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



Plot 5.5.4.3.2.15. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



Plot 5.5.4.3.2.16. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



5.5.4.4. EUT with 9.0 dBi Flat Panel Antenna and 0.86 dB Assembly Cable Loss

5.5.4.4.1. Spurious Radiated Emissions

Fundamental Frequency:		902.2 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		14.26 dBm					
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
902.2	118.48	--	V	--	--	--	--
902.2	117.82	--	H	--	--	--	--
2706.6	54.20	51.50	V	54.0	98.5	-2.5	Pass*
2706.6	55.00	53.50	H	54.0	98.5	-0.5	Pass*
3608.8	51.43	45.00	V	54.0	98.5	-9.0	Pass*
3608.8	50.14	40.19	H	54.0	98.5	-13.8	Pass*
4511.0	53.78	48.66	V	54.0	98.5	-5.3	Pass*
4511.0	52.09	45.12	H	54.0	98.5	-7.8	Pass*
5413.2	55.82	50.36	V	54.0	98.5	-3.6	Pass*
5413.2	53.73	43.98	H	54.0	98.5	-10.0	Pass*
8119.8	55.68	42.91	V	54.0	98.5	-11.1	Pass*
8119.8	54.84	41.59	H	54.0	98.5	-12.4	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					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		14.18 dBm					
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	117.49	--	V	--	--	--	--
915.0	117.07	--	H	--	--	--	--
2745.0	53.30	50.30	V	54.0	97.5	-3.7	Pass*
2745.0	56.00	53.80	H	54.0	97.5	-0.2	Pass*
3660.0	51.03	45.39	V	54.0	97.5	-8.6	Pass*
3660.0	51.36	43.58	H	54.0	97.5	-10.4	Pass*
4575.0	54.05	47.04	V	54.0	97.5	-7.0	Pass*
4575.0	52.06	44.93	H	54.0	97.5	-9.1	Pass*
7320.0	55.22	46.60	V	54.0	97.5	-7.4	Pass*
7320.0	54.19	41.77	H	54.0	97.5	-12.2	Pass*

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4

Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

File #: 16MONN026_FCC15C247

January 22, 2016

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

8235.0	58.18	50.29	V	54.0	97.5	-3.7	Pass*
8235.0	55.53	43.47	H	54.0	97.5	-10.5	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:		927.8 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		13.97 dBm					
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
927.8	117.01	--	V	--	--	--	--
927.8	116.67	--	H	--	--	--	--
2783.4	51.70	48.20	V	54.0	97.0	-5.8	Pass*
2783.4	55.60	53.70	H	54.0	97.0	-0.3	Pass*
3711.2	51.37	44.95	V	54.0	97.0	-9.0	Pass*
3711.2	50.87	43.57	H	54.0	97.0	-10.4	Pass*
4639.0	54.16	49.29	V	54.0	97.0	-4.7	Pass*
4639.0	53.82	47.83	H	54.0	97.0	-6.2	Pass*
7422.4	55.29	47.46	V	54.0	97.0	-6.5	Pass*
7422.4	54.22	41.70	H	54.0	97.0	-12.3	Pass*
8350.2	56.15	44.55	V	54.0	97.0	-9.4	Pass*
8350.2	54.36	42.84	H	54.0	97.0	-11.2	Pass*

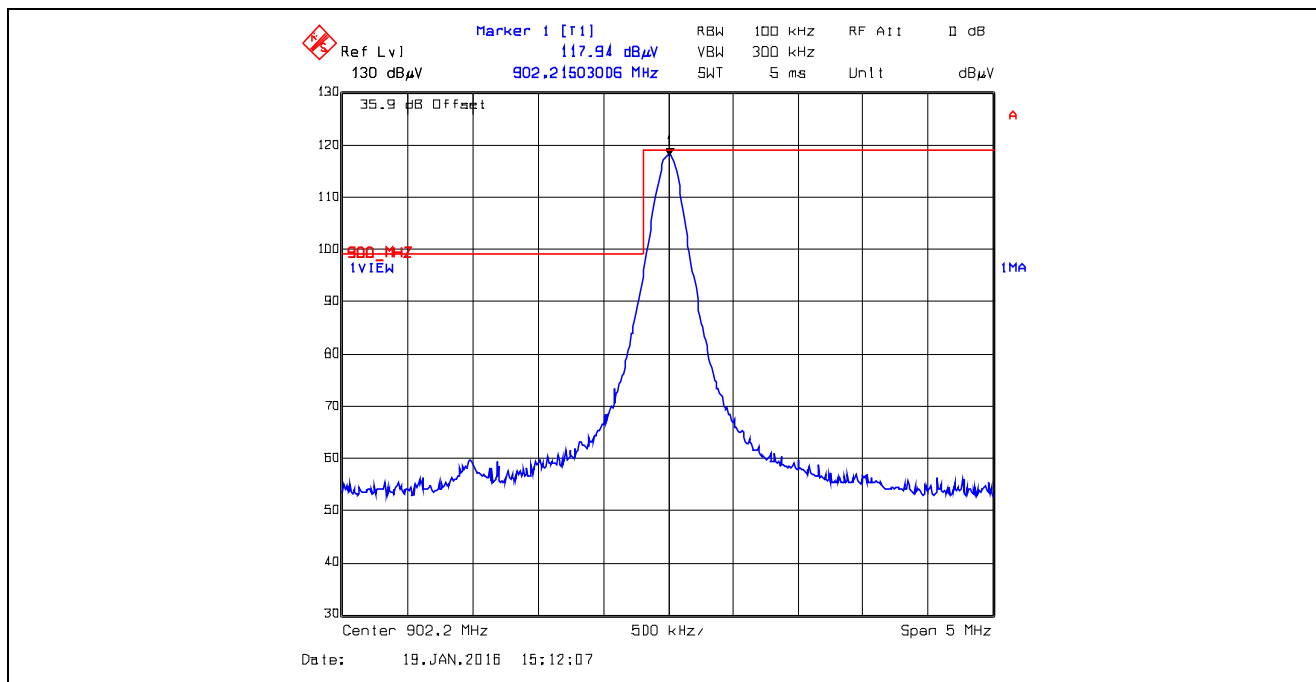
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.

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

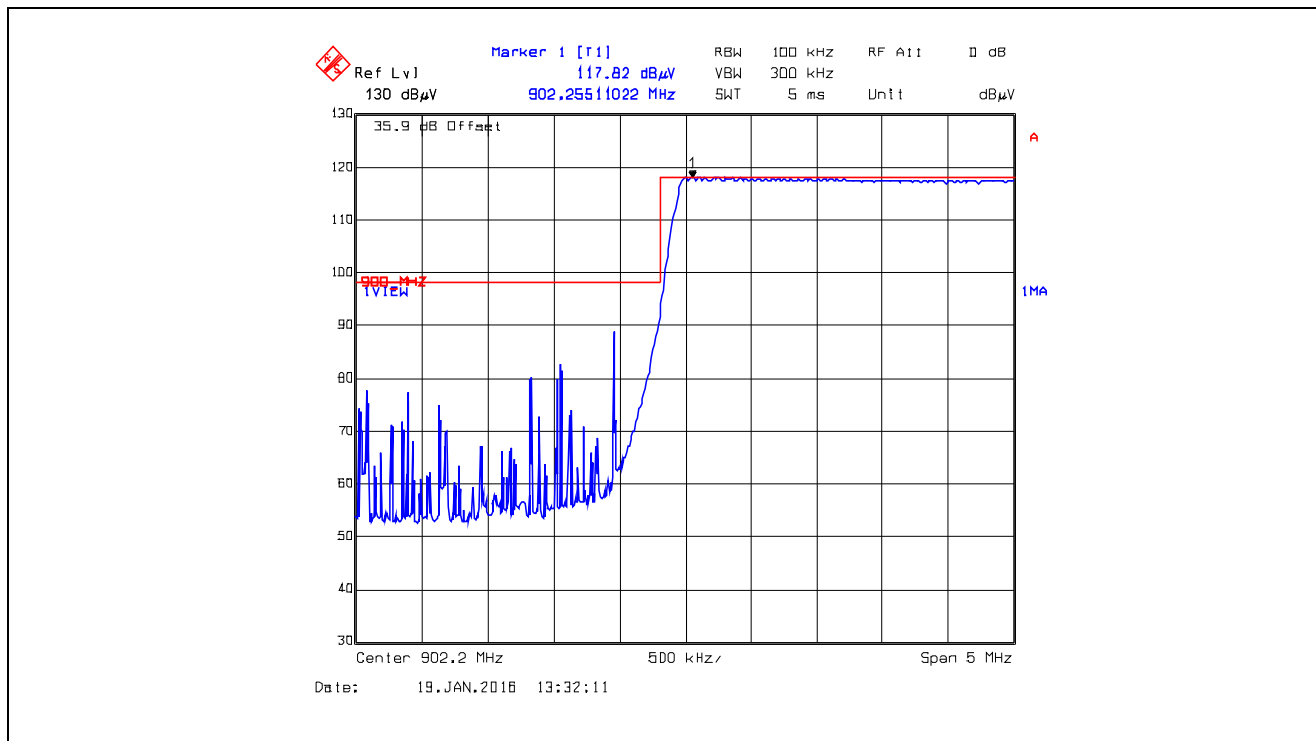
5.5.4.4.2. Band-Edge RF Radiated Emissions

Refer to the following plots.

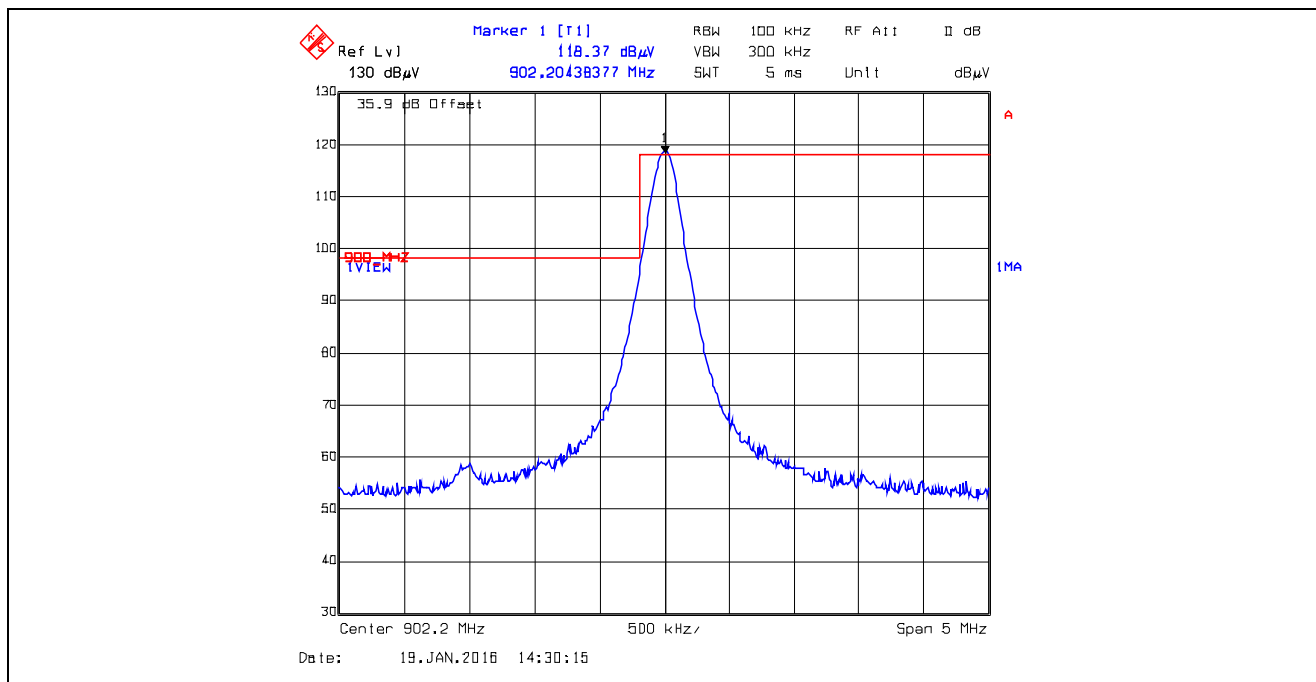
Plot 5.5.4.4.2.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



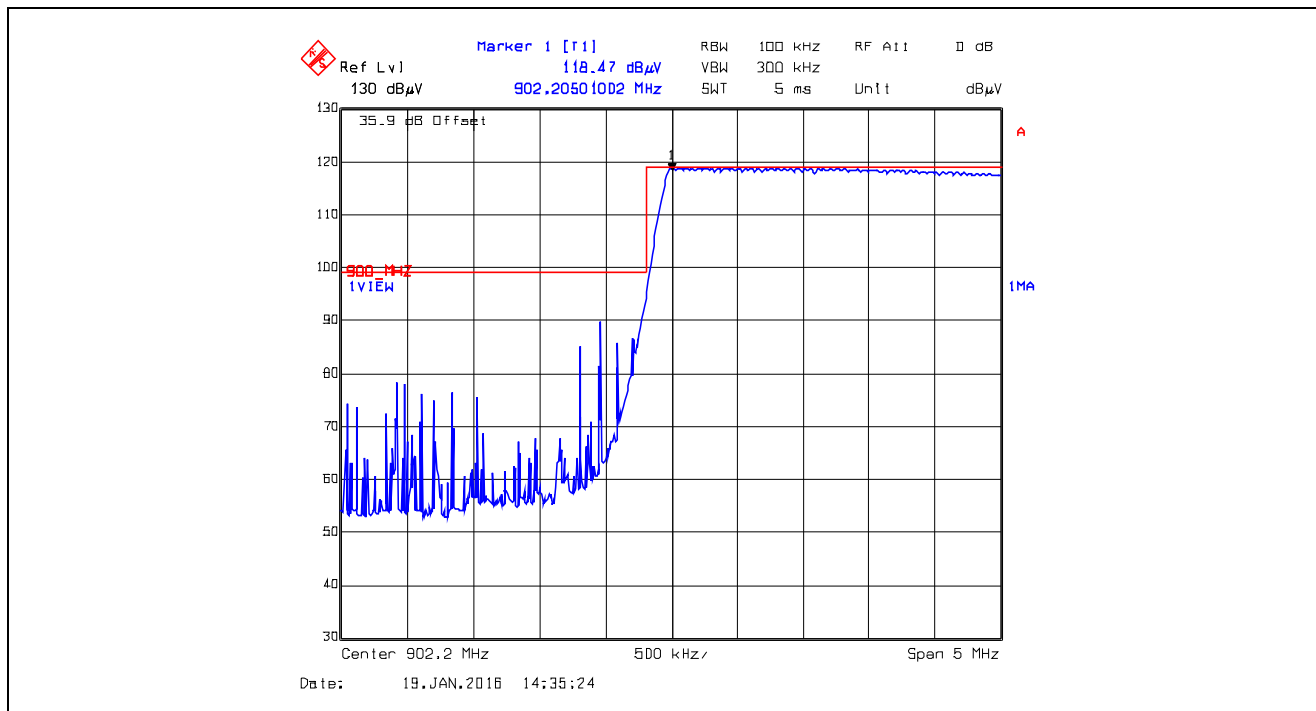
Plot 5.5.4.4.2.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



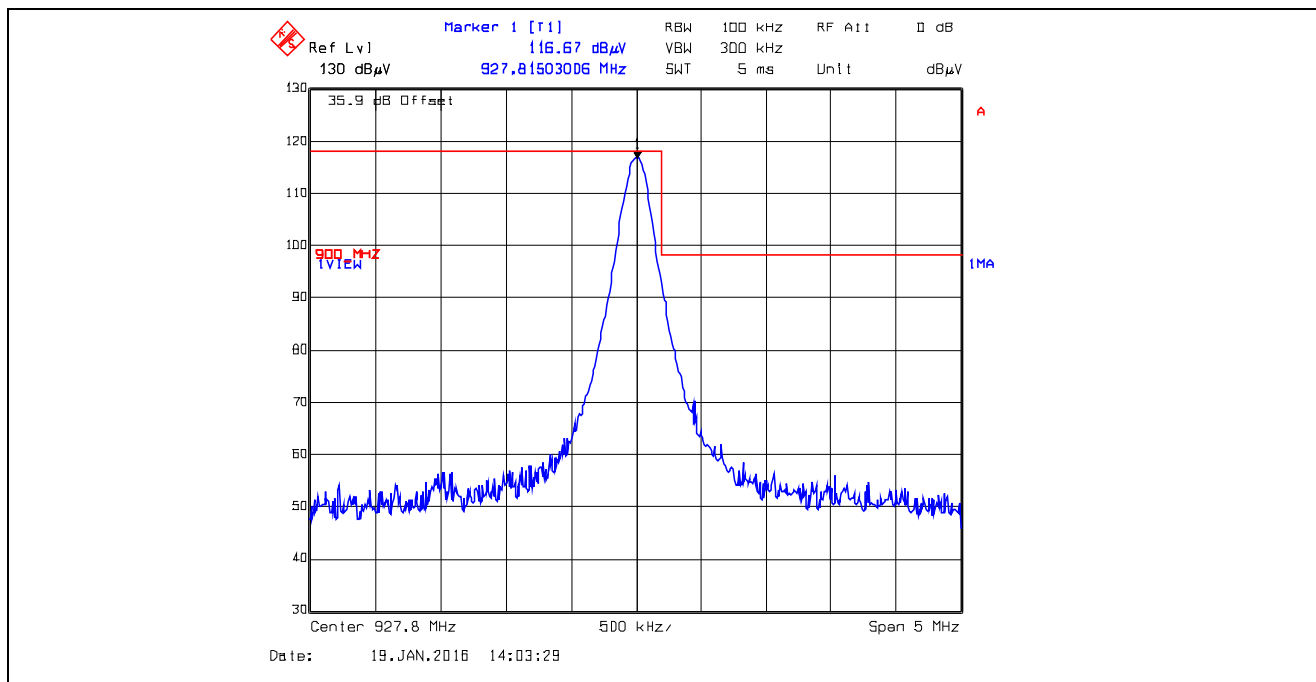
Plot 5.5.4.4.2.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



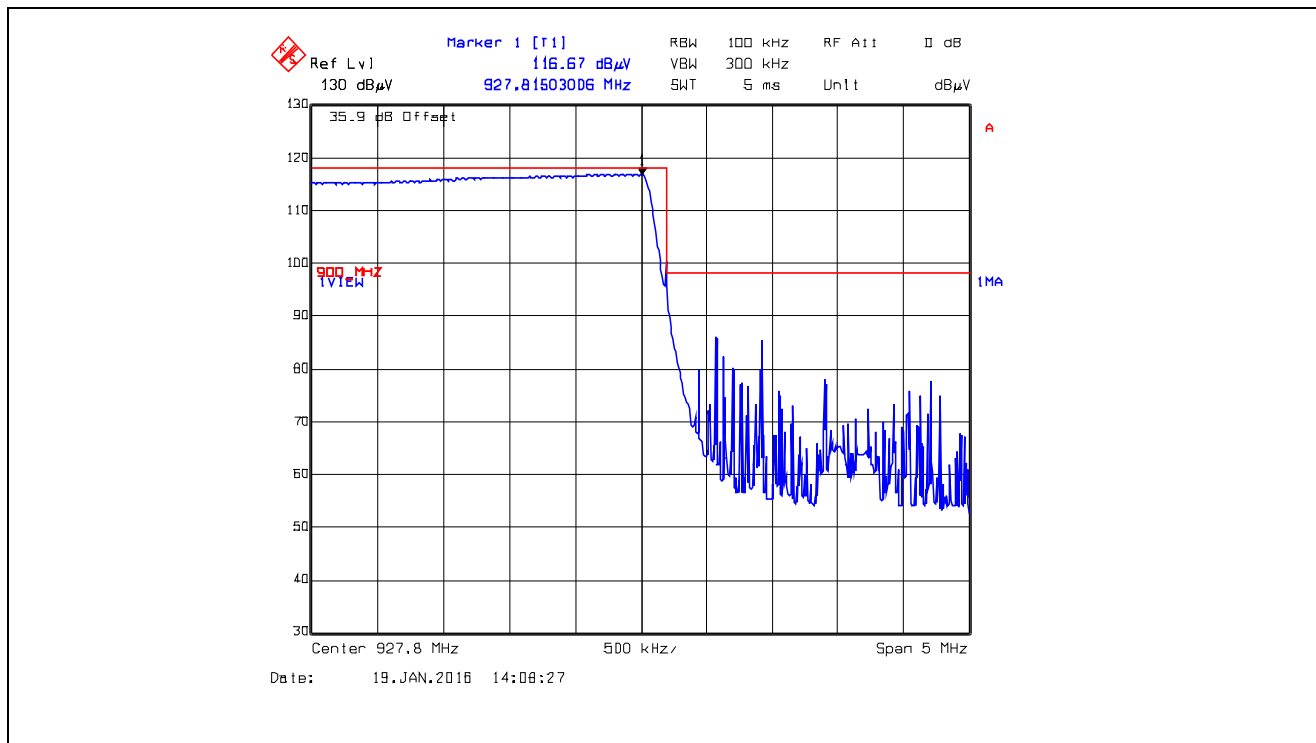
Plot 5.5.4.4.2.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz FSK, Data rate at 10 Kbps



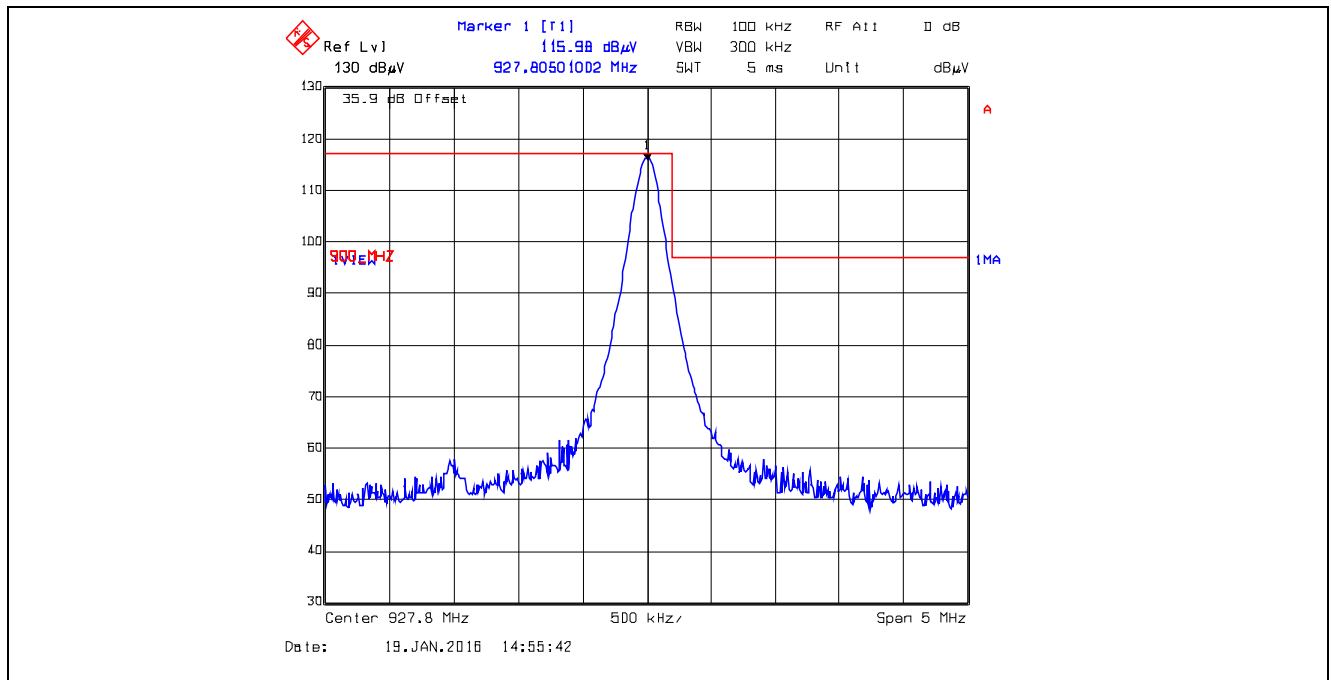
Plot 5.5.4.4.2.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



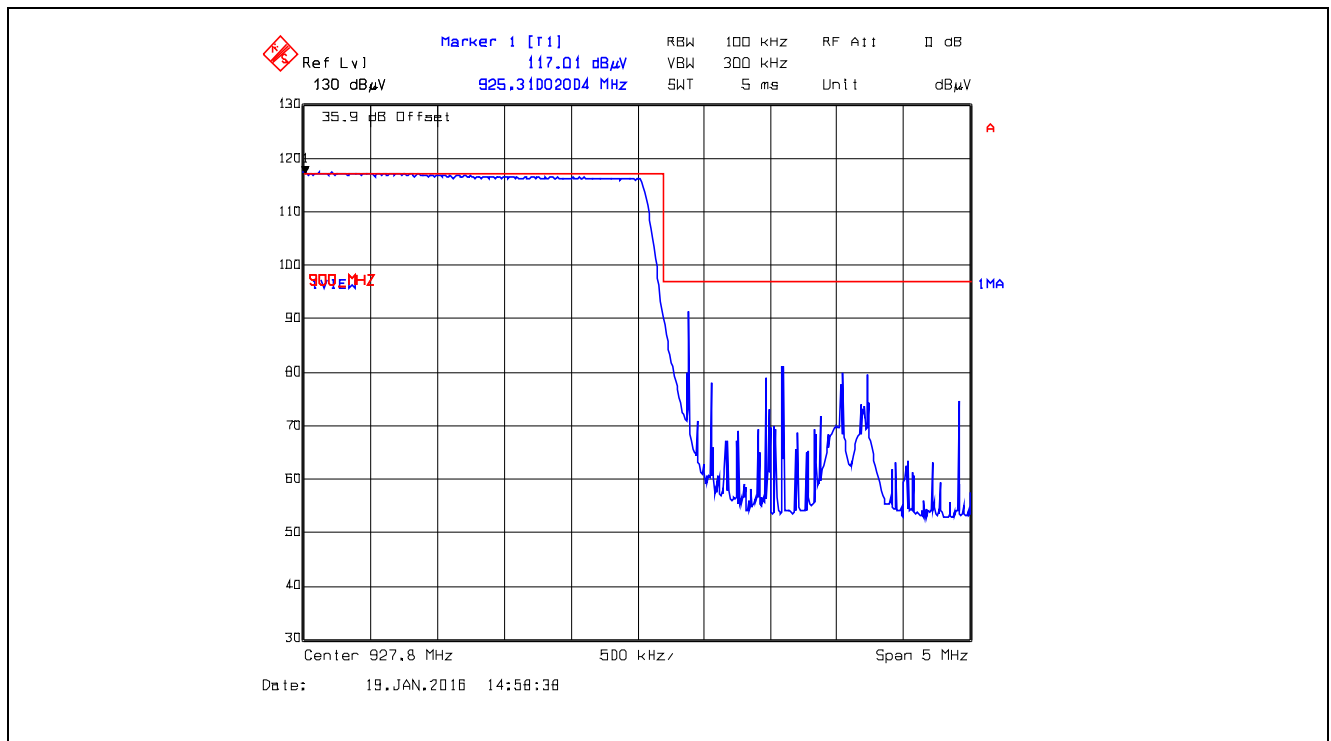
Plot 5.5.4.4.2.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



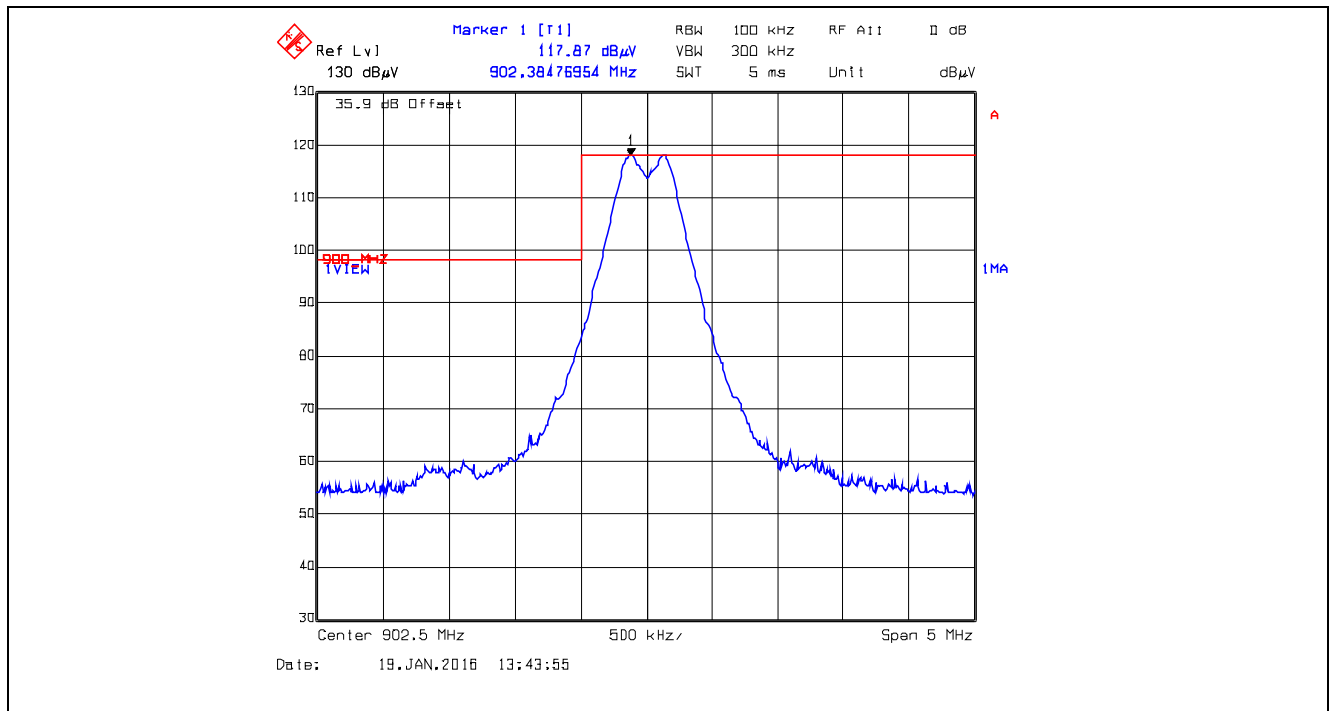
Plot 5.5.4.4.2.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



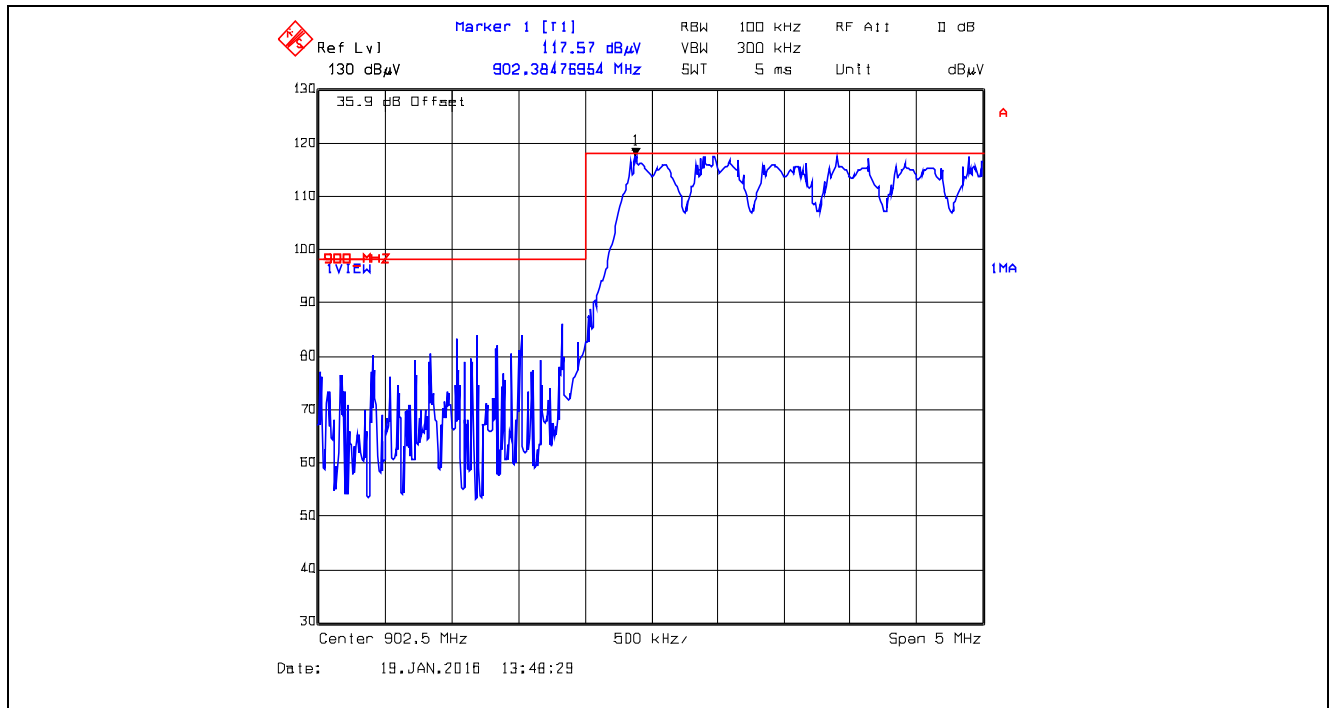
Plot 5.5.4.4.2.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



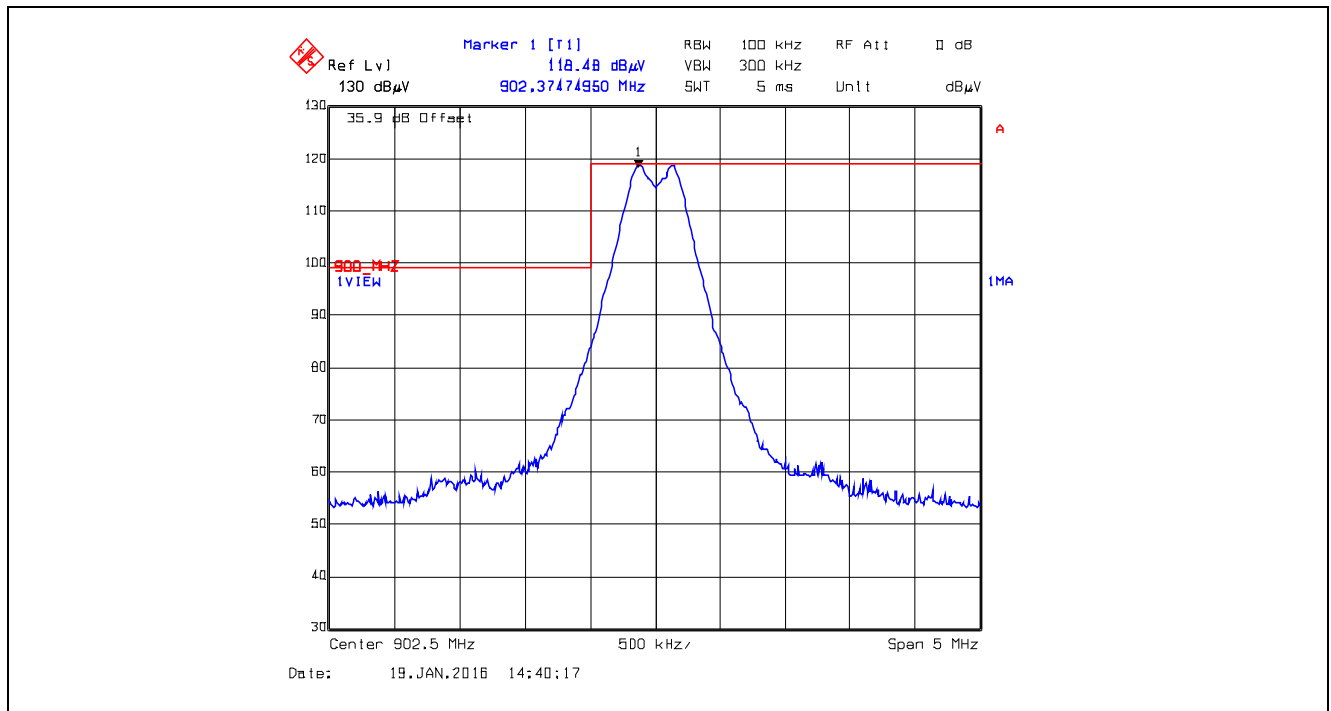
Plot 5.5.4.4.2.9. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



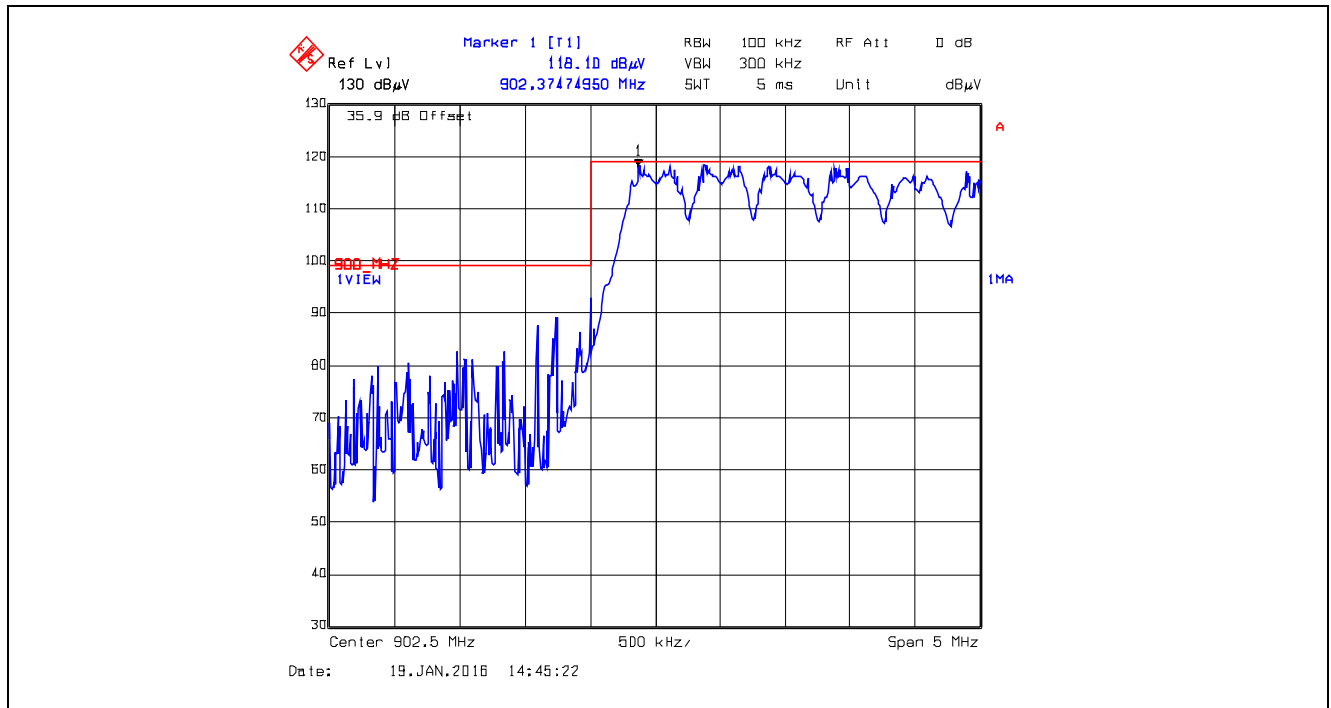
Plot 5.5.4.4.2.10. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



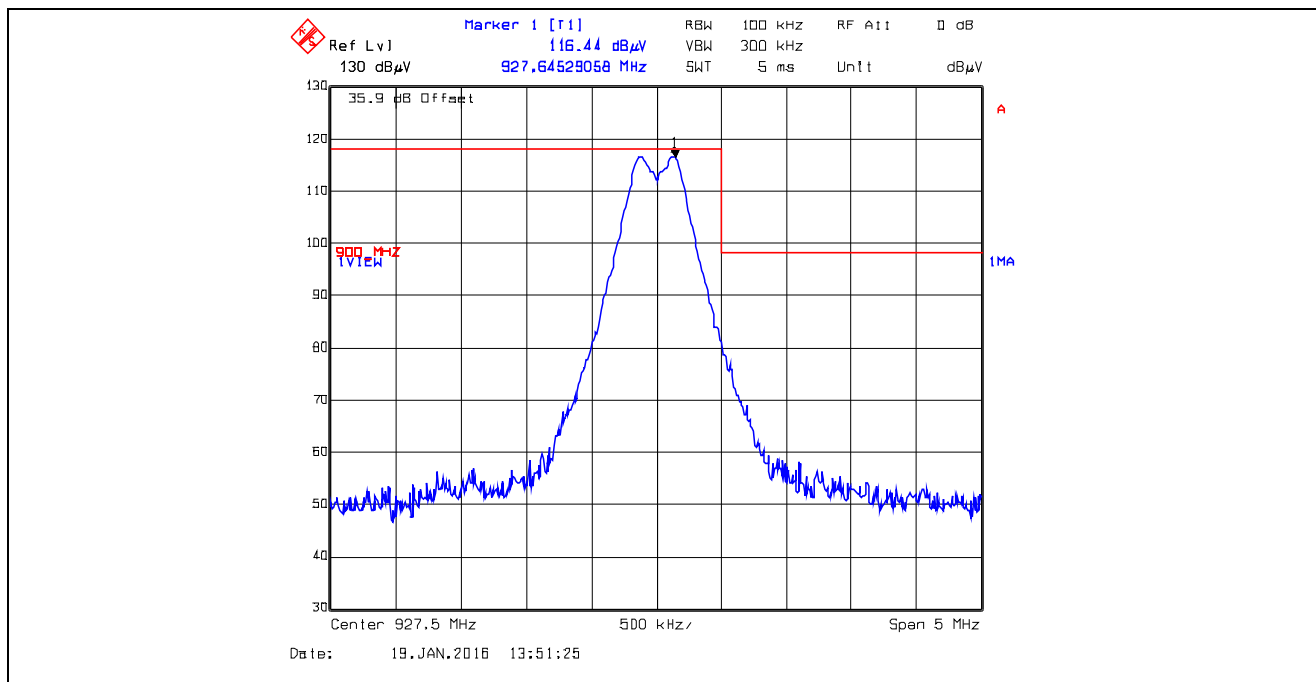
Plot 5.5.4.4.2.11. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



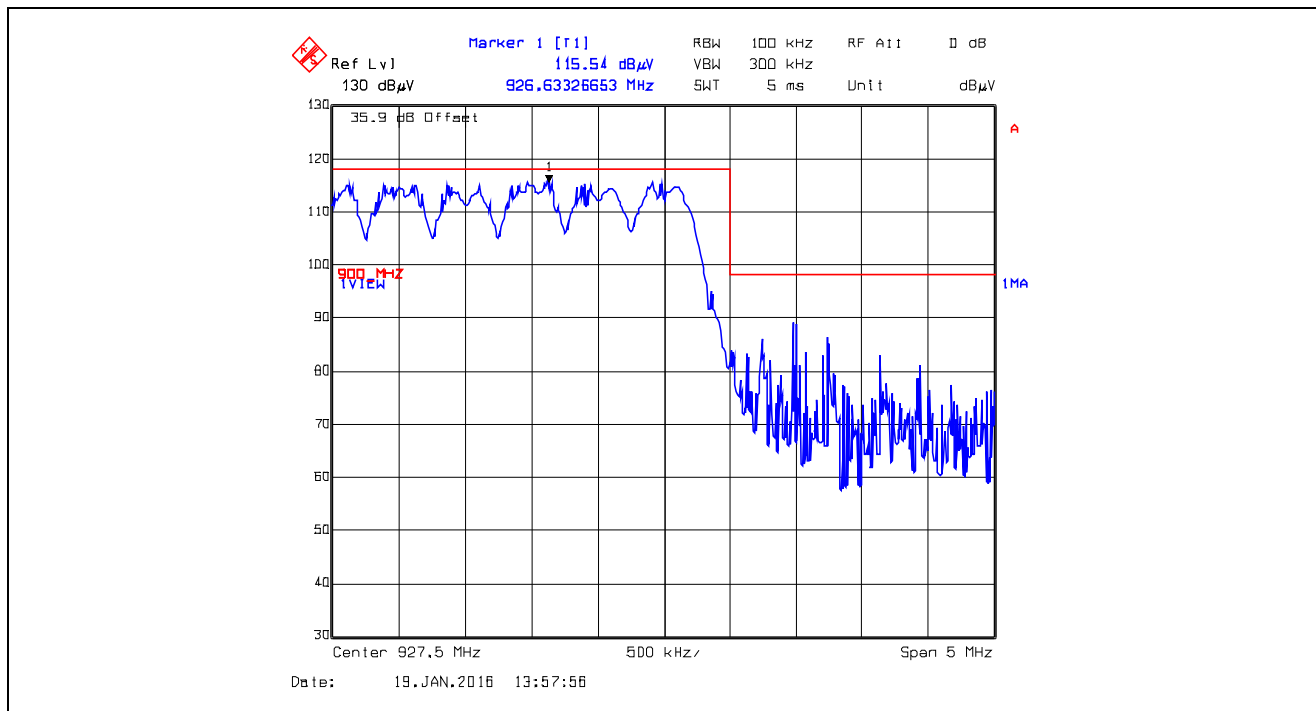
Plot 5.5.4.4.2.12. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



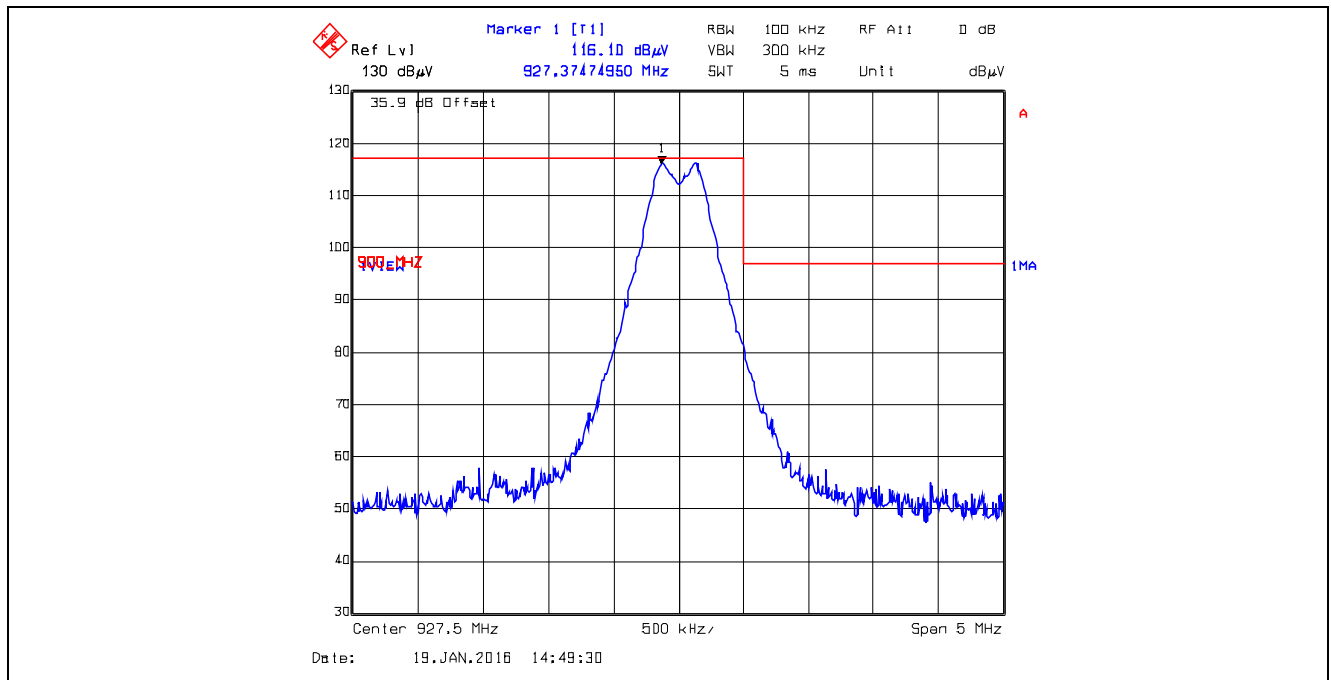
Plot 5.5.4.4.2.13. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



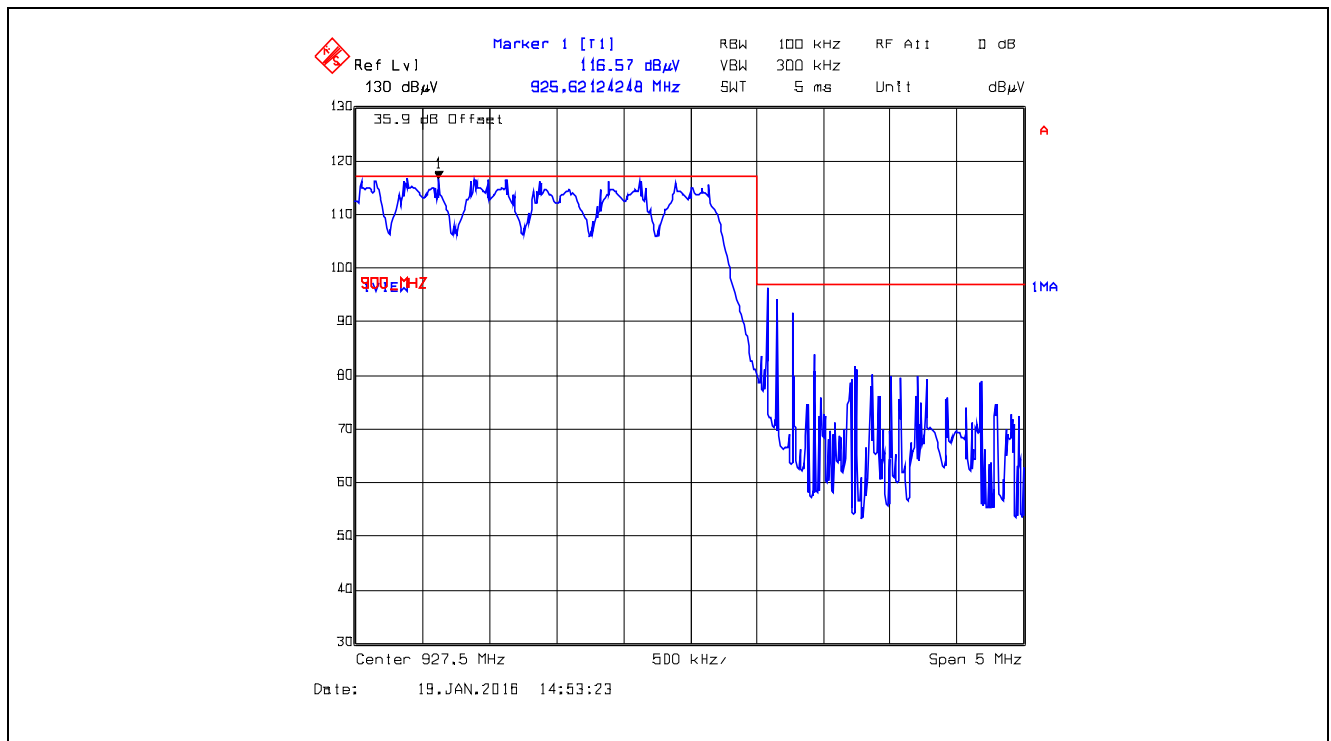
Plot 5.5.4.4.2.14. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



Plot 5.5.4.4.2.15. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



Plot 5.5.4.4.2.16. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



5.5.4.5. EUT with 14.0 dBi Yagi Antenna and 0.86 dB Assembly Cable Loss

5.5.4.5.1. Spurious Radiated Emissions

Fundamental Frequency:		902.2 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		14.26 dBm					
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
902.2	124.87	--	V	--	--	--	--
902.2	124.82	--	H	--	--	--	--
2706.6	53.32	50.29	V	54.0	104.9	-3.7	Pass*
2706.6	55.10	52.80	H	54.0	104.9	-1.2	Pass*
3608.8	50.18	42.56	V	54.0	104.9	-11.4	Pass*
3608.8	49.58	40.12	H	54.0	104.9	-13.9	Pass*
4511.0	53.20	48.25	V	54.0	104.9	-5.7	Pass*
4511.0	52.77	47.71	H	54.0	104.9	-6.3	Pass*
5413.2	57.02	52.82	V	54.0	104.9	-1.2	Pass*
5413.2	55.23	48.60	H	54.0	104.9	-5.4	Pass*
8119.8	56.24	43.96	V	54.0	104.9	-10.0	Pass*
8119.8	55.29	43.18	H	54.0	104.9	-10.8	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					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		14.18 dBm					
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	124.61	--	V	--	--	--	--
915.0	124.62	--	H	--	--	--	--
2745.0	53.44	50.67	V	54.0	104.6	-3.3	Pass*
2745.0	55.30	53.40	H	54.0	104.6	-0.6	Pass*
3660.0	50.63	43.80	V	54.0	104.6	-10.2	Pass*
3660.0	49.44	41.00	H	54.0	104.6	-13.0	Pass*
4575.0	54.54	49.41	V	54.0	104.6	-4.6	Pass*
4575.0	53.09	47.25	H	54.0	104.6	-6.7	Pass*
7320.0	55.69	48.18	V	54.0	104.6	-5.8	Pass*
7320.0	54.22	44.34	H	54.0	104.6	-9.7	Pass*

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4

Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

File #: 16MONN026_FCC15C247

January 22, 2016

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

8235.0	56.47	45.39	V	54.0	104.6	-8.4	Pass*
8235.0	54.36	42.58	H	54.0	104.6	-11.4	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:		927.8 MHz					
Configuration:		GFSK, 10 Kbps					
Measured Conducted Power:		13.97 dBm					
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
927.8	124.55	--	V	--	--	--	--
927.8	124.57	--	H	--	--	--	--
2783.4	53.13	49.43	V	54.0	104.6	-4.6	Pass*
2783.4	54.90	52.70	H	54.0	104.6	-1.3	Pass*
3711.2	50.44	42.29	V	54.0	104.6	-11.7	Pass*
3711.2	49.70	41.50	H	54.0	104.6	-12.5	Pass*
4639.0	54.39	50.37	V	54.0	104.6	-3.6	Pass*
4639.0	53.92	49.58	H	54.0	104.6	-4.4	Pass*
7422.4	56.37	49.60	V	54.0	104.6	-4.4	Pass*
7422.4	55.36	45.20	H	54.0	104.6	-8.8	Pass*
8350.2	57.54	50.19	V	54.0	104.6	-3.8	Pass*
8350.2	55.26	47.00	H	54.0	104.6	-7.0	Pass*

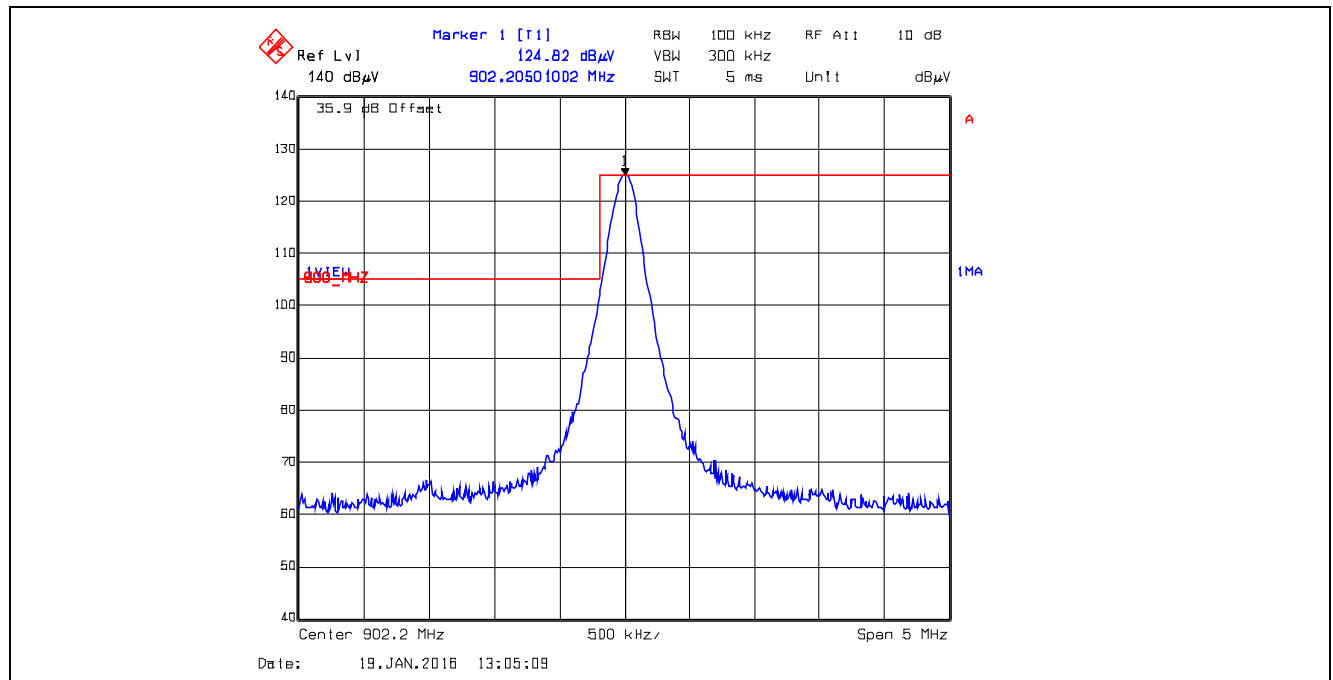
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.

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

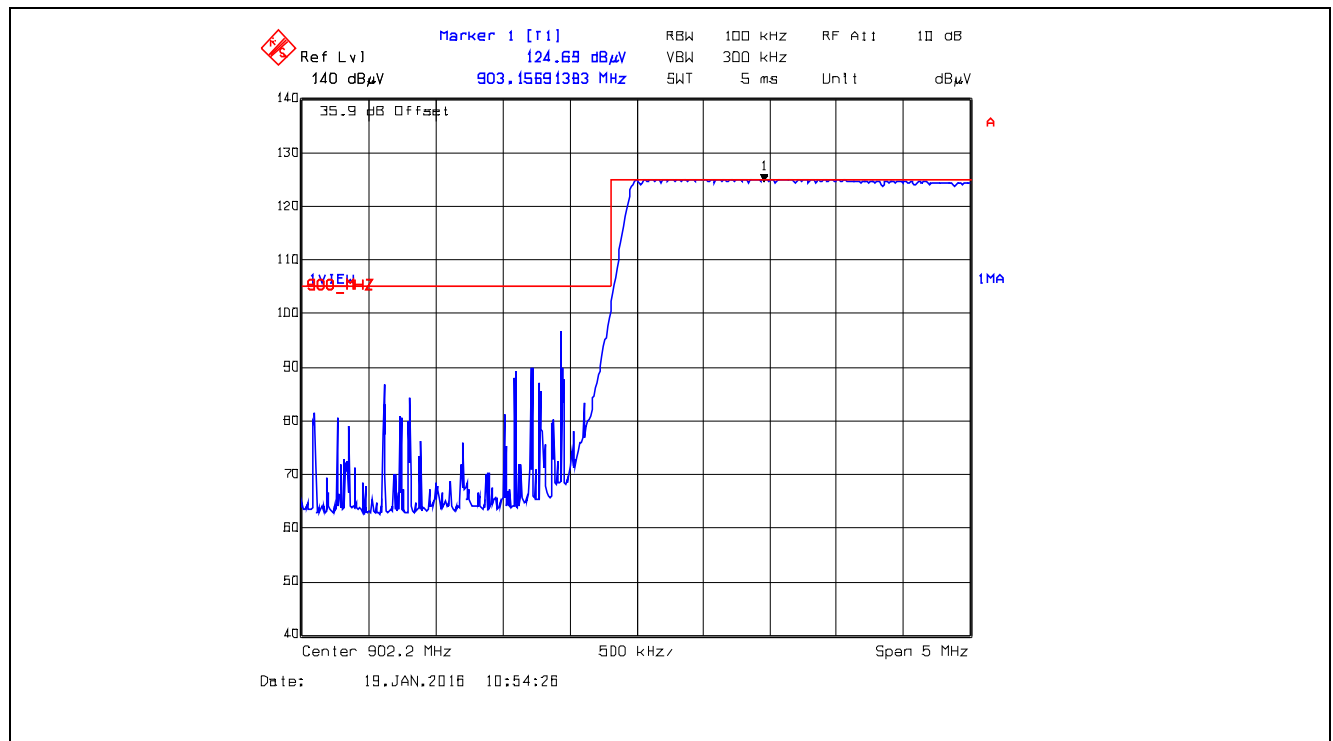
5.5.4.5.2. Band-Edge RF Radiated Emissions

Refer to the following plots.

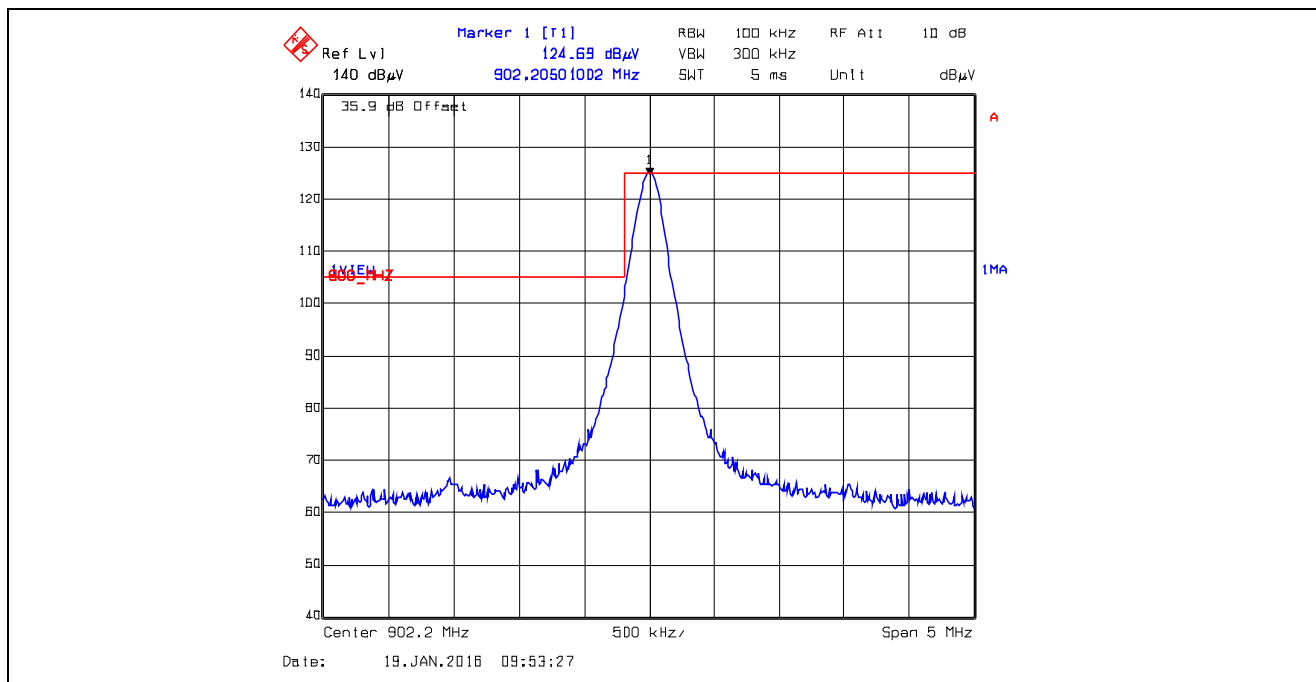
Plot 5.5.4.5.2.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



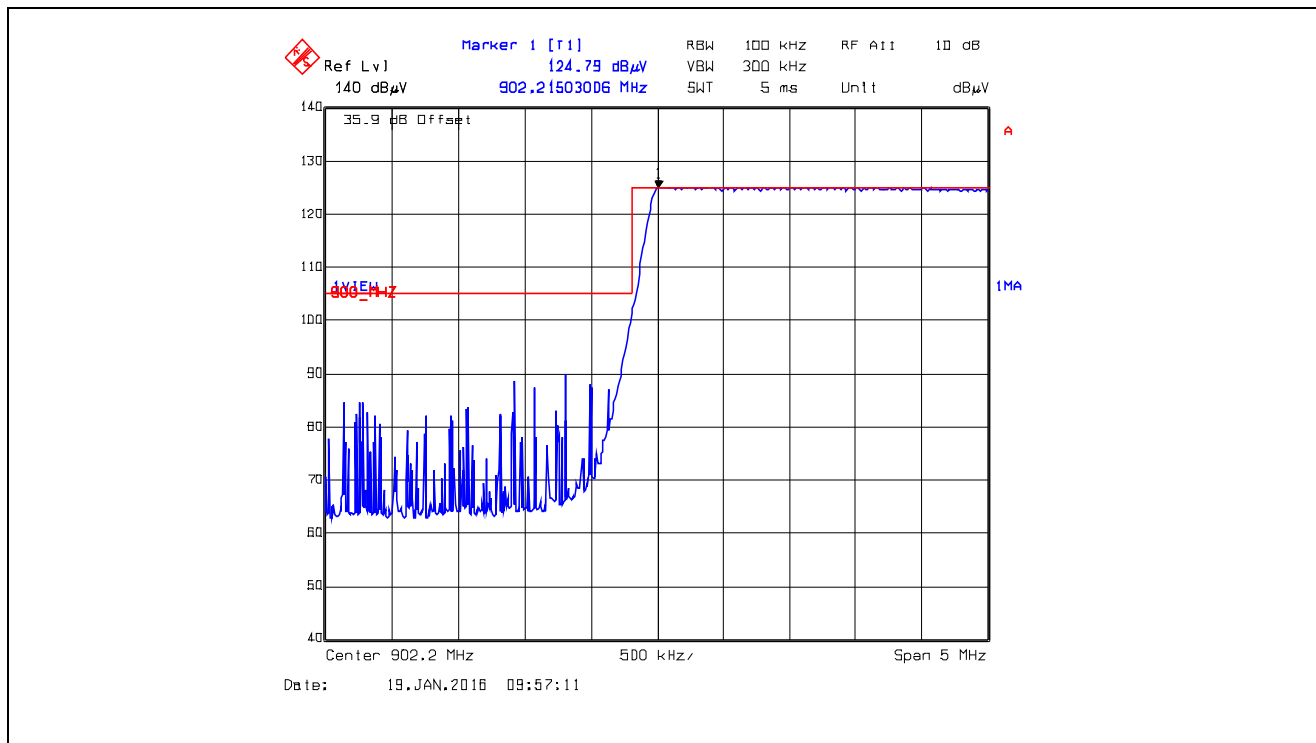
Plot 5.5.4.5.2.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



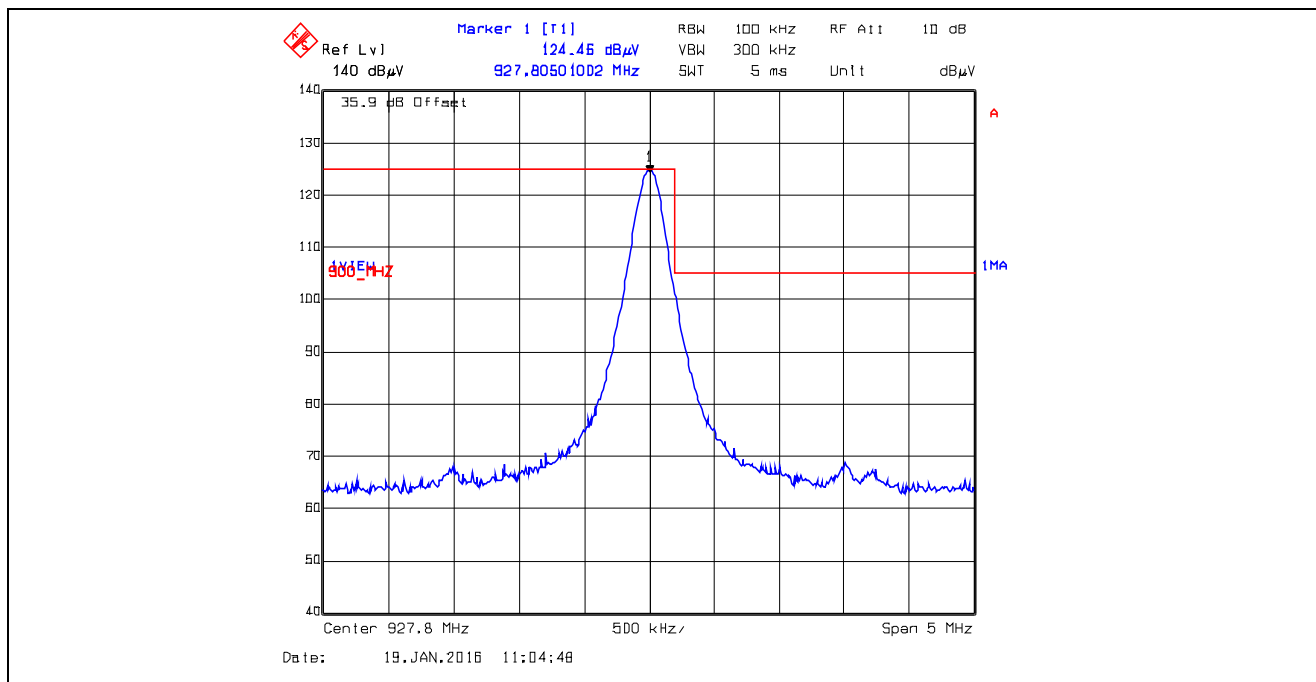
Plot 5.5.4.5.2.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, FSK, Data rate at 10 Kbps



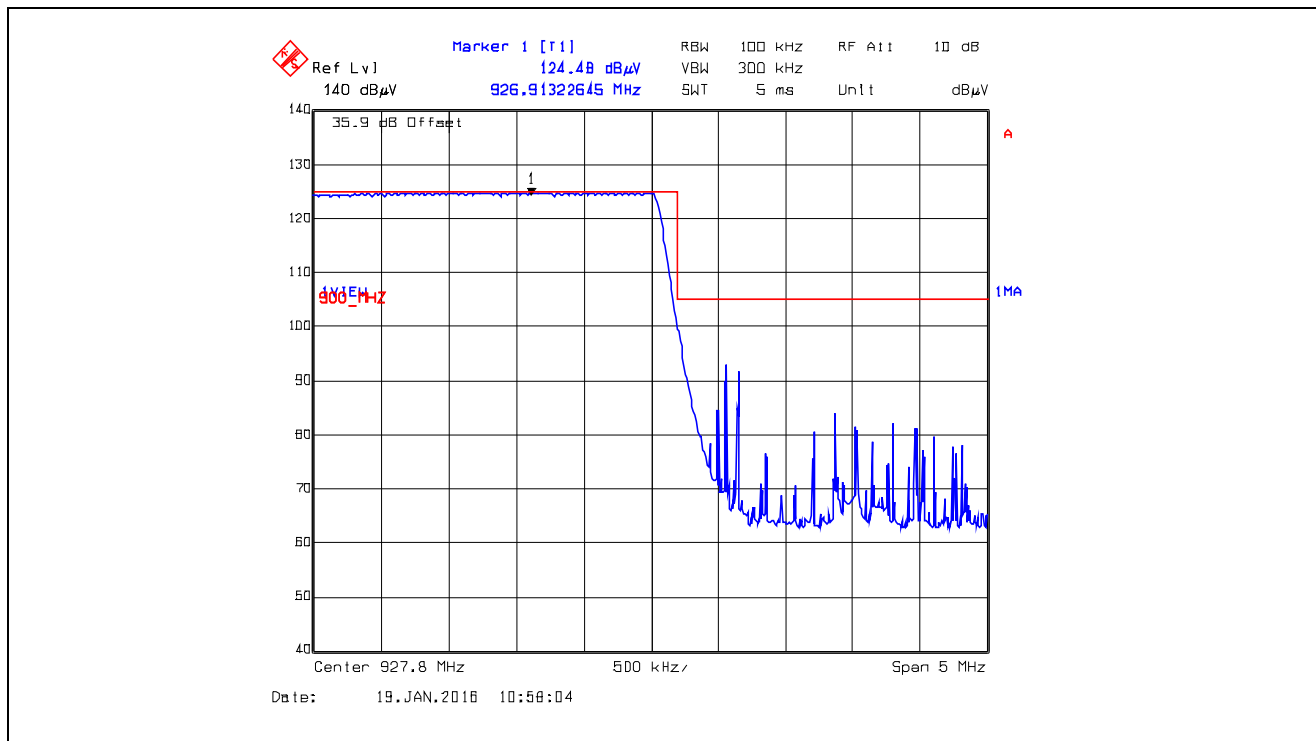
Plot 5.5.4.5.2.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz FSK, Data rate at 10 Kbps



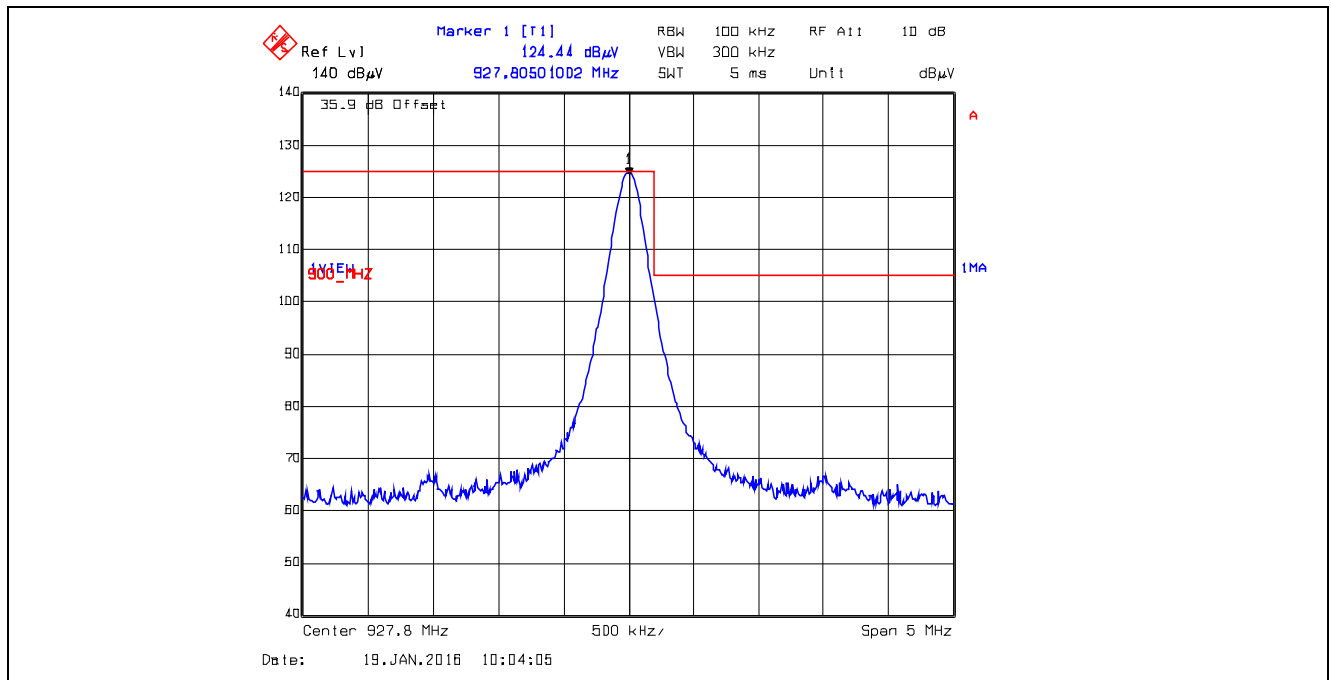
Plot 5.5.4.5.2.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



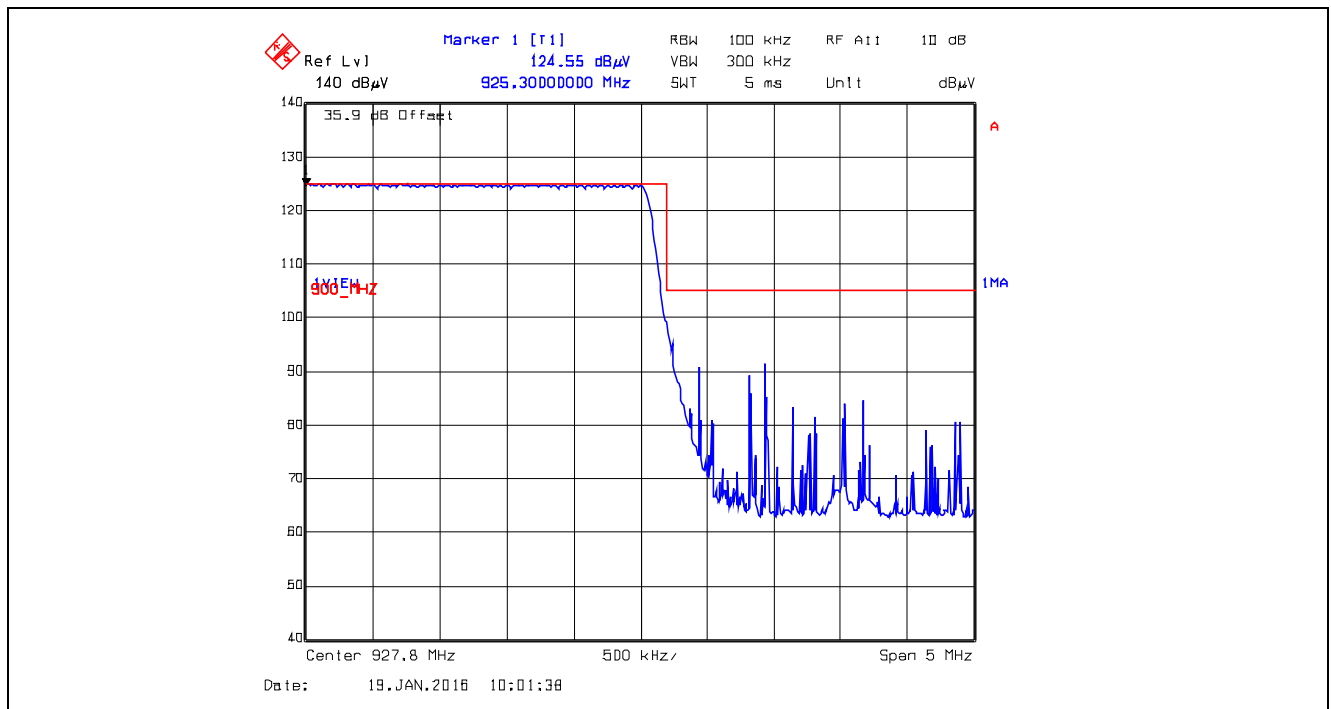
Plot 5.5.4.5.2.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



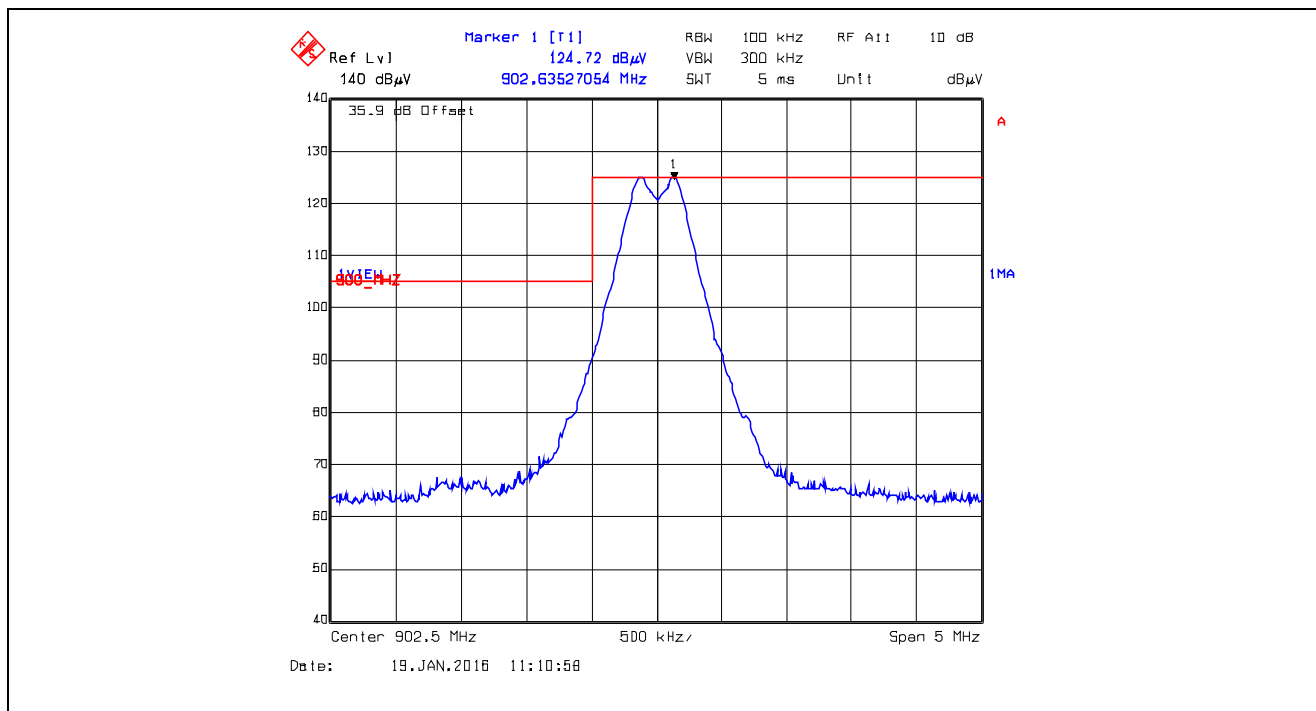
Plot 5.5.4.5.2.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



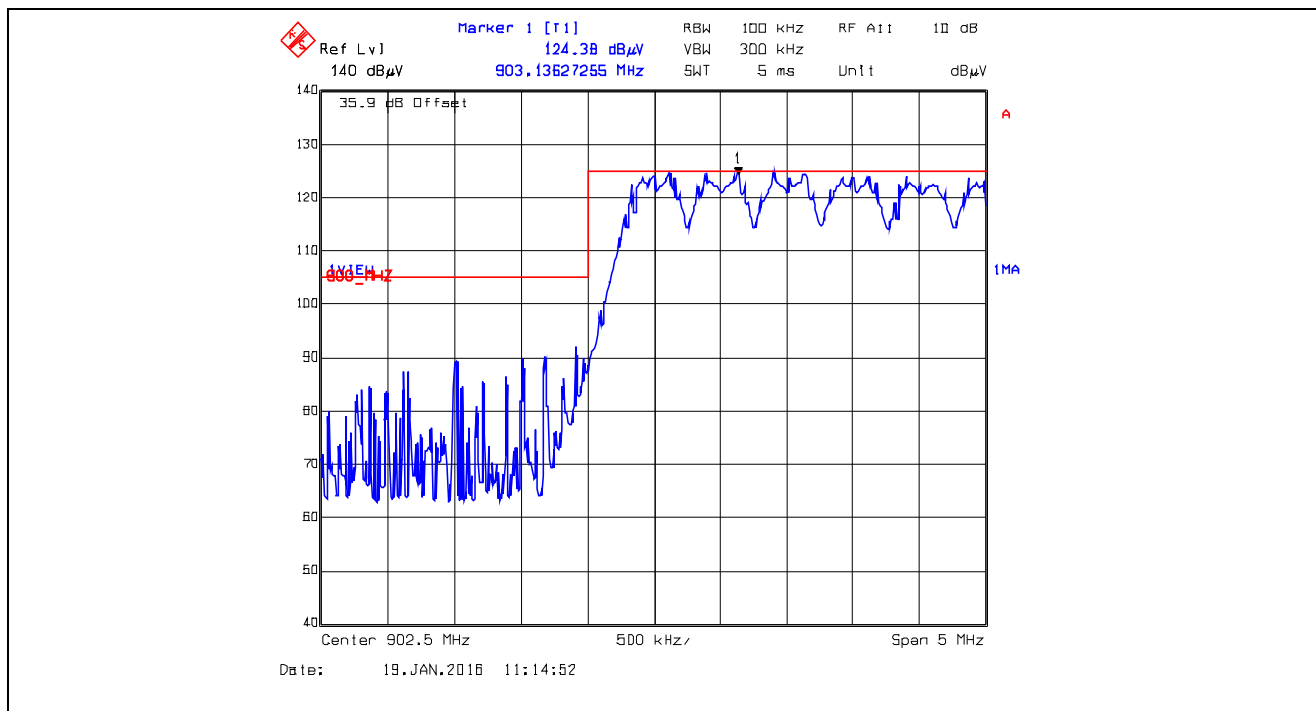
Plot 5.5.4.5.2.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, FSK, Data rate at 10 Kbps



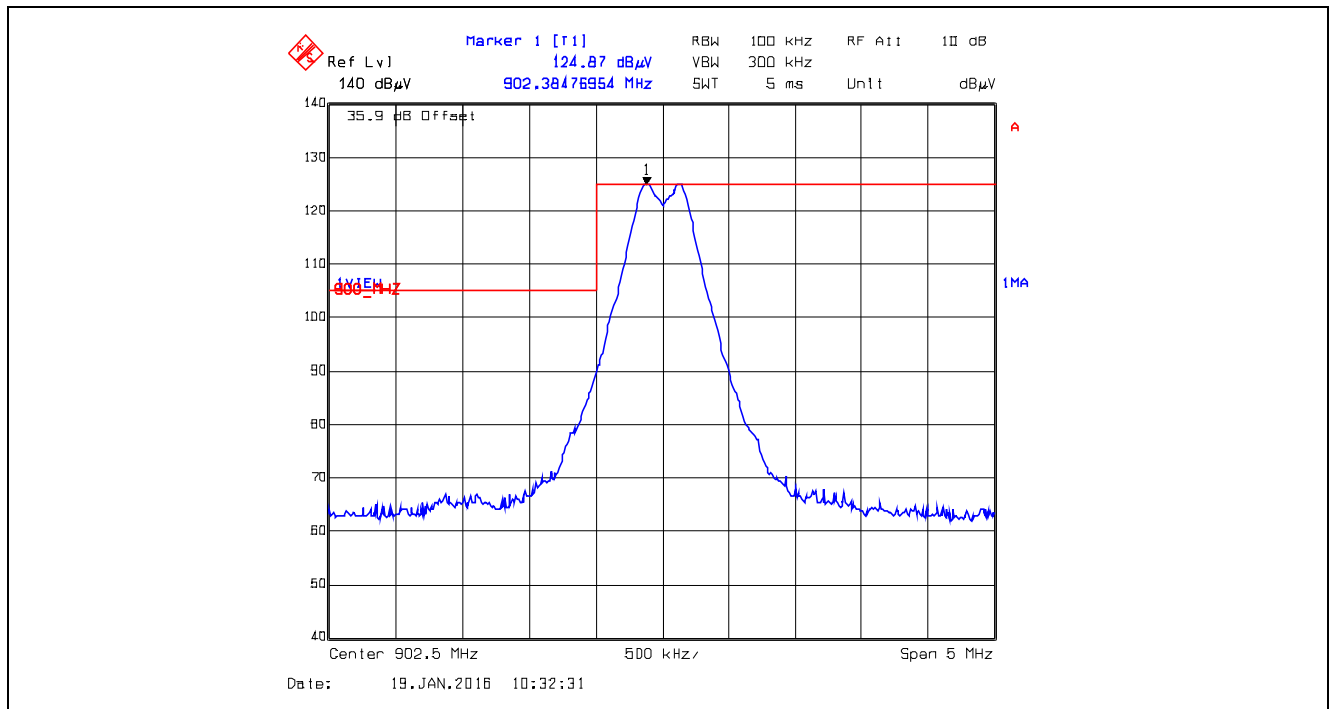
Plot 5.5.4.5.2.9. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



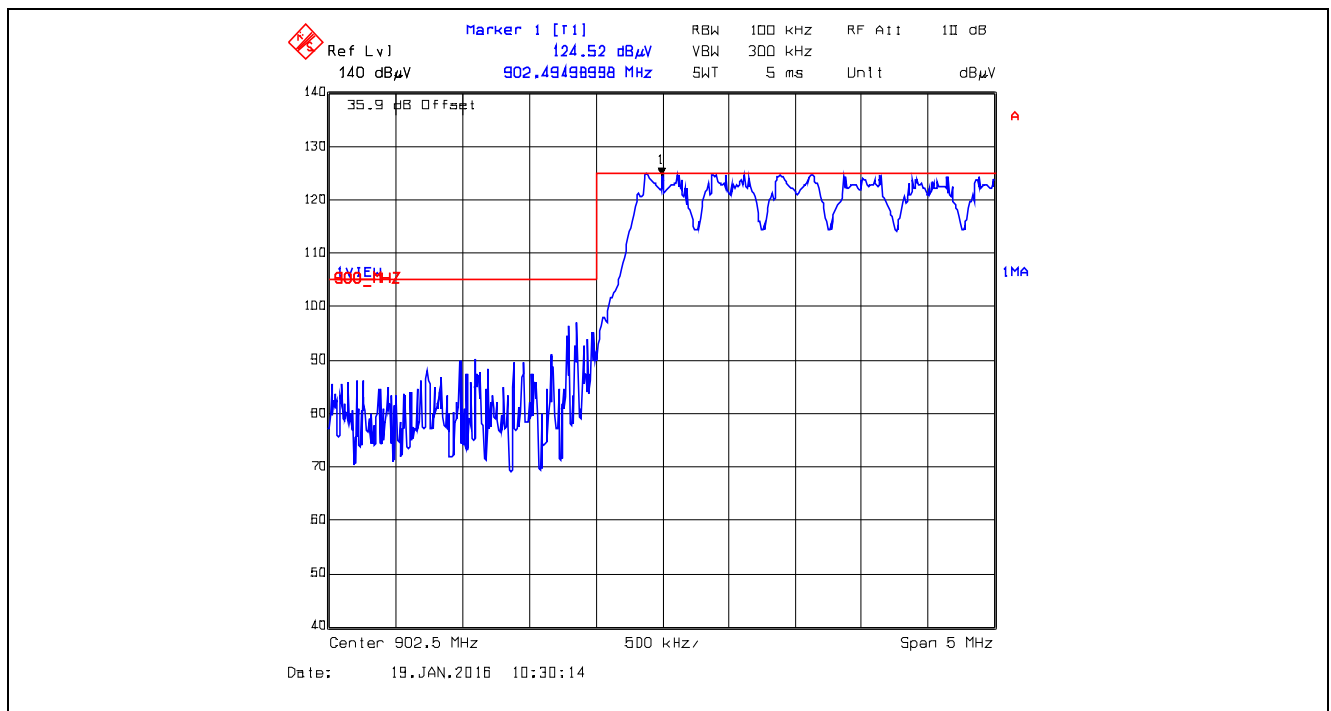
Plot 5.5.4.5.2.10. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



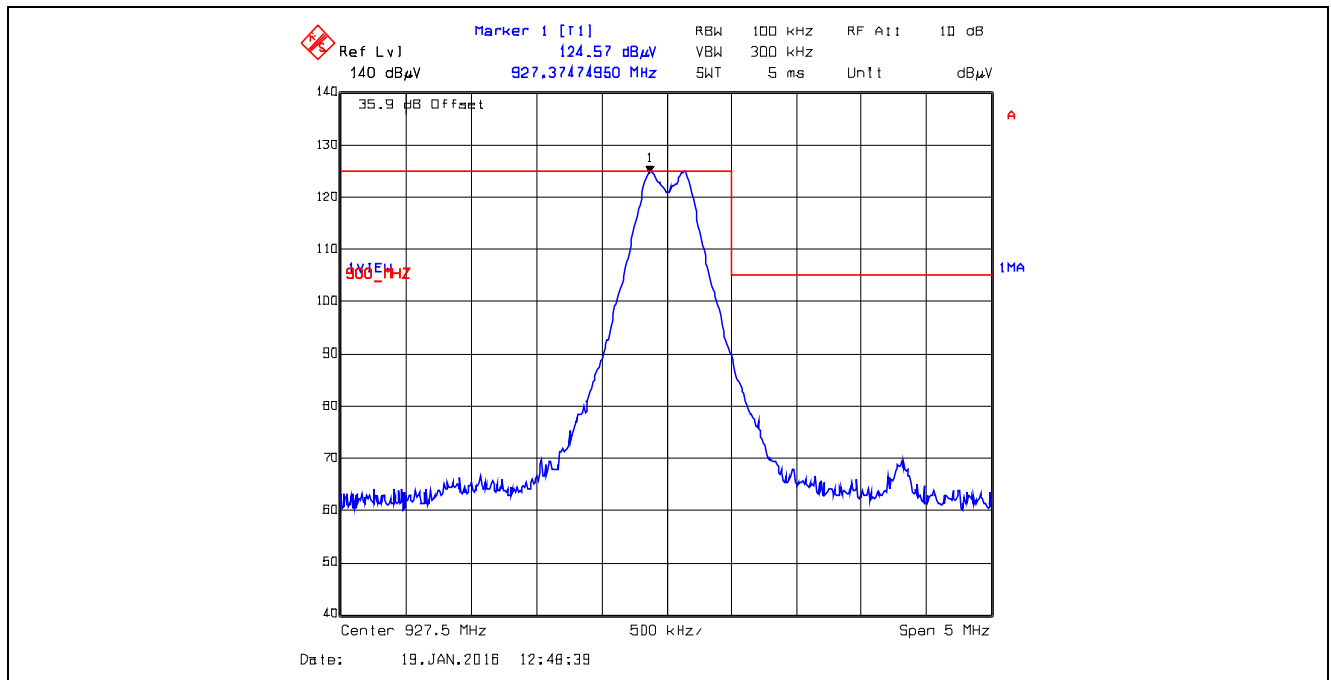
Plot 5.5.4.5.2.11. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



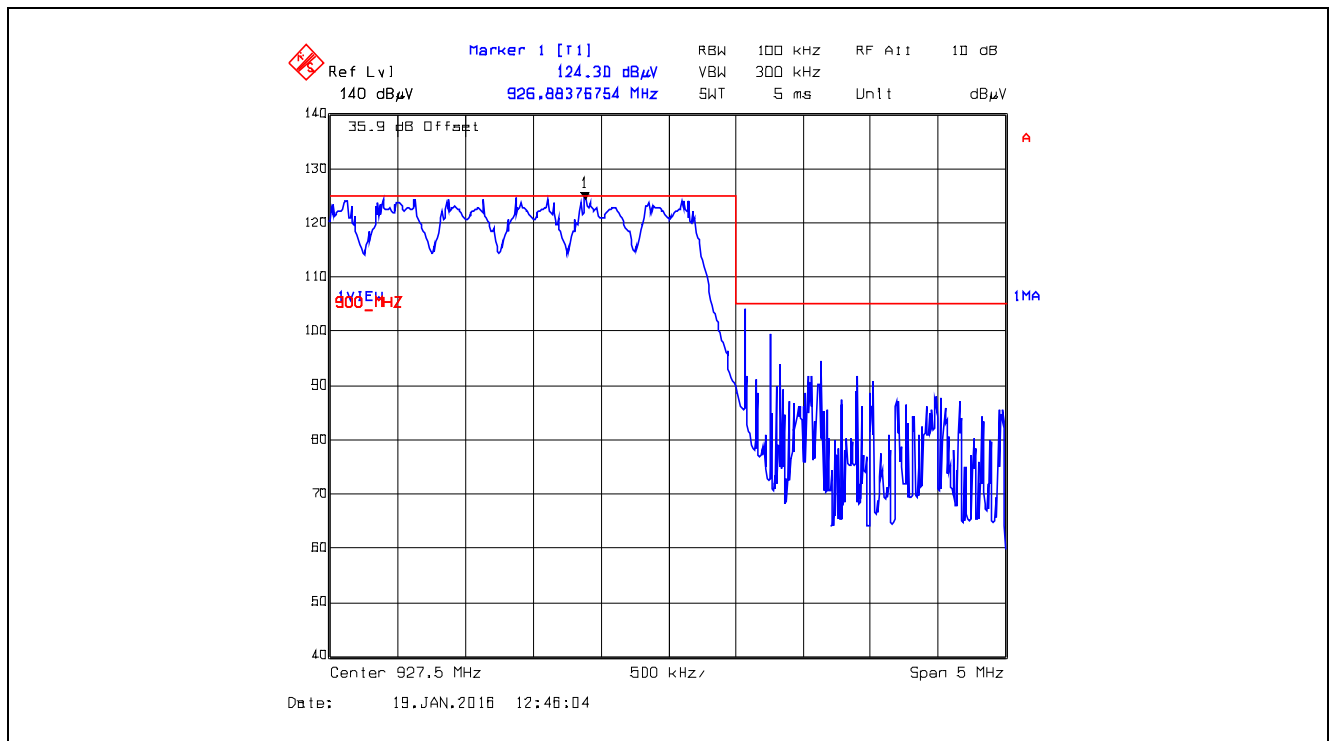
Plot 5.5.4.5.2.12. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK, Data Rate at 400 kbps



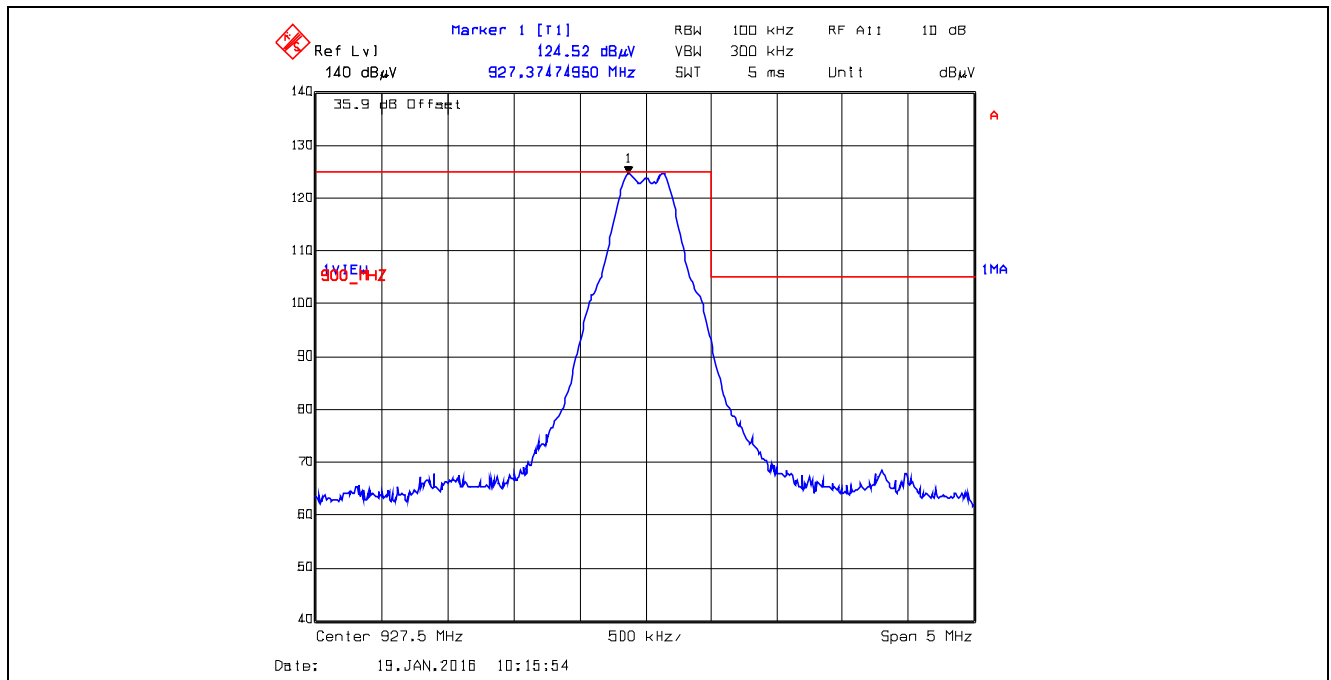
Plot 5.5.4.5.2.13. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



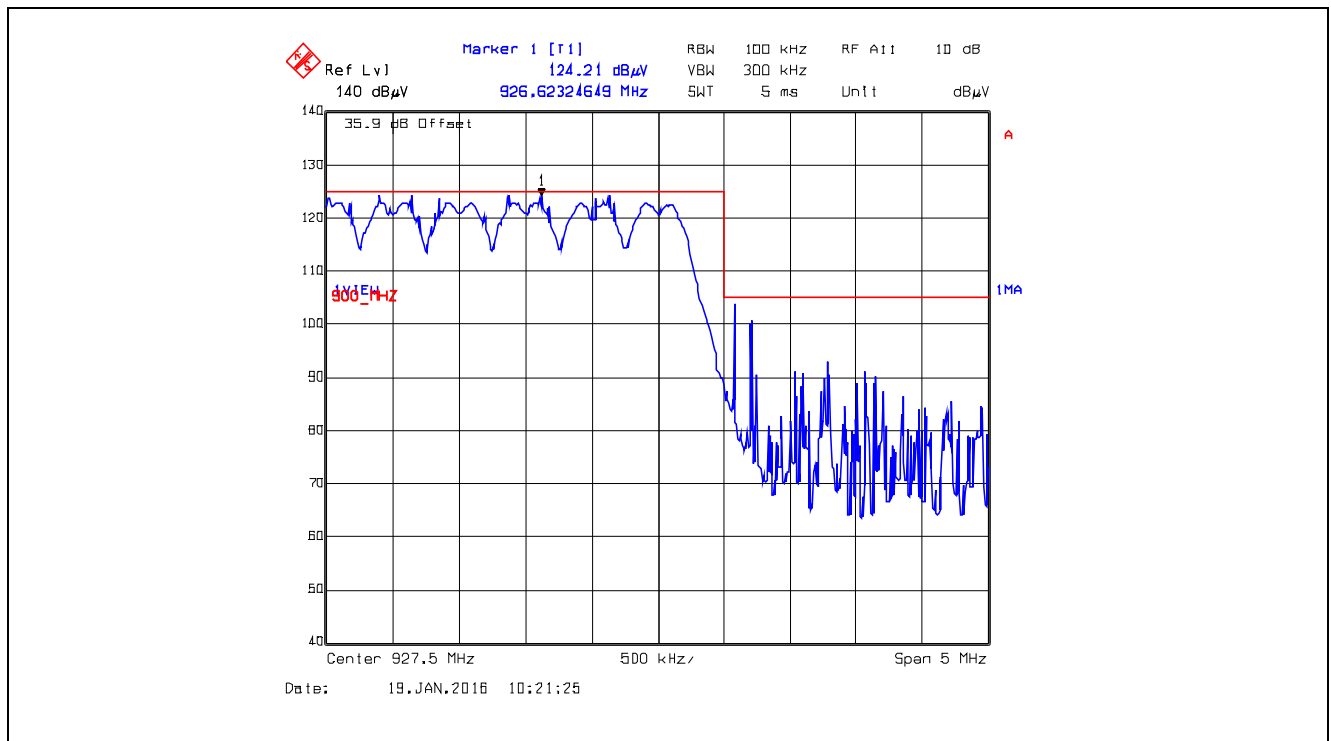
Plot 5.5.4.5.2.14. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



Plot 5.5.4.5.2.15. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



Plot 5.5.4.5.2.16. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK, Data Rate at 400 kbps



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

The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation.

FCC 47 CFR § 1.1310:

TABLE 1—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 TO TABLE 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 TO TABLE 1: 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.

5.6.1. Method of Measurements

Refer to Sections 1.1310, 2.1091

In order to demonstrate compliance with MPE requirements (see Section 2.1091), the following information is typically needed:

- (1) Calculation that estimates the minimum separation distance (20 cm or more) between an antenna and persons required to satisfy power density limits defined for free space.
- (2) Antenna installation and device operating instructions for installers (professional/unskilled users), and the parties responsible for ensuring compliance with the RF exposure requirement
- (3) Any caution statements and/or warning labels that are necessary in order to comply with the exposure limits
- (4) Any other RF exposure related issues that may affect MPE compliance

Calculation Method of RF Safety Distance:

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

Where:
P: power input to the antenna in mW
EIRP: Equivalent (effective) isotropic radiated power
S: power density mW/cm²
G: numeric gain of antenna relative to isotropic radiator
r: distance to centre of radiation in cm

5.6.2. RF Evaluation

Evaluation of RF Exposure Compliance Requirements	
RF Exposure Requirements	Compliance with FCC Rules
Minimum calculated separation distance between antenna and persons required: *8.6 cm	Manufacturer' instruction for separation distance between antenna and persons required: 20 cm
Antenna installation and device operating instructions for installers (professional/unskilled users), and the parties responsible for ensuring compliance with the RF exposure requirement	Antenna installation and device operating instructions shall be provided to installers to maintain and ensure compliance with RF exposure requirements.
Caution statements and/or warning labels that are necessary in order to comply with the exposure limits	Refer to User's Manual for RF Exposure Information.
Any other RF exposure related issues that may affect MPE compliance	None.

*The minimum separation distance between the antenna and bodies of users are calculated using the following formula:

RF EXPOSURE DISTANCE LIMITS

$$r = \sqrt{\frac{P \cdot G}{4 \cdot \pi \cdot S}} = \sqrt{\frac{EIRP}{4 \cdot \pi \cdot S}}$$

$S = f/1500 = 902.5/1500 = 0.6 \text{ mW/cm}^2$
 $EIRP = 27.4 \text{ dBm} = 10^{27.4/10} \text{ mW} = 550 \text{ mW}$ (Worst Case)

$$(\text{Minimum Safe Distance, } r) = \sqrt{\frac{EIRP}{4 \cdot \pi \cdot S}} = \sqrt{\frac{550}{4 \cdot \pi \cdot (0.6)}} \approx 8.6 \text{ cm}$$

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

File #: 16MONN026_FCC15C247

January 22, 2016

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EXHIBIT 6. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal. Due Date
Spectrum Analyzer	Hewlett Packard	HP 8593EM	3412A00103	9 kHz–26.5 GHz	09 Apr 2017
Attenuator	Pasternack	PE7010-20	-	DC–2 GHz	03 Feb 2017
L.I.S.N	EMCO	3825/2	2209	0.01 -100 MHz	29 Sep 2016
Signal Generator	Hewlett Packard	8648C	3443U00391	100 kHz – 3200 MHz	02 Feb 2017
Spectrum Analyzer	Rohde & Schwarz	FSEK30	100077	20Hz–40 GHz	21 Nov 2016
Attenuator	Pasternack	PE7024-20	6	DC–26.5 GHz	Cal on use
DC Block	Hewlett Packard	11742A	12460	0.045–26.5 GHz	Cal on use
High Pass Filter	K & L	11SH10-1500/T8000	2	Cut off 900 MHz	Cal on use
Spectrum Analyzer	Rohde & Schwarz	ESU40	100037	20 Hz – 40 GHz	08 May 2017
RF Amplifier	Com Power	PAM-118A	551052	0.5 – 18 GHz	13 Jul 2016
Biconi-Log Antenna	ETS Lindgren	3142C	26873	26 – 3000 MHz	14 Apr 2016
Horn Antenna	EMCO	3155	5955	1 – 18 GHz	26 Mar 2016
Log Periodic	ETS-Lindgren	3148	23845	200 – 2000 MHz	14 Apr 2016
High Pass Filter	K & L	11SH10-1500/T8000	2	Cut off 900 MHz	Cal on use
Band Reject Filter	Micro-Tronics	BRC50722	001	Cut off 902-928 MHz	Cal on use
Attenuator	Pasternack	PE7024-10	4	DC–26.5 GHz	Cal on use

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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.

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

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