ENGINEERING TEST REPORT

G2XL Performance 900MHz FHSS Transceiver
Model: G2XL1

FCC ID: ZTL- G2XL1

Applicant:

Monnit Corporation
450 South Simmons Way
Suite 670
Kaysville, UT 84037

In Accordance With

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

UltraTech's File No.: 16MONN027_FCC15C247_R2

This Test report is Issued under the Authority of Tri M. Luu Vice President of Engineering UltraTech Group of Labs Date: December 7, 2016	
Report Prepared by: Santhosh Fernandez Issued Date: December 7, 2016	Tested by: Hung Trinh Test Dates: August 4 to September 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.*

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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. Revision history

Document	Issue Date	Description
16MONN027_FCC15C247	October 24, 2016	Original report
16MONN027_FCC15C247_R1	October 28, 2016	Remarks for the two antenna switching added
16MONN027_FCC15C247_R2	December 7, 2016	Updated applicant address details

1.3. RELATED SUBMITTAL(S)/GRANT(S)

None

1.4. 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	2008-09	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

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

APPLICANT	
Name:	Monnit Corporation
Address:	450 South Simmons Way Suite 670 Kaysville, UT 84037
Contact Person:	Mr. Kelly Lewis Phone #: 801-561-5555 Fax #: 801-561-5575 Email Address: kellyl@monnit.com

MANUFACTURER	
Name:	Monnit Corporation
Address:	450 South Simmons Way Suite 670 Kaysville, UT 84037
Contact Person:	Kelly Lewis or Brad Walters Phone #: 801-561-5555 Fax #: 801-561-5575 Email Address: kellyl@monnit.com or bradw@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:	G2XL
Product Name:	G2XL Performance 900MHz FHSS Transceiver
Model Name or Number:	G2XL1
Serial Number:	Test Sample
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:	2.4-3.8V DC
RF Output Power Rating:	+11.6 dBm to +30dBm
Operating Frequency Range:	902.2 - 927.8 MHz
Channel Spacing:	50KHz (slow rate), 500KHz (fast rate)
RF Output Impedance:	50 Ω
Modulation Type:	GFSK (5 Configurations; GFSK, DSSS1, DSSS2, DSSS4, DSSS8)
Data Rates:	400K, 200K, 100K, 50K, 25K, 10K, 5K, 2.5K, 1.25K, and 625 bps
Oscillator Frequency(ies):	24MHz
Antenna Connector Type:	U.FL

2.4. ASSOCIATED ANTENNA DESCRIPTIONS

Antenna Type	Maximum Gain allowed (dBi)	Required Assembly & Cable Loss for the Max Gain of Antenna (dB)
Dipole Antenna	5.0	0.44
Omni-directional Antenna	8.0	3.48
Flat Panel Antenna	9.0	3.54
Yagi Antenna	14.0	10.74

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	2	U.FL	Shielded
2	DC power	1	Red and black wires	Non-shielded
3	USB-2-Serial Terminal, can be removed during test	1	USB-2-Serial Terminal,	Shielded

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
Model Name or Number:	EliteBook 8440p
Serial No.	CND051129W
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
Serial No.	63903
Connected to EUT's Port:	Test Jig of the EUT

Ancillary Equipment # 3	
Description:	DC Power Supply used for DC power line conducted Emissions
Brand name:	Tenma
Model Name or Number:	72-7295
Serial No.	490300270
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 ^{o}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)	1 Watt (Conducted)
Normal Test Modulation:	GFSK as per Sec 2.3
Modulating Signal Source:	Internal

Remarks for Right and Left antenna operation:
Since, as per manufacturer, the switching between right and left antennas only takes place after the PA chain is off; therefore, no investigation is required to be performed for transients during switching

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

None

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:

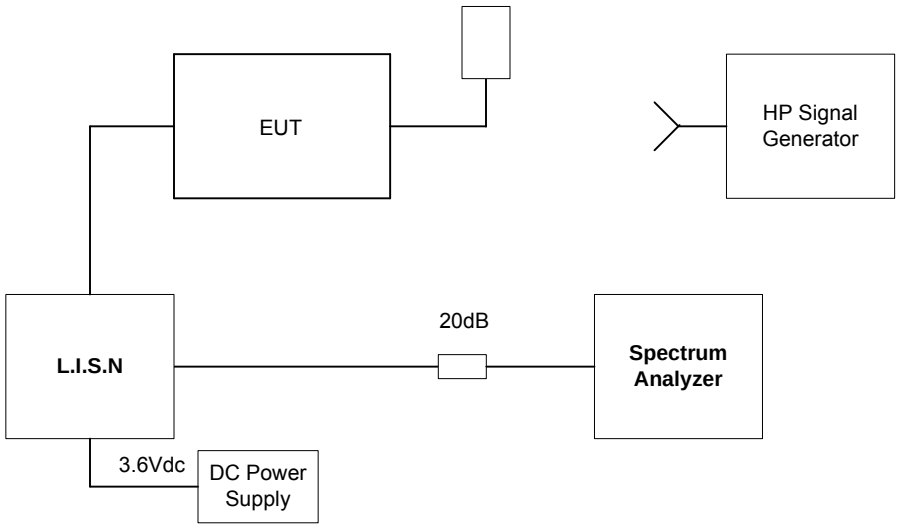
Frequency of emission (MHz)	Conducted Limits (dBμV)	
	Quasi-peak	Average
0.15–0.5 .....……..	66 to 56*	56 to 46*
0.5–5 .....……..	56	46
5-30 ……..	60 ...……..	50

*Decreases linearly with the logarithm of the frequency

5.1.2. Method of Measurements

ANSI C63.4-2009

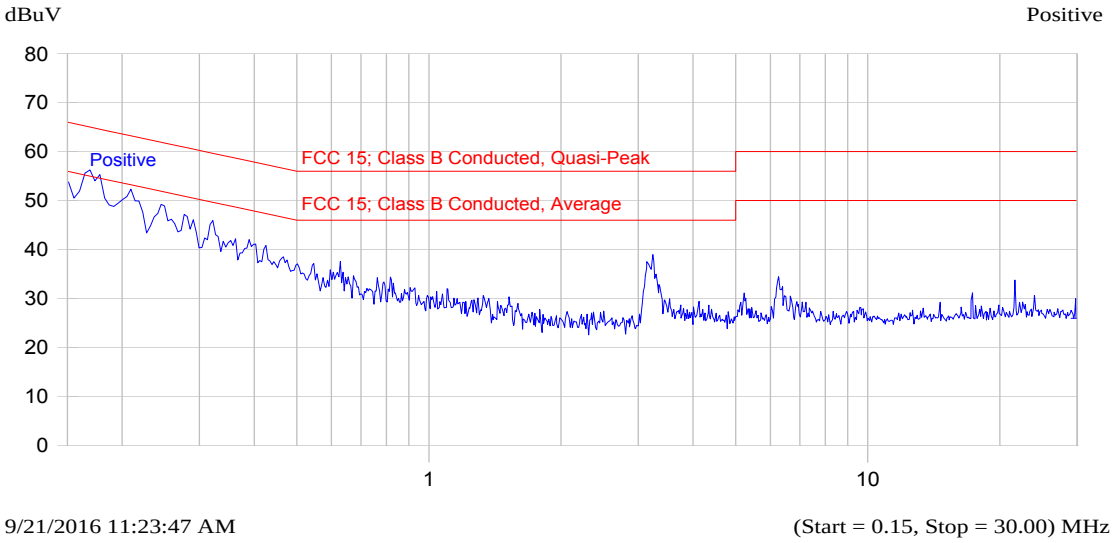
5.1.3. Test Arrangement



5.1.4. Test Data

Plot 5.1.4.1. TX Mode- Positive line

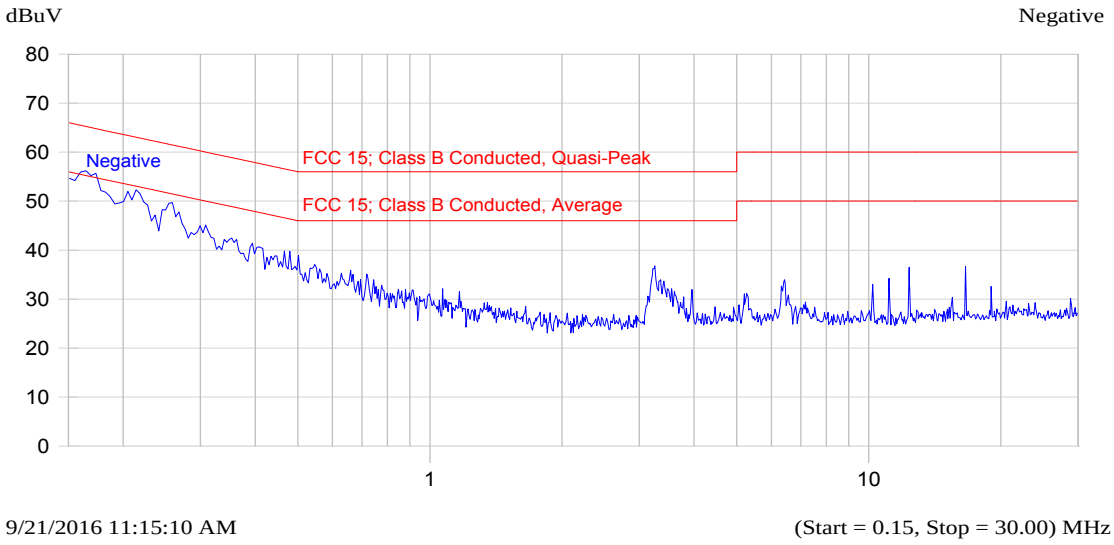
Setup Name: FCC 15 Class B
Customer Name: Monnit
Project Number: MONN-027Q
Operator Name: Hung Trinh
EUT Name: G2XL Rev 3 Sample # 3



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.175	55.3	54.1	-10.7	53.4	-1.3	Positive
0.175	55.5	54.1	-10.6	53.5	**-1.2**	Positive
0.216	52.1	50.6	-12.4	49.8	-3.2	Positive
3.230	35.4	32.9	-23.1	30.5	-15.5	Positive

Plot 5.1.4.2. TX Mode- Negative line

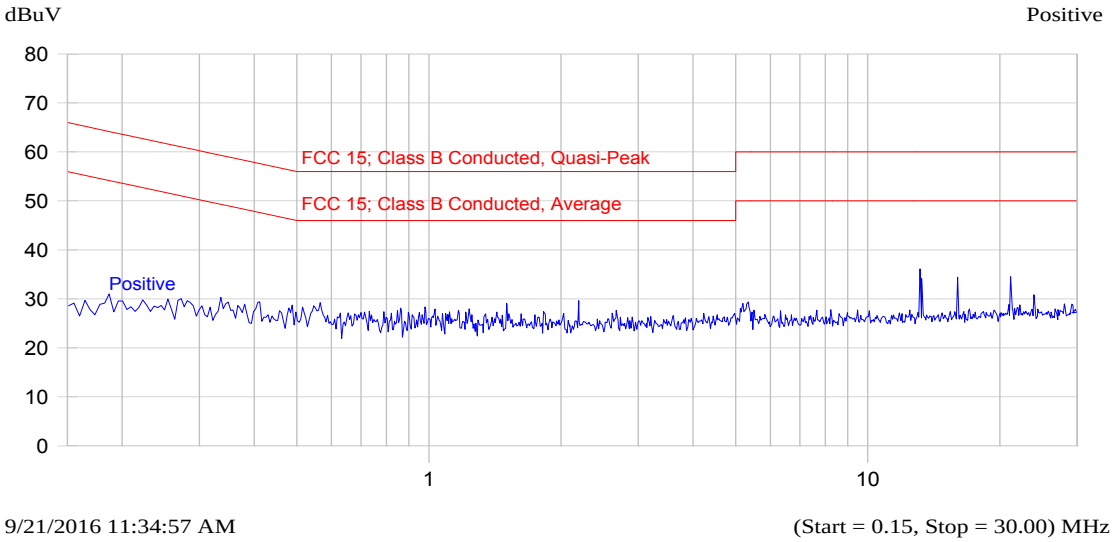
Description: TX mode
Setup Name: FCC 15 Class B
Customer Name: Monnit
Project Number: MONN-027Q
Operator Name: Hung Trinh
EUT Name: G2XL Rev 3 Sample # 3



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.165	56.2	54.2	-11.0	51.4	-3.8	Negative
0.205	52.4	50.4	-13.0	47.7	-5.7	Negative
0.252	52.1	47.2	-14.5	45.9	-5.8	Negative
12.361	24.6	18.7	-41.3	12.8	-37.2	Negative

Plot 5.1.4.3. RX Mode- Positive line

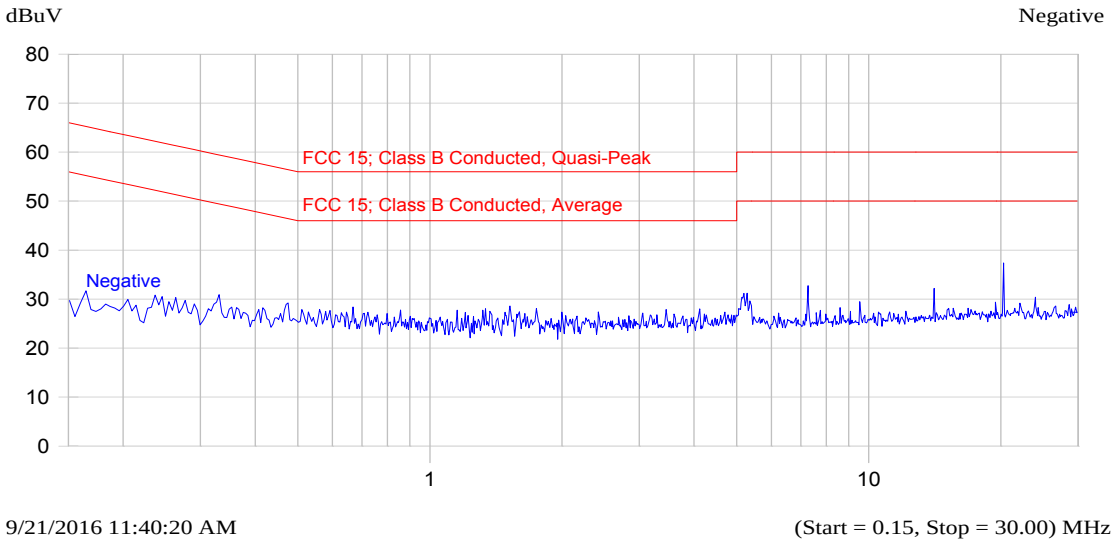
Setup Name: FCC 15 Class B
Customer Name: Monnit
Project Number: MONN-027Q
Operator Name: Hung Trinh
EUT Name: G2XL Rev 3 Sample # 3



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.199	31.5	25.8	-37.9	19.8	-33.8	Positive
13.148	24.7	18.4	-41.6	12.5	-37.5	Positive
16.017	23.3	18.7	-41.3	12.6	-37.4	Positive
21.142	24.1	19.6	-40.4	13.7	-36.3	Positive

Plot 5.1.4.4. RX Mode- Negative line

Setup Name: FCC 15 Class B
Customer Name: Monnit
Project Number: MONN-027Q
Operator Name: Hung Trinh
EUT Name: G2XL Rev 3 Sample # 3



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.156	31.4	26.6	-39.1	20.7	-35.0	Negative
7.289	23.9	18.1	-41.9	12.2	-37.8	Negative
20.276	24.8	19.0	-41.0	13.1	-36.9	Negative

5.2. COMPLIANCE WITH FCC PART 15 – GENERAL TECHNICAL REQUIREMENTS

FCC Section	FCC Rules	Manufacturer's Clarification
15.31	The hoping 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)	Equal Hopping Frequency Use: 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	System Receiver Input Bandwidth: 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	System Receiver Hopping Capability: 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

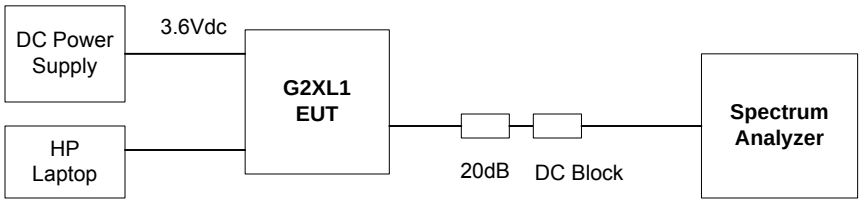
§ 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier 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



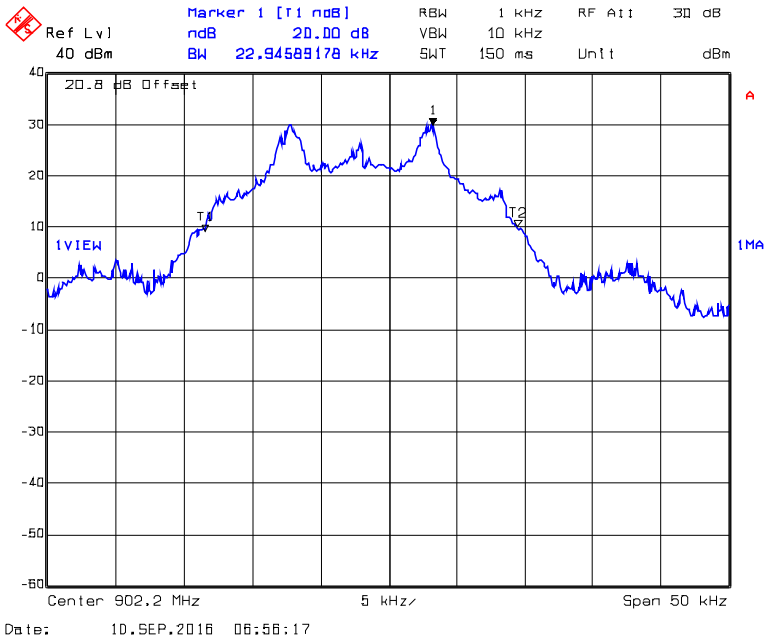
5.3.4. Test Data

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: 26.45 kHz DSSS1 400kbps: 490.98 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: 50.2 kHz DSSS8 400kbps: 505.56 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: 150.30ms <400 ms in 10s	See Note 2

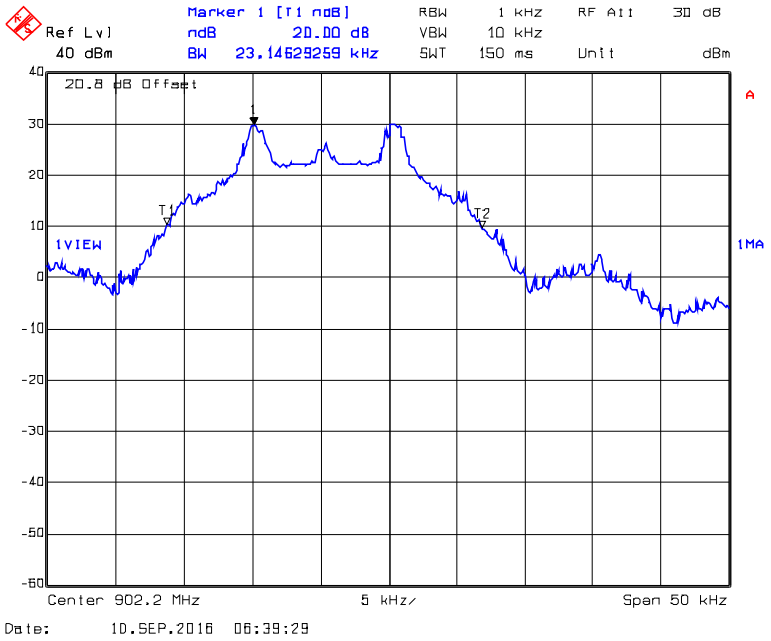
Note 1: See operational description exhibit for details.

Note 2: See the following plots for details.

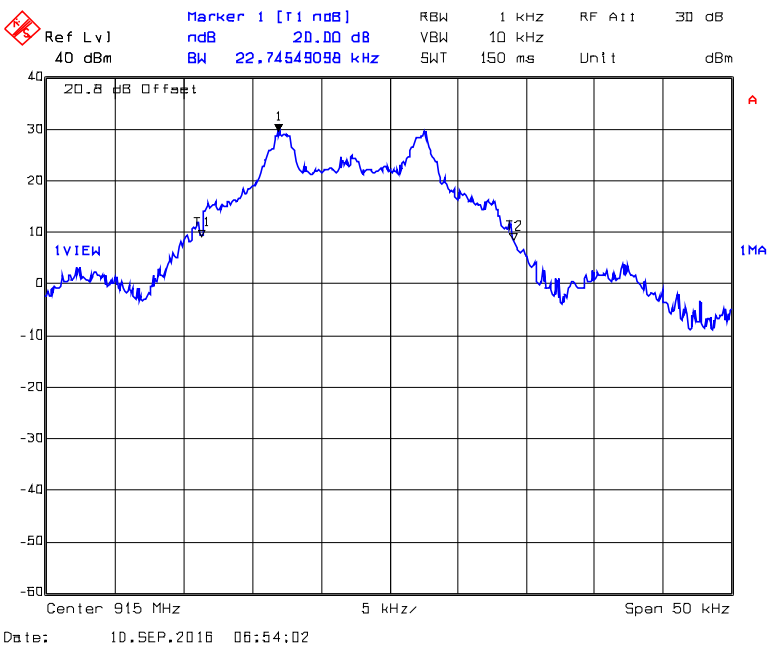
Plot 5.3.4.1. 20 dB Bandwidth, 902.2 MHz, GFSK, 10 kbps -Left



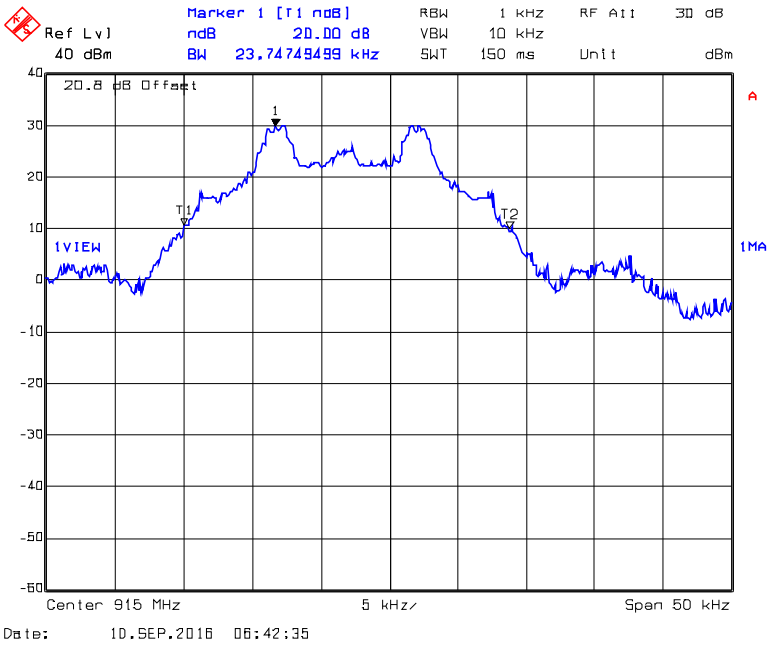
Plot 5.3.4.2. 20 dB Bandwidth, 902.2 MHz, GFSK, 10 kbps -Right



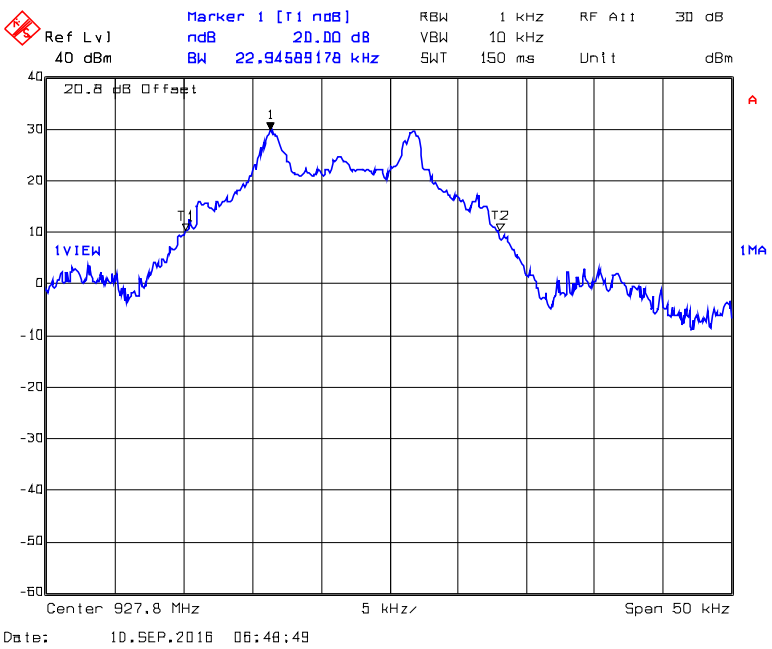
Plot 5.3.4.3. 20 dB Bandwidth, 915 MHz, GFSK, 10 kbps-Left Antenna



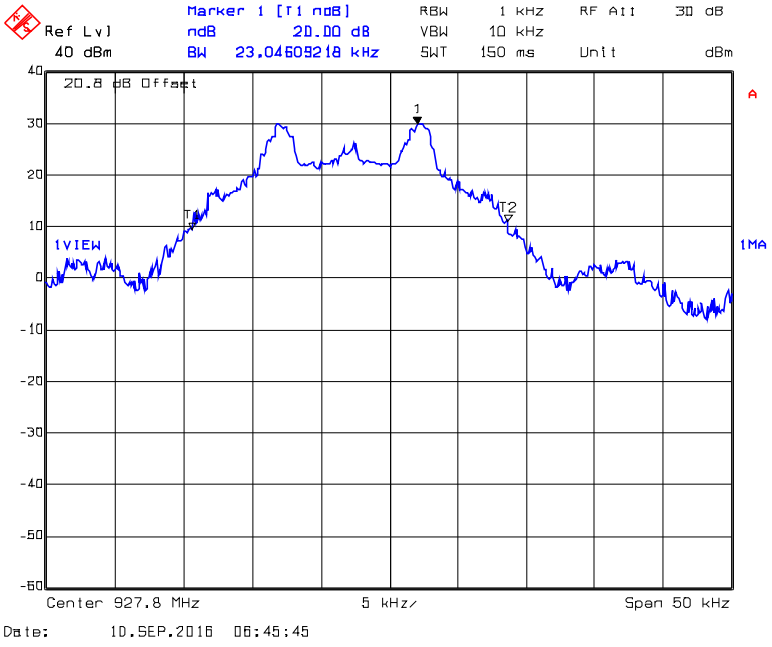
Plot 5.3.4.4. 20 dB Bandwidth, 915 MHz, GFSK, 10 kbps-Right Antenna



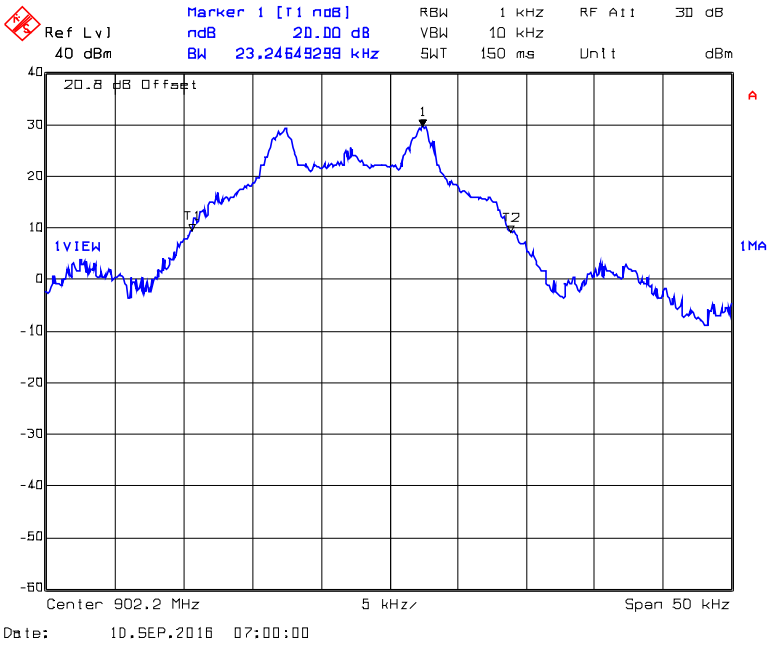
Plot 5.3.4.5. 20 dB Bandwidth, 927.8 MHz, GFSK, 10 kbps-Left Antenna



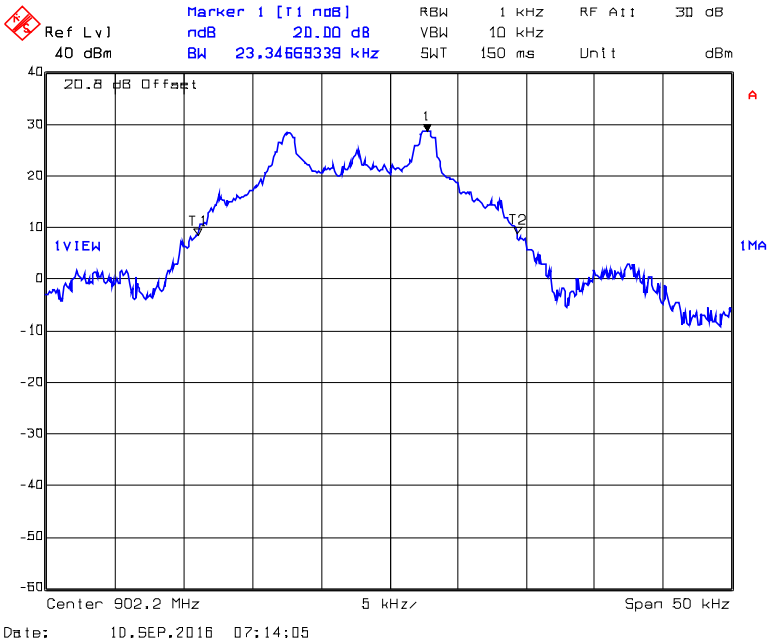
Plot 5.3.4.6. 20 dB Bandwidth, 927.8 MHz, GFSK, 10 kbps-Right Antenna



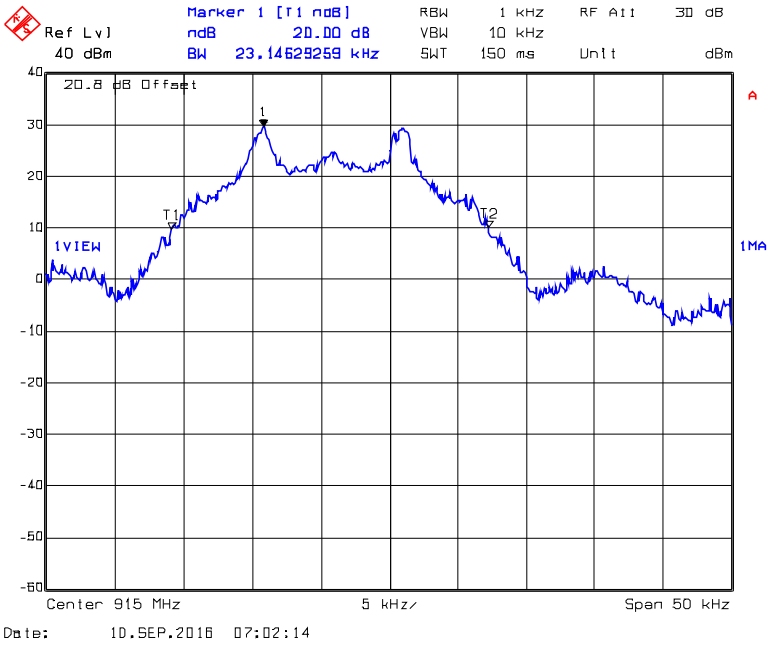
Plot 5.3.4.7. 20 dB Bandwidth, 902.2 MHz, DSSS1, 10 kbps-Left Antenna



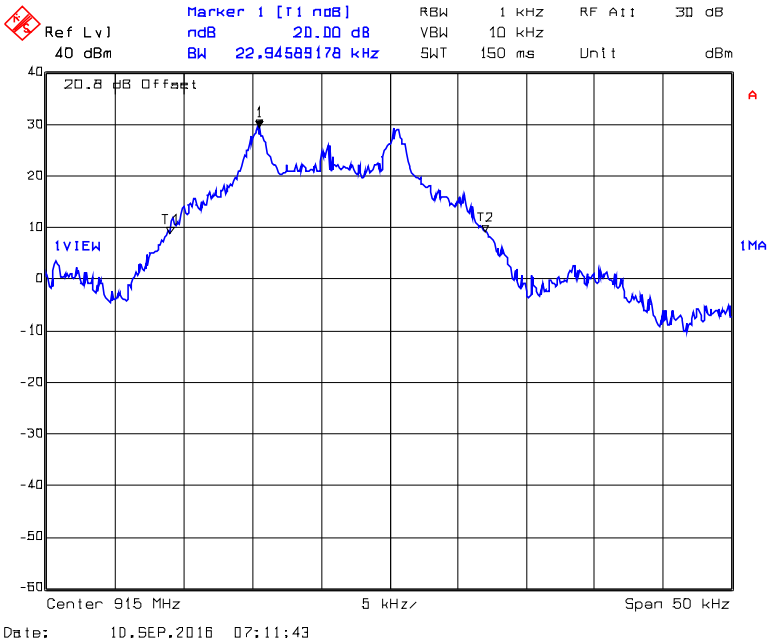
Plot 5.3.4.8. 20 dB Bandwidth, 902.2 MHz, DSSS1, 10 kbps-Right Antenna



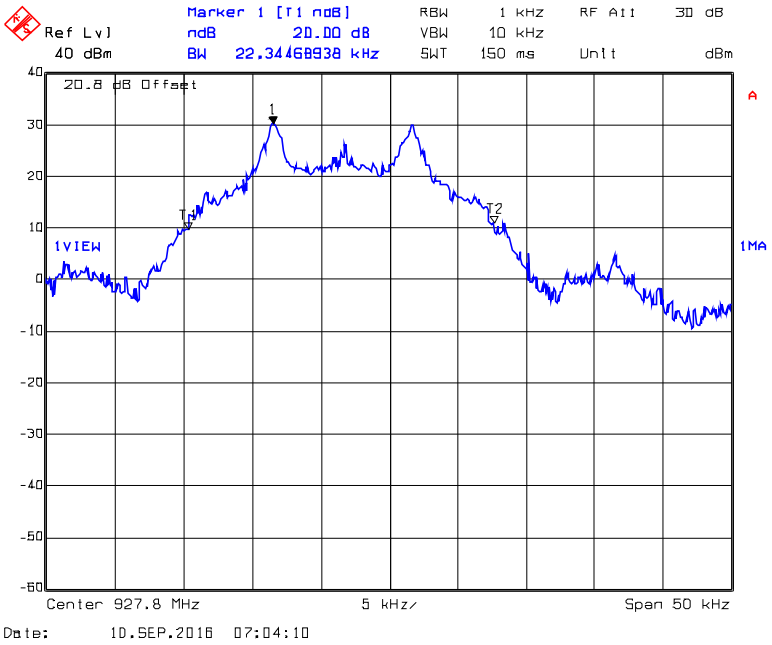
Plot 5.3.4.9. 20 dB Bandwidth, 915.0 MHz, DSSS1, 10 kbps-Left Antenna



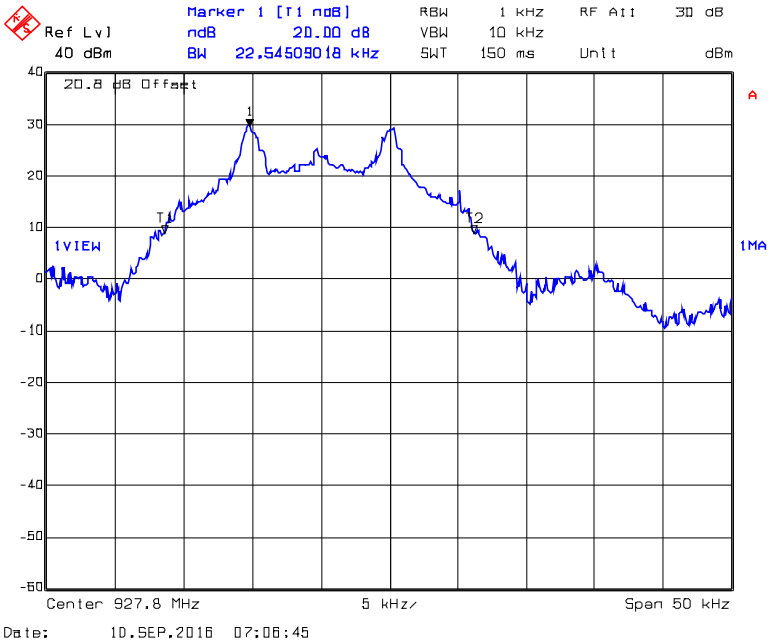
Plot 5.3.4.10. 20 dB Bandwidth, 915.0 MHz, DSSS1, 10 kbps-Right Antenna



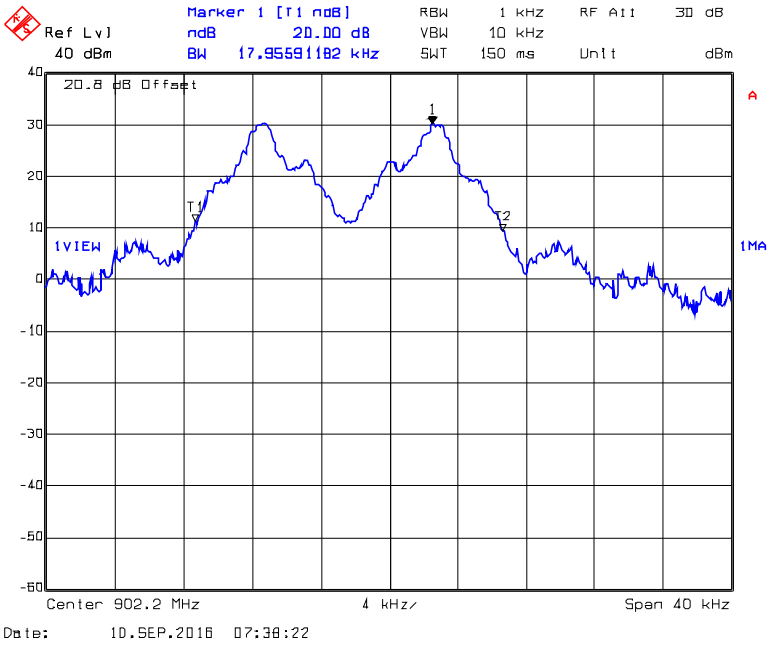
Plot 5.3.4.11. 20 dB Bandwidth, 927.8 MHz, DSSS1, 10 kbps- Left Antenna



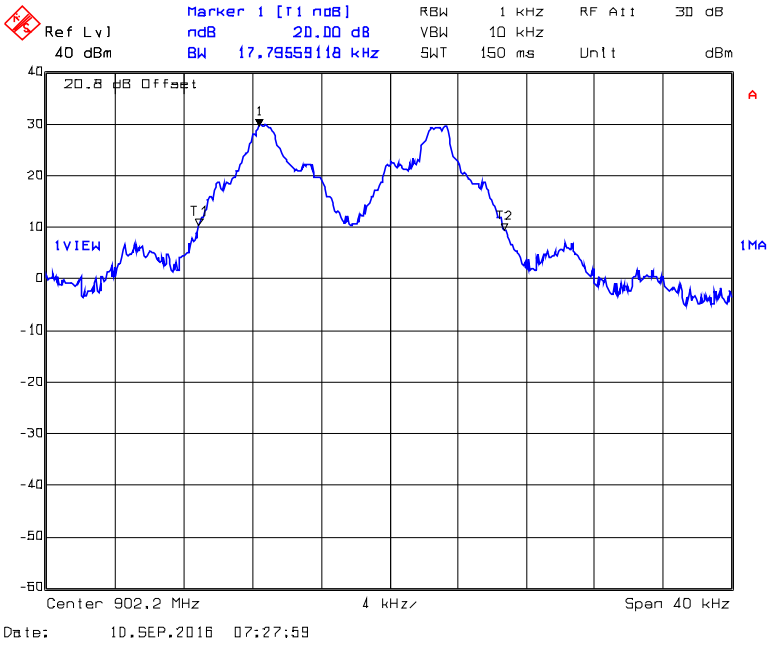
Plot 5.3.4.12. 20 dB Bandwidth, 927.8 MHz, DSSS1, 10 kbps-Right Antenna



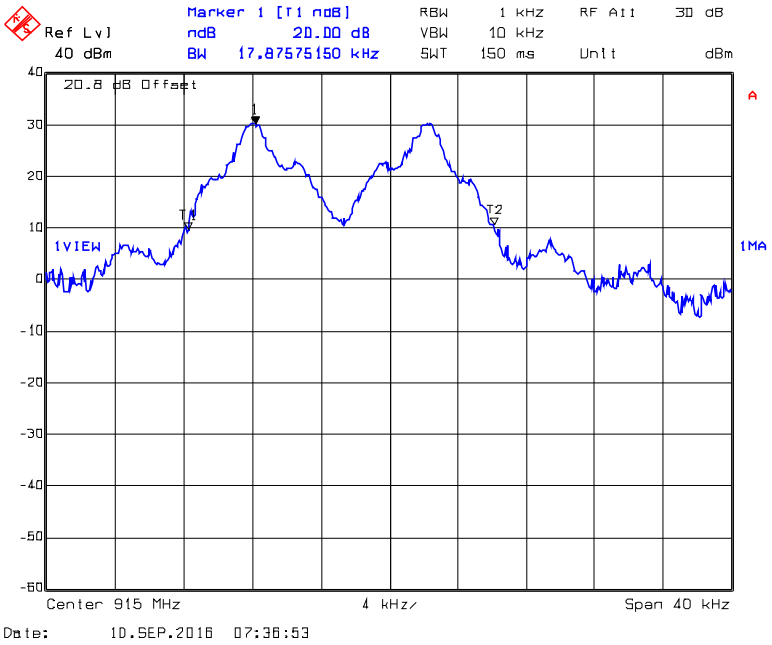
Plot 5.3.4.13. 20 dB Bandwidth, 902.2 MHz, DSSS2, 10 kbps - Left Antenna



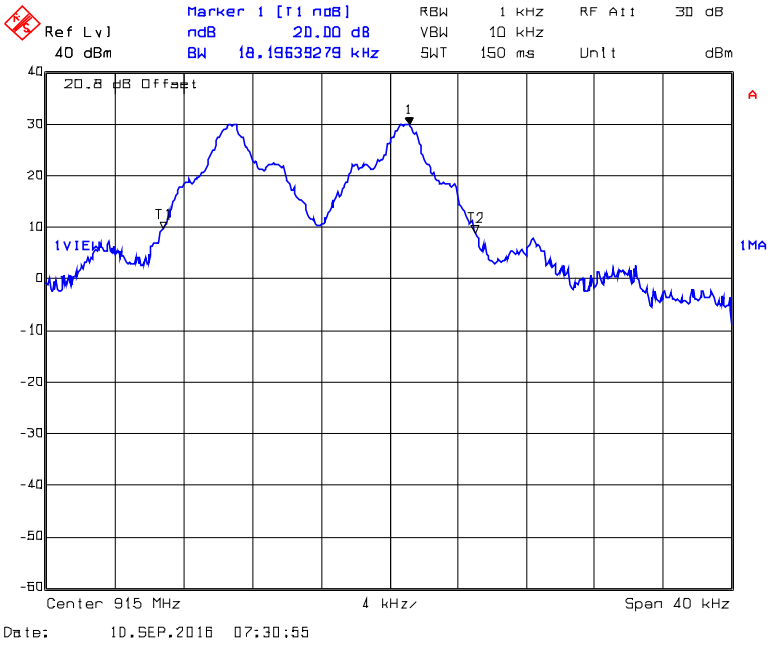
Plot 5.3.4.14. 20 dB Bandwidth, 902.2 MHz, DSSS2, 10 kbps -Right Antenna



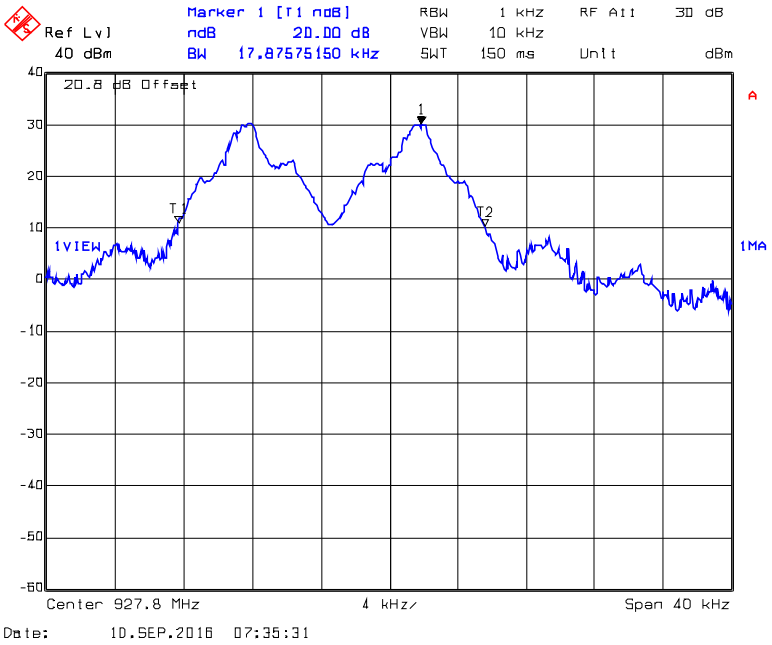
Plot 5.3.4.15. 20 dB Bandwidth, 915.0 MHz, DSSS2, 10 kbps - Left Antenna



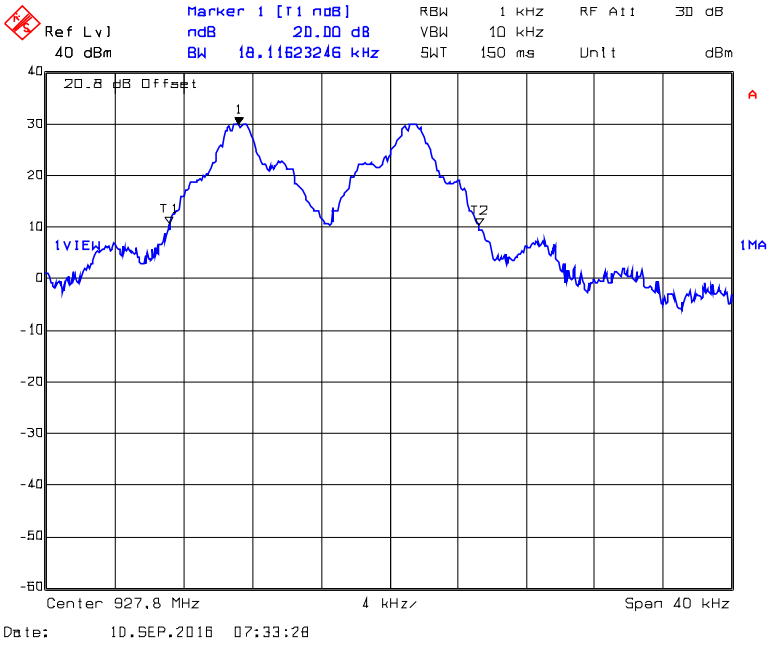
Plot 5.3.4.16. 20 dB Bandwidth, 915.0 MHz, DSSS2, 10 kbps - Right Antenna



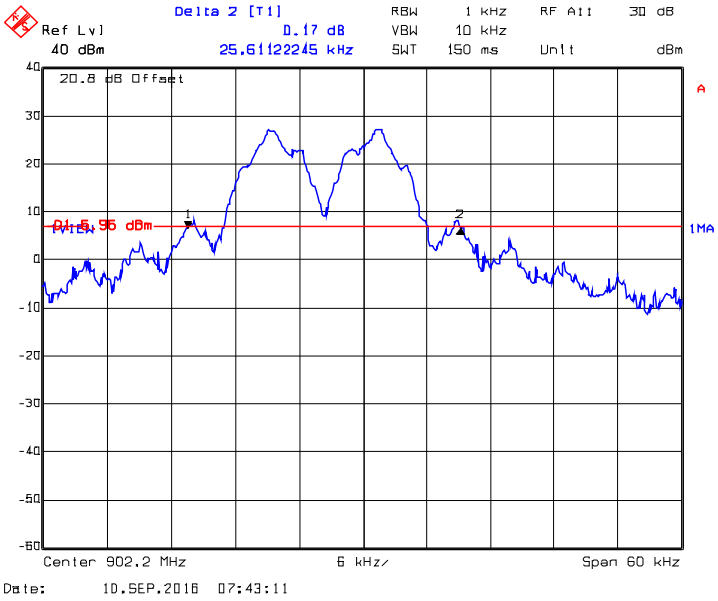
Plot 5.3.4.17. 20 dB Bandwidth, 927.8 MHz, DSSS2, 10 kbps - Left Antenna



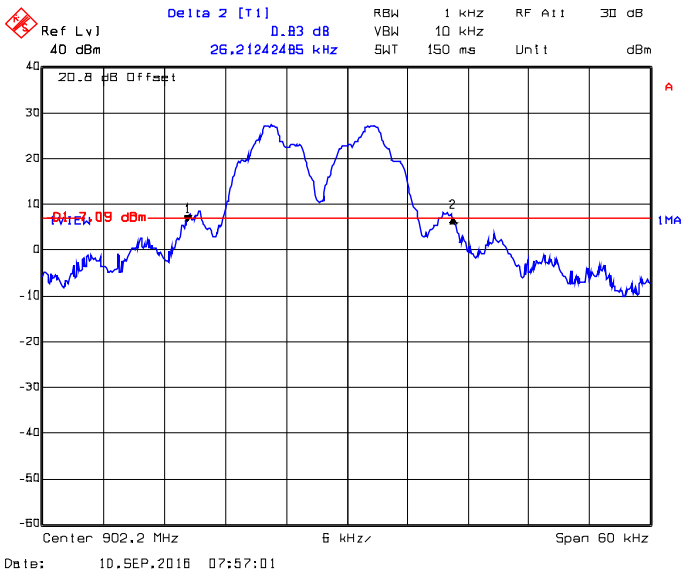
Plot 5.3.4.18. 20 dB Bandwidth, 927.8 MHz, DSSS2, 10 kbps - Right Antenna



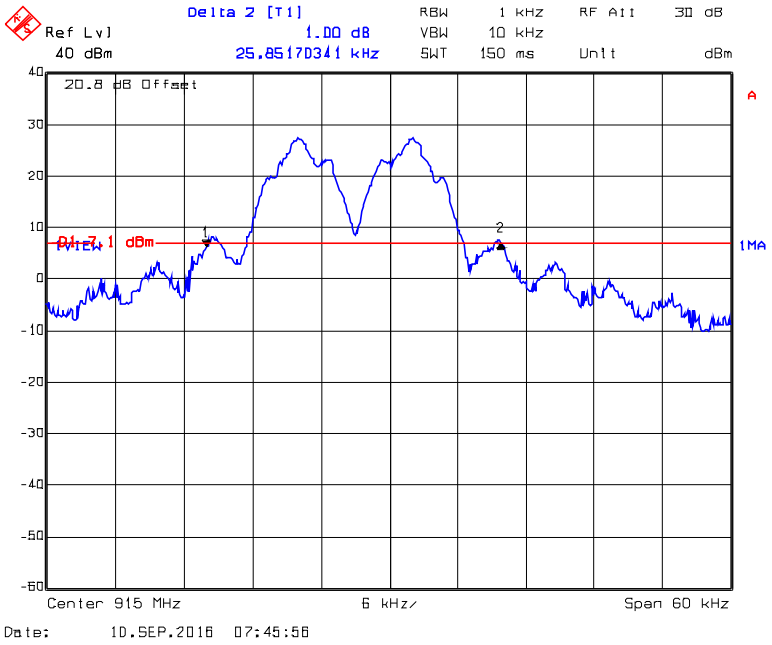
Plot 5.3.4.19. 20 dB Bandwidth, 902.2 MHz, DSSS4, 10 kbps- Left Antenna



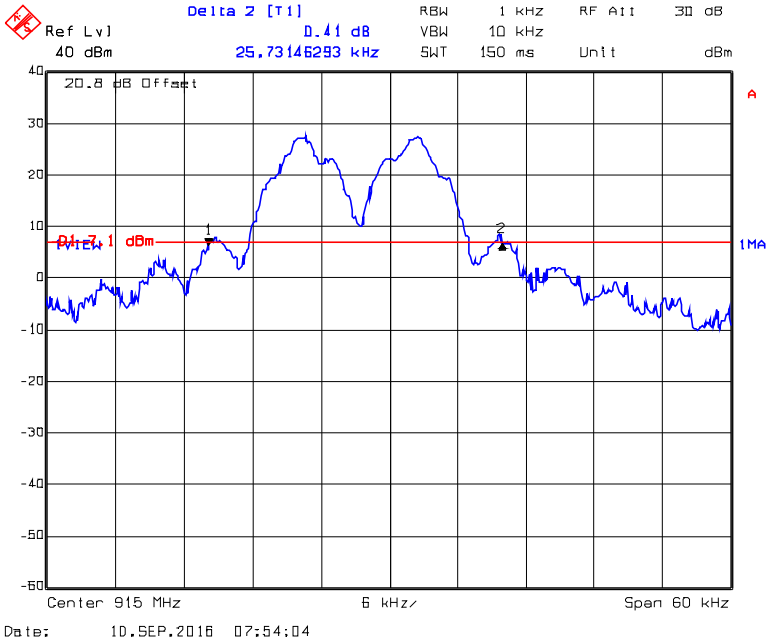
Plot 5.3.4.20. 20 dB Bandwidth, 902.2 MHz, DSSS4, 10 kbps- Right Antenna



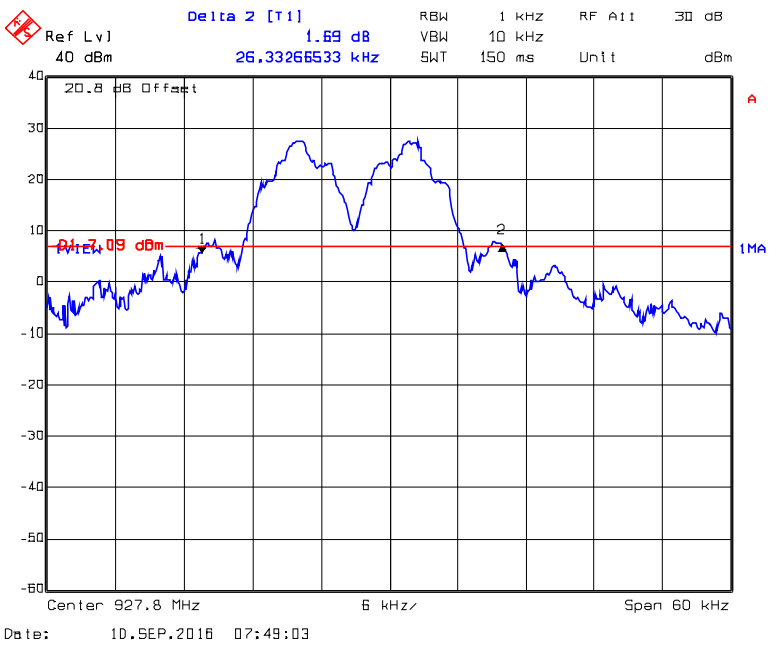
Plot 5.3.4.21. 20 dB Bandwidth, 915.0 MHz, DSSS4, 10 kbps- Left Antenna



Plot 5.3.4.22. 20 dB Bandwidth, 915.0 MHz, DSSS4, 10 kbps- Right Antenna



Plot 5.3.4.23. 20 dB Bandwidth, 927.8 MHz, DSSS4, 10 kbps- Left Antenna

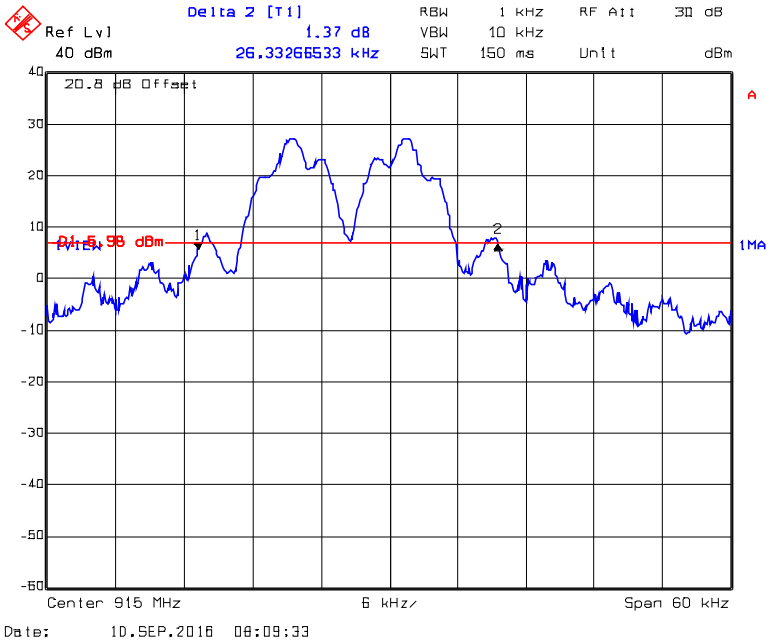


Plot 5.3.4.24. 20 dB Bandwidth, 927.8 MHz, DSSS4, 10 kbps- Right Antenna

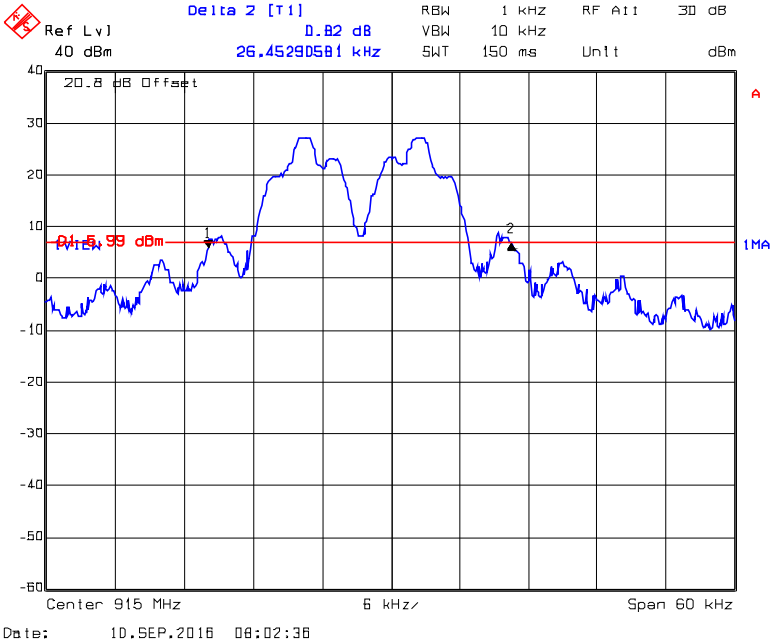
Plot 5.3.4.25. 20 dB Bandwidth, 902.2 MHz, DSSS8, 10 kbps- Left Antenna

Plot 5.3.4.26. 20 dB Bandwidth, 902.2 MHz, DSSS8, 10 kbps- Right Antenna

Plot 5.3.4.27. 20 dB Bandwidth, 915.0 MHz, DSSS8, 10 kbps– Left Antenna

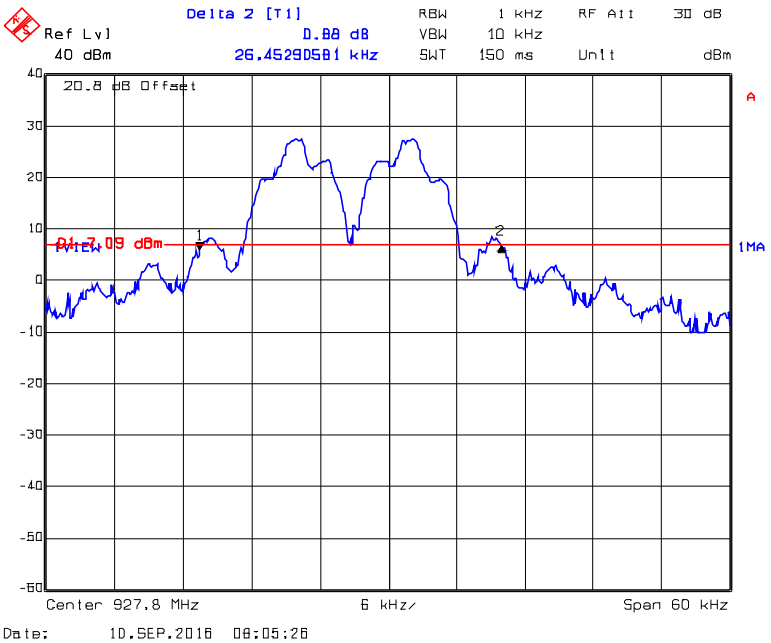


Plot 5.3.4.28. 20 dB Bandwidth, 915.0 MHz, DSSS8, 10 kbps- Right Antenna

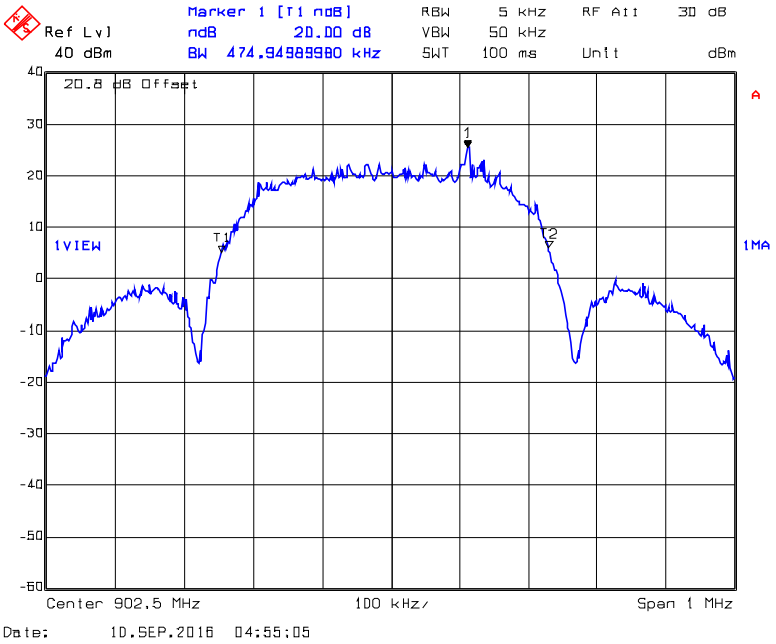


Plot 5.3.4.29. 20 dB Bandwidth, 927.8 MHz, DSSS8, 10 kbps– Left Antenna

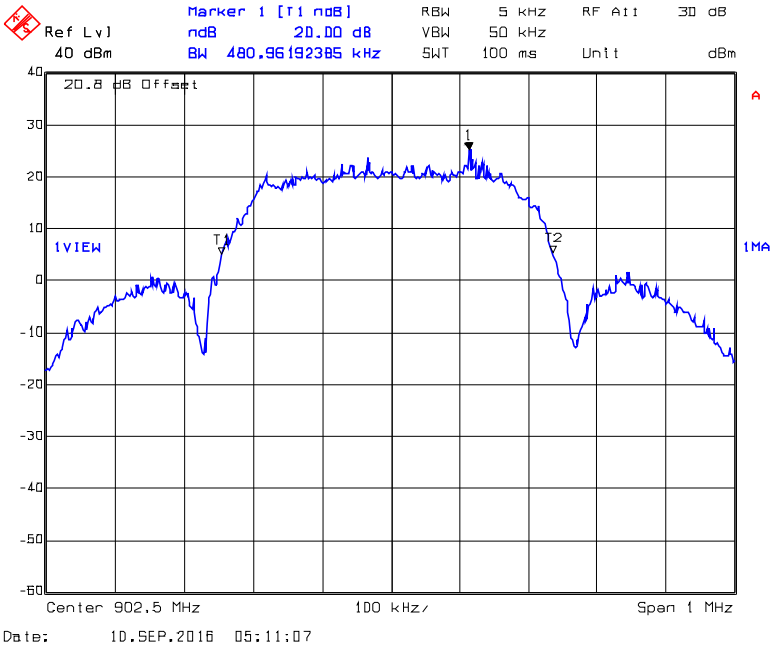
Plot 5.3.4.30. 20 dB Bandwidth, 927.8 MHz, DSSS8, 10 kbps- Right Antenna



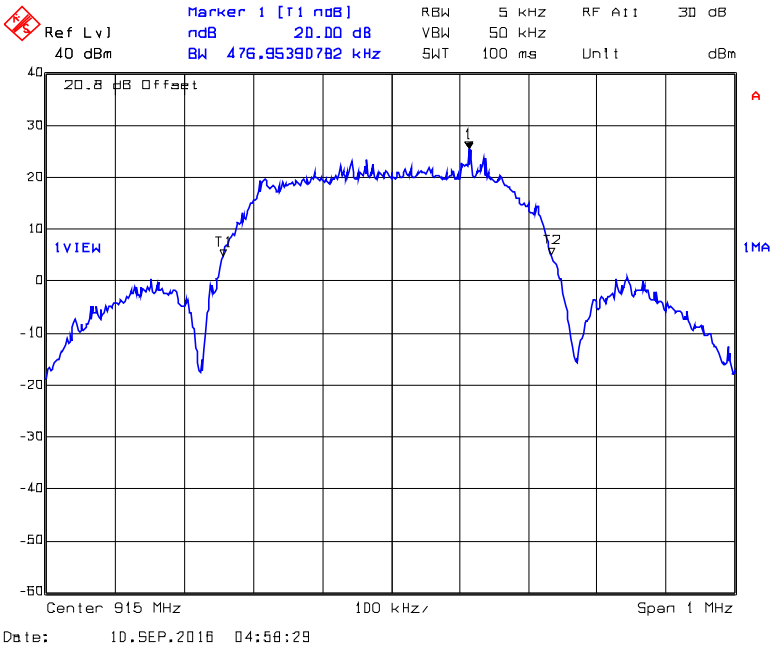
Plot 5.3.4.31. 20 dB Bandwidth, 902.5 MHz, GFSK, 400 kbps– Left Antenna



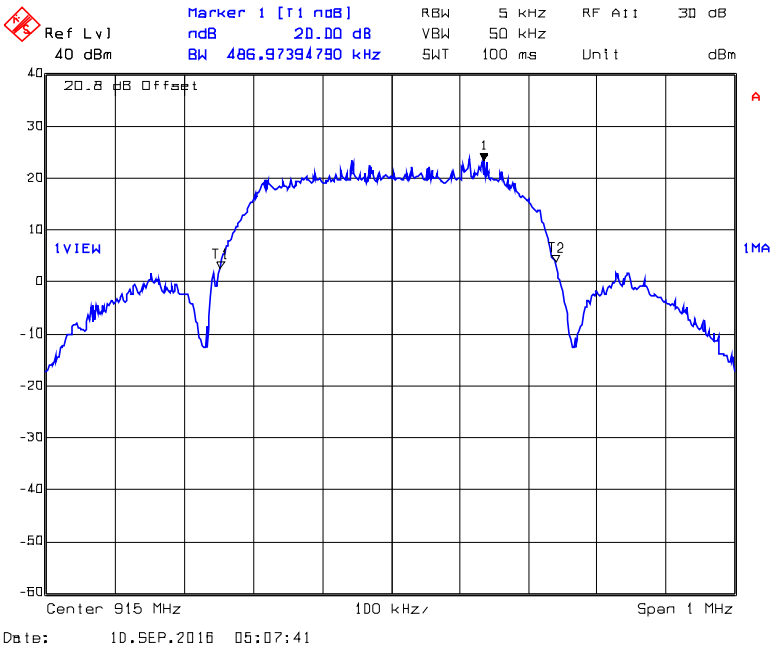
Plot 5.3.4.32. 20 dB Bandwidth, 902.5 MHz, GFSK, 400 kbps- Right Antenna



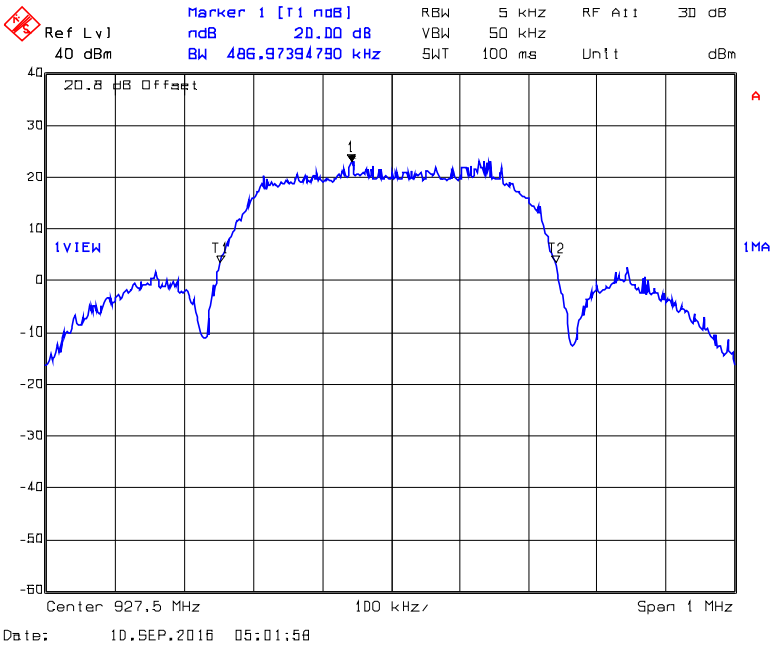
Plot 5.3.4.33. 20 dB Bandwidth, 915.0 MHz, GFSK, 400 kbps– Left Antenna



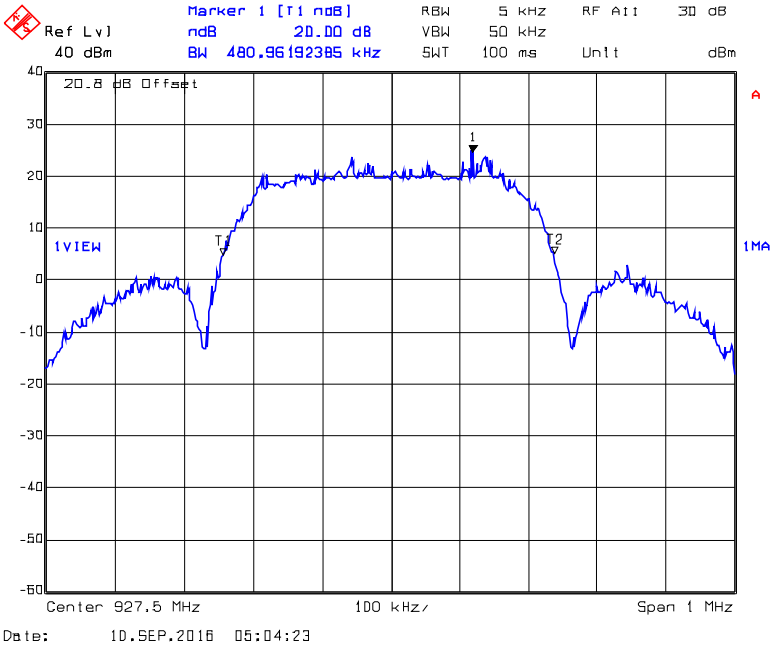
Plot 5.3.4.34. 20 dB Bandwidth, 915.0 MHz, GFSK, 400 kbps- Right Antenna



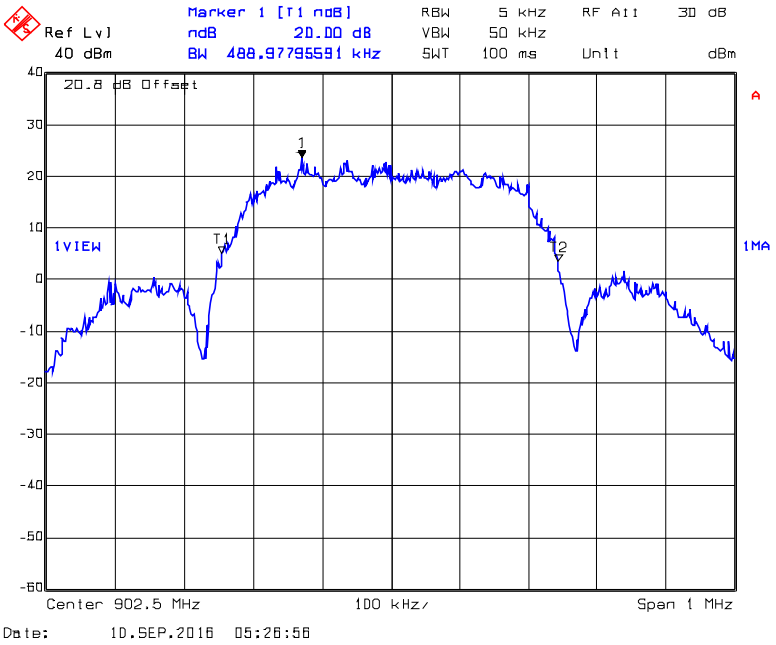
Plot 5.3.4.35. 20 dB Bandwidth, 927.5 MHz, GFSK, 400 kbps– Left Antenna



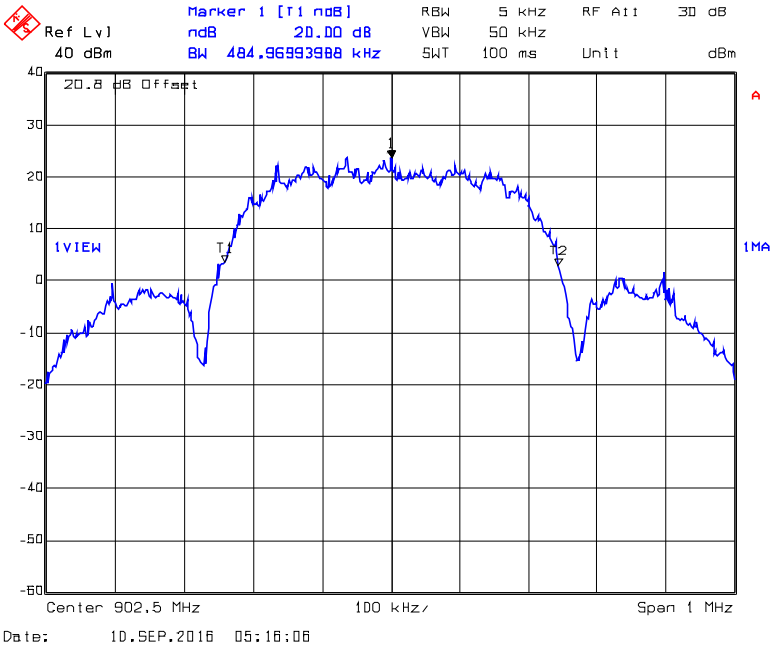
Plot 5.3.4.36. 20 dB Bandwidth, 927.5 MHz, GFSK, 400 kbps- Right Antenna



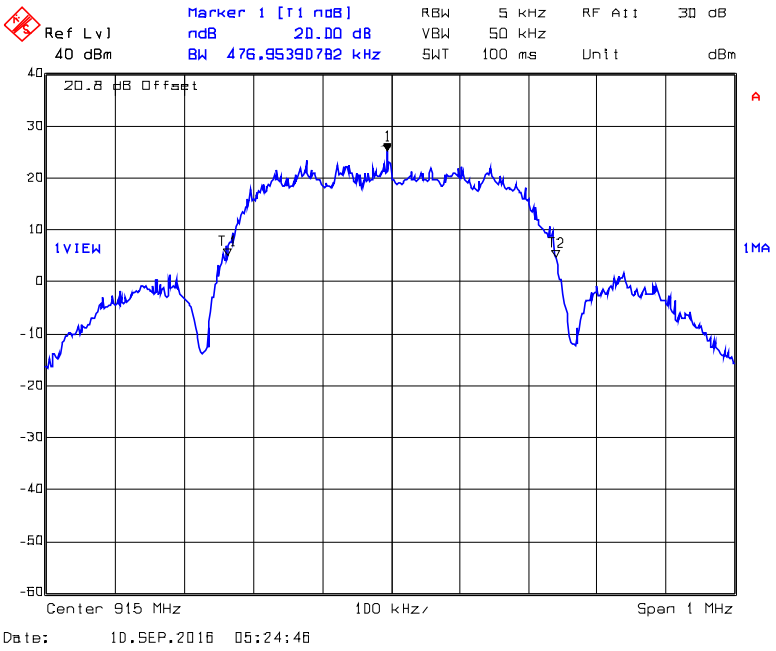
Plot 5.3.4.37. 20 dB Bandwidth, 902.5 MHz, DSSS1, 400 kbps– Left Antenna



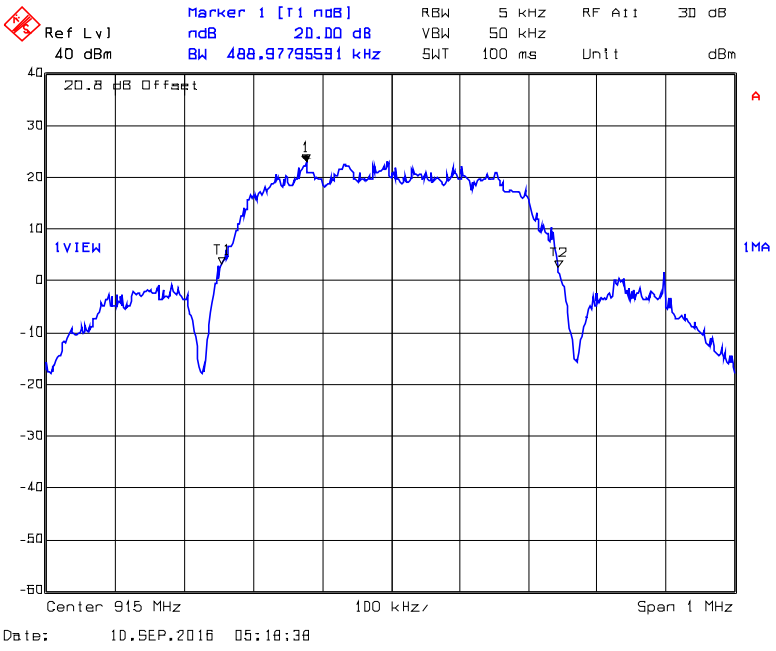
Plot 5.3.4.38. 20 dB Bandwidth, 902.5 MHz, DSSS1, 400 kbps- Right Antenna



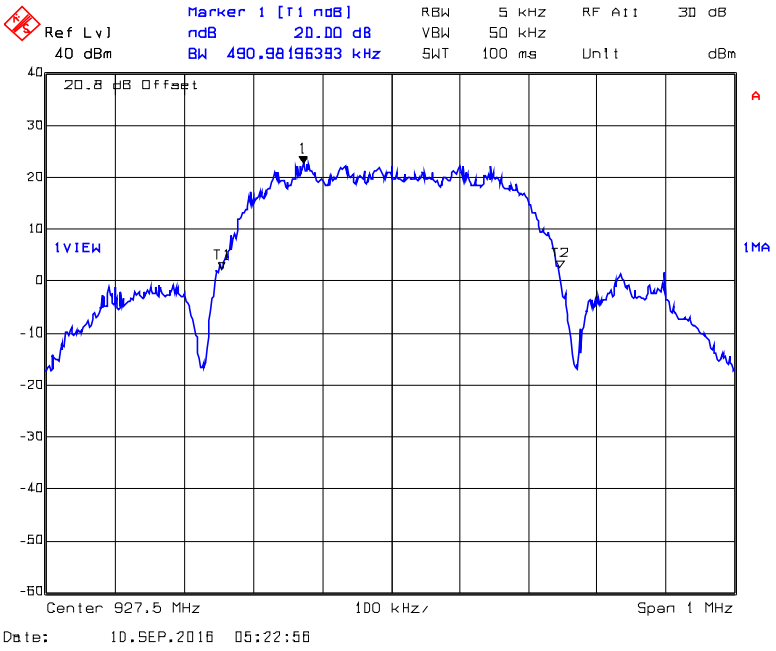
Plot 5.3.4.39. 20 dB Bandwidth, 915.0 MHz, DSSS1, 400 kbps– Left Antenna



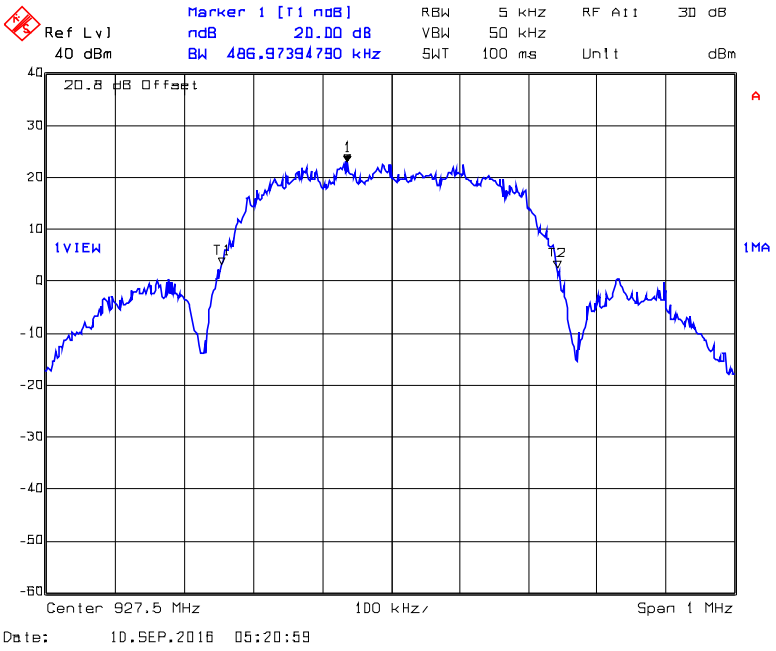
Plot 5.3.4.40. 20 dB Bandwidth, 915.0 MHz, DSSS1, 400 kbps- Right Antenna



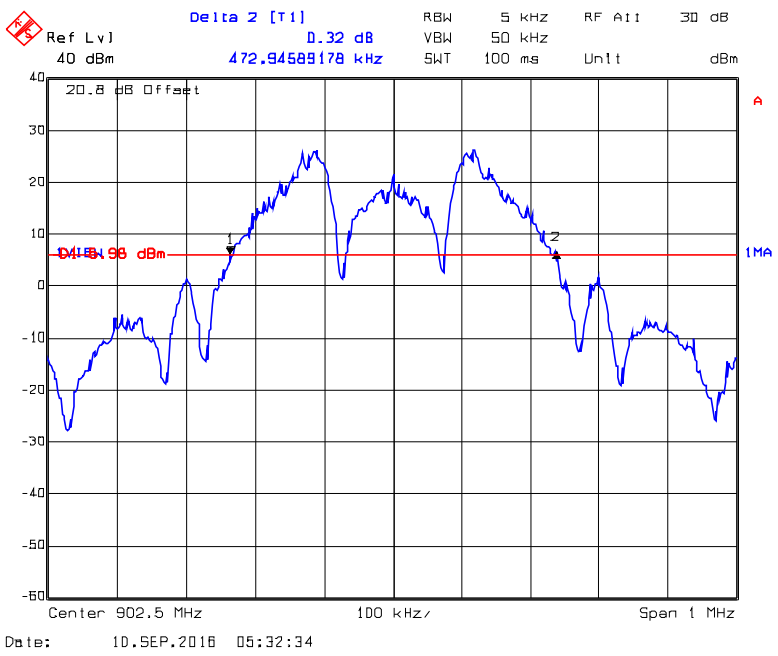
Plot 5.3.4.41. 20 dB Bandwidth, 927.5 MHz, DSSS1, 400 kbps– Left Antenna



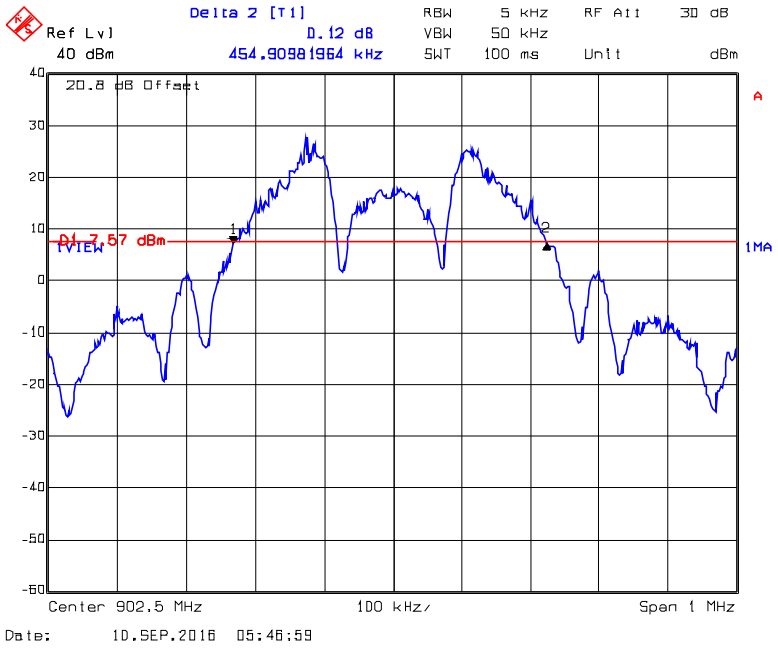
Plot 5.3.4.42. 20 dB Bandwidth, 927.5 MHz, DSSS1, 400 kbps- Right Antenna



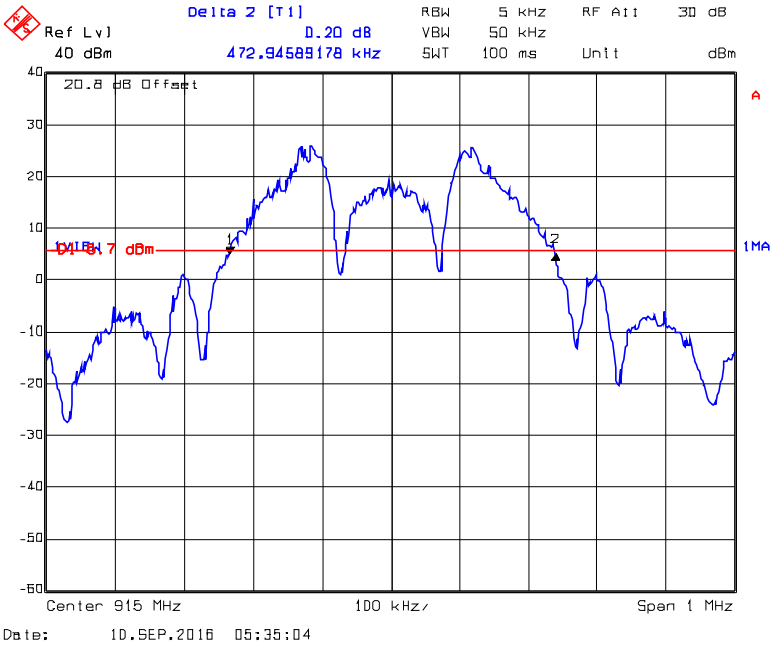
Plot 5.3.4.43. 20 dB Bandwidth, 902.5 MHz, DSSS2, 400 kbps– Left Antenna



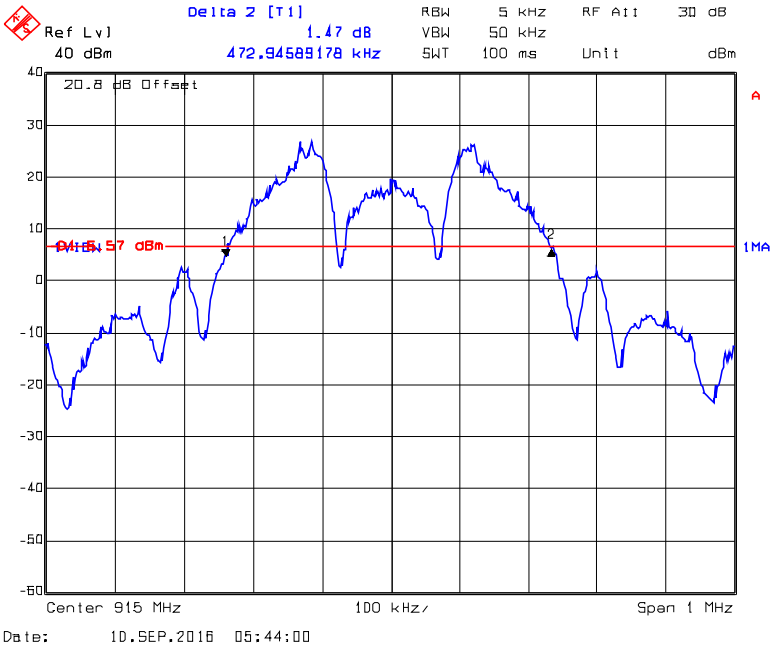
Plot 5.3.4.44. 20 dB Bandwidth, 902.5 MHz, DSSS2, 400 kbps- Right Antenna



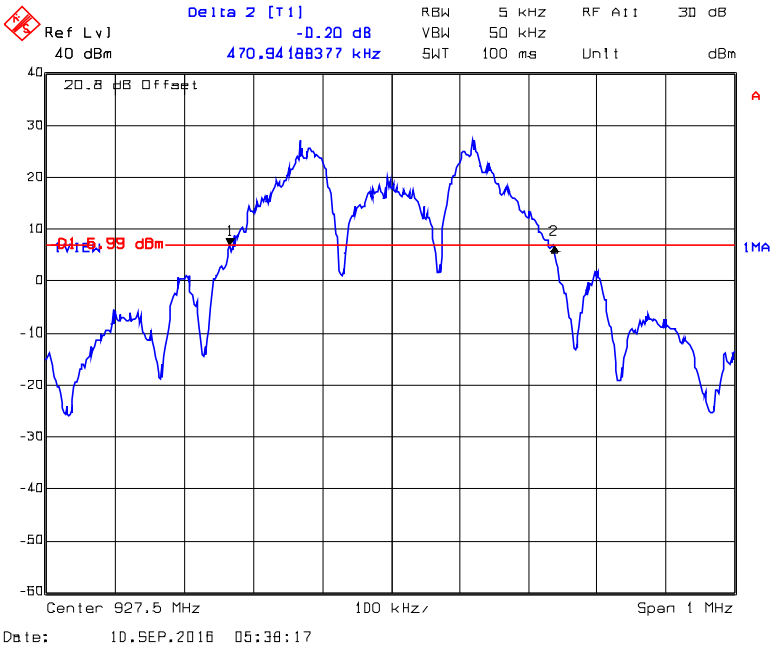
Plot 5.3.4.45. 20 dB Bandwidth, 915.0 MHz, DSSS2, 400 kbps– Left Antenna



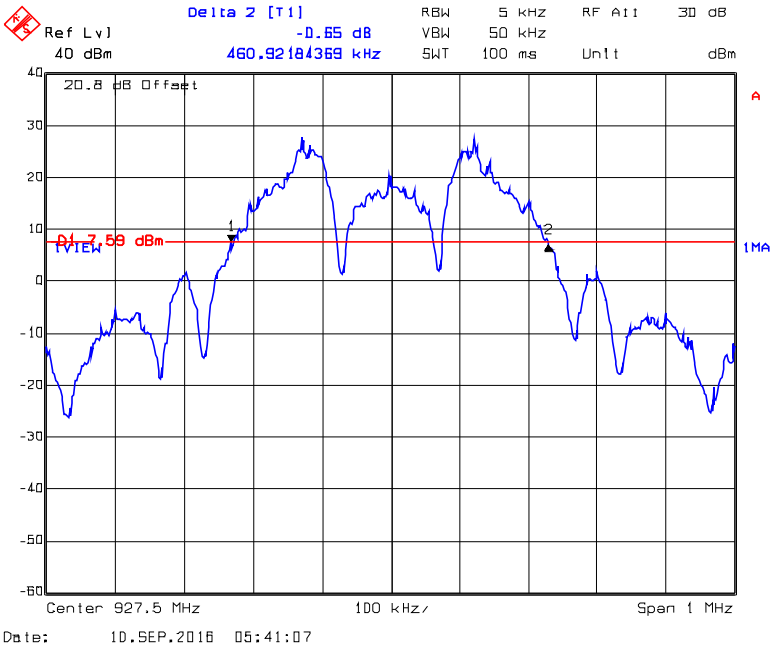
Plot 5.3.4.46. 20 dB Bandwidth, 915.0 MHz, DSSS2, 400 kbps- Right Antenna



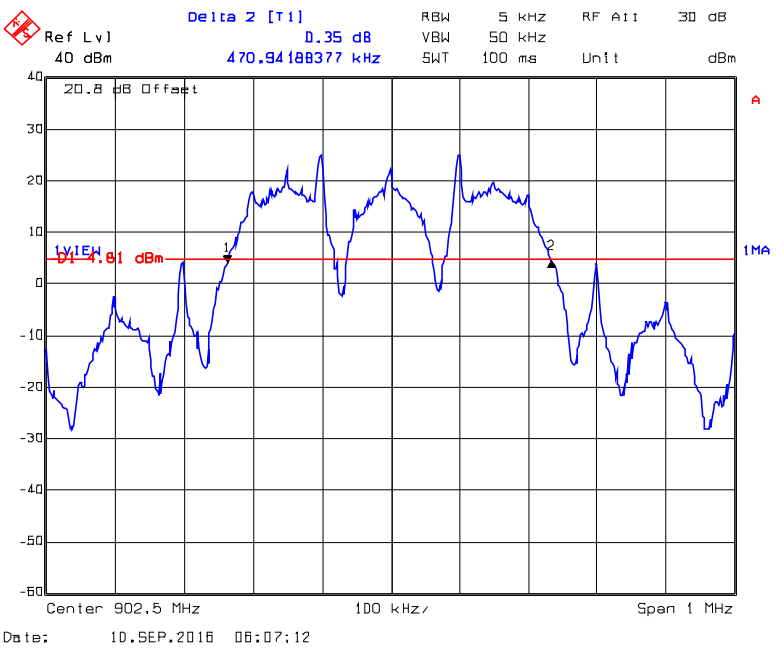
Plot 5.3.4.47. 20 dB Bandwidth, 927.5 MHz, DSSS2, 400 kbps– Left Antenna



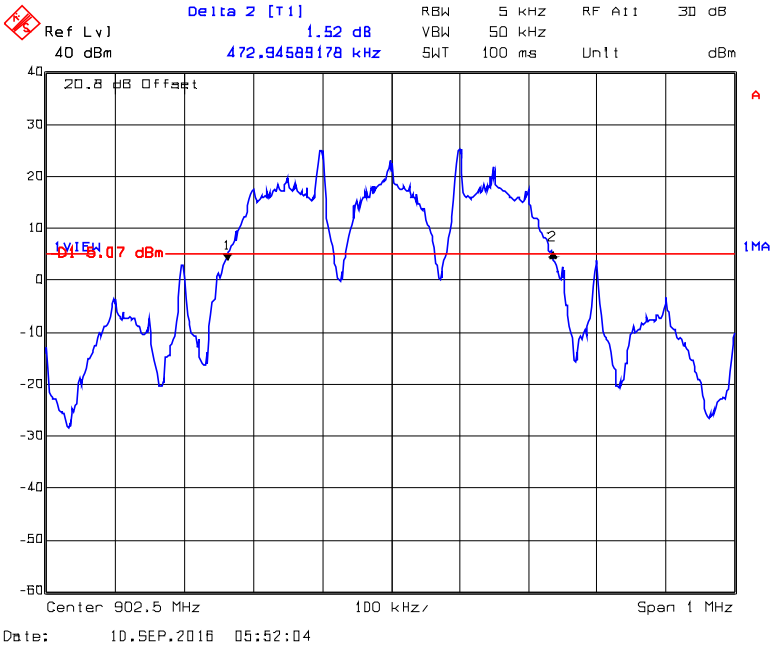
Plot 5.3.4.48. 20 dB Bandwidth, 927.5 MHz, DSSS2, 400 kbps- Right Antenna



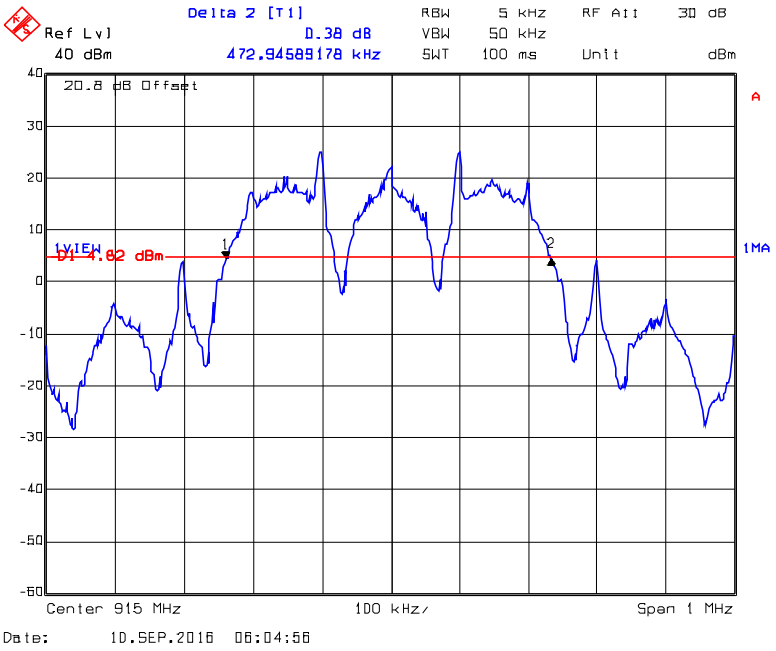
Plot 5.3.4.49. 20 dB Bandwidth, 902.5 MHz, DSSS4, 400 kbps– Left Antenna



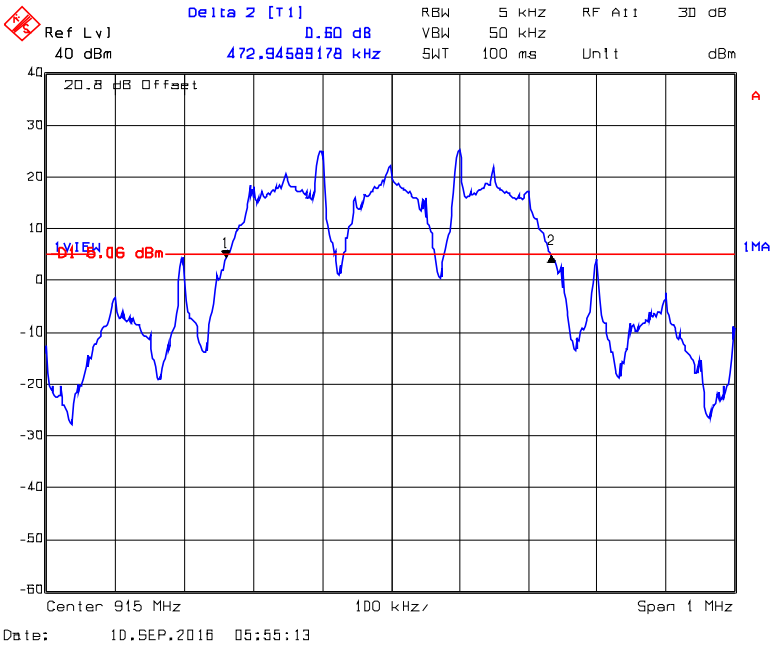
Plot 5.3.4.50. 20 dB Bandwidth, 902.5 MHz, DSSS4, 400 kbps- Right Antenna



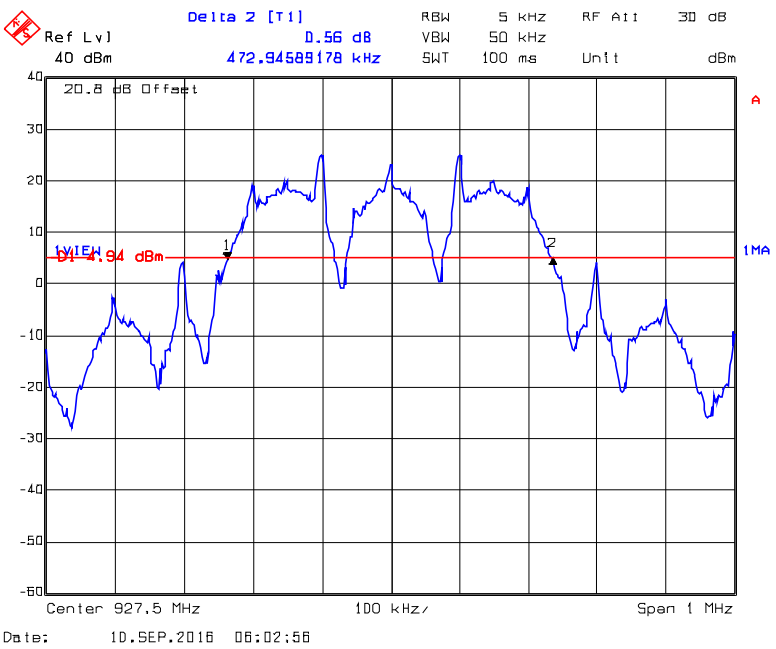
Plot 5.3.4.51. 20 dB Bandwidth, 915.0 MHz, DSSS4, 400 kbps– Left Antenna



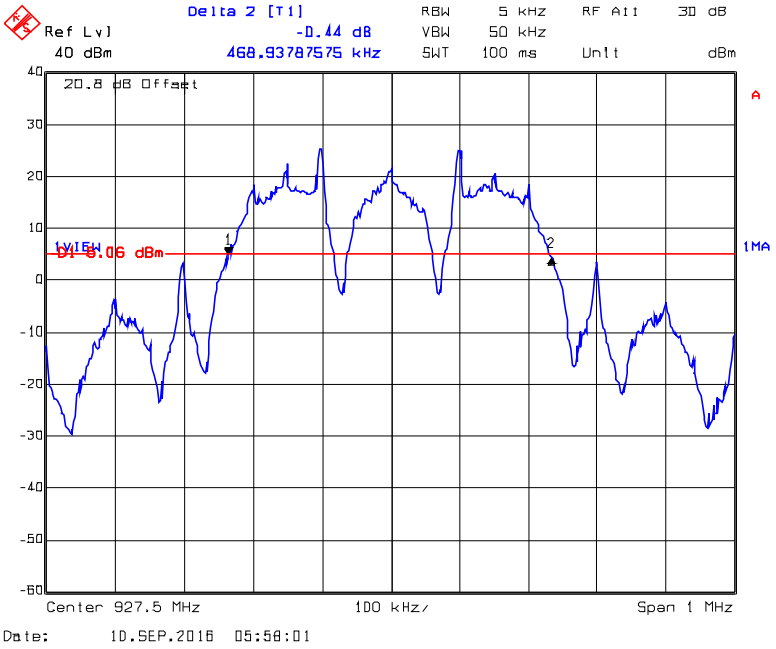
Plot 5.3.4.52. 20 dB Bandwidth, 915.0 MHz, DSSS4, 400 kbps- Right Antenna



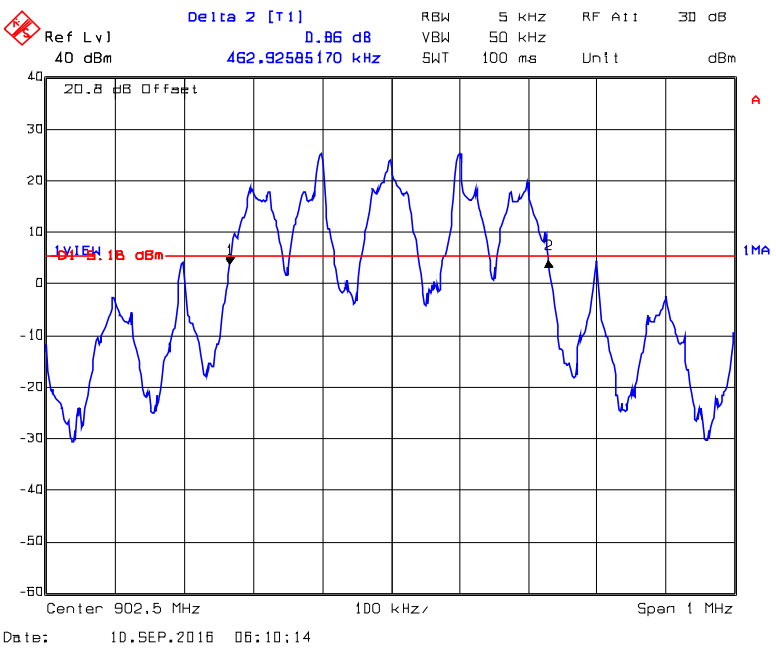
Plot 5.3.4.53. 20 dB Bandwidth, 927.5 MHz, DSSS4, 400 kbps– Left Antenna



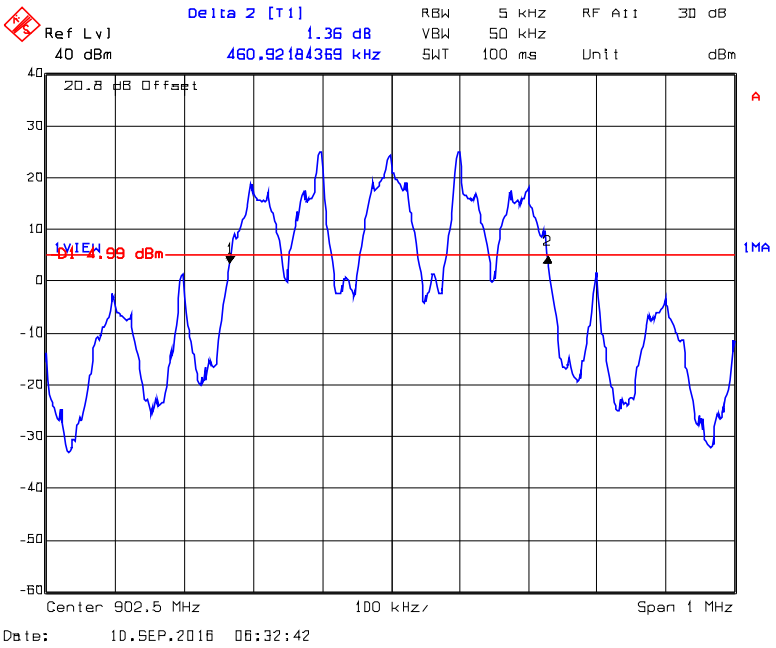
Plot 5.3.4.54. 20 dB Bandwidth, 927.5 MHz, DSSS4, 400 kbps- Right Antenna



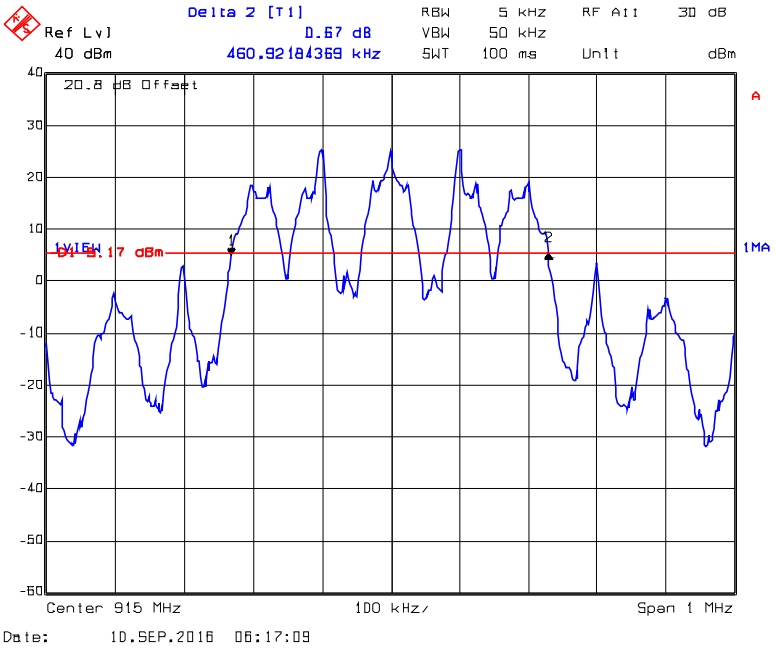
Plot 5.3.4.55. 20 dB Bandwidth, 902.5 MHz, DSSS8, 400 kbps– Left Antenna



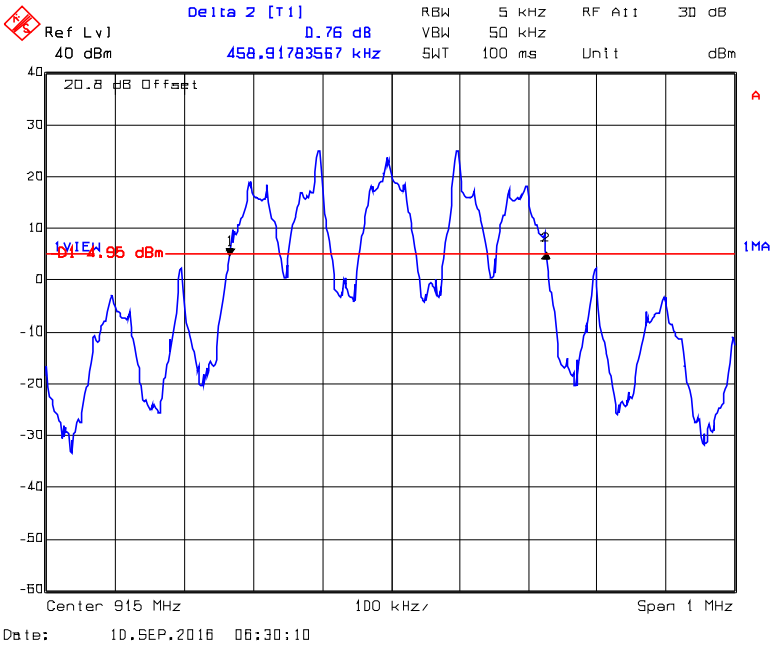
Plot 5.3.4.56. 20 dB Bandwidth, 902.5 MHz, DSSS8, 400 kbps- Right Antenna



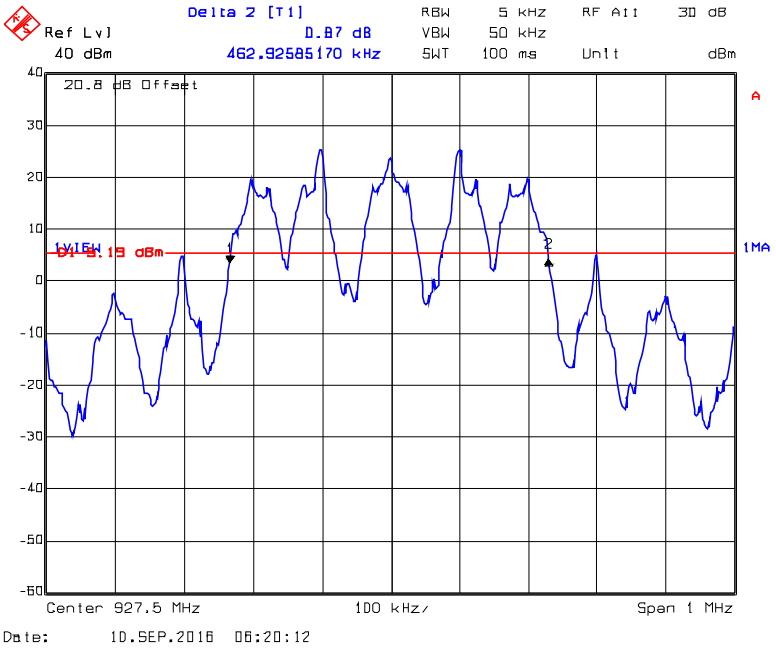
Plot 5.3.4.57. 20 dB Bandwidth, 915.0 MHz, DSSS8, 400 kbps– Left Antenna



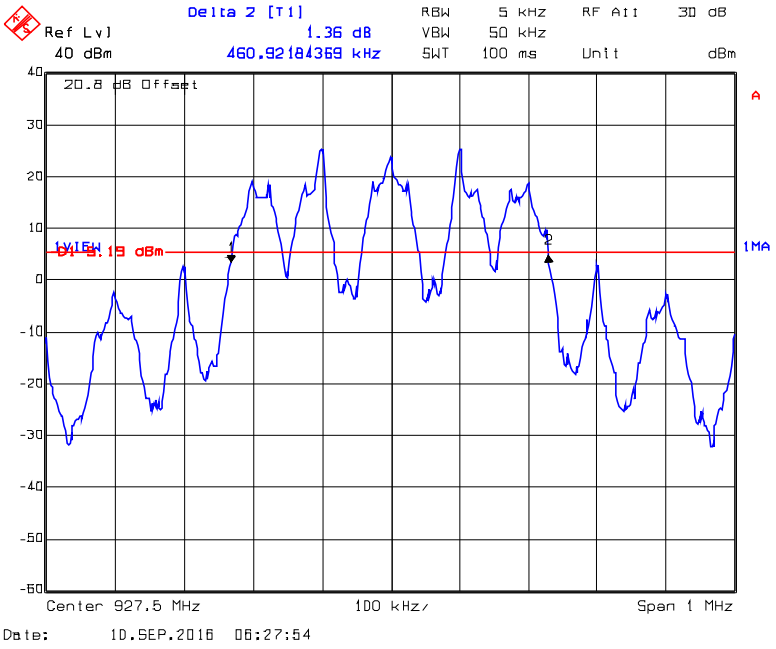
Plot 5.3.4.58. 20 dB Bandwidth, 915.0 MHz, DSSS8, 400 kbps- Right Antenna



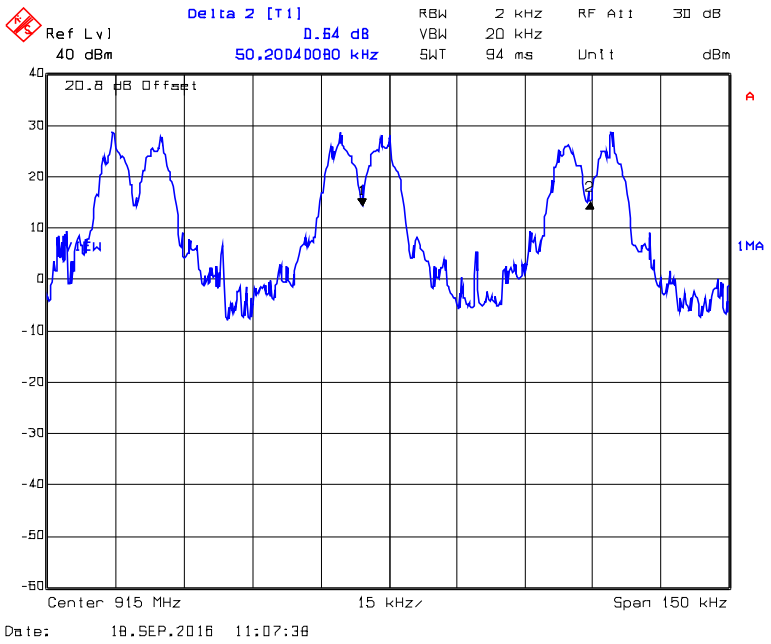
Plot 5.3.4.59. 20 dB Bandwidth, 927.5 MHz, DSSS8, 400 kbps – Left Antenna



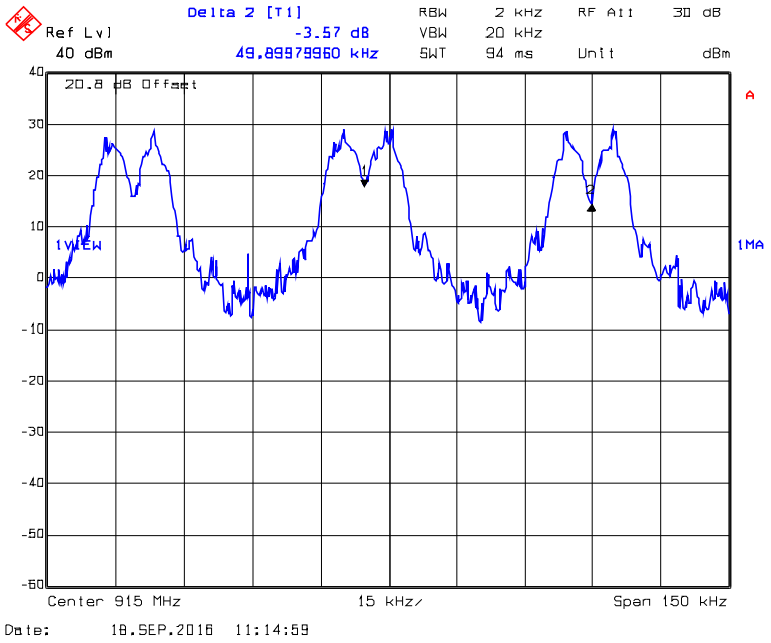
Plot 5.3.4.60. 20 dB Bandwidth, 927.5 MHz, DSSS8, 400 kbps- Right Antenna



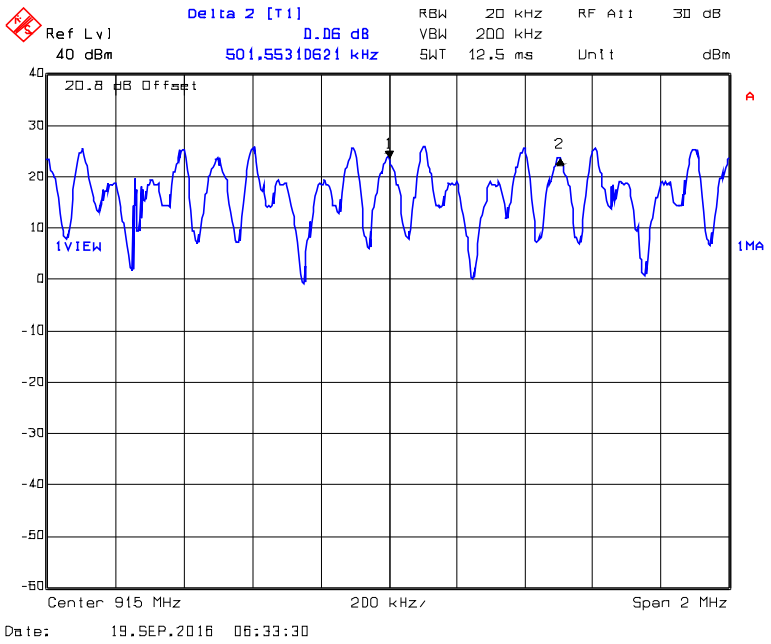
Plot 5.3.4.61. Carrier Frequency Separation, GFSK DSSS8, 10 kbps – Left Antenna



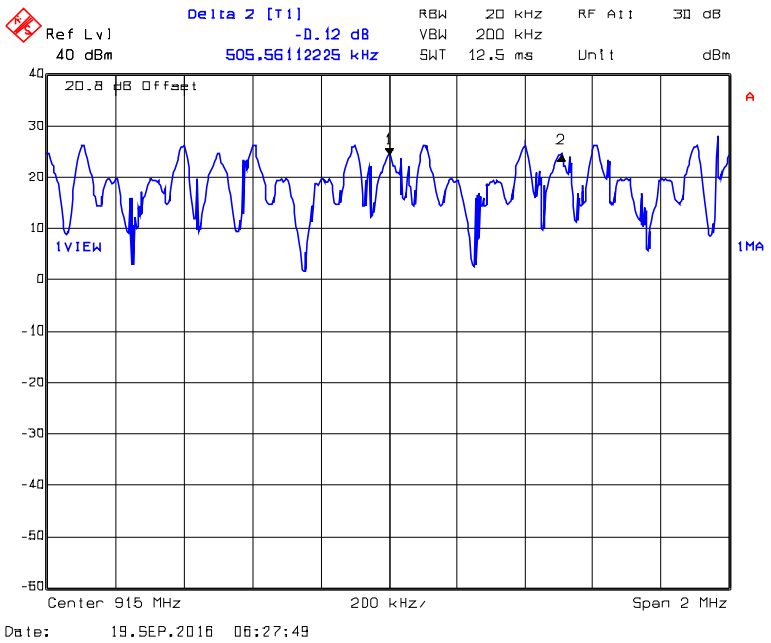
Plot 5.3.4.62. Carrier Frequency Separation, GFSK DSSS8, 10 kbps –Right Antenna



Plot 5.3.4.63. Carrier Frequency Separation, GFSK DSSS8, 400 kbps- Left Antenna

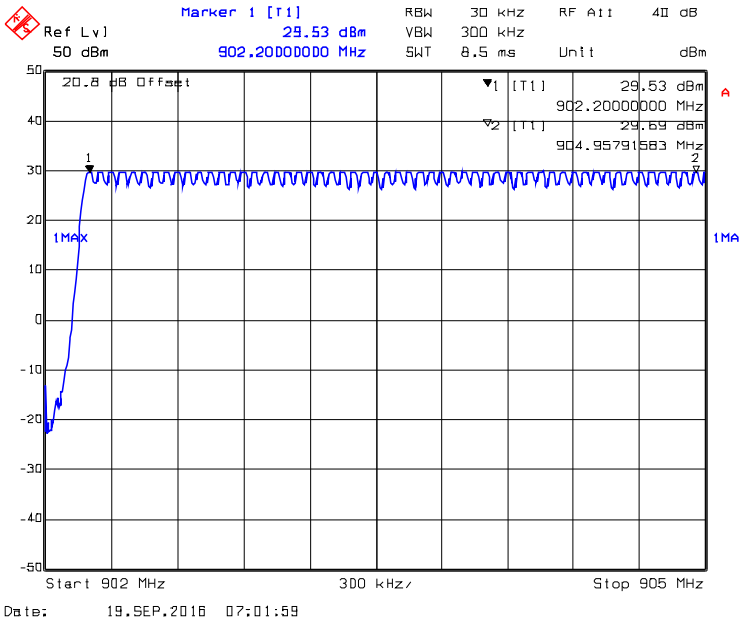


Plot 5.3.4.64. Carrier Frequency Separation, GFSK DSSS8, 400 kbps- Right Antenna

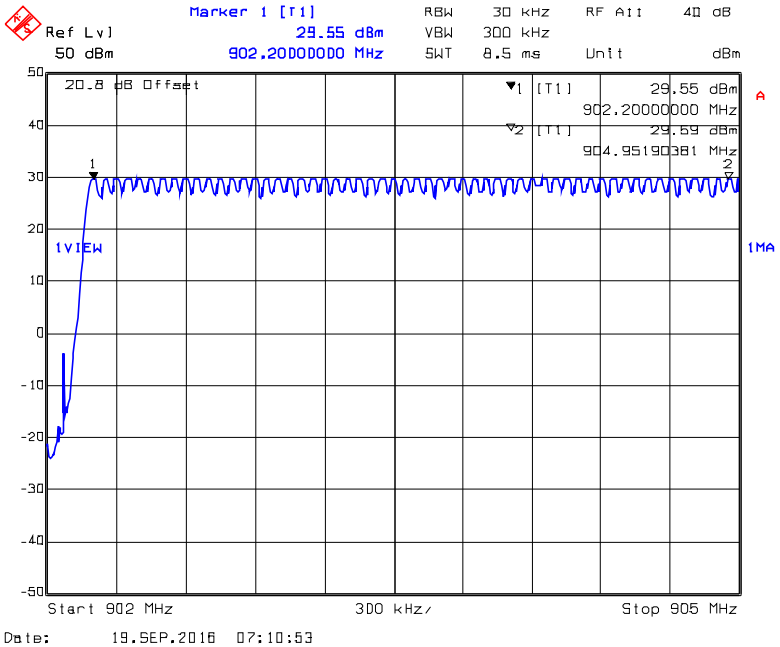


Plot 5.3.4.65. Number of Hopping Frequencies, DSSS8, 10 kbps
56 Hopping Channels from 902 – 904.95 MHz

Left Antenna

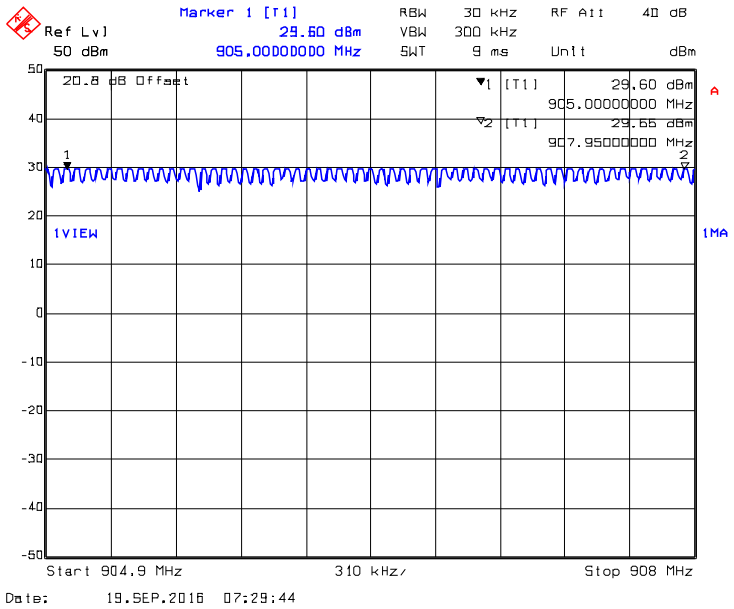


Right Antenna

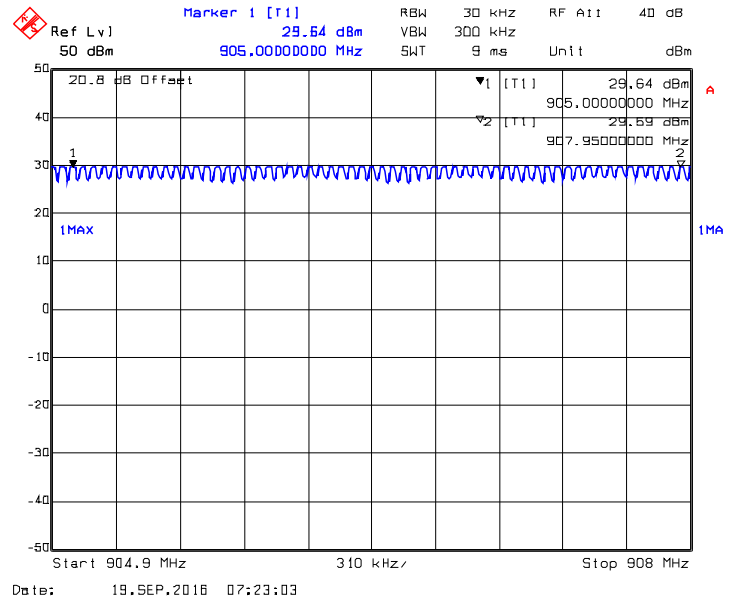


Plot 5.3.4.66. Number of Hopping Frequencies, DSSS8, 10 kbps
60 Hopping Channels from 905 – 908 MHz

Left Antenna

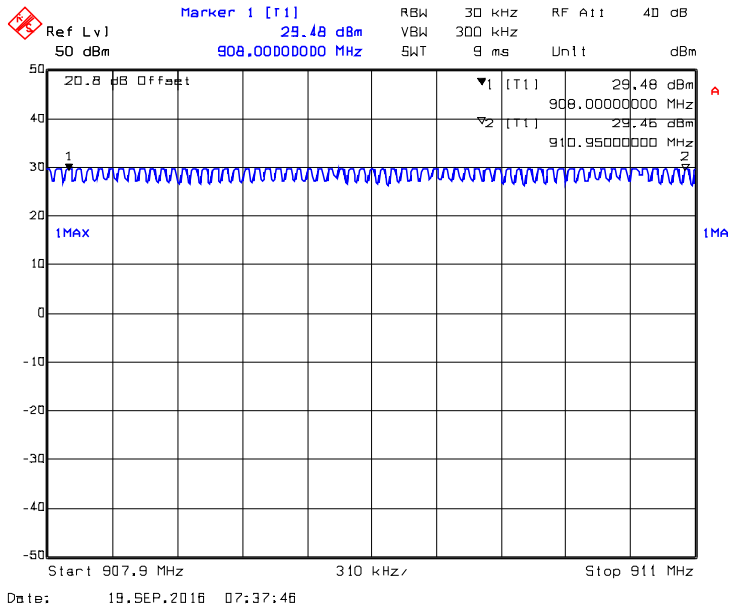


Right Antenna

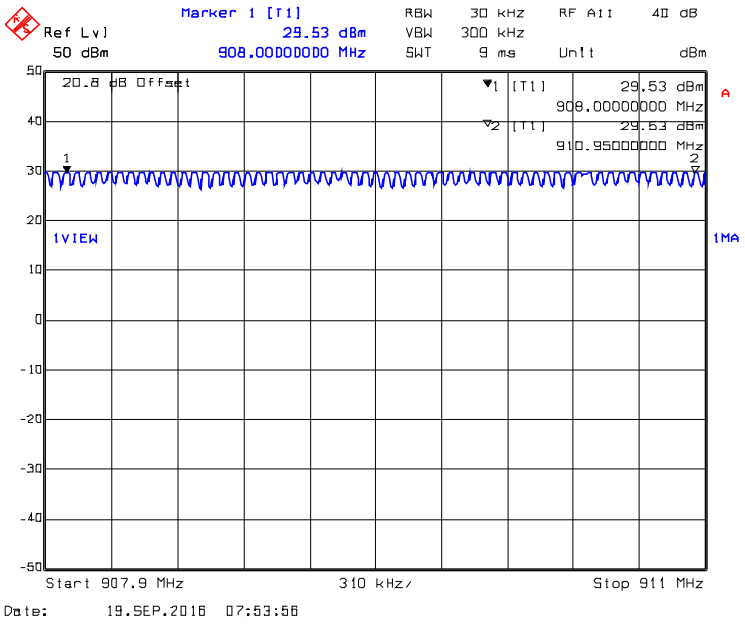


Plot 5.3.4.67. Number of Hopping Frequencies, DSSS8, 10 kbps
60 Hopping Channels from 908 - 911 MHz

Left Antenna

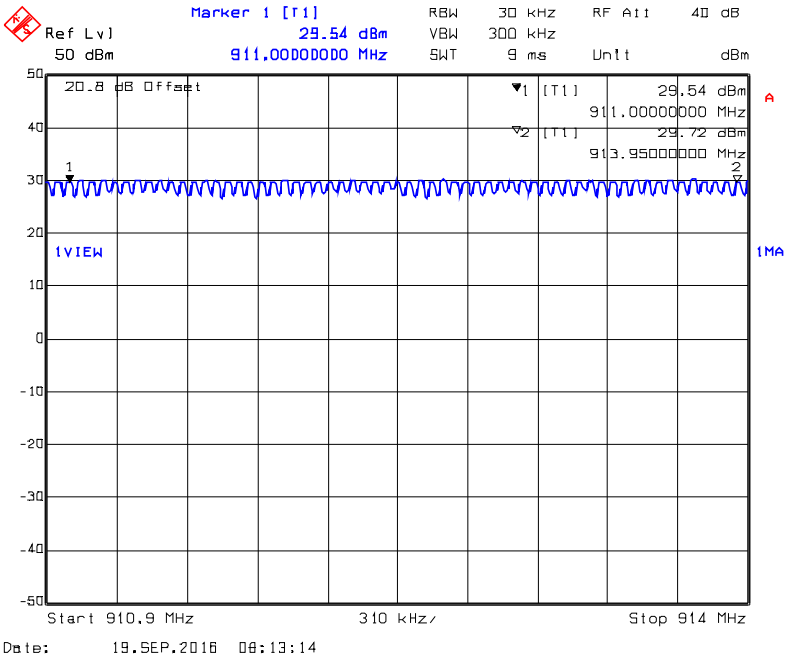


Right Antenna

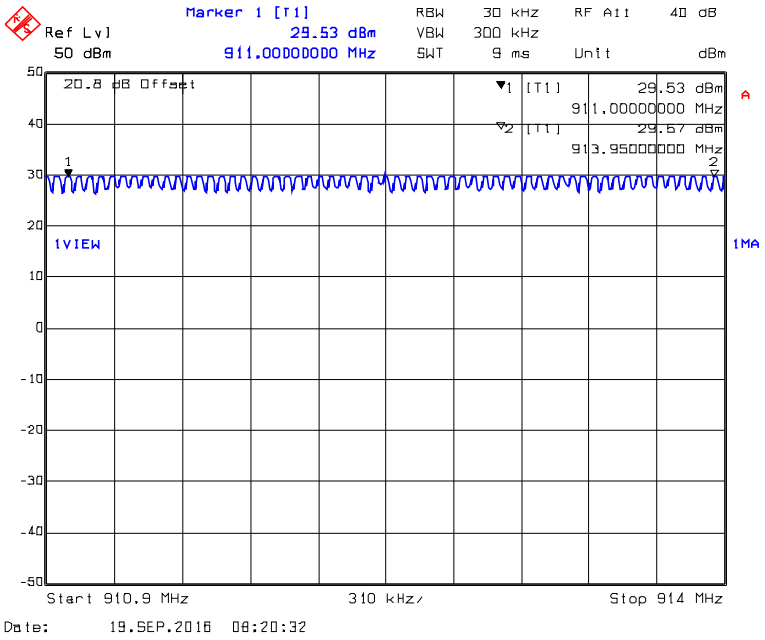


Plot 5.3.4.68. Number of Hopping Frequencies, DSSS8, 10 kbps
60 Hopping Channels from 911 – 914 MHz

Left Antenna

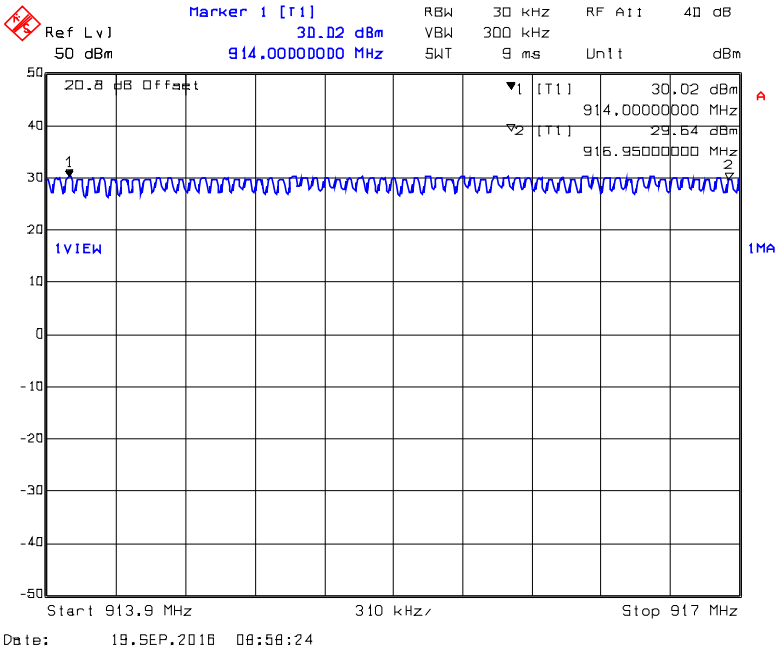


Right Antenna

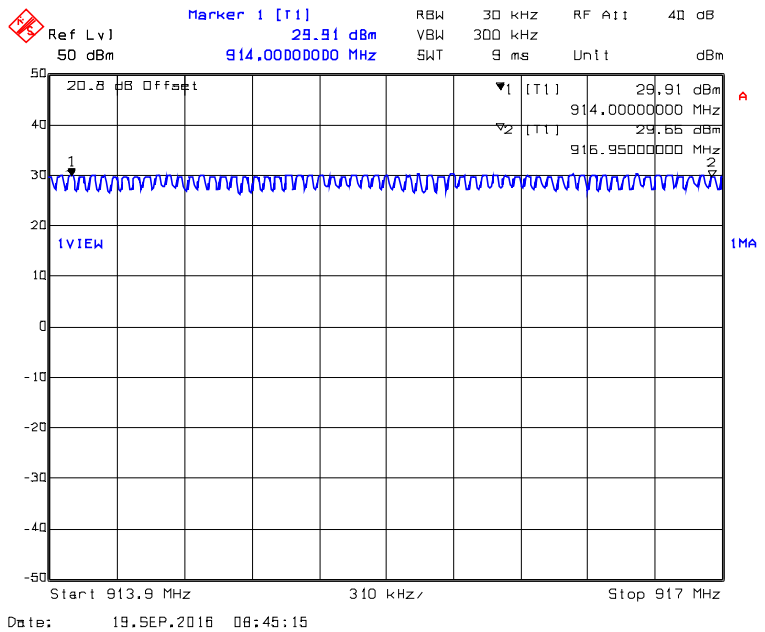


Plot 5.3.4.69. Number of Hopping Frequencies, DSSS8, 10 kbps
60 Hopping Channels from 914 – 917 MHz

Left Antenna

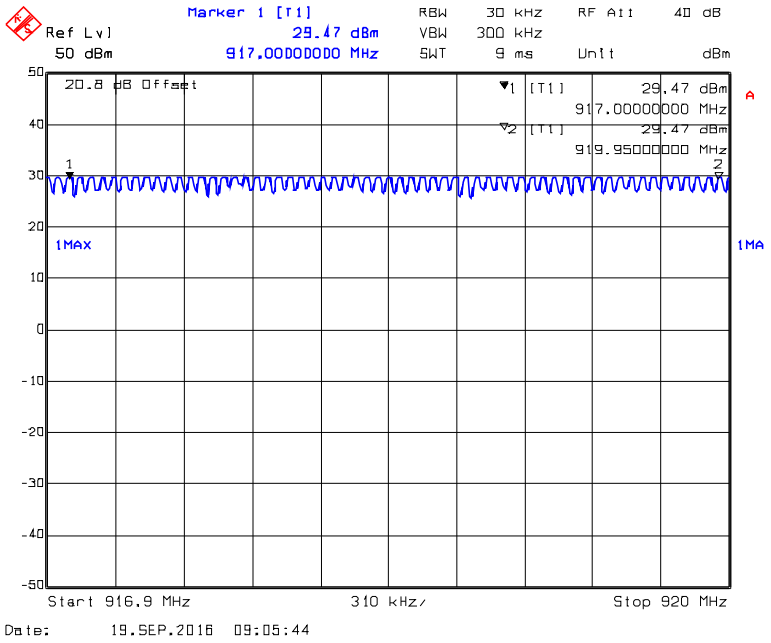


Right Antenna

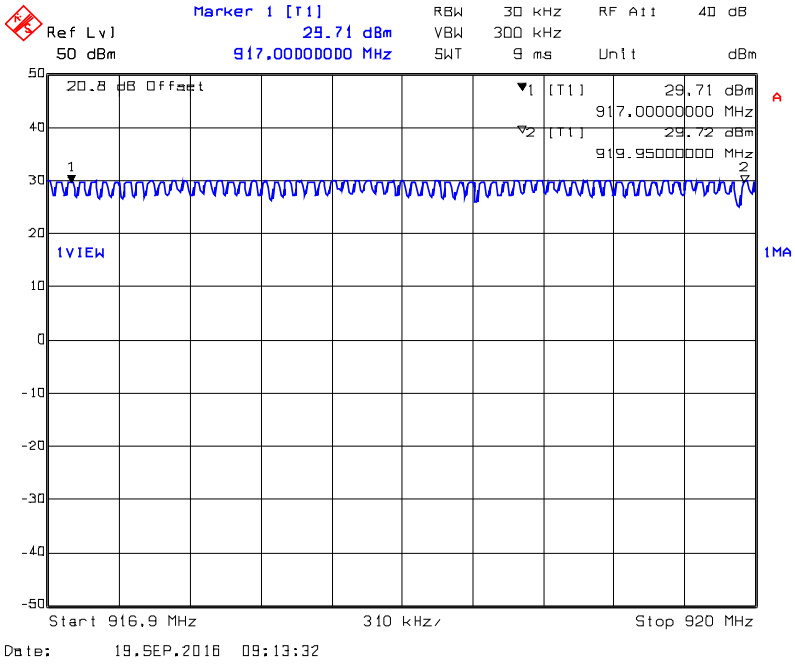


Plot 5.3.4.70. Number of Hopping Frequencies, DSSS8, 10 kbps
60 Hopping Channels from 917 – 920 MHz

Left Antenna

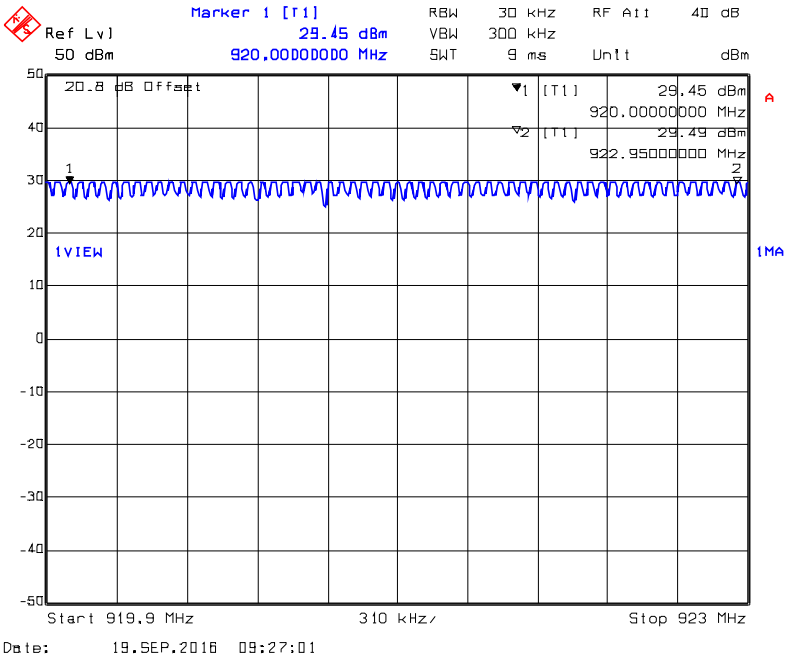


Right Antenna

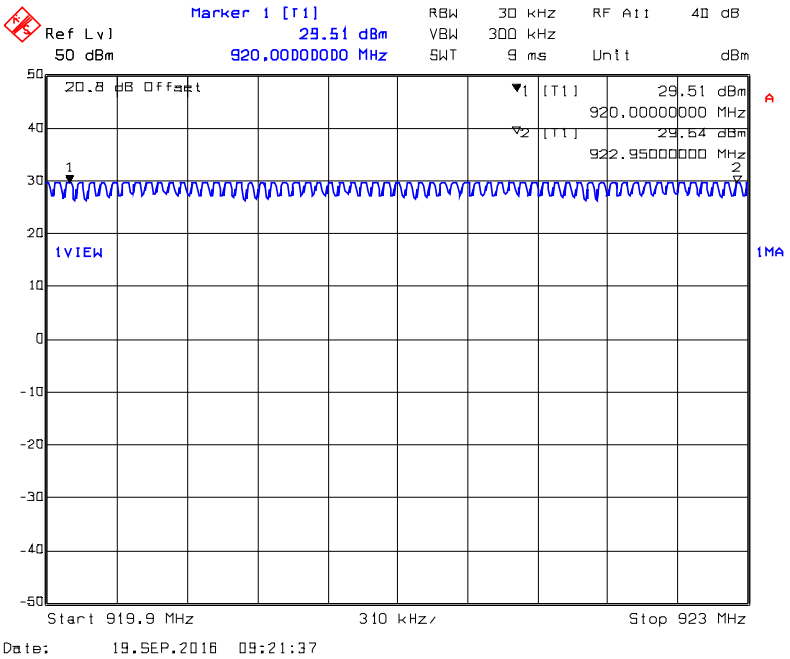


Plot 5.3.4.71. Number of Hopping Frequencies, DSSS8, 10 kbps
60 Hopping Channels from 920 – 923 MHz

Left Antenna

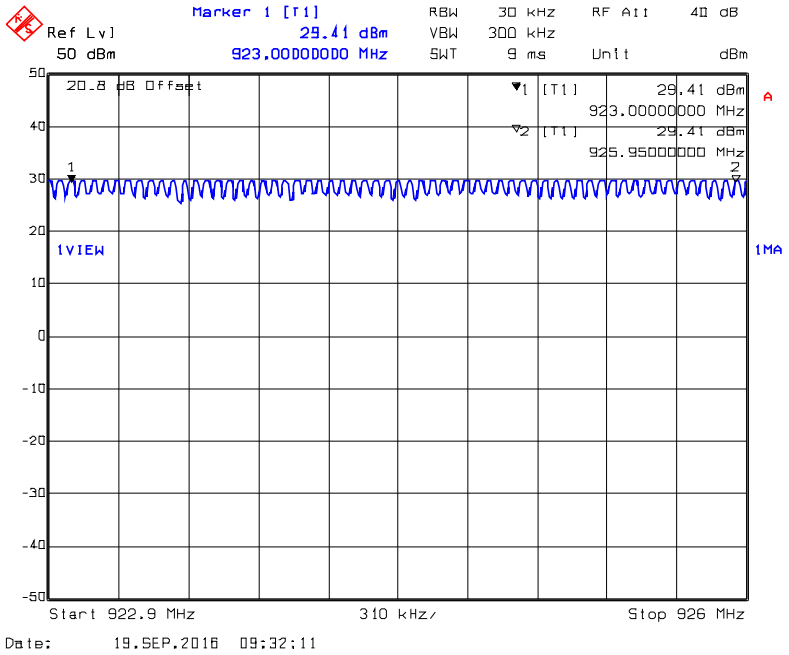


Right Antenna

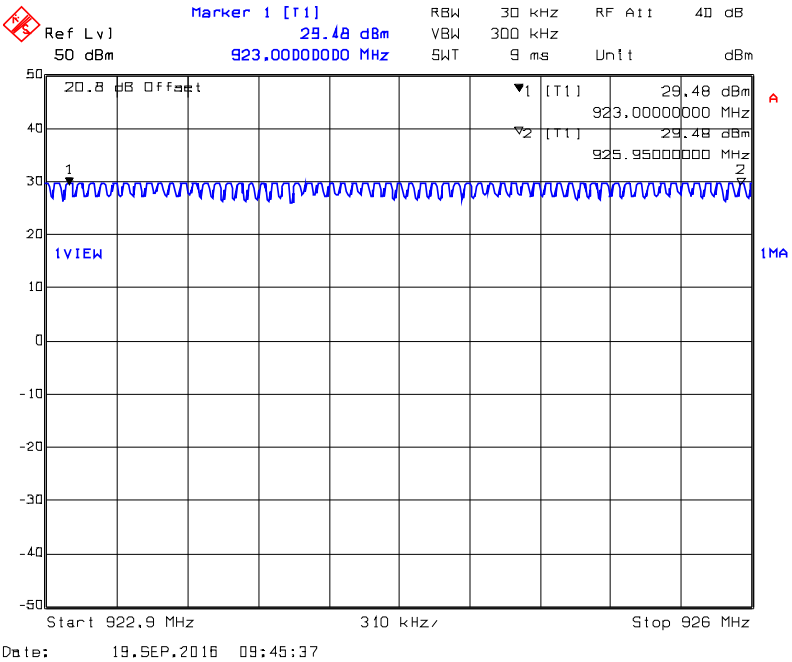


Plot 5.3.4.72. Number of Hopping Frequencies, DSSS8, 10 kbps
60 Hopping Channels from 923 – 926 MHz

Left Antenna

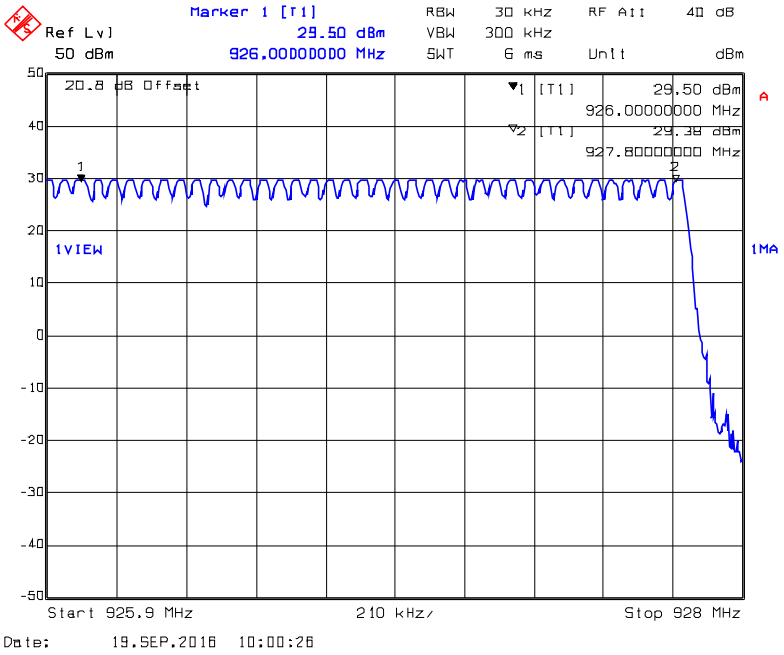


Right Antenna

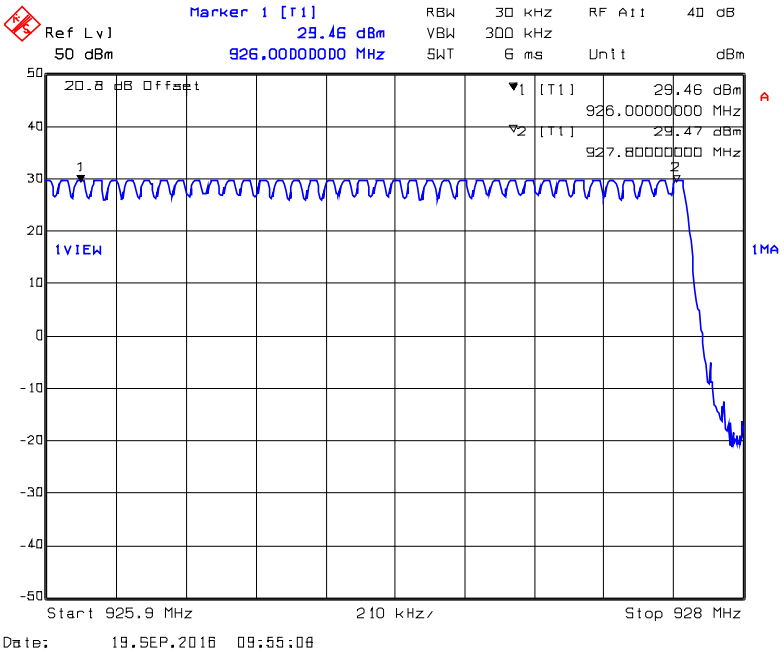


Plot 5.3.4.73. Number of Hopping Frequencies, DSSS8, 10 kbps
37 Hopping Channels from 926 – 927.8 MHz

Left Antenna

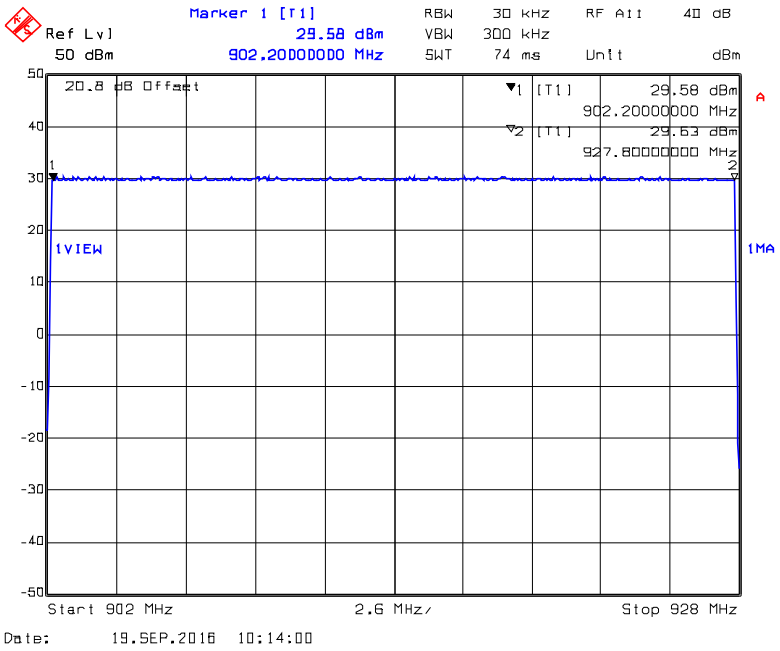


Right Antenna

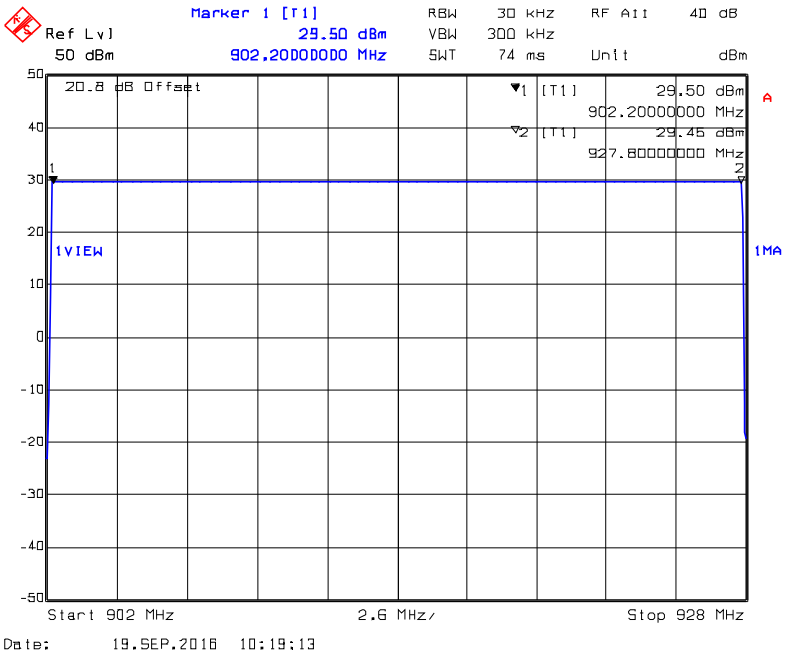


Plot 5.3.4.74. Total Number of Hopping Frequencies, DSSS8, 10 kbps
513 Hopping Channels from 902 – 928 MHz (56+ 7x60 +37 = 513)

Left Antenna

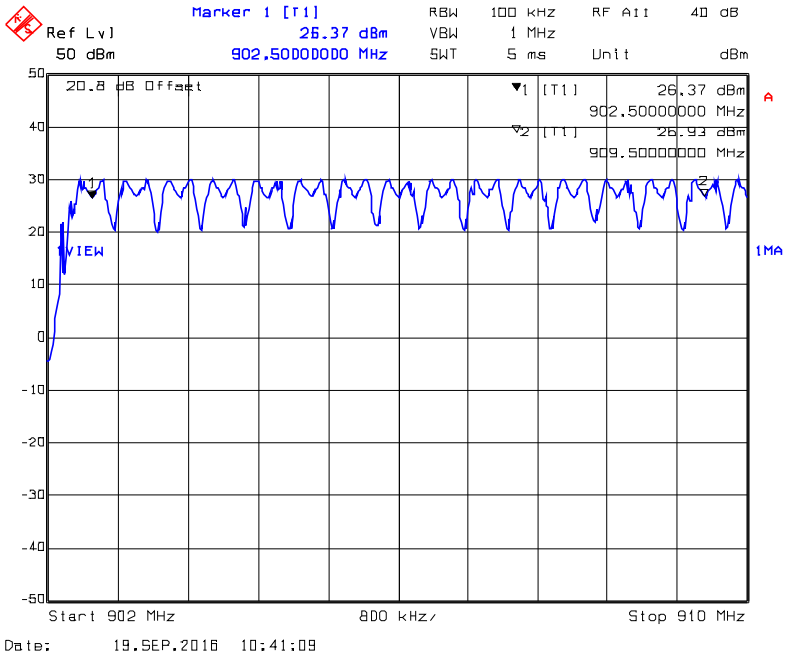


Right Antenna

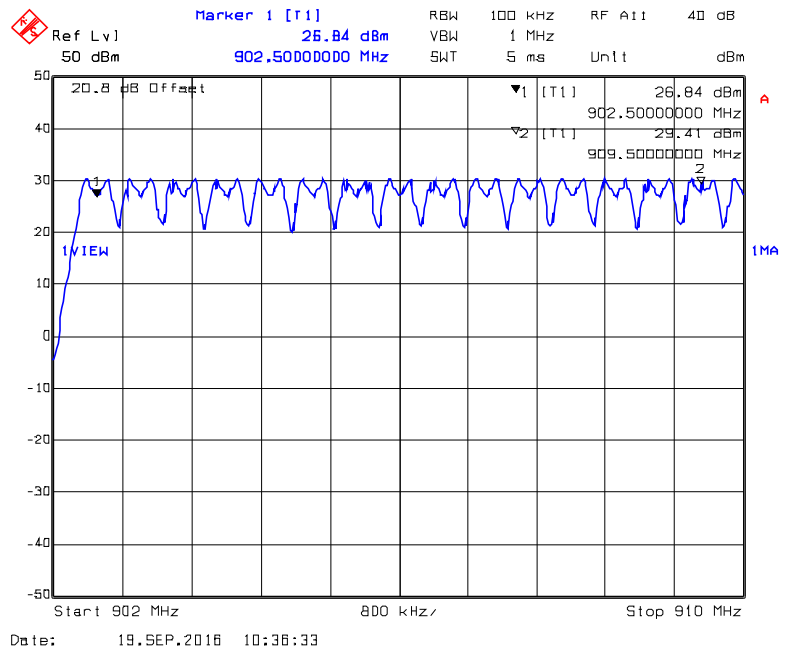


Plot 5.3.4.75. Number of Hopping Frequencies, DSSS8, 400 kbps
15 Hopping Channels from 902.5 – 909.5 MHz

Left Antenna

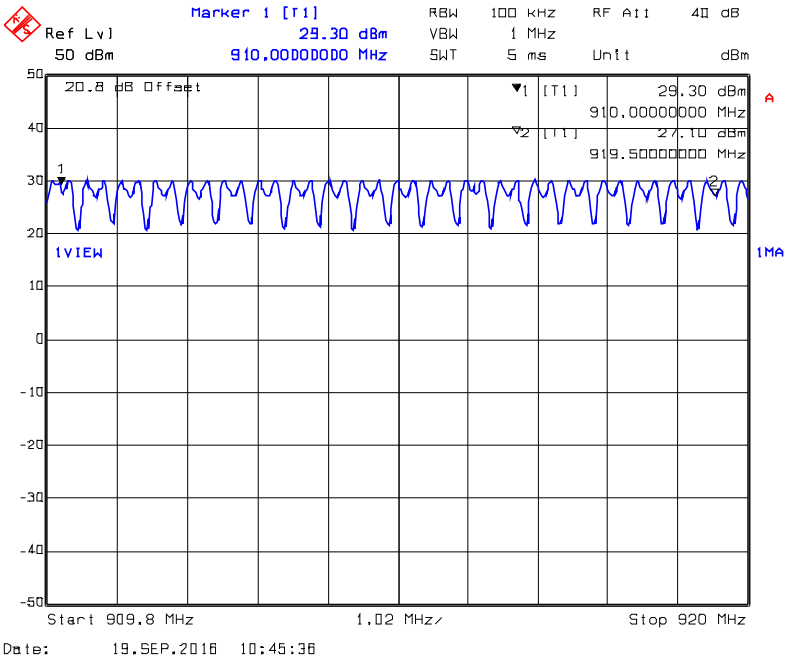


Right Antenna

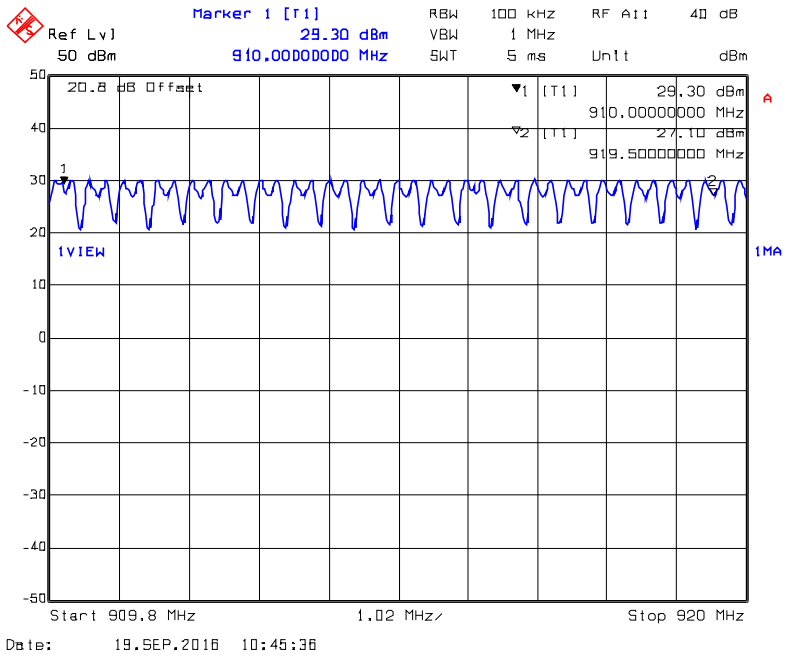


Plot 5.3.4.76. Number of Hopping Frequencies, DSSS8, 400 kbps
20 Hopping Channels from 910 – 919.5 MHz

Left Antenna

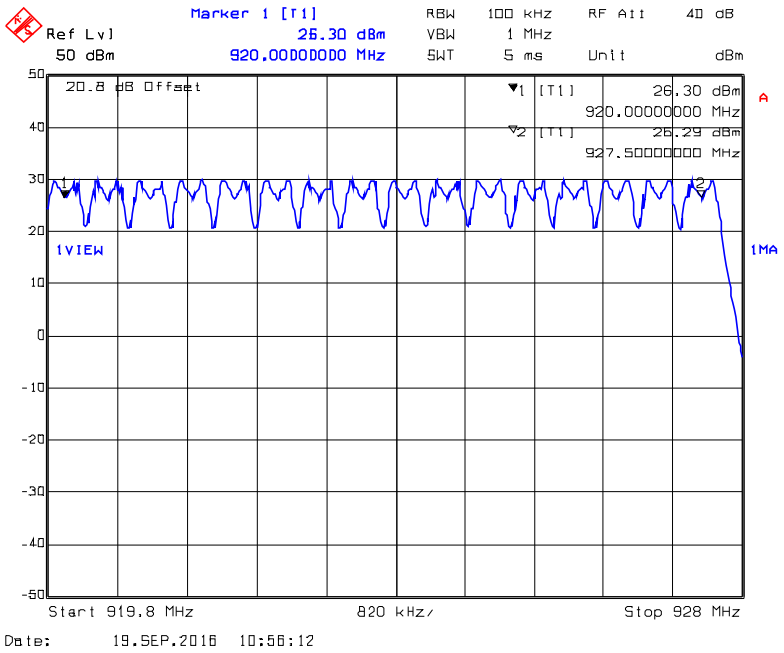


Right Antenna

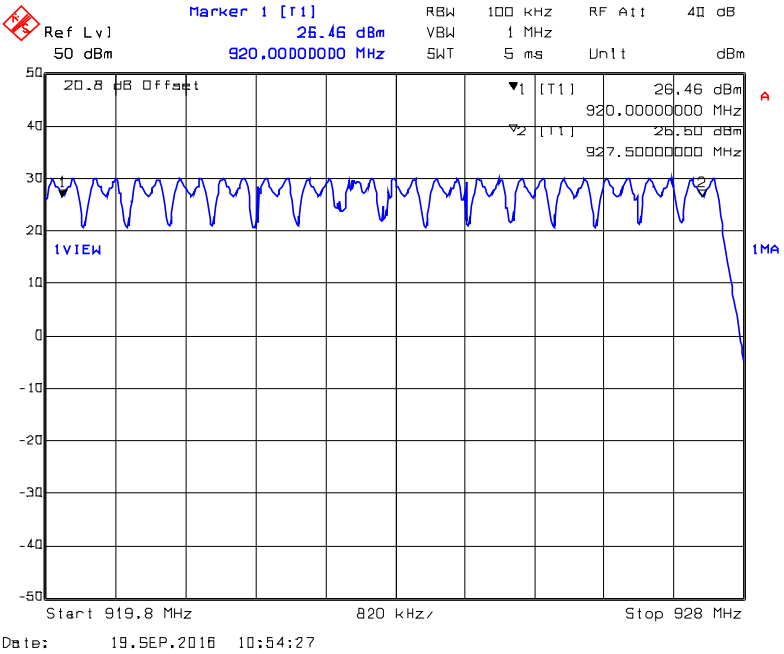


Plot 5.3.4.77. Number of Hopping Frequencies, DSSS8, 400 kbps
16 Hopping Channels from 920 – 927.5 MHz

Left Antenna

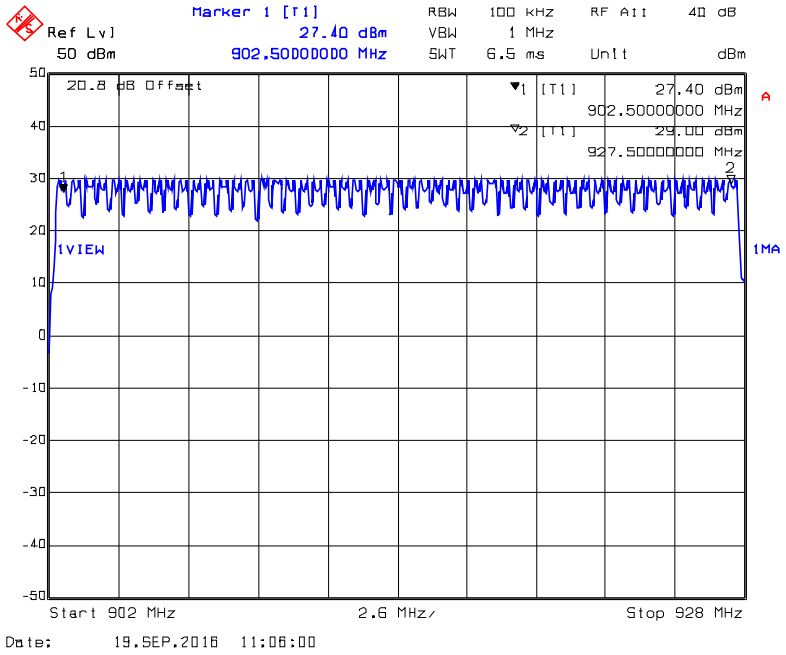


Right Antenna

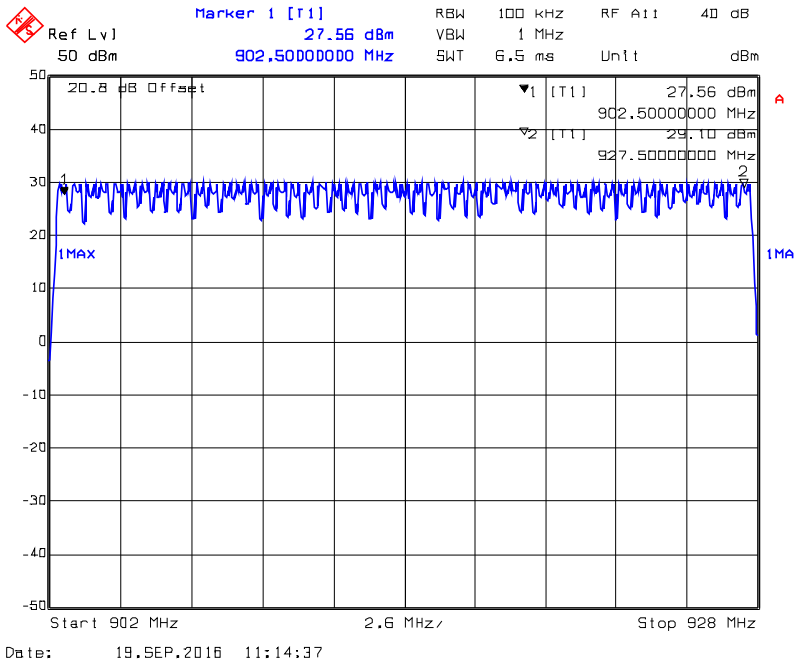


Plot 5.3.4.78. Total Number of Hopping Frequencies, DSSS8, 400 kbps
51 Hopping Channels from 902 – 928 MHz (15+20+16 = 51)

Left Antenna

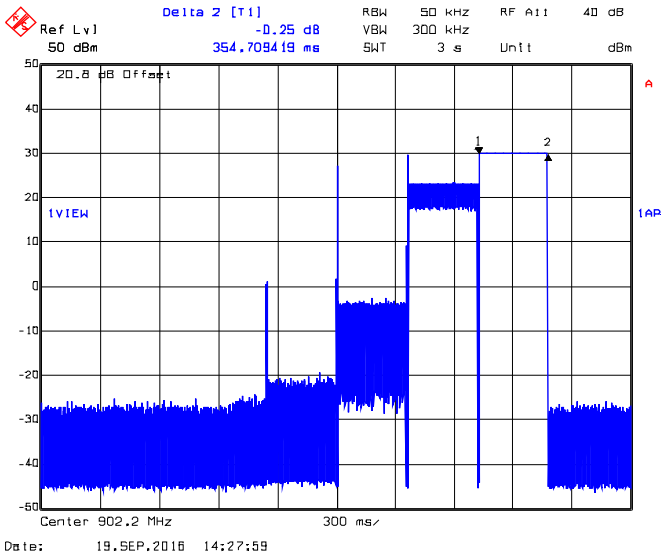


Right Antenna

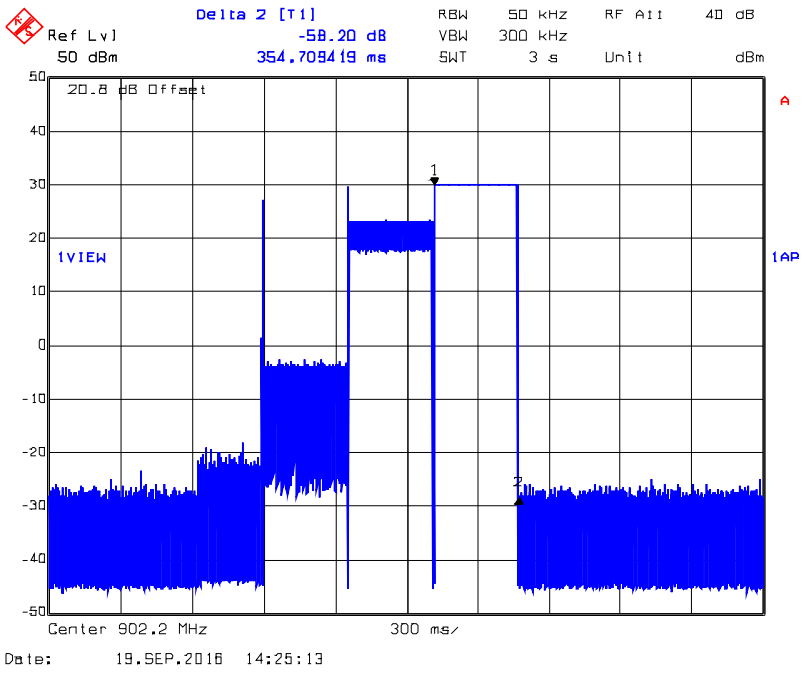


Plot 5.3.4.79. Time of Occupancy, 902.2 MHz, DSSS8, 10 kbps
Dwell Time @ 902.2 MHz = 354.71ms

Left Antenna

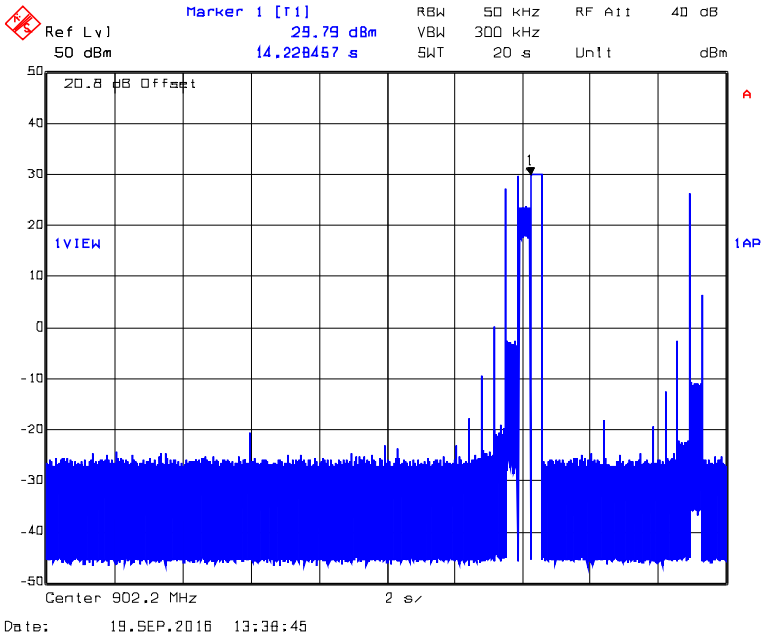


Right Antenna

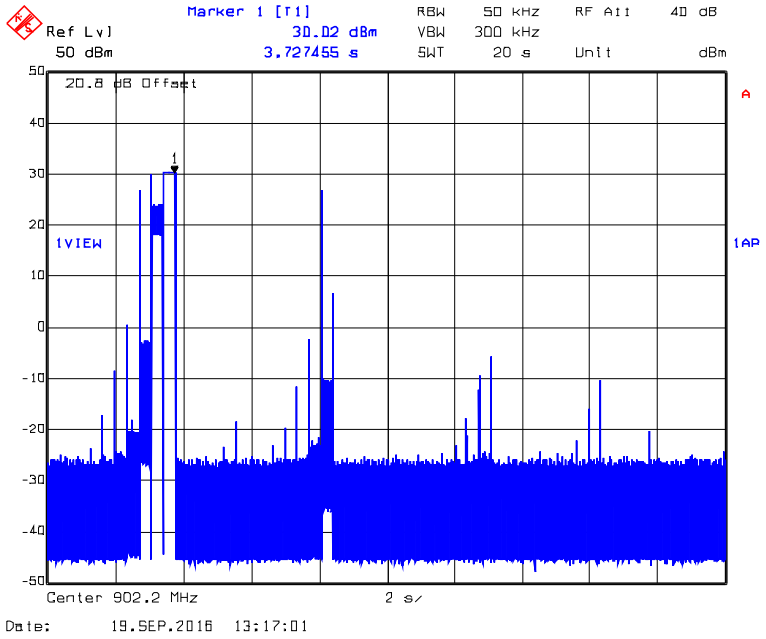


Plot 5.3.4.80. Time of Occupancy, 902.2 MHz DSSS8, 10 kbps
Average time of occupancy = 1 x (T on) in 20s = 1*354.71 = 354.71ms < 400ms

Left Antenna

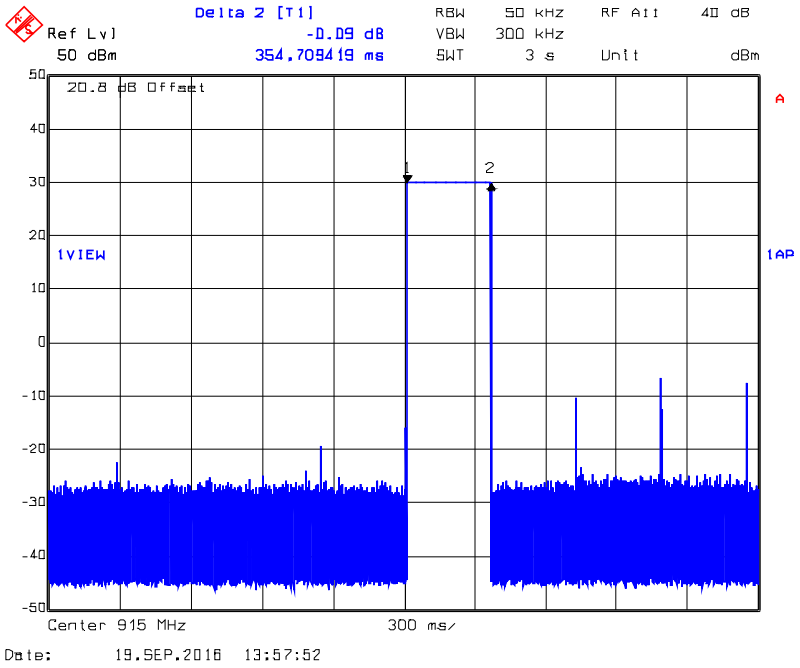


Right Antenna

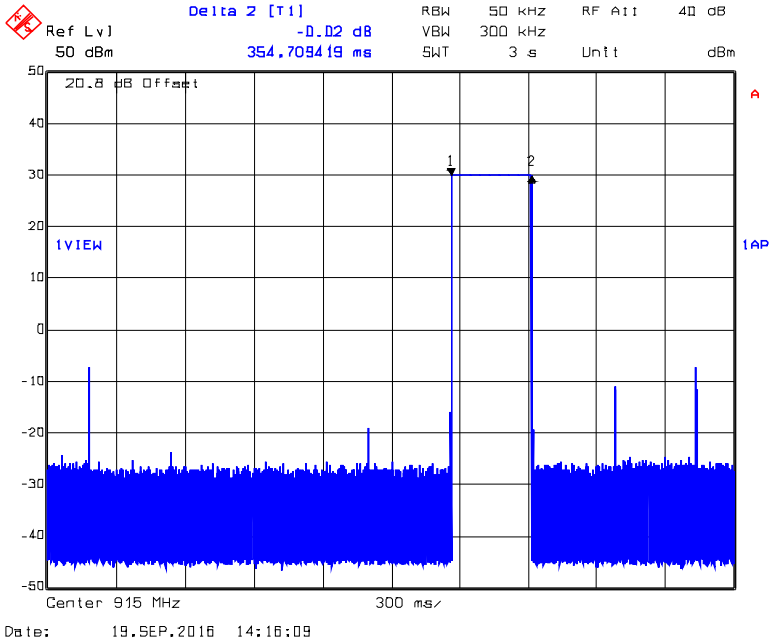


Plot 5.3.4.81. Time of Occupancy, 915 MHz, DSSS8, 10 kbps
Dwell Time @ 915 MHz = 354.71 ms

Left Antenna

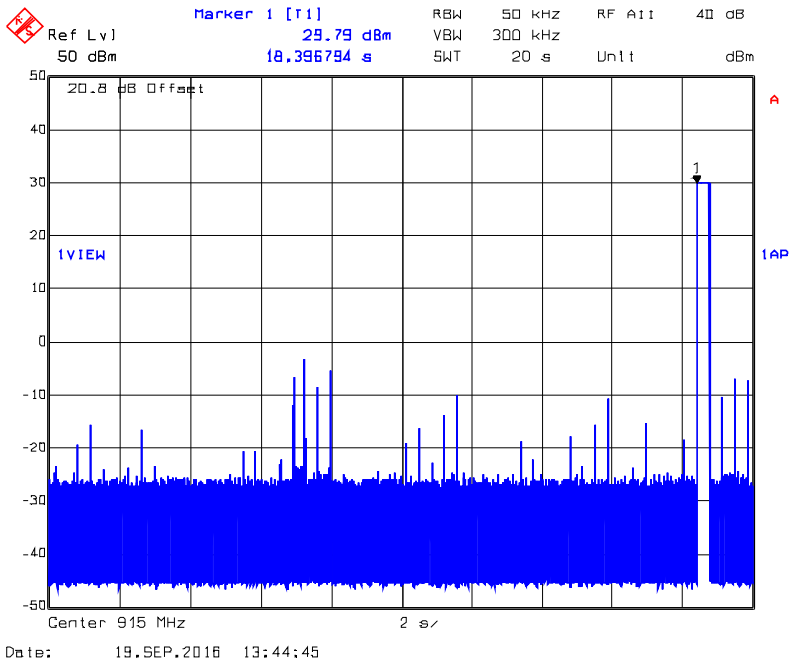


Right Antenna

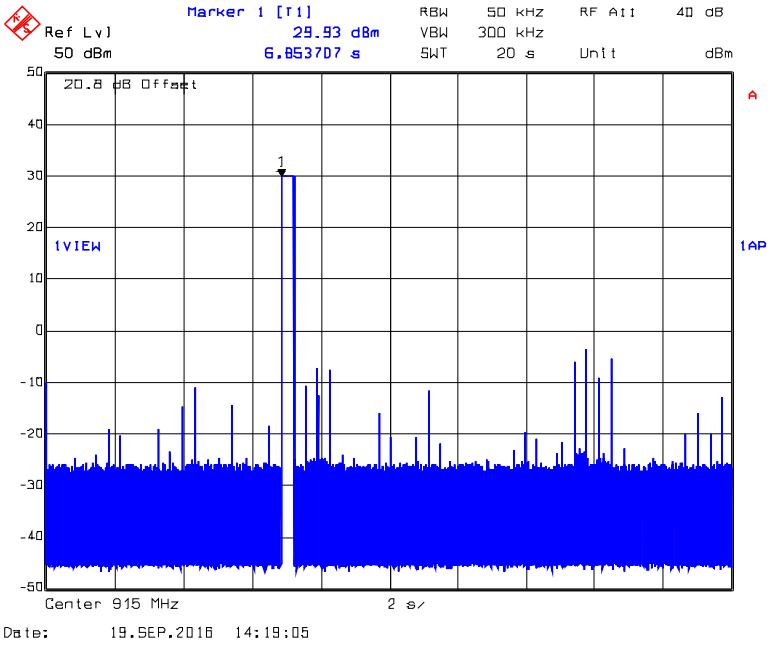


Plot 5.3.4.82. Time of Occupancy, 915 MHz DSSS8, 10 kbps
Average time of occupancy = 1 x (T on) in 20s = 1*354.71ms = 354.71 < 400ms

Left Antenna

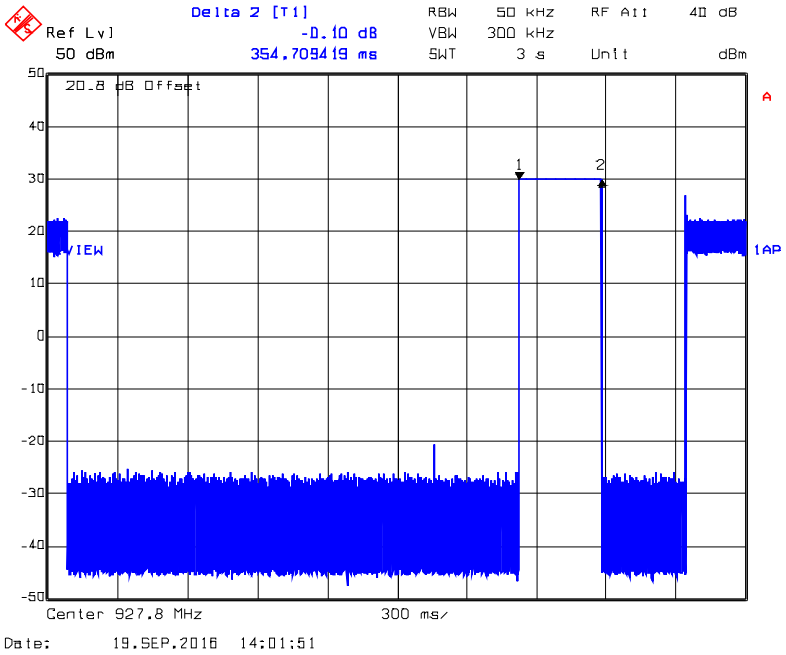


Right Antenna

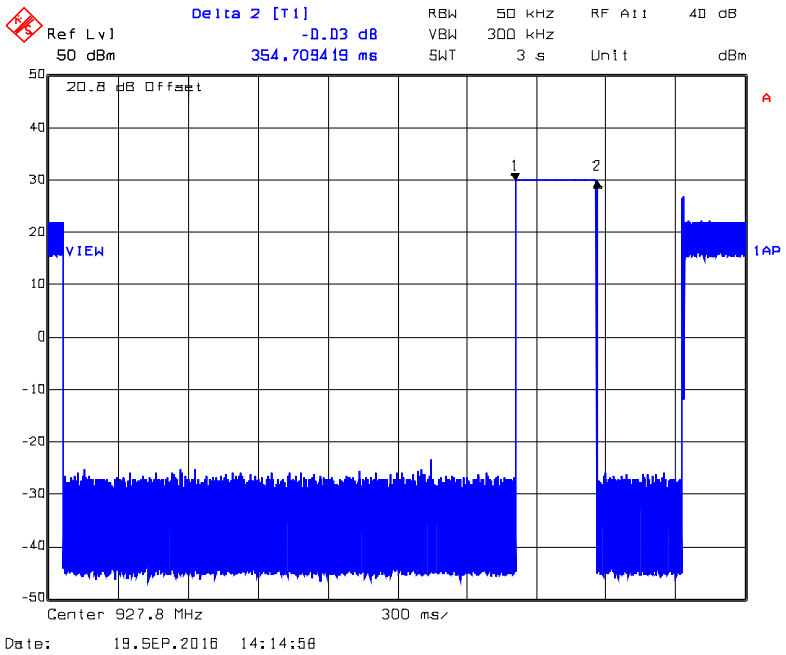


Plot 5.3.4.83. Time of Occupancy, 927.8 MHz, DSSS8, 10 kbps
Dwell Time @ 927.8 MHz = 354.71 ms

Left Antenna

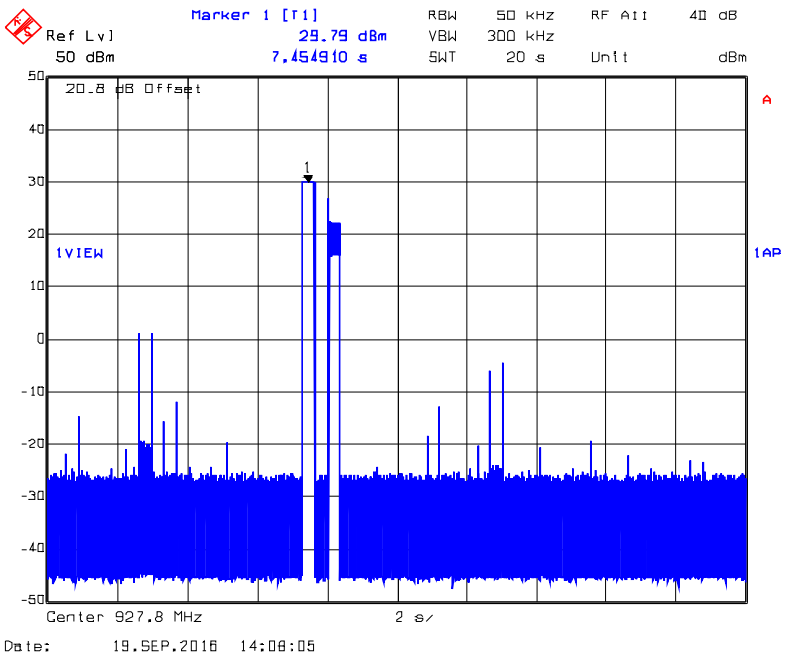


Right Antenna

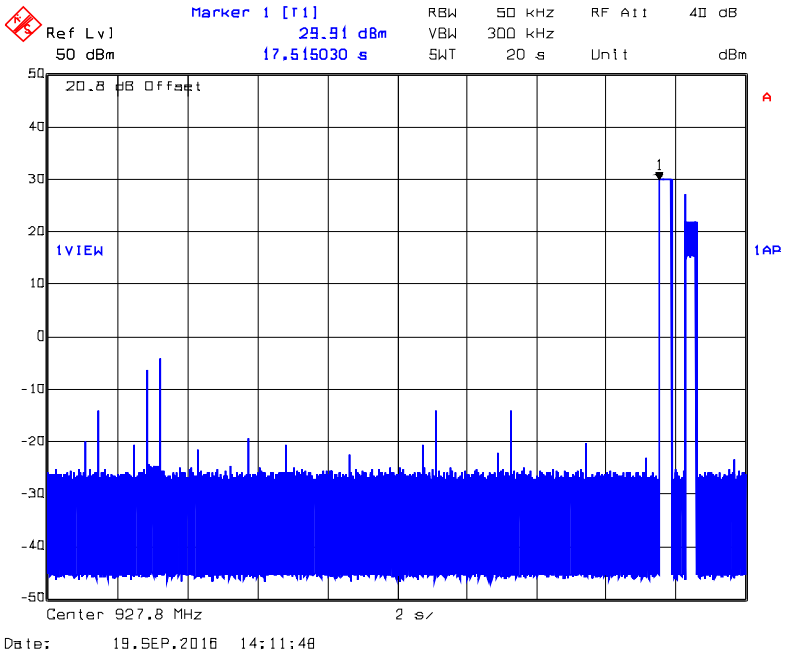


Plot 5.3.4.84. Time of Occupancy, 927.8 MHz DSSS8, 10 kbps
Average time of occupancy = 1 x (T on) in 20s = 1*354.71 ms = 354.71 ms < 400ms

Left Antenna

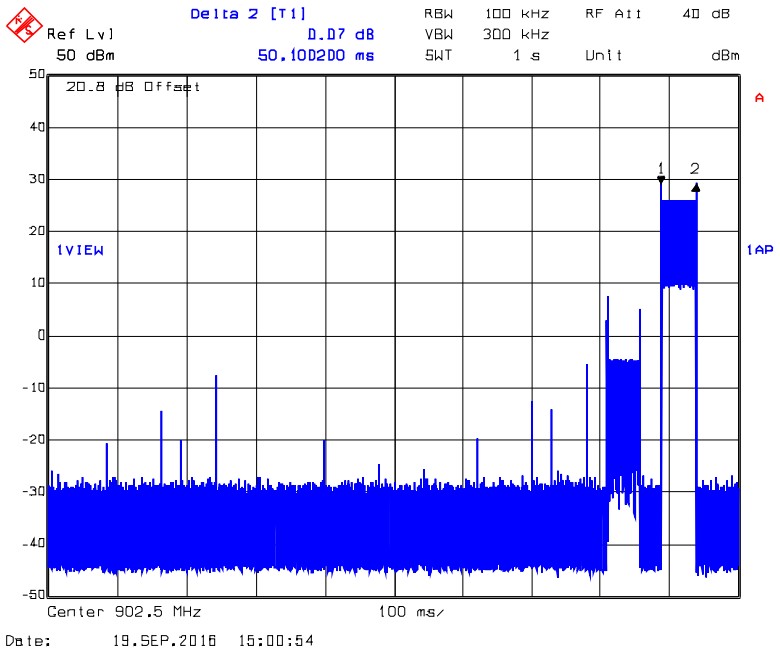


Right Antenna

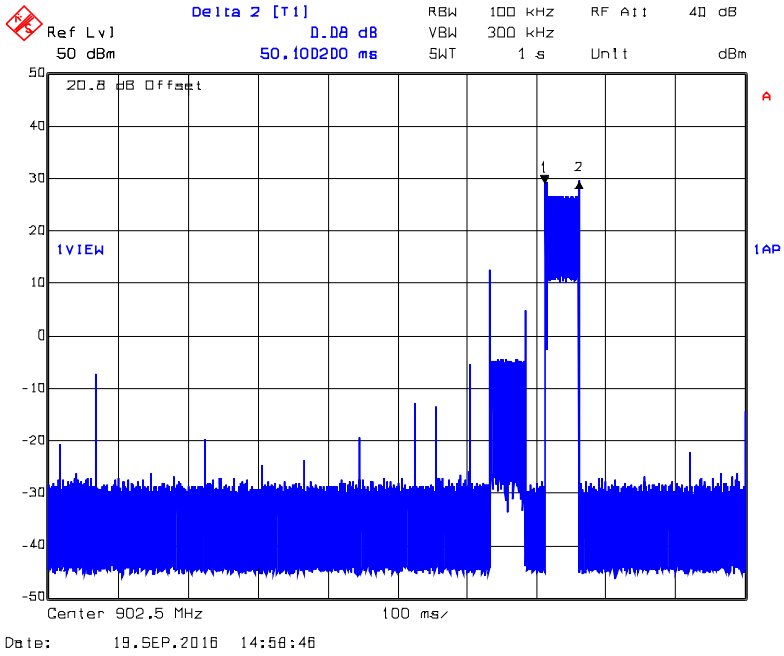


Plot 5.3.4.85. Time of Occupancy, 902.5 MHz, DSSS8, 400 kbps
Dwell Time @ 902.5 MHz = 50.1 ms

Left Antenna

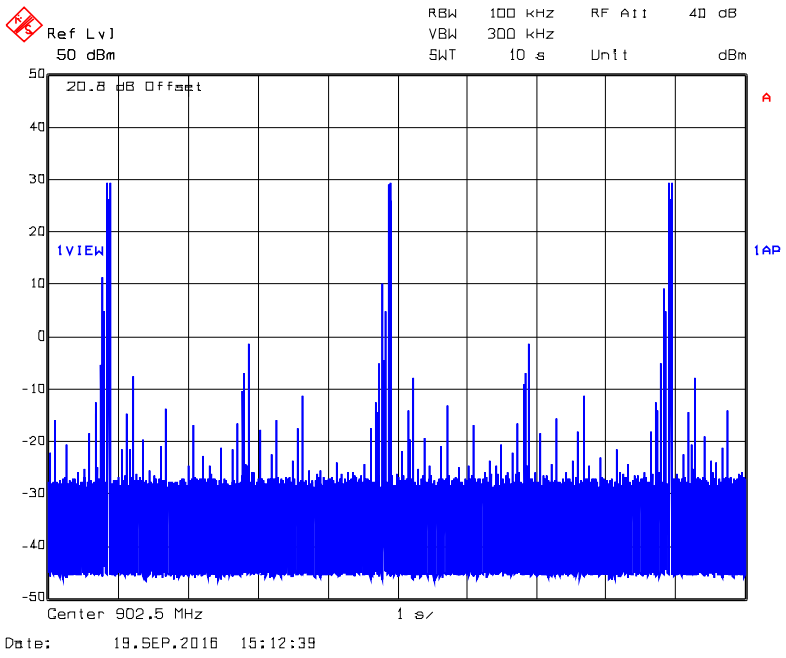


Right Antenna

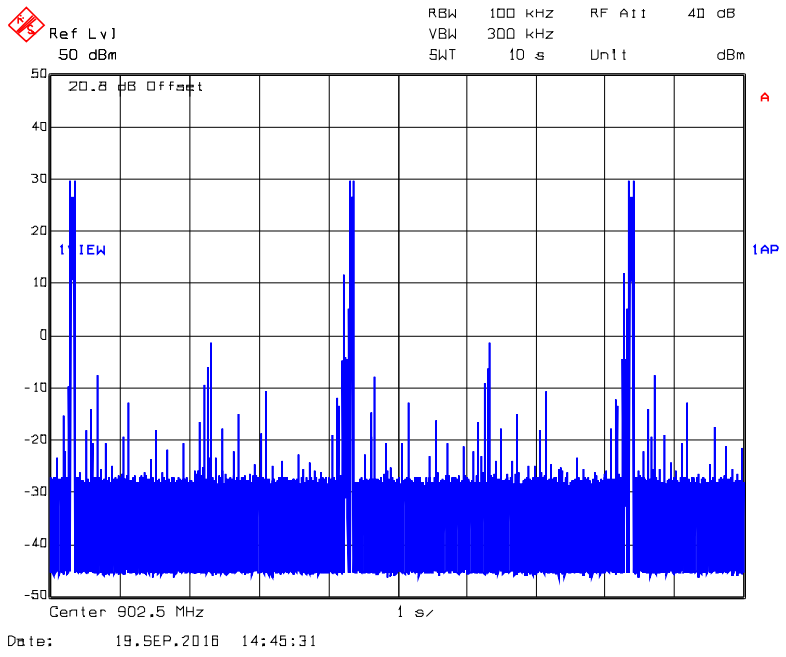


Plot 5.3.4.86. Time of Occupancy, 902.5 MHz, DSSS8, 400 kbps
Average time of occupancy = 3 x (T on) in 10s =3*50.1ms = 150.3 ms < 400ms

Left Antenna

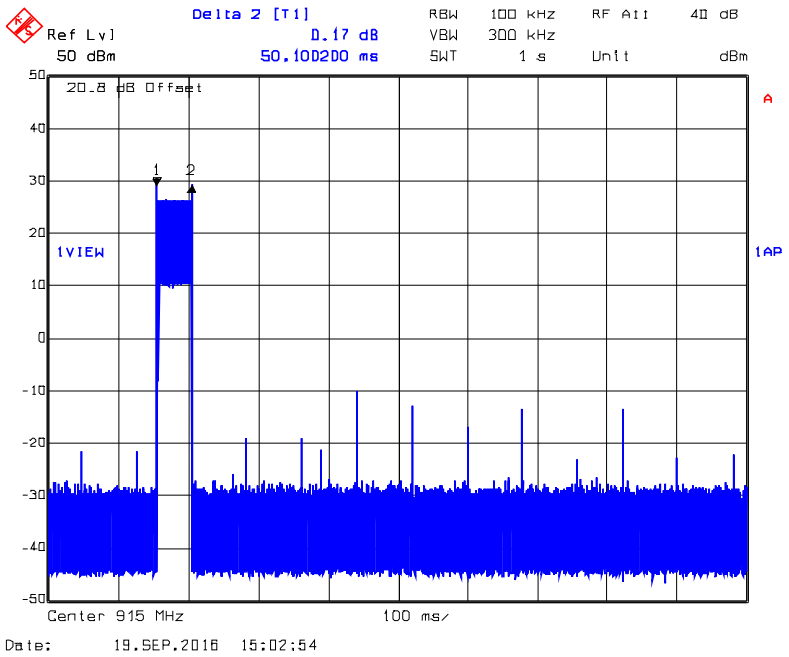


Right Antenna

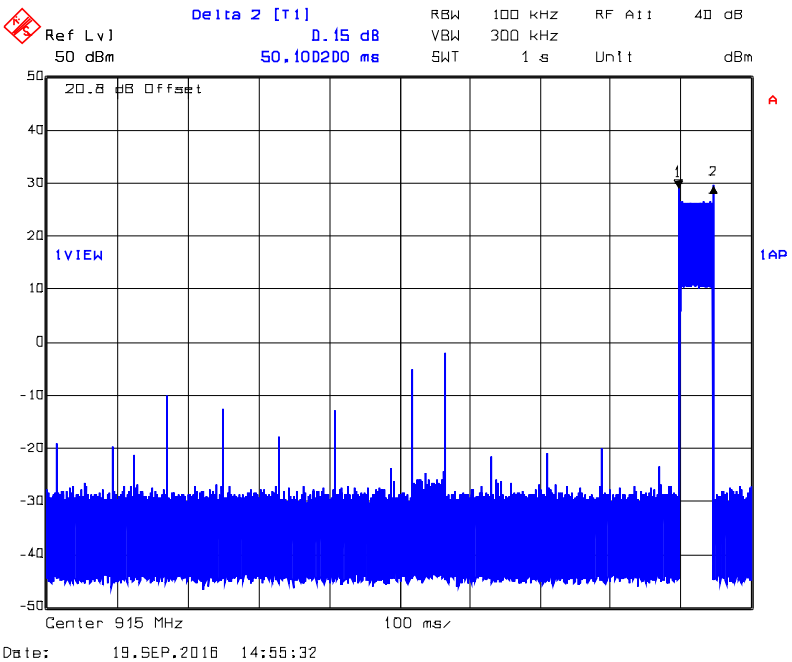


Plot 5.3.4.87. Time of Occupancy, 915.0 MHz, DSSS8, 400 kbps
Dwell Time @ 915.0 MHz = 50.1 ms

Left Antenna

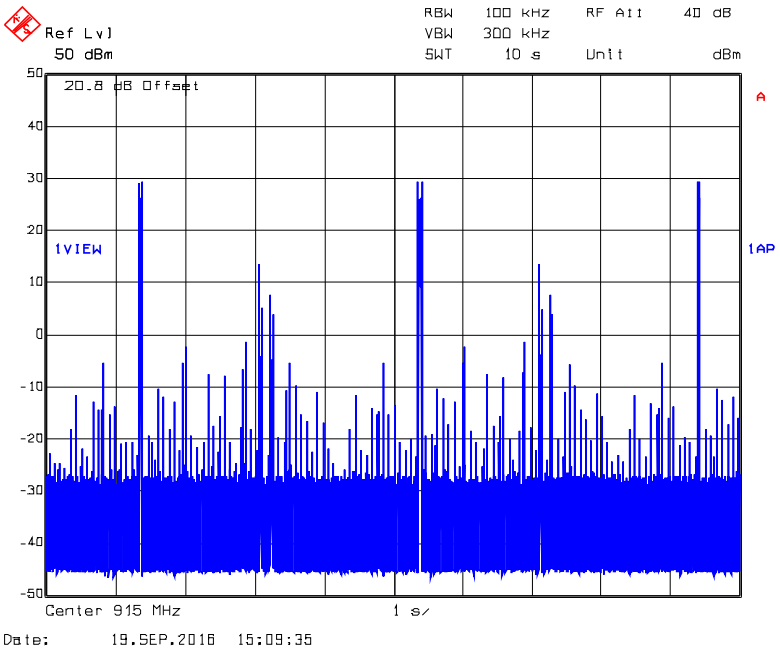


Right Antenna

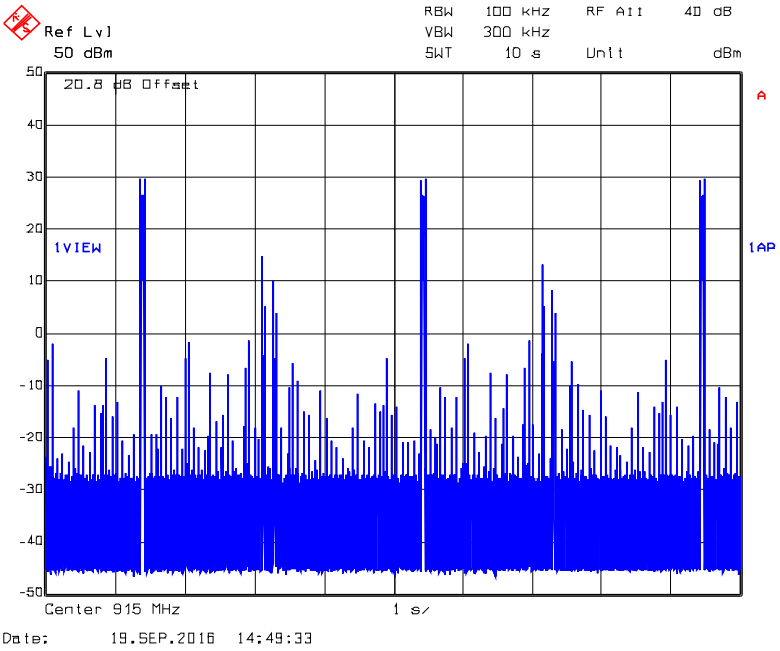


Plot 5.3.4.88. Time of Occupancy, 915.0 MHz, DSSS8, 400 kbps
Average time of occupancy = 3 x (T on) in 10s =3*50.1ms = 150.3 ms < 400ms

Left Antenna

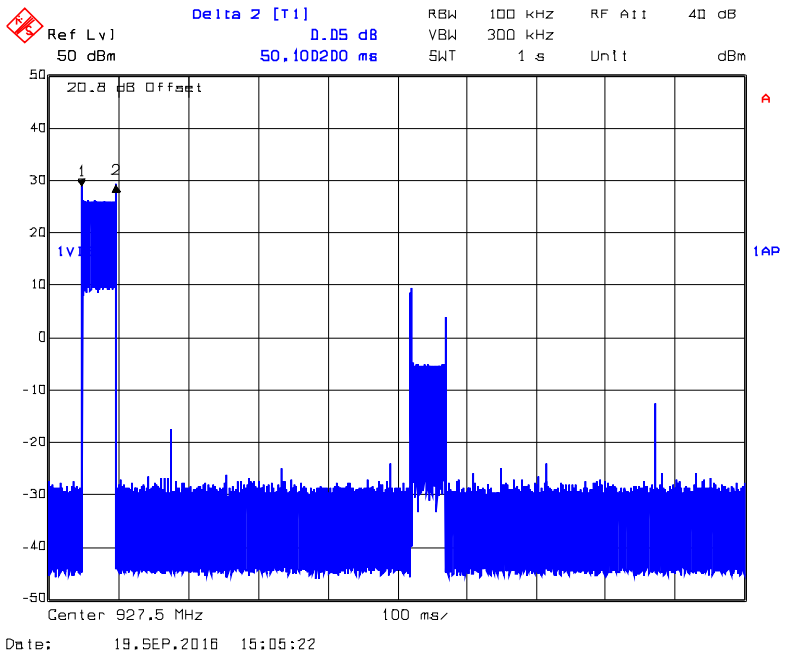


Right Antenna

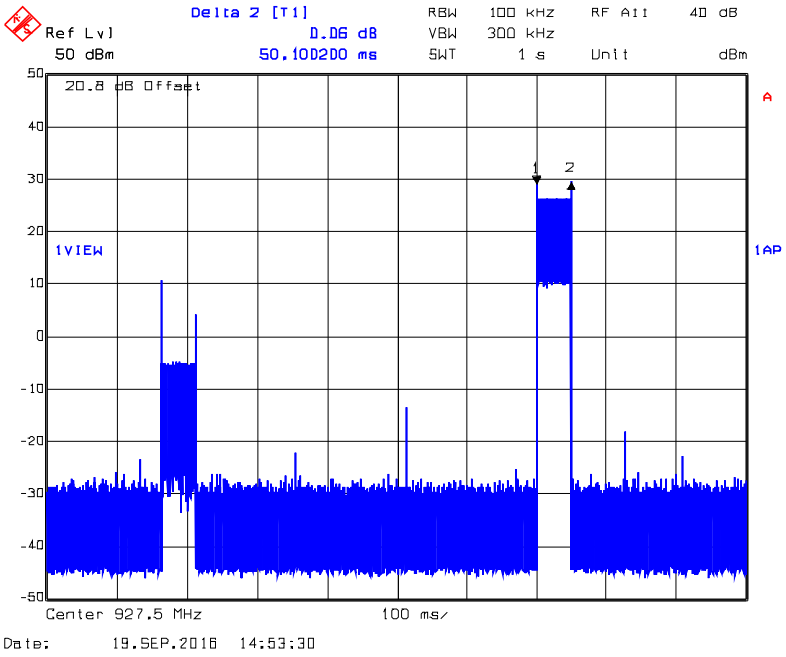


Plot 5.3.4.89. Time of Occupancy, 927.5 MHz, DSSS8, 400 kbps
Dwell Time @ 927.5 MHz = 50.1 ms

Left Antenna

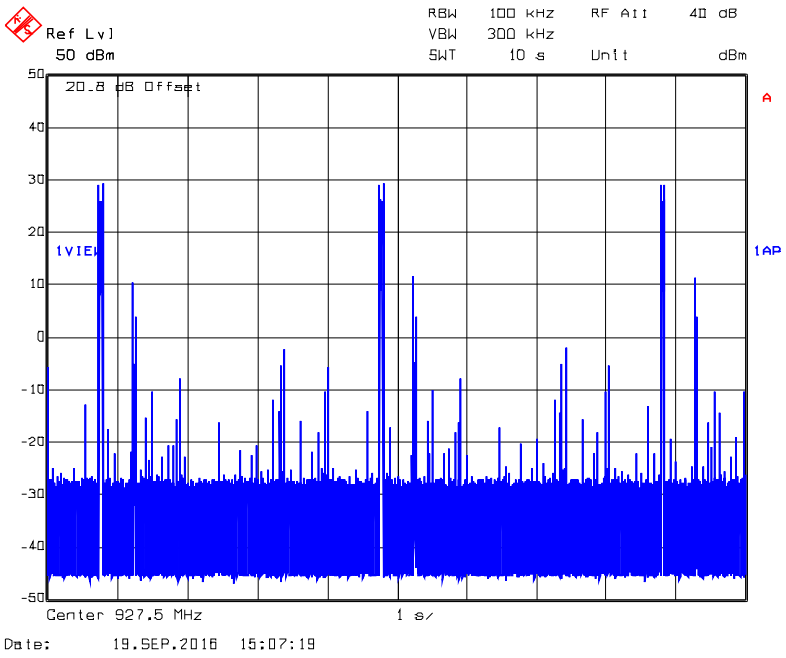


Right Antenna

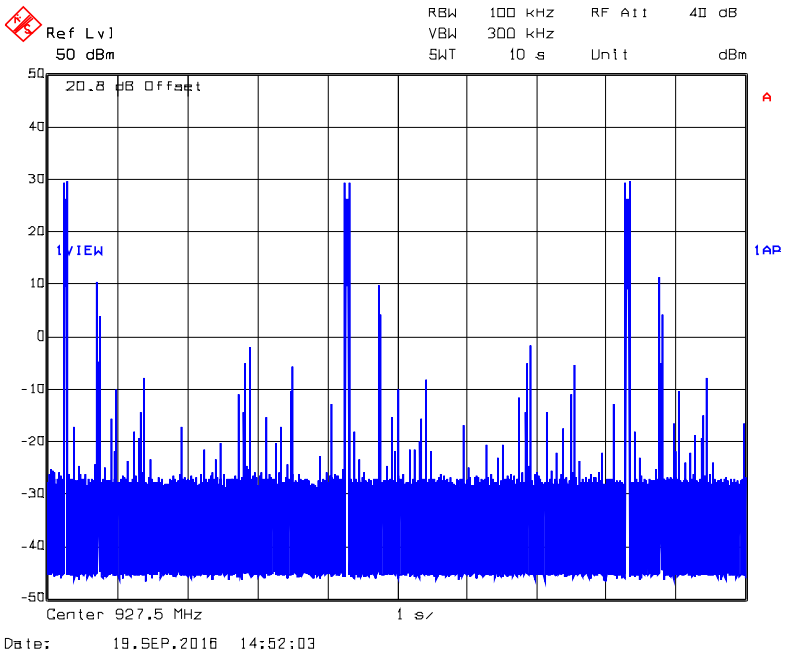


Plot 5.3.4.90. Time of Occupancy, 927.5 MHz, DSSS8, 400 kbps
Average time of occupancy = 3 x (T on) in 10s =3*50.1ms = 150.3 ms < 400ms

Left Antenna



Right Antenna



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

5.4.1. Limits

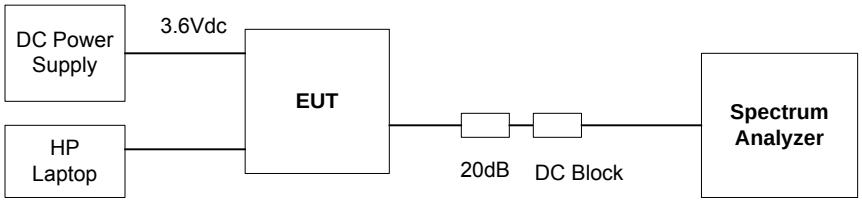
§15.247(b)(2): For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

§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 Left Antenna Terminal (dBm)	Peak Output Power at Right Antenna Terminal (dBm)	Peak Conducted Output Power Limit (dBm)
GFSK	10	902.2	30.0	30.0	30
		915.0	30.0	30.0	30
		927.8	30.0	30.0	30
GFSK DSSS1		902.2	30.0	30.0	30
		915.0	30.0	30.0	30
		927.8	30.0	30.0	30
GFSK DSSS2		902.2	30.0	30.0	30
		915.0	30.0	30.0	30
		927.8	30.0	30.0	30
GFSK DSSS4		902.2	30.0	30.0	30
		915.0	30.0	30.0	30
		927.8	30.0	30.0	30
GFSK DSSS8		902.2	30.0	30.0	30
		915.0	30.0	30.0	30
		927.8	30.0	30.0	30
GFSK	400	902.5	30.0	30.0	30
		915.0	30.0	30.0	30
		927.5	30.0	30.0	30
GFSK DSSS1		902.5	30.0	30.0	30
		915.0	30.0	30.0	30
		927.5	30.0	30.0	30
GFSK DSSS2		902.5	30.0	30.0	30
		915.0	30.0	30.0	30
		927.5	30.0	30.0	30
GFSK DSSS4		902.5	30.0	30.0	30
		915.0	30.0	30.0	30
		927.5	30.0	30.0	30
GFSK DSSS8		902.5	30.0	30.0	30
		915.0	30.0	30.0	30
		927.5	30.0	30.0	30

(b) Peak Conducted Output (Low Power)

Configuration Modulation	Data Rate (kbps)	Frequency (MHz)	Peak Output Power at Left Antenna Terminal (dBm)	Peak Output Power at Right Antenna Terminal (dBm)	Peak Conducted Output Power Limit (dBm)
GFSK	10	902.2	13.00	13.17	30
		915.0	12.58	12.74	30
		927.8	12.16	12.30	30
GFSK DSSS1		902.2	13.16	13.16	30
		915.0	12.60	12.74	30
		927.8	12.18	12.30	30
GFSK DSSS2		902.2	13.09	13.16	30
		915.0	12.52	12.72	30
		927.8	12.16	12.17	30
GFSK DSSS4		902.2	13.09	12.72	30
		915.0	12.60	12.66	30
		927.8	12.10	12.18	30
GFSK DSSS8		902.2	13.30	13.28	30
		915.0	12.39	12.67	30
		927.8	12.15	11.92	30
GFSK	400	902.5	13.14	13.24	30
		915.0	12.60	12.81	30
		927.5	12.24	12.24	30
GFSK DSSS1		902.5	13.09	13.09	30
		915.0	12.72	12.67	30
		927.5	12.30	12.30	30
GFSK DSSS2		902.5	12.58	13.16	30
		915.0	12.03	12.67	30
		927.5	11.88	12.18	30
GFSK DSSS4		902.5	12.79	13.16	30
		915.0	11.96	12.72	30
		927.5	11.63	12.30	30
GFSK DSSS8		902.5	13.14	13.14	30
		915.0	12.58	12.72	30
		927.5	12.16	12.32	30

1. EIRP for Dipole Antenna 5dBi gain

Net gain= [5dBi - 0.44dB (12cm assembly cable) = **4.56dBi**]

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	30.0	34.56	36
		915.0	30.0	34.56	36
		927.8	30.0	34.56	36
GFSK DSSS1		902.2	30.0	34.56	36
		915.0	30.0	34.56	36
		927.8	30.0	34.56	36
GFSK DSSS2		902.2	30.0	34.56	36
		915.0	30.0	34.56	36
		927.8	30.0	34.56	36
GFSK DSSS4		902.2	30.0	34.56	36
		915.0	30.0	34.56	36
		927.8	30.0	34.56	36
GFSK DSSS8		902.2	30.0	34.56	36
		915.0	30.0	34.56	36
		927.8	30.0	34.56	36
GFSK	400	902.5	30.0	34.56	36
		915.0	30.0	34.56	36
		927.5	30.0	34.56	36
GFSK DSSS1		902.5	30.0	34.56	36
		915.0	30.0	34.56	36
		927.5	30.0	34.56	36
GFSK DSSS2		902.5	30.0	34.56	36
		915.0	30.0	34.56	36
		927.5	30.0	34.56	36
GFSK DSSS4		902.5	30.0	34.56	36
		915.0	30.0	34.56	36
		927.5	30.0	34.56	36
GFSK DSSS8		902.5	30.0	34.56	36
		915.0	30.0	34.56	36
		927.5	30.0	34.56	36

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

2. EIRP for Omni Directional Antenna 8dBi gain

Net gain = [8dBi - 0.99dB (12cm+124cm assembly cable) = 7.01dBi]
Additional 1.1dB to comply with 36dBm, 7.01dBi - 1.1dB= 5.91dBi
Additional 1.39dB to comply with Band-Edge radiated, 7.01dBi - 1.1dB - 1.39dB**= 4.52dBi**

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	30.0	34.52	36
		915.0	30.0	34.52	36
		927.8	30.0	34.52	36
GFSK DSSS1		902.2	30.0	34.52	36
		915.0	30.0	34.52	36
		927.8	30.0	34.52	36
GFSK DSSS2		902.2	30.0	34.52	36
		915.0	30.0	34.52	36
		927.8	30.0	34.52	36
GFSK DSSS4		902.2	30.0	34.52	36
		915.0	30.0	34.52	36
		927.8	30.0	34.52	36
GFSK DSSS8		902.2	30.0	34.52	36
		915.0	30.0	34.52	36
		927.8	30.0	34.52	36
GFSK	400	902.5	30.0	34.52	36
		915.0	30.0	34.52	36
		927.5	30.0	34.52	36
GFSK DSSS1		902.5	30.0	34.52	36
		915.0	30.0	34.52	36
		927.5	30.0	34.52	36
GFSK DSSS2		902.5	30.0	34.52	36
		915.0	30.0	34.52	36
		927.5	30.0	34.52	36
GFSK DSSS4		902.5	30.0	34.52	36
		915.0	30.0	34.52	36
		927.5	30.0	34.52	36
GFSK DSSS8		902.5	30.0	34.52	36
		915.0	30.0	34.52	36
		927.5	30.0	34.52	36

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

3. EIRP for Flat Panel Antenna 9dBi gain

Net gain =[9dBi - 0.99dB (12cm+124cm assembly cable) = 8.01dBi]
Additional 2.55dB to comply with 36dBm, 8.01dBi - 2.55dB= **5.46dBi**

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	30.0	35.46	36
		915.0	30.0	35.46	36
		927.8	30.0	35.46	36
GFSK DSSS1		902.2	30.0	35.46	36
		915.0	30.0	35.46	36
		927.8	30.0	35.46	36
GFSK DSSS2		902.2	30.0	35.46	36
		915.0	30.0	35.46	36
		927.8	30.0	35.46	36
GFSK DSSS4		902.2	30.0	35.46	36
		915.0	30.0	35.46	36
		927.8	30.0	35.46	36
GFSK DSSS8		902.2	30.0	35.46	36
		915.0	30.0	35.46	36
		927.8	30.0	35.46	36
GFSK	400	902.5	30.0	35.46	36
		915.0	30.0	35.46	36
		927.5	30.0	35.46	36
GFSK DSSS1		902.5	30.0	35.46	36
		915.0	30.0	35.46	36
		927.5	30.0	35.46	36
GFSK DSSS2		902.5	30.0	35.46	36
		915.0	30.0	35.46	36
		927.5	30.0	35.46	36
GFSK DSSS4		902.5	30.0	35.46	36
		915.0	30.0	35.46	36
		927.5	30.0	35.46	36
GFSK DSSS8		902.5	30.0	35.46	36
		915.0	30.0	35.46	36
		927.5	30.0	35.46	36

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

4. EIRP for Yagi Antenna 14dBi gain

Net gain = [14dBi - 0.99dB (12cm+124cm assembly cable) = 13.01dBi]
Additional 7.1dB to comply with 36dBm, 13.01dBi - 7.1dB= 5.91
Additional 2.65dB to comply with Band-Edge radiated, 13.01dBi - 7.1dB - 2.65dB= **3.26dBi**

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	30.0	33.26	36
		915.0	30.0	33.26	36
		927.8	30.0	33.26	36
GFSK DSSS1		902.2	30.0	33.26	36
		915.0	30.0	33.26	36
		927.8	30.0	33.26	36
GFSK DSSS2		902.2	30.0	33.26	36
		915.0	30.0	33.26	36
		927.8	30.0	33.26	36
GFSK DSSS4		902.2	30.0	33.26	36
		915.0	30.0	33.26	36
		927.8	30.0	33.26	36
GFSK DSSS8		902.2	30.0	33.26	36
		915.0	30.0	33.26	36
		927.8	30.0	33.26	36
GFSK	400	902.5	30.0	33.26	36
		915.0	30.0	33.26	36
		927.5	30.0	33.26	36
GFSK DSSS1		902.5	30.0	33.26	36
		915.0	30.0	33.26	36
		927.5	30.0	33.26	36
GFSK DSSS2		902.5	30.0	33.26	36
		915.0	30.0	33.26	36
		927.5	30.0	33.26	36
GFSK DSSS4		902.5	30.0	33.26	36
		915.0	30.0	33.26	36
		927.5	30.0	33.26	36
GFSK DSSS8		902.5	30.0	33.26	36
		915.0	30.0	33.26	36
		927.5	30.0	33.26	36

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

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.

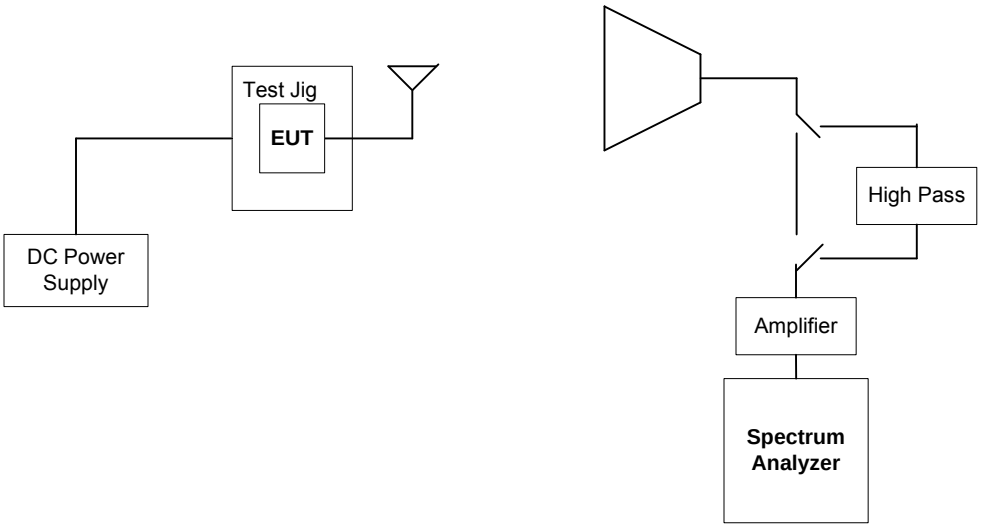
5.5.3. Test Data

5.5.3.1. Spurious Radiated Emissions

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 400 Kbps Right Antenna 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.

5.5.3.1.1. Test Arrangement



5.5.3.1.2. EUT with 5.0 dBi Dipole Antenna

Fundamental Frequency:	902.5 MHz
Configuration:	GFSK, 400 Kbps
Measured Conducted Power:	30.0 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
902.5	130.51	--	V	--	--	--	--
902.2	129.35	--	H	--	--	--	--
2707.5	48.93	43.45	V	54.0	110.5	-10.55	Pass*
2707.5	47.58	41.14	H	54.0	110.5	-12.86	Pass*
4512.5	49.49	39.57	V	54.0	110.5	-14.43	Pass*
4512.5	48.04	35.79	H	54.0	110.5	-18.21	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, 400 Kbps
Measured Conducted Power:	30.0 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	129.84	--	V	--	--	--	--
915.0	129.47	--	H	--	--	--	--
2745.0	46.27	35.52	V	54.0	109.8	-18.48	Pass*
2745.0	44.89	34.21	H	54.0	109.8	-19.79	Pass*
4575.0	50.38	41.07	V	54.0	109.8	-12.93	Pass*
4575.0	49.52	38.11	H	54.0	109.8	-15.89	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:	927.5MHz
Configuration:	GFSK, 400 Kbps
Measured Conducted Power:	30.0 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
927.5	129.35	--	V	--	--	--	--
927.5	129.93	--	H	--	--	--	--
2782.5	46.22	34.93	V	54.0	109.9	-19.07	Pass*
2782.5	42.16	31.94	H	54.0	109.9	-22.06	Pass*
4637.5	50.96	43.54	V	54.0	109.9	-10.46	Pass*
4637.5	50.06	38.63	H	54.0	109.9	-15.37	Pass*

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

5.5.3.2. EUT with 8 dBi Omni Antenna

5.5.3.2.1. Spurious Radiated Emissions

Fundamental Frequency:	902.5 MHz
Configuration:	GFSK, 400 Kbps
Measured Conducted Power:	30.0 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
902.5	130.10	--	V	--	--	--	--
902.5	130.32	--	H	--	--	--	--
2707.5	45.10	34.63	V	54.0	110.3	-19.37	Pass*
2707.5	45.28	34.71	H	54.0	110.3	-19.29	Pass*
4512.5	47.14	33.97	V	54.0	110.3	-20.03	Pass*
4512.5	46.73	33.31	H	54.0	110.3	-20.69	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, 400 Kbps
Measured Conducted Power:	30.0 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	130.22	--	V	--	--	--	--
915.0	130.47	--	H	--	--	--	--
2745.0	43.54	32.47	V	54.0	110.4	-21.53	Pass*
2745.0	44.66	33.48	H	54.0	110.4	-20.52	Pass*
4575.0	48.59	36.44	V	54.0	110.4	-17.56	Pass*
4575.0	47.76	33.67	H	54.0	110.4	-20.33	Pass*

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

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

Fundamental Frequency:	927.5 MHz
Configuration:	GFSK, 400 Kbps
Measured Conducted Power:	30.0 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
927.5	130.55	--	V	--	--	--	--
927.5	130.95	--	H	--	--	--	--
2782.5	42.06	29.97	V	54.0	110.9	-24.03	Pass*
2782.5	42.48	30.33	H	54.0	110.9	-23.67	Pass*
4637.5	48.87	34.49	V	54.0	110.9	-19.51	Pass*
4637.5	47.77	34.88	H	54.0	110.9	-19.12	Pass*

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

5.5.3.3. EUT with 9dBi Panel Antenna

5.5.3.3.1. Spurious Radiated Emissions

Fundamental Frequency:	902.5 MHz
Configuration:	GFSK, 400 Kbps
Measured Conducted Power:	30.0 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
902.5	129.25	--	V	--	--	--	--
902.5	129.67	--	H	--	--	--	--
2707.5	45.06	34.81	V	54.0	109.6	-19.19	Pass*
2707.5	46.12	38.40	H	54.0	109.6	-15.6	Pass*
4512.5	48.42	34.77	V	54.0	109.6	-19.23	Pass*
4512.5	47.58	33.47	H	54.0	109.6	-20.53	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, 400 Kbps
Measured Conducted Power:	30.0 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	128.55	--	V	--	--	--	--
915.0	128.41	--	H	--	--	--	--
2745.0	43.18	32.58	V	54.0	108.5	-21.42	Pass*
2745.0	45.15	36.03	H	54.0	108.5	-17.97	Pass*
4575.0	48.34	35.06	V	54.0	108.5	-18.94	Pass*
4575.0	47.91	33.46	H	54.0	108.5	-20.54	Pass*

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

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

Fundamental Frequency:	927.5 MHz
Configuration:	GFSK, 400 Kbps
Measured Conducted Power:	30.0 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
927.5	127.39		V	--			--
927.5	128.07		H	--			--
2782.5	41.55	30.52	V	54.0	108.0	-23.48	Pass*
2782.5	44.18	34.36	H	54.0	108.0	-19.64	Pass*
4637.5	48.12	35.84	V	54.0	108.0	-18.16	Pass*
4637.5	47.44	33.97	H	54.0	108.0	-20.03	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.

5.5.3.4. EUT with 14.0 dBi Yagi Antenna

5.5.3.4.1. Spurious Radiated Emissions

Fundamental Frequency:	902.5 MHz
Configuration:	GFSK, 400 Kbps
Measured Conducted Power:	30.0 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
902.5	131.08	--	V	--	--	--	--
902.5	130.33	--	H	--	--	--	--
2707.5	45.56	36.22	V	54.0	110.3	-17.78	Pass*
2707.5	45.16	35.33	H	54.0	110.3	-18.67	Pass*
4512.5	47.45	34.19	V	54.0	110.3	-19.81	Pass*
4512.5	47.39	33.17	H	54.0	110.3	-20.83	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, 400 Kbps
Measured Conducted Power:	30.0 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	130.88	--	V	--	--	--	--
915.0	130.26	--	H	--	--	--	--
2745.0	43.35	30.96	V	54.0	110.8	-23.04	Pass*
2745.0	43.27	31.54	H	54.0	110.8	-22.46	Pass*
4575.0	48.43	36.14	V	54.0	110.8	-17.86	Pass*
4575.0	48.01	34.30	H	54.0	110.8	-19.7	Pass*

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

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

Fundamental Frequency:	927.5 MHz
Configuration:	GFSK, 400 Kbps
Measured Conducted Power:	30.0 dBm
Frequency Test Range:	30 MHz – 10 GHz

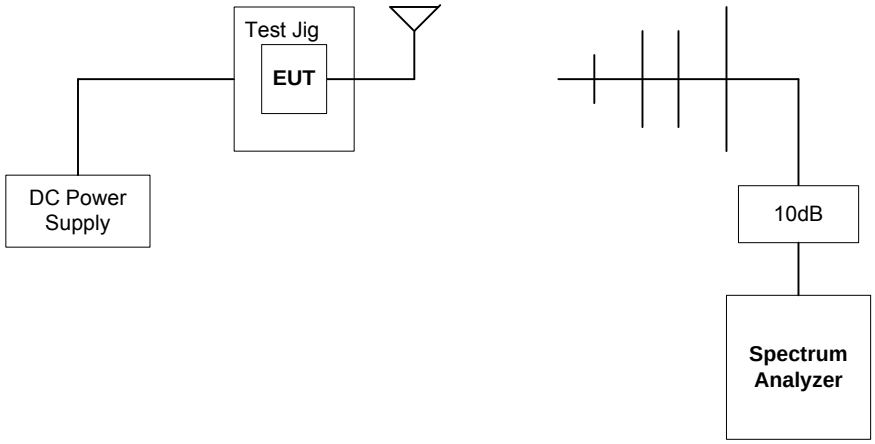
Frequency (MHz)	RF Peak Level (dBµV/m)	RF Avg Level (dBµV/m)	Antenna Plane (H/V)	Limit 15.209 (dBµV/m)	Limit 15.247 (dBµV/m)	Margin (dB)	Pass/ Fail
927.5	130.38	--	V	--	--	--	--
927.5	130.32	--	H	--	--	--	--
2782.5	43.05	29.15	V	54.0	110.3	-24.85	Pass*
2782.5	42.91	29.45	H	54.0	110.3	-24.55	Pass*
4637.5	47.42	34.99	V	54.0	110.3	-19.01	Pass*
4637.5	47.88	34.26	H	54.0	110.3	-19.74	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.

5.5.3.5. Band-Edge RF Radiated Emissions

5.5.3.5.1. Test Arrangement



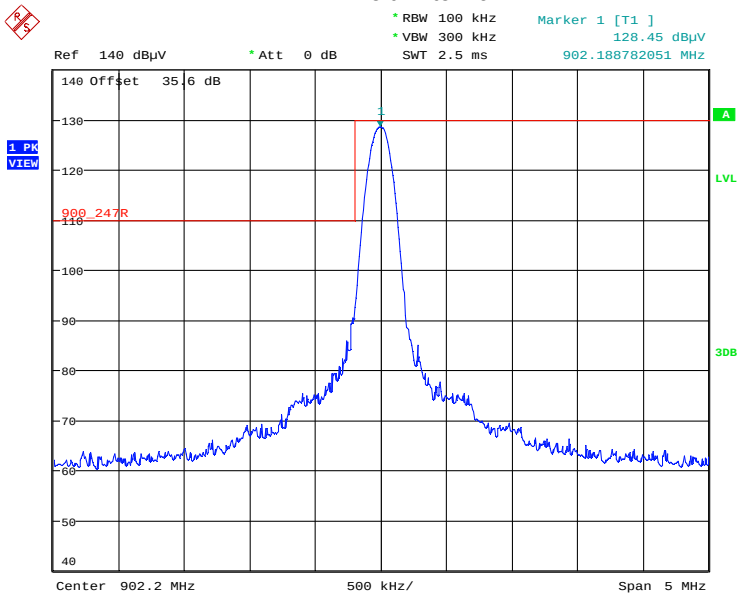
Based on 20db BW testing, for 10kbps the GFSK DSSS8 configuration has wider bandwidth and for 400kbps GFSK DSSS1 has wider bandwidth. These configurations were chosen to represent for all configuration

Refer to the following plots.

5.5.3.5.2. EUT with 5.0 dBi Dipole Antenna

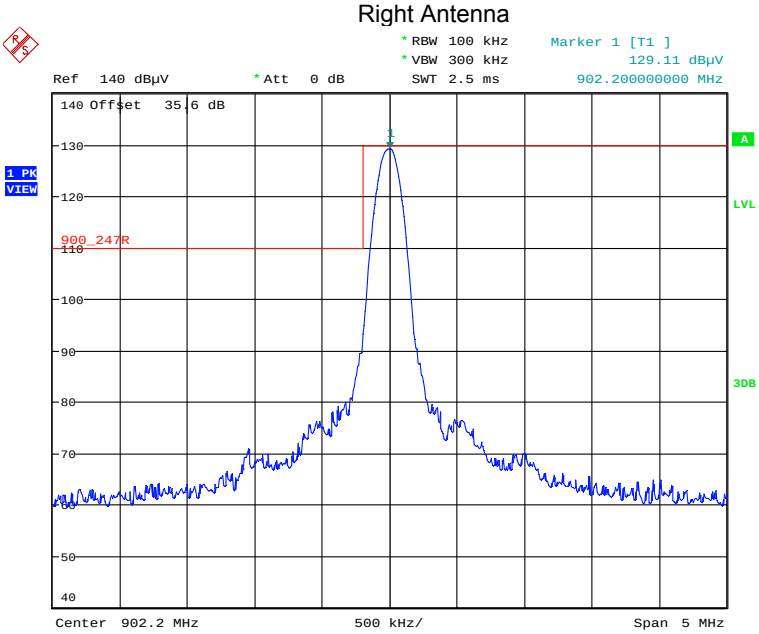
Plot 5.5.3.5.2.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 16.SEP.2016 15:14:25

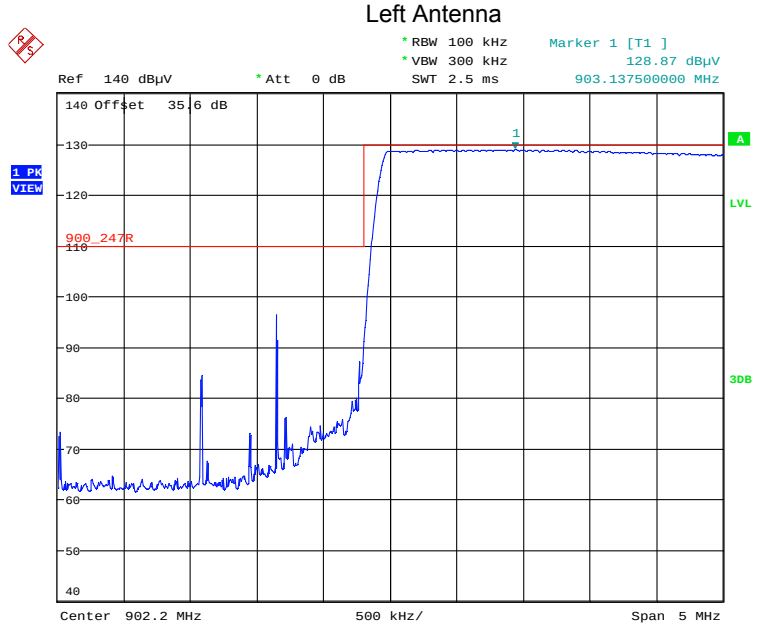
Right Antenna



Date: 16.SEP.2016 15:25:13

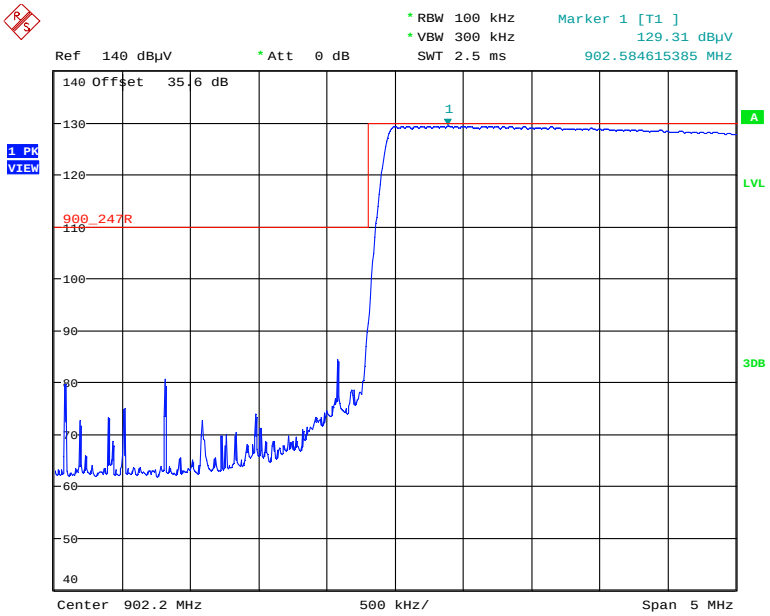
Plot 5.5.3.5.2.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, GFSK DSSS8, 10 kbps

Left Antenna



Date: 16.SEP.2016 15:19:01

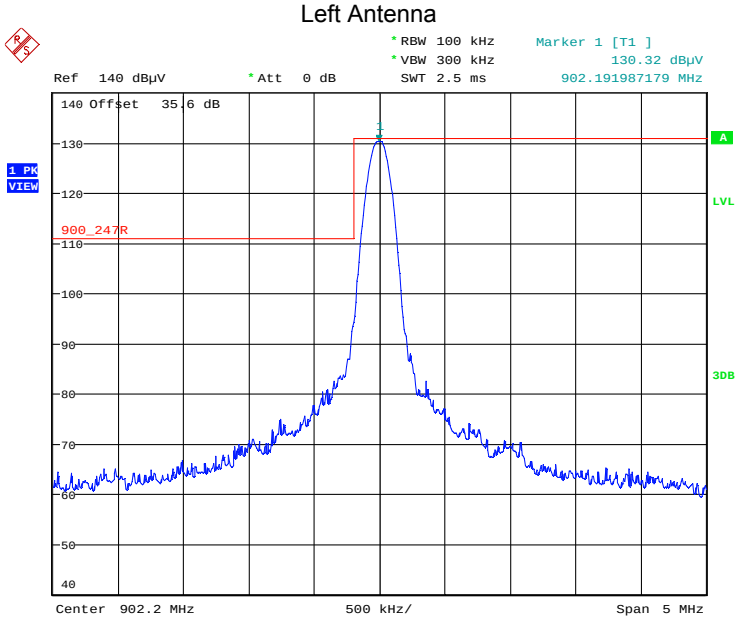
Right Antenna



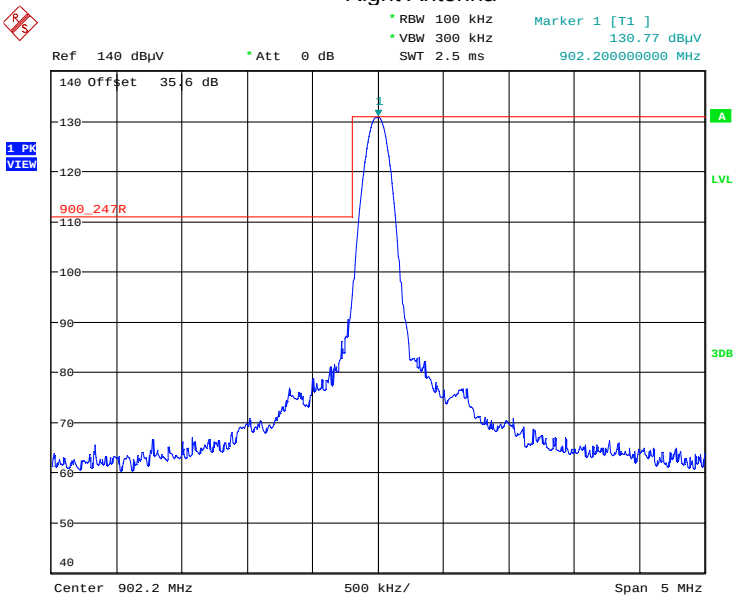
Date: 16.SEP.2016 15:31:28

Plot 5.5.3.5.2.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, GFSK DSSS8, 10 kbps

Left Antenna

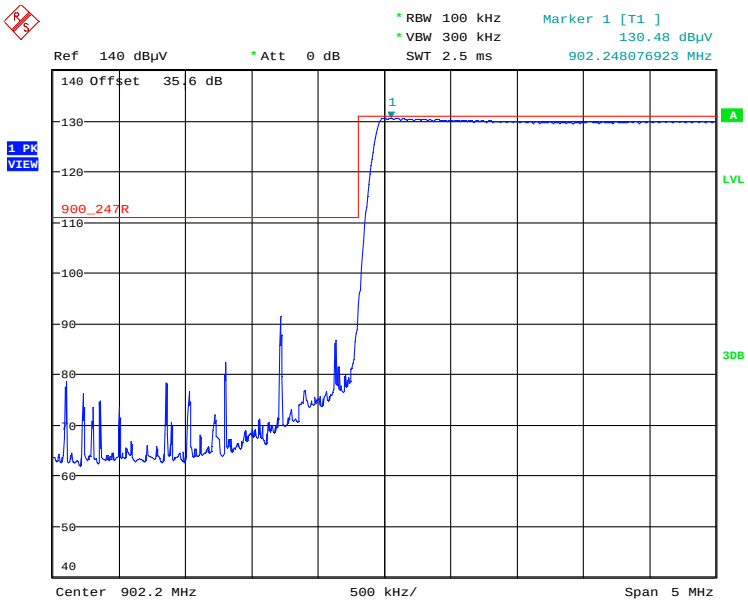


Right Antenna



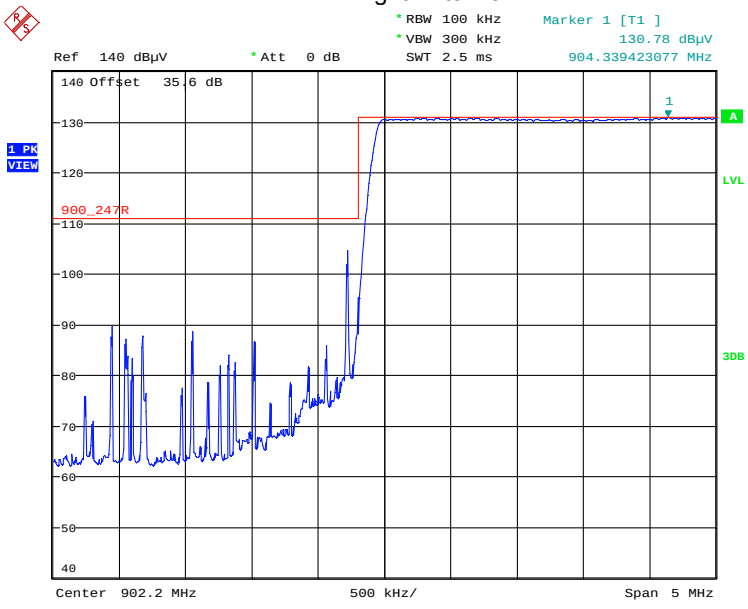
Plot 5.5.3.5.2.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz GFSK DSSS8, 10 kbps

Left Antenna



Date: 16.SEP.2016 13:39:58

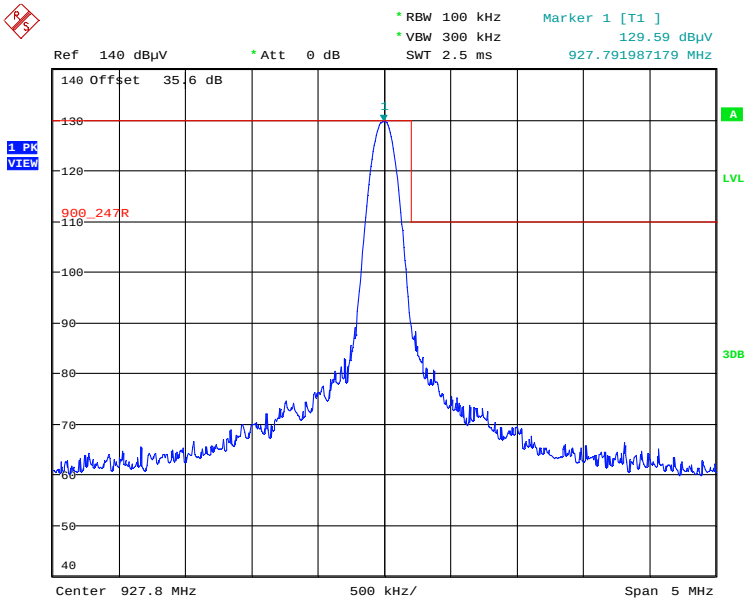
Right Antenna



Date: 16.SEP.2016 14:50:34

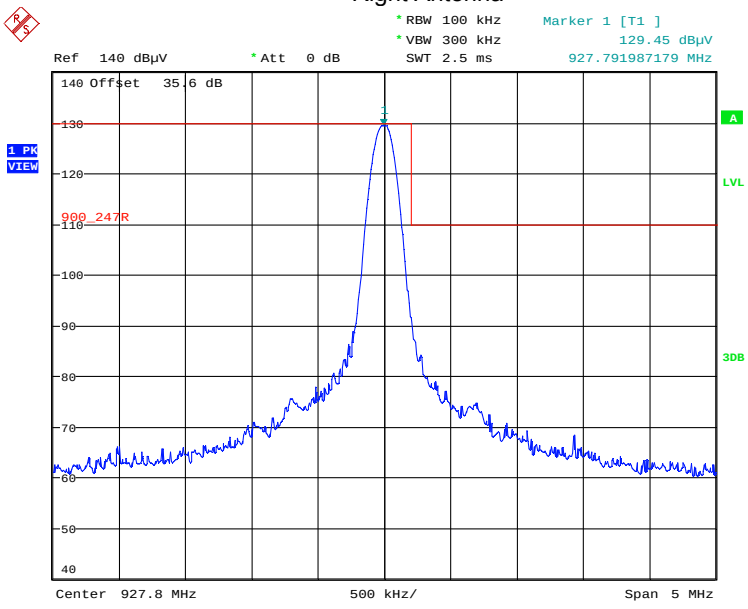
Plot 5.5.3.5.2.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 16.SEP.2016 16:09:11

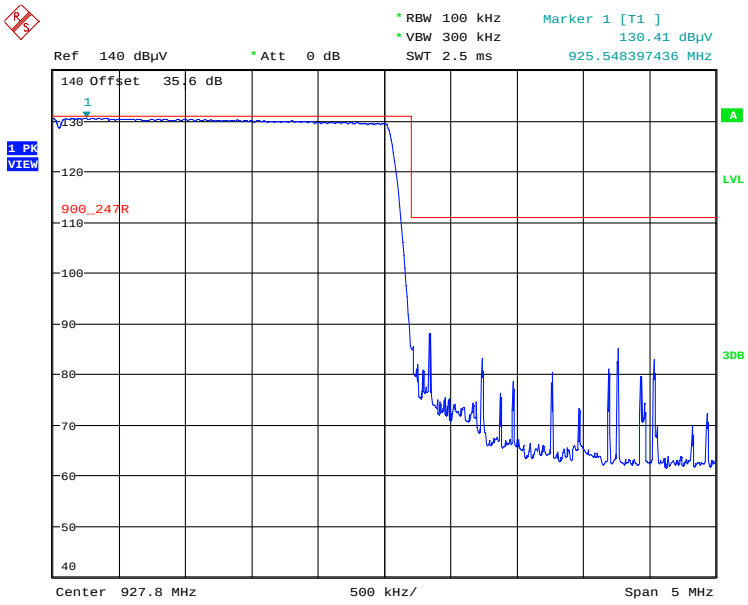
Right Antenna



Date: 16.SEP.2016 16:01:15

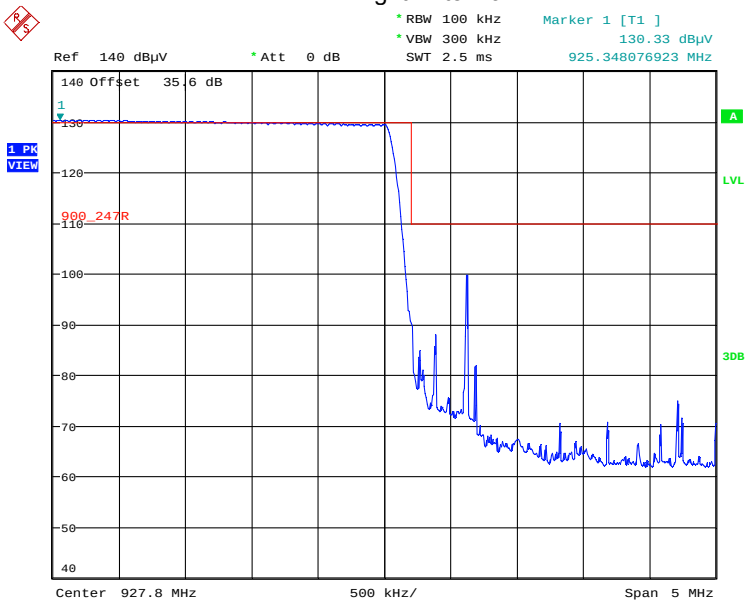
Plot 5.5.3.5.2.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 16.SEP.2016 16:13:14

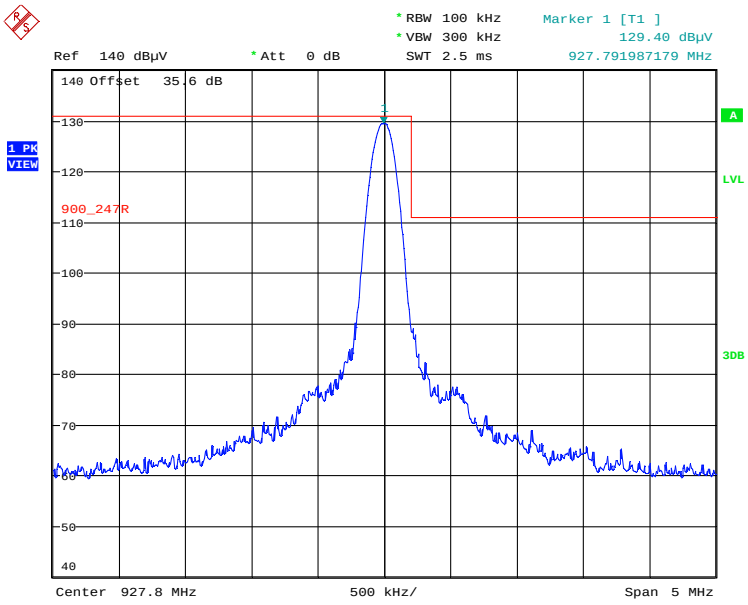
Right Antenna



Date: 16.SEP.2016 16:05:52

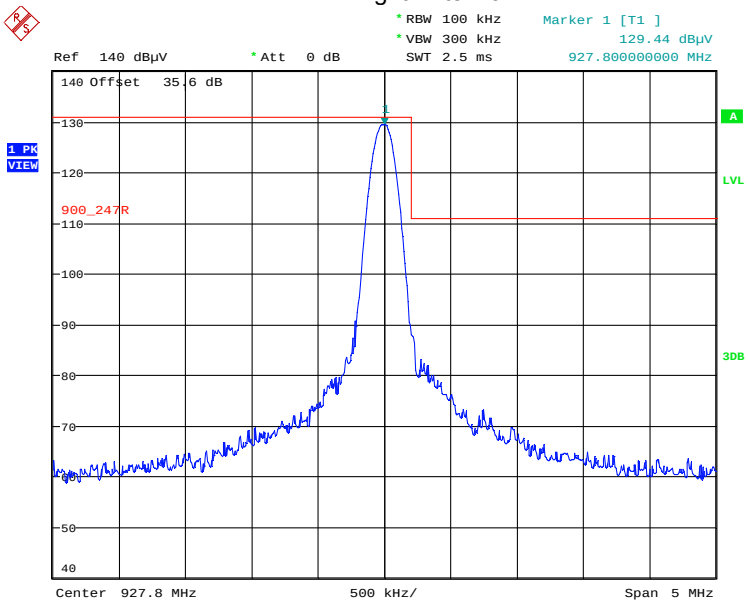
Plot 5.5.3.5.2.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 16.SEP.2016 14:16:36

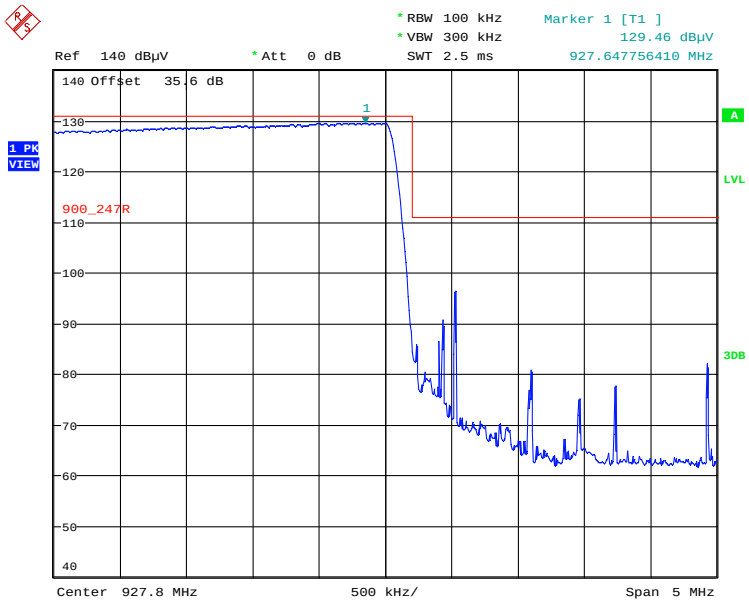
Right Antenna



Date: 16.SEP.2016 14:26:31

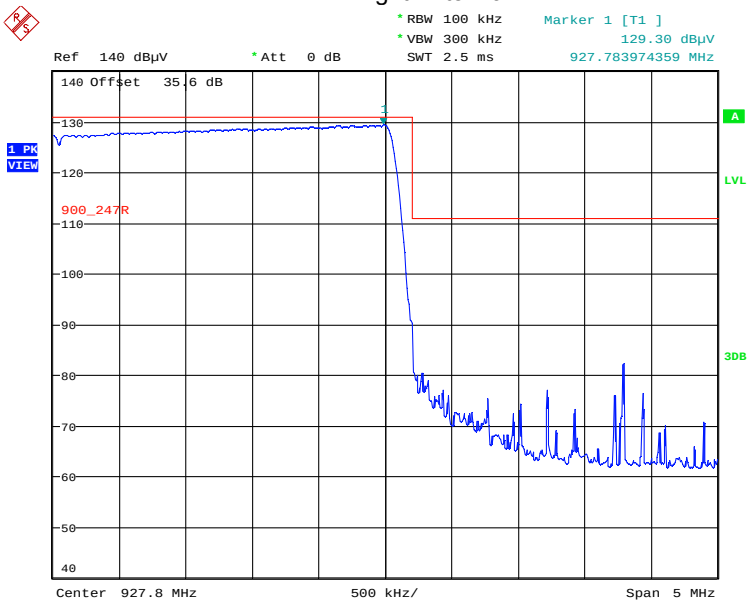
Plot 5.5.3.5.2.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 16.SEP.2016 14:21:14

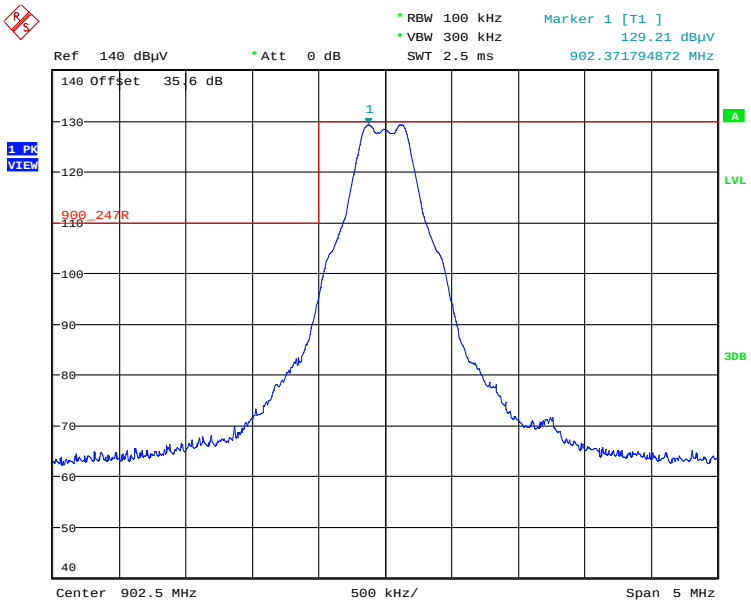
Right Antenna



Date: 16.SEP.2016 14:30:46

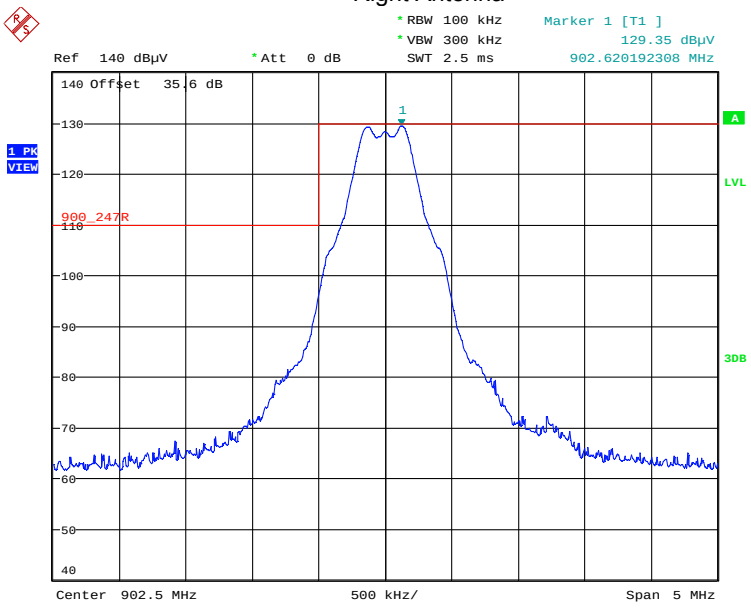
Plot 5.5.3.5.2.9. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 16.SEP.2016 15:45:11

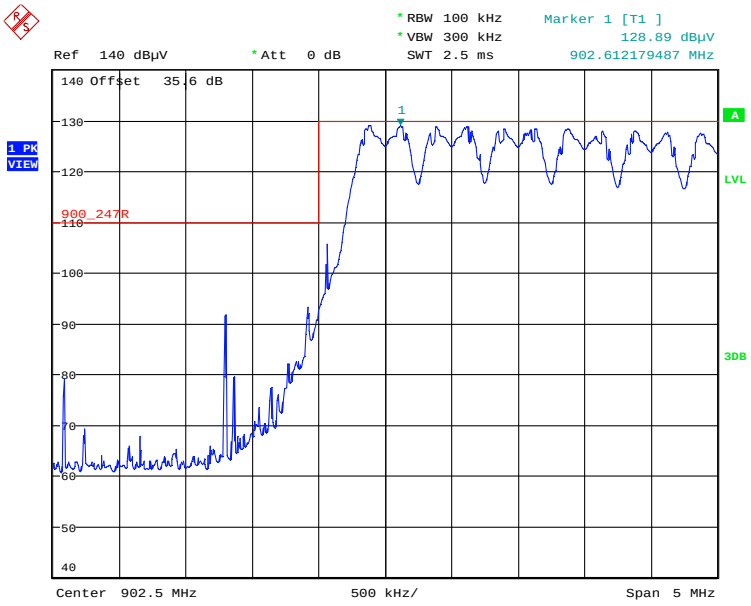
Right Antenna



Date: 16.SEP.2016 15:36:38

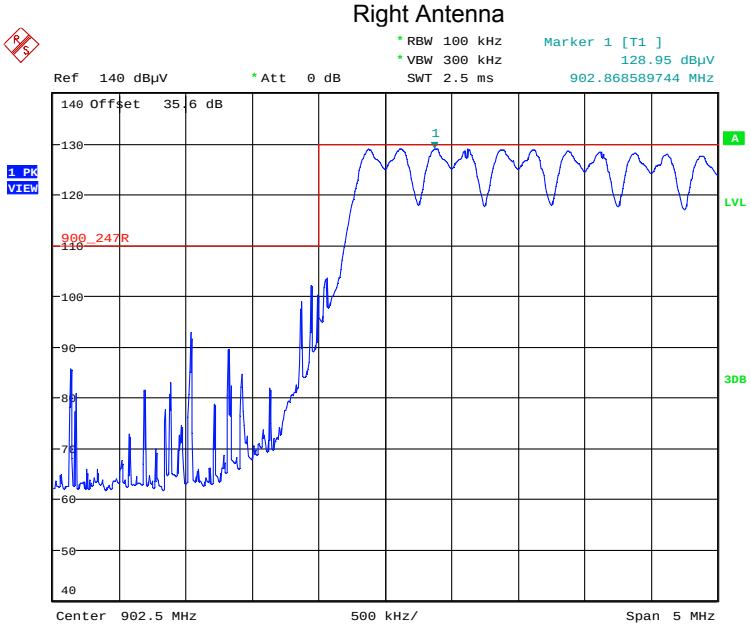
Plot 5.5.3.5.2.10. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 16.SEP.2016 15:47:55

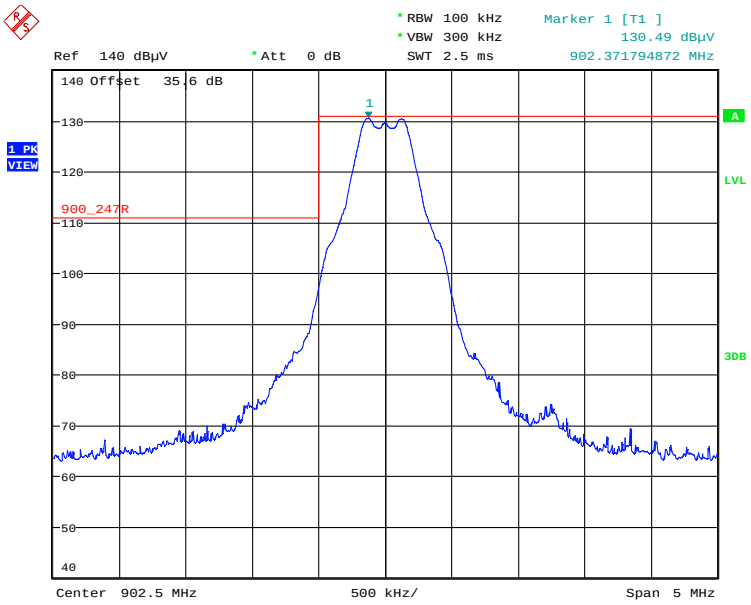
Right Antenna



Date: 16.SEP.2016 15:40:28

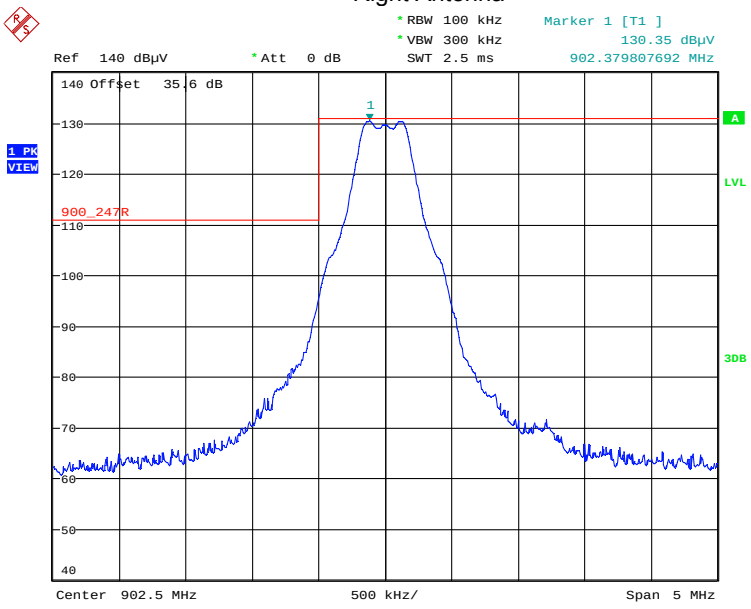
Plot 5.5.3.5.2.11. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 16.SEP.2016 13:43:56

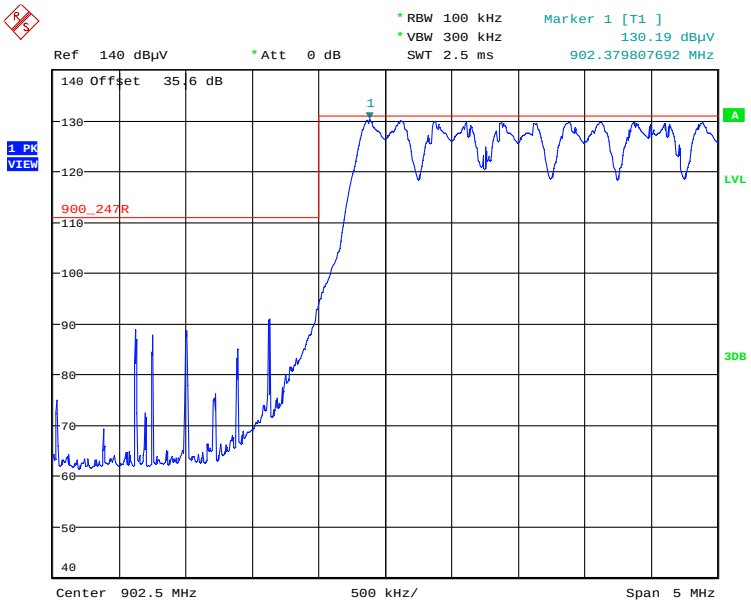
Right Antenna



Date: 16.SEP.2016 14:39:09

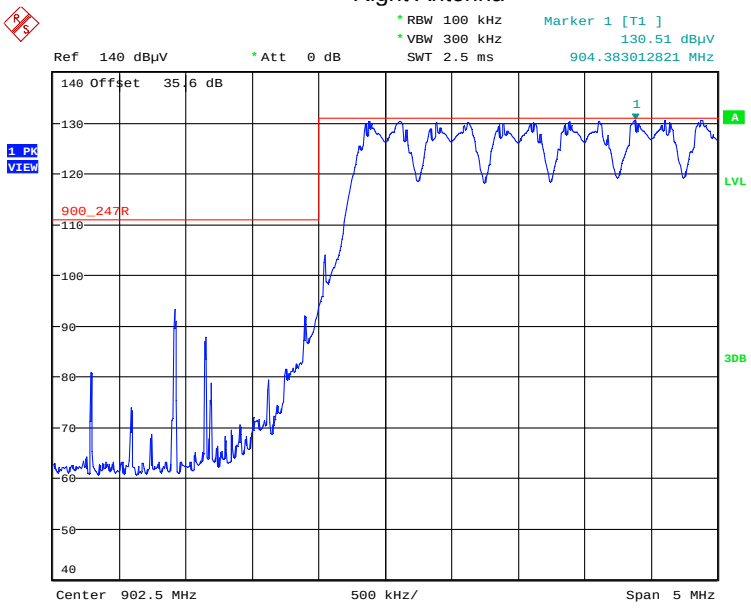
Plot 5.5.3.5.2.12. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 16.SEP.2016 13:49:44

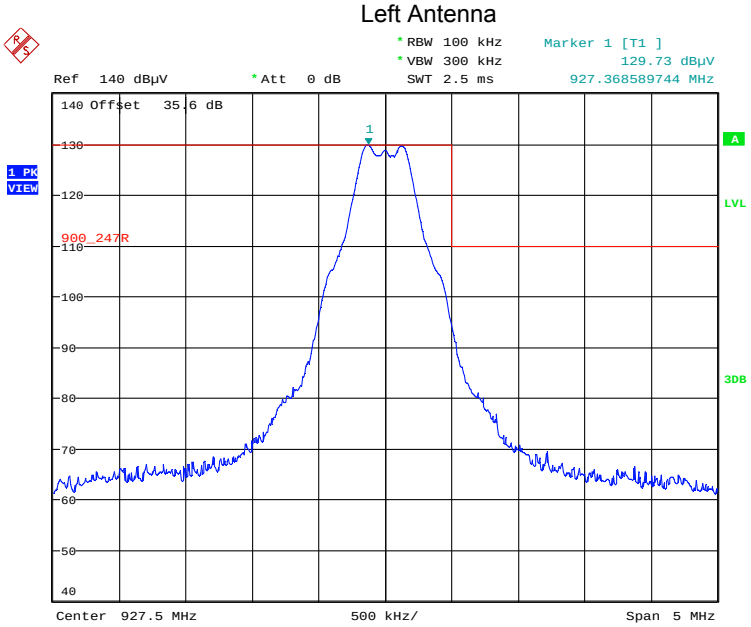
Right Antenna



Date: 16.SEP.2016 14:42:56

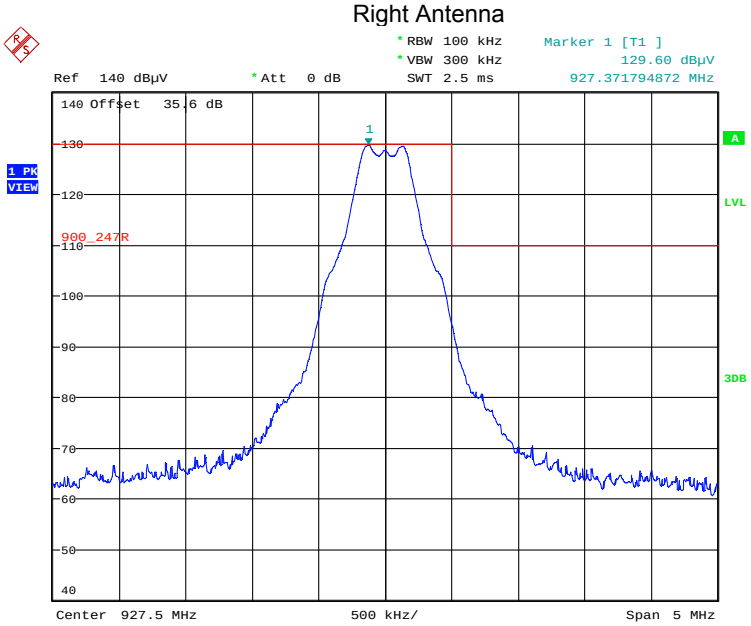
Plot 5.5.3.5.2.13. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 16.SEP.2016 15:51:30

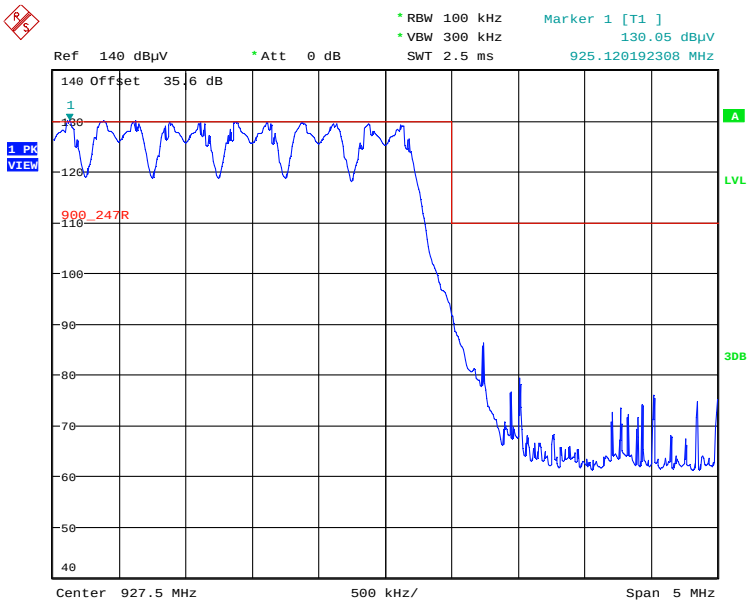
Right Antenna



Date: 16.SEP.2016 15:56:24

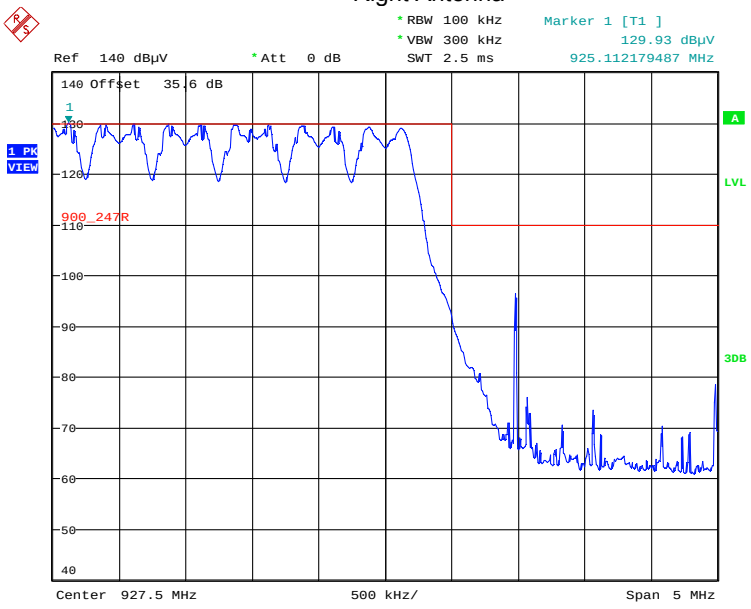
Plot 5.5.3.5.2.14. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 16.SEP.2016 15:53:57

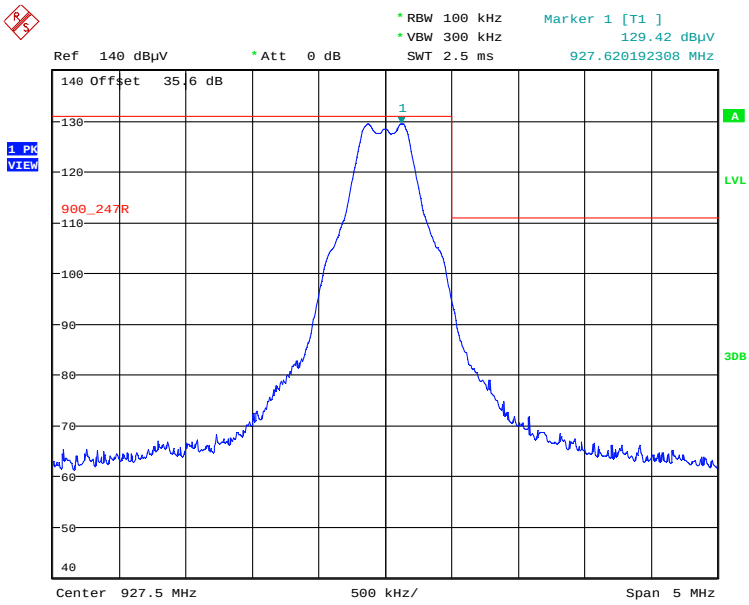
Right Antenna



Date: 16.SEP.2016 15:58:31

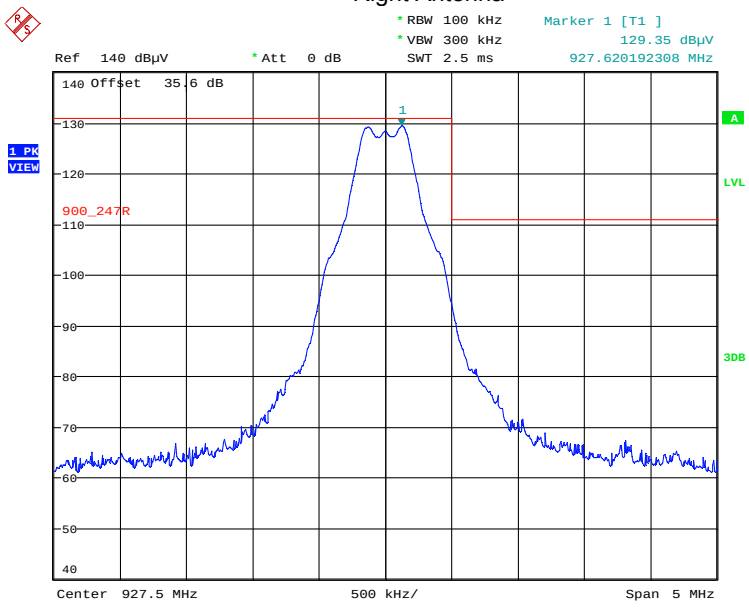
Plot 5.5.3.5.2.15. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 16.SEP.2016 14:03:36

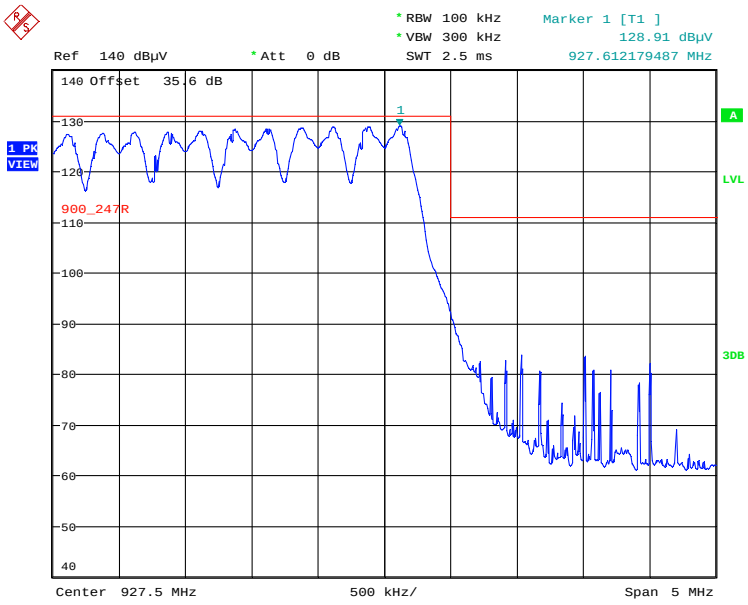
Right Antenna



Date: 16.SEP.2016 14:32:57

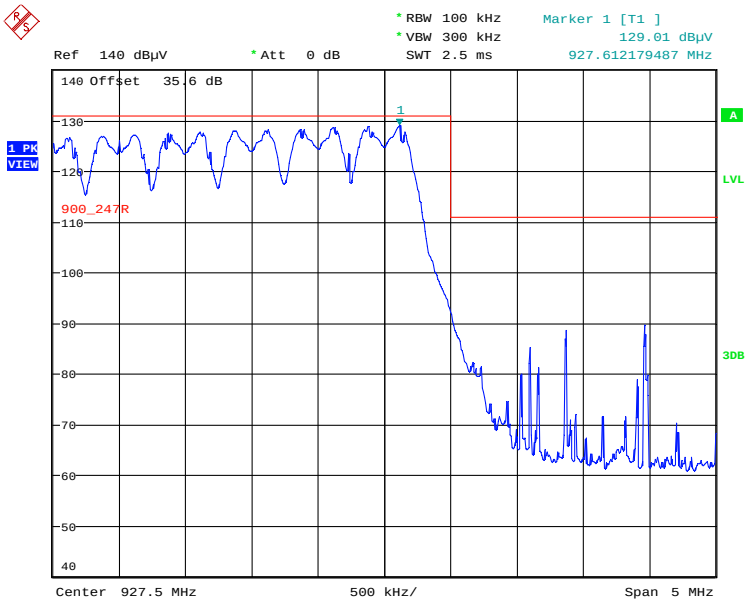
Plot 5.5.3.5.2.16. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 16.SEP.2016 14:08:37

Right Antenna

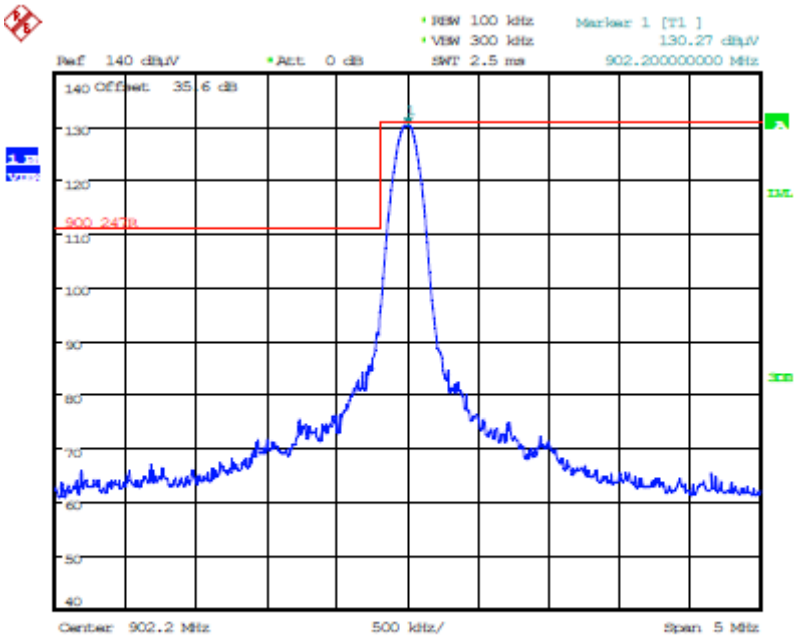


Date: 16.SEP.2016 14:35:24

5.5.3.5.3. EUT with 8 dBi Omni Antenna

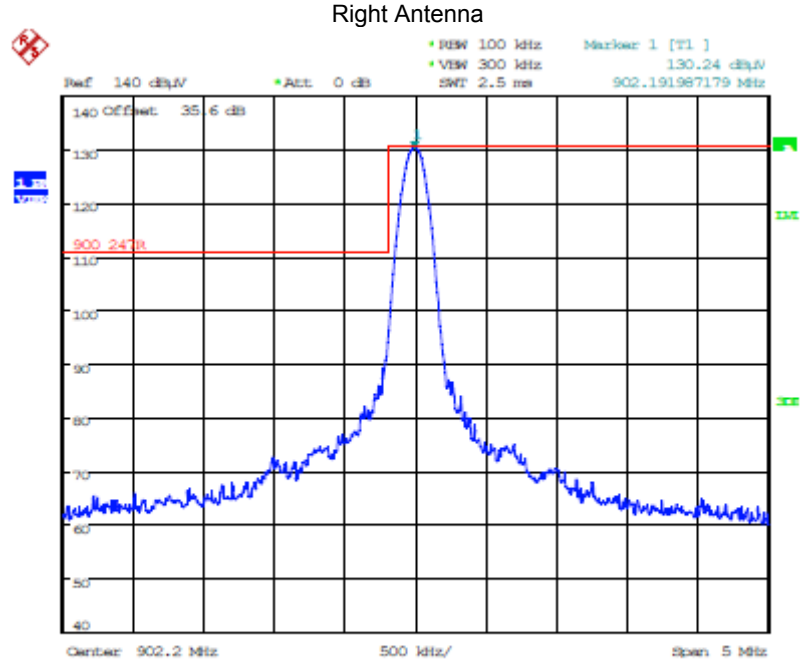
Plot 5.5.3.5.3.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, GFSK DSSS8, 10 kbps

Left Antenna



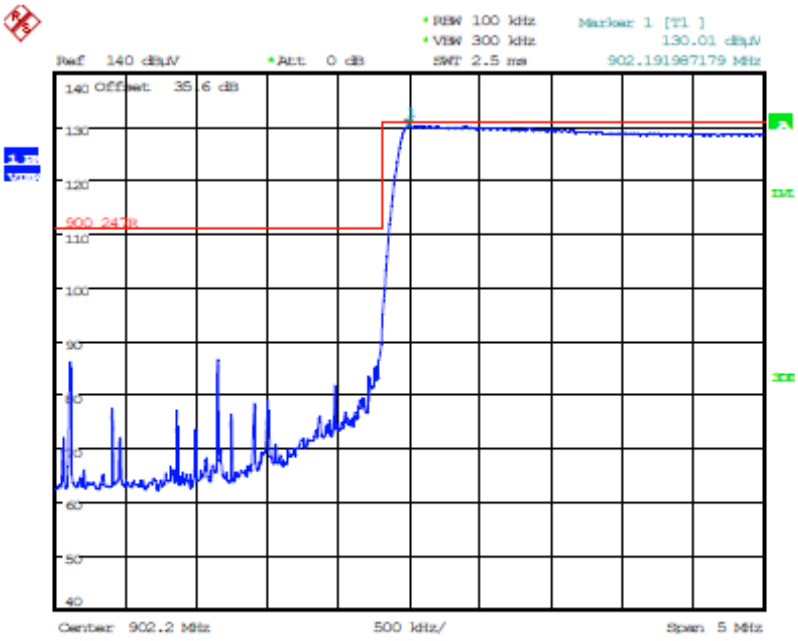
Date: 16.SEP.2016 10:37:04

Right Antenna



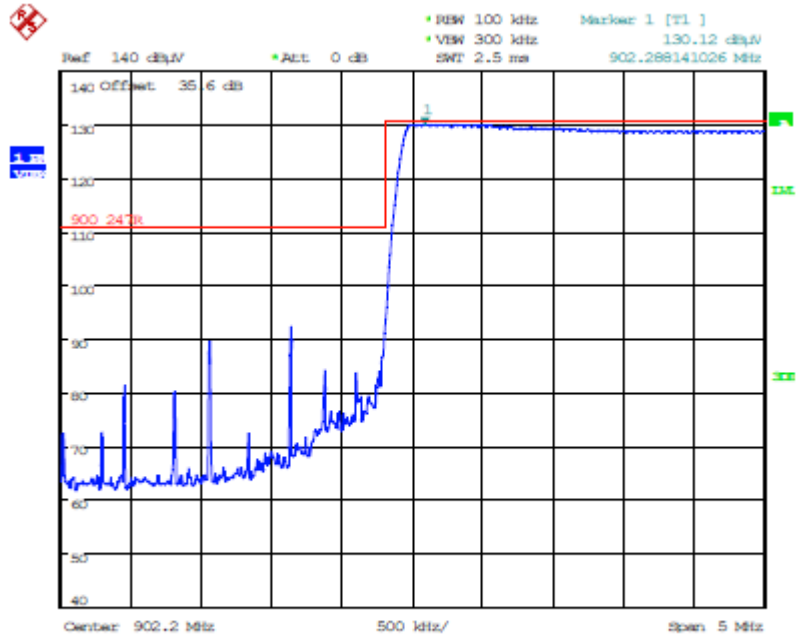
Date: 16.SEP.2016 10:43:48

Plot 5.5.3.5.3.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz, GFSK DSSS8, 10 kbps
Left Antenna



Date: 16.SEP.2016 10:41:31

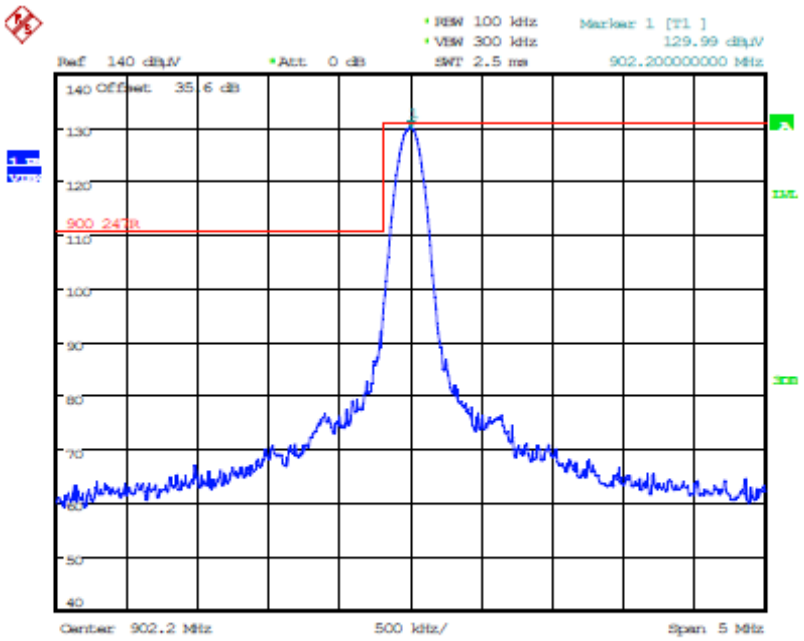
Right Antenna



Date: 16.SEP.2016 10:48:09

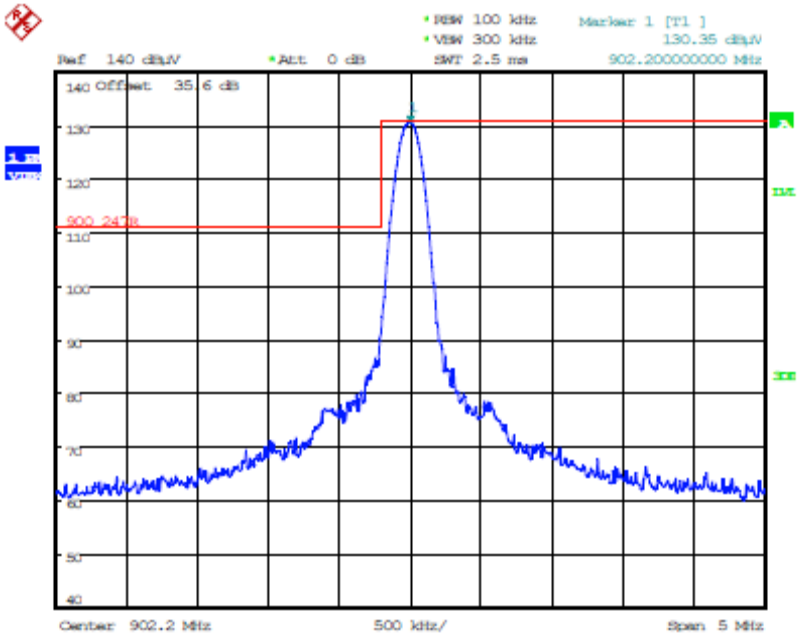
Plot 5.5.3.5.3.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 15.SEP.2016 14:49:31

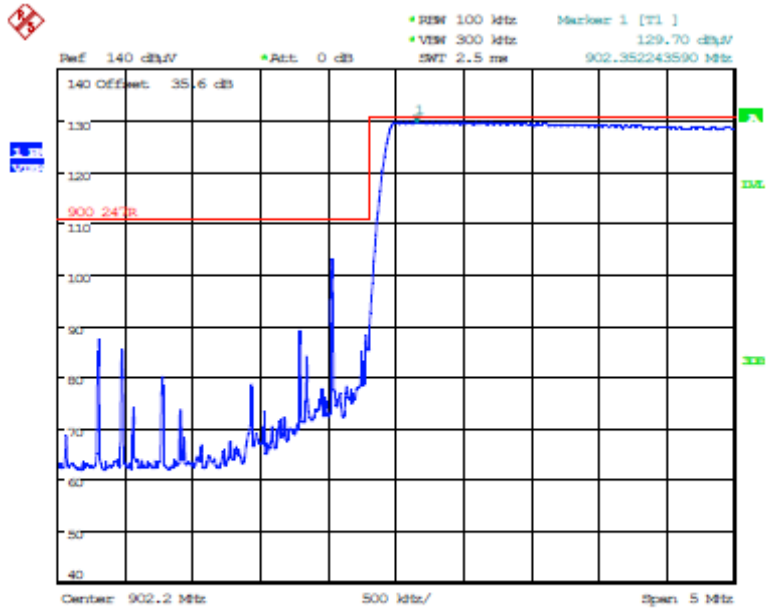
Right Antenna



Date: 15.SEP.2016 14:39:40

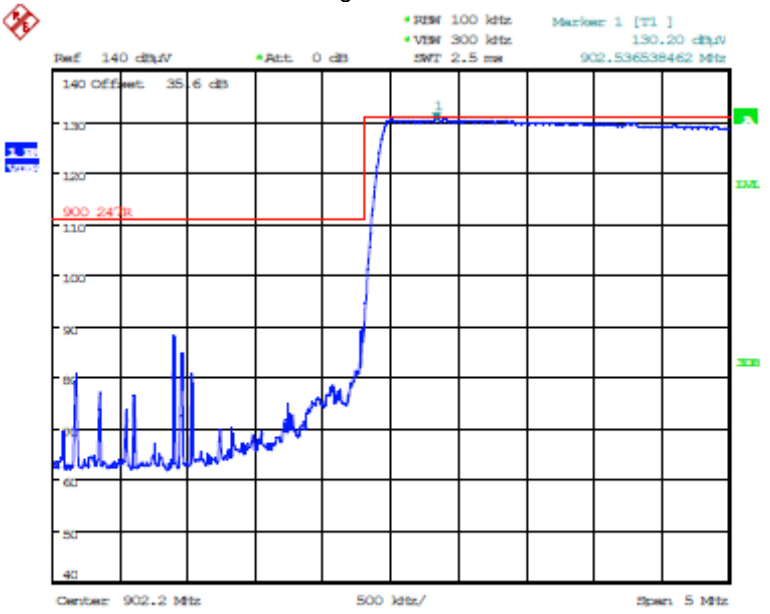
Plot 5.5.3.5.3.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz GFSK DSSS8, 10 kbps

Left Antenna



Date: 15.SEP.2016 14:57:44

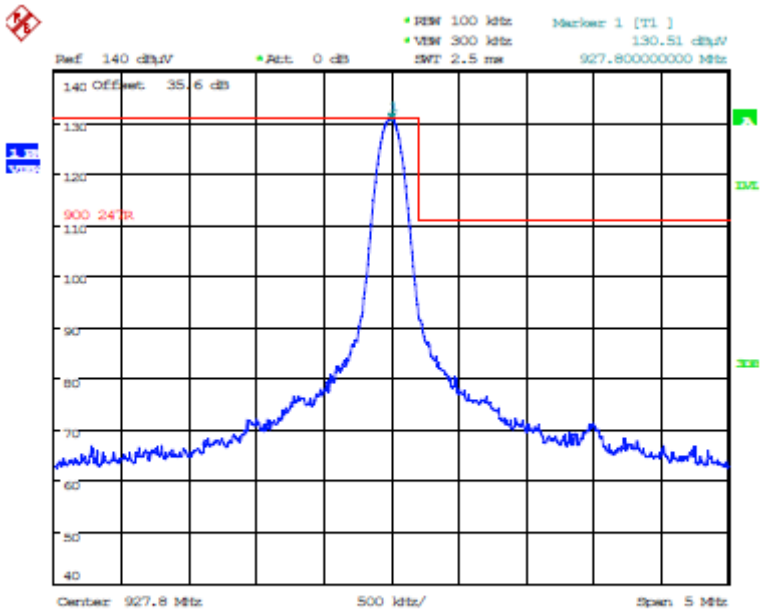
Right Antenna



Date: 15.SEP.2016 14:45:55

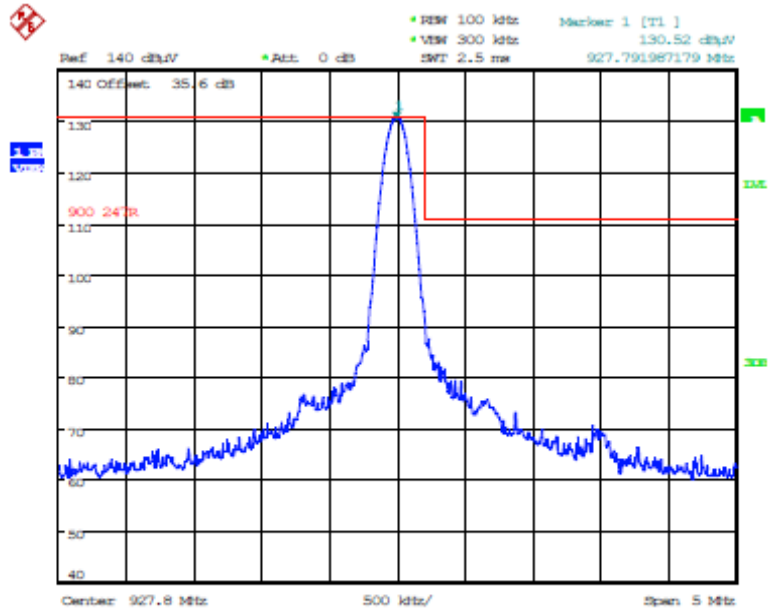
Plot 5.5.3.5.3.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 16.SEP.2016 11:04:41

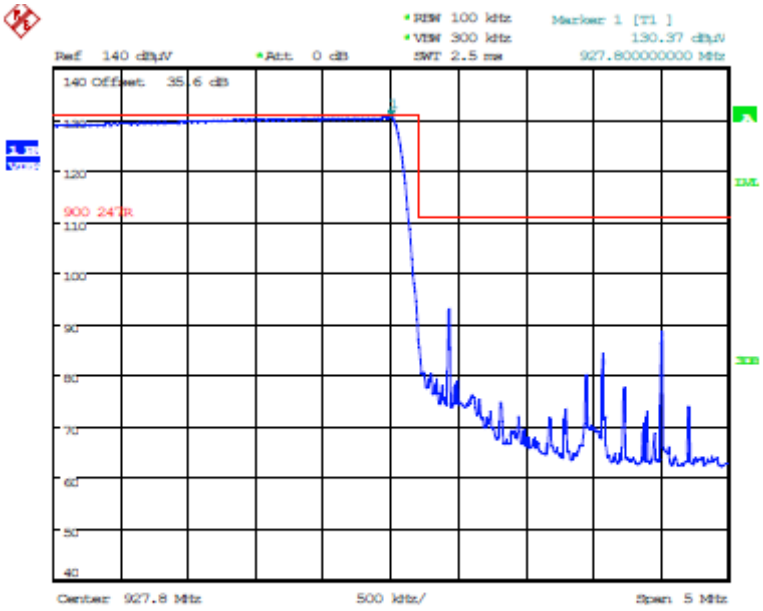
Right Antenna



Date: 16.SEP.2016 10:53:08

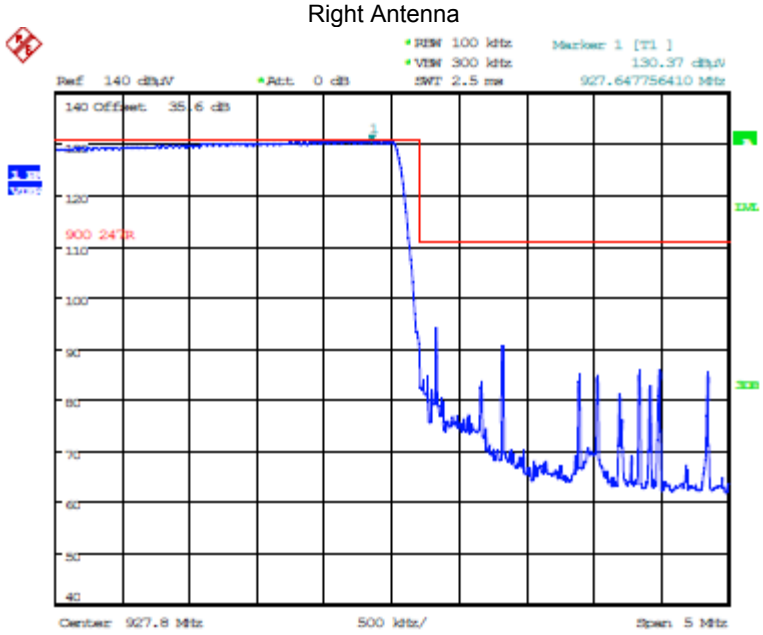
Plot 5.5.3.5.3.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 16.SEP.2016 11:09:28

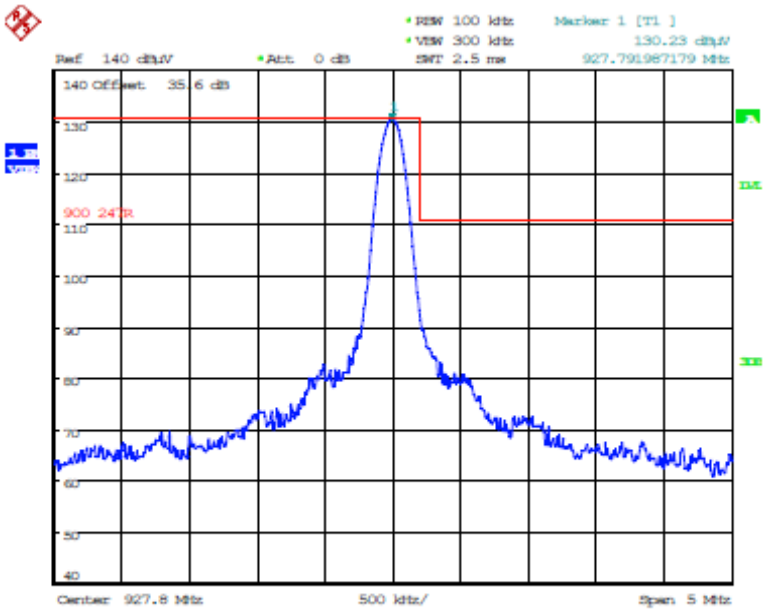
Right Antenna



Date: 16.SEP.2016 11:00:17

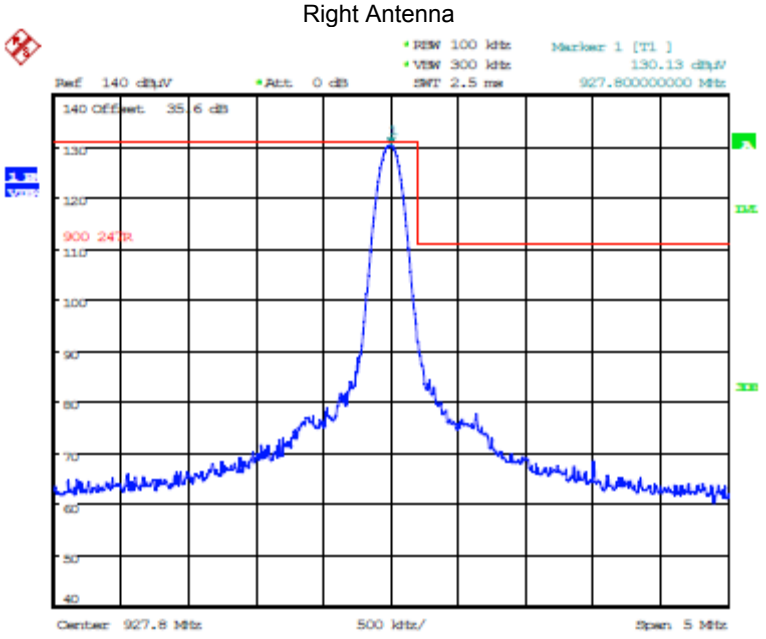
Plot 5.5.3.5.3.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 15.SEP.2016 15:10:44

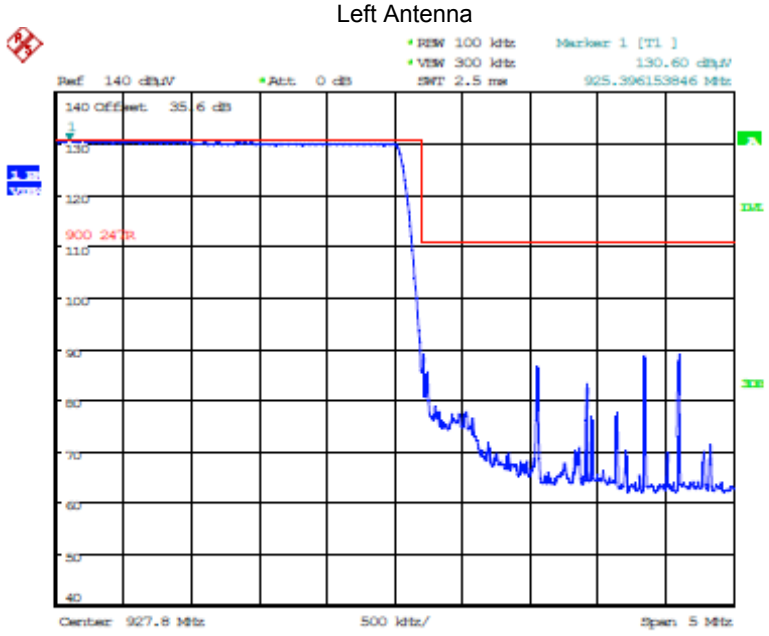
Right Antenna



Date: 15.SEP.2016 15:20:59

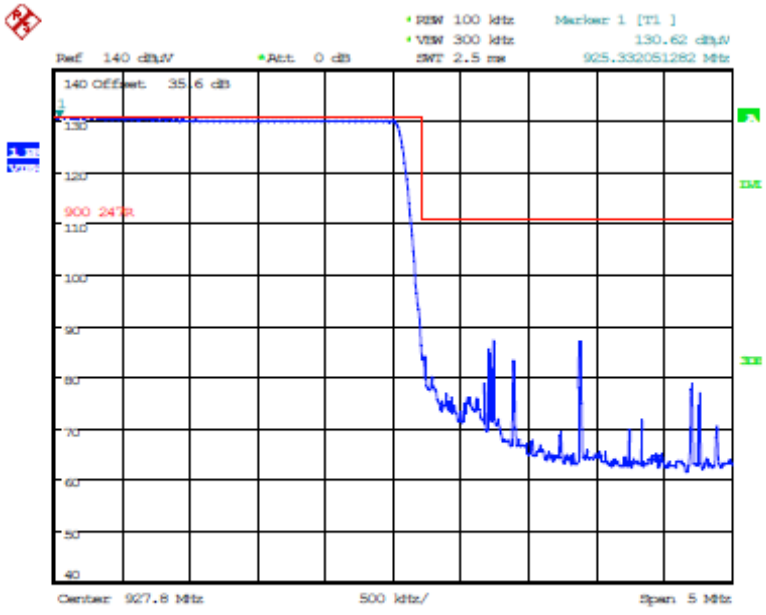
Plot 5.5.3.5.3.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 15.SEP.2016 15:15:32

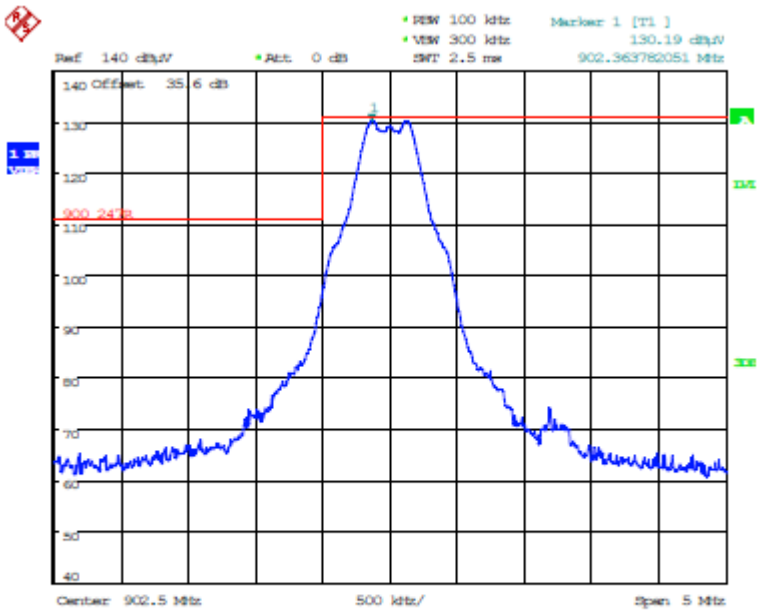
Right Antenna



Date: 15.SEP.2016 15:27:32

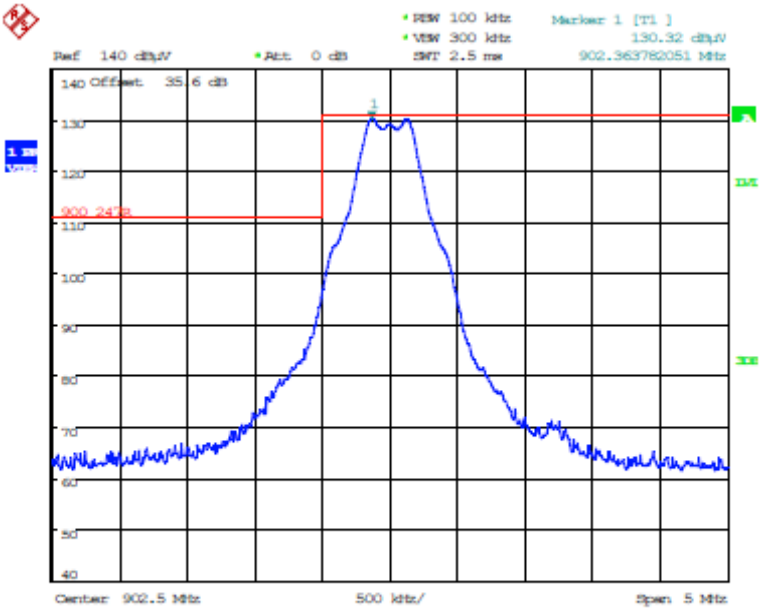
Plot 5.5.3.5.3.9. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 16.SEP.2016 10:27:39

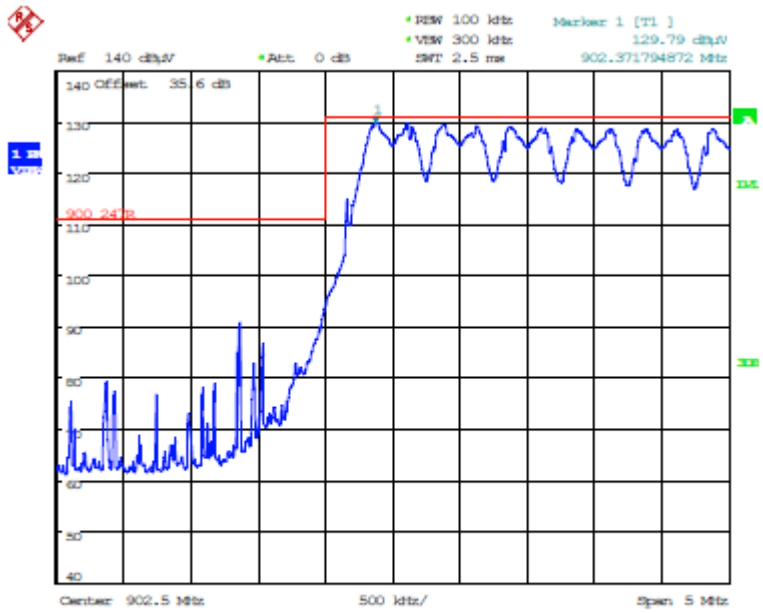
Right Antenna



Date: 16.SEP.2016 10:22:34

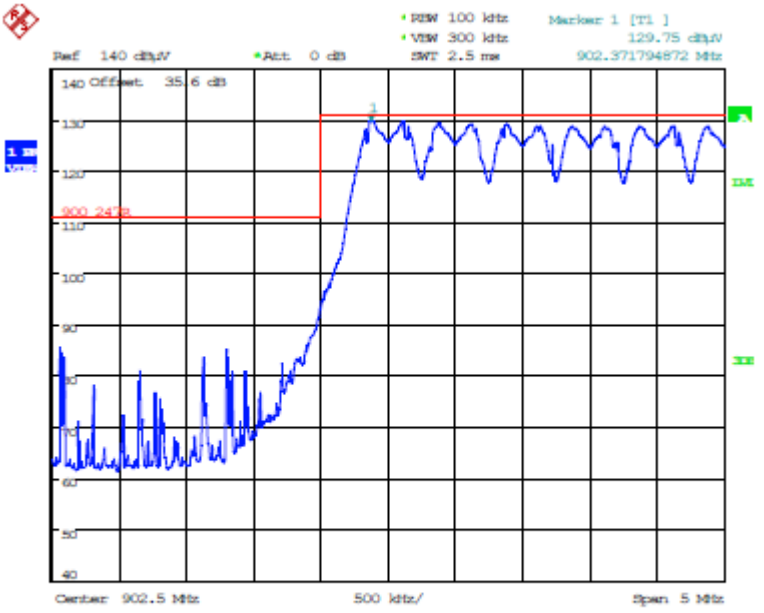
Plot 5.5.3.5.3.10. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 16.SEP.2016 10:33:00

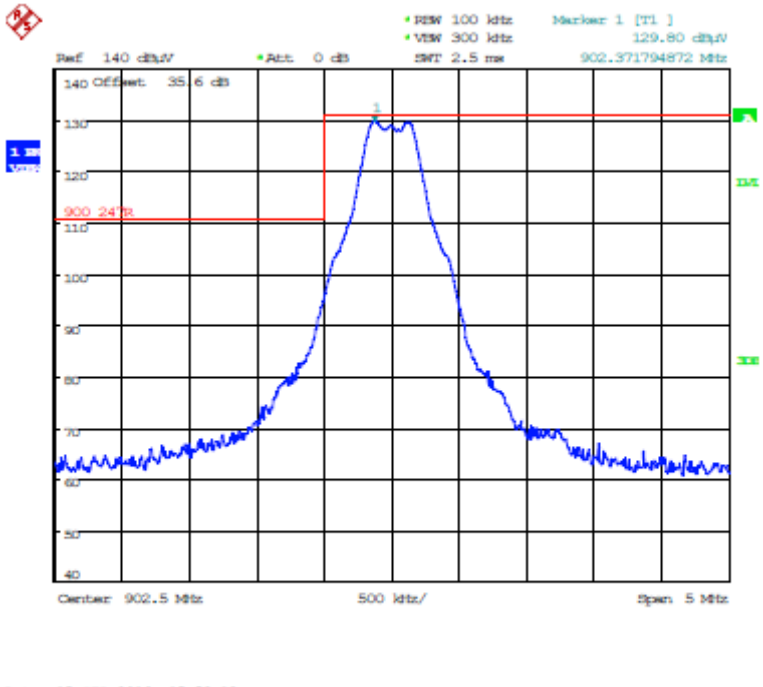
Right Antenna



Date: 16.SEP.2016 10:25:09

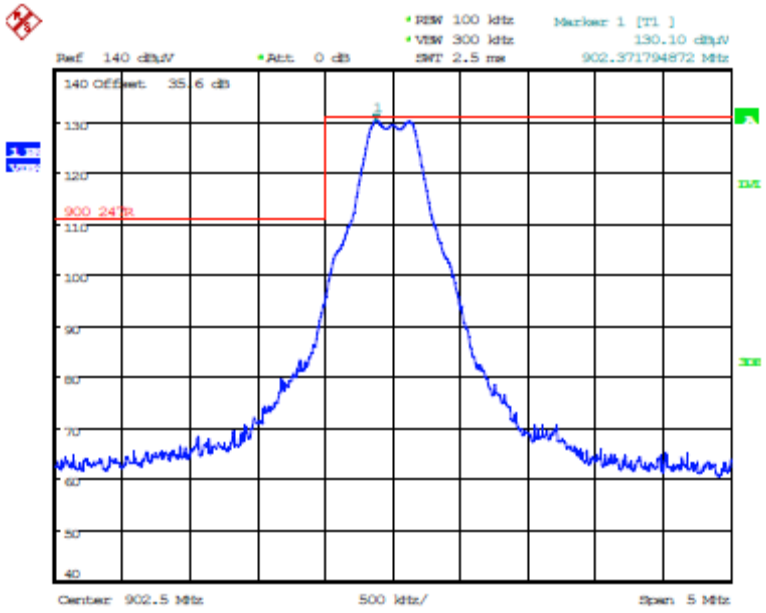
Plot 5.5.3.5.3.11. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 15.SEP.2016 15:52:12

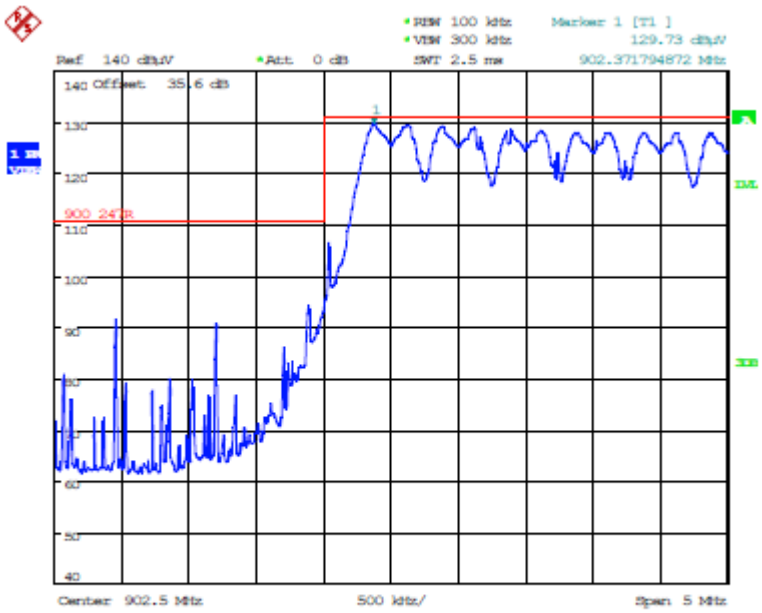
Right Antenna



Date: 15.SEP.2016 16:20:31

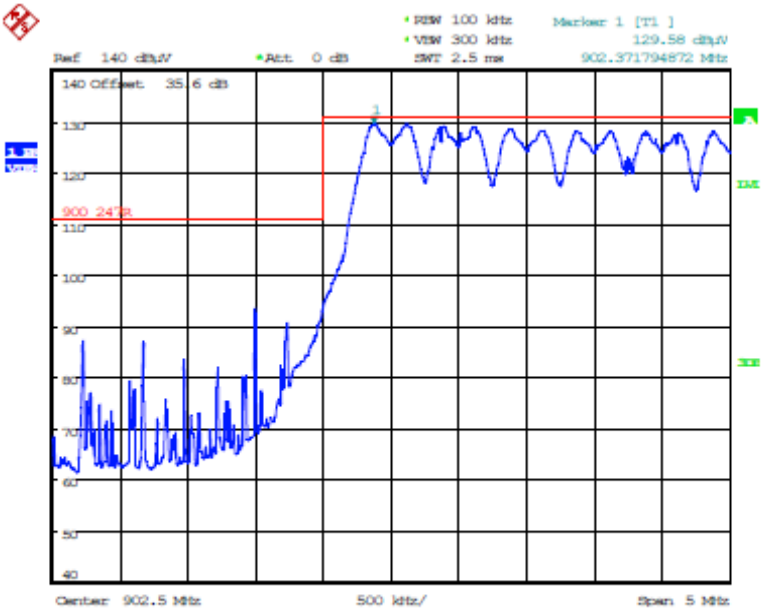
Plot 5.5.3.5.3.12. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 15.SEP.2016 15:59:30

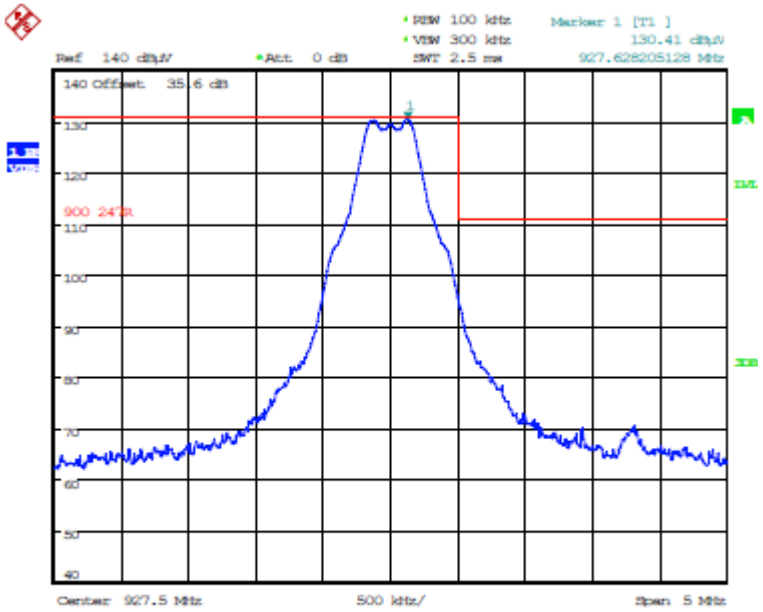
Right Antenna



Date: 15.SEP.2016 16:23:52

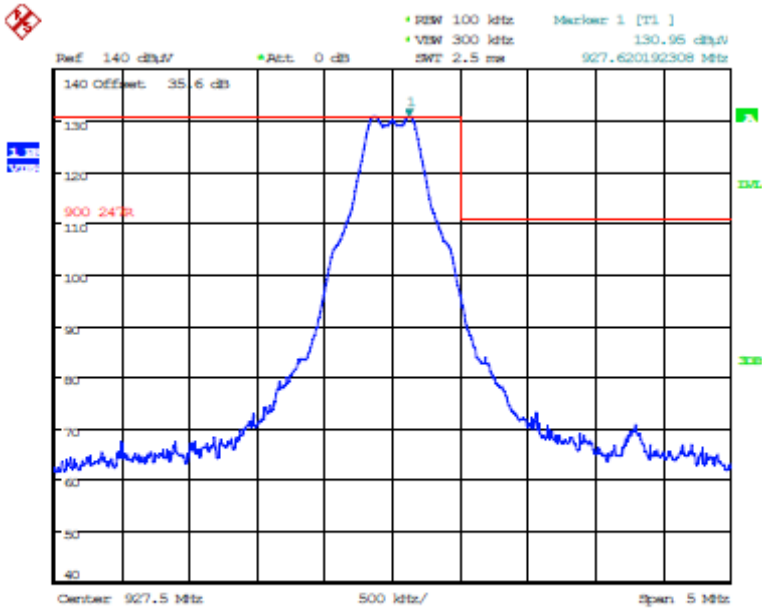
Plot 5.5.3.5.3.13. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 16.SEP.2016 11:12:02

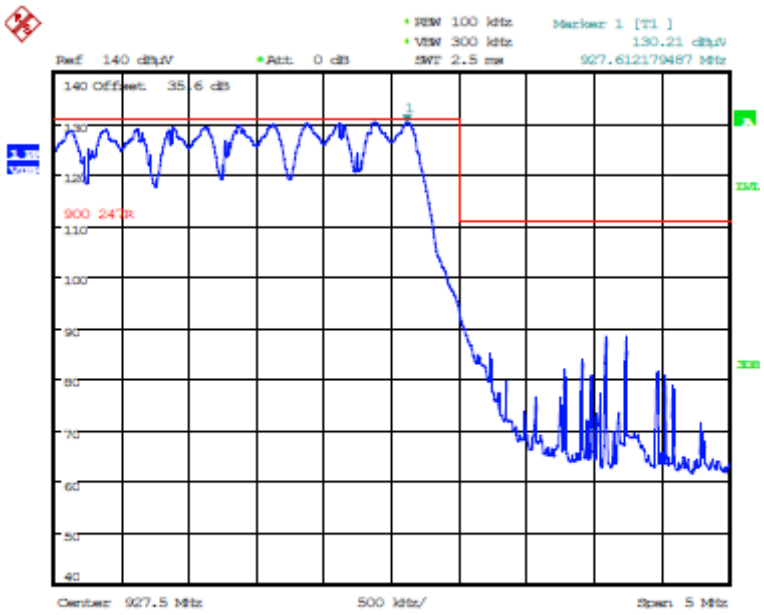
Right Antenna



Date: 16.SEP.2016 11:20:20

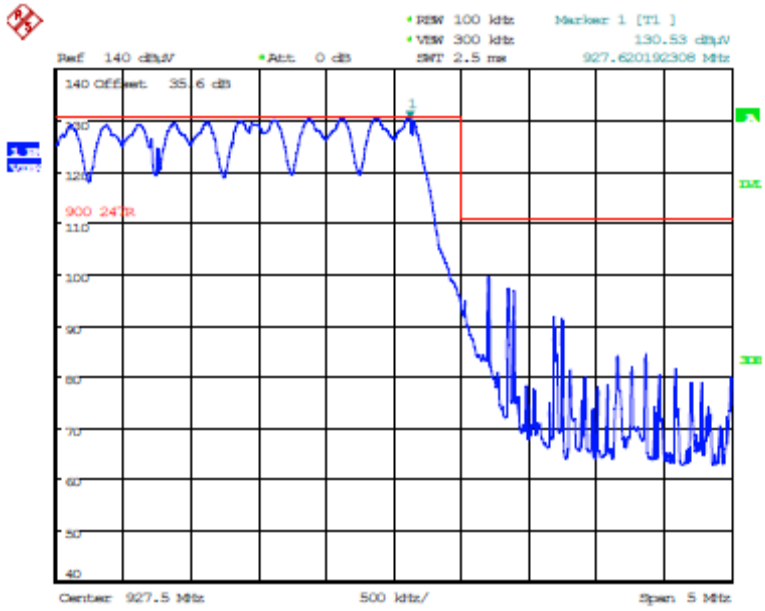
Plot 5.5.3.5.3.14. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 16.SEP.2016 11:17:49

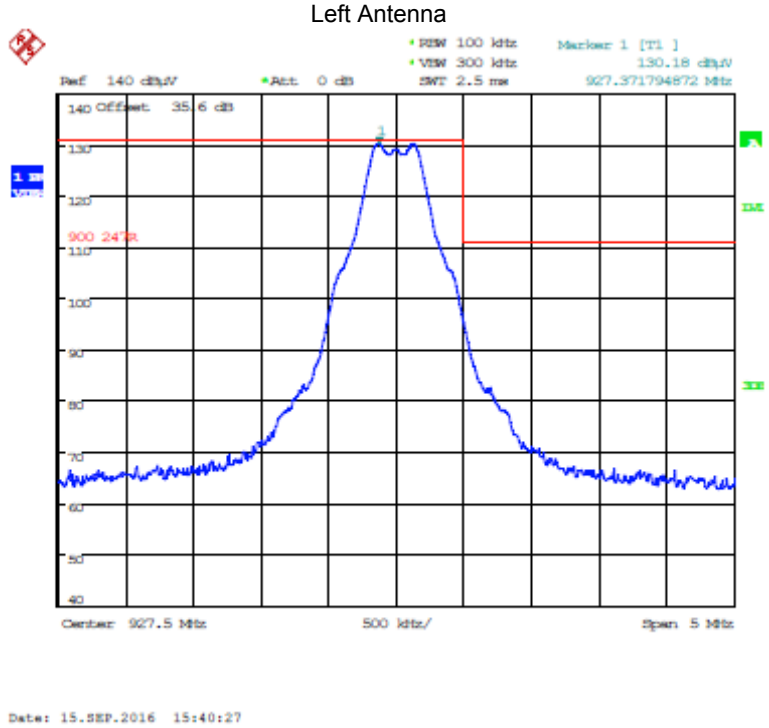
Right Antenna



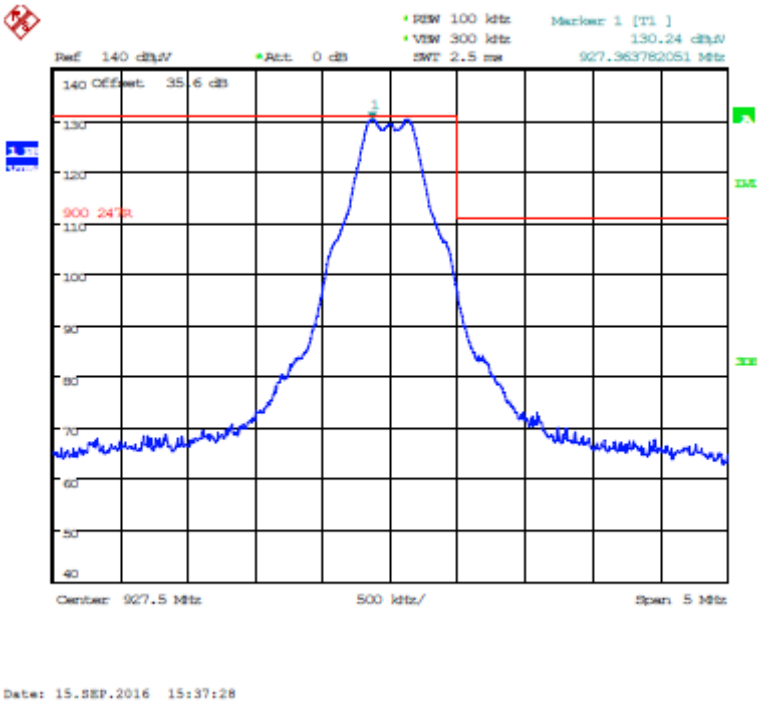
Date: 16.SEP.2016 11:24:33

Plot 5.5.3.5.3.15. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna

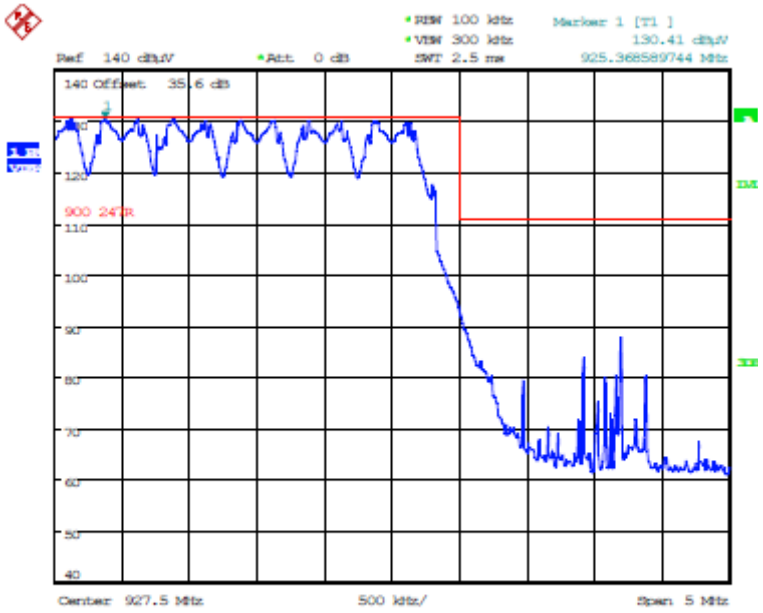


Right Antenna



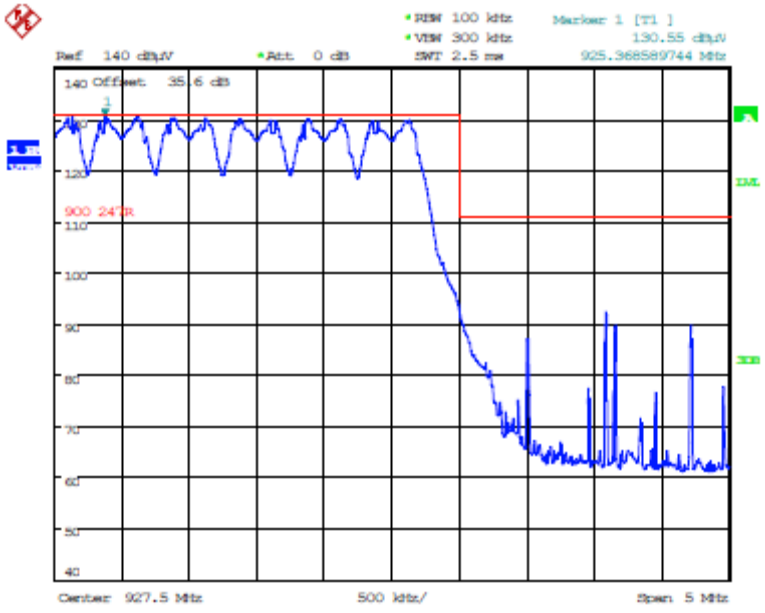
Plot 5.5.3.5.3.16. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 15.SEP.2016 15:48:27

Right Antenna



Date: 15.SEP.2016 15:34:46

5.5.3.5.4. EUT with 9dBi Panel Antenna

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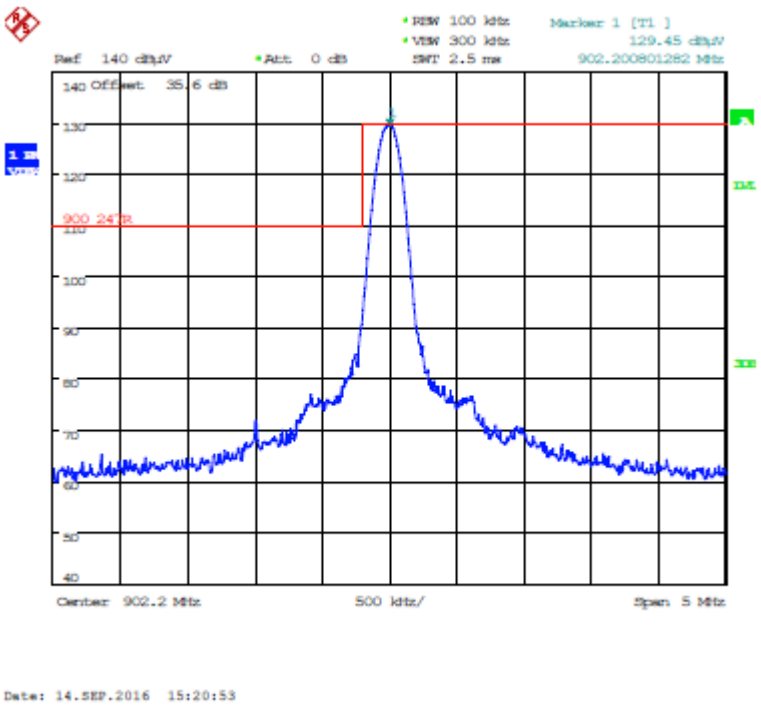
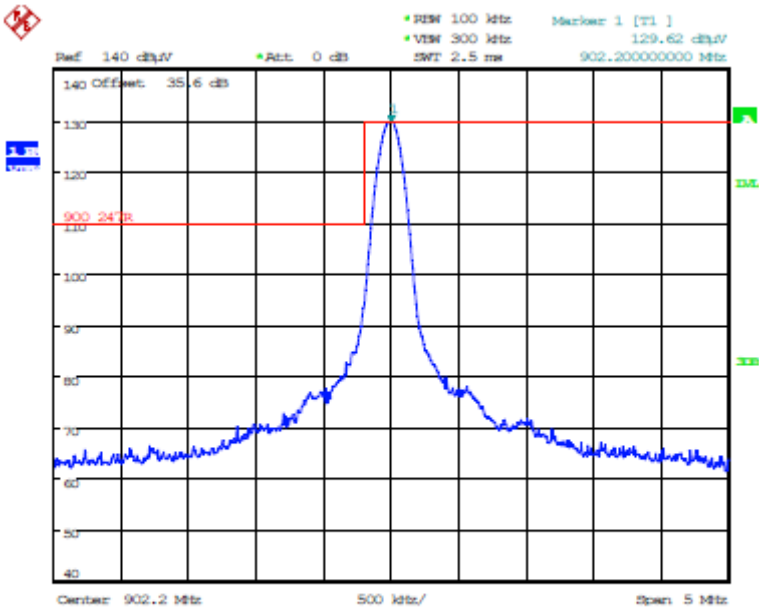
Plot 5.5.3.5.4.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 14.SEP.2016 15:20:53

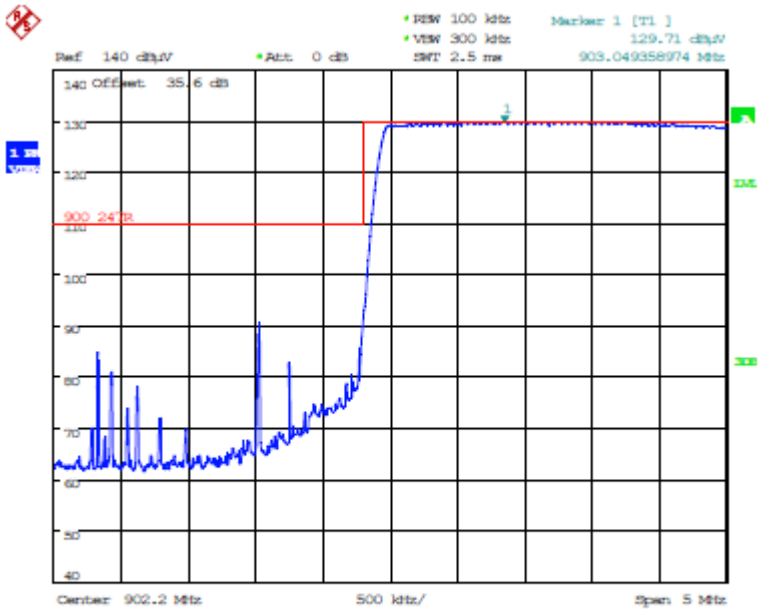
Right Antenna



Date: 14.SEP.2016 15:29:05

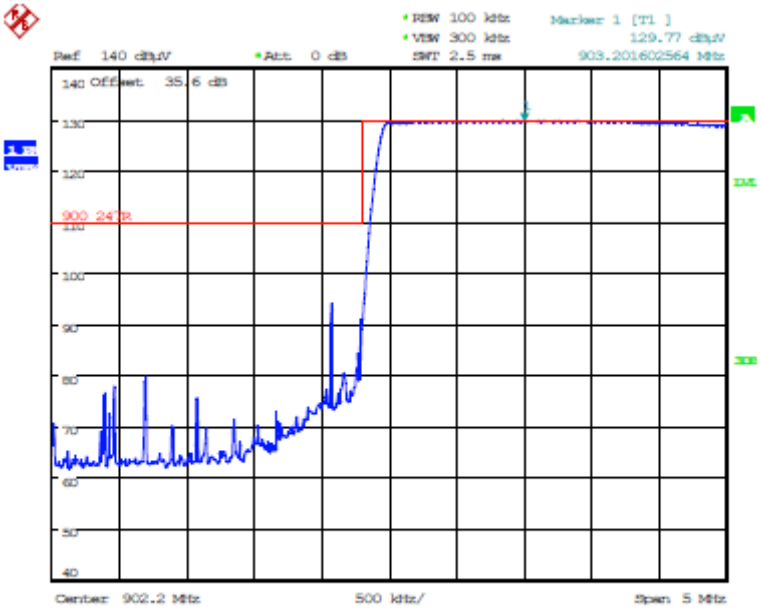
Plot 5.5.3.5.4.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 14.SEP.2016 15:25:16

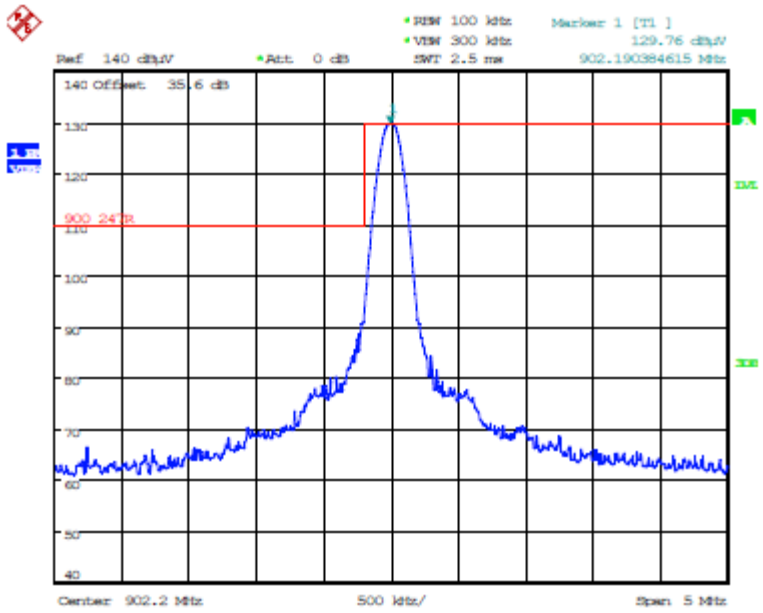
Right Antenna



Date: 14.SEP.2016 15:35:11

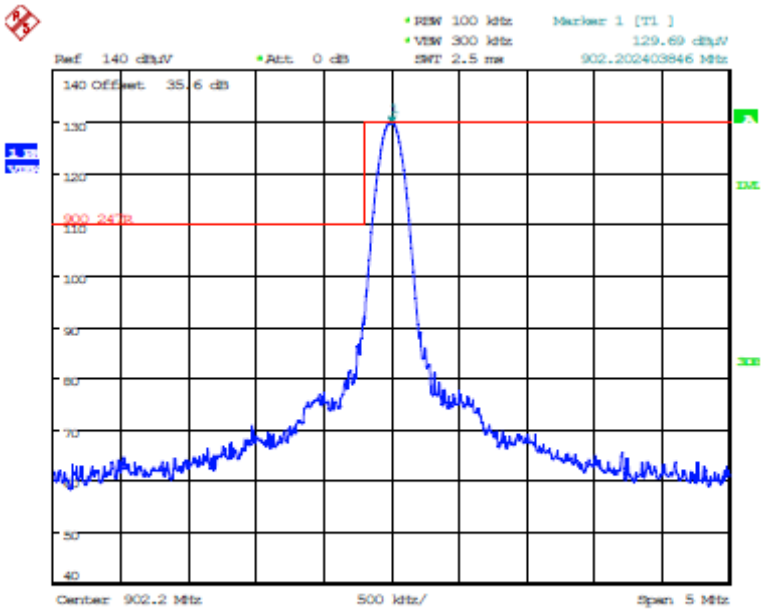
Plot 5.5.3.5.4.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 13.SEP.2016 15:38:12

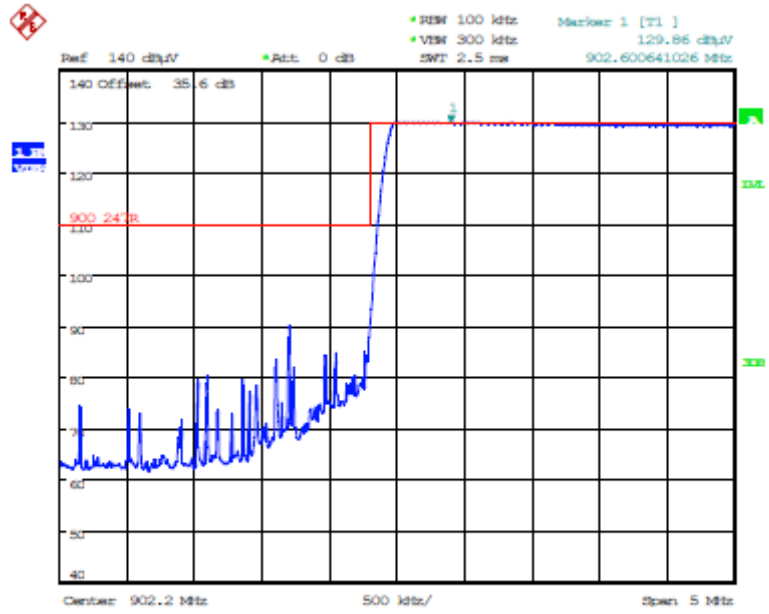
Right Antenna



Date: 13.SEP.2016 16:09:54

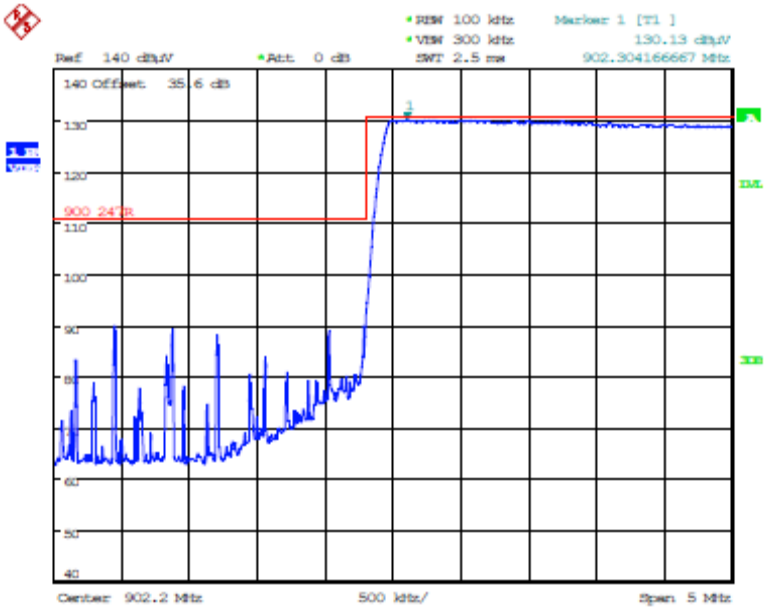
Plot 5.5.3.5.4.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz GFSK DSSS8, 10 kbps

Left Antenna



Date: 13.SEP.2016 15:43:58

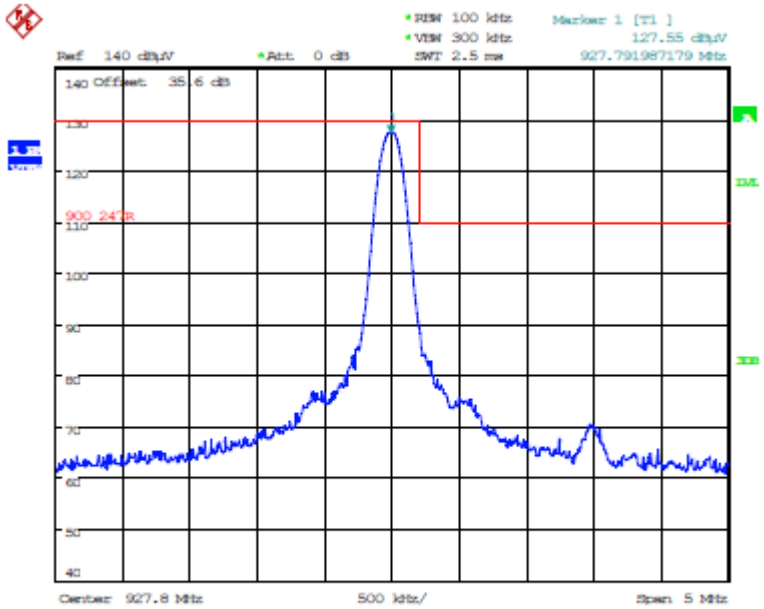
Right Antenna



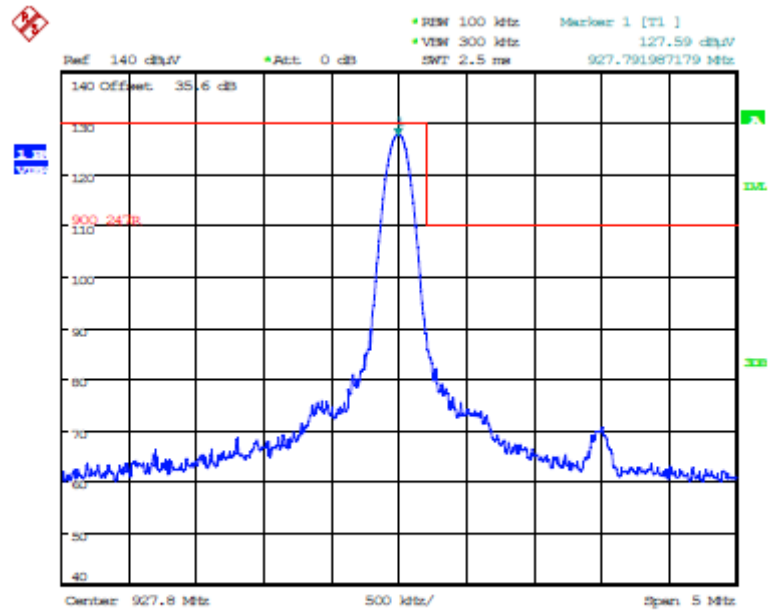
Date: 13.SEP.2016 16:22:15

Plot 5.5.3.5.4.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna

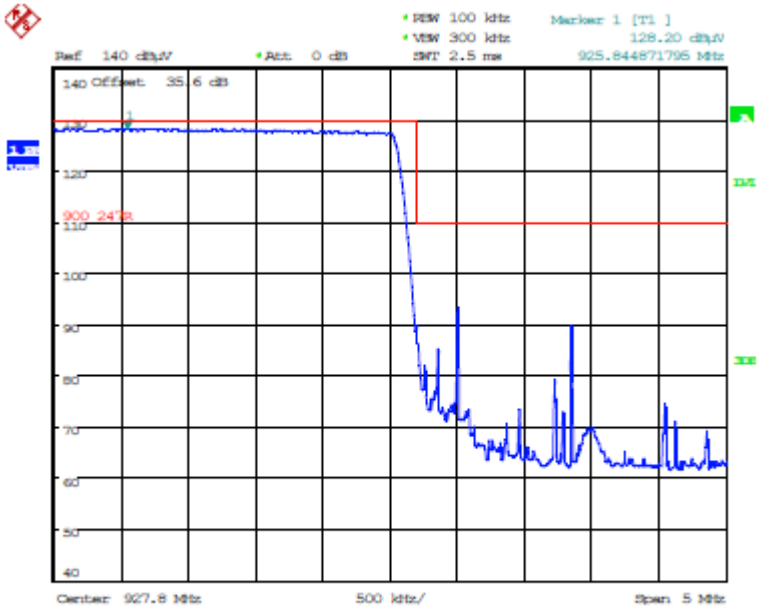


Right Antenna



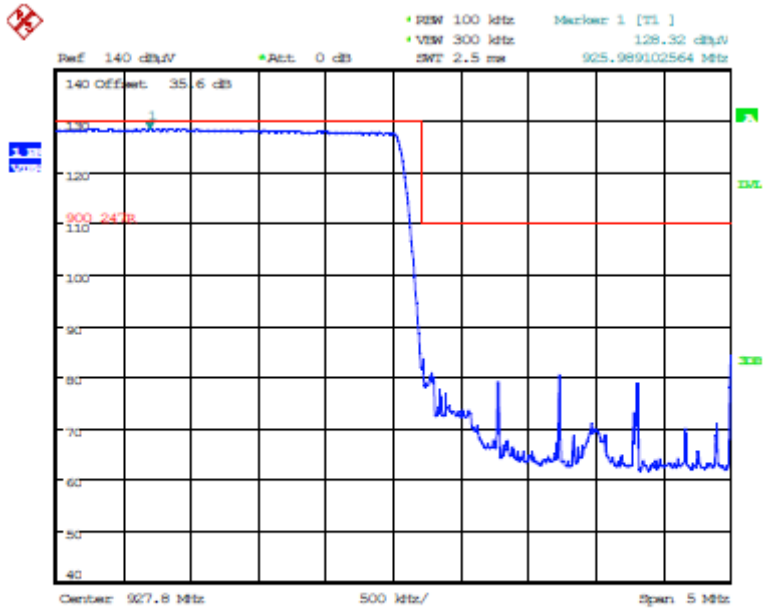
Plot 5.5.3.5.4.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 14.SEP.2016 15:51:12

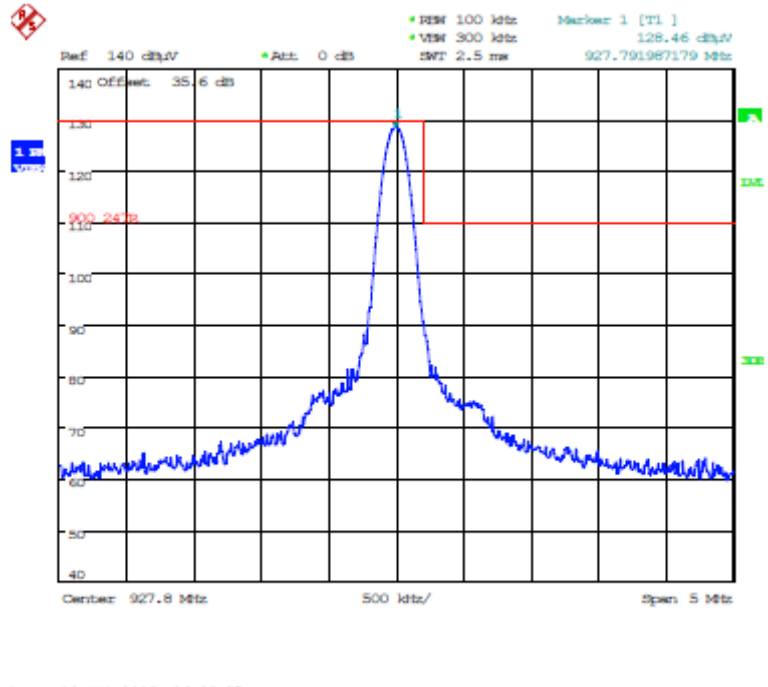
Right Antenna



Date: 14.SEP.2016 15:40:19

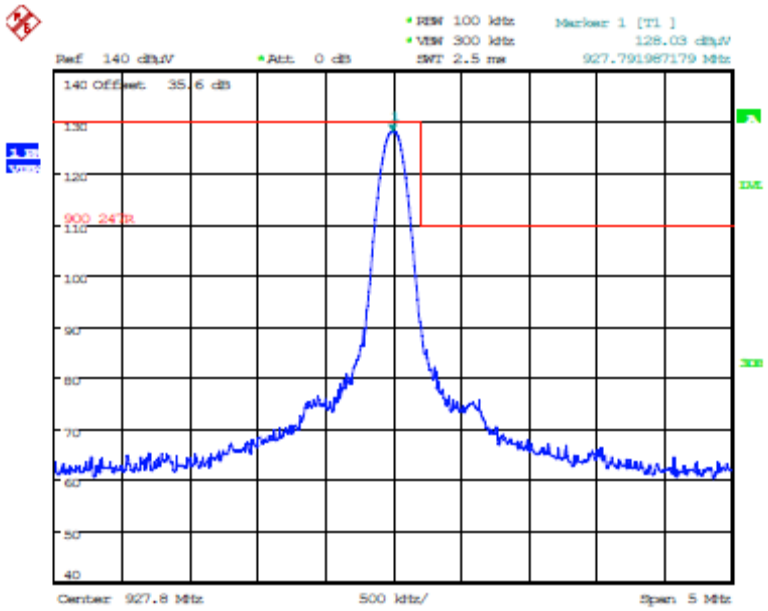
Plot 5.5.3.5.4.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 13.SEP.2016 16:36:35

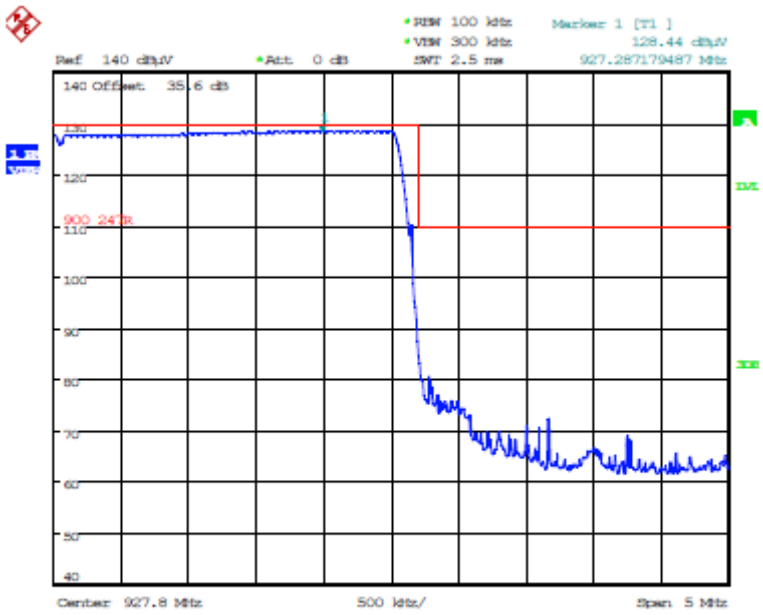
Right Antenna



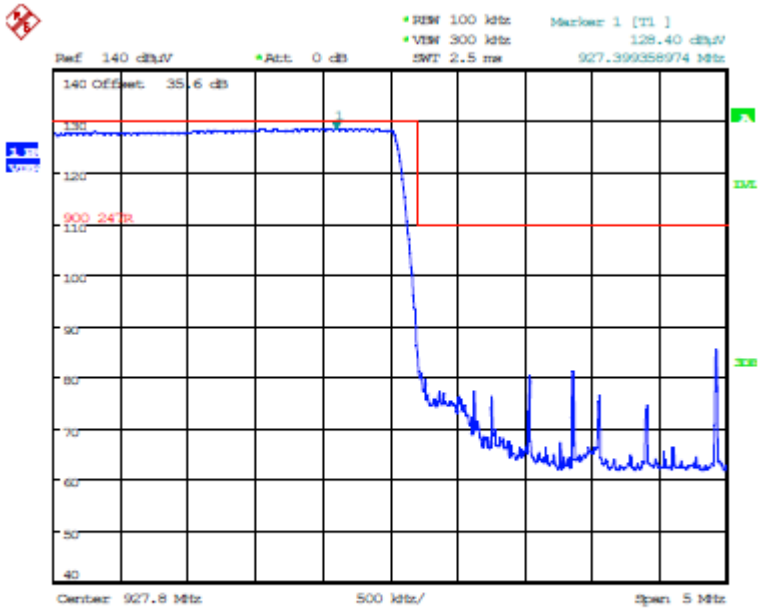
Date: 13.SEP.2016 16:29:22

Plot 5.5.3.5.4.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna

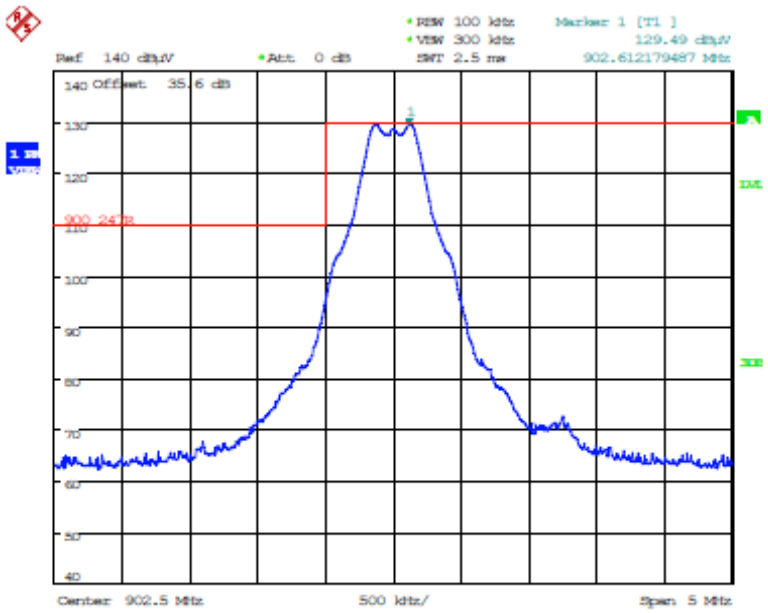


Right Antenna



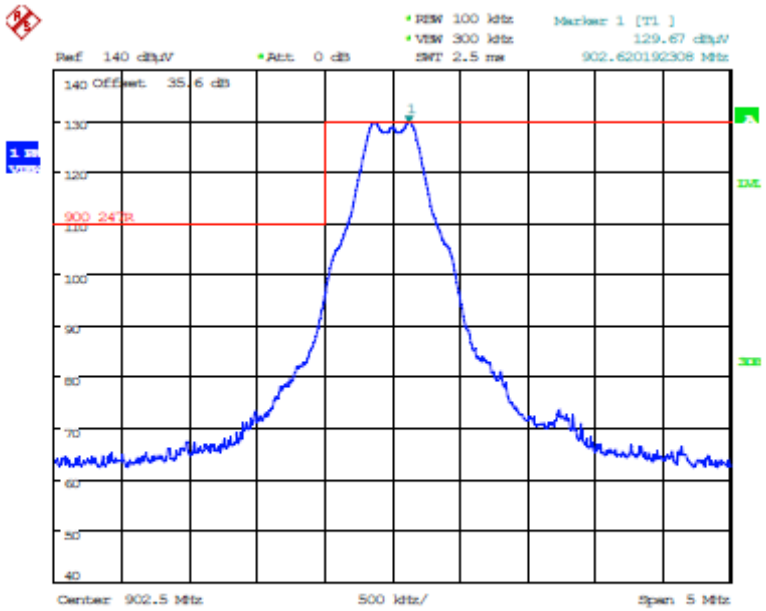
Plot 5.5.3.5.4.9. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 14.SEP.2016 15:53:57

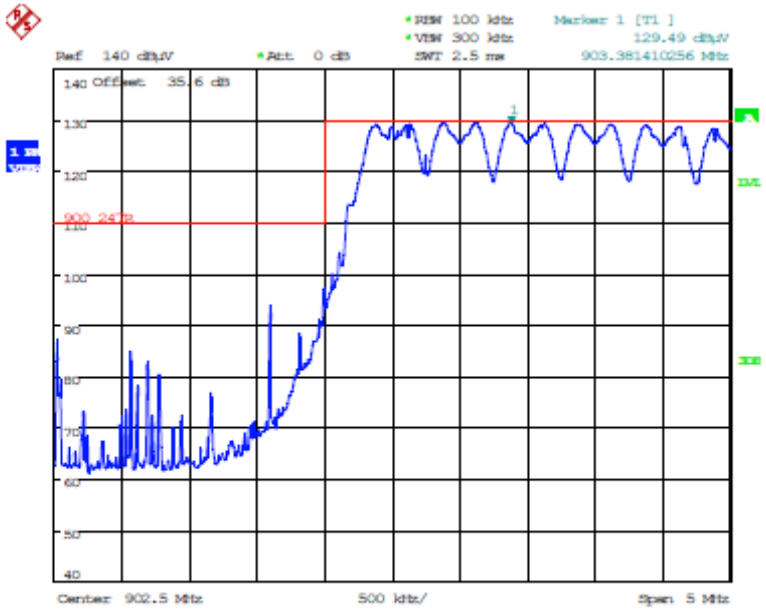
Right Antenna



Date: 14.SEP.2016 16:00:49

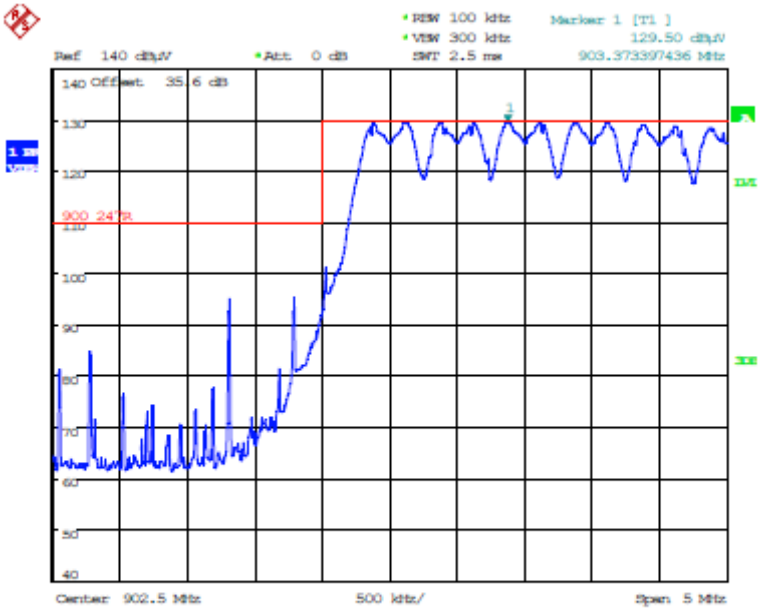
Plot 5.5.3.5.4.10. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 14.SEP.2016 15:57:18

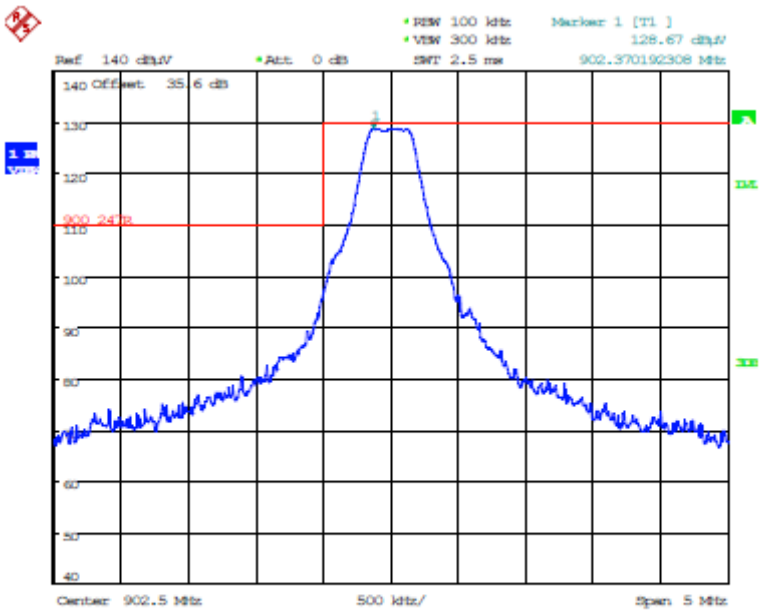
Right Antenna



Date: 14.SEP.2016 16:03:48

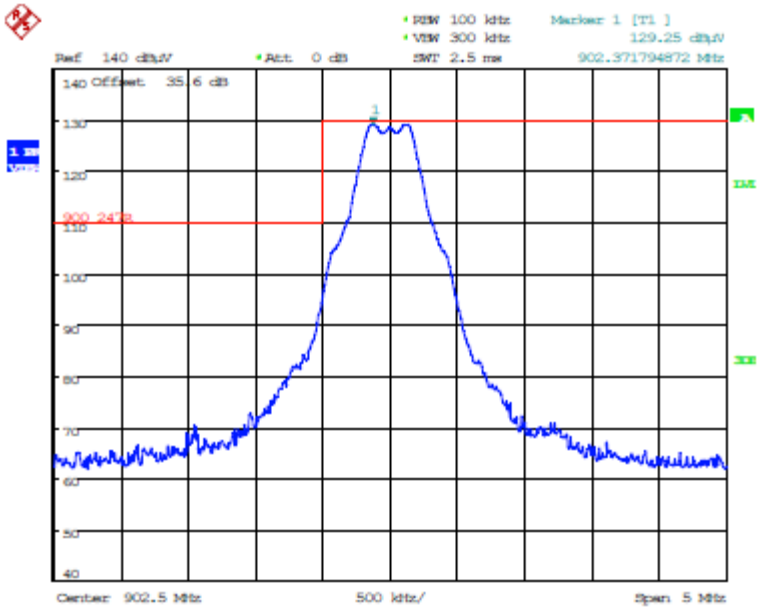
Plot 5.5.3.5.4.11. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 14.SEP.2016 14:00:55

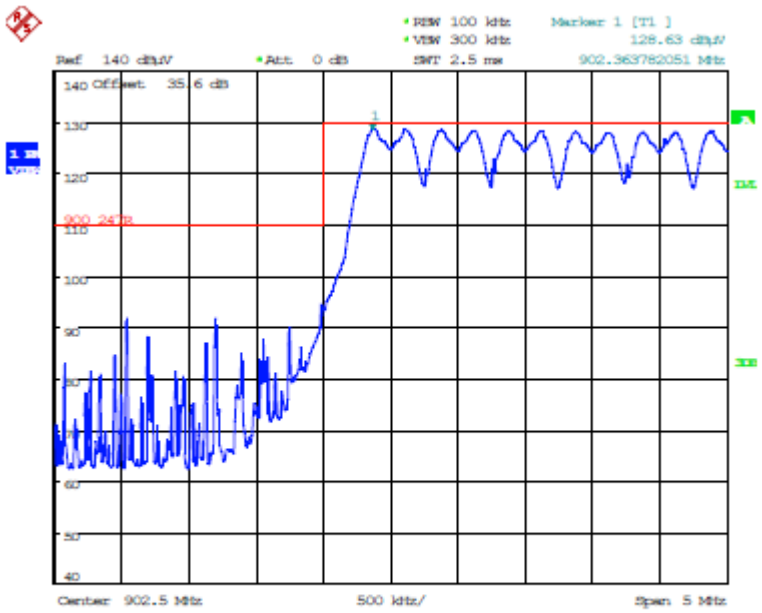
Right Antenna



Date: 14.SEP.2016 14:12:11

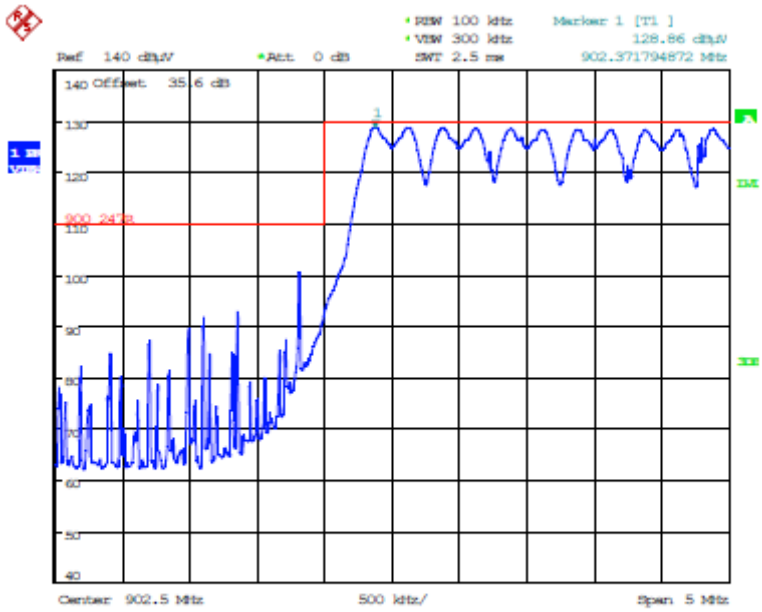
Plot 5.5.3.5.4.12. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 14.SEP.2016 14:06:52

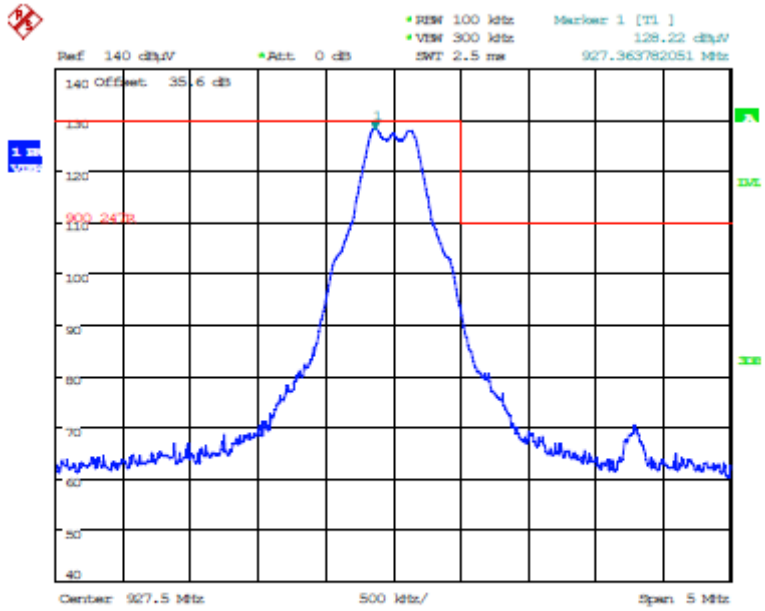
Right Antenna



Date: 14.SEP.2016 14:16:15

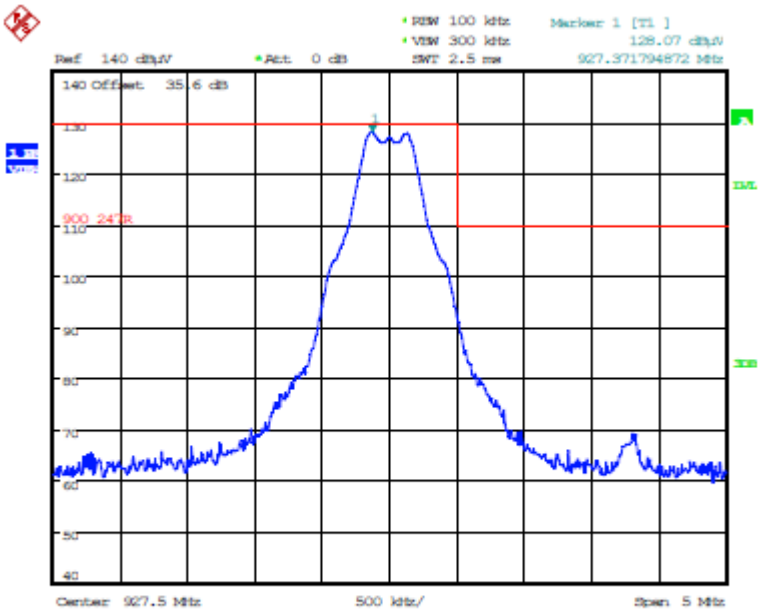
Plot 5.5.3.5.4.13. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 14.SEP.2016 16:14:31

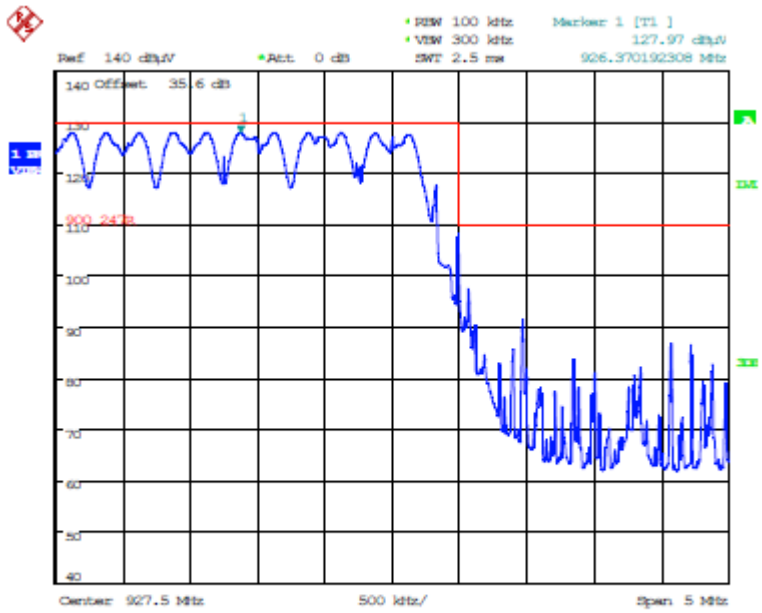
Right Antenna



Date: 14.SEP.2016 16:10:49

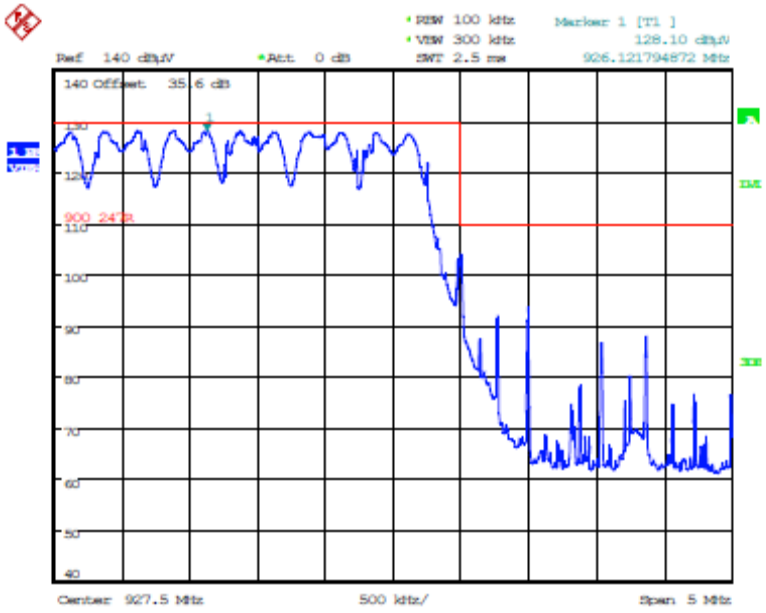
Plot 5.5.3.5.4.14. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 14.SEP.2016 16:21:07

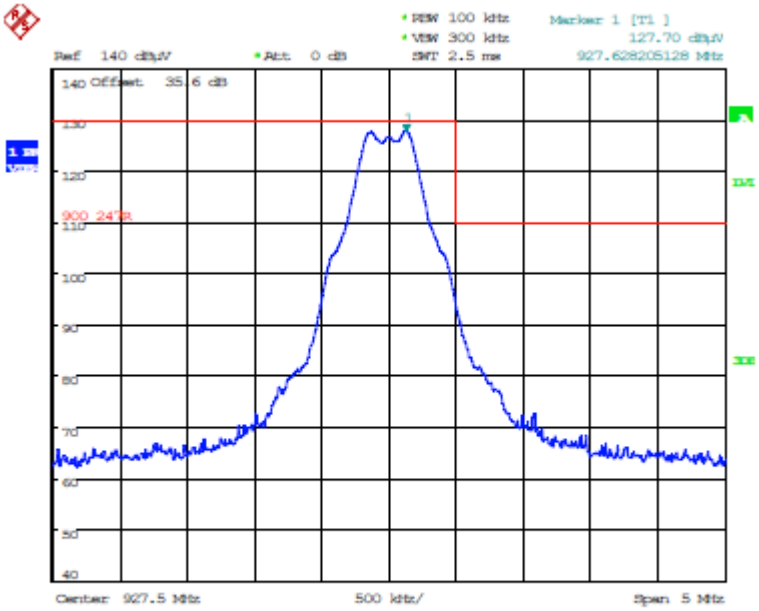
Right Antenna



Date: 14.SEP.2016 16:09:10

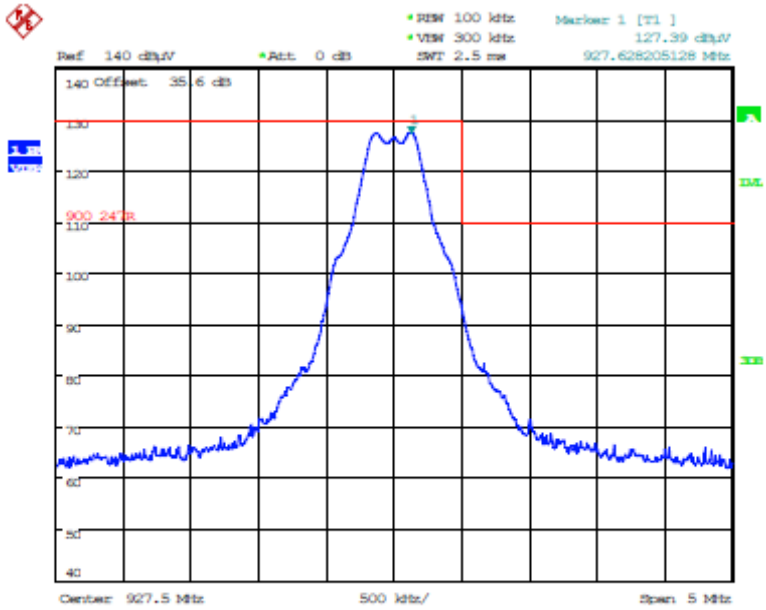
Plot 5.5.3.5.4.15. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 14.SEP.2016 14:34:58

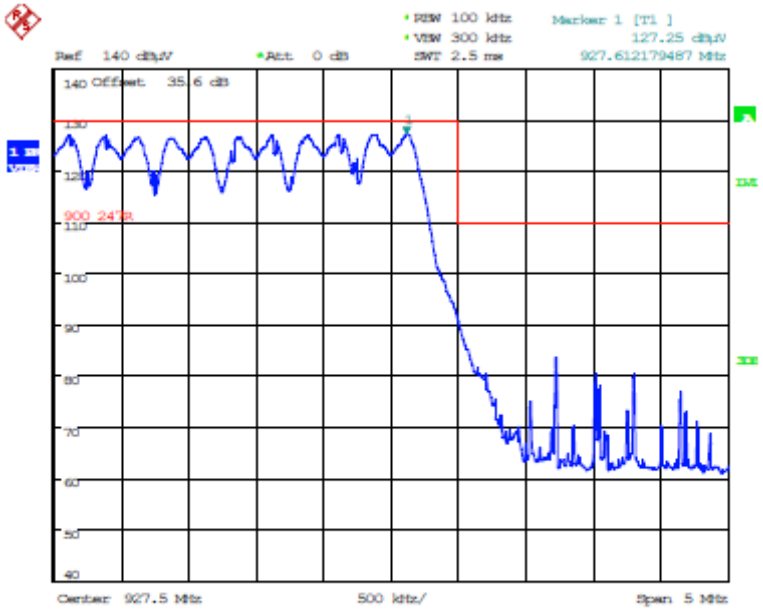
Right Antenna



Date: 14.SEP.2016 14:27:40

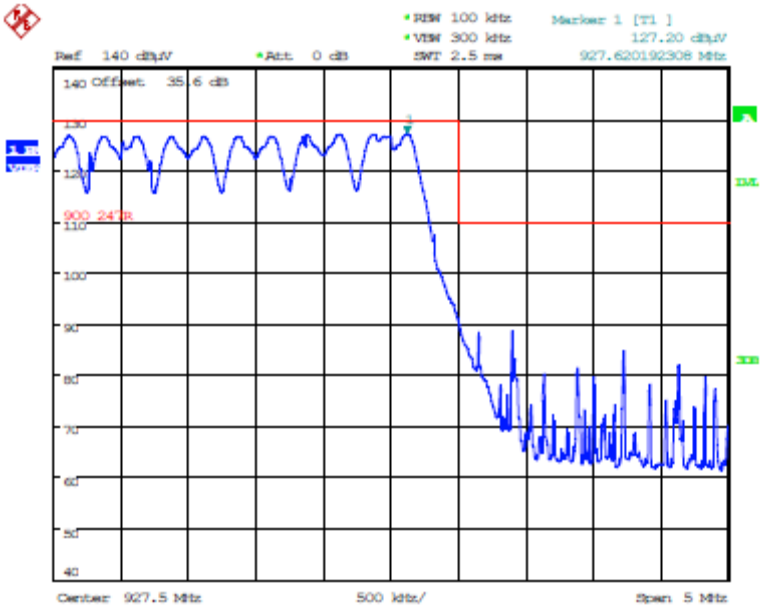
Plot 5.5.3.5.4.16. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 14.SEP.2016 14:38:44

Right Antenna

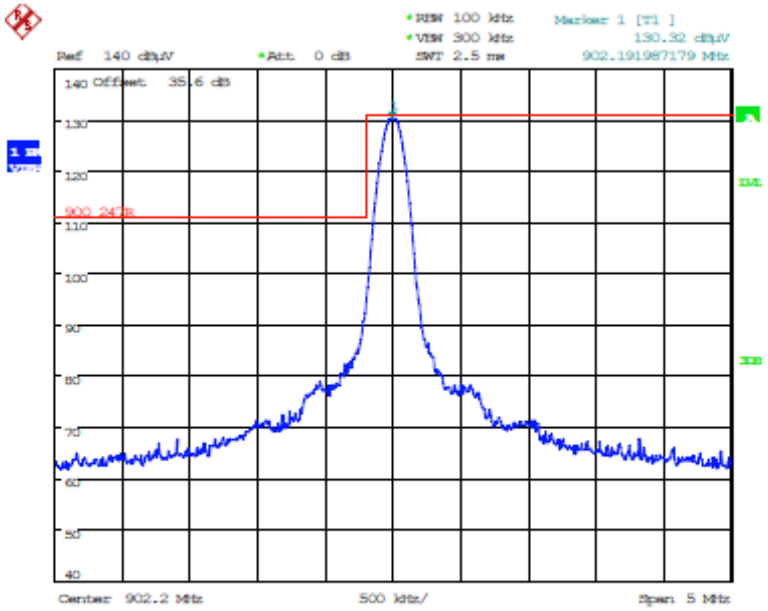


Date: 14.SEP.2016 14:31:46

5.5.3.5.5. EUT with 14.0 dBi Yagi Antenna

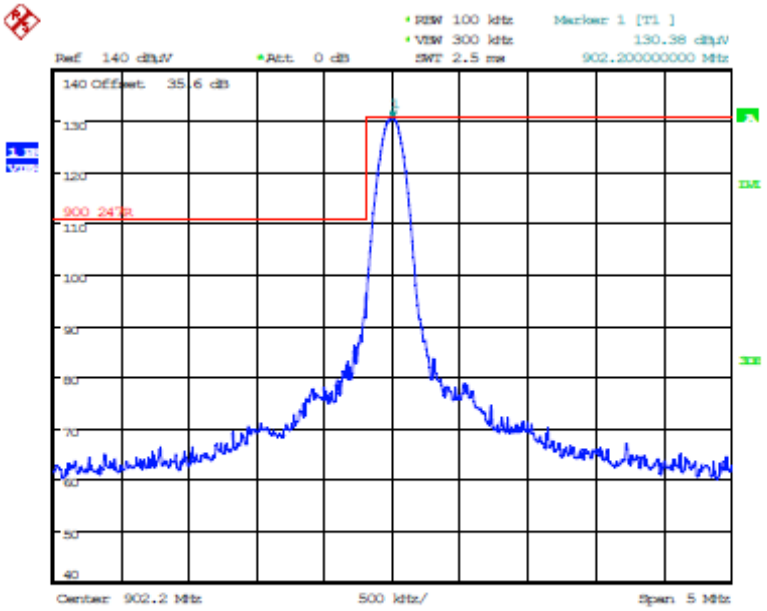
Plot 5.5.3.5.5.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 11.SEP.2016 09:01:20

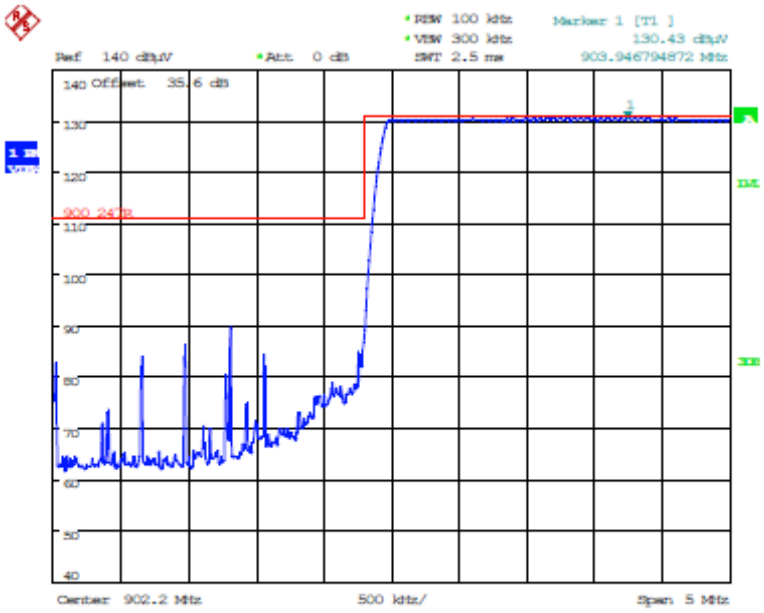
Right Antenna



Date: 11.SEP.2016 09:09:59

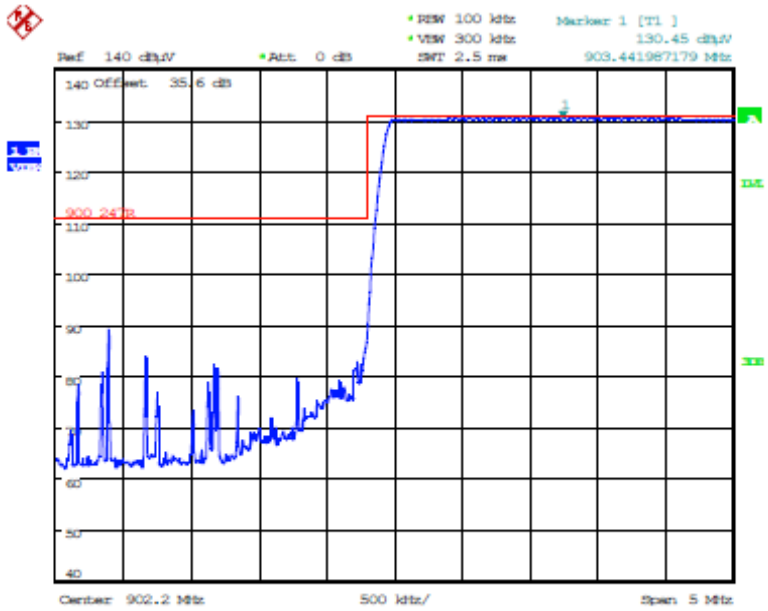
Plot 5.5.3.5.5.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 11.SEP.2016 09:06:09

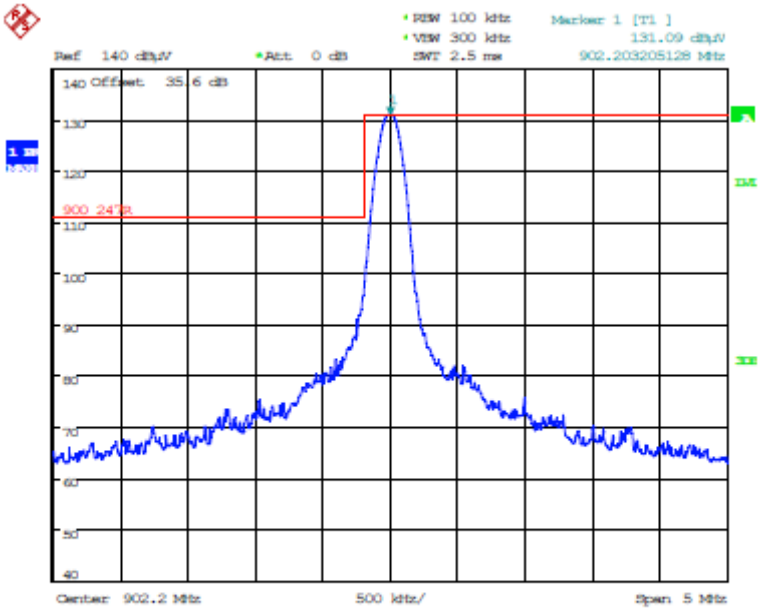
Right Antenna



Date: 11.SEP.2016 09:14:40

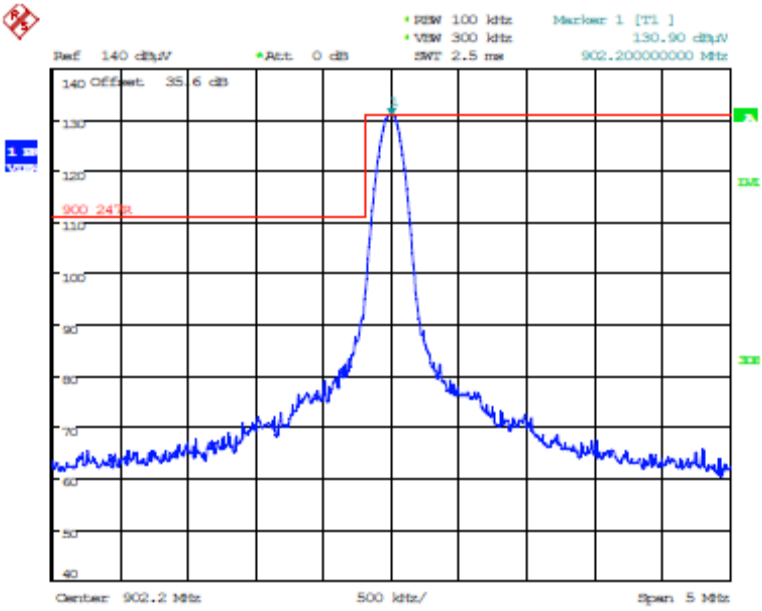
Plot 5.5.3.5.5.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.2 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 11.SEP.2016 06:41:24

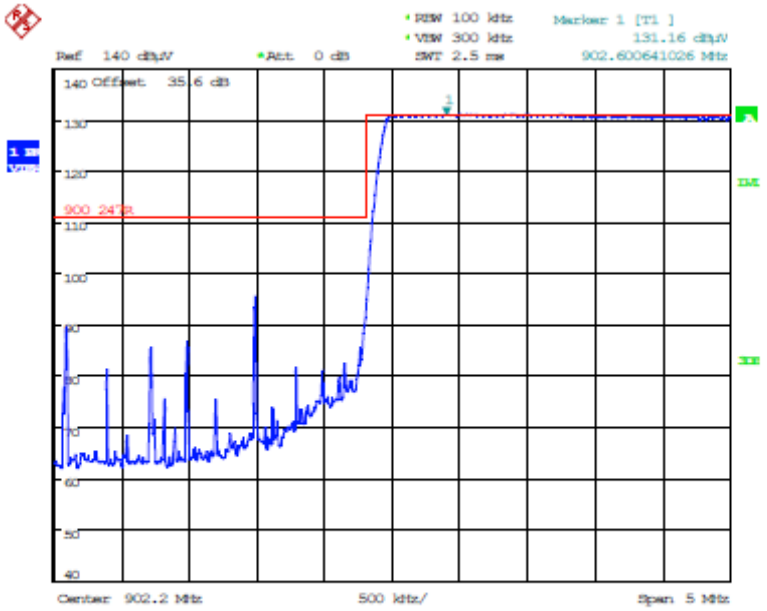
Right Antenna



Date: 11.SEP.2016 07:00:12

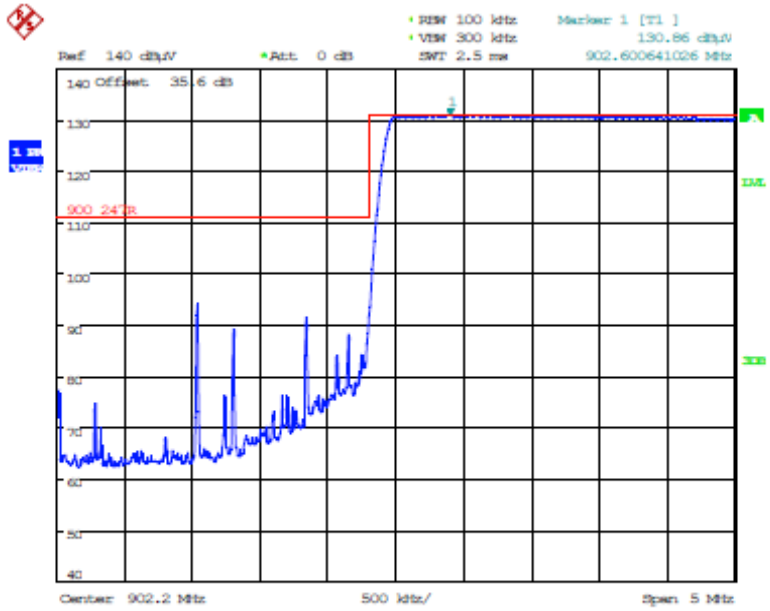
Plot 5.5.3.5.5.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.2 MHz GFSK DSSS8, 10 kbps

Left Antenna



Date: 11.SEP.2016 06:52:27

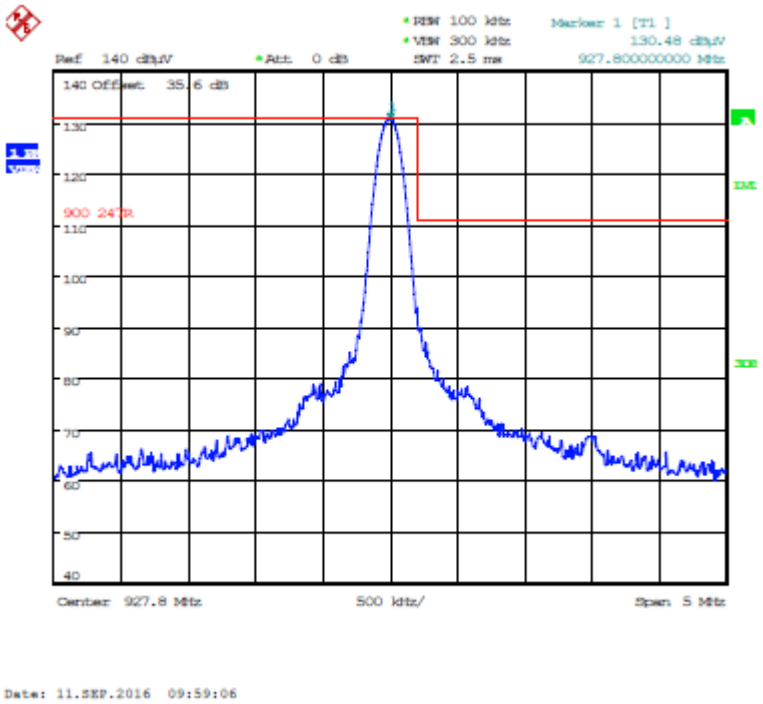
Right Antenna



Date: 11.SEP.2016 07:06:35

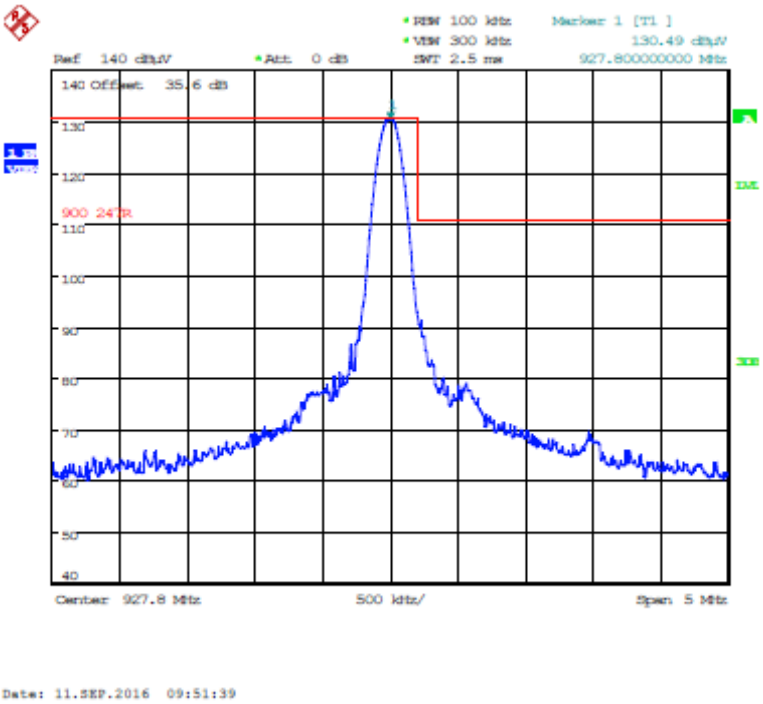
Plot 5.5.3.5.5.5. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 11.SEP.2016 09:59:06

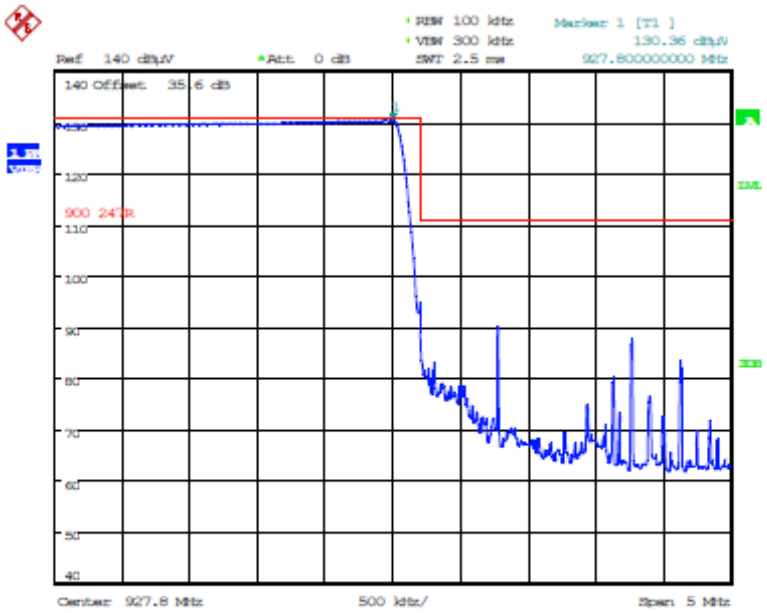
Right Antenna



Date: 11.SEP.2016 09:51:39

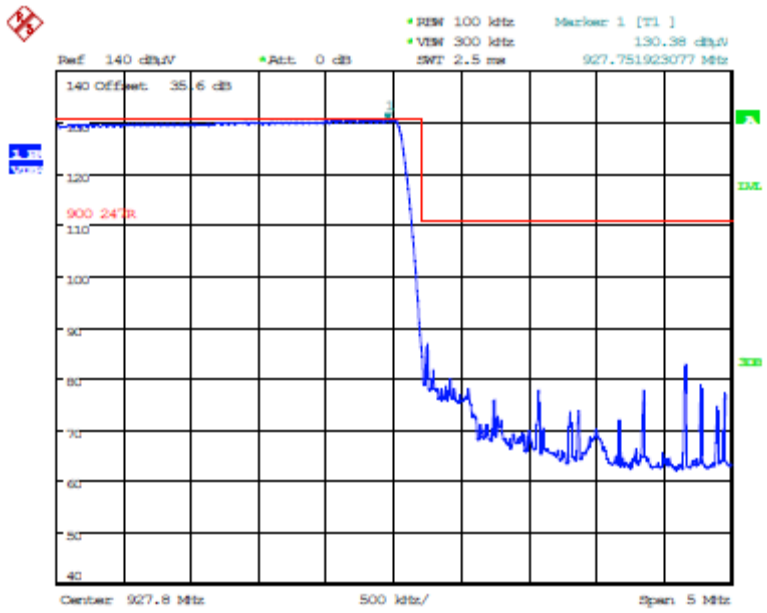
Plot 5.5.3.5.5.6. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 11.SEP.2016 10:03:27

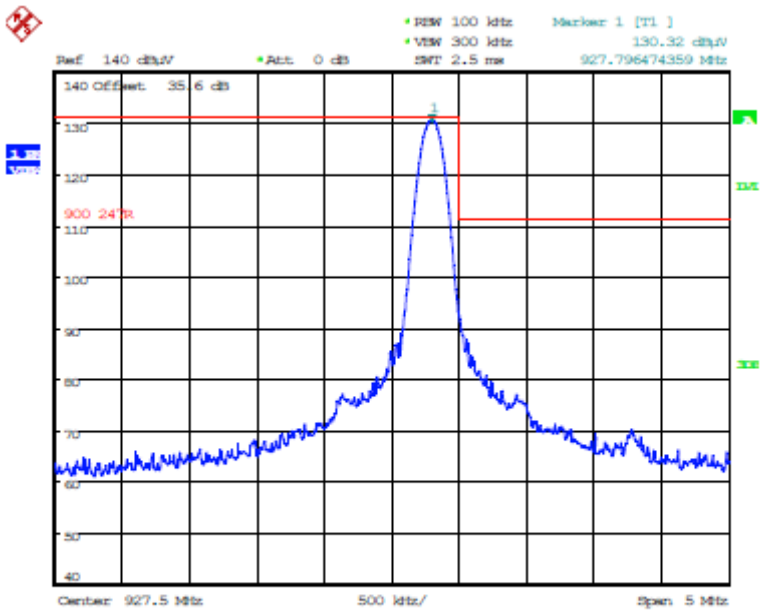
Right Antenna



Date: 11.SEP.2016 09:56:41

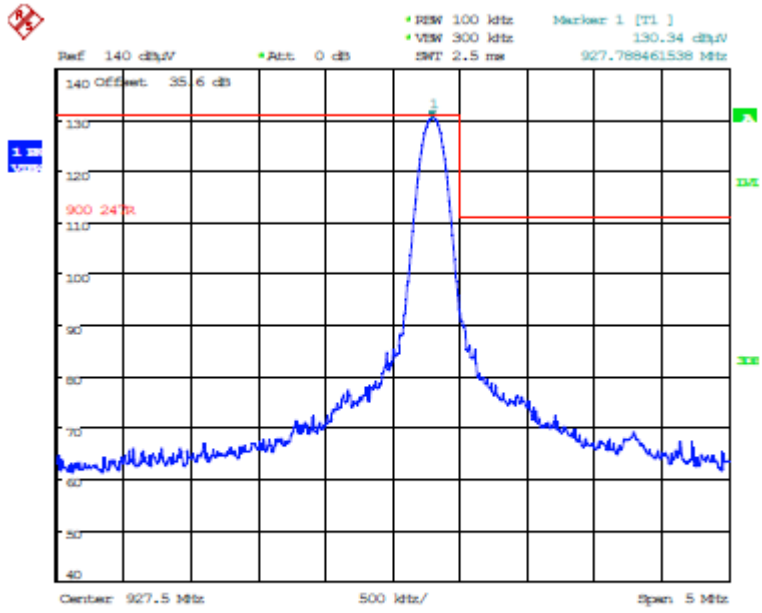
Plot 5.5.3.5.5.7. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 11.SEP.2016 08:34:19

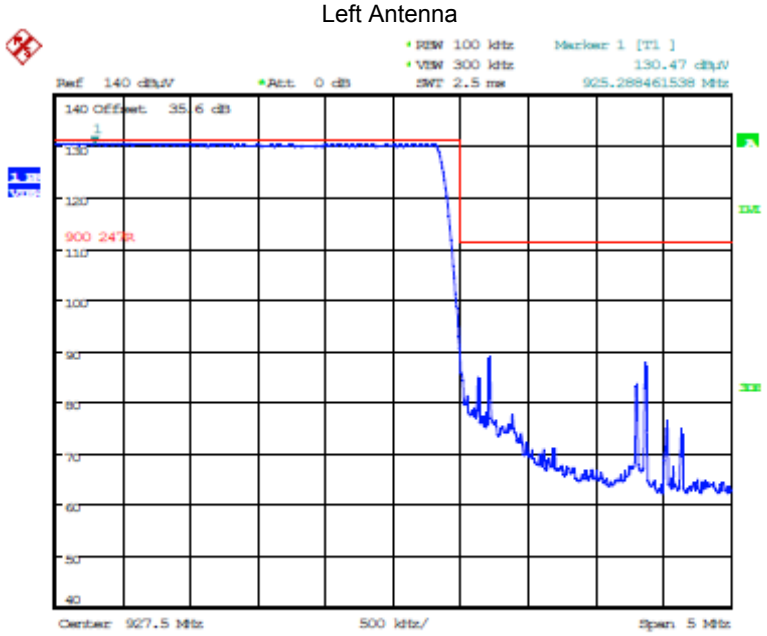
Right Antenna



Date: 11.SEP.2016 08:21:23

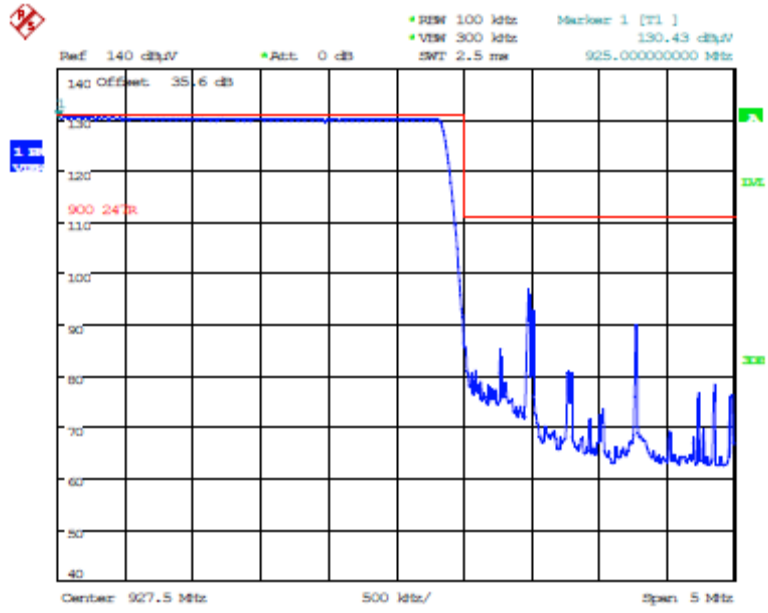
Plot 5.5.3.5.5.8. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.8 MHz, GFSK DSSS8, 10 kbps

Left Antenna



Date: 11.SEP.2016 08:39:25

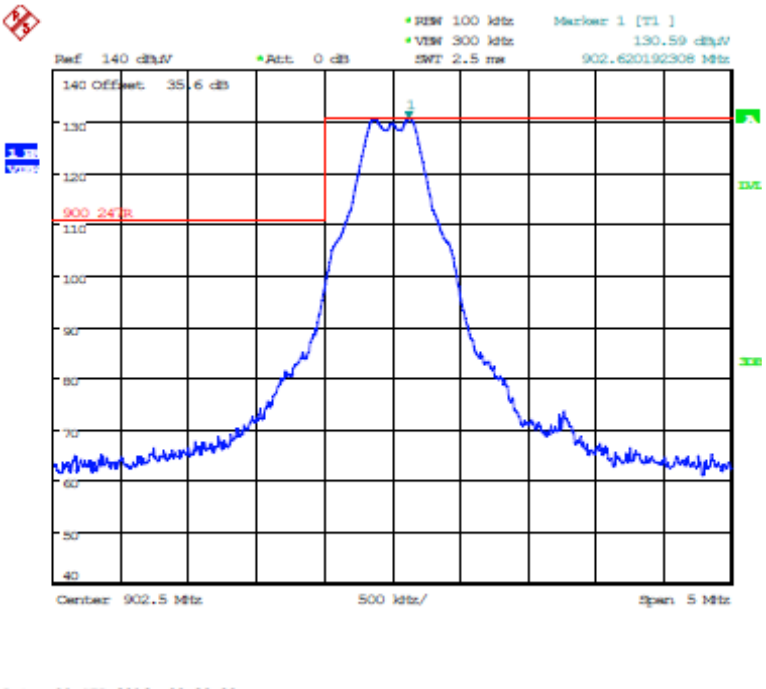
Right Antenna



Date: 11.SEP.2016 08:31:34

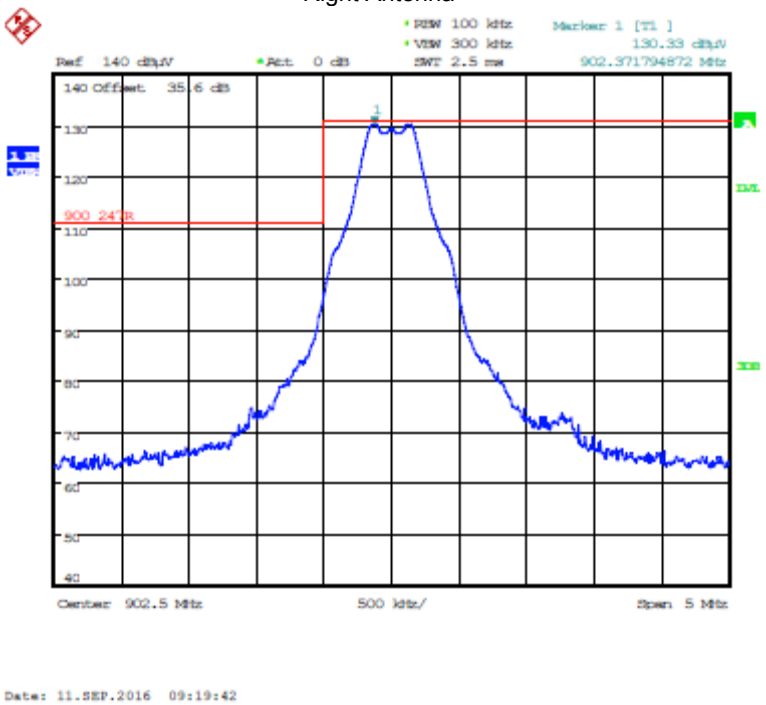
Plot 5.5.3.5.5.9. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 11.SEP.2016 09:28:38

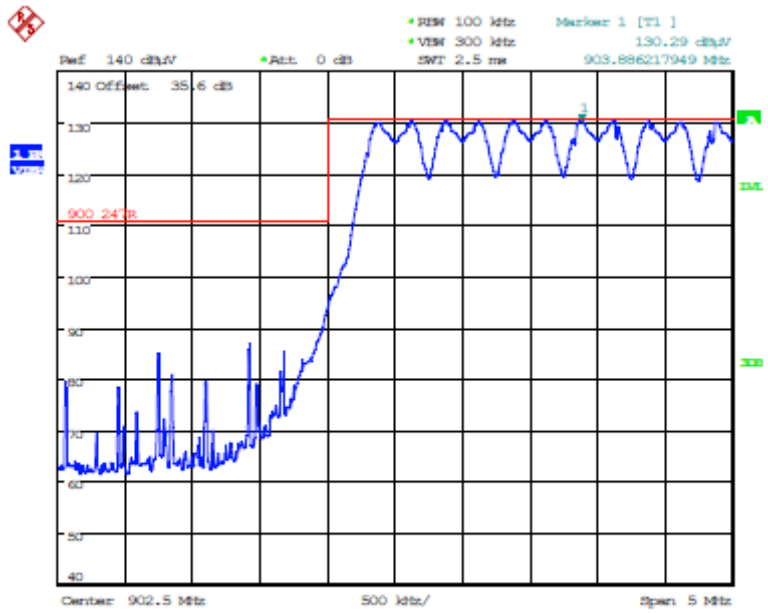
Right Antenna



Date: 11.SEP.2016 09:19:42

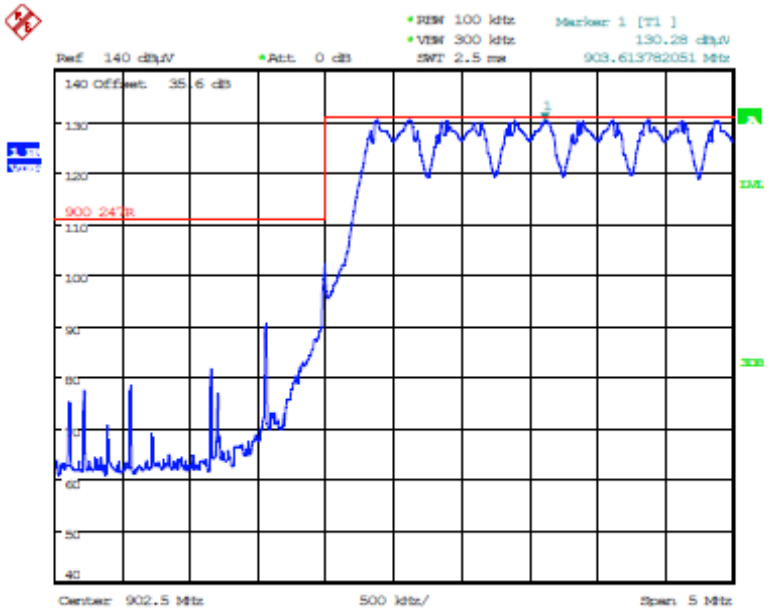
Plot 5.5.3.5.5.10. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 11.SEP.2016 09:31:21

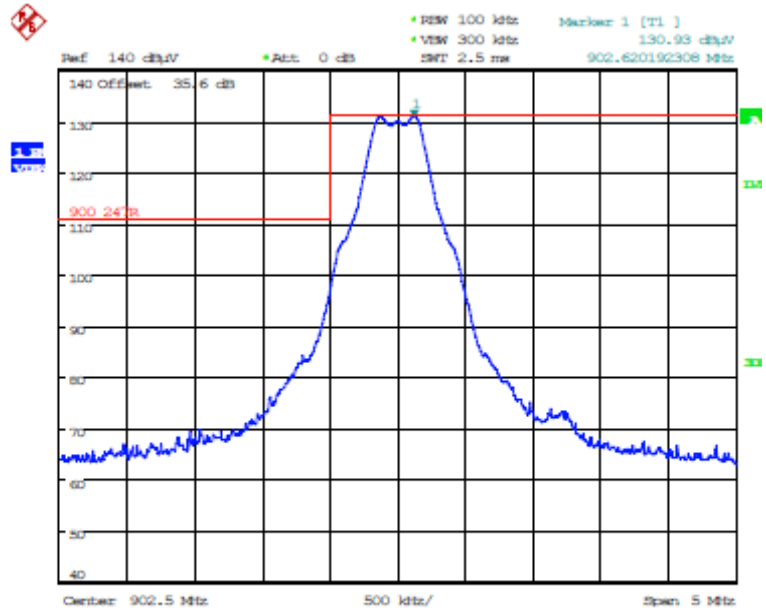
Right Antenna



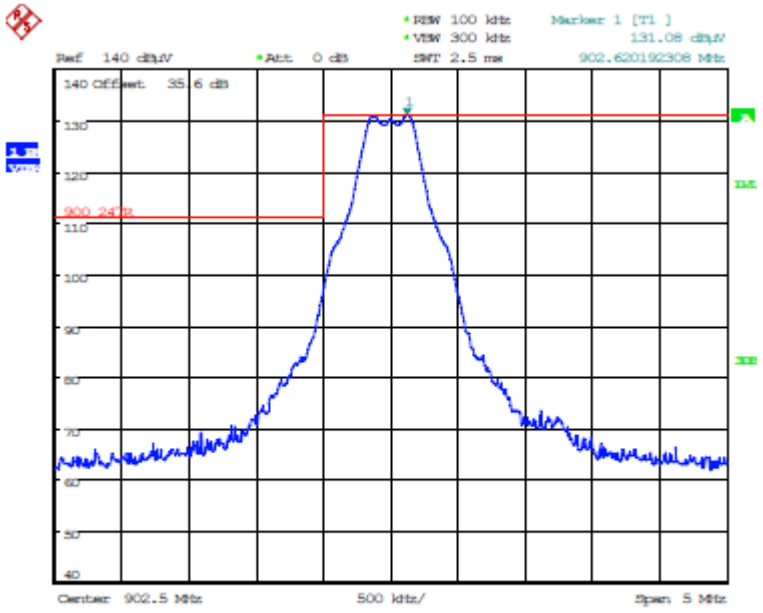
Date: 11.SEP.2016 09:26:03

Plot 5.5.3.5.5.11. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna

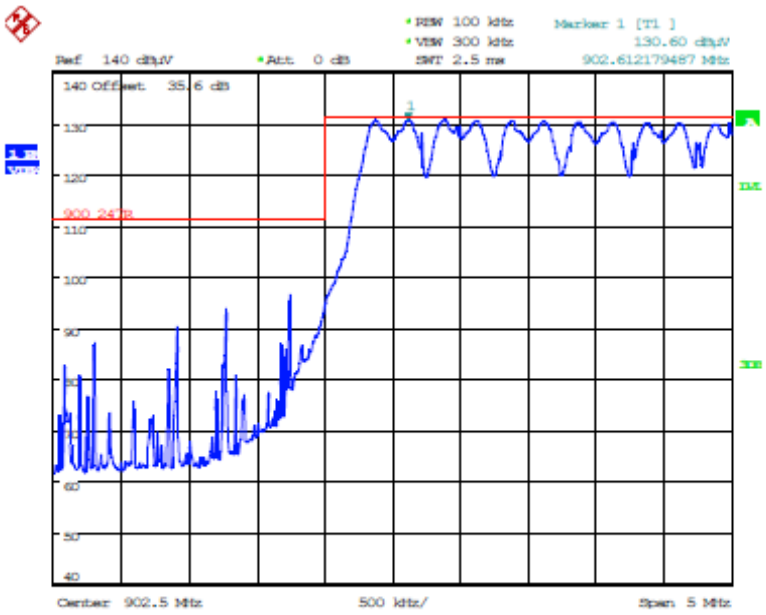


Right Antenna

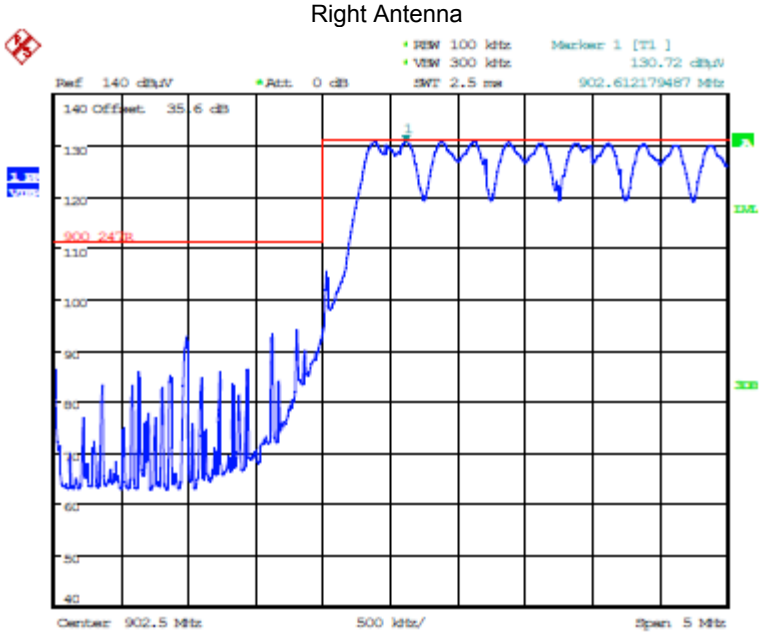


Plot 5.5.3.5.5.12. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, Low End of Frequency Band, 902.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna

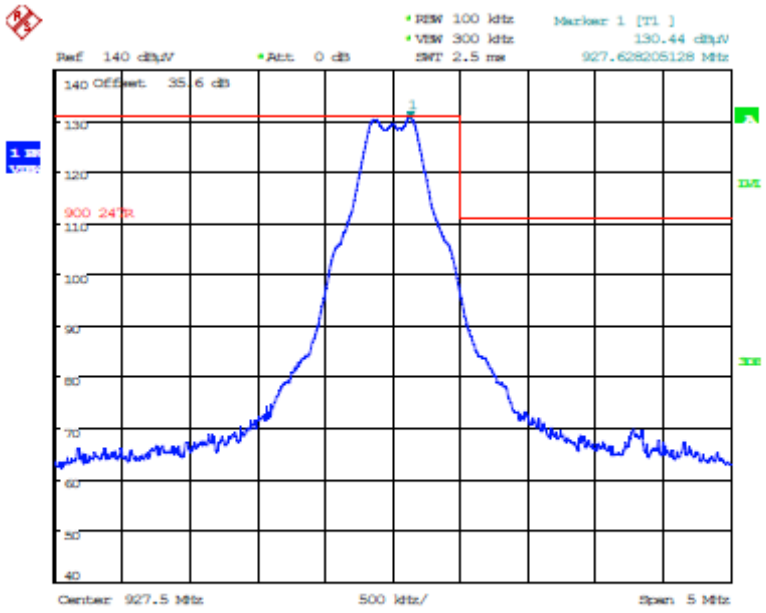


Right Antenna



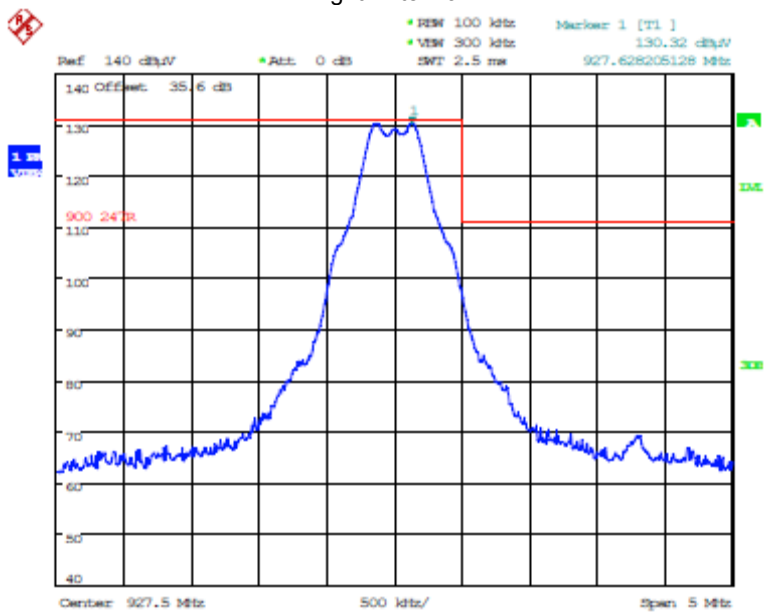
Plot 5.5.3.5.5.13. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 11.SEP.2016 09:39:54

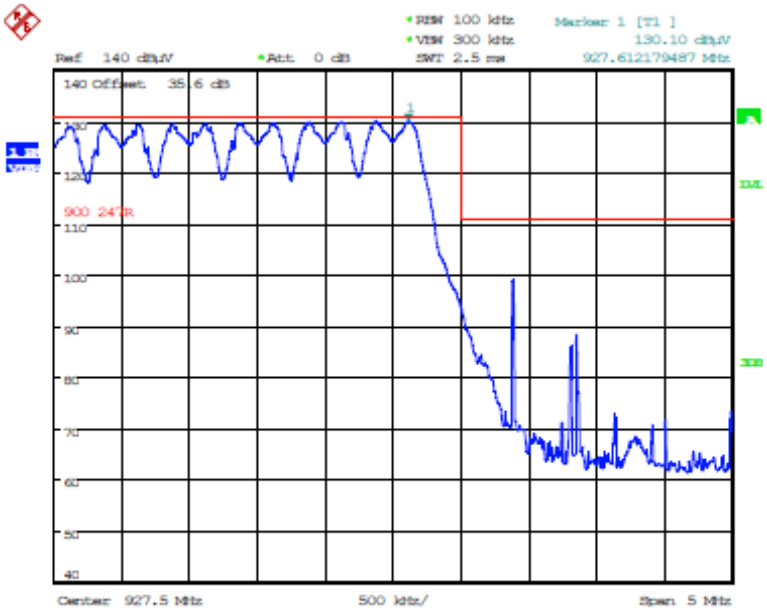
Right Antenna



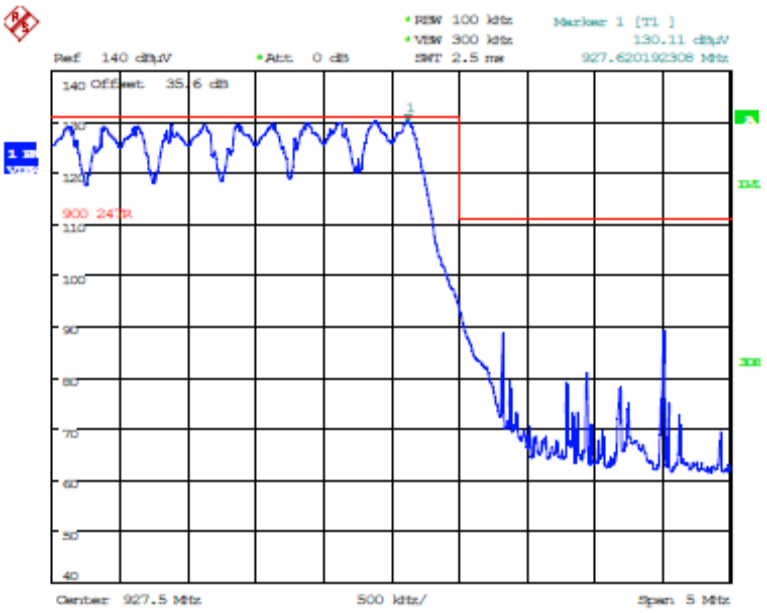
Date: 11.SEP.2016 09:45:31

Plot 5.5.3.5.5.14. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna

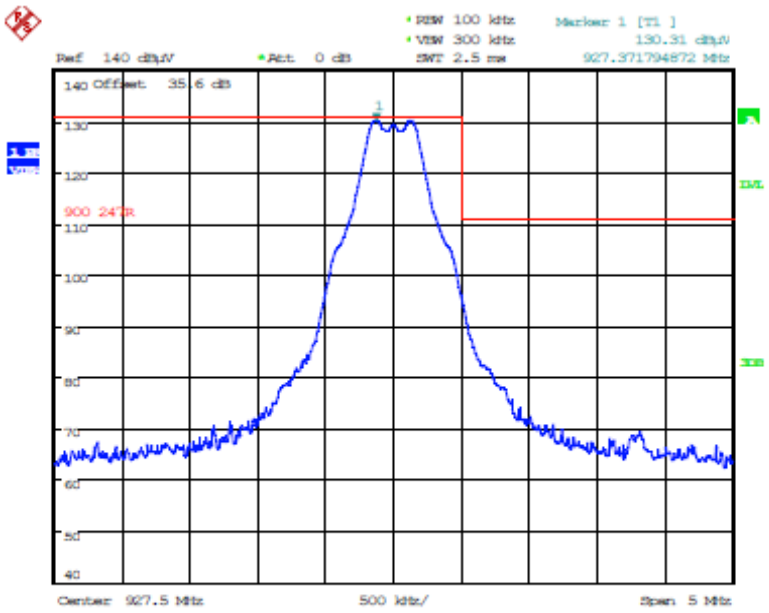


Right Antenna



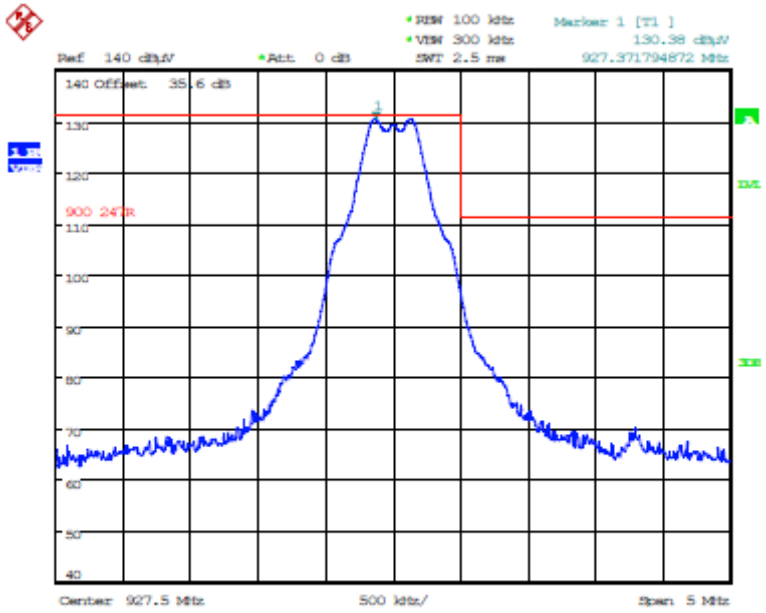
Plot 5.5.3.5.5.15. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Single Frequency Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 11.SEP.2016 07:59:08

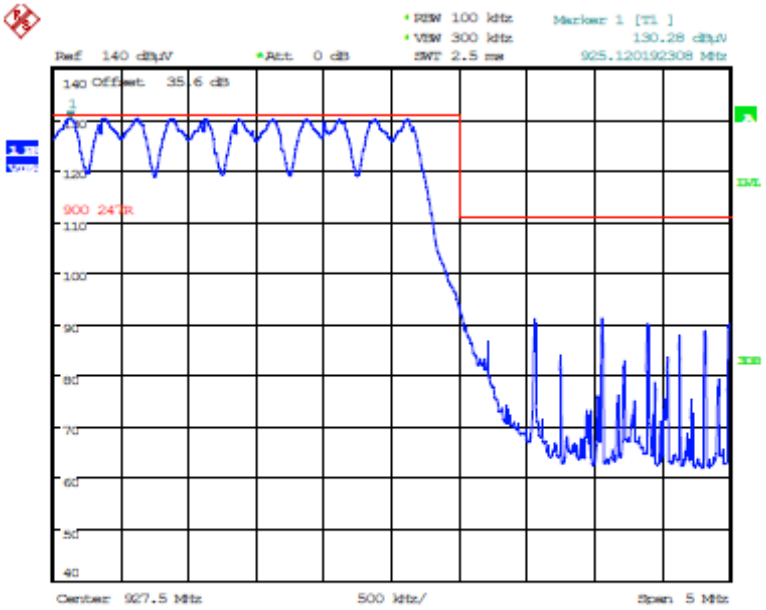
Right Antenna



Date: 11.SEP.2016 08:09:13

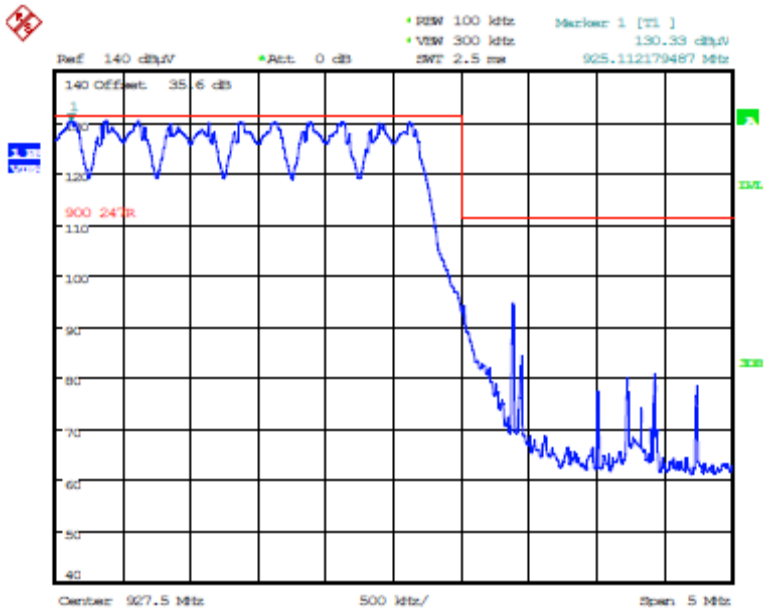
Plot 5.5.3.5.5.16. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Pseudorandom Hopping Mode, High End of Frequency Band, 927.5 MHz, GFSK DSSS1, 400 kbps

Left Antenna



Date: 11.SEP.2016 08:04:55

Right Antenna



Date: 11.SEP.2016 08:15:30

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/cm^2
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: ***21.7 cm**	Manufacturer' instruction for separation distance between antenna and persons required**: 21.7 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 = 902/1500 = 0.6 mW/cm^2
EIRP = 35.5 dBm = $10^{35.5/10}$ mW = 3548.1 mW (Worst Case)

(Minimum Safe Distance, r) = $\sqrt{\frac{EIRP}{4 \cdot \pi \cdot S}} = \sqrt{\frac{3548.1}{4 \cdot \pi \cdot (0.6)}} \approx 21.7cm$

EXHIBIT 6. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal. Due Date
Spectrum Analyzer	Agilent	E7401A	US40240432	9 kHz–1.5 GHz	Apr 14, 2017
Attenuator	Pasternack	PE7010-20	7	DC–2 GHz	Mar 26, 2017
L.I.S.N	Schwarzbeck	NSLK8127	8127276	0.10 -30 MHz	Jun 24, 2017
Signal Generator	Hewlett Packard	8648C	3443U00391	100 kHz – 3200 MHz	Feb 2, 2017
Spectrum Analyzer	Rohde & Schwarz	FSEK30	100077	20Hz–40 GHz	Nov 21, 2016
Attenuator	Pasternack	7024-20	6	DC–26.5 GHz	Cal on use
DC Block	Hewlett Packard	11742A	12460	0.045 – 26.5 GHz	Cal on use
EMI Receiver	Rohde & Schwarz	ESU40	100037	20 Hz – 40 GHz	May 8, 2017
RF Amplifier	Com-Power	PAM-0118A	551016	0.5 – 18 GHz	Jul 17, 2017
RF Amplifier	Hewlett Packard	84498	3008A00769	1 – 26.5 GHz	May 5, 2017
Biconilog	Emco	3142	9601-1005	26-1000 MHz	May 12, 2017
Horn Antenna	Emco	3155	5955	1 – 18 GHz	Apr 21, 2017
Power Divider	Weinschel	1515	0235	DC – 18 GHz	Cal on use
High Pass Filter	K & L	11SH10-1500/T8000	2	Cut off 900 MHz	Cal on use

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**