ENGINEERING TEST REPORT

RH-NET
Model: RHNET1
FCC ID: MHL-RHNET1

Applicant:

Wagner Electronic Products Inc.
326 Pine Grove Road
Rogue River, OR 97537

In Accordance With

Federal Communications Commission (FCC)
Part 15, Subpart C, Section 15.247 Digital Modulation Systems (DTS)

UltraTech's File No.: WGNP-002F15C247

This Test report is Issued under the Authority of Tri M. Luu Vice President of Engineering UltraTech Group of Labs Date: October 10, 2013	
Report Prepared by: Dan Huynh Issued Date: October 10, 2013	Tested by: Mr. Hung Trinh Test Dates: May 30 ~ June 1, 2013

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

UltraTech

3000 Bristol Circle, Oakville, Ontario, Canada, L6H 6G4
Tel.: (905) 829-1570 Fax.: (905) 829-8050
Website: www.ultratech-labs.com, Email: vic@ultratech-labs.com, Email: tri@ultratech-labs.com

FCC	VCCI	Industry Canada	NVLAP	BSMI	Korea KCC-RRL
91038	1309	46390-2049	NVLAP LAB CODE 200093-0	SL2-IN-E-1119R	CA2049

TABLE OF CONTENTS

EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	FCC Part 15, Subpart C, Section 15.247
Title:	Code of Federal Regulations (CFR), Title 47 – Telecommunication, Part 15 – Radio Frequency Devices
Purpose of Test:	Equipment Certification for Digital Modulation Systems (DTS) Transmitter.
Test Procedures:	▪ ANSI C63.4 ▪ ANSI C63.10 ▪ FCC, KDB Publication No. 558074 D01
Environmental Classification:	[x] Commercial, industrial or business environment [x] Residential environment

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

None.

1.3. NORMATIVE REFERENCES

Publication	Year	Title
47 CFR Parts 0-19	2013	Code of Federal Regulations (CFR), Title 47 – Telecommunication
ANSI C63.4	2009	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	2009	American National Standard for Testing Unlicensed Wireless Devices
CISPR 22 & EN 55022	2008-09, Edition 6.0 2006	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
CISPR 16-1-1 +A1 +A2	2006 2006 2007	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-1: Measuring Apparatus
CISPR 16-1-2 +A1 +A2	2003 2004 2006	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-2: Conducted disturbances
FCC, KDB Publication No. 558074 D01 DTS Meas Guidance v03r01	2013	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

APPLICANT	
Name:	Wagner Electronic Products Inc.
Address:	326 Pine Grove Road Rogue River, OR 97537 USA
Contact Person:	Mr. Ed Wagner Phone #: (541) 582-0541 Fax #: (541) 582-4138 Email Address: ewagner@wagnermeters.com

MANUFACTURER	
Name:	Wagner Electronic Products Inc.
Address:	326 Pine Grove Road Rogue River, OR 97537 USA
Contact Person:	Mr. Ed Wagner Phone #: (541) 582-0541 Fax #: (541) 582-4138 Email Address: ewagner@wagnermeters.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:	Wagner Electronic Products Inc.
Product Name:	RH-NET
Model Name or Number:	RHNET1
Serial Number:	Test Sample
Type of Equipment:	Digital Transmission System (DTS)
Input Power Supply Type:	3 VDC Lithium-ion
Primary User Functions of EUT:	Test Relative Humidity and Temperature of sensor and transmit to receiving device.

2.3. EUT'S TECHNICAL SPECIFICATIONS

TRANSMITTER	
Equipment Type:	• Mobile • Base station (fixed use)
Intended Operating Environment:	▪ Commercial, industrial or business environment ▪ Residential environment
Power Supply Requirement:	2.0 – 3.6 VDC
RF Output Power Rating:	8.28 dBm
Operating Frequency Range:	903 to 927 MHz
RF Output Impedance:	50 Ohm
Duty Cycle:	100% for testing purpose
Modulation Type:	2-FSK
Antenna Connector Type:	Integral

2.4. ASSOCIATED ANTENNA DESCRIPTIONS

Antenna Type	Maximum Gain (dBi)
Integral Wire Antenna	2.1

2.5. LIST OF EUT'S PORTS

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

2.6. ANCILLARY EQUIPMENT

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

None.

EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

3.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21 to 23 ^{o}C
Humidity:	45 to 58%
Pressure:	102 kPa
Power Input Source:	3 V Lithium button cell battery

3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TESTS

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

Transmitter Test Signals	
Frequency Band(s):	903 - 927 MHz
Frequency(ies) Tested:	903 MHz, 915 MHz and 927 MHz
RF Power Output: (measured maximum output power at antenna terminals)	8.28 dBm, 0.00673 W (conducted)
Normal Test Modulation:	2-FSK
Modulating Signal Source:	Internal

EXHIBIT 4. SUMMARY OF TEST RESULTS

4.1. LOCATION OF TESTS

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

- AC Power Line Conducted Emissions were performed in UltraTech's shielded room, 24'(L) by 16'(W) by 8'(H).

- Radiated Emissions were performed at the Ultratech's 3-10 TDK Semi-Anechoic Chamber situated in the Town of Oakville, province of Ontario. This test site been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville 3-10 TDK Semi-Anechoic Chamber has been filed with FCC office (FCC File No.: 91038) and Industry Canada office (Industry Canada File No.: 2049A-3). Expiry Date: 2014-04-04.

4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC Section(s)	Test Requirements	Compliance (Yes/No)
15.203	Antenna requirements	Yes
15.207(a)	AC Power Line Conducted Emissions	N/A
15.247(a)(2)	6 dB Bandwidth	Yes
15.247(b)(3)	Peak Conducted Output Power - DTS	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(e)	Power Spectral Density	Yes
15.247(i), 1.1307, 1.1310, 2.1091	RF Exposure	Yes

* The EUT complies with the requirement; it employs an integral antenna.

4.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None.

EXHIBIT 5. TEST DATA

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

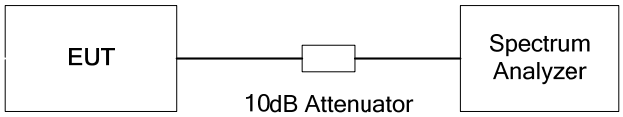
5.1.1. Limit(s)

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

5.1.2. Method of Measurements

KDB Publication No. 558074 D01 DTS Meas Guidance v03r01, Section 8.1 Option 1.

5.1.3. Test Arrangement

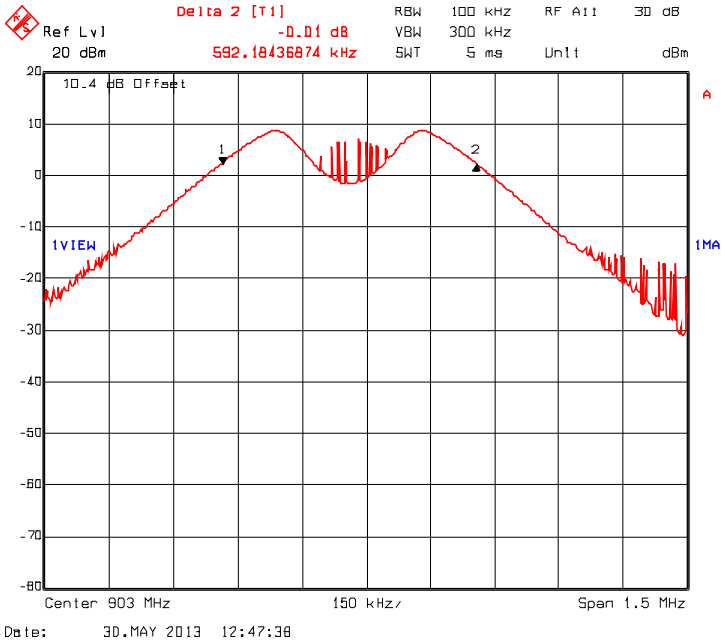


5.1.4. Test Data

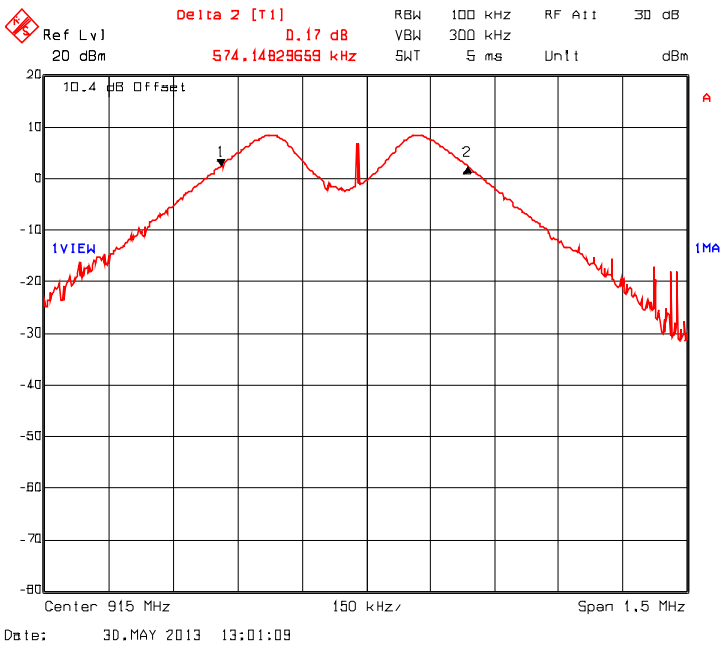
Frequency (MHz)	6 dB Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
903	592.18	512.22
915	574.15	505.01
927	589.18	519.44

See the following plots for detailed measurements.

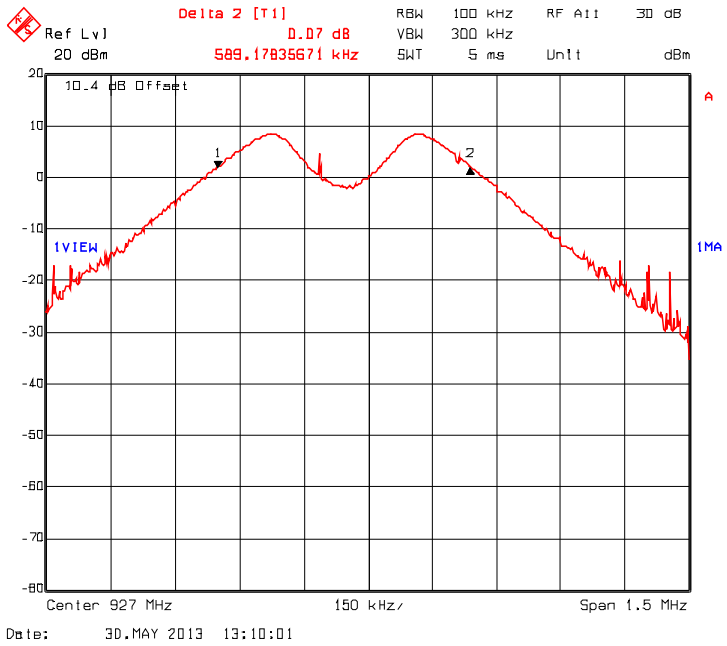
Plot 5.1.4.1. 6 dB Bandwidth, 903 MHz



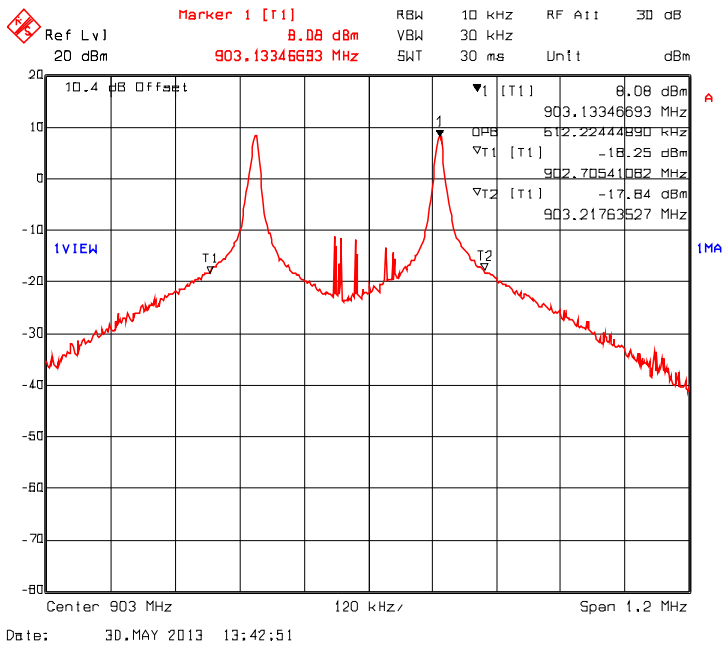
Plot 5.1.4.2. 6 dB Bandwidth, 915 MHz



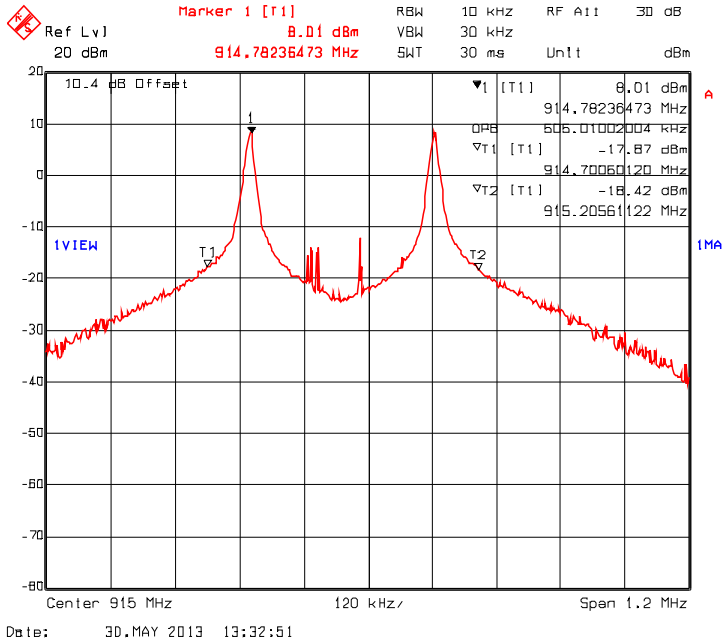
Plot 5.1.4.3. 6 dB Bandwidth, 927 MHz



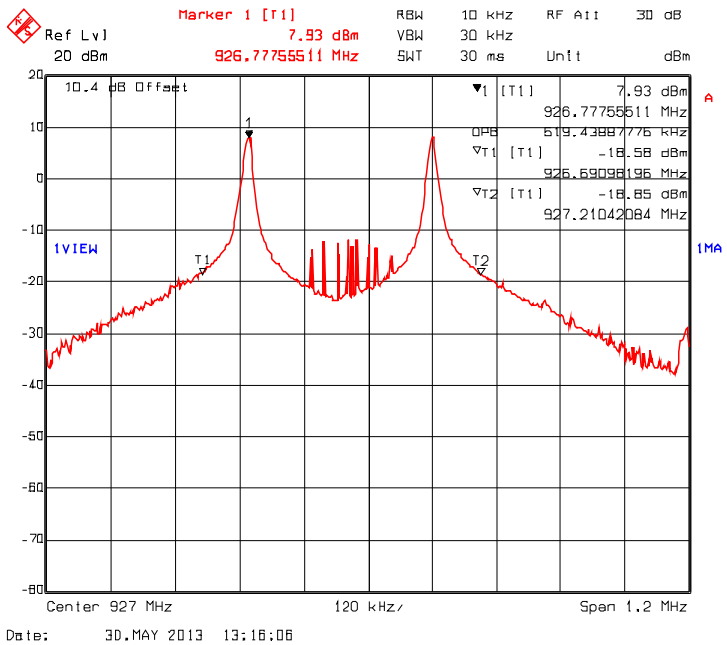
Plot 5.1.4.4. 99% Occupied Bandwidth, 903 MHz



Plot 5.1.4.5. 99% Occupied Bandwidth, 915 MHz



Plot 5.1.4.6. 99% Occupied Bandwidth, 927 MHz



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

5.2.1. Limit(s)

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

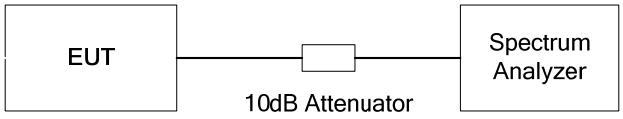
§15.247(b)(4): The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted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

§15.247(b)(4)(ii):Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

5.2.2. Method of Measurements & Test Arrangement

KDB Publication No. 558074 D01 DTS Meas Guidance v03r01, Section 9.1.1 RBW ≥ *DTS bandwidth*

5.2.3. Test Arrangement



5.2.4. Test Data

Frequency (MHz)	Peak Conducted Power (dBm)	*Peak EIRP (dBm)	Peak Conducted Power Limit (dBm)	EIRP Limit (dBm)
903	8.28	10.38	30	36
915	8.14	10.24	30	36
927	8.14	10.24	30	36
Note: 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 = $P_{dBm} + G_{dBi} - CL_{dB}$				

*Maximun antenna gain: 2.1 dBi

5.3. TRANSMITTER BAND-EDGE & SPURIOUS CONDUCTED EMISSIONS [§ 15.247(d)]

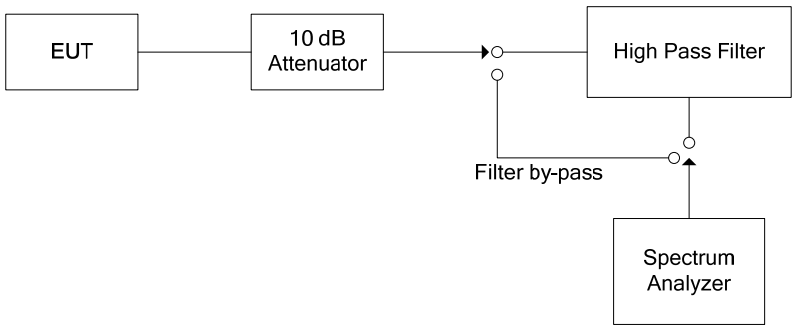
5.3.1. Limit(s)

§ 15.247 (d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.3.2. Method of Measurements

KDB Publication No. 558074 D01 DTS Meas Guidance v03r01, Sections 11 Emissions in non-restricted frequency bands and 13 Band-edge measurements; and ANSI C63.10

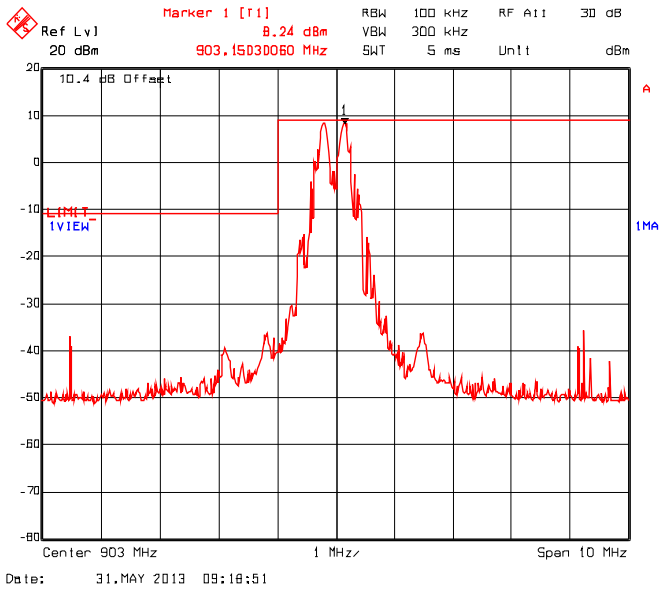
5.3.3. Test Arrangement



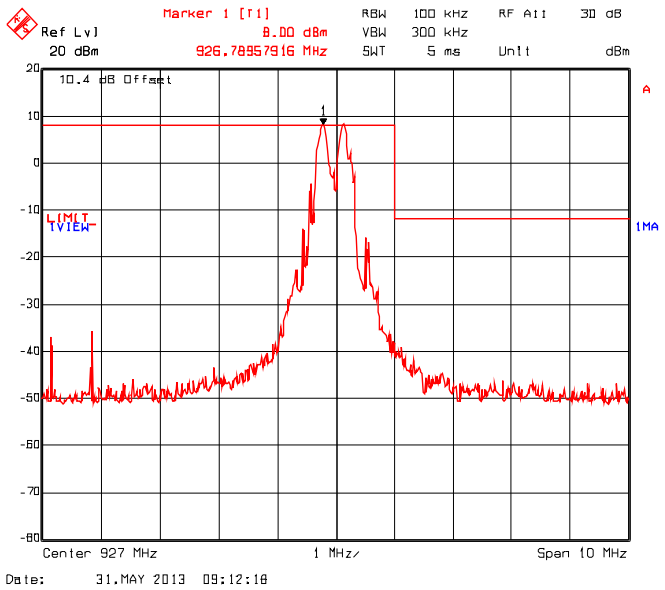
5.3.4. Test Data

5.3.4.1. Band-Edge RF Conducted Emissions

Plot 5.3.4.1.1. Band-Edge RF Conducted Emissions, Low End of Frequency Band



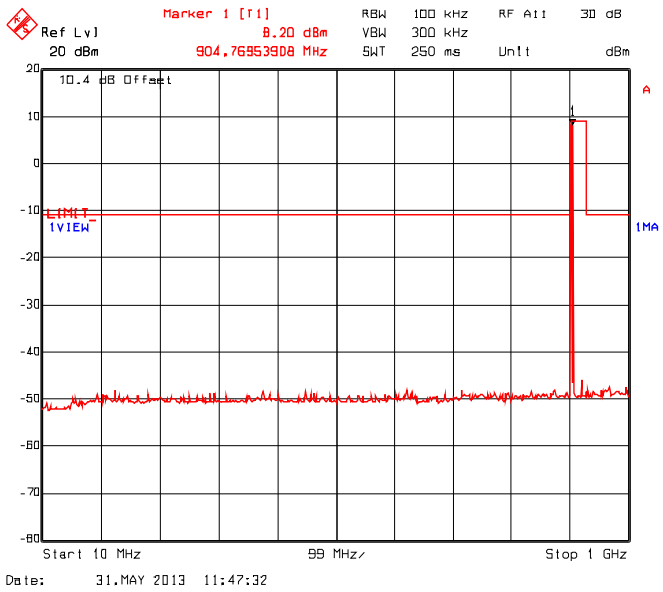
Plot 5.3.4.1.2. Band-Edge RF Conducted Emissions, High End of Frequency Band



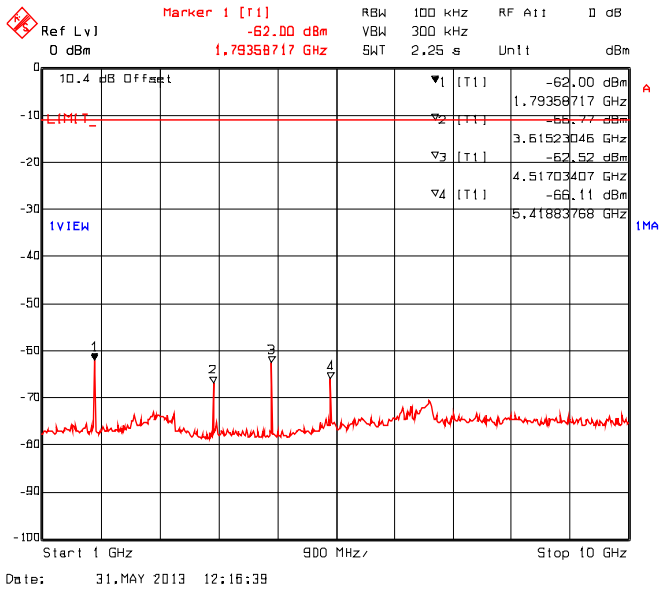
5.3.4.2. Conducted Spurious Emissions

Remark: The following test results are the worst-case measurements.

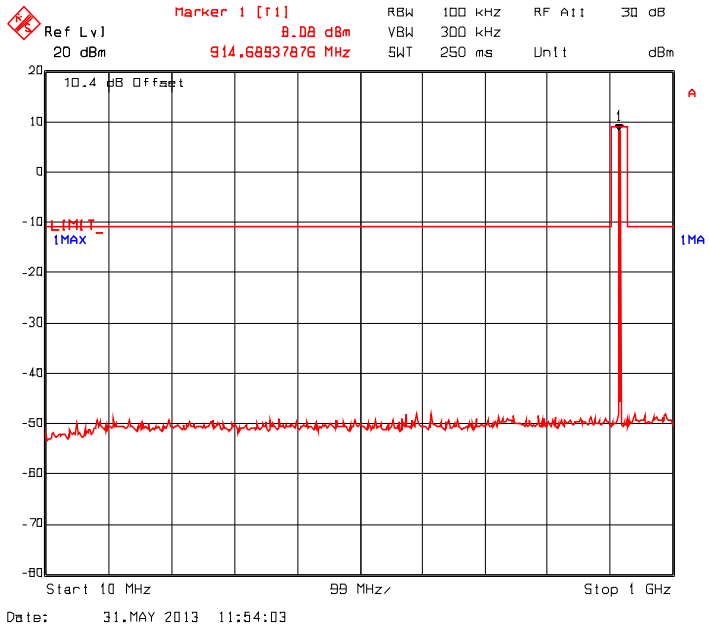
Plot 5.3.4.2.1. Conducted Spurious Emissions, 903 MHz, 10 MHz – 1 GHz



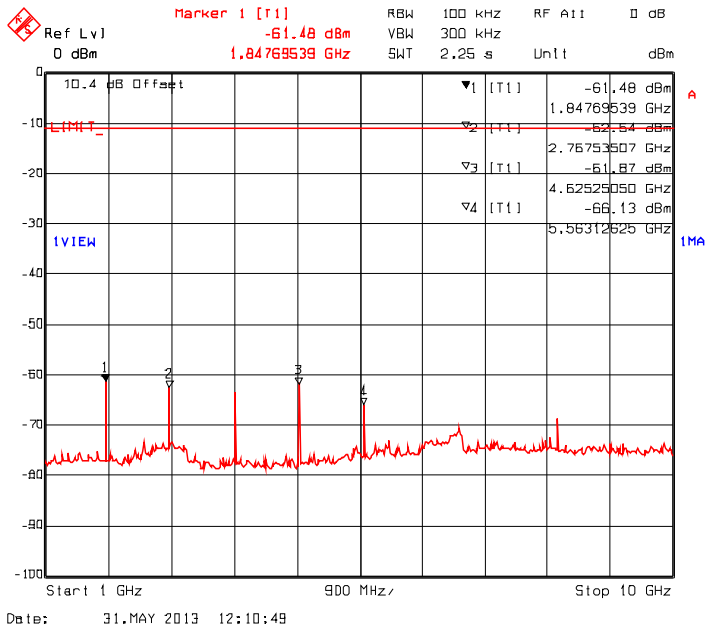
Plot 5.3.4.2.2. Conducted Spurious Emissions, 903 MHz, 1 GHz – 10 GHz



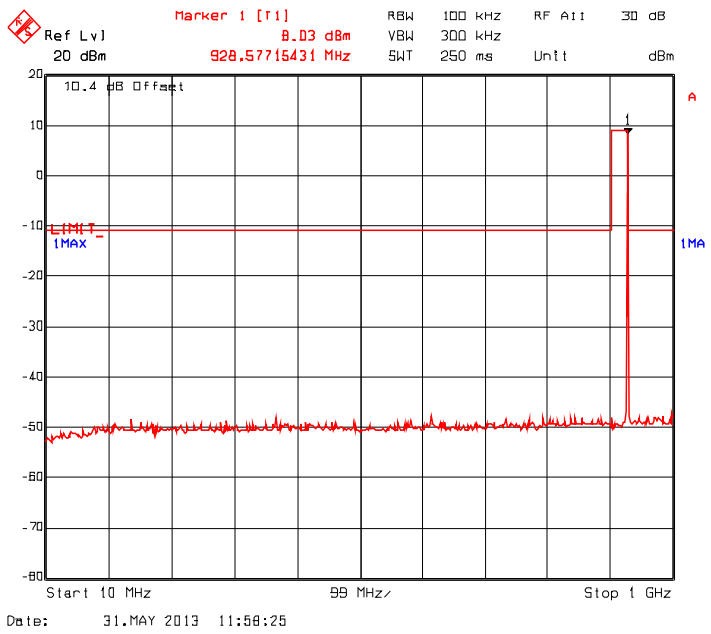
Plot 5.3.4.2.3. Conducted Spurious Emissions, 915 MHz, 10 MHz – 1 GHz



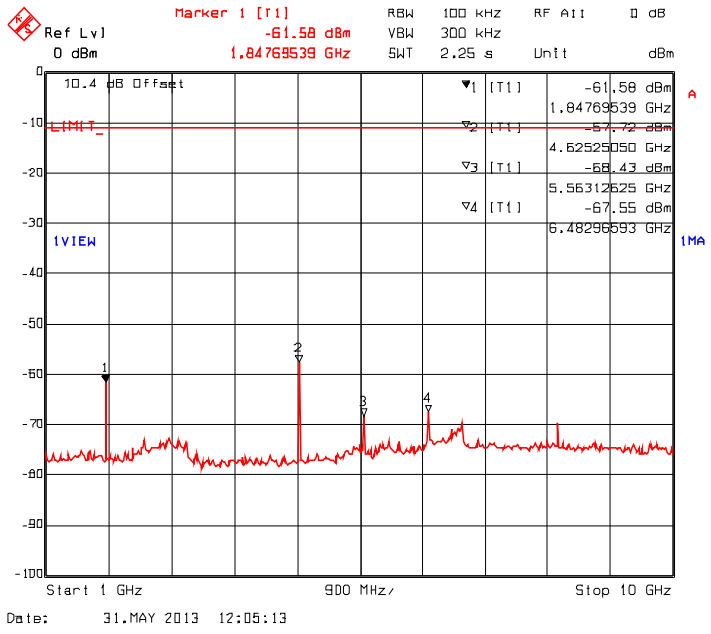
Plot 5.3.4.2.4. Conducted Spurious Emissions, 915 MHz, 1 GHz – 10 GHz



Plot 5.3.4.2.5. Conducted Spurious Emissions, 927 MHz, 10 MHz – 1 GHz



Plot 5.3.4.2.6. Conducted Spurious Emissions, 927 MHz, 1 GHz – 10 GHz



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

5.4.1. 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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Section 15.205(a) - Restricted Bands of Operation

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

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

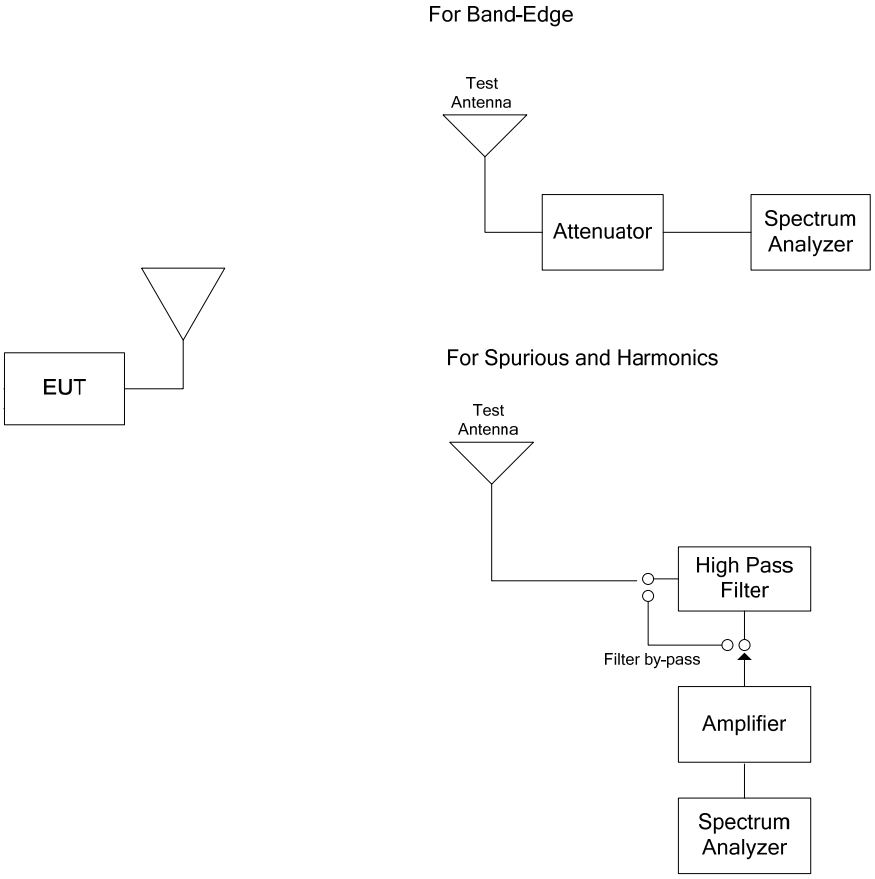
Section 15.209(a) - Field Strength Limits within Restricted Frequency Bands

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

5.4.2. Method of Measurements

ANSI C63.10 and ANSI 63.4 procedures.

5.4.3. Test Arrangement



5.4.4. Test Data

Remark(s):

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

5.4.4.1. Spurious Radiated Emissions

Fundamental Frequency:	903 MHz						
Frequency Test Range:	30 MHz – 10 GHz						
Frequency (MHz)	**RF Peak Level (dBµV/m)**	**RF Avg Level (dBµV/m)**	**Antenna Plane (H/V)**	**Limit 15.209 (dBµV/m)**	**Limit 15.247 (dBµV/m)**	**Margin (dB)**	**Pass/ Fail**
903	102.53	--	V	--	--		--
903	101.33	--	H	--	--		--
2709	53.48	45.91	V	54.0	82.5	-8.1	Pass*
2709	55.64	48.97	H	54.0	82.5	-5.0	Pass*
3612	54.37	45.02	V	54.0	82.5	-9.0	Pass*
3612	49.27	38.90	H	54.0	82.5	-15.1	Pass*
4515	56.25	45.91	V	54.0	82.5	-8.1	Pass*
4515	51.24	39.25	H	54.0	82.5	-14.8	Pass*
5418	54.79	41.41	V	54.0	82.5	-12.6	Pass*
5418	51.38	39.76	H	54.0	82.5	-14.2	Pass*
8127	54.07	42.59	V	54.0	82.5	-11.4	Pass*
8127	55.44	41.54	H	54.0	82.5	-12.5	Pass*
9030	57.18	45.88	V	54.0	82.5	-8.1	Pass*
9030	56.39	43.72	H	54.0	82.5	-10.3	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

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

Fundamental Frequency:	915 MHz						
Frequency Test Range:	30 MHz – 10 GHz						
Frequency (MHz)	**RF Peak Level (dBµV/m)**	**RF Avg Level (dBµV/m)**	**Antenna Plane (H/V)**	**Limit 15.209 (dBµV/m)**	**Limit 15.247 (dBµV/m)**	**Margin (dB)**	**Pass/ Fail**
915	99.32	--	V	--	--		--
915	101.85	--	H	--	--		--
2745	50.02	38.34	V	54.0	81.9	-15.7	Pass*
2745	50.09	41.94	H	54.0	81.9	-12.1	Pass*
3660	50.11	37.35	V	54.0	81.9	-16.7	Pass*
3660	49.54	37.39	H	54.0	81.9	-16.6	Pass*
4575	55.86	42.93	V	54.0	81.9	-11.1	Pass*
4575	52.08	41.61	H	54.0	81.9	-12.4	Pass*
7320	55.17	43.26	V	54.0	81.9	-10.7	Pass*
7320	54.39	42.27	H	54.0	81.9	-11.7	Pass*
8235	54.89	43.58	V	54.0	81.9	-10.4	Pass*
8235	53.81	41.75	H	54.0	81.9	-12.3	Pass*
9150	55.82	45.50	V	54.0	81.9	-8.5	Pass*
9150	53.27	42.49	H	54.0	81.9	-11.5	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

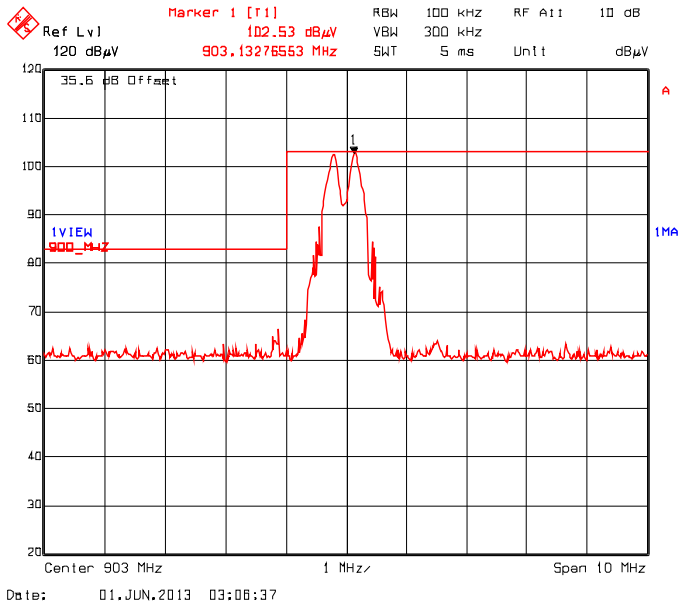
*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

Fundamental Frequency:	927 MHz						
Frequency Test Range:	30 MHz – 10 GHz						
Frequency (MHz)	**RF Peak Level (dBµV/m)**	**RF Avg Level (dBµV/m)**	**Antenna Plane (H/V)**	**Limit 15.209 (dBµV/m)**	**Limit 15.247 (dBµV/m)**	**Margin (dB)**	**Pass/ Fail**
927	100.01	--	V	--	--		--
927	99.90	--	H	--	--		--
2781	52.29	44.11	V	54.0	80.0	-9.9	Pass*
2781	51.87	44.52	H	54.0	80.0	-9.5	Pass*
3708	54.68	42.85	V	54.0	80.0	-11.2	Pass*
3708	55.26	46.03	H	54.0	80.0	-8.0	Pass*
4635	55.26	44.59	V	54.0	80.0	-9.4	Pass*
4635	56.21	44.22	H	54.0	80.0	-9.8	Pass*
7416	54.99	43.76	V	54.0	80.0	-10.2	Pass*
7416	53.68	42.15	H	54.0	80.0	-11.9	Pass*
8343	55.66	42.86	V	54.0	80.0	-11.1	Pass*
8343	54.24	42.45	H	54.0	80.0	-11.6	Pass*
All other spurious emissions and harmonics are more than 20 dB below the applicable limit.							

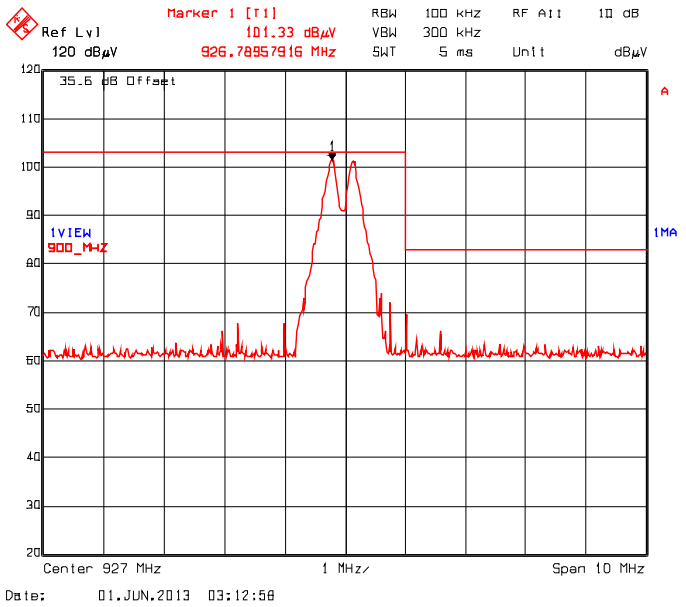
*Field strength of emissions appearing within restricted frequency bands shall not exceed the limits in § 15.209.

5.4.4.2. Band-Edge RF Radiated Emissions

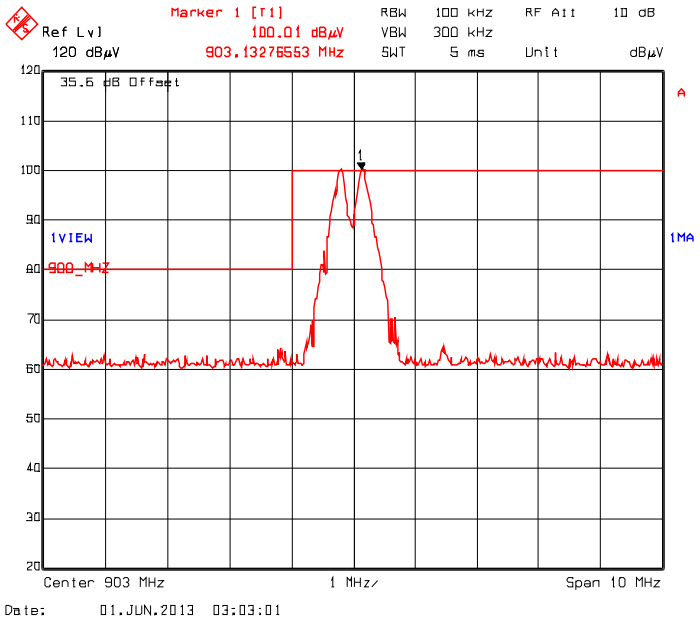
Plot 5.4.4.2.1. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
Low End of Frequency Band



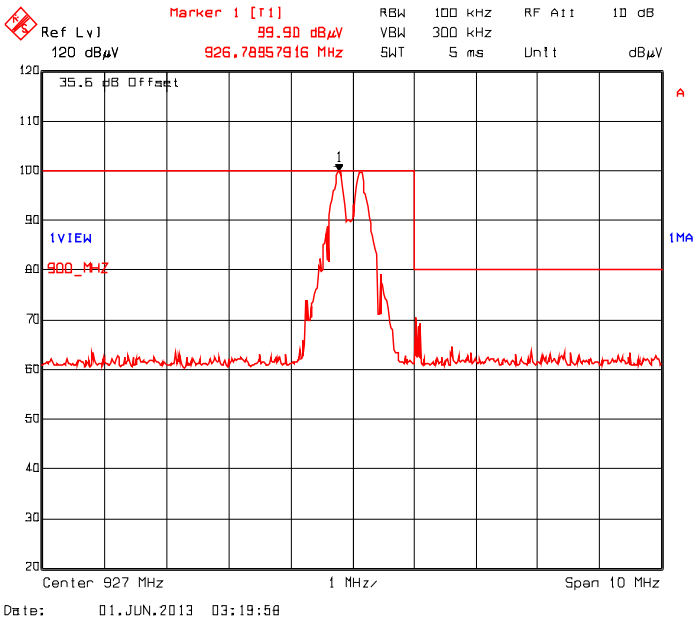
Plot 5.4.4.2.2. Band-Edge RF Radiated Emissions at 3 m, Horizontal Polarization
High End of Frequency Band



Plot 5.4.4.2.3. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
Low End of Frequency Band



Plot 5.4.4.2.4. Band-Edge RF Radiated Emissions at 3 m, Vertical Polarization
High End of Frequency Band



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

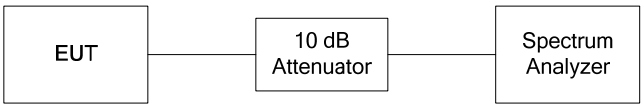
5.5.1. Limit(s)

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

5.5.2. Method of Measurements

KDB 558074 D01 DTS Meas Guidance v03r01, Section 10.2 PKPSD (peak PSD)

5.5.3. Test Arrangement

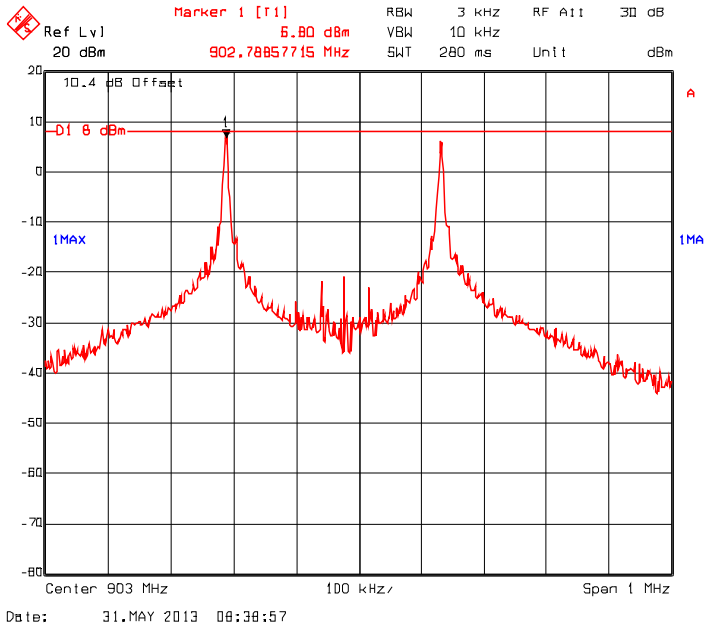


5.5.4. Test Data

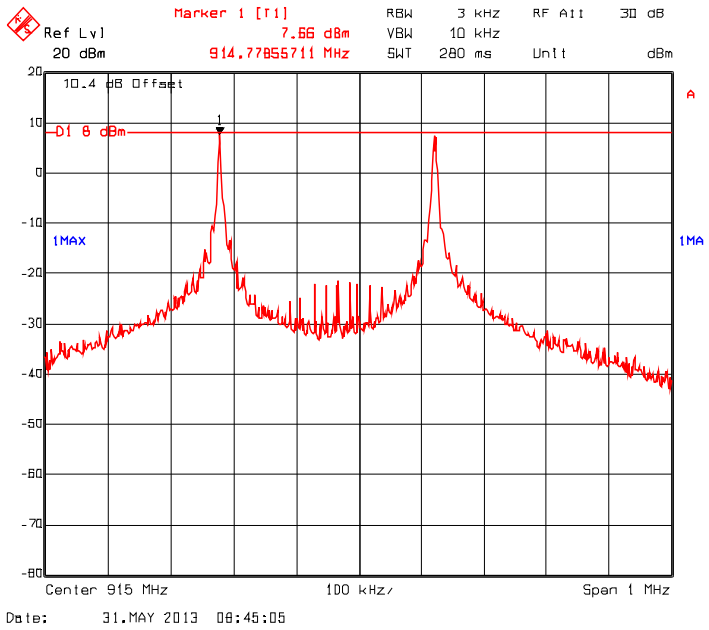
Frequency (MHz)	*PSD in 3 kHz BW (dBm)	Limit (dBm)	Margin (dB)
903	6.80	8	-1.20
915	7.66	8	-0.34
927	7.04	8	-0.96

See the following plots for measurement details.

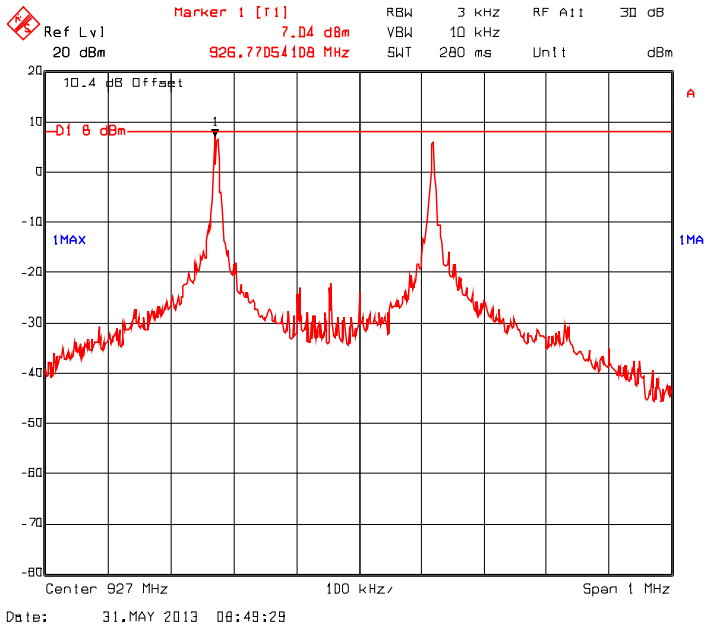
Plot 5.5.4.1. Power Spectral Density, 903 MHz



Plot 5.5.4.2. Power Spectral Density, 915 MHz



Plot 5.5.4.3. Power Spectral Density, 927 MHz



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

5.6.1. Limits

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

Limits for Maximum Permissible Exposure (MPE)

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

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

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

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

5.6.2. Method of Measurements

Calculation Method of RF Safety Distance:

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

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

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

5.6.3. Evaluation of RF Exposure Compliance Requirements

Maximum RF Power conducted, **$P_{conducted}$[dBm]:**	8.28
Maximum Antenna Gain, **G[dBi]**:	2.1
Maximum EIRP, **P_{EIRP}[dBm]**:	10.38
MPE Limit for General Population/Uncontrolled Exposure, $S_{uncontrolled}$[mW/cm^2]:	0.602
Calculated RF Safety Distance for General Population/Uncontrolled Exposure, **$r_{safety\_controlled}$[cm]**:	1.2

EXHIBIT 6. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSEK30	100077	20Hz–40 GHz	02 Nov 2013
Attenuator	Pasternack	7024-10	4	DC–26.5 GHz	Cal on use
High Pass Filter	K & L	11SH10-1500/T8000	2	Cut off 900 MHz	Cal on use
Spectrum Analyzer	Advantest	R3271	15050203	100Hz–26.5GHz	07 Oct 2013
Log Periodic	ETS Lindgren	3148	00023845	200 -2000 MHz	22 Mar 2014
Attenuator	Pasternack	PE7024-10	4	DC–26.5 GHz	Cal on use
Spectrum Analyzer	Rohde & Schwarz	ESU40	100037	20 Hz – 40 GHz	07 Mar 2014
RF Amplifier	Hewlett Packard	84498	3008A00769	1 – 26.5 GHz	6 Aug 2013
RF Amplifier	AH System	PAM-0118	225	20 MHz – 18 GHz	25 Mar 2014
Biconi-Log Antenna	ETS Lindgren	3142C	34792	26 – 3000 MHz	12 Jun 2014
Horn Antenna	ETS Lindgren	3155	5955	1 – 18 GHz	07 Mar 2014

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**