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FCC PART 15.247 & IC RSS-247

900MHz FHSS

TEST REPORT

Applicant	VERDANT ENVIRONMENTAL TECHNOLOGIES
Address	1850 55E AVENUE
	LACHINE QUEBEC H8T 3J5 CANADA
FCC ID	XEYV
IC Certification Number	8410A-V
Model Number	V
Product Description	THERMOSTAT
Date Sample Received	1/10/2017
Final Test Date	1/26/2017
Tested By	Tim Royer
Approved By	Cory Leverett

Report Number	Version Number	Description	Issue Date
58AUT17TestReport	Rev1	Initial Issue	1/30/2017
58AUT17TestReport	Rev2	Included Powerline conducted Emissions Data.	4/5/2017

THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.



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GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

Summary

The device under test does:

- Fulfill the general approval requirements as identified in this test report and was selected by the customer.
- Not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made at:

**Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32669**



Tested by:

Name and Title: Tim Royer, Project Manager/Testing Engineer

Date: 1/26/2017



Reviewed and approved by:

Name and Title: Cory Leverett, Engineering Project Manager

Date: 1/30/2016

Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
FCC ID: XEYV
IC: 8410A-V
Report: 58AUT17TestReport_Rev2

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GENERAL INFORMATION

EUT Specification

Regulatory Standards	FCC Title 47 CFR Part 15.247 IC RSS-247 Issue 1 & RSS-GEN Issue 4				
FCC ID	XEYV				
IC Certification Number	8410A-V				
Model	V				
EUT Description	THERMOSTAT				
Modulation Types	FHSS				
Operating Frequency	TX: 902.4 – 927.6 MHz	RX: 902.4 – 927.6 MHz			
EUT Power Source	<input type="checkbox"/> 110–120Vac/50– 60Hz				
	<input checked="" type="checkbox"/> DC Power (24V)				
	<input type="checkbox"/> Battery Operated Exclusively				
Test Item	<input type="checkbox"/> Prototype	<input checked="" type="checkbox"/> Pre-Production	<input type="checkbox"/> Production		
Type of Equipment	<input checked="" type="checkbox"/> Fixed	<input type="checkbox"/> Mobile	<input type="checkbox"/> Portable		
Antenna Connector	None				
Antenna	External wire				
Test Conditions	Temperature: 24-26°C Relative humidity: 50-65%				
Measurement Standard	ANSI C63.10-2013 FCC DA 00-705 ANSI C63.4-2014 (Radiated Site Validation)				
Test Exercise	The EUT was powered on and operated in a normal operational mode				

Test Supporting Equipment

Device	Manufacturer	Model	S/N	Supplied By	Used For
24V supply	Medical Power Supply	ME10A2403B01	N/A	Verdant	Powerline



RESULTS SUMMARY

FCC Rule Part No.	IC Standard Ref.	Requirement	Test Item	Result
15.215 (c)	RSS-GEN 6.6	Occupied Bandwidth	99% Bandwidth	---
			20 dB Bandwidth	Pass
15.247(a,1)	RSS-247 § 5.1	FHSS Requirements	Channel Separation	Pass
			Hopping Sequence	Pass
			System Receiver Bandwidth	Pass
			Number of Hopping Channels	Pass
			Hopping Channel Occupancy Time	Pass
15.247(b,1) & (b,4)	RSS-247 § 5.4.2	Peak Power Output	Peak Power Output (ERP)	Pass
			Antenna Gain (EIRP)	Pass
15.247(d)	RSS-247 § 5.5	Unwanted Emissions	Bandedge	Pass
			Radiated Spurious	Pass
15.207(a)	RSS-215, sec 5.1, GEN sec 8.8	AC Conducted Emissions	AC Powerline Conducted Emissions	Pass

Notes:

Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
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OCCUPIED BANDWIDTH

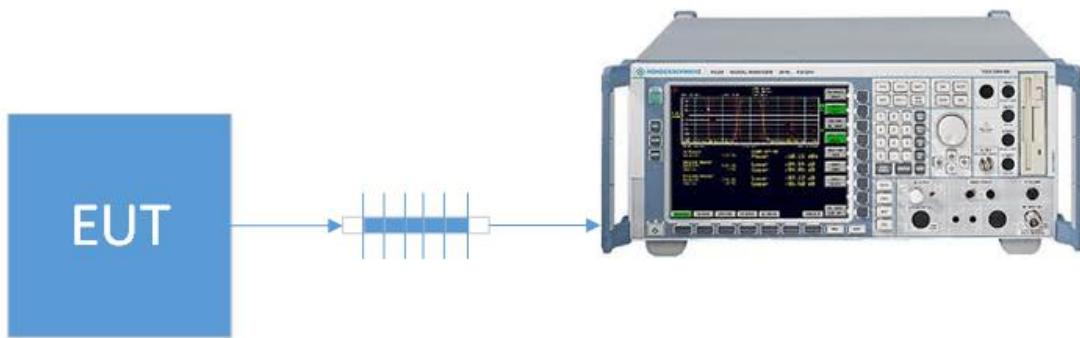
Rules Part No.: FCC 15.215(C), IC RSS 247 § 5.1.1, 5.1.1.3

FCC Requirements: The 20 dB bandwidth of the emission shall be contained within the frequency band designated in the rule section under which the equipment is operated.

IC Requirements: The maximum 20 dB bandwidth shall be 500 KHz, 99% OBW Reporting only

Test Method: ANSI C63.10 § 6.9.2 Occupied bandwidth-20dB Relative procedure
ANSI C63.10 § 6.9.3 Occupied bandwidth Power bandwidth 99% procedure

Setup:



Test Data: **20 dB Occupied Bandwidth Measurement Table**

Tuned Frequency (MHz)	20 dB BW (KHz)	Limit (KHz)	Margin (KHz)
902.4	4.92	≤ 500	459.08
915.0	4.689	≤ 500	495.311
927.6	4.72	≤ 500	495.28

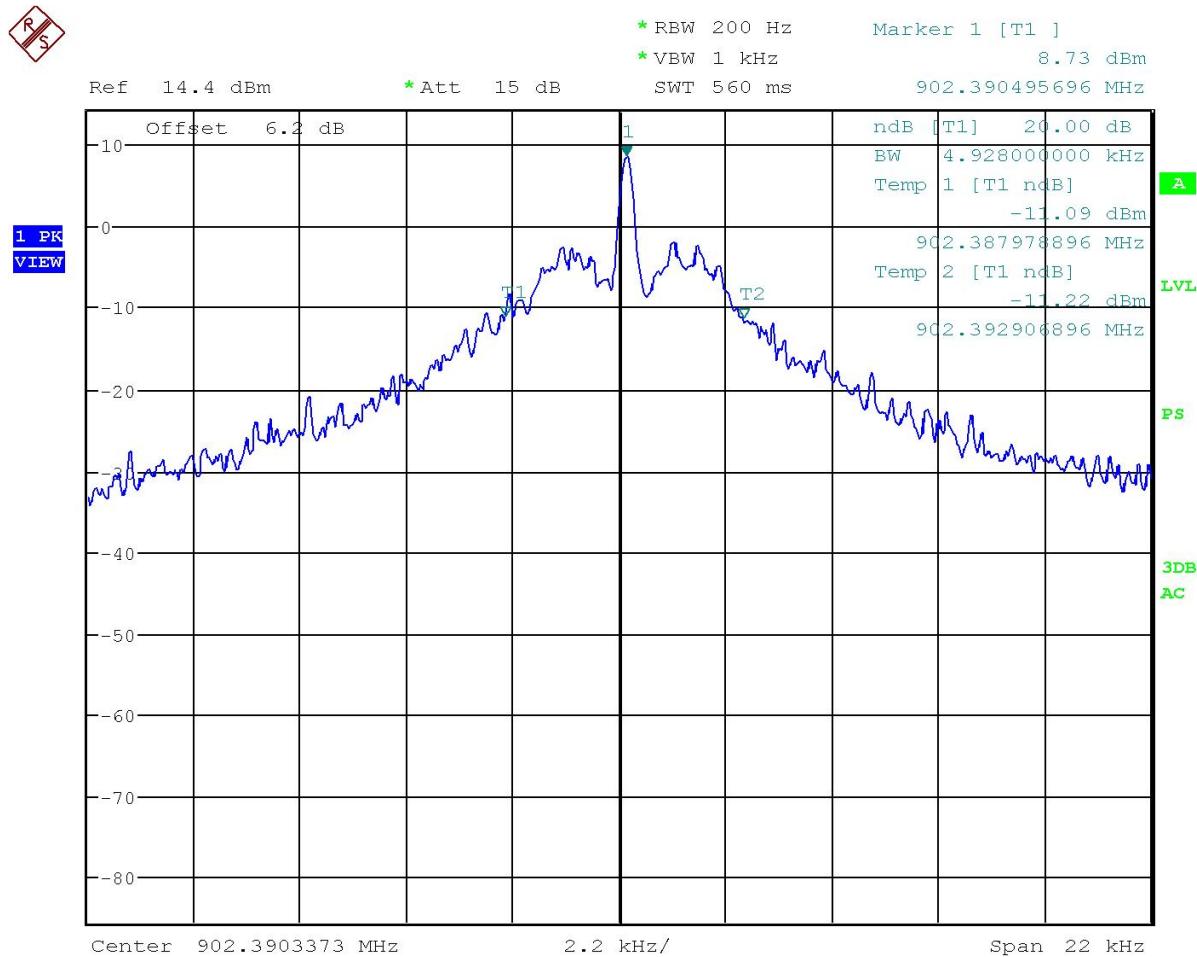
Test Data: **99% Occupied Bandwidth Measurement Table**

Tuned Frequency (MHz)	99% BW (KHz)	Limit (KHz)	Margin (KHz)
902.4	10.22	-	-
915.0	11.352	-	-
927.6	11.36	-	-

RESULTS: Meets Requirements

OCCUPIED BANDWIDTH

Test Data: 20 dB OBW Low End of Band Plot



Date: 19.JAN.2017 10:47:44

RESULTS: Meets Requirements

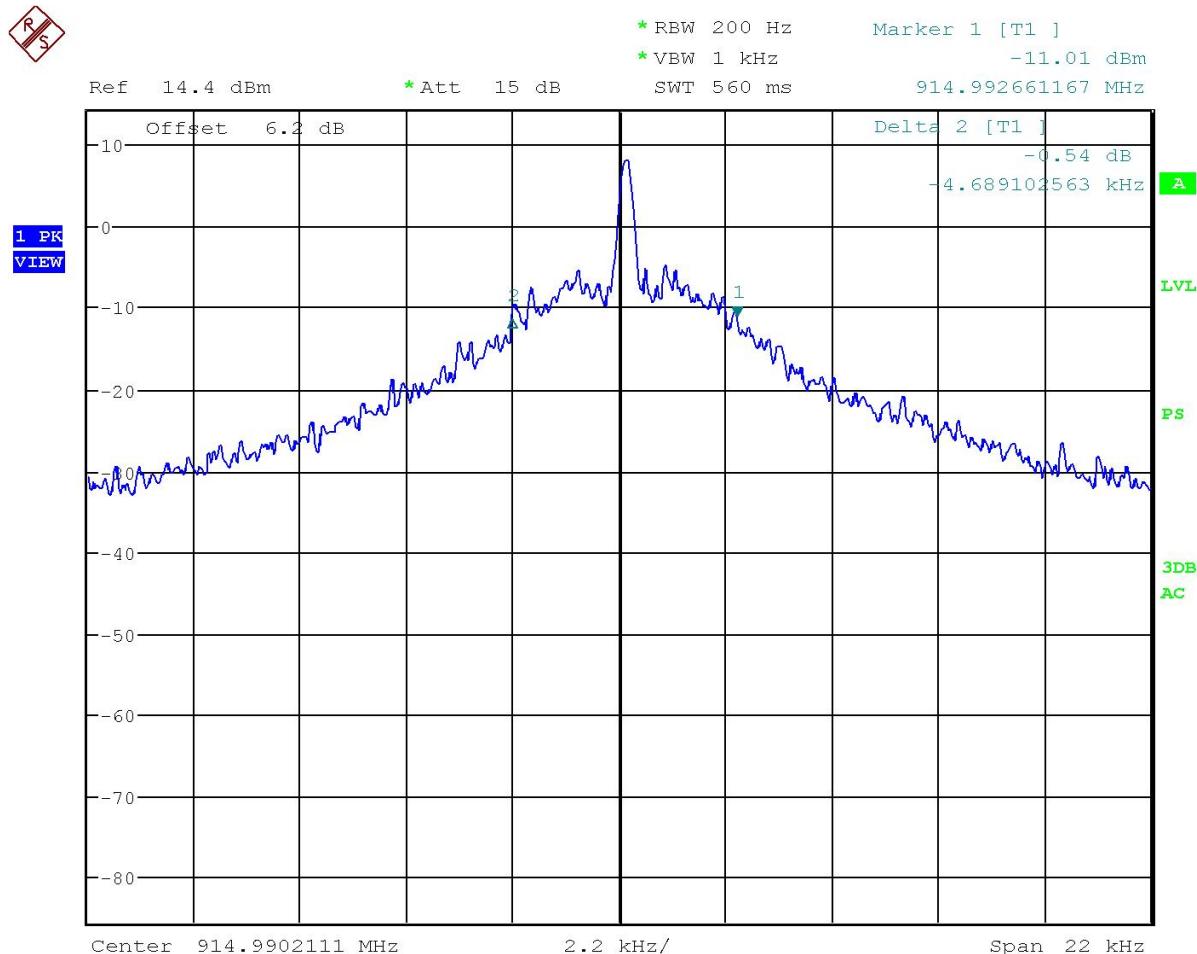
Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
 FCC ID: XEYV
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OCCUPIED BANDWIDTH

Test Data: 20 dB OBW Middle of Band Plot



Date: 19.JAN.2017 10:51:22

RESULTS: Meets Requirements

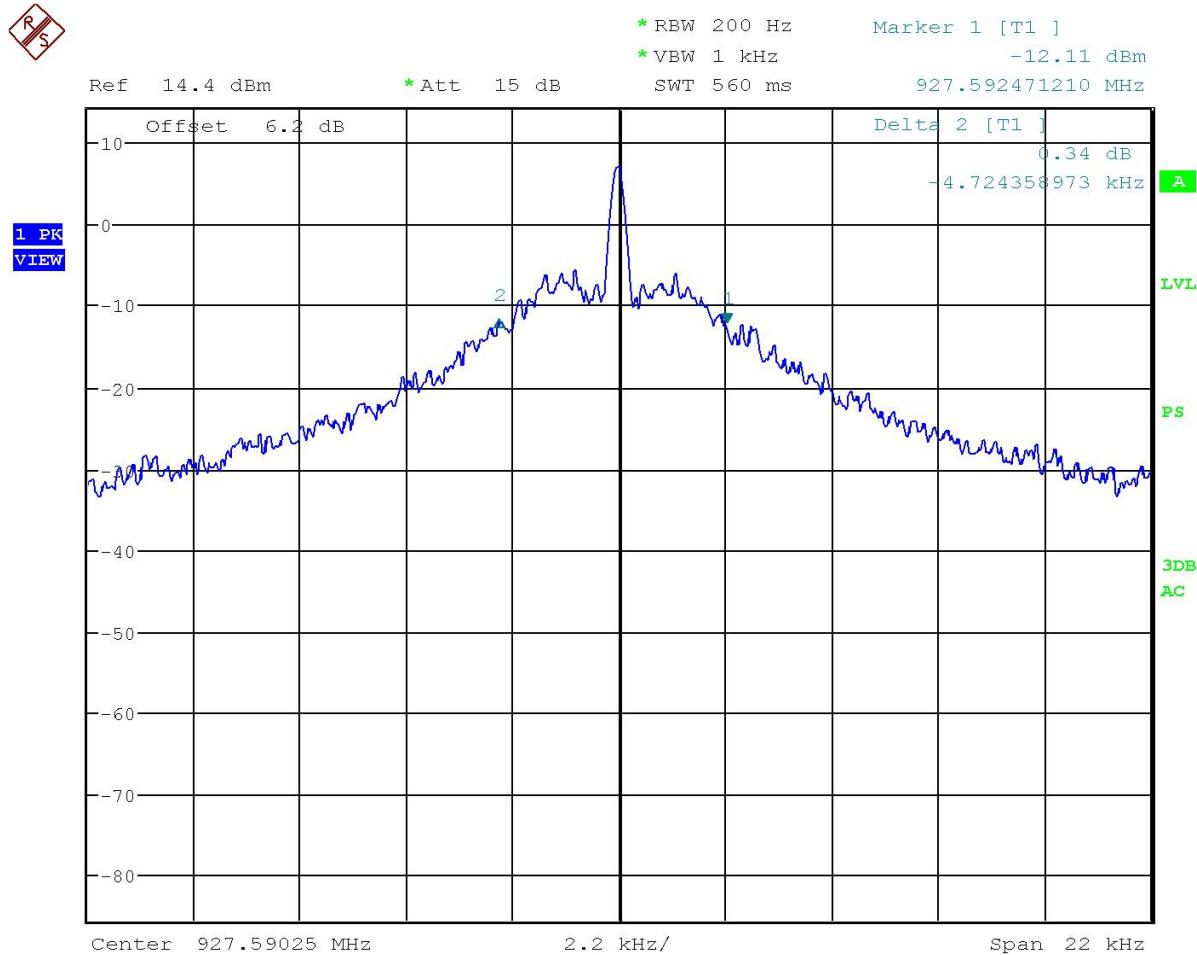
Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
 FCC ID: XEYV
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OCCUPIED BANDWIDTH

Test Data: 20 dB OBW High end of Band Plot



Date: 19.JAN.2017 10:54:56

RESULTS: Meets Requirements

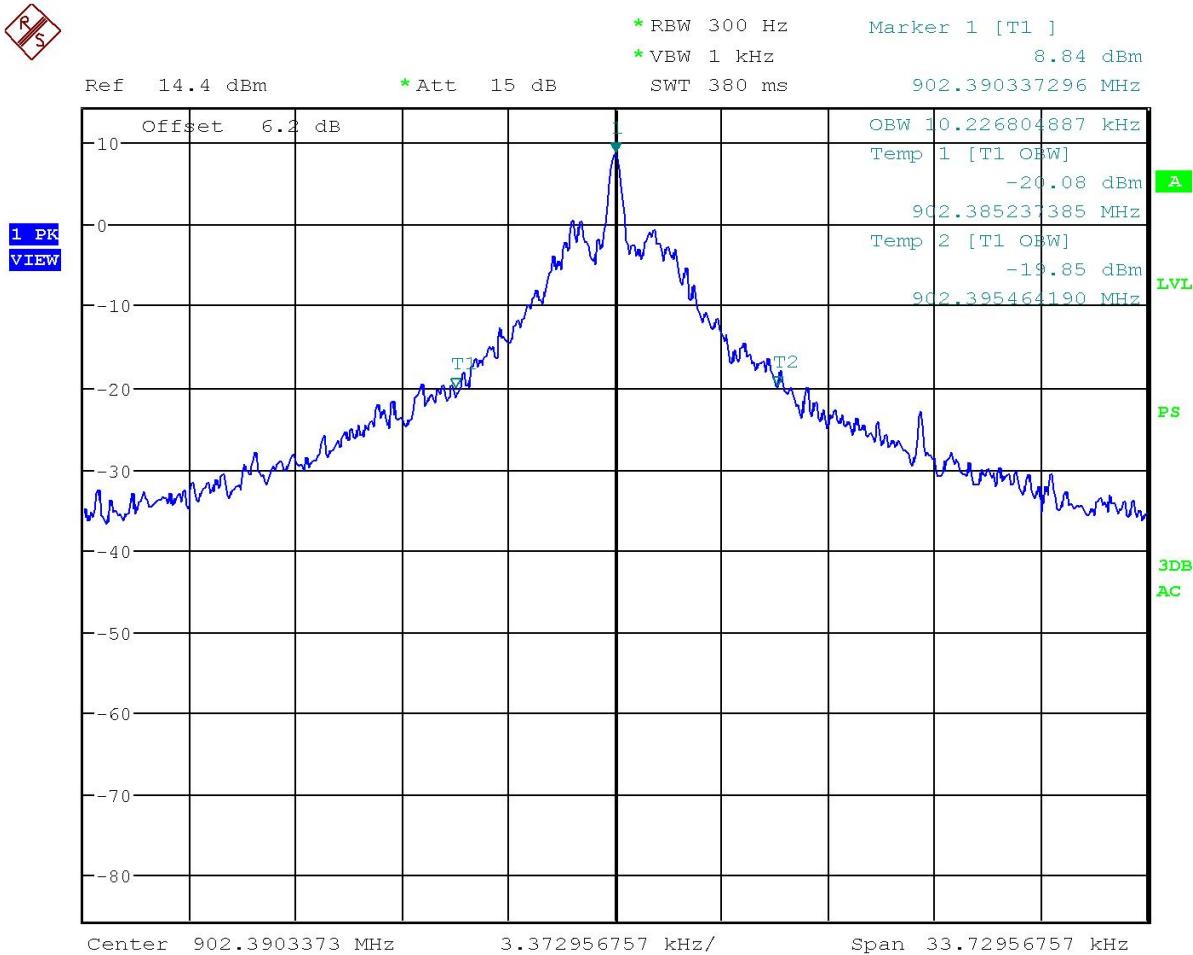
Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
 FCC ID: XEYV
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OCCUPIED BANDWIDTH

Test Data: 99%OBW Low End of Band Plot



Date: 19.JAN.2017 10:43:42

RESULTS: Meets Requirements

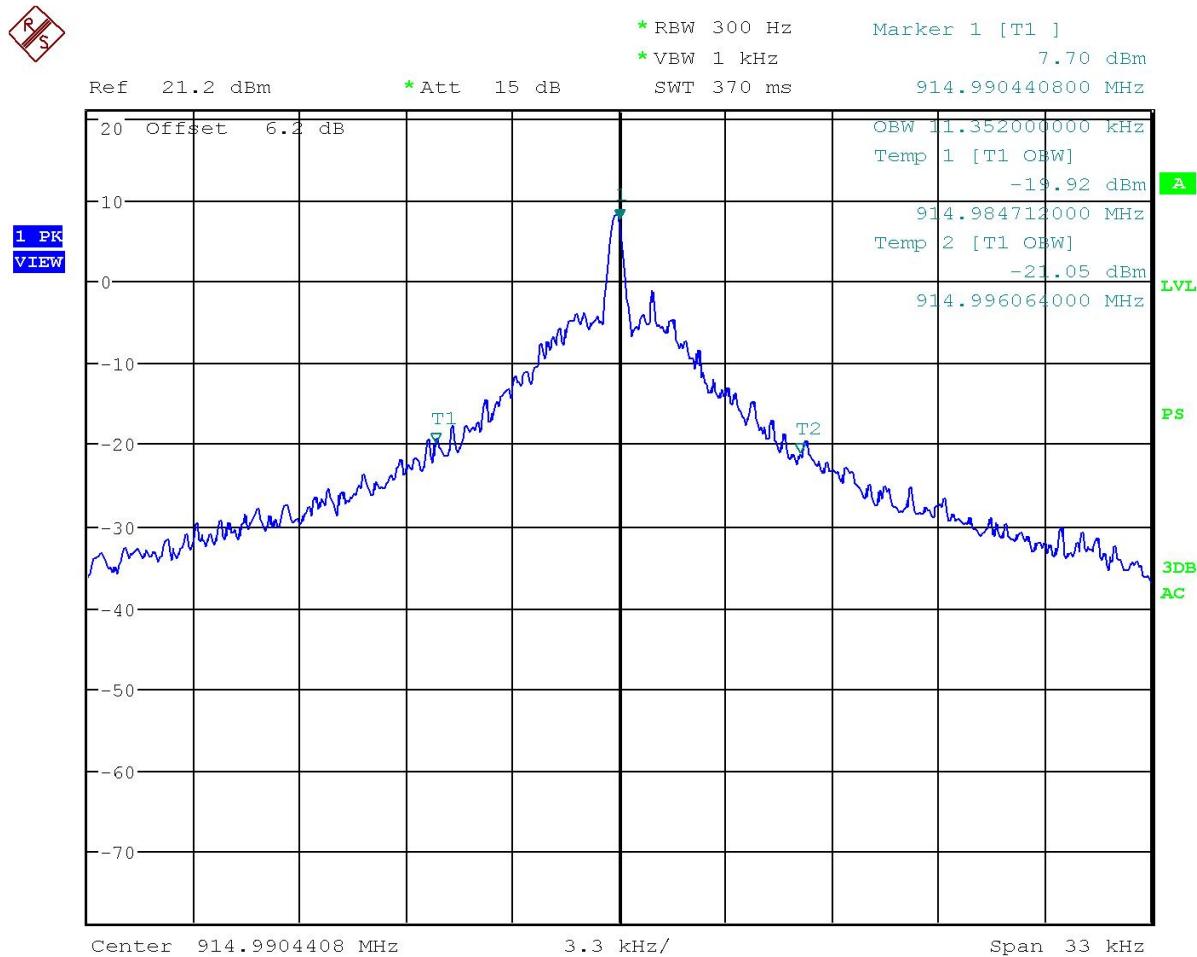
Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
FCC ID: XEYV
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OCCUPIED BANDWIDTH

Test Data: **99%OBW Middle of Band Plot**



Date: 19.JAN.2017 13:20:25

RESULTS: Meets Requirements

Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
FCC ID: XEYV
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Report: 58AUT17TestReport_Rev2

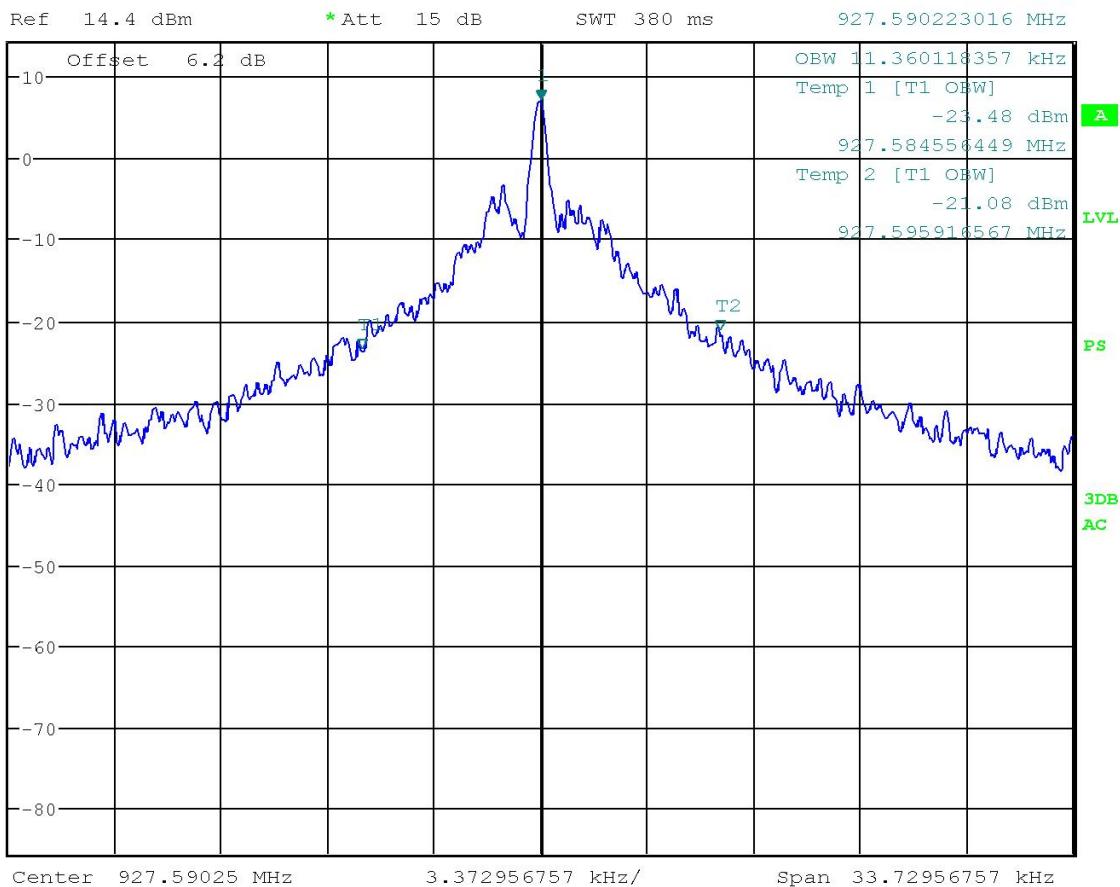
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OCCUPIED BANDWIDTH

Test Data:

99%OBW High end of Band Plot



Date: 19.JAN.2017 10:41:35

RESULTS: Meets Requirements

Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
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FHSS REQUIREMENTS

Rules Part No.: FCC 15.247(a)(1), IC RSS 247 § 5.1.1, 5.1.2, 5.1.3

Requirements: **Maximum 20 dB Bandwidth**

The bandwidth of a frequency hopping channel is the -20 dB emission bandwidth, measured with the hopping stopped. The maximum 20 dB bandwidth of the hopping channel shall be 500 kHz.

Channel Separation

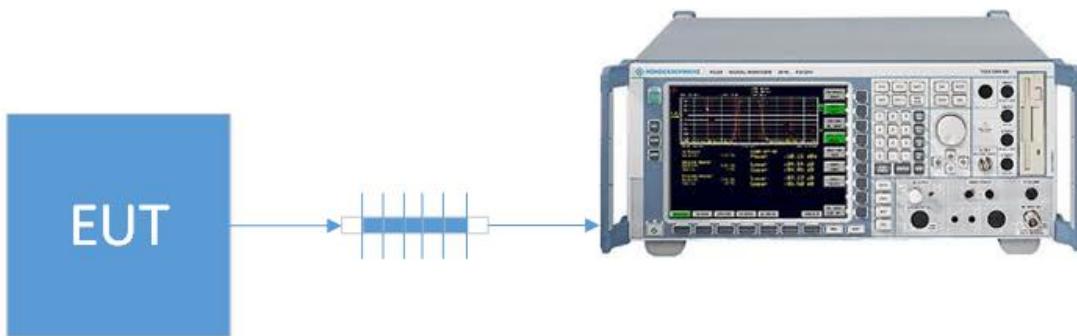
FHSs shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the -20 dB bandwidth of the hopping channel, whichever is greater.

Dwell Time and Number of Hopping Channels

If the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping channels and the average time of occupancy on any channel 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 channels 0.4 seconds within a 10-second period.

Test Method:
 ANSI C63.10 § 7.8.2 Carrier frequency separation
 ANSI C63.10 § 7.8.3 Number of hopping frequencies
 ANSI C63.10 § 7.8.3 Time of Occupancy

Setup:





FHSS REQUIREMENTS

Test Data: FHSS Channel Separation Measurement Table

Mode	Separation (KHz)	Limit (KHz)	Pass / Fail
1	402.8	≥ 25	Pass

Test Data: Number of Hopping Channels Measurement Table

Mode	Number of channels	Limit	Pass / Fail
1	64	≥ 50	Pass

Test Data: Hopping Channel Occupancy Time Measurement Table

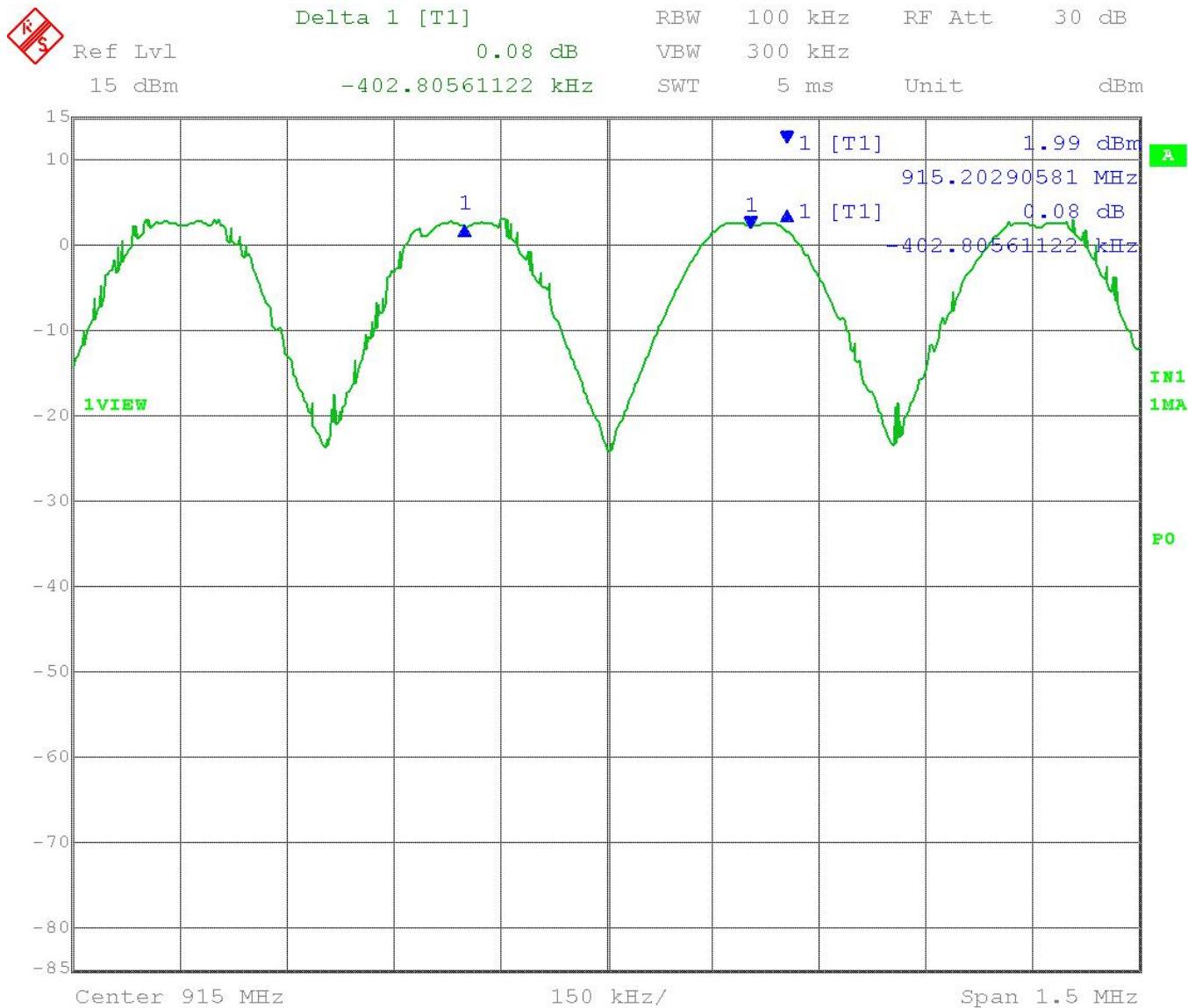
Mode	Number of Tx in Period	Burst Length (mS)	Occupancy Time (mS)	Limit (sec)	Pass / Fail
1	1	6.59	6.59	≤ 0.4	Pass

RESULTS: Meets Requirements

FHSS REQUIREMENTS

Test Data:

Mode 1 Channel Separation Plot



Date: 26.JAN.2017 13:15:38

RESULTS: Meets Requirements

Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
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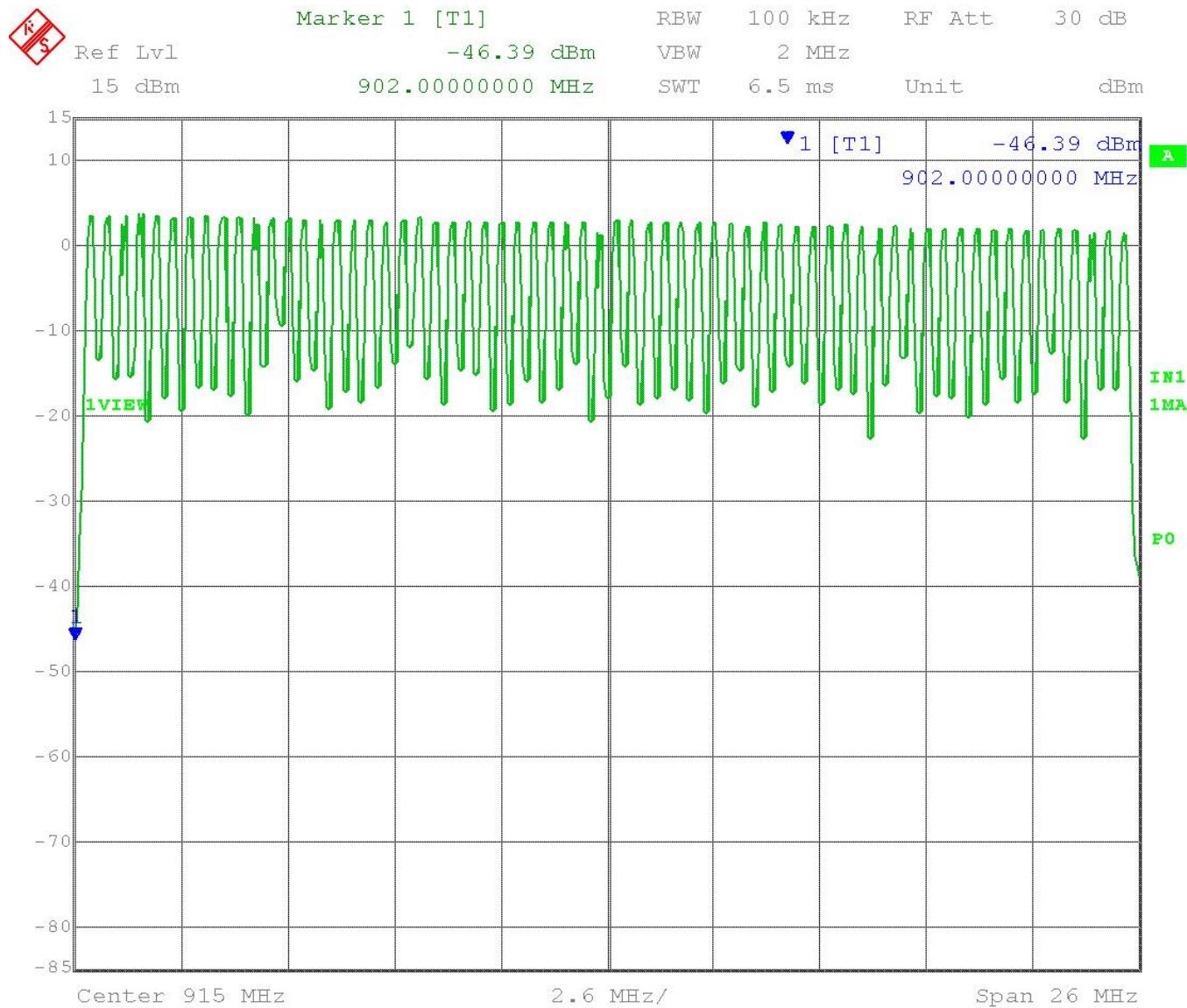
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FHSS REQUIREMENTS

Test Data:

Mode 1 Number of Hopping Channels Plot



Date: 26.JAN.2017 13:06:42

RESULTS: Meets Requirements

Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
 FCC ID: XEYV
 IC: 8410A-V
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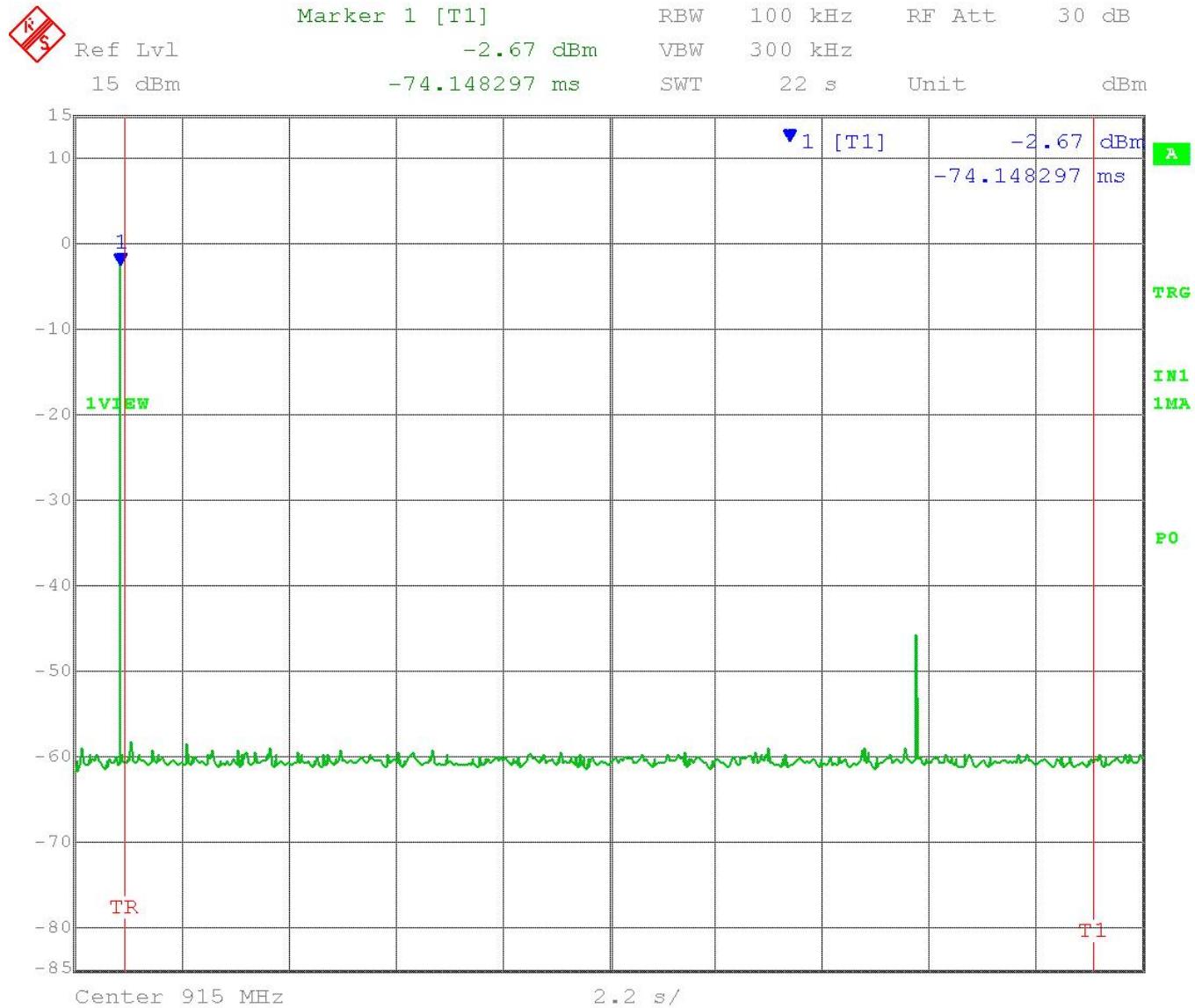
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FHSS REQUIREMENTS

Test Data:

Mode 1 Channel Occupancy Time Plot



Date: 26.JAN.2017 14:03:53

RESULTS: Meets Requirements

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 FCC ID: XEYV
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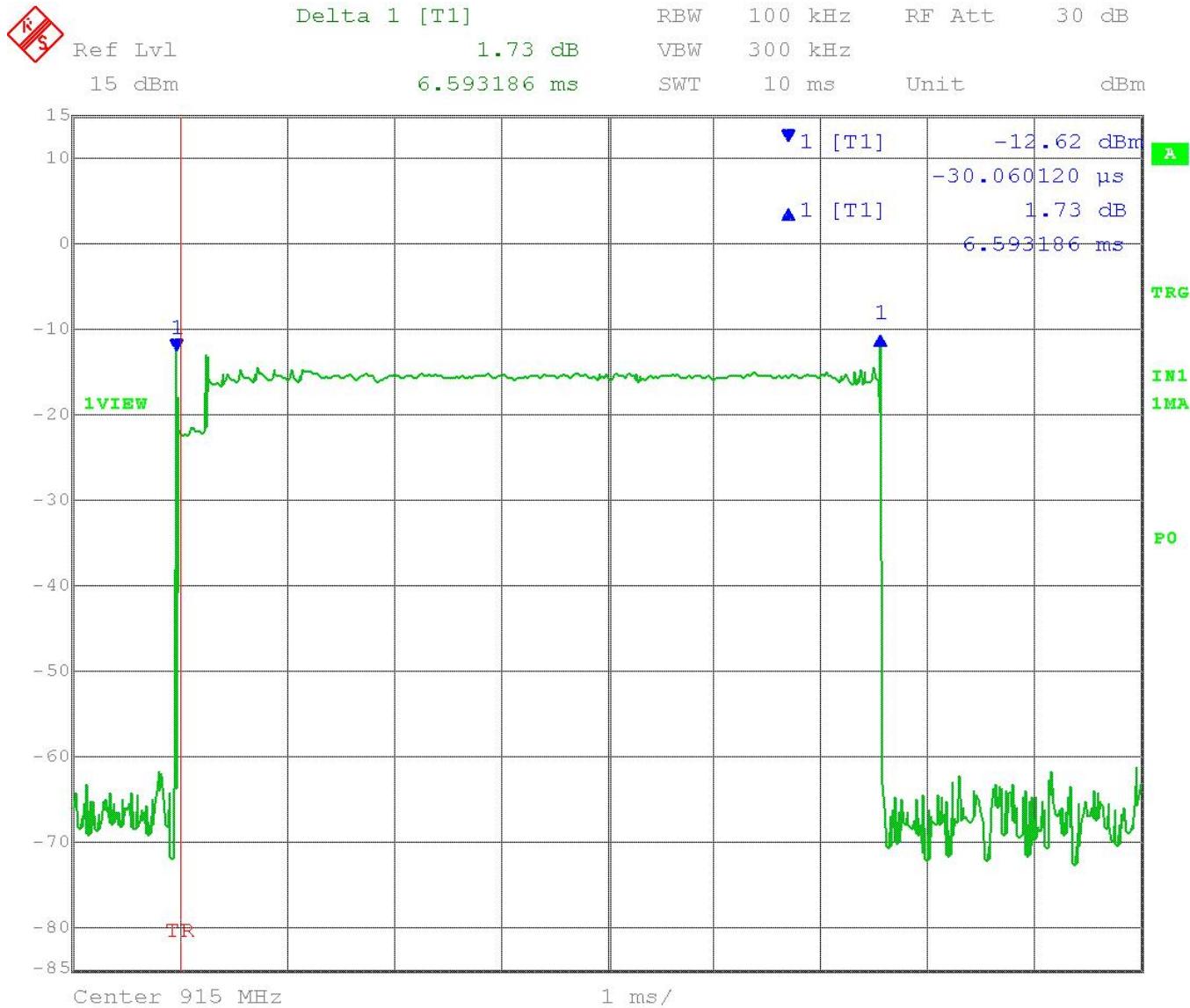
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FHSS REQUIREMENTS

Test Data:

Mode 1 Burst Length Plot



Date: 26.JAN.2017 13:20:48

RESULTS: Meets Requirements

Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
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FHSS REQUIREMENTS PEAK POWER OUTPUT

Rules Part No.: FCC 15.247(b) (2) (4), IC RSS 247 § 5.4.1

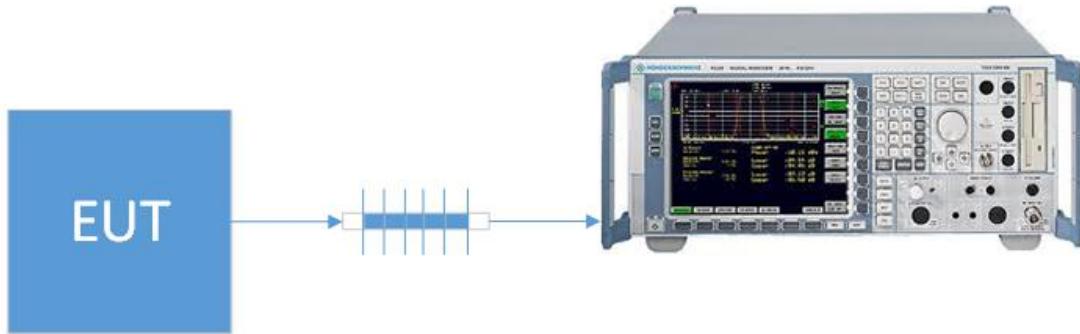
Requirements:

FHSS Using Hopset \geq 50 Channels

The maximum peak conducted output power shall not exceed 1.0 W, and the e.i.r.p. shall not exceed 4 W if the hopset uses 50 or more hopping channels.

Test Method: ANSI C63.10 § 7.8.5 Output Power test procedure for FHSS

Setup:





PEAK POWER OUTPUT

Test Data: Peak Power Output Measurement Table

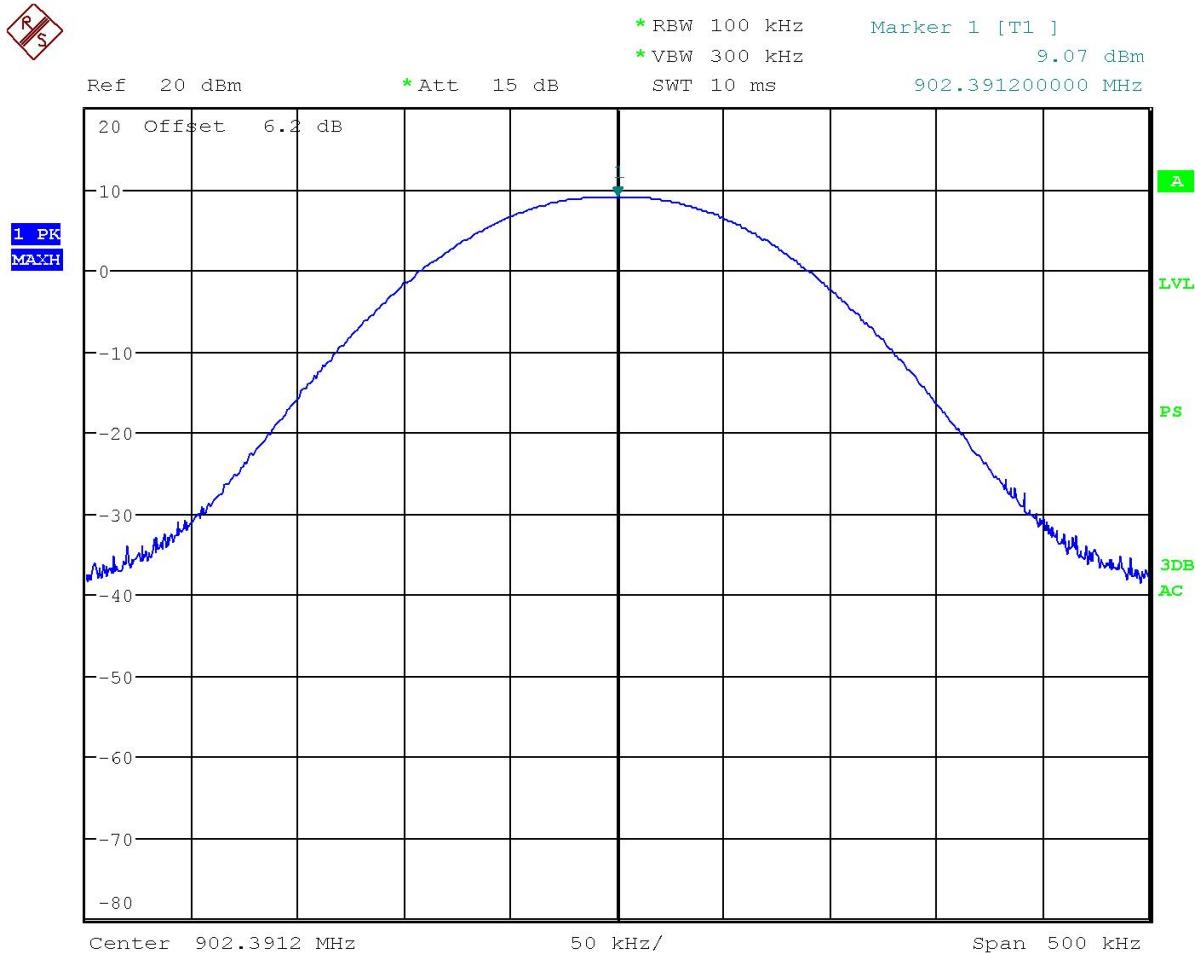
Peak Conducted Power Output Measurement				
Tuned Frequency (MHz)	PConducted (dBm)	PConducted (W)	Limit (W)	Margin (W)
902.4	9.08	0.00809	1.00	0.99191
915.0	8.41	0.00693	1.00	0.99307
927.6	7.48	0.00560	1.00	0.99440

Peak EIRP Power Output Calculation				
Tuned Frequency (MHz)	PConducted (dBm)	EIRP (W)	Limit (W)	Margin (W)
902.4	9.08	0.01327	4.00	3.98673
915.0	8.41	0.01138	4.00	3.98862
927.6	7.48	0.00918	4.00	3.99082

RESULTS: Meets Requirements

PEAK POWER OUTPUT

Test Data: Low End of Band Peak Conducted Power Plot



Date: 19.JAN.2017 11:19:18

RESULTS: Meets Requirements

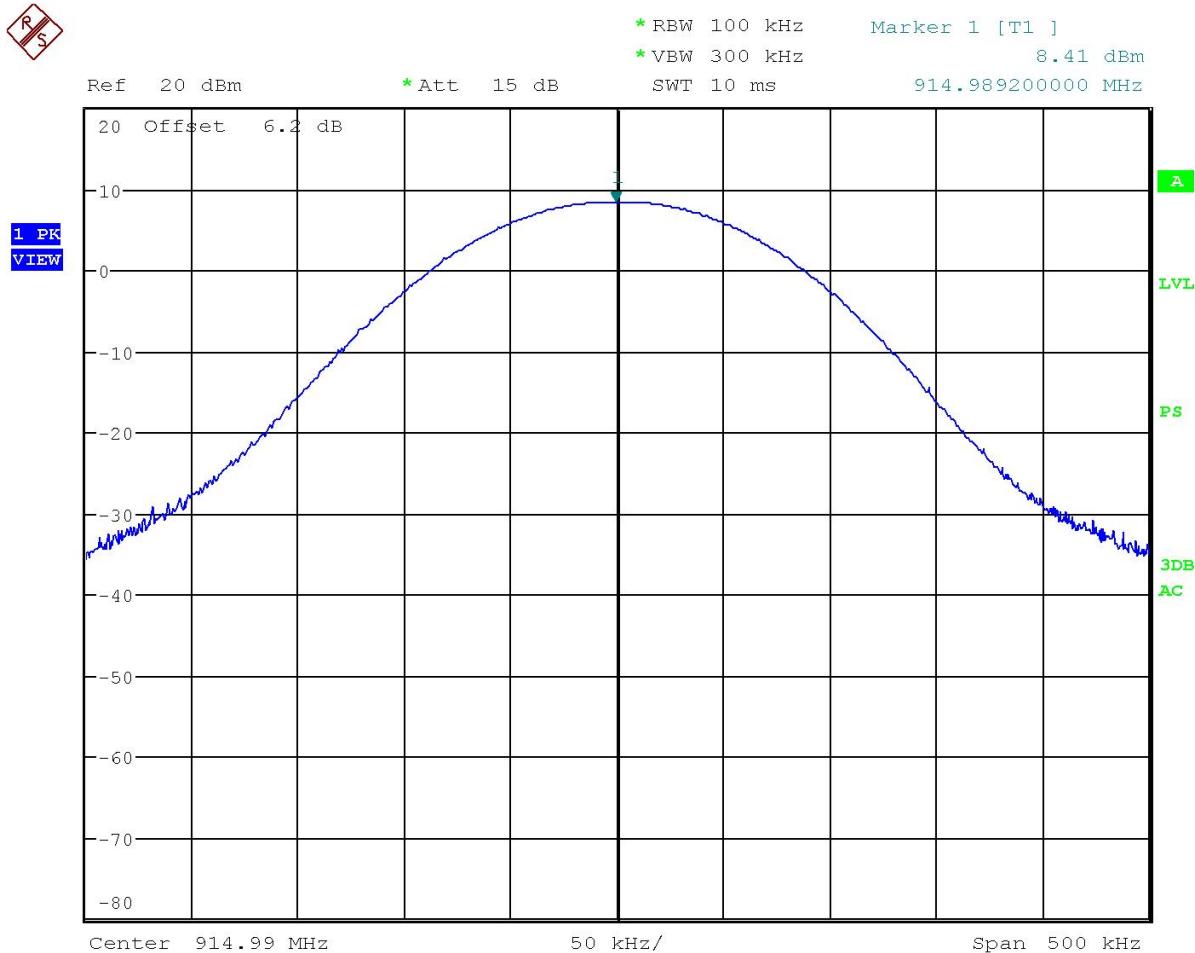
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PEAK POWER OUTPUT

Test Data: Middle of Band Peak Conducted Power Plot



Date: 19.JAN.2017 11:20:37

RESULTS: Meets Requirements

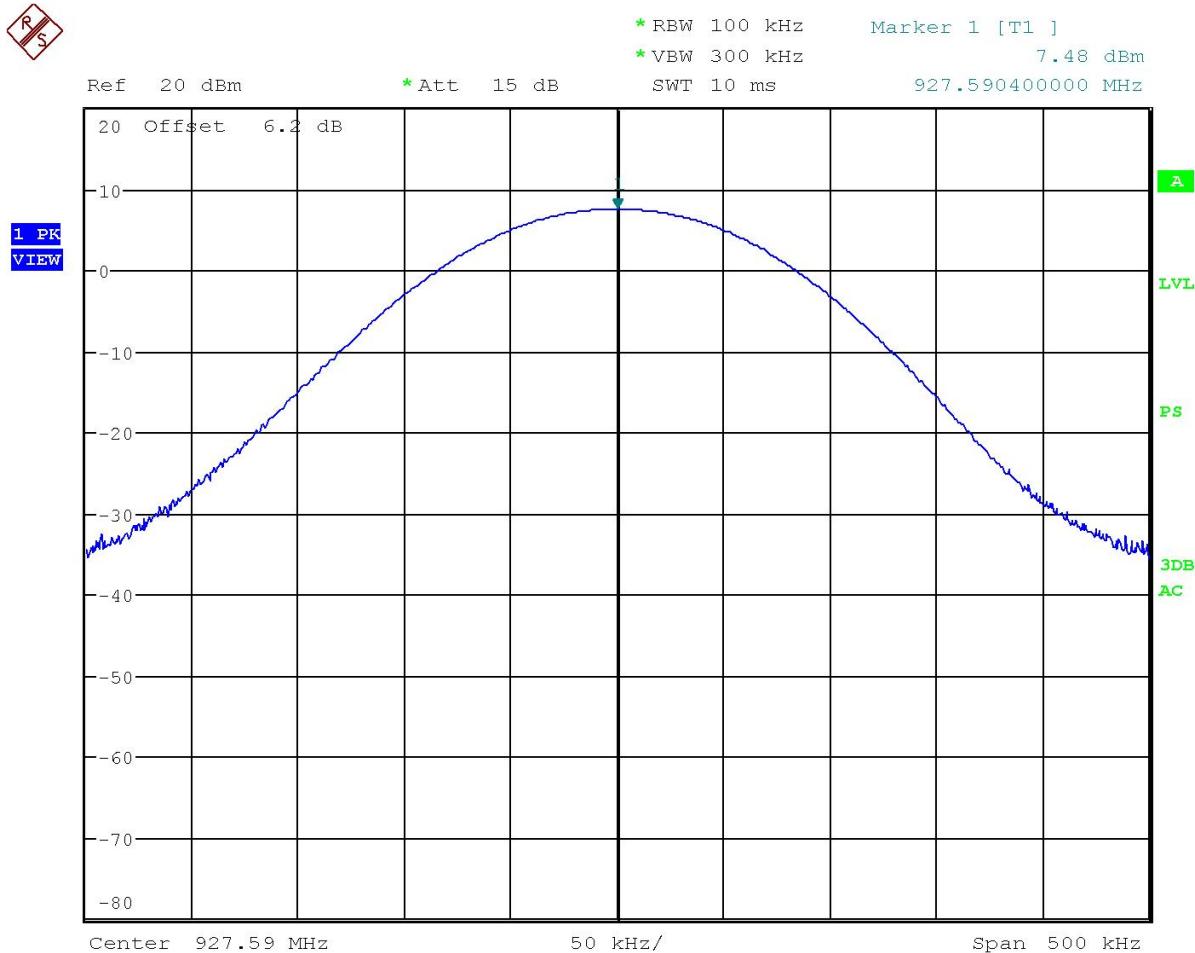
Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
 FCC ID: XEYV
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PEAK POWER OUTPUT

Test Data: Middle of Band Peak Conducted Power Plot



Date: 19.JAN.2017 11:21:43

RESULTS: Meets Requirements

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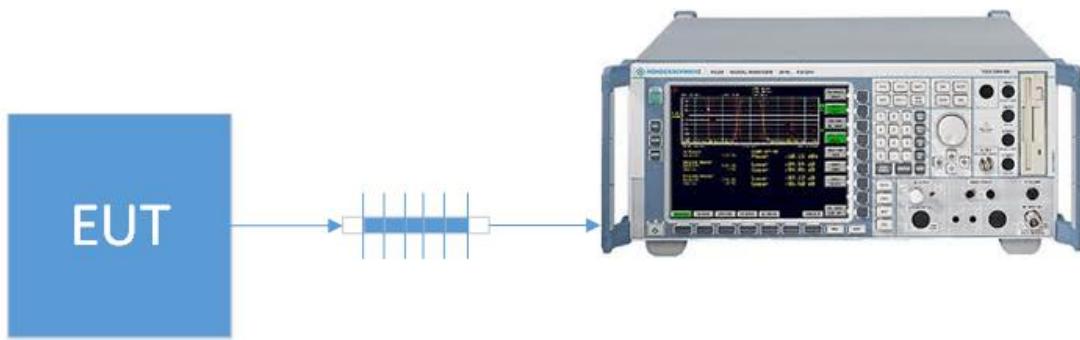
BANDEDGE

Rule Part No.: FCC 15.247(d) & 15.209, IC RSS 247 § 5.5 & RSS GEN § 8.9

Requirements: Emissions must be at least 20dB down from the highest emission level Within the authorized band as measured with a 100 kHz RBW, additionally adjacent restricted band edge emissions must comply with 15.209 and RSS-GEN 8.9 limits.

Test Method: ANSI C63.10 § 6.10.4 Authorized band-edge relative method

Setup:

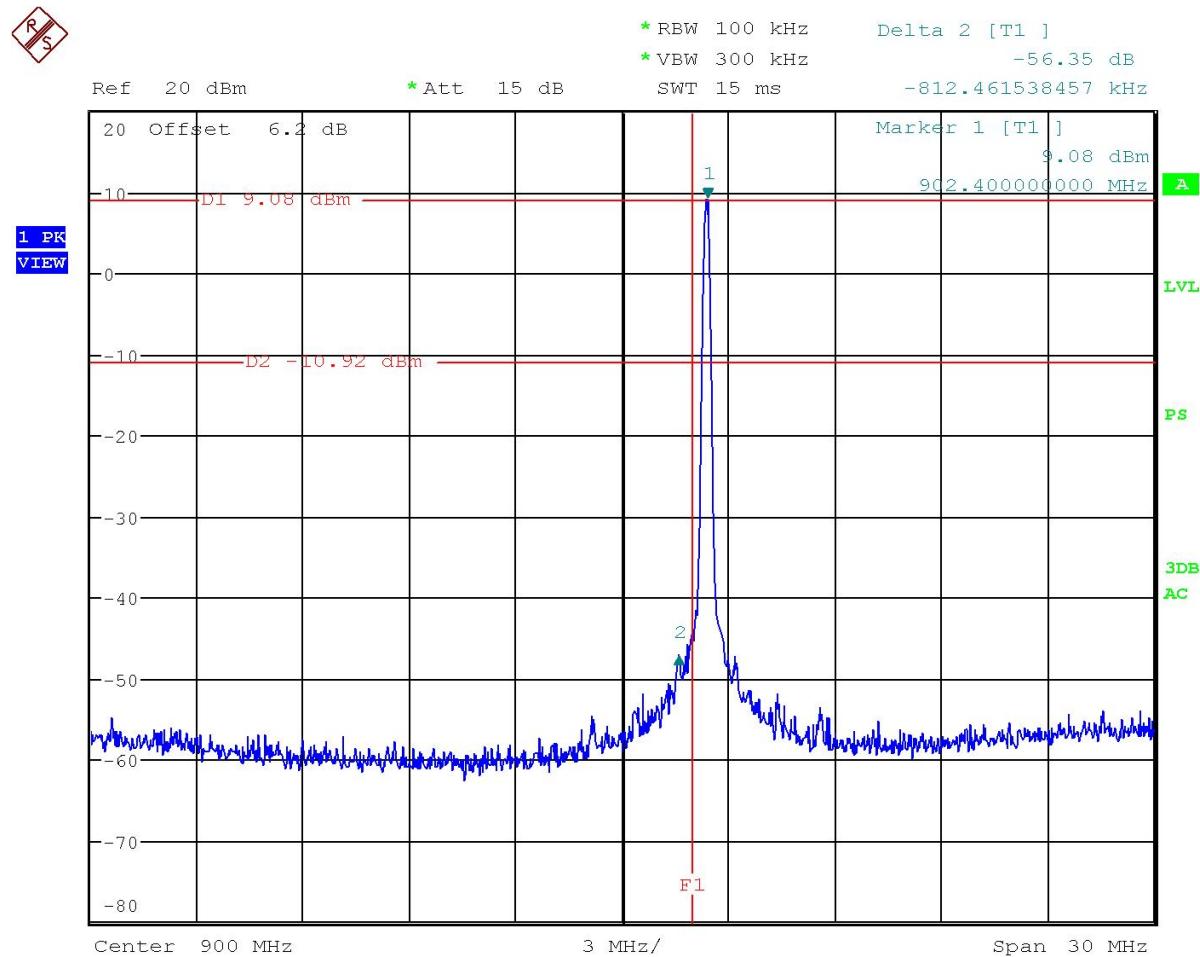


Test Data: **Bandedge Measurement Table**

Bandedge	Tuned Frequency (MHz)	Measured Level (dBc)	Limit (dBc)	Margin (dB)
Lower	902.39	56.35	20	36.35
	Hopping	46.76	20	26.76
Upper	927.59	54.09	20	34.09
	Hopping	42.58	20	22.58

BANDEDGE

Data: Low End of Band Lower Band Edge Plot



Date: 19.JAN.2017 12:02:05

RESULTS: Meets Requirements

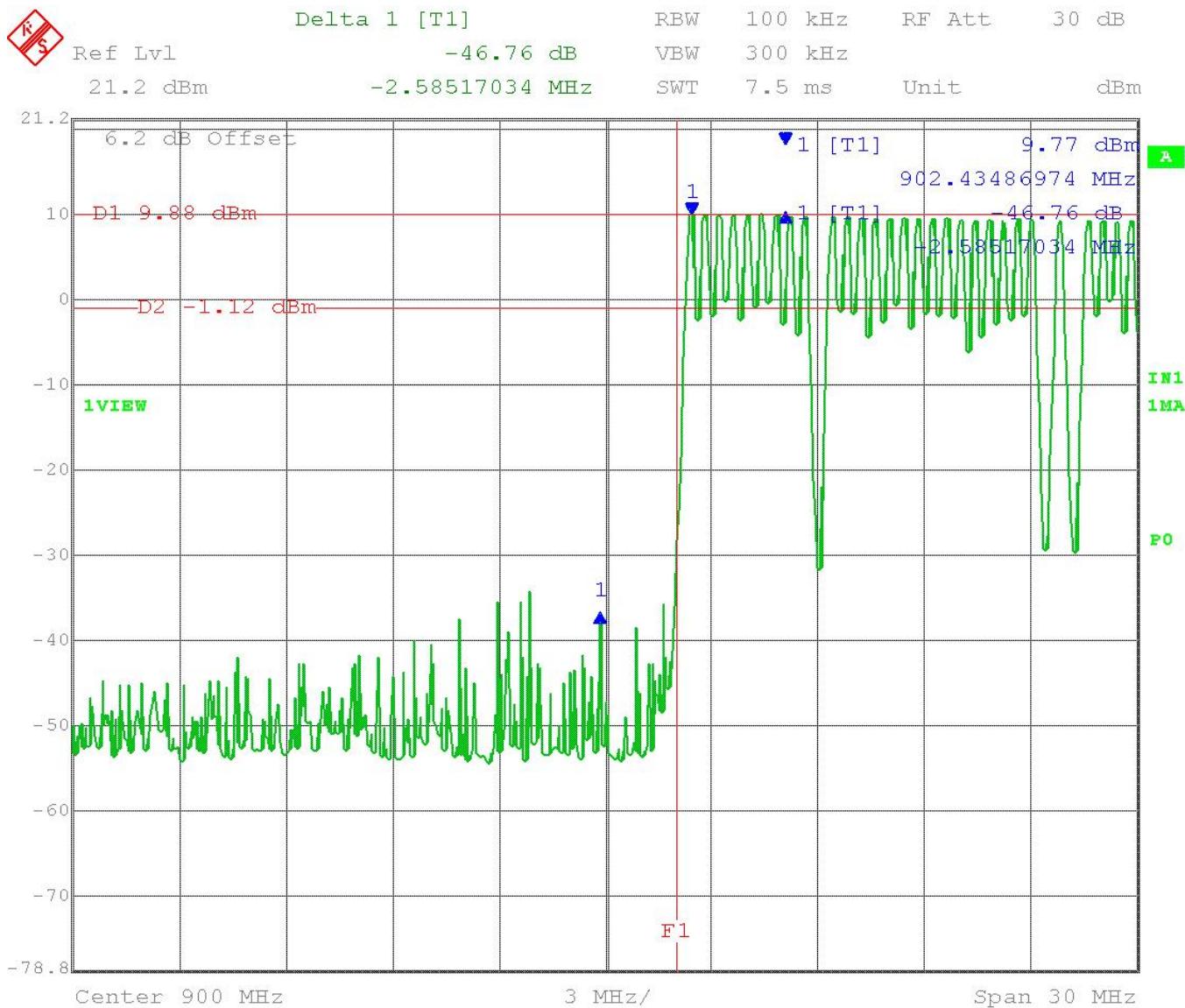
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BANDEDGE

Data: Hopping Lower Band Edge Plot



Date: 26.JAN.2017 14:20:11

RESULTS: Meets Requirements

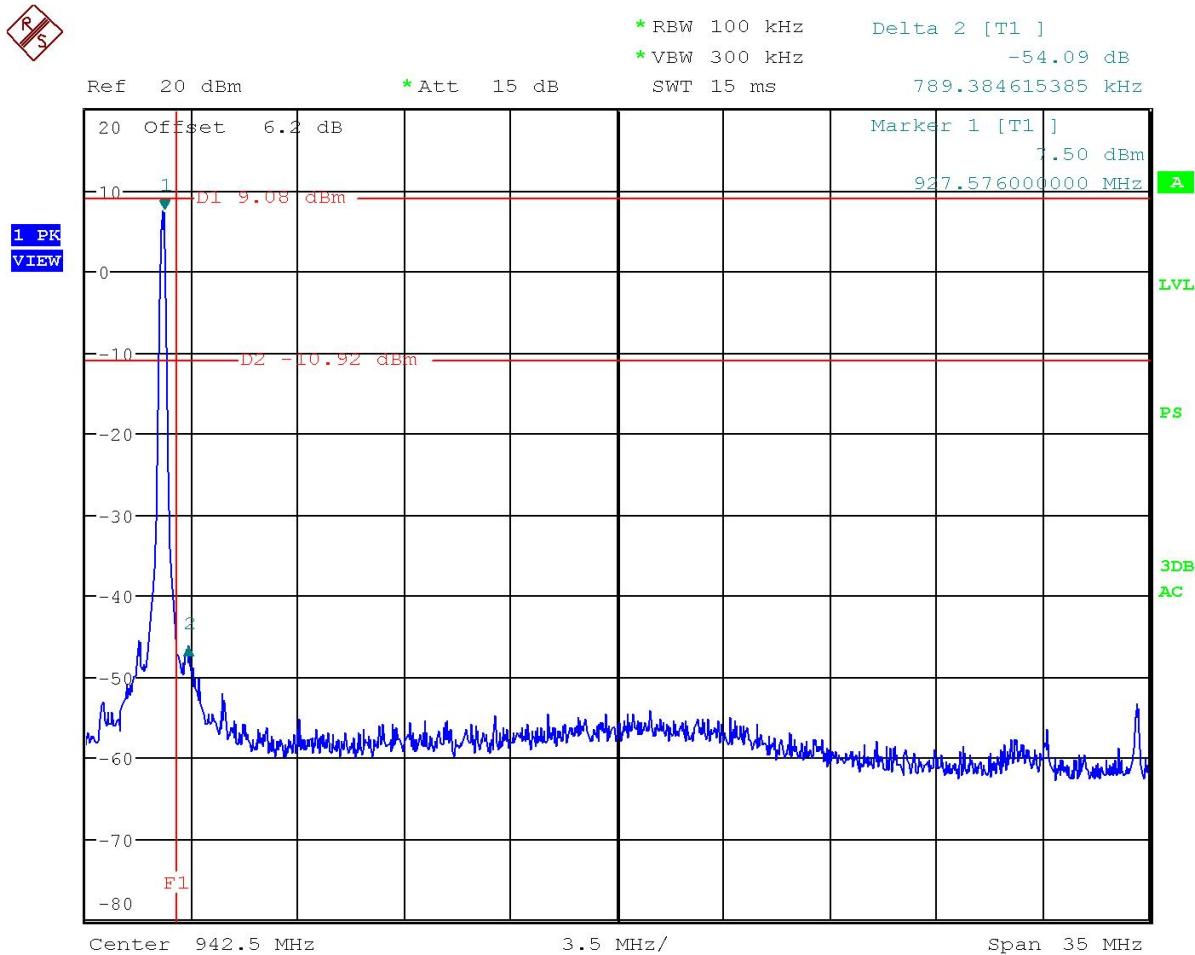
Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
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BANDEDGE

Data: **High End of Band Upper Band Edge Plot**



Date: 19.JAN.2017 12:03:44

RESULTS: Meets Requirements

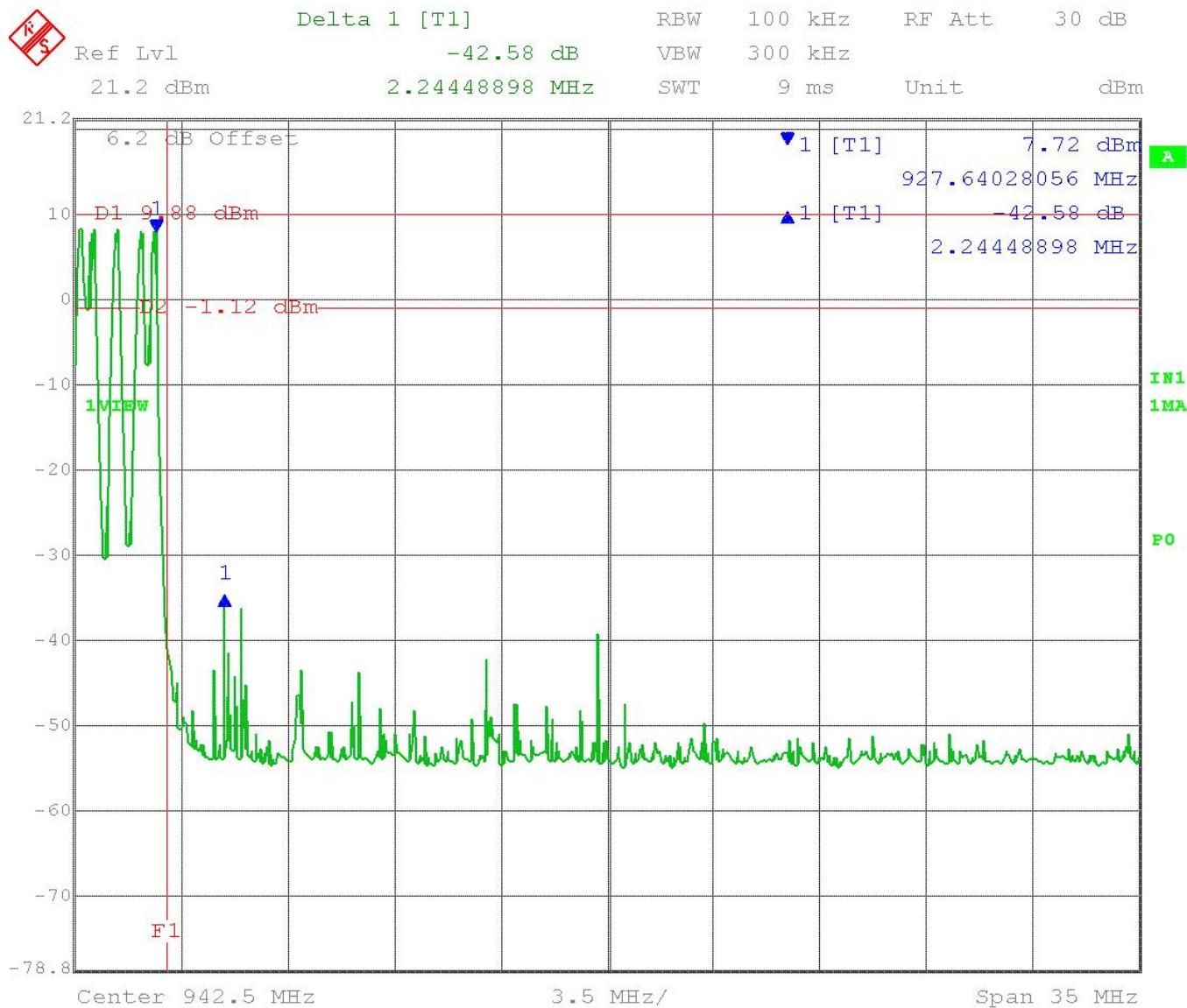
Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
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BANDEDGE

Data: Hopping Upper Band Edge Plot



Date: 26.JAN.2017 14:16:56

RESULTS: Meets Requirements

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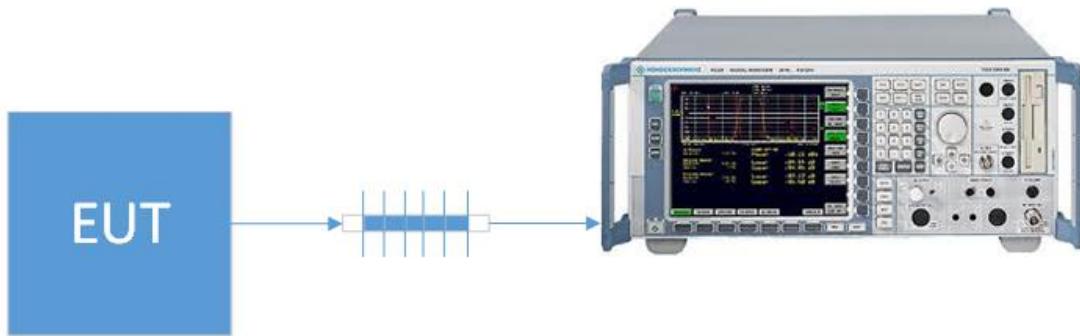
ANTENNA CONDUCTED SPURIOUS EMISSIONS

Rules Part No.: FCC part 15.247 (d) & 15.209, IC RSS 247 § 5.5 & RSS GEN § 8.9

Requirements: 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

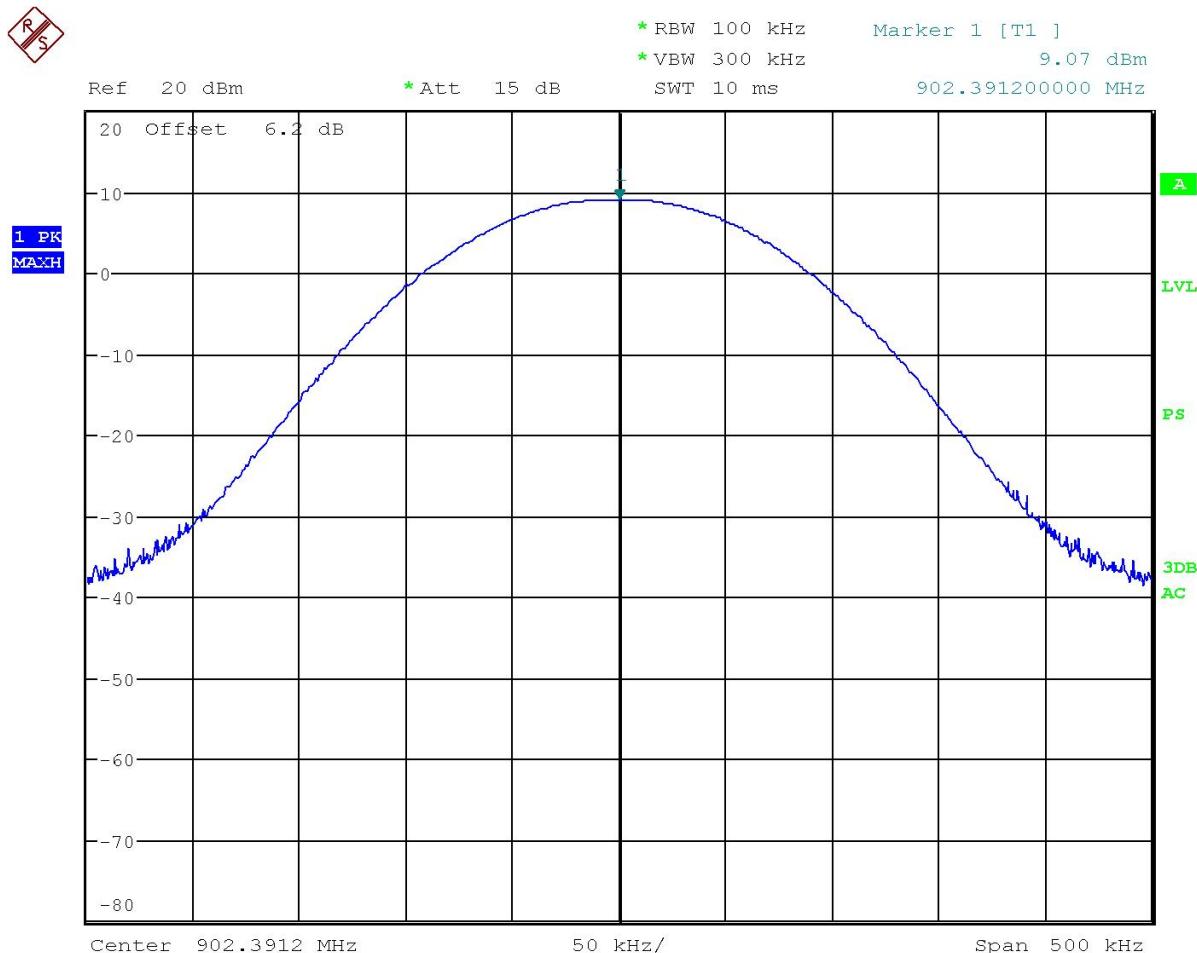
Test Method:
ANSI C63.10 § 11.11.1 General Information
ANSI C63.10 § 11.11.2 Reference level measurement
ANSI C63.10 § 11.11.3 Emission level measurement

Setup:



ANTENNA CONDUCTED SPURIOUS EMISSIONS

Test Data: **100 KHz Reference Level Plot**



Date: 19.JAN.2017 11:19:18

RESULTS: Meets Requirements

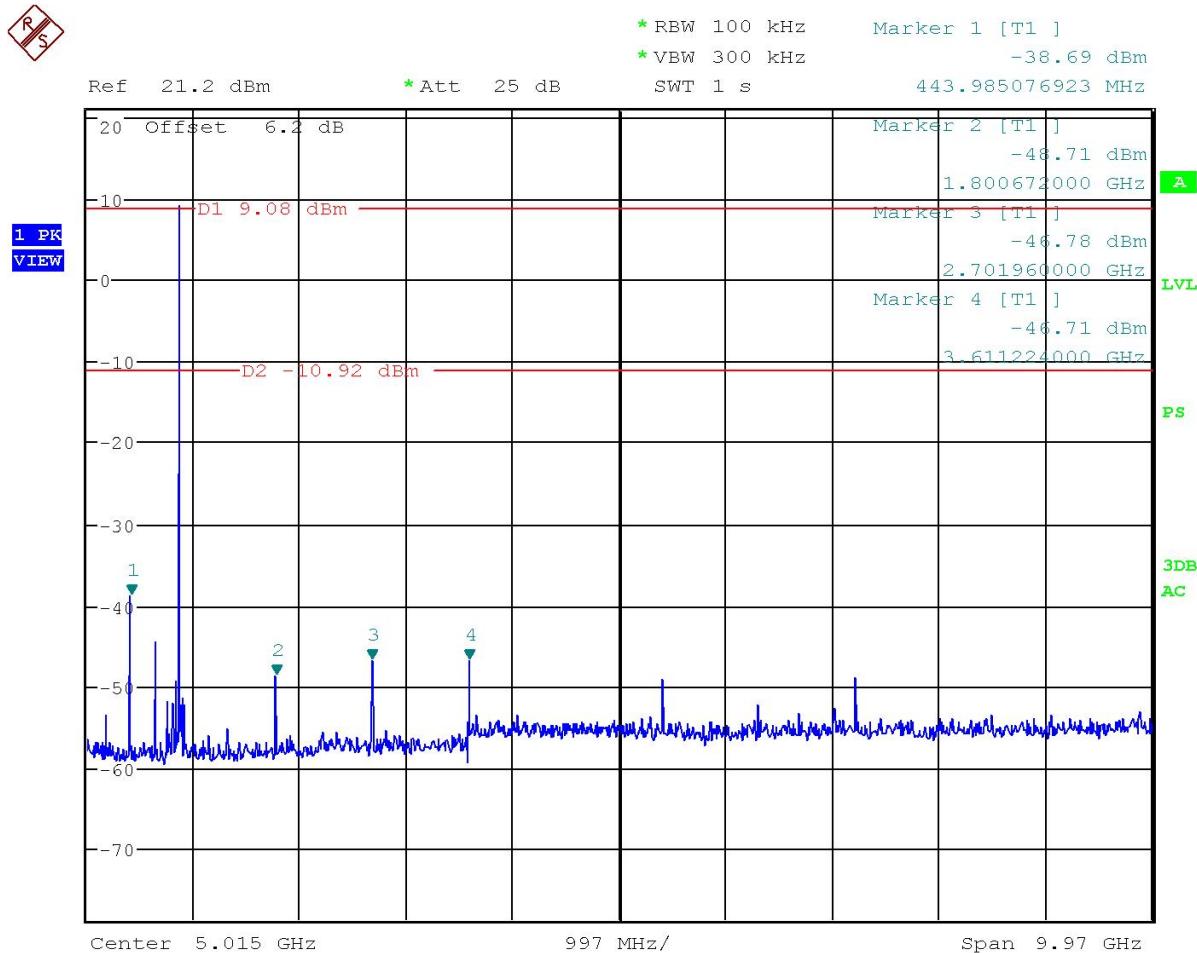
Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
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ANTENNA CONDUCTED SPURIOUS EMISSIONS

Test Data: Low End of Band Plot



Date: 19.JAN.2017 13:53:54

RESULTS: Meets Requirements

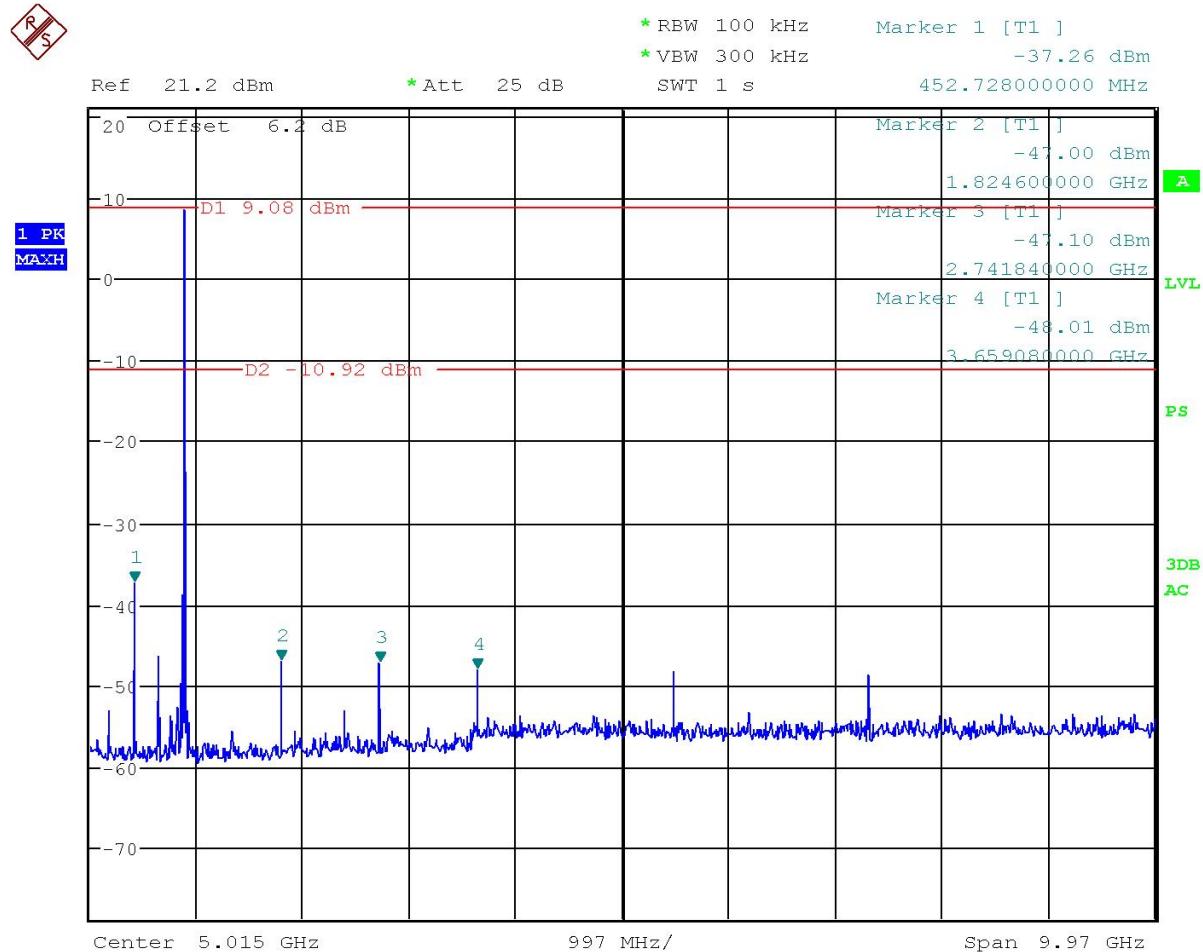
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ANTENNA CONDUCTED SPURIOUS EMISSIONS

Test Data: Middle of Band Plot



Date: 19.JAN.2017 13:54:48

RESULTS: Meets Requirements

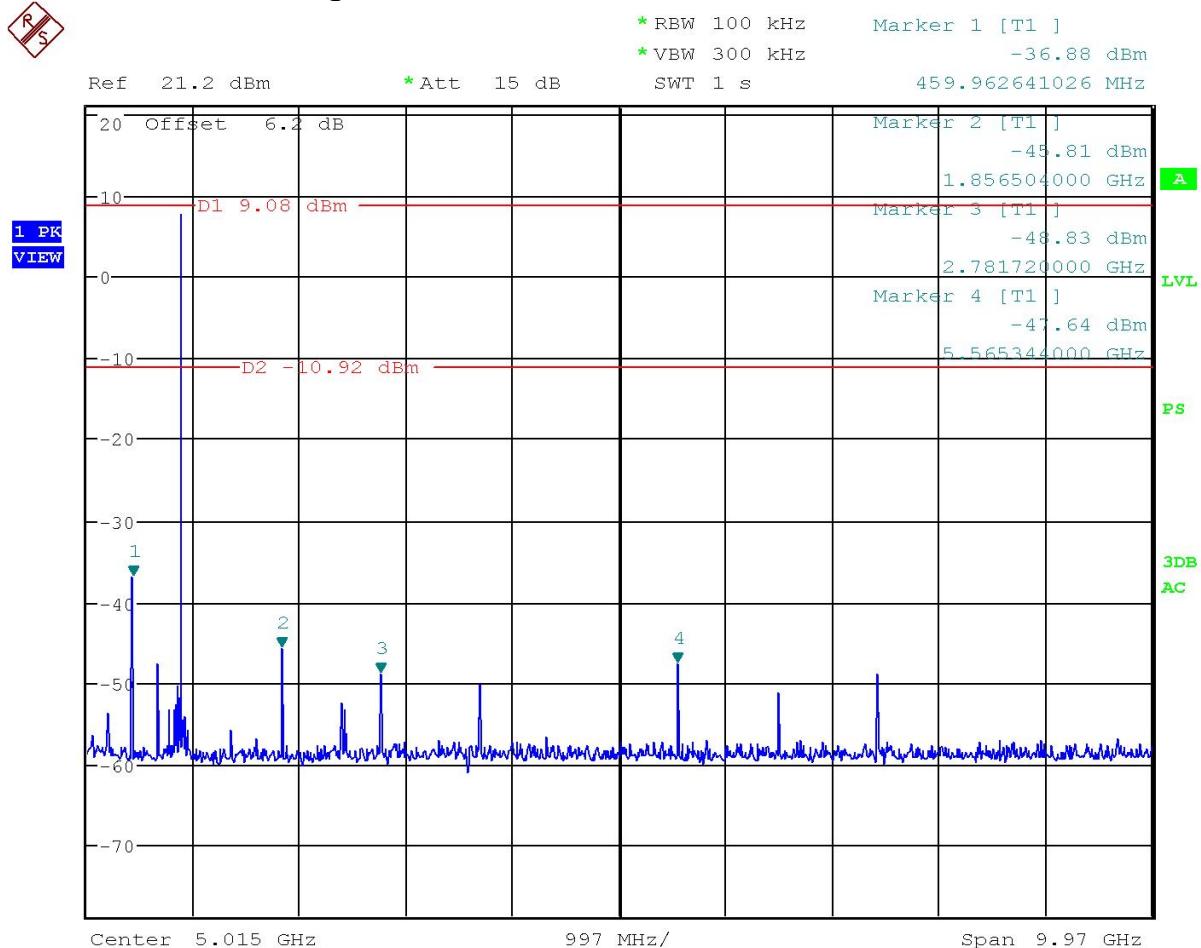
Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
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ANTENNA CONDUCTED SPURIOUS EMISSIONS

Test Data: High End of Band Plot



Date: 19.JAN.2017 13:52:48

RESULTS: Meets Requirements

Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
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RADIATED SPURIOUS EMISSIONS

Rules Part No.: FCC part 15.247 (d) & 15.209, IC RSS 247 § 5.5 & RSS GEN § 8.9

Requirements: Emissions found in restricted bands the levels must comply with the general limits found in FCC part 15.209

Frequency	Limits
FCC Part 15.209, IC RSS-GEN 8.9	
9 to 490 kHz	2400/F (kHz) μ V/m @ 300 meters
490 to 1705 kHz	24000/F (kHz) μ V/m @ 30 meters
1705 kHz to 30 MHz	29.54 dB μ V/m @ 30 meters
30 – 88	40.0 dB μ V/m @ 3 meters
80 – 216	43.5 dB μ V/m @ 3 meters
216 – 960	46.0 dB μ V/m @ 3 meters
Above 960	54.0 dB μ V/m @ 3 meters

Test Method: ANSI C63.4 § Annex D Validation of radiated emissions standard test sites
ANSI C63.10 § 6.3 Common requirements radiated emissions
ANSI C63.10 § 6.4 Emissions below 30 MHz
ANSI C63.10 § 6.5 Emissions between 30 & 1000 MHz
ANSI C63.10 § 6.6 Emissions above 1 GHz

Field Strength Calculation:

The field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dB μ V) to the antenna correction factor supplied by the antenna manufacturer plus the coax loss. The antenna correction factors are stated in terms of dB. The gain of the preselector was accounted for in the spectrum analyzer meter reading.

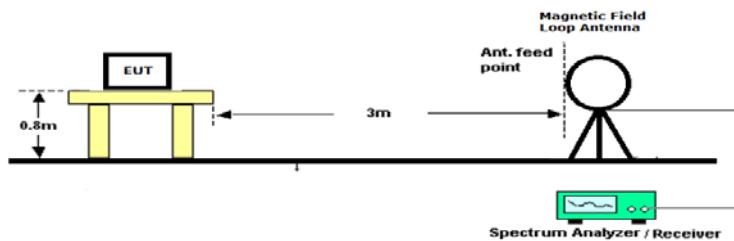
Example:

$$\begin{array}{llll} \text{Freq (MHz)} & \text{Meter Reading} & + \text{ACF} & + \text{CL} = \text{FS} \\ 33 & 20 \text{ dB}\mu\text{V} & + 10.36 \text{ dB} & + 0.5 = 30.86 \text{ dB}\mu\text{V/m} @ 3\text{m} \end{array}$$

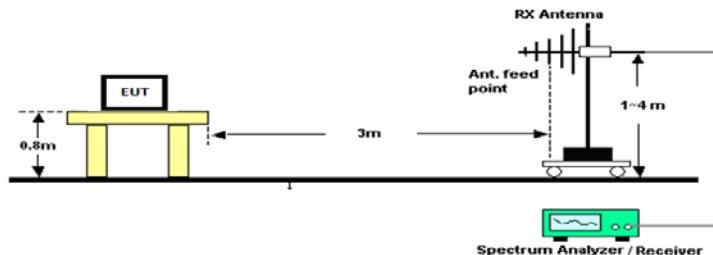
RADIATED SPURIOUS EMISSIONS

Setup:

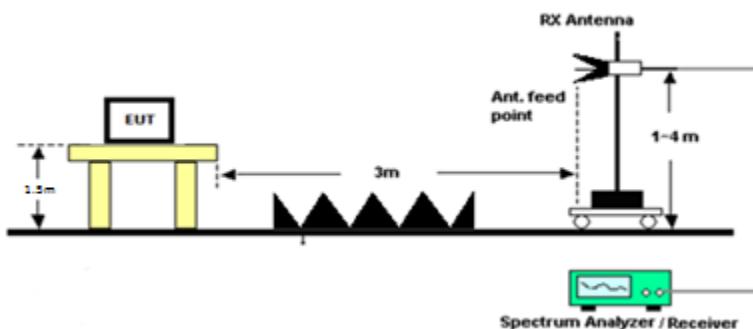
Emissions below 30 MHz



Emissions 30 – 1000 MHz



Emissions above 1 GHz





RADIATED SPURIOUS EMISSIONS

Notes: The EUT was checked in three orthogonal planes as required, a setup photo is provided to show the orientation of the worst case position.

Only the worst case data rate and Output Power which produced emissions within 20dB of the limit are reported.

The spectrum was searched for emissions in the restricted bands listed in part 15.205, and measured from 9 KHz to 10 GHz

Test Data: Measurement Table

Tuned Freq MHz	Emission Frequency MHz	Type (QP/PK/AV)	Meter Reading dBu V	Antenna Polarity	Coax Loss Db	Correction Factor dB/M	Field Strength dBu V/M	Margin dB
Hopping	264.1	Peak	25.60	V	1.90	12.75	40.25	5.75
902.4	2707.2	Peak	12.50	H	6.10	32.35	50.95	3.05
915.0	2745.0	Peak	14.76	V	6.10	32.35	53.21	20.79
915.0	2745.0	Average	-8.94	V	6.10	32.35	29.51	24.49
915.0	3660.0	Peak	22.31	V	6.95	33.51	62.77	11.23
915.0	3660.0	Average	-1.39	V	6.95	33.51	39.07	14.93
915.0	7320.0	Peak	7.60	V	10.06	35.60	53.26	20.74
915.0	7320.0	Average	-16.10	V	10.06	35.60	29.56	24.44
927.6	2782.8	Peak	15.93	H	6.07	32.48	54.48	19.52
927.6	2782.8	Average	-7.77	H	6.07	32.48	30.78	23.22
927.6	3710.4	Peak	16.57	V	7.01	33.62	57.20	16.80
927.6	3710.4	Average	-7.13	V	7.01	33.62	33.50	20.50

Results Meet Requirements

AC POWER LINE CONDUCTED EMISSIONS

Rules Part No.: FCC 15.207(a)

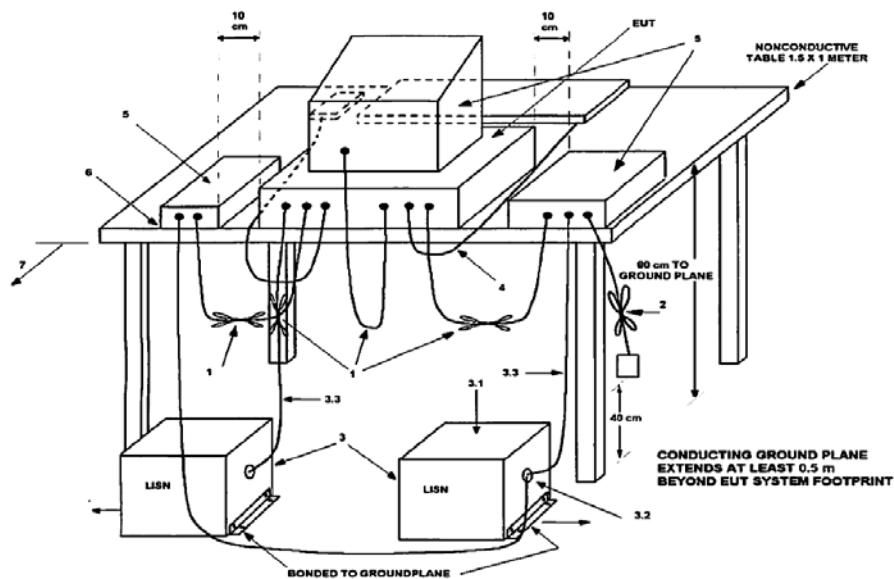
Requirements:

Frequency (MHz)	Quasi Peak Limits (dB μ V)	Average Limits (dB μ V)
0.15 – 0.5	66 – 56 *	56 – 46 *
0.5 – 5.0	56	46
5.0 – 30	60	50

* Decrease with logarithm of frequency

Test Method: ANSI C63.10 § 6.2 Test Method for AC power-line conducted emissions

Setup:



AC POWER LINE CONDUCTED EMISSIONS

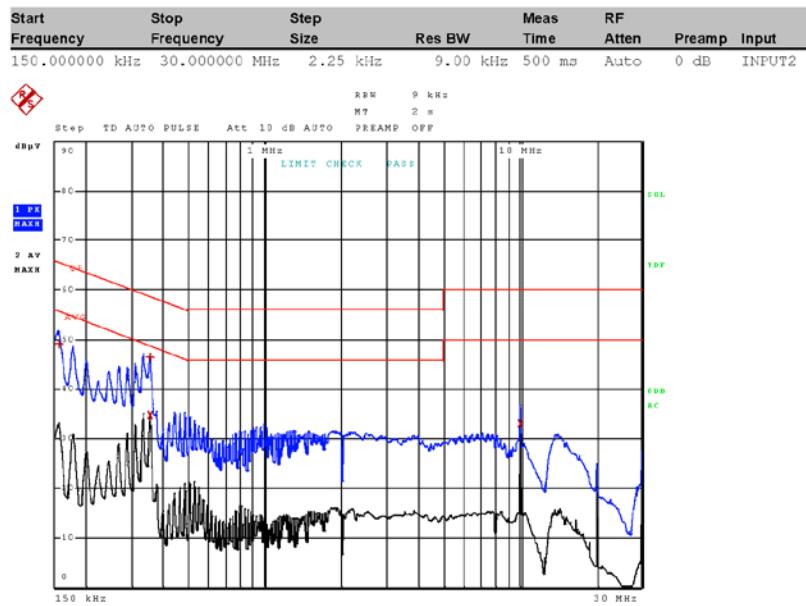
Notes: The following plots represent the emissions read for power line Conducted. Both lines were observed.

Test Data: Mode 1 Low End of Band Powerline 1 Plot

16 Mar 17 07:39

Time Domain Scan (1 Range)

Scan Start: 150 kHz
 Scan Stop: 30 MHz
 Detector: Trace 1: MAX PEAK Trace 2: Average
 Transducer: TDF_20



Final Measurement

Meas Time: 2 s
 Margin: 20 dB
 Subranges: 4

Trace	Frequency	Level (dB μ V)	Detector	Delta Limit/dB
1	154.500000000 kHz	49.04	Quasi Peak	-16.72
1	352.500000000 kHz	46.49	Quasi Peak	-12.42
2	352.500000000 kHz	34.73	Average	-14.17
2	10.000500000 MHz	33.01	Average	-16.99

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RESULTS: Meets Requirements

Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
 FCC ID: XEYV
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AC POWER LINE CONDUCTED EMISSIONS

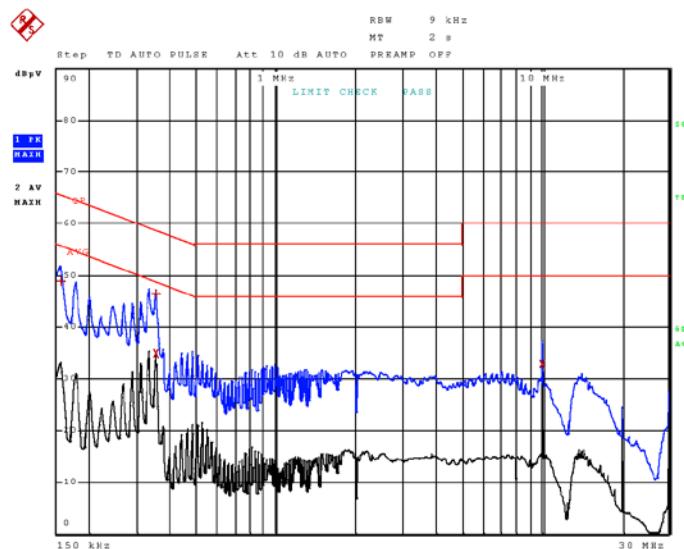
Test Data: Mode 1 Middle of Band Powerline 1 Plot

16.Mar 17 07:41

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: TDF_20

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	500 ms	Auto	0 dB	INPUT2



Final Measurement

Meas Time: 2 s
Margin: 20 dB
Subranges: 4

Trace	Frequency	Level (dB μ V)	Detector	Delta Limit/dB
1	154.500000000 kHz	48.91	Quasi Peak	-16.85
1	352.500000000 kHz	46.44	Quasi Peak	-12.46
2	352.500000000 kHz	34.79	Average	-14.11
2	10.000500000 MHz	32.88	Average	-17.12

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RESULTS: Meets Requirements

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AC POWER LINE CONDUCTED EMISSIONS

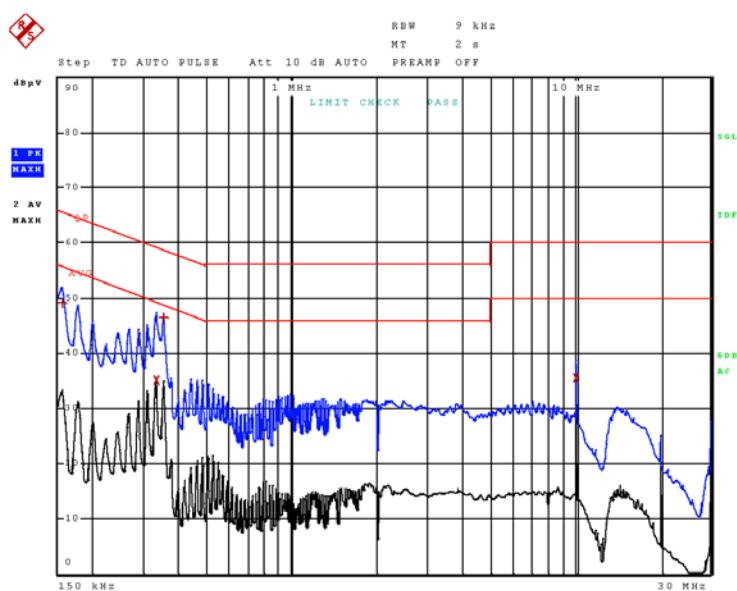
Test Data: Mode 1 High End of Band Powerline 1 Plot

16 Mar 17 07:43

Time Domain Scan (1 Range)

Scan Start: 150 kHz
 Scan Stop: 30 MHz
 Detector: Trace 1: MAX PEAK Trace 2: Average
 Transducer: TDF_20

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	500 ms	Auto	0 dB	INPUT2



Final Measurement

Meas Time: 2 s
 Margin: 20 dB
 Subranges: 4

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	154.500000000 kHz	48.99	Quasi Peak	-16.77
2	330.000000000 kHz	35.16	Average	-14.29
1	352.500000000 kHz	46.46	Quasi Peak	-12.44
2	10.000500000 MHz	35.46	Average	-14.54

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RESULTS: Meets Requirements

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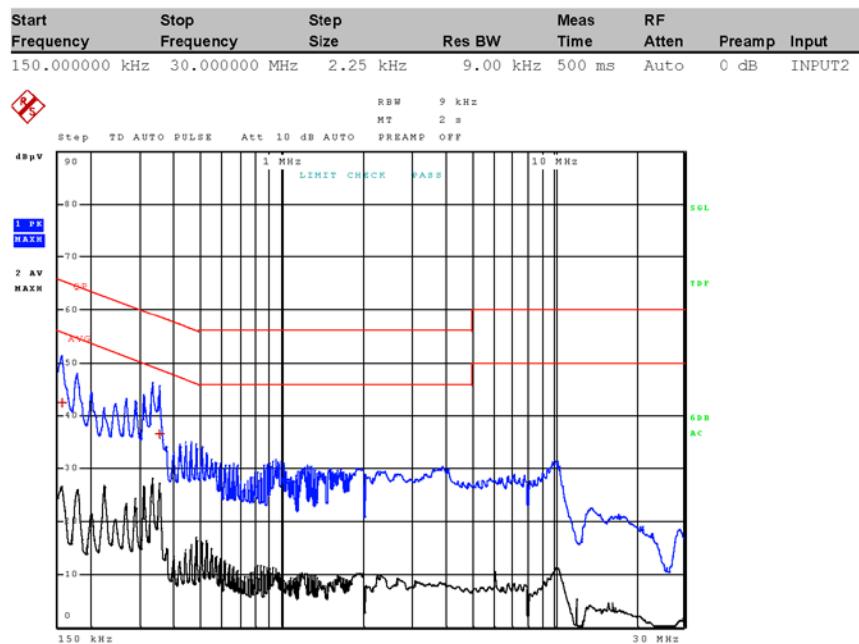
AC POWER LINE CONDUCTED EMISSIONS

Test Data: Mode 1 Hopping Powerline 1 Plot

15.Mar 17 15:19

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: TDF_20



Final Measurement

Meas Time: 2 s
Margin: 20 dB
Subranges: 2

Trace	Frequency	Level (dB _{μV})	Detector	Delta Limit/dB
1	154.500000000 kHz	42.35	Quasi Peak	-23.40
1	352.500000000 kHz	36.57	Quasi Peak	-22.33

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RESULTS: Meets Requirements

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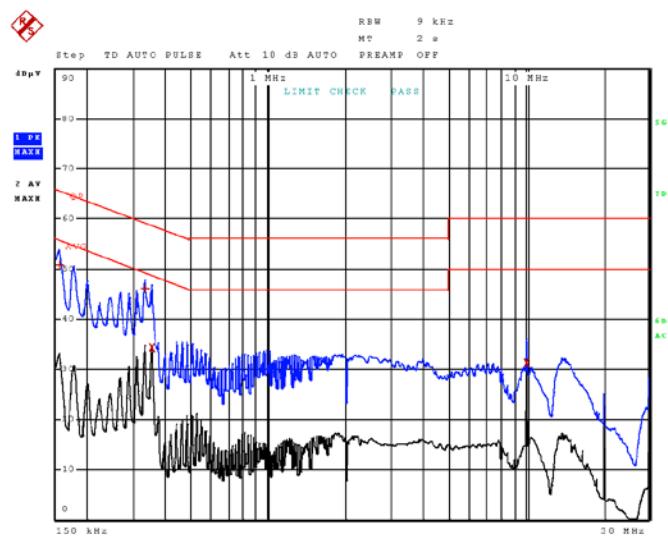
Test Data: Mode 1 Low End of Band Powerline 2 Plot

16.Mar 17 07:47

Time Domain Scan (1 Range)

Scan Start: 150 kHz
 Scan Stop: 30 MHz
 Detector: Trace 1: MAX PEAK Trace 2: Average
 Transducer: TDF_21

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	500 ms	Auto	0 dB	INPUT2



Final Measurement

Meas Time: 2 s
 Margin: 20 dB
 Subranges: 4

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	154.500000000 kHz	50.81	Quasi Peak	-14.94
1	330.000000000 kHz	46.09	Quasi Peak	-13.36
2	352.500000000 kHz	34.28	Average	-14.62
2	10.000500000 MHz	31.22	Average	-18.78

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RESULTS: Meets Requirements

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AC POWER LINE CONDUCTED EMISSIONS

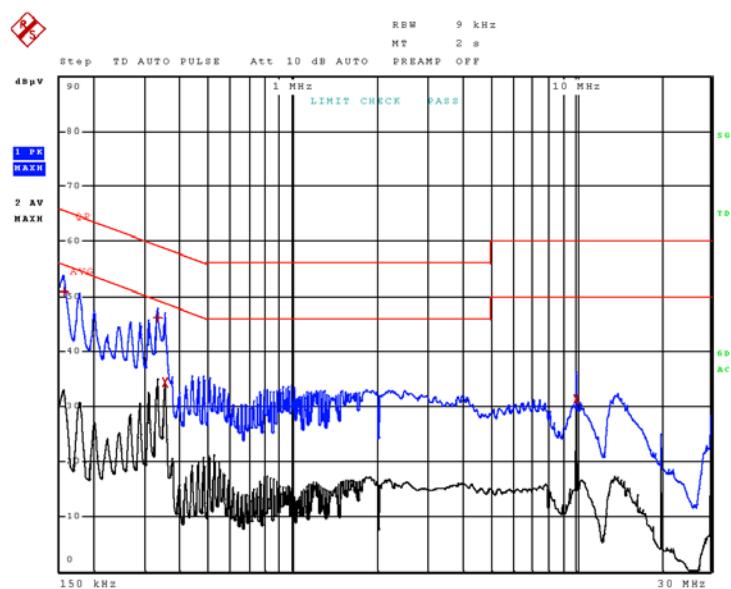
Test Data: Mode 1 Middle of Band Powerline 2 Plot

16.Mar 17 07:49

Time Domain Scan (1 Range)

Scan Start: 150 kHz
 Scan Stop: 30 MHz
 Detector: Trace 1: MAX PEAK Trace 2: Average
 Transducer: TDF_21

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preampl	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	500 ms	Auto	0 dB	INPUT2



Final Measurement

Meas Time: 2 s
 Margin: 20 dB
 Subranges: 4

Trace	Frequency	Level (dB μ V)	Detector	Delta Limit/dB
1	154.500000000 kHz	50.75	Quasi Peak	-15.01
1	330.000000000 kHz	46.09	Quasi Peak	-13.36
2	352.500000000 kHz	34.34	Average	-14.57
2	10.000500000 MHz	31.21	Average	-18.79

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RESULTS: Meets Requirements

Applicant: VERDANT ENVIRONMENTAL TECHNOLOGIES
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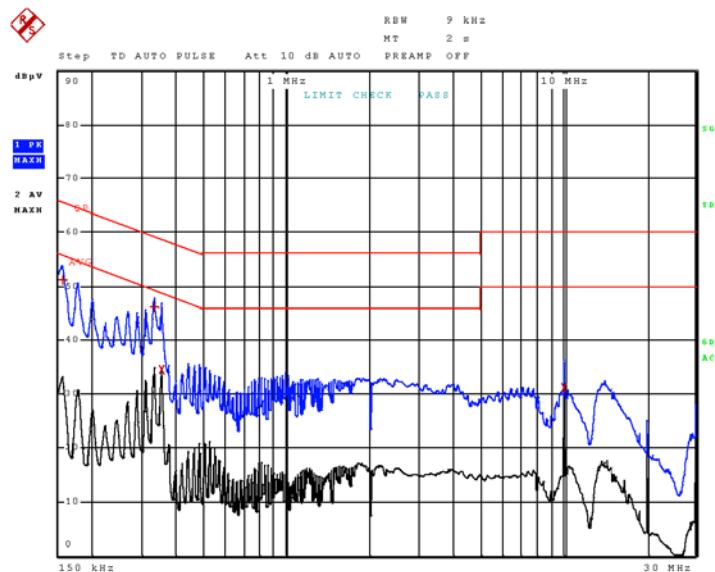
Test Data: Mode 1 High End of Band Powerline 2 Plot

16.Mar 17 07:45

Time Domain Scan (1 Range)

Scan Start: 150 kHz
 Scan Stop: 30 MHz
 Detector: Trace 1: MAX PEAK Trace 2: Average
 Transducer: TDF_21

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	500 ms	Auto	0 dB	INPUT2



Final Measurement

Meas Time: 2 s
 Margin: 20 dB
 Subranges: 4

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	154.500000000 kHz	51.11	Quasi Peak	-14.64
1	330.000000000 kHz	46.08	Quasi Peak	-13.37
2	352.500000000 kHz	34.45	Average	-14.45
2	10.000500000 MHz	31.08	Average	-18.92

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RESULTS: Meets Requirements

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AC POWER LINE CONDUCTED EMISSIONS

Notes: The following plots represent the emissions read for power line Conducted. Both lines were observed.

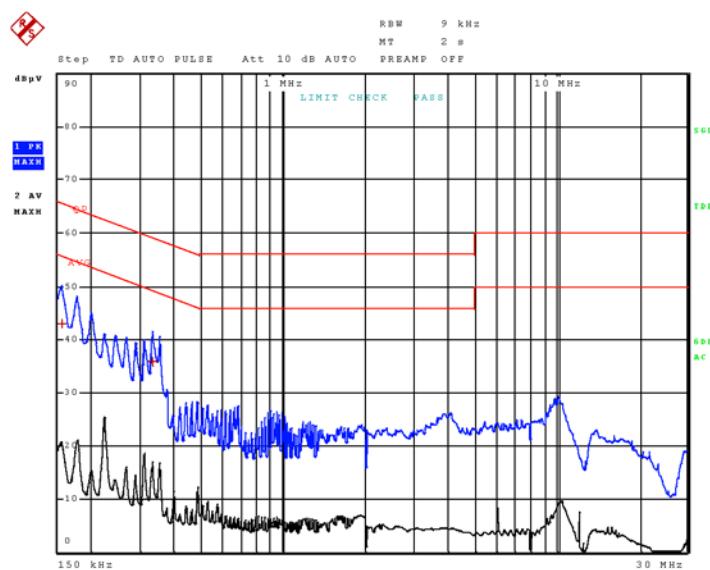
Test Data: Mode 1 Hopping Powerline 2 Plot

15.Mar 17 15:30

Time Domain Scan (1 Range)

Scan Start: 150 kHz
 Scan Stop: 30 MHz
 Detector: Trace 1: MAX PEAK Trace 2: Average
 Transducer: TDF_21

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	500 ms	Auto	0 dB	INPUT2



Final Measurement

Meas Time: 2 s
 Margin: 20 dB
 Subranges: 2

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	154.500000000 kHz	42.93	Quasi Peak	-22.82
1	330.000000000 kHz	35.84	Quasi Peak	-23.61

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RESULTS: Meets Requirements

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TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Attenuator K 6dB 2W DC-40G	Narda	4768-6	1044-1	06/25/15	06/25/17
Antenna: Biconical 1096 Chamber	Eaton	94455-1	1096	07/14/15	07/14/17
Antenna: Log-Periodic 1122	Electro-Metrics	LPA-25	1122	07/14/15	07/14/17
CHAMBER	Panashield	3M	N/A	04/25/16	12/31/17
Antenna: Double-Ridged Horn/ETS Horn 2	ETS-Lindgren Chamber	3117	00041534	02/25/15	02/25/17
EMI Test Receiver R & S ESIB 40 Screen Room	Rohde & Schwarz	ESIB 40	100274	08/16/16	08/16/18
Software: Field Strength Program	Timco	N/A	Version 4.0	N/A	N/A
Antenna: Active Loop	ETS-Lindgren	6502	02529	11/18/15	11/18/17
Coaxial Cable #103 - KMKM-0180-01 Aqua	Micro-Coax	UFB142A-0-0720-200200	225363-002 (#103)	08/05/15	08/05/17
EMI Test Receiver R & S ESU 40 Chamber	Rohde & Schwarz	ESU 40	100320	04/01/16	04/01/18
Coaxial Cable - Chamber 3 cable set (Primary)	Micro-Coax	Chamber 3 cable set (Primary)	KMkm-0244-01; KMkm-0670-00; KFKF-0198-01	08/08/16	08/08/18
Pre-amp	RF-LAMBDA	RLNA00M45GA	NA	01/04/16	01/04/18
LISN (Primary)	Electro-Metrics	ANS-25/2	2604	07/13/15	07/13/17
Coaxial Cable - BMBM-1000-00 Silver	Semflex	LISN Cable	BMBM-1000-00	01/05/17	01/05/18