

**Application for Certification
For a Transceiver.**

D. Green Engineering LLC
P. O. Box 20247
Panama City Beach, FL 32417

Transceiver used in Hunting Dog tracking products

M/N: O

FCC ID: 2AERJ-O-01

REPORT # UT56076A-003

This report was prepared in accordance with the requirements of the FCC Rules and Regulations Part 2, Subpart J, 2.1033, Part 15.247, and other applicable sections of the rules as indicated herein.

Prepared By:

DNB Engineering, Inc.
1100 E Chalk Creek Road
Coalville, UT 84017

8 July 2015

TABLE OF CONTENTS

Paragraph numbers in this report follow the application section numbers found in the FEDERAL COMMUNICATIONS COMMISSION Rules and Regulations, Part 2, Subpart J for Certification of electronic equipment.

TABLE OF CONTENTS.....	2
1.0 ADMINISTRATIVE DATA.....	3
1.1 Certifications and Qualifications.	3
1.2 Measurement Repeatability Information.....	3
1.3 Test Equipment List.	4
2.1033 (b) (2) FCC Identifier.	6
2.1033 (b) (3) Installation and Operating Instructions.	7
2.1033 (b) (4) Brief Description of Circuit Function.	8
2.1033 (b) (5) Block Diagram.	9
2.1033 (b) (6) Report of Measurements	10
15.207 Conducted Emissions (General Provisions)	11
15.209 Radiated Emissions (General Provisions)	16
15.247 (c) Spurious Radiated Emissions.....	21
15.247 (a,2) 6 dB Bandwidth.	26
15.247 (b) Maximum Peak Output Power (Conducted).....	32
15.247 (d) Conducted Band Edge Measurements and Out of Band Emissions.	36
15.247 (c) Spurious RF Conducted Emissions.....	43
15.247(d): Power spectral density(PSD)..	47
2.1055 Frequency stability..	51
2.1033 (b) (7) Equipment Photographs	54
End of Report UT56076A-003.	59

1.0 ADMINISTRATIVE DATA

1.1 Certifications and Qualifications

I certify that DNB Engineering, Inc conducted the tests performed in order to obtain the technical data presented in this application. Also, based on the results of the enclosed data, I have concluded that the equipment tested meets or exceeds the requirements of the Rules and Regulations governing this application.

1.2 Measurement Repeatability Information

The test data presented in this report has been acquired using the guidelines set forth in FCC Part 2.1031 through 2.1057, Part 15. The test results presented in this document are valid only for the equipment identified herein under the test conditions described. Repeatability of these test results will only be achieved with identical measurement conditions. These conditions include: The same test distance, EUT Height, Measurement Site Characteristics, and the same EUT System Components. The system must have the same Interconnecting Cables arranged in identical placement to that in the test set-up, with the system and/or EUT functioning in the identical mode of operation (i.e. software and so on) as on the date of the test. Any deviation from the test conditions and the environment on the date of the test may result in measurement repeatability difficulties.

All changes made to the EUT during the course of testing as identified in this test report must be incorporated into the EUT or identical models to ensure compliance with the FCC regulations.



C. L. Payne III (Para. 1.1)
Facility Manager
Coalville Facility.
DNB Engineering, Inc.
Tel. (435) 336-4433
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1.3 Test Equipment List

TEST EQUIPMENT LIST - CONDUCTED EMISSIONS				
Description	Manufacturer/MN	Asset #	Serial #	Cal Due
LISN	Fisher LISN-50/32-4-01	U-286	2020	19-Jan-16
LISN	FisherFCCLISN-50/250/25/8	U-062	5003	11-Nov-15
Spectrum Analyzer	Agilent/E7401A	U-257	MY42000103	08-Jan-16
Spectrum Analyzer	R&S/FSV30	U-248	101367	18-Jun-16
CDN 16 amp	Fischer/FCC801M316A	U-169	64	09-Jul-17
TILE Software	ETS Lindgren/ 3.4.11.13	U-317	8112006	13-Oct-15
Current Probe	Solar/ 6741-1	U-267	966727	19-Jan-16

TEST EQUIPMENT LIST - RADIATED EMISSIONS				
Description	Manufacturer/MN	Asset #	Serial #	Cal Due
Amplifier	HP/8447D	U-065	2727A06180	5-Jan-16
Amplifier	HP/8447D	U-066	2727A06181	5-Jan-16
Amplifier	HP/8447D	U-068	2727A06184	5-Jan-16
Bicon Antenna	SCH/BBA9106	U-186	7	18-May-17
Log P Antenna	SCH/UHAL09107	U-010	10	10-Oct-15
DRG Horn Antenna	AH Systems/SAS-200/571	U-156	222	23-Apr-17
Spectrum Analyzer	Agilent/E7401A	U-257	MY42000103	8-Jan-16
Spectrum Analyzer	R&S/FSV30	U-248	101367	18-Jun-16
TILE Software	ETS- Lindgern/ 3.4.11.13	U-317	8112006	13-Oct-15

TEST EQUIPMENT LIST - ANTENNA CONDUCTED				
Description	Manufacturer/MN	Asset #	Serial #	Cal Due
Spectrum Analyzer	R&S/FSV30	U-248	101367	18-Jun-16

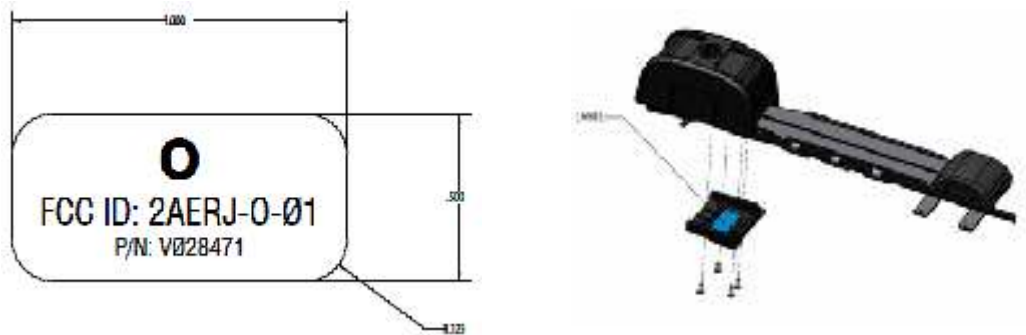
2.1033 (b) (1) Application for Certification

Name of Applicant:	D. Green Engineering LLC P. O. Box 20247 Panama City Beach, FL 32417
FRN Number:	0024594632
Applicant is:	X D. Green Engineering LLC
Vendor	
Licensee	
Prospective Licensee	
Other	
Name of Manufacturer :	VPI Engineering 11814 South Election Road Draper, UT 84020
Description:	Transceiver used in Hunting Dog tracking products
Part Number:	O
Anticipated Production Quantity:	Multiple Units
Frequency Band:	2401.2 - 2481.3 MHz
Rated Power:	1.125 mW
Type of Signal:	Digital Transmission System (DTS)
Hopping Channels:	40
Max Data Rate:	1Mbps (mega-bit) - Data transmission is not continuous, it happens for short intervals for short periods of time.

2.1033 (b) (2) FCC Identifier

FCC ID: 2AERJ-O-01

Figure 1 - Label and location



Label Material:

The adhesive used in this label material is a permanent type.

2.1033 (b) (3) Installation and Operating Instructions

Supplied separately.

2.1033 (b) (4) Brief Description of Circuit Function

The Quick Track OMNI system allows hunters to track their hunting dogs location wirelessly using a Multi-Use Radio Service (MURS). The O is a collar that the dog wears that transmits the GPS location of the dog back to the hunter over MURS. The OR is a MURS receiver that stays with the hunter and relays the dog location to the hunter's smartphone/tablet through a Bluetooth Low Energy Radio.

2.1033 (b) (5) Block Diagram

Supplied separately for confidentiality.

2.1033 (b) (6) Report of Measurements

15.207 Conducted Emissions (General Provisions)

Test Procedure: As specified in ANSI C63.10-2013

To measure conducted emissions, the EUT was set upon a wooden table in the shielded enclosure. AC power was fed into the EUT from the Artificial Mains Network. With the Artificial Mains Network connected to an Rhode & Schwarz FSV Signal and Spectrum Analyzer, and using Personal Computer with TILES Measurement Software, the spectrum was searched from 0.15 - 30 MHz for emissions emanating from the EUT.

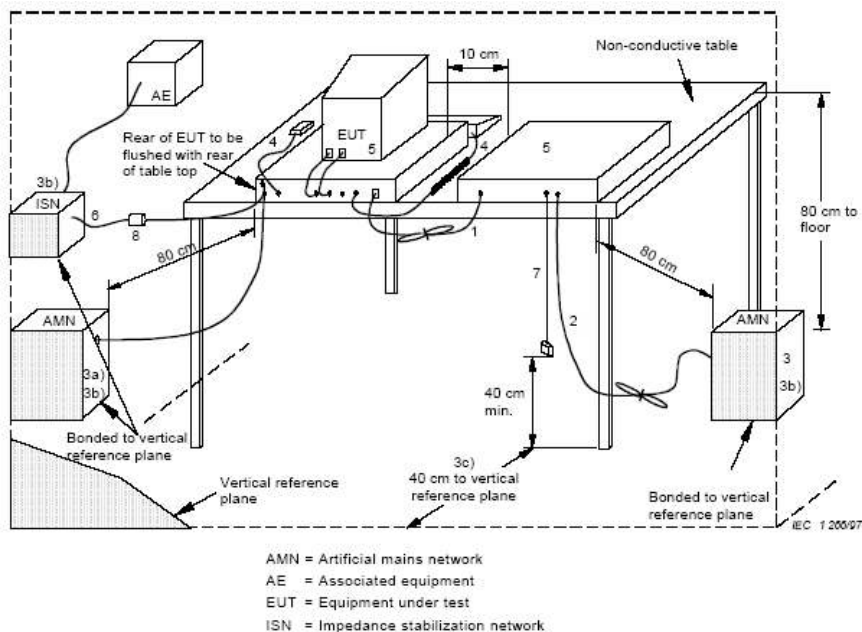
Frequency of emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 - 0.5	66 to 56*	56 to 46*
0.5 - 5	56	46
5 - 30	60	50


* Decreases with the logarithm of the frequency.

EUT operating conditions:

The software provided by the client to enable the EUT to transmit continuously.

Test Set Up:



	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Conducted Emissions		
DNB Job Number:	56076	Date:	2 Apr 2015	Specification [X] 15.207 [X] ANSI C63.10-2013
Customer:	D. Green Engineering LLC			
Model Number:	O			
Description:	Transceiver used in Hunting Dog tracking products			
TEST SET UP - CONDUCTED EMISSIONS				





1100 E Chalk Creek Road
Coalville, UT 84017
(435) 336-4433
FAX (435) 336-4436

Conducted Emissions

DNB Job Number:	56076	Date:	2 Apr 2015	Specification					
Customer:	D. Green Engineering LLC			[X] 15.207 [X] ANSI C63.10-2013					
Model Number:	O								
Description:	Transceiver used in Hunting Dog tracking products								
EUT is in conformance with FCC 15.207		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	Signed	<i>Y Staples</i>				
CONDUCTED EMISSIONS									
Freq in MHz	Meter Reading	Factors in dB		Corr'd Reading	Limit		Lead	Measure Type	Delta
		LISN	Cable		dBuV	Type			
0.163	46.29	0.00	0.10	46.39	66.00	QP	Phase	QP	-19.61
0.163	38.26	0.00	0.10	38.36	56.00	AVE	Phase	AVE	-17.64
0.179	46.29	0.00	0.10	46.39	65.00	QP	Phase	QP	-18.61
0.179	35.01	0.00	0.10	35.11	55.00	AVE	Phase	AVE	-19.89
0.225	46.30	0.00	0.10	46.40	64.00	QP	Phase	QP	-17.60
0.225	35.18	0.00	0.10	35.28	54.00	AVE	Phase	AVE	-18.72
0.267	46.30	0.00	0.20	46.50	63.00	QP	Phase	QP	-16.50
0.267	42.94	0.00	0.20	43.14	53.00	AVE	Phase	AVE	-9.86
0.309	46.31	0.00	0.20	46.51	61.00	QP	Phase	QP	-14.49
0.309	34.64	0.00	0.20	34.84	51.00	AVE	Phase	AVE	-16.16
0.347	44.16	0.00	0.20	44.36	60.00	QP	Phase	QP	-15.64
0.347	38.21	0.00	0.20	38.41	50.00	AVE	Phase	AVE	-11.59
0.384	41.01	0.00	0.20	41.21	59.00	QP	Phase	QP	-17.79
0.384	32.33	0.00	0.20	32.53	49.00	AVE	Phase	AVE	-16.47
1.166	43.88	0.00	0.10	43.98	56.00	QP	Phase	QP	-12.02
1.166	33.44	0.00	0.10	33.54	46.00	AVE	Phase	AVE	-12.46
2.136	44.64	0.00	0.10	44.74	56.00	QP	Phase	QP	-11.26
2.136	34.71	0.00	0.10	34.81	46.00	AVE	Phase	AVE	-11.19
2.440	44.39	0.00	0.10	44.49	56.00	QP	Phase	QP	-11.51
2.440	34.12	0.00	0.10	34.22	46.00	AVE	Phase	AVE	-11.78
2.677	43.38	0.00	0.20	43.58	56.00	QP	Phase	QP	-12.42
2.677	32.95	0.00	0.20	33.15	46.00	AVE	Phase	AVE	-12.85




1100 E Chalk Creek Road
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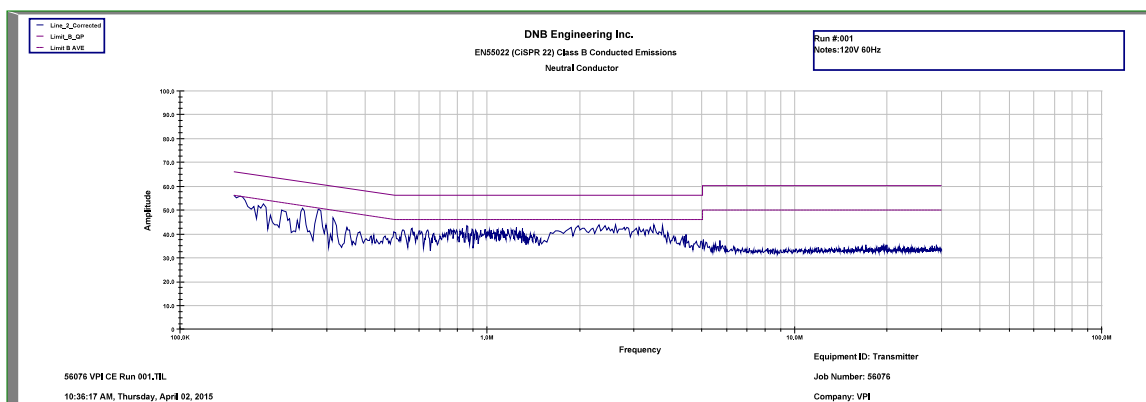
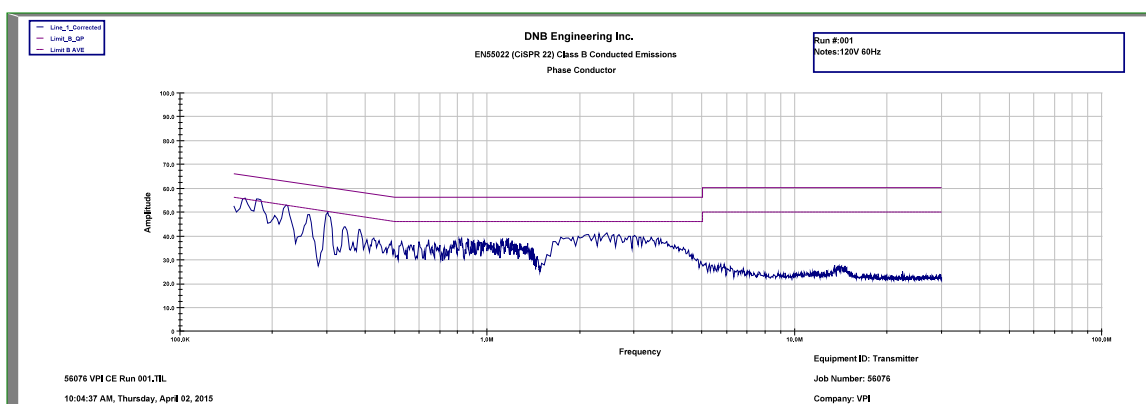
Conducted Emissions

DNB Job Number:	56076	Date:	2 Apr 2015	Specification [X] 15.207 [X] ANSI C63.10-2013
Customer:	D. Green Engineering LLC			
Model Number:	O			
Description:	Transceiver used in Hunting Dog tracking products			

CONDUCTED EMISSIONS

Freq in MHz	Meter Reading	Factors in dB		Corr'd Reading	Limit		Lead	Measure Type	Delta
		LISN	Cable		dBuV	Type			
0.151	46.22	0.00	0.10	46.32	66.00	QP	Neutral	QP	-19.68
0.151	31.09	0.00	0.10	31.19	56.00	AVE	Neutral	AVE	-24.81
0.160	45.11	0.00	0.10	45.21	66.00	QP	Neutral	QP	-20.79
0.160	30.90	0.00	0.10	31.00	56.00	AVE	Neutral	AVE	-25.00
0.182	43.20	0.00	0.10	43.30	65.00	QP	Neutral	QP	-21.70
0.182	32.13	0.00	0.10	32.23	55.00	AVE	Neutral	AVE	-22.77
0.251	38.05	0.00	0.20	38.25	63.00	QP	Neutral	QP	-24.75
0.251	25.18	0.00	0.20	25.38	53.00	AVE	Neutral	AVE	-27.62
0.281	46.23	0.00	0.20	46.43	62.00	QP	Neutral	QP	-15.57
0.281	41.25	0.00	0.20	41.45	52.00	AVE	Neutral	AVE	-10.55
0.315	36.02	0.00	0.20	36.22	61.00	QP	Neutral	QP	-24.78
0.315	31.36	0.00	0.20	31.56	51.00	AVE	Neutral	AVE	-19.44
0.858	37.57	0.00	0.00	37.57	56.00	QP	Neutral	QP	-18.43
0.858	30.36	0.00	0.00	30.36	46.00	AVE	Neutral	AVE	-15.64
2.310	35.92	0.00	0.10	36.02	56.00	QP	Neutral	QP	-19.98
2.310	26.26	0.00	0.10	26.36	46.00	AVE	Neutral	AVE	-19.64
3.491	34.05	0.00	0.20	34.25	56.00	QP	Neutral	QP	-21.75
3.491	22.99	0.00	0.20	23.19	46.00	AVE	Neutral	AVE	-22.81

	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Conducted Emissions		
DNB Job Number:	56076	Date:	2 Apr 2015	Specification [X] 15.207 [X] ANSI C63.10-2013
Customer:	D. Green Engineering LLC			
Model Number:	O			
Description:	Transceiver used in Hunting Dog tracking products			
CONDUCTED EMISSIONS - PLOTS				



15.209 Radiated Emissions (General Provisions)

Test Procedure: ANSI C63.10-2013

The EUT was measured on an open area test site (OATS).

A measuring distance of at least 3 m shall be used for measurements at frequencies up to 1 GHz. For frequencies above 1 GHz, any suitable measuring distance may be used. The equipment size (excluding the antenna) shall be less than 20 % of the measuring distance.

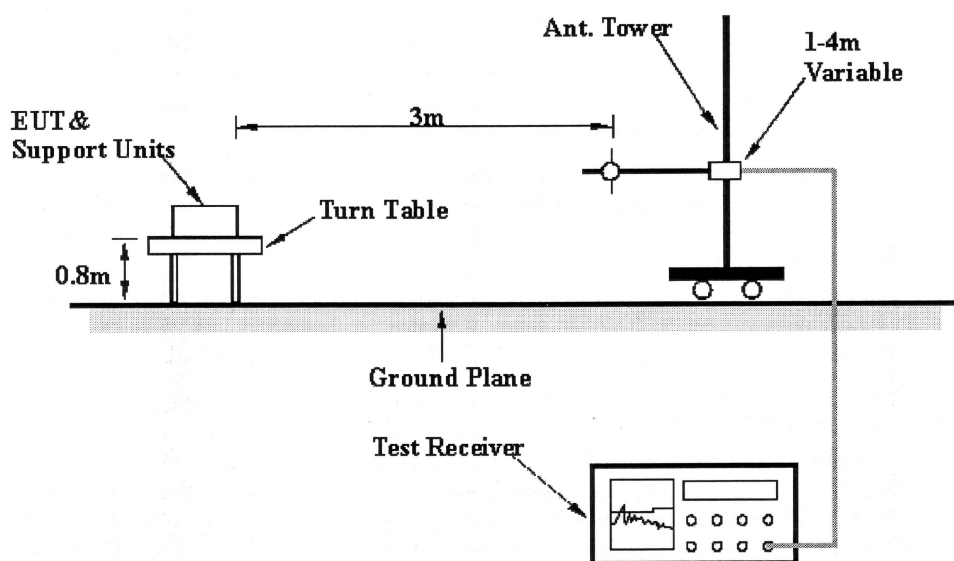
Sufficient precautions shall be taken to ensure that reflections from extraneous objects adjacent to the site do not degrade the measurement results, in particular:


- no extraneous conducting objects having any dimension in excess of a quarter wavelength of the highest frequency tested shall be in the immediate vicinity of the site;
- all cables shall be as short as possible; as much of the cables as possible shall be on the ground plane or preferably below; and the low impedance cables shall be screened.

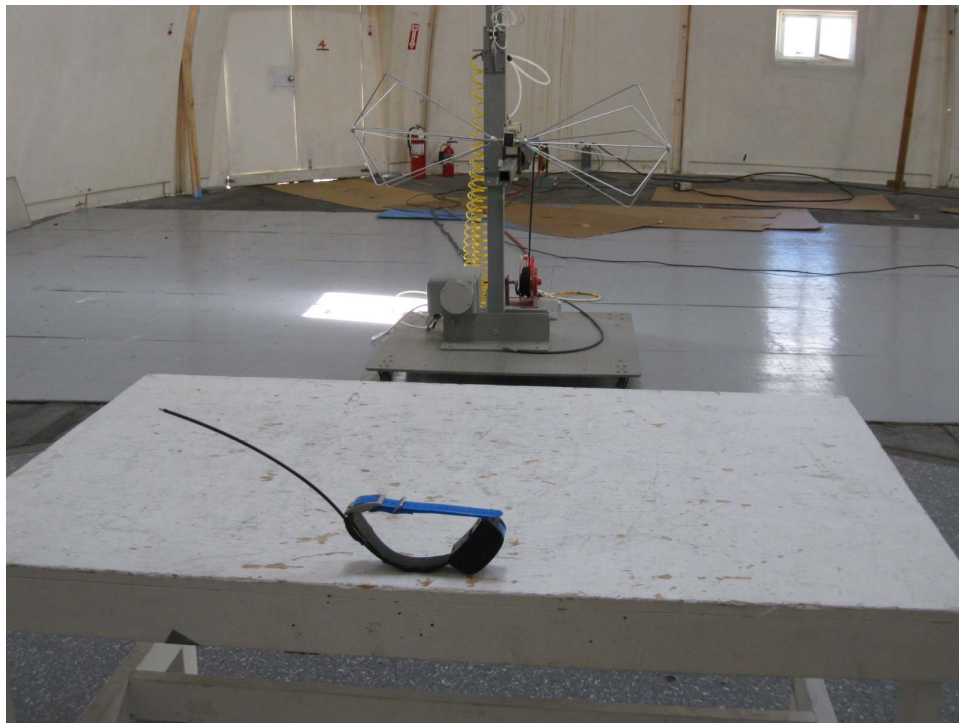
The EUT shall be placed upon a non-conductive table (wooden for below 1GHz and styrene above 1GHz) 0.80 meters above the ground plane for frequencies from 30 to 1000MHz and 1.5 meters above the ground plane above 1 GHz and shall be placed in the “worst case” transmitting mode. The EUT shall be rotated 360 degrees to find the azimuth maxima. The receive antenna shall then be raised and lowered between 1 to 4 meters to find the maximum signal emanating from the EUT. This signal strength is then recorded on the data sheets.


Frequency (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measurement Distance (meters)
.0009 - 0.490	2400/F(kHz)	$20*(\text{Log}_{10}(2400/F(\text{kHz})))$	300
0.490 - 1.705	24000/F(kHz)	$20*(\text{Log}_{10}(24000/F(\text{kHz})))$	30
1.705 - 30.0	30	29.5	30
30 - 88	100	40.0	3
88 - 216	150	43.5	3
216 - 960	200	46.0	3
Above 960	500	54.0	3

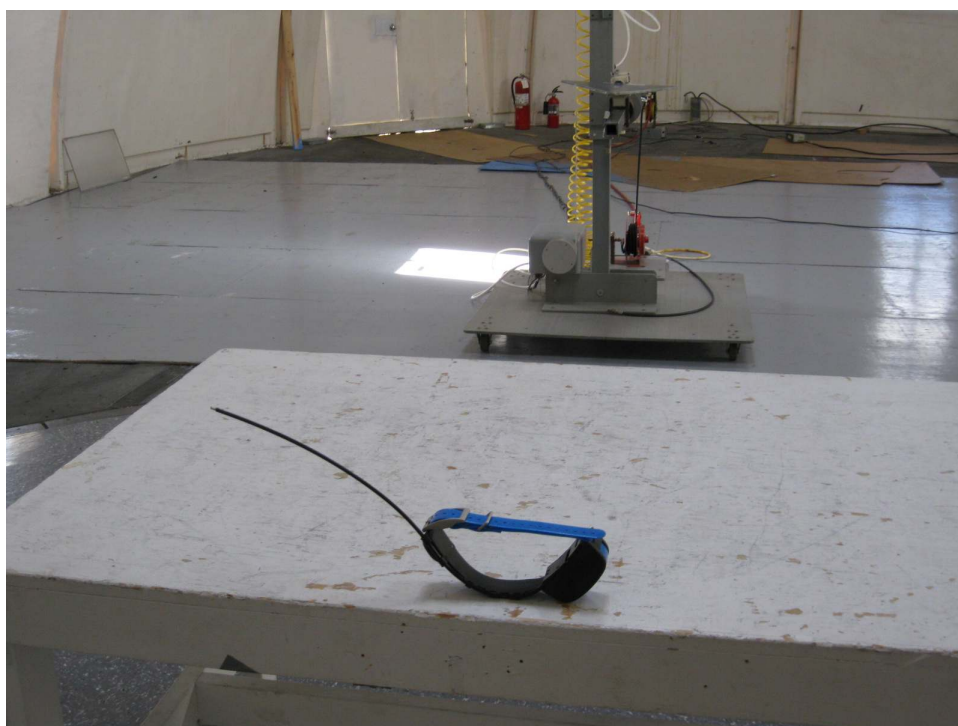
	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (Spurious)		
DNB Job Number:	56076	Date:	2 Apr 2015	Specification [X] 15.209 [X] ANSI C63.10-2013
Customer:	D. Green Engineering LLC			
Model Number:	O			
Description:	Transceiver used in Hunting Dog tracking products			
	Test Set Up			




	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (General)		
DNB Job Number:	56076	Date:	2 Apr 2015	Specification [X] 15.209 [X] ANSI C63.10-2013
Customer:	D. Green Engineering LLC			
Model Number:	O			
Description:	Transceiver used in Hunting Dog tracking products			
Test Set Up - Bicon - Horizontal				



	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (General)		
DNB Job Number:	56076	Date:	2 Apr 2015	Specification [X] 15.209 [X] ANSI C63.10-2013
Customer:	D. Green Engineering LLC			
Model Number:	O			
Description:	Transceiver used in Hunting Dog tracking products			
Test Set Up - Log Periodic - Horizontal				



		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436				Radiated Emissions (General)					
DNB Job Number:		56076				Date:		2 Apr 2015		Specification [X] 15.209 [X] ANSI C63.10-2013	
Customer:		D. Green Engineering LLC									
Model Number:		O									
Description:		Transceiver used in Hunting Dog tracking products									
EUT is in conformance with FCC 15.209						X	YES		NO	Signed	<i>Y Staples</i>
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Positions			
		Ant	Cbl	Amp	Corr	Lim	Delta	Typ	Tbl	Pl	Hgt
137.481	19.73	14.10	2.80	25.90	10.73	43.50	-32.77	QP	260	H	4.00
189.000	30.66	17.00	3.40	25.50	25.56	43.50	-17.94	QP	2	H	4.00
30.000	22.12	19.10	1.40	26.30	16.32	40.00	-23.68	QP	2	V	1.00
37.433	20.07	16.30	1.50	26.20	11.67	40.00	-28.33	QP	292	V	1.00
54.300	20.24	10.00	1.70	26.20	5.74	40.00	-34.26	QP	2	V	1.00
56.324	20.18	9.30	1.80	26.10	5.18	40.00	-34.82	QP	2	V	1.00
67.800	29.20	6.30	2.00	26.20	11.30	40.00	-28.70	QP	285	V	1.00
137.100	19.00	14.10	2.80	25.90	10.00	43.50	-33.50	QP	2	V	1.00
231.356	21.56	16.50	3.40	25.60	15.86	46.00	-30.14	QP	2	V	1.00
249.301	25.02	16.60	3.40	25.60	19.42	46.00	-26.58	QP	275	V	1.00
260.668	21.60	18.10	3.90	25.40	18.20	46.00	-27.80	QP	2	V	1.00
269.956	19.10	18.70	4.00	25.40	16.40	46.00	-29.60	QP	2	V	1.00
274.100	21.40	18.90	4.00	25.40	18.90	46.00	-27.10	QP	2	V	1.00

15.247 (c) Spurious Radiated Emissions


This test is required for any spurious emission or modulation product that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz
VBW = RBW
Sweep = auto
Detector function = peak
Trace = max hold

Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

If the emission on which a radiated measurement must be made is located at the edge of the authorized band of operation, then the alternative “marker-delta” method, listed at the end of this document, may be employed.

	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Radiated Emissions (Spurious)
DNB Job Number:	56076	Date: 5 May 2015	
Customer:	D. Green Engineering LLC		Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Model Number:	O		
Description:	Transceiver used in Hunting Dog tracking products		
Test Set Up - (Vertical - DRG)			



	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (Spurious)		
DNB Job Number:	56076	Date:	5 May 2015	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	D. Green Engineering LLC			
Model Number:	O			
Description:	Transceiver used in Hunting Dog tracking products			
	Low Channel			

Note 1: GF = Ground Floor = If Y reading was at ground floor, If N reading was identifiable signal.

Note 2: Limit listed is the general limit as specified in 15.209 in order to show compliance with the restricted bands of operation as well as the out of band limit in 15.247. No other identifiable signals were observed in the restricted bands as specified in 15.205.

Note 3: Highest frequency investigated was the tenth harmonic of the fundamental, no emissions were detected above the 2nd harmonic. Only data to the 7th harmonic has been provided.

FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Positions			G F
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	Tbl	Pl	Hgt	
2402	59.52	29.45	3.36	---	92.33	---	---	Peak	Peak	145	Vert	1.06	N
4804	22.35	32.99	7.80	24.50	38.64	54.00	-15.36	Ave	Peak	279	Vert	1.00	N
7206	17.67	37.18	8.29	24.20	38.94	54.00	-15.06	Ave	Peak	102	Vert	1.00	N
9608	11.35	37.84	5.42	23.45	31.16	54.00	-22.84	Ave	Peak	0	Vert	1.00	Y
12010	12.01	39.73	11.12	23.60	39.26	54.00	-14.74	Ave	Peak	0	Vert	1.00	Y
14412	12.84	41.51	13.51	23.30	44.56	54.00	-9.44	Ave	Peak	0	Vert	1.00	Y
16814	13.77	41.92	14.38	23.40	46.67	54.00	-7.33	Ave	Peak	0	Vert	1.00	Y
2402	56.34	29.45	3.36	---	89.15	---	---	Peak	Peak	125	Hor	1.00	N
4804	22.42	32.99	7.80	24.50	38.71	54.00	-15.29	Ave	Peak	204	Hor	1.00	N
7206	18.89	37.18	8.29	24.20	40.16	54.00	-13.84	Ave	Peak	352	Hor	1.30	N
9608	11.51	37.84	5.42	23.45	31.32	54.00	-22.68	Ave	Peak	0	Hor	1.00	Y
12010	12.64	39.73	11.12	23.60	39.89	54.00	-14.11	Ave	Peak	0	Hor	1.00	Y
14412	13.22	41.51	13.51	23.30	44.94	54.00	-9.06	Ave	Peak	0	Hor	1.00	Y
16814	13.66	41.92	14.38	23.40	46.56	54.00	-7.44	Ave	Peak	0	Hor	1.00	Y

	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (Spurious)		
DNB Job Number:	56076	Date:	5 May 2015	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	D. Green Engineering LLC			
Model Number:	O			
Description:	Transceiver used in Hunting Dog tracking products			
	Middle Channel			

Note 1:GF = Ground Floor = If Y reading was at ground floor, If N reading was identifiable signal.

Note 2:Limit listed is the general limit as specified in 15.209 in order to show compliance with the restricted bands of operation as well as the out of band limit in 15.247. No other identifiable signals were observed in the restricted bands as specified in 15.205.

Note 3:Highest frequency investigated was the tenth harmonic of the fundamental, no emissions were detected above the 2nd harmonic. Only data to the 7th harmonic has been provided.

FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Positions			G F
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	Tbl	Pl	Hgt	
2440	52.30	29.54	3.42	---	85.26	---	---	Peak	Peak	143	Vert	1.19	N
4880	25.55	33.27	7.88	24.55	42.15	54.00	-11.85	Ave	Peak	335	Vert	1.00	N
7320	19.86	37.11	8.45	24.20	41.22	54.00	-12.78	Ave	Peak	102	Vert	1.08	N
9760	11.8	37.9	5.72	23.50	31.92	54.00	-22.08	Ave	Peak	0	Vert	1.00	Y
12200	13.77	40.26	11.58	23.65	41.96	54.00	-12.04	Ave	Peak	0	Vert	1.00	Y
14640	13.53	41.8	13.53	23.20	45.66	54.00	-8.34	Ave	Peak	0	Vert	1.00	Y
17080	13.5	42.53	15.12	23.00	48.15	54.00	-5.85	Ave	Peak	0	Vert	1.00	Y
2440	53.90	29.54	3.42	---	86.86	---	---	Peak	Peak	234	Hor	2.19	N
4880	25.88	33.27	7.88	24.55	42.48	54.00	-11.52	Ave	Peak	84	Hor	1.44	N
7320	20.8	37.11	8.45	24.20	42.16	54.00	-11.84	Ave	Peak	351	Hor	1.25	N
9760	12.38	37.9	5.72	23.50	32.50	54.00	-21.50	Ave	Peak	0	Hor	1.00	Y
12200	12.66	40.26	11.58	23.65	40.85	54.00	-13.15	Ave	Peak	0	Hor	1.00	Y
14640	12.97	41.8	13.53	23.20	45.10	54.00	-8.90	Ave	Peak	0	Hor	1.00	Y
17080	13.24	42.53	15.12	23.00	47.89	54.00	-6.11	Ave	Peak	0	Hor	1.00	Y

	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (Spurious)		
DNB Job Number:	56076	Date:	5 May 2015	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	D. Green Engineering LLC			
Model Number:	O			
Description:	Transceiver used in Hunting Dog tracking products			
	High Channel			

Note 1: GF = Ground Floor = If Y reading was at ground floor, If N reading was identifiable signal.

Note 2: Limit listed is the general limit as specified in 15.209 in order to show compliance with the restricted bands of operation as well as the out of band limit in 15.247. No other identifiable signals were observed in the restricted bands as specified in 15.205.

Note 3: Highest frequency investigated was the tenth harmonic of the fundamental, no emissions were detected above the 2nd harmonic. Only data to the 7th harmonic has been provided.

FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Positions			G F
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	Tbl	Pl	Hgt	
2480	50.01	29.65	3.47	---	83.13	---	---	Peak	Peak	190	Vert	1.00	N
4960	26.63	33.56	7.96	24.55	43.60	54.00	-10.40	Ave	Peak	328	Vert	1.27	N
7440	17.32	37.04	8.62	24.15	38.83	54.00	-15.17	Ave	Peak	332	Vert	1.13	N
9920	13.22	37.97	6.04	23.55	33.68	54.00	-20.32	Ave	Peak	0	Vert	1.00	Y
12400	10.88	40.82	12.06	23.50	40.26	54.00	-13.74	Ave	Peak	0	Vert	1.00	Y
14880	12.33	42.13	13.24	23.10	44.60	54.00	-9.40	Ave	Peak	0	Vert	1.00	Y
17360	13.87	42.98	15.91	23.05	49.71	54.00	-4.29	Ave	Peak	0	Vert	1.00	Y
2480	51.29	29.65	3.47	---	84.41	---	---	Peak	Peak	234	Hor	1.00	N
4960	26.03	33.56	7.96	24.55	43.00	54.00	-11.00	Ave	Peak	89	Hor	1.30	N
7440	15.88	37.04	8.62	24.15	37.39	54.00	-16.61	Ave	Peak	49	Hor	1.33	N
9920	11.86	37.97	6.04	23.55	32.32	54.00	-21.68	Ave	Peak	0	Hor	1.00	Y
12400	13.62	40.82	12.06	23.50	43.00	54.00	-11.00	Ave	Peak	0	Hor	1.00	Y
14880	14.03	42.13	13.24	23.10	46.30	54.00	-7.70	Ave	Peak	0	Hor	1.00	Y
17360	14.25	42.98	15.91	23.05	50.09	54.00	-3.91	Ave	Peak	0	Hor	1.00	Y

15.247 (a,2) 6 dB Bandwidth

Test Procedure: ANSI C63.10-2013

6 dB Bandwidth

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 6 dB bandwidth, centered on a hopping channel

RBW 1% of the 6 dB bandwidth

VBW RBW

Sweep = auto

Detector function = peak

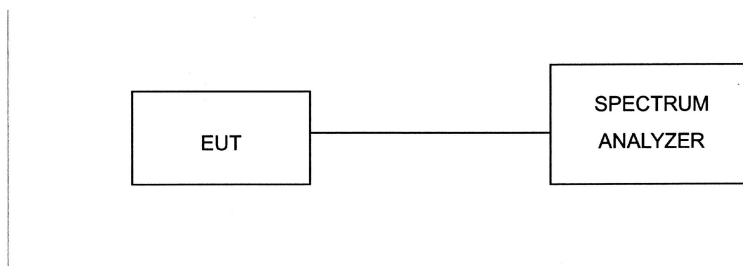
Trace = max hold


The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 6 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 6 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

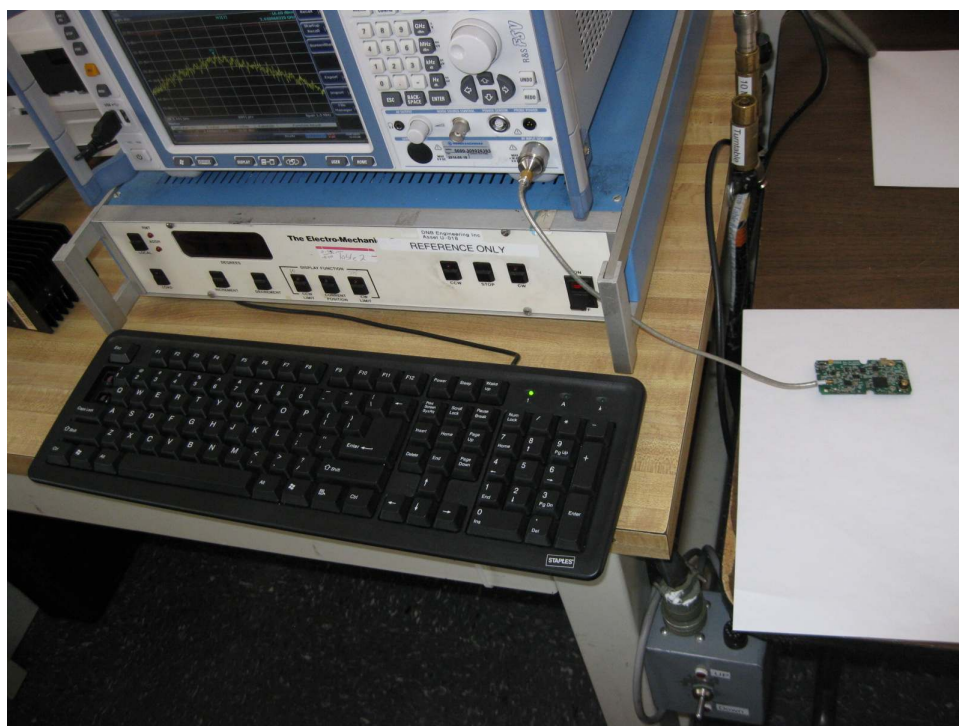
EUT operating conditions:

The software provided by the client to enable the EUT to transmit continuously.

Test Set Up: (Note following set up was used for all antenna conducted measurements)



	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Measurement Test Set Up		
DNB Job Number:	56076	Date:	30 Mar 2015	Conformance Standard FCC Part 15
Customer:	D. Green Engineering LLC			
Model Number:	O			
Description:	Transceiver used in Hunting Dog tracking products			Clause 15.247
Antenna Conducted Measurement Set Up				



	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		6 dB Single Channel Bandwidth	
DNB Job Number:	56076	Date:	30 Mar 2015	Conformance Standard FCC Part 15
Customer:	D. Green Engineering LLC			
Model Number:	O			
Description:	Transceiver used in Hunting Dog tracking products			Clause 15.247(a,2)
	Test Procedure			
Environmental Conditions				
Ambient Temperature		Relative Humidity		Barometric Pressure
21 °C		25 %		101.2 kPa
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>				

6 dB Bandwidth

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 6dB bandwidth, centered on a hopping channel

RBW = 1% of the 6dB bandwidth


VBW = RBW

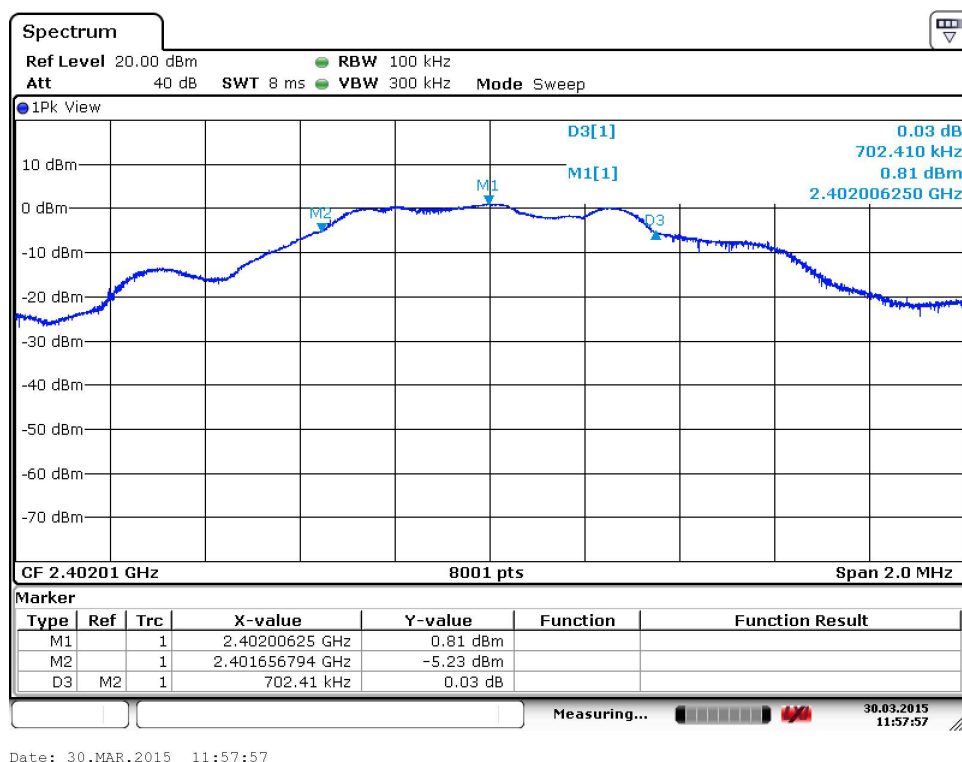
Sweep = auto


Detector function = peak

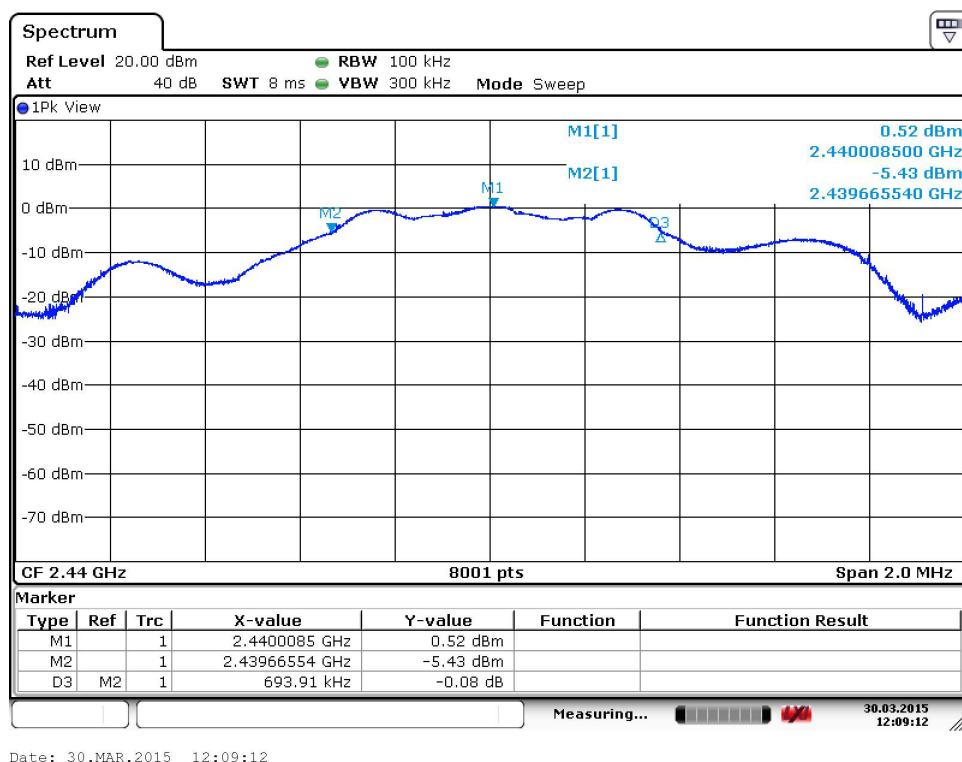
Trace = max hold


The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 6 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 6 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

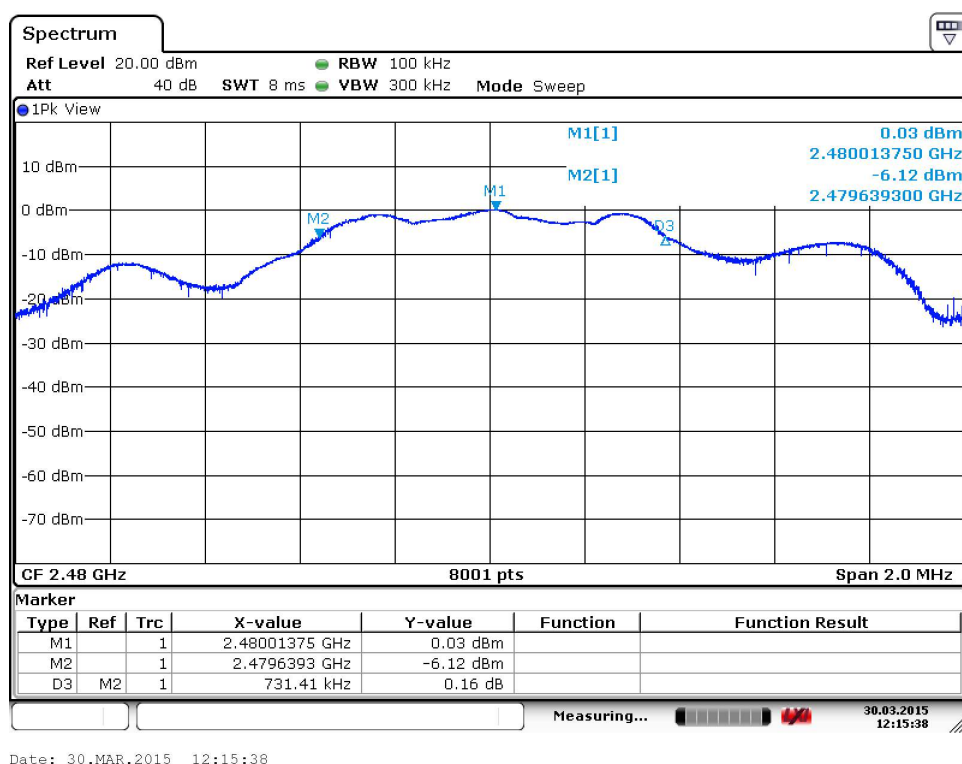
		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		6 dB Single Channel Bandwidth	
DNB Job Number:	56076	Date:	30 Mar 2015	Conformance Standard FCC Part 15 Clause 15.247(a,2)	
Customer:	D. Green Engineering LLC				
Model Number:	O				
Description:	Transceiver used in Hunting Dog tracking products				
	1Mbps data rate (Basic data rate)				
Environmental Conditions					
Ambient Temperature		Relative Humidity		Barometric Pressure	
21 °C		25 %		101.2 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>					
Channel	Chl Freq (MHz)	6dB BW (kHz)	Limit	Pass/Fail	
Low	2402	702.410	> 500 kHz	Pass	



		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		6 dB Single Channel Bandwidth	
DNB Job Number:	56076	Date:	30 Mar 2015	Conformance Standard FCC Part 15	
Customer:	D. Green Engineering LLC				
Model Number:	O				
Description:	Transceiver used in Hunting Dog tracking products			Clause 15.247(a,2)	
	1Mbps data rate (Basic data rate)				
Environmental Conditions					
Ambient Temperature		Relative Humidity		Barometric Pressure	
21 °C		25 %		101.2 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>					
Channel	Chl Freq (MHz)	6dB BW (kHz)	Limit	Pass/Fail	
Middle	2440	693.910	> 500 kHz	Pass	



		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		6 dB Single Channel Bandwidth	
DNB Job Number:	56076	Date:	30 Mar 2015	Conformance Standard FCC Part 15	
Customer:	D. Green Engineering LLC				
Model Number:	O				
Description:	Transceiver used in Hunting Dog tracking products 1Mbps data rate (Basic data rate)			Clause 15.247(a,2)	
Environmental Conditions					
Ambient Temperature		Relative Humidity		Barometric Pressure	
21 °C		25 %		101.2 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>					
Channel	Chl Freq (MHz)	6dB BW (MHz)	Limit	Pass/Fail	
High	2480	731.410	> 500 kHz	Pass	



15.247 (b) Maximum Peak Output Power (Conducted)

Test Procedure: ANSI C63.10-2013

Peak Output Power

Use the following spectrum analyzer settings:

Span = approximately 5 times the 6 B bandwidth, centered on a hopping channel

RBW > the 6 dB bandwidth of the emission being measured

VBW RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power (see the NOTE above regarding external attenuation and cable loss). The limit is specified in one of the subparagraphs of this Section. Submit this plot. A peak responding power meter may be used instead of a spectrum analyzer.

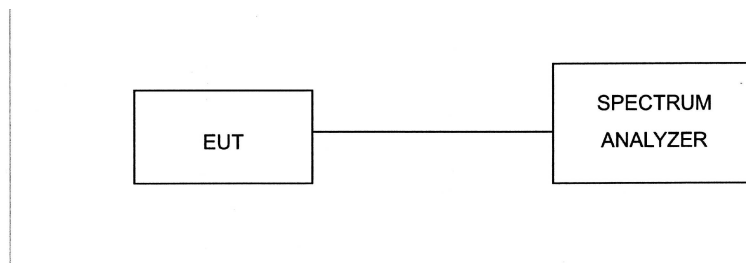
The transmitter output was connected to a spectrum analyzer.


Requirement: The maximum peak output power shall not exceed .125W (21dBm)

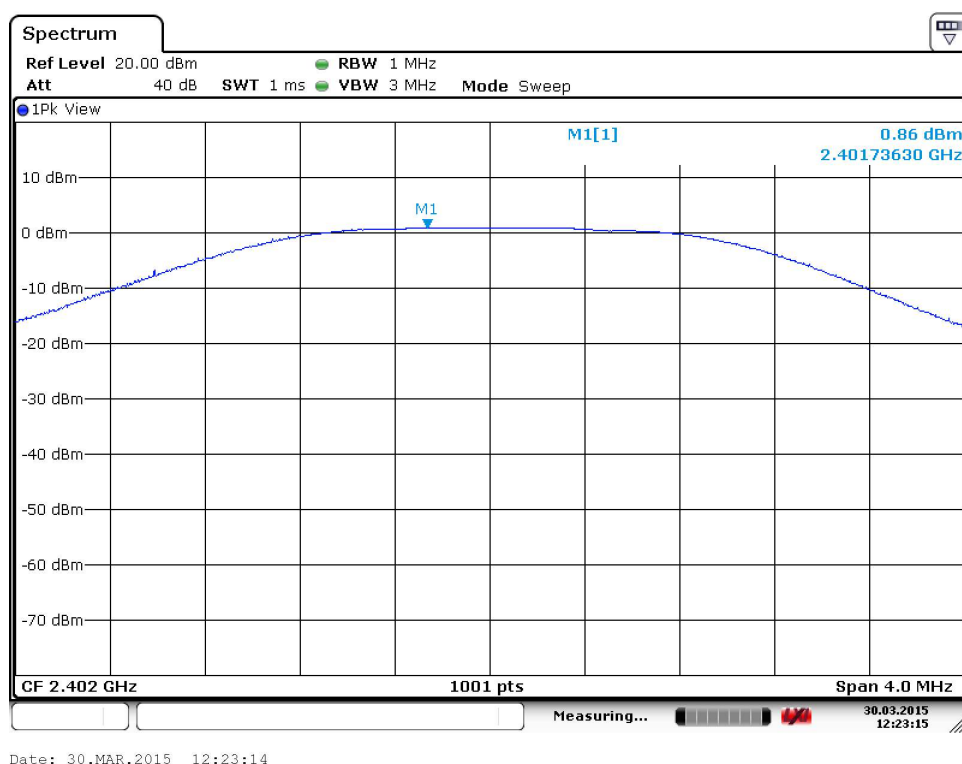
EUT operating conditions:


The software provided by the client to enable the EUT to transmit continuously at the low, mid, and upper channels respectively.

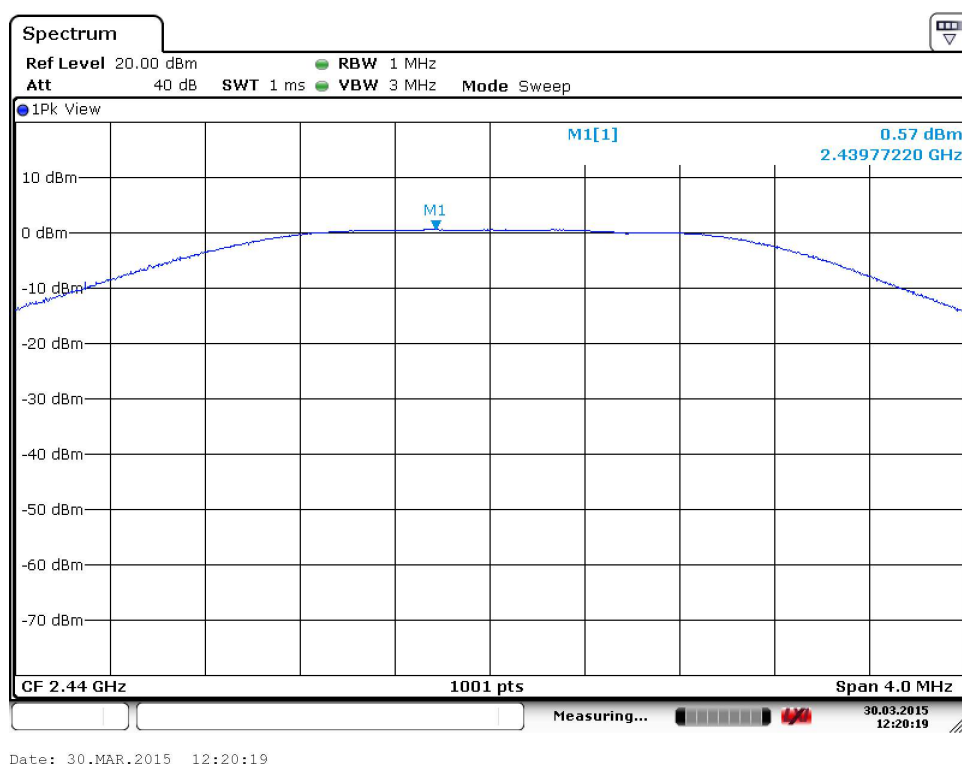
Test Set Up:




		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Peak Output Power (Cond)				
DNB Job Number:		56076		Date:		30 Mar 2015		Conformance Standard FCC Part 15
Customer:		D. Green Engineering LLC						
Model Number:		O						
Description:		Transceiver used in Hunting Dog tracking products						Clause 15.247(b)
		1Mbps data rate (Basic data rate) - Low Channel						
Environmental Conditions								
Ambient Temperature			Relative Humidity			Barometric Pressure		
21 °C			25 %			101.2 kPa		
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>								
Freq MHz	Meas Peak Pwr (dBm)	Limit (dBm)	Delta (dBm)	Meas Peak Pwr (mW)	Limit (mW)	Delta (mW)	Pass/Fail	
2402	0.86	20.97	-20.11	1.219	125	-123.781	Pass	

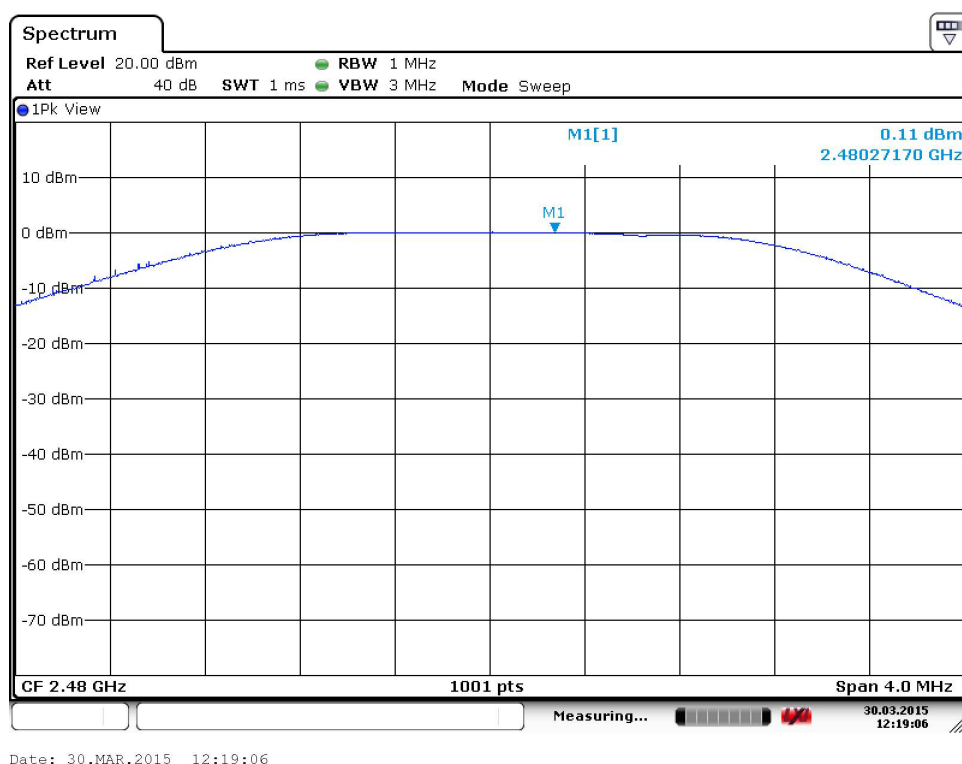


		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Peak Output Power (Cond)				
DNB Job Number:		56076		Date:		30 Mar 2015		Conformance Standard FCC Part 15
Customer:		D. Green Engineering LLC						
Model Number:		O						
Description:		Transceiver used in Hunting Dog tracking products						Clause 15.247(b)
		1Mbps data rate (Basic data rate) - Mid Channel						
Environmental Conditions								
Ambient Temperature			Relative Humidity			Barometric Pressure		
21 °C			25 %			101.2 kPa		
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>								
Freq MHz	Meas Peak Pwr (dBm)	Limit (dBm)	Delta (dBm)	Meas Peak Pwr (mW)	Limit (mW)	Delta (mW)	Pass/Fail	
2440	0.57	20.97	-20.40	1.140	125	-123.860	Pass	



Date: 30.MAR.2015 12:20:19

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Peak Output Power (Cond)			
DNB Job Number:	56076	Date:	30 Mar 2015	Conformance Standard FCC Part 15			
Customer:	D. Green Engineering LLC						
Model Number:	O						
Description:	Transceiver used in Hunting Dog tracking products			Clause 15.247(b)			
	1Mbps data rate (Basic data rate) - High Channel						
Environmental Conditions							
Ambient Temperature		Relative Humidity		Barometric Pressure			
21 °C		25 %		101.2 kPa			
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>							
Freq MHz	Meas Peak Pwr (dBm)	Limit (dBm)	Delta (dBm)	Meas Peak Pwr (mW)	Limit (mW)	Delta (mW)	Pass/Fail
2480	0.11	20.97	-20.86	1.026	125	-123.974	Pass



15.247 (d) Conducted Band Edge Measurements and Out of Band Emissions

Test Procedure: ANSI C63.10-2013

Band-edge Compliance of RF Conducted Emissions

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation

RBW 1% of the span

VBW RBW

Sweep = auto


Detector function = peak

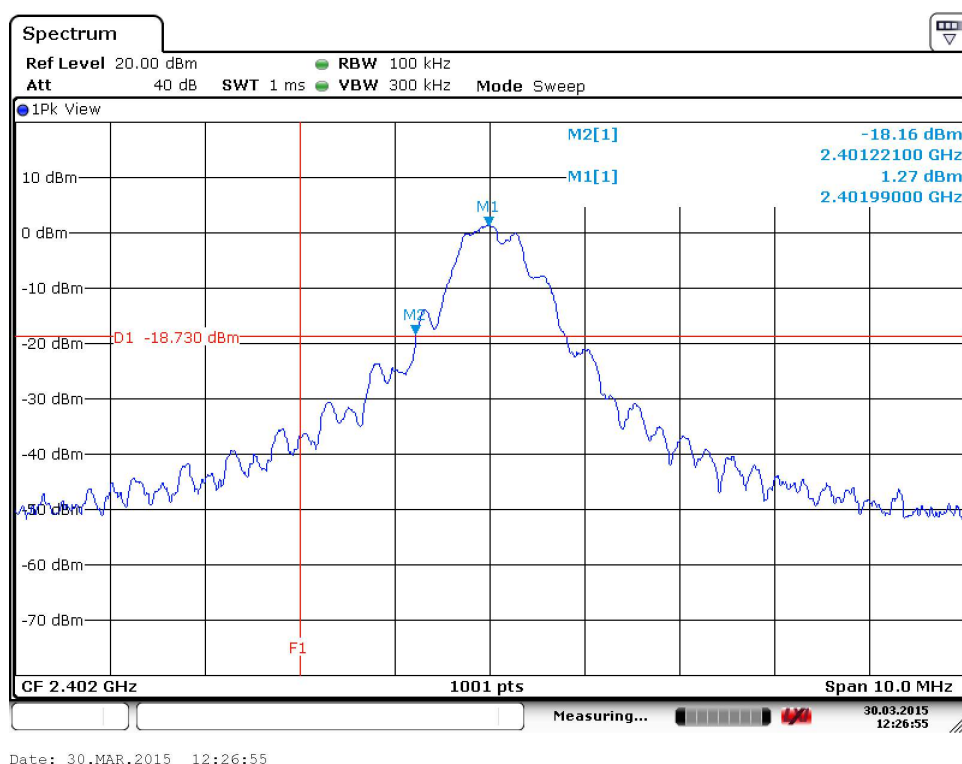
Trace = max hold


Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section. Submit this plot.

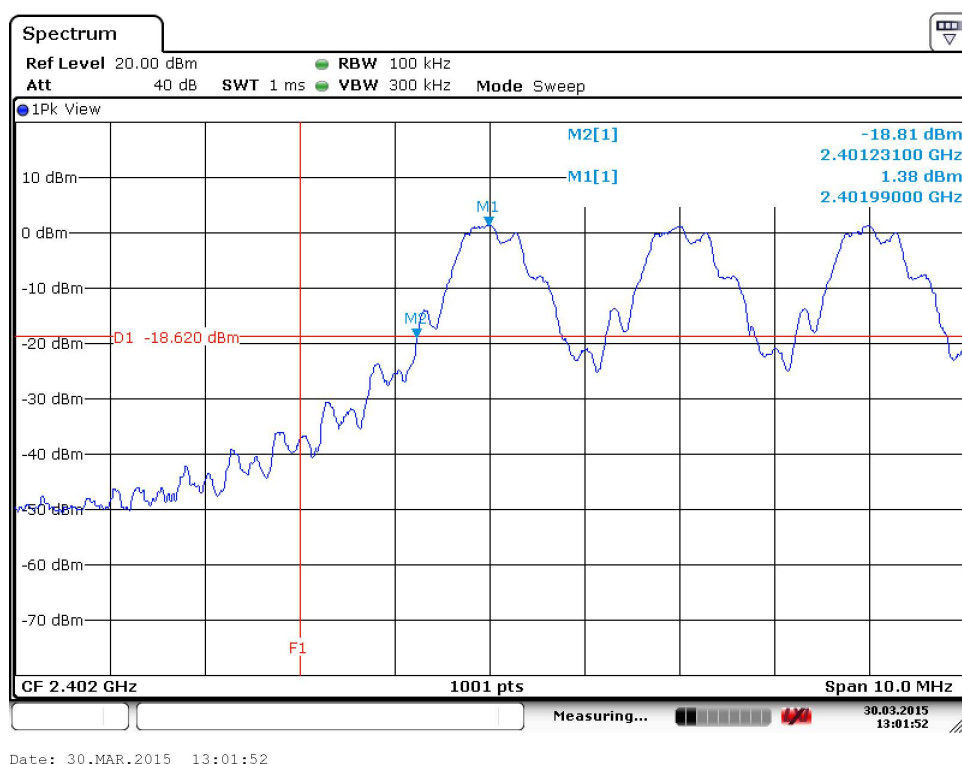
Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit. Submit this plot.


Test Set Up: Same as 15.247 (a,2) 6dB Emission Bandwidth


		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Band Edge Measurements		
DNB Job Number:		56076		Date:	30 Mar 2015	Conformance Standard FCC Part 15
Customer:		D. Green Engineering LLC				
Model Number:		O				
Description:		Transceiver used in Hunting Dog tracking products				Clause 15.247(d)
		1Mbps data rate (Basic data rate)				
Ambient Temperature			Relative Humidity		Barometric Pressure	
19 °C			28 %		101.8 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>						
Conducted Band Edge Measurement - Single Channel				Freq Delta (MHz)		Pass/Fail
Limit	Lower (MHz)		Upper (MHz)			
2400	2401.221			1.221		Pass

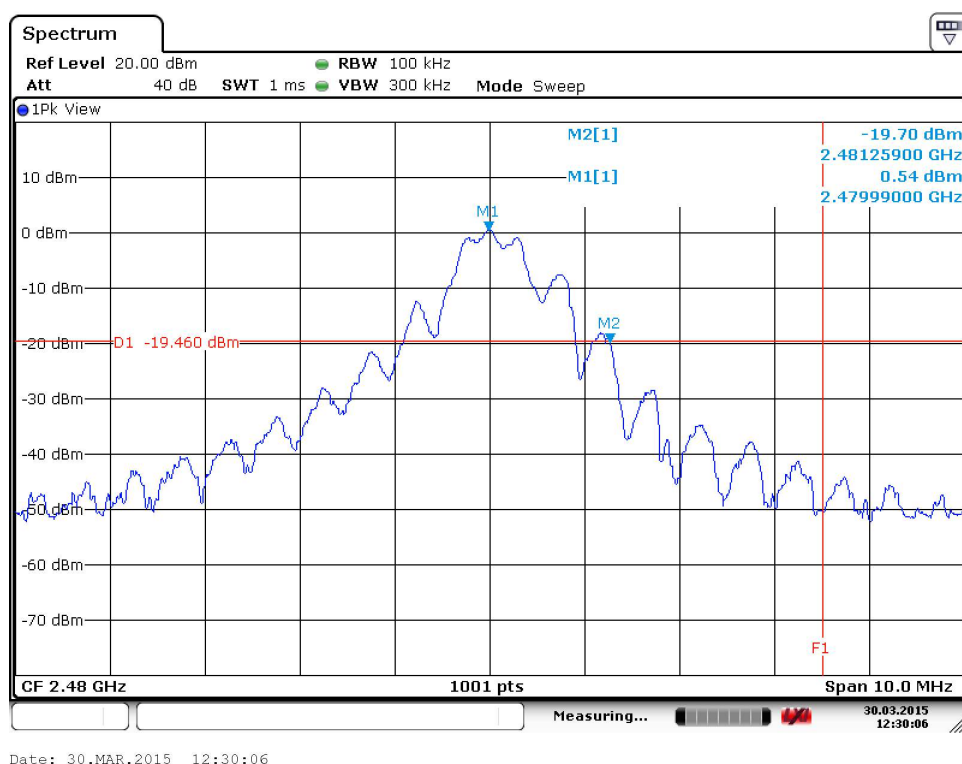



		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Band Edge Measurements		
DNB Job Number:		56076		Date:	30 Mar 2015	Conformance Standard FCC Part 15
Customer:		D. Green Engineering LLC				
Model Number:		O				
Description:		Transceiver used in Hunting Dog tracking products				Clause 15.247(d)
		1Mbps data rate (Basic data rate)				
Ambient Temperature			Relative Humidity		Barometric Pressure	
19 °C			28 %		101.8 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>						
Conducted Band Edge Measurement - All Channels				Freq Delta (MHz)		Pass/Fail
Limit	Lower (MHz)		Upper (MHz)			
2400	2401.231			1.231		Pass

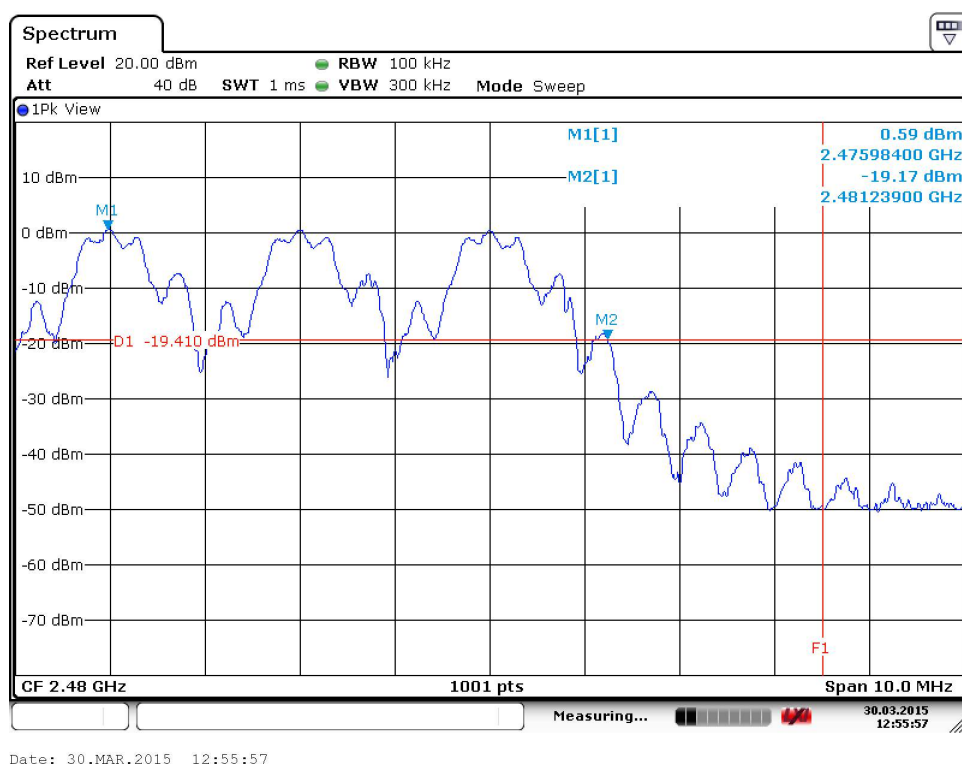


		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Band Edge Measurements					
DNB Job Number:		56076		Date:		5 May 2015		Conformance Standard FCC Part 15	
Customer:		D. Green Engineering LLC							
Model Number:		O							
Description:		Transceiver used in Hunting Dog tracking products						Clause 15.247(d)	
		1Mbps data rate (Basic data rate)							
Ambient Temperature			Relative Humidity			Barometric Pressure			
19 °C			28 %			101.8 kPa			
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>									
Radiated Corrected Band Edge Measurement - Lower Edge									
Band Edge	Lower (MHz)	Upper (MHz)	Limit (dBuV/m)	Measured (dBuV/m)	Delta (dBuV)	Chl	Polar	Freq Delta (MHz)	Result
2400	2400.833		54.00	41.95	-12.05	SC	H	0.833	Pass
2400	2400.927		54.00	43.76	-10.24	SC	V	0.927	Pass
2400	2401.083		54.00	42.65	-11.35	All	H	1.083	Pass
2400	2400.894		54.00	44.18	-9.82	All	V	0.894	Pass

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Band Edge Measurements		
DNB Job Number:		56076		Date:	30 Mar 2015	Conformance Standard FCC Part 15
Customer:		D. Green Engineering LLC				
Model Number:		O				
Description:		Transceiver used in Hunting Dog tracking products				Clause 15.247(d)
		1Mbps data rate (Basic data rate)				
Ambient Temperature			Relative Humidity		Barometric Pressure	
19 °C			28 %		101.8 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>						
Conducted Band Edge Measurement - Single Channel				Freq Delta (MHz)		Pass/Fail
Limit	Lower (MHz)		Upper (MHz)			
2483.5			2481.259	2.241		Pass



		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Band Edge Measurements		
DNB Job Number:		56076		Date:	30 Mar 2015	Conformance Standard FCC Part 15
Customer:		D. Green Engineering LLC				
Model Number:		O				
Description:		Transceiver used in Hunting Dog tracking products				Clause 15.247(d)
		1Mbps data rate (Basic data rate)				
Ambient Temperature			Relative Humidity		Barometric Pressure	
19 °C			28 %		101.8 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>						
Conducted Band Edge Measurement - All Channels				Freq Delta (MHz)		Pass/Fail
Limit	Lower (MHz)		Upper (MHz)			
2483.5			2481.239	2.261		Pass



		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Band Edge Measurements					
DNB Job Number:		56076		Date:		5 May 2015		Conformance Standard FCC Part 15	
Customer:		D. Green Engineering LLC							
Model Number:		O							
Description:		Transceiver used in Hunting Dog tracking products						Clause 15.247(d)	
		1Mbps data rate (Basic data rate)							
Ambient Temperature			Relative Humidity			Barometric Pressure			
19 °C			28 %			101.8 kPa			
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>									
Radiated Corrected Band Edge Measurement - Lower Edge									
Band Edge	Lower (MHz)	Upper (MHz)	Limit (dBuV/m)	Measured (dBuV/m)	Delta (dBuV)	Chl	Polar	Freq Delta (MHz)	Result
2483.5		2481.972	54.00	42.75	-11.25	SC	H	1.528	Pass
2483.5		2480.893	54.00	42.68	-11.32	SC	V	2.607	Pass
2483.5		2481.273	54.00	42.31	-11.69	All	H	2.227	Pass
2483.5		2481.254	54.00	41.99	-12.01	All	V	2.246	Pass

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Conducted Spurious	
DNB Job Number:		56076		Date: 30 Mar 2015	
Customer:		D. Green Engineering LLC			
Model Number:		O			
Description:		Transceiver used in Hunting Dog tracking products			
		Test Procedure			
Ambient Temperature		Relative Humidity		Barometric Pressure	
21 °C		25 %		101.2 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>					

Test Procedure: ANSI C63.10-2013

15.247 (c) Spurious RF Conducted Emissions

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 100 kHz


VBW RBW

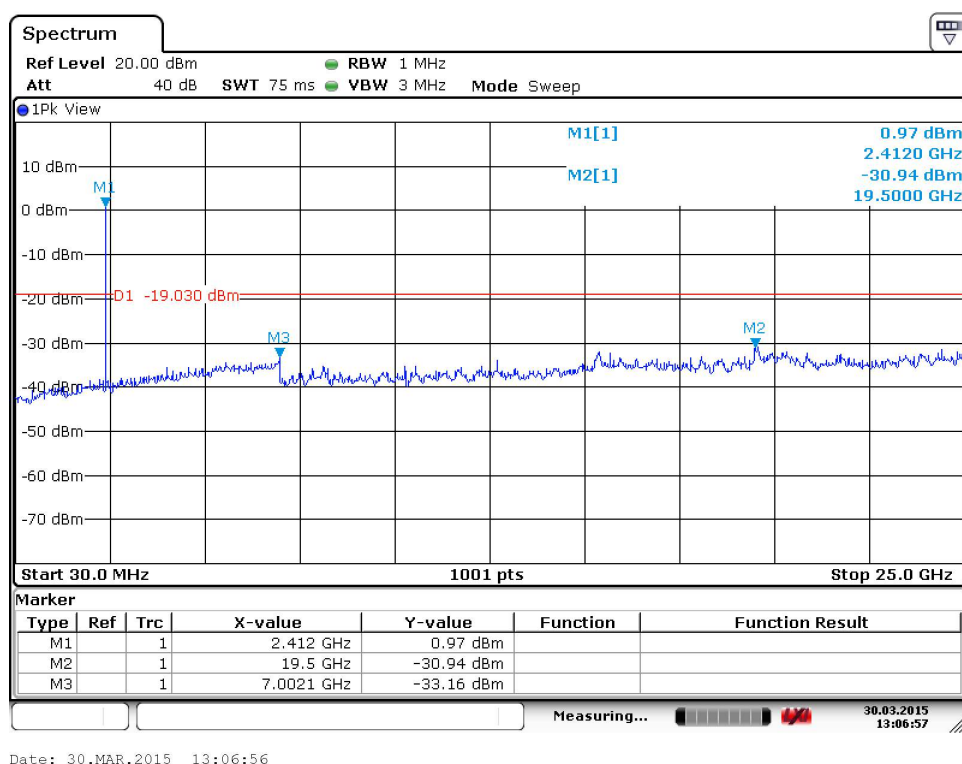
Sweep = auto


Detector function = peak

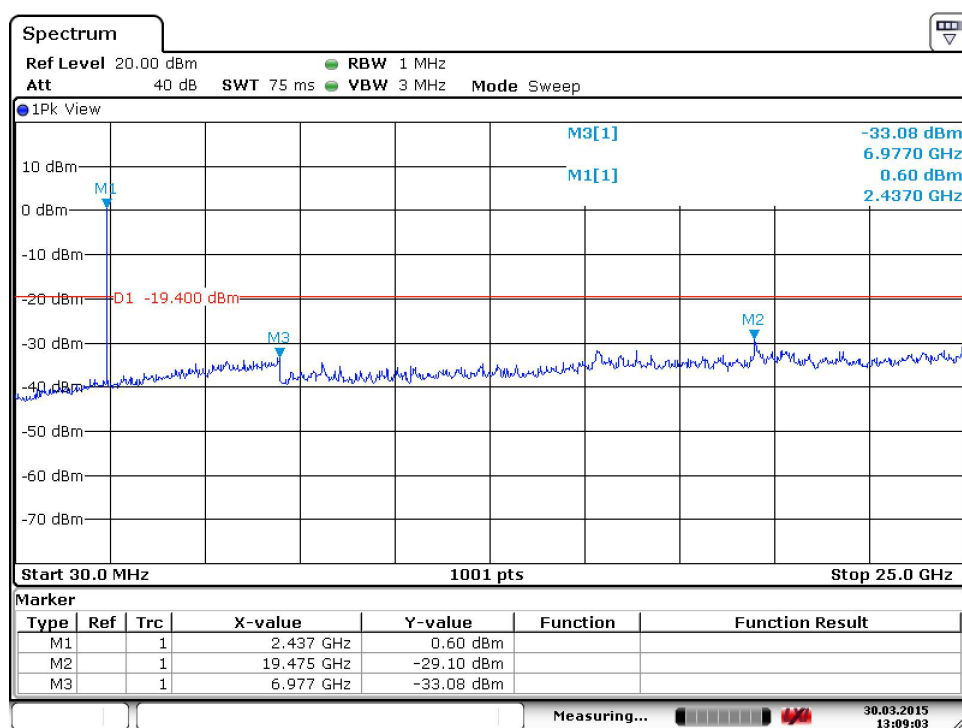
Trace = max hold

Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section. Submit these plots.


		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Conducted Spurious		
DNB Job Number:		56076		Date: 30 Mar 2015		Conformance Standard FCC Part 15
Customer:		D. Green Engineering LLC				
Model Number:		O				
Description:		Transceiver used in Hunting Dog tracking products				Clause 15.247(c)
		1Mbps data rate (Basic data rate) - Low Channel				
Ambient Temperature			Relative Humidity		Barometric Pressure	
21 °C			25 %		101.2 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>						
Peak Output Power		Reading		-20dBc		Pass/Fall
0.86 dBm		0.97 dBm		-19.03 dBm		Pass

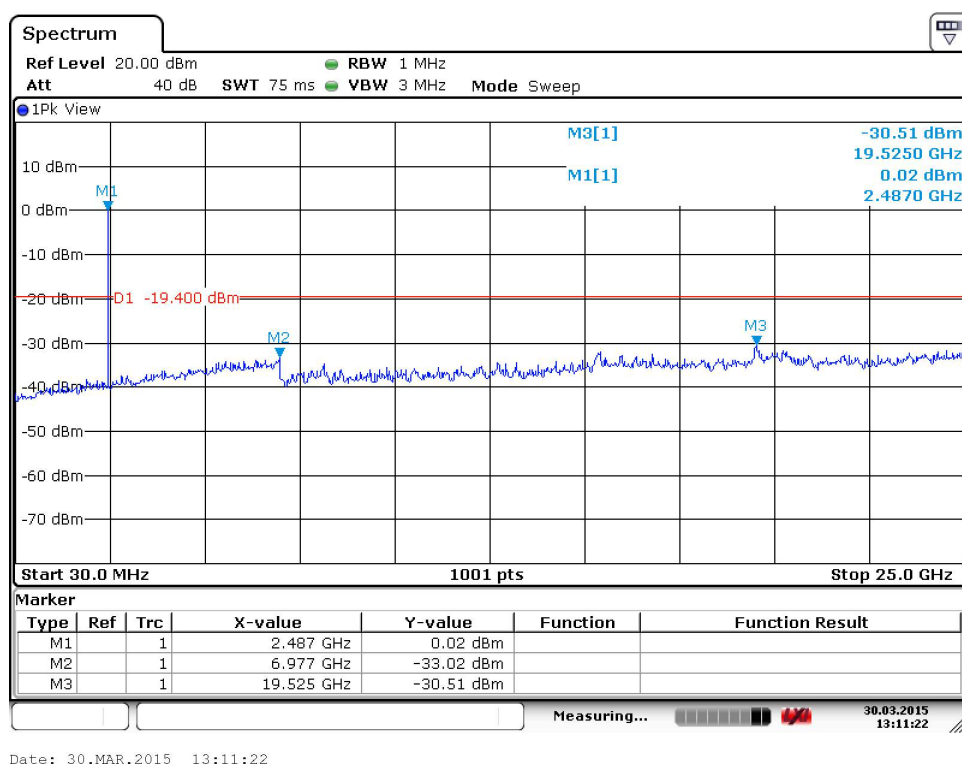


		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Conducted Spurious		
DNB Job Number:		56076		Date: 30 Mar 2015		Conformance Standard FCC Part 15
Customer:		D. Green Engineering LLC				
Model Number:		O				
Description:		Transceiver used in Hunting Dog tracking products				Clause 15.247(c)
		1Mbps data rate (Basic data rate) - Mid Channel				
Ambient Temperature			Relative Humidity		Barometric Pressure	
21 °C			25 %		101.2 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>						
Peak Output Power		Reading		-20dBc		Pass/Fall
0.57 dBm		0.60 dBm		-19.0 dBm		Pass



Date: 30.MAR.2015 13:09:03

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Conducted Spurious		
DNB Job Number:		56076		Date: 30 Mar 2015		Conformance Standard FCC Part 15
Customer:		D. Green Engineering LLC				
Model Number:		O				
Description:		Transceiver used in Hunting Dog tracking products				Clause 15.247(c)
		1Mbps data rate (Basic data rate) - High Channel				
Ambient Temperature			Relative Humidity		Barometric Pressure	
21 °C			25 %		101.2 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>						
Peak Output Power		Reading		-20dBc		Pass/Fall
0.11 dBm		0.02 dBm		-19.98 dBm		Pass



15.247(d): Power spectral density(PSD).

Test Procedure: ANSI C63.10-2013

The same method of determining the conducted output power shall be used to determine the power spectral density.

If a peak output power is measured, then a peak power spectral density measurement is required. If an average output power is measured, then an average power spectral density measurement should be used.

Locate and zoom in on emission peak(s) within the passband.

Set RBW = 3 kHz,

VBW > RBW, sweep= (SPAN/3 kHz) e.g., for a span of 1.5 MHz, the sweep should be $1.5 \times 10^6 / 3 \times 10^3 = 500$ seconds.

The peak level measured must be no greater than + 8 dBm. If external attenuation is used, don't forget to add this value to the reading. Use the following guidelines for modifying the power spectral density measurement procedure when necessary.

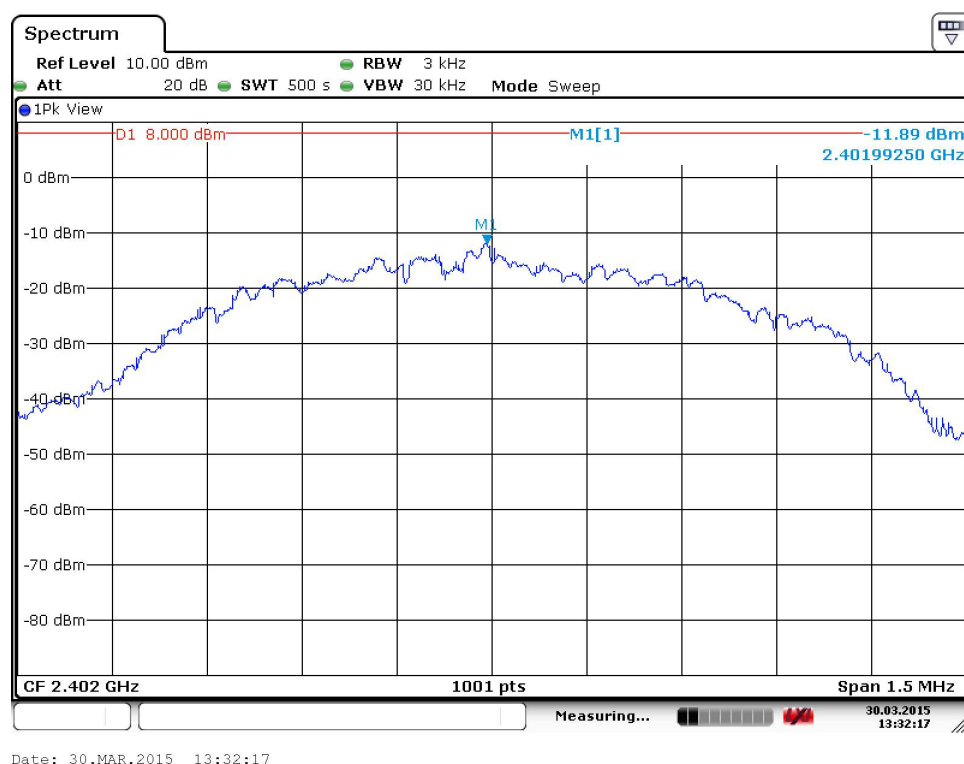
For devices with spectrum line spacing greater than 3 kHz no change is required.


For devices with spectrum line spacing equal to or less than 3 kHz, the resolution bandwidth must be reduced below 3kHz until the individual lines in the spectrum are resolved. The measurement data must then be normalized to 3 kHz by summing the power of all the individual spectral lines within a 3kHz band (in linear power units) to determine compliance.

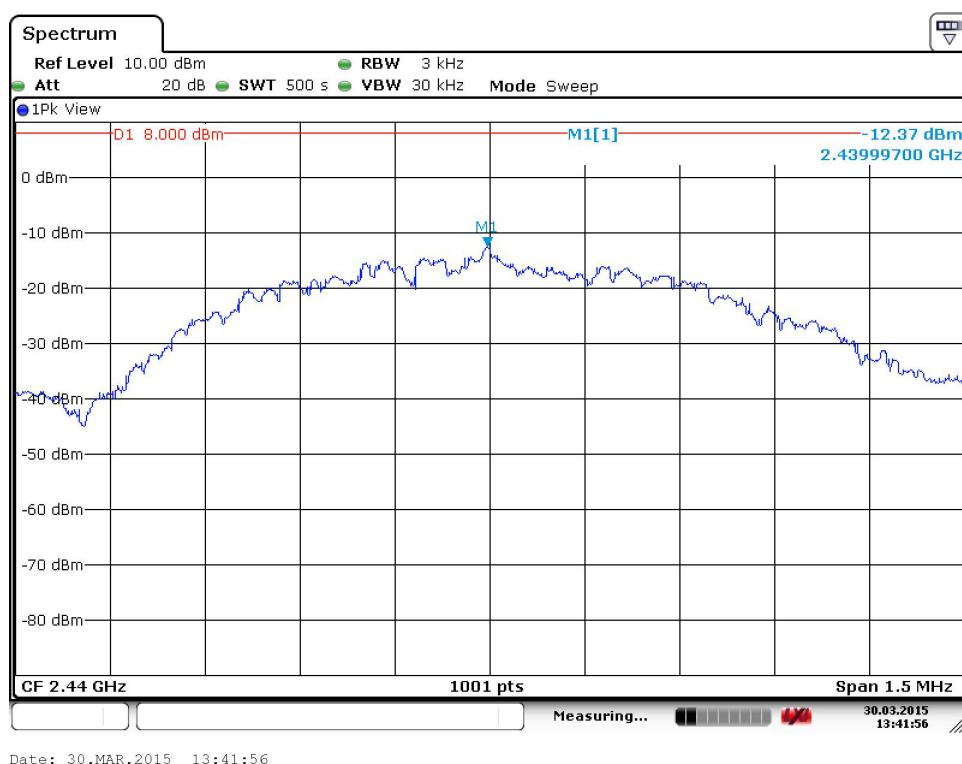
If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 35dB for correction to 3 kHz.


Should all the above fail or any controversy develop regarding accuracy of measurement, the Laboratory will use the HP 89440A Vector Signal Analyzer for final measurement unless a clear showing can be made for a further alternate.

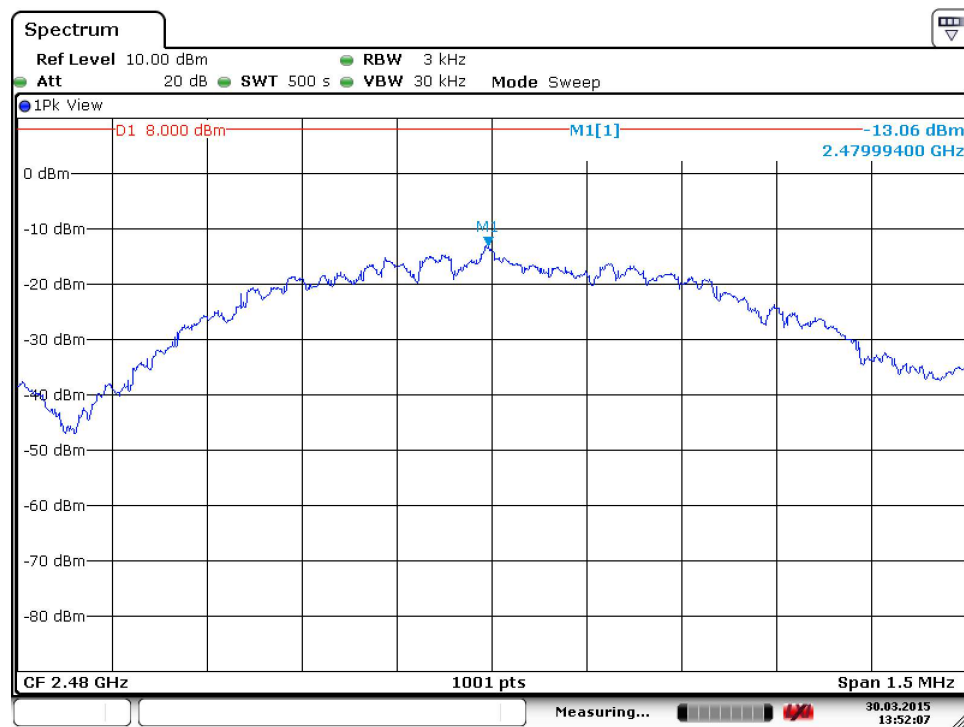
		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Power Spectral Density	
DNB Job Number:	56076	Date:	30 Mar 2015	Conformance Standard FCC Part 15 Clause 15.247(d)	
Customer:	D. Green Engineering LLC				
Model Number:	O				
Description:	Transceiver used in Hunting Dog tracking products				
	1Mbps data rate (Basic data rate)				
Environmental Conditions					
Ambient Temperature		Relative Humidity		Barometric Pressure	
19 °C		28 %		101.8 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>					
Channel	Freq MHz	Meas PSD (dBm)	Limit (dBm)	Delta (dBm)	Pass/Fail
Low	2402	-11.89	8.0	-19.89	Pass



		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Power Spectral Density	
DNB Job Number:	56076	Date:	30 Mar 2015	Conformance Standard FCC Part 15 Clause 15.247(d)	
Customer:	D. Green Engineering LLC				
Model Number:	O				
Description:	Transceiver used in Hunting Dog tracking products				
	1Mbps data rate (Basic data rate)				
Environmental Conditions					
Ambient Temperature		Relative Humidity		Barometric Pressure	
19 °C		28 %		101.8 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>					
Channel	Freq MHz	Meas PSD (dBm)	Limit (dBm)	Delta (dBm)	Pass/Fail
Middle	2440	-12.37	8.0	-20.37	Pass



		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Power Spectral Density	
DNB Job Number:	56076	Date:	30 Mar 2015	Conformance Standard FCC Part 15 Clause 15.247(d)	
Customer:	D. Green Engineering LLC				
Model Number:	O				
Description:	Transceiver used in Hunting Dog tracking products				
	1Mbps data rate (Basic data rate)				
Environmental Conditions					
Ambient Temperature		Relative Humidity		Barometric Pressure	
19 °C		28 %		101.8 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>					
Channel	Freq MHz	Meas PSD (dBm)	Limit (dBm)	Delta (dBm)	Pass/Fail
High	2480	-13.06	8.0	-21.06	Pass



Date: 30.MAR.2015 13:52:07

2.1055 Frequency stability.

Test Procedure: ANSI C63.10-2013

The frequency stability shall be measured with variation of ambient temperature from -30 to +50 degrees centigrade and the voltage shall be measured at 85% and 115% of the nominal voltage.

Use the following spectrum analyzer settings:

Span = 5MHz

RBW = 100 kHz

VBW RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Set marker M1 On the peak of the channel, set marker M2 on the -30dB down point of the leading edge of the channel, set marker M3 on the -30dB down point of the trailing edge of the channel. Record this data in the appropriate table.


Verify that the lower channel does not exceed below the lower band edge and the upper channel does not exceed the upper band edge.

Temperature Stability:


Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10 centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. Temperature range data shall be recorded in the table.

Voltage Stability:

Vary primary supply voltage from 85 to 115 percent of the nominal value or values in the case of a nominal voltage range.

	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Measurement Test Set Up	
DNB Job Number:	56076	Date: 8 May 2015	Conformance Standard FCC Part 15
Customer:	D. Green Engineering LLC		
Model Number:	O		
Description:	Transceiver used in Hunting Dog tracking products		Clause 15.247
Frequency Stability Measurement Set Up			



		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		XMTR Frequency Range			
DNB Job Number:		56076		Date: 8 May 2015		Conformance Standard FCC Part 15	
Customer:		D. Green Engineering LLC					
Model Number:		O					
Description:		Transceiver used in Hunting Dog tracking products				Clause 2.1055	
		1Mbps data rate (Basic data rate)					
Environmental Conditions							
Ambient Temperature			Relative Humidity			Barometric Pressure	
21 °C			25 %			101.2 kPa	
EUT performed within the requirements of the applicable standard <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>Les Payne</i>							
TEST CONDITIONS		Measured Frequency Bandwidth					
		Lo Channel		Mid Channel		Hi Channel	
Temperature	Voltage	Fl	Fh	Fl	Fh	Fl	Fh
-30.00 °C	3.70 Vdc	2.401774690	2.402295670	2.439800200	2.440251770	2.479785800	2.480253960
-20.00 °C	3.70 Vdc	2.401803200	2.402260500	2.439811900	2.440243100	2.479806100	2.480253460
-10.00 °C	3.70 Vdc	2.401791600	2.402263400	2.439797400	2.440272100	2.479811900	2.480259250
0.00 °C	3.70 Vdc	2.401782900	2.402280800	2.439823400	2.440248900	2.479823400	2.480238990
10.00 °C	3.70 Vdc	2.401809000	2.402246000	2.439817700	2.440246000	2.479835000	2.480236090
20.00 °C	3.70 Vdc	2.401806100	2.402246000	2.439820500	2.440251800	2.479840800	2.480215830
25.00 °C	3.145 Vdc	2.401792050	2.402252250	2.439817700	2.440220000	2.479808900	2.480246000
25.00 °C	3.70 Vdc	2.401783370	2.402266730	2.439806100	2.440237300	2.479840800	2.480210040
25.00 °C	4.255 Vdc	2.401806520	2.402240680	2.439820500	2.440217100	2.479800200	2.480251800
30.00 °C	3.70 Vdc	2.401806100	2.402228700	2.439814800	2.440228700	2.479843700	2.480204250
40.00 °C	3.70 Vdc	2.401803200	2.402220000	2.439800300	2.440237300	2.479846600	2.480201360
50.00 °C	3.70 Vdc	2.401809000	2.402222900	2.439794500	2.440228700	2.479855300	2.480181100
55.00 °C	3.70 Vdc	2.401809000	2.402225800	2.439788700	2.440234400	2.479852400	2.480186890

Note 1 : Shaded area represents nominal voltage and temperature range.

Note 2 : Fl = Lower channel frequency edge (-30dB down)
Fh = Upper channel frequency edge (-30dB down)

2.1033 (b) (7) Equipment Photographs

Photo 1	Internal	Top of PCB
Photo 2	Internal	Bottom of PCB
Photo 3	External	
Photo 3	External	

Photo 1 Internal Top of PCB

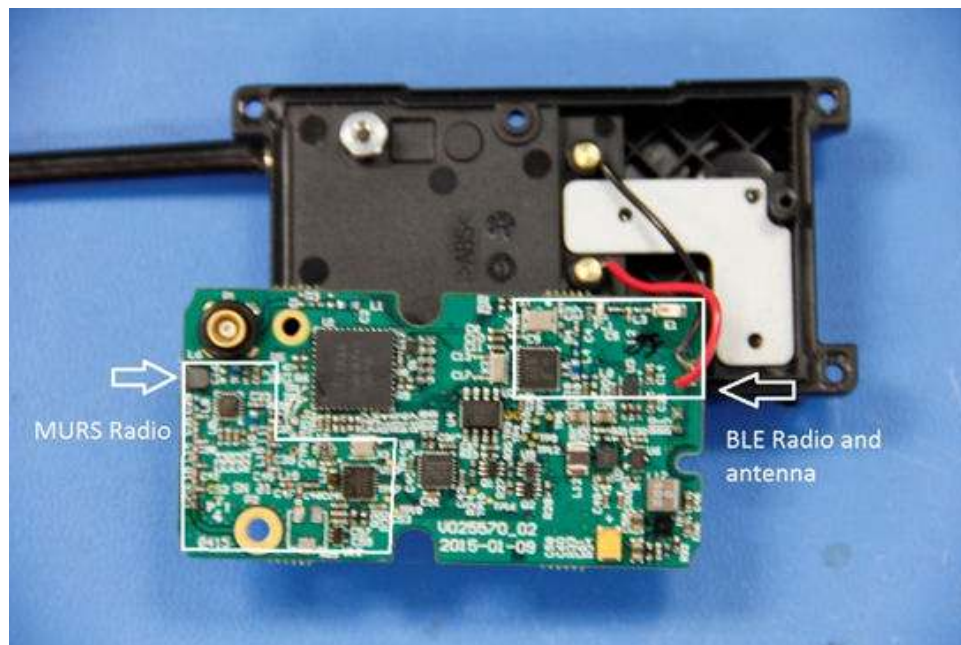


Photo 2 Internal Bottom of PCB



Photo 3 External

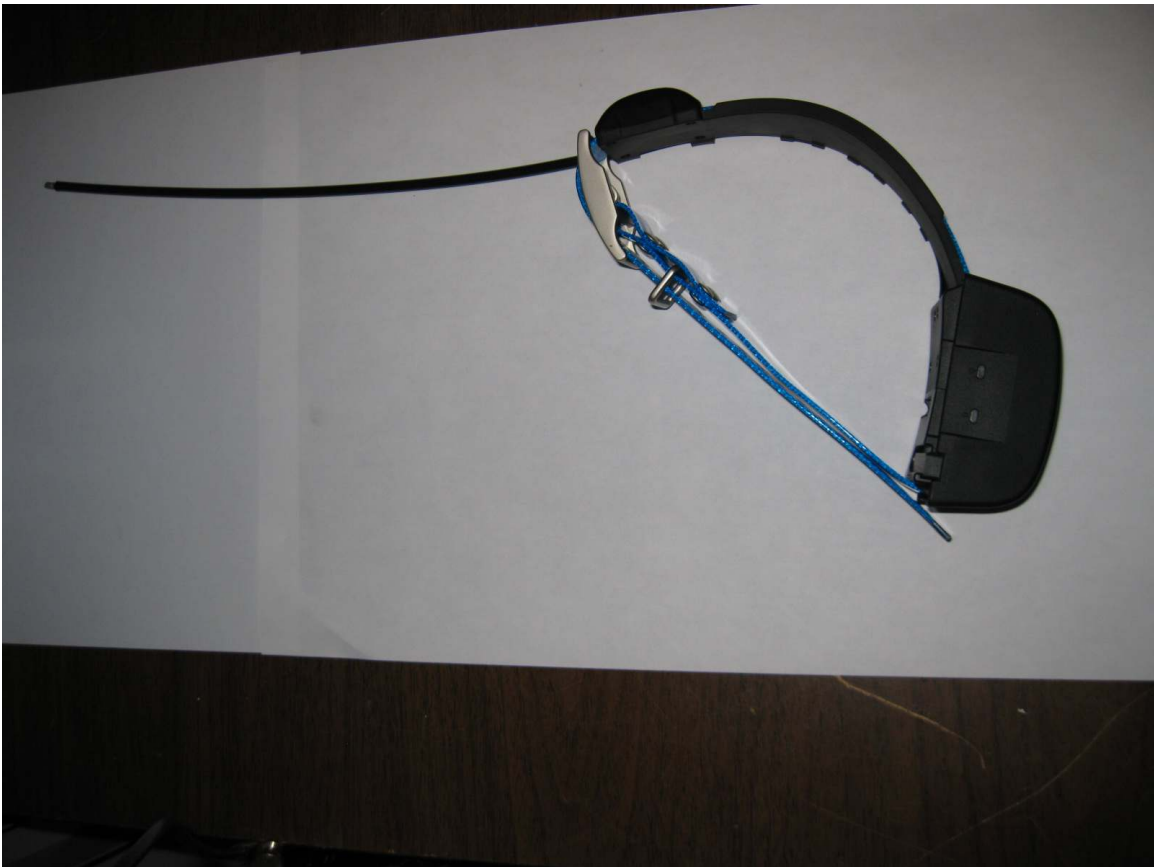
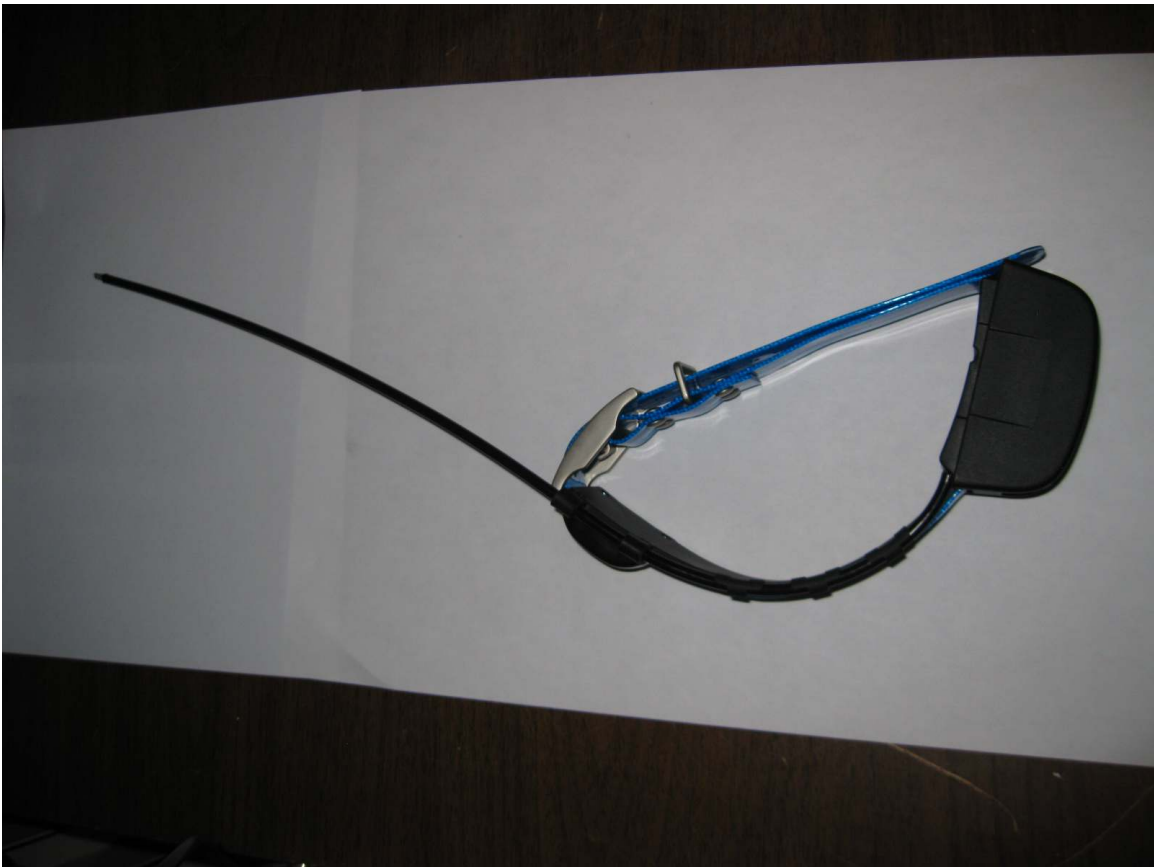


Photo 4

External



End of Report UT56076A-003