

**Application for Certification
For a Transmitter.**

Vutiliti Inc.
126 W. Sego Lily Drive, Suite 150
Sandy, UT 84070

Limited Modular LoRa Transmitter

M/N: VUHDRF1

FCC ID: 2APCG-VUHDRF1

REPORT # UT86088B-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, RSS-247 Issue 2, and other applicable sections of the rules as indicated herein.

Prepared By:

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

31 Mar 2018

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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.

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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)
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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	12 Jan 2019
LISN	FisherFCCLISN-50/250/25/8	U-062	5003	13 Nov 2018
Spectrum Analyzer	Agilent/E7401A	U-257	MY42000103	26 Dec 2019
CDN 16 amp	Fischer/FCC801M316A	U-169	64	10 Jul 2019
TILE Software	ETS Lindgren/ 3.4.11.13	U-317	8112006	08 Mar 2019
Current Probe	Solar/ 6741-1	U-267	966727	15 Dec 2019

TEST EQUIPMENT LIST - RADIATED EMISSIONS				
Description	Manufacturer/MN	Asset #	Serial #	Cal Due
Amplifier	HP/8447D	U-065	2727A06180	17 May 2019
Bicon Antenna	SCH/BBA9106	U-186	7	08 May 2019
Log P Antenna	SCH/UHAL09107	U-010	10	26 Dec 2019
DRG Horn Antenna	AH Systems/SAS-571	U-071	417	10 Jul 2019
Spectrum Analyzer	Agilent/E7401A	U-257	MY42000103	26 Dec 2019
Spectrum Analyzer	R&S/FSV30	U-248	101367	12 Aug 2018
TILE Software	ETS- Lindgern/ 3.4.11.13	U-317	8112006	08 Mar 2019

TEST EQUIPMENT LIST - ANTENNA CONDUCTED				
Description	Manufacturer/MN	Asset #	Serial #	Cal Due
Spectrum Analyzer	R&S/FSV30	U-248	101367	12 Aug 2018

1.4 Test Summary Cross Reference

Test Item	FCC Requirement	IC Requirement	Test Method	Result
Antenna Requirement	FCC Part 15, Subpart C Section 15.203 / 15.247	RSS-Gen Section 8.1.3	---	Pass
AC Power Line Conducted Emissions	FCC Part 15, Subpart C Section 15.207	RSS-Gen Section 8.8	ANSI C63.10 (2013) Section 6.2	Pass
Minimum 6dB Bandwidth	FCC Part 15, Subpart C Section 15.247 (a,2)	RSS-247 Issue 2 Feb 2017 Section 5.2	ANSI C63.10 (2013) Section 11.8.1	Pass
99% Occupied Bandwidth	---	RSS-Gen Section 6.6	RSS-Gen Section 6.6	Pass
Conducted Peak Output Power	FCC Part 15, Subpart C Section 15.247 (a,2,b,3)	RSS-247 Issue 2 Feb 2017 Section 5.4	ANSI C63.10 (2013) Section 11.9.1.2	Pass
Power Spectrum Density	FCC Part 15, Subpart C Section 15.247 (a,2,e)	RSS-247 Issue 1 May 2015 Section 5.2	ANSI C63.10 (2013) Section 11.10.2	Pass
Conducted Spurious Emissions and Band Edge	FCC Part 15, Subpart C Section 15.247 (a,2,d)	RSS-247 Issue 2 Feb 2017 Section 5.5	ANSI C63.10 (2013) Section 11.12.2.4	Pass
Radiated Spurious Emissions and Band Edge	FCC Part 15, Subpart C Section 15.209 / 15.205	RSS-247 Issue 2 Feb 2017 Section 5.5	ANSI C63.10 (2013) Section 6.4, 6.5, 6.6, 6.10	Pass

Preliminary scans were performed to determine worst case modulation, packet length, and data rates. Only worst case data has been recorded within the body of the test report.

1.5 Measurement Uncertainty

Measurement Type	Uncertainty
AC Conducted Emissions	± 1.67 dB
OATS - Radiated Emissions - Vertical Biconical (30-300MHz)	± 4.17 dB
OATS - Radiated Emissions - Horizontal Biconical (30-300MHz)	± 4.22 dB
OATS - Radiated Emissions - Vertical Log Periodic (300-100MHz)	± 4.92 dB
OATS - Radiated Emissions - Horizontal Log Periodic (300-1000MHz)	± 4.79 dB
OATS - Radiated Emissions - Vertical DRG Horn (> 1GHz)	± 5.74 dB
OATS - Radiated Emissions - Horizontal DRG Horn (>1GHz)	± 5.80 dB
Antenna Conducted Measurements	± 1.96 dB

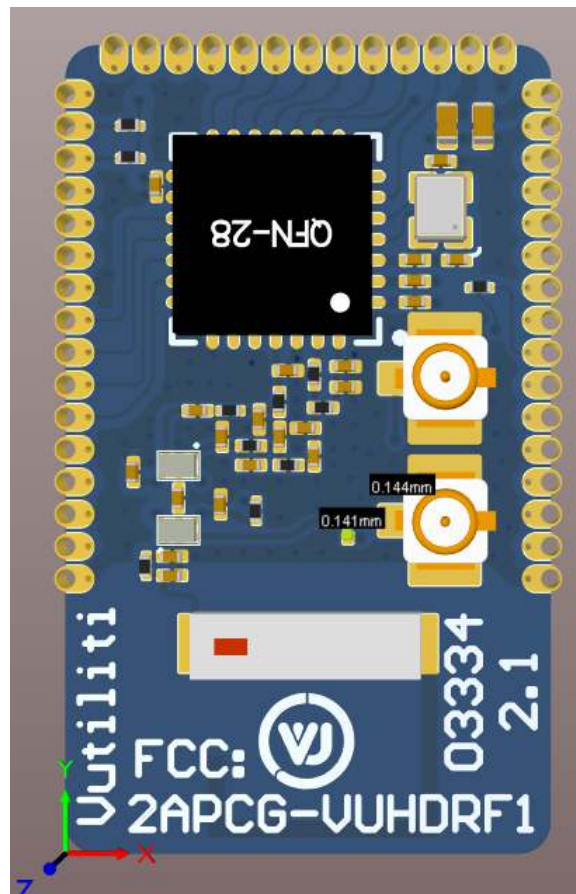
2.1033 (b) (1) Application for Certification

Name of Applicant:	Vutiliti Inc. 126 W. Segoe Lily Drive, Suite 150 Sandy, UT 84070		
FRN Number:	0027379361		
Name of Manufacturer :	Vutiliti Inc. 126 W. Segoe Lily Drive, Suite 150 Sandy, UT 84070		
Description:	Limited Modular LoRa Transmitter		
Model Number(s):	VUHDRF1		
Anticipated Production Quantity:	Multiple Units		
Frequency Band:	LoRa 125kHz (FHSS)	902 - 928 MHz	
	LoRa 500kHz (DTS)	902 - 928 MHz	
Rated Power:	LoRa 125kHz (FHSS)	15.27dBm (34mW)	
	LoRa 500kHz (DTS)	15.44dBm (35mW)	
Type of Signal:	LoRa 125kHz (FHSS) LoRa 500kHz (DTS)		
Channels:	LoRa 125kHz (FHSS)	64 Channels	
	LoRa 500kHz (DTS)	16 Channels	
Max Data Rate:	27kbps - Data transmission is not continuous, it happens for short intervals for short periods of time.		
Antenna Type:	External - Monopole		
Antenna Gain:	External 2.5dBi		

2.1033 (b) (2) FCC Identifier

Model Number: VUHDRF1
FCC ID: 2APCG-VUHDRF1

Figure 1 - Label



2.1033 (b) (3) Installation and Operating Instructions

Supplied separately.

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

Supplied separately for confidentiality.

2.1033 (b) (5) Block Diagram

Supplied separately for confidentiality.

2.1033 (b) (6) Report of Measurements

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Pass - Antenna gain is equal to or less than 6dBi

Pass - The antenna utilizes a unique coupling to the antenna. The end user can not use a different antenna other than the specific type and gain as specified by the manufacturer. Furthermore this module shall only be used with Vutiliti Inc products.

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.

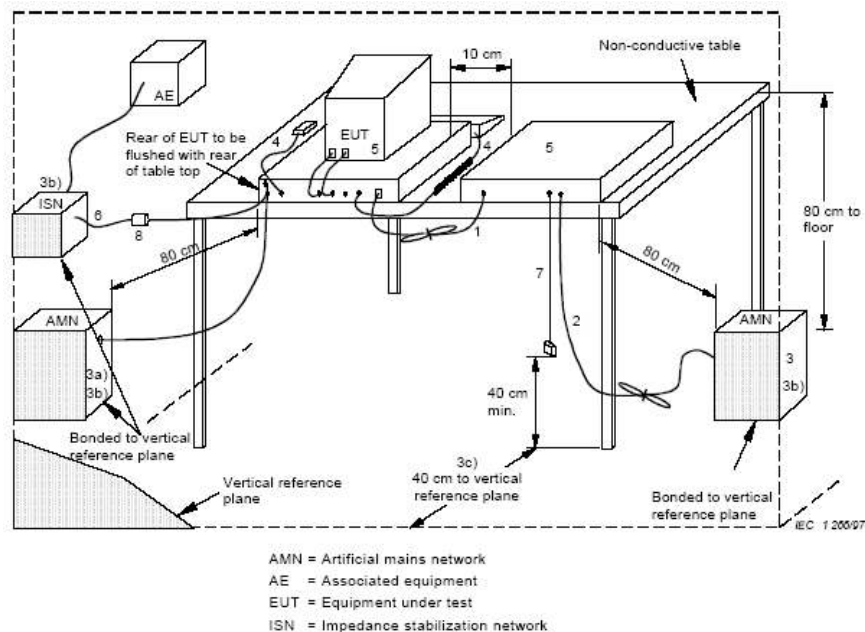
Frequency of emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 - 0.5	66 to 56*	56 to 46*
0.5 - 5	56	46
5 - 30	60	50

* Decreases with the logarithm of the frequency.

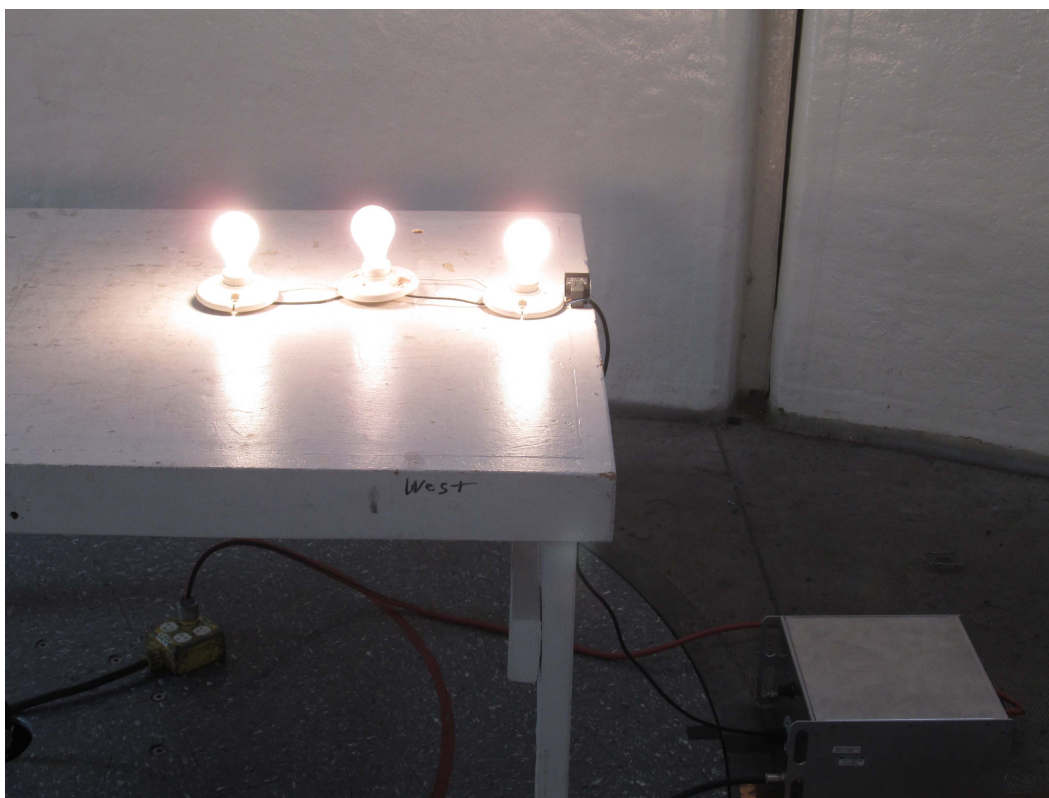
EUT operating conditions:

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:	86088	Date: 10 May 2018	Specification [X] 15.207 [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.		
Model Number:	VUHDRF1		
Description:	LoRa Modular Transmitter		
TEST SET UP - CONDUCTED EMISSIONS			



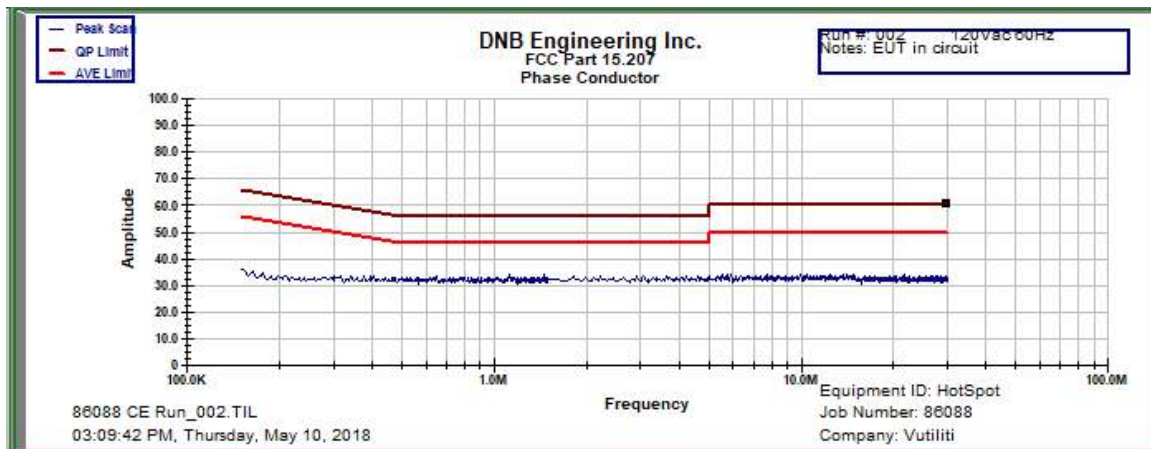
1100 E Chalk Creek Road
Coalville, UT 84017
(435) 336-4433
FAX (435) 336-4436

Conducted Emissions

DNB Job Number:	86088	Date:				10 May 2018	Specification [X] 15.207 [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.						
Model Number:	VUHDRF1						
Description:	LoRa Modular Transmitter						
EUT is in conformance with FCC 15.207		X	YES		NO	Signed	J Payne

CONDUCTED EMISSIONS

Freq in MHz	Meter Reading	Factors in dB		Corr'd Reading	Limit		Lead	Measure Type	Delta
		LISN	Cable		dBuV	Type			
0.646	33.51	0.00	0.00	33.51	46.00	AVE	Phase	Peak	-12.49
0.805	33.23	0.00	0.00	33.23	46.00	AVE	Phase	Peak	-12.77
1.119	34.10	0.00	0.10	34.20	46.00	AVE	Phase	Peak	-11.80
1.443	34.17	0.00	0.10	34.27	46.00	AVE	Phase	Peak	-11.73
1.804	33.50	0.00	0.20	33.70	46.00	AVE	Phase	Peak	-12.30
3.053	33.72	0.00	0.30	34.02	46.00	AVE	Phase	Peak	-11.98





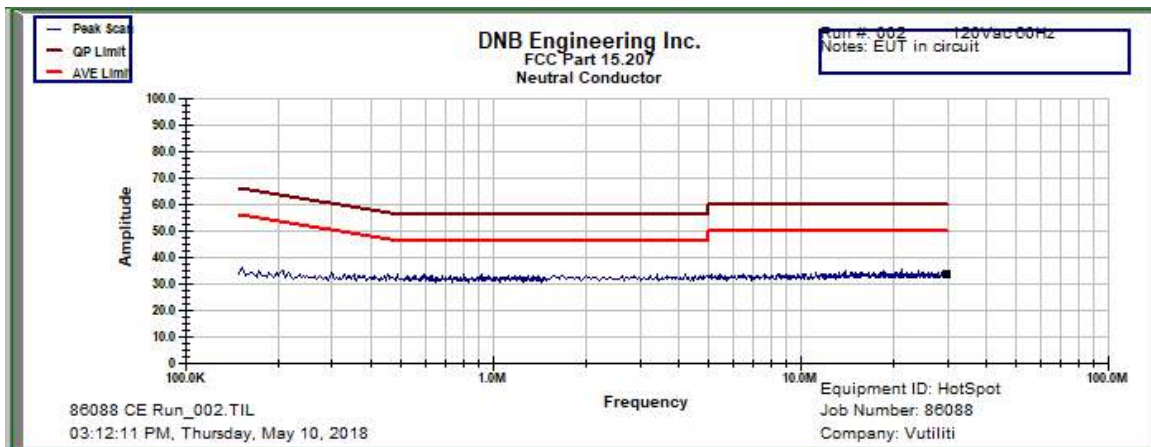
1100 E Chalk Creek Road
Coalville, UT 84017
(435) 336-4433
FAX (435) 336-4436

Conducted Emissions

DNB Job Number:	86088	Date:	10 May 2018	Specification
Customer:	Vutiliti Inc.	[X] 15.207 [X] ANSI C63.10-2013		
Model Number:	VUHDRF1			
Description:	LoRa Modular Transmitter			
EUT is in conformance with FCC 15.207				X YES NO Signed
				J Payne

CONDUCTED EMISSIONS

Freq in MHz	Meter Reading	Factors in dB		Corr'd Reading	Limit		Lead	Measure Type	Delta
		LISN	Cable		dBuV	Type			
0.599	33.85	0.00	0.00	33.85	46.00	AVE	Neutral	Peak	-12.15
0.805	34.04	0.00	0.00	34.04	46.00	AVE	Neutral	Peak	-11.96
0.916	33.54	0.00	0.00	33.54	46.00	AVE	Neutral	Peak	-12.46
1.568	33.35	0.00	0.20	33.55	46.00	AVE	Neutral	Peak	-12.45
2.850	33.44	0.00	0.30	33.74	46.00	AVE	Neutral	Peak	-12.26
3.424	33.85	0.00	0.40	34.25	46.00	AVE	Neutral	Peak	-11.75



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.

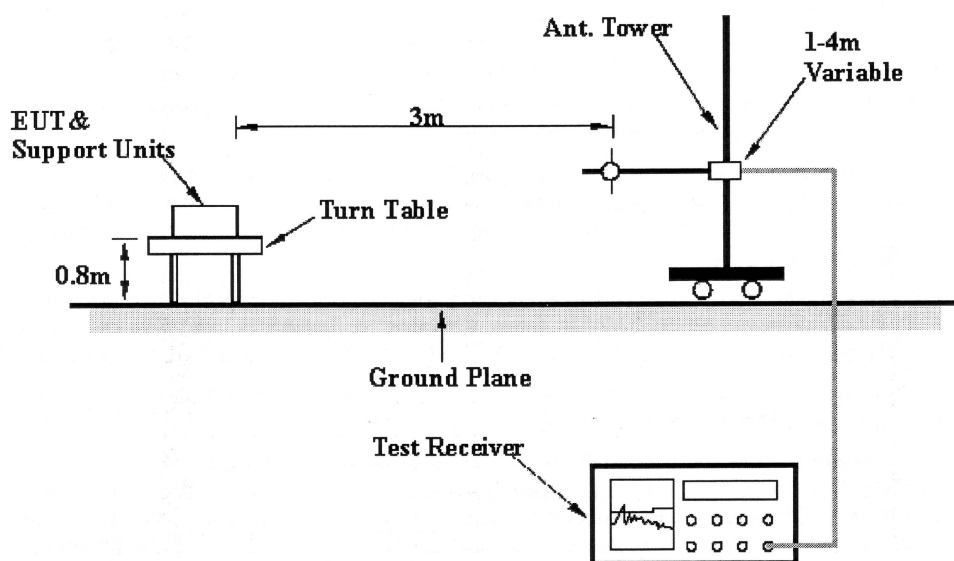
Sufficient precautions shall be taken to ensure that reflections from extraneous objects adjacent to the site do not degrade the measurement results, in particular:

- 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.
- EUT was positioned in three orthogonal axis - only the worst case data (X-Axis) has been recorded

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*(Log ₁₀ (2400/F(kHz)))	300
0.490 - 1.705	24000/F(kHz)	20*(Log ₁₀ (24000/F(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 (General)		
DNB Job Number:	86088	Date:	7 Mar 2018	Specification [X] 15.209 [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.			
Model Number:	VUHDRF1			
Description:	LoRa Modular Transmitter			
	Test Set Up			



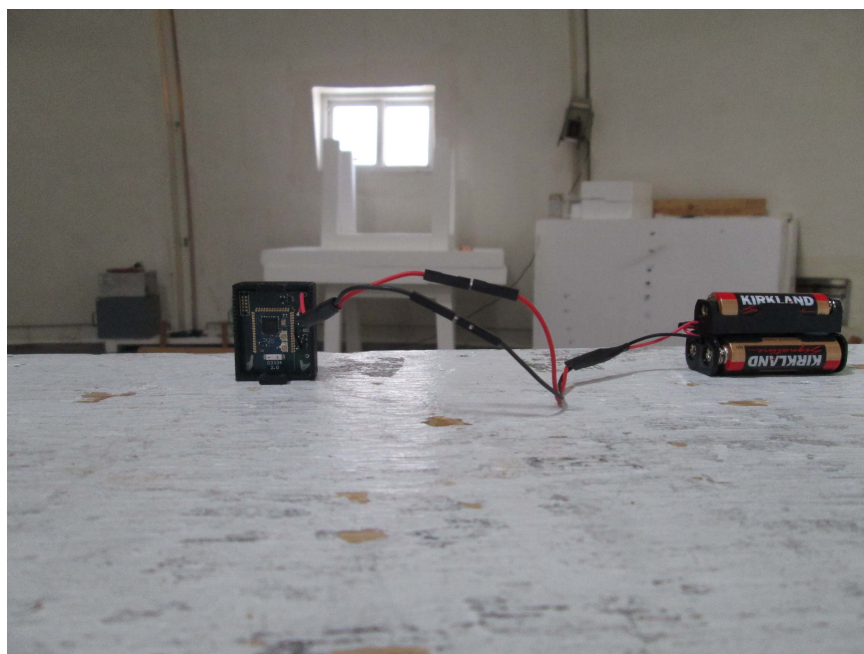
	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (General)		
DNB Job Number:	86088	Date:	7 Mar 2018	Specification [X] 15.209 [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.			
Model Number:	VUHDRF1			
Description:	LoRa Modular Transmitter			
Test Set Up - Vertical - 30-1000MHz				



	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (General)		
DNB Job Number:	86088	Date:	7 Mar 2018	Specification [X] 15.209 [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.			
Model Number:	VUHDRF1			
Description:	LoRa Modular Transmitter			
X-Axis				



	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (General)		
DNB Job Number:	86088	Date:	7 Mar 2018	Specification [X] 15.209 [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.			
Model Number:	VUHDRF1			
Description:	LoRa Modular Transmitter			
Y-Axis				



	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (General)	
DNB Job Number:	86088	Date: 7 Mar 2018	Specification [X] 15.209 [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.		
Model Number:	VUHDRF1		
Description:	LoRa Modular Transmitter		
Z-Axis			



		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Radiated Emissions (General)							
DNB Job Number:		86088		Date:		7 Mar 2018		Specification [X] 15.209 [X] ANSI C63.10-2013			
Customer:		Vutiliti Inc.									
Model Number:		VUHDRF1									
Description:											
EUT is in conformance with FCC 15.209				X	YES		NO	Signed	J Payne		
X - Axis											
FREQ (Mhz)	S/A Reading	Correction Factors (dB)			dBuV/m			Positions			
		Ant	Cbl	Amp	Corr	Lim	Delta	Typ	Tbl	Pl	Hgt
54.783	29.88	6.90	1.10	26.60	11.28	40.00	-28.72	QP	56	Horz	4.00
67.128	42.94	7.16	1.27	26.53	24.84	40.00	-15.16	QP	222	Vert	2.30
732.757	30.93	23.00	5.30	27.67	31.56	46.00	-14.44	QP	332	Horz	1.20
732.817	35.48	23.00	5.30	27.67	36.11	46.00	-9.89	QP	326	Vert	3.50
892.798	24.68	23.94	5.78	27.41	26.99	46.00	-19.01	QP	6	Vert	2.15
Y - Axis											
FREQ (Mhz)	S/A Reading	Correction Factors (dB)			dBuV/m			Positions			
		Ant	Cbl	Amp	Corr	Lim	Delta	Typ	Tbl	Pl	Hgt
40.028	29.67	10.49	0.90	26.60	14.46	40.00	-25.54	QP	49	Vert	1.00
263.944	21.44	12.37	2.88	25.90	10.79	46.00	-35.21	QP	132	Horz	4.00
731.809	34.31	23.00	5.30	27.67	34.93	46.00	-11.07	QP	273	Vert	3.20
732.735	27.53	23.00	5.30	27.67	28.16	46.00	-17.84	QP	67	Horz	4.00
892.814	24.82	23.94	5.78	27.41	27.13	46.00	-18.87	QP	25	Vert	2.10
X - Axis											
FREQ (Mhz)	S/A Reading	Correction Factors (dB)			dBuV/m			Positions			
		Ant	Cbl	Amp	Corr	Lim	Delta	Typ	Tbl	Pl	Hgt
67.141	43.61	7.16	1.27	26.53	25.51	40.00	-14.49	QP	123	Vert	1.85
137.714	37.07	8.04	2.08	26.31	20.88	43.50	-22.62	QP	55	Horz	3.11
158.236	23.96	10.01	2.19	26.30	9.87	43.50	-33.63	QP	299	Vert	1.00
729.392	27.32	22.99	5.29	27.67	27.93	46.00	-18.07	QP	318	Horz	4.00
730.647	35.42	22.99	5.29	27.67	36.03	46.00	-9.97	QP	182	Vert	1.00

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 = $\geq$ 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 repeat the measurement using the average detector of the spectrum analyzer. 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.

Note 1: 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 2: Highest frequency investigated was the tenth harmonic of the fundamental, no radiated emissions were detected above the 3rd harmonic.

Note 3: This module can operate with the BLE and the LoRa (125kHz FHSS) simultaneously OR the BLE and the LoRa (500kHz DTS) simultaneously. The worst case of each is listed within this test report by associated transmitter. Therefore, the following data sheets are organized by BLE, 125kHz LoRa, 500 kHz LoRa, Low, Mid, High Channels, and X, Y, Z axis.

	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (Spurious)		
DNB Job Number:	86088	Date:	13 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.			
Model Number:	VUHDRF1			
Description:	LoRa Modular Transmitter			
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:	86088	Date: 13-16 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti		
Model Number:	VUHDRF1		
Description:	BLE Modular Transmitter BLE and LoRa Transmitter Operating		

BLE - Low Channel - X Axis

FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
2402	85.08	29.45	3.36	26.32	91.56	N/A	N/A	Peak	Peak	Hor
2402	84.66	29.45	3.36	26.32	91.14	N/A	N/A	Ave	Ave	Hor
4804	39.55	32.99	7.80	25.82	54.53	74.00	-19.47	Peak	Peak	Hor
4804	26.95	32.99	7.80	25.82	41.93	54.00	-12.07	Ave	Ave	Hor
7206	39.85	37.18	8.29	25.53	59.78	74.00	-14.22	Peak	Peak	Hor
7206	27.26	37.18	8.29	25.53	47.19	54.00	-6.81	Ave	Ave	Hor
9608	44.58	37.84	5.42	24.91	62.93	74.00	-11.07	Peak	Peak	Hor
9608	32.02	37.84	5.42	24.91	50.37	54.00	-3.63	Ave	Ave	Hor
12010	24.83	39.73	11.12	24.52	51.17	74.00	-22.83	Peak	Peak	Hor
12010	12.27	39.73	11.12	24.52	38.61	54.00	-15.39	Ave	Ave	Hor
14412	21.86	41.51	13.51	23.09	53.78	74.00	-20.22	Peak	Peak	Hor
14412	9.53	41.51	13.51	23.09	41.45	54.00	-12.55	Ave	Ave	Hor
16814	23.16	41.92	14.38	23.56	55.89	74.00	-18.11	Peak	Peak	Hor
16814	10.72	41.92	14.38	23.56	43.45	54.00	-10.55	Ave	Ave	Hor
2402	78.74	29.45	3.36	26.32	85.22	N/A	N/A	Peak	Peak	Vert
2402	78.26	29.45	3.36	26.32	84.74	N/A	N/A	Ave	Ave	Vert
4804	39.89	32.99	7.80	25.82	54.87	74.00	-19.13	Peak	Peak	Vert
4804	27.05	32.99	7.80	25.82	42.03	54.00	-11.97	Ave	Ave	Vert
7206	40.41	37.18	8.29	25.53	60.34	74.00	-13.66	Peak	Peak	Vert
7206	27.26	37.18	8.29	25.53	47.19	54.00	-6.81	Ave	Ave	Vert
9608	44.31	37.84	5.42	24.91	62.66	74.00	-11.34	Peak	Peak	Vert
9608	32.01	37.84	5.42	24.91	50.36	54.00	-3.64	Ave	Ave	Vert
12010	24.77	39.73	11.12	24.52	51.11	74.00	-22.89	Peak	Peak	Vert
12010	12.26	39.73	11.12	24.52	38.60	54.00	-15.40	Ave	Ave	Vert
14412	21.94	41.51	13.51	23.09	53.86	74.00	-20.14	Peak	Peak	Vert
14412	9.53	41.51	13.51	23.09	41.45	54.00	-12.55	Ave	Ave	Vert
16814	23.09	41.92	14.38	23.56	55.82	74.00	-18.18	Peak	Peak	Vert
16814	10.69	41.92	14.38	23.56	43.42	54.00	-10.58	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:	86088	Date: 13-16 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti		
Model Number:	VUHDRF1		
Description:	BLE Modular Transmitter BLE and LoRa Transmitter Operating		

BLE - Low Channel - Y Axis

FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
2402	74.76	29.45	3.36	26.32	81.24	N/A	N/A	Peak	Peak	Hor
2402	74.24	29.45	3.36	26.32	80.72	N/A	N/A	Ave	Ave	Hor
4804	39.48	32.99	7.80	25.82	54.46	74.00	-19.54	Peak	Peak	Hor
4804	27.06	32.99	7.80	25.82	42.04	54.00	-11.96	Ave	Ave	Hor
7206	39.76	37.18	8.29	25.53	59.69	74.00	-14.31	Peak	Peak	Hor
7206	27.27	37.18	8.29	25.53	47.20	54.00	-6.80	Ave	Ave	Hor
9608	44.78	37.84	5.42	24.91	63.13	74.00	-10.87	Peak	Peak	Hor
9608	32.02	37.84	5.42	24.91	50.37	54.00	-3.63	Ave	Ave	Hor
12010	25.29	39.73	11.12	24.52	51.63	74.00	-22.37	Peak	Peak	Hor
12010	12.26	39.73	11.12	24.52	38.60	54.00	-15.40	Ave	Ave	Hor
14412	21.78	41.51	13.51	23.09	53.70	74.00	-20.30	Peak	Peak	Hor
14412	9.54	41.51	13.51	23.09	41.46	54.00	-12.54	Ave	Ave	Hor
16814	23.78	41.92	14.38	23.56	56.51	74.00	-17.49	Peak	Peak	Hor
16814	10.73	41.92	14.38	23.56	43.46	54.00	-10.54	Ave	Ave	Hor
2402	85.16	29.45	3.36	26.32	91.64	N/A	N/A	Peak	Peak	Vert
2402	84.73	29.45	3.36	26.32	91.21	N/A	N/A	Ave	Ave	Vert
4804	39.39	32.99	7.80	25.82	54.37	74.00	-19.63	Peak	Peak	Vert
4804	27.09	32.99	7.80	25.82	42.07	54.00	-11.93	Ave	Ave	Vert
7206	40.21	37.18	8.29	25.53	60.14	74.00	-13.86	Peak	Peak	Vert
7206	27.27	37.18	8.29	25.53	47.20	54.00	-6.80	Ave	Ave	Vert
9608	44.65	37.84	5.42	24.91	63.00	74.00	-11.00	Peak	Peak	Vert
9608	32.03	37.84	5.42	24.91	50.38	54.00	-3.62	Ave	Ave	Vert
12010	24.38	39.73	11.12	24.52	50.72	74.00	-23.28	Peak	Peak	Vert
12010	12.26	39.73	11.12	24.52	38.60	54.00	-15.40	Ave	Ave	Vert
14412	22.27	41.51	13.51	23.09	54.19	74.00	-19.81	Peak	Peak	Vert
14412	9.53	41.51	13.51	23.09	41.45	54.00	-12.55	Ave	Ave	Vert
16814	23.19	41.92	14.38	23.56	55.92	74.00	-18.08	Peak	Peak	Vert
16814	10.72	41.92	14.38	23.56	43.45	54.00	-10.55	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:	86088	Date: 13-16 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti		
Model Number:	VUHDRF1		
Description:	BLE Modular Transmitter BLE and LoRa Transmitter Operating		

BLE - Low Channel - Z Axis

FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
2402	87.22	29.45	3.36	26.32	93.70	N/A	N/A	Peak	Peak	Hor
2402	86.80	29.45	3.36	26.32	93.28	N/A	N/A	Ave	Ave	Hor
4804	39.37	32.99	7.80	25.82	54.35	74.00	-19.65	Peak	Peak	Hor
4804	27.47	32.99	7.80	25.82	42.45	54.00	-11.55	Ave	Ave	Hor
7206	40.03	37.18	8.29	25.53	59.96	74.00	-14.04	Peak	Peak	Hor
7206	27.25	37.18	8.29	25.53	47.18	54.00	-6.82	Ave	Ave	Hor
9608	44.68	37.84	5.42	24.91	63.03	74.00	-10.97	Peak	Peak	Hor
9608	32.02	37.84	5.42	24.91	50.37	54.00	-3.63	Ave	Ave	Hor
12010	24.90	39.73	11.12	24.52	51.24	74.00	-22.76	Peak	Peak	Hor
12010	12.26	39.73	11.12	24.52	38.60	54.00	-15.40	Ave	Ave	Hor
14412	22.07	41.51	13.51	23.09	53.99	74.00	-20.01	Peak	Peak	Hor
14412	9.54	41.51	13.51	23.09	41.46	54.00	-12.54	Ave	Ave	Hor
16814	23.38	41.92	14.38	23.56	56.11	74.00	-17.89	Peak	Peak	Hor
16814	10.72	41.92	14.38	23.56	43.45	54.00	-10.55	Ave	Ave	Hor
2402	75.86	29.45	3.36	26.32	82.34	N/A	N/A	Peak	Peak	Vert
2402	75.39	29.45	3.36	26.32	81.87	N/A	N/A	Ave	Ave	Vert
4804	39.64	32.99	7.80	25.82	54.62	74.00	-19.38	Peak	Peak	Vert
4804	27.07	32.99	7.80	25.82	42.05	54.00	-11.95	Ave	Ave	Vert
7206	39.83	37.18	8.29	25.53	59.76	74.00	-14.24	Peak	Peak	Vert
7206	27.27	37.18	8.29	25.53	47.20	54.00	-6.80	Ave	Ave	Vert
9608	44.83	37.84	5.42	24.91	63.18	74.00	-10.82	Peak	Peak	Vert
9608	32.03	37.84	5.42	24.91	50.38	54.00	-3.62	Ave	Ave	Vert
12010	24.34	39.73	11.12	24.52	50.68	74.00	-23.32	Peak	Peak	Vert
12010	12.26	39.73	11.12	24.52	38.60	54.00	-15.40	Ave	Ave	Vert
14412	21.69	41.51	13.51	23.09	53.61	74.00	-20.39	Peak	Peak	Vert
14412	9.56	41.51	13.51	23.09	41.48	54.00	-12.52	Ave	Ave	Vert
16814	23.20	41.92	14.38	23.56	55.93	74.00	-18.07	Peak	Peak	Vert
16814	10.73	41.92	14.38	23.56	43.46	54.00	-10.54	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:	86088	Date: 13-16 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti		
Model Number:	VUHDRF1		
Description:	BLE Modular Transmitter BLE and LoRa Transmitter Operating		

BLE - Middle Channel - X axis

FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
2440	84.76	29.54	3.42	26.32	91.40	N/A	N/A	Peak	Peak	Hor
2440	84.32	29.54	3.42	26.32	90.96	N/A	N/A	Ave	Ave	Hor
4880	41.41	33.27	7.88	25.80	56.76	74.00	-17.24	Peak	Peak	Hor
4880	27.24	33.27	7.88	25.80	42.59	54.00	-11.41	Ave	Ave	Hor
7320	40.13	37.11	8.45	25.51	60.18	74.00	-13.82	Peak	Peak	Hor
7320	27.17	37.11	8.45	25.51	47.22	54.00	-6.78	Ave	Ave	Hor
9760	43.91	37.90	5.72	24.90	62.63	74.00	-11.37	Peak	Peak	Hor
9760	30.96	37.90	5.72	24.90	49.68	54.00	-4.32	Ave	Ave	Hor
12200	24.43	40.26	11.58	24.44	51.83	74.00	-22.17	Peak	Peak	Hor
12200	11.75	40.26	11.58	24.44	39.15	54.00	-14.85	Ave	Ave	Hor
14640	21.50	41.80	13.53	22.84	53.99	74.00	-20.01	Peak	Peak	Hor
14640	9.12	41.80	13.53	22.84	41.61	54.00	-12.39	Ave	Ave	Hor
17080	21.50	42.53	15.12	23.28	55.87	74.00	-18.13	Peak	Peak	Hor
17080	9.17	42.53	15.12	23.28	43.54	54.00	-10.46	Ave	Ave	Hor
2440	80.34	29.54	3.42	26.32	86.98	N/A	N/A	Peak	Peak	Vert
2440	79.88	29.54	3.42	26.32	86.52	N/A	N/A	Ave	Ave	Vert
4880	40.34	33.27	7.88	25.80	55.69	74.00	-18.31	Peak	Peak	Vert
4880	27.12	33.27	7.88	25.80	42.47	54.00	-11.53	Ave	Ave	Vert
7320	40.04	37.11	8.45	25.51	60.09	74.00	-13.91	Peak	Peak	Vert
7320	27.18	37.11	8.45	25.51	47.23	54.00	-6.77	Ave	Ave	Vert
9760	33.08	37.90	5.72	24.90	51.80	74.00	-22.20	Peak	Peak	Vert
9760	20.42	37.90	5.72	24.90	39.14	54.00	-14.86	Ave	Ave	Vert
12200	26.59	40.26	11.58	24.44	53.99	74.00	-20.01	Peak	Peak	Vert
12200	14.21	40.26	11.58	24.44	41.61	54.00	-12.39	Ave	Ave	Vert
14640	23.10	41.80	13.53	22.84	55.59	74.00	-18.41	Peak	Peak	Vert
14640	11.05	41.80	13.53	22.84	43.54	54.00	-10.46	Ave	Ave	Vert
17080	25.89	42.53	15.12	23.28	60.26	74.00	-13.74	Peak	Peak	Vert
17080	12.99	42.53	15.12	23.28	47.36	54.00	-6.64	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:	86088	Date: 13-16 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti		
Model Number:	VUHDRF1		
Description:	BLE Modular Transmitter BLE and LoRa Transmitter Operating		

BLE - Middle Channel - Y axis

FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
2440	75.83	29.54	3.42	26.32	82.47	N/A	N/A	Peak	Peak	Hor
2440	75.34	29.54	3.42	26.32	81.98	N/A	N/A	Ave	Ave	Hor
4880	40.16	33.27	7.88	25.80	55.51	74.00	-18.49	Peak	Peak	Hor
4880	27.16	33.27	7.88	25.80	42.51	54.00	-11.49	Ave	Ave	Hor
7320	39.50	37.11	8.45	25.51	59.55	74.00	-14.45	Peak	Peak	Hor
7320	27.18	37.11	8.45	25.51	47.23	54.00	-6.77	Ave	Ave	Hor
9760	43.51	37.90	5.72	24.90	62.23	74.00	-11.77	Peak	Peak	Hor
9760	30.90	37.90	5.72	24.90	49.62	54.00	-4.38	Ave	Ave	Hor
12200	24.16	40.26	11.58	24.44	51.56	74.00	-22.44	Peak	Peak	Hor
12200	11.74	40.26	11.58	24.44	39.14	54.00	-14.86	Ave	Ave	Hor
14640	21.23	41.80	13.53	22.84	53.72	74.00	-20.28	Peak	Peak	Hor
14640	9.13	41.80	13.53	22.84	41.62	54.00	-12.38	Ave	Ave	Hor
17080	21.98	42.53	15.12	23.28	56.35	74.00	-17.65	Peak	Peak	Hor
17080	9.18	42.53	15.12	23.28	43.55	54.00	-10.45	Ave	Ave	Hor
2440	85.53	29.54	3.42	26.32	92.17	N/A	N/A	Peak	Peak	Vert
2440	85.11	29.54	3.42	26.32	91.75	N/A	N/A	Ave	Ave	Vert
4880	40.18	33.27	7.88	25.80	55.53	74.00	-18.47	Peak	Peak	Vert
4880	27.21	33.27	7.88	25.80	42.56	54.00	-11.44	Ave	Ave	Vert
7320	39.87	37.11	8.45	25.51	59.92	74.00	-14.08	Peak	Peak	Vert
7320	27.18	37.11	8.45	25.51	47.23	54.00	-6.77	Ave	Ave	Vert
9760	43.24	37.90	5.72	24.90	61.96	74.00	-12.04	Peak	Peak	Vert
9760	30.92	37.90	5.72	24.90	49.64	54.00	-4.36	Ave	Ave	Vert
12200	24.52	40.26	11.58	24.44	51.92	74.00	-22.08	Peak	Peak	Vert
12200	11.75	40.26	11.58	24.44	39.15	54.00	-14.85	Ave	Ave	Vert
14640	21.72	41.80	13.53	22.84	54.21	74.00	-19.79	Peak	Peak	Vert
14640	9.13	41.80	13.53	22.84	41.62	54.00	-12.38	Ave	Ave	Vert
17080	21.56	42.53	15.12	23.28	55.93	74.00	-18.07	Peak	Peak	Vert
17080	9.17	42.53	15.12	23.28	43.54	54.00	-10.46	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013	
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
BLE - Middle Channel - Z axis										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
2440	86.91	29.54	3.42	26.32	93.55	N/A	N/A	Peak	Peak	Hor
2440	86.47	29.54	3.42	26.32	93.11	N/A	N/A	Ave	Ave	Hor
4880	40.18	33.27	7.88	25.80	55.53	74.00	-18.47	Peak	Peak	Hor
4880	27.50	33.27	7.88	25.80	42.85	54.00	-11.15	Ave	Ave	Hor
7320	39.86	37.11	8.45	25.51	59.91	74.00	-14.09	Peak	Peak	Hor
7320	27.20	37.11	8.45	25.51	47.25	54.00	-6.75	Ave	Ave	Hor
9760	43.74	37.90	5.72	24.90	62.46	74.00	-11.54	Peak	Peak	Hor
9760	30.95	37.90	5.72	24.90	49.67	54.00	-4.33	Ave	Ave	Hor
12200	24.61	40.26	11.58	24.44	52.01	74.00	-21.99	Peak	Peak	Hor
12200	11.75	40.26	11.58	24.44	39.15	54.00	-14.85	Ave	Ave	Hor
14640	22.12	41.80	13.53	22.84	54.61	74.00	-19.39	Peak	Peak	Hor
14640	9.13	41.80	13.53	22.84	41.62	54.00	-12.38	Ave	Ave	Hor
17080	22.09	42.53	15.12	23.28	56.46	74.00	-17.54	Peak	Peak	Hor
17080	9.17	42.53	15.12	23.28	43.54	54.00	-10.46	Ave	Ave	Hor
2440	78.63	29.54	3.42	26.32	85.27	N/A	N/A	Peak	Peak	Vert
2440	78.14	29.54	3.42	26.32	84.78	N/A	N/A	Ave	Ave	Vert
4880	39.70	33.27	7.88	25.80	55.05	74.00	-18.95	Peak	Peak	Vert
4880	27.08	33.27	7.88	25.80	42.43	54.00	-11.57	Ave	Ave	Vert
7320	39.87	37.11	8.45	25.51	59.92	74.00	-14.08	Peak	Peak	Vert
7320	27.18	37.11	8.45	25.51	47.23	54.00	-6.77	Ave	Ave	Vert
9760	43.56	37.90	5.72	24.90	62.28	74.00	-11.72	Peak	Peak	Vert
9760	30.90	37.90	5.72	24.90	49.62	54.00	-4.38	Ave	Ave	Vert
12200	24.16	40.26	11.58	24.44	51.56	74.00	-22.44	Peak	Peak	Vert
12200	11.75	40.26	11.58	24.44	39.15	54.00	-14.85	Ave	Ave	Vert
14640	22.04	41.80	13.53	22.84	54.53	74.00	-19.47	Peak	Peak	Vert
14640	9.12	41.80	13.53	22.84	41.61	54.00	-12.39	Ave	Ave	Vert
17080	22.47	42.53	15.12	23.28	56.84	74.00	-17.16	Peak	Peak	Vert
17080	9.16	42.53	15.12	23.28	43.53	54.00	-10.47	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013	
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
BLE - High Channel - X axis										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
2480	83.78	29.65	3.47	26.31	90.59	N/A	N/A	Peak	Peak	Hor
2480	83.34	29.65	3.47	26.31	90.15	N/A	N/A	Ave	Ave	Hor
4960	40.12	33.56	7.96	25.79	55.85	74.00	-18.15	Peak	Peak	Hor
4960	27.70	33.56	7.96	25.79	43.43	54.00	-10.57	Ave	Ave	Hor
7440	40.04	37.04	8.62	25.48	60.21	74.00	-13.79	Peak	Peak	Hor
7440	27.17	37.04	8.62	25.48	47.34	54.00	-6.66	Ave	Ave	Hor
9920	44.28	37.97	6.04	24.89	63.40	74.00	-10.60	Peak	Peak	Hor
9920	31.44	37.97	6.04	24.89	50.56	54.00	-3.44	Ave	Ave	Hor
12400	23.79	40.82	12.06	24.37	52.30	74.00	-21.70	Peak	Peak	Hor
12400	10.78	40.82	12.06	24.37	39.29	54.00	-14.71	Ave	Ave	Hor
14880	22.26	42.13	13.24	22.67	54.97	74.00	-19.03	Peak	Peak	Hor
14880	8.92	42.13	13.24	22.67	41.63	54.00	-12.37	Ave	Ave	Hor
17360	20.37	42.98	15.91	23.05	56.21	74.00	-17.79	Peak	Peak	Hor
17360	7.48	42.98	15.91	23.05	43.32	54.00	-10.68	Ave	Ave	Hor
2480	80.00	29.65	3.47	26.31	86.81	N/A	N/A	Peak	Peak	Vert
2480	79.50	29.65	3.47	26.31	86.31	N/A	N/A	Ave	Ave	Vert
4960	40.36	33.56	7.96	25.79	56.09	74.00	-17.91	Peak	Peak	Vert
4960	27.75	33.56	7.96	25.79	43.48	54.00	-10.52	Ave	Ave	Vert
7440	40.39	37.04	8.62	25.48	60.56	74.00	-13.44	Peak	Peak	Vert
7440	27.41	37.04	8.62	25.48	47.58	54.00	-6.42	Ave	Ave	Vert
9920	43.95	37.97	6.04	24.89	63.07	74.00	-10.93	Peak	Peak	Vert
9920	31.53	37.97	6.04	24.89	50.65	54.00	-3.35	Ave	Ave	Vert
12400	23.96	40.82	12.06	24.37	52.47	74.00	-21.53	Peak	Peak	Vert
12400	10.89	40.82	12.06	24.37	39.40	54.00	-14.60	Ave	Ave	Vert
14880	21.52	42.13	13.24	22.67	54.23	74.00	-19.77	Peak	Peak	Vert
14880	9.01	42.13	13.24	22.67	41.72	54.00	-12.28	Ave	Ave	Vert
17360	20.16	42.98	15.91	23.05	56.00	74.00	-18.00	Peak	Peak	Vert
17360	7.57	42.98	15.91	23.05	43.41	54.00	-10.59	Ave	Ave	Vert



1100 E Chalk Creek Road
Coalville, UT 84017
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Radiated Emissions (Spurious)

DNB Job Number:	86088	Date: 13-16 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti		
Model Number:	VUHDRF1		
Description:	BLE Modular Transmitter BLE and LoRa Transmitter Operating		

BLE - High Channel - Y axis

FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
2480	75.18	29.65	3.47	26.31	81.99	N/A	N/A	Peak	Peak	Hor
2480	74.65	29.65	3.47	26.31	81.46	N/A	N/A	Ave	Ave	Hor
4960	40.26	33.56	7.96	25.79	55.99	74.00	-18.01	Peak	Peak	Hor
4960	27.71	33.56	7.96	25.79	43.44	54.00	-10.56	Ave	Ave	Hor
7440	39.86	37.04	8.62	25.48	60.03	74.00	-13.97	Peak	Peak	Hor
7440	27.20	37.04	8.62	25.48	47.37	54.00	-6.63	Ave	Ave	Hor
9920	43.92	37.97	6.04	24.89	63.04	74.00	-10.96	Peak	Peak	Hor
9920	31.43	37.97	6.04	24.89	50.55	54.00	-3.45	Ave	Ave	Hor
12400	23.24	40.82	12.06	24.37	51.75	74.00	-22.25	Peak	Peak	Hor
12400	10.79	40.82	12.06	24.37	39.30	54.00	-14.70	Ave	Ave	Hor
14880	21.69	42.13	13.24	22.67	54.40	74.00	-19.60	Peak	Peak	Hor
14880	8.93	42.13	13.24	22.67	41.64	54.00	-12.36	Ave	Ave	Hor
17360	19.92	42.98	15.91	23.05	55.76	74.00	-18.24	Peak	Peak	Hor
17360	7.50	42.98	15.91	23.05	43.34	54.00	-10.66	Ave	Ave	Hor
2480	83.99	29.65	3.47	26.31	90.80	N/A	N/A	Peak	Peak	Vert
2480	83.53	29.65	3.47	26.31	90.34	N/A	N/A	Ave	Ave	Vert
4960	45.28	33.56	7.96	25.79	61.01	74.00	-12.99	Peak	Peak	Vert
4960	27.75	33.56	7.96	25.79	43.48	54.00	-10.52	Ave	Ave	Vert
7440	39.30	37.04	8.62	25.48	59.47	74.00	-14.53	Peak	Peak	Vert
7440	27.21	37.04	8.62	25.48	47.38	54.00	-6.62	Ave	Ave	Vert
9920	44.74	37.97	6.04	24.89	63.86	74.00	-10.14	Peak	Peak	Vert
9920	31.45	37.97	6.04	24.89	50.57	54.00	-3.43	Ave	Ave	Vert
12400	23.61	40.82	12.06	24.37	52.12	74.00	-21.88	Peak	Peak	Vert
12400	10.79	40.82	12.06	24.37	39.30	54.00	-14.70	Ave	Ave	Vert
14880	21.31	42.13	13.24	22.67	54.02	74.00	-19.98	Peak	Peak	Vert
14880	8.92	42.13	13.24	22.67	41.63	54.00	-12.37	Ave	Ave	Ave
17360	19.68	42.98	15.91	23.05	55.52	74.00	-18.48	Peak	Peak	Vert
17360	7.50	42.98	15.91	23.05	43.34	54.00	-10.66	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013	
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
BLE - High Channel - Z axis										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
2480	85.51	29.65	3.47	26.31	92.32	N/A	N/A	Peak	Peak	Hor
2480	85.07	29.65	3.47	26.31	91.88	N/A	N/A	Ave	Ave	Hor
4960	40.56	33.56	7.96	25.79	56.29	74.00	-17.71	Peak	Peak	Hor
4960	27.68	33.56	7.96	25.79	43.41	54.00	-10.59	Ave	Ave	Hor
7440	39.23	37.04	8.62	25.48	59.40	74.00	-14.60	Peak	Peak	Hor
7440	27.20	37.04	8.62	25.48	47.37	54.00	-6.63	Ave	Ave	Hor
9920	44.22	37.97	6.04	24.89	63.34	74.00	-10.66	Peak	Peak	Hor
9920	31.43	37.97	6.04	24.89	50.55	54.00	-3.45	Ave	Ave	Hor
12400	23.35	40.82	12.06	24.37	51.86	74.00	-22.14	Peak	Peak	Hor
12400	10.78	40.82	12.06	24.37	39.29	54.00	-14.71	Ave	Ave	Hor
14880	21.71	42.13	13.24	22.67	54.42	74.00	-19.58	Peak	Peak	Hor
14880	8.91	42.13	13.24	22.67	41.62	54.00	-12.38	Ave	Ave	Hor
17360	20.14	42.98	15.91	23.05	55.98	74.00	-18.02	Peak	Peak	Hor
17360	7.47	42.98	15.91	23.05	43.31	54.00	-10.69	Ave	Ave	Hor
2480	79.35	29.65	3.47	26.31	86.16	N/A	N/A	Peak	Peak	Vert
2480	78.83	29.65	3.47	26.31	85.64	N/A	N/A	Ave	Ave	Vert
4960	40.44	33.56	7.96	25.79	56.17	74.00	-17.83	Peak	Peak	Vert
4960	27.61	33.56	7.96	25.79	43.34	54.00	-10.66	Ave	Ave	Vert
7440	39.80	37.04	8.62	25.48	59.97	74.00	-14.03	Peak	Peak	Vert
7440	27.20	37.04	8.62	25.48	47.37	54.00	-6.63	Ave	Ave	Vert
9920	44.45	37.97	6.04	24.89	63.57	74.00	-10.43	Peak	Peak	Vert
9920	31.46	37.97	6.04	24.89	50.58	54.00	-3.42	Ave	Ave	Vert
12400	23.60	40.82	12.06	24.37	52.11	74.00	-21.89	Peak	Peak	Vert
12400	22.07	40.82	12.06	24.37	50.58	54.00	-3.42	Ave	Ave	Vert
14880	21.16	42.13	13.24	22.67	53.87	74.00	-20.13	Peak	Peak	Vert
14880	8.93	42.13	13.24	22.67	41.64	54.00	-12.36	Ave	Ave	Vert
17360	19.88	42.98	15.91	23.05	55.72	74.00	-18.28	Peak	Peak	Vert
17360	7.49	42.98	15.91	23.05	43.33	54.00	-10.67	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Low Channel - X-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1804.600	37.61	26.99	2.88	26.34	41.14	74.00	-32.86	PK	PK	Hor
1804.600	18.69	26.99	2.88	26.34	22.22	54.00	-31.78	Ave	Ave	Hor
2706.900	22.50	29.95	3.46	26.31	29.60	74.00	-44.40	PK	PK	Hor
2706.900	18.69	29.95	3.46	26.31	25.79	54.00	-28.21	Ave	Ave	Hor
3609.200	17.44	30.67	3.87	26.13	25.85	74.00	-48.15	PK	PK	Hor
3609.200	5.32	30.67	3.87	26.13	13.73	54.00	-40.27	Ave	Ave	Hor
4511.500	18.62	31.94	7.51	25.87	32.20	74.00	-41.80	PK	PK	Hor
4511.500	6.23	31.94	7.51	25.87	19.81	54.00	-34.19	Ave	Ave	Hor
5413.800	19.47	33.78	9.82	25.67	37.40	74.00	-36.60	PK	PK	Hor
5413.800	7.14	33.78	9.82	25.67	25.07	54.00	-28.93	Ave	Ave	Hor
6316.100	22.13	36.27	9.26	25.66	42.00	74.00	-32.00	PK	PK	Hor
6316.100	9.52	36.27	9.26	25.66	29.39	54.00	-24.61	Ave	Ave	Hor
7218.400	10.83	37.17	8.31	25.53	30.77	74.00	-43.23	PK	PK	Hor
7218.400	-1.19	37.17	8.31	25.53	18.75	54.00	-35.25	Ave	Ave	Hor
8120.700	11.07	37.25	7.42	25.31	30.44	74.00	-43.56	PK	PK	Hor
8120.700	-1.40	37.25	7.42	25.31	17.97	54.00	-36.03	Ave	Ave	Hor
9023.000	10.88	37.61	6.34	25.03	29.80	74.00	-44.20	PK	PK	Hor
9023.000	-1.53	37.61	6.34	25.03	17.39	54.00	-36.61	Ave	Ave	Hor



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013	
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Low Channel - X-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Fcators (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1804.600	36.11	26.99	2.88	26.34	39.64	74.00	-34.36	PK	PK	Vert
1804.600	8.58	26.99	2.88	26.34	12.11	54.00	-41.89	Ave	Ave	Vert
2706.900	17.87	29.95	3.46	26.31	24.97	74.00	-49.03	PK	PK	Vert
2706.900	8.58	29.95	3.46	26.31	15.68	54.00	-38.32	Ave	Ave	Vert
3609.200	25.42	30.67	3.87	26.13	33.83	74.00	-40.17	PK	PK	Vert
3609.200	8.58	30.67	3.87	26.13	16.99	54.00	-37.01	Ave	Ave	Vert
4511.500	28.21	31.94	7.51	25.87	41.79	74.00	-32.21	PK	PK	Vert
4511.500	8.58	31.94	7.51	25.87	22.16	54.00	-31.84	Ave	Ave	Vert
5413.800	21.10	33.78	9.82	25.67	39.03	74.00	-34.97	PK	PK	Vert
5413.800	8.58	33.78	9.82	25.67	26.51	54.00	-27.49	Ave	Ave	Vert
6316.100	22.00	35.64	9.26	25.66	41.24	74.00	-32.76	PK	PK	Vert
6316.100	9.51	35.64	9.26	25.66	28.75	54.00	-25.25	Ave	Ave	Vert
7218.400	11.76	37.17	8.31	25.53	31.70	74.00	-42.30	PK	PK	Vert
7218.400	-1.28	37.17	8.31	25.53	18.66	54.00	-35.34	Ave	Ave	Vert
8120.700	10.95	37.25	7.42	25.31	30.32	74.00	-43.68	PK	PK	Vert
8120.700	-1.49	37.25	7.42	25.31	17.88	54.00	-36.12	Ave	Ave	Vert
9023.000	11.02	37.61	6.34	25.03	29.94	74.00	-44.06	PK	PK	Vert
9023.000	-1.48	37.61	6.34	25.03	17.44	54.00	-36.56	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Low Channel - X-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1804.600	24.55	26.99	2.88	26.34	28.08	74.00	-45.92	PK	PK	Hor
1804.600	3.90	26.99	2.88	26.34	7.43	54.00	-46.57	Ave	Ave	Hor
2706.900	16.53	29.95	3.46	26.31	23.63	74.00	-50.37	PK	PK	Hor
2706.900	3.98	29.95	3.46	26.31	11.08	54.00	-42.92	Ave	Ave	Hor
3609.200	26.43	30.67	3.87	26.13	34.84	74.00	-39.16	PK	PK	Hor
3609.200	5.37	30.67	3.87	26.13	13.78	54.00	-40.22	Ave	Ave	Hor
4511.500	19.62	31.94	7.51	25.87	33.20	74.00	-40.80	PK	PK	Hor
4511.500	6.21	31.94	7.51	25.87	19.79	54.00	-34.21	Ave	Ave	Hor
5413.800	19.84	33.78	9.82	25.67	37.77	74.00	-36.23	PK	PK	Hor
5413.800	7.14	33.78	9.82	25.67	25.07	54.00	-28.93	Ave	Ave	Hor
6316.100	22.63	36.27	9.26	25.66	42.50	74.00	-31.50	PK	PK	Hor
6316.100	9.50	36.27	9.26	25.66	29.37	54.00	-24.63	Ave	Ave	Hor
7218.400	11.31	37.17	8.31	25.53	31.25	74.00	-42.75	PK	PK	Hor
7218.400	-1.30	37.17	8.31	25.53	18.64	54.00	-35.36	Ave	Ave	Hor
8120.700	11.36	37.25	7.42	25.31	30.73	74.00	-43.27	PK	PK	Hor
8120.700	-1.30	37.25	7.42	25.31	18.07	54.00	-35.93	Ave	Ave	Hor
9023.000	11.26	37.61	6.34	25.03	30.18	74.00	-43.82	PK	PK	Hor
9023.000	-1.30	37.61	6.34	25.03	17.62	54.00	-36.38	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Low Channel - X-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1804.600	35.59	26.99	4.31	26.34	40.55	74.00	-33.45	PK	PK	Vert
1804.600	16.88	26.99	4.31	26.34	21.84	54.00	-32.16	Ave	Ave	Vert
2706.900	24.96	29.95	3.46	26.31	32.06	74.00	-41.94	PK	PK	Vert
2706.900	8.49	29.95	3.46	26.31	15.59	54.00	-38.41	Ave	Ave	Vert
3609.200	20.40	30.67	3.87	26.13	28.81	74.00	-45.19	PK	PK	Vert
3609.200	8.49	30.67	3.87	26.13	16.90	54.00	-37.10	Ave	Ave	Vert
4511.500	29.09	31.94	7.51	25.87	42.67	74.00	-31.33	PK	PK	Vert
4511.500	8.49	31.94	7.51	25.87	22.07	54.00	-31.93	Ave	Ave	Vert
5413.800	20.31	33.78	9.82	25.67	38.24	74.00	-35.76	PK	PK	Vert
5413.800	8.49	33.78	9.82	25.67	26.42	54.00	-27.58	Ave	Ave	Vert
6316.100	22.11	35.64	7.97	25.66	40.07	74.00	-33.93	PK	PK	Vert
6316.100	9.49	35.64	7.97	25.66	27.45	54.00	-26.55	Ave	Ave	Vert
7218.400	11.52	37.17	8.31	25.53	31.46	74.00	-42.54	PK	PK	Vert
7218.400	-1.29	37.17	8.31	25.53	18.65	54.00	-35.35	Ave	Ave	Vert
8120.700	11.10	37.25	7.42	25.31	30.47	74.00	-43.53	PK	PK	Vert
8120.700	-1.29	37.25	7.42	25.31	18.08	54.00	-35.92	Ave	Ave	Vert
9023.000	17.53	37.61	6.34	25.03	36.45	74.00	-37.55	PK	PK	Vert
9023.000	-0.10	37.61	6.34	25.03	18.82	54.00	-35.18	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Mid Channel - X-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Fctors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1817.000	42.50	27.08	2.87	26.35	46.11	74.00	-27.89	PK	PK	Hor
1817.000	23.21	27.08	2.87	26.35	26.82	54.00	-27.18	Ave	Ave	Hor
2725.500	25.43	29.97	3.45	26.31	32.55	74.00	-41.45	PK	PK	Hor
2725.500	8.79	29.97	3.45	26.31	15.91	54.00	-38.09	Ave	Ave	Hor
3634.000	17.62	30.76	3.96	26.12	26.21	74.00	-47.79	PK	PK	Hor
3634.000	5.09	30.76	3.96	26.12	13.68	54.00	-40.32	Ave	Ave	Hor
4542.500	18.13	32.05	7.54	25.86	31.86	74.00	-42.14	PK	PK	Hor
4542.500	6.14	32.05	7.54	25.86	19.87	54.00	-34.13	Ave	Ave	Hor
5451.000	19.39	33.79	9.98	25.66	37.50	74.00	-36.50	PK	PK	Hor
5451.000	7.14	33.79	9.98	25.66	25.25	54.00	-28.75	Ave	Ave	Hor
6359.500	22.48	36.42	9.20	25.66	42.44	74.00	-31.56	PK	PK	Hor
6359.500	9.92	36.42	9.20	25.66	29.88	54.00	-24.12	Ave	Ave	Hor
7268.000	11.05	37.14	8.38	25.52	31.04	74.00	-42.96	PK	PK	Hor
7268.000	-1.08	37.14	8.38	25.52	18.91	54.00	-35.09	Ave	Ave	Hor
8176.500	11.05	37.27	7.44	25.29	30.47	74.00	-43.53	PK	PK	Hor
8176.500	-1.25	37.27	7.44	25.29	18.17	54.00	-35.83	Ave	Ave	Hor
9085.000	11.32	37.63	6.20	25.02	30.13	74.00	-43.87	PK	PK	Hor
9085.000	-1.24	37.63	6.20	25.02	17.57	54.00	-36.43	Ave	Ave	Hor



1100 E Chalk Creek Road
Coalville, UT 84017
(435) 336-4433
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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Mid Channel - X-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1817.000	35.16	27.08	2.87	26.35	38.77	74.00	-35.23	PK	PK	Vert
1817.000	10.67	27.08	2.87	26.35	14.28	54.00	-39.72	Ave	Ave	Vert
2725.500	19.40	29.97	3.45	26.31	26.52	74.00	-47.48	PK	PK	Vert
2725.500	4.49	29.97	3.45	26.31	11.61	54.00	-42.39	Ave	Ave	Vert
3634.000	17.32	30.76	3.96	26.12	25.91	74.00	-48.09	PK	PK	Vert
3634.000	5.11	30.76	3.96	26.12	13.70	54.00	-40.30	Ave	Ave	Vert
4542.500	19.14	32.05	7.54	25.86	32.87	74.00	-41.13	PK	PK	Vert
4542.500	6.14	32.05	7.54	25.86	19.87	54.00	-34.13	Ave	Ave	Vert
5451.000	19.36	33.79	9.98	25.66	37.47	74.00	-36.53	PK	PK	Vert
5451.000	7.15	33.79	9.98	25.66	25.26	54.00	-28.74	Ave	Ave	Vert
6359.500	22.32	35.70	9.20	25.66	41.56	74.00	-32.44	PK	PK	Vert
6359.500	9.94	35.70	9.20	25.66	29.18	54.00	-24.82	Ave	Ave	Vert
7268.000	11.44	37.14	8.38	25.52	31.43	74.00	-42.57	PK	PK	Vert
7268.000	-1.08	37.14	8.38	25.52	18.91	54.00	-35.09	Ave	Ave	Vert
8176.500	10.99	37.27	7.44	25.29	30.41	74.00	-43.59	PK	PK	Vert
8176.500	-1.22	37.27	7.44	25.29	18.20	54.00	-35.80	Ave	Ave	Vert
9085.000	14.28	37.63	6.20	25.02	33.09	74.00	-40.91	PK	PK	Vert
9085.000	-0.88	37.63	6.20	25.02	17.93	54.00	-36.07	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Mid Channel - X-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1817.000	36.76	27.08	2.87	26.35	40.37	74.00	-33.63	PK	PK	Hor
1817.000	4.56	27.08	2.87	26.35	8.17	54.00	-45.83	Ave	Ave	Hor
2725.500	16.51	29.97	3.45	26.31	23.63	74.00	-50.37	PK	PK	Hor
2725.500	3.80	29.97	3.45	26.31	10.92	54.00	-43.08	Ave	Ave	Hor
3634.000	17.16	30.76	3.96	26.12	25.75	74.00	-48.25	PK	PK	Hor
3634.000	5.09	30.76	3.96	26.12	13.68	54.00	-40.32	Ave	Ave	Hor
4542.500	18.10	32.05	7.54	25.86	31.83	74.00	-42.17	PK	PK	Hor
4542.500	6.16	32.05	7.54	25.86	19.89	54.00	-34.11	Ave	Ave	Hor
5451.000	19.14	33.79	9.98	25.66	37.25	74.00	-36.75	PK	PK	Hor
5451.000	7.14	33.79	9.98	25.66	25.25	54.00	-28.75	Ave	Ave	Hor
6359.500	22.24	36.42	9.20	25.66	42.20	74.00	-31.80	PK	PK	Hor
6359.500	9.93	36.42	9.20	25.66	29.89	54.00	-24.11	Ave	Ave	Hor
7268.000	11.46	37.14	8.38	25.52	31.45	74.00	-42.55	PK	PK	Hor
7268.000	-1.04	37.14	8.38	25.52	18.95	54.00	-35.05	Ave	Ave	Hor
8176.500	17.76	37.27	7.44	25.29	37.18	74.00	-36.82	PK	PK	Hor
8176.500	-1.23	37.27	7.44	25.29	18.19	54.00	-35.81	Ave	Ave	Hor
9085.000	11.87	37.63	6.20	25.02	30.68	74.00	-43.32	PK	PK	Hor
9085.000	-1.07	37.63	6.20	25.02	17.74	54.00	-36.26	Ave	Ave	Hor



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Mid Channel - X-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1817.000	38.80	27.08	2.87	26.35	42.41	74.00	-31.59	PK	PK	Vert
1817.000	19.79	27.08	2.87	26.35	23.40	54.00	-30.60	Ave	Ave	Vert
2725.500	23.09	29.97	3.45	26.31	30.21	74.00	-43.79	PK	PK	Vert
2725.500	7.11	29.97	3.45	26.31	14.23	54.00	-39.77	Ave	Ave	Vert
3634.000	17.57	30.76	3.96	26.12	26.16	74.00	-47.84	PK	PK	Vert
3634.000	5.18	30.76	3.96	26.12	13.77	54.00	-40.23	Ave	Ave	Vert
4542.500	21.52	32.05	7.54	25.86	35.25	74.00	-38.75	PK	PK	Vert
4542.500	6.16	32.05	7.54	25.86	19.89	54.00	-34.11	Ave	Ave	Vert
5451.000	19.61	33.79	9.98	25.66	37.72	74.00	-36.28	PK	PK	Vert
5451.000	7.15	33.79	9.98	25.66	25.26	54.00	-28.74	Ave	Ave	Vert
6359.500	22.51	35.70	9.20	25.66	41.75	74.00	-32.25	PK	PK	Vert
6359.500	9.00	35.70	9.20	25.66	28.24	54.00	-25.76	Ave	Ave	Vert
7268.000	10.99	37.14	8.38	25.52	30.98	74.00	-43.02	PK	PK	Vert
7268.000	-1.03	37.14	8.38	25.52	18.96	54.00	-35.04	Ave	Ave	Vert
8176.500	11.23	37.27	7.44	25.29	30.65	74.00	-43.35	PK	PK	Vert
8176.500	-1.21	37.27	7.44	25.29	18.21	54.00	-35.79	Ave	Ave	Vert
9085.000	11.39	37.63	6.20	25.02	30.20	74.00	-43.80	PK	PK	Vert
9085.000	-1.13	37.63	6.20	25.02	17.68	54.00	-36.32	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - High Channel - X-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1829.800	37.14	27.17	2.87	26.35	40.83	74.00	-33.17	PK	PK	Hor
1829.800	17.94	27.17	2.87	26.35	21.63	54.00	-32.37	Ave	Ave	Hor
2744.700	25.71	29.99	3.45	26.31	32.85	74.00	-41.15	PK	PK	Hor
2744.700	5.67	29.99	3.45	26.31	12.81	54.00	-41.19	Ave	Ave	Hor
3659.600	21.56	30.84	4.04	26.11	30.33	74.00	-43.67	PK	PK	Hor
3659.600	5.11	30.84	4.04	26.11	13.88	54.00	-40.12	Ave	Ave	Hor
4574.500	18.27	32.17	7.57	25.86	32.16	74.00	-41.84	PK	PK	Hor
4574.500	5.80	32.17	7.57	25.86	19.69	54.00	-34.31	Ave	Ave	Hor
5489.400	15.80	33.80	10.15	25.65	34.10	74.00	-39.90	PK	PK	Hor
5489.400	7.28	33.80	10.15	25.65	25.58	54.00	-28.42	Ave	Ave	Hor
6404.300	23.15	36.57	9.13	25.65	43.20	74.00	-30.80	PK	PK	Hor
6404.300	10.50	36.57	9.13	25.65	30.55	54.00	-23.45	Ave	Ave	Hor
7319.200	10.80	37.11	8.45	25.51	30.85	74.00	-43.15	PK	PK	Hor
7319.200	-1.31	37.11	8.45	25.51	18.74	54.00	-35.26	Ave	Ave	Hor
8234.100	11.14	37.29	7.45	25.27	30.61	74.00	-43.39	PK	PK	Hor
8234.100	-1.63	37.29	7.45	25.27	17.84	54.00	-36.16	Ave	Ave	Hor
9149.000	11.41	37.66	6.04	25.00	30.11	74.00	-43.89	PK	PK	Hor
9149.000	-1.20	37.66	6.04	25.00	17.50	54.00	-36.50	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - High Channel - X-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1829.800	34.99	27.17	2.87	26.35	38.68	74.00	-35.32	PK	PK	Vert
1829.800	14.97	27.17	2.87	26.35	18.66	54.00	-35.34	Ave	Ave	Vert
2744.700	19.17	29.99	3.45	26.31	26.31	74.00	-47.69	PK	PK	Vert
2744.700	5.03	29.99	3.45	26.31	12.17	54.00	-41.83	Ave	Ave	Vert
3659.600	19.11	30.84	4.04	26.11	27.88	74.00	-46.12	PK	PK	Vert
3659.600	4.94	30.84	4.04	26.11	13.71	54.00	-40.29	Ave	Ave	Vert
4574.500	18.21	32.17	7.57	25.86	32.10	74.00	-41.90	PK	PK	Vert
4574.500	5.77	32.17	7.57	25.86	19.66	54.00	-34.34	Ave	Ave	Vert
5489.400	19.34	33.80	10.15	25.65	37.64	74.00	-36.36	PK	PK	Vert
5489.400	7.29	33.80	10.15	25.65	25.59	54.00	-28.41	Ave	Ave	Vert
6404.300	22.40	35.77	9.13	25.65	41.65	74.00	-32.35	PK	PK	Vert
6404.300	10.48	35.77	9.13	25.65	29.73	54.00	-24.27	Ave	Ave	Vert
7319.200	10.77	37.11	8.45	25.51	30.82	74.00	-43.18	PK	PK	Vert
7319.200	-1.32	37.11	8.45	25.51	18.73	54.00	-35.27	Ave	Ave	Vert
8234.100	10.68	37.29	7.45	25.27	30.15	74.00	-43.85	PK	PK	Vert
8234.100	-1.71	37.29	7.45	25.27	17.76	54.00	-36.24	Ave	Ave	Vert
9149.000	11.23	37.66	6.04	25.00	29.93	74.00	-44.07	PK	PK	Vert
9149.000	-1.20	37.66	6.04	25.00	17.50	54.00	-36.50	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - High Channel - X-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1829.800	33.47	27.17	2.87	26.35	37.16	74.00	-36.84	PK	PK	Hor
1829.800	11.04	27.17	2.87	26.35	14.73	54.00	-39.27	Ave	Ave	Hor
2744.700	17.09	29.99	3.45	26.31	24.23	74.00	-49.77	PK	PK	Hor
2744.700	4.11	29.99	3.45	26.31	11.25	54.00	-42.75	Ave	Ave	Hor
3659.600	17.36	30.84	4.04	26.11	26.13	74.00	-47.87	PK	PK	Hor
3659.600	4.99	30.84	4.04	26.11	13.76	54.00	-40.24	Ave	Ave	Hor
4574.500	18.06	32.17	7.57	25.86	31.95	74.00	-42.05	PK	PK	Hor
4574.500	5.81	32.17	7.57	25.86	19.70	54.00	-34.30	Ave	Ave	Hor
5489.400	19.23	33.80	10.15	25.65	37.53	74.00	-36.47	PK	PK	Hor
5489.400	7.32	33.80	10.15	25.65	25.62	54.00	-28.38	Ave	Ave	Hor
6404.300	22.84	36.57	9.13	25.65	42.89	74.00	-31.11	PK	PK	Hor
6404.300	10.50	36.57	9.13	25.65	30.55	54.00	-23.45	Ave	Ave	Hor
7319.200	11.67	37.11	8.45	25.51	31.72	74.00	-42.28	PK	PK	Hor
7319.200	-1.24	37.11	8.45	25.51	18.81	54.00	-35.19	Ave	Ave	Hor
8234.100	11.06	37.29	7.45	25.27	30.53	74.00	-43.47	PK	PK	Hor
8234.100	-1.61	37.29	7.45	25.27	17.86	54.00	-36.14	Ave	Ave	Hor
9149.000	13.64	37.66	6.04	25.00	32.34	74.00	-41.66	PK	PK	Hor
9149.000	-0.33	37.66	6.04	25.00	18.37	54.00	-35.63	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - High Channel - X-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1829.800	38.86	27.17	2.87	26.35	42.55	74.00	-31.45	PK	PK	Vert
1829.800	19.86	27.17	2.87	26.35	23.55	54.00	-30.45	Ave	Ave	Vert
2744.700	21.90	29.99	3.45	26.31	29.04	74.00	-44.96	PK	PK	Vert
2744.700	6.51	29.99	3.45	26.31	13.65	54.00	-40.35	Ave	Ave	Vert
3659.600	17.47	30.84	4.04	26.11	26.24	74.00	-47.76	PK	PK	Vert
3659.600	5.02	30.84	4.04	26.11	13.79	54.00	-40.21	Ave	Ave	Vert
4574.500	18.29	32.17	7.57	25.86	32.18	74.00	-41.82	PK	PK	Vert
4574.500	5.83	32.17	7.57	25.86	19.72	54.00	-34.28	Ave	Ave	Vert
5489.400	19.52	33.80	10.15	25.65	37.82	74.00	-36.18	PK	PK	Vert
5489.400	7.35	33.80	10.15	25.65	25.65	54.00	-28.35	Ave	Ave	Vert
6404.300	23.60	35.77	9.13	25.65	42.85	74.00	-31.15	PK	PK	Vert
6404.300	9.00	35.77	9.13	25.65	28.25	54.00	-25.75	Ave	Ave	Vert
7319.200	11.56	37.11	8.45	25.51	31.61	74.00	-42.39	PK	PK	Vert
7319.200	-1.16	37.11	8.45	25.51	18.89	54.00	-35.11	Ave	Ave	Vert
8234.100	10.85	37.29	7.45	25.27	30.32	74.00	-43.68	PK	PK	Vert
8234.100	-1.53	37.29	7.45	25.27	17.94	54.00	-36.06	Ave	Ave	Vert
9149.000	11.44	37.66	6.04	25.00	30.14	74.00	-43.86	PK	PK	Vert
9149.000	-1.05	37.66	6.04	25.00	17.65	54.00	-36.35	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Low Channel - Y-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1804.600	40.08	26.99	2.88	26.34	43.61	74.00	-30.39	PK	PK	Hor
1804.600	20.93	26.99	2.88	26.34	24.46	54.00	-29.54	Ave	Ave	Hor
2706.900	23.80	29.95	3.46	26.31	30.90	74.00	-43.10	PK	PK	Hor
2706.900	7.74	29.95	3.46	26.31	14.84	54.00	-39.16	Ave	Ave	Hor
3609.200	17.63	30.67	3.87	26.13	26.04	74.00	-47.96	PK	PK	Hor
3609.200	5.33	30.67	3.87	26.13	13.74	54.00	-40.26	Ave	Ave	Hor
4511.500	19.11	31.94	7.51	25.87	32.69	74.00	-41.31	PK	PK	Hor
4511.500	6.23	31.94	7.51	25.87	19.81	54.00	-34.19	Ave	Ave	Hor
5413.800	19.63	33.78	9.82	25.67	37.56	74.00	-36.44	PK	PK	Hor
5413.800	7.12	33.78	9.82	25.67	25.05	54.00	-28.95	Ave	Ave	Hor
6316.100	21.89	36.27	9.26	25.66	41.76	74.00	-32.24	PK	PK	Hor
6316.100	9.50	36.27	9.26	25.66	29.37	54.00	-24.63	Ave	Ave	Hor
7218.400	11.15	37.17	8.31	25.53	31.09	74.00	-42.91	PK	PK	Hor
7218.400	-1.23	37.17	8.31	25.53	18.71	54.00	-35.29	Ave	Ave	Hor
8120.700	10.84	37.25	7.42	25.31	30.21	74.00	-43.79	PK	PK	Hor
8120.700	-1.46	37.25	7.42	25.31	17.91	54.00	-36.09	Ave	Ave	Hor
9023.000	10.69	37.61	6.34	25.03	29.61	74.00	-44.39	PK	PK	Hor
9023.000	-1.47	37.61	6.34	25.03	17.45	54.00	-36.55	Ave	Ave	Hor



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Coalville, UT 84017
(435) 336-4433
FAX (435) 336-4436

Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Low Channel - Y-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1804.600	34.09	26.99	2.88	26.34	37.62	74.00	-36.38	PK	PK	Vert
1804.600	9.78	26.99	2.88	26.34	13.31	54.00	-40.69	Ave	Ave	Vert
2706.900	20.51	29.95	3.46	26.31	27.61	74.00	-46.39	PK	PK	Vert
2706.900	9.78	29.95	3.46	26.31	16.88	54.00	-37.12	Ave	Ave	Vert
3609.200	17.72	30.67	3.87	26.13	26.13	74.00	-47.87	PK	PK	Vert
3609.200	5.37	30.67	3.87	26.13	13.78	54.00	-40.22	Ave	Ave	Vert
4511.500	22.33	31.94	7.51	25.87	35.91	74.00	-38.09	PK	PK	Vert
4511.500	6.21	31.94	7.51	25.87	19.79	54.00	-34.21	Ave	Ave	Vert
5413.800	19.97	33.78	9.82	25.67	37.90	74.00	-36.10	PK	PK	Vert
5413.800	7.10	33.78	9.82	25.67	25.03	54.00	-28.97	Ave	Ave	Vert
6316.100	22.07	35.64	9.26	25.66	41.31	74.00	-32.69	PK	PK	Vert
6316.100	9.47	35.64	9.26	25.66	28.71	54.00	-25.29	Ave	Ave	Vert
7218.400	10.73	37.17	8.31	25.53	30.67	74.00	-43.33	PK	PK	Vert
7218.400	-1.31	37.17	8.31	25.53	18.63	54.00	-35.37	Ave	Ave	Vert
8120.700	10.52	37.25	7.42	25.31	29.89	74.00	-44.11	PK	PK	Vert
8120.700	-1.49	37.25	7.42	25.31	17.88	54.00	-36.12	Ave	Ave	Vert
9023.000	10.54	37.61	6.34	25.03	29.46	74.00	-44.54	PK	PK	Vert
9023.000	-1.58	37.61	6.34	25.03	17.34	54.00	-36.66	Ave	Ave	Vert



1100 E Chalk Creek Road
Coalville, UT 84017
(435) 336-4433
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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Low Channel - Y-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1804.600	31.21	26.99	2.88	26.34	34.74	74.00	-39.26	PK	PK	Hor
1804.600	6.22	26.99	2.88	26.34	9.75	54.00	-44.25	Ave	Ave	Hor
2706.900	16.63	29.95	3.46	26.31	23.73	74.00	-50.27	PK	PK	Hor
2706.900	6.22	29.95	3.46	26.31	13.32	54.00	-40.68	Ave	Ave	Hor
3609.200	17.46	30.67	3.87	26.13	25.87	74.00	-48.13	PK	PK	Hor
3609.200	5.33	30.67	3.87	26.13	13.74	54.00	-40.26	Ave	Ave	Hor
4511.500	18.66	31.94	7.51	25.87	32.24	74.00	-41.76	PK	PK	Hor
4511.500	6.21	31.94	7.51	25.87	19.79	54.00	-34.21	Ave	Ave	Hor
5413.800	19.62	33.78	9.82	25.67	37.55	74.00	-36.45	PK	PK	Hor
5413.800	7.12	33.78	9.82	25.67	25.05	54.00	-28.95	Ave	Ave	Hor
6316.100	21.97	36.27	9.26	25.66	41.84	74.00	-32.16	PK	PK	Hor
6316.100	9.48	36.27	9.26	25.66	29.35	54.00	-24.65	Ave	Ave	Hor
7218.400	11.06	37.17	8.31	25.53	31.00	74.00	-43.00	PK	PK	Hor
7218.400	-1.23	37.17	8.31	25.53	18.71	54.00	-35.29	Ave	Ave	Hor
8120.700	11.31	37.25	7.42	25.31	30.68	74.00	-43.32	PK	PK	Hor
8120.700	-1.45	37.25	7.42	25.31	17.92	54.00	-36.08	Ave	Ave	Hor
9023.000	11.32	37.61	6.34	25.03	30.24	74.00	-43.76	PK	PK	Hor
9023.000	-1.53	37.61	6.34	25.03	17.39	54.00	-36.61	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Low Channel - Y-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1804.600	39.11	26.99	4.31	26.34	44.07	74.00	-29.93	PK	PK	Vert
1804.600	20.07	26.99	4.31	26.34	25.03	54.00	-28.97	Ave	Ave	Vert
2706.900	21.34	29.95	3.46	26.31	28.44	74.00	-45.56	PK	PK	Vert
2706.900	5.89	29.95	3.46	26.31	12.99	54.00	-41.01	Ave	Ave	Vert
3609.200	24.03	30.67	3.87	26.13	32.44	74.00	-41.56	PK	PK	Vert
3609.200	5.90	30.67	3.87	26.13	14.31	54.00	-39.69	Ave	Ave	Vert
4511.500	18.38	31.94	7.51	25.87	31.96	74.00	-42.04	PK	PK	Vert
4511.500	6.25	31.94	7.51	25.87	19.83	54.00	-34.17	Ave	Ave	Vert
5413.800	19.49	33.78	9.82	25.67	37.42	74.00	-36.58	PK	PK	Vert
5413.800	7.13	33.78	9.82	25.67	25.06	54.00	-28.94	Ave	Ave	Vert
6316.100	22.60	35.64	7.97	25.66	40.56	74.00	-33.44	PK	PK	Vert
6316.100	9.48	35.64	7.97	25.66	27.44	54.00	-26.56	Ave	Ave	Vert
7218.400	10.75	37.17	8.31	25.53	30.69	74.00	-43.31	PK	PK	Vert
7218.400	-1.25	37.17	8.31	25.53	18.69	54.00	-35.31	Ave	Ave	Vert
8120.700	10.90	37.25	7.42	25.31	30.27	74.00	-43.73	PK	PK	Vert
8120.700	-1.45	37.25	7.42	25.31	17.92	54.00	-36.08	Ave	Ave	Vert
9023.000	10.86	37.61	6.34	25.03	29.78	74.00	-44.22	PK	PK	Vert
9023.000	-1.57	37.61	6.34	25.03	17.35	54.00	-36.65	Ave	Ave	Vert



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Coalville, UT 84017
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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Mid Channel - Y-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Fctors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1817.000	37.28	27.08	2.87	26.35	40.89	74.00	-33.11	PK	PK	Hor
1817.000	18.37	27.08	2.87	26.35	21.98	54.00	-32.02	Ave	Ave	Hor
2725.500	20.98	29.97	3.45	26.31	28.10	74.00	-45.90	PK	PK	Hor
2725.500	5.93	29.97	3.45	26.31	13.05	54.00	-40.95	Ave	Ave	Hor
3634.000	17.22	30.76	3.96	26.12	25.81	74.00	-48.19	PK	PK	Hor
3634.000	5.09	30.76	3.96	26.12	13.68	54.00	-40.32	Ave	Ave	Hor
4542.500	18.88	32.05	7.54	25.86	32.61	74.00	-41.39	PK	PK	Hor
4542.500	6.12	32.05	7.54	25.86	19.85	54.00	-34.15	Ave	Ave	Hor
5451.000	19.65	33.79	9.98	25.66	37.76	74.00	-36.24	PK	PK	Hor
5451.000	7.15	33.79	9.98	25.66	25.26	54.00	-28.74	Ave	Ave	Hor
6359.500	22.26	36.42	9.20	25.66	42.22	74.00	-31.78	PK	PK	Hor
6359.500	9.92	36.42	9.20	25.66	29.88	54.00	-24.12	Ave	Ave	Hor
7268.000	11.29	37.14	8.38	25.52	31.28	74.00	-42.72	PK	PK	Hor
7268.000	-1.14	37.14	8.38	25.52	18.85	54.00	-35.15	Ave	Ave	Hor
8176.500	11.00	37.27	7.44	25.29	30.42	74.00	-43.58	PK	PK	Hor
8176.500	-1.20	37.27	7.44	25.29	18.22	54.00	-35.78	Ave	Ave	Hor
9085.000	13.27	37.63	6.20	25.02	32.08	74.00	-41.92	PK	PK	Hor
9085.000	-0.89	37.63	6.20	25.02	17.92	54.00	-36.08	Ave	Ave	Hor



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Coalville, UT 84017
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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Mid Channel - Y-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1817.000	36.09	27.08	2.87	26.35	39.70	74.00	-34.30	PK	PK	Vert
1817.000	10.66	27.08	2.87	26.35	14.27	54.00	-39.73	Ave	Ave	Vert
2725.500	16.29	29.97	3.45	26.31	23.41	74.00	-50.59	PK	PK	Vert
2725.500	3.90	29.97	3.45	26.31	11.02	54.00	-42.98	Ave	Ave	Vert
3634.000	17.09	30.76	3.96	26.12	25.68	74.00	-48.32	PK	PK	Vert
3634.000	5.10	30.76	3.96	26.12	13.69	54.00	-40.31	Ave	Ave	Vert
4542.500	18.28	32.05	7.54	25.86	32.01	74.00	-41.99	PK	PK	Vert
4542.500	6.13	32.05	7.54	25.86	19.86	54.00	-34.14	Ave	Ave	Vert
5451.000	19.44	33.79	9.98	25.66	37.55	74.00	-36.45	PK	PK	Vert
5451.000	7.13	33.79	9.98	25.66	25.24	54.00	-28.76	Ave	Ave	Vert
6359.500	22.24	35.70	9.20	25.66	41.48	74.00	-32.52	PK	PK	Vert
6359.500	9.92	35.70	9.20	25.66	29.16	54.00	-24.84	Ave	Ave	Vert
7268.000	11.12	37.14	8.38	25.52	31.11	74.00	-42.89	PK	PK	Vert
7268.000	-1.09	37.14	8.38	25.52	18.90	54.00	-35.10	Ave	Ave	Vert
8176.500	11.14	37.27	7.44	25.29	30.56	74.00	-43.44	PK	PK	Vert
8176.500	-1.27	37.27	7.44	25.29	18.15	54.00	-35.85	Ave	Ave	Vert
9085.000	12.22	37.63	6.20	25.02	31.03	74.00	-42.97	PK	PK	Vert
9085.000	-1.34	37.63	6.20	25.02	17.47	54.00	-36.53	Ave	Ave	Vert



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Coalville, UT 84017
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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Mid Channel - Y-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1817.000	36.38	27.08	2.87	26.35	39.99	74.00	-34.01	PK	PK	Hor
1817.000	5.56	27.08	2.87	26.35	9.17	54.00	-44.83	Ave	Ave	Hor
2725.500	16.16	29.97	3.45	26.31	23.28	74.00	-50.72	PK	PK	Hor
2725.500	3.81	29.97	3.45	26.31	10.93	54.00	-43.07	Ave	Ave	Hor
3634.000	20.18	30.76	3.96	26.12	28.77	74.00	-45.23	PK	PK	Hor
3634.000	5.09	30.76	3.96	26.12	13.68	54.00	-40.32	Ave	Ave	Hor
4542.500	18.23	32.05	7.54	25.86	31.96	74.00	-42.04	PK	PK	Hor
4542.500	6.12	32.05	7.54	25.86	19.85	54.00	-34.15	Ave	Ave	Hor
5451.000	19.40	33.79	9.98	25.66	37.51	74.00	-36.49	PK	PK	Hor
5451.000	7.12	33.79	9.98	25.66	25.23	54.00	-28.77	Ave	Ave	Hor
6359.500	22.10	36.42	9.20	25.66	42.06	74.00	-31.94	PK	PK	Hor
6359.500	9.91	36.42	9.20	25.66	29.87	54.00	-24.13	Ave	Ave	Hor
7268.000	11.05	37.14	8.38	25.52	31.04	74.00	-42.96	PK	PK	Hor
7268.000	-1.10	37.14	8.38	25.52	18.89	54.00	-35.11	Ave	Ave	Hor
8176.500	11.07	37.27	7.44	25.29	30.49	74.00	-43.51	PK	PK	Hor
8176.500	-1.29	37.27	7.44	25.29	18.13	54.00	-35.87	Ave	Ave	Hor
9085.000	11.11	37.63	6.20	25.02	29.92	74.00	-44.08	PK	PK	Hor
9085.000	-1.32	37.63	6.20	25.02	17.49	54.00	-36.51	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Mid Channel - Y-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1817.000	39.96	27.08	2.87	26.35	43.57	74.00	-30.43	PK	PK	Vert
1817.000	20.87	27.08	2.87	26.35	24.48	54.00	-29.52	Ave	Ave	Vert
2725.500	22.75	29.97	3.45	26.31	29.87	74.00	-44.13	PK	PK	Vert
2725.500	6.98	29.97	3.45	26.31	14.10	54.00	-39.90	Ave	Ave	Vert
3634.000	19.19	30.76	3.96	26.12	27.78	74.00	-46.22	PK	PK	Vert
3634.000	5.08	30.76	3.96	26.12	13.67	54.00	-40.33	Ave	Ave	Vert
4542.500	18.54	32.05	7.54	25.86	32.27	74.00	-41.73	PK	PK	Vert
4542.500	6.10	32.05	7.54	25.86	19.83	54.00	-34.17	Ave	Ave	Vert
5451.000	19.08	33.79	9.98	25.66	37.19	74.00	-36.81	PK	PK	Vert
5451.000	7.13	33.79	9.98	25.66	25.24	54.00	-28.76	Ave	Ave	Vert
6359.500	22.42	35.70	9.20	25.66	41.66	74.00	-32.34	PK	PK	Vert
6359.500	9.00	35.70	9.20	25.66	28.24	54.00	-25.76	Ave	Ave	Vert
7268.000	11.23	37.14	8.38	25.52	31.22	74.00	-42.78	PK	PK	Vert
7268.000	-1.09	37.14	8.38	25.52	18.90	54.00	-35.10	Ave	Ave	Vert
8176.500	10.97	37.27	7.44	25.29	30.39	74.00	-43.61	PK	PK	Vert
8176.500	-1.26	37.27	7.44	25.29	18.16	54.00	-35.84	Ave	Ave	Vert
9085.000	12.47	37.63	6.20	25.02	31.28	74.00	-42.72	PK	PK	Vert
9085.000	-1.05	37.63	6.20	25.02	17.76	54.00	-36.24	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - High Channel - Y-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1829.800	40.26	27.17	2.87	26.35	43.95	74.00	-30.05	PK	PK	Hor
1829.800	21.14	27.17	2.87	26.35	24.83	54.00	-29.17	Ave	Ave	Hor
2744.700	24.54	29.99	3.45	26.31	31.68	74.00	-42.32	PK	PK	Hor
2744.700	8.28	29.99	3.45	26.31	15.42	54.00	-38.58	Ave	Ave	Hor
3659.600	22.87	30.84	4.04	26.11	31.64	74.00	-42.36	PK	PK	Hor
3659.600	5.29	30.84	4.04	26.11	14.06	54.00	-39.94	Ave	Ave	Hor
4574.500	20.16	32.17	7.57	25.86	34.05	74.00	-39.95	PK	PK	Hor
4574.500	6.07	32.17	7.57	25.86	19.96	54.00	-34.04	Ave	Ave	Hor
5489.400	20.27	33.80	10.15	25.65	38.57	74.00	-35.43	PK	PK	Hor
5489.400	7.59	33.80	10.15	25.65	25.89	54.00	-28.11	Ave	Ave	Hor
6404.300	23.05	36.57	9.13	25.65	43.10	74.00	-30.90	PK	PK	Hor
6404.300	10.71	36.57	9.13	25.65	30.76	54.00	-23.24	Ave	Ave	Hor
7319.200	11.45	37.11	8.45	25.51	31.50	74.00	-42.50	PK	PK	Hor
7319.200	-0.72	37.11	8.45	25.51	19.33	54.00	-34.67	Ave	Ave	Hor
8234.100	11.31	37.29	7.45	25.27	30.78	74.00	-43.22	PK	PK	Hor
8234.100	-1.07	37.29	7.45	25.27	18.40	54.00	-35.60	Ave	Ave	Hor
9149.000	11.63	37.66	6.04	25.00	30.33	74.00	-43.67	PK	PK	Hor
9149.000	-0.70	37.66	6.04	25.00	18.00	54.00	-36.00	Ave	Ave	Hor



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - High Channel - Y-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1829.800	30.35	27.17	2.87	26.35	34.04	74.00	-39.96	PK	PK	Vert
1829.800	12.59	27.17	2.87	26.35	16.28	54.00	-37.72	Ave	Ave	Vert
2744.700	17.46	29.99	3.45	26.31	24.60	74.00	-49.40	PK	PK	Vert
2744.700	4.47	29.99	3.45	26.31	11.61	54.00	-42.39	Ave	Ave	Vert
3659.600	18.05	30.84	4.04	26.11	26.82	74.00	-47.18	PK	PK	Vert
3659.600	5.35	30.84	4.04	26.11	14.12	54.00	-39.88	Ave	Ave	Vert
4574.500	18.05	32.17	7.57	25.86	31.94	74.00	-42.06	PK	PK	Vert
4574.500	6.10	32.17	7.57	25.86	19.99	54.00	-34.01	Ave	Ave	Vert
5489.400	19.38	33.80	10.15	25.65	37.68	74.00	-36.32	PK	PK	Vert
5489.400	7.61	33.80	10.15	25.65	25.91	54.00	-28.09	Ave	Ave	Vert
6404.300	23.14	35.77	9.13	25.65	42.39	74.00	-31.61	PK	PK	Vert
6404.300	10.72	35.77	9.13	25.65	29.97	54.00	-24.03	Ave	Ave	Vert
7319.200	11.80	37.11	8.45	25.51	31.85	74.00	-42.15	PK	PK	Vert
7319.200	-0.63	37.11	8.45	25.51	19.42	54.00	-34.58	Ave	Ave	Vert
8234.100	11.26	37.29	7.45	25.27	30.73	74.00	-43.27	PK	PK	Vert
8234.100	-1.08	37.29	7.45	25.27	18.39	54.00	-35.61	Ave	Ave	Vert
9149.000	13.23	37.66	6.04	25.00	31.93	74.00	-42.07	PK	PK	Vert
9149.000	-0.42	37.66	6.04	25.00	18.28	54.00	-35.72	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - High Channel - Y-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1829.800	29.29	27.17	2.87	26.35	32.98	74.00	-41.02	PK	PK	Hor
1829.800	6.73	27.17	2.87	26.35	10.42	54.00	-43.58	Ave	Ave	Hor
2744.700	18.35	29.99	3.45	26.31	25.49	74.00	-48.51	PK	PK	Hor
2744.700	4.67	29.99	3.45	26.31	11.81	54.00	-42.19	Ave	Ave	Hor
3659.600	20.72	30.84	4.04	26.11	29.49	74.00	-44.51	PK	PK	Hor
3659.600	5.01	30.84	4.04	26.11	13.78	54.00	-40.22	Ave	Ave	Hor
4574.500	17.92	32.17	7.57	25.86	31.81	74.00	-42.19	PK	PK	Hor
4574.500	5.79	32.17	7.57	25.86	19.68	54.00	-34.32	Ave	Ave	Hor
5489.400	19.59	33.80	10.15	25.65	37.89	74.00	-36.11	PK	PK	Hor
5489.400	7.31	33.80	10.15	25.65	25.61	54.00	-28.39	Ave	Ave	Hor
6404.300	22.49	36.57	9.13	25.65	42.54	74.00	-31.46	PK	PK	Hor
6404.300	10.48	36.57	9.13	25.65	30.53	54.00	-23.47	Ave	Ave	Hor
7319.200	11.15	37.11	8.45	25.51	31.20	74.00	-42.80	PK	PK	Hor
7319.200	-1.24	37.11	8.45	25.51	18.81	54.00	-35.19	Ave	Ave	Hor
8234.100	11.12	37.29	7.45	25.27	30.59	74.00	-43.41	PK	PK	Hor
8234.100	-1.49	37.29	7.45	25.27	17.98	54.00	-36.02	Ave	Ave	Hor
9149.000	11.14	37.66	6.04	25.00	29.84	74.00	-44.16	PK	PK	Hor
9149.000	-1.27	37.66	6.04	25.00	17.43	54.00	-36.57	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - High Channel - Y-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1829.800	39.22	27.17	2.87	26.35	42.91	74.00	-31.09	PK	PK	Vert
1829.800	20.27	27.17	2.87	26.35	23.96	54.00	-30.04	Ave	Ave	Vert
2744.700	22.79	29.99	3.45	26.31	29.93	74.00	-44.07	PK	PK	Vert
2744.700	7.15	29.99	3.45	26.31	14.29	54.00	-39.71	Ave	Ave	Vert
3659.600	28.28	30.84	4.04	26.11	37.05	74.00	-36.95	PK	PK	Vert
3659.600	5.43	30.84	4.04	26.11	14.20	54.00	-39.80	Ave	Ave	Vert
4574.500	18.53	32.17	7.57	25.86	32.42	74.00	-41.58	PK	PK	Vert
4574.500	6.15	32.17	7.57	25.86	20.04	54.00	-33.96	Ave	Ave	Vert
5489.400	20.50	33.80	10.15	25.65	38.80	74.00	-35.20	PK	PK	Vert
5489.400	7.68	33.80	10.15	25.65	25.98	54.00	-28.02	Ave	Ave	Vert
6404.300	23.37	35.77	9.13	25.65	42.62	74.00	-31.38	PK	PK	Vert
6404.300	9.10	35.77	9.13	25.65	28.35	54.00	-25.65	Ave	Ave	Vert
7319.200	12.12	37.11	8.45	25.51	32.17	74.00	-41.83	PK	PK	Vert
7319.200	-0.62	37.11	8.45	25.51	19.43	54.00	-34.57	Ave	Ave	Vert
8234.100	10.81	37.29	7.45	25.27	30.28	74.00	-43.72	PK	PK	Vert
8234.100	-0.98	37.29	7.45	25.27	18.49	54.00	-35.51	Ave	Ave	Vert
9149.000	15.22	37.66	6.04	25.00	33.92	74.00	-40.08	PK	PK	Vert
9149.000	-0.18	37.66	6.04	25.00	18.52	54.00	-35.48	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Low Channel - Z-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1804.600	40.24	26.99	2.88	26.34	43.77	74.00	-30.23	PK	PK	Hor
1804.600	21.13	26.99	2.88	26.34	24.66	54.00	-29.34	Ave	Ave	Hor
2706.900	24.62	29.95	3.46	26.31	31.72	74.00	-42.28	PK	PK	Hor
2706.900	7.31	29.95	3.46	26.31	14.41	54.00	-39.59	Ave	Ave	Hor
3609.200	18.26	30.67	3.87	26.13	26.67	74.00	-47.33	PK	PK	Hor
3609.200	5.50	30.67	3.87	26.13	13.91	54.00	-40.09	Ave	Ave	Hor
4511.500	18.66	31.94	7.51	25.87	32.24	74.00	-41.76	PK	PK	Hor
4511.500	6.42	31.94	7.51	25.87	20.00	54.00	-34.00	Ave	Ave	Hor
5413.800	20.05	33.78	9.82	25.67	37.98	74.00	-36.02	PK	PK	Hor
5413.800	7.34	33.78	9.82	25.67	25.27	54.00	-28.73	Ave	Ave	Hor
6316.100	22.07	36.27	9.26	25.66	41.94	74.00	-32.06	PK	PK	Hor
6316.100	9.66	36.27	9.26	25.66	29.53	54.00	-24.47	Ave	Ave	Hor
7218.400	11.51	37.17	8.31	25.53	31.45	74.00	-42.55	PK	PK	Hor
7218.400	-0.08	37.17	8.31	25.53	19.86	54.00	-34.14	Ave	Ave	Hor
8120.700	11.01	37.25	7.42	25.31	30.38	74.00	-43.62	PK	PK	Hor
8120.700	-1.01	37.25	7.42	25.31	18.36	54.00	-35.64	Ave	Ave	Hor
9023.000	11.93	37.61	6.34	25.03	30.85	74.00	-43.15	PK	PK	Hor
9023.000	-0.96	37.61	6.34	25.03	17.96	54.00	-36.04	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Low Channel - Z-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1804.600	36.41	26.99	2.88	26.34	39.94	74.00	-34.06	PK	PK	Vert
1804.600	10.15	26.99	2.88	26.34	13.68	54.00	-40.32	Ave	Ave	Vert
2706.900	23.83	29.95	3.46	26.31	30.93	74.00	-43.07	PK	PK	Vert
2706.900	4.71	29.95	3.46	26.31	11.81	54.00	-42.19	Ave	Ave	Vert
3609.200	19.82	30.67	3.87	26.13	28.23	74.00	-45.77	PK	PK	Vert
3609.200	5.51	30.67	3.87	26.13	13.92	54.00	-40.08	Ave	Ave	Vert
4511.500	18.97	31.94	7.51	25.87	32.55	74.00	-41.45	PK	PK	Vert
4511.500	6.42	31.94	7.51	25.87	20.00	54.00	-34.00	Ave	Ave	Vert
5413.800	19.85	33.78	9.82	25.67	37.78	74.00	-36.22	PK	PK	Vert
5413.800	7.33	33.78	9.82	25.67	25.26	54.00	-28.74	Ave	Ave	Vert
6316.100	22.69	35.64	9.26	25.66	41.93	74.00	-32.07	PK	PK	Vert
6316.100	9.63	35.64	9.26	25.66	28.87	54.00	-25.13	Ave	Ave	Vert
7218.400	11.24	37.17	8.31	25.53	31.18	74.00	-42.82	PK	PK	Vert
7218.400	-0.82	37.17	8.31	25.53	19.12	54.00	-34.88	Ave	Ave	Vert
8120.700	11.49	37.25	7.42	25.31	30.86	74.00	-43.14	PK	PK	Vert
8120.700	-1.03	37.25	7.42	25.31	18.34	54.00	-35.66	Ave	Ave	Vert
9023.000	11.05	37.61	6.34	25.03	29.97	74.00	-44.03	PK	PK	Vert
9023.000	-1.20	37.61	6.34	25.03	17.72	54.00	-36.28	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Low Channel - Z-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1804.600	30.45	26.99	2.88	26.34	33.98	74.00	-40.02	PK	PK	Hor
1804.600	6.92	26.99	2.88	26.34	10.45	54.00	-43.55	Ave	Ave	Hor
2706.900	16.23	29.95	3.46	26.31	23.33	74.00	-50.67	PK	PK	Hor
2706.900	4.03	29.95	3.46	26.31	11.13	54.00	-42.87	Ave	Ave	Hor
3609.200	18.18	30.67	3.87	26.13	26.59	74.00	-47.41	PK	PK	Hor
3609.200	5.49	30.67	3.87	26.13	13.90	54.00	-40.10	Ave	Ave	Hor
4511.500	19.11	31.94	7.51	25.87	32.69	74.00	-41.31	PK	PK	Hor
4511.500	6.41	31.94	7.51	25.87	20.00	54.00	-34.00	Ave	Ave	Hor
5413.800	19.98	33.78	9.82	25.67	37.91	74.00	-36.09	PK	PK	Hor
5413.800	7.30	33.78	9.82	25.67	25.23	54.00	-28.77	Ave	Ave	Hor
6316.100	22.01	36.27	9.26	25.66	41.88	74.00	-32.12	PK	PK	Hor
6316.100	9.65	36.27	9.26	25.66	29.52	54.00	-24.48	Ave	Ave	Hor
7218.400	11.59	37.17	8.31	25.53	31.53	74.00	-42.47	PK	PK	Hor
7218.400	-0.84	37.17	8.31	25.53	19.10	54.00	-34.90	Ave	Ave	Hor
8120.700	11.09	37.25	7.42	25.31	30.46	74.00	-43.54	PK	PK	Hor
8120.700	-1.06	37.25	7.42	25.31	18.31	54.00	-35.69	Ave	Ave	Hor
9023.000	10.94	37.61	6.34	25.03	29.86	74.00	-44.14	PK	PK	Hor
9023.000	-1.25	37.61	6.34	25.03	17.67	54.00	-36.33	Ave	Ave	Hor



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Low Channel - Z-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1804.600	39.93	26.99	4.31	26.34	44.89	74.00	-29.11	PK	PK	Vert
1804.600	20.86	26.99	4.31	26.34	25.82	54.00	-28.18	Ave	Ave	Vert
2706.900	23.23	29.95	3.46	26.31	30.33	74.00	-43.67	PK	PK	Vert
2706.900	7.34	29.95	3.46	26.31	14.44	54.00	-39.56	Ave	Ave	Vert
3609.200	18.80	30.67	3.87	26.13	27.21	74.00	-46.79	PK	PK	Vert
3609.200	5.51	30.67	3.87	26.13	13.92	54.00	-40.08	Ave	Ave	Vert
4511.500	19.08	31.94	7.51	25.87	32.66	74.00	-41.34	PK	PK	Vert
4511.500	6.41	31.94	7.51	25.87	19.99	54.00	-34.01	Ave	Ave	Vert
5413.800	19.79	33.78	9.82	25.67	37.72	74.00	-36.28	PK	PK	Vert
5413.800	7.35	33.78	9.82	25.67	25.28	54.00	-28.72	Ave	Ave	Vert
6316.100	21.92	35.64	7.97	25.66	39.88	74.00	-34.12	PK	PK	Vert
6316.100	9.65	35.64	7.97	25.66	27.61	54.00	-26.39	Ave	Ave	Vert
7218.400	19.48	37.17	8.31	25.53	39.42	74.00	-34.58	PK	PK	Vert
7218.400	-0.84	37.17	8.31	25.53	19.10	54.00	-34.90	Ave	Ave	Vert
8120.700	11.44	37.25	7.42	25.31	30.81	74.00	-43.19	PK	PK	Vert
8120.700	-1.04	37.25	7.42	25.31	18.33	54.00	-35.67	Ave	Ave	Vert
9023.000	11.15	37.61	6.34	25.03	30.07	74.00	-43.93	PK	PK	Vert
9023.000	-1.25	37.61	6.34	25.03	17.67	54.00	-36.33	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Mid Channel - Z-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Fctors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1817.000	37.50	27.08	2.87	26.35	41.11	74.00	-32.89	PK	PK	Hor
1817.000	18.56	27.08	2.87	26.35	22.17	54.00	-31.83	Ave	Ave	Hor
2725.500	22.05	29.97	3.45	26.31	29.17	74.00	-44.83	PK	PK	Hor
2725.500	6.52	29.97	3.45	26.31	13.64	54.00	-40.36	Ave	Ave	Hor
3634.000	14.63	30.76	3.96	26.12	23.22	74.00	-50.78	PK	PK	Hor
3634.000	5.45	30.76	3.96	26.12	14.04	54.00	-39.96	Ave	Ave	Hor
4542.500	19.01	32.05	7.54	25.86	32.74	74.00	-41.26	PK	PK	Hor
4542.500	6.29	32.05	7.54	25.86	20.02	54.00	-33.98	Ave	Ave	Hor
5451.000	19.74	33.79	9.98	25.66	37.85	74.00	-36.15	PK	PK	Hor
5451.000	7.30	33.79	9.98	25.66	25.41	54.00	-28.59	Ave	Ave	Hor
6359.500	22.12	36.42	9.20	25.66	42.08	74.00	-31.92	PK	PK	Hor
6359.500	10.05	36.42	9.20	25.66	30.01	54.00	-23.99	Ave	Ave	Hor
7268.000	20.42	37.14	8.38	25.52	40.41	74.00	-33.59	PK	PK	Hor
7268.000	-0.72	37.14	8.38	25.52	19.27	54.00	-34.73	Ave	Ave	Hor
8176.500	11.18	37.27	7.44	25.29	30.60	74.00	-43.40	PK	PK	Hor
8176.500	-0.90	37.27	7.44	25.29	18.52	54.00	-35.48	Ave	Ave	Hor
9085.000	11.80	37.63	6.20	25.02	30.61	74.00	-43.39	PK	PK	Hor
9085.000	-0.86	37.63	6.20	25.02	17.95	54.00	-36.05	Ave	Ave	Hor



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Mid Channel - Z-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1817.000	39.35	27.08	2.87	26.35	42.96	74.00	-31.04	PK	PK	Vert
1817.000	11.89	27.08	2.87	26.35	15.50	54.00	-38.50	Ave	Ave	Vert
2725.500	19.94	29.97	3.45	26.31	27.06	74.00	-46.94	PK	PK	Vert
2725.500	4.75	29.97	3.45	26.31	11.87	54.00	-42.13	Ave	Ave	Vert
3634.000	17.08	30.76	3.96	26.12	25.67	74.00	-48.33	PK	PK	Vert
3634.000	5.23	30.76	3.96	26.12	13.82	54.00	-40.18	Ave	Ave	Vert
4542.500	18.93	32.05	7.54	25.86	32.66	74.00	-41.34	PK	PK	Vert
4542.500	6.25	32.05	7.54	25.86	19.98	54.00	-34.02	Ave	Ave	Vert
5451.000	20.20	33.79	9.98	25.66	38.31	74.00	-35.69	PK	PK	Vert
5451.000	7.26	33.79	9.98	25.66	25.37	54.00	-28.63	Ave	Ave	Vert
6359.500	22.37	35.70	9.20	25.66	41.61	74.00	-32.39	PK	PK	Vert
6359.500	10.01	35.70	9.20	25.66	29.25	54.00	-24.75	Ave	Ave	Vert
7268.000	11.41	37.14	8.38	25.52	31.40	74.00	-42.60	PK	PK	Vert
7268.000	-0.77	37.14	8.38	25.52	19.22	54.00	-34.78	Ave	Ave	Vert
8176.500	11.22	37.27	7.44	25.29	30.64	74.00	-43.36	PK	PK	Vert
8176.500	-0.97	37.27	7.44	25.29	18.45	54.00	-35.55	Ave	Ave	Vert
9085.000	11.31	37.63	6.20	25.02	30.12	74.00	-43.88	PK	PK	Vert
9085.000	-1.08	37.63	6.20	25.02	17.73	54.00	-36.27	Ave	Ave	Vert



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Coalville, UT 84017
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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Mid Channel - Z-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1817.000	31.50	27.08	2.87	26.35	35.11	74.00	-38.89	PK	PK	Hor
1817.000	6.56	27.08	2.87	26.35	10.17	54.00	-43.83	Ave	Ave	Hor
2725.500	17.01	29.97	3.45	26.31	24.13	74.00	-49.87	PK	PK	Hor
2725.500	4.32	29.97	3.45	26.31	11.44	54.00	-42.56	Ave	Ave	Hor
3634.000	17.91	30.76	3.96	26.12	26.50	74.00	-47.50	PK	PK	Hor
3634.000	5.00	30.76	3.96	26.12	13.59	54.00	-40.41	Ave	Ave	Hor
4542.500	19.76	32.05	7.54	25.86	33.49	74.00	-40.51	PK	PK	Hor
4542.500	6.17	32.05	7.54	25.86	19.90	54.00	-34.10	Ave	Ave	Hor
5451.000	19.77	33.79	9.98	25.66	37.88	74.00	-36.12	PK	PK	Hor
5451.000	7.18	33.79	9.98	25.66	25.29	54.00	-28.71	Ave	Ave	Hor
6359.500	22.85	36.42	9.20	25.66	42.81	74.00	-31.19	PK	PK	Hor
6359.500	9.95	36.42	9.20	25.66	29.91	54.00	-24.09	Ave	Ave	Hor
7268.000	11.17	37.14	8.38	25.52	31.16	74.00	-42.84	PK	PK	Hor
7268.000	-1.00	37.14	8.38	25.52	18.99	54.00	-35.01	Ave	Ave	Hor
8176.500	11.21	37.27	7.44	25.29	30.63	74.00	-43.37	PK	PK	Hor
8176.500	-1.18	37.27	7.44	25.29	18.24	54.00	-35.76	Ave	Ave	Hor
9085.000	11.73	37.63	6.20	25.02	30.54	74.00	-43.46	PK	PK	Hor
9085.000	-1.06	37.63	6.20	25.02	17.75	54.00	-36.25	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - Mid Channel - Z-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1817.000	40.06	27.08	2.87	26.35	43.67	74.00	-30.33	PK	PK	Vert
1817.000	21.02	27.08	2.87	26.35	24.63	54.00	-29.37	Ave	Ave	Vert
2725.500	23.84	29.97	3.45	26.31	30.96	74.00	-43.04	PK	PK	Vert
2725.500	7.42	29.97	3.45	26.31	14.54	54.00	-39.46	Ave	Ave	Vert
3634.000	26.14	30.76	3.96	26.12	34.73	74.00	-39.27	PK	PK	Vert
3634.000	5.16	30.76	3.96	26.12	13.75	54.00	-40.25	Ave	Ave	Vert
4542.500	19.54	32.05	7.54	25.86	33.27	74.00	-40.73	PK	PK	Vert
4542.500	6.22	32.05	7.54	25.86	19.95	54.00	-34.05	Ave	Ave	Vert
5451.000	20.69	33.79	9.98	25.66	38.80	74.00	-35.20	PK	PK	Vert
5451.000	7.20	33.79	9.98	25.66	25.31	54.00	-28.69	Ave	Ave	Vert
6359.500	22.10	35.70	9.20	25.66	41.34	74.00	-32.66	PK	PK	Vert
6359.500	9.10	35.70	9.20	25.66	28.34	54.00	-25.66	Ave	Ave	Vert
7268.000	12.07	37.14	8.38	25.52	32.06	74.00	-41.94	PK	PK	Vert
7268.000	-0.91	37.14	8.38	25.52	19.08	54.00	-34.92	Ave	Ave	Vert
8176.500	11.10	37.27	7.44	25.29	30.52	74.00	-43.48	PK	PK	Vert
8176.500	-1.10	37.27	7.44	25.29	18.32	54.00	-35.68	Ave	Ave	Vert
9085.000	10.88	37.63	6.20	25.02	29.69	74.00	-44.31	PK	PK	Vert
9085.000	-1.16	37.63	6.20	25.02	17.65	54.00	-36.35	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - High Channel - Z-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1829.800	41.52	27.17	2.87	26.35	45.21	74.00	-28.79	PK	PK	Hor
1829.800	15.72	27.17	2.87	26.35	19.41	54.00	-34.59	Ave	Ave	Hor
2744.700	21.47	29.99	3.45	26.31	28.61	74.00	-45.39	PK	PK	Hor
2744.700	6.39	29.99	3.45	26.31	13.53	54.00	-40.47	Ave	Ave	Hor
3659.600	18.48	30.84	4.04	26.11	27.25	74.00	-46.75	PK	PK	Hor
3659.600	5.57	30.84	4.04	26.11	14.34	54.00	-39.66	Ave	Ave	Hor
4574.500	21.23	32.17	7.57	25.86	35.12	74.00	-38.88	PK	PK	Hor
4574.500	6.03	32.17	7.57	25.86	19.92	54.00	-34.08	Ave	Ave	Hor
5489.400	19.60	33.80	10.15	25.65	37.90	74.00	-36.10	PK	PK	Hor
5489.400	7.52	33.80	10.15	25.65	25.82	54.00	-28.18	Ave	Ave	Hor
6404.300	23.23	36.57	9.13	25.65	43.28	74.00	-30.72	PK	PK	Hor
6404.300	10.67	36.57	9.13	25.65	30.72	54.00	-23.28	Ave	Ave	Hor
7319.200	11.99	37.11	8.45	25.51	32.04	74.00	-41.96	PK	PK	Hor
7319.200	-0.77	37.11	8.45	25.51	19.28	54.00	-34.72	Ave	Ave	Hor
8234.100	10.93	37.29	7.45	25.27	30.40	74.00	-43.60	PK	PK	Hor
8234.100	-1.24	37.29	7.45	25.27	18.23	54.00	-35.77	Ave	Ave	Hor
9149.000	14.87	37.66	6.04	25.00	33.57	74.00	-40.43	PK	PK	Hor
9149.000	-0.29	37.66	6.04	25.00	18.41	54.00	-35.59	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - High Channel - Z-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1829.800	34.77	27.17	2.87	26.35	38.46	74.00	-35.54	PK	PK	Vert
1829.800	16.01	27.17	2.87	26.35	19.70	54.00	-34.30	Ave	Ave	Vert
2744.700	21.37	29.99	3.45	26.31	28.51	74.00	-45.49	PK	PK	Vert
2744.700	6.17	29.99	3.45	26.31	13.31	54.00	-40.69	Ave	Ave	Vert
3659.600	19.15	30.84	4.04	26.11	27.92	74.00	-46.08	PK	PK	Vert
3659.600	5.16	30.84	4.04	26.11	13.93	54.00	-40.07	Ave	Ave	Vert
4574.500	18.22	32.17	7.57	25.86	32.11	74.00	-41.89	PK	PK	Vert
4574.500	5.96	32.17	7.57	25.86	19.85	54.00	-34.15	Ave	Ave	Vert
5489.400	19.79	33.80	10.15	25.65	38.09	74.00	-35.91	PK	PK	Vert
5489.400	7.46	33.80	10.15	25.65	25.76	54.00	-28.24	Ave	Ave	Vert
6404.300	22.91	35.77	9.13	25.65	42.16	74.00	-31.84	PK	PK	Vert
6404.300	10.62	35.77	9.13	25.65	29.87	54.00	-24.13	Ave	Ave	Vert
7319.200	11.94	37.11	8.45	25.51	31.99	74.00	-42.01	PK	PK	Vert
7319.200	-8.60	37.11	8.45	25.51	11.45	54.00	-42.55	Ave	Ave	Vert
8234.100	11.47	37.29	7.45	25.27	30.94	74.00	-43.06	PK	PK	Vert
8234.100	-1.21	37.29	7.45	25.27	18.26	54.00	-35.74	Ave	Ave	Vert
9149.000	14.37	37.66	6.04	25.00	33.07	74.00	-40.93	PK	PK	Vert
9149.000	-2.00	37.66	6.04	25.00	16.70	54.00	-37.30	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - High Channel - Z-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1829.800	40.10	27.17	2.87	26.35	43.79	74.00	-30.21	PK	PK	Hor
1829.800	8.51	27.17	2.87	26.35	12.20	54.00	-41.80	Ave	Ave	Hor
2744.700	17.33	29.99	3.45	26.31	24.47	74.00	-49.53	PK	PK	Hor
2744.700	4.21	29.99	3.45	26.31	11.35	54.00	-42.65	Ave	Ave	Hor
3659.600	17.37	30.84	4.04	26.11	26.14	74.00	-47.86	PK	PK	Hor
3659.600	5.17	30.84	4.04	26.11	13.94	54.00	-40.06	Ave	Ave	Hor
4574.500	18.23	32.17	7.57	25.86	32.12	74.00	-41.88	PK	PK	Hor
4574.500	5.90	32.17	7.57	25.86	19.79	54.00	-34.21	Ave	Ave	Hor
5489.400	20.27	33.80	10.15	25.65	38.57	74.00	-35.43	PK	PK	Hor
5489.400	7.41	33.80	10.15	25.65	25.71	54.00	-28.29	Ave	Ave	Hor
6404.300	23.04	36.57	9.13	25.65	43.09	74.00	-30.91	PK	PK	Hor
6404.300	10.56	36.57	9.13	25.65	30.61	54.00	-23.39	Ave	Ave	Hor
7319.200	11.35	37.11	8.45	25.51	31.40	74.00	-42.60	PK	PK	Hor
7319.200	-1.04	37.11	8.45	25.51	19.01	54.00	-34.99	Ave	Ave	Hor
8234.100	10.68	37.29	7.45	25.27	30.15	74.00	-43.85	PK	PK	Hor
8234.100	-1.40	37.29	7.45	25.27	18.07	54.00	-35.93	Ave	Ave	Hor
9149.000	15.90	37.66	6.04	25.00	34.60	74.00	-39.40	PK	PK	Hor
9149.000	0.02	37.66	6.04	25.00	18.72	54.00	-35.28	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (125kHz) - High Channel - Z-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1829.800	41.36	27.17	2.87	26.35	45.05	74.00	-28.95	PK	PK	Vert
1829.800	19.53	27.17	2.87	26.35	23.22	54.00	-30.78	Ave	Ave	Vert
2744.700	24.93	29.99	3.45	26.31	32.07	74.00	-41.93	PK	PK	Vert
2744.700	8.38	29.99	3.45	26.31	15.52	54.00	-38.48	Ave	Ave	Vert
3659.600	32.80	30.84	4.04	26.11	41.57	74.00	-32.43	PK	PK	Vert
3659.600	6.02	30.84	4.04	26.11	14.79	54.00	-39.21	Ave	Ave	Vert
4574.500	18.48	32.17	7.57	25.86	32.37	74.00	-41.63	PK	PK	Vert
4574.500	5.87	32.17	7.57	25.86	19.76	54.00	-34.24	Ave	Ave	Vert
5489.400	19.67	33.80	10.15	25.65	37.97	74.00	-36.03	PK	PK	Vert
5489.400	7.39	33.80	10.15	25.65	25.69	54.00	-28.31	Ave	Ave	Vert
6404.300	22.94	35.77	9.13	25.65	42.19	74.00	-31.81	PK	PK	Vert
6404.300	10.55	35.77	9.13	25.65	29.80	54.00	-24.20	Ave	Ave	Vert
7319.200	10.81	37.11	8.45	25.51	30.86	74.00	-43.14	PK	PK	Vert
7319.200	-1.10	37.11	8.45	25.51	18.95	54.00	-35.05	Ave	Ave	Vert
8234.100	11.14	37.29	7.45	25.27	30.61	74.00	-43.39	PK	PK	Vert
8234.100	-1.37	37.29	7.45	25.27	18.10	54.00	-35.90	Ave	Ave	Vert
9149.000	17.09	37.66	6.04	25.00	35.79	74.00	-38.21	PK	PK	Vert
9149.000	0.20	37.66	6.04	25.00	18.90	54.00	-35.10	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Low Channel - X-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1806.000	41.9	27.0	4.3	26.3	46.9	74.0	-27.1	PK	PK	Hor
1806.000	12.3	27.0	4.3	26.3	17.3	54.0	-36.7	Ave	Ave	Hor
2709.000	26.2	30.0	5.3	26.3	35.2	74.0	-38.8	PK	PK	Hor
2709.000	5.4	30.0	5.3	26.3	14.3	54.0	-39.7	Ave	Ave	Hor
3612.000	18.1	30.7	6.0	26.1	28.6	74.0	-45.4	PK	PK	Hor
3612.000	5.3	30.7	6.0	26.1	15.8	54.0	-38.2	Ave	Ave	Hor
4515.000	18.7	32.0	6.8	25.9	31.5	74.0	-42.5	PK	PK	Hor
4515.000	6.2	32.0	6.8	25.9	19.0	54.0	-35.0	Ave	Ave	Hor
5418.000	19.3	33.8	7.5	25.7	34.9	74.0	-39.1	PK	PK	Hor
5418.000	7.1	33.8	7.5	25.7	22.7	54.0	-31.3	Ave	Ave	Hor
6321.000	21.9	36.3	8.1	25.7	40.7	74.0	-33.3	PK	PK	Hor
6321.000	9.5	36.3	8.1	25.7	28.3	54.0	-25.7	Ave	Ave	Hor
7224.000	10.7	37.2	8.8	25.5	31.1	74.0	-42.9	PK	PK	Hor
7224.000	-1.2	37.2	8.8	25.5	19.2	54.0	-34.8	Ave	Ave	Hor
8127.000	11.3	37.3	9.4	25.3	32.7	74.0	-41.3	PK	PK	Hor
8127.000	-1.4	37.3	9.4	25.3	19.9	54.0	-34.1	Ave	Ave	Hor
9030.000	11.1	37.6	10.0	25.0	33.7	74.0	-40.3	PK	PK	Hor
9030.000	-1.6	37.6	10.0	25.0	21.0	54.0	-33.0	Ave	Ave	Hor



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Low Channel - X-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1806.000	43.4	27.0	2.9	26.3	46.9	74.0	-27.1	PK	PK	Vert
1806.000	5.4	27.0	2.9	26.3	8.9	54.0	-45.1	Ave	Ave	Vert
2709.000	16.4	30.0	3.5	26.3	23.5	74.0	-50.5	PK	PK	Vert
2709.000	4.0	30.0	3.5	26.3	11.1	54.0	-42.9	Ave	Ave	Vert
3612.000	17.5	30.7	3.9	26.1	25.9	74.0	-48.1	PK	PK	Vert
3612.000	5.3	30.7	3.9	26.1	13.7	54.0	-40.3	Ave	Ave	Vert
4515.000	18.4	32.0	7.5	25.9	32.0	74.0	-42.0	PK	PK	Vert
4515.000	6.2	32.0	7.5	25.9	19.8	54.0	-34.2	Ave	Ave	Vert
5418.000	19.8	33.8	9.8	25.7	37.7	74.0	-36.3	PK	PK	Vert
5418.000	7.1	33.8	9.8	25.7	25.0	54.0	-29.0	Ave	Ave	Vert
6321.000	22.9	35.6	9.3	25.7	42.1	74.0	-31.9	PK	PK	Vert
6321.000	9.5	35.6	9.3	25.7	28.8	54.0	-25.2	Ave	Ave	Vert
7224.000	11.5	37.2	8.3	25.5	31.4	74.0	-42.6	PK	PK	Vert
7224.000	-1.2	37.2	8.3	25.5	18.7	54.0	-35.3	Ave	Ave	Vert
8127.000	11.7	37.3	7.4	25.3	31.1	74.0	-42.9	PK	PK	Vert
8127.000	-1.5	37.3	7.4	25.3	17.9	54.0	-36.1	Ave	Ave	Vert
9030.000	11.9	37.6	6.3	25.0	30.8	74.0	-43.2	PK	PK	Vert
9030.000	-1.5	37.6	6.3	25.0	17.4	54.0	-36.6	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Low Channel - X-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1806.000	35.1	27.0	2.9	26.3	38.6	74.0	-35.4	PK	PK	Hor
1806.000	4.3	27.0	2.9	26.3	7.9	54.0	-46.1	Ave	Ave	Hor
2709.000	17.0	30.0	3.5	26.3	24.1	74.0	-49.9	PK	PK	Hor
2709.000	3.9	30.0	3.5	26.3	11.0	54.0	-43.0	Ave	Ave	Hor
3612.000	17.4	30.7	3.9	26.1	25.8	74.0	-48.2	PK	PK	Hor
3612.000	5.3	30.7	3.9	26.1	13.7	54.0	-40.3	Ave	Ave	Hor
4515.000	18.5	32.0	7.5	25.9	32.1	74.0	-41.9	PK	PK	Hor
4515.000	6.2	32.0	7.5	25.9	19.8	54.0	-34.2	Ave	Ave	Hor
5418.000	19.6	33.8	9.8	25.7	37.6	74.0	-36.4	PK	PK	Hor
5418.000	7.1	33.8	9.8	25.7	25.1	54.0	-28.9	Ave	Ave	Hor
6321.000	21.9	36.3	9.3	25.7	41.8	74.0	-32.2	PK	PK	Hor
6321.000	9.5	36.3	9.3	25.7	29.4	54.0	-24.6	Ave	Ave	Hor
7224.000	11.1	37.2	8.3	25.5	31.1	74.0	-42.9	PK	PK	Hor
7224.000	-1.2	37.2	8.3	25.5	18.7	54.0	-35.3	Ave	Ave	Hor
8127.000	10.9	37.3	7.4	25.3	30.3	74.0	-43.7	PK	PK	Hor
8127.000	-1.5	37.3	7.4	25.3	17.9	54.0	-36.1	Ave	Ave	Hor
9030.000	10.9	37.6	6.3	25.0	29.8	74.0	-44.2	PK	PK	Hor
9030.000	-1.6	37.6	6.3	25.0	17.3	54.0	-36.7	Ave	Ave	Hor



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

Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Low Channel - X-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1806.000	39.2	27.0	2.9	26.3	42.7	74.0	-31.3	PK	PK	Vert
1806.000	10.6	27.0	2.9	26.3	14.2	54.0	-39.8	Ave	Ave	Vert
2709.000	22.6	30.0	3.5	26.3	29.7	74.0	-44.3	PK	PK	Vert
2709.000	4.5	30.0	3.5	26.3	11.6	54.0	-42.4	Ave	Ave	Vert
3612.000	17.4	30.7	3.9	26.1	25.9	74.0	-48.1	PK	PK	Vert
3612.000	5.3	30.7	3.9	26.1	13.7	54.0	-40.3	Ave	Ave	Vert
4515.000	18.4	32.0	7.5	25.9	32.0	74.0	-42.0	PK	PK	Vert
4515.000	6.2	32.0	7.5	25.9	19.8	54.0	-34.2	Ave	Ave	Vert
5418.000	19.3	33.8	9.8	25.7	37.3	74.0	-36.7	PK	PK	Vert
5418.000	7.1	33.8	9.8	25.7	25.1	54.0	-28.9	Ave	Ave	Vert
6321.000	21.8	35.6	9.3	25.7	41.0	74.0	-33.0	PK	PK	Vert
6321.000	9.5	35.6	9.3	25.7	28.8	54.0	-25.2	Ave	Ave	Vert
7224.000	11.1	37.2	8.3	25.5	31.0	74.0	-43.0	PK	PK	Vert
7224.000	-1.2	37.2	8.3	25.5	18.7	54.0	-35.3	Ave	Ave	Vert
8127.000	10.6	37.3	7.4	25.3	30.0	74.0	-44.0	PK	PK	Vert
8127.000	-1.5	37.3	7.4	25.3	17.9	54.0	-36.1	Ave	Ave	Vert
9030.000	11.8	37.6	6.3	25.0	30.7	74.0	-43.3	PK	PK	Vert
9030.000	-1.5	37.6	6.3	25.0	17.4	54.0	-36.6	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Mid Channel - X-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1813.600	40.7	27.1	4.3	26.3	45.8	74.0	-28.2	PK	PK	Hor
1813.600	11.6	27.1	4.3	26.3	16.6	54.0	-37.4	Ave	Ave	Hor
2723.400	25.0	30.0	5.3	26.3	33.9	74.0	-40.1	PK	PK	Hor
2723.400	5.0	30.0	5.3	26.3	14.0	54.0	-40.0	Ave	Ave	Hor
3631.200	22.1	30.7	6.0	26.1	32.7	74.0	-41.3	PK	PK	Hor
3631.200	5.4	30.7	6.0	26.1	16.0	54.0	-38.0	Ave	Ave	Hor
4539.000	18.6	32.0	6.8	25.9	31.5	74.0	-42.5	PK	PK	Hor
4539.000	6.4	32.0	6.8	25.9	19.4	54.0	-34.6	Ave	Ave	Hor
5446.800	19.7	33.8	7.5	25.7	35.3	74.0	-38.7	PK	PK	Hor
5446.800	7.4	33.8	7.5	25.7	23.0	54.0	-31.0	Ave	Ave	Hor
6354.600	22.8	36.4	8.1	25.7	41.7	74.0	-32.3	PK	PK	Hor
6354.600	10.0	36.4	8.1	25.7	28.9	54.0	-25.1	Ave	Ave	Hor
7262.400	12.1	37.1	8.8	25.5	32.5	74.0	-41.5	PK	PK	Hor
7262.400	-0.6	37.1	8.8	25.5	19.8	54.0	-34.2	Ave	Ave	Hor
8170.200	11.3	37.3	9.4	25.3	32.7	74.0	-41.3	PK	PK	Hor
8170.200	-0.8	37.3	9.4	25.3	20.6	54.0	-33.4	Ave	Ave	Hor
9078.000	11.7	37.6	10.0	25.0	34.3	74.0	-39.7	PK	PK	Hor
9078.000	-1.1	37.6	10.0	25.0	21.6	54.0	-32.4	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Mid Channel - X-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1813.600	35.6	27.1	2.9	26.3	39.2	74.0	-34.8	PK	PK	Vert
1813.600	5.5	27.1	2.9	26.3	9.1	54.0	-44.9	Ave	Ave	Vert
2723.400	16.5	30.0	3.5	26.3	23.7	74.0	-50.3	PK	PK	Vert
2723.400	4.0	30.0	3.5	26.3	11.1	54.0	-42.9	Ave	Ave	Vert
3631.200	18.2	30.7	3.9	26.1	26.8	74.0	-47.2	PK	PK	Vert
3631.200	5.3	30.7	3.9	26.1	13.9	54.0	-40.1	Ave	Ave	Vert
4539.000	19.1	32.0	7.5	25.9	32.8	74.0	-41.2	PK	PK	Vert
4539.000	6.4	32.0	7.5	25.9	20.1	54.0	-33.9	Ave	Ave	Vert
5446.800	19.6	33.8	10.0	25.7	37.7	74.0	-36.3	PK	PK	Vert
5446.800	7.3	33.8	10.0	25.7	25.4	54.0	-28.6	Ave	Ave	Vert
6354.600	22.1	35.7	9.2	25.7	41.3	74.0	-32.7	PK	PK	Vert
6354.600	10.0	35.7	9.2	25.7	29.2	54.0	-24.8	Ave	Ave	Vert
7262.400	12.3	37.1	8.4	25.5	32.2	74.0	-41.8	PK	PK	Vert
7262.400	-0.7	37.1	8.4	25.5	19.3	54.0	-34.7	Ave	Ave	Vert
8170.200	12.0	37.3	7.4	25.3	31.4	74.0	-42.6	PK	PK	Vert
8170.200	-0.9	37.3	7.4	25.3	18.5	54.0	-35.5	Ave	Ave	Vert
9078.000	12.3	37.6	6.2	25.0	31.1	74.0	-42.9	PK	PK	Vert
9078.000	-1.1	37.6	6.2	25.0	17.8	54.0	-36.2	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Mid Channel - X-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1815.600	17.2	27.1	2.9	26.3	20.8	74.0	-53.2	PK	PK	Hor
1815.600	3.9	27.1	2.9	26.3	7.5	54.0	-46.5	Ave	Ave	Hor
2723.400	16.1	30.0	3.5	26.3	23.2	74.0	-50.8	PK	PK	Hor
2723.400	4.1	30.0	3.5	26.3	11.2	54.0	-42.8	Ave	Ave	Hor
3631.200	21.2	30.7	3.9	26.1	29.7	74.0	-44.3	PK	PK	Hor
3631.200	5.4	30.7	3.9	26.1	14.0	54.0	-40.0	Ave	Ave	Hor
4539.000	19.0	32.0	7.5	25.9	32.7	74.0	-41.3	PK	PK	Hor
4539.000	6.4	32.0	7.5	25.9	20.1	54.0	-33.9	Ave	Ave	Hor
5446.800	19.9	33.8	10.0	25.7	38.0	74.0	-36.0	PK	PK	Hor
5446.800	7.4	33.8	10.0	25.7	25.5	54.0	-28.5	Ave	Ave	Hor
6354.600	21.9	36.4	9.2	25.7	41.9	74.0	-32.1	PK	PK	Hor
6354.600	10.0	36.4	9.2	25.7	30.0	54.0	-24.0	Ave	Ave	Hor
7262.400	11.4	37.1	8.4	25.5	31.4	74.0	-42.6	PK	PK	Hor
7262.400	-0.6	37.1	8.4	25.5	19.4	54.0	-34.6	Ave	Ave	Hor
8170.200	11.6	37.3	7.4	25.3	31.0	74.0	-43.0	PK	PK	Hor
8170.200	-0.7	37.3	7.4	25.3	18.7	54.0	-35.3	Ave	Ave	Hor
9078.000	12.1	37.6	6.2	25.0	30.9	74.0	-43.1	PK	PK	Hor
9078.000	-1.0	37.6	6.2	25.0	17.8	54.0	-36.2	Ave	Ave	Hor



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

Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Mid Channel - X-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1813.600	41.8	27.1	2.9	26.3	45.3	74.0	-28.7	PK	PK	Vert
1813.600	10.5	27.1	2.9	26.3	14.1	54.0	-39.9	Ave	Ave	Vert
2723.400	21.8	30.0	3.5	26.3	28.9	74.0	-45.1	PK	PK	Vert
2723.400	4.6	30.0	3.5	26.3	11.7	54.0	-42.3	Ave	Ave	Vert
3631.200	27.6	30.7	3.9	26.1	36.2	74.0	-37.8	PK	PK	Vert
3631.200	5.4	30.7	3.9	26.1	14.0	54.0	-40.0	Ave	Ave	Vert
4539.000	18.8	32.0	7.5	25.9	32.5	74.0	-41.5	PK	PK	Vert
4539.000	6.5	32.0	7.5	25.9	20.2	54.0	-33.8	Ave	Ave	Vert
5446.800	20.1	33.8	10.0	25.7	38.2	74.0	-35.8	PK	PK	Vert
5446.800	7.4	33.8	10.0	25.7	25.5	54.0	-28.5	Ave	Ave	Vert
6354.600	23.0	35.7	9.2	25.7	42.2	74.0	-31.8	PK	PK	Vert
6354.600	8.9	35.7	9.2	25.7	28.1	54.0	-25.9	Ave	Ave	Vert
7262.400	12.1	37.1	8.4	25.5	32.1	74.0	-41.9	PK	PK	Vert
7262.400	-0.5	37.1	8.4	25.5	19.5	54.0	-34.5	Ave	Ave	Vert
8170.200	12.4	37.3	7.4	25.3	31.8	74.0	-42.2	PK	PK	Vert
8170.200	-0.7	37.3	7.4	25.3	18.7	54.0	-35.3	Ave	Ave	Vert
9078.000	11.9	37.6	6.2	25.0	30.7	74.0	-43.3	PK	PK	Vert
9078.000	-1.0	37.6	6.2	25.0	17.9	54.0	-36.1	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - High Channel - X-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1828.400	41.8	27.2	4.3	26.3	46.9	74.0	-27.1	PK	PK	Hor
1828.400	11.1	27.2	4.3	26.3	16.2	54.0	-37.8	Ave	Ave	Hor
2742.600	25.2	30.0	5.4	26.3	34.2	74.0	-39.8	PK	PK	Hor
2742.600	4.3	30.0	5.4	26.3	13.3	54.0	-40.7	Ave	Ave	Hor
3656.800	18.0	30.8	6.0	26.1	28.8	74.0	-45.2	PK	PK	Hor
3656.800	4.3	30.8	6.0	26.1	15.1	54.0	-38.9	Ave	Ave	Hor
4571.000	19.3	32.2	6.8	25.9	32.4	74.0	-41.6	PK	PK	Hor
4571.000	5.2	32.2	6.8	25.9	18.3	54.0	-35.7	Ave	Ave	Hor
5485.200	19.6	33.8	7.5	25.7	35.3	74.0	-38.7	PK	PK	Hor
5485.200	6.6	33.8	7.5	25.7	22.3	54.0	-31.7	Ave	Ave	Hor
6399.400	22.3	36.6	8.2	25.7	41.3	74.0	-32.7	PK	PK	Hor
6399.400	9.6	36.6	8.2	25.7	28.6	54.0	-25.4	Ave	Ave	Hor
7313.600	10.6	37.1	8.8	25.5	31.1	74.0	-42.9	PK	PK	Hor
7313.600	-2.1	37.1	8.8	25.5	18.4	54.0	-35.6	Ave	Ave	Hor
8227.800	10.8	37.3	9.5	25.3	32.3	74.0	-41.7	PK	PK	Hor
8227.800	-2.5	37.3	9.5	25.3	19.0	54.0	-35.0	Ave	Ave	Hor
9142.000	11.5	37.7	10.1	25.0	34.2	74.0	-39.8	PK	PK	Hor
9142.000	-2.1	37.7	10.1	25.0	20.6	54.0	-33.4	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - High Channel - X-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1828.400	30.8	27.2	2.9	26.3	34.4	74.0	-39.6	PK	PK	Vert
1828.400	5.9	27.2	2.9	26.3	9.6	54.0	-44.4	Ave	Ave	Vert
2742.600	17.0	30.0	3.5	26.3	24.1	74.0	-49.9	PK	PK	Vert
2742.600	3.3	30.0	3.5	26.3	10.4	54.0	-43.6	Ave	Ave	Vert
3656.800	17.9	30.8	4.0	26.1	26.6	74.0	-47.4	PK	PK	Vert
3656.800	4.3	30.8	4.0	26.1	13.0	54.0	-41.0	Ave	Ave	Vert
4571.000	18.1	32.2	7.6	25.9	31.9	74.0	-42.1	PK	PK	Vert
4571.000	5.1	32.2	7.6	25.9	19.0	54.0	-35.0	Ave	Ave	Vert
5485.200	19.8	33.8	10.1	25.7	38.0	74.0	-36.0	PK	PK	Vert
5485.200	6.6	33.8	10.1	25.7	24.9	54.0	-29.1	Ave	Ave	Vert
6399.400	22.9	35.8	9.1	25.7	42.1	74.0	-31.9	PK	PK	Vert
6399.400	9.5	35.8	9.1	25.7	28.8	54.0	-25.2	Ave	Ave	Vert
7313.600	11.0	37.1	8.4	25.5	31.0	74.0	-43.0	PK	PK	Vert
7313.600	2.1	37.1	8.4	25.5	22.1	54.0	-31.9	Ave	Ave	Vert
8227.800	10.7	37.3	7.4	25.3	30.2	74.0	-43.8	PK	PK	Vert
8227.800	-2.6	37.3	7.4	25.3	16.9	54.0	-37.1	Ave	Ave	Vert
9142.000	13.0	37.7	6.1	25.0	31.7	74.0	-42.3	PK	PK	Vert
9142.000	-2.1	37.7	6.1	25.0	16.6	54.0	-37.4	Ave	Ave	Vert



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

Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - High Channel - X-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1828.400	22.6	27.2	2.9	26.3	26.3	74.0	-47.7	PK	PK	Hor
1828.400	3.4	27.2	2.9	26.3	7.0	54.0	-47.0	Ave	Ave	Hor
2742.600	16.3	30.0	3.5	26.3	23.4	74.0	-50.6	PK	PK	Hor
2742.600	3.1	30.0	3.5	26.3	10.2	54.0	-43.8	Ave	Ave	Hor
3656.800	17.5	30.8	4.0	26.1	26.3	74.0	-47.7	PK	PK	Hor
3656.800	4.2	30.8	4.0	26.1	13.0	54.0	-41.0	Ave	Ave	Hor
4571.000	18.5	32.2	7.6	25.9	32.4	74.0	-41.6	PK	PK	Hor
4571.000	5.1	32.2	7.6	25.9	19.0	54.0	-35.0	Ave	Ave	Hor
5485.200	19.4	33.8	10.1	25.7	37.7	74.0	-36.3	PK	PK	Hor
5485.200	6.6	33.8	10.1	25.7	24.9	54.0	-29.1	Ave	Ave	Hor
6399.400	23.1	36.6	9.1	25.7	43.2	74.0	-30.8	PK	PK	Hor
6399.400	9.5	36.6	9.1	25.7	29.5	54.0	-24.5	Ave	Ave	Hor
7313.600	11.0	37.1	8.4	25.5	31.0	74.0	-43.0	PK	PK	Hor
7313.600	-2.1	37.1	8.4	25.5	17.9	54.0	-36.1	Ave	Ave	Hor
8227.800	11.0	37.3	7.4	25.3	30.5	74.0	-43.5	PK	PK	Hor
8227.800	-2.6	37.3	7.4	25.3	16.9	54.0	-37.1	Ave	Ave	Hor
9142.000	11.3	37.7	6.1	25.0	30.0	74.0	-44.0	PK	PK	Hor
9142.000	-2.2	37.7	6.1	25.0	16.6	54.0	-37.4	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - High Channel - X-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1828.400	39.9	27.2	2.9	26.3	43.6	74.0	-30.4	PK	PK	Vert
1828.400	10.4	27.2	2.9	26.3	14.1	54.0	-39.9	Ave	Ave	Vert
2742.600	22.0	30.0	3.5	26.3	29.1	74.0	-44.9	PK	PK	Vert
2742.600	3.6	30.0	3.5	26.3	10.8	54.0	-43.2	Ave	Ave	Vert
3656.800	17.2	30.8	4.0	26.1	26.0	74.0	-48.0	PK	PK	Vert
3656.800	4.2	30.8	4.0	26.1	13.0	54.0	-41.0	Ave	Ave	Vert
4571.000	17.9	32.2	7.6	25.9	31.7	74.0	-42.3	PK	PK	Vert
4571.000	5.1	32.2	7.6	25.9	19.0	54.0	-35.0	Ave	Ave	Vert
5485.200	19.4	33.8	10.1	25.7	37.7	74.0	-36.3	PK	PK	Vert
5485.200	6.6	33.8	10.1	25.7	24.9	54.0	-29.1	Ave	Ave	Vert
6399.400	22.9	35.8	9.1	25.7	42.1	74.0	-31.9	PK	PK	Vert
6399.400	9.5	35.8	9.1	25.7	28.7	54.0	-25.3	Ave	Ave	Vert
7313.600	11.2	37.1	8.4	25.5	31.2	74.0	-42.8	PK	PK	Vert
7313.600	-2.1	37.1	8.4	25.5	17.9	54.0	-36.1	Ave	Ave	Vert
8227.800	10.9	37.3	7.4	25.3	30.3	74.0	-43.7	PK	PK	Vert
8227.800	-2.6	37.3	7.4	25.3	16.9	54.0	-37.1	Ave	Ave	Vert
9142.000	10.6	37.7	6.1	25.0	29.4	74.0	-44.6	PK	PK	Vert
9142.000	-2.2	37.7	6.1	25.0	16.5	54.0	-37.5	Ave	Ave	Vert



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

Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Low Channel - Y-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1806.000	38.1	27.0	2.9	26.3	41.6	74.0	-32.4	PK	PK	Hor
1806.000	10.0	27.0	2.9	26.3	13.5	54.0	-40.5	Ave	Ave	Hor
2709.000	20.6	30.0	3.5	26.3	27.7	74.0	-46.3	PK	PK	Hor
2709.000	4.2	30.0	3.5	26.3	11.3	54.0	-42.7	Ave	Ave	Hor
3612.000	17.7	30.7	3.9	26.1	26.2	74.0	-47.8	PK	PK	Hor
3612.000	5.3	30.7	3.9	26.1	13.7	54.0	-40.3	Ave	Ave	Hor
4515.000	18.8	32.0	7.5	25.9	32.4	74.0	-41.6	PK	PK	Hor
4515.000	6.2	32.0	7.5	25.9	19.8	54.0	-34.2	Ave	Ave	Hor
5418.000	20.6	33.8	9.8	25.7	38.5	74.0	-35.5	PK	PK	Hor
5418.000	7.1	33.8	9.8	25.7	25.1	54.0	-28.9	Ave	Ave	Hor
6321.000	21.9	36.3	9.3	25.7	41.7	74.0	-32.3	PK	PK	Hor
6321.000	9.5	36.3	9.3	25.7	29.4	54.0	-24.6	Ave	Ave	Hor
7224.000	11.2	37.2	8.3	25.5	31.2	74.0	-42.8	PK	PK	Hor
7224.000	-1.2	37.2	8.3	25.5	18.8	54.0	-35.2	Ave	Ave	Hor
8127.000	10.6	37.3	7.4	25.3	30.0	74.0	-44.0	PK	PK	Hor
8127.000	-1.4	37.3	7.4	25.3	18.0	54.0	-36.0	Ave	Ave	Hor
9030.000	10.7	37.6	6.3	25.0	29.6	74.0	-44.4	PK	PK	Hor
9030.000	-1.5	37.6	6.3	25.0	17.4	54.0	-36.6	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Low Channel - Y-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1806.000	34.9	27.0	2.9	26.3	38.4	74.0	-35.6	PK	PK	Vert
1806.000	4.8	27.0	2.9	26.3	8.4	54.0	-45.6	Ave	Ave	Vert
2709.000	15.8	30.0	3.5	26.3	22.9	74.0	-51.1	PK	PK	Vert
2709.000	3.9	30.0	3.5	26.3	11.0	54.0	-43.0	Ave	Ave	Vert
3612.000	19.3	30.7	3.9	26.1	27.7	74.0	-46.3	PK	PK	Vert
3612.000	5.3	30.7	3.9	26.1	13.7	54.0	-40.3	Ave	Ave	Vert
4515.000	18.9	32.0	7.5	25.9	32.5	74.0	-41.5	PK	PK	Vert
4515.000	6.2	32.0	7.5	25.9	19.8	54.0	-34.2	Ave	Ave	Vert
5418.000	19.7	33.8	9.8	25.7	37.6	74.0	-36.4	PK	PK	Vert
5418.000	7.1	33.8	9.8	25.7	25.1	54.0	-28.9	Ave	Ave	Vert
6321.000	18.4	35.6	9.3	25.7	37.6	74.0	-36.4	PK	PK	Vert
6321.000	9.5	35.6	9.3	25.7	28.8	54.0	-25.2	Ave	Ave	Vert
7224.000	11.1	37.2	8.3	25.5	31.1	74.0	-42.9	PK	PK	Vert
7224.000	-1.2	37.2	8.3	25.5	18.7	54.0	-35.3	Ave	Ave	Vert
8127.000	11.4	37.3	7.4	25.3	30.7	74.0	-43.3	PK	PK	Vert
8127.000	-1.4	37.3	7.4	25.3	18.0	54.0	-36.0	Ave	Ave	Vert
9030.000	10.8	37.6	6.3	25.0	29.7	74.0	-44.3	PK	PK	Vert
9030.000	-1.6	37.6	6.3	25.0	17.4	54.0	-36.6	Ave	Ave	Vert



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

Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Low Channel - Y-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1806.000	40.9	27.0	2.9	26.3	44.4	74.0	-29.6	PK	PK	Hor
1806.000	3.8	27.0	2.9	26.3	7.3	54.0	-46.7	Ave	Ave	Hor
2709.000	16.4	30.0	3.5	26.3	23.5	74.0	-50.5	PK	PK	Hor
2709.000	3.7	30.0	3.5	26.3	10.8	54.0	-43.2	Ave	Ave	Hor
3612.000	18.0	30.7	3.9	26.1	26.4	74.0	-47.6	PK	PK	Hor
3612.000	5.3	30.7	3.9	26.1	13.7	54.0	-40.3	Ave	Ave	Hor
4515.000	18.6	32.0	7.5	25.9	32.2	74.0	-41.8	PK	PK	Hor
4515.000	6.2	32.0	7.5	25.9	19.8	54.0	-34.2	Ave	Ave	Hor
5418.000	19.9	33.8	9.8	25.7	37.9	74.0	-36.1	PK	PK	Hor
5418.000	7.1	33.8	9.8	25.7	25.1	54.0	-28.9	Ave	Ave	Hor
6321.000	21.7	36.3	9.3	25.7	41.6	74.0	-32.4	PK	PK	Hor
6321.000	9.5	36.3	9.3	25.7	29.4	54.0	-24.6	Ave	Ave	Hor
7224.000	11.1	37.2	8.3	25.5	31.0	74.0	-43.0	PK	PK	Hor
7224.000	-1.2	37.2	8.3	25.5	18.7	54.0	-35.3	Ave	Ave	Hor
8127.000	10.9	37.3	7.4	25.3	30.3	74.0	-43.7	PK	PK	Hor
8127.000	-1.5	37.3	7.4	25.3	17.9	54.0	-36.1	Ave	Ave	Hor
9030.000	10.6	37.6	6.3	25.0	29.5	74.0	-44.5	PK	PK	Hor
9030.000	-1.6	37.6	6.3	25.0	17.3	54.0	-36.7	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Low Channel - Y-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1806.000	42.5	27.0	2.9	26.3	46.0	74.0	-28.0	PK	PK	Vert
1806.000	10.2	27.0	2.9	26.3	13.7	54.0	-40.3	Ave	Ave	Vert
2709.000	20.9	30.0	3.5	26.3	28.0	74.0	-46.0	PK	PK	Vert
2709.000	4.2	30.0	3.5	26.3	11.3	54.0	-42.7	Ave	Ave	Vert
3612.000	18.0	30.7	3.9	26.1	26.4	74.0	-47.6	PK	PK	Vert
3612.000	5.3	30.7	3.9	26.1	13.7	54.0	-40.3	Ave	Ave	Vert
4515.000	18.7	32.0	7.5	25.9	32.3	74.0	-41.7	PK	PK	Vert
4515.000	6.2	32.0	7.5	25.9	19.8	54.0	-34.2	Ave	Ave	Vert
5418.000	19.1	33.8	9.8	25.7	37.1	74.0	-36.9	PK	PK	Vert
5418.000	7.1	33.8	9.8	25.7	25.1	54.0	-28.9	Ave	Ave	Vert
6321.000	21.5	35.6	9.3	25.7	40.7	74.0	-33.3	PK	PK	Vert
6321.000	9.5	35.6	9.3	25.7	28.8	54.0	-25.2	Ave	Ave	Vert
7224.000	11.9	37.2	8.3	25.5	31.9	74.0	-42.1	PK	PK	Vert
7224.000	-1.2	37.2	8.3	25.5	18.7	54.0	-35.3	Ave	Ave	Vert
8127.000	10.5	37.3	7.4	25.3	29.9	74.0	-44.1	PK	PK	Vert
8127.000	-1.5	37.3	7.4	25.3	17.9	54.0	-36.1	Ave	Ave	Vert
9030.000	11.2	37.6	6.3	25.0	30.1	74.0	-43.9	PK	PK	Vert
9030.000	-1.5	37.6	6.3	25.0	17.4	54.0	-36.6	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Mid Channel - Y-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1813.600	40.7	27.1	2.9	26.3	44.3	74.0	-29.7	PK	PK	Hor
1813.600	11.2	27.1	2.9	26.3	14.8	54.0	-39.2	Ave	Ave	Hor
2723.400	22.2	30.0	3.5	26.3	29.3	74.0	-44.7	PK	PK	Hor
2723.400	4.5	30.0	3.5	26.3	11.6	54.0	-42.4	Ave	Ave	Hor
3631.200	17.7	30.7	3.9	26.1	26.2	74.0	-47.8	PK	PK	Hor
3631.200	5.3	30.7	3.9	26.1	13.9	54.0	-40.1	Ave	Ave	Hor
4539.000	18.4	32.0	7.5	25.9	32.1	74.0	-41.9	PK	PK	Hor
4539.000	6.3	32.0	7.5	25.9	20.0	54.0	-34.0	Ave	Ave	Hor
5446.800	20.0	33.8	10.0	25.7	38.1	74.0	-35.9	PK	PK	Hor
5446.800	7.3	33.8	10.0	25.7	25.4	54.0	-28.6	Ave	Ave	Hor
6354.600	22.4	36.4	9.2	25.7	42.4	74.0	-31.6	PK	PK	Hor
6354.600	10.0	36.4	9.2	25.7	29.9	54.0	-24.1	Ave	Ave	Hor
7262.400	11.6	37.1	8.4	25.5	31.5	74.0	-42.5	PK	PK	Hor
7262.400	-0.7	37.1	8.4	25.5	19.2	54.0	-34.8	Ave	Ave	Hor
8170.200	11.1	37.3	7.4	25.3	30.5	74.0	-43.5	PK	PK	Hor
8170.200	-1.0	37.3	7.4	25.3	18.4	54.0	-35.6	Ave	Ave	Hor
9078.000	11.7	37.6	6.2	25.0	30.5	74.0	-43.5	PK	PK	Hor
9078.000	-1.1	37.6	6.2	25.0	17.7	54.0	-36.3	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Mid Channel - Y-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1813.600	29.9	27.1	2.9	26.3	33.5	74.0	-40.5	PK	PK	Vert
1813.600	5.6	27.1	2.9	26.3	9.2	54.0	-44.8	Ave	Ave	Vert
2723.400	16.9	30.0	3.5	26.3	24.0	74.0	-50.0	PK	PK	Vert
2723.400	4.0	30.0	3.5	26.3	11.1	54.0	-42.9	Ave	Ave	Vert
3631.200	22.7	30.7	3.9	26.1	31.3	74.0	-42.7	PK	PK	Vert
3631.200	5.3	30.7	3.9	26.1	13.9	54.0	-40.1	Ave	Ave	Vert
4539.000	18.7	32.0	7.5	25.9	32.4	74.0	-41.6	PK	PK	Vert
4539.000	6.3	32.0	7.5	25.9	20.1	54.0	-33.9	Ave	Ave	Vert
5446.800	20.4	33.8	10.0	25.7	38.5	74.0	-35.5	PK	PK	Vert
5446.800	7.3	33.8	10.0	25.7	25.4	54.0	-28.6	Ave	Ave	Vert
6354.600	22.4	35.7	9.2	25.7	41.7	74.0	-32.3	PK	PK	Vert
6354.600	10.0	35.7	9.2	25.7	29.2	54.0	-24.8	Ave	Ave	Vert
7262.400	11.7	37.1	8.4	25.5	31.7	74.0	-42.3	PK	PK	Vert
7262.400	-0.7	37.1	8.4	25.5	19.3	54.0	-34.7	Ave	Ave	Vert
8170.200	11.9	37.3	7.4	25.3	31.3	74.0	-42.7	PK	PK	Vert
8170.200	-0.9	37.3	7.4	25.3	18.5	54.0	-35.5	Ave	Ave	Vert
9078.000	10.8	37.6	6.2	25.0	29.7	74.0	-44.3	PK	PK	Vert
9078.000	-1.1	37.6	6.2	25.0	17.7	54.0	-36.3	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Mid Channel - Y-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1813.600	35.6	27.1	2.9	26.3	39.2	74.0	-34.8	PK	PK	Hor
1813.600	4.1	27.1	2.9	26.3	7.7	54.0	-46.3	Ave	Ave	Hor
2723.400	16.3	30.0	3.5	26.3	23.4	74.0	-50.6	PK	PK	Hor
2723.400	4.0	30.0	3.5	26.3	11.1	54.0	-42.9	Ave	Ave	Hor
3631.200	18.1	30.7	3.9	26.1	26.7	74.0	-47.3	PK	PK	Hor
3631.200	5.3	30.7	3.9	26.1	13.8	54.0	-40.2	Ave	Ave	Hor
4539.000	19.1	32.0	7.5	25.9	32.8	74.0	-41.2	PK	PK	Hor
4539.000	6.3	32.0	7.5	25.9	20.0	54.0	-34.0	Ave	Ave	Hor
5446.800	20.2	33.8	10.0	25.7	38.3	74.0	-35.7	PK	PK	Hor
5446.800	7.2	33.8	10.0	25.7	25.3	54.0	-28.7	Ave	Ave	Hor
6354.600	22.2	36.4	9.2	25.7	42.2	74.0	-31.8	PK	PK	Hor
6354.600	10.0	36.4	9.2	25.7	29.9	54.0	-24.1	Ave	Ave	Hor
7262.400	11.4	37.1	8.4	25.5	31.4	74.0	-42.6	PK	PK	Hor
7262.400	-0.8	37.1	8.4	25.5	19.2	54.0	-34.8	Ave	Ave	Hor
8170.200	11.4	37.3	7.4	25.3	30.8	74.0	-43.2	PK	PK	Hor
8170.200	-1.0	37.3	7.4	25.3	18.4	54.0	-35.6	Ave	Ave	Hor
9078.000	10.8	37.6	6.2	25.0	29.6	74.0	-44.4	PK	PK	Hor
9078.000	-1.2	37.6	6.2	25.0	17.6	54.0	-36.4	Ave	Ave	Hor



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

Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Mid Channel - Y-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1813.600	40.6	27.1	2.9	26.3	44.2	74.0	-29.8	PK	PK	Vert
1813.600	10.6	27.1	2.9	26.3	14.2	54.0	-39.8	Ave	Ave	Vert
2723.400	21.2	30.0	3.5	26.3	28.3	74.0	-45.7	PK	PK	Vert
2723.400	4.2	30.0	3.5	26.3	11.3	54.0	-42.7	Ave	Ave	Vert
3631.200	18.1	30.7	3.9	26.1	26.7	74.0	-47.3	PK	PK	Vert
3631.200	5.3	30.7	3.9	26.1	13.8	54.0	-40.2	Ave	Ave	Vert
4539.000	18.9	32.0	7.5	25.9	32.6	74.0	-41.4	PK	PK	Vert
4539.000	6.3	32.0	7.5	25.9	20.0	54.0	-34.0	Ave	Ave	Vert
5446.800	20.2	33.8	10.0	25.7	38.2	74.0	-35.8	PK	PK	Vert
5446.800	7.2	33.8	10.0	25.7	25.3	54.0	-28.7	Ave	Ave	Vert
6354.600	22.1	35.7	9.2	25.7	41.4	74.0	-32.6	PK	PK	Vert
6354.600	9.0	35.7	9.2	25.7	28.2	54.0	-25.8	Ave	Ave	Vert
7262.400	12.1	37.1	8.4	25.5	32.1	74.0	-41.9	PK	PK	Vert
7262.400	-0.8	37.1	8.4	25.5	19.2	54.0	-34.8	Ave	Ave	Vert
8170.200	11.5	37.3	7.4	25.3	30.9	74.0	-43.1	PK	PK	Vert
8170.200	-1.1	37.3	7.4	25.3	18.4	54.0	-35.6	Ave	Ave	Vert
9078.000	11.9	37.6	6.2	25.0	30.7	74.0	-43.3	PK	PK	Vert
9078.000	-1.2	37.6	6.2	25.0	17.6	54.0	-36.4	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - High Channel - Y-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1828.400	34.8	27.2	2.9	26.3	38.5	74.0	-35.5	PK	PK	Hor
1828.400	8.2	27.2	2.9	26.3	11.9	54.0	-42.1	Ave	Ave	Hor
2742.600	19.8	30.0	3.5	26.3	27.0	74.0	-47.0	PK	PK	Hor
2742.600	4.1	30.0	3.5	26.3	11.2	54.0	-42.8	Ave	Ave	Hor
3656.800	28.4	30.8	4.0	26.1	37.2	74.0	-36.8	PK	PK	Hor
3656.800	5.0	30.8	4.0	26.1	13.7	54.0	-40.3	Ave	Ave	Hor
4571.000	18.6	32.2	7.6	25.9	32.5	74.0	-41.5	PK	PK	Hor
4571.000	5.8	32.2	7.6	25.9	19.7	54.0	-34.3	Ave	Ave	Hor
5485.200	19.6	33.8	10.1	25.7	37.9	74.0	-36.1	PK	PK	Hor
5485.200	7.3	33.8	10.1	25.7	25.5	54.0	-28.5	Ave	Ave	Hor
6399.400	23.2	36.6	9.1	25.7	43.3	74.0	-30.7	PK	PK	Hor
6399.400	10.5	36.6	9.1	25.7	30.5	54.0	-23.5	Ave	Ave	Hor
7313.600	11.2	37.1	8.4	25.5	31.2	74.0	-42.8	PK	PK	Hor
7313.600	-1.3	37.1	8.4	25.5	18.7	54.0	-35.3	Ave	Ave	Hor
8227.800	10.3	37.3	7.4	25.3	29.8	74.0	-44.2	PK	PK	Hor
8227.800	-1.8	37.3	7.4	25.3	17.7	54.0	-36.3	Ave	Ave	Hor
9142.000	11.2	37.7	6.1	25.0	30.0	74.0	-44.0	PK	PK	Hor
9142.000	-1.4	37.7	6.1	25.0	17.3	54.0	-36.7	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - High Channel - Y-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1828.400	43.7	27.2	2.9	26.3	47.4	74.0	-26.6	PK	PK	Vert
1828.400	3.6	27.2	2.9	26.3	7.3	54.0	-46.7	Ave	Ave	Vert
2742.600	16.3	30.0	3.5	26.3	23.4	74.0	-50.6	PK	PK	Vert
2742.600	3.8	30.0	3.5	26.3	11.0	54.0	-43.0	Ave	Ave	Vert
3656.800	17.2	30.8	4.0	26.1	26.0	74.0	-48.0	PK	PK	Vert
3656.800	4.9	30.8	4.0	26.1	13.7	54.0	-40.3	Ave	Ave	Vert
4571.000	18.1	32.2	7.6	25.9	32.0	74.0	-42.0	PK	PK	Vert
4571.000	5.8	32.2	7.6	25.9	19.6	54.0	-34.4	Ave	Ave	Vert
5485.200	19.3	33.8	10.1	25.7	37.6	74.0	-36.4	PK	PK	Vert
5485.200	7.2	33.8	10.1	25.7	25.5	54.0	-28.5	Ave	Ave	Vert
6399.400	22.5	35.8	9.1	25.7	41.7	74.0	-32.3	PK	PK	Vert
6399.400	10.5	35.8	9.1	25.7	29.7	54.0	-24.3	Ave	Ave	Vert
7313.600	10.9	37.1	8.4	25.5	30.9	74.0	-43.1	PK	PK	Vert
7313.600	-1.4	37.1	8.4	25.5	18.7	54.0	-35.3	Ave	Ave	Vert
8227.800	11.2	37.3	7.4	25.3	30.6	74.0	-43.4	PK	PK	Vert
8227.800	-1.8	37.3	7.4	25.3	17.7	54.0	-36.3	Ave	Ave	Vert
9142.000	11.1	37.7	6.1	25.0	29.8	74.0	-44.2	PK	PK	Vert
9142.000	-1.4	37.7	6.1	25.0	17.3	54.0	-36.7	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - High Channel - Y-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1828.400	33.9	27.2	2.9	26.3	37.6	74.0	-36.4	PK	PK	Hor
1828.400	3.8	27.2	2.9	26.3	7.5	54.0	-46.5	Ave	Ave	Hor
2742.600	17.1	30.0	3.5	26.3	24.3	74.0	-49.7	PK	PK	Hor
2742.600	3.8	30.0	3.5	26.3	10.9	54.0	-43.1	Ave	Ave	Hor
3656.800	20.2	30.8	4.0	26.1	29.0	74.0	-45.0	PK	PK	Hor
3656.800	4.9	30.8	4.0	26.1	13.7	54.0	-40.3	Ave	Ave	Hor
4571.000	18.3	32.2	7.6	25.9	32.2	74.0	-41.8	PK	PK	Hor
4571.000	5.8	32.2	7.6	25.9	19.6	54.0	-34.4	Ave	Ave	Hor
5485.200	19.6	33.8	10.1	25.7	37.9	74.0	-36.1	PK	PK	Hor
5485.200	7.2	33.8	10.1	25.7	25.5	54.0	-28.5	Ave	Ave	Hor
6399.400	23.0	36.6	9.1	25.7	43.0	74.0	-31.0	PK	PK	Hor
6399.400	10.5	36.6	9.1	25.7	30.5	54.0	-23.5	Ave	Ave	Hor
7313.600	11.3	37.1	8.4	25.5	31.3	74.0	-42.7	PK	PK	Hor
7313.600	-1.4	37.1	8.4	25.5	18.7	54.0	-35.3	Ave	Ave	Hor
8227.800	10.7	37.3	7.4	25.3	30.2	74.0	-43.8	PK	PK	Hor
8227.800	-1.8	37.3	7.4	25.3	17.7	54.0	-36.3	Ave	Ave	Hor
9142.000	11.2	37.7	6.1	25.0	29.9	74.0	-44.1	PK	PK	Hor
9142.000	-1.4	37.7	6.1	25.0	17.3	54.0	-36.7	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - High Channel - Y-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1828.400	36.9	27.2	2.9	26.3	40.6	74.0	-33.4	PK	PK	Vert
1828.400	9.2	27.2	2.9	26.3	12.8	54.0	-41.2	Ave	Ave	Vert
2742.600	18.4	30.0	3.5	26.3	25.5	74.0	-48.5	PK	PK	Vert
2742.600	3.9	30.0	3.5	26.3	11.0	54.0	-43.0	Ave	Ave	Vert
3656.800	17.1	30.8	4.0	26.1	25.8	74.0	-48.2	PK	PK	Vert
3656.800	4.9	30.8	4.0	26.1	13.7	54.0	-40.3	Ave	Ave	Vert
4571.000	19.0	32.2	7.6	25.9	32.9	74.0	-41.1	PK	PK	Vert
4571.000	5.8	32.2	7.6	25.9	19.6	54.0	-34.4	Ave	Ave	Vert
5485.200	19.6	33.8	10.1	25.7	37.9	74.0	-36.1	PK	PK	Vert
5485.200	7.2	33.8	10.1	25.7	25.5	54.0	-28.5	Ave	Ave	Vert
6399.400	22.3	35.8	9.1	25.7	41.5	74.0	-32.5	PK	PK	Vert
6399.400	9.0	35.8	9.1	25.7	28.2	54.0	-25.8	Ave	Ave	Vert
7313.600	10.8	37.1	8.4	25.5	30.9	74.0	-43.1	PK	PK	Vert
7313.600	-1.3	37.1	8.4	25.5	18.7	54.0	-35.3	Ave	Ave	Vert
8227.800	10.4	37.3	7.4	25.3	29.8	74.0	-44.2	PK	PK	Vert
8227.800	-1.8	37.3	7.4	25.3	17.7	54.0	-36.3	Ave	Ave	Vert
9142.000	10.9	37.7	6.1	25.0	29.6	74.0	-44.4	PK	PK	Vert
9142.000	-1.4	37.7	6.1	25.0	17.3	54.0	-36.7	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Low Channel - Z-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1806.000	40.4	27.0	2.9	26.3	43.9	74.0	-30.1	PK	PK	Hor
1806.000	11.4	27.0	2.9	26.3	14.9	54.0	-39.1	Ave	Ave	Hor
2709.000	23.9	30.0	3.5	26.3	31.0	74.0	-43.0	PK	PK	Hor
2709.000	5.2	30.0	3.5	26.3	12.3	54.0	-41.7	Ave	Ave	Hor
3612.000	19.0	30.7	3.9	26.1	27.5	74.0	-46.5	PK	PK	Hor
3612.000	5.3	30.7	3.9	26.1	13.7	54.0	-40.3	Ave	Ave	Hor
4515.000	18.1	32.0	7.5	25.9	31.7	74.0	-42.3	PK	PK	Hor
4515.000	6.2	32.0	7.5	25.9	19.8	54.0	-34.2	Ave	Ave	Hor
5418.000	19.7	33.8	9.8	25.7	37.7	74.0	-36.3	PK	PK	Hor
5418.000	7.1	33.8	9.8	25.7	25.1	54.0	-28.9	Ave	Ave	Hor
6321.000	22.0	36.3	9.3	25.7	41.8	74.0	-32.2	PK	PK	Hor
6321.000	9.5	36.3	9.3	25.7	29.4	54.0	-24.6	Ave	Ave	Hor
7224.000	11.1	37.2	8.3	25.5	31.1	74.0	-42.9	PK	PK	Hor
7224.000	-1.2	37.2	8.3	25.5	18.7	54.0	-35.3	Ave	Ave	Hor
8127.000	11.3	37.3	7.4	25.3	30.7	74.0	-43.3	PK	PK	Hor
8127.000	-1.4	37.3	7.4	25.3	17.9	54.0	-36.1	Ave	Ave	Hor
9030.000	14.7	37.6	6.3	25.0	33.6	74.0	-40.4	PK	PK	Hor
9030.000	-1.4	37.6	6.3	25.0	17.5	54.0	-36.5	Ave	Ave	Hor



1100 E Chalk Creek Road
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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Low Channel - Z-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1806.000	40.2	27.0	2.9	26.3	43.7	74.0	-30.3	PK	PK	Vert
1806.000	5.2	27.0	2.9	26.3	8.7	54.0	-45.3	Ave	Ave	Vert
2709.000	17.0	30.0	3.5	26.3	24.1	74.0	-49.9	PK	PK	Vert
2709.000	4.3	30.0	3.5	26.3	11.4	54.0	-42.6	Ave	Ave	Vert
3612.000	18.5	30.7	3.9	26.1	26.9	74.0	-47.1	PK	PK	Vert
3612.000	5.7	30.7	3.9	26.1	14.1	54.0	-39.9	Ave	Ave	Vert
4515.000	18.9	32.0	7.5	25.9	32.5	74.0	-41.5	PK	PK	Vert
4515.000	6.7	32.0	7.5	25.9	20.3	54.0	-33.7	Ave	Ave	Vert
5418.000	19.9	33.8	9.8	25.7	37.8	74.0	-36.2	PK	PK	Vert
5418.000	7.6	33.8	9.8	25.7	25.5	54.0	-28.5	Ave	Ave	Vert
6321.000	23.1	35.6	9.3	25.7	42.4	74.0	-31.6	PK	PK	Vert
6321.000	9.9	35.6	9.3	25.7	29.1	54.0	-24.9	Ave	Ave	Vert
7224.000	15.5	37.2	8.3	25.5	35.4	74.0	-38.6	PK	PK	Vert
7224.000	-0.5	37.2	8.3	25.5	19.5	54.0	-34.5	Ave	Ave	Vert
8127.000	11.9	37.3	7.4	25.3	31.2	74.0	-42.8	PK	PK	Vert
8127.000	-0.6	37.3	7.4	25.3	18.8	54.0	-35.2	Ave	Ave	Vert
9030.000	11.6	37.6	6.3	25.0	30.5	74.0	-43.5	PK	PK	Vert
9030.000	-0.8	37.6	6.3	25.0	18.1	54.0	-35.9	Ave	Ave	Vert



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Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Low Channel - Z-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1806.000	26.9	27.0	2.9	26.3	30.5	74.0	-43.5	PK	PK	Hor
1806.000	4.7	27.0	2.9	26.3	8.2	54.0	-45.8	Ave	Ave	Hor
2709.000	16.6	30.0	3.5	26.3	23.7	74.0	-50.3	PK	PK	Hor
2709.000	4.1	30.0	3.5	26.3	11.2	54.0	-42.8	Ave	Ave	Hor
3612.000	18.2	30.7	3.9	26.1	26.6	74.0	-47.4	PK	PK	Hor
3612.000	5.6	30.7	3.9	26.1	14.1	54.0	-39.9	Ave	Ave	Hor
4515.000	18.9	32.0	7.5	25.9	32.5	74.0	-41.5	PK	PK	Hor
4515.000	6.6	32.0	7.5	25.9	20.2	54.0	-33.8	Ave	Ave	Hor
5418.000	19.8	33.8	9.8	25.7	37.7	74.0	-36.3	PK	PK	Hor
5418.000	7.5	33.8	9.8	25.7	25.4	54.0	-28.6	Ave	Ave	Hor
6321.000	22.6	36.3	9.3	25.7	42.5	74.0	-31.5	PK	PK	Hor
6321.000	9.8	36.3	9.3	25.7	29.7	54.0	-24.3	Ave	Ave	Hor
7224.000	12.1	37.2	8.3	25.5	32.0	74.0	-42.0	PK	PK	Hor
7224.000	-0.6	37.2	8.3	25.5	19.4	54.0	-34.6	Ave	Ave	Hor
8127.000	11.5	37.3	7.4	25.3	30.9	74.0	-43.1	PK	PK	Hor
8127.000	-0.7	37.3	7.4	25.3	18.7	54.0	-35.3	Ave	Ave	Hor
9030.000	11.8	37.6	6.3	25.0	30.7	74.0	-43.3	PK	PK	Hor
9030.000	-1.0	37.6	6.3	25.0	17.9	54.0	-36.1	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Low Channel - Z-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1806.000	40.7	27.0	4.3	26.3	45.7	74.0	-28.3	PK	PK	Vert
1806.000	11.7	27.0	4.3	26.3	16.7	54.0	-37.3	Ave	Ave	Vert
2709.000	22.5	30.0	3.5	26.3	29.6	74.0	-44.4	PK	PK	Vert
2709.000	4.8	30.0	3.5	26.3	11.9	54.0	-42.1	Ave	Ave	Vert
3612.000	18.1	30.7	3.9	26.1	26.6	74.0	-47.4	PK	PK	Vert
3612.000	5.7	30.7	3.9	26.1	14.1	54.0	-39.9	Ave	Ave	Vert
4515.000	19.0	32.0	7.5	25.9	32.6	74.0	-41.4	PK	PK	Vert
4515.000	6.6	32.0	7.5	25.9	20.2	54.0	-33.8	Ave	Ave	Vert
5418.000	19.7	33.8	9.8	25.7	37.7	74.0	-36.3	PK	PK	Vert
5418.000	7.5	33.8	9.8	25.7	25.5	54.0	-28.5	Ave	Ave	Vert
6321.000	21.7	35.6	8.0	25.7	39.6	74.0	-34.4	PK	PK	Vert
6321.000	9.8	35.6	8.0	25.7	27.8	54.0	-26.2	Ave	Ave	Vert
7224.000	12.0	37.2	8.3	25.5	31.9	74.0	-42.1	PK	PK	Vert
7224.000	-0.5	37.2	8.3	25.5	19.4	54.0	-34.6	Ave	Ave	Vert
8127.000	12.2	37.3	7.4	25.3	31.6	74.0	-42.4	PK	PK	Vert
8127.000	-0.6	37.3	7.4	25.3	18.7	54.0	-35.3	Ave	Ave	Vert
9030.000	12.0	37.6	6.3	25.0	30.9	74.0	-43.1	PK	PK	Vert
9030.000	-0.9	37.6	6.3	25.0	18.0	54.0	-36.0	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Mid Channel - Z-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1813.600	39.9	27.1	2.9	26.3	43.5	74.0	-30.5	PK	PK	Hor
1813.600	11.2	27.1	2.9	26.3	14.7	54.0	-39.3	Ave	Ave	Hor
2723.400	23.8	30.0	3.5	26.3	30.9	74.0	-43.1	PK	PK	Hor
2723.400	4.7	30.0	3.5	26.3	11.8	54.0	-42.2	Ave	Ave	Hor
3631.200	17.5	30.7	3.9	26.1	26.0	74.0	-48.0	PK	PK	Hor
3631.200	5.1	30.7	3.9	26.1	13.7	54.0	-40.3	Ave	Ave	Hor
4539.000	18.7	32.0	7.5	25.9	32.4	74.0	-41.6	PK	PK	Hor
4539.000	6.2	32.0	7.5	25.9	19.9	54.0	-34.1	Ave	Ave	Hor
5446.800	19.4	33.8	10.0	25.7	37.5	74.0	-36.5	PK	PK	Hor
5446.800	7.2	33.8	10.0	25.7	25.3	54.0	-28.7	Ave	Ave	Hor
6354.600	22.3	36.4	9.2	25.7	42.3	74.0	-31.7	PK	PK	Hor
6354.600	9.9	36.4	9.2	25.7	29.9	54.0	-24.1	Ave	Ave	Hor
7262.400	11.3	37.1	8.4	25.5	31.3	74.0	-42.7	PK	PK	Hor
7262.400	-1.0	37.1	8.4	25.5	19.0	54.0	-35.0	Ave	Ave	Hor
8170.200	11.7	37.3	7.4	25.3	31.1	74.0	-42.9	PK	PK	Hor
8170.200	-1.2	37.3	7.4	25.3	18.2	54.0	-35.8	Ave	Ave	Hor
9078.000	10.6	37.6	6.2	25.0	29.5	74.0	-44.5	PK	PK	Hor
9078.000	-1.3	37.6	6.2	25.0	17.5	54.0	-36.5	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Mid Channel - Z-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1813.600	37.4	27.1	2.9	26.3	41.0	74.0	-33.0	PK	PK	Vert
1813.600	5.6	27.1	2.9	26.3	9.2	54.0	-44.8	Ave	Ave	Vert
2723.400	16.5	30.0	3.5	26.3	23.6	74.0	-50.4	PK	PK	Vert
2723.400	3.9	30.0	3.5	26.3	11.0	54.0	-43.0	Ave	Ave	Vert
3631.200	25.8	30.7	3.9	26.1	34.3	74.0	-39.7	PK	PK	Vert
3631.200	5.2	30.7	3.9	26.1	13.7	54.0	-40.3	Ave	Ave	Vert
4539.000	18.6	32.0	7.5	25.9	32.3	74.0	-41.7	PK	PK	Vert
4539.000	6.2	32.0	7.5	25.9	19.9	54.0	-34.1	Ave	Ave	Vert
5446.800	19.4	33.8	10.0	25.7	37.5	74.0	-36.5	PK	PK	Vert
5446.800	7.2	33.8	10.0	25.7	25.2	54.0	-28.8	Ave	Ave	Vert
6354.600	22.2	35.7	9.2	25.7	41.4	74.0	-32.6	PK	PK	Vert
6354.600	9.9	35.7	9.2	25.7	29.1	54.0	-24.9	Ave	Ave	Vert
7262.400	11.0	37.1	8.4	25.5	30.9	74.0	-43.1	PK	PK	Vert
7262.400	-1.1	37.1	8.4	25.5	18.9	54.0	-35.1	Ave	Ave	Vert
8170.200	11.0	37.3	7.4	25.3	30.4	74.0	-43.6	PK	PK	Vert
8170.200	-1.3	37.3	7.4	25.3	18.2	54.0	-35.8	Ave	Ave	Vert
9078.000	11.1	37.6	6.2	25.0	29.9	74.0	-44.1	PK	PK	Vert
9078.000	-1.4	37.6	6.2	25.0	17.4	54.0	-36.6	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Mid Channel - Z-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1813.600	36.4	27.1	2.9	26.3	40.0	74.0	-34.0	PK	PK	Hor
1813.600	4.3	27.1	2.9	26.3	7.9	54.0	-46.1	Ave	Ave	Hor
2723.400	16.1	30.0	3.5	26.3	23.2	74.0	-50.8	PK	PK	Hor
2723.400	3.9	30.0	3.5	26.3	11.0	54.0	-43.0	Ave	Ave	Hor
3631.200	17.7	30.7	3.9	26.1	26.2	74.0	-47.8	PK	PK	Hor
3631.200	5.2	30.7	3.9	26.1	13.8	54.0	-40.2	Ave	Ave	Hor
4539.000	18.8	32.0	7.5	25.9	32.6	74.0	-41.4	PK	PK	Hor
4539.000	6.2	32.0	7.5	25.9	19.9	54.0	-34.1	Ave	Ave	Hor
5446.800	19.4	33.8	10.0	25.7	37.5	74.0	-36.5	PK	PK	Hor
5446.800	7.2	33.8	10.0	25.7	25.3	54.0	-28.7	Ave	Ave	Hor
6354.600	21.9	36.4	9.2	25.7	41.9	74.0	-32.1	PK	PK	Hor
6354.600	9.9	36.4	9.2	25.7	29.8	54.0	-24.2	Ave	Ave	Hor
7262.400	11.1	37.1	8.4	25.5	31.0	74.0	-43.0	PK	PK	Hor
7262.400	-0.9	37.1	8.4	25.5	19.0	54.0	-35.0	Ave	Ave	Hor
8170.200	13.6	37.3	7.4	25.3	33.0	74.0	-41.0	PK	PK	Hor
8170.200	-1.2	37.3	7.4	25.3	18.2	54.0	-35.8	Ave	Ave	Hor
9078.000	11.8	37.6	6.2	25.0	30.7	74.0	-43.3	PK	PK	Hor
9078.000	-1.2	37.6	6.2	25.0	17.6	54.0	-36.4	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - Mid Channel - Z-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1813.600	38.8	27.1	2.9	26.3	42.4	74.0	-31.6	PK	PK	Vert
1813.600	10.4	27.1	2.9	26.3	13.9	54.0	-40.1	Ave	Ave	Vert
2723.400	22.2	30.0	3.5	26.3	29.3	74.0	-44.7	PK	PK	Vert
2723.400	4.5	30.0	3.5	26.3	11.6	54.0	-42.4	Ave	Ave	Vert
3631.200	23.7	30.7	3.9	26.1	32.3	74.0	-41.7	PK	PK	Vert
3631.200	5.2	30.7	3.9	26.1	13.8	54.0	-40.2	Ave	Ave	Vert
4539.000	18.3	32.0	7.5	25.9	32.1	74.0	-41.9	PK	PK	Vert
4539.000	6.2	32.0	7.5	25.9	20.0	54.0	-34.0	Ave	Ave	Vert
5446.800	19.9	33.8	10.0	25.7	37.9	74.0	-36.1	PK	PK	Vert
5446.800	7.2	33.8	10.0	25.7	25.3	54.0	-28.7	Ave	Ave	Vert
6354.600	22.5	35.7	9.2	25.7	41.7	74.0	-32.3	PK	PK	Vert
6354.600	9.0	35.7	9.2	25.7	28.2	54.0	-25.8	Ave	Ave	Vert
7262.400	11.5	37.1	8.4	25.5	31.5	74.0	-42.5	PK	PK	Vert
7262.400	-0.9	37.1	8.4	25.5	19.1	54.0	-34.9	Ave	Ave	Vert
8170.200	11.2	37.3	7.4	25.3	30.6	74.0	-43.4	PK	PK	Vert
8170.200	-1.1	37.3	7.4	25.3	18.3	54.0	-35.7	Ave	Ave	Vert
9078.000	11.1	37.6	6.2	25.0	29.9	74.0	-44.1	PK	PK	Vert
9078.000	-1.2	37.6	6.2	25.0	17.6	54.0	-36.4	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - High Channel - Z-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1828.400	38.4	27.2	2.9	26.3	42.0	74.0	-32.0	PK	PK	Hor
1828.400	10.0	27.2	2.9	26.3	13.7	54.0	-40.3	Ave	Ave	Hor
2742.600	22.0	30.0	3.5	26.3	29.2	74.0	-44.8	PK	PK	Hor
2742.600	4.4	30.0	3.5	26.3	11.5	54.0	-42.5	Ave	Ave	Hor
3656.800	17.1	30.8	4.0	26.1	25.8	74.0	-48.2	PK	PK	Hor
3656.800	4.9	30.8	4.0	26.1	13.7	54.0	-40.3	Ave	Ave	Hor
4571.000	18.1	32.2	7.6	25.9	31.9	74.0	-42.1	PK	PK	Hor
4571.000	5.8	32.2	7.6	25.9	19.7	54.0	-34.3	Ave	Ave	Hor
5485.200	19.7	33.8	10.1	25.7	37.9	74.0	-36.1	PK	PK	Hor
5485.200	7.3	33.8	10.1	25.7	25.5	54.0	-28.5	Ave	Ave	Hor
6399.400	22.9	36.6	9.1	25.7	42.9	74.0	-31.1	PK	PK	Hor
6399.400	10.5	36.6	9.1	25.7	30.5	54.0	-23.5	Ave	Ave	Hor
7313.600	11.4	37.1	8.4	25.5	31.4	74.0	-42.6	PK	PK	Hor
7313.600	-1.3	37.1	8.4	25.5	18.7	54.0	-35.3	Ave	Ave	Hor
8227.800	10.4	37.3	7.4	25.3	29.9	74.0	-44.1	PK	PK	Hor
8227.800	-1.8	37.3	7.4	25.3	17.7	54.0	-36.3	Ave	Ave	Hor
9142.000	10.8	37.7	6.1	25.0	29.5	74.0	-44.5	PK	PK	Hor
9142.000	-1.4	37.7	6.1	25.0	17.3	54.0	-36.7	Ave	Ave	Hor

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - High Channel - ZX-axis - LoRa Transmit Antenna Horizontal										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1828.400	34.4	27.2	2.9	26.3	38.1	74.0	-35.9	PK	PK	Vert
1828.400	6.5	27.2	2.9	26.3	10.1	54.0	-43.9	Ave	Ave	Vert
2742.600	16.6	30.0	3.5	26.3	23.7	74.0	-50.3	PK	PK	Vert
2742.600	3.9	30.0	3.5	26.3	11.0	54.0	-43.0	Ave	Ave	Vert
3656.800	17.3	30.8	4.0	26.1	26.0	74.0	-48.0	PK	PK	Vert
3656.800	5.0	30.8	4.0	26.1	13.7	54.0	-40.3	Ave	Ave	Vert
4571.000	18.2	32.2	7.6	25.9	32.0	74.0	-42.0	PK	PK	Vert
4571.000	5.8	32.2	7.6	25.9	19.7	54.0	-34.3	Ave	Ave	Vert
5485.200	19.9	33.8	10.1	25.7	38.2	74.0	-35.8	PK	PK	Vert
5485.200	7.3	33.8	10.1	25.7	25.5	54.0	-28.5	Ave	Ave	Vert
6399.400	23.3	35.8	9.1	25.7	42.6	74.0	-31.4	PK	PK	Vert
6399.400	10.5	35.8	9.1	25.7	29.7	54.0	-24.3	Ave	Ave	Vert
7313.600	11.1	37.1	8.4	25.5	31.1	74.0	-42.9	PK	PK	Vert
7313.600	-1.3	37.1	8.4	25.5	18.8	54.0	-35.2	Ave	Ave	Vert
8227.800	10.9	37.3	7.4	25.3	30.3	74.0	-43.7	PK	PK	Vert
8227.800	-1.7	37.3	7.4	25.3	17.7	54.0	-36.3	Ave	Ave	Vert
9142.000	10.7	37.7	6.1	25.0	29.4	74.0	-44.6	PK	PK	Vert
9142.000	-1.4	37.7	6.1	25.0	17.4	54.0	-36.6	Ave	Ave	Vert

		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436			Radiated Emissions (Spurious)					
DNB Job Number:		86088			Date: 13-16 Mar 2018			Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - High Channel - Z-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1828.400	34.0	27.2	2.9	26.3	37.6	74.0	-36.4	PK	PK	Hor
1828.400	4.1	27.2	2.9	26.3	7.8	54.0	-46.2	Ave	Ave	Hor
2742.600	18.1	30.0	3.5	26.3	25.2	74.0	-48.8	PK	PK	Hor
2742.600	3.8	30.0	3.5	26.3	11.0	54.0	-43.0	Ave	Ave	Hor
3656.800	17.4	30.8	4.0	26.1	26.1	74.0	-47.9	PK	PK	Hor
3656.800	4.9	30.8	4.0	26.1	13.7	54.0	-40.3	Ave	Ave	Hor
4571.000	17.8	32.2	7.6	25.9	31.7	74.0	-42.3	PK	PK	Hor
4571.000	5.8	32.2	7.6	25.9	19.6	54.0	-34.4	Ave	Ave	Hor
5485.200	20.2	33.8	10.1	25.7	38.5	74.0	-35.5	PK	PK	Hor
5485.200	7.2	33.8	10.1	25.7	25.5	54.0	-28.5	Ave	Ave	Hor
6399.400	22.8	36.6	9.1	25.7	42.9	74.0	-31.1	PK	PK	Hor
6399.400	10.5	36.6	9.1	25.7	30.5	54.0	-23.5	Ave	Ave	Hor
7313.600	11.3	37.1	8.4	25.5	31.3	74.0	-42.7	PK	PK	Hor
7313.600	-1.4	37.1	8.4	25.5	18.7	54.0	-35.3	Ave	Ave	Hor
8227.800	11.4	37.3	7.4	25.3	30.9	74.0	-43.1	PK	PK	Hor
8227.800	-1.8	37.3	7.4	25.3	17.7	54.0	-36.3	Ave	Ave	Hor
9142.000	10.9	37.7	6.1	25.0	29.6	74.0	-44.4	PK	PK	Hor
9142.000	-1.4	37.7	6.1	25.0	17.3	54.0	-36.7	Ave	Ave	Hor



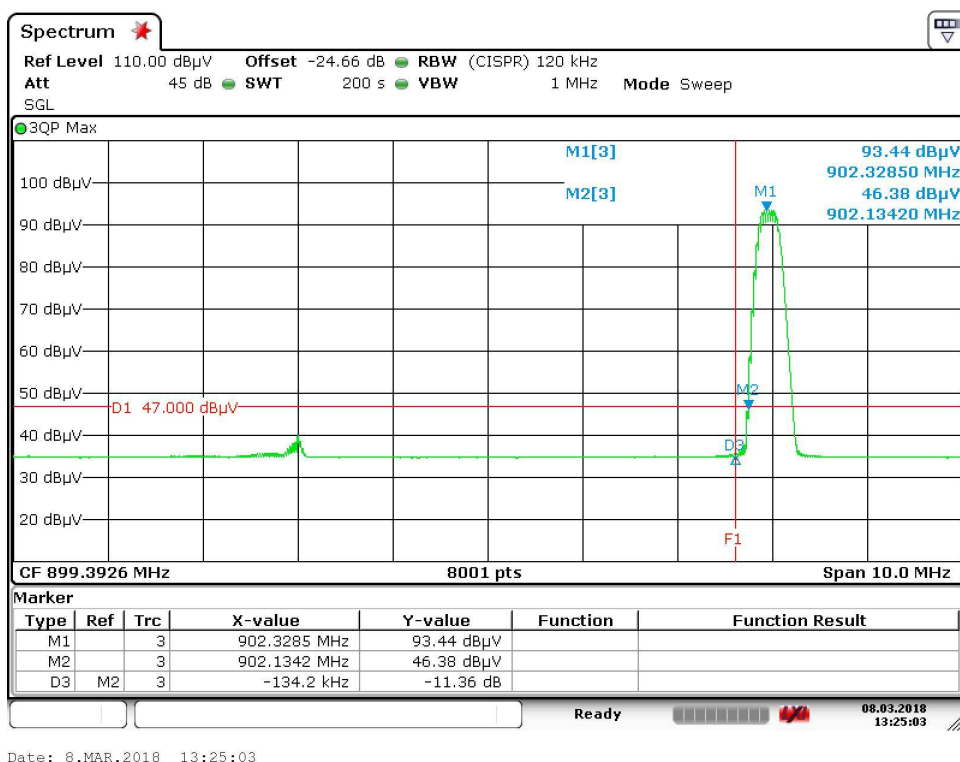
1100 E Chalk Creek Road
Coalville, UT 84017
(435) 336-4433
FAX (435) 336-4436

Radiated Emissions (Spurious)

DNB Job Number:		86088				Date: 13-16 Mar 2018		Specification [X] 15.247 (c) [X] ANSI C63.10-2013		
Customer:		Vutiliti								
Model Number:		VUHDRF1								
Description:		BLE Modular Transmitter								
		BLE and LoRa Transmitter Operating								
LoRa (500kHz) - High Channel - Z-axis - LoRa Transmit Antenna Vertical										
FREQ (Mhz)	Meter	Correction Factors (dB)			dBuV/m			Type		Receive Polarity
		Ant	Cbl	Amp	Corr	Lim	Delta	Lim	Rdng	
1828.400	38.00	27.20	2.90	26.30	41.70	74.00	-32.30	PK	PK	Vert
1828.400	9.90	27.20	2.90	26.30	13.60	54.00	-40.40	Ave	Ave	Vert
2742.600	21.40	30.00	3.50	26.30	28.50	74.00	-45.50	PK	PK	Vert
2742.600	4.30	30.00	3.50	26.30	11.40	54.00	-42.60	Ave	Ave	Vert
3656.800	17.30	30.80	4.00	26.10	26.00	74.00	-48.00	PK	PK	Vert
3656.800	5.00	30.80	4.00	26.10	13.70	54.00	-40.30	Ave	Ave	Vert
4571.000	18.70	32.20	7.60	25.90	32.60	74.00	-41.40	PK	PK	Vert
4571.000	5.80	32.20	7.60	25.90	19.60	54.00	-34.40	Ave	Ave	Vert
5485.200	19.80	33.80	10.10	25.70	38.00	74.00	-36.00	PK	PK	Vert
5485.200	7.20	33.80	10.10	25.70	25.50	54.00	-28.50	Ave	Ave	Vert
6399.400	23.10	35.80	9.10	25.70	42.30	74.00	-31.70	PK	PK	Vert
6399.400	9.00	35.80	9.10	25.70	28.20	54.00	-25.80	Ave	Ave	Vert
7313.600	10.70	37.10	8.40	25.50	30.70	74.00	-43.30	PK	PK	Vert
7313.600	-1.30	37.10	8.40	25.50	18.70	54.00	-35.30	Ave	Ave	Vert
8227.800	10.60	37.30	7.40	25.30	30.00	74.00	-44.00	PK	PK	Vert
8227.800	-1.80	37.30	7.40	25.30	17.70	54.00	-36.30	Ave	Ave	Vert
9142.000	12.90	37.70	6.10	25.00	31.60	74.00	-42.40	PK	PK	Vert
9142.000	-1.40	37.70	6.10	25.00	17.30	54.00	-36.70	Ave	Ave	Vert

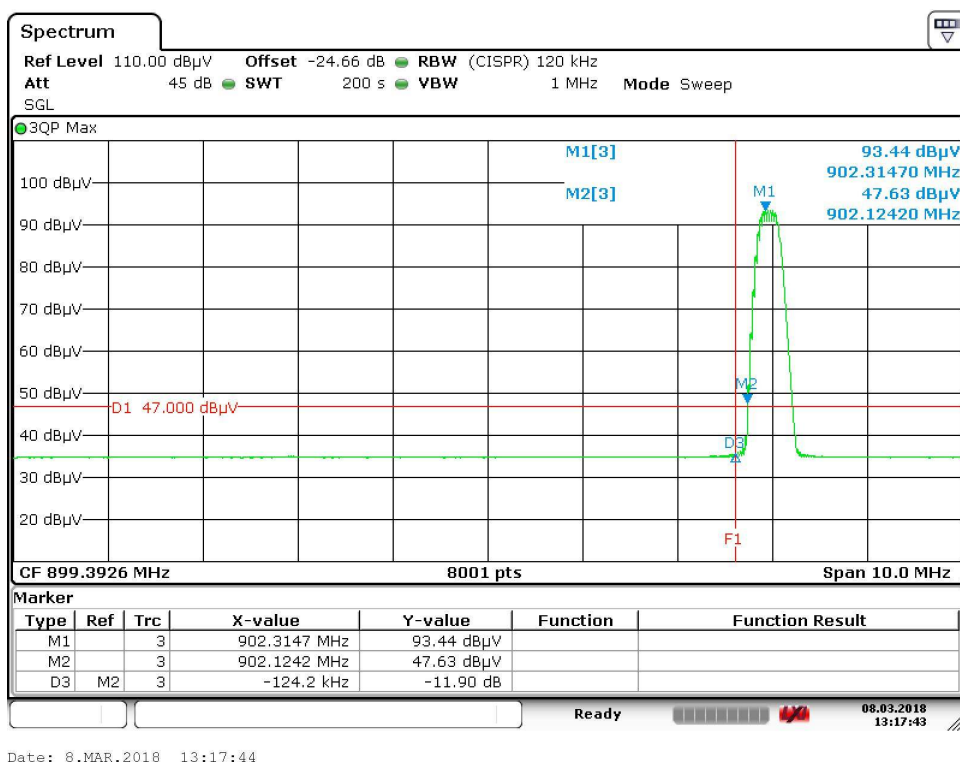
	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (Bandedge)		
DNB Job Number:	86088	Date:	8 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.			
Model Number:	VUHDRF1			
Description:	125kHz LoRa Modular Transmitter			

Radiated Corrected Band Edge
Lower Edge / X-Axis
Receive Antenna - Horizontal
EUT Transmit Antenna - Horizontal



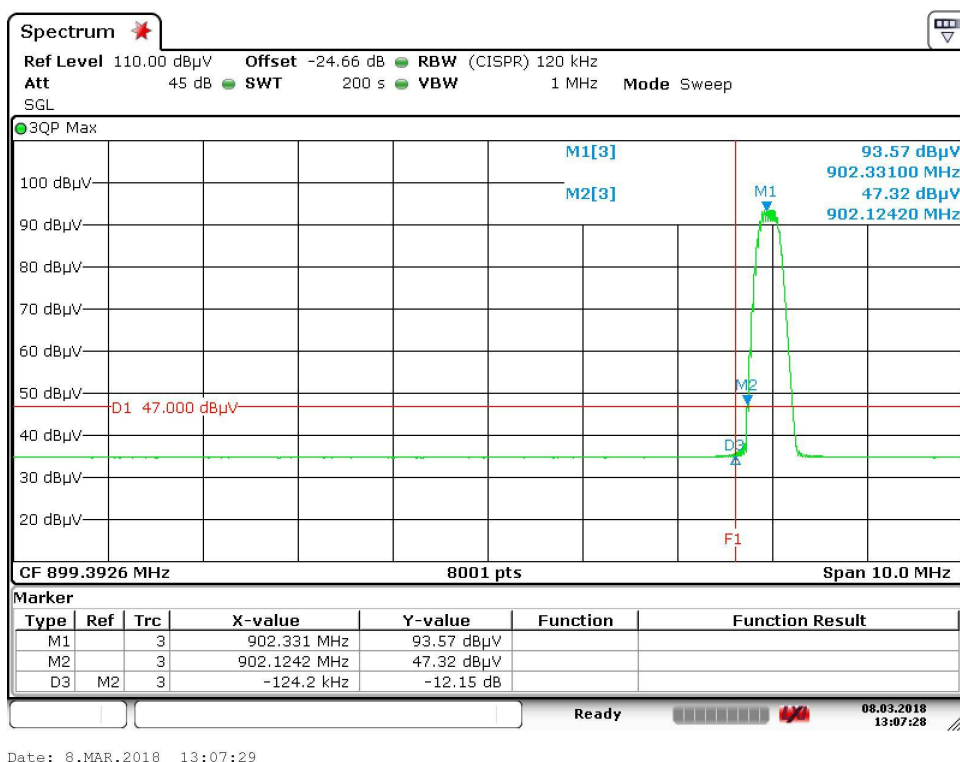
		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Radiated Emissions (Bandedge)	
DNB Job Number: 86088		Date: 8 Mar 2018			
Customer: Vutiliti Inc.		Specification [X] 15.247 (c) [X] ANSI C63.10-2013			
Model Number: VUHDRF1					
Description: 125kHz LoRa Modular Transmitter					

Radiated Corrected Band Edge
Lower Edge / X-Axis
Receive Antenna - Vertical
EUT Transmit Antenna - Horizontal



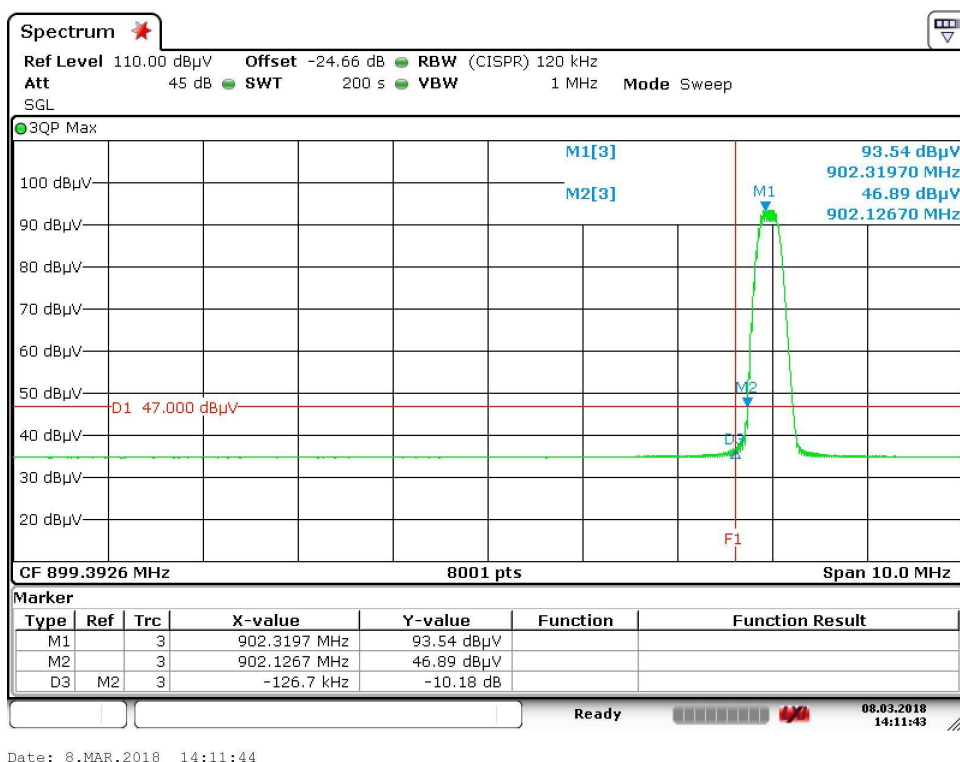
		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Radiated Emissions (Bandedge)	
DNB Job Number: 86088		Date: 8 Mar 2018			
Customer: Vutiliti Inc.		Specification [X] 15.247 (c) [X] ANSI C63.10-2013			
Model Number: VUHDRF1					
Description: 125kHz LoRa Modular Transmitter					

Radiated Corrected Band Edge
 Lower Edge / X-Axis
 Receive Antenna - Horizontal
 EUT Transmit Antenna - Vertical



 1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Radiated Emissions (Bandedge)	
DNB Job Number:	86088	Date:	8 Mar 2018
Customer:	Vutiliti Inc.		Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Model Number:	VUHDRF1		
Description:	125kHz LoRa Modular Transmitter		

Radiated Corrected Band Edge
Lower Edge / X-Axis
Receive Antenna - Vertical
EUT Transmit Antenna - Vertical

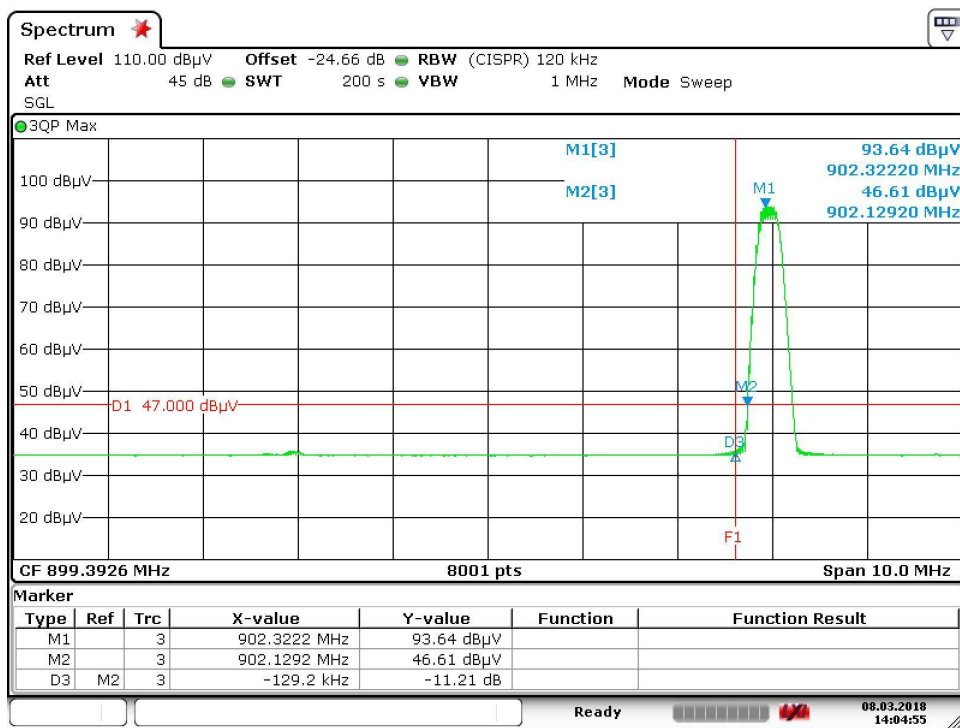


1100 E Chalk Creek Road
Coalville, UT 84017
(435) 336-4433
FAX (435) 336-4436

Radiated Emissions (Bandedge)

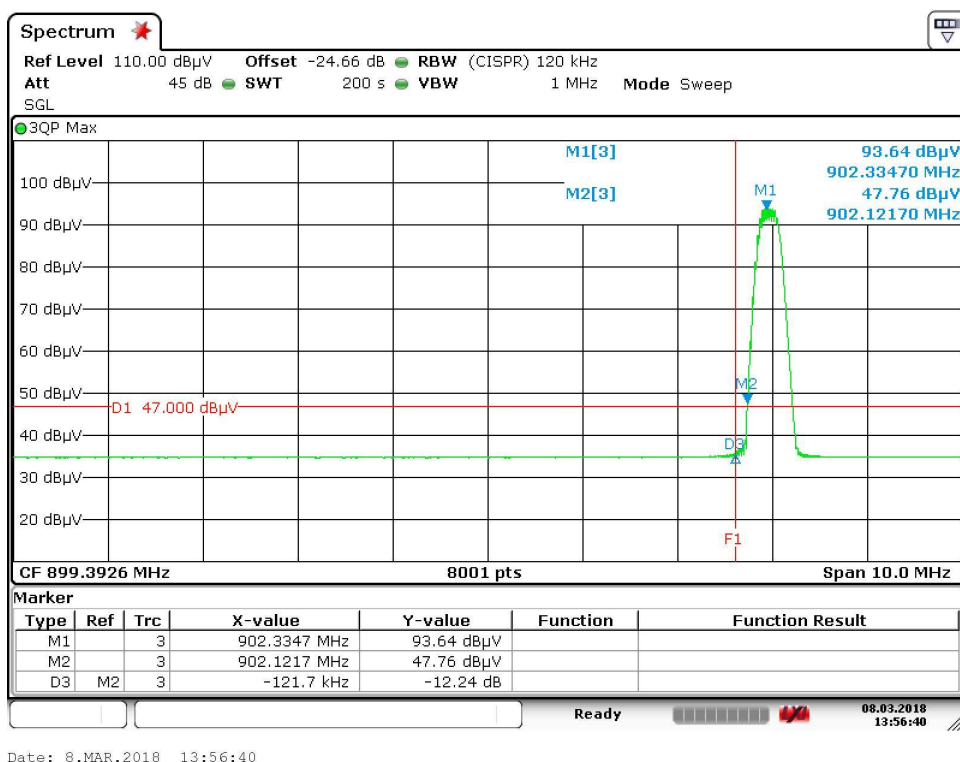
DNB Job Number:	86088	Date:	8 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.			
Model Number:	VUHDRF1			
Description:	125kHz LoRa Modular Transmitter			

Radiated Corrected Band Edge
Lower Edge / Y-Axis
Receive Antenna - Horizontal
EUT Transmit Antenna - Horizontal



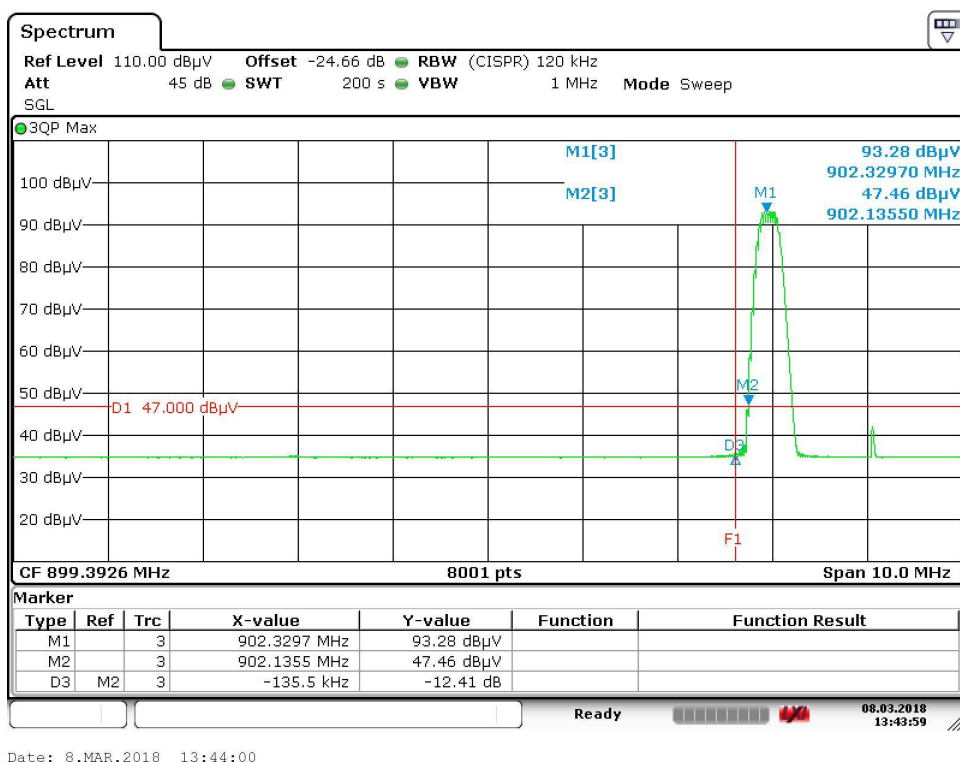
		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Radiated Emissions (Bandedge)	
DNB Job Number: 86088		Date: 8 Mar 2018			
Customer: Vutiliti Inc.		Specification [X] 15.247 (c) [X] ANSI C63.10-2013			
Model Number: VUHDRF1					
Description: 125kHz LoRa Modular Transmitter					

Radiated Corrected Band Edge
 Lower Edge / Y-Axis
 Receive Antenna - Vertical
 EUT Transmit Antenna - Horizontal



	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (Bandedge)		
DNB Job Number:	86088	Date:	8 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.			
Model Number:	VUHDRF1			
Description:	125kHz LoRa Modular Transmitter			

Radiated Corrected Band Edge
Lower Edge / Y-Axis
Receive Antenna - Horizontal
EUT Transmit Antenna - Vertical



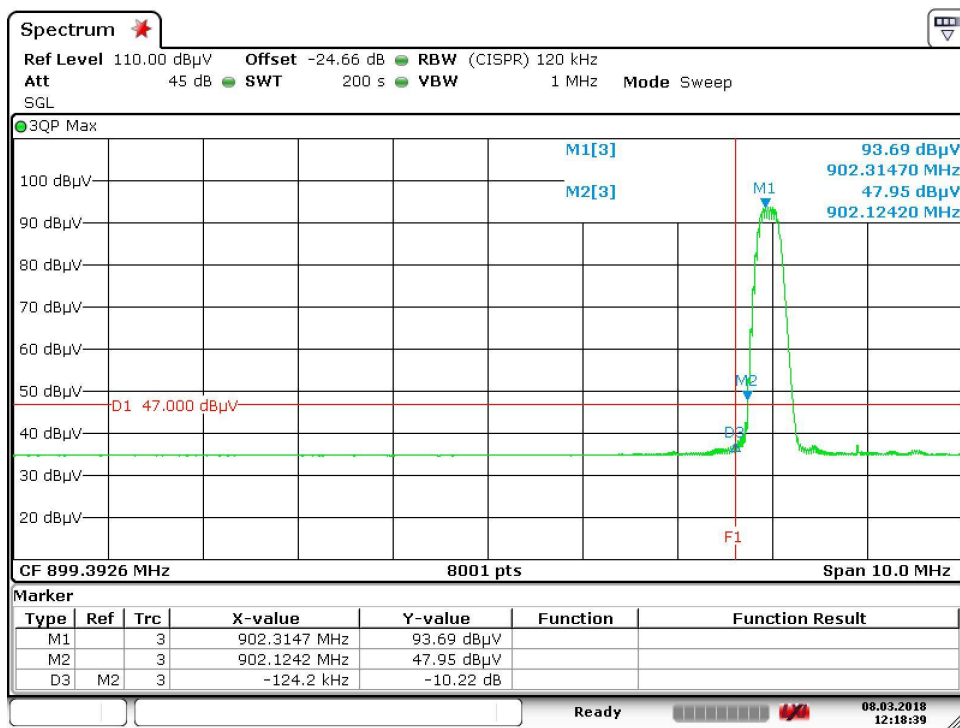
Date: 8.MAR.2018 13:44:00

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

Radiated Emissions (Bandedge)

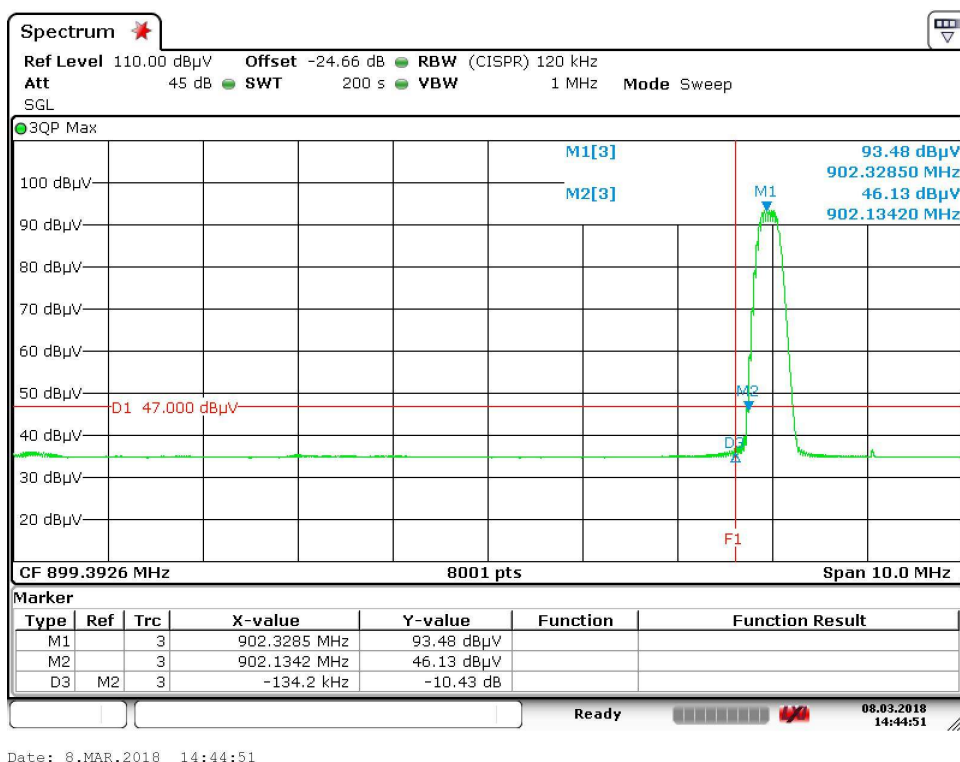
DNB Job Number:	86088	Date:	8 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.			
Model Number:	VUHDRF1			
Description:	125kHz LoRa Modular Transmitter			

Radiated Corrected Band Edge
Lower Edge / Y-Axis
Receive Antenna - Vertical
EUT Transmit Antenna - Vertical



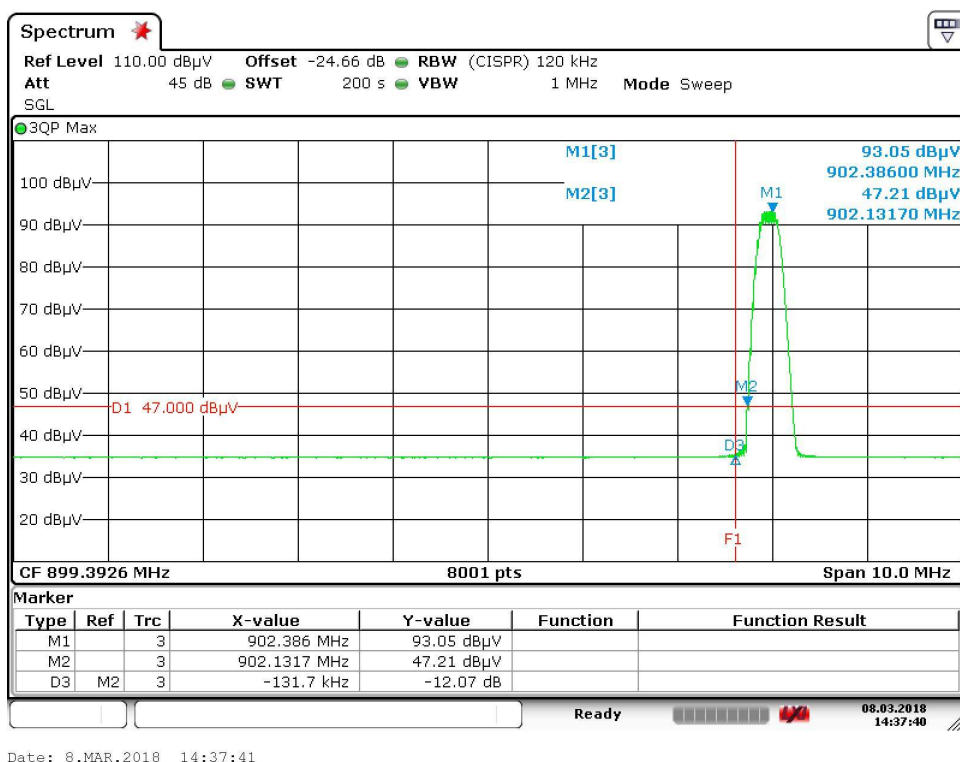
	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (Bandedge)		
DNB Job Number:	86088	Date:	8 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.			
Model Number:	VUHDRF1			
Description:	125kHz LoRa Modular Transmitter			

Radiated Corrected Band Edge
Lower Edge / Z-Axis
Receive Antenna - Horizontal
EUT Transmit Antenna - Horizontal



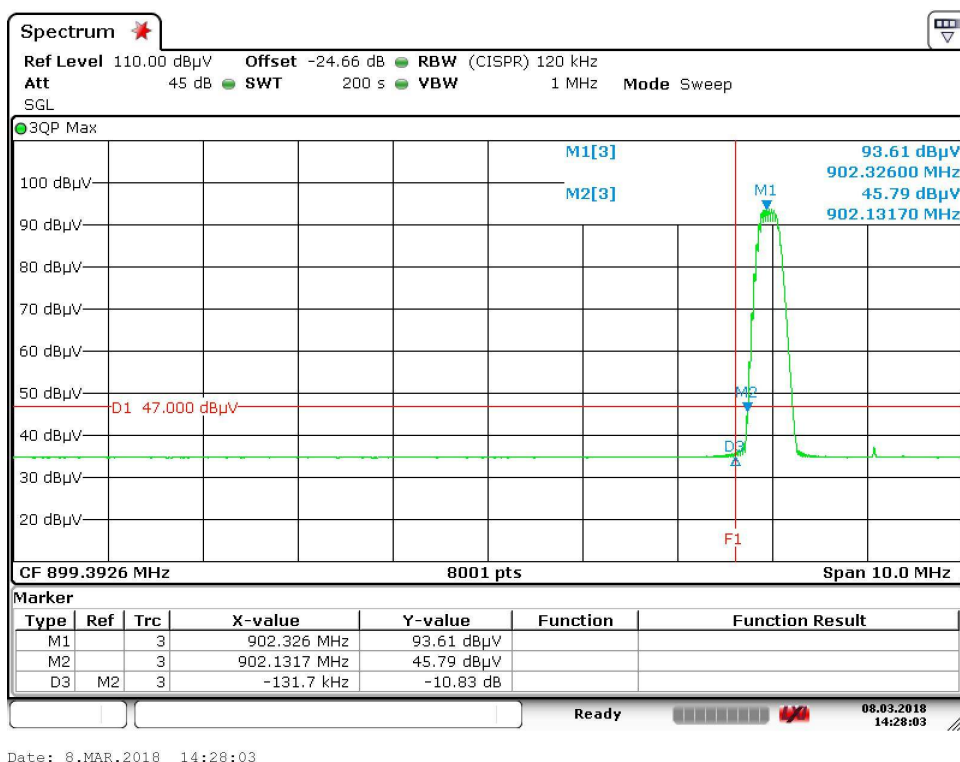
		1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Radiated Emissions (Bandedge)	
DNB Job Number: 86088		Date: 8 Mar 2018			
Customer: Vutiliti Inc.		Specification [X] 15.247 (c) [X] ANSI C63.10-2013			
Model Number: VUHDRF1					
Description: 125kHz LoRa Modular Transmitter					

Radiated Corrected Band Edge
 Lower Edge / Z-Axis
 Receive Antenna - Vertical
 EUT Transmit Antenna - Horizontal



 1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Radiated Emissions (Bandedge)	
DNB Job Number:	86088	Date:	8 Mar 2018
Customer:	Vutiliti Inc.		Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Model Number:	VUHDRF1		
Description:	125kHz LoRa Modular Transmitter		

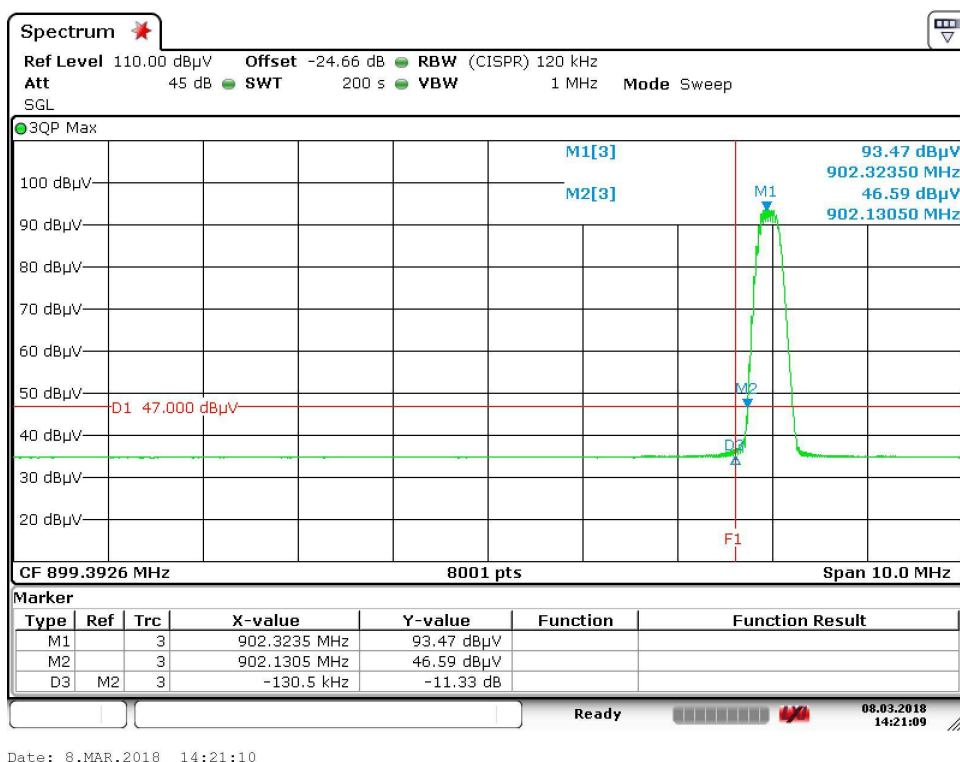
Radiated Corrected Band Edge
Lower Edge / Z-Axis
Receive Antenna - Horizontal
EUT Transmit Antenna - Vertical



Date: 8.MAR.2018 14:28:03

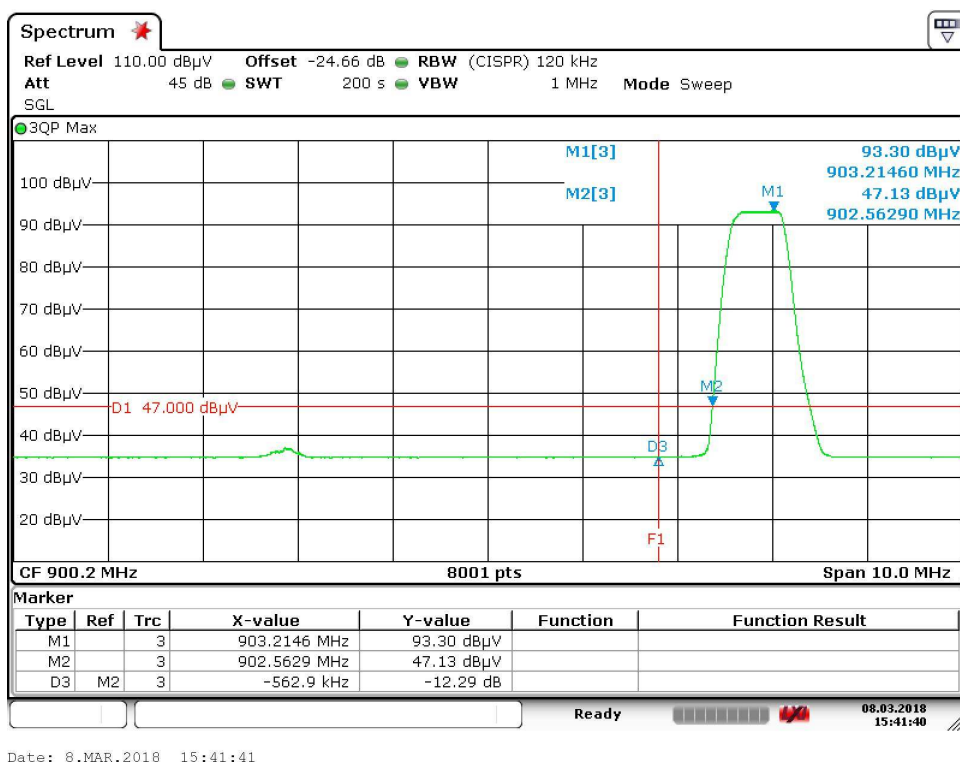
	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (Bandedge)		
DNB Job Number:	86088	Date:	8 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.			
Model Number:	VUHDRF1			
Description:	125kHz LoRa Modular Transmitter			

Radiated Corrected Band Edge
Lower Edge / Z-Axis
Receive Antenna - Vertical
EUT Transmit Antenna - Vertical



	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436	Radiated Emissions (Bandedge)		
DNB Job Number:	86088	Date:	8 Mar 2018	Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Customer:	Vutiliti Inc.			
Model Number:	VUHDRF1			
Description:	500kHz LoRa Modular Transmitter			

Radiated Corrected Band Edge
Lower Edge / X-Axis
Receive Antenna - Horizontal
EUT Transmit Antenna - Horizontal



	1100 E Chalk Creek Road Coalville, UT 84017 (435) 336-4433 FAX (435) 336-4436		Radiated Emissions (Bandedge)	
	DNB Job Number:	86088		
Customer:	Vutiliti Inc.			Specification [X] 15.247 (c) [X] ANSI C63.10-2013
Model Number:	VUHDRF1			
Description:	500kHz LoRa Modular Transmitter			

Radiated Corrected Band Edge
 Lower Edge / X-Axis
 Receive Antenna - Vertical
 EUT Transmit Antenna - Horizontal

