FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

Urban Active Vehicle

MODEL NUMBER: 561077

FCC ID: 2AJFG561077
IC: 21819-561077

REPORT NUMBER: 11385860C

ISSUE DATE:October 10, 2016

Prepared for
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Troy, MI, 48083

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	October 5, 2016	Initial Issue	V Sabalvaro
--	October 10, 2016	Editorial Changes	V Sabalvaro

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TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS 4

2. TEST METHODOLOGY 5

3. FACILITIES AND ACCREDITATION 5

4. CALIBRATION AND UNCERTAINTY 5

4.1. MEASURING INSTRUMENT CALIBRATION 5

4.2. SAMPLE CALCULATION 5

4.3. MEASUREMENT UNCERTAINTY 6

5.5. DESCRIPTION OF TEST SETUP 8

6. TEST AND MEASUREMENT EQUIPMENT 10

7. TEST RESULTS 11

7.1 Configuration Tx 433.92MHz Test Data 11

7.1.1 Test Conditions and Results – Occupied Bandwidth 11
7.1.2 Test Conditions and Results – Cease Operation 16
7.1.3 Test Conditions and Results – Pulse Train 18
7.1.4 Test Conditions and Results – RADIATED EMISSIONS Fundamental and Spurious 24

8. SETUP PHOTOS 34

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Vast Production Services
307 Robbins Drive
Troy, MI, 48083

EUT DESCRIPTION: Urban Active Vehicle

MODEL: 561077

SERIAL NUMBER: 0059752

DATE TESTED: August 8 – September 29, 2016

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex A1.1	Pass
INDUSTRY CANADA RSS-GEN Issue 4	Pass

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL LLC based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 15, RSS-GEN Issue 4, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfingsten Road, Northbrook, IL 60062 USA.

UL NBK is accredited by NVLAP, Laboratory Code 100414-0. The full scope of accreditation can be viewed at http://ts.nist.gov

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Sample Calculations
Radiated Field Strength and Conducted Emissions data contained within this report is calculated on the following basis:
Field Strength (dBuV/m) = Meter Reading (dBuV) + AF (dB/m) - Gain (dB) + Cable Loss (dB)
Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable Loss (dB) + LISN IL (dB)
Conducted Current (dBuA) = Meter Reading (dBuV) + Cable Loss (dB) - Transducer Factor (dBohms)

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4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test	Range	Equipment	Uncertainty k=2
Conducted Emissions	150k-30MHz	LISN	3.65dB
Radiated Emissions	9k-30MHz	H-Field Loop	3.15dB
Radiated Emissions	30-200MHz	Bicon 3m Horz	3.64dB
Radiated Emissions	30-200MHz	Bicon 3m Vert	5.10dB
Radiated Emissions	200-1000MHz	LogP 3m Horz	4.00dB
Radiated Emissions	200-1000MHz	LogP 3m Vert	5.36dB
Radiated Emissions	30-200MHz	Bicon 10m Horz	4.48dB
Radiated Emissions	30-200MHz	Bicon 10m Vert	4.49dB
Radiated Emissions	200-1000MHz	LogP 10m Horz	3.79dB
Radiated Emissions	200-1000MHz	LogP 10m Vert	3.84dB
Radiated Emissions	1-18GHz	Horn	4.32dB
Conducted Ant Port	30MHz-26GHz	Spectrum Analyzer	2.94dB

Uncertainty figures are valid to a confidence level of 95%.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a 433.92MHz periodic transmitter. It is powered by a DC vehicle battery. The transmitter is used for electronic acess and authorization system of a vehicle. The radio wave signals of ASK and FSK are not transmitted simultaneously. The key fob transmits radio wave signals of ASK and FSK modulations. Either one of ASK or FSK are transmitted by operator's actions. End user cannot control which of ASK and FSK modulation are to be transmitted.
The device is manufactured by Vast Production Services

5.2. MAXIMUM OUTPUT E-FIELD STRENGTH

The transmitter has a maximum output peak E-field as follows:

Frequency Range (MHz)	Mode	Output AV E-field Strength (dBuV/m)
433.92	TX - ASK	77.21
433.92	TX - FSK	70.78

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PCB trace antenna.

5.4. WORST-CASE CONFIGURATION AND MODE

The EUT was set in worst axis as found in preliminary testing. The Z-axis was determined to be the worst axis.

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5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
CAN/LIN Interface	Vector	VN1630A	-	-
Laptop	DELL	E6410	82563381124	
Power Supply	Leader	LPS-164A	9070286	
Tablet	Samsung	SM-T560NU	RS2H60LF76W	A3LSMT560NU

I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
0	Enclosure	-	Non-Electrical	-	-	None
1	DC	2	Wire	DC	<3m	None
2	CAN	1	Wire	I/O	<3m	None

TEST SETUP

The EUT is programmed for continuous TX mode for Radiated and Bandwidth measurements. For timing tests, the EUT is programmed for manual TX operation.

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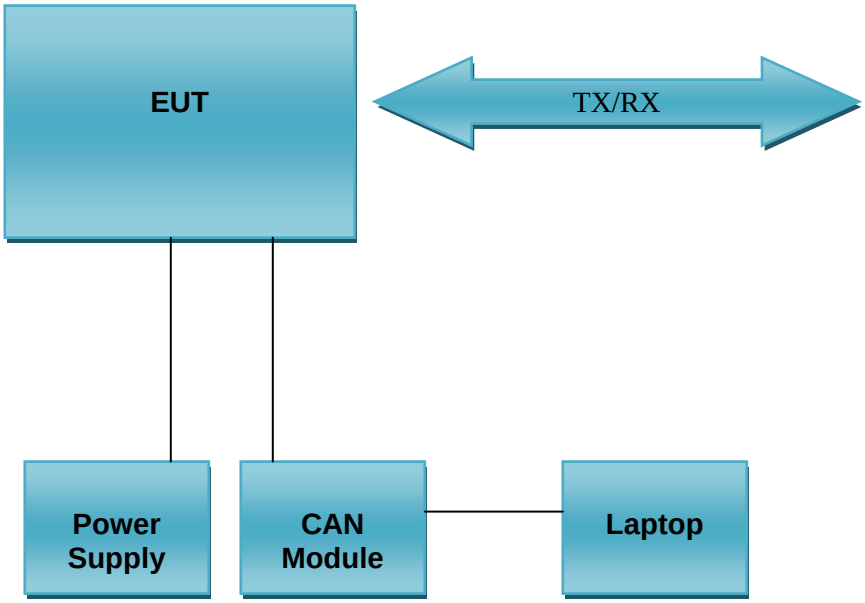
SETUP DIAGRAM FOR TESTS



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6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List					
Description	**Manufacturer**	**Model**	**T No.**	**Cal Date**	**Cal Due**
Radiated Software	UL	UL EMC	Ver 9.5, Nov, 2015		
Signal Analyzer	Agilent	PXA	EMC4360	1/8/2016	1/31/2017
Test Receiver	Rhode & Schwarz	ESCI	EMC4328	11/18/2015	11/30/2016
Log-P Antenna	Chase	UPA6109	EMC4313	1/22/2016	1/31/2017
Bicon Antenna	Chase	UPA6106A	EMC4078	12/28/2015	12/31/2016
Antenna Array	UL	BOMS	EMC4276	12/1/2015	12/31/2016
Test Receiver	Rhode & Schwarz	ESU	EMC4323	1/2/2016	1/31/2017

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7. TEST RESULTS

7.1 Configuration Tx 433.92MHz Test Data

7.1.1 Test Conditions and Results – Occupied Bandwidth

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The device was operated and the spectrum analyzer resolution bandwidth set per the appropriate standard.
Basic Standard	47 CFR Part 15.231(c)
Occupied Bandwidth Limits	
0.25% of Center Frequency (433.92MHz: 1085.8kHz)	

Table 1 Occupied Bandwidth Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	1
Supplementary information: None		

Table 2 Occupied Bandwidth Spectrum Analyzer Settings

Resolution Bandwidth	Occupied Bandwidth Requirements	
	dBc	% PWR
15kHz	-20	99
Supplementary information: None		

Table 3 Occupied Bandwidth Test Result Summary

Center Frequency	Modulation	20dB BW Measured (kHz)	99% BW Measured (kHz)
433.92MHz	ASK	86.23	370.97
433.92MHz	FSK	85.03	89.921

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Figure 1 – Bandwidth Graph 433.92MHz – 20dB (ASK modulation)

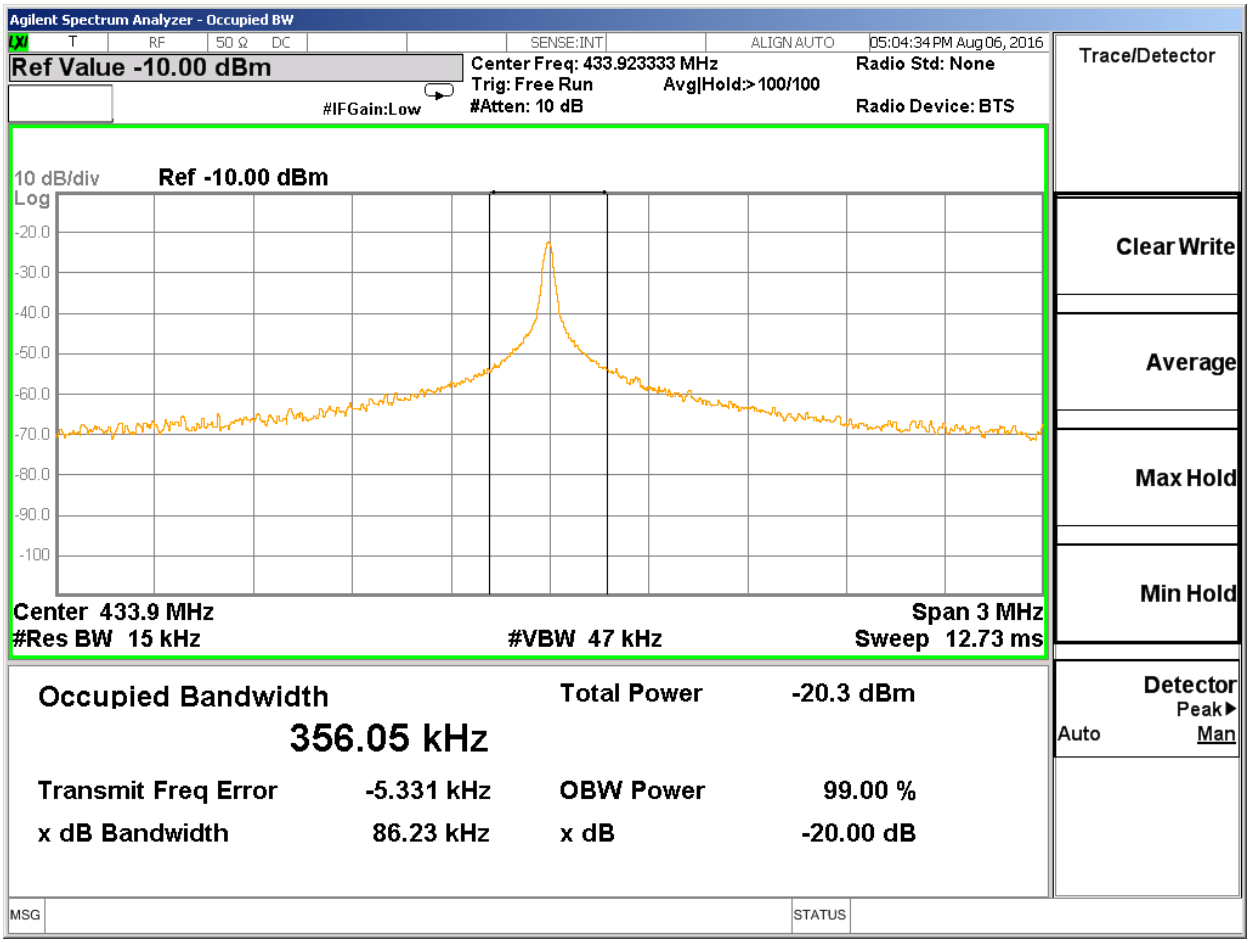

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Figure 2 – Bandwidth Graph 433.92MHz – 20dB (FSK modulation)

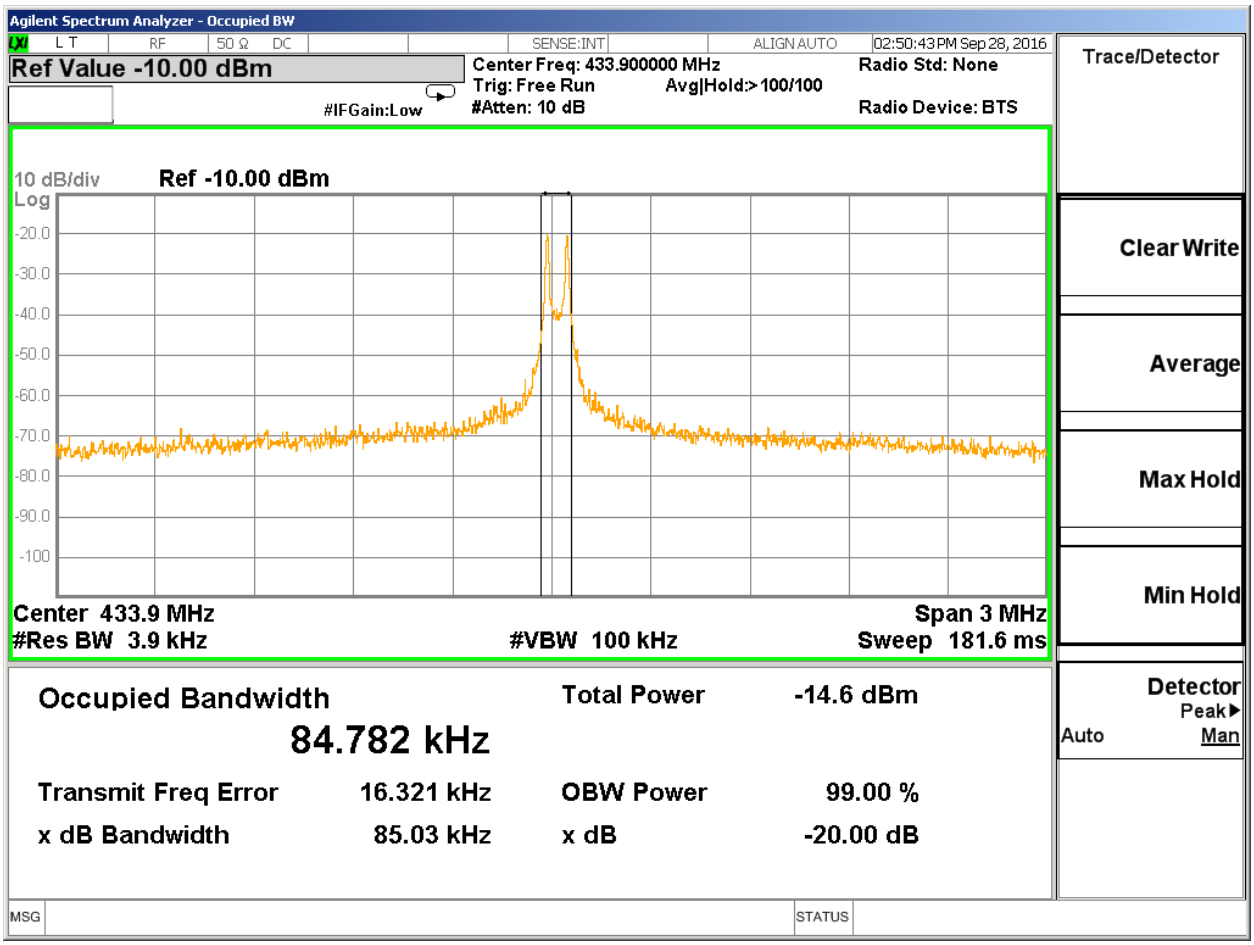

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Figure 3 – Bandwidth Graph 433.92MHz – 99% (ASK modulation)

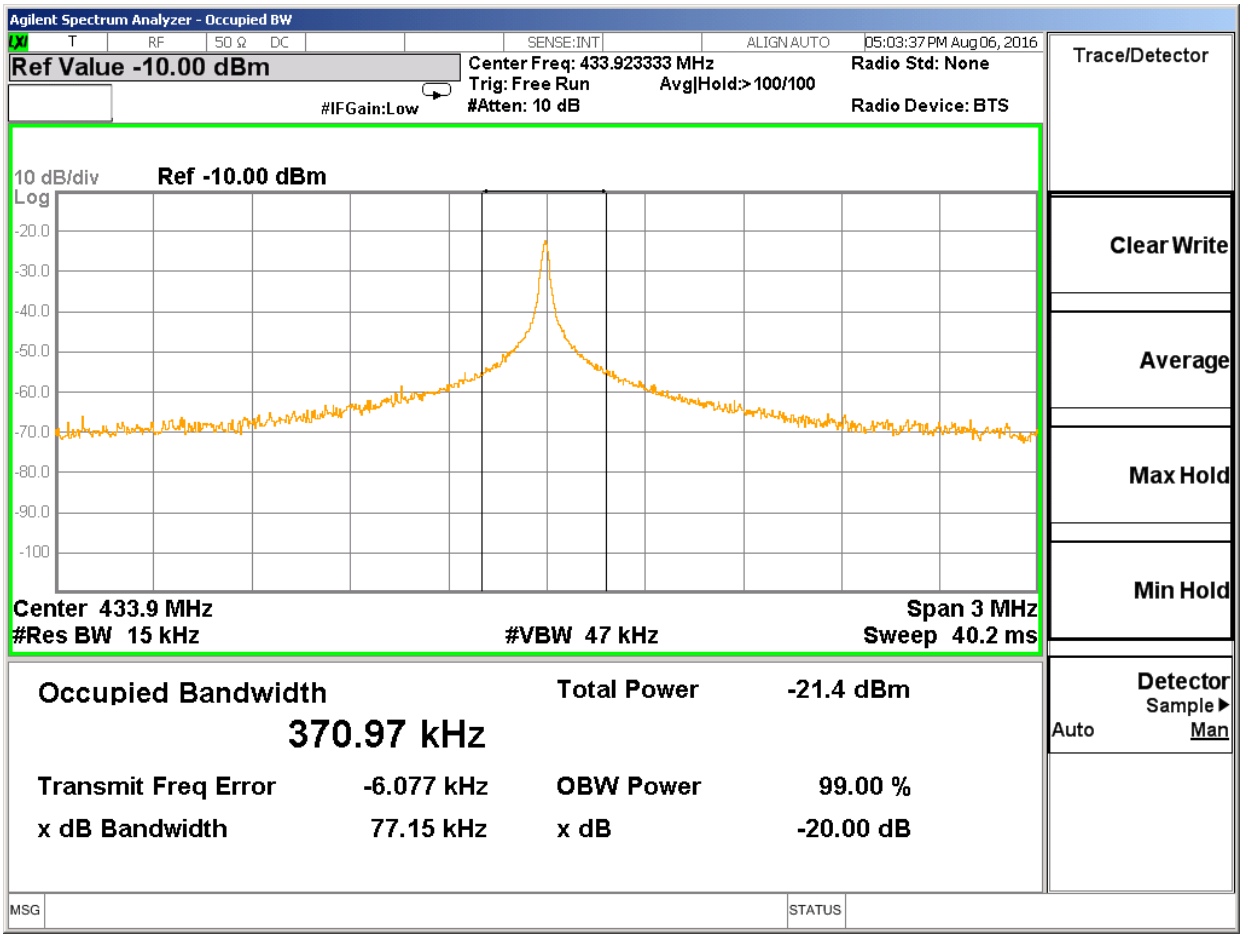

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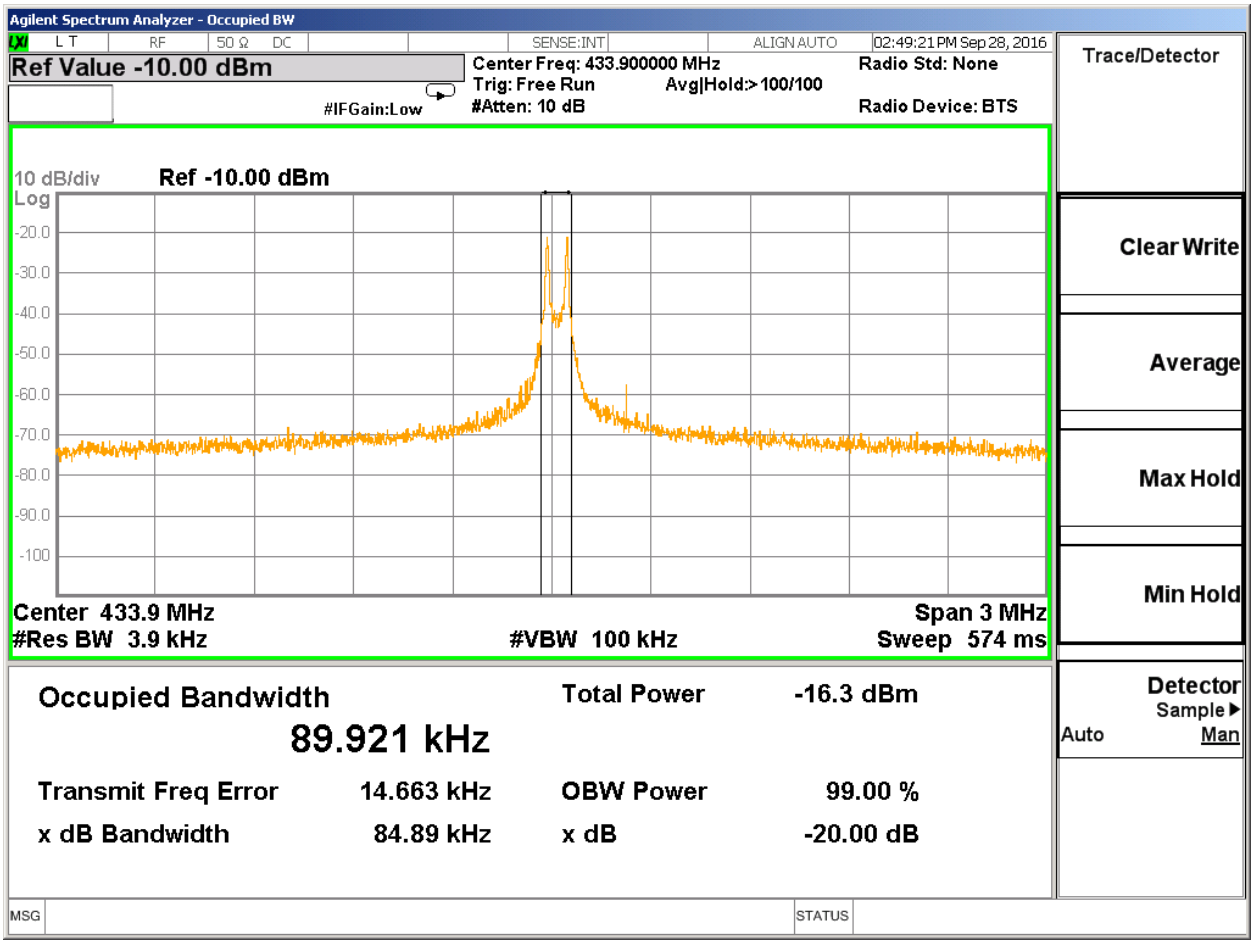
Figure 4 – Bandwidth Graph 433.92MHz – 99% (FSK modulation)



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7.1.2 Test Conditions and Results – Cease Operation

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The device was operated and the transmission time measured with the spectrum analyzer set to zero span at the fundamental frequency.
Basic Standard	47 CFR Part 15.231(a)
Cease Operation Limits	
The transmissions shall stop within 5 seconds of either a button being released or if automatically controlled transmissions shall be stopped 5 seconds after transmissions begin.	

Table 4 Cease Operation Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	1
Supplementary information: None		

Figure 5 Cease Operation Graph 433.92MHz (ASK modulation)

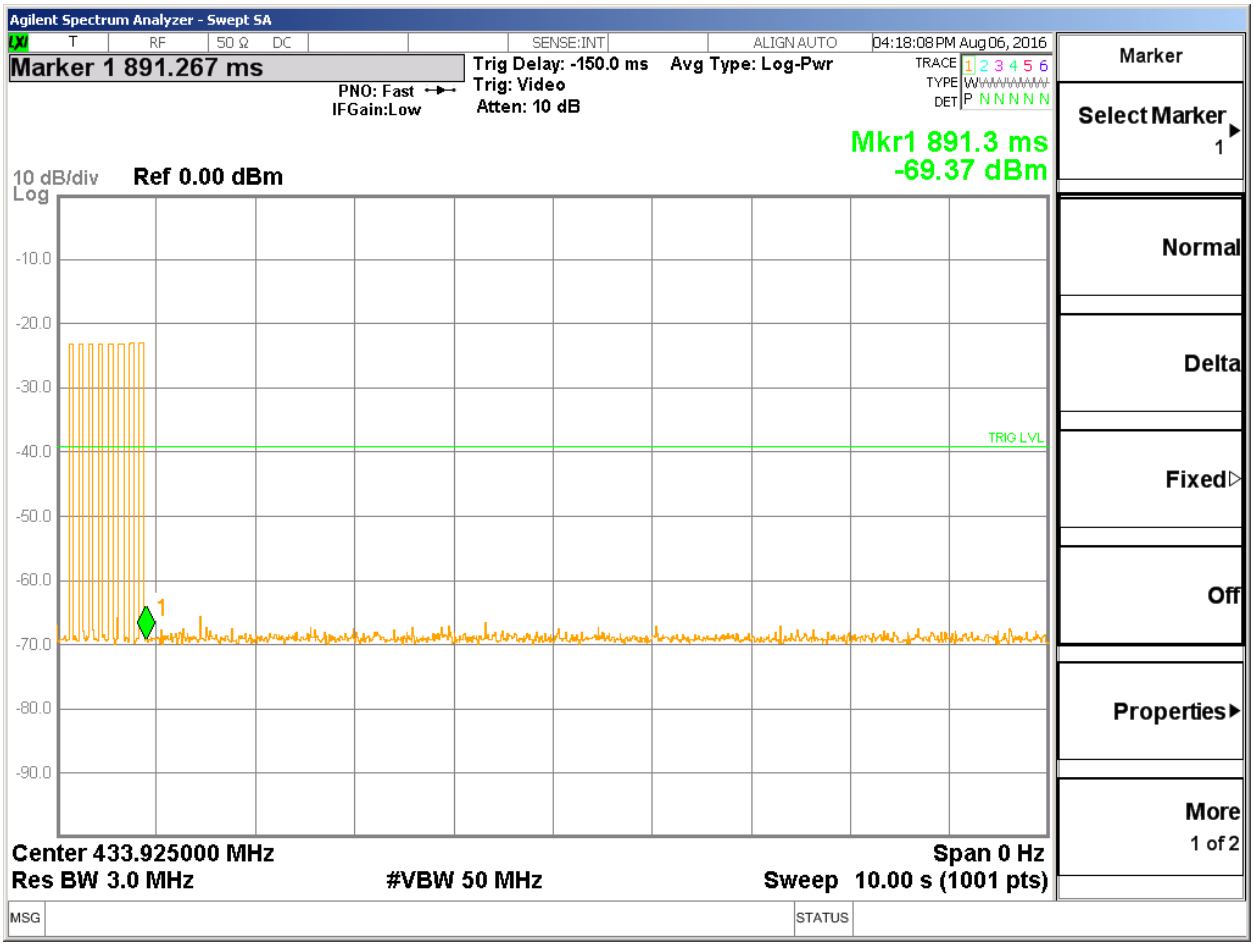

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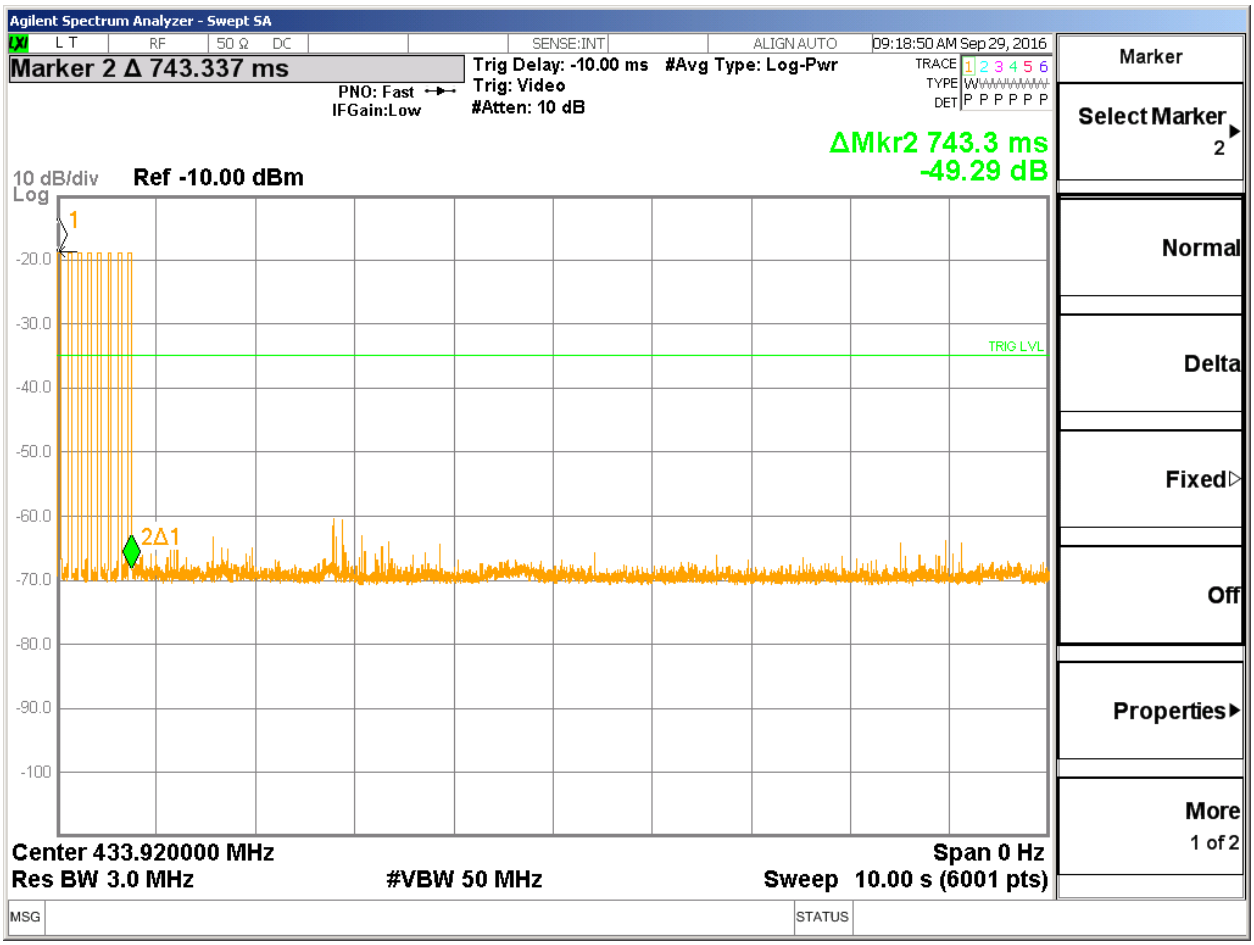
Figure 6 Cease Operation Graph 433.92MHz (FSK modulation)



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7.1.3 Test Conditions and Results – Pulse Train

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The pulse train was measured with the spectrum analyzer set to zero span at the fundamental frequency.	
Basic Standard		FCC Part 15 Subpart A, 15.35
Pulse Train Limits		
There are no limits for this test. This data is used to calculate the averaging correction factor that is applied to the measured peak radiated emissions results.		

Table 5 Pulse Train Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	1
Supplementary information: None		

Table 6 Pulse Train Calculation

			Total Transmission period or 100ms whichever is lesser	DC Correction Factor (dB) $20\log\left(\frac{PulseWidth}{Period}\right)$
TX Frequency	Modulation	Total TX time		
433.92MHz	ASK	$(48 \times 0.120) + (46 \times 0.240) = 2mS$	100mS	-15.49dB
	FSK	34.43	100mS	-9.26
Worst Case Duty Cycle: Worst case duty cycle was calculated over 100mS.				

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Figure 7 Pulse Train Graphs for 433.92MHz (ASK modulation)

Short pulse duration: 0.120mS
Long pulse duration: 0.240mS

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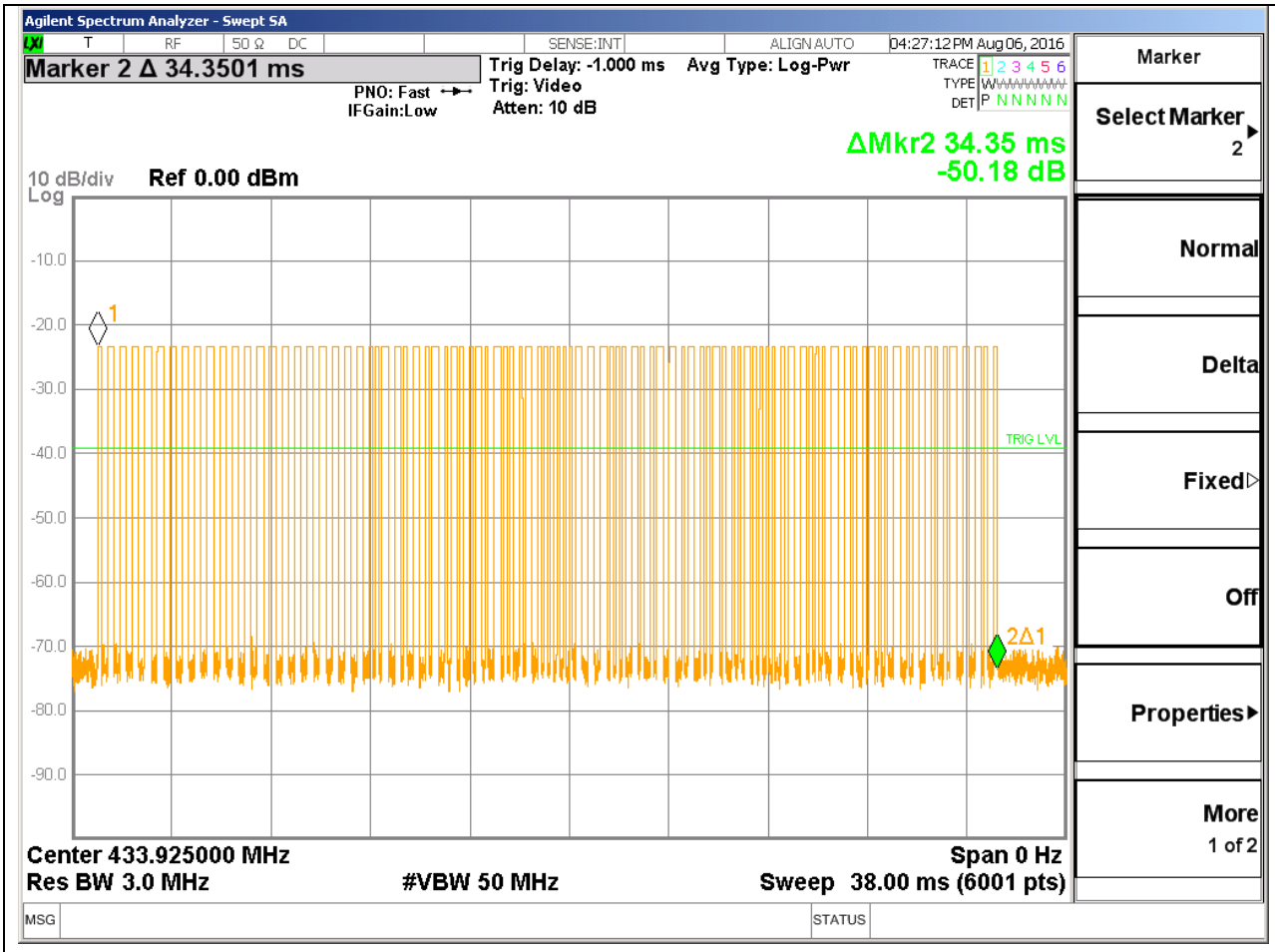

Number of Pulses: 48 Short, 46 Long

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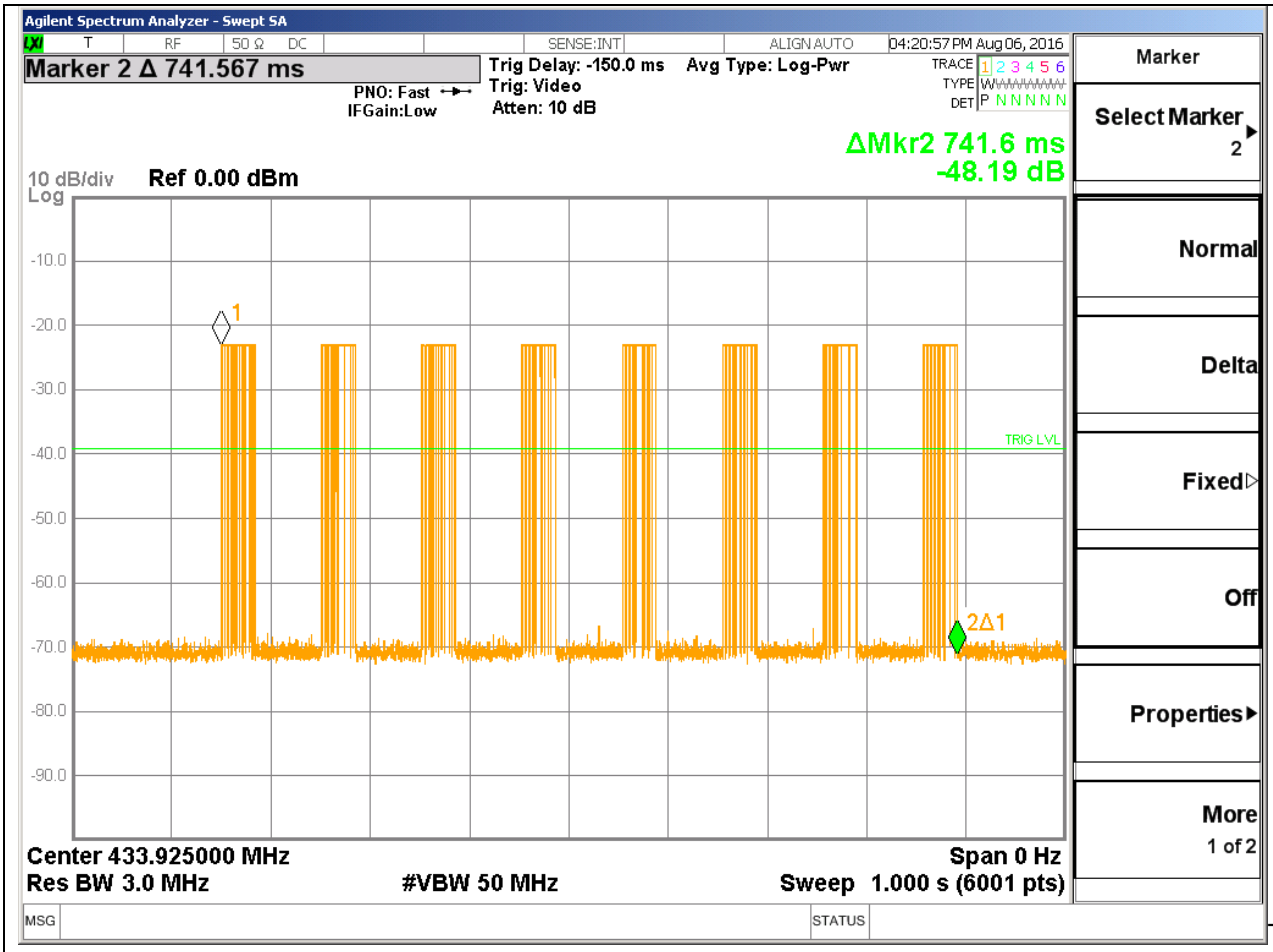

Total Transmission Burst Package

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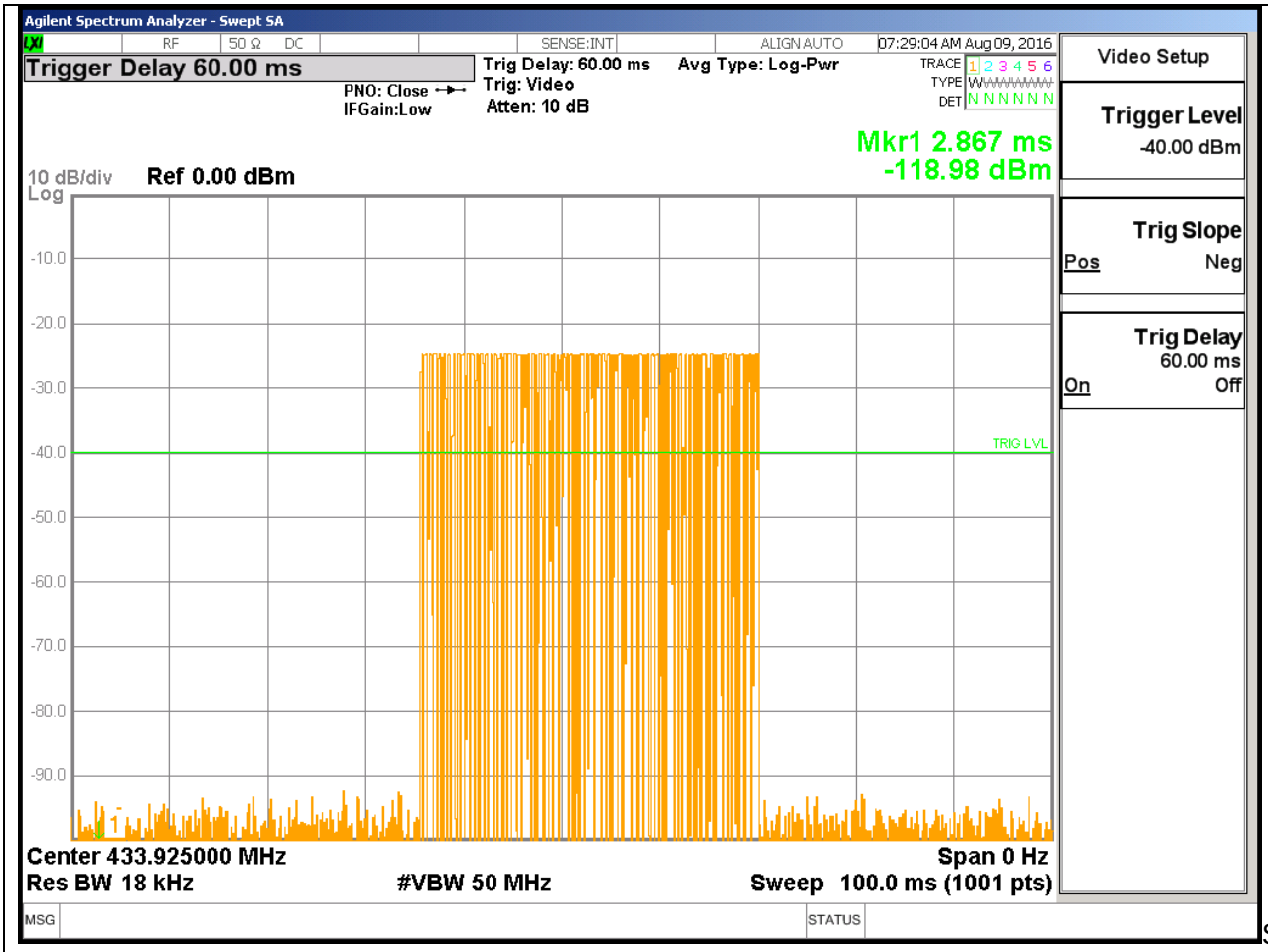

Single

Burst within 100ms

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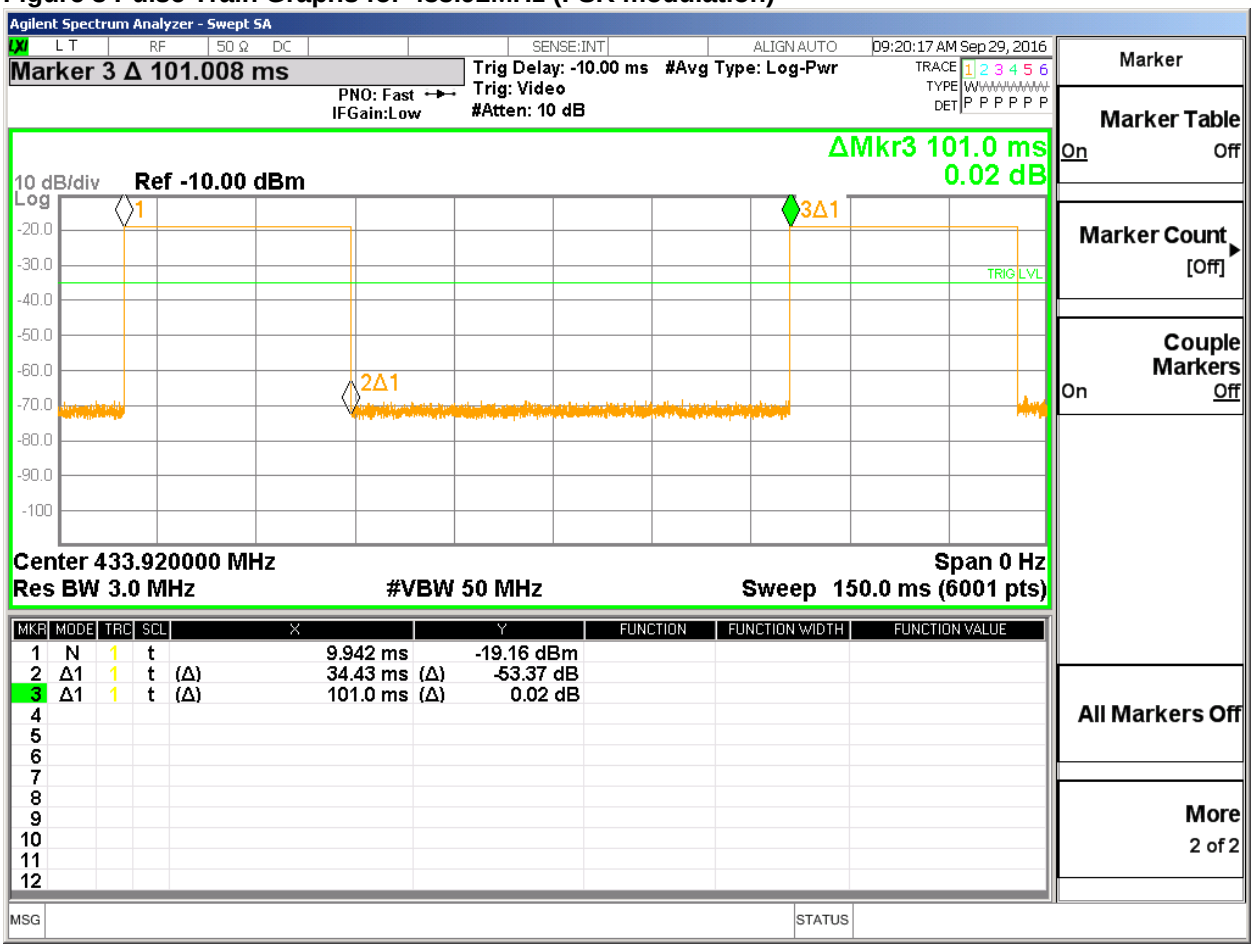
Figure 8 Pulse Train Graphs for 433.92MHz (FSK modulation)



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7.1.4 Test Conditions and Results – RADIATED EMISSIONS Fundamental and Spurious

Test Description	Measurements were made in a 10-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4:2003. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3-meter as noted. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in both horizontal and vertical polarities. Final measurements (quasi-peak or average as noted) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.	
Basic Standard	47 CFR Part 15 subpart C, and RSS-210	
UL LPG	80-EM-S0029	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30MHz – 1GHz	3 meter distance
	1GHz – 4GHz	3 meter distance

Out of band spurious emissions limit

Frequency (MHz)	Limit (dBµV/m)	
	Quasi-Peak	Peak
30 - 88	40.00	NA
88 - 216	43.52	NA
216 - 960	46.02	NA
960 - 1000	54	NA
Above 1000 (FCC)	NA	54 (at 3-meter)

Fundamental Frequency Limits and Non-restricted band Harmonic Limits

Frequency (MHz)	Limit (dBµV/m) @ 3m distance All harmonics except those in restricted bands must be attenuated by 20dB or more	
	Average - Fundamental	Peak - Fundamental
433.92	80.8	100.8

Supplementary information: See section 7.1.3 for duty cycle information.

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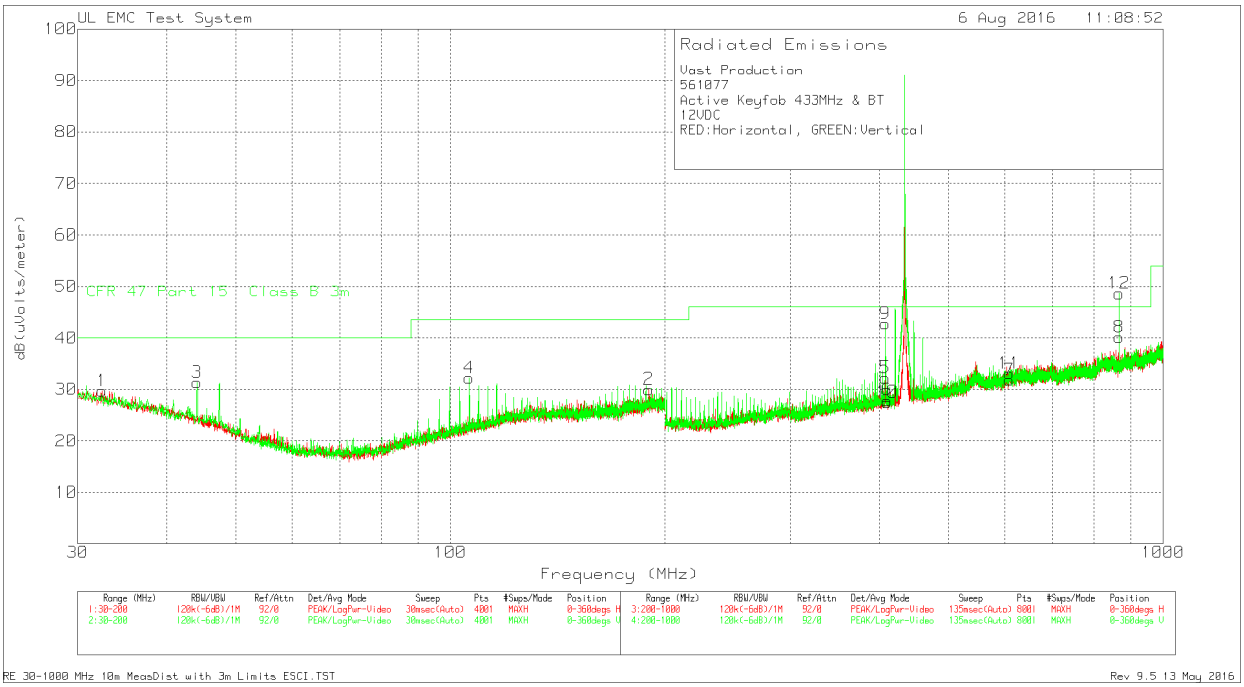
Figure 9 Radiated Emissions Graph (30MHz to 1GHz) – ASK Modulation



Besides the fundamental transmit frequency and its harmonics, All visible emissions are at least 6dB below the limit or under the noise floor, therefore no further measurement needed.

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Table 7 - Radiated Emissions Data Points 433.92MHz – 30MHz to 1GHz – ASK Modulation

Vast Production
561076
Active Keyfob 315MHz & BT
12VDC

Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path dB	Peak Level Reading dBuV/m	DC Factor dB	Average Level with DC Factor dBuV/m	PK Limit	PK Margin (dB)	AV Limit	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	Notes
433.9199	67.7	Pk	16.3	8.7	92.7	-15.49	77.21	100.8	-8.1	80.8	-3.59	208	128	V	2
433.9179	55.21	Pk	16.3	8.7	80.21	-15.49	64.72	100.8	-20.59	80.8	-16.08	257	102	H	2
867.8373	18.07	Pk	22.1	9.5	49.67	-15.49	34.18	66.02	-16.35	46.02	-11.84	148	139	V	2
867.8446	11.17	Pk	22.1	9.5	42.77	-15.49	27.28	66.02	-23.25	46.02	-18.74	308	105	H	2

Pk - Peak detector

Note:
2 - Y-Axis

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Figure 10 Radiated Emissions Graph (30MHz to 1GHz) – FSK Modulation

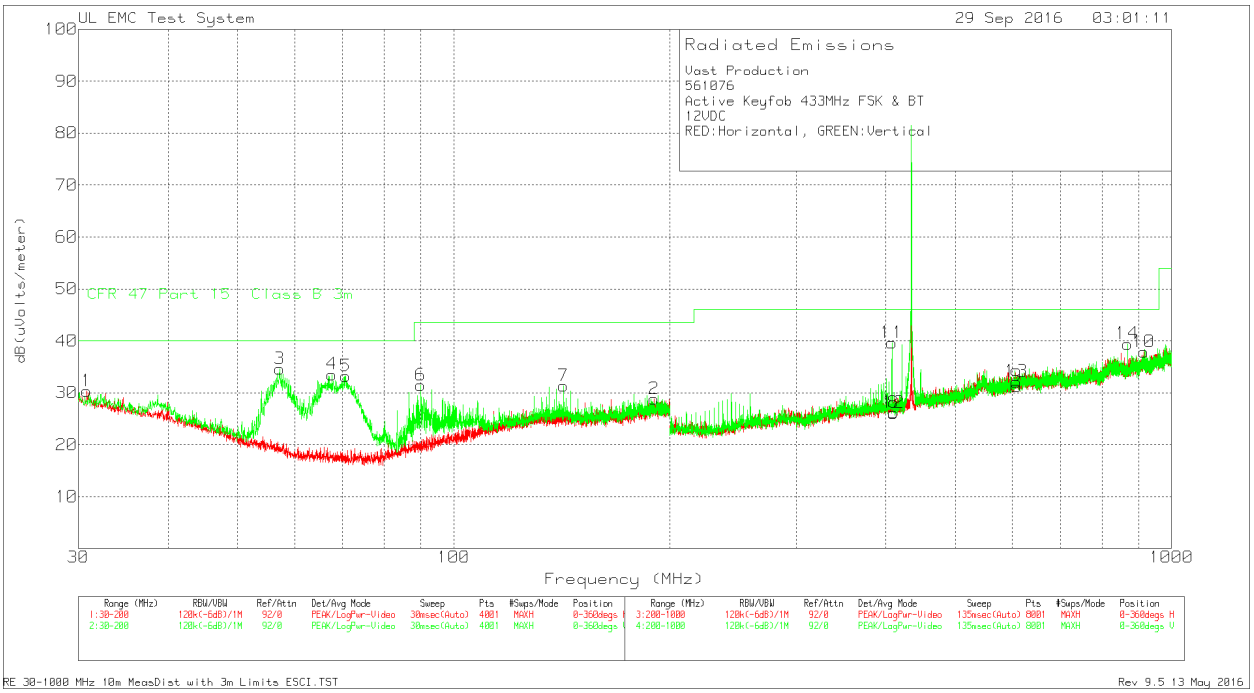

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Table 8 - Radiated Emissions Data Points 433.92MHz – 30MHz to 1GHz – FSK Modulation

Vast Production
561076
Active Keyfob 433MHz FSK & BT
12VDC
RED:Horizontal, GREEN:Vertical

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dBm	Path dB	10M to 3M Factor dB	Corrected Reading dB(uVolts/ meter)	QP Limit	QP Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	30.8075	31.95	Pk	17.9	-30	10.5	30.35	40	-9.65	0-360	398	H
2	190.1825	31.34	Pk	16	-29	10.5	28.84	43.52	-14.68	0-360	99	H
3	57.2	46.27	Pk	7.8	-30	10.5	34.57	40	-5.43	0-360	251	V
4	67.655	46.54	Pk	6.5	-30	10.5	33.54	40	-6.46	0-360	398	V
5	70.7575	46.14	Pk	6.5	-29.9	10.5	33.24	40	-6.76	0-360	251	V
6	89.925	41.58	Pk	9.3	-29.9	10.5	31.48	43.52	-12.04	0-360	102	V
7	142.285	36.4	Pk	14.1	-29.7	10.5	31.3	43.52	-12.22	0-360	102	V
8	410	28.08	Pk	15.9	-28.3	10.5	26.18	46.02	-19.84	0-360	199	H
9	608	28.08	Pk	20	-27.3	10.5	31.28	46.02	-14.74	0-360	399	H
10	914.6	31.77	Pk	23.4	-27.8	10.5	37.87	46.02	-8.15	0-360	199	H
11	407.7	41.53	Pk	15.9	-28.3	10.5	39.63	46.02	-6.39	0-360	99	V
12	410	28.04	Pk	15.9	-28.3	10.5	26.14	46.02	-19.88	0-360	299	V
13	608	28.94	Pk	20	-27.3	10.5	32.14	46.02	-13.88	0-360	399	V
14	867.8	34.43	Pk	22.1	-27.6	10.5	39.43	46.02	-6.59	0-360	399	V

Pk - Peak detector

Radiated Emission Data

Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dBm	Path dB	10M to 3M Factor dB	Corrected Reading dB(uVolts/ meter)	QP Limit	QP Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
57.2366	43.94	Qp	7.8	-30	10.5	32.24	40	-7.76	1	260	V

Qp - Quasi-Peak detector

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Table 9 - Radiated Emissions Data Points 433.92MHz – 30MHz to 1GHz – FSK Modulation

Fundamamental and Harmonics Measurements

Vast Production
561077
Active Keyfob FSK 433MHz & BT
12VDC
RED:Horizontal, GREEN:Vertical

Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dBm	Path dB	Peak Level dBuV/m	DC Factor dB	Average Level with DC factor dBuV/m	Peak Limit	Peak Margin (dB)	Average Limit	Average margin	Azimuth [Degs]	Height [cm]	Polarity
433.9465	43.49	Pk	16.3	8.4	68.19	-9.26	58.93	100.8	-32.61	80.8	-21.87	264	347	H
433.8864	55.34	Pk	16.3	8.4	80.04	-9.26	70.78	100.8	-20.76	80.8	-10.02	1	138	V
867.7738	9.76	Pk	22.1	9.5	41.36	-9.26	32.1	66.02	-24.66	46.02	-13.92	348	133	V
867.7732	5.52	Pk	22.1	9.5	37.12	-9.26	27.86	66.02	-28.9	46.02	-18.16	302	259	H

Pk - Peak detector

Text File: Funda Harmonic 1-3 HV FSK 433.TXT

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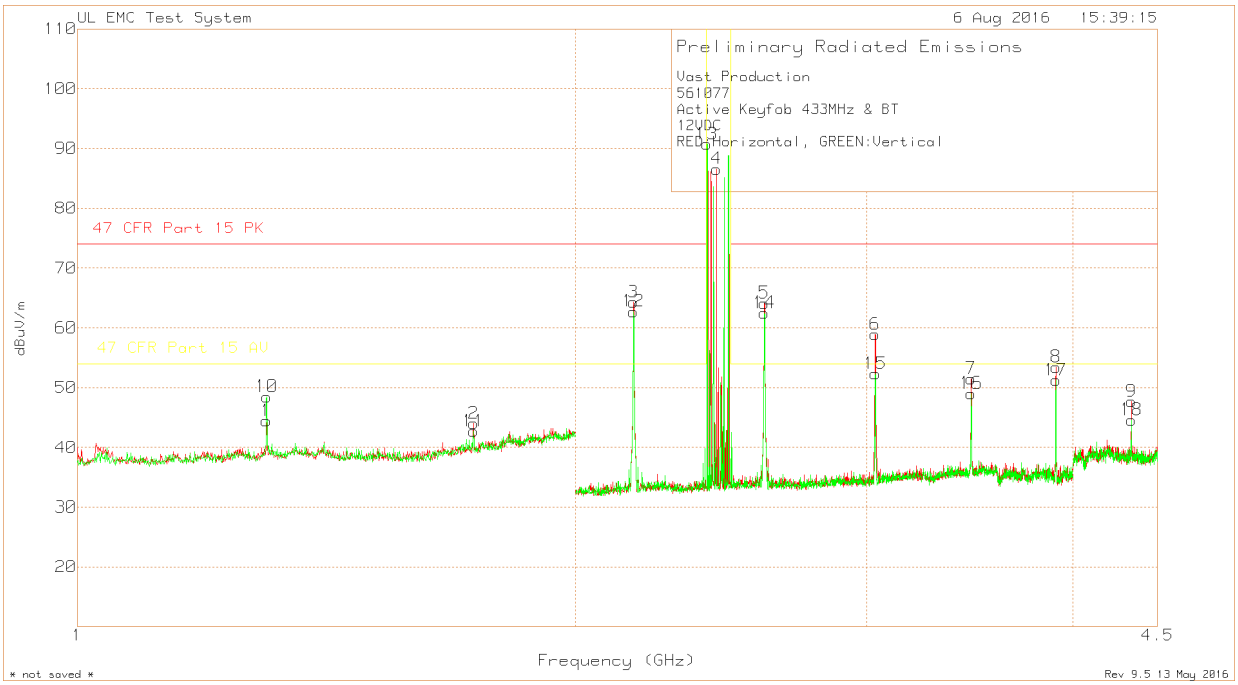
Figure 11 Radiated Emissions Graph (Above 1GHz) ASK Modulation



Emissions visible at 2.4GHz are the product of the modular certified Bluetooth transmitter. Besides the transmit frequency harmonics, All visible emissions are at least 6dB below the limit or under the noise floor, therefore no further measurement needed.

Table 10 - Radiated Emissions Data Points 433.92MHz – Above 1GHz – ASK Modulation

Vast Production														
561076														
Active Keyfob 315MHz & BT														
12VDC														
Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path (dB)	Peak Level dBuV/m	DC Factor dB	Average Level with DC Factor dBuV/m	PK Limit	PK Margin (dB)	AV Limit	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1.3016	73.1	Pk	28.9	-57.01	44.99	-15.49	29.5	74	-29.01	54	-24.5	11	108	H
1.3018	78.72	Pk	28.9	-57.01	50.61	-15.49	35.12	74	-23.39	54	-18.88	278	212	V
1.7357	69.52	Pk	29.6	-55.42	43.7	-15.49	28.21	74	-30.3	54	-25.79	149	157	V
1.7359	69.42	Pk	29.6	-55.42	43.6	-15.49	28.11	74	-30.4	54	-25.89	296	153	H
2.1696	93.55	Pk	21.7	-52.18	63.07	-15.49	47.58	74	-10.93	54	-6.42	301	226	H
2.1696	95.05	Pk	21.7	-52.18	64.57	-15.49	49.08	74	-9.43	54	-4.92	85	101	V
2.6035	91.95	Pk	22.3	-51.19	63.06	-15.49	47.57	74	-10.94	54	-6.43	111	119	V
2.6035	92.59	Pk	22.3	-51.19	63.7	-15.49	48.21	74	-10.3	54	-5.79	78	100	H
3.0373	86.23	Pk	22.5	-50.24	58.49	-15.49	43	74	-15.51	54	-11	84	105	H
3.0374	79.21	Pk	22.5	-50.23	51.48	-15.49	35.99	74	-22.52	54	-18.01	71	150	V
3.4713	76.29	Pk	23.5	-50.59	49.2	-15.49	33.71	74	-24.8	54	-20.29	308	115	V
3.4715	78.81	Pk	23.5	-50.59	51.72	-15.49	36.23	74	-22.28	54	-17.77	77	162	H
3.9053	79.74	Pk	23.8	-51	52.54	-15.49	37.05	74	-21.46	54	-16.95	248	100	H
3.9052	77.48	Pk	23.8	-51	50.28	-15.49	34.79	74	-23.72	54	-19.21	135	156	V
4.3393	70.36	Pk	28.1	-52.09	46.37	-15.49	30.88	74	-27.63	54	-23.12	330	103	V
4.3392	73.56	Pk	28.1	-52.09	49.57	-15.49	34.08	74	-24.43	54	-19.92	47	208	H
Pk - Peak detector														

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Figure 12 Radiated Emissions Graph (Above 1GHz) FSK Modulation

Emissions visible at 2.4GHz are the product of the modular certified Bluetooth transmitter. Besides the transmit frequency harmonics, All visible emissions are at least 6dB below the limit or under the noise floor, therefore no further measurement needed.

Table 11 - Radiated Emissions Data Points 433.92MHz – Above 1GHz – FSK Modulation

Vast Production
561077
Active Keyfob FSK 433MHz & BT
12VDC
RED:Horizontal, GREEN:Vertical

Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor dBm	Path (dB)	Peak Level dBuV/m	DC Factor dB	Average Level with DC Factor dBuV/m	Peak Limit	Peak Margin (dB)	Average Limit	Average Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1.3017	72.39	Pk	28.9	-57.01	44.28	-9.26	35.02	74	-29.72	54	-18.98	82	109	H
1.7355	70.15	Pk	29.6	-55.42	44.33	-9.26	35.07	74	-29.67	54	-18.93	61	221	H
2.1694	84.35	Pk	21.7	-52.18	53.87	-9.26	44.61	74	-20.13	54	-9.39	96	226	H
2.6033	83.27	Pk	22.3	-51.19	54.38	-9.26	45.12	74	-19.62	54	-8.88	109	210	H
3.0372	85.84	Pk	22.5	-50.24	58.1	-9.26	48.84	74	-15.9	54	-5.16	101	251	H
3.4715	77.15	Pk	23.5	-50.59	50.06	-9.26	40.8	74	-23.94	54	-13.2	104	159	H
3.905	75.23	Pk	23.8	-51	48.03	-9.26	38.77	74	-25.97	54	-15.23	93	100	H
4.3393	70.76	Pk	28.1	-52.09	46.77	-9.26	37.51	74	-27.23	54	-16.49	146	100	H
1.3018	74.5	Pk	28.9	-57.01	46.39	-9.26	37.13	74	-27.61	54	-16.87	117	125	V
1.7357	67.19	Pk	29.6	-55.42	41.37	-9.26	32.11	74	-32.63	54	-21.89	174	147	V
2.1697	82.88	Pk	21.7	-52.18	52.4	-9.26	43.14	74	-21.6	54	-10.86	193	173	V
2.6036	76.91	Pk	22.3	-51.19	48.02	-9.26	38.76	74	-25.98	54	-15.24	282	106	V
3.0372	80.08	Pk	22.5	-50.24	52.34	-9.26	43.08	74	-21.66	54	-10.92	99	105	V
3.4711	71.41	Pk	23.5	-50.59	44.32	-9.26	35.06	74	-29.68	54	-18.94	180	220	V
3.9055	72.71	Pk	23.8	-51	45.51	-9.26	36.25	74	-28.49	54	-17.75	27	100	V
4.3395	67.5	Pk	28.1	-52.09	43.51	-9.26	34.25	74	-30.49	54	-19.75	358	105	V

Pk - Peak detector

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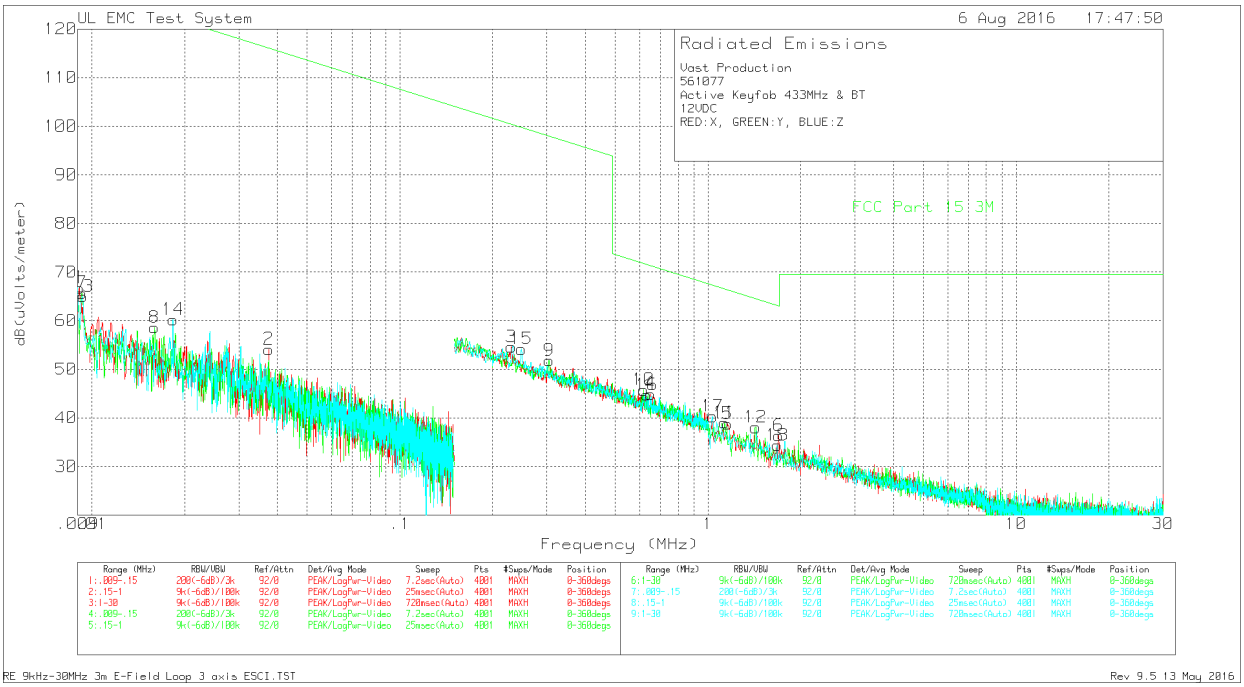
Figure 13 Radiated Emissions Graph (9kHz to 30MHz) – ASK Modulation



Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 3 m open area test site. Therefore sufficient tests weremade to demonstrate that the alternative site produces results that correlate with the ones oftests made in an open field based on KDB 937606.

All visible emissions are at least 6dB below the limit or under the noise floor, therefore no further measurement needed.

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Table 12 - Radiated Emissions Data Points 433.92MHz – 9kHz to 30MHz – ASK Modulation

Vast Production										
561077										
Active Keyfob 433MHz & BT										
12VDC										
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dB/m	Path dB	Corrected Reading dB(uVolts /meter)	AV Limit	AV Margin (dB)	Azimuth [Degs]	Antenna Polarity
1	0.009105	44.44	Pk	22.3	0	66.74	128.4	-61.66	0-360	X
2	0.03756	39.21	Pk	14.9	0	54.11	116.1	-61.99	0-360	X
3	0.23009	42.58	Pk	12	0	54.58	100.36	-45.78	0-360	X
4	0.65257	32.91	Pk	12	0	44.91	71.31	-26.4	0-360	X
5	1.1595	26.09	Pk	12.6	0.1	38.79	66.32	-27.53	0-360	X
6	1.696	23.82	Pk	12.4	0.1	36.32	63.02	-26.7	0-360	X
7	0.00928	43.7	Pk	22	0	65.7	128.23	-62.53	0-360	Y
8	0.016	40.1	Pk	18.5	0	58.6	123.51	-64.91	0-360	Y
9	0.30485	39.9	Pk	11.9	0	51.8	97.92	-46.12	0-360	Y
10	0.61796	33.75	Pk	12	0	45.75	71.78	-26.03	0-360	Y
11	1.1305	26.28	Pk	12.6	0.1	38.98	66.54	-27.56	0-360	Y
12	1.42775	25.44	Pk	12.5	0.1	38.04	64.51	-26.47	0-360	Y
13	0.00935	43.03	Pk	21.9	0	64.93	128.17	-63.24	0-360	Z
14	0.018345	42.82	Pk	17.4	0	60.22	122.32	-62.1	0-360	Z
15	0.24777	42.14	Pk	12	0	54.14	99.72	-45.58	0-360	Z
16	0.63202	32.75	Pk	12	0	44.75	71.59	-26.84	0-360	Z
17	1.03625	27.59	Pk	12.6	0.1	40.29	67.29	-27	0-360	Z
18	1.6815	21.83	Pk	12.4	0.1	34.33	63.09	-28.76	0-360	Z
Pk - Peak detector										

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