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Report No.: GZEM171200747403
Page: 1 of 22
FCC ID: 2AOUJDAJDOJO2

TEST REPORT

Application No.: GZEM1712007474CR
Applicant: OjO Electric, LLC
Address of Applicant: 201 Lombard Street, Oxnard, Ca. 93030, USA
Equipment Under Test (EUT):
EUT Name: OjO Commuter Scooter
FCC ID: 2AOUJDAJDOJO2
Model No.: OjO500
Standard(s) : 47 CFR Part 15, Subpart C 15.231
Date of Receipt: 2017-12-29
Date of Test: 2018-02-06 to 2018-03-30
Date of Issue: 2018-07-20

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Kobe Jian

EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2018-07-20		Original

Authorized for issue by:			
Tested By	 Jackson Yuan	<hr/> Jackson_Yuan /Project Engineer	2018-02-06 to 2018-03-30
Checked By	 Ricky Liu	<hr/> Ricky_Liu /Reviewer	2018-04-20
			Date

2 Test Summary

Test	Test Requirement	Test method	Result
Radiated Emission	47 CFR Part 15, Subpart C 15.231(b)	ANSI C 63.10: Clasue 6.4, 6.5 and 6.6	PASS
Occupied Bandwidth	47 CFR Part 15, Subpart C 15.231(c)	ANSI C 63.10: Clasue 6.9	PASS
Dwell Time	47 CFR Part 15, Subpart C 15.231(a)	47 CFR Part 15, Subpart C 15.231(a)	PASS ^①

Remark:

EUT: In this whole report EUT means Equipment Under Test.

N/A: not applicable. Refer to the relative section for the details.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radio Frequency.

① The EUT passed Dwell Time test after modification.

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4 General Information

4.1 Details of E.U.T.

Operation Frequency:	433.92MHz
Modulation and Antenna Type:	The Tx was a narrow-band OOK modulation by internal signal, no voice application and with an integral antenna. The antenna for the Rx is an integral antenna.
Antenna Gain:	0 dBi
Power Supply:	DC 3V (size of "CR1632" button cell)
Normal Test Voltage:	DC 3V
Cable:	None
EUT Function:	Wireless electronic lock with 433.92MHz as carrier for data transmission

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

No.	Item	Measurement uncertainty
1	Conducted Emission	1.02dB(9kHz to 150kHz)
		1.05dB(150kHz to 30MHz)
2	Radiated emission	5.06dB(30MHz to 1GHz)
		5.06dB(1GHz to 26GHz)

4.4 Deviation from Standards

None.

4.5 Abnormalities from Standard Conditions

The EUT passed Dwell Time test after modification.

4.6 Other Information Requested by the Customer

None.

4.7 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

4.8 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

- **Industry Canada (Registration No.: 4620B-1)**

The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 4620B-1.

- **VCCI (Registration No.: R-2460, C-2584, G-449 and T-1179)**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co. Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2460, C-2584, G-449 and T-1179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IEC6001 and Rules of procedure IEC6002, and the relevant IEC600 CB-Scheme Operational documents.

5 Equipment List

No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date (YYYY-MM-DD)	Cal.Due date (YYYY-MM-DD)
EMC0039	Temperature Chamber	GZ GongWen Co.Ltd.	GDJW-100	118	2017-07-17	2018-07-16
EMC2022	DC Power Supply	KIKUSUI ELECTRONICS CORP.	PAN60-20A	HH000269	2017-11-02	2018-11-01
EMC0007	DMM	Fluke	73	70671122	2017-07-26	2018-07-25
EMC0006	DMM	Fluke	73	70681569	2017-07-26	2018-07-25
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	2016-12-04	2019-12-03
EMC0530	10m Semi- Anechoic Chamber	ETS	N/A	N/A	2016-04-30	2018-04-29
EMC2026	Horn Antenna (Rx)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	9120D-84	2016-09-09	2019-09-08
EMC0519	Bilog Type Antenna	Schaffner Chase	CBL6143	5070	2017-05-04	2020-05-03
EMC0521	1-26.5GHz Pre Amplifier	Agilent	8449B	3008A01649	2018-01-08	2019-01-07
EMC2065	Amplifier 9kHz- 1300MHz	HP	8447F	3113AU6624	2017-06-19	2018-06-18
EMC0507	Antenna Mask (Tx)	HD-GmbH	AS620M	620/408	N/A	N/A
EMC0508	Antenna Mask (Rx)	HD-GmbH	MA240	240/619	N/A	N/A
EMC0509	Turntable	HD-GmbH	DT430	N/A	N/A	N/A
EMC0510	Turntable & Antenna Mask Controller	HD-GmbH	HD100	N/A	N/A	N/A
EMC0512	EMI Test Software	Rohde & Schwarz	ES-K1	N/A	N/A	N/A
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100283	2018-01-19	2019-01-18
EMC0516	Signal Generator	Rohde & Schwarz	SMR20	100416	2018-01-08	2019-01-07
EMC0032	Radio Communication Monitor	Rohde & Schwarz	CMS54	100137	2017-06-19	2018-06-18
EMC0904	Power Meter	Rohde & Schwarz	NRVS	825770/074	2017-11-29	2018-11-28
EMC0906	Dual Directional Coupler	Werlatone Inc.	C1795	6634	2017-06-26	2018-06-25
EMC2055	Oscilloscope 500MHz	Tektronix	TDS3052C	C011815	2018-01-08	2019-01-07
EMC0523	Active Loop Antenna	EMCO	6502	42963	2018-03-05	2020-03-05
EMC0069	Signal Analyzer (20Hz ~ 26.5Ghz	R&S	FSIQ26	100312	2017-11-20	2018-11-19
SEM003-18	Trilog Broadband Antenna 25-2000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	665	2016-06-29	2019-06-28
EMC2025	Trilog Broadband Antenna 30-1000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9160	9160-3372	2016-09-08	2019-09-07
EMC2142	966 Anechoic Chamber	C.R.T	9mX6mX6m	NA	2017-11-29	2018-11-28
EMC2139	MXE EMI Receiver	Keysight	N9038A	MY57290121	2017-11-15	2018-11-14
EMC2138	EXA Signal Analyzer	KEYSIGHT	N9010A	MY57120105	2017-11-15	2018-11-14
EMC0078	Temperature, & Humidity	Shanghai Meteorological Instrument factory Co., Ltd.	ZJ1-2B	709131	2017-07-19	2018-07-18
EMC0068	Modulation Analyzer	HP	8901B	3438B05310	2018-03-15	2019-03-14

6 Test Results

6.1 E.U.T. test conditions

Test Voltage: DC 3V (new battery)

Requirements:

15.31(e): For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Operating Environment:

Temperature: 22-25.0 °C

Humidity: 48-55% RH

Atmospheric Pressure: 1001-1010 mbar

Test frequencies and frequency range: According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

According to the 15.33 (a) For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in the following table:

Number of fundamental frequencies to be tested in EUT transmit band

Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

Frequency range of radiated emission measurements

Lowest frequency generated in the device	Upper frequency range of measurement
9 kHz to below 10 GHz	10th harmonic of highest fundamental frequency or to 40 GHz, whichever is lower
At or above 10 GHz to below 30 GHz	5th harmonic of highest fundamental frequency or to 100 GHz, whichever is lower
At or above 30 GHz	5th harmonic of highest fundamental frequency or to 200 GHz, whichever is lower, unless otherwise specified

Remark: Test frequency is 433.92MHz.

6.2 Antenna Requirement

Standard requirement

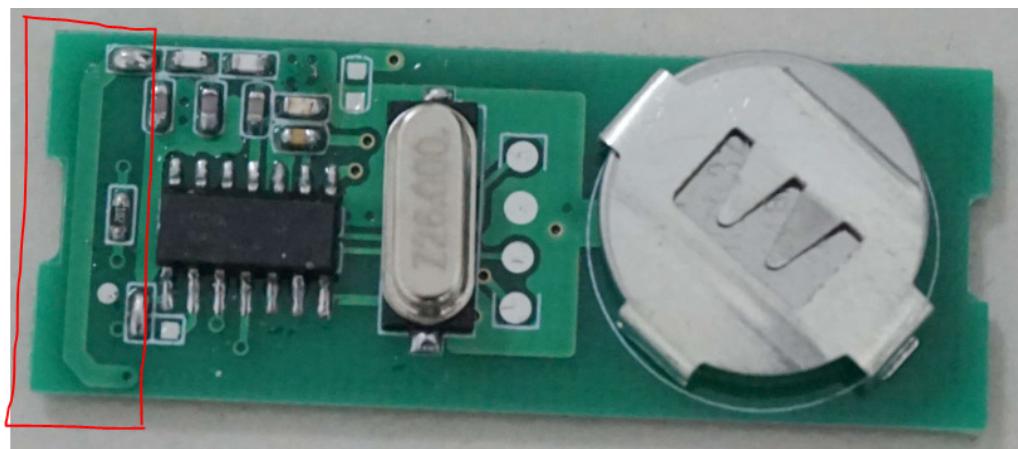
15.203 requirement:

For intentional device. According to 15.203. 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.

EUT Antenna

The antenna is a PCB Antenna integrated on the main PCB and no consideration of replacement.

The maximum gain of the antenna is 0 dBi.



Test result: The unit does meet the FCC requirements.

6.3 Radiated Emissions

Test Requirement:	47 CFR Part 15, Subpart C 15.231(b)
Test Method:	ANSI C63.10: Clause 6.4, 6.5 and 6.6
Measurement Distance:	3 m (Semi-Anechoic Chamber)
Test Status:	Test in transmitting mode.
Requirements:	the field strength of emissions from intentional radiators operated under this Section shall not exceed the following:

Fundamental Frequency MHz	Field Strength of Fundamental (dB μ V/m @ 3 m)	Field Strength of Harmonics and Spurious Emissions (dB μ V/m @ 3 m)
40.66 to 40.70	67.04	47.04
70 to 130	61.94	41.94
130 to 174	61.94 to 71.48	41.94 to 51.48
174 to 260	71.48	51.48
260 to 470	71.48 to 81.94	51.48 to 61.94
Above 470	81.94	61.94
Detector:	Peak for pre-scan QP for 30MHz to 1000 MHz: 120 kHz resolution bandwidth Peak for Above 1 GHz: 1 MHz resolution bandwidth	

** linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, uV/m at 3 meters = 56.81818(F) - 6136.3636; for the band 260-470 MHz, uV/m at 3 meters = 41.6667(F) - 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

The fundamental frequency of the EUT is 433.92 MHz

The limit for average or QP field strength dB μ V/m for the fundamental emission= 80.8 dB μ V/m

No fundamental is allowed in the restricted bands.

The limit for average field strength dB μ V/m for the spurious emission=60.8 dB μ V/m. Spurious in the restricted bands must be less than 60.8 dB μ V/m or 15.209, whichever limit permits a higher field strength.

And according 15.35(a)

15.35(a) On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function and related measurement bandwidths, unless otherwise specified. The specifications for the measuring instrument using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Interference (CISPR) of the International Electrotechnical Commission. As an alternative to CISPR quasi-peak measurements, the responsible party, at its option, may demonstrate compliance with the emission limits using measuring equipment employing a peak detector function, properly adjusted for such factors as pulse desensitization, as long as the same bandwidths as indicated for CISPR quasi-peak measurements are employed.

Note: For pulse modulated devices with a pulse-repetition frequency of 20 Hz or less and for which CISPR quasi-peak measurements are specified, compliance with the regulations shall be demonstrated using measuring equipment employing a peak detector function, properly adjusted for such factors as pulse desensitization, using the same measurement bandwidths that are indicated for CISPR quasi-peak measurements.

According to 15.35 (b) Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz. When average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, e.g., see §§ 15.250, 15.252, 15.255, and 15.509-15.519 of this part, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device, e.g., the total peak power level. Note that the use of a pulse desensitization correction factor may be needed to determine the total peak emission level. The instruction manual or application note for the measurement instrument should be consulted for determining pulse desensitization factors, as necessary.

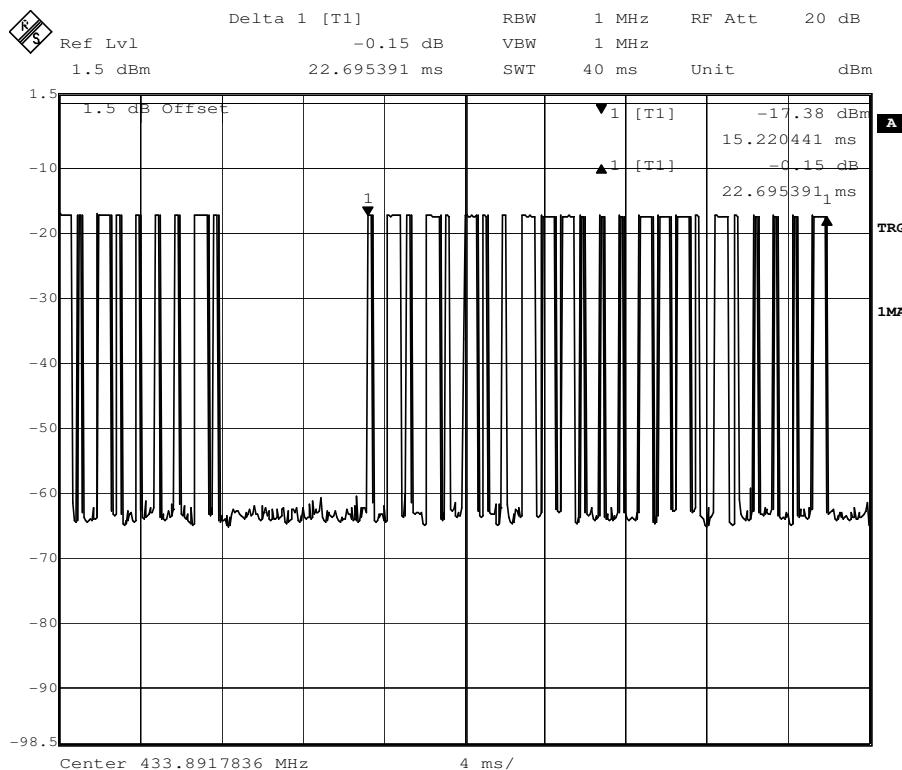
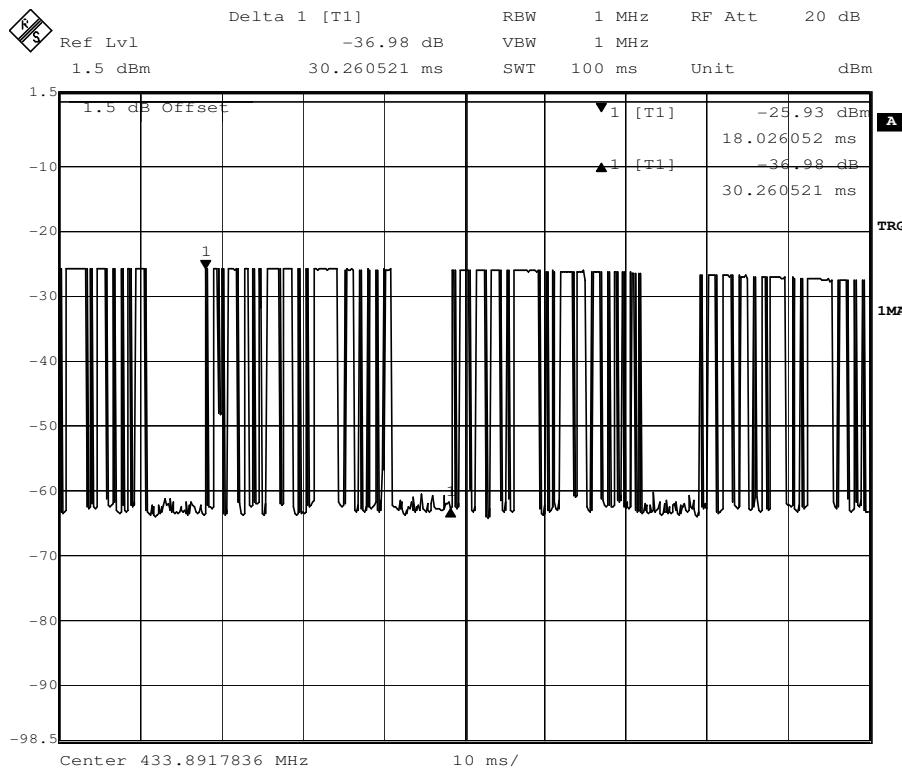
The average correction factor is computed by analyzing the on time in 100ms over one complete pulse train. Analysis of the remote transmitter on time in one complete pulse train, therefore the average value of fundamental frequency is: Average = Peak value + 20log (Duty cycle), where the duty factor is calculated from following formula:

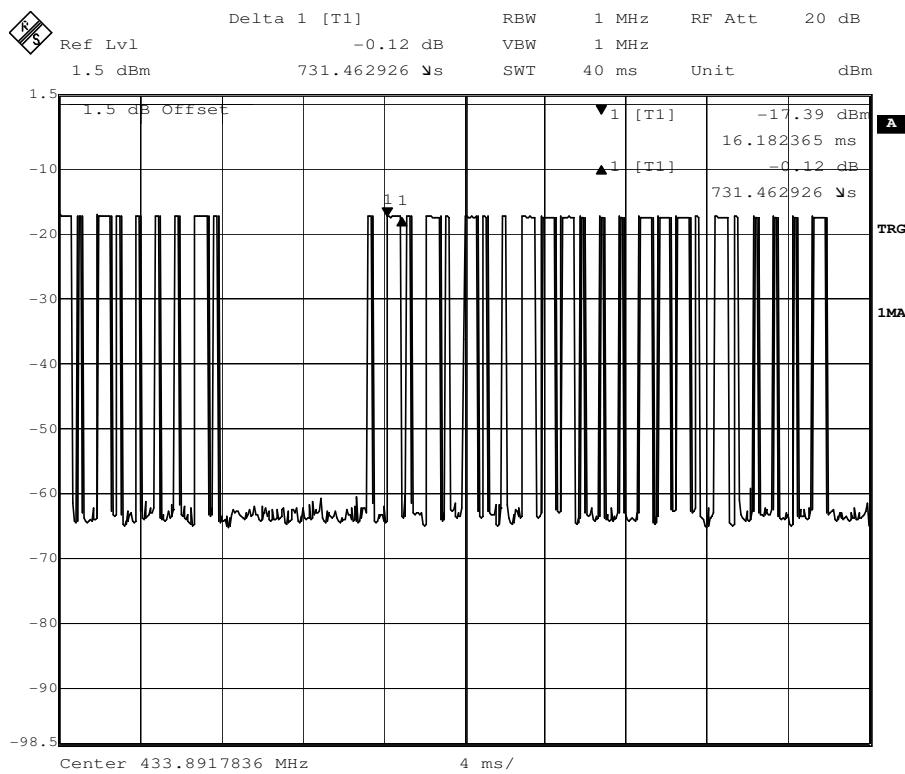
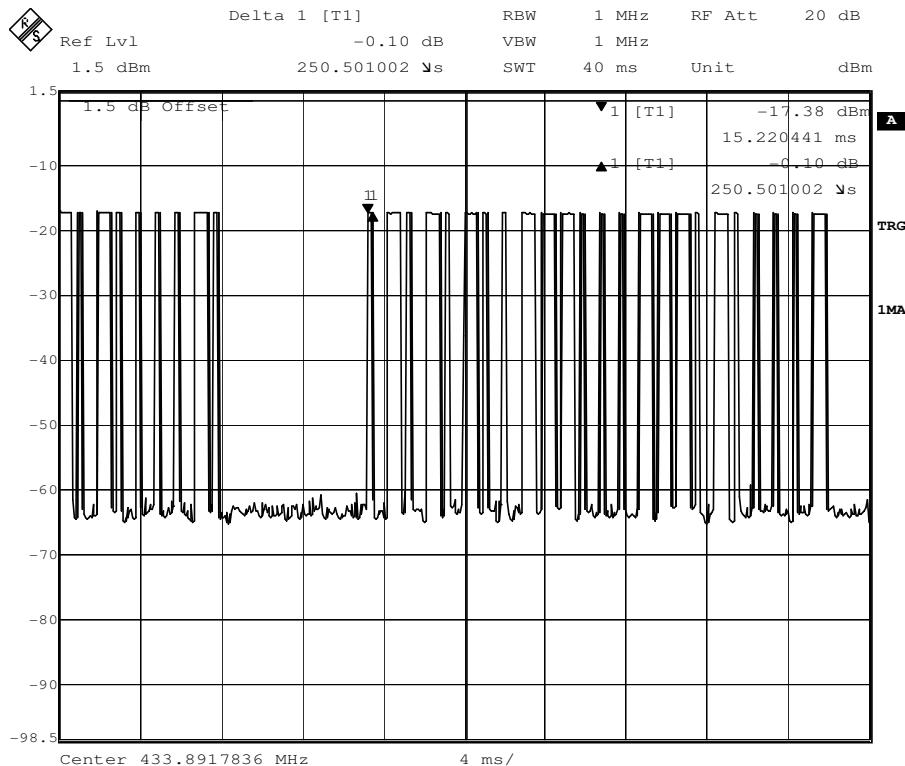
$$20\log (\text{Duty cycle}) = 20\log \left(\frac{T_{\text{pulse}}}{100} \right) = 20\log(0.3735) = -8.554 \text{ dB}$$

$$\text{Here } T_{\text{pulse}} = (0.250501002 \times 13 + 0.731462926 \times 11) = 11.302605212 \text{ (ms)}$$

Please refer to below plots for more details.

Test Plot





Test Procedure:

1) 9 kHz to 30 MHz emissions:

For testing performed with the loop antenna. The center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

2) 30 MHz to 1 GHz emissions:

For testing performed with the bi-log type antenna. The measurement is performed with the EUT rotated 360°, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

3) 1 GHz to 40 GHz emissions:

Test site with RF absorbing material covering the ground plane that met the site validation criterion called out in CISPR 16-1-4:2010 was used to perform radiated emission test above 1 GHz.

For testing performed with the horn antenna. The measurement is performed with the EUT rotated 360°, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

Detector For PK value:

: 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

For AV value:

For harmonic emissions:

Average = Peak value + 20log (Duty cycle),

For other unwanted emissions:

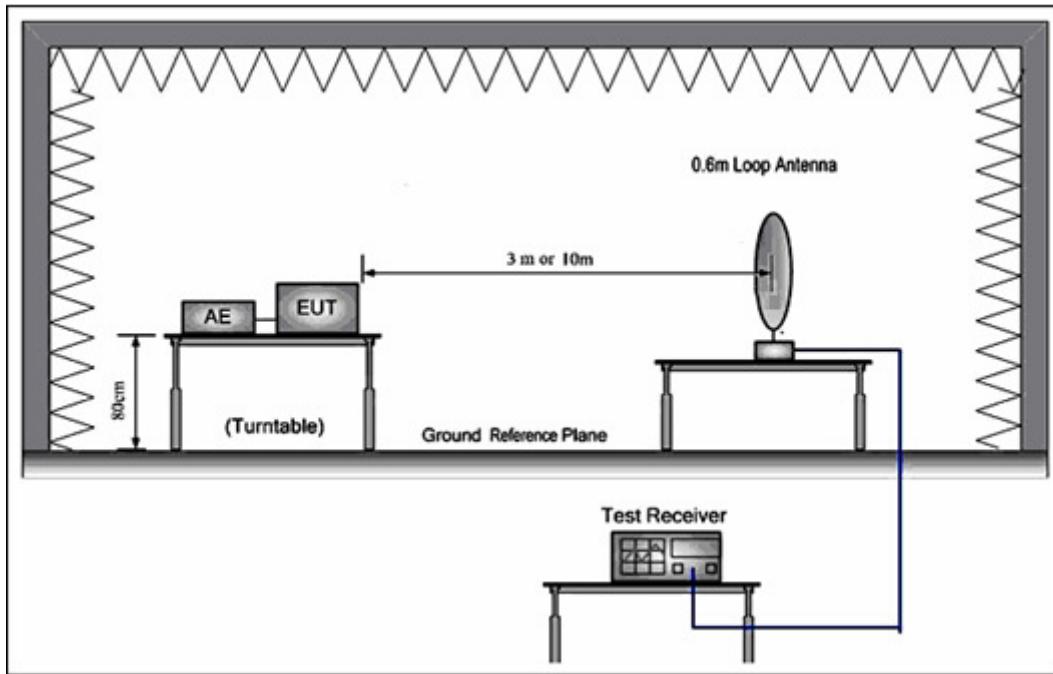
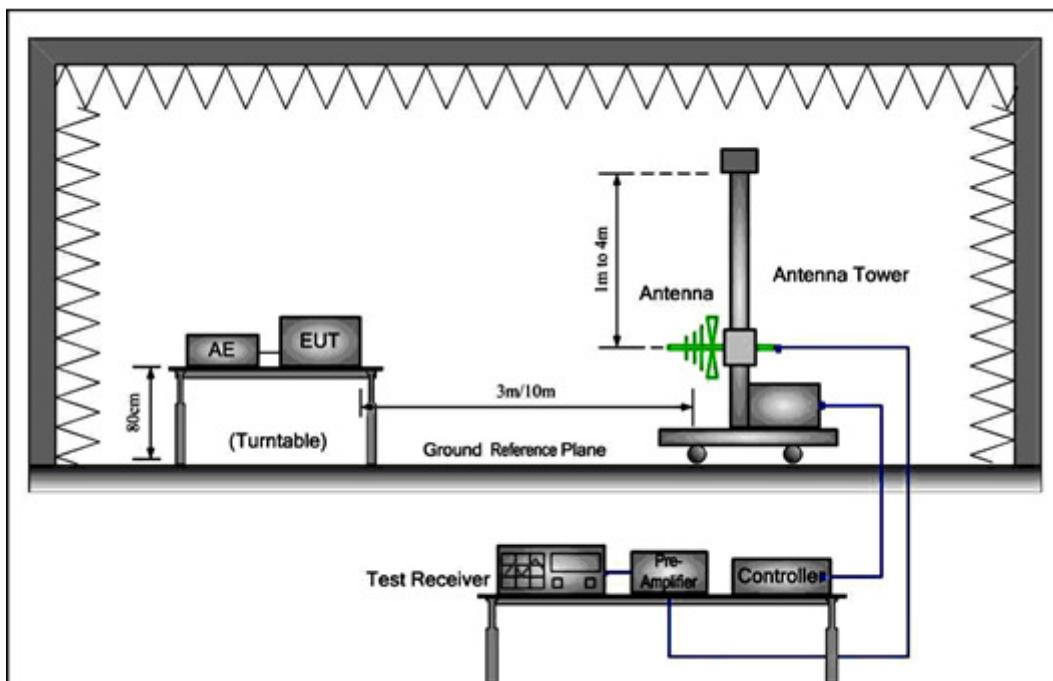
RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW = 10Hz

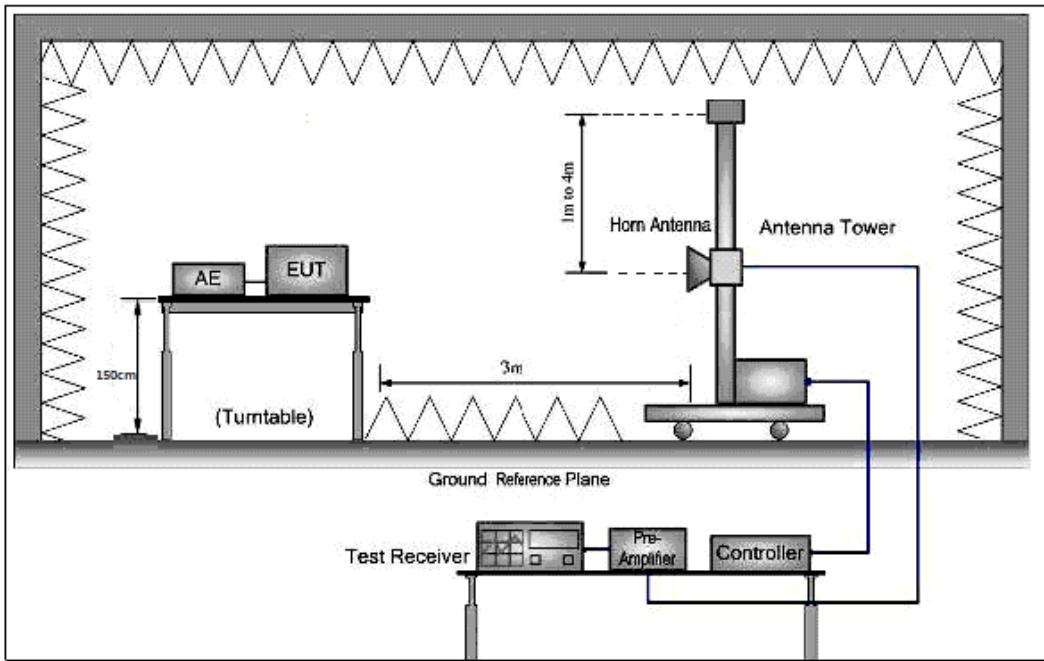
Sweep = auto

Detector function = peak

Trace = max hold

Test Configuration:1) 9 kHz to 30 MHz emissions:2) 30 MHz to 1 GHz emissions:

3) 1 GHz to 40 GHz emissions:



1) Fundamental emission:

Antenna polarization: Horizontal:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
433.565	86.93	16.93	1.85	29.25	76.26	108.8	-32.54	Peak
433.565	78.38	16.93	1.85	29.25	67.71	80.8	-13.10	Average

Antenna polarization: Vertical

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
433.551	74.79	16.93	1.85	29.25	64.12	108.8	-44.68	Peak
433.551	66.24	16.93	1.85	29.25	55.57	80.8	-25.23	Average

Antenna polarization: Vertical

Y: rotate EUT by 90° vertically.

X: rotate EUT by 90° clockwise.

Z: EUT as Radiated Emission test setup photograph in section 6 of this report.

Remark: Radiated Emission test setup photograph in section 6 of this report is the worst case and reported.

2) Other Emissions:

The receive was scanned from the lowest frequency generated within the EUT to 5 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. The worst case emissions were reported.

An initial pre-scan was performed in the 3 m chamber using the spectrum analyzer in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bilog antenna with 2 orthogonal polarities.

The field strength is calculated by adding the Antenna Factor, Cable Factor & Peramplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Peramplifier Factor.
The following test results were performed on the EUT.

Test the EUT in transmitting mode.:

Radiated emission below 30MHz

9 kHz~30 MHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

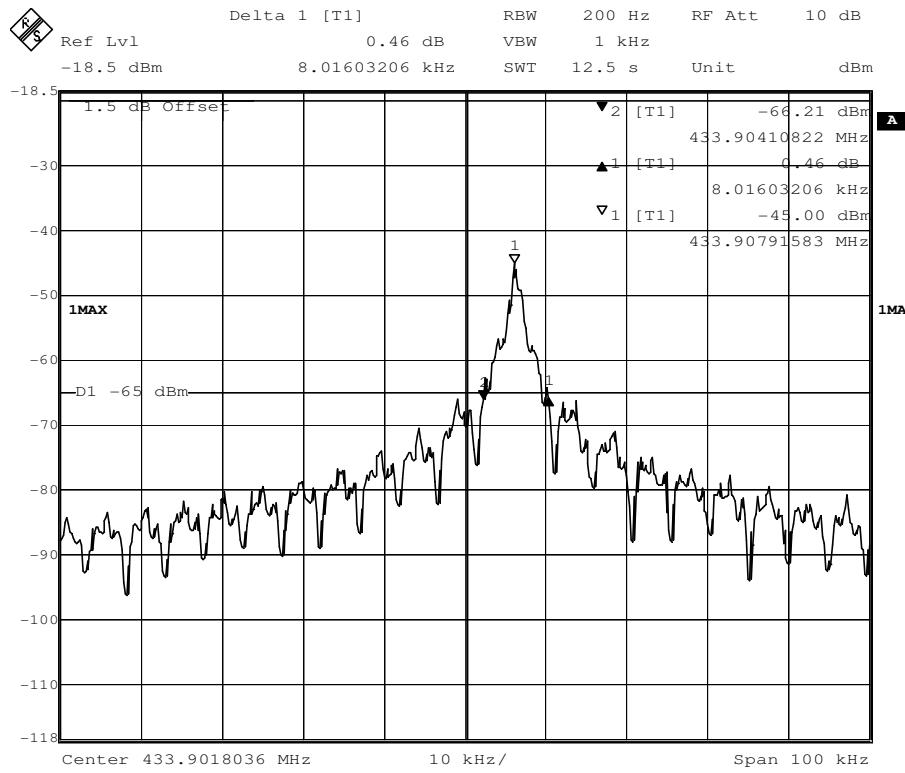
30 MHz~5 GHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

Horizontal.

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
48.502	23.93	12.97	0.63	24.78	12.75	40.0	-27.50	QP
99.528	26.06	9.56	0.85	27.12	9.35	60.8	-51.45	QP
149.486	26.91	13.25	1.17	28.12	13.21	60.8	-47.59	QP
172.599	27.37	12.91	1.32	28.09	13.51	60.8	-47.29	QP
260.144	27.83	12.70	1.67	29.03	13.17	60.8	-47.63	QP
774.158	29.19	22.47	2.82	28.89	25.59	60.8	-35.21	QP
1299.003	45.65	24.79	2.9	38.88	28.81	60.8	-31.99	Average
1299.003	48.55	24.79	2.9	38.88	37.36	80.8	-43.44	Peak
1732.483	46.05	25.10	4.31	38.96	33.69	60.8	-27.11	Average
1732.483	51.79	25.10	4.31	38.96	42.24	80.8	-38.56	Peak
2165.500	54.76	25.57	7.8	39.03	51.11	60.8	-9.69	Average
2165.500	65.32	25.57	7.8	39.03	59.66	80.8	-21.14	Peak
2598.351	47.07	26.78	5.1	39.18	34.40	60.8	-26.40	Average
2598.351	50.25	26.78	5.1	39.18	42.95	80.8	-37.85	Peak
3031.063	47.14	27.90	4.8	39.44	36.61	60.8	-24.19	Average
3031.063	51.9	27.90	4.8	39.44	45.16	80.8	-35.64	Peak
3464.664	52.6	27.90	5.76	39.87	42.98	60.8	-17.82	Average
3464.664	57.74	27.90	5.76	39.87	51.53	80.8	-29.27	Peak

Vertical.

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
40.702	24.74	12.62	0.62	23.76	14.22	40.0	-25.78	QP
73.617	24.89	10.09	0.75	25.67	10.06	60.8	-50.74	QP
159.225	27.92	13.40	1.26	28.1	14.48	60.8	-46.32	QP
245.951	28.77	12.48	1.59	29.17	13.67	60.8	-47.13	QP
562.662	29.59	19.95	1.99	29.38	22.15	60.8	-38.65	QP
755.387	29.12	22.21	2.92	29.03	25.22	60.8	-35.58	QP
1299.003	48.21	24.79	2.9	38.88	31.43	60.8	-29.37	Average
1299.003	51.17	24.79	2.9	38.88	39.98	80.8	-40.82	Peak
1732.483	46.40	25.10	4.31	38.96	32.92	60.8	-27.88	Average
1732.483	51.02	25.10	4.31	38.96	41.47	80.8	-39.33	Peak
2163.510	55.40	25.57	7.8	39.03	51.10	60.8	-9.70	Average
2163.510	65.31	25.57	7.8	39.03	59.65	80.8	-21.15	Peak
2598.351	46.44	26.78	5.1	39.18	34.49	60.8	-26.31	Average
2598.351	50.34	26.78	5.1	39.18	43.04	80.8	-37.76	Peak
3031.063	49.60	27.90	4.8	39.44	36.92	60.8	-23.88	Average
3031.063	52.21	27.90	4.8	39.44	45.47	80.8	-35.33	Peak
3464.664	51.05	27.90	5.76	39.87	41.56	60.8	-19.24	Average
3464.664	56.32	27.90	5.76	39.87	50.11	80.8	-30.69	Peak

**Remark:**

According to 15.35 (b) When average radiated emission measurements are specified in the regulations, including emission measurements below 1000 MHz, there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules, e.g., see Section 15.255.

6.4 Occupied Bandwidth

Test Requirement: 47 CFR Part 15, Subpart C 15.231(c)

Test Method: ANSI C63.10: Clause 6.9

Test Status: Test in transmitting mode at lowest and highest channel.

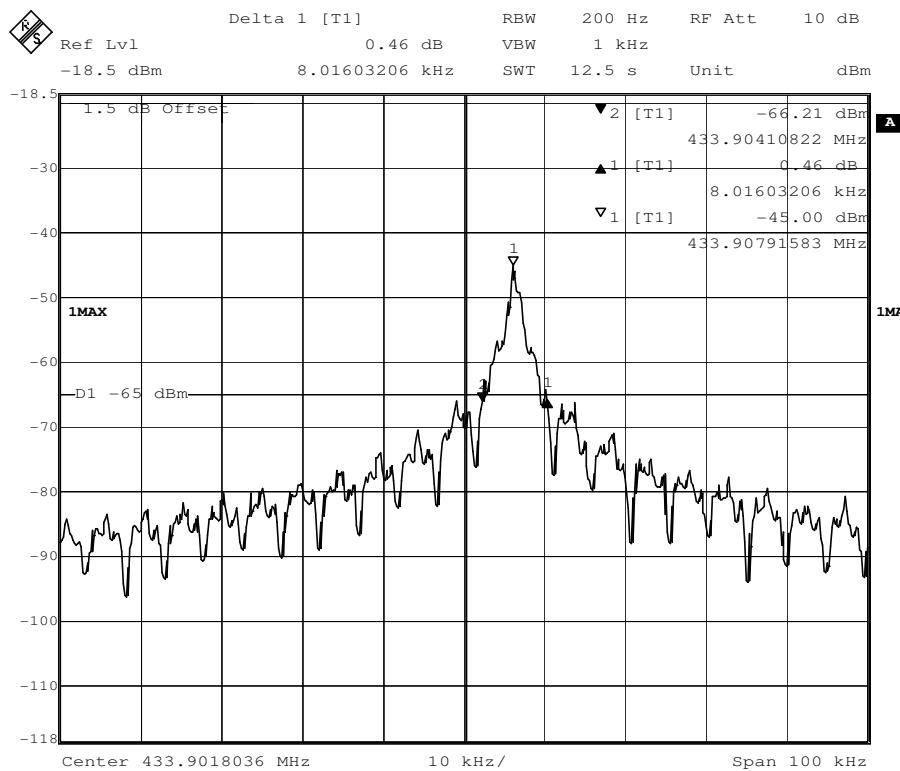
Requirements: 15.231 (c) The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

Method of measurement: The useful radiated emission from the EUT was detected by the spectrum analyzer with peak detector. Record the 20 dB bandwidth of the carrier.

Test result:

Test Channel	bandwidth	Limit
433.908MHz	8.016 kHz	1.08 MHz

Test Plot:



6.5 Dwell Time:

Test Requirement: 47 CFR Part 15, Subpart C 15.231(a)

Test Method: 47 CFR Part 15, Subpart C 15.231(a)

Test Status: Test in transmitting mode.

Requirements:

1. Regulation 15.231 (a) The provisions of this Section are restricted to periodic operation within the band 40.66 40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this Section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Radio control of toys is not permitted. Continuous transmissions, such as voice or video, and data transmissions are not permitted. The prohibition against data transmissions does not preclude the use of recognition codes. Those codes are used to identify the sensor that is activated or to identify the particular component as being part of the system.

Result:

The EUT is a remote switch without audio or video transmitted.

The EUT meets the requirements of this section.

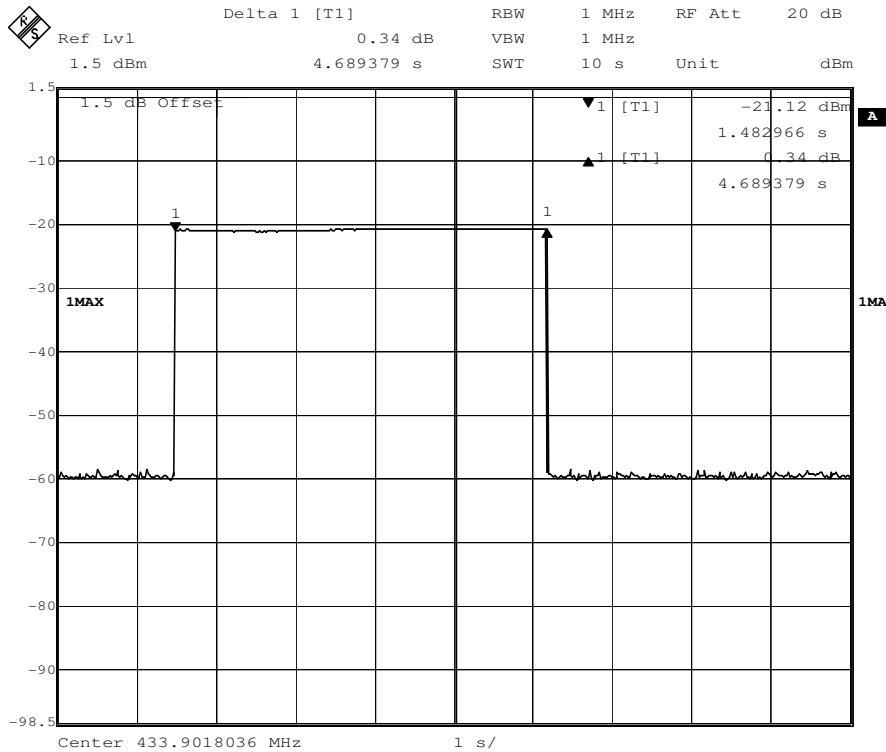
2. Regulation 15.231 (a1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

Result:

Carrier Frequency	Shutdown Time	Limit
433.92MHz	4.69s	≤5s

Result plot as follows:

Channel:



3. Regulation 15.231 (a2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.

Result:

The EUT does not have automatic transmission.

4. Regulation 15.231 (a3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions to determine system integrity of transmitters used in security or safety applications are allowed if the periodic rate of transmission does not exceed one transmission of not more than one second duration per hour for each transmitter.

Result:

The EUT does not employ periodic transmission.

5. Regulation 15.231 (a4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.

Result:

This section is not applicable to the EUT.

--The End of Report--