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Report No.: 1701RSU00601 Report Version: Issue Date: 01-16-2017

MEASUREMENT REPORT

FCC PART 15.231(a) / RSS-210

FCC ID: VBA-EF2600TS

IC: 7098A-EF2600TS

APPLICANT: EverFlourish Electrical Co., Ltd.

Application Type: Certification

Product: Remote Control Transmitter

Model No.: **EMW2600TS**

EverFlourish Brand Name:

FCC Classification: FCC Part 15 Security/Remote Control Transmitter

(DSC)

FCC Rule Part(s): Part 15.231

IC Rule(s): RSS-210 Issue 9

Test Procedure(s): ANSI C63.10-2013

Test Date: January 05 ~ 12, 2017

Reviewed By : Robin Wu (Robin Wu)

Approved By :

(Marlin Chen)





The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou)

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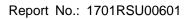




Revision History

Report No.	Version	Description	Issue Date	Note
1701RSU00601	Rev. 01	Initial report	01-16-2017	Valid

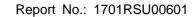
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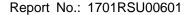
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7. CONCLUSION......28





§2.1033 General Information

Applicant:	EverFlourish Electrical Co., Ltd.		
Applicant Address:	Renjiu Village, Wuxiang Town, Yinzhou, Ningbo 315111 P.R.China		
Manufacturer:	EverFlourish Electrical Co., Ltd.		
Manufacturer Address:	Renjiu Village, Wuxiang Town, Yinzhou, Ningbo 315111 P.R.China		
Test Site:	MRT Technology (Suzhou) Co., Ltd		
Test Site Address:	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic		
	Development Zone, Suzhou, China		
MRT FCC Registration No.:	809388		
MRT IC Registration No.:	11384A		
FCC Rule Part(s):	Part 15.231(a)		
IC Rule(s):	RSS-210 Issue 9 - Annex A		
Model No.	EMW2600TS		
Test Device Serial No.:	N/A ☐ Production ☐ Pre-Production ☐ Engineering		
FCC Classification:	FCC Part 15 Security/Remote Control Transmitter(DSC)		

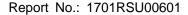
Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is a FCC registered (MRT Reg. No. 809388) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.
- MRT facility is a VCCI registered (R-4179, G-814, C-4664, T-2206) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, EU and TELEC Rules.



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1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on September 30, 2013.





2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name	Remote Control Transmitter	
Model No.	EMW2600TS	
Frequency Range	433.92 MHz	
Type of modulation	ASK	
Antenna Type	Internal Antenna	
Antenna Gain	2.0dBi	
Device Category	Portable Device	

2.2. Test Standards

The following report is prepared on behalf of the **EverFlourish Electrical Co., Ltd.** in accordance with FCC Part 15, Subpart C, and section 15.231, 15.203, 15.205 and 15.209 of the Federal Communication Commission rules, and RSS-210 Issue 9 & RSS-Gen Issue 4 rules of IC rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.231, 15.203, 15.205 and 15.209 of the Federal Communication Commission rules, and RSS-210 Issue 9 & RSS-Gen Issue 4 rules of IC rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

2.3. Test Methodology

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013).

Deviation from measurement procedure......None

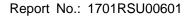
2.4. EUT Setup and Test Mode

The EUT was operated at continuous transmitting mode that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List					
Test Mode	Description	Remark			
Mode 1	Transmitting	With modulation			

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ANTENNA REQUIREMENTS 3.

Excerpt from §15.203 of the FCC Rules/Regulations:

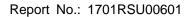
"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antenna of the **Remote Control Transmitter** is permanently attached.
- There are no provisions for connection to an external antenna.

Conclusion:

The Remote Control Transmitter FCC ID: VBA-EF2600TS unit complies with the requirement of §15.203.

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4. TEST EQUIPMENT CALIBRATION DATA

Radiated Disturbance - AC2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cal. Due Date
MXE EMI Receiver	Agilent	N9038A	MRTSUE06125	1 year	2017/08/03
Broadband Coaxial Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06121	1 year	2017/12/10
TRILOG Antenna	Schwarzbeck	VULB9162	MRTSUE06022	1 year	2017/10/22
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06171	1 year	2017/11/19
Loop Antenna	Schwarzbeck	FMZB1519	MRTSUE06025	1 year	2017/12/14
Digitial Thermometer & Hygrometer	Minggao	ETH529	MRTSUE06170	1 year	2017/12/14
Anechoic Chamber	RIKEN	Chamber-AC2	MRTSUE06213	1 year	2017/05/10

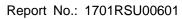
20dB Bandwidth - AC2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cal. Due Date
MXE EMI Receiver	Agilent	N9038A	MRTSUE06125	1 year	2017/08/03
TRILOG Antenna	Schwarzbeck	VULB9162	MRTSUE06022	1 year	2017/10/22
Digitial Thermometer & Hygrometer	Minggao	ETH529	MRTSUE06170	1 year	2017/12/14
Anechoic Chamber	RIKEN	Chamber-AC2	MRTSUE06213	1 year	2017/05/10

Release Time - AC2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cal. Due Date
MXE EMI Receiver	Agilent	N9038A	MRTSUE06125	1 year	2017/08/03
TRILOG Antenna	Schwarzbeck	VULB9162	MRTSUE06022	1 year	2017/10/22
Digitial Thermometer &		ETI ISOO	MDTOUE	_	0047/40/44
Hygrometer	Minggao	ETH529	MRTSUE06170	1 year	2017/12/14
Anechoic Chamber	RIKEN	Chamber-AC2	MRTSUE06213	1 year	2017/05/10

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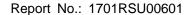


Duty Cycle - AC2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cal. Due Date
MXE EMI Receiver	Agilent	N9038A	MRTSUE06125	1 year	2017/08/03
TRILOG Antenna	Schwarzbeck	VULB9162	MRTSUE06022	1 year	2017/10/22
Digitial Thermometer &		ETUE00	MDTOUE		0047/40/44
Hygrometer	Minggao	ETH529	MRTSUE06170	1 year	2017/12/14
Anechoic Chamber	RIKEN	Chamber-AC2	MRTSUE06213	1 year	2017/05/10

Software	Version	Function
e3	V8.3.5	EMI Test Software

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5. MEASUREMENT UNCERTAINTY

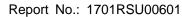
Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Radiated Emission Measurement - AC2

Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):

9kHz ~ 1GHz: 4.18dB 1GHz ~ 18GHz: 4.76dB

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TEST RESULT

6.1. Summary

EverFlourish Electrical Co., Ltd. Company Name:

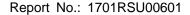
FCC ID: VBA-EF2600TS IC: 7098A-EF2600TS

FCC Part Section(s)	IC Section(s)	Test Description	Test Condition	Test Result
15.205	DCC 240 A4 2	Radiated Spurious		Door
15.231(b)	RSS-210, A1.2	Emissions		Pass
15.231(c)	RSS-210, A1.3	20dB Bandwidth	Radiated	Pass
15.231(a)(1)	RSS-210, A1.1(a)	Release Time		Pass
15.231(b)	RSS-Gen, 6.10	Duty Cycle		Pass

Notes:

- All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- The analyzer plots shown in this section were all taken with a correction table loaded into the 2) analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

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6.2. Radiated Emissions

6.2.1. Standard Applicable

According to §15.231(b), the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental Frequency	Field Strength of Fundamental	Field Strength of Spurious Emissions
(MHz)	(microvolts/meter)	(microvolts/meter)
40.66 - 40.70	2250	225
70 - 130	1250	125
130 - 174	¹ 1250 to 3750	¹ 125 to 375
174 - 260	3750	375
260 - 470	¹ 3750 to 12500	¹ 375 to 1250
Above 470	12500	1250

The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength.

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements start below or at the lowest crystal frequency.

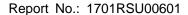
Compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.

6.2.2.Test Procedure

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.231(b) and FCC Part 15.209 Limit.

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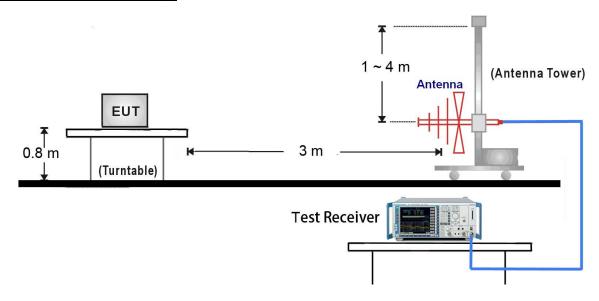




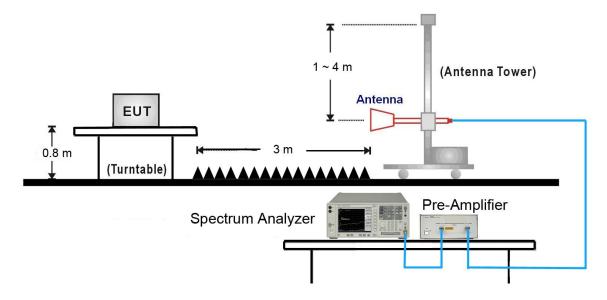
6.2.3.Test Setup

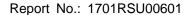
The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.231(a) and FCC Part 15.209 Limit.

30MHz ~ 1GHz Test Setup:



1GHz ~ 5GHz Test Setup:

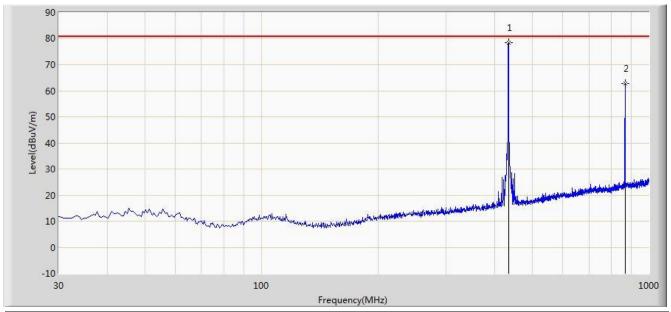






6.2.4.Test Results

Site: AC2	Time: 2017/01/08 - 17:26
Limit: FCC_Part15.231_RSE(3m)	Engineer: Milo Li
Probe: VULB9162_0.03-8GHz	Polarity: Horizontal
EUT: Remote Control Transmitter	Power: By Battery
Test Mode 1	



No	Frequency	Reading	Factor	DutyCycle	Measure	Limit	Over	Туре
	(MHz)	Level	(dB)	Factor	Level	(dBuV/m)	Limit	
		(dBuV)		(dB)	(dBuV/m)		(dB)	
1	434.005	61.179	17.201	N/A	78.380	100.825	-22.445	PK
	434.005	61.179	17.201	-9.180	69.200	80.825	-11.625	AV
2	867.595	38.963	23.864	N/A	62.827	80.825	-17.998	PK
	867.595	38.963	23.864	-9.180	53.647	60.825	-7.178	AV

Note 1: Testing is carried out with frequency rang 9 kHz to the tenth harmonics. There is the ambient noise within frequency range 9 kHz ~ 30 MHz, the permissible value is not show in the report.

Note 2: The fundamental frequency is 433.92MHz, so the fundamental and spurious emissions radiated limit base on the operating frequency 433.92MHz.

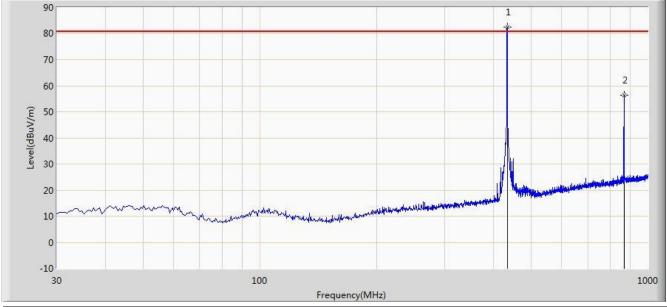
Note 3: Peak Measure Level ($dB\mu V/m$) = Reading Level ($dB\mu V$) + Factor (dB).

AV Measure Level = Peak Measure Level + Duty Cycle Factor.

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).



Site: AC2	Time: 2017/01/08 - 17:24
Limit: FCC_Part15.231_RSE(3m)	Engineer: Milo Li
Probe: VULB9162_0.03-8GHz	Polarity: Vertical
EUT: Remote Control Transmitter	Power: By Battery
Test Mode 1	



No	Frequency	Reading	Factor	DutyCycle	Measure	Limit	Over	Туре
	(MHz)	Level	(dB)	Factor	Level	(dBuV/m)	Limit	
		(dBuV)		(dB)	(dBuV/m)		(dB)	
1	434.005	65.309	17.201	N/A	82.510	100.825	-18.315	PK
	434.005	65.309	17.201	-9.180	73.330	80.825	-7.495	AV
2	867.595	32.645	23.864	N/A	56.509	80.825	-24.316	PK
	867.595	32.645	23.864	-9.180	47.329	60.825	-13.496	AV

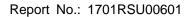
Note 1: Testing is carried out with frequency rang 9 kHz to the tenth harmonics. There is the ambient noise within frequency range 9 kHz \sim 30 MHz, the permissible value is not show in the report.

Note 2: The fundamental frequency is 433.92MHz, so the fundamental and spurious emissions radiated limit base on the operating frequency 433.92MHz.

Note 3: Peak Measure Level $(dB\mu V/m)$ = Reading Level $(dB\mu V)$ + Factor (dB).

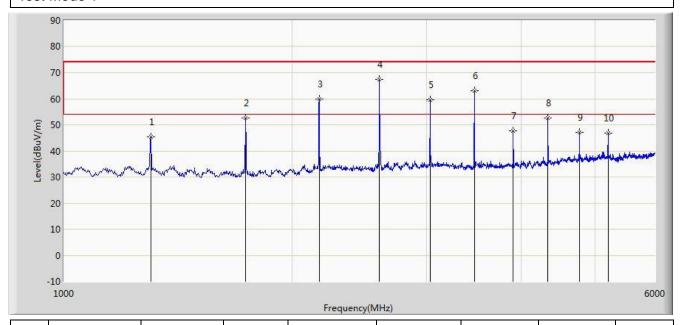
AV Measure Level = Peak Measure Level + Duty Cycle Factor.

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).





Site: AC2	Time: 2017/01/07 - 13:16
Limit: FCC_Part15.209_RE(3m)	Engineer: Milo Li
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Remote Control Transmitter	Power: By Battery
Test Mode 1	



No	Frequency	Reading	Factor	Duty cycle	Measure	Limit	Over	Туре
	(MHz)	Level	(dB)	Factor	Level	(dBuV/m)	Limit	
		(dBuV)		(dB)	(dBuV/m)		(dB)	
1	1302.500	50.794	-5.358	N/A	45.436	74.000	-28.564	PK
	1302.500	50.794	-5.358	-9.180	36.256	54.000	-17.744	AV
2	1735.000	58.688	-6.085	N/A	52.603	80.825	-28.222	PK
	1735.000	58.688	-6.085	-9.180	43.423	60.825	-17.402	AV
3	2170.000	62.540	-2.813	N/A	59.727	80.825	-21.098	PK
	2170.000	62.540	-2.813	-9.180	50.547	60.825	-10.278	AV
4	2602.500	70.295	-2.790	N/A	67.505	80.825	-13.320	PK
	2602.500	70.295	-2.790	-9.180	58.325	60.825	-2.500	AV
5	3037.500	62.320	-2.870	N/A	59.450	80.825	-21.375	PK
	3037.500	62.320	-2.870	-9.180	50.270	60.825	-10.555	AV
6	3470.000	64.675	-1.574	N/A	63.101	80.825	-17.724	PK
	3470.000	64.675	-1.574	-9.180	53.921	60.825	-6.904	AV
7	3905.000	48.197	-0.598	N/A	47.599	74.000	-26.401	PK
	3905.000	48.197	-0.598	-9.180	38.419	54.000	-15.581	AV
8	4337.500	51.640	1.082	N/A	52.722	74.000	-21.278	PK
	4337.500	51.640	1.082	-9.180	43.542	54.000	-10.458	AV

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9	4772.500	44.134	2.848	N/A	46.982	74.000	-27.018	PK
	4772.500	44.134	2.848	-9.180	37.802	54.000	-16.198	AV
10	5205.000	43.961	2.798	N/A	46.759	80.825	-34.066	PK
	5205.000	43.961	2.798	-9.180	37.579	60.825	-23.246	AV

Note 1: Testing is carried out with frequency rang 9 kHz to the tenth harmonics. There is the ambient noise within frequency range 9 kHz ~ 30 MHz, the permissible value is not show in the report.

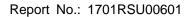
Note 2: The fundamental frequency is 433.92MHz, so the fundamental and spurious emissions radiated limit base on the operating frequency 433.92MHz.

Note 3: Peak Measure Level ($dB\mu V/m$) = Reading Level ($dB\mu V$) + Factor (dB).

AV Measure Level = Peak Measure Level - Duty Cycle Factor.

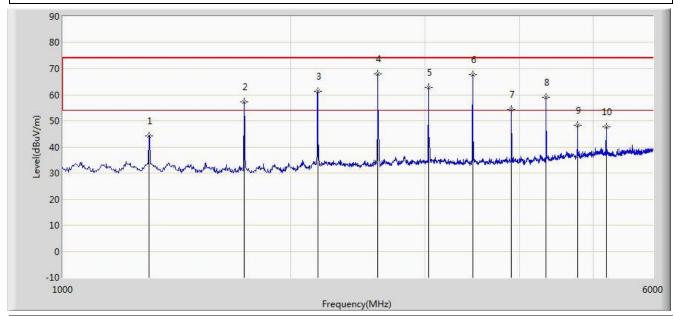
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

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Site: AC2	Time: 2017/01/07 - 13:17
Limit: FCC_Part15.209_RE(3m)	Engineer: Milo Li
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Remote Control Transmitter	Power: By Battery
Test Mode 1	



No	Frequency	Reading	Factor	Duty cycle	Measure	Limit	Over	Туре
	(MHz)	Level	(dB)	Factor	Level	(dBuV/m)	Limit	
		(dBuV)		(dB)	(dBuV/m)		(dB)	
1	1300.000	49.684	-5.389	N/A	44.295	74.000	-29.705	PK
	1300.000	49.684	-5.389	-9.180	35.115	54.000	-18.885	AV
2	1735.000	63.230	-6.085	N/A	57.145	80.825	-23.680	PK
	1735.000	63.230	-6.085	-9.180	47.965	60.825	-12.860	AV
3	2170.000	64.241	-2.813	N/A	61.428	80.825	-19.397	PK
	2170.000	64.241	-2.813	-9.180	52.248	60.825	-8.577	AV
4	2602.500	70.863	-2.790	N/A	68.073	80.825	-12.752	PK
	2602.500	70.863	-2.790	-9.180	58.893	60.825	-1.932	AV
5	3037.500	65.560	-2.870	N/A	62.690	80.825	-18.135	PK
	3037.500	65.560	-2.870	-9.180	53.510	60.825	-7.315	AV
6	3470.000	69.226	-1.574	N/A	67.652	74.000	-6.348	PK
	3470.000	69.226	-1.574	-9.180	58.472	54.000	4.472	AV
7	3905.000	55.059	-0.598	N/A	54.461	74.000	-19.539	PK
	3905.000	55.059	-0.598	-9.180	45.281	54.000	-8.719	AV
8	4337.500	58.035	1.082	N/A	59.117	74.000	-14.883	PK
	4337.500	58.035	1.082	-9.180	49.937	54.000	-4.063	AV

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9	4772.500	45.310	2.848	N/A	48.158	74.000	-25.842	PK
	4772.500	45.310	2.848	-9.180	38.978	54.000	-15.022	AV
10	5205.000	44.904	2.798	N/A	47.702	80.825	-33.123	PK
	5205.000	44.904	2.798	-9.180	38.522	60.825	-22.303	AV

Note 1: Testing is carried out with frequency rang 9 kHz to the tenth harmonics. There is the ambient noise within frequency range 9 kHz ~ 30 MHz, the permissible value is not show in the report.

Note 2: The fundamental frequency is 433.92MHz, so the fundamental and spurious emissions radiated limit base on the operating frequency 433.92MHz.

Note 3: Peak Measure Level ($dB\mu V/m$) = Reading Level ($dB\mu V$) + Factor (dB).

AV Measure Level = Peak Measure Level - Duty Cycle Factor.

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

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6.3. 20dB Bandwidth

6.3.1.Standard Applicable

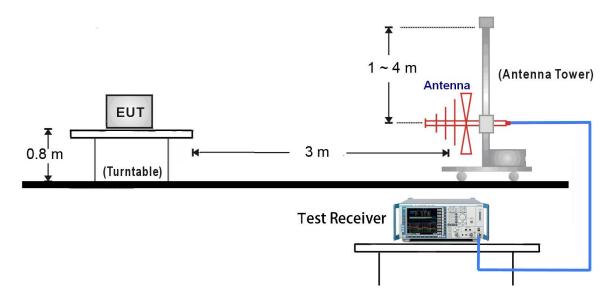
According to FCC Part 15.231(c), the bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70MHz and below 900MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

According RSS-210, A1.3, the 99% bandwidth of momentarily operated devices shall be less or equal to 0.25% of the centre frequency for devices operating between 70 MHz and 900 MHz. For devices operating above 900 MHz, the 99% bandwidth shall be less or equal to 0.5% of the centre frequency.

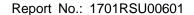
6.3.2.Test Procedure

With the EUT's antenna attached, the EUT's 20dB Bandwidth power was received by the test antenna, which was connected to the spectrum analyzer with the START, and STOP frequencies set to the EUT's operation band.

6.3.3.Test Setup



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6.3.4.Test Result

Test Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Result
433.82	61.20	≤ 1084.80	Pass

Limit = Fundamental Frequency * 0.25% = 433.92 MHz * 0.25% = 1084.80 kHz

20dB Bandwidth Test Plot





6.4. Release Time

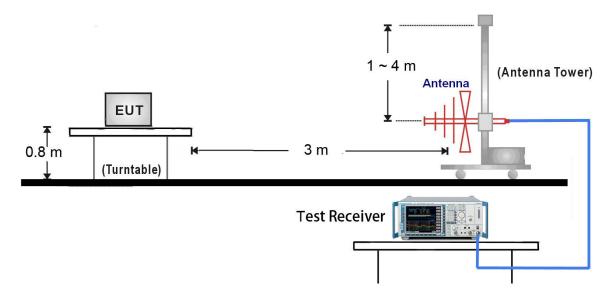
6.4.1.Standard Applicable

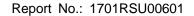
According to FCC 15.231(a), (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

6.4.2.Test Procedure

With the EUT's antenna attached, the EUT's output signal was received by the test antenna, which was connected to the spectrum analyzer. Set the center frequency to 433.92MHz, than set the spectrum analyzer to Zero Span for the release time reading. During the testing, the switch was released then the EUT automatically deactivated.

6.4.3.Test Setup





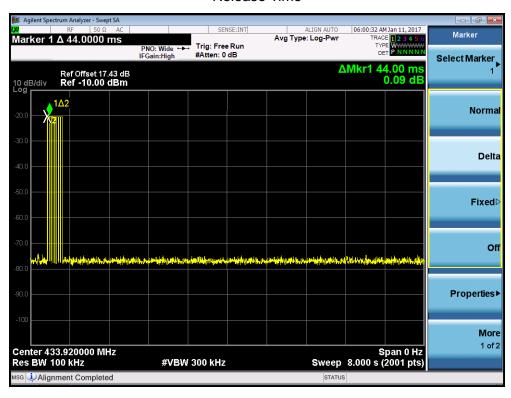


6.4.4.Test Result

Item	Measured Value	Limit	Result
Release Time	0.308s	≤ 5 s	Pass

Release Time (s) = 0.044 * 7 = 0.308 s

Release Time





6.5. Duty Cycle

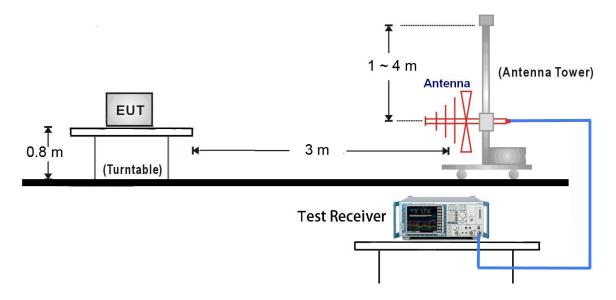
6.5.1. Standard Applicable

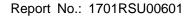
According to FCC Part 15.231(b) and 15.35(c), for pulse operation transmitter, the averaging pulsed emissions are calculated by peak value of measured emission plus duty cycle factor.

6.5.2.Test Procedure

With the EUT's antenna attached, the EUT's output signal was received by the test antenna, which was connected to the spectrum analyzer. Set the center frequency to 433.92MHz, than set the spectrum analyzer to Zero Span for the release time reading. During the testing, the switch was released then the EUT automatically deactivated.

6.5.3.Test Setup







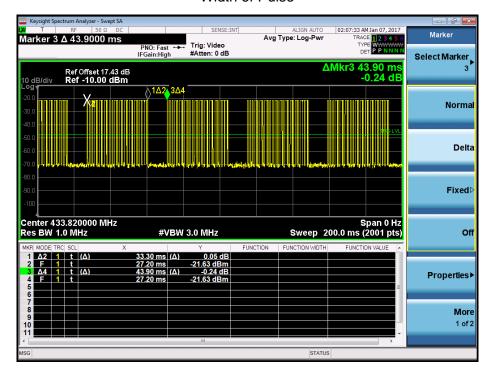
6.5.4.Test Result

Total Time (Ton)	The duration of one cycle	Duty Cycle	Duty Cycle Factor
(ms)	(ms)	(%)	(dB)
15.26	43.9	34.76	-9.18

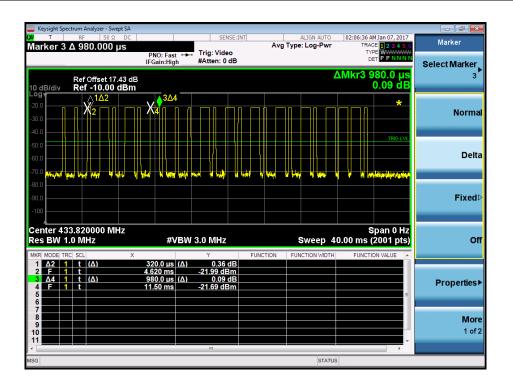
Note: Duty Cycle Factor = 20*Log(Duty Cycle).

Total Time $(T_{on})(ms) = 0.32 * 14 + 0.98 * 11 = 15.26 (ms)$

Width of Pulse









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7. CONCLUSION

The data collected relate only the item(s) tested and show that the **Remote Control Transmitter**FCC ID: VBA-EF2600TS is in compliance with FCC Part 15.231 of the FCC Rules and IC Rules.

————— The End