

TEST REPORT



Applicant	Fox & Summit USA, LLC
Address	2378 Peck Rd City of Industry, CA 90601 United States

Manufacturer or Supplier	GUANGDONG ROULE ELECTRONICS CO., LTD.
Address	No. 12, Pingdong 3rd Road, Nanping Industry Community, Zhuhai City, Guangdong, China
Product	Wi-Fi Window/Door sensor
Brand Name	N/A
Model	FS-WDS200
Additional Model & Model Difference	N/A
Date of tests	Dec. 29, 2018 ~ Apr. 24, 2019

the tests have been carried out according to the requirements of the following standards:

☒ **FCC Part 15, Subpart C, Section 15.231**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Breeze Jiang Project Engineer / EMC Department	Approved by Glyn He Supervisor / EMC Department
	 Date: May 17, 2019

This report is governed by, and incorporates by reference, CPS Conditions of Service as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

TABLE OF CONTENTS

RELEASE CONTROL RECORD.....	4
1 SUMMARY OF TEST RESULTS	5
2 MEASUREMENT UNCERTAINTY	5
3 GENERAL INFORMATION.....	6
3.1 GENERAL DESCRIPTION OF EUT	6
3.2 DESCRIPTION OF TEST MODES	7
3.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	7
3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS	9
3.5 DESCRIPTION OF SUPPORT UNITS	9
4. TEST TYPES AND RESULTS	10
4.1 RADIATED EMISSION MEASUREMENT	10
4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT	10
4.1.2 TEST INSTRUMENTS	11
4.1.3 TEST PROCEDURES.....	12
4.1.4 TEST SETUP	13
4.1.5 DEVIATION FROM TEST STANDARD.....	14
4.1.6 EUT OPERATING CONDITIONS	14
4.1.7 TEST RESULTS.....	15
4.2 20DB BANDWIDTH MEASUREMENT	19
4.2.1 LIMITS OF 20DB BANDWIDTH MEASUREMENT.....	19
4.2.2 TEST INSTRUMENTS	19
4.2.3 TEST PROCEDURE	20
4.2.4 DEVIATION FROM TEST STANDARD.....	20
4.2.5 TEST SETUP	20
4.2.6 EUT OPERATING CONDITIONS	20
4.2.7 TEST RESULTS.....	21
4.3 DEACTIVATION TIME MEASUREMENT	22
4.3.1 LIMITS OF DEACTIVATION TIME MEASUREMENT.....	22
4.3.2 TEST INSTRUMENTS	22
4.3.3 TEST PROCEDURE	23
4.3.4 DEVIATION FROM TEST STANDARD.....	23
4.3.5 TEST SETUP	23



Test Report No.: RF181229N003-4

4.3.6	EUT OPERATING CONDITIONS	23
4.3.7	TEST RESULTS.....	24
5	PHOTOGRAPHS OF THE TEST CONFIGURATION	25
6	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	26

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF181229N003-4	Original release	May 17, 2019

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.231)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
§15.203	Antenna Requirement	PASS	No antenna connector is used
§15.207 (a)	AC Power Conducted Emission	N/A	EUT is powered by battery
§15.209 §15.231(b)	Radiated Emission	PASS	Compliant
§15.231 (a)	Deactivation time measurement	PASS	Compliant
§15.231(c)	Emission Bandwidth Measurement	PASS	Compliant

2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Radiated emissions	9KHz ~ 30MHz	2.16dB
	30MHz ~ 1GHz	3.76dB
	1GHz ~ 18GHz	4.84dB
	18GHz ~ 40GHz	4.96dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wi-Fi Window/Door sensor
MODEL NO.	FS-WDS200
FCC ID	2AR57-WDS-F
NOMINAL VOLTAGE	DC 4.5V (1.5V*AAA*3) from Battery
MODULATION TYPE	OOK
OPERATING FREQUENCY	433.92MHz
NUMBER OF CHANNEL	1
ANTENNA TYPE	Spring Antenna 2.15dBi
I/O PORTS	Refer to the user's manual

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions, but only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.:181229N003-2) for detailed product photo.

3.2 DESCRIPTION OF TEST MODES

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned on X plane for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

FREQUENCY	TEST MODES
433.92MHz	Transmitting

3.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	RE ≥ 1G	RE < 1G	PLC	EB	DT	
-	√	√	-	√	√	Power by New Battery

Where **RE ≥ 1G**: Radiated Emission above 1GHz
PLC: Power Line Conducted Emission
DT: Deactivation Time measurement

RE < 1G: Radiated Emission below 1GHz
EB: 20dB Bandwidth measurement

RADIATED EMISSION TEST (ABOVE 1 GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
1	1	OOK

RADIATED EMISSION TEST (BELOW 1 GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
1	1	OOK

EMISSION BANDWIDTH MEASUREMENT:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
1	1	OOK

DEACTIVATION TIME MEASUREMENT:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
1	1	OOK

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE \geq 1G	23deg. C, 53%RH	DC 4.5V from New Battery	Walker
RE $<$ 1G	23deg. C, 53%RH	DC 4.5V from New Battery	Walker
EB	20deg. C, 55%RH	DC 4.5V from New Battery	Sen
DT	20deg. C, 55%RH	DC 4.5V from New Battery	Sen

3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C Section 15.231

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together without other necessary accessories or support units.

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

According to §15.231(b), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emission (microvolts/meter)
40.66–40.70	2,250	225
70–130	1,250	125
130–174	¹ 1,250 to 3,750	¹ 125 to 375
174–260	3,750	375
260–470	¹ 3,750 to 12,500	¹ 375 to 1,250
Above 470	12,500	1,250

NOTE:

- ¹ Linear interpolations.
- The lower limit shall apply at the transition frequencies.
- Emission level (dBuV/m) = 20 log Emission level (uV/m).
- As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Mar. 12,19	Mar. 11,20
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Nov. 04,18	Nov. 03,19
Active Loop Antenna (9KHz -30MHz)	SCHWARZBECK	FMZB 1519B	1519B-045	May 04,18	May 03,19
Amplifier (9KHz -1GHz)	Burgeon	BPA-530	100210	Apr. 18,19	Apr. 18,20
Bilog Antenna (20MHz -2GHz)	Teseq	CBL 6111D	30643	Aug. 11, 18	Aug. 10, 19
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	Jul. 21, 18	Jul. 20, 19
Horn Antenna (18GHz -40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170242	May 05,18	May 04,19
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Feb. 10,18	Feb. 09,20
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	Apr. 18,19	Apr. 18,20
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 08,18	Nov. 07,19
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A

NOTE:

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 749762.

4.1.3 TEST PROCEDURES

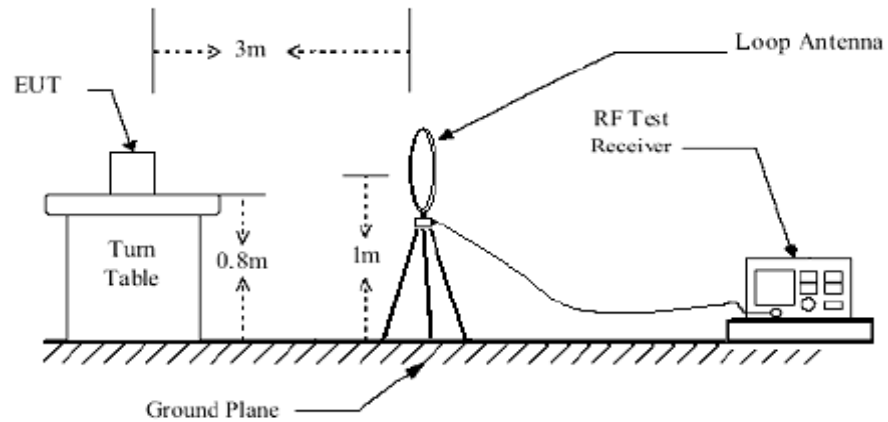
- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position Y, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using new battery. The turntable was rotated to maximize the emission level.
- h. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.

NOTE:

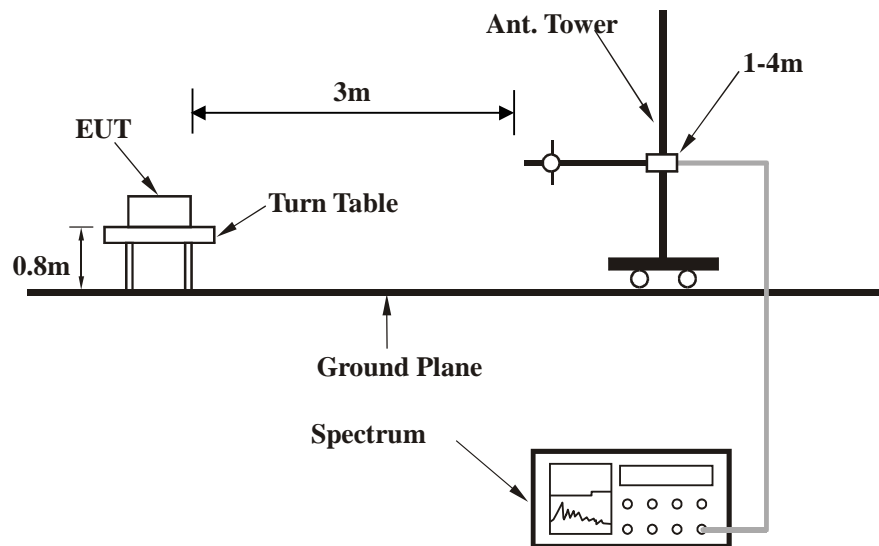
1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. $\text{Emission level(dBuV/m)} = \text{Raw Value(dBuV)} + \text{Correction Factor(dB/m)}$
4. $\text{Correction Factor(dB/m)} = \text{Antenna Factor (dB/m)} + \text{Cable Factor (dB)}$
5. $\text{Margin value} = \text{Emission level} - \text{Limit value.}$
6. $\text{Fundamental AV value} = \text{PK Emission} + \text{AV Factor.}$

4.1.4 TEST SETUP

Below 30MHz test setup

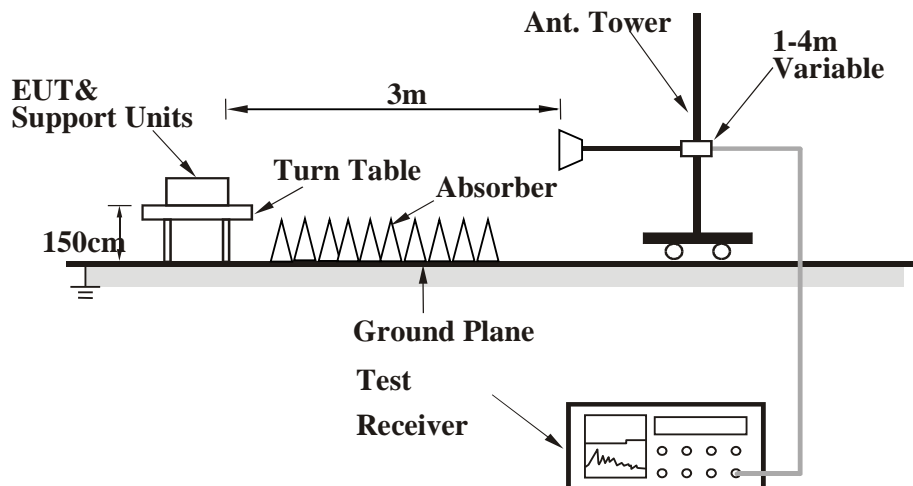


Below 1GHz test setup



Note: For the actual test configuration, please refer to the attached file (Test Setup Photo).

Above 1GHz test setup



Note: For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.5 DEVIATION FROM TEST STANDARD

No deviation.

4.1.6 EUT OPERATING CONDITIONS

- Placed the EUT on the testing table.
- Enable EUT under transmission condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA:

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	30.00 QP	-10.13	34.00	23.87	40.00	-16.13	100	23
2	141.92 QP	-16.02	29.44	13.42	43.50	-30.08	100	124
3	401.52 QP	-9.29	29.73	20.44	46.00	-25.56	100	251
4	*433.92 PK	-8.75	89.42	80.67	100.82	-20.15	313	119
5	*433.92 AV	-	-	65.78	80.82	-15.04	313	119
6	519.66 QP	-6.97	31.89	24.92	46.00	-21.08	100	36
7	734.18 QP	-3.69	30.65	26.96	46.00	-19.04	100	48
8	#867.87 PK	-0.96	37.19	36.23	80.82	-44.59	100	359
9	#867.87 AV			21.34	60.82	-39.48	100	359
10	917.61 QP	-0.43	31.08	30.65	46.00	-15.35	100	274
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	30.00 QP	-10.13	35.13	25.00	40.00	-15.00	200	24
2	127.93 QP	-16.29	31.31	15.02	43.50	-28.48	200	123
3	354.89 QP	-10.53	30.72	20.19	46.00	-25.81	200	87
4	*433.92 PK	-8.75	95.37	86.62	100.82	-14.20	200	26
5	*433.92 AV			71.73	80.82	-9.09	200	26
6	519.66 QP	-6.97	32.61	25.64	46.00	-20.36	200	265
7	704.65 QP	-3.92	31.01	27.09	46.00	-18.91	200	52
8	#835.22 QP	-1.44	31.09	29.65	46.00	-16.35	200	136
9	#867.87 PK	-0.96	39.09	38.13	80.82	-42.69	200	52
10	867.87 AV			23.24	60.82	-37.58	200	52

NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) at frequency below 1GHz.
2. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": Harmonic frequency
7. Fundamental AV value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20 log (Duty cycle) = 20Log(18%)=-14.89dB, Please see page 17~18 for plotted duty.

ABOVE 1GHz WORST-CASE DATA:

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	4759.62 PK	4.71	53.92	58.63	74.00	-15.37	100	0
2	4759.62 AV	-	-	43.74	54.00	-10.26	100	0
3	5195.51 PK	5.96	53.00	58.98	74.00	-15.04	100	12
4	5195.51 AV	-	-	44.09	54.00	-9.91	100	12
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	4342.95 PK	-4.40	54.25	58.65	74.00	-15.35	100	0
2	4342.95 AV	-	-	43.76	54.00	-10.24	100	0
3	5195.51 PK	5.96	53.91	59.87	74.00	-14.13	100	24
4	5195.51 AV	-	-	44.98	54.00	-9.02	100	24

- 1 The resolution bandwidth of test receiver/spectrum analyzer is 1MHz for Peak detection (PK) at frequency above 1GHz.
- 2 Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
- 3 Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
- 4 Margin value = Emission level – Limit value.
- 5 The emission levels of other frequencies were less than 20dB margin against the limit.
- 6 Fundamental AV value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20 log (Duty cycle) =20Log(18%)=-14.89dB, Please see page 17~18 for plotted duty.

Duty Cycle:

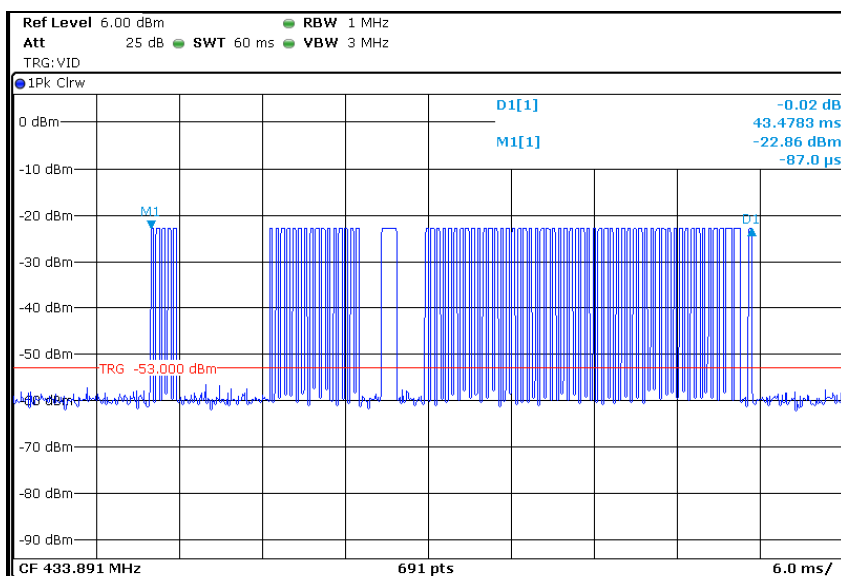
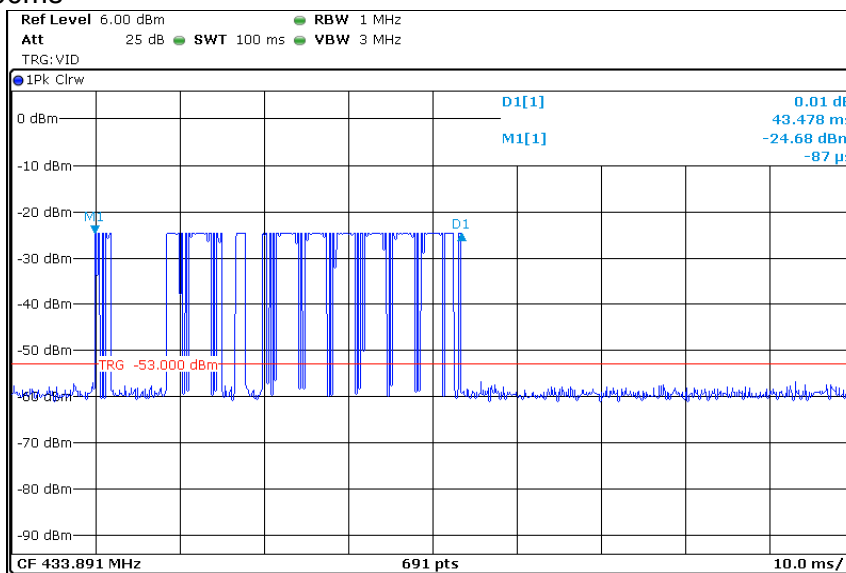
$$T_p = 100.00\text{ms}$$

$$\text{Ton} = \text{Ton1} * \text{Number} + \text{Ton2} * \text{Number} + \text{Ton3} * \text{Number} = 0.2174 * 74 + 0.4348 * 2 + 1.0435 * 1 = 18.0007\text{ms}$$

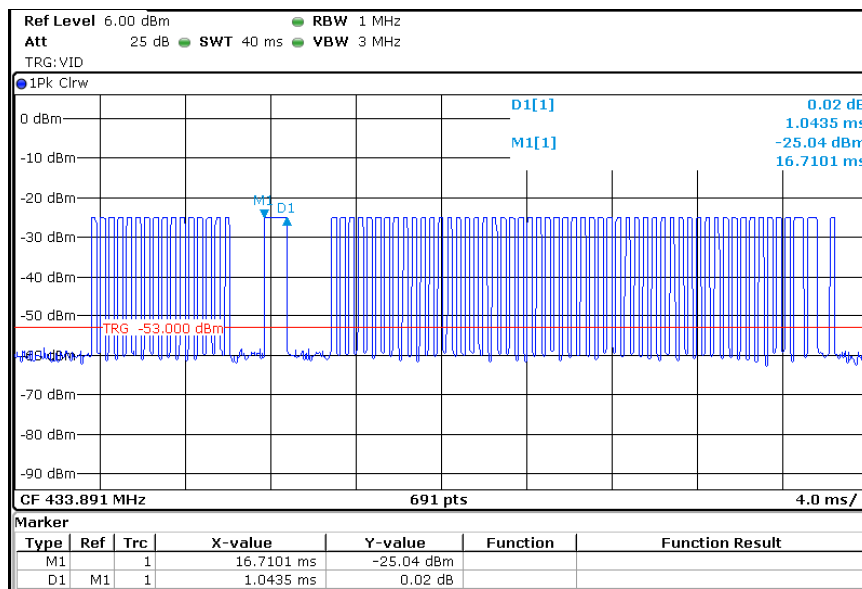
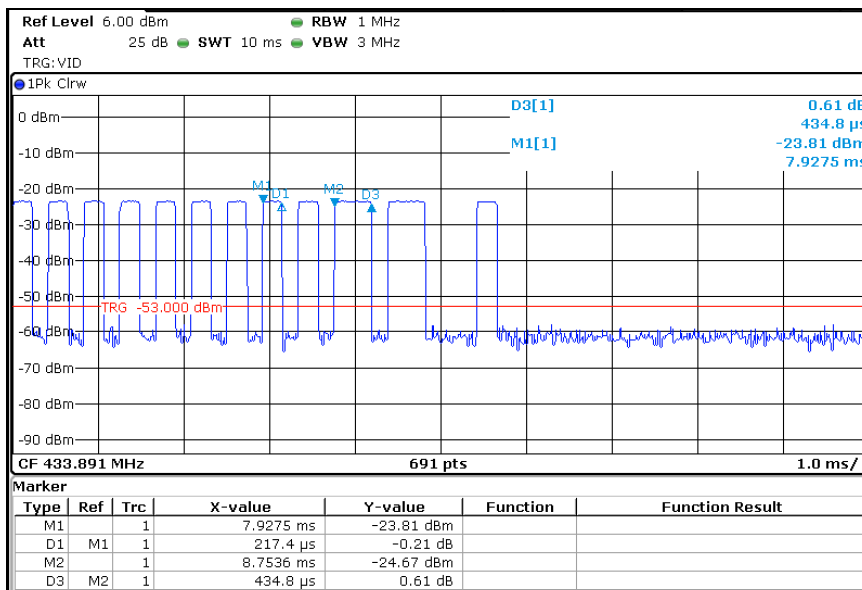
$$\text{Duty Cycle} = \text{Ton} / T_p * 100\% = 18.0007 / 100.00 * 100\% = 18\%$$

$$\text{Factor} = 20\text{Log}(\text{Duty Cycle}) = 20\text{Log}(18\%) = -14.89\text{dB}$$

$$T_p = 100.00\text{ms}$$



$$\text{Ton} = \text{Ton1} * \text{Number} + \text{Ton2} * \text{Number} + \text{Ton3} * \text{Number} = 0.2174 * 74 + 0.4348 * 2 + 1.0435 * 1 = 18.0007 \text{ms}$$



4.2 20dB BANDWIDTH MEASUREMENT

4.2.1 LIMITS OF 20dB BANDWIDTH MEASUREMENT

According to FCC 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. Bandwidth is determined at the points 20 dB down from the modulated carrier.

$$\text{Limit} = \text{Fundamental Frequency} \times 0.25\% = 433.92 \text{ MHz} \times 0.25\% = 1084.75 \text{ kHz}$$

4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	Jun. 13, 18	Jun. 12, 19
Power Sensor	Keysight	U2021XA	MY55060018	Jun. 13, 18	Jun. 12, 19
Power Meter	Anritsu	ML2495A	1139001	Mar. 12, 19	Mar. 11, 20
Power Sensor	Anritsu	MA2411B	1531155	Mar. 12, 19	Mar. 11, 20
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 17, 18	Oct. 16, 19
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep. 20, 18	Sep. 19, 19
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 08, 18	Nov. 07, 19
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 04, 18	Nov. 03, 19
Signal Generator	Agilent	N5183A	MY50140980	Jan. 02, 19	Jan. 01, 20
Agile Signal Generator	Agilent	8645A	Agilent	Oct. 27, 18	Oct. 26, 19
Spectrum Analyzer	Keysight	N9020A	MY55400499	Mar. 12, 19	Mar. 11, 20
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Jan. 02, 19	Jan. 01, 20
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Jul. 06, 18	Jul. 05, 19
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A	N/A
DC Source	Keysight	E3642A	MY56146098	N/A	N/A

NOTE:

1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

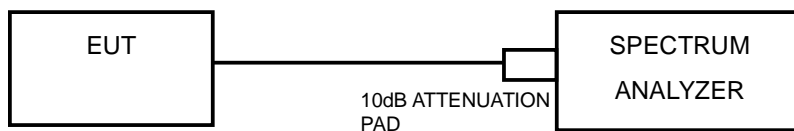
4.2.3 TEST PROCEDURE

The spectrum analyzer was receiving the maximum emission level. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



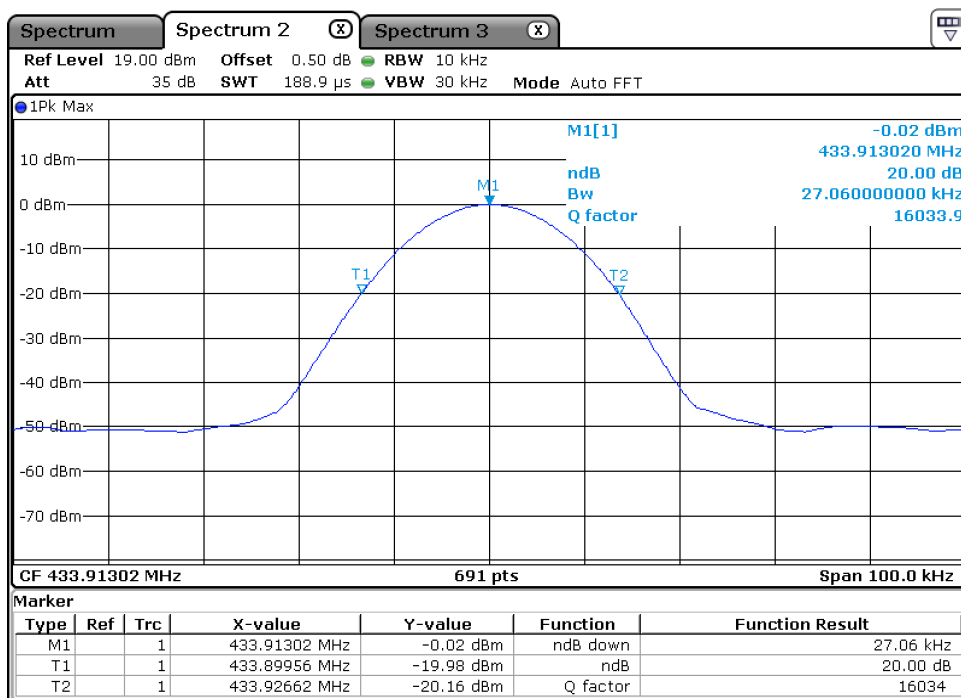
4.2.6 EUT OPERATING CONDITIONS

- a) Turned on the power of all equipment.
- b) EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

4.2.7 TEST RESULTS

FREQUENCY (MHz)	20dB BANDWIDTH (kHz)	MAXIMUM LIMIT (kHz)	PASS/FAIL
433.92	27.06	1084.75	PASS

Test Data:



4.3 DEACTIVATION TIME MEASUREMENT

4.3.1 LIMITS OF DEACTIVATION TIME MEASUREMENT

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.

15.231 (a)(2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.

4.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	Jun. 13,18	Jun. 12,19
Power Sensor	Keysight	U2021XA	MY55060018	Jun. 13,18	Jun. 12,19
Power Meter	Anritsu	ML2495A	1139001	Mar. 12,19	Mar. 11,20
Power Sensor	Anritsu	MA2411B	1531155	Mar. 12,19	Mar. 11,20
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 17, 18	Oct.16, 19
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.20,18	Sep. 19,19
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 08,18	Nov. 07,19
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 04,18	Nov. 03,19
Signal Generator	Agilent	N5183A	MY50140980	Jan. 02, 19	Jan. 01, 20
Agile Signal Generator	Agilent	8645A	Agilent	Oct. 27, 18	Oct. 26, 19
Spectrum Analyzer	Keysight	N9020A	MY55400499	Mar. 12,19	Mar. 11,20
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Jan. 02, 19	Jan. 01, 20
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Jul. 06, 18	Jul. 05, 19
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A	N/A
DC Source	Keysight	E3642A	MY56146098	N/A	N/A

NOTE: 1. The test was performed in RF Oven room.

2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

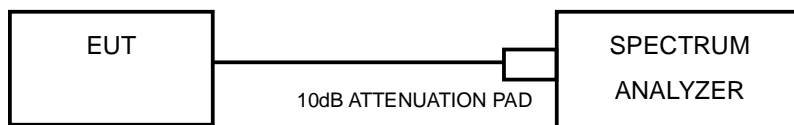
4.3.3 TEST PROCEDURE

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, than set the spectrum analyzer to Zero Span for the release time reading. During the testing, the transmission duration was measured and recorded.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

4.3.5 TEST SETUP



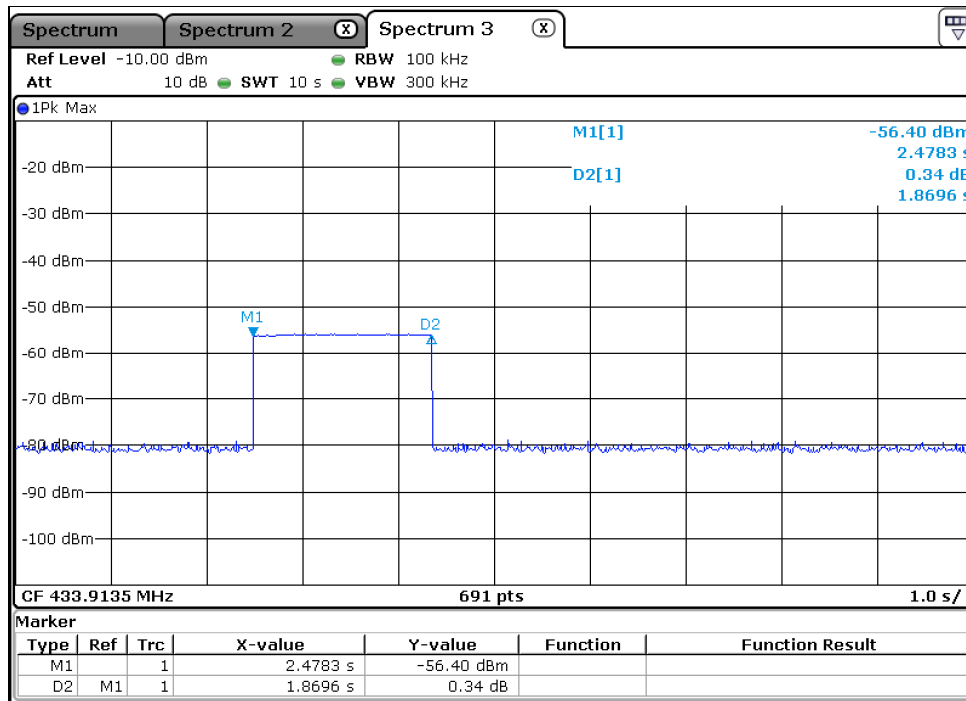
4.3.6 EUT OPERATING CONDITIONS

- c) Turned on the power of all equipment.
- d) EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

4.3.7 TEST RESULTS

FREQUENCY (MHz)	MEASUREMENT RESULT (sec)	MAXIMUM LIMIT (sec)	PASS/FAIL
433.92	1.8696	5	PASS

The plots of test results are attached as below.



5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

6 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---