CENTRE OF TESTING SERVICE INTERNATIONAL

OPERATE ACCORDING TO ISO/IEC 17025

FCC ID TEST REPORT

TEST REPORT NUMBER : CNB3110711-02808-E

CENTRE OF TESTING SERVICE CO., LTD.
Building F, Dachuang industrial park, No.379, Zhongshan Dadao,
Guangzhou, China.

TEST REPORT For FCC ID

47 CFR PART 15 OCT, 2009

Report Reference No.	**CNB3110711-02808-E**
Date of issue	12-Jul 2011
Testing Laboratory Name	**CENTRE OF TESTING SERVICE CO., LTD**
Address	Building F, Dachuang industrial park, No.379, Zhongshan Dadao, Guangzhou, China.
Testing location/ procedure	Full application of Harmonised standards ■
	Partial application of Harmonised standards □
	Other standard testing method □
Applicant's name	Ningbo Saferhome Electronics Co.,Ltd
Address	NO.5,keyuanroad(North), Taoyuan street,Ningbo Zhejiang China
Test specification	
Standard	**47 CFR PART 15 OCT, 2010, ANSI C63.4-2009**
Test Report Form No.	CTSEMC-1.0
TRF Originator	CENTRE OF TESTING SERVICE CO., LTD
Master TRF	Dated 2009-01

Test item description.....	Wireless Remotely Operated Switch
Trade Mark.....	HOMEMATE
Manufacturer.....	Ningbo Homemate Products Co.,Ltd
Model/Type reference.....	HM-ZJ-04
Ratings.....	DC 3.0V For (TX)
Operating Frequency.....	433.92MHz/ FSK
Result	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Violet Lee / File administrators	Tom Xiao / Technique principal	Vincent.Yao / Manager

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FCC ID -- T E S T R E P O R T

Test Report No. :	CNB3110307-00609-O	07 April 2011 Date of issue

Type / Model.....	HM-ZJ-04
EUT.....	Wireless Remotely Operated Switch
Applicant……	Ningbo Homemate Products Co.,Ltd
Address.....	NO.78,Tongde Road, Zhuang Shi Ave,Ningbo
Telephone.....	+86-574-87774104
Fax.....	+86-574-87706688
Contact.....	Daniel Tse
Manufacturer……	Ningbo Homemate Products Co.,Ltd
Address.....	NO.78,Tongde Road, Zhuang Shi Ave,Ningbo
Telephone.....	+86-574-87774104
Fax.....	+86-574-87706688
Contact.....	Daniel Tse
Factory ……	Ningbo Homemate Products Co.,Ltd
Address.....	NO.78,Tongde Road, Zhuang Shi Ave,Ningbo
Telephone.....	+86-574-87774104
Fax.....	+86-574-87706688
Contact.....	Daniel Tse

Test Result according to the standards on page 3: **Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

■**47 CFR PART 15 OCT, 2010**
■ **ANSI C63.4-2009**

2. SUMMARY

2.1 GENERAL REMARKS

Date of receipt of test sample	11 Jul 2011
Testing commenced on	12 Jul 2011
Testing concluded on	21 Jul 2011

2.2 FINAL ASSESSMENT

The FCC requirements pertaining to the technical standards and tested operation modes are

■ - fulfilled.

□ - **not** fulfilled.

The equipment under test

■ - fulfils the FCC requirements cited on page 3.

□ - **does not** fulfil the FCC requirements cited on page 3.

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3. EQUIPMENT UNDER TEST

3.1 Power supply system utilised

Power supply voltage : ■ DC 3.0V for (TX)

3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: **1**
Serial number: Prototype

3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:
For Radiation emission:

■ –TX +X position
□ –TX +Y position
□ –TX +Z position

For Other Test item

■ Manully control

Operation mode 1: TX +X position
Note: X position of EUT is the worst case, so only these test results be recorded in the test report.

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3.4 EUT configuration

3.4.1. Description of configuration (EUT)

Description	:	Wireless Remotely Operated Switch
Model Number	:	HM-ZJ-04
Operation frequency	:	433.92MHz
Radio Technology	:	FSK
Modulation Technology	:	FSK modulation
Antenna	:	Telescope antenna
Antenna Assembly Gain	:	1dBi (maximum)

3.4.2. Tested Supporting System Details

N/A

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4. TEST ENVIRONMENT

4.1 Address of the test laboratory

Building F, Dachuang industrial park, No.379, Zhongshan Dadao, Guangzhou, China

Tel：+86-20-85543113 (32 lines) Fax：+86-20-38780406

4.2 Test facility

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

CNAS-Lab Code: L3394

CENTRE OF TESTING SERVICE CO., LTD has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

IC-Registration No.: 8374

The 3m Alternate Test Site of CENTRE OF TESTING SERVICE CO., LTD has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374 on June 6, 2011 .

FCC-Registration No.: 971995

CENTRE OF TESTING SERVICE CO., LTD, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration No.791995, July 21, 2009.

4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 ° C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

4.4 Definitions of symbols used in this test report

■ - The black square indicates that the listed condition, standard or equipment is applicable for this report.
□ - The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

4.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the CTS quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

4.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±1.22dB	(1)
Power disturbance	30MHz~300MHz	±1.38dB	(1)
Radiation emission (3m)	30MHz~300MHz	±3.14dB	(1)
	300MHz~1000MHz	±3.18dB	(1)

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

5. Summary of standards and results

5.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	**Standard**	**Results**
Conducted Emission Test	ANSI C63.4-2009 FCC Part 15 C: 15.207	N/A
Radiated Emission Test	ANSI C63.4-2009 FCC Part 15 C: 15.231	PASSED
20 dB Bandwidth Test	ANSI C63.4-2009 FCC Part 15 C: 15.231	PASSED
Stop Transmitting Time Test	ANSI C63.4-2009 FCC Part 15 C: 15.231	PASSED
N/A is an abbreviation for Not Applicable.		

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6. Power Line Conducted Emission Test

6.1.1 Description of the test location

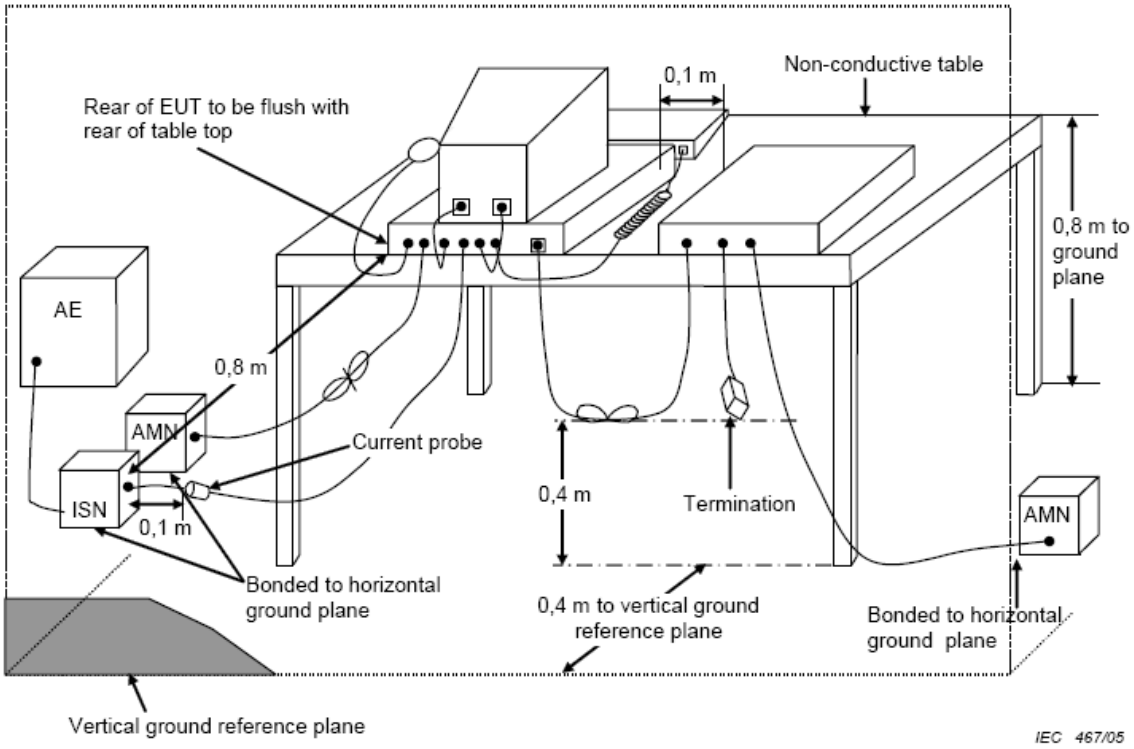
Test location : Shielding Room

6.1.2 Description of the test set-up

6.1.2.1 Operating Condition

The EUT is engraving during the test, and the results of the maximum emanation are recorded

6.1.2.2 Block Diagram of Test Setup



6.1.3 Limits of disturbance (Class B)

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

6.1.4 Test result

The EUT power by battery.Not Applicable.

7. Radiated disturbance (electric field)

7.1.Test Equipment

Radiated disturbance (electric field)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2010/12
2	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2010/12
3	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2010/12
4	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2010/12
5	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2010/12

7.2.Block Diagram of Test Setup

7.2.1 Block Diagram of connection between EUT and simulators

(EUT: Solar-*Powered* Multi-beam Active Wireless Infrared Light Walls*)*

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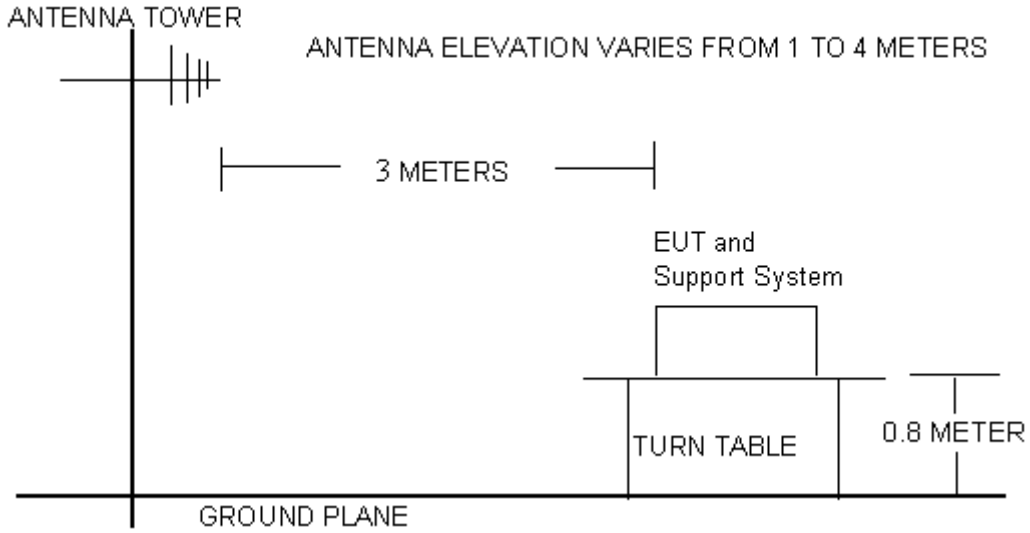
7.2.2 Anechoic Chamber Setup Diagram



7.3.Radiated Emission Limit Standard: FCC 15.231

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other:74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Remark: (1) Emission level dBμV = 20 log Emission level μV/m
(2) The smaller limit shall apply at the cross point between two frequency bands.
(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

7.4.Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2009on radiated emission Test.

The frequency range from 30MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.

All measurements for radiated emissions within the restricted bands were performed using a Quasi-Peak detector with 120kHz RBW below 1GHz and a Peak and Average detector with 1MHz RBW above 1GHz,

All measurements for radiated emissions within the restricted bands were performed using a Quasi-Peak detector with 300kHz VBW below 1GHz and a Peak detector with 1MHz VBW above 1GHz, A average detector be caluclated from peak value using duty cycle factor Both 30MHz to 1000MHz and above 1GHz

Pretest x, y, z position of EUT, final, select the worst case x position test and record the test results in the report.

The test modes (TX Mode) is tested in Anechoic Chamber and all the scanning waveforms are reported on section 7.5

7.5.Radiated Emission Test Results

PASSED.

The frequency range from 30MHz to 230MHz, 230MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.

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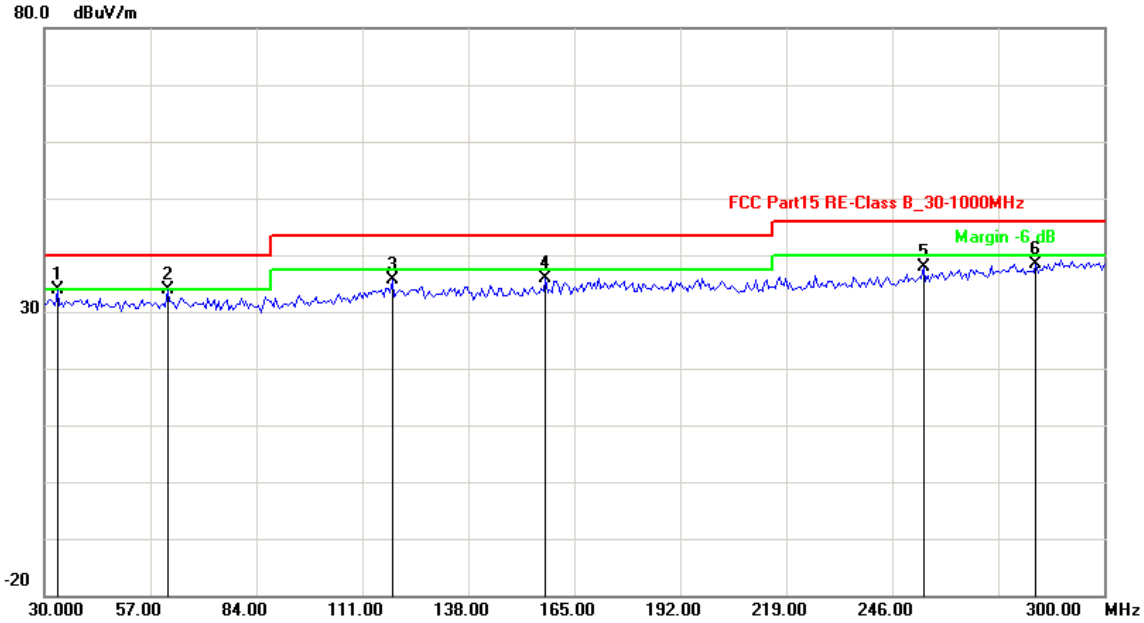
Channel: Test point: Frequency range:	433.92MHz (TX) Horizontal 30-230MHz	Result:	■ - passed ☐ - not passed

EUT	Wireless Remotely Operated Switch
Operating Condition	DC 3.0V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test Date:	11 Jul~21 Jul 2011
Operator	**Peter**
MODEL NO	HM-ZJ-04



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	33.2465	6.12	27.74	33.86	40.00	-6.14	QP
2	61.3828	5.35	28.52	33.87	40.00	-6.13	QP
3	118.7375	6.41	29.15	35.56	43.50	-7.94	QP
4	157.6954	6.58	29.29	35.87	43.50	-7.63	QP
5	254.0080	9.20	28.67	37.87	46.00	-8.13	QP
6	282.6854	10.63	27.72	38.35	46.00	-7.65	QP

Note:Level=Reading+Facytor. Margin= Level- Limit.

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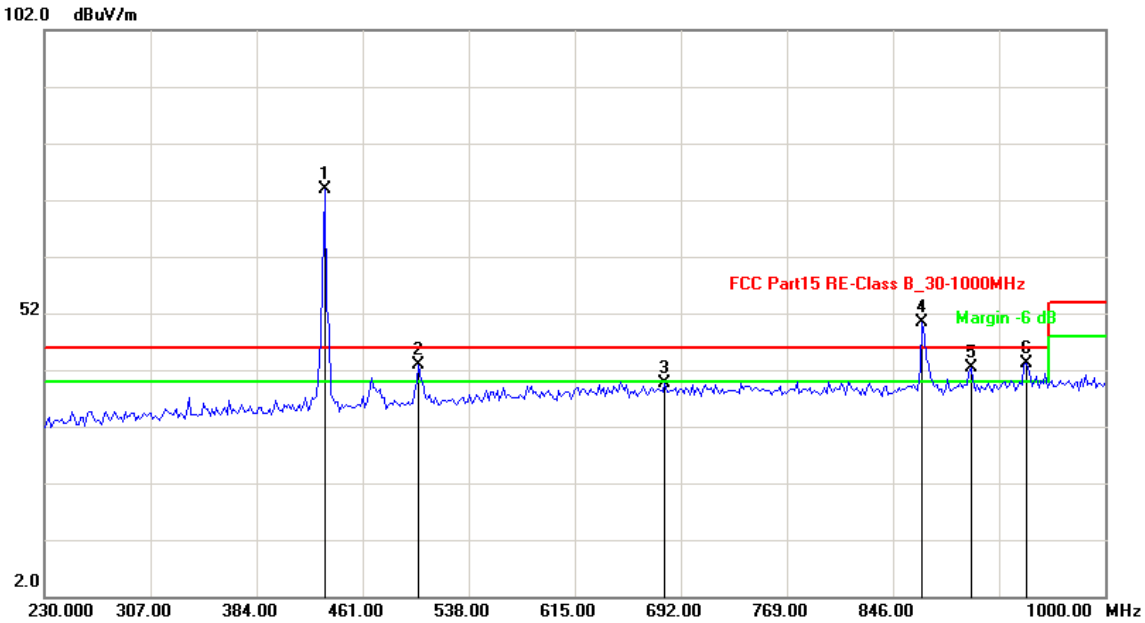

Fundamental and Harmonics Average Result							
Frequency (MHz)	**Factor (dB/m)**	**Reading (dBuV)**	**Duty Cycle Correction Factor(dB)**	**Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Det.**
433.9174	8.25	65.58	----	73.83	100.83	-27.00	Peak
433.9174	8.25	65.58	-9.45	64.38	80.83	-16.45	AV

No.	**Frequency (MHz)**	**Factor (dB/m)**	**Reading (dBuV)**	**Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Det.**
1	501.5832	8.60	34.32	42.92	46.00	-3.08	QP
2	680.5812	10.19	29.32	39.51	46.00	-6.49	QP
3	867.8446	10.42	39.97	50.39	80.83	-30.44	Peak
4	902.7856	10.50	31.84	42.34	46.00	-3.66	QP
5	942.9058	10.50	32.62	43.12	46.00	-2.88	QP

Note:Level=Reading+Facytor. Margin= Level- Limit.
Average Level=Peak level + Duty Factor

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Channel:	433.92MMHz (TX)	Result:	■ - passed □ - not passed
Test point:	Horizontal		
Frequency range:	1GHz-5GHz		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1296.593	13.76	36.99	50.75	74.00	-23.25	peak
2	1729.459	15.35	34.81	50.16	74.00	-23.84	peak
3	2659.319	18.90	32.94	51.84	74.00	-22.16	peak
4	3076.152	20.42	32.55	52.97	74.00	-21.03	peak
5	4406.814	22.07	31.66	43.73	54.00	-10.27	AVG
6	4863.727	23.06	31.83	43.89	54.00	-10.11	AVG

Note:Level=Reading+Facytor. Margin= Level- Limit.

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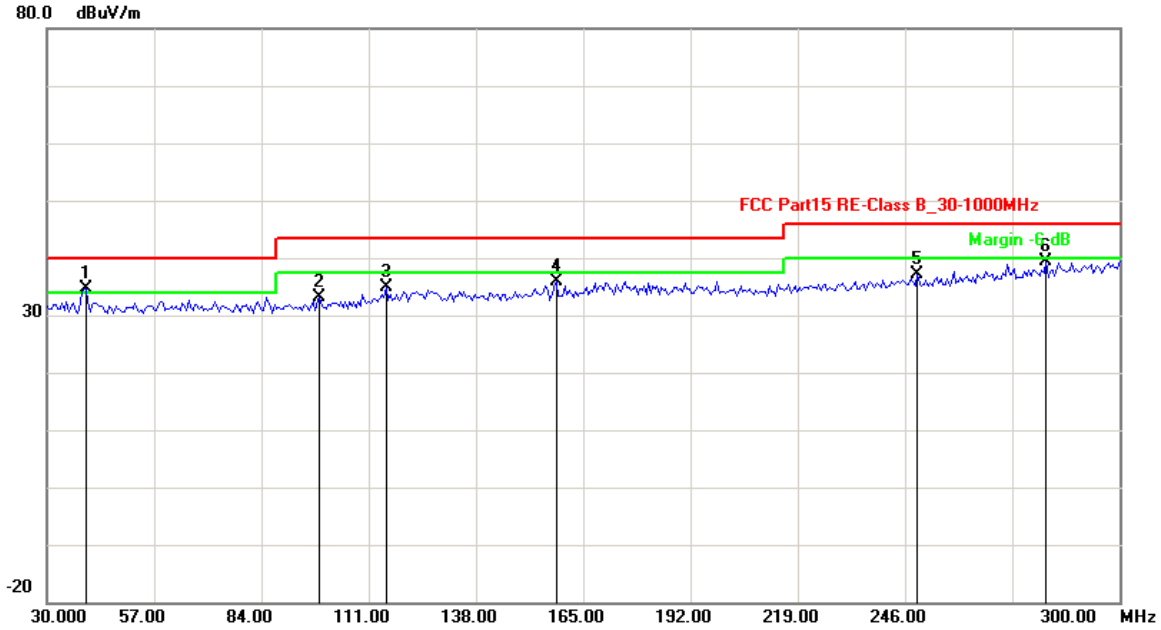
Channel: Test point: Frequency range:	433.92 MHz (TX) Vertical 30-230MHz	Result:	■ - passed □ - not passed

EUT	Wireless Remotely Operated Switch
Operating Condition	DC 3.0V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test Date:	11 Jul~21 Jul 2011
Operator	**Peter**
MODEL NO	HM-ZJ-04



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	39.7395	5.72	28.79	34.51	40.00	-5.49	QP
2	98.7174	5.11	28.05	33.16	43.50	-10.34	QP
3	115.4910	6.16	28.71	34.87	43.50	-8.63	QP
4	158.2365	6.60	29.16	35.76	43.50	-7.74	QP
5	249.1383	8.96	28.26	37.22	46.00	-8.78	QP
6	281.6032	10.58	28.89	39.47	46.00	-6.53	QP

Note:Level=Reading+Facytor. Margin= Level- Limit.

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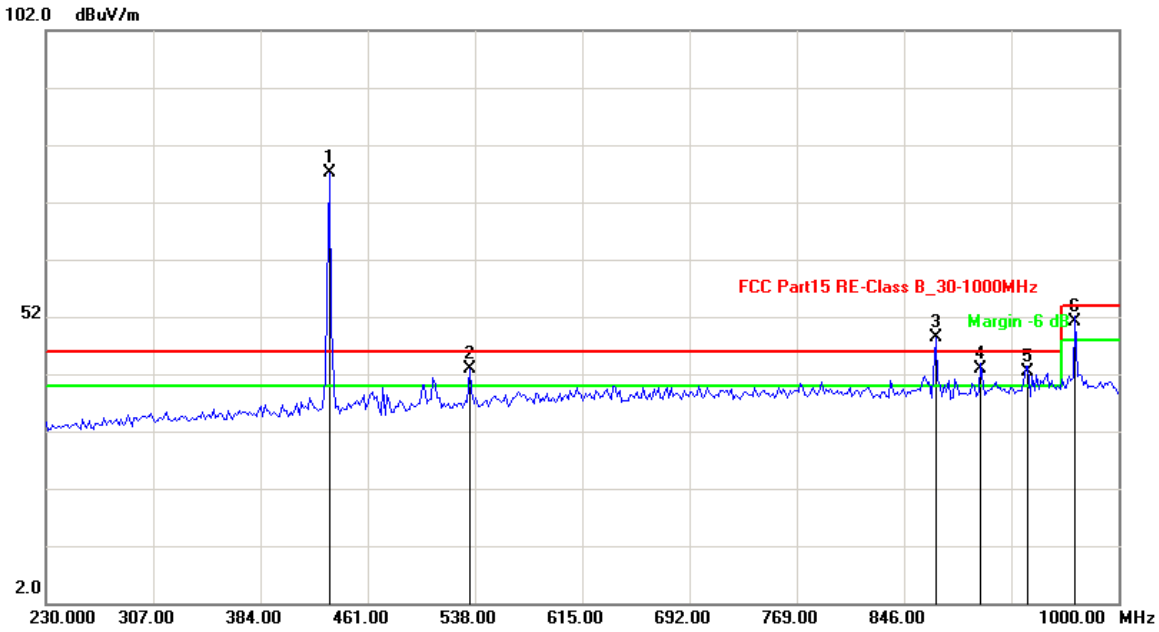

Fundamental and Harmonics Average Result							
Frequency (MHz)	**Factor (dB/m)**	**Reading (dBuV)**	**Duty Cycle Correction Factor(dB)**	**Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Det.**
433.9274	8.25	68.88	----	77.13	100.83	-23.70	Peak
433.9274	8.25	68.88	-9.45	59.43	80.83	-21.40	AV

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	533.9880	8.74	34.25	42.99	46.00	-3.01	QP
2	868.8477	10.44	38.04	50.48	80.83	-30.35	Peak
3	901.2425	10.50	32.46	42.96	46.00	-3.04	QP
4	935.1904	10.50	31.79	42.29	46.00	-3.71	QP
5	969.1383	10.50	40.63	51.13	54.00	-2.87	QP

Note:Level=Reading+Facytor. Margin= Level- Limit.
Average Level=Peak level + Duty Factor

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Channel:	433.92 MHz (TX)	Result:	■ - passed □ - not passed
Test point:	Vertical		
Frequency range:	1GHz-5GHz		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1296.593	13.76	41.97	55.73	74.00	-18.27	peak
2	1400.802	14.21	38.71	52.92	74.00	-21.08	peak
3	1729.459	15.35	36.05	51.40	74.00	-22.60	peak
4	2170.341	16.86	34.88	51.74	74.00	-22.26	peak
5	2338.677	17.55	39.04	46.59	54.00	-7.41	AVG
6	4775.551	22.87	32.25	45.12	54.00	-8.88	AVG

Note:Level=Reading+Facytor. Margin= Level- Limit.

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8. 20 dB Bandwidth test

8.1. Test Equipment

20 dB Bandwidth test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	10868	2010/12
2	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2010/12
3	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2010/12

8.2. Test Information

EUT:	Wireless Remotely Operated Switch
M/N:	HM-ZJ-04
Power supply:	DC 3.0V (TX)
Test Condition:	Ambient Temperature: 25°C Humidity: 56%
Test standard:	FCC PART 15C: 15.231
Test mode:	Transmitting
Test Frequency:	433.92MHz
Test Date:	11 Jul to 12 Jul 2011
Test By:	**Peter**

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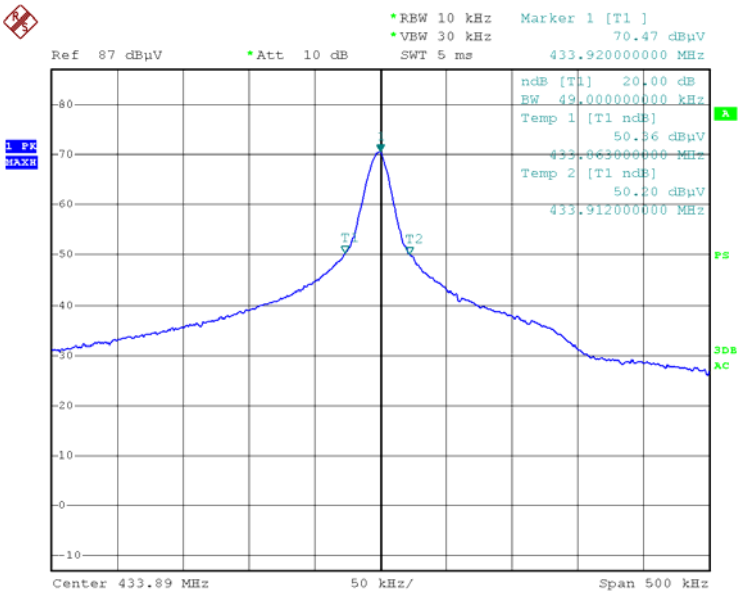
8.3. Test Results

PASSED.

The testing data was attached in the next pages.

Frequency (MHz)	20 dB Bandwidth (kHz)	Limit(kHz): No wider than 0.25% of the center frequency	Conclusion
433.92	49.0	433.92*0.25%=1.0848MHz	PASSED



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9. Stop Transmitting Time Test

9.1. Test Equipment

Band Edge Compliance test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	10868	2010/12
2	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2010/12
3	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2010/12

9.2. Test Information

EUT:	Wireless Remotely Operated Switch
M/N:	HM-ZJ-04
Power supply:	DC 3.0V (TX)
Test Condition:	Ambient Temperature: 25°C Humidity: 56%
Test standard:	FCC PART 15C: 15.231
Test mode:	Transmitting
Test Frequency:	433.92MHz
Test Date:	11 Jul to 12 Jul 2011
Test By:	**Peter**

9.3. Test Results

PASSED.

The testing data was attached in the next pages.

Set the spectrum to zero span, activated the EUT by manually, And then, we could see the transmitting wave in the spectrum, when the time marker went to “1R”, released the EUT, After 34.45ms, we could see the EUT stop transmitting.

Frequency (MHz)	Stop Transmitting Time	Limit: not more than 5 seconds of being released	Conclusion
433.92	34.45ms	5s	PASSED

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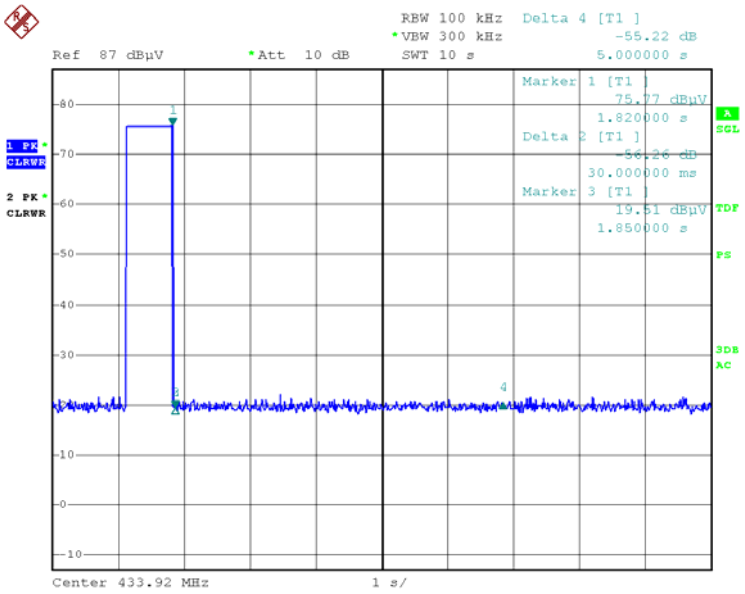

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10. Pulse Desensitization Correction Factor

10.1. Test Equipment

Band Edge Compliance test					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	10868	2010/12
2	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2010/12
3	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2010/12
4	Spectrum	Agilent	E4446A	44300459	2010/12

Test Information

EUT:	Wireless Remotely Operated Switch
M/N:	HM-ZJ-04
Power supply:	DC 3.0V (TX)
Test Condition:	Ambient Temperature: 25°C Humidity: 56%
Test standard:	FCC PART 15C: 15.231
Test mode:	Transmitting
Test Frequency:	433.92MHz
Test Date:	11 Jul to 12 Jul 2011
Test By:	**Peter**

10.3. Test Results

PASSED.

The testing data was attached in the next pages.

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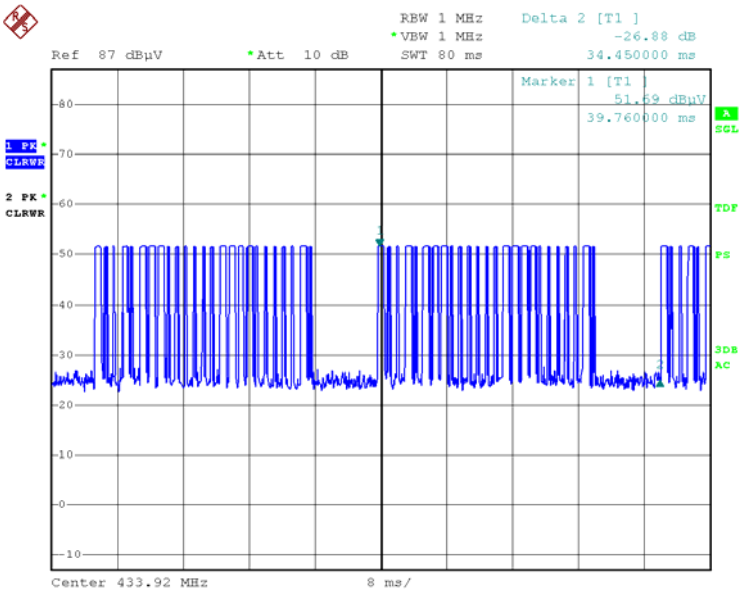

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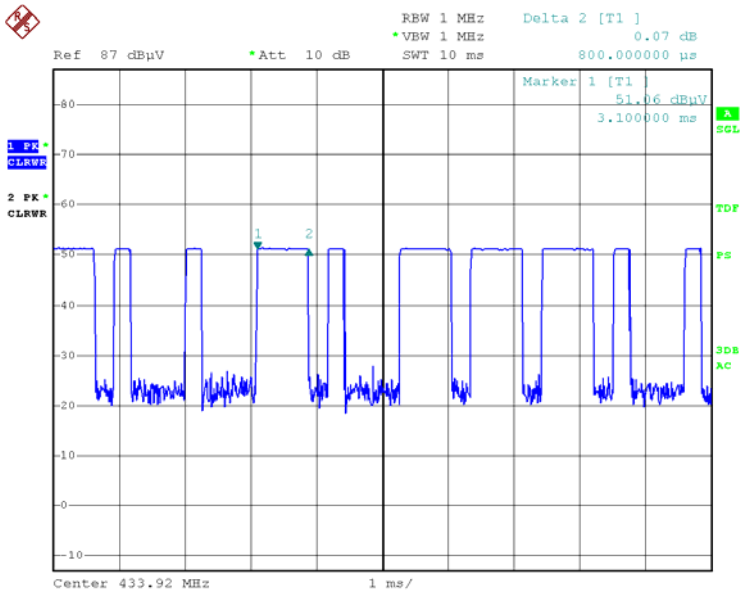

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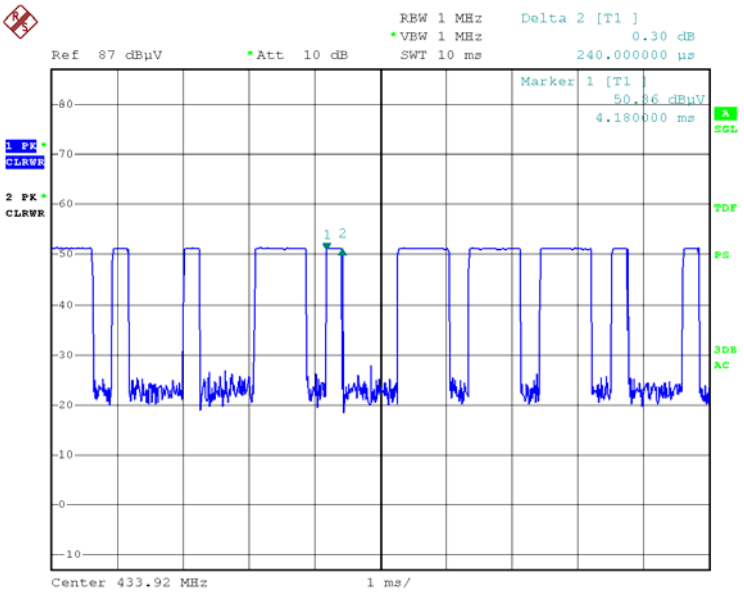

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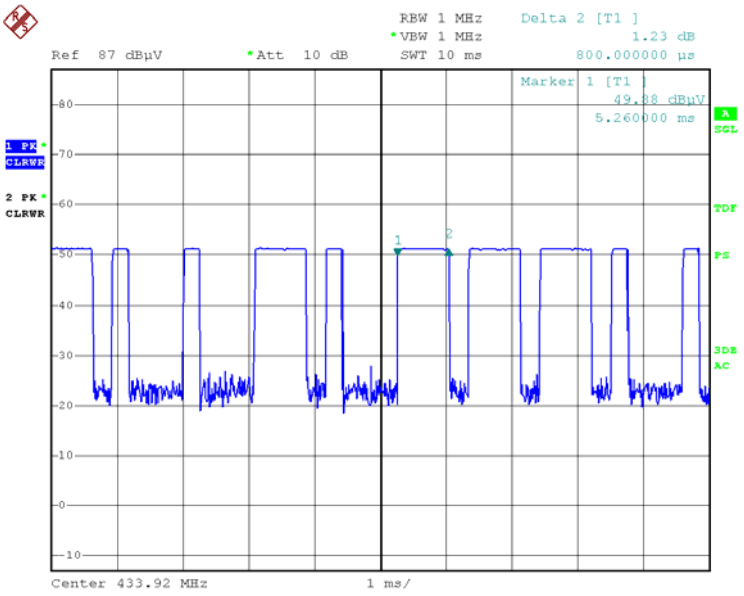

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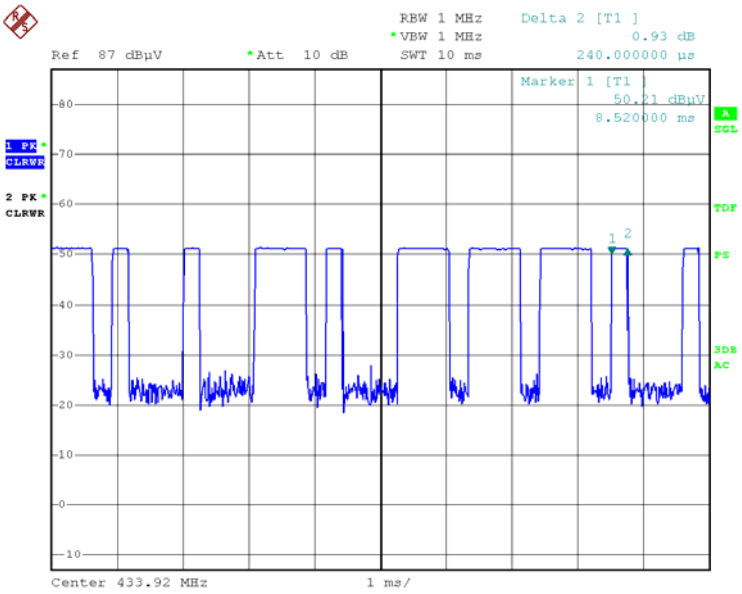

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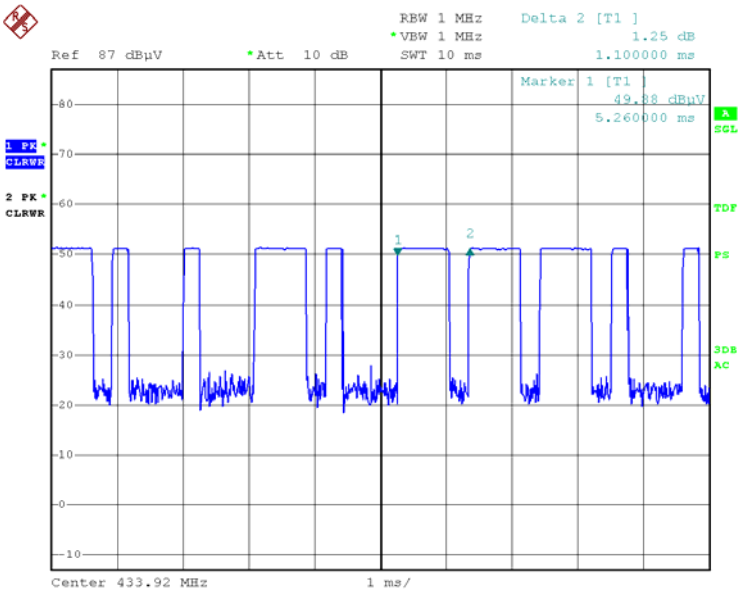

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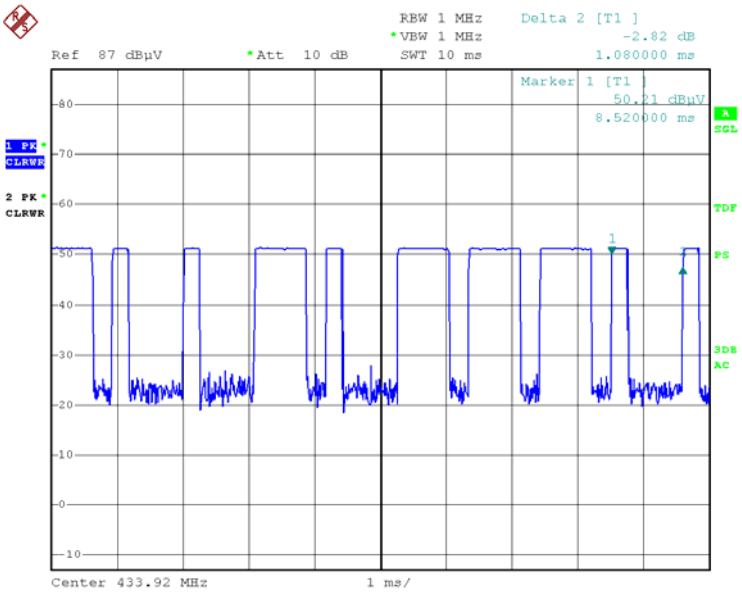

Test Data

Ton+off=34.45ms(which exceeds 0.1 seconds,and use the formula Ton/100ms to calculate the duty-cycle correction factor)

Ton=0.8ms*10+0.24ms*15=11.60

Duty cycle Correction Factor=20*log(Ton/Ton+off)= -9.45 dB

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11. Manufacturer/ Approval holder Declaration

The following identical model(s):

N/A

Belong to the tested device:

Product description: Wireless Remotely Operated Switch
Model name: HM-ZJ-04

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