

APPLICATION CERTIFICATION FCC Part 15C

On Behalf of
Libre Home Inc

In-wall Relay Control
Model No.: SDWRM, SDWDM

FCC ID: 2AQXA-SDWRM

Prepared for : Libre Home Inc
Address : 13 Crestview Ter. Montvale, New Jersey, United States 07645

Prepared by : Shenzhen Accurate Technology Co., Ltd.
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Report No. : ATE20181841
Date of Test : October 19-October 23, 2018
Date of Report : October 24, 2018

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Test Report Certification

Applicant : Libre Home Inc
EUT Description : In-wall Relay Control
Model No. : SDWRM, SDWDM
Trade Name : Libre Home

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.10: 2013

The EUT was tested according to DTS test procedure of August 24, 2018 KDB558074 D01 DTS Meas Guidance v05 for compliance to FCC 47CFR 15.247 requirements

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test : October 19-October 23, 2018
Date of Report : October 24, 2018

Prepared by :

Stan Yang
(Stan Yang, Engineer)

Sean Liu

Approved & Authorized Signer :

(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	In-wall Relay Control
Model Number	:	SDWRM, SDWDM (Note: We hereby state that these models are identical in interior structure, electrical circuits and components, only different in model name, Therefore, only model SDWRM is for tests.)
Radio Device	:	ZigBee
Modulation Type	:	OQPSK
Frequency Range	:	2405-2480MHz
Number of Channels	:	16
Channel Spacing	:	5MHz
Antenna Gain	:	2.8dBi
Antenna Type	:	PCB Antenna
Power Supply	:	AC 120V/60Hz
Max Loading Rate	:	1800W
Applicant	:	Libre Home Inc
Address	:	13 Crestview Ter. Montvale, New Jersey, United States 07645

1.2. Carrier Frequency of Channels

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
11	2405	17	2435	23	2465
12	2410	18	2440	24	2470
13	2415	19	2445	25	2475
14	2420	20	2450	26	2480
15	2425	21	2455		
16	2430	22	2460		

1.3.Special Accessory and Auxiliary Equipment

N/A

1.4.Description of Test Facility

EMC Lab	:	Recognition of accreditation by Federal Communications Commission (FCC) The Designation Number is CN1189 The Registration Number is 708358
		Listed by Innovation, Science and Economic Development Canada (ISED) The Registration Number is 5077A-2
		Accredited by China National Accreditation Service for Conformity Assessment (CNAS) The Registration Number is CNAS L3193
		Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01
Name of Firm	:	Shenzhen Accurate Technology Co., Ltd.
Site Location	:	1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

1.5.Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Cal. Interval
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 06, 2018	One Year
EMI Test Receiver	Rohde&Schwarz	ESR	101817	Jan. 06, 2018	One Year
Spectrum Analyzer	Rohde&Schwarz	FSV-40	101495	Jan. 06, 2018	One Year
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 06, 2018	One Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 06, 2018	One Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 06, 2018	One Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 06, 2018	One Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 06, 2018	One Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 06, 2018	One Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18 G-10SS	N/A	Jan. 06, 2018	One Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2 485-2375/2510 -60/11SS	N/A	Jan. 06, 2018	One Year
Conducted Emission Measurement Software: ES-K1 V1.71					
Radiated Emission Measurement Software: EZ_EMV V1.1.4.2					

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: **Transmitting mode**

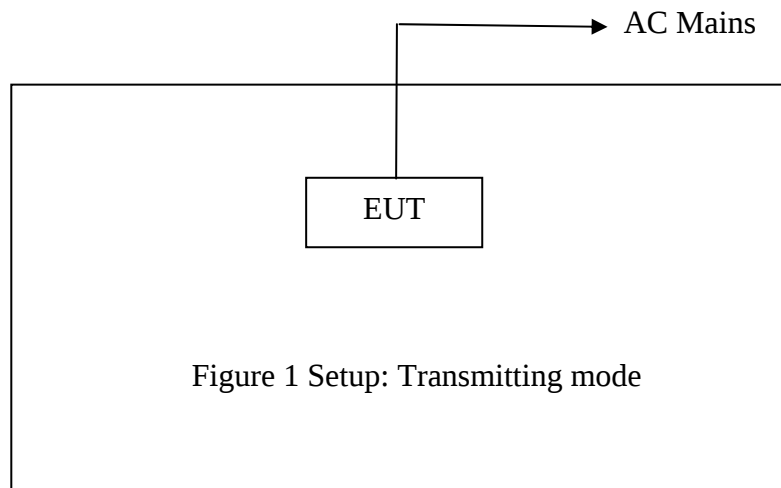
Low Channel: 2405MHz

Middle Channel: 2450MHz

High Channel: 2480MHz

Its duty cycle setting is greater than 98%.

3.2.Configuration and peripherals



4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.247(a)(2)	6dB Bandwidth Test	Compliant
Section 15.247(b)(3)	Maximum Peak Output Power Test	Compliant
Section 15.247(e)	Power Spectral Density Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.247(d) Section 15.209	Radiated Spurious Emission Test	Compliant
Section 15.207	AC Power Line Conducted Emission Test	Compliant
Section 15.203	Antenna Requirement	Compliant

5. 6DB BANDWIDTH TEST

5.1. Block Diagram of Test Setup



5.2. The Requirement For Section 15.247(a)(2)

Section 15.247(a)(2): Systems using digital modulation techniques may operate in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

5.3. EUT Configuration on Measurement

The equipment is installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.4. Operating Condition of EUT

5.4.1. Setup the EUT and simulator as shown as Section 5.1.

5.4.2. Turn on the power of all equipment.

5.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2405-2480MHz. We select 2405MHz, 2450MHz, and 2480MHz TX frequency to transmit.

5.5. Test Procedure

5.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

5.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz.

5.5.3. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

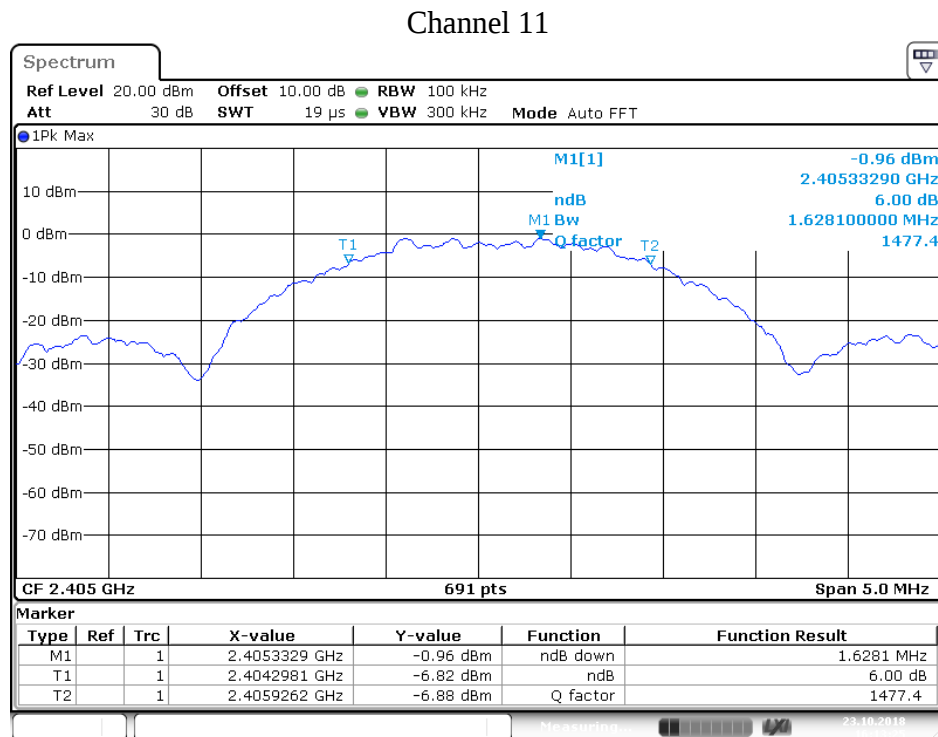
5.6. Test Result

Test Lab: Shielding room

Test Engineer: Star

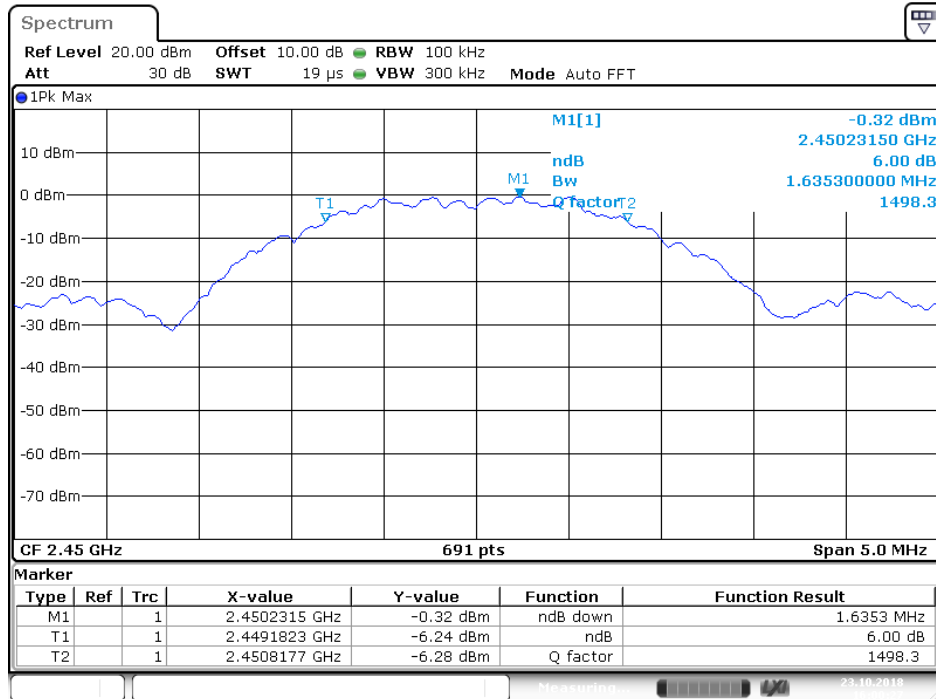
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit(MHz)	Result
11	2405	1.628	0.5	PASS
20	2450	1.635	0.5	PASS
26	2480	1.650	0.5	PASS

The spectrum analyzer plots are attached as below.



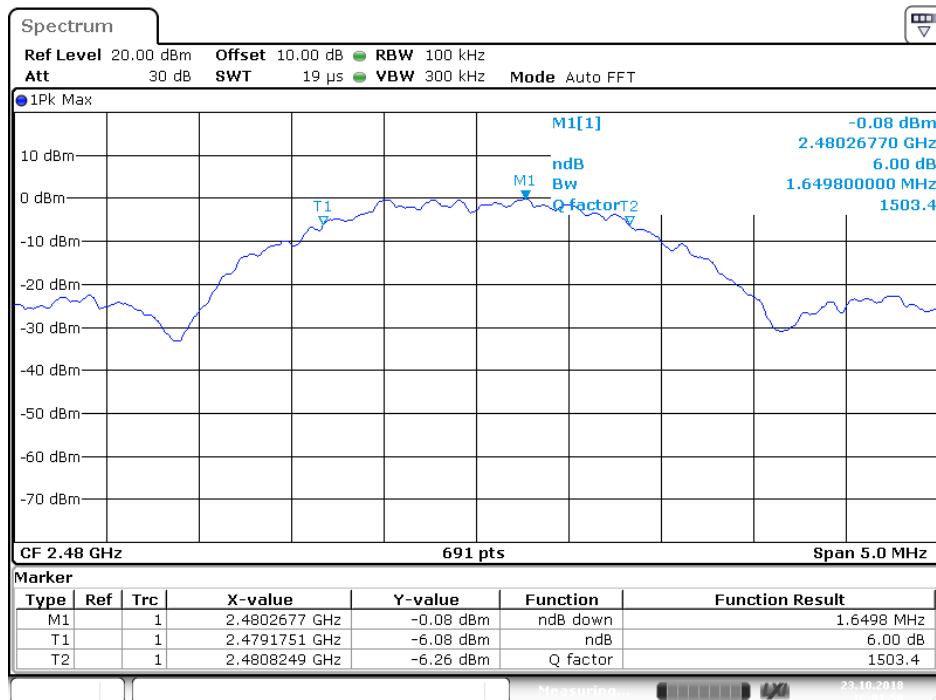
Date: 23.OCT.2018 16:13:26

Channel 20



Date: 23.OCT.2018 16:00:28

Channel 26



Date: 23.OCT.2018 16:01:50

6. MAXIMUM PEAK OUTPUT POWER TEST

6.1. Block Diagram of Test Setup



6.2. The Requirement For Section 15.247(b)(3)

Section 15.247(b)(3): For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt.

6.3. EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.4. Operating Condition of EUT

6.4.1. Setup the EUT and simulator as shown as Section 6.1.

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2405-2480MHz. We select 2405MHz, 2450MHz, and 2480MHz TX frequency to transmit.

6.5. Test Procedure

6.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

6.5.2. Set RBW of spectrum analyzer to 3MHz and VBW to 10MHz.

6.5.3. Measurement the maximum peak output power.

6.6. Test Result

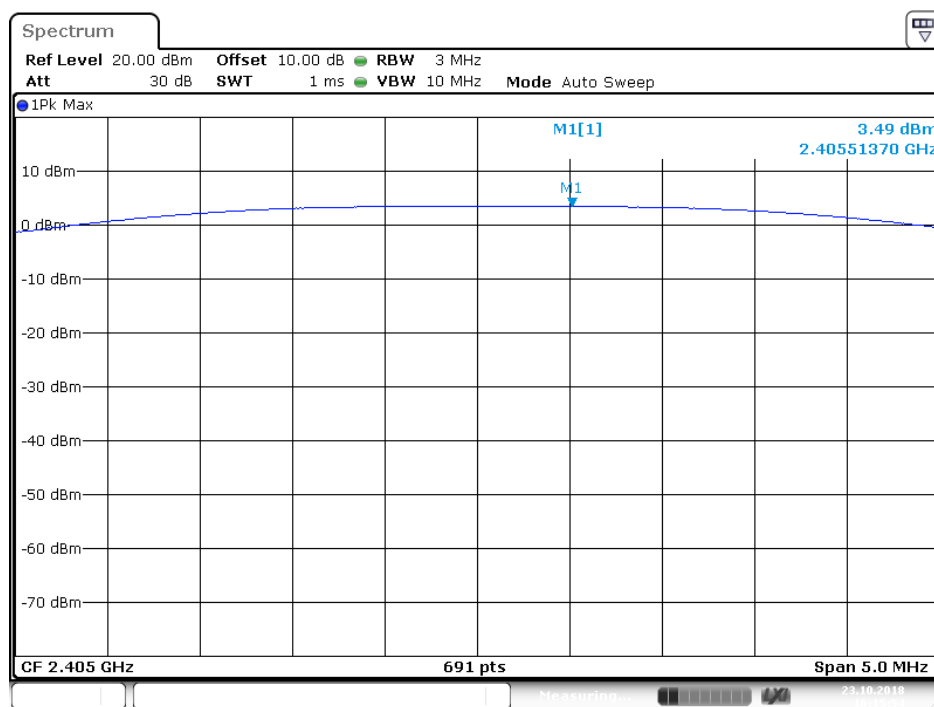
Test Lab: Shielding room

Test Engineer: Star

Channel	Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Result
11	2405	3.49	30	PASS
20	2450	3.97	30	PASS
26	2480	3.88	30	PASS

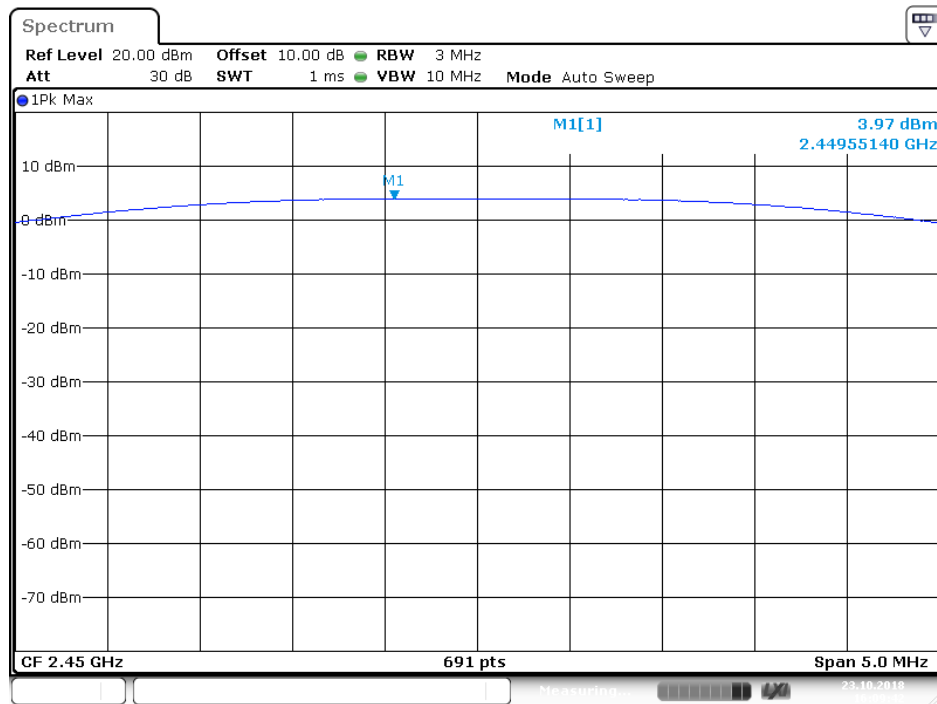
The spectrum analyzer plots are attached as below.

Channel 11



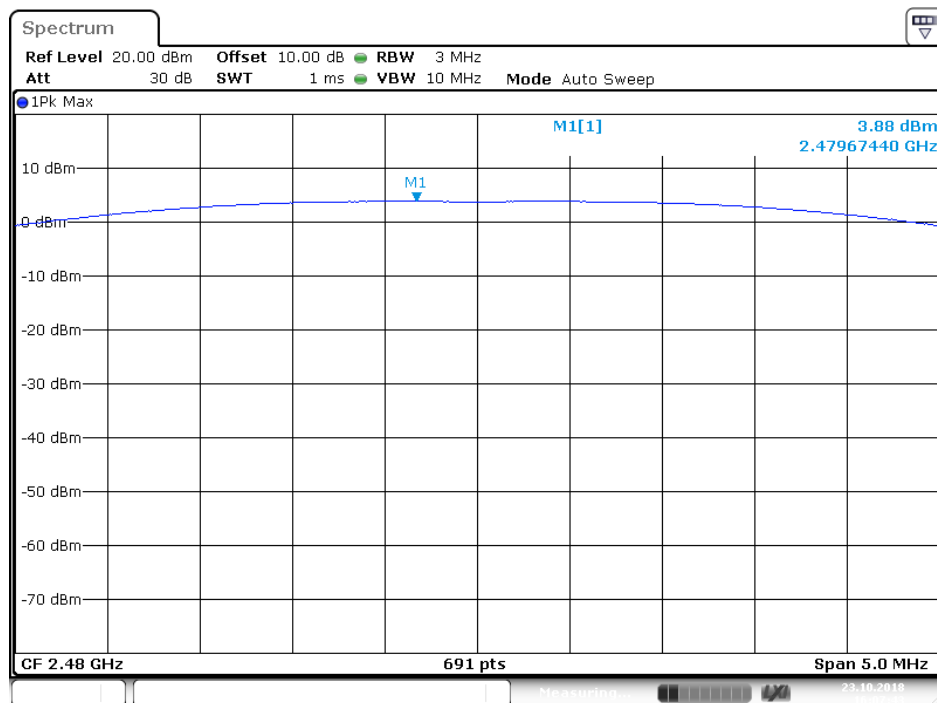
Date: 23.OCT.2018 16:15:55

Channel 20



Date: 23.OCT.2018 16:09:42

Channel 26



Date: 23.OCT.2018 16:07:43

7. POWER SPECTRAL DENSITY TEST

7.1. Block Diagram of Test Setup



7.2. The Requirement For Section 15.247(e)

Section 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

7.3. EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.4. Operating Condition of EUT

7.4.1. Setup the EUT and simulator as shown as Section 7.1.

7.4.2. Turn on the power of all equipment.

7.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2405-2480MHz. We select 2405MHz, 2450MHz, and 2480MHz TX frequency to transmit.

7.5. Test Procedure

7.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

7.5.2. Measurement Procedure PKPSD:

7.5.3. This procedure must be used if maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit, and is optional if the maximum (average) conducted output power was used to demonstrate compliance.

1. Set analyzer center frequency to DTS Channel center frequency.
2. Set the span to 1.5 times the DTS Channel bandwidth.
3. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3kHz) and repeat.

7.5.4. Measurement the maximum power spectral density.

7.6. Test Result

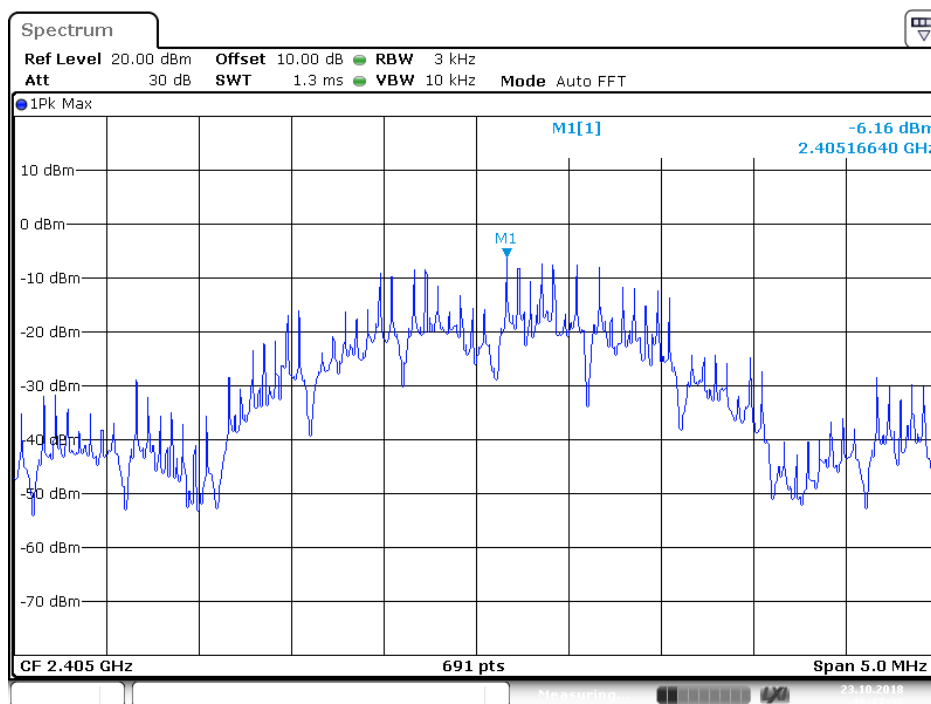
Test Lab: Shielding room

Test Engineer: Star

Channel	Frequency (MHz)	PSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
11	2405	-6.16	8	PASS
20	2450	-6.47	8	PASS
26	2480	-6.31	8	PASS

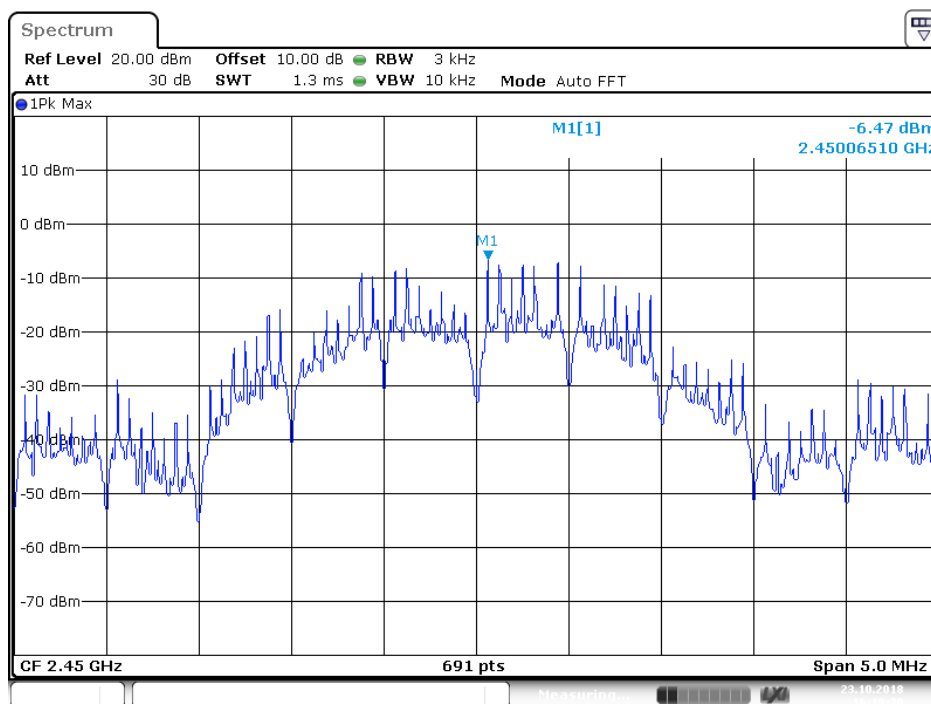
The spectrum analyzer plots are attached as below.

Channel 11



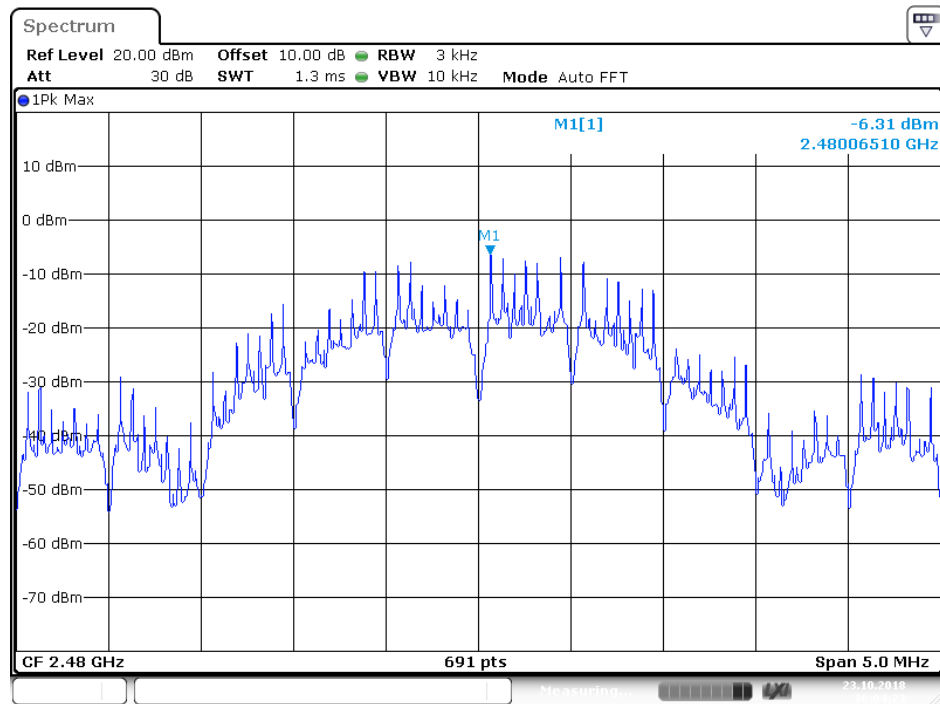
Date: 23.OCT.2018 16:17:33

Channel 20



Date: 23.OCT.2018 16:10:39

Channel 26



Date: 23.OCT.2018 16:04:24

8. BAND EDGE COMPLIANCE TEST

8.1. Block Diagram of Test Setup



8.2. The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

8.3. EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.4. Operating Condition of EUT

8.4.1. Setup the EUT and simulator as shown as Section 8.1.

8.4.2. Turn on the power of all equipment.

8.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2405-2480MHz. We select 2405MHz, 2480MHz TX frequency to transmit.

8.5. Test Procedure

Conducted Band Edge:

8.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.

8.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz.

Radiate Band Edge:

8.5.3. The EUT is placed on a turntable, which is 1.5m above the ground plane and worked at highest radiated power.

8.5.4. The turntable was rotated for 360 degrees to determine the position of maximum emission level.

8.5.5. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

8.5.6. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

8.5.7. RBW=1MHz, VBW=1MHz

8.5.8. The band edges was measured and recorded.

8.6. Test Result

Pass.

Test Lab: Shielding room

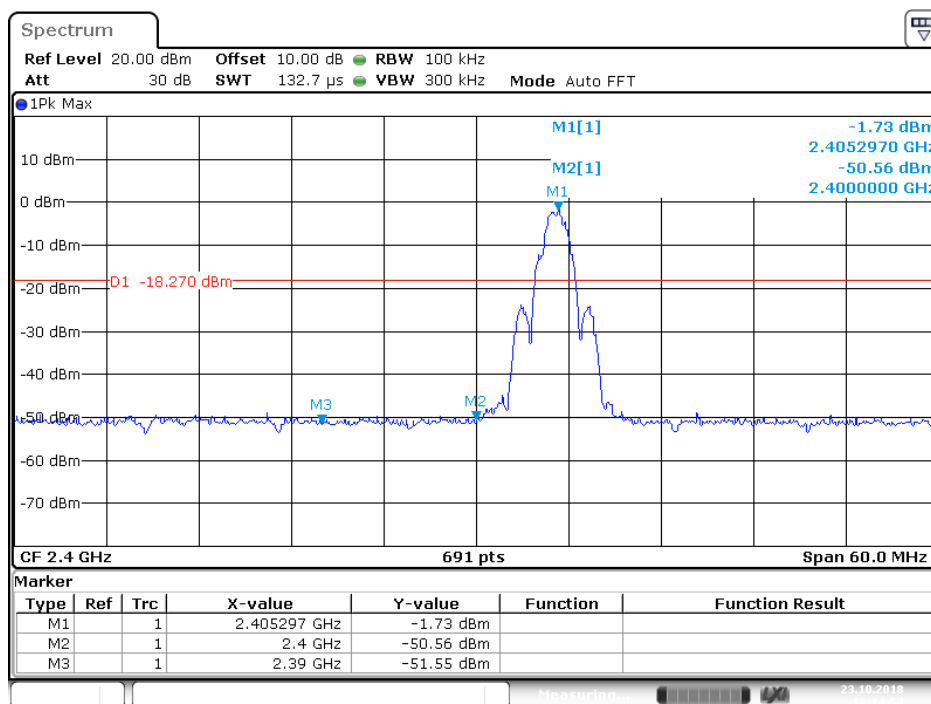
Test Engineer: Star

Conducted Band Edge Result

Channel	Frequency	Delta peak to band emission	Limit(dBc)
11	2405MHz	48.83	> 20
26	2480MHz	47.52	> 20

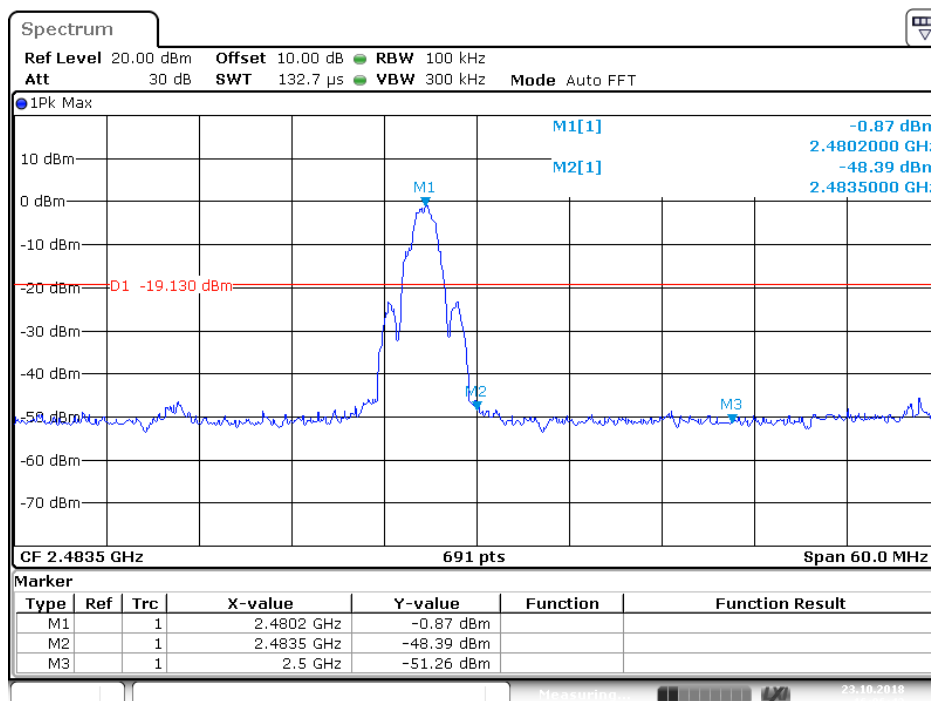
The spectrum analyzer plots are attached as below.

Channel 11



Date: 23.OCT.2018 16:14:55

Channel 26



Date: 23.OCT.2018 16:06:42



Radiated Band Edge Result

ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

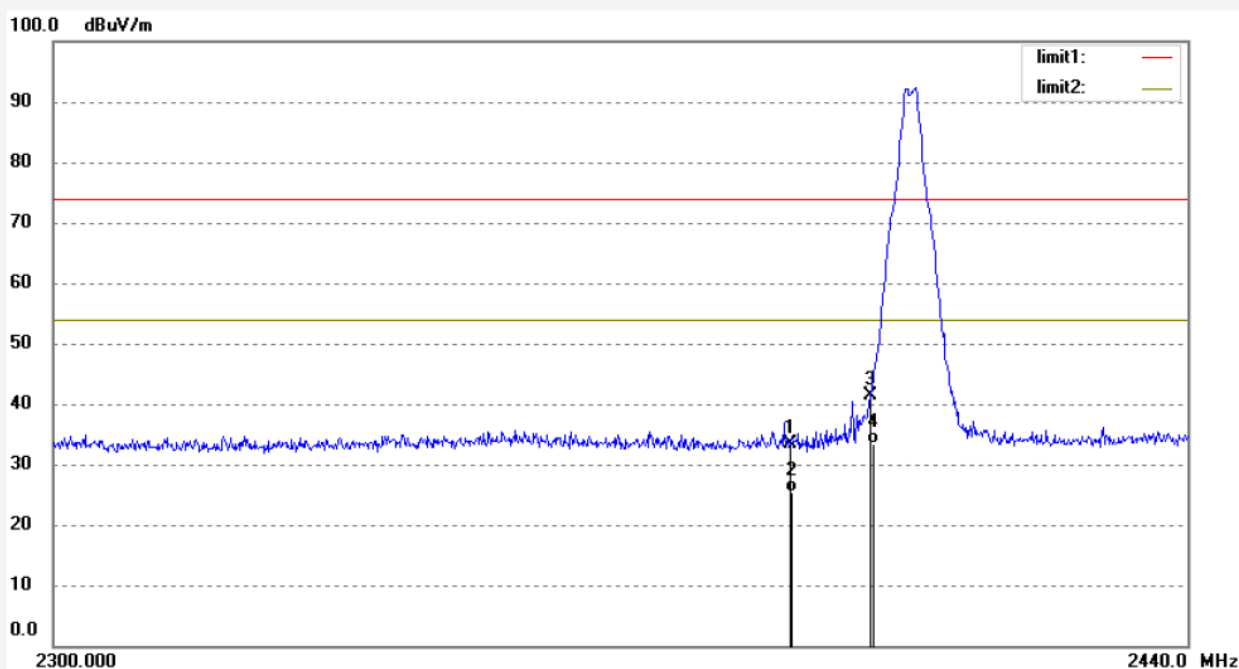
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2018 #520
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2405MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 10/31/35
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841

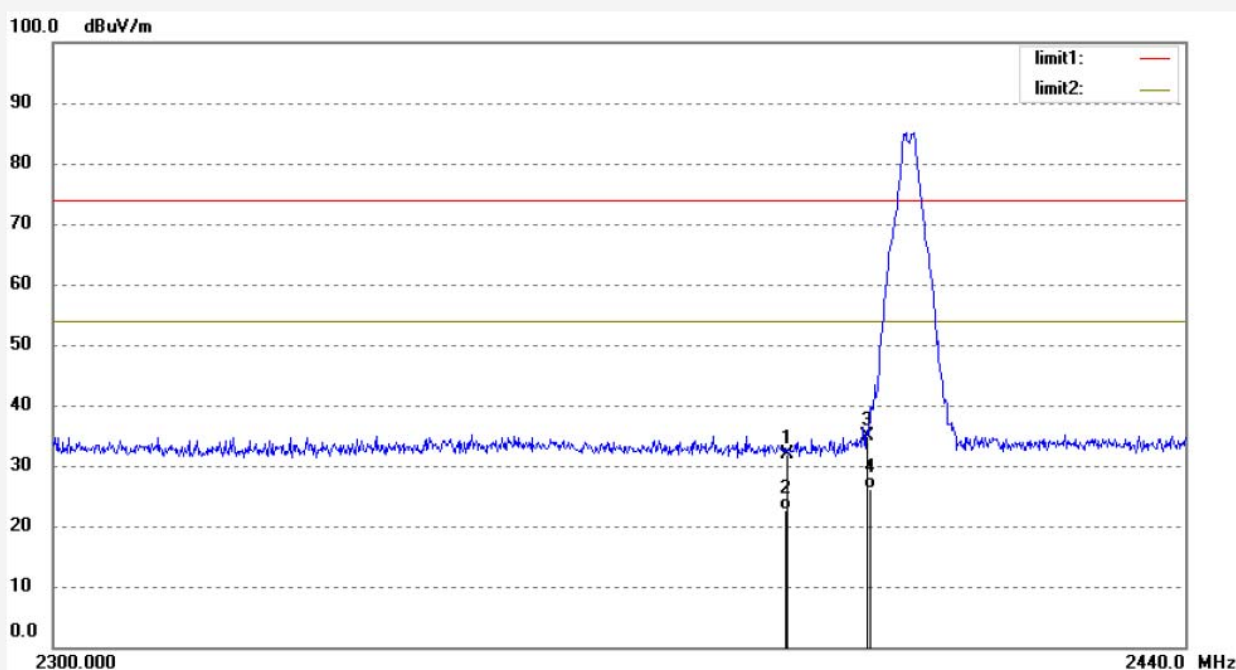


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	41.37	-8.00	33.37	74.00	-40.63	peak	200	145	
2	2390.000	33.47	-8.00	25.47	54.00	-28.53	AVG	200	122	
3	2400.000	49.23	-7.97	41.26	74.00	-32.74	peak	200	86	
4	2400.000	41.25	-7.97	33.28	54.00	-20.72	AVG	200	256	

Job No.: STAR2018 #519
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2405MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 10/29/56
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841

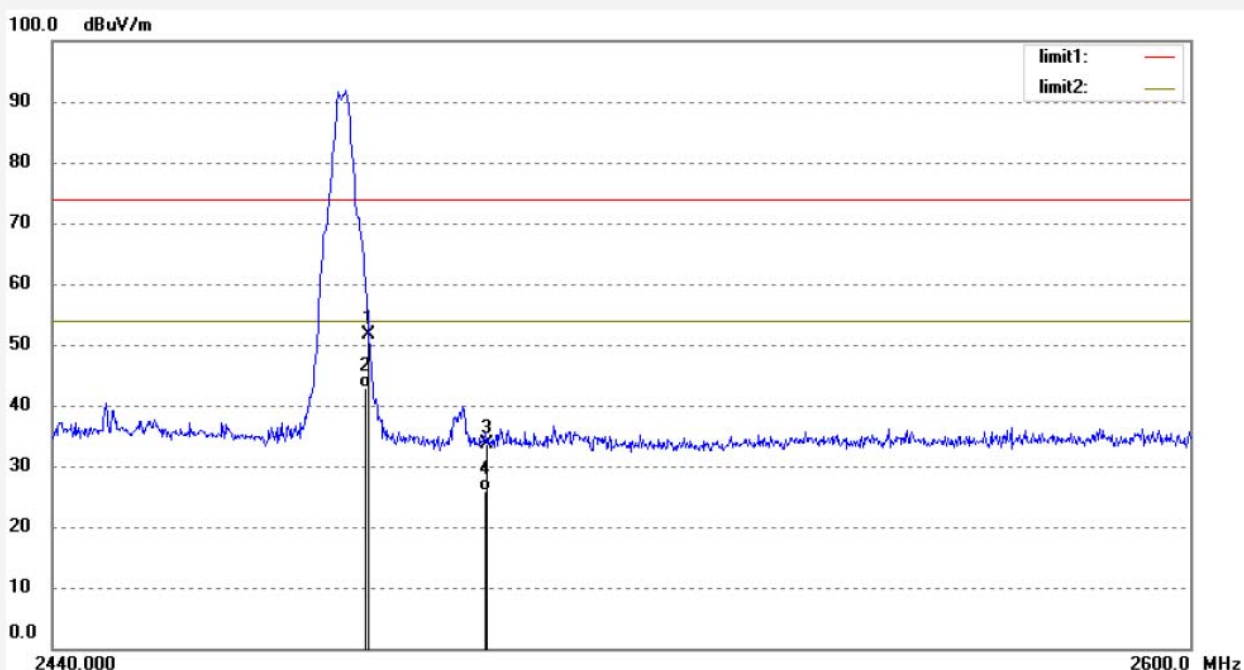


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	39.76	-8.00	31.76	74.00	-42.24	peak	150	299	
2	2390.000	30.59	-8.00	22.59	54.00	-31.41	AVG	150	215	
3	2400.000	42.90	-7.97	34.93	74.00	-39.07	peak	150	135	
4	2400.000	34.14	-7.97	26.17	54.00	-27.83	AVG	150	305	

Job No.: STAR2018 #517
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2480MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 10/25/51
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841

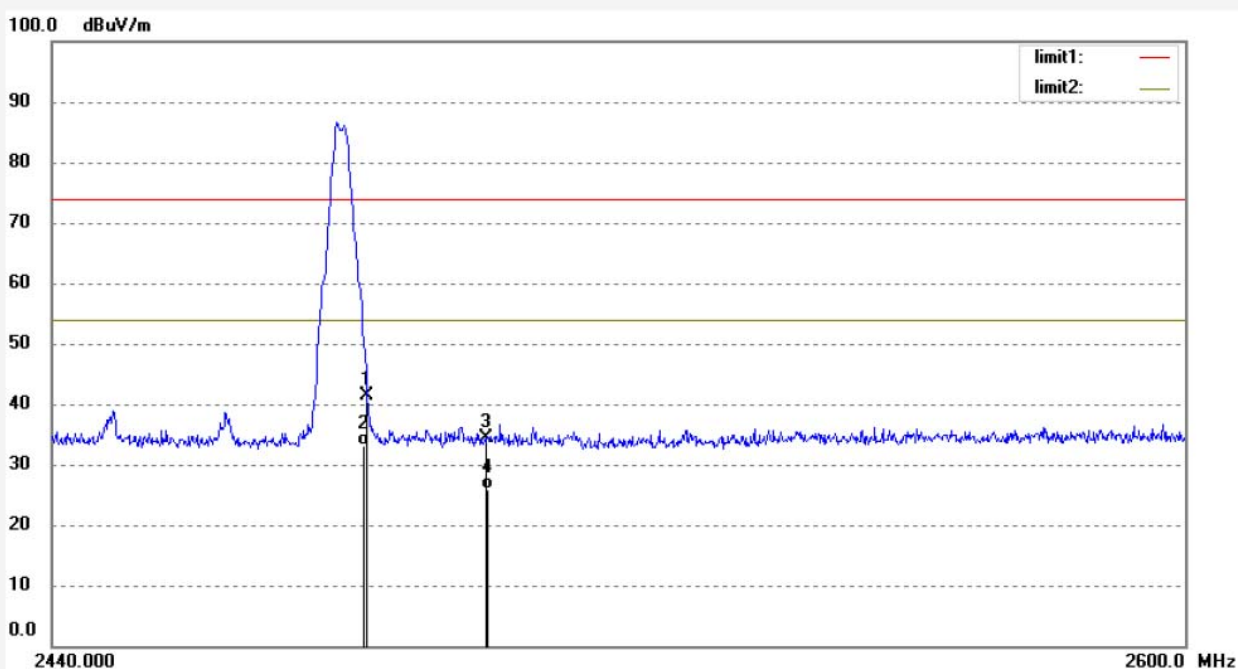


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	59.46	-7.76	51.70	74.00	-22.30	peak	200	314	
2	2483.500	50.57	-7.76	42.81	54.00	-11.19	AVG	200	245	
3	2500.000	41.45	-7.71	33.74	74.00	-40.26	peak	200	222	
4	2500.000	33.64	-7.71	25.93	54.00	-28.07	AVG	200	192	

Job No.: STAR2018 #518
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2480MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 10/27/41
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	49.16	-7.76	41.40	74.00	-32.60	peak	150	45	
2	2483.500	41.00	-7.76	33.24	54.00	-20.76	AVG	150	136	
3	2500.000	41.97	-7.71	34.26	74.00	-39.74	peak	150	220	
4	2500.000	33.57	-7.71	25.86	54.00	-28.14	AVG	150	140	

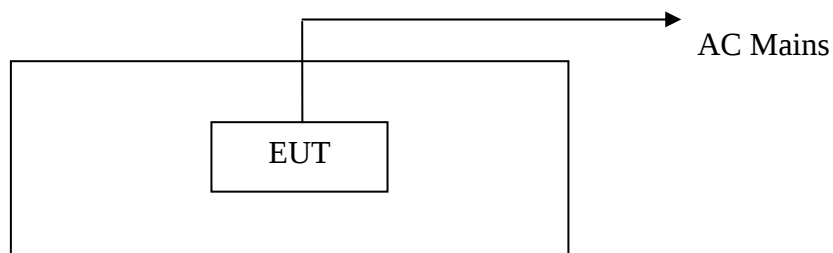
Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:
Result = Reading + Corrected Factor

9. RADIATED SPURIOUS EMISSION TEST

9.1. Block Diagram of Test Setup

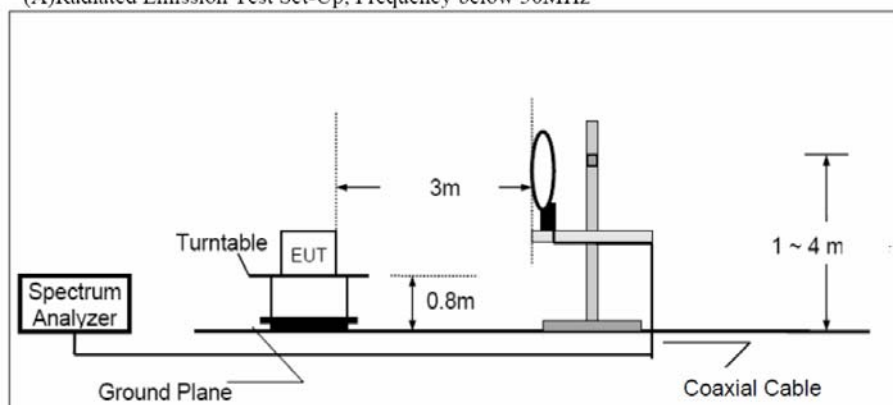
9.1.1. Block diagram of connection between the EUT and peripherals



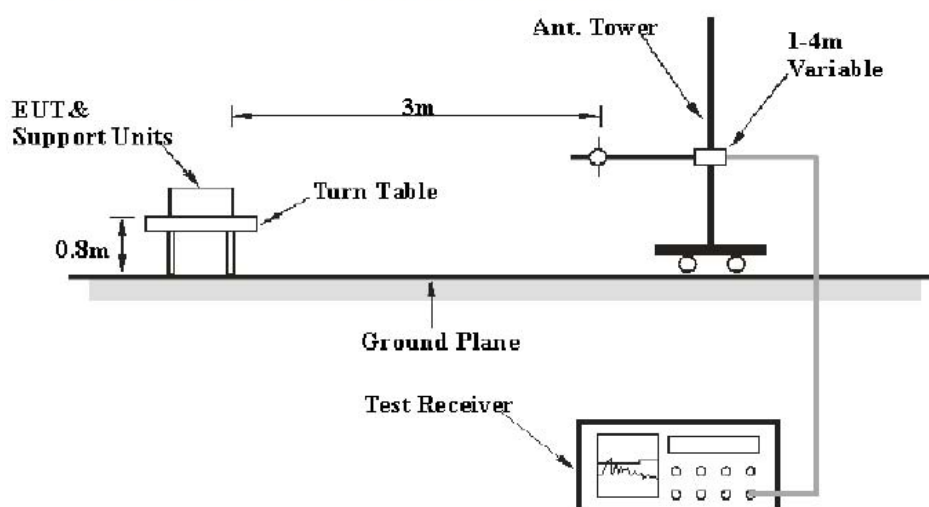
Setup: Transmitting mode

9.1.2. Semi-Anechoic Chamber Test Setup Diagram

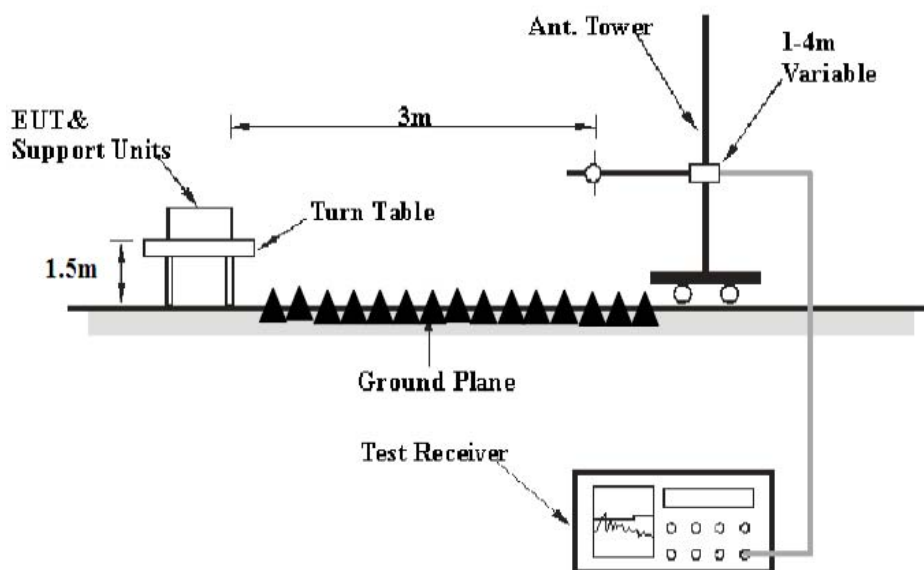
(A) Radiated Emission Test Set-Up, Frequency below 30MHz



(B) Radiated Emission Test Set-Up, Frequency 30MHz-1GHz



(C) Radiated Emission Test Set-Up, Frequency above 1GHz



9.2.The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

9.3. Restricted bands of operation

9.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510

²Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

9.4.Configuration of EUT on Measurement

The equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.5. Operating Condition of EUT

9.5.1. Setup the EUT and simulator as shown as Section 9.1.

9.5.2. Turn on the power of all equipment.

9.5.3. Let the EUT work in TX modes measure it. The transmit frequency are 2405-2480MHz. We select 2405MHz, 2450MHz, and 2480MHz TX frequency to transmit.

9.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground (Below 1GHz). The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground (Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. This EUT was tested in 3 orthogonal positions and the worst case position data was reported.

The bandwidth of test receiver is set at 9 kHz in below 30MHz. and set at 120 kHz in 30-1000MHz, and 1MHz in above 1000MHz.

The final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector. The field strength is calculated by adding the antenna factor, and cable loss, and subtracting the amplifier gain from the measured reading.

9.7.Data Sample

Frequency (MHz)	Reading (dB μ v)	Factor (dB/m)	Result (dB μ v/m)	Limit (dB μ v/m)	Margin (dB)	Remark
X.XX	43.85	-22.22	21.63	43.5	-21.87	QP

Frequency(MHz) = Emission frequency in MHz

Reading(dB μ v) = Uncorrected Analyzer/Receiver reading

Factor (dB/m) = Antenna factor + Cable Loss – Amplifier gain

Result(dB μ v/m) = Reading(dB μ v) + Factor(dB/m)

Limit (dB μ v/m) = Limit stated in standard

Margin (dB) = Result(dB μ v/m) - Limit (dB μ v/m)

QP = Quasi-peak Reading

Calculation Formula:

Margin(dB) = Result (dB μ V/m)–Limit(dB μ V/m)

Result(dB μ V/m)= Reading(dB μ V)+ Factor(dB/m)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

9.8.The Field Strength of Radiation Emission Measurement Results

Pass.

Test Lab: 3m Anechoic chamber

Test Engineer: Star

The frequency range from 9kHz to 26.5GHz is checked.

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

2. The radiation emissions from 9kHz-30MHz and 18-26.5GHz are not reported, because the test values lower than the limits of 20dB.

The spectrum analyzer plots are attached as below.

Below 1GHz



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Site: 1# Chamber

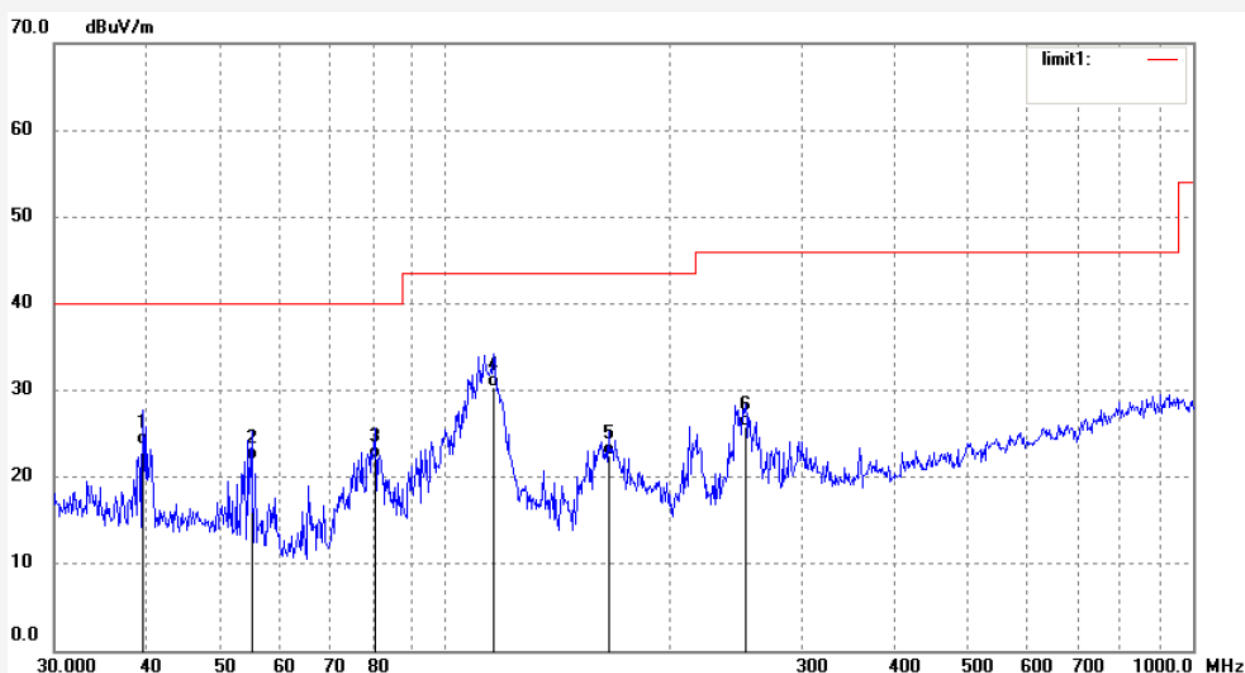
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2018 #505
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2405MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 9/57/21
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	39.4588	43.10	-19.39	23.71	40.00	-16.29	QP	200	172	
2	55.0944	43.57	-21.61	21.96	40.00	-18.04	QP	200	193	
3	80.8042	45.10	-22.97	22.13	40.00	-17.87	QP	200	231	
4	116.0391	50.00	-19.55	30.45	43.50	-13.05	QP	200	233	
5	165.4716	43.27	-20.76	22.51	43.50	-20.99	QP	200	258	
6	252.2523	43.55	-17.82	25.73	46.00	-20.27	QP	200	321	

Job No.: STAR2018 #506

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: In-wall Relay Control

Mode: TX 2405MHz

Model: SDWRM

Manufacturer: Libre Home Inc

Polarization: Vertical

Power Source: AC 120V/60Hz

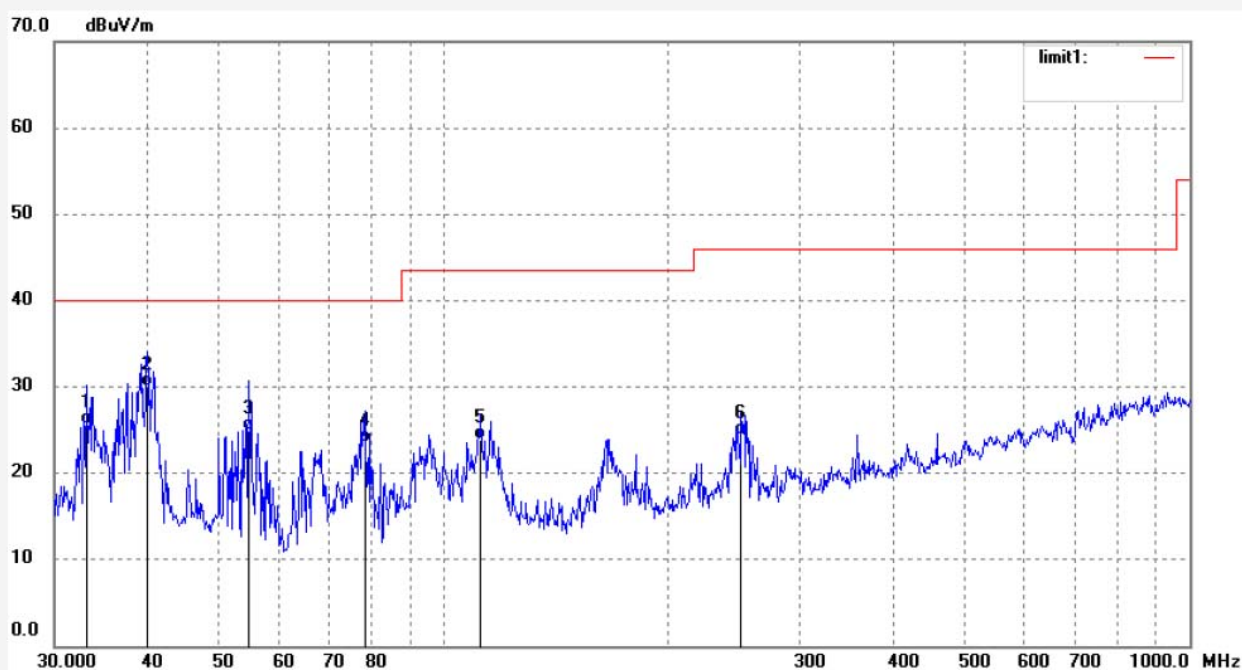
Date: 18/10/20/

Time: 9/58/56

Engineer Signature: star

Distance:

Note: Report No.: ATE20181841

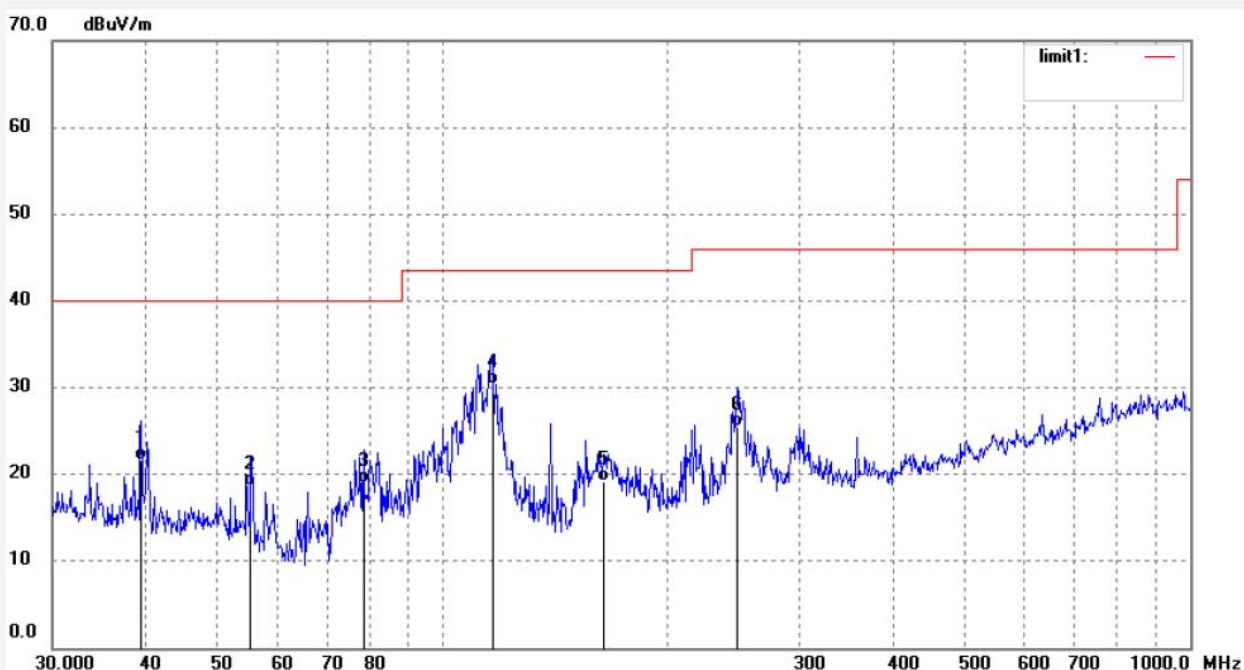


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.1015	43.70	-18.11	25.59	40.00	-14.41	QP	100	40	
2	40.0173	49.47	-19.53	29.94	40.00	-10.06	QP	100	132	
3	54.7086	45.00	-20.06	24.94	40.00	-15.06	QP	100	59	
4	78.2888	48.13	-24.67	23.46	40.00	-16.54	QP	100	133	
5	112.0328	43.24	-19.42	23.82	43.50	-19.68	QP	100	180	
6	250.4859	42.14	-17.81	24.33	46.00	-21.67	QP	100	236	

Job No.: STAR2018 #508
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2450MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 10/01/17
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841

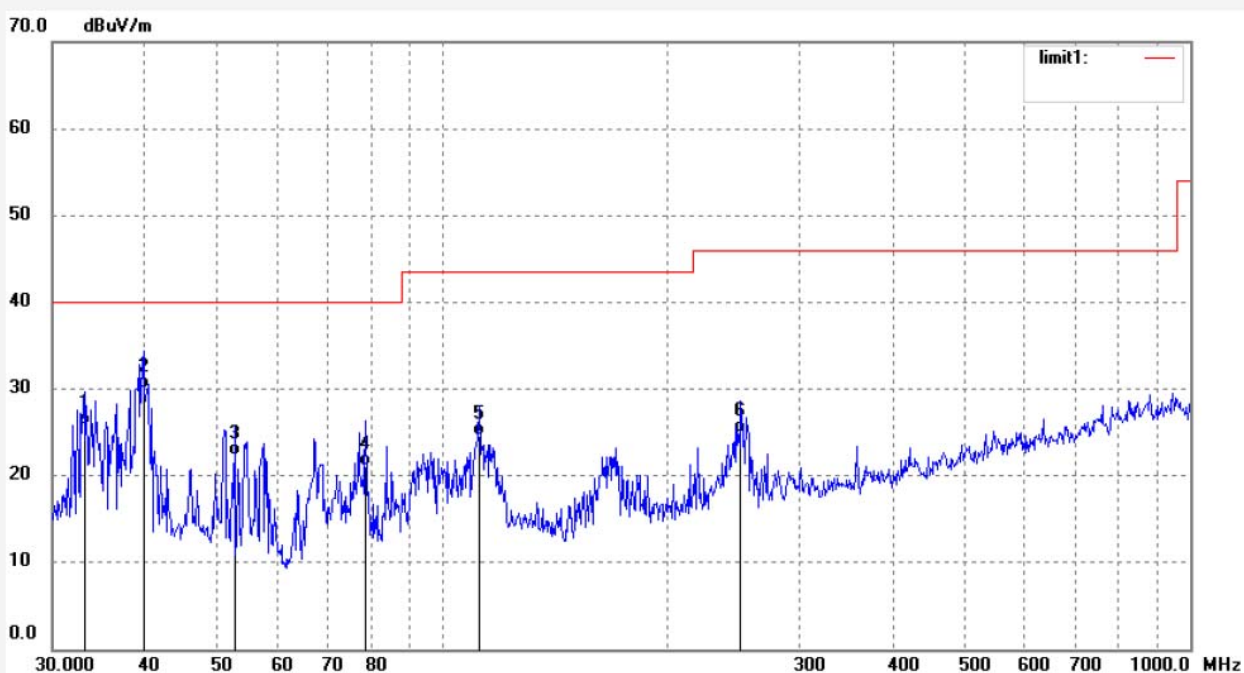


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	39.4587	41.00	-19.39	21.61	40.00	-18.39	QP	200	322	
2	55.2882	40.20	-21.64	18.56	40.00	-21.44	QP	200	320	
3	78.2888	42.69	-23.67	19.02	40.00	-20.98	QP	200	125	
4	116.4475	50.00	-19.56	30.44	43.50	-13.06	QP	200	58	
5	164.3129	40.00	-20.83	19.17	43.50	-24.33	QP	200	246	
6	247.8594	43.25	-17.81	25.44	46.00	-20.56	QP	200	218	

Job No.: STAR2018 #507
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2450MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 9/59/48
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.1015	44.00	-18.11	25.89	40.00	-14.11	QP	100	175	
2	39.7370	49.50	-19.46	30.04	40.00	-9.96	QP	100	133	
3	52.6345	42.14	-19.91	22.23	40.00	-17.77	QP	100	250	
4	78.8409	45.62	-24.53	21.09	40.00	-18.91	QP	100	192	
5	112.0327	44.00	-19.42	24.58	43.50	-18.92	QP	100	224	
6	250.4858	42.69	-17.81	24.88	46.00	-21.12	QP	100	139	



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Job No.: STAR2018 #509

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: In-wall Relay Control

Mode: TX 2480MHz

Model: SDWRM

Manufacturer: Libre Home Inc

Polarization: Horizontal

Power Source: AC 120V/60Hz

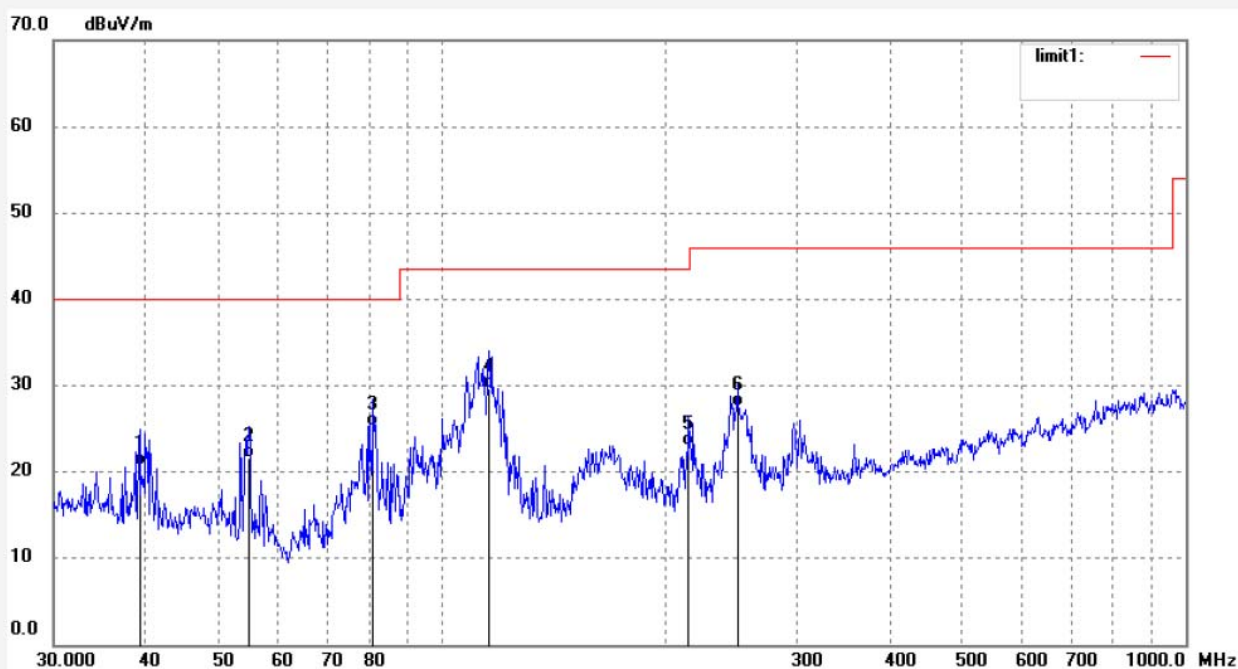
Date: 18/10/20/

Time: 10/03/08

Engineer Signature: star

Distance:

Note: Report No.: ATE20181841

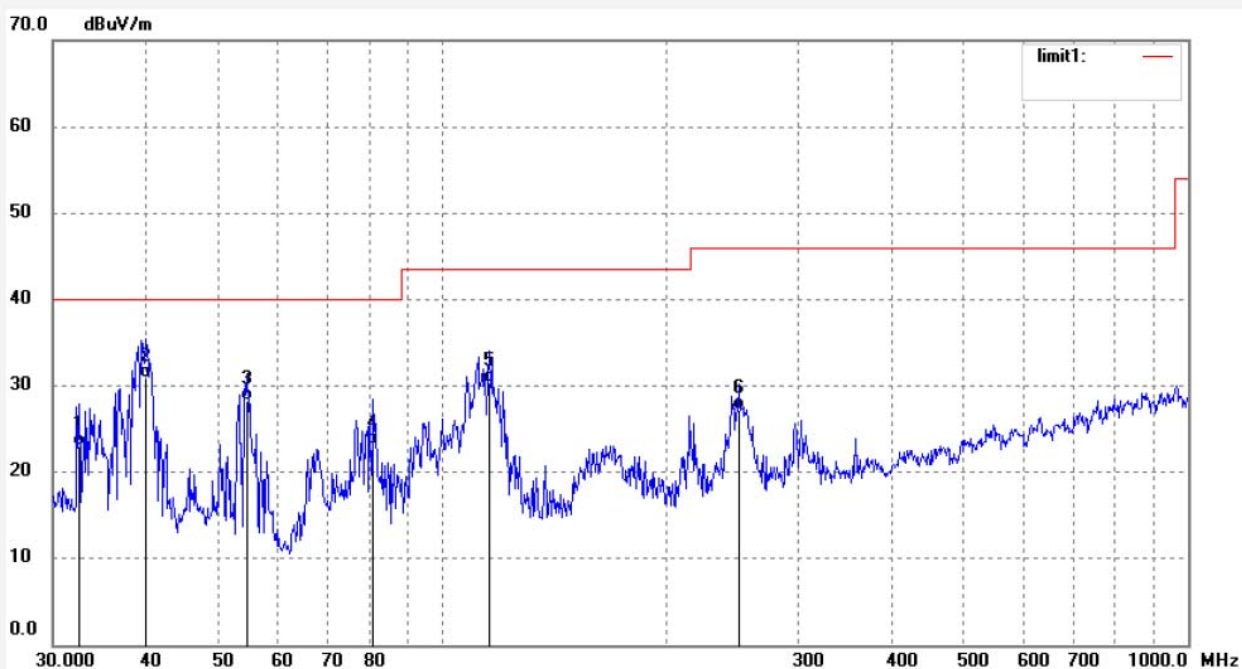


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	39.1824	40.10	-19.33	20.77	40.00	-19.23	QP	200	99	
2	54.9010	41.70	-20.08	21.62	40.00	-18.38	QP	200	41	
3	80.8041	48.30	-22.97	25.33	40.00	-14.67	QP	200	103	
4	115.6321	49.14	-19.55	29.59	43.50	-13.91	QP	200	258	
5	214.6063	41.69	-18.67	23.02	43.50	-20.48	QP	200	351	
6	249.6074	45.36	-17.81	27.55	46.00	-18.45	QP	200	256	

Job No.: STAR2018 #510
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2480MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 10/04/22
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	32.5248	41.00	-18.05	22.95	40.00	-17.05	QP	100	259	
2	40.0172	50.40	-19.53	30.87	40.00	-9.13	QP	100	103	
3	54.7085	48.30	-20.06	28.24	40.00	-11.76	QP	100	144	
4	80.8041	47.23	-23.97	23.26	40.00	-16.74	QP	100	179	
5	115.6321	50.00	-19.55	30.45	43.50	-13.05	QP	100	266	
6	249.6074	44.96	-17.81	27.15	46.00	-18.85	QP	100	283	

Above 1GHz



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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

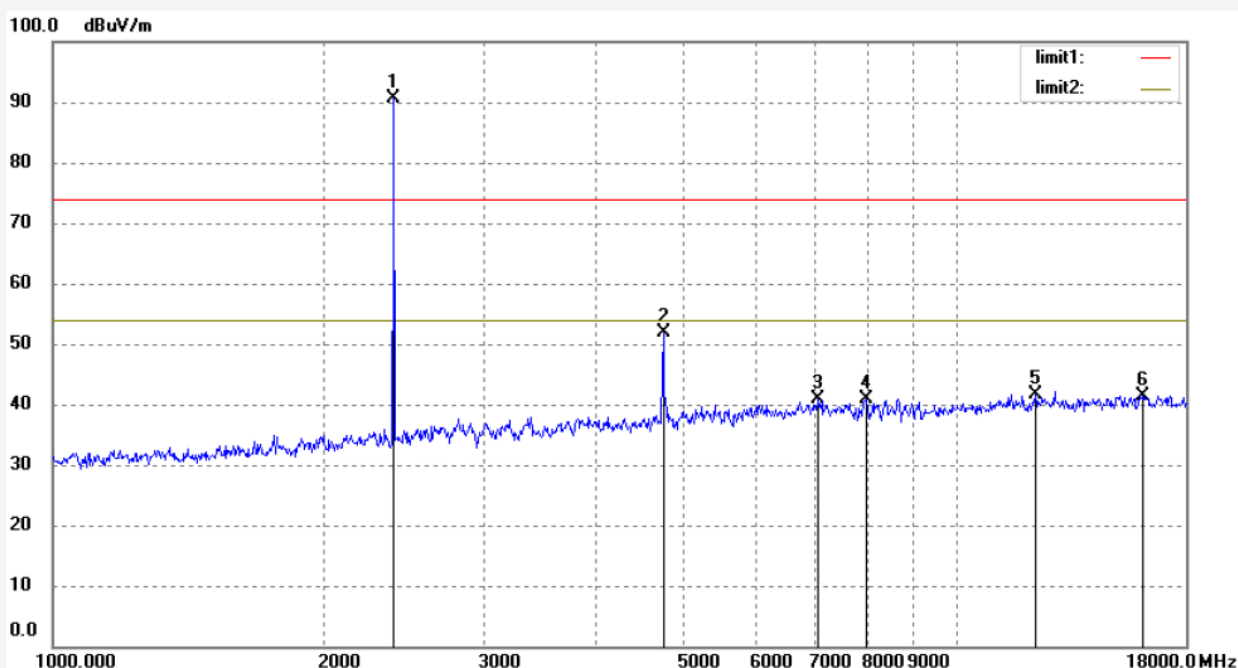
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR2018 #512
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2405MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 10/11/44
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841

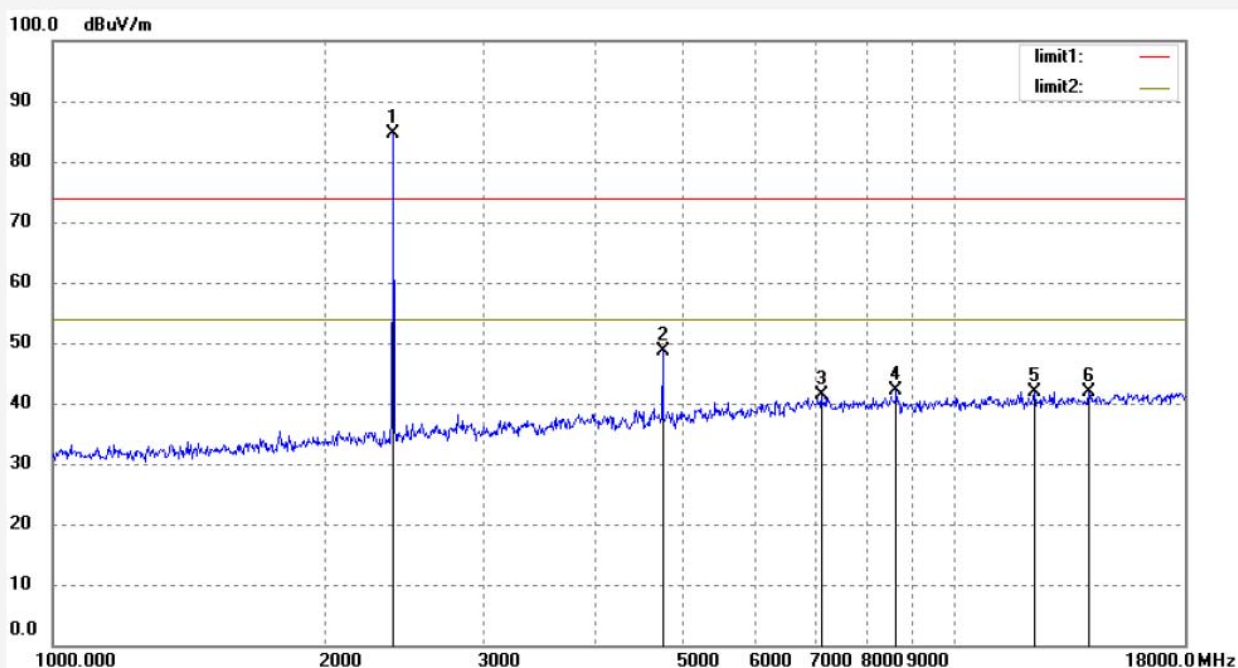


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2405.059	98.69	-8.00	90.69			peak	200	355	
2	4810.051	54.39	-2.48	51.91	74.00	-22.09	peak	200	126	
3	7050.590	39.03	1.86	40.89	74.00	-33.11	peak	200	25	
4	7967.435	37.61	3.30	40.91	74.00	-33.09	peak	200	166	
5	12257.686	34.00	7.69	41.69	74.00	-32.31	peak	200	168	
6	16115.207	28.52	12.92	41.44	74.00	-32.56	peak	200	28	

Job No.: STAR2018 #511
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2405MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 10/10/08
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841

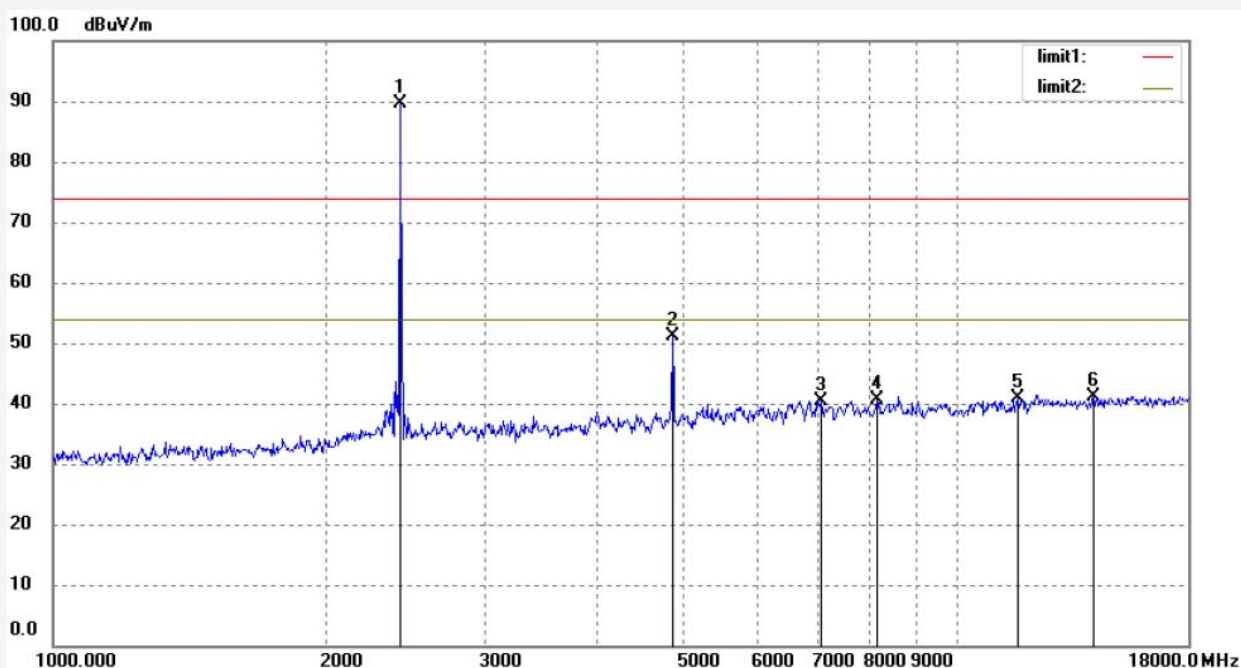


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2405.059	92.54	-8.00	84.54			peak	150	333	
2	4810.051	51.08	-2.48	48.60	74.00	-25.40	peak	150	256	
3	7112.426	39.31	1.95	41.26	74.00	-32.74	peak	150	210	
4	8618.860	37.65	4.39	42.04	74.00	-31.96	peak	150	282	
5	12257.686	34.27	7.69	41.96	74.00	-32.04	peak	150	179	
6	14095.689	29.64	12.19	41.83	74.00	-32.17	peak	150	182	

Job No.: STAR2018 #513
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2450MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 10/14/29
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841

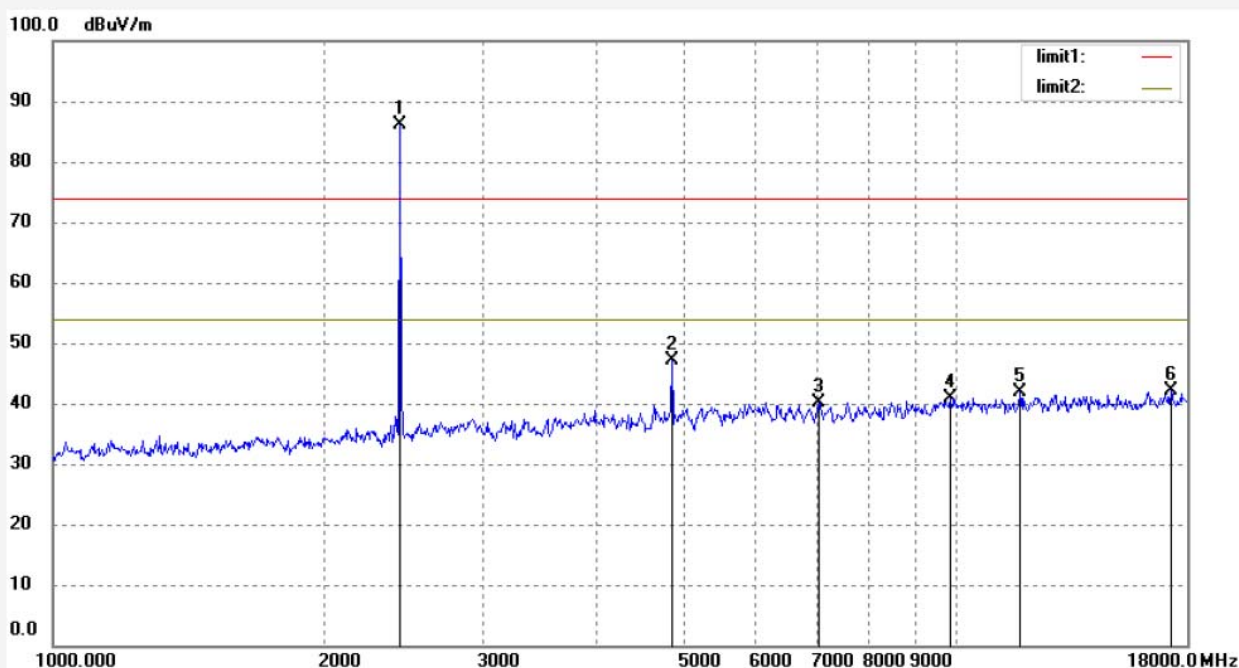


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2450.062	97.54	-7.91	89.63	74.00	-22.85	peak	200	55	
2	4900.038	53.31	-2.16	51.15	74.00	-33.55	peak	200	132	
3	7071.142	38.55	1.90	40.45	74.00	-33.38	peak	200	148	
4	8155.141	36.98	3.64	40.62	74.00	-33.15	peak	200	210	
5	11665.905	34.09	6.76	40.85	74.00	-32.88	peak	200	256	
6	14136.778	28.71	12.41	41.12	74.00	-32.88	peak	200	289	

Job No.: STAR2018 #514
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2450MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 10/17/33
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841

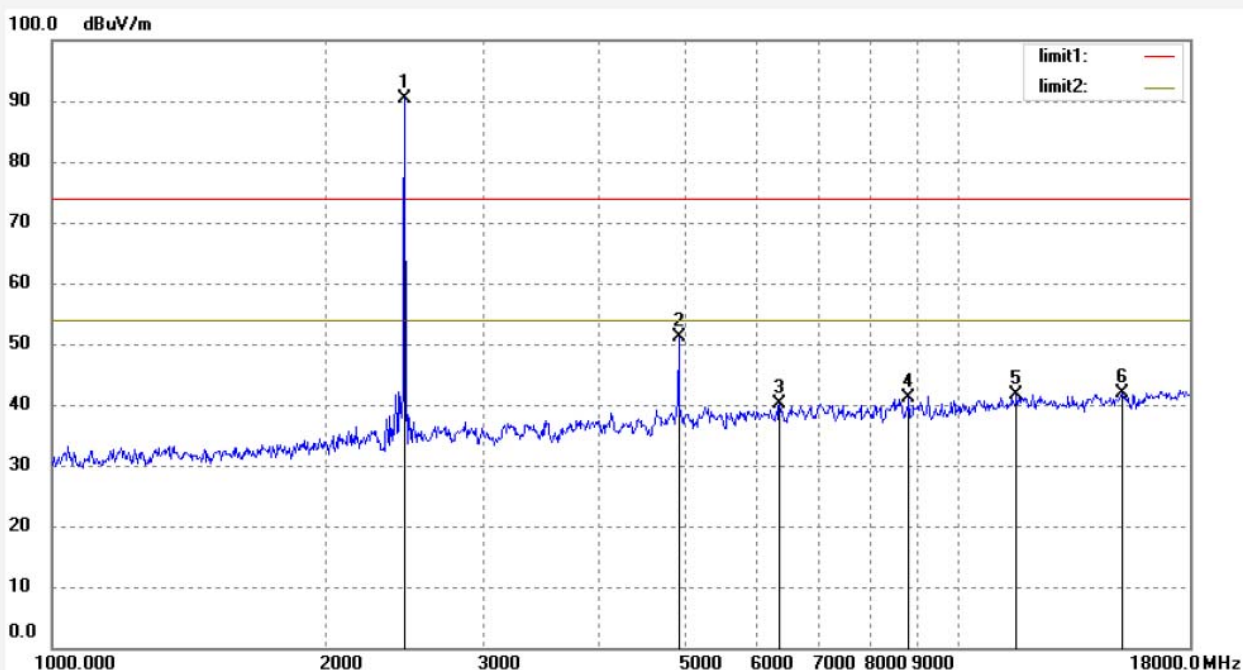


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2450.062	93.97	-7.91	86.06			peak	150	300	
2	4900.038	49.29	-2.16	47.13	74.00	-26.87	peak	150	145	
3	7050.590	38.29	1.86	40.15	74.00	-33.85	peak	150	222	
4	9853.701	35.47	5.45	40.92	74.00	-33.08	peak	150	236	
5	11768.220	34.98	6.88	41.86	74.00	-32.14	peak	150	268	
6	17281.236	25.88	16.13	42.01	74.00	-31.99	peak	150	304	

Job No.: STAR2018 #516
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: In-wall Relay Control
Mode: TX 2480MHz
Model: SDWRM
Manufacturer: Libre Home Inc

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 18/10/20/
Time: 10/22/33
Engineer Signature: star
Distance:

Note: Report No.: ATE20181841



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.034	98.31	-7.84	90.47			peak	200	88	
2	4960.044	53.16	-1.92	51.24	74.00	-22.76	peak	200	102	
3	6349.172	39.40	0.71	40.11	74.00	-33.89	peak	200	45	
4	8821.913	36.42	4.60	41.02	74.00	-32.98	peak	200	322	
5	11598.189	34.94	6.67	41.61	74.00	-32.39	peak	200	158	
6	15159.656	28.91	13.06	41.97	74.00	-32.03	peak	200	149	

Job No.: STAR2018 #515

Standard: FCC Part 15C 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 55 %

EUT: In-wall Relay Control

Mode: TX 2480MHz

Model: SDWRM

Manufacturer: Libre Home Inc

Polarization: Vertical

Power Source: AC 120V/60Hz

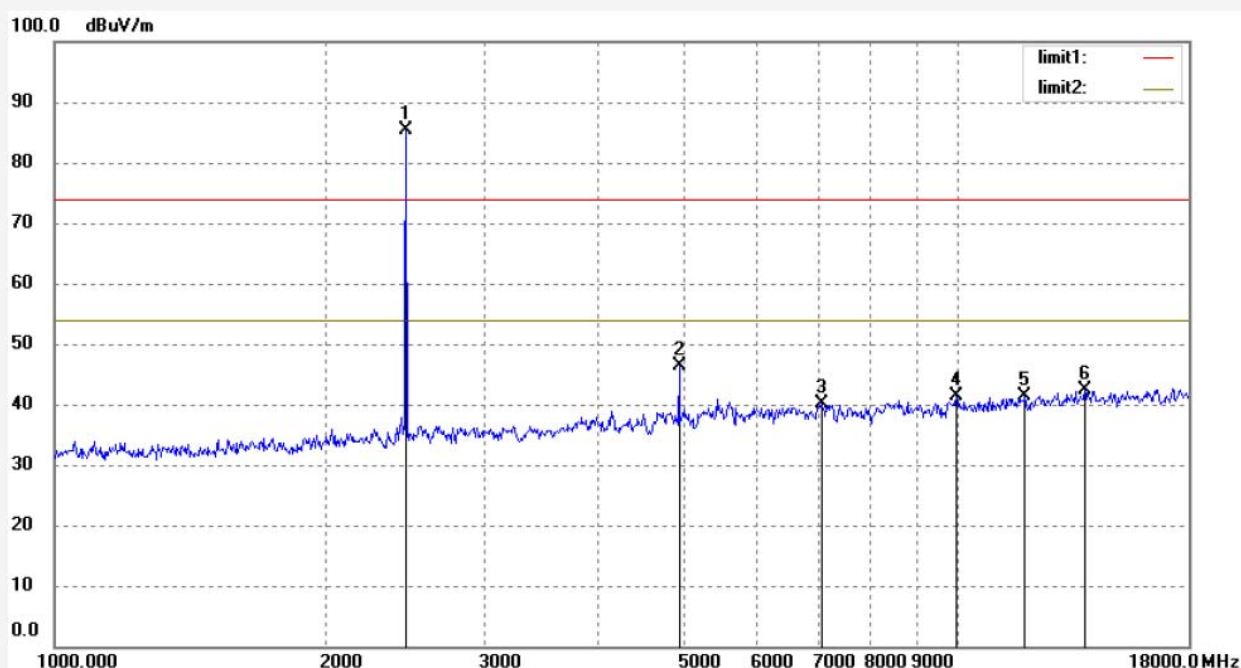
Date: 18/10/20/

Time: 10/20/52

Engineer Signature: star

Distance:

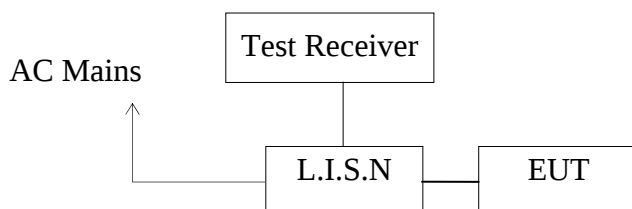
Note: Report No.: ATE20181841



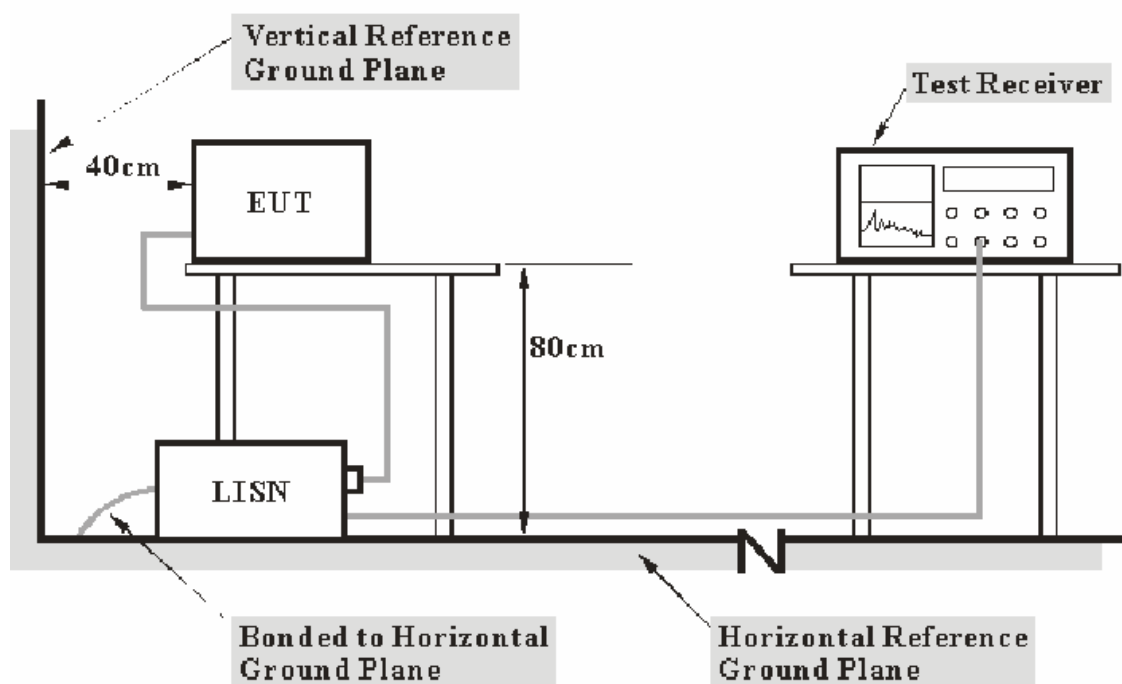
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.034	93.22	-7.84	85.38			peak	150	100	
2	4960.044	48.20	-1.92	46.28	74.00	-27.72	peak	150	139	
3	7071.142	38.25	1.90	40.15	74.00	-33.85	peak	150	52	
4	9969.098	35.87	5.43	41.30	74.00	-32.70	peak	150	84	
5	11871.433	34.31	7.00	41.31	74.00	-32.69	peak	150	136	
6	13811.392	31.26	11.20	42.46	74.00	-31.54	peak	150	104	

10.AC POWER LINE CONDUCTED EMISSION TEST

10.1.Block Diagram of Test Setup



10.2.Test System Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

10.3.Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μ V)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0
NOTE1: The lower limit shall apply at the transition frequencies. NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

10.4.Configuration of EUT on Measurement

The equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

10.5.Operating Condition of EUT

10.5.1.Setup the EUT and simulator as shown as Section 10.1.

10.5.2.Turn on the power of all equipment.

10.5.3.Let the EUT work in test mode and measure it.

10.6.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

10.7.Data Sample

Frequency (MHz)	Transducer value (dB)	QuasiPeak Level (dBμV)	Average Level (dBμV)	QuasiPeak Limit (dBμV)	Average Limit (dBμV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	10.5	51.1	34.2	56.0	46.0	4.9	11.8	Pass

Frequency(MHz) = Emission frequency in MHz

Transducer value(dB) = Insertion loss of LISN + Cable Loss

Level(dBμV) = Quasi-peak Reading/Average Reading + Transducer value

Limit (dBμV) = Limit stated in standard

Calculation Formula:

Margin = Limit (dBμV) - Level (dBμV)

10.8.Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150kHz to 30MHz is checked.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

Emissions attenuated more than 20 dB below the permissible value are not reported.

All data was recorded in the Quasi-peak and average detection mode.

The spectral diagrams are attached as below.

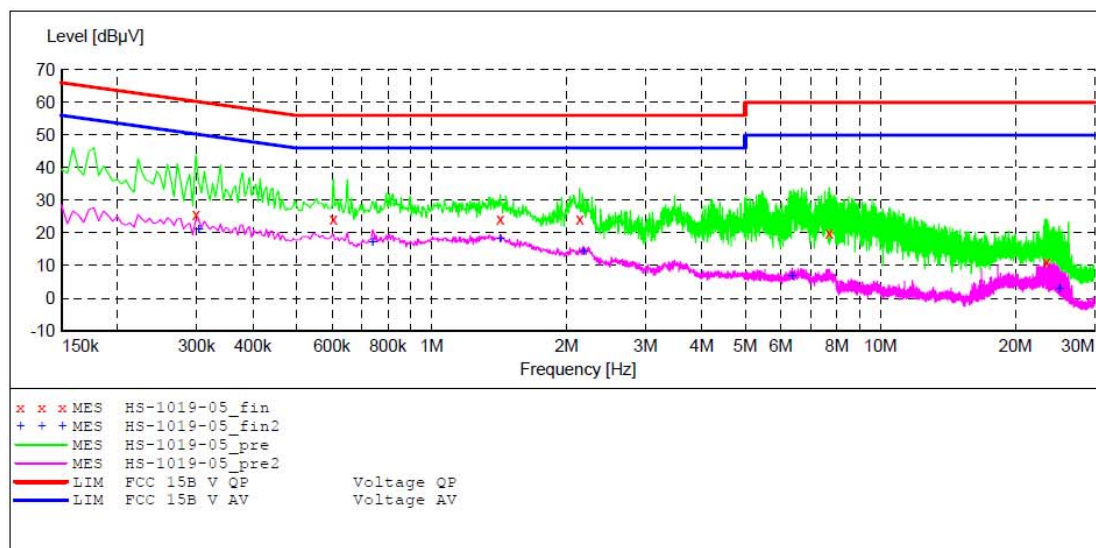
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15C

EUT: In-wall Relay Control M/N:SDWRM
 Manufacturer: Libre Home Inc
 Operating Condition: Wireless communication
 Test Site: 2#Shielding Room
 Operator: STAR
 Test Specification: L 120V /60Hz
 Comment: Report NO.:ATE20181841
 Start of Test: 2018-10-19 / 14:51:15

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "HS-1019-05_fin"

2018-10-19 14:53

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.298500	25.70	10.9	60	34.6	QP	L1	GND
0.604500	24.10	11.0	56	31.9	QP	L1	GND
1.423500	24.10	11.2	56	31.9	QP	L1	GND
2.139000	24.10	11.3	56	31.9	QP	L1	GND
7.692000	20.00	11.5	60	40.0	QP	L1	GND
23.464500	11.10	11.7	60	48.9	QP	L1	GND

MEASUREMENT RESULT: "HS-1019-05_fin2"

2018-10-19 14:53

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.303000	21.10	10.9	50	29.1	AV	L1	GND
0.739500	17.20	11.1	46	28.8	AV	L1	GND
1.423500	18.20	11.2	46	27.8	AV	L1	GND
2.179500	14.20	11.3	46	31.8	AV	L1	GND
6.355500	6.80	11.5	50	43.2	AV	L1	GND
25.030500	3.00	11.7	50	47.0	AV	L1	GND

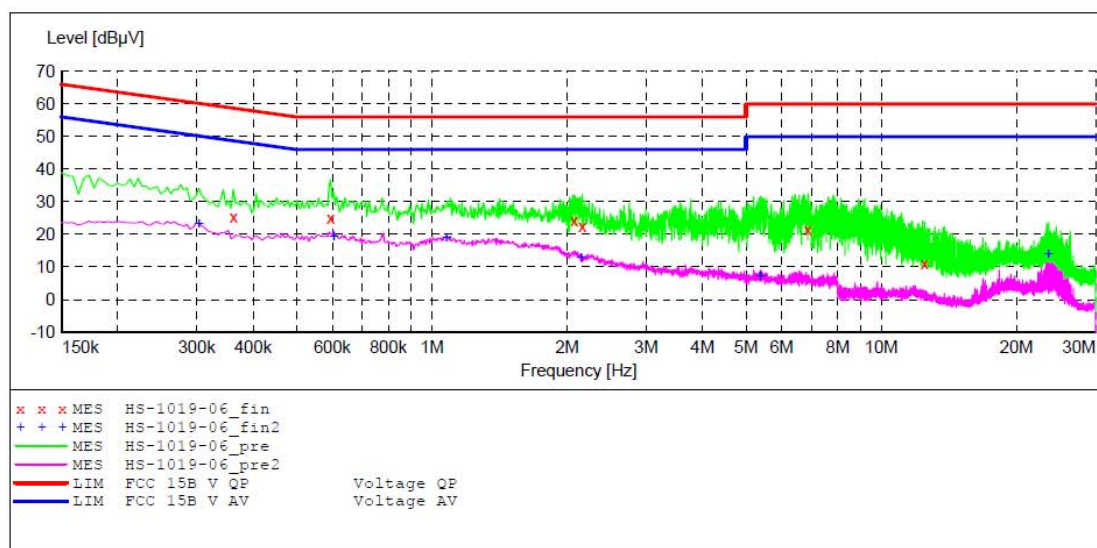
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15C

EUT: In-wall Relay Control M/N:SDWRM
 Manufacturer: Libre Home Inc
 Operating Condition: Wireless communication
 Test Site: 2#Shielding Room
 Operator: STAR
 Test Specification: N 120V /60Hz
 Comment: Report NO.:ATE20181841
 Start of Test: 2018-10-19 / 14:54:08

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "HS-1019-06_fin"

2018-10-19 14:56

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.361500	25.40	10.9	59	33.3	QP	N	GND
0.595500	25.00	11.0	56	31.0	QP	N	GND
2.071500	24.20	11.3	56	31.7	Q	N	GND
2.161500	22.40	11.3	56	33.6	QP	N	GND
6.864000	21.50	11.5	60	38.5	QP	N	GND
12.480000	11.00	11.6	60	49.0	QP	N	GND

MEASUREMENT RESULT: "HS-1019-06_fin2"

2018-10-19 14:56

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.303000	23.20	10.9	50	27.0	AV	N	GND
0.604500	19.20	11.0	46	26.8	AV	N	GND
1.077000	18.90	11.1	46	27.1	AV	N	GND
2.148000	12.80	11.3	46	33.2	AV	N	GND
5.374500	7.30	11.5	50	42.7	AV	N	GND
23.563500	13.90	11.7	50	36.1	AV	N	GND

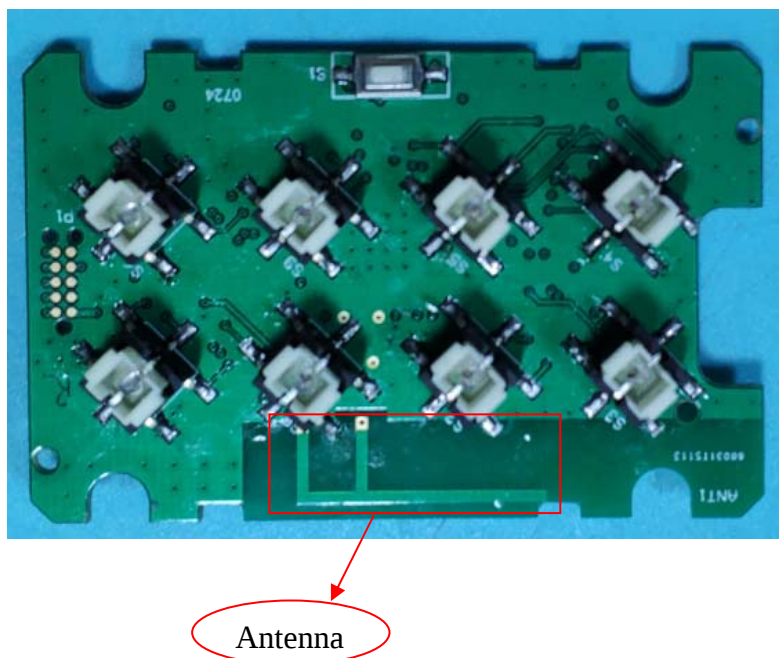
11.ANTENNA REQUIREMENT

11.1.The Requirement

According to Section 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.

11.2.Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Antenna gain of EUT is 2.8dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



***** End of Test Report *****