FCC REPORT

Applicant:	Computime Ltd.
Address of Applicant:	6/F, Bldg 20E, Phase 3, Hong Kong Science Park, 20 Science Park East Ave, Shatin, New Territories, Hong Kong
Manufacturer/Factory:	Computime Electronics(Shenzhen)Company Limited
Address of Manufacturer/Factory:	Yuekenguangyu Industrial Park,Kangqiao Road 88#, Danzhutou Community,Nanwan Street Office Longgang District,Shenzhen,China

Equipment Under Test (EUT)

Product Name:	Electrically heated bedding control
Model No.:	L85B, L85KQB
Trade Mark:	Sunbeam
FCC ID:	2AAUQ-151161CT
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.231
Date of sample receipt:	March 06, 2018
Date of Test:	March 06- April 11, 2018
Date of report issued:	April 12, 2018
Test Result :	PASS *

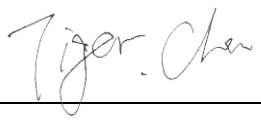
* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

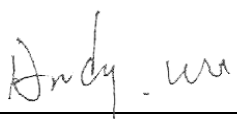
Robinson Lo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*April 12, 2018*	*Original*

Prepared By:  ***Date:*** *April 12, 2018*

Project Engineer

Check By:  ***Date:*** *April 12, 2018*

Reviewer

3 Contents

Page

4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
Restricted bands of operation.	15.205	Pass
Conduction Emission	15.207	Not applicable
Spurious Emissions	15.231(b) &15.209	Pass
20dB Bandwidth	15.231(c)	Pass
Deactivation Testing	15.231(a)(1)	Pass

Pass: The EUT complies with the essential requirements in the standard.

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	± 4.34dB	(1)
Radiated Emission	30MHz ~ 1000MHz	± 4.24dB	(1)
Radiated Emission	1GHz ~ 26.5GHz	± 4.68dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.45dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

5 General Information

5.1 General Description of EUT

Product Name:	Electrically heated bedding control
Model No.:	L85B, L85KQB
Test Model:	L85KQB
Remark:	L85B is a single select zone controller; L85KQB is a two select zone controller. They are same in RF spec., the difference between the models is controller zone can be choose
Serial No.:	N/A
Test sample(s) ID:	GTS201803000046-1
Sample(s) Status:	Engineer sample
Hardware:	REMOTE_r3.0
Software:	2
Operation Frequency:	418MHz
Channel numbers:	1
Modulation technology:	GFSK
Antenna Type:	Integral Antenna
Power supply:	DC 4.5V 3*1.5V Size “AAA” battery
Labeling:	 

5.2 Test mode

Transmitting mode	Keep the EUT in transmitting mode.
Remark: New battery is used during all test. So the report just shows that condition's data.	

Per-test mode.

We have verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. only Worse case Y axis is reported:

Axis	X	Y	Z
Field Strength(dBuV/m)	78.34	78.39	77.69

Final Test Mode:

According to ANSI C63.10 standards, the test results are both the "worst case" and "worst setup":

Y axis (see the test setup photo)

5.3 Test Facility

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

● **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen 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 files. Registration 381383, January 08, 2018.

● **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.

5.4 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.
No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone,
Xixiang Road, Baoan District, Shenzhen, Guangdong, China
Tel: 0755-27798480
Fax: 0755-27798960

5.5 Other Information Requested by the Customer

None.

6 Test Instruments list

RF Test						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 03 2015	July 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June 28 2017	June 27 2018
4	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June 28 2017	June 27 2018
5	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June 28 2017	June 27 2018
6	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 28 2017	June 27 2018
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 28 2017	June 27 2018
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial Cable	GTS	N/A	GTS213	June 28 2017	June 27 2018
10	Coaxial Cable	GTS	N/A	GTS211	June 28 2017	June 27 2018
11	Coaxial cable	GTS	N/A	GTS210	June 28 2017	June 27 2018
12	Coaxial Cable	GTS	N/A	GTS212	June 28 2017	June 27 2018
13	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June 28 2017	June 27 2018
14	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	June 28 2017	June 27 2018
15	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 28 2017	June 27 2018
16	Band filter	Amindeon	82346	GTS219	June 28 2017	June 27 2018
17	Power Meter	Anritsu	ML2495A	GTS540	June 28 2017	June 27 2018
18	Power Sensor	Anritsu	MA2411B	GTS541	June 28 2017	June 27 2018
19	Loop Antenna	Zhinan	ZN30900A	GTS215	June. 28 2017	June. 27 2018

General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Barometer	ChangChun	DYM3	GTS257	June 28 2017	June 27 2018

7 Test results and Measurement Data

7.1 Antenna requirement

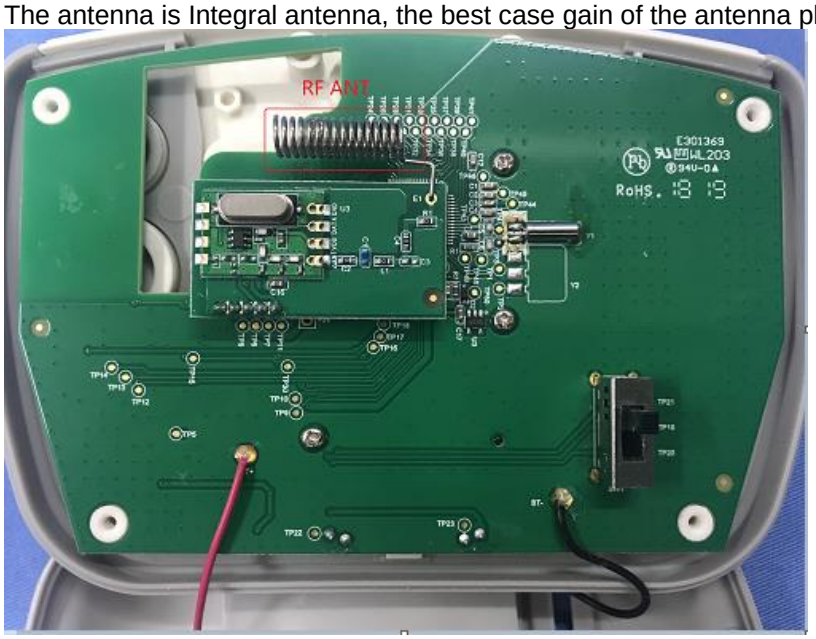
Standard requirement:	FCC Part15 C Section 15.203

15.203 requirement:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is Integral antenna, the best case gain of the antenna please refer to antenna data sheet



7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.205, 15.209 & 15.231(b)
Test Method:	ANSI C63.10:2013
Test Frequency Range:	30MHz to 5GHz
Test site:	Measurement Distance: 3m

Receiver setup:

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value

Limit:

(Transmitter Field Strength of Emissions)

Frequency	Limit (dBuV/m @3m)	Remark
418MHz	80.28	Average Value
	100.28	Peak Value

Limit:

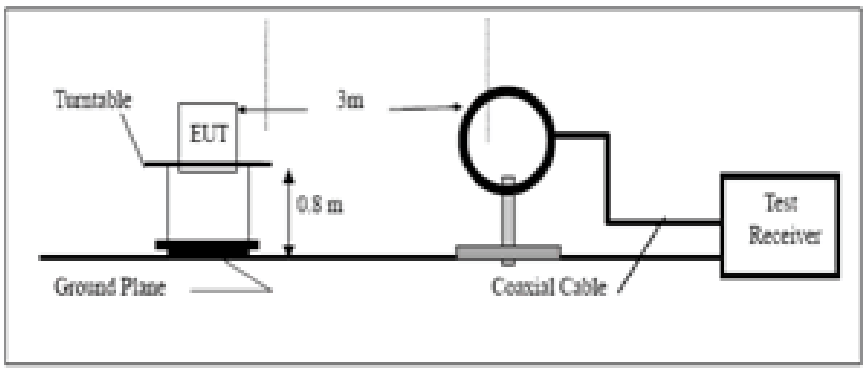
(Spurious Emissions)

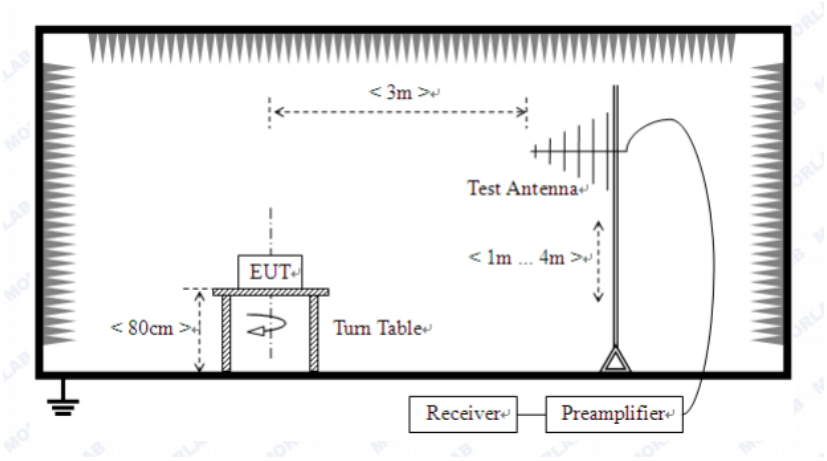
Frequency	Limit (uV/m)	Remark
30MHz-88MHz	100 @3m	Quasi-peak Value
88MHz-216MHz	150 @3m	Quasi-peak Value
216MHz-960MHz	200 @3m	Quasi-peak Value
960MHz-1GHz	500 @3m	Quasi-peak Value
Above 1GHz	500 @3m	Average Value
	5000 @3m	Peak Value

Or The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level whichever limit permits a higher field strength.

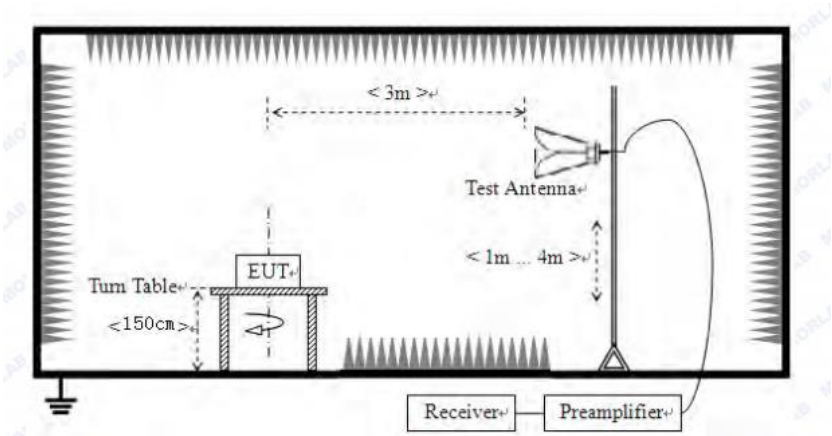
Test setup:

Below 1GHz





Above 1GHz



Test Procedure:

1. During the test, the New Battery was used.
2. The EUT was placed on the top of a rotating table (0.8 meters for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
3. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
4. The antenna 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.
5. 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
6. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have

	10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement data:

7.2.1 Field Strength of the Fundamental Signal

QP Value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
418	97.11	15.86	2.94	37.52	78.39	80.28	-1.89	Vertical
418	94.11	15.86	2.94	37.52	75.39	80.28	-4.89	Horizontal

7.2.2 Restriction bands emissions

All of the restriction bands were tested, and only the data of worst case was exhibited.

QP value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
410	38.34	15.86	2.94	37.52	19.41	46.00	-26.59	Vertical
410	36.11	15.86	2.94	37.52	17.18	46.00	-28.82	Horizontal

Remark:

1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

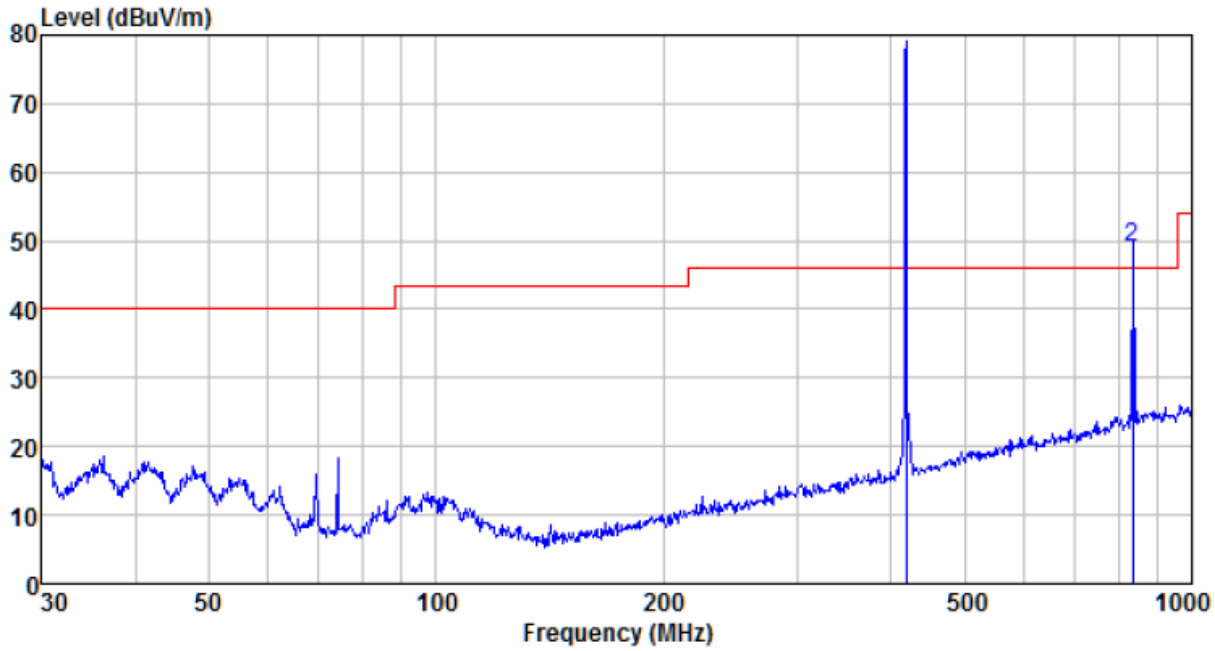
7.2.3 Spurious emissions

- Below 30MHz

  The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o), the test result no need to reported.

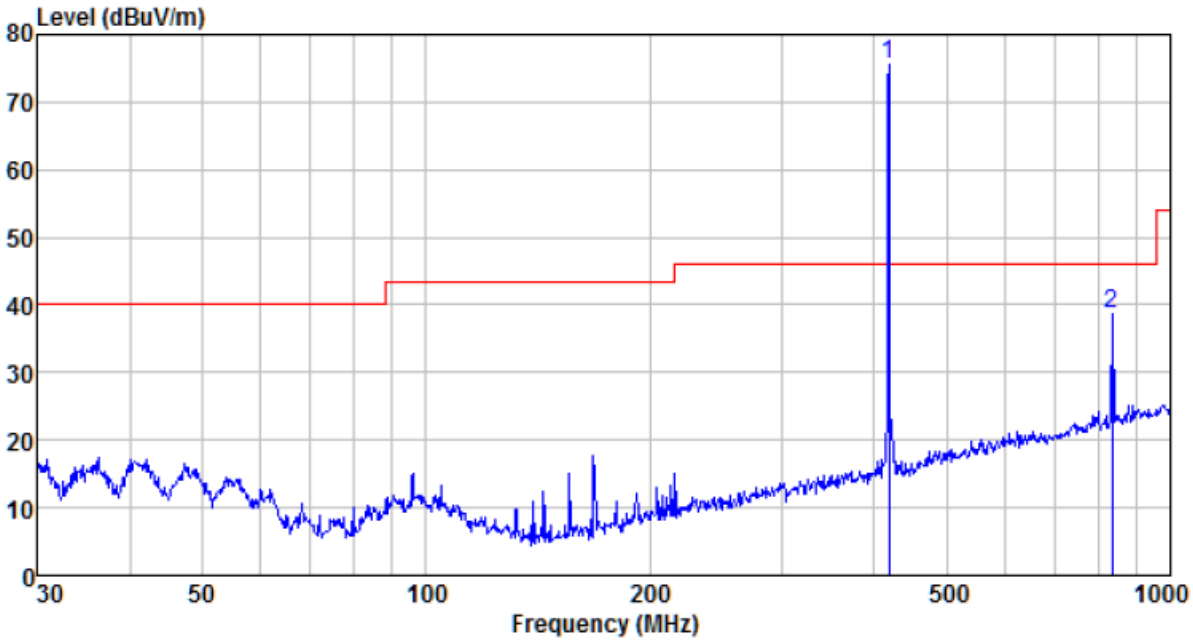
- Below 1GHz

  Horizontal



Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Quasi-peak Value (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
836	60.30	21.62	4.60	37.61	48.91	60.28	-11.37	Horizontal

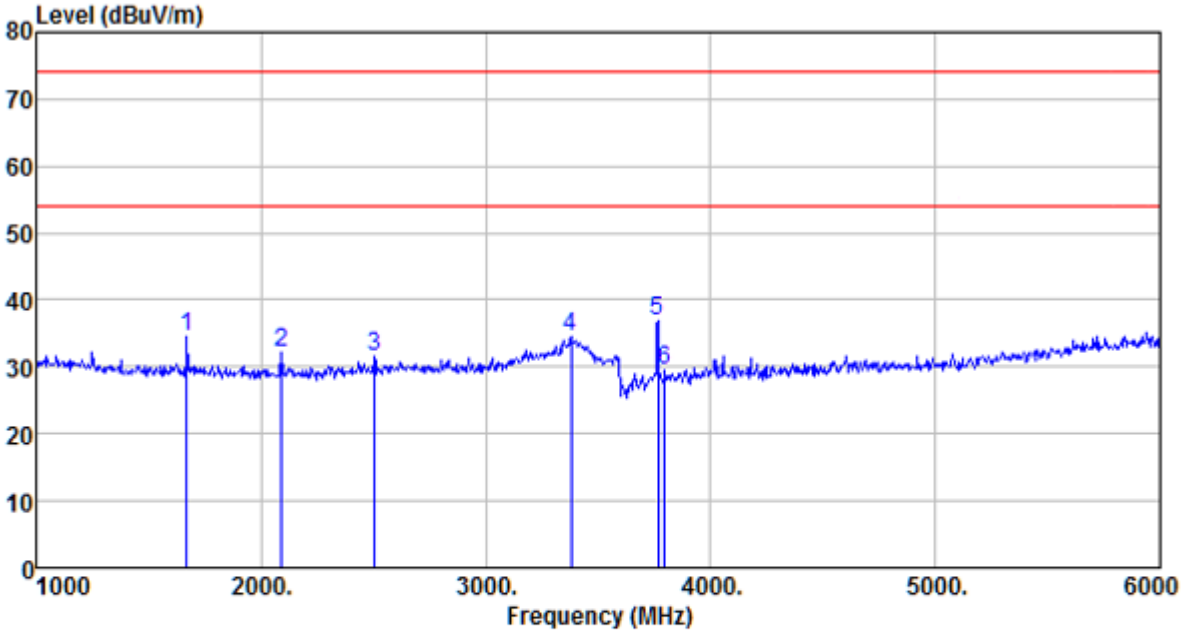
Vertical



Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Quasi-peak Value (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
836	49.98	21.62	4.60	37.61	38.59	60.28	-21.69	Vertical

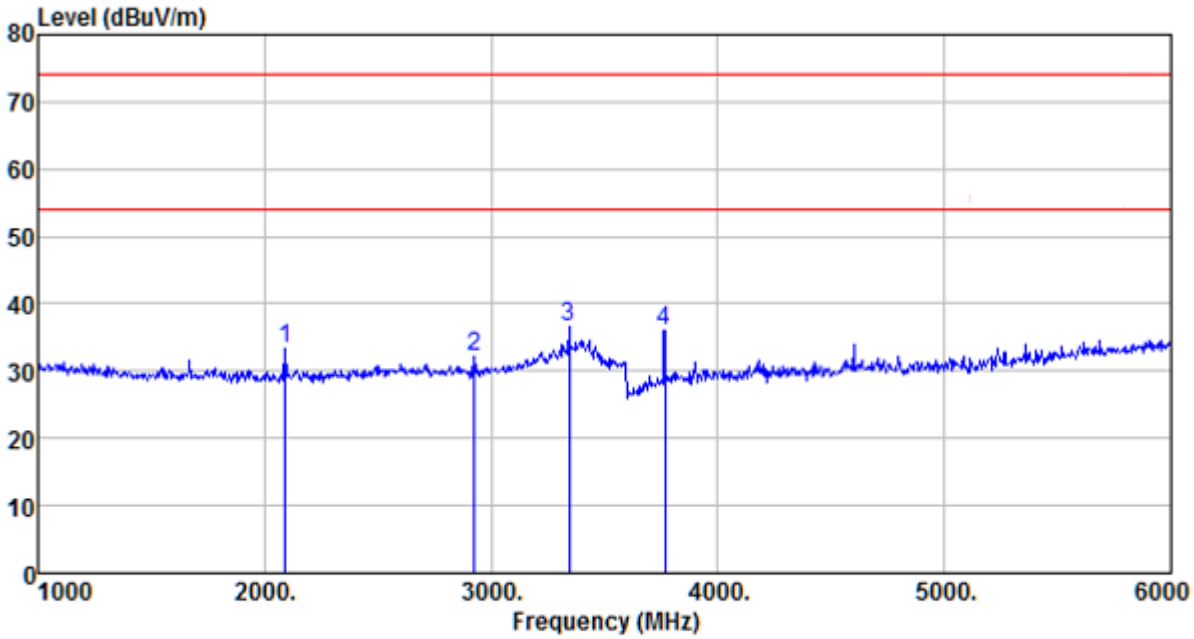
■ Above 1GHz

Horizontal



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
1670.000	40.39	25.60	4.78	36.29	34.48	74.00	-39.52	Peak
2090.000	37.24	26.41	5.06	36.59	32.12	74.00	-41.88	Peak
2505.000	35.26	27.71	5.49	36.95	31.51	74.00	-42.49	Peak
3380.000	36.66	28.40	6.72	37.34	34.44	74.00	-39.56	Peak
3765.000	37.59	29.17	7.46	37.38	36.84	74.00	-37.16	Peak
3795.000	30.14	29.23	7.50	37.38	29.49	74.00	-44.51	Peak

Vertical

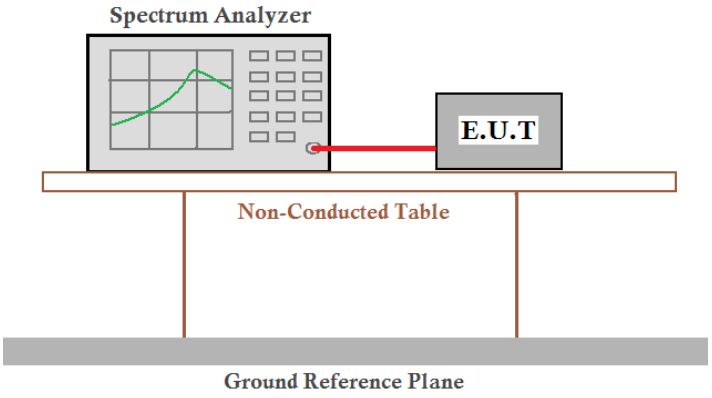


Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2090.000	38.48	26.41	5.06	36.59	33.36	74.00	-40.64	Peak
2925.000	35.18	28.30	5.86	37.25	32.09	74.00	-41.91	Peak
3345.000	38.87	28.40	6.66	37.34	36.59	74.00	-37.41	Peak
3765.000	36.85	29.17	7.46	37.38	36.10	74.00	-37.90	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*

7.3 20dB Occupy Bandwidth

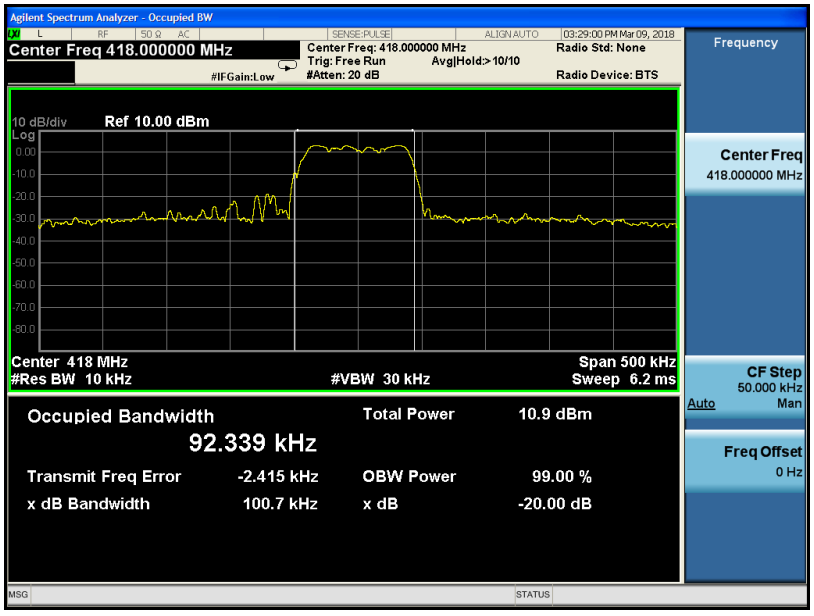
Test Requirement:	FCC Part15 C Section 15.231 (c)
Test Method:	ANSI C63.10:2013
Limit:	The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

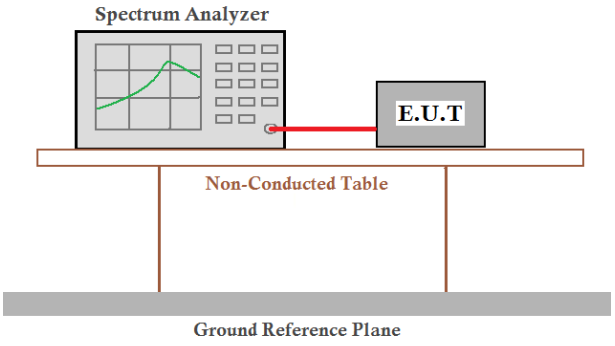
Test Frequency (MHz)	20dB bandwidth (MHz)	Limit (MHz)	Result
418	0.1007	1.045	Pass

Note: Limit (418MHz) = Fundamental frequency×0.25%=418×0.25%=1.045MHz

Test plot as follows:



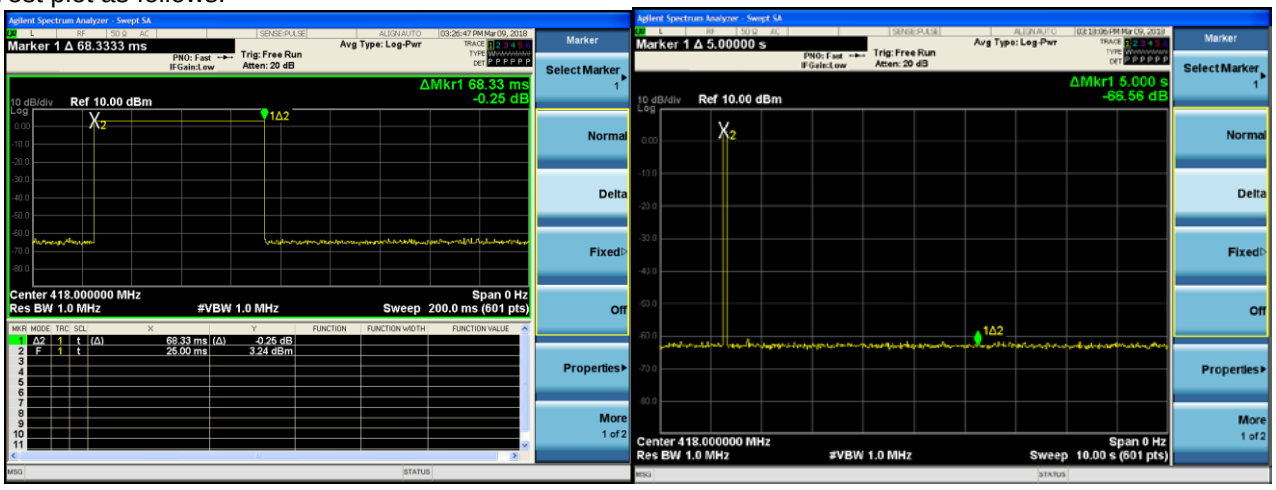
7.4 Deactivation Testing

Test Requirement:	FCC Part15 C Section 15.231 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=1MHz, VBW=1MHz, span=0Hz, detector: Peak
Limit:	Not more than 5 seconds
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement data:

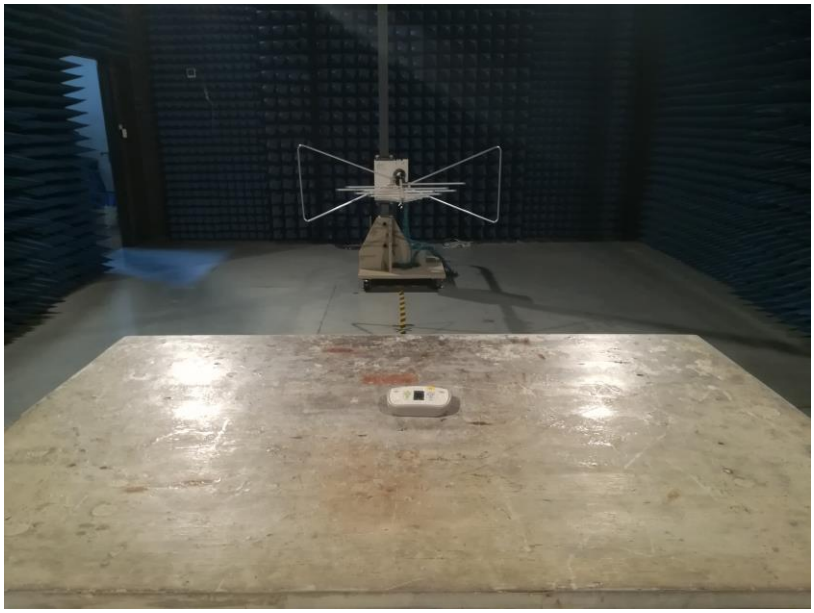
Test Frequency (MHz)	Activation Time (second)	Limit (second)	Result
418	0.06833	<5.0	Pass

Test plot as follows:



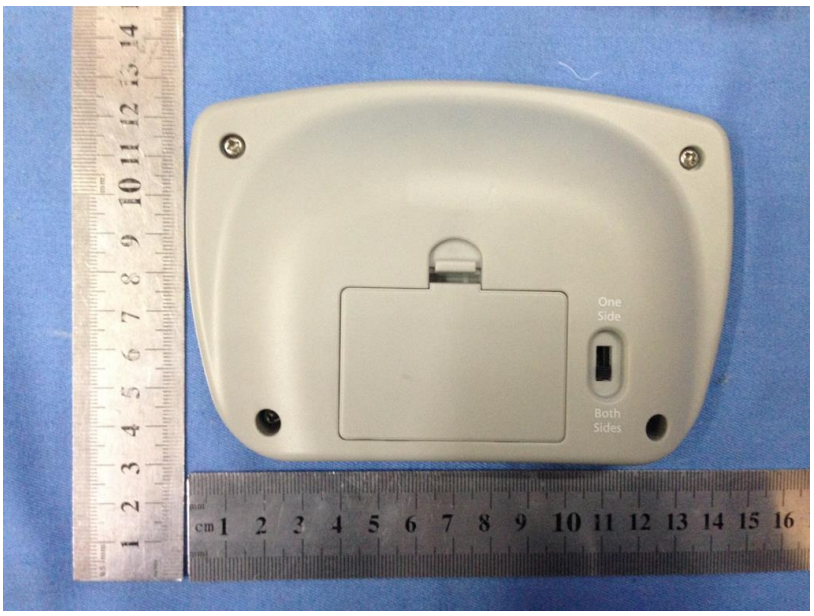
8 Test Setup Photo

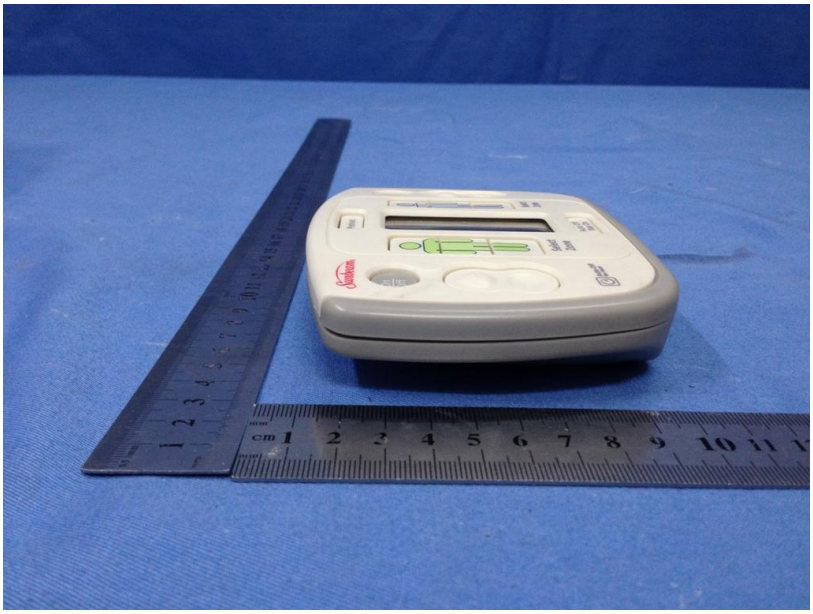
Radiated Emission

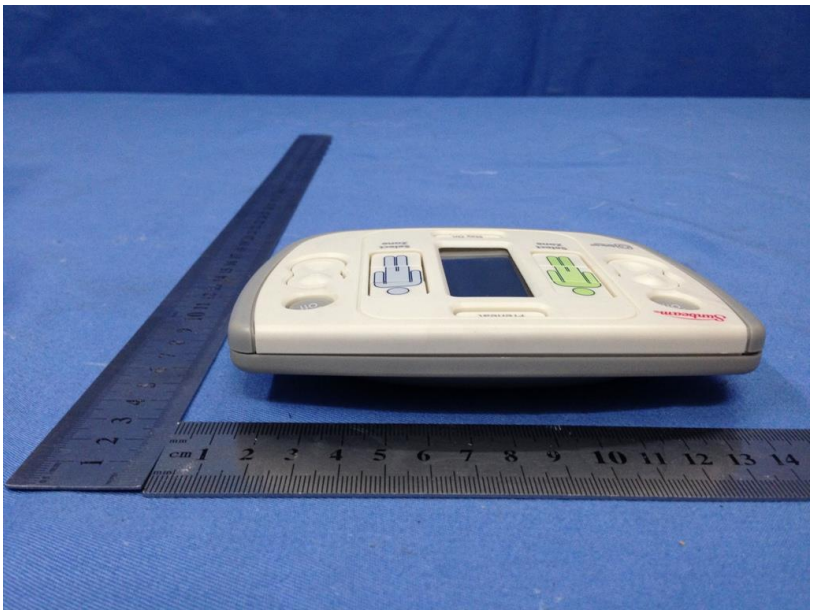


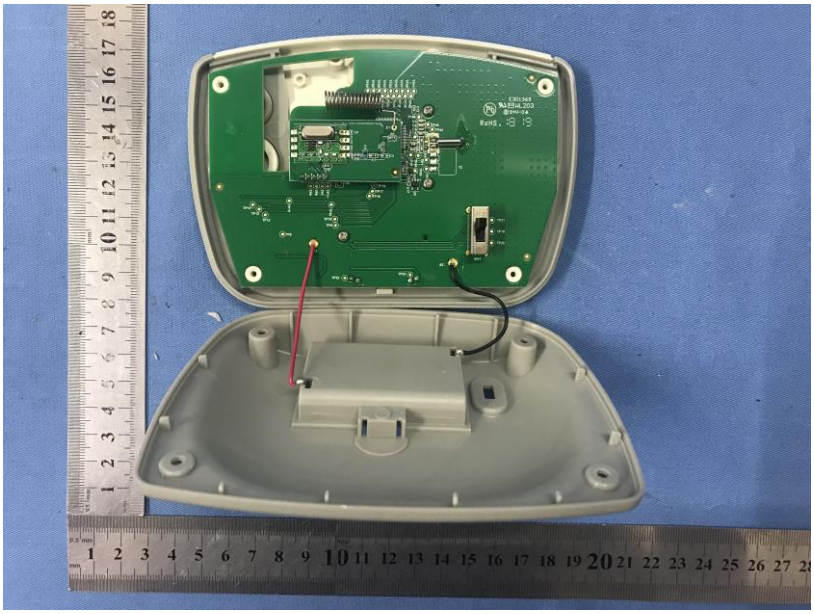
9 EUT Constructional Details

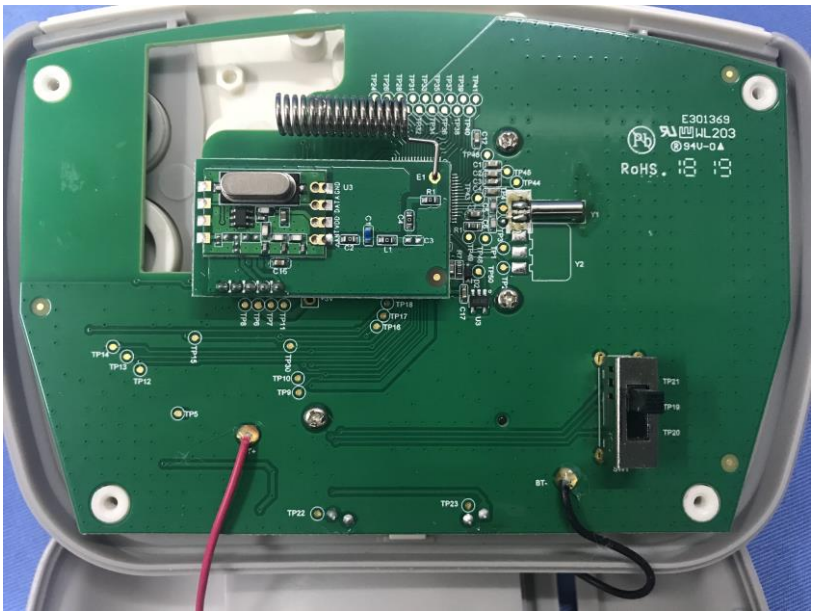
L85KQB







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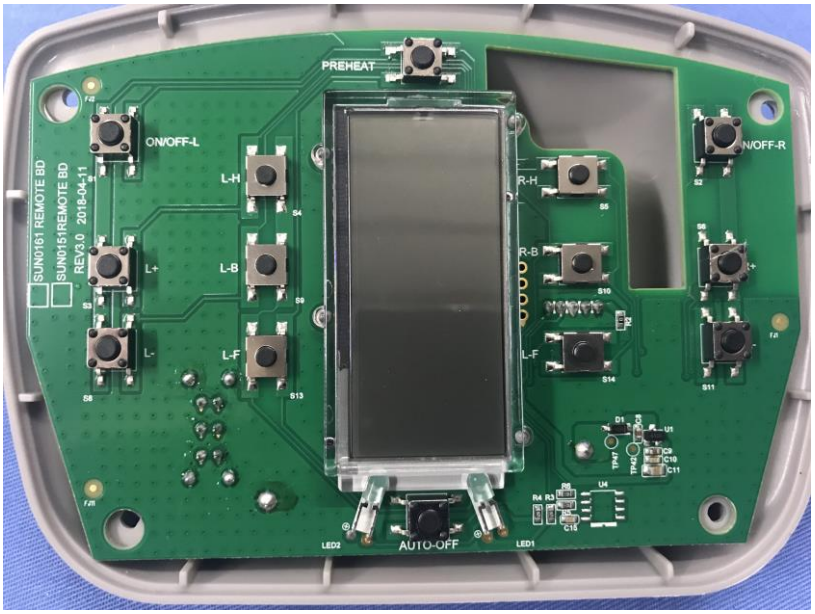
94V-0
RoHS. 18 19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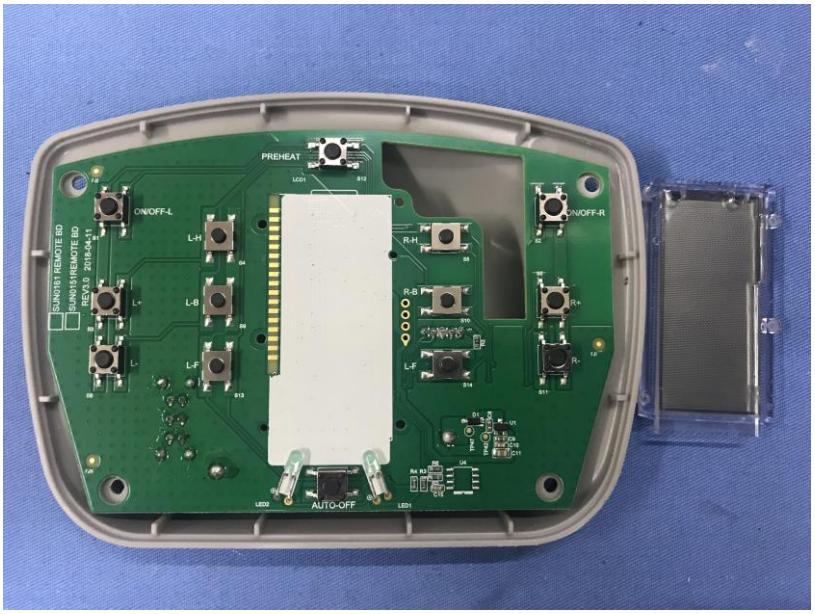
ON/OFF-R
L-H
L-B
L-F
L+
L-
R-H
R-B
R+
AUTO-OFF
SUN0161 REMOTE BD
SUN0151REMOTE BD
REV3.0 2018-04-11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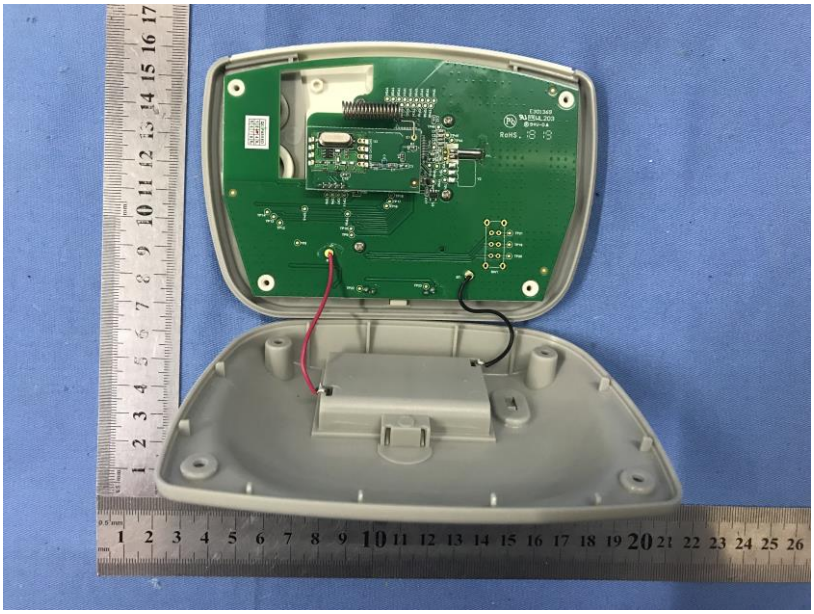
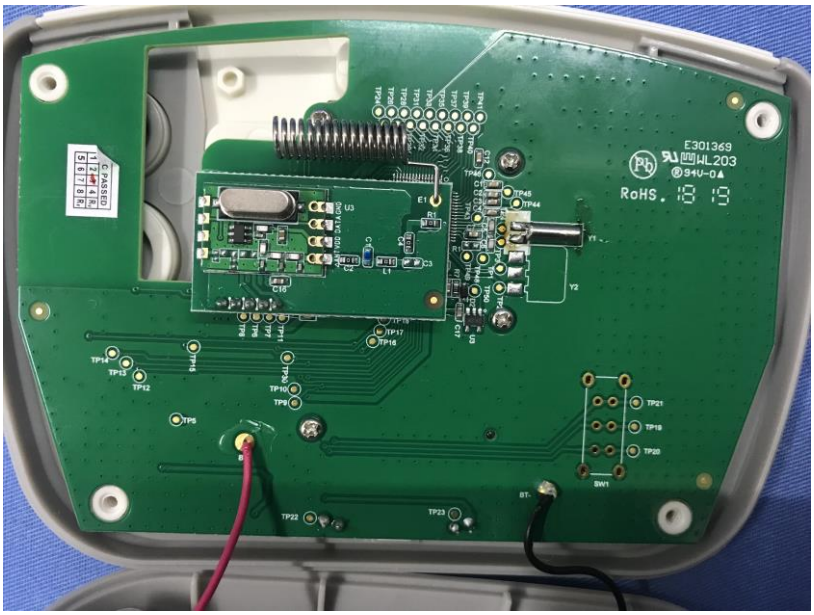
SUN0161 REMOTE BD
SUN0151REMOTE BD
REV3.0 2018-04-11

L85B





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