

APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
iLuv Creative Technology

Selfy Shutter Remote
Model No.: SELFY, SELFY REMOTE

FCC ID: ATL-SELFYREMOTE

Prepared for : iLuv Creative Technology
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U.S.A
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Report Number : ATE20141789
Date of Test : Sep 15-18,2014
Date of Report : Sep 18,2014

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Test Report Certification

Applicant : iLuv Creative Technology
Manufacturer : SEATUNE ELECTRONICS CO.,LTD
EUT Description : Selfy Shutter Remote
(A) MODEL NO.: SELFY, SELFY REMOTE
(B) Trade Name.: iLuv
(C) POWER SUPPLY: DC 3.0V (Powered by battery)

Measurement Procedure Used:

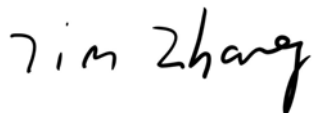
FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.4: 2009

The EUT was tested according to DTS test procedure of Jun 05, 2014 KDB558074 D01 DTS Meas Guidance v03r02 for compliance to FCC 47CFR 15.247 requirements

The device described above is tested by 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 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 ACCURATE TECHNOLOGY CO. LTD.

Date of Test : Sep 15-18, 2014

Prepared by : 
(Tim.zhang, Engineer)

Approved & Authorized Signer : 
(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : Selfy Shutter Remote
 Model Number : SELFY, SELFY REMOTE
 Bluetooth version : Bluetooth V4.0 LE
 Frequency Range : 2402MHz-2480MHz
 Number of Channels : 40
 Type of Antenna : Integral Antenna
 Max Antenna gain : 0dBi
 Power Supply : DC 3.0V (Powered by battery)
 Modulation mode : GFSK
 Applicant : iLuv Creative Technology
 Address : 2 Harbor Park Drive Port Washington, NY 11050 U.S.A
 Manufacturer : SEATUNE ELECTRONICS CO.,LTD
 Address : Linhai Industrial Park Avenue side Shuikou first floor of
 Building B,SHUIKOU TOWN,HUIZHOU
 CITY,GUANGDONG,CHINA
 Date of sample received : Sep 15, 2014
 Date of Test : Sep 15-18, 2014

1.2. Carrier Frequency of Channels

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

1.3. Special Accessory and Auxiliary Equipment

N/A

1.4. Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC
The Registration Number is 752051

Listed by Industry Canada
The Registration Number is 5077A-2

Accredited by China National Accreditation Committee
for Laboratories
The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD

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

1.5. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2
(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2
(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2
(Above 1GHz)

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 11, 2014	Jan. 10, 2015
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 11, 2014	Jan. 10, 2015
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 11, 2014	Jan. 10, 2015
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 11, 2014	Jan. 10, 2015
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 15, 2014	Jan. 14, 2015
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 15, 2014	Jan. 14, 2015
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 11, 2014	Jan. 10, 2015
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 11, 2014	Jan. 10, 2015
Highpass Filter	Wainwright Instruments	WHKX3.6/18 G-10SS	N/A	Jan. 11, 2014	Jan. 10, 2015
Band Reject Filter	Wainwright Instruments	WRCG2400/2 485-2375/2510 -60/11SS	N/A	Jan. 11, 2014	Jan. 10, 2015

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

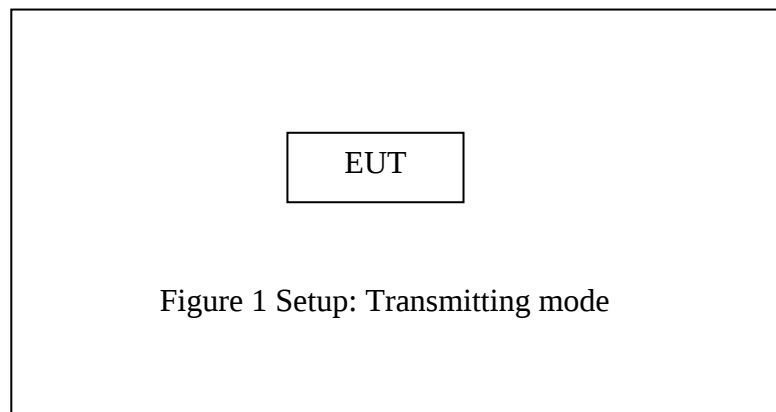
The mode is used: **BLE Transmitting mode**

Low Channel: 2402MHz

Middle Channel: 2440MHz

High Channel: 2480MHz

3.2.Configuration and peripherals



4. TEST PROCEDURES AND RESULTS

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

5. POWER LINE CONDUCTED MEASUREMENT

5.1.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.

5.2.Power Line Conducted Emission Measurement Results

Not applicable

6. 6DB BANDWIDTH MEASUREMENT

6.1. Block Diagram of Test Setup



(EUT: Selfy Shutter Remote)

6.2. 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.

6.3. 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.

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 2402-2480 MHz. We select 2402MHz, 2440MHz, 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 100 kHz and VBW to 300 kHz.

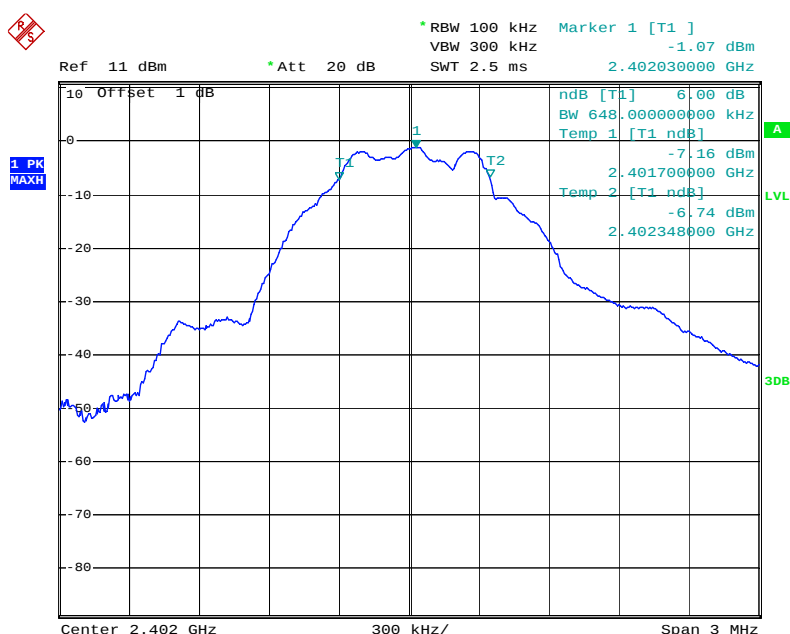
6.5.3. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

6.6. Test Result

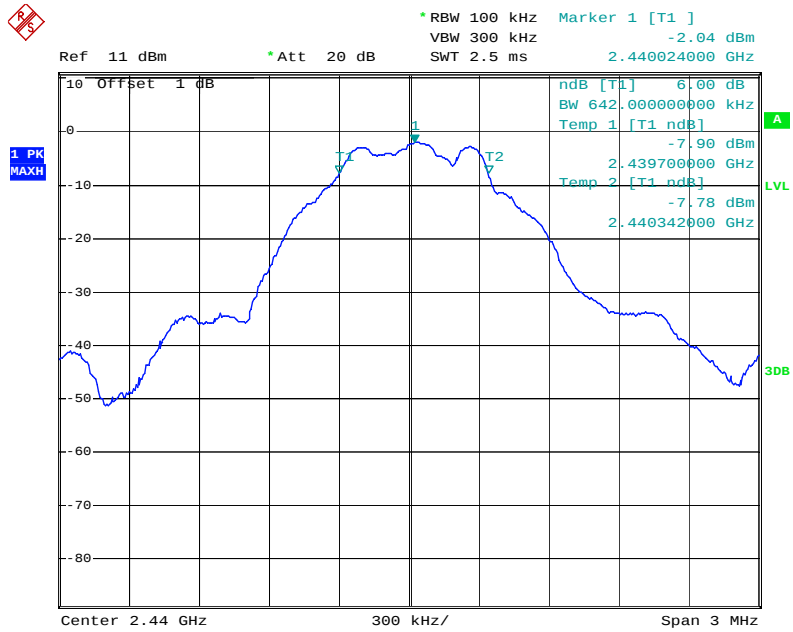
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit(MHz)	PASS/FAIL
0	2402	0.648	0.5	PASS
19	2440	0.642	0.5	PASS
39	2480	0.642	0.5	PASS

The spectrum analyzer plots are attached as below.

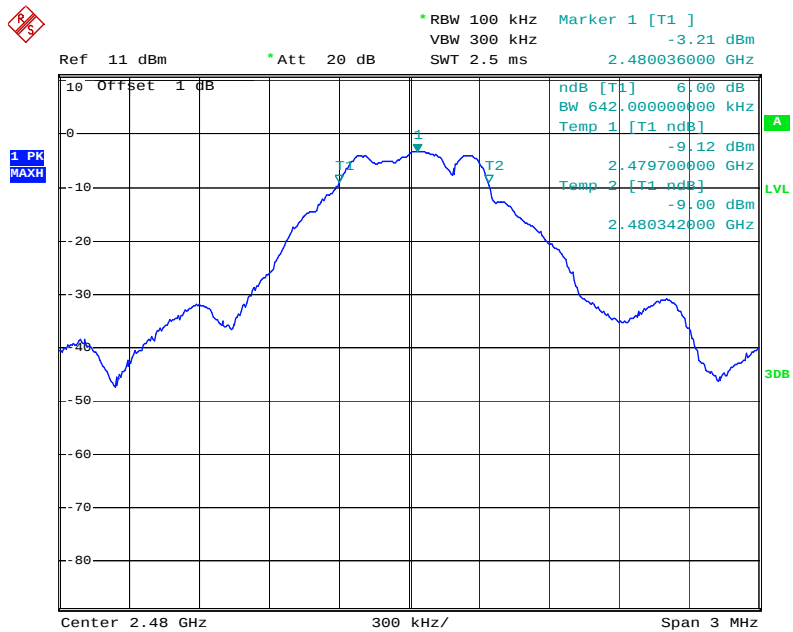
channel 0



channel 19



channel 39



7. MAXIMUM PEAK OUTPUT POWER

7.1. Block Diagram of Test Setup



(EUT: Selfy Shutter Remote)

7.2. 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.

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 2402-2480 MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

7.5. Test Procedure

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

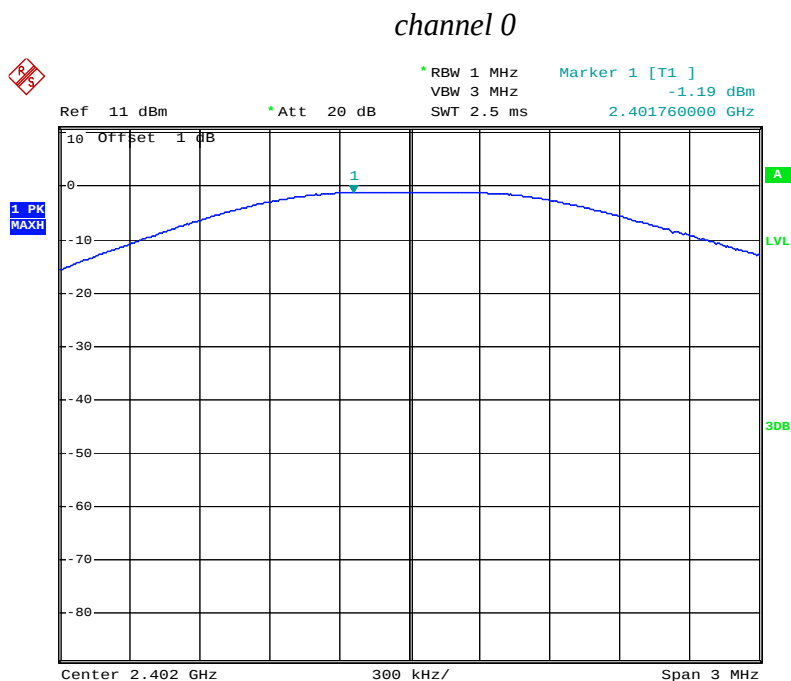
The transmitter output was connected to the spectrum analyzer through a low loss cable.

- Set the RBW $\geq$ DTS bandwidth.
- Set VBW $\geq 3 \times$ RBW.
- Set span $\geq 3 \times$ RBW
- Sweep time = auto couple.
- Detector = peak.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use peak marker function to determine the peak amplitude level.

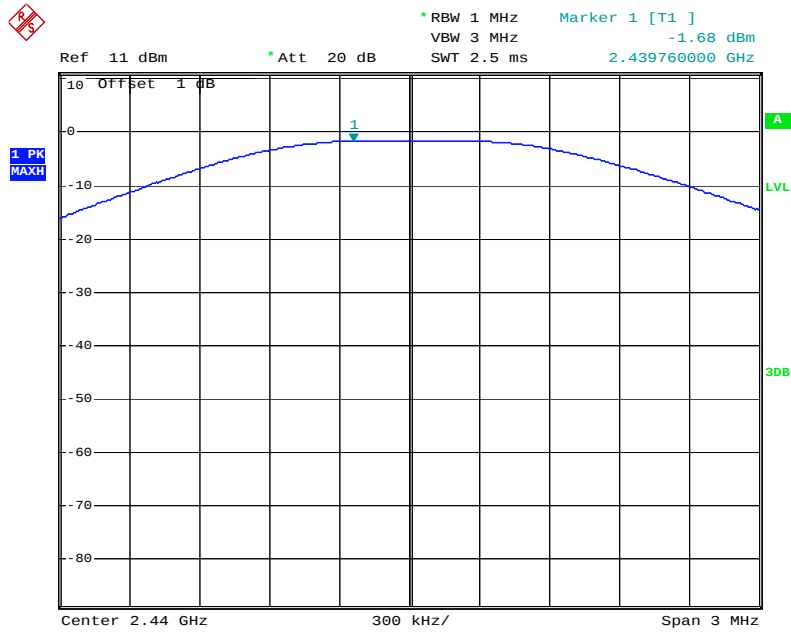
7.6. Test Result

Channel	Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass / Fail
0	2402	-1.19	30	PASS
19	2440	-1.68	30	PASS
39	2480	-2.91	30	PASS

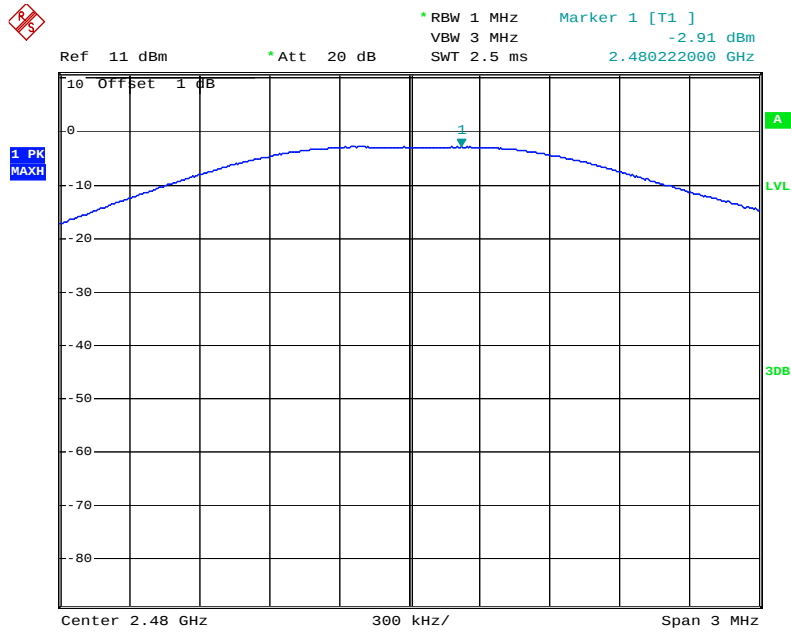
The spectrum analyzer plots are attached as below.



channel 19



channel 39



8. POWER SPECTRAL DENSITY MEASUREMENT

8.1. Block Diagram of Test Setup



(EUT: Selfy Shutter Remote)

8.2. 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.

8.3. 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.

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 2402-2480. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

8.5. Test Procedure

8.5.1. The EUT was tested according to DTS test procedure of Jun 05, 2014 KDB558074 D01 DTS Meas Guidance v03r02 for compliance to FCC 47CFR 15.247 requirements.

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

8.5.3. Measurement Procedure PKPSD:

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 3 kHz) and repeat.

8.5.4.Measurement the maximum power spectral density.

8.6.Test Result

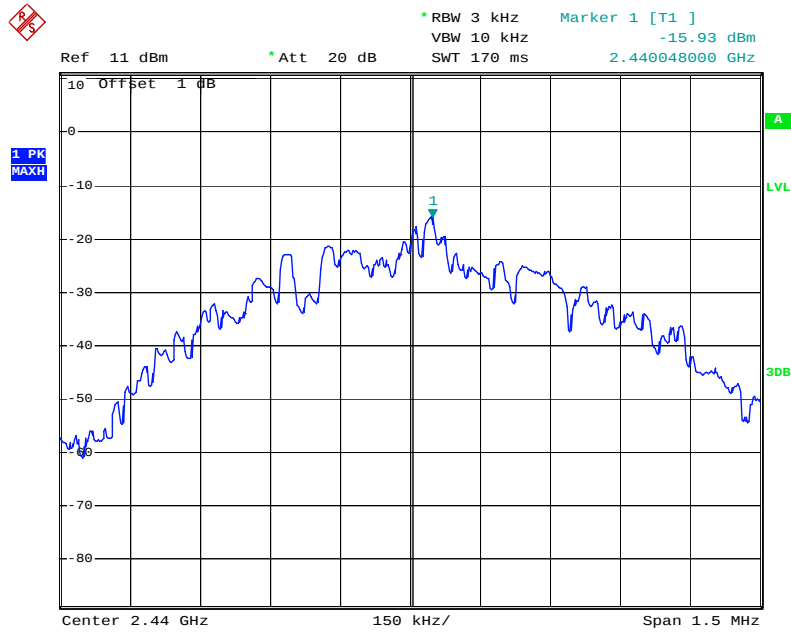
CHANNEL NUMBER	FREQUENCY (MHz)	PSD (dBm/3KHz)	LIMIT (dBm/3KHz)	PASS/FAIL
0	2402	-15.11	8	PASS
19	2440	-15.93	8	PASS
39	2480	-18.03	8	PASS

The spectrum analyzer plots are attached as below.

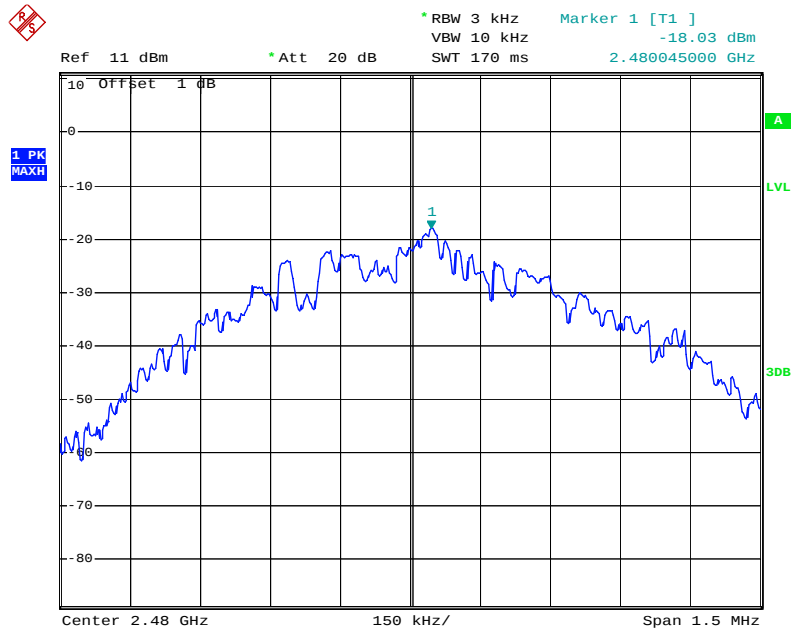
channel 0



channel 19



channel 39



9. BAND EDGE COMPLIANCE TEST

9.1. Block Diagram of Test Setup



(EUT: Selfy Shutter Remote)

9.2. 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).

9.3. 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.

9.4. Operating Condition of EUT

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

9.4.2. Turn on the power of all equipment.

9.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

9.5. Test Procedure

Conducted Band Edge:

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

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

Radiate Band Edge:

9.5.3. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.

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

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

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

RBW=1MHz, VBW=3MHz

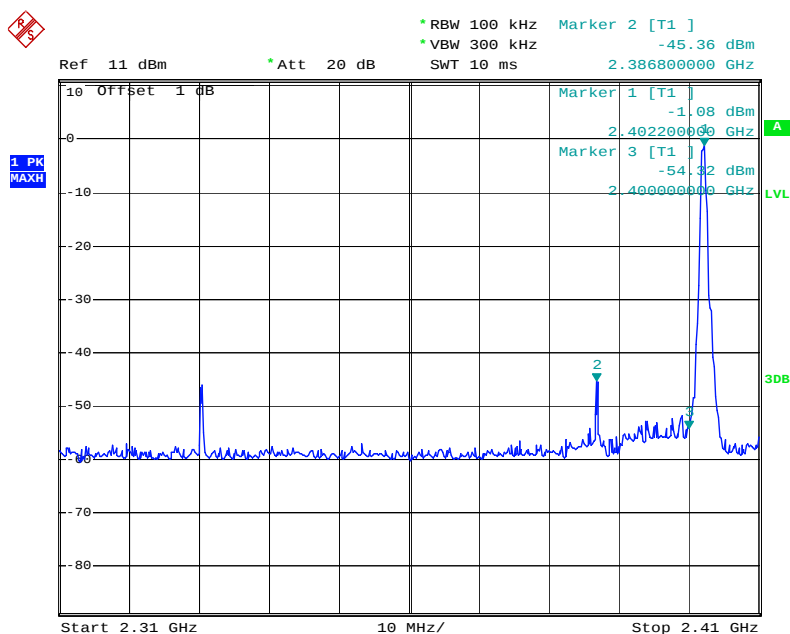
9.5.7. The band edges was measured and recorded.

9.6. Test Result

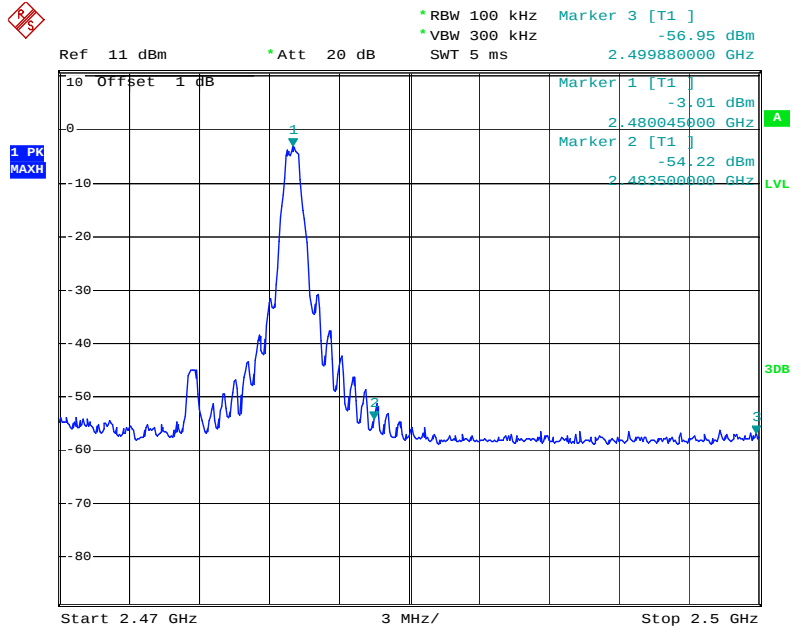
Pass

Channel	Frequency	Delta peak to band emission	Limit(dBc)
0	2386.80MHz	44.28	20
39	2483.50MHz	51.21	20

channel 0



channel 39



Radiated Band Edge Result



ACCURATE TECHNOLOGY CO., LTD.

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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.: STAR #3015

Standard: FCC PK

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2402MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Horizontal

Power Source: DC 3V

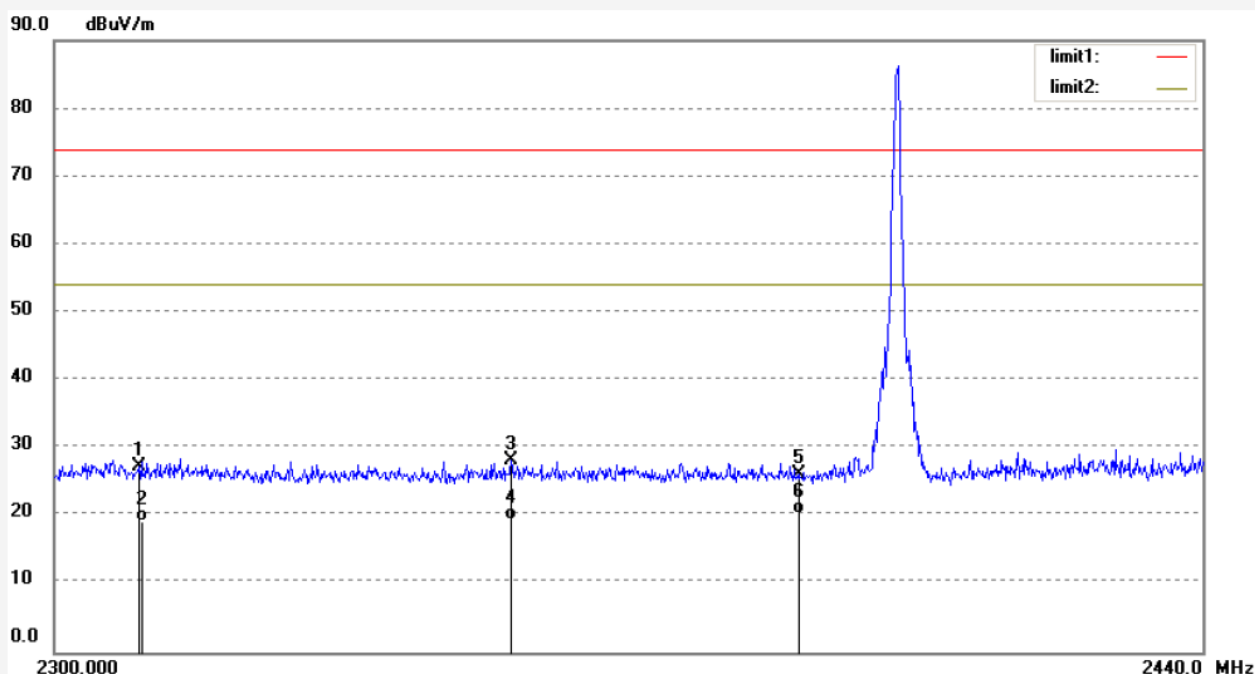
Date: 14/09/16/

Time: 14/25/37

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	34.27	-6.99	27.28	74.00	-46.72	peak			
2	2310.000	26.25	-6.99	19.26	54.00	-34.74	AVG			
3	2354.740	35.04	-6.88	28.16	74.00	-45.84	peak			
4	2354.740	26.41	-6.88	19.53	54.00	-34.47	AVG			
5	2390.000	33.03	-6.78	26.25	74.00	-47.75	peak			
6	2390.000	27.20	-6.78	20.42	54.00	-33.58	AVG			

Job No.: STAR #3016

Standard: FCC PK

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2402MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Vertical

Power Source: DC 3V

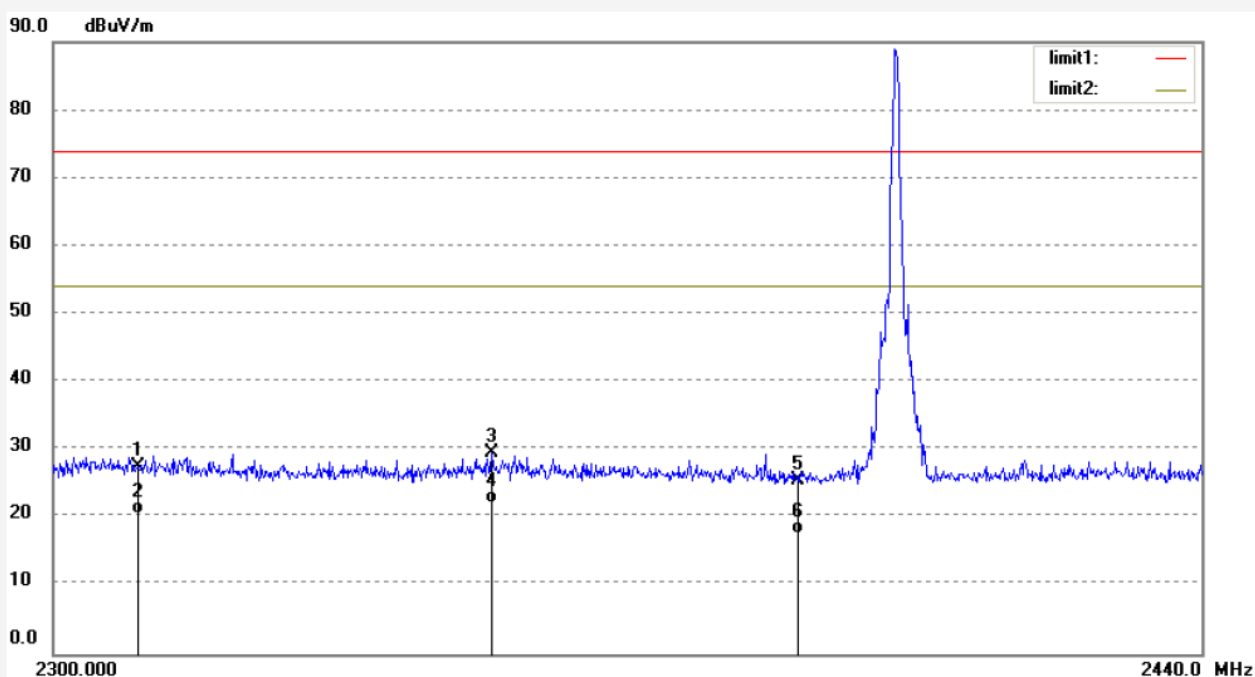
Date: 14/09/16/

Time: 14/29/06

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	34.53	-6.99	27.54	74.00	-46.46	peak			
2	2310.000	27.58	-6.99	20.59	54.00	-33.41	AVG			
3	2352.640	36.54	-6.88	29.66	74.00	-44.34	peak			
4	2352.640	28.93	-6.88	22.05	54.00	-31.95	AVG			
5	2390.000	32.43	-6.78	25.65	74.00	-48.35	peak			
6	2390.000	24.55	-6.78	17.77	54.00	-36.23	AVG			



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.: STAR #3018

Standard: FCC PK

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2480MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Horizontal

Power Source: DC 3V

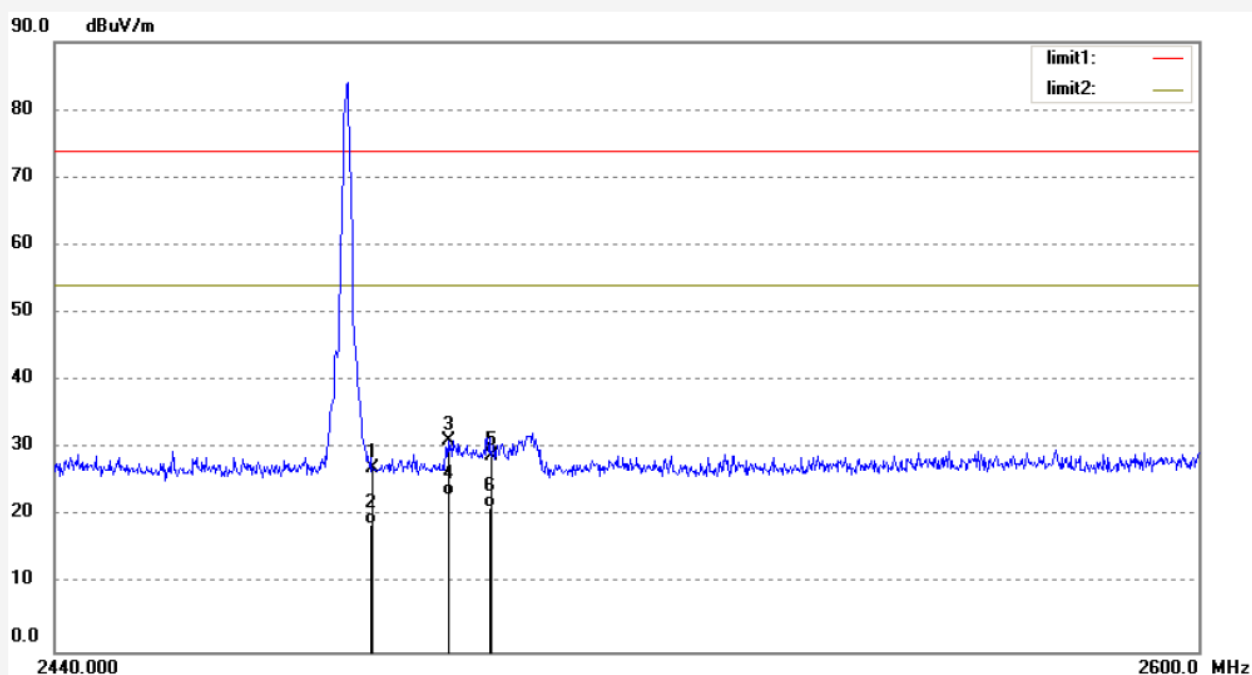
Date: 14/09/16/

Time: 14/36/21

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141789



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	33.60	-6.54	27.06	74.00	-46.94	peak			
2	2483.500	25.40	-6.54	18.86	54.00	-35.14	AVG			
3	2493.920	37.76	-6.51	31.25	74.00	-42.75	peak			
4	2493.920	29.50	-6.51	22.99	54.00	-31.01	AVG			
5	2500.000	35.31	-6.50	28.81	74.00	-45.19	peak			
6	2500.000	27.80	-6.50	21.30	54.00	-32.70	AVG			



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Job No.: STAR #3017

Standard: FCC PK

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2480MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Vertical

Power Source: DC 3V

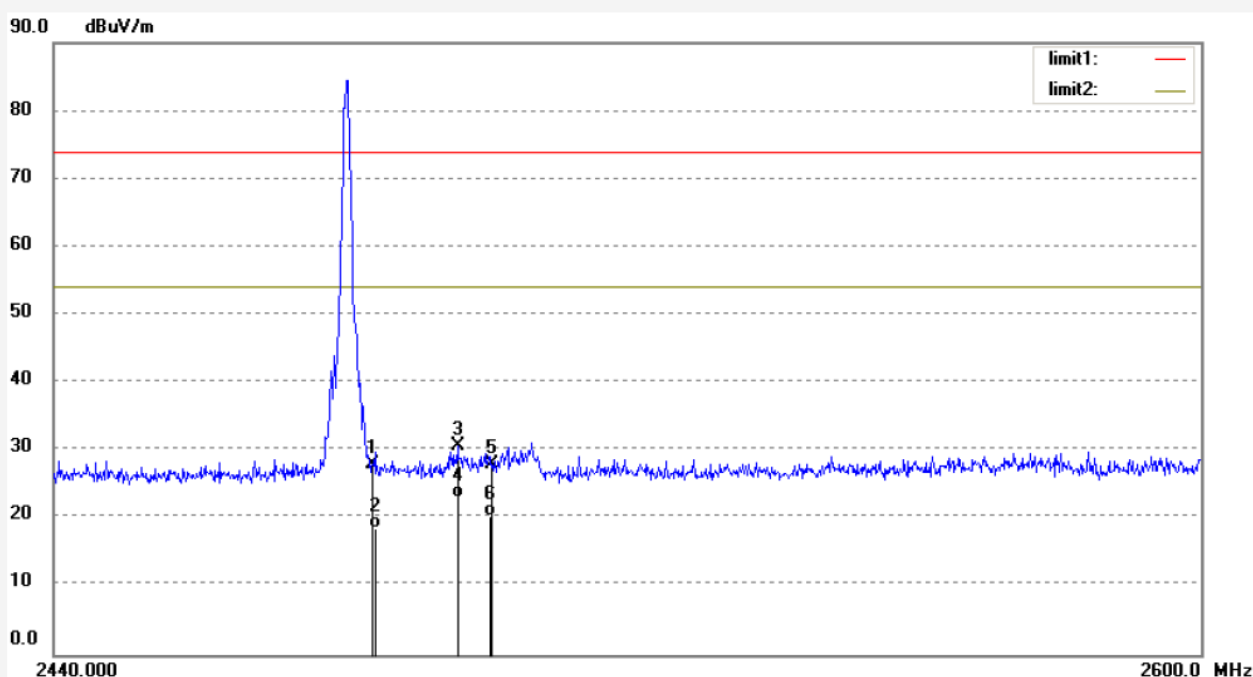
Date: 14/09/16/

Time: 14/32/02

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20141789



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	34.48	-6.54	27.94	74.00	-46.06	peak			
2	2483.500	25.17	-6.54	18.63	54.00	-35.37	AVG			
3	2495.200	37.21	-6.50	30.71	74.00	-43.29	peak			
4	2495.200	29.50	-6.50	23.00	54.00	-31.00	AVG			
5	2500.000	34.56	-6.50	28.06	74.00	-45.94	peak			
6	2500.000	26.93	-6.50	20.43	54.00	-33.57	AVG			

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

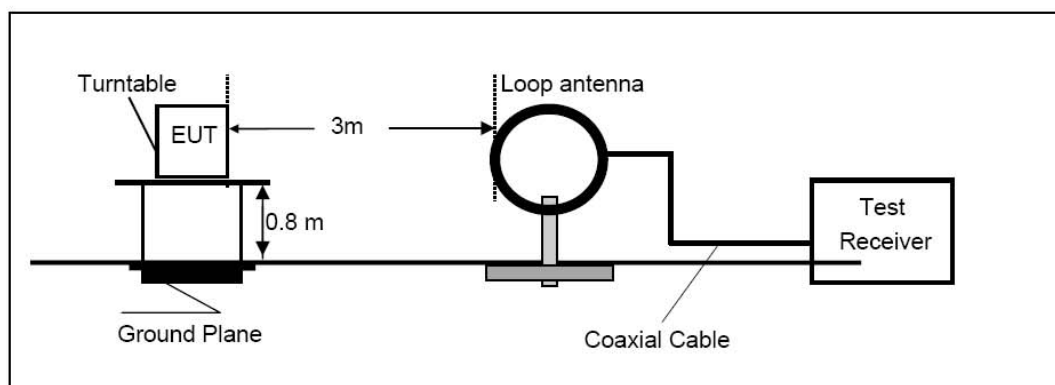
3. Display the measurement of peak values.

10.RADIATED SPURIOUS EMISSION TEST

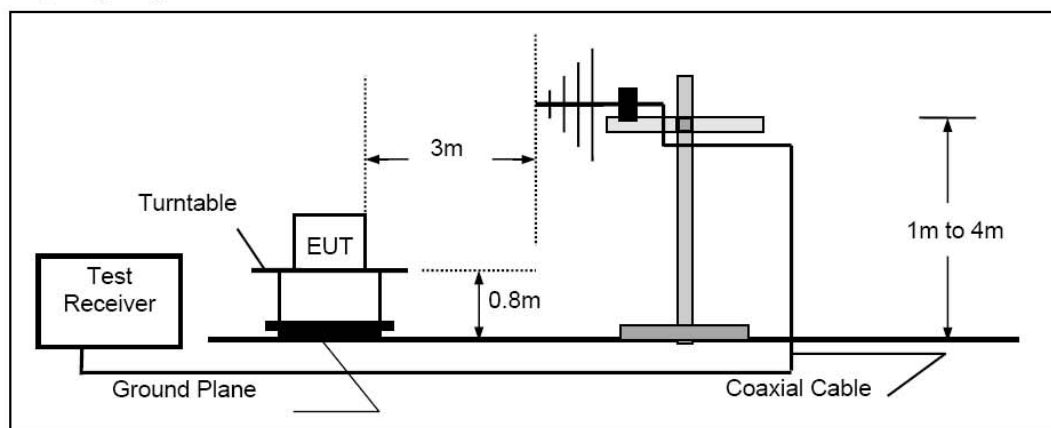
10.1.Block Diagram of Test Setup

Radiated Emission Test Set-Up

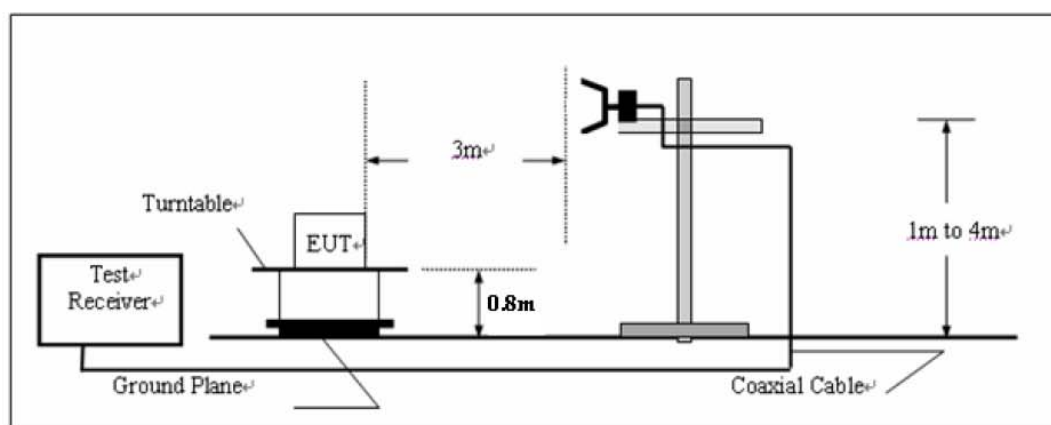
Frequency range 9KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



10.2.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).

10.3.Restricted bands of operation

10.3.1.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.

10.4.Configuration of EUT on Measurement

The equipment is 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.

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 TX modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

10.6.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. 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 bilog 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 interface cables must be manipulated according to ANSI C63.4: 2009 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

10.7.The Field Strength of Radiation Emission Measurement Results

PASS.

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

2. The EUT is tested radiation emission at Low, Middle, High channel in three axes. The worst emissions are reported in all channels. The fundamental radiated emissions were reduced by Band Reject Filter in the attached plots.

3. The radiation emissions from 18-25GHz are not reported, because the test values lower than the limits of 20dB.

Below 1GHz



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Job No.: STAR #3914

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2402MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Horizontal

Power Source: DC 3V

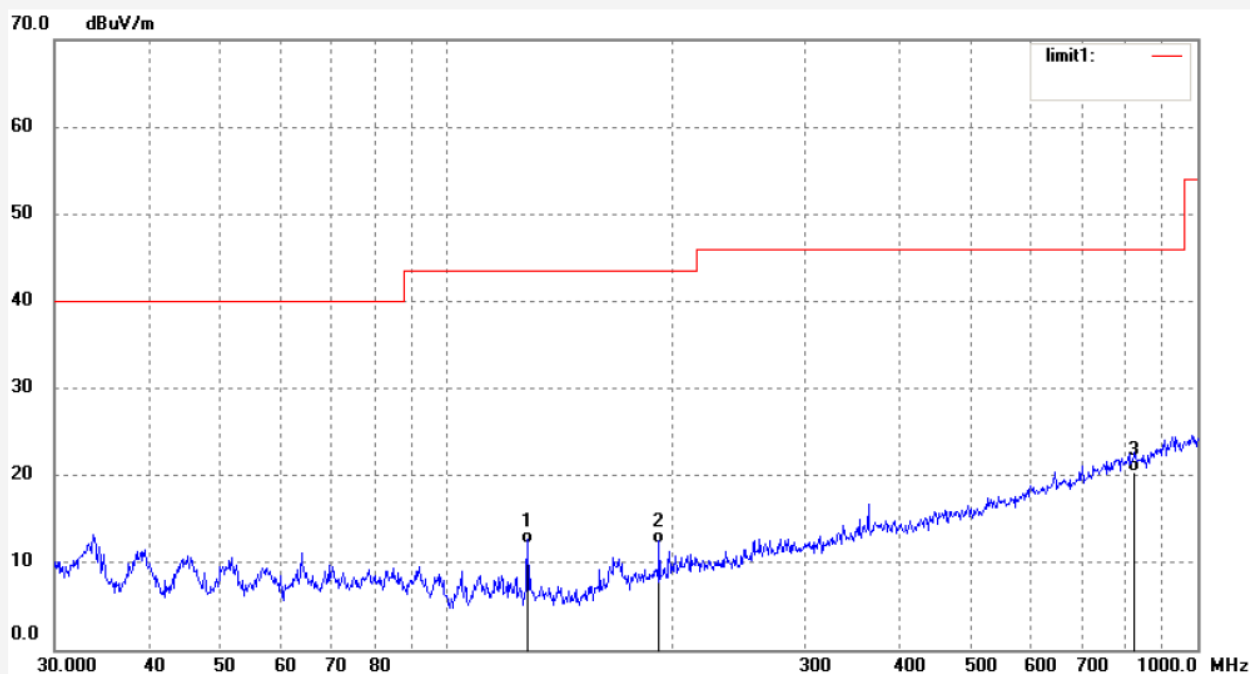
Date: 14/09/17/

Time: 9/24/33

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	128.1129	35.18	-22.94	12.24	43.50	-31.26	QP			
2	191.7450	33.03	-20.80	12.23	43.50	-31.27	QP			
3	824.5968	27.85	-7.39	20.46	46.00	-25.54	QP			

Job No.: STAR #3915

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2402MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Vertical

Power Source: DC 3V

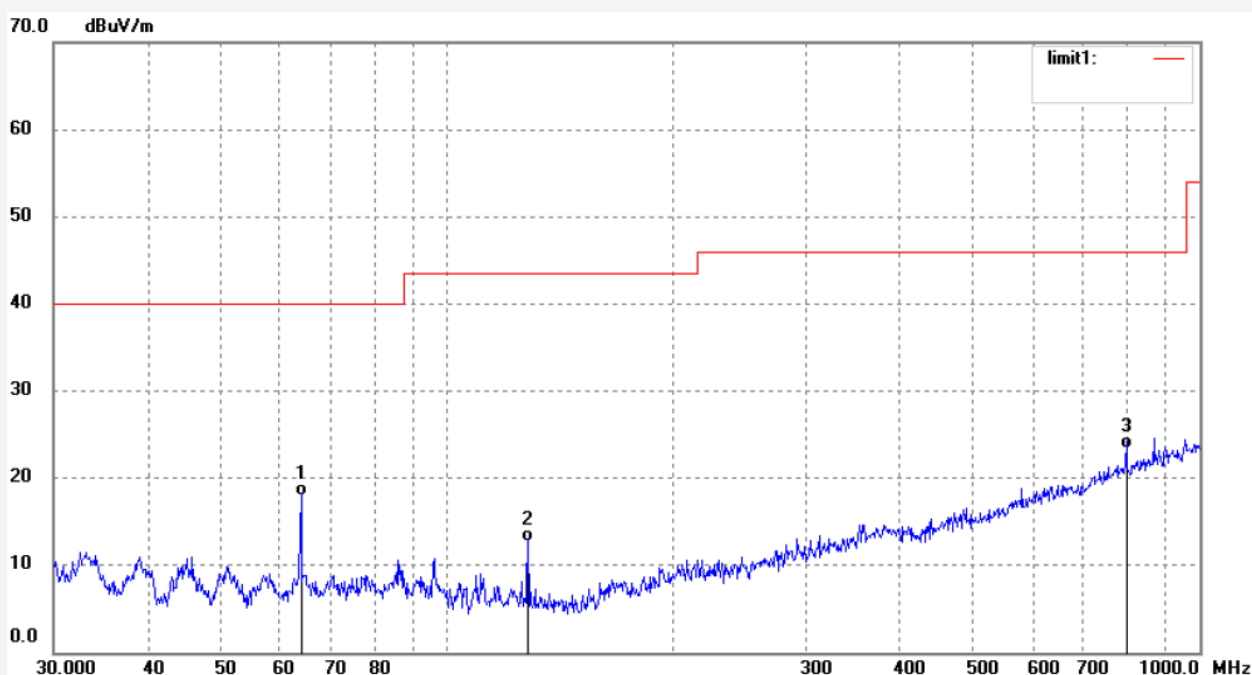
Date: 14/09/16/

Time: 9/25/20

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	63.9827	39.07	-21.17	17.90	40.00	-22.10	QP			
2	128.1129	35.68	-22.94	12.74	43.50	-30.76	QP			
3	798.9796	31.12	-7.80	23.32	46.00	-22.68	QP			

Job No.: STAR #3917

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2440MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Horizontal

Power Source: DC 3V

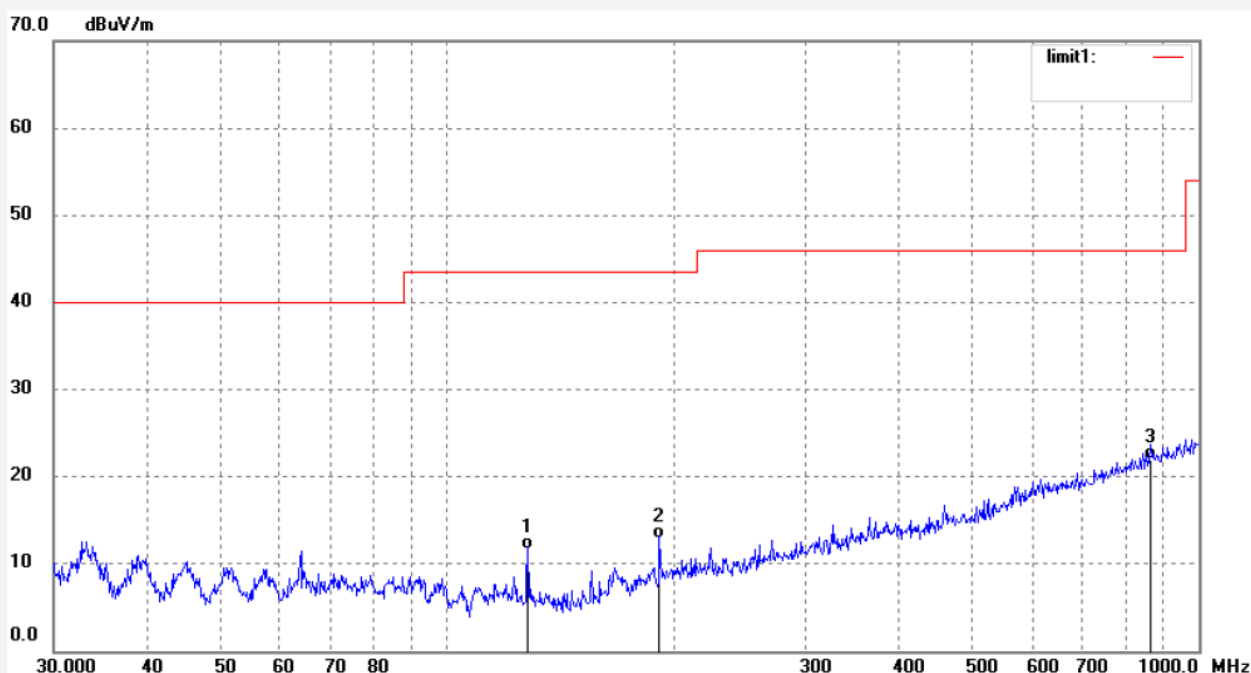
Date: 14/09/17/

Time: 9/27/04

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	128.1129	34.60	-22.94	11.66	43.50	-31.84	QP			
2	191.7450	33.58	-20.80	12.78	43.50	-30.72	QP			
3	863.0561	28.78	-6.74	22.04	46.00	-23.96	QP			

Job No.: STAR #3916

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2440MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Vertical

Power Source: DC 3V

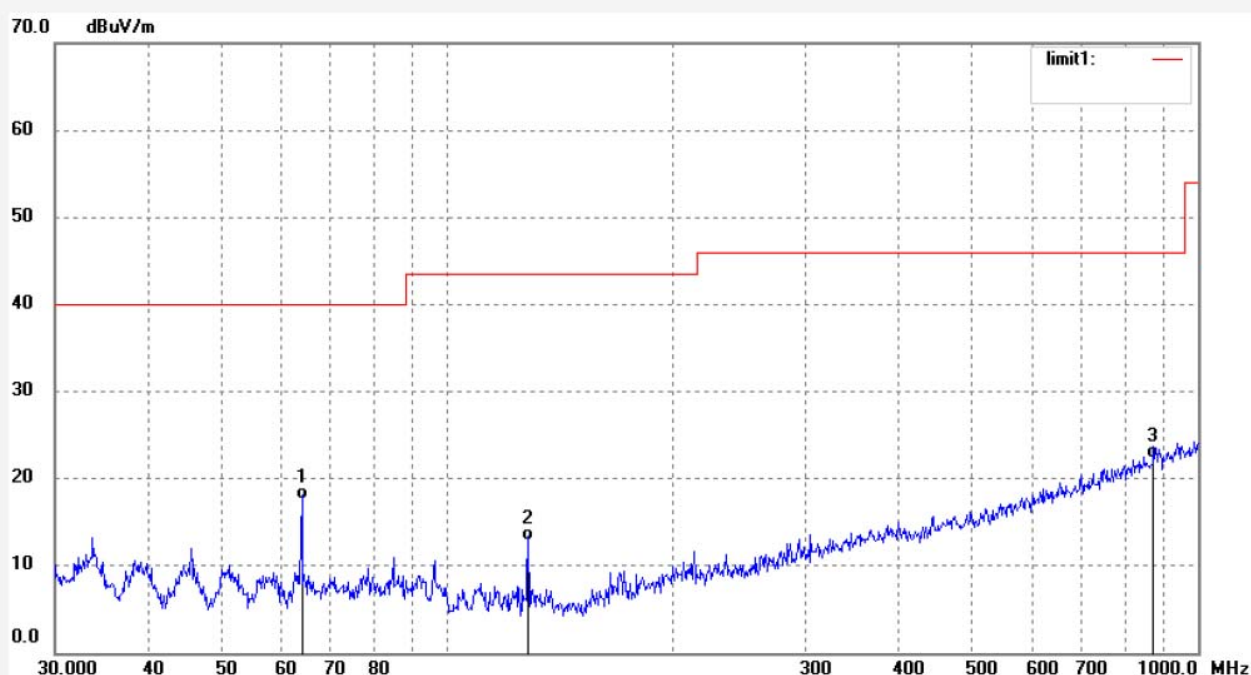
Date: 14/09/17/

Time: 9/25/52

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	63.9827	38.69	-21.17	17.52	40.00	-22.48	QP			
2	128.1128	35.74	-22.94	12.80	43.50	-30.70	QP			
3	872.1832	28.87	-6.59	22.28	46.00	-23.72	QP			

Job No.: STAR #3918

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2480MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Horizontal

Power Source: DC 3V

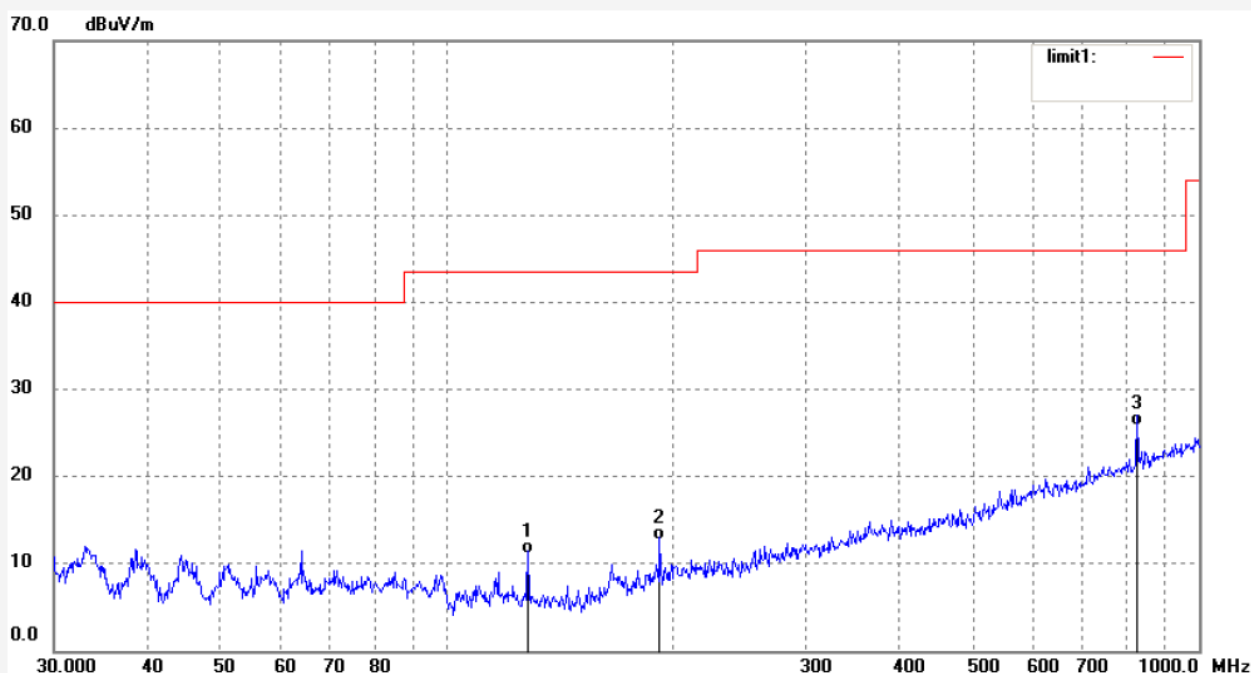
Date: 14/09/17/

Time: 9/27/46

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	128.1129	34.10	-22.94	11.16	43.50	-32.34	QP			
2	191.7450	33.54	-20.80	12.74	43.50	-30.76	QP			
3	827.4933	33.12	-7.32	25.80	46.00	-20.20	QP			

Job No.: STAR #3919

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2480MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Vertical

Power Source: DC 3V

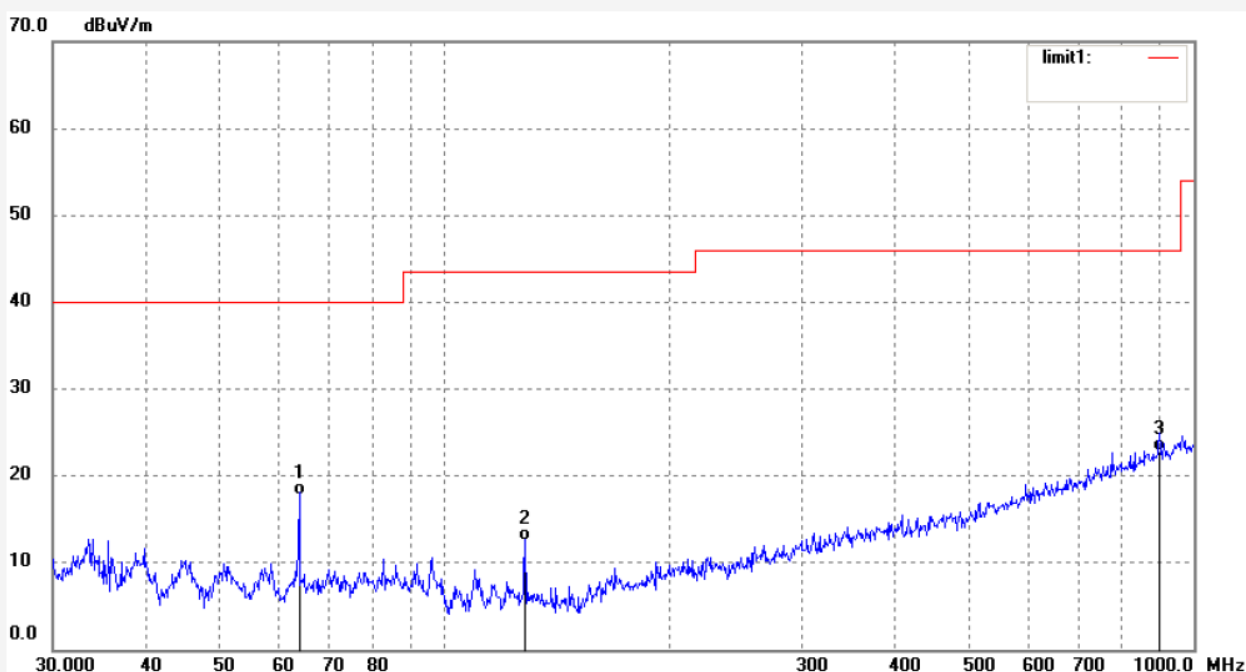
Date: 14/09/17/

Time: 9/28/33

Engineer Signature:

Distance: 3m

Note: Report No:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	63.9828	38.87	-21.17	17.70	40.00	-22.30	QP			
2	128.1130	35.41	-22.94	12.47	43.50	-31.03	QP			
3	900.1474	28.89	-6.11	22.78	46.00	-23.22	QP			

Above 1GHz



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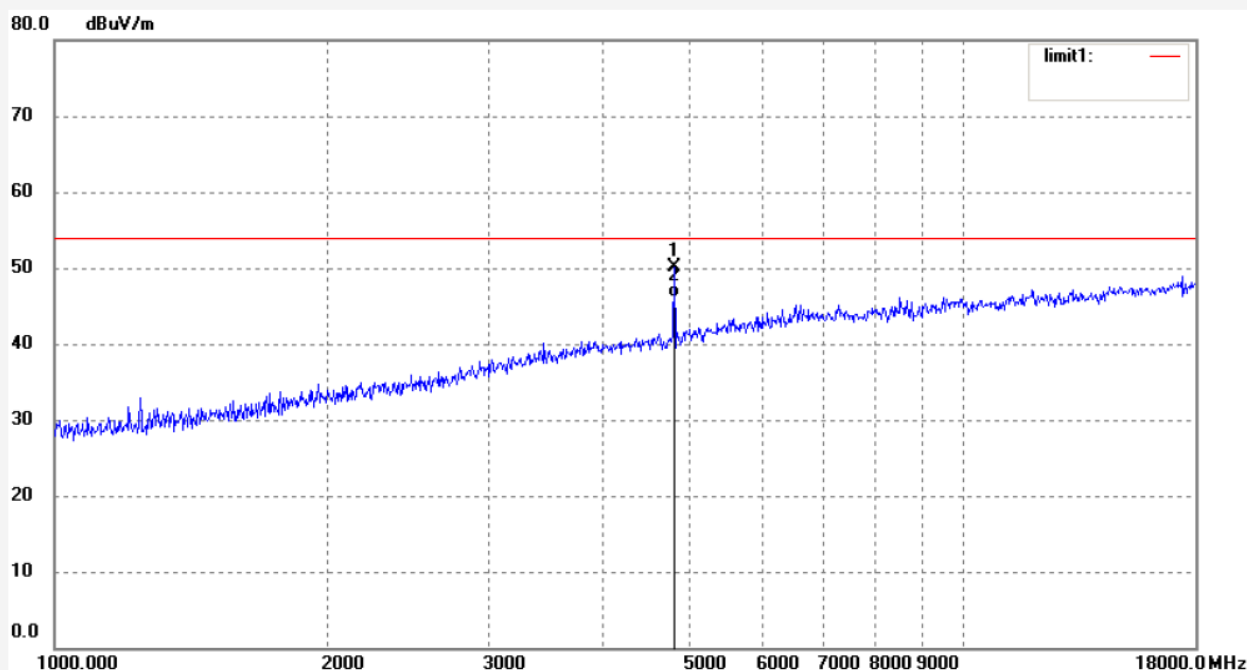
Site: 1# Chamber
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Fax:+86-0755-26503396

Job No.: STAR2014 #1289
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Selfy Shutter Remote
Mode: TX 2402MHz
Model: SELFY

Polarization: Horizontal
Power Source: DC 3V
Date: 14/09/17/
Time: 9/38/58
Engineer Signature: STAR
Distance: 3m

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Note: Report No.:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4804.110	50.21	-0.19	50.02	74.00	-23.98	peak			
2	4804.110	46.20	-0.19	46.01	54.00	-7.99	AVG			

Job No.: STAR2014 #1290

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2402MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Vertical

Power Source: DC 3V

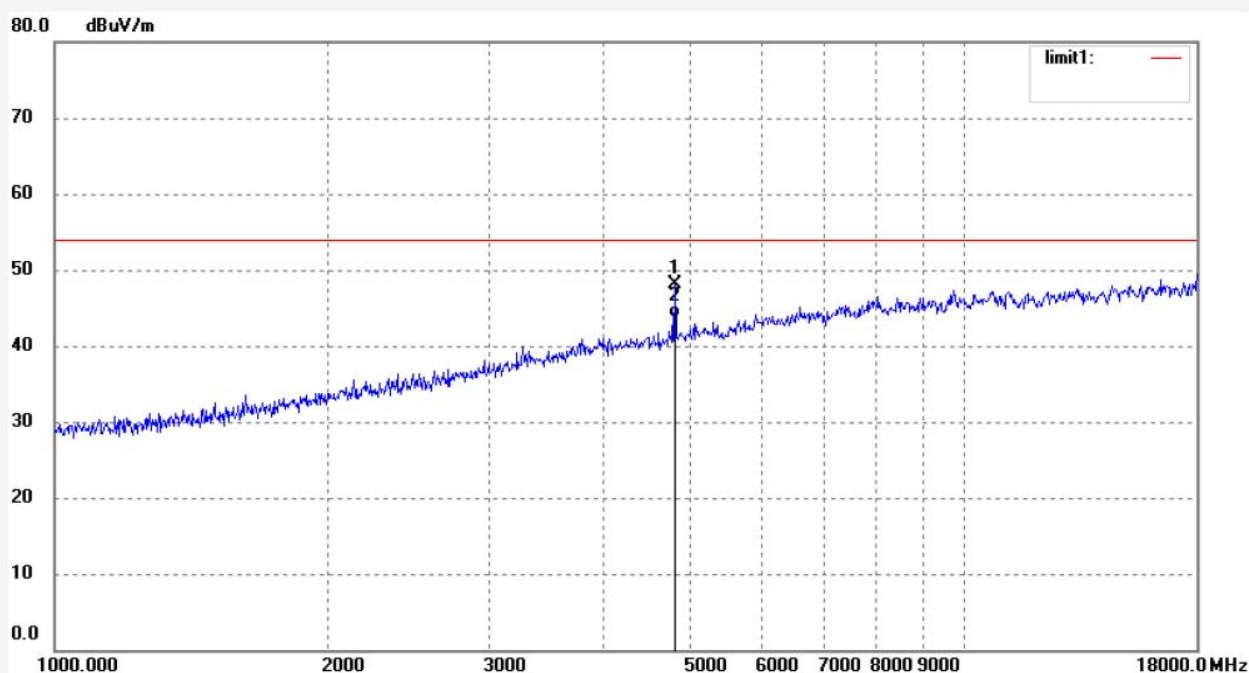
Date: 14/09/17/

Time: 9/42/34

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4804.110	48.37	-0.19	48.18	74.00	-25.82	peak			
2	4804.110	43.83	-0.19	43.64	54.00	-10.36	AVG			

Job No.: STAR2014 #1292

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2440MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Horizontal

Power Source: DC 3V

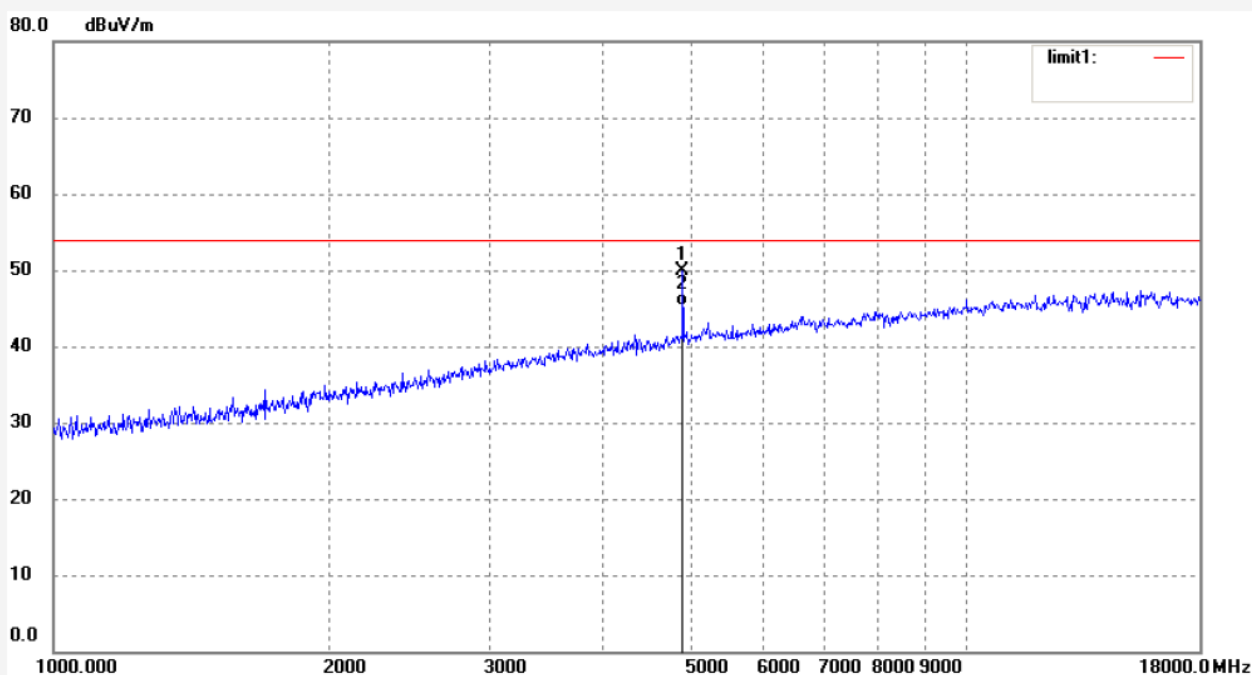
Date: 14/09/17/

Time: 9/51/36

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4880.151	49.76	0.08	49.84	74.00	-24.16	peak			
2	4880.151	45.13	0.08	45.21	54.00	-8.79	AVG			

Job No.: STAR2014 #1291

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2440MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Vertical

Power Source: DC 3V

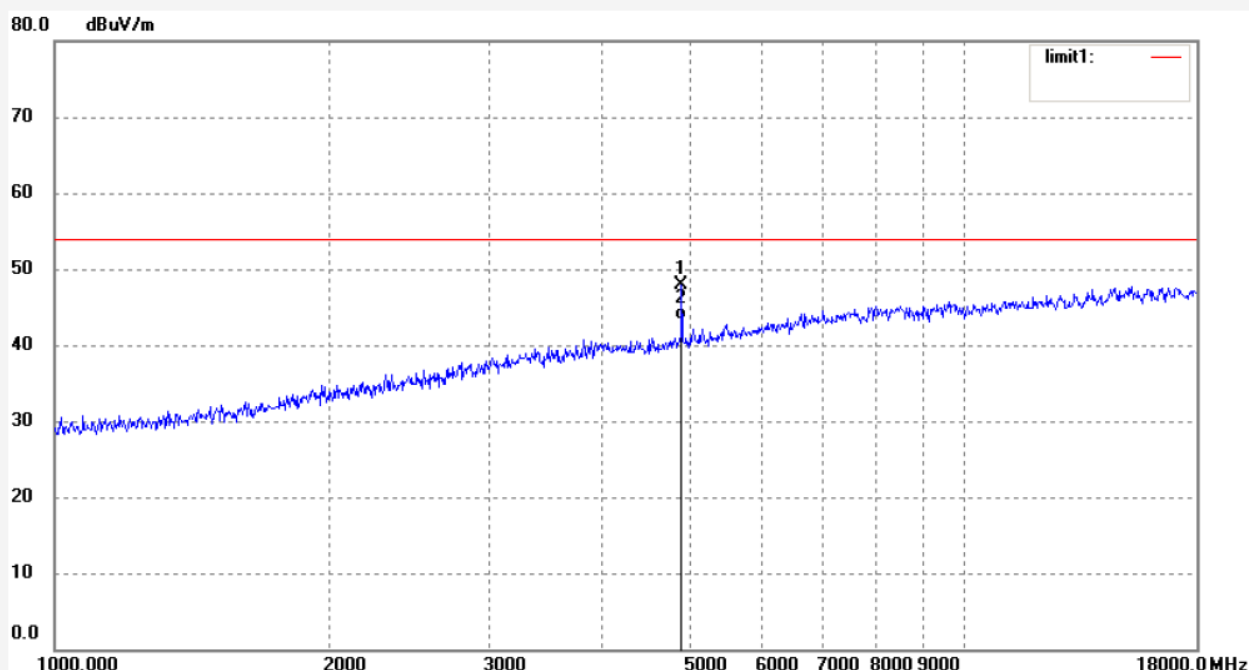
Date: 14/09/17/

Time: 9/47/31

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4880.151	47.81	0.08	47.89	74.00	-26.11	peak			
2	4880.151	43.25	0.08	43.33	54.00	-10.67	AVG			

Job No.: STAR2014 #1293

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2480MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Horizontal

Power Source: DC 3V

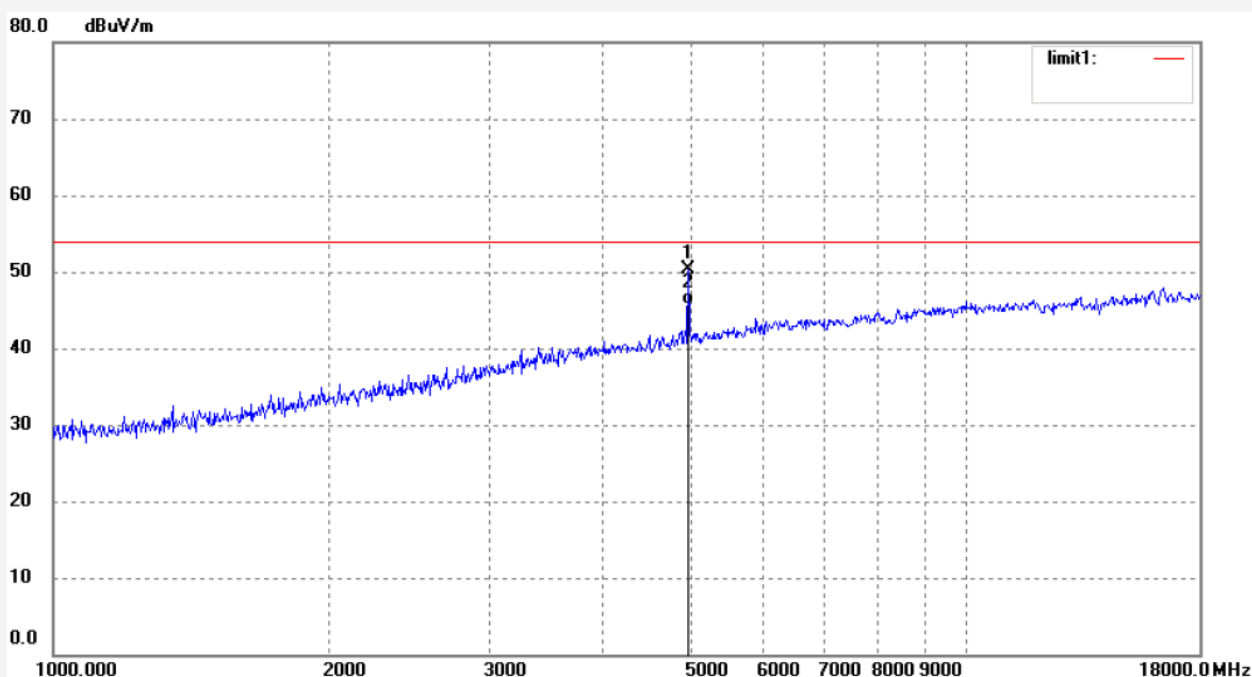
Date: 14/09/17/

Time: 9/55/42

Engineer Signature: STAR

Distance: 3m

Note: Report No.:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4959.307	49.90	0.35	50.25	74.00	-23.75	peak			
2	4959.307	45.28	0.35	45.63	54.00	-8.37	AVG			

Job No.: STAR2014 #1294

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Selfy Shutter Remote

Mode: TX 2480MHz

Model: SELFY

Manufacturer: SEATUNE ELECTRONICS CO.,LTD

Polarization: Vertical

Power Source: DC 3V

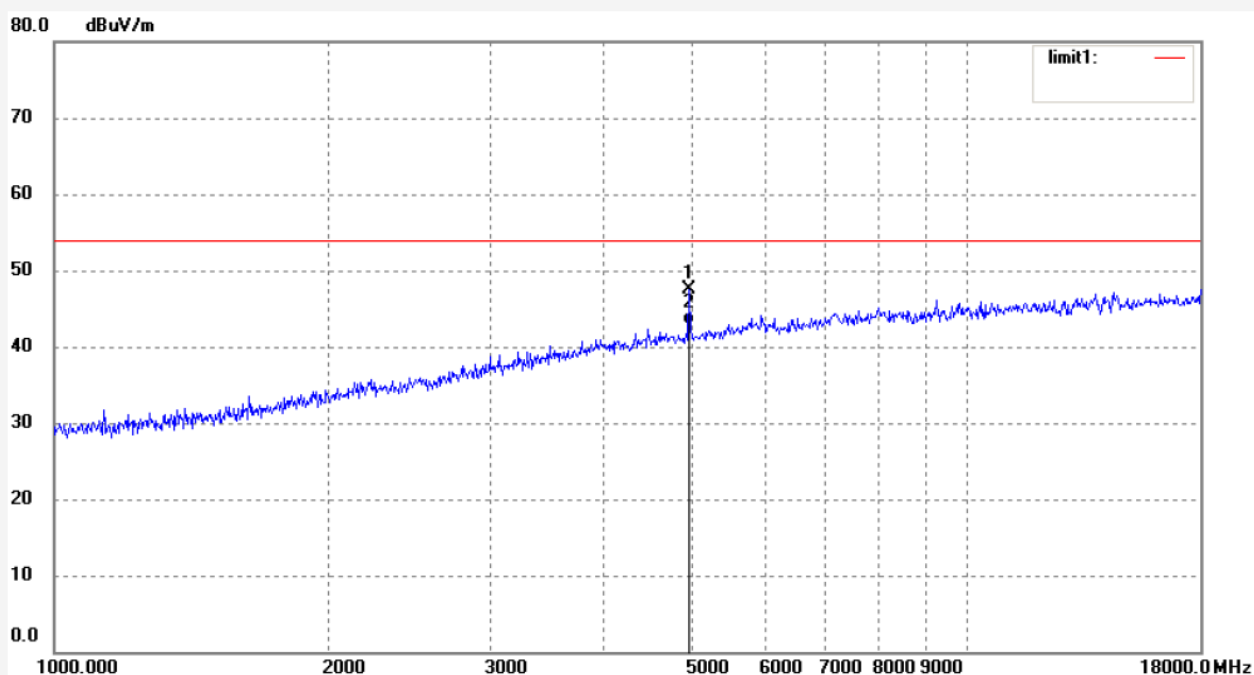
Date: 14/09/17/

Time: 9/59/46

Engineer Signature: STAR

Distance: 3m

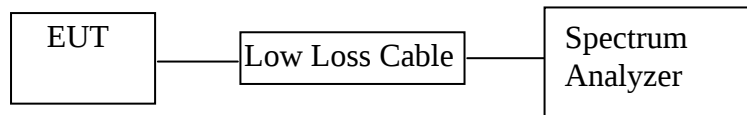
Note: Report No.:ATE20141789



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4959.307	47.17	0.35	47.52	74.00	-26.48	peak			
2	4959.307	42.61	0.35	42.96	54.00	-11.04	AVG			

11.CONDUCTED SPURIOUS EMISSION COMPLIANCE TEST

11.1.Block Diagram of Test Setup



(EUT: Selfy Shutter Remote)

11.2.The Requirement of 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).

11.3.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.

11.4.Operating Condition of EUT

11.4.1.Setup the EUT and simulator as shown as Section 11.1.

11.4.2.Turn on the power of all equipment.

11.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

11.5. Test Procedure

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

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

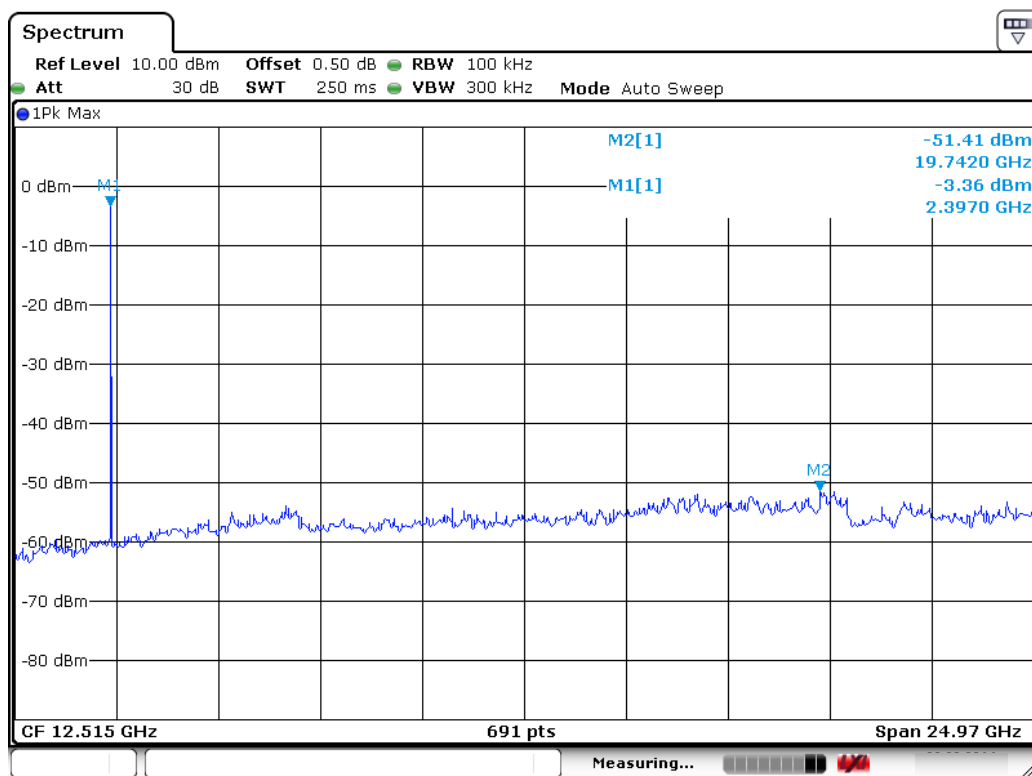
11.5.3. The Conducted Spurious Emission was measured and recorded.

11.6. Test Result

Pass.

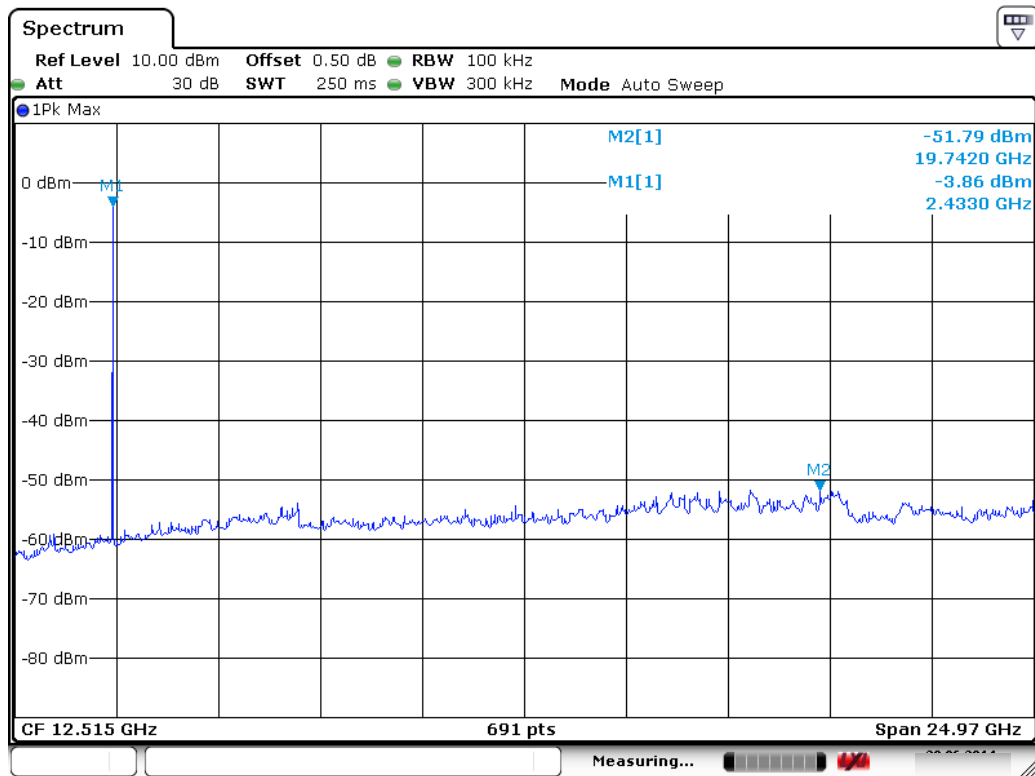
The spectrum analyzer plots are attached as below.

BLE Channel Low 2402MHz



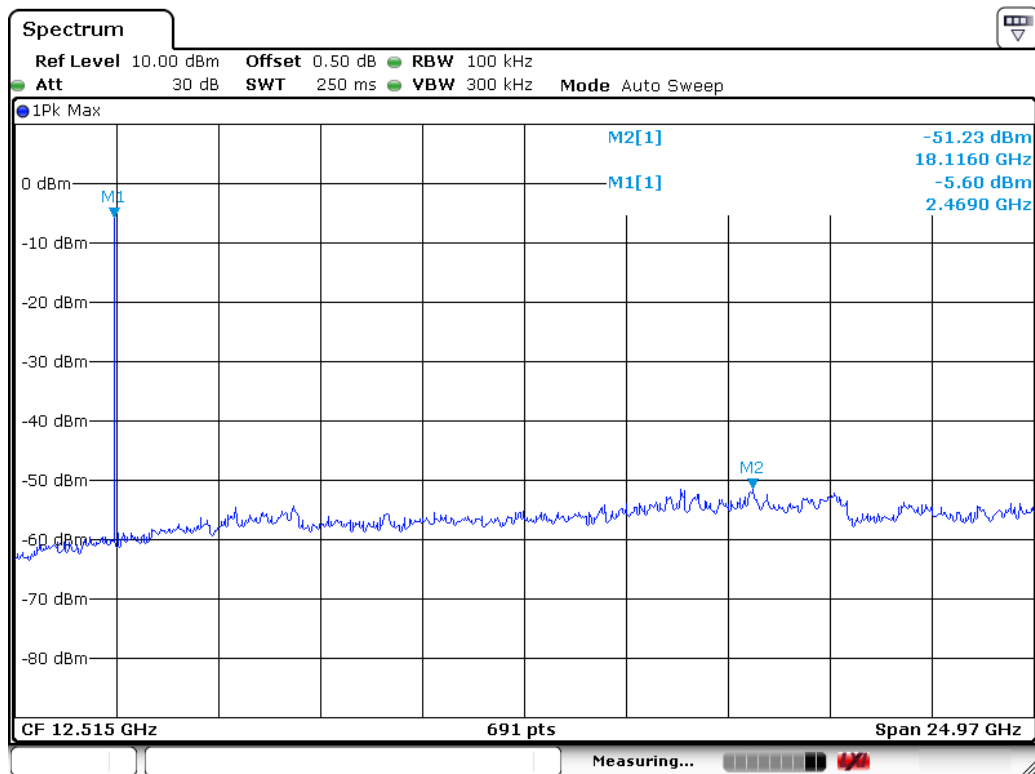
Date: 17.Sep.2014 11:06:21

BLE Channel Middle 2440MHz



Date: 17.Sep.2014 11:07:08

BLE Channel High 2480MHz



Date: 17.Sep.2014 11:07:49

12.ANTENNA REQUIREMENT

12.1.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.

12.2.Antenna Construction

Device is equipped with unique antenna, which isn't displaced by other antenna. Therefore, the equipment complies with the antenna requirement of Section 15.203.

Antenna

