APPLICATION CERTIFICATION FCC Part 15C&RSS-247
On Behalf of
Wellington Drive Technologies Ltd

Bluetooth LE transmission adaptor, SCS Click

Model: CLK-0xx(x could be 0～9, represent different shape or color of enclosure.)

FCC ID: 2AHCE-CLICK1
IC: 21145-CLICK1

Prepared for	:	Wellington Drive Technologies Ltd
Address	:	21 Arrenway Drive, Rosedale, Auckland 0632, New Zealand
Prepared by	:	Shenzhen Accurate Technology Co., Ltd.
Address	:	1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.
		Tel: (0755) 26503290
		Fax: (0755) 26503396

Report No.	:	ATE20172575
Date of Test	:	Oct. 25, 2017-Dec. 25, 2017
Date of Report	:	Dec. 26, 2017

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Description Page

Test Report Certification

Applicant	:	Wellington Drive Technologies Ltd
Address	:	21 Arrenway Drive, Rosedale, Auckland 0632, New Zealand
Manufacturer	:	Wellington Drive Technologies Ltd
Address	:	21 Arrenway Drive, Rosedale, Auckland 0632, New Zealand
Product	:	Bluetooth LE transmission adaptor, SCS Click
Model	:	CLK-0xx (x could be 0～9, represent different shape or color of enclosure.)
Trade name	:	n.a

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.10: 2013
RSS-247 Issue 2 February 2017
RSS-Gen Issue 4 November 2014

The EUT was tested according to DTS test procedure of Apr 05, 2017 KDB558074 D01 DTS Meas Guidance v04 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 and RSS-247. 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 : Oct. 25, 2017-Dec. 25, 2017

Date of Report: Dec. 26, 2017

Prepared by : (Tim Zhang, Engineer)

Approved & Authorized Signer : (Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	Bluetooth LE transmission adaptor, SCS Click
Model	:	CLK-0xx (x could be 0～9, represent different shape or color of enclosure.)
HVIN	:	CLK-001
Trade Name	:	n.a
Bluetooth version	:	4.2 (low energy)
Frequency Range	:	2402MHz-2480MHz
Number of Channels	:	40
Antenna Gain	:	2dBi
Antenna type	:	Internal Antenna
Power Supply	:	DC 5V
Modulation mode	:	GFSK
Applicant Address	: :	Wellington Drive Technologies Ltd 21 Arrenway Drive, Rosedale, Auckland 0632, New Zealand
Manufacturer Address	: :	Wellington Drive Technologies Ltd 21 Arrenway Drive, Rosedale, Auckland 0632, New Zealand
Date of sample received	:	Oct. 25, 2017
Date of Test	:	Oct. 25, 2017-Dec. 25, 2017

1.2.Carrier Frequency of Channels

Channel	Frequceny (MHz)	Channel	Frequceny (MHz)	Channel	Frequceny (MHz)	Channe l	Frequceny (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

PC	Manufacturer: LENOVO M/N: 4290-RT8 S/N: R9-FW93G 11/08

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 (ISEDC)
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	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 07, 2017	Jan. 06, 2018
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 07, 2017	Jan. 06, 2018
Spectrum Analyzer	Rohde&Schwarz	FSV-40	101495	Jan. 07, 2017	Jan. 06, 2018
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 07, 2017	Jan. 06, 2018
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 07, 2017	Jan. 06, 2018
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 13, 2017	Jan. 12, 2018
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 13, 2017	Jan. 12, 2018
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 13, 2017	Jan. 12, 2018
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 13, 2017	Jan. 12, 2018
Open Switch and Control Unit	Rohde&Schwarz	OSP120 + OSP-B157	101244 + 100866	Jan. 07, 2017	Jan. 06, 2018
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 07, 2017	Jan. 06, 2018
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 07, 2017	Jan. 06, 2018
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 07, 2017	Jan. 06, 2018
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	N/A	Jan. 07, 2017	Jan. 06, 2018

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

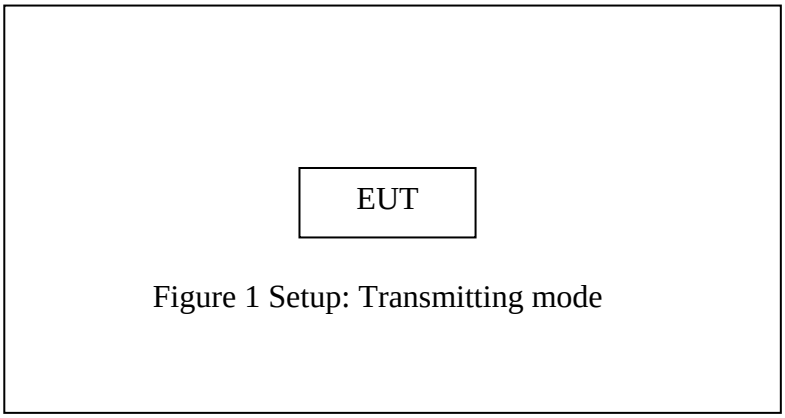


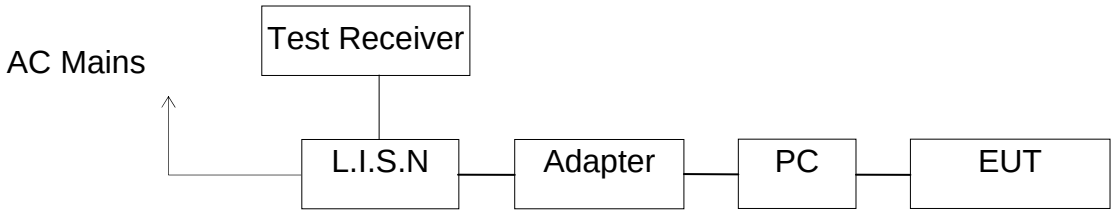
Figure 1 Setup: Transmitting mode

4. TEST PROCEDURES AND RESULTS

FCC&IC Rules	Description of Test	Result
Section 15.247(a)(2) RSS-247 A5.2	6dB Bandwidth Test	Compliant
Section 15.247(e) RSS-247 A5.2	Power Spectral Density Test	Compliant
Section 15.247(b)(3) RSS-247 A5.4	Maximum Peak Output Power Test	Compliant
Section 15.247(d) RSS-247 A5.5	Band Edge Compliance Test	Compliant
Section 15.247(d) Section 15.209 RSS-247 A5.5 RSS-Gen 6.13	Radiated Spurious Emission Test	Compliant
Section 15.247(d) RSS-Gen 6.2	Conducted Spurious Emission Test	Compliant
RSS-Gen Section 6.6	99% Occupied Bandwidth	Compliant
Section 15.207 RSS-Gen Section 8.8	AC Power Line Conducted Emission Test	Compliant
Section 15.203 RSS-Gen 8.3	Antenna Requirement	Compliant

5. POWER LINE CONDUCTED MEASUREMENT

5.1.Block Diagram of Test Setup



(EUT: Bluetooth LE transmission adaptor, SCS Click)

Note: SCS Click is not a PC peripheral device but is intended to be used with specific controllers in field application in accordance with the datasheet.

5.2.Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μV)	
	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.		

5.3.Configuration of EUT on Measurement

The following 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.

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 test mode and measure it.

5.5.Test Procedure

The EUT is put on the plane 0.8 m 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.

5.6.DATA SAMPLE

Frequency (MHz)	Quasi Peak Level (dBμv)	Average Level (dBμv)	Transducer value (dB)	QuasiPeak Result (dBμv)	Average Result (dBμv)	Quasi Peak Limit (dBμv)	Average Limit (dBμv)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	29.4	18.3	11.1	40.5	29.4	56.0	56.0	15.5	16.6	Pass

Transducer value = Insertion loss of LISN + Cable Loss
Result = Quasi-peak Level/Average Level + Transducer value
Limit = Limit stated in standard

Calculation Formula:

Margin = Limit – Reading level value – Transducer value

5.7.Power Line Conducted Emission Measurement Results

PASS.

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

Test mode : BT Operation(worse case)
Test Voltage: 120V/60Hz

MEASUREMENT RESULT: "TUV-1219-02_fin"

12/19/2017

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.175000	54.20	10.5	65	10.5	QP	L1	GND
0.240000	47.20	10.6	62	14.9	QP	L1	GND
4.810000	42.30	11.1	56	13.7	QP	L1	GND

MEASUREMENT RESULT: "TUV-1219-02_fin2"

12/19/2017

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.185000	39.60	10.5	54	14.7	AV	L1	GND
0.240000	30.80	10.6	52	21.3	AV	L1	GND
4.780000	36.90	11.1	46	9.1	AV	L1	GND

MEASUREMENT RESULT: "TUV-1219-01_fin"

12/19/2017

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.180000	57.10	10.5	65	7.4	QP	N	GND
4.800000	44.50	11.1	56	11.5	QP	N	GND
22.345000	33.40	11.4	60	26.6	QP	N	GND

MEASUREMENT RESULT: "TUV-1219-01_fin2"

12/19/2017

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.180000	41.20	10.5	55	13.3	AV	N	GND
4.870000	36.70	11.1	46	9.3	AV	N	GND
5.790000	28.30	11.2	50	21.7	AV	N	GND

Emissions attenuated more than 20 dB below the permissible value are not reported.
The spectral diagrams are attached as below.

ACCURATE TECHNOLOGY CO.,LTD

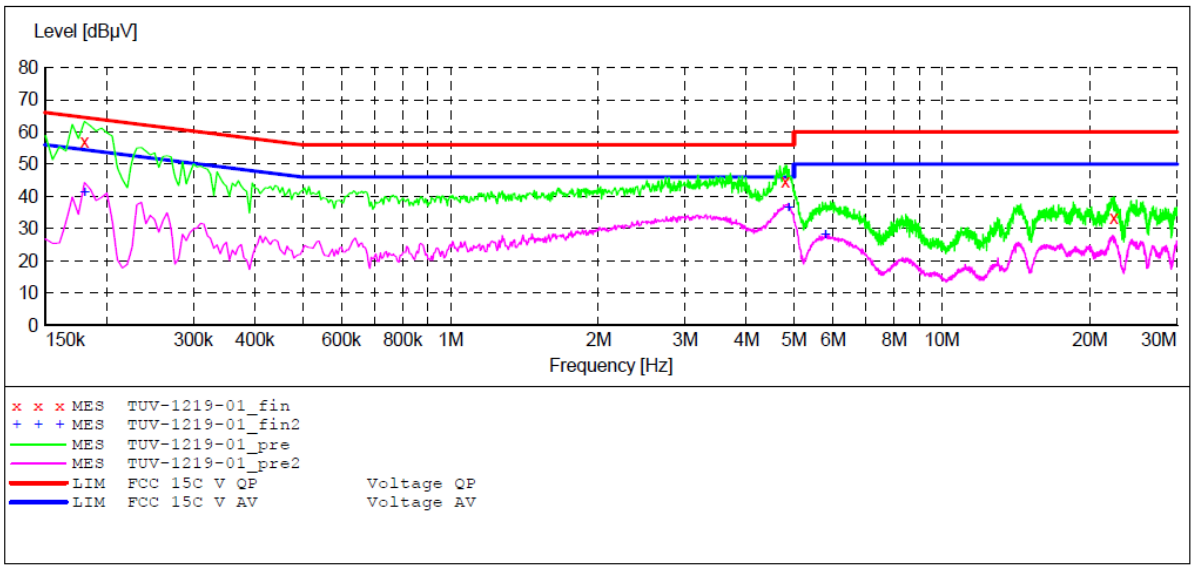
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT: Bluetooth LE transmission adaptor,SCS Click
Manufacturer: Wellington
Operating Condition: TX
Test Site: 1#Shielding Room
Operator: WADE
Test Specification: N 120V/60Hz
Comment: M/N:CLK-0xx(x could be 0~9,represent different shape or color
Comment: of enclosure)

SCAN TABLE: "V 9K-30MHz fin"

Short Description: SUB STD VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak Average	1.0 s	200 Hz	NSLK8126 2008
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "TUV-1219-01_fin"

12/19/2017

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.180000	57.10	10.5	65	7.4	QP	N	GND
4.800000	44.50	11.1	56	11.5	QP	N	GND
22.345000	33.40	11.4	60	26.6	QP	N	GND

MEASUREMENT RESULT: "TUV-1219-01_fin2"

12/19/2017

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.180000	41.20	10.5	55	13.3	AV	N	GND
4.870000	36.70	11.1	46	9.3	AV	N	GND
5.790000	28.30	11.2	50	21.7	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD

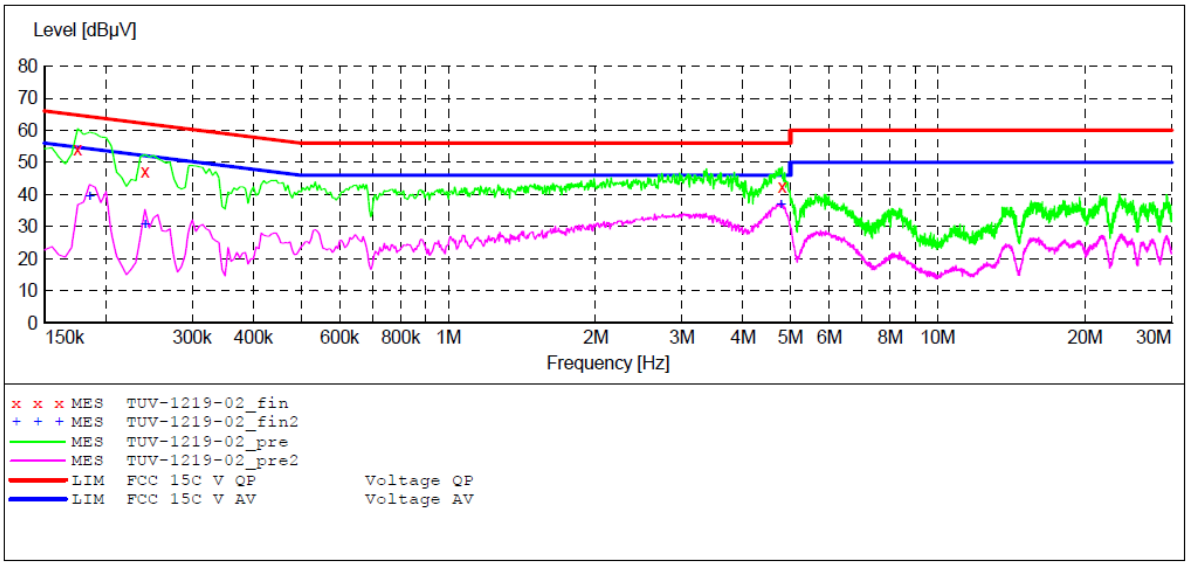
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT: Bluetooth LE transmission adaptor,SCS Click
Manufacturer: Wellington
Operating Condition: TX
Test Site: 1#Shielding Room
Operator: WADE
Test Specification: L 120V/60Hz
Comment: M/N:CLK-0xx(x could be 0~9,represent different shape or color
Comment: of enclosure)

SCAN TABLE: "V 9K-30MHz fin"

Short Description: SUB STD VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak Average	1.0 s	200 Hz	NSLK8126 2008
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "TUV-1219-02_fin"

12/19/2017

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.175000	54.20	10.5	65	10.5	QP	L1	GND
0.240000	47.20	10.6	62	14.9	QP	L1	GND
4.810000	42.30	11.1	56	13.7	QP	L1	GND

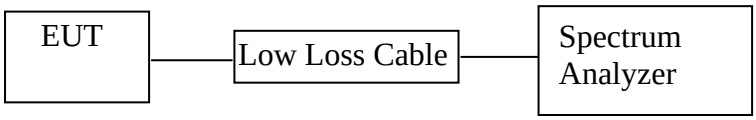
MEASUREMENT RESULT: "TUV-1219-02_fin2"

12/19/2017

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.185000	39.60	10.5	54	14.7	AV	L1	GND
0.240000	30.80	10.6	52	21.3	AV	L1	GND
4.780000	36.90	11.1	46	9.1	AV	L1	GND

6. 6DB BANDWIDTH MEASUREMENT

6.1.Block Diagram of Test Setup



(EUT: Bluetooth LE transmission adaptor, SCS Click)

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.The Requirement for 5.2(1)

The minimum -6 dB bandwidth shall be 500 kHz.

6.4.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.

6.5.Operating Condition of EUT

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

6.5.2.Turn on the power of all equipment.

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

6.6.Test Procedure

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

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

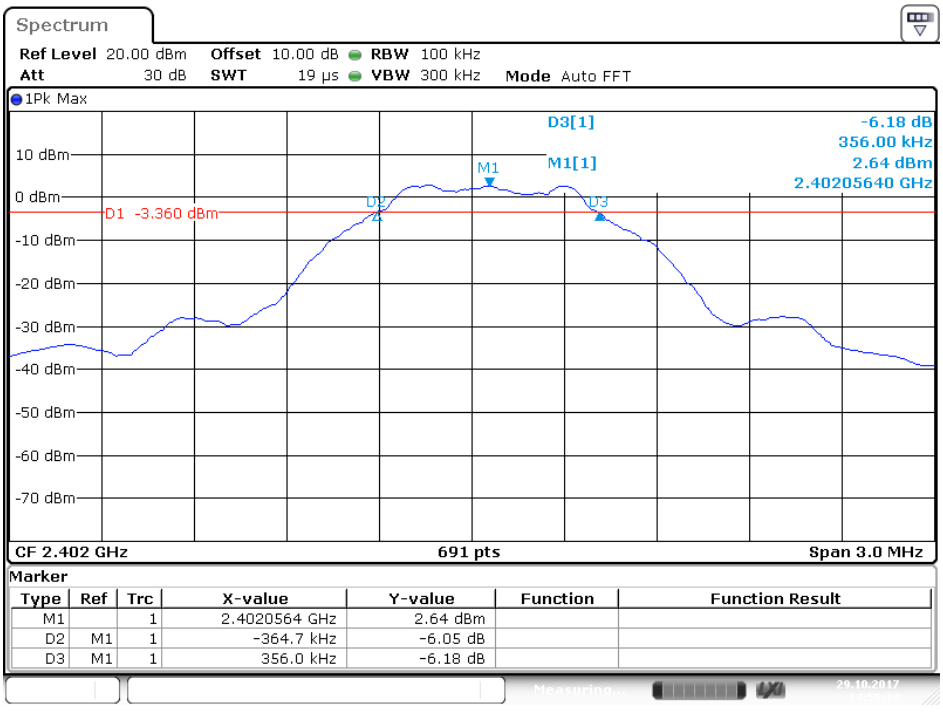
6.6.3.The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

6.7.Test Result

Channel	Frequency (MHz)	6 dB Bandwith (MHz)	Minimum Limit(MHz)	PASS/FAIL
0	2402	0.7207	0.5	PASS
19	2440	0.7164	0.5	PASS
39	2480	0.7294	0.5	PASS

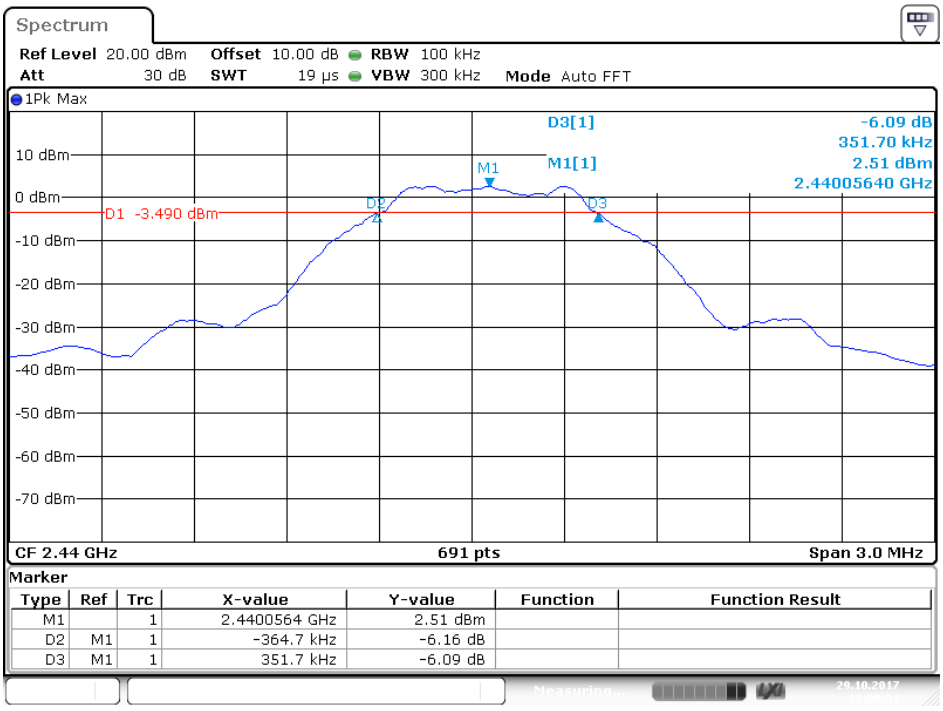
The spectrum analyzer plots are attached as below.

channel 0



Date: 29.OCT.2017 14:59:14

channel 19



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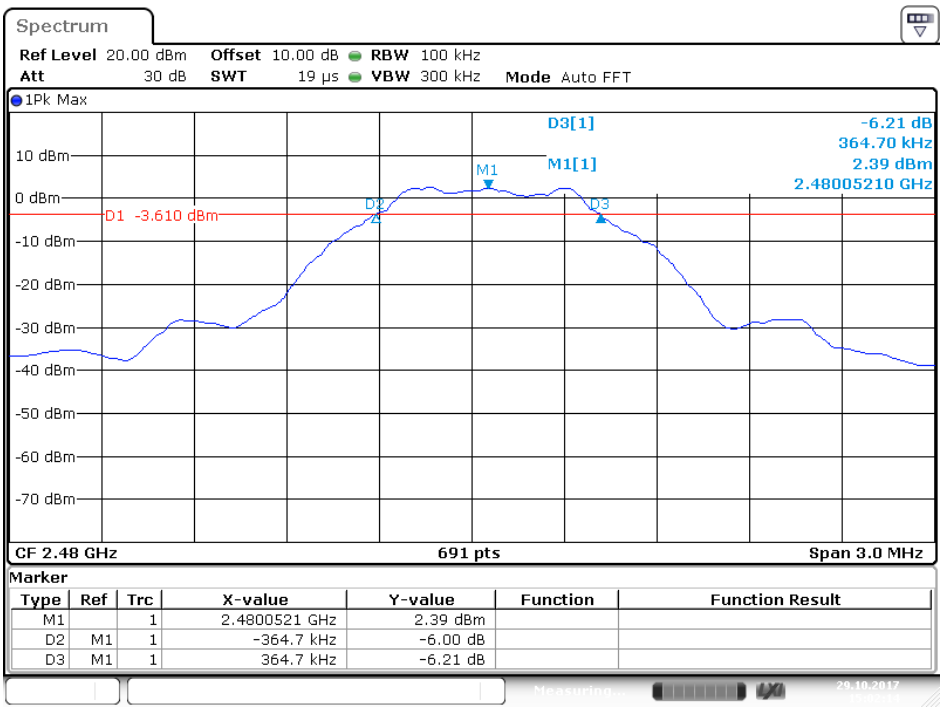
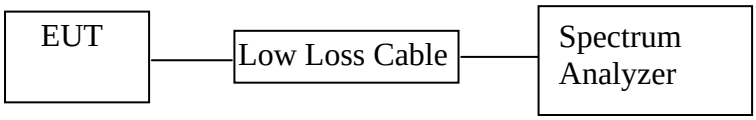
channel 39



Date: 29.OCT.2017 15:02:14

7. MAXIMUM PEAK OUTPUT POWER

7.1.Block Diagram of Test Setup



(EUT: Bluetooth LE transmission adaptor, SCS Click)

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.The Requirement For Section RSS-247 section 5.4

5.4 (4): For DTSs employing digital modulation techniques operating in the bands 902-928MHz and 2400-2483.5MHz, the maximum peak conducted output power shall not exceed 1W.

7.4.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.

7.5.Operating Condition of EUT

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

7.5.2.Turn on the power of all equipment.

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

7.6.Test Procedure

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

7.6.2.Set RBW of spectrum analyzer to 1 MHz and VBW to 3MHz.

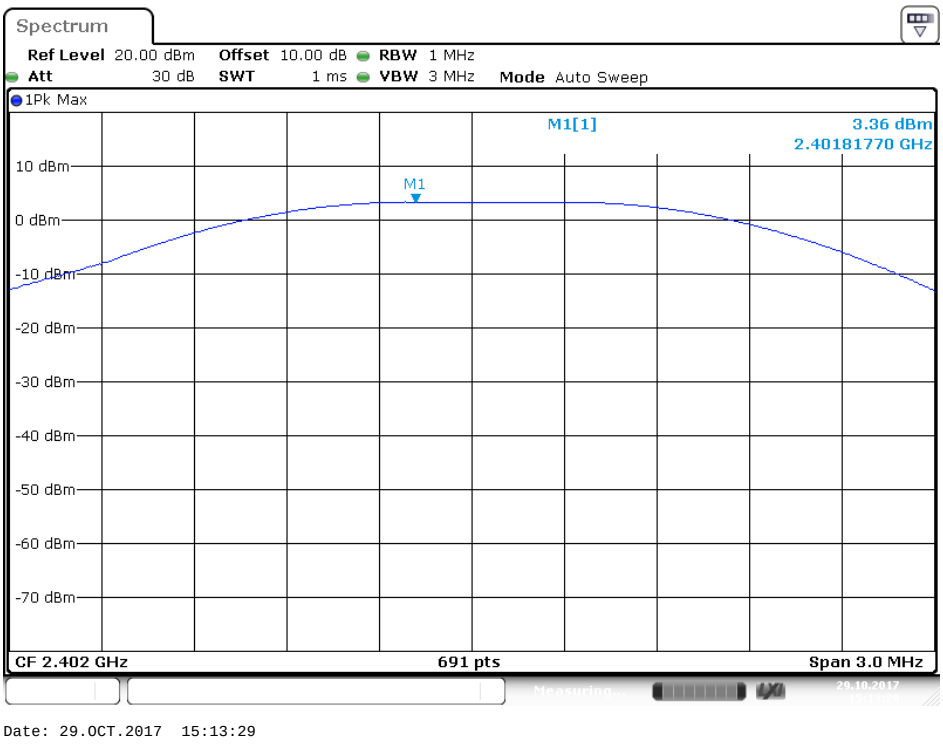
7.6.3.Measurement the maximum peak output power.

7.7.Test Result

Channel	Frequency (MHz)	Peak Output Power (dBm)	Antenna gain (dBi)	E.I.P.R. (dBm)	Peak Power Limit (dBm)	Pass / Fail
0	2402	3.36	2	5.36	30	PASS
19	2440	3.23	2	5.23	30	PASS
39	2480	3.10	2	5.10	30	PASS

The spectrum analyzer plots are attached as below.

channel 0



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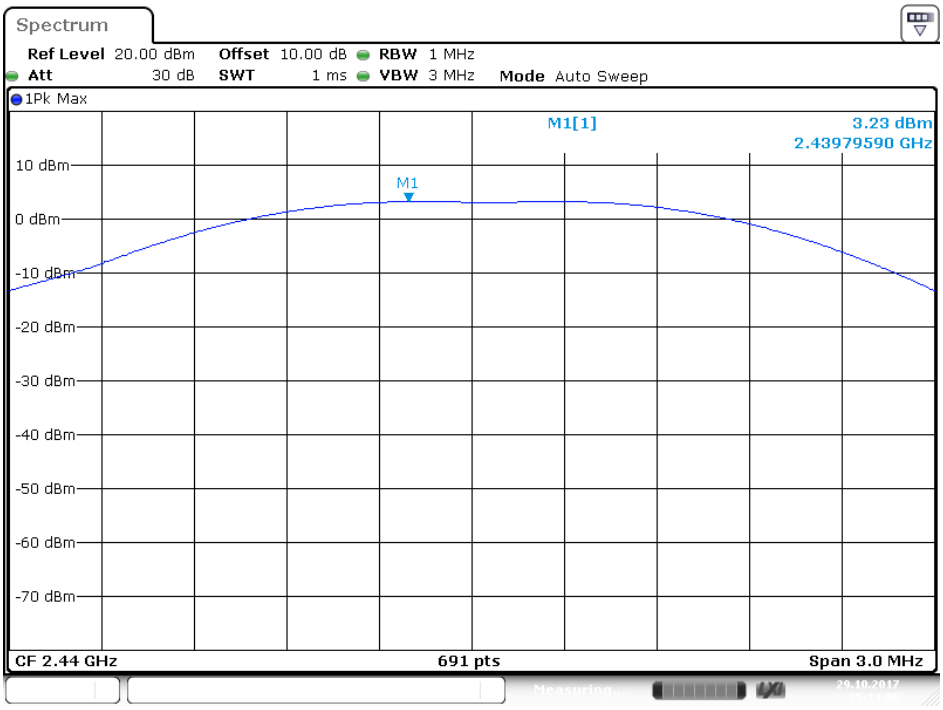
channel 19



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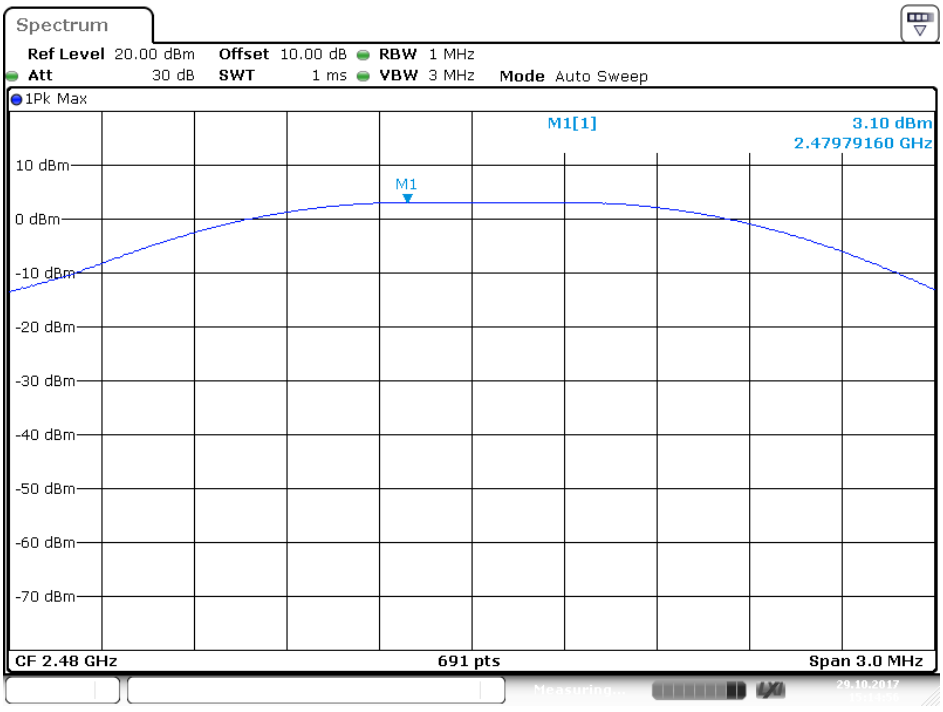
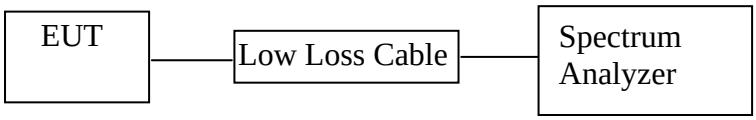
channel 39



Date: 29.OCT.2017 15:14:56

8. POWER SPECTRAL DENSITY MEASUREMENT

8.1.Block Diagram of Test Setup



(EUT: Bluetooth LE transmission adaptor, SCS Click)

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.The Requirement For Section RSS-247 section 5.2

Section 5.2(2): The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of Section 5.4(4), (i.e. the power spectral density shall be determined using the same method as is used to determine the conducted output power).

8.4.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.

8.5.Operating Condition of EUT

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

8.5.2.Turn on the power of all equipment.

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

8.6. Test Procedure

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

8.6.2. Measurement Procedure PKPSD:

8.6.3. 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 kHz $\leqslant$ RBW $\leqslant$ 100 kHz.
4. Set the VBW $\geqslant$ 3 x 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.

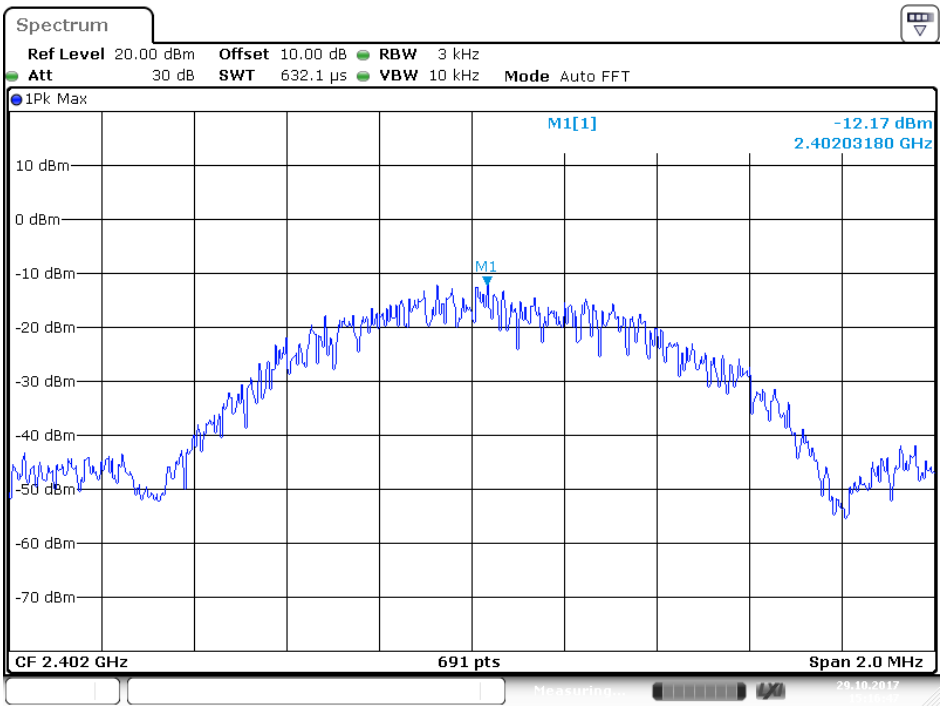
8.6.4. Measurement the maximum power spectral density.

8.7.Test Result

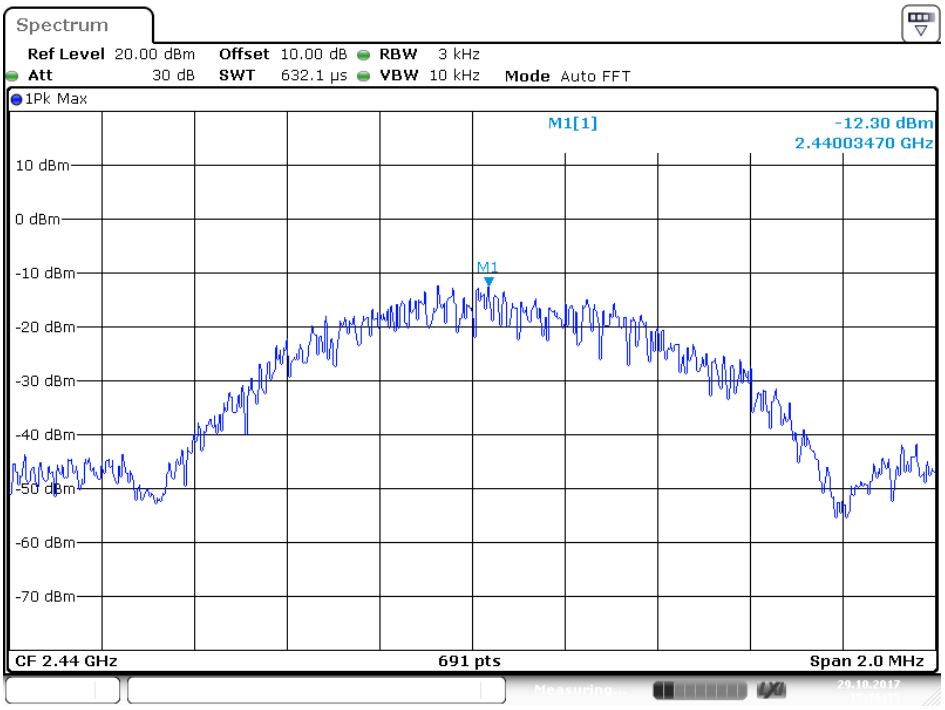
CHANNEL NUMBER	FREQUENCY (MHz)	PSD (dBm/3kHz)	LIMIT (dBm/3kHz)	PASS/FAIL
0	2402	-12.17	8	PASS
19	2440	-12.30	8	PASS
39	2480	-12.09	8	PASS

The spectrum analyzer plots are attached as below.

channel 0

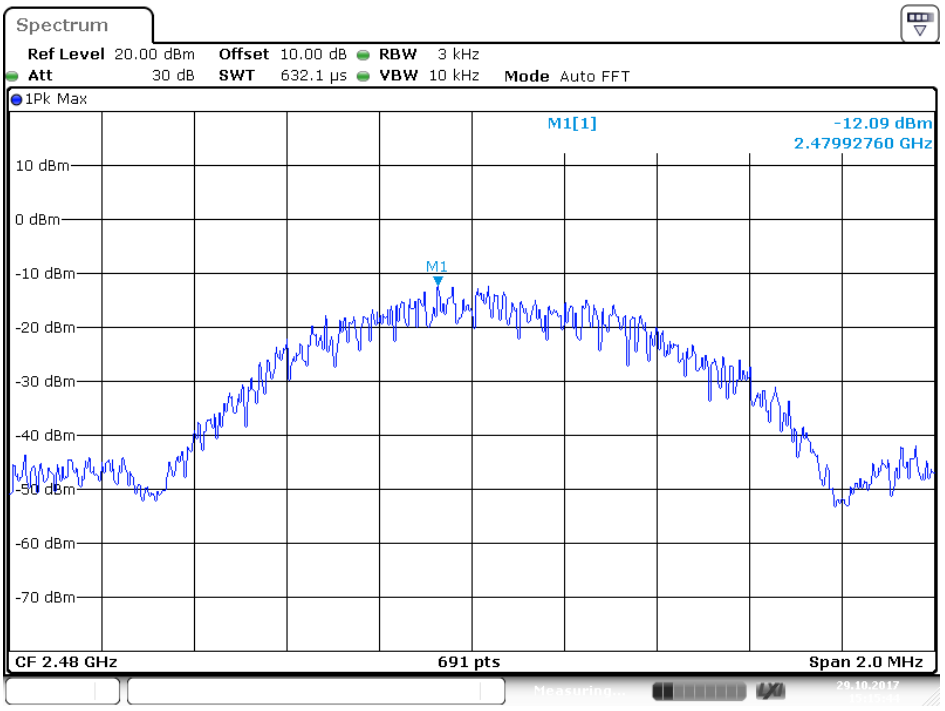


channel 19



Date: 29.OCT.2017 15:16:15

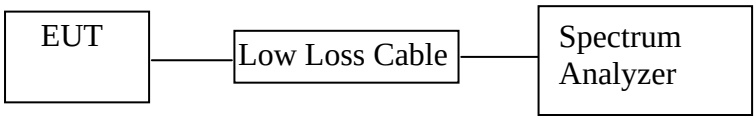
channel 39



Date: 29.OCT.2017 15:15:44

9. BAND EDGE COMPLIANCE TEST

9.1. Block Diagram of Test Setup



(EUT: Bluetooth LE transmission adaptor, SCS Click)

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. The Requirement For RSS-247 Section 5.5

5.5: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

9.4. 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.

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

9.6.Test Procedure

Conducted Band Edge:

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

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

9.6.3. Radiate Band Edge:

9.6.4.The EUT is placed on a turntable, which is 0.1m above the ground plane and worked at highest radiated power.

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

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

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

9.6.8.RBW=1MHz, VBW=1MHz

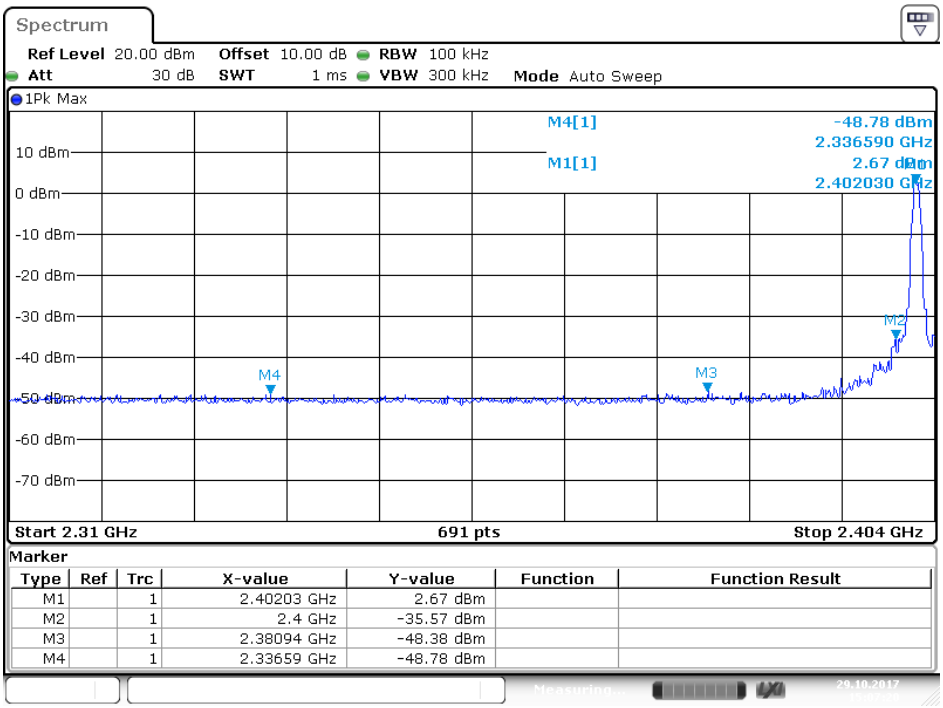
9.6.9.The band edges was measured and recorded.

9.7.Test Result

Pass

Channel	Frequency	Delta peak to band emission	Limit(dBc)
0	2.4GHz	38.24	20
39	2.4835GHz	47.52	20

channel 0



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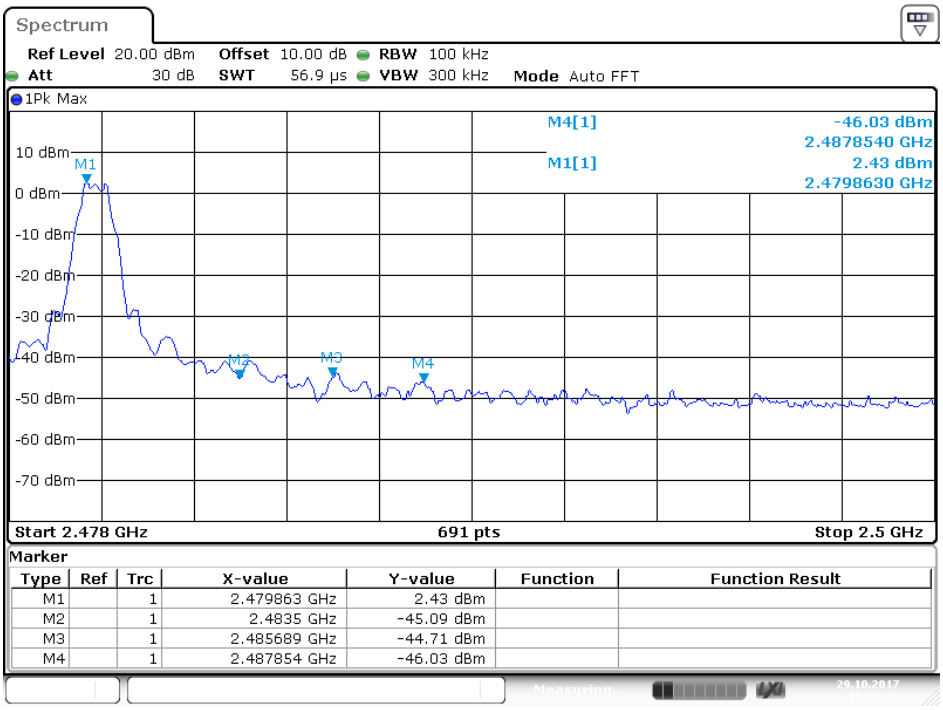
channel 39



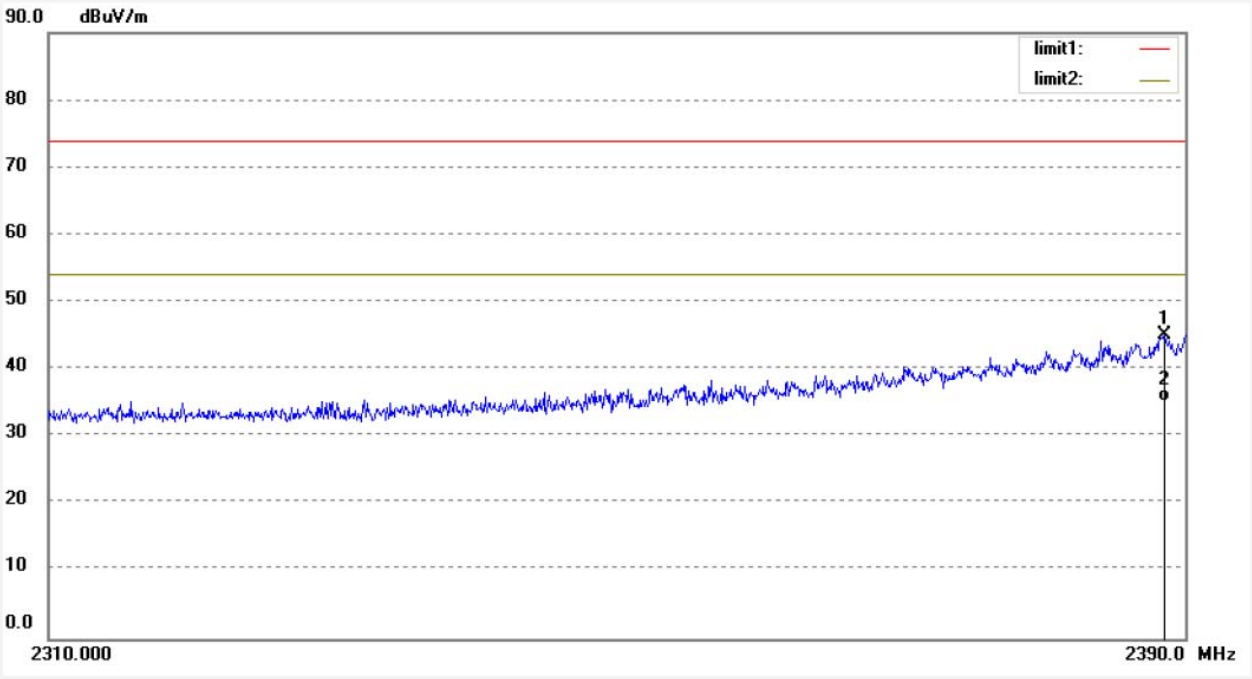
Date: 29.OCT.2017 15:08:43

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: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4875	Polarization: Horizontal
Standard: FCC (Band Edge)	Power Source: DC 5V
Test item: Radiation Test	Date: 17/10/29/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth LE transmission adaptor,SCS Click	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)	
Manufacturer: Wellington	

Note: /

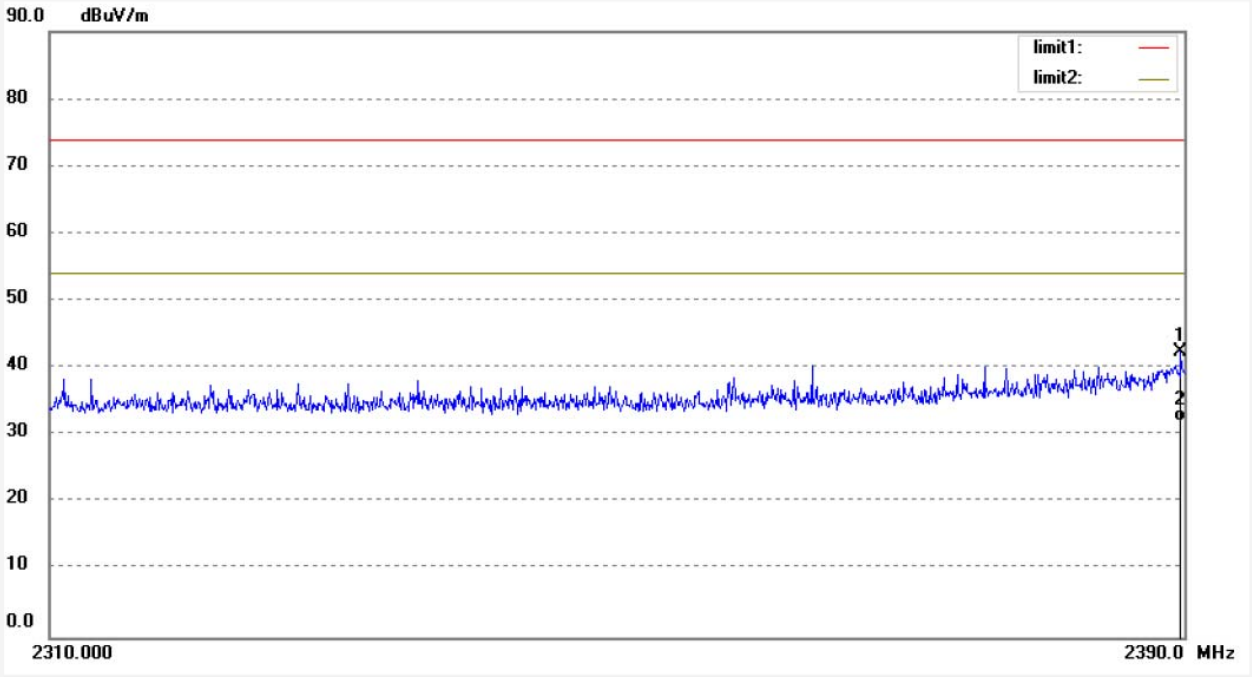


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2388.560	44.27	0.78	45.05	74.00	-28.95	peak			
2	2388.560	34.46	0.78	35.24	54.00	-18.76	AVG			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4874	Polarization: Vertical
Standard: FCC (Band Edge)	Power Source: DC 5V
Test item: Radiation Test	Date: 17/10/29/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth LE transmission adaptor,SCS Click	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)	
Manufacturer: Wellington	

Note:

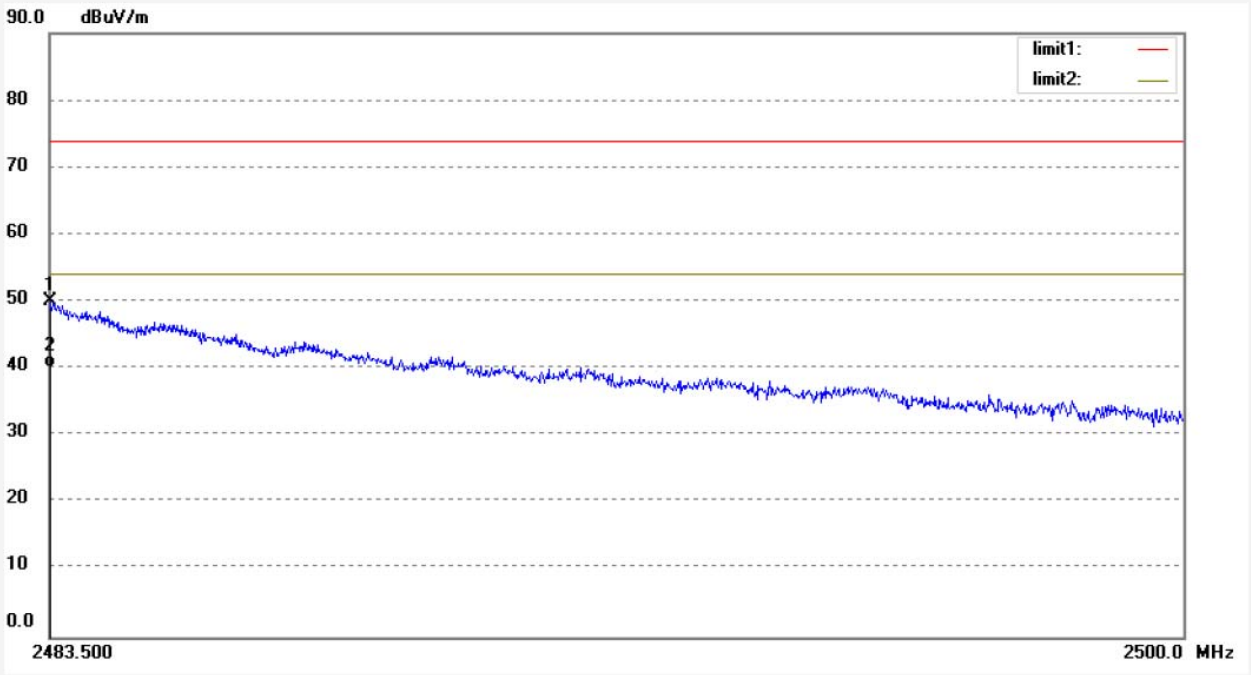


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2389.760	39.62	2.79	42.41	74.00	-31.59	peak			
2	2389.760	29.35	2.79	32.14	54.00	-21.86	AVG			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4880	Polarization: Horizontal
Standard: FCC (Band Edge)	Power Source: DC 5V
Test item: Radiation Test	Date: 17/10/29/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth LE transmission adaptor,SCS Click	Engineer Signature: WADE
Mode: TX 2480MHz	Distance: 3m
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)	
Manufacturer: Wellington	

Note:

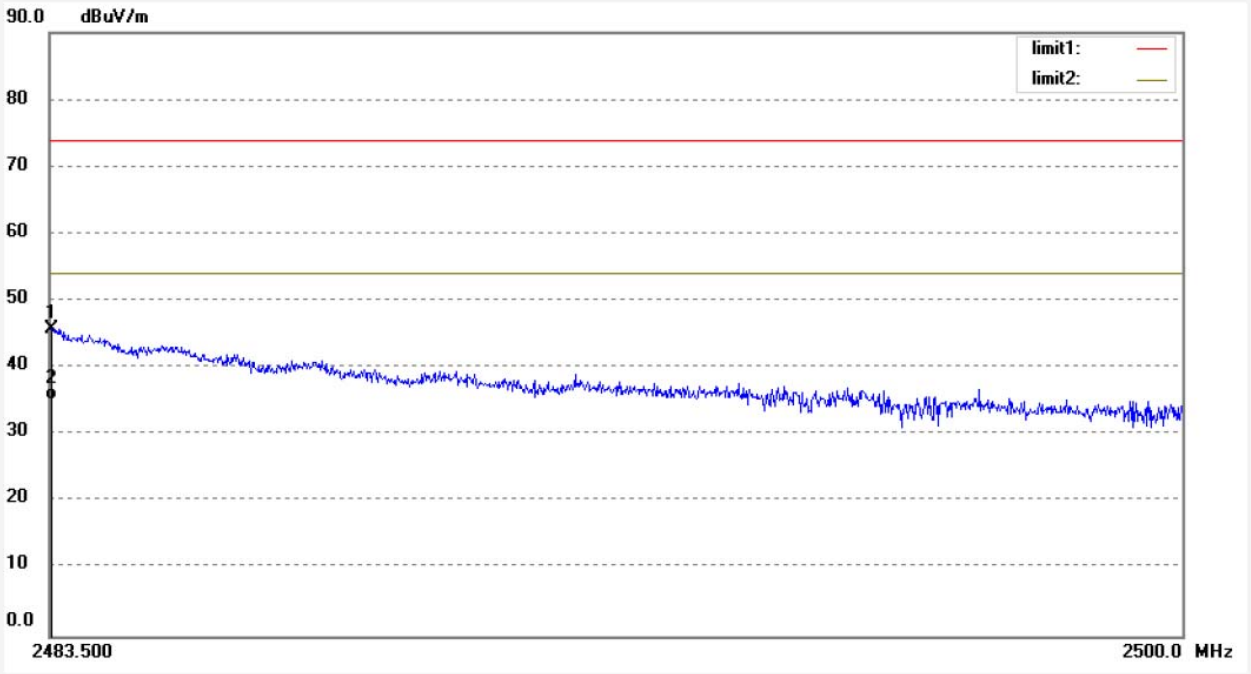


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.517	48.97	1.10	50.07	74.00	-23.93	peak			
2	2483.517	39.15	1.10	40.25	54.00	-13.75	AVG			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4881	Polarization: Vertical
Standard: FCC (Band Edge)	Power Source: DC 5V
Test item: Radiation Test	Date: 17/10/29/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth LE transmission adaptor,SCS Click	Engineer Signature: WADE
Mode: TX 2480MHz	Distance: 3m
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)	
Manufacturer: Wellington	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.533	42.78	3.10	45.88	74.00	-28.12	peak			
2	2483.533	32.18	3.10	35.28	54.00	-18.72	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

10.RADIATED SPURIOUS EMISSION TEST

10.1.Block Diagram of Test Setup

10.1.1.Block diagram of connection between the EUT and peripherals

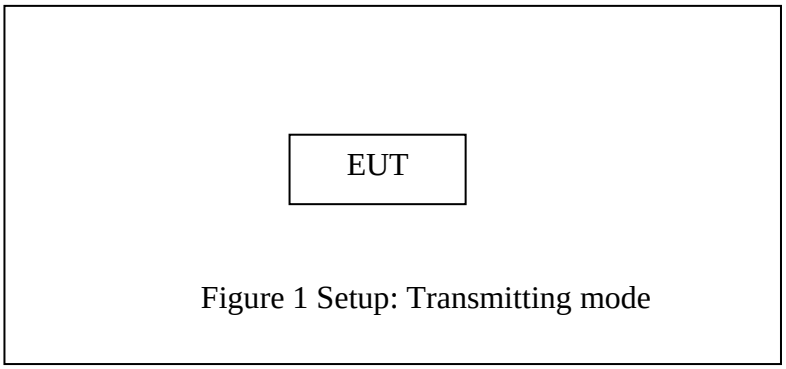
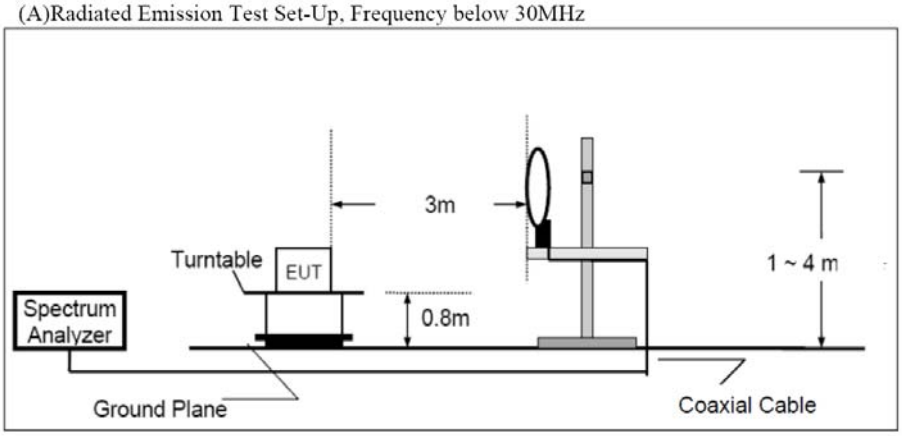


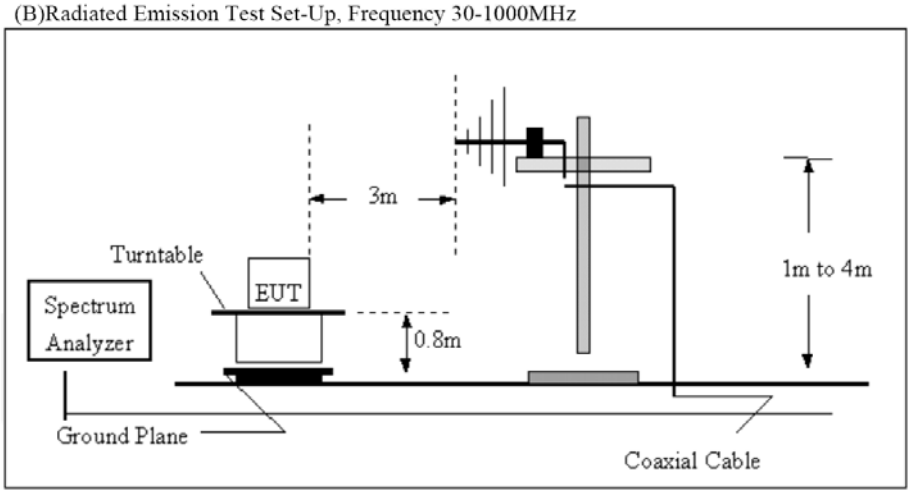
Figure 1 Setup: Transmitting mode

10.1.2.Semi-Anechoic Chamber Test Setup Diagram

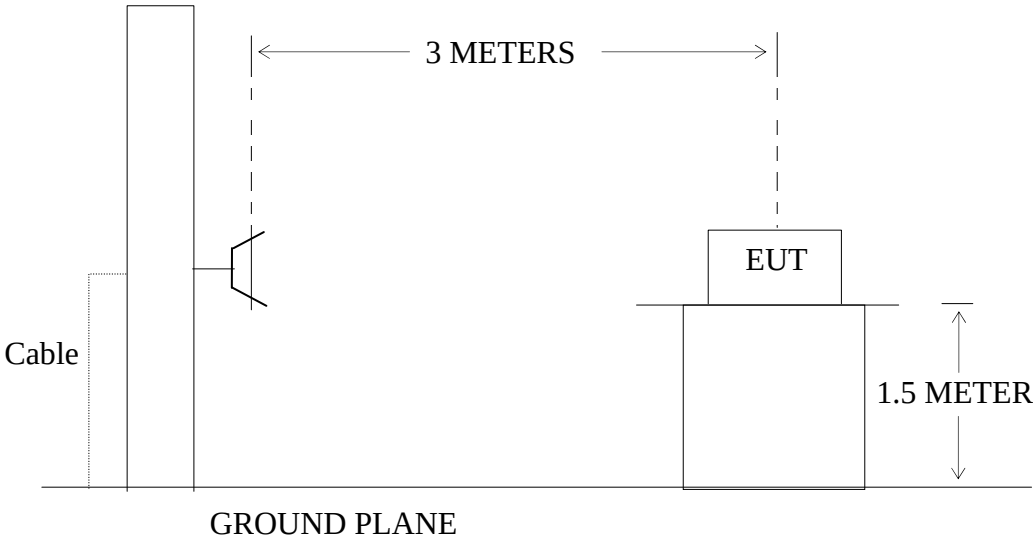
(A)Radiated Emission Test Set-Up, Frequency below 30MHz



(B)Radiated Emission Test Set-Up, Frequency 30-1000MHz



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



10.2.The Emission Limit

10.2.1.Measurement Limits According to RSS-Gen Section 7.2.5 Table 5

Table 5: General Field Strength Limits for Transmitters at Frequencies Above 30 MHz

Frequency (MHz)	Field Strength (microvolt/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

Note: Transmitting devices are not permitted in Table 1 bands or, unless stated otherwise, in TV bands (54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-806 MHz).

10.3.Restricted bands of operation

10.3.1.RSS-Gen Section 7.2.2 Table 3: Restricted Frequency Bands

Table 3: Restricted Frequency Bands (Note)

MHz	MHz	GHz
0.090-0.110	240-285	9.0-9.2
2.1735-2.1905	322-335.4	9.3-9.5
3.020-3.026	399.9-410	10.6-12.7
4.125-4.128	608-614	13.25-13.4
4.17725-4.17775	960-1427	14.47-14.5
4.20725-4.20775	1435-1626.5	15.35-16.2
5.677-5.683	1645.5-1646.5	17.7-21.4
6.215-6.218	1660-1710	22.01-23.12
6.26775-6.26825	1718.8-1722.2	23.6-24.0
6.31175-6.31225	2200-2300	31.2-31.8
8.291-8.294	2310-2390	36.43-36.5
8.362-8.366	2655-2900	Above 38.6
8.37625-8.38675	3260-3267	
8.41425-8.41475	3332-3339	
12.29-12.293	3345.8-3358	
12.51975-12.52025	3500-4400	
12.57675-12.57725	4500-5150	
13.36-13.41	5350-5460	
16.42-16.423	7250-7750	
16.69475-16.69525	8025-8500	
16.80425-16.80475		
25.5-25.67		
37.5-38.25		
73-74.6		
74.8-75.2		
108-138		
156.52475-156.52525		
156.7-156.9		

Note: Certain frequency bands listed in Table 1 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to the devices are set out in the 200– and 300– series RSSs, such as RSS-210 and RSS-310, which contain the requirements that apply to licence-exempt radio apparatus.

(a) Unwanted emissions falling into restricted bands of Table 1 shall comply with the limits specified in RSS-Gen.

(b) For licence-exempt transmitters employing pulsed operation for which an average power limit is specified, a peak power limit also applies. Unless otherwise specified, the peak power limit is 20 dB above the average power limit. The average power measurement of the fundamental shall be performed according to the method described in RSS-Gen Section 4.5. The methodology described in Section 4.5 is also applicable to unwanted emission measurements provided that they exhibit similar pulse characteristics as the fundamental.

10.4.Restricted bands of operation

10.4.1.FCC Part 15.205 Restricted bands of operation

(c) 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			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510
[2]Above 38.6

(d) 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 Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

10.5.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.

10.6.Operating Condition of EUT

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

10.6.2.Turn on the power of all equipment.

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

10.7.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. The EUT was tested in 3 orthogonal planes.

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 frequency range from 9 kHz to 25GHz is checked.
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. The basic equation calculation is as follows:
Result = Reading + Corrected Factor
Where Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

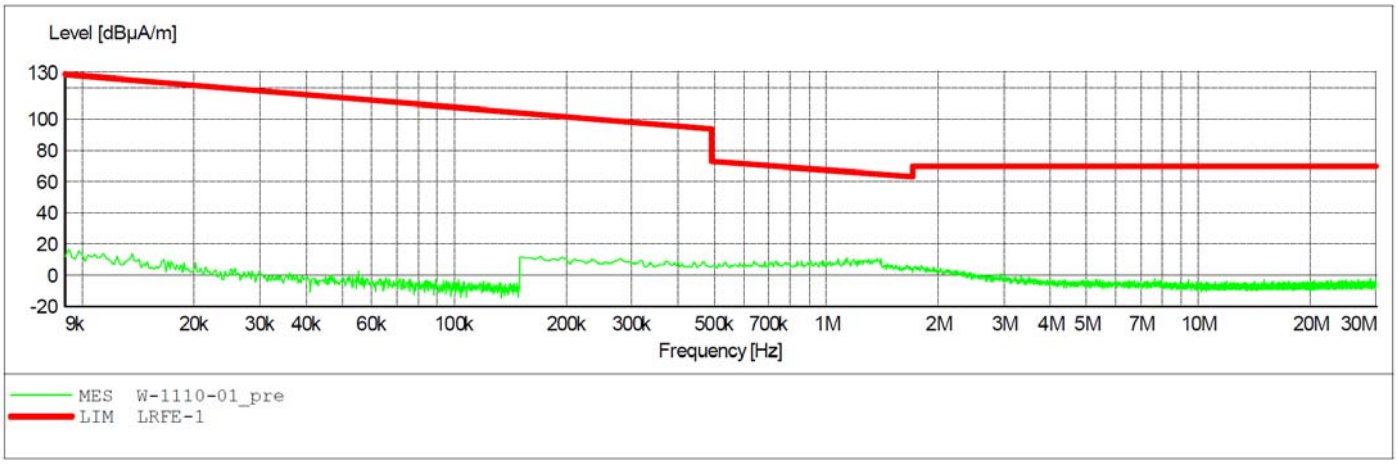
10.8.The Field Strength of Radiation Emission Measurement Results

PASS.

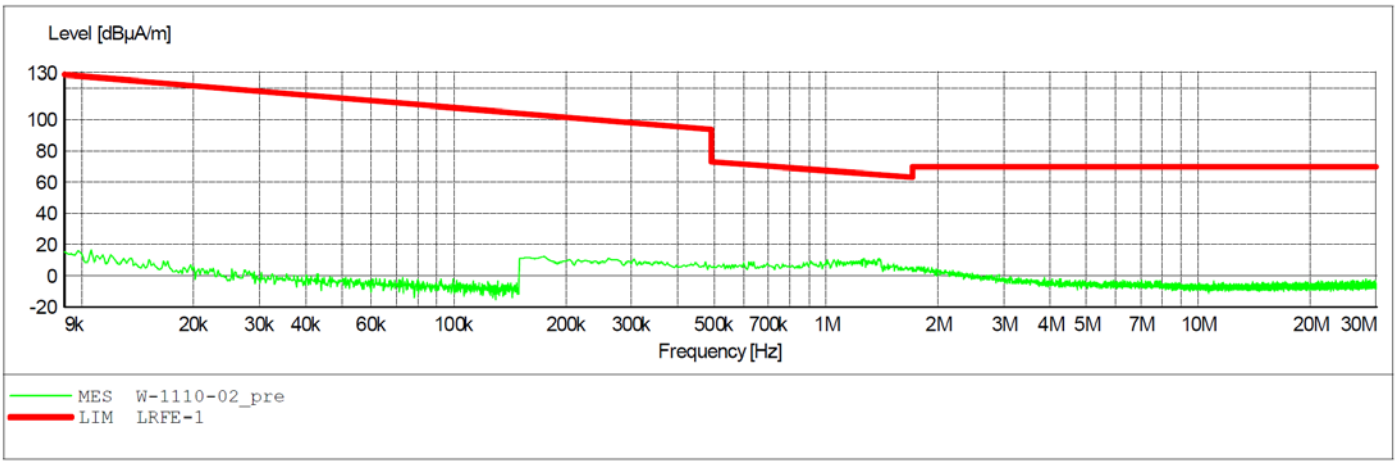
Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

2. *: Denotes restricted band of operation.

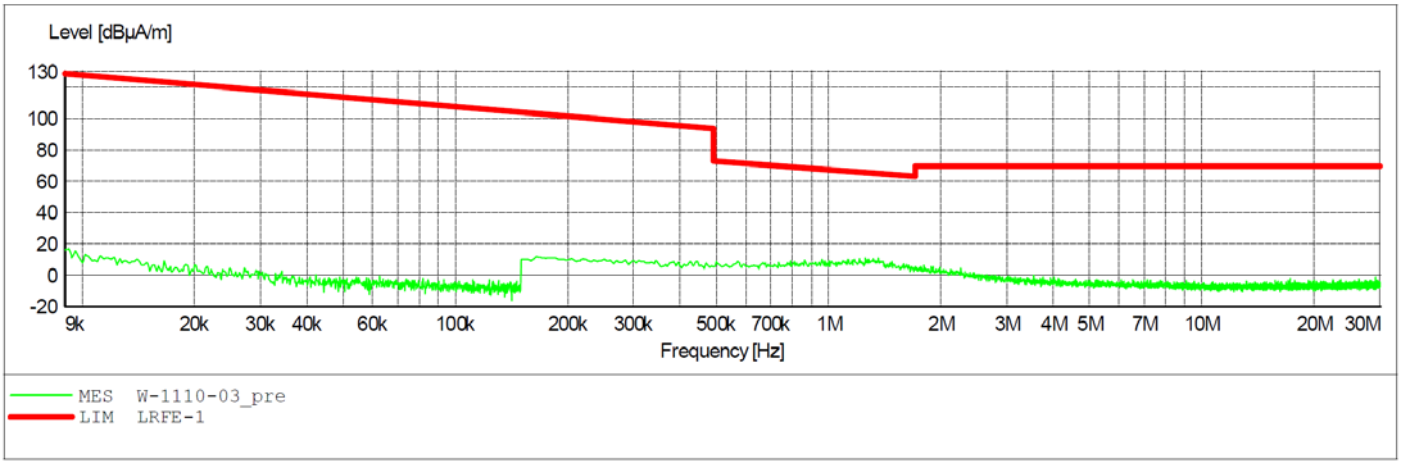
FCC PART15C(9K-30MHz)(Worse case data)



X(Antenna Polarization)



Y(Antenna Polarization)



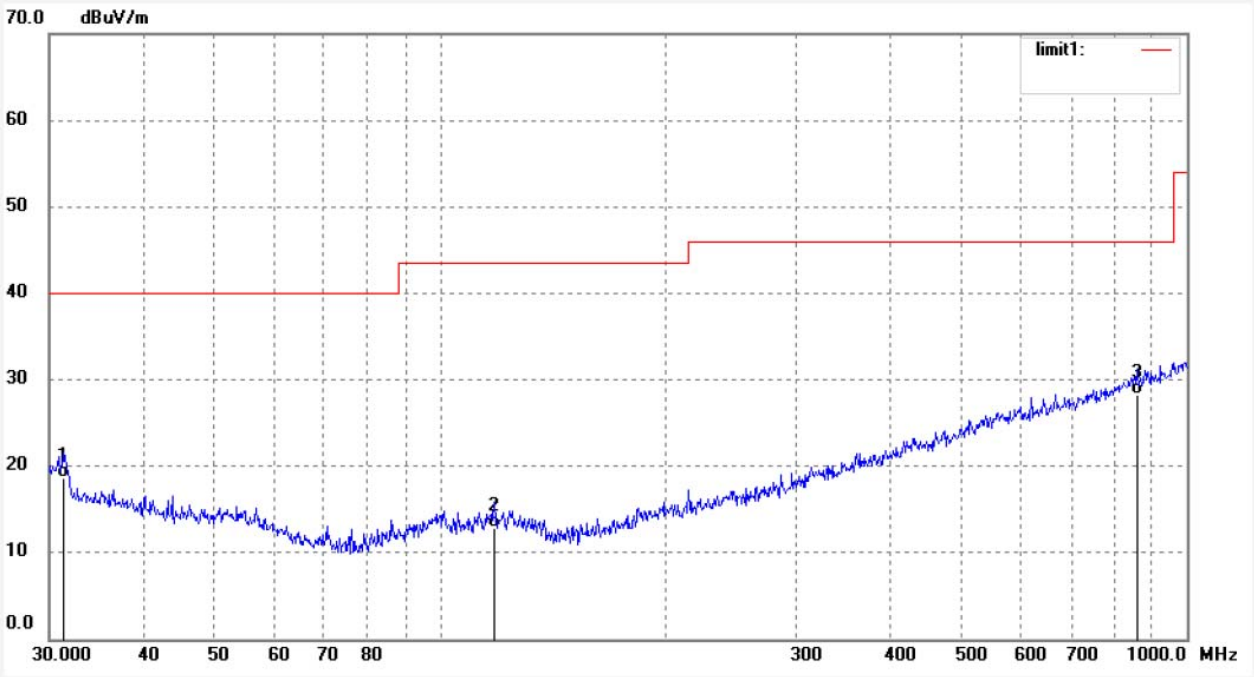
Z(Antenna Polarization)

FCC PART15C(30MHz-1000MHz)

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4888	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 17/10/29/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth LE transmission adaptor,SCS Click	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)	
Manufacturer: Wellington	

Note:



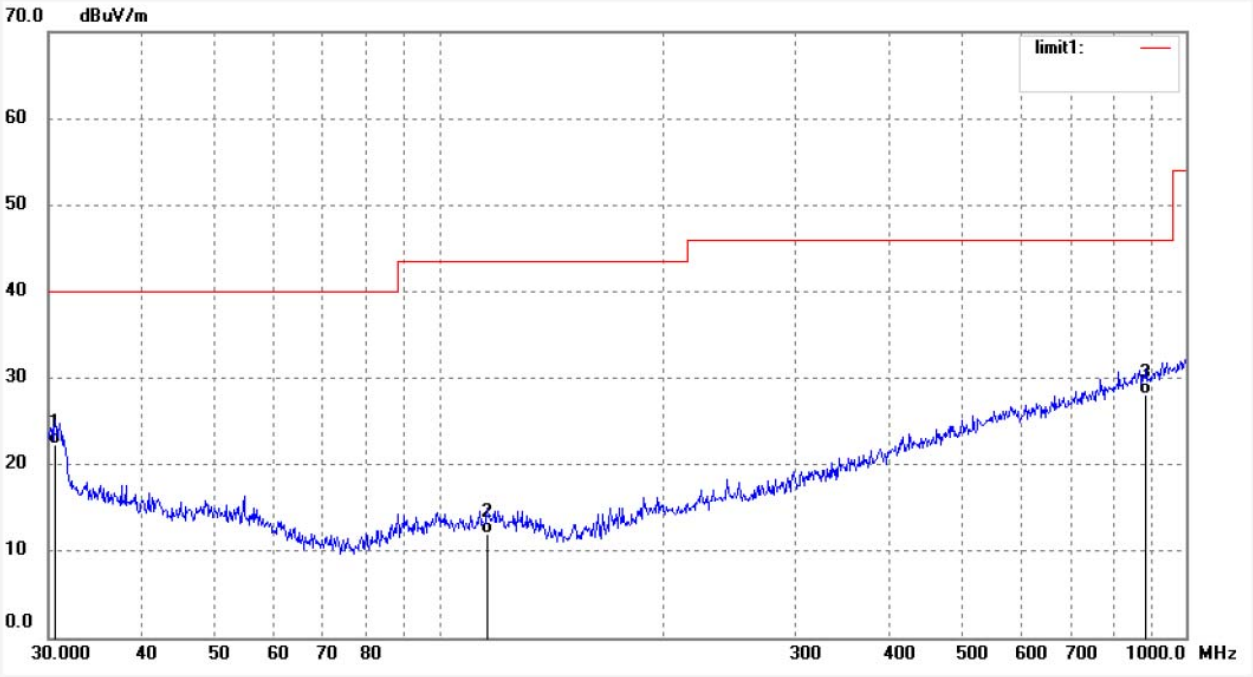
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.3992	28.64	-10.06	18.58	40.00	-21.42	QP			
2	118.1861	25.88	-13.06	12.82	43.50	-30.68	QP			
3	857.0247	26.60	1.65	28.25	46.00	-17.75	QP			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4889
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth LE transmission adaptor,SCS Click
Mode: TX 2402MHz
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)
Manufacturer: Wellington

Polarization: Vertical
Power Source: DC 5V
Date: 17/10/29/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	30.6378	31.41	-9.11	22.30	40.00	-17.70	QP			
2	116.1320	25.05	-13.06	11.99	43.50	-31.51	QP			
3	884.5028	25.95	2.08	28.03	46.00	-17.97	QP			

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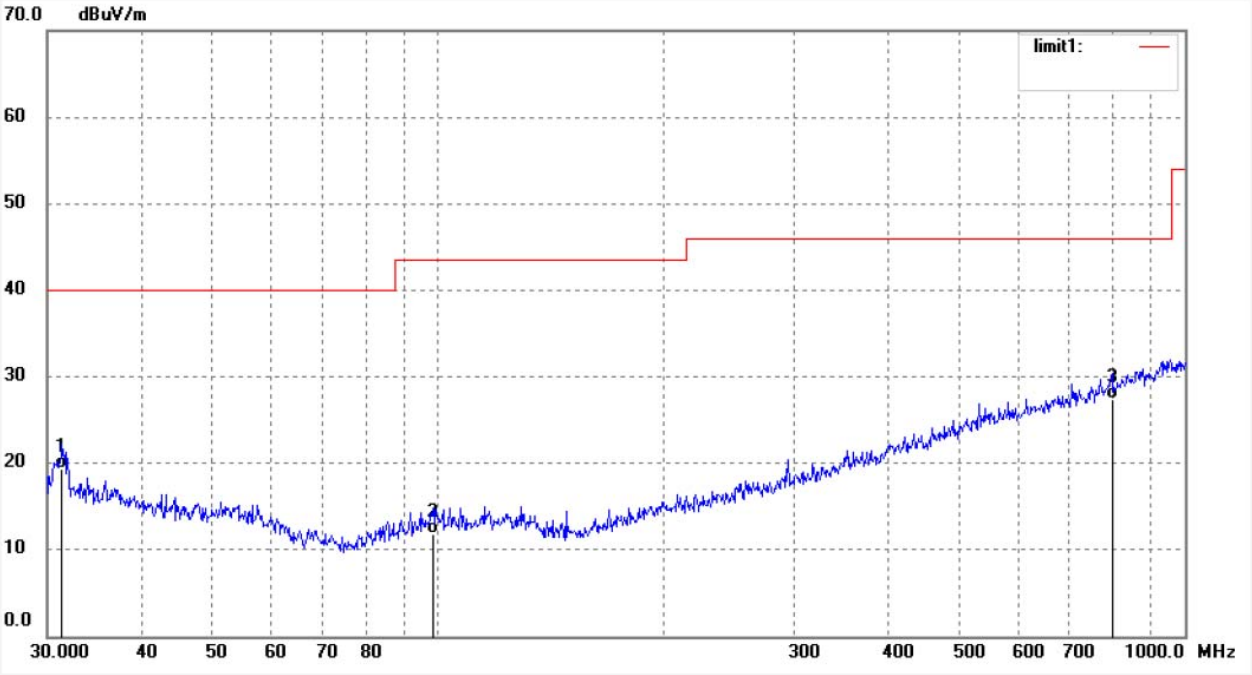
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4891	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 17/10/29/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth LE transmission adaptor,SCS Click	Engineer Signature: WADE
Mode: TX 2440MHz	Distance: 3m
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)	
Manufacturer: Wellington	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.3992	29.41	-10.06	19.35	40.00	-20.65	QP			
2	98.4865	25.31	-13.56	11.75	43.50	-31.75	QP			
3	798.9796	26.58	0.81	27.39	46.00	-18.61	QP			

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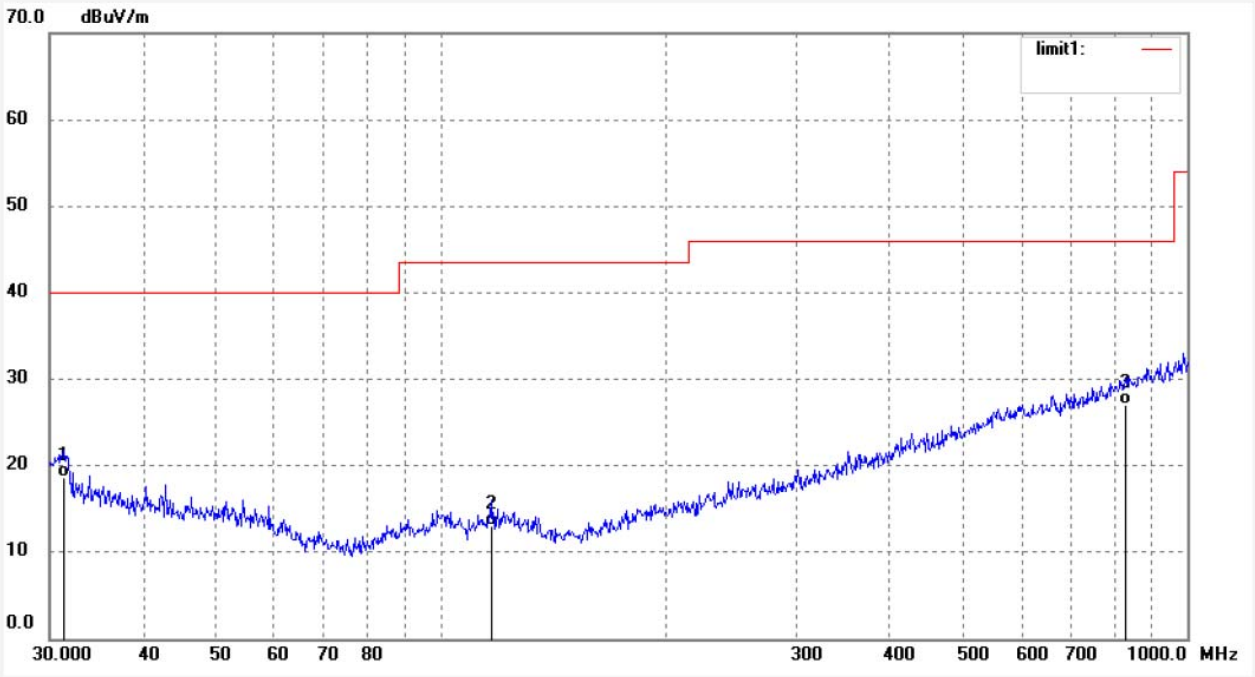
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4890
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth LE transmission adaptor,SCS Click
Mode: TX 2440MHz
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)
Manufacturer: Wellington

Polarization: Vertical
Power Source: DC 5V
Date: 17/10/29/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.3992	28.04	-9.34	18.70	40.00	-21.30	QP			
2	116.9495	26.07	-13.06	13.01	43.50	-30.49	QP			
3	827.4933	25.81	1.30	27.11	46.00	-18.89	QP			

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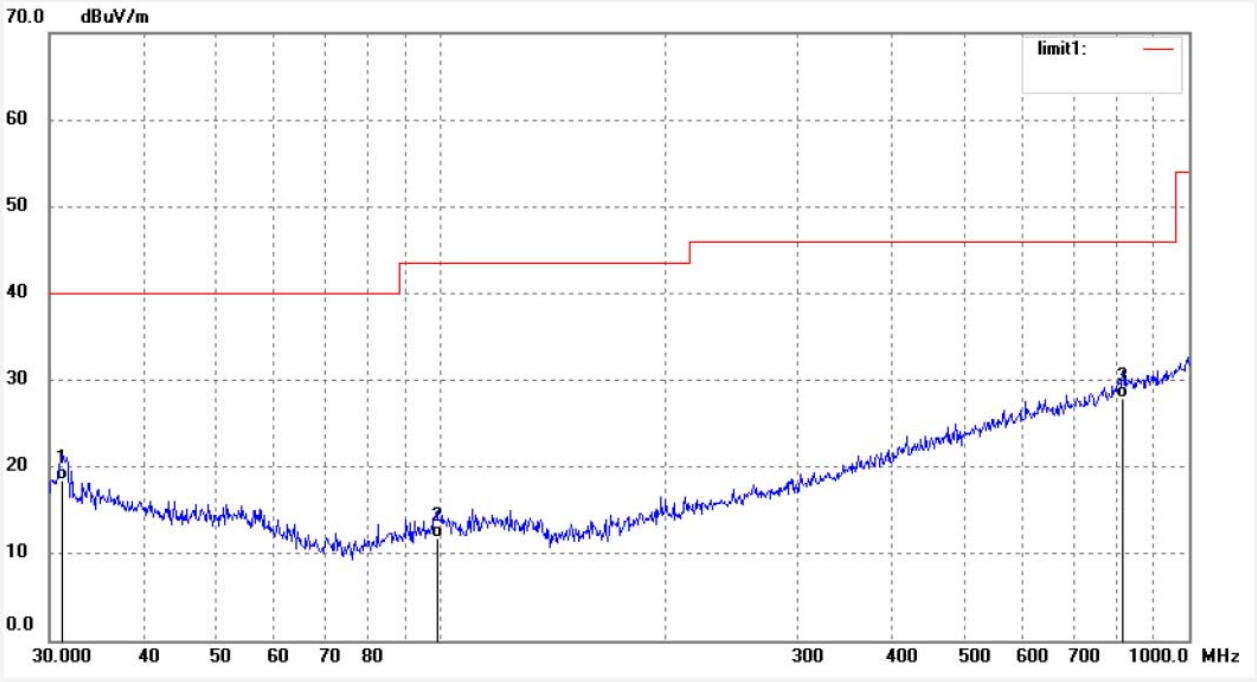
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4892
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth LE transmission adaptor,SCS Click
Mode: TX 2480MHz
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)
Manufacturer: Wellington

Polarization: Horizontal
Power Source: DC 5V
Date: 17/10/29/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.1798	28.45	-10.04	18.41	40.00	-21.59	QP			
2	98.8324	25.33	-13.44	11.89	43.50	-31.61	QP			
3	815.9678	26.91	1.08	27.99	46.00	-18.01	QP			

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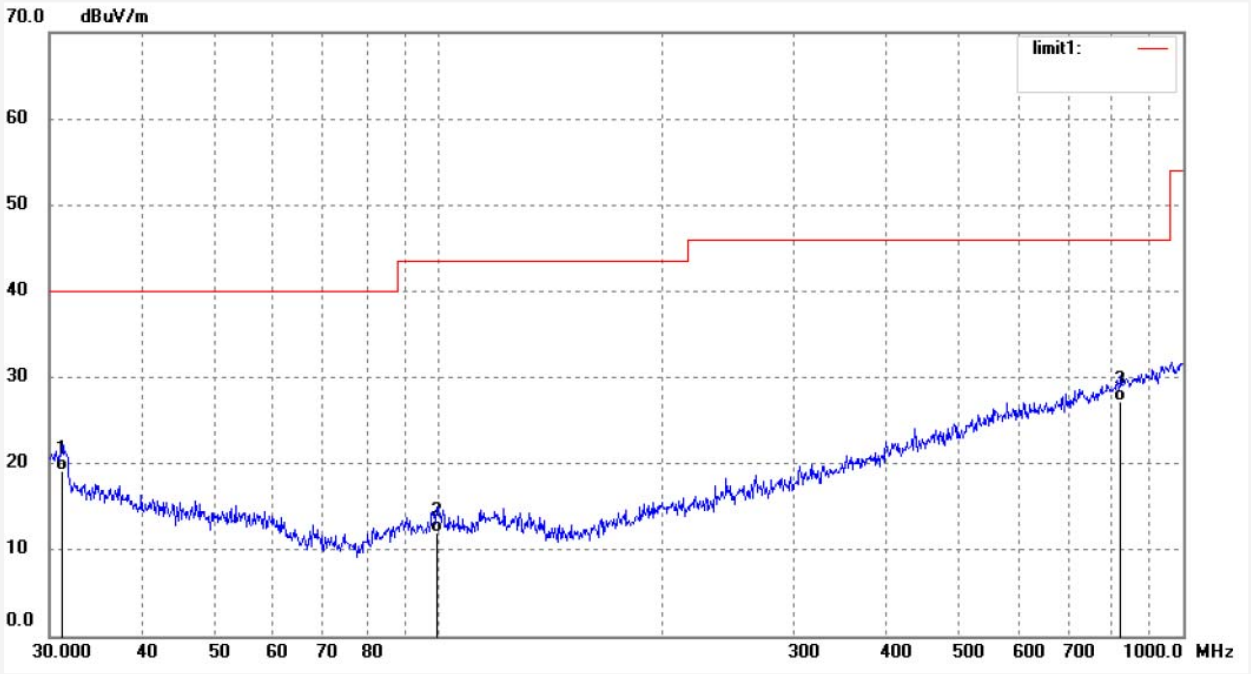
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4893	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 17/10/29/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth LE transmission adaptor,SCS Click	Engineer Signature: WADE
Mode: TX 2480MHz	Distance: 3m
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)	
Manufacturer: Wellington	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.1798	28.43	-9.27	19.16	40.00	-20.84	QP			
2	99.5279	25.22	-13.21	12.01	43.50	-31.49	QP			
3	824.5968	26.01	1.24	27.25	46.00	-18.75	QP			

FCC PART15C(1GHz-18GHz)

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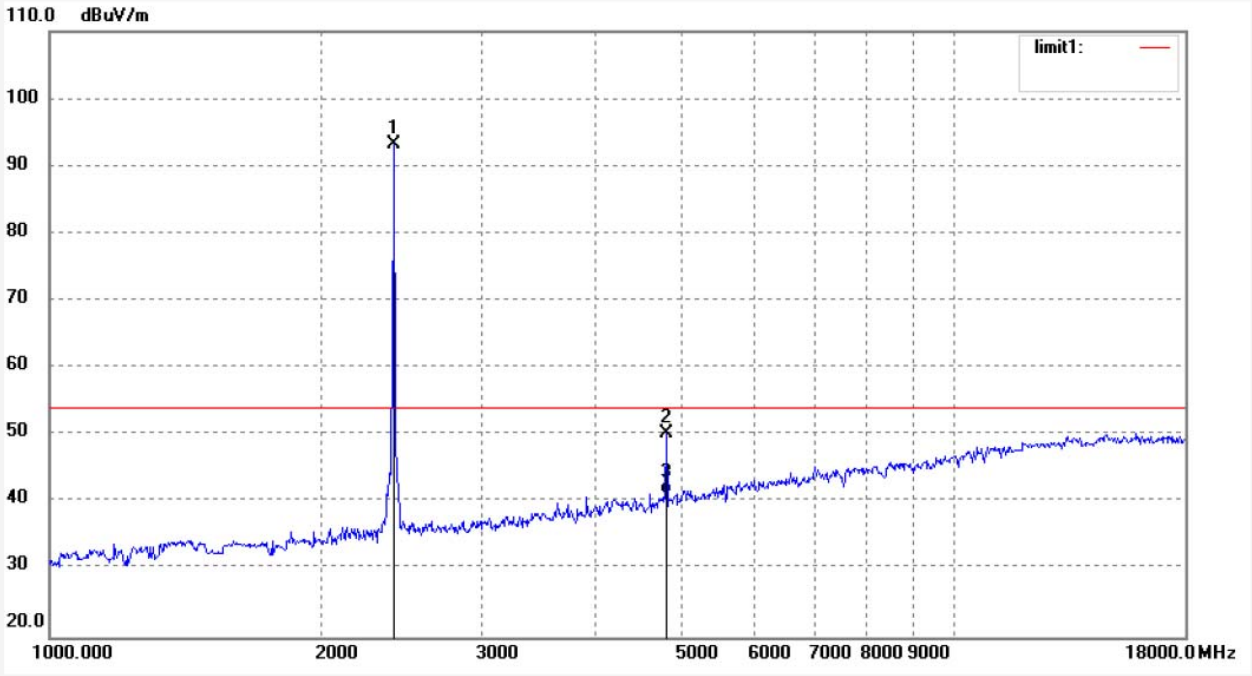
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4872	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 17/10/29/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth LE transmission adaptor,SCS Click	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)	
Manufacturer: Wellington	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	92.45	0.89	93.34	/	/	peak			
2	4804.026	42.97	7.40	50.37	74.00	-23.63	peak			
3	4804.026	33.92	7.40	41.32	54.00	-12.68	AVG			

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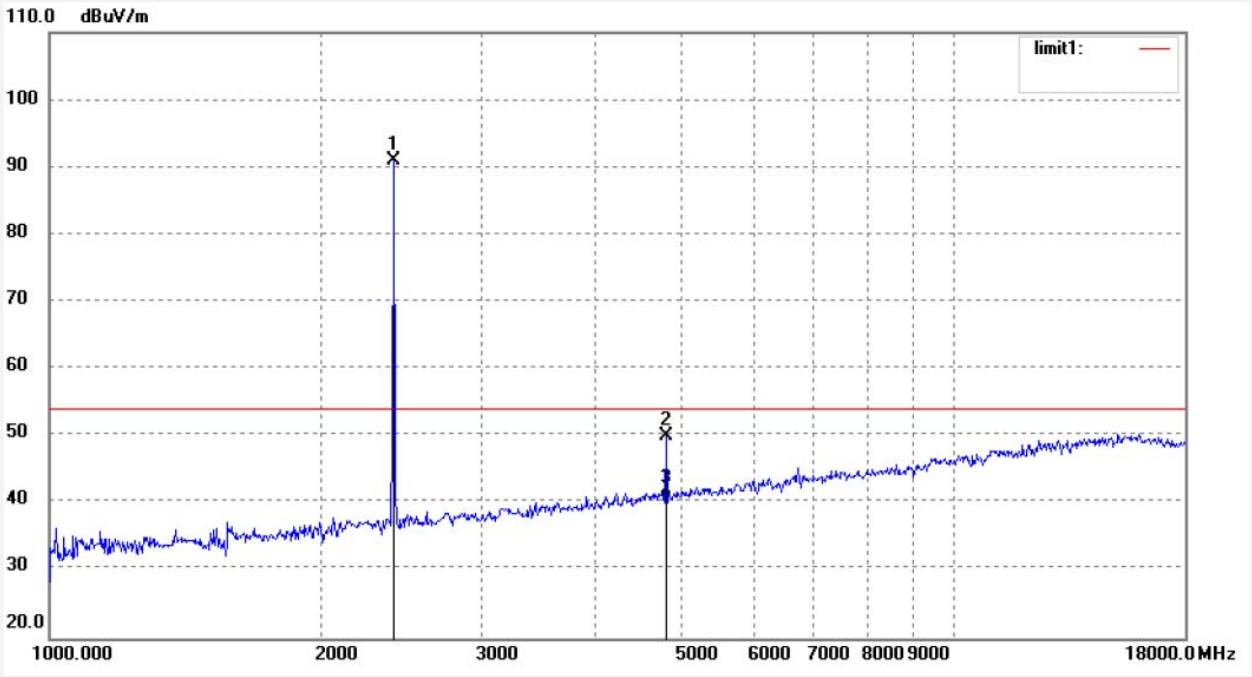
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4873	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 17/10/29/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth LE transmission adaptor,SCS Click	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)	
Manufacturer: Wellington	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	88.19	2.89	91.08	/	/	peak			
2	4804.025	40.54	9.40	49.94	74.00	-24.06	peak			
3	4804.025	31.28	9.40	40.68	54.00	-13.32	AVG			

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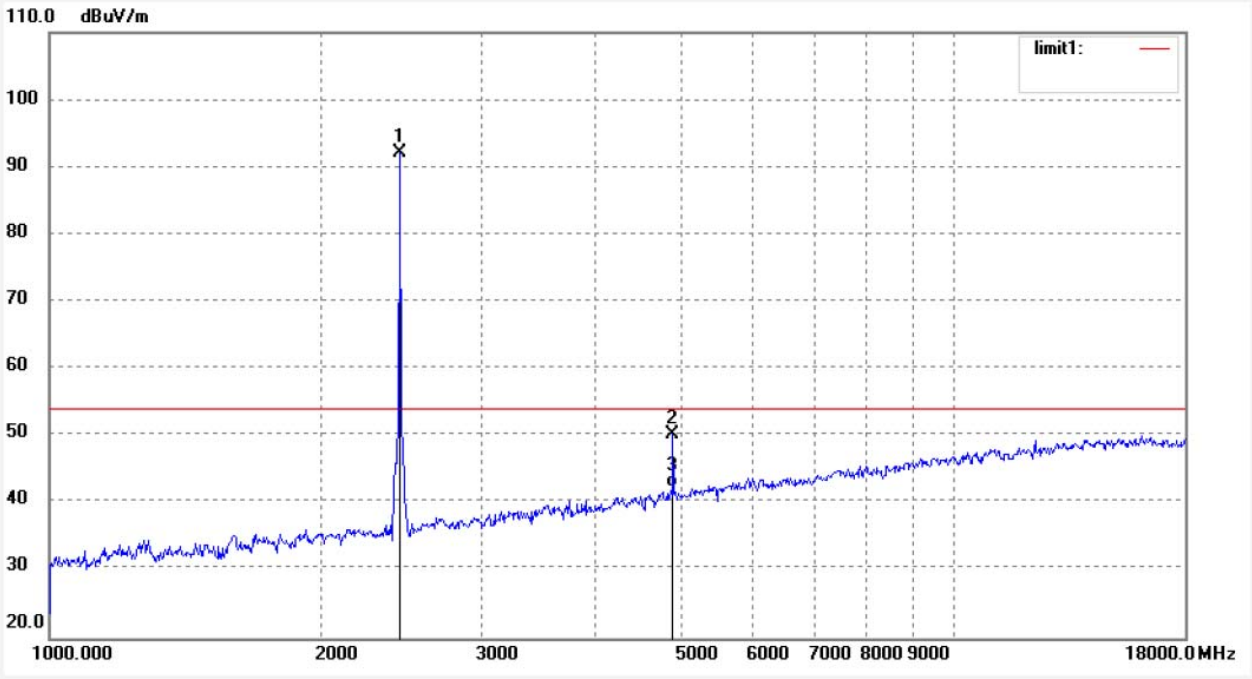
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4876
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth LE transmission adaptor,SCS Click
Mode: TX 2440MHz
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)
Manufacturer: Wellington

Polarization: Horizontal
Power Source: DC 5V
Date: 17/10/29/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2440.000	91.05	1.04	92.09	/	/	peak			
2	4880.028	42.10	8.10	50.20	74.00	-23.80	peak			
3	4880.028	34.25	8.10	42.35	54.00	-11.65	AVG			

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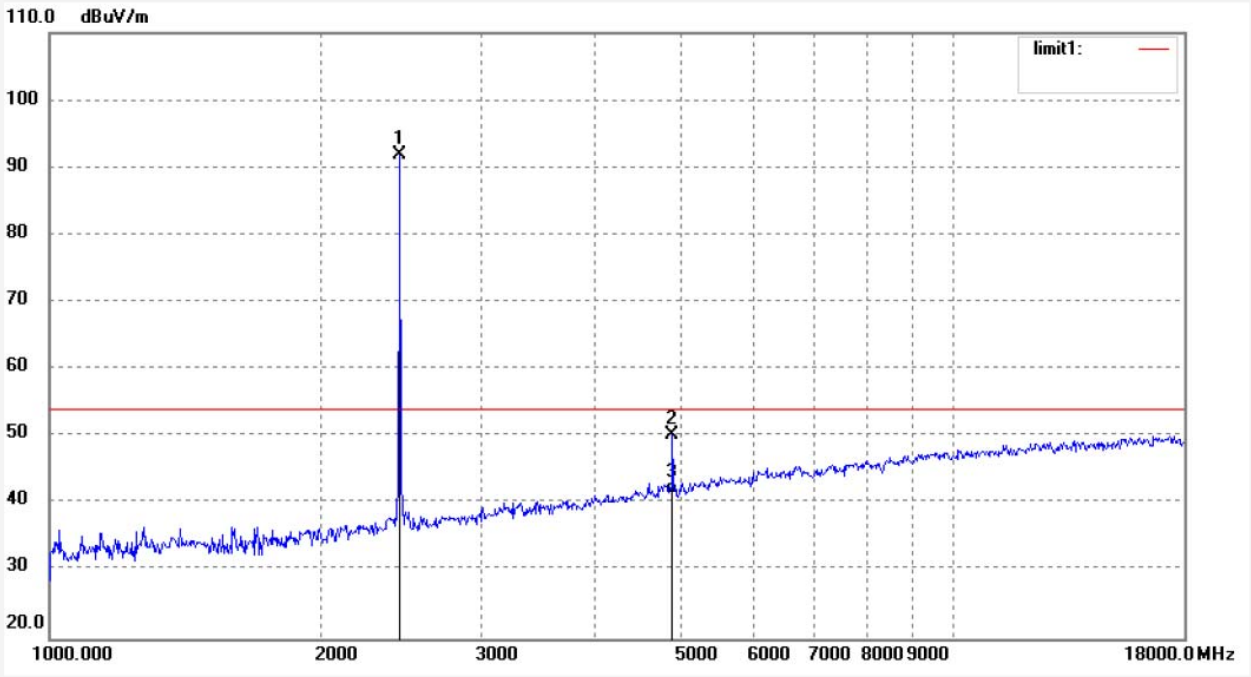
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4877
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth LE transmission adaptor,SCS Click
Mode: TX 2440MHz
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)
Manufacturer: Wellington

Polarization: Vertical
Power Source: DC 5V
Date: 17/10/29/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2440.000	88.77	3.04	91.81	/	/	peak			
2	4880.026	40.13	10.10	50.23	74.00	-23.77	peak			
3	4880.026	31.48	10.10	41.58	54.00	-12.42	AVG			

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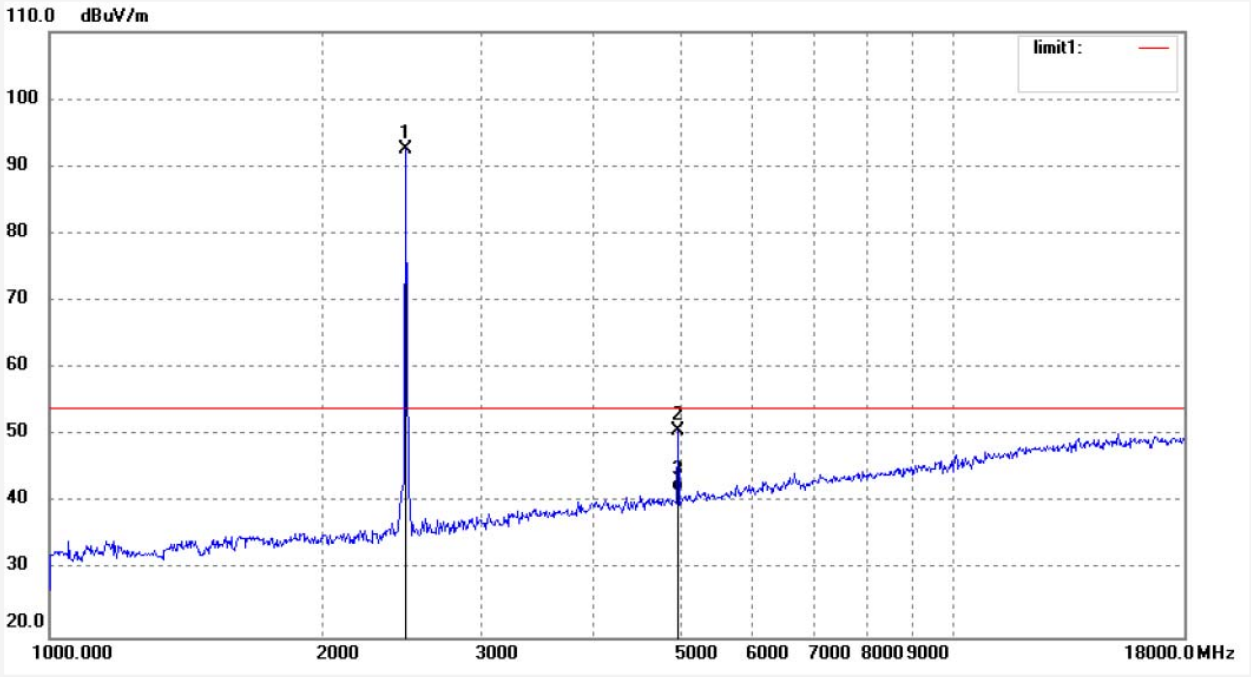
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4879
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth LE transmission adaptor
Mode: TX 2480MHz
Model: SCS Click
Manufacturer: Wellington

Polarization: Horizontal
Power Source: DC 3V
Date: 17/10/29/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	91.55	1.10	92.65	/	/	peak			
2	4960.028	42.15	8.60	50.75	74.00	-23.25	peak			
3	4960.028	33.18	8.60	41.78	54.00	-12.22	AVG			

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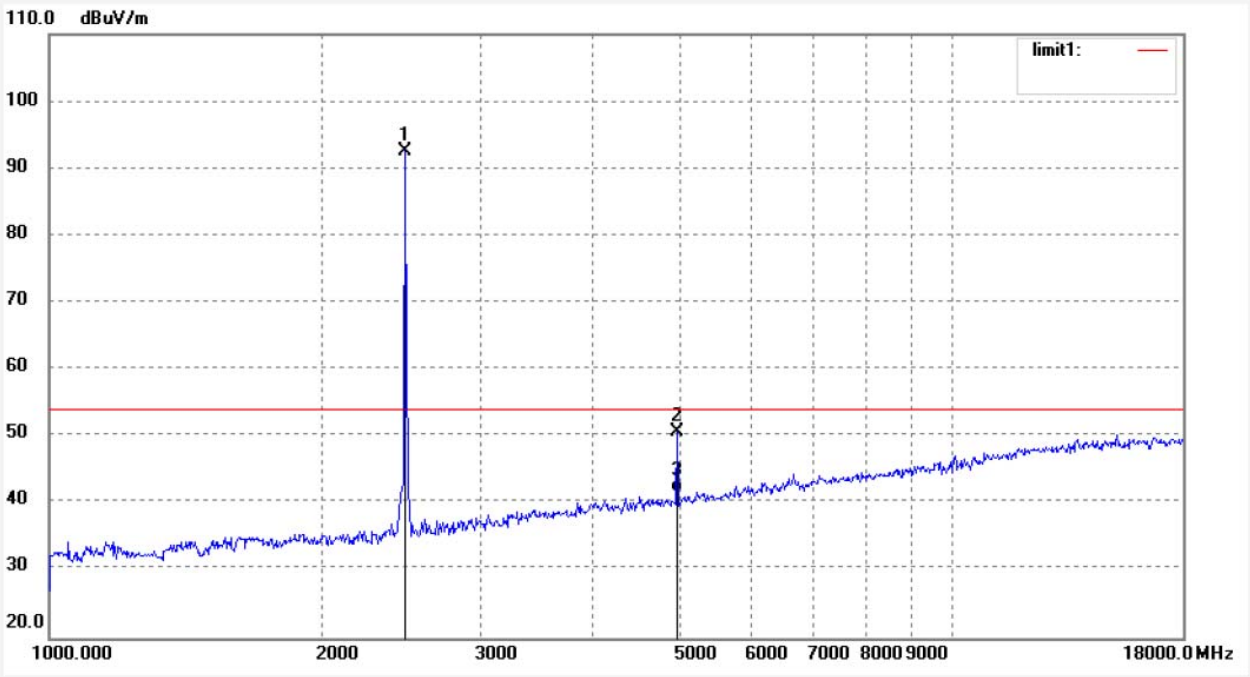
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4879
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth LE transmission adaptor,SCS Click
Mode: TX 2480MHz
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)
Manufacturer: Wellington

Polarization: Horizontal
Power Source: DC 5V
Date: 17/10/29/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	91.55	1.10	92.65	/	/	peak			
2	4960.028	42.15	8.60	50.75	74.00	-23.25	peak			
3	4960.028	33.18	8.60	41.78	54.00	-12.22	AVG			

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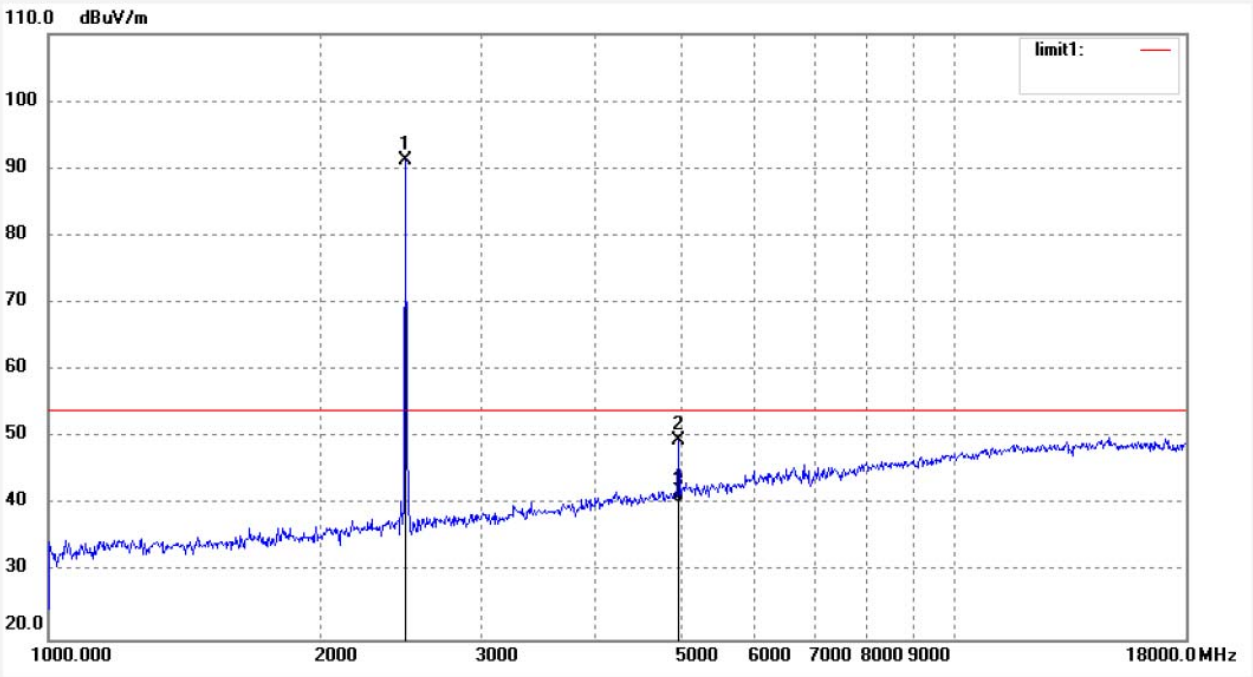
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4878
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth LE transmission adaptor,SCS Click
Mode: TX 2480MHz
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)
Manufacturer: Wellington

Polarization: Vertical
Power Source: DC 5V
Date: 17/10/29/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	88.12	3.10	91.22	/	/	peak			
2	4960.027	39.09	10.60	49.69	74.00	-24.31	peak			
3	4960.027	29.73	10.60	40.33	54.00	-13.67	AVG			

FCC PART15C(18GHz-26.5GHz)

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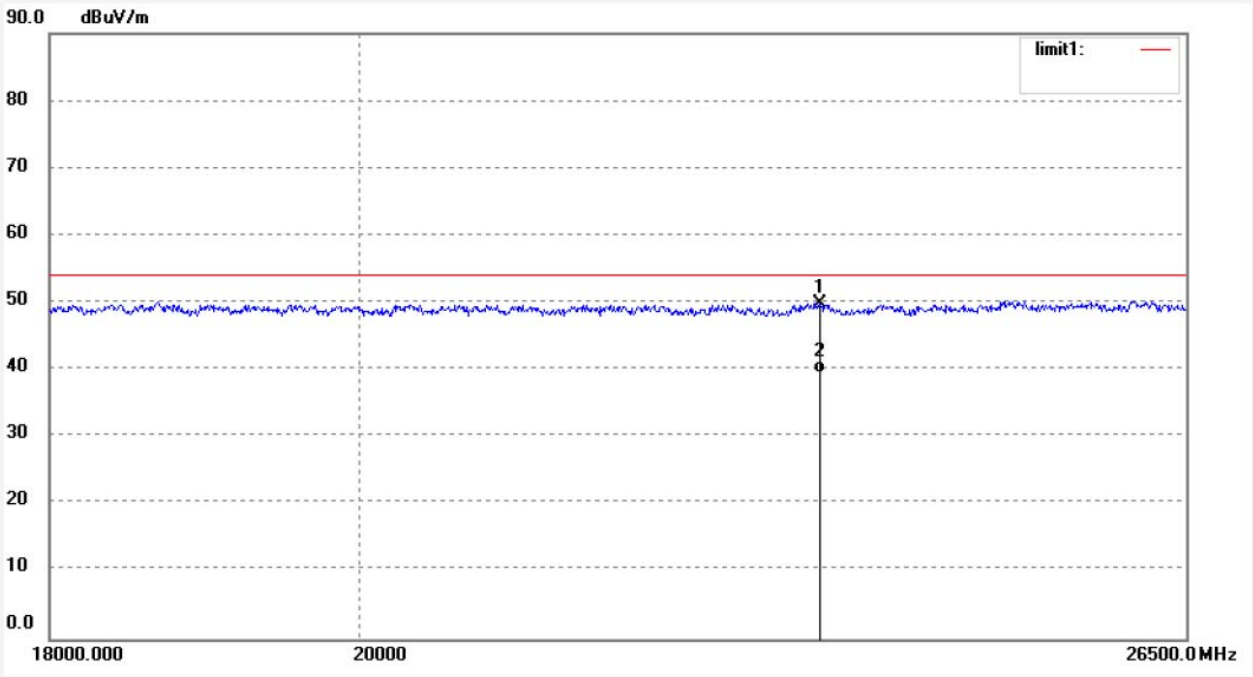
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4883	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 17/10/29/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth LE transmission adaptor,SCS Click	Engineer Signature: WADE
Mode: TX 2402MHz	Distance: 3m
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)	
Manufacturer: Wellington	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	23396.907	-10.01	59.95	49.94	54.00	-4.06	peak			
2	23396.907	-20.38	59.95	39.57	54.00	-14.43	AVG			

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Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
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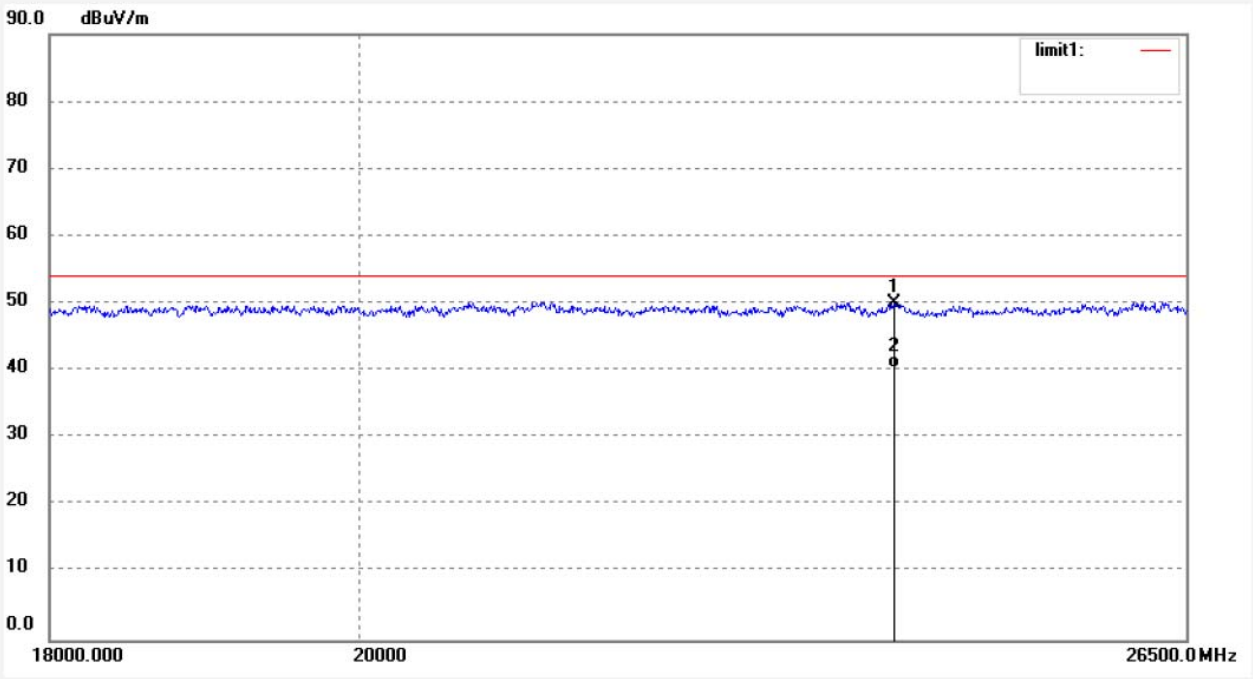
Fax:+86-0755-26503396

Job No.: LGW2017 #4882
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth LE transmission adaptor,SCS Click
Mode: TX 2402MHz
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)
Manufacturer: Wellington

Polarization: Vertical
Power Source: DC 5V
Date: 17/10/29/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	23992.567	10.33	39.73	50.06	54.00	-3.94	peak			
2	23992.567	0.62	39.73	40.35	54.00	-13.65	AVG			

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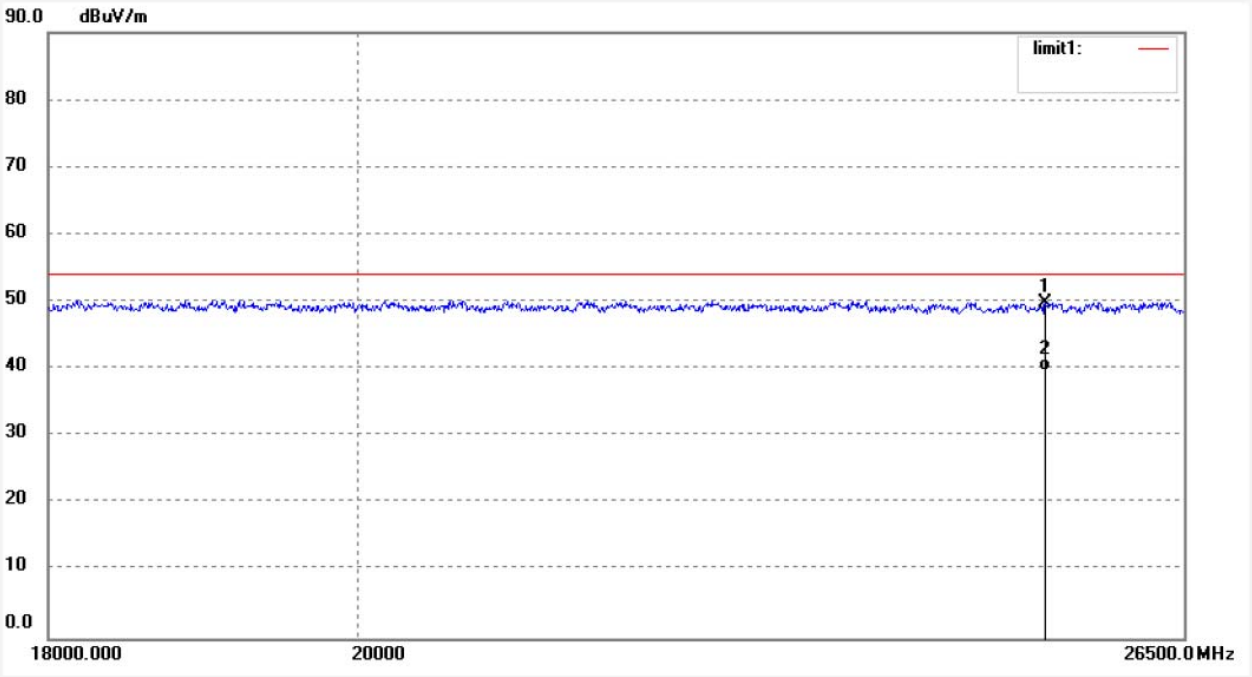
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4884	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 17/10/29/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: Bluetooth LE transmission adaptor,SCS Click	Engineer Signature: WADE
Mode: TX 2440MHz	Distance: 3m
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)	
Manufacturer: Wellington	

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	25278.606	9.93	39.88	49.81	54.00	-4.19	peak			
2	25278.606	-0.24	39.88	39.64	54.00	-14.36	AVG			

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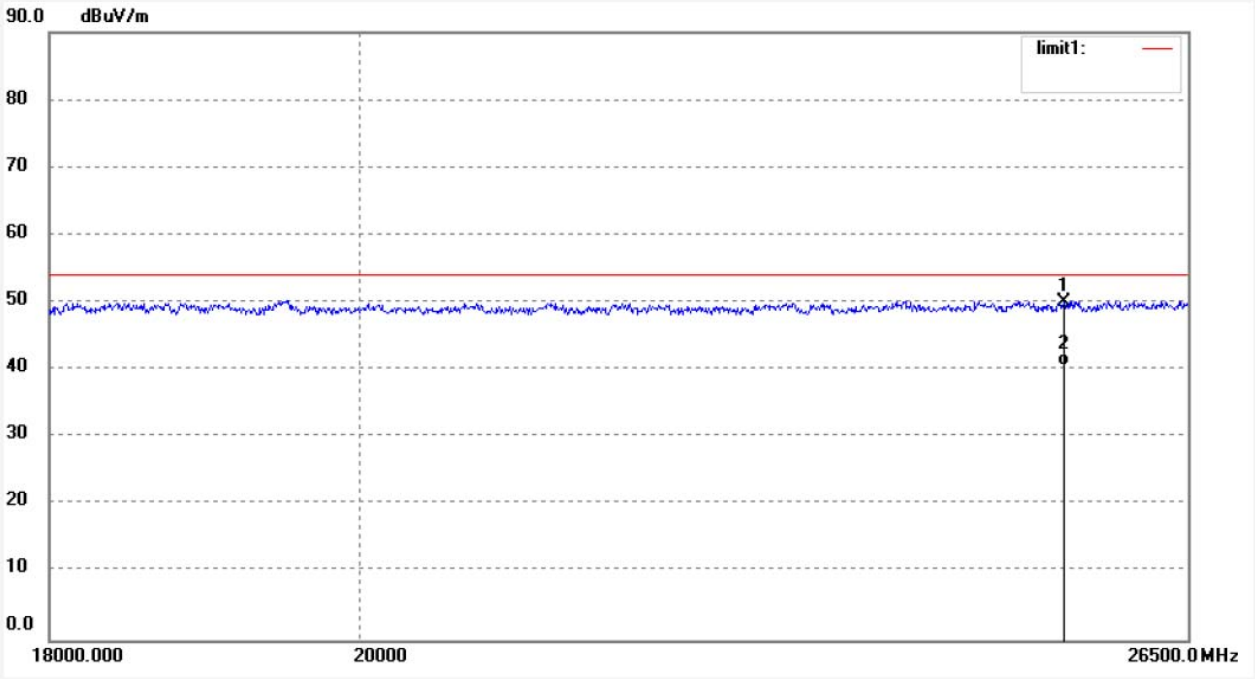
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4885
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth LE transmission adaptor,SCS Click
Mode: TX 2440MHz
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)
Manufacturer: Wellington

Polarization: Vertical
Power Source: DC 5V
Date: 17/10/29/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	25406.028	9.02	41.08	50.10	54.00	-3.90	peak			
2	25406.028	-0.51	41.08	40.57	54.00	-13.43	AVG			

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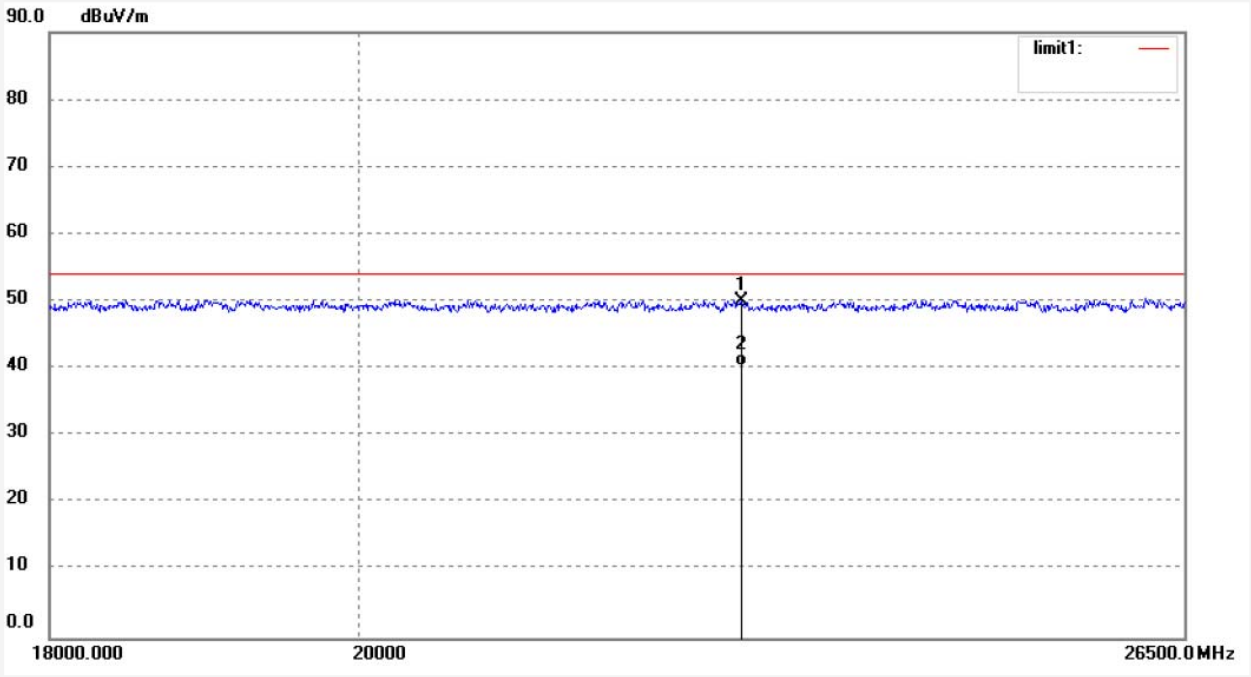
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4887
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth LE transmission adaptor,SCS Click
Mode: TX 2480MHz
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)
Manufacturer: Wellington

Polarization: Horizontal
Power Source: DC 5V
Date: 17/10/29/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



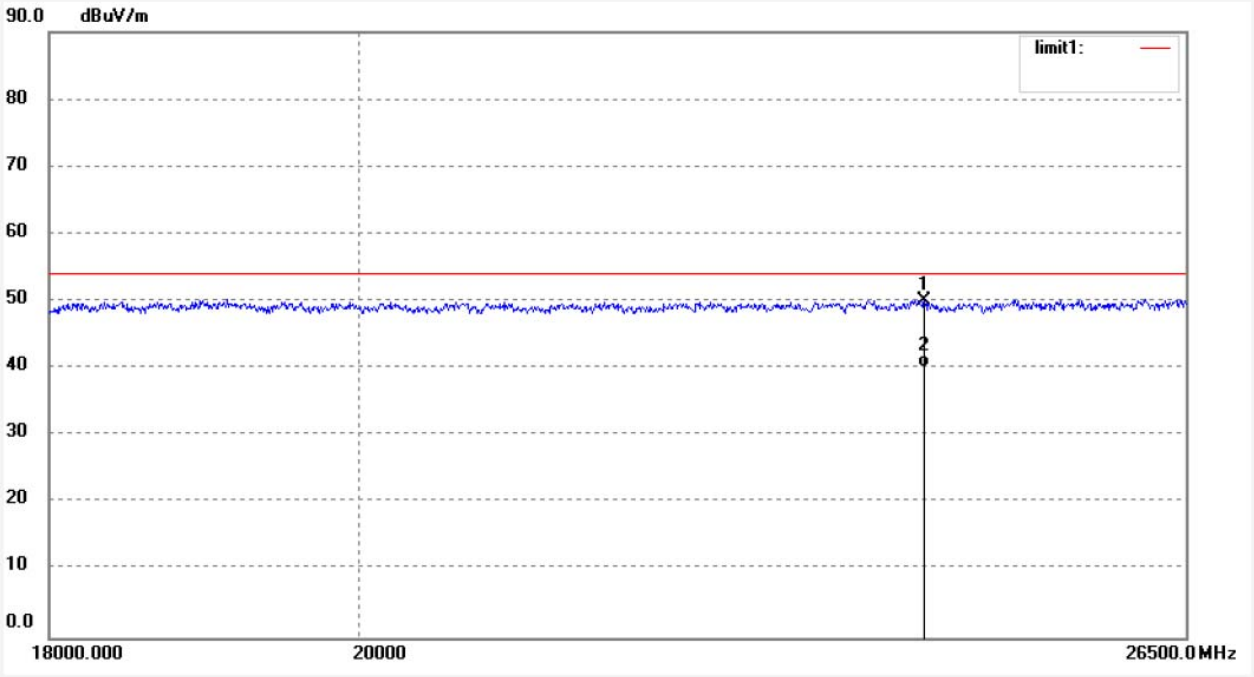
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	22789.577	-9.66	59.68	50.02	54.00	-3.98	peak			
2	22789.577	-19.31	59.68	40.37	54.00	-13.63	AVG			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: LGW2017 #4886
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Bluetooth LE transmission adaptor,SCS Click
Mode: TX 2480MHz
Model: CLK-0xx(x could be 0~9,represent different shape or color of enclosure)
Manufacturer: Wellington

Polarization: Vertical
Power Source: DC 5V
Date: 17/10/29/
Time:
Engineer Signature: WADE
Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	24244.431	10.21	39.96	50.17	54.00	-3.83	peak			
2	24244.431	0.26	39.96	40.22	54.00	-13.78	AVG			

11.99% OCCUPIED BANDWIDTH

11.1.The Requirement for RSS-Gen Clause 4.6.1

11.1.1.When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

11.2.EUT Configuration on Measurement

The following 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.

11.3.Operating Condition of EUT

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

11.3.2.Turn on the power of all equipment.

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

11.4.Test Procedure

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

11.4.2.Set RBW of spectrum analyzer to 30 kHz and VBW to 100 kHz.

11.4.3.Set SPA “Meas” function, Select “Occupied Bandwidth” function, Select “99% Power Bandwidth”. The frequency of the upper and lower markers indicating the edges of the transmitters “99% Power” emission bandwidth shall be recorded to automate by SPA.

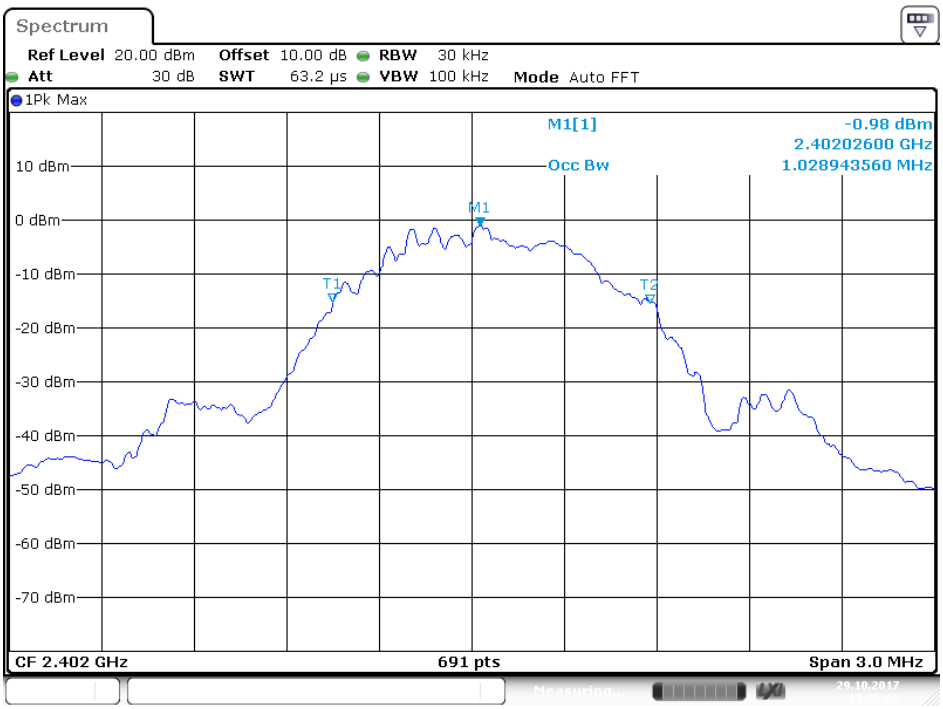
11.5.Measurement Result

The EUT does meet the RSS-Gen requirement.

Frequency (MHz)	99% Occupied Bandwidth (MHz)
2402	1.029
2440	1.029
2480	1.033

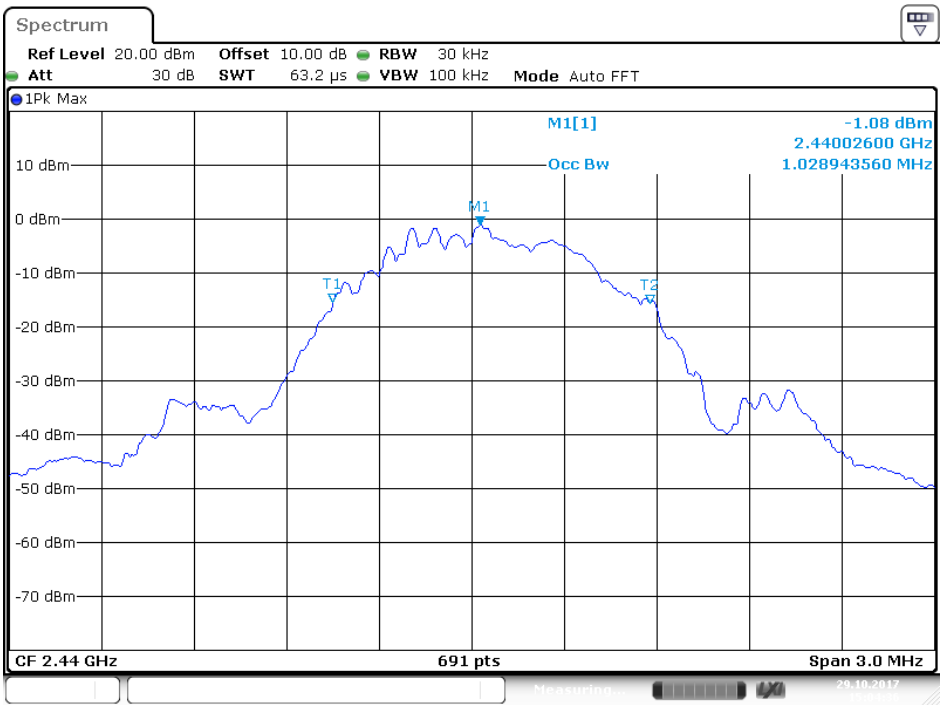
The spectrum analyzer plots are attached as below.

Low Channel 2402MHz



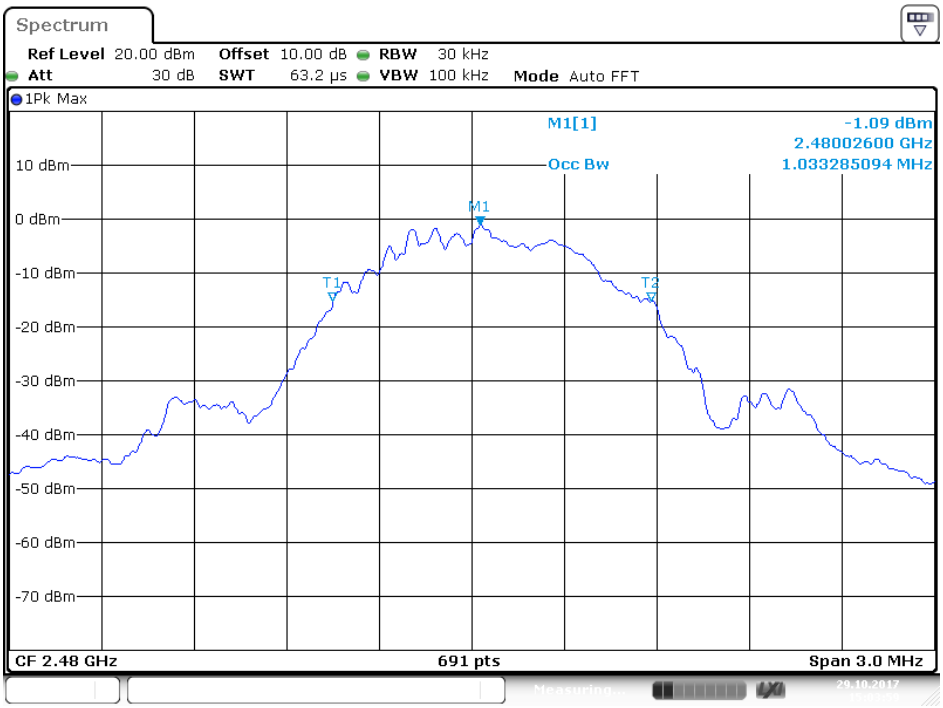
Date: 29.OCT.2017 15:05:06

Middle Channel 2440MHz



Date: 29.OCT.2017 15:04:36

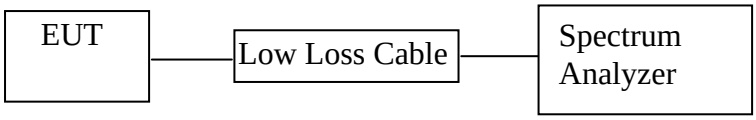
High Channel 2480MHz



Date: 29.OCT.2017 15:03:59

12. CONDUCTED SPURIOUS EMISSION COMPLIANCE TEST

12.1. Block Diagram of Test Setup



(EUT: Bluetooth LE transmission adaptor, SCS Click)

12.2. 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).

12.3. 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.

12.4. Operating Condition of EUT

12.4.1. Setup the EUT and simulator as shown as Section 12.1.

12.4.2. Turn on the power of all equipment.

12.4.3. 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.

12.5.Test Procedure

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

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

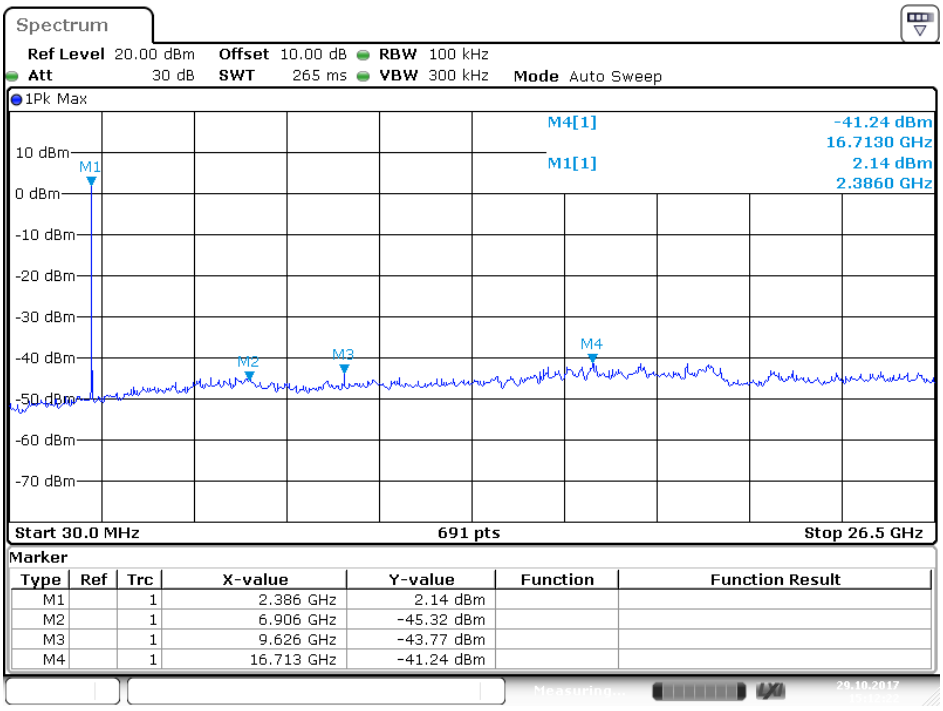
12.5.3.The Conducted Spurious Emission was measured and recorded.

12.6.Test Result

Pass.

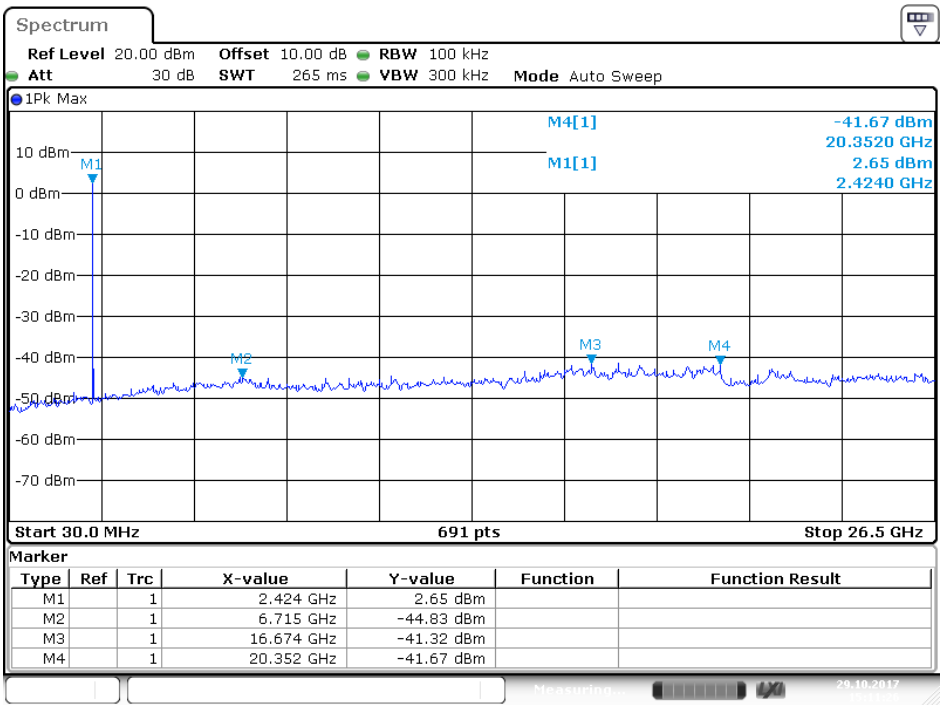
The spectrum analyzer plots are attached as below.

Low Channel 2402MHz



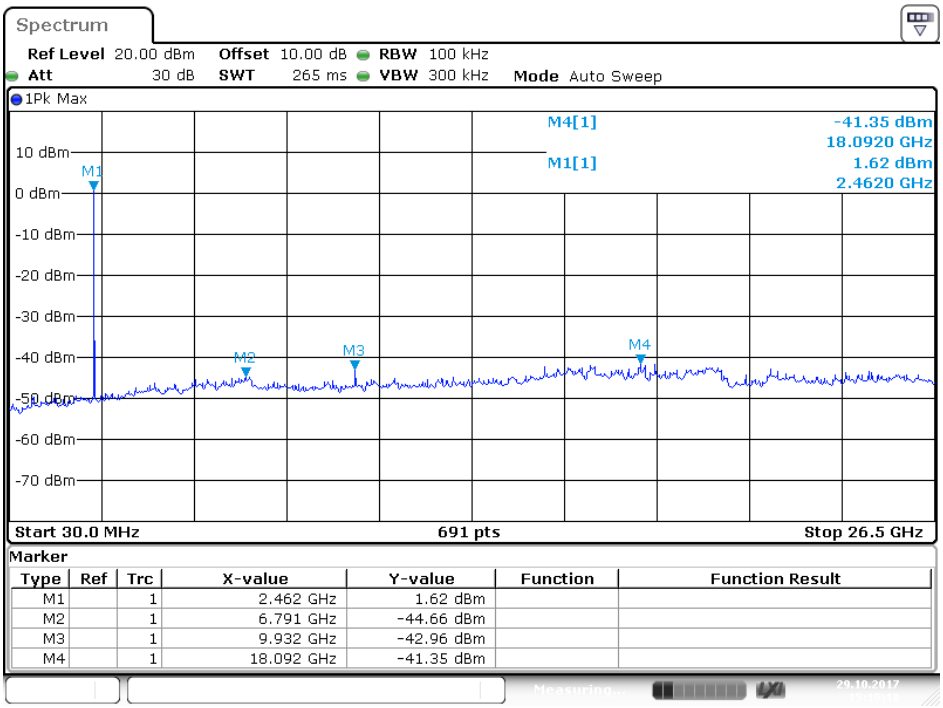
Date: 29.OCT.2017 15:12:22

Middle Channel 2440MHz



Date: 29.OCT.2017 15:11:26

High Channel 2480MHz



Date: 29.OCT.2017 15:10:18

13. ANTENNA REQUIREMENT

13.1. 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.

According to Section RSS GEN 8.3, 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

13.2. Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Antenna gain of EUT is 2dBi. Therefore, the equipment complies with the antenna requirement of FCC part 15C Section 15.203 and RSS GEN 8.3.