APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
KOGA TOUCH CO., LTD

Skizze Pen
Model No.: P0101

FCC ID: 2AP8HP0101

Prepared for	:	KOGA TOUCH CO., LTD
Address	:	5F, No.21 Huiguan Building, No.10 Xibeiwang East Road, Haidian District, Beijing, China
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.	:	ATE20191045
Date of Test	:	July 15-July 16, 2019
Date of Report	:	July 17, 2019

TABLE OF CONTENTS

Description Page

Test Report Certification
1. GENERAL INFORMATION 5
1.1. Description of Device (EUT) 5
1.2. Carrier Frequency of Channels 5
1.3. Special Accessory and Auxiliary Equipment 6
1.4. Description of Test Facility 6
1.5. Measurement Uncertainty 6
2. MEASURING DEVICE AND TEST EQUIPMENT 7
3. OPERATION OF EUT DURING TESTING 8
3.1. Operating Mode 8
3.2. Configuration and peripherals 8
4. TEST PROCEDURES AND RESULTS 9
5. 6DB BANDWIDTH TEST 10
5.1. Block Diagram of Test Setup 10
5.2. The Requirement For Section 15.247(a)(2) 10
5.3. EUT Configuration on Measurement 10
5.4. Operating Condition of EUT 10
5.5. Test Procedure 10
5.6. Test Result 11
6. MAXIMUM PEAK OUTPUT POWER TEST 13
6.1. Block Diagram of Test Setup 13
6.2. The Requirement For Section 15.247(b)(3) 13
6.3. EUT Configuration on Measurement 13
6.4. Operating Condition of EUT 13
6.5. Test Procedure 13
6.6. Test Result 14
7. POWER SPECTRAL DENSITY TEST 16
7.1. Block Diagram of Test Setup 16
7.2. The Requirement For Section 15.247(e) 16
7.3. EUT Configuration on Measurement 16
7.4. Operating Condition of EUT 16
7.5. Test Procedure 17
7.6. Test Result 17
8. BAND EDGE COMPLIANCE TEST 20
8.1. Block Diagram of Test Setup 20
8.2. The Requirement For Section 15.247(d) 20
8.3. EUT Configuration on Measurement 20
8.4. Operating Condition of EUT 20
8.5. Test Procedure 21
8.6. Test Result 21
9. RADIATED SPURIOUS EMISSION TEST 27
9.1. Block Diagram of Test Setup 27
9.2. The Limit For Section 15.247(d) 28
9.3. Restricted bands of operation 29
9.4. Configuration of EUT on Measurement 29

9.5. Operating Condition of EUT 30
9.6. Test Procedure 30
9.7. Data Sample 31
9.8. Test Result 31
10. AC POWER LINE CONDUCTED EMISSION TEST 44
10.1. Block Diagram of Test Setup 44
10.2. Test System Setup 44
10.3. Test Limits 45
10.4. Configuration of EUT on Test 45
10.5. Operating Condition of EUT 45
10.6. Test Procedure 45
10.7. Data Sample 46
10.8. Test Result 46
11. ANTENNA REQUIREMENT 51
11.1. The Requirement 51
11.2. Antenna Construction 51

Test Report Certification

Applicant	:	KOGA TOUCH CO., LTD
Address	:	5F, No.21 Huiguan Building, No.10 Xibeiwang East Road, Haidian District, Beijing, China
EUT Description	:	Skizze Pen
Model No.	:	P0101

Measurement Procedure Used:

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

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

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.
This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test :	July 15-July 16, 2019
Date of Report :	July 17, 2019
Test Engineer :	(Frank, Engineer)
Prepared by :	(Stone Yang, Engineer)
Approved & Authorized Signer :	(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	Skizze Pen
Model Number	:	P0101
Bluetooth Version	:	V4.2 BLE
Frequency Range	:	2402MHz-2480MHz
Number of Channels	:	40
Antenna Gain	:	2dBi
Antenna Type	:	Chip antenna
Power Supply	:	DC 3.7V lithium battery
Modulation Mode	:	GFSK
Hardware Version	:	V1.0
Software Version	:	V1.0
Applicant	:	KOGA TOUCH CO., LTD
Address	:	5F, No.21 Huiguan Building, No.10 Xibeiwang East Road, Haidian District, Beijing, China
Manufacturer	:	KOGA TOUCH CO., LTD
Address	:	5F, No.21 Huiguan Building, No.10 Xibeiwang East Road, Haidian District, Beijing, China

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

AC/DC Power Adapter: (provided by laboratory)	:	Model:TEKA006-0501000UKU
		Input: 100-240V~50/60Hz 0.3A
		Output: DC 5V/1A

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

Radiated Emission Expanded Uncertainty (9kHz-30MHz) : U=2.66dB, k=2

Radiated Emission Expanded Uncertainty (30MHz-1000MHz) : U=4.28dB, k=2

Radiated Emission Expanded Uncertainty (1G-18GHz) : U=4.98dB, k=2

Radiated Emission Expanded Uncertainty (18G-26.5GHz) : U=5.06dB, k=2

Conduction Emission Expanded Uncertainty (Mains ports, 9kHz-30MHz) : U=2.72dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Cal. Interval
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 05, 2019	One Year
EMI Test Receiver	Rohde&Schwarz	ESR	101817	Jan. 05, 2019	One Year
Spectrum Analyzer	Rohde&Schwarz	FSV-40	101495	Jan. 05, 2019	One Year
Pre-Amplifier	Compliance Direction	RSU-M2	38322	Jan. 05, 2019	One Year
Pre-Amplifier	Agilent	8447D	294A10619	Jan. 05, 2019	One Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 05, 2019	One Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 05, 2019	One Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 05, 2019	One Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 05, 2019	One Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 05, 2019	One Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 05, 2019	One Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	N/A	Jan. 05, 2019	One Year
RF Coaxial Cable (Conducted Emission)	SUHNER	N-2m	No.2	Jan. 05, 2019	One Year
RF Coaxial Cable (Radiated Emission)	RESENBERGER	N-12m	No.11	Jan. 05, 2019	One Year
RF Coaxial Cable (Radiated Emission)	RESENBERGER	N-0.5m	No.12	Jan. 05, 2019	One Year
RF Coaxial Cable (Radiated Emission)	SUHNER	N-2m	No.13	Jan. 05, 2019	One Year
RF Coaxial Cable (Radiated Emission)	SUHNER	N-0.5m	No.15	Jan. 05, 2019	One Year
RF Coaxial Cable (Radiated Emission)	SUHNER	N-2m	No.16	Jan. 05, 2019	One Year
RF Coaxial Cable (Radiated Emission)	RESENBERGER	N-6m	No.17	Jan. 05, 2019	One Year
Temporary antenna connector	NTGS	14AE	N/A	Jul. 15, 2019	N/A
Conducted Emission Measurement Software: ES-K1 V1.71					
Radiated Emission Measurement Software: EZ_EMC V1.1.4.2					

Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

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

Note: The equipment under test (EUT) was tested under new battery.
The Bluetooth has been tested under continuous transmission mode.
Its duty cycle setting is greater than 98%.

3.2.Configuration and peripherals

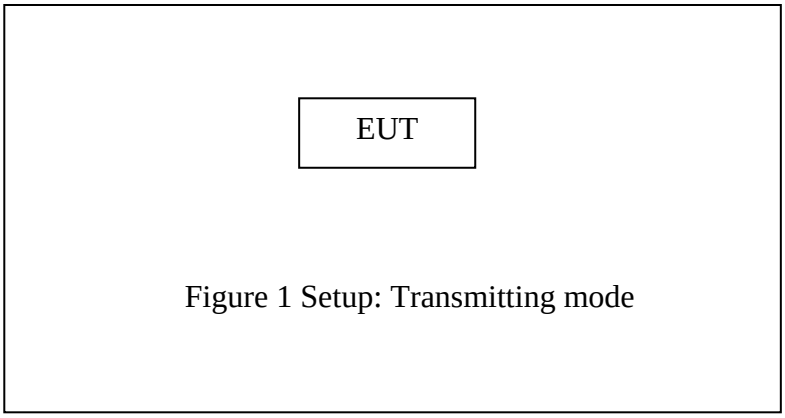


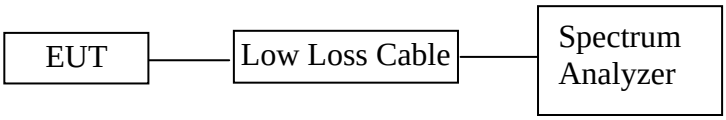
Figure 1 Setup: Transmitting mode

4. TEST PROCEDURES AND RESULTS

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

5. 6DB BANDWIDTH TEST

5.1.Block Diagram of Test Setup



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

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

5.3.EUT Configuration on Measurement

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

5.4.Operating Condition of EUT

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

5.4.2.Turn on the power of all equipment.

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

5.5.Test Procedure

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

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

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

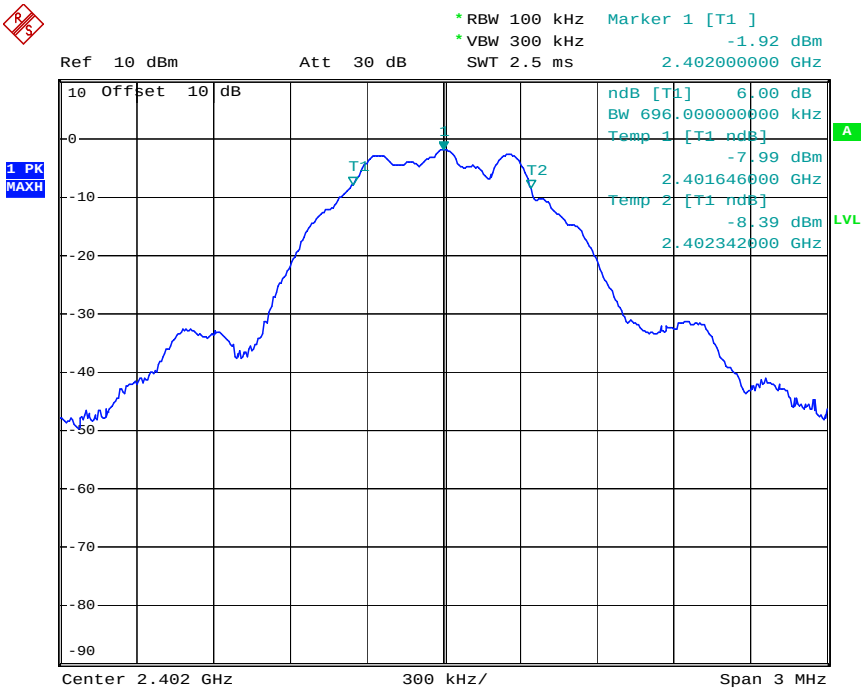
5.6.Test Result

Test Lab: Shielding room
Test Engineer: Frank

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
0	2402	0.696	＞0.5	Pass
19	2440	0.696	＞0.5	Pass
39	2480	0.690	＞0.5	Pass

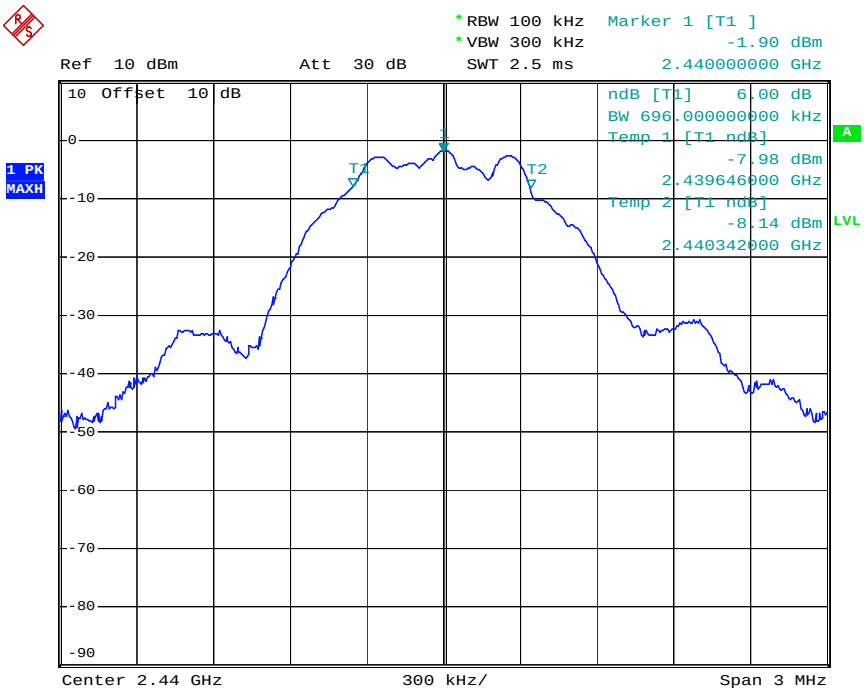
The spectrum analyzer plots are attached as below.

Channel 0



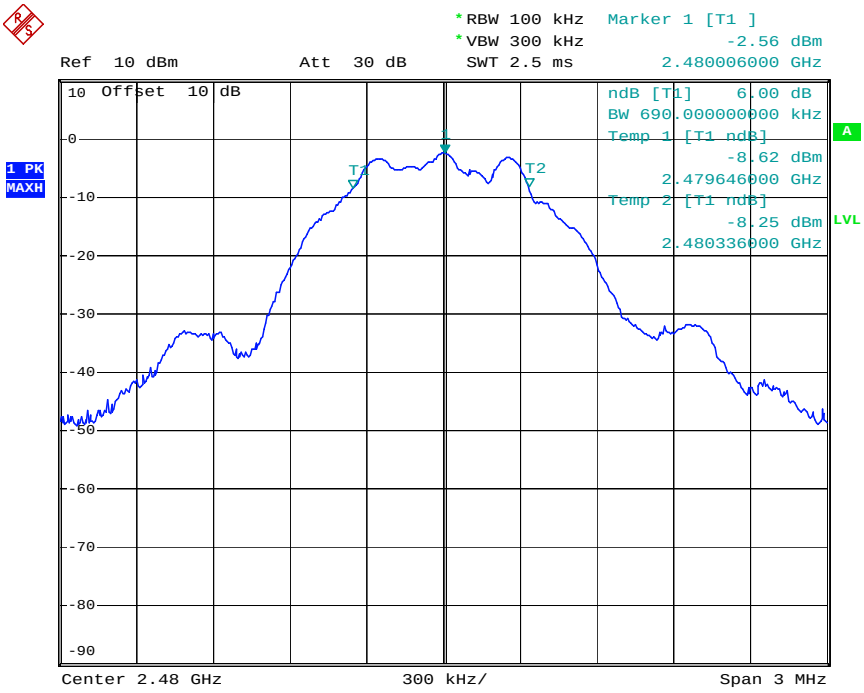
Date: 15.JUL.2019 12:24:15

Channel 19



Date: 15.JUL.2019 12:25:02

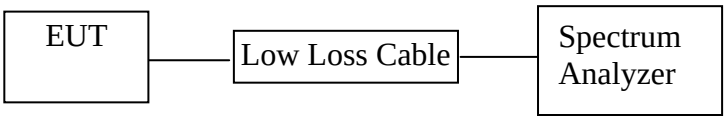
Channel 39



Date: 15.JUL.2019 12:25:47

6. MAXIMUM PEAK OUTPUT POWER TEST

6.1.Block Diagram of Test Setup



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

For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt.

6.3.EUT Configuration on Measurement

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

6.4.Operating Condition of EUT

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

6.4.2.Turn on the power of all equipment.

6.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480MHz. 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 3MHz and VBW to 10MHz.

6.5.3.Measurement the maximum peak output power.

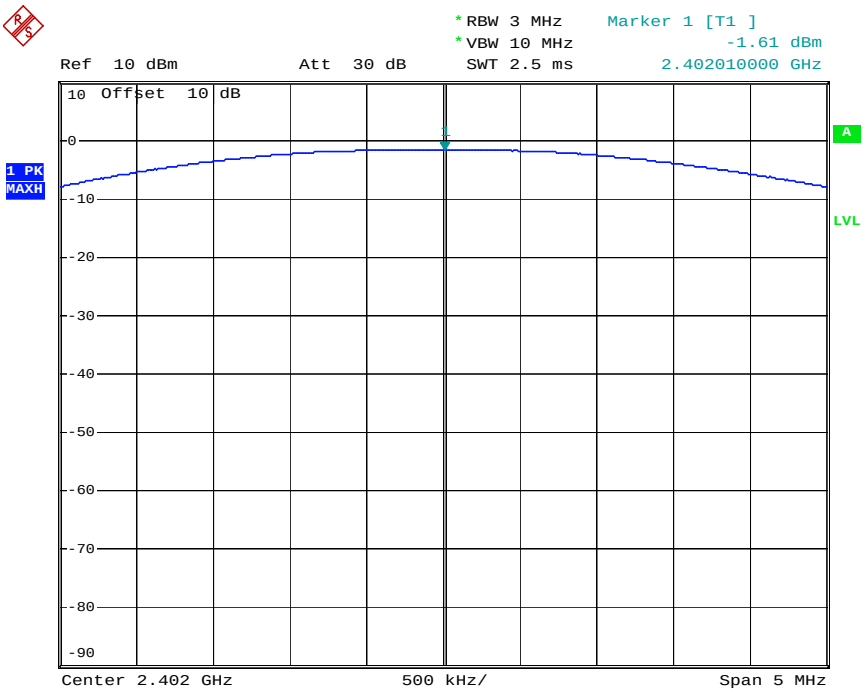
6.6.Test Result

Test Lab: Shielding room
Test Engineer: Frank

Channel	Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Result
0	2402	-1.61	30	Pass
19	2440	-1.58	30	Pass
39	2480	-2.25	30	Pass

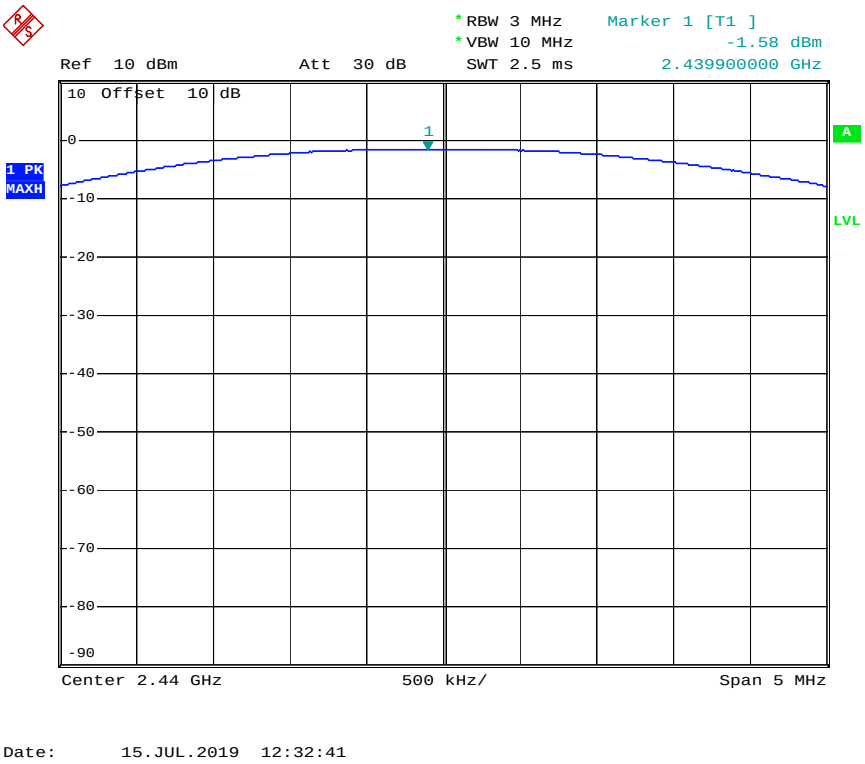
The spectrum analyzer plots are attached as below.

Channel 0

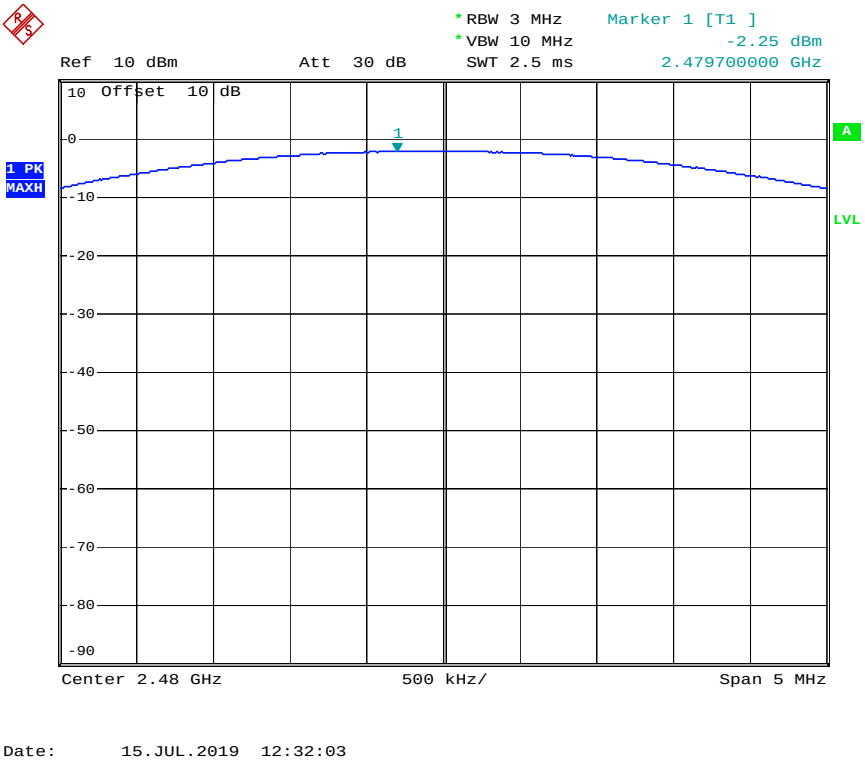


Date: 15.JUL.2019 12:33:27

Channel 19

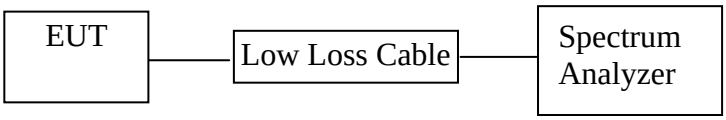


Channel 39



7. POWER SPECTRAL DENSITY TEST

7.1.Block Diagram of Test Setup



7.2.The Requirement For Section 15.247(e)

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

7.3.EUT Configuration on Measurement

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

7.4.Operating Condition of EUT

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

7.4.2.Turn on the power of all equipment.

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

7.5.Test Procedure

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

7.5.2.Measurement Procedure PKPSD:

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

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 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.

7.5.4.Measurement the maximum power spectral density.

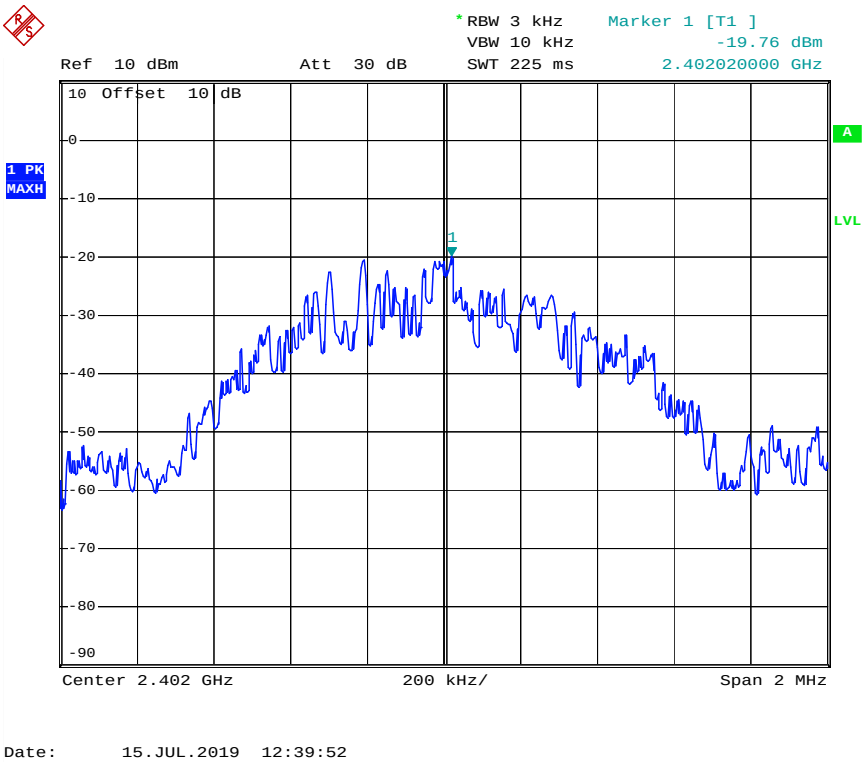
7.6.Test Result

Test Lab: Shielding room
Test Engineer: Frank

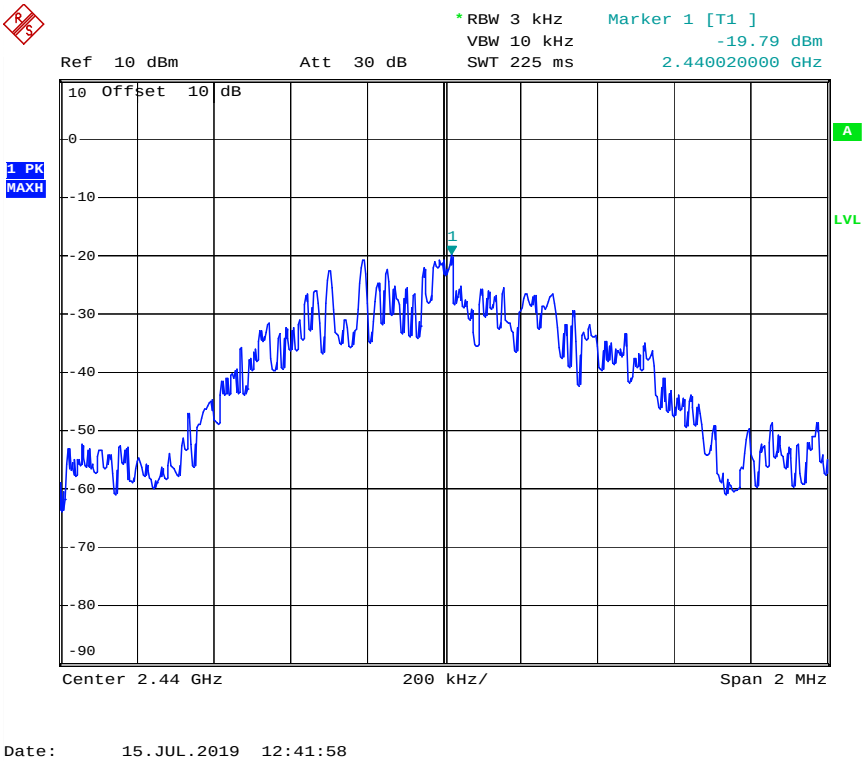
Channel	Frequency (MHz)	PSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
0	2402	-19.76	8	Pass
19	2440	-19.79	8	Pass
39	2480	-20.11	8	Pass

The spectrum analyzer plots are attached as below.

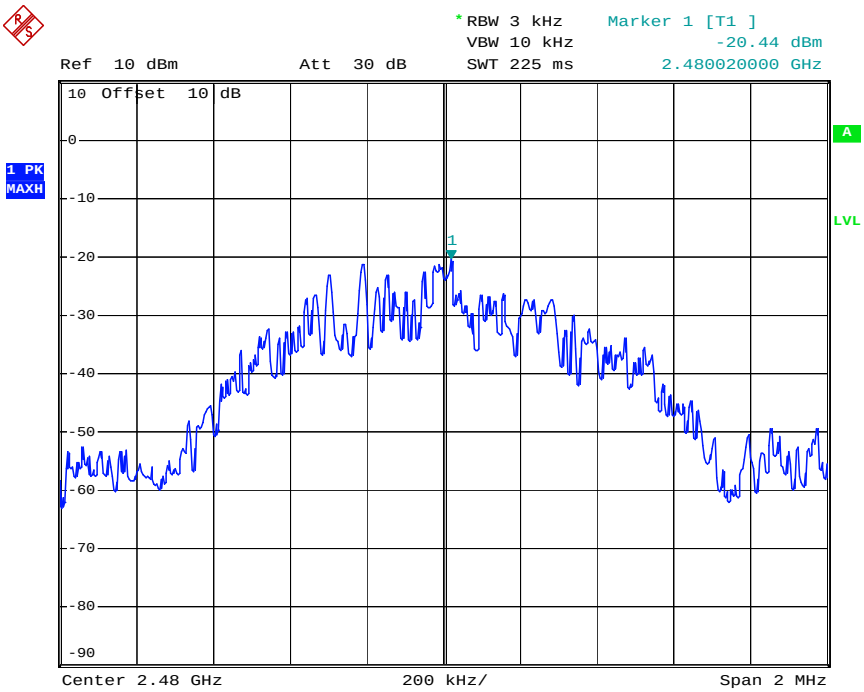
Channel 0



Channel 19



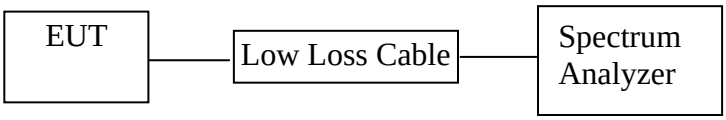
Channel 39



Date: 15.JUL.2019 12:44:37

8. BAND EDGE COMPLIANCE TEST

8.1.Block Diagram of Test Setup



8.2.The Requirement For Section 15.247(d)

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

8.3.EUT Configuration on Measurement

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

8.4.Operating Condition of EUT

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

8.4.2.Turn on the power of all equipment.

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

8.5.Test Procedure

Conducted Band Edge:

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

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

8.5.3. Radiate Band Edge:

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

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

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

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

8.5.8.RBW=1MHz, VBW=1MHz

8.5.9.The band edges was measured and recorded.

8.6.Test Result

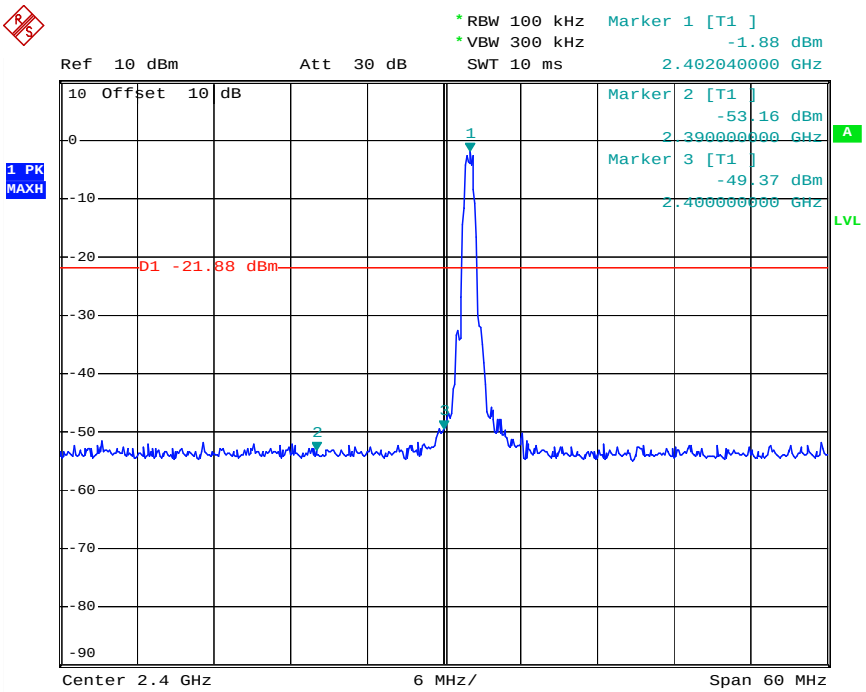
Test Lab: Shielding room
Test Engineer: Frank

Conducted Band Edge Result

Frequency (MHz)	Delta peak to band emission	Limit (dBc)	Result
2402	47.49	＞20	Pass
2480	49.45	＞20	Pass

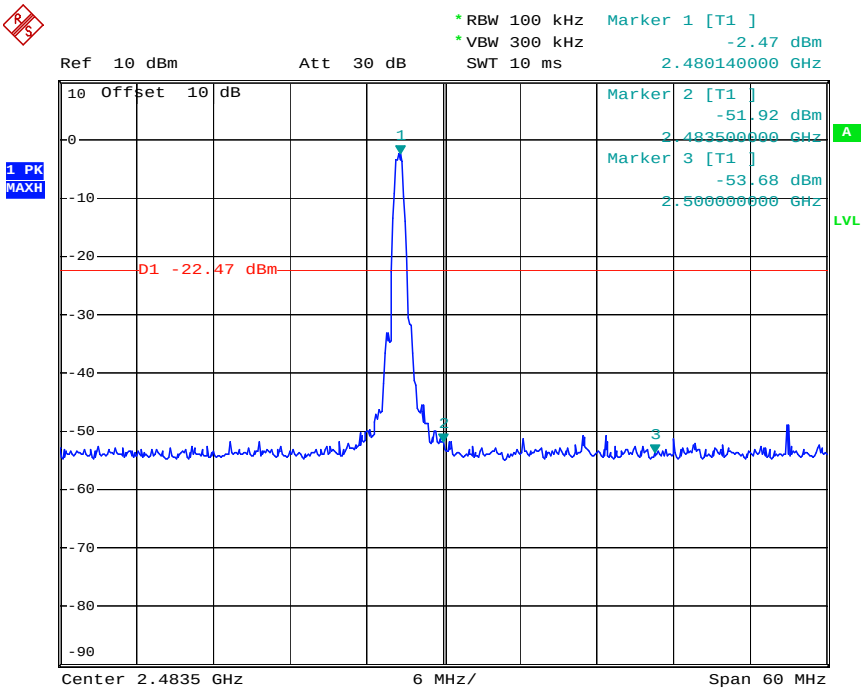
The spectrum analyzer plots are attached as below.

Channel 0



Date: 15.JUL.2019 12:30:29

Channel 39



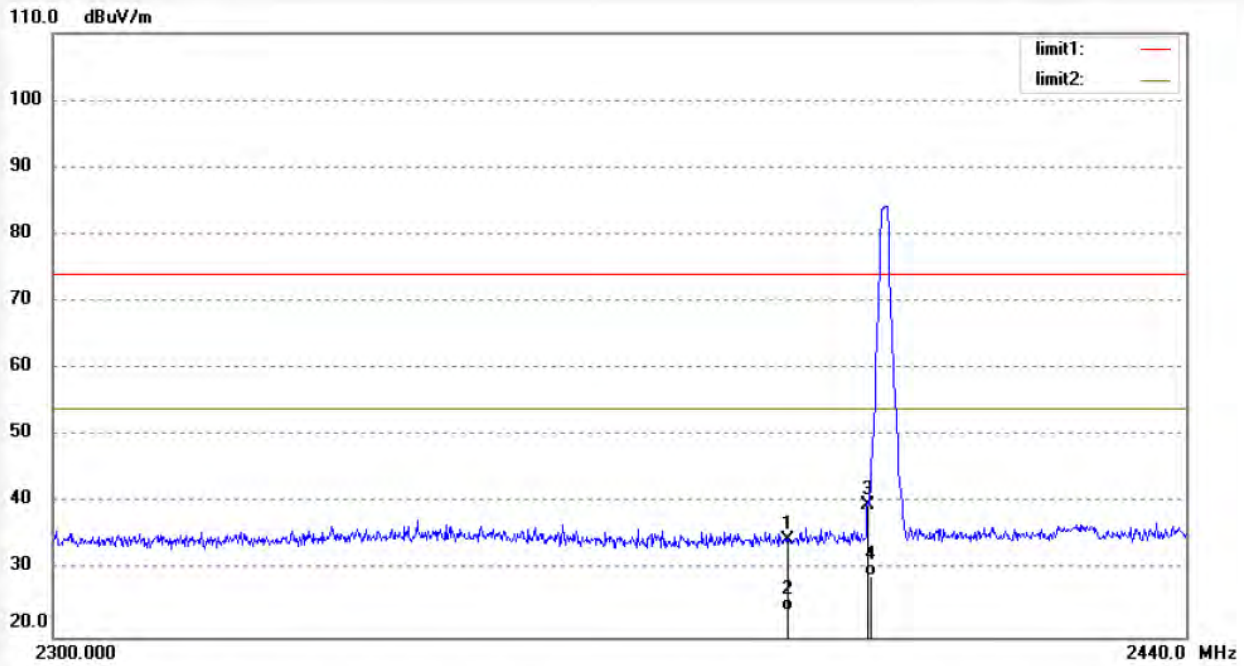
Date: 15.JUL.2019 12:31:19

Radiated Band Edge Result

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: FRANK2019-BT #205	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/16/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/36/26
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045

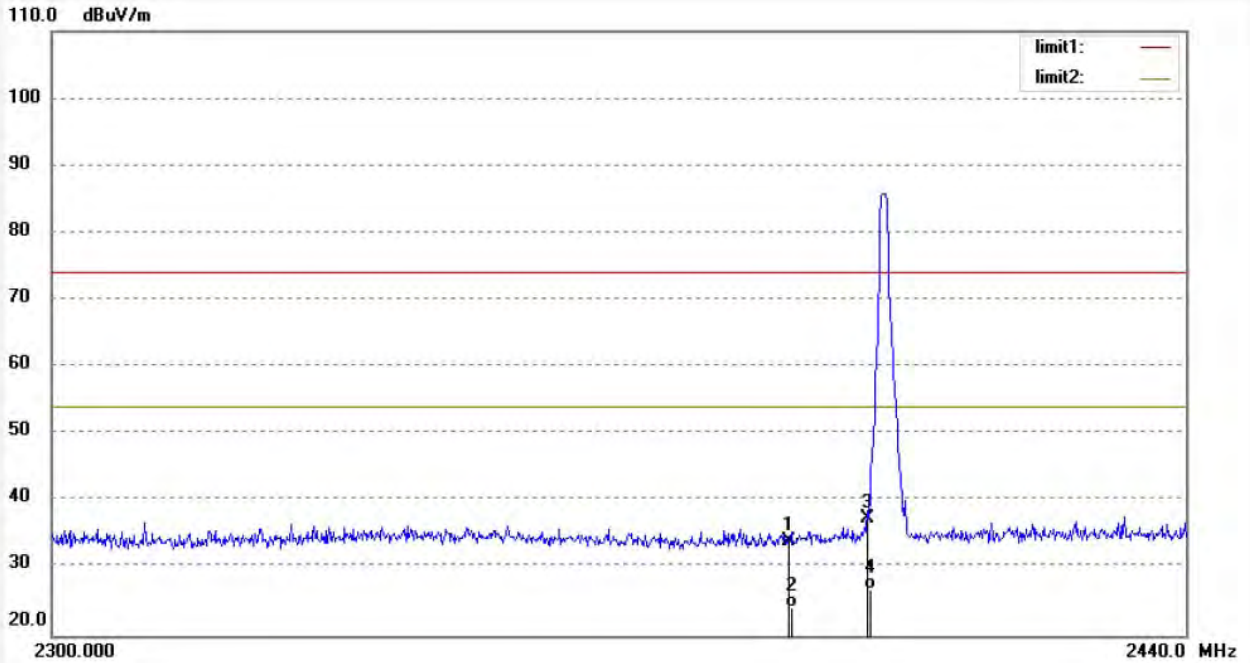


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	40.80	-6.32	34.48	74.00	-39.52	peak	200	211	
2	2390.000	30.16	-6.32	23.84	54.00	-30.16	AVG	200	246	
3	2400.000	46.03	-6.27	39.76	74.00	-34.24	peak	200	321	
4	2400.000	35.48	-6.27	29.21	54.00	-24.79	AVG	200	109	

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.: FRANK2019-BT #206	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/16/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/37/45
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045



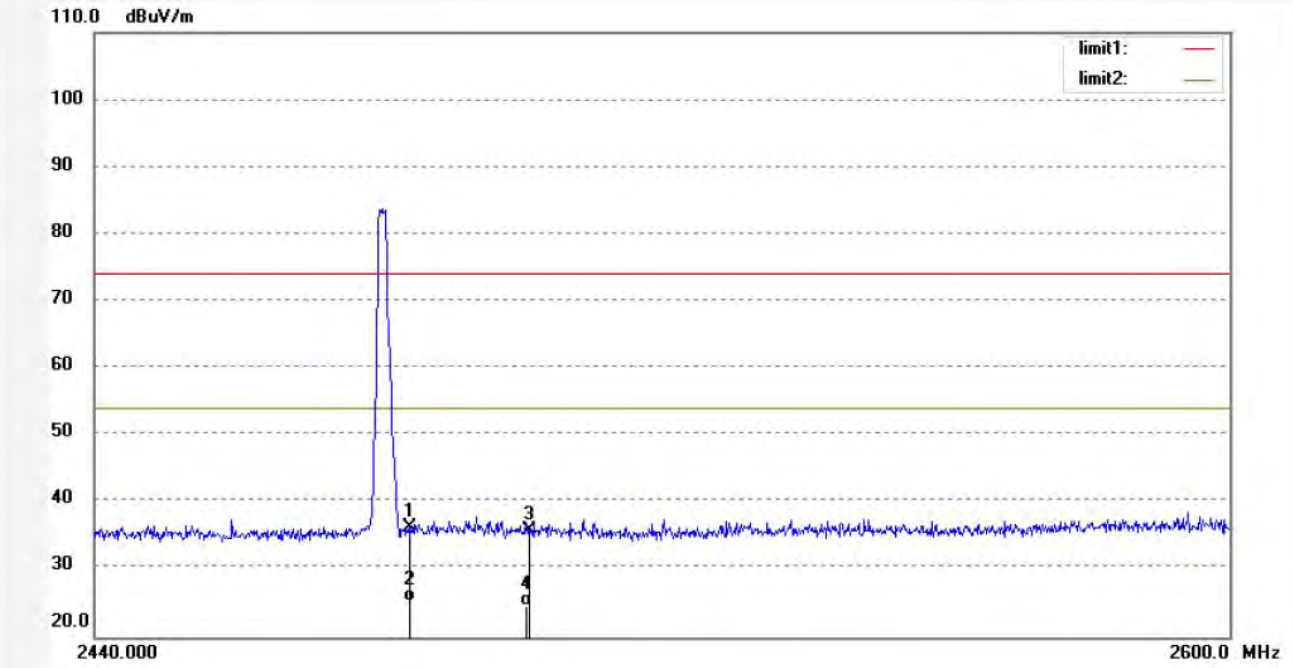
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	40.32	-6.32	34.00	74.00	-40.00	peak	150	91	
2	2390.000	30.45	-6.32	24.13	54.00	-29.87	AVG	150	28	
3	2400.000	43.75	-6.27	37.48	74.00	-36.52	peak	150	221	
4	2400.000	33.15	-6.27	26.88	54.00	-27.12	AVG	150	163	

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.: FRANK2019-BT #204
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Skizze Pen
Mode: TX 2480MHz
Model: P0101
Manufacturer: KOGA TOUCH CO.,LTD

Polarization: Horizontal
Power Source: DC 3.7V
Date: 19/07/16/
Time: 9/33/55
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20191045

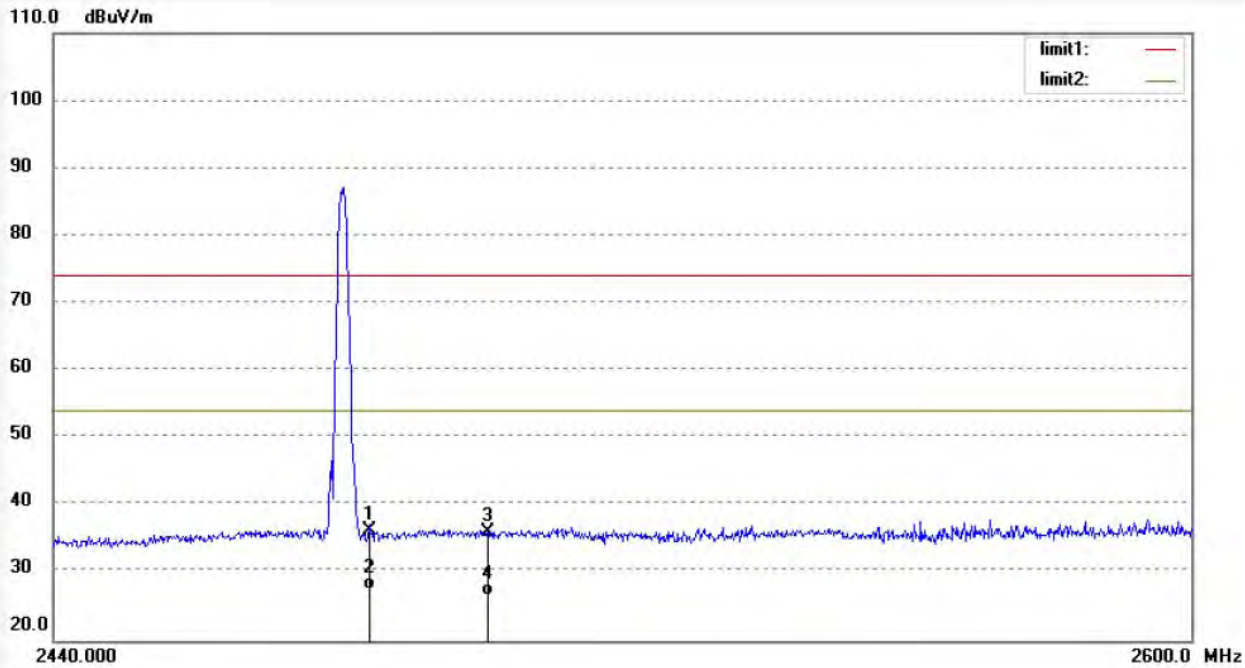


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	42.14	-5.89	36.25	74.00	-37.75	peak	200	21	
2	2483.500	31.15	-5.89	25.26	54.00	-28.74	AVG	200	93	
3	2500.000	41.68	-5.81	35.87	74.00	-38.13	peak	200	221	
4	2500.000	30.48	-5.81	24.67	54.00	-29.33	AVG	200	103	

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.: FRANK2019-BT #203	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/16/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/32/04
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045



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	42.26	-5.89	36.37	74.00	-37.63	peak	150	201	
2	2483.500	33.45	-5.89	27.56	54.00	-26.44	AVG	150	33	
3	2500.000	41.84	-5.81	36.03	74.00	-37.97	peak	150	112	
4	2500.000	32.45	-5.81	26.64	54.00	-27.36	AVG	150	93	

Note:

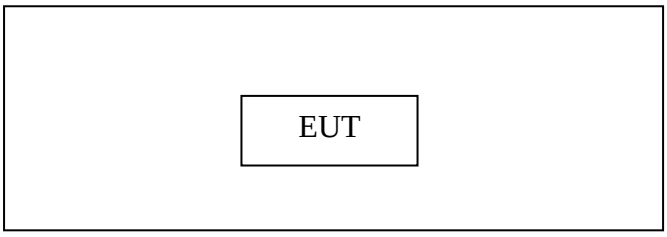
1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is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

   Result = Reading + Corrected Factor

9. RADIATED SPURIOUS EMISSION TEST

9.1.Block Diagram of Test Setup

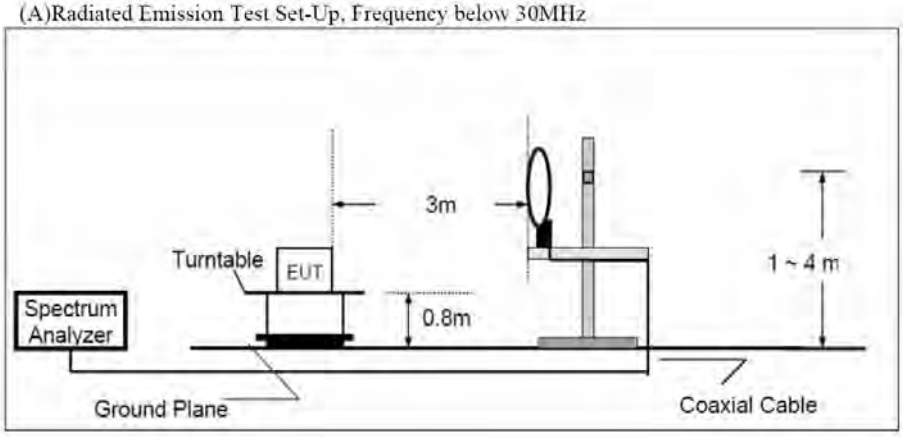
9.1.1.Block diagram of connection between the EUT and peripherals



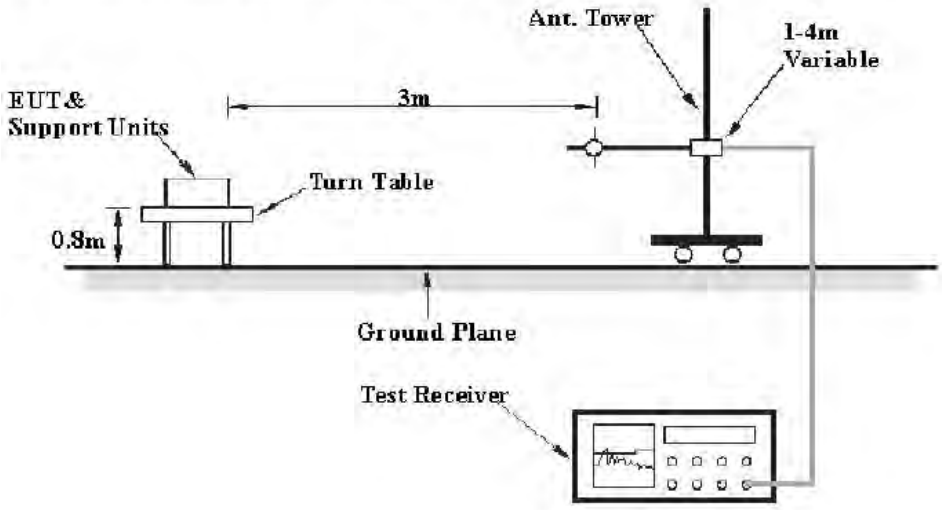
Setup: Transmitting mode

9.1.2.Semi-Anechoic Chamber Test Setup Diagram

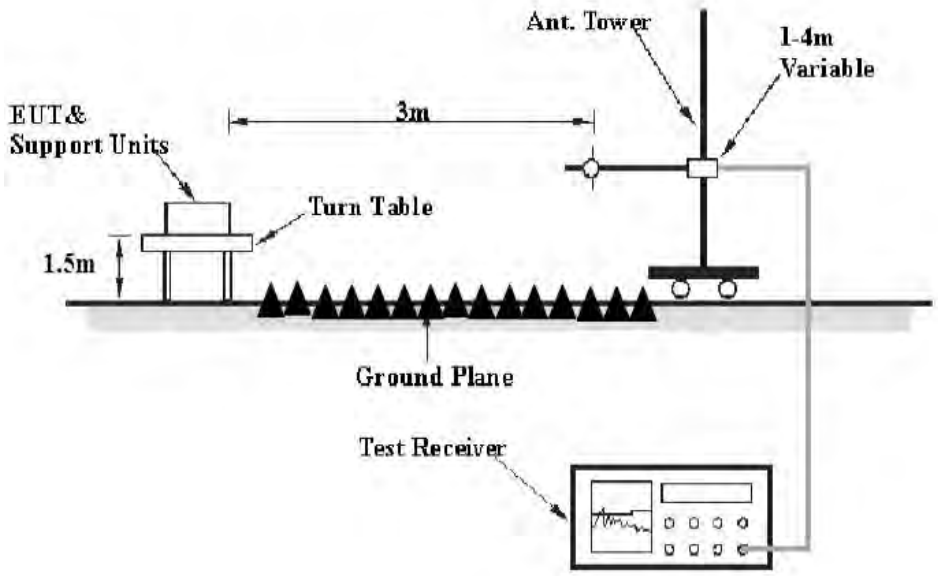
(A)Radiated Emission Test Set-Up, Frequency below 30MHz



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



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



9.2.The Limit For Section 15.247(d)

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

9.3. Restricted bands of operation

9.3.1.FCC Part 15.205 Restricted bands of operation

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

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

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510
[2]Above 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 Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

9.4.Configuration of EUT on Measurement

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

9.5. Operating Condition of EUT

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

9.5.2.Turn on the power of all equipment.

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

9.6.Test Procedure

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

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

The frequency range from 9 kHz to 26.5GHz 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.

9.7. Data Sample

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

Frequency(MHz) = Emission frequency in MHz
Reading(dBμv) = Uncorrected Analyzer/Receiver reading
Factor (dB/m) = Antenna factor + Cable Loss – Amplifier gain
Result(dBμv/m) = Reading(dBμv) + Factor(dB/m)
Limit (dBμv/m) = Limit stated in standard
Margin (dB) = Result(dBμv/m) - Limit (dBμv/m)
QP = Quasi-peak Reading

Calculation Formula:
Margin(dB) = Result (dBμV/m)–Limit(dBμV/m)
Result(dBμV/m)= Reading(dBμV)+ Factor(dB/m)

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

9.8. Test Result

Pass.

Test Lab: 3m Anechoic chamber
Test Engineer: Frank

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

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

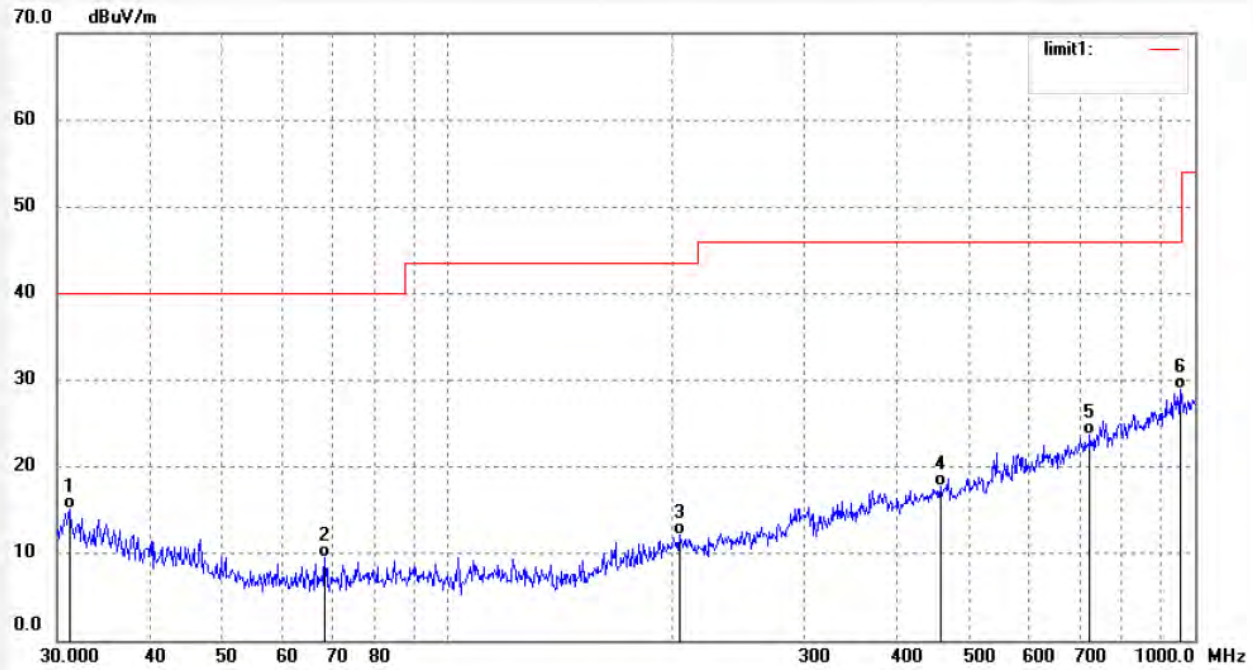
The spectrum analyzer plots are attached as below.

Below 1GHz

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.: FRANK2019-BT #192	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/15/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 10/38/29
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045

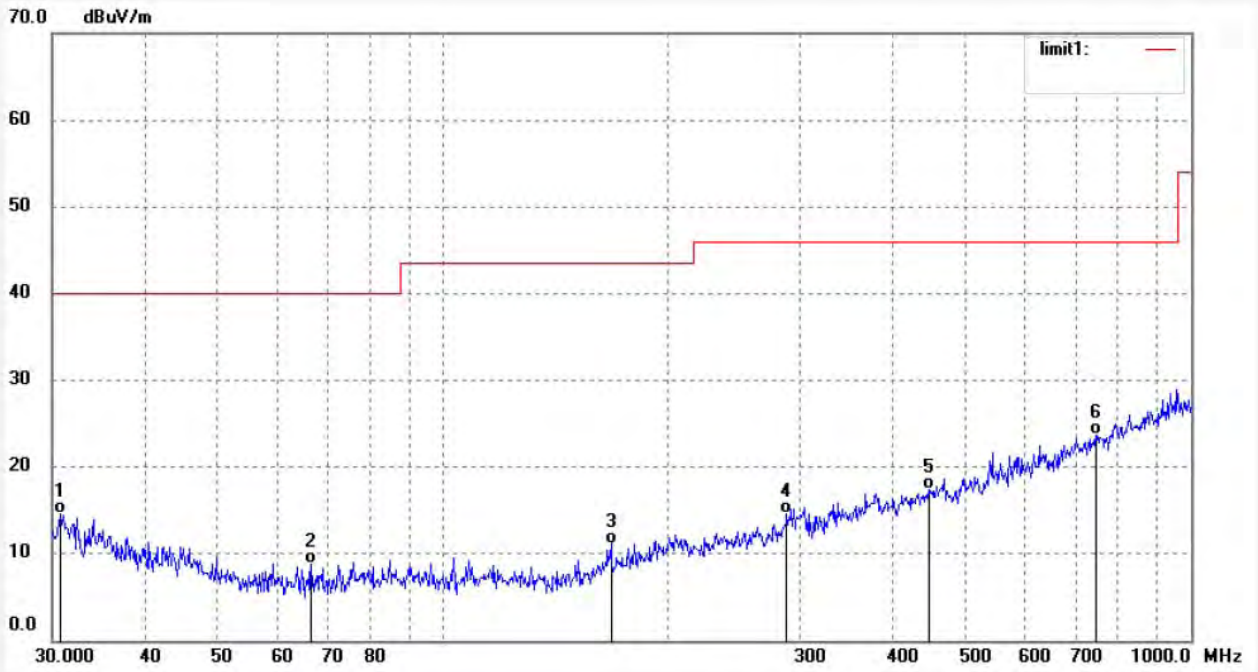


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.1822	35.66	-20.49	15.17	40.00	-24.83	QP	200	224	
2	68.5037	37.01	-27.42	9.59	40.00	-30.41	QP	200	92	
3	204.3052	36.41	-24.18	12.23	43.50	-31.27	QP	200	201	
4	456.7909	34.83	-17.06	17.77	46.00	-28.23	QP	200	331	
5	723.7930	34.58	-10.93	23.65	46.00	-22.35	QP	200	40	
6	955.3509	35.11	-6.18	28.93	46.00	-17.07	QP	200	102	

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.: FRANK2019-BT #191	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/15/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 10/38/12
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045

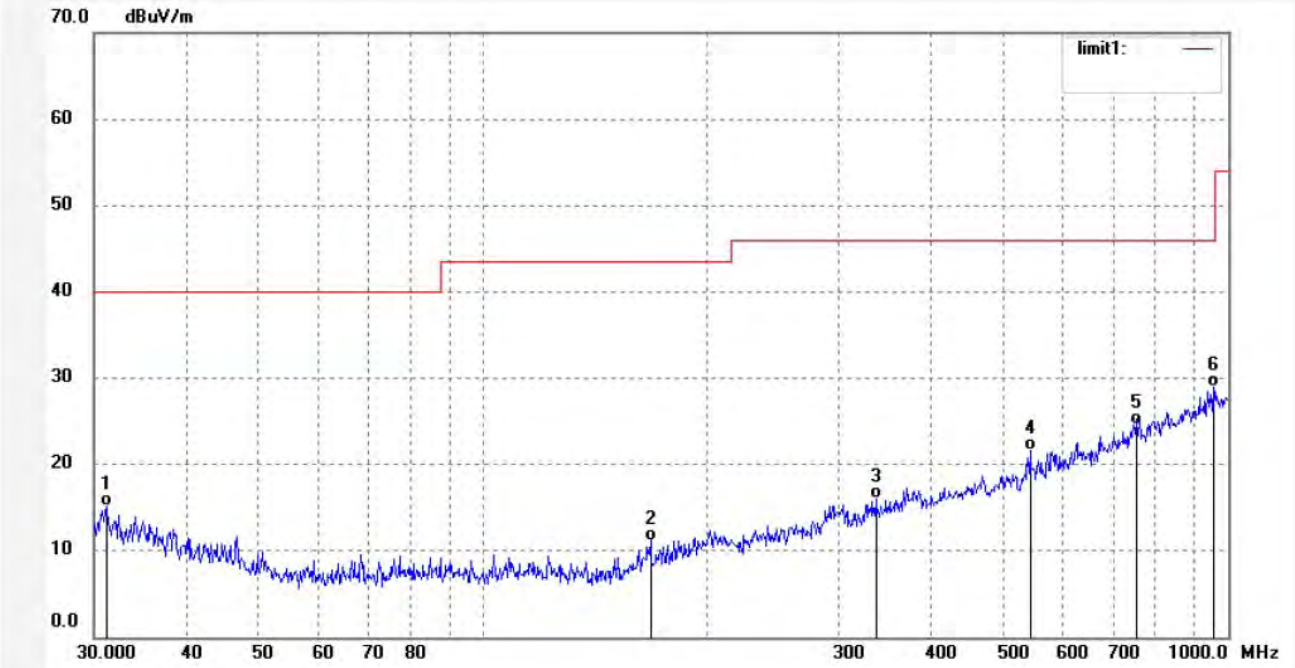


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	30.7469	34.92	-20.39	14.53	40.00	-25.47	QP	100	103	
2	66.6050	36.16	-27.35	8.81	40.00	-31.19	QP	100	95	
3	167.8136	37.43	-26.23	11.20	43.50	-32.30	QP	100	221	
4	288.2839	36.37	-21.74	14.63	46.00	-31.37	QP	100	33	
5	445.6931	34.85	-17.35	17.50	46.00	-28.50	QP	100	110	
6	747.0465	34.04	-10.40	23.64	46.00	-22.36	QP	100	220	

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.: FRANK2019-BT #193	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/15/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 10/38/39
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2440MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045



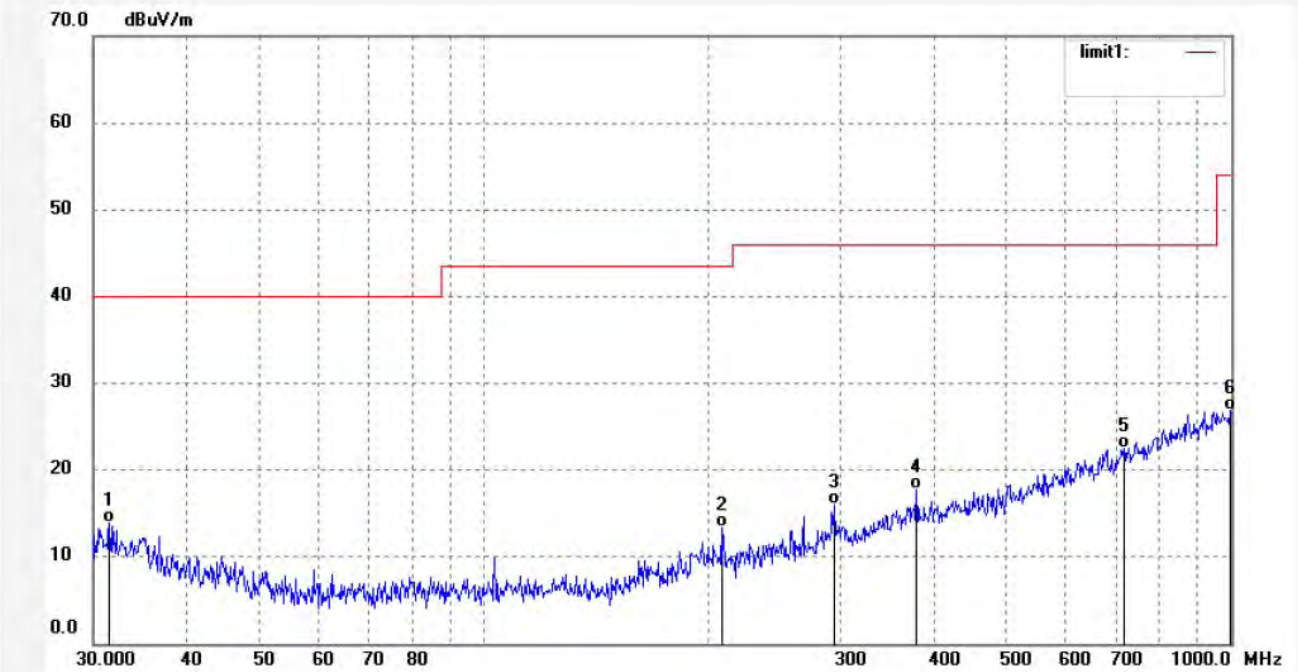
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.1822	35.66	-20.49	15.17	40.00	-24.83	QP	200	145	
2	167.8136	37.43	-26.23	11.20	43.50	-32.30	QP	200	39	
3	336.4816	35.78	-19.84	15.94	46.00	-30.06	QP	200	101	
4	542.6104	36.68	-15.03	21.65	46.00	-24.35	QP	200	211	
5	747.0465	35.01	-10.40	24.61	46.00	-21.39	QP	200	66	
6	955.3509	35.11	-6.18	28.93	46.00	-17.07	QP	200	136	

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.: FRANK2019-BT #194
Standard: FCC Part 15C 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Skizze Pen
Mode: TX 2440MHz
Model: P0101
Manufacturer: KOGA TOUCH CO.,LTD

Polarization: Vertical
Power Source: DC 3.7V
Date: 19/07/15/
Time: 10/38/55
Engineer Signature:
Distance: 3m

Note: Report NO.:ATE20191045

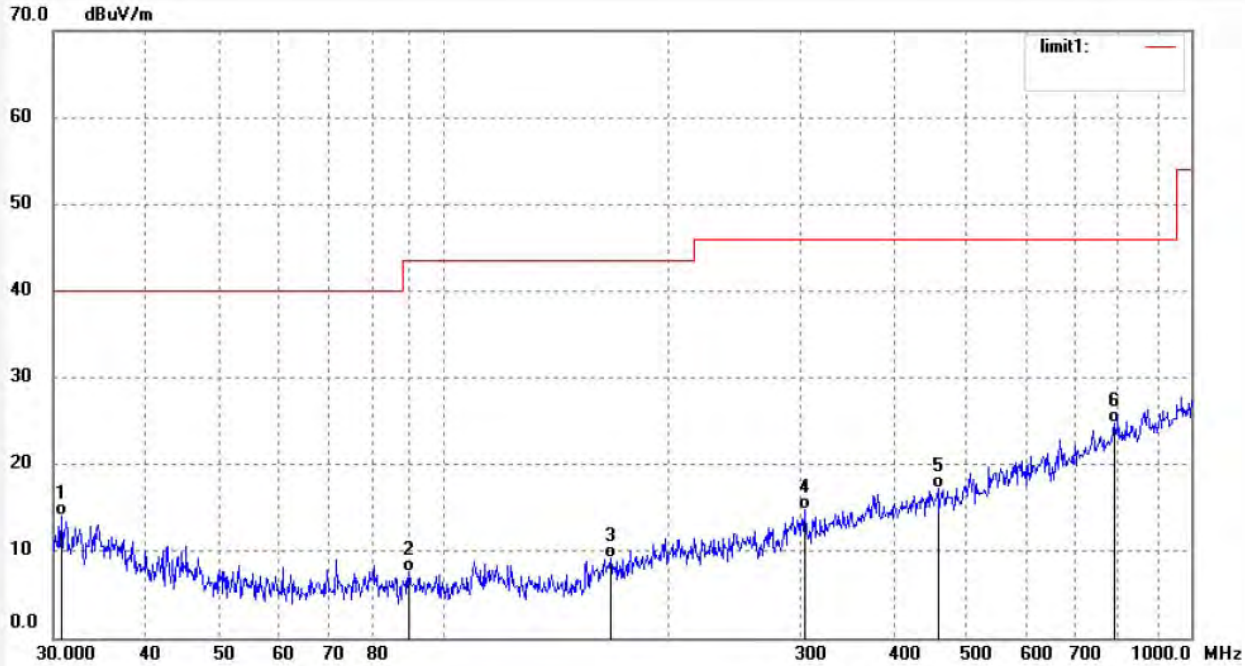


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.5125	34.50	-20.57	13.93	40.00	-26.07	QP	100	171	
2	207.9260	37.49	-24.14	13.35	43.50	-30.15	QP	100	66	
3	294.4259	37.38	-21.45	15.93	46.00	-30.07	QP	100	201	
4	379.1779	36.35	-18.64	17.71	46.00	-28.29	QP	100	121	
5	718.7246	33.47	-11.05	22.42	46.00	-23.58	QP	100	33	
6	996.4926	32.00	-5.10	26.90	54.00	-27.10	QP	100	119	

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.: FRANK2019-BT #196	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/15/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 10/39/23
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045



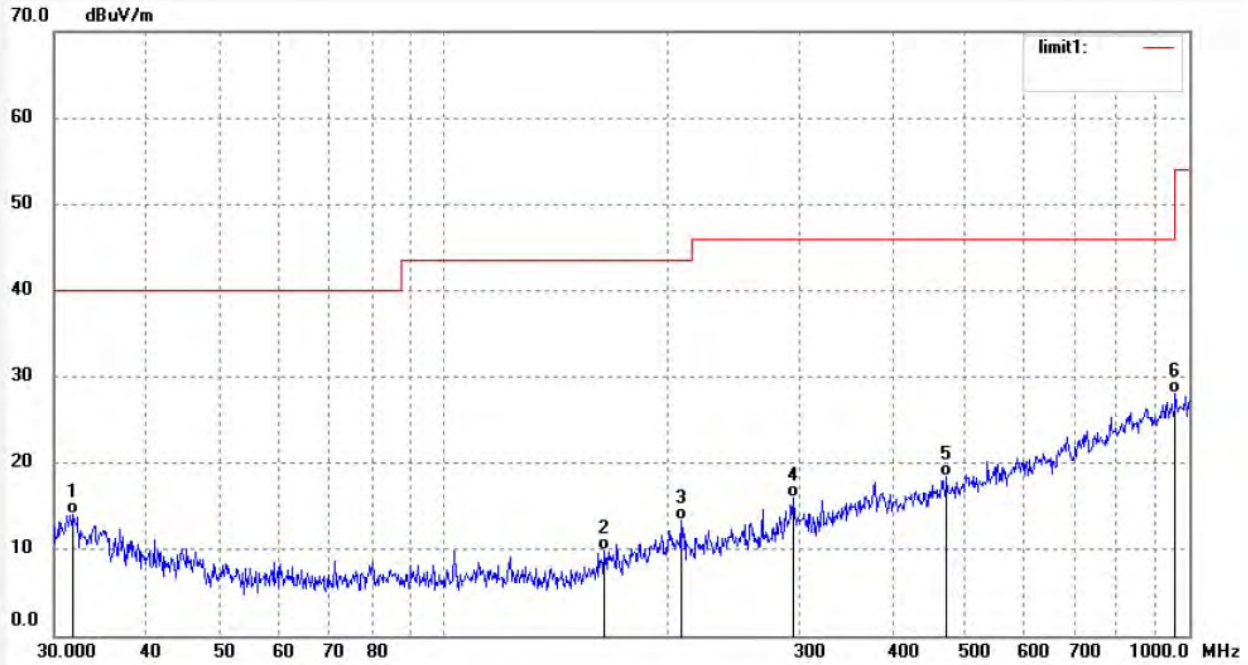
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	30.7469	34.43	-20.39	14.04	40.00	-25.96	QP	200	331	
2	89.7866	34.99	-27.41	7.58	43.50	-35.92	QP	200	96	
3	167.2249	35.41	-26.29	9.12	43.50	-34.38	QP	200	201	
4	303.8851	35.87	-21.11	14.76	46.00	-31.24	QP	200	221	
5	458.3987	34.25	-17.02	17.23	46.00	-28.77	QP	200	66	
6	790.2465	34.04	-9.25	24.79	46.00	-21.21	QP	200	103	

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.: FRANK2019-BT #195	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/15/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 10/39/07
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045



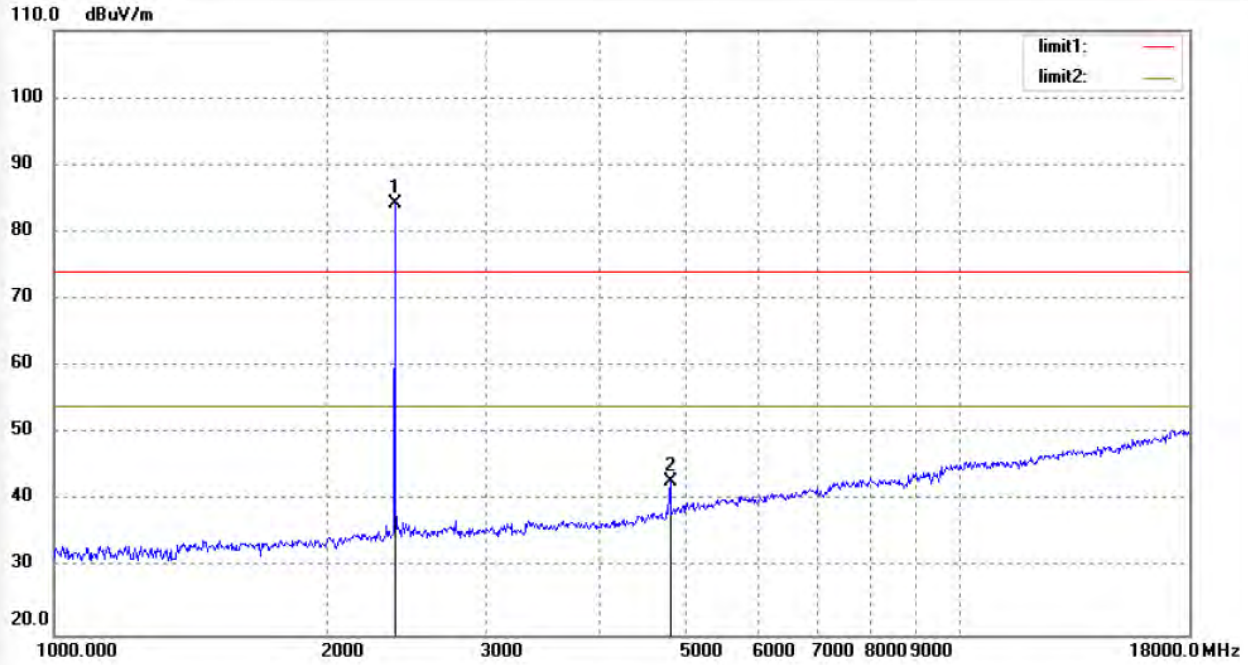
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.8464	34.71	-20.66	14.05	40.00	-25.95	QP	100	321	
2	164.3129	36.51	-26.61	9.90	43.50	-33.60	QP	100	86	
3	207.9260	37.49	-24.14	13.35	43.50	-30.15	QP	100	201	
4	294.4259	37.38	-21.45	15.93	46.00	-30.07	QP	100	112	
5	473.1259	35.25	-16.72	18.53	46.00	-27.47	QP	100	62	
6	958.7134	34.19	-6.10	28.09	46.00	-17.91	QP	100	103	

Above 1GHz

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.: FRANK2019-BT #197	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/16/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/17/32
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045

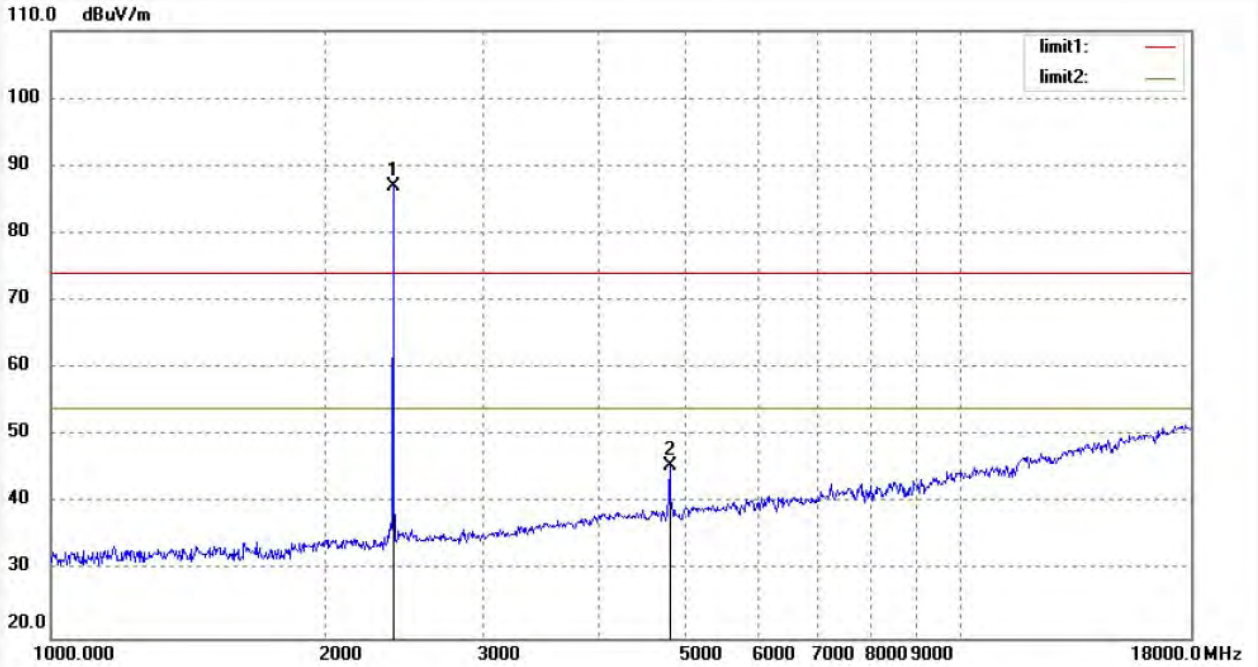


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.019	90.60	-6.37	84.23	/	/	peak	250	93	
2	4804.328	41.75	1.00	42.75	74.00	-31.25	peak	200	103	

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.: FRANK2019-BT #198	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/16/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/20/13
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045

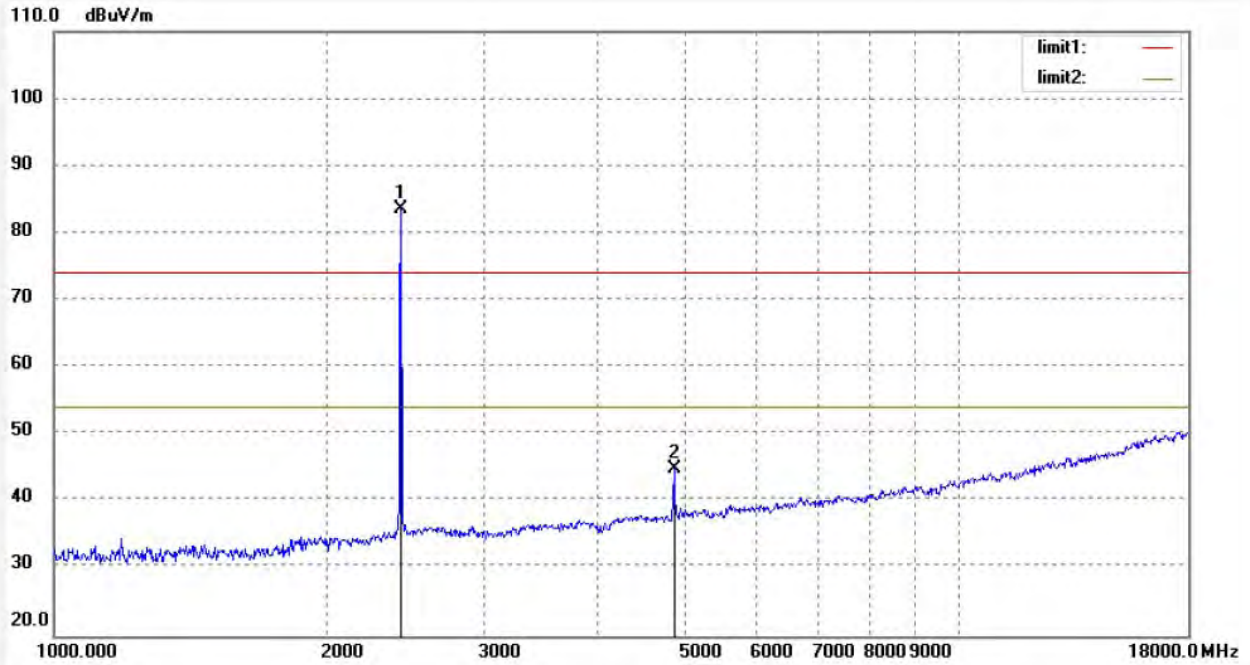


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.019	93.42	-6.37	87.05	/	/	peak	150	221	
2	4804.128	44.54	1.00	45.54	74.00	-28.46	peak	150	103	

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.: FRANK2019-BT #200	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/16/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/26/32
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2440MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045

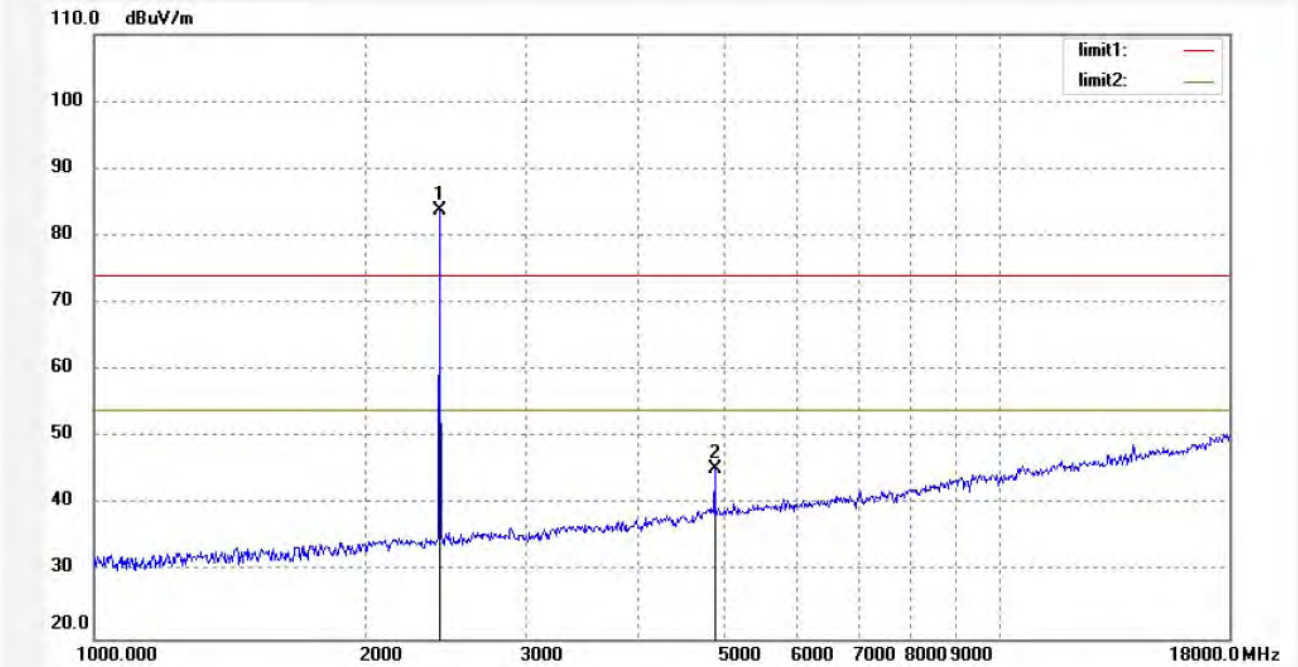


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2440.062	89.68	-6.17	83.51	/	/	peak	200	63	
2	4880.057	43.55	1.25	44.80	74.00	-29.20	peak	200	196	

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.: FRANK2019-BT #199	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/16/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/22/50
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2440MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045

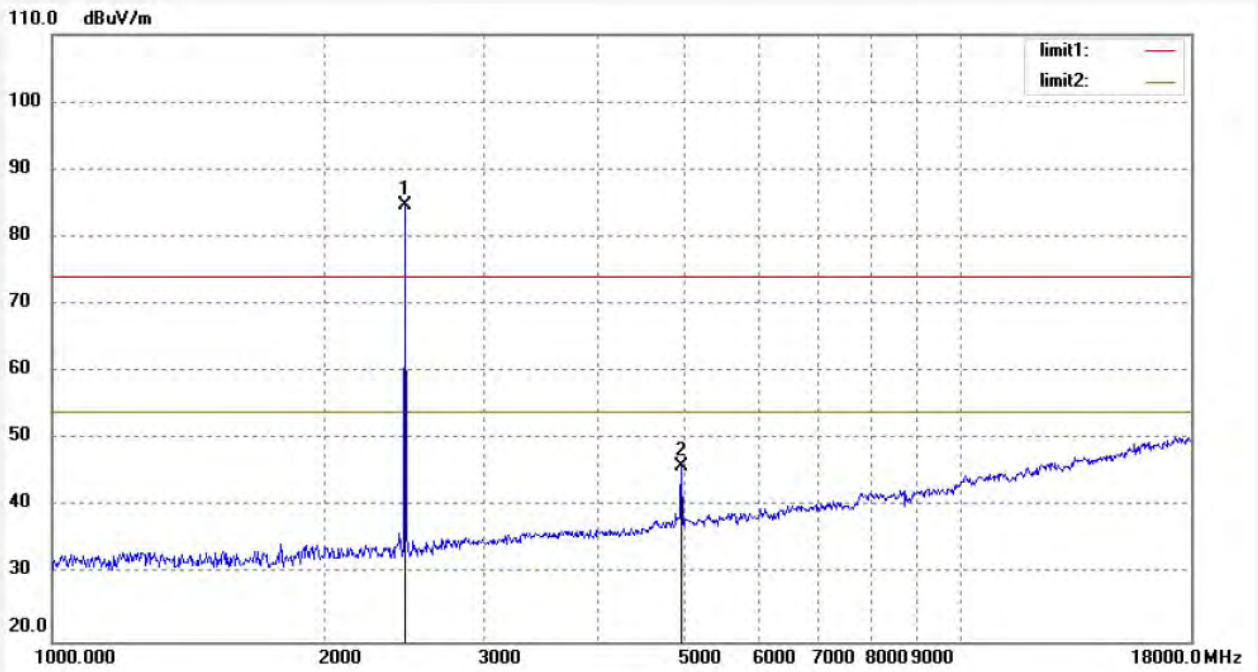


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2440.000	90.08	-6.24	83.84	/	/	peak	150	63	
2	4880.057	43.97	1.25	45.22	74.00	-28.78	peak	150	109	

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.: FRANK2019-BT #201	Polarization: Horizontal
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/16/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/27/56
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

Note: Report NO.:ATE20191045

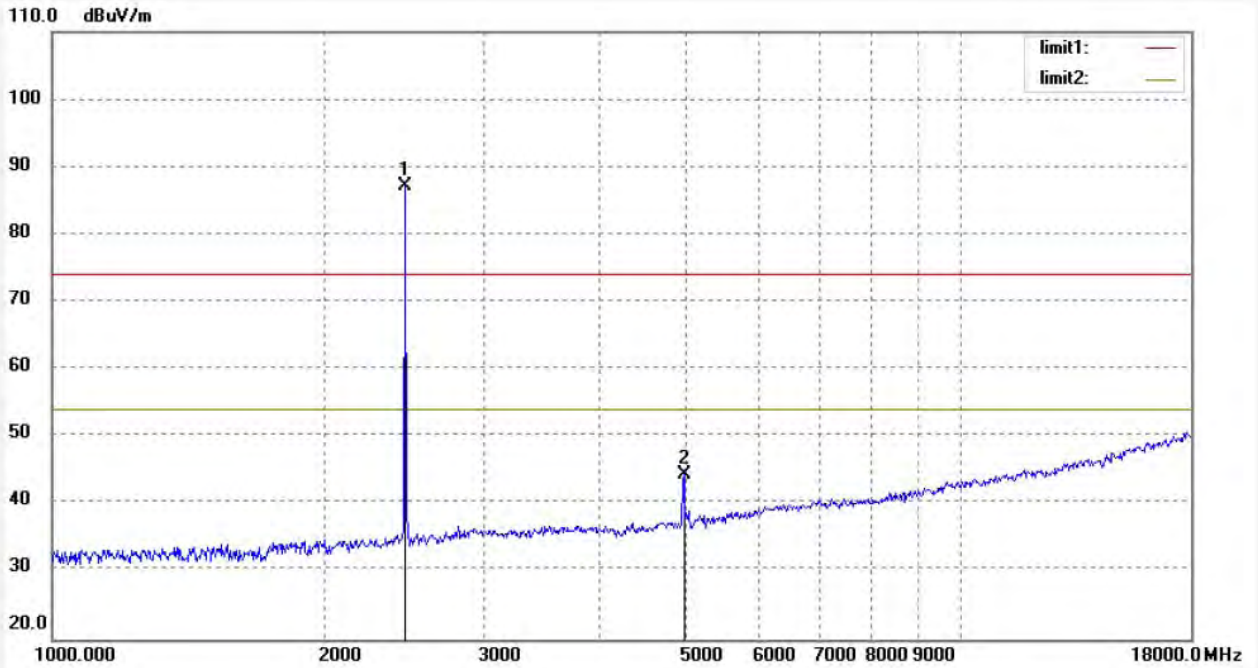


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.034	90.74	-6.04	84.70	/	/	peak	200	55	
2	4960.137	44.46	1.62	46.08	74.00	-27.92	peak	200	145	

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.: FRANK2019-BT #202	Polarization: Vertical
Standard: FCC Part 15C 3M Radiated	Power Source: DC 3.7V
Test item: Radiation Test	Date: 19/07/16/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/30/27
EUT: Skizze Pen	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: P0101	
Manufacturer: KOGA TOUCH CO.,LTD	

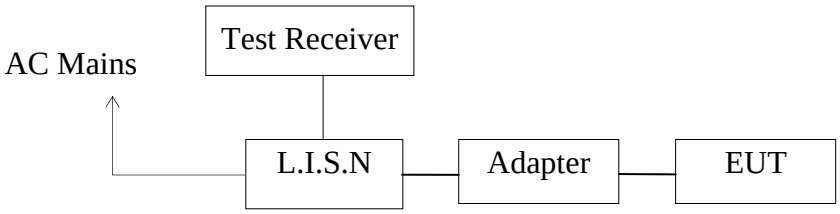
Note: Report NO.:ATE20191045



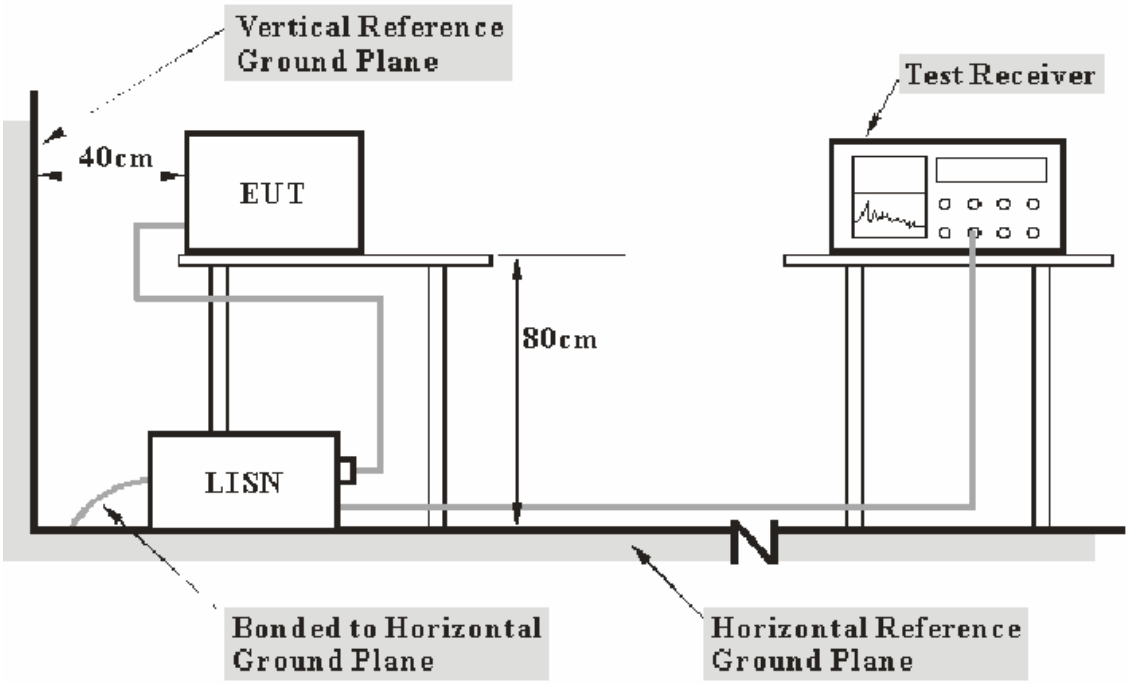
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.034	93.14	-6.04	87.10	/	/	peak	150	221	
2	4960.097	42.65	1.75	44.40	74.00	-29.60	peak	150	163	

10. AC POWER LINE CONDUCTED EMISSION TEST

10.1. Block Diagram of Test Setup



10.2. Test System Setup



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

10.3.Test 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.		

10.4.Configuration of EUT on Test

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

10.5.Operating Condition of EUT

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

10.5.2.Turn on the power of all equipment.

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

10.6.Test Procedure

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

The bandwidth of test receiver is set at 9kHz.

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

10.7.Data Sample

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

Frequency(MHz) = Emission frequency in MHz
Transducer value(dB) = Insertion loss of LISN + Cable Loss
Level(dBμV) = Quasi-peak Reading/Average Reading + Transducer value
Limit (dBμV) = Limit stated in standard

Calculation Formula:
Margin = Limit (dBμV) - Level (dBμV)

10.8.Test Result

Pass.

Test Lab: Shielding room
Test Engineer: Frank

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

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

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

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

The spectral diagrams are attached as below.

ACCURATE TECHNOLOGY CO.,LTD

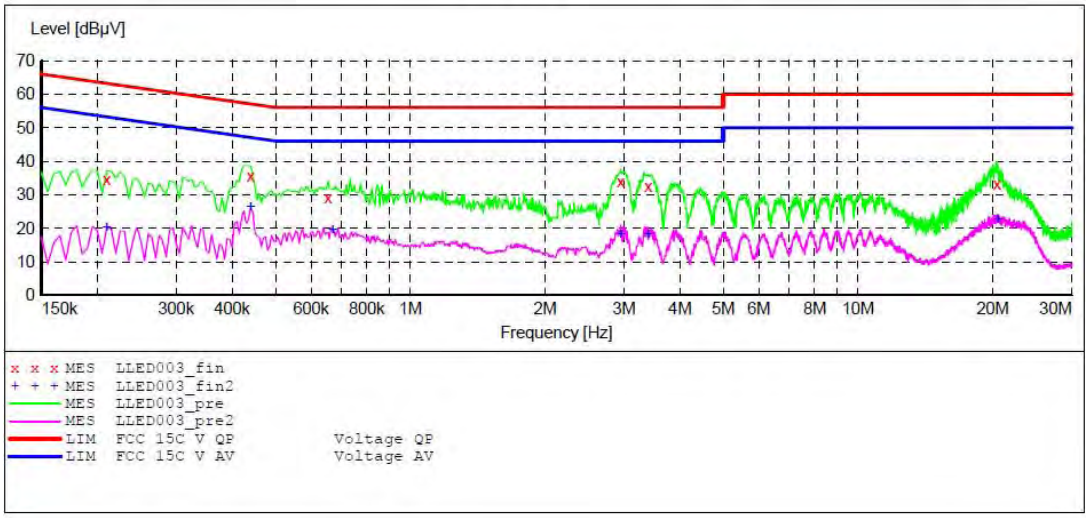
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT: Skizze Pen M/N:P0101
Manufacturer: KOGA TOUCH CO.,LTD
Operating Condition: BT communication
Test Site: 1#Shielding Room
Operator: Frank
Test Specification: N 240V/60Hz
Comment: Report No.:ATE20191045
Start of Test: 7/15/2019 / 9:24:17

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: "LLED003_fin"

2019-1-24 9:27

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.210000	34.60	10.5	63	28.6	QP	N	GND
0.440000	35.60	10.7	57	21.5	QP	N	GND
0.655000	29.10	10.8	56	26.9	QP	N	GND
2.950000	33.70	11.1	56	22.3	QP	N	GND
3.400000	32.60	11.1	56	23.4	QP	N	GND
20.410000	33.10	11.4	60	26.9	QP	N	GND

MEASUREMENT RESULT: "LLED003_fin2"

2019-1-24 9:27

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.210000	20.20	10.5	53	33.0	AV	N	GND
0.440000	26.20	10.7	47	20.9	AV	N	GND
0.670000	19.50	10.8	46	26.5	AV	N	GND
2.950000	18.10	11.1	46	27.9	AV	N	GND
3.390000	18.30	11.1	46	27.7	AV	N	GND
20.530000	22.50	11.4	50	27.5	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD

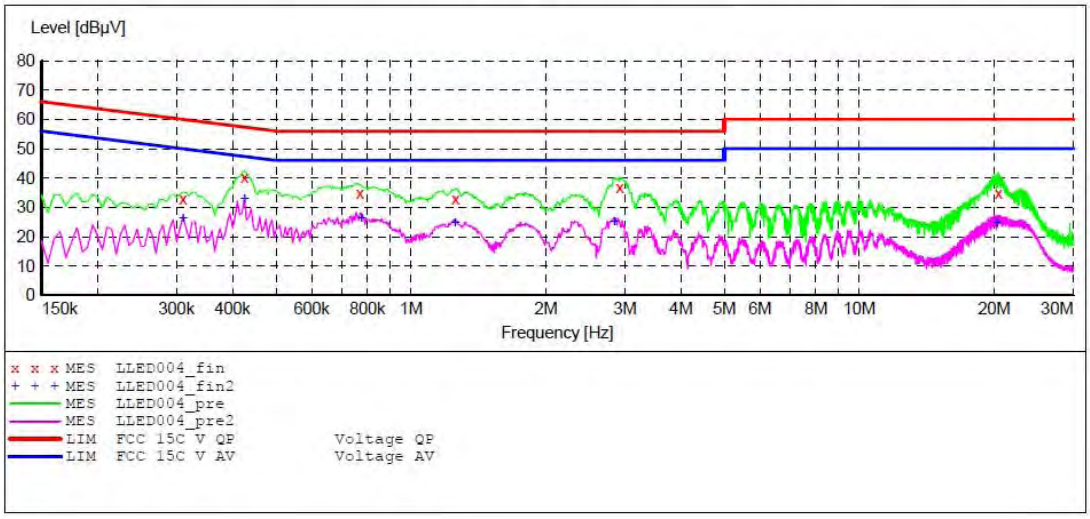
CONDUCTED EMISSION STANDARD FCC PART 15 C

```
EUT:                    Skizze Pen M/N:P0101
Manufacturer:           KOGA TOUCH CO.,LTD
Operating Condition:    BT communication
Test Site:              1#Shielding Room
Operator:               Frank
Test Specification:     L 240V/60Hz
Comment:                Report No.:ATE20191045
Start of Test:          7/15/2019 / 9:28:20
```

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: "LLED004_fin"

2019-1-24 9:32

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.310000	32.90	10.6	60	27.1	QP	L1	GND
0.425000	40.40	10.7	57	16.9	QP	L1	GND
0.770000	34.90	10.8	56	21.1	QP	L1	GND
1.255000	33.00	10.9	56	23.0	QP	L1	GND
2.920000	36.60	11.1	56	19.4	QP	L1	GND
20.410000	34.90	11.4	60	25.1	QP	L1	GND

MEASUREMENT RESULT: "LLED004_fin2"

2019-1-24 9:32

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.310000	26.10	10.6	50	23.9	AV	L1	GND
0.425000	32.80	10.7	47	14.5	AV	L1	GND
0.775000	26.20	10.8	46	19.8	AV	L1	GND
1.255000	24.70	10.9	46	21.3	AV	L1	GND
2.840000	25.00	11.0	46	21.0	AV	L1	GND
20.260000	24.60	11.4	50	25.4	AV	L1	GND

ACCURATE TECHNOLOGY CO.,LTD

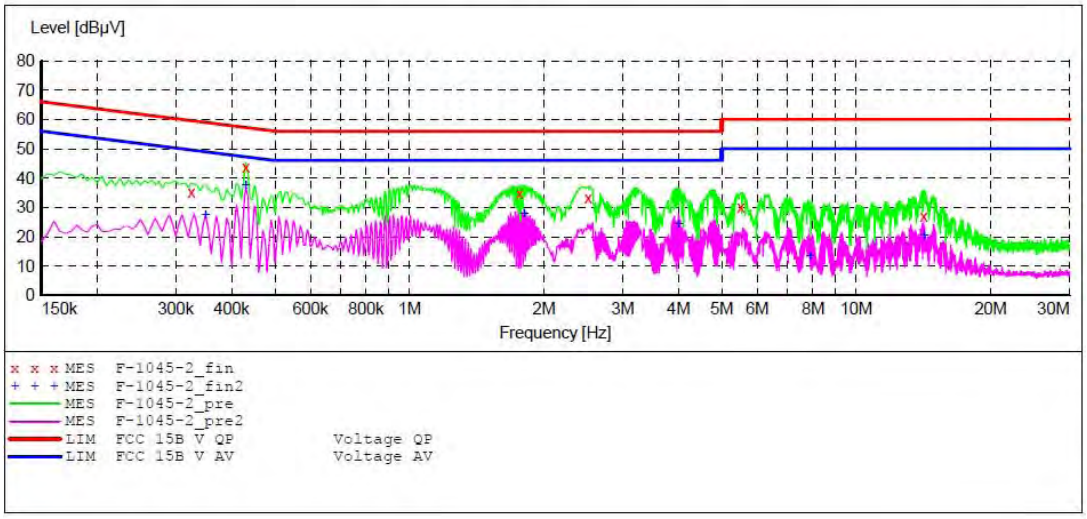
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT:	Skizze Pen M/N:P0101
Manufacturer:	KOGA TOUCH CO.,LTD
Operating Condition:	BT communication
Test Site:	1#Shielding Room
Operator:	Frank
Test Specification:	N 120V/60Hz
Comment:	Report NO.:ATE20191045
Start of Test:	7/15/2019 / 10:14:21AM

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: "F-1045-2_fin"

7/15/2019 10:17AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.325000	35.10	10.6	60	24.5	QP	N	GND
0.430000	43.80	10.6	57	13.5	QP	N	GND
1.765000	34.90	10.7	56	21.1	QP	N	GND
2.510000	33.20	10.8	56	22.8	QP	N	GND
5.520000	29.90	10.8	60	30.1	QP	N	GND
14.155000	27.00	10.9	60	33.0	QP	N	GND

MEASUREMENT RESULT: "F-1045-2_fin2"

7/15/2019 10:17AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.350000	27.30	10.6	49	21.7	AV	N	GND
0.430000	37.60	10.6	47	9.7	AV	N	GND
1.805000	27.80	10.7	46	18.2	AV	N	GND
4.000000	24.20	10.8	46	21.8	AV	N	GND
7.880000	13.50	10.9	50	36.5	AV	N	GND
14.170000	20.40	10.9	50	29.6	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD

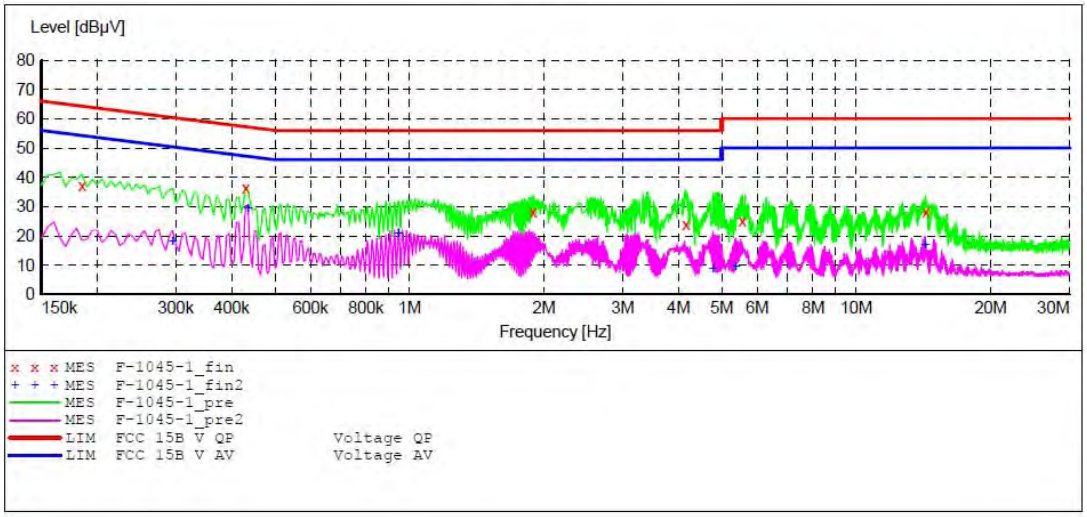
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT:	Skizze Pen M/N:P0101
Manufacturer:	KOGA TOUCH CO.,LTD
Operating Condition:	BT communication
Test Site:	1#Shielding Room
Operator:	Frank
Test Specification:	L 120V/60Hz
Comment:	Report NO.:ATE20191045
Start of Test:	7/15/2019 / 10:09:03AM

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: "F-1045-1_fin"

7/15/2019 10:12AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.185000	37.00	10.5	64	27.3	QP	L1	GND
0.430000	36.20	10.6	57	[illegible]	Q	L1	GND
1.890000	28.30	10.7	56	[illegible]	Q	L1	GND
4.160000	23.70	10.8	56	32.3	QP	L1	GND
5.560000	25.00	10.8	60	35.0	QP	L1	GND
14.305000	28.00	10.9	60	32.0	QP	L1	GND

MEASUREMENT RESULT: "F-1045-1_fin2"

7/15/2019 10:12AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.295000	18.00	10.5	50	32.4	AV	L1	GND
0.435000	29.20	10.6	47	18.0	AV	L1	GND
0.945000	20.80	10.7	46	25.2	AV	L1	GND
4.780000	8.80	10.8	46	37.2	AV	L1	GND
5.370000	9.50	10.8	50	40.5	AV	L1	GND
14.260000	16.80	10.9	50	33.2	AV	L1	GND

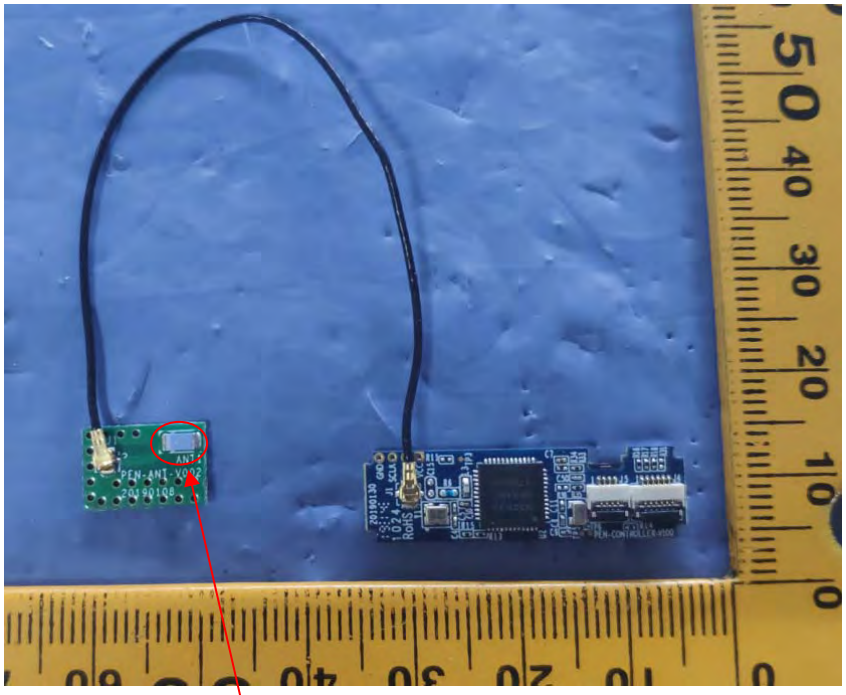
11. ANTENNA REQUIREMENT

11.1. The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

11.2. Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Max Antenna gain of EUT is 2dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna

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