Prüfbericht-Nr.: *Test report No.:*	**50141684 001**	**Auftrags-Nr.:** *Order No.:*	174080192	Seite 1 von 19 *Page 1 of 19*
Kunden-Referenz-Nr.: *Client reference No.:*	N/A	**Auftragsdatum:** *Order date.:*	09.03.2018	

Auftraggeber: *Client:*	**Guangzhou huaxin Electronics Co.,Ltd.** No. 72 Nanxiang 2nd Rd, Science City, Guangzhou, PRC
Prüfgegenstand: *Test item:*	Active Stylus (Pen Unit)
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	X1-Pa-bc (a, b, c are variables, details see section 3.1)
Auftrags-Inhalt: *Order content:*	FCC and IC approval
Prüfgrundlage: *Test specification:*	CFR47 FCC Part 15: Subpart C Section 15.249 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 CFR47 FCC Part 2: Section 2.1091

Wareneingangsdatum: *Date of receipt:*	09.03.2018
Prüfmuster-Nr.: *Test sample No.:*	A000723491-002
Prüfzeitraum: *Testing period:*	23.03.2018 - 28.04.2018
Ort der Prüfung: *Place of testing:*	TÜV Rheinland (Guangdong) Ltd.
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Guangdong) Ltd.
Prüfergebnis*: *Test result*:*	Pass

Please refer to photo documents

geprüft von / *tested by:*

Storm Shu

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
08.05.2018	Storm Shu / Assistant Project Manager	

kontrolliert von / *reviewed by:*

Amy Wang

Datum *Date*	Name/Stellung *Name/Position*	Unterschrift *Signature*
10.05.2018	Amy Wang / Technical Certifier	

Sonstiges / *Other:*

FCC ID: 2AO59-X1-P1-XX

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:*	Prüfmuster vollständig und unbeschädigt *Test item complete and undamaged:*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhalt
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	1 = very good	2 = good	3 = satisfactory	4 = sufficient	5 = poor
	P(ass) = passed a.m. test specifications(s)		F(ail) = failed a.m. test specifications(s)	N/A = not applicable	N/T = not tested

Test Summary

5.1.1 ANTENNA REQUIREMENT
RESULT: Pass

5.1.2 FUNDAMENTAL & HARMONICS RADIATED EMISSION
RESULT: Pass

5.1.3 20DB BANDWIDTH
RESULT: Pass

5.1.4 RADIATED SPURIOUS EMISSION & BAND EDGE
RESULT: Pass

6.1.1 ELECTROMAGNETIC FIELDS
RESULT: Pass

Contents

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Photographs of the Test Set-up

Appendix B: Test Results of General 2.4GHz wireless

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Guangdong) Ltd.
No.102, 1F of Southwest and No.205, 2F No.767 Tianyuan Road, Tianhe District, Guangzhou 510663, Guangdong Province P.R. China

FCC Accreditation Designation No.: CN1207

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

For the measurement Equipment list, refer to the appendix B.

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Item		Extended Uncertainty
Conducted Emission		± 2.68 dB
Radiated Emission (30-1000MHz)	Field strength (dBμV/m)	± 5.16 dB
Radiated Emission (above 1000MHz)	Field strength (dBμV/m)	± 2.22 dB
Radio Spectrum		± 4.51 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Guangdong) Ltd. file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Guangdong) Ltd. Test facility located at No.102, 1F of Southwest and No.205, 2F No.767 Tianyuan Road, Tianhe District, Guangzhou 510663, Guangdong Province P.R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is Active Stylus (Dongle Unit) operating in 2402-2479MHz with 78 channels. The EUT is powered by DC 5.0V via USB port.

Model list:
X1-Pa-bc
1. Variable “a” can be “0” to “9” which represents the different appearance;
2. Variable “b” can be “A” to “Z” which represents the first letter of customer name.
3. Variable “c” can be “A” to “Z” which represents the second letter of customer name.

Therefore, full tests were performed on **X1-P0-CT**.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	Active Stylus (Pen Unit)
Type Designation	X1-Pa-bc
FCC ID	2AO59-X1-D1-XX
Operating Voltage	DC 3.7V (lithium battery)
Testing Voltage	DC 3.7V
Type of Modulation	GFSK
Channel Number	78 channels
Channel Separation	1MHz
Antenna Type	Integral Antenna (PCB Antenna)
Antenna number	1
Antenna Gain	0 dBi Max

Table 3: RF Channel and Frequency of General 2.4GHz

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
00	**2402.00**	20	2422.00	40	2442.00	60	2462.00
01	2403.00	21	2423.00	41	2443.00	61	2463.00
02	2404.00	22	2424.00	42	2444.00	62	2464.00
03	2405.00	23	2425.00	43	2445.00	63	2465.00
04	2406.00	24	2426.00	44	2446.00	64	2466.00
05	2407.00	25	2427.00	45	2447.00	65	2467.00
06	2408.00	26	2428.00	46	2448.00	66	2468.00
07	2409.00	27	2429.00	47	2449.00	67	2469.00
08	2410.00	28	2430.00	48	2450.00	68	2470.00
09	2411.00	29	2431.00	49	2451.00	69	2471.00
10	2412.00	30	2432.00	50	2452.00	70	2472.00
11	2413.00	31	2433.00	51	2453.00	71	2473.00
12	2414.00	32	2434.00	52	2454.00	72	2474.00
13	2415.00	33	2435.00	53	2455.00	73	2475.00
14	2416.00	34	2436.00	54	2456.00	74	2476.00
15	2417.00	35	2437.00	55	2457.00	75	2477.00
16	2418.00	36	2438.00	56	2458.00	76	2478.00
17	2419.00	37	2439.00	57	2459.00	**77**	**2479.00**
18	2420.00	**38**	**2440.00**	58	2460.00		
19	2421.00	39	2441.00	59	2461.00	--	--

Test frequencies are lowest channel: 2402 MHz, middle channel: 2440 MHz and highest channel: 2479 MHz for General 2.4GHz

3.3 Independent Operation Modes

The basic operation modes are:

A. On, General 2.4GHz wireless transmitting mode
    1. Low channel
    2. Middle channel
    3. High channel
B. On, Transmitting on hopping channel
C. On, Normal operation with general 2.4GHz mode
D. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- Block Diagram
- FCC/IC Label and Location Info
- Operation Description
- Photo Document
- Schematics
- User Manual

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in ANSI C63.10: 2013.

According to clause 3.1, all tests were performed on model X1-P0-XX in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 4: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Notebook	Lenovo	ThinkPad X260	PC0DZSKR	N/A

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

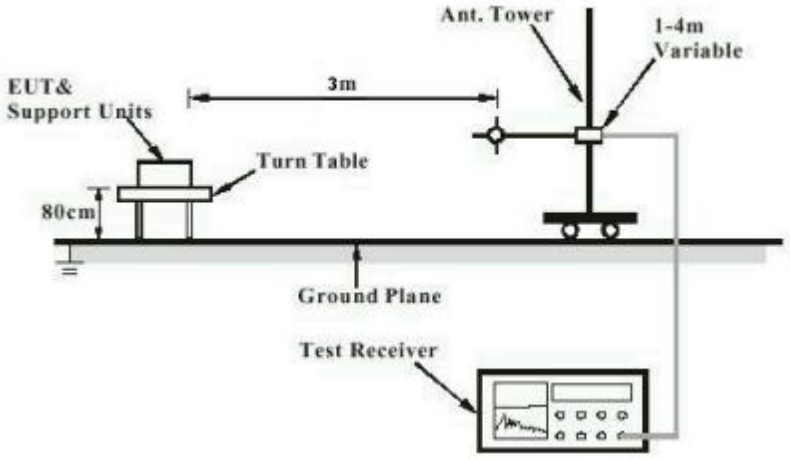


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

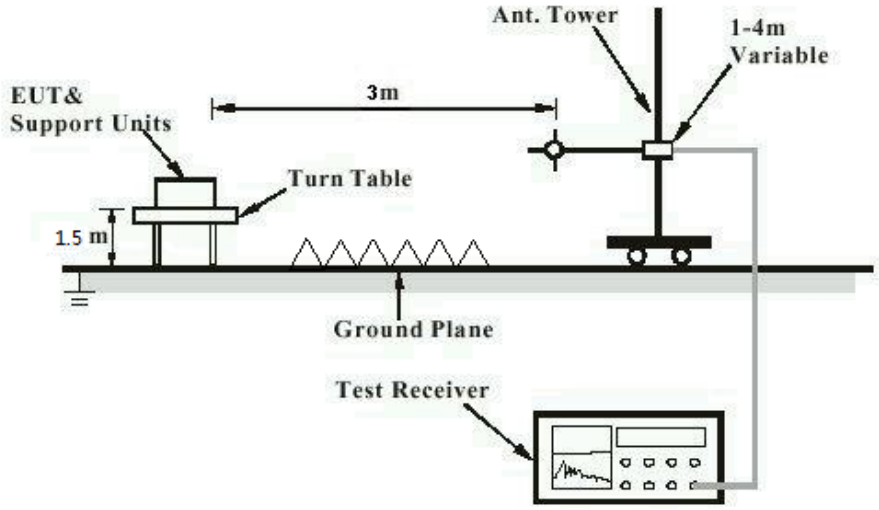


Diagram of Measurement Configuration for Mains Conduction Measurement

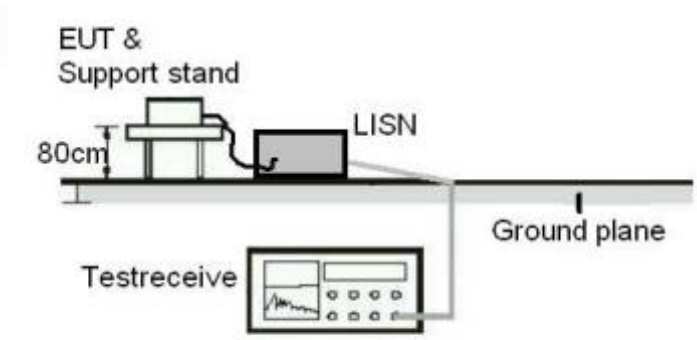
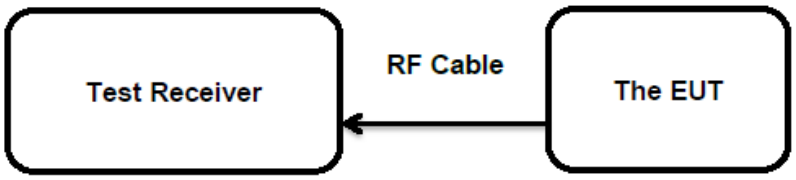


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Test Specification

Test standard : FCC Part 15.247(b)(4) and Part 15.203

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 0 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

5.1.2 Fundamental & Harmonics Radiated Emission

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.249(a)
Basic standard	:	ANSI C63.10: 2013
Limits	:	Refer to FCC Part 15.209(a)
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	28.04.2018
Input voltage	:	DC 3.7V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	22 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	100 kPa

For the measurement records, refer to the appendix B.

5.1.3 20dB Bandwidth

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.215
Basic standard	:	ANSI C63.10: 2013
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	23.03.2018
Input voltage	:	DC 3.7V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	22 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	100 kPa

For details refer to following test result.

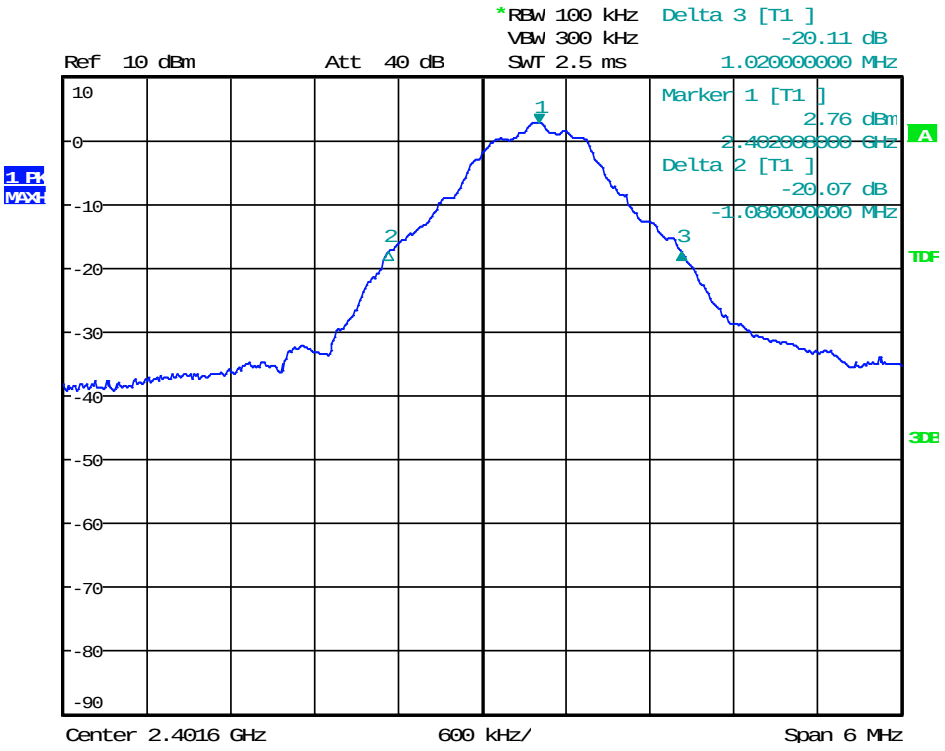
Table 5: Test Result of 20dB Bandwidth, General 2.4GHz

Channel	Test Mode Test Channel (MHz)	20dB Bandwidth (kHz)	Limit (MHz)
Low Channel	2402	2100.00	Within the assigned frequency band 2400~2483.5MHz
High Channel	2479	2052.00	
Maximum Measured Value	**Maximum Measured Value**	2100.00	

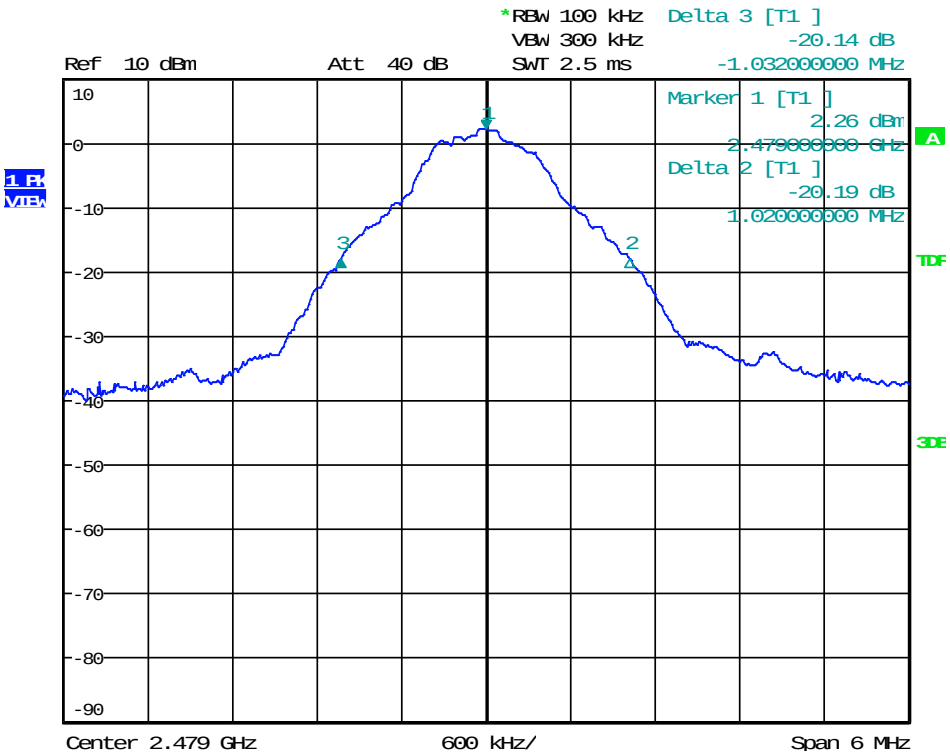
For the measurement records, refer to following test plot:

Test Plot of 20dB Bandwidth

Low CH



High CH



5.1.4 Radiated Spurious Emission & Band Edge

RESULT: **Pass**

Test Specification

Test standard	:	FCC Part 15.249 (d) & FCC Part 15.205
Basic standard	:	ANSI C63.10: 2013
Limits	:	Refer to 15.209(a) of FCC part 15.247(d)
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

Date of testing	:	Refer to test result
Input voltage	:	DC 3.7V
Operation mode	:	A
Test channel	:	Low / Middle / High
Ambient temperature	:	22 ℃
Relative humidity	:	56 %
Atmospheric pressure	:	100 kPa

Remark:
Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix B.

6 Safety Human Exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT: **Pass**

Test Specification

Test standard : CFR47 FCC Part 2: Section 2.1093
CFR47 FCC Part 1: Section 1.1310
FCC KDB Publication 447498 D01 v06

➢ **FCC requirements**

FCC requirement: Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 20cm normally can be maintained between the user and the device.

Measurement Record for CFR47 FCC Part 2.1093

The minimum distance for the EUT is less than 5mm.

The maximum specified e.i.r.p.: 71.005dBuv/m @3m = -24.2dBm=0.0038mW

Antenna Gain: 0dBi max

According to KDB 447498 D01 v06 4.3.1 a)

Exempted Power: 9.5mW, hence the EUT is compliance with the RF exposure.

The minimum distance for the EUT is less than 5mm.

The maximum specified e.i.r.p.: 71.005dBuv/m @3m = -24.2dBm=0.0038mW

7 Photographs of the Test Set-Up

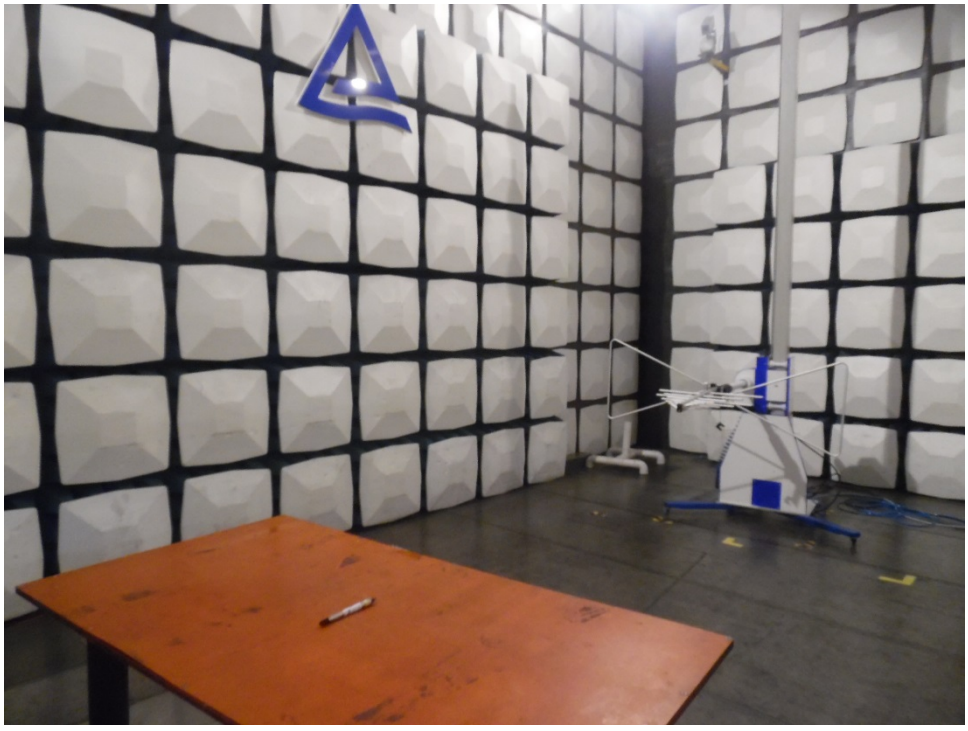
For photographs of the test set-up, refer to the appendix A.

8 List of Tables

Appendix A: Photographs of the Test Set-Up

Photograph 1: Set-up for Radiated Spurious Emission, 9kHz - 30MHz

Photograph 2: Set-up for Radiated Spurious Emission, 30MHz - 1GHz



Photograph 3: Set-up for Radiated Spurious Emission, 1GHz - 18GHz

Photograph 4: Set-up for Radiated Spurious Emission, 18GHz - 26.5GHz

Appendix B: Test Results of General 2.4GHz

Appendix B.1: Measurement Equipment List

TÜVRheinland®
Precisely Right.

Measurement Equipment List

Testing Start Date	23.03.2018
Testing end date	28.04.2018
Project Manager	Storm Shu
Test Report Number	50141684 001
Order Item Number	0174080192B00110
Customer	Guangzhou huaxin Electronics
Product Name	Active Stylus (Pen Unit)
Comment	

Old ID	Equip.	Description	Model	Manufacturer	Inte. (mon)	Due Date
1.887	1813944	EMI Test Receiver	ESCI	Rohde & Schwarz	12	16.03.2019
1.886	1813943	Two-Line V-Network	ENV216	Rohde & Schwarz	12	31.05.2018
1.807	1813832	EMI Test Receiver	ESCI	Rohde & Schwarz	12	18.09.2018
1.805	1813829	FSP30 Spectrum Analyzer	FSP30	Rohde & Schwarz	12	16.03.2019
1.921B	1814142	Trilog Broadband Antenna	VULB9168(6dB)	SCHWARZBECK	24	20.09.2018
1.822	1813850	Loop Antenna	HFH2-Z2	Rohde & Schwarz	24	14.03.2019
1.889C	1814199	Double-Ridged Horn Antenna	HF907(3s	Rohde & Schwarz	24	27.10.2018
1.808	1813833	Horn Antenna	3160-09	EMCO	60	29.07.2019
1.819C	1814068	Pre-Amplifier	A44-00101800-25-10P-	MITEQ	12	16.03.2019
1.819A	1813846	Band Reject Filter	BRM50702	Micro-Tronics	24	07.07.2018
1.808A	1813834	Pre-Amplifier	A33-18002650-30-8P-4	MITEQ	24	20.07.2019
1.666	1813697	SAC	N/A	Albatross Project	36	04.08.2020
1.913	1814012	Shielding Room	9x4x3.4	Changzhou Yuanping	60	06.12.2020

* No entry for devices that are not subject to regular gauging or calibration

Signature: Storm Shu

Note: Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and 18GHz -26.5GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

Appendix B.2: Fundamental & Harmonics Radiated Emission

30MHz - 1GHz

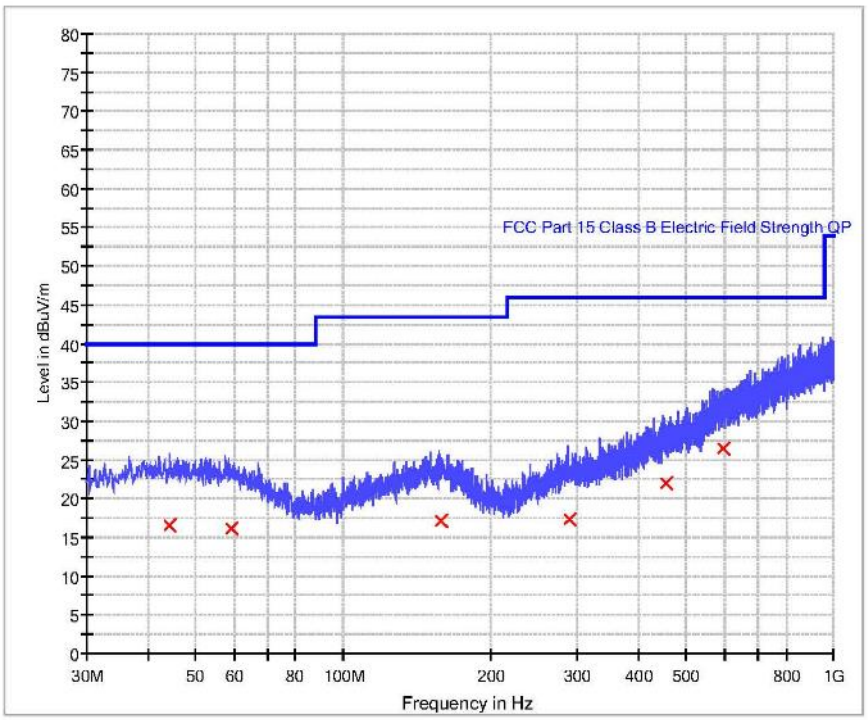
TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (Low)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal

Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)	Comment
44.440000	16.5	1000.0	120.000	H	20.4	23.5	40.0	
59.080000	16.2	1000.0	120.000	H	20.0	23.8	40.0	
158.400000	17.2	1000.0	120.000	H	21.3	26.3	43.5	
288.880000	17.3	1000.0	120.000	H	21.5	28.7	46.0	
455.480000	22.0	1000.0	120.000	H	26.1	24.0	46.0	
594.280000	26.4	1000.0	120.000	H	29.6	19.6	46.0	

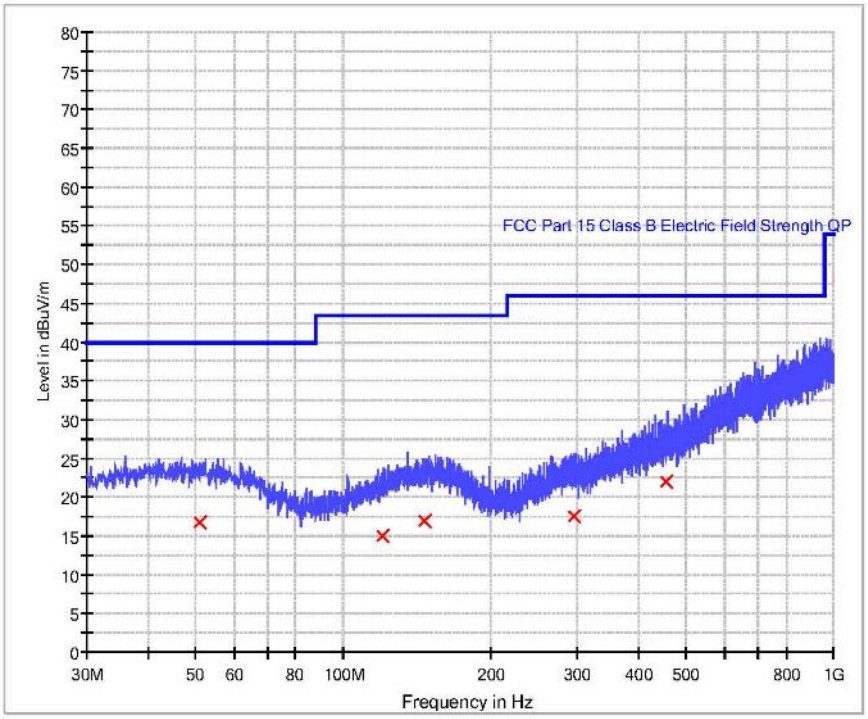
Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (Low)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Vertical
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)	Comment
51.080000	16.7	1000.0	120.000	V	20.5	23.3	40.0	
120.320000	15.0	1000.0	120.000	V	19.2	28.6	43.5	
146.880000	16.8	1000.0	120.000	V	20.9	26.7	43.5	
296.520000	17.4	1000.0	120.000	V	21.6	28.6	46.0	
454.480000	22.0	1000.0	120.000	V	26.0	24.0	46.0	

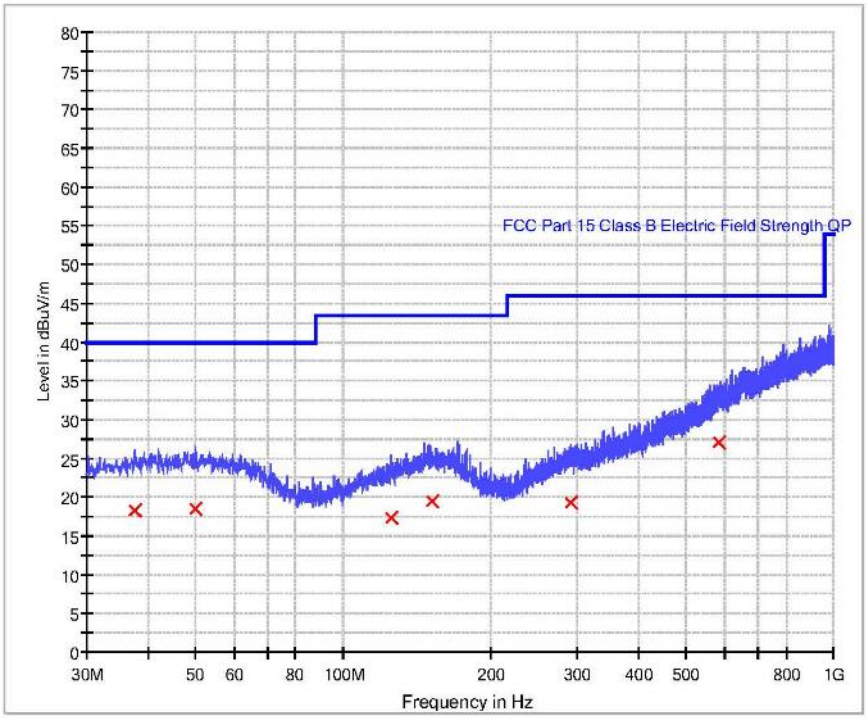
Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (Middle)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)	Comment
37.760000	18.4	1000.0	120.000	H	20.2	21.6	40.0	
50.120000	18.5	1000.0	120.000	H	20.6	21.5	40.0	
125.320000	17.4	1000.0	120.000	H	19.5	26.1	43.5	
151.720000	19.4	1000.0	120.000	H	21.2	24.1	43.5	
292.520000	19.4	1000.0	120.000	H	21.5	26.6	46.0	
582.040000	27.1	1000.0	120.000	H	29.4	18.9	46.0	

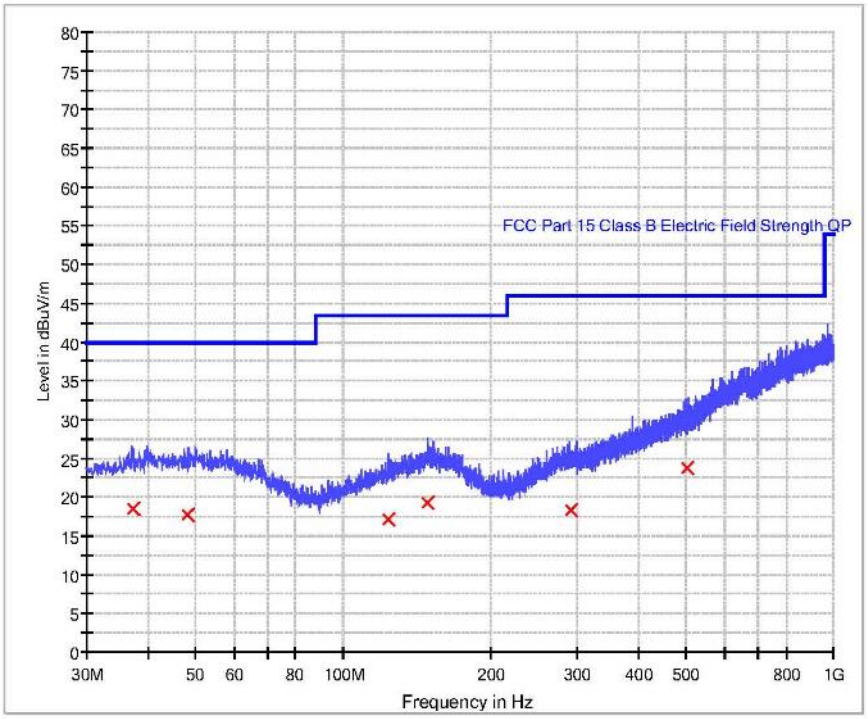
Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (Middle)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Vertical
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)	Comment
37.400000	18.4	1000.0	120.000	V	20.1	21.6	40.0	
48.320000	17.7	1000.0	120.000	V	20.6	22.3	40.0	
123.960000	17.2	1000.0	120.000	V	19.4	26.3	43.5	
149.200000	19.2	1000.0	120.000	V	21.1	24.3	43.5	
291.520000	18.4	1000.0	120.000	V	21.5	27.6	46.0	
503.600000	23.8	1000.0	120.000	V	26.8	22.2	46.0	

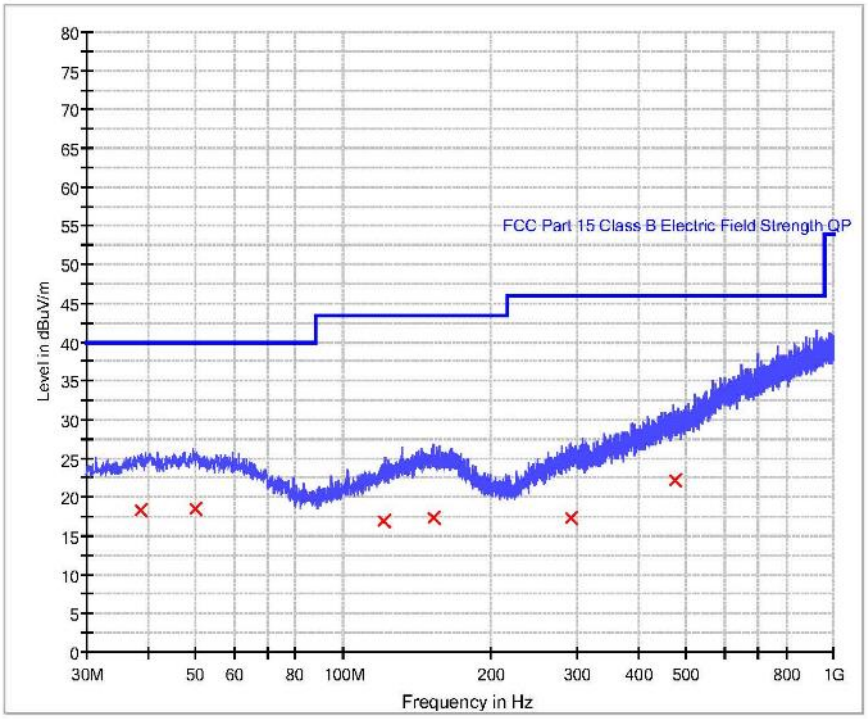
Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (High)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)	Comment
38.840000	18.4	1000.0	120.000	H	20.4	21.6	40.0	
50.000000	18.5	1000.0	120.000	H	20.6	21.5	40.0	
120.800000	17.0	1000.0	120.000	H	19.2	26.5	43.5	
152.480000	17.3	1000.0	120.000	H	21.2	26.2	43.5	
292.400000	17.4	1000.0	120.000	H	21.5	28.6	46.0	
475.240000	22.2	1000.0	120.000	H	26.2	23.8	46.0	

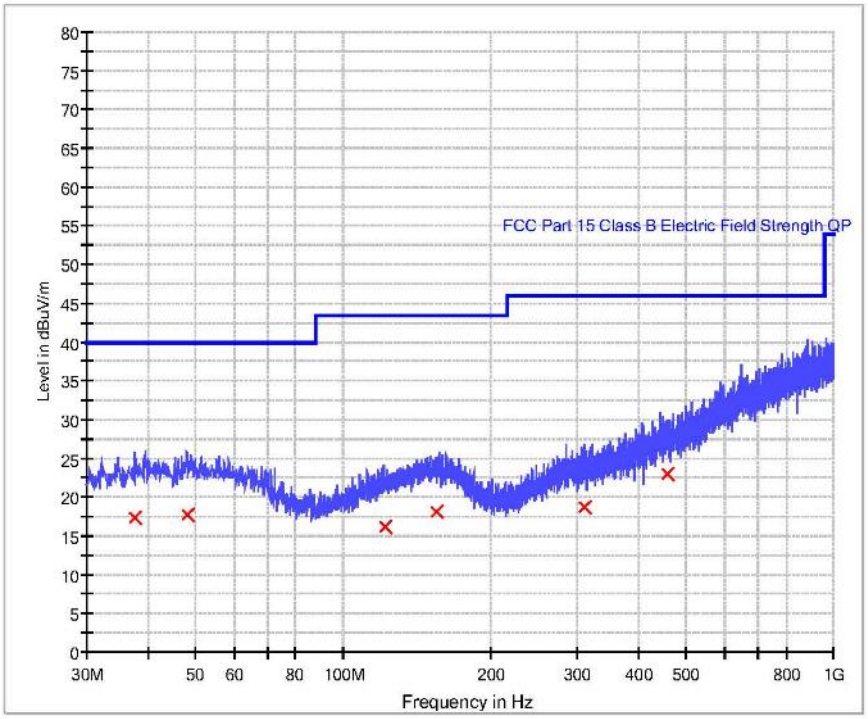
Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (High)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Vertical
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)	Comment
37.760000	17.4	1000.0	120.000	V	20.2	22.6	40.0	
48.320000	17.7	1000.0	120.000	V	20.6	22.3	40.0	
122.040000	16.2	1000.0	120.000	V	19.3	27.3	43.5	
155.480000	18.2	1000.0	120.000	V	21.3	25.3	43.5	
310.560000	18.8	1000.0	120.000	V	21.8	27.2	46.0	
459.360000	23.0	1000.0	120.000	V	26.1	23.0	46.0	

Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

1GHz - 18GHz

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

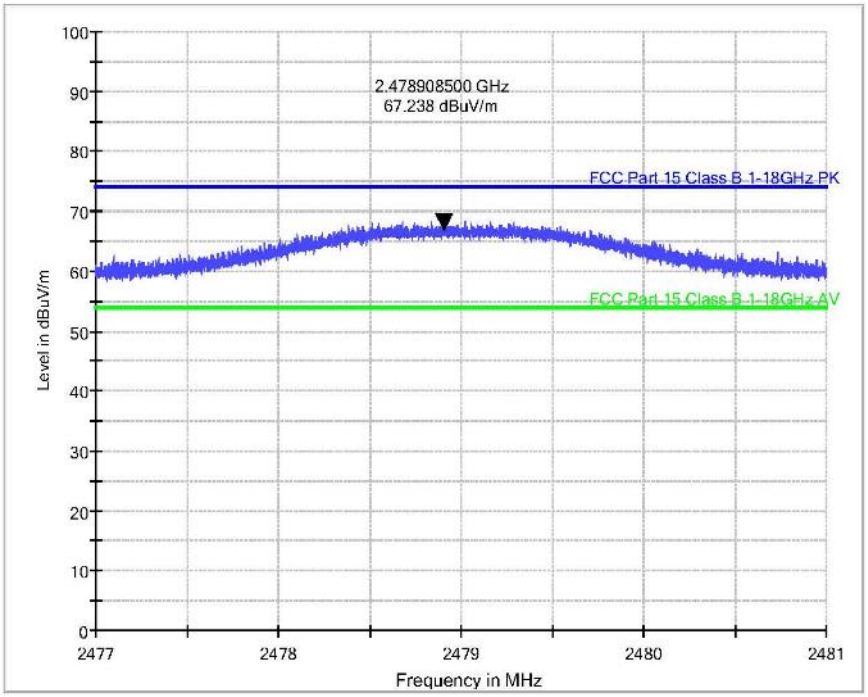
EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (High)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Horizontal

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-04_1GHz-18GHz



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

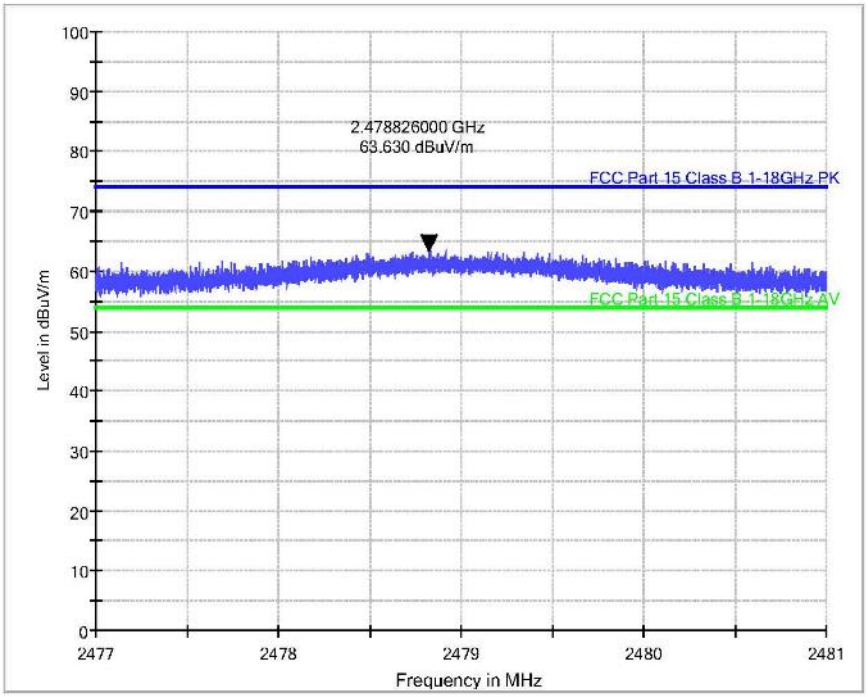
TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (High)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Vertical
Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-04_1GHz-18GHz



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

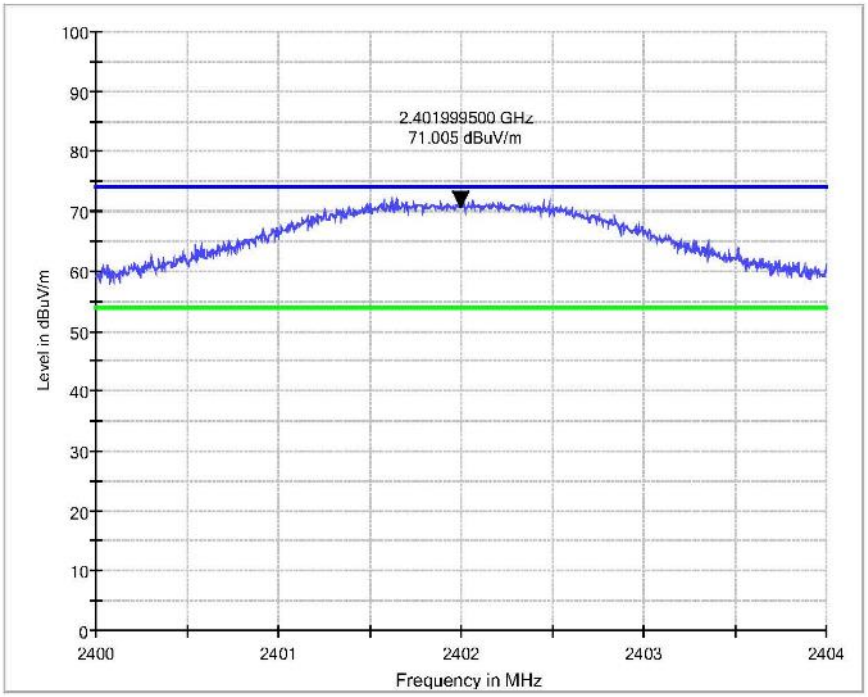
TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (Low)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Horizontal
Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-04_1GHz-18GHz



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

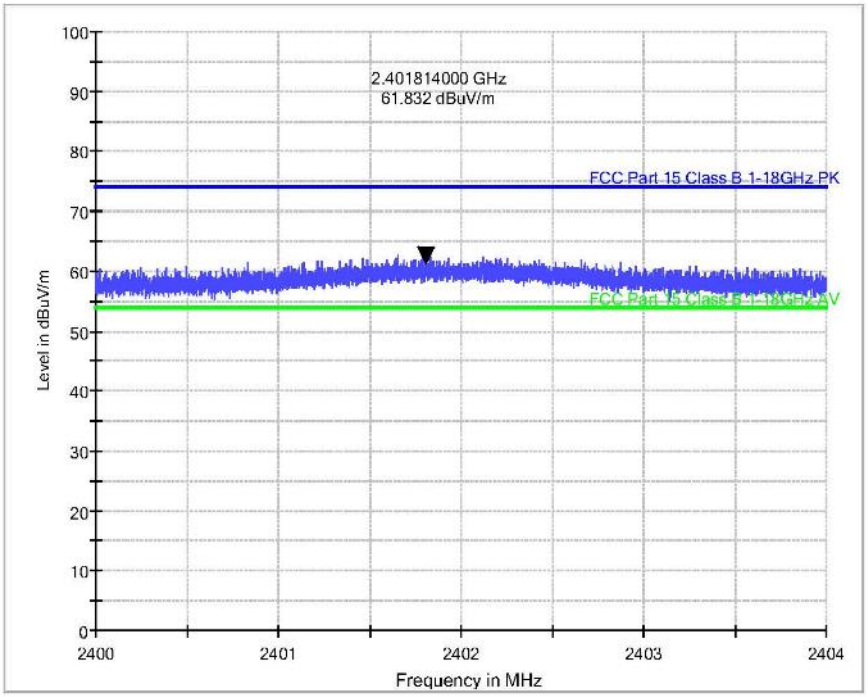
TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (Low)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Vertical
Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-04_1GHz-18GHz



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

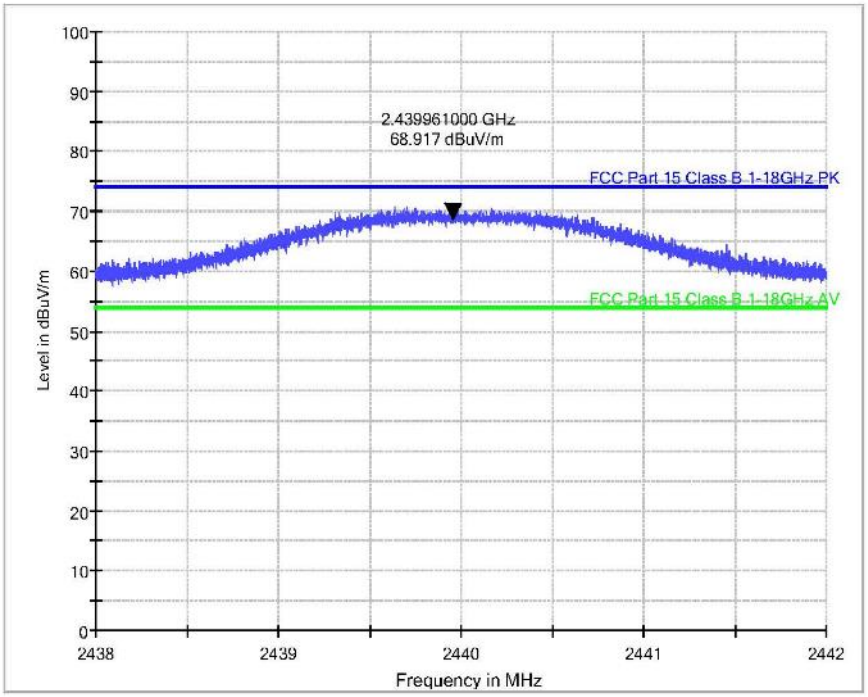
TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (Middle)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Horizontal
Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-04_1GHz-18GHz



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

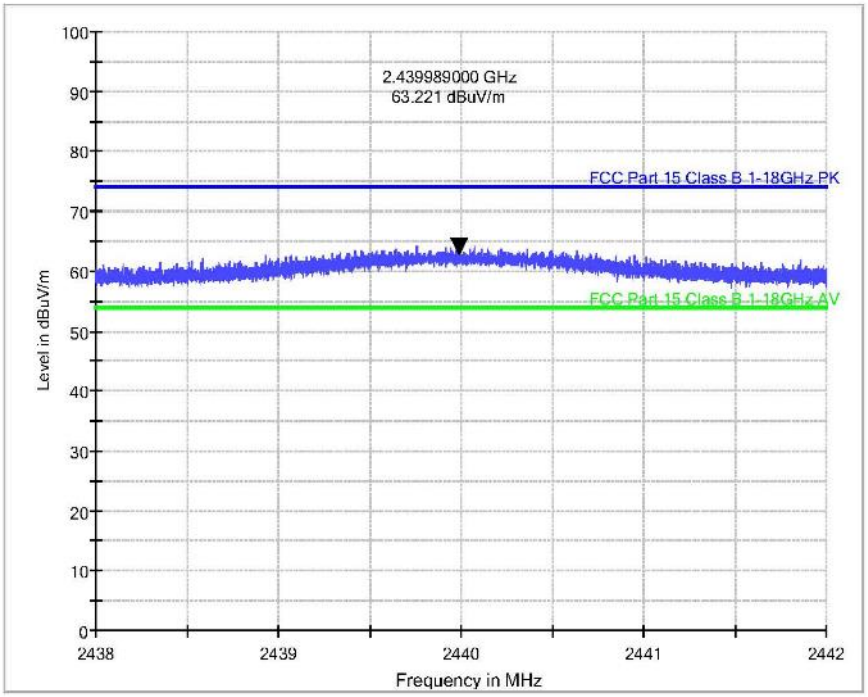
EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (Middle)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Vertical

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-04_1GHz-18GHz



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

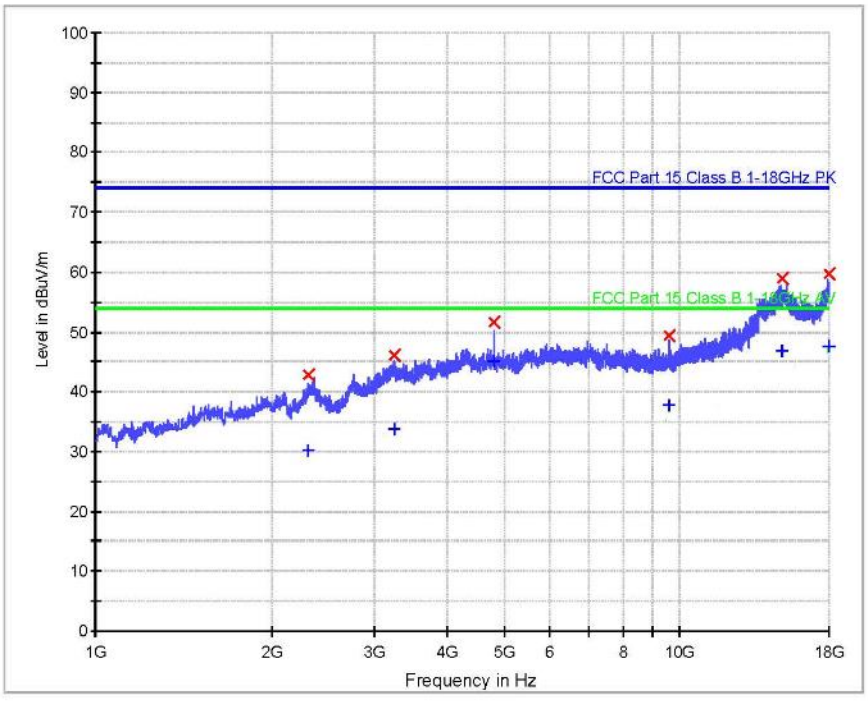
EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (Low)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Horizontal

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-07_1GHz-18GHz_With PreAMP EXT& Notch filter



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
2317.000000	42.9	1000.0	1000.000	H	-11.1	31.1	74.0	
3238.000000	46.2	1000.0	1000.000	H	-7.0	27.8	74.0	
4804.000000	51.7	1000.0	1000.000	H	-4.0	22.3	74.0	
9608.000000	49.5	1000.0	1000.000	H	0.3	24.5	74.0	
14961.000000	59.1	1000.0	1000.000	H	7.9	14.9	74.0	
17951.000000	59.8	1000.0	1000.000	H	10.2	14.2	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
2317.000000	30.2	1000.0	1000.000	H	-11.1	23.8	54.0	
3238.000000	33.8	1000.0	1000.000	H	-7.0	20.2	54.0	
4804.000000	45.2	1000.0	1000.000	H	-4.0	8.8	54.0	
9608.000000	37.9	1000.0	1000.000	H	0.3	16.1	54.0	
14961.000000	46.8	1000.0	1000.000	H	7.9	7.2	54.0	
17951.000000	47.6	1000.0	1000.000	H	10.2	6.4	54.0	

Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

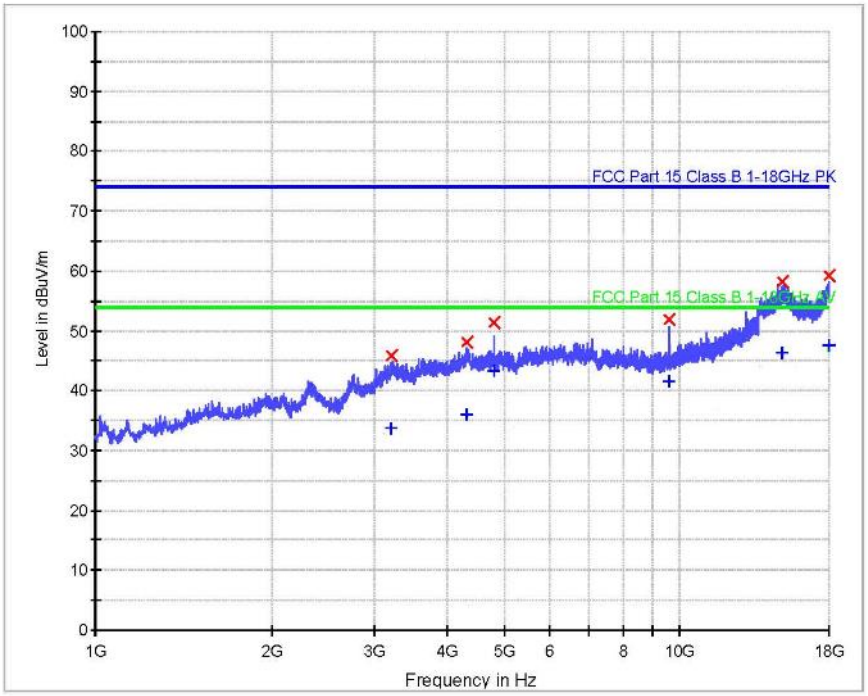
TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (Low)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Vertical
Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-07_1GHz-18GHz_With PreAMP EXT& Notch filter



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
3208.000000	45.9	1000.0	1000.000	V	-7.0	28.2	74.0	
4328.000000	48.1	1000.0	1000.000	V	-3.9	25.9	74.0	
4804.000000	51.3	1000.0	1000.000	V	-4.0	22.7	74.0	
9606.000000	52.0	1000.0	1000.000	V	0.3	22.0	74.0	
14957.000000	58.2	1000.0	1000.000	V	7.9	15.8	74.0	
17970.000000	59.3	1000.0	1000.000	V	10.2	14.7	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
3208.000000	33.7	1000.0	1000.000	V	-7.0	20.3	54.0	
4328.000000	36.1	1000.0	1000.000	V	-3.9	17.9	54.0	
4804.000000	43.2	1000.0	1000.000	V	-4.0	10.8	54.0	
9606.000000	41.6	1000.0	1000.000	V	0.3	12.4	54.0	
14957.000000	46.5	1000.0	1000.000	V	7.9	7.5	54.0	
17970.000000	47.6	1000.0	1000.000	V	10.2	6.4	54.0	

Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

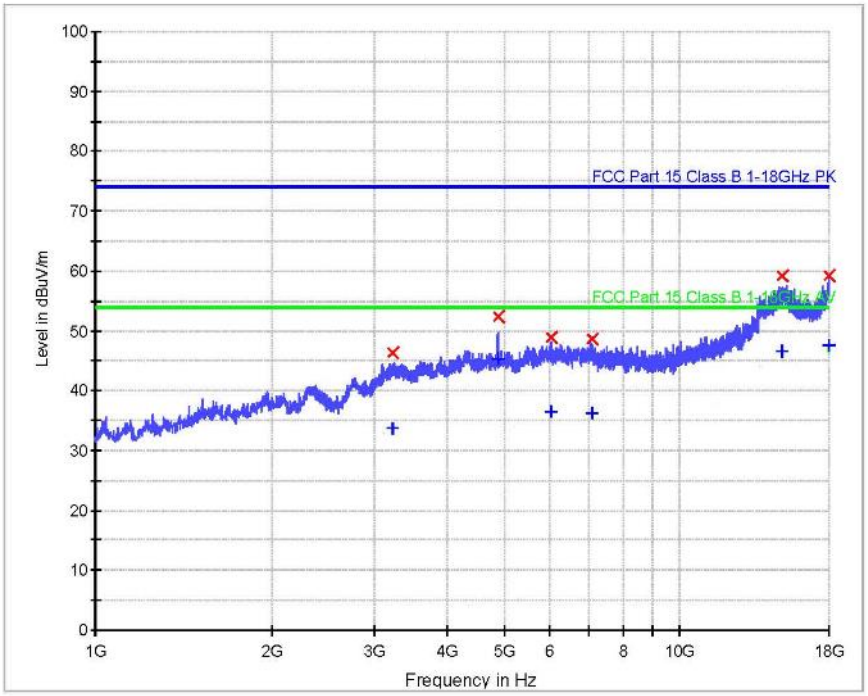
TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (Middle)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Horizontal
Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-07_1GHz-18GHz_With PreAMP EXT& Notch filter



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
3231.000000	46.3	1000.0	1000.000	H	-7.0	27.7	74.0	
4880.000000	52.5	1000.0	1000.000	H	-3.8	21.5	74.0	
6032.000000	48.9	1000.0	1000.000	H	-2.5	25.2	74.0	
7094.000000	48.6	1000.0	1000.000	H	-1.2	25.4	74.0	
15008.000000	59.1	1000.0	1000.000	H	8.0	14.9	74.0	
17987.000000	59.3	1000.0	1000.000	H	10.1	14.7	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
3231.000000	33.6	1000.0	1000.000	H	-7.0	20.4	54.0	
4880.000000	45.5	1000.0	1000.000	H	-3.8	8.5	54.0	
6032.000000	36.4	1000.0	1000.000	H	-2.5	17.6	54.0	
7094.000000	36.4	1000.0	1000.000	H	-1.2	17.6	54.0	
15008.000000	46.5	1000.0	1000.000	H	8.0	7.5	54.0	
17987.000000	47.6	1000.0	1000.000	H	10.1	6.4	54.0	

Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

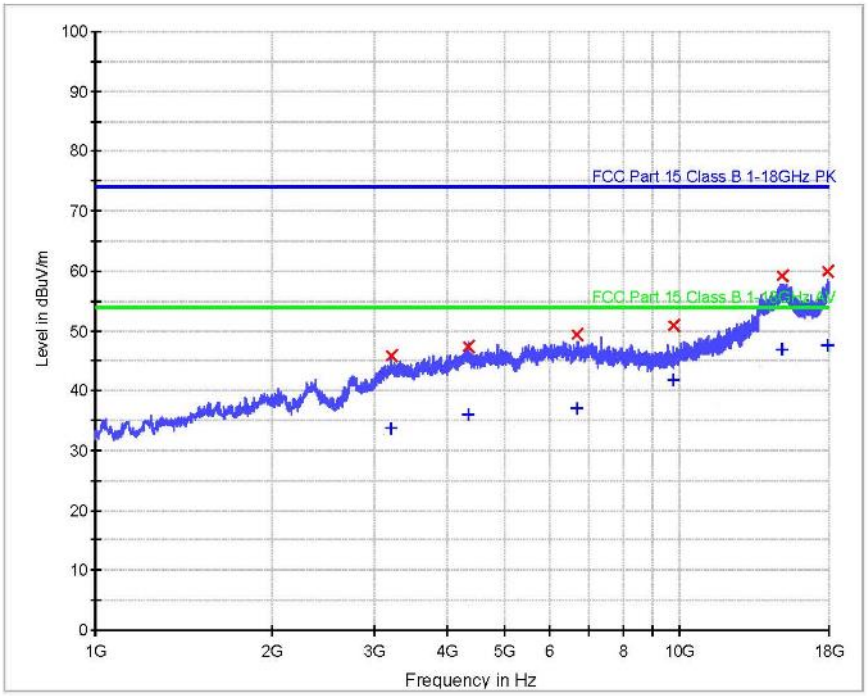
TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (Middle)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Vertical
Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-07_1GHz-18GHz_With PreAMP EXT& Notch filter



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
3208.000000	45.8	1000.0	1000.000	V	-7.0	28.2	74.0	
4338.000000	47.5	1000.0	1000.000	V	-4.0	26.5	74.0	
6684.000000	49.4	1000.0	1000.000	V	-1.7	24.6	74.0	
9759.000000	51.0	1000.0	1000.000	V	0.7	23.0	74.0	
14944.000000	59.2	1000.0	1000.000	V	7.9	14.8	74.0	
17943.000000	59.8	1000.0	1000.000	V	10.1	14.2	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
3208.000000	33.9	1000.0	1000.000	V	-7.0	20.1	54.0	
4338.000000	36.0	1000.0	1000.000	V	-4.0	18.0	54.0	
6684.000000	37.0	1000.0	1000.000	V	-1.7	17.0	54.0	
9759.000000	41.8	1000.0	1000.000	V	0.7	12.2	54.0	
14944.000000	46.9	1000.0	1000.000	V	7.9	7.1	54.0	
17943.000000	47.6	1000.0	1000.000	V	10.1	6.4	54.0	

Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

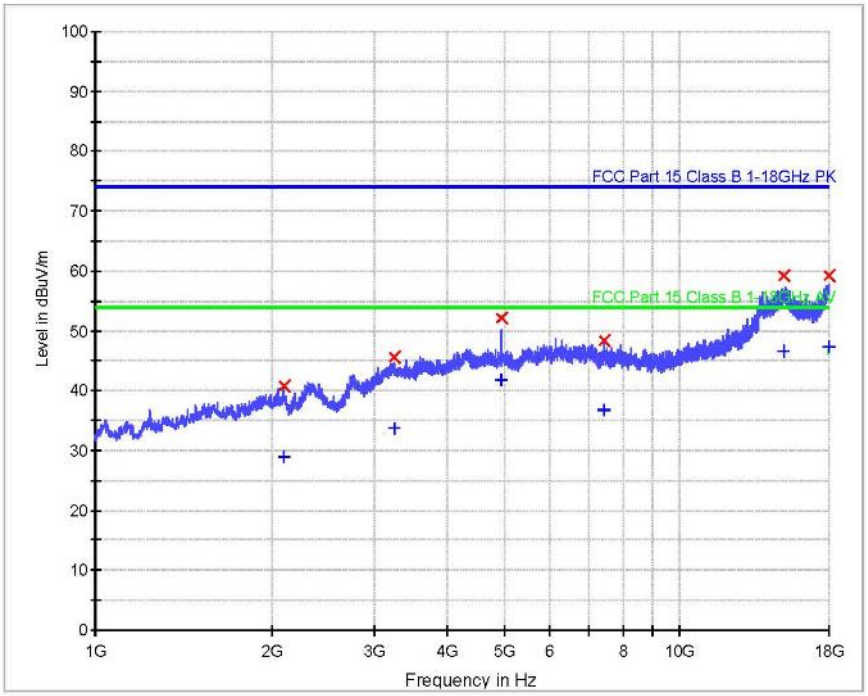
TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (High)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Horizontal
Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-07_1GHz-18GHz_With PreAMP EXT& Notch filter



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
2099.000000	40.8	1000.0	1000.000	H	-11.4	33.2	74.0	
3238.000000	45.6	1000.0	1000.000	H	-7.0	28.4	74.0	
4959.000000	52.1	1000.0	1000.000	H	-3.7	21.9	74.0	
7437.000000	48.5	1000.0	1000.000	H	-1.4	25.6	74.0	
15089.000000	59.2	1000.0	1000.000	H	7.9	14.8	74.0	
17970.000000	59.3	1000.0	1000.000	H	10.2	14.7	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBuV/m)	Comment
2099.000000	29.0	1000.0	1000.000	H	-11.4	25.0	54.0	
3238.000000	33.8	1000.0	1000.000	H	-7.0	20.2	54.0	
4959.000000	41.9	1000.0	1000.000	H	-3.7	12.1	54.0	
7437.000000	36.7	1000.0	1000.000	H	-1.4	17.3	54.0	
15089.000000	46.5	1000.0	1000.000	H	7.9	7.5	54.0	
17970.000000	47.3	1000.0	1000.000	H	10.2	6.7	54.0	

Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

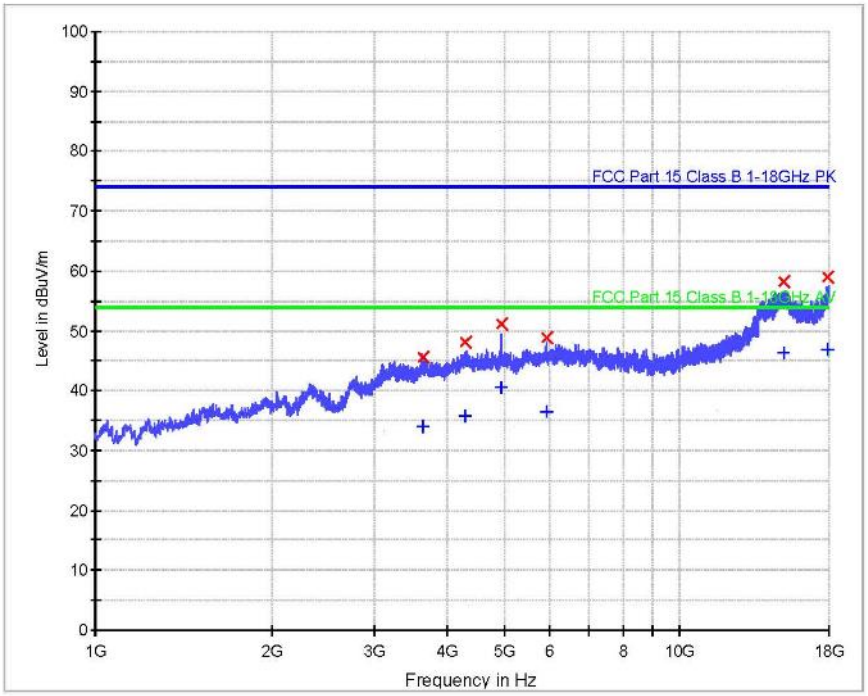
TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Pen
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Radiated Emission
Operation Mode:	Transmitting (High)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Vertical
Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-07_1GHz-18GHz_With PreAMP EXT& Notch filter



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
3641.000000	45.7	1000.0	1000.000	V	-6.6	28.3	74.0	
4304.000000	48.1	1000.0	1000.000	V	-4.0	26.0	74.0	
4957.000000	51.1	1000.0	1000.000	V	-3.7	23.0	74.0	
5904.000000	48.9	1000.0	1000.000	V	-2.8	25.1	74.0	
15050.000000	58.1	1000.0	1000.000	V	7.9	15.9	74.0	
17921.000000	58.8	1000.0	1000.000	V	10.0	15.2	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
3641.000000	34.0	1000.0	1000.000	V	-6.6	20.0	54.0	
4304.000000	35.7	1000.0	1000.000	V	-4.0	18.3	54.0	
4957.000000	40.7	1000.0	1000.000	V	-3.7	13.3	54.0	
5904.000000	36.5	1000.0	1000.000	V	-2.8	17.5	54.0	
15050.000000	46.4	1000.0	1000.000	V	7.9	7.6	54.0	
17921.000000	46.9	1000.0	1000.000	V	10.0	7.1	54.0	

Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

Appendix B.3: Test Results of Radiated Emissions in Restricted Bands

Low channel

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

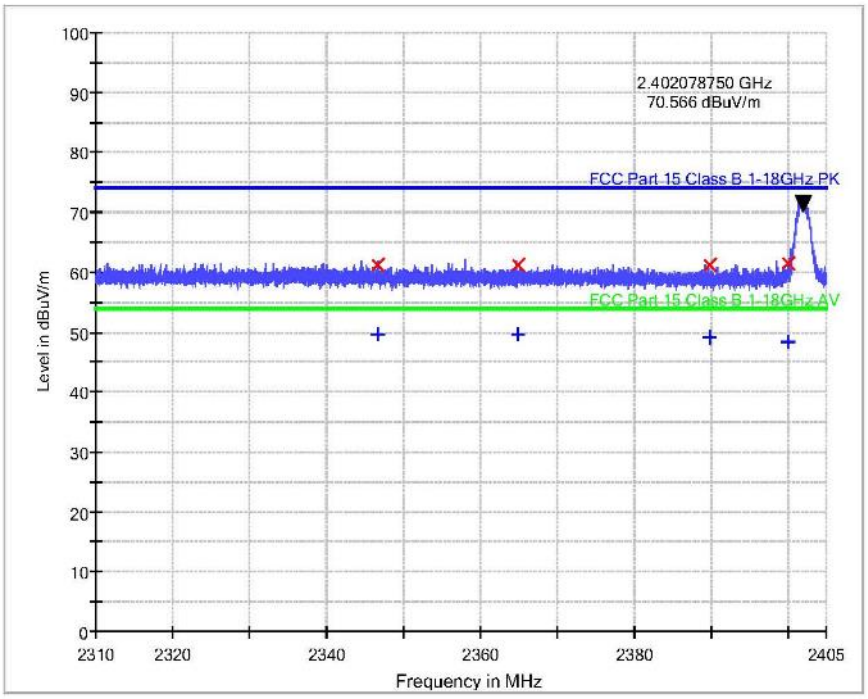
EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Dongle
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Band edge
Operation Mode:	Transmitting (Low)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Horizontal

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-04_1GHz-18GHz



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
2346.640000	61.1	1000.0	1000.000	H	35.1	12.9	74.0	
2365.000000	61.3	1000.0	1000.000	H	35.2	12.7	74.0	
2389.960000	61.3	1000.0	1000.000	H	35.4	12.7	74.0	
2400.040000	61.5	1000.0	1000.000	H	35.5	12.5	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBuV/m)	Comment
2346.640000	49.6	1000.0	1000.000	H	35.1	4.4	54.0	
2365.000000	49.6	1000.0	1000.000	H	35.2	4.4	54.0	
2389.960000	49.2	1000.0	1000.000	H	35.4	4.8	54.0	
2400.040000	48.5	1000.0	1000.000	H	35.5	5.5	54.0	

Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

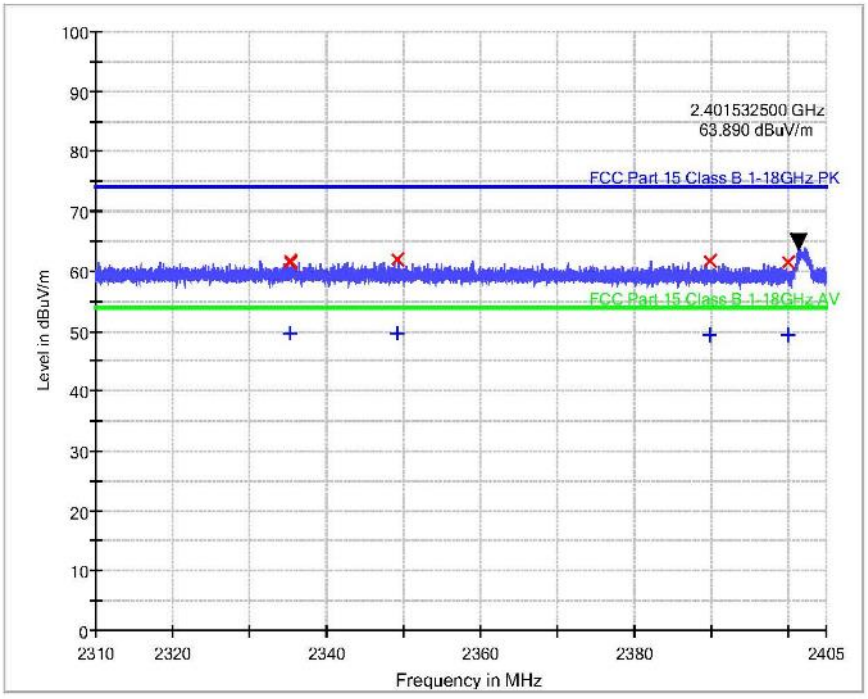
EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Dongle
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Band edge
Operation Mode:	Transmitting (Low)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Vertical

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-04_1GHz-18GHz



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
2335.240000	61.5	1000.0	1000.000	V	35.1	12.5	74.0	
2335.240000	61.7	1000.0	1000.000	V	35.1	12.3	74.0	
2349.280000	61.9	1000.0	1000.000	V	35.2	12.1	74.0	
2389.960000	61.6	1000.0	1000.000	V	35.4	12.4	74.0	
2400.040000	61.3	1000.0	1000.000	V	35.5	12.7	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBuV/m)	Comment
2335.240000	49.6	1000.0	1000.000	V	35.1	4.4	54.0	
2335.240000	49.6	1000.0	1000.000	V	35.1	4.4	54.0	
2349.280000	49.6	1000.0	1000.000	V	35.2	4.4	54.0	
2389.960000	49.3	1000.0	1000.000	V	35.4	4.7	54.0	
2400.040000	49.4	1000.0	1000.000	V	35.5	4.6	54.0	

Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

High channel

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

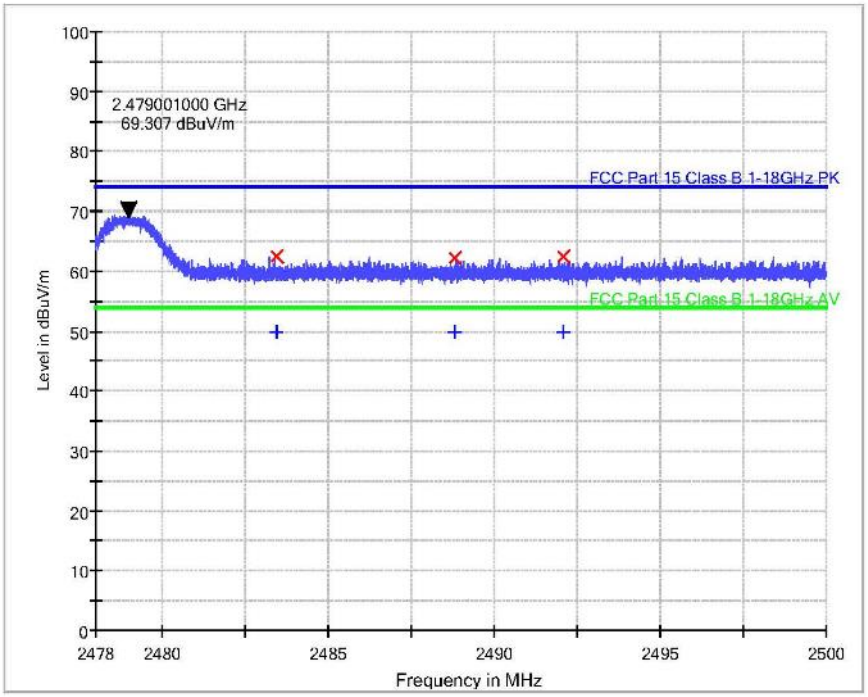
EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Dongle
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Band edge
Operation Mode:	Transmitting (High)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Horizontal

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-04_1GHz-18GHz



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
2483.440000	62.5	1000.0	1000.000	H	36.1	11.5	74.0	
2488.840000	62.3	1000.0	1000.000	H	36.2	11.7	74.0	
2492.080000	62.6	1000.0	1000.000	H	36.2	11.4	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBuV/m)	Comment
2483.440000	49.9	1000.0	1000.000	H	36.1	4.1	54.0	
2488.840000	49.9	1000.0	1000.000	H	36.2	4.2	54.0	
2492.080000	50.0	1000.0	1000.000	H	36.2	4.0	54.0	

Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

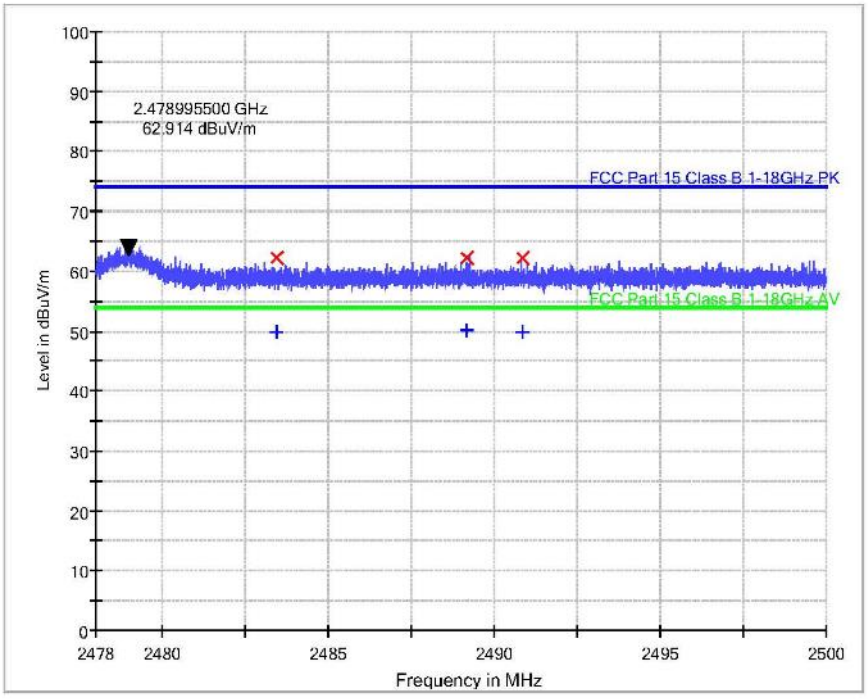
EMC Test Record (Emission)

Common Information

Manufacturer:	Huaxin
Test Item:	Dongle
Identification:	X1-P1
Test Standard:	FCC Part 15
Test Detail:	Band edge
Operation Mode:	Transmitting (High)
Climate Condition:	22 ℃, 56 %, 100 kPa
Test Voltage/ Freq:	Powered by internal battery
Receipt No:	174080192
Report No:	/
Result:	Pass
Comment:	Vertical

Subrange 1	
Frequency Range:	1GHz-18GHz
Receiver:	TUV FSP30
Transducer:	TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT_EREF011-A02-04_1GHz-18GHz



Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Limit and Margin PK

Frequency (MHz)	MaxPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBuV/m)	Comment
2483.440000	62.3	1000.0	1000.000	V	36.1	11.7	74.0	
2489.200000	62.1	1000.0	1000.000	V	36.2	11.9	74.0	
2490.880000	62.2	1000.0	1000.000	V	36.2	11.8	74.0	

Limit and Margin AV

Frequency (MHz)	Average (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBuV/m)	Comment
2483.440000	50.0	1000.0	1000.000	V	36.1	4.1	54.0	
2489.200000	50.1	1000.0	1000.000	V	36.2	3.9	54.0	
2490.880000	49.9	1000.0	1000.000	V	36.2	4.1	54.0	

Tested by: Chris Liang 20180428 Reviewed by: Jacky chen 20180504