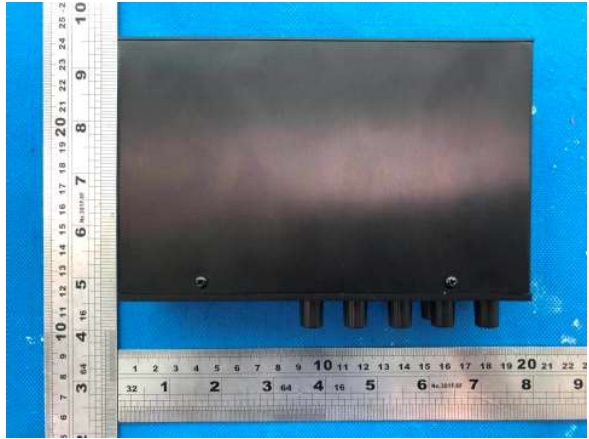


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Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	352690	Auftragsdatum: <i>Order date.:</i>	2019.05.14	
Auftraggeber: <i>Client:</i>	Seikaku Technical Group Limited Offshore Chambers, P.O. Box 217 Apia, Samoa			
Prüfgegenstand: <i>Test item:</i>	AMPLIFIER			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	1) PA-20, PA-20M, PA-20H, PA-20HM, PA-20B, PA-20HB 2) PA-40, PA-40M, PA-40H, PA-40HM, PA-40B, PA-40HB			
Auftrags-Inhalt: <i>Order content:</i>	TUV Rheinland - EMC Service			
Prüfgrundlage: <i>Test specification:</i>	EN 55032:2015 EN 55035:2017 EN 61000-3-2:2014 EN 61000-3-3:2013			
Wareneingangsdatum: <i>Date of receipt:</i>	2019.05.14			
Prüfmuster-Nr.: <i>Test sample No.:</i>	A000913483-001~007			
Prüfzeitraum: <i>Testing period:</i>	Refer to test report			
Ort der Prüfung: <i>Place of testing:</i>	Refer to section 2.1			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Guangdong) Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
2019.07.19 Arthur Liu Project Manager		2019.07.22 Jeffery Xie TC		
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>
Sonstiges / Other:				
RF characteristics of these products were not evaluated in this report.				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft 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				
v04 Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

TEST SUMMARY

5.1.1 RADIATED ELECTROMAGNETIC FIELD

RESULT: Pass

5.1.2 RADIATED EMISSIONS FROM FM RECEIVERS

RESULT: N/A

5.1.3 RADIATED EMISSIONS FROM OUTDOOR UNITS OF HOME SATELLITE RECEIVERS

RESULT: N/A

5.2.1 HARMONIC CURRENTS

RESULT: Pass

5.2.2 VOLTAGE CHANGES, FLUCTUATIONS AND FLICKER

RESULT: Pass

5.2.3 CONDUCTED RADIO-FREQUENCY EMISSIONS ON AC MAINS INPUT PORT

RESULT: Pass

5.3.1 CONDUCTED EMISSIONS ON WIRED NETWORK PORTS

RESULT: N/A

5.3.2 CONDUCTED EMISSIONS ON OPTICAL FIBRE PORTS

RESULT: N/A

5.3.3 CONDUCTED EMISSIONS ON BROADCAST RECEIVER TUNER PORTS

RESULT: N/A

5.3.4 CONDUCTED EMISSIONS ON ANTENNA PORTS

RESULT: N/A

5.4.1 CONDUCTED EMISSIONS ON TV BROADCAST RECEIVER TUNER PORTS

RESULT: N/A

5.4.2 CONDUCTED EMISSIONS ON RF MODULATOR OUTPUT PORTS

RESULT: N/A

5.4.3 CONDUCTED EMISSIONS ON FM BROADCAST RECEIVER TUNER PORTS

RESULT: N/A

6.1.1 R. F. ELECTROMAGNETIC FIELD SUSCEPTIBILITY (RS)

RESULT: Pass

6.1.2 POWER-FREQUENCY MAGNETIC FIELDS

RESULT: Pass

6.1.3 ELECTROSTATIC DISCHARGES (ESD)

RESULT: Pass

6.1.4 RADIO-FREQUENCY COMMON MODE / CONDUCTED SUSCEPTIBILITY (CS)

RESULT: Pass

6.1.5 ELECTRICAL FAST TRANSIENTS (EFT)

RESULT: Pass

6.1.6 SURGE

RESULT: Pass

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6.1.7 VOLTAGE DIPS AND INTERRUPTIONS

RESULT: Pass

6.1.8 BROADBAND IMPULSE NOISE DISTURBANCES, REPETITIVE

RESULT: N/A

6.1.9 BROADBAND IMPULSE NOISE DISTURBANCES, ISOLATED

RESULT: N/A

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1. General Remarks

When applying the basic standards in this test report, please refer to the applied generic or product family standards for edition information:

For dated basic standards, only the edition cited applies. For undated basic standards, the latest edition (including any amendments) applies.

1.1 Complementary Materials

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

Appendix 1: Test result

Appendix 2: List of Test and Measurement Equipment

2. Test Sites

2.1 Test Facilities

1. TÜV Rheinland (Guangdong) Ltd. EMC Laboratory

No.102, 1F of Southwest and No.205, 2F of West Warehouse Building, No.767 Tianyuan Road, Tianhe District, Guangzhou, Guangdong, P.R. China

Test item: others

2. BTL Inc.

No.3, Jinshagang 1st Road, ShiXia, Dalang Town, DongGuan, China

Test item: RS, CS (according to EN55035)

The test at this test site has been conducted under the supervision of a TÜV Rheinland engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Refer to attached Appendix 2.

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3. General Product Information

The 12 products listed in this report are Amplifiers, which constructed by an amplifier board, an audio output transformer at secondary side. All the electrical parts were housed in the metal enclosure; the products can be powered by external approved adaptor;

Model Differences

All models have same similar electric construction, the differences among them are function modules and rated power, details refer to following table:

Four models have same bluetooth module, which used 2.4GHz wireless technology.

Model name	Bluetooth function	MP3 Function	Audio output transformer	Rated power	Weight (kg)	Size (L x W x H) Unit (mm)
PA-20	No	No	No	30	0.85	168x105x44mm
PA-20M	No	Yes	No			
PA-20B	Yes	No	No			
PA-20H	No	No	Yes			
PA-20HM	No	Yes	Yes			
PA-20HB	Yes	No	Yes			
PA-40	No	No	No	60	0.49	
PA-40M	No	Yes	No			
PA-40B	Yes	No	No			
PA-40H	No	No	Yes			
PA-40HM	No	Yes	Yes			
PA-40HB	Yes	No	Yes			

According to the above information, all applicable tests have been performed on PA-40HB, PA-20HB, PA-20B, PA-20M, PA-20HM and PA-40HM. Additional DV and RE tests were performed on PA-40B.

3.1 Product Function and Intended Use

Refer to Technical Documentation and User Manual.

3.2 Ratings and System Details

Type Designation:	1) PA-20, PA-20M, PA-20H, PA-20HM, PA-20B, PA-20HB; 2) PA-40, PA-40M, PA-40H, PA-40HM, PA-40B, PA-40HB
System Input Voltage:	100-240V~; 50/60Hz (powered by adapter)
Power consumption:	Refer to section 3
Ports:	AC mains, audio in, audio out, DC port, USB port
Cable Type:	Unshielded
Protection Class:	II(with adapter) III(without adapter)

Refer to the Technical Documentation for further information.

3.3 Independent Operation Modes

The basic operating modes as below:

Mode A	Input 1kHz signal (audio input and MP3 in if it was available) to audio input port with output terminated with appropriate resistors provided by client (Volume set to rated distortion-limited output voltage)
Mode B	Input 1kHz signal(audio input and MP3 in if it was available) to audio input port with output terminated with appropriate resistors provided by client (Volume set to 1/8 non-clipped rated output power and the EUT was in normal operation)
Mode C	On-off-on 24 times
Mode D	Off

Refer to the Technical Documentation for further information

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Technical Documentation.

3.5 Submitted Documents

Difference Declaration
Construction Drawing
Circuit Diagram
PCB Layout
Part List
Rating Label
User Manual

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

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.

Immunity: The equipment under test (EUT) was configured to have its highest possible susceptibility against the tested phenomena. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Physical Configuration for Testing

Refer to Test setup in chapter 5 and 6.

4.3 Special Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Adapter	XinSPower	A361-1504000E (for PA-40 series)	N/A	Input:100-240V~; 50/60Hz Output:DC15V,4A
Adapter	XinSPower	A361-1502000E (for PA-20 series)	N/A	Input:100-240V~; 50/60Hz Output:DC15V,2A

4.4 Countermeasures to achieve EMC Compliance

Additional countermeasure was employed to achieve DV and RE compliance.

5. Test Results of EMISSION

5.1 Emission on the Enclosure Port

5.1.1 Radiated Electromagnetic Field

RESULT:

Pass

Test Specification

Family Standard	:	EN 55032:2015
Applicable Standard	:	CISPR 16-2-3
Equipment Class	:	Class B
Frequency range	:	30 - 1000MHz*
Kind of test site	:	SAC
Limits	:	EN 55032:2015, Table A.4
Measurement Distance	:	3m

Test Setup

Date of testing	:	see appendix 1
Input Voltage	:	see appendix 1
Operation Mode	:	A
Test Signal	:	1kHz
Earthing	:	Not applied
Temperature	:	see appendix 1
Humidity	:	see appendix 1
Air pressure	:	see appendix 1

Note:

*) the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz.

Photograph 1: Test Set-up for Radiated Electromagnetic Field



Test Result

Measurement uncertainty: 5.16 dB ($k=2$, $\sigma=95\%$)

The measured result is below the specification limit by a margin less than the measurement uncertainty (the minimum margin is 1.2dB and the test lab's measurement uncertainty of this test is 5.16dB); it is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance is more probable than non-compliance with the specification limit. And as the test lab's measurement uncertainty of this test item is less than U_{CISPR} (6.3dB), (U_{CISPR} - the uncertainty recommended by CISPR (6.3dB), therefore the EUT is deemed to comply with the disturbance limit according to Clause 4.1 of CISPR 16-4-2. Above situation was awared to the client, and it was considered as acceptable by the client as well.

Measurements are made at closer distance, down to 3 m. An inverse proportionality factor of 20dB per decade is used to normalize the limits to the specified distance for determining compliance.

Disturbances other than those mentioned are small or not detectable.

For measurement results, please refer to the attached appendix 1.

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5.1.2 Radiated emissions from FM receivers

RESULT: N/A

Test Specification

Test procedure	:	EN 55032:2015, Annex C
Applicable Standard	:	EN 55032:2015
Frequency range	:	30MHz-1000MHz
Test port	:	Enclosure
Limits	:	EN 55032:2015, table A.6

According to electrical character and usage of EUT, there is no FM receivers incorporated. Therefore this test is not applicable for this EUT.

5.1.3 Radiated Emissions from Outdoor units of home Satellite Receivers

RESULT: N/A

Test Specification

Test procedure	:	EN 55032:2015, Annex H
Applicable Standard	:	EN 55032:2015
Frequency range	:	30MHz-18000MHz
Test port	:	Enclosure
Limits	:	EN 55032:2015, table A.7

According to electrical character and usage of EUT, there is no Outdoor units of home Satellite Receivers incorporated. Therefore this test is not applicable for this EUT.

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5.2 Emission on the AC Power Port

5.2.1 Harmonic Currents

RESULT: **Pass**

Test Specification

Basic Standard(s)	:	EN 61000-3-2:2014
Recommendation standards	:	IEC/TS 61000-3-4 or IEC 61000-3-12
Measurement Equipment requirement	:	IEC 61000-4-7
Measured Harmonics	:	1 - 40
Equipment Class	:	A
Limits	:	Clause 7, Table 1

Test Set-up

Date of testing	:	2019.05.10
Input Voltage	:	AC230V, 50Hz
Operational Mode	:	B
Test observation period	:	150 s
Temperature	:	22°C
Humidity	:	52%
Air pressure	:	101kPa

Photograph 2: Test Set-up for Harmonic Current Emissions



Test Result

For detailed test results, please refer to the attached appendix 1.

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5.2.2 Voltage Changes, Fluctuations and Flicker

RESULT:

Pass

Test Specification

Basic Standard(s)	:	EN 61000-3-3:2013
Measurement Equipment requirement	:	IEC 61000-4-15
Limits	:	Clause 5

Test Set-up

Date of testing	:	2019.05.12
Input Voltage	:	AC230V, 50Hz
Operational Mode	:	C
Temperature	:	22°C
Humidity	:	53%
Air pressure	:	101kPa

Photograph 3: Test Set-up for Voltage Changes, Voltage Fluctuations and Flicker



Test Result

Parameter	Pst	Plt	Tmax ms	dc %	dmax %
Limit	1	0.65	500	3.3	6
PA-40HB	/	/	0	0.000	0.060
PA-20HB	/	/	9	0.000	0.034
PA-20B	/	/	7	0.000	0.036
PA-20M	/	/	8	0.038	0.038
PA-20HM	/	/	14	0.000	0.115
PA-40HM	/	/	9	0.000	0.050

According to EN 61000-3-3:2013 clause 5, Pst and Plt requirement shall not be applied to voltage changes caused by manual switching.

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5.2.3 Conducted Radio-frequency Emissions on AC Mains Input Port

RESULT: **Pass**

Test Specification

Family Standard(s)	:	EN 55032:2015
Applicable Standard(s)	:	CISPR 16-2-1
Equipment Class	:	Class B
Ports	:	AC Mains
Frequency range	:	150kHz-30MHz
Test site	:	Shielded Room
Limits	:	EN 55032:2015, table A.10

Test Set-up

Date of testing	:	see appendix 1
Input Voltage	:	see appendix 1
Operational Mode	:	A
Test configuration	:	Tabletop
Temperature	:	see appendix 1
Humidity	:	see appendix 1
Air pressure	:	see appendix 1

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Photograph 4: Test Set-up for Conducted Radio-frequency Emissions on AC Mains Input Port



Test Result

Measurement uncertainty: 3.17 dB ($k=2$, $\sigma=95\%$)

If the result of the measurement with the Quasi Peak detector is below the Average limit, the measurement with Average Detector will be omitted.

Disturbances other than those mentioned are small or not detectable.

For measurement results, please refer to the attached appendix 1.

5.3 Asymmetric Mode Conducted Emissions

5.3.1 Conducted Emissions on Wired Network Ports

RESULT: N/A

Test Specification

Family Standard(s)	:	EN 55032:2015
Equipment Class	:	Class B
Ports	:	Tele. and network ports
Frequency range	:	150kHz-30MHz
Test site	:	Shielded Room
Limits	:	EN 55032:2015 table A.12

According to electrical character and usage of EUT, there is no telecommunication and network port incorporated. Therefore this test is not applicable for this EUT.

5.3.2 Conducted Emissions on Optical Fibre Ports

RESULT: N/A

Test Specification

Family Standard(s)	:	EN 55032:2015
Equipment Class	:	Class B
Ports	:	Optical Fibre Ports
Frequency range	:	150kHz-30MHz
Test site	:	Shielded Room
Limits	:	EN 55032:2015 table A.12

According to electrical character and usage of EUT, there is no Optical Fibre Ports with metallic shield or tension members incorporated. Therefore this test is not applicable for this EUT.

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5.3.3 Conducted Emissions on Broadcast Receiver Tuner Ports

RESULT: N/A

Test Specification

Family Standard(s)	:	EN 55032:2015
Equipment Class	:	Class B
Ports	:	Broadcast Receiver Tuner Ports
Frequency range	:	150kHz-30MHz
Test site	:	Shielded Room
Limits	:	EN 55032:2015 table A.12

According to electrical character and usage of EUT, there is no Broadcast Receiver Tuner Ports incorporated. Therefore this test is not applicable for this EUT.

5.3.4 Conducted Emissions on Antenna Ports

RESULT: N/A

Test Specification

Family Standard(s)	:	EN 55032:2015
Equipment Class	:	Class B
Ports	:	Antenna port
Frequency range	:	150kHz-30MHz
Test site	:	Shielded Room
Limits	:	EN 55032:2015, table A.12

According to electrical character and usage of EUT, there is no antenna ports incorporated. Therefore this test is not applicable for this EUT.

5.4 Conducted Differential Voltage Emissions

5.4.1 Conducted Emissions on TV Broadcast Receiver Tuner Ports

RESULT: N/A

Test Specification

Family Standard(s)	:	EN 55032:2015
Equipment Class	:	Class B
Ports	:	TV Broadcast Receiver Tuner Ports
Frequency range	:	30MHz-2150MHz
Test site	:	Shielded Room
Limits	:	EN 55032:2015 table A.13

According to electrical character and usage of EUT, there is no TV Broadcast Receiver Tuner Ports with an accessible connector incorporated. Therefore this test is not applicable for this EUT.

5.4.2 Conducted Emissions on RF Modulator Output Ports

RESULT: N/A

Test Specification

Family Standard(s)	:	EN 55032:2015
Equipment Class	:	Class B
Ports	:	RF Modulator Output Ports
Frequency range	:	30MHz-2150MHz
Test site	:	Shielded Room
Limits	:	EN 55032:2015 table A.13

According to electrical character and usage of EUT, there is no RF Modulator Output Ports incorporated. Therefore this test is not applicable for this EUT.

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5.4.3 Conducted Emissions on FM Broadcast Receiver Tuner Ports

RESULT: N/A

Test Specification

Family Standard(s)	:	EN 55032:2015
Equipment Class	:	Class B
Ports	:	FM Broadcast Receiver Tuner Ports
Frequency range	:	30MHz-2150MHz
Test site	:	Shielded Room
Limits	:	EN 55032:2015 table A.13

According to electrical character and usage of EUT, there is no FM Broadcast Receiver Tuner Ports with an accessible connector incorporated. Therefore this test is not applicable for this EUT.

6. Test Results of IMMUNITY

6.1 General requirements

According to EN 55035:2017, the appliance shall fulfill the requirement of:

R.F. Electromagnetic Field Susceptibility (RS)	Criterion A
Power-frequency magnetic field	Criterion A
Electrostatic Discharges (ESD)	Criterion B
Electrical Fast Transients (EFT)	Criterion B
Radio-frequency Common Mode / Conducted Susceptibility (CS)	Criterion A
Voltage Dips and Interruptions	Criterion B&C
Surge	Criterion B
Broadband Impulse Noise Disturbances, Repetitive	Criterion A
Broadband Impulse Noise Disturbances, Isolated	Criterion B

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6.1.1 R. F. Electromagnetic Field Susceptibility (RS)

RESULT:

Pass

Test Specification

Family standard	:	EN 55035:2017
Basic standard	:	IEC 61000-4-3
Test level	:	See the following table 2
Frequency range	:	See the following table 2
Modulation	:	1kHz sine-wave, 80% AM
Sweep mode	:	Automatic
Sweep Step	:	1%
Dwell Time	:	≥ 1Sec
Performance criterion	:	A

Test Setup

Date of testing	:	2019.05.30
Input voltage	:	AC 240V/50Hz, AC 120V/60Hz
Operation mode	:	A
Ports	:	Enclosure
Temperature	:	25°C
Humidity	:	55%
Air pressure	:	101kPa

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Photograph 5: Test set-up for Radio-frequency electromagnetic field susceptibility



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Test Result

Table 2: Immunity against Radio-frequency Electromagnetic Field Susceptibility

Field polarization	Side of EUT	Strength /Frequency	Result	Remarks
Horizontal	left	3V/m 80MHz - 1000MHz	Passed	see *) below
Horizontal	right		Passed	see *) below
Horizontal	front		Passed	see *) below
Horizontal	rear	3V/m 1800MHz	Passed	see *) below
Vertical	left	3V/m 2600MHz	Passed	see *) below
Vertical	right	3V/m 3500 MHz	Passed	see *) below
Vertical	front	3V/m 5000 MHz	Passed	see *) below
Vertical	rear		Passed	see *) below

*) Remark: The measured acoustic interference ratio during the test was –20 dB or better.

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6.1.2 Power-frequency Magnetic Fields

RESULT:

Pass

Test Specification

Family Standard	:	EN 55035:2017
Basic standard	:	IEC 61000-4-8
Test Level (A/m)	:	1A/m
Frequency	:	50Hz or 60Hz
Performance criterion	:	A

Test Setup

Testing date	:	2019.05.12
Input Voltage	:	AC 240V/50Hz, AC 120V/60Hz
Operation Mode	:	A
Test configuration	:	Table-top
Temperature	:	22°C
Humidity	:	53%
Air pressure	:	101kPA

Photograph 6: Test Set-up for Power Frequency Magnetic Fields



Test Result

Table 3: Immunity against Power-frequency Magnetic Fields

Point of application	Results
X-Axis	Applied, *)
Y-Axis	Applied, *)
Z-Axis	Applied, *)

*) Remark: No degradation was observed during and after the tests. (SINAD was changing from 28.6 dB to 28.4dB during the test, it could self-recover after the test which can be accepted by manufacturer.)

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6.1.3 Electrostatic Discharges (ESD)

RESULT:

Pass

Test Specification

Family standard	: EN 55035:2017
Basic standard	: IEC 61000-4-2
Discharge impedance	: 330 Ω / 150 pF
Number of discharges	: ≥ 10
Type of discharge	:
Direct discharge	Air discharge, $\pm 2,4,8$ kV Contact discharge, ± 4 kV
Indirect discharge	Contact discharge, ± 4 kV
Polarity	: Positive and negative
Discharge location	: See photo documentation of the test set-up All external locations accessible by hand Horizontal coupling plate (HCP) Vertical coupling plate (VCP)
Performance criterion	: B

Test Setup

Date of testing	: 2019.05.12
Input voltage	: AC 240V/50Hz, AC 120V/60Hz
Operation mode	: A
Temperature	: 22°C
Humidity	: 53%
Air pressure	: 101kPa

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Photograph 7: Test Set-up for Electrostatic Discharge (ESD)

⚡ Contact Discharge $\pm 4\text{kV}$ ⚡ Air Discharge $\pm 2,4,8\text{kV}$



Test Result

Table 4: Electrostatic Discharge

Direct discharges			
Air discharges	Air discharge voltage (kV)	Polarity	Remark
Discharge location			
Refer to Photograph of ESD setup	2,4,8	+/-	Applied, *)
Switches and non-conducted parts of enclosure	2,4,8	+/-	Applied, *)
Contact discharges	Contact discharge voltage (kV)	Polarity	Remark
Discharge location			
Refer to Photograph of ESD setup	4	+/-	Applied, *)
Screws, shell of audio connectors and Conducted parts of enclosure	4	+/-	Applied, *)
Indirect discharges			
Contact discharges	Contact discharge voltage (kV)	Polarity	Remark
Discharge location			
HCP	4	+/-	Applied, *)
VCP	4	+/-	Applied, *)

*) Remark: No degradation was found during and after the test. (SINAD was changing from 28.8 dB to 28.1dB during the test, it could self-recover after the test which can be accepted by manufacturer.)

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6.1.4 Radio-frequency Common Mode / Conducted Susceptibility (CS)

RESULT:

Pass

Family standard	:	EN 55035:2017
Basic standard	:	IEC 61000-4-6
Characteristics of the test generator	:	
Output impedance	:	50 Ω
Harmonics and distortion	:	Any spurious spectral line at least 15 dB below the carrier level
Amplitude modulation	:	80 % $\pm$ 5 % in depth, 1 kHz $\pm$ 10 % sine wave
Frequency bandwidth	:	150 kHz to 80MHz
Frequency step	:	1% with 1 s dwell time
Performance criterion	:	A

Test Setup

Date of testing	:	2019.05.31
Input voltage	:	AC 240V/50Hz, AC 120V/60Hz
Operation mode	:	A
Signal lines and control lines	:	N/A*
Input and output dc power ports	:	N/A*
Input and output ac power ports	:	3V (rms)
Temperature	:	25°C
Humidity	:	55%
Air pressure	:	101kPa

*) The DC input cable and analogue/digital data cable are less than 3m, so the test on these terminals is not applicable

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Photograph 8: Test Set-up for Radio-frequency Common Mode / Conducted Susceptibility (CS)



Table 5: Immunity against Radio-frequency Common Mode / Conducted Susceptibility (CS)

Coupling point	Application	Level (V(r.m.s))	Frequency (MHz)	Remark
Power ports				
AC power input port	CDN-M2	3	0.15-10	Applied, *)
		3 to 1	10-30	
		1	30-80	
DC port	EM clamp	3		N/A
Signal lines >3m				
Audio Input, Audio output	EM clamp	3	0.15-10	N/A
		3 to 1	10-30	
		1	30-80	
	Current Clamp			N/A
Control lines >3m				
	Current Clamp	3		N/A
	EM clamp	3		N/A

*) Remark: the measured acoustic interference ratio during the test was –20 dB or better.

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6.1.5 Electrical Fast Transients (EFT)

RESULT:

Pass

Test Specification

Family standard	:	EN 55035:2017
Basic standard	:	IEC 61000-4-4
Wave shape of the pulse in 50 Ω load	:	
Rise time		5 ns $\pm$ 30 %
Duration		50 ns $\pm$ 30 %
Wave shape into 1 k Ω load	:	
Rise time		5 ns $\pm$ 30 %
Duration		50 ns with a tolerance of -15 ns to + 100 ns
Burst duration	:	15 ms $\pm$ 20 % at 5 kHz
Burst period	:	300 ms $\pm$ 20 %
Repetition frequency	:	5 kHz
Polarity	:	Positive and negative
Time of application	:	2 minutes
Performance criterion	:	B

Test Setup

Date of testing	:	2019.05.12
Input voltage	:	AC 240V/50Hz, AC 120V/60Hz
Operation mode	:	A
Signal lines and control lines	:	N/A*
Input and output dc power ports	:	N/A*
Input and output ac power ports	:	1kV
Temperature	:	22°C
Humidity	:	53%
Air pressure	:	101kPa

*) The DC input cable and analogue/digital data cable are less than 3m, so the test on these terminals is not applicable.

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Photograph 9: Test Set-up for Electrical Fast Transients (EFT)



Table 6: Immunity against Electrical Fast Transients (EFT)

Coupling point	Application	Level (kV)	Polarity	Remark
Power ports				
AC power input port	Coupling/Decoupling network	1	+	Applied, *)
		1	-	Applied, *)
Signal lines >3m				
Audio Input, Audio output	Capacitive Coupling clamp	0.5	+/-	N/A
Control lines >3m				
	Coupling clamp	0.5	+	N/A
		0.5	-	N/A

*) Remark: No degradation was found during and after the test.(SINAD was changing from 28.7 dB to 28.4dB during the test, it could self-recover after the test which can be accepted by manufacturer.)

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6.1.6 Surge

RESULT:

Pass

Test Specification

Family standard	:	EN 55035:2017
Basic standard	:	IEC 61000-4-5
Definitions of the waveform parameters	:	
Front time		1.2 μ s $\pm$ 30 %
Time to half value		50 μ s $\pm$ 20 %
Source impedance	:	
Power line symmetrical		2 Ω + 18 μ F
Power line unsymmetrical		12 Ω + 9 μ F
Polarity	:	Positive and negative
Number of surges / polarity /phase angle	:	5
Phase angles	:	90°, 270 °
Repetition frequency	:	60 s
Performance criterion	:	B

Test Setup

Date of testing	:	2019.05.12
Input voltage	:	AC 240V/50Hz, AC 120V/60Hz
Operation mode	:	A
Temperature	:	22°C
Humidity	:	52%
Air pressure	:	101kPa

*) The DC input cable and analogue/digital data cable are less than 3m, so the test on these terminals is not applicable.

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Photograph 10: Test Set-up for Surge



Table 7: Surge Immunity Tests

Coupling point	Application	Level (kV)	Polarity	Remark
AC power port	Line-to-earth	0.5, 1, 2	+/-	N/A
	Line-to-line	0.5, 1	+/-	Applied, *)

*) Remark: No degradation was found during and after the test. (SINAD was changing from 28.7 dB to 28.4dB during the test, it could self-recover after the test which can be accepted by manufacturer.)

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6.1.7 Voltage Dips and Interruptions

RESULT:

Pass

Test Specification

Family standard	:	EN 55035:2017
Basic standard	:	IEC 61000-4-11
Test voltage generator characteristics for interruptions:		
Rise time		Between 1 μ s and 5 μ s
Fall time		Between 1 μ s and 5 μ s
Output impedance of test voltage generator	:	$<(0.4 + j 0.25 \Omega)$
Phase angle	:	0°
Nominal mains voltage (Ut)	:	AC230V
Rated frequency	:	50/60Hz
Test level	:	
Test level in % Ut		Duration
<5		0.5 period
70		25 period/ 30 period
<5		250 period/ 300 period
Number of interruptions	:	3
Number of voltage dips	:	3
Interval	:	>10s
Performance criterion	:	C or B

Test Setup

Date of testing	:	2019.05.12
Input voltage	:	AC 240V/50Hz, AC 120V/60Hz
Operation mode	:	A
Temperature	:	22°C
Humidity	:	53%
Air pressure	:	101kPa

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Photograph 11: Test Set-up for Voltage Dips and Interruptions



Table 8: Voltage Dip and Interruptions Immunity

Interruptions				
Test Level(%Ut)	Duration (in periods)	Number of interruptions	Performance criterion	Result
0	250 for 50Hz 300 for 60Hz	3	C	Applied, *)
Voltage Dips				
Test Level(%Ut)	Duration (in periods)	Number of Voltage Dips	Performance criterion	Result
70	25 for 50Hz 30 for 60Hz	3	C	Applied, *)
0	0.5	3	B	Applied, **)

*) Remark: During the test, the EUT turned off; it could be recovered automatically after test.

**) Remark: No degradation was found during and after the test.

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6.1.8 Broadband Impulse Noise Disturbances, Repetitive

RESULT: N/A

Test Specification

Family standard	: EN 55035:2017
Basic standard	: Clause 4.2.7
Impulse frequency	: 0.15-0.5MHz; 0.5-10MHz; 10-30MHz
Test level	: 107dBµV; 107-36dBµV; 36-30dBµV
Burst duration	: 0.70 ms
Burst period	: 8.3 ms (60Hz), 10 ms (50Hz)
Performance criterion	: A

According to electrical character and usage of EUT, there is no CPE xDSL ports incorporated. Therefore this test is not applicable for this EUT.

6.1.9 Broadband Impulse Noise Disturbances, Isolated

RESULT: N/A

Test Specification

Family standard	: EN 55035:2017
Basic standard	: Clause 4.2.7
Impulse frequency	: 0.15-30MHz
Test level	: 110dBµV
Burst duration	: 0.24 ms, 10ms, 300ms
Performance criterion	: B

According to electrical character and usage of EUT, there is no CPE xDSL ports incorporated. Therefore this test is not applicable for this EUT.

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EMC Test Record



Receipt No.: 174091930	Page: Of
Report No.:	
Is this test result compliant with the requirements in the test plan? ☒ Yes / ☐ No	

Emission	Disturbance in supply system Harmonics on AC Mains	☒ EN/IEC 61000-3-2 ☐ EN/IEC 61000-3-12
Test voltage / Freq.: AC 230V/50 Hz Climatic conditions: 22 °C; 52 %RH;		
Test Site: TÜV Rheinland (Guangdong) Ltd. EMC Lab		
Model: PA-40HB		Equipment: ☒ DPA 500 ☒ ACS 500
Operation Mode: B		
Harmonics Tables see page :		
Note:		
Settings	General Data	
Voltage	Current	Power Power Fact.

Tested by *Chris Liang*

Reviewed by *Judy Chen*

Date: 20190510

Date: 20190513

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Test Report ISMDPA

Report title:	
Company Name:	
Date of test:	1:46 4.Apr 2019
Measurement file name:	20190403 PA-40HB Har2.rsd
Tester:	
Standard used:	EN/IEC 61000-3-2 Ed.4 Quasi-stationary Equipment class A <= 150% of the limit
Observation time:	150s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2002 + A1:2008)
Customer:	
E. U. T.:	
Temperature :	
Humidity :	

Test Result

E. U. T.:	PASS
Power Source:	PASS

(Date)

(Sign)

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Judy Chen*

Date: 20190513

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E. U. T. Result

Check harmonics 2..40 [exception odd 21..39]:

Harmonic(s) > 150%:

Order (n): None

Harmonic(s) with average > 100%:

Order (n): None

Check odd harmonics 21..39:

All Partial Odd Harmonics below partial limits.

Harmonic(s) > 150%:

Order (n): None

Harmonic(s) with average > 150%:

Order (n): None

Power Source Result

First dataset out of limit:

DS (time): None

Harmonic(s) out of limit:

Order (n): None

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Judy Chen*

Date: 20190513

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Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	142.476E-3			
2	2.719E-3			PASS
3	133.195E-3	5.791	2.30	PASS
4	3.901E-3			PASS
5	129.524E-3	11.362	1.14	PASS
6	3.218E-3			PASS
7	125.261E-3	16.268	770.00E-3	PASS
8	3.257E-3			PASS
9	118.307E-3	29.577	400.00E-3	PASS
10	3.062E-3			PASS
11	110.936E-3	33.617	330.00E-3	PASS
12	2.954E-3			PASS
13	103.218E-3	49.151	210.00E-3	PASS
14	3.231E-3			PASS
15	93.966E-3	62.644	150.00E-3	PASS
16	3.076E-3			PASS
17	83.952E-3	63.431	132.35E-3	PASS
18	2.807E-3			PASS
19	73.912E-3	62.415	118.42E-3	PASS
20	2.586E-3			PASS
21	63.903E-3	39.763	160.71E-3	PASS
22	2.493E-3			PASS
23	54.049E-3	36.832	146.74E-3	PASS
24	2.363E-3			PASS
25	44.710E-3	33.118	135.00E-3	PASS
26	2.205E-3			PASS
27	35.849E-3	28.680	124.99E-3	PASS
28	2.073E-3			PASS
29	27.813E-3	23.897	116.39E-3	PASS
30	1.794E-3			PASS
31	20.901E-3	19.198	108.87E-3	PASS
32	1.599E-3			PASS
33	14.589E-3	14.266	102.27E-3	PASS
34	1.470E-3			PASS
35	9.642E-3	9.999	96.44E-3	PASS
36	1.222E-3			PASS
37	6.694E-3	7.338	91.21E-3	PASS
38	1.221E-3			PASS
39	5.395E-3	6.235	86.53E-3	PASS
40	948.755E-6			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

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Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	143.845E-3			
2	3.318E-3			PASS
3	134.129E-3	3.888	3.45	PASS
4	4.498E-3			PASS
5	130.405E-3	7.626	1.71	PASS
6	3.713E-3			PASS
7	126.078E-3	10.916	1.15	PASS
8	3.778E-3			PASS
9	119.093E-3	19.849	600.00E-3	PASS
10	3.532E-3			PASS
11	111.562E-3	22.538	495.00E-3	PASS
12	3.485E-3			PASS
13	103.655E-3	32.906	315.00E-3	PASS
14	3.816E-3			PASS
15	94.277E-3	41.901	225.00E-3	PASS
16	3.600E-3			PASS
17	84.258E-3	42.442	198.52E-3	PASS
18	3.250E-3			PASS
19	74.274E-3	41.814	177.63E-3	PASS
20	2.999E-3			PASS
21	64.364E-3	40.050	160.71E-3	PASS
22	2.928E-3			PASS
23	54.497E-3	37.137	146.74E-3	PASS
24	2.741E-3			PASS
25	45.110E-3	33.415	135.00E-3	PASS
26	2.607E-3			PASS
27	36.245E-3	28.997	124.99E-3	PASS
28	2.537E-3			PASS
29	28.247E-3	24.270	116.39E-3	PASS
30	2.319E-3			PASS
31	21.278E-3	19.545	108.87E-3	PASS
32	2.201E-3			PASS
33	14.917E-3	14.586	102.27E-3	PASS
34	2.121E-3			PASS
35	9.954E-3	10.321	96.44E-3	PASS
36	1.956E-3			PASS
37	6.890E-3	7.554	91.21E-3	PASS
38	1.879E-3			PASS
39	5.733E-3	6.625	86.53E-3	PASS
40	1.662E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

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Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.47	100.205		
2	50.94E-3	0.022	0.2	PASS
3	103.40E-3	0.045	0.9	PASS
4	27.41E-3	0.012	0.2	PASS
5	67.08E-3	0.029	0.4	PASS
6	14.50E-3	0.006	0.2	PASS
7	61.33E-3	0.027	0.3	PASS
8	21.06E-3	0.009	0.2	PASS
9	60.16E-3	0.026	0.2	PASS
10	11.26E-3	0.005	0.2	PASS
11	94.52E-3	0.041	0.1	PASS
12	12.50E-3	0.005	0.1	PASS
13	102.33E-3	0.044	0.1	PASS
14	19.74E-3	0.009	0.1	PASS
15	76.60E-3	0.033	0.1	PASS
16	16.92E-3	0.007	0.1	PASS
17	54.70E-3	0.024	0.1	PASS
18	11.26E-3	0.005	0.1	PASS
19	69.03E-3	0.030	0.1	PASS
20	17.20E-3	0.007	0.1	PASS
21	85.25E-3	0.037	0.1	PASS
22	15.18E-3	0.007	0.1	PASS
23	32.01E-3	0.014	0.1	PASS
24	13.24E-3	0.006	0.1	PASS
25	42.40E-3	0.018	0.1	PASS
26	12.70E-3	0.006	0.1	PASS
27	71.57E-3	0.031	0.1	PASS
28	12.56E-3	0.005	0.1	PASS
29	25.01E-3	0.011	0.1	PASS
30	16.14E-3	0.007	0.1	PASS
31	60.96E-3	0.027	0.1	PASS
32	12.47E-3	0.005	0.1	PASS
33	27.86E-3	0.012	0.1	PASS
34	12.14E-3	0.005	0.1	PASS
35	39.92E-3	0.017	0.1	PASS
36	11.32E-3	0.005	0.1	PASS
37	41.83E-3	0.018	0.1	PASS
38	15.92E-3	0.007	0.1	PASS
39	28.14E-3	0.012	0.1	PASS
40	13.30E-3	0.006	0.1	PASS

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

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Harmonic current results - DS: 100

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	142.912E-3			
2	2.549E-3			PASS
3	134.034E-3	5.828	2.30	PASS
4	3.853E-3			PASS
5	130.251E-3	11.426	1.14	PASS
6	3.158E-3			PASS
7	125.867E-3	16.346	770.00E-3	PASS
8	3.107E-3			PASS
9	119.003E-3	29.751	400.00E-3	PASS
10	2.979E-3			PASS
11	111.376E-3	33.750	330.00E-3	PASS
12	2.787E-3			PASS
13	103.533E-3	49.301	210.00E-3	PASS
14	3.006E-3			PASS
15	94.100E-3	62.733	150.00E-3	PASS
16	2.954E-3			PASS
17	84.073E-3	63.523	132.35E-3	PASS
18	2.694E-3			PASS
19	74.021E-3	62.507	118.42E-3	PASS
20	2.484E-3			PASS
21	63.798E-3	59.546	107.14E-3	PASS
22	2.386E-3			PASS
23	53.833E-3	55.027	97.83E-3	PASS
24	2.228E-3			PASS
25	44.540E-3	49.489	90.00E-3	PASS
26	2.068E-3			PASS
27	35.621E-3	42.747	83.33E-3	PASS
28	1.947E-3			PASS
29	27.439E-3	35.364	77.59E-3	PASS
30	1.675E-3			PASS
31	20.481E-3	28.219	72.58E-3	PASS
32	1.489E-3			PASS
33	14.350E-3	21.047	68.18E-3	PASS
34	1.348E-3			PASS
35	9.423E-3	14.657	64.29E-3	PASS
36	1.115E-3			PASS
37	6.565E-3	10.797	60.81E-3	PASS
38	1.170E-3			PASS
39	5.534E-3	9.593	57.69E-3	PASS
40	860.882E-6			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Caution: Results related to the 100% limit values

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

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Harmonic voltage results - DS: 100

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.46	100.202		
2	33.52E-3	0.015	0.2	PASS
3	95.43E-3	0.041	0.9	PASS
4	13.29E-3	0.006	0.2	PASS
5	59.95E-3	0.026	0.4	PASS
6	11.88E-3	0.005	0.2	PASS
7	54.27E-3	0.024	0.3	PASS
8	9.24E-3	0.004	0.2	PASS
9	38.79E-3	0.017	0.2	PASS
10	2.62E-3	0.001	0.2	PASS
11	75.57E-3	0.033	0.1	PASS
12	8.74E-3	0.004	0.1	PASS
13	62.44E-3	0.027	0.1	PASS
14	11.30E-3	0.005	0.1	PASS
15	66.68E-3	0.029	0.1	PASS
16	6.08E-3	0.003	0.1	PASS
17	46.22E-3	0.020	0.1	PASS
18	5.32E-3	0.002	0.1	PASS
19	46.45E-3	0.020	0.1	PASS
20	11.23E-3	0.005	0.1	PASS
21	72.75E-3	0.032	0.1	PASS
22	8.18E-3	0.004	0.1	PASS
23	6.24E-3	0.003	0.1	PASS
24	8.55E-3	0.004	0.1	PASS
25	29.36E-3	0.013	0.1	PASS
26	2.95E-3	0.001	0.1	PASS
27	56.34E-3	0.024	0.1	PASS
28	7.46E-3	0.003	0.1	PASS
29	9.77E-3	0.004	0.1	PASS
30	4.59E-3	0.002	0.1	PASS
31	45.98E-3	0.020	0.1	PASS
32	2.38E-3	0.001	0.1	PASS
33	10.58E-3	0.005	0.1	PASS
34	1.95E-3	0.001	0.1	PASS
35	29.75E-3	0.013	0.1	PASS
36	2.93E-3	0.001	0.1	PASS
37	30.99E-3	0.013	0.1	PASS
38	5.72E-3	0.002	0.1	PASS
39	14.13E-3	0.006	0.1	PASS
40	3.49E-3	0.002	0.1	PASS

Power and THD results - DS: 100

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

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True power P:	31.26W	Apparent power S:	86.85VA
Reactiv power Q:	81.03var	Power factor:	0.360
THD (U):	0.001	THD (I):	2.435
Crest Factor (U):	1.414	Crest Factor (I):	5.013

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Judy Chen*

Date: 20190513

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EMC Test Record



Receipt No.: 174091930	Page: Of
Report No.:	
Is this test result compliant with the requirements in the test plan? ☒ Yes / ☐ No	

Emission	Disturbance in supply system Harmonics on AC Mains	☒ EN/IEC 61000-3-2 ☐ EN/IEC 61000-3-12	
Test voltage / Freq.: AC 230V/50 Hz		Climatic conditions: 22 °C; 52 %RH;	
Test Site: TÜV Rheinland (Guangdong) Ltd. EMC Lab			
Model: PA-20HB		Equipment: ☒ DPA 500 ☒ ACS 500	
Operation Mode: B			
Harmonics Tables see page :			
Note:			
Settings		General Data	
Voltage	Current	Power	Power Fact.

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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Test Report ISMDPA

Report title:	
Company Name:	
Date of test:	2:37 4.Apr 2019
Measurement file name:	20190403 PA-20HB Har.rsd
Tester:	
Standard used:	EN/IEC 61000-3-2 Ed.4 Quasi-stationary Equipment class A <= 150% of the limit
Observation time:	150s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2002 + A1:2008)
Customer:	
E. U. T.:	
Temperature :	
Humidity :	

Test Result

E. U. T.:	PASS
Power Source:	PASS

(Date)

(Sign)

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Jacky Chen*

Date: 20190513

Prüfbericht - Nr.:

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E. U. T. Result

Check harmonics 2..40 [exception odd 21..39]:

Harmonic(s) > 150%:

Order (n): None

Harmonic(s) with average > 100%:

Order (n): None

Check odd harmonics 21..39:

All Partial Odd Harmonics below partial limits.

Harmonic(s) > 150%:

Order (n): None

Harmonic(s) with average > 150%:

Order (n): None

Power Source Result

First dataset out of limit:

DS (time): None

Harmonic(s) out of limit:

Order (n): None

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Jacky Chen*

Date: 20190513

Prüfbericht - Nr.:

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Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	43.997E-3			
2	1.311E-3			PASS
3	42.188E-3	1.834	2.30	PASS
4	1.779E-3			PASS
5	40.889E-3	3.587	1.14	PASS
6	1.410E-3			PASS
7	39.310E-3	5.105	770.00E-3	PASS
8	1.451E-3			PASS
9	37.515E-3	9.379	400.00E-3	PASS
10	1.152E-3			PASS
11	35.414E-3	10.732	330.00E-3	PASS
12	1.075E-3			PASS
13	32.985E-3	15.707	210.00E-3	PASS
14	967.821E-6			PASS
15	30.278E-3	20.185	150.00E-3	PASS
16	934.335E-6			PASS
17	27.401E-3	20.704	132.35E-3	PASS
18	869.717E-6			PASS
19	24.450E-3	20.647	118.42E-3	PASS
20	837.992E-6			PASS
21	21.493E-3	13.374	160.71E-3	PASS
22	823.146E-6			PASS
23	18.555E-3	12.644	146.74E-3	PASS
24	799.226E-6			PASS
25	15.751E-3	11.668	135.00E-3	PASS
26	782.051E-6			PASS
27	13.107E-3	10.486	124.99E-3	PASS
28	765.954E-6			PASS
29	10.701E-3	9.195	116.39E-3	PASS
30	742.198E-6			PASS
31	8.584E-3	7.885	108.87E-3	PASS
32	744.941E-6			PASS
33	6.825E-3	6.674	102.27E-3	PASS
34	788.709E-6			PASS
35	5.491E-3	5.694	96.44E-3	PASS
36	739.672E-6			PASS
37	4.624E-3			PASS
38	778.290E-6			PASS
39	4.173E-3			PASS
40	719.847E-6			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

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Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	44.990E-3			
2	2.001E-3			PASS
3	42.548E-3	1.233	3.45	PASS
4	4.423E-3			PASS
5	41.163E-3	2.407	1.71	PASS
6	1.817E-3			PASS
7	39.634E-3	3.431	1.15	PASS
8	1.970E-3			PASS
9	37.736E-3	6.289	600.00E-3	PASS
10	1.358E-3			PASS
11	35.641E-3	7.200	495.00E-3	PASS
12	1.408E-3			PASS
13	33.202E-3	10.540	315.00E-3	PASS
14	1.255E-3			PASS
15	30.457E-3	13.537	225.00E-3	PASS
16	1.306E-3			PASS
17	27.546E-3	13.875	198.52E-3	PASS
18	1.084E-3			PASS
19	24.546E-3	13.819	177.63E-3	PASS
20	1.027E-3			PASS
21	21.594E-3	13.436	160.71E-3	PASS
22	993.801E-6			PASS
23	18.683E-3	12.732	146.74E-3	PASS
24	964.106E-6			PASS
25	15.882E-3	11.765	135.00E-3	PASS
26	972.232E-6			PASS
27	13.224E-3	10.580	124.99E-3	PASS
28	1.015E-3			PASS
29	10.807E-3	9.286	116.39E-3	PASS
30	1.008E-3			PASS
31	8.734E-3	8.022	108.87E-3	PASS
32	1.078E-3			PASS
33	6.967E-3	6.812	102.27E-3	PASS
34	1.182E-3			PASS
35	5.614E-3	5.821	96.44E-3	PASS
36	1.120E-3			PASS
37	4.780E-3			PASS
38	1.094E-3			PASS
39	4.284E-3			PASS
40	1.031E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

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Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.47	100.206		
2	50.58E-3	0.022	0.2	PASS
3	91.52E-3	0.040	0.9	PASS
4	31.92E-3	0.014	0.2	PASS
5	53.22E-3	0.023	0.4	PASS
6	16.43E-3	0.007	0.2	PASS
7	68.42E-3	0.030	0.3	PASS
8	18.12E-3	0.008	0.2	PASS
9	39.66E-3	0.017	0.2	PASS
10	14.95E-3	0.006	0.2	PASS
11	85.92E-3	0.037	0.1	PASS
12	11.83E-3	0.005	0.1	PASS
13	92.54E-3	0.040	0.1	PASS
14	18.19E-3	0.008	0.1	PASS
15	47.31E-3	0.021	0.1	PASS
16	18.01E-3	0.008	0.1	PASS
17	70.74E-3	0.031	0.1	PASS
18	14.40E-3	0.006	0.1	PASS
19	52.91E-3	0.023	0.1	PASS
20	17.52E-3	0.008	0.1	PASS
21	63.64E-3	0.028	0.1	PASS
22	15.77E-3	0.007	0.1	PASS
23	41.29E-3	0.018	0.1	PASS
24	15.59E-3	0.007	0.1	PASS
25	38.76E-3	0.017	0.1	PASS
26	13.09E-3	0.006	0.1	PASS
27	65.57E-3	0.029	0.1	PASS
28	12.49E-3	0.005	0.1	PASS
29	28.07E-3	0.012	0.1	PASS
30	12.04E-3	0.005	0.1	PASS
31	55.44E-3	0.024	0.1	PASS
32	13.78E-3	0.006	0.1	PASS
33	30.76E-3	0.013	0.1	PASS
34	14.29E-3	0.006	0.1	PASS
35	37.23E-3	0.016	0.1	PASS
36	12.23E-3	0.005	0.1	PASS
37	45.84E-3	0.020	0.1	PASS
38	17.47E-3	0.008	0.1	PASS
39	22.51E-3	0.010	0.1	PASS
40	16.14E-3	0.007	0.1	PASS

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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Harmonic current results - DS: 100

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	43.573E-3			
2	1.685E-3			PASS
3	42.019E-3	1.827	2.30	PASS
4	2.187E-3			PASS
5	41.069E-3	3.603	1.14	PASS
6	1.145E-3			PASS
7	39.617E-3	5.145	770.00E-3	PASS
8	1.403E-3			PASS
9	37.736E-3	9.434	400.00E-3	PASS
10	1.072E-3			PASS
11	35.501E-3	10.758	330.00E-3	PASS
12	1.056E-3			PASS
13	32.993E-3	15.711	210.00E-3	PASS
14	975.942E-6			PASS
15	30.251E-3	20.167	150.00E-3	PASS
16	969.985E-6			PASS
17	27.355E-3	20.669	132.35E-3	PASS
18	889.003E-6			PASS
19	24.393E-3	20.598	118.42E-3	PASS
20	834.702E-6			PASS
21	21.525E-3	20.091	107.14E-3	PASS
22	784.613E-6			PASS
23	18.479E-3	18.888	97.83E-3	PASS
24	743.580E-6			PASS
25	15.675E-3	17.417	90.00E-3	PASS
26	734.447E-6			PASS
27	13.018E-3	15.623	83.33E-3	PASS
28	738.945E-6			PASS
29	10.625E-3	13.694	77.59E-3	PASS
30	726.358E-6			PASS
31	8.519E-3	11.738	72.58E-3	PASS
32	780.878E-6			PASS
33	6.773E-3	9.934	68.18E-3	PASS
34	722.373E-6			PASS
35	5.470E-3	8.508	64.29E-3	PASS
36	782.899E-6			PASS
37	4.660E-3			PASS
38	702.639E-6			PASS
39	4.200E-3			PASS
40	753.896E-6			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Caution: Results related to the 100% limit values

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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Harmonic voltage results - DS: 100

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.45	100.196		
2	46.07E-3	0.020	0.2	PASS
3	77.68E-3	0.034	0.9	PASS
4	13.03E-3	0.006	0.2	PASS
5	38.84E-3	0.017	0.4	PASS
6	3.00E-3	0.001	0.2	PASS
7	55.30E-3	0.024	0.3	PASS
8	9.50E-3	0.004	0.2	PASS
9	29.72E-3	0.013	0.2	PASS
10	7.65E-3	0.003	0.2	PASS
11	53.91E-3	0.023	0.1	PASS
12	2.24E-3	0.001	0.1	PASS
13	43.08E-3	0.019	0.1	PASS
14	12.10E-3	0.005	0.1	PASS
15	32.48E-3	0.014	0.1	PASS
16	4.14E-3	0.002	0.1	PASS
17	62.96E-3	0.027	0.1	PASS
18	4.78E-3	0.002	0.1	PASS
19	38.06E-3	0.017	0.1	PASS
20	10.91E-3	0.005	0.1	PASS
21	42.72E-3	0.019	0.1	PASS
22	3.55E-3	0.002	0.1	PASS
23	29.13E-3	0.013	0.1	PASS
24	4.21E-3	0.002	0.1	PASS
25	25.45E-3	0.011	0.1	PASS
26	3.10E-3	0.001	0.1	PASS
27	50.81E-3	0.022	0.1	PASS
28	6.73E-3	0.003	0.1	PASS
29	7.10E-3	0.003	0.1	PASS
30	4.71E-3	0.002	0.1	PASS
31	39.86E-3	0.017	0.1	PASS
32	1.56E-3	0.001	0.1	PASS
33	10.89E-3	0.005	0.1	PASS
34	8.14E-3	0.004	0.1	PASS
35	25.42E-3	0.011	0.1	PASS
36	2.67E-3	0.001	0.1	PASS
37	31.78E-3	0.014	0.1	PASS
38	12.73E-3	0.006	0.1	PASS
39	9.85E-3	0.004	0.1	PASS
40	3.54E-3	0.002	0.1	PASS

Power and THD results - DS: 100

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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True power P:	9.635W	Apparent power S:	27.73VA
Reactiv power Q:	26var	Power factor:	0.348
THD (U):	0.001	THD (I):	2.591
Crest Factor (U):	1.414	Crest Factor (I):	5.344

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:
Test Report No.

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EMC Test Record



Receipt No.: 174091930	Page: 01
Report No.:	
Is this test result compliant with the requirements in the test plan? ☒ Yes / ☐ No	

Emission	Disturbance in supply system Harmonics on AC Mains			☒ EN/IEC 61000-3-2 ☐ EN/IEC 61000-3-12
Test voltage / Freq.: AC 230V/50 Hz Climatic conditions: 22 °C; 52 %RH;				
Test Site: TÜV Rheinland (Guangdong) Ltd. EMC Lab				
Model: PA 20B			Equipment: ☒ DPA 500 ☒ ACS 500	
Operation Mode: B				
Harmonics Tables see page :				
Note:				
Settings		General Data		
Voltage		Current	Power	Power Fact.

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

50264155 001

Test Report No.

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Test Report ISMDPA

Report title:	
Company Name:	
Date of test:	3:11 4.Apr 2019
Measurement file name:	20190403 PA-20B Har.rsd
Tester:	
Standard used:	EN/IEC 61000-3-2 Ed.4 Quasi-stationary Equipment class A <= 150% of the limit
Observation time:	150s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2002 + A1:2008)
Customer:	
E. U. T.:	
Temperature :	
Humidity :	

Test Result

E. U. T.:	PASS
Power Source:	PASS

(Date)

(Sign)

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Jacky Chen*

Date: 20190513

Prüfbericht - Nr.:

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E. U. T. Result

Check harmonics 2..40 [exception odd 21..39]:

Harmonic(s) > 150%:

Order (n): None

Harmonic(s) with average > 100%:

Order (n): None

Check odd harmonics 21..39:

All Partial Odd Harmonics below partial limits.

Harmonic(s) > 150%:

Order (n): None

Harmonic(s) with average > 150%:

Order (n): None

Power Source Result

First dataset out of limit:

DS (time): None

Harmonic(s) out of limit:

Order (n): None

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Jacky Chen*

Date: 20190513

Prüfbericht - Nr.:

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Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	36.117E-3			
2	2.050E-3			PASS
3	34.483E-3	1.499	2.30	PASS
4	2.935E-3			PASS
5	33.570E-3	2.945	1.14	PASS
6	2.738E-3			PASS
7	32.428E-3	4.211	770.00E-3	PASS
8	2.779E-3			PASS
9	31.246E-3	7.812	400.00E-3	PASS
10	2.560E-3			PASS
11	29.866E-3	9.050	330.00E-3	PASS
12	2.503E-3			PASS
13	28.241E-3	13.448	210.00E-3	PASS
14	2.449E-3			PASS
15	26.368E-3	17.579	150.00E-3	PASS
16	2.399E-3			PASS
17	24.354E-3	18.401	132.35E-3	PASS
18	2.348E-3			PASS
19	22.247E-3	18.787	118.42E-3	PASS
20	2.299E-3			PASS
21	20.101E-3	12.507	160.71E-3	PASS
22	2.242E-3			PASS
23	17.910E-3	12.205	146.74E-3	PASS
24	2.174E-3			PASS
25	15.786E-3	11.693	135.00E-3	PASS
26	2.107E-3			PASS
27	13.706E-3	10.965	124.99E-3	PASS
28	2.016E-3			PASS
29	11.735E-3	10.083	116.39E-3	PASS
30	1.928E-3			PASS
31	9.909E-3	9.102	108.87E-3	PASS
32	1.840E-3			PASS
33	8.231E-3	8.049	102.27E-3	PASS
34	1.781E-3			PASS
35	6.763E-3	7.013	96.44E-3	PASS
36	1.648E-3			PASS
37	5.551E-3	6.085	91.21E-3	PASS
38	1.607E-3			PASS
39	4.547E-3			PASS
40	1.473E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	37.624E-3			
2	2.819E-3			PASS
3	35.718E-3	1.035	3.45	PASS
4	5.111E-3	0.792	645.00E-3	PASS
5	34.653E-3	2.026	1.71	PASS
6	3.235E-3			PASS
7	33.559E-3	2.906	1.15	PASS
8	3.468E-3			PASS
9	32.131E-3	5.355	600.00E-3	PASS
10	2.983E-3			PASS
11	30.653E-3	6.193	495.00E-3	PASS
12	2.827E-3			PASS
13	28.848E-3	9.158	315.00E-3	PASS
14	2.804E-3			PASS
15	26.914E-3	11.962	225.00E-3	PASS
16	2.713E-3			PASS
17	24.835E-3	12.510	198.52E-3	PASS
18	2.645E-3			PASS
19	22.665E-3	12.759	177.63E-3	PASS
20	2.597E-3			PASS
21	20.482E-3	12.745	160.71E-3	PASS
22	2.519E-3			PASS
23	18.189E-3	12.395	146.74E-3	PASS
24	2.461E-3			PASS
25	16.003E-3	11.854	135.00E-3	PASS
26	2.378E-3			PASS
27	13.880E-3	11.105	124.99E-3	PASS
28	2.263E-3			PASS
29	11.877E-3	10.205	116.39E-3	PASS
30	2.186E-3			PASS
31	10.046E-3	9.227	108.87E-3	PASS
32	2.080E-3			PASS
33	8.385E-3	8.199	102.27E-3	PASS
34	2.142E-3			PASS
35	7.155E-3	7.419	96.44E-3	PASS
36	1.996E-3			PASS
37	6.031E-3	6.612	91.21E-3	PASS
38	1.994E-3			PASS
39	5.022E-3	5.803	86.53E-3	PASS
40	1.818E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

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Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.47	100.206		
2	50.67E-3	0.022	0.2	PASS
3	89.95E-3	0.039	0.9	PASS
4	28.97E-3	0.013	0.2	PASS
5	51.16E-3	0.022	0.4	PASS
6	17.86E-3	0.008	0.2	PASS
7	70.04E-3	0.030	0.3	PASS
8	18.89E-3	0.008	0.2	PASS
9	39.25E-3	0.017	0.2	PASS
10	13.21E-3	0.006	0.2	PASS
11	85.99E-3	0.037	0.1	PASS
12	13.30E-3	0.006	0.1	PASS
13	92.33E-3	0.040	0.1	PASS
14	18.23E-3	0.008	0.1	PASS
15	45.50E-3	0.020	0.1	PASS
16	15.17E-3	0.007	0.1	PASS
17	74.04E-3	0.032	0.1	PASS
18	15.14E-3	0.007	0.1	PASS
19	48.69E-3	0.021	0.1	PASS
20	16.98E-3	0.007	0.1	PASS
21	62.80E-3	0.027	0.1	PASS
22	16.85E-3	0.007	0.1	PASS
23	41.71E-3	0.018	0.1	PASS
24	16.36E-3	0.007	0.1	PASS
25	32.35E-3	0.014	0.1	PASS
26	12.46E-3	0.005	0.1	PASS
27	67.38E-3	0.029	0.1	PASS
28	16.40E-3	0.007	0.1	PASS
29	21.76E-3	0.009	0.1	PASS
30	15.43E-3	0.007	0.1	PASS
31	56.04E-3	0.024	0.1	PASS
32	12.98E-3	0.006	0.1	PASS
33	39.13E-3	0.017	0.1	PASS
34	11.96E-3	0.005	0.1	PASS
35	35.31E-3	0.015	0.1	PASS
36	11.94E-3	0.005	0.1	PASS
37	52.96E-3	0.023	0.1	PASS
38	16.03E-3	0.007	0.1	PASS
39	21.95E-3	0.010	0.1	PASS
40	14.78E-3	0.006	0.1	PASS

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

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Harmonic current results - DS: 100

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	35.973E-3			
2	1.930E-3			PASS
3	34.736E-3	1.510	2.30	PASS
4	2.955E-3			PASS
5	34.023E-3	2.984	1.14	PASS
6	2.897E-3			PASS
7	33.161E-3	4.307	770.00E-3	PASS
8	2.973E-3			PASS
9	31.820E-3	7.955	400.00E-3	PASS
10	2.620E-3			PASS
11	30.366E-3	9.202	330.00E-3	PASS
12	2.546E-3			PASS
13	28.607E-3	13.623	210.00E-3	PASS
14	2.490E-3			PASS
15	26.727E-3	17.818	150.00E-3	PASS
16	2.409E-3			PASS
17	24.651E-3	18.625	132.35E-3	PASS
18	2.406E-3			PASS
19	22.479E-3	18.982	118.42E-3	PASS
20	2.334E-3			PASS
21	20.387E-3	19.029	107.14E-3	PASS
22	2.304E-3			PASS
23	18.145E-3	18.547	97.83E-3	PASS
24	2.234E-3			PASS
25	15.923E-3	17.693	90.00E-3	PASS
26	2.243E-3			PASS
27	13.788E-3	16.546	83.33E-3	PASS
28	2.061E-3			PASS
29	11.786E-3	15.191	77.59E-3	PASS
30	1.994E-3			PASS
31	9.988E-3	13.761	72.58E-3	PASS
32	1.901E-3			PASS
33	8.280E-3	12.144	68.18E-3	PASS
34	1.913E-3			PASS
35	6.766E-3	10.524	64.29E-3	PASS
36	1.713E-3			PASS
37	5.578E-3	9.173	60.81E-3	PASS
38	1.706E-3			PASS
39	4.570E-3			PASS
40	1.496E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Caution: Results related to the 100% limit values

Tested by *Chris Liang*

Reviewed by *Jody Chen*

Date: 20190510

Date: 20190513

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Harmonic voltage results - DS: 100

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.46	100.199		
2	43.82E-3	0.019	0.2	PASS
3	66.21E-3	0.029	0.9	PASS
4	18.60E-3	0.008	0.2	PASS
5	49.34E-3	0.021	0.4	PASS
6	10.77E-3	0.005	0.2	PASS
7	57.26E-3	0.025	0.3	PASS
8	14.48E-3	0.006	0.2	PASS
9	25.84E-3	0.011	0.2	PASS
10	3.12E-3	0.001	0.2	PASS
11	78.52E-3	0.034	0.1	PASS
12	3.81E-3	0.002	0.1	PASS
13	84.94E-3	0.037	0.1	PASS
14	12.90E-3	0.006	0.1	PASS
15	34.14E-3	0.015	0.1	PASS
16	6.73E-3	0.003	0.1	PASS
17	52.43E-3	0.023	0.1	PASS
18	1.16E-3	0.001	0.1	PASS
19	36.49E-3	0.016	0.1	PASS
20	10.26E-3	0.004	0.1	PASS
21	42.70E-3	0.019	0.1	PASS
22	3.51E-3	0.002	0.1	PASS
23	30.33E-3	0.013	0.1	PASS
24	6.93E-3	0.003	0.1	PASS
25	15.30E-3	0.007	0.1	PASS
26	3.22E-3	0.001	0.1	PASS
27	54.56E-3	0.024	0.1	PASS
28	2.28E-3	0.001	0.1	PASS
29	12.24E-3	0.005	0.1	PASS
30	4.69E-3	0.002	0.1	PASS
31	39.55E-3	0.017	0.1	PASS
32	4.81E-3	0.002	0.1	PASS
33	18.38E-3	0.008	0.1	PASS
34	5.53E-3	0.002	0.1	PASS
35	24.38E-3	0.011	0.1	PASS
36	1.70E-3	0.001	0.1	PASS
37	33.15E-3	0.014	0.1	PASS
38	11.80E-3	0.005	0.1	PASS
39	12.44E-3	0.005	0.1	PASS
40	368.63E-6	0.000	0.1	PASS

Power and THD results - DS: 100

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

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True power P:	8.161W	Apparent power S:	24.41VA
Reactiv power Q:	23.01var	Power factor:	0.334
THD (U):	0.001	THD (I):	2.689
Crest Factor (U):	1.414	Crest Factor (I):	5.19

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Jacky Chen*

Date: 20190513

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EMC Test Record



Receipt No.: 174091930	Page: 01
Report No.:	
Is this test result compliant with the requirements in the test plan? ☒ Yes / ☐ No	

Emission	Disturbance in supply system Harmonics on AC Mains	☒ EN/IEC 61000-3-2 ☐ EN/IEC 61000-3-12
Test voltage / Freq.: AC 230V/50 Hz Climatic conditions: 22 °C; 52 %RH;		
Test Site: TÜV Rheinland (Guangdong) Ltd. EMC Lab		
Model: PA 20M		Equipment: ☒ DPA 500 ☒ ACS 500
Operation Mode: B		
Harmonics Tables see page :		
Note:		
Settings	General Data	
Voltage	Current	Power Power Fact.

Tested by Chris Liang

Reviewed by Jody Chen

Date: 20190510

Date: 20190513

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Test Report ISMDPA

Report title:	
Company Name:	
Date of test:	22:50 3.Apr 2019
Measurement file name:	20190403 PA-20M Har.rsd
Tester:	
Standard used:	EN/IEC 61000-3-2 Ed.4 Quasi-stationary Equipment class A <= 150% of the limit
Observation time:	150s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2002 + A1:2008)
Customer:	
E. U. T.:	
Temperature :	
Humidity :	

Test Result

E. U. T.:	PASS
Power Source:	PASS

(Date)

(Sign)

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Jody Chen*

Date: 20190513

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E. U. T. Result

Check harmonics 2..40 [exception odd 21..39]:

Harmonic(s) > 150%:

Order (n): None

Harmonic(s) with average > 100%:

Order (n): None

Check odd harmonics 21..39:

All Partial Odd Harmonics below partial limits.

Harmonic(s) > 150%:

Order (n): None

Harmonic(s) with average > 150%:

Order (n): None

Power Source Result

First dataset out of limit:

DS (time): None

Harmonic(s) out of limit:

Order (n): None

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Jody Chen*

Date: 20190513

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Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	39.332E-3			
2	2.085E-3			PASS
3	37.620E-3	1.636	2.30	PASS
4	2.766E-3			PASS
5	36.452E-3	3.198	1.14	PASS
6	2.764E-3			PASS
7	35.123E-3	4.561	770.00E-3	PASS
8	2.724E-3			PASS
9	33.708E-3	8.427	400.00E-3	PASS
10	2.572E-3			PASS
11	32.034E-3	9.707	330.00E-3	PASS
12	2.479E-3			PASS
13	30.079E-3	14.323	210.00E-3	PASS
14	2.392E-3			PASS
15	27.853E-3	18.569	150.00E-3	PASS
16	2.309E-3			PASS
17	25.472E-3	19.246	132.35E-3	PASS
18	2.258E-3			PASS
19	22.990E-3	19.414	118.42E-3	PASS
20	2.178E-3			PASS
21	20.468E-3	12.736	160.71E-3	PASS
22	2.101E-3			PASS
23	17.932E-3	12.220	146.74E-3	PASS
24	2.016E-3			PASS
25	15.479E-3	11.466	135.00E-3	PASS
26	1.943E-3			PASS
27	13.105E-3	10.484	124.99E-3	PASS
28	1.848E-3			PASS
29	10.898E-3	9.364	116.39E-3	PASS
30	1.762E-3			PASS
31	8.897E-3	8.172	108.87E-3	PASS
32	1.676E-3			PASS
33	7.127E-3	6.969	102.27E-3	PASS
34	1.580E-3			PASS
35	5.660E-3	5.869	96.44E-3	PASS
36	1.511E-3			PASS
37	4.527E-3			PASS
38	1.451E-3			PASS
39	3.756E-3			PASS
40	1.364E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Tested by *Chris Liang*

Reviewed by *Jody Chen*

Date: 20190510

Date: 20190513

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Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	40.163E-3			
2	2.276E-3			PASS
3	38.023E-3	1.102	3.45	PASS
4	2.975E-3			PASS
5	36.680E-3	2.145	1.71	PASS
6	2.997E-3			PASS
7	35.350E-3	3.061	1.15	PASS
8	2.907E-3			PASS
9	33.860E-3	5.643	600.00E-3	PASS
10	2.763E-3			PASS
11	32.152E-3	6.495	495.00E-3	PASS
12	2.653E-3			PASS
13	30.169E-3	9.578	315.00E-3	PASS
14	2.559E-3			PASS
15	27.951E-3	12.422	225.00E-3	PASS
16	2.486E-3			PASS
17	25.567E-3	12.879	198.52E-3	PASS
18	2.368E-3			PASS
19	23.065E-3	12.985	177.63E-3	PASS
20	2.265E-3			PASS
21	20.563E-3	12.795	160.71E-3	PASS
22	2.190E-3			PASS
23	18.016E-3	12.277	146.74E-3	PASS
24	2.101E-3			PASS
25	15.597E-3	11.553	135.00E-3	PASS
26	2.045E-3			PASS
27	13.189E-3	10.552	124.99E-3	PASS
28	1.973E-3			PASS
29	10.991E-3	9.444	116.39E-3	PASS
30	1.914E-3			PASS
31	8.992E-3	8.259	108.87E-3	PASS
32	1.849E-3			PASS
33	7.225E-3	7.064	102.27E-3	PASS
34	1.799E-3			PASS
35	5.759E-3	5.971	96.44E-3	PASS
36	1.770E-3			PASS
37	4.612E-3			PASS
38	1.725E-3			PASS
39	3.848E-3			PASS
40	1.611E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Tested by *Chris Liang*

Reviewed by *Jody Chen*

Date: 20190510

Date: 20190513

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Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.57	100.250		
2	53.28E-3	0.023	0.2	PASS
3	88.79E-3	0.039	0.9	PASS
4	28.18E-3	0.012	0.2	PASS
5	50.15E-3	0.022	0.4	PASS
6	17.05E-3	0.007	0.2	PASS
7	69.01E-3	0.030	0.3	PASS
8	19.70E-3	0.009	0.2	PASS
9	39.02E-3	0.017	0.2	PASS
10	13.38E-3	0.006	0.2	PASS
11	87.00E-3	0.038	0.1	PASS
12	12.07E-3	0.005	0.1	PASS
13	89.06E-3	0.039	0.1	PASS
14	17.57E-3	0.008	0.1	PASS
15	49.97E-3	0.022	0.1	PASS
16	16.26E-3	0.007	0.1	PASS
17	68.87E-3	0.030	0.1	PASS
18	13.50E-3	0.006	0.1	PASS
19	64.54E-3	0.028	0.1	PASS
20	16.27E-3	0.007	0.1	PASS
21	61.69E-3	0.027	0.1	PASS
22	13.73E-3	0.006	0.1	PASS
23	47.90E-3	0.021	0.1	PASS
24	14.20E-3	0.006	0.1	PASS
25	40.48E-3	0.018	0.1	PASS
26	12.22E-3	0.005	0.1	PASS
27	65.55E-3	0.029	0.1	PASS
28	11.05E-3	0.005	0.1	PASS
29	38.50E-3	0.017	0.1	PASS
30	11.69E-3	0.005	0.1	PASS
31	55.51E-3	0.024	0.1	PASS
32	14.22E-3	0.006	0.1	PASS
33	31.60E-3	0.014	0.1	PASS
34	11.18E-3	0.005	0.1	PASS
35	37.15E-3	0.016	0.1	PASS
36	10.39E-3	0.005	0.1	PASS
37	45.87E-3	0.020	0.1	PASS
38	14.57E-3	0.006	0.1	PASS
39	26.78E-3	0.012	0.1	PASS
40	14.07E-3	0.006	0.1	PASS

Tested by *Chris Liang*

Reviewed by *Jody Chen*

Date: 20190510

Date: 20190513

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Harmonic current results - DS: 100

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	40.062E-3			
2	2.070E-3			PASS
3	38.009E-3	1.653	2.30	PASS
4	2.831E-3			PASS
5	36.616E-3	3.212	1.14	PASS
6	2.826E-3			PASS
7	35.075E-3	4.555	770.00E-3	PASS
8	2.785E-3			PASS
9	33.630E-3	8.407	400.00E-3	PASS
10	2.579E-3			PASS
11	32.025E-3	9.705	330.00E-3	PASS
12	2.455E-3			PASS
13	30.093E-3	14.330	210.00E-3	PASS
14	2.376E-3			PASS
15	27.885E-3	18.590	150.00E-3	PASS
16	2.326E-3			PASS
17	25.489E-3	19.259	132.35E-3	PASS
18	2.247E-3			PASS
19	23.014E-3	19.435	118.42E-3	PASS
20	2.159E-3			PASS
21	20.525E-3	19.157	107.14E-3	PASS
22	2.106E-3			PASS
23	17.956E-3	18.355	97.83E-3	PASS
24	2.036E-3			PASS
25	15.476E-3	17.196	90.00E-3	PASS
26	1.972E-3			PASS
27	13.086E-3	15.704	83.33E-3	PASS
28	1.878E-3			PASS
29	10.894E-3	14.040	77.59E-3	PASS
30	1.770E-3			PASS
31	8.864E-3	12.213	72.58E-3	PASS
32	1.696E-3			PASS
33	7.089E-3	10.398	68.18E-3	PASS
34	1.571E-3			PASS
35	5.588E-3	8.691	64.29E-3	PASS
36	1.559E-3			PASS
37	4.474E-3			PASS
38	1.494E-3			PASS
39	3.739E-3			PASS
40	1.399E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Caution: Results related to the 100% limit values

Tested by Chris Liang

Reviewed by Jody Chen

Date: 20190510

Date: 20190513

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Harmonic voltage results - DS: 100

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.57	100.247		
2	47.59E-3	0.021	0.2	PASS
3	78.00E-3	0.034	0.9	PASS
4	10.66E-3	0.005	0.2	PASS
5	12.29E-3	0.005	0.4	PASS
6	6.12E-3	0.003	0.2	PASS
7	65.44E-3	0.028	0.3	PASS
8	14.00E-3	0.006	0.2	PASS
9	32.28E-3	0.014	0.2	PASS
10	8.39E-3	0.004	0.2	PASS
11	60.78E-3	0.026	0.1	PASS
12	3.92E-3	0.002	0.1	PASS
13	60.82E-3	0.026	0.1	PASS
14	7.04E-3	0.003	0.1	PASS
15	31.25E-3	0.014	0.1	PASS
16	7.97E-3	0.003	0.1	PASS
17	57.30E-3	0.025	0.1	PASS
18	8.55E-3	0.004	0.1	PASS
19	31.53E-3	0.014	0.1	PASS
20	8.85E-3	0.004	0.1	PASS
21	45.78E-3	0.020	0.1	PASS
22	7.58E-3	0.003	0.1	PASS
23	22.23E-3	0.010	0.1	PASS
24	3.88E-3	0.002	0.1	PASS
25	28.10E-3	0.012	0.1	PASS
26	5.19E-3	0.002	0.1	PASS
27	50.52E-3	0.022	0.1	PASS
28	4.89E-3	0.002	0.1	PASS
29	2.28E-3	0.001	0.1	PASS
30	4.83E-3	0.002	0.1	PASS
31	39.23E-3	0.017	0.1	PASS
32	2.36E-3	0.001	0.1	PASS
33	14.14E-3	0.006	0.1	PASS
34	7.02E-3	0.003	0.1	PASS
35	30.37E-3	0.013	0.1	PASS
36	2.82E-3	0.001	0.1	PASS
37	32.16E-3	0.014	0.1	PASS
38	9.23E-3	0.004	0.1	PASS
39	13.47E-3	0.006	0.1	PASS
40	6.07E-3	0.003	0.1	PASS

Power and THD results - DS: 100

Tested by *Chris Liang*

Reviewed by *Judy Chen*

Date: 20190510

Date: 20190513

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True power P:	8.884W	Apparent power S:	25.37VA
Reactiv power Q:	23.76var	Power factor:	0.350
THD (U):	0.001	THD (I):	2.564
Crest Factor (U):	1.414	Crest Factor (I):	5.157

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Jody Chen*

Date: 20190513

Prüfbericht - Nr.:
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EMC Test Record



Receipt No.: 174091930	Page: 01
Report No.:	
Is this test result compliant with the requirements in the test plan? ☒ Yes / ☐ No	

Emission	Disturbance in supply system Harmonics on AC Mains			☒ EN/IEC 61000-3-2 ☐ EN/IEC 61000-3-12
Test voltage / Freq.: AC 230V/50 Hz Climatic conditions: 22 °C; 52 %RH;				
Test Site: TÜV Rheinland (Guangdong) Ltd. EMC Lab				
Model: PA 20HM			Equipment: ☒ DPA 500 ☒ ACS 500	
Operation Mode: B				
Harmonics Tables see page :				
Note:				
Settings		General Data		
Voltage		Current	Power	Power Fact.

Tested by *Chris Liang*

Reviewed by *Jody Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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Test Report ISMDPA

Report title:	
Company Name:	
Date of test:	23:26 3.Apr 2019
Measurement file name:	20190403 PA-20HM Har.rsd
Tester:	
Standard used:	EN/IEC 61000-3-2 Ed.4 Quasi-stationary Equipment class A <= 150% of the limit
Observation time:	150s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2002 + A1:2008)
Customer:	
E. U. T.:	
Temperature :	
Humidity :	

Test Result	
E. U. T.:	PASS
Power Source:	PASS

(Date)

(Sign)

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Jody Chen*

Date: 20190513

Prüfbericht - Nr.:

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E. U. T. Result

Check harmonics 2..40 [exception odd 21..39]:

Harmonic(s) > 150%:

Order (n): None

Harmonic(s) with average > 100%:

Order (n): None

Check odd harmonics 21..39:

All Partial Odd Harmonics below partial limits.

Harmonic(s) > 150%:

Order (n): None

Harmonic(s) with average > 150%:

Order (n): None

Power Source Result

First dataset out of limit:

DS (time): None

Harmonic(s) out of limit:

Order (n): None

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Jody Chen*

Date: 20190513

Prüfbericht - Nr.:

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Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	63.448E-3			
2	6.366E-3	0.589	1.08	PASS
3	61.367E-3	2.668	2.30	PASS
4	8.656E-3	2.013	430.00E-3	PASS
5	59.007E-3	5.176	1.14	PASS
6	8.720E-3	2.907	300.00E-3	PASS
7	56.115E-3	7.288	770.00E-3	PASS
8	8.754E-3	3.806	230.00E-3	PASS
9	52.793E-3	13.198	400.00E-3	PASS
10	8.740E-3	4.750	184.00E-3	PASS
11	48.878E-3	14.812	330.00E-3	PASS
12	8.709E-3	5.680	153.33E-3	PASS
13	44.390E-3	21.138	210.00E-3	PASS
14	8.594E-3	6.539	131.43E-3	PASS
15	39.511E-3	26.341	150.00E-3	PASS
16	8.428E-3	7.329	115.00E-3	PASS
17	34.472E-3	26.046	132.35E-3	PASS
18	8.190E-3	8.012	102.22E-3	PASS
19	29.469E-3	24.885	118.42E-3	PASS
20	7.903E-3	8.590	92.00E-3	PASS
21	24.659E-3	15.344	160.71E-3	PASS
22	7.576E-3	9.058	83.64E-3	PASS
23	20.173E-3	13.747	146.74E-3	PASS
24	7.226E-3	9.426	76.66E-3	PASS
25	16.160E-3	11.971	135.00E-3	PASS
26	6.870E-3	9.707	70.77E-3	PASS
27	12.734E-3	10.188	124.99E-3	PASS
28	6.509E-3	9.905	65.71E-3	PASS
29	10.064E-3	8.647	116.39E-3	PASS
30	6.161E-3	10.046	61.33E-3	PASS
31	8.190E-3	7.523	108.87E-3	PASS
32	5.825E-3	10.131	57.50E-3	PASS
33	7.116E-3	6.958	102.27E-3	PASS
34	5.508E-3	10.177	54.12E-3	PASS
35	6.626E-3	6.871	96.44E-3	PASS
36	5.190E-3	10.155	51.11E-3	PASS
37	6.397E-3	7.013	91.21E-3	PASS
38	4.884E-3			PASS
39	6.207E-3	7.173	86.53E-3	PASS
40	4.566E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Tested by *Chris Liang*

Reviewed by *Jody Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	64.188E-3			
2	6.547E-3	0.404	1.62	PASS
3	61.839E-3	1.792	3.45	PASS
4	8.923E-3	1.383	645.00E-3	PASS
5	59.443E-3	3.476	1.71	PASS
6	8.968E-3	1.993	450.00E-3	PASS
7	56.413E-3	4.884	1.15	PASS
8	8.994E-3	2.607	345.00E-3	PASS
9	52.969E-3	8.828	600.00E-3	PASS
10	8.961E-3	3.247	276.00E-3	PASS
11	49.030E-3	9.905	495.00E-3	PASS
12	8.926E-3	3.881	229.99E-3	PASS
13	44.520E-3	14.133	315.00E-3	PASS
14	8.853E-3	4.491	197.15E-3	PASS
15	39.653E-3	17.624	225.00E-3	PASS
16	8.676E-3	5.030	172.50E-3	PASS
17	34.588E-3	17.423	198.52E-3	PASS
18	8.398E-3	5.477	153.33E-3	PASS
19	29.575E-3	16.650	177.63E-3	PASS
20	8.123E-3	5.886	138.00E-3	PASS
21	24.800E-3	15.432	160.71E-3	PASS
22	7.804E-3	6.221	125.46E-3	PASS
23	20.325E-3	13.851	146.74E-3	PASS
24	7.450E-3	6.479	114.99E-3	PASS
25	16.325E-3	12.092	135.00E-3	PASS
26	7.114E-3	6.702	106.16E-3	PASS
27	12.866E-3	10.293	124.99E-3	PASS
28	6.728E-3	6.826	98.57E-3	PASS
29	10.170E-3	8.739	116.39E-3	PASS
30	6.383E-3	6.938	92.00E-3	PASS
31	8.279E-3	7.604	108.87E-3	PASS
32	6.095E-3	7.067	86.25E-3	PASS
33	7.252E-3	7.091	102.27E-3	PASS
34	5.812E-3	7.159	81.18E-3	PASS
35	6.785E-3	7.036	96.44E-3	PASS
36	5.454E-3	7.114	76.66E-3	PASS
37	6.562E-3	7.194	91.21E-3	PASS
38	5.128E-3	7.060	72.63E-3	PASS
39	6.340E-3	7.327	86.53E-3	PASS
40	4.834E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Tested by *Chris Liang*

Reviewed by *Jody Chen*

Date: 20190510

Date: 20190513

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Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.51	100.221		
2	50.01E-3	0.022	0.2	PASS
3	92.42E-3	0.040	0.9	PASS
4	27.91E-3	0.012	0.2	PASS
5	50.77E-3	0.022	0.4	PASS
6	15.30E-3	0.007	0.2	PASS
7	71.02E-3	0.031	0.3	PASS
8	19.63E-3	0.009	0.2	PASS
9	37.92E-3	0.016	0.2	PASS
10	11.03E-3	0.005	0.2	PASS
11	81.51E-3	0.035	0.1	PASS
12	10.68E-3	0.005	0.1	PASS
13	94.28E-3	0.041	0.1	PASS
14	18.67E-3	0.008	0.1	PASS
15	56.77E-3	0.025	0.1	PASS
16	15.04E-3	0.007	0.1	PASS
17	64.31E-3	0.028	0.1	PASS
18	11.84E-3	0.005	0.1	PASS
19	46.51E-3	0.020	0.1	PASS
20	19.14E-3	0.008	0.1	PASS
21	64.47E-3	0.028	0.1	PASS
22	14.49E-3	0.006	0.1	PASS
23	43.20E-3	0.019	0.1	PASS
24	16.82E-3	0.007	0.1	PASS
25	47.20E-3	0.021	0.1	PASS
26	12.96E-3	0.006	0.1	PASS
27	58.70E-3	0.026	0.1	PASS
28	14.51E-3	0.006	0.1	PASS
29	22.30E-3	0.010	0.1	PASS
30	15.19E-3	0.007	0.1	PASS
31	55.09E-3	0.024	0.1	PASS
32	15.06E-3	0.007	0.1	PASS
33	24.83E-3	0.011	0.1	PASS
34	14.65E-3	0.006	0.1	PASS
35	46.10E-3	0.020	0.1	PASS
36	12.70E-3	0.006	0.1	PASS
37	35.67E-3	0.016	0.1	PASS
38	18.78E-3	0.008	0.1	PASS
39	22.31E-3	0.010	0.1	PASS
40	15.16E-3	0.007	0.1	PASS

Tested by *Chris Liang*

Reviewed by *Jody Chen*

Date: 20190510

Date: 20190513

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Harmonic current results - DS: 100

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	64.000E-3			
2	6.336E-3	0.587	1.08	PASS
3	61.651E-3	2.680	2.30	PASS
4	8.622E-3	2.005	430.00E-3	PASS
5	59.111E-3	5.185	1.14	PASS
6	8.685E-3	2.895	300.00E-3	PASS
7	56.241E-3	7.304	770.00E-3	PASS
8	8.718E-3	3.791	230.00E-3	PASS
9	52.943E-3	13.236	400.00E-3	PASS
10	8.744E-3	4.752	184.00E-3	PASS
11	48.995E-3	14.847	330.00E-3	PASS
12	8.668E-3	5.653	153.33E-3	PASS
13	44.459E-3	21.171	210.00E-3	PASS
14	8.562E-3	6.514	131.43E-3	PASS
15	39.537E-3	26.358	150.00E-3	PASS
16	8.390E-3	7.295	115.00E-3	PASS
17	34.488E-3	26.058	132.35E-3	PASS
18	8.124E-3	7.947	102.22E-3	PASS
19	29.471E-3	24.887	118.42E-3	PASS
20	7.815E-3	8.494	92.00E-3	PASS
21	24.655E-3	23.012	107.14E-3	PASS
22	7.476E-3	8.938	83.64E-3	PASS
23	20.157E-3	20.605	97.83E-3	PASS
24	7.103E-3	9.266	76.66E-3	PASS
25	16.161E-3	17.956	90.00E-3	PASS
26	6.708E-3	9.478	70.77E-3	PASS
27	12.741E-3	15.290	83.33E-3	PASS
28	6.367E-3	9.689	65.71E-3	PASS
29	10.075E-3	12.985	77.59E-3	PASS
30	6.054E-3	9.870	61.33E-3	PASS
31	8.200E-3	11.298	72.58E-3	PASS
32	5.722E-3	9.950	57.50E-3	PASS
33	7.171E-3	10.517	68.18E-3	PASS
34	5.394E-3	9.968	54.12E-3	PASS
35	6.666E-3	10.368	64.29E-3	PASS
36	5.087E-3	9.953	51.11E-3	PASS
37	6.476E-3	10.649	60.81E-3	PASS
38	4.841E-3			PASS
39	6.274E-3	10.875	57.69E-3	PASS
40	4.490E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Caution: Results related to the 100% limit values

Tested by *Chris Liang*

Reviewed by *Jody Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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Harmonic voltage results - DS: 100

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.50	100.216		
2	36.20E-3	0.016	0.2	PASS
3	66.35E-3	0.029	0.9	PASS
4	12.26E-3	0.005	0.2	PASS
5	23.01E-3	0.010	0.4	PASS
6	933.44E-6	0.000	0.2	PASS
7	55.09E-3	0.024	0.3	PASS
8	8.86E-3	0.004	0.2	PASS
9	21.65E-3	0.009	0.2	PASS
10	5.89E-3	0.003	0.2	PASS
11	69.49E-3	0.030	0.1	PASS
12	7.13E-3	0.003	0.1	PASS
13	58.90E-3	0.026	0.1	PASS
14	15.22E-3	0.007	0.1	PASS
15	47.94E-3	0.021	0.1	PASS
16	4.61E-3	0.002	0.1	PASS
17	50.75E-3	0.022	0.1	PASS
18	3.36E-3	0.001	0.1	PASS
19	36.18E-3	0.016	0.1	PASS
20	10.31E-3	0.004	0.1	PASS
21	40.92E-3	0.018	0.1	PASS
22	6.82E-3	0.003	0.1	PASS
23	32.91E-3	0.014	0.1	PASS
24	3.44E-3	0.001	0.1	PASS
25	32.31E-3	0.014	0.1	PASS
26	644.72E-6	0.000	0.1	PASS
27	46.48E-3	0.020	0.1	PASS
28	2.89E-3	0.001	0.1	PASS
29	11.11E-3	0.005	0.1	PASS
30	3.47E-3	0.002	0.1	PASS
31	41.20E-3	0.018	0.1	PASS
32	7.60E-3	0.003	0.1	PASS
33	12.47E-3	0.005	0.1	PASS
34	6.83E-3	0.003	0.1	PASS
35	33.72E-3	0.015	0.1	PASS
36	6.60E-3	0.003	0.1	PASS
37	24.28E-3	0.011	0.1	PASS
38	8.37E-3	0.004	0.1	PASS
39	12.57E-3	0.005	0.1	PASS
40	5.29E-3	0.002	0.1	PASS

Power and THD results - DS: 100

Tested by *Chris Liang*

Reviewed by *Jody Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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True power P:	14.24W	Apparent power S:	37.68VA
Reactiv power Q:	34.88var	Power factor:	0.378
THD (U):	0.001	THD (I):	2.376
Crest Factor (U):	1.414	Crest Factor (I):	4.676

Tested by *Chris Liang*

Reviewed by *Jody Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:
Test Report No.

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EMC Test Record



Receipt No.: 174091930	Page: 01
Report No.:	
Is this test result compliant with the requirements in the test plan? ☒ Yes / ☐ No	

Emission	Disturbance in supply system Harmonics on AC Mains			☒ EN/IEC 61000-3-2 ☐ EN/IEC 61000-3-12
Test voltage / Freq.: AC 230V/50 Hz Climatic conditions: 22 °C; 52 %RH;				
Test Site: TÜV Rheinland (Guangdong) Ltd. EMC Lab				
Model: PA 40HM			Equipment:	
Operation Mode: B			☒ DPA 500 ☒ ACS 500	
Harmonics Tables see page :				
Note:				
Settings		General Data		
Voltage		Current	Power	Power Fact.

Tested by *Chris Liang*

Reviewed by *Judy Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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Test Report No.

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Test Report ISMDPA

Report title:	
Company Name:	
Date of test:	23:55 3.Apr 2019
Measurement file name:	20190403 PA-40HM Har.rsd
Tester:	
Standard used:	EN/IEC 61000-3-2 Ed.4 Quasi-stationary Equipment class A <= 150% of the limit
Observation time:	150s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2002 + A1:2008)
Customer:	
E. U. T.:	
Temperature :	
Humidity :	

Test Result

E. U. T.:	PASS
Power Source:	PASS

(Date)

(Sign)

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Jacky Chen*

Date: 20190513

Prüfbericht - Nr.:

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E. U. T. Result

Check harmonics 2..40 [exception odd 21..39]:

Harmonic(s) > 150%:	
Order (n):	None
Harmonic(s) with average > 100%:	
Order (n):	None

Check odd harmonics 21..39:

All Partial Odd Harmonics below partial limits.	
Harmonic(s) > 150%:	
Order (n):	None
Harmonic(s) with average > 150%:	
Order (n):	None

Power Source Result

First dataset out of limit:	
DS (time):	None
Harmonic(s) out of limit:	
Order (n):	None

Tested by *Chris Liang*

Date: 20190510

Reviewed by *Jacky Chen*

Date: 20190513

Prüfbericht - Nr.:

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Average harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	49.596E-3			
2	2.435E-3			PASS
3	34.733E-3	1.510	2.30	PASS
4	3.863E-3			PASS
5	34.166E-3	2.997	1.14	PASS
6	2.941E-3			PASS
7	33.656E-3	4.371	770.00E-3	PASS
8	2.883E-3			PASS
9	32.592E-3	8.148	400.00E-3	PASS
10	3.203E-3			PASS
11	31.542E-3	9.558	330.00E-3	PASS
12	2.819E-3			PASS
13	30.547E-3	14.546	210.00E-3	PASS
14	2.475E-3			PASS
15	29.153E-3	19.435	150.00E-3	PASS
16	2.377E-3			PASS
17	27.550E-3	20.816	132.35E-3	PASS
18	2.471E-3			PASS
19	25.960E-3	21.922	118.42E-3	PASS
20	2.351E-3			PASS
21	24.177E-3	15.044	160.71E-3	PASS
22	2.185E-3			PASS
23	22.278E-3	15.182	146.74E-3	PASS
24	2.049E-3			PASS
25	20.574E-3	15.240	135.00E-3	PASS
26	1.858E-3			PASS
27	18.940E-3	15.153	124.99E-3	PASS
28	1.684E-3			PASS
29	16.767E-3	14.407	116.39E-3	PASS
30	1.537E-3			PASS
31	14.714E-3	13.515	108.87E-3	PASS
32	1.352E-3			PASS
33	13.155E-3	12.863	102.27E-3	PASS
34	1.328E-3			PASS
35	11.468E-3	11.892	96.44E-3	PASS
36	1.112E-3			PASS
37	9.677E-3	10.609	91.21E-3	PASS
38	1.093E-3			PASS
39	8.225E-3	9.505	86.53E-3	PASS
40	915.797E-6			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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Test Report No.

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Maximum harmonic current results

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	50.669E-3			
2	3.834E-3			PASS
3	34.918E-3	1.012	3.45	PASS
4	4.686E-3			PASS
5	34.505E-3	2.018	1.71	PASS
6	3.868E-3			PASS
7	33.837E-3	2.930	1.15	PASS
8	3.622E-3			PASS
9	33.178E-3	5.530	600.00E-3	PASS
10	3.782E-3			PASS
11	32.114E-3	6.488	495.00E-3	PASS
12	3.326E-3			PASS
13	30.741E-3	9.759	315.00E-3	PASS
14	3.237E-3			PASS
15	29.372E-3	13.054	225.00E-3	PASS
16	2.993E-3			PASS
17	27.709E-3	13.957	198.52E-3	PASS
18	2.938E-3			PASS
19	26.120E-3	14.704	177.63E-3	PASS
20	2.705E-3			PASS
21	24.421E-3	15.196	160.71E-3	PASS
22	2.506E-3			PASS
23	22.531E-3	15.354	146.74E-3	PASS
24	2.363E-3			PASS
25	20.716E-3	15.345	135.00E-3	PASS
26	2.152E-3			PASS
27	19.123E-3	15.299	124.99E-3	PASS
28	1.910E-3			PASS
29	16.886E-3	14.509	116.39E-3	PASS
30	1.821E-3			PASS
31	15.052E-3	13.826	108.87E-3	PASS
32	1.655E-3			PASS
33	13.348E-3	13.052	102.27E-3	PASS
34	1.651E-3			PASS
35	11.559E-3	11.987	96.44E-3	PASS
36	1.477E-3			PASS
37	9.804E-3	10.748	91.21E-3	PASS
38	1.412E-3			PASS
39	8.316E-3	9.610	86.53E-3	PASS
40	1.257E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

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Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.49	100.212		
2	53.24E-3	0.023	0.2	PASS
3	89.12E-3	0.039	0.9	PASS
4	28.69E-3	0.012	0.2	PASS
5	56.38E-3	0.025	0.4	PASS
6	15.24E-3	0.007	0.2	PASS
7	67.45E-3	0.029	0.3	PASS
8	18.70E-3	0.008	0.2	PASS
9	38.22E-3	0.017	0.2	PASS
10	14.04E-3	0.006	0.2	PASS
11	94.60E-3	0.041	0.1	PASS
12	11.55E-3	0.005	0.1	PASS
13	79.70E-3	0.035	0.1	PASS
14	18.03E-3	0.008	0.1	PASS
15	43.17E-3	0.019	0.1	PASS
16	12.59E-3	0.005	0.1	PASS
17	80.18E-3	0.035	0.1	PASS
18	12.38E-3	0.005	0.1	PASS
19	36.45E-3	0.016	0.1	PASS
20	16.83E-3	0.007	0.1	PASS
21	60.99E-3	0.027	0.1	PASS
22	15.12E-3	0.007	0.1	PASS
23	36.82E-3	0.016	0.1	PASS
24	11.41E-3	0.005	0.1	PASS
25	38.06E-3	0.017	0.1	PASS
26	12.37E-3	0.005	0.1	PASS
27	70.28E-3	0.031	0.1	PASS
28	13.50E-3	0.006	0.1	PASS
29	28.30E-3	0.012	0.1	PASS
30	10.38E-3	0.005	0.1	PASS
31	41.99E-3	0.018	0.1	PASS
32	11.07E-3	0.005	0.1	PASS
33	41.36E-3	0.018	0.1	PASS
34	11.46E-3	0.005	0.1	PASS
35	48.43E-3	0.021	0.1	PASS
36	8.48E-3	0.004	0.1	PASS
37	36.44E-3	0.016	0.1	PASS
38	17.30E-3	0.008	0.1	PASS
39	27.83E-3	0.012	0.1	PASS
40	11.60E-3	0.005	0.1	PASS

Tested by *Chris Liang*

Reviewed by *Judy Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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Harmonic current results - DS: 100

Hn	I _{eff} [A]	% of Limit	Limit [A]	Result
1	50.654E-3			
2	2.132E-3			PASS
3	34.832E-3	1.514	2.30	PASS
4	3.798E-3			PASS
5	34.348E-3	3.013	1.14	PASS
6	2.738E-3			PASS
7	33.465E-3	4.346	770.00E-3	PASS
8	2.465E-3			PASS
9	32.882E-3	8.221	400.00E-3	PASS
10	3.049E-3			PASS
11	31.889E-3	9.663	330.00E-3	PASS
12	2.602E-3			PASS
13	30.406E-3	14.479	210.00E-3	PASS
14	2.235E-3			PASS
15	29.002E-3	19.335	150.00E-3	PASS
16	2.223E-3			PASS
17	27.344E-3	20.660	132.35E-3	PASS
18	2.289E-3			PASS
19	25.934E-3	21.900	118.42E-3	PASS
20	2.100E-3			PASS
21	24.402E-3	22.776	107.14E-3	PASS
22	1.935E-3			PASS
23	22.365E-3	22.861	97.83E-3	PASS
24	1.913E-3			PASS
25	20.482E-3	22.758	90.00E-3	PASS
26	1.672E-3			PASS
27	18.788E-3	22.547	83.33E-3	PASS
28	1.561E-3			PASS
29	16.835E-3	21.697	77.59E-3	PASS
30	1.287E-3			PASS
31	14.904E-3	20.535	72.58E-3	PASS
32	1.119E-3			PASS
33	13.290E-3	19.492	68.18E-3	PASS
34	1.224E-3			PASS
35	11.507E-3	17.899	64.29E-3	PASS
36	1.018E-3			PASS
37	9.637E-3	15.847	60.81E-3	PASS
38	1.053E-3			PASS
39	8.255E-3	14.309	57.69E-3	PASS
40	856.016E-6			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Caution: Results related to the 100% limit values

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

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Harmonic voltage results - DS: 100

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.48	100.210		
2	44.34E-3	0.019	0.2	PASS
3	73.12E-3	0.032	0.9	PASS
4	9.08E-3	0.004	0.2	PASS
5	37.90E-3	0.016	0.4	PASS
6	11.48E-3	0.005	0.2	PASS
7	58.96E-3	0.026	0.3	PASS
8	4.23E-3	0.002	0.2	PASS
9	19.79E-3	0.009	0.2	PASS
10	6.72E-3	0.003	0.2	PASS
11	81.76E-3	0.036	0.1	PASS
12	3.36E-3	0.001	0.1	PASS
13	55.39E-3	0.024	0.1	PASS
14	13.08E-3	0.006	0.1	PASS
15	32.78E-3	0.014	0.1	PASS
16	9.20E-3	0.004	0.1	PASS
17	74.90E-3	0.033	0.1	PASS
18	5.51E-3	0.002	0.1	PASS
19	23.69E-3	0.010	0.1	PASS
20	5.64E-3	0.002	0.1	PASS
21	43.94E-3	0.019	0.1	PASS
22	8.28E-3	0.004	0.1	PASS
23	24.51E-3	0.011	0.1	PASS
24	5.02E-3	0.002	0.1	PASS
25	19.93E-3	0.009	0.1	PASS
26	3.82E-3	0.002	0.1	PASS
27	56.41E-3	0.025	0.1	PASS
28	3.43E-3	0.001	0.1	PASS
29	13.11E-3	0.006	0.1	PASS
30	2.06E-3	0.001	0.1	PASS
31	28.24E-3	0.012	0.1	PASS
32	10.01E-3	0.004	0.1	PASS
33	22.06E-3	0.010	0.1	PASS
34	2.97E-3	0.001	0.1	PASS
35	40.66E-3	0.018	0.1	PASS
36	3.49E-3	0.002	0.1	PASS
37	27.08E-3	0.012	0.1	PASS
38	8.31E-3	0.004	0.1	PASS
39	17.55E-3	0.008	0.1	PASS
40	5.86E-3	0.003	0.1	PASS

Power and THD results - DS: 100

Tested by *Chris Liang*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

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True power P:	8.404W	Apparent power S:	27.59VA
Reactiv power Q:	26.27var	Power factor:	0.305
THD (U):	0.001	THD (I):	2.143
Crest Factor (U):	1.414	Crest Factor (I):	5.799

Tested by *Chris Liang*

Reviewed by *Judy Chen*

Date: 20190510

Date: 20190513

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

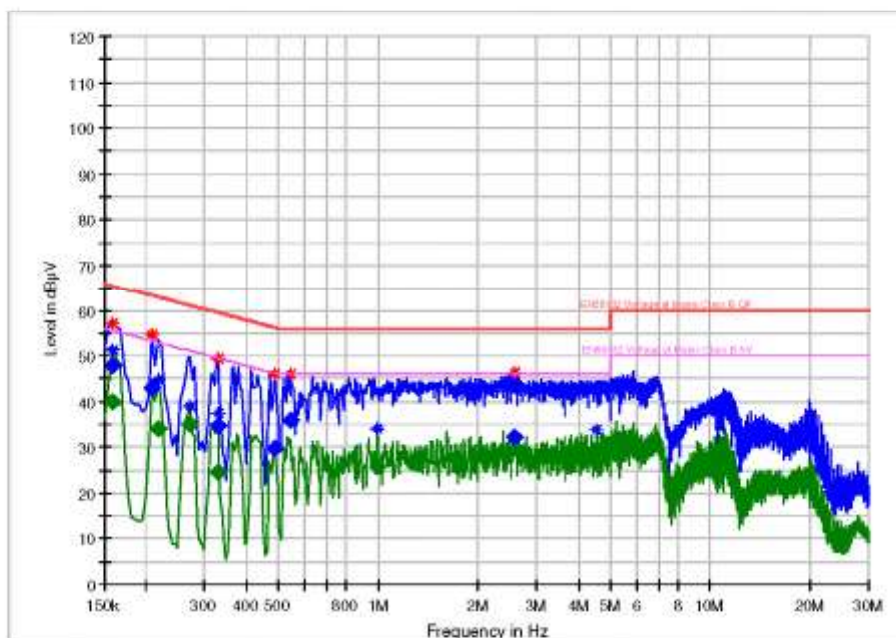
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-20B
Test Standard: EN 55032
Test Detail: Conducted Emission
Operation Mode: A
Climate Condition: 20 °C, 50 %, 100 kPa
Test Voltage/ Freq.: AC 120V/60Hz
Port / Line: AC mains
Receipt No.: 174091930
Report No.: /
Result: Pass
Comment: /

Hardware Setup: 1phase LISN ENV216 to ESCI 3
Level Unit: dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI 3



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Reviewed by

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.159000	---	39.84	55.52	15.67	1000.	9.000	N	OFF	9.6
0.159000	47.91	---	65.52	17.61	1000.	9.000	N	OFF	9.6
0.208500	42.94	---	63.27	20.32	1000.	9.000	N	OFF	9.7
0.217500	---	34.02	52.91	18.89	1000.	9.000	N	OFF	9.7
0.271500	---	34.98	51.07	16.18	1000.	9.000	N	OFF	9.7
0.330000	34.68	---	59.45	24.77	1000.	9.000	N	OFF	9.7
0.330000	---	24.70	49.45	24.76	1000.	9.000	N	OFF	9.7
0.487500	29.89	---	56.21	26.32	1000.	9.000	N	OFF	9.7
0.546000	35.85	---	56.00	20.15	1000.	9.000	N	OFF	9.7
0.996000	---	25.69	46.00	20.31	1000.	9.000	N	OFF	9.7
2.571000	32.13	---	56.00	23.87	1000.	9.000	N	OFF	9.8
4.542000	---	26.82	46.00	19.18	1000.	9.000	N	OFF	9.9

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

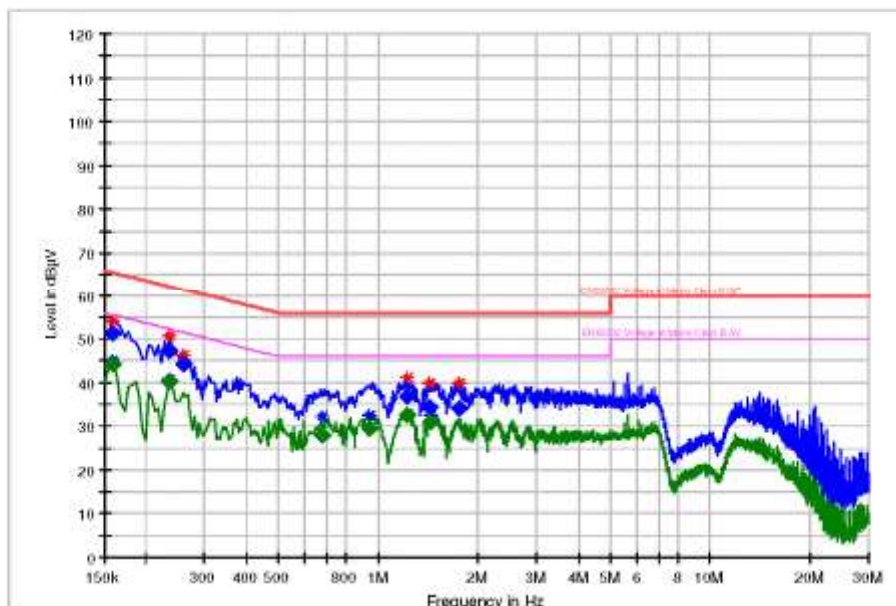
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-20B
Test Standard: EN 55032
Test Detail: Conducted Emission
Operation Mode: A
Climate Condition: 20 °C, 50 %, 100 kPa
Test Voltage/ Freq.: AC 240V/50Hz
Port / Line: AC mains
Receipt No.: 174091930
Report No.: /
Result: Pass
Comment: /

Hardware Setup: 1phase LISN ENV216 to ESCI 3
Level Unit: dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak, Average	9kHz	4.5kHz	10ms	ESCI 3



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.159000	51.10	---	65.52	14.42	1000.	9.000	N	OFF	9.6
0.159000	---	44.18	55.52	11.34	1000.	9.000	N	OFF	9.6
0.235500	---	40.24	52.25	12.01	1000.	9.000	N	OFF	9.7
0.235500	47.30	---	62.25	14.95	1000.	9.000	N	OFF	9.7
0.258000	44.29	---	61.50	17.21	1000.	9.000	N	OFF	9.7
0.676500	---	27.90	46.00	18.10	1000.	9.000	L1	OFF	9.9
0.942000	---	29.59	46.00	16.41	1000.	9.000	L1	OFF	9.9
1.216500	36.86	---	56.00	19.14	1000.	9.000	L1	OFF	10.0
1.221000	---	32.39	46.00	13.61	1000.	9.000	L1	OFF	10.0
1.423500	34.28	---	56.00	21.72	1000.	9.000	L1	OFF	10.0
1.441500	---	30.92	46.00	15.08	1000.	9.000	L1	OFF	10.0
1.743000	34.06	---	56.00	21.94	1000.	9.000	L1	OFF	10.1

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Prüfbericht - Nr.:
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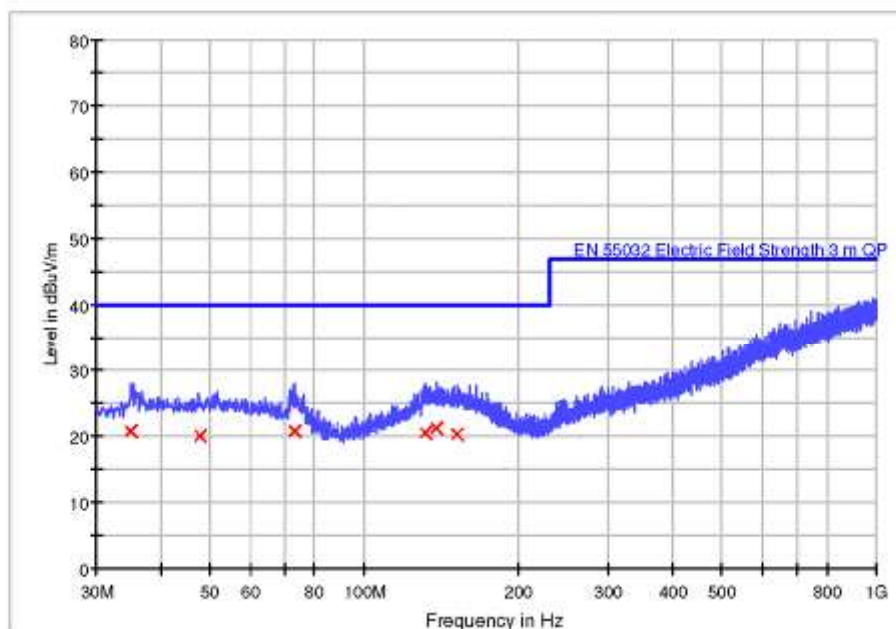
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20B
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



Tested by

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
35.080000	20.7	1000.0	120.000	H	19.7	19.3	40.0
47.720000	20.1	1000.0	120.000	H	20.5	19.9	40.0
73.040000	20.8	1000.0	120.000	H	17.8	19.2	40.0
132.200000	20.5	1000.0	120.000	H	20.0	19.5	40.0
138.880000	21.3	1000.0	120.000	H	20.2	18.7	40.0
152.060000	20.3	1000.0	120.000	H	21.2	19.7	40.0

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Chris Liang

Reviewed by

Jacky Chen

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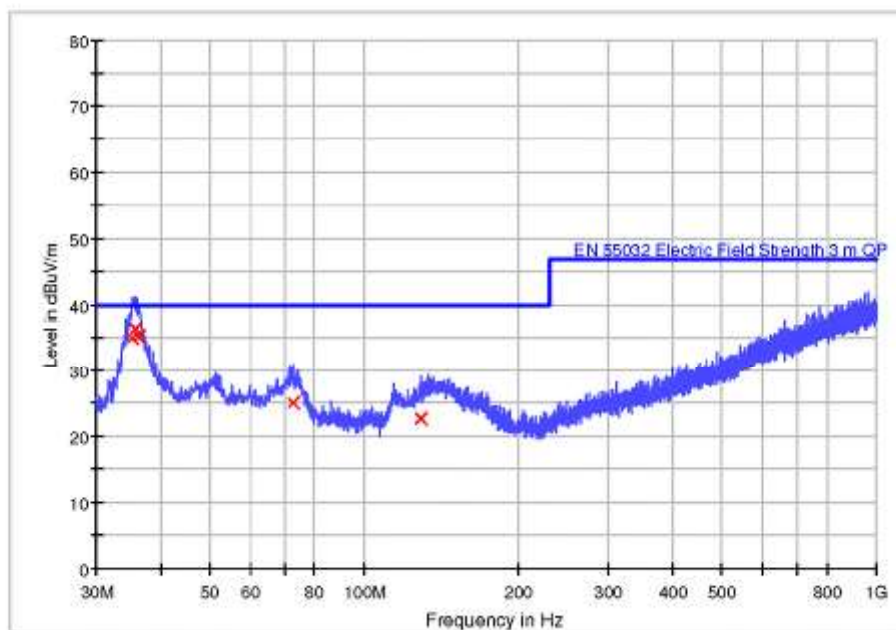
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20B
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
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

20190510

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	Quasi Peak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
35.240000	35.0	1000.0	120.000	V	19.7	5.0	40.0
35.760000	36.4	1000.0	120.000	V	19.7	3.6	40.0
35.800000	36.5	1000.0	120.000	V	19.7	3.5	40.0
36.440000	35.4	1000.0	120.000	V	19.9	4.7	40.0
72.560000	25.0	1000.0	120.000	V	17.9	15.0	40.0
129.320000	22.6	1000.0	120.000	V	19.8	17.4	40.0

Tested by

Chris Liang

Reviewed by

Jacky Chen

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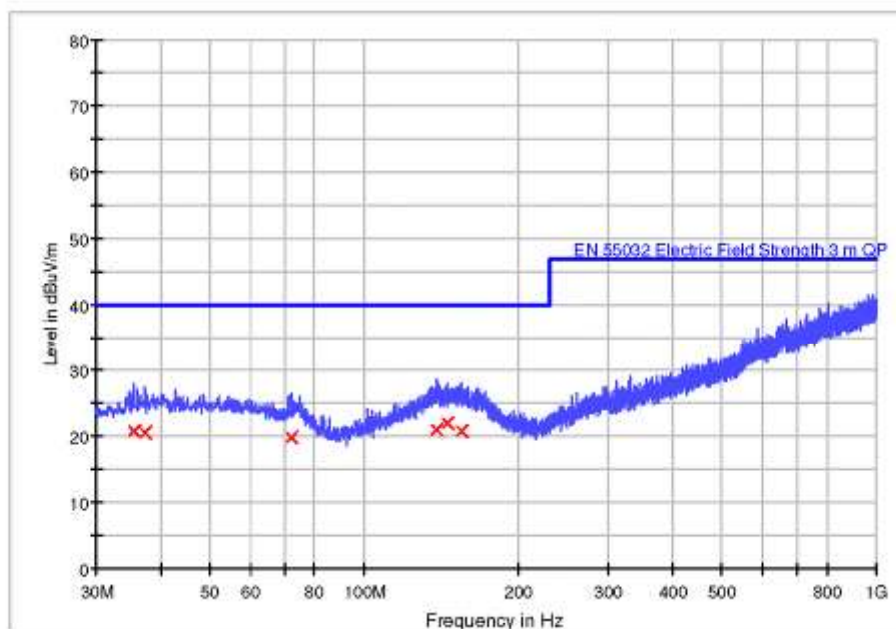
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20B
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal

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



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Chris Liang

20190510

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20190513

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TUV Rheinland (Guangdong) Ltd.

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Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
35.440000	20.6	1000.0	120.000	H	19.7	19.4	40.0
37.400000	20.4	1000.0	120.000	H	20.1	19.6	40.0
72.080000	19.7	1000.0	120.000	H	18.0	20.3	40.0
138.400000	20.9	1000.0	120.000	H	20.2	19.1	40.0
145.440000	22.0	1000.0	120.000	H	20.8	18.0	40.0
154.760000	20.7	1000.0	120.000	H	21.3	19.3	40.0

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Chris Liang

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Jacky Chen

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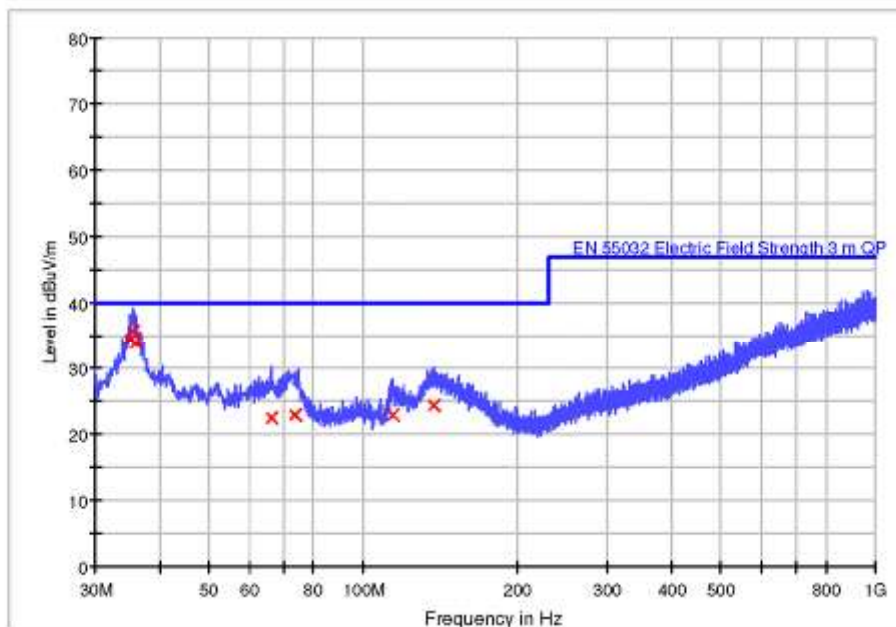
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20B
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
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

20190510

Reviewed by

Jacky Chen

20190513

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
35.000000	34.2	1000.0	120.000	V	19.7	5.8	40.0
35.560000	35.8	1000.0	120.000	V	19.7	4.2	40.0
36.120000	33.8	1000.0	120.000	V	19.8	6.2	40.0
66.120000	22.3	1000.0	120.000	V	19.1	17.7	40.0
74.000000	22.8	1000.0	120.000	V	17.7	17.2	40.0
114.160000	22.8	1000.0	120.000	V	18.5	17.2	40.0
137.920000	24.2	1000.0	120.000	V	20.2	15.8	40.0

Tested by

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Reviewed by

Jacky Chen

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20190513

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

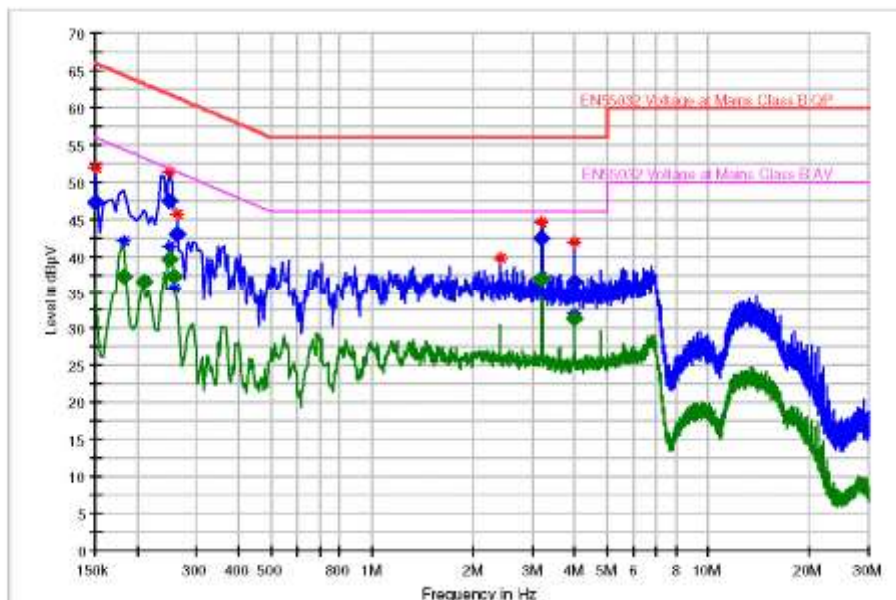
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-20HB
Test Standard: EN 55032
Test Detail: Conducted Emission
Operation Mode: A
Climate Condition: 20 °C, 50 %, 100 kPa
Test Voltage/ Freq.: AC 120V/60Hz
Port / Line: AC mains
Receipt No.: 174091930
Report No.: /
Result: Pass
Comment: /

Hardware Setup: 1phase LISN ENV216 to ESCI 3
Level Unit: dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI 3



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	47.25	---	66.00	18.75	1000.	9.000	N	OFF	9.7
0.181500	---	37.23	54.42	17.19	1000.	9.000	N	OFF	9.7
0.208500	---	36.45	53.27	16.82	1000.	9.000	N	OFF	9.7
0.249000	---	39.57	51.79	12.22	1000.	9.000	N	OFF	9.6
0.249000	47.37	---	61.79	14.42	1000.	9.000	N	OFF	9.6
0.258000	---	37.17	51.50	14.33	1000.	9.000	N	OFF	9.7
0.262500	42.98	---	61.35	18.37	1000.	9.000	N	OFF	9.7
2.400000	36.00	---	56.00	20.00	1000.	9.000	N	OFF	9.8
3.196500	42.43	---	56.00	13.57	1000.	9.000	L1	OFF	10.1
3.196500	---	36.84	46.00	9.16	1000.	9.000	L1	OFF	10.1
3.997500	36.49	---	56.00	19.51	1000.	9.000	N	OFF	9.9
4.002000	---	31.26	46.00	14.74	1000.	9.000	N	OFF	9.9

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

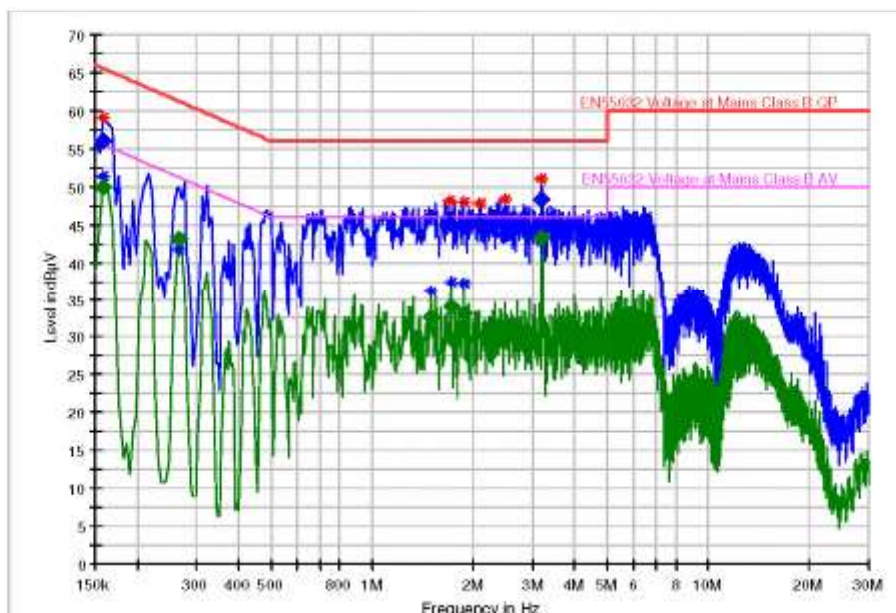
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-20HB
Test Standard: EN 55032
Test Detail: Conducted Emission
Operation Mode: A
Climate Condition: 20 °C, 50 %, 100 kPa
Test Voltage/ Freq.: AC 240V/50Hz
Port / Line: AC mains
Receipt No.: 174091930
Report No.: /
Result: Pass
Comment: /

Hardware Setup: 1phase LISN ENV216 to ESCI 3
Level Unit: dBμV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI 3



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.159000	---	49.95	55.52	5.57	1000.	9.000	L1	OFF	9.8
0.159000	55.95	---	65.52	9.57	1000.	9.000	L1	OFF	9.8
0.267000	---	43.16	51.21	8.05	1000.	9.000	N	OFF	9.7
1.500000	---	32.54	46.00	13.46	1000.	9.000	L1	OFF	10.1
1.702500	45.03	---	56.00	10.97	1000.	9.000	L1	OFF	10.1
1.711500	---	33.94	46.00	12.06	1000.	9.000	L1	OFF	10.1
1.873500	44.74	---	56.00	11.26	1000.	9.000	L1	OFF	10.1
1.873500	---	33.12	46.00	12.88	1000.	9.000	L1	OFF	10.1
2.085000	45.01	---	56.00	10.99	1000.	9.000	L1	OFF	10.1
2.481000	43.65	---	56.00	12.35	1000.	9.000	N	OFF	9.8
3.196500	48.35	---	56.00	7.65	1000.	9.000	L1	OFF	10.1
3.196500	---	43.33	46.00	2.67	1000.	9.000	L1	OFF	10.1

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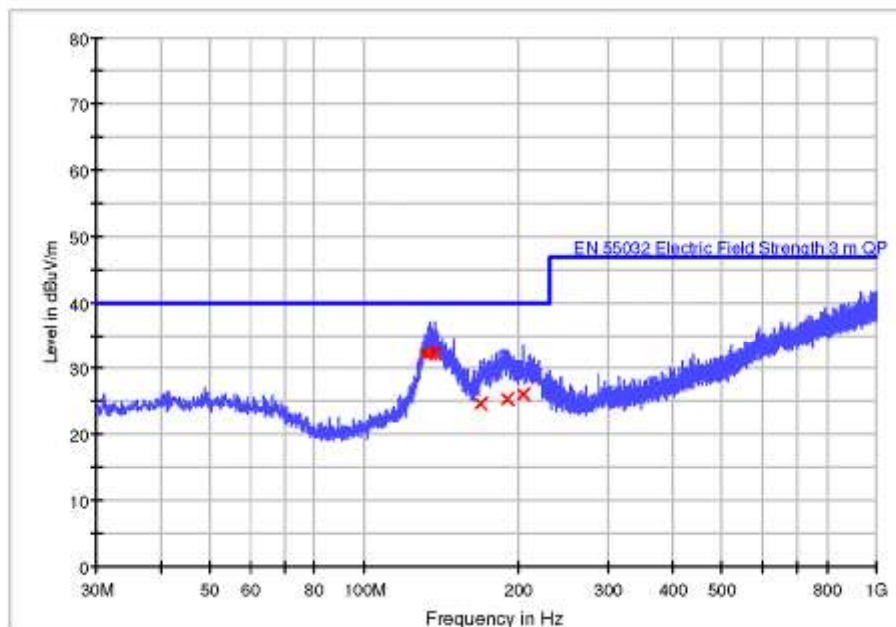
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HB
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
131.840000	32.0	1000.0	120.000	H	19.9	8.0	40.0
135.120000	32.1	1000.0	120.000	H	20.1	7.9	40.0
137.320000	32.1	1000.0	120.000	H	20.2	7.9	40.0
168.600000	24.6	1000.0	120.000	H	21.1	15.4	40.0
190.880000	25.3	1000.0	120.000	H	18.4	14.7	40.0
204.450000	26.0	1000.0	120.000	H	17.8	14.0	40.0

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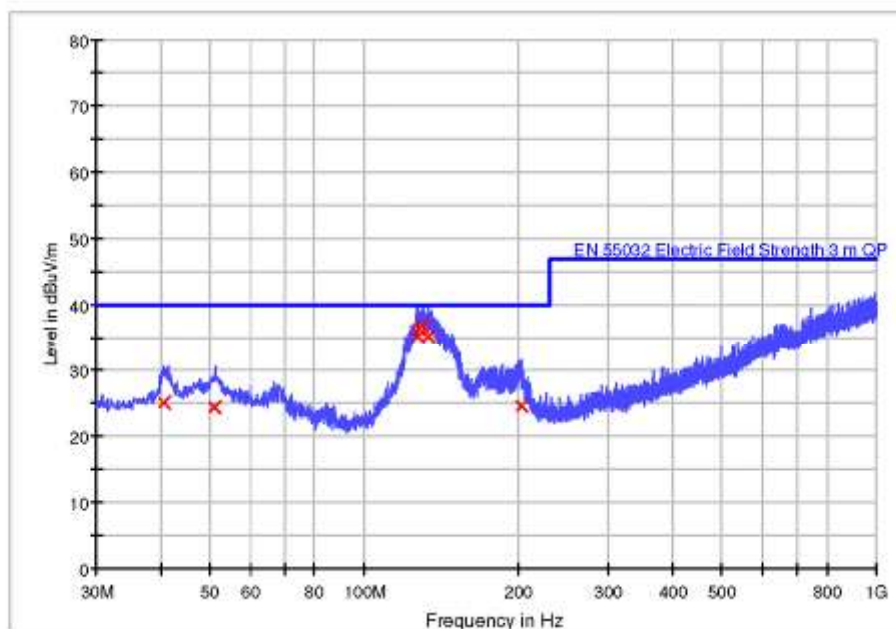
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HB
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Vertical
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
40.800000	25.1	1000.0	120.000	V	20.6	14.9	40.0
51.200000	24.2	1000.0	120.000	V	20.5	15.8	40.0
127.000000	35.3	1000.0	120.000	V	19.6	4.7	40.0
128.560000	36.4	1000.0	120.000	V	19.7	3.6	40.0
130.160000	36.9	1000.0	120.000	V	19.8	3.1	40.0
133.480000	35.2	1000.0	120.000	V	20.1	4.8	40.0
202.640000	24.5	1000.0	120.000	V	17.9	15.5	40.0

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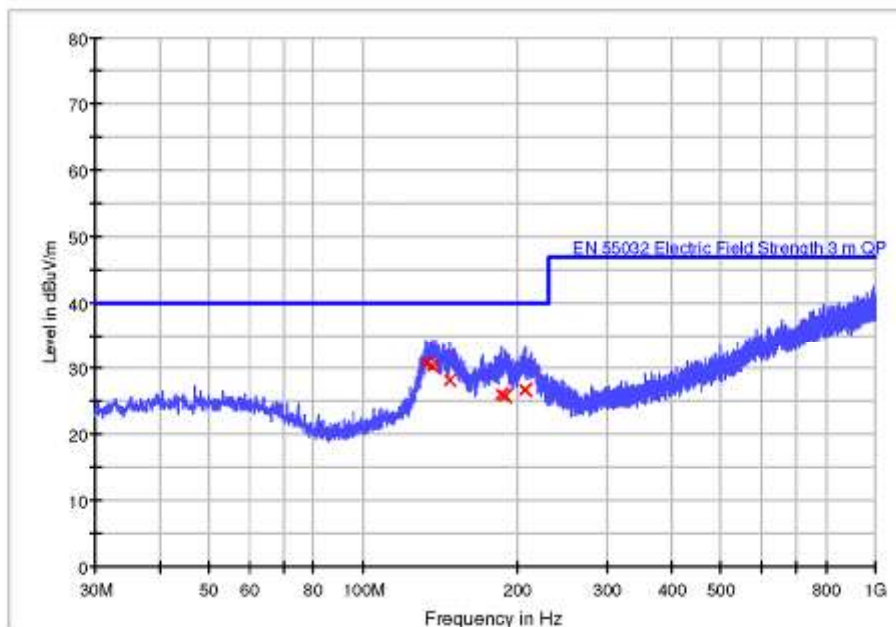
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HB
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
132.560000	30.6	1000.0	120.000	H	20.0	9.4	40.0
136.560000	30.2	1000.0	120.000	H	20.2	9.9	40.0
147.360000	28.1	1000.0	120.000	H	20.9	11.9	40.0
186.760000	25.9	1000.0	120.000	H	18.8	14.1	40.0
189.320000	25.7	1000.0	120.000	H	18.5	14.3	40.0
206.800000	26.6	1000.0	120.000	H	17.9	13.4	40.0

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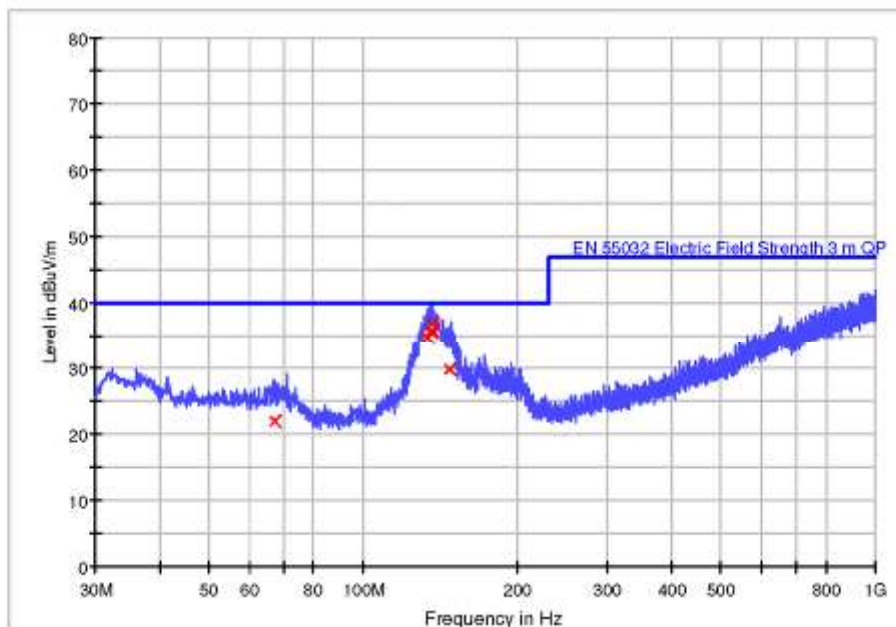
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HB
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Vertical
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



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20190510

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
67.480000	21.9	1000.0	120.000	V	18.8	18.2	40.0
133.440000	34.8	1000.0	120.000	V	20.1	5.2	40.0
135.240000	35.7	1000.0	120.000	V	20.1	4.3	40.0
136.560000	36.9	1000.0	120.000	V	20.2	3.1	40.0
136.960000	35.8	1000.0	120.000	V	20.2	4.2	40.0
148.200000	29.8	1000.0	120.000	V	21.0	10.2	40.0

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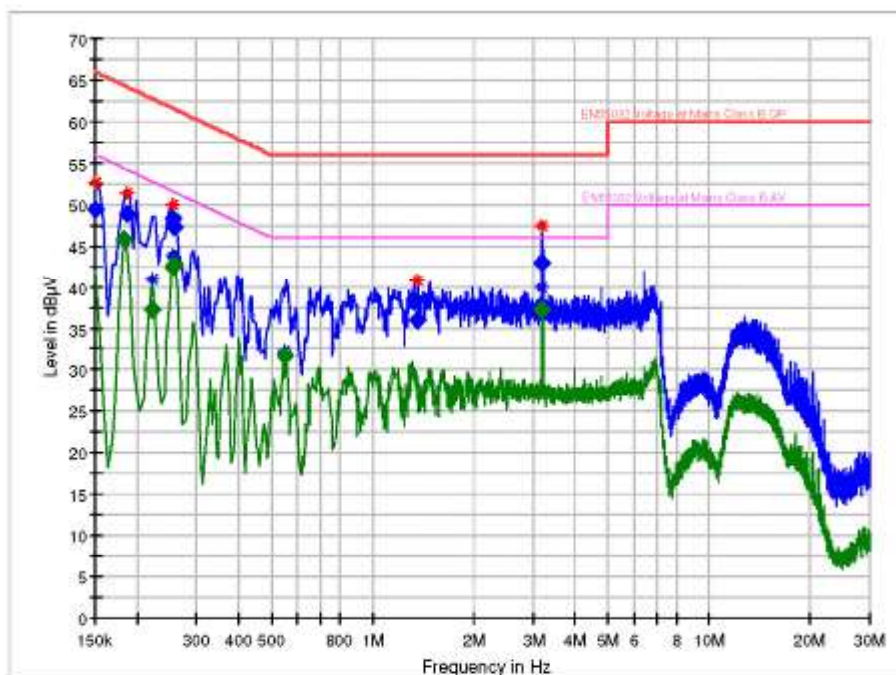
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (EMISSION)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HM
Test Standard:	EN 55032
Test Detail:	Conducted Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq.:	AC 120V/60Hz
Port / Line:	AC mains
Receipt No.:	174091930
Report No.:	/
Result:	Pass
Comment:	/
Hardware Setup:	1phase LISN ENV216 to ESCI 3
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI 3



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	Quasi Peak (dBμV)	C Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	49.42	---	66.00	16.58	1000.	9.000	N	OFF	9.7
0.181500	---	45.78	54.42	8.63	1000.	9.000	N	OFF	9.7
0.186000	48.92	---	64.21	15.29	1000.	9.000	N	OFF	9.7
0.222000	---	37.23	52.74	15.52	1000.	9.000	N	OFF	9.7
0.253500	---	42.42	51.64	9.22	1000.	9.000	L1	OFF	9.8
0.253500	48.33	---	61.64	13.32	1000.	9.000	N	OFF	9.6
0.258000	---	42.87	51.50	8.63	1000.	9.000	N	OFF	9.7
0.258000	47.18	---	61.50	14.32	1000.	9.000	N	OFF	9.7
0.546000	---	31.77	46.00	14.23	1000.	9.000	N	OFF	9.7
1.360500	36.04	---	56.00	19.96	1000.	9.000	L1	OFF	10.0
3.196500	---	37.26	46.00	8.74	1000.	9.000	N	OFF	9.8
3.196500	43.02	---	56.00	12.98	1000.	9.000	N	OFF	9.8

Tested by

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Reviewed by

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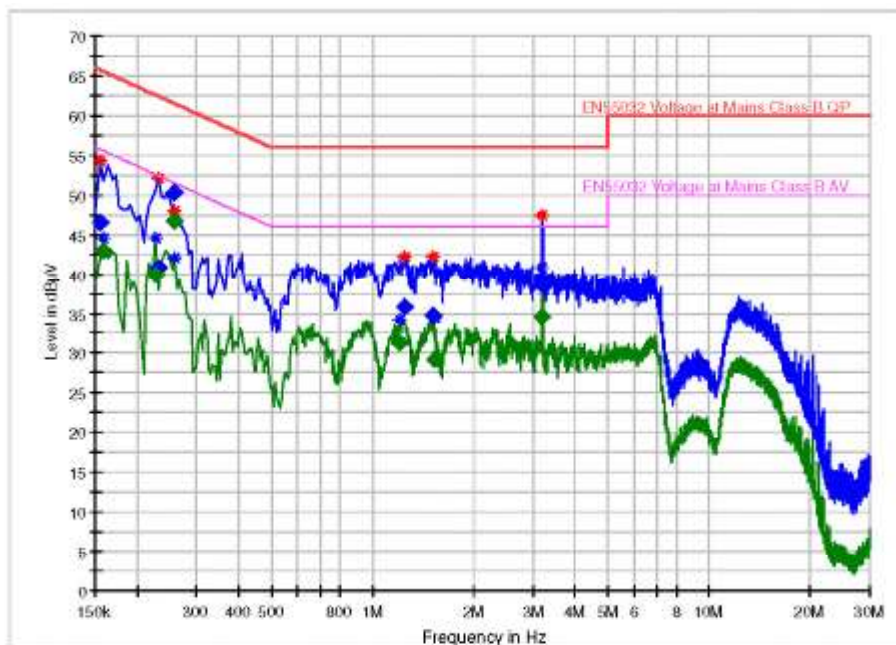
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (EMISSION)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HM
Test Standard:	EN 55032
Test Detail:	Conducted Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq.:	AC 240V/50Hz
Port / Line:	AC mains
Receipt No.:	174091930
Report No.:	/
Result:	Pass
Comment:	/
Hardware Setup:	1phase LISN ENV216 to ESC13
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESC13



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Reviewed by

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.154500	46.55	---	65.75	19.20	1000.	9.000	L1	OFF	9.8
0.159000	---	42.98	55.52	12.54	1000.	9.000	L1	OFF	9.8
0.226500	---	39.97	52.58	12.61	1000.	9.000	N	OFF	9.7
0.231000	40.73	---	62.41	21.68	1000.	9.000	N	OFF	9.6
0.258000	---	46.64	51.50	4.86	1000.	9.000	N	OFF	9.7
0.258000	50.37	---	61.50	11.13	1000.	9.000	N	OFF	9.7
1.203000	---	31.41	46.00	14.59	1000.	9.000	L1	OFF	10.0
1.239000	35.79	---	56.00	20.21	1000.	9.000	L1	OFF	10.0
1.513500	34.67	---	56.00	21.33	1000.	9.000	L1	OFF	10.0
1.522500	---	29.25	46.00	16.75	1000.	9.000	L1	OFF	10.0
3.196500	---	34.63	46.00	11.37	1000.	9.000	N	OFF	9.8
3.196500	38.72	---	56.00	17.28	1000.	9.000	N	OFF	9.8

Tested by

Chris Liang

Reviewed by

Jacky Chen

20190510

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TUV Rheinland (Guangdong) Ltd.

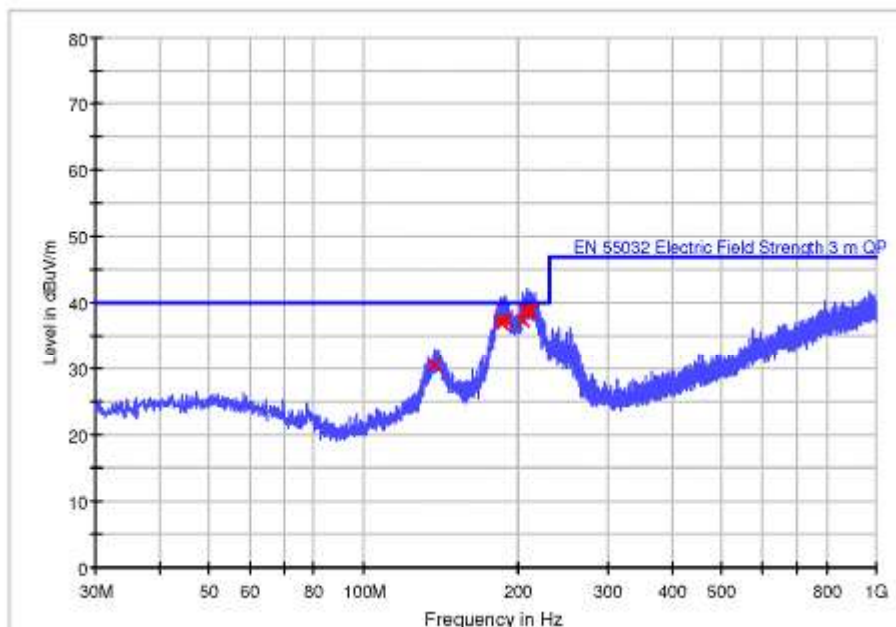
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HM
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
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	Reviewed by:	Jacky Chen
	20190314		20190513

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
137.560000	30.5	1000.0	120.000	H	20.2	9.5	40.0
185.680000	37.5	1000.0	120.000	H	18.9	2.5	40.0
187.120000	36.8	1000.0	120.000	H	18.8	3.2	40.0
189.560000	37.3	1000.0	120.000	H	18.5	2.7	40.0
204.960000	37.4	1000.0	120.000	H	17.8	2.6	40.0
208.200000	38.8	1000.0	120.000	H	17.9	1.3	40.0
210.560000	38.8	1000.0	120.000	H	17.8	1.2	40.0
212.120000	38.8	1000.0	120.000	H	17.8	1.3	40.0

Tested by: *Chris Liang*
20190314

Reviewed by: *Jacky Chen*
20190513

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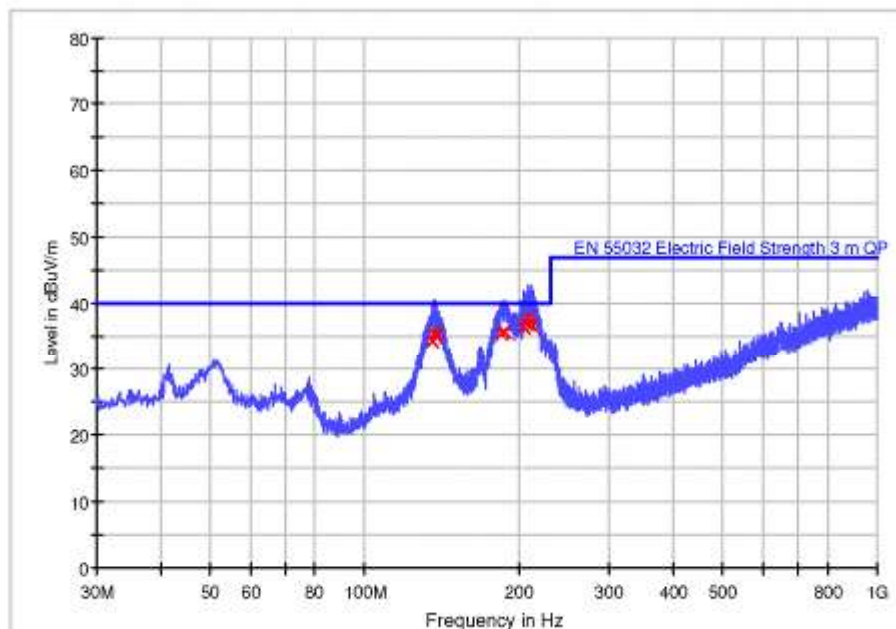
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HM
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
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	Reviewed by:	Jacky Chen
	20190314		20190513

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EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
135.240000	34.4	1000.0	120.000	V	20.1	5.6	40.0
136.720000	35.4	1000.0	120.000	V	20.2	4.6	40.0
137.440000	35.3	1000.0	120.000	V	20.2	4.7	40.0
138.280000	35.2	1000.0	120.000	V	20.2	4.9	40.0
184.960000	35.5	1000.0	120.000	V	19.0	4.5	40.0
188.000000	35.8	1000.0	120.000	V	18.7	4.2	40.0
204.960000	36.5	1000.0	120.000	V	17.8	3.5	40.0
206.920000	37.0	1000.0	120.000	V	17.9	3.0	40.0
209.680000	37.9	1000.0	120.000	V	17.8	2.1	40.0
211.560000	36.6	1000.0	120.000	V	17.8	3.4	40.0

Tested by: *Chris Liang*
20190314

Reviewed by: *Jacky Chen*
20190513

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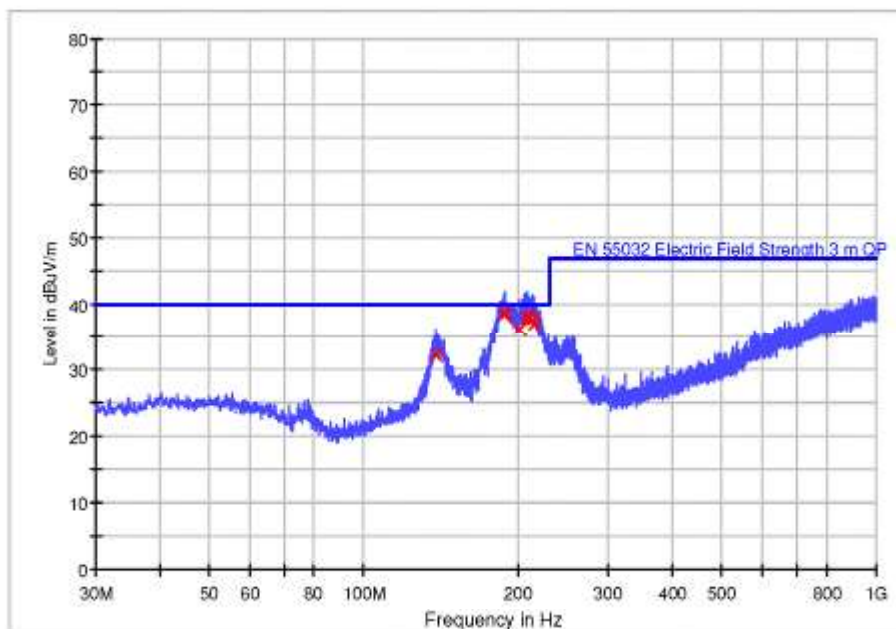
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HM
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
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
20190314

Reviewed by: Jacky Chen
20190513

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EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
136.520000	32.2	1000.0	120.000	H	20.2	7.8	40.0
187.400000	38.6	1000.0	120.000	H	18.7	1.4	40.0
188.960000	38.6	1000.0	120.000	H	18.6	1.4	40.0
202.040000	36.1	1000.0	120.000	H	17.9	3.9	40.0
208.720000	38.4	1000.0	120.000	H	17.8	1.6	40.0
209.440000	37.8	1000.0	120.000	H	17.8	2.2	40.0
212.960000	37.6	1000.0	120.000	H	17.8	2.4	40.0
214.440000	37.0	1000.0	120.000	H	17.8	3.0	40.0

Tested by: *Chris Liang*
20190314

Reviewed by: *Jacky Chen*
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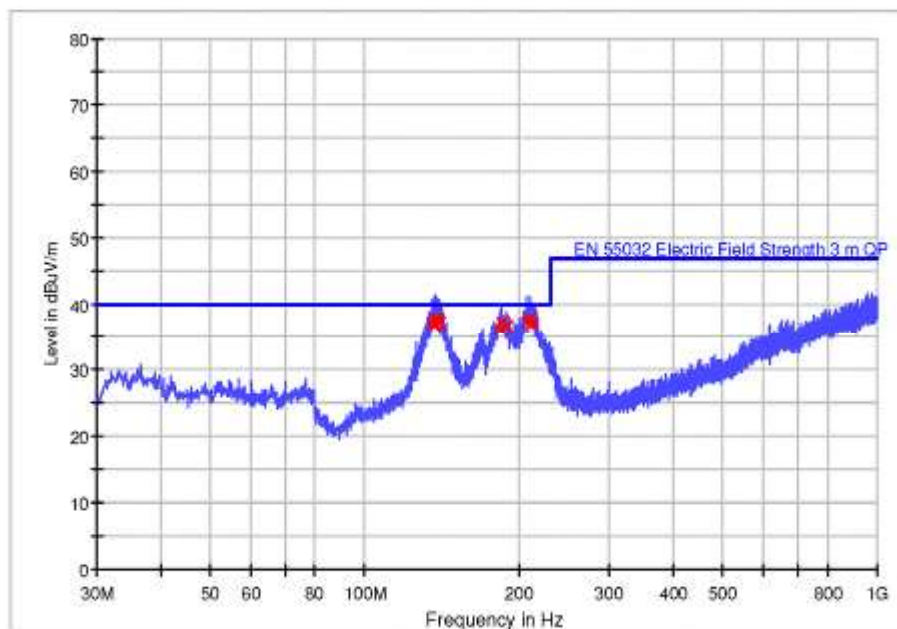
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HM
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
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	Reviewed by:	Jacky Chen
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EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
136.200000	36.9	1000.0	120.000	V	20.2	3.2	40.0
136.960000	37.2	1000.0	120.000	V	20.2	2.8	40.0
137.640000	37.9	1000.0	120.000	V	20.2	2.1	40.0
137.800000	37.0	1000.0	120.000	V	20.2	3.0	40.0
138.360000	37.5	1000.0	120.000	V	20.2	2.5	40.0
139.240000	37.2	1000.0	120.000	V	20.3	2.8	40.0
184.000000	36.1	1000.0	120.000	V	19.1	3.9	40.0
184.960000	37.5	1000.0	120.000	V	19.0	2.6	40.0
188.960000	36.6	1000.0	120.000	V	18.6	3.4	40.0
207.040000	37.5	1000.0	120.000	V	17.9	2.5	40.0
210.160000	37.8	1000.0	120.000	V	17.8	2.2	40.0
211.040000	37.9	1000.0	120.000	V	17.8	2.1	40.0
211.040000	37.9	1000.0	120.000	V	17.8	2.1	40.0
212.520000	37.3	1000.0	120.000	V	17.8	2.7	40.0

Tested by: *Chris Liang*
20190314

Reviewed by: *Jacky Chen*
20190513

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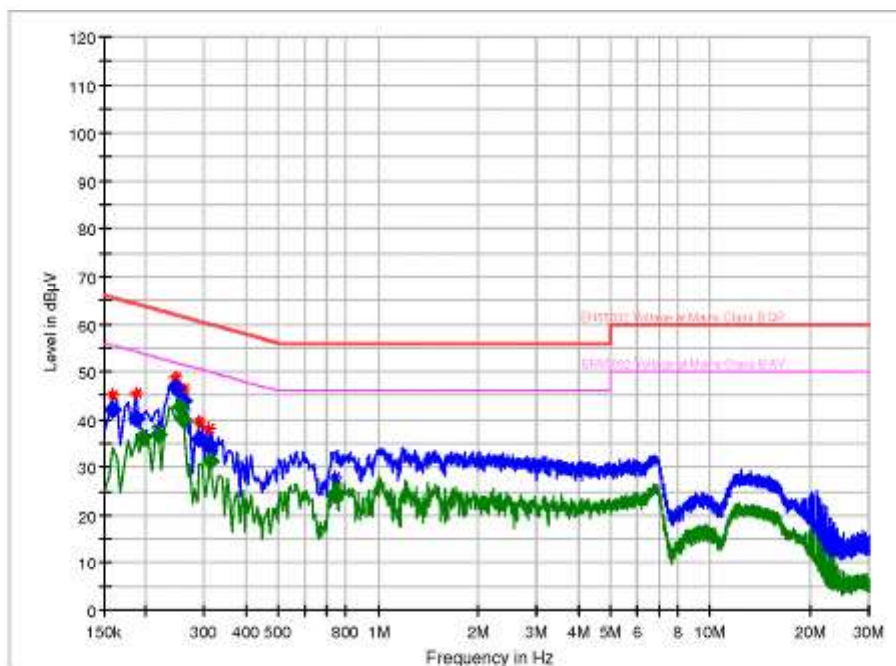
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (EMISSION)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20M
Test Standard:	EN 55032
Test Detail:	Conducted Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq.:	AC 120V/60Hz
Port / Line:	AC mains
Receipt No.:	174091930
Report No.:	/
Result:	Pass
Comment:	/
Hardware Setup:	1phase LISN ENV216 to ESCI 3
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI 3



Tested by: *Chris Liang* Reviewed by: *Jacky Chen*
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EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.159000	41.92	---	65.52	23.60	1000.	9.000	L1	OFF	9.8
0.186000	40.17	---	64.21	24.04	1000.	9.000	N	OFF	9.7
0.195000	---	36.36	53.82	17.46	1000.	9.000	N	OFF	9.7
0.217500	---	36.94	52.91	15.97	1000.	9.000	N	OFF	9.7
0.244500	46.58	---	61.94	15.37	1000.	9.000	N	OFF	9.7
0.253500	---	42.64	51.64	9.00	1000.	9.000	N	OFF	9.6
0.258000	43.75	---	61.50	17.75	1000.	9.000	N	OFF	9.7
0.258000	---	40.02	51.50	11.47	1000.	9.000	N	OFF	9.7
0.289500	36.06	---	60.54	24.48	1000.	9.000	N	OFF	9.7
0.307500	34.73	---	60.04	25.31	1000.	9.000	N	OFF	9.7
0.312000	---	31.24	49.92	18.68	1000.	9.000	N	OFF	9.7
0.739500	---	24.16	46.00	21.84	1000.	9.000	N	OFF	9.7

Tested by: *Chris Liang* Reviewed by: *Jacky Chen*
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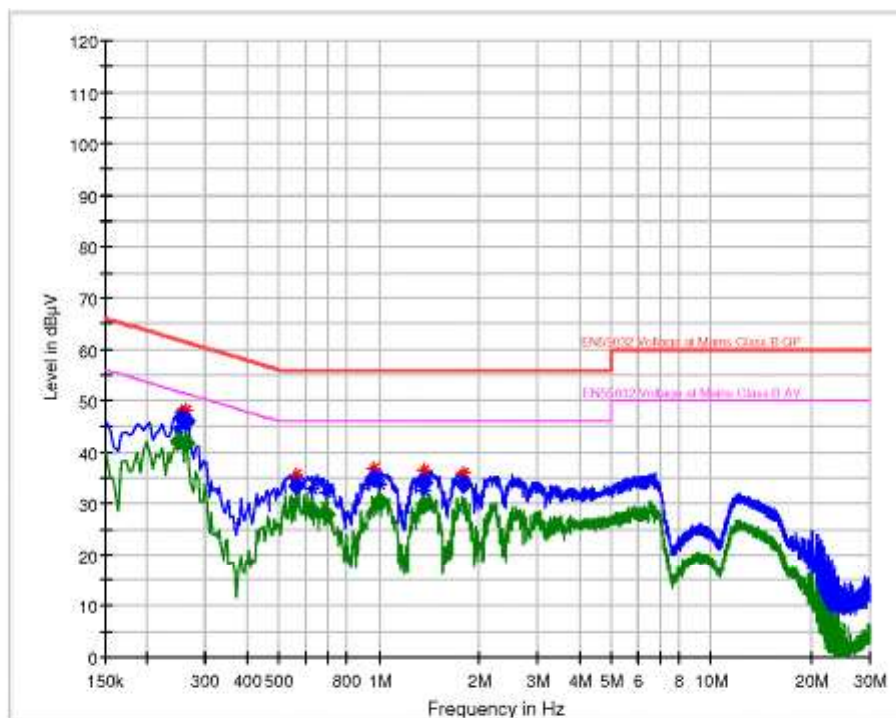
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (EMISSION)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20M
Test Standard:	EN 55032
Test Detail:	Conducted Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq.:	AC 240V/50Hz
Port / Line:	AC mains
Receipt No.:	174091930
Report No.:	/
Result:	Pass
Comment:	/
Hardware Setup:	1phase LISN ENV216 to ESCI 3
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI 3



Tested by: *Chris Liang* Reviewed by: *Jacky Chen*
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EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.249000	---	41.98	51.79	9.81	1000.	9.000	N	OFF	9.6
0.253500	46.51	---	61.64	15.13	1000.	9.000	N	OFF	9.6
0.262500	46.14	---	61.35	15.21	1000.	9.000	N	OFF	9.7
0.262500	---	41.70	51.35	9.65	1000.	9.000	N	OFF	9.7
0.559500	33.39	---	56.00	22.61	1000.	9.000	N	OFF	9.7
0.627000	---	28.59	46.00	17.41	1000.	9.000	N	OFF	9.7
0.694500	---	27.94	46.00	18.06	1000.	9.000	L1	OFF	9.9
0.964500	34.91	---	56.00	21.09	1000.	9.000	L1	OFF	10.0
1.000500	---	30.52	46.00	15.48	1000.	9.000	L1	OFF	10.0
1.356000	---	29.87	46.00	16.13	1000.	9.000	N	OFF	9.7
1.356000	34.05	---	56.00	21.95	1000.	9.000	N	OFF	9.7
1.788000	33.72	---	56.00	22.28	1000.	9.000	L1	OFF	10.1

Tested by: *Chris Liang* Reviewed by: *Jacky Chen*
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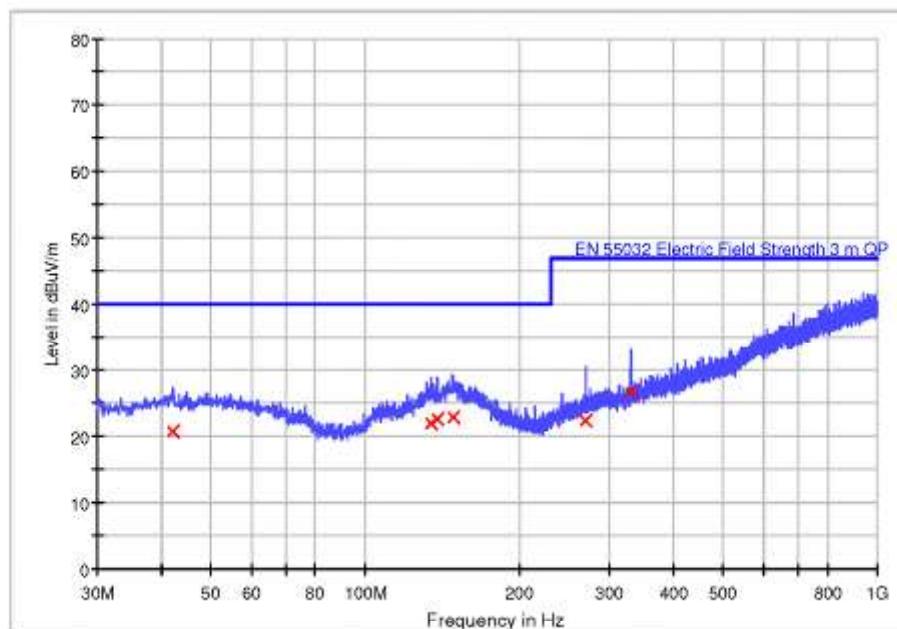
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20M
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
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* Reviewed by: *Jacky Chen*
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Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
42.240000	20.6	1000.0	120.000	H	20.6	19.4	40.0
134.400000	22.0	1000.0	120.000	H	20.1	18.0	40.0
138.400000	22.6	1000.0	120.000	H	20.2	17.4	40.0
148.960000	22.9	1000.0	120.000	H	21.0	17.1	40.0
270.320000	22.5	1000.0	120.000	H	20.7	24.5	47.0
330.080000	26.6	1000.0	120.000	H	22.4	20.4	47.0

Tested by: *Chris Liang* Reviewed by: *Jacky Chen*
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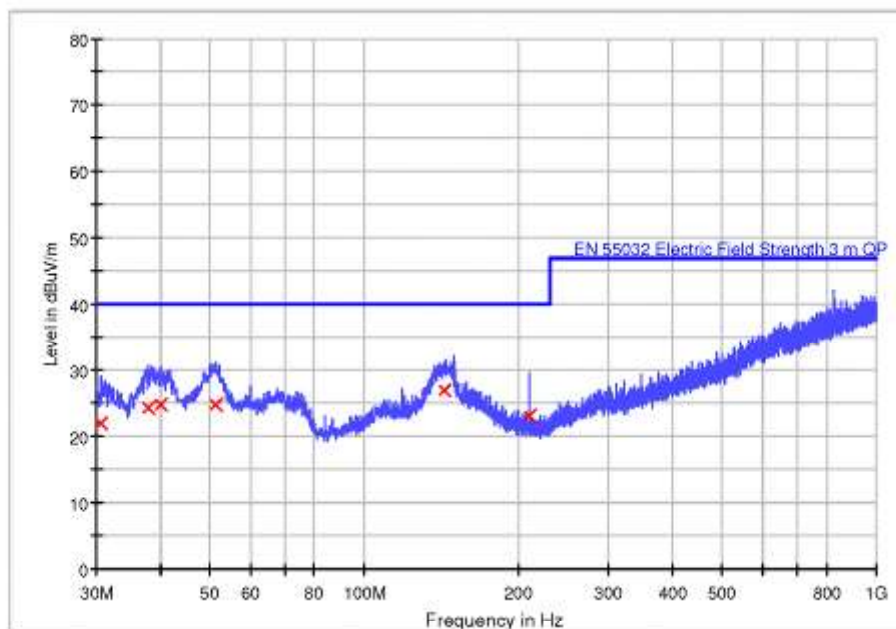
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20M
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
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* Reviewed by: *Jacky Chen*
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EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
30.720000	21.9	1000.0	120.000	V	19.3	18.1	40.0
38.000000	24.3	1000.0	120.000	V	20.2	15.7	40.0
40.080000	24.8	1000.0	120.000	V	20.6	15.2	40.0
51.320000	24.8	1000.0	120.000	V	20.5	15.2	40.0
143.720000	26.8	1000.0	120.000	V	20.6	13.2	40.0
210.280000	23.2	1000.0	120.000	V	17.8	16.8	40.0

Tested by: *Chris Liang*
20190422

Reviewed by: *Jacky Chen*
20190513

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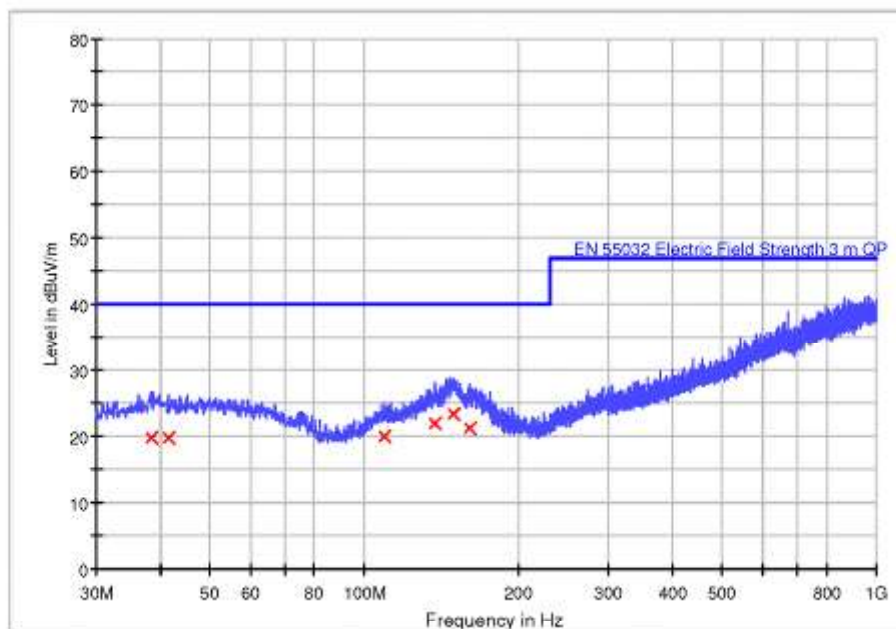
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20M
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
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* Reviewed by: *Jacky Chen*
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EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
38.360000	19.7	1000.0	120.000	H	20.3	20.3	40.0
41.520000	19.9	1000.0	120.000	H	20.6	20.1	40.0
109.680000	20.0	1000.0	120.000	H	18.1	20.0	40.0
138.040000	21.9	1000.0	120.000	H	20.2	18.2	40.0
149.320000	23.3	1000.0	120.000	H	21.1	16.8	40.0
160.600000	21.2	1000.0	120.000	H	21.3	18.9	40.0

Tested by: *Chris Liang* Reviewed by: *Jacky Chen*
20190422 20190513

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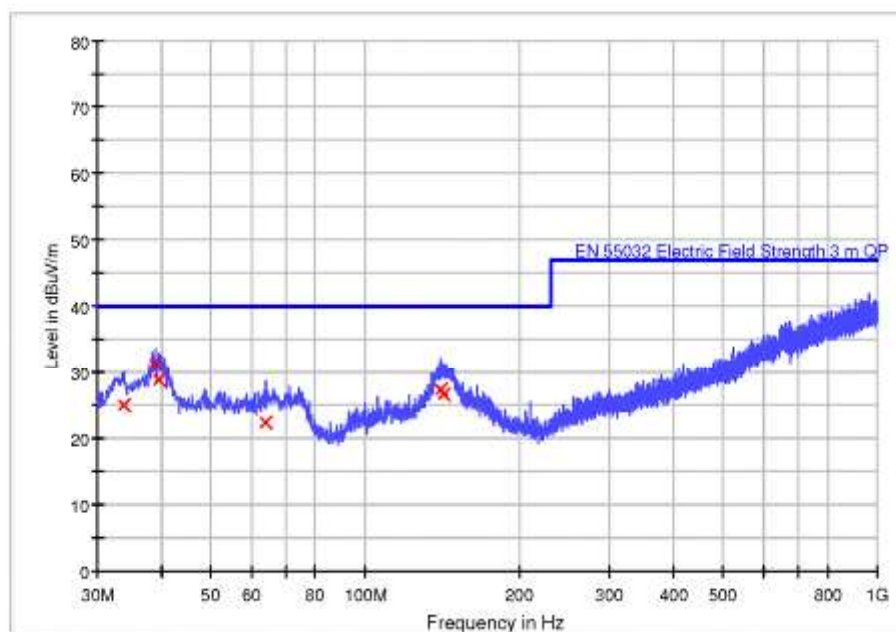
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20M
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
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* Reviewed by: *Jacky Chen*
20190422 20190513

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EMC Test Service Hotline: +86-20-28391188

Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
33.760000	25.0	1000.0	120.000	V	19.5	15.0	40.0
39.080000	31.1	1000.0	120.000	V	20.4	8.9	40.0
39.560000	28.8	1000.0	120.000	V	20.5	11.2	40.0
64.080000	22.3	1000.0	120.000	V	19.4	17.7	40.0
140.080000	27.4	1000.0	120.000	V	20.3	12.6	40.0
142.520000	26.6	1000.0	120.000	V	20.5	13.4	40.0

Tested by: *Chris Liang*
20190422

Reviewed by: *Jacky Chen*
20190513

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EMC Test Service Hotline: +86-20-28391188

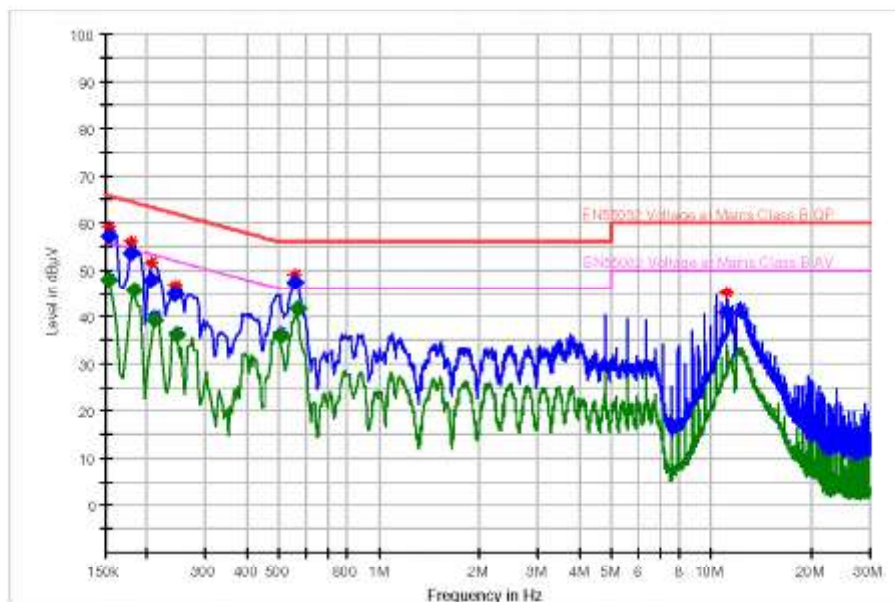
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-40B
Test Standard: EN 55032
Test Detail: Conducted Emission
Operation Mode: A
Climate Condition: 20 °C, 50 %, 100 kPa
Test Voltage/ Freq.: AC 120V/60Hz
Port / Line: AC mains
Receipt No.: 174091930
Report No.: /
Result: Pass
Comment: /

Hardware Setup: 1phase LISN ENV216 to ESCI 3
Level Unit: dBμV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak, Average	9kHz	4.5kHz	10ms	ESCI 3



Tested by

Chris Liang

Reviewed by

Jacky Chen

20190510

20190513

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.154000	---	47.88	55.78	7.91	1000.	9.000	L1	OFF	9.8
0.154000	57.18	---	65.78	8.60	1000.	9.000	L1	OFF	9.8
0.178000	53.59	---	64.58	10.98	1000.	9.000	L1	OFF	9.8
0.182000	---	45.59	54.39	8.80	1000.	9.000	L1	OFF	9.8
0.206000	47.82	---	63.37	15.54	1000.	9.000	L1	OFF	9.8
0.210000	---	39.30	53.21	13.90	1000.	9.000	L1	OFF	9.8
0.242000	44.87	---	62.03	17.16	1000.	9.000	L1	OFF	9.8
0.246000	---	36.21	51.89	15.68	1000.	9.000	N	OFF	9.7
0.502000	---	35.91	46.00	10.10	1000.	9.000	N	OFF	9.7
0.554000	47.43	---	56.00	8.57	1000.	9.000	L1	OFF	9.9
0.566000	---	41.81	46.00	4.19	1000.	9.000	L1	OFF	9.9
11.150000	40.88	---	60.00	19.12	1000.	9.000	L1	OFF	10.5

Tested by

Chris Liang

Reviewed by

Jacky Chen

20190510

20190513

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

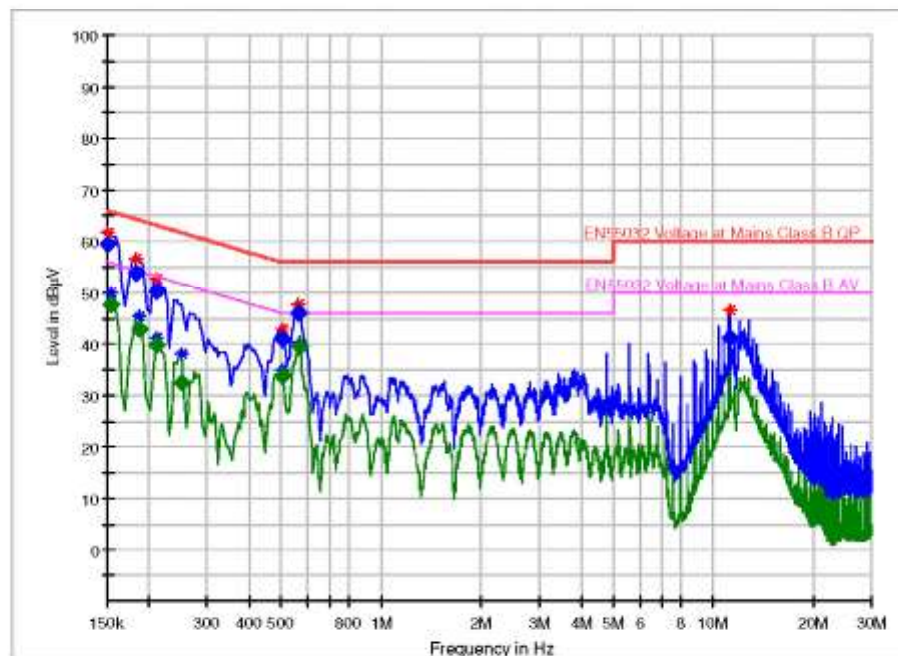
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-40B
Test Standard: EN 55032
Test Detail: Conducted Emission
Operation Mode: A
Climate Condition: 20 °C, 50 %, 100 kPa
Test Voltage/ Freq.: AC 240V/50Hz
Port / Line: AC mains
Receipt No.: 174091930
Report No.: /
Result: Pass
Comment: /

Hardware Setup: 1phase LISN ENV216 to ESCI 3
Level Unit: dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak, Average	9kHz	4.5kHz	10ms	ESCI 3



Tested by: Chris Liang

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Reviewed by: Jacky Chen

20190513

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	59.46	---	66.00	6.54	1000.	0.200	L1	OFF	9.8
0.154000	---	47.66	55.78	8.12	1000.	9.000	N	OFF	9.7
0.182000	53.78	---	64.39	10.61	1000.	9.000	N	OFF	9.7
0.186000	---	42.76	54.21	11.45	1000.	9.000	N	OFF	9.7
0.210000	---	39.83	53.21	13.38	1000.	9.000	L1	OFF	9.8
0.210000	50.31	---	63.21	12.89	1000.	9.000	L1	OFF	9.8
0.250000	---	32.35	51.76	19.41	1000.	9.000	N	OFF	9.6
0.502000	---	33.99	46.00	12.01	1000.	9.000	L1	OFF	9.8
0.502000	40.83	---	56.00	15.17	1000.	9.000	L1	OFF	9.8
0.562000	46.06	---	56.00	9.94	1000.	9.000	L1	OFF	9.9
0.566000	---	39.65	46.00	6.35	1000.	9.000	L1	OFF	9.9
11.166000	41.31	---	60.00	18.69	1000.	9.000	L1	OFF	10.5

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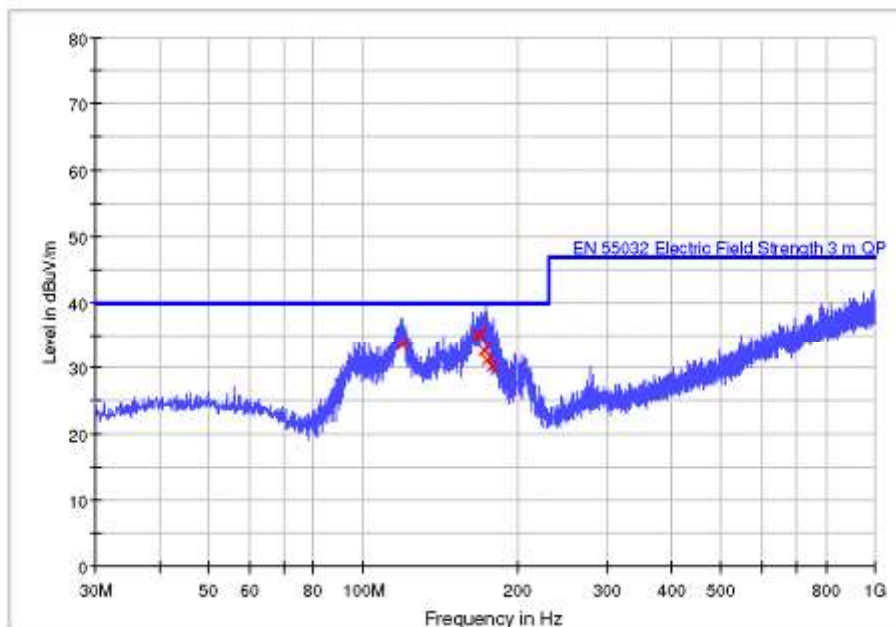
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40B
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



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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
119.720000	33.6	1000.0	120.000	H	19.1	6.4	40.0	
168.000000	35.2	1000.0	120.000	H	21.1	4.8	40.0	
169.440000	34.9	1000.0	120.000	H	21.0	5.1	40.0	
172.360000	32.6	1000.0	120.000	H	20.8	7.4	40.0	
175.240000	31.1	1000.0	120.000	H	20.4	8.9	40.0	
178.640000	30.2	1000.0	120.000	H	19.8	9.8	40.0	

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TUV Rheinland (Guangdong) Ltd.

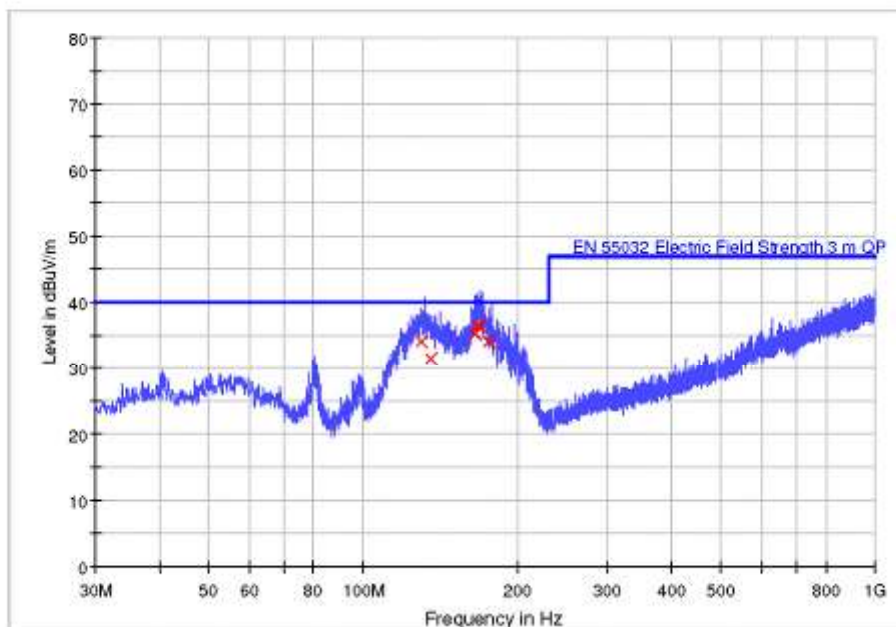
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40B
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
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*
20190510

Reviewed by *Jacky Chen*
20190513

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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
130.400000	33.9	1000.0	120.000	V	19.8	6.1	40.0	
135.960000	31.5	1000.0	120.000	V	20.2	8.5	40.0	
165.800000	35.3	1000.0	120.000	V	21.1	4.7	40.0	
168.000000	36.3	1000.0	120.000	V	21.1	3.7	40.0	
169.440000	36.5	1000.0	120.000	V	21.0	3.5	40.0	
176.240000	34.0	1000.0	120.000	V	20.2	6.0	40.0	

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TUV Rheinland (Guangdong) Ltd.

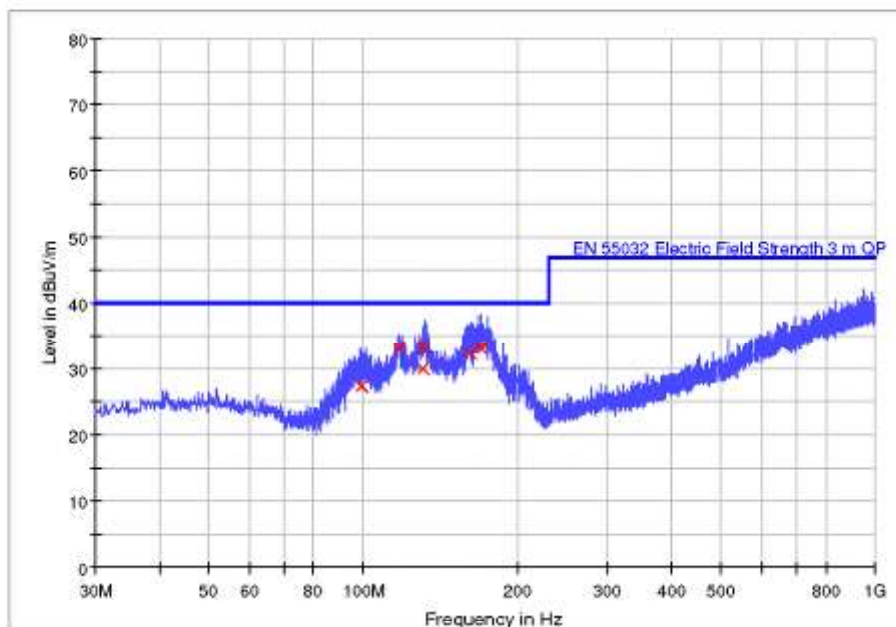
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40B
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal

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



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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
99.000000	27.3	1000.0	120.000	H	17.1	12.7	40.0	
117.800000	33.0	1000.0	120.000	H	18.9	7.0	40.0	
131.360000	30.0	1000.0	120.000	H	19.9	10.0	40.0	
131.360000	33.4	1000.0	120.000	H	19.9	6.6	40.0	
161.680000	32.4	1000.0	120.000	H	21.3	7.6	40.0	
170.520000	33.1	1000.0	120.000	H	20.9	6.9	40.0	

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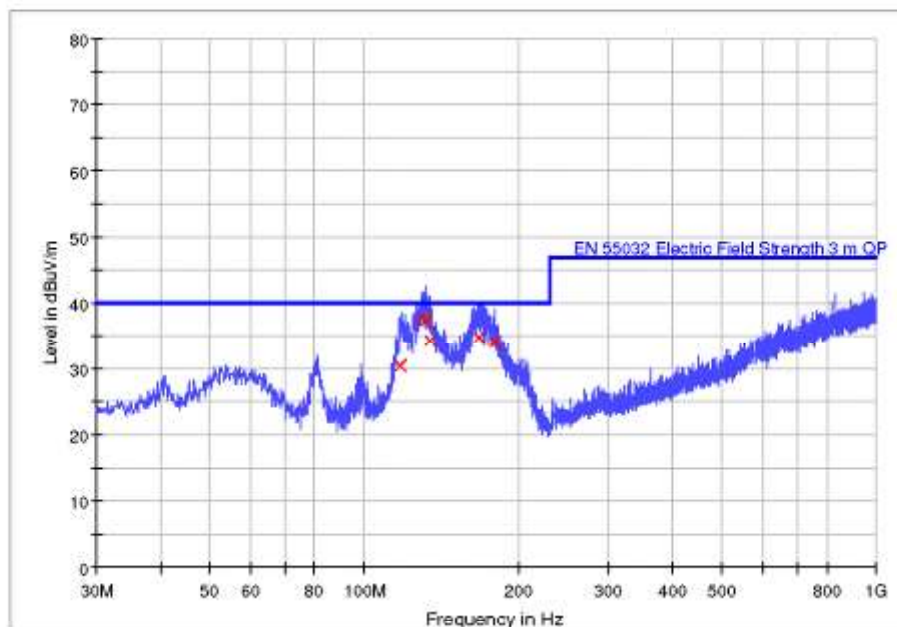
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40B
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Vertical
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



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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
118.040000	30.6	1000.0	120.000	V	18.9	9.4	40.0	
130.280000	37.7	1000.0	120.000	V	18.8	2.3	40.0	
131.600000	37.3	1000.0	120.000	V	19.9	2.7	40.0	
134.520000	34.2	1000.0	120.000	V	20.1	5.8	40.0	
168.240000	34.8	1000.0	120.000	V	21.1	5.2	40.0	
179.520000	34.0	1000.0	120.000	V	19.6	6.0	40.0	

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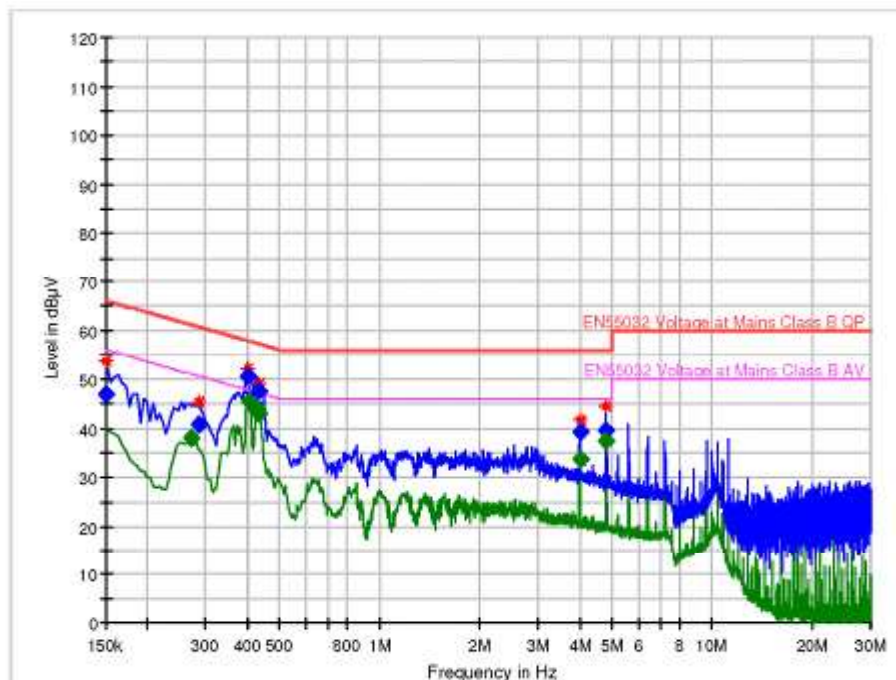
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (EMISSION)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HB
Test Standard:	EN 55032
Test Detail:	Conducted Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq.:	AC 120V/60Hz
Port / Line:	AC mains
Receipt No.:	174091930
Report No.:	/
Result:	Pass
Comment:	/
Hardware Setup:	1phase LISN ENV216 to ESCI 3
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI 3



Tested by *Chris Liang*
20190510

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20190513

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	47.06	---	66.00	18.94	1000.	9.000	L1	OFF	9.8
0.271500	---	37.95	51.07	13.12	1000.	9.000	L1	OFF	9.8
0.285000	40.86	---	60.67	19.81	1000.	9.000	N	OFF	9.7
0.402000	50.52	---	57.81	7.29	1000.	9.000	L1	OFF	9.8
0.406500	---	45.49	47.72	2.23	1000.	9.000	N	OFF	9.7
0.429000	---	43.92	47.27	3.36	1000.	9.000	N	OFF	9.7
0.433500	---	42.88	47.19	4.30	1000.	9.000	L1	OFF	9.8
0.433500	47.68	---	57.19	9.50	1000.	9.000	N	OFF	9.7
4.002000	39.14	---	56.00	16.86	1000.	9.000	L1	OFF	10.2
4.002000	---	33.86	46.00	12.14	1000.	9.000	L1	OFF	10.2
4.798500	---	37.36	46.00	8.64	1000.	9.000	L1	OFF	10.2
4.803000	39.51	---	56.00	16.49	1000.	9.000	L1	OFF	10.2

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

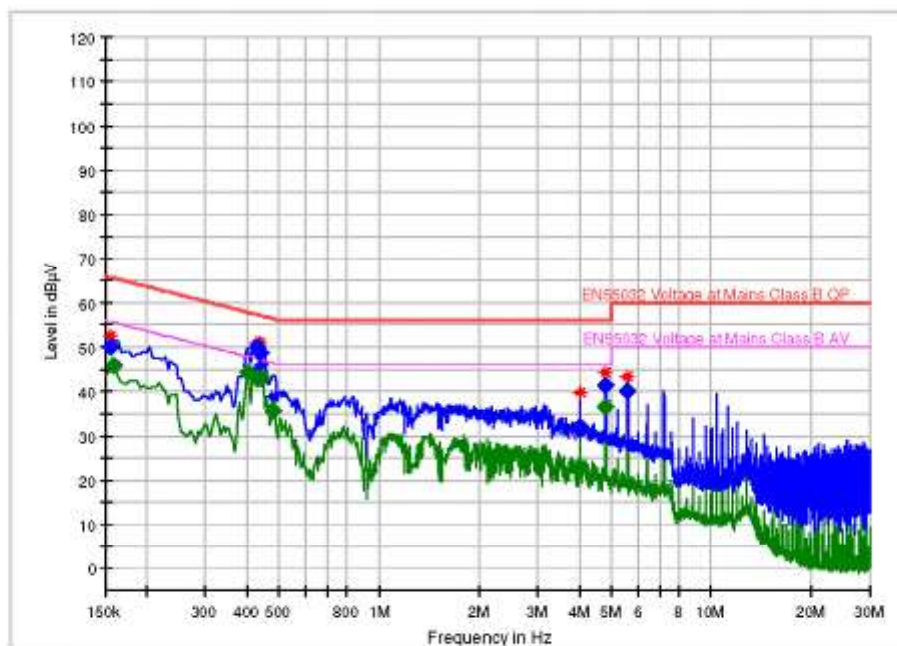
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-40HB
Test Standard: EN 55032
Test Detail: Conducted Emission
Operation Mode: A
Climate Condition: 20 °C, 50 %, 100 kPa
Test Voltage/ Freq.: AC 240V/50Hz
Port / Line: AC mains
Receipt No.: 174091930
Report No.: /
Result: Pass
Comment: /

Hardware Setup: 1phase LISN ENV216 to ESCI 3
Level Unit: dBμV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak, Average	9kHz	4.5kHz	10ms	ESCI 3



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.154500	49.98	---	65.75	15.77	1000.	9.000	L1	OFF	9.8
0.159000	---	45.90	55.52	9.62	1000.	9.000	N	OFF	9.6
0.402000	---	44.29	47.81	3.52	1000.	9.000	N	OFF	9.7
0.429000	---	43.01	47.27	4.26	1000.	9.000	L1	OFF	9.8
0.429000	49.85	---	57.27	7.42	1000.	9.000	L1	OFF	9.8
0.438000	48.65	---	57.10	8.45	1000.	9.000	L1	OFF	9.8
0.442500	---	42.96	47.02	4.05	1000.	9.000	L1	OFF	9.8
0.478500	---	35.70	46.37	10.67	1000.	9.000	N	OFF	9.7
4.011000	32.18	---	56.00	23.82	1000.	9.000	N	OFF	9.9
4.803000	41.50	---	56.00	14.50	1000.	9.000	N	OFF	9.9
4.803000	---	36.45	46.00	9.55	1000.	9.000	N	OFF	9.9
5.608500	40.22	---	60.00	19.78	1000.	9.000	N	OFF	9.9

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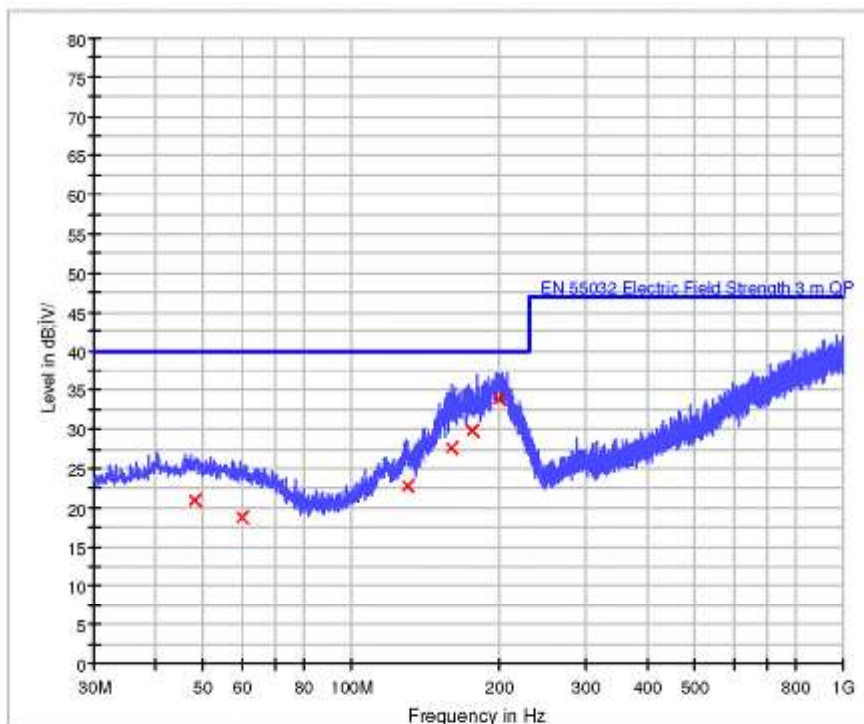
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HB
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Horizontal

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



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dB V/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB V/m)	Comment
48.200000	21.0	1000.0	120.000	H	20.6	19.0	40.0	
60.200000	18.6	1000.0	120.000	H	19.9	21.4	40.0	
129.920000	22.7	1000.0	120.000	H	19.8	17.3	40.0	
160.600000	27.6	1000.0	120.000	H	21.3	12.4	40.0	
176.120000	29.8	1000.0	120.000	H	20.2	10.2	40.0	
200.120000	33.9	1000.0	120.000	H	17.9	6.1	40.0	

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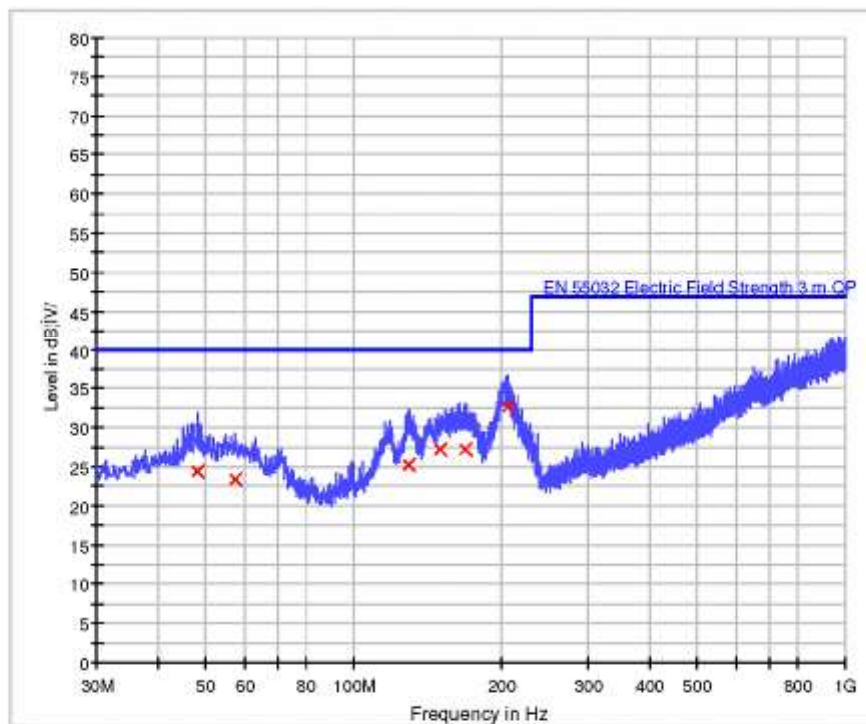
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HB
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
Report No:	/
Result:	Pass
Comment:	Test distance is 3m; Vertical
Subrange 1	
Frequency range:	30-1000MHz
Receiver:	ESCI 3
Transducer:	VULB9168



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dB V/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB V/m)	Comment
48.200000	24.4	1000.0	120.000	V	20.6	15.6	40.0	
57.280000	23.4	1000.0	120.000	V	20.1	16.6	40.0	
129.800000	25.3	1000.0	120.000	V	19.8	14.7	40.0	
150.520000	27.3	1000.0	120.000	V	21.1	12.7	40.0	
169.080000	27.2	1000.0	120.000	V	21.0	12.8	40.0	
205.680000	32.7	1000.0	120.000	V	17.9	7.3	40.0	

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Reviewed by

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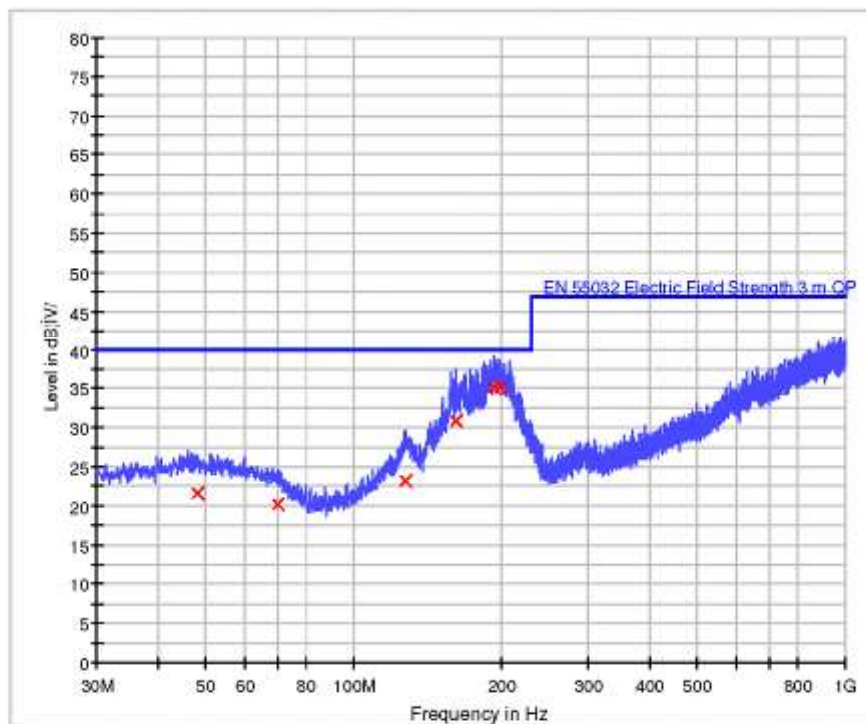
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HB
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
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

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Reviewed by

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dB/μV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB/μV/m)	Comment
47.960000	21.6	1000.0	120.000	H	20.6	18.4	40.0	
70.240000	20.1	1000.0	120.000	H	18.2	19.9	40.0	
127.600000	23.1	1000.0	120.000	H	19.7	16.9	40.0	
161.320000	30.8	1000.0	120.000	H	21.3	9.2	40.0	
192.720000	35.1	1000.0	120.000	H	18.3	5.0	40.0	
199.040000	35.0	1000.0	120.000	H	18.0	5.0	40.0	

Tested by

Chris Liang

Reviewed by

Jacky Chen

20190510

20190513

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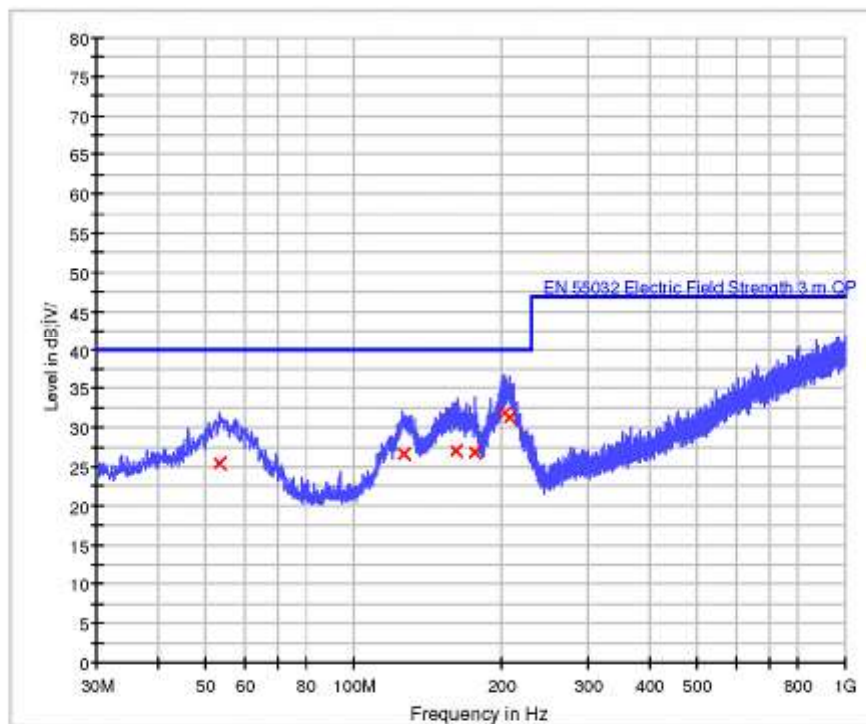
TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HB
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 kPa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
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

20190510

Reviewed by

Jacky Chen

20190513

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dB V/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB V/m)	Comment
53.400000	25.4	1000.0	120.000	V	20.4	14.6	40.0	
126.760000	26.7	1000.0	120.000	V	19.6	13.3	40.0	
161.680000	26.9	1000.0	120.000	V	21.3	13.1	40.0	
176.720000	26.9	1000.0	120.000	V	20.1	13.2	40.0	
202.260000	31.8	1000.0	120.000	V	17.9	8.2	40.0	
208.240000	31.2	1000.0	120.000	V	17.9	8.9	40.0	

Tested by

Chris Liang

Reviewed by

Jacky Chen

20190510

20190513

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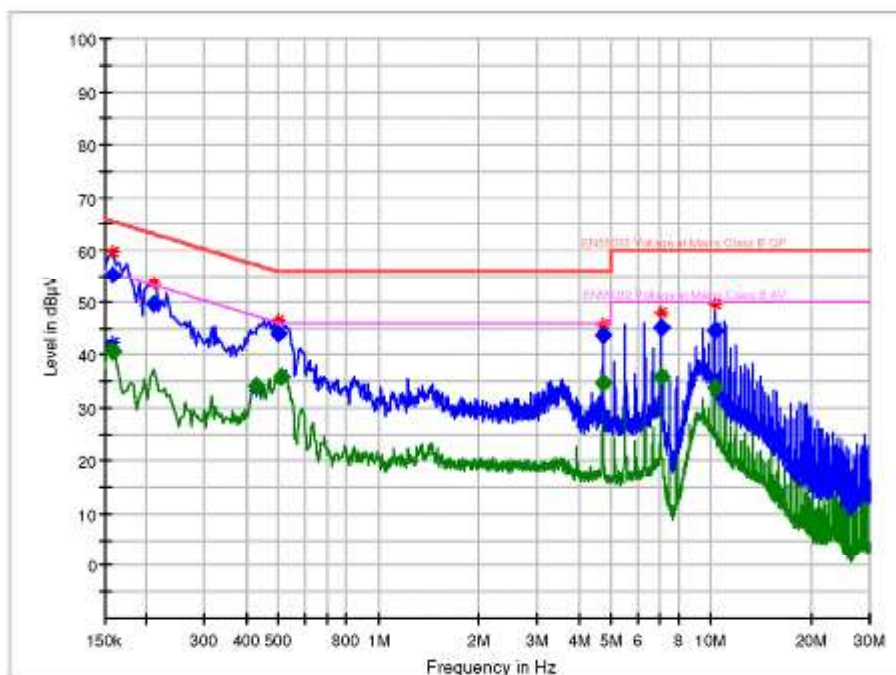
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (EMISSION)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HM
Test Standard:	EN 55032
Test Detail:	Conducted Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq.:	AC 120V/60Hz
Port / Line:	AC mains
Receipt No.:	174091930
Report No.:	/
Result:	Pass
Comment:	/
Hardware Setup:	1phase LISN ENV216 to ESCI 3
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak, Average	9kHz	4.5kHz	10ms	ESCI 3



Tested by

Chris Liang

Reviewed by

Jacky Chen

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.158000	55.23	---	65.57	10.34	1000.	9.000	N	OFF	9.7
0.158000	---	40.74	55.57	14.83	1000.	9.000	N	OFF	9.7
0.210000	49.54	---	63.21	13.67	1000.	9.000	N	OFF	9.7
0.430000	---	34.12	47.25	13.13	1000.	9.000	L1	OFF	9.8
0.498000	44.14	---	56.03	11.90	1000.	9.000	L1	OFF	9.8
0.510000	---	35.97	46.00	10.03	1000.	9.000	L1	OFF	9.9
4.722000	---	34.62	46.00	11.38	1000.	9.000	L1	OFF	10.2
4.726000	43.68	---	56.00	12.32	1000.	9.000	L1	OFF	10.2
7.090000	---	35.79	50.00	14.21	1000.	9.000	L1	OFF	10.3
7.090000	45.27	---	60.00	14.73	1000.	9.000	L1	OFF	10.3
10.242000	44.66	---	60.00	15.34	1000.	9.000	L1	OFF	10.5
10.246000	---	33.88	50.00	16.12	1000.	9.000	L1	OFF	10.5

Tested by

Chris Liang

Reviewed by

Jacky Chen

20190510

20190513

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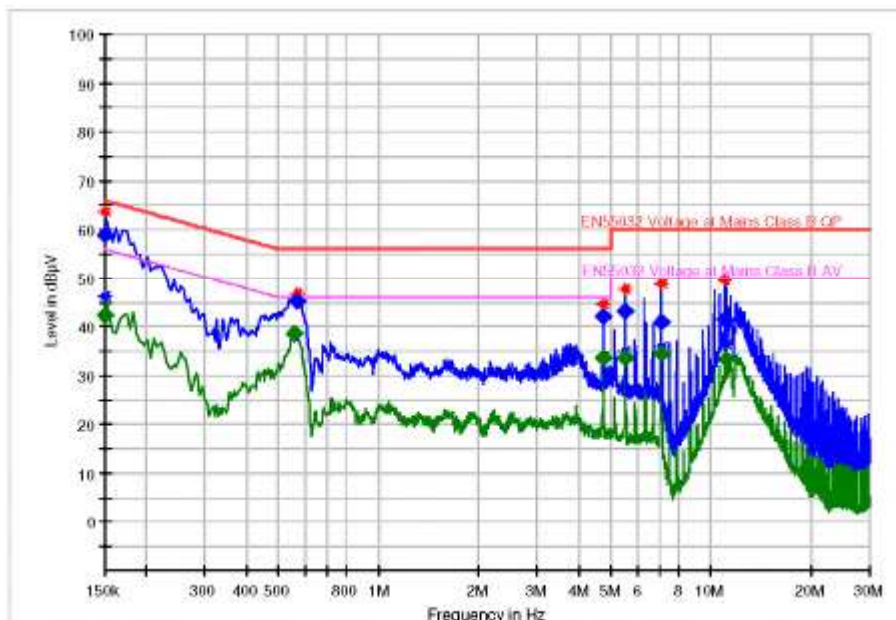
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-40HM
Test Standard: EN 55032
Test Detail: Conducted Emission
Operation Mode: A
Climate Condition: 20 °C, 50 %, 100 k Pa
Test Voltage/ Freq.: AC 240V/50Hz
Port / Line: AC mains
Receipt No.: 174091930
Report No.: /
Result: Pass
Comment: /

Hardware Setup: 1phase LISN ENV216 to ESC13
Level Unit: dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak, Average	9kHz	4.5kHz	10ms	ESC13



Tested by

Chris Liang

Reviewed by

Jacky Chen

20190510

20190513

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Result

Frequency (MHz)	Quasi Peak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	58.89	---	66.00	7.11	1000.	0.200	N	OFF	9.7
0.150000	---	42.38	56.00	13.62	1000.	0.200	L1	OFF	9.8
0.554000	---	38.71	46.00	7.29	1000.	9.000	L1	OFF	9.9
0.570000	45.10	---	56.00	10.90	1000.	9.000	L1	OFF	9.9
4.730000	---	33.50	46.00	12.50	1000.	9.000	L1	OFF	10.2
4.730000	41.92	---	56.00	14.08	1000.	9.000	L1	OFF	10.2
5.518000	43.06	---	60.00	16.94	1000.	9.000	N	OFF	9.9
5.526000	---	33.65	50.00	16.35	1000.	9.000	N	OFF	9.9
7.102000	40.94	---	60.00	19.06	1000.	9.000	N	OFF	10.0
7.102000	---	34.54	50.00	15.46	1000.	9.000	N	OFF	10.0
11.038000	41.61	---	60.00	18.39	1000.	9.000	N	OFF	10.2
11.042000	---	33.26	50.00	16.74	1000.	9.000	N	OFF	10.2

Tested by

Chris Liang

Reviewed by

Jacky Chen

20190510

20190513

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TUV Rheinland (Guangdong) Ltd.

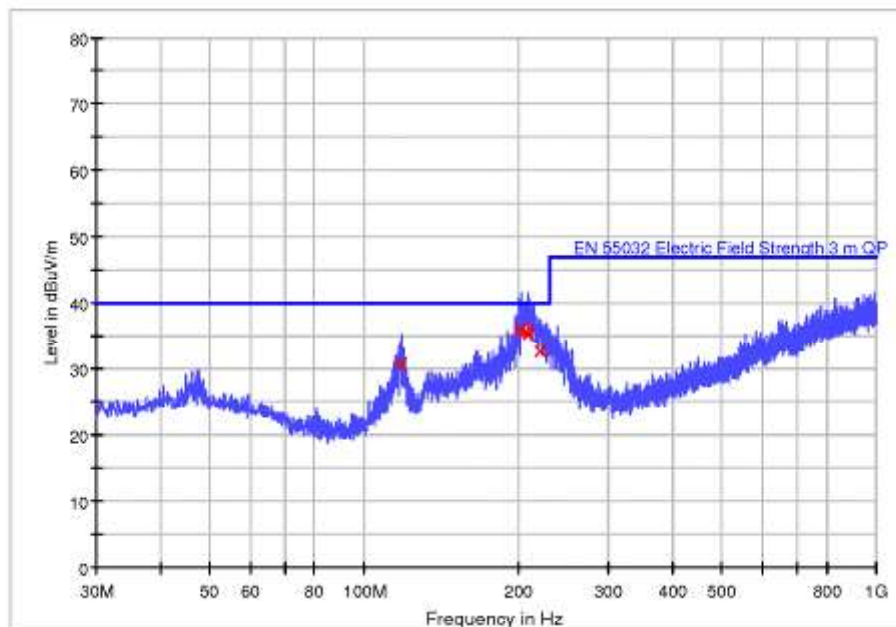
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HM
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
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* Reviewed by: *Jacky Chen*
20190314 20190513

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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
117.680000	30.7	1000.0	120.000	H	18.9	9.3	40.0	
201.680000	36.0	1000.0	120.000	H	17.9	4.0	40.0	
207.520000	35.8	1000.0	120.000	H	17.9	4.2	40.0	
208.960000	35.4	1000.0	120.000	H	17.8	4.7	40.0	
220.840000	32.7	1000.0	120.000	H	17.7	7.3	40.0	
221.560000	32.6	1000.0	120.000	H	17.7	7.4	40.0	

Tested by: *Chris Liang*
20190314

Reviewed by: *Jacky Chen*
20190513

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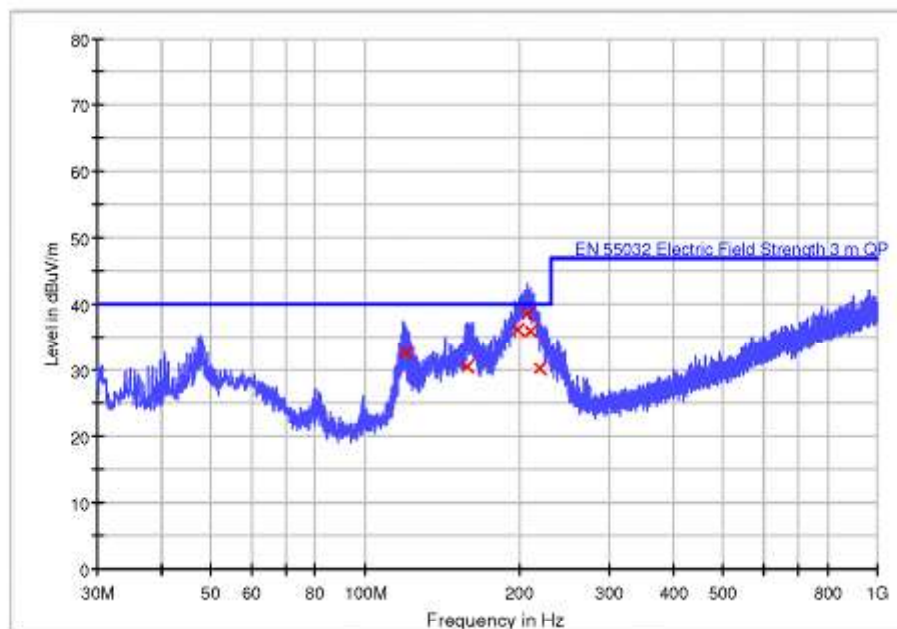
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HM
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	AC 120V/60Hz
Receipt No:	174091930
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* Reviewed by: *Jacky Chen*
20190314 20190513

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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
119.840000	32.5	1000.0	120.000	V	19.1	7.5	40.0	
158.400000	30.6	1000.0	120.000	V	21.3	9.4	40.0	
198.920000	36.2	1000.0	120.000	V	18.0	3.8	40.0	
207.760000	38.5	1000.0	120.000	V	17.9	1.5	40.0	
209.800000	35.9	1000.0	120.000	V	17.8	4.1	40.0	
219.640000	30.3	1000.0	120.000	V	17.7	9.7	40.0	

Tested by: *Chris Liang*
20190314

Reviewed by: *Jacky Chen*
20190513

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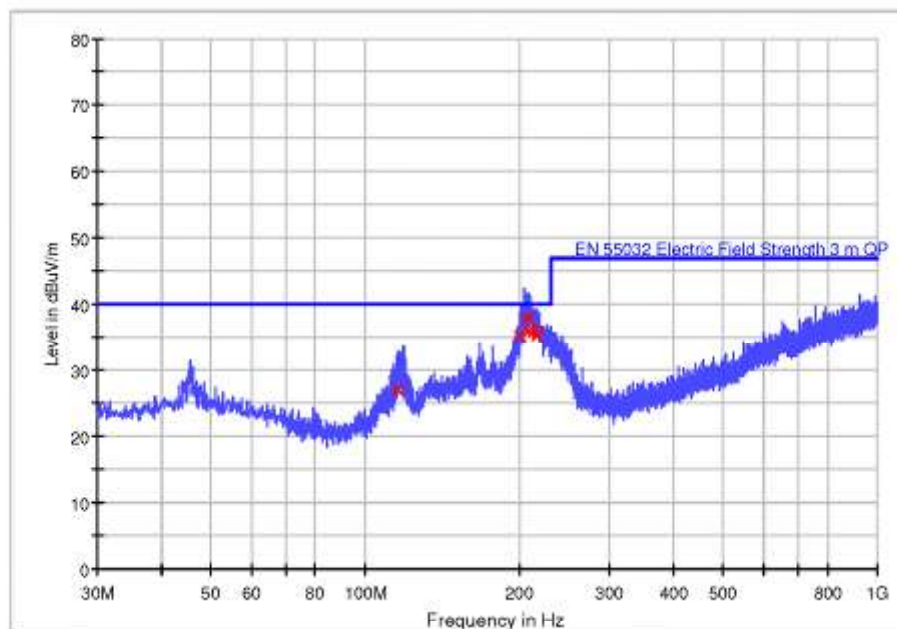
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HM
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
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* Reviewed by: *Jacky Chen*
20190314 20190513

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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
116.440000	26.9	1000.0	120.000	H	18.8	13.1	40.0	
200.840000	35.3	1000.0	120.000	H	17.9	4.7	40.0	
208.000000	37.9	1000.0	120.000	H	17.9	2.2	40.0	
209.080000	36.1	1000.0	120.000	H	17.8	3.9	40.0	
213.680000	36.1	1000.0	120.000	H	17.8	3.9	40.0	
216.360000	35.3	1000.0	120.000	H	17.7	4.7	40.0	

Tested by: *Chris Liang* Reviewed by: *Jacky Chen*
20190314 20190513

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TUV Rheinland (Guangdong) Ltd.

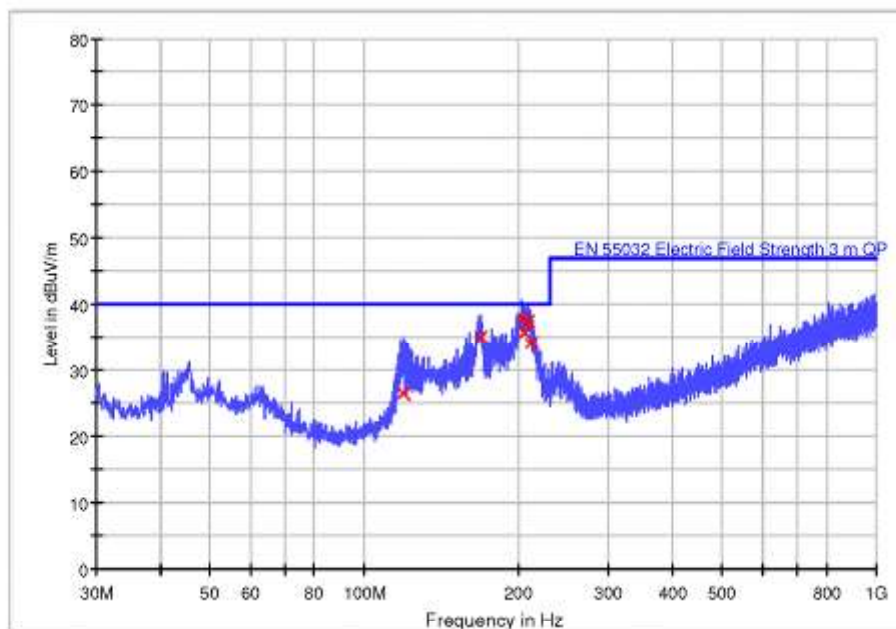
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HM
Test Standard:	EN 55032
Test Detail:	Radiated Emission
Operation Mode:	A
Climate Condition:	20 °C, 50 %, 100 k Pa
Test Voltage/ Freq:	AC 240V/50Hz
Receipt No:	174091930
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* Reviewed by: *Jacky Chen*
20190314 20190513

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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
119.360000	26.5	1000.0	120.000	V	19.1	13.5	40.0	
168.960000	34.9	1000.0	120.000	V	21.0	5.1	40.0	
204.480000	38.0	1000.0	120.000	V	17.8	2.0	40.0	
206.040000	35.6	1000.0	120.000	V	17.9	4.4	40.0	
208.480000	37.5	1000.0	120.000	V	17.9	2.5	40.0	
211.880000	34.1	1000.0	120.000	V	17.8	5.9	40.0	

Tested by: *Chris Liang* Reviewed by: *Jacky Chen*
20190314 20190513

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Measurement Equipment List

Testing Start Date 14.05.2019
Testing end date 25.06.2019

Project Manager Arthur Liu
Cost Center 41
Test Report Number 50264155 001
Order Item Number 0174091930A00100

Customer Seikaku Technical Group Limited
Product Name AMPLIFIER
Comment

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Old ID	Equip.	Description	Model	Manufacturer	Inte. (mon)	Due Date DD.MM.YYYY
1.806	1813830	Harmonics and Flicker Analyzer	DPA 500	EM TEST	12	26.04.2020
1.806A	1813831	AC Source	ACS 500	EM TEST	12	26.04.2020
1.887	1813944	EMI Test Receiver	ESCI	Rohde & Schwarz	12	15.03.2020
1.886	1813943	Two-Line V-Network	ENV216	Rohde & Schwarz	12	24.05.2020
1.921B	1814142	Trilog Broadband Antenna	VULB9168(6dB)	SCHWARZBECK	24	20.09.2019
1.623	1813818	ESD Gun	NSG 437	TESEQ	12	02.07.2019
1.677	1813715	Ultra Compact Simulator	UCS 500-M4	EM TEST	12	15.03.2020
1.678	1813716	Motorised Variac	MV 2616	EM TEST	12	15.03.2020
1.679	1813717	Magnetic Field Coil	MS 100	EM TEST	12	15.03.2020
1.680	1813718	Current Transformer	MC 2630	EM TEST	12	15.03.2020
1.701	1814023	Burst EFT coupling clamp	CDN3425	TESEQ	12	15.03.2020
1.666	1813697	SAC	N/A	Albatross Project	36	27.11.2021
1.923	1814067	EMI Test Receiver	ESR7	Rohde & Schwarz	12	15.03.2020
1.913	1814012	Shielding Room	9x4x3.4	Changzhou Yuanping	60	06.12.2020

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Test Report No.

BTL Inc.

RS Measurement Instruments List

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	ETS	3142C	47662	Mar. 11, 2020
2	Amplifier	AR	50S1G4A	326720	Mar. 28, 2020

3	Audio Test System	Audio precision	ATS-1ACCESS	ATS1-45376	Mar. 11, 2020
4	Universal Radio Communication Tester	R&S	CMU 200	115711	Mar. 11, 2020
5	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 11, 2020
6	MXG Analog Signal Generator	Agilent	N5181A	MY49060710	Aug. 20, 2019
7	Conditioning Amplifier	B&K	_2690__0F2_	2723746	Jul. 03, 2019
8	Power amplifier	MILMEGA	AS1860-50	1064834	Aug. 20, 2020
9	Microwave Log.-Per. Antenna	TESEQ	STLP 9149	9149-277	Mar. 11, 2021
10	Power amplifier	MILMEGA	80RF1000-250	1064833	Aug. 20, 2020
11	wideband radio communication tester	R&S	CMW500	152372	Mar. 11, 2020
13	Free-field 1/2" Microphone	B&K	4190-L-001	2913343	Jun. 21, 2020

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CS Measurement Instruments List

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EM Clamp	MEB	KEMZ801	14291	Mar. 11, 2020
2	Audio Test System	Audio precision	ATS-1ACCESS	ATS1-45376	Mar. 11, 2020
3	Universal Radio Communication Tester	R&S	CMU 200	115711	Mar. 11, 2020
4	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 11, 2020
5	Power CDN	FCC	FCC-801-M2/M3-16A	100270	Mar. 11, 2020
6	Power CDN	FCC	FCC-801-M2/M3-16A	100271	Mar. 11, 2020
7	Signal Line CDN	FCC	FCC-801-T8-SRJ45	100273	Mar. 11, 2020
8	Signal Line CDN	FCC	FCC-801-T2-RJ11	100269	Mar. 11, 2020

9	Signal Line CDN	FCC	FCC-801-T4-RJ45	100272	Mar. 11, 2020
10	Conditioning Amplifier	B&K	_2690__0F2_	2723746	Jul. 03, 2019
11	TEST SYSTEM FOR CONDUCTED AND	TESEQ	NSG 4070B	37513	Sep. 04, 2019
12	wideband radio communication tester	R&S	CMW500	152372	Mar. 11, 2020
15	Free-field 1/2" Microphone	B&K	4190-L-001	2913343	Jun. 21, 2020
16	UPV Audio Analyzer	R&S	UPV	104259	Mar. 11, 2020