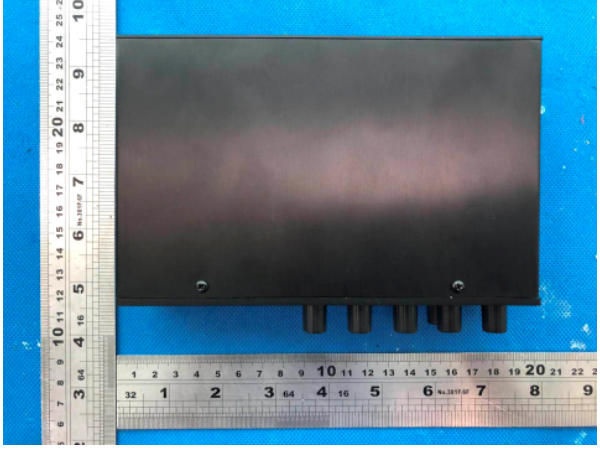


Prüfbericht-Nr.: <i>Test Report No.:</i>	50264153 001	Auftrags-Nr.: <i>Order No.:</i>	174091930	Seite 1 von 26 <i>Page 1 of 26</i>	
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	352690	Auftragsdatum: <i>Order date:</i>	14.05.2019		
Auftraggeber: <i>Client:</i>	Seikaku Technical Group Limited Offshore Chambers, P.O. Box 217 Apia, Samoa				
Prüfgegenstand: <i>Test item:</i>	AMPLIFIER				
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	PA-20B, PA-20HB PA-40B, PA-40HB				
Auftrags-Inhalt: <i>Order content:</i>	RED approval				
Prüfgrundlage: <i>Test specification:</i>	EN 301 489-1 V2.2.1:2019 EN 301 489-17 V3.2.0:2017 EN 61000-3-2:2014 EN 61000-3-3:2013				
Wareneingangsdatum: <i>Date of receipt:</i>	14.05.2019				
Prüfmuster-Nr.: <i>Test sample No.:</i>	174091930-001~004				
Prüfzeitraum: <i>Testing period:</i>	Refer to report				
Ort der Prüfung: <i>Place of testing:</i>	Refer to section 2.1				
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Guangdong) Co., Ltd.				
Prüfergebnis*: <i>Test result*:</i>	Pass				
geprüft von / tested by:		kontrolliert von / reviewed by:			
					
12.07.2019	Arthur Liu/ Project Manager	12.07.2019	Storm Shu / Technical Certifier		
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>
Sonstiges / Other:					
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>			Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged:</i>		
* 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					
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 HARMONIC CURRENT EMISSIONS ON AC MAINS

RESULT: Pass

5.1.2 VOLTAGE FLUCTUATIONS AND FLICKER ON AC MAINS

RESULT: Pass

5.1.3 CONDUCTED EMISSION ON AC MAINS

RESULT: Pass

5.1.4 RADIATED EMISSION

RESULT: Pass

5.2.1 RADIO FREQUENCY ELECTROMAGNETIC FIELDS (RS)

RESULT: Pass

5.2.2 RADIO FREQUENCY CONTINUOUS CONDUCTED (CS)

RESULT: Pass

5.2.3 ELECTROSTATIC DISCHARGE (ESD)

RESULT: Pass

5.2.4 ELECTRICAL FAST TRANSIENTS (EFT)

RESULT: Pass

5.2.5 SURGE

RESULT: Pass

5.2.6 VOLTAGE DIPS AND INTERRUPTIONS

RESULT: Pass

Contents

1	GENERAL REMARKS	4
1.1	COMPLEMENTARY MATERIALS	4
2	TEST SITES	4
2.1	TEST FACILITIES	4
2.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS.....	5
2.3	UNCERTAINTY OF MEASUREMENT	5
3	GENERAL PRODUCT INFORMATION	6
3.1	PRODUCT FUNCTION AND INTENDED USE.....	6
3.2	RATINGS AND SYSTEM DETAILS	7
3.3	INDEPENDENT OPERATION MODES	7
3.4	NOISE GENERATING AND NOISE SUPPRESSING PARTS	7
3.5	SUBMITTED DOCUMENTS.....	8
4	TEST SET-UP AND OPERATION MODES	9
4.1	PRINCIPLE OF CONFIGURATION SELECTION	9
4.2	TEST OPERATION AND TEST SOFTWARE	9
4.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	9
4.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE	9
5	TEST RESULTS OF EMC REQUIREMENT.....	10
5.1	TEST RESULTS OF EMISSION	10
5.1.1	Harmonic Current Emissions on AC Mains.....	10
5.1.2	Voltage Fluctuations and Flicker on AC Mains	11
5.1.3	Conducted Emission on AC Mains.....	12
5.1.4	Radiated Emission	13
5.2	TEST RESULTS OF IMMUNITY	14
5.2.1	Radio Frequency Electromagnetic Fields (RS)	14
5.2.2	Radio Frequency Continuous Conducted (CS).....	15
5.2.3	Electrostatic Discharge (ESD).....	16
5.2.4	Electrical Fast Transients (EFT).....	17
5.2.5	Surge.....	18
5.2.6	Voltage Dips and Interruptions.....	19
6	PHOTOGRAPHS OF THE TEST SET-UP	20
7	LIST OF TABLES.....	26
8	LIST OF PHOTOGRAPHS	26

1 General Remarks

1.1 Complementary Materials

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

Appendix 1: Test Results of Article 3.1b EMC Requirements.

Appendix 2: List of Test and measurement Instruments

2 Test Sites

2.1 Test Facilities

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 Items: others

Shenzhen STS Test Services Co., Ltd.

1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China

Test Items: RS(1-6GHz)

The tests at the test sites have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Refer to attached Appendix 2.

2.3 Uncertainty of Measurement

Table 2: Measurement Uncertainty

Parameter	Uncertainty
Conducted Emission, 150k-30MHz	2.68dB
Radiated Emission, below 1GHz	5.16dB

3 General Product Information

3.1 Product Function and Intended Use

The new submitted samples are Amplifiers for professional use, which used 2.4GHz wireless technology for indoor use only.

Model difference:

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

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

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

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

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Information of EUT	Value
Kind of Equipment	Amplifiers
Type Designation	PA-20B, PA-20HB, PA-40B, PA-40HB
Type of Device	Adaptive Frequency Hopping (non-LBT based)
Classification of Receiver	Category 2
Operating Temperature Range	-20 °C ~ +35 °C
Operating Voltage	100-240V~; 50/60Hz Powered by Adapter; XinSPower: A361-1502000E(2A, for PA-20B, PA-20HB) A361-1504000E(4A, for PA-40B, PA-40HB)
Testing Voltage	AC 230V 50Hz
Technical Specification of Bluetooth 4.0 Smart(dual mode)	
Operating Frequency	2402 - 2480 MHz
Type of Modulation	GFSK, ($\pi/4$)DQPSK, 8DPSK
Equipment types	FHSS with Adaptive (LBT based DAA) DSSS with Adaptive (LBT based DAA) Only one adaptive mode is implemented and could not operate in a non-adaptive mode
Channel Number	79 Channels(for FHSS) 40 Channels(for DSSS)
Channel Spacing	1 MHz (for FHSS) 2 MHz (for DSSS)
Antenna Type	PCB Layout Antenna
Antenna Gain	0 dBi

3.3 Independent Operation Modes

The basic operation modes are:

- A. wireless connecting
- B. Off

3.4 Noise Generating and Noise Suppressing Parts

For details refer to the Circuit Diagram.

3.5 Submitted Documents

- Parts List
- Schematics
- 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 Test Operation and Test Software

Test operation refers to test setup in chapter 5 and chapter 6

4.3 Special Accessories and Auxiliary Equipment

None

4.4 Countermeasures to Achieve EMC Compliance

No additional countermeasures to the submitted test sample(s) were employed to achieve compliance.

5 Test Results of EMC Requirement

5.1 Test Results of EMISSION

5.1.1 Harmonic Current Emissions on AC Mains

RESULT:

Pass

Test Specification

Test standard	: EN 301 489-17 V3.2.0:2017 EN 61000-3-2: 2014
Basic standard	: EN 301 489-1 V2.2.1:2019, Clause 8.5
Measured harmonics	: 2 - 40
Classification	: Class A
Limit	: EN 61000-3-2: 2014, Clause 7.1 Table 1

Test Set-up

Date of testing	: Refer to appendix 1
Input Voltage	: AC230V, 50Hz
Operational Mode	: A
Test observation period	: 150 s
Temperature	: 22°C
Humidity	: 52%
Air pressure	: 101kPa

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

5.1.3 Conducted Emission on AC Mains

RESULT:**Pass****Test Specification**

Test standard	: EN 301 489-17 V3.2.0:2017
Basic standard	: EN 301 489-1 V2.2.1:2019 EN 55032: 2015
Test requirement	: EN 301 489-1 V2.2.1:2019, Clause 8.4
Frequency range	: 150 KHz – 30 MHz
Kind of test site	: Shielded Room
Limit	: EN 301 489-1 V2.2.1:2019, Clause 8.4.3.2

Test Setup

Date of testing	: Refer to appendix 1
Test voltage	: Refer to appendix 1
Operation mode	: A
Test ports	: AC mains terminals
Earthing	: Not connected
Test configuration	: Table-top
Ambient temperature	: 23 °C
Relative humidity	: 55 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix 1.

5.1.4 Radiated Emission

RESULT:**Pass****Test Specification**

Test standard	: EN 301 489-17 V3.2.0:2017
Basic standard	: EN 301 489-1 V2.2.1:2019 EN 55032: 2015
Test requirement	: EN 301 489-1 V2.2.1:2019, Clause 8.2
Classification	: Class B
Frequency range	: 30 MHz – 1 GHz
Kind of test site	: 3m Semi-anechoic Chamber
Limit	: EN 301 489-17 V3.2.0:2017, Clause 8.2.3

Test Setup

Date of testing	: Refer to appendix 1
Test voltage	: Refer to appendix 1
Operation mode	: A
Test Ports	: Enclosure
Earthing	: Not connected
Ambient temperature	: 22 °C
Relative humidity	: 52 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix 1.

5.2 Test Results of IMMUNITY

5.2.1 Radio Frequency Electromagnetic Fields (RS)

RESULT:
Pass
Test Specification

Test standard	: EN 301 489-17 V3.2.0:2017
Basic standard	: EN 301 489-1 V2.2.1:2019 EN 61000-4-3: 2006+A1:2008+A2:2010
Test requirement	: EN 301 489-1 V2.2.1:2019, Clause 9.2
Frequency range	: 80 MHz to 6000 MHz
Test level	: 3 V/m, (unmodulated, r.m.s)
Modulation	: 80% AM by a sinusoidal signal of 1kHz
Kind of test site	: 3m Full-anechoic Chamber
Performance criteria	: A (Transmitters: CT & Receivers: CR)

Test Setup

Date of testing	: 12.05.2019
Test voltage	: AC230 50Hz
Operation mode	: A
Test Ports	: Enclosure
Ambient temperature	: 22 °C
Relative humidity	: 52%
Atmospheric pressure	: 101 kPa

Table 4: Test Result of Radio Frequency Electromagnetic Fields (RS)

Test EUT	Test Frequency Band	Test port	Polarity	Location	Actual Performance
PA-40HB PA-20HB PA-20B	80MHz – 1000MHz	Enclosure	Vertical / Horizontal	Front	A*
				Rear	A*
				Left	A*
				Right	A*
	1000MHz – 6000MHz	Enclosure	Vertical / Horizontal	Front	A*
				Rear	A*
				Left	A*
				Right	A*

*Remark: No degradation was observed during and after the tests.

5.2.2 Radio Frequency Continuous Conducted (CS)

RESULT:
Pass
Test Specification

Test standard	: EN 301 489-17 V3.2.0:2017
Basic standard	: EN 301 489-1 V2.2.1:2019 EN 61000-4-6: 2009
Test requirement	: EN 301 489-1 V2.2.1:2019, Clause 9.5
Frequency range	: 0.15 - 80 MHz
Source impedance	: 150 Ω
Test level	: 3V ms (unmodulated, r.m.s.)
Modulation	: AM 80%, 1 kHz sine-wave
Sweep mode	: Automatic
Sweep rate	: $< 1.5 \times 10^{-3}$ decade / sec.
Performance criteria	: A (Transmitters: CT & Receivers: CR)

Test Setup

Date of testing	: 05.12.2019
Input voltage	: AC 230V, 50Hz
Operation mode	: A
Test Ports	: AC mains power port
Earthing	: Connected
Ambient temperature	: 25.1 °C
Relative humidity	: 49 %
Atmospheric pressure	: 100 kPa

Table 5: Test Result of Radio Frequency Continuous Conducted (CS)

Coupling point	Application	Level (V(r.m.s))	Remark
Power ports			
AC power port	CDN-M2	3	Applied, *)
		3	Applied, *)
DC power port	EM clamp	3	Applied, *)
		3	Applied, *)
Signal lines			
Control port	Current Clamp	3	N/A
	EM clamp	3	Applied, *)
Control lines	Current Clamp	3	N/A
	EM clamp	3	N/A

*)Remark: No degradation was observed during and after the tests.

5.2.3 Electrostatic Discharge (ESD)

RESULT:
Pass
Test Specification

Test standard	: EN 301 489-17 V3.2.0:2017
Basic standard	: EN 301 489-1 V2.2.1:2019 EN 61000-4-2: 2009
Test requirement	: EN 301 489-1 V2.2.1:2019, Clause 9.3
Discharge impedance	: 330 Ω / 150 pF
Test level	: Air discharge: ± 2 kV, ± 4 kV, ± 8 kV Contact discharge: ± 4 kV HCP & VCP: ± 4 kV
Position	: All exposed surfaces
Performance criteria	: B (Transmitters: TT & Receivers: TR)

Test Setup

Date of testing	: 05.12.2019
Input voltage	: AC 230V 50Hz
Operation mode	: A
Test Ports	: Enclosure
Earthing	: Connected
Ambient temperature	: 22 °C
Relative humidity	: 52 %
Atmospheric pressure	: 101kPa

Table 6: Test Result of Electrostatic Discharge (ESD)

Test EUT	Test Level	Location	Actual Performance
PA-40HB PA-20HB PA-20B	± 4 kV / Contact	HCP	A*
		VCP	A*
		Conducted Enclosure	A*
	± 2.0 kV, ± 4.0 kV, ± 8.0 kV / Air	Non-conducted Enclosure	A*
		Button	A*
		Slot	A*

*Remark: No degradation was observed during and after the tests.

5.2.4 Electrical Fast Transients (EFT)

RESULT:
Pass
Test Specification

Test requirement	: EN 301 489-17 V3.2.0:2017
Basic standard	: EN 301 489-1 V2.2.1:2019 EN 61000-4-4: 2004+A1:2010
Test requirement	: EN 301 489-1 V2.2.1:2019, Clause 9.4
Test level	: ± 1.0 kV on AC
Test duration	: 2 minute per level & polarity
Rise time	: 5/50ns
Repetition frequency	: 5 KHz
Performance criteria	: B (Transmitters: TT & Receivers: TR)

Test Setup

Date of testing	: 05.12.2019
Input voltage	: AC 230V,50Hz
Operation mode	: A
Test Ports	: AC input port; DC port; signal port
Earthing	: Not connected
Ambient temperature	: 22 °C
Relative humidity	: 52 %
Atmospheric pressure	: 101kPa

Table 7: Test Result of Electrical Fast Transients (EFT)

Coupling point	Application	Level(kV)	Polarity	Remark
Power ports				
AC power port	Coupling/Decoupling network	1	+	Applied, *)
		1	-	Applied, *)
DC power port	Capacitive Coupling Clamp	0.5	+	Applied, *)
		0.5	-	Applied, *)
Signal lines				
Control port	Capacitive Coupling Clamp	0.5	+	Applied, *)
		0.5	-	Applied, *)
Control lines				
	Capacitive Coupling Clamp	0.5	+	N/A
		0.5	-	N/A

*Remark: No degradation was observed during and after the tests.

5.2.5 Surge

RESULT:
Pass
Test Specification

Test standard	: EN 301 489-17 V3.2.0:2017
Basic standard	: EN 301 489-1 V2.2.1:2019 EN 61000-4-5: 2006
Test requirement	: EN 301 489-1 V2.2.1:2019, Clause 9.8
Test level	: ± 1.0 kV line to line
Repetition rate	: Max. 1/min
Performance criteria	: B (Transmitters: TT & Receivers: TR)

Test Setup

Date of testing	: 05.12.2019
Input voltage	: AC 230V,50Hz
Operation mode	: A
Test Ports	: ± 1.0 kV line to line on AC
T_r / T_h	: 1,2 / 50 μ s
Earthing	: Connected
Ambient temperature	: 22 °C
Relative humidity	: 52%
Atmospheric pressure	: 101 kPa

Table 8: Test Result of Surge

Test EUT	Coupling Port	Test Level ($\pm$ kV)	Coupling Phase	Actual Performance
PA-40HB PA-20HB PA-20B	AC mains power port	± 1.0 kV line to line	0	A*
			$\pi/2$	A*
			π	A*
			$3\pi/2$	A*

*Remark: No degradation was observed during and after the tests.

5.2.6 Voltage Dips and Interruptions

RESULT:
Pass
Test Specification

Test requirement	: EN 301 489-17 V3.2.0:2017
Basic standard	: EN 301 489-1 V2.2.1:2019 EN 61000-4-11: 2004
Test requirement	: EN 301 489-1 V2.2.1:2019, Clause 9.7
Test level	: Voltage dips: ☒ 0 % residual voltage for 0,5 cycle ☒ 0 % residual voltage for 1 cycle ☒ 70 % residual voltage for 25 cycles (at 50 Hz) Voltage interruptions: ☒ 0 % residual voltage for 250 cycles (at 50 Hz).
Performance criteria	: B (Transmitters: TT & Receivers: TR) C (Transmitters: TT & Receivers: TR) for 250 cycles

Test Setup

Date of testing	: 05.12.2019
Input voltage	: AC 230V,50Hz
Operation mode	: A
Test Ports	: AC mains power port
Earthing	: Connected
Ambient temperature	: 25.1 °C
Relative humidity	: 49 %
Atmospheric pressure	: 100 kPa

Table 9: Test Result of Voltage Dips and Interruptions

Test EUT	Coupling Port	Voltage Reduction (%)	Reduction Duration (in Period)	Actual Performance
PA-40HB PA-20HB PA-20B	AC mains power port	100%	0.5	A*
		100%	1	A*
		30%	25	A*
		100%	250	B**

*Remark: No degradation was observed during and after the tests.

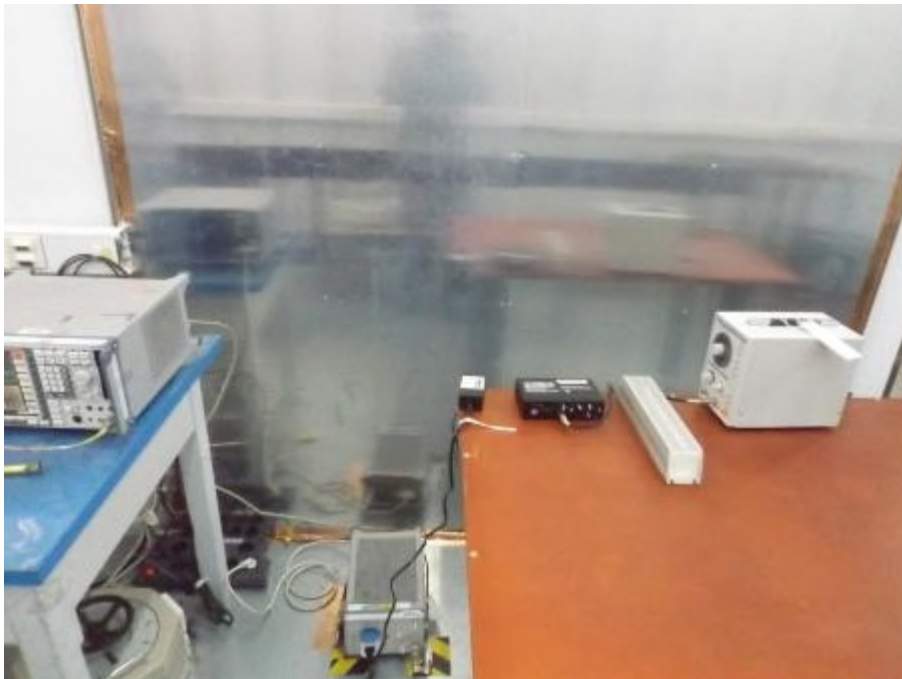
**Remark: During the test, The EUT turned off. However, it could restore automatically after test.

6 Photographs of the Test Set-Up

Photograph 1: Test Set-up for Harmonic Current Emissions



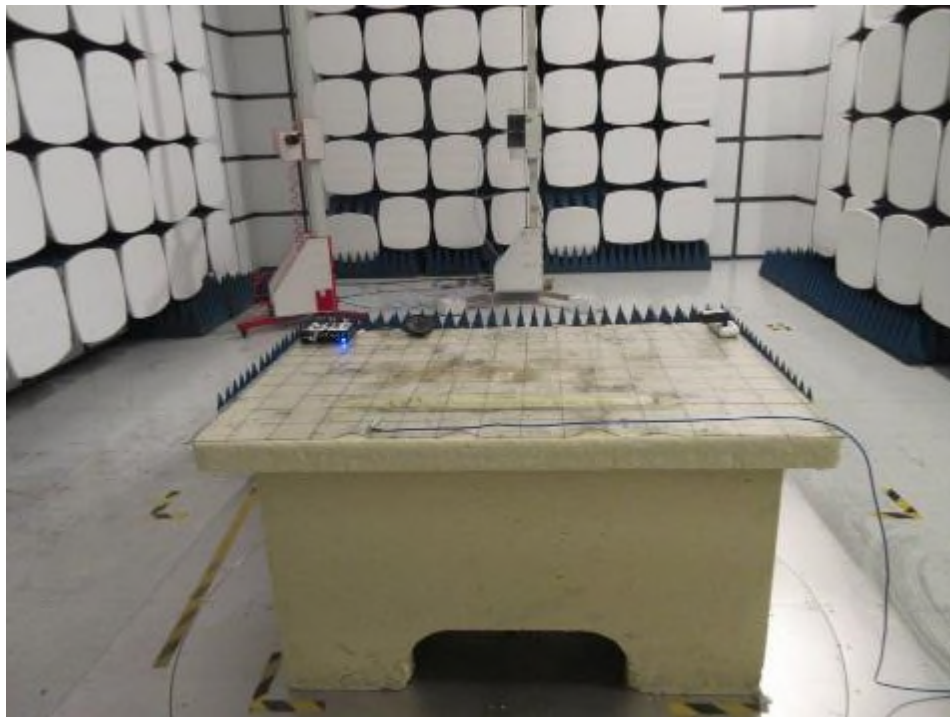
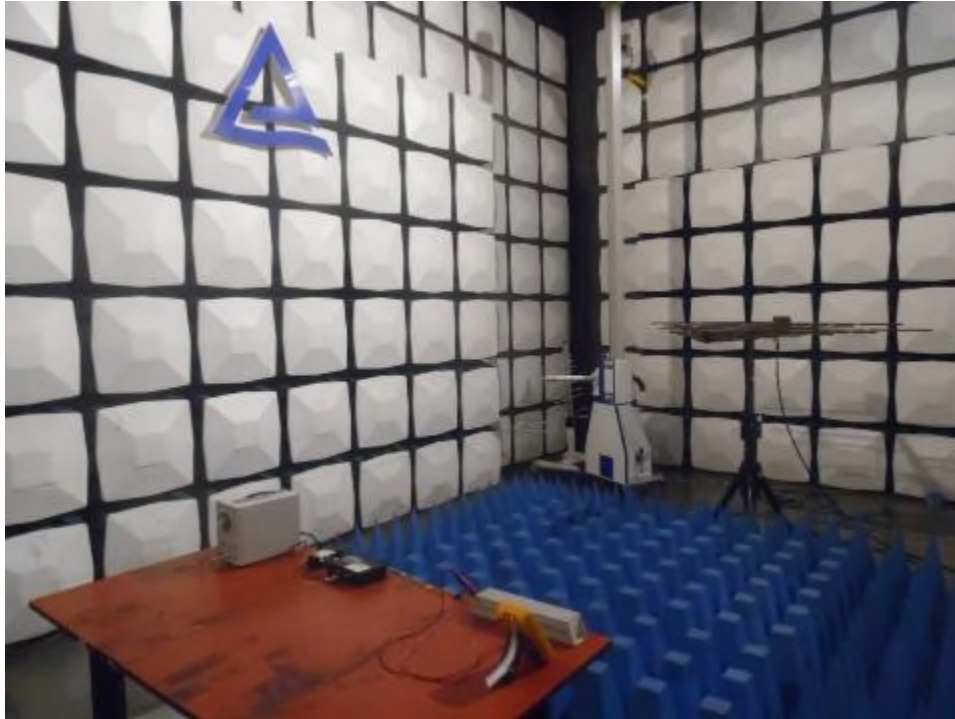
Photograph 2: Set-up for Conducted Emission on AC Mains



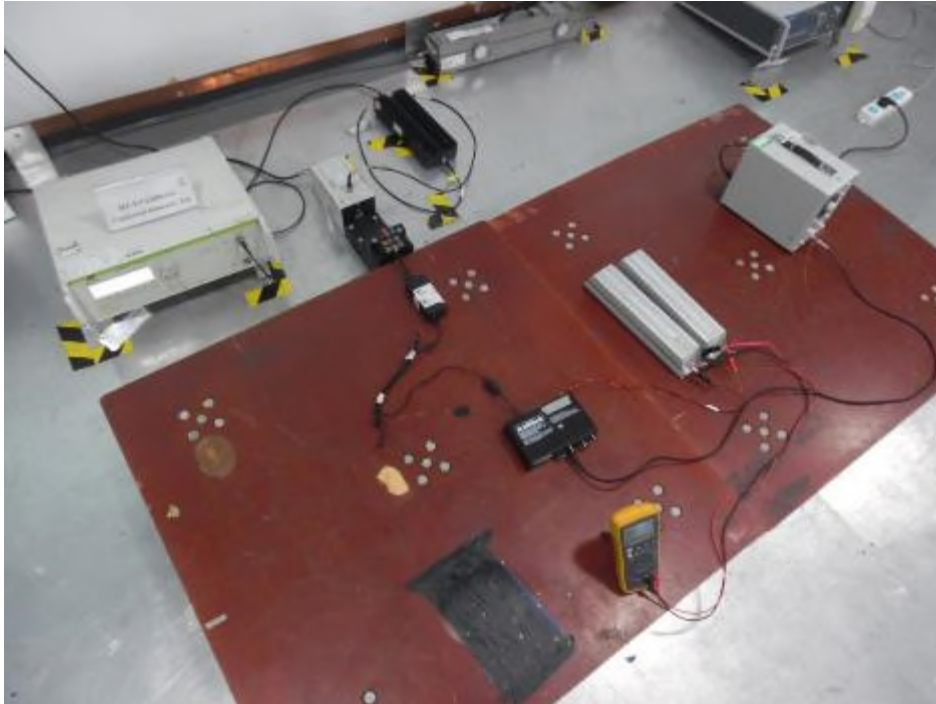
Photograph 3: Set-up for Radiated Disturbances (30 MHz – 1GHz)

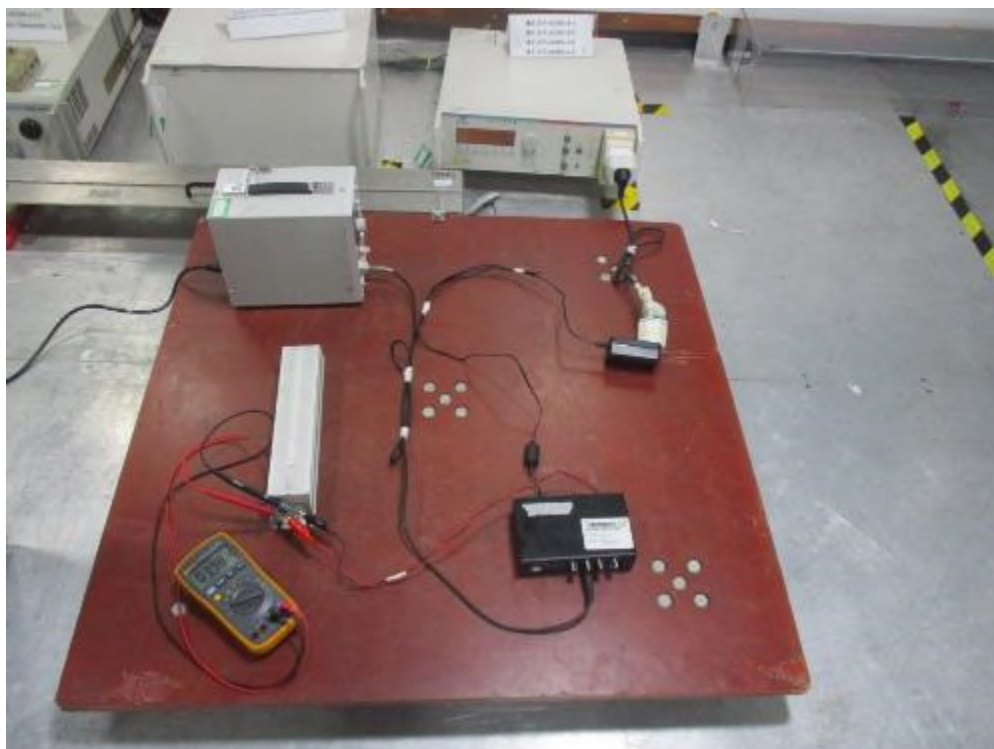


Photograph 4: Set-up for Radio-frequency Electromagnetic Field Susceptibility



Photograph 5: Set-up for Radio-frequency Common Mode / Conducted



Photograph 6: Set-up for Electrostatic Discharge⚡ Contact Discharge $\pm 4\text{kV}$ ⚡ Air Discharge $\pm 2, 4, 8\text{kV}$ **Photograph 7: Set-up for EFT**

Photograph 8: Set-up for Surge & Voltage Dips and Interruptions



7 List of Tables

Table 1: List of Test and Measurement Equipment.....	5
Table 2: Measurement Uncertainty.....	5
Table 3: Technical Specification of EUT	7
Table 4: Test Result of Radio Frequency Electromagnetic Fields (RS).....	14
Table 5: Test Result of Radio Frequency Continuous Conducted (CS).....	15
Table 6: Test Result of Electrostatic Discharge (ESD).....	16
Table 7: Test Result of Electrical Fast Transients (EFT).....	17
Table 8: Test Result of Surge	18
Table 9: Test Result of Voltage Dips and Interruptions	19

8 List of Photographs

Photograph 1: Test Set-up for Harmonic Current Emissions.....	20
Photograph 2: Set-up for Conducted Emission on AC Mains	20
Photograph 3: Set-up for Radiated Disturbances (30 MHz – 1GHz)	21
Photograph 4: Set-up for Radio-frequency Electromagnetic Field Susceptibility	22
Photograph 5: Set-up for Radio-frequency Common Mode / Conducted	23
Photograph 6: Set-up for Electrostatic Discharge	24
Photograph 7: Set-up for EFT.....	24
Photograph 8: Set-up for Surge & Voltage Dips and Interruptions	25

Prüfbericht - Nr.:

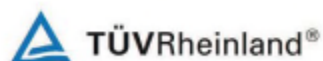
50264153 001

Seite 1 von 75

Page 1 of 75

Test Report No.

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: A		
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.:

50264153 001

Test Report No.

Seite 2 von 75

Page 2 of 75

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 *Jacky Chen*

Date: 20190513

Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 3 von 75

Page 3 of 75

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.:

50264153 001

Seite 4 von 75

Test Report No.

Page 4 of 75

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

Prüfbericht - Nr.:

50264153 001

Seite 5 von 75

Test Report No.

Page 5 of 75

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

Prüfbericht - Nr.:

50264153 001

Seite 6 von 75

Test Report No.

Page 6 of 75

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

Prüfbericht - Nr.:

50264153 001

Seite 7 von 75

Test Report No.

Page 7 of 75

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

Prüfbericht - Nr.:

50264153 001

Seite 8 von 75

Test Report No.

Page 8 of 75

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

Prüfbericht - Nr.:

50264153 001

Seite 9 von 75

Test Report No.

Page 9 of 75

True power P:	31.26W	Apparent power S:	86.85VA
Reactive 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*

Reviewed by *Jacky Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

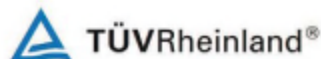
50264153 001

Seite 10 von 75

Test Report No.

Page 10 of 75

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: A		
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.:

50264153 001

Test Report No.

Seite 11 von 75

Page 11 of 75

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.:

50264153 001

Seite 12 von 75

Test Report No.

Page 12 of 75

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.:

50264153 001

Seite 13 von 75

Test Report No.

Page 13 of 75

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

Prüfbericht - Nr.:

50264153 001

Seite 14 von 75

Test Report No.

Page 14 of 75

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

Prüfbericht - Nr.:

50264153 001

Seite 15 von 75

Test Report No.

Page 15 of 75

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.:

50264153 001

Seite 16 von 75

Test Report No.

Page 16 of 75

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.:

50264153 001

Seite 17 von 75

Test Report No.

Page 17 of 75

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.:

50264153 001

Seite 18 von 75

Test Report No.

Page 18 of 75

True power P:	9.635W	Apparent power S:	27.73VA
Reactive 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*

Date: 20190510

Reviewed by *Jacky Chen*

Date: 20190513

Prüfbericht - Nr.:

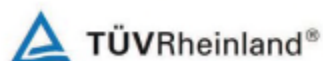
50264153 001

Seite 19 von 75

Test Report No.

Page 19 of 75

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-20B		Equipment: ☒ DPA 500 ☒ ACS 500
Operation Mode: A		
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.:

50264153 001

Test Report No.

Seite 20 von 75

Page 20 of 75

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.:

50264153 001

Test Report No.

Seite 21 von 75

Page 21 of 75

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.:

50264153 001

Seite 22 von 75

Test Report No.

Page 22 of 75

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.:

50264153 001

Seite 23 von 75

Test Report No.

Page 23 of 75

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

Prüfbericht - Nr.:

50264153 001

Seite 24 von 75

Test Report No.

Page 24 of 75

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

Prüfbericht - Nr.:

50264153 001

Seite 25 von 75

Test Report No.

Page 25 of 75

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 *Jacky Chen*

Date: 20190510

Date: 20190513

Prüfbericht - Nr.:

50264153 001

Seite 26 von 75

Test Report No.

Page 26 of 75

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

Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 27 von 75

Page 27 of 75

True power P:	8.161W	Apparent power S:	24.41VA
Reactive 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

Prüfbericht - Nr.:

50264153 001

Seite 28 von 75

Test Report No.

Page 28 of 75

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

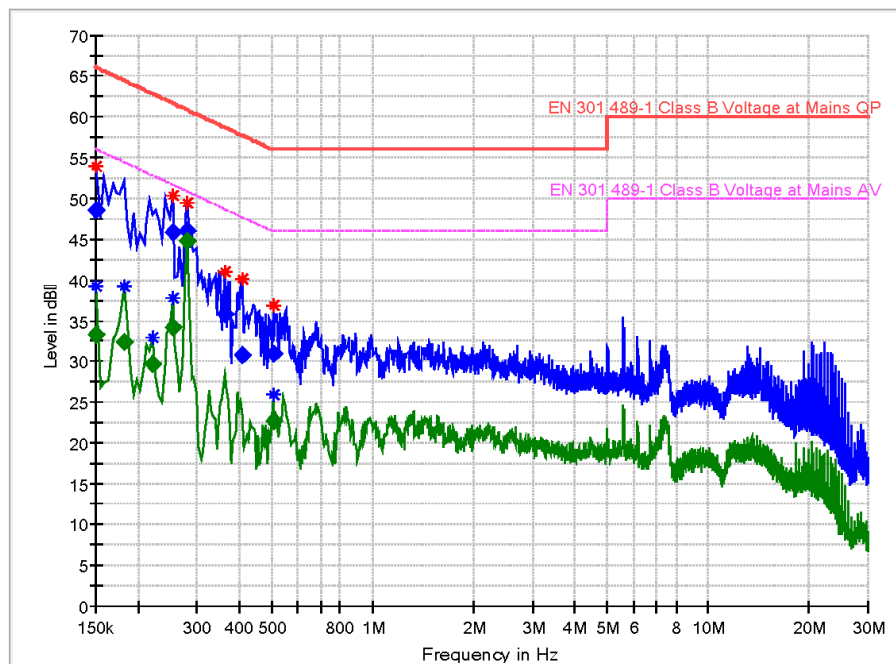
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-20B
Test Standard: EN 301489
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*

20190510

20190513

Prüfbericht - Nr.:

50264153 001

Seite 29 von 75

Test Report No.

Page 29 of 75

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	---	33.35	56.00	22.65	1000.	9.000	N	OFF	9.7
0.150000	48.53	---	66.00	17.47	1000.	9.000	N	OFF	9.7
0.181500	---	32.46	54.42	21.96	1000.	9.000	N	OFF	9.7
0.222000	---	29.75	52.74	22.99	1000.	9.000	N	OFF	9.7
0.253500	---	34.19	51.64	17.45	1000.	9.000	N	OFF	9.6
0.253500	45.82	---	61.64	15.82	1000.	9.000	N	OFF	9.6
0.280500	46.08	---	60.80	14.72	1000.	9.000	N	OFF	9.7
0.280500	---	44.75	50.80	6.05	1000.	9.000	L1	OFF	9.8
0.361500	35.75	---	58.69	22.94	1000.	9.000	N	OFF	9.7
0.411000	30.78	---	57.63	26.85	1000.	9.000	N	OFF	9.7
0.505500	---	22.82	46.00	23.18	1000.	9.000	N	OFF	9.7
0.505500	30.98	---	56.00	25.02	1000.	9.000	N	OFF	9.7

Tested by

Chris Liang

Reviewed by

Jacky Chen

20190510

20190513

Prüfbericht - Nr.:

50264153 001

Seite 30 von 75

Test Report No.

Page 30 of 75

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

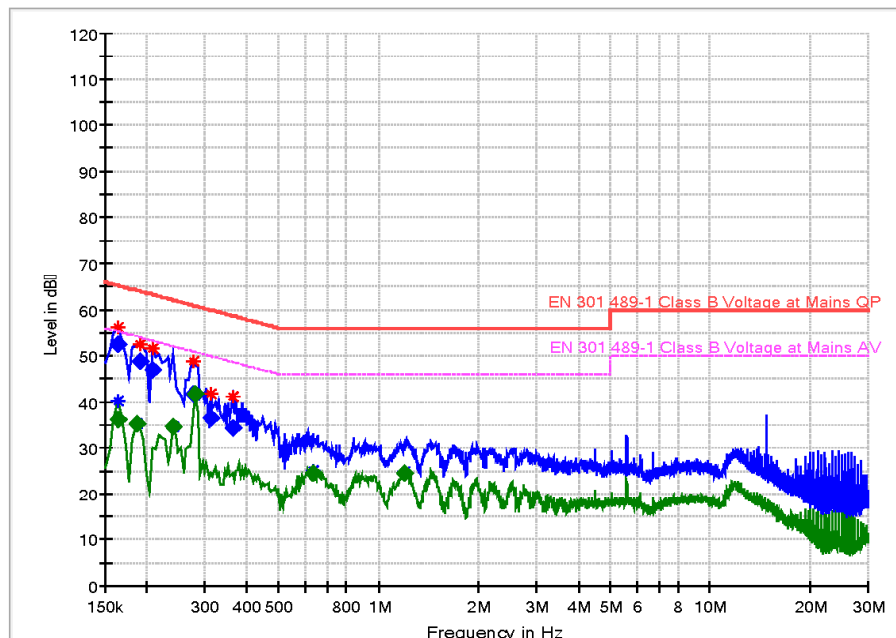
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-20B
Test Standard: EN 301489
Test Detail: Conducted Emission
Operation Mode: A
Climate Condition: 20 °C, 50 %, 100 k Pa
Test Voltage/ Freq.: AC 230V/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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Prüfbericht - Nr.:

50264153 001

Seite 31 von 75

Test Report No.

Page 31 of 75

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)
0.163500	---	36.10	55.28	19.18	1000.	9.000	N	OFF	9.7
0.163500	52.39	---	65.28	12.89	1000.	9.000	N	OFF	9.7
0.186000	---	35.33	54.21	18.88	1000.	9.000	N	OFF	9.7
0.190500	48.87	---	64.02	15.14	1000.	9.000	N	OFF	9.7
0.208500	47.00	---	63.27	16.26	1000.	9.000	N	OFF	9.7
0.240000	---	34.68	52.10	17.42	1000.	9.000	N	OFF	9.6
0.276000	41.77	---	60.94	19.17	1000.	9.000	N	OFF	9.7
0.280500	---	41.87	50.80	8.93	1000.	9.000	N	OFF	9.7
0.312000	36.61	---	59.92	23.31	1000.	9.000	N	OFF	9.7
0.361500	34.43	---	58.69	24.26	1000.	9.000	N	OFF	9.7
0.631500	---	24.56	46.00	21.44	1000.	9.000	N	OFF	9.7
1.189500	---	24.65	46.00	21.35	1000.	9.000	L1	OFF	10.0

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 32 von 75

Page 32 of 75

TUV Rheinland (Guangdong) Ltd.

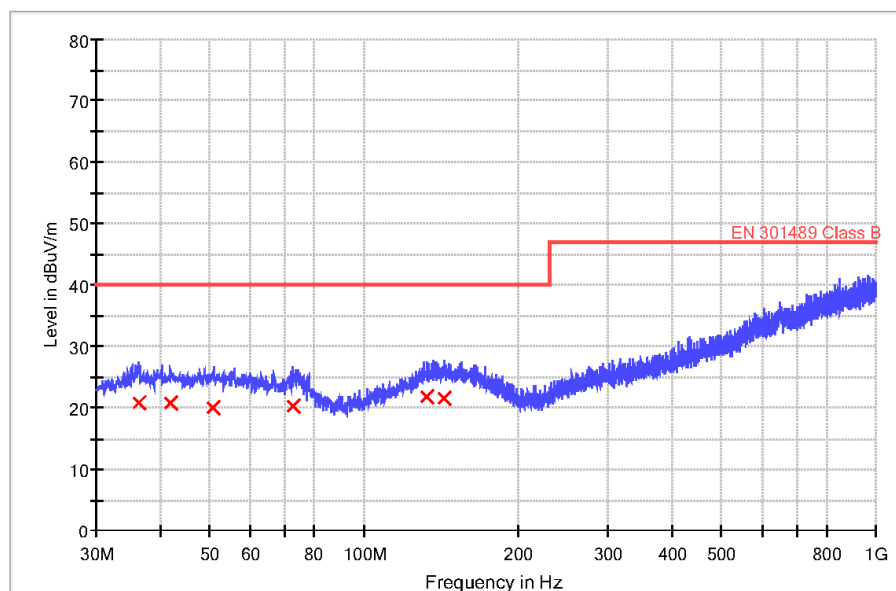
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20B
Test Standard:	EN 301489
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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Prüfbericht - Nr.:

50264153 001

Seite 33 von 75

Test Report No.

Page 33 of 75

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)
36.320000	20.8	1000.0	120.000	H	19.8	19.2	40.0
41.880000	20.7	1000.0	120.000	H	20.6	19.3	40.0
50.840000	20.0	1000.0	120.000	H	20.5	20.0	40.0
72.800000	20.2	1000.0	120.000	H	17.9	19.8	40.0
132.560000	21.8	1000.0	120.000	H	20.0	18.2	40.0
143.600000	21.5	1000.0	120.000	H	20.6	18.5	40.0

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 34 von 75

Page 34 of 75

TUV Rheinland (Guangdong) Ltd.

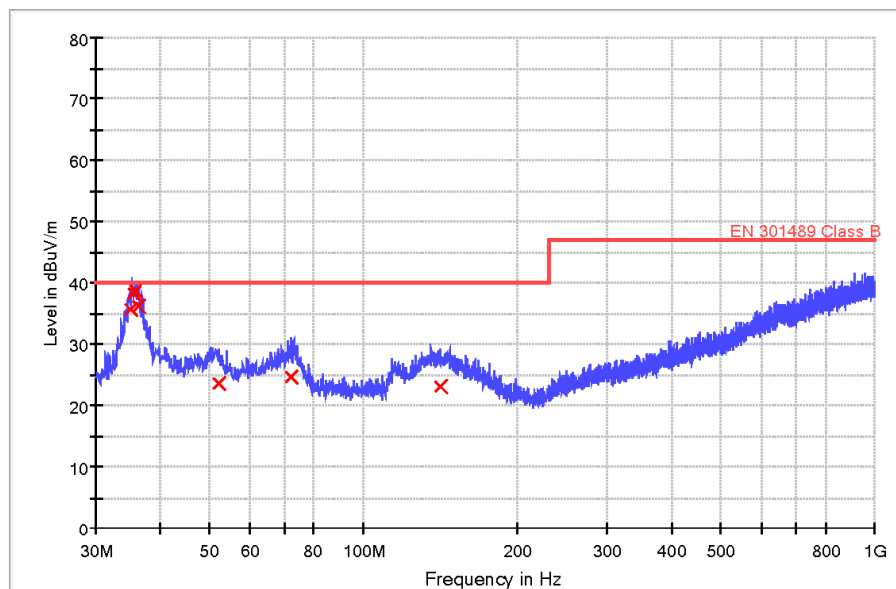
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20B
Test Standard:	EN 301489
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



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Prüfbericht - Nr.:

50264153 001

Seite 35 von 75

Test Report No.

Page 35 of 75

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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)
35.160000	35.6	1000.0	120.000	V	19.7	4.4	40.0
35.640000	38.3	1000.0	120.000	V	19.7	1.8	40.0
35.920000	38.8	1000.0	120.000	V	19.8	1.2	40.0
36.280000	36.2	1000.0	120.000	V	19.8	3.9	40.0
52.200000	23.5	1000.0	120.000	V	20.4	16.5	40.0
72.440000	24.5	1000.0	120.000	V	17.9	15.5	40.0
141.920000	23.2	1000.0	120.000	V	20.5	16.8	40.0

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 36 von 75

Page 36 of 75

TUV Rheinland (Guangdong) Ltd.

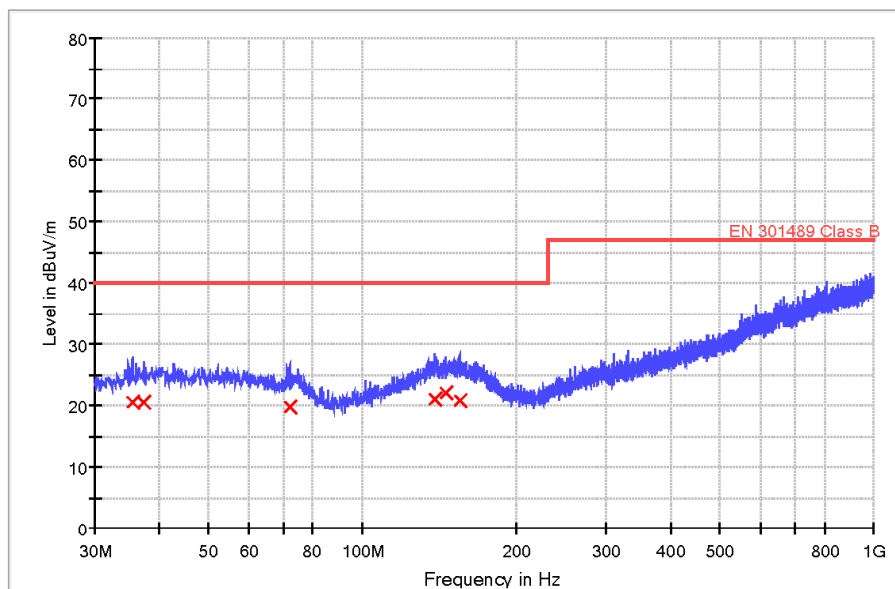
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20B
Test Standard:	EN 301489
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



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Prüfbericht - Nr.:

50264153 001

Seite 37 von 75

Test Report No.

Page 37 of 75

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)
35.440000	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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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 38 von 75

Page 38 of 75

TUV Rheinland (Guangdong) Ltd.

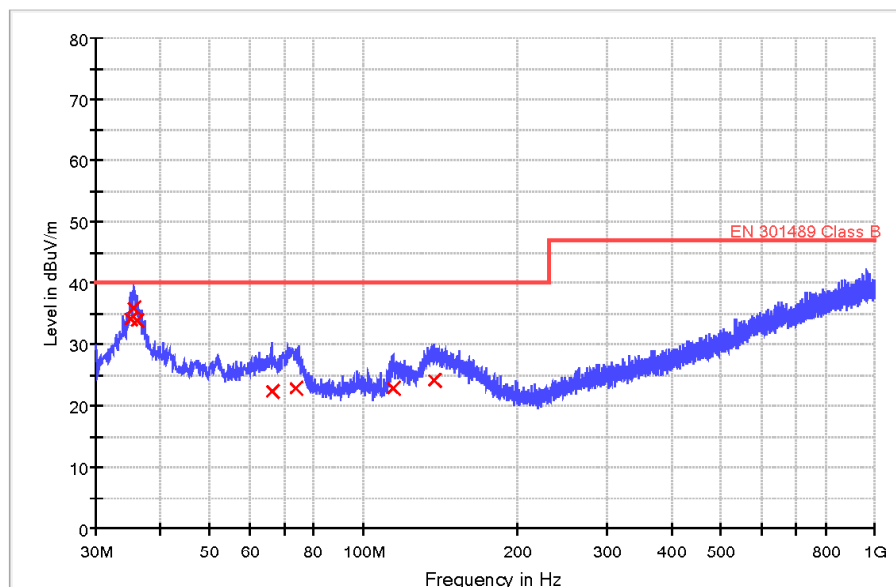
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20B
Test Standard:	EN 301489
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



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Prüfbericht - Nr.:

50264153 001

Seite 39 von 75

Test Report No.

Page 39 of 75

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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)
35.000000	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

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 40 von 75

Page 40 of 75

TUV Rheinland (Guangdong) Ltd.

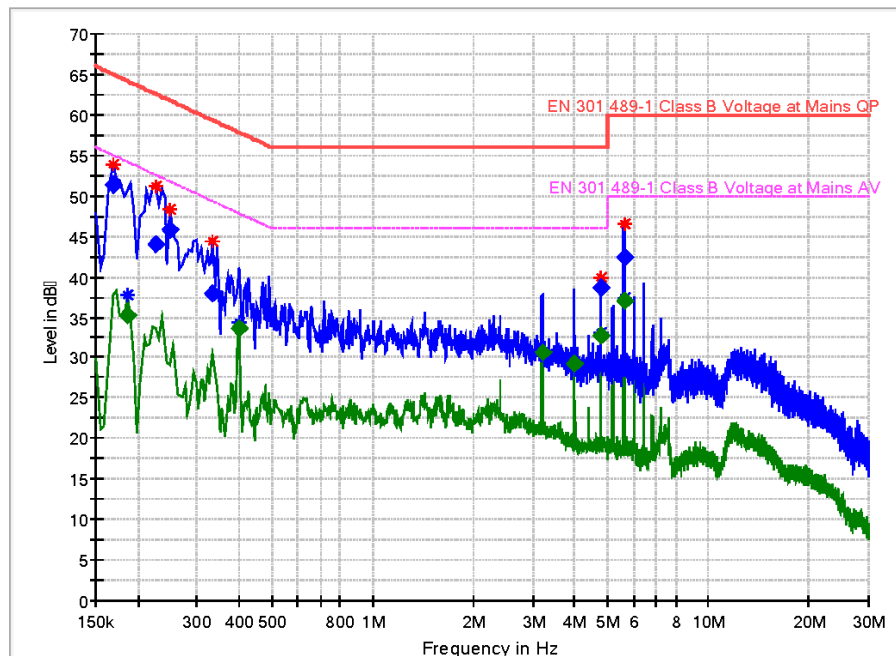
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (EMISSION)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HB
Test Standard:	EN 301489
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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Prüfbericht - Nr.:

50264153 001

Seite 41 von 75

Test Report No.

Page 41 of 75

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Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.168000	51.42	---	65.06	13.64	1000.	9.000	N	OFF	9.7
0.186000	---	35.23	54.21	18.98	1000.	9.000	N	OFF	9.7
0.226500	44.00	---	62.58	18.58	1000.	9.000	N	OFF	9.7
0.249000	45.91	---	61.79	15.88	1000.	9.000	N	OFF	9.6
0.334500	37.94	---	59.34	21.40	1000.	9.000	N	OFF	9.7
0.402000	---	33.61	47.81	14.20	1000.	9.000	N	OFF	9.7
3.201000	---	30.61	46.00	15.39	1000.	9.000	L1	OFF	10.1
4.002000	---	29.10	46.00	16.90	1000.	9.000	N	OFF	9.9
4.798500	38.74	---	56.00	17.26	1000.	9.000	L1	OFF	10.2
4.803000	---	32.71	46.00	13.29	1000.	9.000	L1	OFF	10.2
5.604000	---	37.11	50.00	12.89	1000.	9.000	N	OFF	9.9
5.604000	42.36	---	60.00	17.64	1000.	9.000	N	OFF	9.9

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Prüfbericht - Nr.:

50264153 001

Seite 42 von 75

Test Report No.

Page 42 of 75

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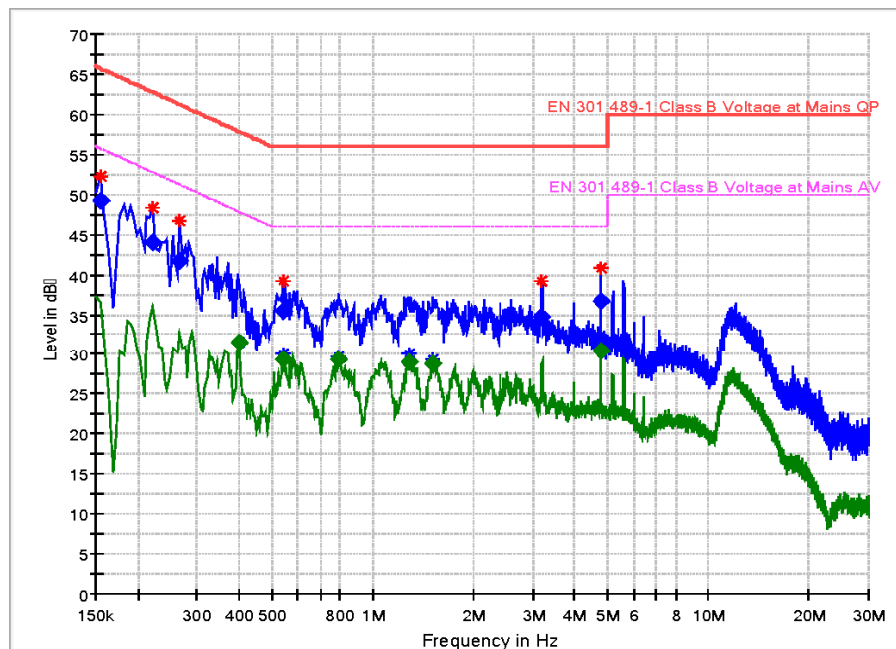
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-20HB
Test Standard: EN 301489
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 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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Prüfbericht - Nr.:

50264153 001

Seite 43 von 75

Test Report No.

Page 43 of 75

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	49.15	---	65.75	16.60	1000.	9.000	N	OFF	9.7
0.222000	44.01	---	62.74	18.73	1000.	9.000	N	OFF	9.7
0.267000	41.75	---	61.21	19.46	1000.	9.000	N	OFF	9.7
0.402000	---	31.50	47.81	16.31	1000.	9.000	N	OFF	9.7
0.541500	---	29.44	46.00	16.56	1000.	9.000	N	OFF	9.7
0.541500	35.40	---	56.00	20.60	1000.	9.000	N	OFF	9.7
0.793500	---	29.28	46.00	16.72	1000.	9.000	N	OFF	9.7
1.288500	---	28.96	46.00	17.04	1000.	9.000	L1	OFF	10.0
1.518000	---	28.86	46.00	17.14	1000.	9.000	L1	OFF	10.0
3.196500	34.75	---	56.00	21.25	1000.	9.000	L1	OFF	10.1
4.798500	---	30.52	46.00	15.48	1000.	9.000	N	OFF	9.9
4.798500	36.73	---	56.00	19.27	1000.	9.000	L1	OFF	10.2

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 44 von 75

Page 44 of 75

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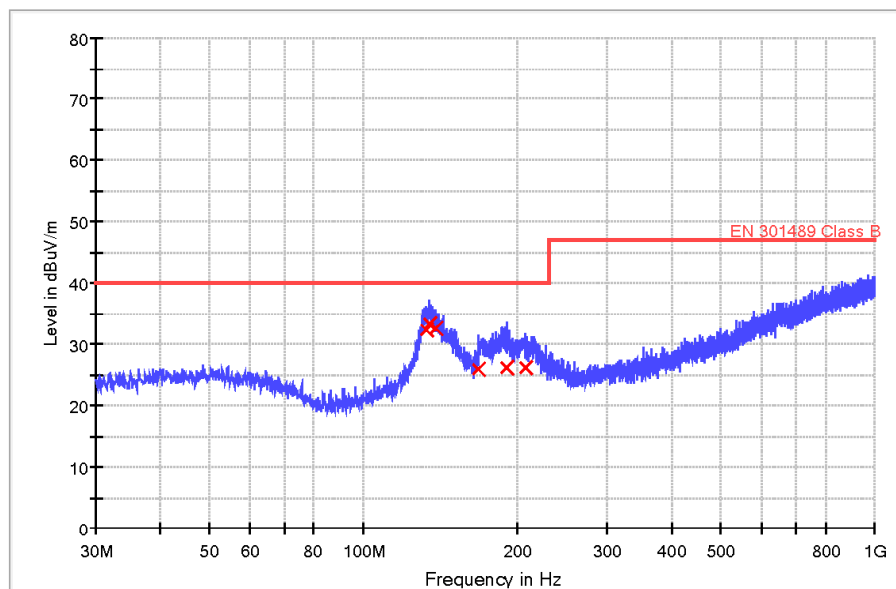
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HB
Test Standard:	EN 301489
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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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 45 von 75

Page 45 of 75

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)
132.680000	32.3	1000.0	120.000	H	20.0	7.7	40.0
135.000000	33.2	1000.0	120.000	H	20.1	6.8	40.0
138.280000	32.5	1000.0	120.000	H	20.2	7.5	40.0
167.880000	25.8	1000.0	120.000	H	21.1	14.2	40.0
190.160000	26.2	1000.0	120.000	H	18.5	13.8	40.0
208.000000	26.1	1000.0	120.000	H	17.9	13.9	40.0

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 46 von 75

Page 46 of 75

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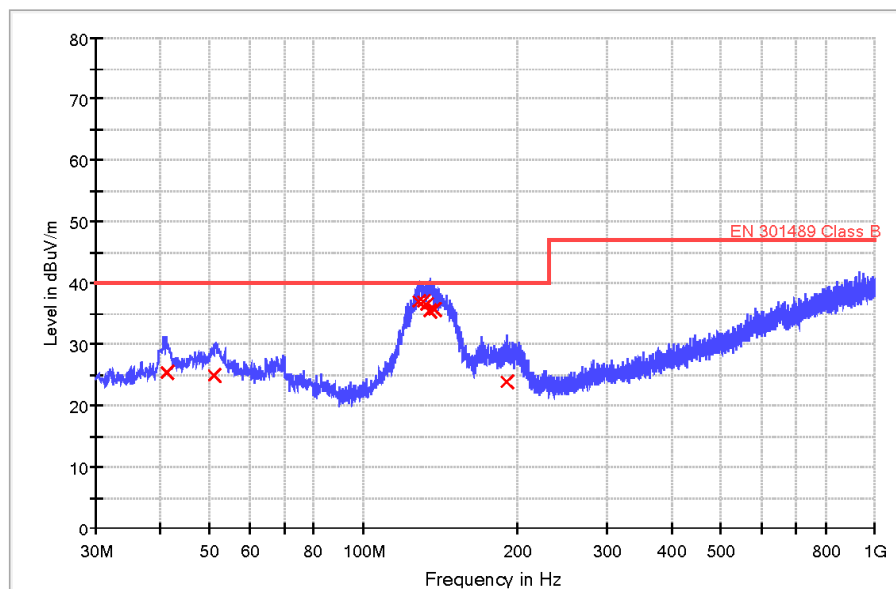
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HB
Test Standard:	EN 301489
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



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Prüfbericht - Nr.:

50264153 001

Seite 47 von 75

Test Report No.

Page 47 of 75

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)
41.160000	25.3	1000.0	120.000	V	20.6	14.7	40.0
51.200000	24.9	1000.0	120.000	V	20.5	15.1	40.0
127.840000	37.0	1000.0	120.000	V	19.7	3.0	40.0
131.000000	37.0	1000.0	120.000	V	19.9	3.0	40.0
132.680000	36.3	1000.0	120.000	V	20.0	3.7	40.0
134.280000	35.4	1000.0	120.000	V	20.1	4.7	40.0
137.440000	35.6	1000.0	120.000	V	20.2	4.4	40.0
190.880000	23.9	1000.0	120.000	V	18.4	16.1	40.0

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 48 von 75

Page 48 of 75

TUV Rheinland (Guangdong) Ltd.

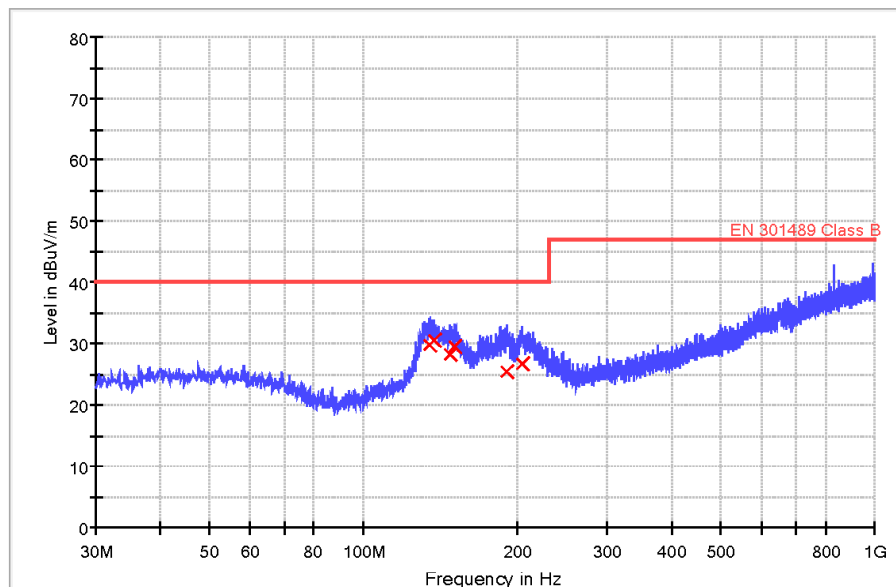
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HB
Test Standard:	EN 301489
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



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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 49 von 75

Page 49 of 75

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)
135.000000	29.6	1000.0	120.000	H	20.1	10.4	40.0
137.440000	30.6	1000.0	120.000	H	20.2	9.4	40.0
147.360000	28.3	1000.0	120.000	H	20.9	11.7	40.0
150.640000	29.6	1000.0	120.000	H	21.2	10.4	40.0
191.160000	25.3	1000.0	120.000	H	18.4	14.7	40.0
204.000000	26.7	1000.0	120.000	H	17.8	13.3	40.0

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 50 von 75

Page 50 of 75

TUV Rheinland (Guangdong) Ltd.

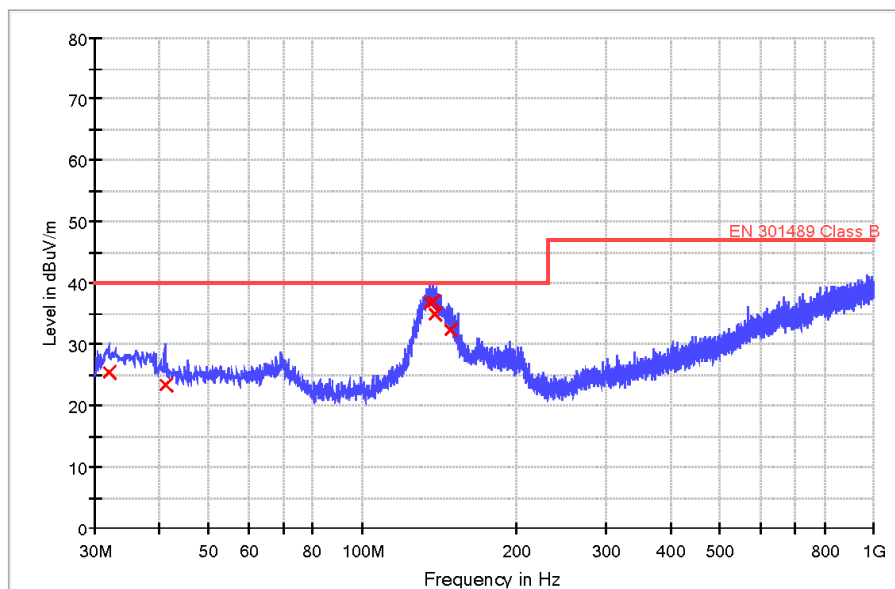
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-20HB
Test Standard:	EN 301489
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

20190510

Reviewed by

Jacky Chen

20190513

Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 51 von 75

Page 51 of 75

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)
31.920000	25.4	1000.0	120.000	V	19.4	14.6	40.0
41.160000	23.4	1000.0	120.000	V	20.6	16.6	40.0
135.720000	36.6	1000.0	120.000	V	20.1	3.4	40.0
137.440000	37.0	1000.0	120.000	V	20.2	3.0	40.0
138.880000	34.9	1000.0	120.000	V	20.2	5.1	40.0
148.960000	32.3	1000.0	120.000	V	21.0	7.7	40.0

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 52 von 75

Page 52 of 75

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

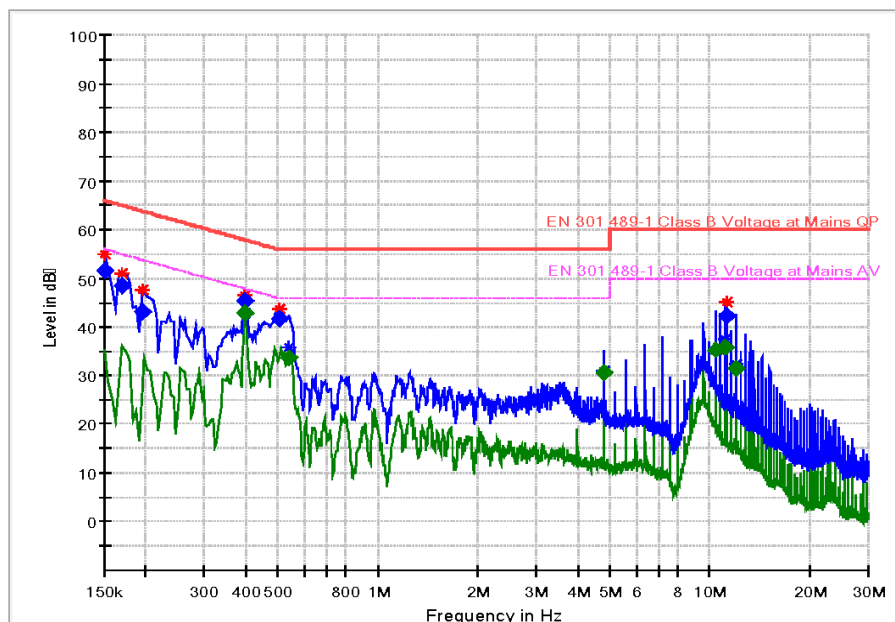
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-40B
Test Standard: EN 301489
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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Prüfbericht - Nr.:

50264153 001

Seite 53 von 75

Test Report No.

Page 53 of 75

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	51.52	---	66.00	14.48	1000.	0.200	N	OFF	9.7
0.170000	48.56	---	64.96	16.40	1000.	9.000	N	OFF	9.7
0.194000	43.21	---	63.86	20.65	1000.	9.000	L1	OFF	9.8
0.398000	45.38	---	57.90	12.52	1000.	9.000	L1	OFF	9.8
0.398000	---	42.88	47.90	5.02	1000.	9.000	N	OFF	9.7
0.502000	41.84	---	56.00	14.16	1000.	9.000	N	OFF	9.7
0.538000	---	33.70	46.00	12.30	1000.	9.000	N	OFF	9.7
4.786000	---	30.46	46.00	15.54	1000.	9.000	L1	OFF	10.2
10.362000	---	35.28	50.00	14.72	1000.	9.000	L1	OFF	10.5
11.162000	---	35.88	50.00	14.12	1000.	9.000	L1	OFF	10.5
11.166000	42.27	---	60.00	17.73	1000.	9.000	L1	OFF	10.5
11.962000	---	31.47	50.00	18.53	1000.	9.000	L1	OFF	10.5

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 54 von 75

Page 54 of 75

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

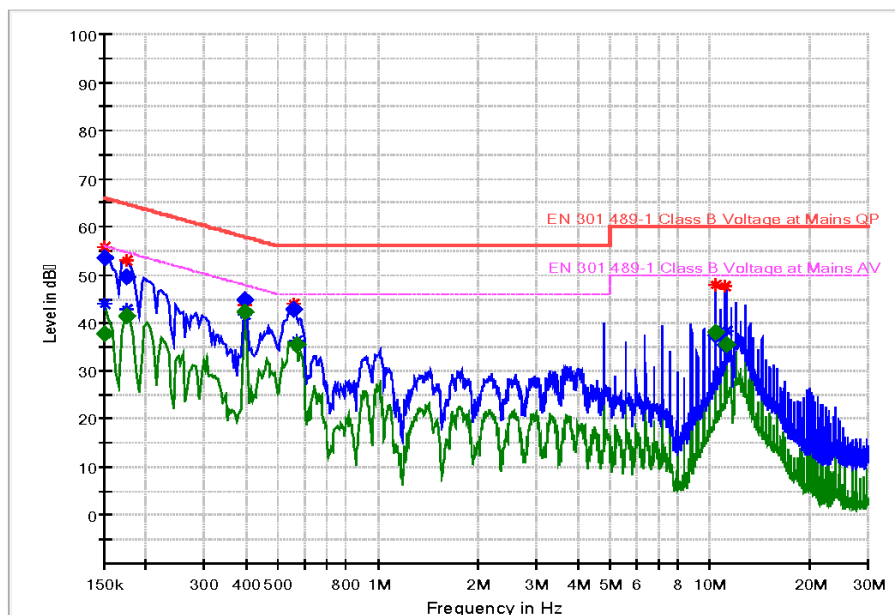
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-40B
Test Standard: EN 301489
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 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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Prüfbericht - Nr.:

50264153 001

Seite 55 von 75

Test Report No.

Page 55 of 75

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	53.54	---	66.00	12.46	1000.	0.200	N	OFF	9.7
0.150000	---	37.94	56.00	18.06	1000.	0.200	L1	OFF	9.8
0.174000	49.77	---	64.77	15.00	1000.	9.000	N	OFF	9.7
0.174000	---	41.49	54.77	13.28	1000.	9.000	L1	OFF	9.8
0.398000	44.81	---	57.90	13.09	1000.	9.000	L1	OFF	9.8
0.398000	---	42.36	47.90	5.54	1000.	9.000	L1	OFF	9.8
0.554000	42.88	---	56.00	13.12	1000.	9.000	N	OFF	9.7
0.566000	---	35.69	46.00	10.31	1000.	9.000	N	OFF	9.7
10.362000	---	38.10	50.00	11.90	1000.	9.000	L1	OFF	10.5
10.366000	37.57	---	60.00	22.43	1000.	9.000	L1	OFF	10.5
11.158000	35.71	---	60.00	24.29	1000.	9.000	L1	OFF	10.5
11.166000	---	35.61	50.00	14.39	1000.	9.000	N	OFF	10.2

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 56 von 75

Page 56 of 75

TUV Rheinland (Guangdong) Ltd.

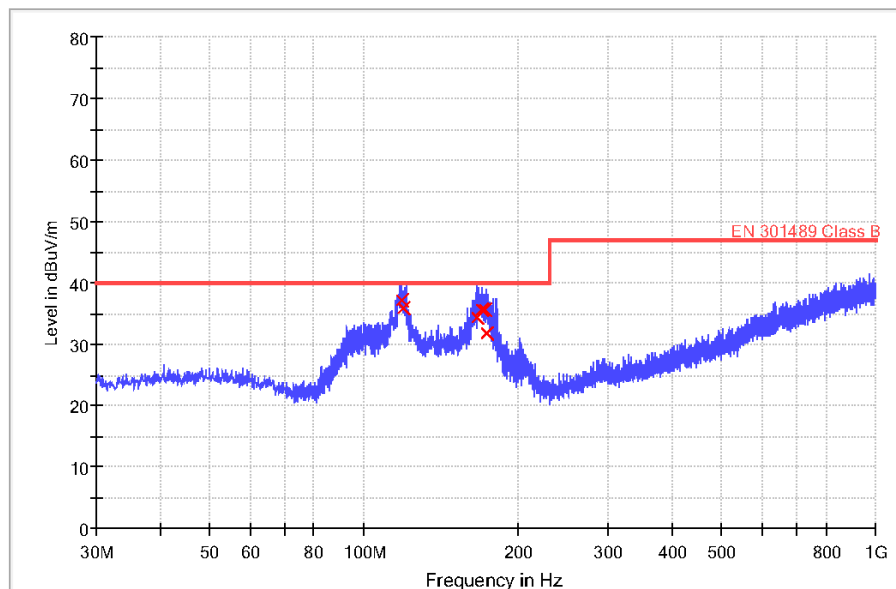
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40B
Test Standard:	EN 301489
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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Prüfbericht - Nr.:

50264153 001

Seite 57 von 75

Test Report No.

Page 57 of 75

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
118.640000	37.1	1000.0	120.000	H	19.0	2.9	40.0	
119.600000	35.9	1000.0	120.000	H	19.1	4.1	40.0	
167.120000	34.4	1000.0	120.000	H	21.1	5.7	40.0	
169.920000	35.7	1000.0	120.000	H	21.0	4.3	40.0	
172.000000	35.7	1000.0	120.000	H	20.8	4.3	40.0	
173.440000	31.8	1000.0	120.000	H	20.6	8.2	40.0	

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 58 von 75

Page 58 of 75

TUV Rheinland (Guangdong) Ltd.

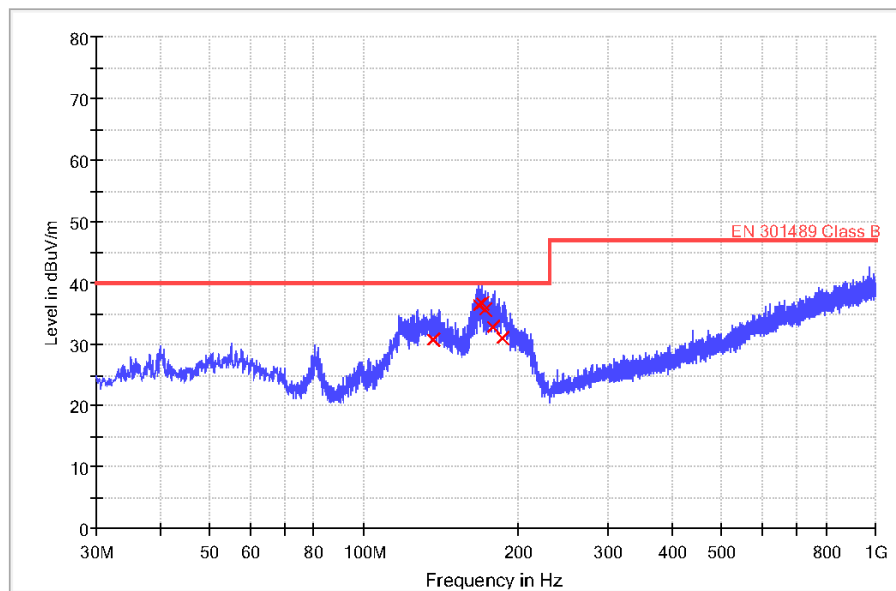
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40B
Test Standard:	EN 301489
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



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Prüfbericht - Nr.:

50264153 001

Seite 59 von 75

Test Report No.

Page 59 of 75

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
136.680000	30.8	1000.0	120.000	V	20.2	9.2	40.0	
168.240000	36.4	1000.0	120.000	V	21.1	3.6	40.0	
170.400000	36.7	1000.0	120.000	V	20.9	3.4	40.0	
172.480000	35.7	1000.0	120.000	V	20.7	4.3	40.0	
179.000000	32.9	1000.0	120.000	V	19.7	7.1	40.0	
186.400000	31.0	1000.0	120.000	V	18.8	9.0	40.0	

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 60 von 75

Page 60 of 75

TUV Rheinland (Guangdong) Ltd.

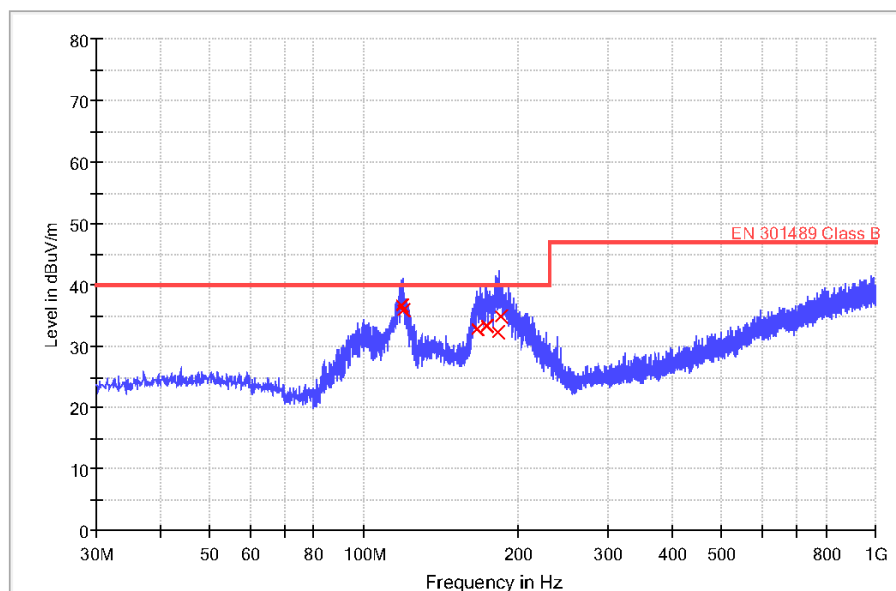
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40B
Test Standard:	EN 301489
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



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Prüfbericht - Nr.:

50264153 001

Seite 61 von 75

Test Report No.

Page 61 of 75

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
118.280000	36.8	1000.0	120.000	H	18.9	3.2	40.0	
119.600000	35.8	1000.0	120.000	H	19.1	4.2	40.0	
166.040000	32.7	1000.0	120.000	H	21.1	7.3	40.0	
173.800000	33.3	1000.0	120.000	H	20.5	6.7	40.0	
182.040000	32.3	1000.0	120.000	H	19.3	7.7	40.0	
184.960000	34.9	1000.0	120.000	H	19.0	5.2	40.0	

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 62 von 75

Page 62 of 75

TUV Rheinland (Guangdong) Ltd.

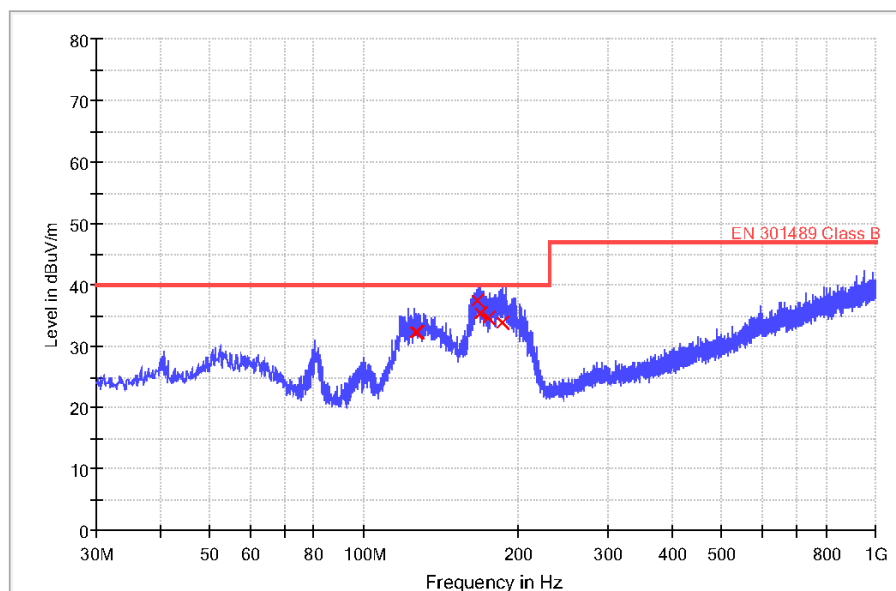
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40B
Test Standard:	EN 301489
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



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Prüfbericht - Nr.:

50264153 001

Seite 63 von 75

Test Report No.

Page 63 of 75

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
126.160000	32.4	1000.0	120.000	V	19.6	7.6	40.0	
127.480000	32.4	1000.0	120.000	V	19.6	7.6	40.0	
166.160000	37.6	1000.0	120.000	V	21.1	2.5	40.0	
169.080000	35.3	1000.0	120.000	V	21.0	4.7	40.0	
174.880000	34.7	1000.0	120.000	V	20.4	5.4	40.0	
185.920000	33.8	1000.0	120.000	V	18.9	6.2	40.0	

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Prüfbericht - Nr.:

50264153 001

Seite 64 von 75

Test Report No.

Page 64 of 75

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 301489
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
150kHz - 30MHz

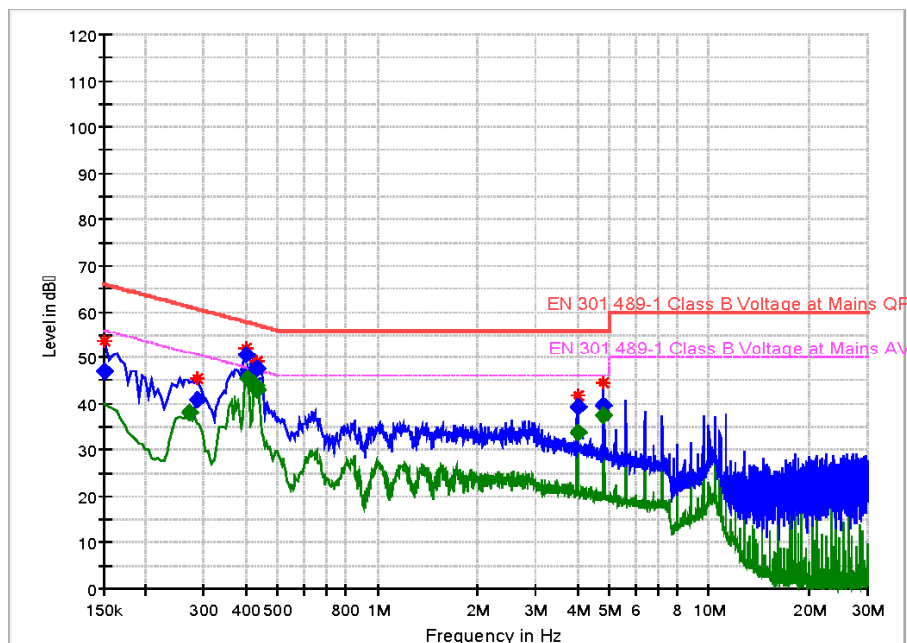
Detectors
Peak; Average

IF Bandwidth
9kHz

Step Size
4.5kHz

Meas. Time
10ms

Receiver
ESCI 3



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Prüfbericht - Nr.:

50264153 001

Seite 65 von 75

Test Report No.

Page 65 of 75

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	3.35	1000.	9.000	N	OFF	9.7
0.433500	---	42.88	47.19	4.31	1000.	9.000	L1	OFF	9.8
0.433500	47.68	---	57.19	9.51	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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Prüfbericht - Nr.:

50264153 001

Seite 66 von 75

Test Report No.

Page 66 of 75

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

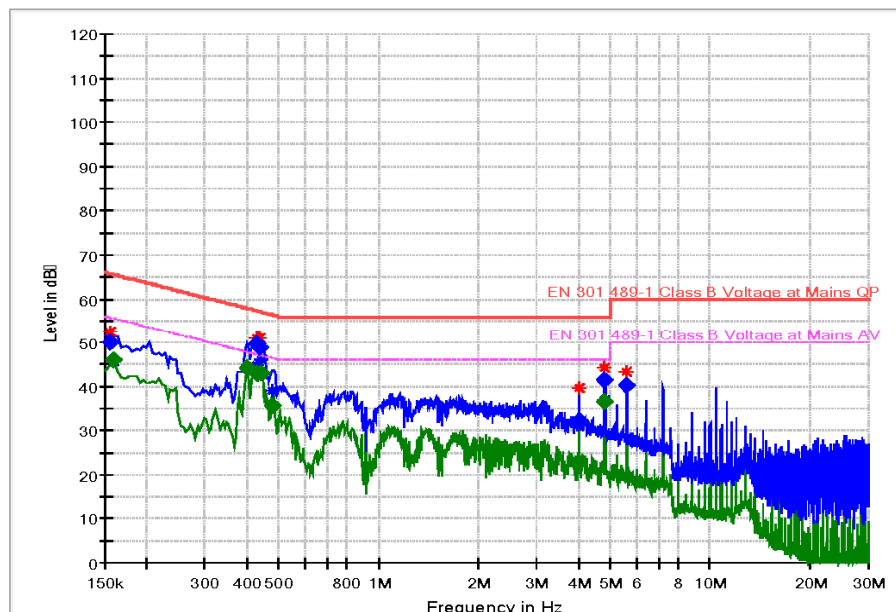
EMC Test Record (EMISSION)

Common Information

Manufacturer: Seikaku
Test Item: Bluetooth receiver
Identification: PA-40HB
Test Standard: EN 301489
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 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

Reviewed by *Jacky Chen*
20190513

Prüfbericht - Nr.:

50264153 001

Seite 67 von 75

Test Report No.

Page 67 of 75

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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Reviewed by

Jacky Chen

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 68 von 75

Page 68 of 75

TUV Rheinland (Guangdong) Ltd.

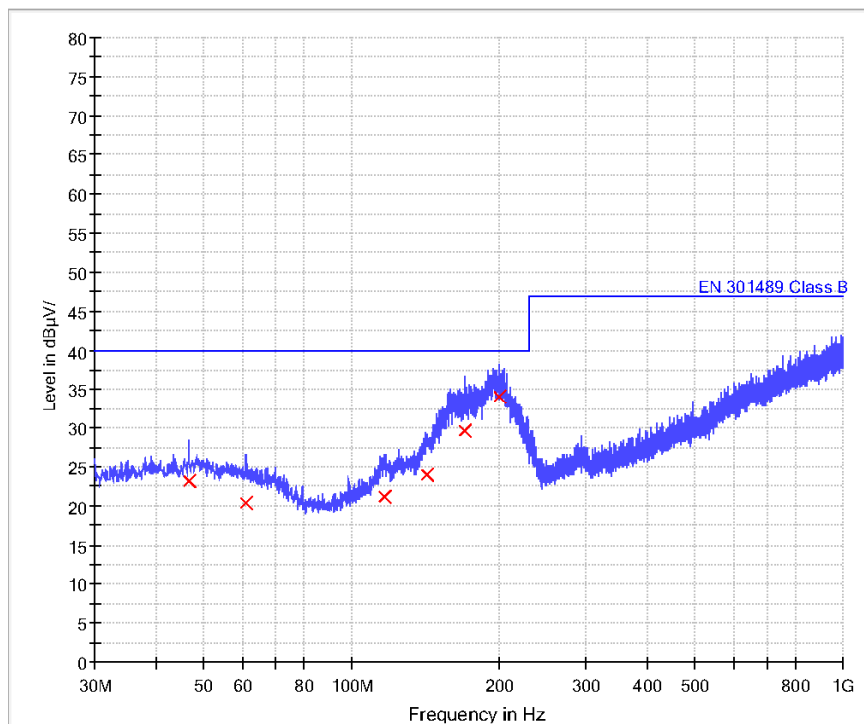
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HB
Test Standard:	EN 301489
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

20190510

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Prüfbericht - Nr.:

50264153 001

Seite 69 von 75

Test Report No.

Page 69 of 75

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dB;I/V/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB;I/V/m)	Comment
46.720000	23.1	1000.0	120.000	H	20.5	16.9	40.0	
61.160000	20.3	1000.0	120.000	H	19.7	19.7	40.0	
116.680000	21.2	1000.0	120.000	H	18.8	18.8	40.0	
141.920000	24.0	1000.0	120.000	H	20.5	16.0	40.0	
170.280000	29.5	1000.0	120.000	H	20.9	10.5	40.0	
200.360000	34.1	1000.0	120.000	H	17.9	5.9	40.0	

Tested by

Chris Liang

Reviewed by

Jacky Chen

20190510

20190513

Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 70 von 75

Page 70 of 75

TUV Rheinland (Guangdong) Ltd.

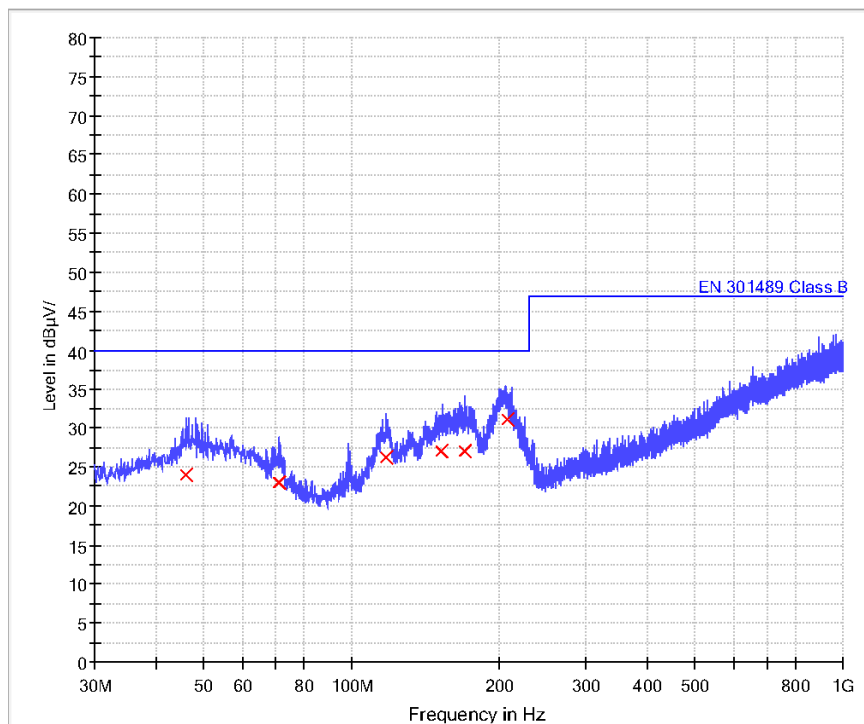
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HB
Test Standard:	EN 301489
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



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Prüfbericht - Nr.:

50264153 001

Seite 71 von 75

Test Report No.

Page 71 of 75

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dB;I/V/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB;I/V/m)	Comment
45.880000	24.1	1000.0	120.000	V	20.4	15.9	40.0	
71.360000	23.0	1000.0	120.000	V	18.1	17.0	40.0	
117.280000	26.2	1000.0	120.000	V	18.8	13.8	40.0	
152.200000	27.0	1000.0	120.000	V	21.2	13.0	40.0	
170.280000	27.1	1000.0	120.000	V	20.9	12.9	40.0	
207.160000	31.0	1000.0	120.000	V	17.9	9.0	40.0	

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 72 von 75

Page 72 of 75

TUV Rheinland (Guangdong) Ltd.

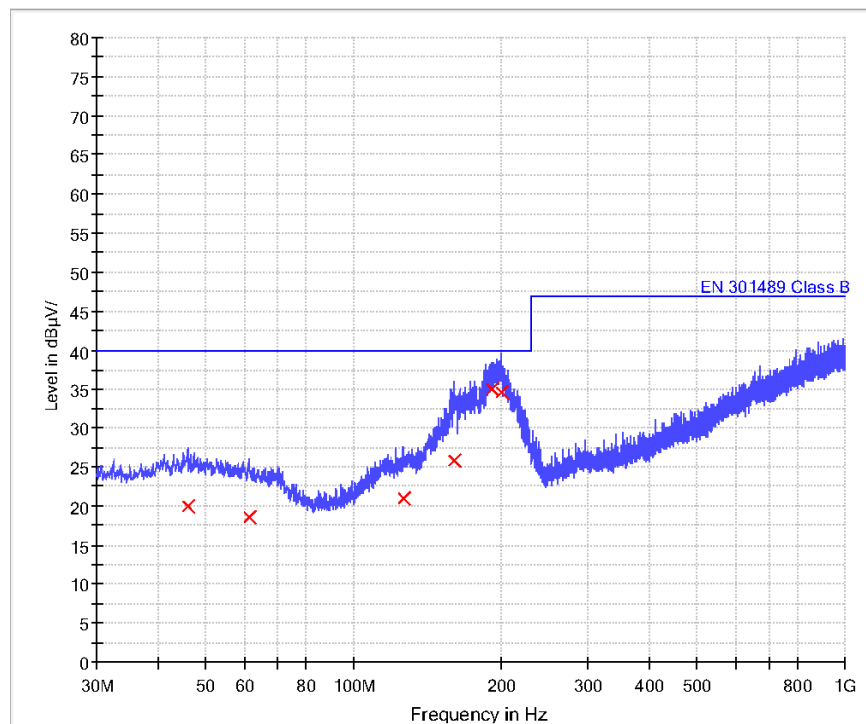
EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HB
Test Standard:	EN 301489
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



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20190513

Prüfbericht - Nr.:

50264153 001

Seite 73 von 75

Test Report No.

Page 73 of 75

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dB;I/V/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB;I/V/m)	Comment
45.880000	20.0	1000.0	120.000	H	20.4	20.0	40.0	
61.280000	18.6	1000.0	120.000	H	19.7	21.4	40.0	
126.160000	20.9	1000.0	120.000	H	19.6	19.1	40.0	
160.360000	25.8	1000.0	120.000	H	21.3	14.2	40.0	
191.000000	35.1	1000.0	120.000	H	18.4	4.9	40.0	
191.000000	35.1	1000.0	120.000	H	18.4	4.9	40.0	
200.120000	34.6	1000.0	120.000	H	17.9	5.4	40.0	

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Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 74 von 75

Page 74 of 75

TUV Rheinland (Guangdong) Ltd.

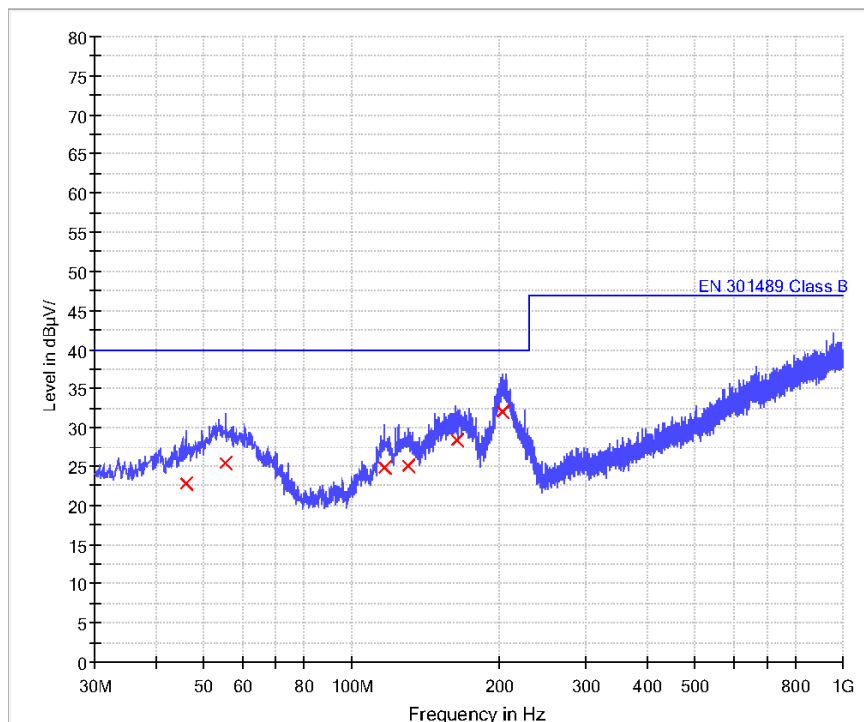
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EMC Test Record (Emission)

Common Information

Manufacturer:	Seikaku
Test Item:	Bluetooth receiver
Identification:	PA-40HB
Test Standard:	EN 301489
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



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Chris Liang

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Prüfbericht - Nr.:

50264153 001

Seite 75 von 75

Test Report No.

Page 75 of 75

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Limit and Margin QP

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)	Comment
46.000000	22.8	1000.0	120.000	V	20.4	17.2	40.0	
55.360000	25.4	1000.0	120.000	V	20.3	14.6	40.0	
116.920000	24.7	1000.0	120.000	V	18.8	15.3	40.0	
130.040000	24.9	1000.0	120.000	V	19.8	15.1	40.0	
163.600000	28.5	1000.0	120.000	V	21.2	11.5	40.0	
202.400000	32.0	1000.0	120.000	V	17.9	8.0	40.0	

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Reviewed by

Jacky Chen

20190510

20190513

Prüfbericht - Nr.:

50264153 001

Seite 1 von 2

Test Report No.

Page 1 of 2



Measurement Equipment List

Testing Start Date 14.05.2019
Testing end date 22.06.2019

Project Manager Arthur Liu
Cost Center 41
Test Report Number 50264153 001
Order Item Number 0174091930A00120

Customer Seikaku Technical Group Limited
Product Name AMPLIFIER
Comment

Page 1 of 1

Old ID	Equip.	Description	Model	Manufacturer	Inte. (mon)	Due Date DD.MM.YYYY
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
1.806	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
1.807	1813832	EMI Test Receiver	ESCI	Rohde & Schwarz	12	14.03.2020
1.805	1813829	FSP30 Spectrum Analyzer	FSP30	Rohde & Schwarz	12	22.08.2019
1.921B	1814142	Trilog Broadband Antenna	VULB9168(8dB)	SCHWARZBECK	24	20.09.2019
1.889C	1814199	Double-Ridged Horn Antenna	HF907(3s)	Rohde & Schwarz	24	23.10.2020
1.819C	1814068	Pre-Amplifier	A44-00101800-25-10P-	MITEQ	12	08.05.2020
1.819A	1813846	Band Reject Filter	BRM50702	Micro-Tronics	24	04.07.2020
1.623	1813818	ESD Gun	NSG 437	TESEQ	12	02.07.2019
1.657	1813681	Dual Channel Power Meter	NRVD	Rohde & Schwarz	12	14.03.2020
1.657A	1813682	10V Insertion Unit	URV5-Z2	Rohde & Schwarz	12	14.03.2020
1.657B	1813683	10V Insertion Unit	URV5-Z2	Rohde & Schwarz	12	11.09.2019
1.697	1813744	RF AMPLIFIER	AP32 MT310A	PRANA	12	17.07.2019
1.602	1813751	RF Power Amplifier	AS0104-400/200ST	Milmega	12	10.04.2020
1.610	1813797	Signal Generator	SMB100A	Rohde & Schwarz	12	14.03.2020
1.651	1813656	Continuous Wave Simulator	CWS 500C	EM TEST	12	15.03.2020
1.651A	1813657	6dB Attenuator	ATT 6	EM TEST	12	15.03.2020
1.651C	1813659	EM Clamp	EM101	Luthi	24	16.03.2020
1.910	1813968	Coupling Decoupling Network	CDN M016	TESEQ	12	15.03.2020
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
1.701	1814023	Burst EFT coupling clamp	CDN3425	TESEQ	12	15.03.2020
1.683	1813721	Log-Periodic Antenna	AT1080	Amplifier Research	12	13.04.2020
1.684	1813722	Horn Antenna	AT4002A	Amplifier Research	12	13.04.2020
1.666	1813697	SAC	N/A	Albatross Project	36	27.11.2021
1.913	1814012	Shielding Room	9x4x3.4	Changzhou Yuanping	60	06.12.2020
1.642	1814076	ESD Generator	Ditto	EM TEST(Switzerland)	12	30.03.2020

Prüfbericht - Nr.:

50264153 001

Test Report No.

Seite 2 von 2

Page 2 of 2

Shenzhen STS Test Services Co., Ltd.

RS Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
RF Relay matrix tsj	TSJ	RFM-S621	04261	2020.06.27
Power meter	Agilent	E4419B	MY45102079	2020.06.27
Power Sensor	Agilent	8481A	MY41496625	2020.06.27
Power Sensor	Agilent	8481A	MY41496628	2020.06.27
MXG analog signal generator	Agilent	N5181A	MY46240859	2020.06.27
Power Amplifier	Schaffner	CBA9429	T4306S	2020.06.27
Power Amplifier	Schaffner	CBA9433	T435F4	2020.06.27
Logarithmic- periodic Antenna	Schwarzbeck	VULP9118E	820	2020.06.27
Microwave Horn Antenna	Schwarzbeck	BBHA 9120LF	F01008	2020.06.27
Universal Radio Communication Tester	R&S	CMU200	111764	2020.06.27
Audio Analyzer	R&S	UPV	100419	2020.06.27
Power Amplifier	MICOTOP	MPA-3000- 6000-50	MPA1706275	2020.06.27