

Produkte
Products

Prüfbericht - Nr.: 17024818 001		Seite 1 von 15 Page 1 of 15	
<i>Test Report No.:</i>			
Auftraggeber: <i>Client:</i>	Seikaku Technical Group Limited Offshor Chambers, P.O. Box 217, Apia, Samoa		
Gegenstand der Prüfung: <i>Test item:</i>	Wireless Microphone Receiver		
Bezeichnung: <i>Identification:</i>	WL-200R	Serien-Nr.: <i>Serial No.:</i>	n.a.
Wareneingangs-Nr.: <i>Receipt No.:</i>	163089214	Eingangsdatum: <i>Date of receipt:</i>	2012-02-13
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of test item at delivery:</i>	The sample is OK for testing and not damaged		
Prüfört: <i>Testing location:</i>	TÜV Rheinland (Guangdong) Ltd. EMC Laboratory (FCC Registration No.: 833845) (Industry Canada Test Site No.: 2932C-1) Guangzhou Auto Market, Yuan Gang Section, Guangshan Road, Guangzhou, P.R. China		
Prüfgrundlage: <i>Test specification:</i>	FCC Part 15 Subpart B (ANSI C63.4:2003)		
Prüfergebnis: <i>Test Result:</i>	Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). The test item passed the test specification(s).		
Prüflaboratorium: <i>Testing Laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.		
geprüft/ tested by:	kontrolliert/ reviewed by:		
2012-05-02	Sam Lin/ Project Manager	2012-05-04	Shawn Peng/ 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 Aspects:			
Abkürzungen:	P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar NIT = nicht getestet	Abbreviations:	P(ass) = passed F(ail) = failed N/A = not applicable NIT = 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 relates to the a. m. test item. 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 safety mark on this or similar products.</i>			

TEST SUMMARY

5.1.1 CONDUCTED EMISSION FOR FCC PART15 SUBPART B SECTION 15.107(A)

RESULT: Passed

6.1.1 RADIATED EMISSION FOR FCC PART15 SUBPART B SECTION 15.109(A)

RESULT: Passed

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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

2. Test Sites

2.1 Test Facilities

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory

Guangzhou Auto Market, Yuan Gang Section, Guangshan Road, Guangzhou, P.R.
China

FCC Registration No.: 833845

Industry Canada Test site No.: 2932C-1

The tests at the test site 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

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
Conducted emissions				
EMI Test Receiver	Rohde & Schwarz	ESCI	100178	2013-03-12
Artificial Mains Network	Rohde & Schwarz	ESH2-Z5	100114	2013-03-12
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100701	2013-03-12
Radiated emissions				
Spectrum Analyzer	Rohde & Schwarz	FSP30	100286	2013-03-12
EMI Test Receiver	Rohde & Schwarz	ESCI	100216	2013-03-12
Pre-Amplifier	MITEQ	AFS42-00101800	1101599	2012-07-30
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	209	2013-03-12
Double-Ridged Waveguide Horn	Rohde & Schwarz	HF 906	100385	2012-08-23

2.3 Traceability

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

2.4 Calibration

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

2.5 Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO/IEC 17025 are:

Table 2: Measurement Uncertainty

Items		Extended Uncertainty
CE	Disturbance Voltage (dBuV)	U=2.68dB, k=2, σ =95%
RE (30-1000MHz)	Field strength (dBuV/m)	U=4.94dB, k=2, σ =95%
RE (above 1000MHz)	Field strength (dBuV/m)	U=4.88dB, k=2, σ =95%

2.6 Location of Original Data

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

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Guangdong) Ltd. EMC Laboratory facility located at Guangzhou Auto Market, Yuan Gang Section, Guangshan Road, Guangzhou, P.R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3. General Product Information

3.1 Product Function and Intended Use

The EUT is receiver in wireless microphone system. It can be operated in 175 ~ 186MHz frequency range.

For more information refer to the Instruction Manual.

3.2 Ratings and System Details

Table 3: Information of EUT

Kind of Equipment:	Wireless Microphone Receiver
Type Designation:	WL-200R
FCC ID:	H38WL-200R

Table 4: Technical Specification of EUT

Technical Specification	Value
Operating Frequency:	175-186MHz
Operation Voltage:	DC 12-15V (via AC/DC adaptor)
Modulation:	FM
Antenna Type:	External dedicated antenna, Non-User Replaceable
Number of Antenna:	2
Number of Channels:	16
External Ports:	Unbalanced output jack, XLR audio output port

Table 5: Information of AC/DC adapter

Kind of Equipment:	AC/DC adapter
Type Designation:	KSAC1500080W1UV-1
Input Voltage:	AC 100-240V, 50/60Hz, 0.4A
Output Rating	DC 15V, 0.8A

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, receiving
- B. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Bill of Material
- Constructional Drawing
- PCB Layout
- Photo Document
- Circuit Diagram
- Instruction Manual
- Rating Label

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.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5&6.

4.3 Special Accessories and Auxiliary Equipment

None.

4.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test

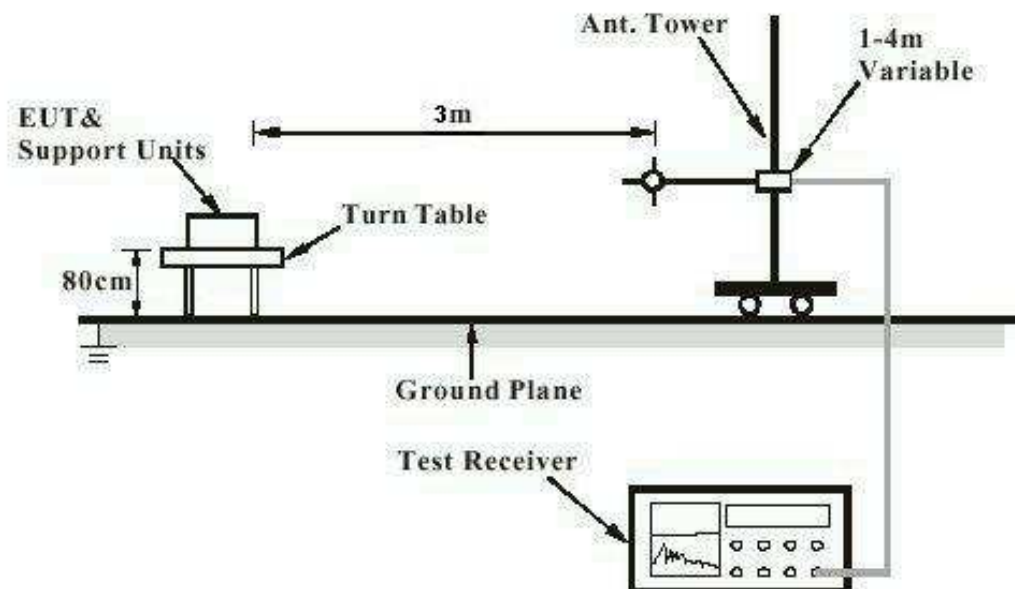


Diagram of Measurement Equipment Configuration for Conduction Measurement

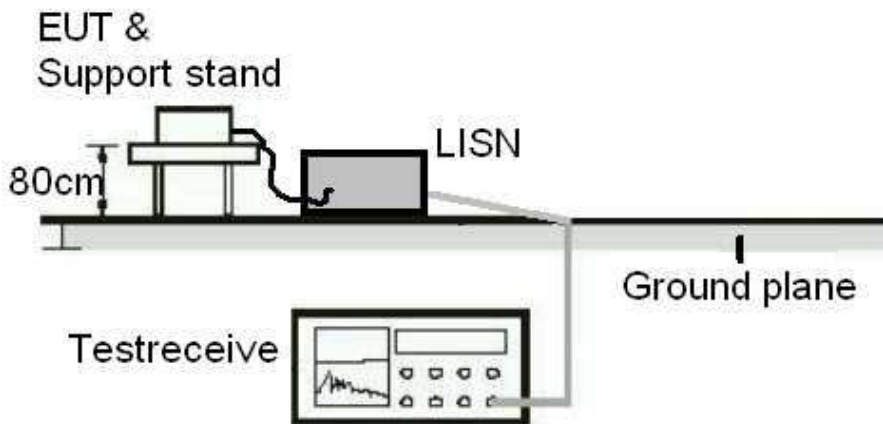
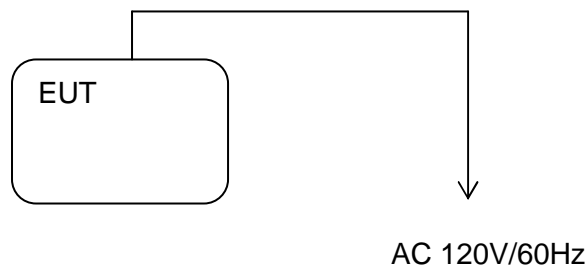


Diagram of Equipment Configuration for Testing



5. Test Results EMISSION

5.1 Emission in the Frequency Range up to 30 MHz

5.1.1 Conducted Emission for FCC Part15 Subpart B Section 15.107(a)

RESULT:**Passed**

Date of testing	:	2012-03-19
Test specification	:	FCC Part15 Subpart B Section 15.107(a)
Frequency range	:	0.15 – 30MHz
Classification	:	Class B
Test procedure	:	ANSI C63.4:2003
Kind of test site	:	Shielded room

Test setup

Input Voltage	:	AC 120V, 60Hz
Operation mode	:	A
Ambient temperature	:	22°C
Relative humidity	:	55%
Atmospheric pressure	:	101 kPa

Refer to attached Appendix 1 for details.

6. Emission in the Frequency Range above 30 MHz

6.1.1 Radiated Emission for FCC Part15 Subpart B Section 15.109(a)

RESULT: **Passed**

Date of testing	:	2012-03-22
Test standard	:	FCC Part15 Subpart B Section 15.109(a)
Frequency range	:	30 - 1000MHz, 1- 5GHz
Classification	:	Class B
Test procedure	:	ANSI C63.4:2003
Kind of test site	:	3m Semi-Anechoic Chamber

Test setup

Input Voltage	:	AC 120V, 60Hz
Operation mode	:	A
Ambient temperature	:	23°C
Relative humidity	:	50%
Atmospheric pressure	:	101 kPa

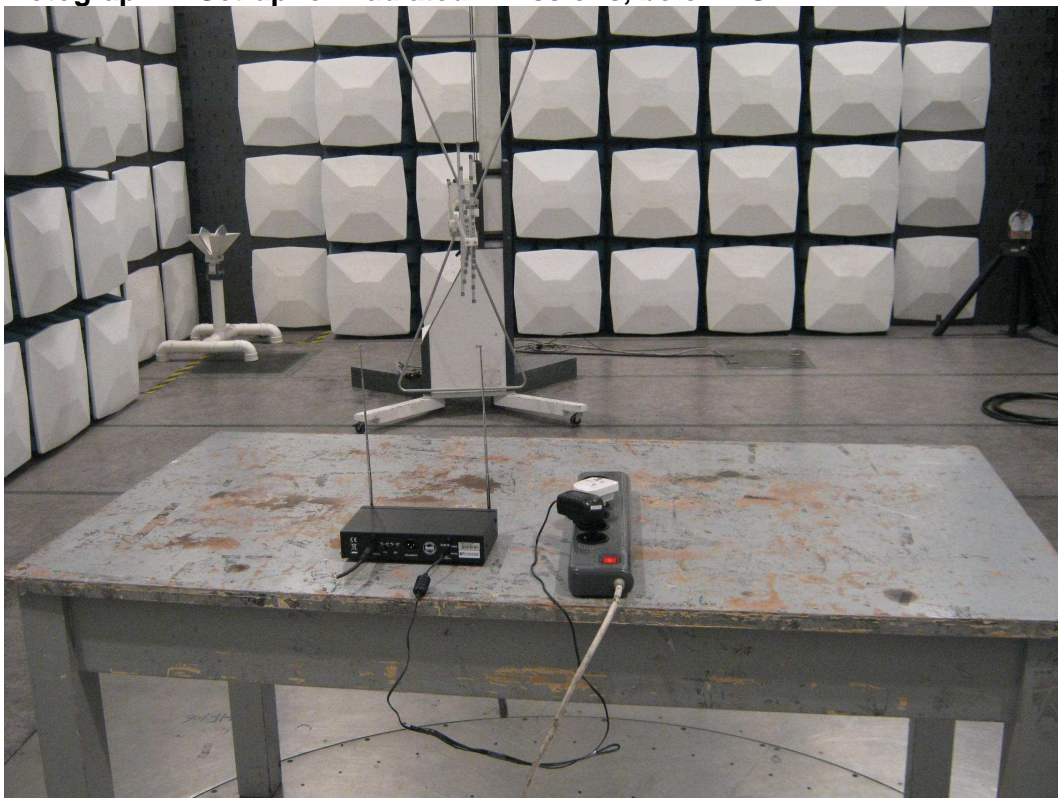
Refer to attached Appendix 1 for details.

7. Photographs of the Test Set-Up

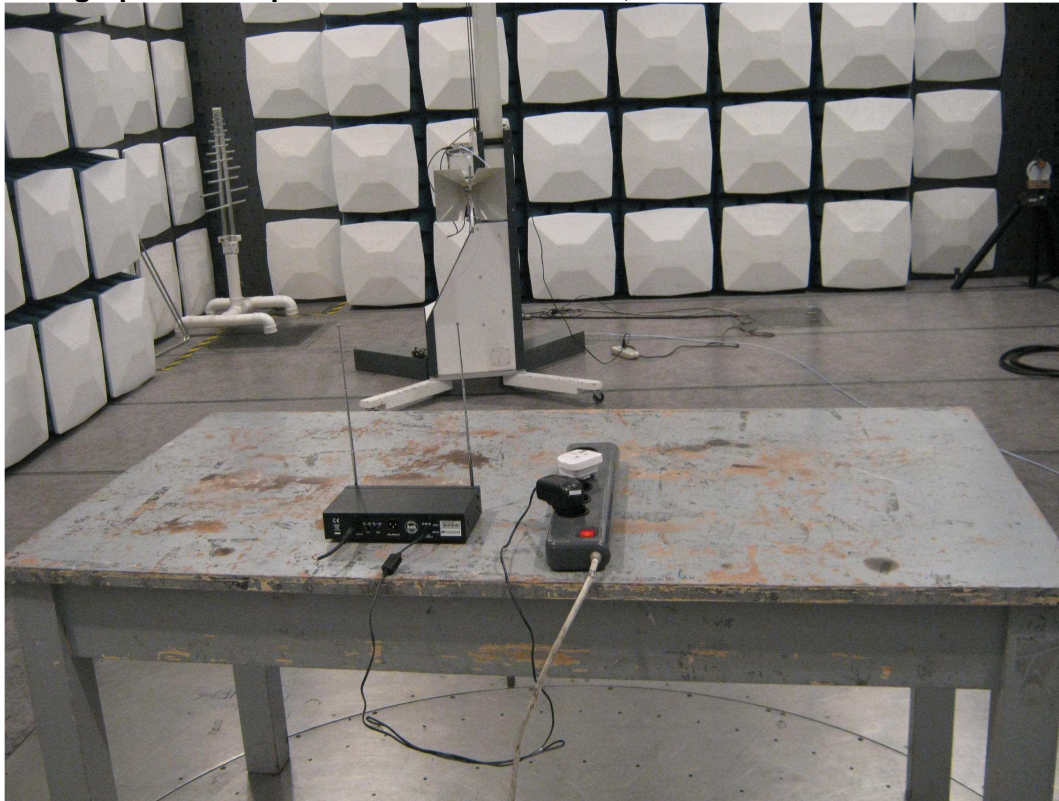
Photograph 1: Set-up for Conducted Emissions



Photograph 2: Set-up for Radiated Emissions, below 1GHz



Photograph 3: Set-up for Radiated Emissions, above 1GHz



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Test plots of Radiated Emissions

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EMC Test Service Hotline: +86-20-28391188

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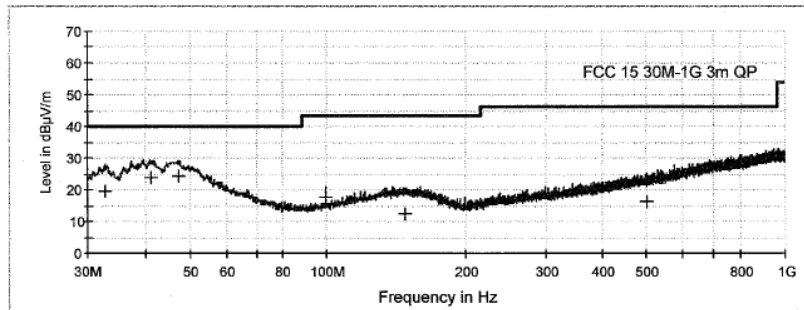
EMC Test Record (Emission)

Common Information

Manufacturer: Seikaku
 Test Item: Wireless Microphone Receiver
 Identification: WI200-R
 Test Standard: FCC Part 15
 Test Detail: RE
 Operation Mode: A
 Climate Condition: 23°C, 50 %RH; 101 kPa
 Test Voltage/ Freq: AC120V / 60Hz
 Receipt No: 163089214 200
 Report No: 17024818 001
 Result: Pass
 Comment: Test distance is 3m, Vertical

Subrange 1
 Frequency Range: 30M-1000MHz
 Receiver: TUV ESCI 3
 Transducer: TUV SAC UVLB 9168/ TUV ESCI 3-TUV SAC UVLB 9168

FCC 15 30M-1G sweep



Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)	Polarization
32.800000	19.8	14.2	20.2	40.0	V
41.400000	24.0	14.9	16.0	40.0	V
47.350000	24.5	14.7	15.5	40.0	V
99.850000	17.8	11.6	25.7	43.5	V
148.100000	12.3	15.9	31.2	43.5	V
501.900000	16.2	20.1	29.8	46.0	V

Sign-off Test Data

Date: 3/19/2012 - Time: 1:29:21

Tested by:  2012-03-19
 Reviewed by:  2012-04-09

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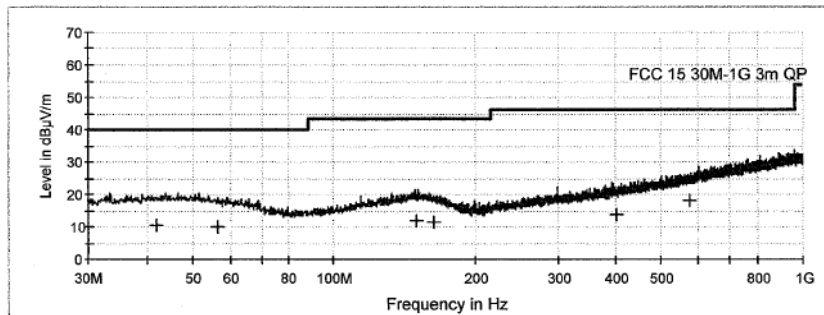
EMC Test Record (Emission)

Common Information

Manufacturer: Seikaku
 Test Item: Wireless Microphone Receiver
 Identification: WI200-R
 Test Standard: FCC Part 15
 Test Detail: RE
 Operation Mode: A
 Climate Condition: 23°C, 50 %RH; 101 kPa
 Test Voltage/ Freq: AC120V / 60Hz
 Receipt No: 163089214 200
 Report No: 17024818 001
 Result: Pass
 Comment: Test distance is 3m, Horizontal

Subrange 1
 Frequency Range: 30M-1000MHz
 Receiver: TUV ESCI 3
 Transducer: TUV SAC UVLB 9168/ TUV ESCI 3-TUV SAC UVLB 9168

FCC 15 30M-1G sweep





Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)	Polarization
41.900000	10.5	14.9	29.5	40.0	H
56.800000	10.0	14.1	30.0	40.0	H
151.000000	11.9	16.0	31.6	43.5	H
164.700000	11.6	15.7	31.9	43.5	H
401.050000	14.0	18.0	32.0	46.0	H
577.450000	18.0	21.7	28.0	46.0	H

Sign-off Test Data

Date: 3/19/2012 - Time: 1:36:39

Tested by:  Reviewed by: 

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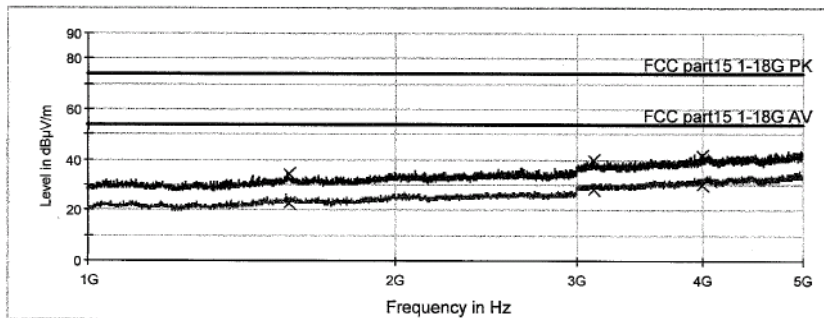
EMC Test Record (Emission)

Common Information

Manufacturer: Seikaku
 Test Item: Wireless Microphone Receiver
 Identification: WL200-R
 Test Standard: FCC Part 15
 Test Detail: RE
 Operation Mode: A
 Climate Condition: 23°C, 50 %RH; 101 kPa
 Test Voltage/ Freq: AC120V / 60Hz
 Receipt No: 163089214 200
 Report No: 17024818 001
 Result: Pass
 Comment: Test distance is 3m, Horizontal

Subrange 1
 Frequency Range: 1GHz-5GHz
 Receiver: TUV FSP30
 Transducer: TUV SAC HF907/ TUV FSP30-TUV SAC HF907

Pre TUV 1 to 18G HF907



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)	Polarization
1571.000000	34.4	-10.4	39.6	74.0	H
3120.000000	40.0	-2.9	34.0	74.0	H
3988.000000	41.7	-0.8	32.3	74.0	H

Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Polarization
1571.000000	22.8	-10.4	31.2	54.0	H
3120.000000	28.2	-2.9	25.8	54.0	H
3988.000000	29.7	-0.8	24.3	54.0	H

Sign-off Test Data

Date: 3/29/2012 - Time: 4:35:47

Tested by:  Reviewed by: 

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

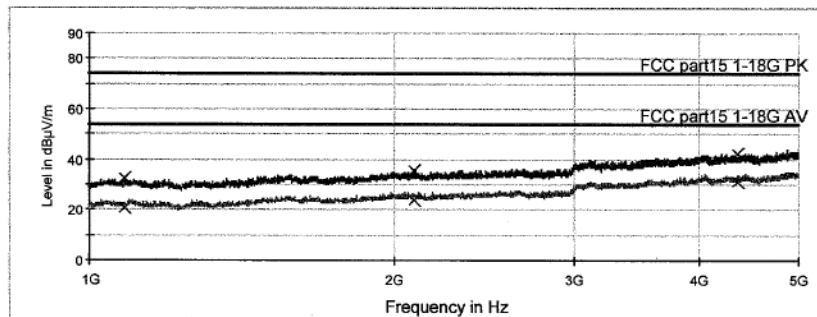
EMC Test Record (Emission)

Common Information

Manufacturer: Seikaku
 Test Item: Wireless Microphone Receiver
 Identification: WL200-R
 Test Standard: FCC Part 15
 Test Detail: RE
 Operation Mode: A
 Climate Condition: 23°C, 50 %RH; 101 kPa
 Test Voltage/ Freq: AC120V / 60Hz
 Receipt No: 163089214 200
 Report No: 17024818 001
 Result: Pass
 Comment: Test distance is 3m, Vertical

Subrange 1
 Frequency Range: 1GHz-5GHz
 Receiver: TUV FSP30
 Transducer: TUV SAC HF907/ TUV FSP30-TUV SAC HF907

Pre TUV 1 to 18G HF907



Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)	Polarization
1086.000000	32.4	-12.8	41.6	74.0	V
2092.000000	35.5	-8.3	38.5	74.0	V
4355.000000	42.4	0.3	31.6	74.0	V

Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Polarization
1086.000000	20.7	-12.8	33.3	54.0	V
2092.000000	23.9	-8.3	30.1	54.0	V
4355.000000	31.1	0.3	22.9	54.0	V

Date: 3/29/2012 - Time: 4:31:31

Tested by:  Reviewed by: _____

Test plots of Conducted Emissions

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EMC Test Service Hotline: +86-20-28391188

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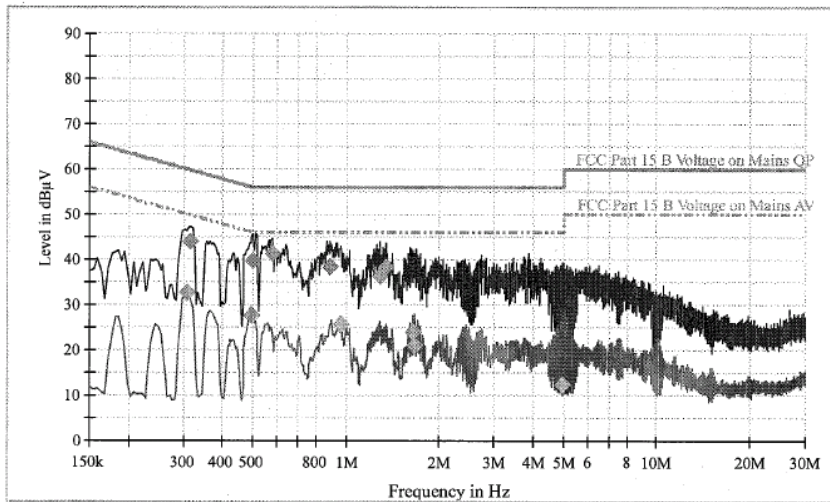
EMC Test Record (EMISSION)

Test Information

Manufacturer: Seikaku
 Test Item: Wireless System
 Identification: WL-200R
 Test Standard: FCC Part 15 B
 Test Detail: Conducted Emission
 Operation Mode: A
 Climate Condition: 22 °C; 55 %RH; 101 kPa.
 Test Voltage/ Freq.: AC 120 V/ 60 Hz
 Port / Line: AC Mains(L1+N)
 Receipt No.: 163089214 200
 Report No.: 17024685 001
 Result: Pass
 Comment: /

Hardware Setup: 1phase LISN ESH3-Z5 to ESCI
 Level Unit: dBµV


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



Sign-off Test Data

3/22/2012, 5:41:48

Tested by: 

Reviewed by: 

TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

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Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.316500	44.1	1000.0	9.000	GN	L1	9.9	15.7	59.8	
0.501000	39.5	1000.0	9.000	GN	L1	10.1	16.5	56.0	
0.577500	41.2	1000.0	9.000	GN	L1	10.0	14.8	56.0	
0.888000	38.3	1000.0	9.000	GN	N	10.1	17.7	56.0	
1.284000	36.3	1000.0	9.000	GN	L1	10.1	19.7	56.0	
1.347000	38.3	1000.0	9.000	GN	L1	10.1	17.7	56.0	

Final Result 2

Frequency (MHz)	Average (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.307500	32.7	1000.0	9.000	GN	L1	9.9	17.3	50.0	
0.496500	27.6	1000.0	9.000	GN	L1	10.1	18.5	46.1	
0.964500	25.6	1000.0	9.000	GN	L1	10.1	20.4	46.0	
1.648500	24.0	1000.0	9.000	GN	L1	10.1	22.0	46.0	
1.671000	21.1	1000.0	9.000	GN	N	10.1	24.9	46.0	
4.947000	12.3	1000.0	9.000	GN	L1	10.3	33.7	46.0	

Sign-off Test Data

3/22/2012, 5:41:48

Tested by:



Reviewed by:

