

<b>Prüfbericht-Nr.:</b> <i>Test Report No.:</i>	16060045 001	<b>Auftrags-Nr.:</b> <i>Order No.:</i>	174020628	Seite 1 von 30 <i>Page 1 of 30</i>	
<b>Kunden-Referenz-Nr.:</b> <i>Client Reference No.:</i>	352690	<b>Auftragsdatum:</b> <i>Order date.:</i>	30.Mar.2014		
<b>Auftraggeber:</b> <i>Client:</i>	Sam Ash Music Corporation 262 Duffy Avenue Hicksville, NY 11801 United States				
<b>Prüfgegenstand:</b> <i>Test item:</i>	USB Digital Wireless System				
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type No.:</i>	Stage HXD1	<b>FCC ID:</b> <i>FCC ID</i>	CCRHXD1		
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	TUV Rheinland - EMC service				
<b>Prüfgrundlage:</b> <i>Test specification:</i>	ANSI C63.4: 2009 FCC Part 15: October 1, 2013 Subpart C section 15.207, 15.209 and 15.247				
<b>Wareneingangsdatum:</b> <i>Date of receipt:</i>	31.Mar.2014				
<b>Prüfmuster-Nr.:</b> <i>Test sample No.:</i>	N/A				
<b>Prüfzeitraum:</b> <i>Testing period:</i>	Refer to test report				
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	Refer to section 2.1				
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	TÜV Rheinland (Guangdong) Ltd.				
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass				
<b>geprüft von / tested by:</b>		<b>kontrolliert von / reviewed by:</b>			
14.May.2014	Frank Du/ Project Manager		14.May.2014	Liangdong Xie/Project Manager	
<b>Datum</b> <i>Date</i>	<b>Name/Stellung</b> <i>Name/Position</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Datum</b> <i>Date</i>	<b>Name/Stellung</b> <i>Name/Position</i>	<b>Unterschrift</b> <i>Signature</i>
<b>Sonstiges / Other:</b>					
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
<p>* 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</p> <p>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</p>					
<p><b>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.</b>  <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></p>					

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## Test Summary

<b>FCC Rules</b>		<b>Test items</b>	<b>Result</b>
<b>Paragraph</b>	<b>Released Date</b>		
<b>Part 15 Per Section 15.207(a)</b>	<b>October 1, 2013</b>	<b>Conducted Emission</b>	<b>Pass</b>
<b>Part 15 Per Section 15.209(a)</b>	<b>October 1, 2013</b>	<b>Radiated Spurious Emission</b>	<b>Pass</b>
<b>Part 15 Per Section 15.203</b>	<b>October 1, 2013</b>	<b>Antenna requirement</b>	<b>N/A</b>
<b>Part 15 Per Section 15.247(b)(1)</b>	<b>October 1, 2013</b>	<b>Maximum Peak Output power</b>	<b>Pass</b>
<b>Part 15 Per Section 15.247(a)(1)</b>	<b>October 1, 2013</b>	<b>6dB Bandwidth</b>	<b>Pass</b>
<b>Part 15 Per Section 15.247(a)(1)</b>	<b>October 1, 2013</b>	<b>Hopping Channel Carrier Frequency Separation</b>	<b>N/A</b>
<b>Part 15 Per Section 15.247(a)(1)(iii)</b>	<b>October 1, 2013</b>	<b>Number of Hopping Frequency Used</b>	<b>N/A</b>
<b>Part 15 Per Section 15.247(a)(1)(iii)</b>	<b>October 1, 2013</b>	<b>Time of Occupancy (Dwell Time)</b>	<b>N/A</b>
<b>Part 15 Per Section 15.247(d)</b>	<b>October 1, 2013</b>	<b>Bandedge Emission</b>	<b>Pass</b>
<b>Part 15 Per Section 15.247(e)</b>	<b>October 1, 2013</b>	<b>Power spectral density</b>	<b>Pass</b>
<b>Part 15 Per Section 15.247(d)</b>	<b>October 1, 2013</b>	<b>Out-Of-Band Emission measurement</b>	<b>Pass</b>
<b>Safety Human exposure</b>	<b>RSS-102 Issue 4 FCC KDB Publication 447498</b>	<b>Electromagnetic Fields</b>	<b>Pass</b>

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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 result

## **2 Test Sites**

### **2.1 Test Facilities**

**TÜV Rheinland (Guangdong) Ltd. EMC Laboratory**

No.102, 1F of Southwest Warehouse Building, No.767 TianYuan Road,  
Tianhe District, Guangzhou, P.R.China, 510650

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## 2.2 List of Test and Measurement Instruments

**Table 1: List of Test and Measurement Equipment**

Kind of Equipment	Type	Manufacturer	S/N	Calibrated until	Calibrated Interval
EMI Test Receiver	ESCI-3	Rohde & Schwarz	100216	16.Mar.2015	1 year
Spectrum Analyzer	FSP30	Rohde & Schwarz	100286	16.Mar.2015	1 year
Trilog-Broadband Antenna	VULB9168 (30MHz-1GHz)	SCHWARZBECK MESSELEKTRONIK	209	16.Mar.2015	2 years
Double-Ridged Waveguide Horn Antenna	HF906 (1-18GHz)	Rohde & Schwarz	100385	16.Mar.2015	2 years
Pre-amplifier	AFS42-00101800- 25-S-42	MITEQ	1101599	16.Mar.2015	2 years
Band Reject Filter	BRM50702	Micro-Tronics	023	16.Mar.2015	2 years
Standard Gain Horn Antenna	3160-09 (18-26.5GHz)	EMCO	21642	16.Mar.2015	5 years
Pre-amplifier	AFS33-18002650- 30-8P-44	MITEQ	1108282	16.Mar.2015	2 years
3m Anechoic Chamber	N/A	Albatross Project GmbH	N/A	16.Mar.2015	1 year
Loop Antenna	HFH2-Z2 (<30MHz)	Rohde & Schwarz	100111	16.Mar.2015	2 years
EMI Test Receiver	ESCS30	Rohde & Schwarz	100316	16.Mar.2015	1 year
Two-Line V-Network	ESH3-Z5	Rohde & Schwarz	100308	16.Mar.2015	1 year
Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100701	16.Mar.2015	1 year

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## **2.3 Traceability**

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

## **2.4 Calibration**

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications.

## **2.5 Measurement Uncertainty**

Uncertainty for conducted emissions measurements is 2.68dB.

Uncertainty for radiated emissions measurements is 5.16dB (30M-1GHz) and 4.88dB (> 1GHz)

The reported expanded uncertainty is based on a standard uncertainty multiply by a coverage factor  $k=2$ , providing a level of confidence of approximately 95%.

## **2.6 Location of original data**

The original copies of test data taken during actual testing were attached at Appendix 1 of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Guangdong) file for certification follow-up purposes.

## **2.7 Status of facility used for testing**

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory; No.102, 1F of Southwest Warehouse Building, No.767 TianYuan Road, Tianhe District, Guangzhou, P.R.China is listed on the US Federal Communications Commission list of facilities approved to perform measurements, the register no. 833845.

### 3 General Product Information

The submitted sample Stage HXD1 is a wireless transmitter. It uses digital modulation technics and operates in 2400 frequency band.

For details refer to the User Manual and Circuit Diagram.

#### 3.1 Product Function and Intended Use

Refer to the Technical Documentation and user manual.

#### 3.2 Ratings and System Details

Type Designation	:	Stage HXD1
Frequency range	:	2404.0 MHz -2476.0MHz
Number of employed channels	:	5 channels
Channel Spacing	:	2MHz
Modulation Type	:	GFSK
Type of antenna	:	Integral antenna
Power supply	:	DC3.0V(battery powered)
Equipment type	:	Portable Equipment
Protection Class	:	III

Refer to the Technical Documentation for further information.



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### **3.3 Independent Operation Modes**

A. Transmitting.

For further information refer to User Manual.

### **3.4 Submitted Documents**

Block Diagram  
Schematics  
Operation Description  
Components List  
FCC label and location  
User Manual  
Internal Photos  
External Photos  
Application form

## **4 Test Set-up and Operation Mode**

### **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**

Refer to test set-up in chapter 5.

### **4.3 Special Accessories and Auxiliary Equipment**

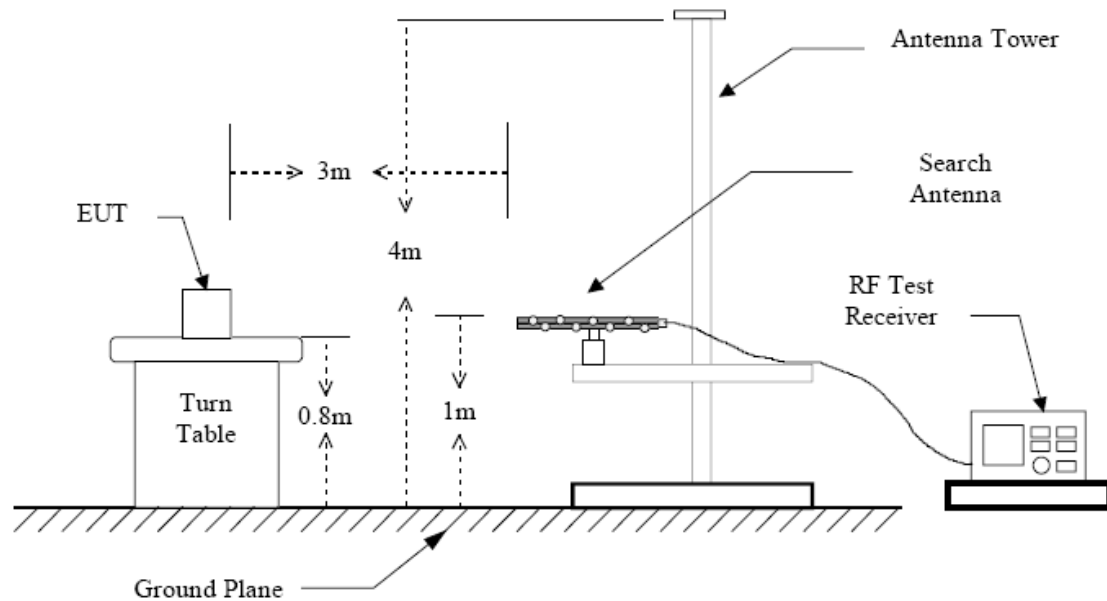
None.

### **4.4 Countermeasures to achieve EMC Compliance**

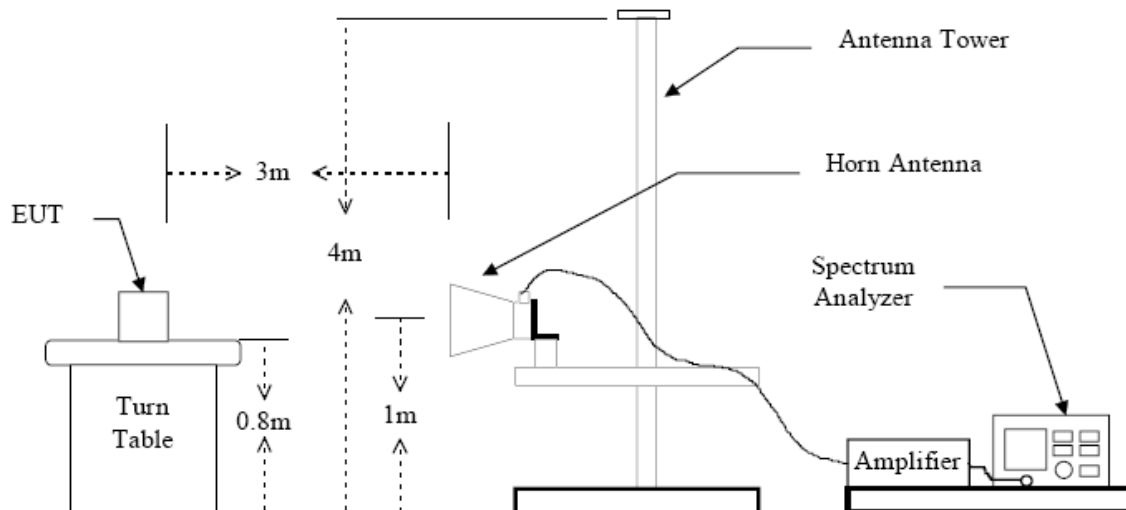
The test sample, which has been tested, contained the noise suppression parts as described in the technical document. No additional measures were employed to achieve compliance.

## 4.5 Test set-up

### Diagram 1 of Configuration for Testing Radiated Emission 30MHz -1 GHz



### Diagram 2 of Configuration for Testing Radiated Emission above 1 GHz

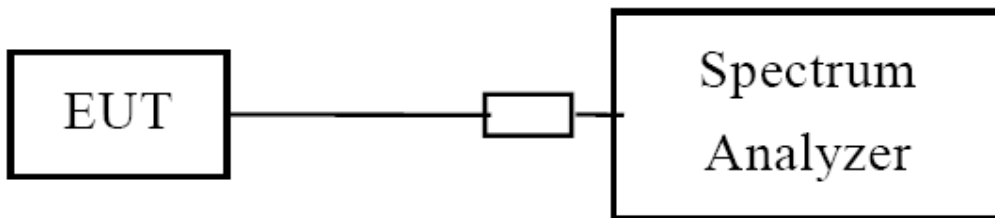




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Diagram 5 of Configuration for Testing other test items



## 5 Test Results EMISSION

### 5.1 Conducted Emission

**RESULT:** N/A

Date of testing	:	---.---.---
Test specification	:	FCC Part 15 Per Section 15.207(a)
Limits	:	FCC Part 15 Per Section 15.207(a)
Test procedure	:	Procedure specified in ANSI C63.4 were followed
Deviations from Standard Test	:	
Procedures	:	None
Kind of test site	:	Shielded room
Operation mode	:	--
Power supply	:	--
Temperature	:	--
Humidity	:	--

#### Test procedure:

For tabletop device, the EUT and its peripherals were placed on a wooden table, 0.8cm above the horizontal reference plane and 40cm away from vertical reference plane in a shielded room. For floor-standing device, the EUT shall be placed either directly on the reference ground plane or on insulating material as described in ANSI C63.4 Clause 6.3.2.1.

The EUT was connected to input power source through a line impedance stabilization network (LISN). The excess length of the power cord between the EUT and the LISN shall be folded back and forth at the center of the lead to form a bundle not exceeding 40cm in length.

The EUT was tested in a typical model of operation in accordance with ANSI C63.4:2009, Pre-test was performed in peak and average detection mode. final measurement was performed using quasi-peak and average detection on the live and neutral lines with the worst case.

The test software Rohde & Schwarz EMC32 was used during the test.

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

EUT is powered by battery, has no connection to Mains port, therefore this test is not applicable.

## 5.2 Radiated Spurious Emission

**RESULT:**

**Pass**

Date of testing	:	Apr.28.2014
Test specification	:	FCC Part 15 Per Section 15.209(a)
Limits	:	FCC Part 15 Per Section 15.209(a)
Test procedure	:	Procedure specified in ANSI C63.4
Deviations from Standard Test procedures	:	None
Kind of test site	:	3m Semi-anechoic chamber
Operation mode	:	Transmitting at fix channel with max power (High, Low, Mid)
Power supply	:	DC3.0V(powered by battery)
Temperature	:	23°C
Humidity	:	50%

**Test procedure:**

For tabletop device, the and its peripherals were placed on a wooden table,80cm above ground plane in semi-anechoic chamber. For floor-standing equipment, the EUT and all cables shall be insulated, if required, from the ground plane by up to 12mm of insulating material in semi-anechoic chamber.

The EUT was set 3 meters away from the receiving antenna, which was mounted on a variable-height antenna tower. Test shall be made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height shall be varied from 1m to 4m. The table was rotated 360 degrees to detect the suspected emission frequency points. The position of the worst radiation case with both horizontal and vertical receiving antenna polarization was recorded together with the suspected emission frequency points above-mentioned.

The EUT was tested in a typical model of operation in accordance with ANSI C63.4:2009, Pre-test was performed in peak detection mode. Final measurement was performed using quasi-peak detection with the worst case.

The test software Rohde & Schwarz EMC32 was used during the test.

**Note:**

While testing, the EUT is connected with a serial port bridge board for test mode setup. The length of the communication cable between the EUT and the bridge board, which including Tx, Rx, GND serial pins, is minimized to reduce the unwanted influence to test result. The bridge board can be connected to a host computer with standard DB9 com port cable for running of the test setup software. After setup successfully, the EUT can keep the test mode with the host computer and the cable removed.

Refer to appendix 1 for test result.

### 5.3 Antenna requirement

**RESULT:** **Pass**

Date of testing : ---  
Test specification : FCC Part 15 Per Section 15.203  
FCC Part 15 Per Section 15.247(b)

For intentional device, according to 15.203, and intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to 15.247(b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by amount in dB than the directional gain of the antenna exceeds of 6dBi.

As the antenna is permanently printed on RF Board, there is no consideration of replacement.

And the max gain of the antenna is 0dBi.



## 5.4 Maximum Peak Output Power

**RESULT:** **Pass**

Date of testing : Apr. 17, 2014  
 Test specification : FCC Part 15 Per Section 15.247(b)(3)  
 Limits : FCC Part 15 Per Section 15.247(b)(3)

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

Deviations from Standard Test procedures : None  
 Test procedure : Procedure specified in ANSI C63.4  
 Kind of test site : Shielded room  
 Operation mode : Transmitting on the measured channel.  
 Power supply : DC3.0V (powered by battery)  
 Temperature : 23°C  
 Humidity : 50%

**Table 2: Peak Conducted Power**

Channel	Frequency (MHz)	Power Reading(dBm)	Cable Loss(dB)	Output Power		Limit (mW)*
				(dBm)	(mW)	
Low	2403.8	-1.27	0.40	-0.87	0.82	1000
Mid	2447.8	-3.62	0.40	-3.22	0.44	1000
High	2471.8	-3.17	0.40	-2.77	0.53	1000

Please refer to Appendix 1 for measurement data.

## 5.5 6dB Bandwidth

**RESULT:** **Pass**

Date of testing : May.14, 2014  
Test specification : FCC Part 15 Per Section 15.247(a)(2)  
Limits : FCC Part 15 Per Section 15.247(a)(2)

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

Deviations from Standard Test procedures : None  
Test procedure : Procedure specified in ANSI C63.4  
Operation mode : Transmitting on the measured channel.  
Kind of test site : Shielded room  
Power supply : DC3.0V(powered by battery)  
Temperature : 22°C  
Humidity : 52%

### Test procedure:

1. Connect the antenna port of the EUT to the spectrum analyzer by a low lost cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Spectrum analyzer setting: Centered Frequency= measured channel, RBW=10kHz,VBW=30kHz.
4. Mark the peak power frequency point and the -6dB upper and lower frequency points.
5. Read the frequency delta value between the -6dB upper and lower frequency points.
6. Repeat step 2 to 5 until all the channels required are finished.

**Table 3: 6dB Bandwidth**

Channel	Frequency (MHz)	Test Result (kHz)
Low	2403.8	680
High	2471.8	670

Please refer to Appendix 1 for measurement data.

## 5.6 Hopping Channel Carrier Frequency Separation

**RESULT:** N/A

Date of testing : ---  
Test specification : FCC Part 15 Per Section 15.247(a)(1)  
Limits : FCC Part 15 Per Section 15.247(a)(1)

Frequency hopping systems operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 0.125W.

Deviations from Standard Test procedures : None  
Test procedure : Procedure specified in ANSI C63.4  
Kind of test site : Shielded room  
Operation mode : ---  
Power supply : ---  
Temperature : ---  
Humidity : ---

### Test procedure:

1. Connect the antenna port of the EUT to the spectrum analyzer by a low loss cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Spectrum analyzer setting: Centered Frequency = measured channel, RBW = 30 kHz, VBW = 100 kHz, Frequency Span = wide enough to cover the adjacent channel.
4. Mark the peak power frequency point of the measured channel and its adjacent channel(s)
5. Read the frequency delta value between the measured channel and its adjacent channel(s)
6. Repeat step 3 to 5 until all the channels measured are finished.

EUT does not use Frequency hopping technics, therefore this test is not applicable.

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## 5.7 Number of Hopping Frequency Used

**RESULT:** N/A

Date of testing	:	---
Test specification	:	FCC Part 15 Per Section 15.247(a)(1)(iii)
Limits	:	FCC Part 15 Per Section 15.247(a)(1)(iii) Frequency hopping system in the 2400-2483.5 MHz band shall use at least 15 non-overlapping channels
Deviations from Standard Test procedures	:	None
Test procedure	:	Procedure specified in ANSI C63.4
Kind of test site	:	Shielded room
Operation mode	:	---
Power supply	:	---
Temperature	:	---
Humidity	:	---

### Test procedure:

1. Connect the antenna port of the EUT to the spectrum analyzer by a low loss cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Spectrum analyzer setting: RBW = 100 kHz, VBW ≥ RBW, Frequency Span = wide enough to cover the channels to be plotted.
4. Set the spectrum analyzer to Max-hold mode and plot the result(s) with record of all hopping channel.

EUT does not use Frequency hopping technics, therefore this test is not applicable.

## 5.8 Time of Occupancy (Dwell Time)

**RESULT:** N/A

Date of testing : ---  
Test specification : FCC Part 15 Per Section 15.247(a)(1)(iii)  
Limits : FCC Part 15 Per Section 15.247(a)(1)(iii)

For frequency hopping system operating in the 2400-2483.5MHz band, the average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Deviations from Standard Test procedures : None  
Test Procedure : Procedure specified in ANSI C63.4  
Kind of test site : Shielded room  
Operation mode : ---  
Power supply : ---  
Temperature : ---  
Humidity : ---

### Test procedure:

1. Connect the antenna port of the EUT to the spectrum analyzer by a low loss cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Spectrum analyzer setting: Centered Frequency = measured channel, RBW = 1MHz, VBW $\geq$ RBW, Frequency Span = 0 Hz.
4. Set sweep time properly to capture the entire dwell time per hopping channel.
5. Set detector type to Peak and trace mode to Max Hold and make the measurement.
6. Repeat step 3-5 until all channels measured were complete.

EUT does not use Frequency hopping technics, therefore this test is not applicable.

## 5.9 Bandedge Emission

**RESULT:** **Pass**

Date of testing : Apr.28.2014  
Test specification : FCC Part 15 Per Section 15.247(d)  
Limits : FCC Part 15 Per Section 15.247(d)

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

In addition:  
FCC Part 15 - radiated emission which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a).

Deviations from Standard Test procedures : None  
Test Procedure : Procedure specified in ANSI C63.4  
Kind of test site : Shielded room  
Operation mode : Transmitting at the highest and lowest channel (band edge)  
Power supply : DC3.0V(powered by battery)  
Temperature : 22°C  
Humidity : 55%

### Test procedure:

1. Connect the antenna port of the EUT to the spectrum analyzer by a low lost cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Spectrum analyzer setting: RBW = 100 kHz, VBW≥RBW.
4. Set proper frequency span respectively for out-of-band emission measurement of the band edge and the whole range (up to 10 times of the carrier frequency.)
5. Set the trace mode to Max Hold and mark the peak reading of any spurious emission recorded.

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**Table 4: Band Edges Emission in the Restricted Bands by Marker Delta Method**

Frequency [MHz]	dBc [dB]	PK [dB $\mu$ V/m]	AV [dB $\mu$ V/m]	Polarity (H/V)	PK limit [dB $\mu$ V/m]	AV limit [dB $\mu$ V/m]
2483.5	53.38	52.06	---	V	74	54
2400.0	53.96	54.4	---	H	74	54

**NOTE:**

1. The Peak carrier field strength of the highest/lowest channel is 105.06dBuV/m, 108.40dBuV/m.  
The above field strength levels were measured in horizontal polarity which is the worst case.
2. The dBc value between the carrier maximum power and band edge emission power of the frequency listed in the table is calculated from the test record showed in Appendix 1.
3. Peak value of the high/low band edge emission listed in the table is calculated by the below formula: PK value of band edge emission = Peak carrier field strength – dBc value in item2

\*Note: Please refer to Appendix 1 for measurement data. Disturbances other than those mentioned above are small or not detectable. Please refer to the Appendix 1 for the noise floor of the band edge emission.

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## 5.10 Power spectral density

**RESULT:**

**Pass**

Date of testing : Apr.28.2014  
Test specification : FCC Part 15 Per Section 15.247(e)  
Limits : FCC Part 15 Per Section 15.247(e)

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

Deviations from Standard Test procedures : None  
Test procedure : Procedure specified in ANSI C63.4  
Kind of test site : Shielded room  
Operation mode : Transmitting on the measured channel.  
Power supply : DC3.0V(powered by battery)  
Temperature : 23°C  
Humidity : 50%

**Table 5: power spectral density**

Channel	Frequency (MHz)	Power Reading(dBm)	Limit dBm/3kHz
Low	2403.8	-10.10	8.0
Mid	2447.8	-15.40	8.0
High	2471.8	-7.44	8.0

Please refer to Appendix 1 for measurement data.



## 5.11 Out-of-Band Emission

**RESULT:**

**Pass**

Date of testing : Apr.24, 2014  
Test specification : FCC Part 15 Per Section 15.247(d)  
Limits : FCC Part 15 Per Section 15.247(d)

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

In addition:

FCC Part 15 - radiated emission which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a).

Deviations from Standard Test

procedures : None  
Test Procedure : Procedure specified in ANSI C63.4  
Kind of test site : Shielded room  
Operation mode : Transmitting at the highest and lowest channel  
Power supply : DC3.0V(powered by battery)  
Temperature : 22°C  
Humidity : 55%

**Test procedure:**

1. Connect the antenna port of the EUT to the spectrum analyzer by a low loss cable.
2. Set the EUT to proper test mode with relative test software and hardware.
3. Spectrum analyzer setting: RBW = 100 kHz, VBW ≥ RBW.
4. Set proper frequency span respectively for out-of-band emission measurement of the band edge and the whole range (up to 10 times of the carrier frequency.)
5. Set the trace mode to Max Hold and mark the peak reading of any spurious emission recorded.

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**Table 6: Out-Of-Band Emission measurement (conducted)**

<b>Emission (Carrier operating at Channel low, mid and high)</b>	<b>Attenuation</b>	<b>Limit (dB)</b>
30MHz to 25GHz	All emission in this 100kHz bandwidth are attenuated more than 20dB from the carrier	$\Delta \geq 20$

Note: Refer to Appendix 1 for measurement data.

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*Test Report No.:*

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## 6. Safety Human exposure

### 6.1 Radio Frequency Exposure Compliance

#### 6.1.1 Electromagnetic Fields

**RESULT:**

Passed

Test standard : RSS-102 Issue 4  
FCC KDB Publication 447498

The maximum peak output power of the transmitter is 0.82mW only, which less than 20mW. Hence the EUT is exempted from routine evaluation limits (SAR Evaluation) according to clause 2.5.1 of RSS-102 Issue 4.

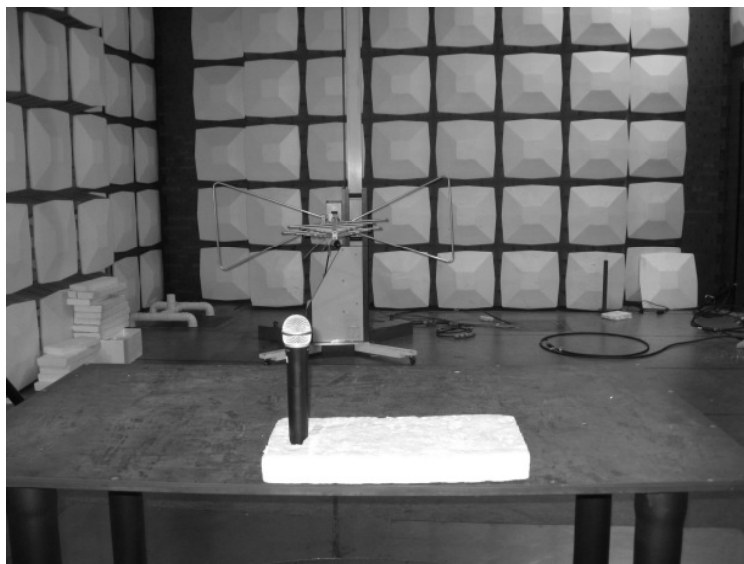
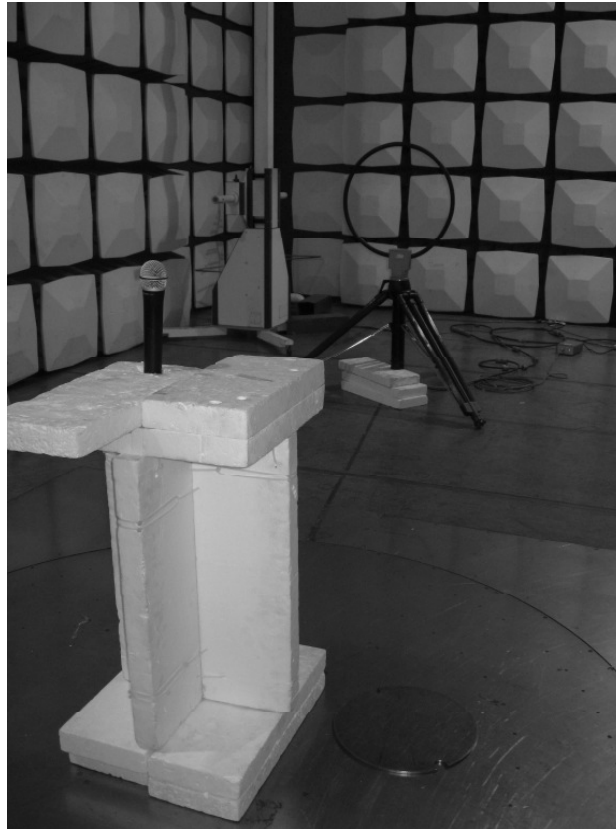
The minimum distance for the EUT is 5mm, since maximum peak output power of the transmitter is 0.82mW <10mW, hence the EUT is excluded from SAR evaluation according to FCC KDB publication 447498 D01: Mobile and Portable RF Exposure.Guidance v05.

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## 7. Photographs of the Test Set-Up

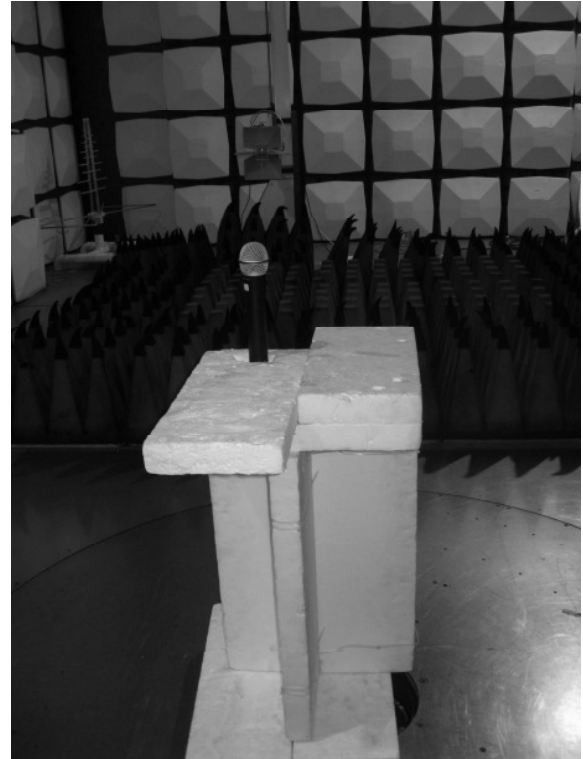
**Photograph 1: Set-up for Radiation Measurement below 1GHz**



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**Photograph 2: Set-up for Radiation Measurement above 1GHz**



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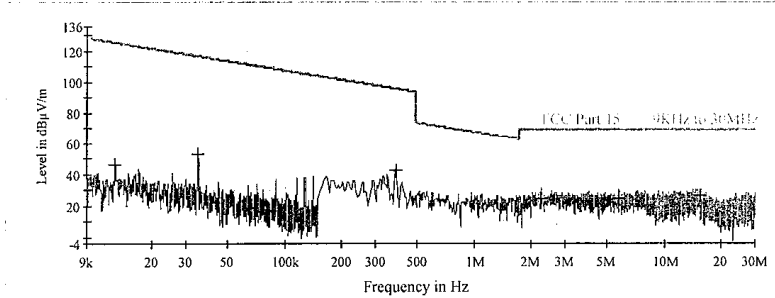
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ High channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Horizontal

Subrange 1  
 Frequency Range: 9K-30MHz  
 Receiver: TUV ESCI 3  
 Transducer: TUV SAC HFH2-Z2/ TUV ESCI 3-TUV SAC HFH2-Z2



### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
0.012760	/	46.4	1000.0	0.200	H	20.9	79.1	125.6
0.034840	/	53.3	1000.0	0.200	H	20.5	63.5	116.8
0.386000	/	42.8	1000.0	9.000	H	20.8	53.0	95.9
2.266000	24.8	/	1000.0	9.000	H	20.6	44.7	69.5
5.730000	24.3	/	1000.0	9.000	H	20.6	45.2	69.5
15.406000	26.8	/	1000.0	9.000	H	22.3	42.7	69.5

**Sign-off Test Data**



Date: 4/28/2014 - Time: 1:36:32

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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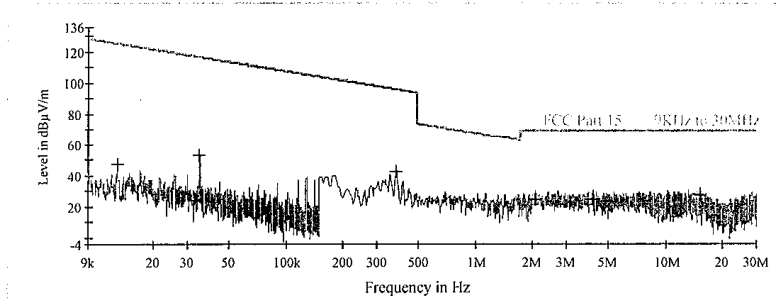
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
Test Item: Wireless System  
Identification: HXD1  
Test Standard: FCC Part 15.209  
Test Detail: RE  
Operation Mode: Tx @ High channel  
Climate Condition: 23 °C; 50 %RH; 101 kPa.  
Test Voltage/ Freq: DC 3.0V  
Receipt No: 174020628  
Report No: 16060046 001  
Result: Pass  
Comment: Test distance is 3m, Vertical

Subrange 1  
Frequency Range: 9K-30MHz  
Receiver: TUV ESCI 3  
Transducer: TUV SAC HFH2-Z2/ TUV ESCI 3-TUV SAC HFH2-Z2



### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
0.012840	/	47.5	1000.0	0.200	V	20.9	78.1	125.5
0.034840	/	53.1	1000.0	0.200	V	20.5	63.7	116.8
0.382000	/	42.4	1000.0	9.000	V	20.8	53.6	96.0
2.046000	25.0	/	1000.0	9.000	V	20.7	44.5	69.5
4.126000	24.5	/	1000.0	9.000	V	20.8	45.0	69.5
15.150000	27.1	/	1000.0	9.000	V	22.8	42.4	69.5

Sign-off Test Data



Date: 4/28/2014 - Time: 1:40:20

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_



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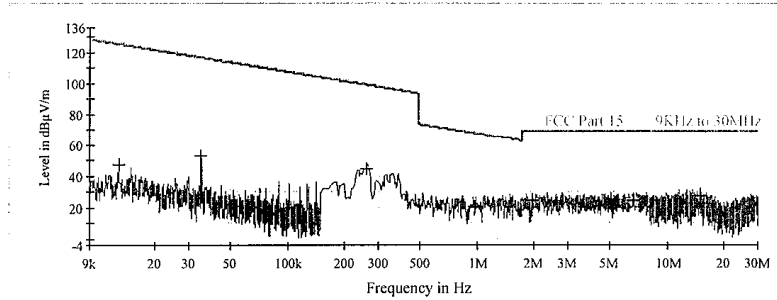
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Mid channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Horizontal

Subrange 1  
 Frequency Range: 9K-30MHz  
 Receiver: TUV ESCI 3  
 Transducer: TUV SAC HFH2-Z2/ TUV ESCI 3-TUV SAC HFH2-Z2



### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
0.012840	/	47.6	1000.0	0.200	H	20.9	77.9	125.5
0.034840	/	53.2	1000.0	0.200	H	20.5	63.7	116.8
0.262000	/	44.9	1000.0	9.000	H	21.0	54.3	99.3
1.950000	24.8	/	1000.0	9.000	H	20.7	44.7	69.5
6.582000	24.7	/	1000.0	9.000	H	20.7	44.8	69.5
14.770000	27.1	/	1000.0	9.000	H	23.0	42.4	69.5

Sign-off Test Data



Date: 4/28/2014 - Time: 1:46:41

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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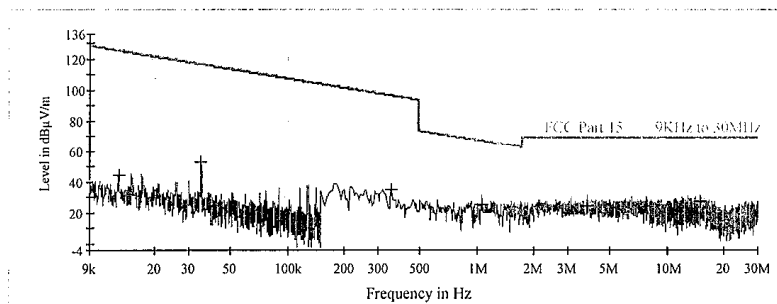
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Mid channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Vertical

Subrange 1  
 Frequency Range: 9K-30MHz  
 Receiver: TUV ESCI 3  
 Transducer: TUV SAC HFH2-Z2/ TUV ESCI 3-TUV SAC HFH2-Z2



### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
0.012920	/	44.3	1000.0	0.200	V	20.9	81.1	125.5
0.034840	/	53.2	1000.0	0.200	V	20.5	63.6	116.8
0.350000	/	35.3	1000.0	9.000	V	20.9	61.5	96.7
1.054000	25.3	/	1000.0	9.000	V	20.4	41.9	67.2
3.786000	24.6	/	1000.0	9.000	V	20.7	44.9	69.5
15.006000	27.2	/	1000.0	9.000	V	23.1	42.3	69.5

Sign-off Test Data



Date: 4/28/2014 - Time: 1:44:05

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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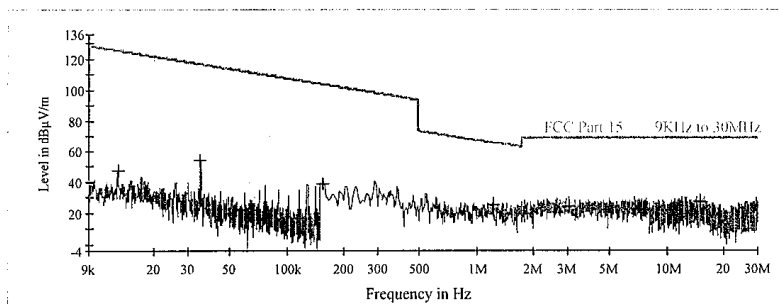
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
Test Item: Wireless System  
Identification: HXD1  
Test Standard: FCC Part 15.209  
Test Detail: RE  
Operation Mode: Tx @ Low channel  
Climate Condition: 23 °C; 50 %RH; 101 kPa.  
Test Voltage/ Freq: DC 3.0V  
Receipt No: 174020628  
Report No: 16060046 001  
Result: Pass  
Comment: Test distance is 3m, Horizontal

Subrange 1  
Frequency Range: 9K-30MHz  
Receiver: TUV ESCI 3  
Transducer: TUV SAC HFH2-Z2/ TUV ESCI 3-TUV SAC HFH2-Z2



### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
0.012840	/	47.5	1000.0	0.200	H	20.9	78.0	125.5
0.034920	/	54.5	1000.0	0.200	H	20.5	62.3	116.8
0.154000	/	38.4	1000.0	9.000	H	20.5	65.5	103.9
1.218000	25.3	/	1000.0	9.000	H	20.5	40.6	65.9
3.042000	24.4	/	1000.0	9.000	H	20.4	45.1	69.5
14.914000	27.2	/	1000.0	9.000	H	23.1	42.3	69.5

Sign-off Test Data



Date: 4/28/2014 - Time: 1:49:56

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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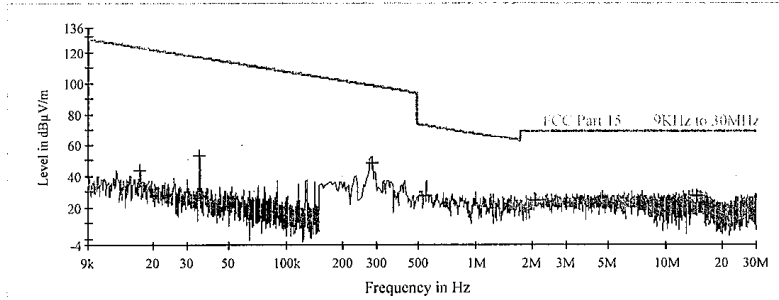
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Low channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Vertical

Subrange 1  
 Frequency Range: 9K-30MHz  
 Receiver: TUV ESCI 3  
 Transducer: TUV SAC HFH2-Z2/ TUV ESCI 3-TUV SAC HFH2-Z2



### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
0.017000	/	43.6	1000.0	0.200	V	20.7	79.4	123.1
0.034840	/	53.1	1000.0	0.200	V	20.5	63.7	116.8
0.282000	/	48.5	1000.0	9.000	V	20.9	50.1	98.6
0.546000	27.1	/	1000.0	9.000	V	20.7	45.8	72.9
2.062000	24.9	/	1000.0	9.000	V	20.7	44.6	69.5
14.594000	27.0	/	1000.0	9.000	V	23.0	42.5	69.5

Sign-off Test Data



Date: 4/28/2014 - Time: 1:52:55

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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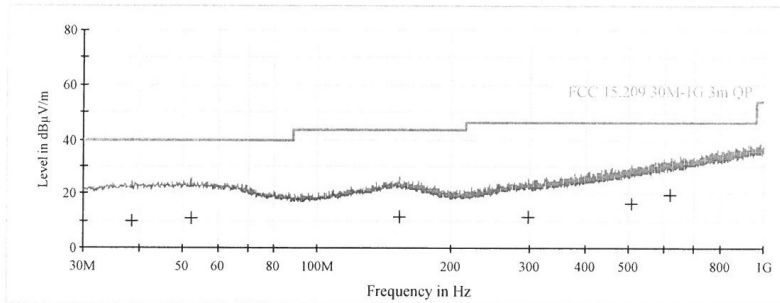
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless receiver System.  
 Identification: HXD1 (Highest frequency)  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: A  
 Climate Condition: 23 °C ; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: AC 120 V/ 60 Hz  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Horizontal

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



### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
38.750000	9.6	1000.0	120.000	H	14.6	30.4	40.0
52.300000	10.7	1000.0	120.000	H	15.0	29.3	40.0
153.300000	11.4	1000.0	120.000	H	15.7	32.1	43.5
298.550000	11.6	1000.0	120.000	H	15.9	34.4	46.0
504.350000	16.4	1000.0	120.000	H	20.9	29.6	46.0
615.520000	19.6	1000.0	120.000	H	23.1	26.4	46.0

Sign-off Test Data



Date: 4/15/2014 - Time: 2:33:33

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

**Prüfbericht - Nr.:**

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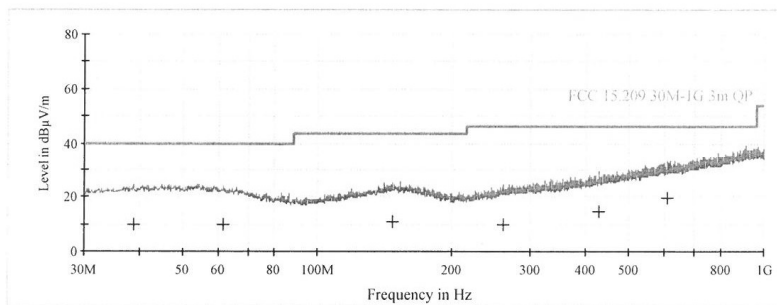
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless receiver System  
 Identification: HXD1 (Highest frequency)  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: A  
 Climate Condition: 23 °C ; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: AC 120 V/ 60 Hz  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Vertical

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



### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
38.850000	9.7	1000.0	120.000	V	14.6	30.3	40.0
61.650000	9.8	1000.0	120.000	V	14.4	30.2	40.0
147.250000	10.9	1000.0	120.000	V	15.5	32.6	43.5
261.000000	9.9	1000.0	120.000	V	14.6	36.1	46.0
426.600000	14.7	1000.0	120.000	V	19.3	31.3	46.0
605.800000	19.6	1000.0	120.000	V	23.1	26.4	46.0

Sign-off Test Data



Date: 4/15/2014 - Time: 2:36:44

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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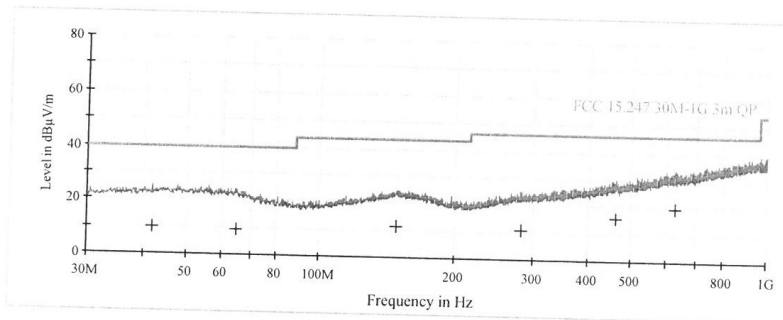
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless receiver System  
 Identification: HXD1 (Mid frequency)  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: A  
 Climate Condition: 23°C ; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: AC 120 V/ 60 Hz  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Vertical

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



### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
41.900000	9.9	1000.0	120.000	V	14.8	30.1	40.0
65.150000	9.5	1000.0	120.000	V	14.0	30.5	40.0
149.050000	11.5	1000.0	120.000	V	15.6	32.0	43.5
283.650000	11.0	1000.0	120.000	V	15.6	35.0	46.0
461.550000	15.5	1000.0	120.000	V	20.0	30.5	46.0
624.500000	19.8	1000.0	120.000	V	23.5	26.2	46.0

Sign-off Test Data

Date: 4/15/2014 - Time: 2:22:26

Tested by:  Reviewed by: 

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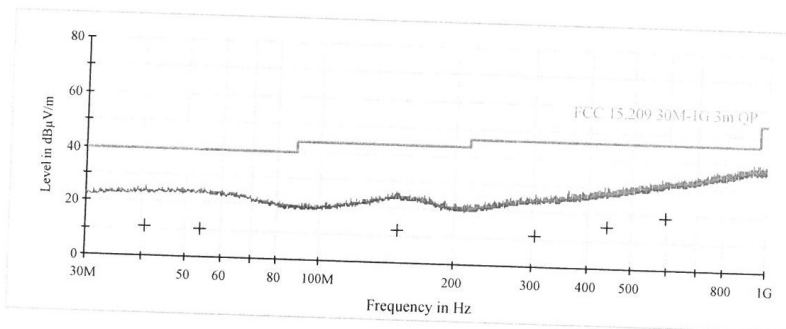
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
Test Item: Wireless receiver System  
Identification: HXD1 (Mid frequency)  
Test Standard: FCC Part 15.209  
Test Detail: RE  
Operation Mode: A  
Climate Condition: 23°C ; 50 %RH; 101 kPa.  
Test Voltage/ Freq: AC 120 V/ 60 Hz  
Receipt No: 174020628  
Report No: 16060046 001  
Result: Pass  
Comment: Test distance is 3m, Horizontal

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



### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
40.800000	11.0	1000.0	120.000	H	14.8	29.0	40.0
54.250000	10.3	1000.0	120.000	H	14.9	29.7	40.0
150.050000	11.8	1000.0	120.000	H	15.6	31.7	43.5
305.700000	11.6	1000.0	120.000	H	16.1	34.4	46.0
442.350000	15.2	1000.0	120.000	H	19.7	30.8	46.0
594.800000	19.3	1000.0	120.000	H	22.8	26.7	46.0

Sign-off Test Data



Date: 4/15/2014 - Time: 2:12:09

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_



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**16060045 001**

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TUV Rheinland (Guangdong) Ltd.

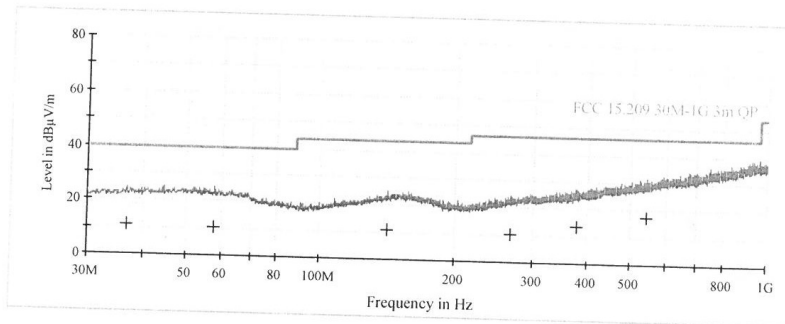
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless receiver System  
 Identification: HXD1 (Low frequency)  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: A  
 Climate Condition: 23°C ; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: AC 120 V/ 60 Hz  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Horizontal

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



### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
36.800000	10.9	1000.0	120.000	H	14.5	29.1	40.0
58.000000	10.3	1000.0	120.000	H	14.7	29.7	40.0
141.550000	10.8	1000.0	120.000	H	15.1	32.7	43.5
267.050000	10.3	1000.0	120.000	H	14.9	35.7	46.0
376.800000	13.4	1000.0	120.000	H	18.0	32.6	46.0
540.450000	17.5	1000.0	120.000	H	21.5	28.5	46.0

Sign-off Test Data



Date: 4/15/2014 - Time: 2:29:34

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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Test Report No.

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TUV Rheinland (Guangdong) Ltd.

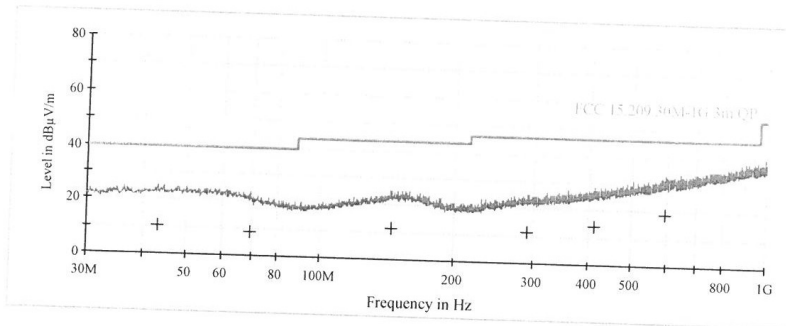
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
Test Item: Wireless receiver System  
Identification: HXD1 (Low frequency)  
Test Standard: FCC Part 15.209  
Test Detail: RE  
Operation Mode: A  
Climate Condition: 23°C ; 50 %RH; 101 kPa.  
Test Voltage/ Freq: AC 120 V/ 60 Hz  
Receipt No: 174020628  
Report No: 16060046 001  
Result: Pass  
Comment: Test distance is 3m, Vertical

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



### Limit and Margin QP

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
43.200000	10.4	1000.0	120.000	V	14.9	29.6	40.0
69.400000	8.9	1000.0	120.000	V	13.2	31.1	40.0
144.700000	11.2	1000.0	120.000	V	15.3	32.3	43.5
291.800000	11.3	1000.0	120.000	V	15.8	34.7	46.0
410.350000	14.1	1000.0	120.000	V	18.8	31.9	46.0
595.500000	19.3	1000.0	120.000	V	22.8	26.7	46.0

Sign-off Test Data



Date: 4/15/2014 - Time: 2:26:19

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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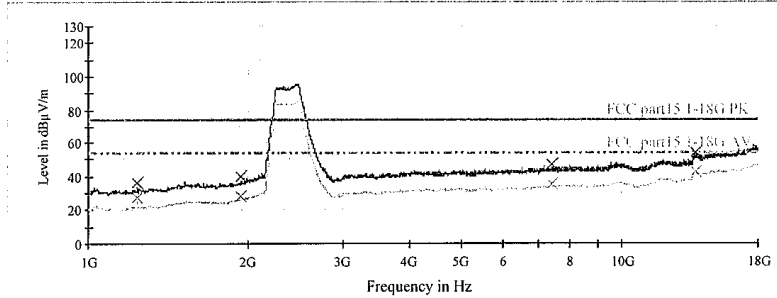
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ High channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Vertical

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



### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/)
1236.000000	36.0	1000.0	1000.000	V	-14.4	38.0	74.0
1931.000000	39.7	1000.0	1000.000	V	-10.0	34.3	74.0
7415.000000	46.6	1000.0	1000.000	V	0.1	27.4	74.0
13788.000000	54.2	1000.0	1000.000	V	4.7	19.8	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/)
1236.000000	27.2	1000.0	1000.000	V	-14.4	26.8	54.0
1931.000000	28.4	1000.0	1000.000	V	-10.0	25.6	54.0
7415.000000	35.0	1000.0	1000.000	V	0.1	19.0	54.0
13788.000000	42.4	1000.0	1000.000	V	4.7	11.6	54.0



Date: 4/23/2014 - Time: 6:09:06

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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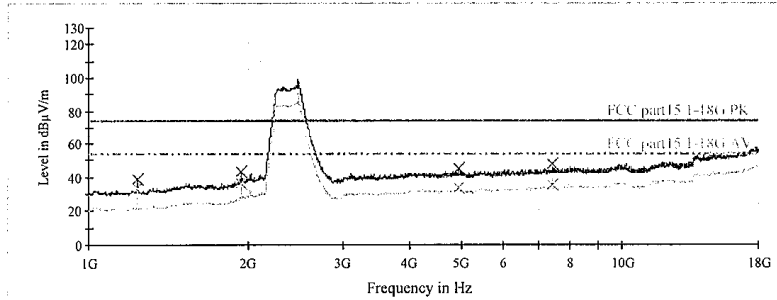
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ High channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Vertical

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



### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1236.000000	39.1	1000.0	1000.000	H	-14.4	34.9	74.0
1931.000000	43.8	1000.0	1000.000	H	-10.0	30.2	74.0
4944.000000	45.5	1000.0	1000.000	H	-3.3	28.5	74.0
7415.000000	47.7	1000.0	1000.000	H	0.1	26.3	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1236.000000	33.8	1000.0	1000.000	H	-14.4	20.2	54.0
1931.000000	36.5	1000.0	1000.000	H	-10.0	17.5	54.0
4944.000000	33.7	1000.0	1000.000	H	-3.3	20.3	54.0
7415.000000	35.3	1000.0	1000.000	H	0.1	18.7	54.0



Date: 4/23/2014 - Time: 6:03:51

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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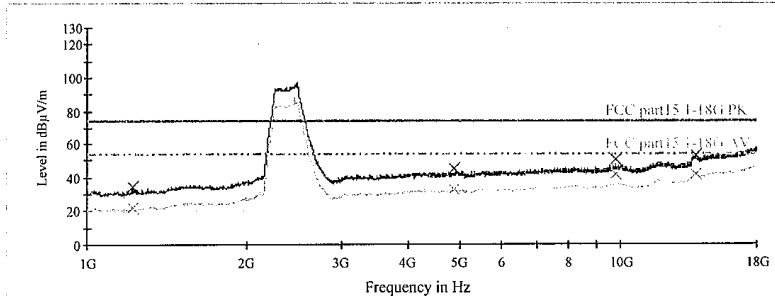
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Mid channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Vertical

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



### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/)
1223.000000	34.9	1000.0	1000.000	V	-14.5	39.1	74.0
4895.000000	44.8	1000.0	1000.000	V	-3.5	29.2	74.0
9791.000000	50.7	1000.0	1000.000	V	4.3	23.3	74.0
13833.000000	53.4	1000.0	1000.000	V	4.8	20.6	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/)
1223.000000	22.5	1000.0	1000.000	V	-14.5	31.5	54.0
4895.000000	32.5	1000.0	1000.000	V	-3.5	21.5	54.0
9791.000000	41.3	1000.0	1000.000	V	4.3	12.7	54.0
13833.000000	42.0	1000.0	1000.000	V	4.8	12.0	54.0



Date: 4/23/2014 - Time: 5:45:36

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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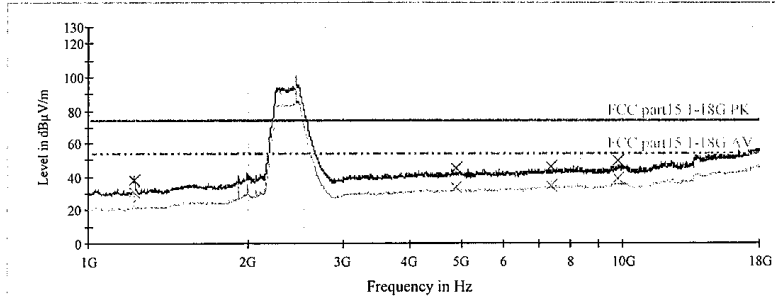
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Mid channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Horizontal

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



### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1223.000000	38.2	1000.0	1000.000	H	-14.5	35.8	74.0
4895.000000	44.8	1000.0	1000.000	H	-3.5	29.2	74.0
7343.000000	46.1	1000.0	1000.000	H	-0.3	27.9	74.0
9791.000000	49.4	1000.0	1000.000	H	4.3	24.6	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1223.000000	30.9	1000.0	1000.000	H	-14.5	23.1	54.0
4895.000000	33.6	1000.0	1000.000	H	-3.5	20.4	54.0
7343.000000	34.2	1000.0	1000.000	H	-0.3	19.8	54.0
9791.000000	39.1	1000.0	1000.000	H	4.3	14.9	54.0



Date: 4/23/2014 - Time: 5:38:54

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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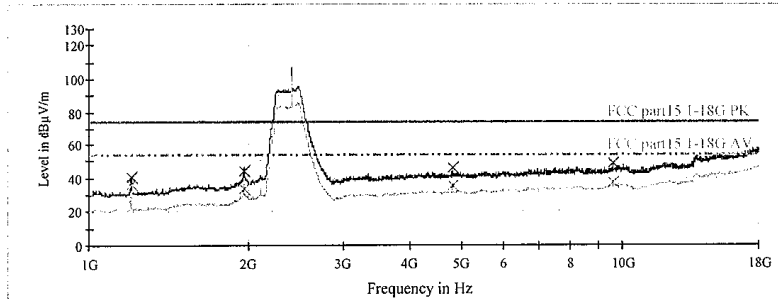
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Low channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Horizontal

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



### Limit and Margin PK

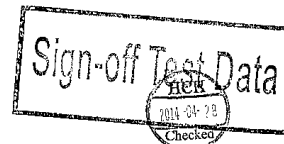
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/)
1202.000000	40.3	1000.0	1000.000	H	-14.5	33.7	74.0
1952.000000	44.5	1000.0	1000.000	H	-9.6	29.5	74.0
4808.000000	46.0	1000.0	1000.000	H	-3.7	28.0	74.0
9815.000000	48.5	1000.0	1000.000	H	4.2	25.5	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/)
1202.000000	36.0	1000.0	1000.000	H	-14.5	18.0	54.0
1952.000000	34.0	1000.0	1000.000	H	-9.6	20.0	54.0
4808.000000	35.7	1000.0	1000.000	H	-3.7	18.3	54.0
9815.000000	37.5	1000.0	1000.000	H	4.2	16.5	54.0

Date: 4/23/2014 - Time: 5:58:09

Tested by:  Reviewed by: \_\_\_\_\_



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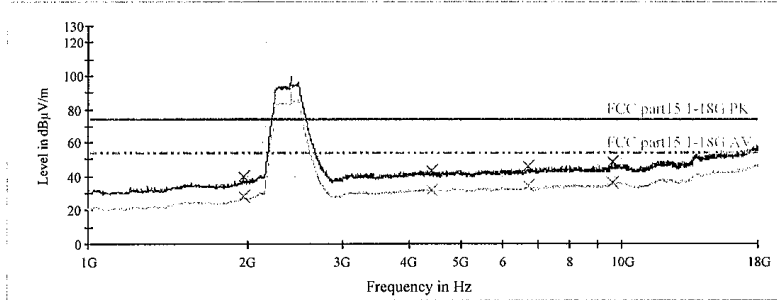
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
Test Item: Wireless System  
Identification: HXD1  
Test Standard: FCC Part 15.209  
Test Detail: RE  
Operation Mode: Tx @ Low channel  
Climate Condition: 23 °C; 50 %RH; 101 kPa.  
Test Voltage/ Freq: DC 3.0V  
Receipt No: 174020628  
Report No: 16060046 001  
Result: Pass  
Comment: Test distance is 3m, Vertical

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



### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1952.000000	40.1	1000.0	1000.000	V	-9.6	33.9	74.0
4417.000000	43.4	1000.0	1000.000	V	-4.1	30.6	74.0
6695.000000	46.3	1000.0	1000.000	V	-0.5	27.7	74.0
9617.000000	48.4	1000.0	1000.000	V	4.2	25.6	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1952.000000	28.3	1000.0	1000.000	V	-9.6	25.7	54.0
4417.000000	31.8	1000.0	1000.000	V	-4.1	22.2	54.0
6695.000000	34.1	1000.0	1000.000	V	-0.5	19.9	54.0
9617.000000	36.3	1000.0	1000.000	V	4.2	17.7	54.0

Date: 4/23/2014 - Time: 5:52:53

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_





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EMC Test Service Hotline: +86-20-28391188

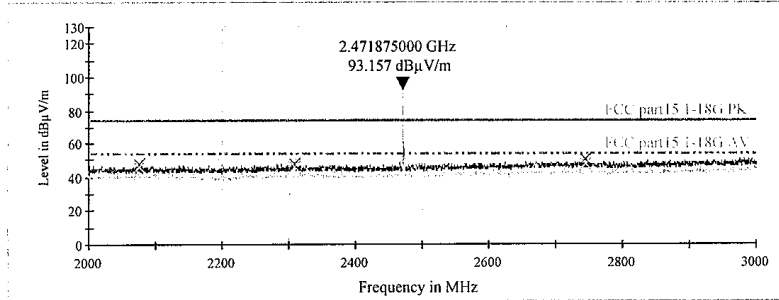
## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ High channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Horizontal

Subrange 1  
 Frequency Range: 2GHz-3GHz  
 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)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2076.000000	47.5	1000.0	1000.000	H	32.0	26.5	74.0
2309.000000	48.0	1000.0	1000.000	H	32.1	26.0	74.0
2744.000000	50.2	1000.0	1000.000	H	33.5	23.8	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2076.000000	45.7	1000.0	1000.000	H	32.0	8.4	54.0
2309.000000	46.1	1000.0	1000.000	H	32.1	7.9	54.0
2744.000000	48.0	1000.0	1000.000	H	33.5	6.0	54.0

Sign-off Test Data



Date: 4/24/2014 - Time: 9:55:40

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

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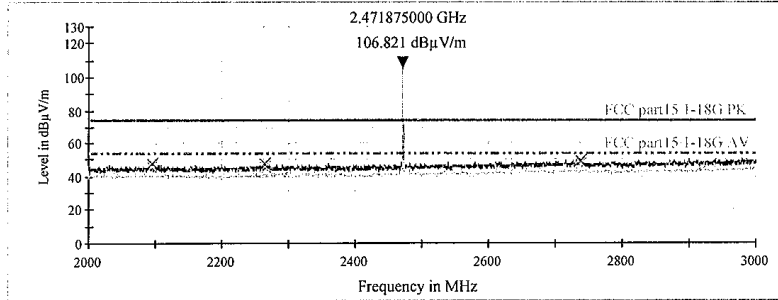
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ High channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Vertical

Subrange 1  
 Frequency Range: 2GHz-3GHz  
 Receiver: TUV FSP30  
 Transducer: TUV SAC HF907/ TUV FSP30-TUV SAC HF907



### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2095.000000	48.1	1000.0	1000.000	V	31.8	25.9	74.0
2264.000000	47.5	1000.0	1000.000	V	32.1	26.5	74.0
2737.000000	49.8	1000.0	1000.000	V	33.5	24.2	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2095.000000	45.7	1000.0	1000.000	V	31.8	8.3	54.0
2264.000000	46.2	1000.0	1000.000	V	32.1	7.8	54.0
2737.000000	48.1	1000.0	1000.000	V	33.5	5.9	54.0

Date: 4/24/2014 - Time: 9:59:31

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_



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EMC Test Service Hotline: +86-20-28391188

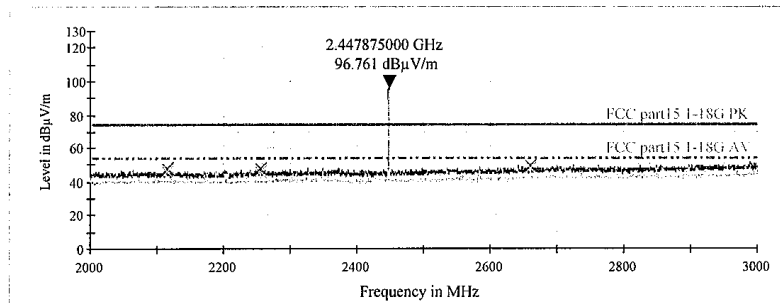
## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Mid channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Horizontal

#### Subrange 1

Frequency Range: 2GHz-3GHz  
 Receiver: TUV FSP30  
 Transducer: TUV SAC HF907/ TUV FSP30-TUV SAC HF907



### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2116.000000	47.6	1000.0	1000.000	H	31.8	26.4	74.0
2255.000000	48.0	1000.0	1000.000	H	32.0	26.0	74.0
2661.000000	49.2	1000.0	1000.000	H	33.9	24.8	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2116.000000	45.8	1000.0	1000.000	H	31.8	8.2	54.0
2255.000000	46.0	1000.0	1000.000	H	32.0	8.0	54.0
2661.000000	47.6	1000.0	1000.000	H	33.9	6.4	54.0

Date: 4/24/2014 - Time: 9:50:30

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_



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*Test Report No.*

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TUV Rheinland (Guangdong) Ltd.

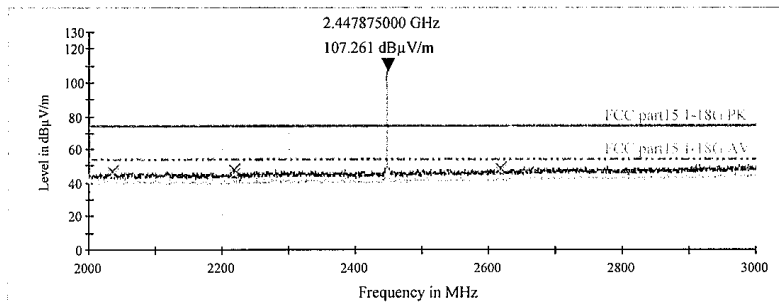
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Mid channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Vertical

Subrange 1  
 Frequency Range: 2GHz-3GHz  
 Receiver: TUV FSP30  
 Transducer: TUV SAC HF907/ TUV FSP30-TUV SAC HF907



### Limit and Margin PK

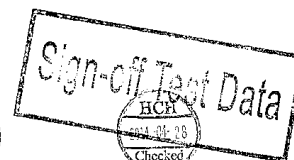
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2036.000000	46.6	1000.0	1000.000	V	32.1	27.4	74.0
2218.000000	47.5	1000.0	1000.000	V	31.9	26.5	74.0
2618.000000	49.0	1000.0	1000.000	V	33.8	25.0	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2036.000000	45.1	1000.0	1000.000	V	32.1	8.9	54.0
2218.000000	45.4	1000.0	1000.000	V	31.9	8.6	54.0
2618.000000	47.2	1000.0	1000.000	V	33.8	6.8	54.0

Date: 4/24/2014 - Time: 9:46:31

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_



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Test Report No.

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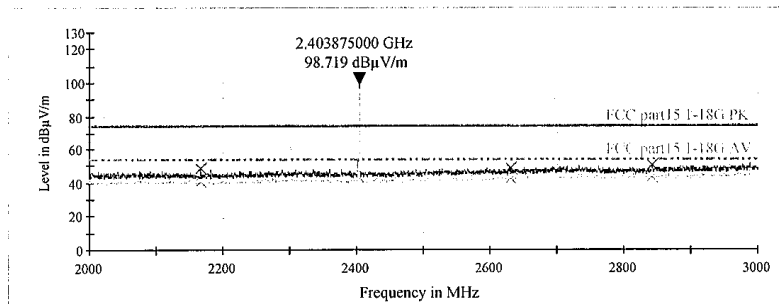
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
Test Item: Wireless System  
Identification: HXD1  
Test Standard: FCC Part 15.209  
Test Detail: RE  
Operation Mode: Tx @ Low channel  
Climate Condition: 23 °C; 50 %RH; 101 kPa.  
Test Voltage/ Freq: DC 3.0V  
Receipt No: 174020628  
Report No: 16060046 001  
Result: Pass  
Comment: Test distance is 3m, Horizontal

Subrange 1  
Frequency Range: 2GHz-3GHz  
Receiver: TUV FSP30  
Transducer: TUV SAC HF907/ TUV FSP30-TUV SAC HF907



### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2166.000000	48.4	1000.0	1000.000	H	31.7	25.6	74.0
2631.000000	49.1	1000.0	1000.000	H	33.8	24.9	74.0
2842.000000	50.1	1000.0	1000.000	H	33.8	23.9	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2166.000000	40.4	1000.0	1000.000	H	31.7	13.6	54.0
2631.000000	42.1	1000.0	1000.000	H	33.8	11.9	54.0
2842.000000	43.0	1000.0	1000.000	H	33.8	11.0	54.0



Date: 4/24/2014 - Time: 9:29:16

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

**Prüfbericht - Nr.:**  
Test Report No.

**16060045 001**

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TUV Rheinland (Guangdong) Ltd.

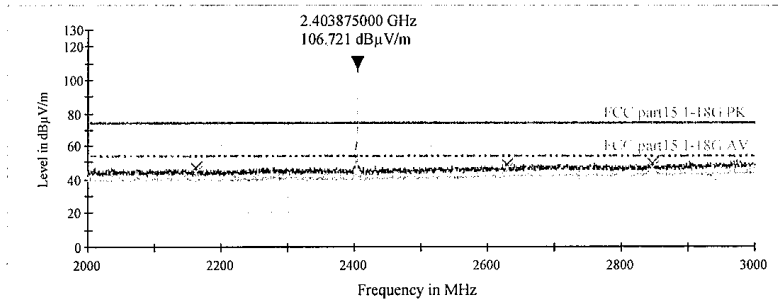
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Low channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Vertical

Subrange 1  
 Frequency Range: 2GHz-3GHz  
 Receiver: TUV FSP30  
 Transducer: TUV SAC HF907/ TUV FSP30-TUV SAC HF907



### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
2162.000000	46.7	1000.0	1000.000	V	31.7	27.3	74.0
2628.000000	49.0	1000.0	1000.000	V	33.8	25.0	74.0
2847.000000	49.9	1000.0	1000.000	V	33.8	24.1	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
2162.000000	44.2	1000.0	1000.000	V	31.7	9.8	54.0
2628.000000	46.2	1000.0	1000.000	V	33.8	7.8	54.0
2847.000000	47.2	1000.0	1000.000	V	33.8	6.8	54.0



Date: 4/24/2014 - Time: 9:38:07

Tested by: \_\_\_\_\_ Reviewed by: \_\_\_\_\_

**Prüfbericht - Nr.:** 16060045 001  
Test Report No.

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TUV Rheinland (Guangdong) Ltd.

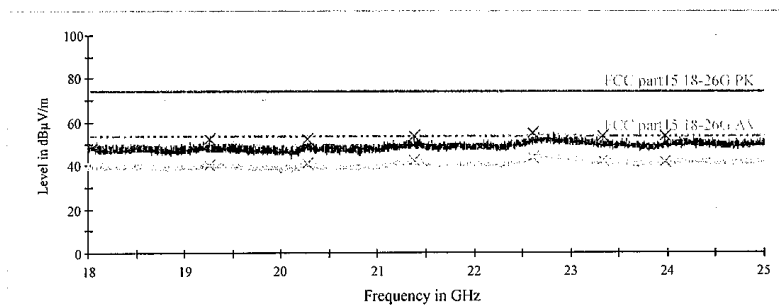
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ High channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Horizontal

Subrange 1  
 Frequency Range: 18GHz-25GHz  
 Receiver: TUV FSP30  
 Transducer: TUV SAC 3160-09/ TUV FSP30-TUV SAC 3160-09



### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/)
19264.000000	52.2	1000.0	1000.000	H	5.0	21.8	74.0
20269.000000	52.6	1000.0	1000.000	H	4.8	21.4	74.0
21377.000000	53.9	1000.0	1000.000	H	6.0	20.1	74.0
22612.000000	55.1	1000.0	1000.000	H	9.0	18.9	74.0
23328.000000	53.8	1000.0	1000.000	H	6.8	20.2	74.0
23970.000000	63.7	1000.0	1000.000	H	5.9	20.3	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/)
19264.000000	40.0	1000.0	1000.000	H	5.0	14.0	54.0
20269.000000	40.8	1000.0	1000.000	H	4.8	13.2	54.0
21377.000000	41.9	1000.0	1000.000	H	6.0	12.1	54.0
22612.000000	43.6	1000.0	1000.000	H	9.0	10.4	54.0
23328.000000	42.1	1000.0	1000.000	H	6.8	11.9	54.0
23970.000000	41.7	1000.0	1000.000	H	5.9	12.3	54.0

Date: 4/24/2014 - Time: 2:44:03

Sign-off Test Data  
 Tested by: [Signature]  
 Checked: [Signature]

Reviewed by: [Signature]  
 HCH  
 2014-04-25  
 Checked

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TUV Rheinland (Guangdong) Ltd.

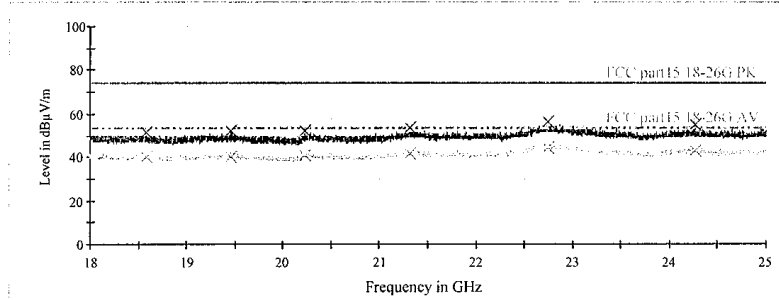
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ High channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Vertical

Subrange 1  
 Frequency Range: 18GHz-25GHz  
 Receiver: TUV FSP30  
 Transducer: TUV SAC 3160-09/ TUV FSP30-TUV SAC 3160-09



### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/)
18587.000000	52.0	1000.0	1000.000	V	4.4	22.0	74.0
19460.000000	52.5	1000.0	1000.000	V	4.9	21.5	74.0
20226.000000	52.4	1000.0	1000.000	V	4.8	21.6	74.0
21319.000000	54.0	1000.0	1000.000	V	5.9	20.0	74.0
22747.000000	56.3	1000.0	1000.000	V	9.0	17.7	74.0
24262.000000	54.8	1000.0	1000.000	V	5.9	19.2	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/)
18587.000000	40.0	1000.0	1000.000	V	4.4	14.0	54.0
19460.000000	40.3	1000.0	1000.000	V	4.9	13.7	54.0
20226.000000	40.9	1000.0	1000.000	V	4.8	13.1	54.0
21319.000000	41.8	1000.0	1000.000	V	5.9	12.2	54.0
22747.000000	44.5	1000.0	1000.000	V	9.0	9.5	54.0
24262.000000	42.9	1000.0	1000.000	V	5.9	11.1	54.0

Date: 4/24/2014 - Time: 2:46:24

Sign-off Test Data  
 Tested by: [Signature] 2014-04-24  
 Reviewed by: [Signature] HCH



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**16060045 001**

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TUV Rheinland (Guangdong) Ltd.

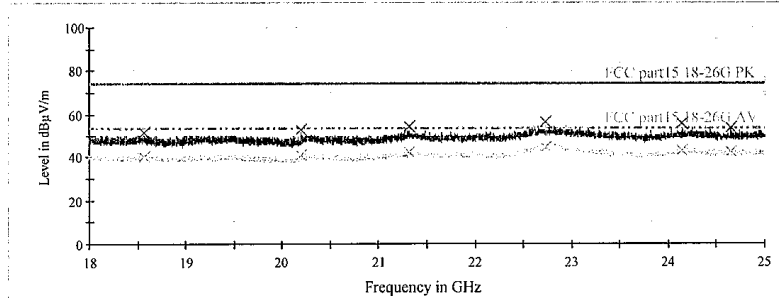
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Mid channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Horizontal

Subrange 1  
 Frequency Range: 18GHz-25GHz  
 Receiver: TUV FSP30  
 Transducer: TUV SAC 3160-09/ TUV FSP30-TUV SAC 3160-09





### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV)
18569.000000	51.7	1000.0	1000.000	H	4.3	22.3	74.0
20202.000000	53.0	1000.0	1000.000	H	4.7	21.0	74.0
21313.000000	54.5	1000.0	1000.000	H	5.9	19.5	74.0
22726.000000	56.4	1000.0	1000.000	H	9.0	17.6	74.0
24143.000000	55.6	1000.0	1000.000	H	5.9	18.4	74.0
24650.000000	53.5	1000.0	1000.000	H	6.2	20.5	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV)
18569.000000	40.2	1000.0	1000.000	H	4.3	13.8	54.0
20202.000000	40.5	1000.0	1000.000	H	4.7	13.5	54.0
21313.000000	41.9	1000.0	1000.000	H	5.9	12.1	54.0
22726.000000	44.5	1000.0	1000.000	H	9.0	9.5	54.0
24143.000000	42.9	1000.0	1000.000	H	5.9	11.1	54.0
24650.000000	41.9	1000.0	1000.000	H	6.2	12.1	54.0

Date: 4/24/2014 - Time: 2:40:48

Tested by:  2014-04-28  
 Reviewed by: 

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TUV Rheinland (Guangdong) Ltd.

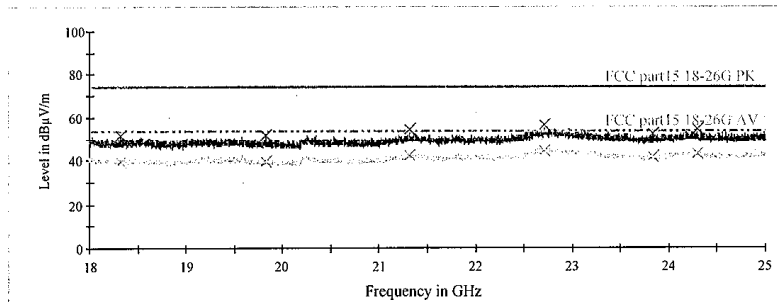
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Mid channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, ~~Horizontal~~ vertical.

Subrange 1  
 Frequency Range: 18GHz-25GHz  
 Receiver: TUV FSP30  
 Transducer: TUV SAC 3160-09/ TUV FSP30-TUV SAC 3160-09



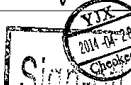

### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV)
18326.000000	51.4	1000.0	1000.000	V	4.0	22.6	74.0
19832.000000	51.4	1000.0	1000.000	V	4.7	22.6	74.0
21321.000000	54.1	1000.0	1000.000	V	5.9	19.9	74.0
22718.000000	56.3	1000.0	1000.000	V	9.0	17.7	74.0
23833.000000	52.6	1000.0	1000.000	V	5.7	21.4	74.0
24291.000000	54.7	1000.0	1000.000	V	5.9	19.3	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV)
18326.000000	39.8	1000.0	1000.000	V	4.0	14.2	54.0
19832.000000	39.7	1000.0	1000.000	V	4.7	14.3	54.0
21321.000000	42.2	1000.0	1000.000	V	5.9	11.8	54.0
22718.000000	44.4	1000.0	1000.000	V	9.0	9.6	54.0
23833.000000	41.2	1000.0	1000.000	V	5.7	12.8	54.0
24291.000000	42.9	1000.0	1000.000	V	5.9	11.1	54.0

Date: 4/24/2014 - Time: 2:38:27

Tested by:  Reviewed by:   
 Sign-off Test Data

Prüfbericht - Nr.:

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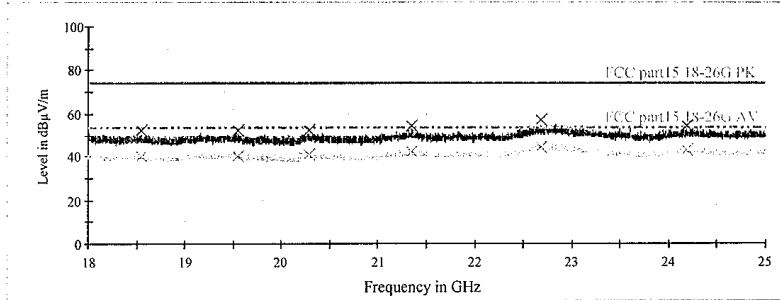
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Low channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Horizontal

Subrange 1  
 Frequency Range: 18GHz-25GHz  
 Receiver: TUV FSP30  
 Transducer: TUV SAC 3160-09/ TUV FSP30-TUV SAC 3160-09







### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/)
18547.000000	52.2	1000.0	1000.000	H	4.3	21.8	74.0
19558.000000	52.7	1000.0	1000.000	H	4.8	21.3	74.0
20290.000000	52.5	1000.0	1000.000	H	4.8	21.5	74.0
21342.000000	54.2	1000.0	1000.000	H	6.0	19.8	74.0
22680.000000	56.9	1000.0	1000.000	H	9.1	17.1	74.0
24189.000000	54.6	1000.0	1000.000	H	6.0	19.4	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/)
18547.000000	40.3	1000.0	1000.000	H	4.3	13.7	54.0
19558.000000	40.3	1000.0	1000.000	H	4.8	13.7	54.0
20290.000000	40.7	1000.0	1000.000	H	4.8	13.3	54.0
21342.000000	42.0	1000.0	1000.000	H	6.0	12.0	54.0
22680.000000	44.4	1000.0	1000.000	H	9.1	9.6	54.0
24189.000000	42.9	1000.0	1000.000	H	6.0	11.1	54.0

Date: 4/24/2014 - Time: 2:32:16

Tested by:  Checked:  Reviewed by:  Checked: 

**Prüfbericht - Nr.:**  
Test Report No.

**16060045 001**

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TUV Rheinland (Guangdong) Ltd.

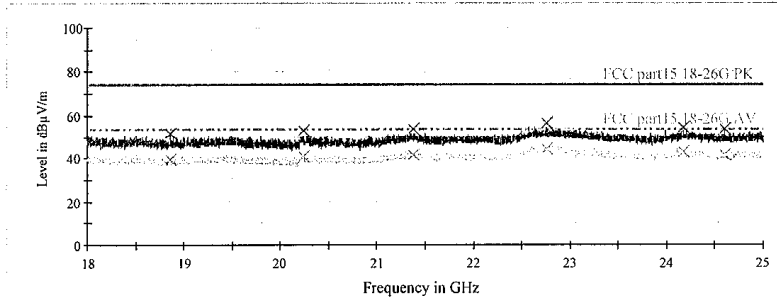
EMC Test Service Hotline: +86-20-28391188

## EMC Test Record (Emission)

### Common Information

Manufacturer: Seikaku  
 Test Item: Wireless System  
 Identification: HXD1  
 Test Standard: FCC Part 15.209  
 Test Detail: RE  
 Operation Mode: Tx @ Low channel  
 Climate Condition: 23 °C; 50 %RH; 101 kPa.  
 Test Voltage/ Freq: DC 3.0V  
 Receipt No: 174020628  
 Report No: 16060046 001  
 Result: Pass  
 Comment: Test distance is 3m, Vertical

Subrange 1  
 Frequency Range: 18GHz-25GHz  
 Receiver: TUV FSP30  
 Transducer: TUV SAC 3160-09/ TUV FSP30-TUV SAC 3160-09






### Limit and Margin PK

Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV)
18858.000000	51.5	1000.0	1000.000	V	4.7	22.5	74.0
20234.000000	52.9	1000.0	1000.000	V	4.8	21.1	74.0
21378.000000	53.9	1000.0	1000.000	V	6.0	20.1	74.0
22757.000000	56.1	1000.0	1000.000	V	8.9	17.9	74.0
24176.000000	54.6	1000.0	1000.000	V	6.0	19.4	74.0
24602.000000	53.7	1000.0	1000.000	V	6.1	20.3	74.0

### Limit and Margin AV

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Polarization	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV)
18858.000000	39.3	1000.0	1000.000	V	4.7	14.7	54.0
20234.000000	40.9	1000.0	1000.000	V	4.8	13.1	54.0
21378.000000	41.7	1000.0	1000.000	V	6.0	12.3	54.0
22757.000000	44.4	1000.0	1000.000	V	8.9	9.6	54.0
24176.000000	42.8	1000.0	1000.000	V	6.0	11.2	54.0
24602.000000	41.8	1000.0	1000.000	V	6.1	12.2	54.0

Date: 4/24/2014 - Time: 2:35:15

Tested by:  Data  
 Reviewed by:   
 Checked: 







Prüfbericht - Nr.:

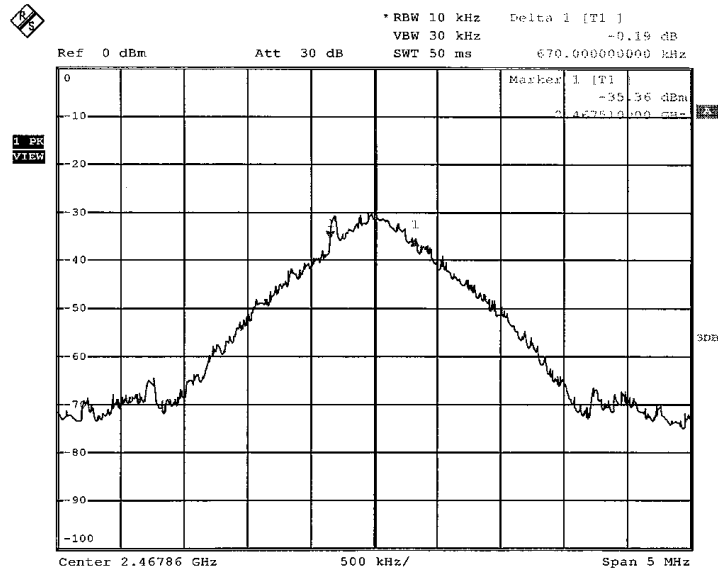
16060045 001

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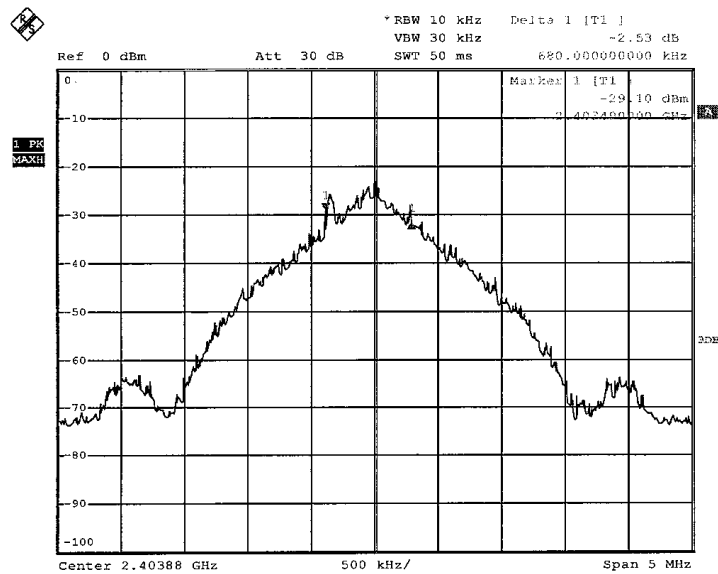
Test Report No.

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### 6dB Bandwidth



Date: 13.MAY.2014 22:22:54



Date: 13.MAY.2014 22:01:28

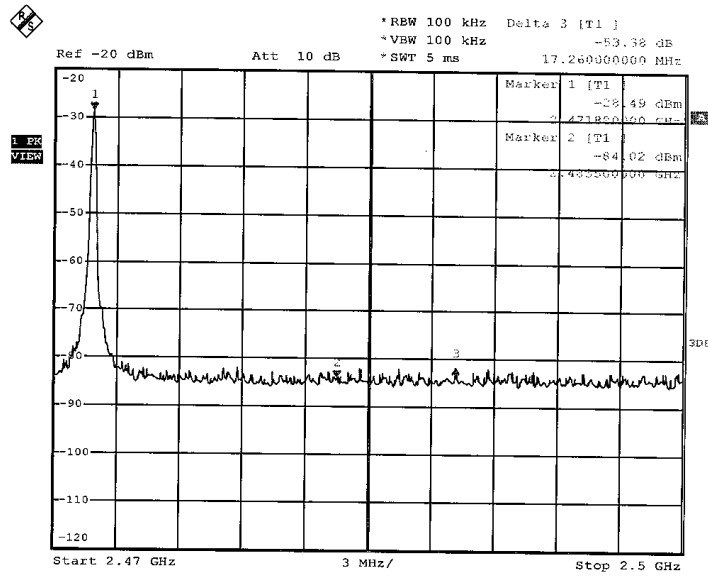


Prüfbericht - Nr.:  
Test Report No.

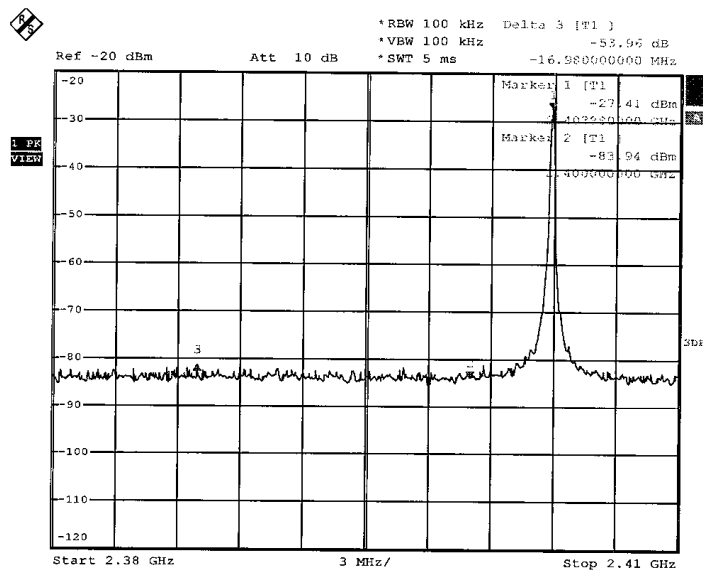
16060045 001

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Band edge Emission



Date: 24.APR.2014 23:46:16

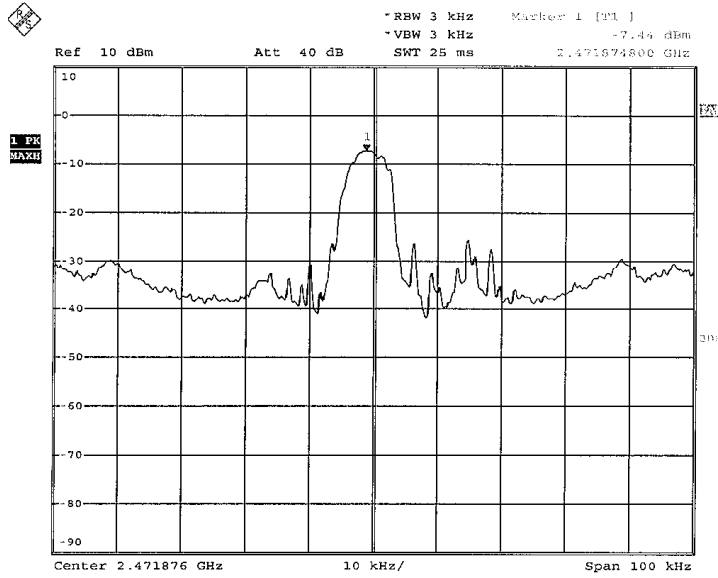


Date: 24.APR.2014 23:54:05

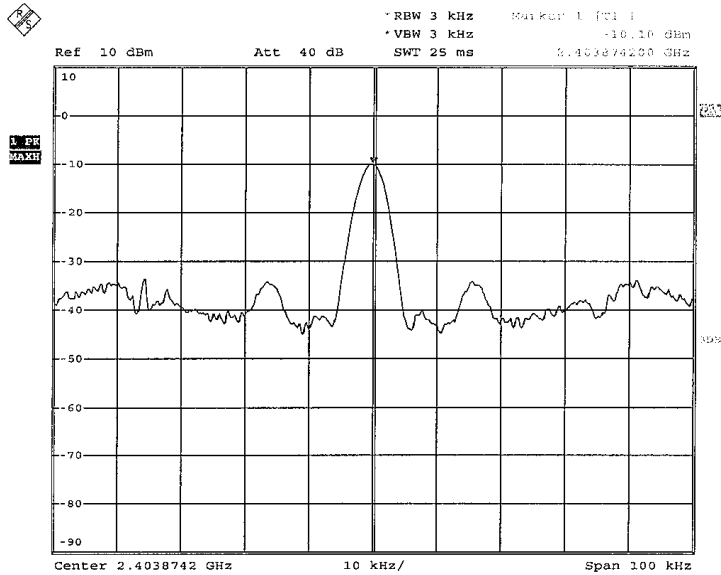
Prüfbericht - Nr.:  
Test Report No.

16060045 001

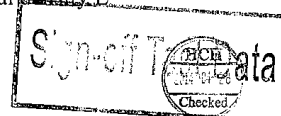
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20140425 HXD1 Power spectral density H



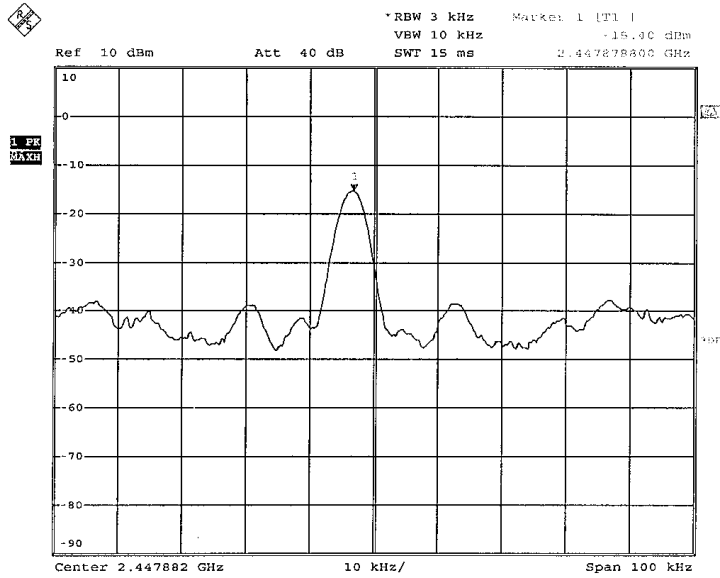
20140425 HXD1 Power spectral density L



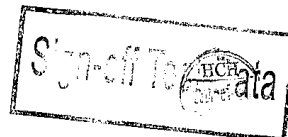
**Prüfbericht - Nr.:**  
Test Report No.

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20140425 HXD1 Power spectral density M



Prüfbericht - Nr.:

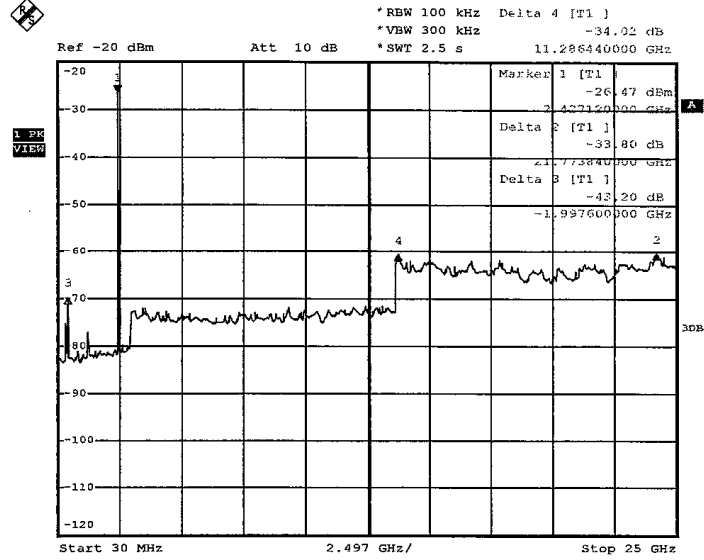
16060045 001

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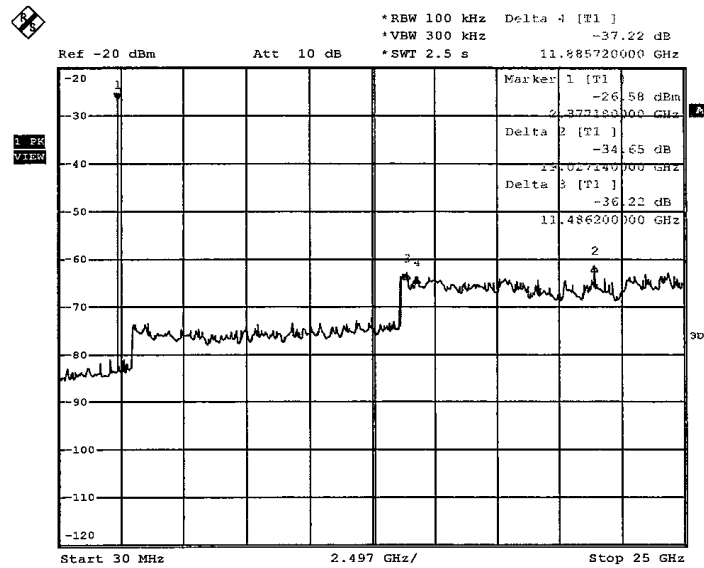
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Out-of-Band Emission



Date: 24.APR.2014 23:27:26



Date: 24.APR.2014 23:30:17

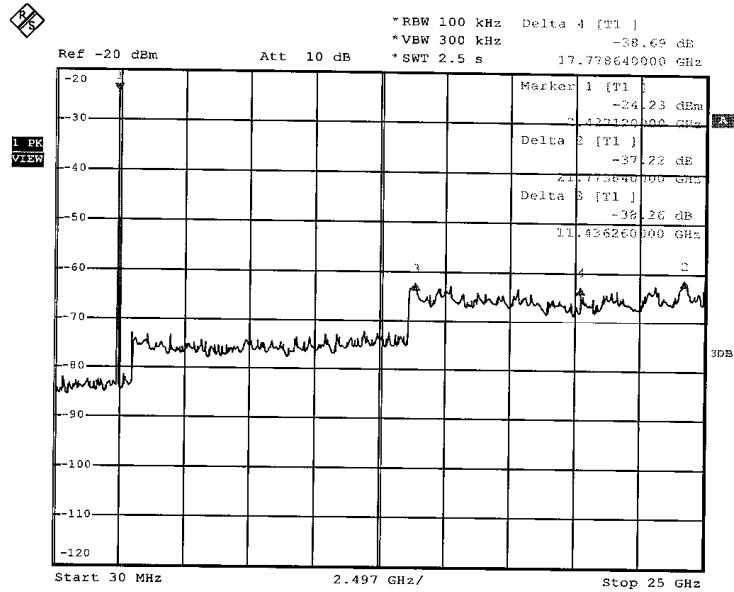
Prüfbericht - Nr.:

16060045 001

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Date: 24.APR.2014 23:36:50