







## ISO/IEC17025 Accredited Lab.

Report No: FCC1408147-02 File reference No: 2014-09-12

Applicant: Guangzhou Sunday Electronics Co., Ltd.

Product: Receiver of Wireless Keyboard

Model No: Receiver of S-KW258SL, S-KW1xxxx- S-KW6xxxx (the "x"

means one discretionary character of A/a - Z/z or one Arabic

number of 0-9)

Trademark: Sunday

Test Standards: FCC Part 15 Subpart B: 2012

Test result:

It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.4&FCC Part 15 regulations for

the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated: Sep 12, 2014

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD

East 5/Block 4, Anhua Industrial Zone, No.8, Tairan Rd. Chegongmiao, FuTian District, Shenzhen, CHINA.

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timewaytech.com

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# **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

#### **CNAS-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

## FCC-Registration No.: 899988

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 899988.

## IC- Registration No.: IC5205A-02

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-02.

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# **Test Report Conclusion**

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#### 1.0 General Details

#### 1.1 Test Lab Details

SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD Name:

Address: East 5/Block 4, Anhua Industrial Zone, No.8, Tairan Rd. CheGongMiao, FuTian District,

Shenzhen, CHINA.

Telephone: (755) 83448688 Fax: (755) 83442996

#### 1.2 Applicant Details

Applicant: Guangzhou Sunday Electronics Co., Ltd.

Address: No.236-238, Minsheng Rd., Lanhe Town, Nansha District, Guangzhou, China

+86-20-84928933 / 84928938 Telephone:

+86-20-84928823 Fax:

#### 1.3 Description of EUT

Product: Receiver of Wireless Keyboard

Manufacturer: Guangzhou Sunday Electronics Co., Ltd.

No.236-238, Minsheng Rd., Lanhe Town, Nansha District, Guangzhou, China Address:

Brand Name: Sunday

Model Number: Receiver of S-KW258SL

Additional Model Number: S-KW1xxxx- S-KW6xxxx ( the "x" means one discretionary character of

A/a - Z/z or one Arabic number of 0 - 9)

DC5.0V, Powered by PC Rating:

Submitted Sample: 1 Sample

Test Duration: 2014-08-28 to 2014-09-11

## 1.6 Test Uncertainty

Conducted Emissions Uncertainty = 3.6dB Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

lemy lang The sample tested by

Print Name: Terry Tong

Date: 2014-09-12



#### List of Measurement Equipment 2.0

#### 2.1 **Conducted Emission Test**

				Calibration	Calibration
Name	Model No.	Serial No.	Manufacturer	Date	Cycle
EMI Test Receiver	ESH3	860905/006	RS	2014.08.22	1Year
Spectrum Analyzer	ESA-L1500A	US37451154	HP	2014.08.22	1Year
PULSE LIMITER	ESH3-Z2	100281	RS	2014.08.23	1Year
LISN	ESH3-Z5	100294	RS	2014.08.22	1Year
LISN	ESH3-Z5	100253	RS	2014.08.22	1Year

#### 2.2 Radiated electromagnetic disturbance test

				Calibration	Calibration
Name	Model No.	Serial No.	Manufacturer	Date	Cycle
EMI Test Receiver	ESI26	838786/013	RS	2014.08.23	1Year
Coaxial Switch	MP59B	M70585	ANRITSU	N/A	N/A
Bilog Antenna	VULB9163	9163/340	Schwarebeck	2014.08.24	1Year
Horn Antenna	BBHA 9120D	9120D-631	Schwarebeck	2014.08.26	1Year

#### 2.3 **Auxiliary Equipment**

Name	Model No.	Serial No.	Manufacturer	Cable	FCC ID/DOC
Notebook	R4		IBM		FCC DOC
Notebook	E43L		LENOVO		FCC DOC
				Data cable of	
				1.5m length	
Mouse			DELL	unshielded	FCC DOC
				Data cable of	
Passive				1.5m length	
Earphone				unshielded	FCC VOC
LCD Monitor	PH2450		SUMSANG		FCC DOC
Monitor	D710		DELL		FCC DOC

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#### 3.0 **Technical Details**

3.1 **Investigations Requested** Perform Electromagnetic Interference [EMI] tests for FCC Requirement.

3.2 Test Standards

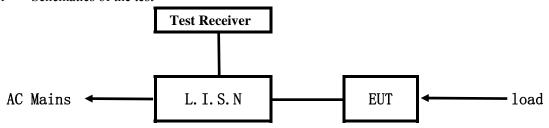
FCC Part 15 Subpart B: 2012

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#### 4.0 Conducted Power line Test

#### 4.1 Schematics of the test



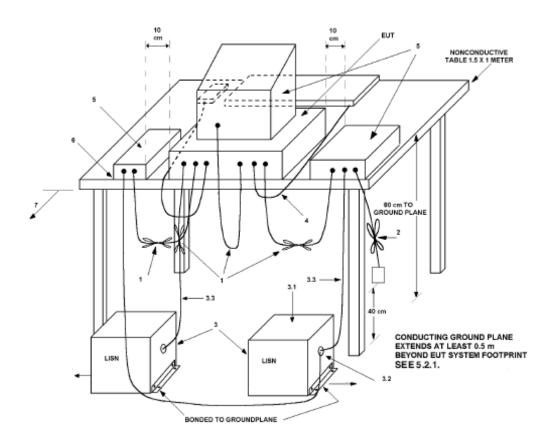
**EUT: Equipment Under Test** 

#### 4.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003. Cables and peripherals were moved to find the maximum emission levels for each frequency.

Actual Working Voltage and Frequency: 120V~, 60Hz

Block diagram of Test setup



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#### 4.3 Power line conducted Emission Limit

Eraguanay (MHz)	Class A Li	mits dB(μV)	Class B Limits dB(µV)		
Frequency(MHz)	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level	
0.15 ~ 0.50	79.00	66.00	66.00~56.00*	56.00~46.00*	
$0.50 \sim 5.00$	73.00	60.00	56.00	46.00	
$5.00 \sim 30.00$	73.00	60.00	60.00	50.00	

Notes:

- 1. \*decreasing linearly with logarithm of frequency.
- 2. The tighter limit shall apply at the transition frequencies

## 4.4 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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## A: Conducted Emission on Live Terminal (150kHz to 30MHz)

#### **EUT Operating Environment**

Temperature: 25°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

**EUT set Condition: Communication with PC** 

**Equipment Level: Class B** 

**Results: Pass** 

Please refer to following diagram for individual



No. Mk.	Freq.			Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.4335	31.70	11.30	43.00	57.19	-14.19	QP	
2 *	0.4335	26.00	11.30	37.30	47.19	-9.89	AVG	

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## B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

#### **EUT Operating Environment**

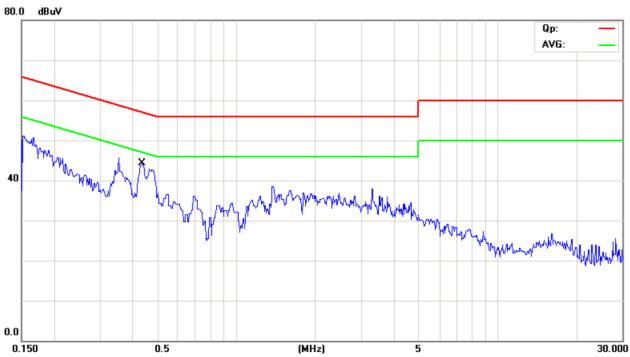
Temperature: 25°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

**EUT set Condition: Communication with PC** 

**Equipment Level: Class B** 

**Results: Pass** 

Please refer to following diagram for individual



No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.4327	31.20	11.30	42.50	57.20	-14.70	QP	
2 *	0.4327	24.00	11.30	35.30	47.20	-11.90	AVG	

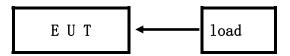
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#### 5.0 Radiated Disturbance Test

#### 5.1 Schematics of the test

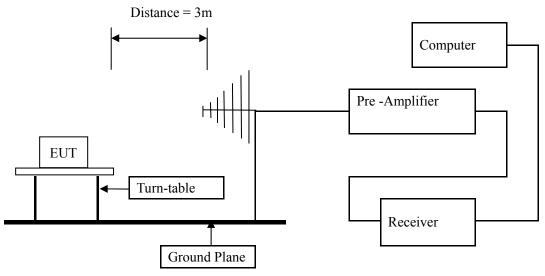


#### 5.2 Test Method and test Procedure:

The EUT was tested according to ANSI C63.4 –2003, The frequency spectrum from 30MHz to 6GHz was investigated. All reading from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. For measurement above 1GHz, peak values with RBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK

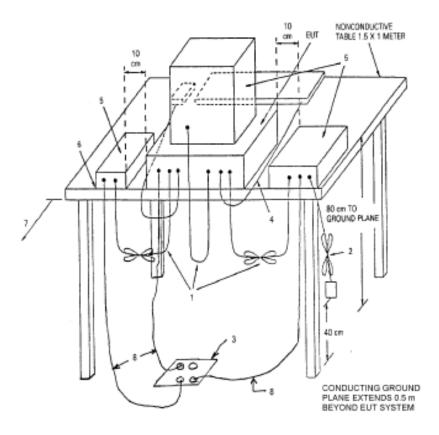
Actual Working Voltage and Frequency: 120V~, 60Hz

## **Block diagram of Test setup**



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#### 5.3 Radiated Emission Limit

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/m)
30-88	3	40.00
88-216	3	43.50
216-960	3	46.00
Above 960	3	54.00

Note: The lower limit shall apply at the transition frequencies

## 5.4 Test result

The frequency spectrum from 30MHz to 18GHz was investigated. All reading from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK Measurements were made at 3 meters.

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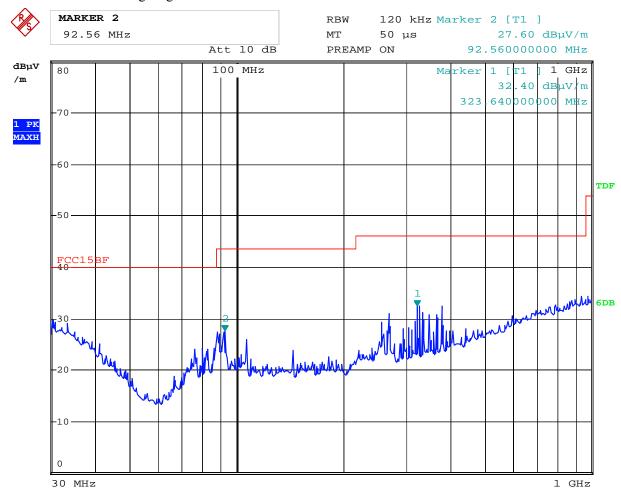


# A. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Communication with PC

#### **Results:** Pass

Please refer to following diagram for individual



Date: 2.SEP.2014 16:23:58

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \u03b4 V/m)
92.560	27.60	Н	43.50
323.640	32.40	Н	46.00

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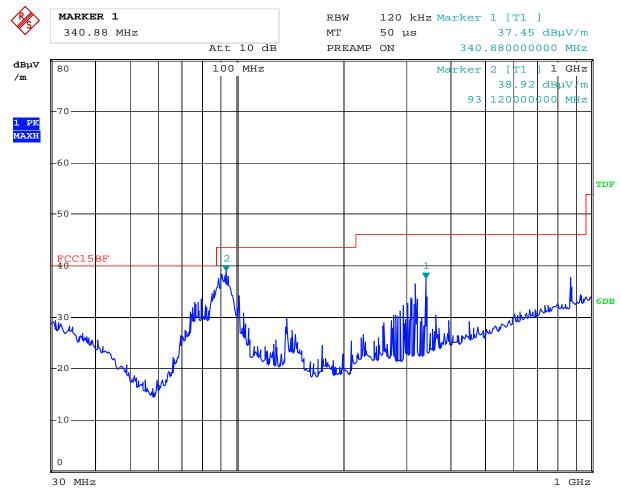


## B Radiated Emission In Vertical (30MHz----1000MHz)

**EUT set Condition:** Communication with **PC** 

**Results:** Pass

Please refer to following diagram for individual



Date: 2.SEP.2014 16:21:57

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB $\mu$ V/m)
340.880	37.45	V	46.00
93.120	38.92	V	43.50

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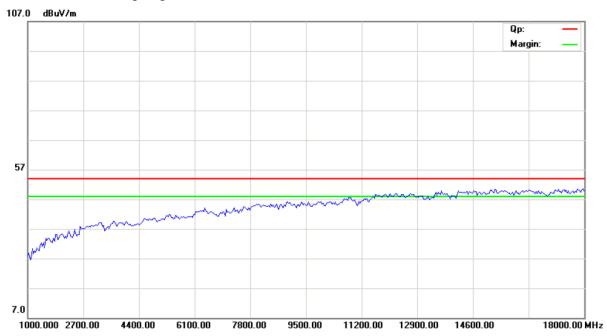


# C. General Radiated Emission Data Radiated Emission In Horizontal (1000MHz----18000MHz)

**EUT set Condition:** Communication with **PC** 

**Results:** Pass

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \( \mu \)V/m)
-	-	Н	
-	-	Н	

Note: The radiated emission level less than the limit for more than 20dB, no necessary to take down the record

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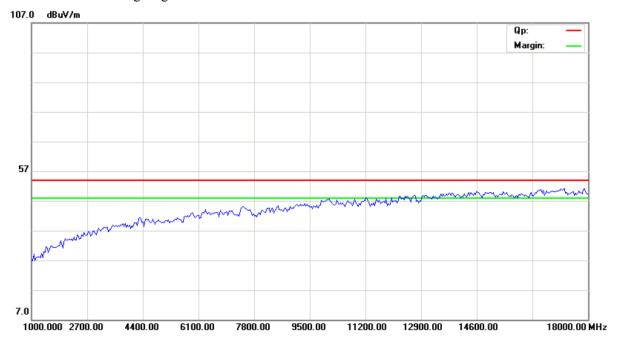


# D. General Radiated Emission Data Radiated Emission In Vertical (1000MHz----6000MHz)

**EUT set Condition:** Communication with **PC** 

**Results:** Pass

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \u03b4 V/m)
		V	
		V	

Note: The radiated emission level less than the limit for more than 20dB, no necessary to take down the record

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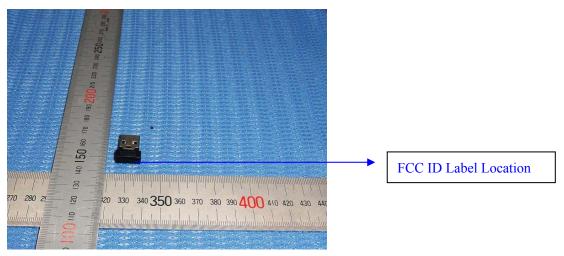


#### 6.0 FCC ID Label

# FCC ID: XQLS-KW258SL-D

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

#### **Mark Location:**



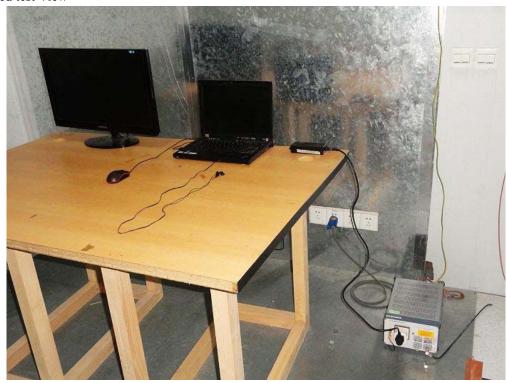
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## 7.0 Photo of testing

#### Conducted test View--7.1



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#### 7.2 Radiated emission test view--





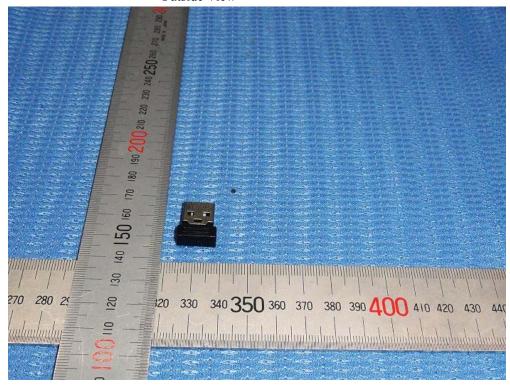
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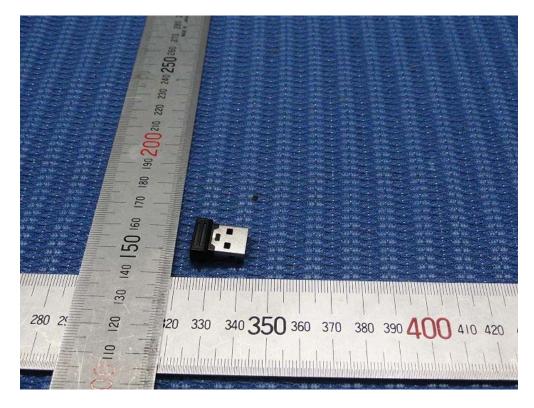
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Outside View





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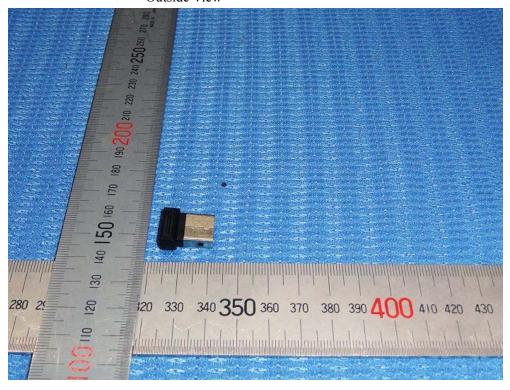
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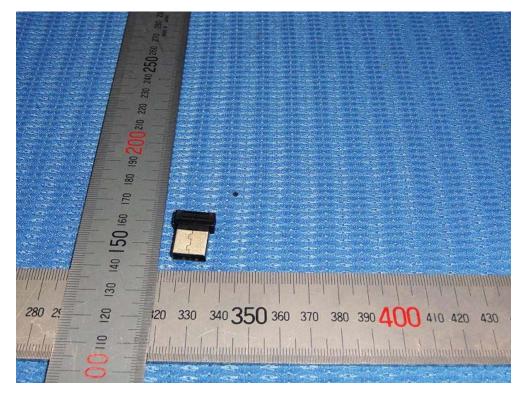
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#### Photo for the EUT

#### Outside View





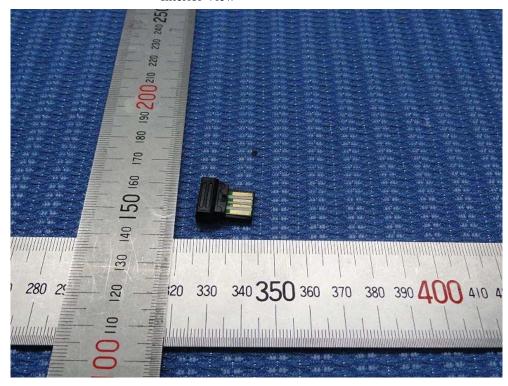
The report refers only to the sample tested and does not apply to the bulk.

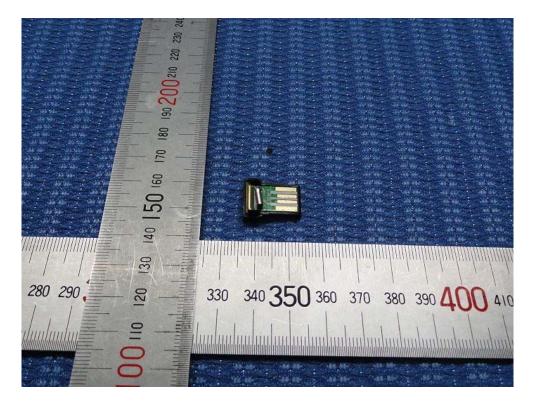
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Interior View





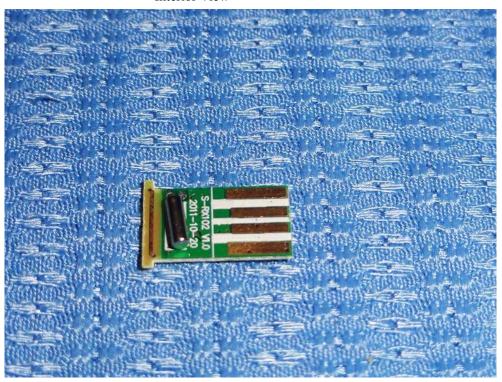
The report refers only to the sample tested and does not apply to the bulk.

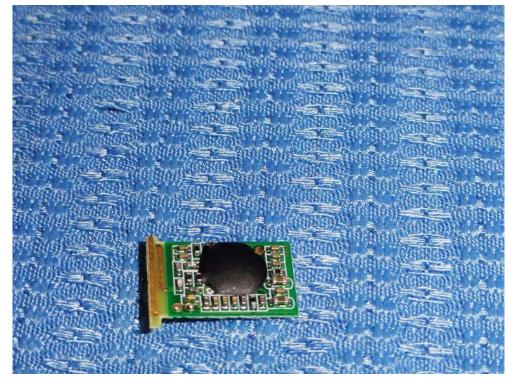
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# Interior View





-End of the report-

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