

TEST REPORT For FCC

On Behalf of

Willis Electric Co., Ltd.

Control Box

Model No.: WL805

Prepared for : Willis Electric Co., Ltd.
Address : No.504-1, Chung-Hua Road, Sec.4, Hsin Chu, Taiwan

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
Address : 1F., Xingyuan Industrial Park, Tongda Road, Bao'an Blvd., Bao'an District, Shenzhen, Guangdong, China

Date of receipt of test sample : July 27, 2012
Number of tested samples : 1
Serial number : Prototype
Date of Test : July 27, 2012 - August 01, 2012
Date of Report : August 01, 2012

**TEST REPORT
FCC CFR 47 PART 15 Subpart B**

Report Reference No. : LCS120727149TF

Date Of Issue : August 01, 2012

Testing Laboratory Name : **Shenzhen LCS Compliance Testing Laboratory Ltd.**

Address : 1F., Xingyuan Industrial Park, Tongda Road, Bao'an Blvd.,
Bao'an District, Shenzhen, Guangdong, China

Testing Location/ Procedure : Full application of Harmonised standards
Partial application of Harmonised standards
Other standard testing method

Applicant's Name..... : **Willis Electric Co., Ltd.**

Address : No.504-1, Chung-Hua Road, Sec.4, Hsin Chu, Taiwan

Test Specification

Standard : FCC CFR 47 PART 15 Subpart B, ANSI C63.4-2003

Test Report Form No. : LCSEMC-1.0

TRF Originator : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF..... : Dated 2011-03

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Test Item Description. : **Control Box**

Trade Mark : N/A

Manufacturer..... : Kupoint (Dongguan) Electric Co., Ltd.

Model/ Type Reference : WL805

Ratings : DC 9V, Rate Power: 10.8W

Result : **Positive**

Compiled by:

Ada Liang

Supervised by:

Vito Cao

Approved by:

Gavin Liang

Ada Liang/ File administrators

Vito Cao/ Technique principal

Gavin Liang/ Manager

TEST REPORT

Test Report No. : LCS120727149TF	<u>August 01, 2012</u> Date of issue
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Type/ Model..... : WL805
EUT..... : Control Box
Applicant..... : Willis Electric Co., Ltd. Address..... : No.504-1, Chung-Hua Road, Sec.4, Hsin Chu, Taiwan Telephone..... : / Fax..... : /
Manufacturer..... : Kupoint (Dongguan) Electric Co., Ltd. Address..... : Huaide Village, Humen, Dongguan, Guangdong, China Telephone..... : / Fax..... : /
Factory..... : Kupoint (Dongguan) Electric Co., Ltd. Address..... : Huaide Village, Humen, Dongguan, Guangdong, China Telephone..... : / Fax..... : /

Test Result according to the standards on page 5: **Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC CFR 47 PART 15 Subpart B	Class B	PASS
Radiated disturbance	FCC CFR 47 PART 15 Subpart B	Class B	PASS

N/A is an abbreviation for Not Applicable.

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : Control Box

Model Number : WL805

Power Supply : DC 9V, Rate Power: 10.8W

EUT Clock Frequency : 433.92MHz

2.2. Description of Support Device

Manufacturer	Description	Model	Serial Number	Certificate
Willis Electric Co., Ltd.	Speaker	FP-2118	3044204	FCC DoC
NOKIA	Phone	Nokia 5233	0597760	FCC ID

2.3. EUT Interface Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Signal	MP3	Audio	Unshielded	1.2

2.4. Description of Test Facility

Site Description
 EMC Lab. : Accredited by CNAS, June 04, 2010
 The Certificate Registration Number. is L4595.
 Accredited by FCC, July 14, 2011
 The Certificate Registration Number. is 899208.
 Accredited by Industry Canada, May. 02, 2011
 The Certificate Registration Number. is 9642A-1
 Accredited by VCCI, Japan January 30, 2012
 The Certificate Registration Number. is C-4260 and R-380

2.5.Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.6.Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Radiation Uncertainty :	30MHz~200MHz	$\pm 2.96\text{dB}$	(1)
	200MHz~1000MHz	$\pm 3.10\text{dB}$	(1)
	1GHz~26.5GH	$\pm 4.20\text{dB}$	(1)
Conduction Uncertainty :	150kHz~30MHz	$\pm 1.63\text{dB}$	(1)
Power disturbance :	30MHz~300MHz	$\pm 1.60\text{dB}$	(1)

- (1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

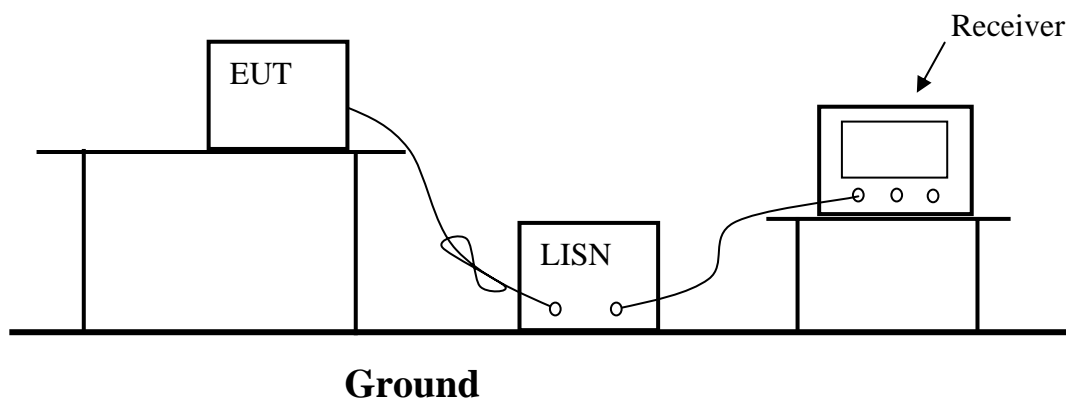
3. POWER LINE CONDUCTED MEASUREMENT

3.1. Test Equipment

The following test equipments are used during the power line conducted measurement:

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101142	2012/06/18
2	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	101840	2012/06/18
3	Artificial Mains	ROHDE & SCHWARZ	ENV216	101288	2012/06/18
4	EMI Test Software	AUDIX	E3	N/A	2012/06/18

3.2. Block Diagram of Test Setup



3.3. Power Line Conducted Emission Measurement Limits (Class B)

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 ~ 0.50	66 to 56*	56 to 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

- Notes: 1. *Decreasing linearly with logarithm of frequency.
 2. The lower limit shall apply at the transition frequencies.

3.4. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown as Section 3.2.

3.5.2. Turn on the power of all equipment.

3.5.3. Let the EUT work in test mode (ON) and measure it.

3.6. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC/ANSI C63.4-2003 on Conducted Emission Measurement.

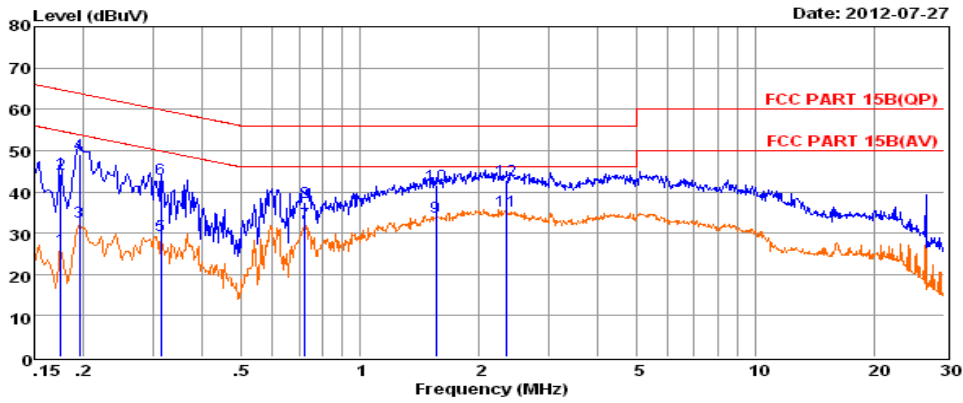
The bandwidth of test receiver is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

3.7. Power Line Conducted Emission Measurement Results

PASS.

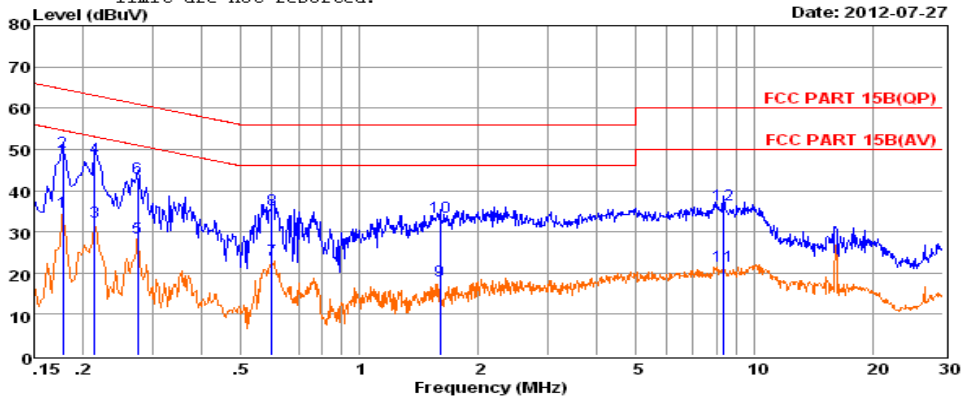
All the scanning waveforms for Conducted Emission Measurement are refer to the next page.



Env. Ins: 24*/56%
 EUT: Control Box
 M/N: WL805
 Power Rating: DC 9V From Adapter Input AC 120V/60Hz
 Test Mode: On
 Operator: Fox
 Memo:
 Pol: LINE

Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.17	16.64	9.60	0.02	26.26	54.72	-28.46 Average
2	0.17	34.68	9.60	0.02	44.30	64.72	-20.42 QP
3	0.20	23.07	9.63	0.02	32.72	53.80	-21.08 Average
4	0.20	39.30	9.63	0.02	48.95	63.80	-14.85 QP
5	0.31	19.77	9.63	0.03	29.43	49.88	-20.45 Average
6	0.31	33.53	9.63	0.03	43.19	59.88	-16.69 QP
7	0.72	22.78	9.64	0.04	32.46	46.00	-13.54 Average
8	0.72	27.83	9.64	0.04	37.51	56.00	-18.49 QP
9	1.55	24.09	9.64	0.05	33.78	46.00	-12.22 Average
10	1.55	31.81	9.64	0.05	41.50	56.00	-14.50 QP
11	2.35	25.84	9.64	0.05	35.53	46.00	-10.47 Average
12	2.35	33.19	9.64	0.05	42.88	56.00	-13.12 QP

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.
 2. The emission levels that are 20dB below the official limit are not reported.



Env. Ins: 24*/56%
 EUT: Control Box
 M/N: WL805
 Power Rating: DC 9V From Adapter Input AC 120V/60Hz
 Test Mode: On
 Operator: Fox
 Memo:
 Pol: LINE

Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.18	25.05	9.61	0.02	34.68	54.59	-19.91 Average
2	0.18	39.70	9.61	0.02	49.33	64.59	-15.26 QP
3	0.21	22.82	9.63	0.03	32.48	53.05	-20.57 Average
4	0.21	38.22	9.63	0.03	47.88	63.05	-15.17 QP
5	0.27	18.88	9.63	0.03	28.54	50.98	-22.44 Average
6	0.27	33.33	9.63	0.03	42.99	60.98	-17.99 QP
7	0.60	13.57	9.63	0.04	23.24	46.00	-22.76 Average
8	0.60	25.68	9.63	0.04	35.35	56.00	-20.65 QP
9	1.60	8.51	9.64	0.05	18.20	46.00	-27.80 Average
10	1.60	23.81	9.64	0.05	33.50	56.00	-22.50 QP
11	8.32	12.10	9.68	0.07	21.85	50.00	-28.15 Average
12	8.32	26.82	9.68	0.07	36.57	60.00	-23.43 QP

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.
 2. The emission levels that are 20dB below the official limit are not reported.

4. RADIATED EMISSION MEASUREMENT

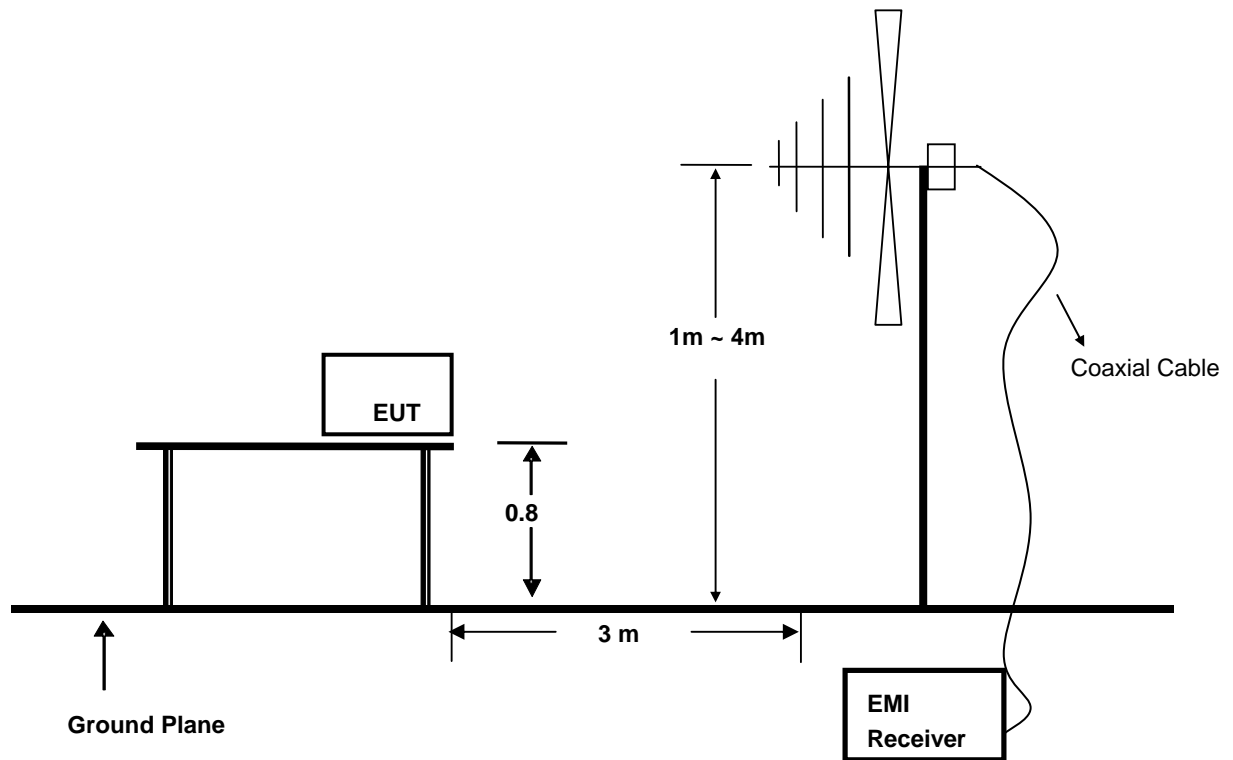
4.1. Test Equipment

The following test equipments are used during the radiated emission measurement:

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101142	2012/06/18
2	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	101840	2012/06/18
3	Log per Antenna	SCHWARZBECK	VULB9163	9163-470	2012/06/18
4	Horn Antenna	EMCO	3115	6741	2012/06/18
5	Loop Antenna	R&S	HFH2-Z2	860004/001	2012/06/18
6	Amplifier	Agilent	8449B	3008A02120	2012/06/18 </td
7	Amplifier	Compliance Direction	PAP-0102	21001	2012/06/18
8	EMI Test Software	AUDIX	E3	N/A	2012/06/18

4.

2. Block Diagram of Test Setup



4.3. Radiated Emission Limit (Class B)

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F (kHz)	300
0.490–1.705	24000/F (kHz)	30
1.705–30.0	30	30
30–88	100**	3
88–216	150**	3
216–960	200**	3
Above 960	500	3

Remark: (1) Emission level (dB) μ V = 20 log Emission level μ V/m

- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

4.4.EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.5.Operating Condition of EUT

- 4.5.1. Setup the EUT as shown in Section 4.2.
- 4.5.2. Let the EUT work in test mode (on) and measure it.

4.6.Test Procedure

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported,

otherwise, the emissions will be measured in average mode again and reported.

10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

Spectrum Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	5000 MHz
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average

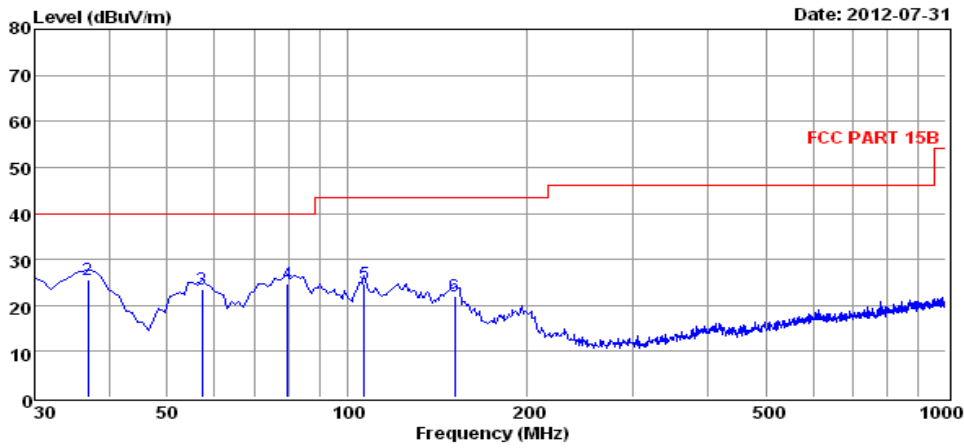
4.7.Radiated Emission Noise Measurement Results

PASS.

Note:

1. Results of Radiated Emissions (9kHz~30MHz), The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
2. Measuring frequencies from 1G~5GHz Harmonic , No emission found between lowest internal used/generated frequency to 5GHz.

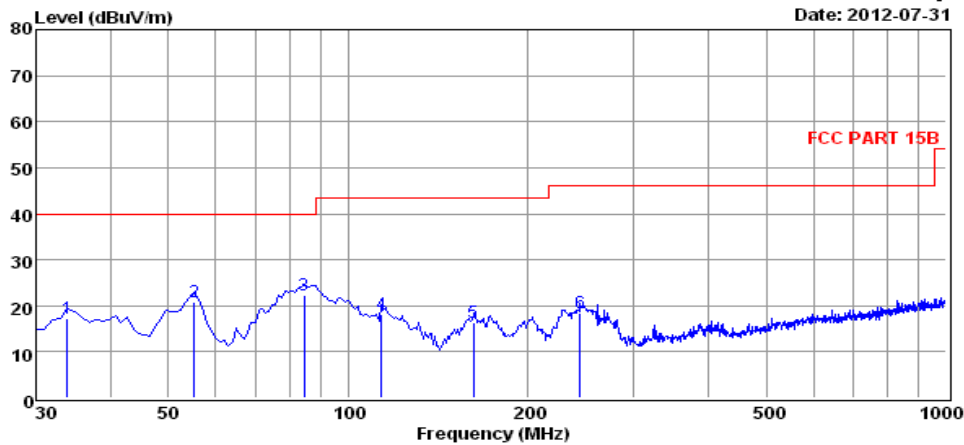
The scanning waveforms please refer to the next page.



Env. /Ins: 24°C/56%
 EUT: Control Box
 M/N: WL805
 Power Rating: DC 9V From Adapter Input AC 120V/60Hz
 Test Mode: On
 Operator: KANO
 Memo:
 pol: VERTICAL

	Freq.	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	30.00	41.28	0.39	12.33	30.12	23.88	40.00	-16.12	QP
2	36.79	42.54	0.41	12.76	30.13	25.58	40.00	-14.42	QP
3	57.16	40.23	0.47	12.88	30.15	23.43	40.00	-16.57	QP
4	79.47	45.72	0.65	8.46	30.18	24.65	40.00	-15.35	QP
5	106.63	41.54	0.68	12.56	30.20	24.58	43.50	-18.92	QP
6	151.25	43.29	0.73	8.31	30.20	22.13	43.50	-21.37	QP

Note: 1. All readings are Quasi-peak values.
 2. Measured = Reading + Antenna Factor + Cable Loss - Amp Factor.
 3. The emission levels that are 20dB below the official limit are not reported.



Env. /Ins: 24°C/56%
 EUT: Control Box
 M/N: WL805
 Power Rating: DC 9V From Adapter Input AC 120V/60Hz
 Test Mode: On
 Operator: KANO
 Memo:
 pol: HORIZONTAL

	Freq.	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	33.88	34.73	0.37	12.31	30.13	17.28	40.00	-22.72	QP
2	55.22	37.60	0.46	13.01	30.15	20.92	40.00	-19.08	QP
3	84.32	41.95	0.54	10.07	30.18	22.38	40.00	-17.62	QP
4	113.42	36.04	0.65	11.64	30.20	18.13	43.50	-25.37	QP
5	161.92	37.02	0.75	8.73	30.20	16.30	43.50	-27.20	QP
6	244.37	35.62	0.90	12.08	30.18	18.42	46.00	-27.58	QP

Note: 1. All readings are Quasi-peak values.
 2. Measured = Reading + Antenna Factor + Cable Loss - Amp Factor.
 3. The emission levels that are 20dB below the official limit are not reported.

5. MANUFACTURER/ APPROVAL HOLDER DECLARATION

The following identical model(s):

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Belong to the tested device:

Product description : Control Box
Model name : WL805

No additional models were tested.

-----THE END OF REPORT-----