

CENTRE OF TESTING SERVICE INTERNATIONAL

OPERATE ACCORDING TO ISO/IEC 17025

FCC ID TEST REPORT

TEST REPORT NUMBER: CGZ3150306-00226-EF



CENTRE OF TESTING SERVICE CO., LTD.

A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China





	TEST REPORT For FCC ID 47 CFR PART 15 OCT, 2014
Report Reference No	. CGZ3150306-00226-EF
Date of issue	. 06 March 2015
Testing Laboratory Name	CENTRE OF TESTING SERVICE CO., LTD.
Address	A101, No.65, Zhuji Highway,Tianhe District, Guangzhou, China
Testing location/ procedure	. Full application of Harmonised standards ■
	Partial application of Harmonised standards \square
	Other standard testing method \square
Applicant's name	. Worldpicom Corporation
Address	Yokohama Landmark Tower 9F, 2-2-1 Minatomirai, Nishi- ku,Yokohama, Japan
Test specification	
Standard	47 CFR PART 15 OCT, 2014
	ANSI C63.4-2009
Test Report Form No	. CTSEMC-1.0
TRF Originator	. CENTRE OF TESTING SERVICE CO., LTD.
Master TRF	. Dated 2009-01
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Test item description	: Table Terminal
Trade Mark	1
Manufacturer	Leo Electronics (Hong Kong) Limited
Model/Type reference	WP-D801
Ratings	Battery 7.4V
	DC 12V by Adpater for Charging;
	Adapter Input: AC 100-240V, 50/60Hz; Output:DC 12V
Operating Frequency	. 13.56MHz
Result	Docitivo

Compiled by:

Supervised by:

Approved by:

Kate zhang / Fileadministrators

Duke yang / Technique principal

Vincent yao / Manager

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FCCID-TEST REPORT

 Test Report No. :
 CGZ3150306-00226-EF
 06 March 2015 Date of issue

Type / Model	WP-D801
EUT	Table Terminal
Applicant	Worldpicom Corporation
Address	Yokohama Landmark Tower 9F, 2-2-1 Minatomirai, Nishi-ku, Yokohama, Japan
Telephone	+86-755-29735015
Fax	+86-755-29567380
Contact	BENSON MA
Manager	Les Electer de Albert Kerry Paris
Manufacturer	Leo Electronics (Hong Kong) Limited
Address	25 King's Road Room 702B-3, 7/F North Point, Hong Kong
Telephone	+852-28800398
Fax	+852-25650485
Contact	Hoshino
Factory	
Address	1
Telephone	1
Fax	1
Contact	1

Test Result according to the standards on page 1: PASSED

The test report merely corresponds to the test sample.

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CENTRE OF TESTING SERVICE





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1.0 TEST STANDARDS

The tests were performed according to following standards:

- 47 CFR PART 15 OCT, 2014
- ANSI C63.4-2009

2.0 SUMMARY

2.1 GENERAL REMARKS

Date of receipt of test sample	09 February 2015
Testing commenced on	05 March 2015
Testing concluded on	06 March 2015

2.2 FINAL ASSESSMENT

The FCC requirements pertaining to the technical standards and tested operation modes are

- fulfilled.
- □ **not** fulfilled.

The equipment under test

- fulfils the FCC requirements cited on page 1.
- does not fulfil the FCC requirements cited on page 1.

3.0 EQUIPMENT UNDER TEST

3.1 Power supply system utilised

Power supply voltage : ■ Battery 7.4V, AC 120V/60Hz for adapter

3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: 1

Serial number: Prototype

3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

- ☐ Standby
- ☐ TX- Y position
- ☐ TX- Zposition
- TX- X position

Transmitter Frequency: 13.56MHz

Note:Operation mode TX -X position of EUT is the radiated test worst case. So only these test results be recorded in the test report.

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3.4 EUT configuration

3.4.1. Description of configuration (EUT)

Description :	Table Terminal
Model Number :	WP-D801
Operation frequency :	13.56MHz
Antenna :	PCB antenna, met requirement of FCC 15.203

3.4.2. Tested Supporting System Details

N/A

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4.0 TEST ENVIRONMENT

4.1 Address of the test laboratory

A101, No.65, Zhuji Highway, Tianhe District, Guangzhou, China

Tel: +86-20-85543113 (32 lines) Fax: +86-20-38780406

4.2 Test facility

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

CNAS-Lab Code: L3394

CENTRE OF TESTING SERVICE CO., LTD has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

IC-Registration No.: 8374A

The 3m Alternate Test Site of CENTRE OF TESTING SERVICE CO., LTD has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374A on June 6, 2011.

FCC-Registration No.: 971995

CENTRE OF TESTING SERVICE CO., LTD, 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.791995, July 13,2012.

4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 ° C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

4.4 Definitions of symbols used in this test report

- - The black square indicates that the listed condition, standard or equipment is applicable for this report.
- □ The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

4.5 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 CTS 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.

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4.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±1.22dB	(1)
Power disturbance	30MHz~300MHz	±1.38dB	(1)
	30MHz~300MHz	±3.14dB	(1)
Radiation emission (3m)	300MHz~1000MHz	±3.18dB	(1)
	1GHz~26.5GHz	±3.54dB	(1)

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

5.0 SUMMARY OF STANDARDS ANS RESULTS

5.1. Description of Standards and Results

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

EMISSION		
Description of Test Item	Standard	Results
Conducted Emission Test	FCC Part 15 : 15.207 ANSI C63.4-2009	PASSED
Radiated emission	FCC Part 15.205/15.209/15.225 ANSI C63.4-2009	PASSED
Frequency Stability	FCC Part 15.225(e) ANSI C63.4-2009	PASSED
N/A is an abbreviation for Not Applicable.		

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6.0 POWER LINE CONDUCTED EMISSION TEST

6.1.Test Equipment

Conduc	ted Disturbance				
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESHS10	842884/012	2014/11
2	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/025	2014/11
3	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/026	2014/11
4	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100301	2014/11
5	EMI Test Software	EZ-EMC	Farad	N/A	N/A

6.2. Block Diagram of Test Setup

EUT

(EUT: Table Terminal)

6.3. Power Line Conducted Emission Test Limits Standard: FCC Part 15: 15.207,ANSI C63.4-2009

	Maximum RF I	_ine Voltage
Frequency	Quasi-Peak Level	Average Level
, and quality	dB(μV)	dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

6.4.Test Procedure

The Adapter Power connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). This provides a 50 ohm coupling impedance for the EUT. Please refer the block diagram of the test setup and photographs. The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#1). Power on the PC and let it work normally, we use a keyboard test soft ware, let EUT working in test mode, then test it. 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 Part 15C on Conducted Emission Test.

6.5. Power Line Conducted Emission Test Results PASSED.

The frequency range from 150KHz~30MHz is investigated. Please see the following pages.

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^{2.} The lower limit shall apply at the transition frequencies.

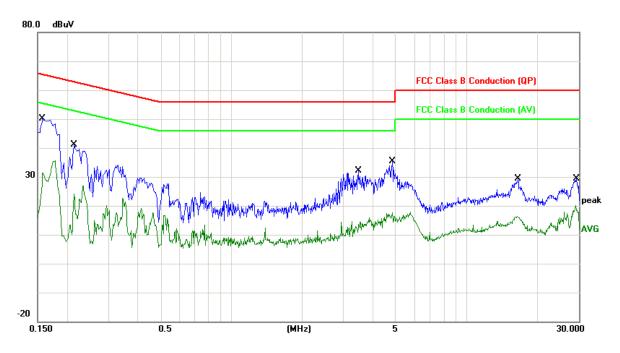






Test point:	L	Result:	■ - passed
Frequency range:	0.15MHz~30MHz		□ - not passed

EUT	Table Terminal
Operating Condition	TX
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test Date:	05 March 2015
Operator	Duke
MODEL NO	WP-D801



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	0.1580	9.78	37.49	47.27	65.57	-18.30	QP
2	0.1580	9.78	13.62	23.40	55.57	-32.17	AVG
3	0.2140	9.78	27.26	37.04	63.05	-26.01	QP
4	0.2140	9.78	6.21	15.99	53.05	-37.06	AVG
5	3.4740	9.90	12.47	22.37	56.00	-33.63	QP
6	3.4740	9.90	1.22	11.12	46.00	-34.88	AVG
7	4.8420	9.92	16.95	26.87	56.00	-29.13	QP
8	4.8420	9.92	5.00	14.92	46.00	-31.08	AVG
9	16.5260	9.96	11.24	21.20	60.00	-38.80	QP
10	16.5260	9.96	4.33	14.29	50.00	-35.71	AVG
11	29.3500	10.10	12.75	22.85	60.00	-37.15	QP
12	29.3500	10.10	7.18	17.28	50.00	-32.72	AVG
Remark:	Other frequen	icy mini ma	rgin all >6 dB	of Limit			

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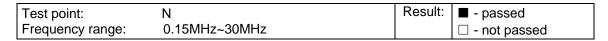
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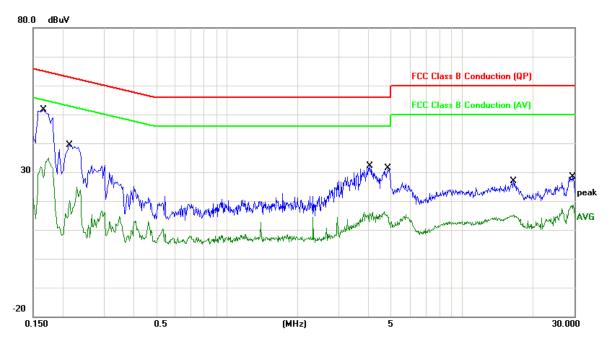
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No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.		
1	0.1660	9.78	37.92	47.70	65.16	-17.46	QP		
2	0.1660	9.78	19.70	29.48	55.16	-25.68	AVG		
3	0.2140	9.78	27.88	37.66	63.05	-25.39	QP		
4	0.2140	9.78	7.49	17.27	53.05	-35.78	AVG		
5	4.0540	9.90	14.64	24.54	56.00	-31.46	QP		
6	4.0540	9.90	2.73	12.63	46.00	-33.37	AVG		
7	4.8420	9.92	13.32	23.24	56.00	-32.76	QP		
8	4.8420	9.92	2.17	12.09	46.00	-33.91	AVG		
9	16.5420	9.96	9.86	19.82	60.00	-40.18	QP		
10	16.5420	9.96	3.89	13.85	50.00	-36.15	AVG		
11	29.4700	10.10	14.07	24.17	60.00	-35.83	QP		
12	29.4700	10.10	8.78	18.88	50.00	-31.12	AVG		
Remark	Remark: Other frequency mini margin all >6 dB of Limit								

Note:Level=Reading+Factor. Margin= Level-Limit

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7.0 RADIATED EMISSION

7.1 Limit

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

	FCC Part 15.209								
Frequency	Field Strength L	imitation	Field Strength Limitation at 3m Measurement Distance						
(MHz)	(uV/m)	Distance	(dBuV/m)	(dBuV/m)					
0.009-0.490	2400/F(KHz)	300m	20log 2400/F(KHz)+80						
0.490-1.705	24000/F(KHz)	30m	20log 24000/F(KHz)+40						
1.705-30.00	30	30m	20log 30+40	69.5					
30.00-88.00	100	3m	20log 100	40.0					
88.00-216.00	150	3m	20log 150	43.5					
216.00-960.00	200	3m	20log 200	46.0					
Above 960.00	500	3m	20log 500	54.0					
	FC	C Part 15.2	25(a)/(b)/(c)						
Frequency	Field Strength L	imitation	Field Strength Lim Measurement D						
(MHz)	(uV/m)	Distance	(dBuV/m)	(dBuV/m)					
13.553-13.567	15848	30m	20log 15848+40	124.0					
13.567-13.710	334	30m	20log 334+40	90.5					
13.110-13.410 13.710-14.010	106	30m	20log 106+40	80.5					

Note:

- (1) The tighter limit shall apply at the boundary between two frequency range.
- (2) Limitation expressed in dBuV/m is calculated by 20log Emission Level (uV/m).
- (3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of $L_{d1} = L_{d2} * (d_2/d_1)^2$.

Example:

F.S Limit at 30m distance is 30uV/m , then F.S Limitation at 3m distance is adjusted as $L_{d1}=L_{1}=30uV/m\ ^{*}(10)^{2}=100\ ^{*}$ 30 uV/m

7.2 Test Equipment

Radia	Radiated disturbance (electric field)								
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.				
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2014/11				
2	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2014/03				
3	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2014/03				
4	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2014/03				
5	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2014/03				
6	Loop Antenna	A.R.A	PLA-1030/B	1030	2014/11				
7	EMI Test Software	EZ-EMC	Farad	N/A	N/A				

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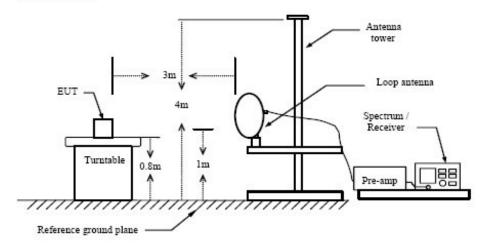
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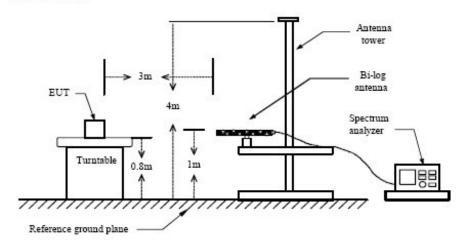


7.3 Test Configuration

Below 30MHz



Below 1 GHz



7.4. Block Diagram of Test Setup



(EUT: Table Terminal)

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7.5 Test Procedure

- 1. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- 2. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m or 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- 3. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4. The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- 5. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- 6. For the actual test configuration, please refer to the related Item –EUT Test Photos.

NOTE: (FCC PART 15.209)

- 1. Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode with Detector BW=120 kHz.
- 2. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

NOTE: (FCC PART 15.225)

- 1. Spectrum Setting:
 - 9 KHz 150 KHz, RBW= 200Hz, VBW=200Hz, Sweep time = 200 ms. 150 K Hz – 30 MHz, RBW= 10 KHz, VBW=10 KHz, Sweep time = 200 ms.
 - 30 MHz 1000 MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms.
- 2. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- 3. The Log-Bicon Antenna will use to test frequency range from 30MHz to 1000MHz and the Loop Antenna will use to test frequency below 30MHz.

7.6 Test Results

The frequency range from 9KHz~30MHz,30MHz to 230MHz, 230MHz to 1000MHz is investigated. Please see the following pages.

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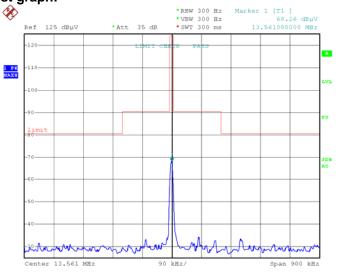


EUT	Table Terminal
Operating Condition	DC 5V
Test Condition	Ambient Temperature: 25°C Humidity: 56%
Test distance	3 Meter
Test Date:	05 March 2015
Operator	Duke
MODEL NO	WP-D801

Test Mode:	TX –X Position Mode	Result:	■ - passed
Frequency range:	9KHz~30MHz		\square - not passed

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	13.56000	14.24	54.02	68.26	124.00	-55.74	QP
2 27.13220 14.79 22.98 37.77 69.50 -31.73							
Rema	Remark: Others the result margin all > 10dB of the limit.						

FCC Part 15.225 test graph:



Date: 5.MAR.2015 14:37:13

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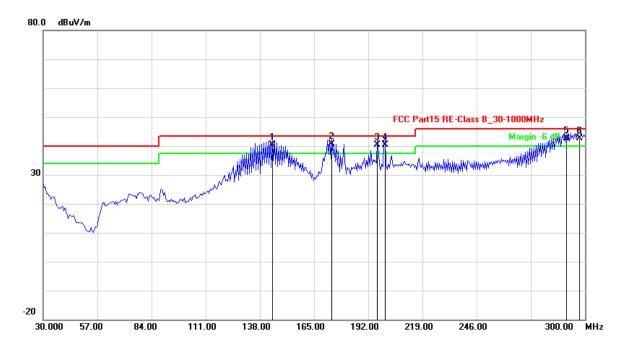
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Channel:TX –X PositionResult:■ - passedTest point:Horizontal□ - not passedFrequency range:30MHz-1GHz



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	144.1683	-22.78	63.12	40.34	43.50	-3.16	QP
2	173.9279	-22.21	62.77	40.56	43.50	-2.94	QP
3	196.6533	-18.44	58.86	40.42	43.50	-3.08	QP
4	200.4409	-18.63	58.96	40.33	43.50	-3.17	QP
5	290.8016	-12.98	55.57	42.59	46.00	-3.41	QP
6	297.2946	-12.34	55.07	42.73	46.00	-3.27	QP

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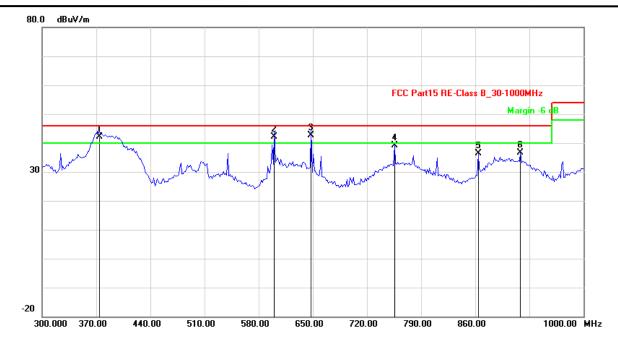
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No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	374.3487	-24.28	66.37	42.09	46.00	-3.91	QP
2	600.2004	-19.49	61.70	42.21	46.00	-3.79	QP
3	647.8958	-17.28	59.79	42.51	46.00	-3.49	QP
4	755.9118	-14.21	53.28	39.07	46.00	-6.93	QP
5	863.9279	-15.83	52.12	36.29	46.00	-9.71	QP
6	918.6373	-12.28	48.97	36.69	46.00	-9.31	QP

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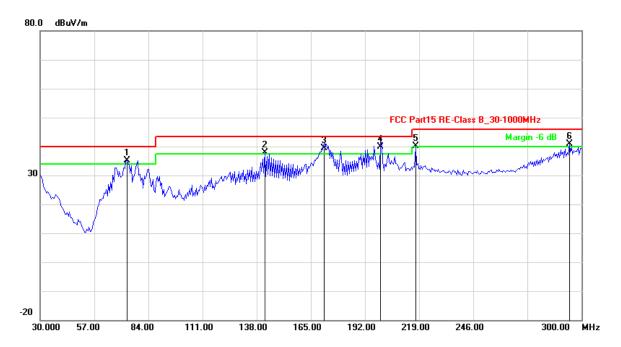
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Channel:	TX –X Position	Result:	■ - passed
Test point:	Vertical		□ - not passed
Frequency range:	30MHz-1GHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	73.2866	-28.03	63.17	35.14	40.00	-4.86	QP
2	142.0040	-22.57	60.52	37.95	43.50	-5.55	QP
3	171.7635	-22.44	61.70	39.26	43.50	-4.24	QP
4	199.8998	-18.65	58.62	39.97	43.50	-3.53	QP
5	217.2144	-18.33	58.48	40.15	46.00	-5.85	QP
6	294.0481	-12.66	53.66	41.00	46.00	-5.00	QP

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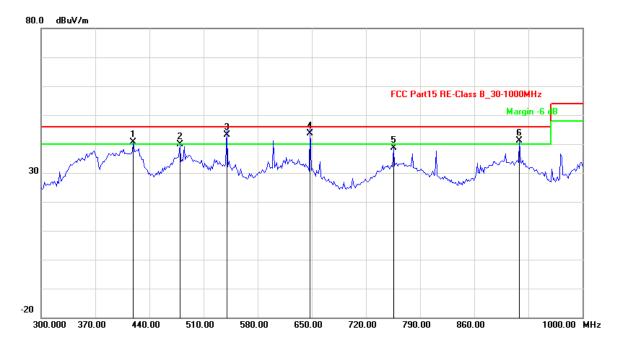
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No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	419.2385	-23.92	64.43	40.51	46.00	-5.49	QP
2	479.5591	-18.79	58.61	39.82	46.00	-6.18	QP
3	539.8798	-23.62	66.66	43.04	46.00	-2.96	QP
4	647.8958	-17.28	60.87	43.59	46.00	-2.41	QP
5	755.9118	-14.21	52.79	38.58	46.00	-7.42	QP
6	918.6373	-12.28	53.32	41.04	46.00	-4.96	QP

Remark: Other frequency mini margin all >10 dB of Limit

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8.0 FREQUENCY STABILITY MEASUREMENT

8.1 Limit

FCC Part 15.225(e)

The frequency tolerance of the carrier signal shall be maintained within +/-0.01% of the operating frequency over a temperature variation of - 20 degrees to + 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

For battery operated equipment, the equipment tests shall be performed using a new battery.

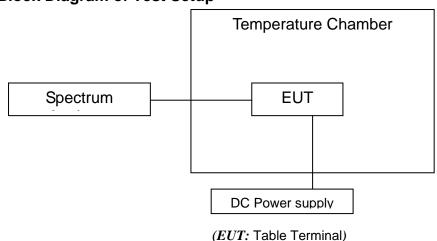
8.2 Test Equipment

Radia	ated disturbance (elect	ric field)			
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2014/11
2	Temperature Chamber	GW	GDS-150	1016	2014/11
3	DC Source	MCP	M10-SP-305E	/	2014/3

8.3 Test Procedure

- The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber.
 - After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter.
- 2. At room temperature (25±5°C), an external variable DC power supply was connected to the EUT. The frequency of the transmitter was measured for 115%, 100% and 85% of the nominal operating input voltage.

8.4. Block Diagram of Test Setup



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8.5. Test Results

Please see the following pages.

Test Temp.	Test Voltage (V dc)	Frequency (MHz)	Error (KHz)	Limit (KHz)
	6.29	13.560887	+0.887	±1.356
-20 ℃	7.40	13.560869	+0.869	
	8.51	13.560870	+0.870	
	6.29	13.560859	+0.859	
25 ℃	7.40	13.560888	+0.888	
	8.51	13.560869	+0.869	
	6.29	13.560853	+0.853	
50℃	7.40	13.560859	+0.859	
	8.51	13.560857	+0.857	

Test Temp.	Test Voltage (V dc)	Frequency (MHz)	Error (KHz)	Limit (KHz)
	6.29	13.560885	+0.885	±1.356
-20 ℃	7.40	13.560872	+0.872	
	8.51	13.560870	+0.870	
	6.29	13.560858	+0.858	
25 ℃	7.40	13.560890	+0.890	
	8.51	13.560869	+0.869	
	6.29	13.560855	+0.855	
50 ℃	7.40	13.560857	+0.857	
	8.51	13.560857	+0.857	

Test Temp.	Test Voltage (V dc)	Frequency (MHz)	Error (KHz)	Limit (KHz)
	6.29	13.560879	+0.879	±1.356
-20 ℃	7.40	13.560865	+0.865	
	8.51	13.560872	+0.872	
	6.29	13.560856	+0.856	
25 ℃	7.40	13.560878	+0.878	
	8.51	13.560871	+0.871	
	6.29	13.560861	+0.861	
50 ℃	7.40	13.560864	+0.864	
	8.51	13.560859	+0.859	

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Test Temp.	Test Voltage (V dc)	Frequency (MHz)	Error (KHz)	Limit (KHz)
	6.29	13.560889	+0.889	±1.356
-20 ℃	7.40	13.560872	+0.872	
	8.51	13.560872	+0.872	
	6.29	13.560861	+0.861	
25 ℃	7.40	13.560873	+0.873	
	8.51	13.560870	+0.870	
	6.29	13.560863	+0.863	
50 ℃	7.40	13.560865	+0.865	
	8.51	13.560865	+0.865	

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9.0 DEVIATION TO TEST SPECIFICATIONS

The following identical model(s):

N/A

Belong to the tested device:

Product description: **Table Terminal**Model name: **WP-D801**

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