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MPE TEST REPORT

FCC Per 47 CFR 2.1091(b)

Report Reference No. ..... :	**TRE1307004503 R/C:89404**
FCC ID. ..... :	**BBP-PRSP201NW1**
Compiled by (position+printed name+signature)..:	File administrators Jerome Luo
Supervised by (position+printed name+signature)..:	Test Engineer Yuchao Wang
Approved by (position+printed name+signature)..:	Manager Wenliang Li
Date of issue ..... :	Sep 27, 2013
Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd**
Address ..... :	Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Applicant's name ..... :	**RICOH Co., LTD.**
Address ..... :	810 Shimoimaizumi,Ebina City, Kanagawa-Pref., 243-0460 Japan
Test specification:	
Standard ..... :	**FCC Per 47 CFR 2.1091(b)**
	KDB447498 v05r01
TRF Originator ..... :	Shenzhen Huatongwei International Inspection CO., Ltd
Master TRF ..... :	Dated 2006-06

Test item description ..... :	Printer
Trade Mark ..... :	RICOH
Model/Type reference ..... :	SP 201Nw
Listed Models ..... :	/
Modulation Type ..... :	OFDM,CCK
Operation Frequency ..... :	From 2412MHz to 2462MHz
Manufacturer ..... :	**RICOH Co., LTD.**
Rating ..... :	AC 120V/60Hz 8A 900W
Result ..... :	**Positive**

MPE T E S T R E P O R T

Test Report No. :	**TRE1307004503**	Sep 27, 2013 Date of issue

Equipment under Test	:	Printer
Model /Type	:	SP 201Nw
Listed Models	:	/
Applicant	:	**RICOH Co., LTD.**
Address	:	810 Shimoimaizumi,Ebina City, Kanagawa-Pref., 243-0460 Japan
Manufacturer		**RICOH Co., LTD.**
Address	:	3-6，Naka-magome 1-Chome Ohta-ku,Tokyo 143-8555 Japan

Contents

1. SUMMARY

1.1. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○	Power Cable	Length (m) :	/
		Shield :	/
		Detachable :	/
○	Multimeter	Manufacturer :	/
		Model No. :	/

1.2. NOTE

1. The EUT is a Printer with WLAN fuction,The functions of the EUT listed as below:

	Test Standards	Reference Report
	FCC Part 15 Subpart B	TRE1307004501
WLAN 802.11b/g/n	FCC Part 15 Subpart C	TRE1307004502
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2. The frequency bands used in this EUT are listed as follows:

Frequency Band(MHz)	2400-2483.5	5150-5350	5470-5725	5725-5850
802.11b	√	—	—	—
802.11g	√	—	—	—
802.11n(20MHz)	√	—	—	—
802.11n(40MHz)	√	—	—	—

3. The EUT incorporates a SISO function,Physically,the EUT provides one completed transmitter and one completed receiver.

Modulation Mode	TX Function
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	1TX
802.11n (40MHz)	1TX

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2. TEST ENVIRONMENT

2.1. Address of the test laboratory

Shenzhen Huatongwei International Inspection Co., Ltd
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Phone: 86-755-26715686 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

2.2. Environmental conditions

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

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

2.3. 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 TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd 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.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

3. Method of measurement

3.1. Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.
According to §1.1310 and §2.1091 RF exposure is calculated.
KDB447498 v05r01:Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

3.2. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(180/f)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

F=frequency in MHz
*=Plane-wave equivalent power density

3.3. MPE Calculation Method

Predication of MPE limit at a given distance
Equation from page 18 of OET Bulletin 65, Edition 97-01

$S=PG/4\pi R^2$

Where: S=power density
P=power input to antenna
G=power gain of the antenna in the direction of interest relative to an isotropic radiator
R=distance to the center of radiation of the antenna

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the antenna is -1.20dBi, and the power drift from Turn-up Procedure provide by manufacturer as following states,the RF power density can be obtained.

Manufacturing tolerance

WLAN

802.11b			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	20.50	20.50	20.50
Tolerance ±(dB)	1	1	1
802.11g			
Channel	Channel 810	Channel 661	Channel 512
Target (dBm)	20.50	20.50	20.50
Tolerance ±(dB)	1	1	1
802.11n(20MHz)			
Channel	Channel 1	Channel 6	Channel 11
Target (dBm)	19.50	19.50	19.50
Tolerance ±(dB)	1	1	1
802.11n(40MHz)			
Channel	Channel 3	Channel 6	Channel 9
Target (dBm)	18.50	18.50	18.50
Tolerance ±(dB)	1	1	1

TEST RESULTS

For 802.11b Mode

Test Frequency（MHz）	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 20 cm (mW/cm^2)	Scaling Factor	Power Density At 20 cm (mW/cm^2) Including Scaling Factor	Power Density Limit (mW/cm2)	Test Results
2412	20.00	20.31	107.3989	0.7586	0.0031	1.3152	0.0032	1.0000	PASS
2437	20.00	20.54	113.2400	0.7586	0.0031	1.2474	0.0032	1.0000	PASS
2462	20.00	20.64	115.8777	0.7586	0.0031	1.2190	0.0032	1.0000	PASS

For 802.11g Mode

Test Frequency（MHz）	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 20 cm (mW/cm^2)	Scaling Factor	Power Density At 20 cm (mW/cm^2) Including Scaling Factor	Power Density Limit (mW/cm2)	Test Results
2412	20.00	19.92	98.1748	0.7586	0.0030	1.4388	0.0032	1.0000	PASS
2437	20.00	20.06	101.3911	0.7586	0.0030	1.3932	0.0032	1.0000	PASS
2462	20.00	20.20	104.7129	0.7586	0.0030	1.3490	0.0032	1.0000	PASS

For 802.11n(20MHz) Mode

Test Frequency（MHz）	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 20 cm (mW/cm^2)	Scaling Factor	Power Density At 20 cm (mW/cm^2) Including Scaling Factor	Power Density Limit (mW/cm2)	Test Results
2412	20.00	18.63	72.9458	0.7586	0.0028	1.5382	0.0031	1.0000	PASS
2437	20.00	19.23	83.7529	0.7586	0.0029	1.3397	0.0031	1.0000	PASS
2462	20.00	19.85	96.6051	0.7586	0.0030	1.1614	0.0031	1.0000	PASS

For 802.11n(40MHz) Mode

Test Frequency（MHz）	Minimum Separation Distance (cm)	Output Power (dBm)	Output Power (mW)	Antenna Gain (Numeric)	Power Density At 20 cm (mW/cm^2)	Scaling Factor	Power Density At 20 cm (mW/cm^2) Including Scaling Factor	Power Density Limit (mW/cm2)	Test Results
2422	20.00	18.19	65.9174	0.7586	0.0027	1.3521	0.0029	1.0000	PASS
2437	20.00	18.13	65.0130	0.7586	0.0027	1.3709	0.0029	1.0000	PASS
2452	20.00	18.14	65.1628	0.7586	0.0027	1.3677	0.0029	1.0000	PASS

4. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure.

.....End of Report.....