

FCC RF Test Report

APPLICANT : PAX Technology Limited EQUIPMENT : Wireless POS Terminal

BRAND NAME : PAX
MODEL NAME : D200
MARKETING NAME : D200

FCC ID : V5PD200W

STANDARD : FCC Part 15 Subpart C §15.247

CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Sep. 16, 2013 and testing was completed on Nov. 06, 2013. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown to be compliant with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (SHENZHEN) INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

SPORTON INTERNATIONAL (SHENZHEN) INC.

No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C.

SPORTON INTERNATIONAL (SHENZHEN) INC.

TEL: 86-755- 3320-2398 FCC ID: V5PD200W

Page Number : 1 of 55
Report Issued Date : Nov. 20, 2013

Report No.: FR391602B



TABLE OF CONTENTS

RE	VISIO	N HISTORY	3
SU	MMAF	RY OF TEST RESULT	4
1	GENE	ERAL DESCRIPTION	5
	1.1	Applicant	5
	1.2	Manufacturer	
	1.3	Feature of Equipment Under Test	
	1.4	Product Specification of Equipment Under Test	5
	1.5	Modification of EUT	
	1.6	Testing Site	6
	1.7	Applied Standards	6
2	TEST	CONFIGURATION OF EQUIPMENT UNDER TEST	7
	2.1	Carrier Frequency Channel	7
	2.2	Pre-Scanned RF Power	8
	2.3	Test Mode	9
	2.4	Connection Diagram of Test System	10
	2.5	Support Unit used in test configuration and system	11
	2.6	EUT Operation Test Setup	11
	2.7	Measurement Results Explanation Example	12
3	TEST	RESULT	13
	3.1	6dB Bandwidth Measurement	13
	3.2	Output Power Measurement	15
	3.3	Power Spectral Density Measurement	18
	3.4	Conducted Band Edges and Spurious Emission Measurement	20
	3.5	Radiated Band Edges and Spurious Emission Measurement	30
	3.6	AC Conducted Emission Measurement	47
	3.7	Antenna Requirements	53
4	LIST	OF MEASURING EQUIPMENT	54
5	UNCE	ERTAINTY OF EVALUATION	55
ΑP	PEND	IX A. SETUP PHOTOGRAPHS	

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 2 of 55
Report Issued Date : Nov. 20, 2013

Report No.: FR391602B



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR391602B	Rev. 01	Initial issue of report	Nov. 20, 2013



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	Conducted Band Edges	, 00 ID -	Pass	-
3.4		Conducted Spurious Emission	- ≤ 20dBc	Pass	-
3.5	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 5.71 dB at 608.120 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 3.65 dB at 0.440 MHz
3.7	3.7 15.203 & Antenna Requirement		N/A	Pass	-

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 4 of 55
Report Issued Date : Nov. 20, 2013

Report No.: FR391602B



1 General Description

1.1 Applicant

PAX Technology Limited

Room 2416, 24/F., Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hong Kong

1.2 Manufacturer

PAX Computer Technology (Shenzhen) Co., Ltd.

4/F No.3 Building, Software Park, Second Central Science-Tech Road, High-Tech industrial Park, Shenzhen, Guangdong, P.R.C.

Report No.: FR391602B

1.3 Feature of Equipment Under Test

Product Feature					
Equipment	Wireless POS Terminal				
Brand Name	PAX				
Model Name	D200				
Marketing Name	D200				
FCC ID	V5PD200W				
EUT supports Radios application	WLAN 2.4GHz 802.11bgn HT20/Bluetooth v2.1 + EDR/ RFID				
HW Version	D200-XXX-XXX				
SW Version	V1.XX				
EUT Stage	Production Unit				

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard						
Tx/Rx Channel Frequency Range	802.11b/g/n : 2412 MHz ~ 2462 MHz					
Maximum (Peak) Output Power to	802.11b : 16.89 dBm (0.0489 W)					
Antenna	802.11g : 20.10 dBm (0.1023 W)					
Antenna	802.11n HT20 : 20.14 dBm (0.1033 W)					
Antenna Type	802.11b/g/n: FPC Antenna with gain 0.85 dBi					
Type of Modulation	802.11b: DSSS (DBPSK / DQPSK / CCK)					
Type of Modulation	802.11g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM)					

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

SPORTON INTERNATIONAL (SHENZHEN) INC.Page Number: 5 of 55TEL: 86-755- 3320-2398Report Issued Date: Nov. 20, 2013FCC ID: V5PD200WReport Version: Rev. 01

1.6 Testing Site

Test Site	SPORTON INT	SPORTON INTERNATIONAL (SHENZHEN) INC.					
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C.						
1001 0110 200411011	TEL: +86-755-3320-2398						
Test Site No.	S	Sporton Site No	FCC Registration No.				
rest Site No.	TH01-SZ	CO01-SZ	03CH01-SZ	831040			

Note: The test site complies with ANSI C63.4 2003 requirement.

1.7 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
- ANSI C63.4-2003

Remark:

- 1. All test items were verified and recorded according to the standards and without any deviation during the test.
- 2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

SPORTON INTERNATIONAL (SHENZHEN) INC.
TEL: 86-755-3320-2398

FCC ID: V5PD200W

Page Number : 6 of 55 Report Issued Date : Nov. 20, 2013

Report No.: FR391602B



2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
	1	2412	7	2442
	2	2417	8	2447
2400 2402 5 MH-	3	2422	9	2452
2400-2483.5 MHz	4	2427	10	2457
	5	2432	11	2462
	6	2437	-	-

SPORTON INTERNATIONAL (SHENZHEN) INC.

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 7 of 55
Report Issued Date : Nov. 20, 2013

Report No.: FR391602B



2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

		2.4GHz 802.11b RF Power (dBm)						
Channel	Frequency	DSSS Data Rate						
		1 Mbps	2 Mbps	5.5 Mbps	11 Mbps			
CH 01	2412 MHz	<mark>16.89</mark>	16.86	16.81	16.85			
CH 06	2437 MHz	15.98	15.96	15.93	15.91			
CH 11	2462 MHz	15.69	15.67	15.64	15.61			

	Frequency	2.4GHz 802.11g RF Power (dBm)							
Channel		OFDM Data Rate							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 01	2412 MHz	20.10	20.05	20.08	19.83	19.93	19.82	19.78	20.04
CH 06	2437 MHz	19.37	19.33	19.31	19.25	19.29	19.26	19.21	19.30
CH 11	2462 MHz	19.17	19.12	19.13	19.09	19.06	19.11	19.07	19.13

	Frequency	2.4GHz 802.11n HT20 RF Power (dBm)							
Channel		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	<mark>20.14</mark>	20.07	20.10	20.02	20.03	20.11	20.10	20.07
CH 06	2437 MHz	19.54	19.51	19.48	19.44	19.41	19.49	19.46	19.43
CH 11	2462 MHz	19.32	19.28	19.24	19.30	19.29	19.23	19.24	19.27

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TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 8 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



2.3 Test Mode

Final results of test modes, data rates and test channels are shown as following table.

	Test Cases							
	Test Items	Mode	Data Rate	Test Channel				
	6dB BW	802.11b	1 Mbps	1/6/11				
	Power Spectral	802.11g	6 Mbps	1/6/11				
	Density	802.11n HT20	MCS0	1/6/11				
		802.11b	1 Mbps	1/6/11				
	Output Power	802.11g	6 Mbps	1/6/11				
Conducted TCs		802.11n HT20	MCS0	1/6/11				
IUS		802.11b 1 Mb		1/11				
	Conducted Band Edge	802.11g	6 Mbps	1/11				
		802.11n HT20	MCS0	1/11				
	Conducted	802.11b	1 Mbps	1/6/11				
		802.11g	6 Mbps	1/6/11				
	Spurious Emission	802.11n HT20	MCS0	1/6/11				
	5 " / 15 1	802.11b	1 Mbps	1/11				
	Radiated Band	802.11g	6 Mbps	1/11				
Radiated	Edge	802.11n HT20	MCS0	1/11				
TCs	Badlatad C	802.11b	1 Mbps	1/6/11				
	Radiated Spurious	802.11g	6 Mbps	1/6/11				
	Emission	802.11n HT20	MCS0	1/6/11				
AC Conducted	Mode 1 : Bluetooth L	ink + USB Cable (Charging fro	om Adapter)	•				
Emission	Mode 2 : WLAN Link	+ USB Cable (Charging from	Adapter)					

Remark: The worst case of conducted emission is mode 1; only the test data of it was reported.

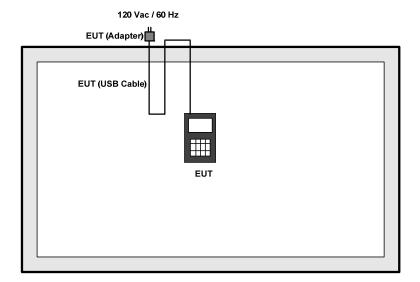
TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 9 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



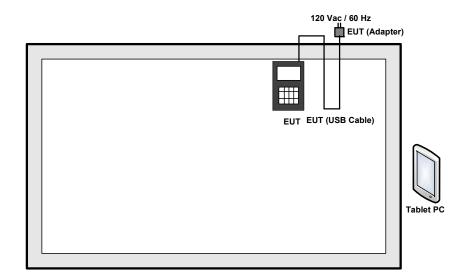
Report No.: FR391602B

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode> Mode 1



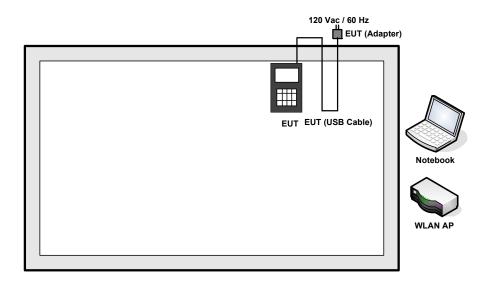
SPORTON INTERNATIONAL (SHENZHEN) INC.

TEL: 86-755-3320-2398 FCC ID: V5PD200W

Page Number : 10 of 55 Report Issued Date: Nov. 20, 2013 Report Version : Rev. 01



Mode 2



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	DC Power Supply	TOPWORD	3303DR	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Notebook	Lenovo	G480	PRC4	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
4.	Tablet PC	Lenovo	IdeaTab 2107A-H	N/A	N/A	N/A

2.6 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

SPORTON INTERNATIONAL (SHENZHEN) INC.

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 11 of 55
Report Issued Date : Nov. 20, 2013

Report No.: FR391602B

2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 7.5 dB and 10dB attenuator.

$$Offset(dB) = RF \ cable \ loss(dB) + attenuator \ factor(dB).$$

= 7.5 + 10 = 17.5 (dB)

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 12 of 55
Report Issued Date : Nov. 20, 2013

Report No.: FR391602B



3 Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

- 1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r01.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
- 5. Measure and record the results in the test report.

3.1.4 Test Setup

FCC ID: V5PD200W



SPORTON INTERNATIONAL (SHENZHEN) INC.
TEL: 86-755- 3320-2398

Report Issued Date: Nov. 20, 2013
Report Version: Rev. 01

Page Number

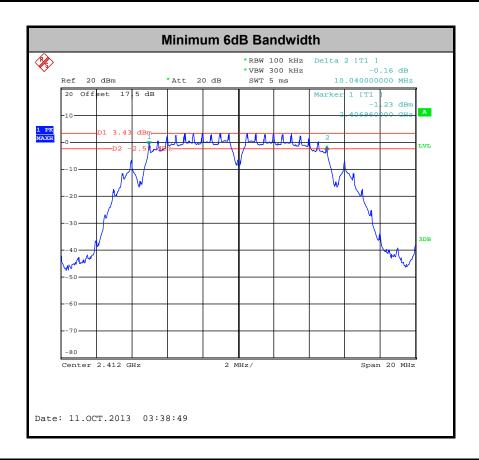
: 13 of 55



3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

Test Band :	2.4GHz	Temperature :	24~26 ℃
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	10.04	0.5	Pass
11b	1Mbps	1	6	2437	10.08	0.5	Pass
11b	1Mbps	1	11	2462	10.08	0.5	Pass
11g	6Mbps	1	1	2412	16.52	0.5	Pass
11g	6Mbps	1	6	2437	16.52	0.5	Pass
11g	6Mbps	1	11	2462	16.56	0.5	Pass
HT20	MCS0	1	1	2412	17.76	0.5	Pass
HT20	MCS0	1	6	2437	17.76	0.5	Pass
HT20	MCS0	1	11	2462	17.76	0.5	Pass



TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 14 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting Antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the Antenna exceeds 6dBi.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

- The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r01.
- 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Measure the conducted output power and record the results in the test report.

3.2.4 Test Setup



SPORTON INTERNATIONAL (SHENZHEN) INC. TEL: 86-755-3320-2398

FCC ID: V5PD200W

Page Number : 15 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



FCC RF Test Report

3.2.5 Test Result of Peak Output Power

Test Mode :	2.4GHz	Temperature :	24~26 ℃
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	RF Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	16.89	30	0.85	Pass
11b	1Mbps	1	6	2437	15.98	30	0.85	Pass
11b	1Mbps	1	11	2462	15.69	30	0.85	Pass
11g	6Mbps	1	1	2412	20.10	30	0.85	Pass
11g	6Mbps	1	6	2437	19.37	30	0.85	Pass
11g	6Mbps	1	11	2462	19.17	30	0.85	Pass
HT20	MCS0	1	1	2412	20.14	30	0.85	Pass
HT20	MCS0	1	6	2437	19.54	30	0.85	Pass
HT20	MCS0	1	11	2462	19.32	30	0.85	Pass

Note: Measured power (dBm) has offset with cable loss.

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 16 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



FCC RF Test Report

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	2.4GHz	Temperature :	24~26℃
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	0.00	12.94	30	0.85	Pass
11b	1Mbps	1	6	2437	0.00	12.10	30	0.85	Pass
11b	1Mbps	1	11	2462	0.00	11.82	30	0.85	Pass
11g	6Mbps	1	1	2412	0.00	11.32	30	0.85	Pass
11g	6Mbps	1	6	2437	0.00	10.67	30	0.85	Pass
11g	6Mbps	1	11	2462	0.00	10.36	30	0.85	Pass
HT20	MCS0	1	1	2412	0.00	11.55	30	0.85	Pass
HT20	MCS0	1	6	2437	0.00	10.84	30	0.85	Pass
HT20	MCS0	1	11	2462	0.00	10.57	30	0.85	Pass

Note: Measured power (dBm) has offset with cable loss and duty factor.

SPORTON INTERNATIONAL (SHENZHEN) INC.

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 17 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

Report No.: FR391602B

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

- The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
- 5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
- Measure and record the results in the test report.

3.3.4 Test Setup



 SPORTON INTERNATIONAL (SHENZHEN) INC.
 Page Number
 : 18 of 55

 TEL: 86-755- 3320-2398
 Report Issued Date
 : Nov. 20, 2013

 FCC ID: V5PD200W
 Report Version
 : Rev. 01

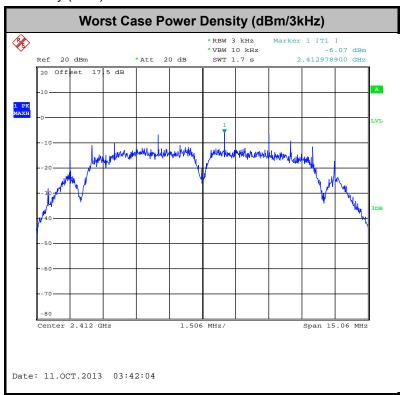


3.3.5 Test Result of Power Spectral Density

Test Mode :	2.4GHz	Temperature :	24~26 ℃
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Peak Power Density (dBm/3kHz)	Max. Limits (dBm/3kHz)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	-6.07	8	0.85	Pass
11b	1Mbps	1	6	2437	-6.64	8	0.85	Pass
11b	1Mbps	1	11	2462	-7.34	8	0.85	Pass
11g	6Mbps	1	1	2412	-13.43	8	0.85	Pass
11g	6Mbps	1	6	2437	-14.83	8	0.85	Pass
11g	6Mbps	1	11	2462	-15.60	8	0.85	Pass
HT20	MCS0	1	1	2412	-14.60	8	0.85	Pass
HT20	MCS0	1	6	2437	-15.19	8	0.85	Pass
HT20	MCS0	1	11	2462	-15.85	8	0.85	Pass

Note: Measured power density (dBm) has offset with cable loss.



SPORTON INTERNATIONAL (SHENZHEN) INC.

TEL: 86-755- 3320-2398 FCC ID: V5PD200W

Page Number : 19 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions 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).

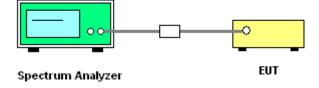
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

- The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
- 5. Measure and record the results in the test report.
- 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup



SPORTON INTERNATIONAL (SHENZHEN) INC. TEL: 86-755-3320-2398

FCC ID: V5PD200W

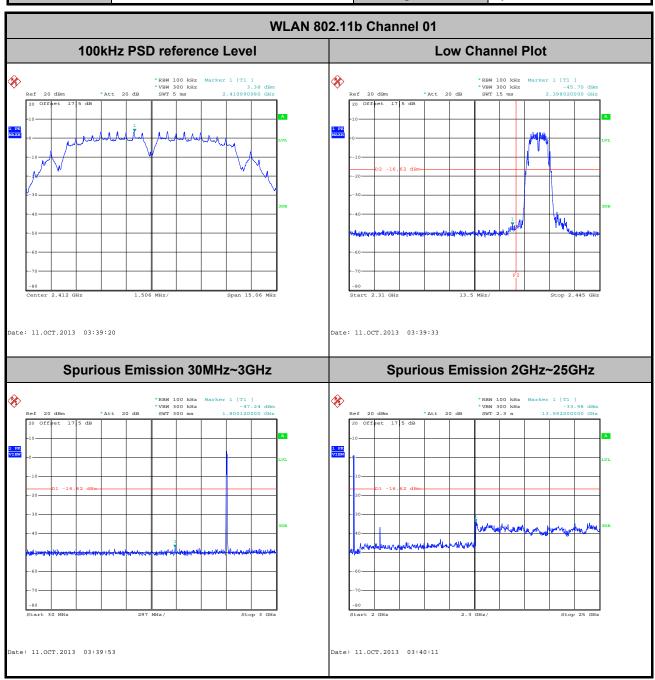
Page Number : 20 of 55
Report Issued Date : Nov. 20, 2013

Report No.: FR391602B



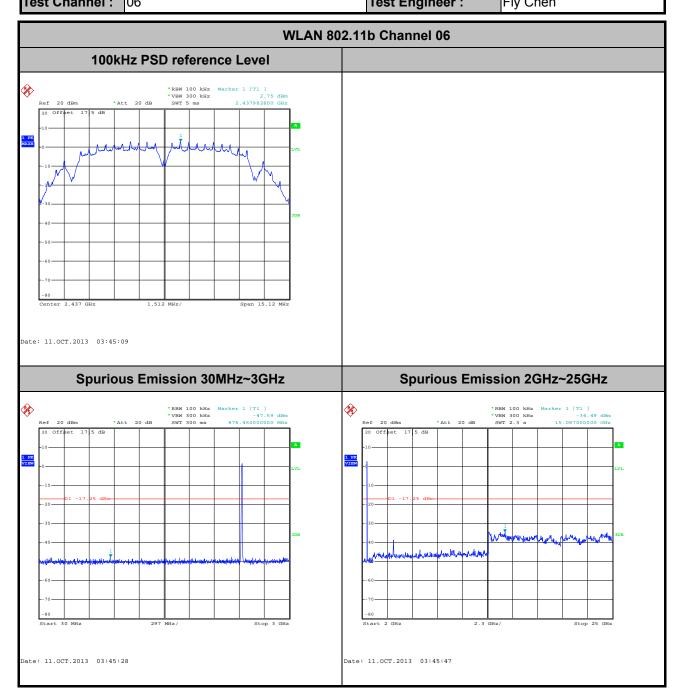
3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	Temperature :	24~26℃
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Fly Chen



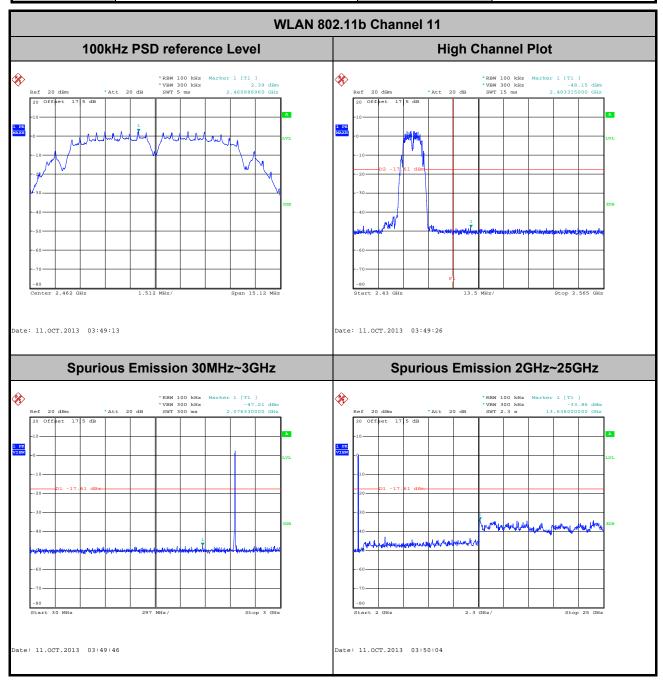
TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 21 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	802.11b	Temperature :	24~26℃
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel ·	06	Test Engineer :	Fly Chen

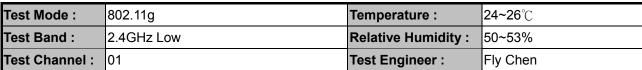


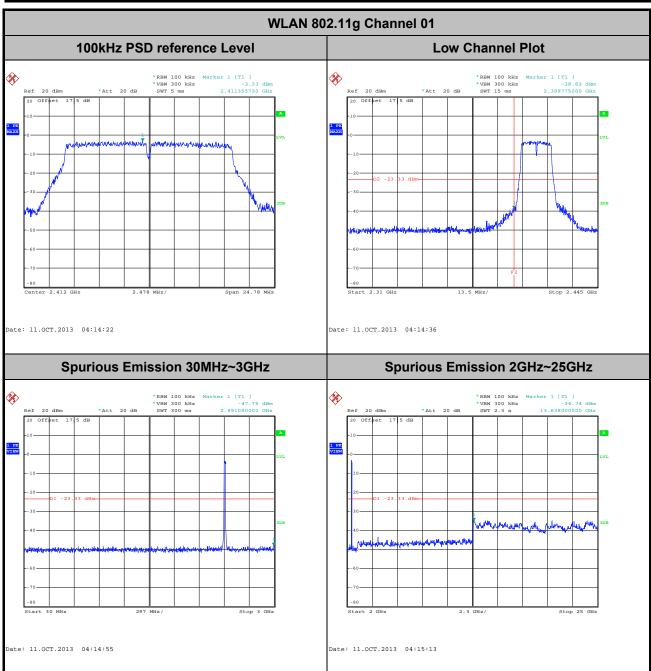
Page Number : 22 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	802.11b	Temperature :	24~26℃
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Fly Chen



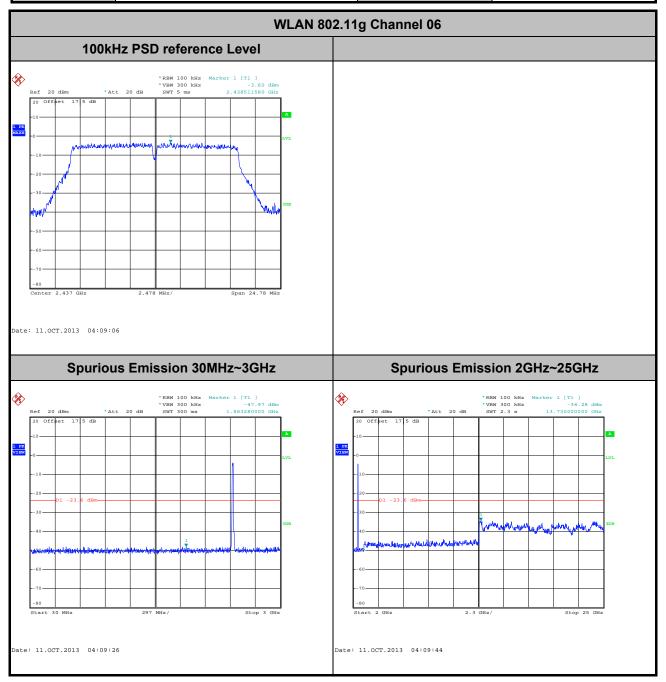
Page Number : 23 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01





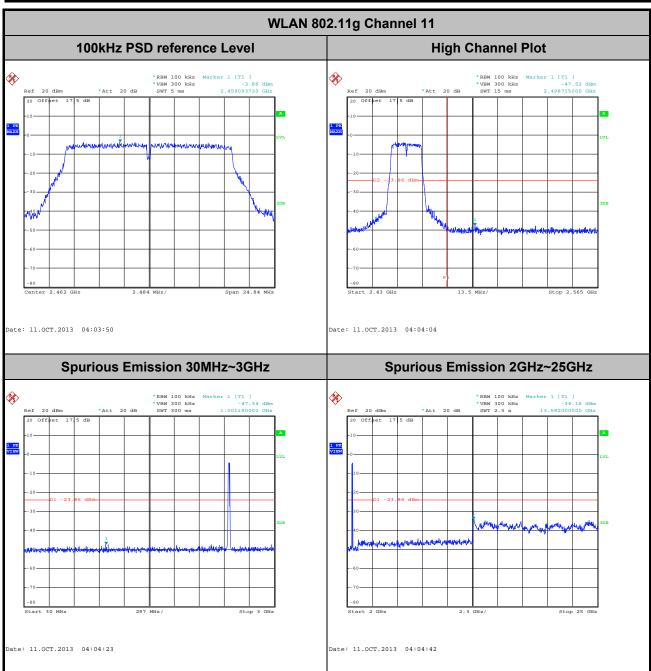
Page Number : 24 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	802.11g	Temperature :	24~26℃
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Fly Chen



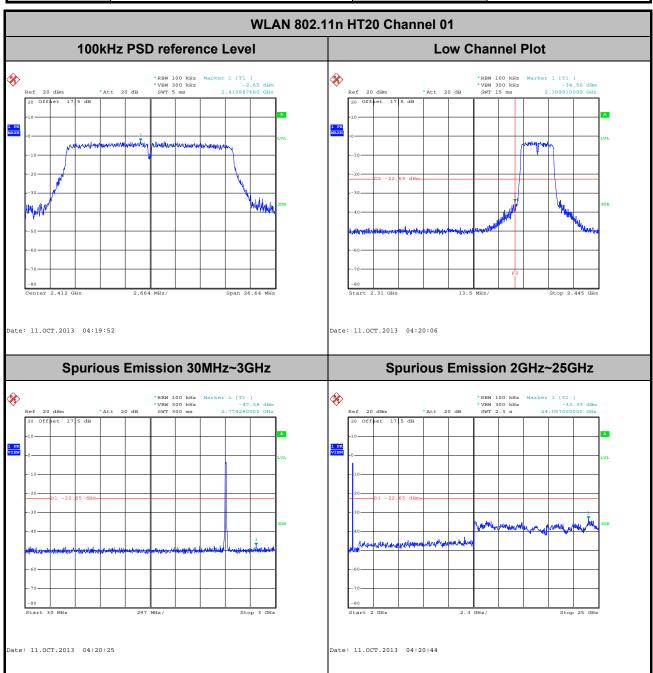
Page Number : 25 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	802.11g	Temperature :	24~26 ℃
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Fly Chen



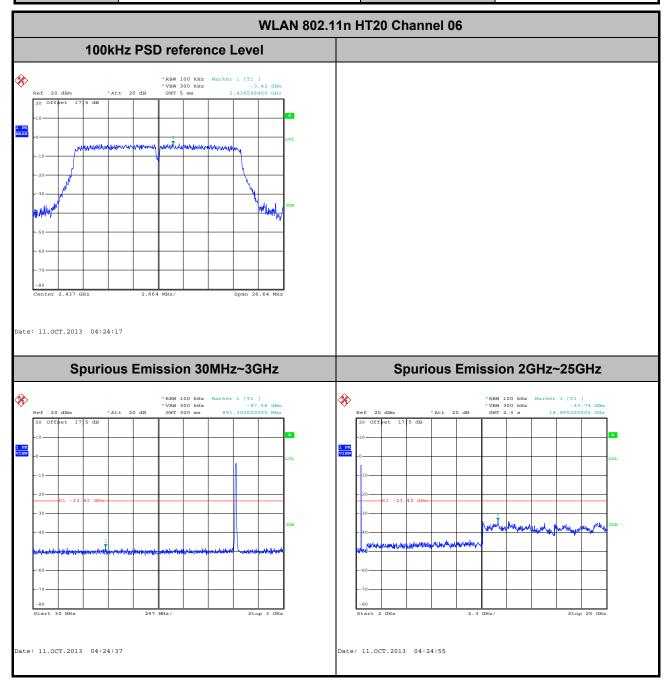
Page Number : 26 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Fly Chen



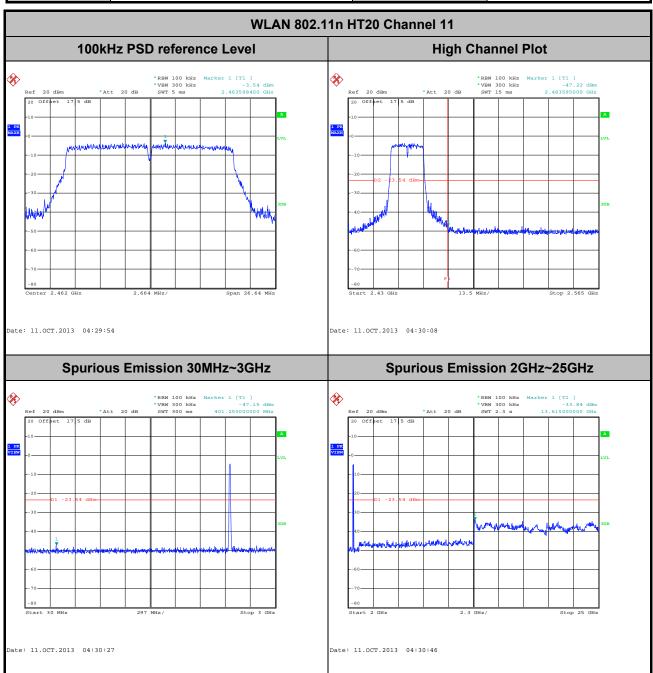
Page Number : 27 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Fly Chen



Page Number : 28 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	802.11n HT20	Temperature :	24~26℃
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Fly Chen



Page Number : 29 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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

3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 30 of 55
Report Issued Date : Nov. 20, 2013

Report No.: FR391602B

3.5.3 Test Procedures

- 1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
- 2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.

Report No.: FR391602B

- 3. The EUT was placed on a turntable with 0.8 meter above ground.
- 4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 5. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- 6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
- 7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \ge 1$ GHz for peak measurement. For average measurement:
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

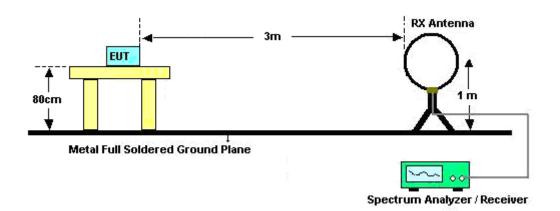
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	100.00	-	-	10Hz
802.11g	100.00	-	-	10Hz
2.4GHz 802.11n HT20	100.00	-	-	10Hz

SPORTON INTERNATIONAL (SHENZHEN) INC.Page Number: 31 of 55TEL: 86-755- 3320-2398Report Issued Date: Nov. 20, 2013FCC ID: V5PD200WReport Version: Rev. 01



3.5.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 32 of 55 Report Issued Date : Nov. 20, 2013

: Rev. 01

Report Version



Ant. feed point Soldered Ground Plane RX Antenna Ant. feed point 1~4 m Metal Full Soldered Ground Plane

For radiated emissions above 1GHz

3.5.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 33 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Report No.: FR391602B

Spectrum Analyzer / Receiver

3.5.6 Test Result of Radiated Spurious at Band Edges

Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	Robin Luo

Report No.: FR391602B

	ANTENNA POLARITY : HORIZONTAL											
Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark		
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos			
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)			
2389.74	54.73	-19.27	74	51.67	27.26	5.59	29.79	100	350	Peak		
2364.27	38.29	-15.71	54	35.33	27.16	5.59	29.79	100	350	Average		

	ANTENNA POLARITY: VERTICAL											
Frequency Level Over Limit Read Antenna Cable Preamp Ant Table Ren										Remark		
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos			
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)			
2389.92	49.85	-24.15	74	46.75	27.26	5.62	29.78	113	300	Peak		
2389.02	34.02	-19.98	54	30.96	27.26	5.59	29.79	113	300	Average		

Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	Robin Luo

	ANTENNA POLARITY : HORIZONTAL											
Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark		
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos			
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)			
2498.59	45.71	-28.29	74	42.17	27.55	5.74	29.75	100	355	Peak		
2498.32	35.69	-18.31	54	32.15	27.55	5.74	29.75	100	355	Average		

	ANTENNA POLARITY : VERTICAL											
Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark		
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)			
2496.79	43.21	-30.79	74	39.67	27.55	5.74	29.75	113	73	Peak		
2498.74	32.61	-21.39	54	29.07	27.55	5.74	29.75	113	73	Average		

 SPORTON INTERNATIONAL (SHENZHEN) INC.
 Page Number
 : 34 of 55

 TEL: 86-755- 3320-2398
 Report Issued Date
 : Nov. 20, 2013

 FCC ID: V5PD200W
 Report Version
 : Rev. 01



FCC RF Test Report

Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	Robin Luo

Report No.: FR391602B

	ANTENNA POLARITY : HORIZONTAL												
Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark			
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos				
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)				
2389.92	55.31	-18.69	74	52.21	27.26	5.62	29.78	100	352	Peak			
2364.27	38.41	-15.59	54	35.45	27.16	5.59	29.79	100	352	Average			

	ANTENNA POLARITY : VERTICAL											
Frequency	quency Level Over Limit Read Antenna Cable Preamp Ant Table Remark											
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos			
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)			
2389.74	50.65	-23.35	74	47.59	27.26	5.59	29.79	112	300	Peak		
2389.02	33.77	-20.23	54	30.71	27.26	5.59	29.79	112	300	Average		

Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	Robin Luo

	ANTENNA POLARITY : HORIZONTAL											
Frequency	equency Level Over Limit Read Antenna Cable Preamp Ant Table Remark											
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos			
(MHz)	(dBµV/m)	(dB)	$(dB\mu V/m)$	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)			
2483.59	53.24	-20.76	74	49.79	27.5	5.71	29.76	100	350	Peak		
2483.5	37.34	-16.66	54	33.89	27.5	5.71	29.76	100	350	Average		

	ANTENNA POLARITY : VERTICAL												
Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark			
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos				
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)				
2483.59	48.72	-25.28	74	45.27	27.5	5.71	29.76	109	300	Peak			
2483.5	33.33	-20.67	54	29.88	27.5	5.71	29.76	109	300	Average			

SPORTON INTERNATIONAL (SHENZHEN) INC.Page Number: 35 of 55TEL: 86-755- 3320-2398Report Issued Date: Nov. 20, 2013FCC ID: V5PD200WReport Version: Rev. 01



FCC RF Test Report

Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	49~51%
Test Channel :	01	Test Engineer :	Robin Luo

Report No.: FR391602B

	ANTENNA POLARITY : HORIZONTAL												
Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark			
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos				
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)				
2389.92	58.57	-15.43	74	55.47	27.26	5.62	29.78	100	360	Peak			

	ANTENNA POLARITY : VERTICAL											
Frequency	quency Level Over Limit Read Antenna Cable Preamp Ant Table Remark											
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos			
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)			
2389.92	55.71	-18.29	74	52.61	27.26	5.62	29.78	112	300	Peak		
2389.02	37.49	-16.51	54	34.43	27.26	5.59	29.79	112	300	Average		

Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	49~51%
Test Channel :	11	Test Engineer :	Robin Luo

	ANTENNA POLARITY : HORIZONTAL												
Frequency	equency Level Over Limit Read Antenna Cable Preamp Ant Table Remark												
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos				
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)				
2483.95	59.49	-14.51	74	56.04	27.5	5.71	29.76	100	352	Peak			
2483.5	41.2	-12.8	54	37.75	27.5	5.71	29.76	100	352	Average			

	ANTENNA POLARITY : VERTICAL											
Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark		
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos			
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)			
2483.95	54	-20	74	50.55	27.5	5.71	29.76	112	300	Peak		
2483.5	35.82	-18.18	54	32.37	27.5	5.71	29.76	112	300	Average		

SPORTON INTERNATIONAL (SHENZHEN) INC.Page Number: 36 of 55TEL: 86-755- 3320-2398Report Issued Date: Nov. 20, 2013FCC ID: V5PD200WReport Version: Rev. 01



3.5.7 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Note: Pre-scanned all test modes and only choose the worst case mode recorded in the test report for radiated spurious emission below 1GHz.

Test Mode :	802.	.11b	Temperature :	24~25°C				
Test Channel :	01		Relative Humidity :	49~51%				
Test Engineer :	Rob	in Luo	Polarization :	Horizontal				
	1.	2412 MHz is fundamer	ntal signal which can b	e ignored.				
Remark :	2.	2. Average measurement was not performed if peak level went lower than the						
		average limit.						

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2412	100.35	-	-	97.2	27.31	5.62	29.78	100	350	Peak
2412	98.95	-	-	95.8	27.31	5.62	29.78	100	350	Average
4824	48.83	-25.17	74	38.39	31.42	8.36	29.34	100	320	Peak

Test Mode :	802.11b	Temperature :	24~25°C					
Test Channel :	01	Relative Humidity :	49~51%					
Test Engineer :	Robin Luo	Polarization :	Vertical					
	1. 2412 MHz is fundamenta	2412 MHz is fundamental signal which can be ignored.						
Remark :	2. Average measurement was not performed if peak level went lower than the							
	average limit.							

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2412	99.66	-	-	96.51	27.31	5.62	29.78	113	300	Peak
2412	98.25	-	-	95.1	27.31	5.62	29.78	113	300	Average
4824	49.29	-24.71	74	38.85	31.42	8.36	29.34	200	360	Peak

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 37 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	802.11b	Temperature :	24~25°C				
Test Channel :	06	Relative Humidity :	49~51%				
Test Engineer :	Robin Luo	Polarization :	Horizontal				
	1. 2437 MHz is fundament	al signal which can be	ignored.				
Remark :	2. Average measurement was not performed if peak level went lower than the						
	average limit.						

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2437	99.61	-	-	96.33	27.4	5.65	29.77	100	351	Peak
2437	96.99	-	-	93.71	27.4	5.65	29.77	100	351	Average
4874	48.72	-25.28	74	38.12	31.53	8.41	29.34	145	265	Peak
7311	42.25	-31.75	74	24.02	36.22	9.99	27.98	174	321	Peak

Test Mode :	802.11b	Temperature :	24~25°C				
Test Channel :	06	Relative Humidity :	49~51%				
Test Engineer :	Robin Luo	Polarization :	Vertical				
	1. 2437 MHz is fundament	al signal which can be	ignored.				
Remark :	2. Average measurement was not performed if peak level went lower than the						
	average limit.						

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	($dB\mu V/m$)	(dB)	$(dB\mu V/m)$	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2437	94.75	-	-	91.47	27.4	5.65	29.77	112	73	Peak
2437	92.61	-	-	89.33	27.4	5.65	29.77	112	73	Average
4874	43.54	-30.46	74	32.94	31.53	8.41	29.34	145	265	Peak
7311	43.45	-30.55	74	25.22	36.22	9.99	27.98	174	321	Peak

Page Number : 38 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	802.11b	.11b Temperature :					
Test Channel :	11	Relative Humidity :	49~51%				
Test Engineer :	Robin Luo	Polarization :	Horizontal				
	1. 2462 MHz is fundament	al signal which can be	ignored.				
Remark :	2. Average measurement was not performed if peak level went lower than the						
	average limit.						

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2462	100.02	-	-	96.65	27.45	5.68	29.76	100	355	Peak
2462	97.64	-	-	94.27	27.45	5.68	29.76	100	355	Average
4924	48.69	-25.31	74	37.94	31.64	8.46	29.35	146	347	Peak
7386	39.46	-34.54	74	20.91	36.43	10.02	27.9	145	274	Peak

Test Mode :	802.11b	Temperature :	24~25°C				
Test Channel :	11	Relative Humidity :	49~51%				
Test Engineer :	Robin Luo	Polarization :	Vertical				
	1. 2462 MHz is fundament	2462 MHz is fundamental signal which can be ignored.					
Remark :	2. Average measurement was not performed if peak level went lower than the						
	average limit.						

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	$(dB\mu V/m)$	(dB)	$(dB\mu V/m)$	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2462	94.58	-	-	91.21	27.45	5.68	29.76	113	73	Peak
2462	92.12	-	-	88.75	27.45	5.68	29.76	113	73	Average
4924	47.49	-26.51	74	36.74	31.64	8.46	29.35	146	347	Peak
7386	40.92	-33.08	74	22.37	36.43	10.02	27.9	145	300	Peak

Page Number : 39 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	802.11g	Temperature :	24~25°C							
Test Channel :	01	Relative Humidity :	49~51%							
Test Engineer :	Robin Luo	Polarization :	Horizontal							
	1. 2412 MHz is fundament	2412 MHz is fundamental signal which can be ignored.								
Remark :	2. Average measurement	verage measurement was not performed if peak level went lower than the								

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2412	101.48	-	-	98.33	27.31	5.62	29.78	100	352	Peak
2412	92.79	-	-	89.64	27.31	5.62	29.78	100	352	Average
4824	45.83	-28.17	74	35.39	31.42	8.36	29.34	105	198	Peak

average limit.

Test Mode :	802	2.11g	Temperature :	24~25°C				
Test Channel :	01		Relative Humidity :	49~51%				
Test Engineer :	Ro	bin Luo	Polarization :	Vertical				
	1.	2412 MHz is fundament	al signal which can be	ignored.				
Remark :	2.	2. Average measurement was not performed if peak level went lower than the						
		average limit.						

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2412	96.04	-	-	92.89	27.31	5.62	29.78	112	300	Peak
2412	87.3	-	-	84.15	27.31	5.62	29.78	112	300	Average
4824	40.86	-33.14	74	30.42	31.42	8.36	29.34	105	198	Peak

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 40 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	802.11g	Temperature :	24~25°C				
Test Channel :	06	Relative Humidity :	49~51%				
Test Engineer :	Robin Luo	Polarization :	Horizontal				
	1. 2437 MHz is fundament	al signal which can be	ignored.				
Remark :	2. Average measurement was not performed if peak level went lower than the						
	average limit.						

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2437	101.05	-	-	97.77	27.4	5.65	29.77	100	351	Peak
2437	92.14	-	-	88.86	27.4	5.65	29.77	100	351	Average
4874	46.27	-27.73	74	35.67	31.53	8.41	29.34	145	265	Peak
7311	39.26	-34.74	74	21.03	36.22	9.99	27.98	174	321	Peak

Test Mode :	802.11g	Temperature :	24~25°C				
Test Channel :	06	Relative Humidity :	49~51%				
Test Engineer :	Robin Luo	Polarization :	Vertical				
	1. 2437 MHz is fundament	al signal which can be	ignored.				
Remark :	2. Average measurement was not performed if peak level went lower than the						
	average limit.						

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	$(dB\mu V/m)$	(dB)	$(dB\mu V/m)$	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2437	95.44	-	-	92.16	27.4	5.65	29.77	114	300	Peak
2437	86.69	-	-	83.41	27.4	5.65	29.77	114	300	Average
4874	36.69	-37.31	74	26.09	31.53	8.41	29.34	145	265	Peak
7311	41.45	-32.55	74	23.22	36.22	9.99	27.98	174	321	Peak

Page Number : 41 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	802.11g	Temperature :	24~25°C					
Test Channel :	11	Relative Humidity :	49~51%					
Test Engineer :	Robin Luo	Polarization :	Horizontal					
	1. 2462 MHz is fundament	al signal which can be	ignored.					
Remark :	2. Average measurement was not performed if peak level went lower than the							
	average limit.							

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2462	101.06	-	-	97.69	27.45	5.68	29.76	100	350	Peak
2462	92.23	-	-	88.86	27.45	5.68	29.76	100	350	Average
4924	43.73	-30.27	74	32.98	31.64	8.46	29.35	146	347	Peak
7386	39.46	-34.54	74	20.91	36.43	10.02	27.9	145	274	Peak

Test Mode :	802.11g	Temperature :	24~25°C				
Test Channel :	11	Relative Humidity :	49~51%				
Test Engineer :	Robin Luo	Polarization :	Vertical				
	1. 2462 MHz is fundament	al signal which can be	ignored.				
Remark :	2. Average measurement was not performed if peak level went lower than the						
	average limit.						

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	$(dB\mu V/m)$	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2462	95.32	-	-	91.95	27.45	5.68	29.76	109	300	Peak
2462	86.59	-	-	83.22	27.45	5.68	29.76	109	300	Average
4924	39.49	-34.51	74	28.74	31.64	8.46	29.35	146	347	Peak
7386	39.92	-34.08	74	21.37	36.43	10.02	27.9	145	274	Peak

Page Number : 42 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C				
Test Channel :	01	Relative Humidity :	49~51%				
Test Engineer :	Robin Luo	Polarization :	Horizontal				
	1. 2412 MHz is fundament	al signal which can be	ignored.				
Remark :	2. Average measurement	2. Average measurement was not performed if peak level went lower than the					
	average limit.						

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2412	100.77	-	-	97.62	27.31	5.62	29.78	100	360	Peak
2412	91.27	-	-	88.12	27.31	5.62	29.78	100	360	Average
4824	43.83	-30.17	74	33.39	31.42	8.36	29.34	105	198	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C				
Test Channel :	01	Relative Humidity :	49~51%				
Test Engineer :	Robin Luo	Polarization :	Vertical				
	1. 2412 MHz is fundament	al signal which can be	ignored.				
Remark :	2. Average measurement	Average measurement was not performed if peak level went lower than the					
	average limit.						

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2412	97.35	-	-	94.2	27.31	5.62	29.78	112	300	Peak
2412	88.14	-	-	84.99	27.31	5.62	29.78	112	300	Average
4824	38.8	-35.2	74	28.36	31.42	8.36	29.34	105	198	Peak

Page Number : 43 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C				
Test Channel :	06	Relative Humidity :	49~51%				
Test Engineer :	Robin Luo	Polarization :	Horizontal				
	1. 2437 MHz is fundament	al signal which can be	ignored.				
Remark :	2. Average measurement was not performed if peak level went lower than						
	average limit.						

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2437	101.72	-	-	98.44	27.4	5.65	29.77	100	360	Peak
2437	91.83	-	-	88.55	27.4	5.65	29.77	100	360	Average
4874	44.72	-29.28	74	34.12	31.53	8.41	29.34	145	265	Peak
7311	40.26	-33.74	74	22.03	36.22	9.99	27.98	174	321	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C				
Test Channel :	06	Relative Humidity :	49~51%				
Test Engineer :	Robin Luo	Polarization :	Vertical				
	1. 2437 MHz is fundament	al signal which can be	ignored.				
Remark :	2. Average measurement	. Average measurement was not performed if peak level went lower than					
	average limit.						

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
		Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	
(MHz)	$(dB\mu V/m)$	(dB)	$(dB\mu V/m)$	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
2437	96.31	-	-	93.03	27.4	5.65	29.77	113	300	Peak
2437	86.6	-	-	83.32	27.4	5.65	29.77	113	300	Average
4874	38.31	-35.69	74	27.71	31.53	8.41	29.34	145	265	Peak
7311	41.45	-32.55	74	23.22	36.22	9.99	27.98	100	360	Peak

Page Number : 44 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



Test Mode: 2.4GHz 802.11n HT20 24~25°C Temperature : Test Channel: 11 49~51% Relative Humidity: Test Engineer : Robin Luo Polarization: Horizontal 1. 2462 MHz is fundamental signal which can be ignored. Remark: 2. Average measurement was not performed if peak level went lower than the average limit.

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV)	(dB)	(dB)	(dB)	(cm)	(deg)	
160.95	35.52	-7.98	43.5	54.53	9.9	1.55	30.46	200	360	Peak
187.14	31.21	-12.29	43.5	50.5	9.45	1.64	30.38	-	-	Peak
384.05	24.99	-21.01	46	36.38	16.08	2.25	29.72	-	-	Peak
485.9	37.58	-8.42	46	47.17	17.3	2.49	29.38	-	-	Peak
635.28	33.07	-12.93	46	40.34	19.06	2.82	29.15	-	-	Peak
824.43	37.81	-8.19	46	42.13	21.34	3.24	28.9	-	-	Peak
2462	102.13	-	-	98.76	27.45	5.68	29.76	100	352	Peak
2462	92.25	-	-	88.88	27.45	5.68	29.76	100	352	Average
4924	43.73	-30.27	74	32.98	31.64	8.46	29.35	146	347	Peak
7386	39.46	-34.54	74	20.91	36.43	10.02	27.9	145	274	Peak

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 45 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C				
Test Channel :	11	Relative Humidity :	49~51%				
Test Engineer :	Robin Luo	Polarization :	Vertical				
	1. 2462 MHz is fundament	al signal which can be	ignored.				
Remark :	2. Average measurement was not performed if peak level went lower th						
	average limit.						

Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
(MHz)	(dBµV/m)	Limit (dB)	Line (dBµV/m)	Level (dBµV)	Factor (dB)	Loss (dB)	Factor (dB)	Pos (cm)	Pos (deg)	
144.46	20.39	-23.11	43.5	38.26	11.2	1.45	30.52	-	-	Peak
325.85	29.56	-16.44	46	42.88	14.5	2.09	29.91	-	-	Peak
458.74	33.68	-12.32	46	43.92	16.8	2.43	29.47	-	-	Peak
511.12	38.49	-7.51	46	47.45	17.8	2.56	29.32	-	-	Peak
608.12	40.29	-5.71	46	47.56	19.14	2.78	29.19	200	360	Peak
712.88	36.99	-9.01	46	43.24	19.82	2.98	29.05	-	-	Peak
2462	96.04	-	-	92.67	27.45	5.68	29.76	112	300	Peak
2462	86.58	-	-	83.21	27.45	5.68	29.76	112	300	Average
4924	40.49	-33.51	74	29.74	31.64	8.46	29.35	146	347	Peak
7386	40.92	-33.08	74	22.37	36.43	10.02	27.9	145	274	Peak

Page Number : 46 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01

3.6 AC Conducted Emission Measurement

3.6.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Report No.: FR391602B

: 47 of 55

Page Number

Frequency of Emission	Conducted	Limit (dΒμV)
(MHz)	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

^{*}Decreases with the logarithm of the frequency.

3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

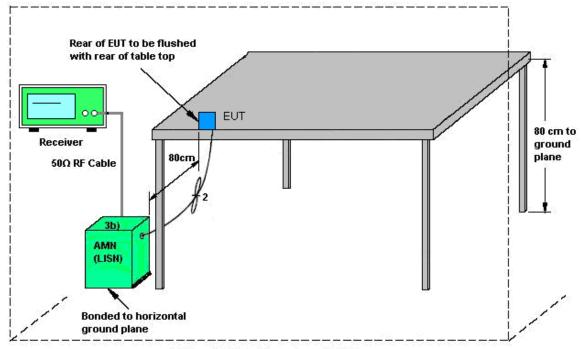
3.6.3 Test Procedures

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

TEL: 86-755- 3320-2398 Report Issued Date: Nov. 20, 2013 FCC ID: V5PD200W Report Version: Rev. 01



3.6.4 Test Setup



AMN = Artificial mains network (LISN)

AE = Associated equipment

EUT = Equipment under test

ISN = Impedance stabilization network

SPORTON INTERNATIONAL (SHENZHEN) INC.

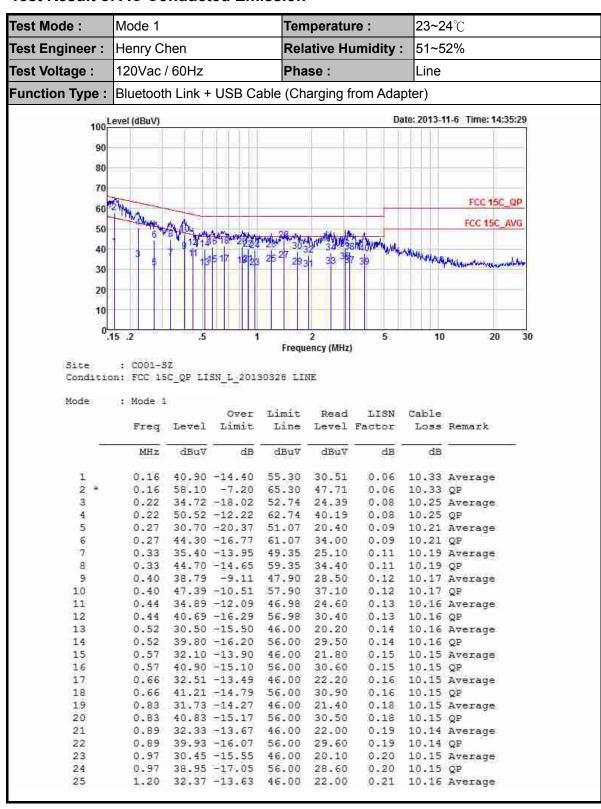
TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 48 of 55 Report Issued Date : Nov. 20, 2013

Report No.: FR391602B

Report Version : Rev. 01



3.6.5 Test Result of AC Conducted Emission



TEL: 86-755- 3320-2398 FCC ID: V5PD200W

Page Number : 49 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



FCC RF Test Report

Test Mode :	Mode 1	Tem	Temperature :			23~24℃		
Test Engineer :	Henry Chen		Rela	Relative Humidity :			51~52%	
Test Voltage :	120Vac / 60Hz	Pha	Phase :			Line		
Function Type :	Bluetooth Link +	able (Ch	(Charging from Adapt			er)		
100	Level (dBuV)		Date			e: 2013-11-6 Time: 14:35:29		
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0 Site			Frequ	ency (MHz)		10	20	30
Site Conditi	: C001-5Z		Frequ	ency (MHz)		10	20	30
Site Conditi	: CO01-SZ on: FCC 15C QP LI	SN_L_201	Frequ	ency (MHz)		10		30
Site Conditi	: CO01-SZ on: FCC 15C QP LI	SN_L_201: Over	Freque	ency (MHz) NE Read		Cable		30
Site Conditi	: CO01-5Z on; FCC 15C QP LI: : Mode 1	SN_L_201: Over	Freque	ency (MHz) NE Read	LISN	Cable		30
Site Conditi	: CO01-5Z on; FCC 15C QP LI: : Mode 1	SN_L_201: Over	Freque	Read Level	LISN Factor	Cable		30
Site Conditi	: CO01-5Z on: FCC 15C QP LI : Mode 1 Freq Level	SN_L_2013 Over Limit dB	Frequence Sosses LIR Limit Line dBuV	Read Level	LISN Factor	Cable Loss	Remark	30
Site Conditi Mode	: CO01-5Z on; FCC 15C QF LI : Mode 1 Freq Level MHz dBuV	Over Limit dB -16.63	Frequence Sosses LIP Limit Line dBuV 56.00	Read Level dBuV 29.00	LISN Factor dB 0.21	Cable Loss dB	Remark	30
Site Conditi Mode	: C001-5Z on; FCC 15C QF LI: : Mode 1 Freq Level MHz dBuV 1.20 39.37	Over Limit dB -16.63	Limit Line dBuV 56.00	Read Level dBuV 29.00 23.80	LISN Factor dB 0.21 0.21	Cable Loss dB 10.16 10.17	Remark QP Average	30
Site Conditi Mode — 26 27	: C001-5Z on: FCC 15C QP LI: : Mode 1 Freq Level MHz dBuV 1.20 39.37 1.40 34.18	Over Limit dB -16.63 -11.82 -11.62	Frequence	Read Level dBuV 29.00 23.80 34.00	LISN Factor dB 0.21 0.21 0.21	Cable Loss dB 10.16 10.17 10.17	Remark QP Average	30
0 5ite Conditi Mode 	: C001-5Z on: FCC 15C QP LI : Mode 1 Freq Level MHz dBuV 1.20 39.37 1.40 34.18 1.40 44.38 1.66 31.00 1.66 38.70	Over Limit dB -16.63 -11.82 -11.62 -15.00 -17.30	Limit Line dBuV 56.00 46.00 56.00 46.00 56.00	Read Level dBuV 29.00 23.80 34.00 20.60 28.30	LISN Factor dB 0.21 0.21 0.21 0.22 0.22	Cable Loss dB 10.16 10.17 10.17 10.18 10.18	Remark QP Average QP Average QP	30
0 Site Conditi Mode — 26 27 28 29 30 31	: C001-5Z on: FCC 15C QP LI : Mode 1 Freq Level MHz dBuV 1.20 39.37 1.40 34.18 1.40 44.38 1.66 31.00 1.66 38.70 1.92 29.81	Over Limit dB -16.63 -11.82 -11.62 -15.00 -17.30 -16.19	Frequents	Read Level dBuV 29.00 23.80 34.00 20.60 28.30 19.40	LISN Factor dB 0.21 0.21 0.21 0.22 0.22 0.22 0.23	Cable Loss dB 10.16 10.17 10.17 10.18 10.18 10.18	Remark QP Average QP Average QP Average	30
0 Site Conditi Mode 	: C001-5Z on: FCC 15C QP LI: : Mode 1 Freq Level MHz dBuV 1.20 39.37 1.40 34.18 1.40 44.38 1.66 31.00 1.66 38.70 1.92 29.81 1.92 37.01	Over Limit dB -16.63 -11.82 -11.62 -15.00 -17.30 -16.19 -18.99	Frequents	Read Level dBuV 29.00 23.80 34.00 20.60 28.30 19.40 26.60	LISN Factor dB 0.21 0.21 0.21 0.22 0.22 0.22 0.23 0.23	Cable Loss dB 10.16 10.17 10.17 10.18 10.18 10.18 10.18	Remark QP Average QP Average QP Average QP Average QP	30
26 27 28 29 30 31 32 33	: CO01-5Z on: FCC 15C QP LI: : Mode 1 Freq Level MHz dBuV 1.20 39.37 1.40 34.18 1.40 44.38 1.66 31.00 1.66 38.70 1.92 29.81 1.92 37.01 2.54 31.25	Over Limit dB -16.63 -11.82 -15.00 -17.30 -16.19 -18.99 -14.75	Dimit Limit Line dBuV 56.00 46.00 56.00 46.00 56.00 46.00	Read Level dBuV 29.00 23.80 34.00 20.60 28.30 19.40 26.60 20.80	LISN Factor dB 0.21 0.21 0.21 0.22 0.22 0.23 0.23 0.25	Cable Loss dB 10.16 10.17 10.18 10.18 10.18 10.18	Remark QP Average QP Average QP Average QP Average	30
26 27 28 29 30 31 32 33	: C001-5Z on: FCC 15C QP LI: : Mode 1 Freq Level MHz dBuV 1.20 39.37 1.40 34.18 1.40 44.38 1.66 31.00 1.66 38.70 1.92 29.81 1.92 37.01 2.54 31.25 2.54 37.95	Over Limit ———————————————————————————————————	Dimit Limit Line dBuV 56.00 46.00 56.00 46.00 56.00 46.00 56.00	Read Level dBuV 29.00 23.80 34.00 20.60 28.30 19.40 26.60 20.80 27.50	LISN Factor dB 0.21 0.21 0.21 0.22 0.22 0.23 0.23 0.25 0.25	Cable Loss dB 10.16 10.17 10.17 10.18 10.18 10.18 10.18 10.20 10.20	Remark QP Average QP Average QP Average QP Average QP Average	30
26 27 28 29 30 31 32 33 34 35	: C001-5Z on: FCC 15C QP LI: : Mode 1 Freq Level MHz dBuV 1.20 39.37 1.40 34.18 1.40 44.38 1.66 31.00 1.66 38.70 1.92 29.81 1.92 37.01 2.54 31.25 2.54 37.95 3.06 33.47	Over Limit dB -16.63 -11.82 -11.62 -15.00 -17.30 -16.19 -18.99 -14.75 -18.05 -12.53	Dimit Line dBuV 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00	Read Level dBuV 29.00 23.80 34.00 20.60 20.60 28.30 19.40 26.60 20.80 27.50 22.99	LISN Factor dB 0.21 0.21 0.21 0.22 0.22 0.23 0.25 0.25 0.27	Cable Loss dB 10.16 10.17 10.18 10.18 10.18 10.18 10.20 10.20 10.20	Remark QP Average QP Average QP Average QP Average QP Average	30
26 27 28 29 30 31 32 33 34 35 36	: CO01-5Z on: FCC 15C QP LI: : Mode 1 Freq Level MHz dBuV 1.20 39.37 1.40 34.18 1.40 44.38 1.66 31.00 1.66 38.70 1.92 29.81 1.92 37.01 2.54 31.25 2.54 37.95 3.06 33.47 3.06 39.77	Over Limit dB -16.63 -11.82 -15.00 -17.30 -16.19 -18.99 -14.75 -18.05 -12.53 -16.23	Dimit Limit Line dBuV 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 56.00 56.00	Read Level dBuV 29.00 23.80 34.00 20.60 28.30 19.40 26.60 27.50 22.99 29.29	LISN Factor dB 0.21 0.21 0.21 0.22 0.22 0.22 0.25 0.25 0.27 0.27	Cable Loss dB 10.16 10.17 10.18 10.18 10.18 10.20 10.20 10.20 10.21 10.21	Remark QP Average QP Average QP Average QP Average QP Average QP	30
26 27 28 29 30 31 32 33 34 35 36	: CO01-5Z on: FCC 15C QP LI: : Mode 1 Freq Level MHz dBuV 1.20 39.37 1.40 34.18 1.40 44.38 1.66 31.00 1.66 38.70 1.92 29.81 1.92 37.01 2.54 31.25 2.54 37.95 3.06 33.47 3.06 39.77 3.24 31.68	Over Limit dB -16.63 -11.82 -11.62 -15.00 -17.30 -16.19 -18.99 -14.75 -18.05 -12.53 -16.23 -14.32	Dimit Limit Line dBuV 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00	Read Level dBuV 29.00 23.80 34.00 20.60 28.30 19.40 26.60 27.50 22.99 29.29 21.20	LISN Factor dB 0.21 0.21 0.21 0.22 0.22 0.22 0.23 0.23 0.25 0.25 0.27 0.27 0.27	Cable Loss dB 10.16 10.17 10.18 10.18 10.18 10.20 10.20 10.21 10.21 10.21	Remark QP Average QP Average QP Average QP Average QP Average QP Average	30
26 27 28 29 30 31 32 33 34 35 36 37	: CO01-5Z on: FCC 15C QP LI : Mode 1 Freq Level MHz dBuV 1.20 39.37 1.40 34.18 1.40 44.38 1.66 31.00 1.66 38.70 1.92 29.81 1.92 37.01 2.54 31.25 2.54 37.95 3.06 33.47 3.06 39.77 3.24 31.68 3.24 38.48	Over Limit dB -16.63 -11.82 -11.62 -15.00 -17.30 -16.19 -18.99 -14.75 -18.05 -12.53 -16.23 -14.32 -17.52	Frequence Freque	Read Level dBuV 29.00 23.80 34.00 20.60 28.30 19.40 26.60 27.50 22.99 29.29 21.20 28.00	LISN Factor dB 0.21 0.21 0.21 0.22 0.22 0.23 0.23 0.25 0.27 0.27 0.27 0.27 0.27	Cable Loss dB 10.16 10.17 10.18 10.18 10.20 10.20 10.21 10.21 10.21 10.21	Remark QP Average QP Average QP Average QP Average QP Average QP Average QP	30
26 27 28 29 30 31 32 33 34 35 36	: CO01-5Z on: FCC 15C QP LI: : Mode 1 Freq Level MHz dBuV 1.20 39.37 1.40 34.18 1.40 44.38 1.66 31.00 1.66 38.70 1.92 29.81 1.92 37.01 2.54 31.25 2.54 37.95 3.06 33.47 3.06 39.77 3.24 31.68	Over Limit dB -16.63 -11.82 -11.62 -15.00 -17.30 -16.19 -18.99 -14.75 -12.53 -16.23 -14.32 -17.52 -14.99	Frequence Freque	Read Level dBuV 29.00 23.80 34.00 20.60 28.30 19.40 26.60 27.50 22.99 29.29 21.20 28.00 20.50	LISN Factor dB 0.21 0.21 0.21 0.22 0.23 0.23 0.25 0.27 0.27 0.27 0.27 0.27 0.29	Cable Loss dB 10.16 10.17 10.18 10.18 10.20 10.20 10.21 10.21 10.21 10.21	Remark QP Average	30

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 50 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



Test Mode: Temperature: **23~24°**C Mode 1 Test Engineer : Henry Chen Relative Humidity : 51~52% 120Vac / 60Hz Test Voltage: Phase: Neutral Function Type: Bluetooth Link + USB Cable (Charging from Adapter) 100 Level (dBuV) Date: 2013-11-6 Time: 15:07:52 90 80 70 FCC 15C_QP 60 ALMOSON STANSON STANSO FCC 15C_AVG 50 40 30 20 10 20 5 Frequency (MHz) Site : C001-SZ Condition: FCC 15C QP LISN_N_20130328 NEUTRAL Mode : Mode 1 Over Limit Read LISN Cable Freq Level Limit Line Level Factor Loss Remark dBuV dBuV dBuV dB MH z dB dB 0.16 42.57 -12.68 55.25 32.20 0.04 10.33 Average 1 56.87 -8.38 0.16 65.25 46.50 0.04 10.33 QP 0.19 36.02 -17.91 53.93 25.70 0.04 10.28 Average 4 0.19 47.82 -16.11 63.93 37.50 0.04 10.28 QP 10.24 Average 0.22 35.38 -17.28 52.66 25.10 0.04 0.22 47.98 -14.68 62.66 37.70 6 0.04 10.24 QP 7 0.24 31.37 -20.80 52.17 21.10 0.04 10.23 Average 44.57 -17.60 R 0.24 62.17 34.30 0.04 10.23 QP 0.26 28.86 -22.70 51.56 18.60 9 10.22 Average 0.04 10 0.26 42.96 -18.60 61.56 32.70 0.04 10.22 QP 29.85 -21.18 51.03 19.60 43.75 -17.28 61.03 33.50 11 0.27 0.04 10.21 Average 12 0.27 0.04 10.21 QP 0.33 44.53 -4.87 49.40 34.30 13 0.04 10.19 Average 0.33 53.43 -5.97 59.40 43.20 0.41 43.71 -3.97 47.68 33.50 0.04 10.19 QP 0.04 10.17 Average 14 15 0.41 47.68 33.50 0.41 51.31 -6.37 57.68 41.10 0.04 10.17 OP 16 17 * 43.50 -3.65 47.15 33.30 0.44 0.04 10.16 Average 0.44 52.40 -4.75 57.15 42.20 0.04 18 10.16 QP 0.50 40.70 -5.31 46.01 30.50 0.04 10.16 Average 19 20 0.50 49.70 -6.31 56.01 39.50 0.04 10.16 QP 0.57 41.19 -4.81 46.00 31.00 0.57 48.69 -7.31 56.00 38.50 21 0.04 10.15 Average 0.04 10.15 QP 22 0.66 39.39 -6.61 46.00 29.20 0.04 10.15 Average 23 0.66 48.79 -7.21 56.00 38.60 0.75 38.48 -7.52 46.00 28.30 0.04 24 10.15 OP 25 0.04 10.14 Average

TEL: 86-755- 3320-2398 FCC ID: V5PD200W

Page Number : 51 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



FCC RF Test Report

Test Mode :	Mode 1			Temperature :		23~2	23~24 ℃		
Test Engineer :	Henry Chen		Rel	Relative Humidity :		51~5	51~52%		
Test Voltage :	120Vac / 60Hz		Pha	Phase :		Neut	Neutral		
Function Type :	Bluetooth Link + USB Cable								
			`		1427.6		11-6 Time: 15:07:52		
100	evel (dBuV)		1			ALC: LO (5:	11-9 111101 15.01.02		
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80									
70									
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	13/12	113		ency (MHz)	. 5	-11	, 20 3		
Site	: CO01-S	Ž							
Site Conditi	: COO1-5		130328 NE	UTRAL					
		z C OP LISN_N_20	130328 NE	UTRAL					
		C OP LISN_N_20		UTRAL					
Conditi	on: FCC 15	C OP LISN_N_20	Limit	Read		Cable			
Conditi	on: FCC 15	C OP LISN_N_20	Limit				Remark		
Conditi	on: FCC 15 : Mode 1 Freq	C OP LISN_N_20 Over Level Limit	Limit Line	Read Level E	Factor	Loss	Remark		
Condition Mode	en: FCC 15 : Mode 1 Freq MHz	OP LISN_N_20	Limit Line	Read Level H	Pactor dB	Loss	Remark		
Condition Mode	en: FCC 15 : Mode 1 Freq MHz 0.75	Over Level Limit dBuV dB 48.68 -7.32	Limit Line dBuV 56.00	Read Level B dBuV 38.50	dB 0.04	Loss dB 10.14	Remark 		
Condition Mode	on: FCC 15 : Mode 1 Freq MHz 0.75 0.82	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11	Limit Line dBuV 56.00 46.00	Read Level B dBuV 38.50 28.70	dB 0.04 0.04	dB 10.14 10.15	Remark QP Average		
Condition Mode 26 27 28	m: FCC 15 : Mode 1 Freq MHz 0.75 0.82 0.82	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51	Limit Line dBuV 56.00 46.00 56.00	Read Level B dBuV 38.50 28.70 38.30	dB 0.04 0.04 0.04	dB 10.14 10.15 10.15	QP Average QP		
Condition Mode	MHz 0.75 0.82 0.96	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61	Limit Line dBuV 56.00 46.00 56.00 46.00	Read Level B dBuV 38.50 28.70 38.30 27.20	dB 0.04 0.04 0.04 0.04	dB 10.14 10.15 10.15	QP Average QP Average		
Condition Mode 26 27 28	MHz 0.75 0.82 0.96 0.96	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31	Limit Line dBuV 56.00 46.00 56.00 46.00 56.00	Read Level B dBuV 38.50 28.70 38.30 27.20 36.50	dB 0.04 0.04 0.04 0.04 0.04	dB 10.14 10.15 10.15 10.15	QP Average QP Average QP		
Condition Mode 26 27 28 29 30	MHz 0.75 0.82 0.96 0.96	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61	Limit Line dBuV 56.00 46.00 56.00 46.00 46.00	Read Level B dBuV 38.50 28.70 38.30 27.20	dB 0.04 0.04 0.04 0.04 0.04	dB 10.14 10.15 10.15 10.15 10.15	QP Average QP Average QP Average		
Condition Mode 26 27 28 29 30 31	MHz 0.75 0.82 0.96 0.96 1.25	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19	Limit Line 56.00 46.00 56.00 46.00 56.00 56.00	Read Level B 48.50 28.70 38.30 27.20 36.50 25.60 34.10	dB 0.04 0.04 0.04 0.04 0.04 0.05	dB 10.14 10.15 10.15 10.15 10.16 10.16	QP Average QP Average QP Average		
Condition Mode 26 27 28 29 30 31 32	MHz 0.75 0.82 0.96 0.96 1.25 1.51	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19 44.31 -11.69	Limit Line dBuV 56.00 46.00 56.00 46.00 56.00 46.00 56.00	Read Level B 48.50 28.70 38.30 27.20 36.50 25.60 34.10	dB 0.04 0.04 0.04 0.04 0.04 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.16 10.16	QP Average QP Average QP Average QP Average		
Condition Mode	MHz 0.75 0.82 0.96 0.96 1.25 1.51	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19 44.31 -11.69 35.62 -10.38	Limit Line dBuV 56.00 46.00 56.00 46.00 56.00 46.00 56.00	Read Level B dBuV 38.50 28.70 38.30 27.20 36.50 25.60 34.10 25.40	0.04 0.04 0.04 0.04 0.04 0.05 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.15 10.16 10.16	QP Average QP Average QP Average QP Average		
Condition Mode 26 27 28 29 30 31 32 33 34	MHz 0.75 0.82 0.96 0.96 1.25 1.51 1.51	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19 44.31 -11.69 35.62 -10.38 44.02 -11.98	Limit Line dBuV 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00	Read Level B dBuV 38.50 28.70 38.30 27.20 36.50 25.60 34.10 25.40 33.80	0.04 0.04 0.04 0.04 0.04 0.05 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.15 10.16 10.16	QP Average		
Condition Mode 26 27 28 29 30 31 32 33 34 35	MHz 0.75 0.82 0.96 0.96 1.25 1.25 1.51 1.60 1.60	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19 44.31 -11.69 35.62 -10.38 44.02 -11.98 35.63 -10.37	Limit Line 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00	Read Level E dBuV 38.50 28.70 38.30 27.20 36.50 25.40 33.80 25.41 33.41	0.04 0.04 0.04 0.04 0.04 0.05 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.15 10.16 10.16 10.17 10.17 10.17	Remark QP Average QP Average QP Average QP Average QP Average QP Average QP		
Condition Mode 26 27 28 29 30 31 32 33 34 35 36	MHz 0.75 0.82 0.96 0.96 1.25 1.25 1.51 1.60 1.60 1.79	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19 44.31 -11.69 35.62 -10.38 44.02 -11.98 35.63 -10.37 43.63 -12.37	Limit Line 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00	Read Level E dBuV 38.50 28.70 38.30 27.20 36.50 25.40 33.80 25.41 33.41 23.80	0.04 0.04 0.04 0.04 0.04 0.05 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.16 10.16 10.17 10.17 10.17 10.17	QP Average		
Condition Mode 26 27 28 29 30 31 32 33 34 35 36 37	MHz 0.75 0.82 0.96 0.96 1.25 1.51 1.51 1.60 1.79 1.79 2.45	C OP LISN_N_200 Cver Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19 44.31 -11.69 44.32 -10.38 44.02 -11.98 45.63 -10.37 43.63 -12.37 34.04 -11.96 42.24 -13.76 34.87 -11.13	Limit Line 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00	Read Level B dBuV 38.50 28.70 38.30 27.20 36.50 25.60 34.10 25.40 33.80 25.41 33.41 23.80 32.00 24.60	0.04 0.04 0.04 0.04 0.05 0.05 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.16 10.16 10.17 10.17 10.17 10.17 10.18 10.18	QP Average		
Condition Mode	MHz 0.75 0.82 0.96 0.96 1.25 1.51 1.51 1.60 1.79 1.79 2.45 2.45	C OF LISN_N_200 Cver Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19 44.31 -11.69 44.32 -11.98 44.02 -11.98 45.63 -10.37 43.63 -12.37 34.04 -11.96 42.24 -13.76 34.87 -11.13 43.07 -12.93	Limit Line 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00	Read Level B 48 10 28 10 28 10 28 10 28 10 27 10 25 10 25 10 25 11 23 11	dB 0.04 0.04 0.04 0.04 0.05 0.05 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.16 10.16 10.17 10.17 10.17 10.18 10.18 10.20 10.20	QP Average		
Condition Mode	MHz 0.75 0.82 0.96 0.96 1.25 1.25 1.51 1.60 1.60 1.79 1.79 2.45 2.45 3.07	C OF LISN_N_20 C OF LISN_N_20 C OF LISN_N_20 ABUV	Limit Line 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00	Read Level B 48	dB 0.04 0.04 0.04 0.04 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.16 10.16 10.17 10.17 10.17 10.18 10.18 10.20 10.20 10.21	QP Average		
Condition Mode	MHz 0.75 0.82 0.96 0.96 1.25 1.25 1.51 1.60 1.60 1.79 1.79 2.45 2.45 3.07	C OF LISN_N_200 Cover Level Limit dBuV dE 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19 44.31 -11.69 35.62 -10.38 44.02 -11.98 35.63 -10.37 43.63 -12.37 34.04 -11.96 34.87 -11.13 43.07 -12.93 36.29 -9.71 44.49 -11.51	Limit Line 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00	Read Level B 48 10 28 10	dB 0.04 0.04 0.04 0.04 0.05 0.05 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.16 10.16 10.17 10.17 10.17 10.18 10.18 10.20 10.20 10.21	QP Average		
Condition Mode 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43	MHz 0.75 0.82 0.96 0.96 1.25 1.25 1.51 1.60 1.60 1.79 2.45 2.45 3.07 3.07 3.26	C OF LISN_N_200 Cover Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19 44.31 -11.69 35.62 -10.38 44.02 -11.98 35.63 -10.37 43.63 -12.37 34.04 -11.96 42.24 -13.76 42.24 -13.76 43.87 -11.13 43.07 -12.93 36.29 -9.71 44.49 -11.51 33.80 -12.20	Limit Line dBuV 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00	Read Level B dBuV 38.50 28.70 38.30 27.20 36.50 25.60 34.10 25.40 33.80 25.41 33.41 23.80 32.00 24.60 32.80 26.00 34.20 23.50	0.04 0.04 0.04 0.04 0.05 0.05 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.16 10.16 10.17 10.17 10.17 10.18 10.18 10.20 10.20 10.21	QP Average		
Condition Mode 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44	MHz 0.75 0.82 0.96 0.96 1.25 1.25 1.51 1.51 1.60 1.79 2.45 2.45 3.07 3.07 3.26 3.26	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19 44.31 -11.69 35.62 -10.38 44.02 -11.98 35.63 -10.37 43.63 -12.37 34.04 -11.96 34.04 -11.96 35.63 -10.37 43.63 -12.37 34.04 -11.93 35.63 -10.37 36.29 -9.71 44.49 -11.51 33.80 -12.20 42.00 -14.00	Limit Line dBuV 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00	Read Level B dBuV 38.50 28.70 38.30 27.20 36.50 25.60 34.10 25.40 33.80 25.41 33.41 23.80 32.00 24.60 32.80 26.00 34.20 23.50 31.70	0.04 0.04 0.04 0.04 0.05 0.05 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.15 10.16 10.17 10.17 10.17 10.17 10.18 10.18 10.20 10.20 10.21 10.21	Remark QP Average QP		
Condition Mode 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	MHz 0.75 0.82 0.96 0.96 1.25 1.25 1.51 1.51 1.60 1.60 1.79 2.45 2.45 3.07 3.26 3.92	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19 44.31 -11.69 35.62 -10.38 44.02 -11.98 35.63 -10.37 43.63 -12.37 34.04 -11.96 42.24 -13.76 34.87 -11.13 43.07 -12.93 36.29 -9.71 44.49 -11.51 33.80 -12.20 42.00 -14.00 34.62 -11.38	Limit Line dBuV 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00	Read Level B 48.50 28.70 38.50 27.20 36.50 25.60 34.10 25.41 33.41 23.80 32.00 24.60 32.80 26.00 34.20 23.50 31.70 24.30	dB 0.04 0.04 0.04 0.04 0.05 0.05 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.15 10.16 10.16 10.17 10.17 10.17 10.18 10.18 10.20 10.20 10.21 10.21 10.21	Remark QP Average		
Condition Mode 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44	MHz 0.75 0.82 0.96 0.96 1.25 1.25 1.51 1.60 1.60 1.79 2.45 2.45 3.07 3.07 3.26 3.92 3.92	Over Level Limit dBuV dB 48.68 -7.32 38.89 -7.11 48.49 -7.51 37.39 -8.61 46.69 -9.31 35.81 -10.19 44.31 -11.69 35.62 -10.38 44.02 -11.98 35.63 -10.37 43.63 -12.37 34.04 -11.96 34.04 -11.96 35.63 -10.37 43.63 -12.37 34.04 -11.93 35.63 -10.37 36.29 -9.71 44.49 -11.51 33.80 -12.20 42.00 -14.00	Limit Line dBuV 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00	Read Level B dBuV 38.50 28.70 38.30 27.20 36.50 25.60 34.10 25.40 33.80 25.41 33.41 23.80 32.00 24.60 32.80 26.00 34.20 23.50 31.70 24.30 32.40	0.04 0.04 0.04 0.04 0.05 0.05 0.05 0.05	dB 10.14 10.15 10.15 10.15 10.16 10.16 10.17 10.17 10.17 10.18 10.20 10.21 10.21 10.21 10.21 10.21	Remark QP Average		

4.62 39.04 -16.96 56.00 28.70 0.11 10.23 QP

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 52 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



3.7 Antenna Requirements

3.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 53 of 55
Report Issued Date : Nov. 20, 2013

Report No.: FR391602B

Report Version : Rev. 01



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Mar. 28, 2013	Oct. 11, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	N/A	Mar. 28, 2013	Oct. 11, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Power Sensor	Anritsu	MA2411B	1207253	N/A	Mar. 28, 2013	Oct. 11, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Spectrum Analyzer	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	Apr. 04, 2013	Oct. 11, 2013	Apr. 03, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 12, 2012	Oct. 11, 2013	Oct. 11, 2013	Radiation (03CH01-SZ)
Bilog Antenna	SCHAFFNER	CBL6112B	2614	30MHz~2GHz	Nov. 03, 2012	Oct. 11, 2013	Nov. 02, 2013	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3000MHz GAIN 30db	Mar. 28, 2013	Oct. 11, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	Mar. 28, 2013	Oct. 11, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
SHF-EHF-Horn	Schwarzbeck	BBHA9170	BBHA9170249	14GHz~40GHz	Nov. 23, 2012	Oct. 11, 2013	Nov. 22, 2013	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 22, 2012	Oct. 11, 2013	Oct. 21, 2013	Radiation (03CH01-SZ)
Turn Table	EM Electronics	EM 1000	N/A	0~360 degree	N/A	Oct. 11, 2013	N/A	Radiation (03CH01-SZ)
Antenna Mast	EM electronics	EM 1000	N/A	1 m~4 m	N/A	Oct. 11, 2013	N/A	Radiation (03CH01-SZ)
ESCIO TEST Receiver	R&S	1142.8007.0 3	100724	9kHz~3GHz	Mar. 08, 2013	Nov. 06, 2013	Mar. 07, 2014	Conduction (CO01-SZ)
AC LISN	ETS-LINDGREN	3816/2SH	00103912	0.1MHz~108MHz	Feb. 28, 2013	Nov. 06, 2013	Feb. 27, 2014	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	ETS-LINDGREN	3816/2SH	00103892	0.1MHz~108MHz	Feb. 28, 2013	Nov. 06, 2013	Feb. 27, 2014	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891 N/A	N/A	Nov. 20, 2012	Nov. 06, 2013	Nov. 19, 2013	Conduction (CO01-SZ)

TEL: 86-755- 3320-2398 FCC ID: V5PD200W Page Number : 54 of 55
Report Issued Date : Nov. 20, 2013
Report Version : Rev. 01



FCC RF Test Report

5 Uncertainty of Evaluation

<u>Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)</u>

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.26

Report No.: FR391602B

<u>Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)</u>

Measuring Uncertainty for a Level of	3.90
Confidence of 95% (U = 2Uc(y))	3.90

 SPORTON INTERNATIONAL (SHENZHEN) INC.
 Page Number
 : 55 of 55

 TEL: 86-755- 3320-2398
 Report Issued Date
 : Nov. 20, 2013

 FCC ID: V5PD200W
 Report Version
 : Rev. 01