Partial FCC RF Test Report

APPLICANT	:	DT Research Inc.
EQUIPMENT	:	WLAN Module
BRAND NAME	:	DT Research Inc.
MODEL NAME	:	600B
FCC ID	:	YE3600B
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DTS) Digital Transmission System

This is a partial report which is included the RF Power and AC Conducted Emission test item. The product was received on Dec. 15, 2012 and completely tested on Dec. 18, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

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

Reviewed by:

Jones Tsai

Jones Tsai / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.
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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR2D0508-01C	Rev. 01	Initial issue of report	Jan. 17, 2013

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(b)	RSS-210 A8.4	Power Output Measurement	≤ 30dBm	Pass	-
3.2	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 9.30 dB at 0.198 MHz
3.3	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

DT Research Inc.
6F., NO. 1, NingPo E. St., Taipei, 100 Taiwan, R.O.C.

1.2 Manufacturer

DT Research Inc.
6F., NO. 1, NingPo E. St., Taipei, 100 Taiwan, R.O.C.

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	WLAN Module
Brand Name	DT Research Inc.
Model Name	600B
FCC ID	YE3600B
Installed into Mobile POS Tablet	Brand Name: DT Research Inc. Model Name: DT395 FCC ID: YE3800A
EUT supports Radios application	CDMA WLAN 11abgn / Bluetooth 2.1/3.0/4.0
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

<table>
<tr><th colspan="2">Product Specification subjective to this standard</th></tr>
<tr><td>Tx/Rx Channel Frequency Range</td><td>802.11b/g/n : 2412 MHz ~ 2462 MHz
802.11a/n: 5745~5825MHz.</td></tr>
<tr><td>Maximum Output Power to Antenna</td><td><2412 MHz ~ 2462 MHz >
802.11b : 19.31 dBm (0.0853 W) <for Ant 1>
802.11b : 17.95 dBm (0.0624 W) <for Ant 2>
802.11g : 21.73 dBm (0.1489 W) <for Ant 1>
802.11g : 20.87 dBm (0.1222 W) <for Ant 2>
802.11n HT20 : 21.98 dBm (0.1578 W) <for Ant 1>
802.11n HT20 : 21.13 dBm (0.1297 W) <for Ant 2>
802.11n HT20 : 22.35 dBm (0.1718 W) <for Ant 1+2>
802.11n HT40 : 19.78 dBm (0.0951 W) <for Ant 1>
802.11n HT40 : 18.78 dBm (0.0755 W) <for Ant 2>
802.11n HT40 : 22.44 dBm (0.1754 W) <for Ant 1+2>
<5745 MHz ~ 5825 MHz >
802.11a : 20.64 dBm (0.1159 W) <for Ant 1>
802.11a : 21.69 dBm (0.1476 W) <for Ant 2>
802.11n HT20 : 20.57 dBm (0.1140 W) <for Ant 1>
802.11n HT20 : 21.73 dBm (0.1489 W) <for Ant 2>
802.11n HT20 : 23.45 dBm (0.2213 W) <for Ant 1+2>
802.11n HT40 : 22.25 dBm (0.1679 W) <for Ant 1>
802.11n HT40 : 23.07 dBm (0.2028 W) <for Ant 2>
802.11n HT40 : 23.51 dBm (0.2244 W) <for Ant 1+2></td></tr>
<tr><td>Antenna Type</td><td>< Antenna 1>
802.11b/g/n : PIFA_L Antenna type with gain 2.27 dBi
802.11a/n : PIFA_R Antenna type with gain 2.15 dBi
<Antenna 2>
802.11b/g/n : PIFA_L Antenna type with gain 1.97 dBi
802.11a/n : PIFA_R Antenna type with gain -0.34 dBi</td></tr>
<tr><td>Type of Modulation</td><td>802.11b : DSSS (DBPSK / DQPSK / CCK)
802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)</td></tr>
<tr><td>Antenna Function for Transmitter</td><td>
<table>
<tr><th></th><th>Ant 1.</th><th>Ant 2.</th></tr>
<tr><td>802.11 b</td><td>V</td><td>V</td></tr>
<tr><td>802.11 g</td><td>V</td><td>V</td></tr>
<tr><td>802.11 a</td><td>V</td><td>V</td></tr>
<tr><td>802.11 n SISO</td><td>V</td><td>V</td></tr>
<tr><td>802.11 n MIMO</td><td>V</td><td>V</td></tr>
</table>
Note: MIMO mode is uncorrelated.
Ant 1 and Ant 2 can’t transmit simultaneously under 802.11 a/b/g SISO mode.
</td></tr>
</table>

1.5 Testing Site

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978	
Test Site No.	Sporton Site No.	
	TH02-HY	CO05-HY

1.6 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 v02
- FCC KDB 662911 D01 Multiple Transmitter Output v01r02.
- ANSI C63.4-2003 and ANSI C63.10-2009

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

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).

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 and Channel

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

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band 4	149	5745	159	5795
	151	5755	161	5805
	157	5785		

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and antenna configurations as following table and the highest power data rates were chosen for full test in the following tables. Final Output Power equals to Measured Output Power adds the duty factor.

<Ant 1>

802.11b				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	19.31	19.27	19.26	19.22

802.11g								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.73	21.43	21.42	21.35	21.69	21.52	21.46	21.39

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.98	21.32	21.45	21.29	21.37	21.36	21.74	21.37

2.4GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	19.78	19.27	19.47	19.58	19.54	19.76	19.73	18.70

802.11a								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	20.64	20.26	20.45	20.11	20.42	20.39	20.28	20.21

5GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	20.57	20.34	20.26	20.30	20.25	20.24	20.54	20.26

5GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	22.25	22.23	22.22	22.18	22.16	22.15	22.11	22.09

<Ant 2>

802.11b				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	17.95	17.81	17.72	17.62

802.11g								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	20.87	20.71	20.68	20.42	20.86	20.46	20.72	20.61

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.13	20.55	20.79	20.53	20.51	20.45	20.95	20.55

2.4GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	18.78	18.44	18.61	18.64	18.44	18.53	18.69	18.27

802.11a								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.69	21.31	21.46	21.13	21.58	21.54	21.56	21.66

5GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.73	21.54	21.50	21.53	21.51	21.44	21.63	21.61

5GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	23.07	23.04	23.03	23.01	22.96	22.95	22.93	22.88

MIMO <Ant 1+2>

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	22.35	22.18	22.29	22.31	22.19	22.28	22.29	22.21

2.4GHz 802.11n HT40								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	22.44	22.26	21.98	22.17	22.36	22.16	22.23	22.04

5GHz 802.11n HT20								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	23.45	22.92	23.21	23.24	23.17	23.00	23.13	22.85

5GHz 802.11n HT40								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	23.51	23.46	23.36	23.35	23.28	23.18	23.14	23.09

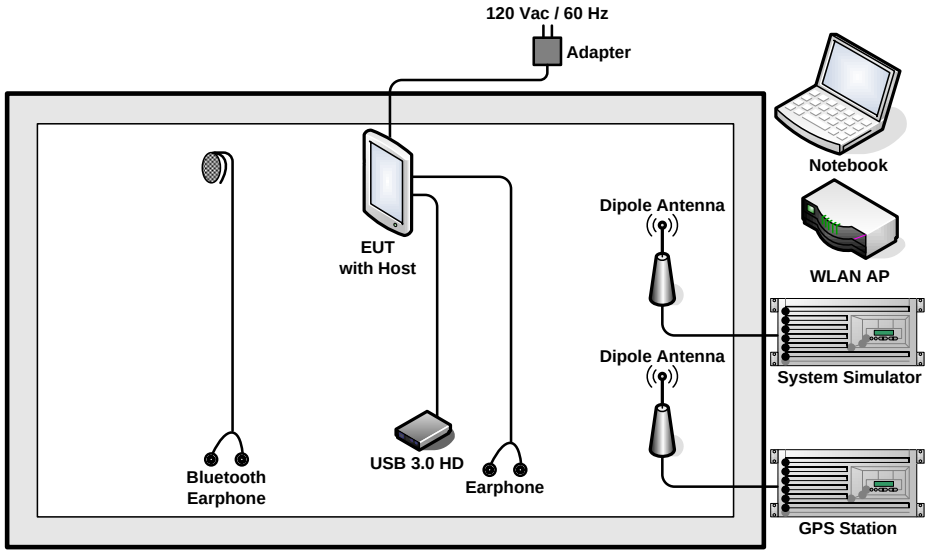
Note: MIMO Ant 1+2 is a calculated result from sum of the power MIMO Ant 1 and MIMO Ant 2.

2.3 Test Mode

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

Test Cases	
AC Conducted Emission	Mode 1 :CDMA2000 BC0 Idle + WLAN (2.4G) Link + Bluetooth Link + GPS Rx + Camera + MPEG4 + H Pattern + TC Mode 2 CDMA2000 BC1 Idle + WLAN (5G) Link + Bluetooth Link + GPS Rx + Camera + MPEG4 + H Pattern + TC
Remark: 1. The worst case of conducted emission is mode 1; only the test data of it was reported. 2. TC stands for Test Configuration, and consists of USB Link with USB3.0 HD, Adapter, SD Card, Earphone, and ID Card.	

2.4 Connection Diagram of Test System



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
5.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
6.	USB3.0 HD	WD	WDBPCK5000A BK-PESN	FCC DoC	Shielded, 0.5 m	N/A
7.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

3 Test Result

3.1 Peak Output Power Measurement

3.1.1 Limit of Peak Output Power

For systems using digital modulation in the 2400-2483.5MHz and 5725-5850MHz, the limit for peak output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is 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.

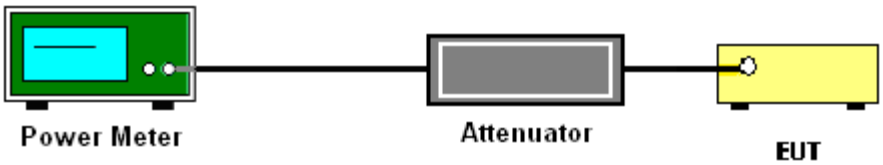
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
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. Measure the conducted output power and record the results in the test report.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v01r02.

3.1.4 Test Setup



3.1.5 Test Result of Peak Output Power

Test Mode :	802.11b	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)		Max. Limits (dBm)	Pass/Fail
		Ant 1	Ant 2		
01	2412	19.29	17.95	30	Pass
06	2437	19.31	16.38	30	Pass
11	2462	19.25	17.69	30	Pass

Test Mode :	802.11g	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)		Max. Limits (dBm)	Pass/Fail
		Ant 1	Ant 2		
01	2412	20.23	19.36	30	Pass
06	2437	21.73	20.87	30	Pass
11	2462	20.27	19.15	30	Pass

Test Mode :	802.11n HT20	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %

Channel	Frequency (MHz)	802.11n HT20 Peak Output Power (dBm)					Max. Limits (dBm)	Pass/Fail
		SISO Ant 1	SISO Ant 2	MIMO Ant 1	MIMO Ant 2	MIMO Ant 1+2		
01	2412	20.24	19.11	18.87	18.19	21.72	30	Pass
06	2437	21.98	21.13	19.41	19.27	22.35	30	Pass
11	2462	20.11	18.88	18.19	17.81	21.01	30	Pass

Note : MIMO Ant 1+2 is a calculated result from sum of the power MIMO Ant 1 and MIMO Ant 2.

Test Mode :	802.11n HT40	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %

Channel	Frequency (MHz)	802.11n HT40 Peak Output Power (dBm)					Max. Limits (dBm)	Pass/Fail
		SISO Ant 1	SISO Ant 2	MIMO Ant 1	MIMO Ant 2	MIMO Ant 1+2		
03	2422	17.04	15.70	14.91	15.10	18.02	30	Pass
06	2437	19.78	18.78	19.75	19.09	22.44	30	Pass
09	2452	16.52	16.39	14.46	14.58	17.53	30	Pass

Note : MIMO Ant 1+2 is a calculated result from sum of the power MIMO Ant 1 and MIMO Ant 2.

Test Mode :	802.11a	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %

Channel	Frequency (MHz)	802.11a Measured Output Power (dBm)		Max. Limits (dBm)	Pass/Fail
		Ant 1	Ant 2		
149	5745	20.64	21.69	30	Pass
157	5785	20.53	21.62	30	Pass
165	5825	20.11	21.40	30	Pass

Test Mode :	802.11n HT20	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %

Channel	Frequency (MHz)	802.11n HT20 Peak Output Power (dBm)					Max. Limits (dBm)	Pass/Fail
		SISO Ant 1	SISO Ant 2	MIMO Ant 1	MIMO Ant 2	MIMO Ant 1+2		
149	5745	20.57	21.73	20.18	20.69	23.45	30	Pass
157	5785	20.40	21.72	19.65	19.84	22.76	30	Pass
165	5825	20.35	21.45	20.20	20.32	23.27	30	Pass

Note : MIMO Ant 1+2 is a calculated result from sum of the power MIMO Ant 1 and MIMO Ant 2.

Test Mode :	802.11n HT40	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %

Channel	Frequency (MHz)	802.11n HT40 Peak Output Power (dBm)					Max. Limits (dBm)	Pass/Fail
		SISO Ant 1	SISO Ant 2	MIMO Ant 1	MIMO Ant 2	MIMO Ant 1+2		
151	5755	22.25	23.07	20.24	20.75	23.51	30	Pass
159	5795	21.78	22.93	20.09	20.48	23.30	30	Pass

Note : MIMO Ant 1+2 is a calculated result from sum of the power MIMO Ant 1 and MIMO Ant 2.

3.1.6 Test Result of Average output Power (Reporting Only)

Test Mode :	802.11b	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %
Duty Cycle:	98.74% for Ant 1 99.14% for Ant 2	Duty Factor:	0.06dB for Ant 1 0.04dB for Ant 2

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)	
		Ant 1	Ant 2
01	2412	16.64	15.57
06	2437	16.69	14.00
11	2462	16.62	15.27

Test Mode :	802.11g	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %
Duty Cycle:	99.05% for Ant 1 99.05% for Ant 2	Duty Factor:	0.04dB for Ant 1 0.04dB for Ant 2

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)	
		Ant 1	Ant 2
01	2412	12.64	11.94
06	2437	15.57	14.96
11	2462	12.78	11.78

Test Mode :	802.11n HT20	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %
Duty Cycle:	98.48% for SISO Ant. 1 98.47% for SISO Ant. 2 97.65% for MIMO Ant. 1 97.63% for MIMO Ant. 2	Duty Factor:	0.07dB for SISO Ant. 1 0.07dB for SISO Ant. 2 0.10dB for MIMO Ant. 1 0.10dB for MIMO Ant. 2

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)				
		SISO Ant 1	SISO Ant 2	MIMO Ant 1	MIMO Ant 2	MIMO Ant 1+2
01	2412	11.97	10.48	11.33	11.36	14.36
06	2437	15.47	15.02	12.76	12.85	15.82
11	2462	11.60	10.48	10.34	10.38	13.37

Test Mode :	802.11n HT40	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %
Duty Cycle:	97.55% for SISO Ant. 1 96.95% for SISO Ant. 2 94.32% for MIMO Ant. 1 93.18% for MIMO Ant. 2	Duty Factor:	0.11dB for SISO Ant. 1 0.13dB for SISO Ant. 2 0.25dB for MIMO Ant. 1 0.31dB for MIMO Ant. 2

Channel	Frequency (MHz)	802.11n HT40 Average Output Power (dBm)				
		SISO Ant 1	SISO Ant 2	MIMO Ant 1	MIMO Ant 2	MIMO Ant 1+2
03	2422	9.20	7.76	6.79	6.99	9.90
06	2437	12.15	11.38	12.22	12.29	15.27
09	2452	8.42	8.57	6.41	6.39	9.41

Note :

1. MIMO Ant 1+2 is a calculated result from sum of the power MIMO Ant 1 and MIMO Ant 2.
2. The average power is measured by power meter with average power sensor and is reporting only.

Test Mode :	802.11a	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %
Duty Cycle:	98.11% for Ant 1 98.58% for Ant 2	Duty Factor:	0.08dB for Ant 1 0.06dB for Ant 2

Channel	Frequency (MHz)	802.11a Average Output Power (dBm)	
		Ant 1	Ant 2
149	5745	14.26	15.79
157	5785	14.09	15.66
165	5825	13.99	15.54

Test Mode :	802.11n HT20	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %
Duty Cycle:	98.47% for SISO Ant. 1 98.48% for SISO Ant. 2 97.06% for MIMO Ant. 1 97.65% for MIMO Ant. 2	Duty Factor:	0.07dB for SISO Ant. 1 0.07dB for SISO Ant. 2 0.13dB for MIMO Ant. 1 0.10dB for MIMO Ant. 2

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)				
		SISO Ant 1	SISO Ant 2	MIMO Ant 1	MIMO Ant 2	MIMO Ant 1+2
149	5745	14.43	15.79	13.53	13.48	16.52
157	5785	14.21	15.61	13.49	13.38	16.45
165	5825	13.96	15.51	13.21	13.26	16.25

Test Mode :	802.11n HT40	Temperature :	24~26 ℃
Test Engineer :	Reece Li	Relative Humidity :	58~61 %
Duty Cycle:	95.88% for SISO Ant. 1 96.94% for SISO Ant. 2 94.70% for MIMO Ant. 1 95.42% for MIMO Ant. 2	Duty Factor:	0.18dB for SISO Ant. 1 0.13dB for SISO Ant. 2 0.24dB for MIMO Ant. 1 0.20dB for MIMO Ant. 2

Channel	Frequency (MHz)	802.11n HT40 Average Output Power (dBm)				
		SISO Ant 1	SISO Ant 2	MIMO Ant 1	MIMO Ant 2	MIMO Ant 1+2
151	5755	19.73	20.10	13.35	13.21	16.29
159	5795	19.55	20.04	13.46	13.33	16.41

Note :

1. MIMO Ant 1+2 is a calculated result from sum of the power MIMO Ant 1 and MIMO Ant 2.
2. The average power is measured by power meter with average power sensor and is reporting only.

3.2 AC Conducted Emission Measurement

3.2.1 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.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	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.

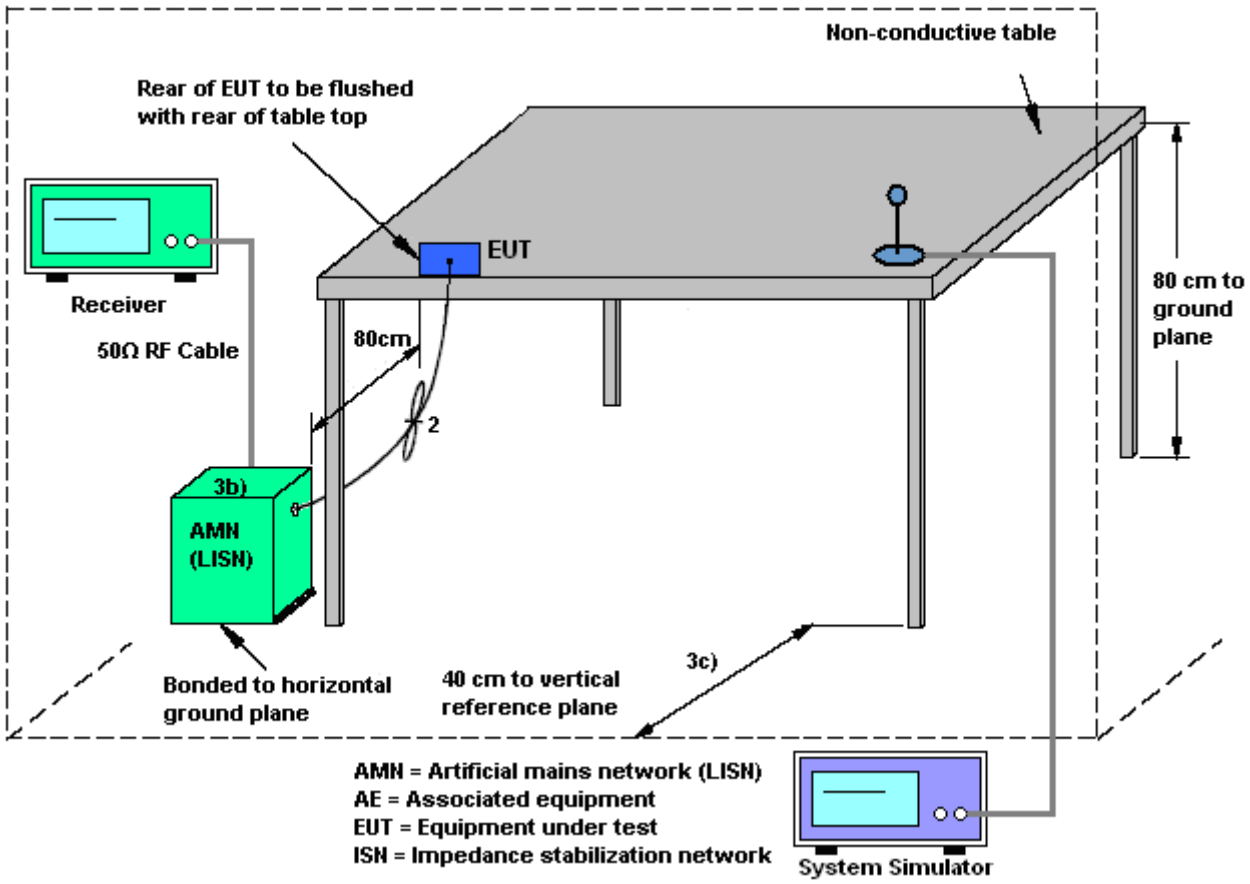
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

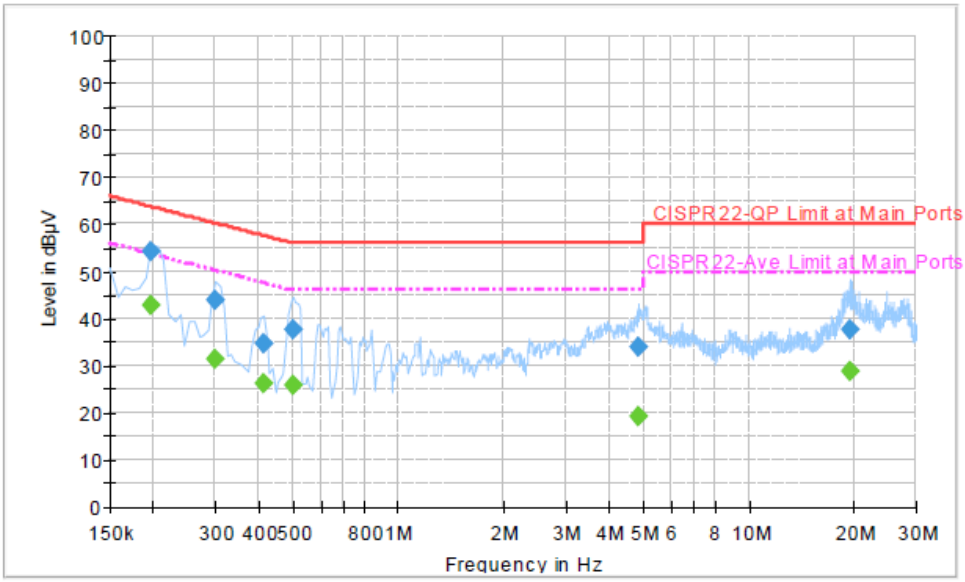
1. The testing follows the guidelines in ANSI C63.10-2009 and ANSI C63.4-2003 test site requirement.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 KHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.2.4 Test Setup



3.2.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	**Temperature :**	20~22℃
Test Engineer :	Slash Huang	**Relative Humidity :**	45~47%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	CDMA2000 BC0 Idle + WLAN (2.4G) Link + Bluetooth Link + GPS Rx + Camera + MPEG4 + H Pattern + TC		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



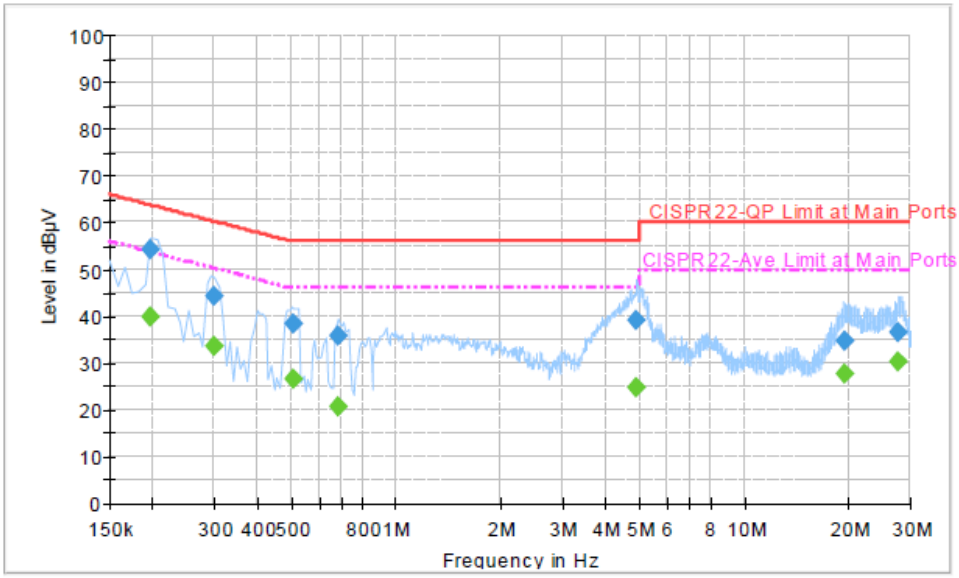
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	54.4	Off	L1	19.4	9.3	63.7
0.302000	43.9	Off	L1	19.3	16.3	60.2
0.414000	34.6	Off	L1	19.4	23.0	57.6
0.502000	37.8	Off	L1	19.4	18.2	56.0
4.830000	34.0	Off	L1	19.6	22.0	56.0
19.350000	37.8	Off	L1	19.7	22.2	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	42.8	Off	L1	19.4	10.9	53.7
0.302000	31.2	Off	L1	19.3	19.0	50.2
0.414000	26.3	Off	L1	19.4	21.3	47.6
0.502000	25.8	Off	L1	19.4	20.2	46.0
4.830000	19.2	Off	L1	19.6	26.8	46.0
19.350000	28.8	Off	L1	19.7	21.2	50.0

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	CDMA2000 BC0 Idle + WLAN (2.4G) Link + Bluetooth Link + GPS Rx + Camera + MPEG4 + H Pattern + TC		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	54.3	Off	N	19.4	9.4	63.7
0.302000	44.3	Off	N	19.4	15.9	60.2
0.510000	38.5	Off	N	19.4	17.5	56.0
0.686000	35.8	Off	N	19.5	20.2	56.0
4.926000	39.1	Off	N	19.6	16.9	56.0
19.566000	34.8	Off	N	19.8	25.2	60.0
27.790000	36.4	Off	N	20.0	23.6	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	39.7	Off	N	19.4	14.0	53.7
0.302000	33.6	Off	N	19.4	16.6	50.2
0.510000	26.7	Off	N	19.4	19.3	46.0
0.686000	20.7	Off	N	19.5	25.3	46.0
4.926000	24.7	Off	N	19.6	21.3	46.0
19.566000	27.7	Off	N	19.8	22.3	50.0
27.790000	30.2	Off	N	20.0	19.8	50.0

3.3 Antenna Requirements

3.3.1 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.

3.3.2 Antenna Connected Construction

Non-standard connector is used.

3.3.3 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. The EUT supports MIMO mode. The composite antenna gain is as following table.

	2.4GHz	5GHz
Composite gain (dBi)	2.12	1.08
PSD Array gain (dBi)	0.00	0.00
Power limit reduction (dBi)	0.00	0.00
PSD limit reduction	0.00	0.00

Power limit reduction = Composite gain – 6dBi, (min = 0)

PSD limit reduction = Composite gain + PSD Array gain – 6dBi, (min = 0)

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For CDD transmissions, directional gain is calculated as

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = 10 log(N_{ANT}/N_{SS}=1) dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Dec. 17, 2012 ~ Dec. 18, 2012	Jun. 05, 2013	Conducted (TH02-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9KHz – 2.75GHz	Nov. 13, 2012	Dec. 11, 2012	Nov. 12, 2013	Conduction (CO05-HY)
Two-LISN	Rohde & Schwarz	ENV216	100080	9KHz ~ 30MHz	Dec. 06, 2012	Dec. 11, 2012	Dec. 05, 2013	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Dec. 11, 2012	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	117995	N/A	Jul. 28, 2011	Dec. 11, 2012	Jul. 27, 2013	Conduction (CO05-HY)
GPS Station	T&E	GS-50	N/A	N/A	N/A	Dec. 11, 2012	N/A	Conduction (CO05-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150KHz ~ 30MHz)

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

Appendix A. Photographs of EUT

Please refer to Sporton report number EP2D0508-01 as below.