

Partial FCC RF Test Report

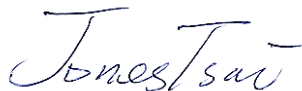
APPLICANT : Getac Technology Corporation.
EQUIPMENT : WLAN module
BRAND NAME : Intel
MODEL NAME : 7260NGW
FCC ID : QYL7260NGW
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

This is a partial report which is included the conducted output power and AC conducted emission test items. The product was received on Sep. 12, 2013 and testing was completed on Nov. 07, 2013. We, SPORTON INTERNATIONAL 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 INC., the test report shall not be reproduced except in full.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

SPORTON INTERNATIONAL INC.

TEL : 886-3-327-3456

FAX : 886-3-328-4978

FCC ID : QYL7260NGW

Page Number : 1 of 27

Report Issued Date : Nov. 28, 2013

Report Version : Rev. 01



TABLE OF CONTENTS

REVISION HISTORY 3

SUMMARY OF TEST RESULT 4

1 GENERAL DESCRIPTION 5

 1.1 Applicant 5

 1.2 Manufacturer 5

 1.3 Feature of Equipment Under Test 5

 1.4 Product Specification of Equipment Under Test 6

 1.5 Modification of EUT 7

 1.6 Testing Site 8

 1.7 Applied Standards 8

2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST 9

 2.1 Carrier Frequency and Channel 9

 2.2 Pre-Scanned RF Power 10

 2.3 Test Mode 16

 2.4 Connection Diagram of Test System 16

 2.5 Support Unit used in test configuration and system 17

3 TEST RESULT 18

 3.1 AC Conducted Emission Measurement 18

 3.2 Antenna Requirements 24

4 LIST OF MEASURING EQUIPMENT 26

5 UNCERTAINTY OF EVALUATION 27

APPENDIX A. SETUP PHOTOGRAPHS



SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 8.00 dB at 4.526 MHz
3.2	15.203 & 15.407(a)	RSS-210 A9.2	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Getac Technology Corporation.

5F., Building A, No. 209, Sec.1, Nangang Rd.,Nangang Dist., Taipei City 11568, Taiwan, R.O.C.

1.2 Manufacturer

Getac Technology(Kunshan)Co., LTD.

No. 269, No. 2 Avenue, Kunshan Comprehensive Free Trade Zone, Jiangsu Province, P.R.C.

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	WLAN module
Brand Name	Intel
Model Name	7260NGW
FCC ID	QYL7260NGW
installed into Notebook	Brand Name: Getac Model Name: B300 Marketing Name: B300
EUT supports Radios application	WLAN 11a/b/g/n (HT20/HT40) WLAN 11ac (VHT20/ VHT40/VHT80) Bluetooth 3.0 + EDR / Bluetooth 4.0 - LE
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	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5580 MHz 5660 MHz ~ 5700 MHz
Maximum Output Power	<p><Ant. 1> <5180 MHz ~ 5240 MHz> 802.11a : 15.45 dBm / 0.0351 W 802.11n HT20 : 15.56 dBm / 0.0360 W 802.11n HT40 : 15.45 dBm / 0.0351 W 802.11ac VHT20: 15.34 dBm / 0.0342 W 802.11ac VHT40: 15.42 dBm / 0.0348 W 802.11ac VHT80: 7.90 dBm / 0.0062 W <5260 MHz ~ 5320 MHz> 802.11a : 15.41 dBm / 0.0348 W 802.11n HT20 : 15.83 dBm / 0.0383 W 802.11n HT40 : 10.97 dBm / 0.0125 W 802.11ac VHT20: 15.53 dBm / 0.0357 W 802.11ac VHT40: 10.85 dBm / 0.0122 W 802.11ac VHT80: 10.42 dBm / 0.0110 W <5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz > 802.11a : 16.18 dBm / 0.0415 W 802.11n HT20 : 16.27 dBm / 0.0424 W 802.11n HT40 : 16.29 dBm / 0.0426 W 802.11ac VHT20: 16.03 dBm / 0.0401 W 802.11ac VHT40: 16.30 dBm / 0.0427 W 802.11ac VHT80: 8.59 dBm / 0.0072 W</p> <p><Ant. 2> <5180 MHz ~ 5240 MHz> 802.11a : 15.41 dBm / 0.0348 W 802.11n HT20 : 15.44 dBm / 0.0350 W 802.11n HT40 : 15.11 dBm / 0.0324 W 802.11ac VHT20: 15.50 dBm / 0.0355 W 802.11ac VHT40: 14.69 dBm / 0.0294 W 802.11ac VHT80: 8.04 dBm / 0.0064 W <5260 MHz ~ 5320 MHz> 802.11a : 15.58 dBm / 0.0361 W 802.11n HT20 : 15.78 dBm / 0.0378 W 802.11n HT40 : 10.96 dBm / 0.0125 W 802.11ac VHT20: 15.73 dBm / 0.0374 W 802.11ac VHT40: 10.79 dBm / 0.0120 W 802.11ac VHT80: 10.49 dBm / 0.0112 W <5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz > 802.11a : 16.36 dBm / 0.0433 W 802.11n HT20 : 16.05 dBm / 0.0403 W 802.11n HT40 : 16.42 dBm / 0.0439 W 802.11ac VHT20: 16.26 dBm / 0.0423 W 802.11ac VHT40: 16.42 dBm / 0.0439 W 802.11ac VHT80: 8.63 dBm / 0.0073 W</p>



Product Specification subjective to this standard													
Maximum Output Power	<p>MIMO <Ant. 1 +2> <5180 MHz ~ 5240 MHz> 802.11n HT20 : 13.27 dBm / 0.0212 W 802.11n HT40 : 12.30 dBm / 0.0170 W 802.11ac VHT20: 13.25 dBm / 0.0211 W 802.11ac VHT40: 12.13 dBm / 0.0163 W 802.11ac VHT80: 6.49 dBm / 0.0045 W <5260 MHz ~ 5320 MHz> 802.11n HT20 : 13.44 dBm / 0.0221 W 802.11n HT40 : 9.23 dBm / 0.0084 W 802.11ac VHT20: 13.40 dBm / 0.0219 W 802.11ac VHT40: 9.03 dBm / 0.0080 W 802.11ac VHT80: 8.85 dBm / 0.0077 W <5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz > 802.11n HT20 : 16.48 dBm / 0.0445 W 802.11n HT40 : 16.40 dBm / 0.0437 W 802.11ac VHT20: 16.45 dBm / 0.0442 W 802.11ac VHT40: 16.40 dBm / 0.0437 W 802.11ac VHT80: 9.19 dBm / 0.0083 W</p>												
Antenna Type	<p><5180 MHz ~ 5240 MHz> Main Antenna : PIFA Antenna with gain -1.01 dBi Aux. Antenna : PIFA Antenna with gain 3.303 dBi <5260 MHz ~ 5320 MHz> Main Antenna : PIFA Antenna with gain -1.01 dBi Aux. Antenna : PIFA Antenna with gain 3.303 dBi <5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz > Main Antenna : PIFA Antenna with gain -0.30 dBi Aux. Antenna : PIFA Antenna with gain 2.22 dBi</p>												
Type of Modulation	802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)												
Antenna Function Description	<table border="1"> <thead> <tr> <th></th> <th>Ant. 1</th> <th>Ant. 2</th> </tr> </thead> <tbody> <tr> <td>802.11 a</td> <td>V</td> <td>V</td> </tr> <tr> <td>802.11 n/ac SISO</td> <td>V</td> <td>V</td> </tr> <tr> <td>802.11 n/ac MIMO</td> <td>V</td> <td>V</td> </tr> </tbody> </table>		Ant. 1	Ant. 2	802.11 a	V	V	802.11 n/ac SISO	V	V	802.11 n/ac MIMO	V	V
	Ant. 1	Ant. 2											
802.11 a	V	V											
802.11 n/ac SISO	V	V											
802.11 n/ac MIMO	V	V											

1.5 Modification of EUT

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

1.6 Testing Site

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st 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

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 E
- ♦ FCC KDB 789033 D01 General UNII Test Procedures v01r03
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

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.

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).

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5150-5250 MHz Band 1 (U-NII-1)	36	5180	44	5220
	38	5190	46	5230
	40	5200	48	5240

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5250-5350 MHz Band 2 (U-NII-2A)	52	5260	60	5300
	54	5270	62	5310
	56	5280	64	5320

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5470-5600 MHz and 5650-5725 MHz Band 3 (U-NII-2C)	100	5500	116	5580
	102	5510	132	5660
	104	5520	134	5670
	108	5540	136	5680
	110	5550	140	5700
	112	5560		

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate.

<Ant. 1>

5GHz 802.11a mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	15.45	15.44	15.43	15.42	15.33	15.42	15.44	15.08
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	15.41	15.36	15.26	15.19	15.14	15.29	15.35	15.28
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.18	16.04	16.02	16.00	16.10	16.11	16.09	16.07

5GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	15.56	15.53	15.54	15.50	15.55	15.54	15.54	15.52
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	15.83	15.39	15.68	15.66	15.81	15.73	15.77	15.72
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.27	16.21	16.19	16.20	16.17	16.21	16.21	16.21

5GHz 802.11n HT40 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	15.45	14.93	15.09	15.44	15.39	15.42	15.40	15.41
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	10.97	10.83	10.84	10.85	10.86	10.86	10.86	10.86
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.29	16.14	16.20	16.25	16.23	16.28	16.16	16.04



5GHz 802.11ac VHT20 mode									
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	15.34	15.29	15.30	15.33	15.26	15.21	15.28	15.29	15.31
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	15.53	15.44	15.42	15.40	15.36	15.40	15.35	15.35	15.46
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.03	16.03	16.03	16.01	15.94	16.01	15.92	15.92	15.95

5GHz 802.11ac VHT40 mode										
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	15.42	15.39	15.41	15.35	15.37	15.39	15.37	15.41	15.36	15.40
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	10.85	10.84	10.82	10.84	10.83	10.84	10.79	10.73	10.81	10.84
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.30	16.27	16.24	16.27	16.27	16.24	16.27	16.25	16.25	16.29

5GHz 802.11ac VHT80 mode										
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	7.90	7.88	7.89	7.89	7.77	7.81	7.70	7.81	7.78	7.89
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	10.42	10.37	10.39	10.40	10.30	10.39	10.33	10.26	10.20	10.34
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	8.59	8.57	8.59	8.56	8.49	8.49	8.44	8.55	8.48	8.54



<Ant. 2>

5GHz 802.11a mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	15.41	15.38	15.31	15.36	15.33	15.36	15.36	15.34
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	15.58	15.36	15.33	15.32	15.36	15.34	15.41	15.28
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.36	16.31	16.30	16.31	16.30	16.30	16.21	16.29

5GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	15.44	15.39	15.39	15.39	15.43	15.41	15.34	15.40
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	15.78	15.63	15.59	15.52	15.56	15.51	15.54	15.63
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.05	15.96	15.96	16.04	16.01	15.99	16.03	16.03

5GHz 802.11n HT40 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	15.11	15.09	15.10	15.08	15.10	15.08	15.05	15.08
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	10.96	10.91	10.95	10.95	10.91	10.94	10.94	10.62
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.42	16.27	16.25	16.25	16.25	16.18	16.28	16.34



5GHz 802.11ac VHT20 mode									
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	15.50	15.39	15.31	15.38	15.33	15.47	15.39	15.48	15.43
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	15.73	15.65	15.65	15.60	15.59	15.65	15.64	15.61	15.54
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.26	16.21	16.23	16.22	16.17	16.25	16.25	16.25	16.18

5GHz 802.11ac VHT40 mode										
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	14.69	14.57	14.65	14.65	14.60	14.64	14.68	14.65	14.68	14.65
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	10.79	10.75	10.75	10.78	10.49	10.76	10.78	10.78	10.68	10.61
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.42	16.15	16.19	16.15	16.10	16.11	16.10	16.14	16.08	16.16

5GHz 802.11ac VHT80 mode										
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	8.04	7.98	7.86	7.96	8.01	8.02	8.01	8.02	7.94	8.03
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	10.49	10.37	10.40	10.46	10.43	10.45	10.26	10.45	10.45	10.48
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	8.63	8.60	8.55	8.60	8.59	8.63	8.58	8.55	8.56	8.58



MIMO <Ant. 1+2>

5GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS 8	MCS 9	MCS 10	MCS 11	MCS 12	MCS 13	MCS 14	MCS 15
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	13.27	13.25	13.15	12.96	13.20	12.60	12.74	12.70
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	13.44	13.43	13.12	13.41	13.41	13.26	12.99	13.12
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.48	16.46	16.45	16.42	16.47	16.30	16.46	16.47

5GHz 802.11n HT40 mode								
Data Rate (MHz)	MCS 8	MCS 9	MCS 10	MCS 11	MCS 12	MCS 13	MCS 14	MCS 15
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	12.30	12.17	12.20	12.20	12.27	11.84	11.79	12.05
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	9.23	9.01	9.20	8.88	9.06	9.08	9.21	9.15
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.40	16.35	16.03	16.16	16.21	16.34	16.34	16.31



5GHz 802.11ac VHT20 mode									
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	13.25	13.24	13.14	13.04	12.99	12.90	13.02	13.08	13.22
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	13.40	13.35	13.05	13.34	13.32	13.37	13.10	13.14	12.84
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.45	16.38	16.39	16.38	15.55	16.31	15.81	15.86	15.97

5GHz 802.11ac VHT40 mode										
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	12.13	11.94	11.96	12.11	12.10	11.85	12.04	12.12	12.10	12.10
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	9.03	8.97	9.00	8.98	9.00	9.02	9.02	9.02	8.94	8.93
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	16.40	16.39	16.14	15.71	15.90	15.98	15.99	16.15	16.28	16.23

5GHz 802.11ac VHT80 mode										
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Avg. Power (dBm) <5180 MHz ~ 5240MHz>	6.49	6.48	6.47	6.41	6.42	6.45	6.42	6.43	6.46	6.43
Avg. Power(dBm) <5260 MHz ~ 5320MHz>	8.85	8.71	8.80	8.65	8.82	8.82	8.84	8.83	8.75	8.73
Avg. Power(dBm) <5500 MHz ~ 5580MHz>& <5660 MHz ~ 5700MHz>	9.19	9.05	9.14	9.18	9.17	9.06	8.98	8.96	9.18	9.11

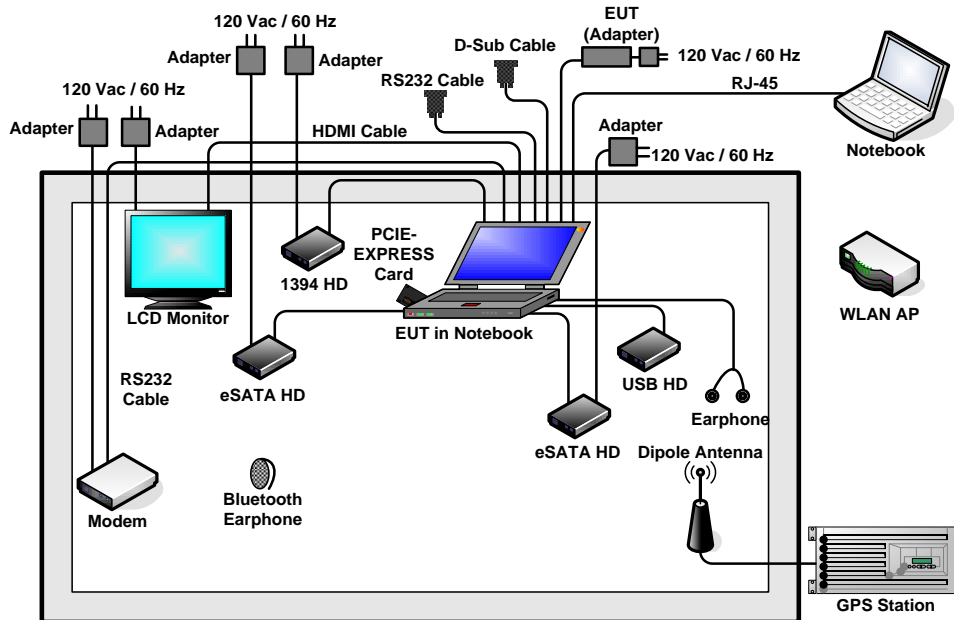
Note: MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.

2.3 Test Mode

Test Cases	
AC Conducted Emission	Mode 1 : WLAN (5GHz) Link + Bluetooth Link + H Pattern + MPEG4 + Camera + GPS Rx + TC
<p>Remark: TC stands for Test Configuration, and consists of SD Card, USB HD, Earphone, Adapter, HDMI Cable, RJ-45 Link, D-sub Cable(Load), RS232 Cable(Load), eSATA HD, 1394 HD, Modem, DVD-ROM, and PCIE-EXPRESS Card.</p>	

2.4 Connection Diagram of Test System

<AC Conducted Emission Mode>





2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	GPS Station	Pendulum	GSG-54	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
4.	LCD Monitor	DELL	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
5.	Notebook	DELL	Latitude E6320	FCC DoC	Unshielded, 3.0m	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
6.	Earphone	Ergotech	ET-E200	N/A	Unshielded, 1.8 m	N/A
7.	USB HD	WD	WDBAAR3200ABK -PESN	FCC DoC	Unshielded, 0.5 m	N/A
8.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
9.	eSATA HD	FReeCOM	Qiattro 1TB AK	FCC DoC	Shielded, 0.8 m	Unshielded, 1.8 m
10.	eSATA HD	WD	WD6400H1Q-00	FCC DoC	Shielded, 0.8 m	Unshielded, 1.8 m
11.	PCIE-EXPRESS Card	BELKIN	FD7010	PD5LMWB800RA	N/A	N/A
12.	1394 HD	WD	WD-6400H1CS-00	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
13.	Modem	ACEEX	DM1414	IFAXDM1414	Shielded, 1.5 m	Unshielded, 1.8 m

3 Test Result

3.1 AC Conducted Emission Measurement

3.1.1 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 (dB μ V)	
	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.

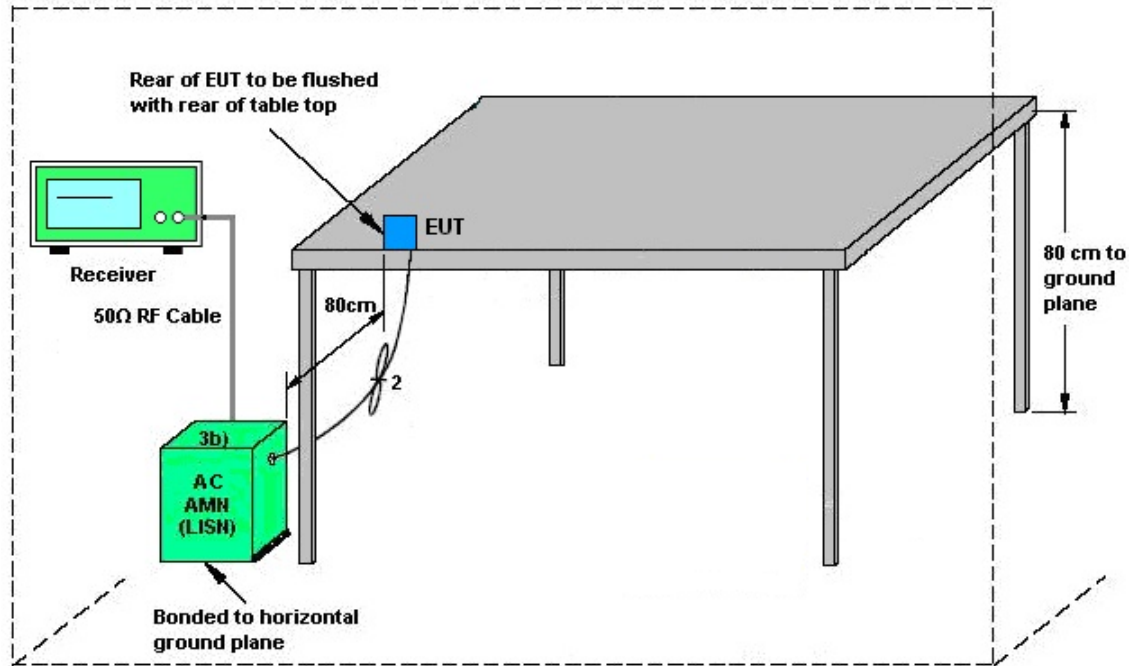
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room 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.

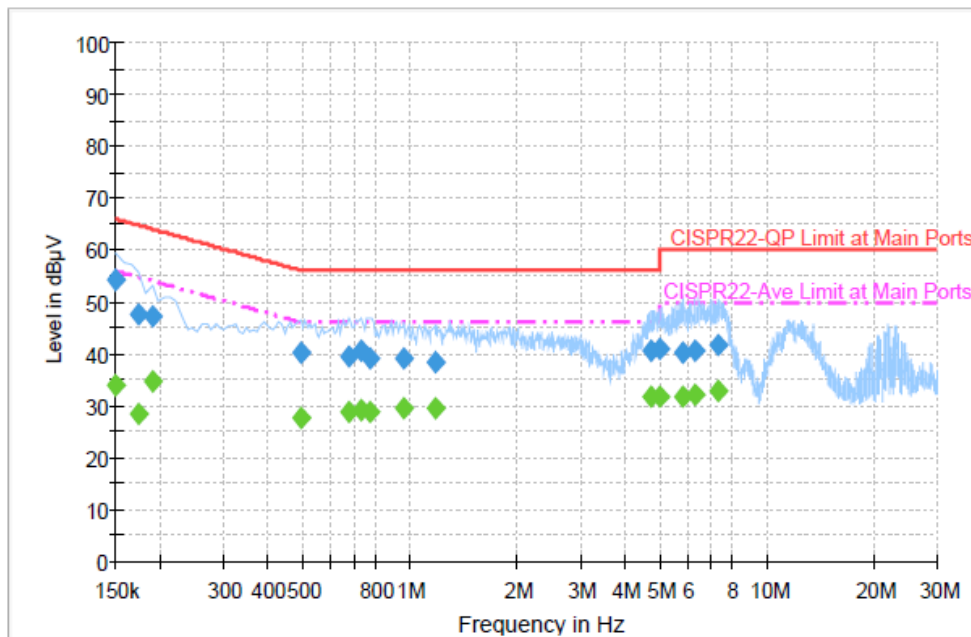
3.1.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.1.5 Test Result of AC Conducted Emission

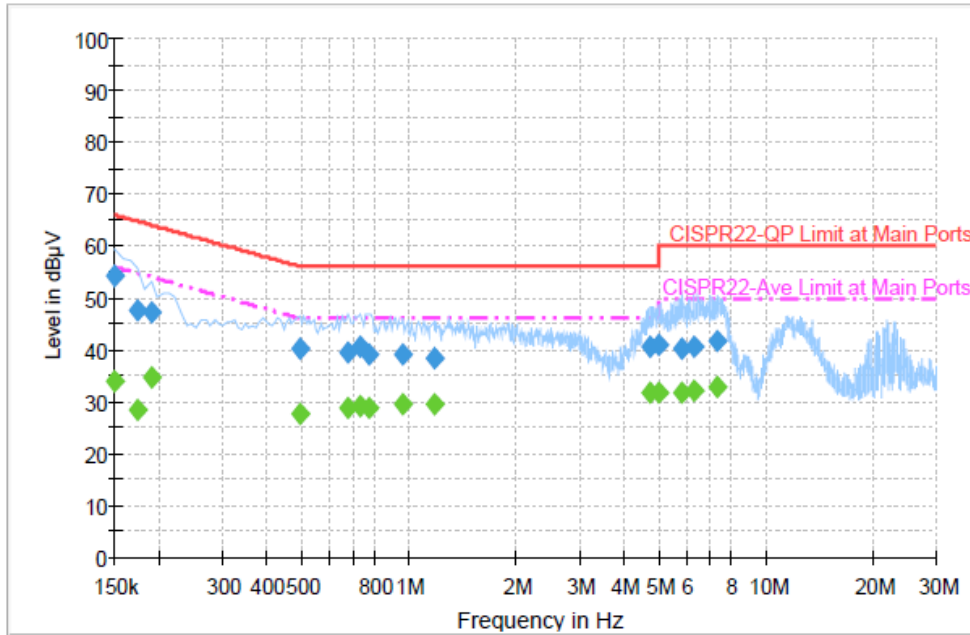
Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN (5GHz) Link + Bluetooth Link + H Pattern + MPEG4 + Camera + GPS Rx + TC		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	54.1	Off	L1	19.4	11.9	66.0
0.174000	47.7	Off	L1	19.4	17.1	64.8
0.190000	47.2	Off	L1	19.4	16.8	64.0
0.494000	40.2	Off	L1	19.3	15.9	56.1
0.678000	39.7	Off	L1	19.5	16.3	56.0
0.734000	40.6	Off	L1	19.4	15.4	56.0
0.774000	39.1	Off	L1	19.5	16.9	56.0
0.966000	39.1	Off	L1	19.4	16.9	56.0
1.174000	38.4	Off	L1	19.5	17.6	56.0
4.726000	40.6	Off	L1	19.6	15.4	56.0
4.990000	41.0	Off	L1	19.7	15.0	56.0
5.846000	40.3	Off	L1	19.7	19.7	60.0
6.318000	40.8	Off	L1	19.6	19.2	60.0
7.278000	41.7	Off	L1	19.6	18.3	60.0

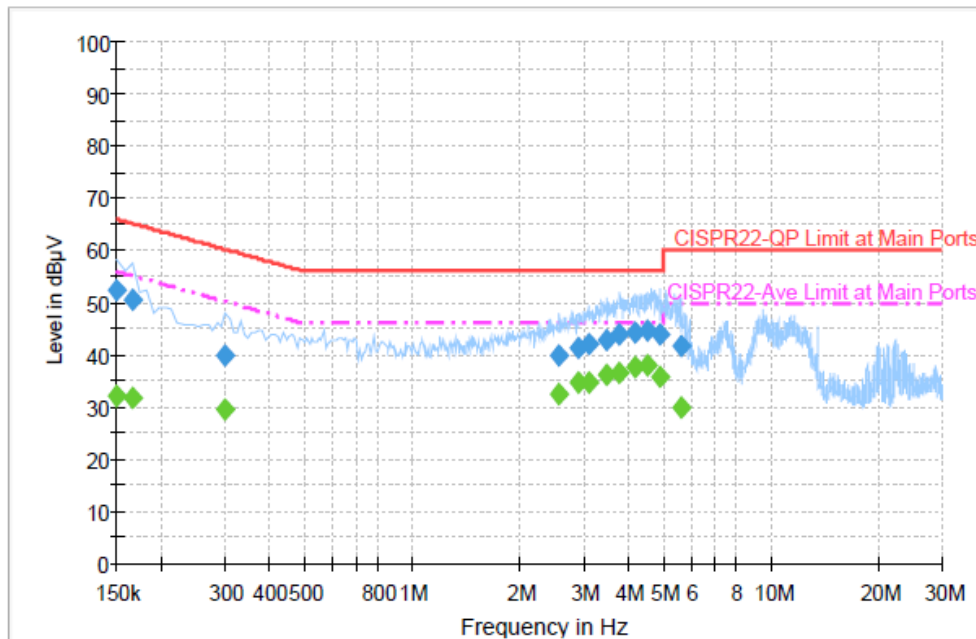
Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN (5GHz) Link + Bluetooth Link + H Pattern + MPEG4 + Camera + GPS Rx + TC		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	34.0	Off	L1	19.4	22.0	56.0
0.174000	28.5	Off	L1	19.4	26.3	54.8
0.190000	34.6	Off	L1	19.4	19.4	54.0
0.494000	27.8	Off	L1	19.3	18.3	46.1
0.678000	28.8	Off	L1	19.5	17.2	46.0
0.734000	29.2	Off	L1	19.4	16.8	46.0
0.774000	28.9	Off	L1	19.5	17.1	46.0
0.966000	29.5	Off	L1	19.4	16.5	46.0
1.174000	29.6	Off	L1	19.5	16.4	46.0
4.726000	31.7	Off	L1	19.6	14.3	46.0
4.990000	31.6	Off	L1	19.7	14.4	46.0
5.846000	31.9	Off	L1	19.7	18.1	50.0
6.318000	32.2	Off	L1	19.6	17.8	50.0
7.278000	32.8	Off	L1	19.6	17.2	50.0

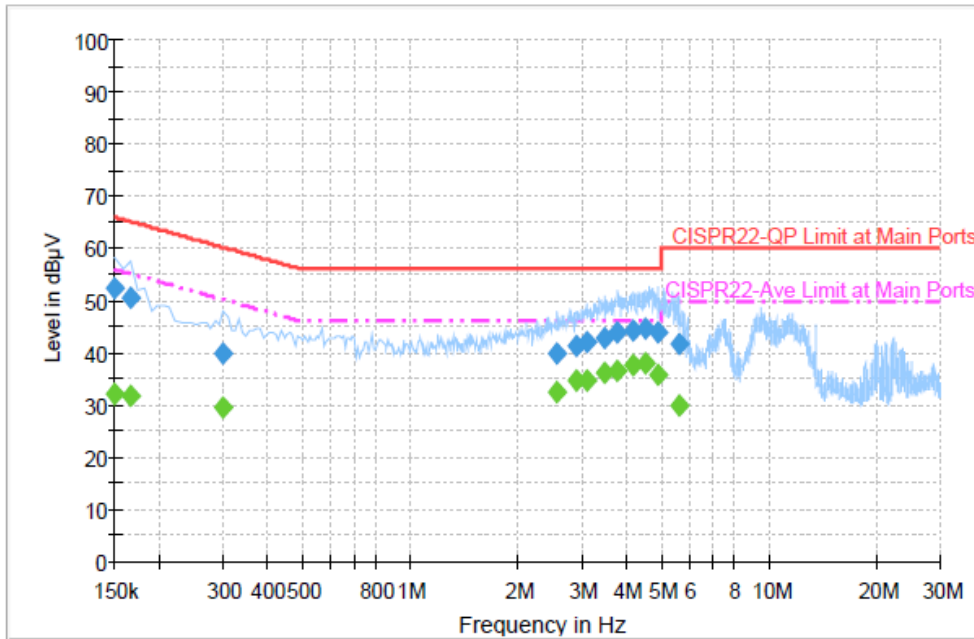
Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN (5GHz) Link + Bluetooth Link + H Pattern + MPEG4 + Camera + GPS Rx + TC		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	52.5	Off	N	19.4	13.5	66.0
0.166000	50.4	Off	N	19.4	14.8	65.2
0.302000	39.7	Off	N	19.4	20.5	60.2
2.574000	39.8	Off	N	19.6	16.2	56.0
2.910000	41.3	Off	N	19.6	14.7	56.0
3.094000	42.0	Off	N	19.6	14.0	56.0
3.486000	42.9	Off	N	19.6	13.1	56.0
3.782000	43.8	Off	N	19.6	12.2	56.0
4.182000	44.2	Off	N	19.6	11.8	56.0
4.526000	44.6	Off	N	19.6	11.4	56.0
4.902000	43.9	Off	N	19.7	12.1	56.0
5.630000	41.7	Off	N	19.7	18.3	60.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN (5GHz) Link + Bluetooth Link + H Pattern + MPEG4 + Camera + GPS Rx + TC		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	31.9	Off	N	19.4	24.1	56.0
0.166000	31.7	Off	N	19.4	23.5	55.2
0.302000	29.6	Off	N	19.4	20.6	50.2
2.574000	32.5	Off	N	19.6	13.5	46.0
2.910000	34.8	Off	N	19.6	11.2	46.0
3.094000	34.8	Off	N	19.6	11.2	46.0
3.486000	36.0	Off	N	19.6	10.0	46.0
3.782000	36.6	Off	N	19.6	9.4	46.0
4.182000	37.6	Off	N	19.6	8.4	46.0
4.526000	38.0	Off	N	19.6	8.0	46.0
4.902000	35.9	Off	N	19.7	10.1	46.0
5.630000	30.0	Off	N	19.7	20.0	50.0

3.2 Antenna Requirements

3.2.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.2.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the k th antenna is being fed by spatial stream j , or zero if it is not;
 G_k is the gain in dBi of the k th antenna.



The EUT supports CDD mode.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

			DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
	Ant 1 (dBi)	Ant 2 (dBi)				
Band I	-1.01	3.30	1.66	4.67	0.00	0.00
Band II	-1.01	3.30	1.66	4.67	0.00	0.00
Band III	-0.30	2.22	1.14	4.15	0.00	0.00

$$\text{Power Limit Reduction} = DG(\text{Power}) - 6\text{dBi}, (\text{min} = 0)$$

$$\text{PSD Limit Reduction} = DG(\text{PSD}) - 6\text{dBi}, (\text{min} = 0)$$



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Aug. 17, 2013	Nov. 07, 2013	Aug. 16, 2014	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Aug. 17, 2013	Nov. 07, 2013	Aug. 16, 2014	Conducted (TH02-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9kHz - 2.75GHz	Nov. 13, 2012	Sep. 12, 2013	Nov. 12, 2013	Conduction (CO05-HY)
Two-LISN (for auxiliary equipment)	Rohde & Schwarz	ENV216	100081	9kHz ~ 30MHz	Dec. 12, 2012	Sep. 12, 2013	Dec. 11, 2013	Conduction (CO05-HY)
Two-LISN	Rohde & Schwarz	ENV216	100080	9kHz ~ 30MHz	Dec. 06, 2012	Sep. 12, 2013	Dec. 05, 2013	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Sep. 12, 2013	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
---	------

