



Spectrum Research & Testing Lab., Inc.

No.167,Ln. 780, Shan-Tong Rd.,Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan County 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A12110102
Report No.: FCCA12110102
FCC ID : ZME-WIDP
Page: 1 of 46
Date: Nov. 16, 2012

Product Name: Wi-Drive+
Model No.: WIDP
Applicant: Kingston Digital, Inc.
17600 Newhope Street Fountain Valley, CA 92708, U.S.A
Date of Receipt: Nov. 01, 2012
Finished date of Test: Nov. 16, 2012
Applicable Standards: 47 CFR Part 15, Subpart C
ANSI C63.4: 2003
KDB 558074-D01; Oct 2012” The FCC has made this KDB a requirement went testing DTS devices.

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Tested By : Richard Lin , Date: 11/16/2012
(Richard Lin)

Approved By : [Signature] , Date: 11/16/2012
(Johnson Ho, Director)





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Revisions History

Report No.	Issue Date	Revisions
FCCA12110102	Nov. 15, 2012	Initial issue
FCCA12110102	Nov. 16, 2012	P1, update Applicable Standards P11, 4.1.2 TEST EQUIPMENT add LOOP ANTENNA P12, 4.1.3 TEST SET-UP add 9kHz~30MHz P30, 4.3.6 update TEST RESULT P43 6. PHOTOS OF TESTING add below 30MHz



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1. DOCUMENT POLICY AND TEST STATEMENT

1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.

1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- DC power source, DC 3.7V of charge battery, was used during the test.

1.3 EUT MODIFICATION

- No modification in SRT Lab.



2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wi-Drive+
MODEL NO.	WIDP
POWER SUPPLY	DC power source, DC 3.7V of charge battery
CABLE	NA
FREQUENCY BAND	2.4 GHz ~ 2.4835 GHz
CARRIER FREQUENCY	2.412 GHz ~ 2.462 GHz
NUMBER OF CHANNEL	11 (802.11n – HT20)
RATED RF OUTPUT POWER	2.4 GHz 802.11n – HT20 : 13.48 dBm (22.28 mW)
MODULATION TYPE	IEEE802.11n – HT20 SISO-OFDM (BPSK/16QAM/64QAM)
MODE OF OPERATION	Half duplex
BIT RATE OF TRANSMISSION	802.11n – HT20 : MCS0~MCS7 (Max. 72.2 Mbps)
ANTENNA TYPE	Chip Antenna
ANTENNA GAIN	2.88 dBi
CHANNEL BANDWIDTH	20 MHz (802.11n – HT20)

NOTE:

For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

2.2 DESCRIPTION OF EUT INTERNAL DEVICE

DEVICE	BRAND / MAKER	MODEL #	FCC ID / DOC	REMARK
N/A				



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2.3 DESCRIPTION OF TEST MODE

11 channels are provided by EUT of wireless. The 3 channels of lower, medium and higher were chosen for test. There are test modes for each test configuration as below:

Mode		Modulation Type	Channel	Frequency (MHz)
1	802.11n – HT20	64QAM (OFDM)	CH01	2412
2			CH06	2437
3			CH11	2462

NOTE:

1. Below 1 GHz, the channel 1, 6 and 11 were pre-tested in chamber and chosen the worst case for conducted and radiated emission test.
2. Above 1 GHz, the channel 1, 6 and 11 were tested individually.
3. The axis X,Y and Z we evaluate in chamber, the X axis is worst case.

X axis:



Y axis:



Z axis:





2.4 DESCRIPTION OF SUPPORT UNIT

The EUT was configured by the requirement of ANSI C63.4:2003. All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

NO	DEVICE	BRAND	MODEL #	FCC ID/DOC	CABLE
1	PC	ACER	Aspire SA85	DoC	1.5m unshielded power cable
2	CRT Monitor	SAMSUNG	PG17IS	DoC	1.8m unshielded power cord 1.5m shielded data cable. with one core.
3	Keyboard	WinTEK	WM530	DoC	1.8m unshielded data cable.
4	Mouse	WinTEK	WSS30	DoC	1.5m unshielded data cable.
5	Modem	ACEEX	DM-1414	DoC	1.5m unshielded power cord 1.5m shielded data cable.
6	Printer	EPSON	STYLUS C20SX	N/A	1.5m unshielded power cord 1.2m shielded data cable.
7	Dual Band USB Adapter	D-Link	DWA-160	CCAE08LP1090T3	N/A

NOTE:

For the actual test configuration, please refer to the photos of testing.

2.5 EUT OPERATING CONDITION

1. Setup the EUT and all peripheral devices .
2. Turn on the power of all equipment and EUT.
3. We will use the following programs under Windows Home server system to test EUT.
4. Access IP "192.168.200.254" homepage and with download files, and set the EUT under continuous transmission mode



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3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a wireless product. According to the specifications provided by the applicant, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C

ANSI C63.4: 2003

KDB 558074-D01; Oct 2012” The FCC has made this KDB a requirement went testing DTS devices.

All tests have been performed and recorded as the above standards.

3.1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

STANDARD SECTION	TEST TYPE AND LIMIT RESULTS	RESULTS
15.203	Antenna requirement Limit : max. 6dBi	PASS
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit : min. 500kHz	PASS
15.247(b)	Maximum Peak Conducted Output Power Limit: max. 30dBm	PASS
15.247(d)	Transmitter Radiated Emissions Limit: Table 15.209	PASS
15.247(e)	Power Density Limit: max. 8dBm	PASS
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS

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Date: Nov. 16, 2012**4.1 RADIATED EMISSION TEST****4.1.1 LIMIT**

FCC Part15, Subpart C Section 15.209 limit of radiated emission for frequency below1000MHz. The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (dB μ V/m)
0.009 - 0.490	300	2400/F(KHz)
0.490 - 1.705	30	24000/F(KHz)
1.705 - 30	30	30
30 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
Above 960	3	54.0

NOTE:

- 30 dBuV (in 30m) = 70 dBuV (in 3m).
- In the emission tables above , the tighter limit applies at the band edges.
- Distance refers to the distance between measuring instrument, antenna, and the closest point of any part of the device or system.

FCC Part 15, Section15.35(b) limit of radiated emission for frequency above 1000 MHz

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0



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4.1.2 TEST EQUIPMENT

The following test equipment was used during the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER	9 kHz ~ 2.75 GHz	ROHDE & SCHWARZ	ESCS30 / 100376	DEC. 27, 2012 ETC
EMI TEST RECEIVER	20 MHz ~ 1000 MHz	ROHDE & SCHWARZ	ESVS30 / 841977/003	DEC. 03, 2012 ETC
SPECTRUM ANALYZER	9 kHz ~ 7GHz	ROHDE & SCHWARZ	FSP7 / 100289	APR. 18, 2013 ETC
SPECTRUM ANALYZER	9 kHz ~ 40GHz	ROHDE & SCHWARZ	FSP40 / 100093	DEC. 29, 2012 ETC
LOOP ANTENNA	9 kHz ~ 30 MHz	ROHDE & SCHWARZ	HFH2-Z2 / 860 605/002	MAR. 2013 ETC
BI-LOG ANTENNA	30 MHz ~ 2 GHz	SCHAFFNER	CBL6141A / 4181	JUN. 25, 2013 ETC
HORN ANTENNA	1 GHz ~ 18 GHz	EMCO	3115/ 9602-4681	JAN. 11, 2013 ETC
PRE-AMPLIFIER	1 GHz ~ 26.5 GHz	AGILENT	8449B/ 3008A01995	JAN. 03, 2013 ETC
OPEN AREA TEST SITE	3 – 10 M MEASUREMENT	SRT	A02 / SRT002	APR. 12, 2013 SRT
ANECHOIC CHAMBER	3 M MEASUREMENT	SRT	A01 / SRT001	MAY. 17, 2013 SRT
COAXIAL CABLE	30 M	TIMES	LMR-400 / #30M (L1TCAB014)	MAY. 31, 2013 ETC
FILTER	2 LINE, 30 A	FIL.COIL	FC-943 / 869	NCR
RF CABLE	UP TO 18 GHz	JYEBAO	A30A30-L 142 / EQF-0035(001)	JAN. 04, 2013 ETC
RF CABLE	UP TO 18 GHz	JYEBAO	A30A30-L 142 / EQF-0036(002)	JAN. 04, 2013 ETC

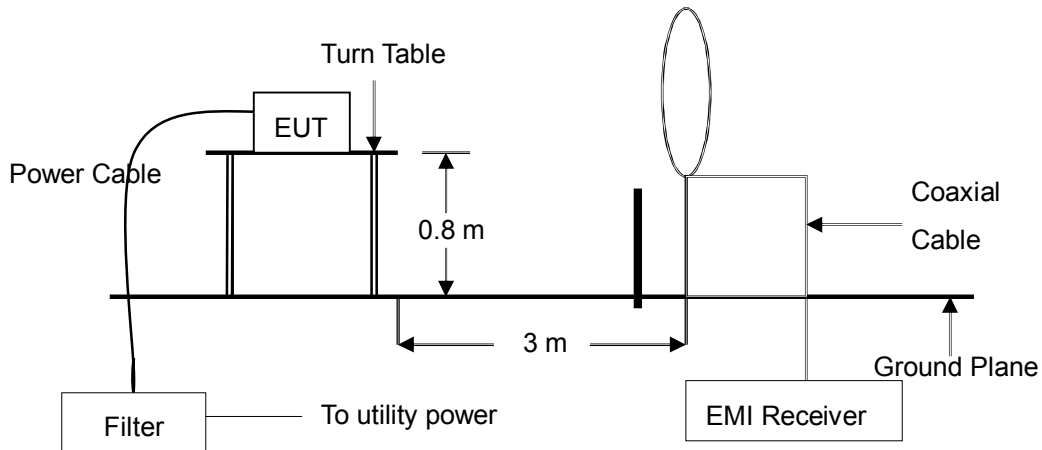
NOTE:

The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

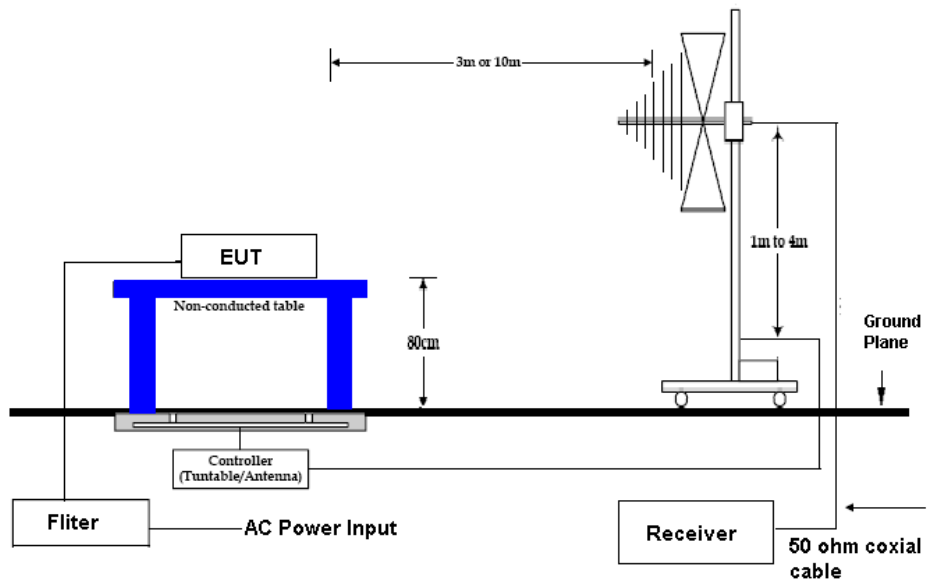


4.1.3 TEST SET-UP

9 kHz ~ 30 MHz

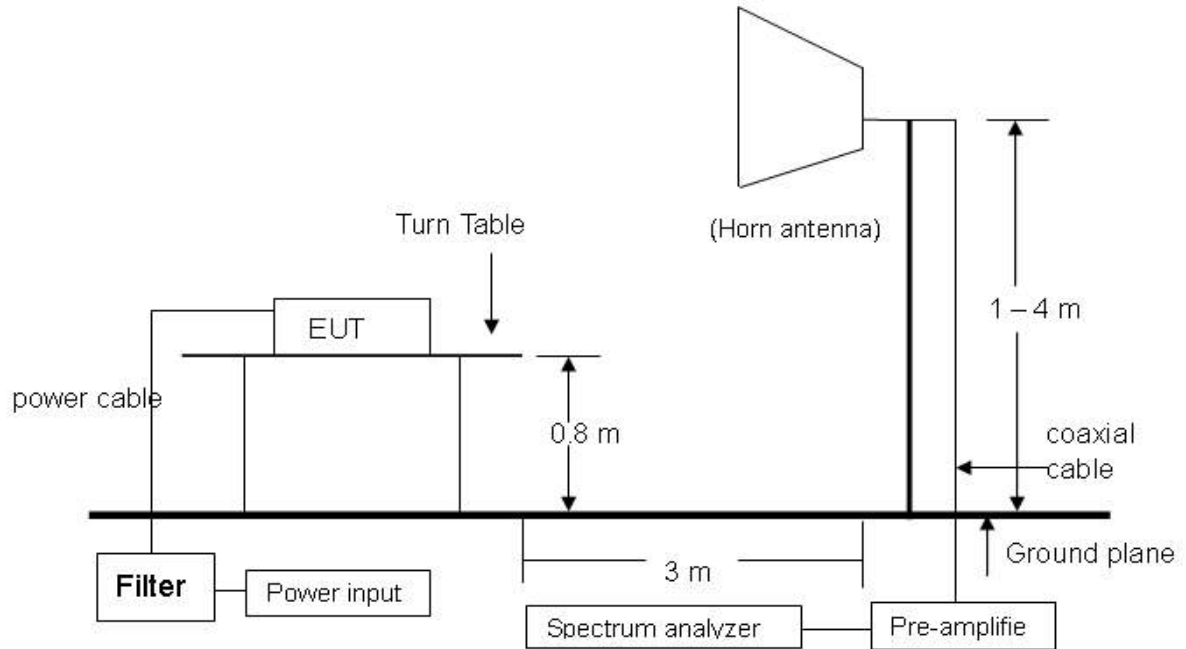


30 MHz ~ 1 GHz





Above 1 GHz



NOTE:

The EUT system was put on a wooden table with 0.8m heights above a ground plane. For the actual test configuration, please refer to the photos of testing.



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4.1.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.4:2003 and CISPR 22:2003.

The measurements were made at an open area test site with 3 meter measurement distance under 1 GHz and with 3m distance above 1GHz.

The frequency spectrum measured started from 9kHz to 30MHz and 30 MHz to 1 GHz, all readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver.

Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak or average values with 1 MHz resolution bandwidth of the test receiver.

The EUT system was operated in all typical methods by users.

The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data.

The procedure is referred on the test procedure of SRT LAB.



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4.1.5 TEST RESULT

Temperature:	<u>23 °C</u>	Humidity:	<u>59 %RH</u>
Frequency Range:	<u>9 kHz – 30 MHz</u>	Measured Distance:	<u>3 m</u>
Receiver Detector:	<u>Q.P.</u>	Tested Mode:	<u>CH01</u>
Tested By:	<u>Richard Lin</u>	Tested Date:	<u>Nov. 16, 2012</u>

Frequency (MHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit (dBμV/m)	Margin (dB)
7.46	0.48	20.40	9.31	30.19	70.00	-39.81
10.83	0.58	20.54	8.92	30.04	70.00	-39.96
15.98	0.69	20.80	8.41	29.90	70.00	-40.10
18.71	0.74	20.93	8.35	30.02	70.00	-39.98
21.29	0.78	21.06	7.98	29.83	70.00	-40.17
26.34	0.86	21.32	7.64	29.82	70.00	-40.18

Temperature:	<u>23 °C</u>	Humidity:	<u>59 %RH</u>
Frequency Range:	<u>9 kHz – 30 MHz</u>	Measured Distance:	<u>3 m</u>
Receiver Detector:	<u>Q.P.</u>	Tested Mode:	<u>CH06</u>
Tested By:	<u>Richard Lin</u>	Tested Date:	<u>Nov. 16, 2012</u>

Frequency (MHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit (dBμV/m)	Margin (dB)
8.31	0.51	20.43	10.32	31.26	70.00	-38.74
10.85	0.58	20.54	9.34	30.46	70.00	-39.54
12.09	0.61	20.60	10.27	31.48	70.00	-38.52
13.88	0.65	20.69	9.35	30.69	70.00	-39.31
15.17	0.67	20.76	9.06	30.49	70.00	-39.51
21.78	0.79	21.09	8.44	30.32	70.00	-39.68



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Temperature:	<u>23 °C</u>	Humidity:	<u>59 %RH</u>
Frequency Range:	<u>9 kHz – 30 MHz</u>	Measured Distance:	<u>3 m</u>
Receiver Detector:	<u>Q.P.</u>	Tested Mode:	<u>CH11</u>
Tested By:	<u>Richard Lin</u>	Tested Date:	<u>Nov. 16, 2012</u>

Frequency (MHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dB μ V)	Emission (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
10.23	0.57	20.51	9.61	30.69	70.00	-39.31
11.57	0.59	20.58	10.05	31.22	70.00	-38.78
13.08	0.63	20.65	9.93	31.21	70.00	-38.79
14.33	0.65	20.72	9.72	31.09	70.00	-38.91
19.82	0.76	20.99	9.08	30.82	70.00	-39.18
26.51	0.86	21.33	8.57	30.76	70.00	-39.24



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Temperature:	20 °C	Humidity:	62 %RH
Tested By:	Richard Lin	Tested Mode:	CH01
Receiver Detector:	Q.P.	Modulation Type:	OFDM
Frequency Range:	30 M – 1 GHz	Tested Date:	Nov. 05, 2012

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	AZ(°)	EL(m)
417.29	3.31	16.54	17.94	37.78	46.0	-8.22	321	2.64
748.02	4.77	21.46	9.75	35.98	46.0	-10.02	94	1.79
872.56	5.25	22.86	8.17	36.27	46.0	-9.73	205	1.35
900.77	5.33	22.80	10.29	38.42	46.0	-7.58	172	1.32
950.48	5.53	24.00	10.91	40.44	46.0	-5.56	112	1.17
960.11	5.56	24.04	12.68	42.28	54.0	-11.72	78	1.11

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	AZ(°)	EL(m)
341.06	2.94	14.75	13.85	31.54	46.0	-14.46	149	1.95
417.28	3.31	16.54	20.32	40.16	46.0	-5.84	257	2.23
448.77	3.46	16.97	18.38	38.81	46.0	-7.19	168	2.32
872.57	5.25	22.86	8.33	36.43	46.0	-9.57	279	3.55
900.80	5.33	22.80	8.57	36.70	46.0	-9.30	91	3.58
950.45	5.53	24.00	5.46	34.99	46.0	-11.01	89	3.62

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



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Temperature:	20 °C	Humidity:	62 %RH
Tested By:	Richard Lin	Tested Mode:	CH06
Receiver Detector:	Q.P.	Modulation Type:	OFDM
Frequency Range:	30 M – 1 GHz	Tested Date:	Nov. 05, 2012

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
417.35	3.31	16.54	18.73	38.57	46.0	-7.43	169	2.76
748.62	4.77	21.46	11.76	37.99	46.0	-8.01	293	1.73
797.50	4.98	21.69	8.29	34.96	46.0	-11.04	58	1.65
872.11	5.25	22.86	8.02	36.12	46.0	-9.88	107	1.48
900.80	5.33	22.80	10.95	39.08	46.0	-6.92	112	1.32
950.92	5.53	24.00	9.48	39.01	46.0	-6.99	136	1.17

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
417.36	3.31	16.54	21.37	41.21	46.0	-4.79	265	2.15
426.65	3.35	16.66	14.35	34.36	46.0	-11.64	157	2.24
448.71	3.46	16.97	15.38	35.81	46.0	-10.19	77	2.28
872.14	5.25	22.86	10.19	38.29	46.0	-7.71	239	3.46
900.85	5.33	22.80	9.03	37.16	46.0	-8.84	140	3.59
950.98	5.53	24.00	5.77	35.30	46.0	-10.70	142	3.62

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "**": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.

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Temperature:	20 °C	Humidity:	62 %RH
Tested By:	Richard Lin	Tested Mode:	CH11
Receiver Detector:	Q.P.	Modulation Type:	OFDM
Frequency Range:	30 M – 1 GHz	Tested Date:	Nov. 05, 2012

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
417.23	3.31	16.54	17.67	37.51	46.0	-8.49	159	2.83
448.54	3.46	16.97	13.44	33.87	46.0	-12.13	318	2.71
748.71	4.77	21.46	7.03	33.26	46.0	-12.74	292	1.79
872.59	5.25	22.86	8.39	36.49	46.0	-9.51	66	1.45
900.82	5.33	22.80	10.52	38.65	46.0	-7.35	117	1.38
950.18	5.53	24.00	10.38	39.91	46.0	-6.09	211	1.22

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
417.22	3.31	16.54	21.48	41.32	46.0	-4.68	162	2.24
448.57	3.46	16.97	18.63	39.06	46.0	-6.94	194	2.37
748.74	4.77	21.46	8.65	34.88	46.0	-11.12	283	3.23
872.57	5.25	22.86	8.32	36.42	46.0	-9.58	137	3.47
900.84	5.33	22.80	7.94	36.07	46.0	-9.93	254	3.65
950.18	5.53	24.00	4.72	34.25	46.0	-11.75	144	3.69

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "**": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss.
4. The field strength of other emission frequencies were very low against the limit.



Spectrum Research & Testing Lab., Inc.
 No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan County 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A12110102
 Report No.: FCCA12110102
 FCC ID : ZME-WIDP
 Page: 20 of 46
 Date: Nov. 16, 2012

Temperature:	20 °C	Humidity:	62 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	CH01
Frequency Range:	1 GHz – 25 GHz	Modulation Type:	OFDM
Tested By:	Richard Lin	Tested Date:	Nov. 05, 2012

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dB μ V)		Emission Level (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1877.40	-31.82	26.81	52.83	42.27	47.82	37.26	74	54	-26.18	-16.74	207	2.21
1918.36	-31.75	26.97	48.91	38.39	44.13	33.61	74	54	-29.87	-20.39	152	2.14
3758.68	-29.52	31.82	42.75	32.26	45.05	34.56	74	54	-28.95	-19.44	336	1.69
3913.27	-29.38	32.26	41.76	31.34	44.64	34.22	74	54	-29.36	-19.78	102	1.57
5227.09	-27.63	33.84	38.62	28.15	44.82	34.35	74	54	-29.18	-19.65	49	1.25
5529.13	-26.87	34.01	37.28	26.77	44.41	33.90	74	54	-29.59	-20.10	85	1.18

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dB μ V)		Emission Level (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2513.72	-31.02	28.44	46.67	36.12	44.09	33.54	74	54	-29.91	-20.46	129	1.49
3138.36	-30.43	30.38	43.52	32.98	43.46	32.92	74	54	-30.54	-21.08	116	1.67
3758.70	-29.52	31.82	42.85	32.37	45.15	34.67	74	54	-28.85	-19.33	291	1.82
3954.17	-29.34	32.37	42.86	32.41	45.89	35.44	74	54	-28.11	-18.56	243	1.88
4359.43	-28.88	32.57	40.81	30.25	44.50	33.94	74	54	-29.50	-20.06	185	2.02
5177.75	-27.79	33.81	38.76	28.29	44.78	34.31	74	54	-29.22	-19.69	267	2.23

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "**": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field strength of fundamental frequency.



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TEST REPORT

Reference No.: A12110102
 Report No.: FCCA12110102
 FCC ID : ZME-WIDP
 Page: 21 of 46
 Date: Nov. 16, 2012

Temperature:	20 °C	Humidity:	62 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	CH01 (Fundamental)
Frequency Range:	1 GHz – 25 GHz	Modulation Type:	OFDM
Tested By:	Richard Lin	Tested Date:	Nov. 05, 2012

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dB μ V)		Emission Level (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2412.00	-31.14	28.21	89.08	77.35	86.15	74.42	*	*	*	*	*	*
4824.00	-28.46	33.31	48.76	38.19	53.61	43.04	74	54	-20.39	-10.96	241	1.38
7236.00	-27.03	35.81	37.82	27.28	46.60	36.06	74	54	-27.40	-17.94	136	1.44
9648.00	-25.60	37.82	38.86	28.42	51.08	40.64	74	54	-22.92	-13.36	92	1.52
12060.00	-23.76	39.16	36.37	25.89	51.77	41.29	74	54	-22.23	-12.71	58	1.73
14472.00	-21.15	42.08	29.41	19.07	50.33	39.99	74	54	-23.67	-14.01	227	1.46

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dB μ V)		Emission Level (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2412.00	-31.14	28.21	88.95	77.21	86.02	74.28	*	*	*	*	*	*
4824.00	-28.46	33.31	42.85	32.36	47.70	37.21	74	54	-26.30	-16.79	109	1.58
7236.00	-27.03	35.81	36.97	26.49	45.75	35.27	74	54	-28.25	-18.73	182	1.63
9648.00	-25.60	37.82	38.63	28.12	50.85	40.34	74	54	-23.15	-13.66	44	1.39
12060.00	-23.76	39.16	36.89	26.47	52.29	41.87	74	54	-21.71	-12.13	306	1.55
14472.00	-21.15	42.08	29.54	19.15	50.46	40.07	74	54	-23.54	-13.93	98	1.42

NOTE:

1. Measurement uncertainty is +/- 4.73dB.
2. "**": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F): The field strength of fundamental frequency.



TEST REPORT

Temperature:	20 °C	Humidity:	62 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	CH06
Frequency Range:	1 GHz – 25 GHz	Modulation Type:	OFDM
Tested By:	Richard Lin	Tested Date:	Nov. 05, 2012

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBµV)		Emission Level (dBµV/m)		Limit (dBµV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1738.52	-32.03	26.25	49.76	39.24	43.98	33.46	74	54	-30.02	-20.54	312	2.24
1917.67	-31.76	26.97	55.53	45.02	50.74	40.23	74	54	-23.26	-13.77	235	2.17
3279.03	-30.17	30.66	43.41	32.97	43.90	33.46	74	54	-30.10	-20.54	118	1.81
3858.79	-29.43	32.10	42.28	31.76	44.95	34.43	74	54	-29.05	-19.57	207	1.63
3909.44	-29.38	32.25	42.25	31.79	45.11	34.65	74	54	-28.89	-19.35	101	1.56
5277.17	-27.48	33.87	38.86	28.38	45.24	34.76	74	54	-28.76	-19.24	54	1.29

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBµV)		Emission Level (dBµV/m)		Limit (dBµV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1917.69	-31.76	26.97	51.29	40.83	46.50	36.04	74	54	-27.50	-17.96	72	1.34
3033.17	-30.63	30.17	43.42	32.92	42.96	32.46	74	54	-31.04	-21.54	93	1.58
3288.63	-30.15	30.68	43.06	32.58	43.58	33.10	74	54	-30.42	-20.90	159	1.62
3649.22	-29.62	31.52	43.17	32.67	45.06	34.56	74	54	-28.94	-19.44	256	1.83
4414.50	-28.82	32.58	42.08	31.54	45.84	35.30	74	54	-28.16	-18.70	198	2.04
5218.01	-27.66	33.83	38.73	28.29	44.90	34.46	74	54	-29.10	-19.54	283	2.28

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "**": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field strength of fundamental frequency.



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TEST REPORT

Reference No.: A12110102
 Report No.: FCCA12110102
 FCC ID : ZME-WIDP
 Page: 23 of 46
 Date: Nov. 16, 2012

Temperature:	20 °C	Humidity:	62 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	CH06 (Fundamental)
Frequency Range:	1 GHz – 25 GHz	Modulation Type:	OFDM
Tested By:	Richard Lin	Tested Date:	Nov. 05, 2012

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dB μ V)		Emission Level (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2437.00	-31.11	28.26	89.04	77.38	86.20	74.54	*	*	*	*	*	*
4874.00	-28.42	33.42	45.62	35.16	50.62	40.16	74	54	-23.38	-13.84	88	1.49
7311.00	-26.98	36.01	38.72	28.27	47.74	37.29	74	54	-26.26	-16.71	134	1.36
9748.00	-25.45	37.90	39.17	28.62	51.62	41.07	74	54	-22.38	-12.93	296	1.58
12185.00	-23.43	39.09	36.98	26.54	52.64	42.20	74	54	-21.36	-11.80	72	1.42
14622.00	-21.25	41.59	29.03	18.58	49.37	38.92	74	54	-24.63	-15.08	205	1.74

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dB μ V)		Emission Level (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2437.00	-31.11	28.26	89.01	77.24	86.17	74.40	*	*	*	*	*	*
4874.00	-28.42	33.42	48.65	38.18	53.65	43.18	74	54	-20.35	-10.82	47	1.47
7311.00	-26.98	36.01	37.28	26.74	46.30	35.76	74	54	-27.70	-18.24	324	1.52
9748.00	-25.45	37.90	39.26	28.76	51.71	41.21	74	54	-22.29	-12.79	178	1.68
12185.00	-23.43	39.09	37.62	27.18	53.28	42.84	74	54	-20.72	-11.16	248	1.63
14622.00	-21.25	41.59	29.43	18.95	49.77	39.29	74	54	-24.23	-14.71	139	1.55

NOTE:

1. Measurement uncertainty is +/- 4.73dB.
2. "**": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F): The field strength of fundamental frequency.



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TEST REPORT

Reference No.: A12110102
 Report No.: FCCA12110102
 FCC ID : ZME-WIDP
 Page: 24 of 46
 Date: Nov. 16, 2012

Temperature:	20 °C	Humidity:	62 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	CH11
Frequency Range:	1 GHz – 25 GHz	Modulation Type:	OFDM
Tested By:	Richard Lin	Tested Date:	Nov. 05, 2012

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dB μ V)		Emission Level (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1948.67	-31.71	27.09	53.19	42.63	48.57	38.01	74	54	-25.43	-15.99	135	2.21
2879.34	-30.77	29.69	44.12	33.75	43.04	32.67	74	54	-30.96	-21.33	217	1.93
3227.85	-30.27	30.55	42.95	32.39	43.24	32.68	74	54	-30.76	-21.32	310	1.85
3808.93	-29.48	31.96	42.76	32.15	45.25	34.64	74	54	-28.75	-19.36	74	1.67
3899.52	-29.39	32.22	41.93	31.48	44.75	34.30	74	54	-29.25	-19.70	105	1.62
5519.00	-26.85	34.00	37.64	27.12	44.79	34.27	74	54	-29.21	-19.73	89	1.18

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dB μ V)		Emission Level (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
3158.21	-30.40	30.42	42.97	32.58	42.99	32.60	74	54	-31.01	-21.40	169	1.69
3909.57	-29.38	32.25	42.16	31.64	45.02	34.50	74	54	-28.98	-19.50	205	1.85
4157.33	-29.12	32.53	41.28	30.83	44.69	34.24	74	54	-29.31	-19.76	177	1.92
4468.04	-28.76	32.59	40.38	29.92	44.22	33.76	74	54	-29.78	-20.24	248	2.02
5037.88	-28.21	33.72	38.75	28.25	44.26	33.76	74	54	-29.74	-20.24	91	2.21
5409.94	-27.08	33.95	38.61	28.13	45.47	34.99	74	54	-28.53	-19.01	241	2.34

NOTE :

1. Measurement uncertainty is +/- 4.73dB.
2. "**": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field strength of fundamental frequency.



TEST REPORT

Temperature:	20 °C	Humidity:	62 %RH
Receiver Detector:	PK. or AV.	Tested Mode:	CH11 (Fundamental)
Frequency Range:	1 GHz – 25 GHz	Modulation Type:	OFDM
Tested By:	Richard Lin	Tested Date:	Nov. 05, 2012

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dB μ V)		Emission Level (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2462.00	-31.08	28.32	98.85	87.13	96.09	84.37	*	*	*	*	*	*
4924.00	-28.38	33.53	47.63	37.15	52.78	42.30	74	54	-21.22	-11.70	317	1.69
7386.00	-26.94	36.20	39.14	28.65	48.41	37.92	74	54	-25.59	-16.08	243	1.53
9848.00	-25.29	37.98	39.59	29.04	52.27	41.72	74	54	-21.73	-12.28	169	1.74
12310.00	-23.10	39.01	39.82	29.38	55.74	45.30	74	54	-18.26	-8.70	81	1.48
14772.00	-21.37	40.96	29.88	19.32	49.47	38.91	74	54	-24.53	-15.09	262	1.59

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dB μ V)		Emission Level (dB μ V/m)		Limit (dB μ V/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2462.00	-31.08	28.32	96.03	85.41	93.27	82.65	*	*	*	*	*	*
4924.00	-28.38	33.53	42.38	31.85	47.53	37.00	74	54	-26.47	-17.00	194	1.32
7386.00	-26.94	36.20	37.19	26.62	46.46	35.89	74	54	-27.54	-18.11	208	1.47
9848.00	-25.29	37.98	39.87	29.37	52.55	42.05	74	54	-21.45	-11.95	300	1.55
12310.00	-23.10	39.01	39.66	29.24	55.58	45.16	74	54	-18.42	-8.84	95	1.59
14772.00	-21.37	40.96	29.93	19.39	49.52	38.98	74	54	-24.48	-15.02	68	1.64

NOTE:

1. Measurement uncertainty is +/- 4.73dB.
2. "**": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field strength of fundamental frequency.



4.2 BANDWIDTH TEST

4.2.1 LIMIT

FCC Part15, Subpart C Section 15.247 (a)(2). The minimum 6dB bandwidth shall be at least 500 kHz.

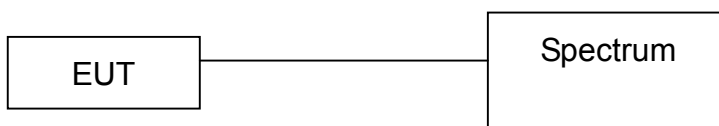
4.2.2 TEST EQUIPMENT

The following test equipment was used during the test:

EQUIPMENT/FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM ANALYZER	9 kHz ~ 40 GHz	ROHDE & SCHWARZ	FSP40 / 100093	DEC. 29, 2012 ETC
EMI TEST RECEIVER	9 kHz ~ 6 GHz	ROHDE & SCHWARZ	ESL6/ 100176	Mar. 2013 ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.2.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.2.4 TEST PROCEDURE

The EUT was operated in continuous transmission mode or any specific channel. Printed out the test result from the spectrum by hard copy function.

4.2.5 EUT OPERATING CONDITION

1. Set the EUT under continuous transmission condition.
2. The EUT was set to the highest available power level.



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TEST REPORT

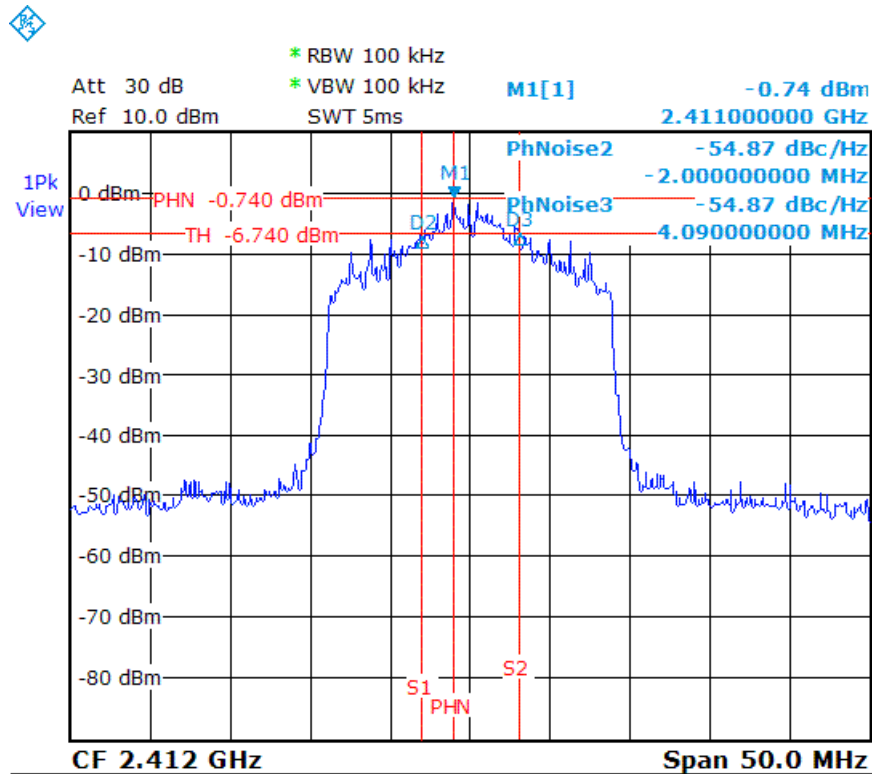
Reference No.: A12110102
 Report No.: FCCA12110102
 FCC ID : ZME-WIDP
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 Date: Nov. 16, 2012

4.2.6 TEST RESULT

Temperature:	24°C	Humidity:	60%RH
Spectrum Detector:	PK.	Tesr Mode:	802.11n – HT20
Tested By:	Richard	Modulation Type:	64QAM
Test Result:	PASS	Tested Date:	Nov. 06, 2012

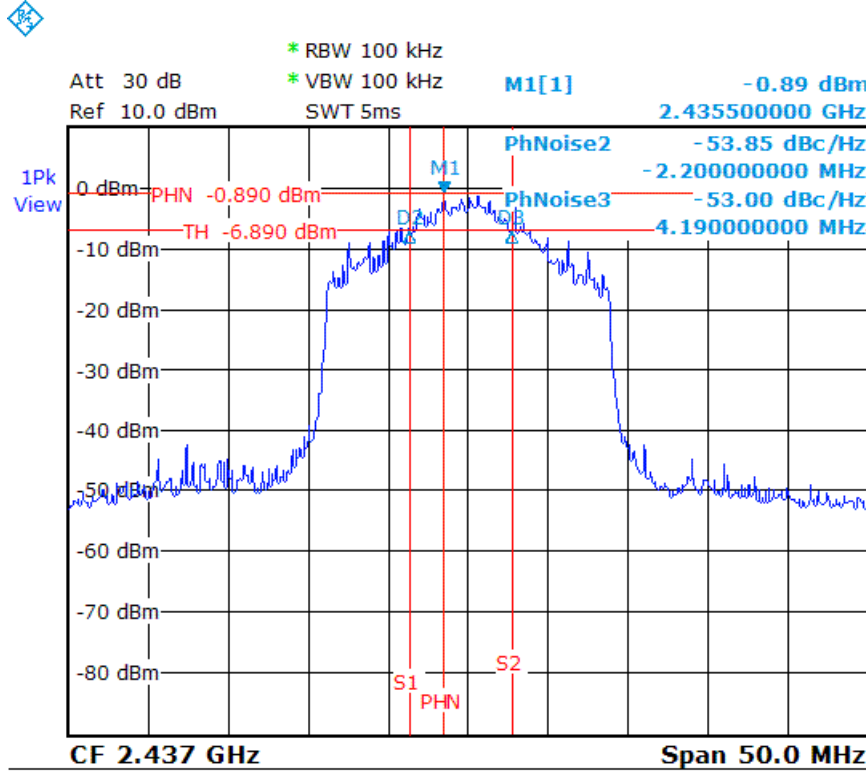
Channel Number	Channel Frequency (MHz)	6dB Down BW (MHz)	Minimum Limit (MHz)
CH01	2412	6.09	0.5
CH06	2437	6.39	0.5
CH11	2462	7.38	0.5

CH01 : (2.00 + 4.09 = **6.09**)

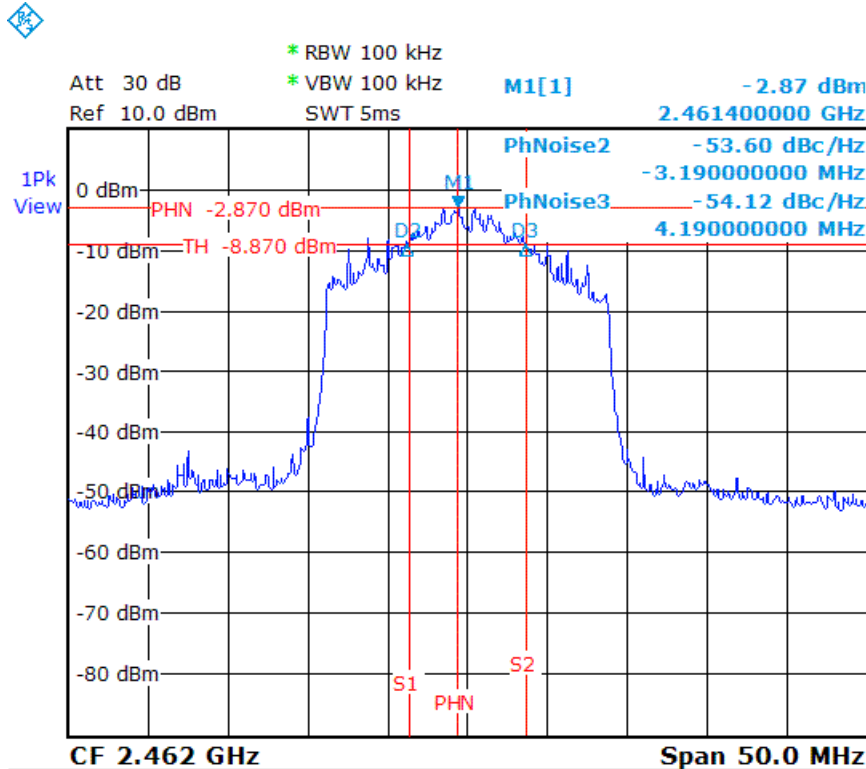




CH06 : (2.2 + 4.19 = **6.39**)



CH11 : (3.19 + 4.19 = **7.38**)





4.3 PEAK POWER TEST

4.3.1 LIMIT

FCC Part15, Subpart C Section 15.247(b).

Frequency Range (MHz)	The maximum (peak) conducted output power Limit(w)				
	Quantity of Hopping Channel	50	25	15	75
902-928	1(30dBm)	0.125(21dBm)	NA	NA	NA
2400-2483.5	NA	NA	0.125(21dBm)	1(30dBm)	1(30dBm)
5725-5850	NA	NA	NA	NA	1(30dBm)

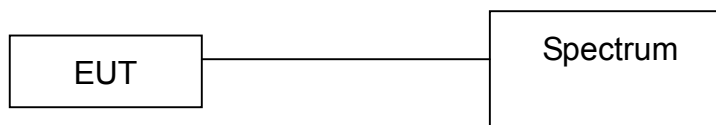
4.3.2 TEST EQUIPMENT

The following test equipment was used during the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM ANALYZER	9 kHz ~ 40 GHz	ROHDE & SCHWARZ	FSP40 / 100093	DEC. 29, 2012 ETC
EMI TEST RECEIVER	9 kHz ~ 6 GHz	ROHDE & SCHWARZ	ESL6/ 100176	Mar. 2013 ETC ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.3.4 TEST PROCEDURE

The EUT was operating in continuous transmission mode or could control its channel. Printed out the test result from the spectrum by hard copy function.

4.3.5 EUT OPERATING CONDITION

1. Set the EUT under continuous transmission condition.
2. The EUT was set to the highest available power level.



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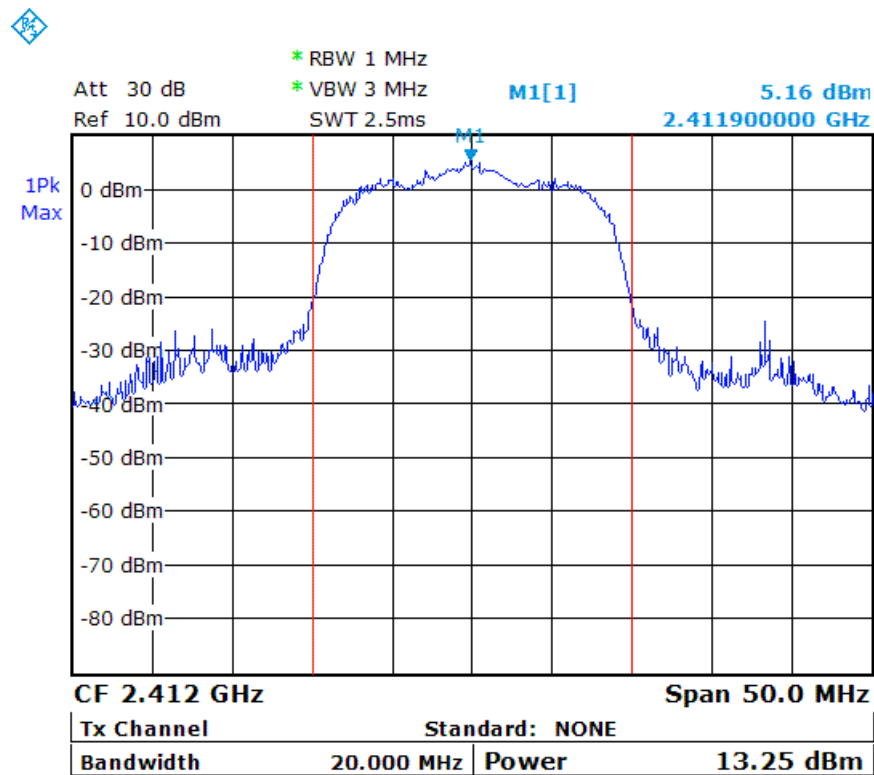
Reference No.: A12110102
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4.3.6 TEST RESULT

Temperature:	24°C	Humidity:	60%RH
Spectrum Detector:	PK.	Tesr Mode:	802.11n – HT20
Tested By:	Richard	Modulation Type:	64QAM
Test Result:	PASS	Tested Date:	Nov. 06, 2012

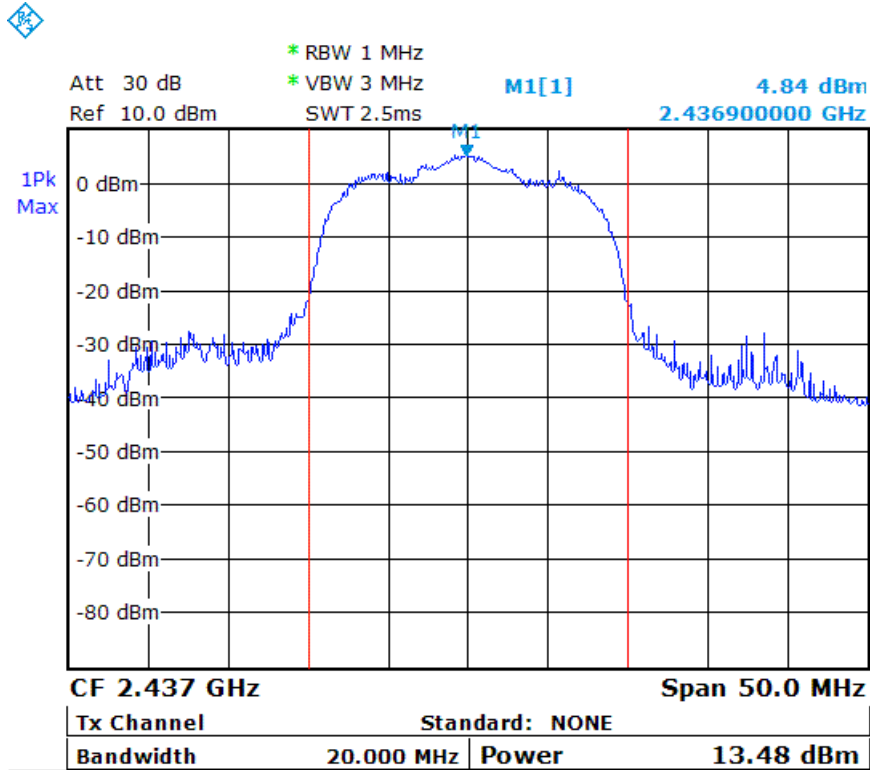
Channel Number	Channel Frequency (MHz)	Conducted Output Power (dBm)	Power Limit (dBm)
CH01	2412	5.16	30
CH06	2437	4.84	30
CH11	2462	4.98	30

CH01 :

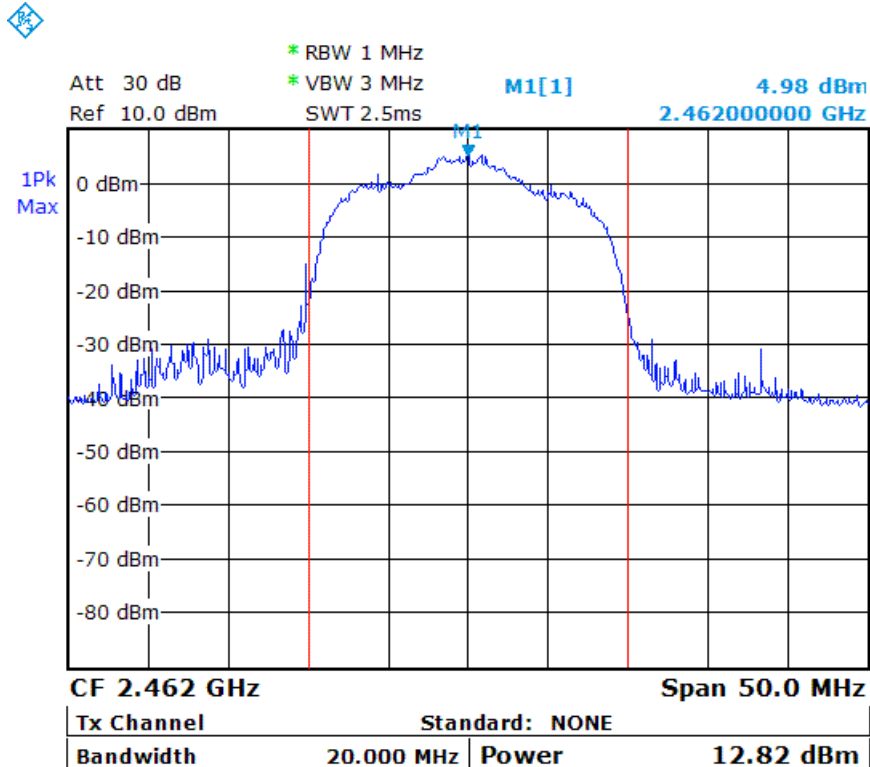




CH06 :



CH11 :



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Date: Nov. 16, 2012**4.4 BAND EDGE TEST****4.4.1 LIMIT**

FCC Part15, Subpart C Section 15.247. In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, 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) (see Section 15.205(c)).

OPERATING FREQUENCY RANGE (MHz)	SPURIOUS EMISSION FREQUENCY (MHz)	LIMIT	
		Peak power ration to emission(dBc)	Emission level(dBuV/m)
902 - 928	<902	>20	NA
	>928	>20	NA
	960-1240	NA	54
2400 - 2483.5	<2400	>20	NA
	>2483.5-2500	NA	54
5725 - 5850	<5350-5460	NA	54
	<5725	>20	NA
	>5850	>20	NA



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4.4.2 TEST EQUIPMENT

The following test equipment was used during the test:

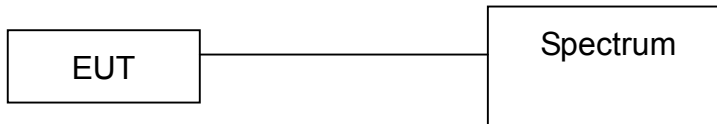
EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM ANALYZER	9 kHz ~ 40 GHz	ROHDE & SCHWARZ	FSP40 / 100093	DEC. 29, 2012 ETC
EMI TEST RECEIVER	9 kHz ~ 6 GHz	ROHDE & SCHWARZ	ESL6/ 100176	Mar. 2013 ETC ETC
BI-LOG ANTENNA	30 MHz ~ 2 GHz	SCHAFFNER	CBL6141A / 4181	JUN. 25, 2013 ETC
HORN ANTENNA	1 GHz ~ 18 GHz	EMCO	3115/ 9602-4681	JAN. 11, 2013 ETC
PRE-AMPLIFIER	1 GHz ~ 26.5 GHz	AGILENT	8449B/ 3008A01995	JAN. 03, 2013 ETC
OPEN AREA TEST SITE	3 – 10 M MEASUREMENT	SRT	A02 / SRT002	APR. 12, 2013 SRT
ANECHOIC CHAMBER	3 M MEASUREMENT	SRT	A01 / SRT001	MAY. 17, 2013 SRT
COAXIAL CABLE	30 M	TIMES	LMR-400 / #30M (L1TCAB014)	MAY. 31, 2013 ETC
FILTER	2 LINE, 30 A	FIL.COIL	FC-943 / 869	NCR
RF CABLE	UP TO 18 GHz	JYEBAO	A30A30-L 142 / EQF-0035(001)	JAN. 04, 2013 ETC
RF CABLE	UP TO 18 GHz	JYEBAO	A30A30-L 142 / EQF-0036(002)	JAN. 04, 2013 ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.



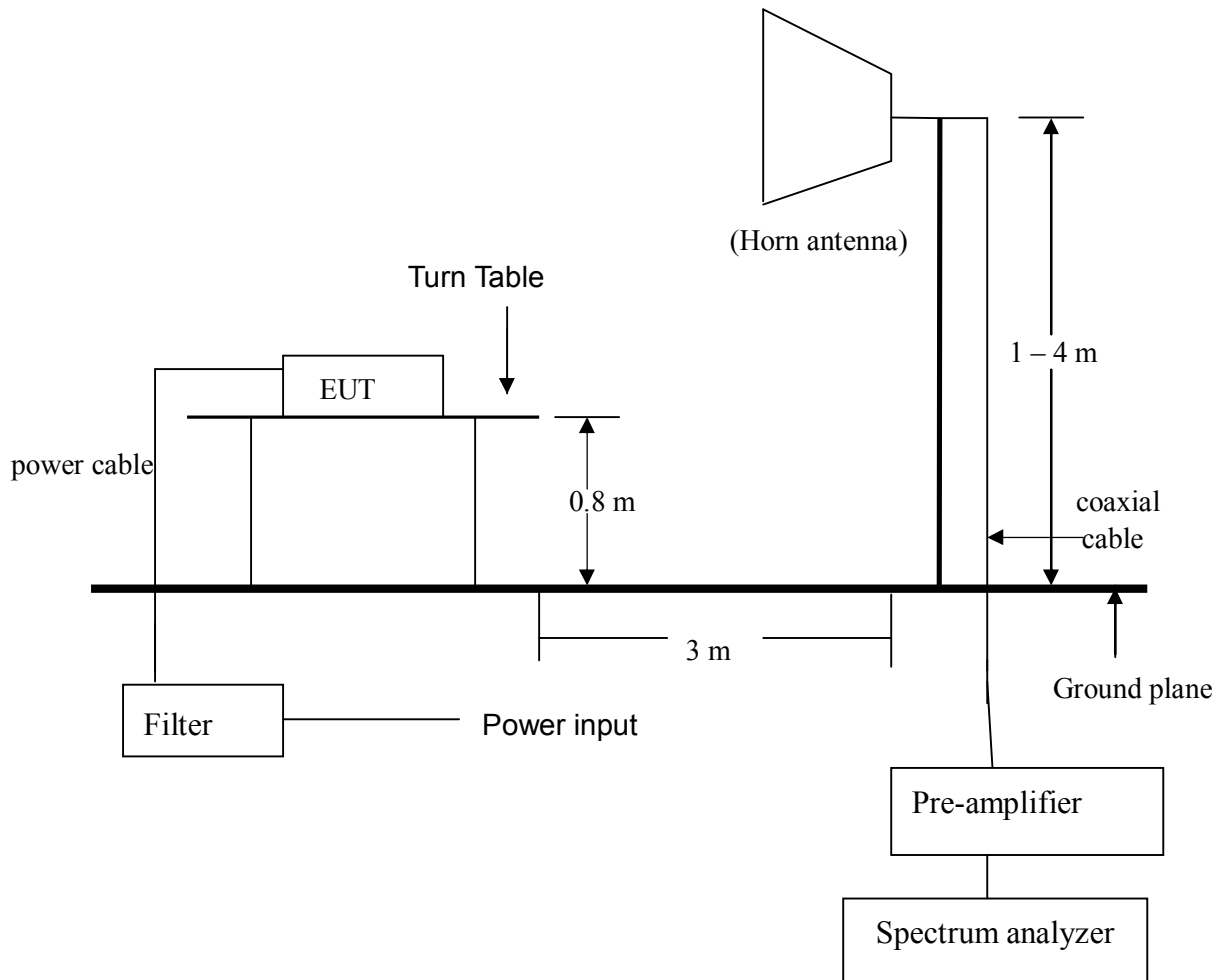
4.4.3 TEST SET-UP

FOR RF CONDUCTED TEST (dBc)



The EUT was connected to a spectrum through a 50Ω RF cable.

FOR RADIATED EMISSION TEST



NOTE:

1. The EUT system was put on a wooden table with 0.8m heights above a ground plane.
2. For the actual test configuration, please refer to the photos of testing.



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4.4.4 TEST PROCEDURE

1. The EUT was operating in continuous transmission mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.
2. The EUT was tested according to the requirement of ANSI C63.4 and CISPR 22. The measurements were made at an open area test site with 3 meter measurement distance under 1 GHz and with 3m distance above 1GHz. The frequency spectrum measured started from 30 MHz. Under 1 GHz. All readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak and average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

4.4.5 EUT OPERATING CONDITION

1. Set the EUT under continuous transmission condition.
2. The EUT was set to the highest available power level.



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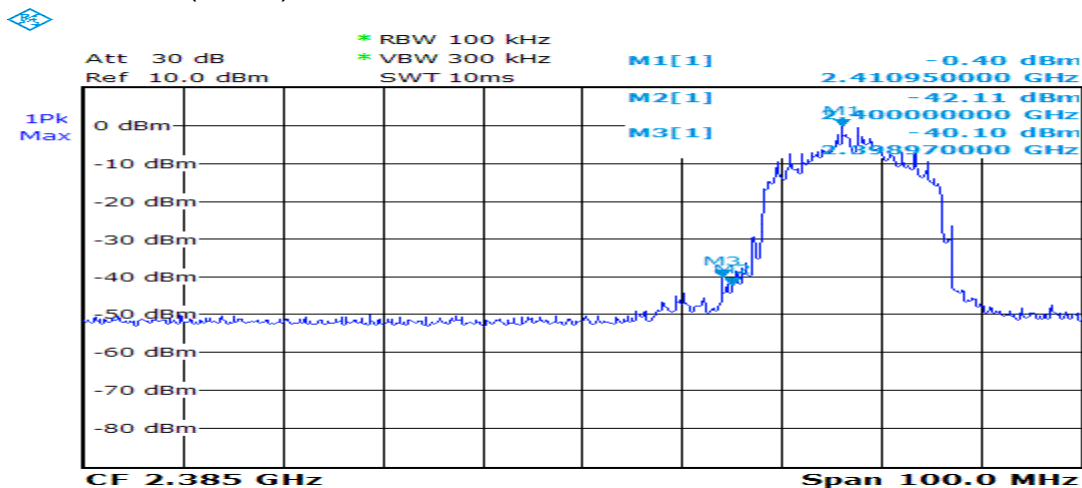
4.4.6 TEST RESULT

Temperature:	24°C	Humidity:	60%RH
Spectrum Detector:	PK. or AV.	Test Mode:	802.11n – HT20
Tested By:	Richard	Modulation Type:	64QAM
Test Result:	PASS	Tested Date:	Nov. 06, 2012

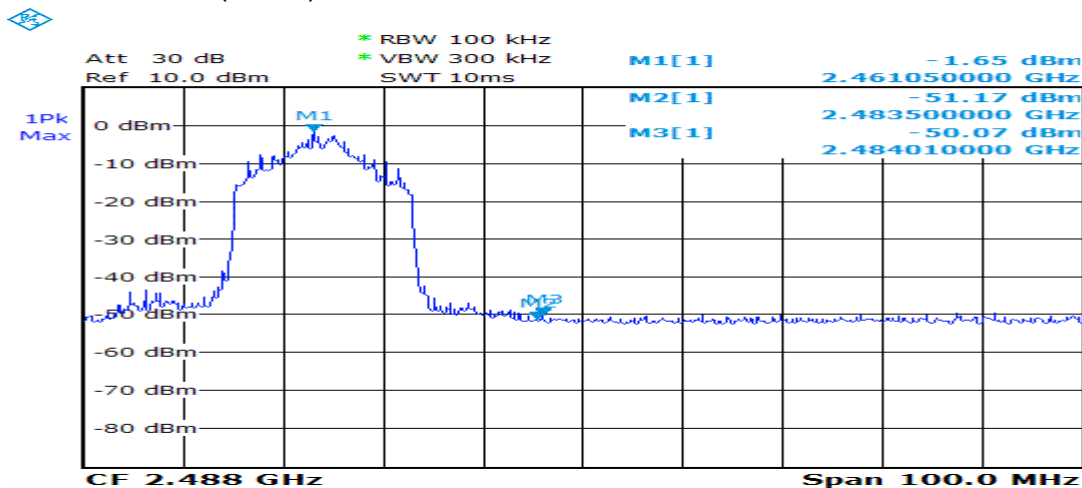
1. Conducted test

Frequency (MHz)	Peak Power Output (dBm)	Emission Read Value (dBm)	Result Of Band Edge (dBc)	Band Edge Limit (dBc)
< 2400	-0.40	-40.10	39.70	> 20 dBc
> 2483.5	-1.65	-50.07	48.42	> 20 dBc

Below 2400 MHz (CH01) :



Above 2483.5 MHz (CH11) :

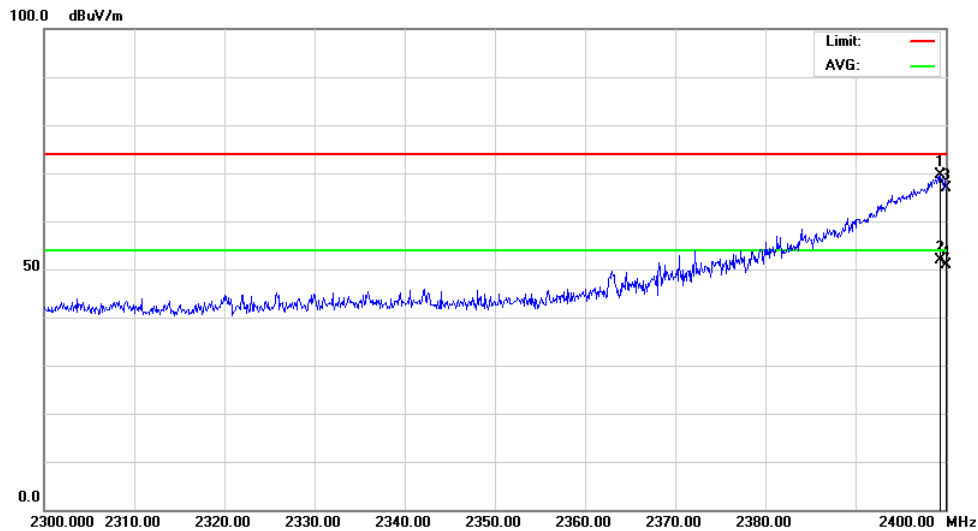




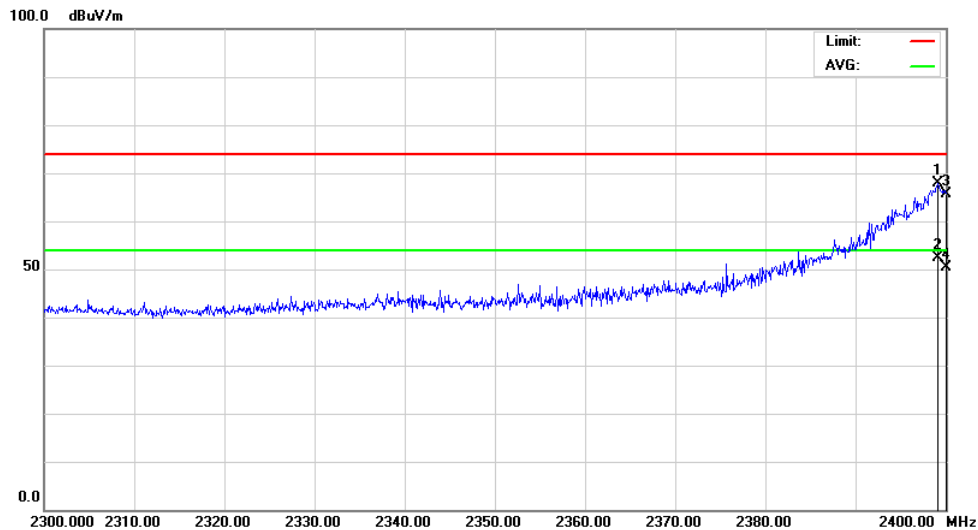
2. Radiated emission test
 Below 2400 MHz (CH01) :

Frequency (MHz)	Correct Factor (dB)	Ant. Fac. (dB)	Ant. Pol. (H/V)	Reading (dBuV)		Emission (dBuV/m)		Limit Line (dBuV/m)		Over Limit (dBuV/m)	
				PK	AV	PK	AV	PK	AV	PK	AV
2412.00	-31.14	28.21	H	89.08	77.35	86.15	74.42	114.00	94.00	-27.85	-19.58
2412.00	-31.14	28.21	V	88.95	77.21	86.02	74.28	114.00	94.00	-27.98	-19.72
2399.43	-31.15	28.18	H	72.61	54.76	69.64	51.79	74.00	54.00	-4.36	-2.21
2399.41	-31.15	28.18	V	70.75	55.31	67.78	52.34	74.00	54.00	-6.22	-1.66
2400.00	-31.15	28.18	H	69.93	53.81	66.96	50.84	74.00	54.00	-7.04	-3.16
2400.00	-31.15	28.18	V	68.69	53.31	65.72	50.34	74.00	54.00	-8.28	-3.66

Horizontal:



Vertical:





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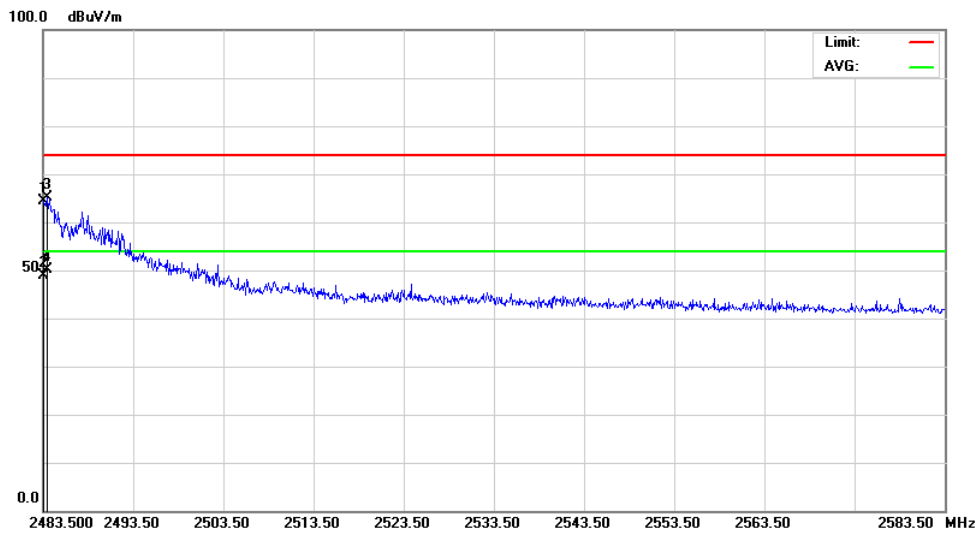
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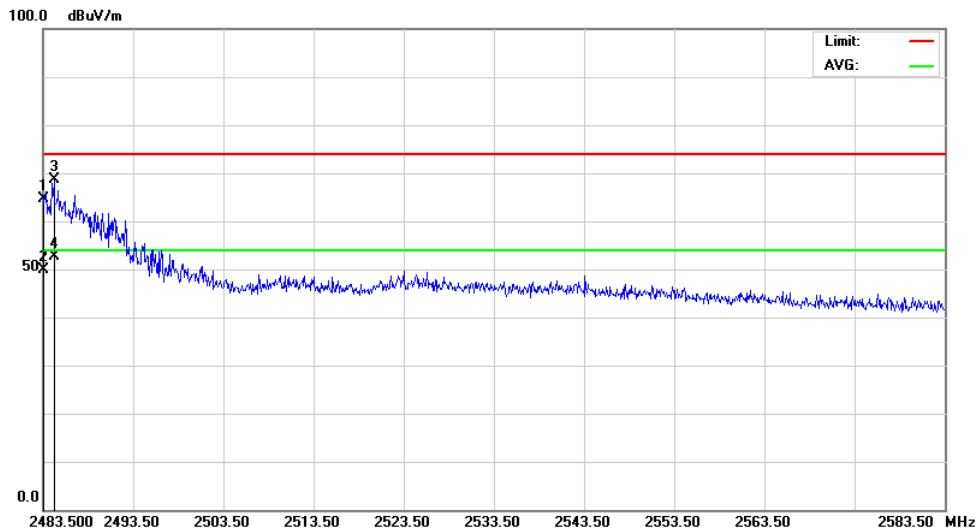
Above 2483.5 MHz (CH11) :

Frequency (MHz)	Correct Factor (dB)	Ant. Fac. (dB)	Ant. Pol. (H/V)	Reading (dBuV)		Emission (dBuV/m)		Limit Line (dBuV/m)		Over Limit (dBuV/m)	
				PK	AV	PK	AV	PK	AV	PK	AV
2462.00	-31.08	28.32	H	98.85	87.13	96.09	84.37	114.00	94.00	-17.91	-9.63
2462.00	-31.08	28.32	V	96.03	85.41	93.27	82.65	114.00	94.00	-20.73	-11.35
2483.50	-31.05	28.36	H	67.03	51.48	64.34	48.79	74.00	54.00	-9.66	-5.21
2483.50	-31.05	28.36	V	67.41	52.58	64.72	49.89	74.00	54.00	-9.28	-4.11
2483.86	-31.05	28.36	H	67.87	52.77	65.18	50.08	74.00	54.00	-8.82	-3.92
2484.32	-31.05	28.36	V	71.31	55.20	68.63	52.52	74.00	54.00	-5.37	-1.48

Horizontal:



Vertical:





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4.5 POWER DENSITY TEST

4.5.1 LIMIT

FCC Part15, Subpart C Section 15.247

FREQUENCY RANGE (MHz)	Limit (dBm / kHz)
902-928	8 dBm / 3 kHz
2400-2483.5	
5725-5850	

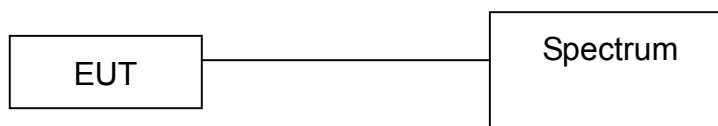
4.5.2 TEST EQUIPMENT

The following test equipment was used during the radiated emission test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM ANALYZER	9 kHz ~ 40 GHz	ROHDE & SCHWARZ	FSP40 / 100093	DEC. 29, 2012 ETC
EMI TEST RECEIVER	9 kHz ~ 6 GHz	ROHDE & SCHWARZ	ESL6/ 100176	Mar. 2013 ETC ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.5.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.5.4 TEST PROCEDURE

The EUT was operating in transmitter mode and could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

4.5.5 EUT OPERATING CONDITION

1. Set the EUT under continuous transmission condition.
2. The EUT was set to the highest available power level.



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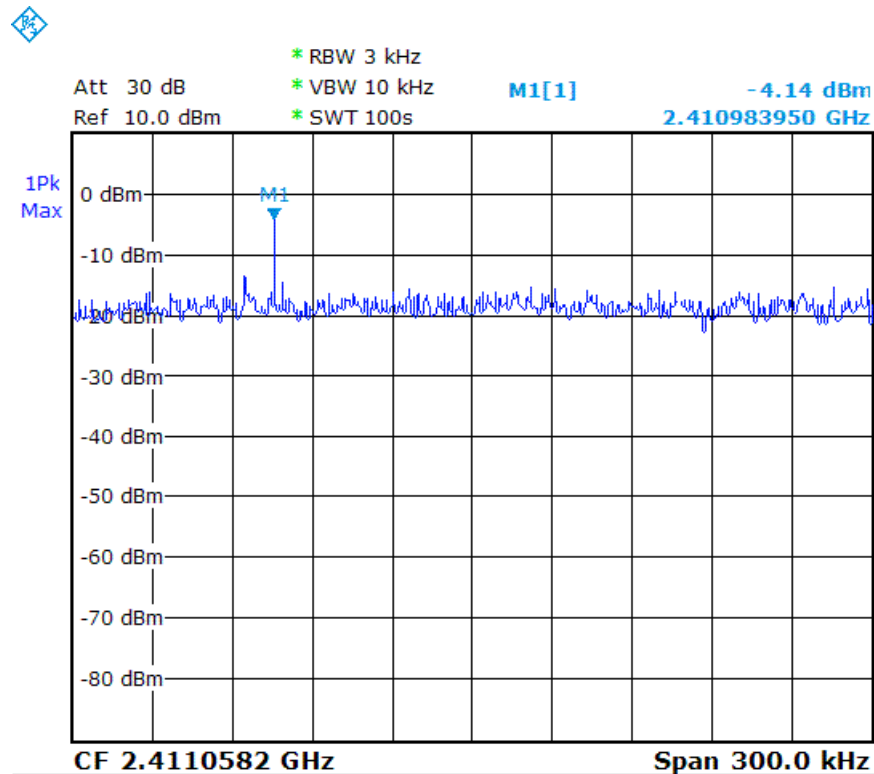
Reference No.: A12110102
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4.5.6 TEST RESULT

Temperature:	24°C	Humidity:	60%RH
Spectrum Detector:	PK.	Tesr Mode:	802.11n – HT20
Tested By:	Richard	Modulation Type:	64QAM
Test Result:	PASS	Tested Date:	Nov. 06, 2012

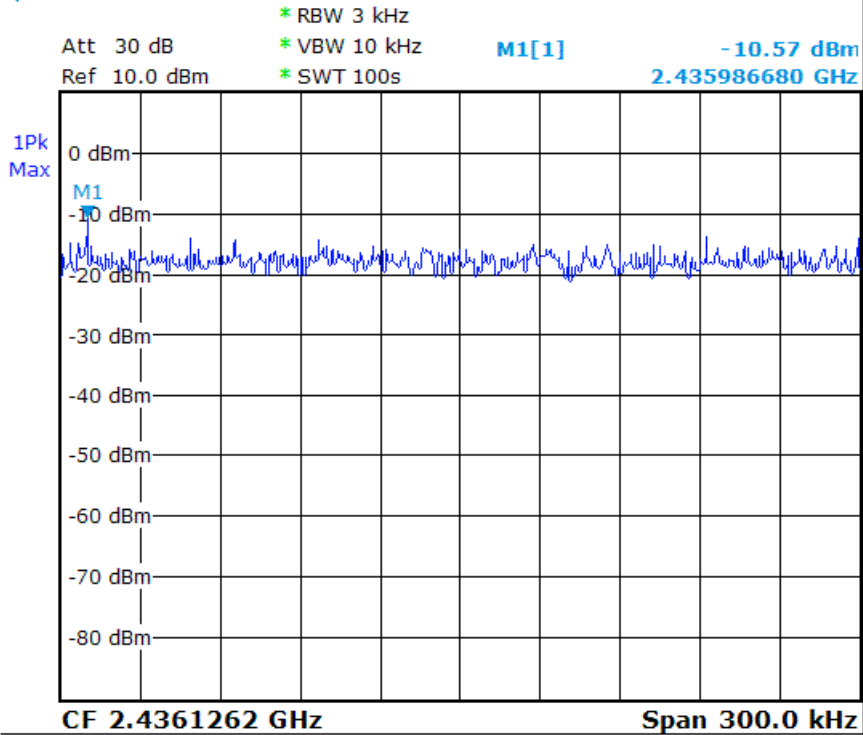
Channel Number	Channel Frequency (MHz)	RF Power Level in 3 KHz BW (dBm/3kHz)	Maximum Limit (dBm/3kHz)
CH01	2412	-4.14	8
CH06	2437	-10.57	8
CH11	2462	-15.18	8

CH01 :

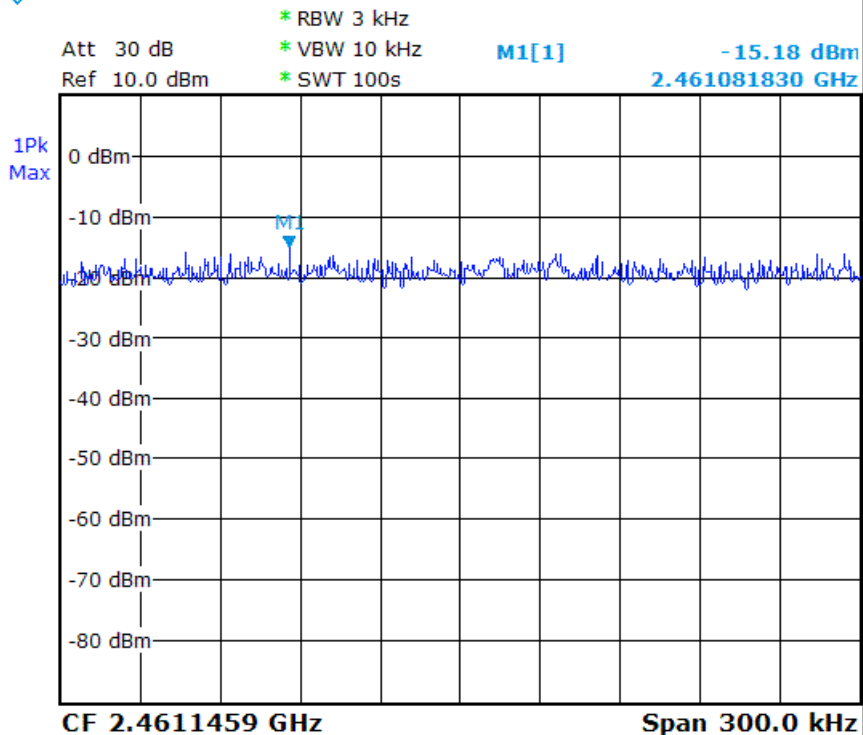




CH06 :



CH11 :





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5. Antenna application

5.1 Antenna requirement

The EUT's antenna is met the requirement of FCC Part 15C section 15.203 and 15.204.

FCC Part 15C section 15.247 requirement:

Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

5.2 Result

The EUT's antenna used a Chip antenna. Gain of antenna types is 2.88 dBi that meet the requirement.



6. PHOTOS OF TESTING

- Radiated test (below 30M)





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- Radiated test (below 1G)





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- Radiated test (above 1G)





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7. TERMS OF ABBREVIATION

AV.	Average detection
AZ(°)	Turn table azimuth
Correct.	Correction
EL(m)	Antenna height (meter)
EUT	Equipment Under Test
Horiz.	Horizontal direction
LISN	Line Impedance Stabilization Network
NSA	Normalized Site Attenuation
Q.P.	Quasi-peak detection
SRT Lab	Spectrum Research & Testing Laboratory, Inc.
Vert.	Vertical direction