
FCC Test Report

Report No.: AGC00M110101-2F2

FCC ID : ZDIK2-652PE

PRODUCT DESIGNATION : 11N Wireless PCI-E Card

BRAND NAME : KINGNET

TEST MODEL : K2-652PE

CLIENT : Shenzhen Kingnet Technology Co., Ltd

DATE OF ISSUE : Sep.16, 2011

STANDARD(S) : FCC Part 15 Rules

Attestation of Global Compliance Co., Ltd.

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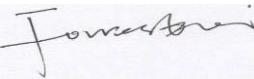
VERIFICATION OF COMPLIANCE

Applicant	Shenzhen Kingnet Technology Co., Ltd 1-4F, Building 5, Civil Science Industry Zone, Pingshan, Xili, Nanshan, Shenzhen China, P.R.C
Manufacturer	Shenzhen Kingnet Electronics Technology Co., Ltd 1-4F, Building 5, Civil Science Industry Zone, Pingshan, Xili, Nanshan, Shenzhen China, P.R.C
Product Designation	11N Wireless PCI-E Card
Brand Name	KINGNET
Model Name	K2-652PE
FCC ID	ZDIK2-652PE
Report Number	AGC00M110101-2F1
Date of Test	Sep.9 to Sep.16, 2011

WE HEREBY CERTIFY THAT:

The above equipment was tested by Attestation of Global Compliance Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247.

Tested By: 
Angela Li Sep.16, 2011

Reviewed By: 
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TABLE OF CONTENTS

1. GENERAL INFORMATION	4
1.1 PRODUCT DESCRIPTION	4
1.2 TABLE OF CARRIER FREQUENCIES	4
1.3 IEEE 802.11N MODULATION SCHEME	5
1.4 RELATED SUBMITTAL(S) / GRANT (S)	5
1.5 TEST METHODOLOGY	5
1.6 TEST FACILITY	5
1.7 SPECIAL ACCESSORIES	5
1.8 EQUIPMENT MODIFICATIONS	5
2. SYSTEM TEST CONFIGURATION	6
2.1 CONFIGURATION OF EUT SYSTEM	6
2.2 EQUIPMENT USED IN EUT SYSTEM	6
3. SUMMARY OF TEST RESULTS	7
4. DESCRIPTION OF TEST MODES	7
5 PEAK OUTPUT POWER	8
5.1 MEASUREMENT PROCEDURE	8
5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	8
5.3 MEASUREMENT EQUIPMENT USED	8
5.4 LIMITS AND MEASUREMENT RESULT	9
6 6 DB BANDWIDTH	11
6.1 MEASUREMENT PROCEDURE	11
6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	11
6.3 MEASUREMENT EQUIPMENT USED	11
6.4 LIMITS AND MEASUREMENT RESULTS	11
7. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY	17
7.1 MEASUREMENT PROCEDURE	17
7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	17
7.3 MEASUREMENT EQUIPMENT USED	17
7.4 LIMITS AND MEASUREMENT RESULT	17
8. RADIATED EMISSION MEASUREMENT	22
8.1 MEASUREMENT PROCEDURE	22
8.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	22
8.3 MEASUREMENT EQUIPMENT USED	23
8.4 LIMITS AND MEASUREMENT RESULT	24
9 BAND EDGE EMISSION	29
9.1 MEASUREMENT PROCEDURE	29
9.2 TEST SET-UP	29
9.3 TEST RESULT	29
10 FCC LINE CONDUCTED EMISSION TEST	38
10.1 LIMITS OF LINE CONDUCTED EMISSION TEST	38
10.2 BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST	38
10.3 PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST	39
10.4 FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST	39
10.5 TEST RESULT OF LINE CONDUCTED EMISSION TEST	40

APPENDIX I.....	42
PHOTOGRAPHS OF THE EUT	42
APPENDIX II.....	44
PHOTOGRAPHS OF THE TEST SETUP	44

1. GENERAL INFORMATION

1.1 PRODUCT DESCRIPTION

The EUT is a 11N Wireless PCI-E Card designed as an “Wifi Device”. It is designed by way of utilizing the DSSS and OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

Operation Frequency	2.412 GHz to 2.462GHz
Max. Output Power	11b:12.37dBm ,g:12.11dBm,n(20) :11.52,11n(40):11.50dBm
Modulation	DBPSK,DQPSK,CCK,OFDM,16-QAM,64-QAM
Data Rate	DSSS(1/2/5.5/11),OFDM(6/9/12/18/24/36/48/54) See section 1.3 for 802.11n
Number of channels	11
Antenna Designation	Detachable Reversed SMA Antenna
Antenna Gain	Antenna (max): 2.0dBi
Power Supply	DC12V by PC

1.2 TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
2400~2483.5MHZ	1	2412MHZ
	2	2417MHZ
	3	2422 MHZ
	4	2427 MHZ
	5	2432 MHZ
	6	2437 MHZ
	7	2442 MHZ
	8	2447 MHZ
	9	2452 MHZ
	10	2457 MHZ
	11	2462MHZ

Note: For 20MHZ bandwidth system use Channel 1 to Channel 11

For 40MHZ bandwidth system use Channel 3 to Channel 9

1.3 IEEE 802.11N MODULATION SCHEME

MCS Index	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		Data rate(Mbps)	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0
6	1	64-QAM	3/4	6	312	648	234	486	58.5	121.5
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	guard interval

1.4 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: ZDIK2-652PE** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

1.5 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.6 TEST FACILITY

All measurement facilities used to collect the measurement data are located at Attestation of Global Compliance Co., Ltd.
1F., No.2 Building, Huafeng No.1 Technical Industrial Park, Sanwei, Xixiang, Baoan District, Shenzhen
The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003.
FCC register No.: 259865

1.7 SPECIAL ACCESSORIES

Refer to section 2.2.

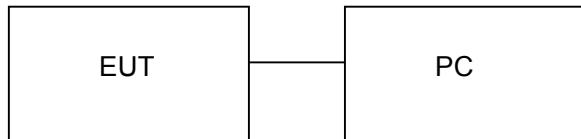
1.8 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2. SYSTEM TEST CONFIGURATION

2.1 CONFIGURATION OF EUT SYSTEM

Configure: Control by PC to continuous transmitting in specified channel or normal Wi-Fi.



2.2 EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	Remark
1	Display	Dell	E1910Hc	AE
2	PC	Dell	DPTIPLEX 380	AE
3	Mouse	--	--	AE
4	Keyboard	Dell	--	AE

3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.247	Peak Output Power	Compliant
§15.247	6dB Bandwidth	Compliant
§15.247	Power Spectral Density	Compliant
§15.209	Radiated Emission	Compliant
§15.247	Band Edges	Compliant
§15.207	Conduction Emission	Compliant

4. DESCRIPTION OF TEST MODES

TEST MODES
Transmit by 802.11b with Date rate(1/2/5.5/11)
Transmit by 802.11g with Date rate (6/9/12/18/24/36/48/54)
Transmit by 802.11n (20MHz) with Date rate(6.5/13/19.5/26/39/52/58.5/65)
Transmit by 802.11n (40MHz) with Date rate (13.5/27/40.5/54/81/108/121.5/135)
Normal (Wi-Fi)

Note: 1 The EUT has been set to operate continuously on the lowest, middle and highest operation frequency individually.

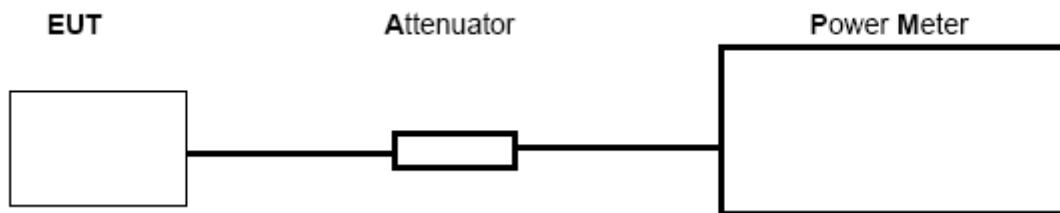
2 All modes under which configuration applicable have been tested and the worst mode test data recording in the test report.

5 PEAK OUTPUT POWER

5.1 MEASUREMENT PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to power meter through an RF attenuator
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Set the RBW greater than 6DB bandwidth of emission.
5. Record the maximum power from the power meter.

5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



5.3 MEASUREMENT EQUIPMENT USED

Description	Manufacturer	Model	SERIAL NUMBER	Cal. Date	Cal. Due
Power meter	Agilent	N1911A	N/A	06/27/2011	06/26/2012
Power sensor	Agilent	N192XA	N/A	06/27/2011	06/26/2012
RF attenuator	N/A	RFA20db	N/A	N/A	N/A

5.4 LIMITS AND MEASUREMENT RESULT

TEST ITEM	PEAK POWER
TEST MODE	802.11b with data rate 1

LIMITS AND MEASUREMENT RESULT			
Frequency (GHz)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	12.01	30	Pass
2.437	12.14	30	Pass
2.462	12.37	30	Pass

TEST ITEM	PEAK POWER
TEST MODE	802.11g with data rate 6

LIMITS AND MEASUREMENT RESULT			
Frequency (GHz)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	11.68	30	Pass
2.437	11.52	30	Pass
2.462	12.11	30	Pass

TEST ITEM	PEAK POWER
TEST MODE	802.11n 20 with data rate 6.5

LIMITS AND MEASUREMENT RESULT			
Frequency (GHz)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.422	11.47	30	Pass
2.437	11.43	30	Pass
2.462	11.52	30	Pass

TEST ITEM	PEAK POWER
TEST MODE	802.11n 40 with data rate 13.5

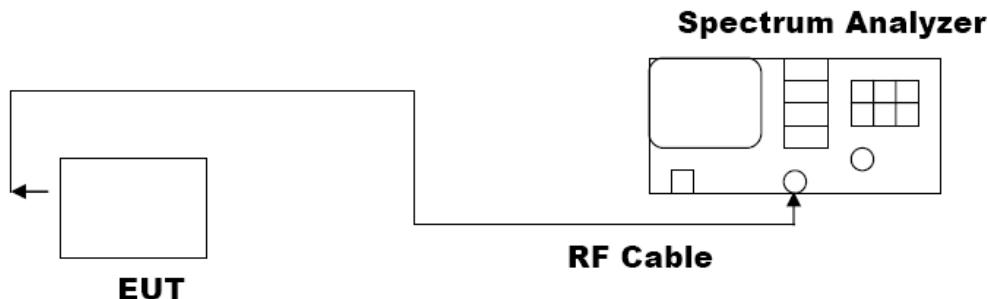
LIMITS AND MEASUREMENT RESULT			
Frequency (GHz)	Peak Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.422	11.30	30	Pass
2.437	11.41	30	Pass
2.462	11.50	30	Pass

6 6 DB BANDWIDTH

6.1 MEASUREMENT PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz,
VBW= 100 KHz.
4. Set SPA Trace 1 Max hold, then View.

6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



6.3 MEASUREMENT EQUIPMENT USED

Description	Manufacturer	Model	SERIAL NUMBER	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4440A	N/A	06/27/2011	06/26/2012
RF attenuator	N/A	RFA20db	N/A	N/A	N/A

6.4 LIMITS AND MEASUREMENT RESULTS

TEST ITEM	6DB BANDWIDTH		
TEST MODE	802.11b with data rate 1		

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (MHz)		Criteria
>500KHZ	Low Channel	11.746	PASS
	Middle Channel	11.082	PASS
	High Channel	12.464	PASS

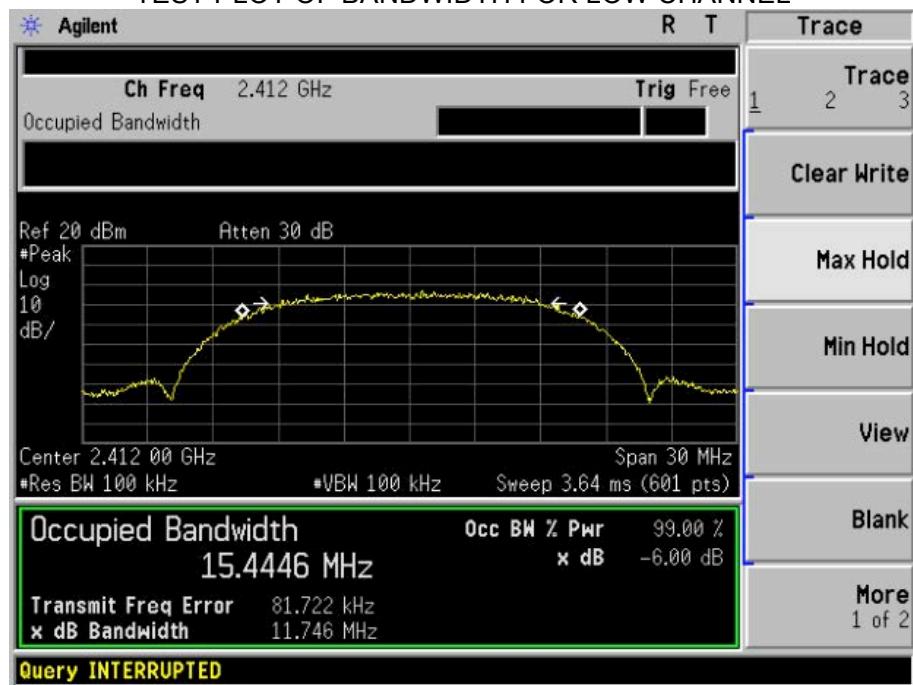
Note: all the test mode 11b/g/n(20) were tested ,and there is only give the worst data.

TEST ITEM	6DB BANDWIDTH
TEST MODE	802.11n 40 with data rate 13.5

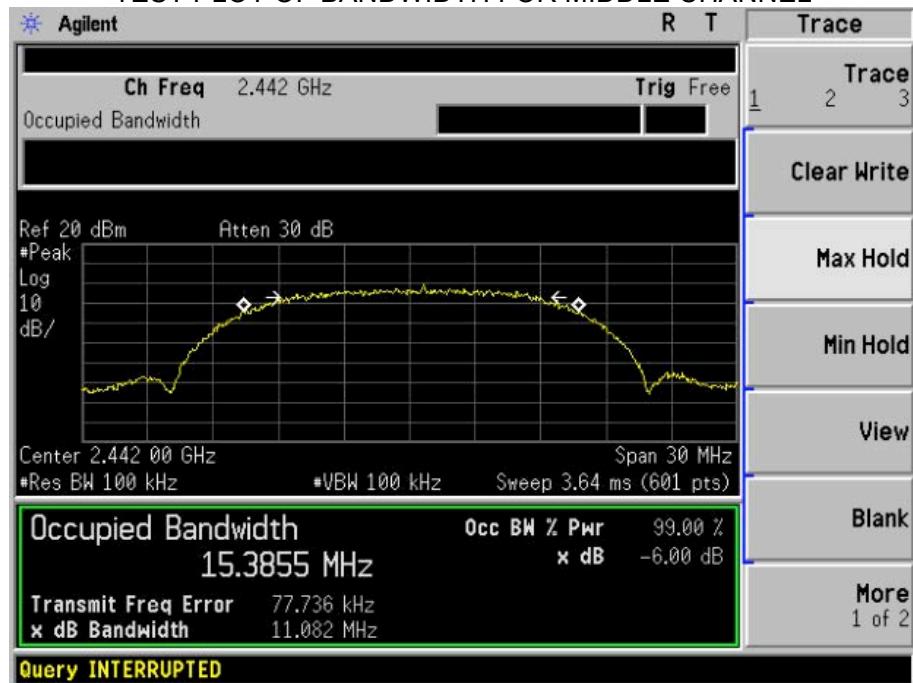
LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (MHz)	Criteria	
>500KHZ	Low Channel	36.414	PASS
	Middle Channel	36.414	PASS
	High Channel	36.360	PASS

802.11b TEST RESULT

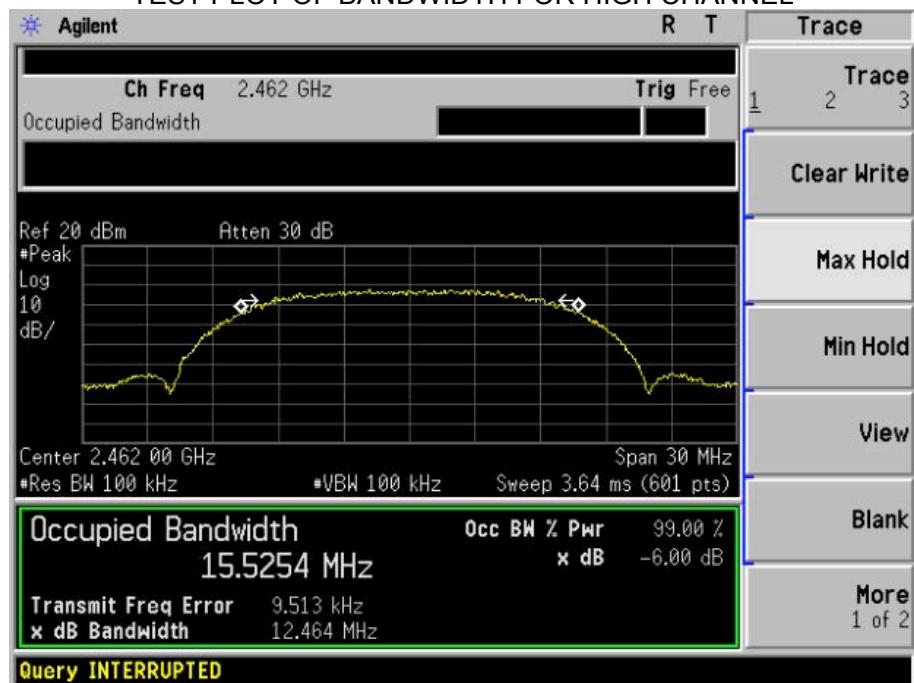
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

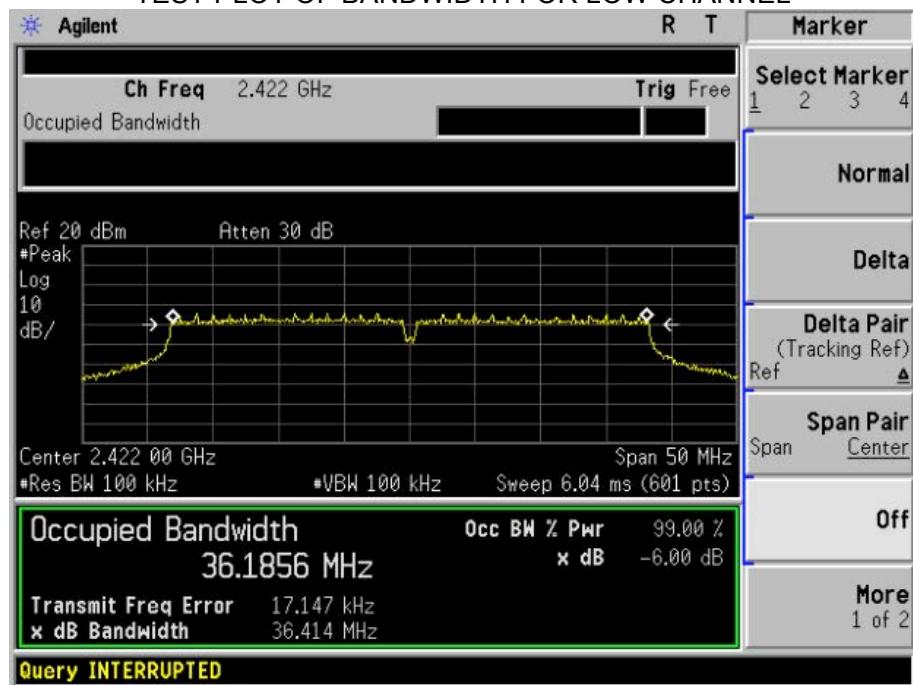


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

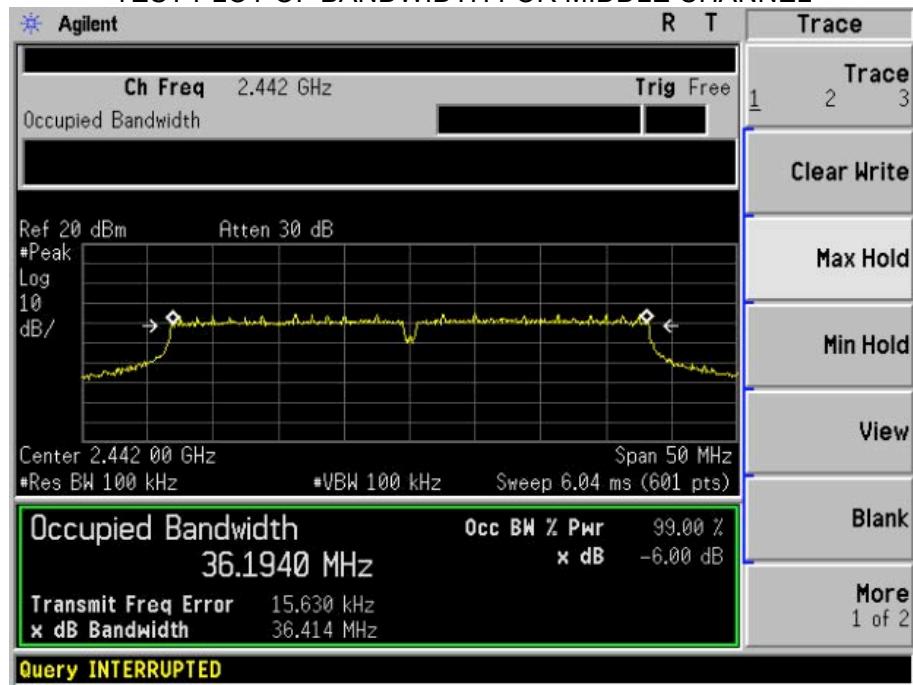


802.11n 40 TEST RESULT

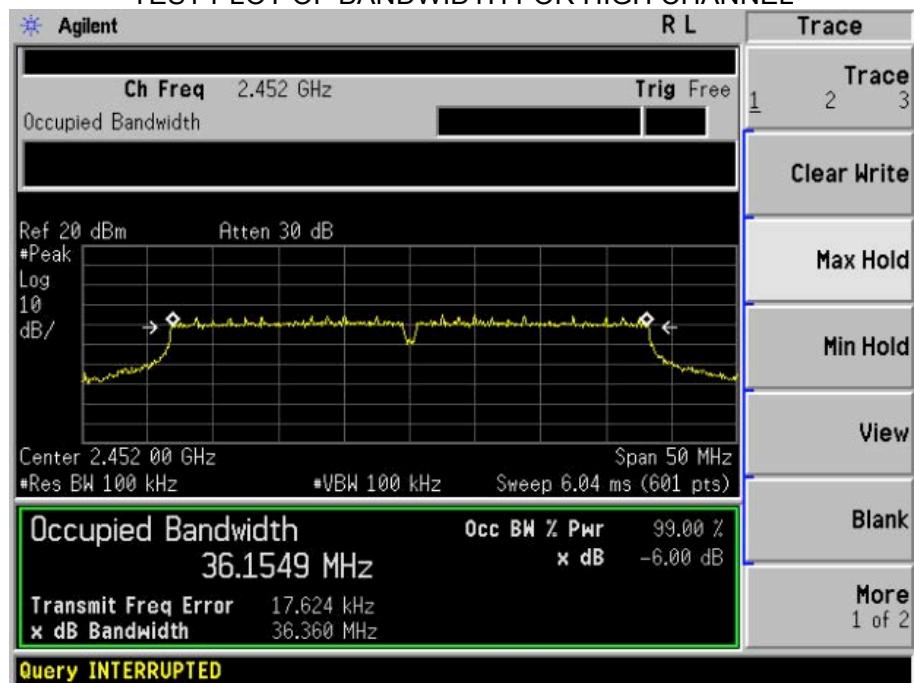
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



7. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

7.1 MEASUREMENT PROCEDURE

- (1). The EUT was placed on a turn table which is 0.8m above ground plane.
- (2). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (3). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (4). Set SPA Centre Frequency = Operation Frequency, RBW= 3 KHz,
VBW= 3 KHz., Sweep time= AUTO
- (5). Set SPA Trace 1 Max hold, then View.

7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 6.2

7.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.3

7.4 LIMITS AND MEASUREMENT RESULT

TEST ITEM	POWER PECTRAL DENSITY	
TEST MODE	802.11b with data rate 1	

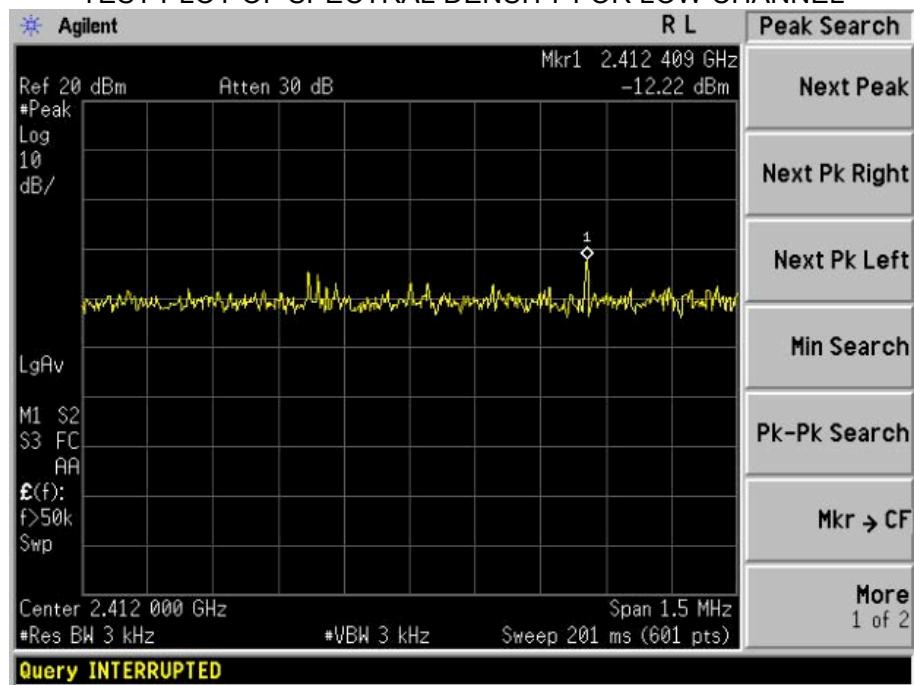
LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (dBm/3KHz)	Criteria	
8 dBm / 3KHz	Low Channel	-12.22	Pass
	Middle Channel	-11.86	Pass
	High Channel	-12.53	Pass

Note: all the test mode 11b/g/n(20) were tested ,and there is only give the worst data.

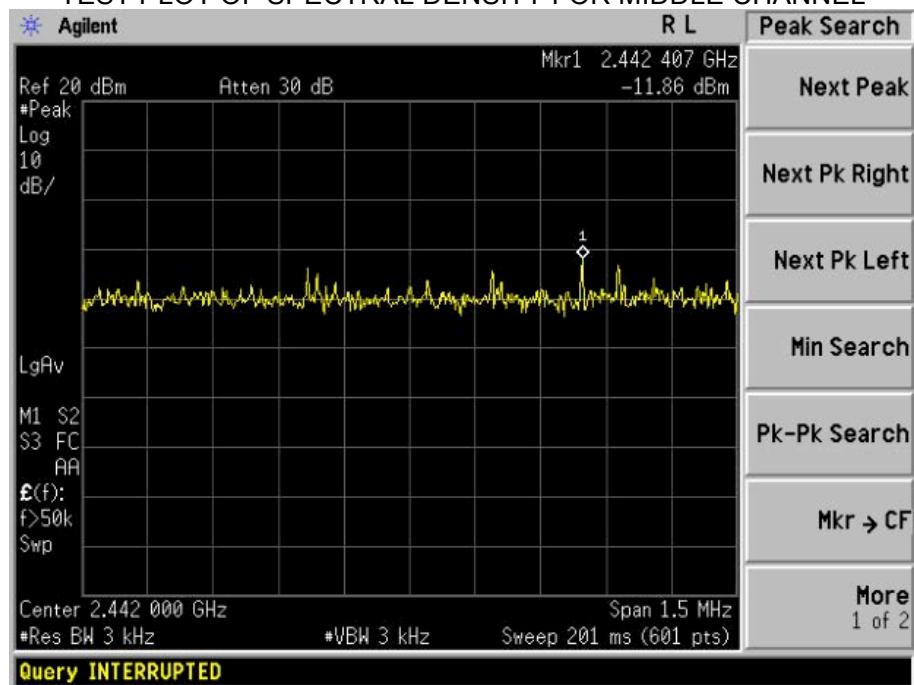
TEST ITEM	POWER PECTRAL DENSITY	
TEST MODE	802.11n 40 with data rate 13.5	

LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (dBm/3KHz)	Criteria	
8 dBm / 3KHz	Low channel	-28.43	Pass
	Middle Channel	-31.14	Pass
	High channel	-31.41	Pass

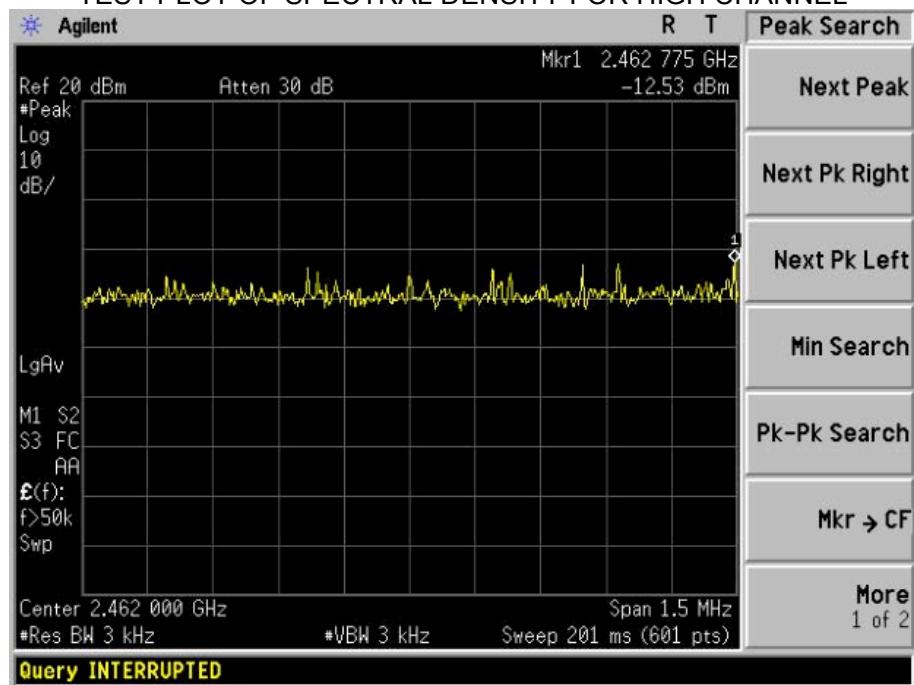
802.11b TEST RESULT
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL

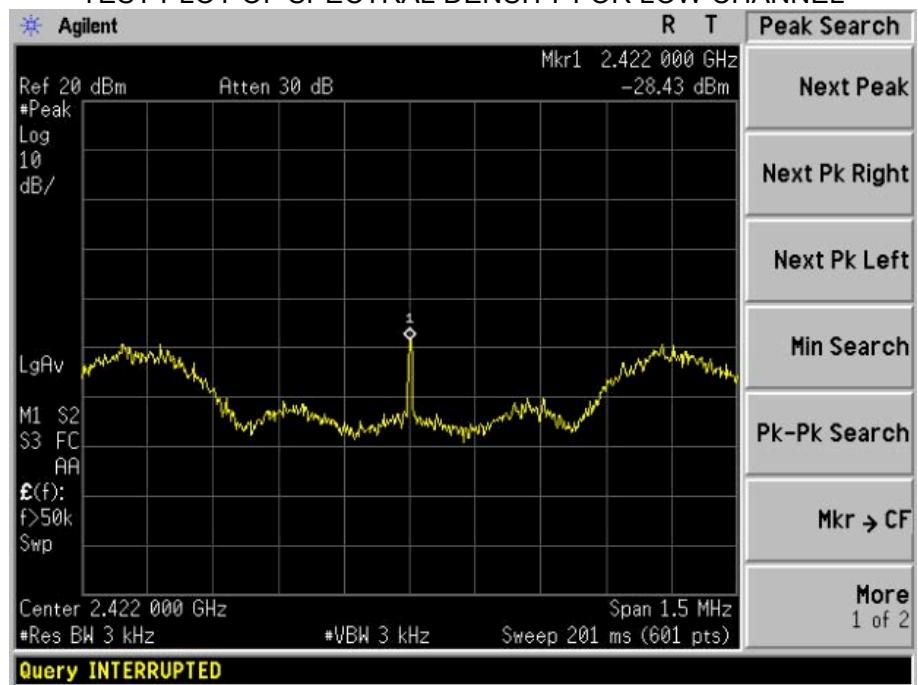


TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL

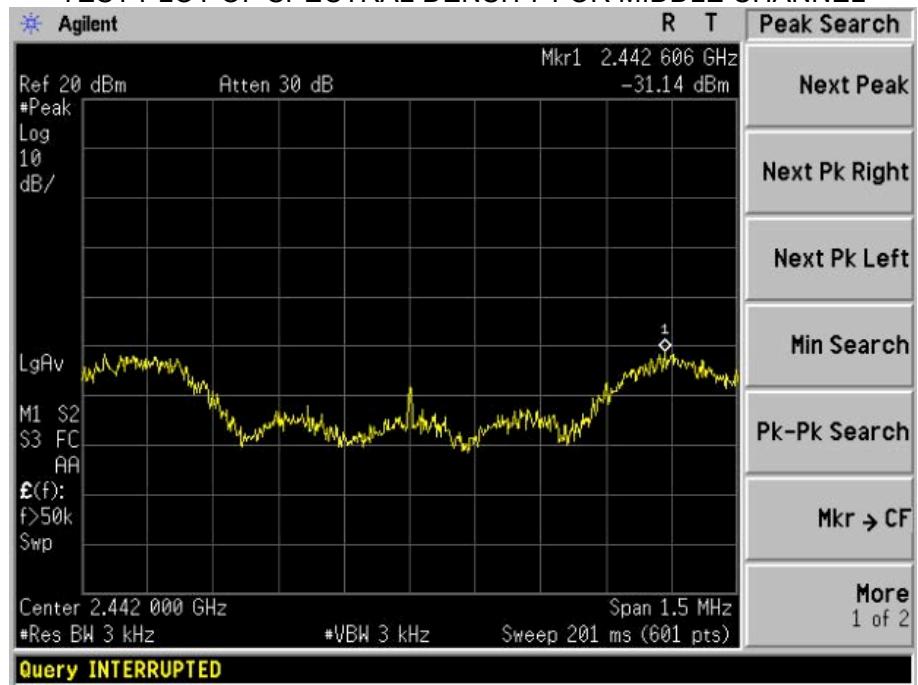


802.11n 40 TEST RESULT

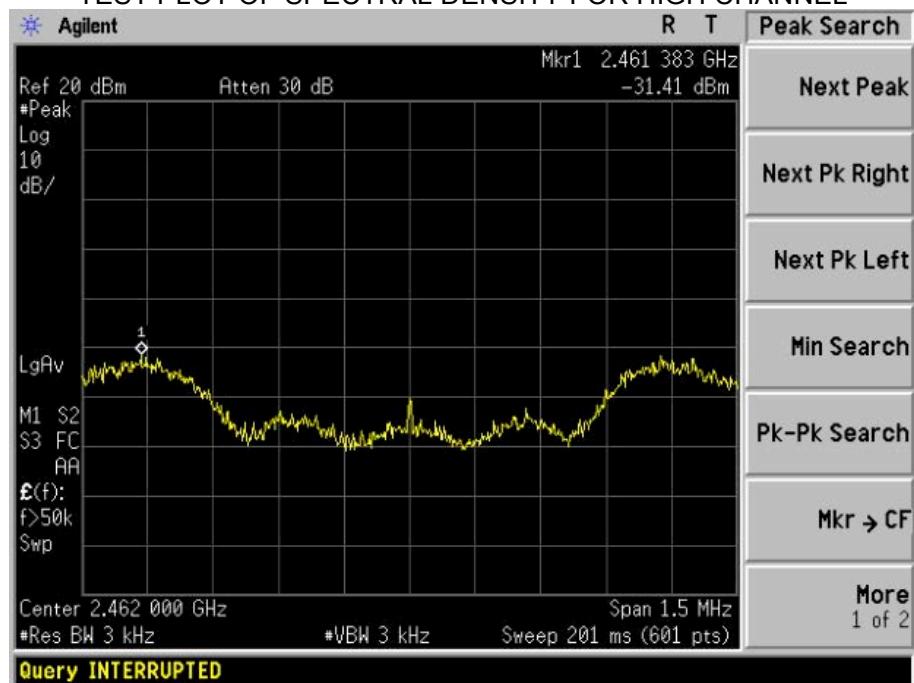
TEST PLOT OF SPECTRAL DENSITY FOR LOW CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR MIDDLE CHANNEL



TEST PLOT OF SPECTRAL DENSITY FOR HIGH CHANNEL



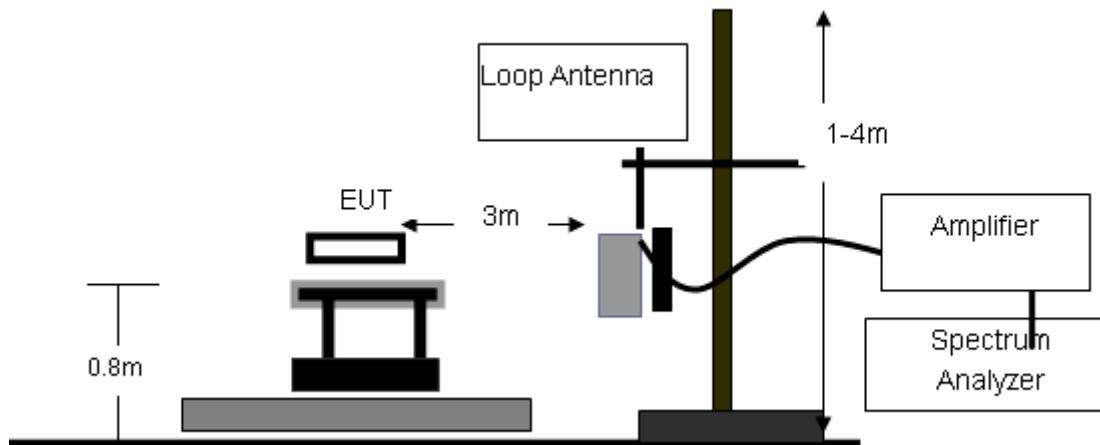
8. RADIATED EMISSION MEASUREMENT

8.1 MEASUREMENT PROCEDURE

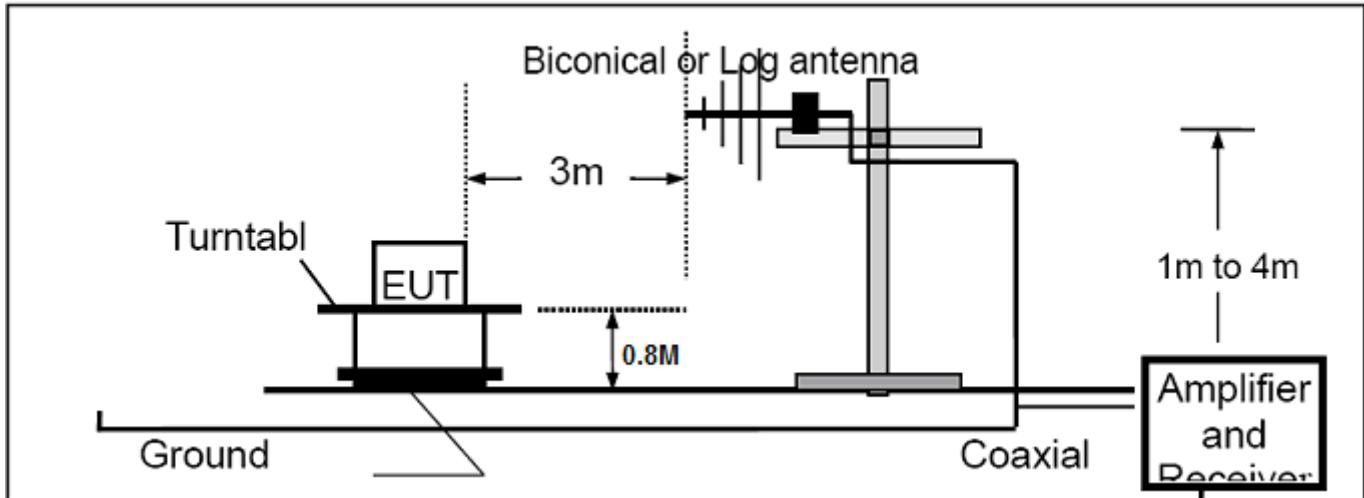
- 1 Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 Meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2 Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine The position of the highest radiation.
- 3 The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4 For each suspected emissions, the antenna tower was scan (from 1M to 4M) and then the turntable was Rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5 Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode
- 6 For emission above 1GHZ, use 1MHZ VBW and RBW for peak reading. Then 1MHZ RBW and 10Hz VBW For average reading in spectrum analyzer.
- 7 When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one Complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the Pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 seconds interval during which the field strength is at its maximum value.
- 8 If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9 For testing above 1GHZ, the emissions level of the EUT in peak mode was lower than average limit (that Means the emissions level in peak mode also complies with the limit in average mode) then testing will be Stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average Mode again and reported.
- 10 in case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded Data should be QP measured by receiver. High-Low scan is not required in this case.

8.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

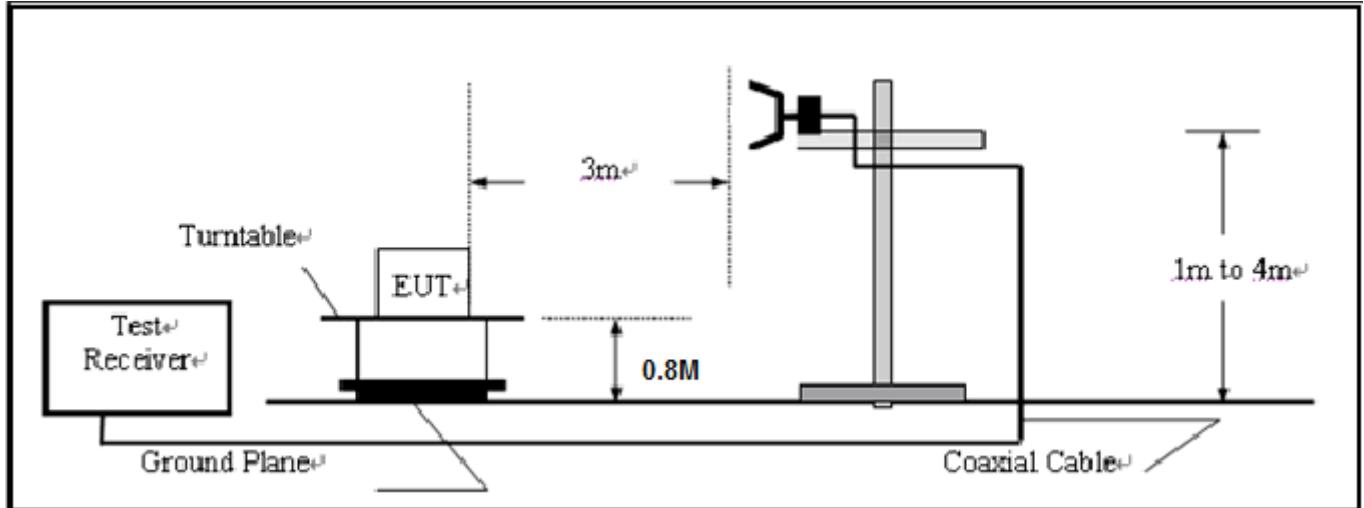
RADIATED EMISSION TEST SETUP BELOW 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



8.3 MEASUREMENT EQUIPMENT USED

Description	Manufacturer	Model	SERIAL NUMBER	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4440A	N/A	06/27/2011	06/26/2012
Amplifier	EM	EM30180	0607030	06/27/2011	06/26/2012
Horn Antenna	EM	EM-AH-10180	N/A	06/27/2011	06/26/2012
Horn Antenna	A.H. Systems Inc.	SAS-574	--	06/27/2011	06/26/2012
EMI Test Receiver	Rohde & Schwarz	ESCI	N/A	06/27/2011	06/26/2012
Amplifier	EM	EM30180	N/A	06/27/2011	06/26/2012
Biological Antenna	A.H. Systems Inc.	SAS-521-4	N/A	06/27/2011	06/26/2012
Loop Antenna	A.H.	SAS-526B	264	06/27/2011	06/26/2012
Isolation Transformer	LETEAC	LTBK	--	06/27/2011	06/26/2012

8.4 LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested For restricted band radiated emission,
the test records reported below are the worst result compared to other modes.

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequency to 30MHz.

RADIATED EMISSION BELOW 1GHZ

EUT	MID	Model Name	MD700
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b With date rate 11 2462MHZ	Antenna	Vertical



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna	Table	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		52.6332	29.50	3.45	32.95	40.00	-7.05	peak			
2	*	78.5000	23.99	9.53	33.52	40.00	-6.48	peak			
3		178.7332	15.83	17.91	33.74	43.50	-9.76	peak			
4		219.1500	20.59	14.15	34.74	46.00	-11.26	peak			
5		293.5167	12.50	17.06	29.56	46.00	-16.44	peak			
6		472.9667	12.10	21.62	33.72	46.00	-12.28	peak			

EUT	MID	Model Name	MD700
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b With date rate 11 2462MHZ	Antenna	Horizontal

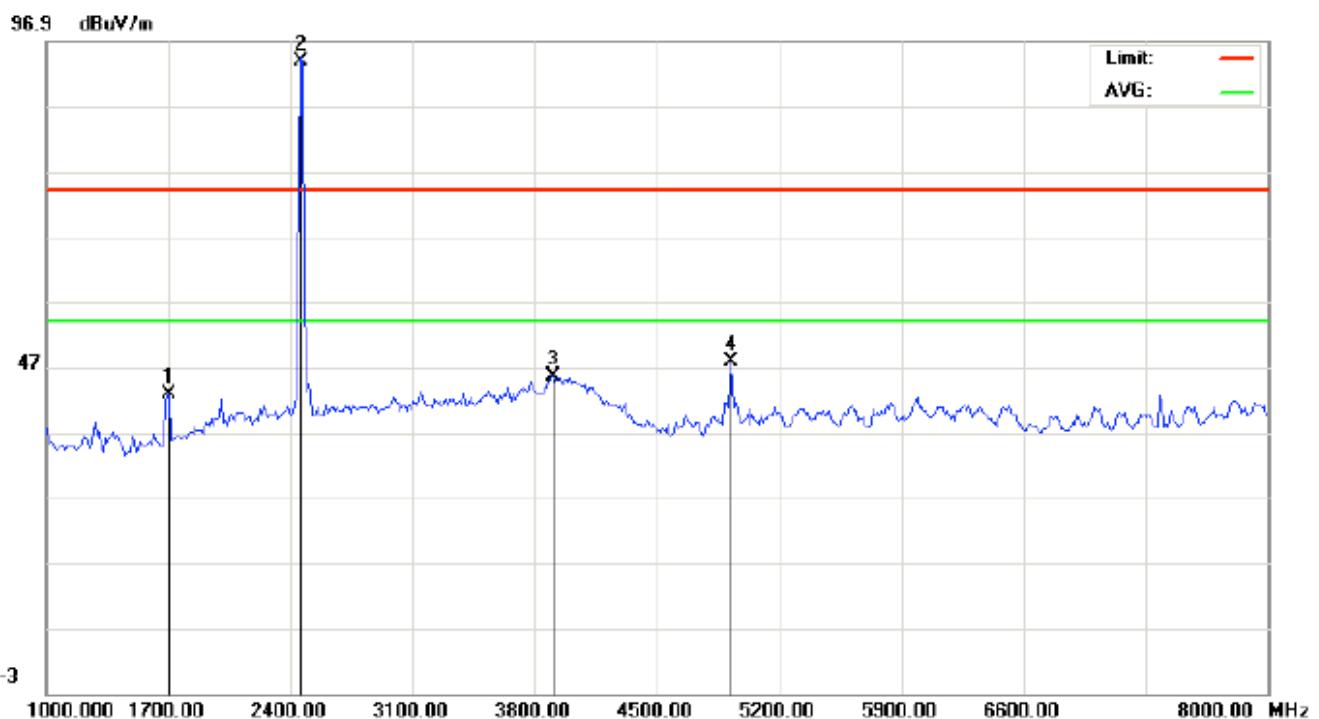


No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna	Table	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		Height	Degree	
1	!	47.7832	30.87	4.45	35.32	40.00	-4.68	peak			
2	*	75.2667	32.85	2.75	35.60	40.00	-4.40	peak			
3		109.2167	19.96	10.19	30.15	43.50	-13.35	peak			
4		148.0166	15.68	17.93	33.61	43.50	-9.89	peak			
5		236.9333	14.36	15.51	29.87	46.00	-16.13	peak			
6		479.4331	10.44	21.67	32.11	46.00	-13.89	peak			

Note: Measurement= Reading + Factor, Over=Measure-Limit.

RADIATED EMISSION ABOVE 1GHZ

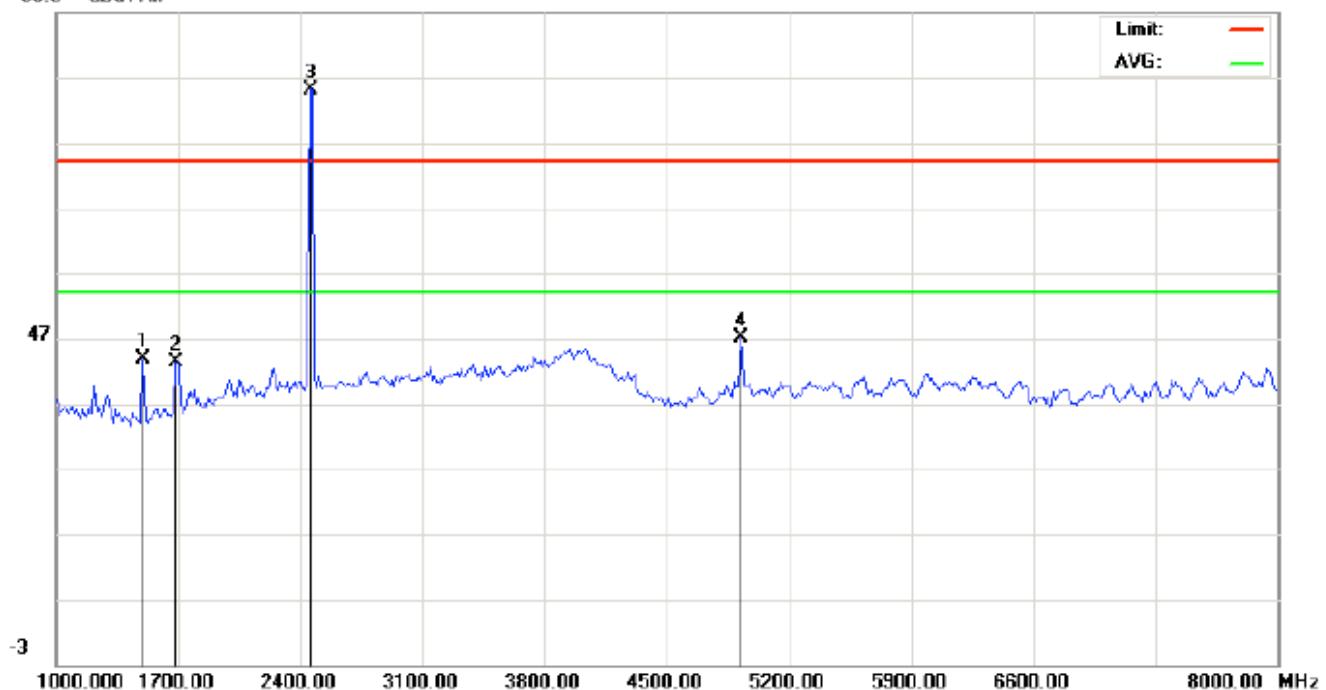
EUT	MID	Model Name	MD700
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b With date rate 11 2462MHZ	Antenna	Vertical



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna	Table	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		Height	Degree	
1		1700.000	46.08	-3.28	42.80	74.00	-31.20	peak			
2	*	2462.000	93.45	0.39	93.84	74.00	19.84	peak			
3		3905.000	40.81	4.60	45.41	74.00	-28.59	peak			
4		4920.000	49.71	-2.01	47.70	74.00	-26.30	peak			

EUT	MID	Model Name	MD700
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b With date rate 11 2462MHZ	Antenna	Horizontal

96.9 dBuV/m



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna	Table	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		1501.667	49.08	-5.36	43.72	74.00	-30.28	peak			
2		1688.333	46.60	-3.40	43.20	74.00	-30.80	peak			
3	*	2462.000	84.68	0.39	85.07	74.00	11.07	peak			
4		4920.000	48.94	-2.01	46.93	74.00	-27.07	peak			

Note: The other frequency radiation emissions have more than 20dB margin.

Measurement= Reading + Factor, Over=Measure-Limit.

All modes radiation emission from 8GHz to 25GHz at least have 20dB margin.

9 BAND EDGE EMISSION

9.1 MEASUREMENT PROCEDURE

1. Set the EUT Work on the top, the bottom operation frequency individually.
2. Set SPA Start or Stop Frequency = Operation Frequency, RBW= 1MHz, VBW= 1MHz.
3. The band edges was measured and recorded.

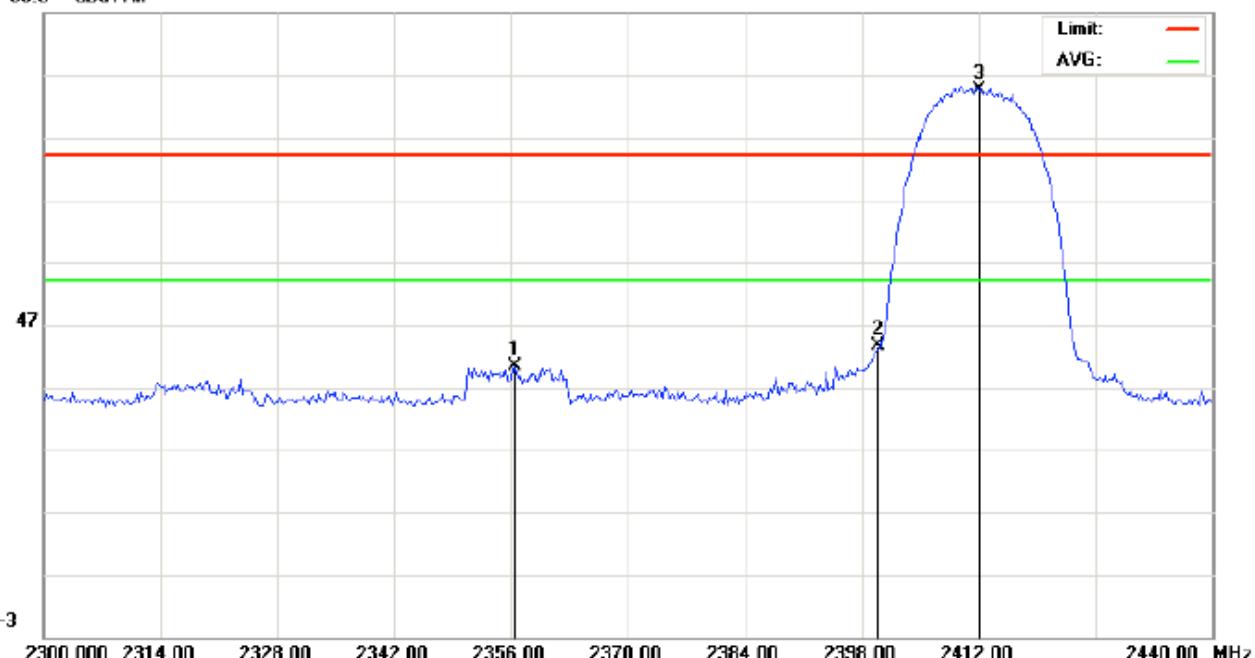
9.2 TEST SET-UP

The same as described in section 8.2

9.3 TEST RESULT

EUT	MID	Model Name	MD700
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b With data rate 11 2412MHZ	Antenna	Vertical

96.9 dBuV/m

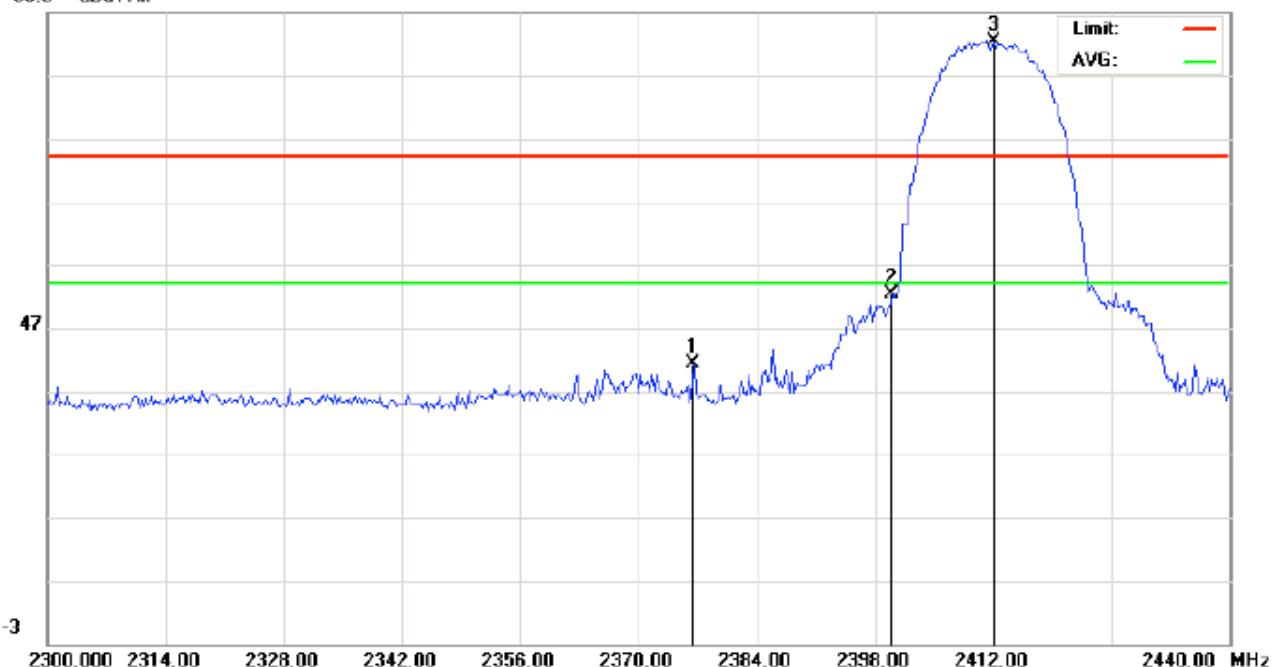


Site: site #1 Polarization: **Vertical** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: 11N Wireless PCI-E Card Distance: 3m
M/N: K2-652PE
Mode: channel 01
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2356.467	39.89	0.27	40.16	74.00	-33.84	peak			
2		2400.000	43.10	0.32	43.42	74.00	-30.58	peak			
3	*	2412.000	84.20	0.33	84.53	74.00	10.53	peak			

EUT	MID	Model Name	MD700
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b With data rate 11 2412MHZ	Antenna	Horizontal

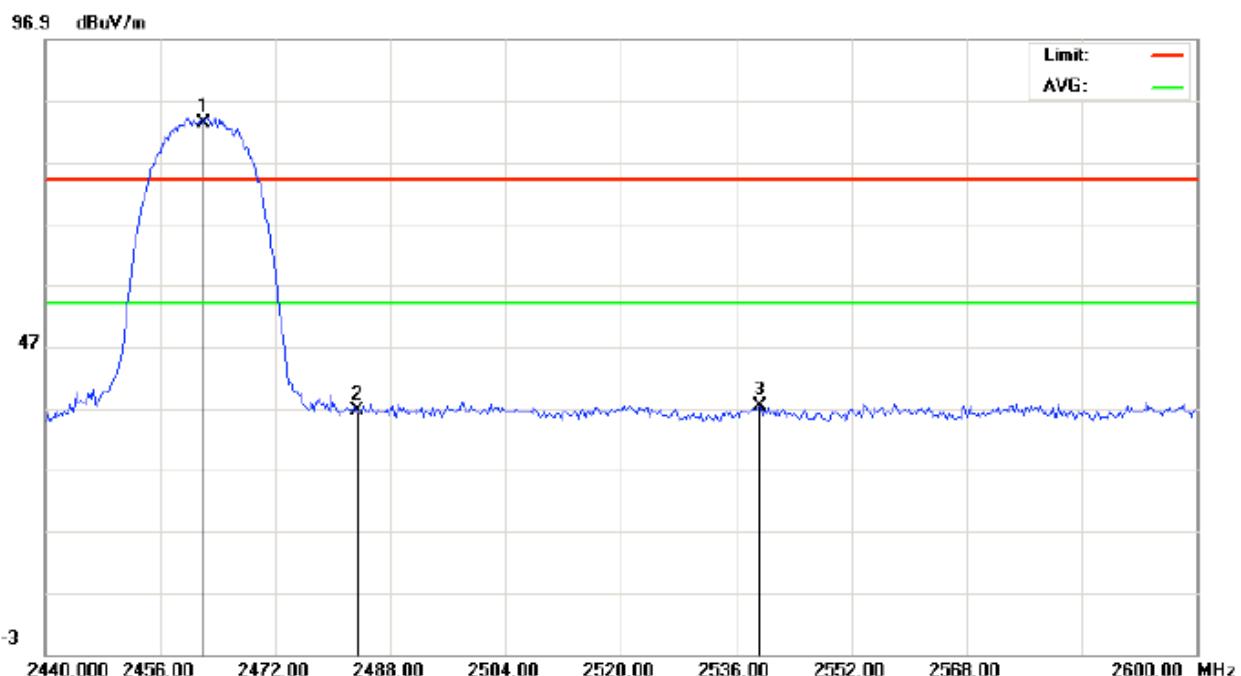
96.9 dBuV/m



Site: site #1 Polarization: **Horizontal** Temperature: 26
 Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
 EUT: 11N Wireless PCI-E Card Distance: 3m
 M/N: K2-652PE
 Mode: channel 01
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2376.533	40.95	0.29	41.24	74.00	-32.76	peak			
2		2400.000	51.96	0.32	52.28	74.00	-21.72	peak			
3	*	2412.000	91.89	0.33	92.22	74.00	18.22	peak			

EUT	MID	Model Name	MD700
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b With data rate 11 2462MHZ	Antenna	Vertical



Site: site #1 Polarization: **Vertical** Temperature: 26
 Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
 EUT: 11N Wireless PCI-E Card Distance: 3m
 M/N: K2-652PE
 Mode: channel 01
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2462.000	82.89	0.39	83.28	74.00	9.28	peak			
2		2483.500	36.13	0.41	36.54	74.00	-37.46	peak			
3		2539.200	36.71	0.52	37.23	74.00	-36.77	peak			

EUT	MID	Model Name	MD700
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b With data rate 11 2462MHZ	Antenna	Horizontal

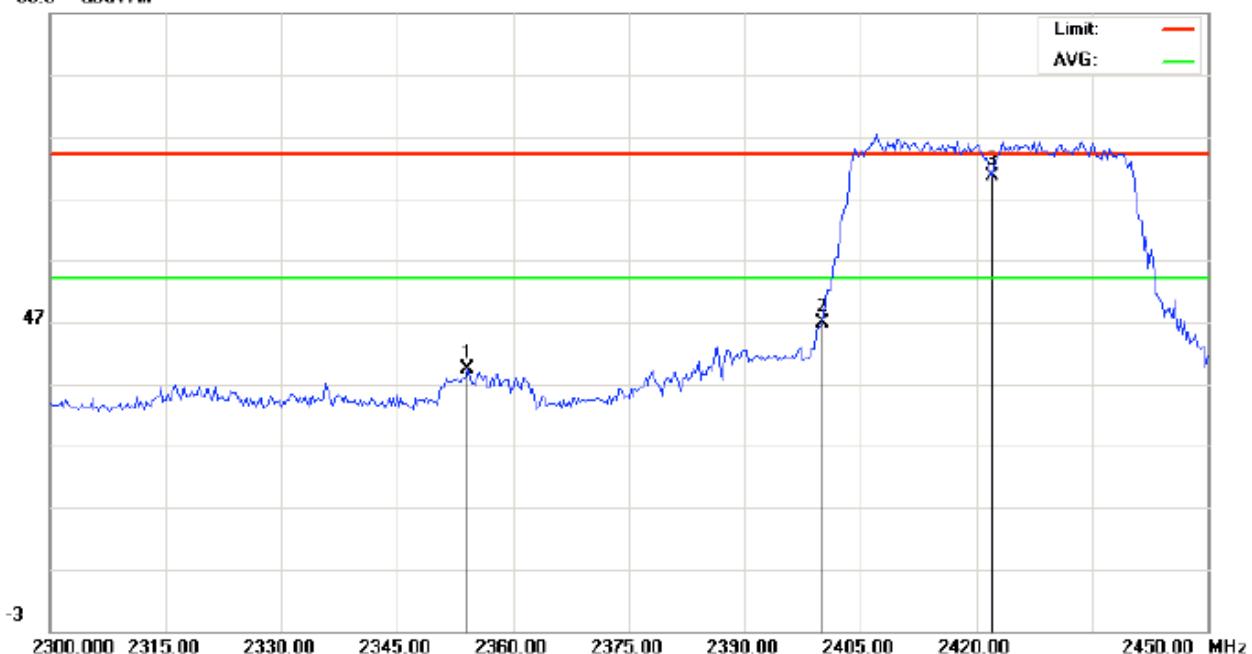


Site: site #1 Polarization: **Horizontal** Temperature: 26
 Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
 EUT: 11N Wireless PCI-E Card Distance: 3m
 M/N: K2-652PE
 Mode: channel 01
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dB	cm		degree		
1	*	2462.000	92.18	0.39	92.57	74.00	18.57	peak			
2		2483.500	38.64	0.41	39.05	74.00	-34.95	peak			
3		2504.267	41.11	0.44	41.55	74.00	-32.45	peak			

EUT	MID	Model Name	MD700
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 With data rate 135 2422MHZ	Antenna	Vertical

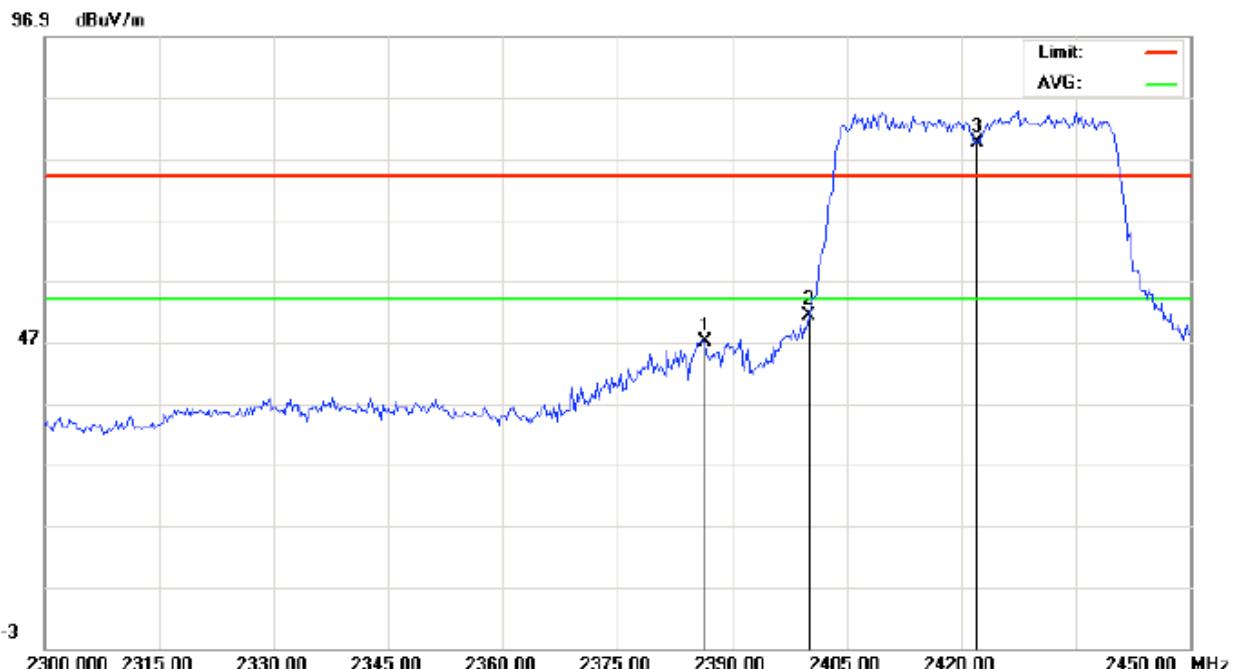
96.9 dBuV/m



Site: site #1 Polarization: **Vertical** Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
EUT: 11N WirelessPCI-E Card Distance: 3m
M/N: K2-652PE
Mode: channel 03
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna	Table	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		Height	Degree	
1		2354.000	39.04	0.27	39.31	74.00	-34.69	peak			
2		2400.000	46.50	0.32	46.82	74.00	-27.18	peak			
3	*	2422.000	70.30	0.34	70.64	74.00	-3.36	peak			

EUT	MID	Model Name	MD700
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 With data rate 135 2422MHZ	Antenna	Horizontal



Site: site #1 Polarization: **Horizontal** Temperature: 26
 Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
 EUT: 11N Wireless PCI-E Card Distance: 3m
 M/N: K2-652PE
 Mode: channel 03
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2386.500	46.79	0.31	47.10	74.00	-26.90	peak			
2		2400.000	50.86	0.32	51.18	74.00	-22.82	peak			
3	*	2422.000	79.20	0.34	79.54	74.00	5.54	peak			

EUT	MID	Model Name	MD700
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 With data rate 135 2452MHZ	Antenna	Vertical



Site: site #1 Polarization: **Vertical** Temperature: 26
 Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
 EUT: 11N WirelessPCI-E Card Distance: 3m
 M/N: K2-652PE
 Mode: vchannel 09
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2462.000	68.95	0.39	69.34	74.00	-4.66	peak			
2		2483.500	47.38	0.41	47.79	74.00	-26.21	peak			
3		2523.200	34.55	0.49	35.04	74.00	-38.96	peak			

EUT	MID	Model Name	MD700
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11n 40 With data rate 135 2452MHZ	Antenna	Horizontal



Site: site #1 Polarization: **Horizontal** Temperature: 26
 Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %
 EUT: 11N Wireless PCI-E Card Distance: 3m
 M/N: K2-652PE
 Mode: channel 09
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2462.000	79.25	0.39	79.64	74.00	5.64	peak			
2		2483.500	50.61	0.41	51.02	74.00	-22.98	peak			
3		2504.300	47.92	0.44	48.36	74.00	-25.64	peak			

Note: the other modes radiation emission have enough 20dB margin.
 Measurement= Reading + Factor, Over=Measure-Limit.

10 FCC LINE CONDUCTED EMISSION TEST

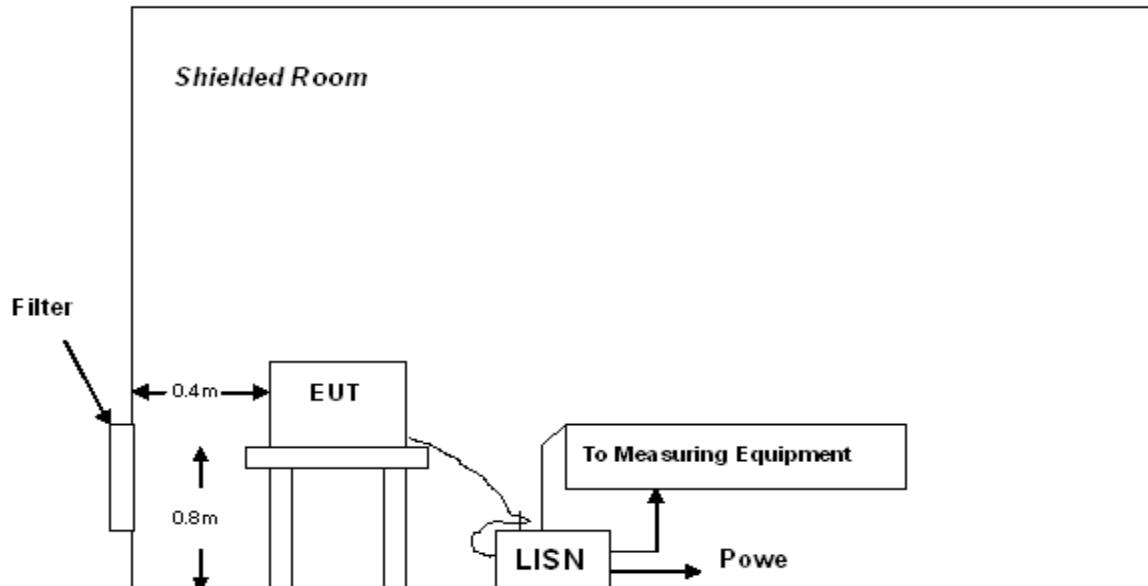
10.1 LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

**Note: 1. The lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

10.2 BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



10.3 PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per ANSI C63.4.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4) All support equipments received AC120V power from a LISN, if any.
- 5) The EUT received power from support adapter.
- 6) The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7) Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8) During the above scans, the emissions were maximized by cable manipulation.
- 9) The following test mode(s) were scanned during the preliminary test:

Preliminary Line Conducted Emission Test				
Frequency Range Investigated		150 KHz TO 30 MHz		
Mode of operation	Date	Report No.	Data#	Worst Mode
802.11b	09/16/2011	AGC00M110101-2	K2-652PE-0	<input checked="" type="checkbox"/>
802.11g	09/16/2011	AGC00M110101-2	K2-652PE-1	<input type="checkbox"/>
802.11n	09/16/2011	AGC00M110101-2	K2-652PE-2	<input type="checkbox"/>

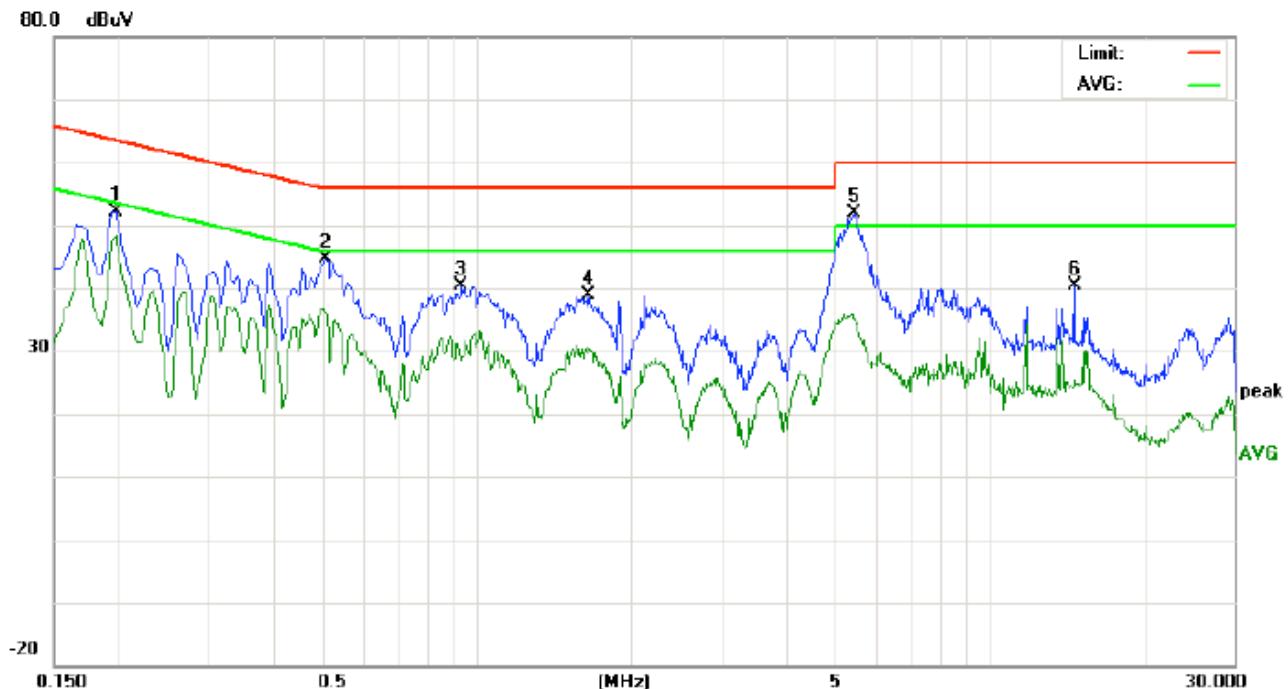
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

10.4 FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1) EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- 2) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3) The test data of the worst case condition(s) was reported on the Summary Data page.

10.5 TEST RESULT OF LINE CONDUCTED EMISSION TEST

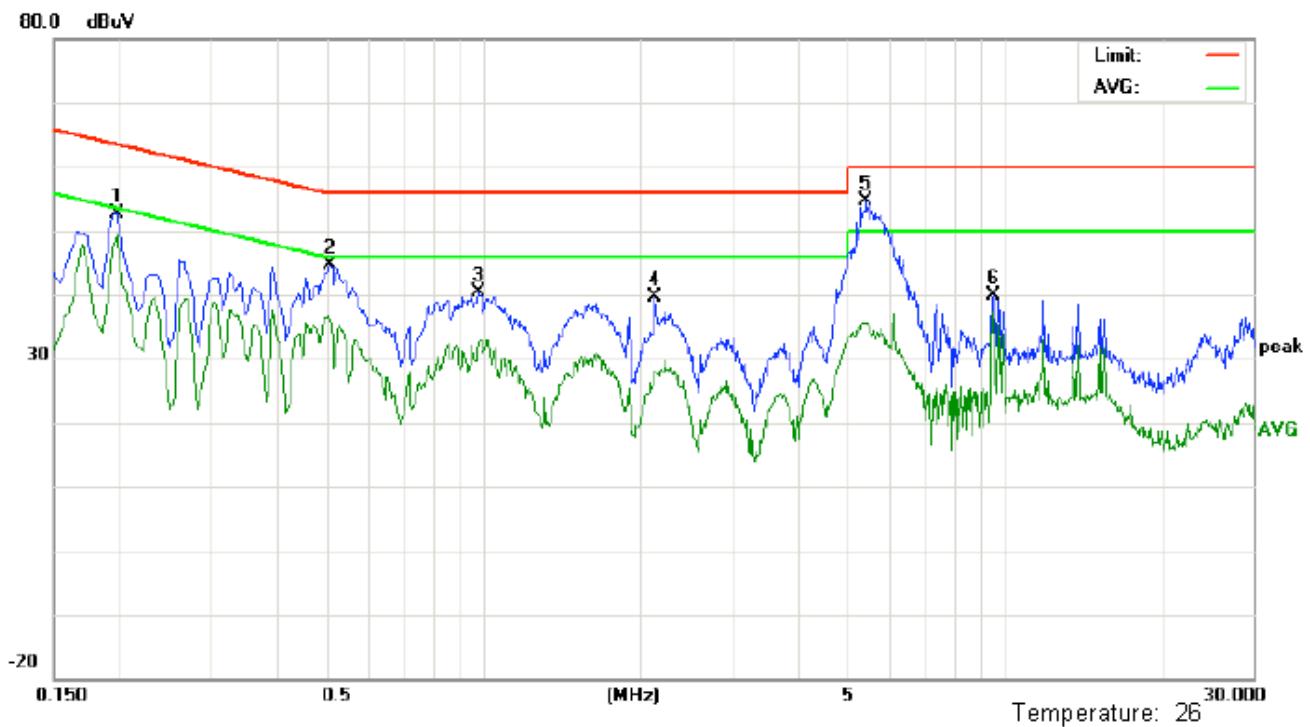
TEST RESULT OF L LINE



Site: Conduction Phase: **L1** Temperature: 26
 Limit: FCC Class B Conduction(QP) Power: Humidity: 60 %
 EUT: 11N Wireless PCI-E Card
 M/N: K2-652PE
 Mode: 802.11b
 Note:

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	Avg		dB	Peak	QP	Avg	QP	Avg	QP	Avg	
1	0.1980	42.03		38.11	10.21	52.24		48.32	63.69	53.69	-11.45	-5.37	P	
2	0.5100	34.22		25.65	10.39	44.61		36.04	56.00	46.00	-11.39	-9.96	P	
3	0.9380	29.90		18.45	10.39	40.29		28.84	56.00	46.00	-15.71	-17.16	P	
4	1.6620	28.50		19.33	10.33	38.83		29.66	56.00	46.00	-17.17	-16.34	P	
5	5.4579	41.72		24.95	10.25	51.97		35.20	60.00	50.00	-8.03	-14.80	P	
6	14.6659	30.20		14.32	10.12	40.32		24.44	60.00	50.00	-19.68	-25.56	P	

TEST RESULT OF N LINE



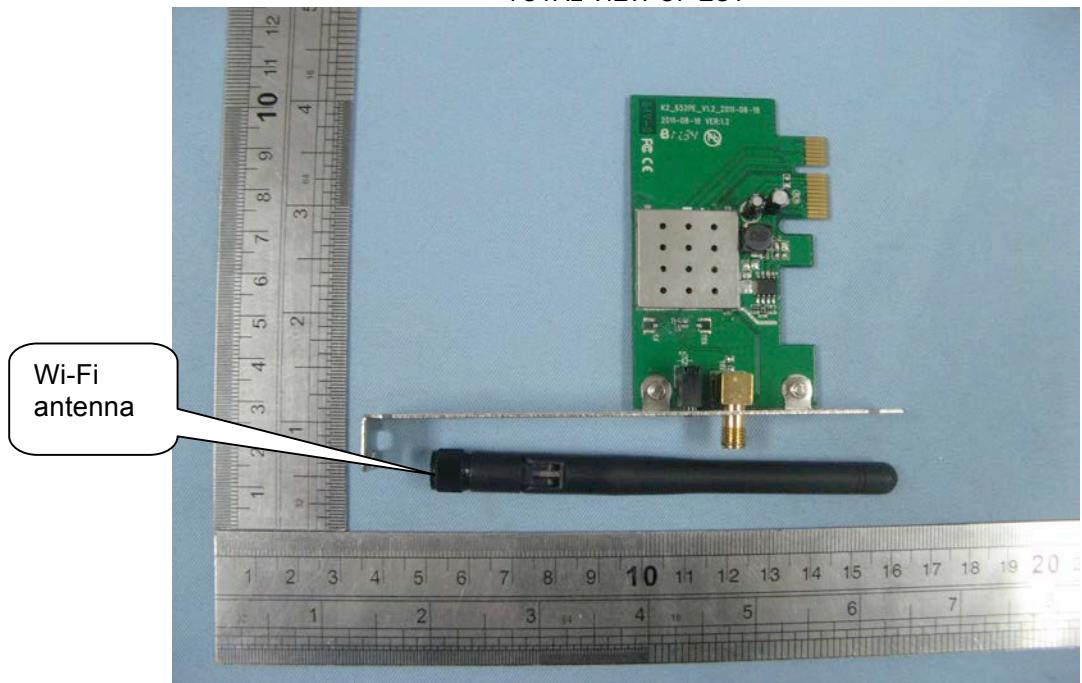
Site: Conduction Phase: **N** Humidity: 60 %
 Limit: FCC Class B Conduction(QP) Power:
 EUT: 11N Wireless PCI-E Card
 M/N: K2-652PE

Mode: 802.11b

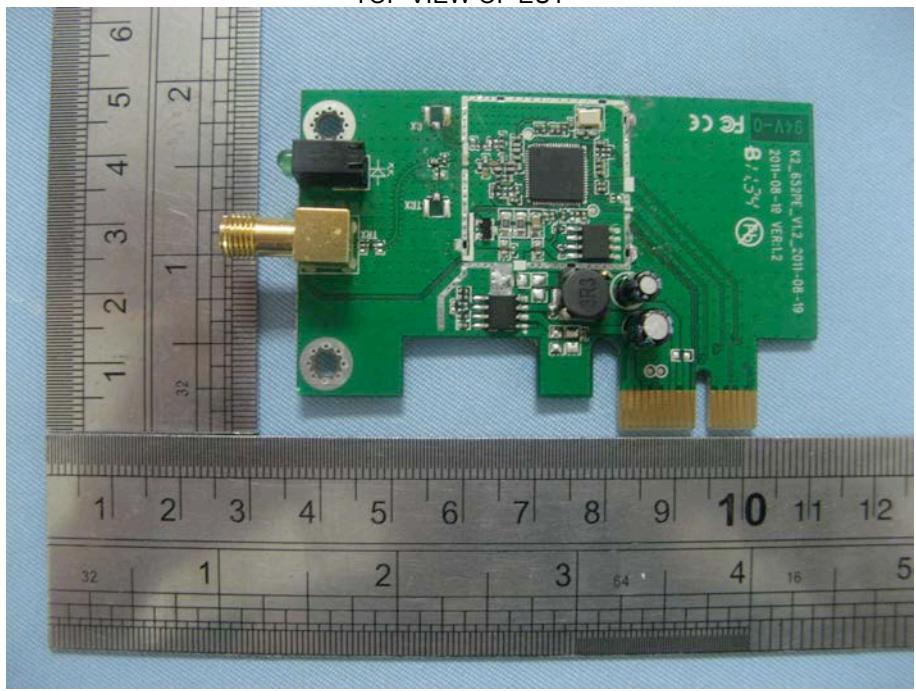
No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	Avg		Peak	QP	Avg	QP	Avg	QP	Avg		
1	0.1980	42.46		39.06	10.21	52.67		49.27	63.69	53.69	-11.02	-4.42	P	
2	0.5100	34.11		25.37	10.39	44.50		35.76	56.00	46.00	-11.50	-10.24	P	
3	0.9820	29.94		22.31	10.38	40.32		32.69	56.00	46.00	-15.68	-13.31	P	
4	2.1340	29.26		17.94	10.28	39.54		28.22	56.00	46.00	-16.46	-17.78	P	
5	5.4419	44.27		25.35	10.25	54.52		35.60	60.00	50.00	-5.48	-14.40	P	
6	9.5459	29.45		24.71	10.35	39.80		35.06	60.00	50.00	-20.20	-14.94	P	

APPENDIX I
PHOTOGRAPHS OF THE EUT

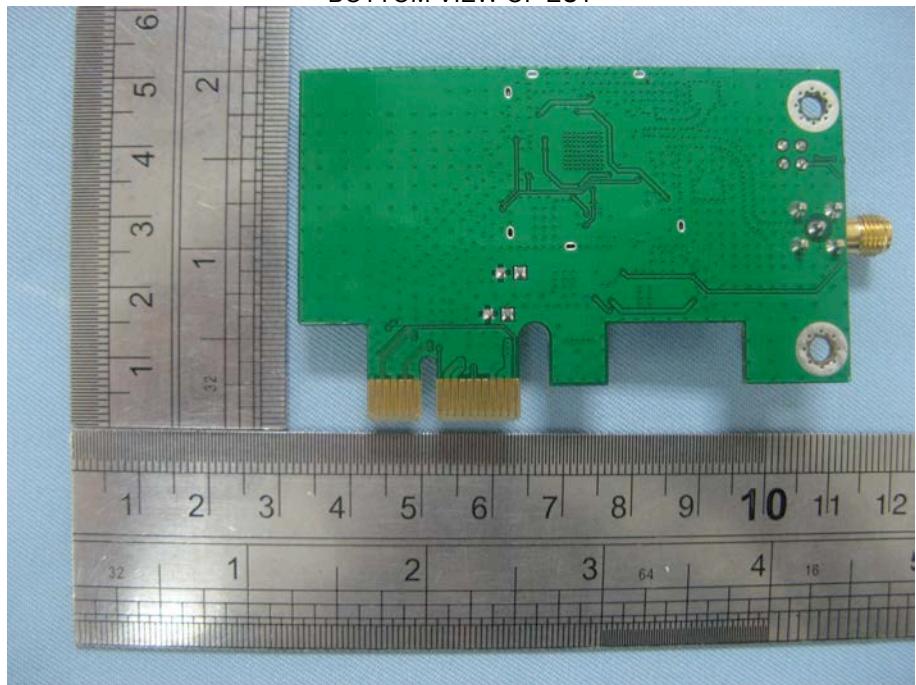
TOTAL VIEW OF EUT



TOP VIEW OF EUT

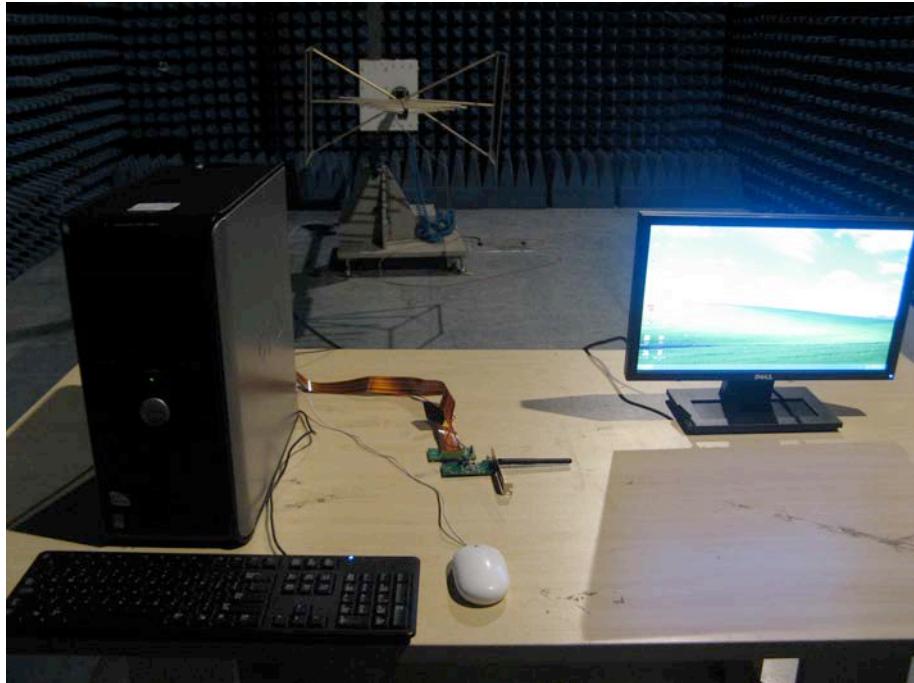


BOTTOM VIEW OF EUT



APPENDIX II
PHOTOGRAPHS OF THE TEST SETUP

RADIATED EMISSION TEST SETUP



CONDUCTED EMISSION TEST SETUP



----END OF REPORT----