

# **FCC RADIO TEST REPORT** FCC ID: 2AB87511

Product: 802.11n 150M Ultra Wireless LAN Router

**Trade Name:** ALFA

Model Name: AIP-W511, AIP-W511H, UR24, UR24H, FR24,

FR24H

Serial Model: N/A

Report No.: NTEK-2014NT04210948

## **Prepared for**

**Iconnect** 

No.9, Aly. 58, Ln. 112, Ruiguang Rd., Neihu Dist., Taipei City 114, Taiwan

## Prepared by

NTEK Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street Bao'an District, Shenzhen P.R. China

Tel.: +86-0755-61156588 Fax.: +86-0755-61156599 Website:www.ntek.org.cn



## **TEST RESULT CERTIFICATION**

Applicant's name:	
Address:	No.9, Aly. 58, Ln. 112, Ruiguang Rd., Neihu Dist., Taipei City 114, Taiwan
Manufacture's Name:	Iconnect
Address:	No.9, Aly. 58, Ln. 112, Ruiguang Rd., Neihu Dist., Taipei City 114, Taiwan
Product description	
Product name:	802.11n 150M Ultra Wireless LAN Router
Model and/or type reference :	AIP-W511,AIP-W511H,UR24,UR24H,FR24,FR24H
Serial Model:	N/A
DIFF::	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: AIP-W511
Standards:	FCC Part15.247
Test procedure	ANSI C63.4-2003
	s been tested by NTEK, and the test results show that the n compliance with the FCC requirements. And it is applicable only not the report.
	ced except in full, without the written approval of NTEK, this ised by NTEK, personal only, and shall be noted in the revision of .
Date (s) of performance of tests.	
Date of Issue	·
Test Result	Pass
Testing Engine	er: Apple Huang
	(Apple Huang)
Technical Man	
	(Tom Zhang)
Authorized Sig	natory: tong

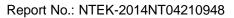
(Bovey Yang)



## Page 3 of 74 Report No.: NTEK-2014NT04210948

## **Table of Contents**

	Page
1 . SUMMARY OF TEST RESULTS	5
1.1 TEST FACILITY	6
1.2 MEASUREMENT UNCERTAINTY	6
2 . GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 DESCRIPTION OF TEST MODES	9
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTEI	
2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	11
2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	12
3 . EMC EMISSION TEST	13
3.1 CONDUCTED EMISSION MEASUREMENT 3.1.1 POWER LINE CONDUCTED EMISSION LIMITS	13 13
3.1.2 TEST PROCEDURE	14
3.1.3 DEVIATION FROM TEST STANDARD	14
3.1.4 TEST SETUP	14
3.1.5 EUT OPERATING CONDITIONS	14
3.1.6 TEST RESULTS	15
3.2 RADIATED EMISSION MEASUREMENT 3.2.1 RADIATED EMISSION LIMITS	17 17
3.2.2 TEST PROCEDURE	17
3.2.3 DEVIATION FROM TEST STANDARD	18
3.2.4 TEST SETUP	19
3.2.5 EUT OPERATING CONDITIONS	20
3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ) 3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)	21 22
3.2.8 TEST RESULTS (ABOVE 1000 MHZ)	24
3.2.9 TEST RESULTS (RESTRICTED BANDS REQUIREMENTS)	36
4 . POWER SPECTRAL DENSITY TEST	52
4.1 APPLIED PROCEDURES / LIMIT	52
4.1.1 TEST PROCEDURE	52
4.1.2 DEVIATION FROM STANDARD	52
4.1.3 TEST SETUP	52 52
4.1.4 EUT OPERATION CONDITIONS 4.1.5 TEST RESULTS	52 53
5 . BANDWIDTH TEST	61
5 1 APPLIED PROCEDURES / LIMIT	61





## **Table of Contents**

	Page
5.1.1 TEST PROCEDURE	61
5.1.2 DEVIATION FROM STANDARD	61
5.1.3 TEST SETUP	61
5.1.4 EUT OPERATION CONDITIONS	61
5.1.5 TEST RESULTS	62
6 . PEAK OUTPUT POWER TEST	70
6.1 APPLIED PROCEDURES / LIMIT	70
6.1.1 TEST PROCEDURE	70
6.1.2 DEVIATION FROM STANDARD	70
6.1.3 TEST SETUP	70
6.1.4 EUT OPERATION CONDITIONS	70
6.1.5 TEST RESULTS	71
7. ANTENNA REQUIREMENT	72
7.1 STANDARD REQUIREMENT	72
7.2 EUT ANTENNA	72
8 . EUT TEST PHOTO	73
APPENDIX-PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS	



## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C				
Standard Section	Test Item	Judgment	Remark	
15.207	Conducted Emission	PASS		
15.247 (a)(2)	6dB Bandwidth	PASS		
15.247 (b)	Peak Output Power	PASS		
15.247 (c)	Radiated Spurious Emission	PASS		
15.247 (d)	Power Spectral Density	PASS		
15.205	Band Edge Emission	PASS		
15.203	Antenna Requirement	PASS		

## NOTE:

(1)" N/A" denotes test is not applicable in this Test Report



## 1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd

Add.:1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.

FCC Registration No.:238937; IC Registration No.:9270A-1

CNAS Registration No.:L5516

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $\mathbf{y} \pm \mathbf{U}$ , where expended uncertainty  $\mathbf{U}$  is based on a standard uncertainty multiplied by a coverage factor of  $\mathbf{k=2}$ , providing a level of confidence of approximately 95 %  $^{\circ}$ 

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%



## 2. GENERAL INFORMATION

## 2.1 GENERAL DESCRIPTION OF EUT

Equipment	802.11n 150M Ultra	Wireless LAN Router			
Trade Name	ALFA				
Model Name	AIP-W511,AIP-W511	IH,UR24,UR24H,FR24,FR24H			
Serial Model	N/A				
Model Difference		ion, software and electric circuit are the roduct color and model named different.  I: AIP-W511			
Product Description	Operation Frequency: Modulation Type: Bit Rate of Transmitter  Number Of Channel  Antenna Designation: Peak Output Power(Conducted):  Antenna Gain (dBi)  Based on the application of the policy of th	n 150M Ultra Wireless LAN Router 802.11b/g/n 20:2412~2462 MHz 802.11n 40: 2422~2452MHz CCK/OFDM/DBPSK/DAPSK 802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n(20/40MHz):300/150/144.44/ 130/117/115.56/104/86.67/78/52/6.5 Mbps 802.11b/g/n20: 11CH 802.11n 40: 7CH Please see Note 3.  802.11b: 9.24 dBm (Max.) 802.11g: 8.25 dBm (Max.) 802.11n(20MHz): 7.88 dBm (Max.) 802.11n(40MHz): 7.09 dBm (Max.) 1 dbi etion, features, or specification exhibited for EUT technical specification, please anual.	in		
Channel List	Please refer to the Note 2.				
Ratings	DC 3.7V				
Adapter	AC Power Input: 100-240V~, 50/60Hz, 0.4A Output: 5.0V === 2.5A				
	Rated Voltage: 3.7V				
Battery	Charge Limit: 4.2V				
	Capacity :2800mAh				
Connecting I/O Port(s)	Please refer to the U	lser's Manual			

## Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



2.

٠,								
	Channel List for 802.11b/g/n(20MHz)							
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
	01	2412	04	2427	07	2442	10	2457
	02	2417	05	2432	80	2447	11	2462
	03	2422	06	2437	09	2452		

Report No.: NTEK-2014NT04210948

	Channel List for 802.11n(40MHz)						
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	06	2437	09	2452		
04	2427	07	2442				
05	2432	80	2447				

3.

## Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
Α	N/A	N/A	Integral Antenna	N/A	1	N/A



#### 2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n(20)CH1/ CH6/ CH11
Mode 4	802.11n(40) CH3/ CH6/ CH9
Mode 5	Link Mode

	For Conducted Emission
Final Test Mode	Description
Mode 5	Link Mode

For Radiated Emission		
Final Test Mode	Description	
Mode 1	802.11b CH1/ CH6/ CH11	
Mode 2	802.11g CH1/ CH6/ CH11	
Mode 3	802.11n CH1/ CH6/ CH11	
Mode 4	802.11n(40) CH3/ CH6/ CH9	

#### Note:

- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

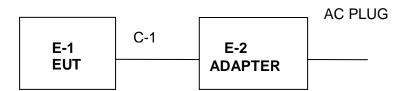


## 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Measurement:



Radiated Measurement:





## 2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	802.11n 150M Ultra Wireless LAN Router	N/A	AIP-W511	N/A	EUT
E-2	Adapter	N/A	GFP051U-050050-Q	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.8m	

#### Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in <code>"Length\_"</code> column.



## 2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

**Radiation Test equipment** 

Naui	Nation rest equipment							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until			
1	Spectrum Analyzer	Agilent	E4407B	160400005	Jul. 06. 2013			
2	Test Receiver	R&S	ESPI	101318	Jul. 06. 2013			
3	Bilog Antenna	TESEQ	CBL6111D	31216	Jul. 06. 2013			
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	Jul. 06. 2013			
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	Jul. 06. 2013			
6	Horn Antenna	EM	EM-AH-10180	2011071402	Jul. 06. 2013			
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	Jul. 06. 2013			
8	Amplifier	EM	EM-30180	060538	Jul. 06. 2013			
9	Loop Antenna	ARA	PLA-1030/B	1029	Jul. 06. 2013			
10	Power Meter	R&S	NRVS	100696	Jul. 06. 2013			
11	Power Sensor (Peak)	R&S	NRV-Z31	0396.0101.1 9	Jul. 06., 2013			

**Conduction Test equipment** 

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Test Receiver	R&S	ESCI	101160	Jul. 06. 2013
2	LISN	R&S	ENV216	101313	Jul. 06. 2013
3	LISN	EMCO	3816/2	00042990	Jul. 06. 2013
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	Jul. 06. 2013
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	Jul. 06. 2013
6	Absorbing clamp	R&S	MOS-21	100423	Jul. 06. 2013



3. EMC EMISSION TEST

#### 3.1 CONDUCTED EMISSION MEASUREMENT

## 3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B	Standard	
FREQUENCY (IVIDZ)	Quasi-peak	Average	Quasi-peak	Average	Statiuatu
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

#### Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz



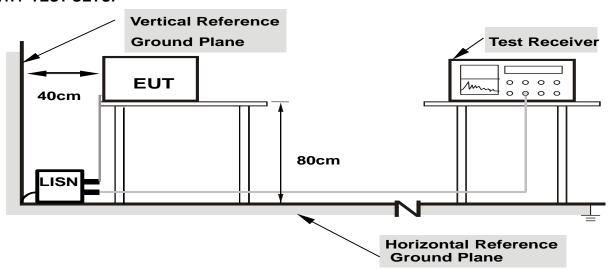
#### 3.1.2 TEST PROCEDURE

- a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.

#### 3.1.3 DEVIATION FROM TEST STANDARD

No deviation

#### 3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

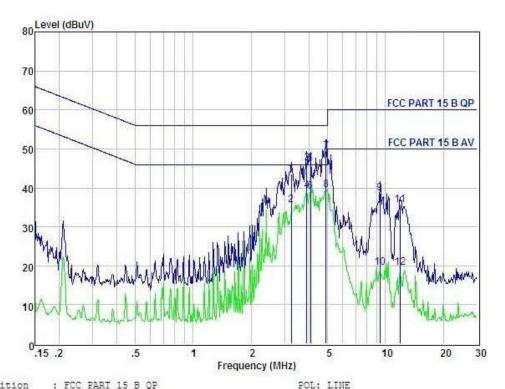
### 3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



3.1.6 TEST RESULTS

	802.11n 150M Ultra Wireless LAN Router	Model Name. :	AIP-W511
Temperature:	<b>26</b> ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	L
Test Voltage :	DC 5 V from Adapter AC120V/60Hz	Test Mode:	Mode 5

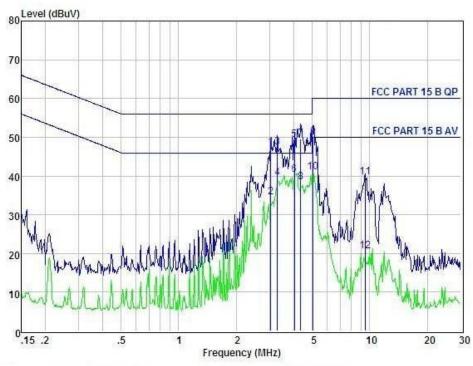


U	nartro	11 ; 1	LC PARI	TO D AL				FUL:	LINE	
	Item	Freq	Read	LISN Factor	Preamp Factor	Cable Lose	Level	Limit	Margin	Remark
		MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
	1	3.241	33.75	0.07	-9.69	0.12	43.63	56.00	-12.37	QP
	2	3.241	25.75	0.07	-9.69	0.12	35.63	46.00	-10.37	Average
	3	3.901	36.46	0.08	-9.69	0.12	46.35	56.00	-9.65	QP
	4	3.901	29.46	0.08	-9.69	0.12	39.35	46.00	-6.65	Average
	5	4.070	36.23	0.08	-9.69	0.12	46.12	56.00	-9.88	QP
	6	4.070	29.23	0.08	-9.69	0.12	39.12	46.00	-6.88	Average
	7	4.900	39.49	0.10	-9.68	0.12	49.39	56.00	-6.61	QP
	8	4.900	29.49	0.10	-9.68	0.12	39.39	46.00	-6.61	Average
	9	9.352	28.82	0.17	-9.38	0.19	38.56	60.00	-21.44	QP
	10	9.352	9.82	0.17	-9.38	0.19	19,56	50.00	-30.44	Average
	11	11.933	25.55	0.26	-9.47	0.22	35.50	60.00	-24.50	QP
	12	11.933	9.55	0.26	-9.47	0.22	19.50	50.00	-30.50	Average



I <b>- I I I</b> :	802.11n 150M Ultra Wireless LAN Router	Model Name. :	AIP-W511
Temperature:	<b>26</b> ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	N
TASE VOIDAGE .	DC 5 V from Adapter AC120V/60Hz	Test Mode:	Mode 5

Page 16 of 74



Co	ndition	n : F	CC PART	15 B QP				POL: 1	NEUTRAL	
	Item	Freq	Read	LISN Factor	Preamp Factor	Cable Lose	Level	Limit	Margin	Remark
		MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
3	1	3.041	37.54	0.07	-9.69	0.12	47.42	56.00	-8.58	QP
	2	3.041	24.54	0.07	-9.69	0.12	34.42	46.00	-11.58	Average
	3	3.293	37.60	0.07	-9.69	0.12	47.48	56.00	-8.52	QP
	4	3.293	29.60	0.07	-9.69	0.12	39.48	46.00	-6.52	Average
	5	4.027	39.47	0.08	-9.69	0.12	49.36	56.00	-6.64	QP
	6	4.027	30.47	0.08	-9.69	0.12	40.36	46.00	-5.64	Average
	7	4.361	39.59	0.09	-9.68	0.12	49.48	56.00	-6.52	QP
	8	4.361	28.59	0.09	-9.68	0.12	38.48	46.00	-7.52	Average
	8	5,058	40.10	0.10	-9.68	0.12	50.00	60.00	-10.00	QP
	10	5.058	31.10	0.10	-9.68	0.12	41.00	50.00	-9.00	Average
	11	9.451	29.89	0.17	-9.38	0.19	39.63	60.00	-20.37	QP
	12	9.451	10.89	0.17	-9.38	0.19	20.63	50.00	-29.37	Average



3.2 RADIATED EMISSION MEASUREMENT

## 3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

	Class A (dBu	V/m) (at 3M)	Class B (dBuV/m) (at 3M)		
FREQUENCY (MHz)	PEAK	AVERAGE	PEAK	AVERAGE	
Above 1000	80 60		74	54	

#### Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting	
Attenuation	Auto	
Start Frequency	1000 MHz	
Stop Frequency	10th carrier harmonic	
RB / VB (emission in restricted	4 Mile / 4 Mile for Dook 4 Mile / 40//=for Average	
band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average	

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP



3.2.2 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos. Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

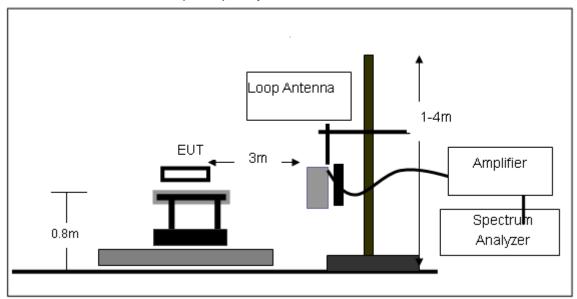
#### 3.2.3 DEVIATION FROM TEST STANDARD

No deviation

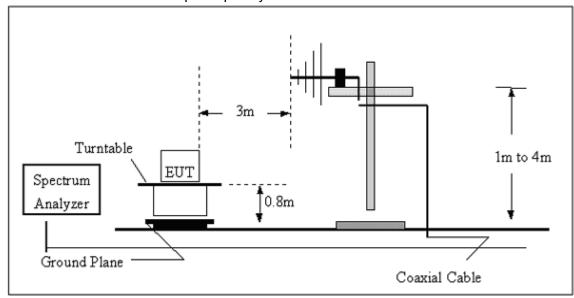


## 3.2.4 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz

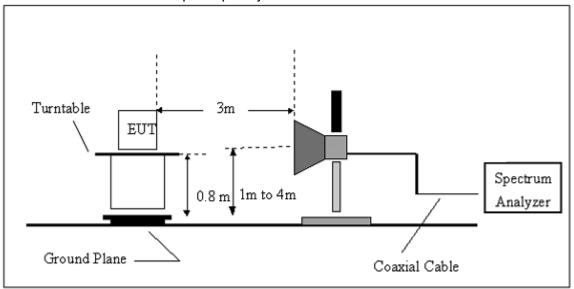


(B) Radiated Emission Test-Up Frequency 30MHz~1GHz





## (C) Radiated Emission Test-Up Frequency Above 1GHz



## 3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



3.2.6 TEST RESULTS (BETWEEN 9KHZ - 30 MHZ)

IF() •	802.11n 150M Ultra Wireless LAN Router	Model Name. :	AIP-W511
Temperature:	20 ℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage:	DC 3.7V
Test Mode:	Link mode	Polarization :	

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
				PASS
				PASS

#### NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

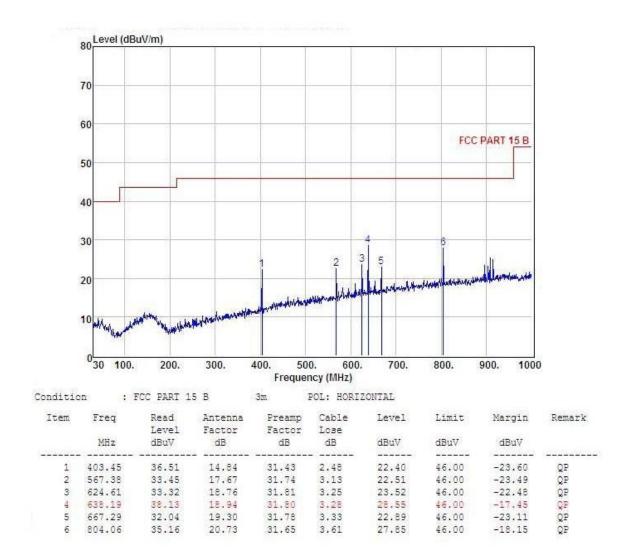
Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.



## 3.2.7 TEST RESULTS (BETWEEN 30MHZ - 1GHZ)

IFUI:	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	Link mode	Polarization :	Horizontal



Vertical



Test Mode :

Link mode

EUT:

802.11n 150M Ultra Wireless
LAN Router

Model Name : AIP-W511

Relative Humidity: 48%

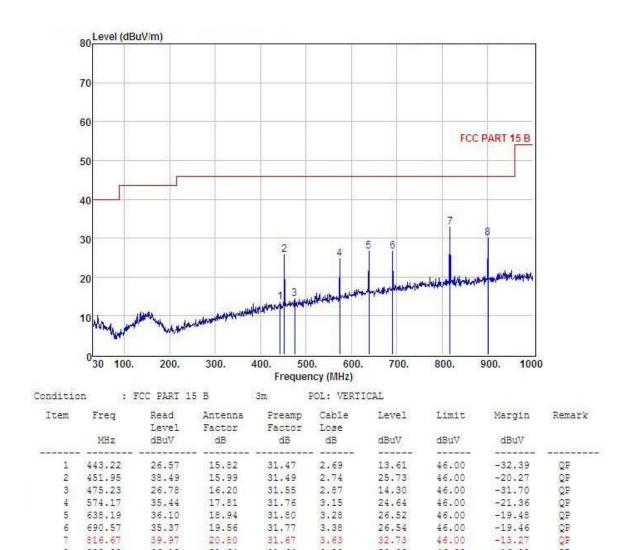
Pressure:

1010 hPa

Test Voltage: DC 3.7V

Polarization:

Page 23 of 74



29.92 46.00

-16.08

8 900.09 36.12 21.64 31.64 3.80



## 3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

IFUI .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH1 (802.11b Mode)/2412	Polarization:	Horizontal

Page 24 of 74

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4824.15	47.77	10.44	58.21	74	-15.79	peak
4824.15	32.42	10.44	42.86	54	-11.14	AVG
7236.149	43.09	12.39	55.48	74	-18.52	peak
7236.149	27.85	12.39	40.24	54	-13.76	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

IFUI .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH1 (802.11b Mode)/2412	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.145	48.99	10.4	59.39	74	-14.61	peak
4874.145	32.74	10.4	43.14	54	-10.86	AVG
7311.163	43.72	12.75	56.47	74	-17.53	peak
7311.163	28.61	12.75	41.36	54	-12.64	AVG

Remark:



<b> -</b>	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH6 (802.11b Mode)/2437	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.159	50.12	10.4	60.52	74	-13.48	peak
4874.159	31.85	10.4	42.25	54	-11.75	AVG
7311.136	41.41	12.75	54.16	74	-19.84	peak
7311.136	24.73	12.75	37.48	54	-16.52	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

<b> -   </b>   .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH6 (802.11b Mode)/2437	Polarization:	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4924.146	48.72	10.39	59.11	74	-14.89	peak
4934.146	32.2	10.44	42.64	54	-11.36	AVG
7386.143	43.74	12.68	56.42	74	-17.58	peak
7386.143	28.03	12.68	40.71	54	-13.29	AVG

## Remark:

- 1. Factor = Antenna Factor + Cable Loss Pre-amplifier.
- 2. No emission detected above 18GHz



IFUI :	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH11 (802.11b Mode)/2462	Polarization :	Horizontal

Page 26 of 74

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4924.145	49.8	10.39	60.19	74	-13.81	peak
4924.145	30.87	10.39	41.26	54	-12.74	AVG
7386.142	41.37	12.68	54.05	74	-19.95	peak
7386.142	26.89	12.68	39.57	54	-14.43	AVG

## Remark:

- 1. Factor = Antenna Factor + Cable Loss Pre-amplifier.
- 2. No emission detected above 18GHz

HUII.	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH11 (802.11b Mode)/2462	Polarization:	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4924.122	49.09	10.39	59.48	74	-14.52	peak
4924.122	32.85	10.39	43.24	54	-10.76	AVG
7386.143	40.71	12.68	53.39	74	-20.61	peak
7386.143	29.43	12.68	42.11	54	-11.89	AVG

## Remark:



<b> -</b>	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH1 (802.11g Mode)/2412	Polarization :	Horizontal

Page 27 of 74

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4824.17	45.82	10.44	56.26	74	-17.74	peak
4824.17	30.18	10.44	40.62	54	-13.38	AVG
7236.224	43.37	12.39	55.76	74	-18.24	peak
7236.224	27.09	12.39	39.48	54	-14.52	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

<b> -</b>	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH1 (802.11g Mode)/2412	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4824.155	50.38	10.44	60.82	74	-13.18	peak
4824.155	32.02	10.44	42.46	54	-11.54	AVG
7236.142	42.85	12.39	55.24	74	-18.76	peak
7236.142	27.12	12.39	39.51	54	-14.49	AVG

Remark



802.11n 150M Ultra Wireless EUT: Model Name : AIP-W511 LAN Router Relative Humidity: Temperature: 20 ℃ 48% Test Voltage : Pressure: 1010 hPa DC 3.7V CH6 (802.11g Mode)/2437 Test Mode : Polarization: Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.14	46.07	10.4	56.47	74	-17.53	peak
4874.14	30.42	10.4	40.82	54	-13.18	AVG
7311.17	39.83	12.75	52.58	74	-21.42	peak
7311.17	25.62	12.75	38.37	54	-15.63	AVG

Remark:

Factor = Antenna Factor + Cable Loss - Pre-amplifier.

HUII.	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH6 (802.11g Mode)/2437	Polarization:	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.158	46.92	10.4	57.32	74	-16.68	peak
4874.158	31.06	10.4	41.46	54	-12.54	AVG
7311.137	42.1	12.75	54.85	74	-19.15	peak
7311.137	26.76	12.75	39.51	54	-14.49	AVG

Remark:



<b> -</b>	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH11 (802.11g Mode)/2462	Polarization :	Horizontal

Page 29 of 74

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4924.138	45.87	10.39	56.26	74	-17.74	peak
4924.138	30.35	10.39	40.74	54	-13.26	AVG
7386.149	40.84	12.68	53.52	74	-20.48	peak
7386.149	25.76	12.68	38.44	54	-15.56	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

HIII :	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	20 ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH11(802.11g Mode)/2462	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4924.148	49.1	10.39	59.49	74	-14.51	peak
4924.148	30.87	10.39	41.26	54	-12.74	AVG
7386.13	41.69	12.68	54.37	74	-19.63	peak
7386.13	26.5	12.68	39.18	54	-14.82	AVG

Remark



I-UI .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	20 ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH1(802.11n Mode)/20MHz	Polarization:	Horizontal

Page 30 of 74

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4824.14	47.77	10.44	58.21	74	-15.79	peak
4824.14	31.2	10.44	41.64	54	-12.36	AVG
7236.122	42.79	12.39	55.18	74	-18.82	peak
7236.122	26.88	12.39	39.27	54	-14.73	AVG

## Remark:

Factor = Antenna Factor + Cable Loss - Pre-amplifier.

<b>-</b>	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH1(802.11n Mode)/20MHz	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4824.141	47.95	10.44	58.39	74	-15.61	peak
4824.141	30.67	10.44	41.11	54	-12.89	AVG
7236.145	43.14	12.39	55.53	74	-18.47	peak
7236.145	28.09	12.39	40.48	54	-13.52	AVG

## Remark:



802.11n 150M Ultra Wireless EUT: Model Name : AIP-W511 LAN Router Temperature: 20 ℃ Relative Humidity: 48% Pressure: 1010 hPa Test Voltage : DC 3.7V Test Mode : CH6(802.11n Mode)/20MHz Polarization: Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.16	46.97	10.4	57.37	74	-16.63	peak
4874.16	31.43	10.4	41.83	54	-12.17	AVG
7311.128	41.3	12.75	54.05	74	-19.95	peak
7311.128	25.89	12.75	38.64	54	-15.36	AVG

Remark:

Factor = Antenna Factor + Cable Loss - Pre-amplifier.

<b> -</b>	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH6(802.11n Mode)/20MHz	Polarization:	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.161	49.32	10.4	59.72	74	-14.28	peak
4874.161	31.45	10.4	41.85	54	-12.15	AVG
7311.166	42.49	12.75	55.24	74	-18.76	peak
7311.166	26.52	12.75	39.27	54	-14.73	AVG

Remark:



<b> -</b>	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH11(802.11n Mode)/20MHz	Polarization :	Horizontal

Page 32 of 74

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
4924.14	48.07	10.39	58.46	74	-15.54	peak
4924.14	31.92	10.39	42.31	54	-11.69	AVG
7386.183	42.92	12.68	55.60	74	-18.40	peak
7386.183	26.57	12.68	39.25	54	-14.75	AVG

Remark:

Factor = Antenna Factor + Cable Loss - Pre-amplifier.

FUI.	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH11(802.11n Mode)/20MHz	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4924.15	50.39	10.39	60.78	74	-13.22	peak
4924.15	32.65	10.39	43.04	54	-10.96	AVG
7386.167	40.69	12.68	53.37	74	-20.63	peak
7386.167	28.51	12.68	41.19	54	-12.81	AVG

Remark:



<b> -</b>     .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH3(802.11n Mode)/40MHz	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4844.156	44.76	10.5	55.26	74	-18.74	peak
4844.156	31.37	10.5	41.87	54	-12.13	AVG
7266.319	41.84	12.5	54.34	74	-19.66	peak
7266.319	29.53	12.5	42.03	54	-11.97	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

<b> -</b>	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH3(802.11n Mode)/40MHz	Polarization:	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
4844.325	48.04	10.5	58.54	74	-15.46	peak
4844.325	34.75	10.5	45.25	54	-8.75	AVG
7266.258	41.57	12.5	54.07	74	-19.93	peak
7266.258	30.02	12.5	42.52	54	-11.48	AVG

Remark:



<b> -</b>     .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH6(802.11n Mode)/40MHz	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.238	46.33	10.4	56.73	74	-17.27	peak
4874.238	31.43	10.4	41.83	54	-12.17	AVG
7311.159	35.78	12.75	48.53	74	-25.47	peak
7311.159	27.57	12.75	40.32	54	-13.68	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

<b> -</b>	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH6(802.11n Mode)/40MHz	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4874.535	46.04	10.4	56.44	74	-17.56	peak
4874.535	32.12	10.4	42.52	54	-11.48	AVG
7311.633	37.78	12.75	50.53	74	-23.47	peak
7311.633	29.72	12.75	42.47	54	-11.53	AVG

Remark<sup>1</sup>



<b> -</b>         .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH9(802.11n Mode)/40MHz	Polarization:	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4904.345	46.87	10.29	57.16	74	-16.84	peak
4904.345	32.74	10.29	43.03	54	-10.97	AVG
7356.247	41.23	12.79	54.02	74	-19.98	peak
7356.247	28.46	12.79	41.25	54	-12.75	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

IP()   .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH9(802.11n Mode)/40MHz	Polarization:	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type
4904.16	46.22	10.29	56.51	74	-17.49	peak
4904.16	33.13	10.29	43.42	54	-10.58	AVG
7356.423	37.55	12.79	50.34	74	-23.66	peak
7356.423	28.37	12.79	41.16	54	-12.84	AVG

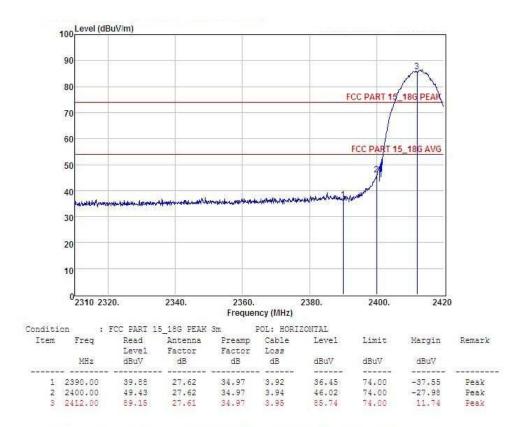
Remark:



Page 36 of 74 Report No.: NTEK-2014NT04210948

## 3.2.9 TEST RESULTS (RESTRICTED BANDS REQUIREMENTS)

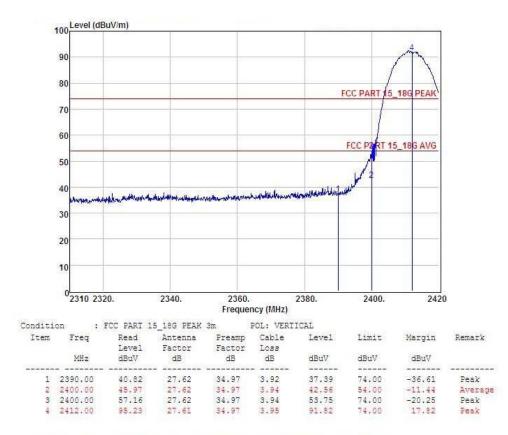
I-UI .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH1(802.11b Mode)	Polarization :	Horizontal



Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss



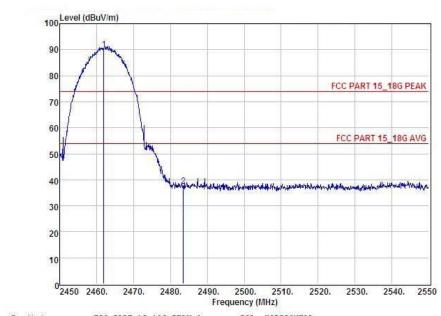
I-UII .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH1(802.11b Mode)	Polarization :	Vertical





802.11n 150M Ultra Wireless EUT: Model Name : AIP-W511 LAN Router Relative Humidity: Temperature: 20 ℃ 48% Test Voltage : Pressure: DC 3.7V 1010 hPa Test Mode : CH11(802.11b Mode) Polarization: Horizontal

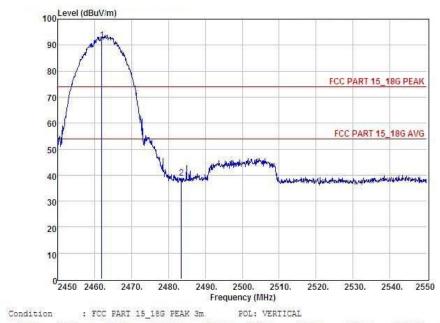
Report No.: NTEK-2014NT04210948



Conditi	on :	FCC PART 1	5_18G PEAK	3m	POL: HORIZ	ONTAL			
Item	Freq	Read Level	Antenna Factor	Preamp Factor		Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2462.00	93.47	27.59	34.97	3.98	90.07	74.00	16.07	Peak
2	2483.50	40.83	27.59	34.97	4.00	37.45	74.00	-36.55	Peak



802.11n 150M Ultra Wireless EUT: Model Name : AIP-W511 LAN Router Relative Humidity: Temperature: 20 ℃ 48% Pressure: 1010 hPa Test Voltage : DC 3.7V Test Mode : CH11(802.11b Mode) Vertical Polarization:

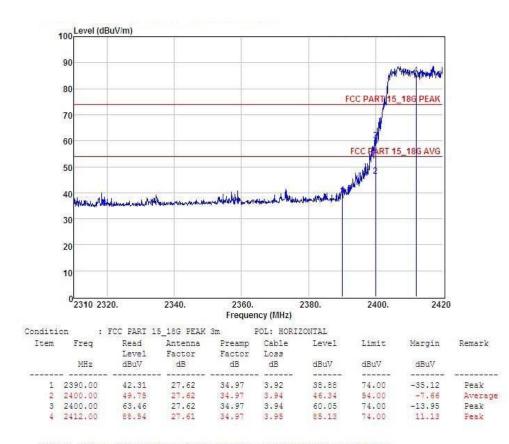


Item Freq Read Antenna Preamp Cable Level Limit Margin Remark Level Factor Factor Loss MHz dBuV dBuV dBuV dBuV 95.23 27.59 42.19 27.59 34.97 3.98 91.83 17.83 74.00 1 2462.00 95.23 Peak 2 2483.50 42.19 34.97 4.00 74.00 -35.19 38.81 Peak



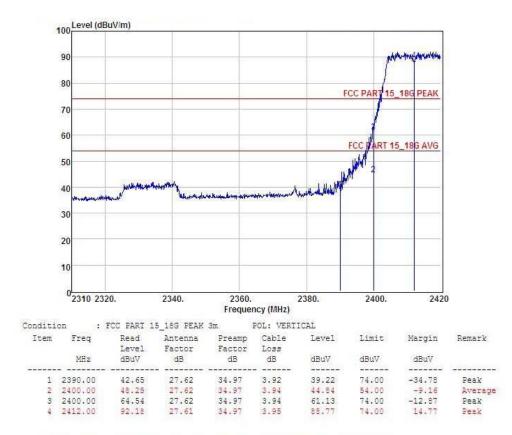
802.11n 150M Ultra Wireless EUT: Model Name : AIP-W511 LAN Router Relative Humidity: Temperature: **20** ℃ 48% Test Voltage : Pressure: DC 3.7V 1010 hPa Test Mode : CH1(802.11g Mode) Polarization: Horizontal

Report No.: NTEK-2014NT04210948





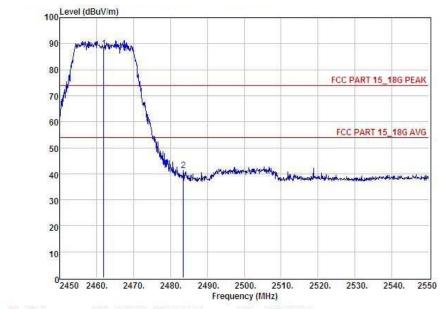
I-UI .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH1(802.11gMode)	Polarization :	Vertical





802.11n 150M Ultra Wireless EUT: Model Name : AIP-W511 LAN Router Relative Humidity: Temperature: 20 ℃ 48% Test Voltage : Pressure: DC 3.7V 1010 hPa Test Mode : CH11(802.11g Mode) Polarization: Horizontal

Report No.: NTEK-2014NT04210948

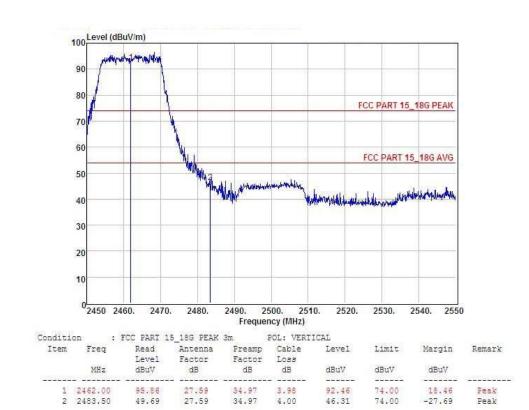


Conditio	n :	FCC PART 15	18G PEAK	3m	POL: HORIZ	ZONTAL			
Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Level	Limit	Margin	Remark
0.000000000000	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	2462.00	91.65	27.59	34.97	3.98	88.25	74.00	14.25	Peak
2	2483.50	44.77	27.59	34.97	4.00	41.39	74.00	-32.61	Peak



Page 43 of 74 Report No.: NTEK-2014NT04210948

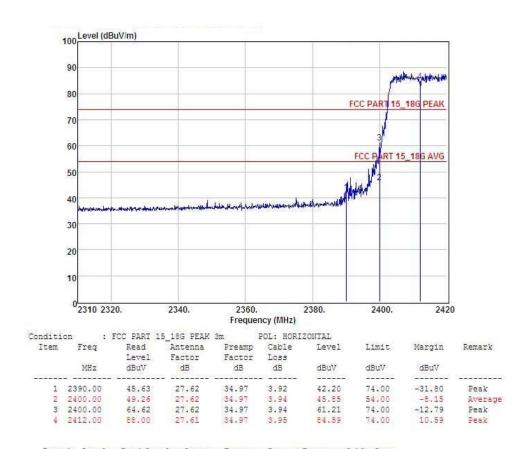
I-UI .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH11(802.11g Mode)	Polarization :	Vertical





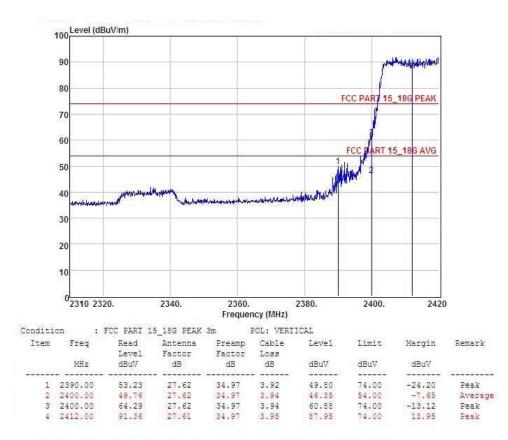
802.11n 150M Ultra Wireless EUT: Model Name : AIP-W511 LAN Router Relative Humidity: Temperature: **20** ℃ 48% Test Voltage : Pressure: DC 3.7V 1010 hPa Test Mode : CH1(802.11n Mode)/20MHz Polarization: Horizontal

Report No.: NTEK-2014NT04210948





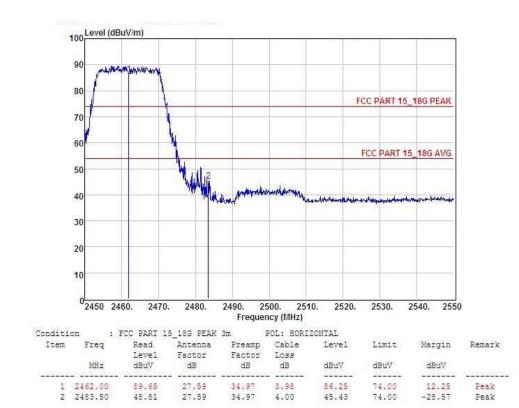
802.11n 150M Ultra Wireless EUT: Model Name : AIP-W511 LAN Router Relative Humidity: Temperature: 20 ℃ 48% Pressure: Test Voltage : DC 3.7V 1010 hPa Test Mode CH1(802.11n Mode)/20M Polarization: Vertical





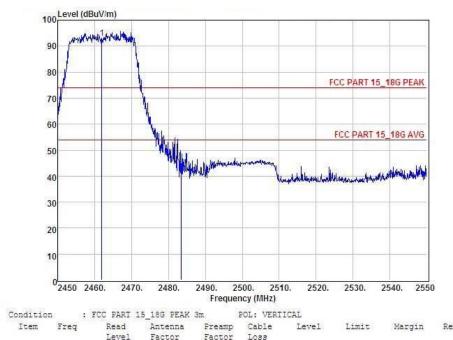
802.11n 150M Ultra Wireless EUT: Model Name : AIP-W511 LAN Router Relative Humidity: Temperature: 20 ℃ 48% Test Voltage : Pressure: DC 3.7V 1010 hPa Test Mode : Polarization: CH11(802.11n Mode)/20MHz Horizontal

Report No.: NTEK-2014NT04210948





I-UI .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH11(802.11n Mode)/20MHz	Polarization :	Vertical



Co	ndition	1 1	FCC PART 15	_18G PEAK	3m 1	POL: VERTI	CAL			
	Item	Freq			Preamp Factor		Level	Limit	Margin	Remark
		MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
-										
	1 2	2462.00	96.31	27.59	34.97	3.98	92.91	74.00	18.91	Peak
	2 2	2483.50	44.51	27.59	34.97	4.00	41.13	74.00	-32.87	Peak

Horizontal



Test Mode :

EUT:

802.11n 150M Ultra Wireless
LAN Router

Model Name: AIP-W511

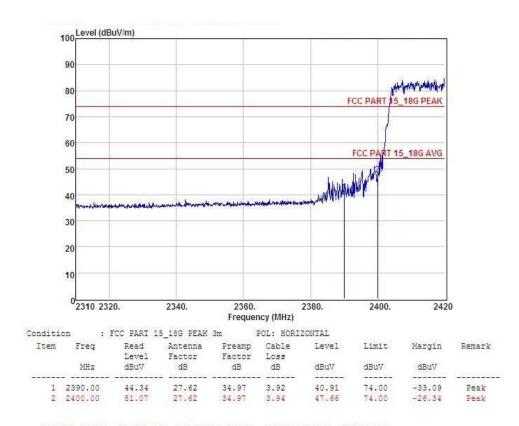
Relative Humidity: 48%

Pressure: 1010 hPa

Test Voltage: DC 3.7V

Polarization:

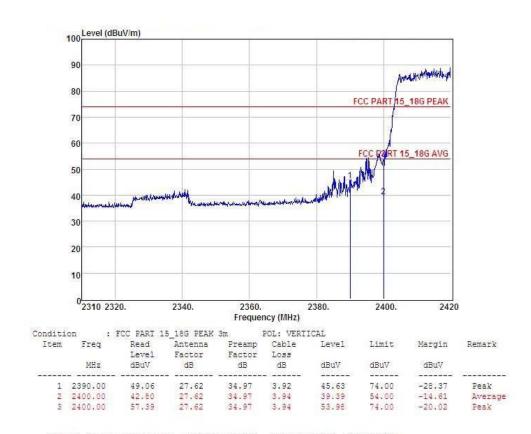
CH3(802.11n Mode)/40M





Page 49 of 74 Report No.: NTEK-2014NT04210948

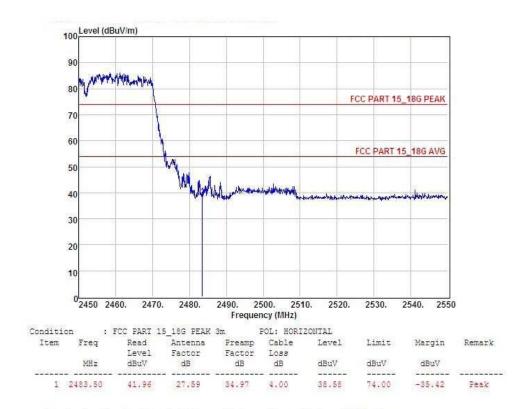
I-UI .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>20</b> ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH3(802.11n Mode)/40MHz	Polarization :	Vertical





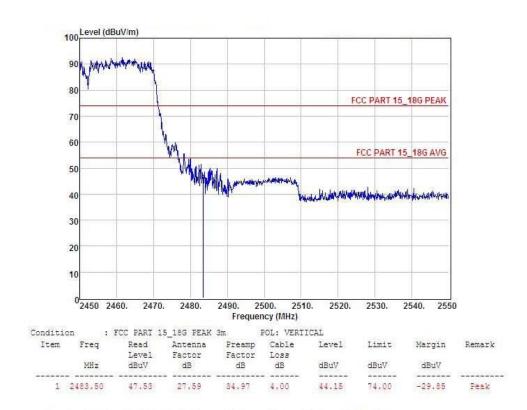
802.11n 150M Ultra Wireless EUT: Model Name : AIP-W511 LAN Router Relative Humidity: Temperature: 20 ℃ 48% Test Voltage : Pressure: 1010 hPa DC 3.7V Test Mode : Polarization: CH9(802.11n Mode)/40MHz Horizontal

Report No.: NTEK-2014NT04210948





802.11n 150M Ultra Wireless EUT: Model Name : AIP-W511 LAN Router Relative Humidity: Temperature: **20** ℃ 48% Pressure: 1010 hPa Test Voltage : DC 3.7V Test Mode : Vertical CH9(802.11n Mode)/40MHz Polarization:





## 4. POWER SPECTRAL DENSITY TEST

## 4.1 APPLIED PROCEDURES / LIMIT

	FCC Part15 (15.247) , Subpart C						
Section	Test Item	Limit	Frequency Range (MHz)	Result			
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS			

#### 4.1.1 TEST PROCEDURE

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. Set the span to 1.5 times the DTS channel bandwidth.
- 3. Set the RBW ≥ 3 kHz.
- 4. Set the VBW  $\geq$  3 x RBW.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

#### 4.1.2 DEVIATION FROM STANDARD

No deviation.

#### 4.1.3 TEST SETUP



## 4.1.4 EUT OPERATION CONDITIONS

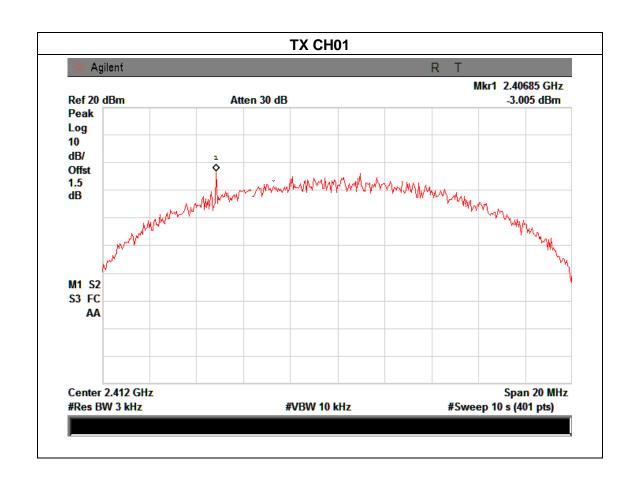
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

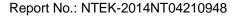


## 4.1.5 TEST RESULTS

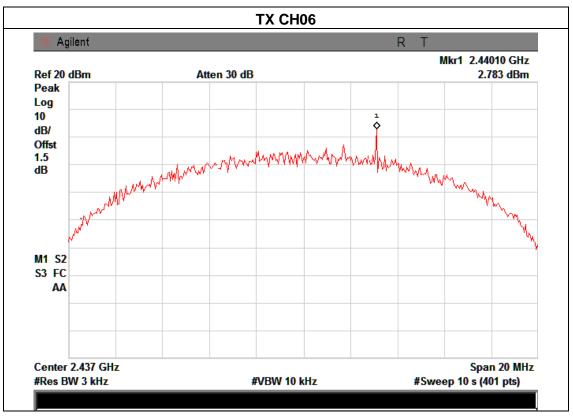
IFUI .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511		
Temperature:	<b>25</b> ℃	Relative Humidity:	60%		
Pressure:	015 hPa Test Voltage : DC 3.7V				
Test Mode :	TX b Mode /CH01, CH06, CH11				

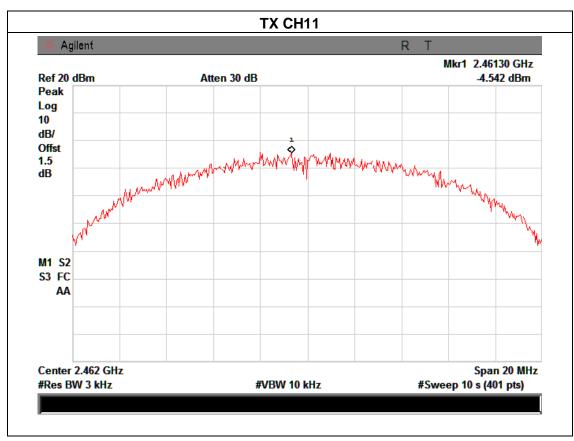
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-3.00	8	PASS
2437 MHz	2.78	8	PASS
2462 MHz	-4.54	8	PASS







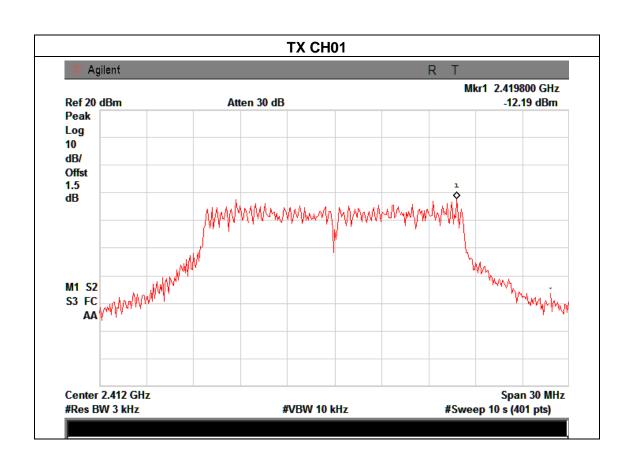


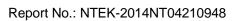




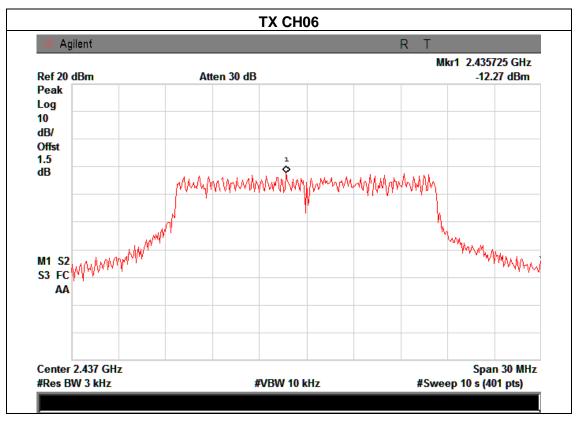
<b> -</b>	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511		
Temperature:	<b>25</b> ℃	Relative Humidity:	60%		
Pressure:	015 hPa Test Voltage : DC 3.7V				
Test Mode :	TX g Mode /CH01, CH06, CH11				

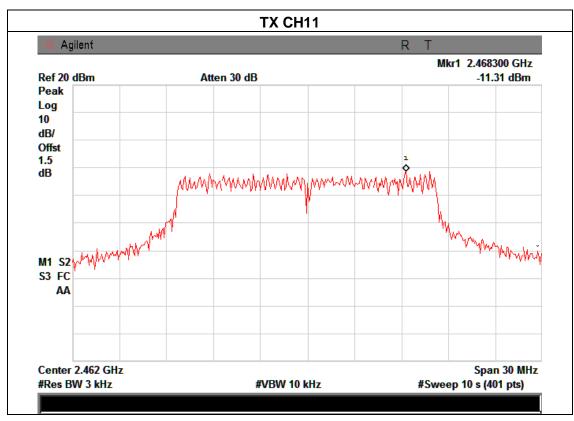
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-12.19	8	PASS
2437 MHz	-12.27	8	PASS
2462 MHz	-11.31	8	PASS







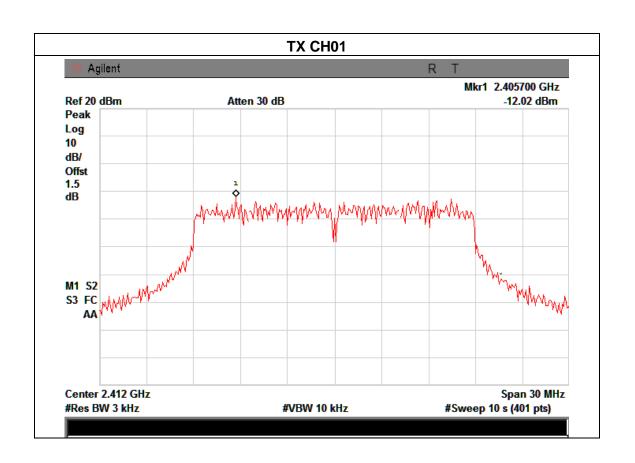


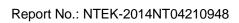




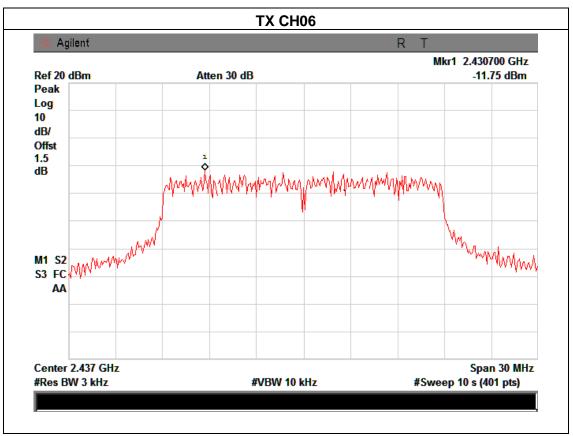
<b> -</b>	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>25</b> ℃	Relative Humidity:	60%
Pressure:	1015 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX n Mode(20M) /CH01, CH06, CH11		

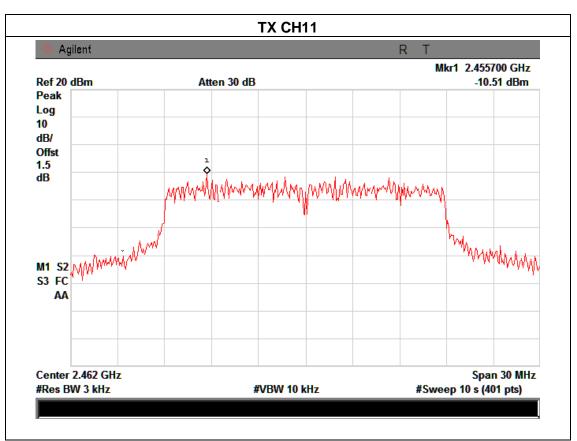
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-12.02	8	PASS
2437 MHz	-11.75	8	PASS
2462 MHz	-10.51	8	PASS







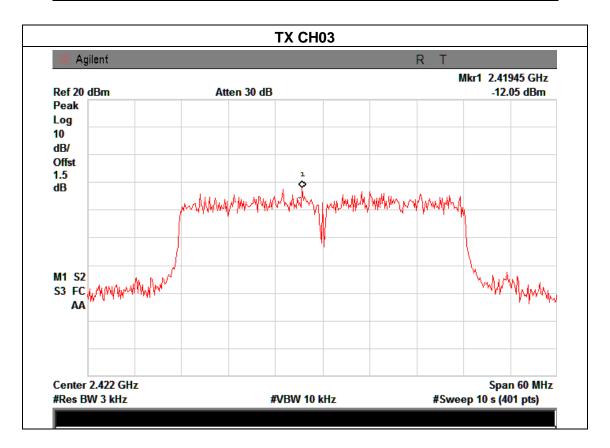


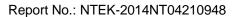




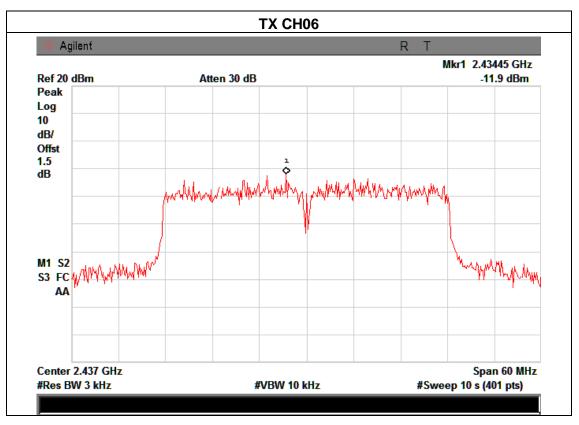
I <b>- I I I</b> :	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>25</b> ℃	Relative Humidity:	60%
Pressure:	1015 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX n Mode(40M) /CH03, CH06	6, CH09	

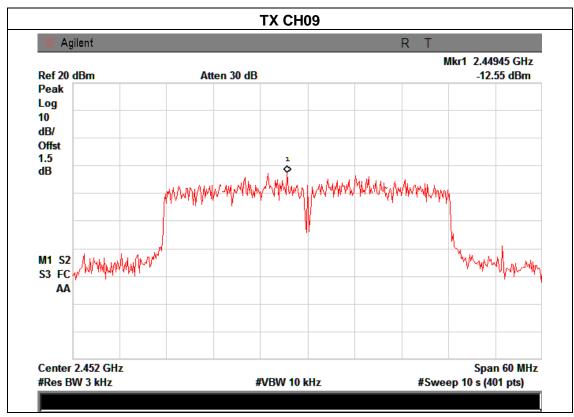
Frequency	Power Density (dBm)	Limit (dBm)	Result
2422 MHz	-12.05	8	PASS
2437 MHz	-11.90	8	PASS
2452 MHz	-12.55	8	PASS













5. BANDWIDTH TEST

## 5.1 APPLIED PROCEDURES / LIMIT

	FCC Part15 (15.247) , Subpart C					
Section Test Item Limit Frequency Range (MHz) Result				Result		
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS		

#### **5.1.1 TEST PROCEDURE**

Set RBW = 100 kHz.

Set the video bandwidth (VBW)  $\geq$  3  $\square$  RBW.

Detector = Peak.

Trace mode = max hold.

Sweep = auto couple.

Allow the trace to stabilize.

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

#### 5.1.2 DEVIATION FROM STANDARD

No deviation.

#### 5.1.3 TEST SETUP



# **5.1.4 EUT OPERATION CONDITIONS**

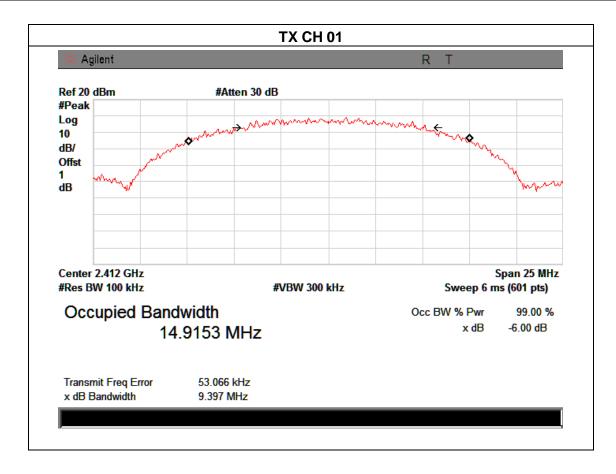
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



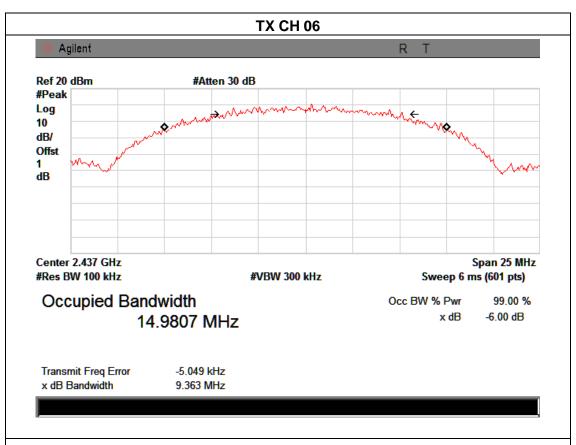
# **5.1.5 TEST RESULTS**

	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>25</b> ℃	Relative Humidity:	60%
Pressure:	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX b Mode /CH01, CH06, CH11		

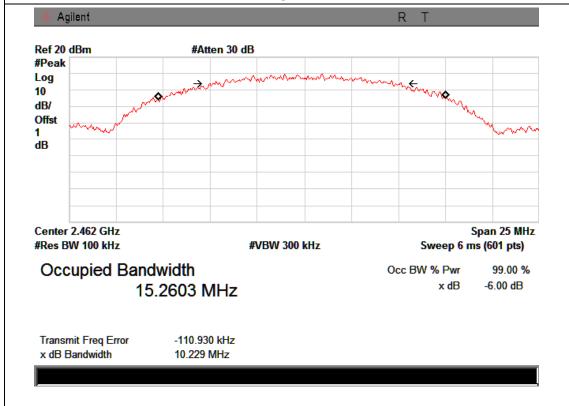
Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Channel Separation (MHz)	Result
2412 MHz	9.39	14.91	>=500KHz	PASS
2437 MHz	9.36	14.98	>=500KHz	PASS
2462 MHz	10.22	15.26	>=500KHz	PASS







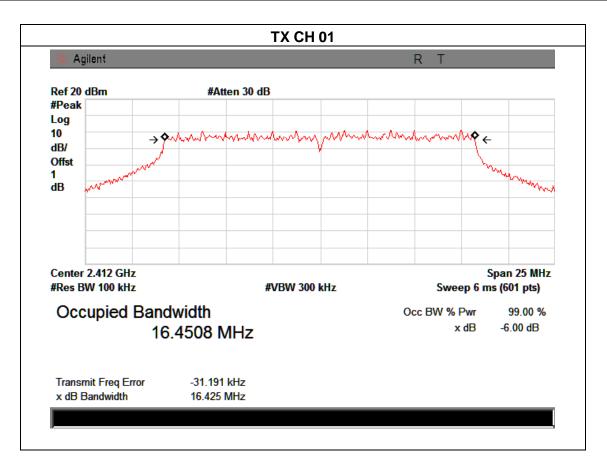




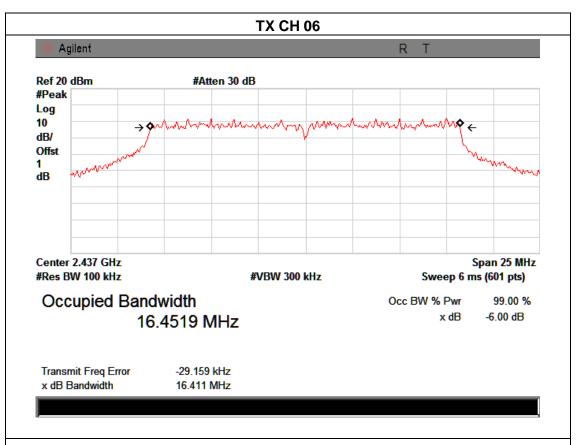


I <b>- I I I</b> .	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>25</b> ℃	Relative Humidity:	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX g Mode /CH01, CH06, CH11		

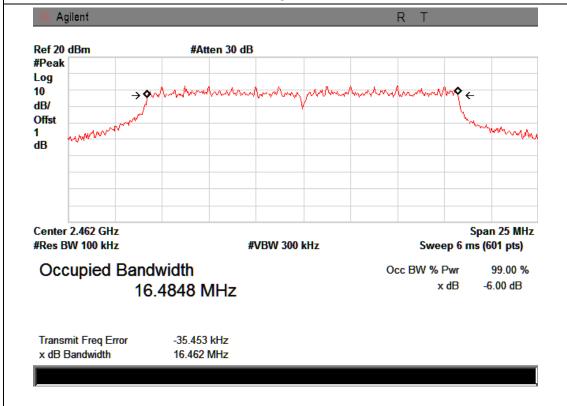
Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Channel Separation (MHz)	Result
2412 MHz	16.42	16.45	>=500KHz	PASS
2437 MHz	16.41	16.45	>=500KHz	PASS
2462 MHz	16.46	16.48	>=500KHz	PASS







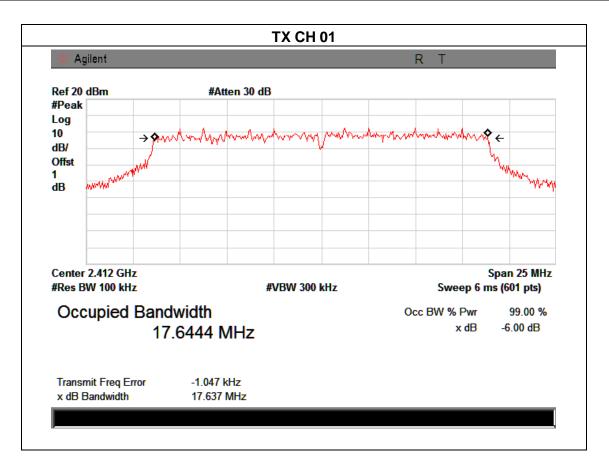
#### **TX CH 11**



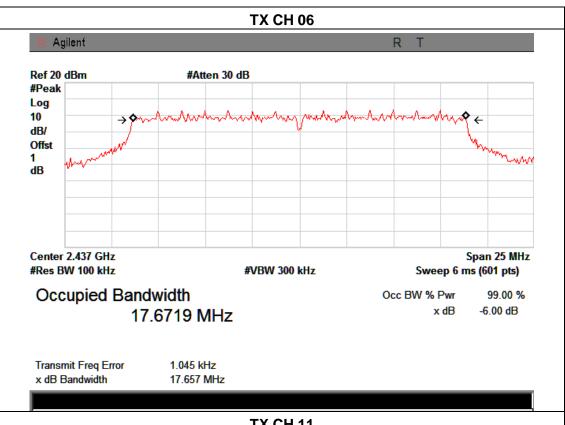


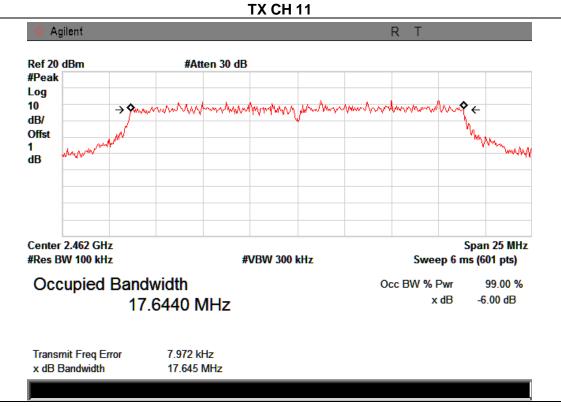
I <b>- I I I</b> :	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>25</b> ℃	Relative Humidity:	60%
Pressure:	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX n Mode(20M) /CH01, CH06, CH11		

Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Channel Separation (MHz)	Result
2412 MHz	17.63	17.64	>=500KHz	PASS
2437 MHz	17.65	17.67	>=500KHz	PASS
2462 MHz	17.64	17.64	>=500KHz	PASS







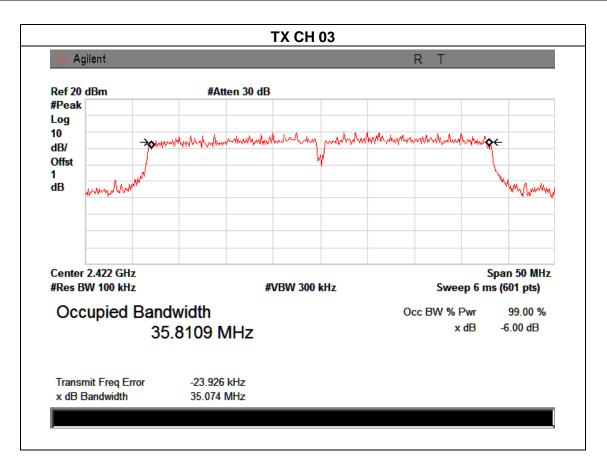




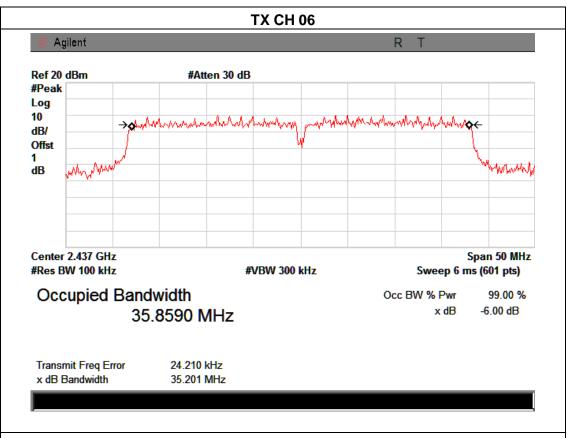
<b> -</b>	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>25</b> ℃	Relative Humidity:	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX n Mode(40M) /CH03, CH06, CH09		

Page 68 of 74

Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Channel Separation (MHz)	Result
2422 MHz	35.07	35.81	>=500KHz	PASS
2437 MHz	35.20	35.85	>=500KHz	PASS
2452 MHz	35.25	35.83	>=500KHz	PASS







## **TX CH 09** Agilent Ref 20 dBm #Atten 30 dB #Peak Log 10 dB/ Offst Market Market <sub>ምሳሌላ</sub>ያላላሳ dΒ Center 2.452 GHz Span 50 MHz #Res BW 100 kHz **#VBW 300 kHz** Sweep 6 ms (601 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % x dB -6.00 dB 35.8398 MHz Transmit Freq Error 48.962 kHz x dB Bandwidth 35.251 MHz



**6. PEAK OUTPUT POWER TEST** 

## **6.1 APPLIED PROCEDURES / LIMIT**

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

# **6.1.1 TEST PROCEDURE**

a. The EUT was directly connected to the Power meter

## **6.1.2 DEVIATION FROM STANDARD**

No deviation.

## 6.1.3 TEST SETUP



## **6.1.4 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



6.1.5 TEST RESULTS

IF()) :	802.11n 150M Ultra Wireless LAN Router	Model Name :	AIP-W511
Temperature:	<b>25</b> ℃	Relative Humidity:	60%
Pressure:	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX b/g/n(20M,40M) Mode /CH01, CH06, CH11		

TV 000 441 M. I.					
	TX 802.11b Mode				
Test Channe	Frequency	Peak Conducted Output Power	LIMIT		
	(MHz)	(dBm)	dBm		
CH01	2412	9.24	30		
CH06	2437	9.18	30		
CH11	2462	8.97	30		
	TX 802.11g Mode				
CH01	2412	8.03	30		
CH06	2437	8.25	30		
CH11	2462	7.96	30		
TX 802.11n20 Mode					
CH01	2412	7.88	30		
CH06	2437	7.75	30		
CH11	2462	7.58	30		
TX 802.11n40 Mode					
CH03	2422	7.09	30		
CH06	2437	6.85	30		
CH09	2452	6.47	30		



7. ANTENNA REQUIREMENT

# 7.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

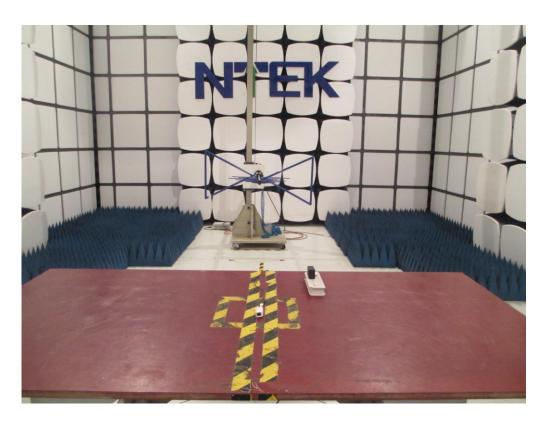
## 7.2 EUT ANTENNA

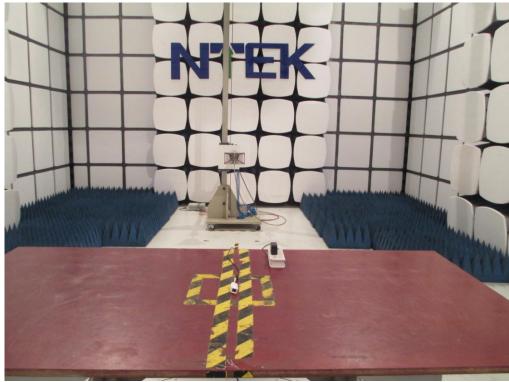
The EUT antenna is Internal antenna. It comply with the standard requirement.



8. EUT TEST PHOTO

# **Radiated Measurement Photos**









# **Conducted Measurement Photos**

