

# **FCC Test Report**

## Report No: FCS202107033W02

### Issued for

Applicant:	Shenzhen Wuhao Electronic Intelligent Technology Co., Ltd.
Address:	Room 308, Phase III, Block C, No. 663 Bulong Road, Dafapo Community, Bantian Street, Longgang District, Shenzhen
Product Name:	MINI PC
Brand Name:	AWOW
Model Name:	ТХ33
Series Model:	MB28
FCC ID:	2A2V4-TX33
Add: Room 105 Floor E Hi-Te	7: Flux Compliance Service Laboratory Bao hao Technology Building 1 NO.15 Gong ye West Road ch Industrial, Song shan lake Dongguan (:769-27280901 http://www.FCS-lab.com



#### TEST RESULT CERTIFICATION

Applicant's Name:	Shenzhen Wuhao Electronic Intelligent Technology Co., Ltd.
Address	Room 308, Phase III, Block C, No. 663 Bulong Road, Dafapo Community, Bantian Street, Longgang District, Shenzhen
Manufacture's Name:	Shenzhen Wuhao Electronic Intelligent Technology Co., Ltd.
Address:	Room 308, Phase III, Block C, No. 663 Bulong Road, Dafapo Community, Bantian Street, Longgang District, Shenzhen
<b>Draduat</b> Description	
Product Description	
Product Description	MINI PC
•	
Product Name:	
Product Name: Model Name: Series Model	TX33

This device described above has been tested by Flux Compliance Service Laboratory, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test.....

Date (s) of performance of tests.: 10 Jul, 2021 ~ 21 Jul, 2021

Date of Issue..... 21 Jul, 2021

Test Result..... Pass

Tested by

: Scott shen

(Scott Shen)

Reviewed by

Dukelian

(Duke Qian)

Approved by

(Kait Chen)

Flux Compliance Service Laboratory

:





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#### **Revision History**

Rev.	Issue Date	Effect Page	Contents
00	21 Jul, 2021	All	Initial Issue

Flux Compliance Service Laboratory Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan Tel: 769-27280901 Fax:769-27280901 http://www.FCS-lab.com

#### 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards: KDB 558074 D01 15.247 Meas Guidance v05r02

FCC Part 15.247,Subpart C				
Standard Section	Test Item	Judgment	Remark	
FCC 15.247 (a) (2)	6dB Bandwidth	PASS		
FCC 15.247 (b) (3)	Conducted Output Power	PASS		
FCC 15.247 (e)	Power Spectral Density	PASS		
FCC 15.247 (d)	Band-edge and Spurious Emissions (Conducted)	PASS		
FCC 15.247 (d)	Dedicted Spurious Emissions			
FCC 15.209	Radiated Spurious Emissions	PASS		
FCC 15.205				
FCC 15.247 (d)	Redicted Rend Edge Compliance			
FCC 15.209	Radiated Band Edge Compliance	PASS		
FCC 15.205				
FCC 15.207	Power Line Conducted Emission	PASS		
FCC 15.203	Antenna requirement	PASS		
15.205	Restricted Band Edge Emission PASS			

NOTE:

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

(2) All tests are according to ANSI C63.10-2013



#### **1.1 TEST FACTORY**

Company Name:	Flux Compliance Service Laboratory
Address:	Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan
Telephone:	+86-769-27280901
Fax:	+86-769-27280901
FCC Test Firm Regist Designation number: A2LA accreditation nu	

#### 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 **k=2**, providing a level of confidence of approximately **95** %.

No.	Item	Uncertainty
1	RF output power, conducted	±0.71dB
2	Unwanted Emissions, conducted	±2.988 dB
3	Conducted Emission (9KHz-150KHz)	±4.13 dB
4	Conducted Emission (150KHz-30MHz)	±4.74 dB
5	All emissions,radiated(<1G) 30MHz-1000MHz	±5.2 dB
6	All emissions, radiated 1GHz -18GHz	±4.66 dB
7	All emissions,radiated 18GHz -40GHz	±4.31 dB



#### 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	MINI PC
Trade Name	AWOW
Model Name	TX33
Series Model	MB28
Model Difference	The electrical circuit design, layout, components used and internal wiring for above models are identical, only different in model name and appearance colours.
Channel List	Please refer to the Note 2.
	IEEE 802.11b: 2412MHz-2462MHz
Operation frequency	IEEE 802.11g: 2412MHz-2462MHz
	IEEE 802.11n HT20: 2412MHz-2462MHz
	IEEE 802.11n HT40: 2422MHz-2452MHz
	IEEE 802.11b: DSSS (CCK, QPSK, BPSK)
Modulation:	IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK, BPSK)
	IEEE 802.11b: 1, 2, 5.5, 11 Mbps
Transmitter rate:	IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	IEEE 802.11n HT20: up to 150 Mbps, HT40: up to 300Mbps
Power supply	Input: 100-240V~50/60Hz,1.2A Output: DC 12V,3A
Battery	N/A
Hardware version number	V1.10
Software version number	V1.10
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

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



2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	05	2432	09	2452
02	2417	06	2437	10	2457
03	2422	07	2442	11	2462
04	2427	08	2447		

#### 3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	FGHX	PIFA Antenna	N/A	1.0B dBi	WIFI Antenna

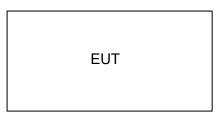


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#### 2.2 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Block diagram of EUT configuration for test



Test software: the FCC tool The test softeware was used to control EUT work in continuous TX mode, and select test channel, Wireless mode as below table

Mode	Setting Tx Power	data rate (Mbps) (see Note)	Channel	Frequency (MHz)
	8	1	LCH: CH1	2412
IEEE 802.11b	8	1	MCH: CH6	2437
	8	1	HCH: CH11	2462
IEEE 802.11g	20	6	LCH: CH1	2412
	20	6	MCH: CH6	2437
	20	6	HCH: CH11	2462
	20	MCS 8	LCH: CH1	2412
IEEE 802.11n HT20	20	MCS 8	MCH: CH6	2437
	20	MCS 8	HCH: CH11	2462
	20	MCS 8	LCH: CH3	2422
IEEE 802.11n HT40	20	MCS 8	MCH: CH6	2437
	20	MCS 8	HCH: CH9	2452

Note:

(1) According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test,

(2) During the test, the dutycycle>98%, the test voltage was tuned from 85% to 115% of the

Nominal rate supply votage, and found that the worst case was the nominal rated supply condition, So the report just shows that condition's data



#### 2.3 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

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.	Serial No.	Note
1	Adapter	N/A	JHD-AP036E-120300AA-A	N/A	This phone is for testing only in report.
2	Adapter	HW	0789SK	N/A	This adapter is for testing only in report.
3	Displayer	N/A	F26DS35	N/A	This adapter is for testing only in report.
		Support			

#### Necessary accessories

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note

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  $^{r}$  Length  $_{a}$  column.
- (3) "YES" is means "shielded" "with core"; "NO" is means "unshielded" "without core".



#### 2.4 EQUIPMENTS LIST

#### Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESRP 3	FCS-E001	2021.05.26	2022.05.25
Signal Analyzer	R&S	FSV40-N	FCS-E012	2021.05.26	2022.05.25
Active loop Antenna	ZHINAN	ZN30900C	FCS-E013	2020.08.09	2021.08.10
Bilog Antenna	SCHWARZBECK	VULB 9168	FCS-E002	2020.08.26	2021.08.25
Horn Antenna	SCHWARZBECK	BBHA 9120D	FCS-E003	2020.08.26	2021.08.25
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	FCS-E018	2021.05.26	2022.05.25
Pre-Amplifier(0.1M-3G Hz)	EMCI	EM330N	FCS-E004	2021.05.26	2022.05.25
Pre-Amplifier (1G-18GHz)	N/A	TSAMP-0518SE	FCS-E014	2021.05.26	2022.05.25
Pre-Amplifier (18G-40GHz)	TERA-MW	TRLA-0400	FCS-E019	2020.08.08	2021.08.07
Temperature & Humidity	HTC-1	victor	FCS-E005	2020.08.26	2021.08.25

#### **Conduction Test equipment**

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESPI	FCS-E020	2021.05.26	2022.05.25
LISN	R&S	ENV216	FCS-E007	2020.08.08	2021.08.07
LISN	ETS	3810/2NM	FCS-E009	2021.05.26	2022.05.25
Temperature & Humidity	HTC-1	victor	FCS-E008	2020.08.08	2021.08.07

#### **RF** Connected Test

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
MXA SIGNAL Analyzer	Keysight	N9020A	FCS-E015	2021.05.26	2022.05.25
Spectrum Analyzer	Agilent	E4447A	MY50180039	2020.08.08	2021.08.07
Spectrum Analyzer	R&S	FSV-40	101499	2020.08.26	2021.08.25
Power Sensor	Agilent	UX2021XA	FCS-E021	2021.05.26	2022.05.25



#### 3.6DB BANDWIDTH

#### 3.1 Limit

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500 kHz

#### 3.2 Test Procedure

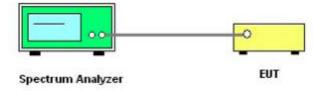
(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Set the spectrum analyzer as follows

RBW:	100kHz
VBW:	300kHz
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

(3) 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

#### 3.3 Test setup

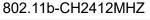


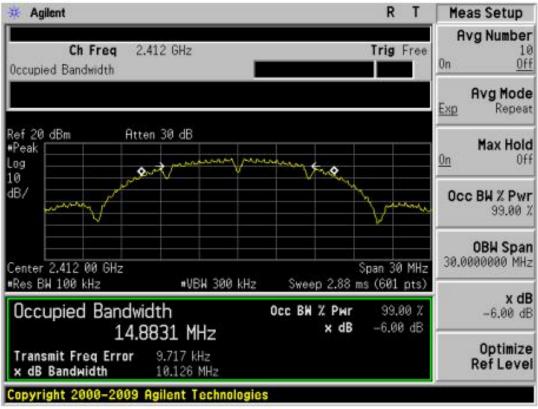


#### 3.4 Test results

TestMode	Channel (MHz)	6dB Bandwidth (MHz)	Limit [MHz]	Verdict
802.11b	2412MHz	10.126	0.5	Pass
802.11b	2437MHz	10.108	0.5	Pass
802.11b	2462MHz	10.126	0.5	Pass
802.11g	2412MHz	16.563	0.5	Pass
802.11g	2437MHz	16.571	0.5	Pass
802.11g	2462MHz	16.568	0.5	Pass
802.11n 20	2412MHz	17.720	0.5	Pass
802.11n 20	2437MHz	17.733	0.5	Pass
802.11n 20	2462MHz	17.719	0.5	Pass
802.11n 40	2422MHz	36.491	0.5	Pass
802.11n 40	2437MHz	36.487	0.5	Pass
802.11n 40	2452MHz	36.479	0.5	Pass

#### 3.5 Original Test Data

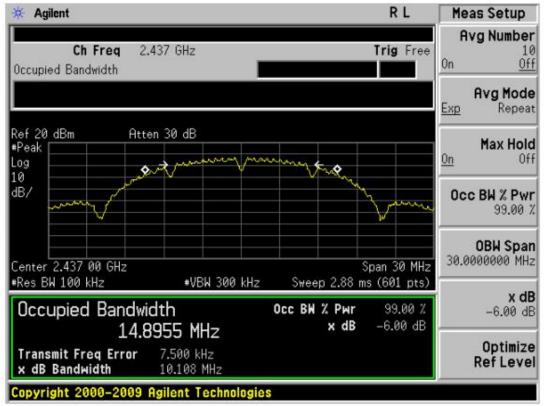




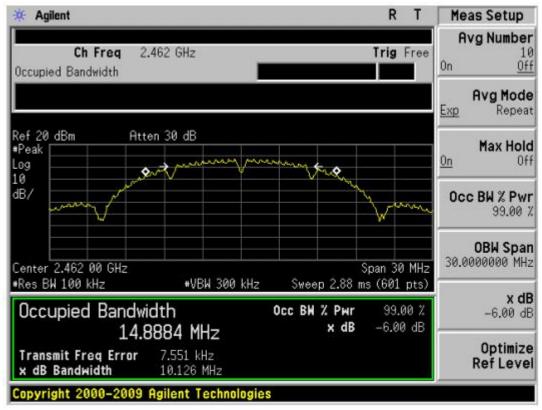


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#### 802.11b-CH237MHZ



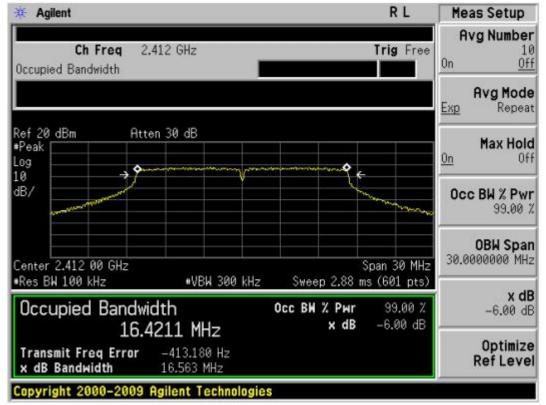
#### 802.11b-CH2462MHZ



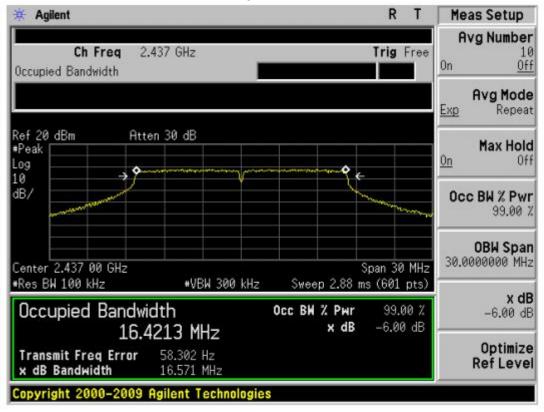


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#### 802.11g H2412MHZ

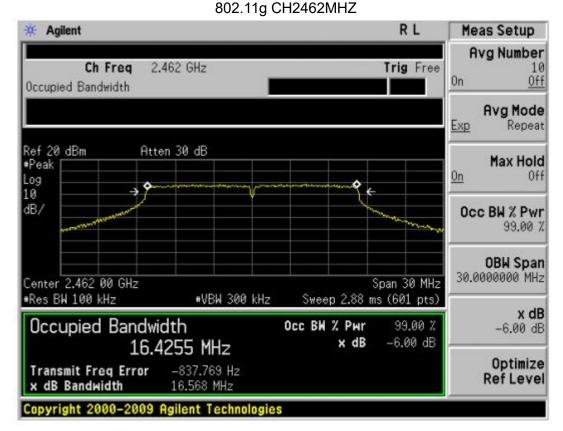


#### 802.11g CH2437MHZ

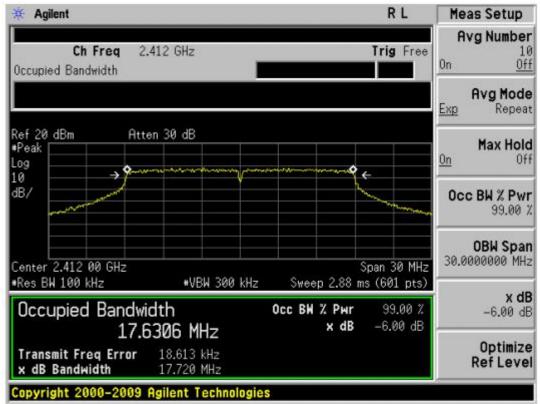




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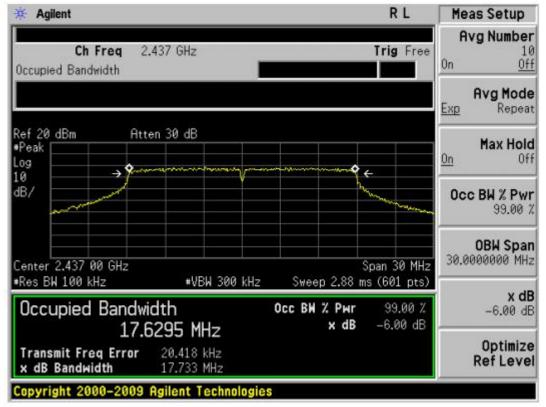


#### 802.11n 20-2412MHz

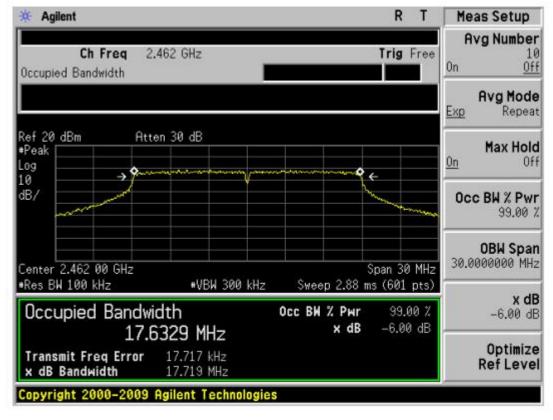




#### 802.11n 20-2437MHz



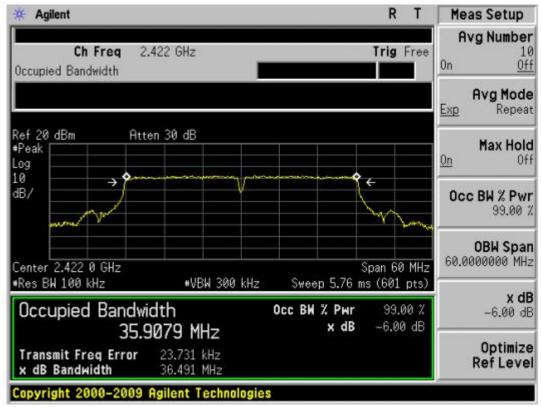
#### 802.11n 20-2462MHz



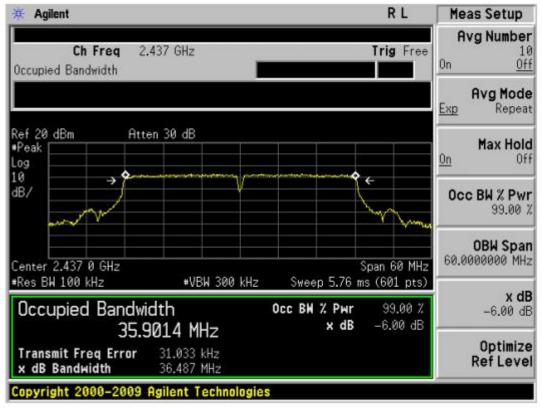


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#### 802.11n 40-2422MHz



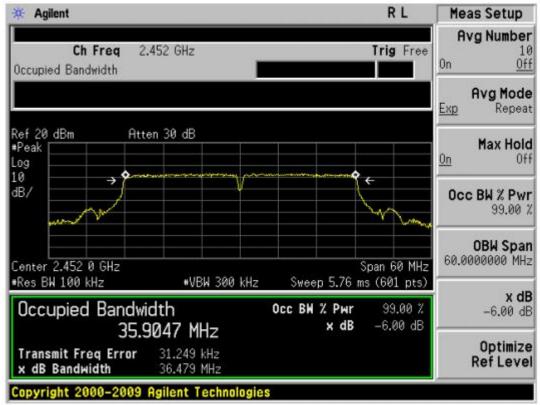
#### 802.11n 40-2437MHz





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#### 802.11n 40-2452MHz





#### **4 CONDUCTED OUTPUT POWER**

#### 4.1 limit

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 4.2 test procedure

- a. Connect each EUT's antenna output to power sensor by RF cable and attenuator
- b. Measure the PK output power of each antenna port by power sensor.

#### 4.3 TEST SETUP



#### 4.5 test results

TestMode	Channel (MHz)	Result (dBm)	Limit (dBm)	Verdict
802.11b	2412MHz	8.36	30	Pass
802.11b	2437MHz	8.24	30	Pass
802.11b	2462MHz	9.57	30	Pass
802.11g	2412MHz	8.17	30	Pass
802.11g	2437MHz	9.39	30	Pass
802.11g	2462MHz	8.28	30	Pass
802.11n 20	2412MHz	7.53	30	Pass
802.11n 20	2437MHz	6.39	30	Pass
802.11n 20	2462MHz	7.82	30	Pass
802.11n 40	2422MHz	8.26	30	Pass
802.11n 40	2437MHz	7.97	30	Pass
802.11n 40	2452MHz	7.16	30	Pass



#### 5. POWER SPECTRAL DENSITY

#### 5.1 LIMIT

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

#### 5.2 TEST PROCEDURE

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Set the spectrum analyzer as follows:

Center frequency	DTS Channel center frequency
RBW:	3 kHz ≤ RBW ≤ 100 kHz
VBW:	≥ 3RBW
Span	1.5 times the DTS bandwidth
Detector Mode:	Pake
Sweep time:	auto
Trace mode	Max hold

(3) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude level within the RBW

(4) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

#### 5.3 TEST SETUP



Spectrum Analyzer

EUT

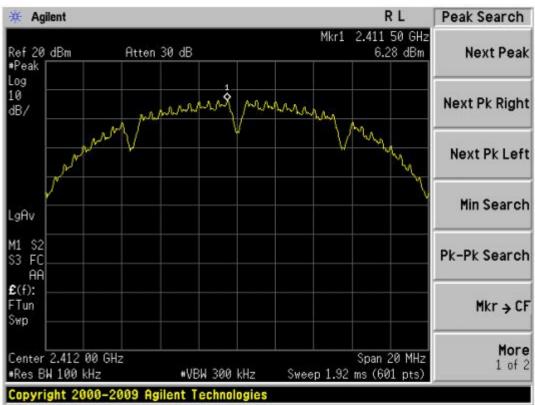


#### 5.4 TEST RESULTS

TestMode	Channel (MHz)	Result (dBm/100KHz)	Limit (dBm/3KHz)	Verdict
802.11b	2412MHz	6.28	8	Pass
802.11b	2437MHz	6.85	8	Pass
802.11b	2462MHz	6.91	8	Pass
802.11g	2412MHz	-2.27	8	Pass
802.11g	2437MHz	-1.89	8	Pass
802.11g	2462MHz	-1.56	8	Pass
802.11n 20	2412MHz	-1.77	8	Pass
802.11n 20	2437MHz	-1.86	8	Pass
802.11n 20	2462MHz	-1.20	8	Pass
802.11n 40	2422MHz	-7.85	8	Pass
802.11n 40	2437MHz	-7.09	8	Pass
802.11n 40	2452MHz	-6.79	8	Pass

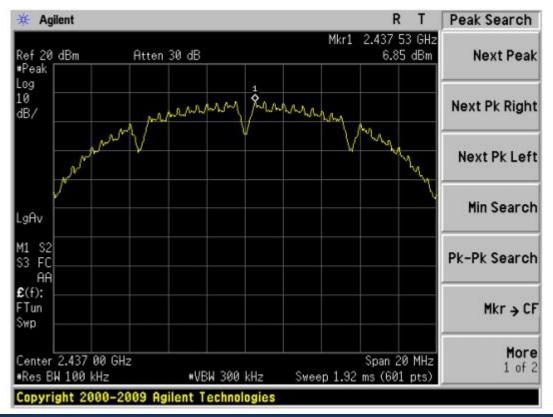


5.5 original test data



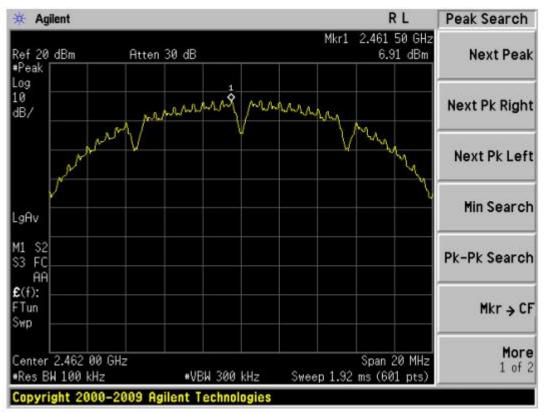
802.11b-2412MHz

802.11b-2437MHz

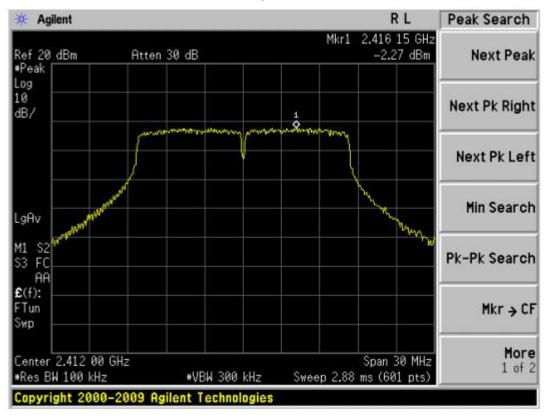




802.11b-2462MHz



#### 802.11g-2412MHz



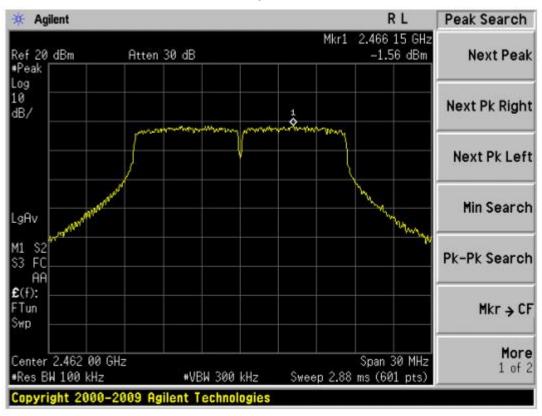


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🔆 Agilent			RL	Peak Search
#Peak	itten 30 dB	Mkr	1 2.441 15 GHz -1.89 dBm	Next Peak
Log L0 dB/	an approximation of	1		Next Pk Right
		ander die geschen der Angeleinen der Ander	1	Next Pk Left
LgAv			Mar Mar March	Min Search
M1 \$2 \$3 FC AA				Pk-Pk Search
E(f): FTun Swp				Mkr → CF
Center 2.437 00 GHz #Res BW 100 kHz	#VBW 300 ki	łz Sweep 2.i	Span 30 MHz 88 ms (601 pts)	More 1 of 2

802.11g-2437MHz

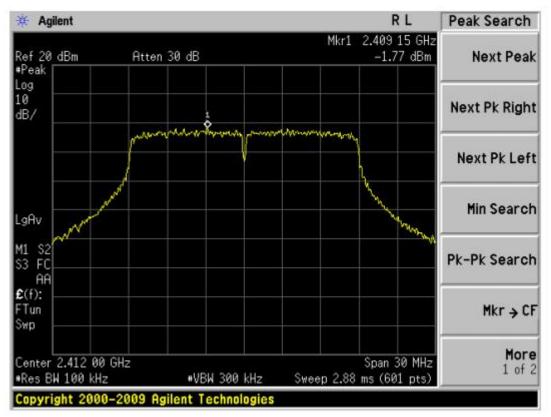
#### 802.11g-2462MHz



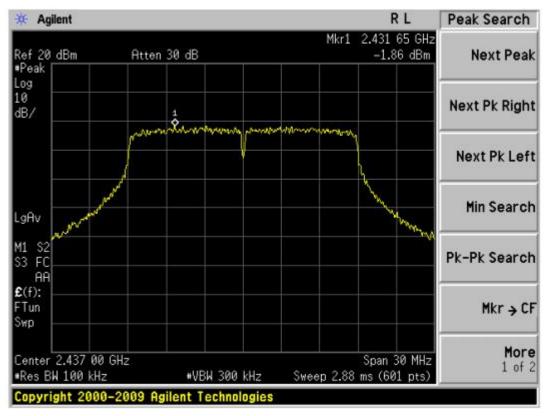


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802.11n 20-2412MHz



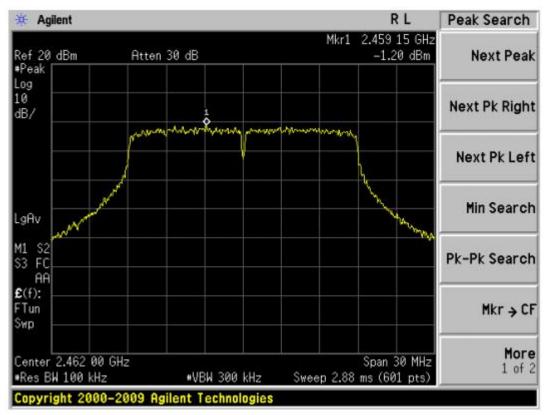
802.11n 20-2437MHz



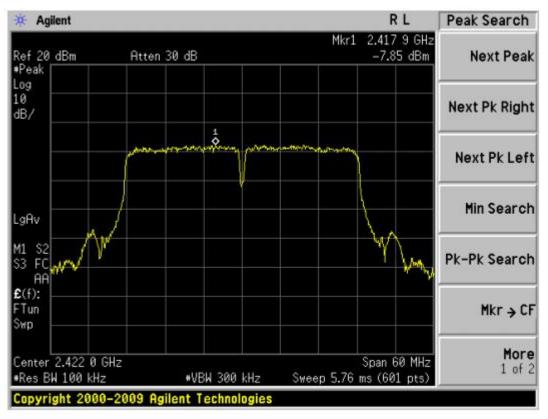


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802.11n 20-2462MHz



#### 802.11n 40-2422MHz





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802.11n 40-2437MHz



#### 802.11n 40-2452MHz





6. Band edge and spurious(conducted)

#### 6.1 LIMIT

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 30dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

#### 6.2 TEST PROCEDURE

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Establish a reference level by using the following procedure:

Center frequency	DTS Channel center
	frequency
RBW:	100kHz
VBW:	300kHz
Span	1.5times the DTS bandwidth
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

(3) Establish Allow the trace to stabilize, use the peak marker function to determine the maximum peak

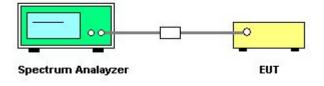
power level to establish the reference level.

(4) Set the spectrum analyzer as follows:

RBW:	100kHz
VBW:	300kHz
Span	Encompass frequency range to be
	measured
Number of measurement points	≥span/RBW
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

(5) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude of all unwanted emissions outside of the authorized frequency band

#### 6.3 TEST SETUP

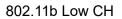


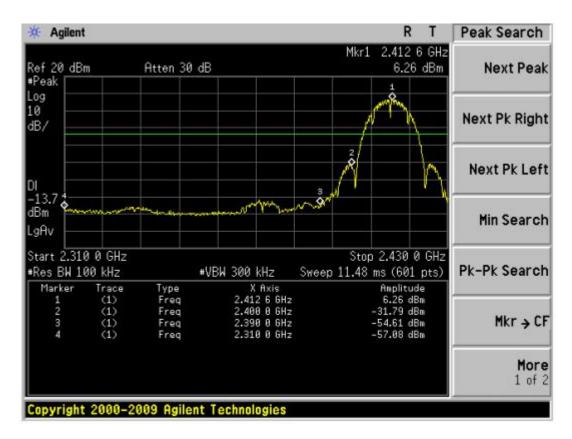


#### 6.5 TEST RESULTS

Eut set mode	CH or Frequency	Result
802.11b	CH1	Pass
	CH11	Pass
802.11g	CH1	Pass
	CH11	Pass
802.11n 20	CH1	Pass
	CH11	Pass
802.11n 40	СНЗ	Pass
	CH9	Pass

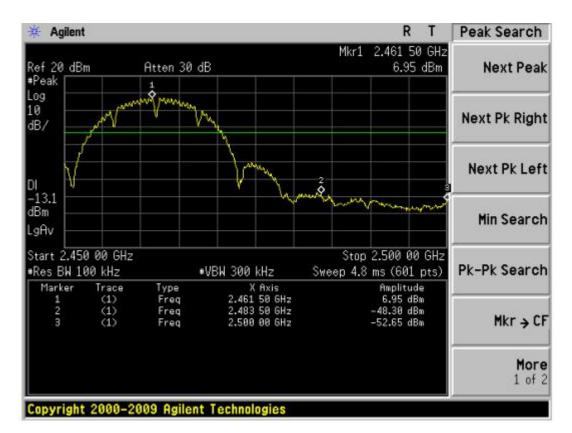
#### 6.5 Original test data



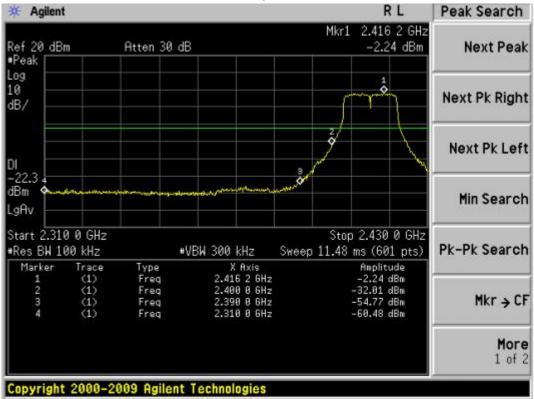




#### 802.11b High CH

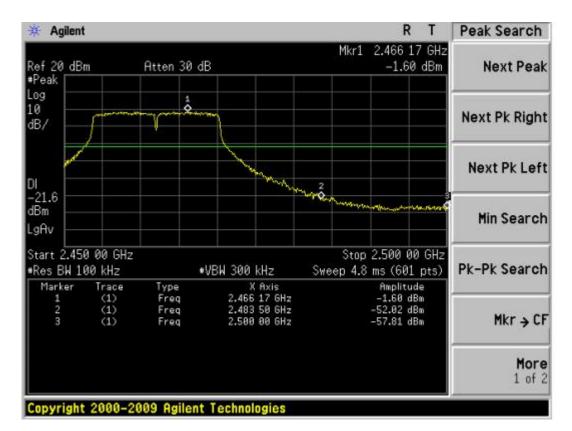


#### 802.11g low CH

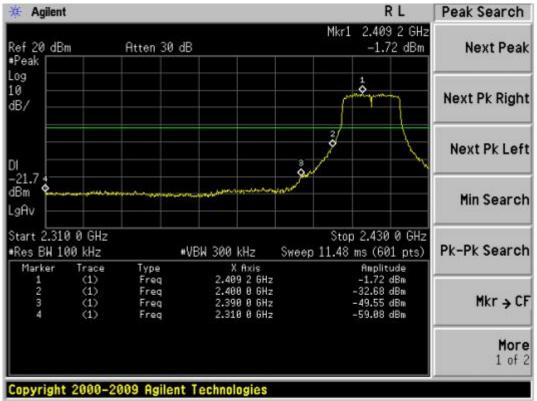




#### 802.11g high CH



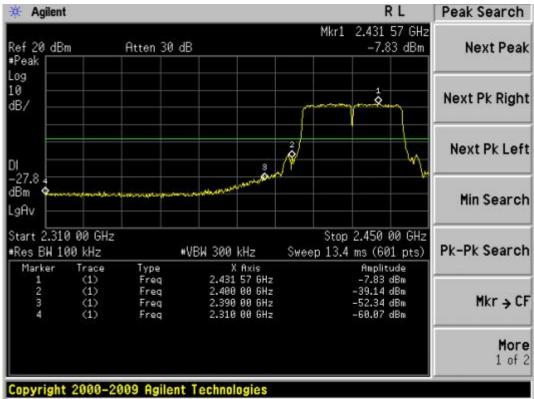
#### 802.11n20 Low CH





#### 802.11n20 High CH Peak Search 💥 Agilent RL Mkr1 2.459 17 GHz -1.36 dBm Ref 20 dBm Atten 30 dB Next Peak #Peak Log 10 ¢ Next Pk Right dB/ ļ Next Pk Left Went Hard Marker DI -21.4 dBm Min Search LgAv Start 2.450 00 GHz Stop 2.500 00 GHz Sweep 4.8 ms (601 pts) Pk-Pk Search \*Res BW 100 kHz \*VBW 300 kHz Type Freq Marker Trace X Axis Amplitude 2.459 17 GHz 2.483 50 GHz -1.36 dBm -49.65 dBm (1) (1) (1) 2 3 Freq Mkr → CF Freq 2.500 00 GHz -58.35 dBm More 1 of 2 Copyright 2000-2009 Agilent Technologies

802.11n40 Low CH



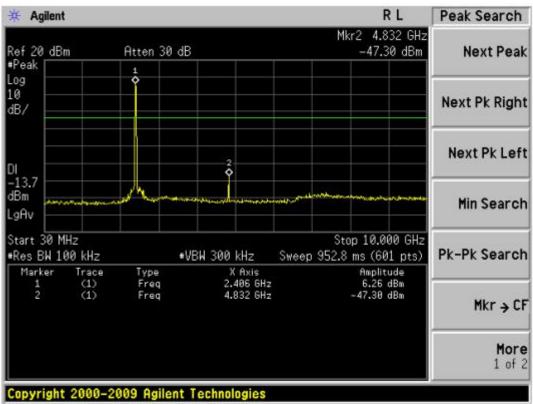


#### 802.11n40 High CH

Peak Search	T	F								🔆 Agilent
Next Peak	Mkr1 2.461 62 GHz -6.80 dBm					30 dB	Atten		Ref 20 dBm #Peak	
Next Pk Right						1 •	1 <b></b>	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Log 10 dB/
Next Pk Left				WY.			¥			DI W
Min Search	-14h18144.5	and the second	- And Anna							-26.8 dBm LgAv
Pk-Pk Search	Stop 2,500 00 GHz Sweep 6.72 ms (601 pts) Amplitude				kHz Axis	W 300 x		Туре		Start 2.430 #Res BW 10 Marker
Mkr → CF	-6.80 dBm -50.41 dBm -56.81 dBm		2.483 50 GHz -50.41 dBm		2.483 50 GHz	(1) Freq 2.461 62 6Hz (1) Freq 2.483 50 6Hz	Freq 2.461 62 G Freq 2.483 50 G	1 2 3		
More 1 of 2										
					ogies	echnol	ilent T	109 Ag	2000-20	Copyright



Spurious emissions (802.11b)



802.11b low CH, 2412MHZ 30MHZ-10GHZ

#### 🔆 Agilent RL Peak Search Mkr1 24.925 GHz Ref 20 dBm Atten 30 dB -52.72 dBm Next Peak #Peak Log 10 Next Pk Right dB/ Next Pk Left D -13.7 dBm Min Search LgAv Start 10.000 GHz Stop 25.000 GHz Pk-Pk Search \*Res BW 100 kHz #VBW 300 kHz Sweep 1.434 s (601 pts) Type Freq Marker X Axis Amplitude Trace (1) 24.925 GHz -52.72 dBm Mkr → CF More 1 of 2 Copyright 2000-2009 Agilent Technologies

#### 10GHZ-25GHZ

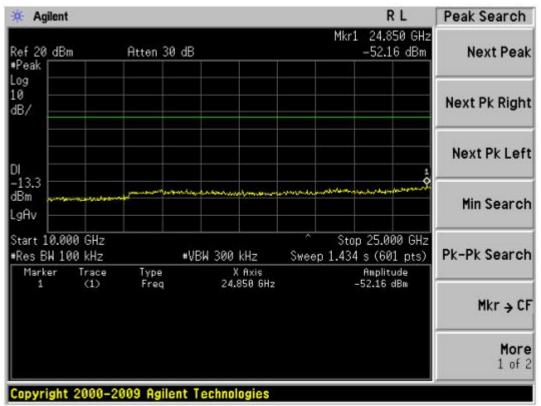


#### RL Peak Search 💥 Agilent Mkr1 2.439 GHz Atten 30 dB 6.73 dBm Ref 20 dBm Next Peak #Peak 10 Log 10 Next Pk Right dB/ Next Pk Left 20 DI -13.3 dBm Min Search LgAv Center 5.015 GHz Span 9.97 GHz Sweep 952.8 ms (601 pts) **Pk-Pk Search** \*Res BW 100 kHz \*VBW 300 kHz Type Freq X Axis 2.439 GHz 4.882 GHz Marker Amplitude Trace 6.73 dBm -46.81 dBm (1) (1) 12 Freq Mkr → CF More 1 of 2 Copyright 2000-2009 Agilent Technologies

## 802.11b Middle CH, 2437MHz 30MHZ-10GHZ

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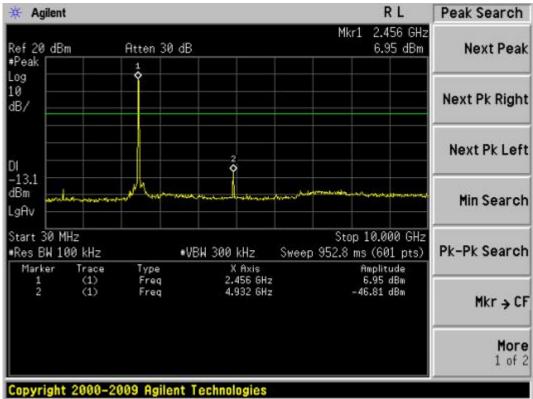
#### 10GHZ-25GHZ



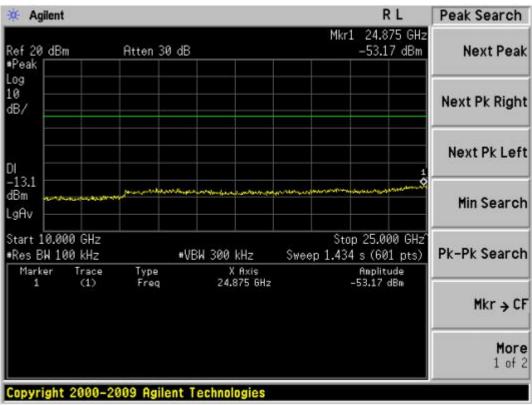
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## 802.11b High CH, 2462MHz 30MHZ-10GHZ



#### 10GHZ-25GHZ

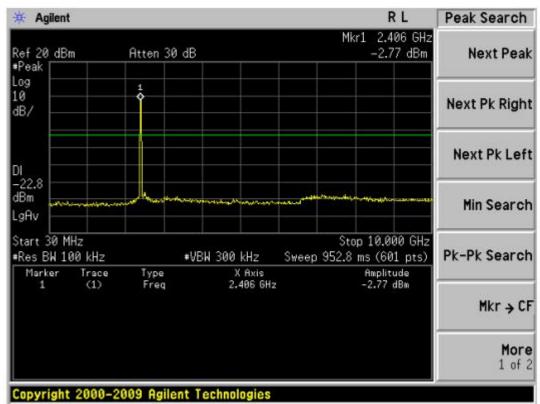




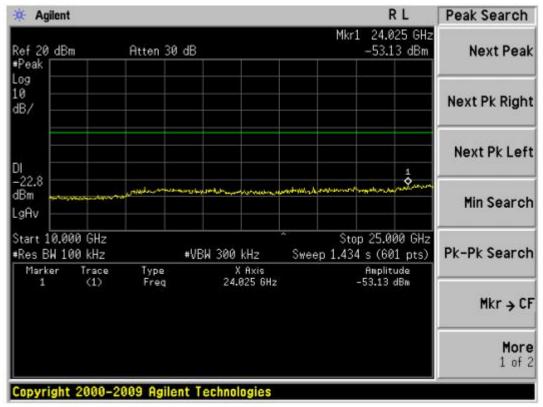


(802.11g)

## 802.11g Low CH, 2412MHz 30MHz-10GHZ



## 10GHZ-25GHZ



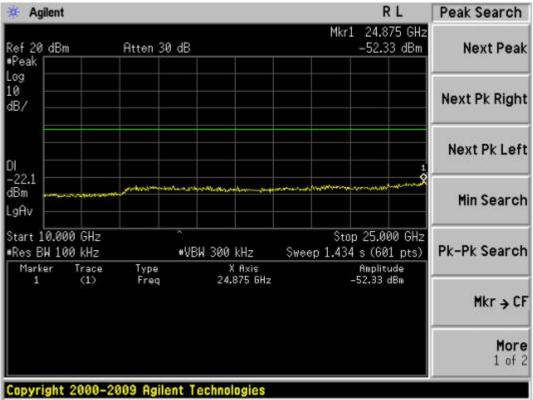


#### RL Peak Search 🔆 Agilent Mkr1 2.439 GHz Atten 30 dB -2.10 dBm Next Peak Ref 20 dBm #Peak Log 10 Next Pk Right dB/ Next Pk Left DI -22.1 dBm Min Search \_gAv Start 30 MHz Stop 10.000 GHz **Pk-Pk Search** \*Res BW 100 kHz #VBW 300 kHz Sweep 952.8 ms (601 pts) X Axis 2.439 GHz Marker Type Freq Amplitude Trace (1) -2.10 dBm Mkr → CF More 1 of 2 Copyright 2000-2009 Agilent Technologies

## 802.11g Middle CH, 2437MHz 30MHz-10GHZ

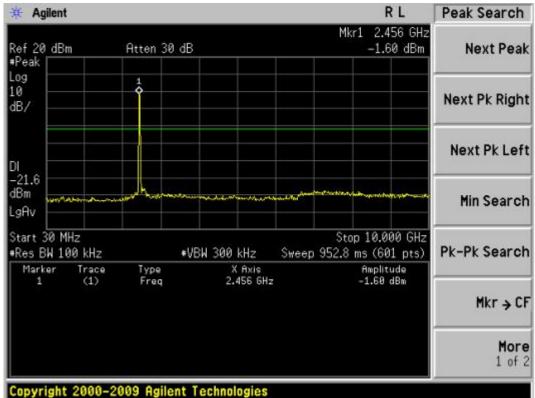
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#### 10GHZ-25GHZ

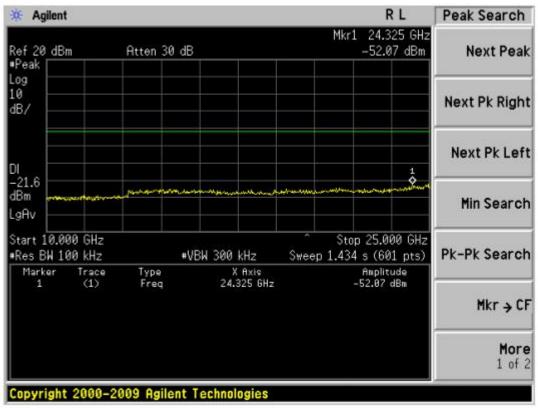




## 802.11g High CH, 2462MHz 30MHZ-10GHZ



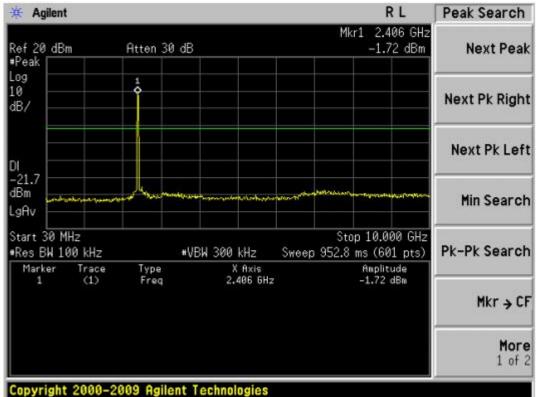
#### 10GHZ-25GHZ



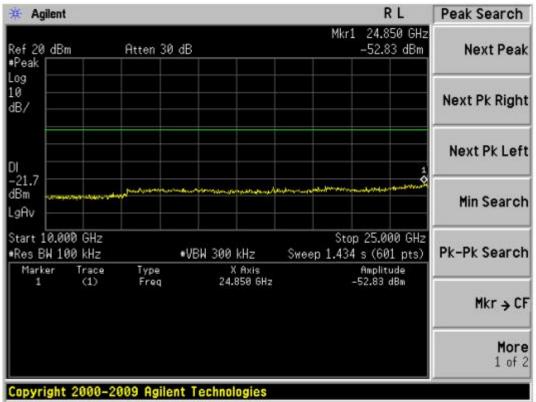


## 802.11n 20 Low CH, 2412MHz 30MHZ-10GHZ

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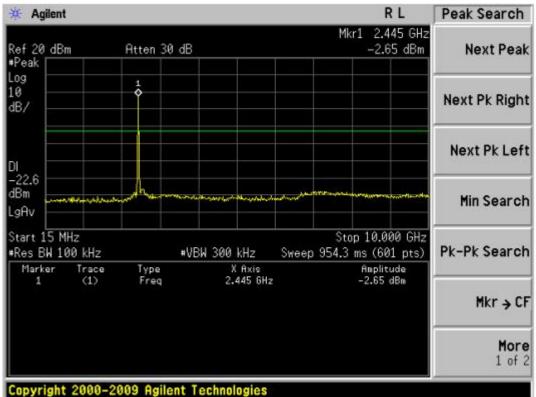
## 10GHZ-25GHZ



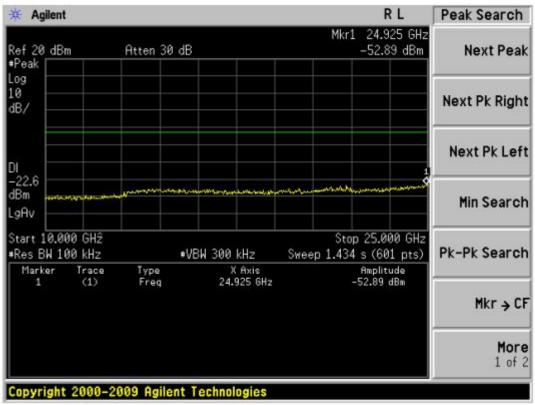
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## 802.11n 20 Middle CH, 2437MHz 30MHZ-10GHZ

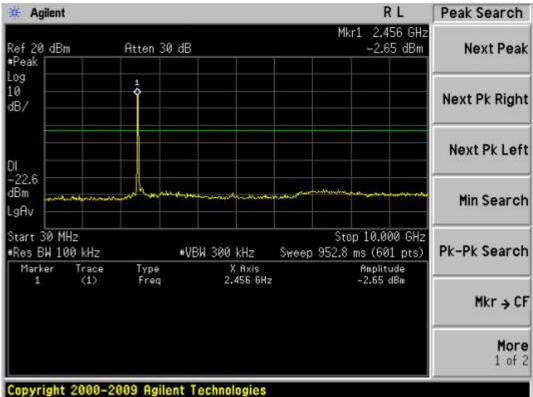


#### 10GHZ-25GHZ

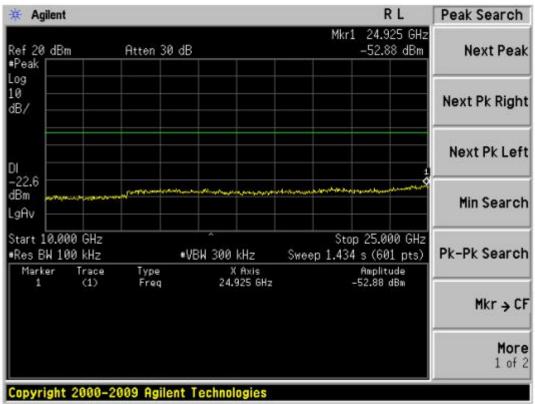




## 802.11n 20 High CH, 2462MHz 30MHZ-10GHZ



#### 10GHZ-25GHZ



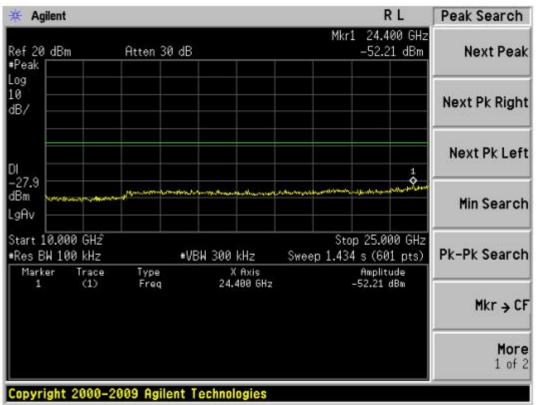


#### 🔆 Agilent R Т Peak Search Mkr1 2.439 GHz -7.89 dBm Ref 20 dBm Atten 30 dB Next Peak #Peak Log 10 Next Pk Right õ dB/ Next Pk Left DI -27.9 dBm Min Search \_gAv Start 30 MHz Stop 10.000 GHz Pk-Pk Search \*Res BW 100 kHz #VBW 300 kHz Sweep 952.8 ms (601 pts) Trace (1) Type Freq X Axis 2.439 GHz Amplitude Marker -7.89 dBm Mkr → CF More 1 of 2 Copyright 2000-2009 Agilent Technologies

## 802.11n 40 Low CH, 2422MHz 30MHZ-10GHZ

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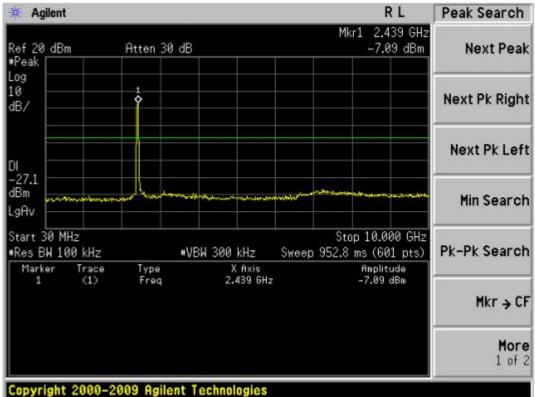
#### 10GHZ-25GHZ



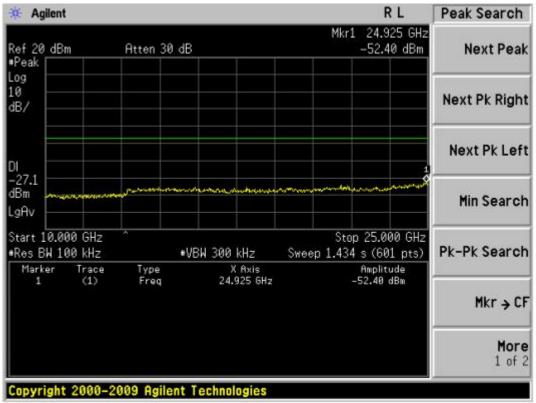
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## 802.11n 40 Middle CH, 2437MHz 30MHZ-10GHZ



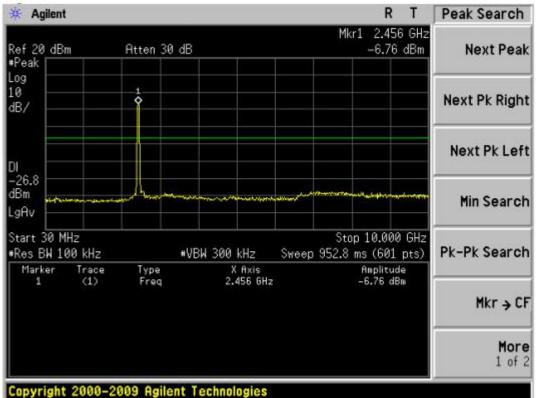
#### 10GHZ-25GHZ



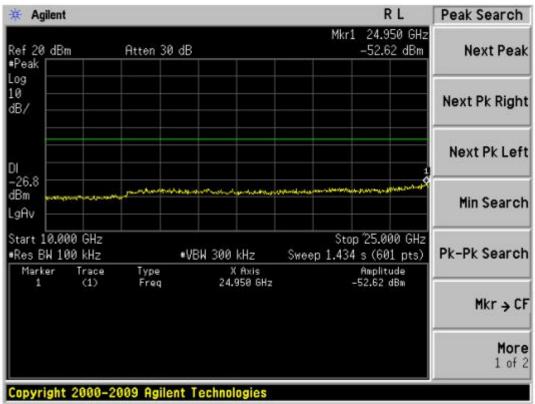
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## 802.11n 40 High CH, 2452MHz 30MHZ-10GHZ



#### 10GHZ-25GHZ





## 7 RADIATED EMISSION MEASUREMENT

## 7.1 RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205(a)&209(a) limit in the table and according to ANSI C63.10-2013 below has to be followed

LIMITS OF RADIATED EMISSION MEASUREMENT (0.009MHz - 1000MHz)

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 (1GHz-25 GHz)

FREQUENCY (MHz)	(dBuV/m) (at 3M)		
	PEAK	AVERAGE	
Above 1000	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).

#### For Radiated Emission

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/AV
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier hamonic(Peak/AV)
RB / VB (emission in restricted	
band)	PK=1MHz / 1MHz, AV=1 MHz /10 Hz

#### For Band edge

Spectrum Parameter	Setting		
Detector	Peak/AV		
	Lower Band Edge: 2300 to 2403 MHz		
Start/Stop Frequency	Upper Band Edge: 2479 to 2500 MHz		
RB / VB (emission in restricted band)	PK=1MHz / 1MHz, AV=1 MHz / 10 Hz		



Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

## 7.2 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz,and above 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 meters (above 1GHz is 1.5 m) above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment shall be 0.8 m(above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. 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 QuasiPeak 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:

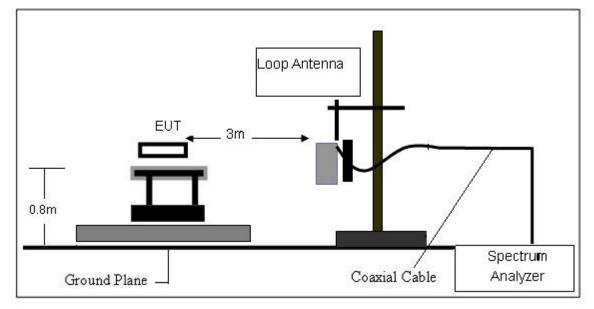
Both horizontal and vertical antenna polarities were tested

and performed pretest to three orthogonal axis. The worst case emissions were reported

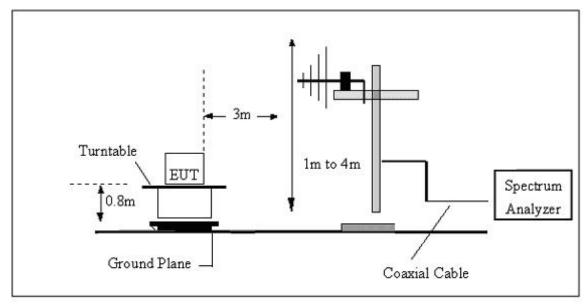


## 7.3 TESTSETUP

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

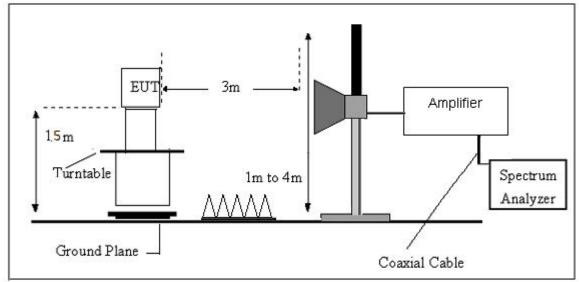


#### (B) Radiated Emission Test-Up Frequency 30MHz~1GHz











## 7.4. TEST RESULTS

(9KHz-30MHz)

Temperature:	<b>22.7℃</b>	Relative Humidity:	61%
Test Voltage:	DC 12V	Test Mode:	802.11b

Freq.	Reading	Limit	Margin	State	Test Desult
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F	Test Result
					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.

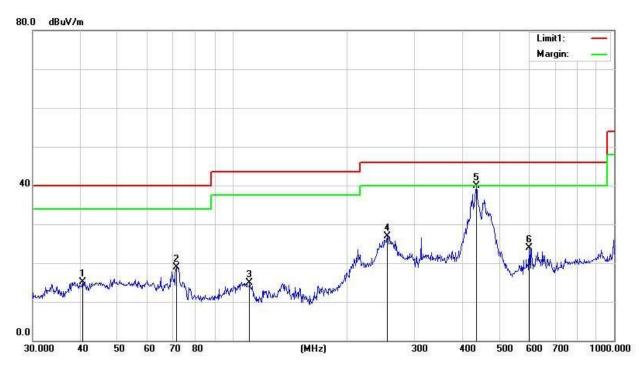
Distance extrapolation factor =40 log (specific distance/test distance)(dB);

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



## (30MHz-1000MHz)

Temperature:	24.7°C	Relative Humidity:	61%
Test Voltage:	DC 12V	Phase:	Horizontal
Test Mode:	802.11b(worst)		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/	(dBuV/m)	(dBuV/m)	(dB)	
			m)				
1	40.5591	32.11	-17.01	15.10	40.00	-24.90	QP
2	71.3300	39.64	-20.64	19.00	40.00	-21.00	QP
3	110.9570	32.65	-17.84	14.81	43.50	-28.69	QP
4	254.7281	44.52	-17.58	26.94	46.00	-19.06	QP
5	435.5898	54.31	-14.44	39.87	46.00	-6.13	QP
6	599.3211	35.18	-11.36	23.82	46.00	-22.18	QP

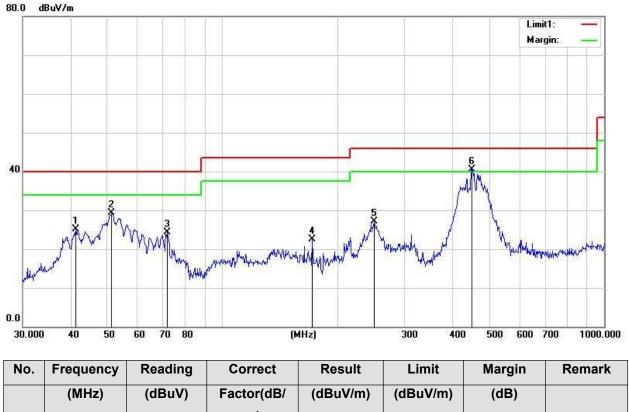
Note: 1. Margin = Result (Result = Reading + Factor )-Limit

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.



Temperature:	22.7°C	Relative Humidity:	61%
Test Voltage:	DC 12V	Phase:	Vertical
Test Mode:	ON		



NO.	riequency	Reading	Conect	Result	Linin	wargin	I Cellial K
	(MHz)	(dBuV)	Factor(dB/ m)	(dBuV/m)	(dBuV/m)	(dB)	
1	41.2764	65.42	-40.24	25.18	40.00	-14.82	QP
2	51.3004	69.52	-40.24	29.28	40.00	-10.72	QP
3	71.5806	64.62	-40.24	24.38	40.00	-15.62	QP
4	171.9944	62.83	-40.24	22.59	43.50	-20.91	QP
5	249.4250	67.43	-40.24	27.19	46.00	-18.81	QP
6	449.5557	80.76	-40.24	40.52	46.00	-5.48	QP

Note: 1. Margin = Result (Result = Reading + Factor )-Limit

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

polarization

Vertical

Vertical

Vertical Vertical

Vertical

Vertical

Horizontal

Horizonta

Horizonta

Horizontal

Horizontal

Horizontal



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## (1GHz~25GHz) Restricted band and Spurious emission Requirements

Peak value:	Peak value:								
Frequency (MHz)	Read Leve <b>l</b> (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)		
4824.00	36.26	31.79	8.62	32.10	44.57	74.00	-29.43		
7236.00	31.67	36.19	11.68	31.97	47.57	74.00	-26.43		
9648.00	30.89	38.07	14.16	31.56	51.56	74.00	-22.44		
12060.00	*					74.00			
14472.00	*					74.00			
16884.00	*					74.00			
4824.00	35.56	31.79	8.62	32.10	43.87	74.00	-30.13		
7236.00	31.74	36.19	11.68	31.97	47.64	74.00	-26.36		
9648.00	30.61	38.07	14.16	31.56	51.28	74.00	-22.72		
12060.00	*					74.00			
14472.00	*					74.00			
16884.00	*					74.00			
Average val	ue:				- 2/2				
Frequency	Read Level	Antenna Factor	Cable Loss	Preamp Factor		Limit Line	Over Limit		

## 802.11b(Worst)-Low

Average val	ue:		70	9	13. 14 13. 14		n	
Frequency (MHz)	Read Leve <b>l</b> (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	25.66	31.79	8.62	32.10	33.97	54.00	-20.03	Vertical
7236.00	20.63	36.19	11.68	31.97	36.53	54.00	-17.47	Vertica
9648.00	21.31	38.07	14.16	31.56	41.98	54.00	-12.02	Vertica
12060.00	*					54.00		Vertica
14472.00	*					54.00		Vertica
16884.00	*					54.00		Vertical
4824.00	25.31	31.79	8.62	32.10	33.62	54.00	-20.38	Horizontal
7236.00	20.39	36.19	11.68	31.97	36.29	54.00	-17.71	Horizontal
9648.00	20.42	38.07	14.16	31.56	41.09	54.00	-12.91	Horizonta
12060.00	*					54.00		Horizonta
14472.00	*					54.00	s	Horizonta
16884.00	*		2		8	54.00	8	Horizonta



Peak value:

Feak value.								
Frequency (MHz)	Read Leve <b>l</b> (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	36.02	31.85	8.66	32.12	44.41	74.00	-29.59	Vertical
7311.00	32.18	36.37	11.71	31.91	48.35	74.00	-25.65	Vertical
9748.00	32.23	38.27	14.25	31.56	53.19	74.00	-20.81	Vertical
12185.00	*					74.00		Vertical
14622.00	*					74.00		Vertical
17059.00	*					74.00		Vertical
4874.00	37.02	31.85	8.66	32.12	45.41	74.00	-28.59	Horizonta
7311.00	31.09	36.37	11.71	31.91	47.26	74.00	-26.74	Horizontal
9748.00	32.23	38.27	14.25	31.56	53,19	74.00	-20.81	Horizonta
12185.00	*			e o	аў. Парадана С	74.00		Horizonta
14622.00	*				5) S	74.00		Horizonta
17059.00	*				3	74.00		Horizonta
Average va	ue:	21		-21 - 1 60'				
Frequency (MHz)	Read Leve <b>l</b> (dBuV)	Antenna Factor (dB/m)	Cab <b>l</b> e Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	27.13	31.85	8.66	32.12	35.52	54.00	-18.48	Vertica
7311.00	20.57	36.37	11.71	31.91	36.74	54.00	-17.26	Vertica
9748.00	21.54	38.27	14.25	31.56	42.50	54.00	-11.50	Vertica
12185.00	*					54.00	8	Vertical
14622.00	*					54.00		Vertica
17059.00	*					54.00		Vertica
4874.00	27.30	31.85	8.66	32.12	35.69	54.00	-18.31	Horizontal
7311.00	20.23	36.37	11.71	31.91	36.40	54.00	-17.60	Horizontal
9748.00	22.00	38.27	14.25	31.56	42.96	54.00	-11.04	Horizontal
12185.00	*			3		54.00		Horizonta
14622.00	*					54.00		Horizonta
17059.00	*					54.00		Horizontal

#### 802.11b(Worst)-Middle

Flux Compliance Service Laboratory



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## 802.11b(Worst)-High

Peak value:								
Frequency (MHz)	Read Leve <b>l</b> (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	39.14	31.90	8.70	32.15	47.59	74.00	-26.41	Vertica
7386.00	31.33	36.49	11.76	31.83	47.75	74.00	-26.25	Vertical
9848.00	34.43	38.62	14.31	31.77	55.59	74.00	-18.41	Vertical
12310.00	*					74.00		Vertical
14772.00	*					74.00		Vertical
17234.00	*					74.00		Vertical
4924.00	39.34	31.90	8.70	32.15	47.79	74.00	-26.21	Horizontal
7386.00	30.69	36.49	11.76	31.83	47.11	74.00	-26.89	Horizontal
9848.00	30.80	38.62	14.31	31.77	51.96	74.00	-22.04	Horizonta
12310.00	*					74.00		Horizonta
14772.00	*					74.00		Horizontal
17234.00	*					74.00		Horizonta

#### Average value:

Frequency (MHz)	Read Leve <b>l</b> (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	30.50	31.90	8.70	32.15	38.95	54.00	-15.05	Vertica
7386.00	21.38	36.49	11.76	31.83	37.80	54.00	-16.20	Vertica
9848.00	23.04	38.62	14.31	31.77	44.20	54.00	-9.80	Vertical
12310.00	*					54.00		Vertical
14772.00	*					54.00		Vertica
17234.00	*					54.00		Vertica
4924.00	30.00	31.90	8.70	32.15	38.45	54.00	-15.55	Horizontal
7386.00	20.18	36.49	11.76	31.83	36.60	54.00	-17.40	Horizonta
9848.00	20.15	38.62	14.31	31.77	41.31	54.00	-12.69	Horizonta
12310.00	*					54.00		Horizonta
14772.00	*	a a				54.00		Horizonta
17234.00	*					54.00		Horizonta





## Radiated Band Edge data

Remark: All restriction band have been tested, and only the worst case is shown in report

802.11	b low	СН
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Peak value:
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Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cab <b>l</b> e Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	48.89	27.59	5.38	34.01	47.85	74.00	-26.15	Horizontal
2400.00	54.73	27.58	5.39	34.01	53.69	74.00	-20.31	Horizontal
2390.00	47.76	27.59	5.38	34.01	46.72	74.00	-27.28	Vertical
2400.00	51.59	27.58	5.39	34.01	50.55	74.00	-23.45	Vertical

#### Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	37.90	27.59	5.38	34.01	36.86	54.00	-17.14	Horizontal
2400.00	43.82	27.58	5.39	34.01	42.78	54.00	-11.22	Horizontal
2390.00	36.12	27.59	5.38	34.01	35.08	54.00	-18.92	Vertical
2400.00	40.68	27.58	5.39	34.01	39.64	54.00	-14.36	Vertical

## 802.11 b High CH

Peak value:

Frequency (MHz)	Read Leve <b>l</b> (dBuV)	Antenna Factor (dB/m)	Cab <b>l</b> e Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	48.23	27.53	5.47	33.92	47.31	74.00	-26.69	Horizontal
2500.00	45.87	27.55	5.49	29.93	48.98	74.00	-25.02	Horizontal
2483.50	47.68	27.53	5.47	33.92	46.76	74.00	-27.24	Vertical
2500.00	44.05	27.55	5.49	29.93	47.16	74.00	-26.84	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cab <b>l</b> e Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	37.14	27.53	5.47	33.92	36.22	54.00	-17.78	Horizontal
2500.00	34.14	27.55	5.49	29.93	37.25	54.00	-16.75	Horizontal
2483.50	35.29	27.53	5.47	33.92	34.37	54.00	-19.63	Vertical
2500.00	32.40	27.55	5.49	29.93	35.51	54.00	-18.49	Vertical



# 802.11 g Low CH

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	61.94	27.59	5.38	34.01	60.90	74.00	-13.10	Horizontal
2400.00	70.56	27.58	5.39	34.01	69.52	74.00	-4.48	Horizontal
2390.00	58.19	27.59	5.38	34.01	57.15	74.00	-16.85	Vertical
2400.00	67.21	27.58	5.39	34.01	66.17	74.00	-7.83	Vertical

#### Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	44.24	27.59	5.38	34.01	43.20	54.00	-10.80	Horizontal
2400.00	50.90	27.58	5.39	34.01	49.86	54.00	-4.14	Horizontal
2390.00	41.78	27.59	5.38	34.01	40.74	54.00	-13.26	Vertical
2400.00	47.82	27.58	5.39	34.01	46.78	54.00	-7.22	Vertical

## 802.11 g High CH

## Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cab <b>l</b> e Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	53.82	27.53	5.47	33.92	52.90	74.00	-21.10	Horizontal
2500.00	47.07	27.55	5.49	29.93	50.18	74.00	-23.82	Horizontal
2483.50	48.91	27.53	5.47	33.92	47.99	74.00	-26.01	Vertical
2500.00	45.36	27.55	5.49	29.93	48.47	74.00	-25.53	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cab <b>l</b> e Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	36.70	27.53	5.47	33.92	35.78	54.00	-18.22	Horizontal
2500.00	34.80	27.55	5.49	29.93	37.91	54.00	-16.09	Horizontal
2483.50	35.25	27.53	5.47	33.92	34.33	54.00	-19.67	Vertical
2500.00	33.11	27.55	5.49	29.93	36.22	54.00	-17.78	Vertical



# 802.11 N 20 Low CH

Peak value:

Average va	ue:	8						
2400.00	68.39	27.58	5.39	34.01	67.35	74.00	-6.65	Vertical
2390.00	57.89	27.59	5.38	34.01	56.85	74.00	-17.15	Vertical
2400.00	72.50	27.58	5.39	34.01	71.46	74.00	-2.54	Horizonta
2390.00	61.98	27.59	5.38	34.01	60.94	74.00	-13.06	Horizonta
Frequency (MHz)	Read Leve <b>l</b> (dBuV)	Antenna Factor (dB/m)	Cab <b>l</b> e Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarizatio

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Frequency (MHz)	Read Leve <b>l</b> (dBuV)	Antenna Factor (dB/m)	Cab <b>l</b> e Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	46.17	27.59	5.38	34.01	45.13	54.00	-8.87	Horizontal
2400.00	51.36	27.58	5.39	34.01	50.32	54.00	-3.68	Horizontal
2390.00	42.53	27.59	5.38	34.01	41.49	54.00	-12.51	Vertical
2400.00	47.69	27.58	5.39	34.01	46.65	54.00	-7.35	Vertical

## 802.11 N 20 High CH

#### Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	52.73	27.53	5.47	33.92	51.81	74.00	-22.19	Horizontal
2500.00	47.15	27.55	5.49	29.93	50.26	74.00	<b>-</b> 23.74	Horizontal
2483.50	48.88	27.53	5.47	33.92	47.96	74.00	-26.04	Vertical
2500.00	45.26	27.55	5.49	29.93	48.37	74.00	-25.63	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cab <b>l</b> e Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	36.68	27.53	5.47	33.92	35.76	54.00	-18.24	Horizontal
2500.00	34.84	27.55	5.49	29.93	37.95	54.00	-16.05	Horizontal
2483.50	35.51	27.53	5.47	33.92	34.59	54.00	-19.41	Vertical
2500.00	33.13	27.55	5.49	29.93	36.24	54.00	-17.76	Vertical



## 802.11 N 40 Low CH

## Peak value:

Frequency (MHz)	Read Leve <b>l</b> (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	64.49	27.59	5.38	34.01	63.45	74.00	-10.55	Horizontal
2400.00	70.04	27.58	5.39	34.01	69.00	74.00	-5.00	Horizontal
2390.00	64.94	27.59	5.38	34.01	63.90	74.00	-10.10	Vertical
2400.00	69.36	27.58	5.39	34.01	68.32	74.00	-5.68	Vertical
Average va	ue:							
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cab <b>l</b> e Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2390.00	48.59	27.59	5.38	34.01	47.55	54.00	-6.45	Horizontal
2400.00	51.04	27.58	5.39	34.01	50.00	54.00	-4.00	Horizontal
2390.00	49.03	27.59	5.38	34.01	47.99	54.00	-6.01	Vertical
2400.00	50.90	27.58	5.39	34.01	49.86	54.00	-4.14	Vertical

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## 802.11 N 40 High CH

## Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	64.38	27.53	5.47	33.92	63.46	74.00	<b>-</b> 10.54	Horizontal
2500.00	47.09	27.55	5.49	29.93	50.20	74.00	-23.80	Horizontal
2483.50	61.70	27.53	5.47	33.92	60.78	74.00	-13.22	Vertical
2500.00	45.22	27.55	5.49	29.93	48.33	74.00	-25.67	Vertical

#### Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Leve <b>l</b> (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	45.68	27.53	5.47	33.92	44.76	54.00	-9.24	Horizontal
2500.00	34.81	27.55	5.49	29.93	37.92	54.00	-16.08	Horizontal
2483.50	44.31	27.53	5.47	33.92	43.39	54.00	-10.61	Vertical
2500.00	33.03	27.55	5.49	29.93	36.14	54.00	-17.86	Vertical



## **8 CONDUCTED EMISSION TEST**

#### 8.1.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 207(a) limit in the table below has to be followed.

	Conducted Emissionlimit (dBuV)				
FREQUENCY (MHz)	Quasi-peak	Average			
0.15 -0.5	66 - 56 *	56 - 46 *			
0.50 -5.0	56.00	46.00			
5.0 -30.0	60.00	50.00			

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			



#### 8.1.2 TEST PROCEDURE

- a. The EUT was 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical 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.

# Vertical Reference Ground Plane EUT 40cm EUT 80cm N Horizontal Reference Ground Plane

## 8.1.3 TEST SETUP

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

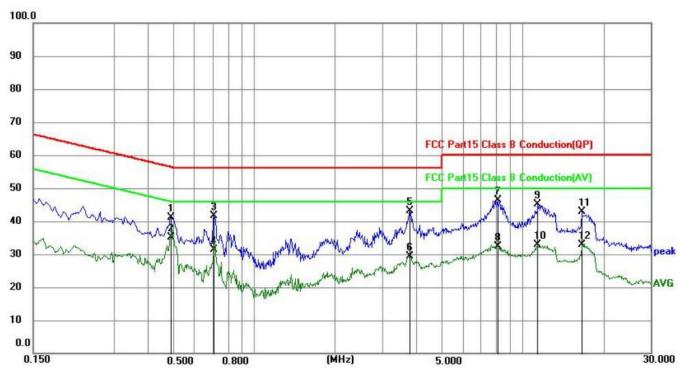
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

Flux Compliance Service Laboratory Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan Tel: 769-27280901 Fax:769-27280901 http://www.FCS-lab.com



## 8.1.4 TEST RESULT

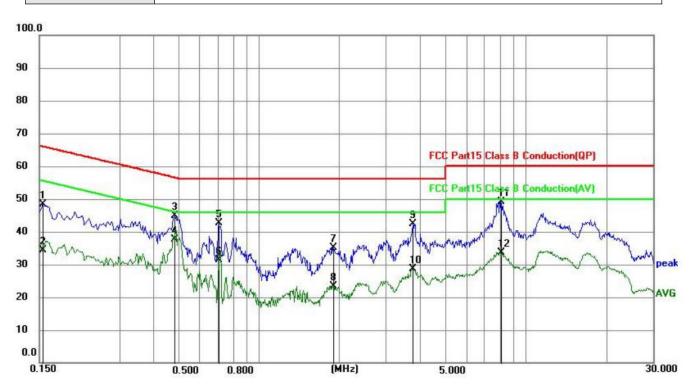
Temperature:	22.1 °C	Relative Humidity:	56%
Test Voltage:	DC 12V	Phase:	L
Test Mode:	802.11b(worst)		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.4875	31.19	9.87	41.06	56.21	15.15	QP
2	0.4875	25.16	9.87	35.03	46.21	11.18	AVG
3	0.7080	31.84	9.89	41.73	56.00	14.27	QP
4	0.7080	21.50	9.89	31.39	46.00	14.61	AVG
5	3.7995	25.06	17.95	43.01	56.00	12.99	QP
6	3.7995	11.41	17.95	29.36	46.00	16.64	AVG
7	8.0700	26.40	20.00	46.40	60.00	13.60	QP
8	8.0700	12.27	20.00	32.27	50.00	17.73	AVG
9	11.4090	25.19	20.04	45.23	60.00	14.77	QP
10	11.4090	12.74	20.04	32.78	50.00	17.22	AVG
11	16.6560	22.85	20.13	42.98	60.00	17.02	QP
12	16.6560	12.66	20.13	32.79	50.00	17.21	AVG



Temperature:	22.1 °C	Relative Humidity:	56%
Test Voltage:	DC 12V	Phase:	N
Test Mode:	802.11b(worst)		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.1545	38.68	9.77	48.45	65.75	17.30	QP
2	0.1545	24.50	9.77	34.27	55.75	21.48	AVG
3	0.4830	34.97	9.87	44.84	56.29	11.45	QP
4	0.4830	27.87	9.87	37.74	46.29	8.55	AVG
5	0.7080	32.77	9.89	42.66	56.00	13.34	QP
6	0.7080	21.59	9.89	31.48	46.00	14.52	AVG
7	1.8960	20.64	14.41	35.05	56.00	20.95	QP
8	1.8960	8.94	14.41	23.35	46.00	22.65	AVG
9	3.7725	24.40	17.94	42.34	56.00	13.66	QP
10	3.7725	10.69	17.94	28.63	46.00	17.37	AVG
11	8.0475	29.05	20.14	49.19	60.00	10.81	QP
12	8.0475	13.37	20.14	33.51	50.00	16.49	AVG



## 9. ANTENNA REQUIREMENT

#### 9.1 STANDARD REQUIREMENT

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

#### 9.2 RESULT

The antennas used for this product are PIFA antenna and other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 1.0dBi.

\*\*\*\*\*\*\*END OF THE REPORT\*\*\*\*\*