FCC RADIO TEST REPORT-WIFI
FCC ID:2AHEQD3EW000

Product： WiFi Repeater

Trade Name： Taihuoniao

Model Name： D3EW000-00

Serial Model： N/A

Report No.： NTEK-2016NT0111708F1

Prepared for

Shenzhen Taihuoniao Technology Ltd.

Funian Square B4 building 629,Shihua Road,Futian bonded zone,
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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name ..... Shenzhen Taihuoniao Technology Ltd.

Address..... Funian Square B4 building 629,Shihua Road,Futian bonded zone,Futian District, Shenzhen City

Manufacture's Name ... Nanning Fu Gui Precision Industry Co., Ltd.

Address..... No.52 Tongle Avenue,Shajing,Jiangnan district,Nanning City, Guangxi Province,China

Product description

Product name..... WiFi Repeater

Model and/or type reference D3EW000-00

Serial Model ..... N/A

Standards ..... FCC Part15.247 01 Oct. 2015

Test procedure ..... ANSI C63.10-2013 and KDB 558074: June 5, 2014

This device described above has been tested by NTEK, and 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..... 01 Jan. 2016 ~18 Jan. 2016

Date of Issue ..... 18 Jan. 2016

Test Result..... **Pass**

Testing Engineer : Eileen Liu.

(Eileen Liu)

Technical Manager : Brown Lu

(Brown Lu)

Authorized Signatory : Sam. Chen

(Sam Chen)

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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 **y ± U**，where expended uncertainty **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	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	WiFi Repeater
Trade Name	Taihuoniao
Model Name	D3EW000-00
Serial Model	N/A
Model Difference	N/A
Product Description	

Operation Frequency:	802.11b/g/n(20MHz): 2412~2462MHz 802.11n(40MHz):2422~2452MHz
Modulation Type:	IEEE 802.11b : DSSS (CCK, QPSK, DBPSK) IEEE 802.11g/n (HT20/HT40) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Bit Rate of Transmitter	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n(20MHz/40MHz):150/144.44/130/117/115.56/104/86.67/78/52/6.5Mbps
Number Of Channel	802.11b/g/n20MHz:11CH 802.11n40MHz:7CH
Antenna:	Please see Note 3.
Antenna Gain (dBi)	Please see Note 3.

Channel List	Please refer to the Note 2.
Ratings	AC 100-240V, 50/60Hz, 0.2A
Adapter	N/A
Battery	N/A
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.

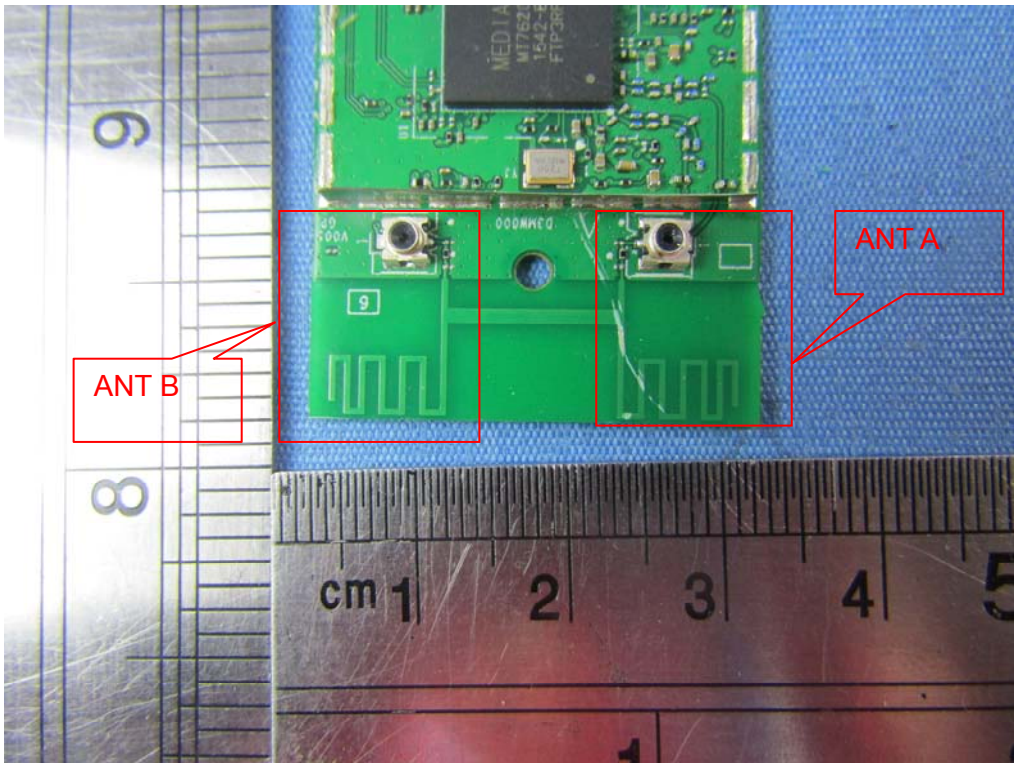
Channel List for 802.11b/g/n(20 MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

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	08	2447				

3.

Table for Filed Antenna

Operating Mode	Mode	Antenna	Gain (dBi)	NOTE
SISO	802.11b/g	Antenna A	2.55	2.4G Band
		Antenna B	2.82	
MIMO(2TX)	802.11n HT20	Antenna A&B	5.71	
	802.11n HT40		2.70	



The Control software(tool_WIFI.exe) can control antenna A B ,

For 2.4GHz mode, antenna A B are transmitting,two antennas simultaneously transmit.

And the data is recorded for radiated emission and band edge.

For MIMO mode , Directional gain = 10*log[(10G1/20 + 10G2/20+…+10GN/20)2/N] dBi (802.11b/g/n_HT20) Directional gain = 10*log[(10G1/10 + 10G2/10+…+10GN/10)/N] dBi (802.11n_HT40)
(according to KDB662911 D01 v02r01)

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	802.11n20 CH1/ CH6/ CH11
Mode 4	802.11n40 CH3/ CH6/ CH9
Mode 5	Link Mode

For Conducted Emission	
Final Test Mode	Description
Mode 5	Link Mode

Pretest Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n20 CH1/ CH6/ CH11
Mode 4	802.11n40 CH3/ CH6/ CH9
Mode 5	Link Mode

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

(2) EUT configured to transmit continuously:

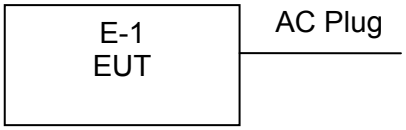
(3) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

Mode	Data Rate
IEEE 802.11b	1 Mbps
IEEE 802.11g	6 Mbps
IEEE 802.11n20	MCS 7
IEEE 802.11n40	MCS 7

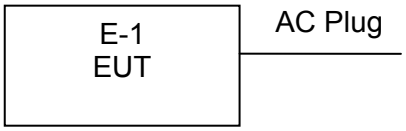
Operated Mode for Worst Duty Cycle	
Test Signal Duty Cycle (x)	Average correction factor (dB)
100% - IEEE 802.11b	0
100% - IEEE 802.11g	0
100% - IEEE 802.11n (HT20)	0
100% - IEEE 802.11n (HT40)	0

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission Test



Radiated Spurious Emission Test



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	Brand	Model/Type No.	Series No.	Note
E-1	WiFi Repeater	Taihuoniao	xTablet T1500	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	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『Length』column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2015.07.06	2016.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2015.06.06	2016.06.05	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2015.07.06	2016.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2015.06.06	2016.06.05	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2015.06.06	2016.06.05	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2015.07.06	2016.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2015.07.06	2016.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2015.12.22	2016.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2015.06.06	2016.06.05	1 year
10	Power Meter	R&S	NRVS	100696	2015.07.06	2016.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2015.07.06	2016.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2015.06.06	2016.06.05	1 year
2	LISN	R&S	ENV216	101313	2015.08.24	2016.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2015.08.24	2016.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2015.06.06	2016.06.05	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2015.06.06	2016.06.05	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2015.06.06	2016.06.05	1 year

1	Attenuation	MCE	24-10-34	BN9258	2015.07.06	2016.07.05	1 year

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 (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
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

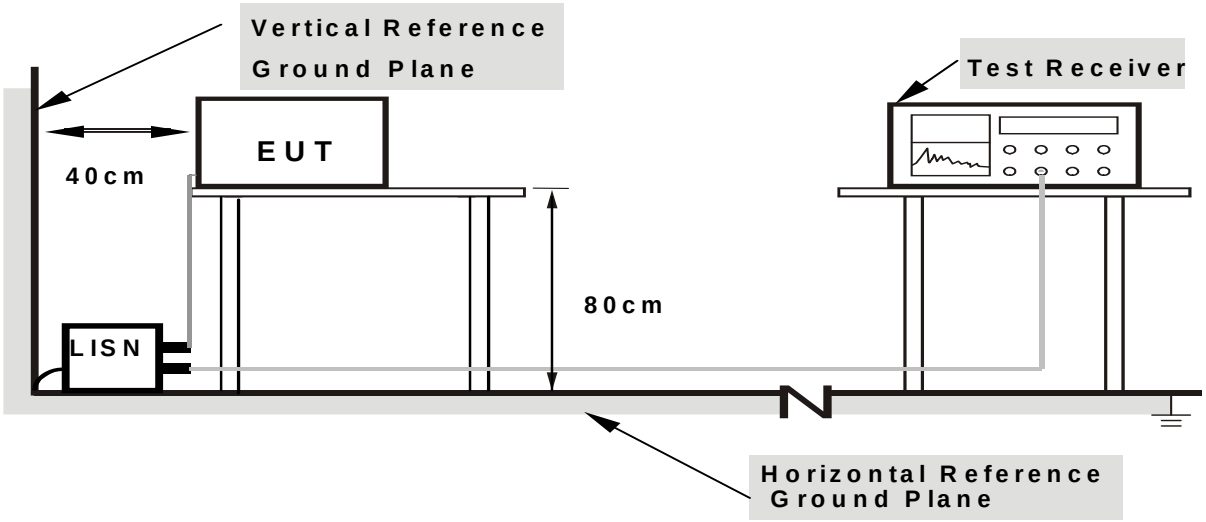
3.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 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

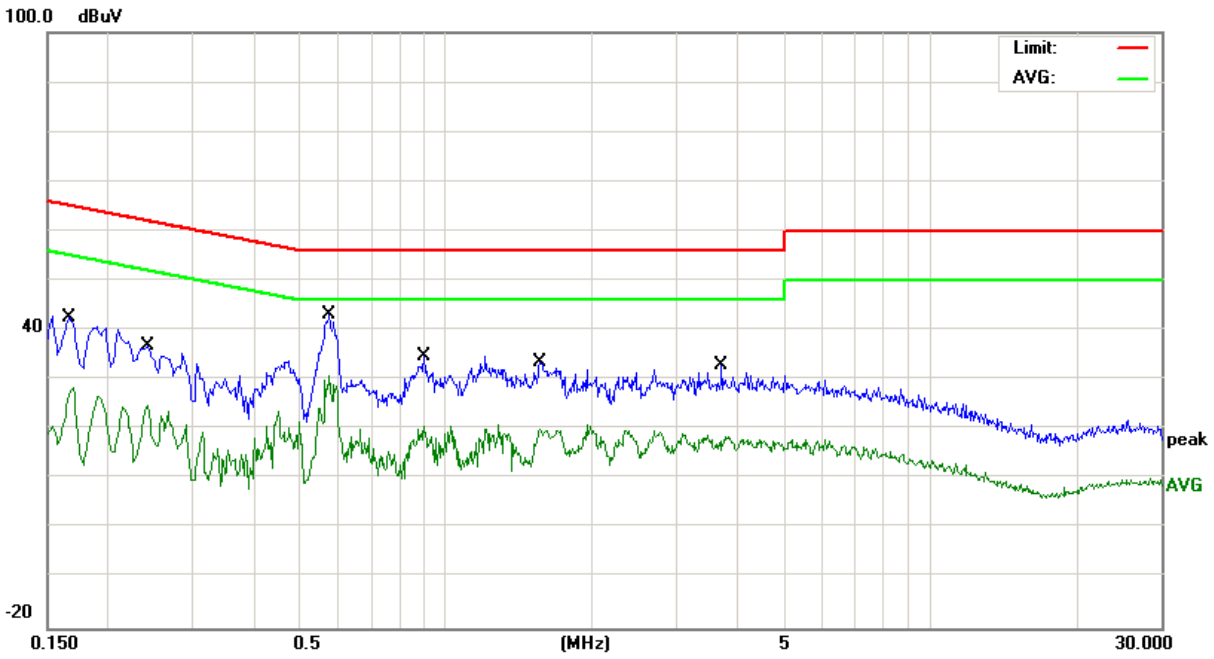
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	AC 120V/60Hz	Test Mode：	Mode 4

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.1660	32.42	10.12	42.54	65.15	-22.61	QP
0.1660	18.29	10.12	28.41	55.15	-26.74	AVG
0.2419	26.76	10.13	36.89	62.03	-25.14	QP
0.2419	14.68	10.13	24.81	52.03	-27.22	AVG
0.5738	33.42	9.79	43.21	56.00	-12.79	QP
0.5738	21.01	9.79	30.80	46.00	-15.20	AVG
0.9020	24.78	9.83	34.61	56.00	-21.39	QP
0.9020	10.69	9.83	20.52	46.00	-25.48	AVG
1.5660	23.89	9.78	33.67	56.00	-22.33	QP
1.5660	11.15	9.78	20.93	46.00	-25.07	AVG
3.7139	23.21	9.75	32.96	56.00	-23.04	QP
3.7139	9.45	9.75	19.20	46.00	-26.80	AVG

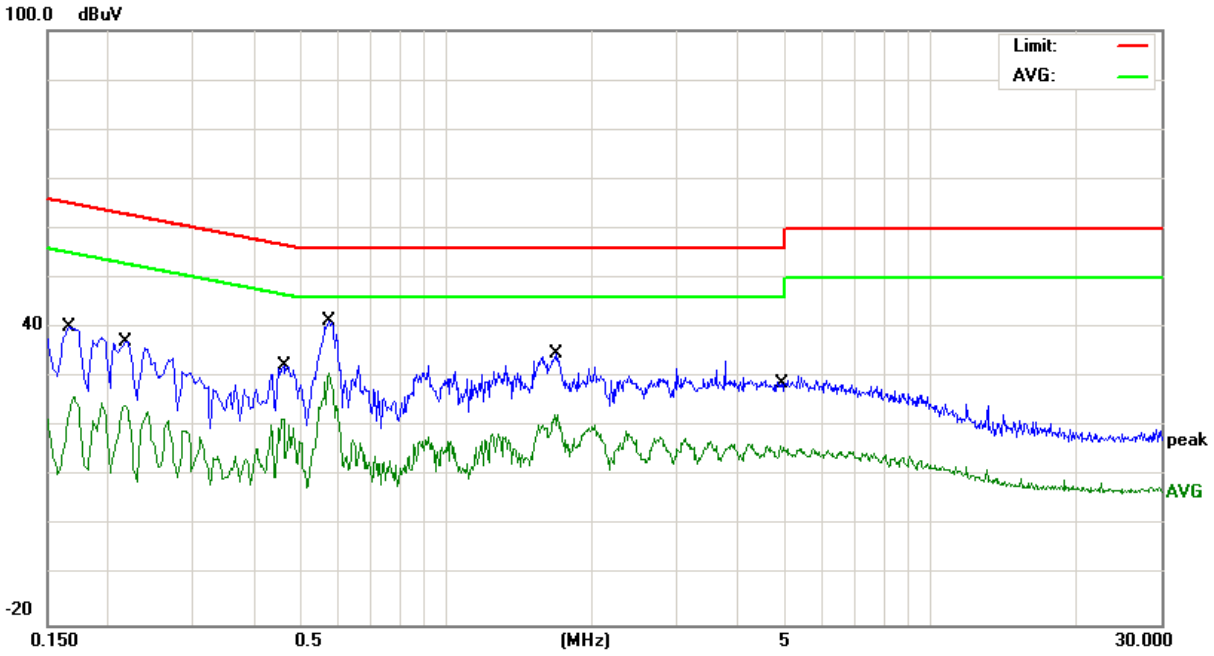
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	AC 120V/60Hz	Test Mode：	Mode 4

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.1660	29.98	10.06	40.04	65.15	-25.11	QP
0.1660	16.14	10.06	26.20	55.15	-28.95	AVG
0.2179	27.02	10.04	37.06	62.89	-25.83	QP
0.2179	14.35	10.04	24.39	52.89	-28.5	AVG
0.4620	22.52	9.91	32.43	56.66	-24.23	QP
0.4620	11.54	9.91	21.45	46.66	-25.21	AVG
0.5738	31.45	9.82	41.27	56.00	-14.73	QP
0.5738	21.04	9.82	30.86	46.00	-15.14	AVG
1.6939	24.94	9.79	34.73	56.00	-21.27	QP
1.6939	12.74	9.79	22.53	46.00	-23.47	AVG
4.9218	20.41	9.73	30.14	56.00	-25.86	QP
4.9218	6.50	9.73	16.23	46.00	-29.77	AVG

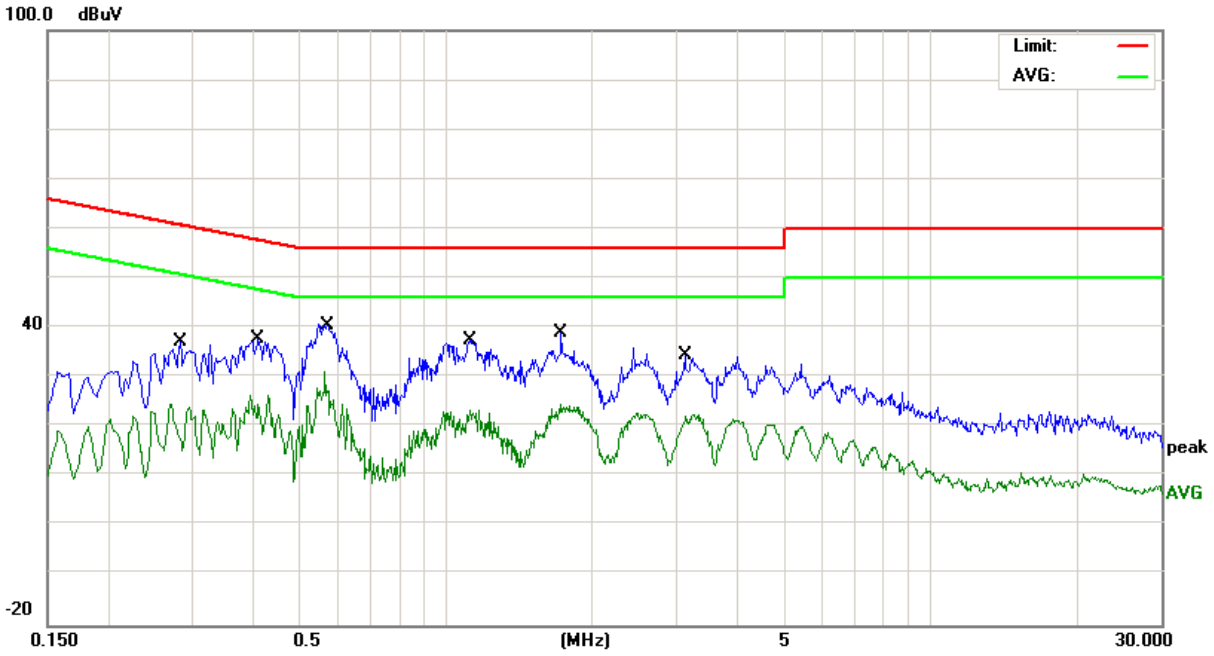
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	AC 240V/50Hz	Test Mode：	Mode 4

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.2819	27.07	10.14	37.21	60.76	-23.55	QP
0.2819	14.37	10.14	24.51	50.76	-26.25	AVG
0.4099	27.77	10.02	37.79	57.65	-19.86	QP
0.4099	16.35	10.02	26.37	47.65	-21.28	AVG
0.5620	30.94	9.79	40.73	56.00	-15.27	QP
0.5620	21.46	9.79	31.25	46.00	-14.75	AVG
1.1180	27.74	9.84	37.58	56.00	-18.42	QP
1.1180	13.38	9.84	23.22	46.00	-22.78	AVG
1.7299	29.16	9.76	38.92	56.00	-17.08	QP
1.7299	14.92	9.76	24.68	46.00	-21.32	AVG
3.1218	24.79	9.74	34.53	56.00	-21.47	QP
3.1218	12.83	9.74	22.57	46.00	-23.43	AVG

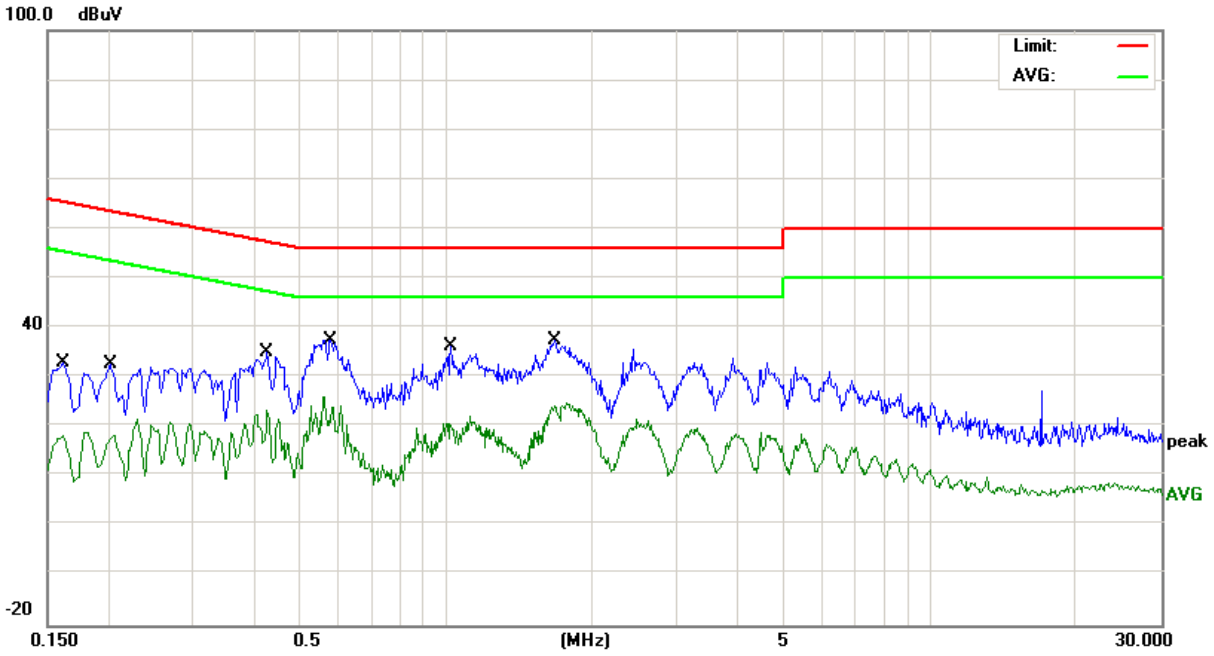
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	AC 240V/50Hz	Test Mode：	Mode 4

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.1620	22.84	10.07	32.91	65.36	-32.45	QP
0.1620	8.09	10.07	18.16	55.36	-37.20	AVG
0.2020	22.58	10.02	32.60	63.52	-30.92	QP
0.2020	11.43	10.02	21.45	53.52	-32.07	AVG
0.4259	25.09	9.99	35.08	57.33	-22.25	QP
0.4259	13.27	9.99	23.26	47.33	-24.07	AVG
0.5779	27.77	9.82	37.59	56.00	-18.41	QP
0.5779	16.24	9.82	26.06	46.00	-19.94	AVG
1.0220	26.43	9.87	36.30	56.00	-19.70	QP
1.0220	10.83	9.87	20.70	46.00	-25.30	AVG
1.6779	27.69	9.79	37.48	56.00	-18.52	QP
1.6779	14.92	9.79	24.71	46.00	-21.29	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

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).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted 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 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. 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 for below 1GHz and 1.5m for above 1GHz; 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

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

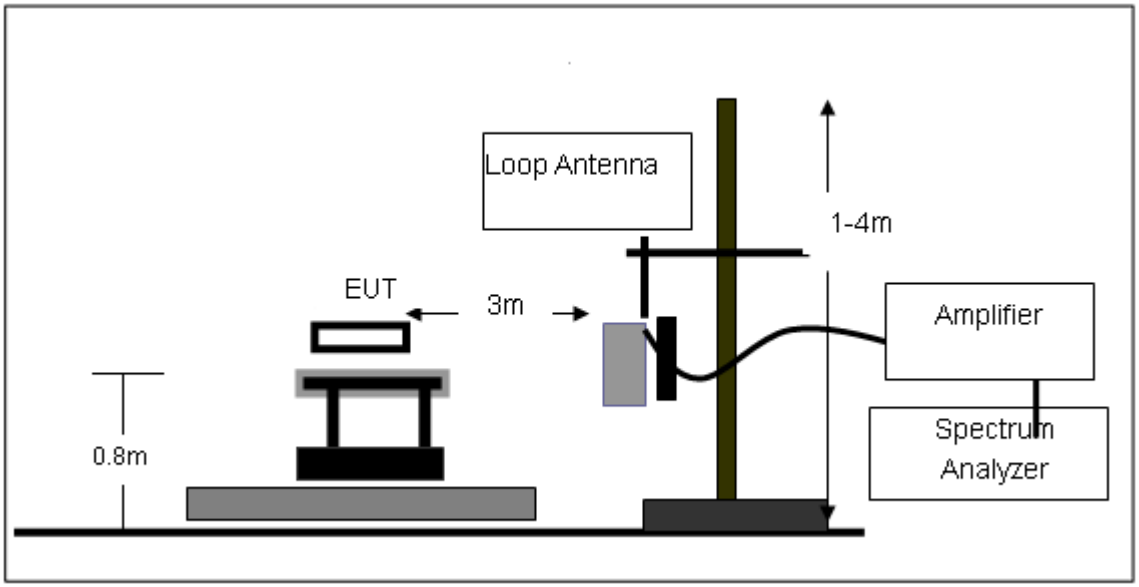
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	Peak	100 kHz	100 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

3.2.3 DEVIATION FROM TEST STANDARD

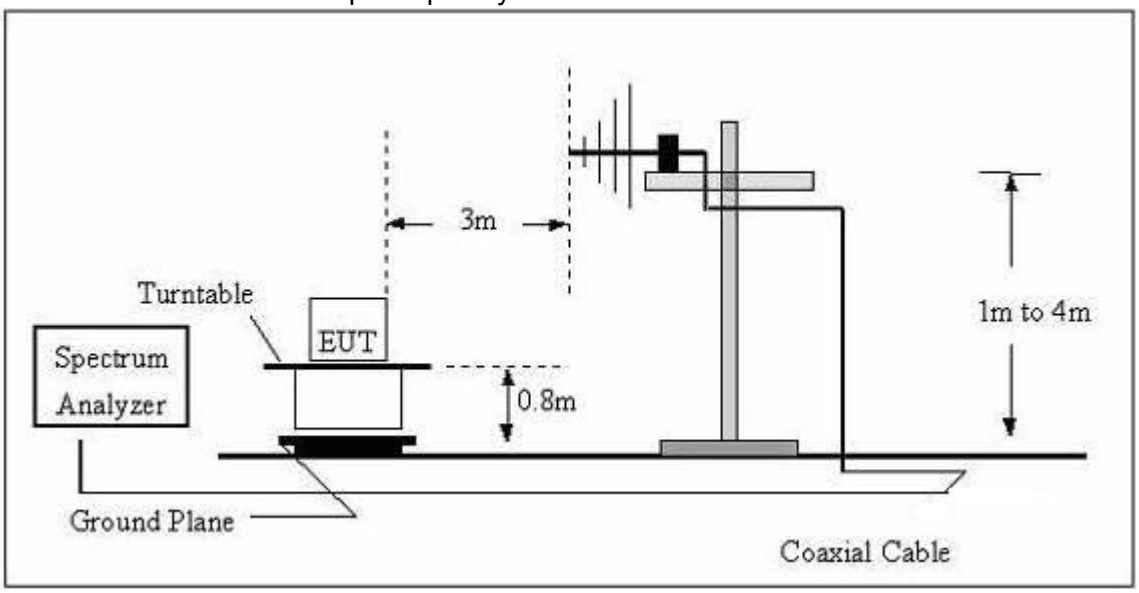
No deviation

3.2.4 TEST SETUP

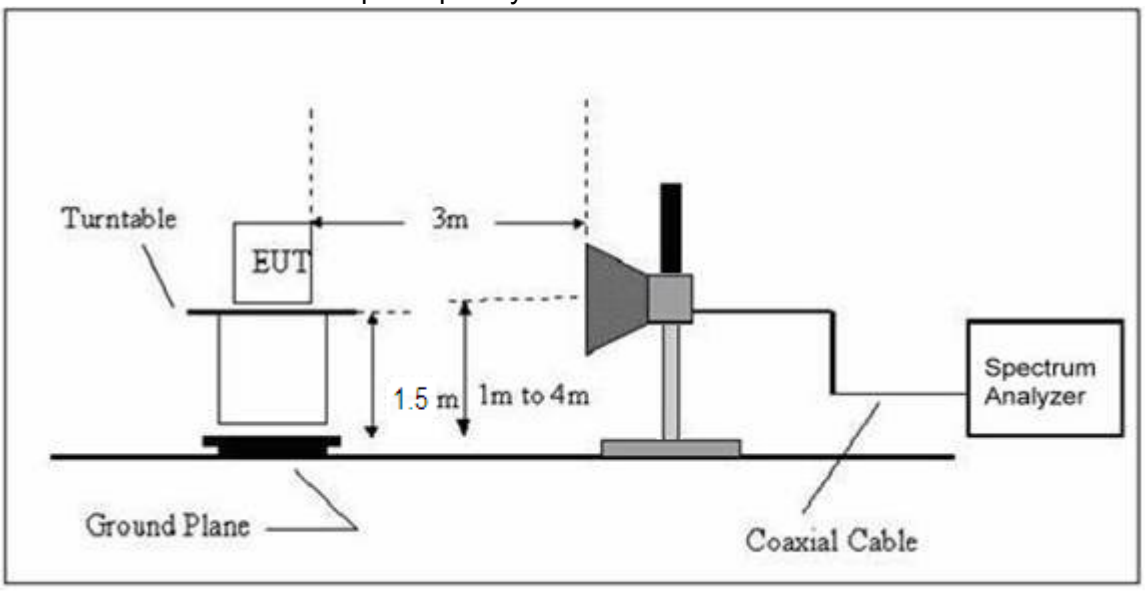
（A）Radiated Emission Test-Up Frequency Below 30MHz



（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 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT：	WiFi Repeater	Model Name. ：	D3EW000-00
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	N/A
--	--	--	--	N/A

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.

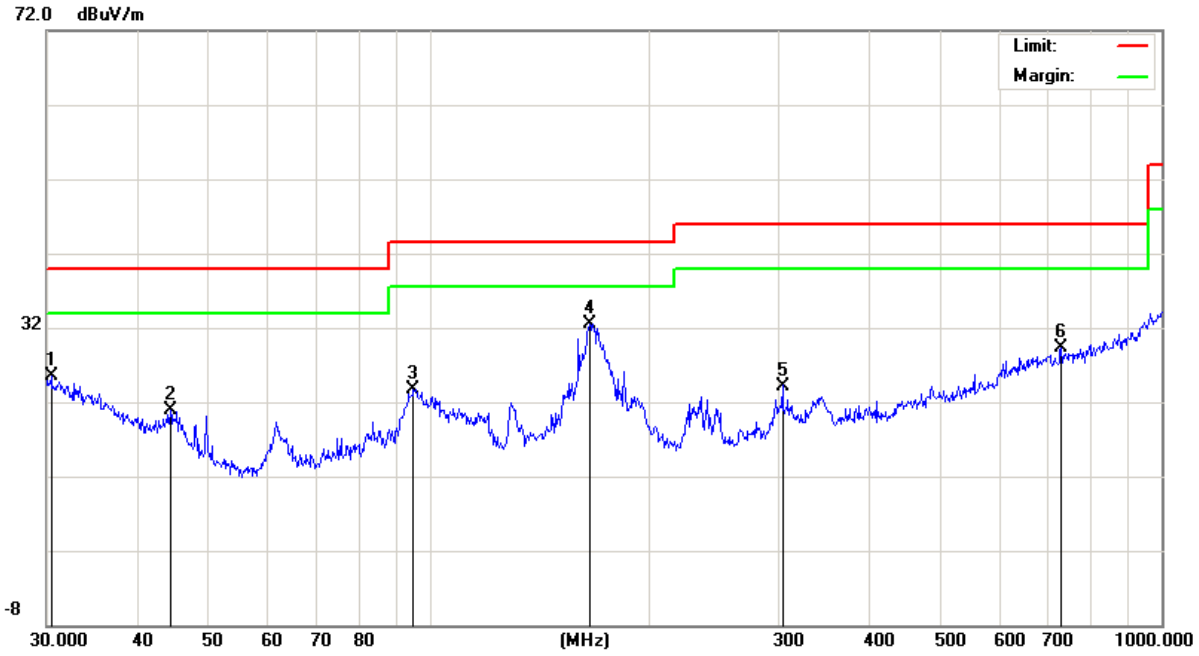
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX -802.11B (High CH)		

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	30.4237	6.15	19.42	25.57	40.00	-14.43	QP
V	44.2751	8.46	12.38	20.84	40.00	-19.16	QP
V	95.0930	13.66	10.10	23.76	43.50	-19.74	QP
V	165.4866	20.76	11.83	32.59	43.50	-10.91	QP
V	303.5437	11.46	12.74	24.20	46.00	-21.80	QP
V	729.3582	7.50	21.77	29.27	46.00	-16.73	QP

Remark:

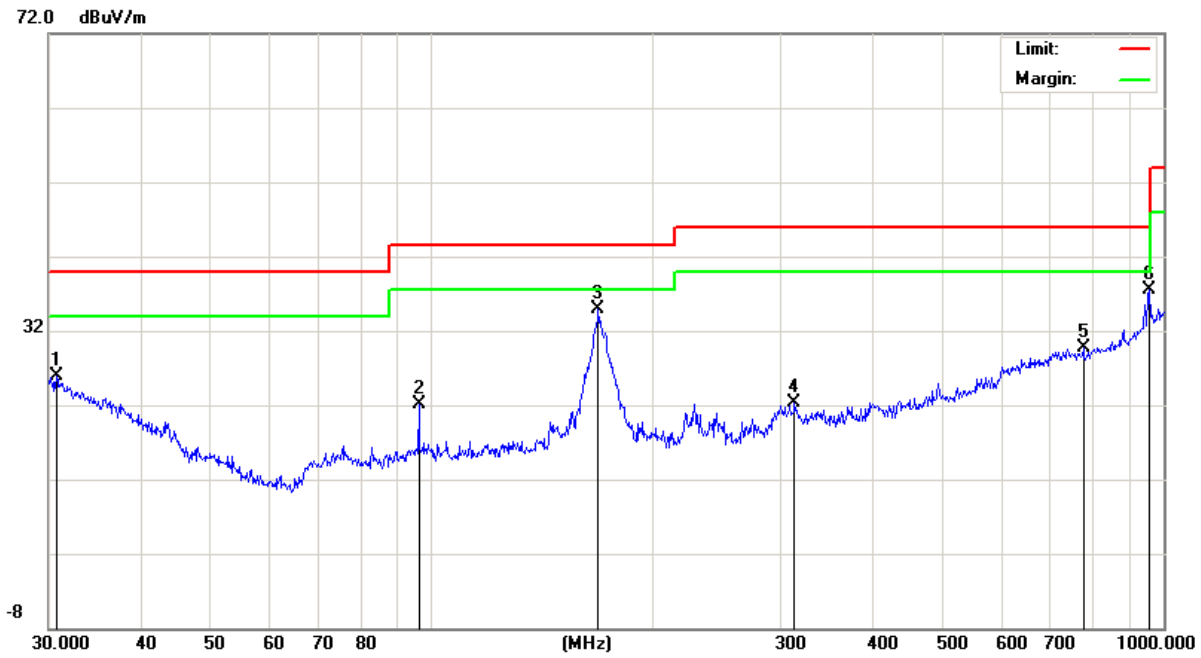
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	30.7454	6.56	19.30	25.86	40.00	-14.14	QP
H	96.0986	11.91	10.16	22.07	43.50	-21.43	QP
H	169.0054	22.51	12.39	34.90	43.50	-8.60	QP
H	313.2760	9.21	13.08	22.29	46.00	-23.71	QP
H	776.8777	7.87	21.92	29.79	46.00	-16.21	QP
H	955.4379	11.06	26.41	37.47	46.00	-8.53	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX		

The Testing have been conformed to 10*2462MHz=24620MHz, and the worst result was report as below:

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (2412 MHz)-Above 1G							
Vertical	4824.119	56.85	10.44	67.29	74.00	-6.71	Pk
Vertical	4824.119	32.14	10.44	42.58	54.00	-11.42	Av
Vertical	7236.124	50.79	12.39	63.18	74.00	-10.82	Pk
Vertical	7236.124	33.56	12.39	45.95	54.00	-8.05	Av
Horizontal	4824.367	54.47	10.44	64.91	74.00	-9.09	Pk
Horizontal	4824.367	29.68	10.44	40.12	54.00	-13.88	Av
Horizontal	7236.192	46.52	12.39	58.91	74.00	-15.09	Pk
Horizontal	7236.192	30.06	12.39	42.45	54.00	-11.55	Av
Mid Channel (2437 MHz)-Above 1G							
Vertical	4874.133	50.44	10.40	60.84	74.00	-13.16	Pk
Vertical	4874.133	31.28	10.40	41.68	54.00	-12.32	Av
Vertical	7311.198	48.96	12.75	61.71	74.00	-12.29	Pk
Vertical	7311.198	29.71	12.75	42.46	54.00	-11.54	Av
Horizontal	4874.091	52.26	10.40	62.66	74.00	-11.34	Pk
Horizontal	4874.091	30.03	10.40	40.43	54.00	-13.57	Av
Horizontal	7311.335	47.42	12.75	60.17	74.00	-13.83	Pk
Horizontal	7311.335	30.09	12.75	42.84	54.00	-11.16	Av
High Channel (2462 MHz)- Above 1G							
Vertical	4924.149	49.86	10.39	60.25	74.00	-13.75	Pk
Vertical	4924.149	29.66	10.39	40.05	54.00	-13.95	Av
Vertical	7386.173	47.42	12.68	60.10	74.00	-13.90	Pk
Vertical	7386.173	29.83	12.68	42.51	54.00	-11.49	Av
Horizontal	4924.126	49.41	10.39	59.80	74.00	-14.20	Pk
Horizontal	4924.126	29.98	10.39	40.37	54.00	-13.63	Av
Horizontal	7386.144	47.12	12.68	59.80	74.00	-14.20	Pk
Horizontal	7386.144	29.62	12.68	42.30	54.00	-11.70	Av

Note:”802.11b” mode is the worst mode.

Radiated band edge:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
802.11b							
2390	59.68	-13.06	46.62	74	-27.38	peak	Vertical
2390	60.17	-13.06	47.11	74	-26.89	peak	Horizontal
2483.5	59.86	-12.78	47.08	74	-26.92	peak	Vertical
2483.5	60.32	-12.78	47.54	74	-26.46	peak	Horizontal
802.11g							
2390	59.64	-13.06	46.58	74	-27.42	peak	Vertical
2390	60.18	-13.06	47.12	74	-26.88	peak	Horizontal
2483.5	60.21	-12.78	47.43	74	-26.57	peak	Vertical
2483.5	60.83	-12.78	48.05	74	-25.95	peak	Horizontal
802.11n20							
2390	59.74	-13.06	46.68	74	-27.32	peak	Vertical
2390	59.52	-13.06	46.46	74	-27.54	peak	Horizontal
2483.5	59.21	-12.78	46.43	74	-27.57	peak	Vertical
2483.5	61.13	-12.78	48.35	74	-25.65	peak	Horizontal
802.11n40							
2390	60.08	-13.06	47.02	74	-26.98	peak	Vertical
2390	59.57	-13.06	46.51	74	-27.49	peak	Horizontal
2483.5	59.61	-12.78	46.83	74	-27.17	peak	Vertical
2483.5	60.04	-12.78	47.26	74	-26.74	peak	Horizontal

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

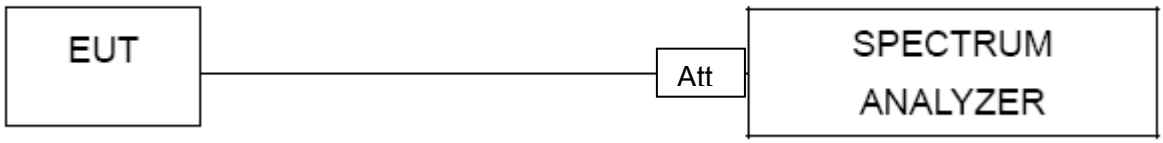
4.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. 3 kHz ≤Set the RBW≤100 kHz.
4. Set the VBW ≥ 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 within the RBW.
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 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

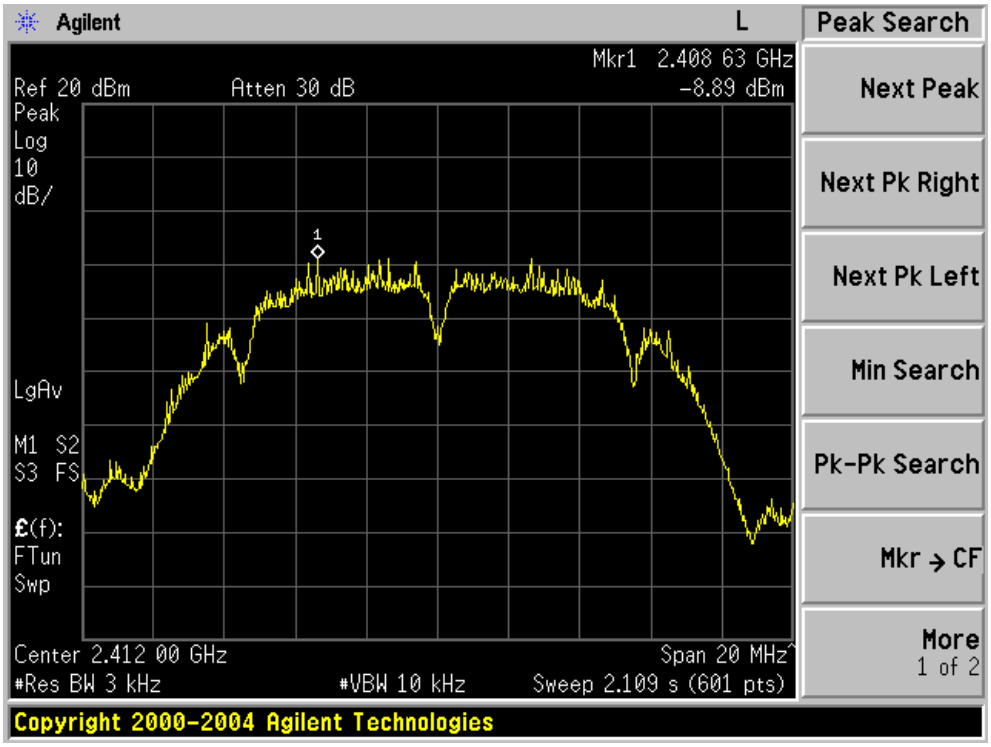
4.1.5 TEST RESULTS

EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX b Mode /CH01, CH06, CH11		

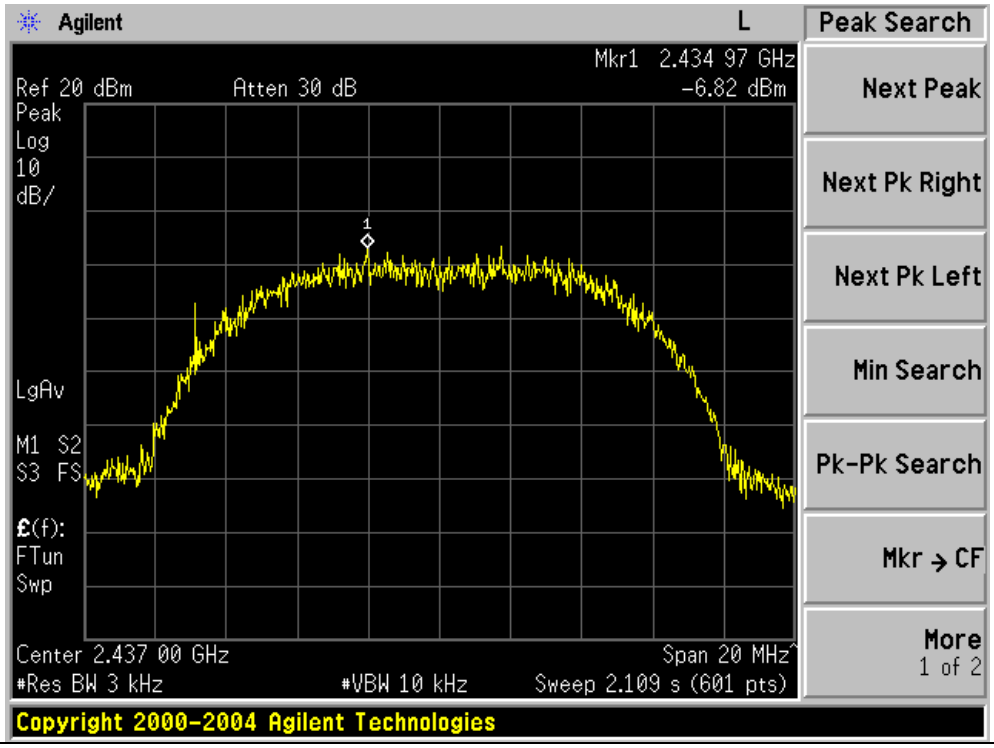
Frequency	Power Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
2412 MHz	-8.89	8	PASS
2437 MHz	-6.82	8	PASS
2462 MHz	-7.96	8	PASS

NOTE: A(B) Represent the value of antenna A and B,The worst data is A Antenna a ,only shown Antenna A Plot.

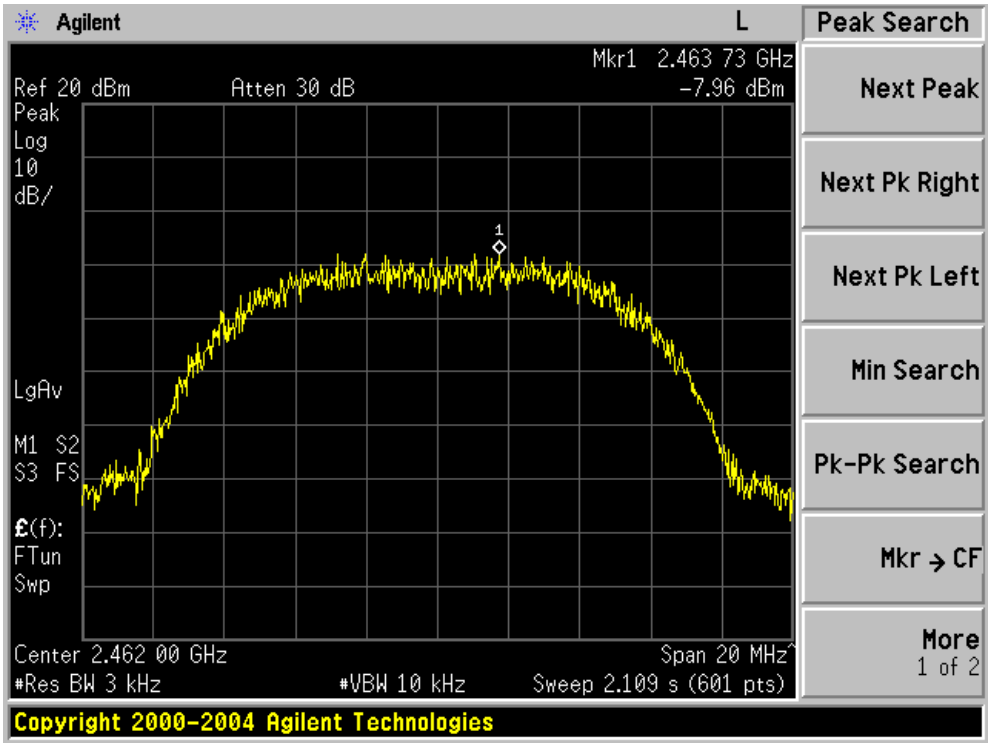
TX CH01



TX CH06



TX CH11

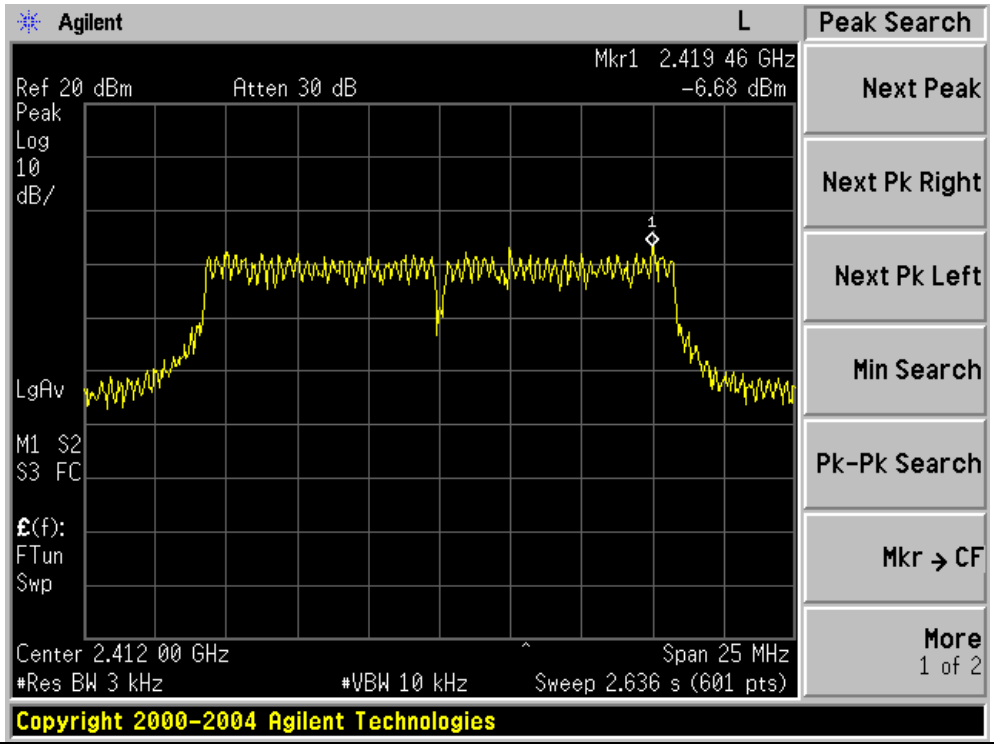


EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX g Mode /CH01, CH06, CH11		

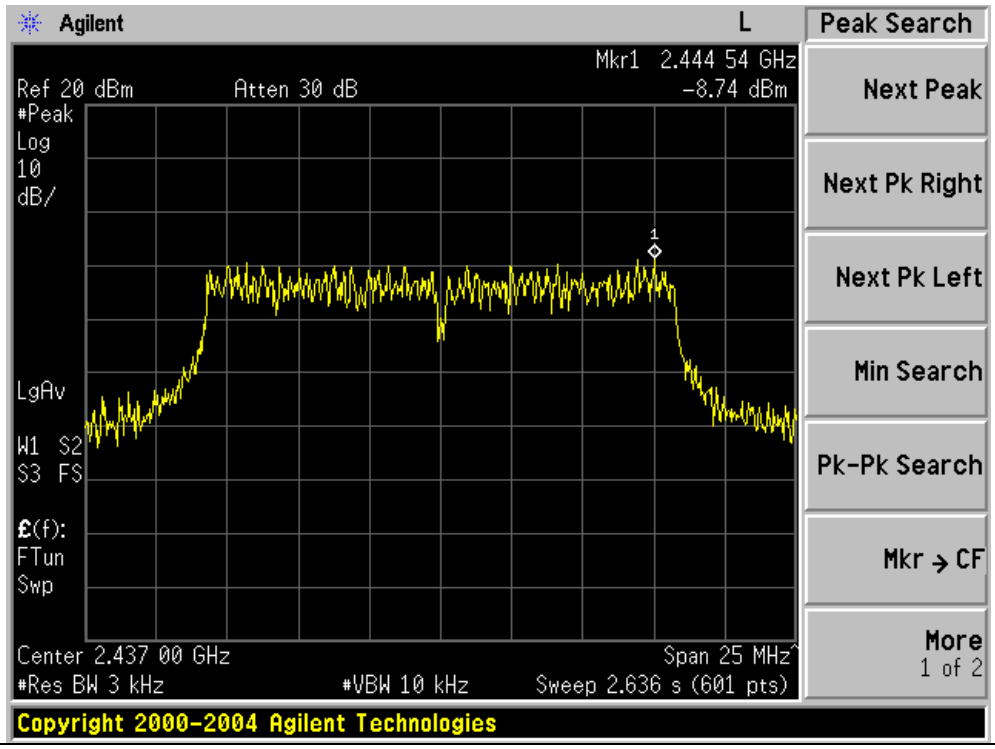
Frequency	Power Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
2412 MHz	-6.68	8	PASS
2437 MHz	-8.74	8	PASS
2462 MHz	-7.56	8	PASS

NOTE: A(B) Represent the value of antenna A and B,The worst data is A Antenna a ,only shown Antenna A Plot.

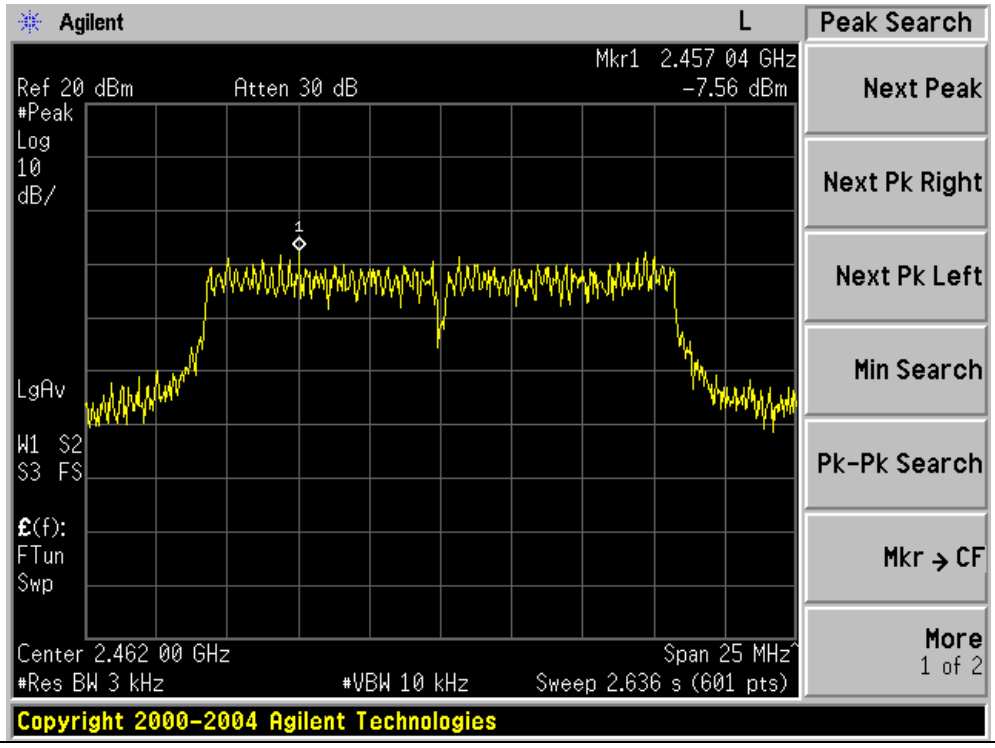
TX CH01



TX CH06



TX CH11

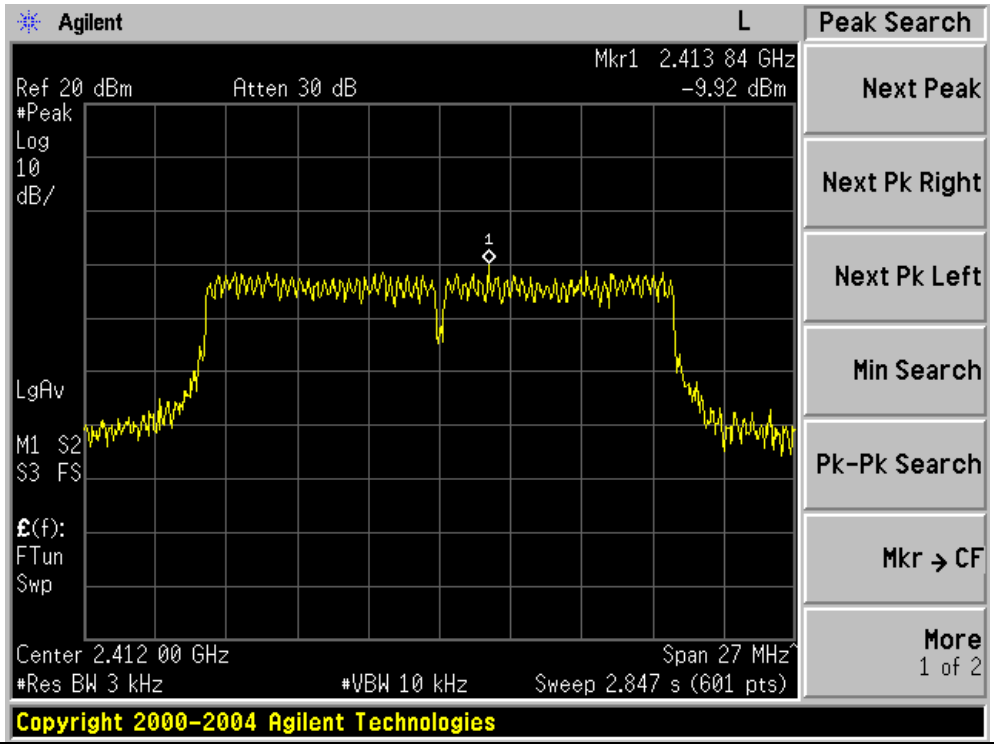


EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX n Mode (20MHz)/CH01, CH06, CH11		

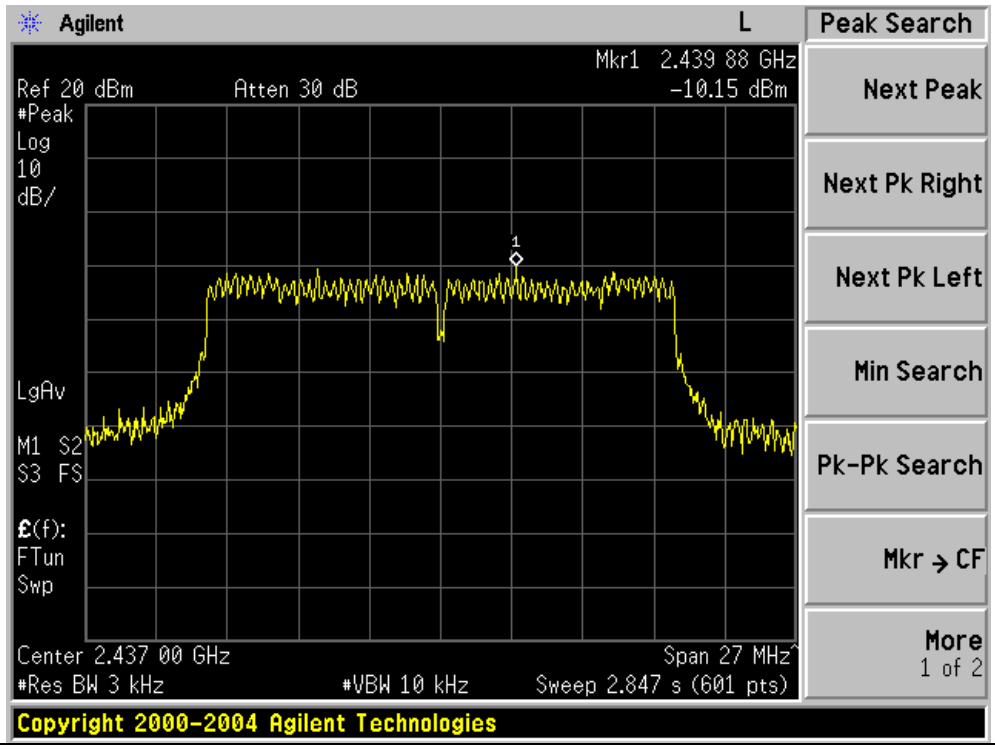
Frequency	Power Density A (dBm)	Power Density B (dBm)	total power density (dBm)	Limit (dBm)	Result
2412 MHz	-9.92	-10.25	-7.07	8	PASS
2437 MHz	-10.15	-11.53	-7.78	8	PASS
2462 MHz	-9.81	-11.37	-7.51	8	PASS

NOTE: A(B) Represent the value of antenna A and B,The worst data is A Antenna ,only shown Antenna A Plot.

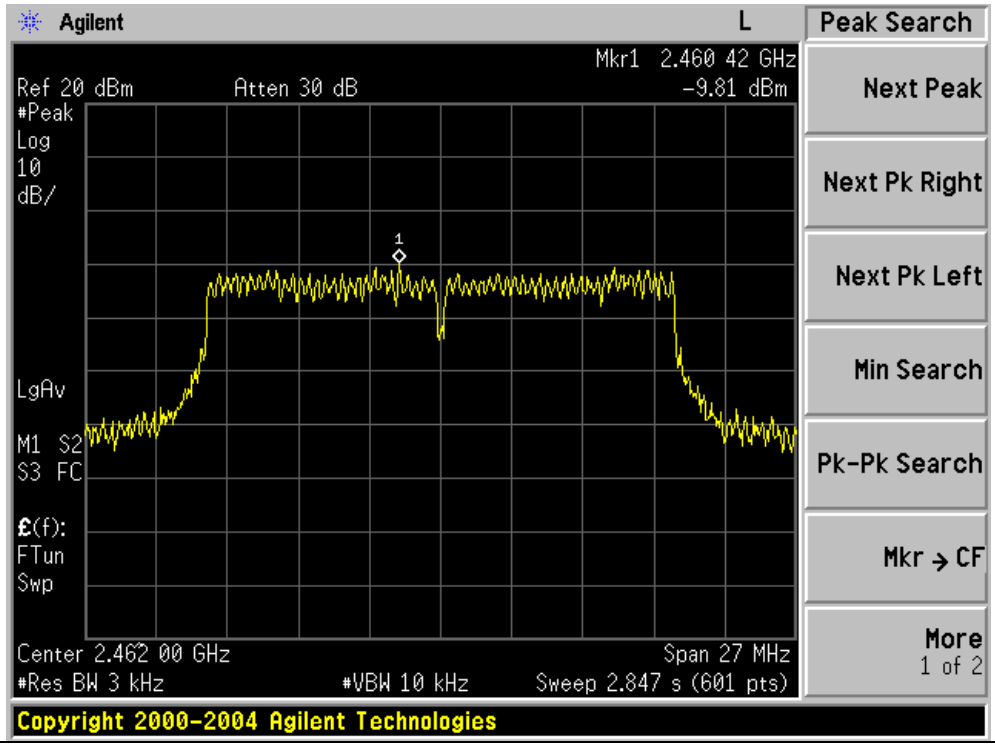
TX CH01



TX CH06



TX CH11

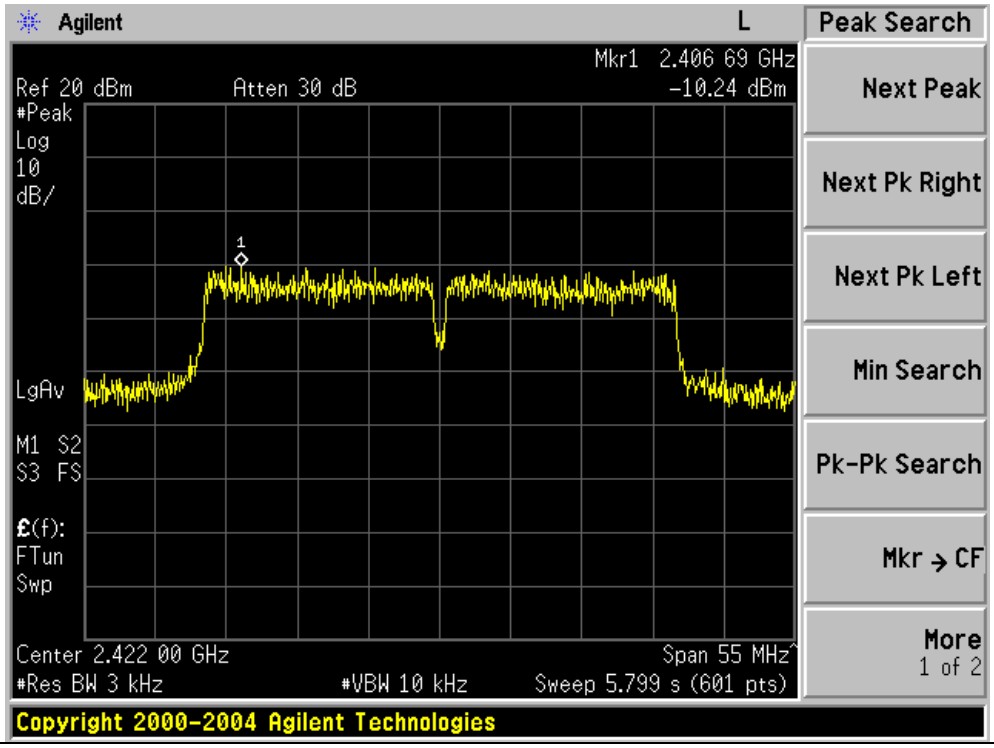


EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX n Mode (40MHz)/CH03, CH06, CH09		

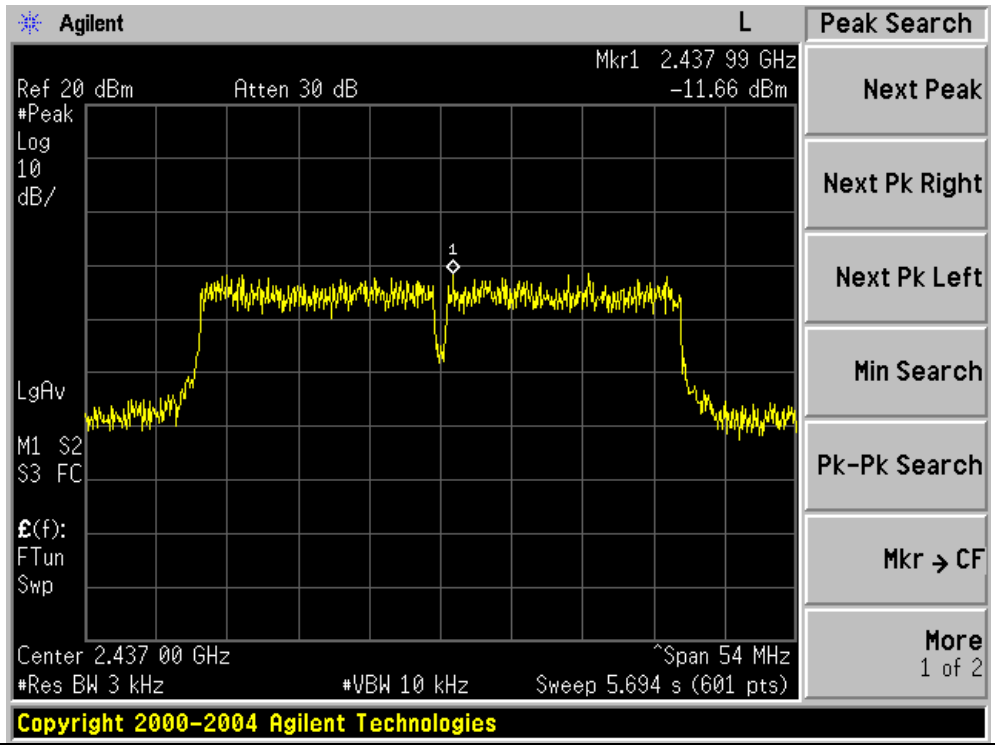
Frequency	Power Density A (dBm)	Power Density B (dBm)	total power density (dBm)	Limit (dBm)	Result
2412 MHz	-10.24	-10.49	-7.35	8	PASS
2437 MHz	-11.66	-12.86	-9.21	8	PASS
2462 MHz	-10.26	-10.40	-7.32	8	PASS

NOTE: A(B) Represent the value of antenna A and B,The worst data is A Antenna ,only shown Antenna A Plot.

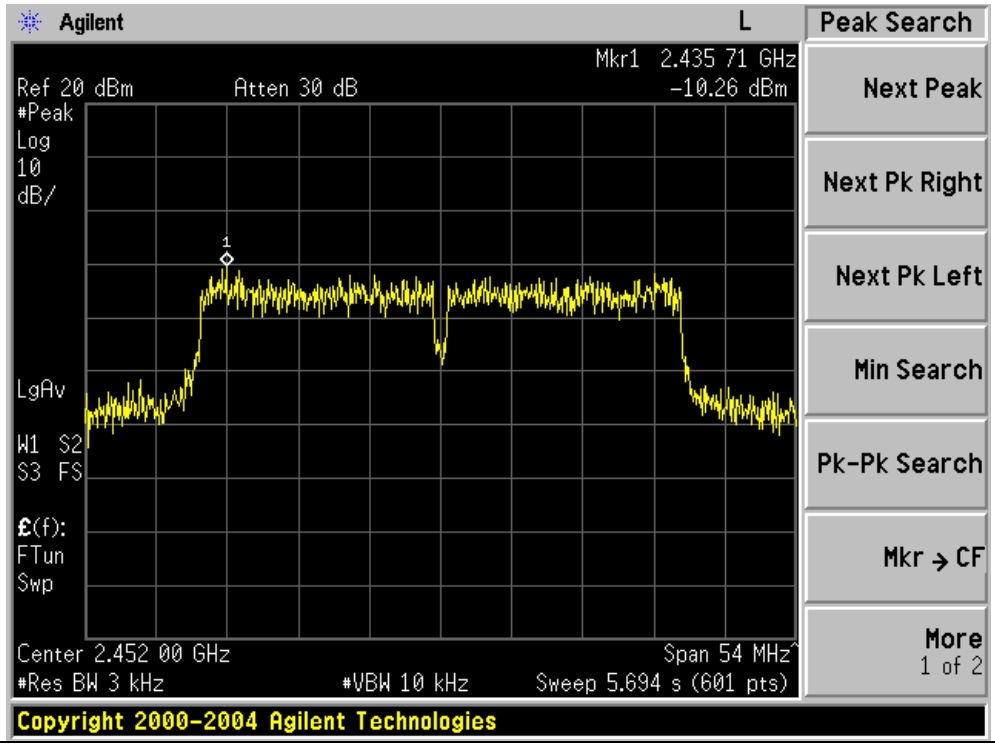
TX CH03



TX CH06



TX CH09



5. BANDWIDTH TEST

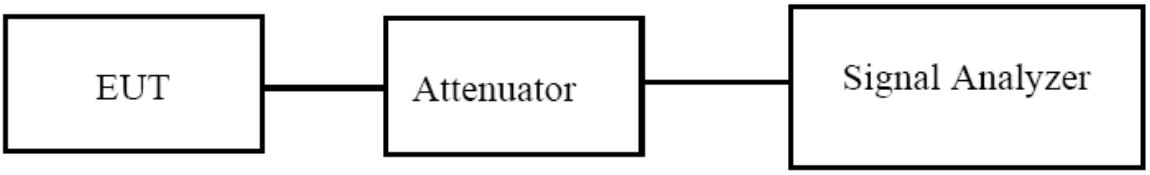
5.1 APPLIED PROCEDURES / LIMIT

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

5.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP



5.1.2 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

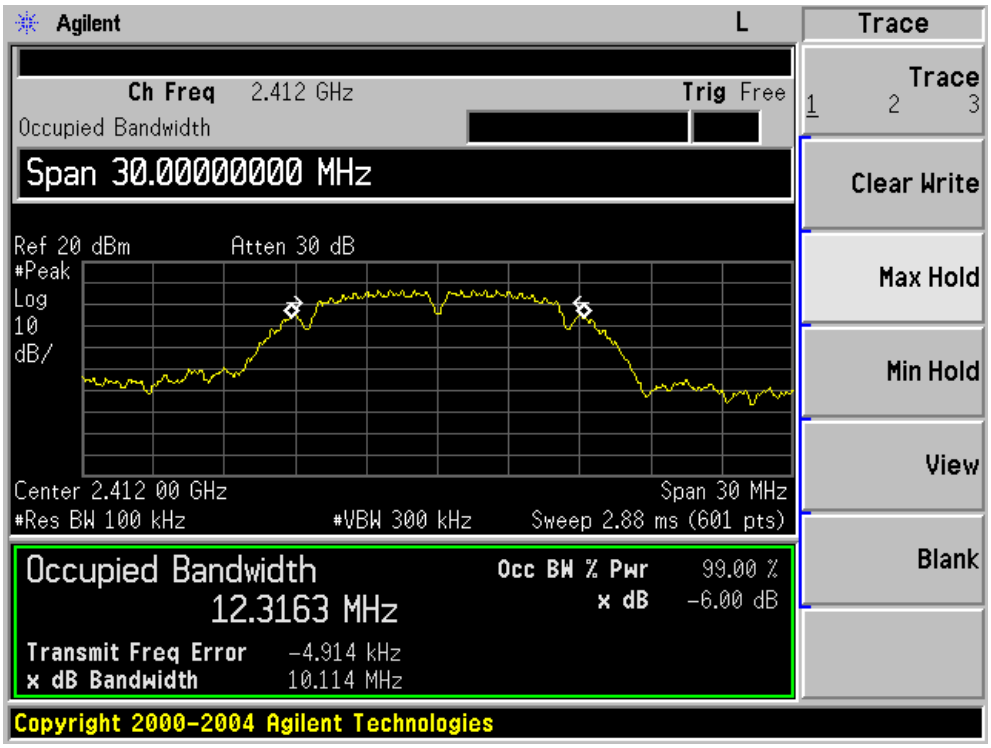
5.1.3 TEST RESULTS

EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX b Mode /CH01, CH06, CH11		

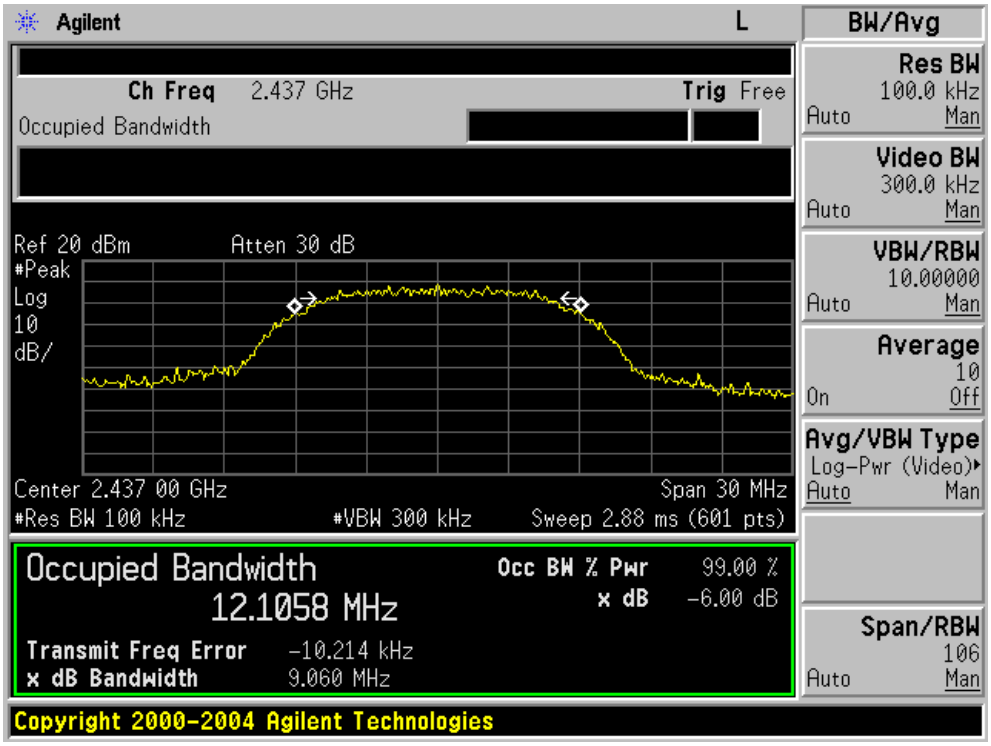
Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.114	500	Pass
Middle	2437	9.060	500	Pass
High	2462	9.053	500	Pass

Note: A (B) Represent the value of antenna A and B ,only shown Antenna A Plot.

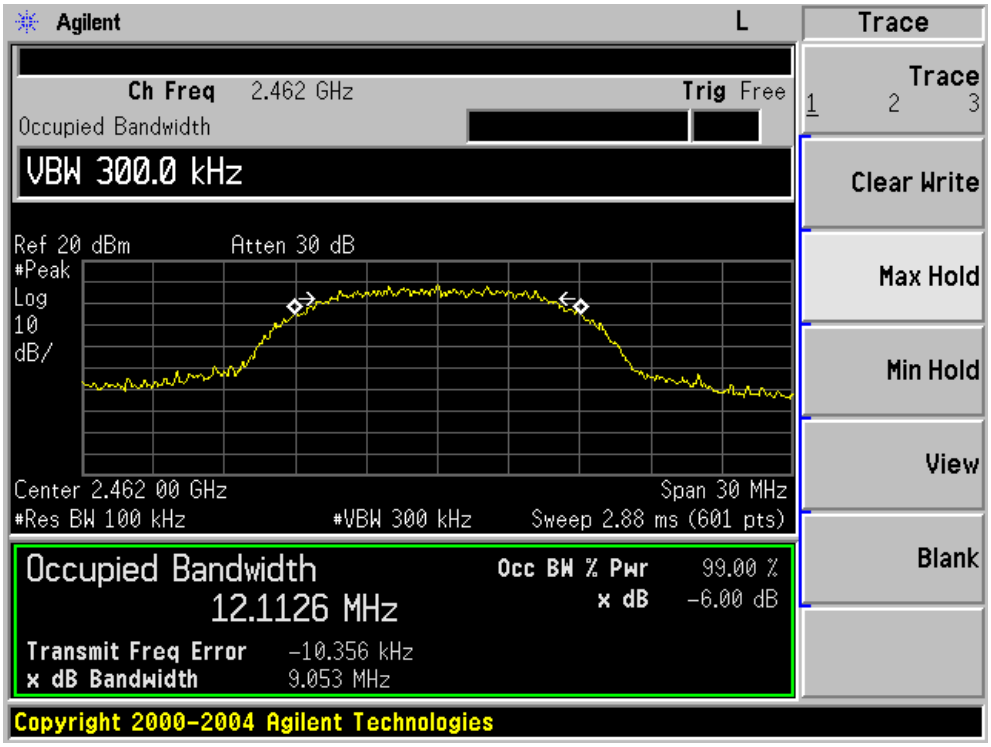
TX CH 01



TX CH 06



TX CH 11

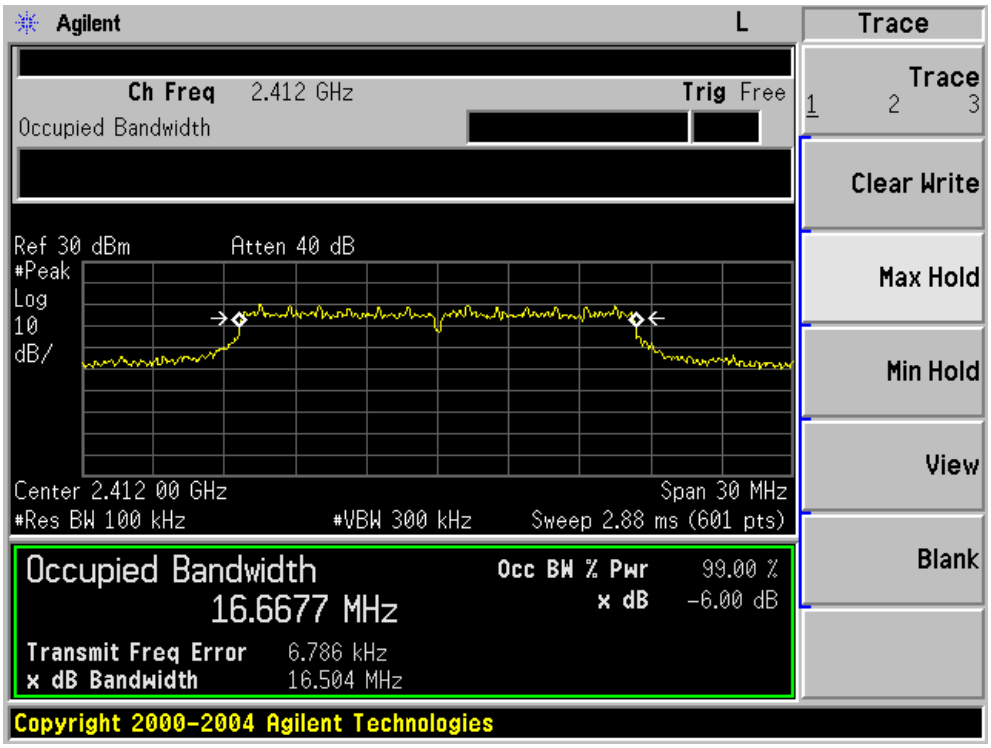


EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX g Mode /CH01, CH06, CH11		

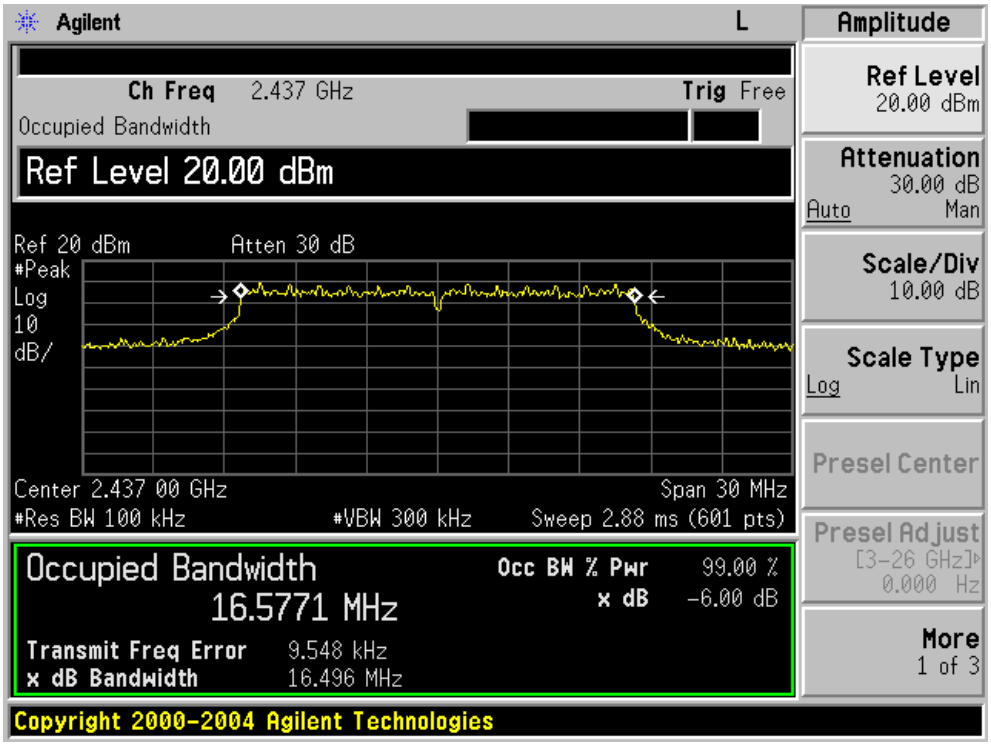
Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.504	500	Pass
Middle	2437	16.496	500	Pass
High	2462	16.514	500	Pass

Note: A (B) Represent the value of antenna A and B ,only shown Antenna A Plot.

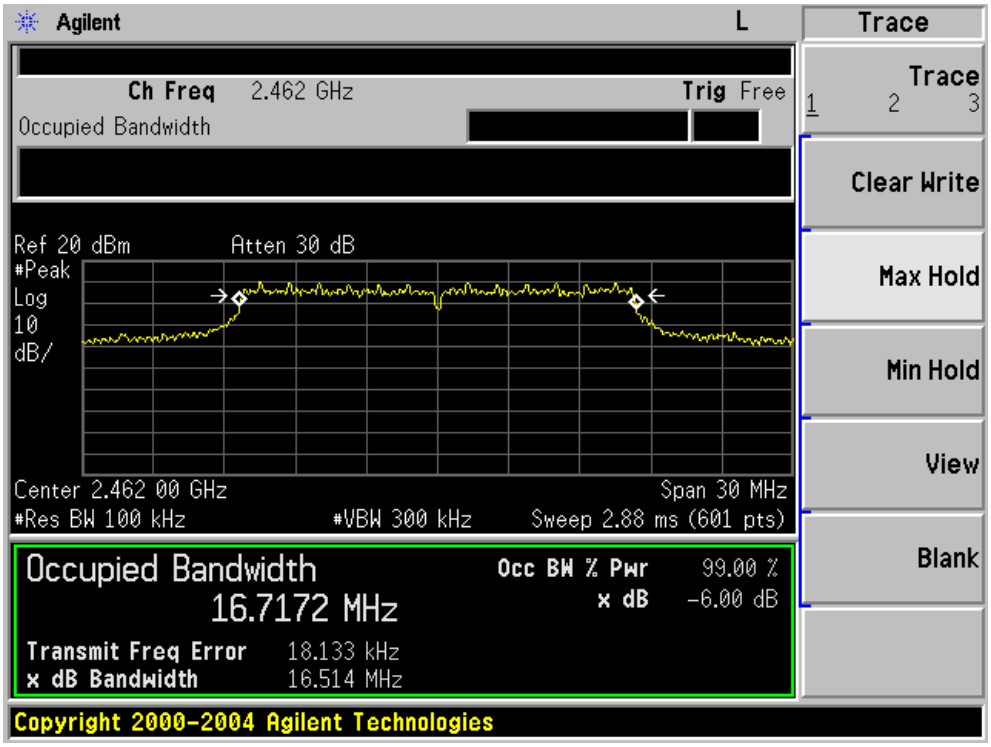
TX CH 01



TX CH 06



TX CH 11

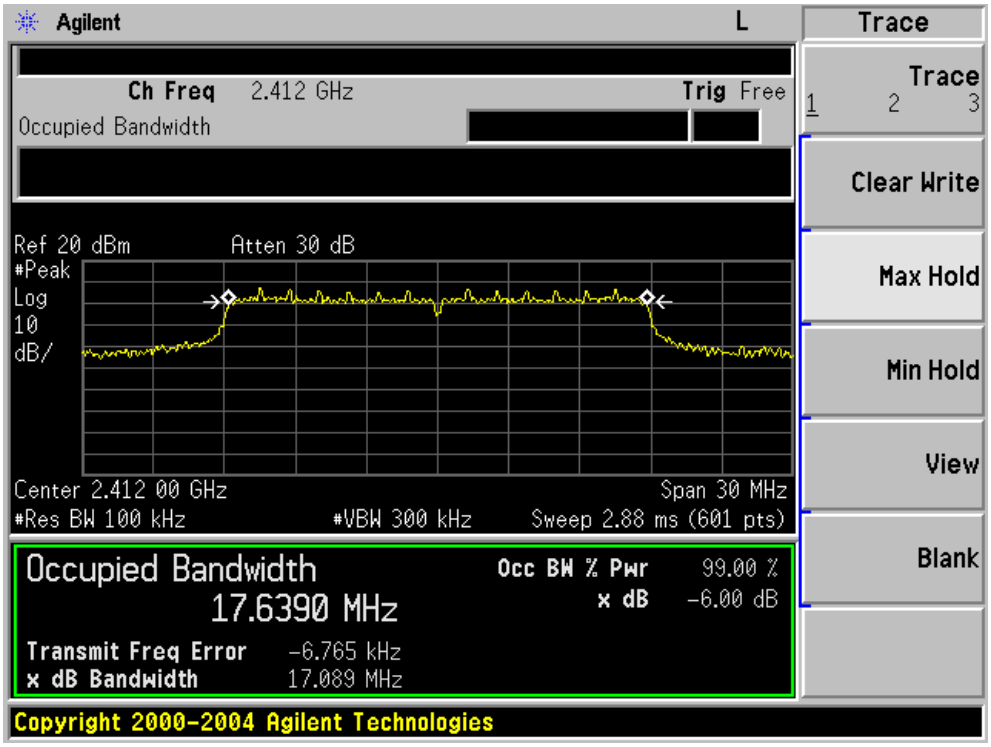


EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX n Mode(20M) /CH01, CH06, CH11		

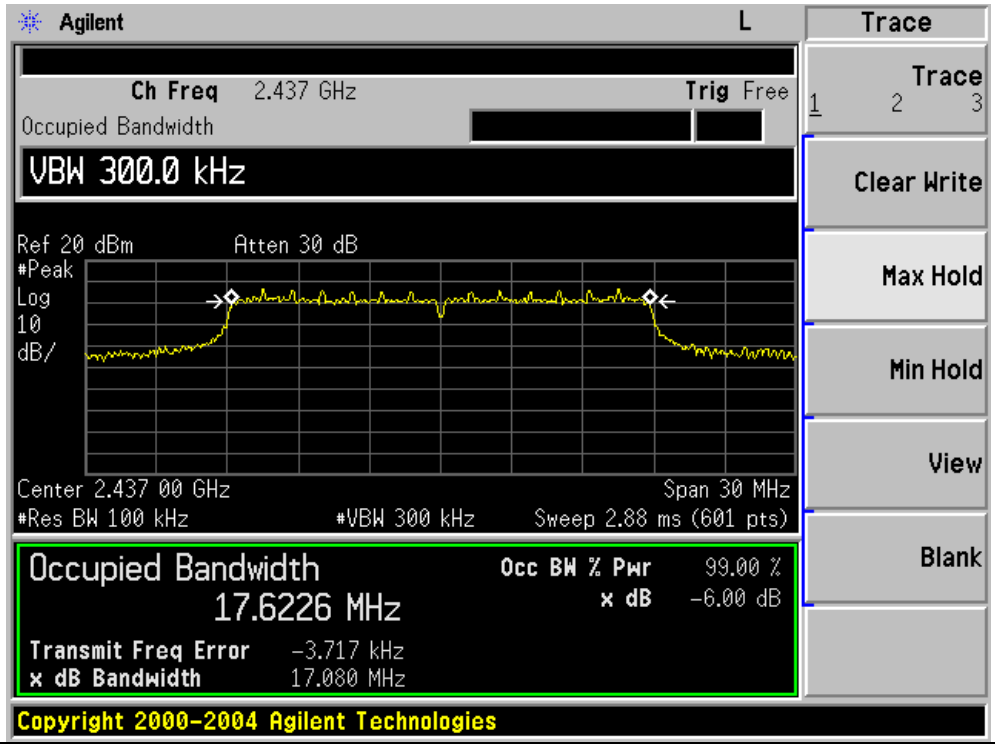
Channel	Frequency (MHz)	6dB bandwidth (MHz)		Limit (kHz)	Result
		ANT A	ANT B		
Low	2412	17.639	17.091	500	Pass
Middle	2437	17.623	17.087	500	Pass
High	2462	17.624	17.122	500	Pass

Note: A (B) Represent the value of antenna A and B ,only shown Antenna A Plot.

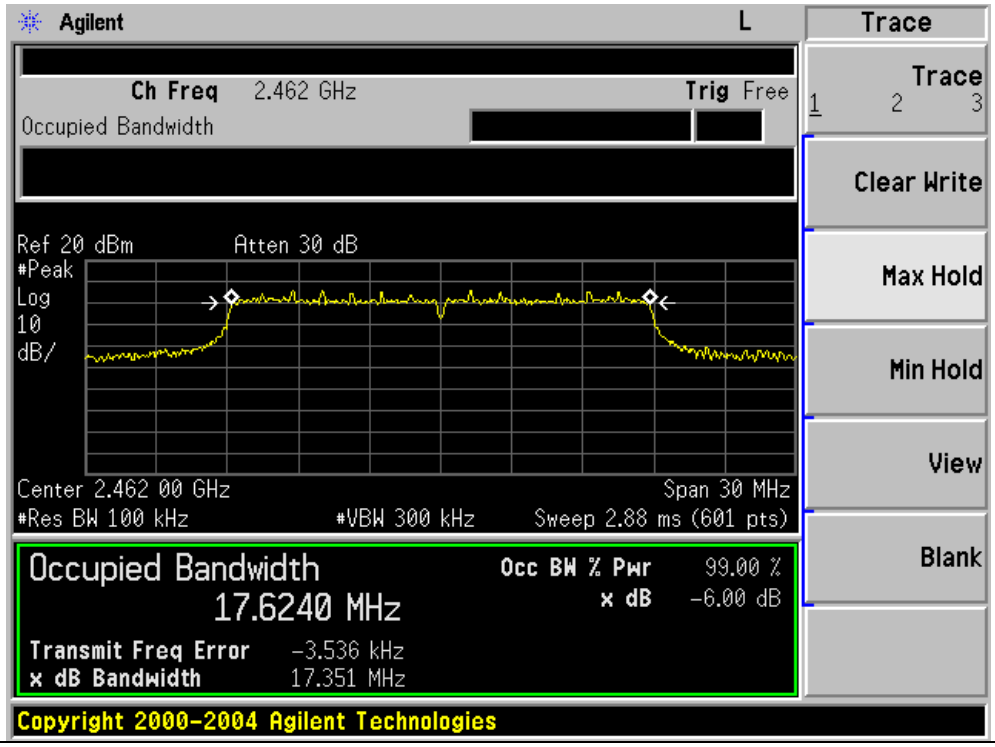
TX CH 01



TX CH 06



TX CH 11

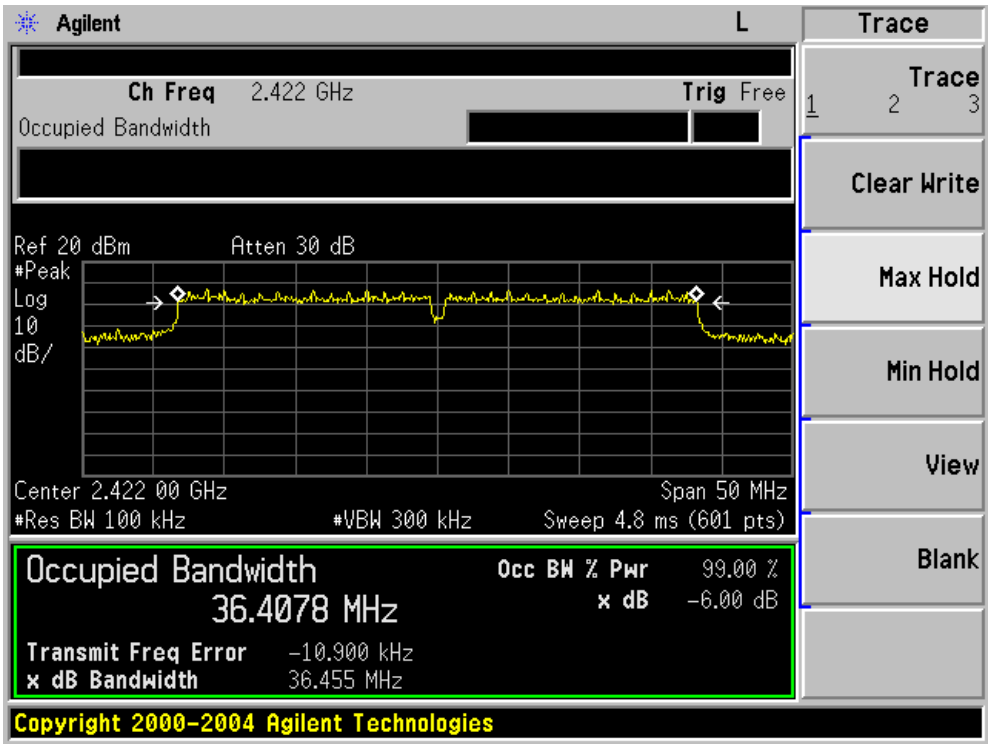


EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX n Mode(40M) /CH03, CH06, CH09		

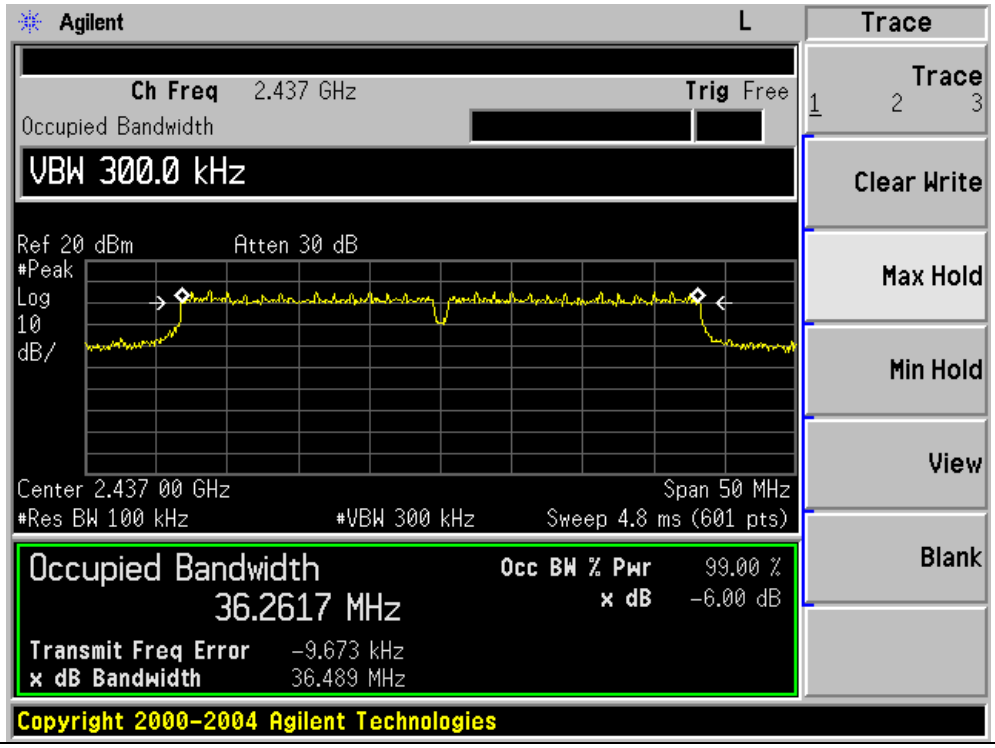
Channel	Frequency (MHz)	6dB bandwidth (MHz)		Limit (kHz)	Result
		ANT A	ANT B		
Low	2412	36.455	36.381	500	Pass
Middle	2437	36.489	36.256	500	Pass
High	2462	36.452	36.267	500	Pass

Note: A (B) Represent the value of antenna A and B ,only shown Antenna A Plot.

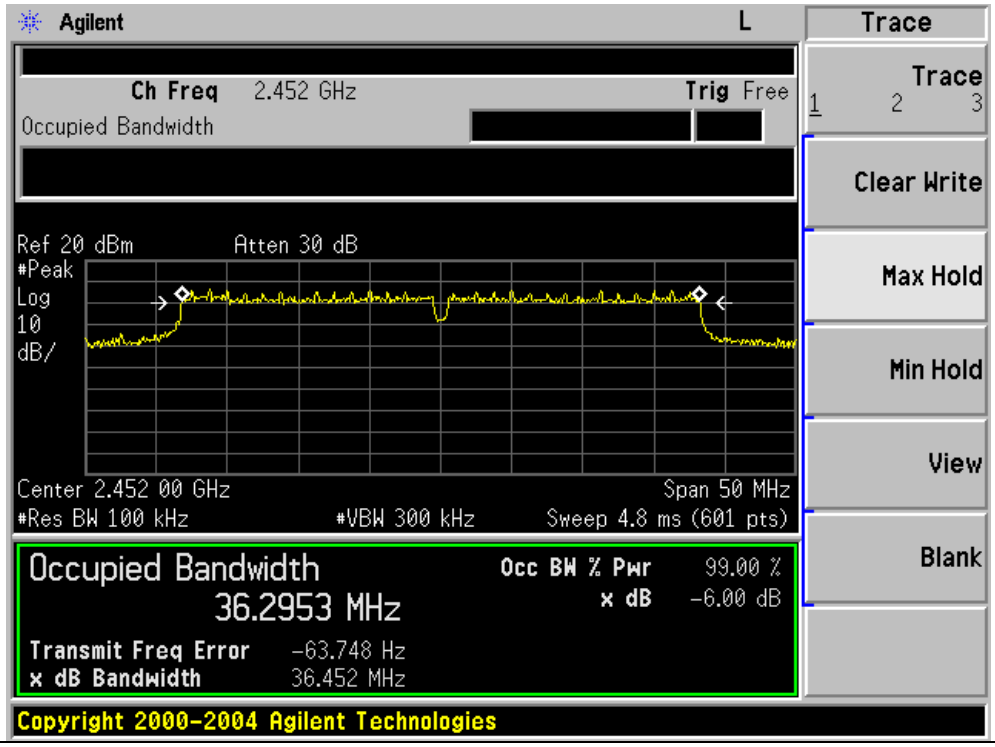
TX CH 03



TX CH 06



TX CH 09



6. MAXIMUM 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. **9.2.2.3 Method AVGSA-1 Alternative (RMS detection with slow sweep and EUT transmitting continuously at full power)**

a) Set span to at least 1.5 times the OBW.

b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz.

c) Set VBW ≥ 3 x RBW.

d) Number of points in sweep ≥ 2 × span / RBW. (This gives bin-to-bin spacing ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)

e) Manually set sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period), but not less than the automatic default sweep time.

NOTE— The transmission symbol period (in seconds) is the reciprocal of the symbol rate (in baud or symbols per second). Note that each symbol can represent one or several data bits and thus the symbol rate should not be confused with the gross bit rate (expressed in bits/second). In no case should the sweep time be set less than the auto sweep time.

f) Set detector = RMS.

g) The EUT shall be operated at ≥ 98 % duty cycle or sweep triggering/signal gating shall be employed such that the sweep time is less than or equal to the transmission duration T.

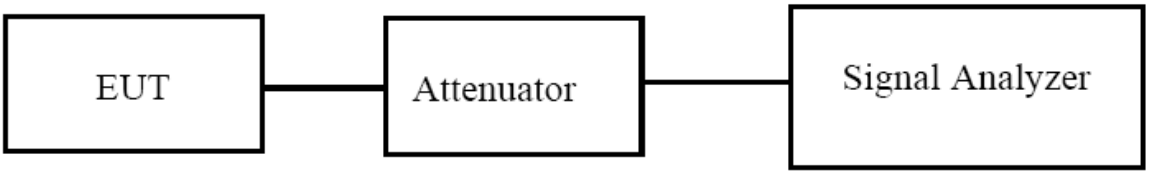
h) Perform a single sweep.

i) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

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 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX b/g/n(20M/40M) Mode		

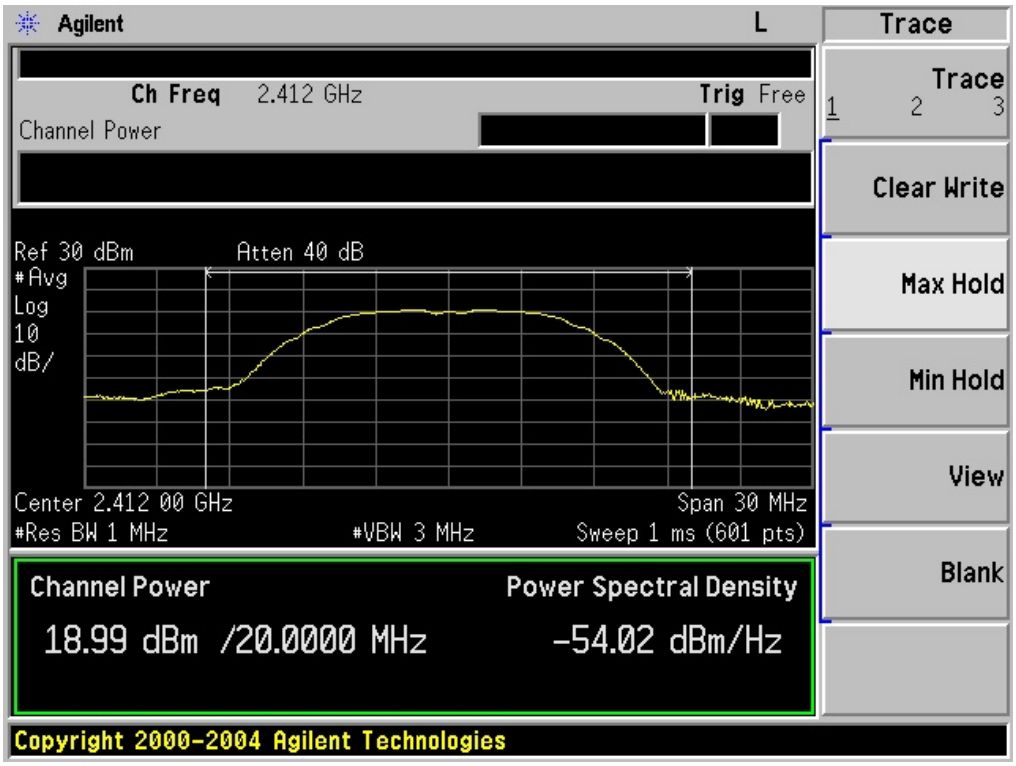
TX 802.11b Mode			
Test Channe	Frequency	Maximum Peak Conducted Output Power（PK）	LIMIT
	(MHz)	(dBm)	dBm
CH01	2412	18.99	30
CH06	2437	19.48	30
CH11	2462	19.43	30
TX 802.11g Mode			
CH01	2412	18.97	30
CH06	2437	20.06	30
CH11	2462	19.01	30

Test Channe	Frequency	Maximum output power. Antenna port		Total Power	LIMIT
	(MHz)	ANT A	ANT B	dBm	dBm
TX 802.11n/20M Mode					
CH01	2412	18.63	18.58	21.62	30
CH06	2437	18.84	18.29	21.58	30
CH11	2462	18.33	18.14	21.25	30
TX 802.11n/40M Mode					
CH03	2422	18.36	18.26	21.32	30
CH06	2437	18.89	18.00	21.48	30
CH09	2452	18.95	18.87	21.92	30

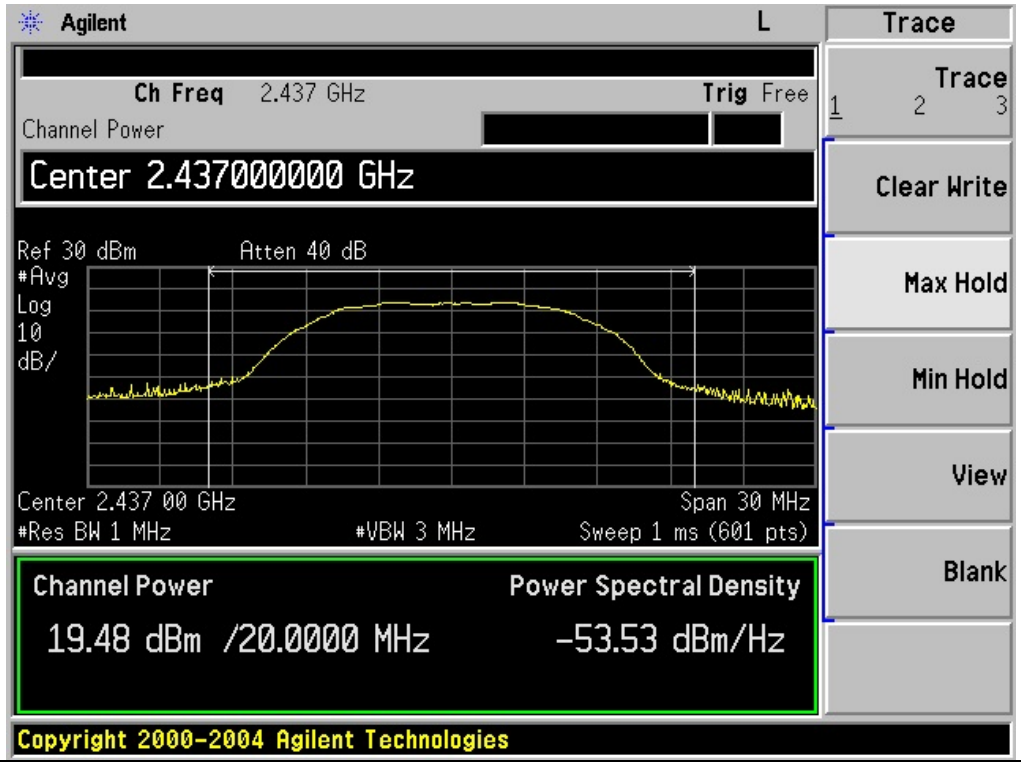
Note: A (B) Represent the value of antenna A and B ,only shown Antenna A Plot.

802.11b Mode

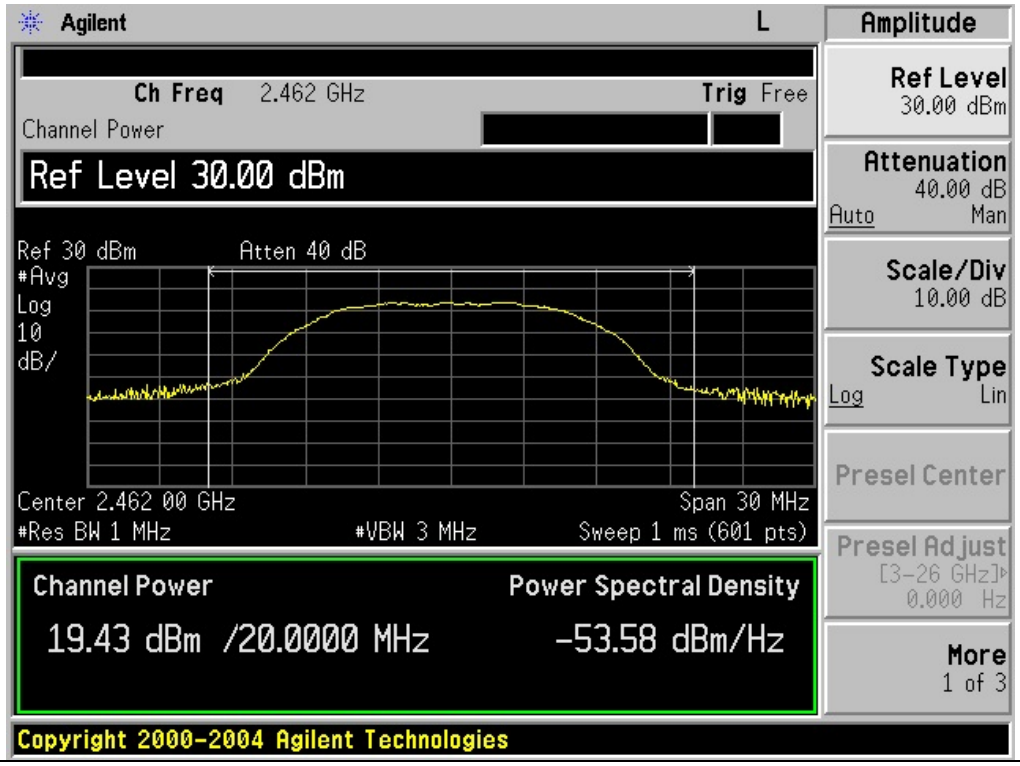
TX CH 01



TX CH 06

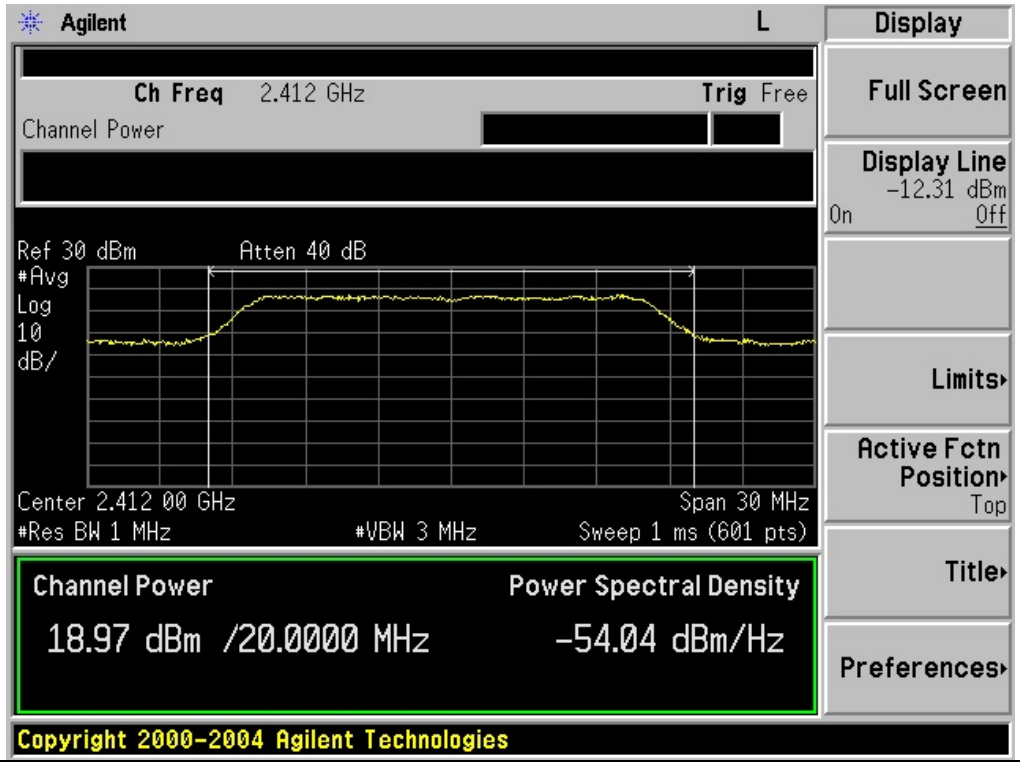


TX CH 11

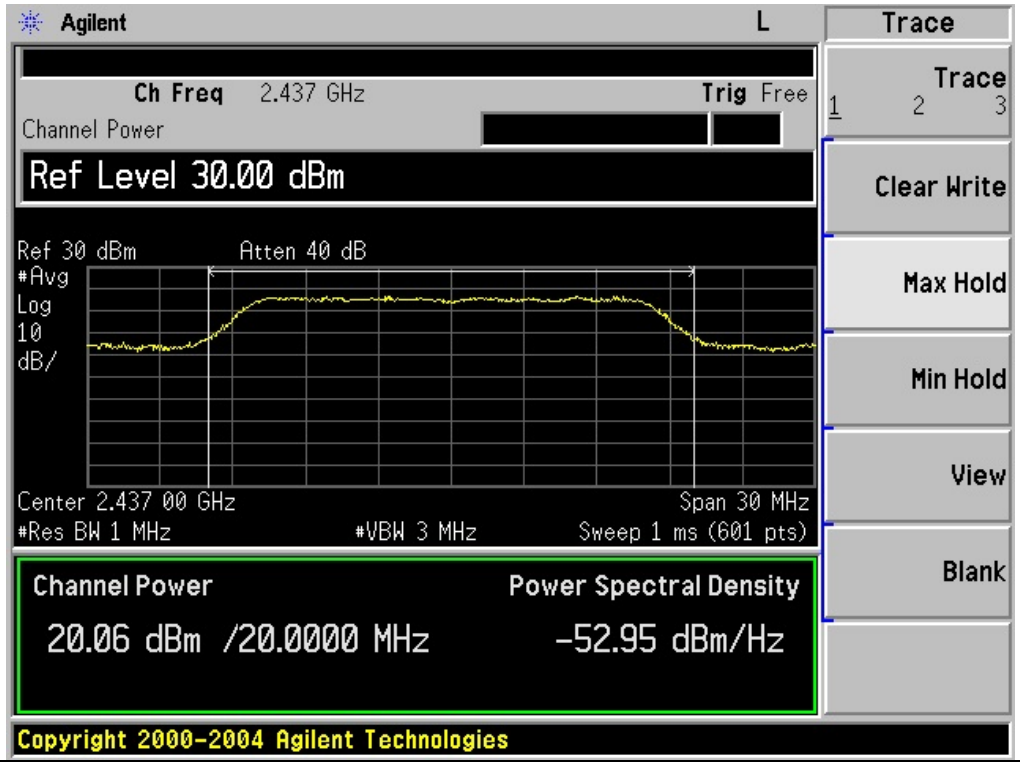


802.11g Mode

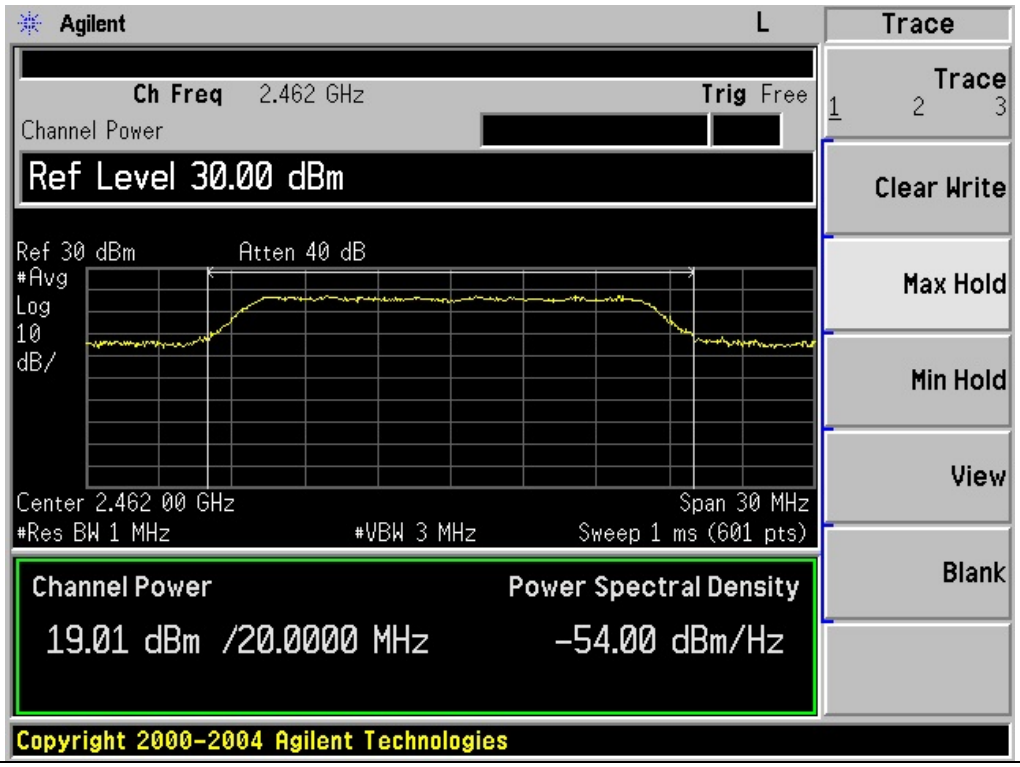
TX CH 01



TX CH 06

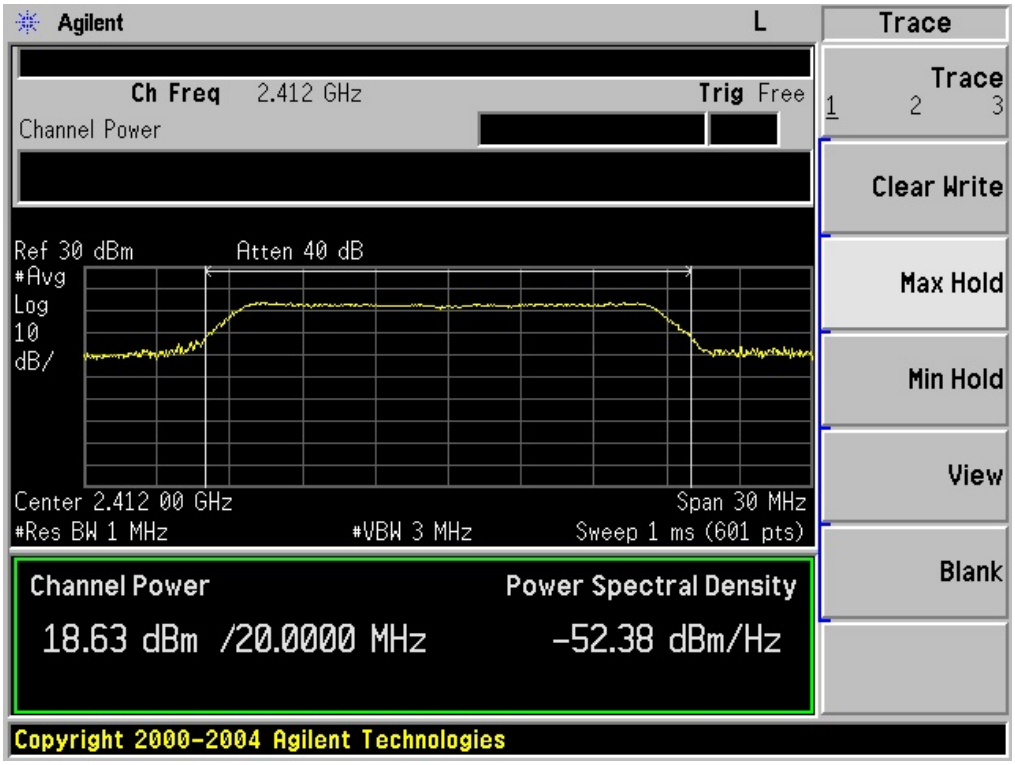


TX CH 11

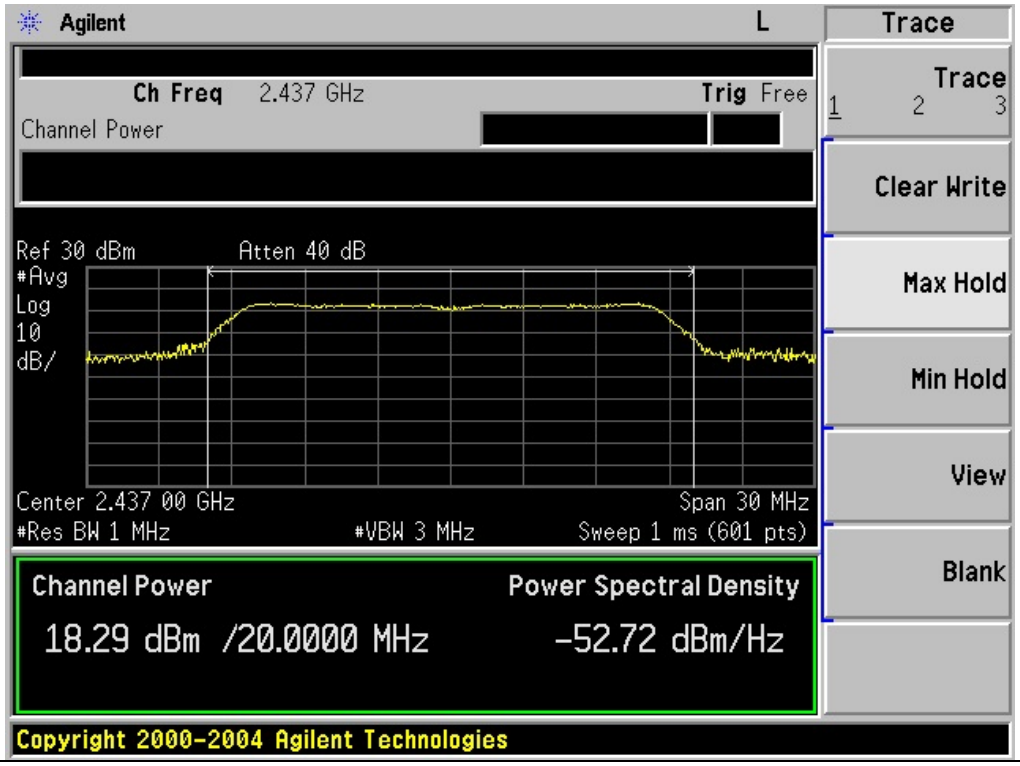


802.11n(20) Mode

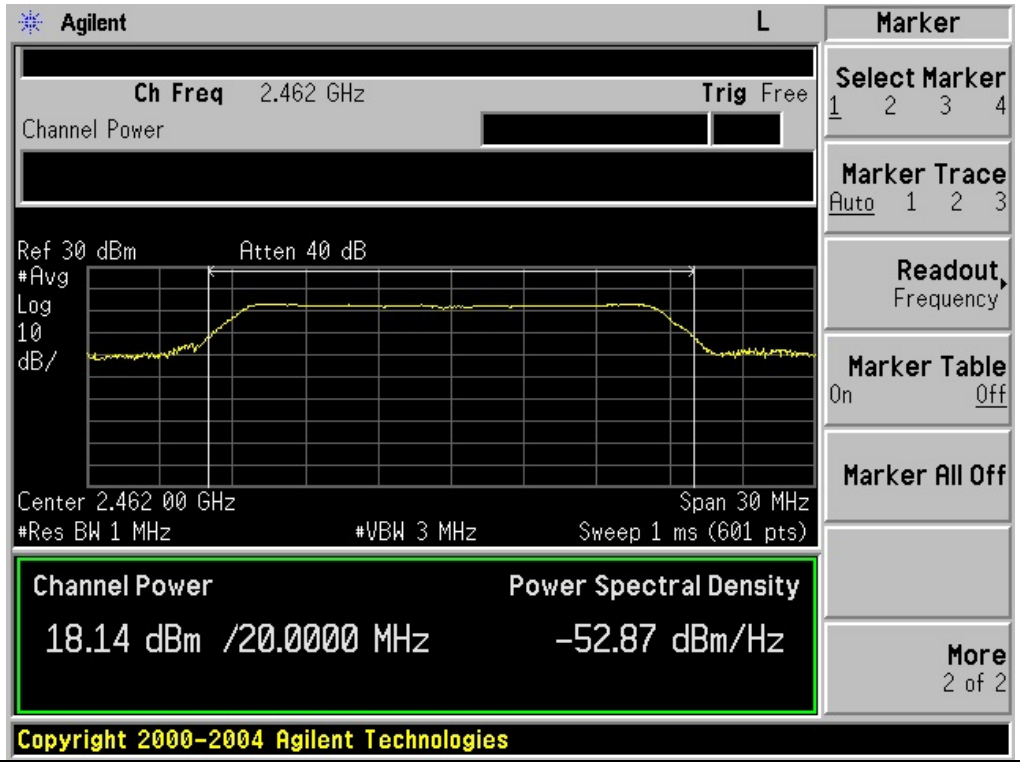
TX CH 01



TX CH 06

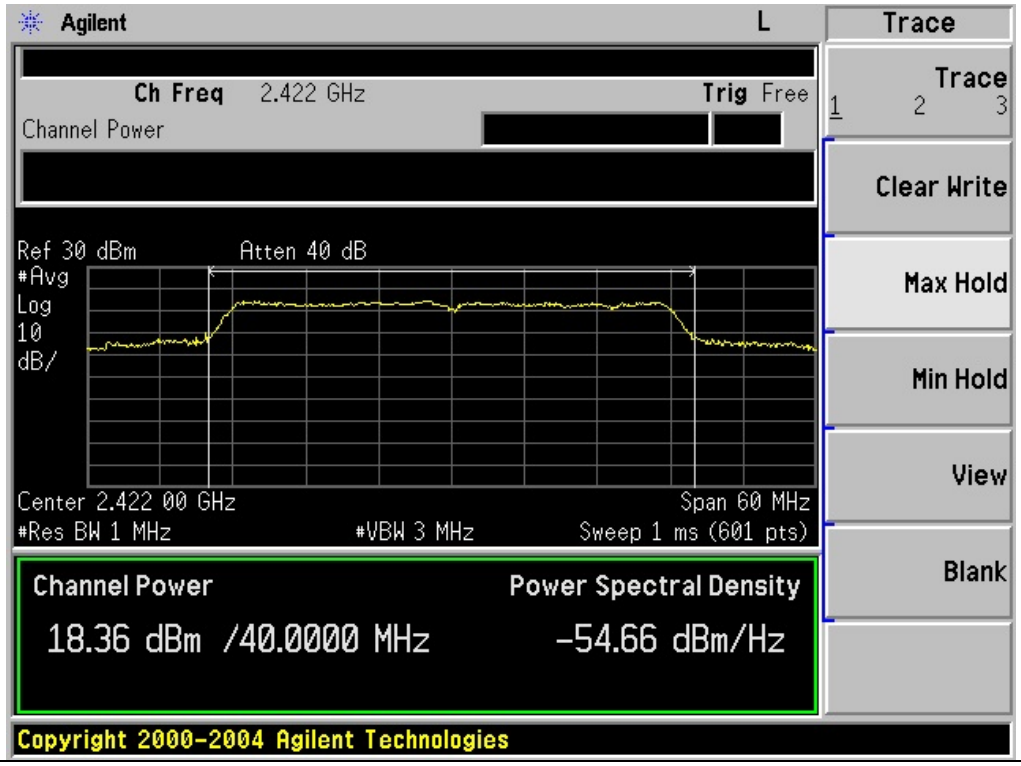


TX CH 11

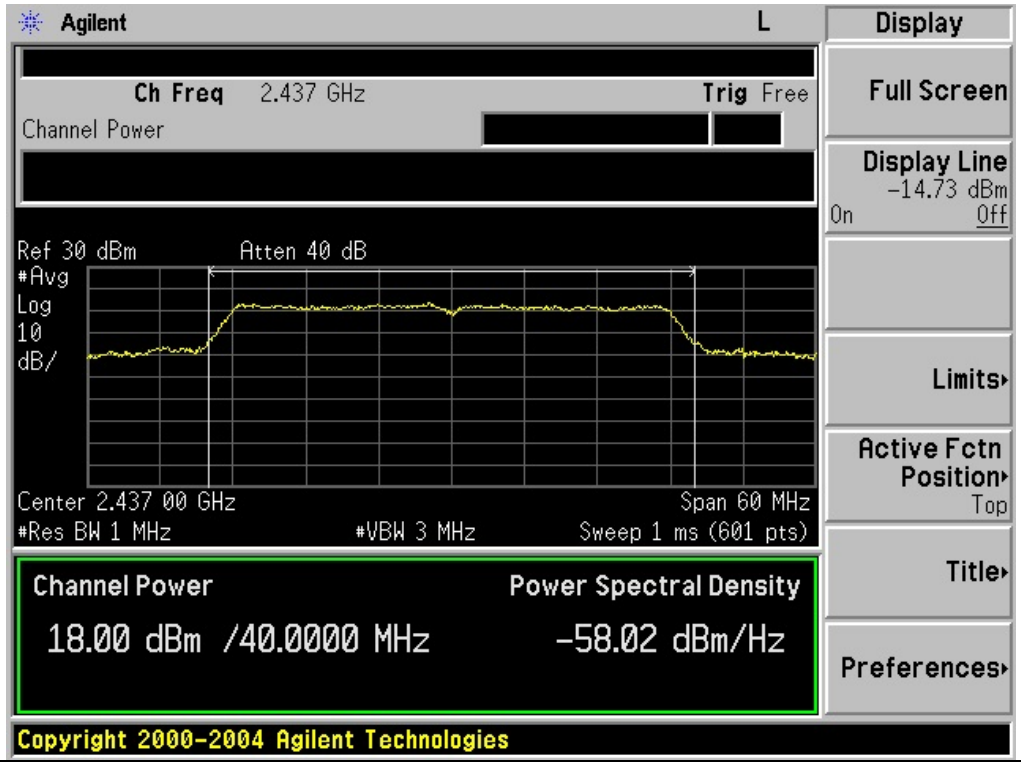


802.11n(40) Mode

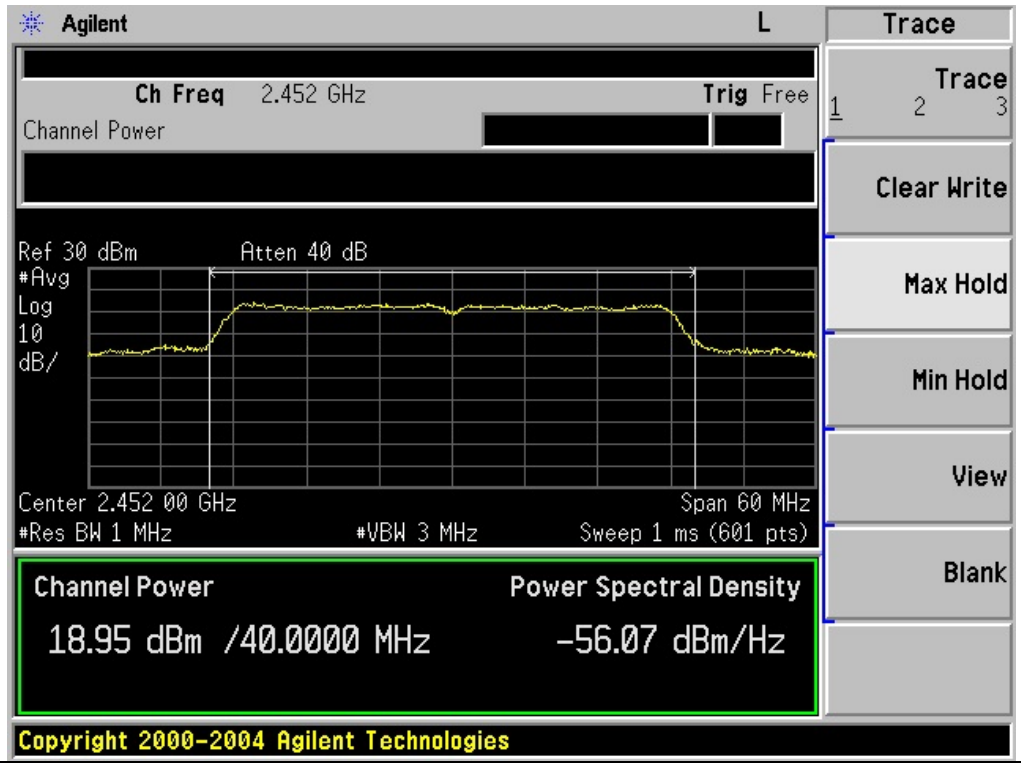
TX CH 03



TX CH 06



TX CH 09



7. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

APPLICABLE STANDARD

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

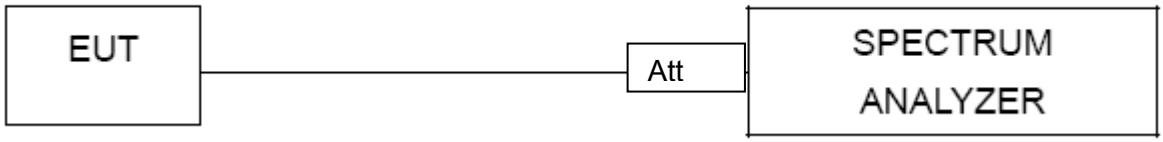
TEST PROCEDURE

a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
b) Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
c) Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
e) Repeat above procedures until all measured frequencies were complete.

7.1 DEVIATION FROM STANDARD

No deviation.

7.2 TEST SETUP



7.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

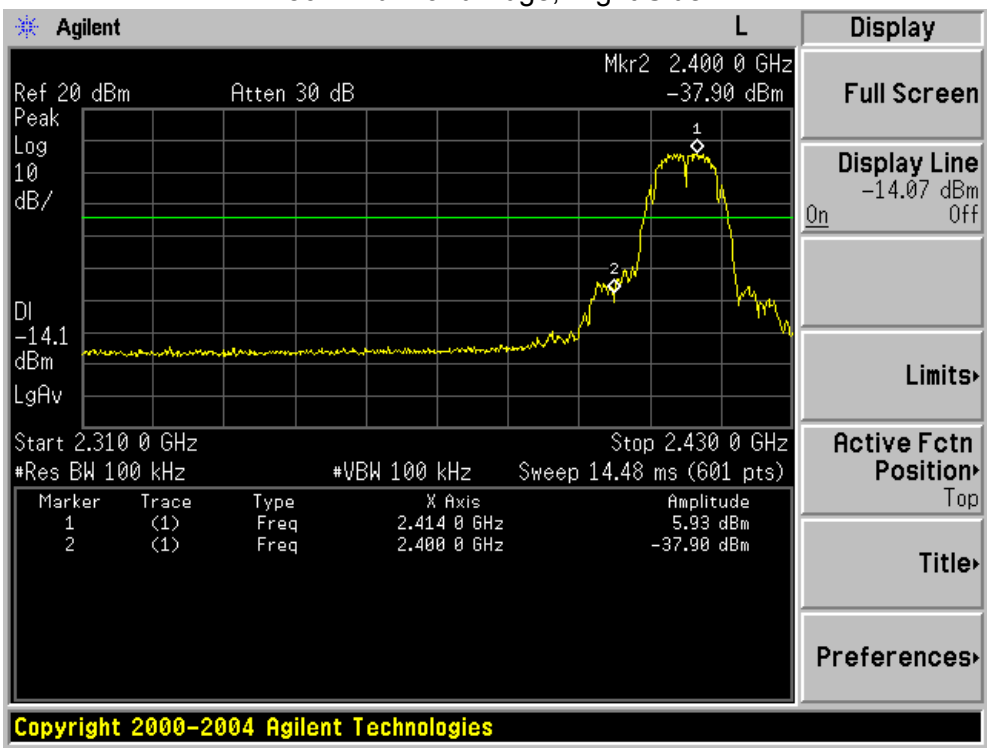
7.4 TEST RESULTS

EUT：	WiFi Repeater	Model Name ：	D3EW000-00
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	AC 120V/60Hz

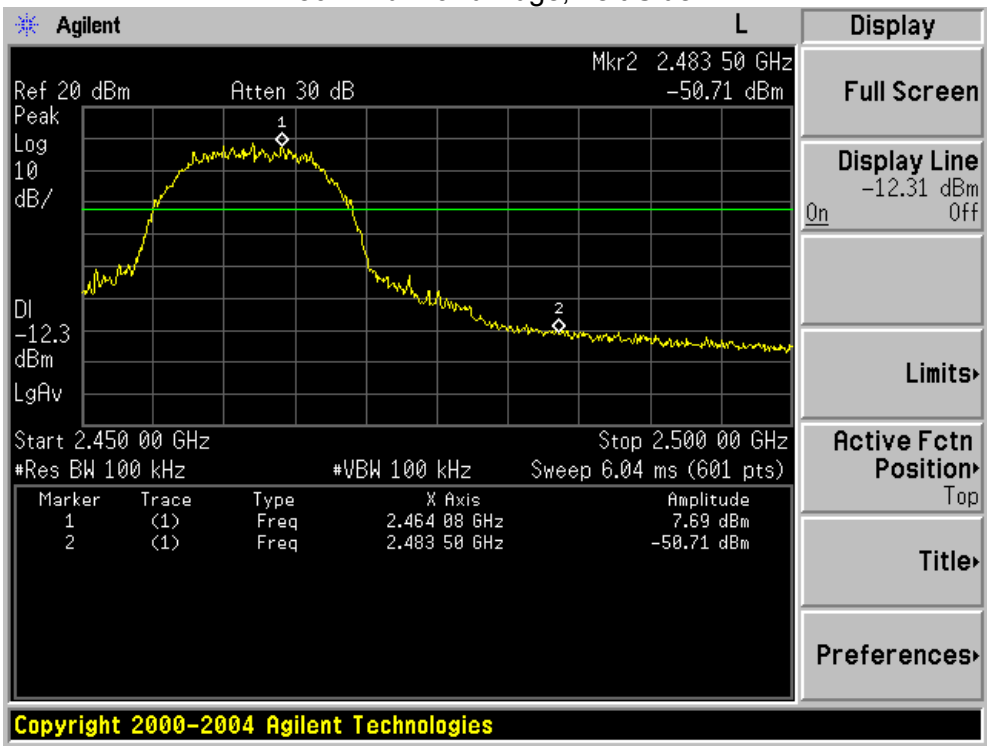
Frequency Band MHz	Delta Peak to band emission (dBc)		＞Limit (dBc)	Result
802.11b mode				
2400	43.83		20	Pass
2483.5	58.40		20	Pass
802.11g mode				
2400	25.59		20	Pass
2483.5	34.95		20	Pass
802.11n-HT20 mode				
2400	27.11	27.06	20	Pass
2483.5	37.55	37.34	20	Pass
802.11n-HT40 mode				
2400	24.76	24.73	20	Pass
2483.5	24.81	25.77	20	Pass

ANTENNA A and B all have been tested，only reported worse case.

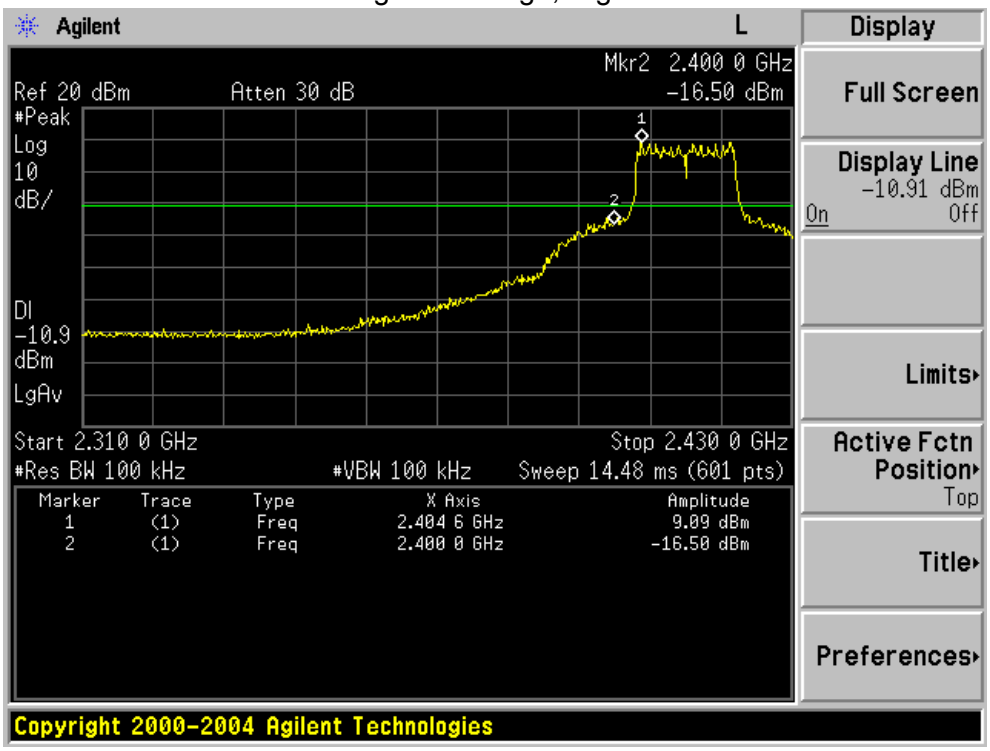
802.11b: Band Edge, Right Side



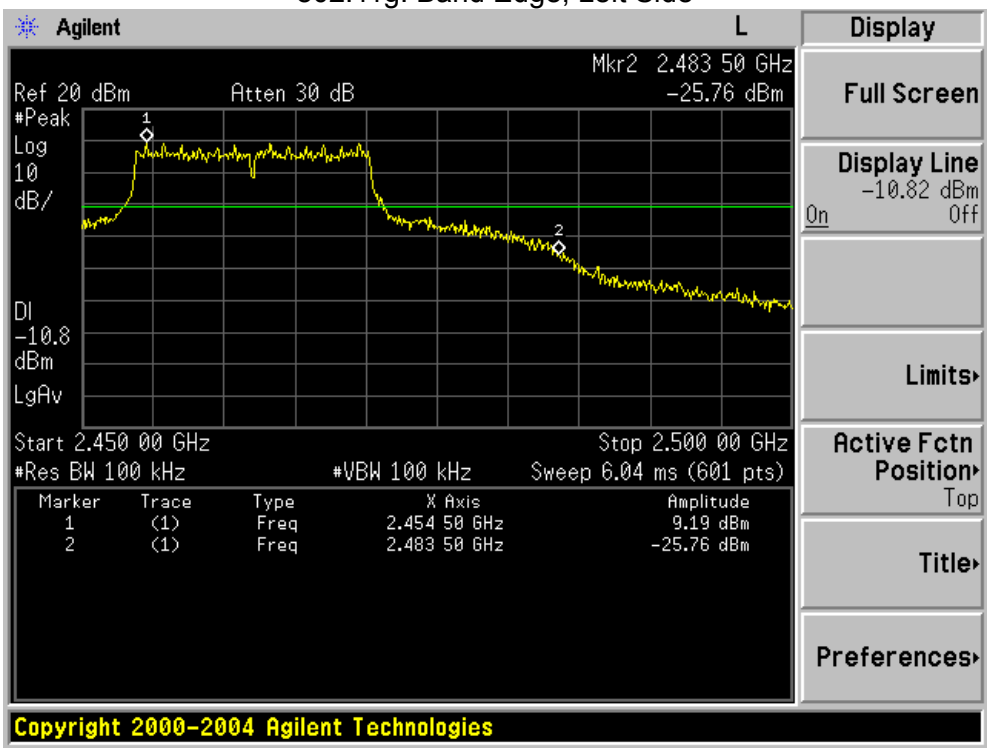
802.11b: Band Edge, Left Side



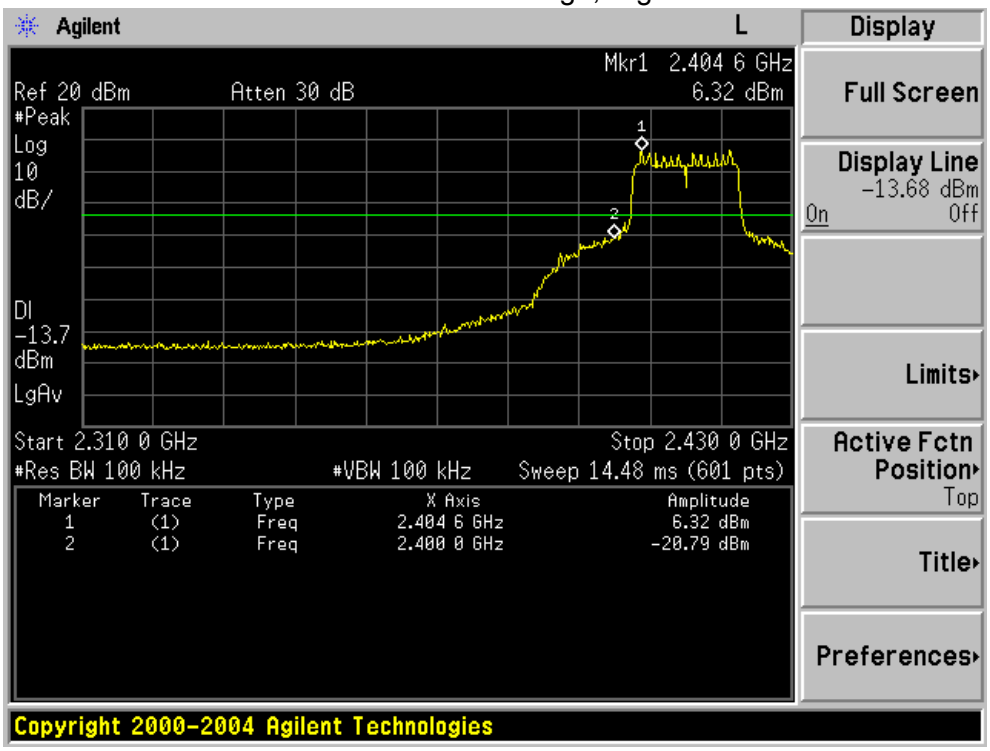
802.11g: Band Edge, Right Side



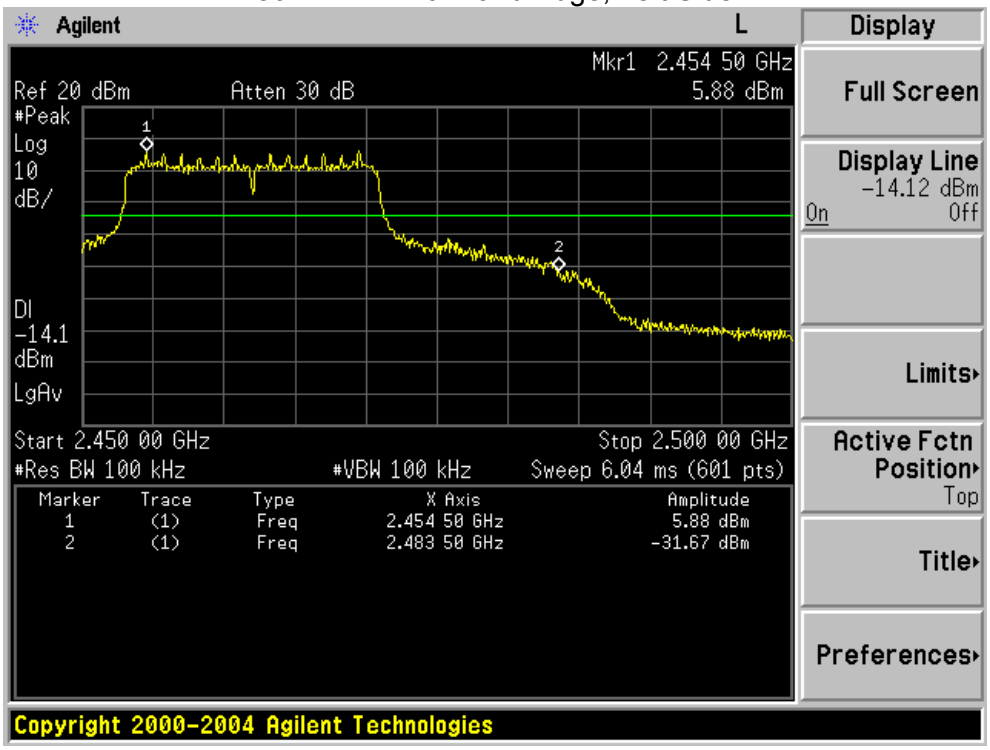
802.11g: Band Edge, Left Side



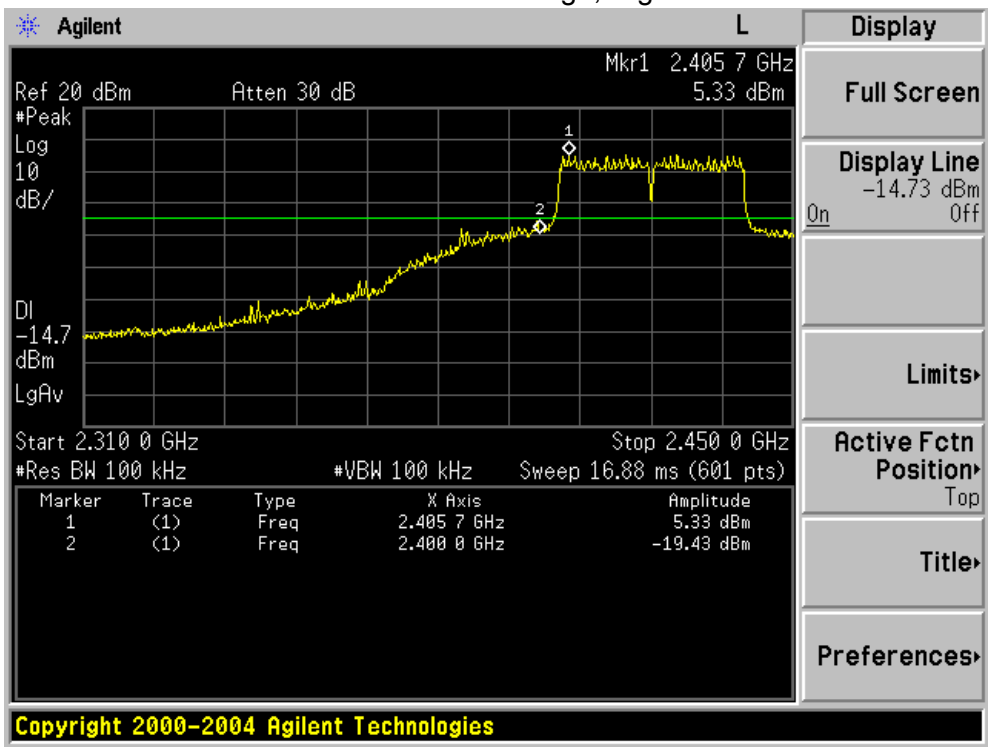
802.11n-HT20: Band Edge, Right Side



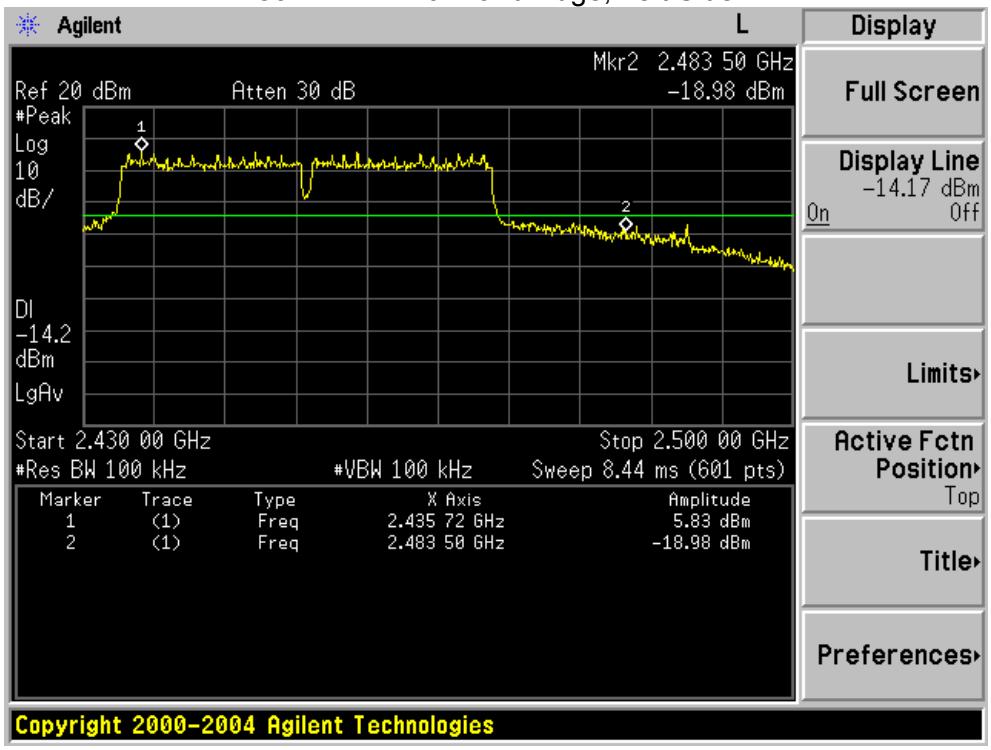
802.11n-HT20: Band Edge, Left Side



802.11n-HT40: Band Edge, Right Side



802.11n-HT40: Band Edge, Left Side



8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

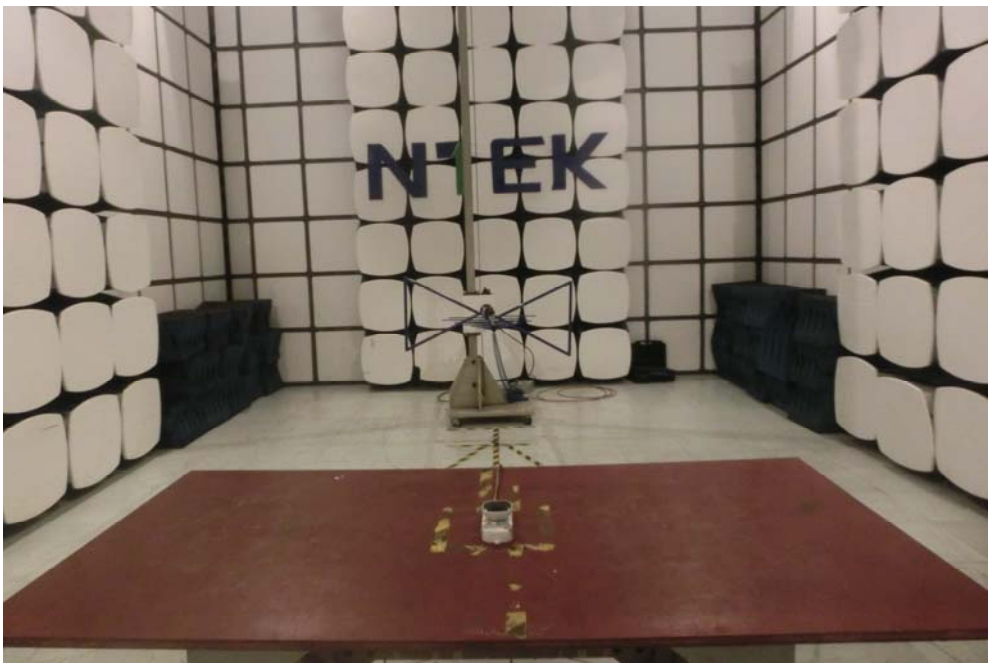
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

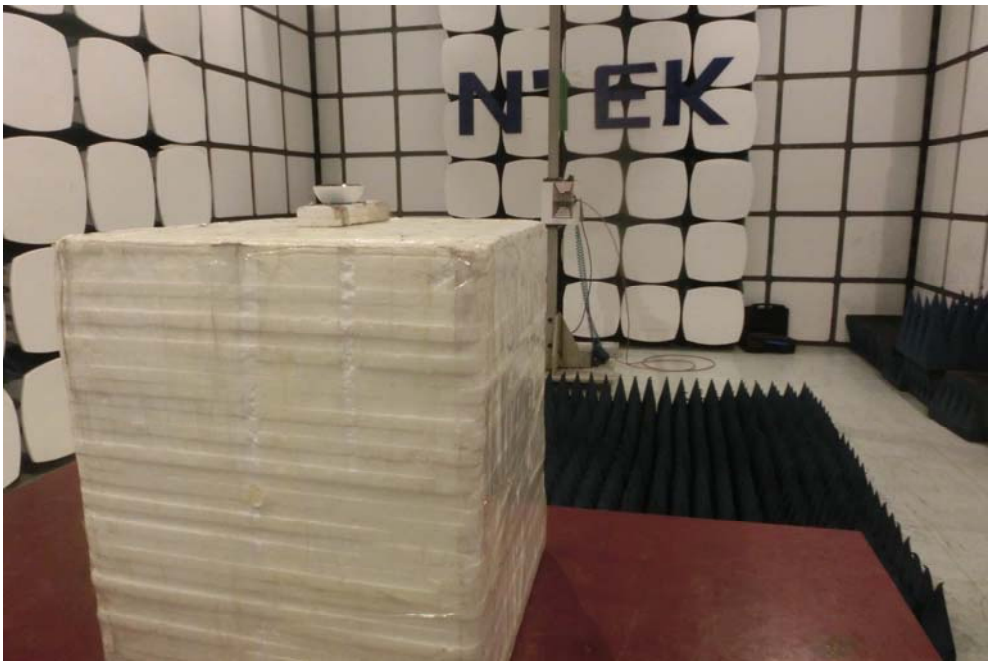
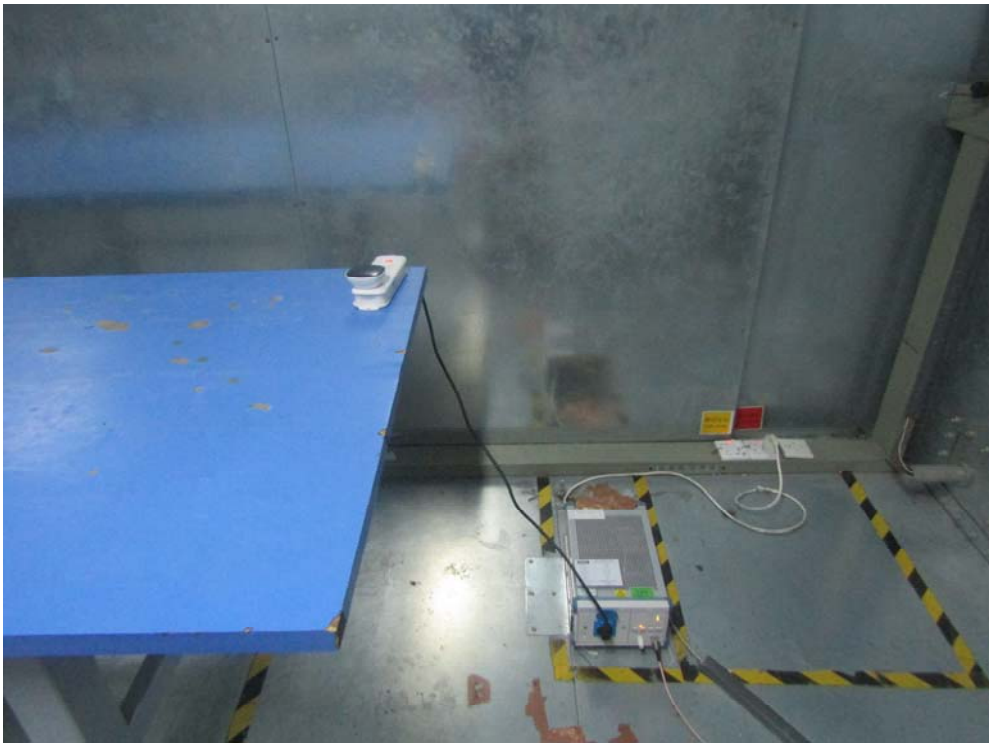
8.2 EUT ANTENNA

The EUT antenna is permanent attached antenna. It comply with the standard requirement.

9. EUT TEST PHOTO

Radiated Measurement Photos





CONDUCTED EMISSION Photos