



FCC TEST REPORT

Report No: STS1501009F01

Issued for

HUARUI TECHNICAL INNOVATION CO.,LIMITED
Room 1708 Nan Fung Tower.,173 Desvoeux Road C.,
Hong Kong.

Product Name:	2.4G WiFi module
Brand Name:	N/A
Model No.:	HR8192ERP5
Series Model:	N/A
FCC ID:	2ADV3-HR8192ERP5
Test Standard:	FCC Part 15.247

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TEST RESULT CERTIFICATION

Applicant's name.....: HUARUI TECHNICAL INNOVATION CO.,LIMITED
Address: Room 1708 Nan Fung Tower.,173 Des voeux Road C.,Hong Kong.
Manufacture's Name: HUARUI TECHNICAL INNOVATION CO.,LIMITED
Address: Room 1708 Nan Fung Tower.,173 Des voeux Road C.,Hong Kong.

Product description

Product name: 2.4G WiFi module
Model and/or type reference ..: HR8192ERP5
Serial Model: N/A

Standards: FCC Part15.247

Test procedure.....: ANSI C63.10-2009

This device described above has been tested by STS, 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. 2015 ~06 Jan. 2015

Date of Issue.....: 07 Jan. 2015

Test Result: **Pass**

Testing Engineer :

(Tony Liu)

Technical Manager :

(Vita Li)

Authorized Signatory :

(Bovey Yang)





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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) (reference KDB 558074 d05 v02. /9.1.2)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Conducted Spurious Emission	PASS	
15.247 (e)	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

Shenzhen STS Test Services Co., Ltd.

Add. : 1/F, Building 2, Zhuoke Science Park, Chongqing Road, Fuyong, Baoan District, Shenzhen, China.

FCC Registration No.: 842334; IC Registration No.: 12108A-1

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded 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	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	2.4G WiFi module	
Trade Name	N/A	
Model Name	HR8192ERP5	
Serial Model	N/A	
Model Difference	N/A	
Product Description	The EUT is a 2.4G WiFi module	
	Operation Frequency:	802.11b/g/n 20: 2412~2462 MHz 802.11n 40: 2422~2452MHz
	Modulation Type:	CCK/OFDM/DBPSK/DAPSK
	Bit Rate of Transmitter	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n(20/40MHz):300/150/144.44/130/117/115.56/104/86.67/78/52/6.5Mbps
	Number Of Channel	802.11b/g/n20: 11CH 802.11n 40: 7CH
	Antenna Designation:	Please see Note 3.
	Antenna Gain (dBi)	0 dBi
Channel List	Please refer to the Note 2.	
Ratings	DC 3.3V	
Hardware version number	N/A	
Software versioning number	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(20MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	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

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	unique Antenna	NA	0	Unique separation of dual antenna





2.2 DESCRIPTION OF TEST MODES

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

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

For Conducted Emission	
Final Test Mode	Description
Mode 5	Link Mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n CH1/ CH6/ CH11
Mode 4	802.11n(40) CH3/ CH6/ CH9
Mode 5	Link Mode

Note:

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



2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TEST



2.4 DESCRIPTION OF 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.	Series No.	Note
E-1	2.4G WiFi module	N/A	HR8192ERP5	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	YES	1.5m	
C-2	NO	NO	1.2m	

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

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Spectrum Analyzer	Agilent	E4407B	MY50140340	2014.10.25	2015.10.24
Test Receiver	R&S	ESCI	101427	2014.10.25	2015.10.24
Bilog Antenna	TESEQ	CBL6111D	34678	2014.10.27	2015.10.26
Horn Antenna	R&S	9120D	152265	2014.10.27	2015.10.26
Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2014.07.06	2015.07.05
Amplifier	Agilent	8449B	60538	2014.10.25	2015.10.24
Loop Antenna	ARA	PLA-1030/B	1029	2014.06.08	2015.06.07
Power Meter	Anritsu	ML2495A	1204003	2014.10.25	2015.10.24
Power Sensor	Anritsu	MA2411B	100309	2014.10.25	2015.10.24
Low frequency cable	N/A	R01	N/A	2014.10.25	2015.10.24
High frequency cable	N/A	R02	N/A	2014.10.25	2015.10.24

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	102086	2014.10.25	2015.10.24
LISN	R&S	ENV216	101242	2014.10.25	2015.10.24
LISN	EMCO	3810/2NM	000-23625	2014.10.25	2015.10.24
Conduction Cable	HUBER+SU HNER	C01	N/A	2014.10.25	2015.10.24



3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 15.247&207(a) limit in the table below has to be followed.

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

0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	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



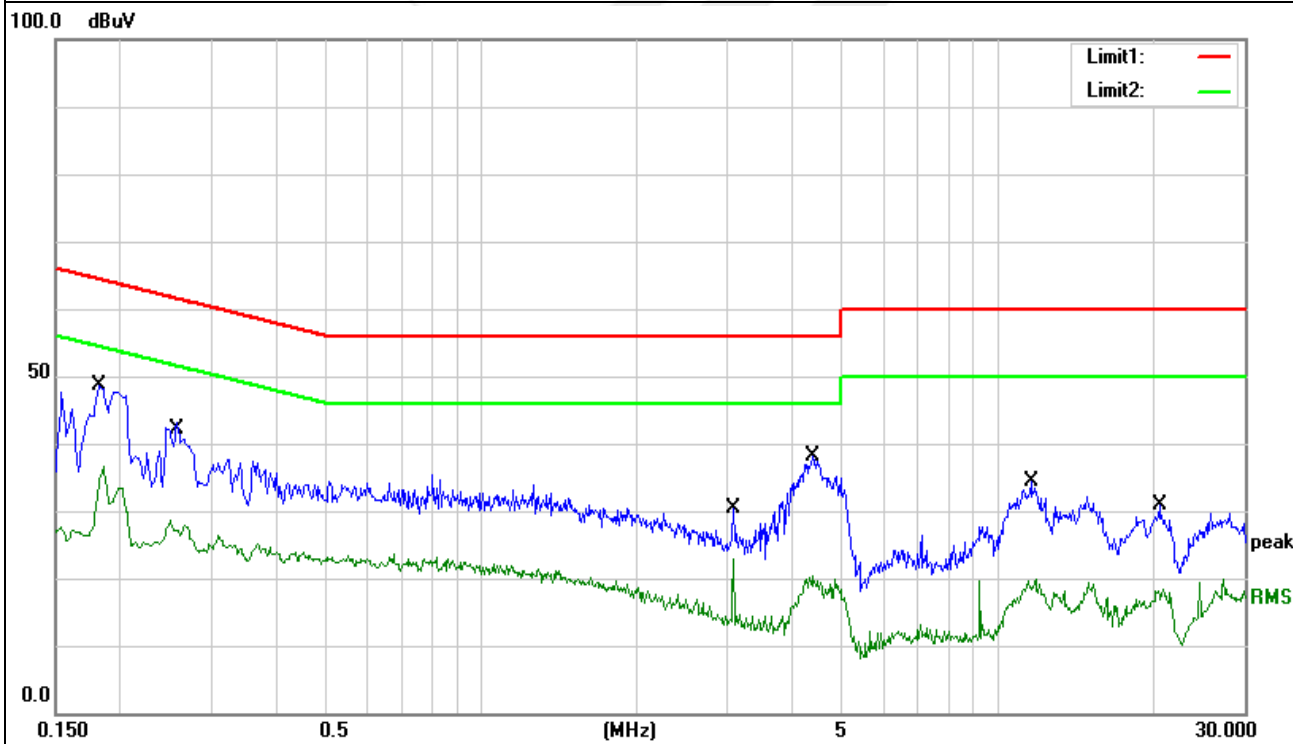
3.1.2 TEST RESULTS

EUT :	2.4G WiFi module	Model Name. :	HR8192ERP5
Temperature :	23 °C	Relative Humidity :	50%
Pressure :	1010hPa	Phase :	L
Test Voltage :	AC120V/50HZ	Test Mode :	Link Mode

Frequency↕ (MHz)↕	Reading↕ (dBuV)↕	Correct↕ Factor(dB)↕	Result↕ (dBuV)↕	Limit↕ (dBuV)↕	Margin↕ (dB)↕	Remark↕
0.1827↕	33.46↕	10.85↕	44.31↕	64.36↕	-20.05↕	QP↕
0.1827↕	19.44↕	10.85↕	30.29↕	54.36↕	-24.07↕	AVG↕
0.2540↕	27.03↕	10.84↕	37.87↕	61.63↕	-23.76↕	QP↕
0.2540↕	16.17↕	10.84↕	27.01↕	51.63↕	-24.62↕	AVG↕
3.0813↕	16.36↕	10.89↕	27.25↕	56.00↕	-28.75↕	QP↕
3.0813↕	7.73↕	10.89↕	18.62↕	46.00↕	-27.38↕	AVG↕
4.3931↕	18.63↕	11.11↕	29.74↕	56.00↕	-26.26↕	QP↕
4.3931↕	2.88↕	11.11↕	13.99↕	46.00↕	-32.01↕	AVG↕
11.5433↕	15.25↕	11.54↕	26.79↕	60.00↕	-33.21↕	QP↕
11.5433↕	6.00↕	11.54↕	17.54↕	50.00↕	-32.46↕	AVG↕
20.5060↕	11.11↕	11.91↕	23.02↕	60.00↕	-36.98↕	QP↕
20.5060↕	4.37↕	11.91↕	16.28↕	50.00↕	-33.72↕	AVG↕

Remark:

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





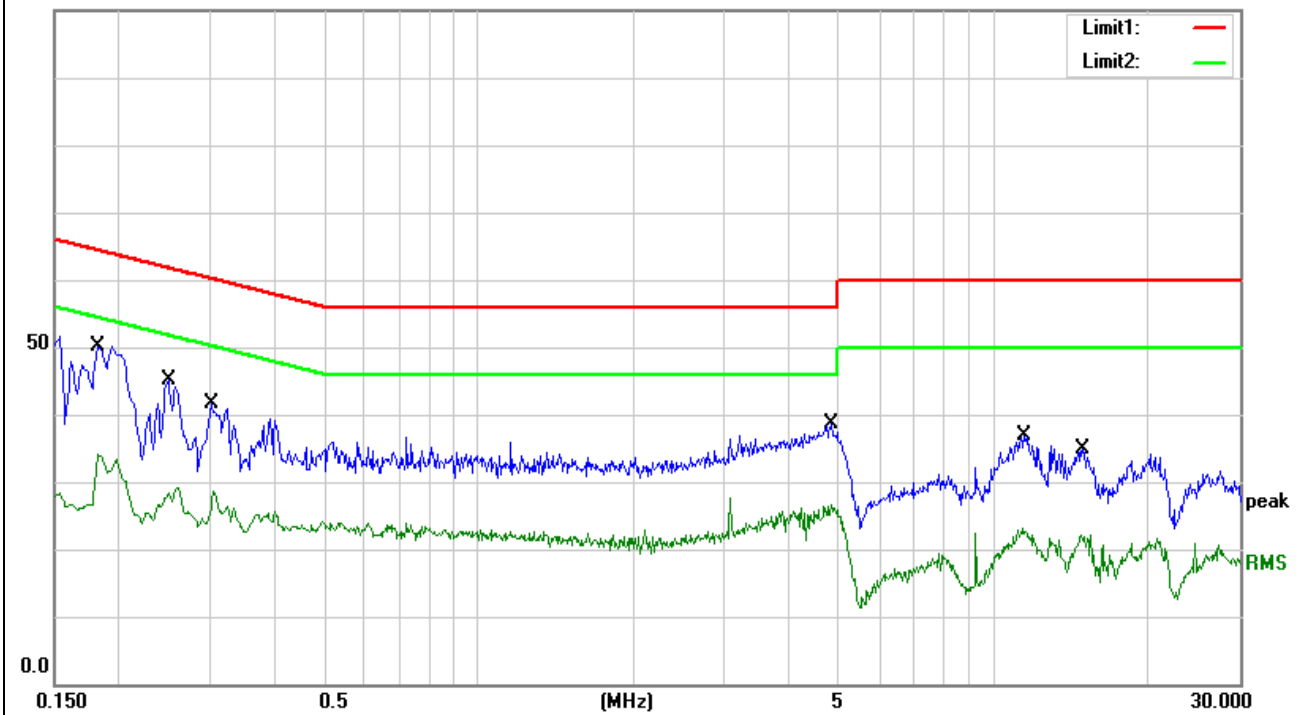
EUT :	2.4G WiFi module	Model Name. :	HR8192ERP5
Temperature :	23 °C	Relative Humidity :	50%
Pressure :	1010hPa	Phase :	N
Test Voltage :	AC120V/50HZ	Test Mode :	Link Mode

Frequency↕ (MHz)↕	Reading↕ (dBuV)↕	Correct↕ Factor(dB)↕	Result↕ (dBuV)↕	Limit↕ (dBuV)↕	Margin↕ (dB)↕	Remark↕ ↕
0.1787↕	34.49↕	10.85↕	45.34↕	64.55↕	-19.21↕	QP↕
0.1787↕	18.59↕	10.85↕	29.44↕	54.55↕	-25.11↕	AVG↕
0.2482↕	31.12↕	10.84↕	41.96↕	61.82↕	-19.86↕	QP↕
0.2482↕	18.09↕	10.84↕	28.93↕	51.82↕	-22.89↕	AVG↕
0.3000↕	23.27↕	10.84↕	34.11↕	60.24↕	-26.13↕	QP↕
0.3000↕	14.07↕	10.84↕	24.91↕	50.24↕	-25.33↕	AVG↕
4.8307↕	22.20↕	11.12↕	33.32↕	56.00↕	-22.68↕	QP↕
4.8307↕	13.76↕	11.12↕	24.88↕	46.00↕	-21.12↕	AVG↕
11.4373↕	19.48↕	11.58↕	31.06↕	60.00↕	-28.94↕	QP↕
11.4373↕	9.94↕	11.58↕	21.52↕	50.00↕	-28.48↕	AVG↕
14.8125↕	16.97↕	11.63↕	28.60↕	60.00↕	-31.40↕	QP↕
14.8125↕	8.88↕	11.63↕	20.51↕	50.00↕	-29.49↕	AVG↕

Remark:

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

100.0 dBuV





3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

6 dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on Part 15.247&205(a), then the Part 15.247&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)	Class B (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).

3.2.2 TEST PROCEDURE

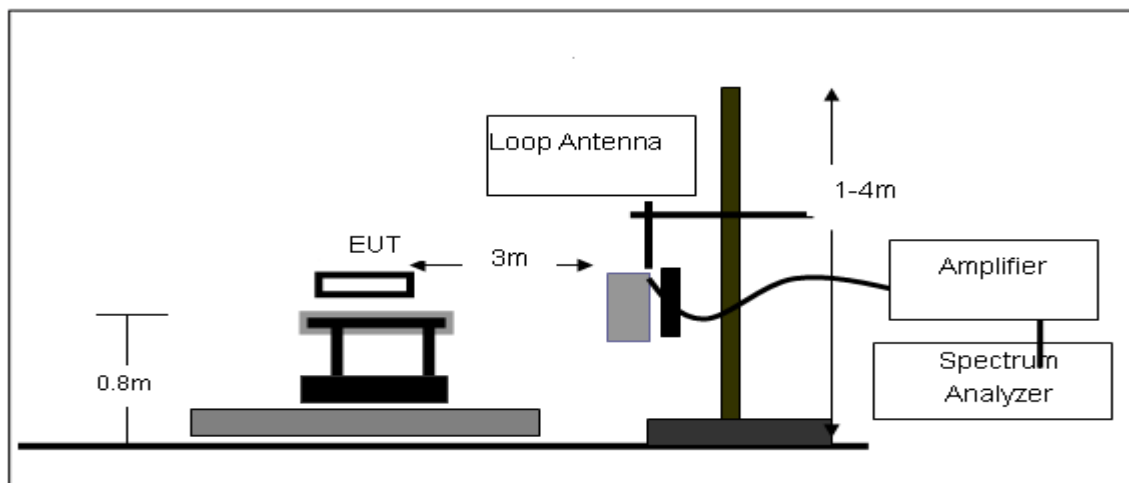
- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 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.
- 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.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

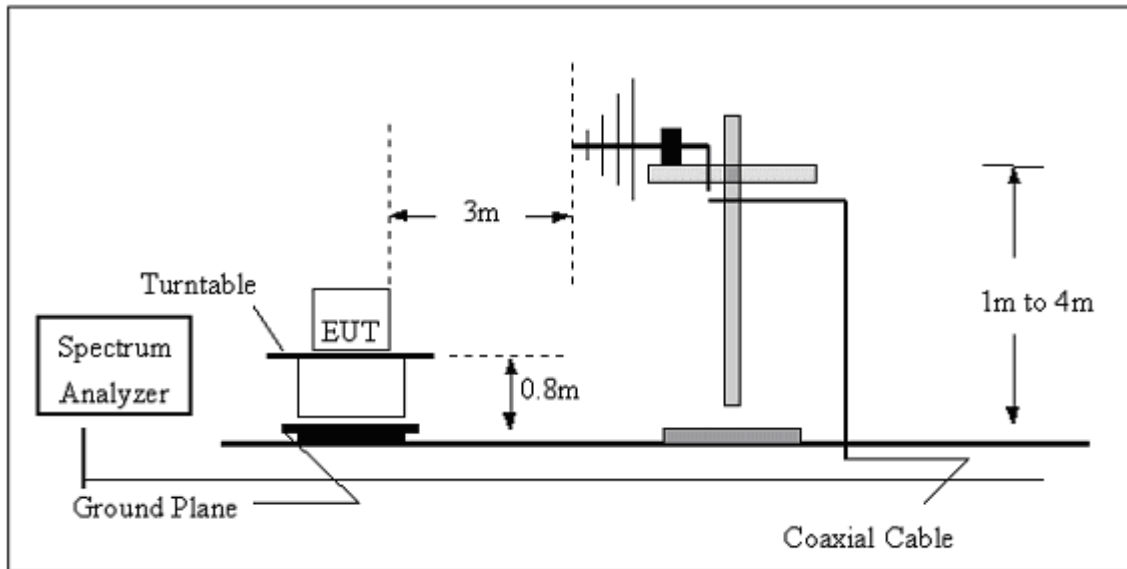
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 TEST SETUP

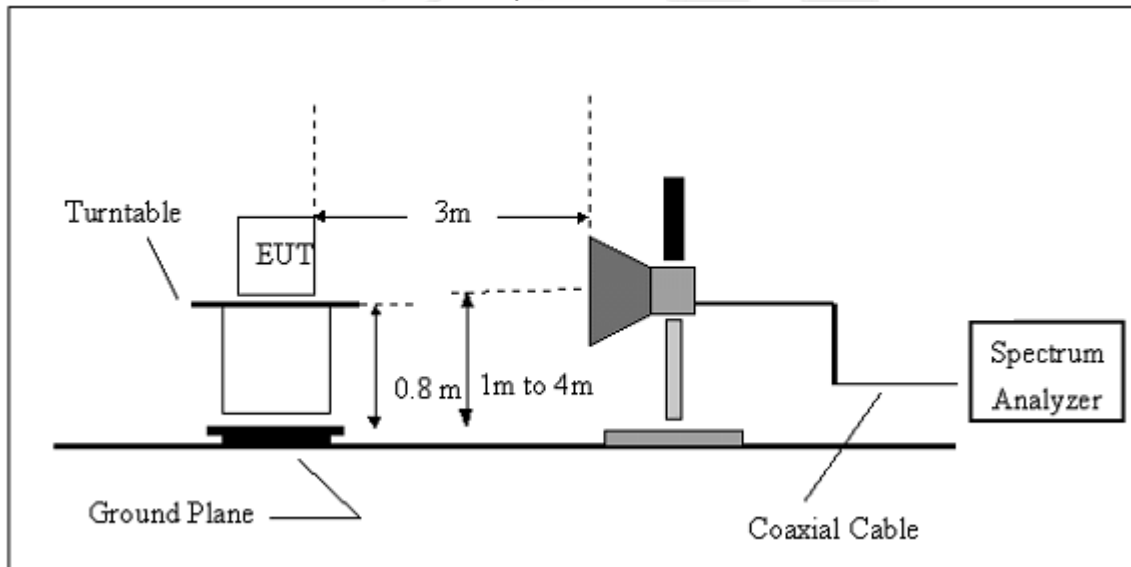
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.4 EUT OPERATING CONDITIONS

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



3.2.5 TEST RESULT

9KHz-30MHz

EUT:	2.4G WiFi module	Model Name. :	HR8192ERP5
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	Link mode	Polarization :	--

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

NOTE:

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

Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);

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



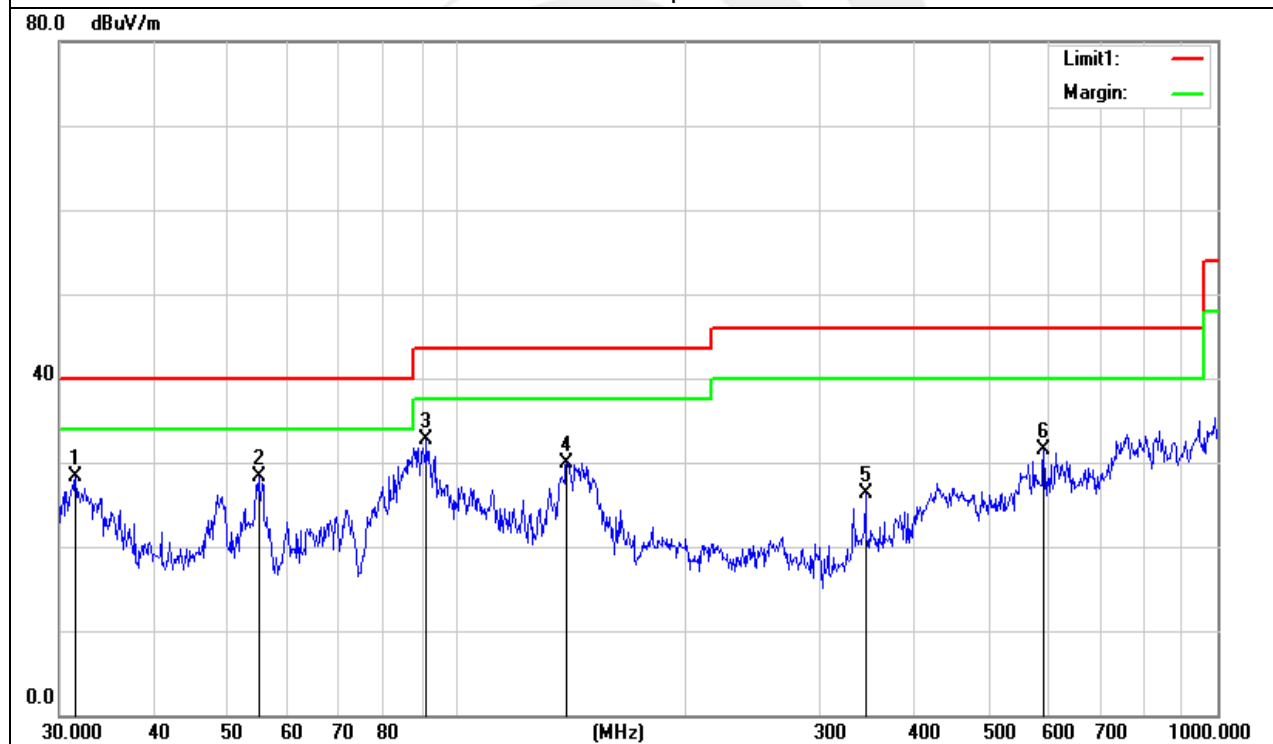
30MHz - 1000MHz

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	Link mode	Polarization :	Horizontal

Frequency↵ (MHz)↵	Reading↵ (dBuV)↵	Correct↵ Factor(dB/m)↵	Result↵ (dBuV/m)↵	Limit↵ (dBuV/m)↵	Margin↵ (dB)↵	Remark↵ ↵
31.5095↵	10.19↵	18.17↵	28.36↵	40.00↵	-11.64↵	QP↵
54.8348↵	21.69↵	6.65↵	28.34↵	40.00↵	-11.66↵	QP↵
91.1746↵	22.98↵	9.80↵	32.78↵	43.50↵	-10.72↵	QP↵
139.3613↵	17.09↵	12.89↵	29.98↵	43.50↵	-13.52↵	QP↵
344.3855↵	9.29↵	17.02↵	26.31↵	46.00↵	-19.69↵	QP↵
590.9737↵	8.85↵	22.60↵	31.45↵	46.00↵	-14.55↵	QP↵

Remark:

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



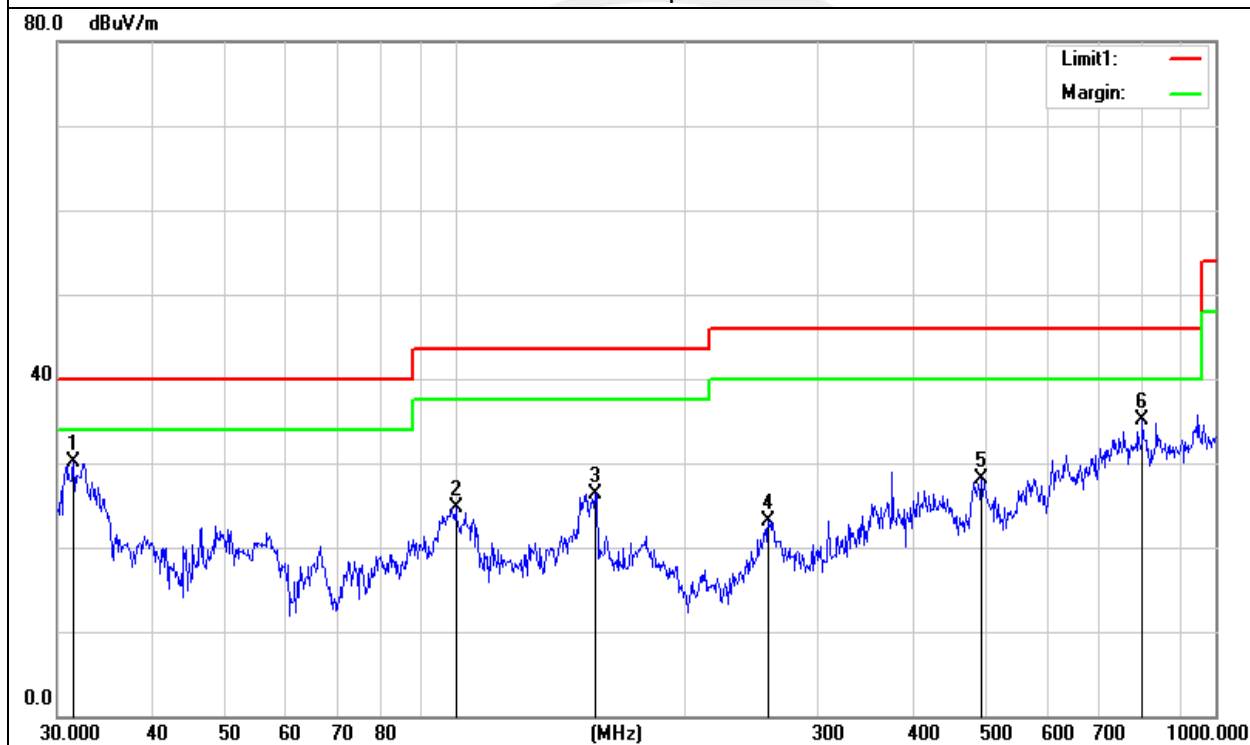


EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	Link mode	Polarization :	Vertical

Frequency [↕]	Reading [↕]	Correct [↕]	Result [↕]	Limit [↕]	Margin [↕]	Remark [↕]
(MHz) [↕]	(dBuV) [↕]	Factor(dB/m) [↕]	(dBuV/m) [↕]	(dBuV/m) [↕]	(dB) [↕]	↕
31.5095 [↕]	11.87 [↕]	18.17 [↕]	30.04 [↕]	40.00 [↕]	-9.96 [↕]	QP [↕]
100.2286 [↕]	13.81 [↕]	10.94 [↕]	24.75 [↕]	43.50 [↕]	-18.75 [↕]	QP [↕]
152.6641 [↕]	14.04 [↕]	12.24 [↕]	26.28 [↕]	43.50 [↕]	-17.22 [↕]	QP [↕]
258.3264 [↕]	7.93 [↕]	15.16 [↕]	23.09 [↕]	46.00 [↕]	-22.91 [↕]	QP [↕]
492.4685 [↕]	7.47 [↕]	20.66 [↕]	28.13 [↕]	46.00 [↕]	-17.87 [↕]	QP [↕]
801.7863 [↕]	9.03 [↕]	26.08 [↕]	35.11 [↕]	46.00 [↕]	-10.89 [↕]	QP [↕]

Remark:

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





Above 1000MHz

Not: A and B antenna transmission at the same time, using the same module

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH1 (802.11b Mode)/2412	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4824.132	46.56	10.44	57	74	-17	peak
4824.063	36.45	10.44	46.89	54	-7.11	AVG
7236.046	42.23	12.39	54.62	74	-19.38	peak
7236.053	28.78	12.39	41.17	54	-12.83	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH1 (802.11b Mode)/2412	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4824.075	49.67	10.39	60.06	74	-13.94	peak
4824.088	33.32	10.39	43.71	54	-10.29	AVG
7236.090	48.78	12.68	61.46	74	-12.54	peak
7236.140	30.34	12.68	43.02	54	-10.98	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH6 (802.11b Mode)/2437	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.050	49.56	10.39	59.95	74	-14.05	peak
4874.110	33.67	10.39	44.06	54	-9.94	AVG
7311.083	48.54	12.68	61.22	74	-12.78	peak
7311.119	30.48	12.68	43.16	54	-10.84	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH6 (802.11b Mode)/2437	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.127	49.56	10.39	59.95	74	-14.05	peak
4874.057	33.78	10.39	44.17	54	-9.83	AVG
7311.129	48.56	12.68	61.24	74	-12.76	peak
7311.064	30.33	12.68	43.01	54	-10.99	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH11 (802.11b Mode)/2462	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.105	49.21	10.39	59.6	74	-14.4	peak
4924.137	33.67	10.39	44.06	54	-9.94	AVG
7386.065	48.78	12.68	61.46	74	-12.54	peak
7386.089	30.56	12.68	43.24	54	-10.76	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH11 (802.11b Mode)/2462	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.119	49.78	10.39	60.17	74	-13.83	peak
4924.115	33.88	10.39	44.27	54	-9.73	AVG
7386.095	48.45	12.68	61.13	74	-12.87	peak
7386.053	30.51	12.68	43.19	54	-10.81	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH1 (802.11g Mode)/2412	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4824.128	46.28	10.44	56.72	74	-17.28	peak
4824.071	36.53	10.44	46.97	54	-7.03	AVG
7236.031	42.36	12.39	54.75	74	-19.25	peak
7236.042	28.31	12.39	40.7	54	-13.3	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH1 (802.11g Mode)/2412	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4824.113	46.56	10.44	57	74	-17	peak
4824.087	36.78	10.44	47.22	54	-6.78	AVG
7236.110	42.67	12.39	55.06	74	-18.94	peak
7236.077	28.45	12.39	40.84	54	-13.16	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH6 (802.11g Mode)/2437	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4874.137	45.23	10.4	55.63	74	-18.37	peak
4874.074	26.56	10.4	36.96	54	-17.04	AVG
7311.117	44.12	12.75	56.87	74	-17.13	peak
7311.154	25.56	12.75	38.31	54	-15.69	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH6 (802.11g Mode)/2437	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4874.135	48.67	10.4	59.07	74	-14.93	peak
4874.129	35.78	10.4	46.18	54	-7.82	AVG
7311.049	48.21	12.75	60.96	74	-13.04	peak
7311.091	33.45	12.75	46.2	54	-7.8	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH11 (802.11g Mode)/2462	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.054	49.57	10.39	59.96	74	-14.04	peak
4924.088	33.29	10.39	43.68	54	-10.32	AVG
7386.083	48.23	12.68	60.91	74	-13.09	peak
7386.071	30.87	12.68	43.55	54	-10.45	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH11(802.11g Mode)/2462	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.135	46.51	10.39	56.9	74	-17.1	peak
4924.078	34.36	10.39	44.75	54	-9.25	AVG
7386.104	46.26	12.68	58.94	74	-15.06	peak
7386.100	33.75	12.68	46.43	54	-7.57	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH1(802.11n Mode)/20MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4824.087	46.35	10.44	56.79	74	-17.21	peak
4824.119	36.67	10.44	47.11	54	-6.89	AVG
7236.101	42.38	12.39	54.77	74	-19.23	peak
7236.023	28.54	12.39	40.93	54	-13.07	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH1(802.11n Mode)/20MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4824.108	46.51	10.44	56.95	74	-17.05	peak
4824.115	37.35	10.44	47.79	54	-6.21	AVG
7236.130	51.68	12.39	64.07	74	-9.93	peak
7236.121	31.39	12.39	43.78	54	-10.22	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH6(802.11n Mode)/20MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4874.118	51.45	10.4	61.85	74	-12.15	peak
4874.065	32.68	10.4	43.08	54	-10.92	AVG
7311.075	48.87	12.75	61.62	74	-12.38	peak
7311.078	27.36	12.75	40.11	54	-13.89	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH6(802.11n Mode)/20MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4874.115	48.23	10.4	58.63	74	-15.37	peak
4874.120	32.58	10.4	42.98	54	-11.02	AVG
7311.073	47.29	12.75	60.04	74	-13.96	peak
7311.100	26.59	12.75	39.34	54	-14.66	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH11(802.11n Mode)/20MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.109	50.15	10.39	60.54	74	-13.46	peak
4924.051	35.23	10.39	45.62	54	-8.38	AVG
7386.095	43.67	12.68	56.35	74	-17.65	peak
7386.179	31.41	12.68	44.09	54	-9.91	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH11(802.11n Mode)/20MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4924.067	51.61	10.39	62	74	-12	peak
4924.052	35.22	10.39	45.61	54	-8.39	AVG
7386.116	42.28	12.68	54.96	74	-19.04	peak
7386.100	28.75	12.68	41.43	54	-12.57	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH3(802.11n Mode)/40MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4844.066	47.55	10.5	58.05	74	-15.95	peak
4844.066	31.37	10.5	41.87	54	-12.13	AVG
7266.224	48.41	12.5	60.91	74	-13.09	peak
7266.294	31.29	12.5	43.79	54	-10.21	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH3(802.11n Mode)/40MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4844.282	47.21	10.5	57.71	74	-16.29	peak
4844.296	30.65	10.5	41.15	54	-12.85	AVG
7266.159	48.63	12.5	61.13	74	-12.87	peak
7266.181	29.37	12.5	41.87	54	-12.13	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH6(802.11n Mode)/40MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4874.148	48.51	10.4	58.91	74	-15.09	peak
4874.199	33.26	10.4	43.66	54	-10.34	AVG
7311.074	47.58	12.75	60.33	74	-13.67	peak
7311.149	32.69	12.75	45.44	54	-8.56	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH6(802.11n Mode)/40MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4874.524	47.46	10.4	57.86	74	-16.14	peak
4874.446	34.21	10.4	44.61	54	-9.39	AVG
7311.566	46.33	12.75	59.08	74	-14.92	peak
7311.586	35.88	12.75	48.63	54	-5.37	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH9(802.11n Mode)/40MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4904.249	49.26	10.29	59.55	74	-14.45	peak
4904.321	35.33	10.29	45.62	54	-8.38	AVG
7356.219	48.21	12.79	61	74	-13	peak
7356.232	31.75	12.79	44.54	54	-9.46	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH9(802.11n Mode)/40MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4904.083	50.26	10.29	60.55	74	-13.45	peak
4904.126	34.11	10.29	44.4	54	-9.6	AVG
7356.371	48.68	12.79	61.47	74	-12.53	peak
7356.384	32.89	12.79	45.68	54	-8.32	AVG

Remark:

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



3.2.6 TEST RESULTS (BAND EDGE)

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH1(802.11b Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.900	80.11	-13	67.11	74	-6.89	peak
2399.900	61.36	-13	48.36	54	-5.54	AVG
2400.000	82.27	-12.99	69.28	74	-4.41	peak
2400.000	61.21	-12.99	48.22	54	-5.74	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH1(802.11b Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.900	81.73	-13	68.73	74	-5.27	peak
2399.900	61.13	-13	48.13	54	-5.87	AVG
2400.000	78.48	-12.99	65.49	74	-8.51	peak
2400.000	59.41	-12.99	46.42	54	-7.58	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH11(802.11b Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2483.500	78.54	-12.78	65.76	74	-8.24	peak
2483.500	60.18	-12.78	47.4	54	-6.6	AVG
2483.600	79.39	-12.77	66.62	74	-7.38	peak
2483.600	60.21	-12.78	47.43	54	-6.57	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH11(802.11b Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2483.500	77.28	-12.78	64.5	74	-9.5	peak
2483.500	60.54	-12.78	47.76	54	-6.24	AVG
2483.600	78.28	-12.77	65.51	74	-8.49	peak
2483.600	59.67	-12.77	46.9	54	-7.1	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH1(802.11g Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.900	76.17	-13	63.17	74	-10.83	peak
2399.900	59.39	-13	46.39	54	-7.61	AVG
2400.000	78.51	-12.99	65.52	74	-8.48	peak
2400.000	58.35	-12.99	45.36	54	-8.64	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH1(802.11gMode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.900	77.15	-13	64.15	74	-9.85	peak
2399.900	60.51	-13	47.51	54	-6.49	AVG
2400.000	78.27	-12.99	65.28	74	-8.72	peak
2400.000	62.79	-12.99	49.8	54	-4.2	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH11(802.11g Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2483.500	77.21	-12.78	64.43	74	-9.57	peak
2483.500	63.55	-12.78	50.77	54	-3.23	AVG
2483.600	76.28	-12.77	63.51	74	-10.49	peak
2483.600	61.73	-12.77	48.96	54	-5.04	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH11(802.11g Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2483.500	76.18	-12.78	63.4	74	-10.6	peak
2483.500	60.32	-12.78	47.54	54	-6.46	AVG
2483.600	75.78	-12.77	63.01	74	-10.99	peak
2483.600	61.25	-12.77	48.48	54	-5.52	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH1(802.11n Mode)/20MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.900	76.26	-13	63.26	74	-10.74	peak
2399.900	58.32	-13	45.32	54	-8.68	AVG
2400.000	78.14	-12.99	65.15	74	-8.85	peak
2400.000	58.37	-12.99	45.38	54	-8.62	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH1(802.11n Mode)/20M	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.900	77.14	-13	64.14	74	-9.86	peak
2399.900	58.56	-13	45.56	54	-8.44	AVG
2400.000	76.31	-12.99	63.32	74	-10.68	peak
2400.000	59.28	-12.99	46.29	54	-7.71	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH11(802.11n Mode)/20MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2483.500	77.28	-12.78	64.5	74	-9.5	peak
2483.500	56.79	-12.78	44.01	54	-9.99	AVG
2483.600	75.31	-12.77	62.54	74	-11.46	peak
2483.600	57.36	-12.77	44.59	54	-9.41	AVG

Remark:

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

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH11(802.11n Mode)/20MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2483.500	73.24	-12.78	60.45	74	-13.55	peak
2483.500	59.31	-12.78	46.84	54	-7.16	AVG
2483.600	73.62	-12.78	60.45	74	-13.55	peak
2483.600	59.56	-12.78	46.84	54	-7.16	AVG

Remark:

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



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH3(802.11n Mode)/40M	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.900	77.15	-13	64.15	74	-9.85	peak
2399.900	58.52	-13	45.52	54	-8.48	AVG
2400.000	77.68	-12.99	64.69	74	-9.31	peak
2400.000	59.59	-12.99	46.6	54	-7.4	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH3(802.11n Mode)/40MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2399.900	80.55	-13	67.55	74	-6.45	peak
2399.900	55.58	-13	42.58	54	-11.42	AVG
2400.000	78.31	-12.99	65.32	74	-8.68	peak
2400.000	55.37	-12.99	42.38	54	-11.62	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						



EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH9(802.11n Mode)/40MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2483.500	76.18	-12.78	63.4	74	-10.6	peak
2483.500	59.23	-12.78	46.45	54	-7.55	AVG
2483.600	77.59	-12.77	64.82	74	-9.18	peak
2483.600	61.12	-12.77	48.35	54	-5.65	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.3V
Test Mode :	CH9(802.11n Mode)/40MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
2483.500	77.36	-12.78	64.58	74	-9.42	peak
2483.500	60.58	-12.78	47.8	54	-6.2	AVG
2483.600	78.27	-12.78	65.49	74	-8.51	peak
2483.600	59.51	-12.78	46.73	54	-7.27	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

4. CONDUCTED SPURIOUS EMISSIONS

4.1 APPLIED PROCEDURES / LIMIT

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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

4.2 TEST PROCEDURE

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

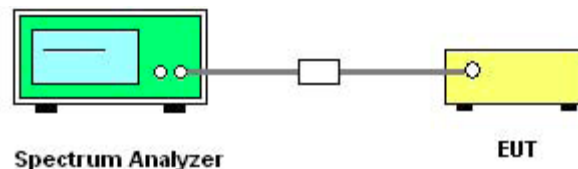
For Band edge

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	Lower Band Edge: 2300 to 2430 MHz Upper Band Edge: 2450 to 2500 MHz
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP



The EUT which is powered by the Battery, is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

4.5 EUT OPERATION CONDITIONS

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

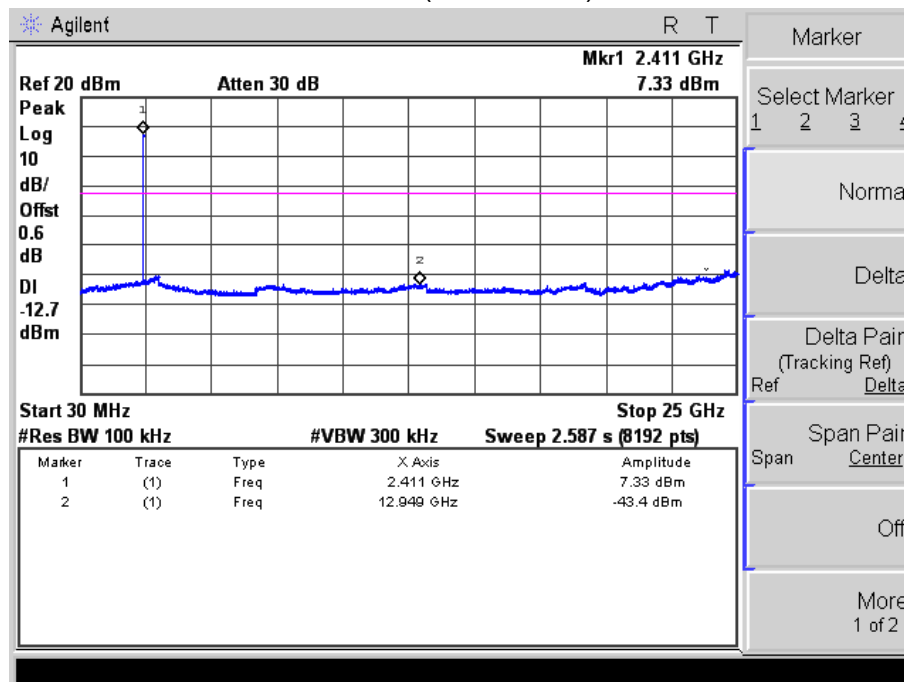


4.6 TEST RESULTS

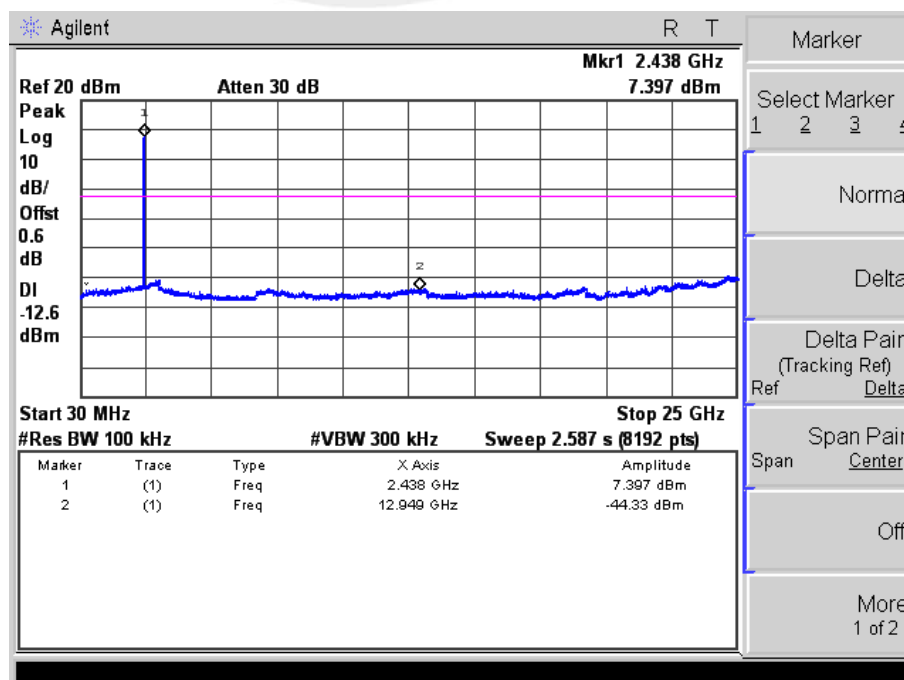
Not:A(B) Represent the value of antennaA and B,The worst data is A Antenna a ,only shown Antenna A Plot.

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX b Mode /CH01, CH06, CH11		

CH 01 (Ant A and B)

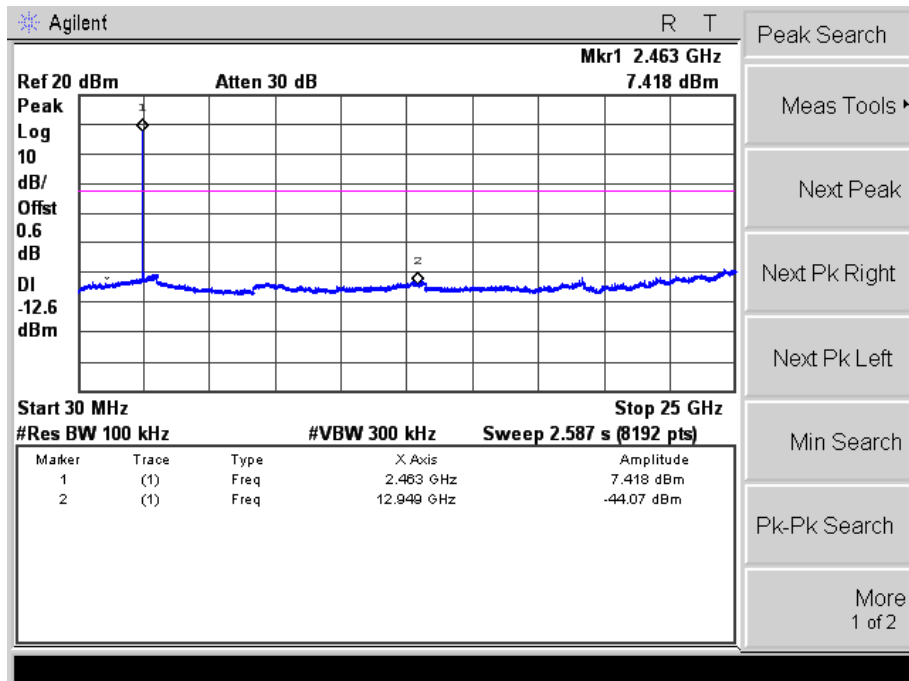


CH 06 (Ant A and B)





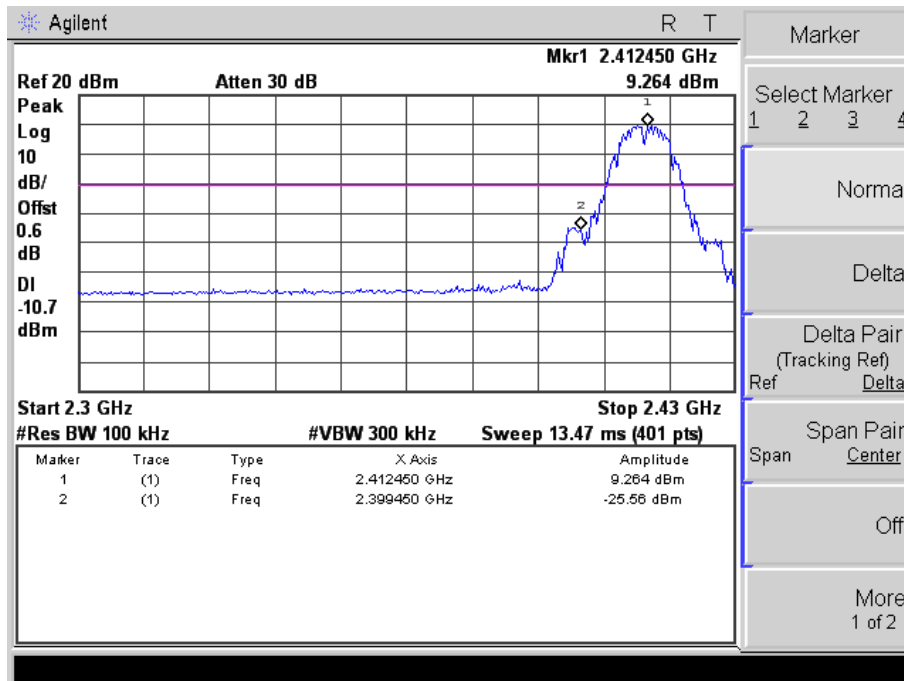
CH 11 (Ant A and B)



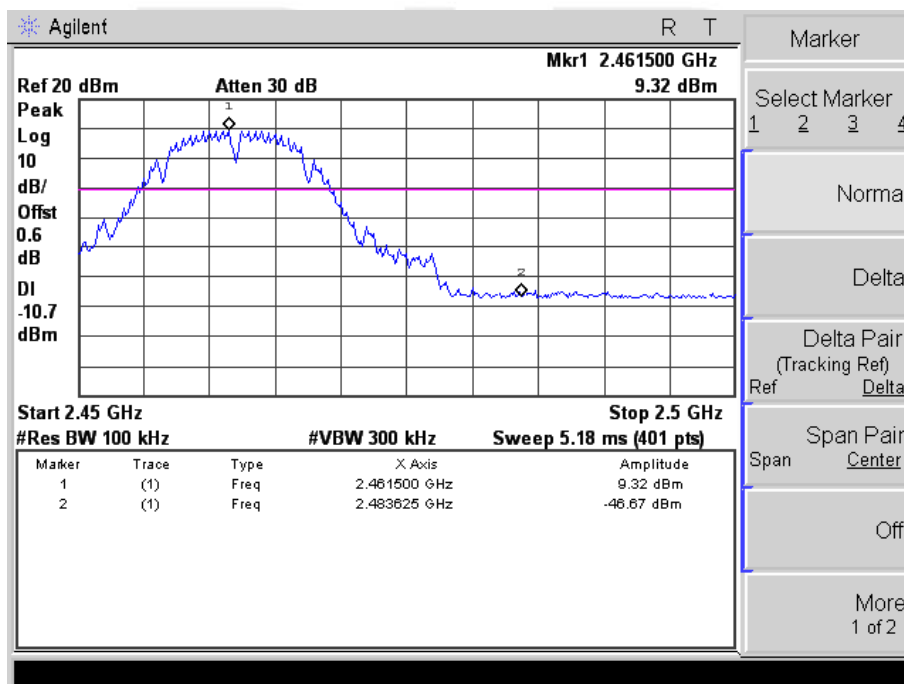


Band edge

CH 01 (Ant A and B)



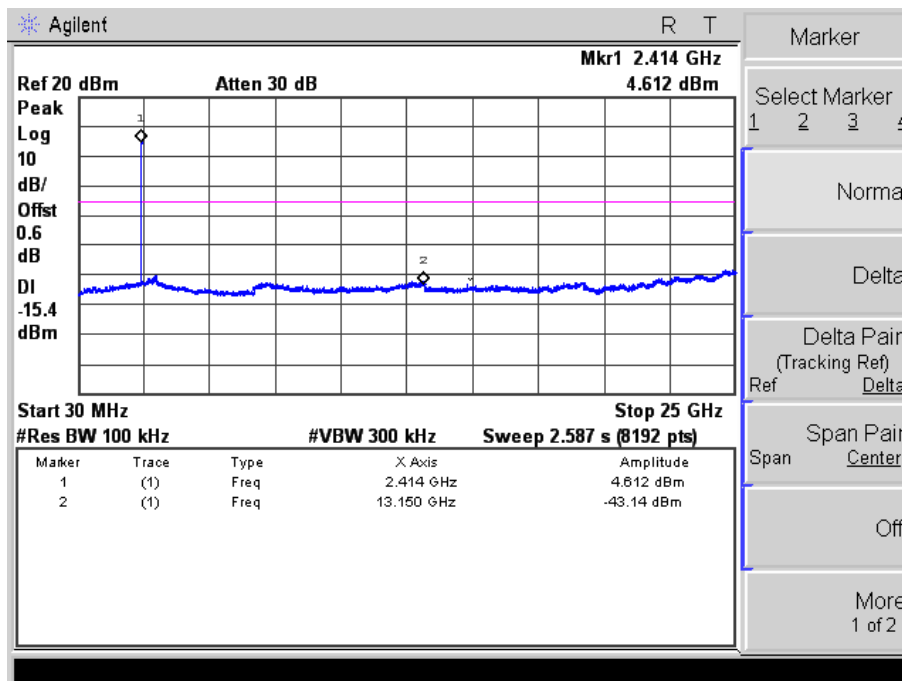
CH 11 (Ant A and B)



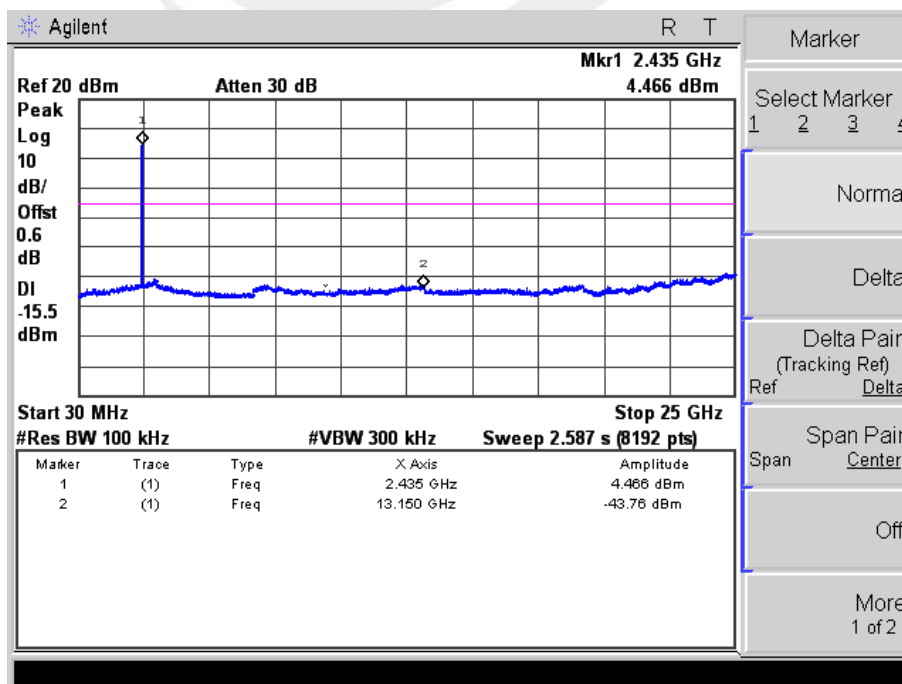


EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX g Mode /CH01, CH06, CH11		

CH 01 (Ant A and B)

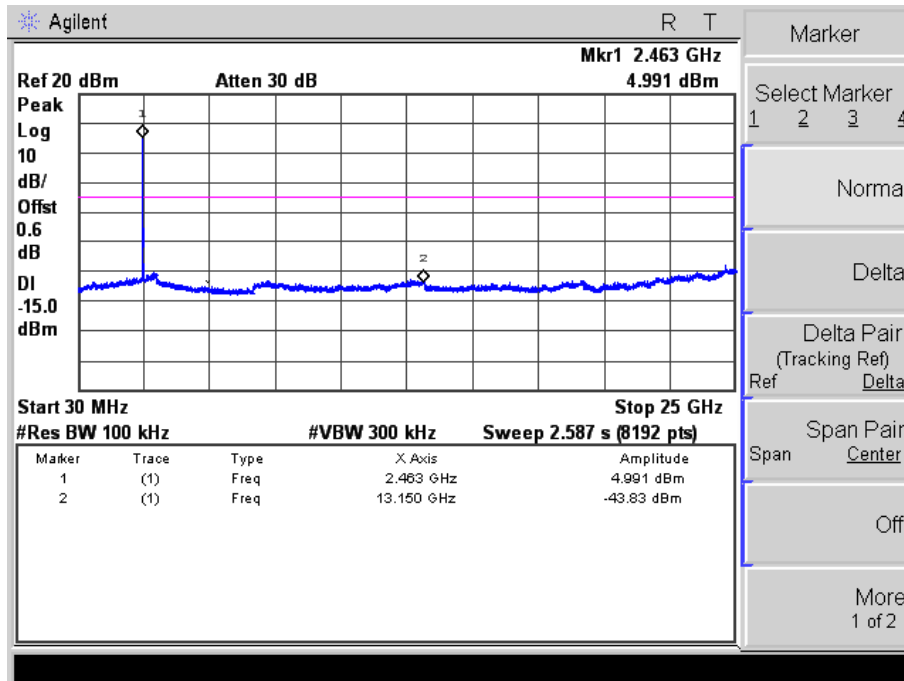


CH 06 (Ant A and B)





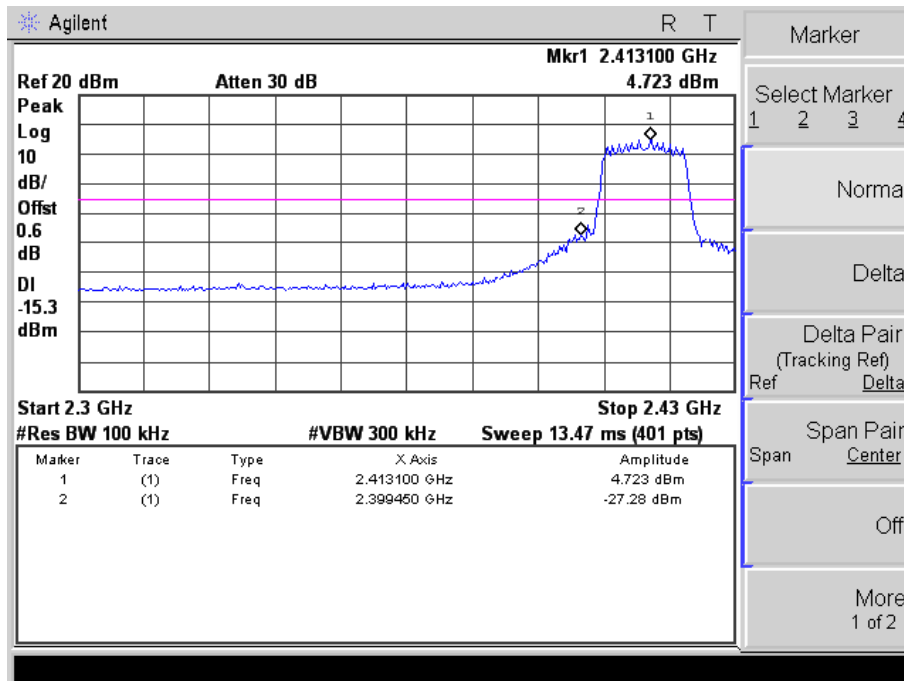
CH 11 (Ant A and B)



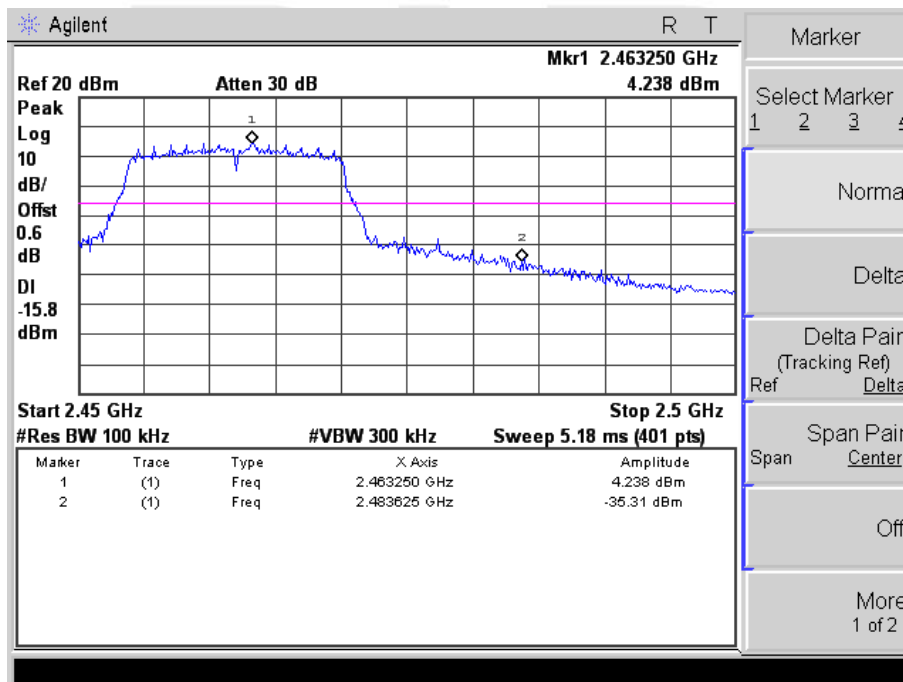


Band edge

CH 01 (Ant A and B)



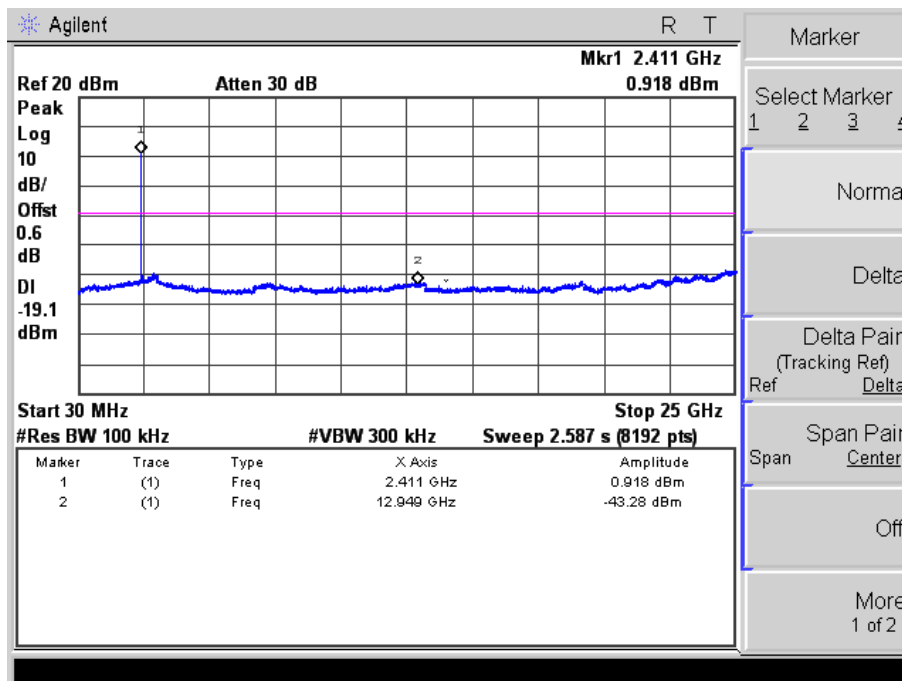
CH11 (Ant A and B)



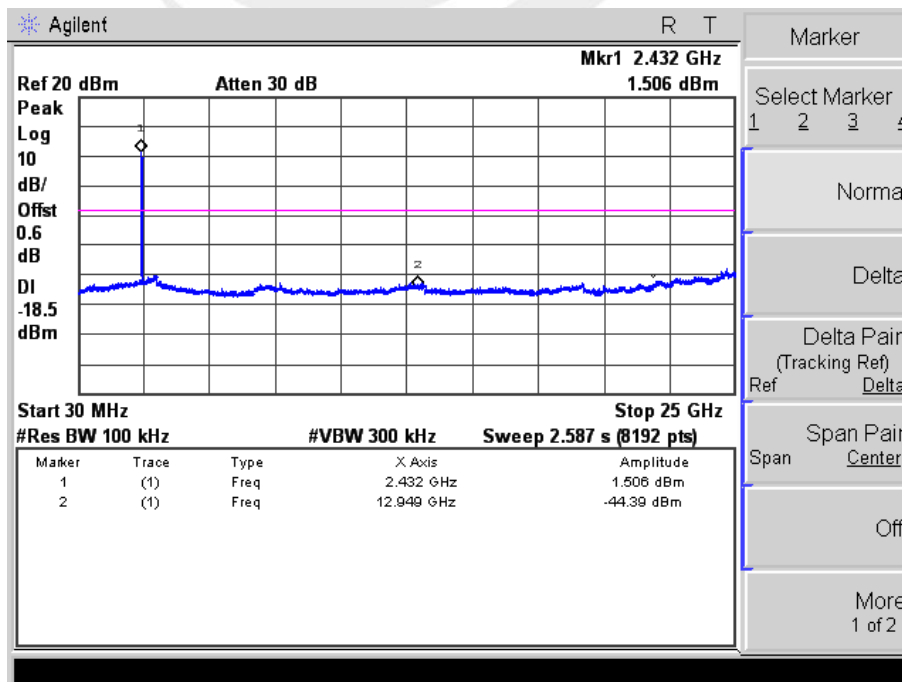


EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX n Mode(20M) /CH01, CH06, CH11		

CH 01 (Ant A and B)

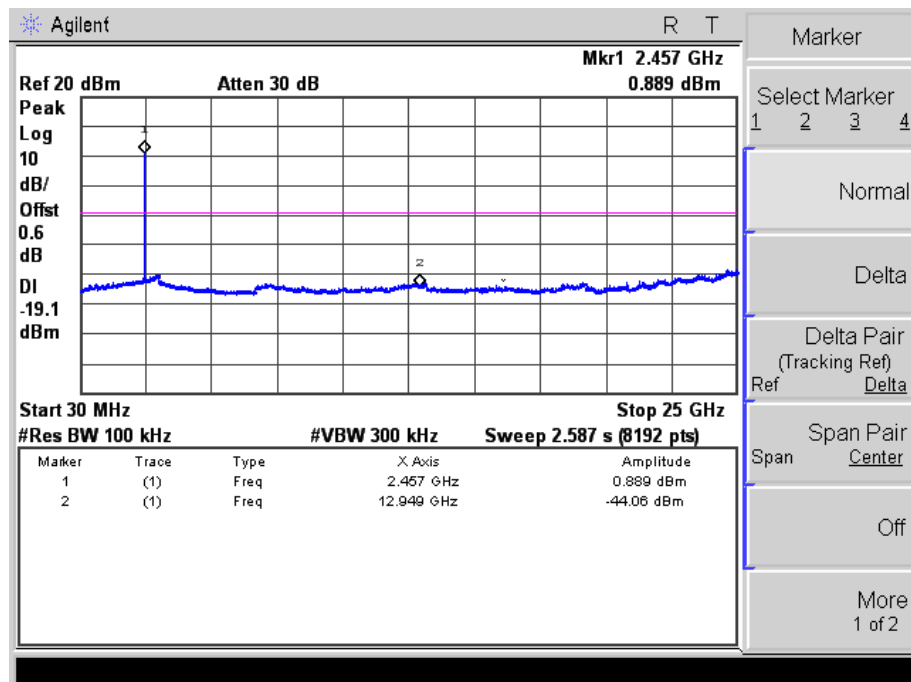


CH 06 (Ant A and B)





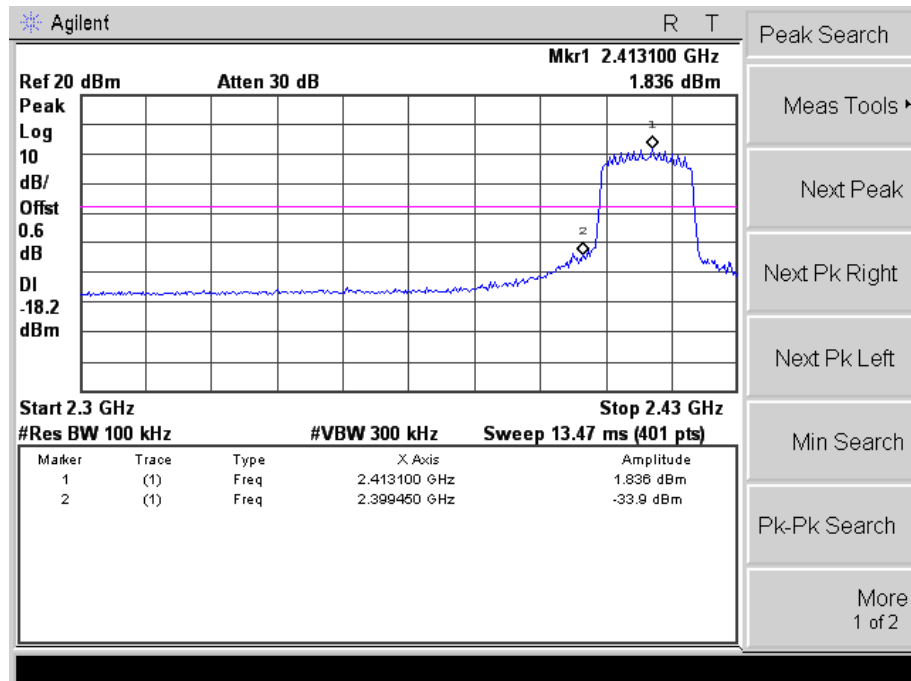
CH 11 (Ant A and B)



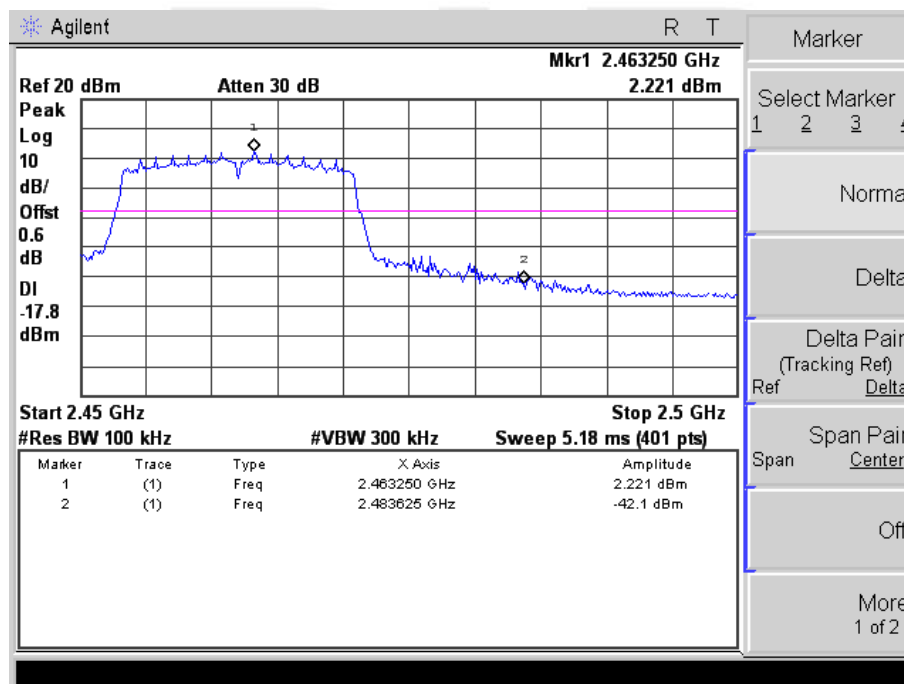


Band edge

CH 01 (Ant A and B)



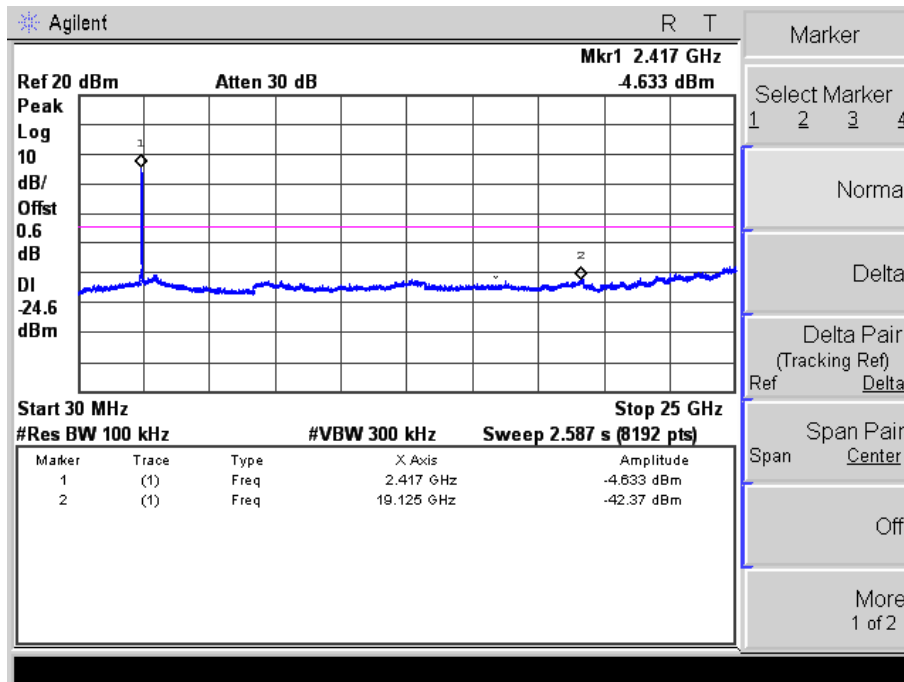
CH 11 (Ant A and B)



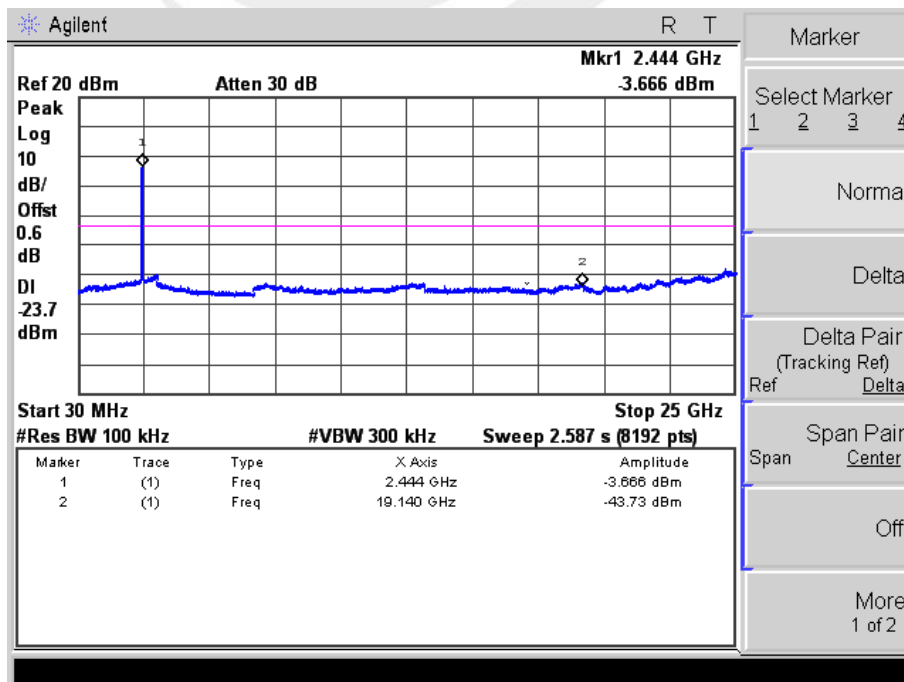


EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX n Mode(40M) /CH03, CH06, CH09		

CH 03 (Ant A and B)

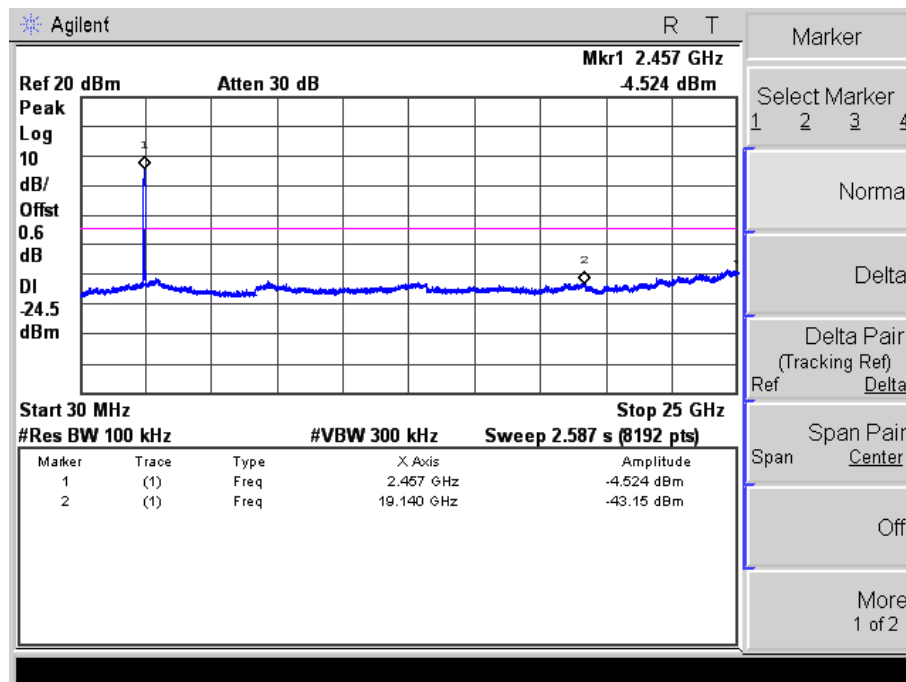


CH06 (Ant A and B)





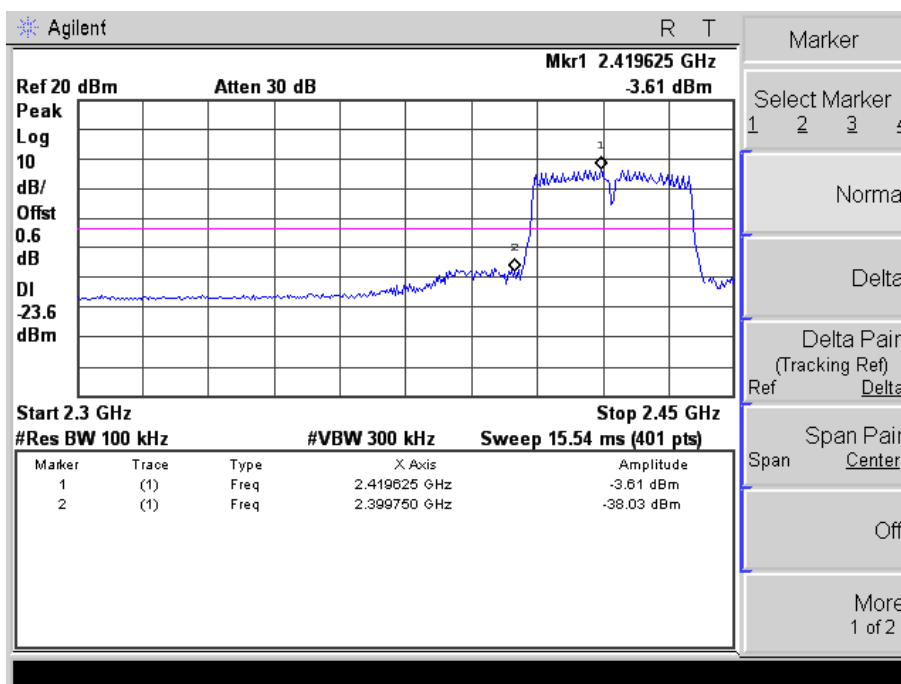
CH09 (Ant A and B)



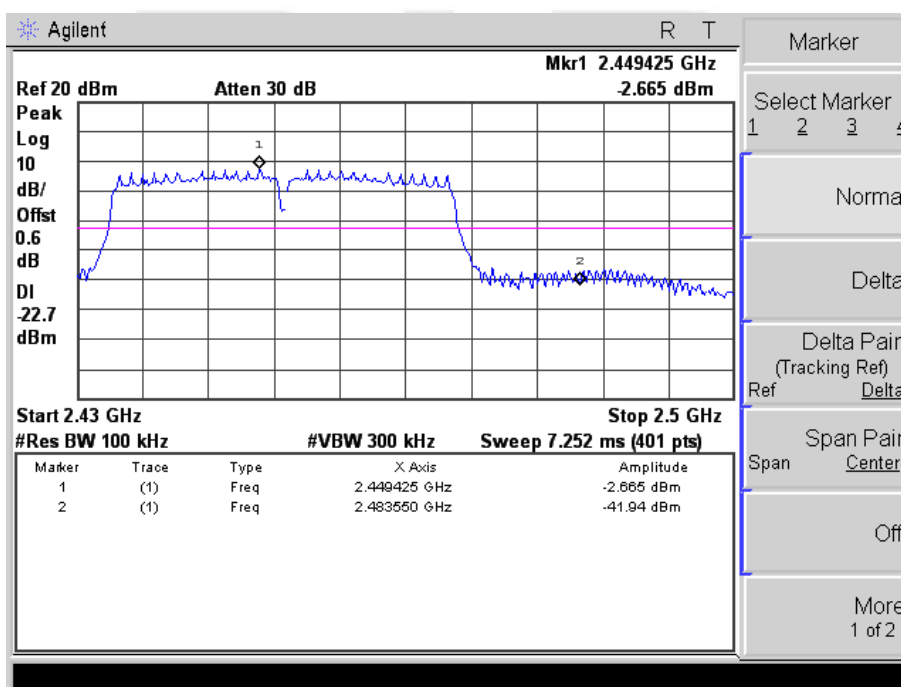


Band edge

CH03 (Ant A and B)



CH 09 (Ant A and B)





5. POWER SPECTRAL DENSITY TEST

5.1 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

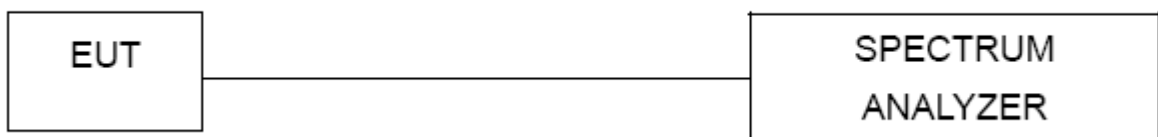
5.2 TEST PROCEDURE

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

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

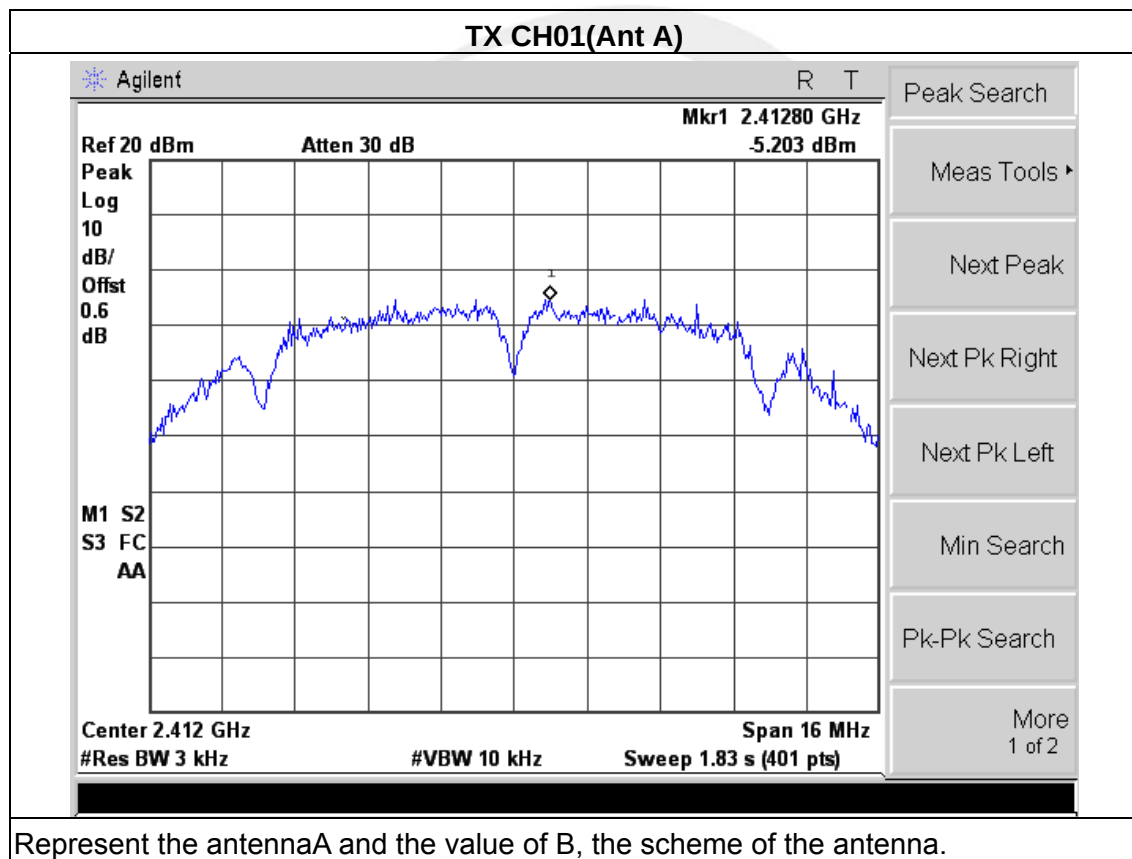
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

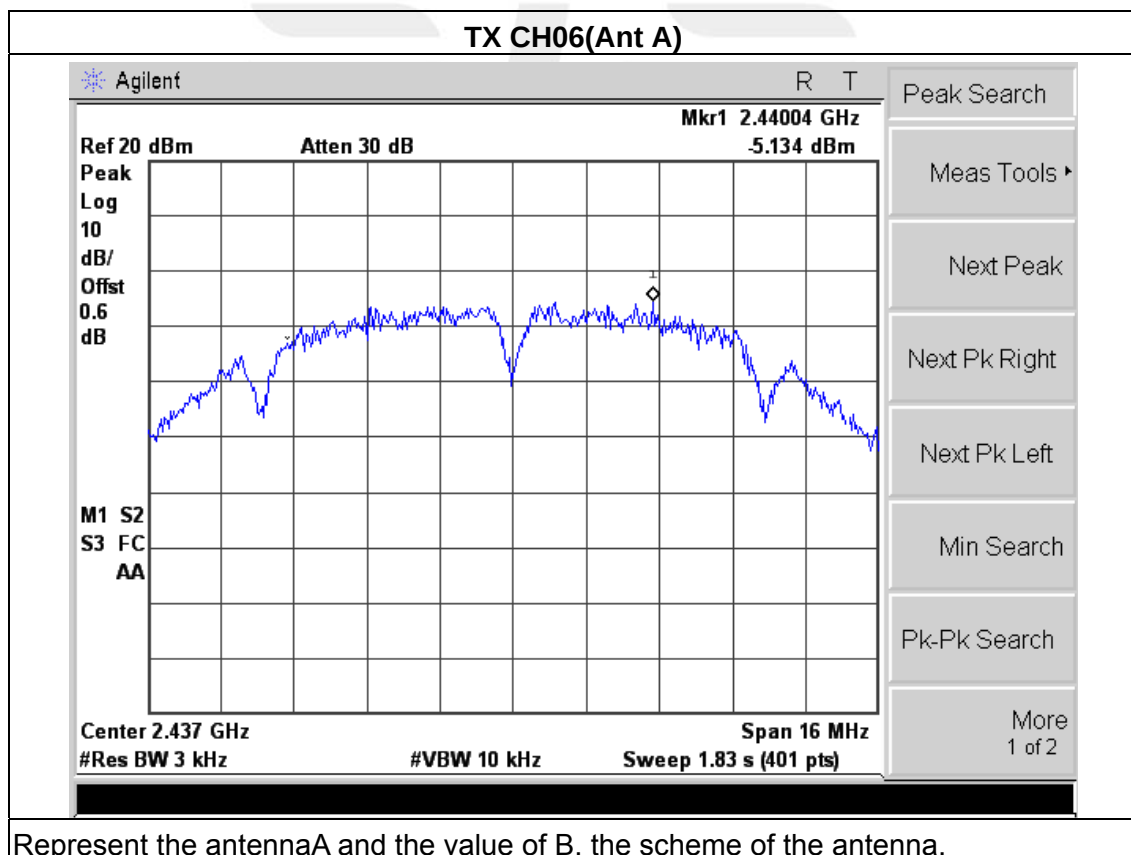
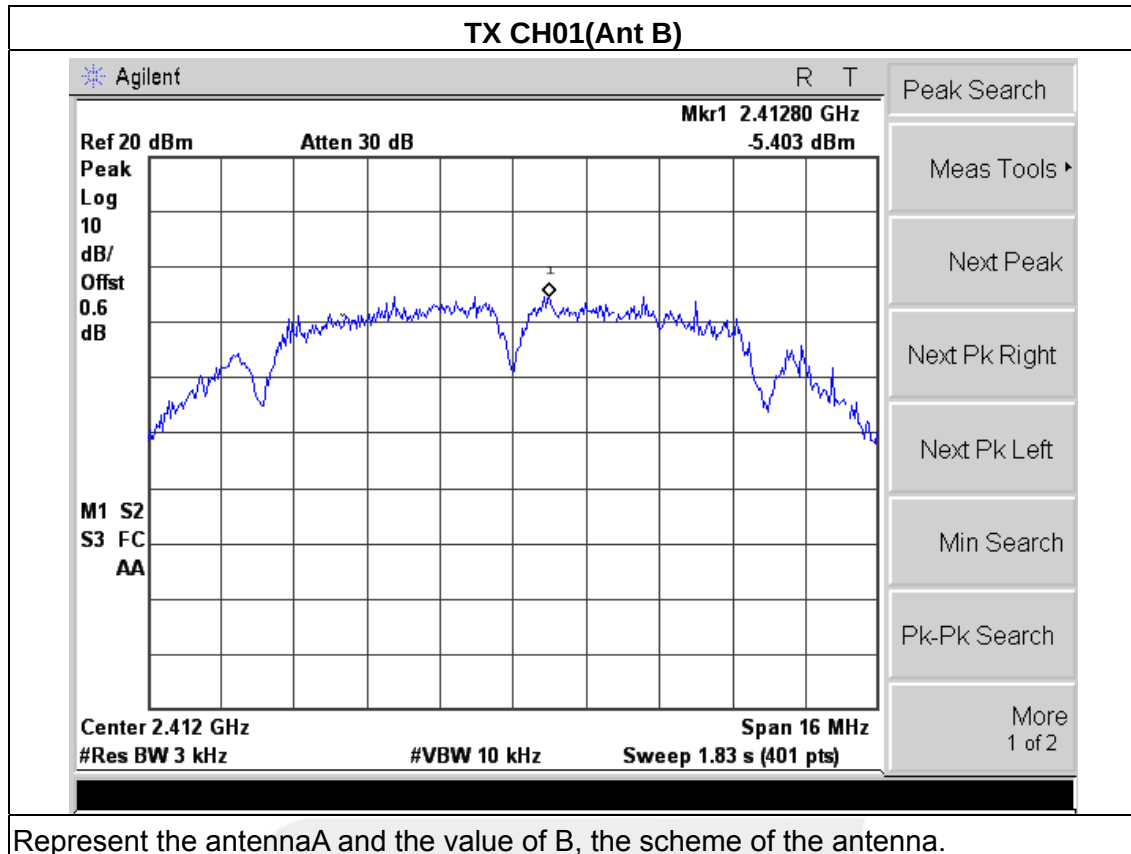


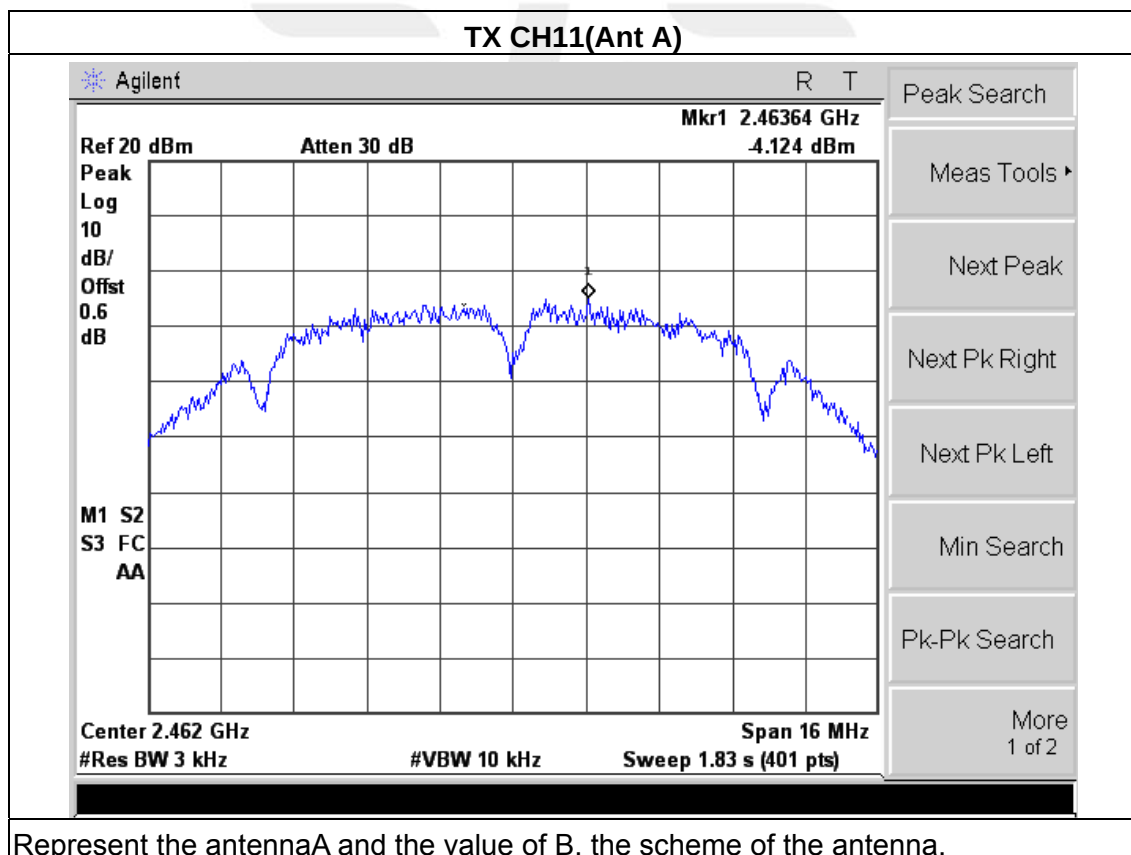
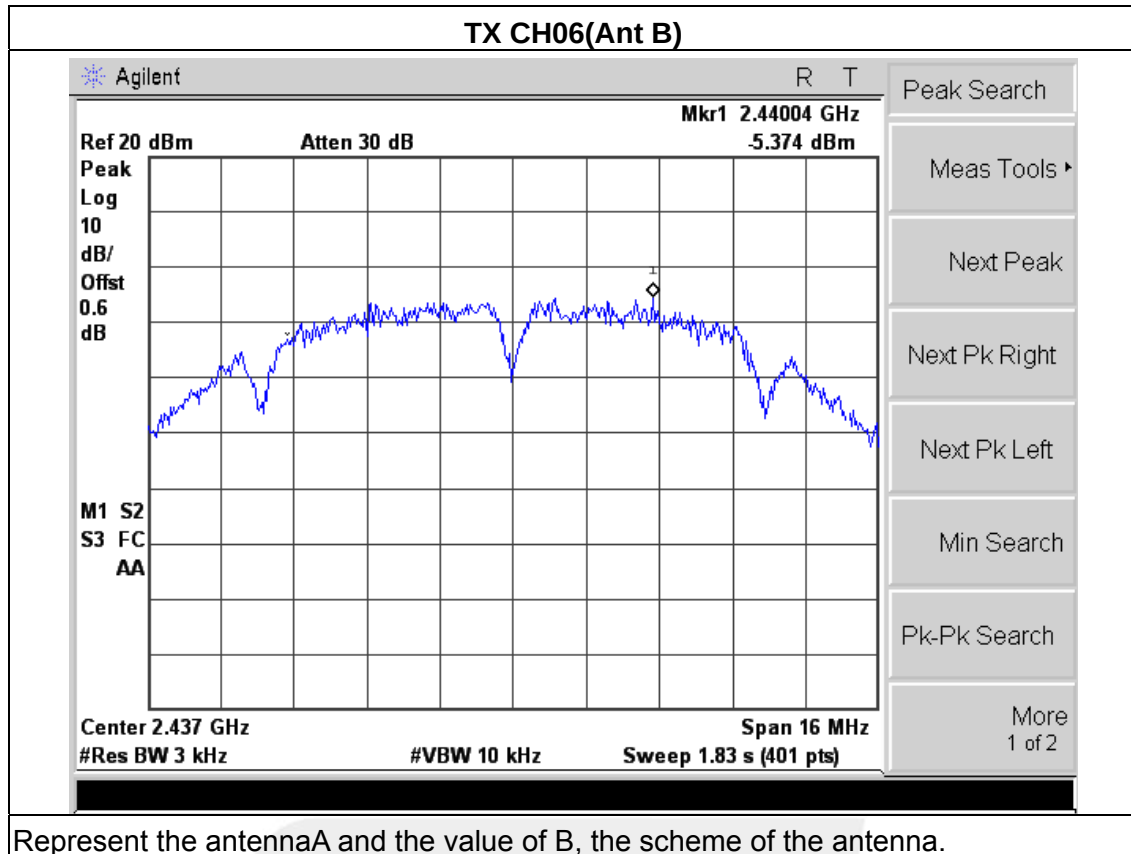
5.6 TEST RESULTS

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX b Mode /CH01, CH06, CH11		

Frequency	Power Density (A/dBm)	Power Density (B/dBm)	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-5.203	-5.403	-2.292	8	PASS
2437 MHz	-5.134	-5.374	-2.242	8	PASS
2462 MHz	-4.124	-4.896	-1.483	8	PASS

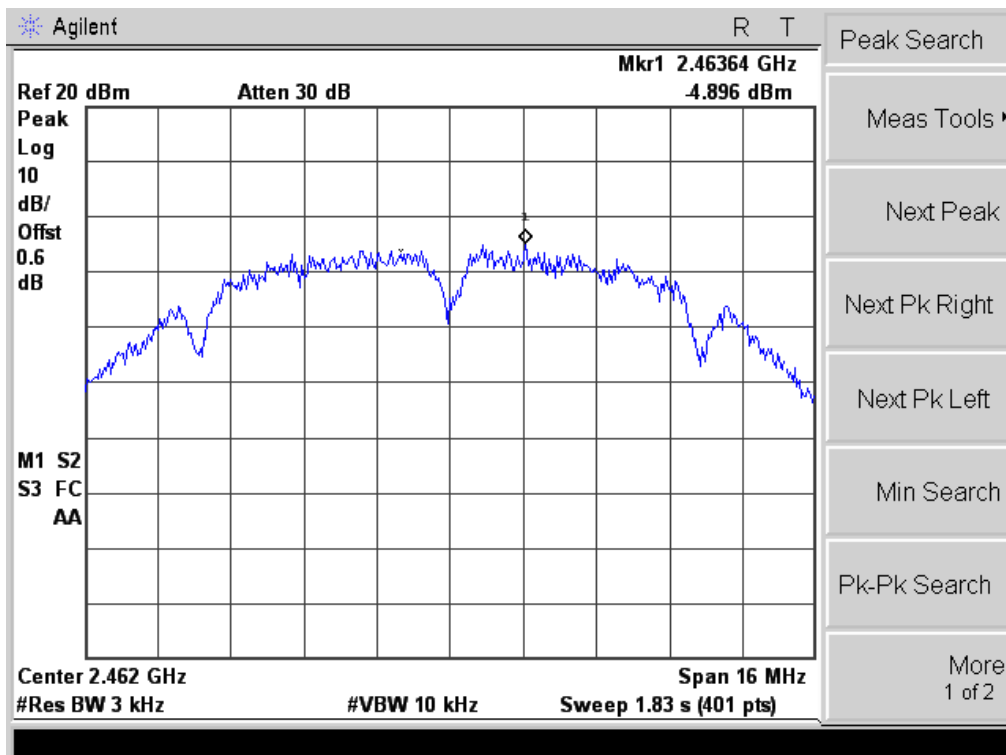








TX CH11(Ant B)

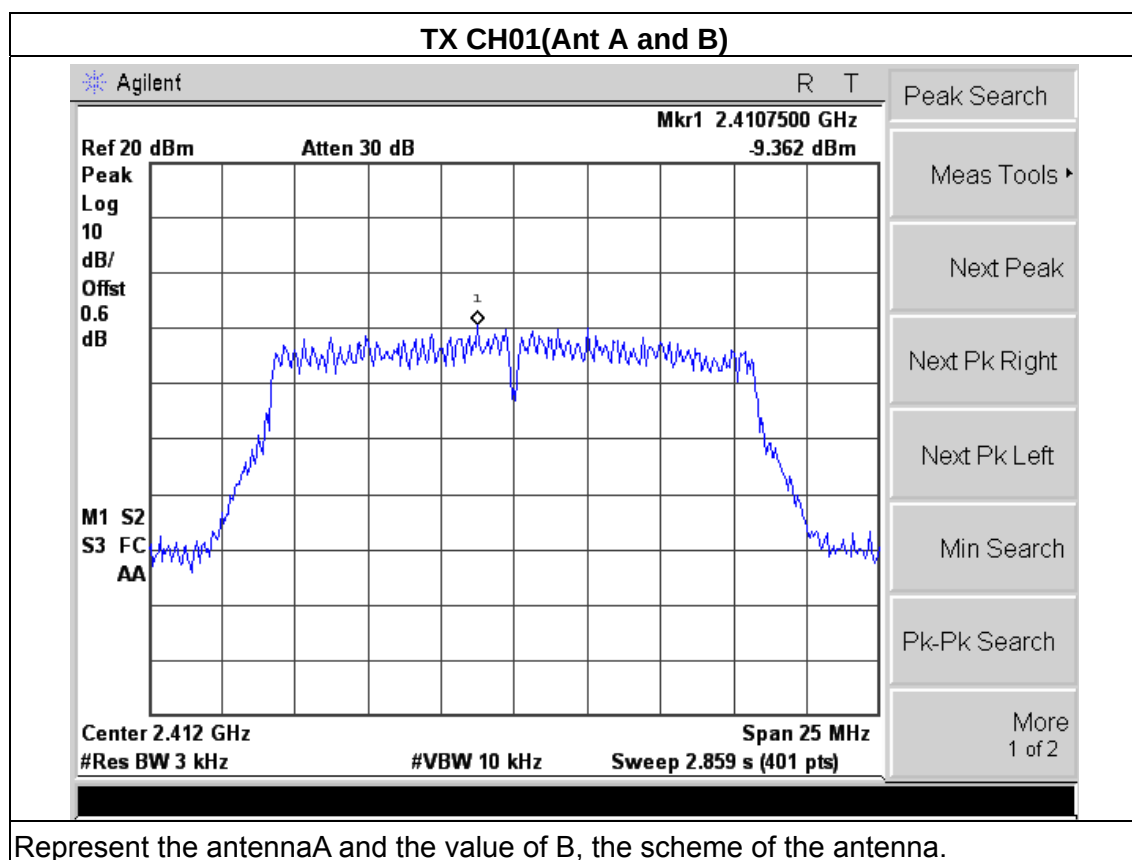


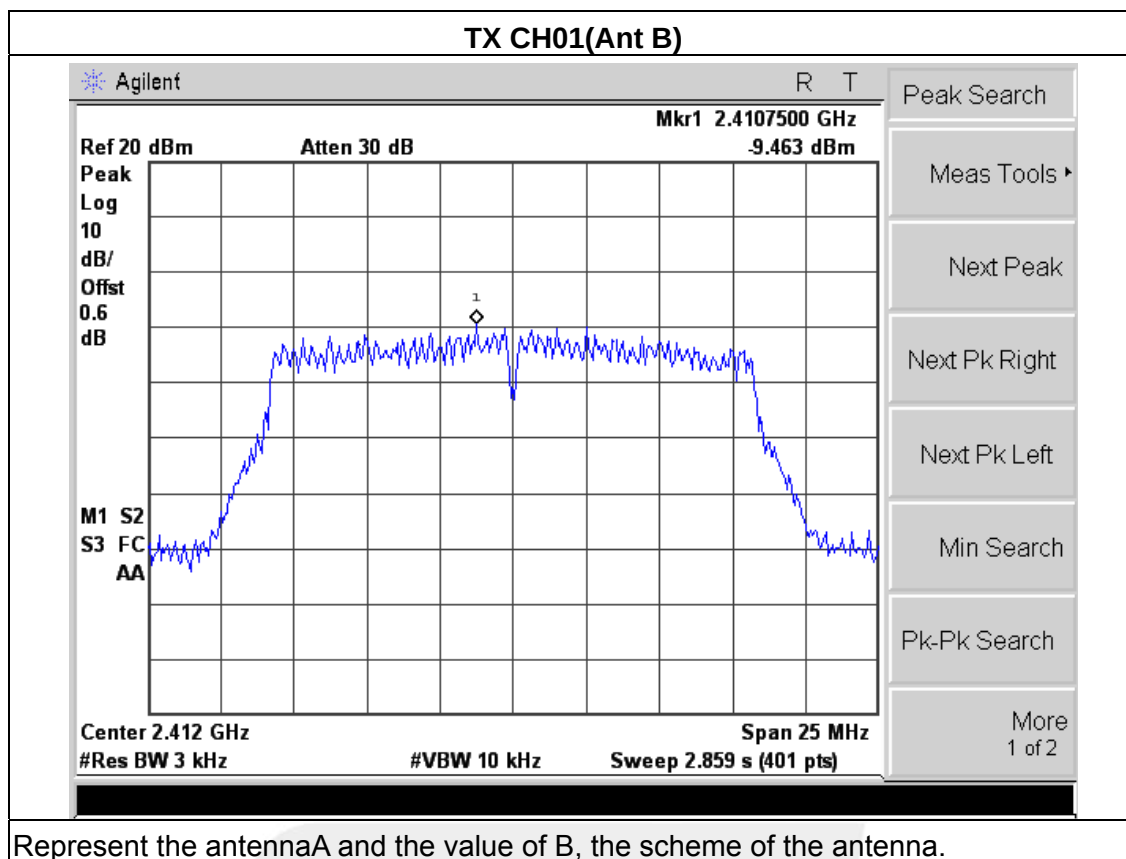
Represent the antennaA and the value of B, the scheme of the antenna.



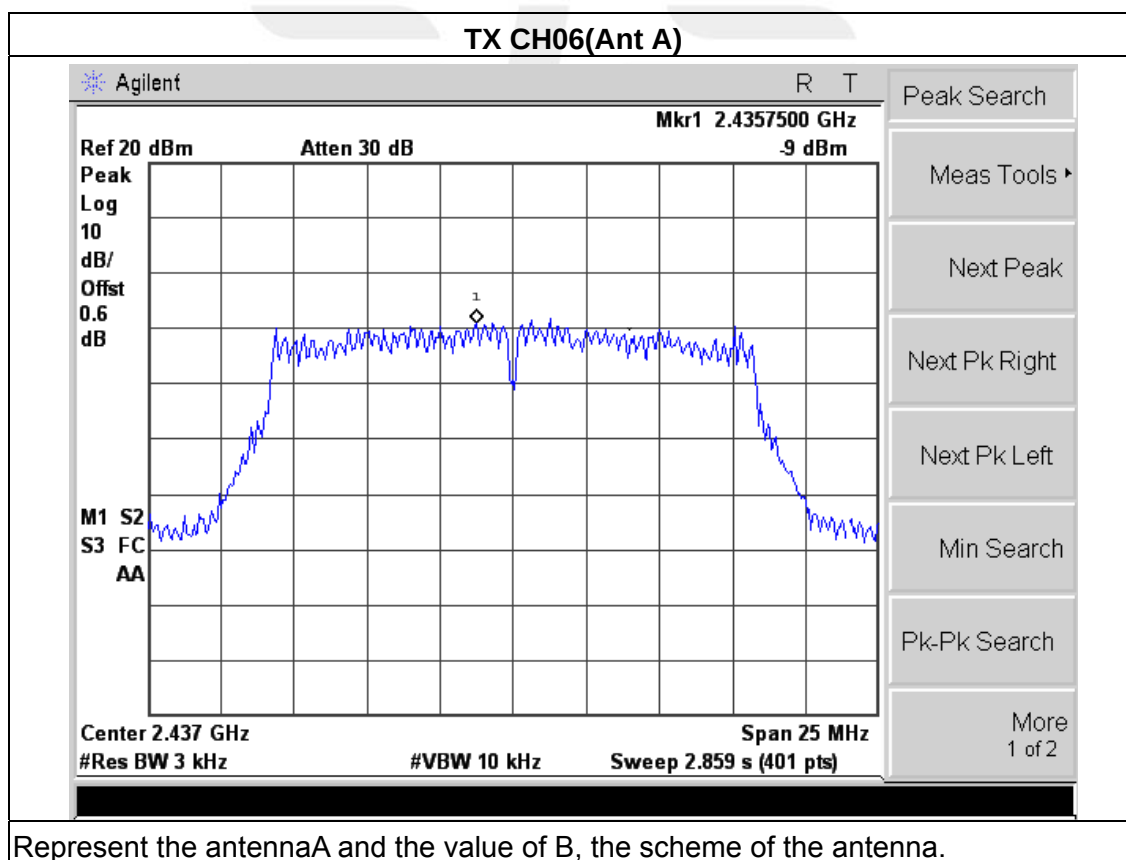
EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX g Mode /CH01, CH06, CH11		

Frequency	Power Density (A/dBm)	Power Density (B/dBm)	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-9.362	-9.463	-6.402	8	PASS
2437 MHz	-9.000	-9.245	-6.110	8	PASS
2462 MHz	-9.011	-9.154	-6.072	8	PASS

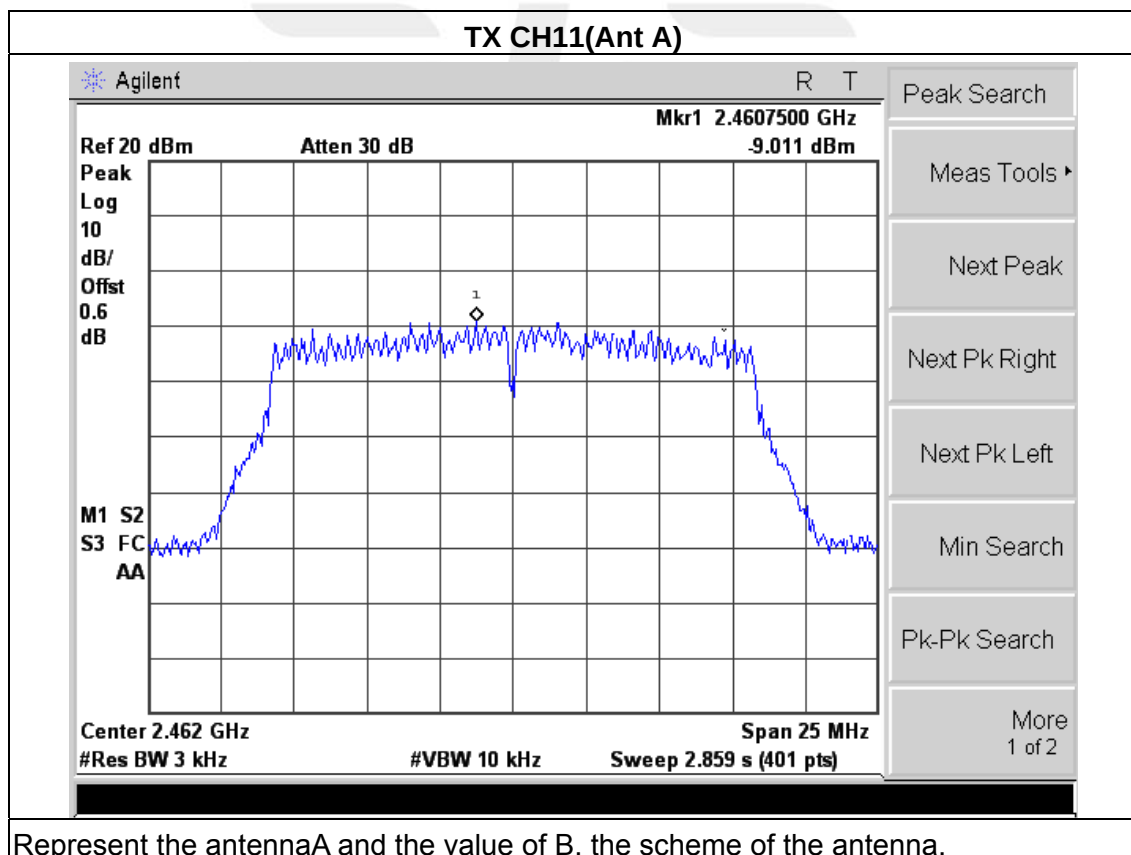
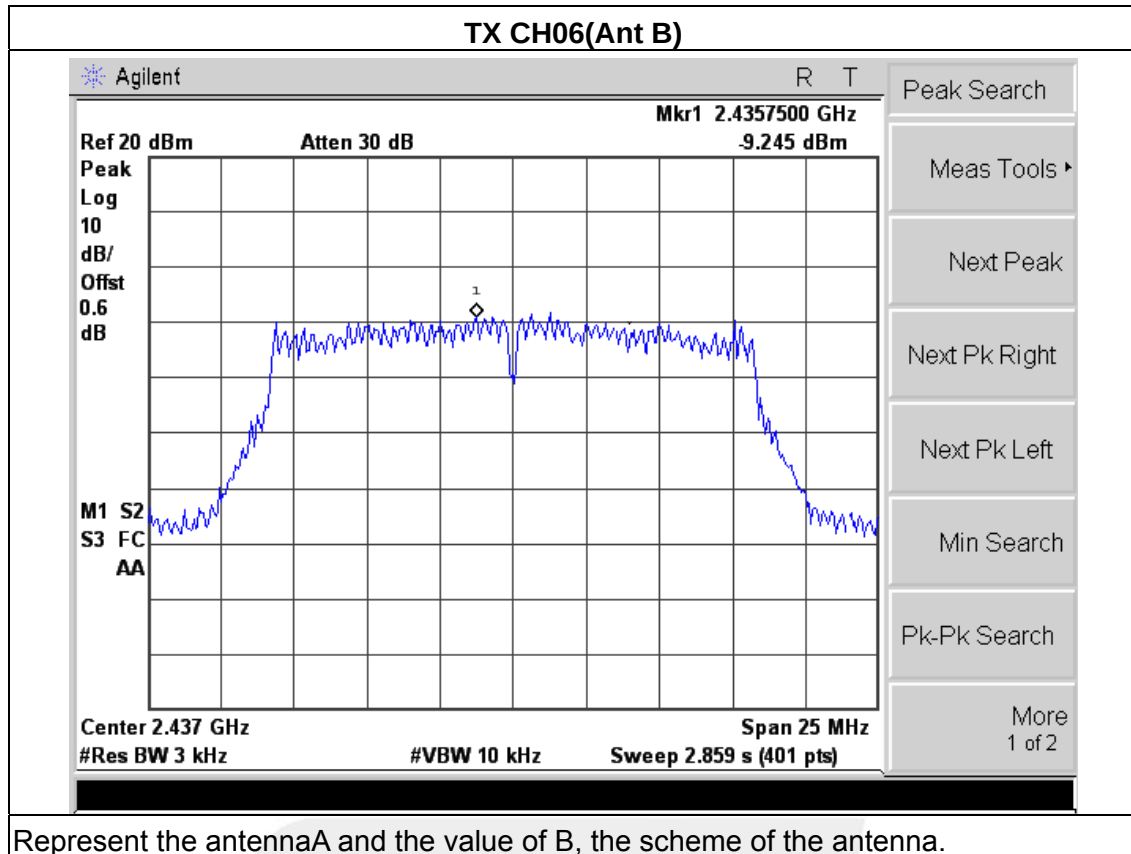


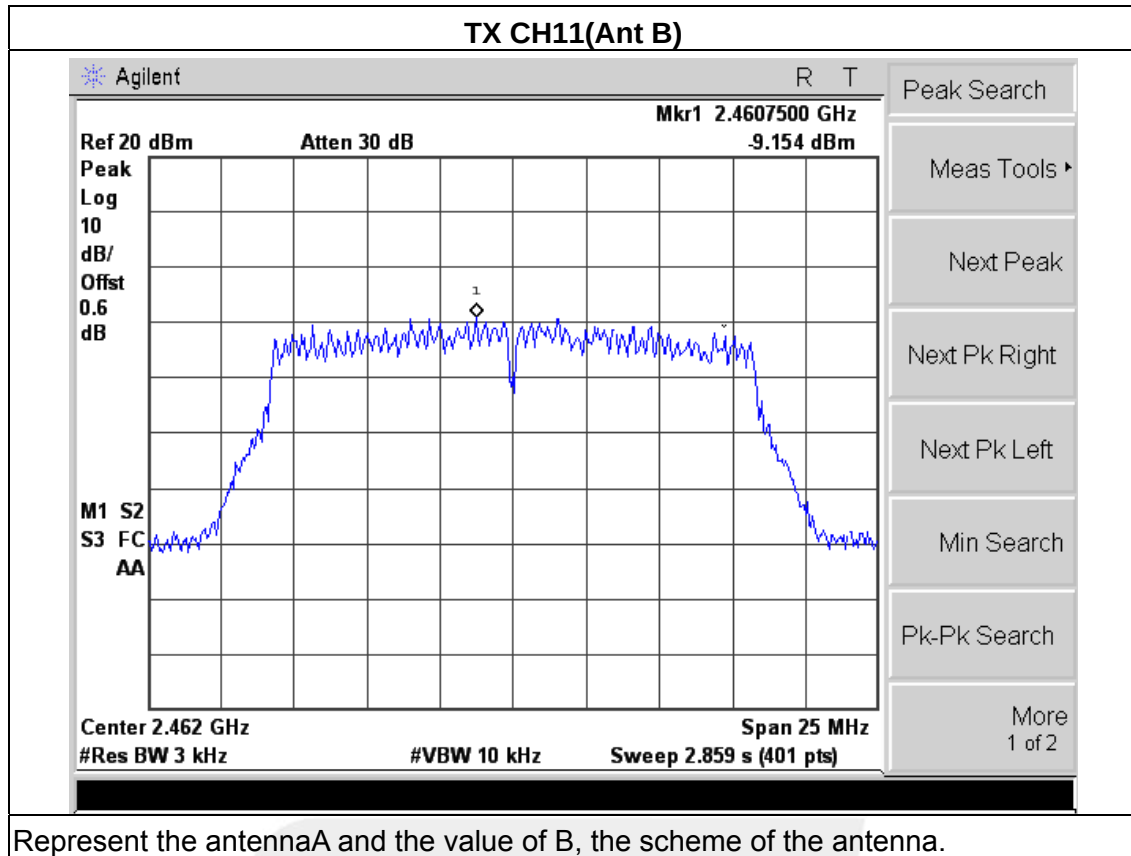


Represent the antennaA and the value of B, the scheme of the antenna.



Represent the antennaA and the value of B, the scheme of the antenna.





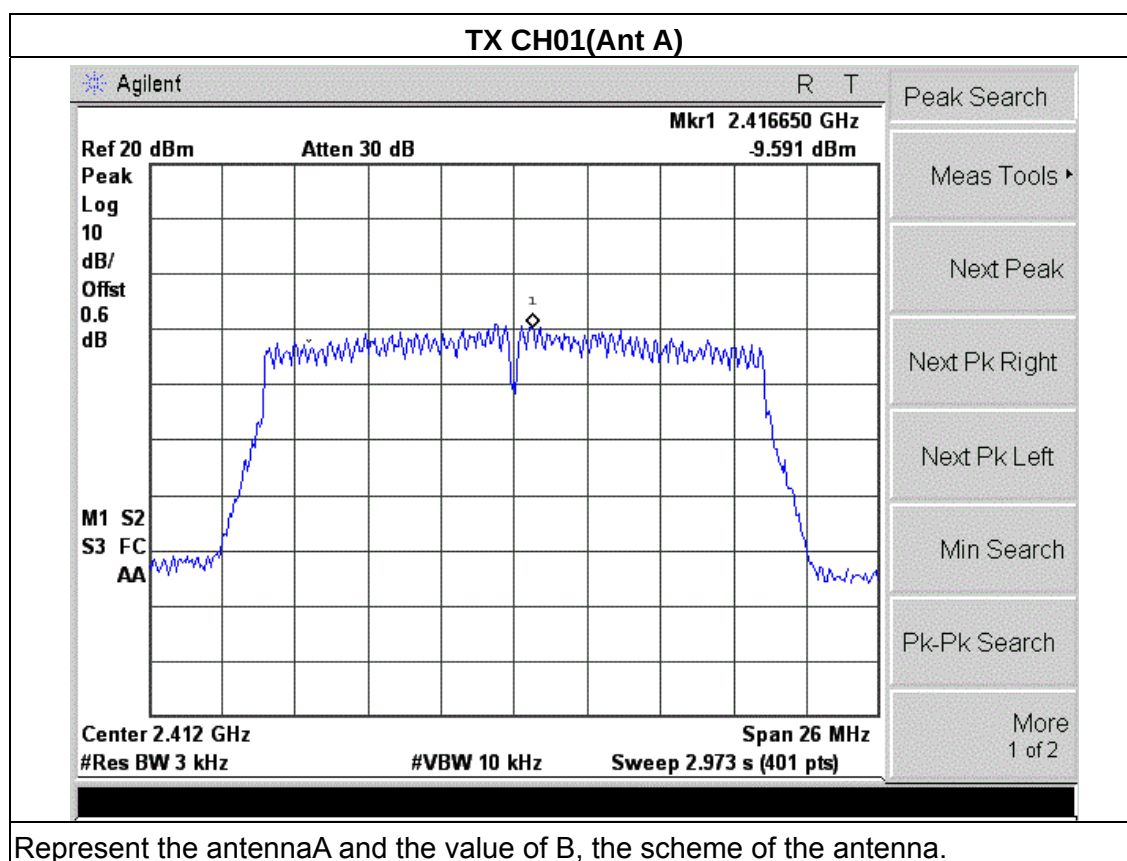
Represent the antennaA and the value of B, the scheme of the antenna.

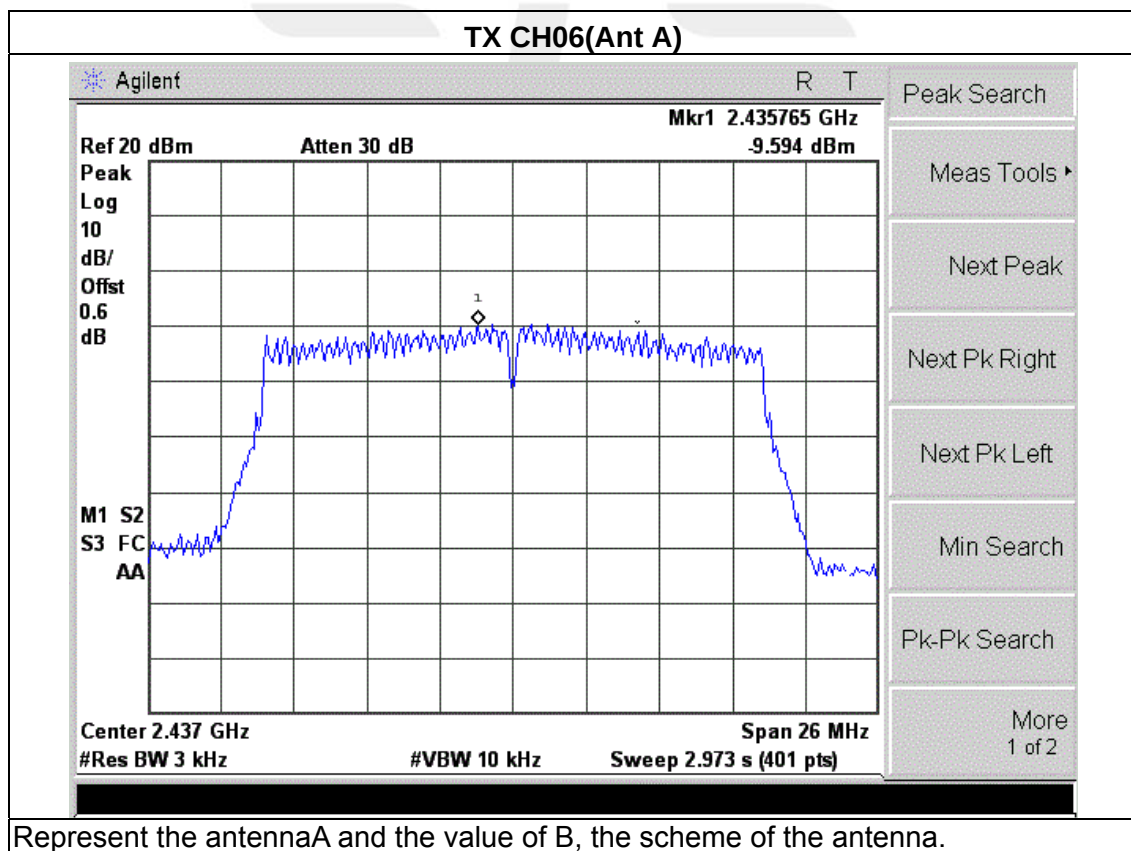
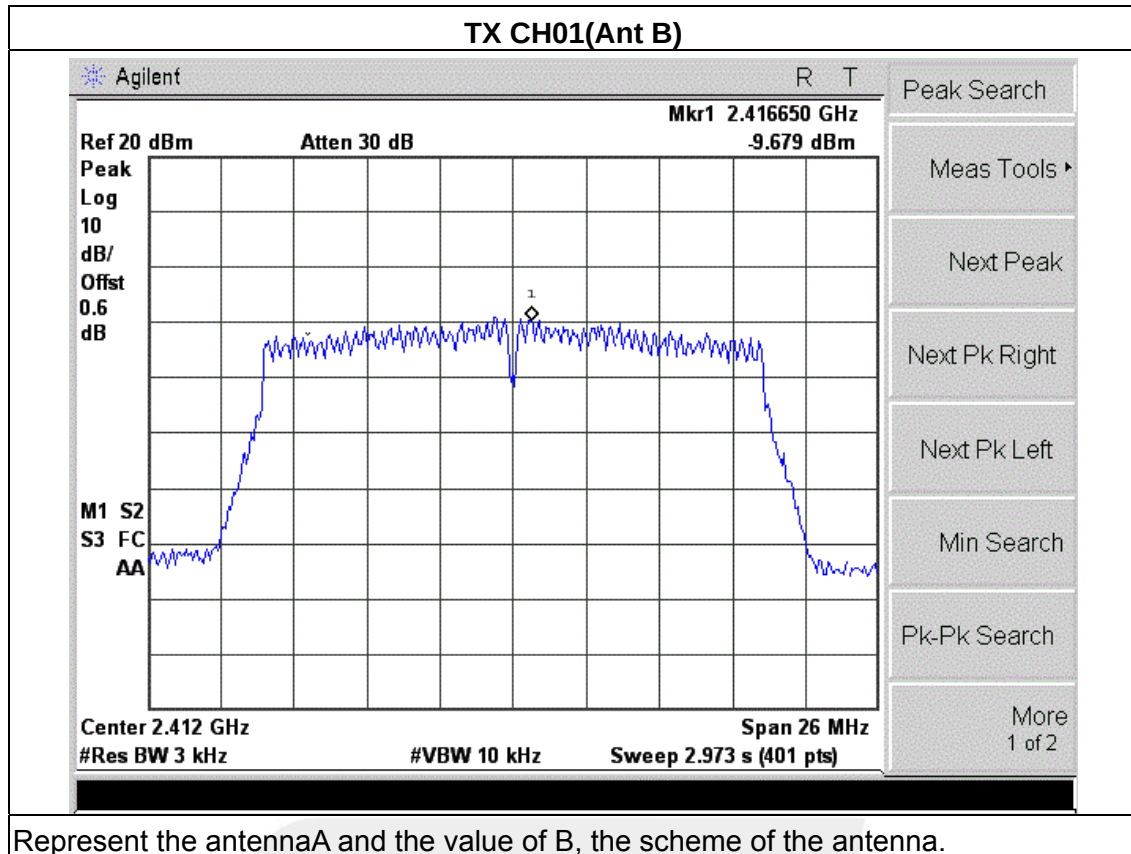


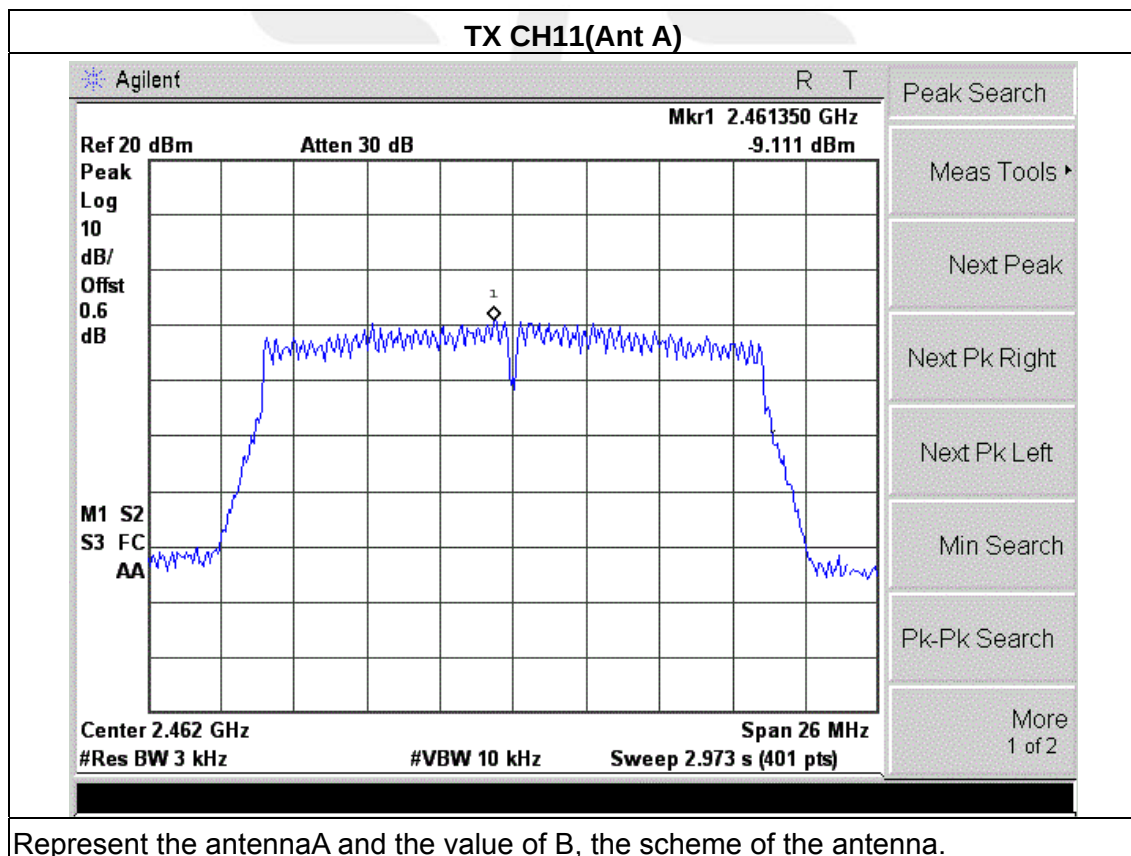
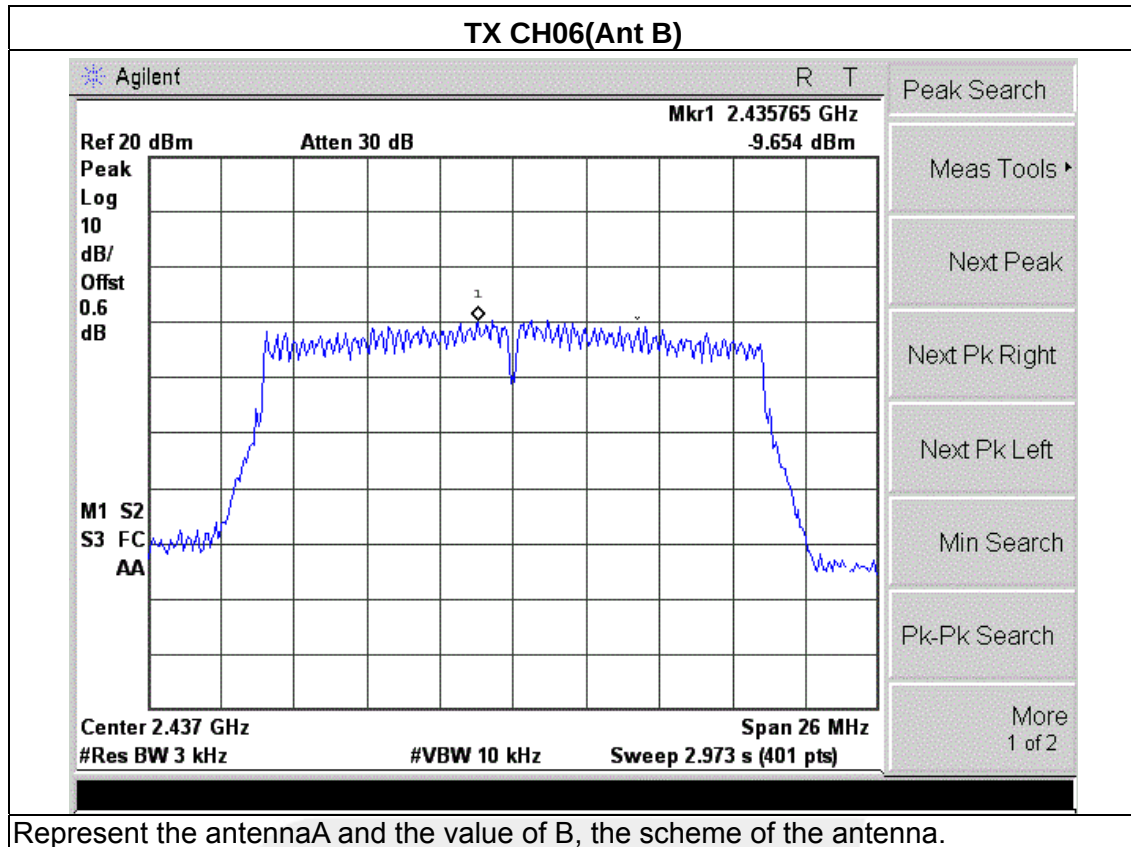


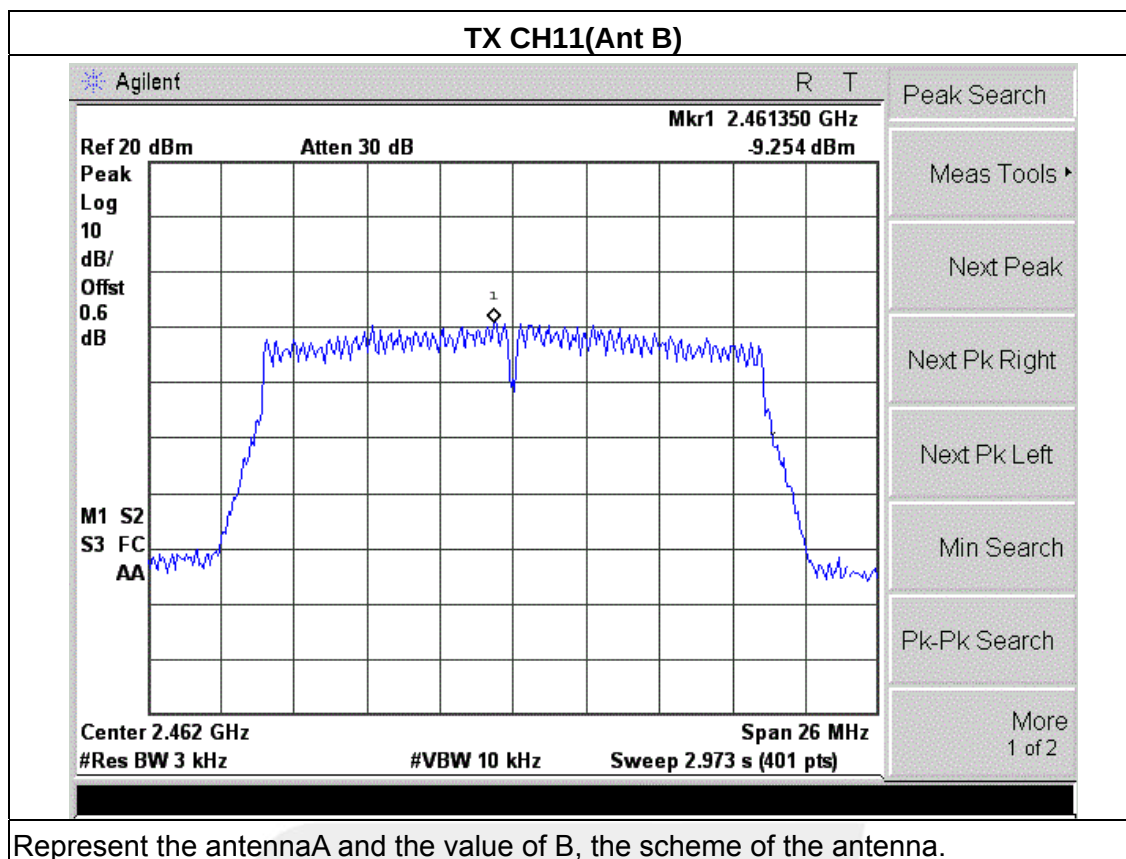
EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX n Mode(20M) /CH01, CH06, CH11		

Frequency	Power Density (A/dBm)	Power Density (B/dBm)	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-9.591	-9.679	-6.624	8	PASS
2437 MHz	-9.594	-9.654	-6.614	8	PASS
2462 MHz	-9.111	-9.254	-6.172	8	PASS





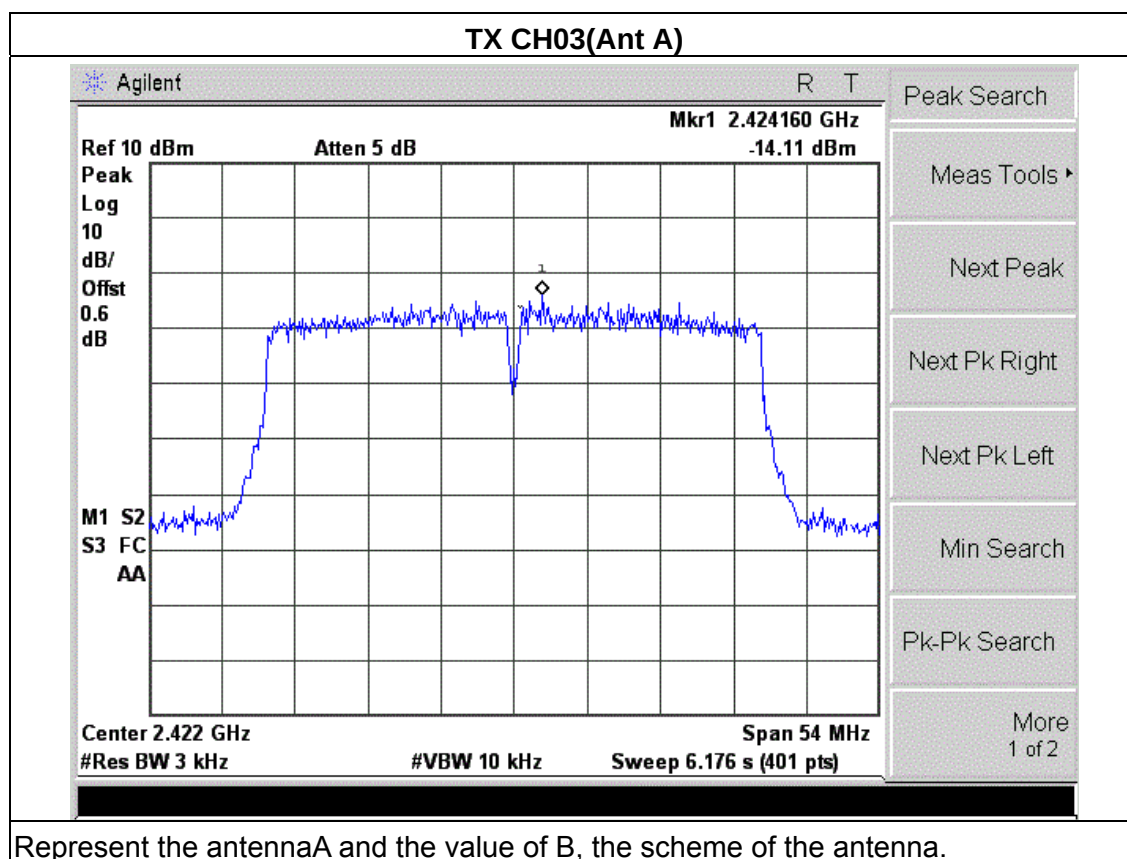


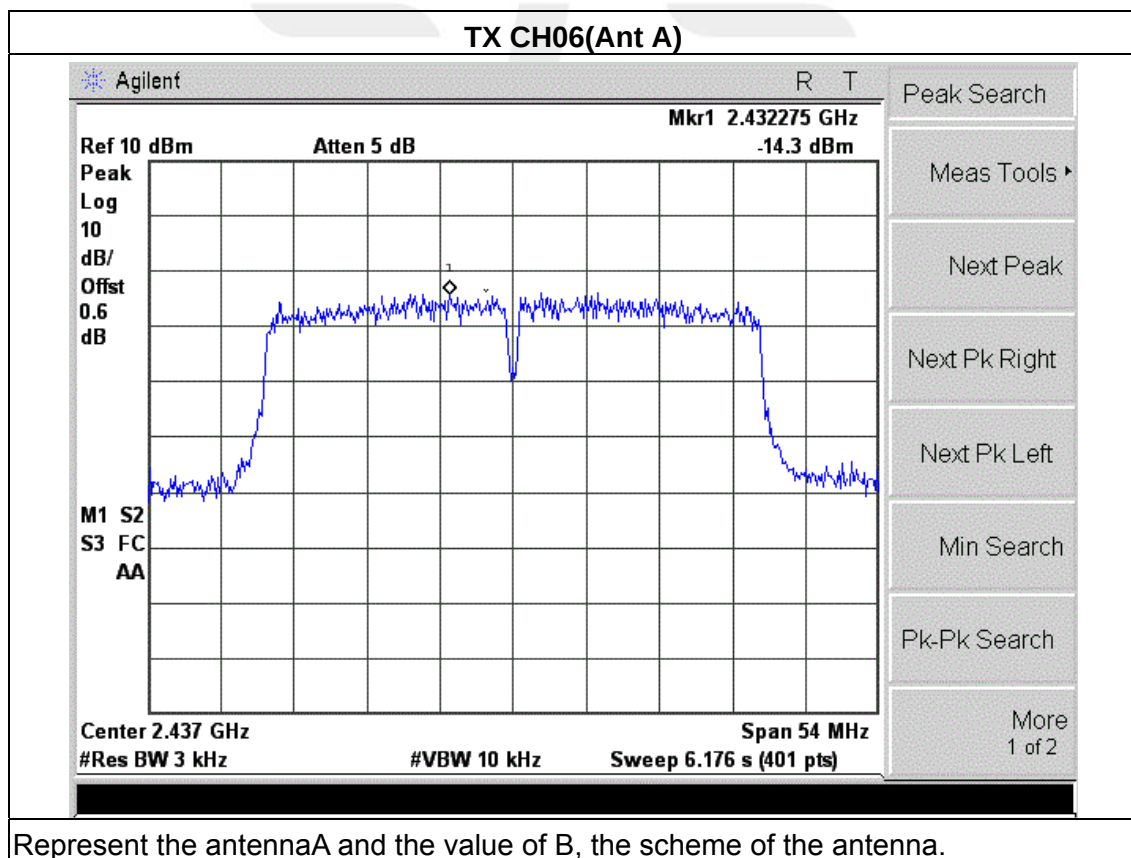
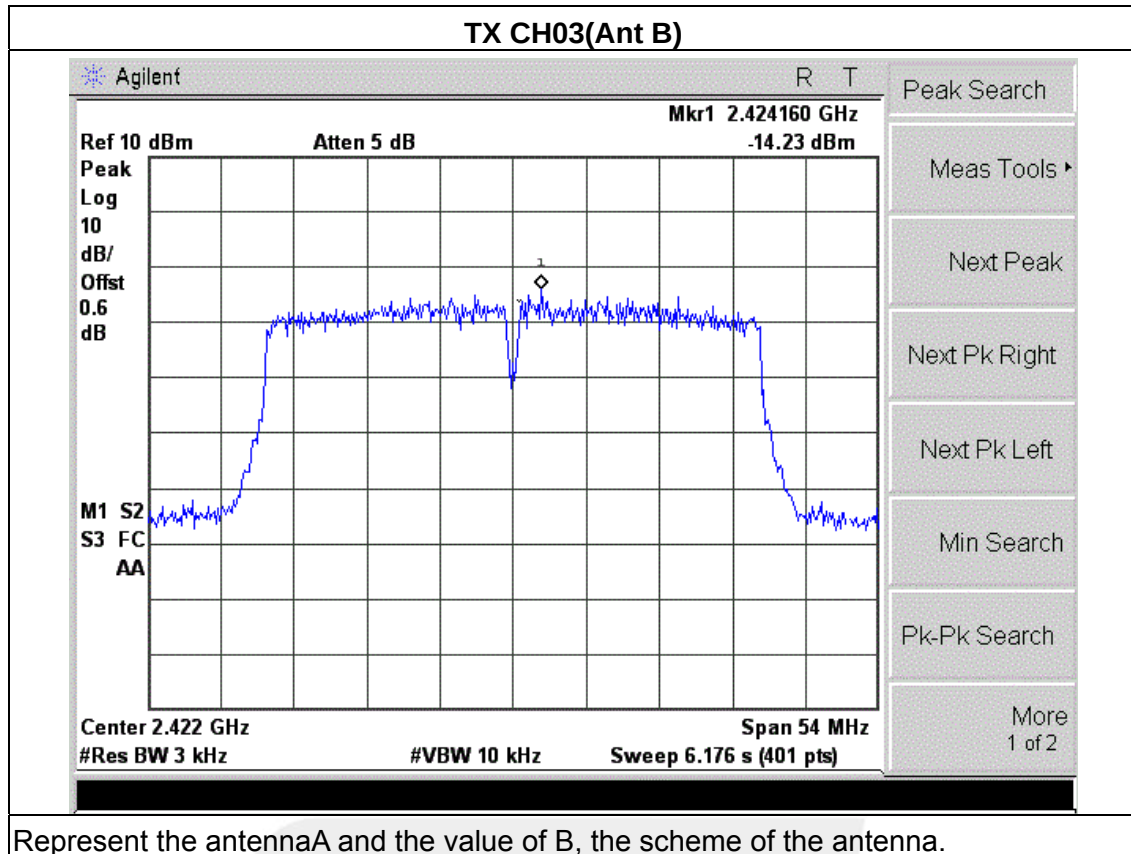


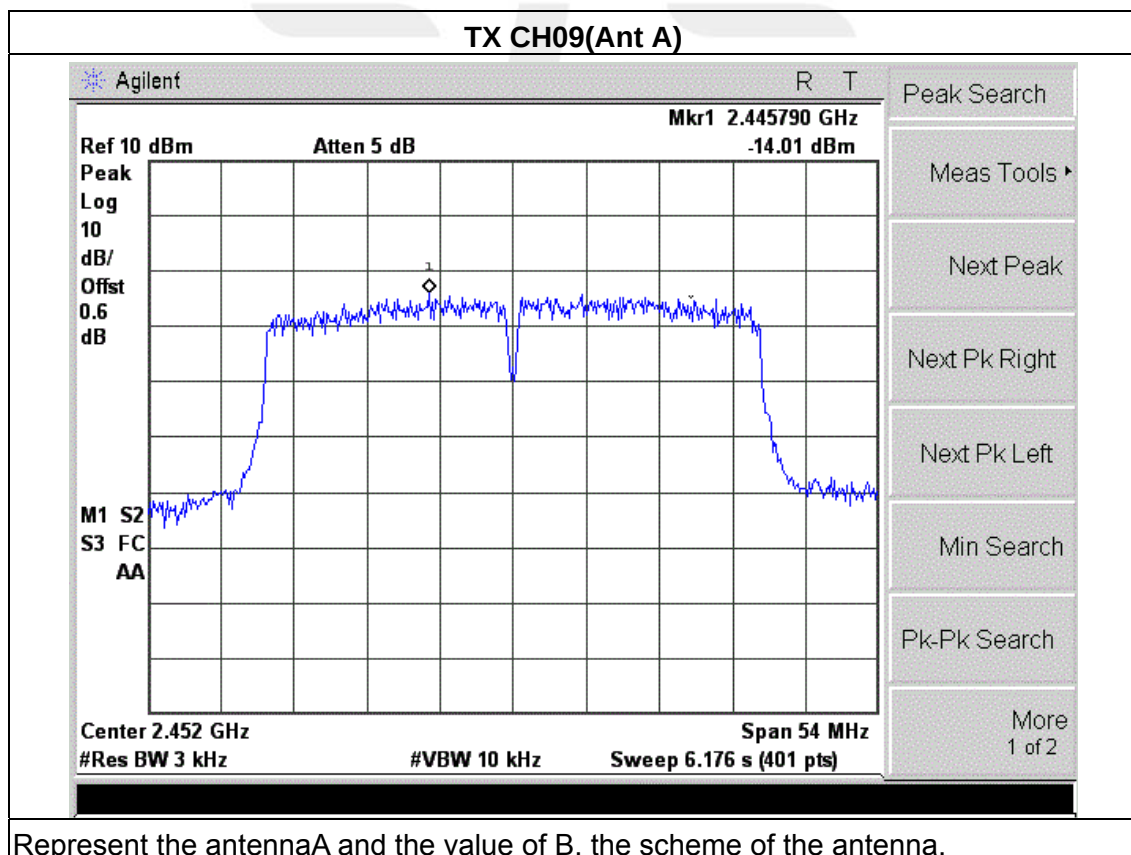
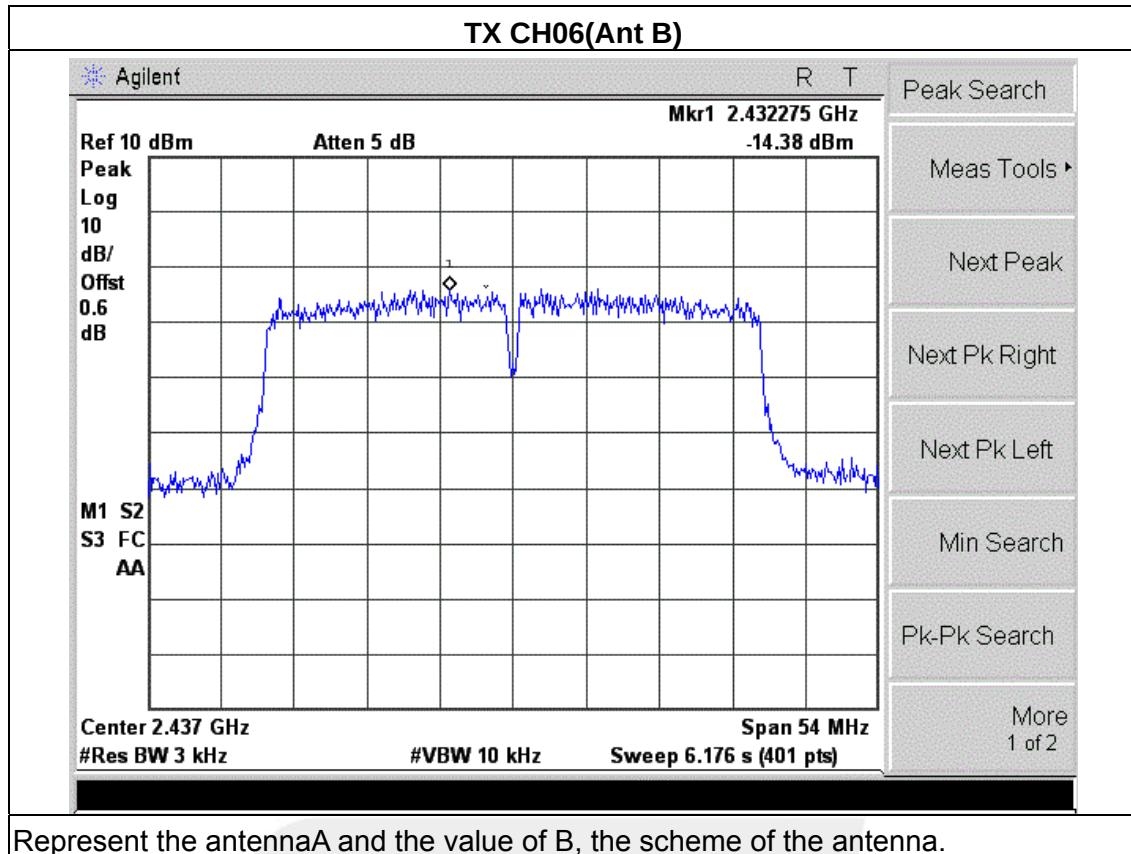


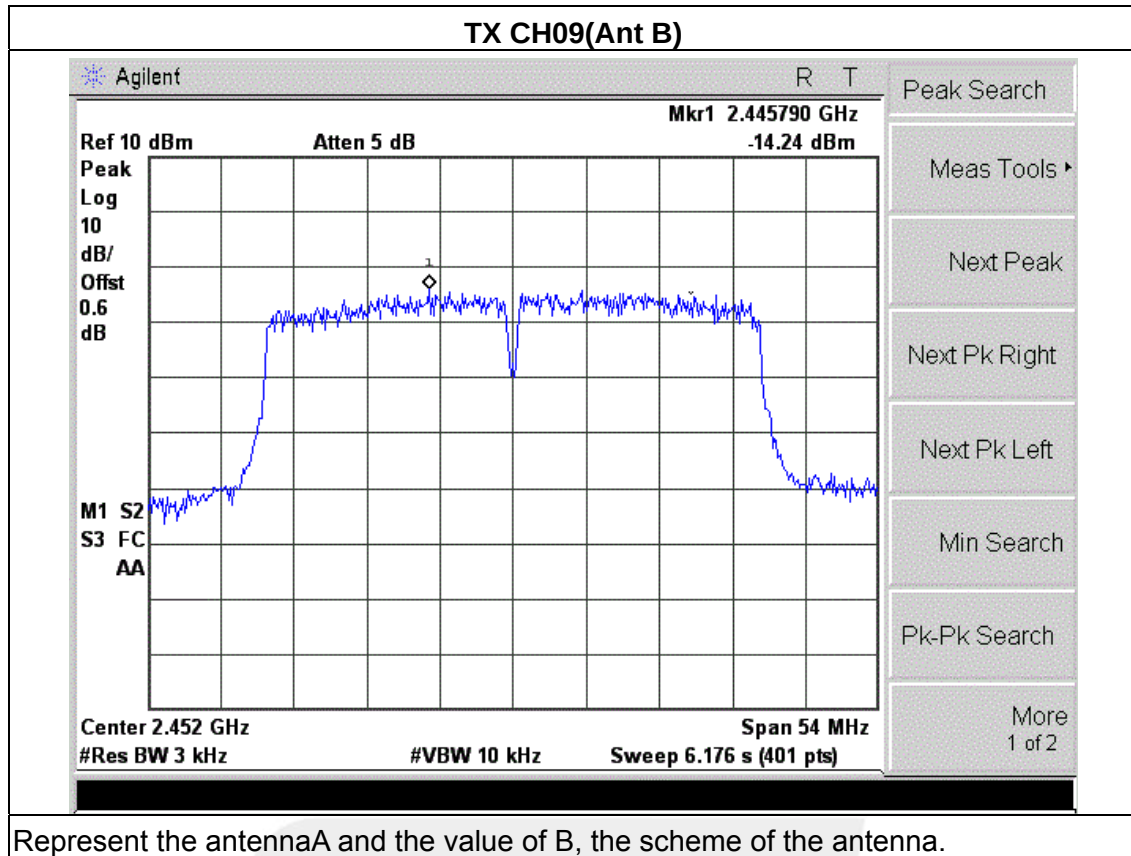
EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX n Mode(40M) /CH03, CH06, CH09		

Frequency	Power Density (A/dBm)	Power Density (B/dBm)	Power Density (dBm)	Limit (dBm)	Result
2422 MHz	-14.11	-14.23	-11.159	8	PASS
2437 MHz	-14.30	-14.38	-11.330	8	PASS
2452 MHz	-14.01	-14.24	-11.113	8	PASS











6. BANDWIDTH TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

6.2 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ 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 frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

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



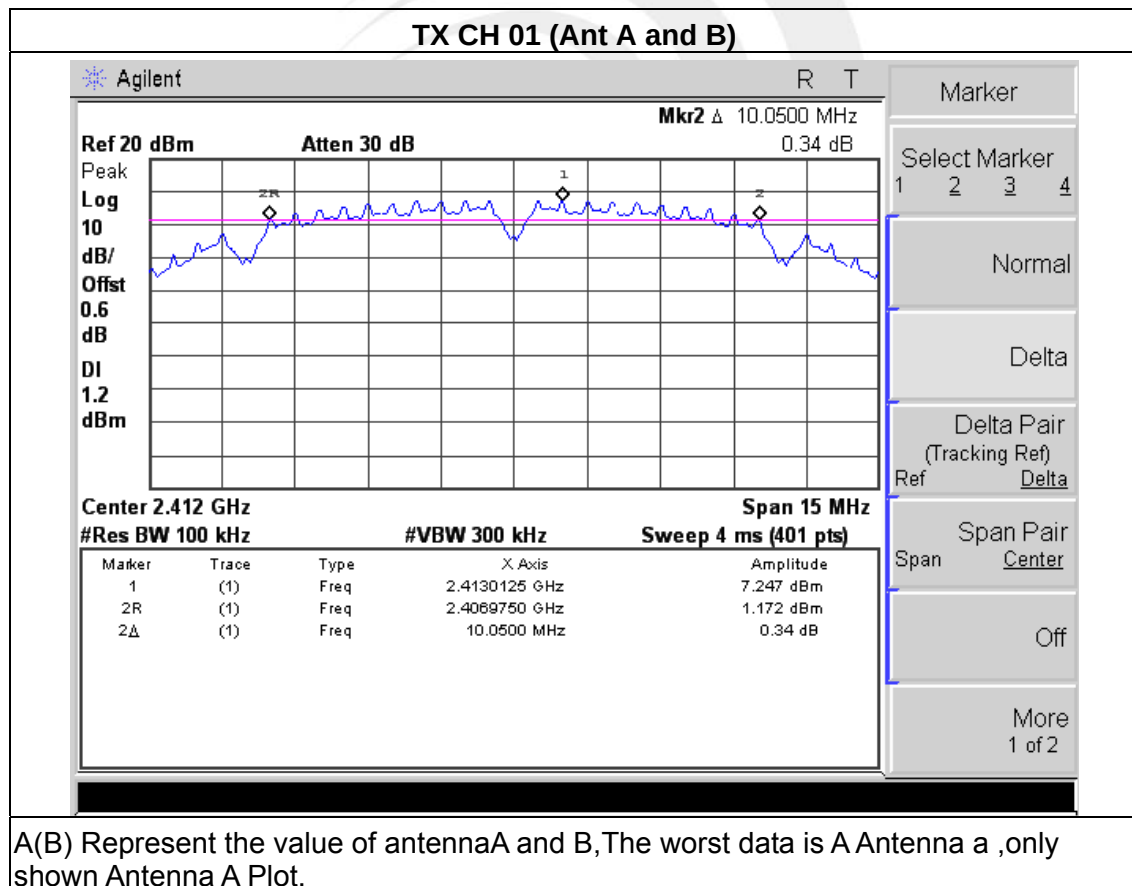
6.6 TEST RESULTS

Note:

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

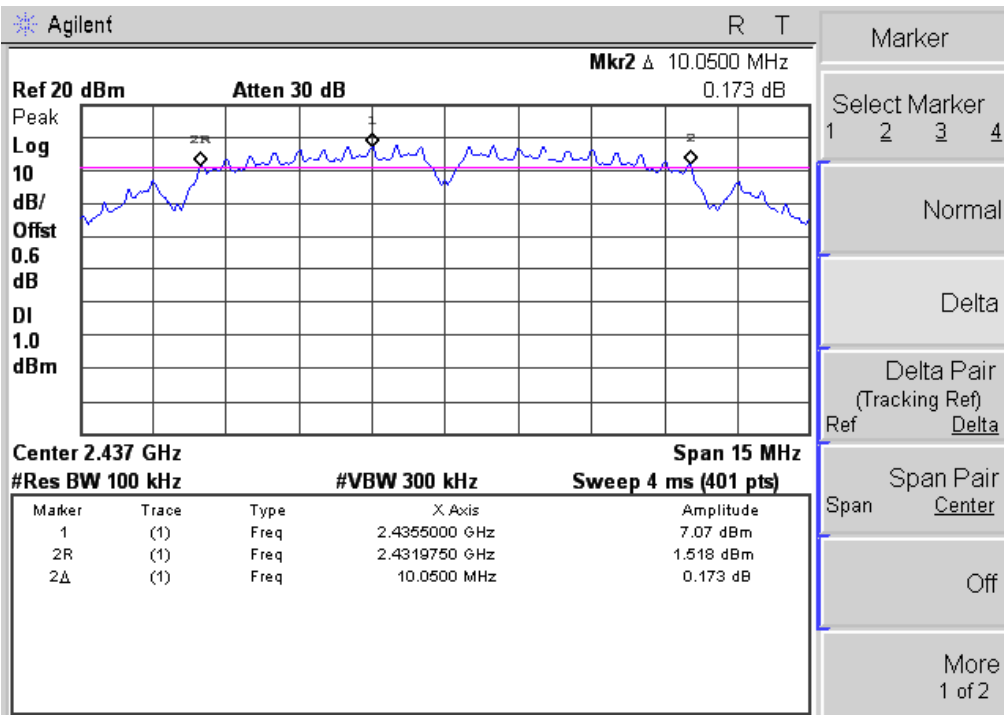
EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX b Mode /CH01, CH06, CH11		

Frequency	6dB /Ant A Bandwidth(MHz)	6dB /Ant B Bandwidth(MHz)	Channel Separation (MHz)	Result
2412 MHz	10.0500	10.0500	>=500KHz	PASS
2437 MHz	10.0500	10.0500	>=500KHz	PASS
2462 MHz	10.0500	10.0500	>=500KHz	PASS



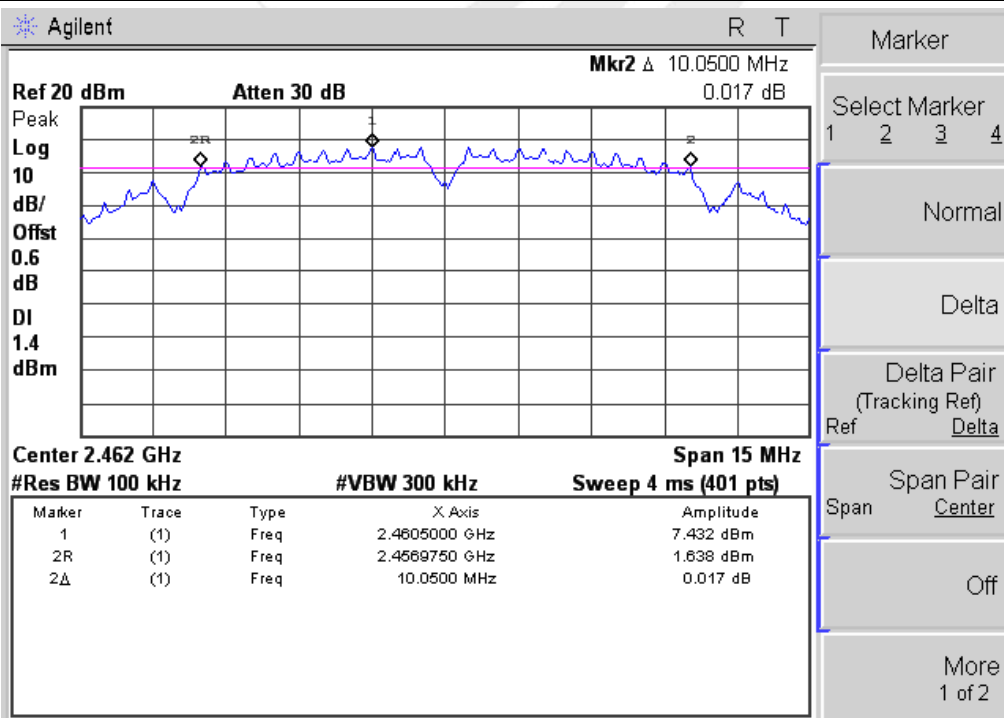


TX CH 06 (Ant A and B)



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

TX CH 11 (Ant A and B)

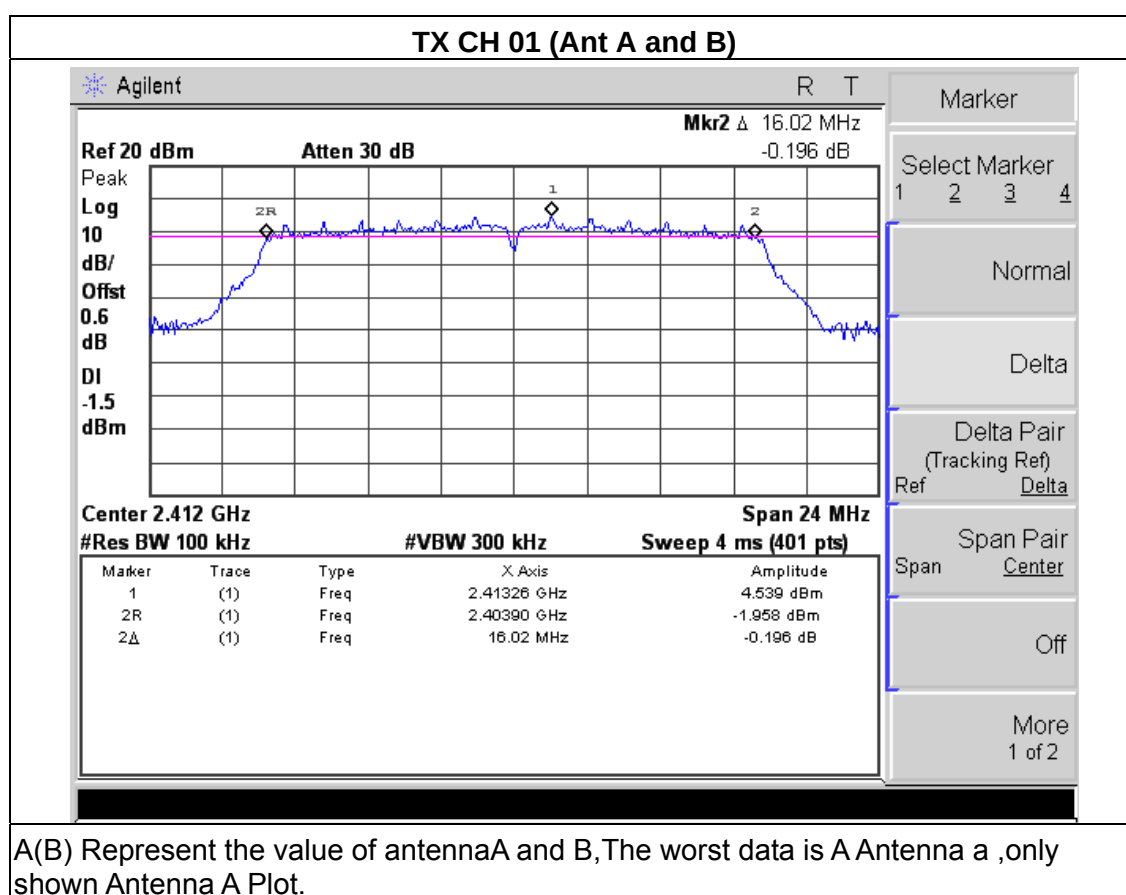


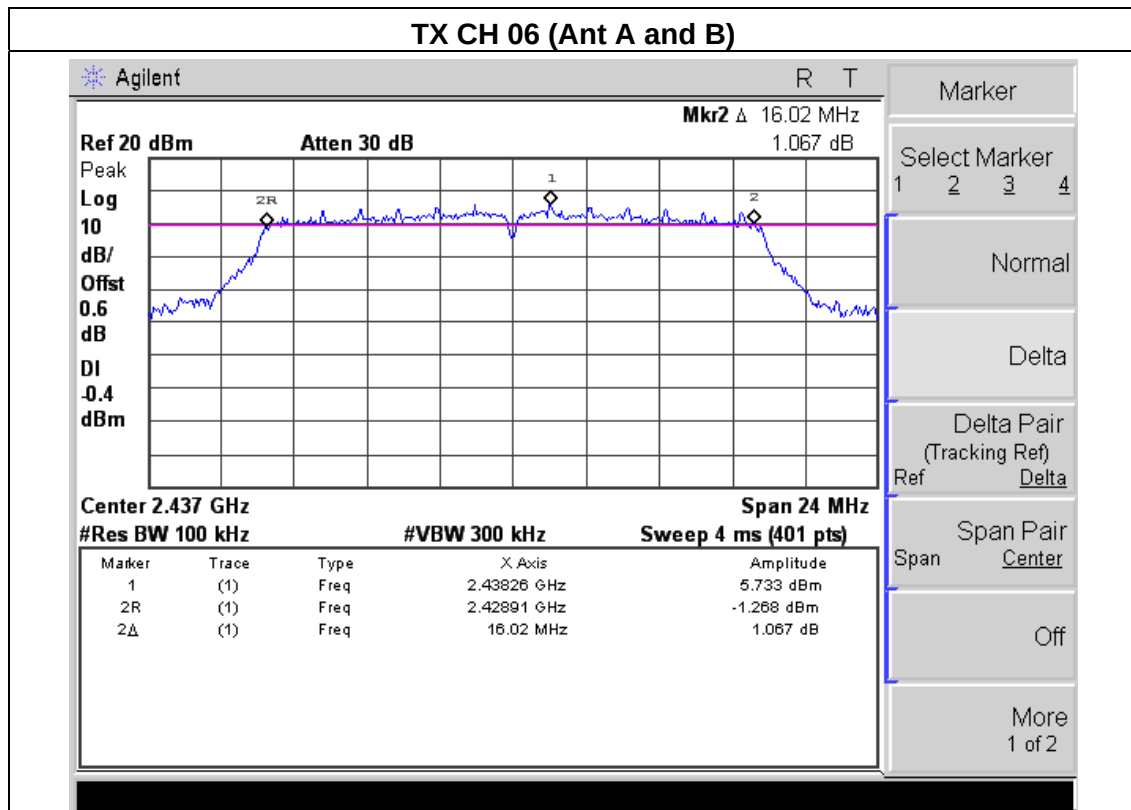
A(B) Represent the value of antennaA and B, The worst data is A Antenna a , only shown Antenna A Plot.



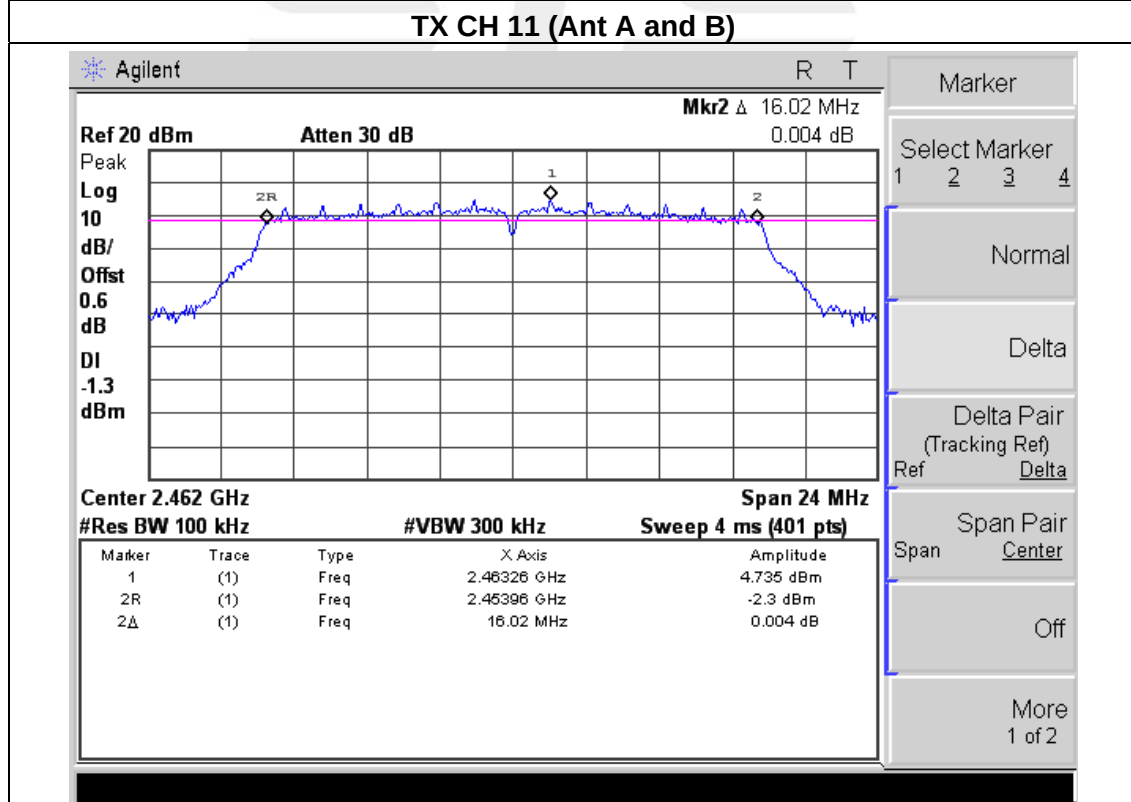
EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX g Mode /CH01, CH06, CH11		

Frequency	6dB/Ant A Bandwidth(MHz)	6Db/Ant B Bandwidth(MHz)	Channel Separation (MHz)	Result
2412 MHz	16.0200	16.0200	>=500KHz	PASS
2437 MHz	16.0200	16.0200	>=500KHz	PASS
2462 MHz	16.0200	16.0200	>=500KHz	PASS





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

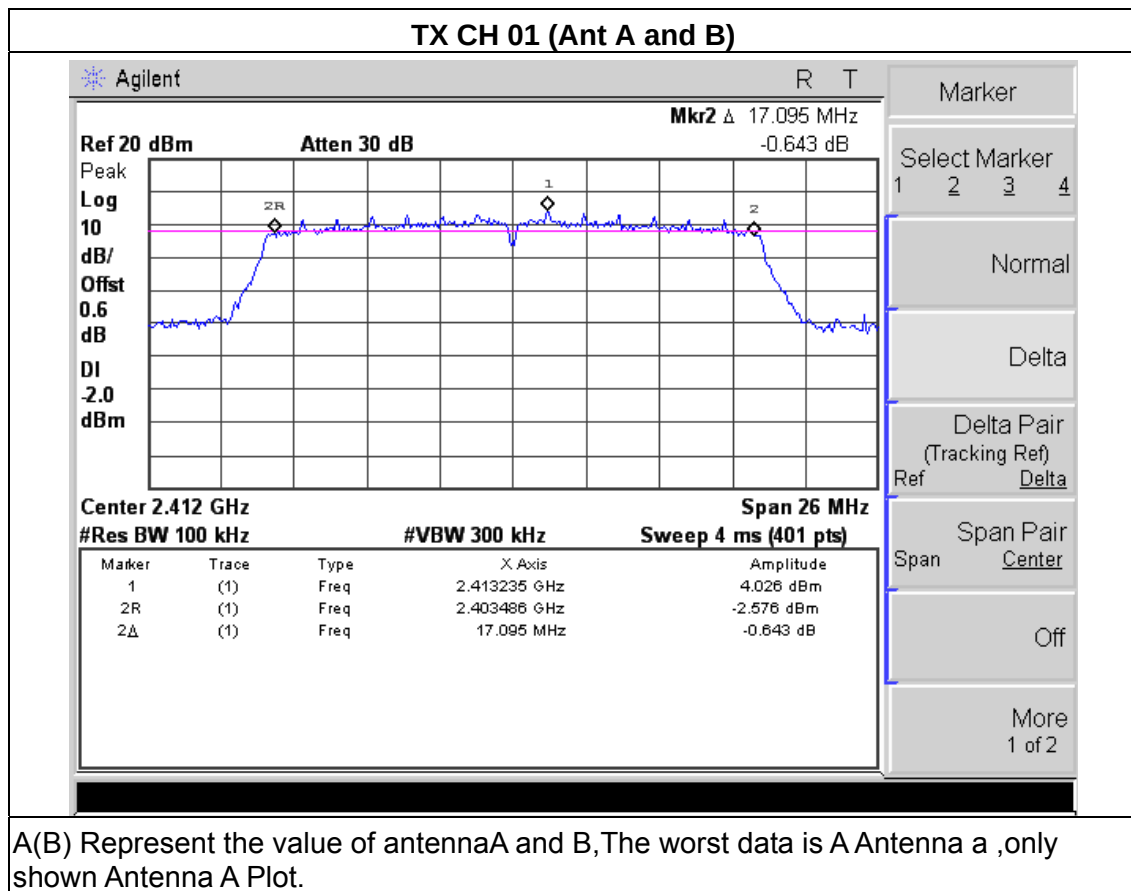


A(B) Represent the value of antennaA and B, The worst data is A Antenna a , only shown Antenna A Plot.



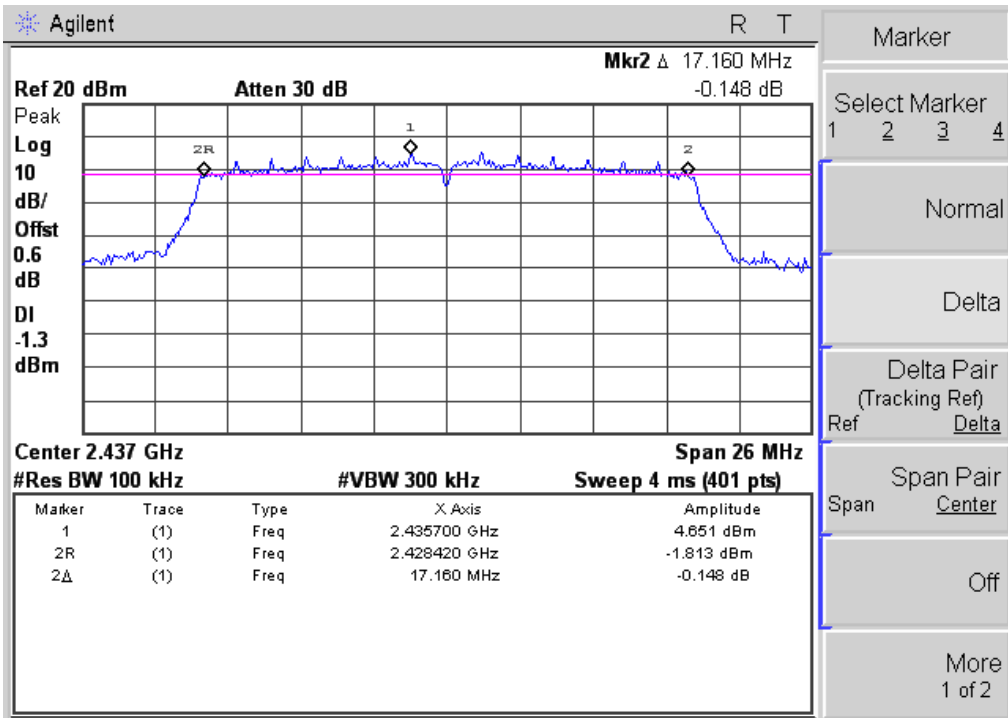
EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX n Mode(20M) /CH01, CH06, CH11		

Frequency	6dB Ant A Bandwidth(MHz)	6dB/Ant B Bandwidth(MHz)	Channel Separation (MHz)	Result
2412 MHz	17.0950	17.0950	>=500KHz	PASS
2437 MHz	17.1600	17.1587	>=500KHz	PASS
2462 MHz	17.0950	17.0942	>=500KHz	PASS



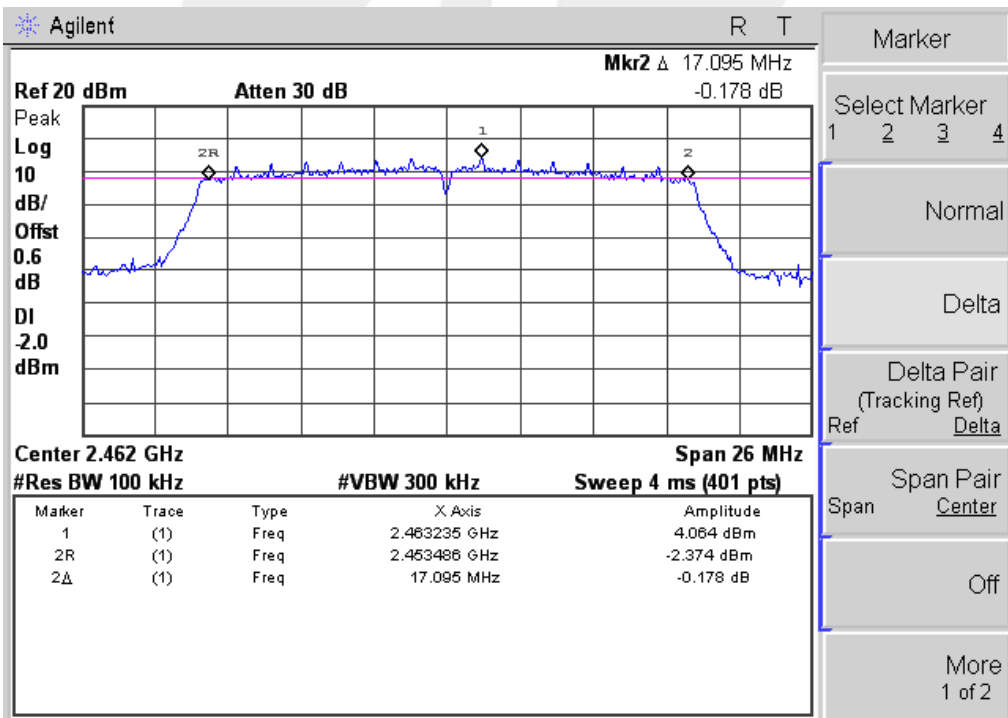


TX CH 06 (Ant A and B)



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

TX CH 11 (Ant A and B)

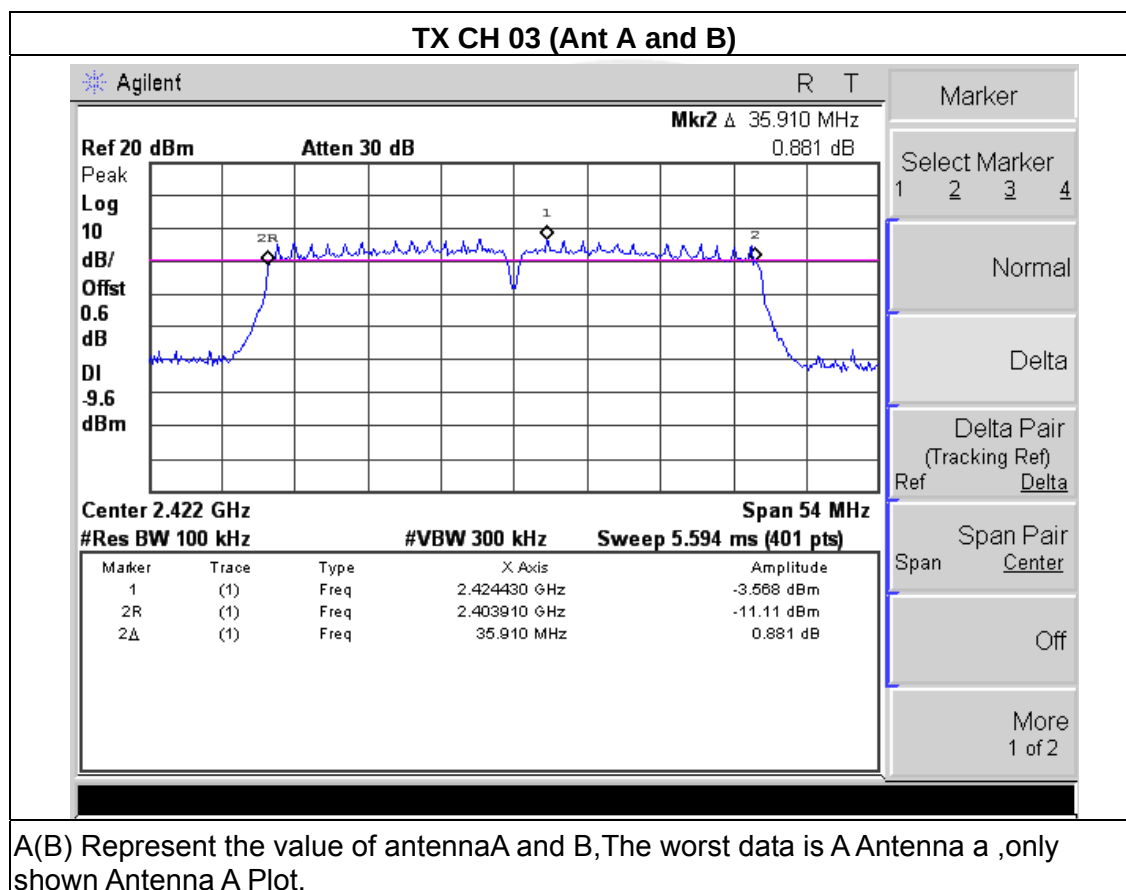


A(B) Represent the value of antennaA and B, The worst data is A Antenna a , only shown Antenna A Plot.



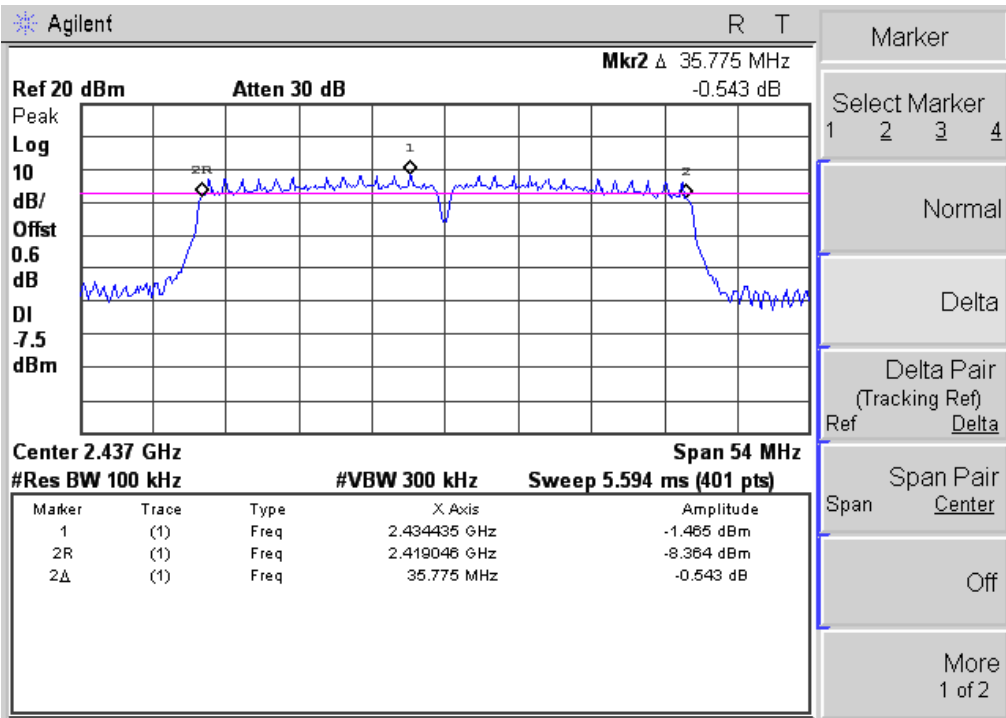
EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX n Mode(40M) /CH03, CH06, CH09		

Frequency	6dB Ant A Bandwidth(MHz)	6dB/ Ant B Bandwidth(MHz)	Channel Separation (MHz)	Result
2422 MHz	35.9100	35.9120	>=500KHz	PASS
2437 MHz	35.7750	35.7740	>=500KHz	PASS
2452 MHz	35.7750	35.7730	>=500KHz	PASS



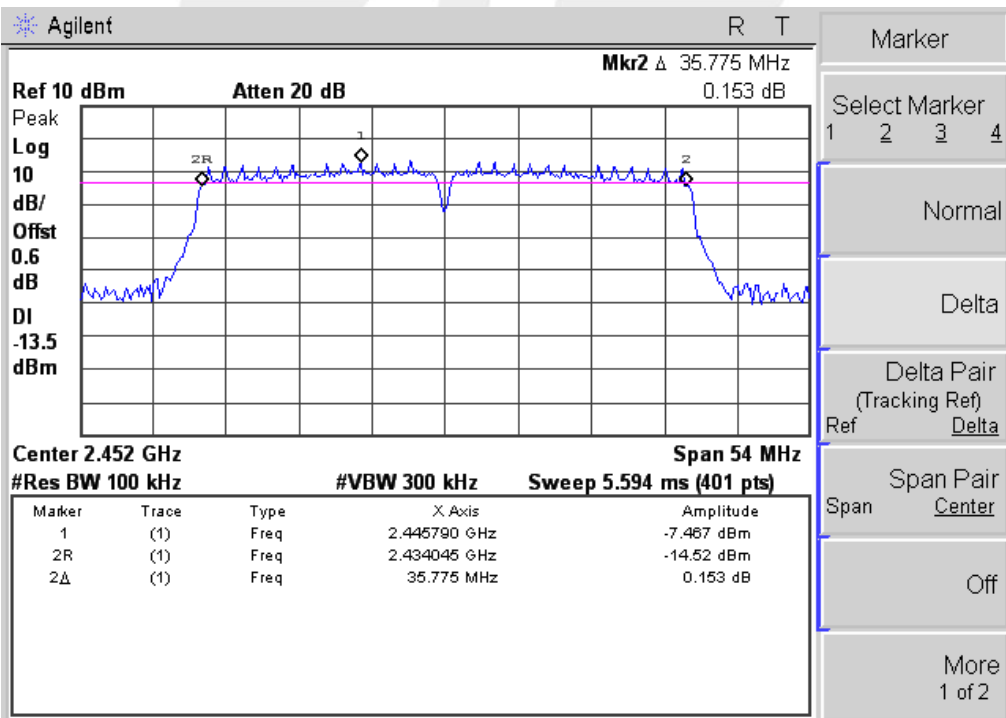


TX CH 06 (Ant A and B)



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

TX CH 09 (Ant A and B)



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



7. PEAK OUTPUT POWER TEST

7.1 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

7.2 TEST PROCEDURE

- The EUT was directly connected to the Power Sensor&Power meter

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

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



7.6 TEST RESULTS

EUT :	2.4G WiFi module	Model Name :	HR8192ERP5
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.3V
Test Mode :	TX b/g/n(20M,40M) Mode /CH01, CH06, CH11		

TX 802.11b Mode (Ant A and B)					
Test Channel	Frequency	Peak Conducted Output Power	Peak Conducted Output Power	Peak Conducted Output Power	LIMIT
	(MHz)	(A/dBm)	(B/dBm)	(dBm)	dBm
CH01	2412	6.245	6.231	9.248	30
CH06	2437	6.236	6.154	9.205	30
CH11	2462	6.145	6.131	9.150	30

TX 802.11g Mode (Ant A and B)					
Test Channel	Frequency	Peak Conducted Output Power	Peak Conducted Output Power	Peak Conducted Output Power	LIMIT
	(MHz)	(A/dBm)	(B/dBm)	(dBm)	dBm
CH01	2412	6.232	6.134	9.194	30
CH06	2437	6.225	6.135	9.191	30
CH11	2462	6.223	6.124	9.185	30

TX 802.11n20 Mode (Ant A and B)					
Test Channel	Frequency	Peak Conducted Output Power	Peak Conducted Output Power	Peak Conducted Output Power	LIMIT
	(MHz)	(A/dBm)	(B/dBm)	(dBm)	dBm
CH01	2412	6.212	6.142	9.187	30
CH06	2437	6.213	6.127	9.181	30
CH11	2462	6.225	6.145	9.195	30

TX 802.11n40 Mode (Ant A and B)					
Test Channel	Frequency	Peak Conducted Output Power	Peak Conducted Output Power	Peak Conducted Output Power	LIMIT
	(MHz)	(A/dBm)	(B/dBm)	(dBm)	dBm
CH03	2422	5.476	5.343	8.420	30
CH06	2437	5.357	5.432	8.405	30
CH09	2452	5.424	5.345	8.395	30



8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

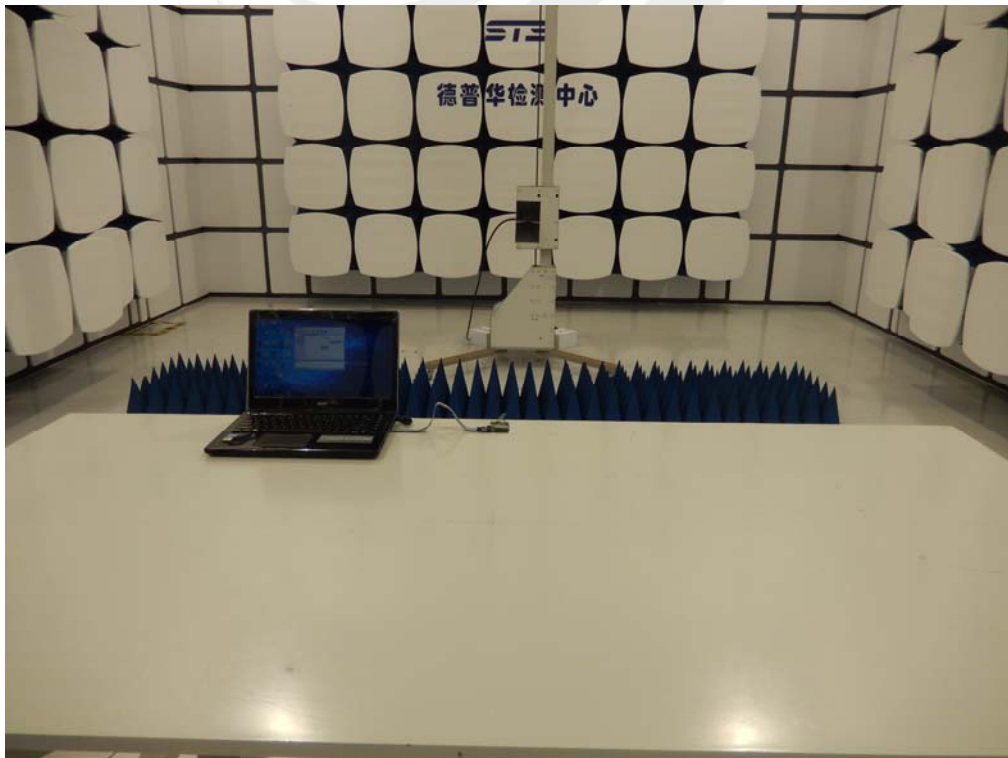
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

8.2 EUT ANTENNA

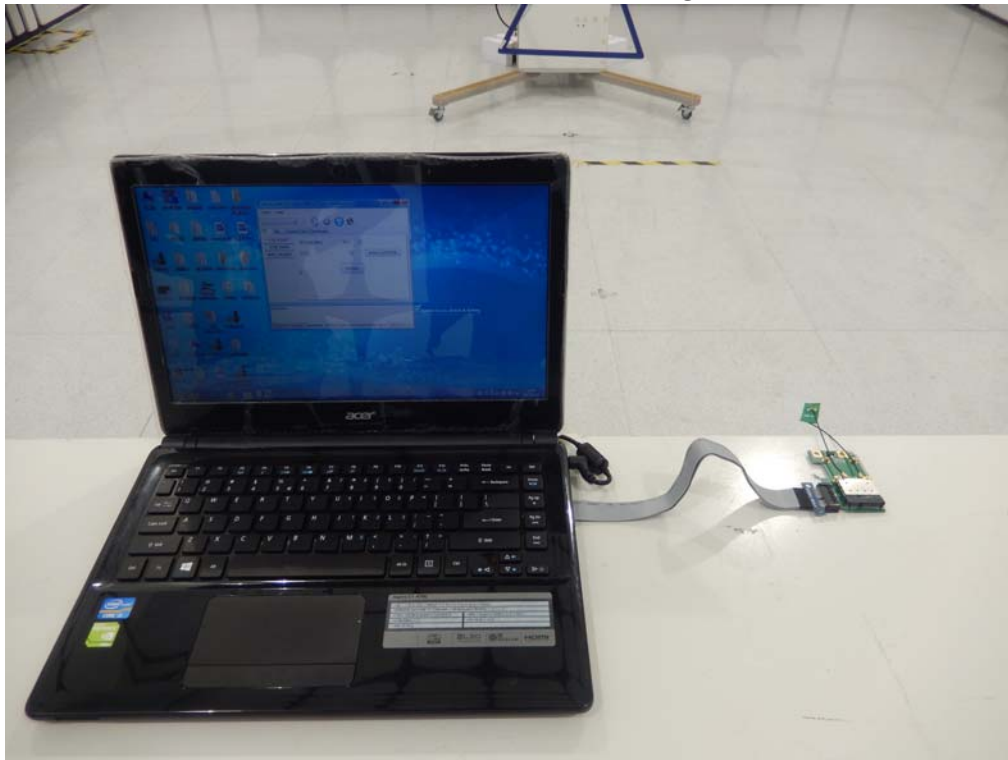
The EUT antenna is unique Antenna connector. It comply with the standard requirement.



APPENDIX - PHOTOS OF TEST SETUP

**Radiated Measurement Photos
30M-1G****Above 1G**

Radiation from close range



Conducted Measurement Photos



conduction from close range

