

# FCC TEST REPORT

## FCC ID: ZFN-ELT0702

Product : Tablet PC

Model Name : ELT0702

Brand : N/A

Report No. : PTC802619160913E-FC01

### Prepared for

Huike Electronics(shenzhen)Co.,Ltd  
Huike industrial park, Minying industrial park, Shui tian country, Shiyan, Baoan District,  
Shenzhen, China

### Prepared by

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## TEST RESULT CERTIFICATION

Applicant's name : Huike Electronics(shenzhen)Co.,Ltd

Address : Huike industrial park, Minying industrial park, Shui tian country, Shiyan, Baoan District, Shenzhen, China

Manufacture's name : Huike Electronics(shenzhen)Co.,Ltd

Address : Huike industrial park, Minying industrial park, Shui tian country, Shiyan, Baoan District, Shenzhen, China

Product name : Tablet PC

Model name : ELT0702

Standards : FCC CFR47 Part 15 Section 15.247

Test procedure : ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V03R05

Test Date : Sep.13. 2016 ~ Sep.21. 2016

Date of Issue : Sep.23. 2016

Test Result : Pass

This device described above has been tested by PTC, 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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Testing Engineer

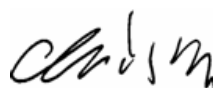
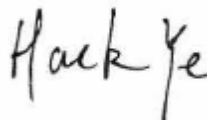
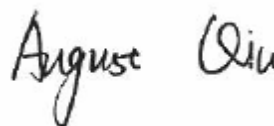
August Qiu

Technical Manager

Hack Ye

Authorized Signatory

Chris Du



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## 2 Test Summary

Test Items	Test Requirement	Result
Conduct Emission	15.207	PASS
Radiated Spurious Emissions	15.205(a) 15.209 15.247(d)	PASS
Conducted Spurious Emission	15.247(d)	PASS
Band edge	15.247(d) 15.205(a)	PASS
6dB Bandwidth	15.247(a)(2)	PASS
Maximum Peak Output Power	15.247(b)(1)	PASS
Power Spectral Density	15.247(e)	PASS
Antenna Requirement	15.203	PASS
Remark: N/A: Not Applicable		

### 3 General Information

#### 3.1 General Description of E.U.T.

Product Name	:	Tablet PC
Model Name	:	ELT0702
Model Description	:	N/A
Bluetooth Version	:	V4.0(BLE Only)
Operating frequency	:	For BLE: 2402-2480MHz, 40 channels For WIFI 2412-2462MHz, 11channels
Antenna installation:	:	PCB printed antenna
Antenna Gain:	:	WiFi: 0dBi BLE: 0dBi
The lowest oscillator:	:	32.768KHz
Type of Modulation	:	For BLE: GFSK For WIFI: IEEE 802.11b CCK/QPSK/BPSK IEEE 802.11g BPSK/QPSK/16QAM/64QAM IEEE 802.11n-HT20 BPSK/QPSK/16QAM/64QAM
Power supply	:	DC 3.7V 4000mAh power by battery, DC 5V 2.0A charging by AC adapter
Adapter	:	Input: AC 100-240V 50/60Hz 0.3A max Output: DC 5V 2.0A
Hardware Version	:	V1.0
Software Version	:	6.6.1

### 3.2 Channel List

WIFI							
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2412	4	2427	7	2442	10	2457
2	2417	5	2432	8	2447	11	2462
3	2422	6	2437	9	2452	/	/
BLE							
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

### 3.3 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Modulation	Test mode	Low channel	Middle channel	High channel
802.11b/g/n-HT20	Transmitting	2412MHz	2437MHz	2462MHz
GFSK(BLE)	Transmitting	2402MHz	2440MHz	2480MHz
Tests Carried Out Under FCC part 15.207				
Test Item		Test Mode		
Conduction Emission 0.15MHz to 30MHz		BT Communication		

### 3.4 Test Site

Dongguan Precise Testing Service Co., Ltd.

Building D,Baoding Technology Park,Guangming Road2, Dongcheng District, Dongguan,  
Guangdong, China, Dongguan, 523129

China

FCC Registration Number: 371540

IC Registration Number: 12191A-1

## 4 Equipment During Test

### 4.1 Equipments List

RF Conducted Test							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	EMC Analyzer (9k~26.5GHz)	Agilent	E4407B	MY45109572	Aug.04, 2016	Aug.03, 2017	1 year
2	EXA Signal Analyzer	Keysight	N9010A	MY50520207 526B25MPB W7X	Aug.04, 2016	Aug.03, 2017	1 year
3	EMI Test Receiver	R&S	ESCI	101155	July 15, 2016	July 14, 2017	1 year
4	Humidity Chamber	GF	GTH-225-40-1P	IAA061225	July 15, 2016	July 14, 2017	1 year
5	USB RF power sensor	DARE	RPR3006W	15I00041SN O01	July 15, 2016	July 14, 2017	1 year
Radiated Emissions							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	EMI Test Receiver	Rohde&Schwarz	ESCI	101417	July 15, 2016	July 14, 2017	1 year
2	Trilog Broadband Antenna	SCHWARZECK	VULB9160	9160-3355	July 15, 2016	July 14, 2017	1 year
3	Amplifier	EM	EM-30180	060538	July 15, 2016	July 14, 2017	1 year
4	Horn Antenna	SCHWARZECK	BBHA9120D	9120D-1246	July 15, 2016	July 14, 2017	1 year
5	Coaxial Cable(below 1GHz)	LARGE	CALB1	-	July 15, 2016	July 14, 2017	1 year
6	Coaxial Cable(above 1GHz)	LARGE	CALB2	-	July 15, 2016	July 14, 2017	1 year
Conducted Emissions							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	EMI Test Receiver	R&S	ESCI	101155	July 15, 2016	July 14, 2017	1 year
2	LISN	SCHWARZECK	NSLK 8128	8128-289	July 15, 2016	July 14, 2017	1 year
3	Cable	LARGE	RF300	-	July 15, 2016	July 14, 2017	1 year





## 4.2 Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	$\pm 1.0\text{dB}$
Power Spectral Density, conducted	$\pm 2.2\text{dB}$
Radio Frequency	$\pm 1 \times 10^{-6}$
Bandwidth	$\pm 1.5 \times 10^{-6}$
Time	$\pm 2\%$
Duty Cycle	$\pm 2\%$
Temperature	$\pm 1^{\circ}\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 3\%$
Conducted Emissions(150kHz~30MHz)	$\pm 3.64\text{dB}$
Radiated Emission(30MHz~1GHz)	$\pm 5.03\text{dB}$
Radiated Emission(1GHz~25GHz)	$\pm 4.74\text{dB}$

## 5 Conducted Emission

Test Requirement:	: FCC CFR 47 Part 15 Section 15.207
Test Method:	: ANSI C63.4:2014
Test Result:	: PASS
Frequency Range:	: 150kHz to 30MHz
Class/Severity:	: Class B
Limit:	: 66-56 dB $\mu$ V between 0.15MHz & 0.5MHz
	: 56 dB $\mu$ V between 0.5MHz & 5MHz
	: 60 dB $\mu$ V between 5MHz & 30MHz
Detector:	: Peak for pre-scan(9kHz Resolution Bandwidth)

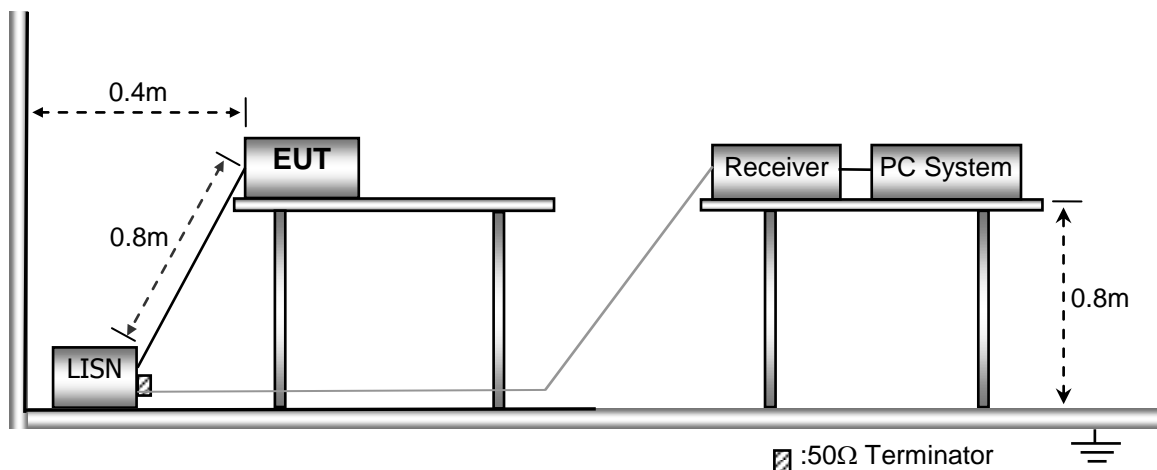
### 5.1 E.U.T. Operation

Operating Environment:

Temperature:	: 25.5 °C
Humidity:	: 51 % RH
Atmospheric Pressure:	: 101.2kPa
EUT Operation:	: Refer to section 3.3

### 5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.

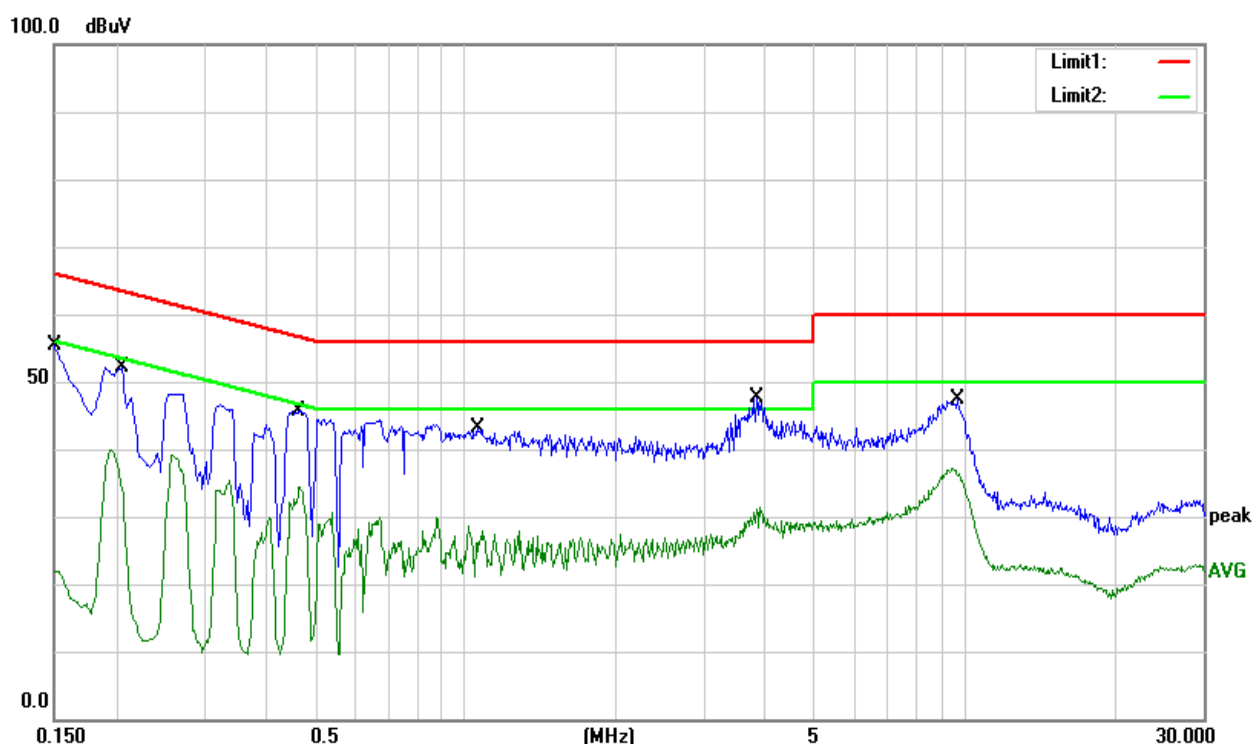


### 5.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

### 5.4 Conducted Emission Test Result

Live line:

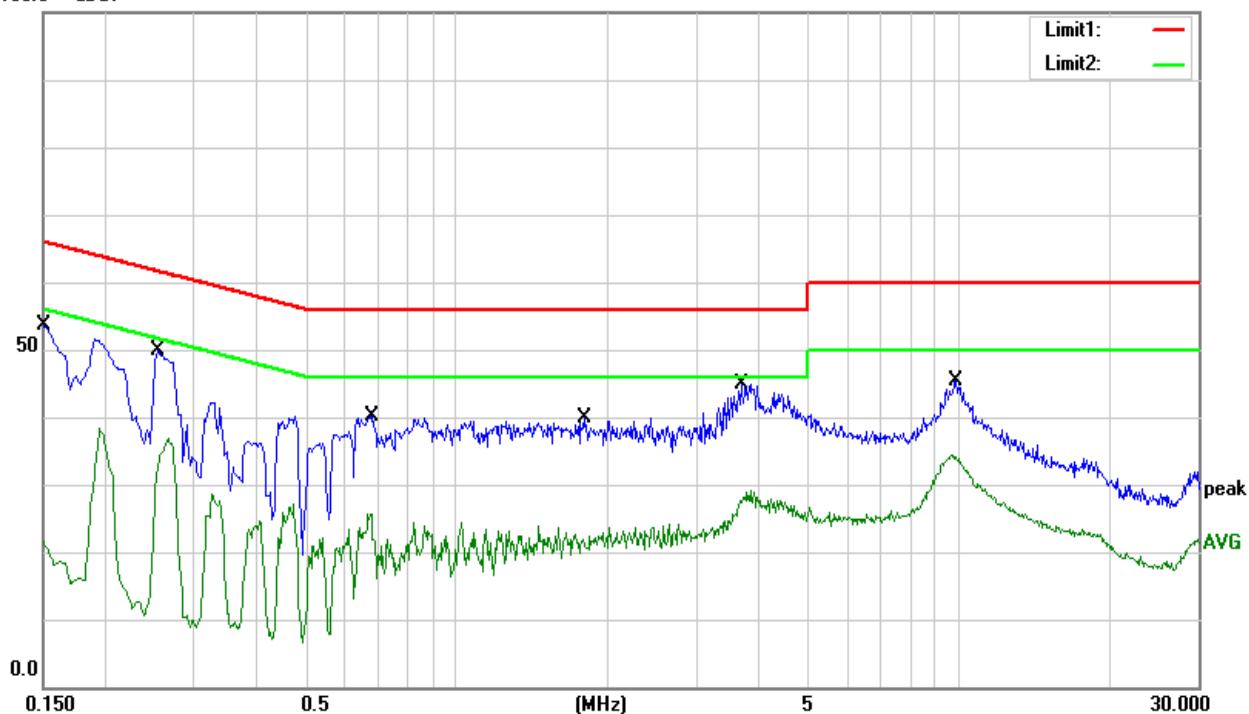


Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.1500	44.13	11.20	55.33	66.00	-10.67	QP
0.1500	10.78	11.20	21.98	56.00	-34.02	AVG
0.2060	42.04	9.99	52.03	63.37	-11.34	QP
0.2060	28.37	9.99	38.36	53.37	-15.01	AVG
0.4660	35.57	10.00	45.57	56.58	-11.01	QP
0.4660	24.31	10.00	34.31	46.58	-12.27	AVG
1.0580	33.23	9.91	43.14	56.00	-12.86	QP
1.0580	17.97	9.91	27.88	46.00	-18.12	AVG
3.8300	37.33	10.20	47.53	56.00	-8.47	QP
3.8300	21.11	10.20	31.31	46.00	-14.69	AVG
9.6860	37.13	10.26	47.39	60.00	-12.61	QP
9.6860	26.99	10.26	37.25	50.00	-12.75	AVG

Remark:Emission Level=Receiver Reading+Cable Loss+AMN Factor

Neutral line:

100.0 dBuV



Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.1500	42.40	11.20	53.60	66.00	-12.40	QP
0.1500	10.43	11.20	21.63	56.00	-34.37	AVG
0.2540	39.85	9.95	49.80	61.63	-11.83	QP
0.2540	26.89	9.95	36.84	51.63	-14.79	AVG
0.6820	30.26	9.99	40.25	56.00	-15.75	QP
0.6820	15.61	9.99	25.60	46.00	-20.40	AVG
1.7980	29.76	10.00	39.76	56.00	-16.24	QP
1.7980	12.80	10.00	22.80	46.00	-23.20	AVG
3.6980	34.73	10.19	44.92	56.00	-11.08	QP
3.6980	18.06	10.19	28.25	46.00	-17.75	AVG
9.9100	35.29	10.20	45.49	60.00	-14.51	QP
9.9100	24.11	10.20	34.31	50.00	-15.69	AVG

Remark: Emission Level = Receiver Reading + Cable Loss + AMN Factor

## 6 Radiated Spurious Emissions

Test Requirement: : FCC CFR47 Part 15 Section 15.209 & 15.247  
 Test Method: : ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE V03R03  
 Test Result: : PASS  
 Measurement Distance: : 3m  
 Limit: : See the follow table

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

### 6.1 EUT Operation

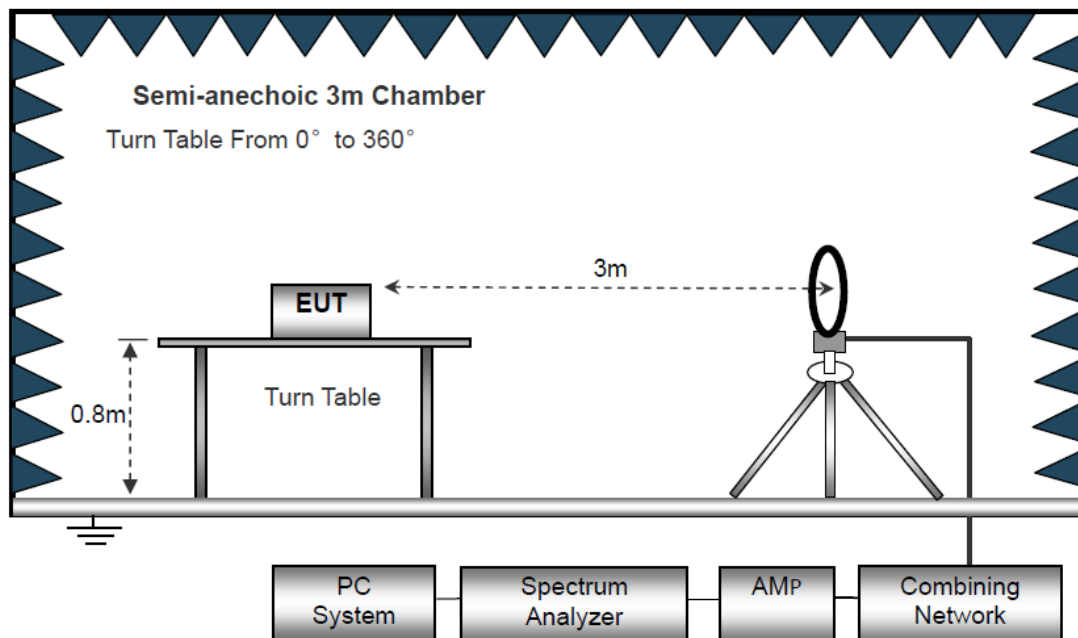
Operating Environment :

Temperature: : 23.5 °C  
 Humidity: : 51.1 % RH  
 Atmospheric Pressure: : 101.2kPa  
 EUT Operation : : Refer to section 3.3

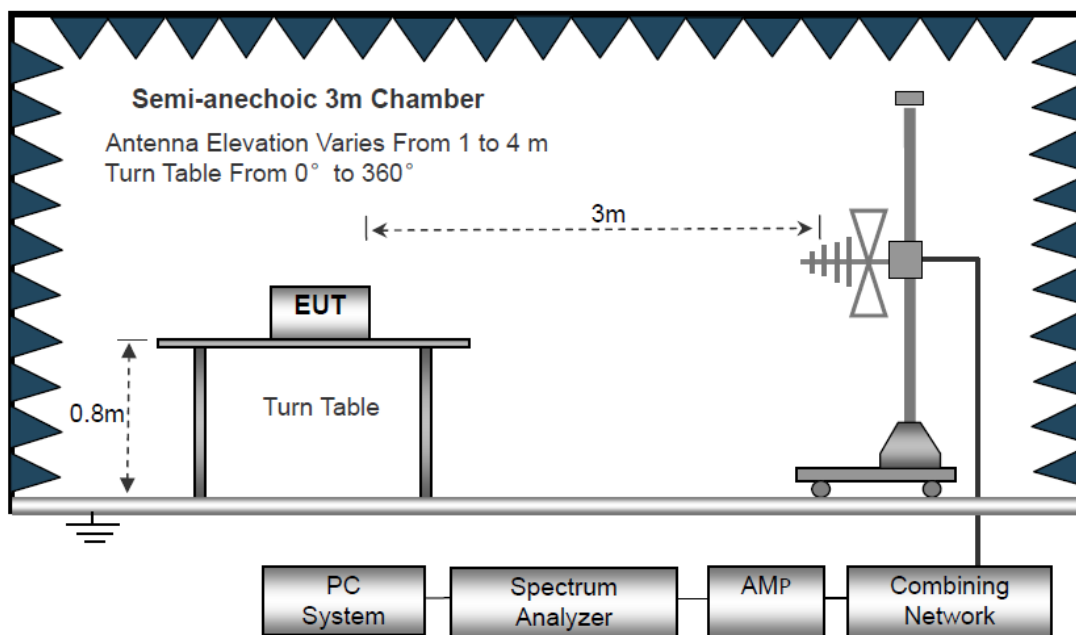
## 6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber testsite

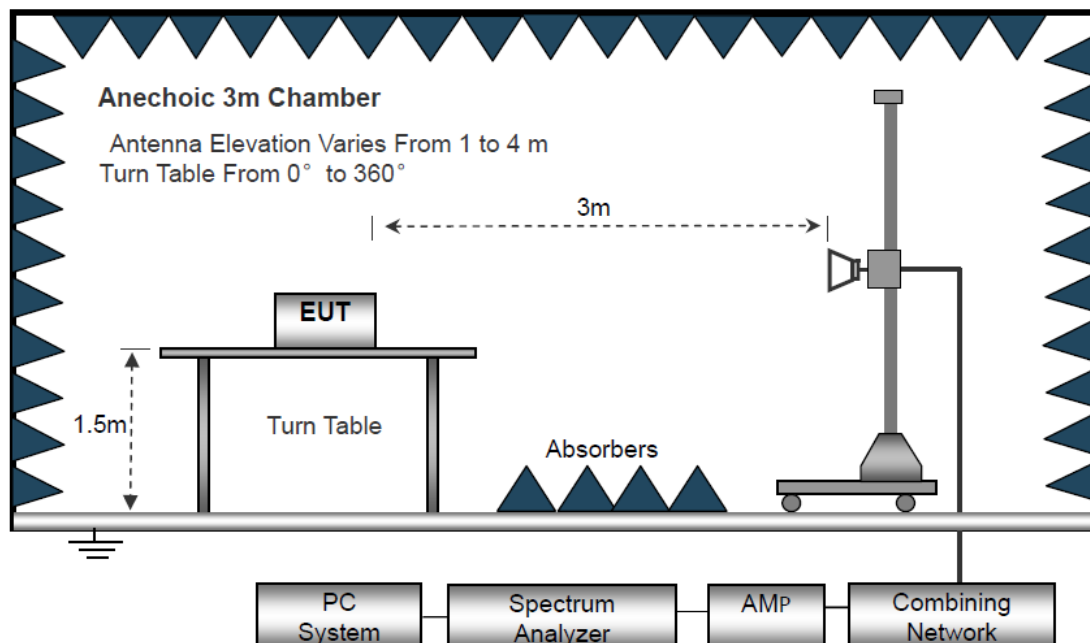
The test setup for emission measurement below 30MHz



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz



### 6.3 Spectrum Analyzer Setup

Below 30MHz

IF Bandwidth	10kHz
Resolution Bandwidth	10kHz
Video Bandwidth	10kHz

30MHz ~ 1GHz

Detector	: PK
Resolution Bandwidth	: 100kHz
Video Bandwidth	: 300kHz
Detector	: QP
Resolution Bandwidth	: 120kHz
Video Bandwidth	: 300kHz

Above 1GHz

Detector	: PK
Resolution Bandwidth	: 1MHz
Video Bandwidth	: 3MHz
Detector	: AV
Resolution Bandwidth	: 1MHz
Video Bandwidth	: 10Hz

## **6.4 Test Procedure**

1. The EUT is placed on a turntable, which is 0.8m above ground plane for below 1GHz and 1.5m for above 1GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.
8. The test above 1GHz must be use the fully anechoic room and the test below 1GHz use the half anechoic room



## 6.5 Summary of Test Results

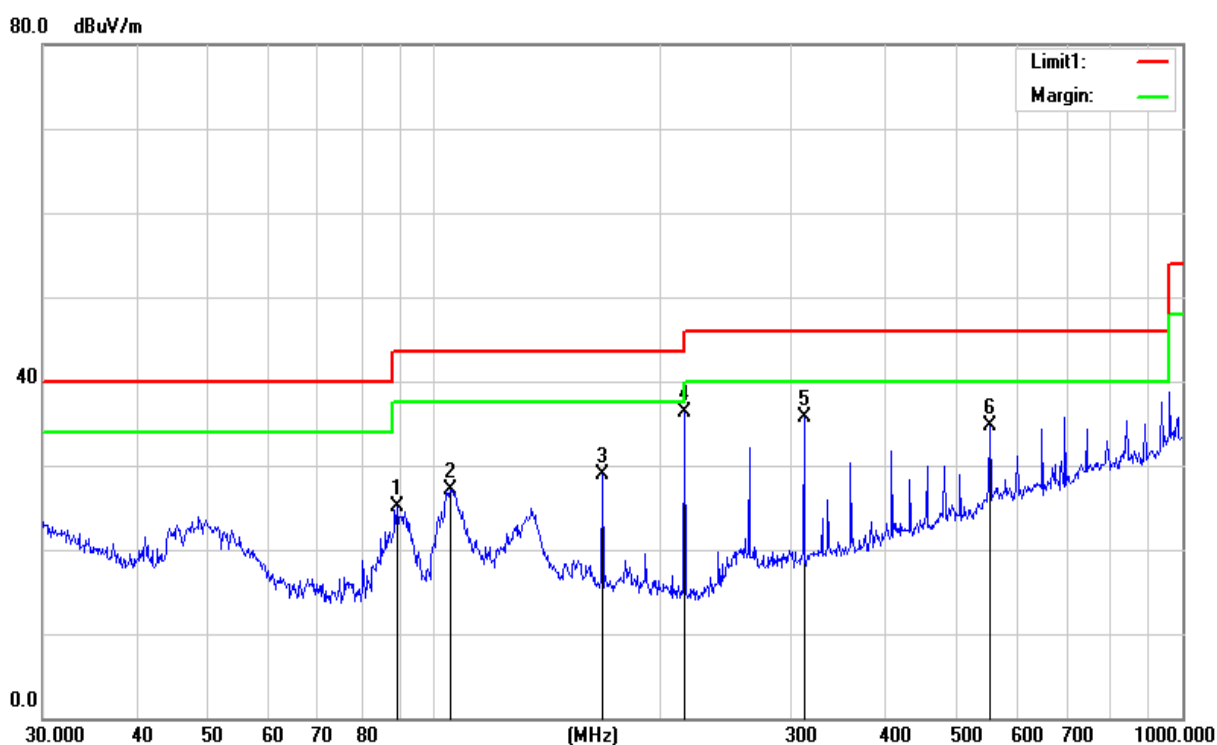
### Test Frequency: Below 30MHz

The measurements were more than 20 dB below the limit and not reported.

### Test Frequency: 30MHz ~ 1GHz

All applicable test modes have been tested and only the worst case (802.11b TX in middle channel) is recorded.

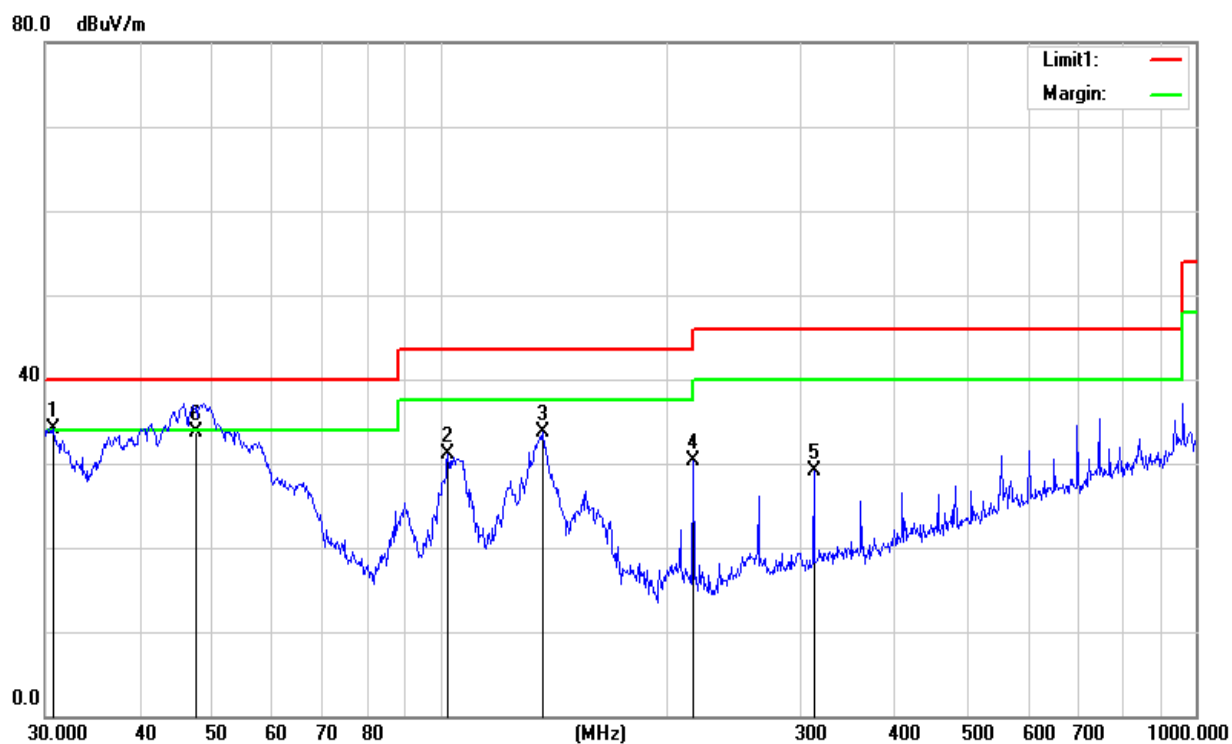
Antenna Polarization: Horizontal



Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
89.2764	15.65	9.43	25.08	43.50	-18.42	QP
105.2718	15.80	11.22	27.02	43.50	-16.48	QP
167.8243	18.15	10.75	28.90	43.50	-14.60	QP
216.0240	26.18	10.09	36.27	46.00	-9.73	QP
312.1794	20.62	15.10	35.72	46.00	-10.28	QP
552.8832	12.20	22.57	34.77	46.00	-11.23	QP

Remark:Emission Level=Receiver Reading+Cable Loss+ANT Factor-AMP Factor

Antenna Polarization: Vertical



Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
30.7455	15.81	18.31	34.12	40.00	-5.88	QP
102.3597	20.11	10.96	31.07	43.50	-12.43	QP
136.4598	21.25	12.55	33.80	43.50	-9.70	QP
216.0240	20.24	10.09	30.33	46.00	-15.67	QP
312.1794	14.00	15.10	29.10	46.00	-16.90	QP
47.5941	24.24	9.38	33.62	40.00	-6.38	QP

Remark: Emission Level = Receiver Reading + Cable Loss + ANT Factor - AMP Factor

**Test Frequency: 1GHz ~ 18GHz**

Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (GFSK/2402 MHz)							
4804.19	62.56	-3.62	58.94	74	-15.06	PK	Vertical
4804.22	43.37	-3.62	39.75	54	-14.25	AV	Vertical
7206.13	58.05	-0.9	57.15	74	-16.85	PK	Vertical
7206.12	37.48	-0.9	36.58	54	-17.42	AV	Vertical
4804.00	58.76	-3.65	55.11	74	-18.89	PK	Horizontal
4803.99	41.04	-3.65	37.39	54	-16.61	AV	Horizontal
Mid Channel (GFSK/2440 MHz)							
4882.08	63.68	-3.65	60.03	74	-13.97	PK	Vertical
4882.07	47.35	-3.65	43.7	54	-10.3	AV	Vertical
7320.22	59.77	-0.83	58.94	74	-15.06	PK	Vertical
7320.21	42.42	-0.83	41.59	54	-12.41	AV	Vertical
4882.18	60.23	-3.68	56.55	74	-17.45	PK	Horizontal
4882.14	43.71	-3.68	40.03	54	-13.97	AV	Horizontal
High Channel (GFSK/2480 MHz)							
4960.26	60.12	-3.59	56.53	74	-17.47	PK	Vertical
4960.30	44.07	-3.59	40.48	54	-13.52	AV	Vertical
7440.26	59.45	-0.73	58.72	74	-15.28	PK	Vertical
7440.31	44.12	-0.73	43.39	54	-10.61	AV	Vertical
4960.32	59.86	-3.59	56.27	74	-17.73	PK	Horizontal
4960.31	44.17	-3.59	40.58	54	-13.42	AV	Horizontal
Remark: 1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.							



Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBμV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11b/2412 MHz)							
4824.20	62.75	-3.58	59.17	74	-14.83	PK	Vertical
4824.21	43.84	-3.58	40.26	54	-13.74	AV	Vertical
7236.14	58.50	-0.8	57.7	74	-16.3	PK	Vertical
7236.12	37.71	-0.8	36.91	54	-17.09	AV	Vertical
4824.20	58.93	-3.58	55.35	74	-18.65	PK	Horizontal
4824.22	40.67	-3.58	37.09	54	-16.91	AV	Horizontal
Mid Channel (802.11b/2437 MHz)							
4874.09	63.33	-3.56	59.77	74	-14.23	PK	Vertical
4874.07	47.84	-3.56	44.28	54	-9.72	AV	Vertical
7311.21	59.89	-0.78	59.11	74	-14.89	PK	Vertical
7311.20	42.84	-0.78	42.06	54	-11.94	AV	Vertical
4874.17	60.06	-3.56	56.5	74	-17.5	PK	Horizontal
4874.15	44.05	-3.56	40.49	54	-13.51	AV	Horizontal
High Channel (802.11b/2462 MHz)							
4944.26	59.64	-3.54	56.1	74	-17.9	PK	Vertical
4944.30	43.61	-3.54	40.07	54	-13.93	AV	Vertical
7416.33	59.47	-0.75	58.72	74	-15.28	PK	Vertical
7416.31	44.20	-0.75	43.45	54	-10.55	AV	Vertical
4944.26	59.99	-3.54	56.45	74	-17.55	PK	Horizontal
4944.31	44.31	-3.54	40.77	54	-13.23	AV	Horizontal
Remark: 1. Factor = Antenna Factor + Cable Loss – Pre-amplifier. 2. Scan with 802.11b, 802.11g, 802.11n (HT-20) the worst case is 802.11b.							

**Radiated band edge:**

Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
GFSK							
2390.0	66.66	-12.99	53.67	74	-20.33	PK	Vertical
2390.0	54.18	-12.99	41.19	54	-12.81	AV	Vertical
2390.0	65.94	-12.99	52.95	74	-21.05	PK	Horizontal
2390.0	52.08	-12.99	39.09	54	-14.91	AV	Horizontal
2483.6	65.75	-12.78	52.97	74	-21.03	PK	Vertical
2483.6	51.51	-12.78	38.73	54	-15.27	AV	Vertical
2483.6	66.76	-12.78	53.98	74	-20.02	PK	Horizontal
2483.6	52.95	-12.78	40.17	54	-13.83	AV	Horizontal
Remark: 1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.  Low measurement frequencies is range from 2310 to 2400 MHz, high measurement frequencies is range from 2483.5 to 2500 MHz. Only show the worst point data of the emissions in the frequency 2310-2400 MHz and 2483.5-2500 MHz.							

Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
802.11 b							
2390.0	66.57	-12.99	53.58	74	-20.42	PK	Vertical
2390.0	53.73	-12.99	40.74	54	-13.26	AV	Vertical
2390.0	65.75	-12.99	52.76	74	-21.24	PK	Horizontal
2390.0	51.82	-12.99	38.83	54	-15.17	AV	Horizontal
2483.6	65.39	-12.78	52.61	74	-21.39	PK	Vertical
2483.6	51.69	-12.78	38.91	54	-15.09	AV	Vertical
2483.6	66.89	-12.78	54.11	74	-19.89	PK	Horizontal
2483.6	53.11	-12.78	40.33	54	-13.67	AV	Horizontal



802.11 g							
2390.0	66.96	-12.99	53.97	74	-20.03	PK	Vertical
2390.0	53.81	-12.99	40.82	54	-13.18	AV	Vertical
2390.0	66.01	-12.99	53.02	74	-20.98	PK	Horizontal
2390.0	51.46	-12.99	38.47	54	-15.53	AV	Horizontal
2483.6	65.56	-12.78	52.78	74	-21.22	PK	Vertical
2483.6	51.51	-12.78	38.73	54	-15.27	AV	Vertical
2483.6	66.69	-12.78	53.91	74	-20.09	PK	Horizontal
2483.6	52.85	-12.78	40.07	54	-13.93	AV	Horizontal

802.11 n20							
2390.0	66.75	-12.99	53.76	74	-20.24	PK	Vertical
2390.0	53.84	-12.99	40.85	54	-13.15	AV	Vertical
2390.0	65.54	-12.99	52.55	74	-21.45	PK	Horizontal
2390.0	51.40	-12.99	38.41	54	-15.59	AV	Horizontal
2483.6	65.67	-12.78	52.89	74	-21.11	PK	Vertical
2483.6	52.06	-12.78	39.28	54	-14.72	AV	Vertical
2483.6	67.10	-12.78	54.32	74	-19.68	PK	Horizontal
2483.6	52.51	-12.78	39.73	54	-14.27	AV	Horizontal

Remark:

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

Low measurement frequencies is range from 2310 to 2400 MHz, high measurement frequencies is range from 2483.5 to 2500 MHz.

Only show the worst point data of the emissions in the frequency 2310-2400 MHz and 2483.5-2500 MHz.

#### Test Frequency :Above 18GHz

The measurements were more than 20 dB below the limit and not reported

Remark1.The testing has been conformed to  $10 \times 2480 = 24800$  MHz.

2.All other emissions more than 30dB below the limit.

## 7 Conducted Spurious Emission

Test Requirement : FCC CFR47 Part 15 Section 15.247  
 Test Method : ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE V03R05  
 Test Limit : Regulation 15.247 (d),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)).

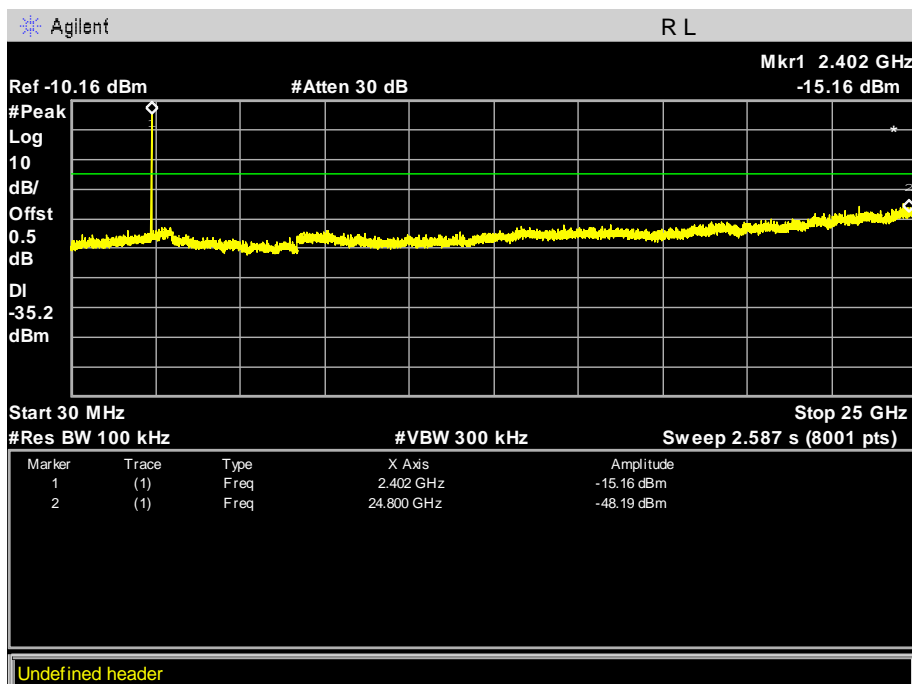
Test Mode : Refer to section 3.3

### 7.1 Test Procedure

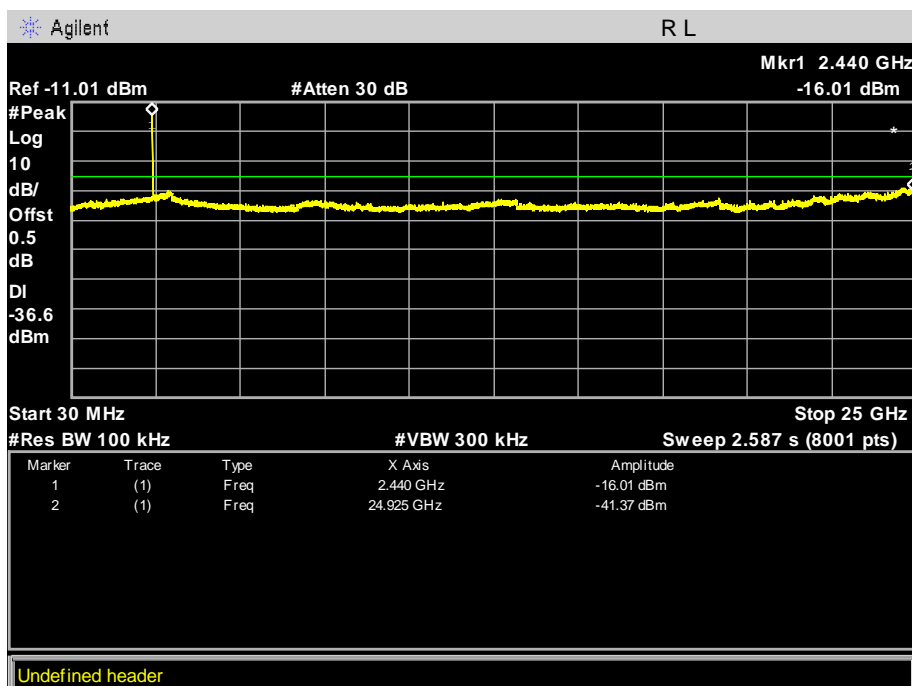
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto  
 Detector function = peak, Trace = max hold

### 7.2 Test Result

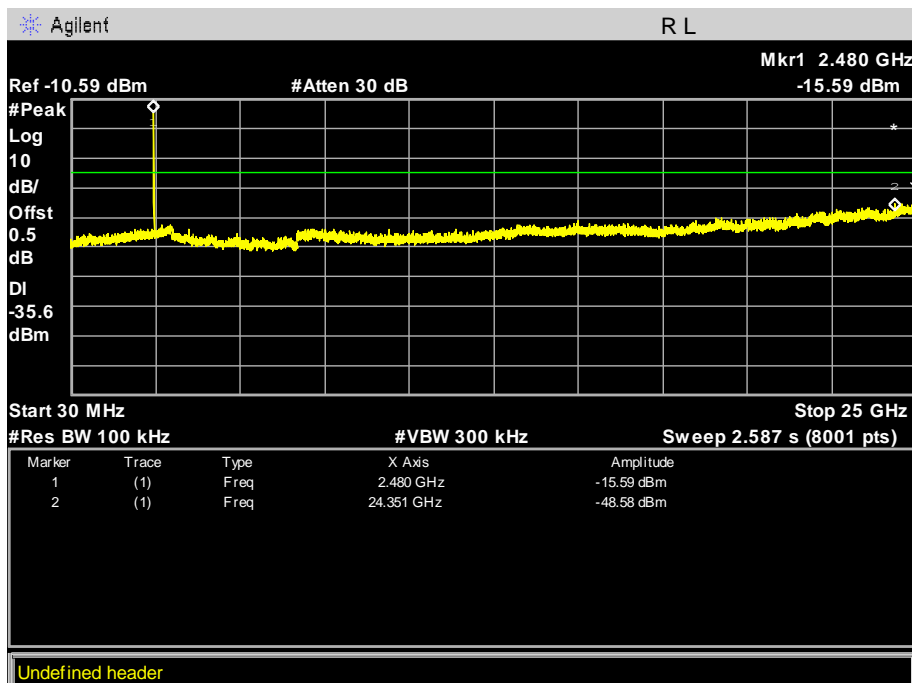
BLE Low Channel



### BLE Middle Channel

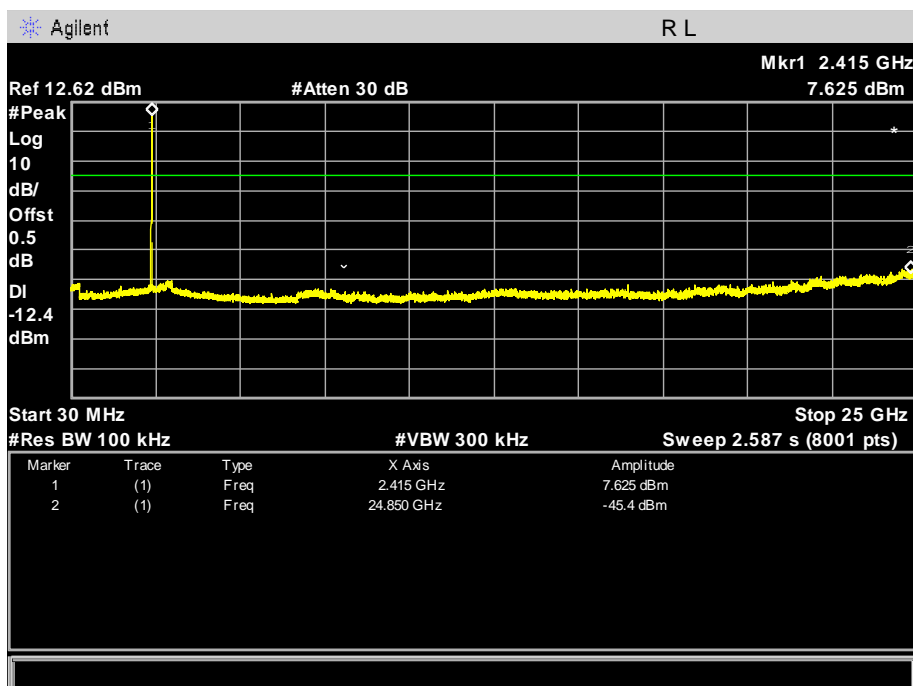


### BLE High Channel

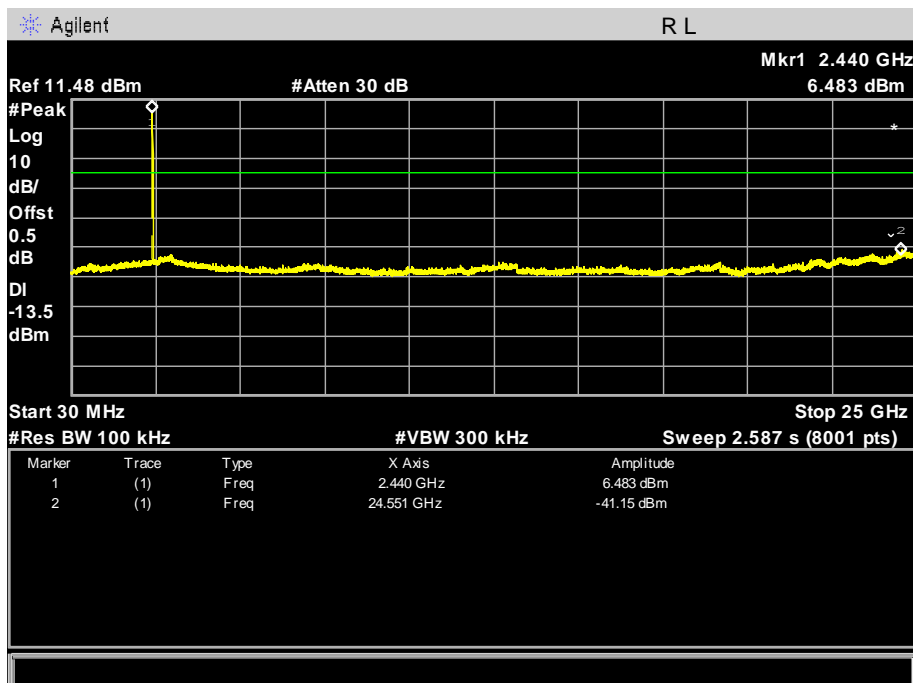




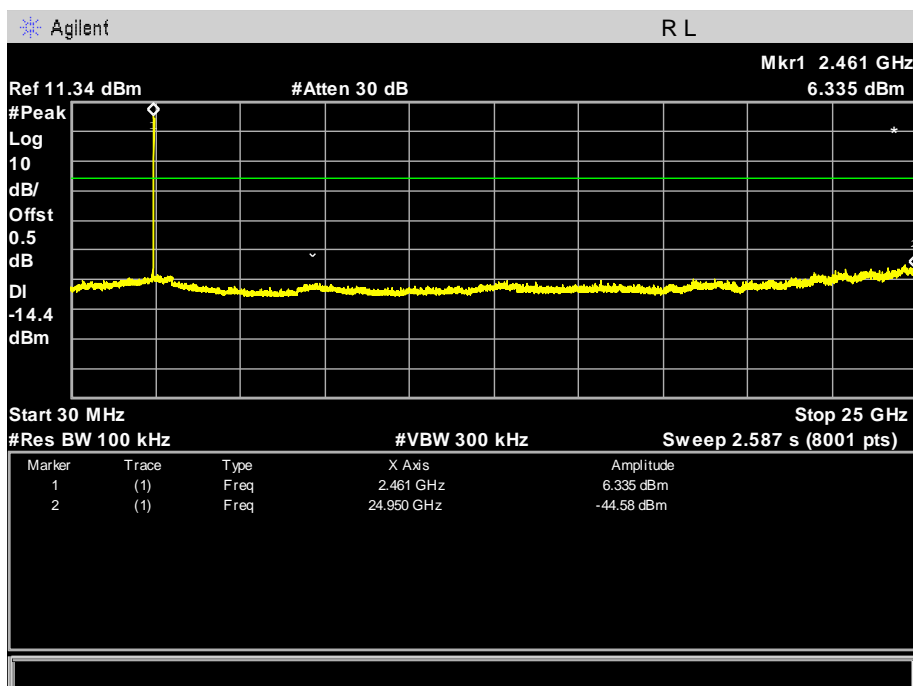
### 802.11b Low Channel



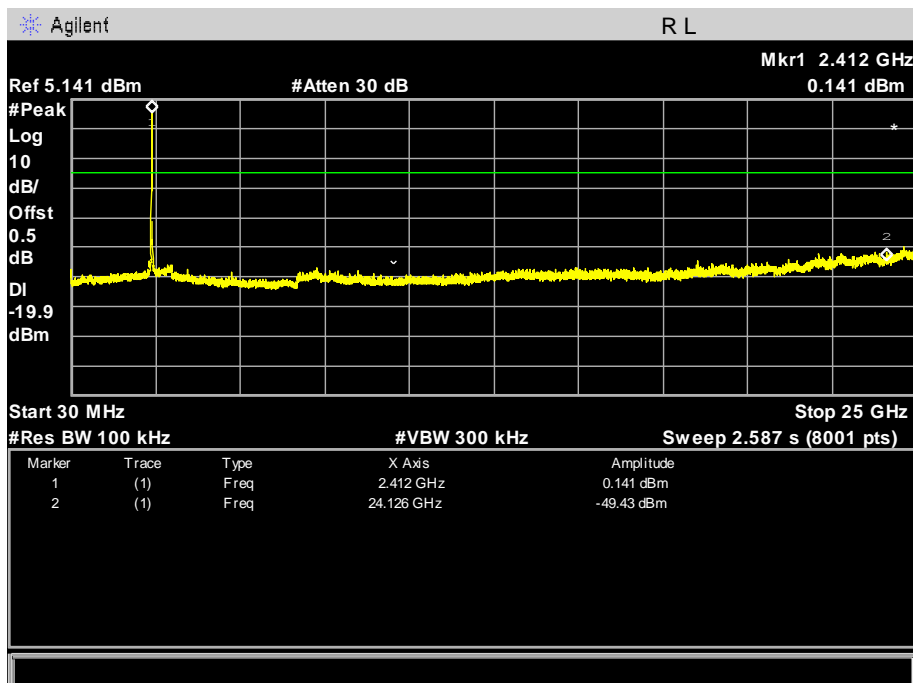
### 802.11b Middle Channel



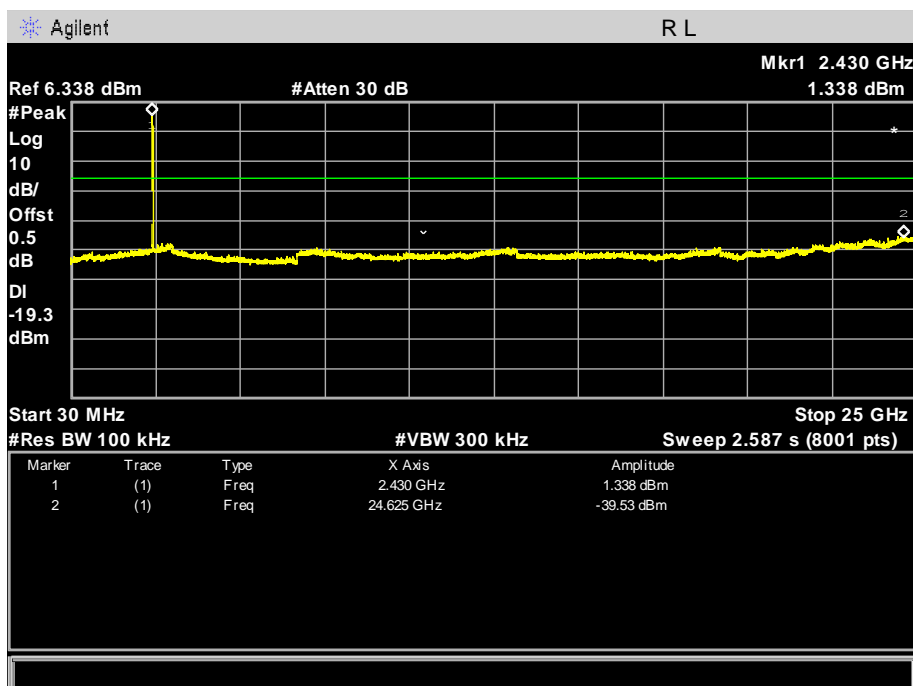
### 802.11b High Channel



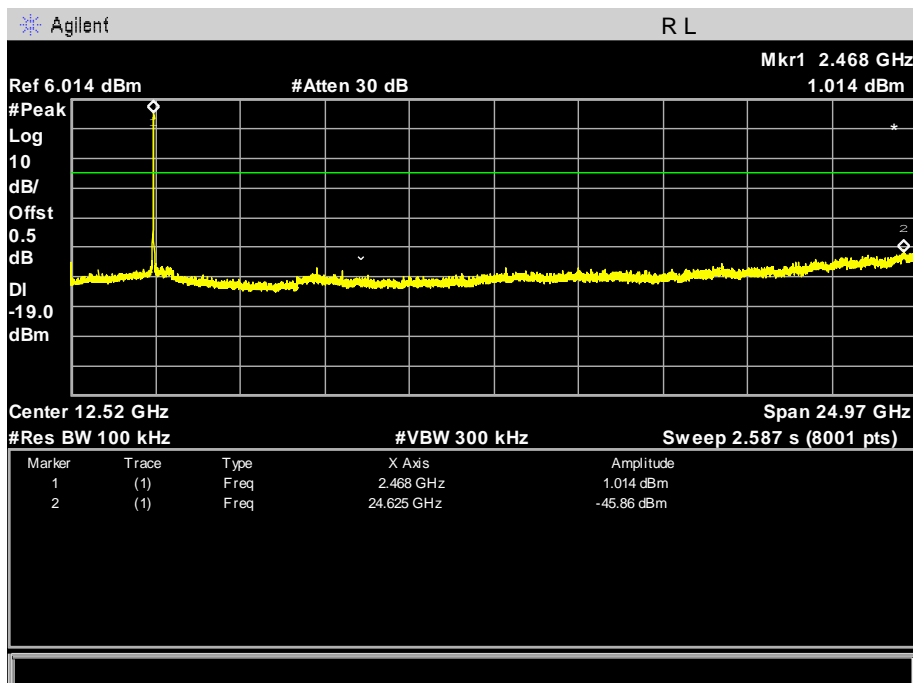
### 802.11g Low Channel



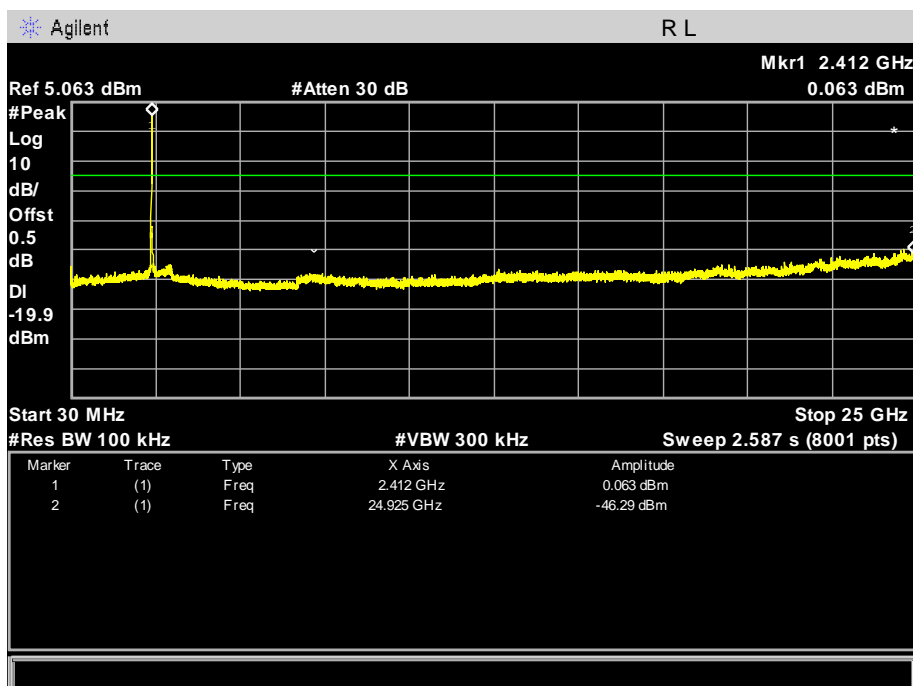
### 802.11g Middle Channel



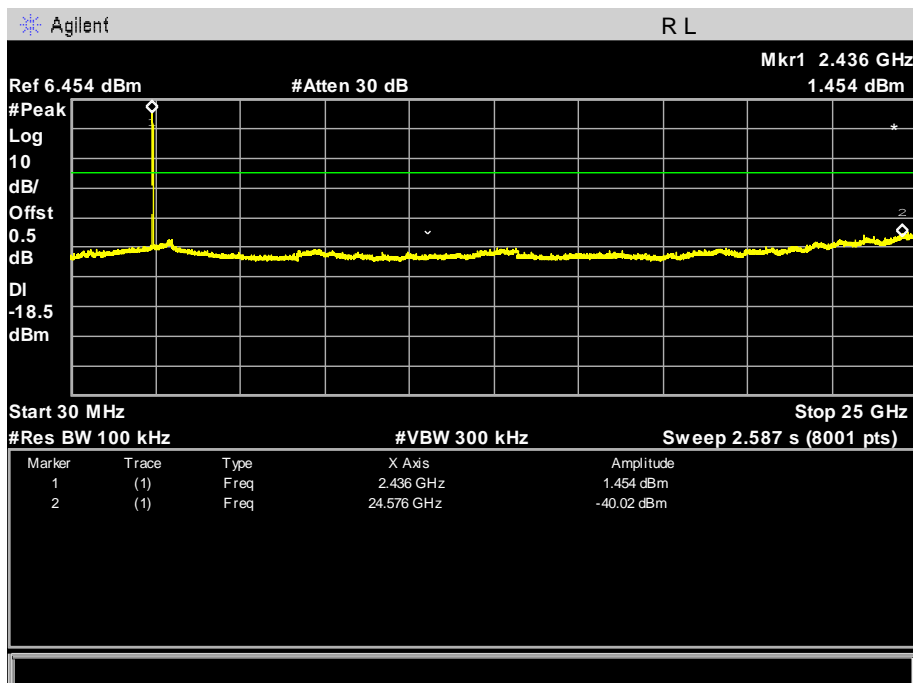
### 802.11g High Channel



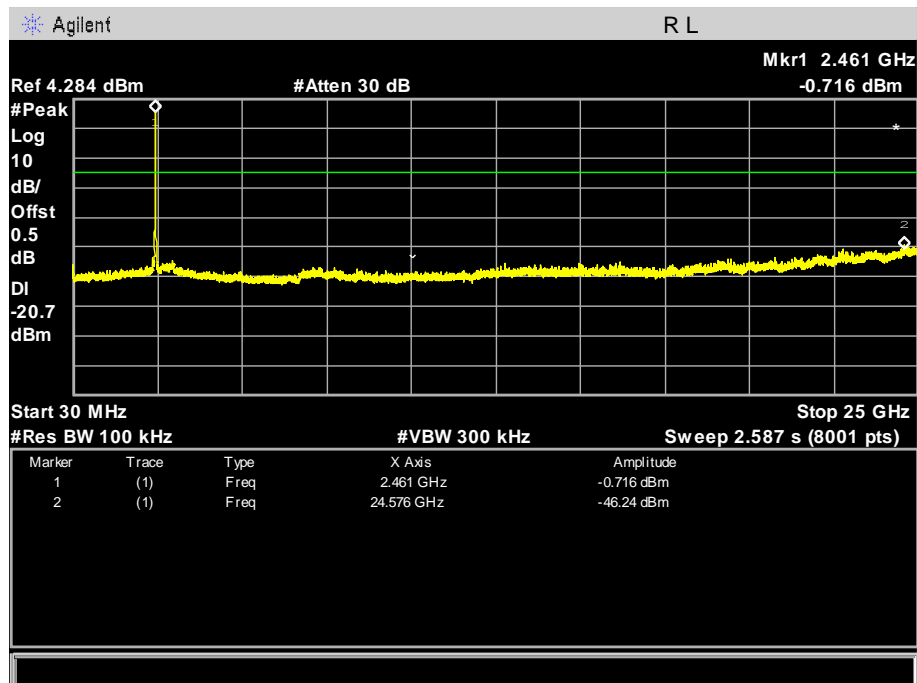
### 802.11HT20 Low Channel



### 802.11HT20 Middle Channel



802.11HT20 High Channel



## 8 Band Edge Measurement

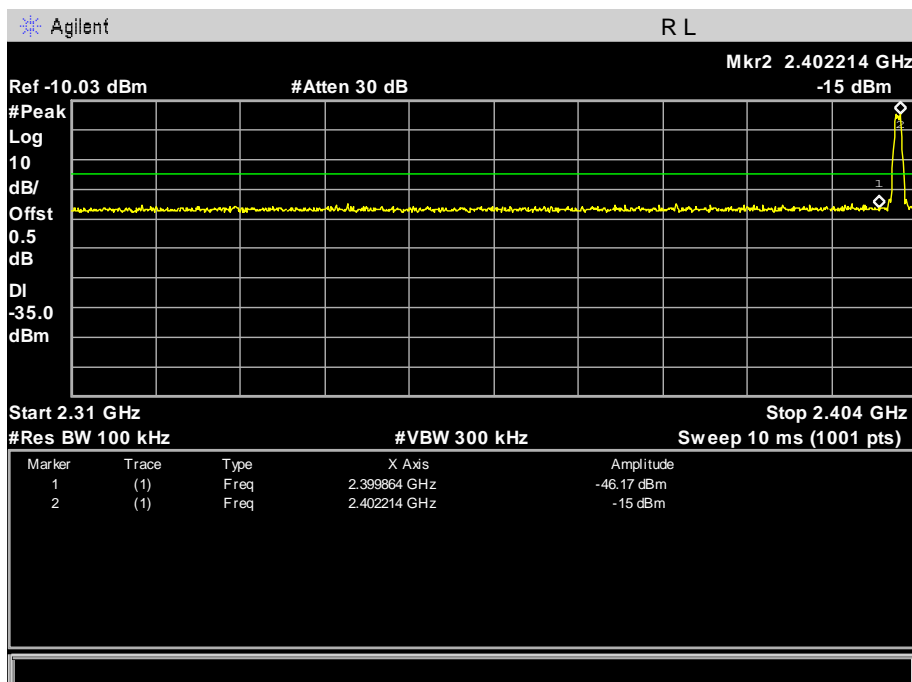
Test Requirement	: Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).
Test Method	: ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE V03R03
Test Limit	: Regulation 15.247 (d),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 Mode	: Refer to section 3.3

### 8.1 Test Procedure

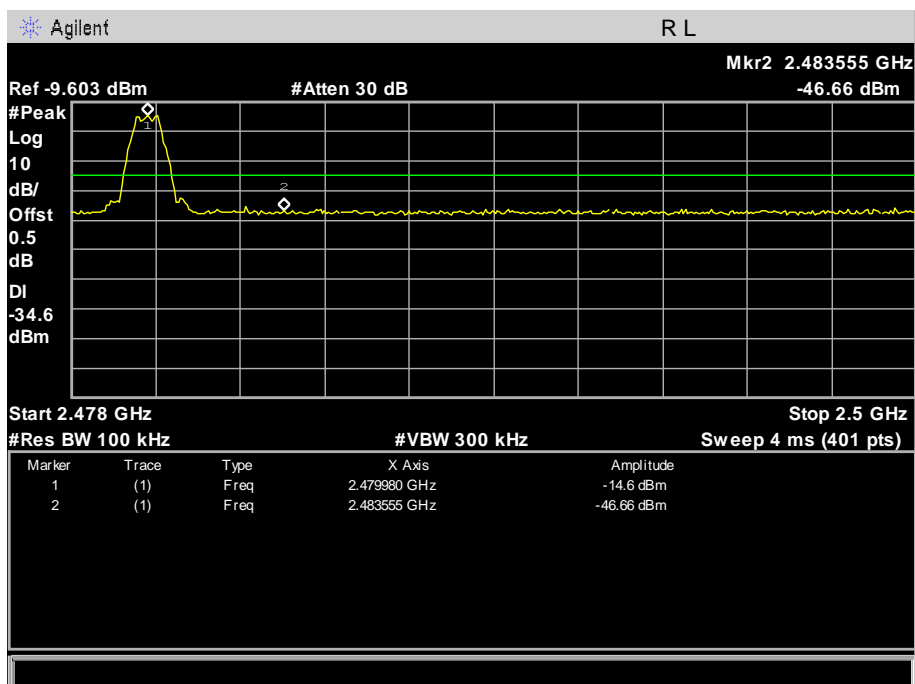
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto  
Detector function = peak, Trace = max hold

## 8.2 Test Result

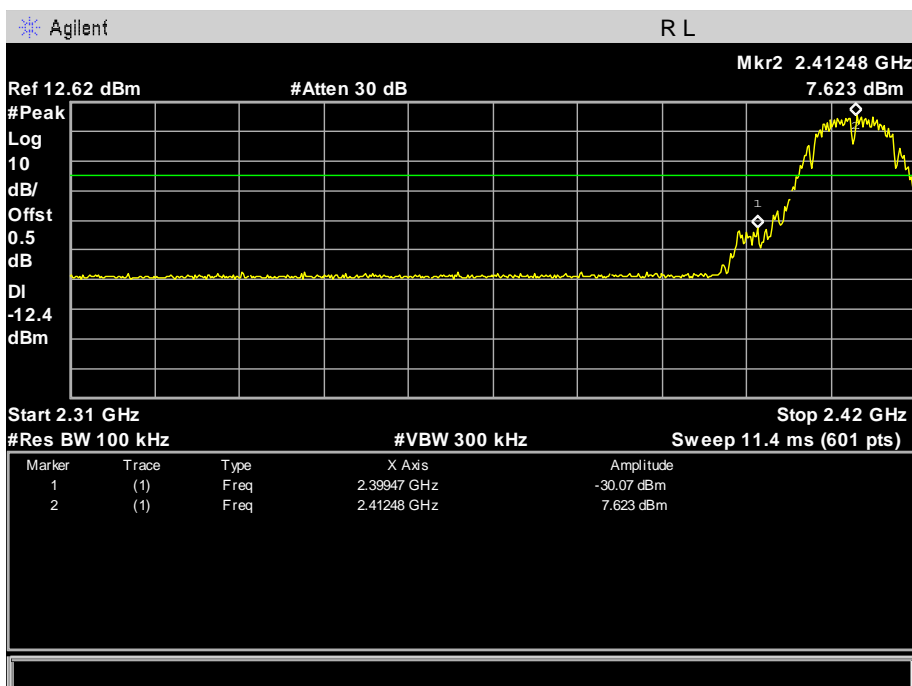
GFSK(BLE) Band edge-left side



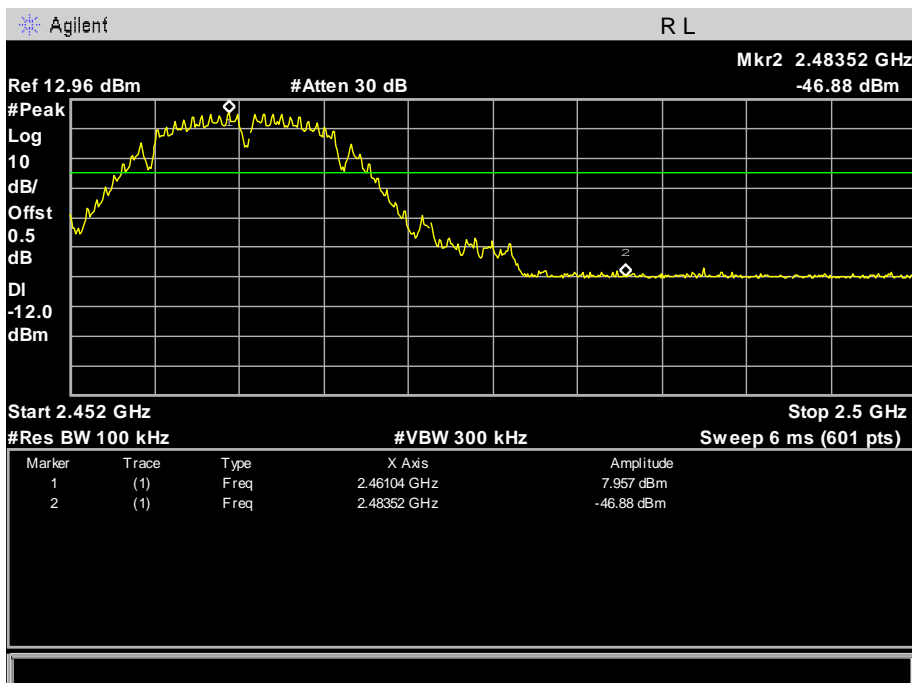
GFSK(BLE) Band edge-right side



802.11b Band edge-left side

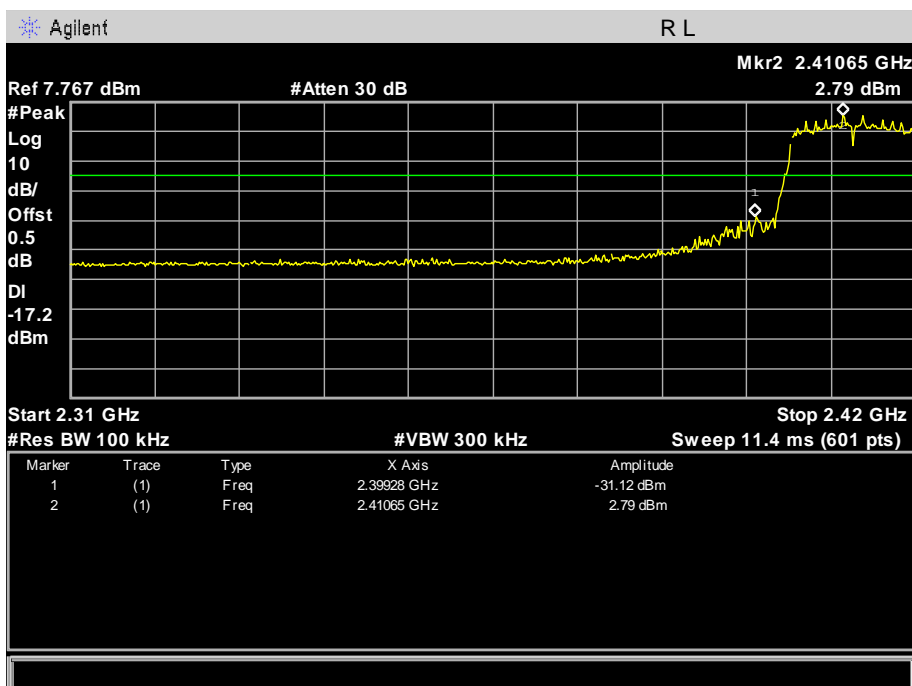


802.11b Band edge-right side

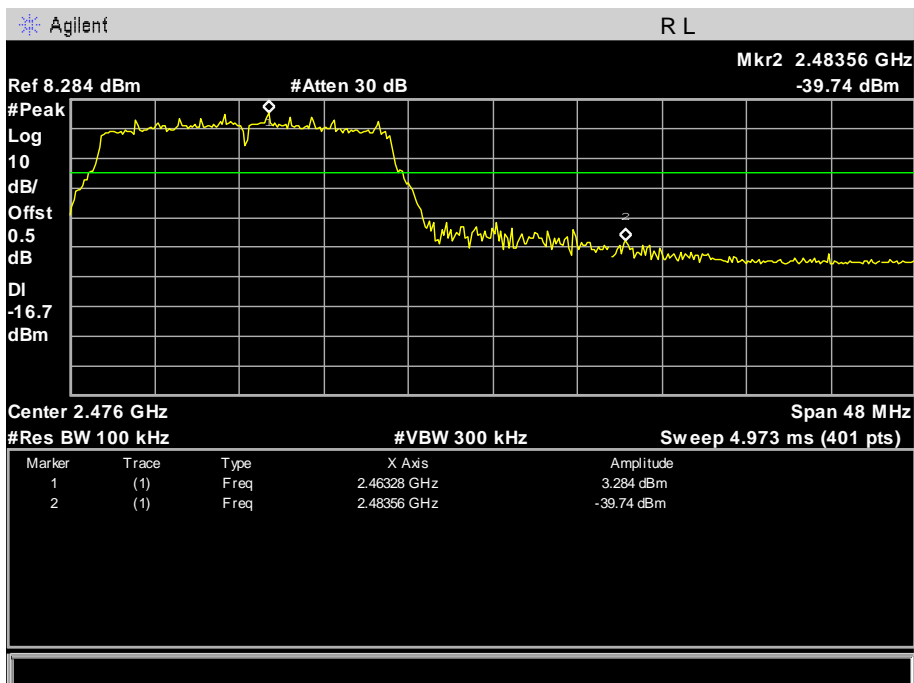




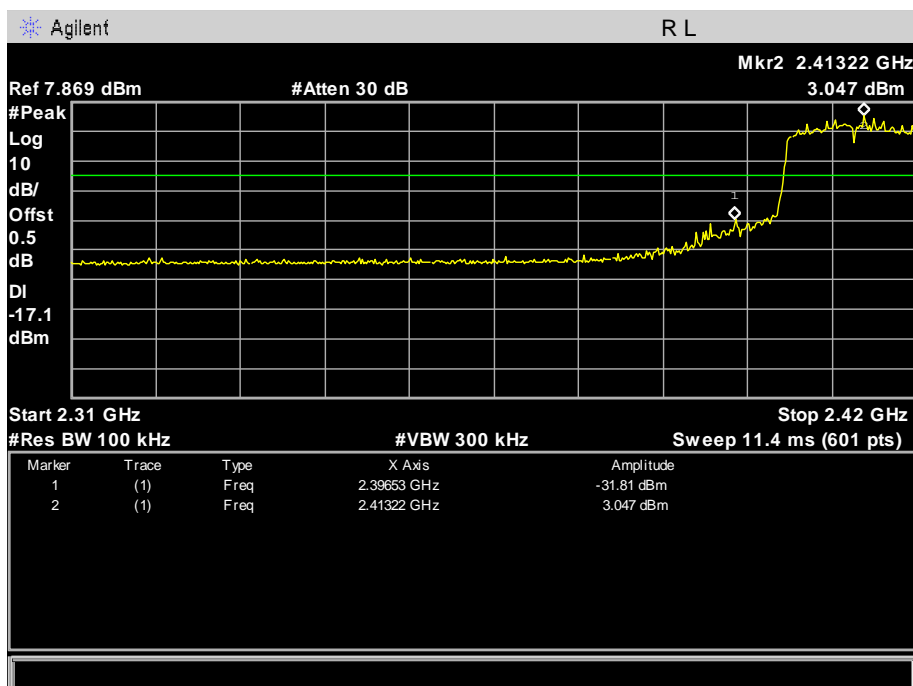
### 802.11g Band edge-left side



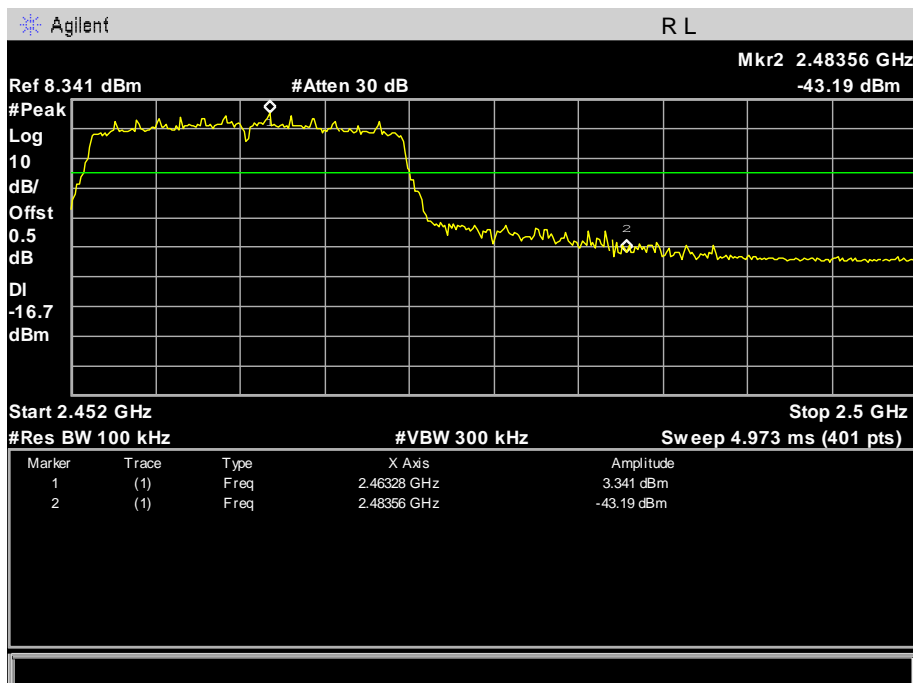
### 802.11g Band edge-right side



802.11n-HT20 Band edge-left side



802.11n-HT20 Band edge-right side



## 9 6dB Bandwidth Measurement

Test Requirement	: FCC CFR47 Part 15 Section 15.247
Test Method	: ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE V03R03
Test Limit	Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Mode	: Refer to section 3.3

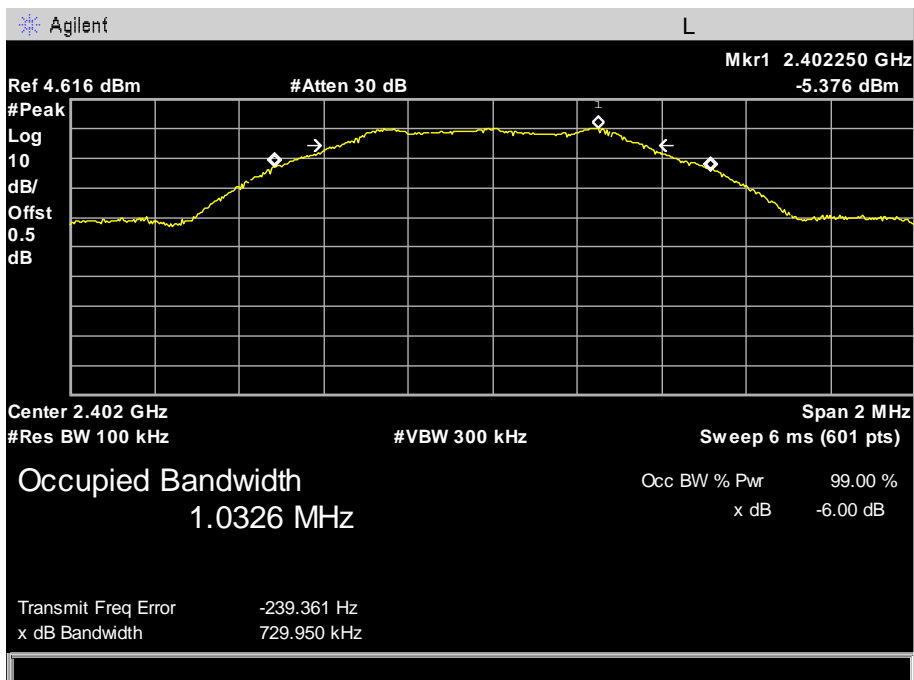
### 9.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: For BLE, RBW = 100 kHz, VBW = 300kHz, For WIFI, RBW = 100kHz, VBW = 300kHz

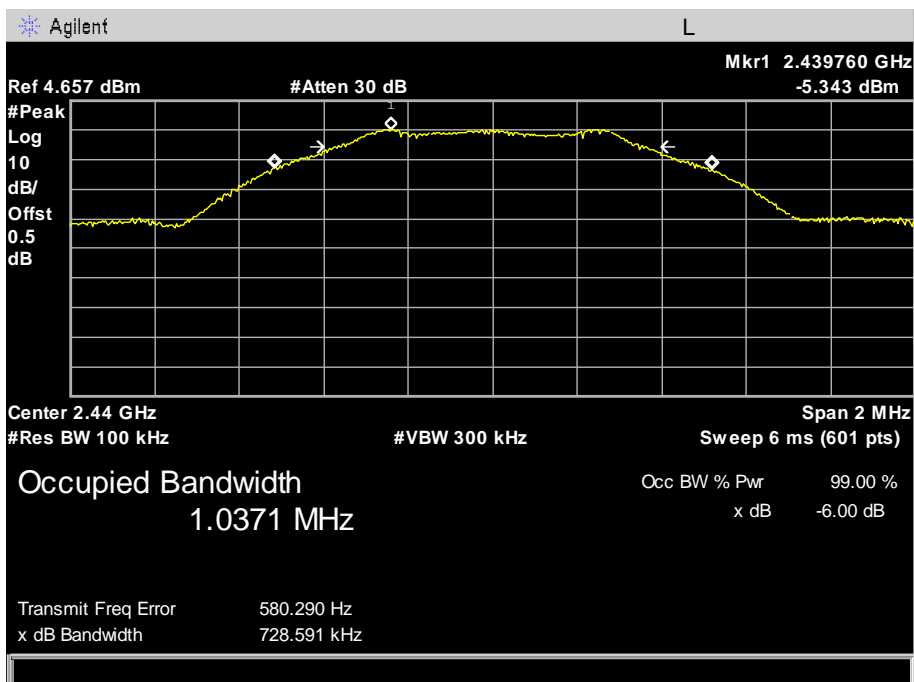
### 9.2 Test Result

Modulation	Bandwidth(MHz)			Limit
	Low Channel	Middle Channel	High Channel	
GFSK(BLE)	0.730	0.729	0.728	≥500kHz
802.11b	10.904	12.594	12.928	≥500kHz
802.11g	15.792	16.546	16.473	≥500kHz
802.11n-HT20	16.866	17.613	17.478	≥500kHz

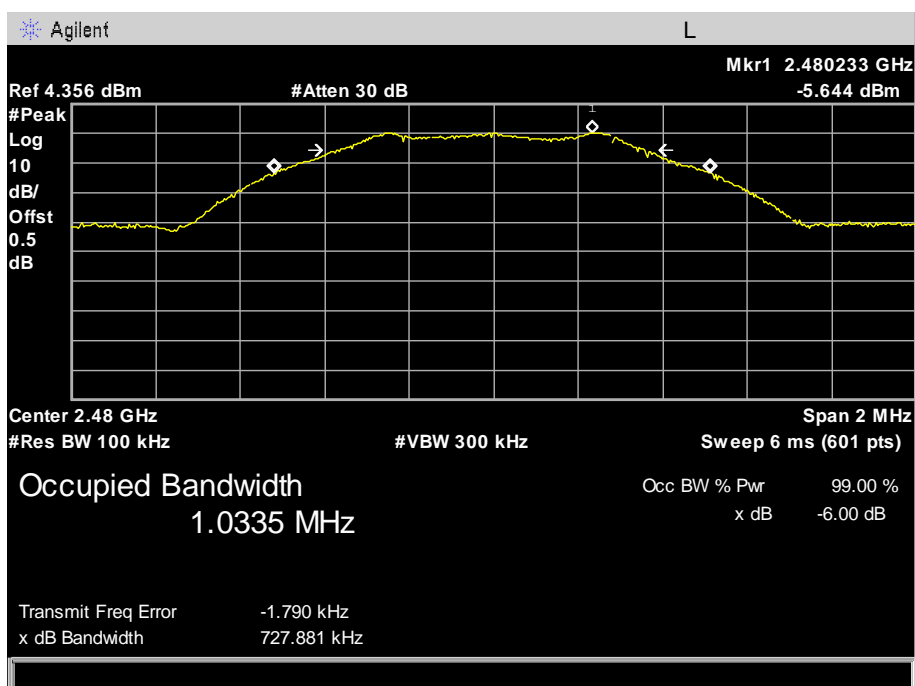
### GFSK(BLE) Low Channel



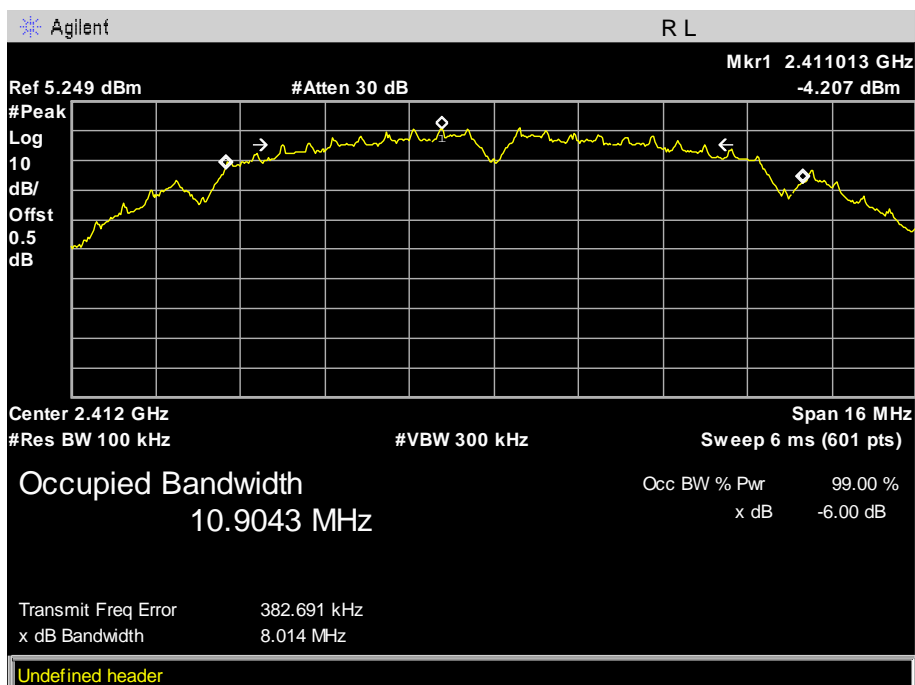
### GFSK(BLE) Middle Channel



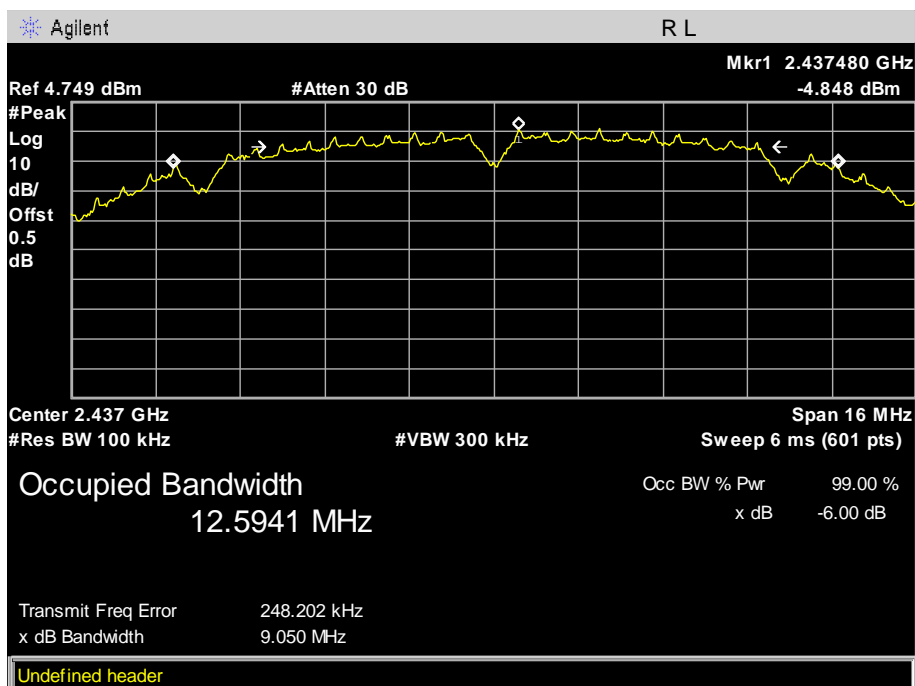
### GFSK(BLE)High Channel



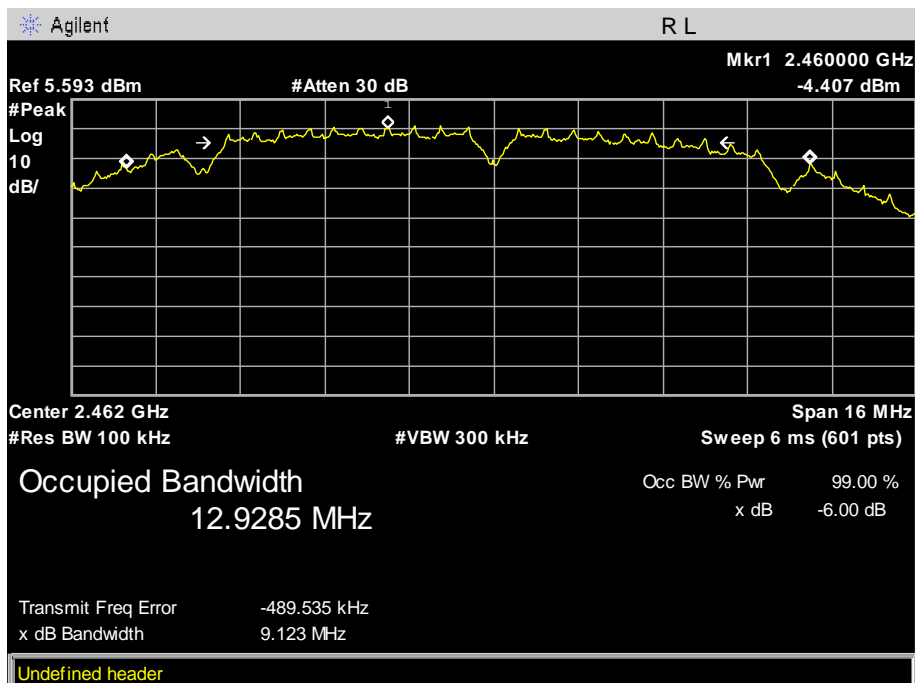
### 802.11b LowChannel



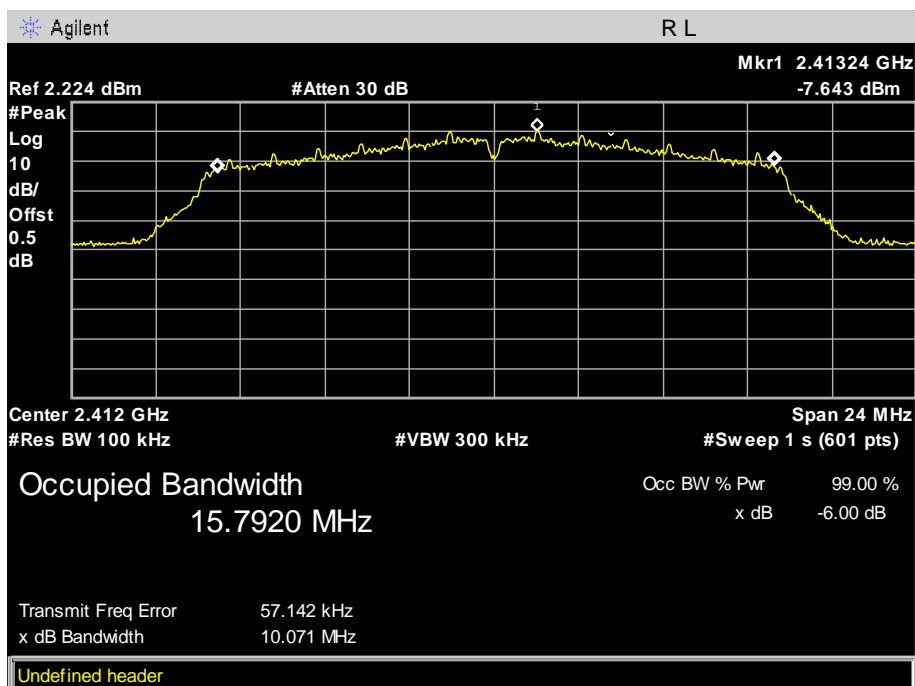
802.11b Middle Channel



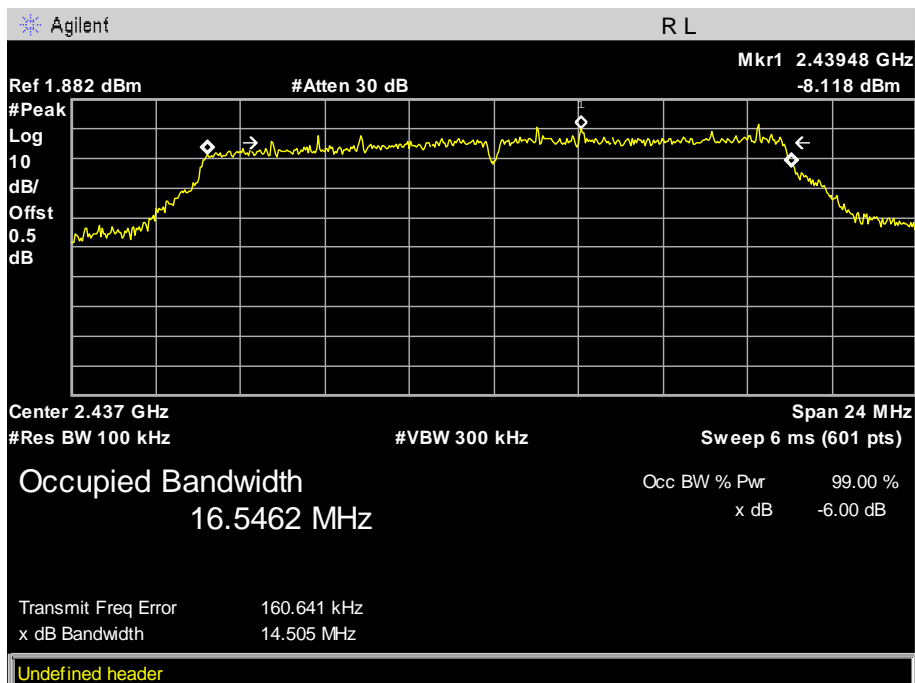
802.11b High Channel



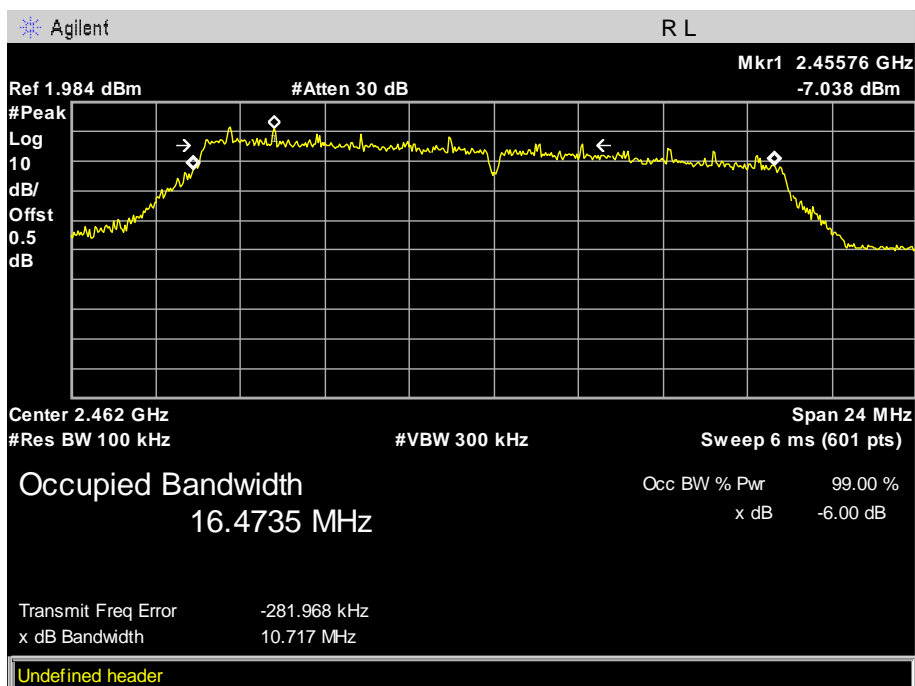
### 802.11g Low Channel



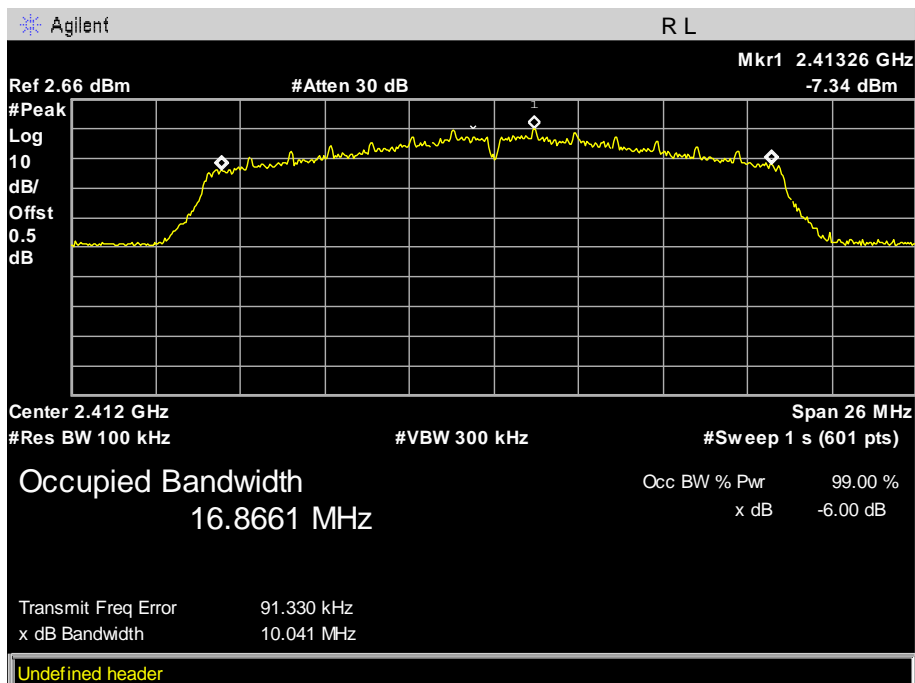
### 802.11g Middle Channel



### 802.11g High Channel

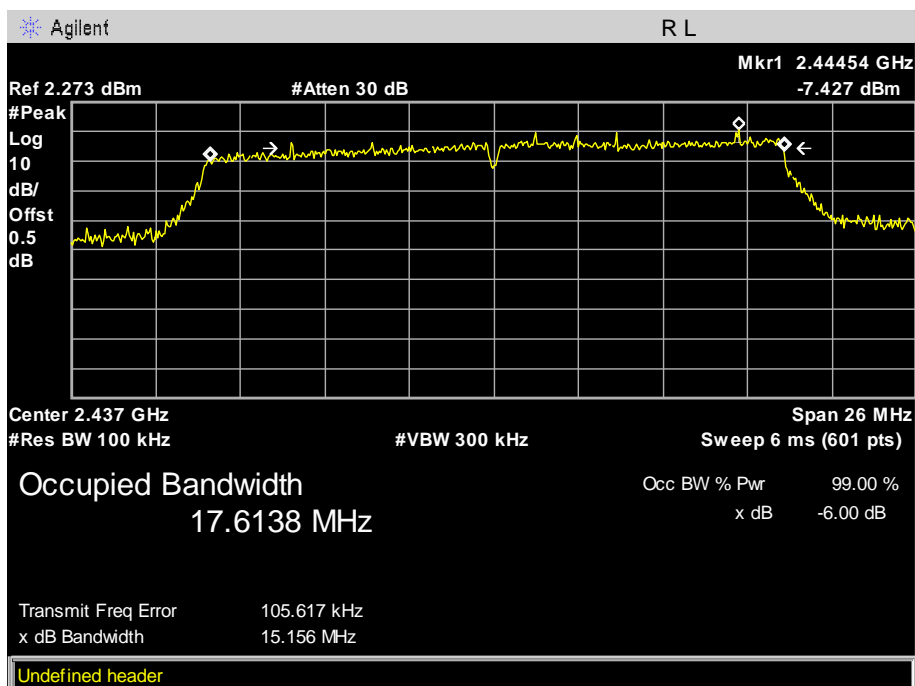


### 802.11n-HT20 Low Channel

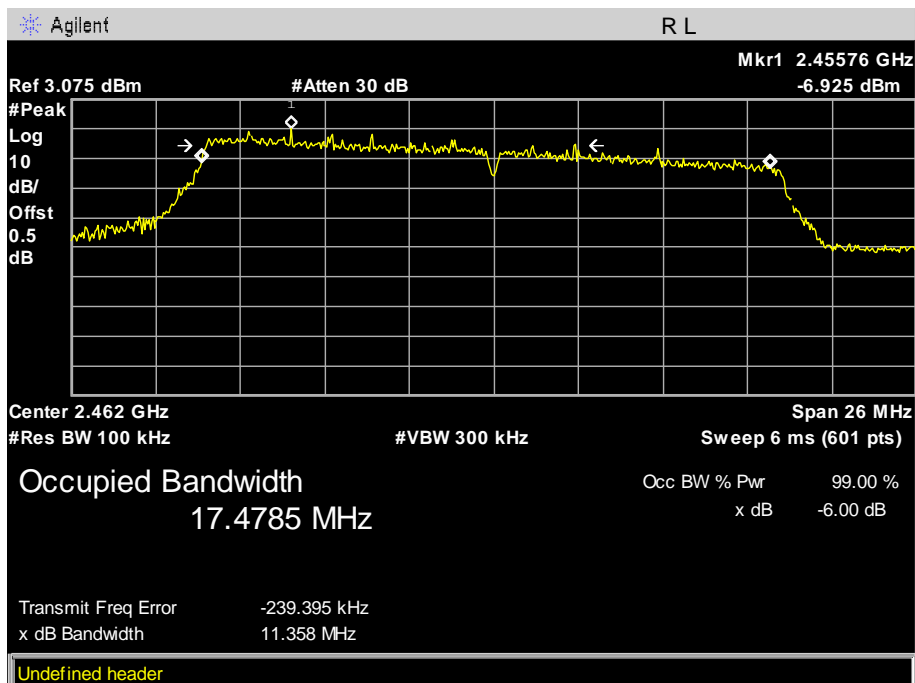




### 802.11n-HT20Middle Channel



### 802.11n-HT20High Channel



## 10 Maximum Peak Output Power

Test Requirement	: FCC CFR47 Part 15 Section 15.247
Test Method	: ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE V03R03
Test Limit	: Regulation 15.247 (b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power.
Test Mode	: Refer to section 3.3

### 10.1 Test Procedure

KDB 558074 D01 DTS Meas Guidance v03r03

The maximum peak conducted output power measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.





## 10.2 Test Result

Modulation	Maximum Peak Output Power (dBm)			Limit
	Low Channel	Middle Channel	High Channel	
GFSK(BLE)	-8.57	-7.95	-6.95	1W(30dBm)
802.11b	18.64	18.74	18.93	1W(30dBm)
802.11g	16.04	16.10	15.43	1W(30dBm)
802.11n-HT20	15.39	15.42	15.65	1W(30dBm)

## 11 Power Spectral density

Test Requirement	: FCC CFR47 Part 15 Section 15.247
Test Method	: ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE V03R03
Test Limit	: Regulation 15.247(f)The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
Test Mode	: Refer to section 3.3

### 11.1 Test Procedure

KDB 558074 D01 DTS Meas Guidance V03R05

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

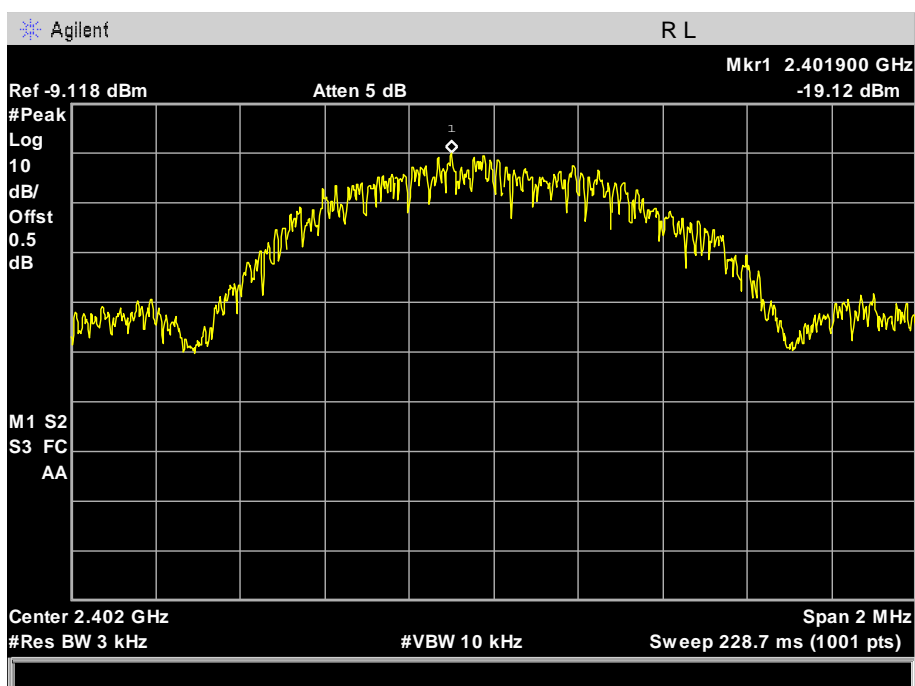
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

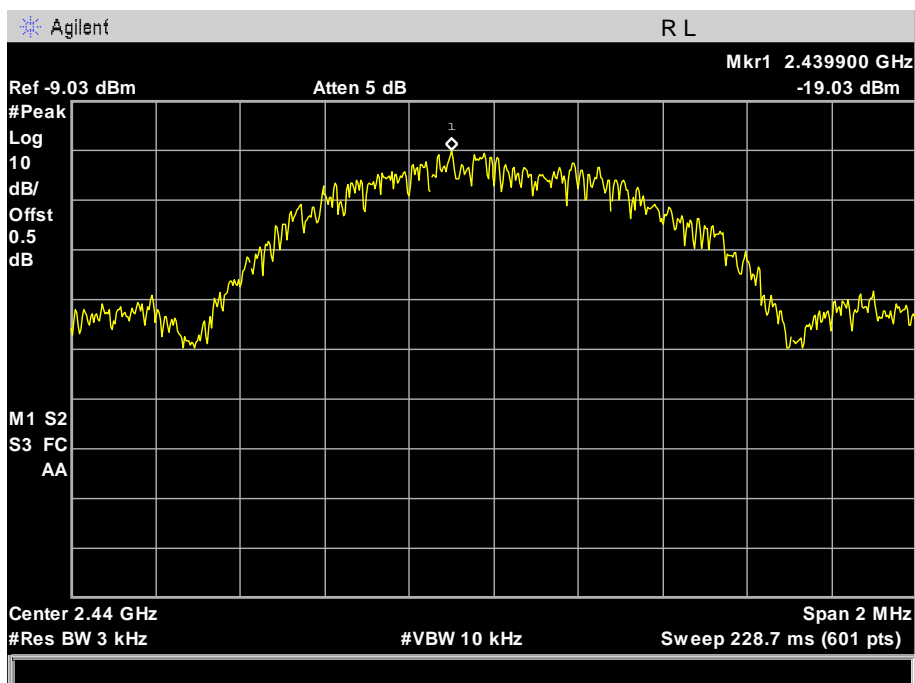
### 11.2 Test Result

Modulation	Power Spectral density ( dBm/3kHz )			Limit
	Low Channel	Middle Channel	High Channel	
GFSK(BLE)	-19.12	-19.03	-19.50	8dBm/3kHz
802.11b	-6.834	-7.932	-7.374	8dBm/3kHz
802.11g	-13.46	-11.41	-11.09	8dBm/3kHz
802.11n-HT20	-11.11	-10.57	-12.90	8dBm/3kHz

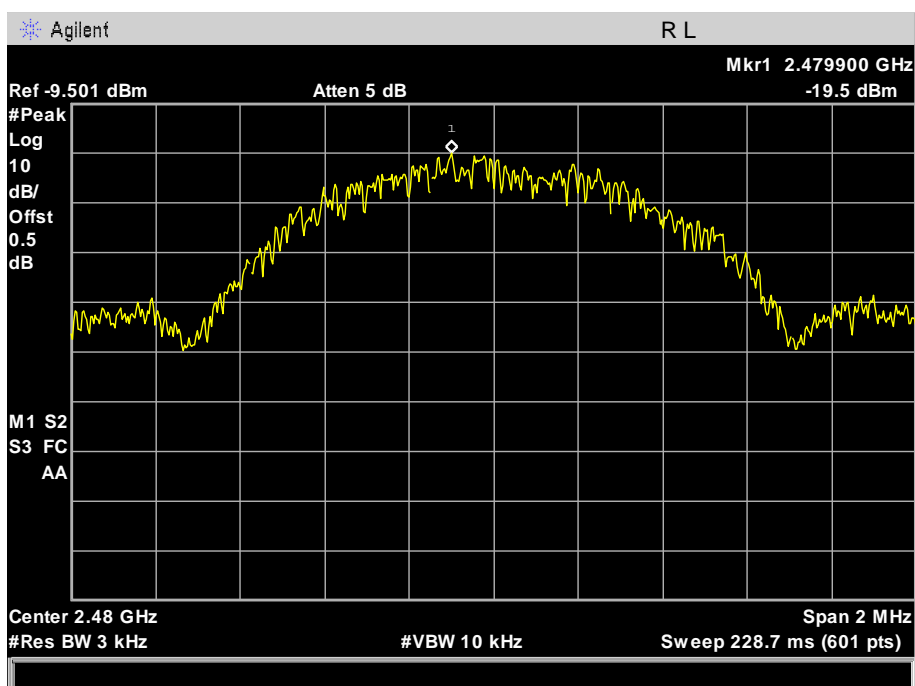
### GFSK(BLE) Low Channel



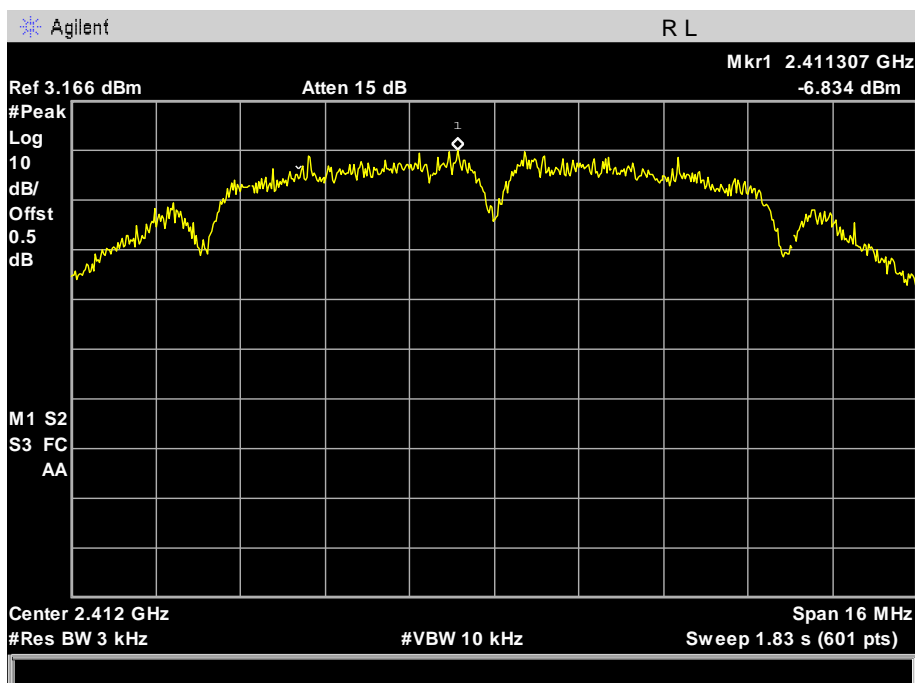
### GFSK(BLE) Middle Channel



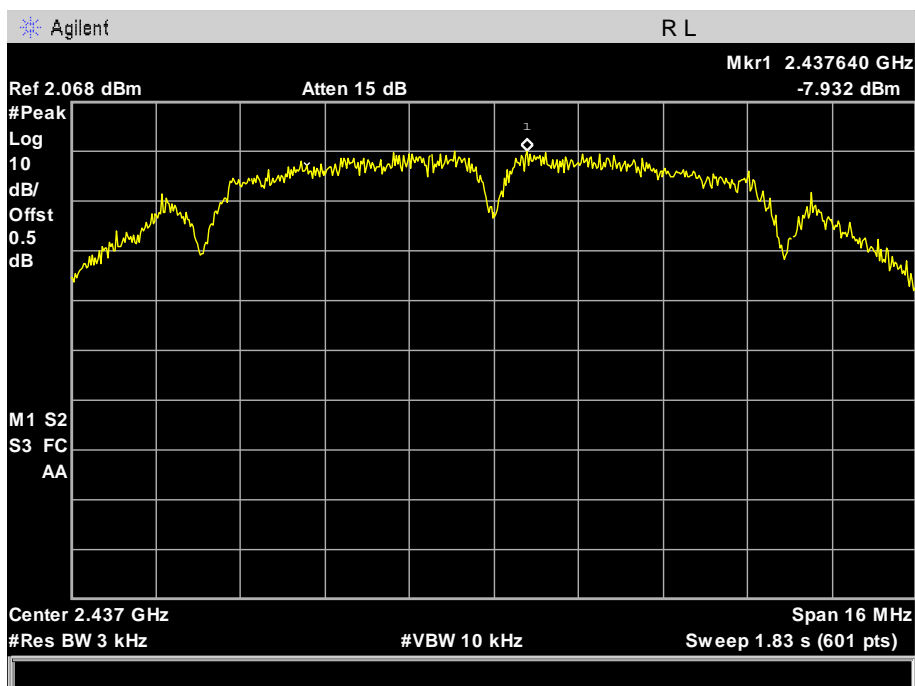
### GFSK(BLE)High Channel



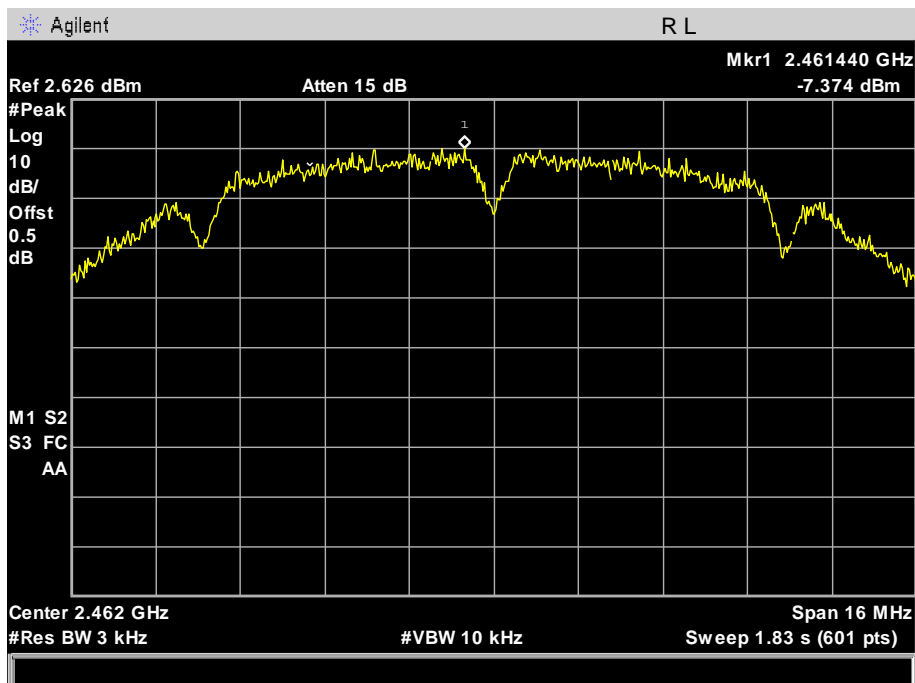
### 802.11b LowChannel



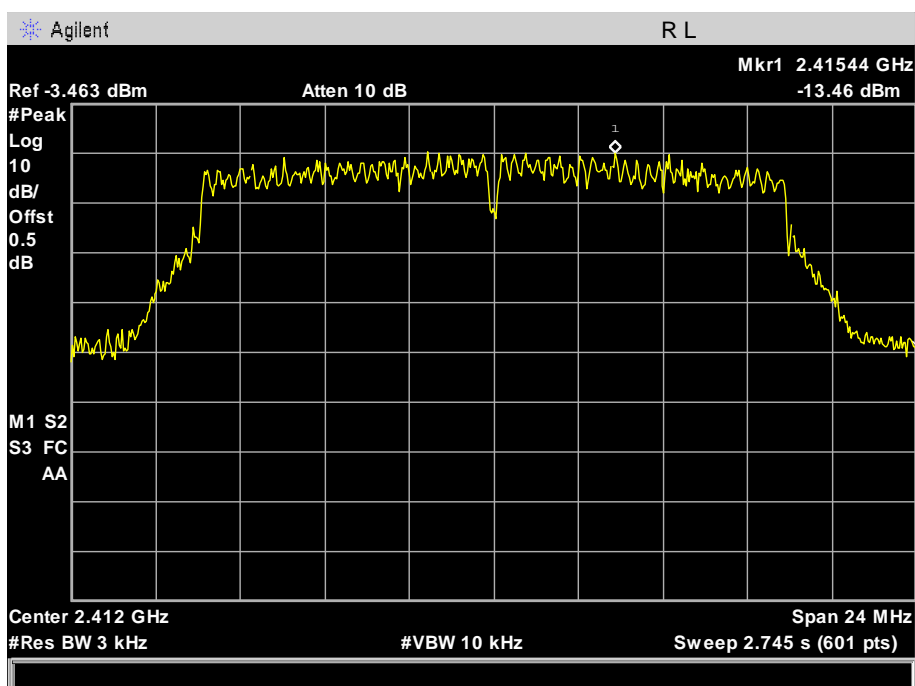
### 802.11b Middle Channel



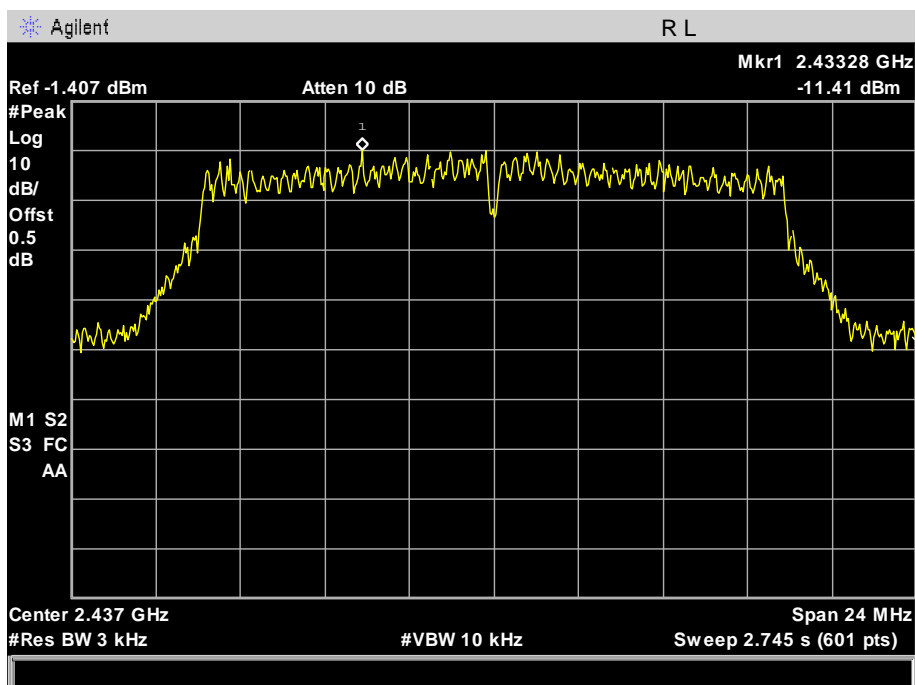
### 802.11b High Channel



### 802.11g Low Channel

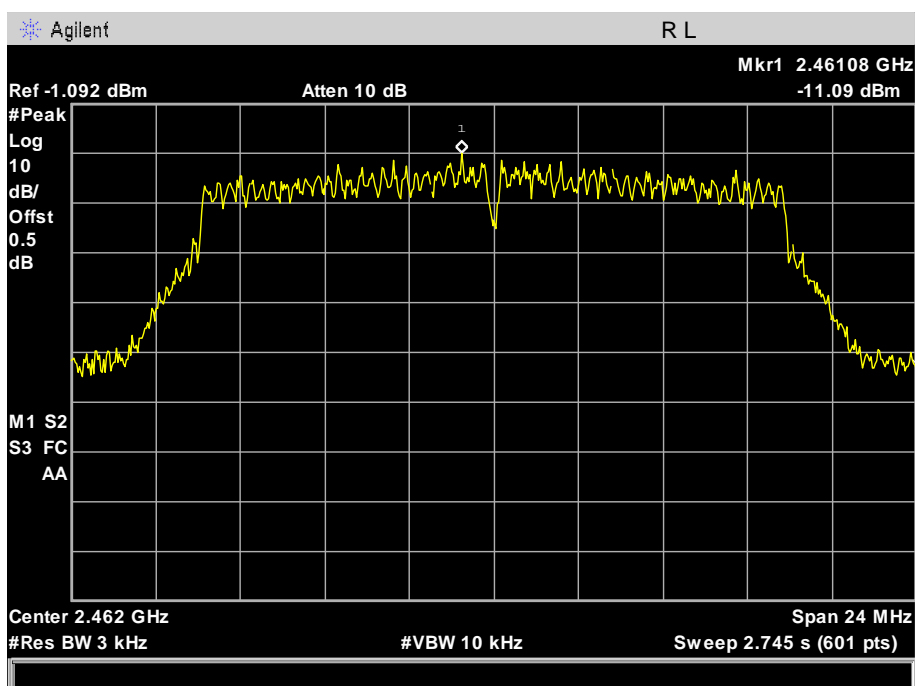


### 802.11g Middle Channel

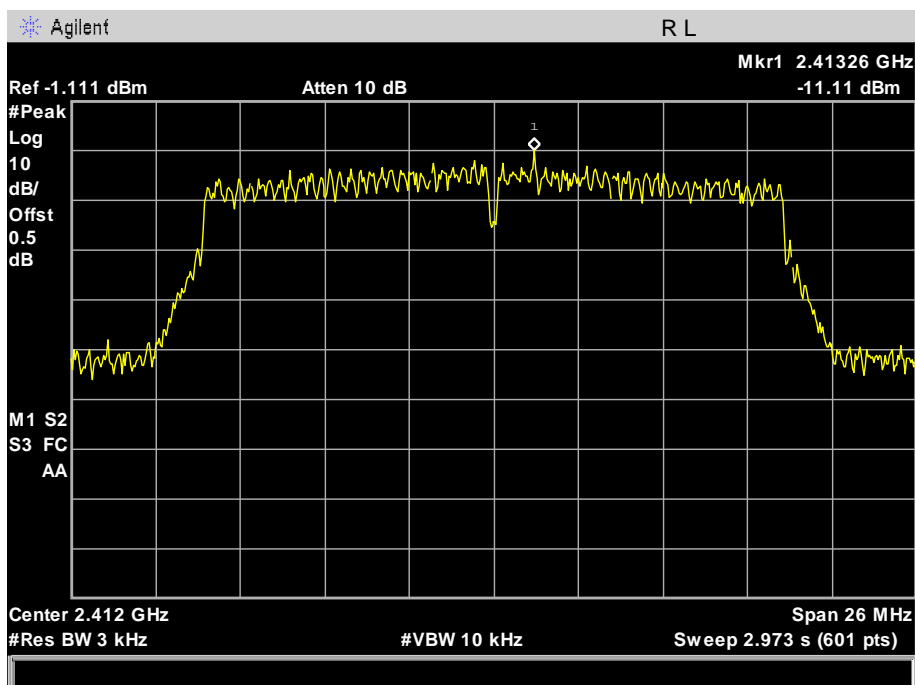




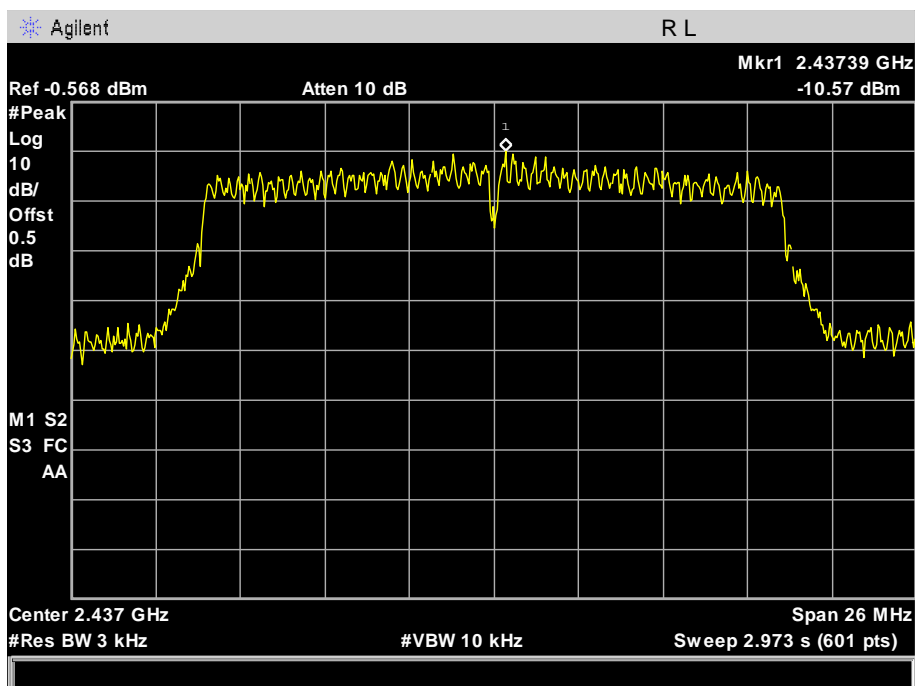
### 802.11g High Channel



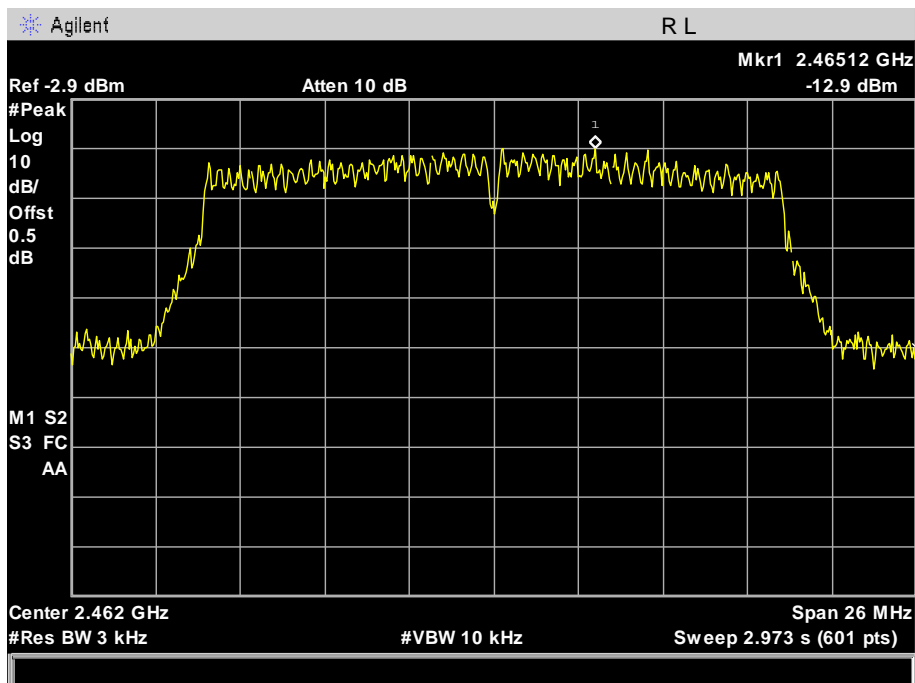
### 802.11n-HT20 Low Channel



802.11n-HT20Middle Channel



802.11n-HT20High Channel



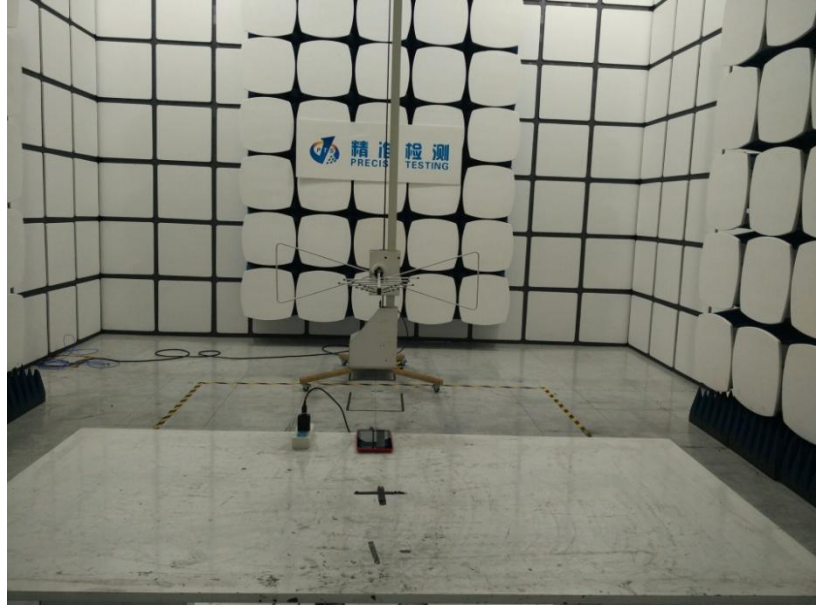


## 12 Antenna Requirement

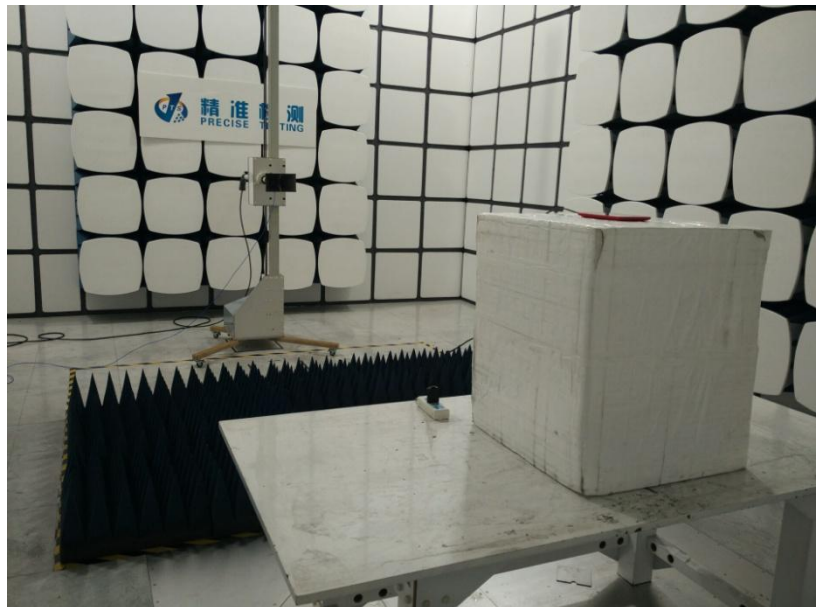
According to the FCC part15.203, a transmitter can only be sold or operated with antennas with which it was approved. This product has anPCB printed antenna, it meet the requirement of this section.

## 13 Test Setup

Radiated Spurious Emissions  
From 30MHz-1000MHz



Above 1GHz



### Conducted Emissions

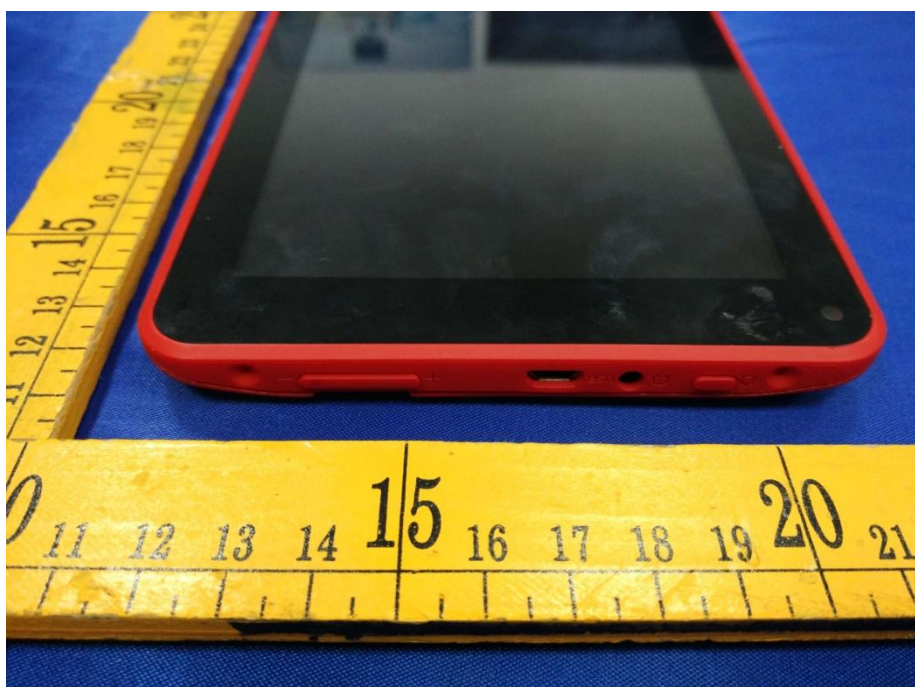


## 14 EUT Photos

### External Photos





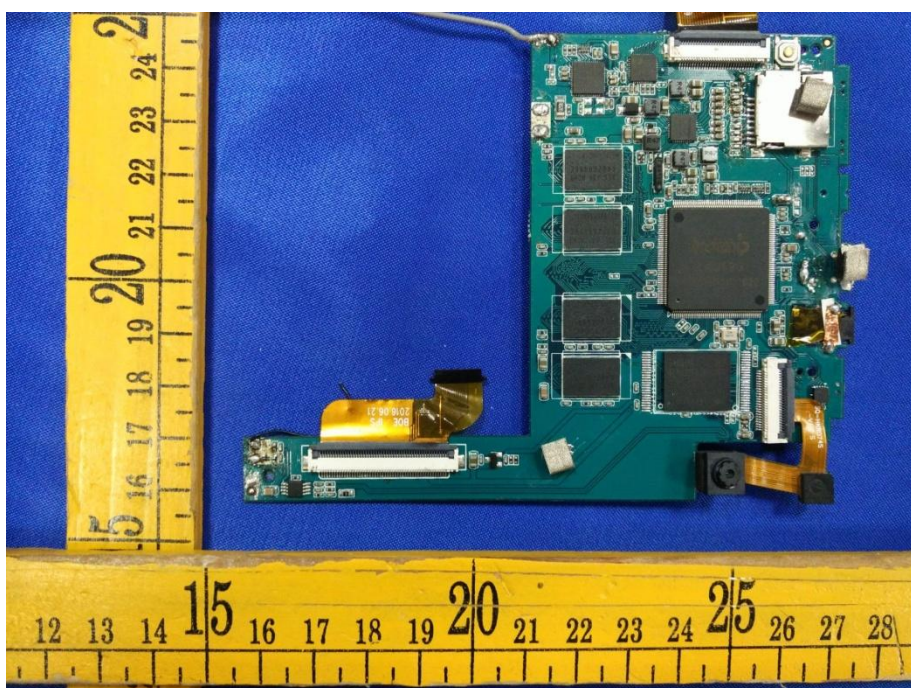
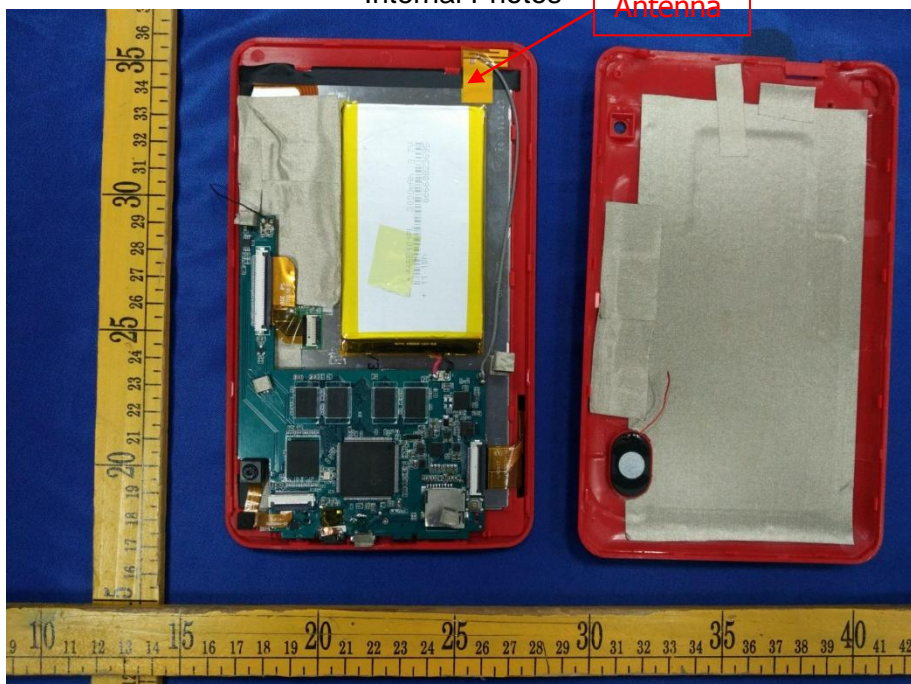


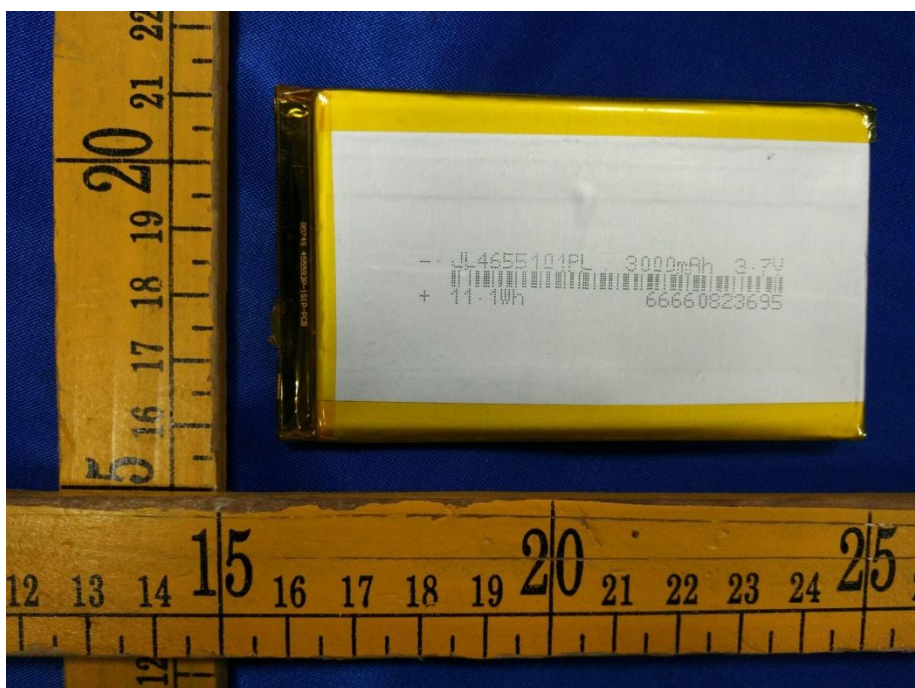
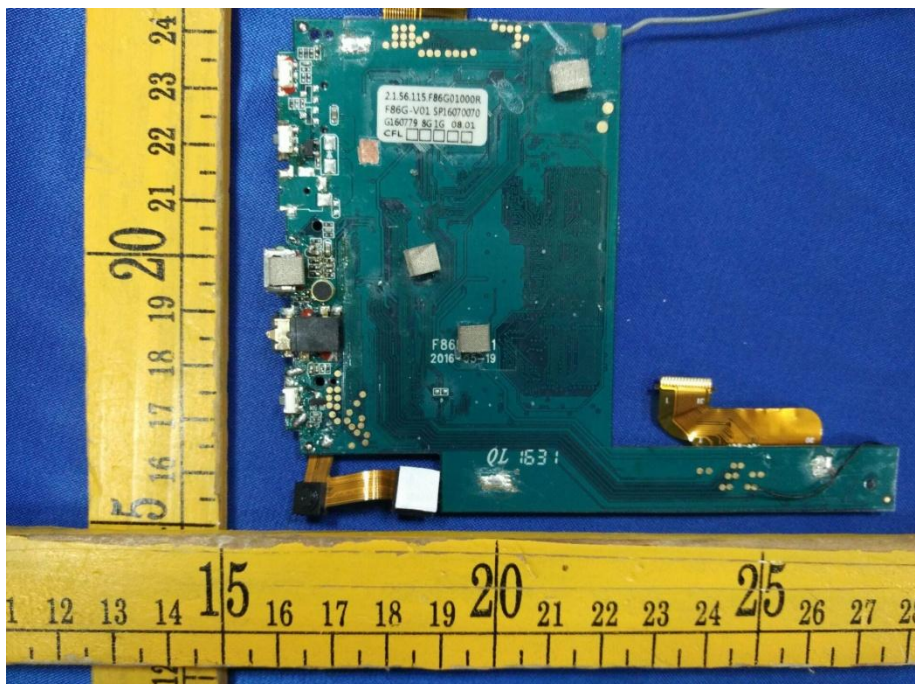




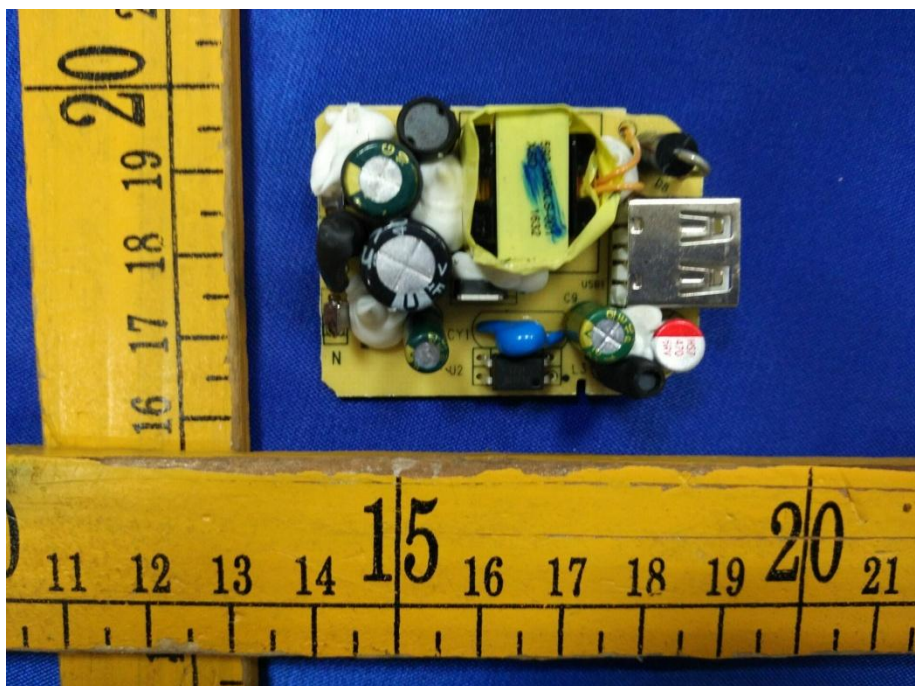
Internal Photos

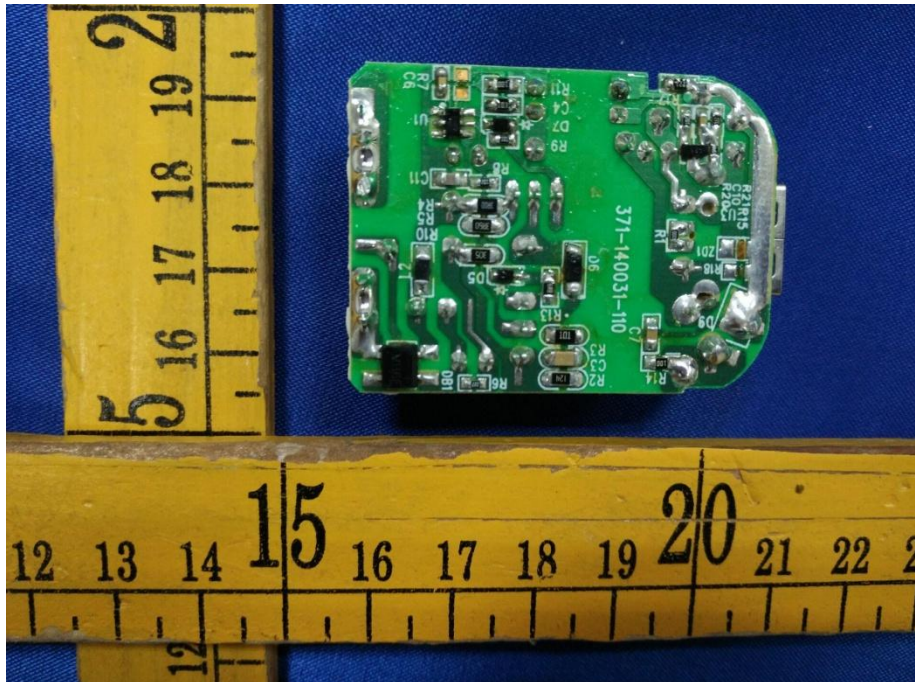
Antenna











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