FCC 47 CFR PART 15 SUBPART C 15.247

TEST REPORT

FOR

HIHI-40KH-TAB

Model : 40KH,QN_103

Issued to
HiHi Ltd
Loewy House, 11 Enterprise Way, Aviation Park West, Christchurch, Dorset, BH23 6EW, UK

Issued by
WH Technology Corp.

EMC Test Site	**Xizhi Office and Lab**	**Datong Rd. Xizhi Dist. New Taipei City Taiwan**
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Contents

1. General Information

Applicant	:	**HiHi Ltd**
Address	:	**Loewy House, 11 Enterprise Way, Aviation Park West,**
Manufacturer	:	**Shenzhen Emdoor Digital Technology Co.,Ltd**
Address	:	**H.Q.:6/F JinFuLai Building,49-1 Dabao Road, Bao An District, Shenzhen**
EUT	:	**HIHI-40KH-TAB**
Model Name	:	**40KH,QN_103**
Model Differences	:	**Only model name different, others are all the same.**

Is here with confirmed to comply with the requirements set out in the FCC Rules and Regulations Part 15 Subpart C and the measurement procedures were according to ANSI C63.4-2014. The said equipment in the configuration described in this report shows the maximum emission levels emanating

FCC part 15 subpart C

Receipt Date : 08/23/2018 Final Test Date : 09/04/2018

Tested By: **Reviewed by:**

Sep.05, 2018 Sep.05, 2018

Date Bing Chang/ Engineer **Date** Bell Wei / Manager

Designation Number: TW2954

2. Report of Measurements and Examinations

2.1 List of Measurements and Examinations

FCC Rule	Description of Test	Result
15.203	. Antenna Requirement	Pass
15.207	. Conducted Emission	Pass
15.209 15.247(d)	. Radiated Emission	Pass
15.247(a)(2)	. 6dB Bandwidth	Pass
15.247(b)	. Maximum Peak Output Power	Pass
15.247(d)	. 100kHz Bandwidth of Frequency Band Edges	Pass
15.247(e)	. Power Spectral Density	Pass

3. Test Configuration of Equipment under Test

3.1 Description of the tested samples

EUT Name	:	HIHI-40KH-TAB
Model Number	:	40KH,QN_103
FCCID	:	2AQZC-40KH
Receipt Date	:	08/23/2018
Power From	:	☑Inside ☑Outside ☑Adaptor ☑Battery ☐AC Power Source ☐DC Power Source ☐Support Unit PC or NB
USB port	:	DC5V1.8A
Battery	:	3.8V 4000mAh
Operate Frequency	:	Refer to the channel list as described below WiFi: 2412 MHz to 2462 MHz for 802.11b/g/n(HT20) 2422 MHz to 2452 MHz for 802.11n(HT40)
Modulation Technique	:	802.11b: CCK/QPSK/BPSK 802.11g/n: BPSK/QPSK/16QAM/64QAM
Number of Channels	:	11 Channels for 802.11b/g/n(HT20) 7 Channels for 802.11n(HT40)
Channel spacing	:	☐N/A ☑ 5 MHz
Antenna Type	:	FPCB Antenna
Antenna gain		1 dBi

3.2 Carrier Frequency of Channels

1. 802.11b/g/n(HT20)

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437		

2. 802.11n(HT40)

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	7	2442
4	2427	8	2447
5	2432	9	2452
6	2437		

3.3 Test Mode and Test Software

a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
b. The complete test system included Notebook and EUT for RF test.
c. Test Software: Radio Test.exe
d. New Battery was used for all testing and the worst radiated emission case from X,Y and Z axis evaluation was selected for testing.
e. Per-test antenna **A** and antenna **B**, find the worst-case is antenna **A**, and record in report.
f. The following test modes were performed for test:
   - 802.11b/g/n(HT20): CH1: 2412MHz, CH6: 2437MHz, CH11: 2462MHz
   - 802.11n(HT40): CH3: 2422MHz, CH6: 2437MHz, CH9: 2452MHz

3.4 TEST Methodology & General Test Procedures

All testing as described bellowed were performed in accordance with ANSI C63.4:2014 and ANSI C63.10:2013.

Conducted Emissions

The EUT is placed on a wood table, which is at 0.8 m above ground plane acceding to clause 15.207 and requirements of ANSI C63.4:2014. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz are using CISPR Quasi-Peak / Average detectors.

Radiated Emissions

The EUT is a placed on a turn table, which is 0.8 m above ground plane. The turntable was rotated through 360 degrees to determine the position of maximum emission level. The EUT is placed at 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

1) Putting the EUT on the platform and turning on the EUT (on/off button on the bottom of the EUT).
2) Setting test channel described as “Channel setting and operating condition”, and testing channel by channel.
3) For the maximum output power measurement, we followed the method of measurement KDB558074 D01.
4) For the spurious emission test based on ANSI(2014), at the frequency where below 1GHz used quasi-peak detector mode; where above 1GHz used the peak and average detector mode. IF the peak value may be under average limit, the average mode will not be performed.

3.5 Measurement Uncertainty

Measurement Item	Uncertainty
Peak Output Power(conducted)	±1.345dB
Power Spectral Density	±1.347dB
Radiated emission(1G-25GHz)	±5.00dB
Radiated emission(30M-1GHz)	±3.89dB
Conducted emission	±1.81dB

3.6 Description of the Support Equipments

Setup Diagram

See test photographs attached in appendix 1 for the actual connections between EUT and support equipment.

Support Equipment

Peripherals Devices:

OUTSIDE SUPPORT EQUIPMENT							
No.	Equipment	Model	Serial No.	FCC ID/ BSMI ID	Trade name	Data Cable	Power Cord
1.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
INSIDE SUPPORT EQUIPMENT							
No.	Equipment	Model	Serial No.	FCC ID/ BSMI ID	Trade name	Data Cable	Power Cord
1.	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note: All the above equipment /cable were placed in worse case position to maximize emission signals during emission test

Grounding: Grounding was in accordance with the manufacturer's requirement and conditions for the intended use.

4. Test and measurement equipment

4.1 calibration

The measuring equipment utilized to perform the tests documented in the report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2 equipment

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and. Other required standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective.

TABLELIST OF TEST AND MEASUREMENT EQUIPMENT

Test Site	Instrument	Manufacturer	Model No.	S/N	Next Cal. Date
Conduction	Spectrum (9K--3GHz)	R&S	FSP3	833387/010	2018/09/20
	EMI Receiver	R&S	ESHS10	830223/008	2019/05/22
	LISN	Rolf Heine Hochfrequenztechnik	NNB-2/16z	98062	2019/05/25
	ISN	Schwarzbeck	8-Wire ISN CAT5	CAT5-8158-0094	2018/09/21
	RF Cable	N/A	N/A	EMI-3	2018/10/19
Radiation	Bilog antenna(30M-1G)	ETC	MCTD2786B	BLB16M04004/JB-5-004	2019/05/03
	Double Ridged Guide Horn antenna(1G-18G)	ETC	MCTD 1209	DRH15N02009	2018/11/23
	Horn antenna (18G-26G)	com-power	AH-826	81000	2019/08/15
	LOOP Antenna (Below 30M)	com-power	AL-130	17117	2018/10/04
	Pre amplifier (30M-1G)	EMC INSTRUMENT	EMC9135	980334	2019/05/04
	Microwave Preamplifier (1G-18G)	EMC INSTRUMENT	EMC051845	980108&AT-18001	2018/10/23
	Pre amplifier (18G~26G)	MITEQ	JS4-18002600-30-5A	808329	2019/08/10
	EMI Test Receiver	R&S	ESVS30 (20M-1000MHz)	826006/002	2018/11/28
	RF Cable	EMCI	N male on end	30m	2018/10/19

	(open site)		of both sides (EMI4)		
	RF CABLE (1~26.5G)	HARBOUT INDUSTRIES	LL142MI(4M+4M)	NA	2019/03/08
	RF CABLE (1~26.5G)	HARBOUR INDUSTRIES	LL142MI(7M)	NA	2019/08/11
	Spectrum (9K--7GHz)	R&S	FSP7	830180/006	2019/03/25
	Spectrum (9K--40GHz)	AGILENT	8564EC	4046A0032	2019/03/01
--	Power Meter	R&S	NRVS	100696	2019/08/10
--	Power Sensor	R&S	URV5-Z4	0395.1619.05	2019/08/10

***CALIBRATION INTERVAL OF INSTRUMENTS LISTED ABOVE IS ONE YEAR**

5. Antenna Requirements

5.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

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

5.2 Antenna Construction and Directional Gain

Antenna Type: FPCB Antenna
Antenna Gain: 1 dBi

6. Test of Conducted Emission

6.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 110 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2014 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

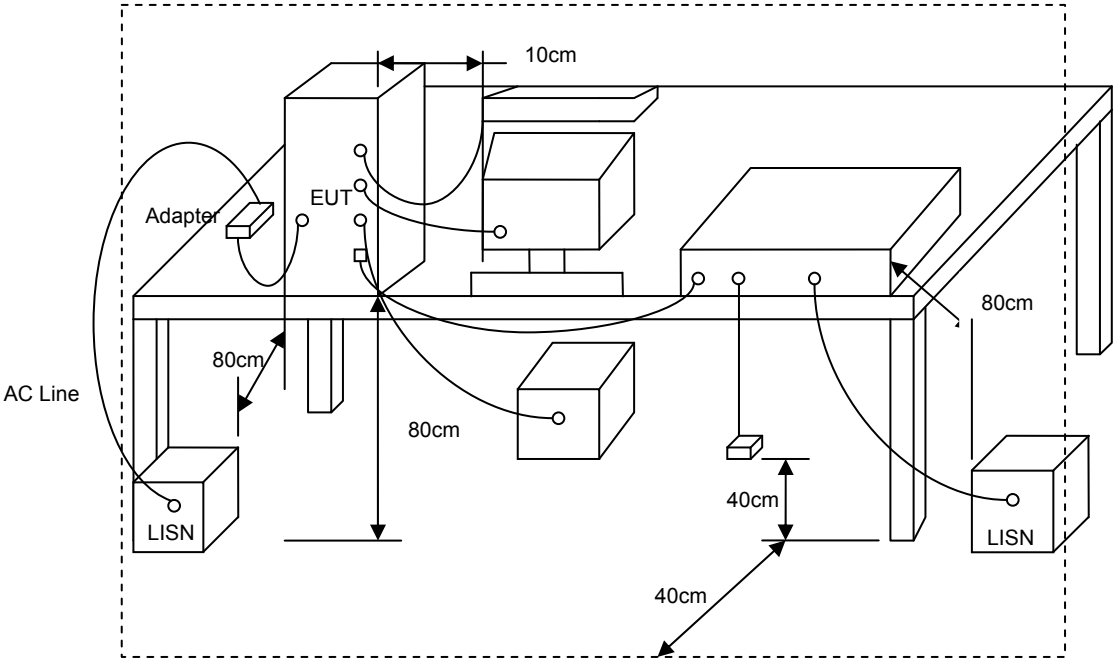
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

6.2 Test Procedures

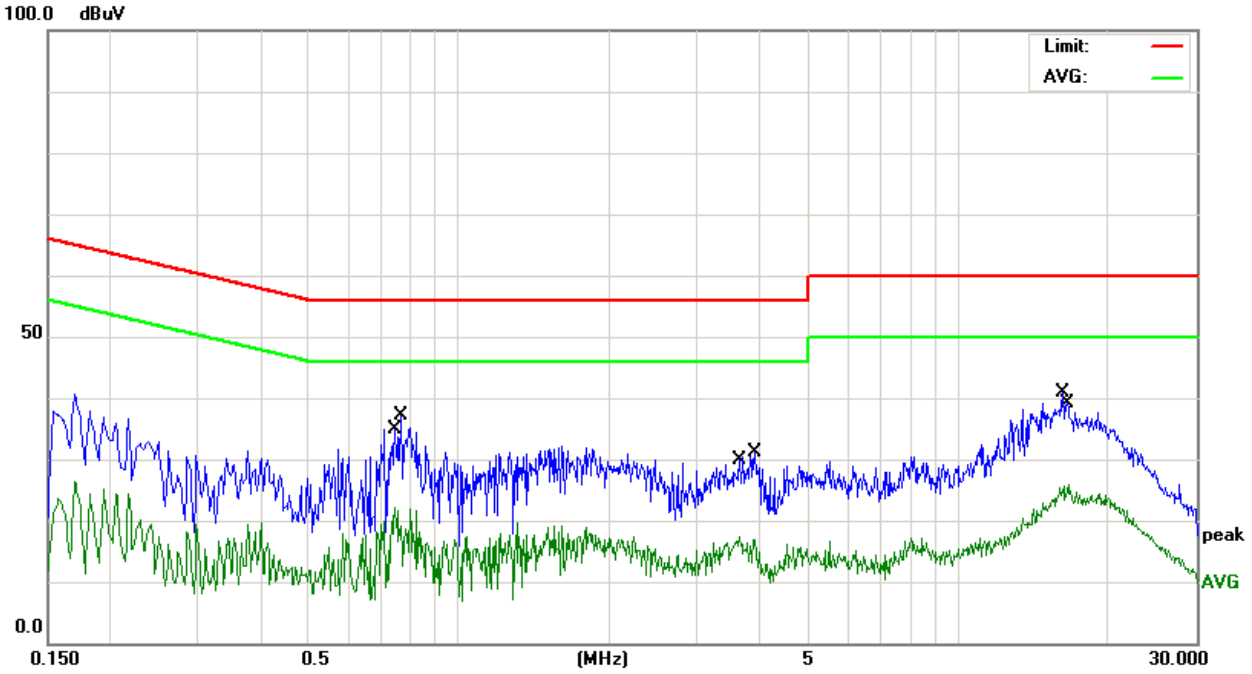
a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connecting to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

6.3 Typical Test Setup



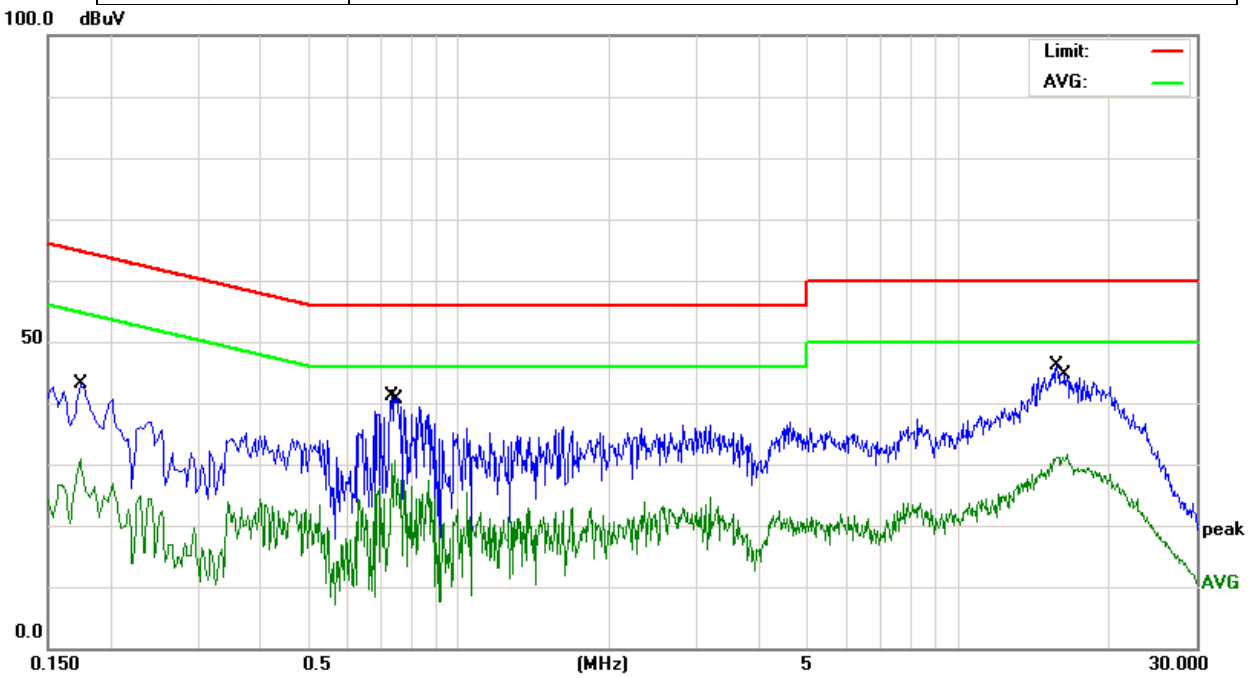
6.4 Test Result and Data

Power	:	DC 3.8V from battery for adapter	Pol/Phase	:	LINE
Test Mode 1	:	TX CH1 2412MHz(worst-case)	Temperatur	:	22 °C
Humidity	:	43 %			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.7460	12.04	9.97	22.01	46.00	-23.99	AVG
2	*	0.7660	27.17	9.97	37.14	56.00	-18.86	QP
3		3.6580	7.30	10.04	17.34	46.00	-28.66	AVG
4		3.9020	21.17	10.05	31.22	56.00	-24.78	QP
5		16.1460	39.32	1.55	40.87	60.00	-19.13	QP
6		16.5860	24.17	1.60	25.77	50.00	-24.23	AVG

Power	:	DC 3.8V from battery for adapter	Pol/Phase	:	NEUTRAL
Test Mode 1	:	TX CH1 2412MHz(worst-case)	Temperatur	:	22 °C
Humidity	:	43 %			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1740	31.57	11.48	43.05	64.76	-21.71	QP
2		0.1740	19.28	11.48	30.76	54.76	-24.00	AVG
3		0.7340	31.19	9.97	41.16	56.00	-14.84	QP
4		0.7460	20.55	9.97	30.52	46.00	-15.48	AVG
5	*	15.7780	44.63	1.50	46.13	60.00	-13.87	QP
6		16.5540	30.03	1.60	31.63	50.00	-18.37	AVG

7. Test of Radiated Emission

7.1 Test Limit

In any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 15.205(a) the restricted bands must also comply with the radiated emission limit specified in section 15.209(a).

Frequency (MHz)	Field Strength (microvolt/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

7.2 Test Procedures

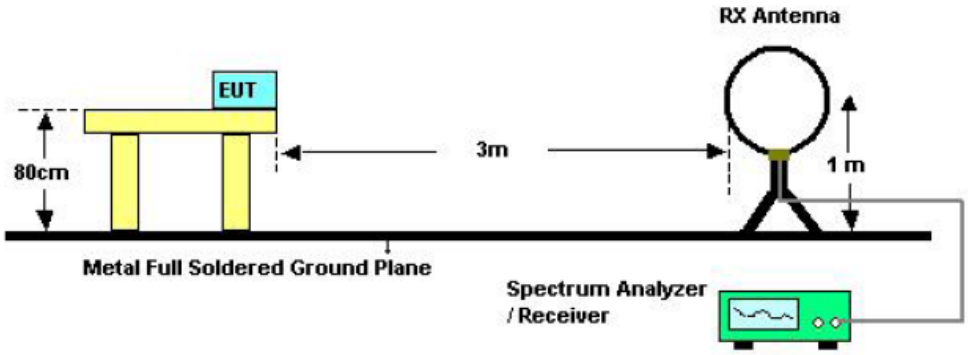
a. The EUT was placed on a rotatable table top 0.8 meter above ground.
b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiation.
d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise,

the emissions will be measured in average mode again and reported.

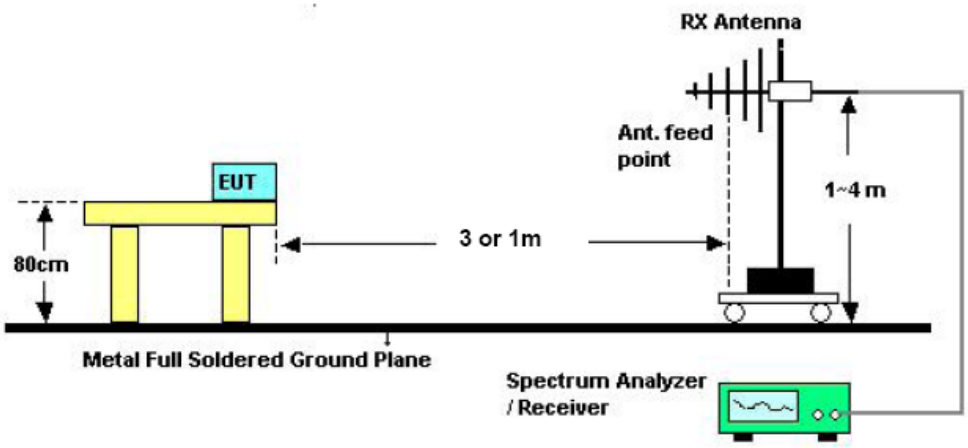
i. “Cone of radiation” has been considered to be 3dB bandwidth of the measurement antenna.

7.3 Typical Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



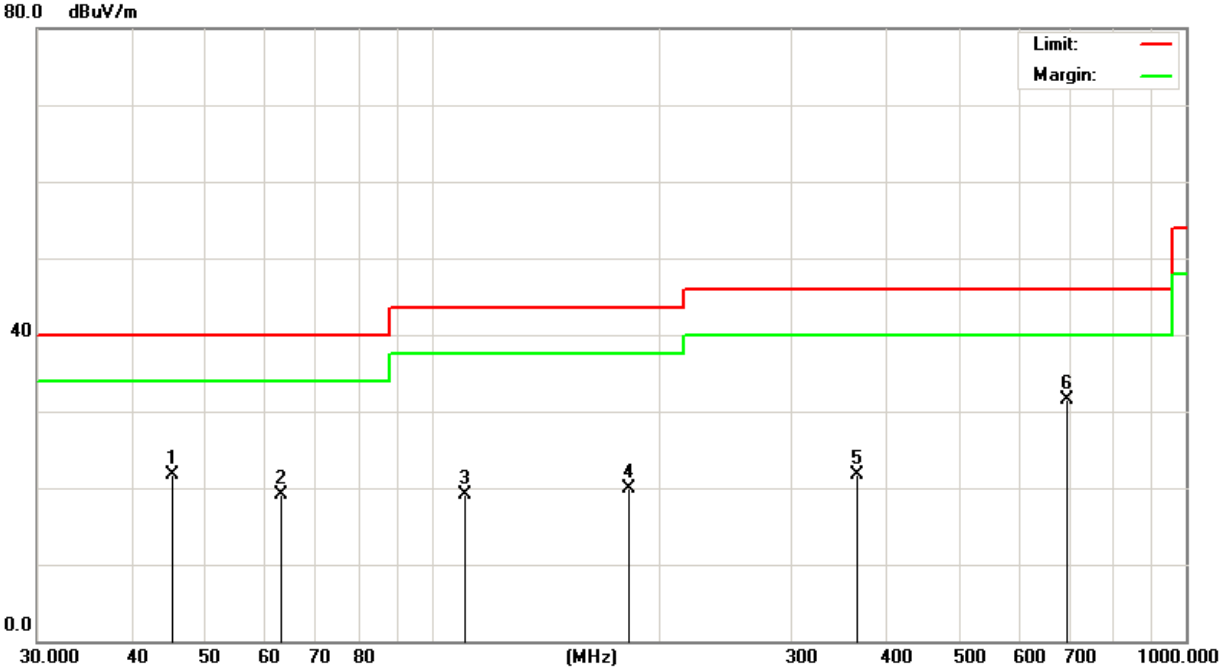
Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.
Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor [9.54 dB].

7.4 Test Result and Data (9kHz ~ 30MHz)

The 9kHz - 30MHz spurious emission is under limit 20dB more.

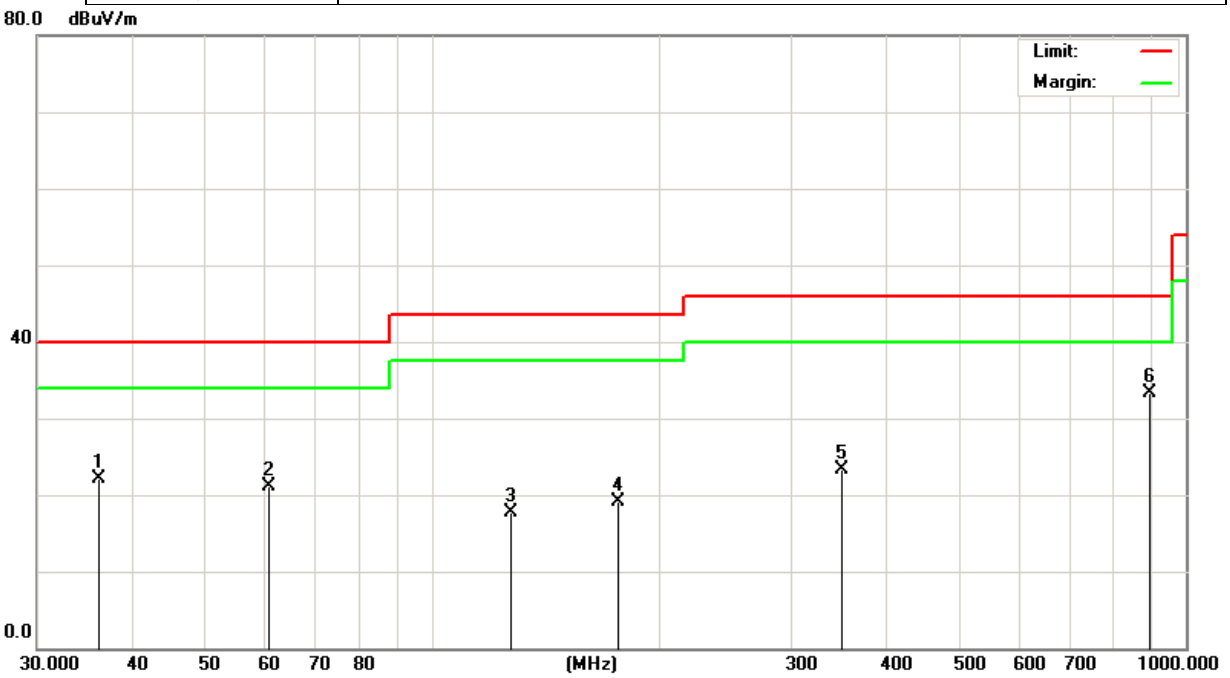
7.5 Test Result and Data (30MHz ~ 1GHz, worst emissions found)

Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL
Test Mode 1	:	TX CH1 2412MHz(worst-case)	Temperature	:	22 ˚C
Humidity	:	59%			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		45.2166	32.56	-10.81	21.75	40.00	-18.25	QP
2		63.3132	32.44	-13.32	19.12	40.00	-20.88	QP
3		110.5687	30.61	-11.48	19.13	43.50	-24.37	QP
4		182.5592	31.27	-11.36	19.91	43.50	-23.59	QP
5		366.8231	29.29	-7.57	21.72	46.00	-24.28	QP
6	*	696.8567	31.25	0.24	31.49	46.00	-14.51	QP

Power	:	DC 3.8V from battery	Pol/Phase	:	VERTICAL
Test Mode 1	:	TX CH1 2412MHz(worst-case)	Temperature	:	22 ˚C
Humidity	:	59%			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		36.2541	34.49	-12.37	22.12	40.00	-17.88	QP
2		60.7044	32.43	-11.25	21.18	40.00	-18.82	QP
3		127.6645	33.14	-15.36	17.78	43.50	-25.72	QP
4		176.2686	33.08	-14.01	19.07	43.50	-24.43	QP
5		349.2500	31.37	-8.05	23.32	46.00	-22.68	QP
6	*	893.8567	30.64	2.75	33.39	46.00	-12.61	QP

Note:

All the modulation modes were tested, the data of the worst mode are recorded in the above pages and the others modulation methods do not exceed the limits.

7.6 Test Result and Data (Between 1~25 GHz)

Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL/ VERTICAL
Test Mode 1	:	TX 1Mbps CH1	Temperature	:	20 °C
Humidity	:	59 %			

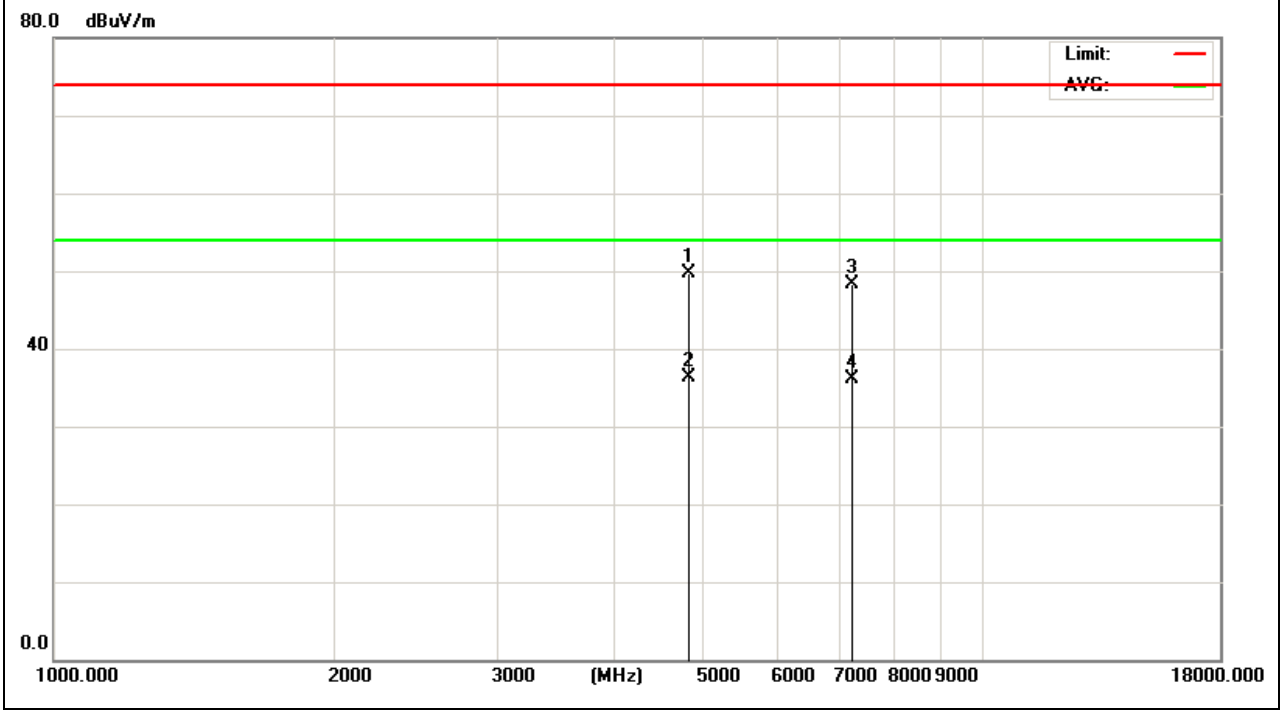
802.11b mode with 1Mbps data rate

Harmonics & Spurious Emissions. Peak & Average Measurement

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824.000	44.71	5.08	49.79	74.00	-24.21	PEAK
4824.000	31.30	5.08	36.38	54.00	-17.62	AVE
7236.000	41.23	7.16	48.39	74.00	-25.61	PEAK
7236.000	28.94	7.16	36.10	54.00	-17.90	AVE

Remark:

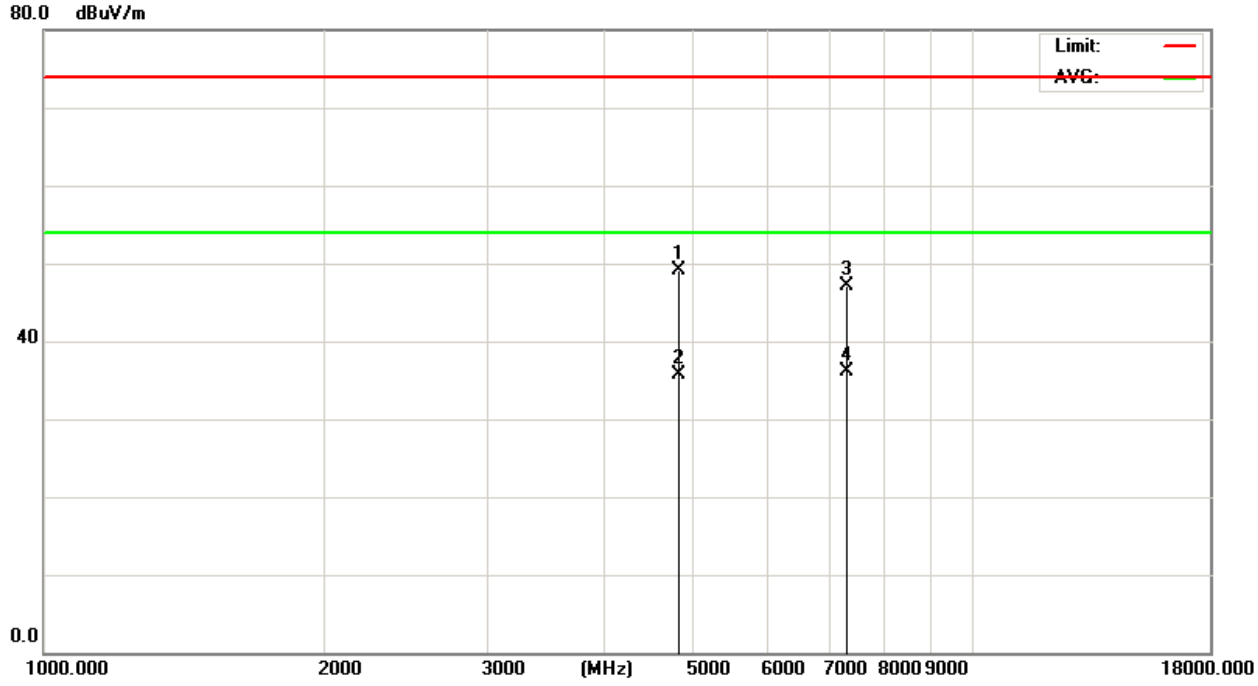
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824.000	44.03	5.08	49.11	74.00	-24.89	PEAK
4824.000	30.68	5.08	35.76	54.00	-18.24	AVE
7236.000	39.47	7.55	47.02	74.00	-26.98	PEAK
7236.000	28.54	7.55	36.09	54.00	-17.91	AVE

Remark:

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



Note:

All the modulation modes were tested, the data of the worst mode are recorded in the above pages and the others modulation methods do not exceed the limits.

The disturbance above 18GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

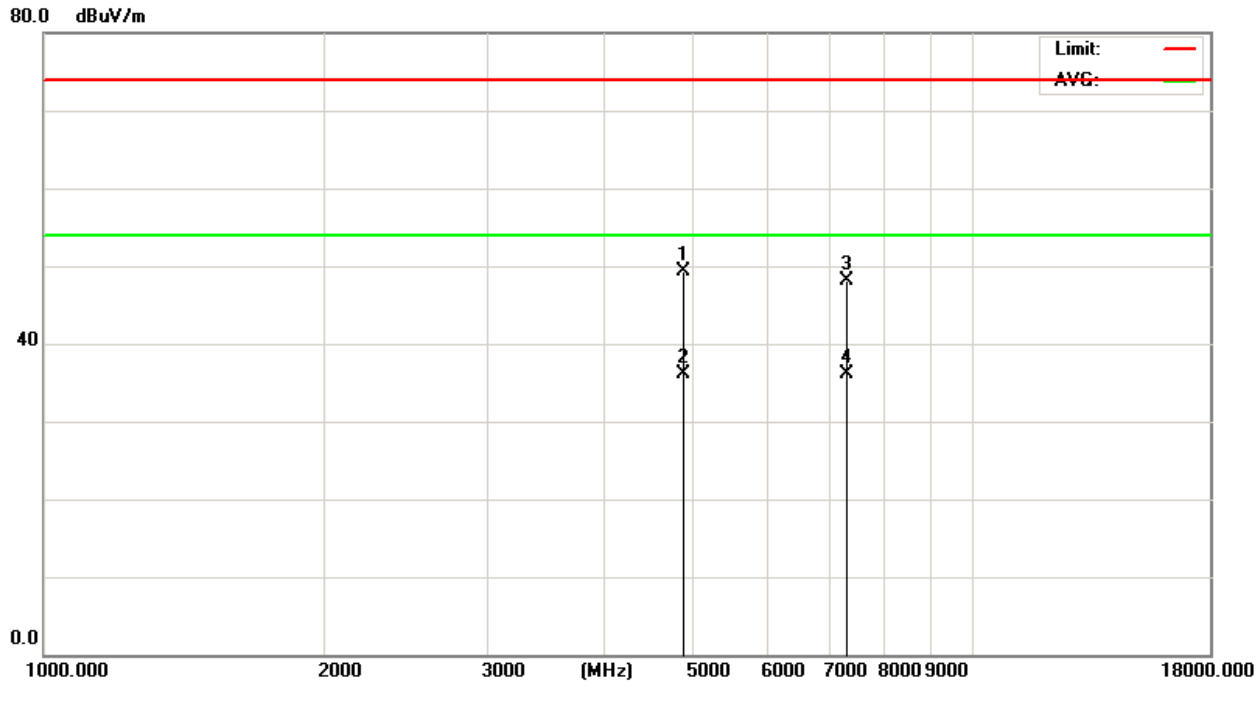
Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL/ VERTICAL
Test Mode 1	:	TX 1Mbps CH6	Temperature	:	20 °C
Humidity	:	59 %			

Harmonics & Spurious Emissions. Peak & Average Measurement

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.000	44.26	5.13	49.39	74.00	-24.61	PEAK
4874.000	31.03	5.13	36.16	54.00	-17.84	AVE
7311.000	40.69	7.49	48.18	74.00	-25.82	PEAK
7311.000	28.54	7.49	36.03	54.00	-17.97	AVE

Remark:

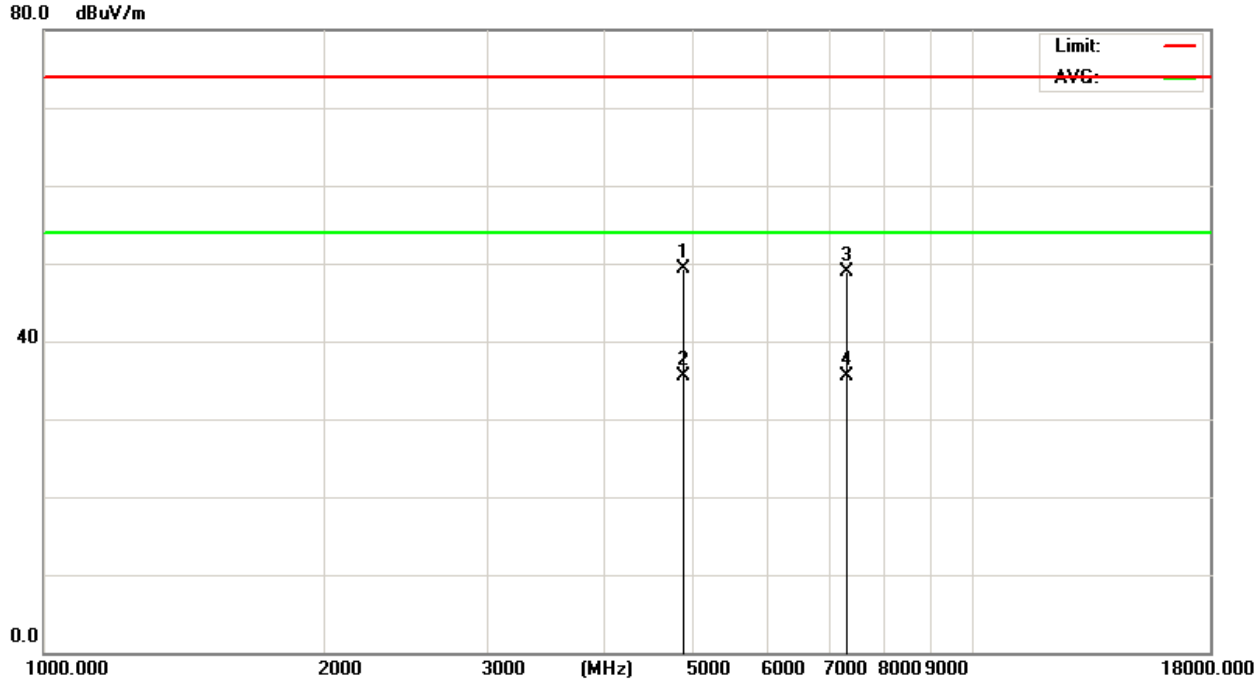
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.000	44.26	5.13	49.39	74.00	-24.61	PEAK
4874.000	30.32	5.13	35.45	54.00	-18.55	AVE
7311.000	41.35	7.49	48.84	74.00	-25.16	PEAK
7311.000	28.10	7.49	35.59	54.00	-18.41	AVE

Remark:

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



Note:

All the modulation modes were tested, the data of the worst mode are recorded in the above pages and the others modulation methods do not exceed the limits.

The disturbance above 18GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

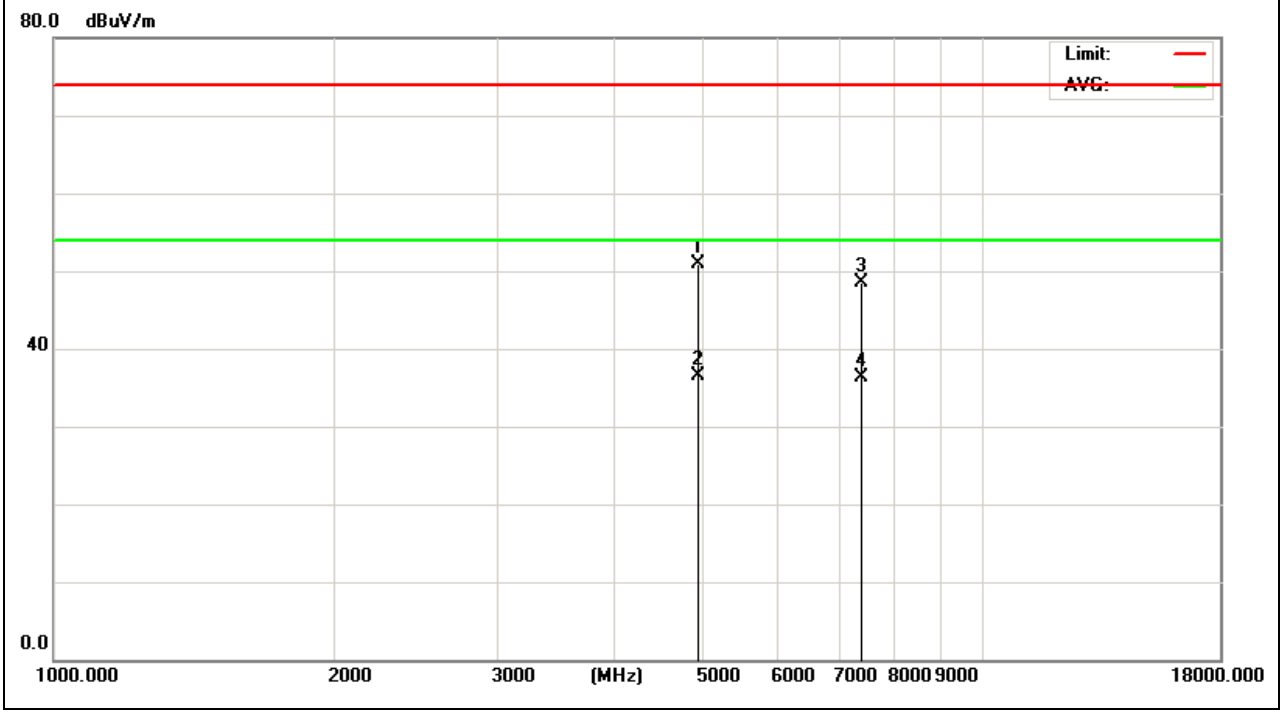
Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL/ VERTICAL
Test Mode 1	:	TX 1Mbps CH11	Temperature	:	30 °C
Humidity	:	59 %			

Harmonics & Spurious Emissions. Peak & Average Measurement

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924.000	45.65	5.18	50.83	74.00	-23.17	PEAK
4924.000	31.33	5.18	36.51	54.00	-17.49	AVE
7386.000	40.63	7.82	48.45	74.00	-25.55	PEAK
7386.000	28.41	7.82	36.23	54.00	-17.77	AVE

Remark:

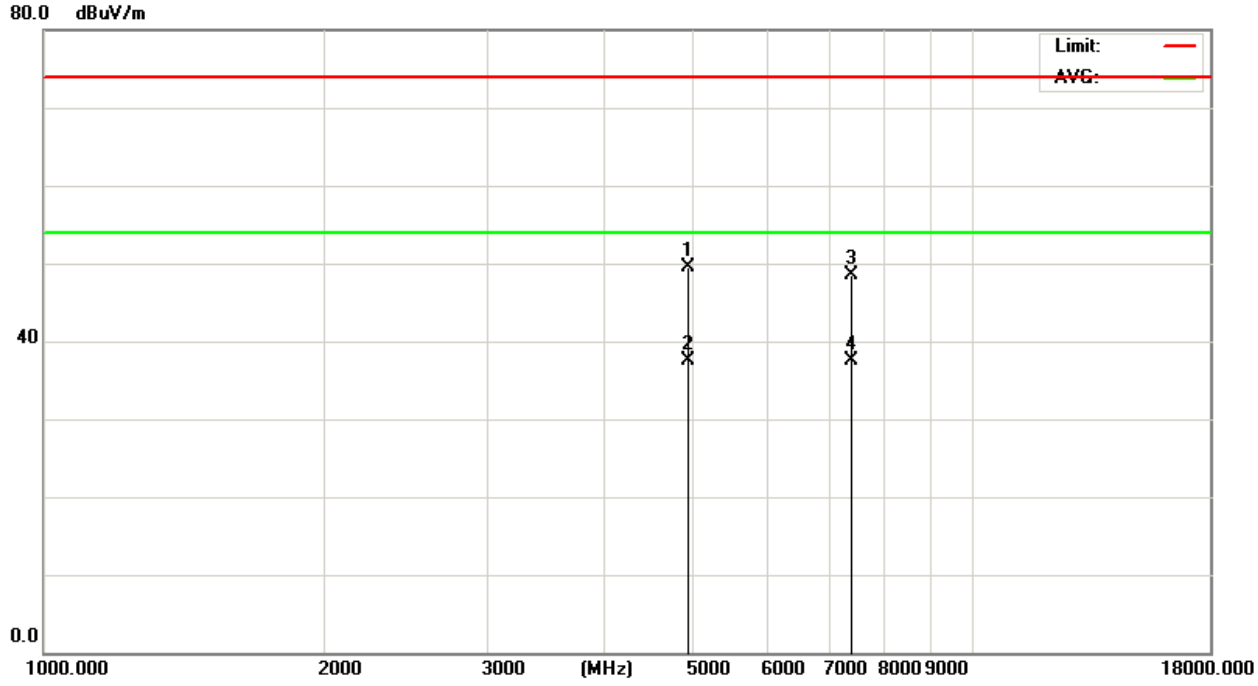
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924.000	44.26	5.18	49.44	74.00	-24.56	PEAK
4924.000	32.32	5.18	37.50	54.00	-16.50	AVE
7386.000	40.72	7.82	48.54	74.00	-25.46	PEAK
7386.000	29.61	7.82	37.43	54.00	-16.57	AVE

Remark:

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



Note:

All the modulation modes were tested, the data of the worst mode are recorded in the above pages and the others modulation methods do not exceed the limits.

The disturbance above 18GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL/ VERTICAL
Test Mode 1	:	TX 6Mbps CH1	Temperature	:	20 °C
Humidity	:	59 %			

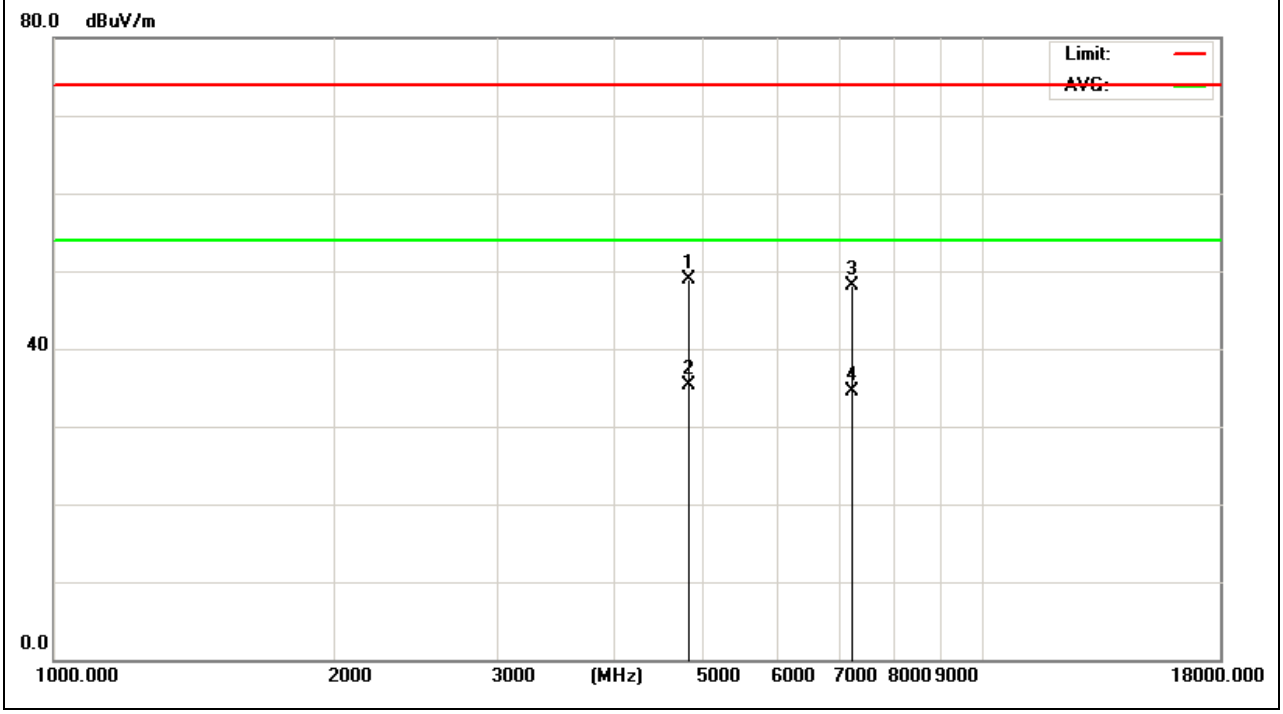
802.11g mode with 6Mbps data rate

Harmonics & Spurious Emissions. Peak & Average Measurement

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824.000	43.84	5.08	48.92	74.00	-25.08	PEAK
4824.000	30.31	5.08	35.39	54.00	-18.61	AVE
7236.000	41.03	7.16	48.19	74.00	-25.81	PEAK
7236.000	27.41	7.16	34.57	54.00	-19.43	AVE

Remark:

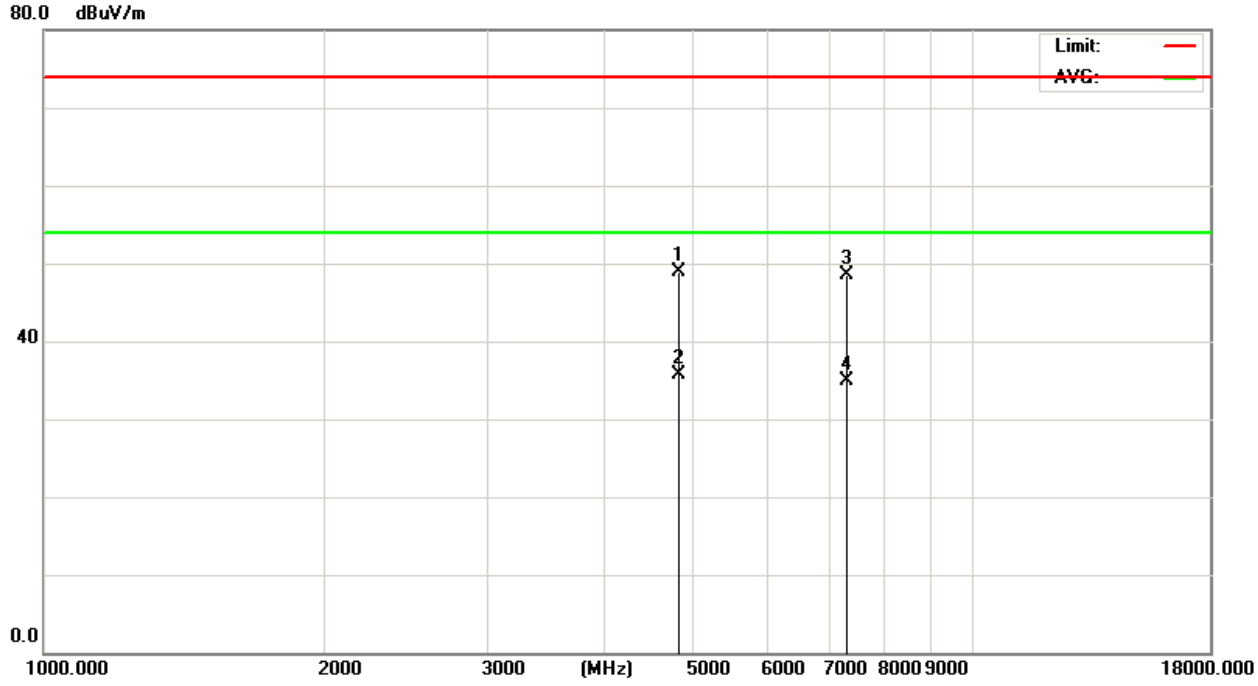
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824.000	43.76	5.08	48.84	74.00	-25.16	PEAK
4824.000	30.64	5.08	35.72	54.00	-18.28	AVE
7236.000	40.96	7.55	48.51	74.00	-25.49	PEAK
7236.000	27.32	7.55	34.87	54.00	-19.13	AVE

Remark:

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



Note:

All the modulation modes were tested, the data of the worst mode are recorded in the above pages and the others modulation methods do not exceed the limits.

The disturbance above 18GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

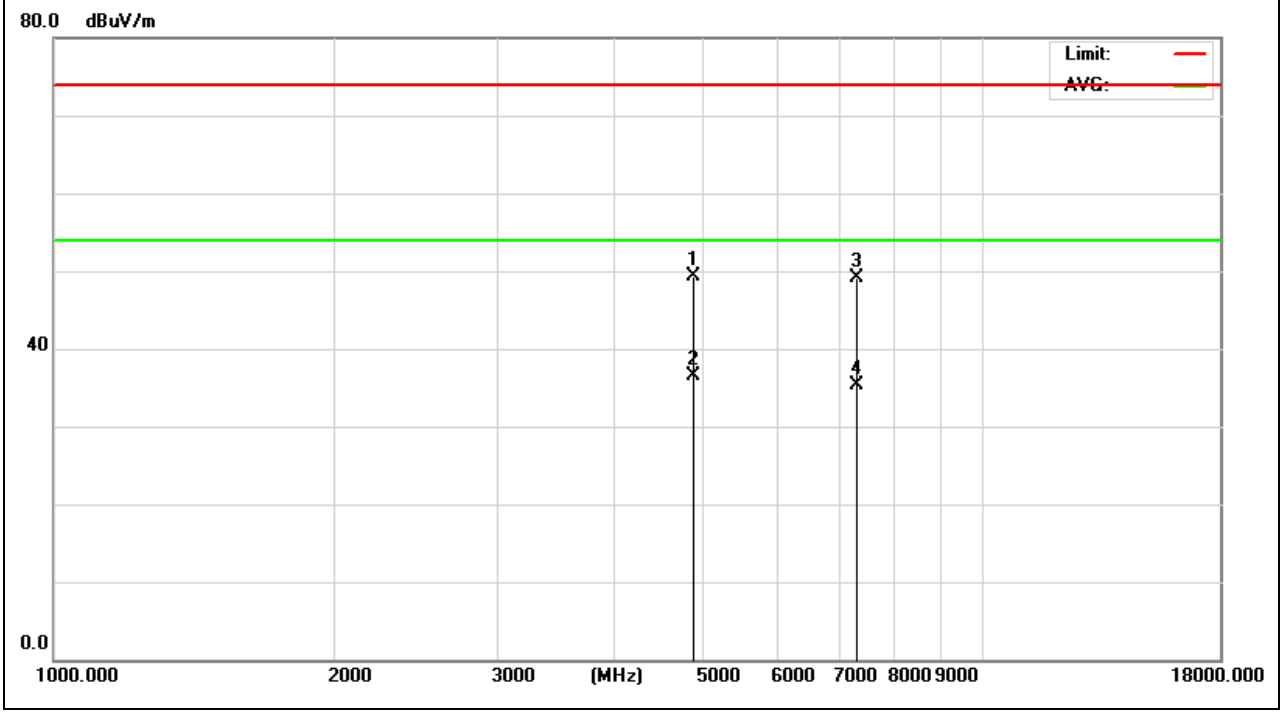
Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL/ VERTICAL
Test Mode 1	:	TX 6Mbps CH6	Temperature	:	20 °C
Humidity	:	59 %			

Harmonics & Spurious Emissions. Peak & Average Measurement

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.000	44.19	5.13	49.32	74.00	-24.68	PEAK
4874.000	31.46	5.13	36.59	54.00	-17.41	AVE
7311.000	41.63	7.49	49.12	74.00	-24.88	PEAK
7311.000	27.91	7.49	35.40	54.00	-18.60	AVE

Remark:

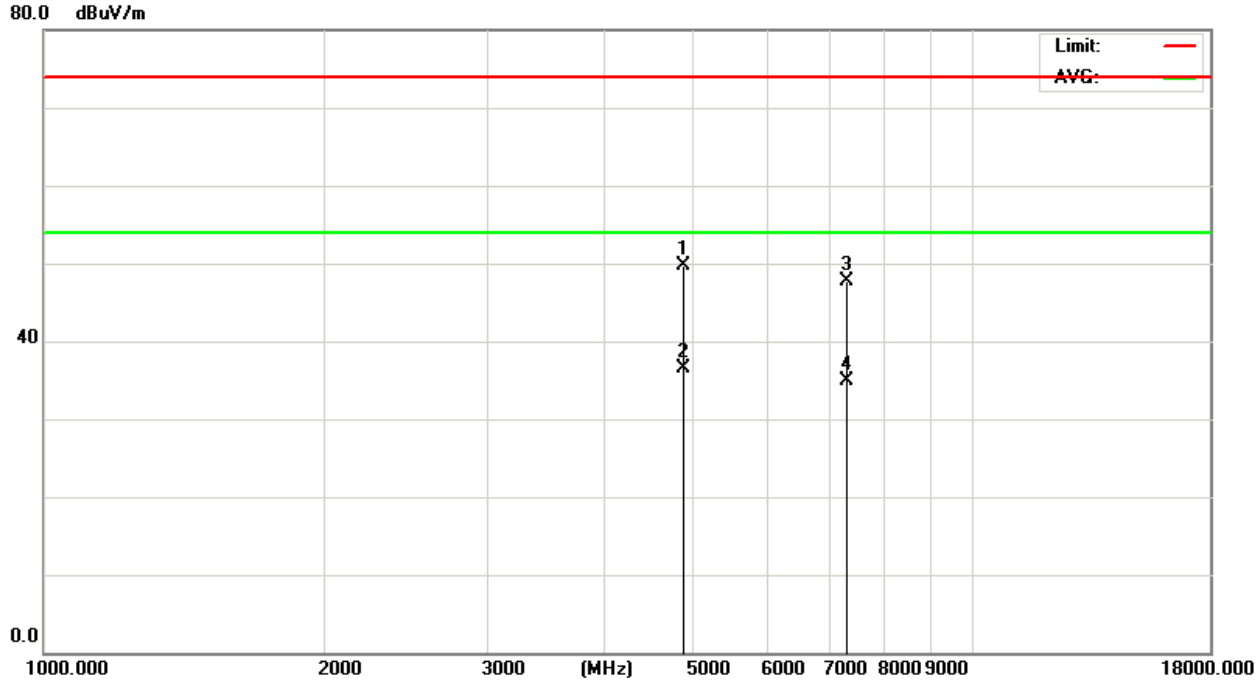
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.000	44.51	5.13	49.64	74.00	-24.36	PEAK
4874.000	31.46	5.13	36.59	54.00	-17.41	AVE
7311.000	40.13	7.49	47.62	74.00	-26.38	PEAK
7311.000	27.42	7.49	34.91	54.00	-19.09	AVE

Remark:

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



Note:

All the modulation modes were tested, the data of the worst mode are recorded in the above pages and the others modulation methods do not exceed the limits.

The disturbance above 18GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

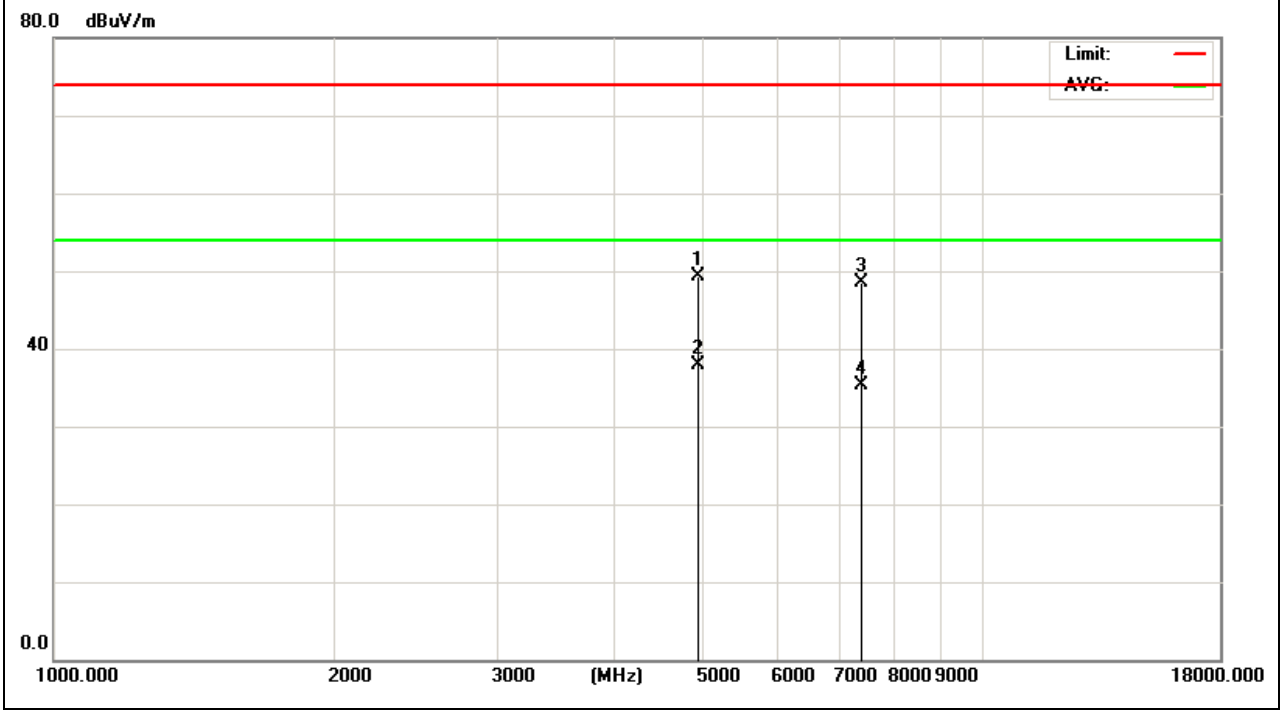
Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL/ VERTICAL
Test Mode 1	:	TX 6Mbps CH11	Temperature	:	20 °C
Humidity	:	59 %			

Harmonics & Spurious Emissions. Peak & Average Measurement

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
4924.000	44.03	5.18	49.21	74.00	-24.79	PEAK
4924.000	32.65	5.18	37.83	54.00	-16.17	AVE
7386.000	40.67	7.82	48.49	74.00	-25.51	PEAK
7386.000	27.54	7.82	35.36	54.00	-18.64	AVE

Remark:

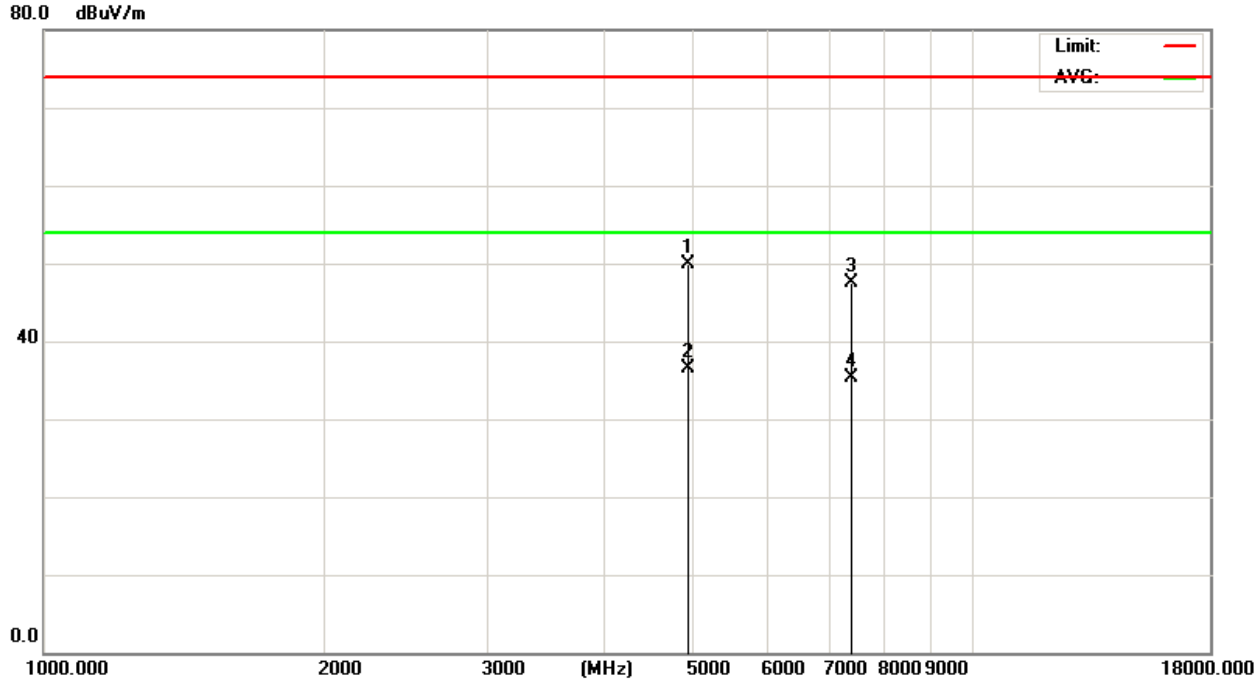
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924.000	44.72	5.18	49.90	74.00	-24.10	PEAK
4924.000	31.33	5.18	36.51	54.00	-17.49	AVE
7386.000	39.64	7.82	47.46	74.00	-26.54	PEAK
7386.000	27.46	7.82	35.28	54.00	-18.72	AVE

Remark:

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



Note:

All the modulation modes were tested, the data of the worst mode are recorded in the above pages and the others modulation methods do not exceed the limits.

The disturbance above 18GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL/ VERTICAL
Test Mode 1	:	TX 7.2Mbps CH1	Temperature	:	20 °C
Humidity	:	59 %			

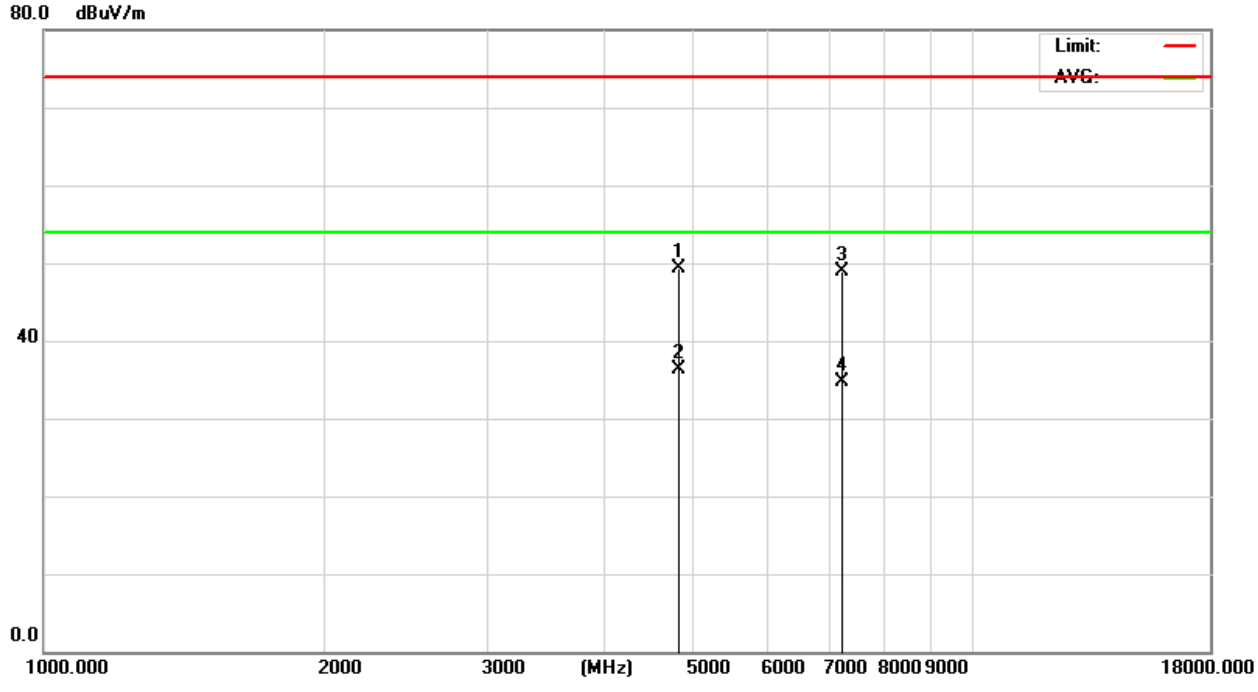
802.11n(HT20) mode with 7.2Mbps data rate

Harmonics & Spurious Emissions. Peak & Average Measurement

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
4824.000	44.19	5.08	49.27	74.00	-24.73	PEAK
4824.000	31.32	5.08	36.40	54.00	-17.60	AVE
7236.000	41.71	7.16	48.87	74.00	-25.13	PEAK
7236.000	27.56	7.16	34.72	54.00	-19.28	AVE

Remark:

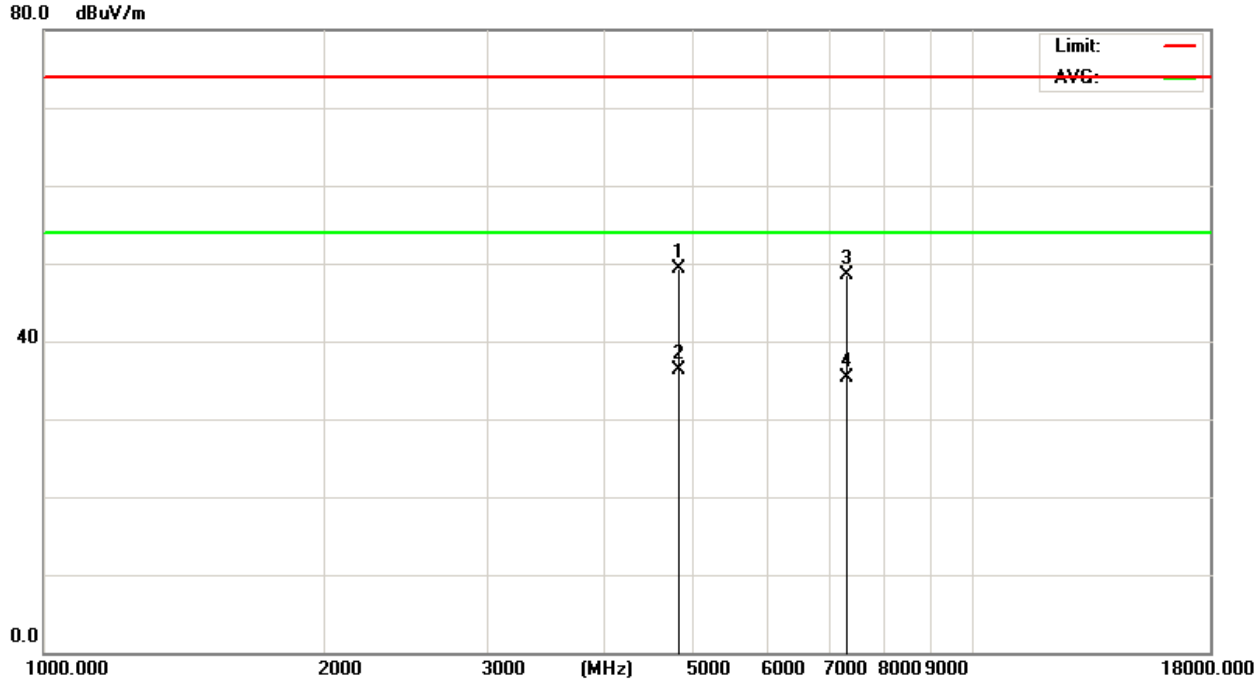
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824.000	44.23	5.08	49.31	74.00	-24.69	PEAK
4824.000	31.32	5.08	36.40	54.00	-17.60	AVE
7236.000	40.94	7.55	48.49	74.00	-25.51	PEAK
7236.000	27.74	7.55	35.29	54.00	-18.71	AVE

Remark:

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



Note:

All the modulation modes were tested, the data of the worst mode are recorded in the above pages and the others modulation methods do not exceed the limits.

The disturbance above 18GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

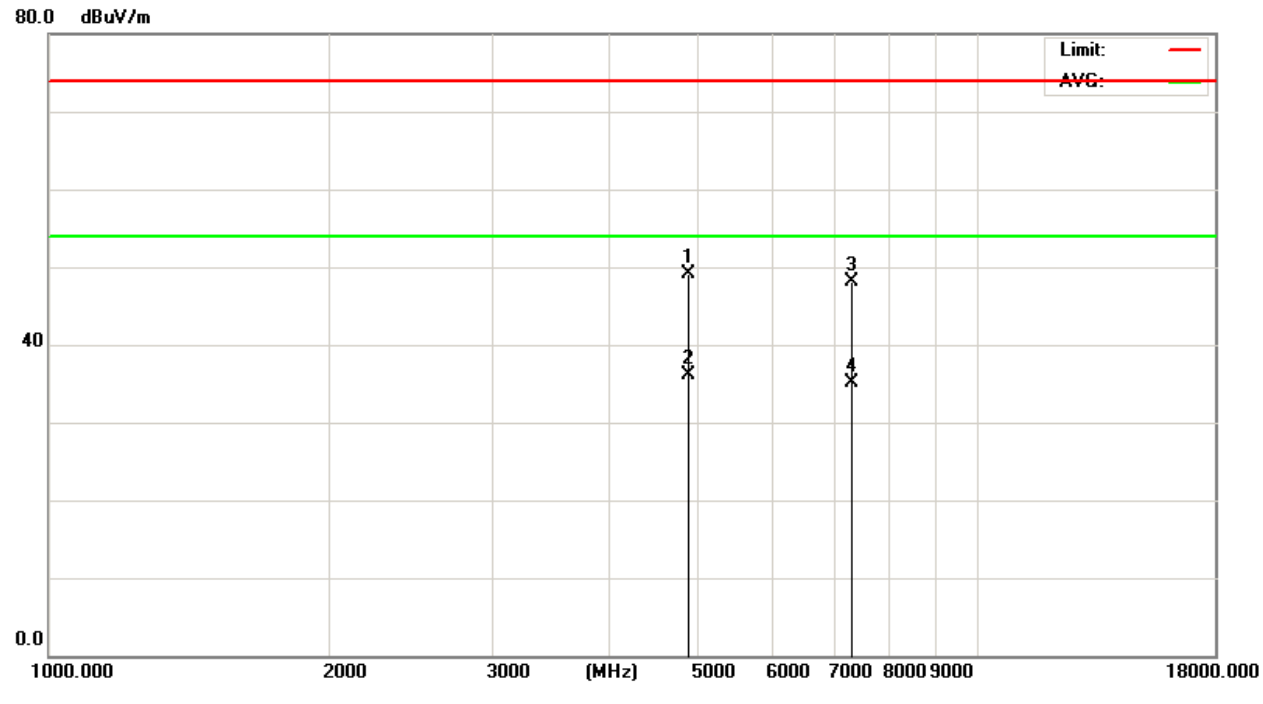
Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL/ VERTICAL
Test Mode 1	:	TX 7.2Mbps CH6	Temperature	:	20 °C
Humidity	:	59 %			

Harmonics & Spurious Emissions. Peak & Average Measurement

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.000	44.05	5.13	49.18	74.00	-24.82	PEAK
4874.000	31.03	5.13	36.16	54.00	-17.84	AVE
7311.000	40.71	7.49	48.20	74.00	-25.80	PEAK
7311.000	27.65	7.49	35.14	54.00	-18.86	AVE

Remark:

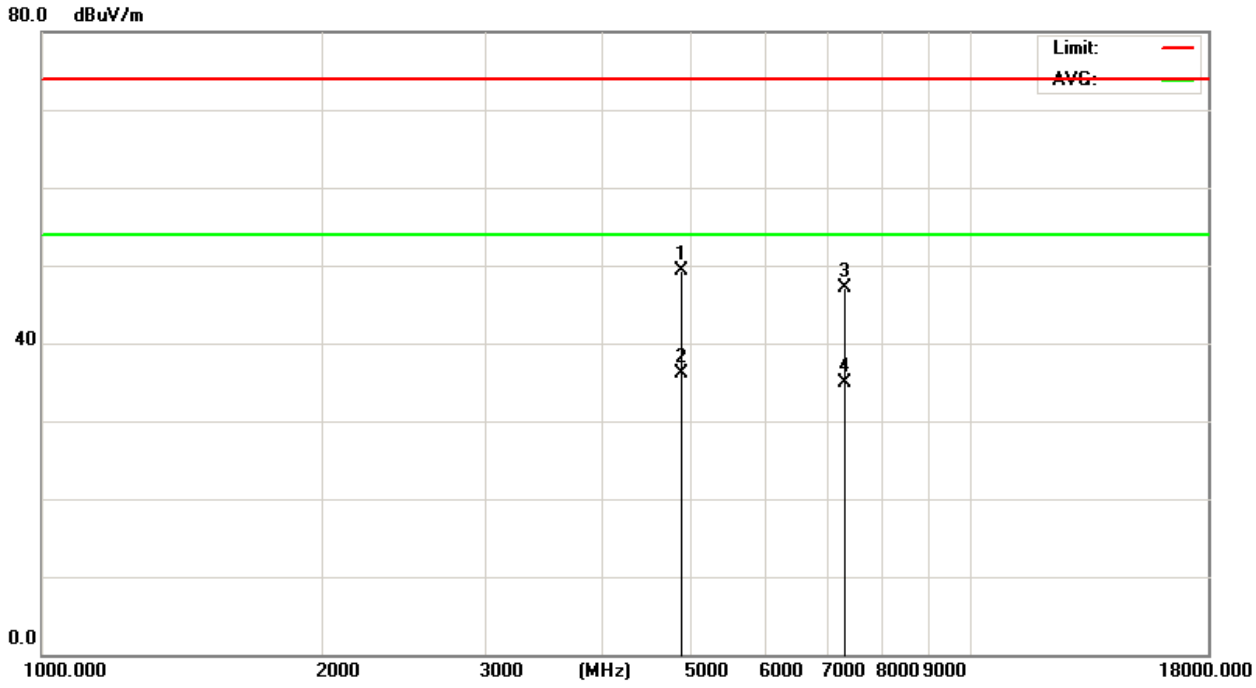
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.000	44.11	5.13	49.24	74.00	-24.76	PEAK
4874.000	31.07	5.13	36.20	54.00	-17.80	AVE
7311.000	39.61	7.49	47.10	74.00	-26.90	PEAK
7311.000	27.46	7.49	34.95	54.00	-19.05	AVE

Remark:

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



Note:

All the modulation modes were tested, the data of the worst mode are recorded in the above pages and the others modulation methods do not exceed the limits.

The disturbance above 18GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

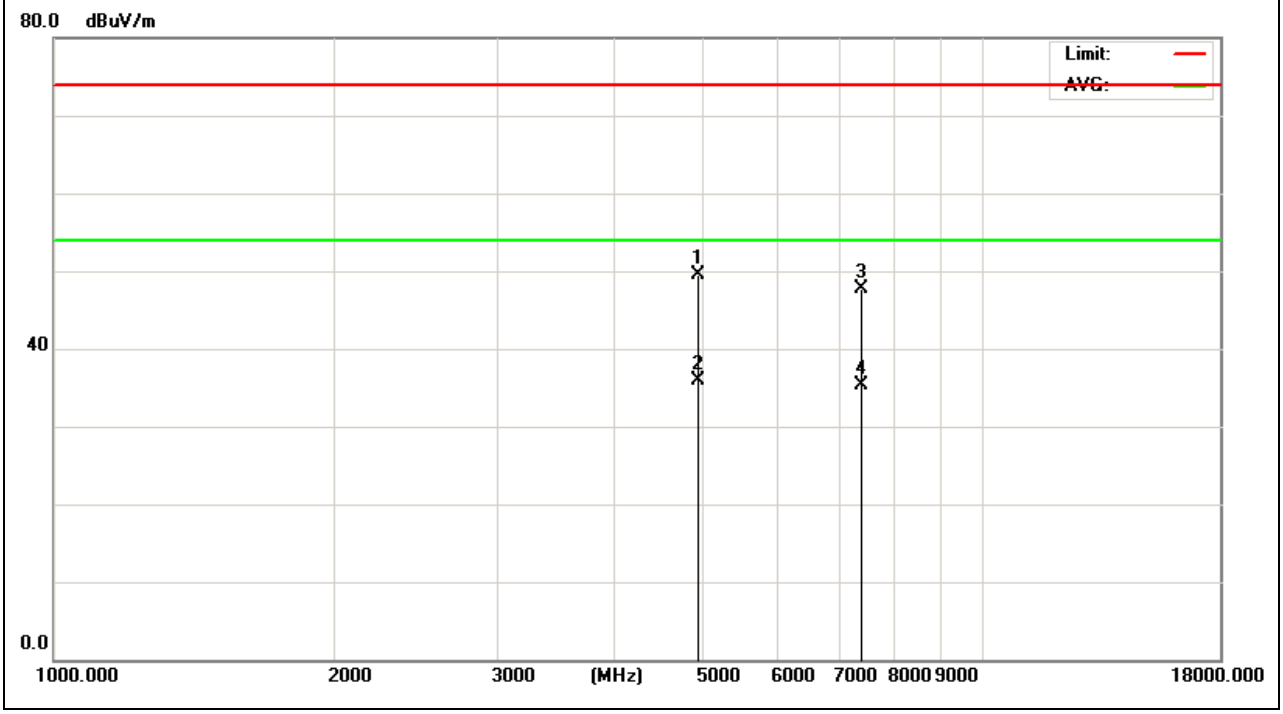
Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL/ VERTICAL
Test Mode 1	:	TX 7.2Mbps CH11	Temperature	:	20 °C
Humidity	:	59 %			

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4924.000	44.33	5.18	49.51	74.00	-24.49	PEAK
4924.000	30.69	5.18	35.87	54.00	-18.13	AVE
7386.000	39.96	7.82	47.78	74.00	-26.22	PEAK
7386.000	27.51	7.82	35.33	54.00	-18.67	AVE

Remark:

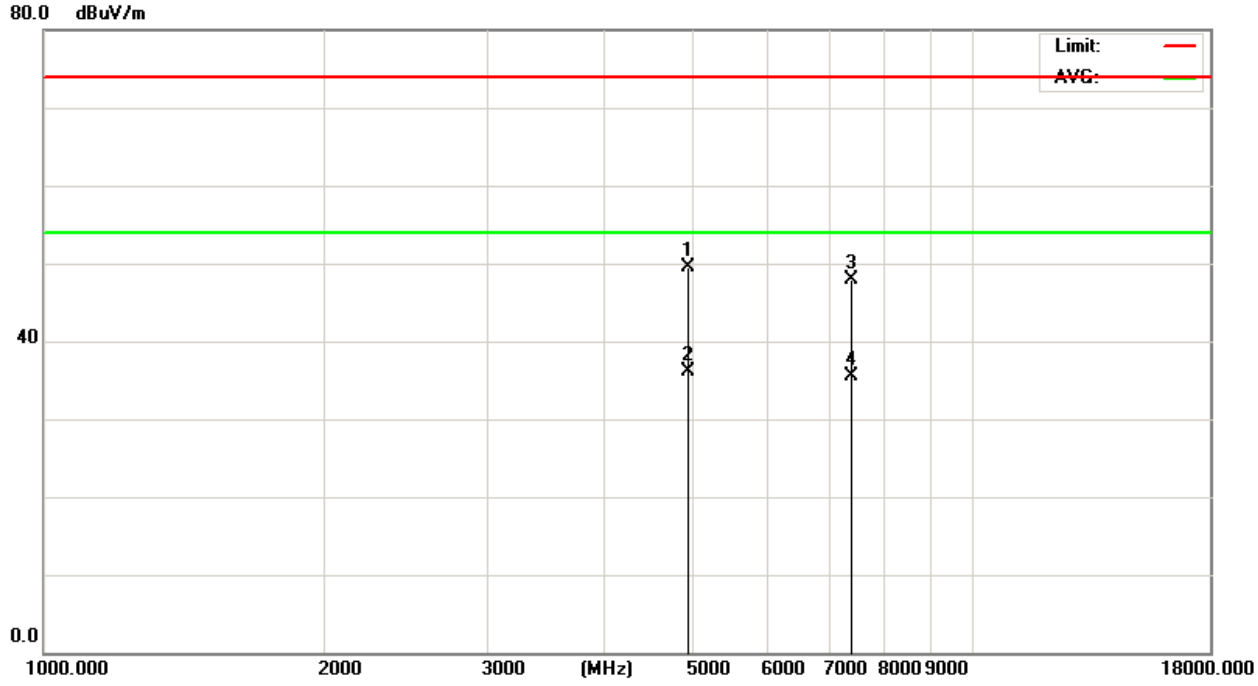
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4844.000	44.26	5.18	49.44	74.00	-24.56	PEAK
4844.000	30.86	5.18	36.04	54.00	-17.96	AVE
7266.000	40.06	7.82	47.88	74.00	-26.12	PEAK
7266.000	27.65	7.82	35.47	54.00	-18.53	AVE

Remark:

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



Note:

All the modulation modes were tested, the data of the worst mode are recorded in the above pages and the others modulation methods do not exceed the limits.

The disturbance above 18GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL/ VERTICAL
Test Mode 1	:	TX 15Mbps CH3	Temperature	:	20 °C
Humidity	:	59 %			

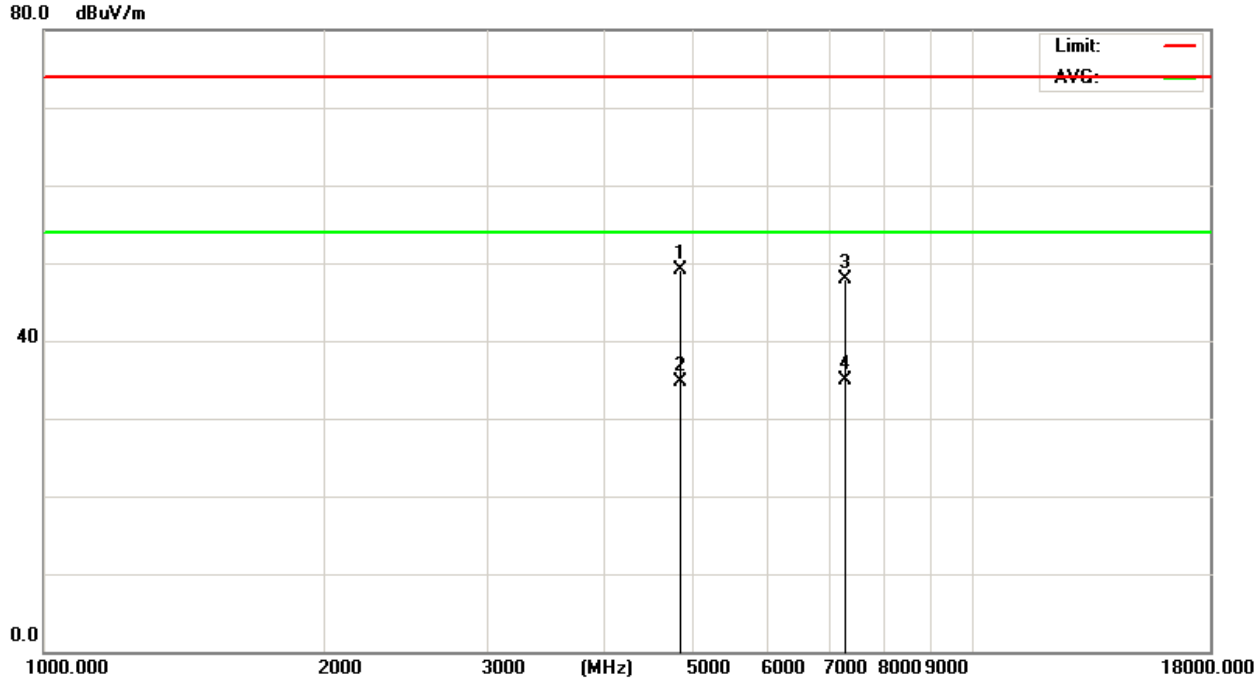
802.11n(HT40) mode with 15Mbps data rate

Harmonics & Spurious Emissions. Peak & Average Measurement

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
4844.000	44.04	5.11	49.15	74.00	-24.85	PEAK
4844.000	29.66	5.11	34.77	54.00	-19.23	AVE
7266.000	40.68	7.29	47.97	74.00	-26.03	PEAK
7266.000	27.65	7.29	34.94	54.00	-19.06	AVE

Remark:

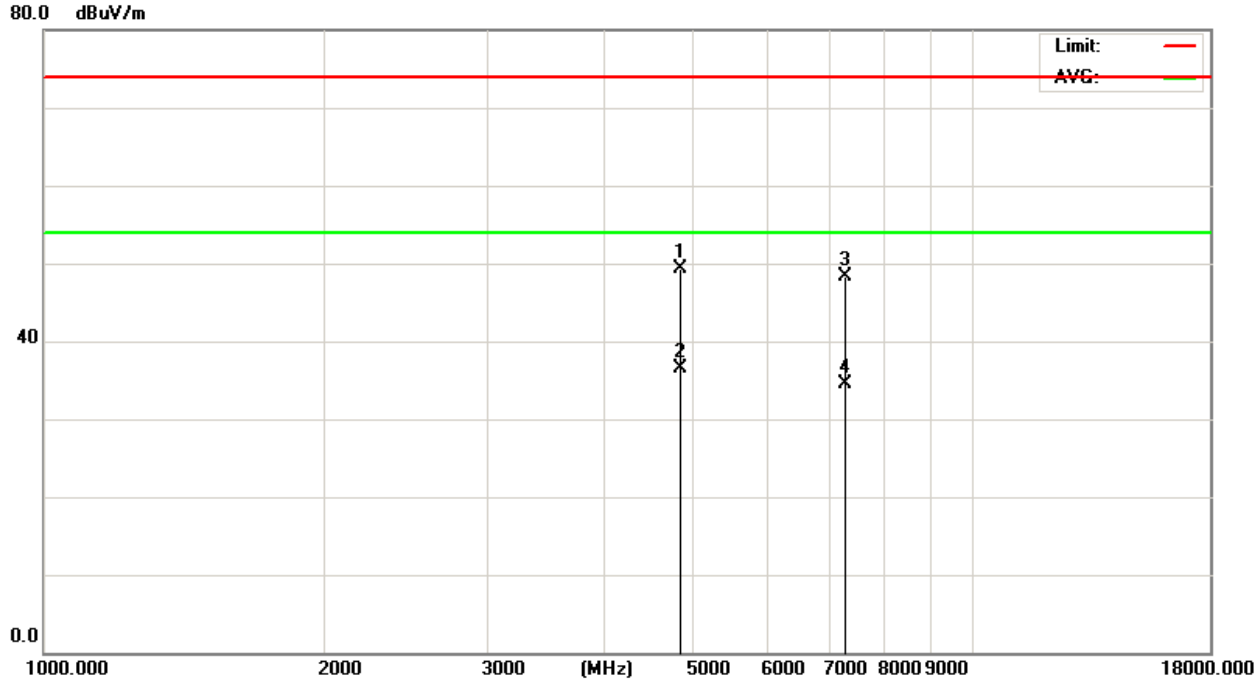
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4844.000	44.18	5.11	49.29	74.00	-24.71	PEAK
4844.000	31.35	5.11	36.46	54.00	-17.54	AVE
7266.000	41.00	7.29	48.29	74.00	-25.71	PEAK
7266.000	27.14	7.29	34.43	54.00	-19.57	AVE

Remark:

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

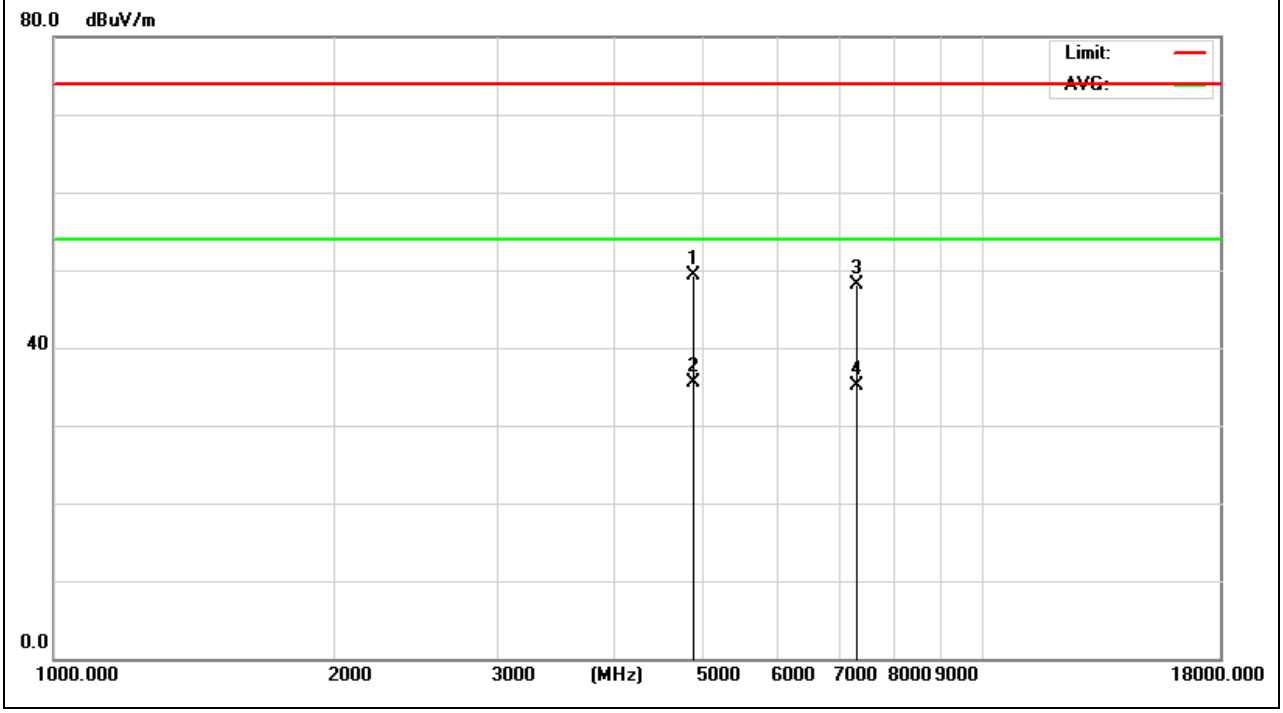


Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL/ VERTICAL
Test Mode 1	:	TX 15Mbps CH6	Temperature	:	20 °C
Humidity	:	59 %			

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.000	44.16	5.13	49.29	74.00	-24.71	PEAK
4874.000	30.35	5.13	35.48	54.00	-18.52	AVE
7311.000	40.71	7.49	48.20	74.00	-25.80	PEAK
7311.000	27.65	7.49	35.14	54.00	-18.86	AVE

Remark:

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

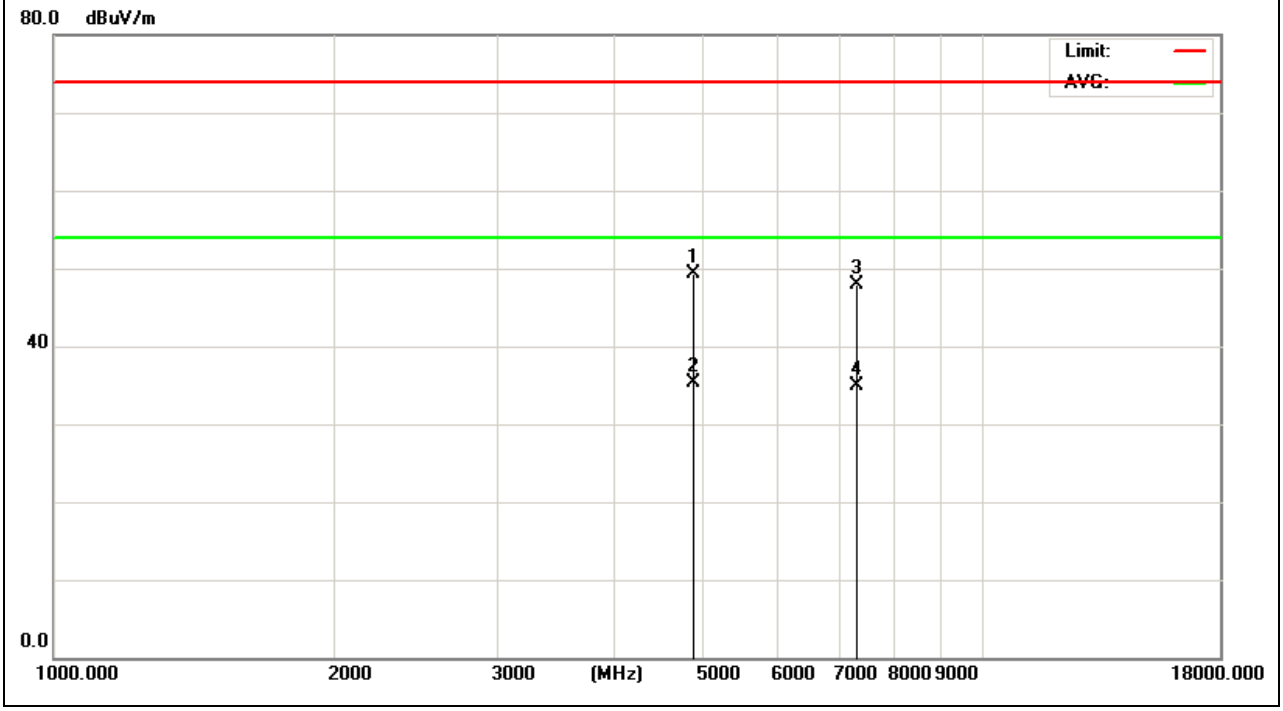


Harmonics & Spurious Emissions. Peak & Average Measurement

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
4874.000	44.24	5.13	49.37	74.00	-24.63	PEAK
4874.000	30.21	5.13	35.34	54.00	-18.66	AVE
7311.000	40.51	7.49	48.00	74.00	-26.00	PEAK
7311.000	27.46	7.49	34.95	54.00	-19.05	AVE

Remark:

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



Note:

All the modulation modes were tested, the data of the worst mode are recorded in the above pages and the others modulation methods do not exceed the limits.

The disturbance above 18GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

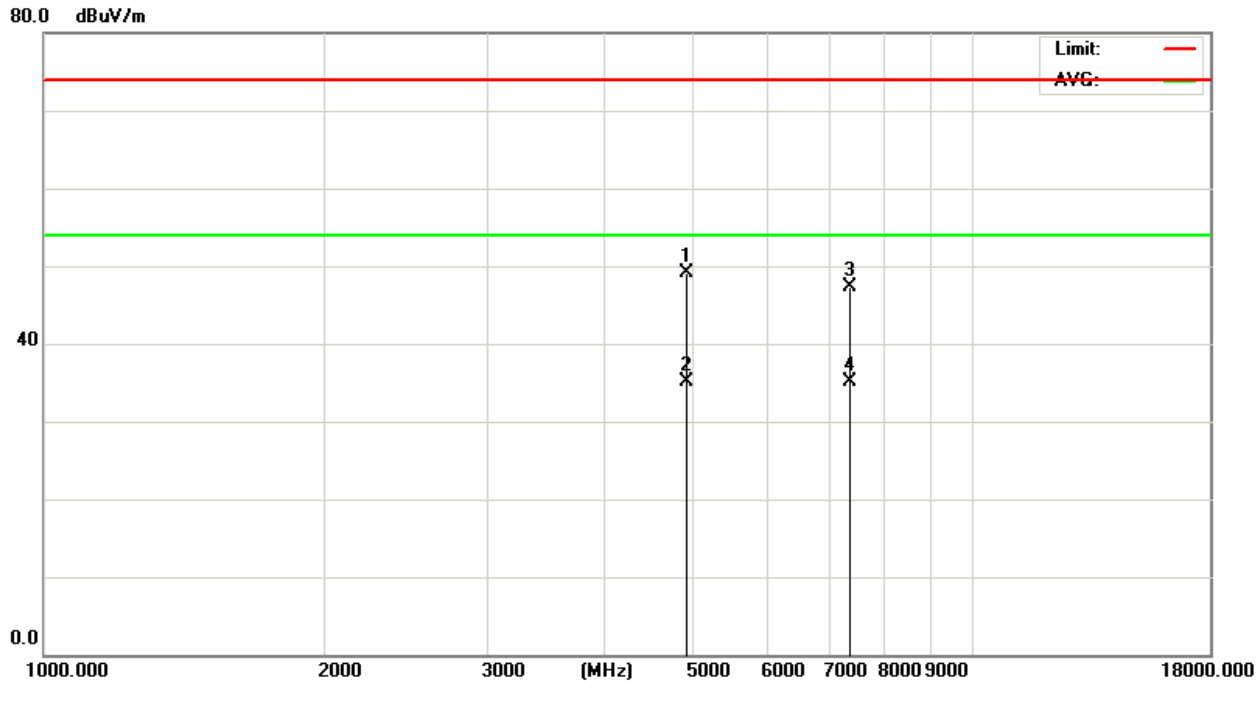
Power	:	DC 3.8V from battery	Pol/Phase	:	HORIZONTAL/ VERTICAL
Test Mode 1	:	TX 15Mbps CH9	Temperature	:	20 °C
Humidity	:	59 %			

Harmonics & Spurious Emissions. Peak & Average Measurement

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4904.000	44.03	5.16	49.19	74.00	-24.81	peak
4904.000	30.03	5.16	35.19	54.00	-18.81	AVE
7356.000	39.63	7.69	47.32	74.00	-26.68	peak
7356.000	27.35	7.69	35.04	54.00	-18.96	AVE

Remark:

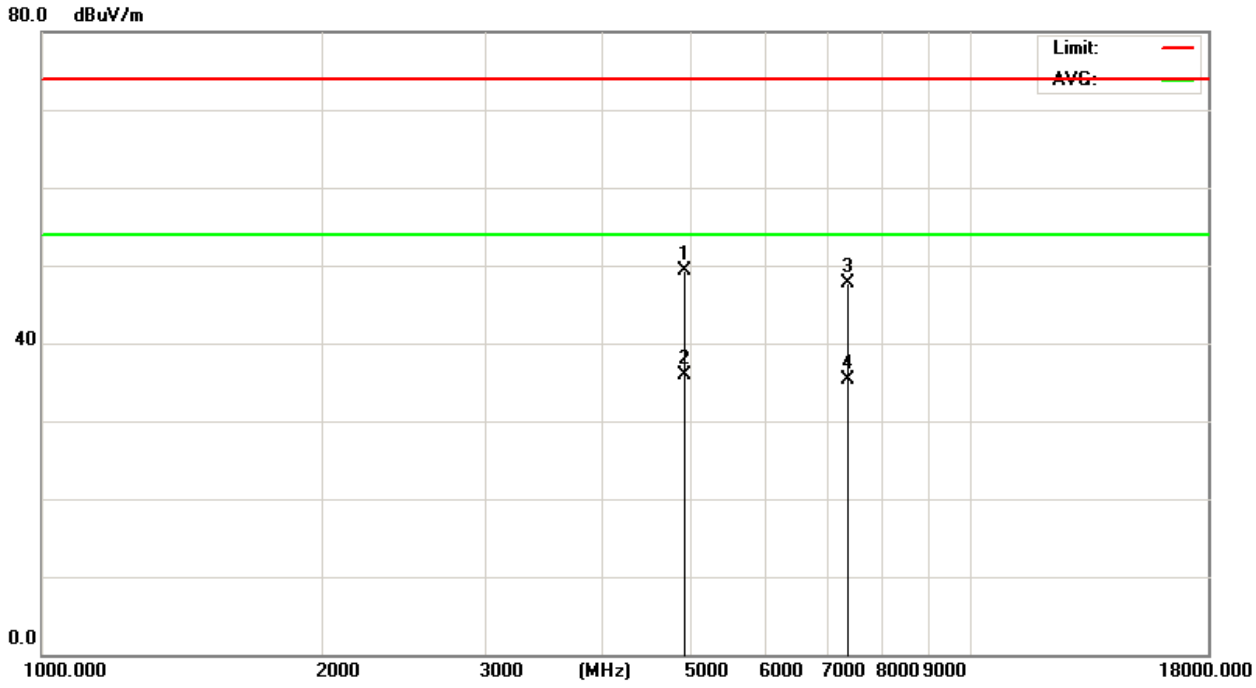
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4904.000	44.18	5.16	49.34	74.00	-24.66	peak
4904.000	30.65	5.16	35.81	54.00	-18.19	AVE
7356.000	39.93	7.69	47.62	74.00	-26.38	peak
7356.000	27.65	7.69	35.34	54.00	-18.66	AVE

Remark:

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



Note:

All the modulation modes were tested, the data of the worst mode are recorded in the above pages and the others modulation methods do not exceed the limits.

The disturbance above 18GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

8. 6dB Bandwidth Measurement Data

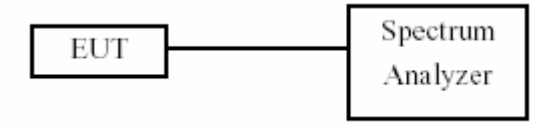
8.1 Test Limit

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

8.2 Test Procedures

a. The transmitter output was connected to the spectrum analyzer.
b. Set RBW of spectrum analyzer to 1~5% of the emission bandwidth and VBW ≥ 3x RBW.
c. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.
d. The 6dB Bandwidth was measured and recorded.

8.3 Test Setup Layout



8.4 Test Result and Data

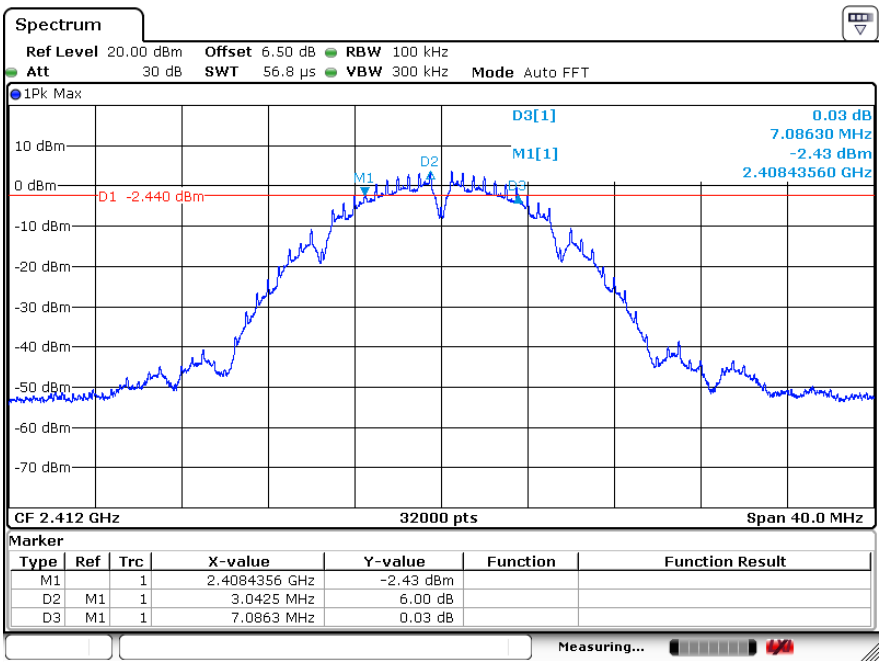
Test Date: Mar. 08, 2018 Temperature: 20℃

Atmospheric pressure: 1000 pha Humidity: 55%

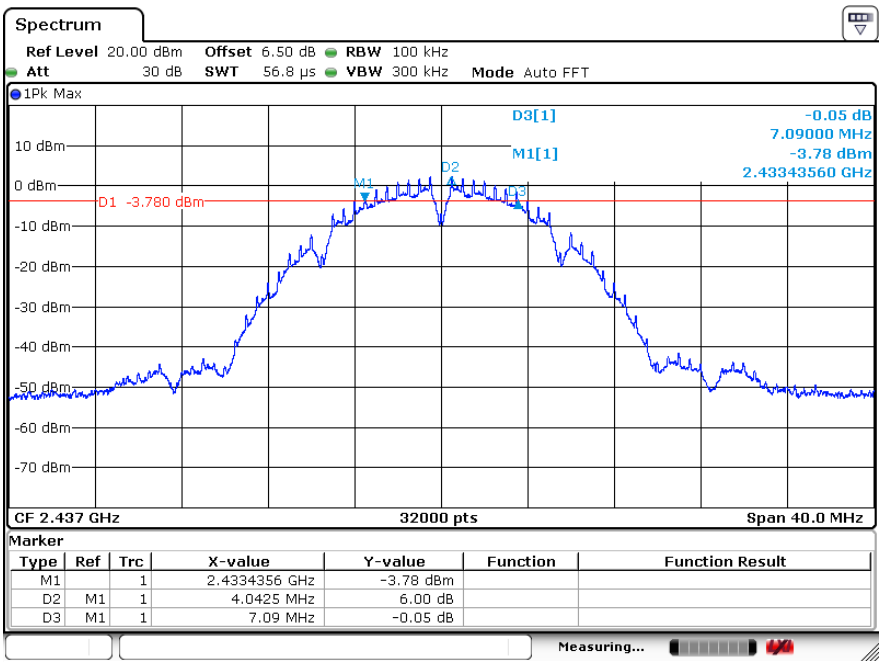
Note: The worst data is Antenna A, only shown Antenna A Plot.

Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)
802.11b	1	2412	7.086
	6	2437	7.090
	11	2462	7.554

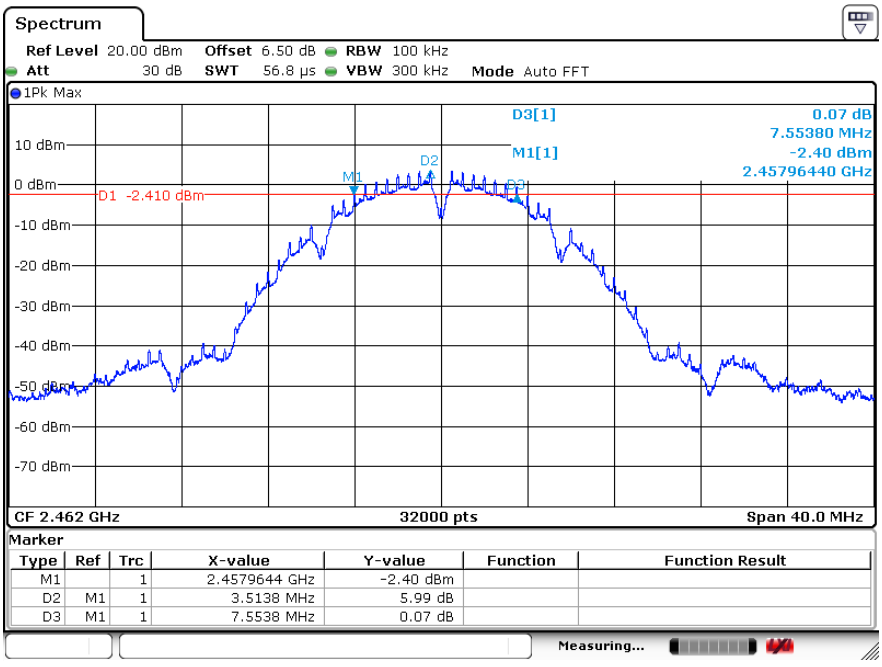
Channel: 1



Channel: 6

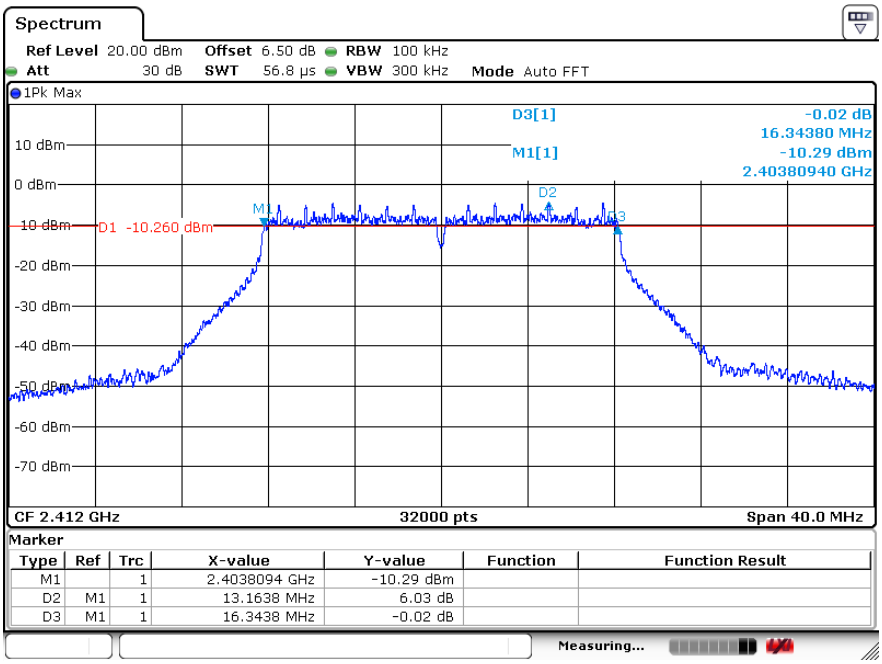


Channel: 11

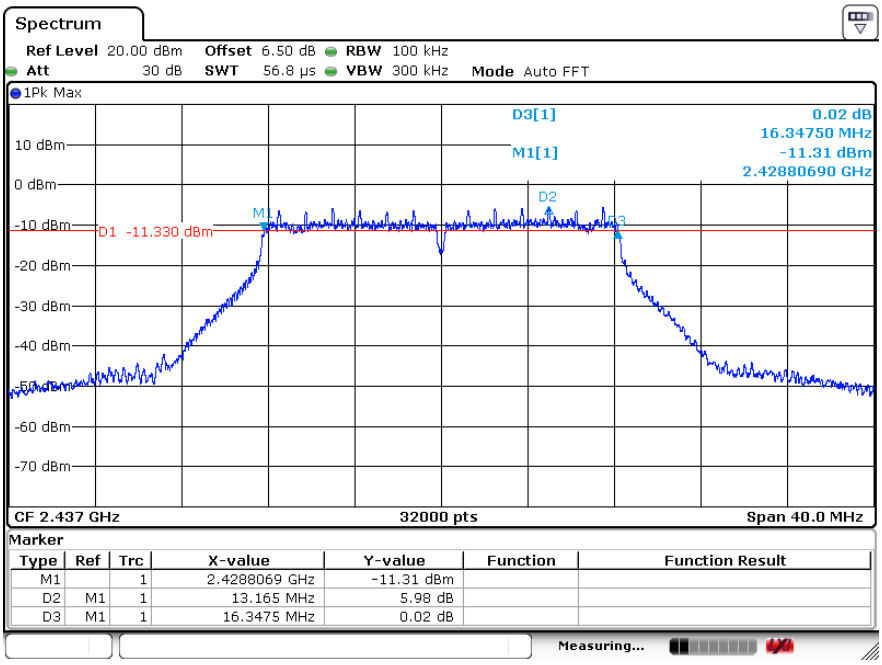


Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)
802.11g	1	2412	16.344
	6	2437	16.348
	11	2462	16.339

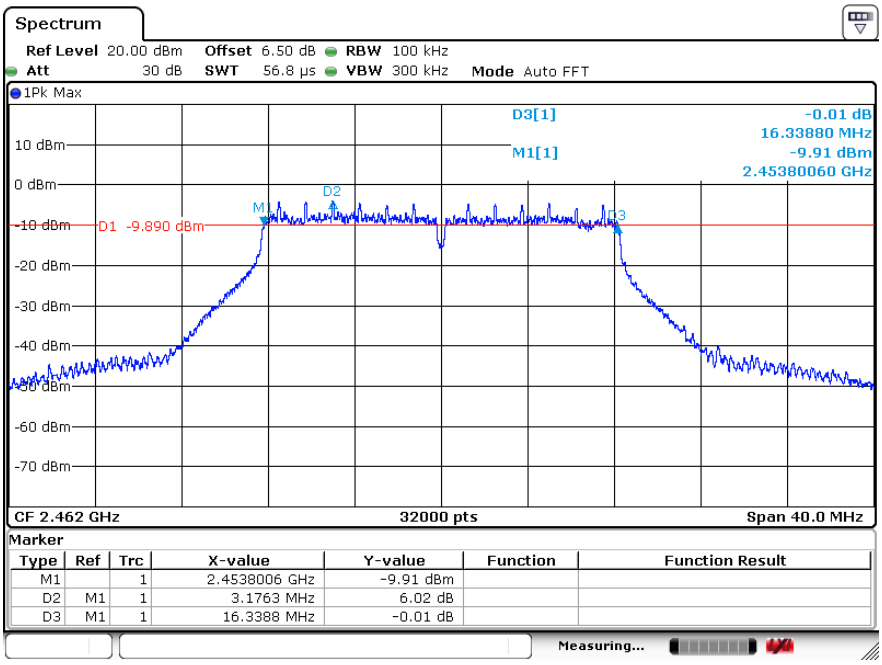
Channel: 1



Channel: 6

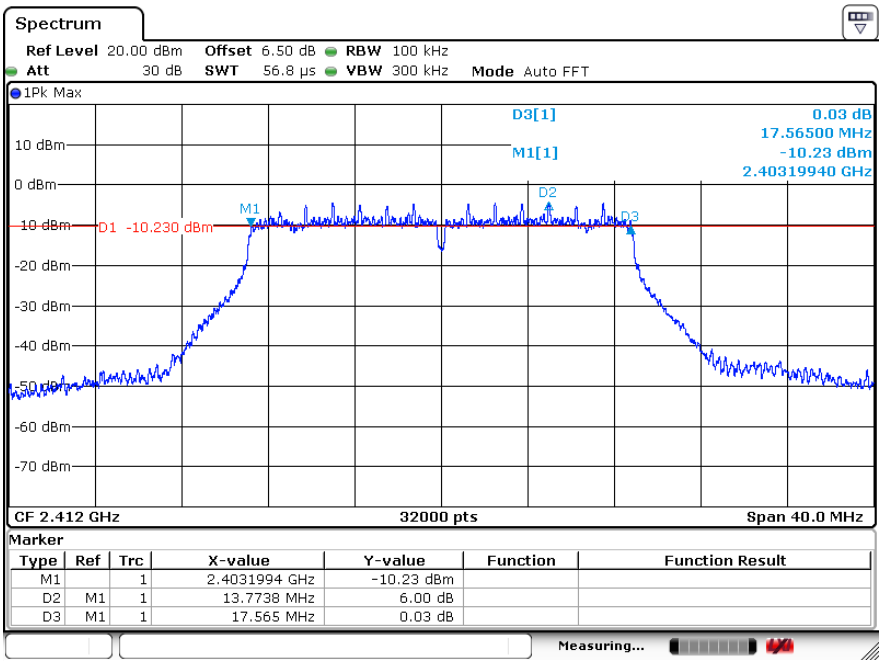


Channel: 11

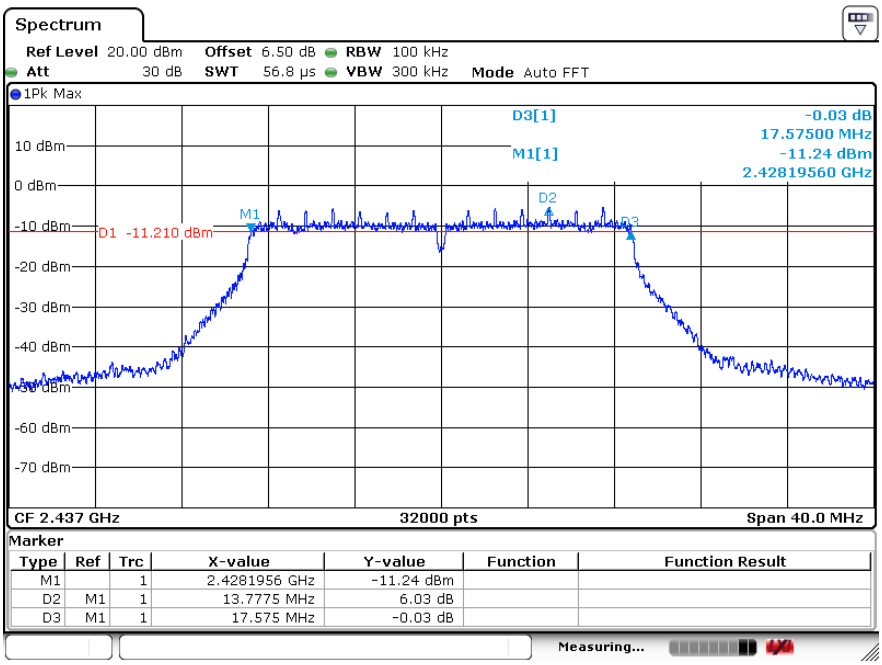


Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)
802.11n20	1	2412	17.565
	6	2437	17.575
	11	2462	17.559

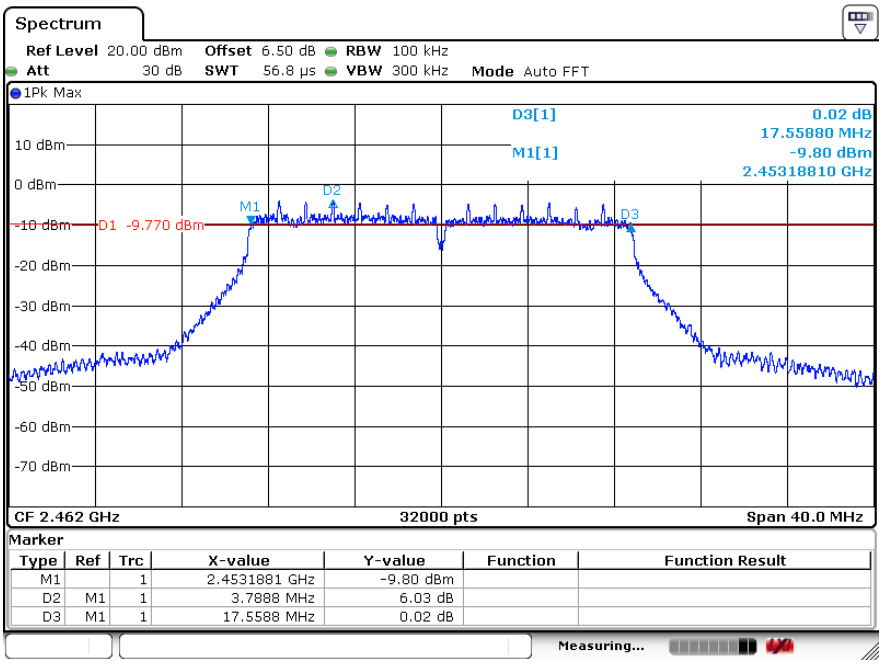
Channel: 1



Channel: 6

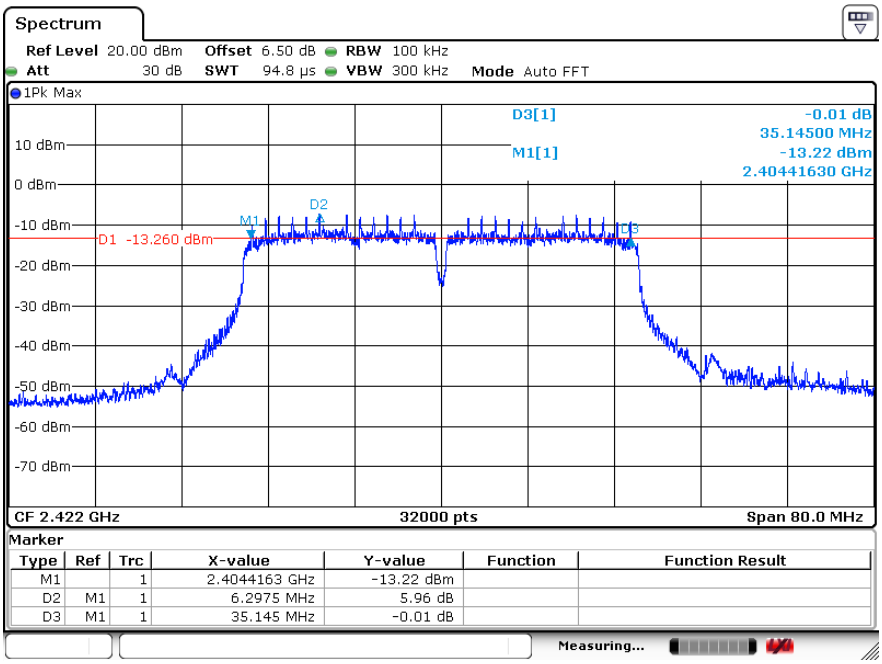


Channel: 11

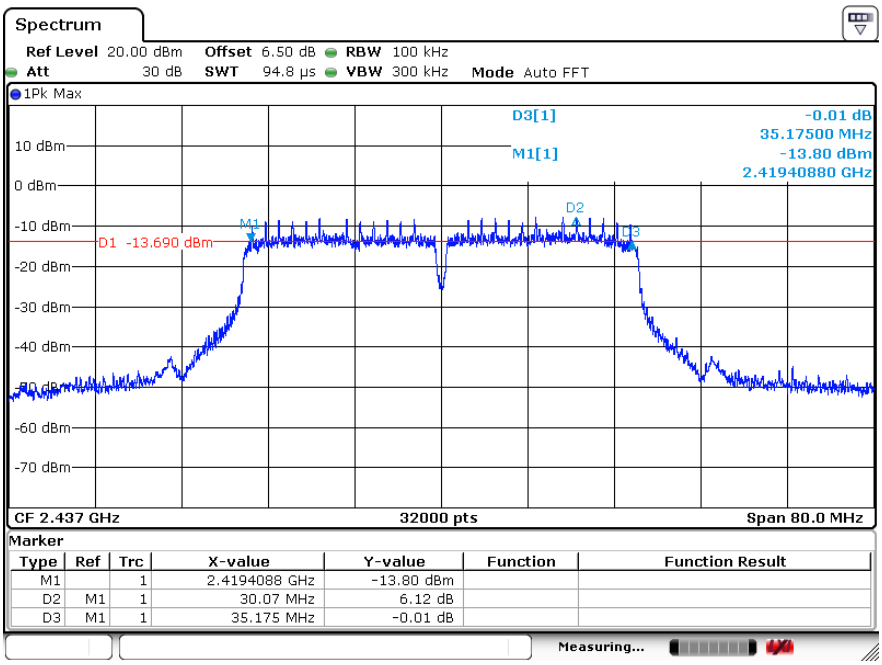


Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)
802.11n40	3	2422	35.145
	6	2437	35.175
	9	2452	35.130

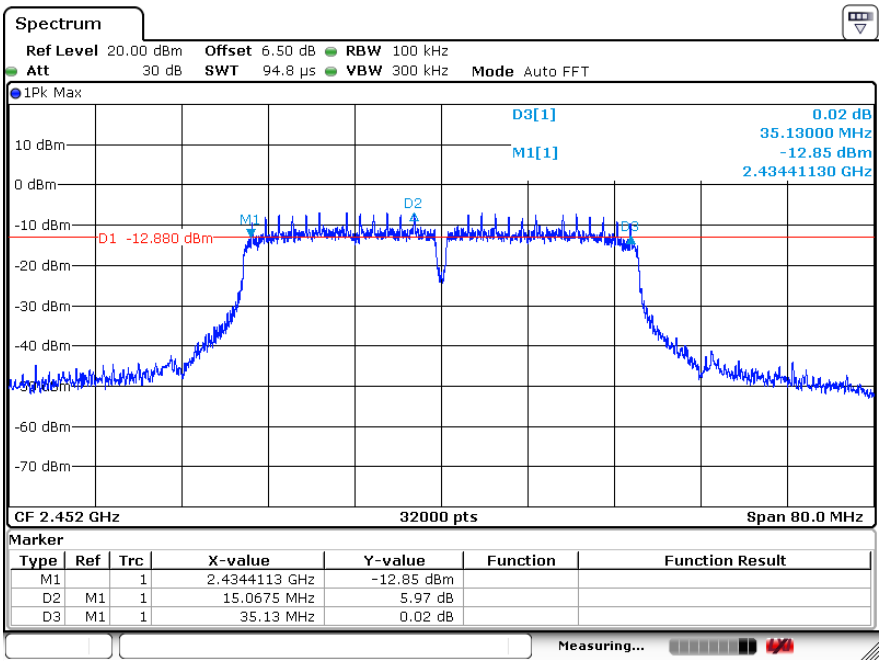
Channel: 1



Channel: 6



Channel: 11



9. Maximum Output Power

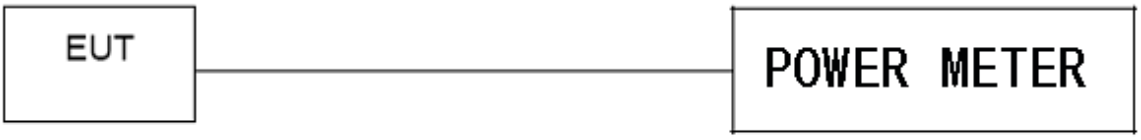
9.1 Test Limit

The Maximum Output Power Measurement is 30dBm.

9.2 Test Procedures

a. Peak power is measured using the wideband power meter.
b. Power is integrated over a bandwidth greater than or equal to the 99% bandwidth.
c. The Peak Output Power was measured and recorded.

9.3 Test Setup Layout



9.4 Test Result and Data

Test Date: Aug. 26, 2018 Temperature: 20℃

Atmospheric pressure: 1000hPa Humidity: 55%

WLAN(2.4G)-Maximum Average Power				
Mode	Data Rate	Channel	Frequency (MHz)	Measured Power (dBm)
802.11b	1Mbps	1	2412	15.78
		6	2437	14.67
		11	2462	15.68
802.11g	6Mbps	1	2412	14.68
		6	2437	14.01
		11	2462	14.99
802.11n (20MHz)	MCS0	1	2412	14.78
		6	2437	13.69
		11	2462	14.93
802.11n (40MHz)	MCS0	3	2422	14.53
		6	2437	14.73
		9	2452	15.54

10. Power Spectral Density

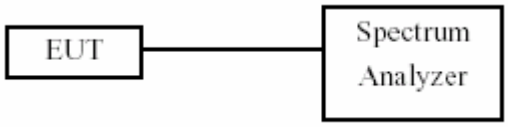
10.1 Test Limit

The Maximum of Power Spectral Density Measurement is 8dBm

10.2 Test Procedures

a. The transmitter output was connected to spectrum analyzer.
b. The spectrum analyzer's resolution bandwidth were set at 3KHz RBW and 10KHz VBW as that of the fundamental frequency. Set the sweep time=auto couple.
c. The power spectral density was measured and recorded.

10.3 Test Setup Layout



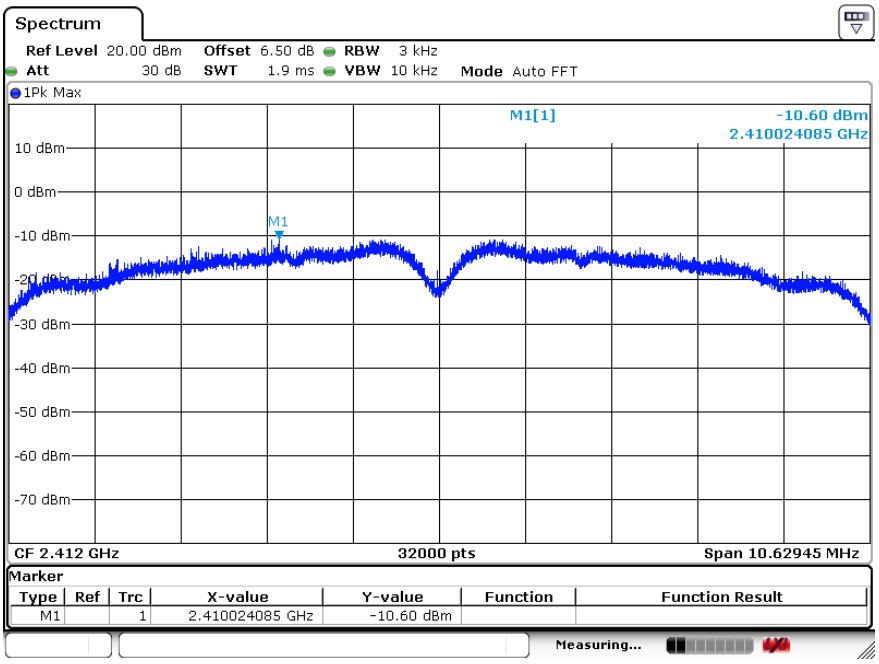
10.4 Test Result and Data

Test Date: Aug. 26, 2018 Temperature: 20℃

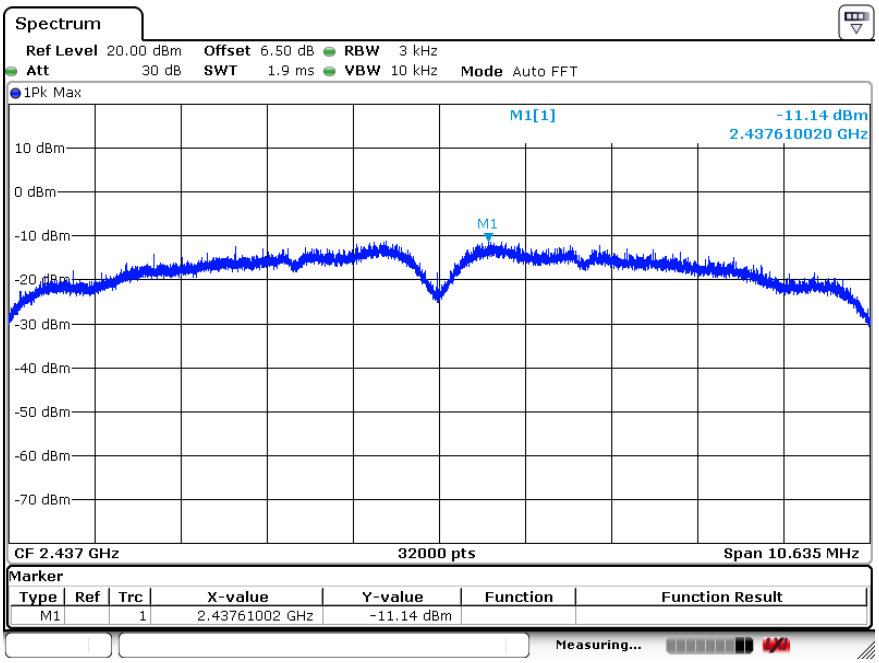
Atmospheric pressure: 1000 pha Humidity: 55%

Mode	Channel	Frequency (MHz)	Measured Power Density (dBm)
802.11b	1	2412	-10.60
	6	2437	-11.14
	11	2462	-9.73

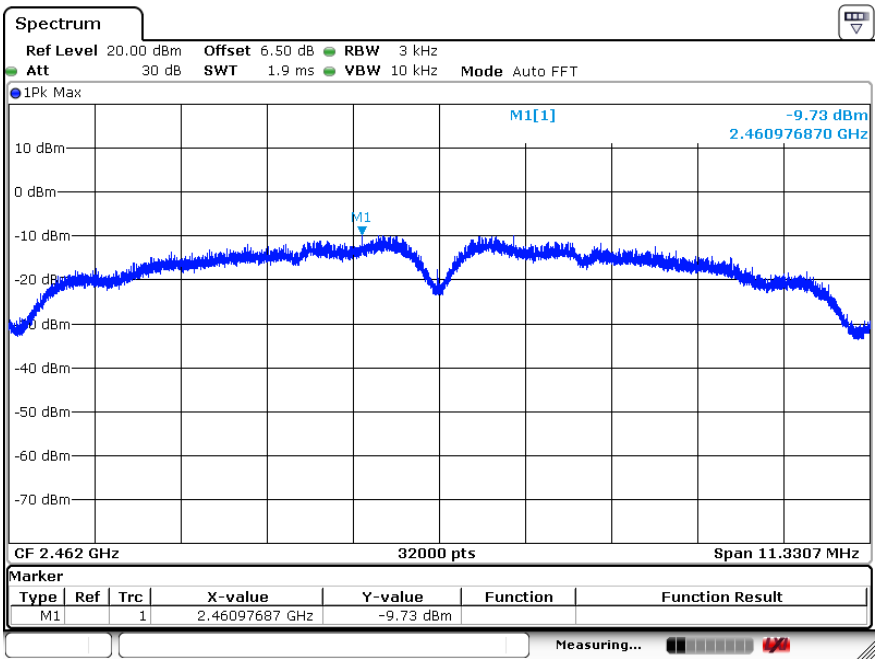
Channel: 1



Channel: 6

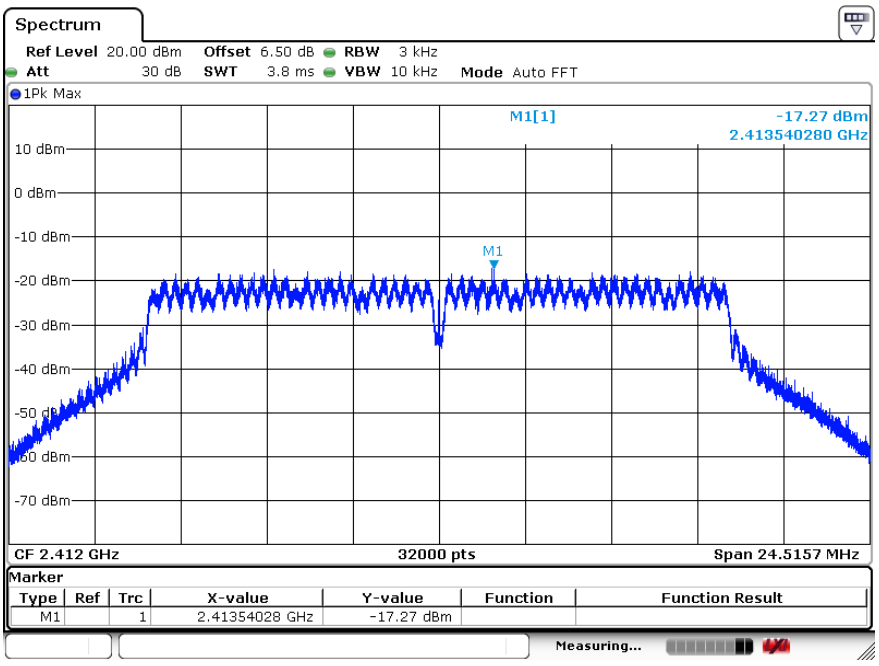


Channel: 11

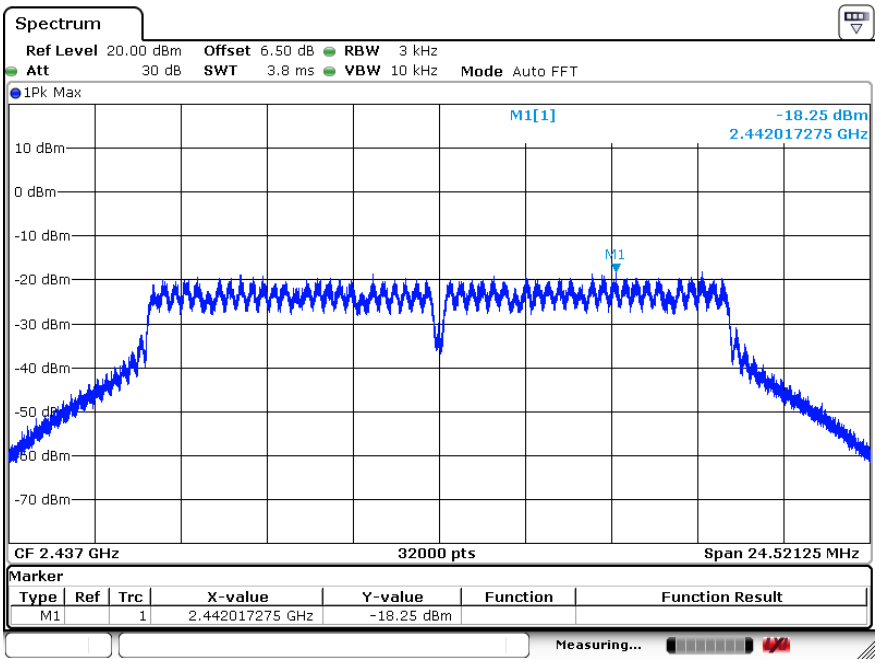


Mode	Channel	Frequency (MHz)	Measured Power Density (dBm)
802.11g	1	2412	-17.27
	6	2437	-18.25
	11	2462	-15.96

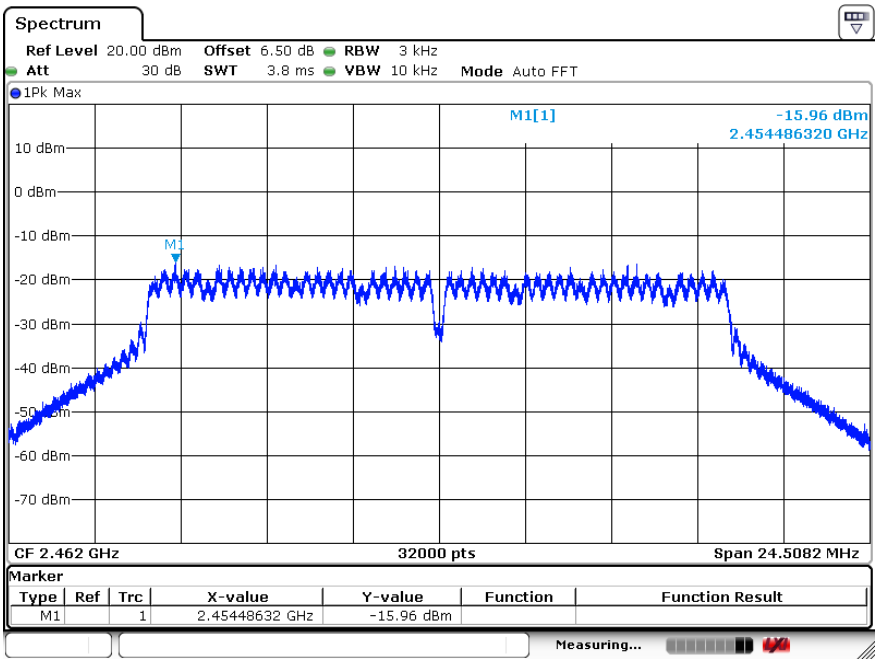
Channel: 1



Channel: 6

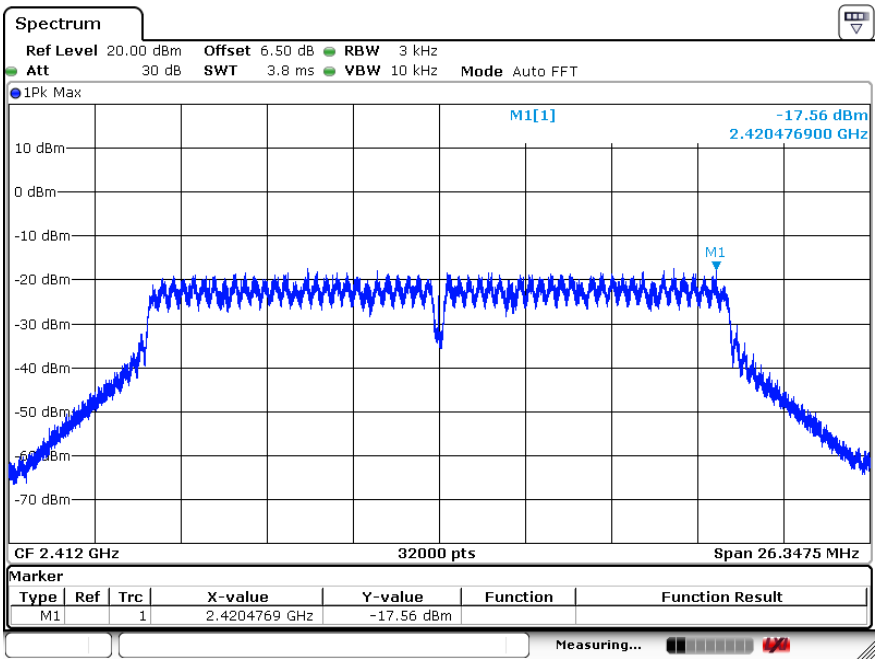


Channel: 11

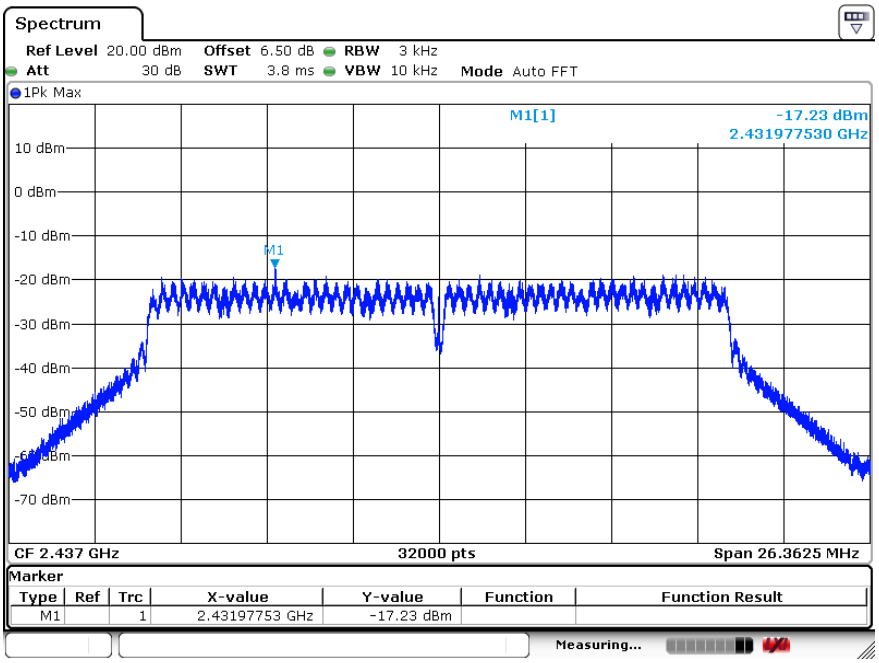


Mode	Channel	Frequency (MHz)	Measured Power Density (dBm)
802.11n20	1	2412	-17.56
	6	2437	-17.23
	11	2462	-17.09

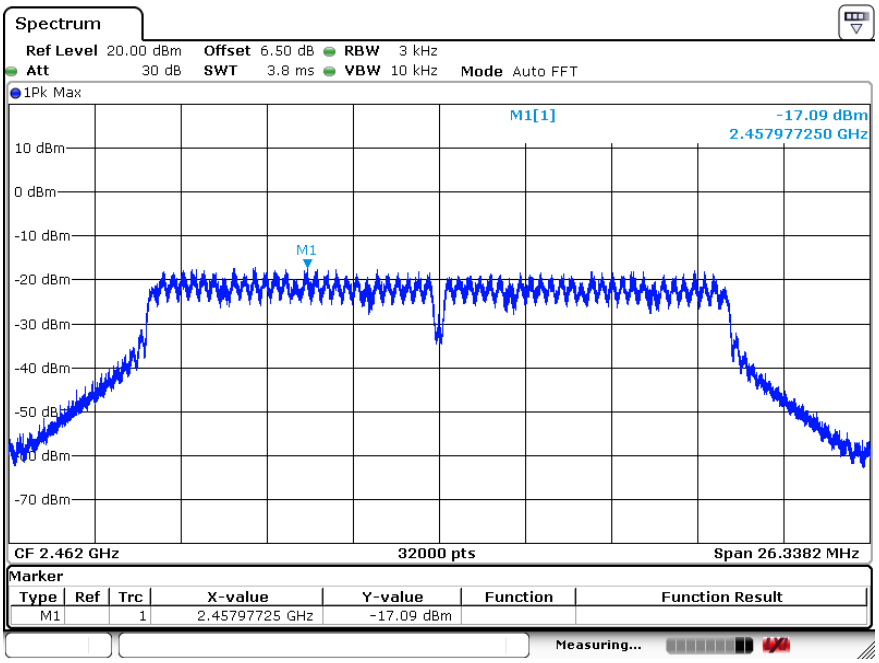
Channel: 1



Channel: 6

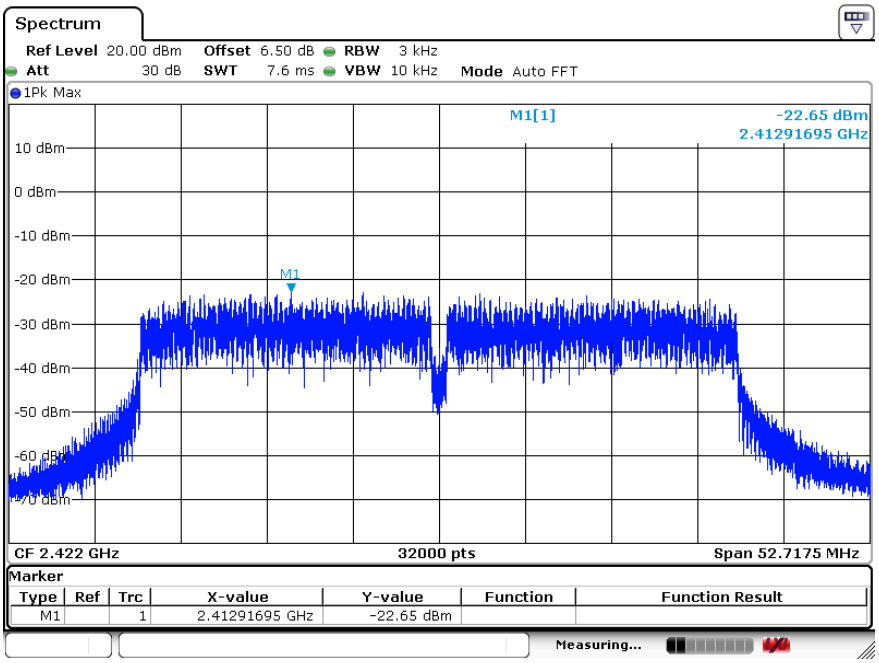


Channel: 11

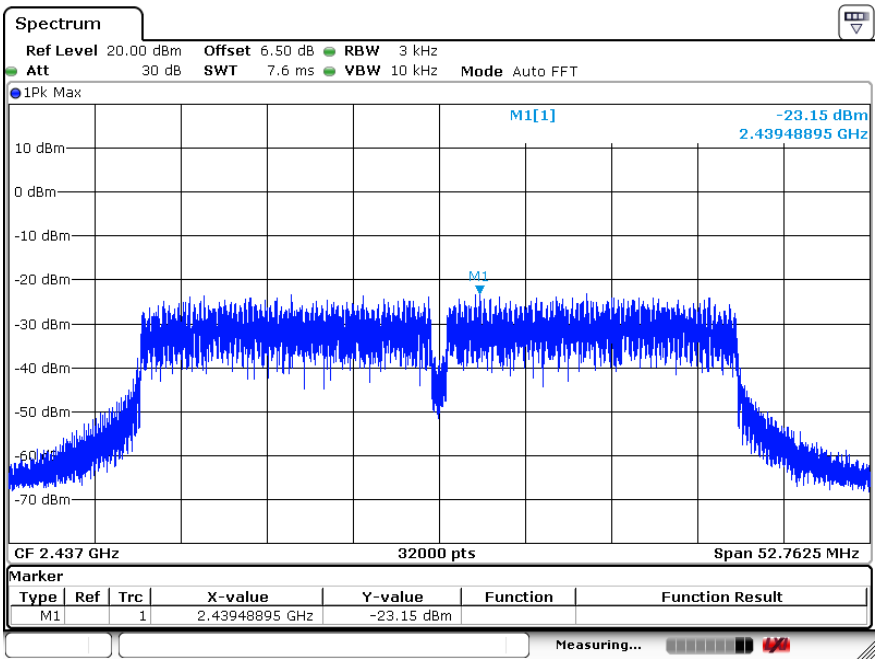


Mode	Channel	Frequency (MHz)	Measured Power Density (dBm)
802.11n40	3	2422	-22.65
	6	2437	-23.15
	9	2452	-22.26

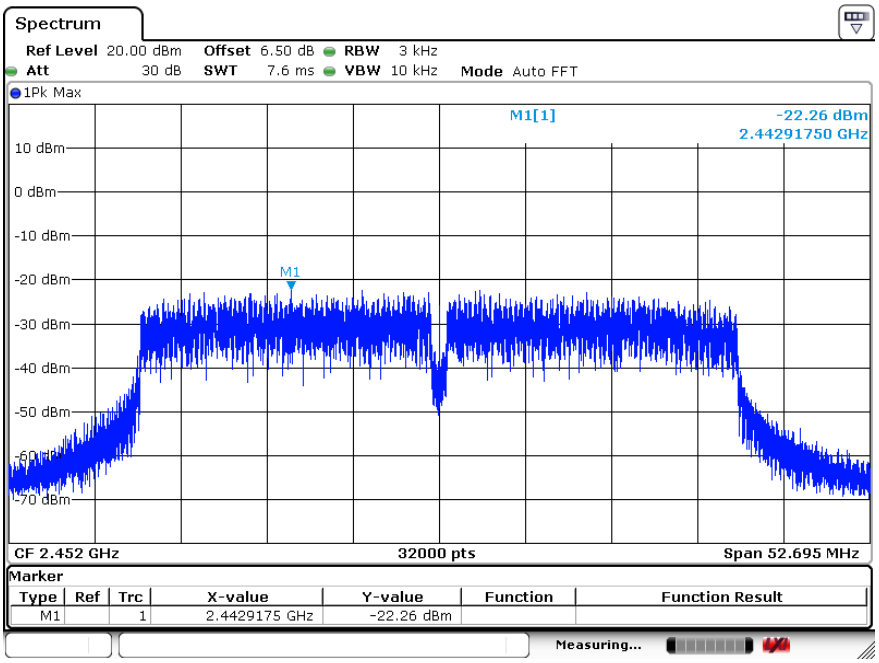
Channel: 1



Channel: 6



Channel: 11



11. Band Edges Measurement

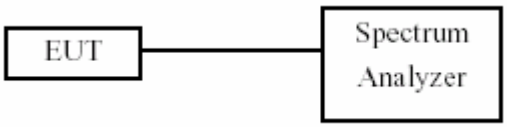
11.1 Test Limit

Below –20dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

11.2 Test Procedure

a. The transmitter output was connected to the spectrum analyzer via a low lose cable.
b. Set RBW of spectrum analyzer to 100 KHz and VBW of spectrum analyzer to 300 KHz with convenient frequency span including 100 KHz bandwidth from band edge.
c. Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20dB relative to the maximum measured in-band peak PSD level.
d. The band edges was measured and recorded.

11.3 Test Setup Layout



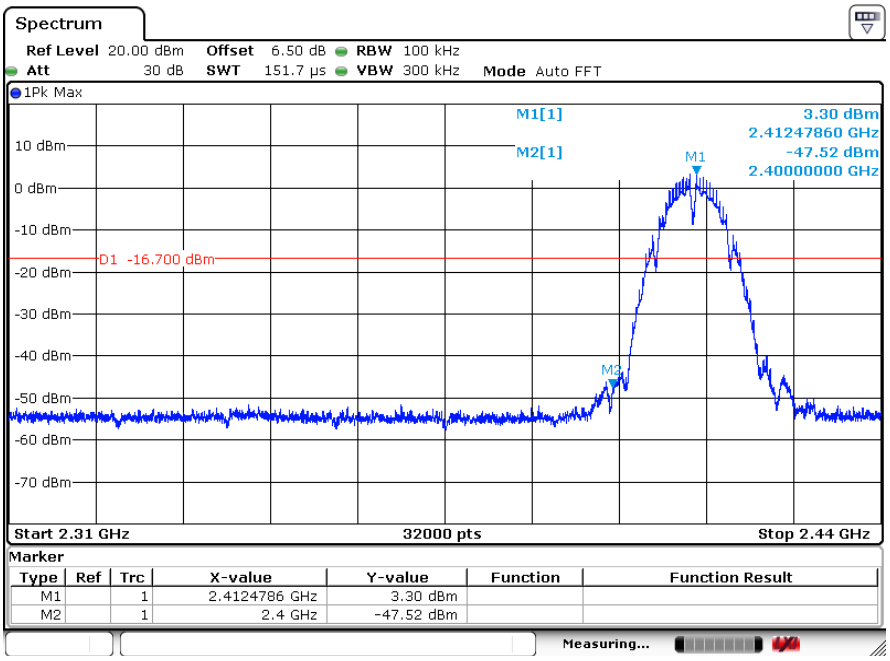
11.4 Test Result and Data

Compare with the output power of the lowest frequency, the Lower Edges attenuated more than 20dB

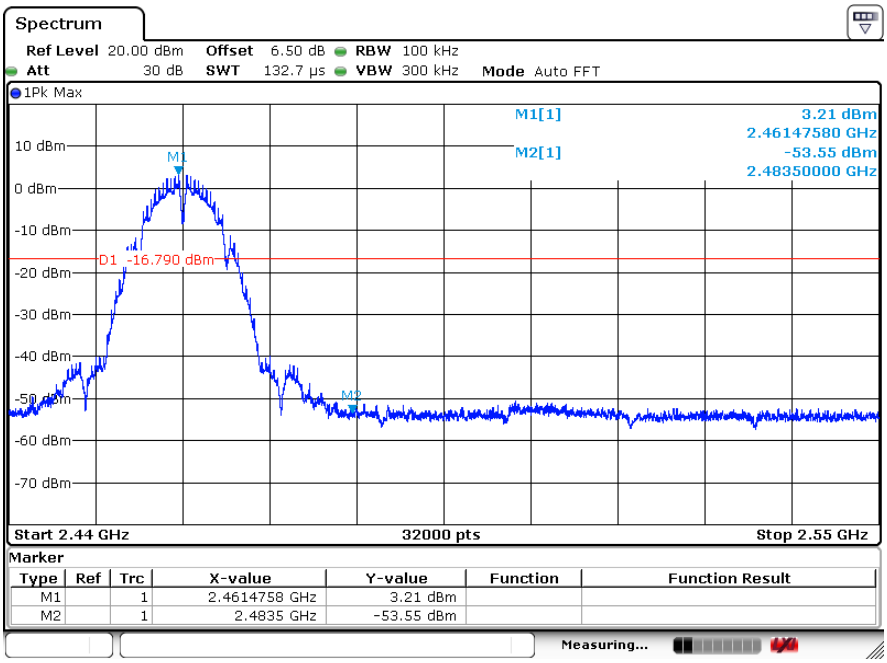
Compare with the output power of the highest frequency, the Upper Edges attenuated more than 20dB.

802.11b mode with 1 Mbps data rate

Channel1: 2.412 GHz

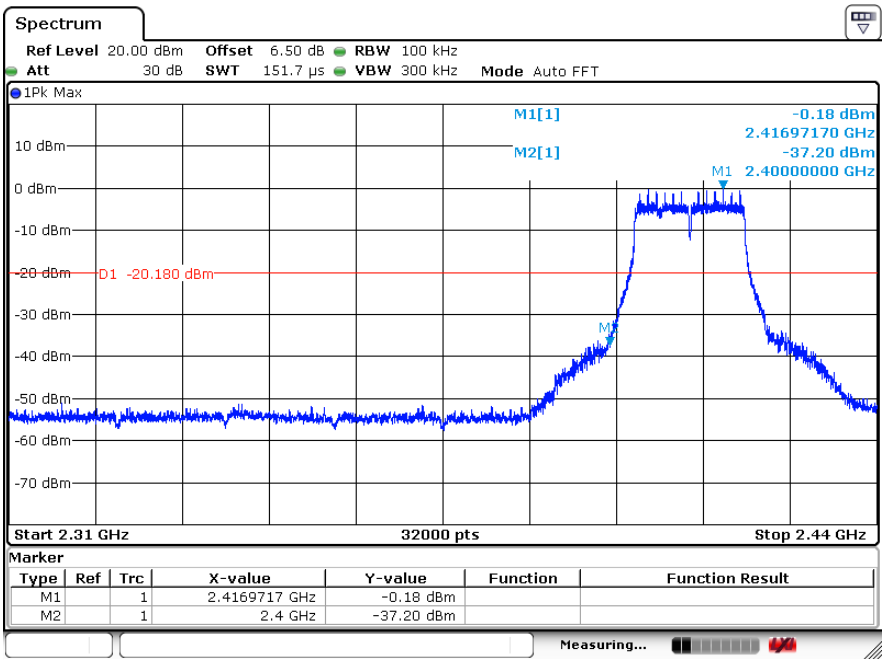


Channel11: 2.462 GHz

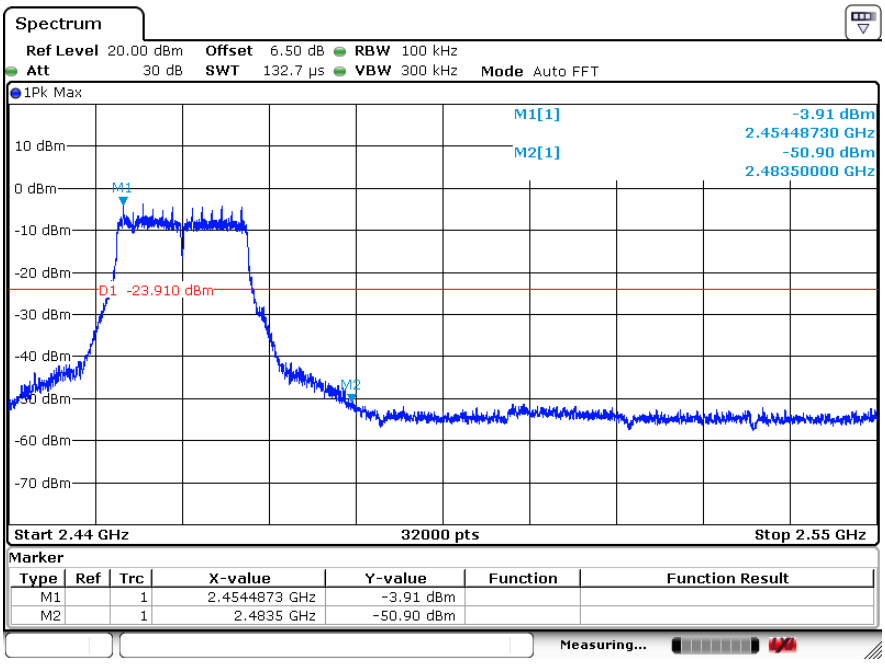


802.11g mode with 6 Mbps data rate

Channel1: 2.412 GHz

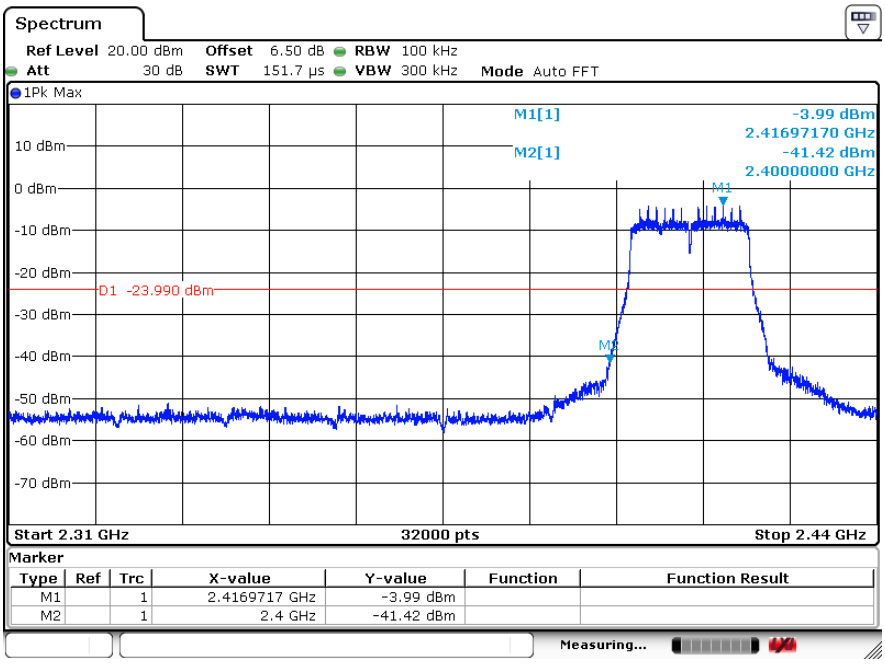


Channel11: 2.462 GHz

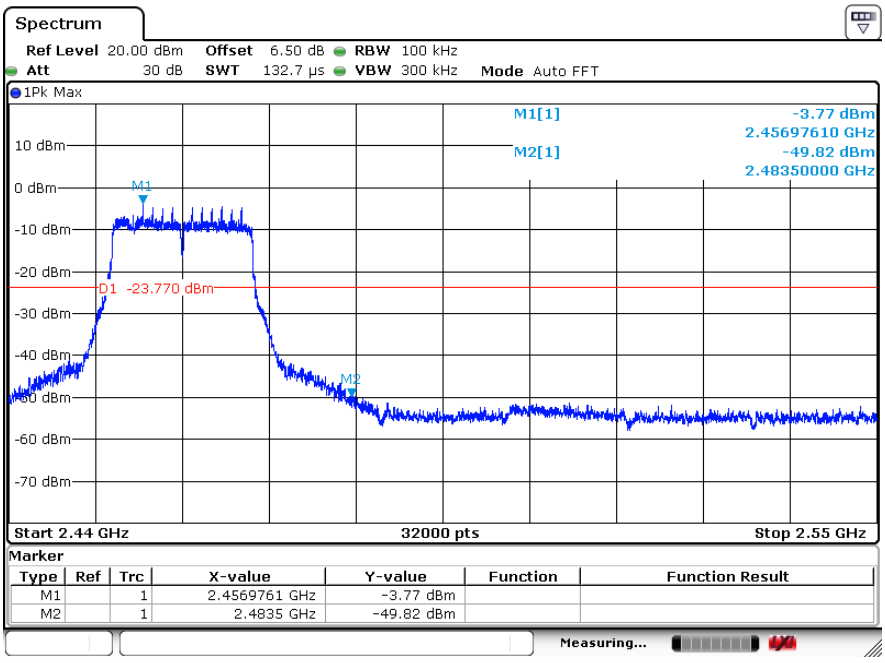


802.11n(HT20) mode with 7.2Mbps data rate

Channel1: 2.412 GHz

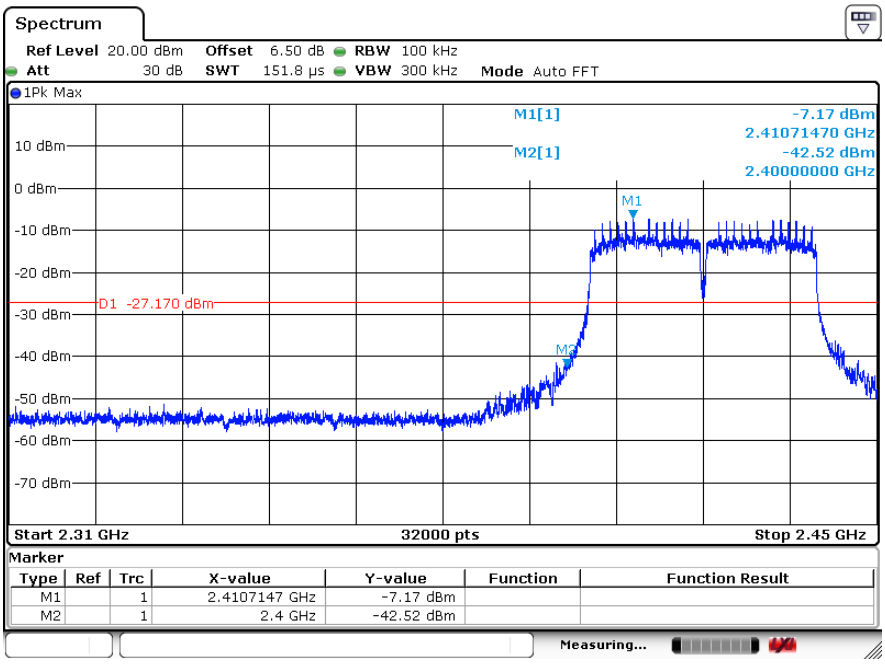


Channel11: 2.462 GHz

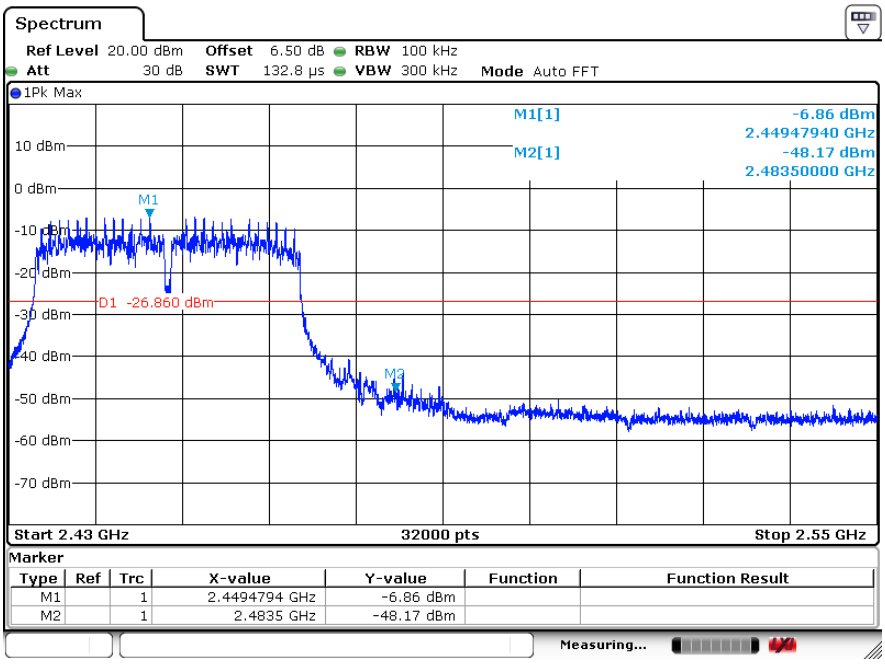


802.11n(HT40) mode with 15Mbps data rate

Channel3: 2.422 GHz



Channel9: 2.452 GHz



11.5 Restrict Band Emission Measurement Data

Power	:	AC 12V/60Hz	Pol/Phase	:	H/V
Test Mode 1	:	802.11b	Temperature	:	26 ˚C
Test Date	:	Aug. 27, 2018	Humidity	:	55 %

Note:
1. The transmitter was setup to transmit at the lowest channel. Then the field strength was measured at 2310-2390 MHz.
2. The transmitter was setup to transmit at the highest channel. Then the field strength was measured at 2483.5-2500 MHz.
3. The data of 2390MHz and 2483.5MHz was the worst.

Channel 1						Fundamental Frequency: 2412 MHz				
Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result (dBuV/m)	Remark	Limit (dBuV/m)		Margin (dB)	Table Deg.	Ant High (m)
						Peak	Ave			
2390	H	43.72	-5.79	37.93	Peak	74	54	-36.07	360	1.5
---	H	---	---	---	Ave	74	54	----	----	---
2390	V	43.47	-5.79	37.68	Peak	74	54	-36.32	181	1.5
---	V	---	----	---	Ave	74	54	----	----	---
2400	H	44.12	-5.7	38.42	Peak	74	54	-35.58	360	1.5
---	H	---	---	---	Ave	74	54	----	----	---
2400	V	43.30	-5.7	37.60	Peak	74	54	-36.40	181	1.5
---	V	---	----	----	Ave	74	54	----	----	---
Channel 11						Fundamental Frequency: 2462 MHz				
Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result (dBuV/m)	Remark	Limit (dBuV/m)		Margin (dB)	Table Deg.	Ant High (m)
						Peak	Ave			
2483.5	H	42.48	-4.98	37.50	Peak	74	54	-36.50	360	1.5
---	H	---	----	----	Ave	74	54	----	----	---
2483.5	V	42.58	-4.98	37.60	Peak	74	54	-36.40	182	1.5
---	V	---	----	----	Ave	74	54	----	----	---
2500	H	39.90	-4.83	35.07	Peak	74	54	-38.93	360	1.5
----	H	---	----	----	Ave	74	54	----	----	---
2500	V	40.54	-4.83	35.71	Peak	74	54	-38.29	182	1.5
----	V	---	----	----	Ave	74	54	----	----	---

Power	:	AC 12V/60Hz	Pol/Phase	:	H/V
Test Mode 1	:	802.11g	Temperature	:	26 ˚C
Test Date	:	Aug. 27, 2018	Humidity	:	55 %

Note:
1. The transmitter was setup to transmit at the lowest channel. Then the field strength was measured at 2310-2390 MHz.
2. The transmitter was setup to transmit at the highest channel. Then the field strength was measured at 2483.5-2500 MHz.
3. The data of 2390MHz and 2483.5MHz was the worst.

Channel 1 — Fundamental Frequency: 2412 MHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result (dBuV/m)	Remark	Limit (dBuV/m)		Margin (dB)	Table Deg.	Ant High (m)
						Peak	Ave			
2390	H	43.92	-5.79	38.13	Peak	74	54	-35.87	352	1.5
---	H	---	---	---	Ave	74	54	----	----	---
2390	V	44.14	-5.79	38.35	Peak	74	54	-35.65	175	1.5
---	V	---	----	---	Ave	74	54	----	----	---
2400	H	45.62	-5.7	39.92	Peak	74	54	-34.08	351	1.5
---	H	---	---	---	Ave	74	54	----	----	---
2400	V	44.21	-5.7	38.51	Peak	74	54	-35.49	172	1.5
---	V	---	----	----	Ave	74	54	----	----	---

Channel 11 — Fundamental Frequency: 2462 MHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result (dBuV/m)	Remark	Limit (dBuV/m)		Margin (dB)	Table Deg.	Ant High (m)
						Peak	Ave			
2483.5	H	41.29	-4.98	36.31	Peak	74	54	-37.69	355	1.5
---	H	---	----	----	Ave	74	54	----	----	---
2483.5	V	42.74	-4.98	37.76	Peak	74	54	-36.24	148	1.5
---	V	---	----	----	Ave	74	54	----	----	---
2500	H	40.81	-4.83	35.98	Peak	74	54	-38.02	353	1.5
----	H	---	----	----	Ave	74	54	----	----	---
2500	V	42.04	-4.83	37.21	Peak	74	54	-36.79	176	1.5
----	V	---	----	----	Ave	74	54	----	----	---

Power	:	AC 12V/60Hz	Pol/Phase	:	H/V
Test Mode 1	:	802.11n20	Temperature	:	26 ˚C
Test Date	:	Aug. 27, 2018	Humidity	:	55 %

Note:
1. The transmitter was setup to transmit at the lowest channel. Then the field strength was measured at 2310-2390 MHz.
2. The transmitter was setup to transmit at the highest channel. Then the field strength was measured at 2483.5-2500 MHz.
3. The data of 2390MHz and 2483.5MHz was the worst.

Channel 1						Fundamental Frequency: 2412 MHz				
Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result (dBuV/m)	Remark	Limit (dBuV/m)		Margin (dB)	Table Deg.	Ant High (m)
						Peak	Ave			
2390	H	44.10	-5.79	38.31	Peak	74	54	-35.69	356	1.5
---	H	---	---	---	Ave	74	54	----	----	---
2390	V	43.21	-5.79	37.42	Peak	74	54	-36.58	174	1.5
---	V	---	----	---	Ave	74	54	----	----	---
2400	H	45.75	-5.7	40.05	Peak	74	54	-33.95	354	1.5
---	H	---	---	---	Ave	74	54	----	----	---
2400	V	43.12	-5.7	37.42	Peak	74	54	-36.58	183	1.5
---	V	---	----	----	Ave	74	54	----	----	---
Channel 11						Fundamental Frequency: 2462 MHz				
Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result (dBuV/m)	Remark	Limit (dBuV/m)		Margin (dB)	Table Deg.	Ant High (m)
						Peak	Ave			
2483.5	H	42.93	-4.98	37.95	Peak	74	54	-36.05	349	1.5
---	H	---	----	----	Ave	74	54	----	----	---
2483.5	V	42.81	-4.98	37.83	Peak	74	54	-36.17	165	1.5
---	V	---	----	----	Ave	74	54	----	----	---
2500	H	39.72	-4.83	34.89	Peak	74	54	-39.11	354	1.5
----	H	---	----	----	Ave	74	54	----	----	---
2500	V	42.17	-4.83	37.34	Peak	74	54	-36.66	181	1.5
----	V	---	----	----	Ave	74	54	----	----	---

Power	:	AC 12V/60Hz	Pol/Phase	:	H/V
Test Mode 1	:	802.11n40	Temperature	:	26 ˚C
Test Date	:	Aug. 27, 2018	Humidity	:	55 %

Note:
1. The transmitter was setup to transmit at the lowest channel. Then the field strength was measured at 2310-2390 MHz.
2. The transmitter was setup to transmit at the highest channel. Then the field strength was measured at 2483.5-2500 MHz.
3. The data of 2390MHz and 2483.5MHz was the worst.

Channel 3 — Fundamental Frequency: 2422 MHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result (dBuV/m)	Remark	Limit (dBuV/m)		Margin (dB)	Table Deg.	Ant High (m)
						Peak	Ave			
2390	H	43.66	-5.79	37.87	Peak	74	54	-36.13	350	1.5
---	H	---	---	---	Ave	74	54	----	----	---
2390	V	43.08	-5.79	37.29	Peak	74	54	-36.71	169	1.5
---	V	---	----	---	Ave	74	54	----	----	---
2400	H	43.81	-5.7	38.11	Peak	74	54	-35.89	353	1.5
---	H	---	---	---	Ave	74	54	----	----	---
2400	V	44.34	-5.7	38.64	Peak	74	54	-35.36	178	1.5
---	V	---	----	----	Ave	74	54	----	----	---

Channel 9 — Fundamental Frequency: 2452 MHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result (dBuV/m)	Remark	Limit (dBuV/m)		Margin (dB)	Table Deg.	Ant High (m)
						Peak	Ave			
2483.5	H	42.63	-4.98	37.65	Peak	74	54	-36.35	354	1.5
---	H	---	----	----	Ave	74	54	----	----	---
2483.5	V	43.24	-4.98	38.26	Peak	74	54	-35.74	167	1.5
---	V	---	----	----	Ave	74	54	----	----	---
2500	H	40.94	-4.83	36.11	Peak	74	54	-37.89	352	1.5
----	H	---	----	----	Ave	74	54	----	----	---
2500	V	40.23	-4.83	35.40	Peak	74	54	-38.60	149	1.5
----	V	---	----	----	Ave	74	54	----	----	---

Note:

1. Emission level = Reading level + Correction factor
2. Correction factor: Antenna factor, Cable loss, Pre-Amp, etc.
3. All emissions as described above were determining by rotating the EUT through three orthogonal axes to maximizing the emissions if the EUT belongs to hand-held or body-worn devices.
4. Measurements above 1000 MHz, Peak detector setting:
   1 MHz RBW with 1 MHz VBW (Peak Detector).

5. Measurements above 1000 MHz, Average detector setting:
   1 MHz RBW with 10Hz VBW (AV Detector).
6. Peak detector measurement data will represent the worst case results.
7. Where limits are specified for both average and peak detector functions, if the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.

12. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.150
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

**: Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

12.1 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.