FCC RADIO TEST REPORT

Applicant	:	NEXCOM International Co., LTD
Address	:	9F, No. 920, Chung-Cheng Rd. Chung-Ho City,Taipei County 235, Taiwan, R.O.C.
Equipment	:	Mesh Wi-Fi Device Gateway
Model No.	:	NIO51
Trade Name	:	NEXCOM
FCC ID	:	YHI-NIO51

I HEREBY CERTIFY THAT :

The sample was received on Jan. 17, 2018 and the testing was carried out on May 16, 2018 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Mark Liao / Assistant Manager

Tested by:

Spree Yei / Engineer

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory

Contents

History of this test report

Report No.	Issue Date	Description
TEFE1801137	May 21, 2018	Original

1. Summary of Test Procedure and Test Results

1.1. Applicable Standards

ANSI C63.4:2014

ANSI C63.10:2013

FCC Rules and Regulations Part 15 Subpart E §15.407

First R&O 14-30

KDB662911

KDB789033

KDB644545

FCC Rule	Description of Test	Result
15.203	Antenna Requirement	Pass
15.207(a)	AC Power Line Conducted Emission	Pass
15.407(b) 15.209	Radiated Spurious Emission	Pass
15.407(a)	26 dB Occupied Bandwidth	Pass
15.407	6 dB Bandwidth	Pass
15.407 (a) & (a)(3)	Average Power	Pass
15.407(a)	Output and PPSD	Pass
15.407(g)	Frequency Stability	Pass
15.407(c)	Automatically Discontinue Transmission	Pass
2.1091	Radio Frequency Exposure	Pass

2. Test Configuration of Equipment under Test

2.1. Feature of Equipment under Test

Equipment	Mesh Wi-Fi Device Gateway
Model No.	NIO51
Brand Name	NEXCOM
Product Description	Please refer to User's Manual.
Connecting I/O Port(s)	Please refer to User's Manual.
Power Requirements	Input voltage: 12~48VDC, 2-pin removable terminal block Input current: 1.5A@12VDC
Frequency Range	802.11b/g/n: 2400~2483.5 MHz 802.11a/n: 5150~5250 MHz
Modulation Type	OFDM, DSSS
Data Rate	2.4GHz: 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40 5GHz: 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40
Antenna Type	Dipole Antenna
Antenna Gain	2.4GHz: 802.11b/g: ANT B: 4 dBi 802.11n: ANT A: 4 dBi; ANT B: 4 dBi 5GHz: 802.11a: ANT A: 5 dBi; 802.11 n: ANT A: 5 dBi; ANT B: 5 dBi

Note:

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

2.2. Carrier Frequency of Channels

Band 1: 5150MHz-5250MHz

802.11a, 802.11n HT20

Channel	Frequency(MHz)	Channel	Frequency(MHz)
***36**	**5180**	***44**	**5220**
40	5200	***48**	**5240**

802.11n HT40

Channel	Frequency(MHz)	Channel	Frequency(MHz)
***38**	**5190**	***46**	**5230**

Band 4: 5725MHz -5850MHz

802.11a, 802.11n HT20

Channel	Frequency(MHz)	Channel	Frequency(MHz)
***149**	**5745**	161	5805
153	5765	***165**	**5825**
***157**	**5785**		

802.11n HT40

Channel	Frequency(MHz)	Channel	Frequency(MHz)
***151**	**5755**	***159**	**5795**

Note: Channels remarked * are selected to perform test.

2.3. 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 remote workstation and EUT for RF test. The remote workstation included Notebook.
   An executive program, " ART2-GUI:v2.3" under WIN 7 was executed to transmit and receive data via WLAN.
c. The following test modes were performed for the test:

Radiation Emissions	
Test Mode	Operating Description
1	802.11a (6Mbps)
2	802.11n HT20 (6.5Mbps)
3	802.11n HT40 (13.5Mbps)

2.4. Description of Test System

Device	Manufacturer	Model No.	Description
Remote workstation			
Notebook	DELL	LatitudeE5450/5450	Power Cable, Unshielding, 1.8m

2.5. General Information of Test

Test Site	**Cerpass Technology Corporation Test Laboratory** Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881 Address: No.68-1, Shihbachongsi, Shihding Township, New Taipei City 223, Taiwan, R.O.C. Tel: +886-2-2663-8582	
	FCC	TW1079, TW1061, TW1439
	IC	4934E-1, 4934E-2
	VCCI	T-2205 for Telecommunication Test C-4663 for Conducted emission test R-4399, R-4218 for Radiated emission test G-10812, G-10813 for radiated disturbance above 1GHz
Frequency Range Investigated:	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 40,000MHz	
Test Distance:	The test distance of radiated emission from antenna to EUT is 3 M.	

2.6. Measurement Uncertainty

Measurement Item	Uncertainty
Radiated Spurious Emission(9KHz~30MHz)	±5.007dB
Radiated Spurious Emission(30MHz~1GHz)	±5.157dB
Radiated Spurious Emission(1GHz~18GHz)	±6.383dB
Radiated Spurious Emission(18GHz~40GHz)	±6.648dB
Conducted Spurious Emission	±1.253dB
6dB Bandwidth	±6.89%
Power Spectral Density	±0.630dB
26 dB Occupied Bandwidth	±6.10%
Frequency Stability	±375KHz
Channel Frequencies Separation	±6.10%
20dB Bandwidth	±6.12%
Dwell Time	±1.34%
Peak Output Power(Conducted Power Meter)	±0.86dB
Temperature	±1.2oC
Humidity	±2.7%
Channel Move Time	±4.53%
Channel Closing Transmission Time	±6.61%
Threshold	±0.631dB
Non occupancy period	±1.17%

3. Test Equipment and Ancillaries Used for Tests

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
EMI Receiver	R&S	ESCI3	100821	2017/09/08	2018/09/07
LISN	Schwarzbeck	NSLK 8127	8127-568	2018/02/26	2019/02/25
Pulse Limiter	R&S	ESH3-Z2	101934	2018/02/22	2019/02/21
Active Loop Antenna	EMCO	6507	40855	2017/05/15	2018/05/14
Bilog Antenna	Schwarzbeck	VULB9168	275	2017/08/31	2018/08/30
Horn Antenna	EMCO	3115	31601	2017/09/11	2018/09/10
Horn Anrenna	EMCO	3116	31970	2018/03/23	2019/03/22
Preamplifier	EM	EM330	60658	2017/09/08	2018/09/07
Preamplifier	EMC INSTRUMENTS	EMC051845SE	980333	2017/09/20	2018/09/19
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2017/11/10	2018/11/09
MXG MW Analog Signal Generator	KEYSIGHT	N5183A	MY50142931	2018/04/10	2019/04/09
Spectrum Analyzer	R&S	FSP40	100219	2017/07/01	2018/06/30
BLUETOOTH TESTER	R&S	CBT	101133	2018/04/02	2019/04/01
Attenuator	KEYSIGHT	8491B	MY39250705	2017/09/04	2018/09/03
Rotary Attenuator	Agilent	8495B	MY42146680	2018/03/29	2019/03/28
Temp & Humi chamber	T-MACHINE	TMJ-9712	T-12-040111	2017/09/04	2018/09/03
Series Power Meter	Anritsu	ML2495A	1224005	2018/03/23	2019/03/22
Power Sensor	Anritsu	MA2411B	1207295	2018/03/23	2019/03/22
Software	Farad	Ez-EMC	ver.ct3a1	N/A	N/A
Software	AUDIX	E3	V8.2014-8-6	N/A	N/A
Software	Keysight	N7607B Signal Studio	V3.0.0.0	N/A	N/A
Software	Keysight	Inservice MonitorUtility	N/A	N/A	N/A

4. Antenna Requirements

4.1. 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 15.407 (a), 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.

4.2. Antenna Construction and Directional Gain

Antenna Type	Dipole Antenna
Antenna Gain	2.4GHz: 802.11b/g: ANT B: 4 dBi 802.11n: ANT A: 4 dBi; ANT B: 4 dBi 5GHz: 802.11a: ANT A: 5 dBi; 802.11n: ANT A: 5 dBi; ANT B: 5 dBi

2412MHz-2462MHz

802.11b/g:
For Power directional gain= G_{ant}= 4 dBi For PSD directional gain = G_{ant}= 4 dBi
802.11n:
For Power directional gain= G_{ant}= 4 dBi For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ /NANT] = 7.01 (dBi)

5150MHz -5250MHz

802.11a
For Power directional gain= G_{ant}=5 For PSD directional gain = G_{ant}=5
802.11n
For Power directional gain= G_{ant}=5 For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ /NANT] = 8.01 (dBi)

5. Test of AC Power Line Conducted Emission

5.1. Test Limit

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

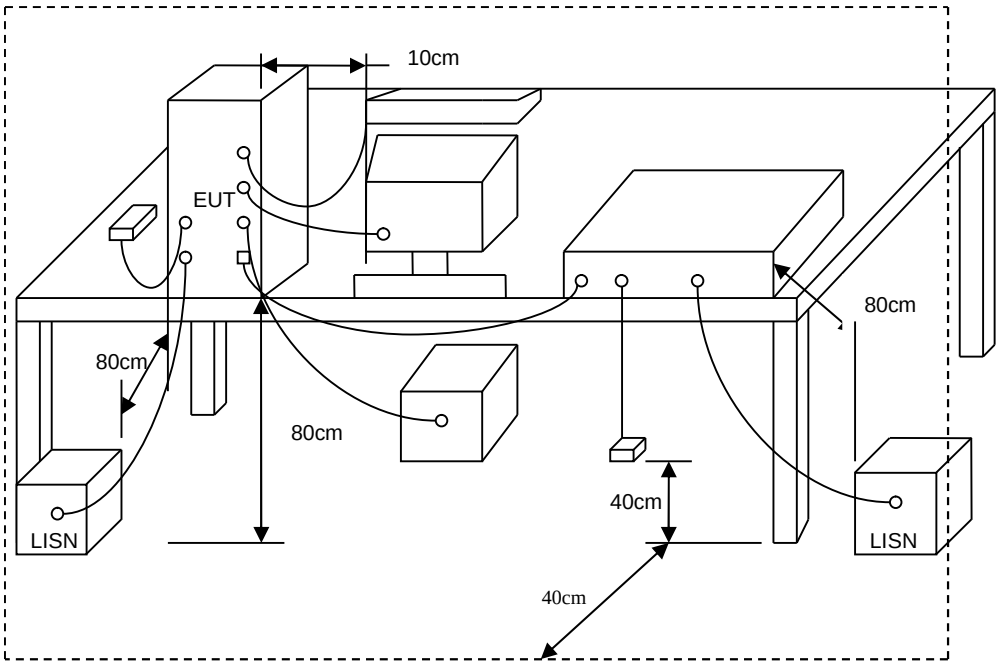
Frequency (MHz)	Quasi Peak (dBμV)	Average (dBμV)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

5.2. 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.

5.3. Typical Test Setup



5.4. Test Result and Data

The EUT was powered from DC source; this test item is not required.

6. Test of Radiated Spurious Emission

6.1. Test Limit

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:
All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27dBm/MHz at the band edge.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

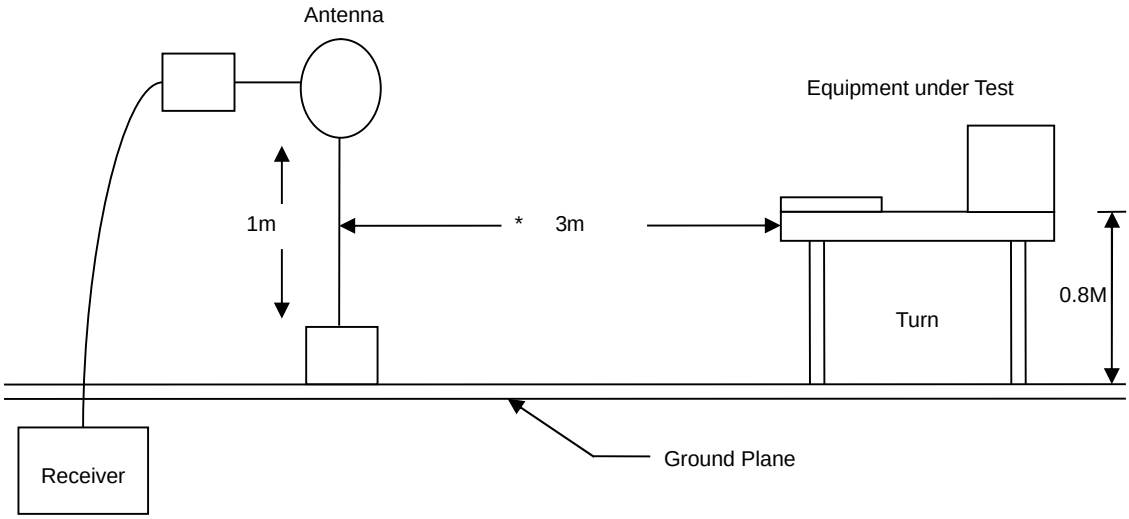
(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

6.2. Test Procedures

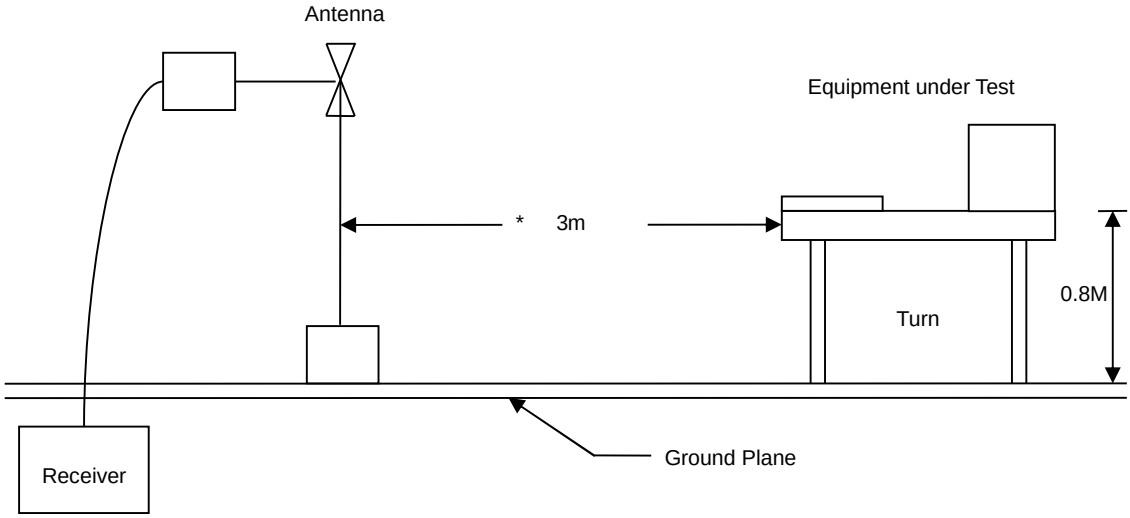
a. The EUT was placed on a rotatable table top 0.8 meter above ground.
b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiation.
d. The antenna 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.

6.3. Typical Test Setup

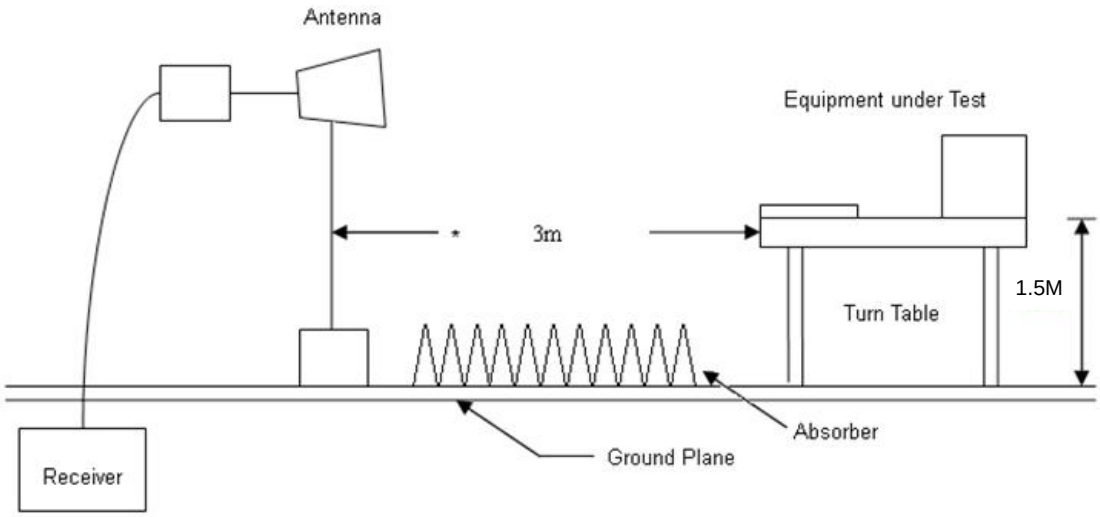
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup

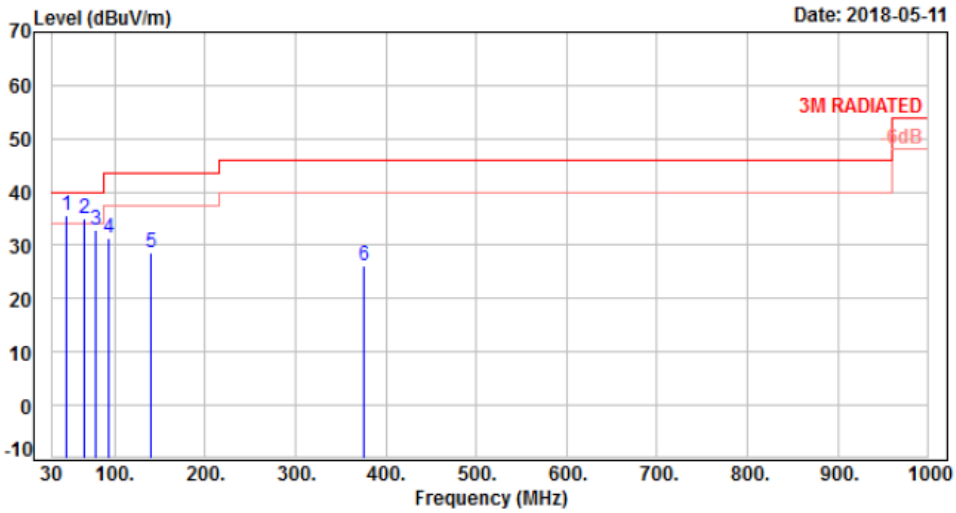


6.4. Test Result and Data (9kHz ~ 30MHz)

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

6.5. Test Result and Data (30MHz ~ 1GHz)

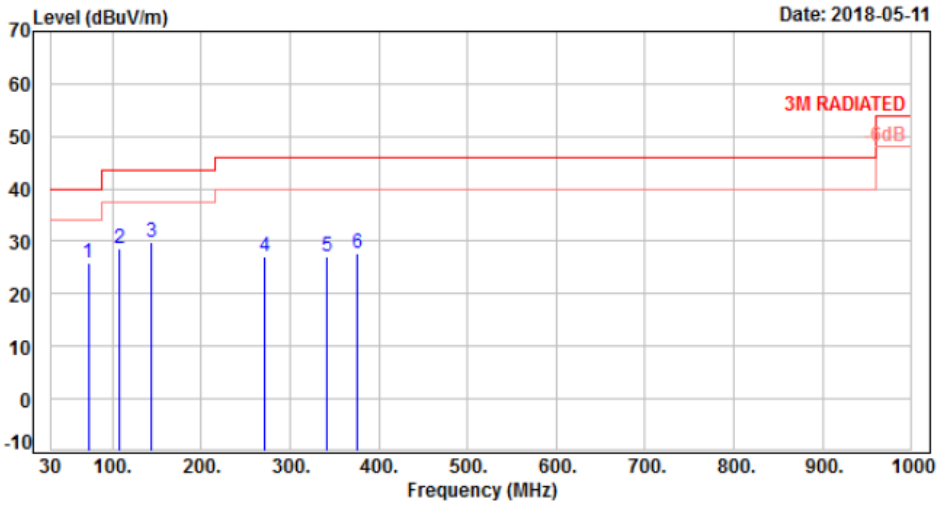
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH36	Temperature	:	21 °C
Test Date	:	May. 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	47.46	-10.69	46.32	35.63	40.00	-4.37	Peak	400	0	P
2	65.89	-12.21	47.33	35.12	40.00	-4.88	Peak	400	0	P
3	78.50	-14.85	47.85	33.00	40.00	-7.00	Peak	400	0	P
4	94.02	-16.39	47.64	31.25	43.50	-12.25	Peak	400	0	P
5	140.58	-11.33	39.91	28.58	43.50	-14.92	Peak	400	0	P
6	375.32	-7.83	33.89	26.06	46.00	-19.94	Peak	400	0	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

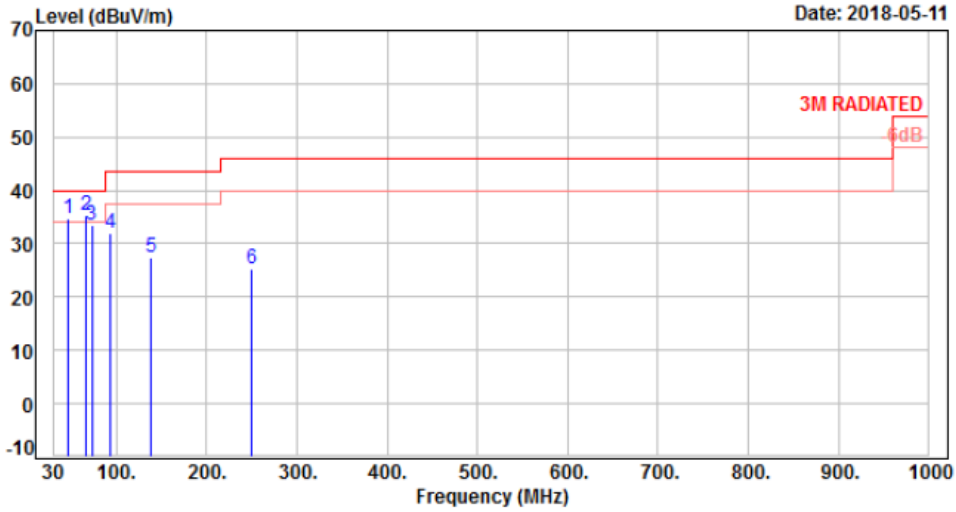
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH36	Temperature	:	21 °C
Test Date	:	May. 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	72.68	-13.52	39.54	26.02	40.00	-13.98	Peak	100	0	P
2	108.57	-14.45	43.03	28.58	43.50	-14.92	Peak	100	0	P
3	144.46	-11.22	41.04	29.82	43.50	-13.68	Peak	100	0	P
4	270.56	-10.75	37.87	27.12	46.00	-18.88	Peak	100	0	P
5	342.34	-8.78	35.94	27.16	46.00	-18.84	Peak	100	0	P
6	375.32	-7.83	35.45	27.62	46.00	-18.38	Peak	100	0	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

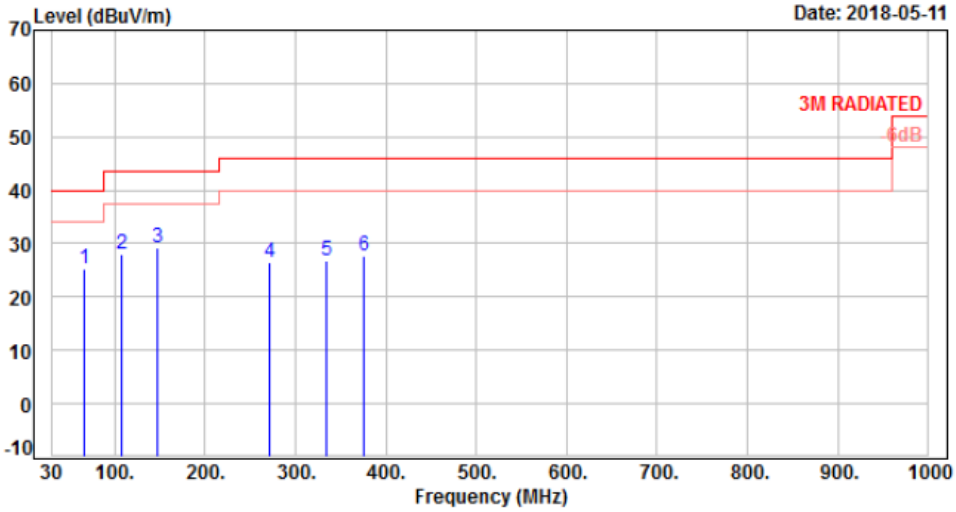
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH149	Temperature	:	21 °C
Test Date	:	May. 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	47.46	-10.69	45.53	34.84	40.00	-5.16	Peak	400	0	P
2	65.89	-12.21	47.50	35.29	40.00	-4.71	Peak	400	0	P
3	72.68	-13.52	46.95	33.43	40.00	-6.57	Peak	400	0	P
4	94.02	-16.39	48.43	32.04	43.50	-11.46	Peak	400	0	P
5	138.64	-11.50	38.77	27.27	43.50	-16.23	Peak	400	0	P
6	250.19	-11.64	37.06	25.42	46.00	-20.58	Peak	400	0	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH149	Temperature	:	21 °C
Test Date	:	May. 11, 2018	Humidity	:	65 %

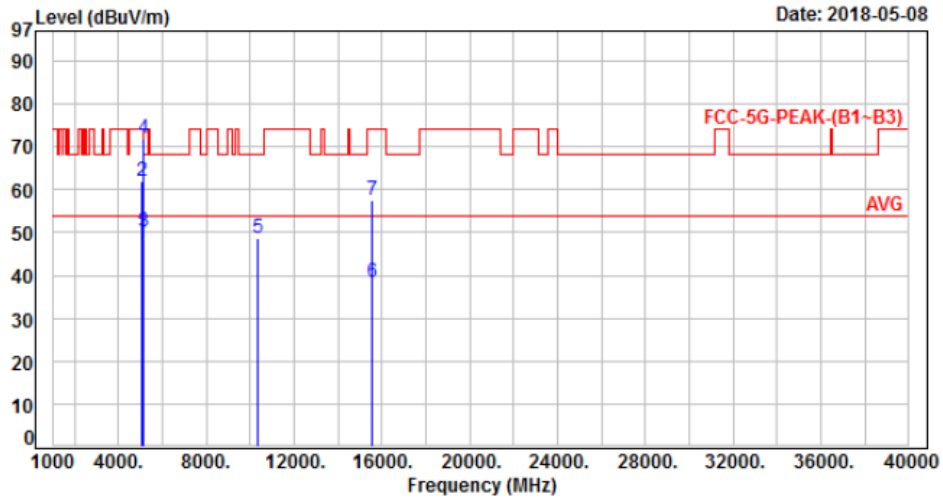


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	65.89	-12.21	37.47	25.26	40.00	-14.74	Peak	100	0	P
2	108.57	-14.45	42.51	28.06	43.50	-15.44	Peak	100	0	P
3	147.37	-11.14	40.43	29.29	43.50	-14.21	Peak	100	0	P
4	270.56	-10.75	37.39	26.64	46.00	-19.36	Peak	100	0	P
5	333.61	-9.00	35.91	26.91	46.00	-19.09	Peak	100	0	P
6	375.32	-7.83	35.62	27.79	46.00	-18.21	Peak	100	0	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

6.6. Test Result and Data (1GHz ~ 40GHz)

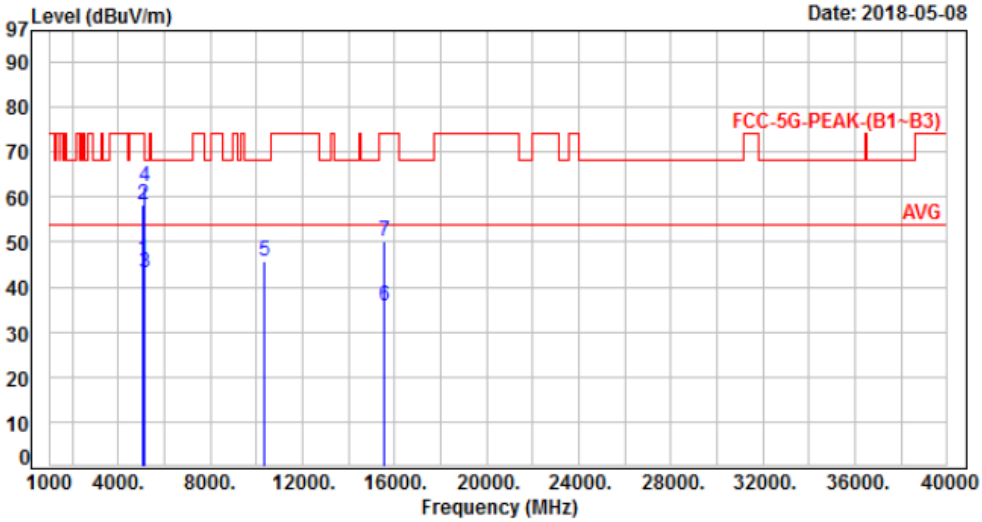
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH36	Temperature	:	21 °C
Test Date	:	May 08, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5100.00	-8.09	57.80	49.71	54.00	-4.29	Average	130	120	P
2	5100.00	-8.09	70.10	62.01	74.00	-11.99	Peak	130	120	P
3	5150.00	-8.01	58.00	49.99	54.00	-4.01	Average	100	360	P
4	5150.00	-8.01	79.90	71.89	74.00	-2.11	Peak	100	360	P
5	10360.00	-0.89	49.50	48.61	68.20	-19.59	Peak	385	212	P
6	15540.00	4.33	34.20	38.53	54.00	-15.47	Average	100	107	P
7	15540.00	4.33	53.10	57.43	74.00	-16.57	Peak	100	107	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

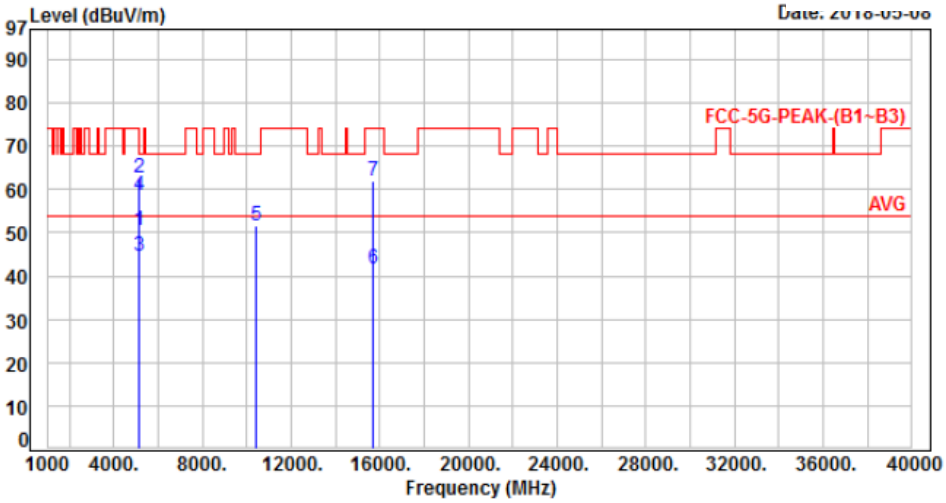
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH36	Temperature	:	21 °C
Test Date	:	May 08, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5100.00	-8.09	54.12	46.03	54.00	-7.97	Average	397	200	P
2	5100.00	-8.09	66.50	58.41	74.00	-15.59	Peak	397	200	P
3	5150.00	-8.01	51.20	43.19	54.00	-10.81	Average	245	277	P
4	5150.00	-8.01	70.20	62.19	74.00	-11.81	Peak	245	277	P
5	10360.00	-0.89	46.60	45.71	68.20	-22.49	Peak	158	116	P
6	15540.00	4.33	31.50	35.83	54.00	-18.17	Average	231	285	P
7	15540.00	4.33	45.80	50.13	74.00	-23.87	Peak	231	285	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

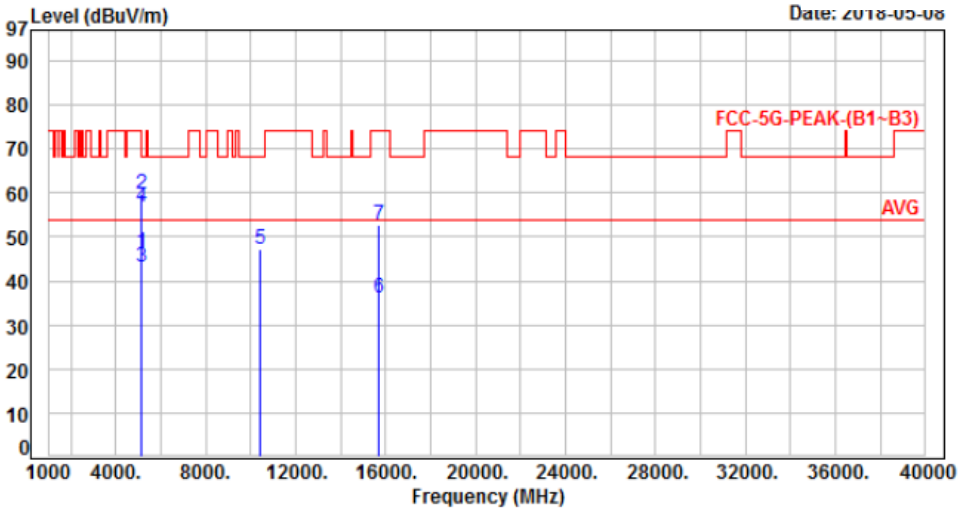
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH44	Temperature	:	21 °C
Test Date	:	May 08, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5136.30	-8.03	58.50	50.47	54.00	-3.53	Average	100	6	P
2	5136.30	-8.03	70.60	62.57	74.00	-11.43	Peak	100	6	P
3	5150.00	-8.01	52.50	44.49	54.00	-9.51	Average	100	6	P
4	5150.00	-8.01	66.50	58.49	74.00	-15.51	Peak	100	6	P
5	10440.00	-0.82	52.60	51.78	68.20	-16.42	Peak	394	14	P
6	15660.00	4.39	37.20	41.59	54.00	-12.41	Average	100	106	P
7	15660.00	4.39	57.50	61.89	74.00	-12.11	Peak	100	106	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

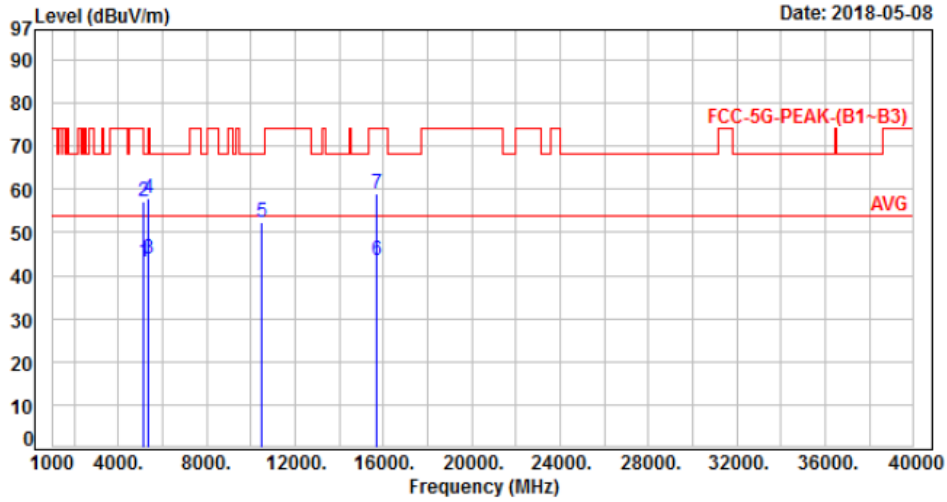
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH44	Temperature	:	21 °C
Test Date	:	May 08, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5136.30	-8.03	54.60	46.57	54.00	-7.43	Average	100	279	P
2	5136.30	-8.03	67.80	59.77	74.00	-14.23	Peak	100	279	P
3	5150.00	-8.01	51.00	42.99	54.00	-11.01	Average	100	279	P
4	5150.00	-8.01	64.90	56.89	74.00	-17.11	Peak	100	279	P
5	10440.00	-0.82	48.20	47.38	68.20	-20.82	Peak	211	177	P
6	15660.00	4.39	31.60	35.99	54.00	-18.01	Average	195	138	P
7	15660.00	4.39	48.50	52.89	74.00	-21.11	Peak	195	138	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

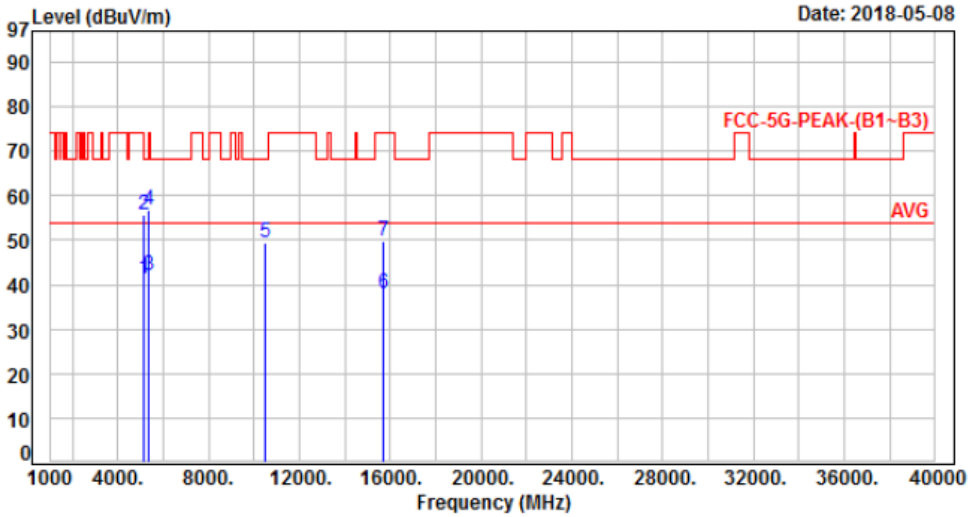
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH48	Temperature	:	21 °C
Test Date	:	May 08, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-8.01	51.30	43.29	54.00	-10.71	Average	152	337	P
2	5150.00	-8.01	65.20	57.19	74.00	-16.81	Peak	152	337	P
3	5350.00	-7.67	51.60	43.93	54.00	-10.07	Average	152	337	P
4	5350.00	-7.67	65.70	58.03	74.00	-15.97	Peak	152	337	P
5	10480.00	-0.78	53.09	52.31	68.20	-15.89	Peak	100	303	P
6	15720.00	4.41	39.01	43.42	54.00	-10.58	Average	120	108	P
7	15720.00	4.41	54.51	58.92	74.00	-15.08	Peak	120	108	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

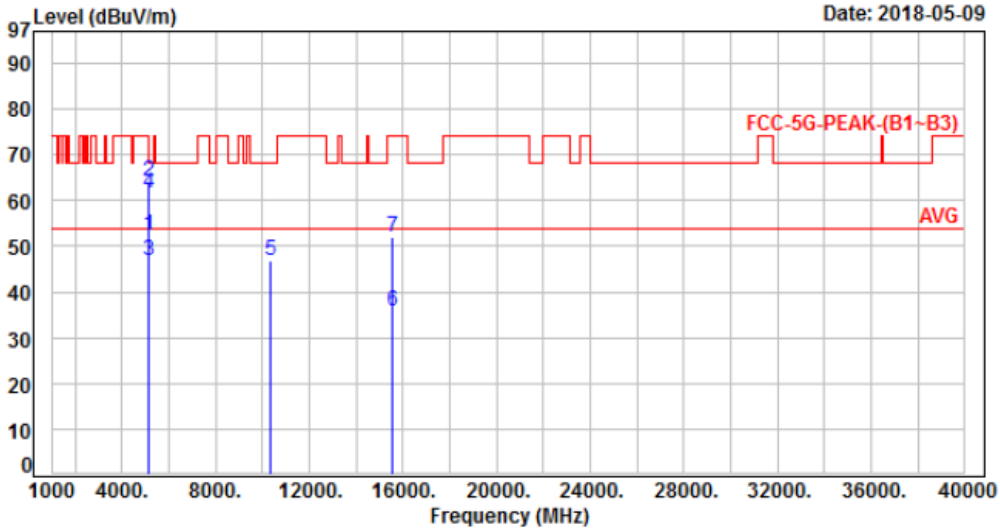
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH48	Temperature	:	21 °C
Test Date	:	May 08, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-8.01	49.50	41.49	54.00	-12.51	Average	394	85	P
2	5150.00	-8.01	63.80	55.79	74.00	-18.21	Peak	394	85	P
3	5350.00	-7.67	49.70	42.03	54.00	-11.97	Average	394	85	P
4	5350.00	-7.67	64.50	56.83	74.00	-17.17	Peak	394	85	P
5	10480.00	-0.78	50.19	49.41	68.20	-18.79	Peak	100	170	P
6	15720.00	4.41	33.51	37.92	54.00	-16.08	Average	100	65	P
7	15720.00	4.41	45.21	49.62	74.00	-24.38	Peak	100	65	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

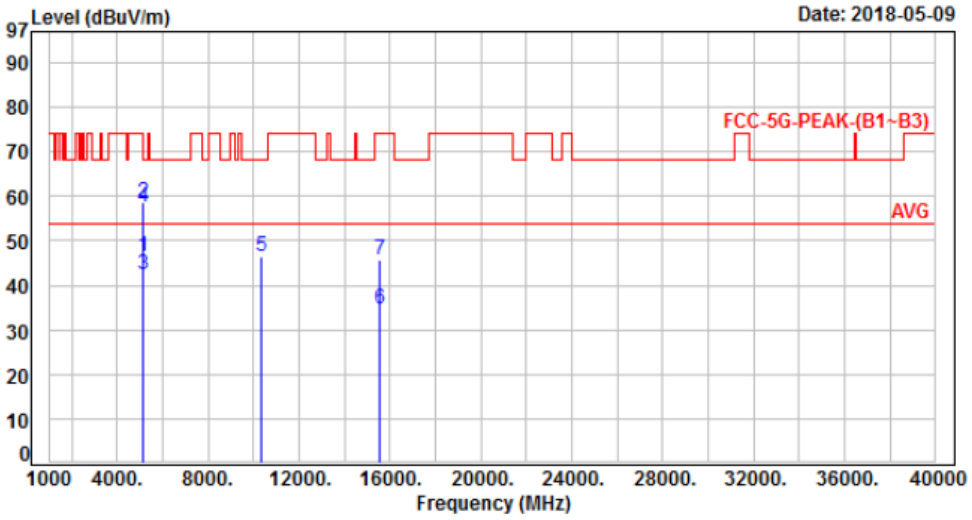
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH36	Temperature	:	21 °C
Test Date	:	May 09, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5103.60	-8.08	60.29	52.21	54.00	-1.79	Average	122	360	P
2	5103.60	-8.08	72.19	64.11	74.00	-9.89	Peak	122	360	P
3	5150.00	-8.01	54.80	46.79	54.00	-7.21	Average	122	360	P
4	5150.00	-8.01	69.50	61.49	74.00	-12.51	Peak	122	360	P
5	10360.00	-0.89	47.80	46.91	68.20	-21.29	Peak	100	212	P
6	15540.00	4.33	31.60	35.93	54.00	-18.07	Average	115	136	P
7	15540.00	4.33	47.80	52.13	74.00	-21.87	Peak	115	136	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

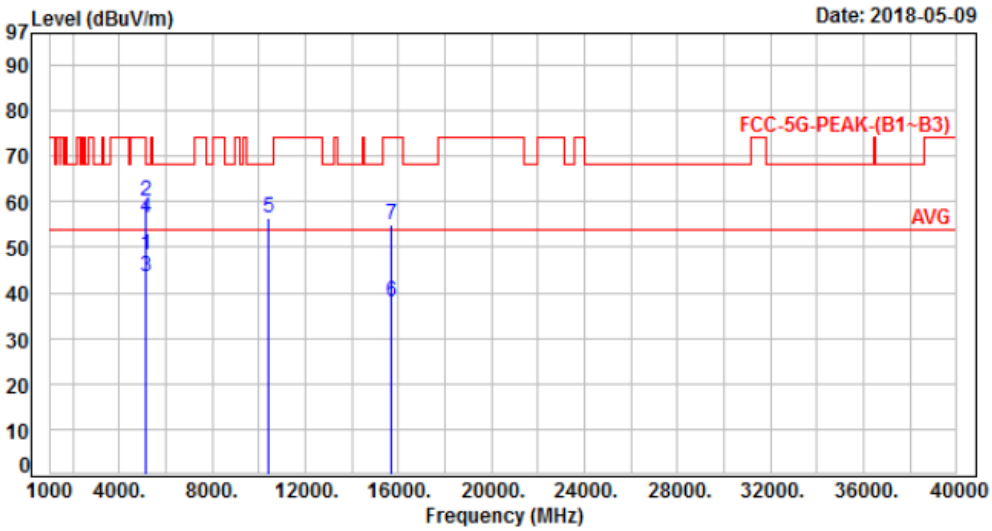
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH36	Temperature	:	21 °C
Test Date	:	May 09, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5103.60	-8.08	54.39	46.31	54.00	-7.69	Average	381	274	P
2	5103.60	-8.08	66.79	58.71	74.00	-15.29	Peak	381	274	P
3	5150.00	-8.01	50.50	42.49	54.00	-11.51	Average	381	274	P
4	5150.00	-8.01	65.50	57.49	74.00	-16.51	Peak	381	274	P
5	10360.00	-0.89	47.22	46.33	68.20	-21.87	Peak	100	81	P
6	15540.00	4.33	30.22	34.55	54.00	-19.45	Average	108	116	P
7	15540.00	4.33	41.48	45.81	74.00	-28.19	Peak	108	116	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

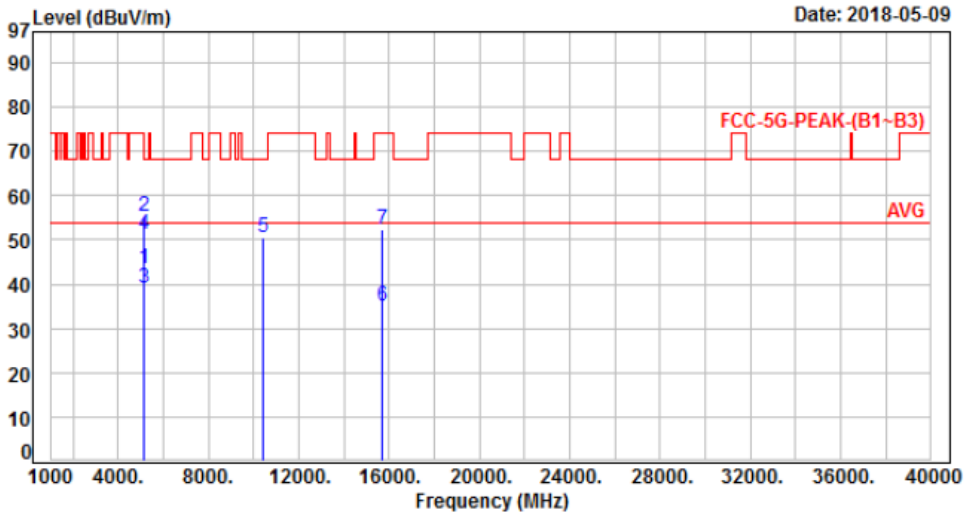
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH44	Temperature	:	21 °C
Test Date	:	May 09, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5133.50	-8.03	56.49	48.46	54.00	-5.54	Average	130	0	P
2	5133.50	-8.03	68.09	60.06	74.00	-13.94	Peak	130	0	P
3	5150.00	-8.01	51.70	43.69	54.00	-10.31	Average	130	0	P
4	5150.00	-8.01	64.60	56.59	74.00	-17.41	Peak	130	0	P
5	10440.00	-0.82	57.20	56.38	68.20	-11.82	Peak	394	214	P
6	15660.00	4.39	33.60	37.99	54.00	-16.01	Average	100	196	P
7	15660.00	4.39	50.50	54.89	74.00	-19.11	Peak	100	196	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

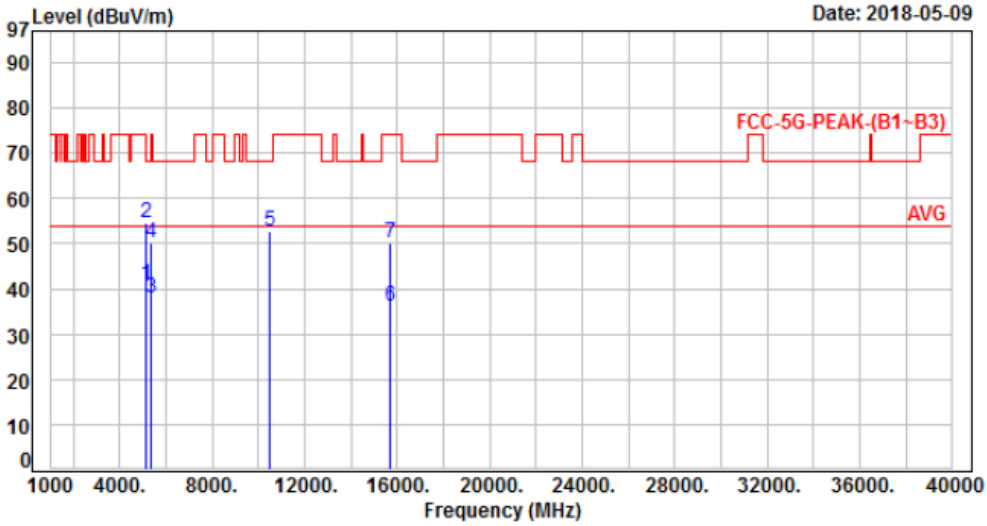
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH44	Temperature	:	21 °C
Test Date	:	May 09, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5133.50	-8.03	51.59	43.56	54.00	-10.44	Average	100	80	P
2	5133.50	-8.03	63.49	55.46	74.00	-18.54	Peak	100	80	P
3	5150.00	-8.01	47.20	39.19	54.00	-14.81	Average	100	80	P
4	5150.00	-8.01	59.40	51.39	74.00	-22.61	Peak	100	80	P
5	10440.00	-0.82	51.20	50.38	68.20	-17.82	Peak	100	174	P
6	15660.00	4.39	30.50	34.89	54.00	-19.11	Average	210	155	P
7	15660.00	4.39	47.82	52.21	74.00	-21.79	Peak	210	155	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

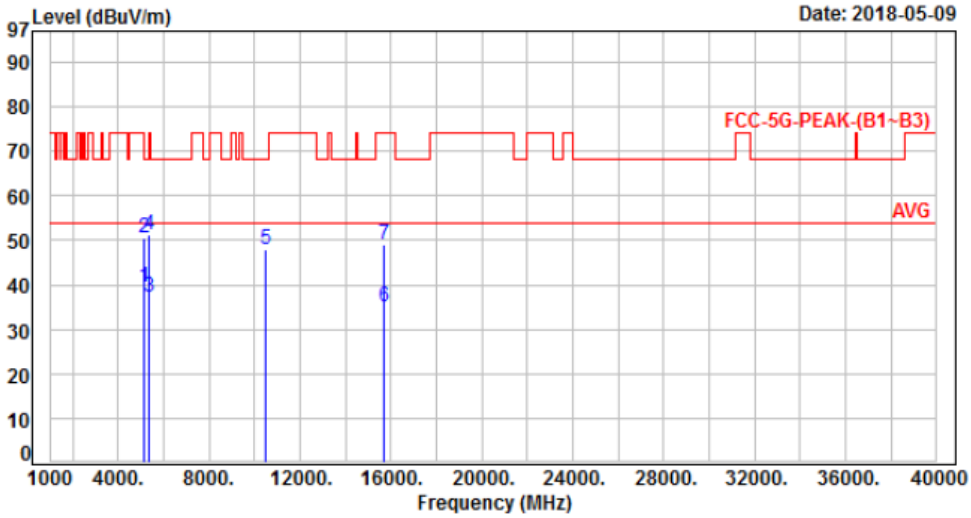
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH48	Temperature	:	21 °C
Test Date	:	May 09, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-8.01	48.80	40.79	54.00	-13.21	Average	130	340	P
2	5150.00	-8.01	62.60	54.59	74.00	-19.41	Peak	130	340	P
3	5350.00	-7.67	45.50	37.83	54.00	-16.17	Average	130	340	P
4	5350.00	-7.67	57.70	50.03	74.00	-23.97	Peak	130	340	P
5	10480.00	-0.78	53.69	52.91	68.20	-15.29	Peak	350	37	P
6	15720.00	4.41	31.61	36.02	54.00	-17.98	Average	100	215	P
7	15720.00	4.41	45.81	50.22	74.00	-23.78	Peak	100	215	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

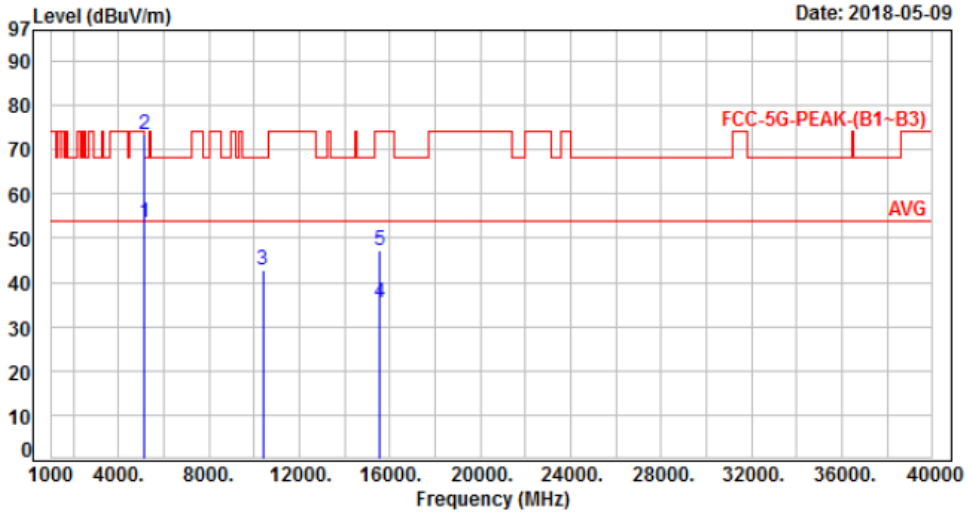
Power	:	AC 120V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH48	Temperature	:	21 °C
Test Date	:	May 09, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-8.01	47.50	39.49	54.00	-14.51	Average	300	39	P
2	5150.00	-8.01	58.60	50.59	74.00	-23.41	Peak	300	39	P
3	5350.00	-7.67	44.90	37.23	54.00	-16.77	Average	300	39	P
4	5350.00	-7.67	58.90	51.23	74.00	-22.77	Peak	300	39	P
5	10480.00	-0.78	48.59	47.81	68.20	-20.39	Peak	107	170	P
6	15720.00	4.41	30.81	35.22	54.00	-18.78	Average	100	160	P
7	15720.00	4.41	44.51	48.92	74.00	-25.08	Peak	100	160	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

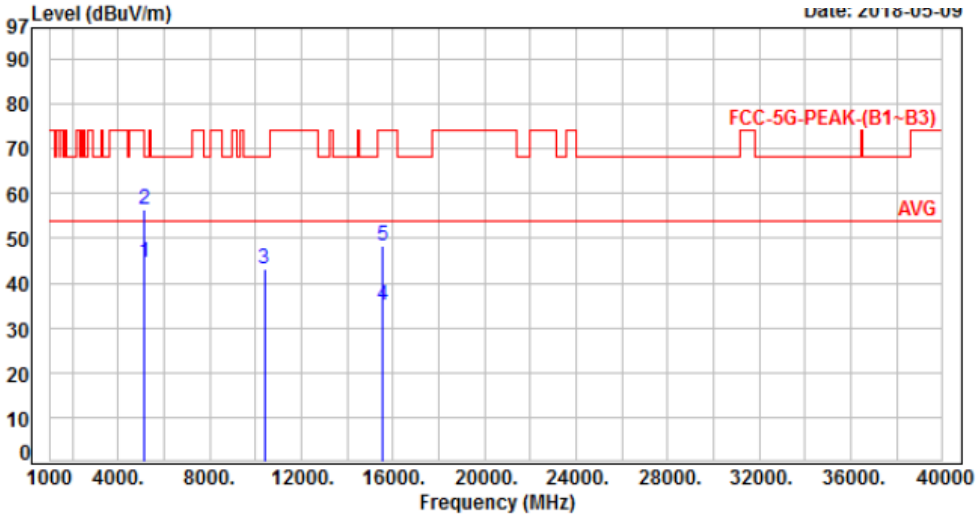
Power	:	AC 120V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH38	Temperature	:	21 °C
Test Date	:	May 09, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-8.01	61.50	53.49	54.00	-0.51	Average	150	353	P
2	5150.00	-8.01	81.30	73.29	74.00	-0.71	Peak	150	353	P
3	10380.00	-0.87	43.70	42.83	68.20	-25.37	Peak	116	102	P
4	15570.00	4.34	31.22	35.56	54.00	-18.44	Average	100	96	P
5	15570.00	4.34	42.81	47.15	74.00	-26.85	Peak	100	96	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

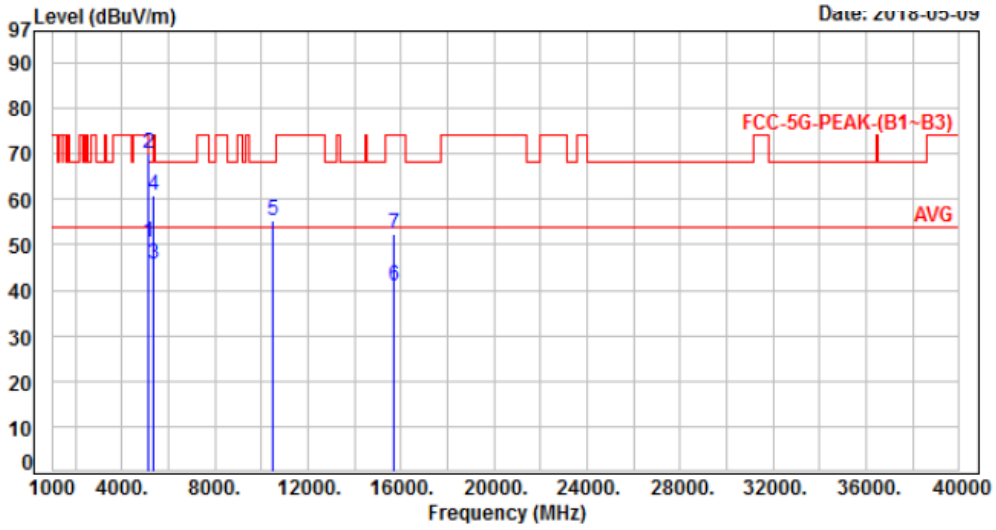
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH38	Temperature	:	21 °C
Test Date	:	May 09, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-8.01	52.80	44.79	54.00	-9.21	Average	100	26	P
2	5150.00	-8.01	64.30	56.29	74.00	-17.71	Peak	100	26	P
3	10380.00	-0.87	43.90	43.03	68.20	-25.17	Peak	100	121	P
4	15570.00	4.34	30.60	34.94	54.00	-19.06	Average	107	76	P
5	15570.00	4.34	43.88	48.22	74.00	-25.78	Peak	107	76	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

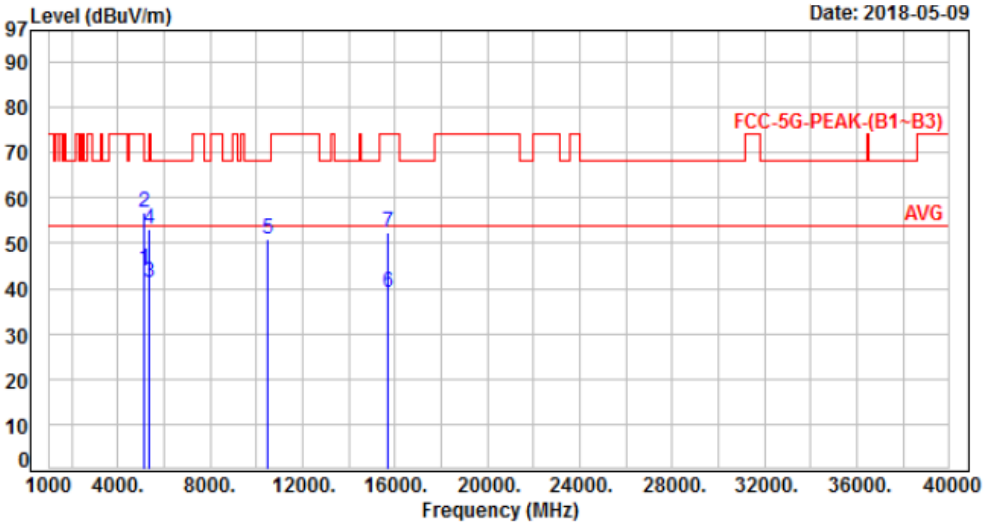
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH46	Temperature	:	21 °C
Test Date	:	May 09, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-8.01	58.40	50.39	54.00	-3.61	Average	140	0	P
2	5150.00	-8.01	78.00	69.99	74.00	-4.01	Peak	140	0	P
3	5350.00	-7.67	53.50	45.83	54.00	-8.17	Average	140	0	P
4	5350.00	-7.67	68.60	60.93	74.00	-13.07	Peak	140	0	P
5	10460.00	-0.81	56.21	55.40	68.20	-12.80	Peak	392	175	P
6	15690.00	4.40	36.50	40.90	54.00	-13.10	Average	100	222	P
7	15690.00	4.40	47.91	52.31	74.00	-21.69	Peak	100	222	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

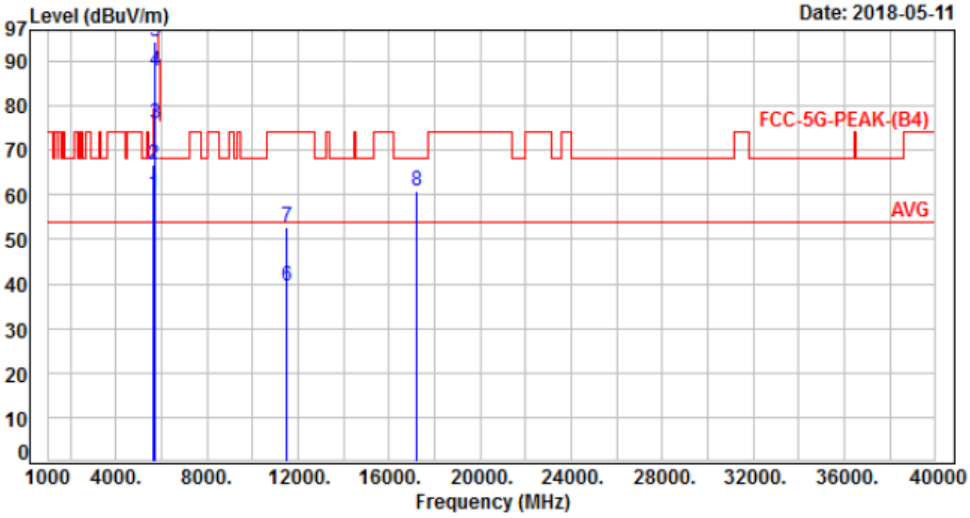
Power	:	AC 120V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH46	Temperature	:	21 °C
Test Date	:	May 09, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5150.00	-8.01	52.30	44.29	54.00	-9.71	Average	330	55	P
2	5150.00	-8.01	64.80	56.79	74.00	-17.21	Peak	330	55	P
3	5350.00	-7.67	48.90	41.23	54.00	-12.77	Average	330	55	P
4	5350.00	-7.67	60.60	52.93	74.00	-21.07	Peak	330	55	P
5	10460.00	-0.81	51.67	50.86	68.20	-17.34	Peak	100	20	P
6	15690.00	4.40	34.61	39.01	54.00	-14.99	Average	100	159	P
7	15690.00	4.40	47.81	52.21	74.00	-21.79	Peak	100	159	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

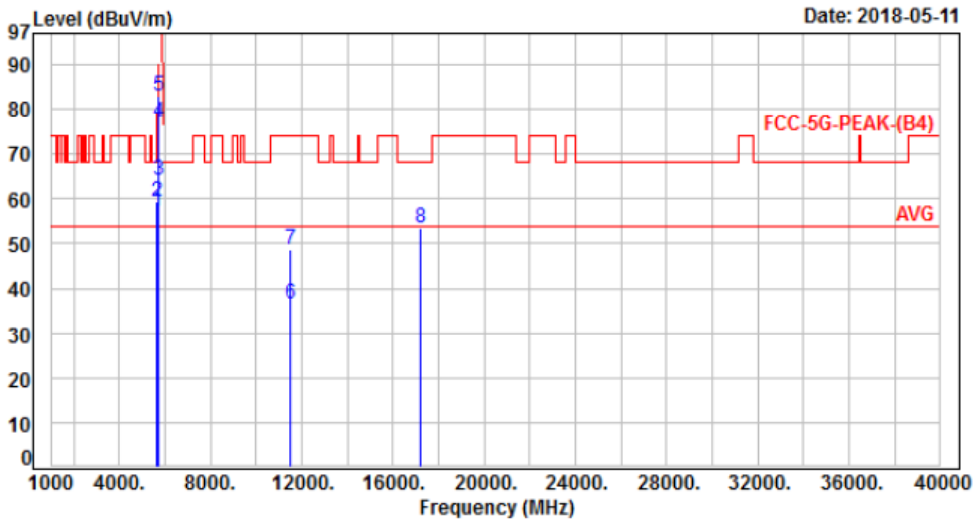
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH149	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-7.37	67.60	60.23	68.20	-7.97	Peak	100	15	P
2	5666.00	-7.36	73.98	66.62	80.04	-13.42	Peak	395	336	P
3	5700.00	-7.35	83.20	75.85	105.20	-29.35	Peak	100	15	P
4	5720.00	-7.35	95.30	87.95	110.80	-22.85	Peak	100	15	P
5	5725.00	-7.35	101.61	94.26	122.20	-27.94	Peak	100	15	P
6	11490.00	0.78	38.60	39.38	54.00	-14.62	Average	250	132	P
7	11490.00	0.78	52.10	52.88	74.00	-21.12	Peak	250	132	P
8	17235.00	9.95	50.94	60.89	68.20	-7.31	Peak	100	126	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

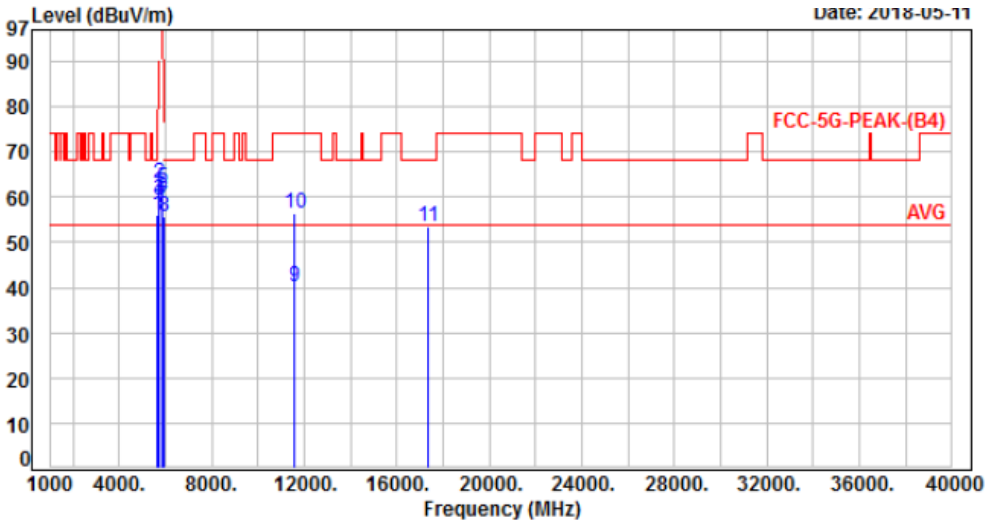
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH149	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-7.37	64.50	57.13	68.20	-11.07	Peak	393	278	P
2	5666.00	-7.36	66.90	59.54	80.04	-20.50	Peak	393	278	P
3	5700.00	-7.35	71.50	64.15	105.20	-41.05	Peak	393	278	P
4	5720.00	-7.35	84.30	76.95	110.80	-33.85	Peak	393	278	P
5	5725.00	-7.35	90.36	83.01	122.20	-39.19	Peak	393	278	P
6	11490.00	0.78	35.80	36.58	54.00	-17.42	Average	102	270	P
7	11490.00	0.78	47.90	48.68	74.00	-25.32	Peak	102	270	P
8	17235.00	9.95	43.51	53.46	68.20	-14.74	Peak	100	200	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

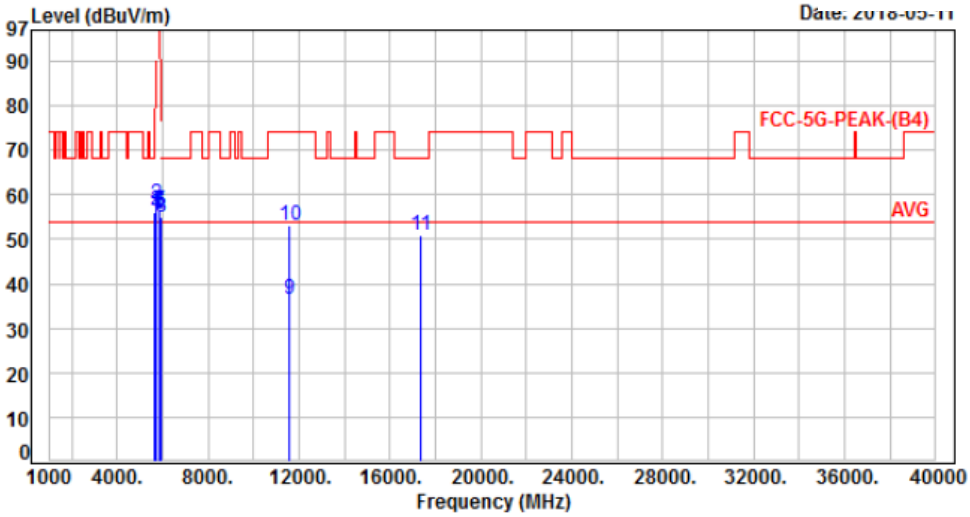
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH157	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-7.37	63.50	56.13	68.20	-12.07	Peak	379	357	P
2	5700.00	-7.35	70.60	63.25	105.20	-41.95	Peak	379	357	P
3	5720.00	-7.35	66.80	59.45	110.80	-51.35	Peak	379	357	P
4	5725.00	-7.35	66.61	59.26	122.20	-62.94	Peak	379	357	P
5	5850.00	-7.30	69.10	61.80	122.20	-60.40	Peak	379	357	P
6	5855.00	-7.30	68.00	60.70	110.80	-50.10	Peak	379	357	P
7	5875.00	-7.30	65.11	57.81	105.20	-47.39	Peak	379	357	P
8	5925.00	-7.28	62.90	55.62	68.20	-12.58	Peak	379	357	P
9	11570.00	0.85	39.20	40.05	54.00	-13.95	Average	262	133	P
10	11570.00	0.85	55.60	56.45	74.00	-17.55	Peak	262	133	P
11	17355.00	10.63	42.79	53.42	68.20	-14.78	Peak	100	107	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

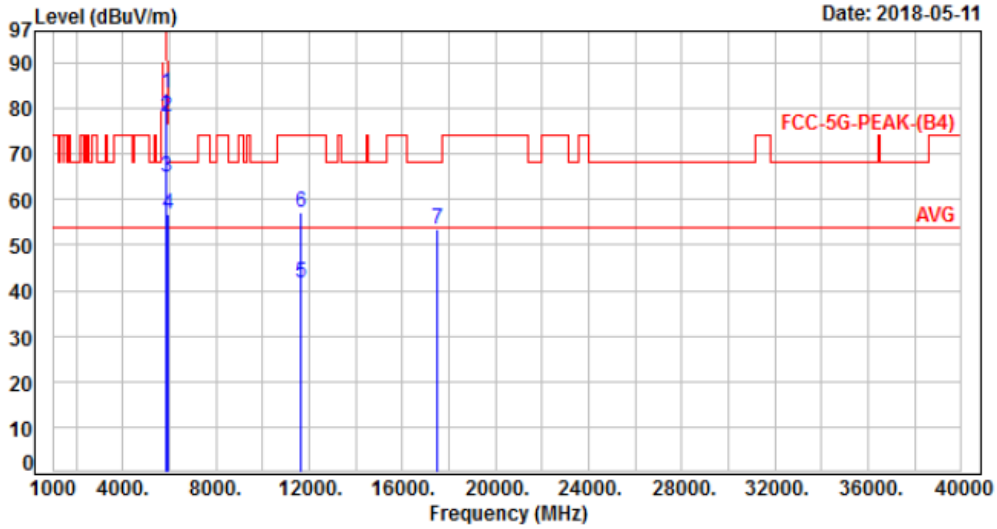
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH157	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-7.37	63.50	56.13	68.20	-12.07	Peak	145	47	P
2	5700.00	-7.35	65.30	57.95	105.20	-47.25	Peak	145	47	P
3	5720.00	-7.35	63.60	56.25	110.80	-54.55	Peak	145	47	P
4	5725.00	-7.35	62.91	55.56	122.20	-66.64	Peak	145	47	P
5	5850.00	-7.30	62.90	55.60	122.20	-66.60	Peak	145	47	P
6	5855.00	-7.30	63.40	56.10	110.80	-54.70	Peak	145	47	P
7	5875.00	-7.30	63.61	56.31	105.20	-48.89	Peak	145	47	P
8	5925.00	-7.28	62.40	55.12	68.20	-13.08	Peak	145	47	P
9	11570.00	0.85	35.50	36.35	54.00	-17.65	Average	100	125	P
10	11570.00	0.85	52.30	53.15	74.00	-20.85	Peak	100	125	P
11	17355.00	10.63	40.19	50.82	68.20	-17.38	Peak	115	102	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

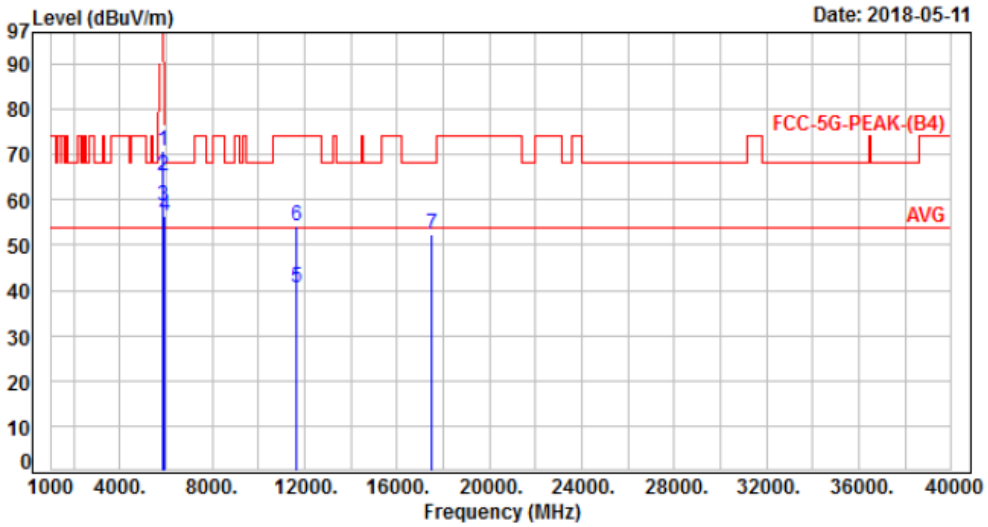
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH165	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5850.00	-7.30	90.50	83.20	122.20	-39.00	Peak	130	321	P
2	5855.00	-7.30	85.60	78.30	110.80	-32.50	Peak	130	321	P
3	5875.00	-7.30	72.21	64.91	105.20	-40.29	Peak	130	321	P
4	5925.00	-7.28	64.10	56.82	68.20	-11.38	Peak	130	321	P
5	11650.00	0.91	40.65	41.56	54.00	-12.44	Average	170	183	P
6	11650.00	0.91	56.20	57.11	74.00	-16.89	Peak	170	183	P
7	17475.00	11.29	42.20	53.49	68.20	-14.71	Peak	100	350	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

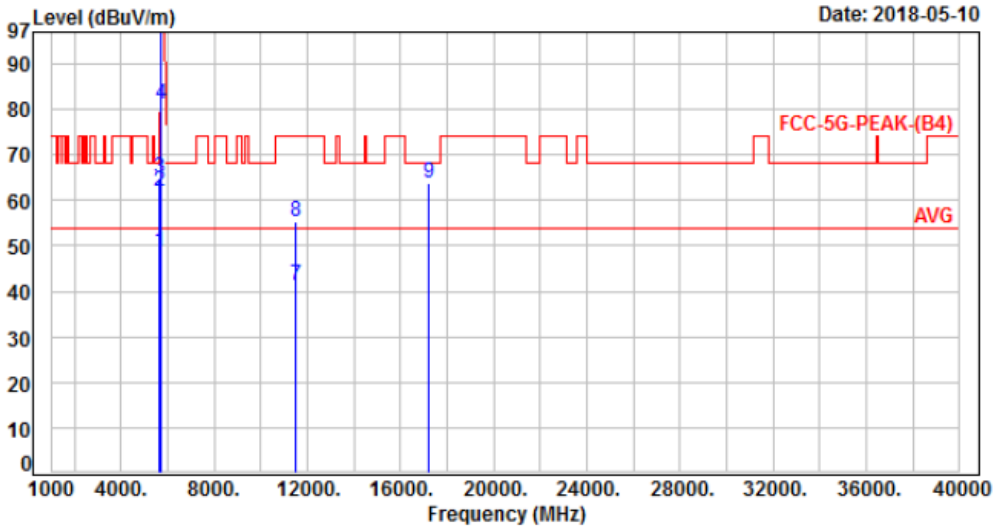
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH165	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5850.00	-7.30	78.20	70.90	122.20	-51.30	Peak	155	47	P
2	5855.00	-7.30	72.60	65.30	110.80	-45.50	Peak	155	47	P
3	5875.00	-7.30	65.91	58.61	105.20	-46.59	Peak	155	47	P
4	5925.00	-7.28	63.60	56.32	68.20	-11.88	Peak	155	47	P
5	11650.00	0.91	39.81	40.72	54.00	-13.28	Average	122	160	P
6	11650.00	0.91	53.20	54.11	74.00	-19.89	Peak	122	160	P
7	17475.00	11.29	41.22	52.51	68.20	-15.69	Peak	104	113	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

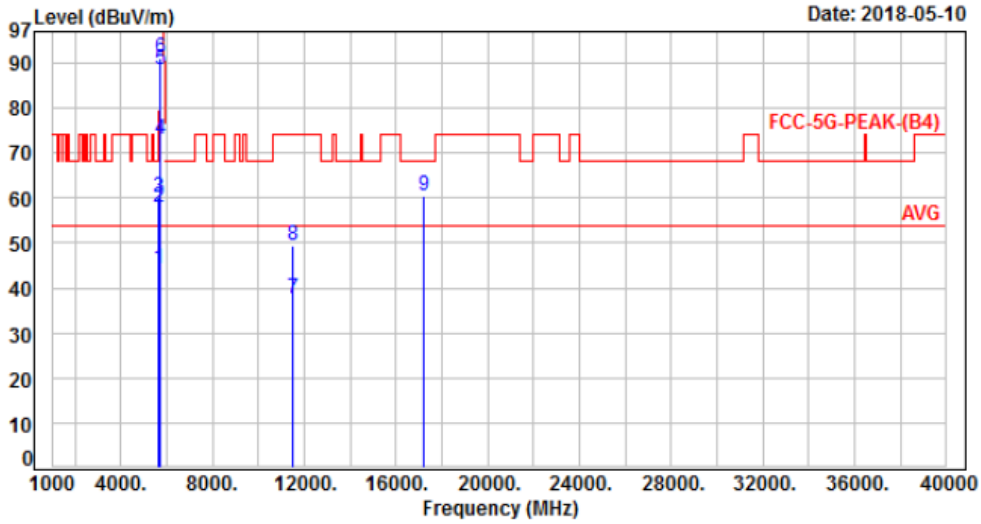
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH149	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-7.37	56.10	48.73	54.00	-5.27	Average	397	343	P
2	5650.00	-7.37	69.50	62.13	68.20	-6.07	Peak	397	343	P
3	5657.00	-7.37	72.20	64.83	73.38	-8.55	Peak	397	343	P
4	5700.00	-7.35	88.60	81.25	105.20	-23.95	Peak	400	0	P
5	5720.00	-7.35	104.66	97.31	110.80	-13.49	Peak	400	0	P
6	5725.00	-7.35	104.81	97.46	122.20	-24.74	Peak	400	0	P
7	11490.00	0.78	40.50	41.28	54.00	-12.72	Average	266	343	P
8	11490.00	0.78	54.50	55.28	74.00	-18.72	Peak	266	343	P
9	17235.00	9.95	53.81	63.76	68.20	-4.44	Peak	100	128	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

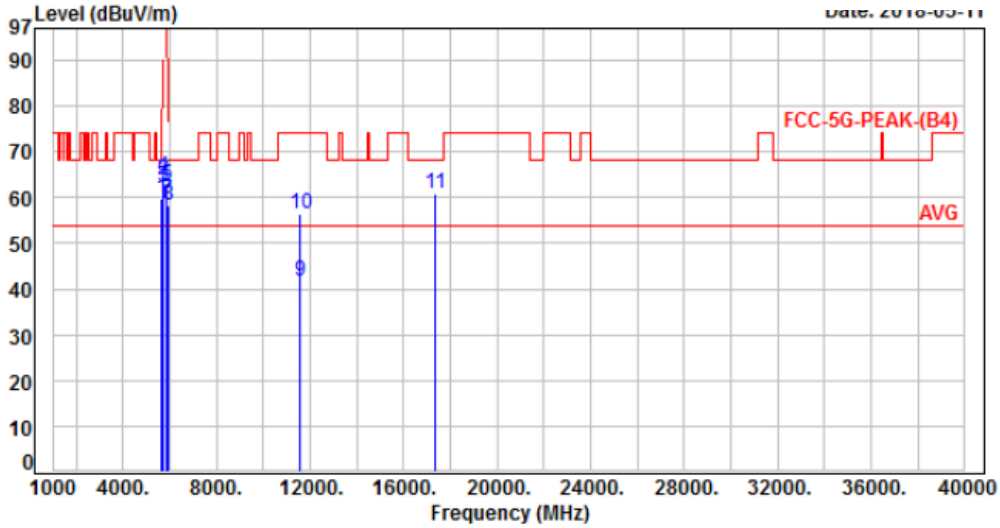
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH149	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-7.37	51.80	44.43	54.00	-9.57	Average	100	280	P
2	5650.00	-7.37	65.20	57.83	68.20	-10.37	Peak	100	280	P
3	5657.00	-7.37	67.60	60.23	73.38	-13.15	Peak	100	280	P
4	5700.00	-7.35	80.50	73.15	105.20	-32.05	Peak	100	161	P
5	5720.00	-7.35	95.90	88.55	110.80	-22.25	Peak	100	161	P
6	5725.00	-7.35	98.61	91.26	122.20	-30.94	Peak	100	161	P
7	11490.00	0.78	36.80	37.58	54.00	-16.42	Average	110	150	P
8	11490.00	0.78	48.50	49.28	74.00	-24.72	Peak	110	150	P
9	17235.00	9.95	50.51	60.46	68.20	-7.74	Peak	100	167	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

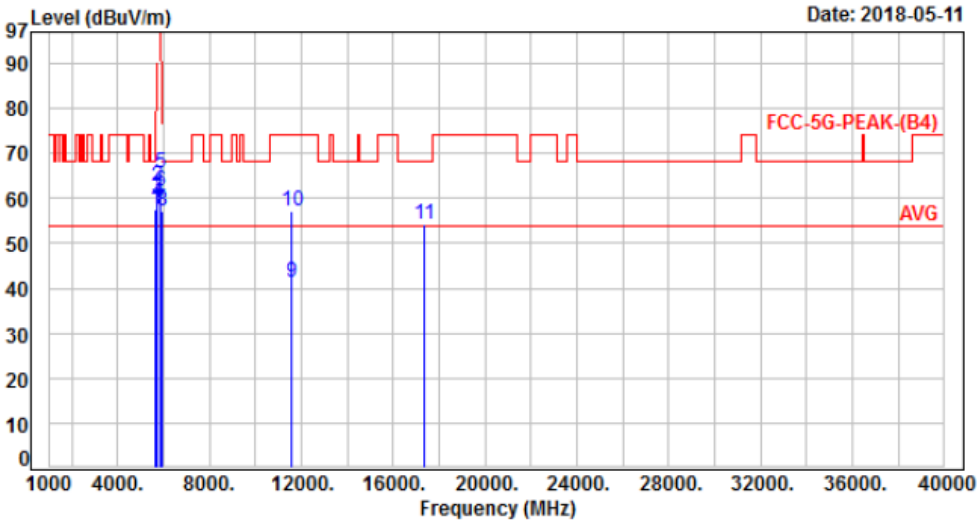
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH157	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-7.37	67.20	59.83	68.20	-8.37	Peak	400	360	P
2	5700.00	-7.35	71.30	63.95	105.20	-41.25	Peak	400	360	P
3	5720.00	-7.35	69.80	62.45	110.80	-48.35	Peak	400	360	P
4	5725.00	-7.35	72.01	64.66	122.20	-57.54	Peak	400	360	P
5	5850.00	-7.30	70.10	62.80	122.20	-59.40	Peak	400	360	P
6	5855.00	-7.30	68.20	60.90	110.80	-49.90	Peak	400	360	P
7	5875.00	-7.30	66.71	59.41	105.20	-45.79	Peak	400	360	P
8	5925.00	-7.28	65.50	58.22	68.20	-9.98	Peak	400	360	P
9	11570.00	0.85	40.90	41.75	54.00	-12.25	Average	298	0	P
10	11570.00	0.85	55.70	56.55	74.00	-17.45	Peak	298	0	P
11	17355.00	10.63	50.21	60.84	68.20	-7.36	Peak	100	342	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

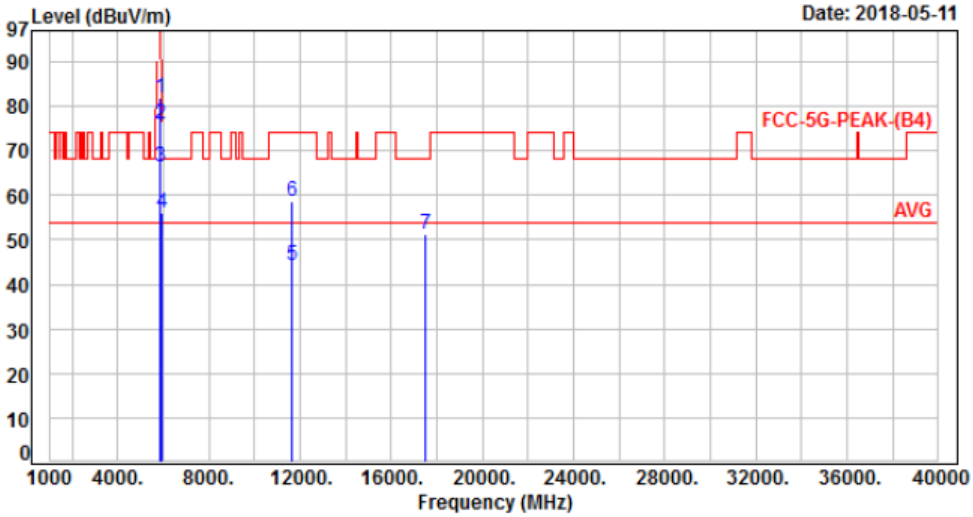
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH157	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-7.37	64.80	57.43	68.20	-10.77	Peak	100	178	P
2	5700.00	-7.35	70.20	62.85	105.20	-42.35	Peak	100	178	P
3	5720.00	-7.35	67.50	60.15	110.80	-50.65	Peak	100	178	P
4	5725.00	-7.35	66.41	59.06	122.20	-63.14	Peak	100	178	P
5	5850.00	-7.30	72.80	65.50	122.20	-56.70	Peak	100	178	P
6	5855.00	-7.30	68.90	61.60	110.80	-49.20	Peak	100	178	P
7	5875.00	-7.30	64.81	57.51	105.20	-47.69	Peak	100	178	P
8	5925.00	-7.28	64.30	57.02	68.20	-11.18	Peak	100	178	P
9	11570.00	0.85	40.60	41.45	54.00	-12.55	Average	100	272	P
10	11570.00	0.85	56.20	57.05	74.00	-16.95	Peak	100	272	P
11	17355.00	10.63	43.65	54.28	68.20	-13.92	Peak	115	225	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

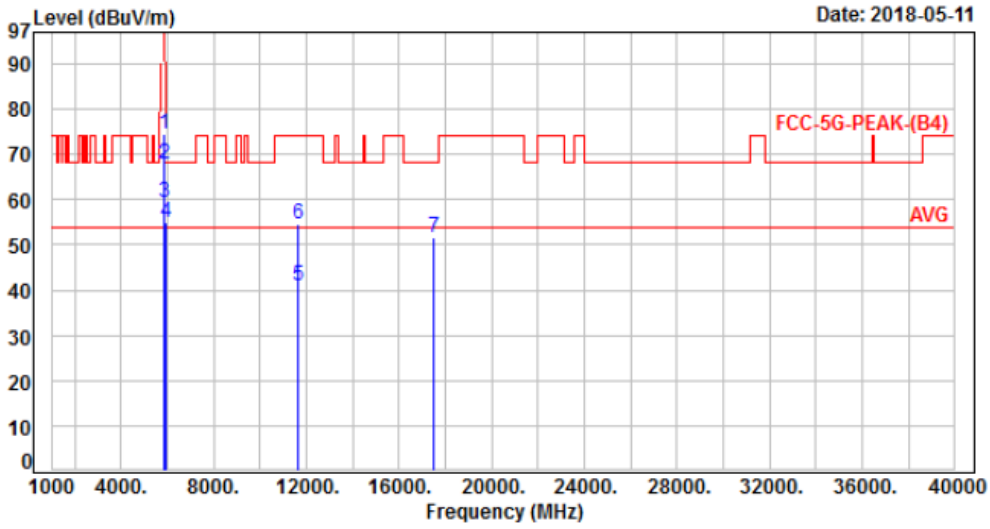
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH165	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5850.00	-7.30	89.30	82.00	122.20	-40.20	Peak	381	360	P
2	5855.00	-7.30	83.20	75.90	110.80	-34.90	Peak	381	360	P
3	5875.00	-7.30	73.61	66.31	105.20	-38.89	Peak	381	360	P
4	5925.00	-7.28	63.20	55.92	68.20	-12.28	Peak	381	360	P
5	11650.00	0.91	43.50	44.41	54.00	-9.59	Average	294	0	P
6	11650.00	0.91	57.80	58.71	74.00	-15.29	Peak	294	0	P
7	17475.00	11.29	39.80	51.09	68.20	-17.11	Peak	100	79	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

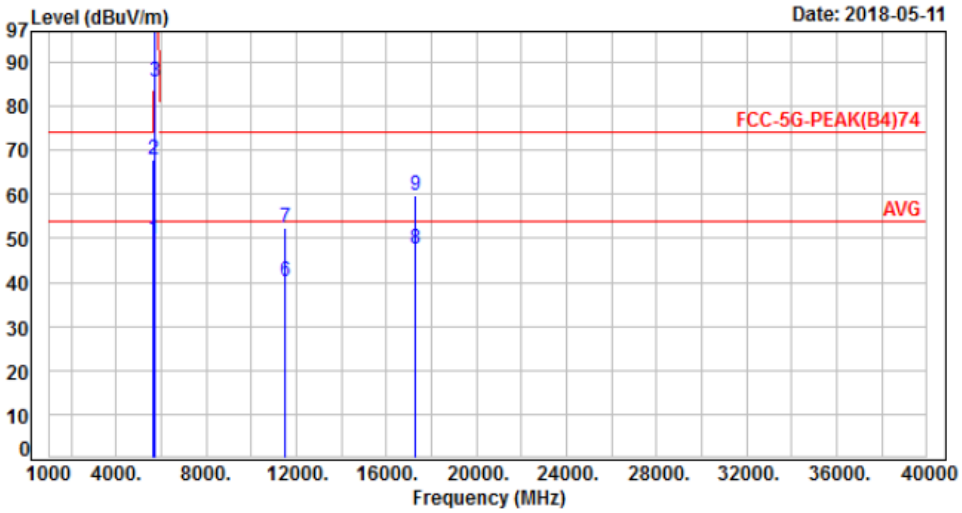
Power	:	AC 120V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH165	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5850.00	-7.30	81.90	74.60	122.20	-47.60	Peak	108	160	P
2	5855.00	-7.30	75.00	67.70	110.80	-43.10	Peak	108	160	P
3	5875.00	-7.30	66.51	59.21	105.20	-45.99	Peak	108	160	P
4	5925.00	-7.28	62.30	55.02	68.20	-13.18	Peak	108	160	P
5	11650.00	0.91	40.20	41.11	54.00	-12.89	Average	100	164	P
6	11650.00	0.91	53.70	54.61	74.00	-19.39	Peak	100	164	P
7	17475.00	11.29	40.35	51.64	68.20	-16.56	Peak	115	136	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

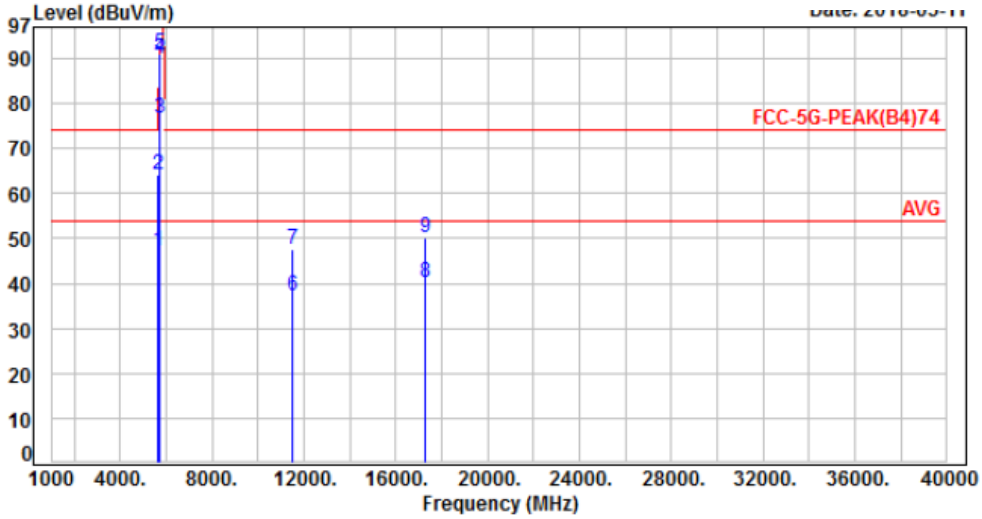
Power	:	AC 120V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH151	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-7.37	57.00	49.63	54.00	-4.37	Average	384	346	P
2	5650.00	-7.37	75.20	67.83	74.00	-6.17	Peak	384	346	P
3	5700.00	-7.35	92.90	85.55	105.20	-19.65	Peak	384	346	P
4	5720.00	-7.35	105.60	98.25	110.80	-12.55	Peak	384	346	P
5	5725.00	-7.35	106.51	99.16	122.20	-23.04	Peak	384	346	P
6	11510.00	0.81	39.22	40.03	54.00	-13.97	Average	266	130	P
7	11510.00	0.81	51.60	52.41	74.00	-21.59	Peak	266	130	P
8	17265.00	10.12	37.30	47.42	54.00	-6.58	Average	139	40	P
9	17265.00	10.12	49.60	59.72	74.00	-14.28	Peak	139	40	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

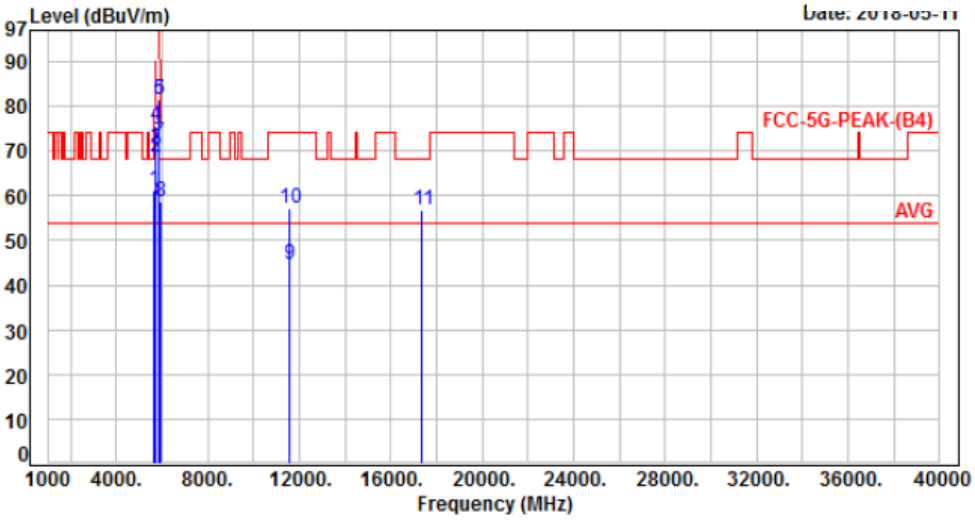
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH151	Temperature	:	21 °C
Test Date	:	May 11, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-7.37	54.50	47.13	54.00	-6.87	Average	100	182	P
2	5650.00	-7.37	71.50	64.13	74.00	-9.87	Peak	100	182	P
3	5700.00	-7.35	83.90	76.55	105.20	-28.65	Peak	100	182	P
4	5720.00	-7.35	97.30	89.95	110.80	-20.85	Peak	100	182	P
5	5725.00	-7.35	98.61	91.26	122.20	-30.94	Peak	100	182	P
6	11510.00	0.81	36.52	37.33	54.00	-16.67	Average	100	277	P
7	11510.00	0.81	46.80	47.61	74.00	-26.39	Peak	100	277	P
8	17265.00	10.12	30.13	40.25	54.00	-13.75	Average	107	122	P
9	17265.00	10.12	40.22	50.34	74.00	-23.66	Peak	107	122	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

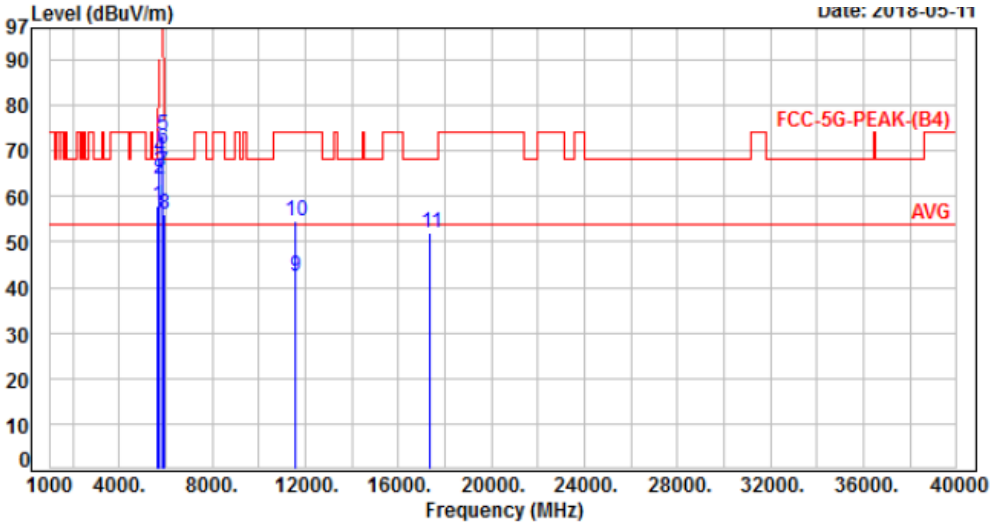
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH159	Temperature	:	21 °C
Test Date	:	May 09, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-7.37	68.60	61.23	68.20	-6.97	Peak	100	360	P
2	5700.00	-7.35	76.10	68.75	105.20	-36.45	Peak	100	360	P
3	5720.00	-7.35	77.90	70.55	110.80	-40.25	Peak	100	360	P
4	5725.00	-7.35	82.81	75.46	122.20	-46.74	Peak	100	360	P
5	5850.00	-7.30	88.90	81.60	122.20	-40.60	Peak	100	360	P
6	5855.00	-7.30	88.70	81.40	110.80	-29.40	Peak	100	360	P
7	5875.00	-7.30	79.11	71.81	105.20	-33.39	Peak	100	360	P
8	5925.00	-7.28	65.80	58.52	68.20	-9.68	Peak	100	360	P
9	11590.00	0.86	43.80	44.66	54.00	-9.34	Average	210	342	P
10	11590.00	0.86	56.30	57.16	74.00	-16.84	Peak	210	342	P
11	17385.00	10.79	45.90	56.69	68.20	-11.51	Peak	100	349	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

Power	:	AC 120V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH159	Temperature	:	21 °C
Test Date	:	May 09, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	5650.00	-7.37	65.20	57.83	68.20	-10.37	Peak	115	180	P
2	5700.00	-7.35	71.20	63.85	105.20	-41.35	Peak	115	180	P
3	5720.00	-7.35	72.50	65.15	110.80	-45.65	Peak	115	180	P
4	5725.00	-7.35	75.91	68.56	122.20	-53.64	Peak	115	180	P
5	5850.00	-7.30	80.70	73.40	122.20	-48.80	Peak	115	180	P
6	5855.00	-7.30	77.90	70.60	110.80	-40.20	Peak	115	180	P
7	5875.00	-7.30	72.61	65.31	105.20	-39.89	Peak	115	180	P
8	5925.00	-7.28	63.50	56.22	68.20	-11.98	Peak	115	180	P
9	11590.00	0.86	41.60	42.46	54.00	-11.54	Average	100	164	P
10	11590.00	0.86	53.60	54.46	74.00	-19.54	Peak	100	164	P
11	17385.00	10.79	41.33	52.12	68.20	-16.08	Peak	112	91	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

6.7. 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

7. On Time, Duty Cycle and Measurement methods

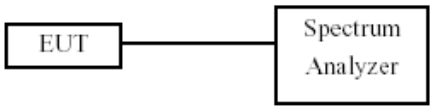
7.1. Test Limit

None; for reporting purposes only.

7.2. Test Procedure

KDB 789033 Zero-Span Spectrum Analyzer Method.

7.3. Test Setup Layout



7.4. Test Result and Data

Temperature: 24°C Humidity: 59%

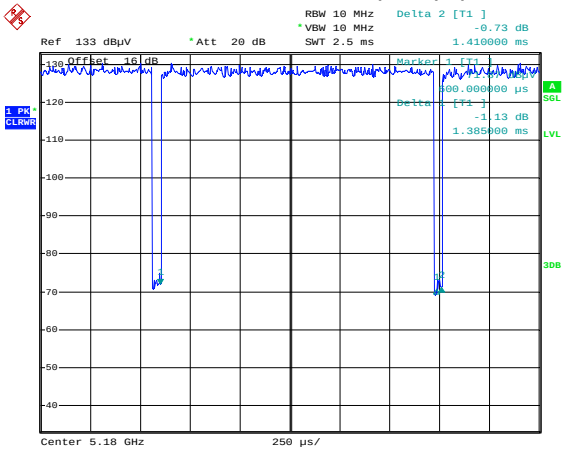
Test Date: May 16, 2018

Modulation Type	On Time (msec)	Period Time (msec)	Duty Cycle (%)	1/T Minimum VBW(Hz)	Duty Cycle correction Factor (dB)
802.11a	1.39	1.41	98.23%	722.02	0.08
802.11an HT20	1.29	1.33	97.29%	773.99	0.12
802.11an HT40	0.65	0.67	97.02%	1533.74	0.13

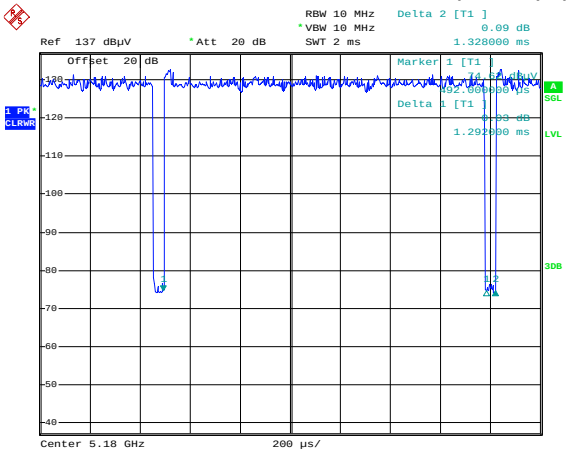
7.5. Measurement Methods

26 dB and 6dB Emission BW	KDB 789033 D02 v02r01, Section C
99% Occupied BW	KDB 789033 D02 v02r01, Section D
Conducted Output Power	KDB 789033 D02 v02r01, Section E.2.d and E.3.b (Method PM-G)
Power Spectral Density	KDB 789033 D02 v02r01, Section F
Unwanted emissions in restricted bands	KDB 789033 D02 v02r01, Sections G and H
Unwanted emissions in non-restricted bands	KDB 789033 D02 v02r01, Sections G and H

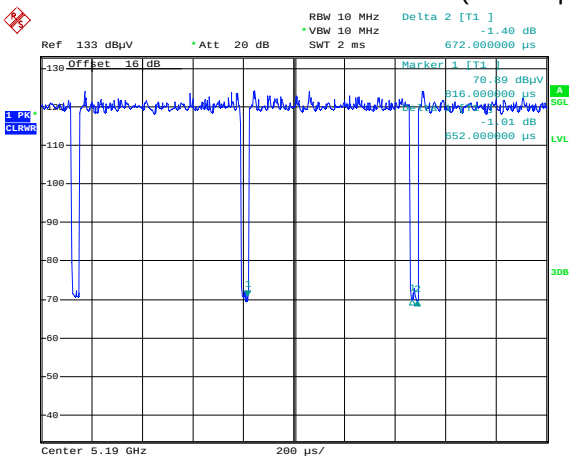
Modulation Standard: 802.11a (6Mbps)



Modulation Standard: 802.11an HT20 (6.5Mbps)



Modulation Standard: 802.11an HT40 (13.5Mbps)



8. 6dB Bandwidth & 99% Bandwidth

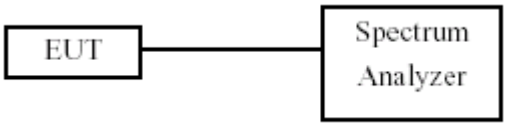
8.1. Test Limit

FCC §15.407
The minimum 6 dB bandwidth shall be at least 500 kHz.

8.2. Test Procedure

Reference to 789033 D02 General UNII Test Procedures New Rules v01: The transmitter output is connected to a spectrum analyzer with the RBW set to100KHz, the VBW >= 3 x RBW, peak detector and max hold.

8.3. Test Setup Layout



8.4. Test Result and Data (6dB Bandwidth)

Temperature: 24°C Humidity: 59%
Test Date: May 16, 2018

Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)
			ANT A	ANT B	
802.11a	149	5745	16.00	---	0.50
	157	5785	16.00	---	0.50
	165	5825	16.10	---	0.50
802.11an HT20	149	5745	17.50	17.30	0.50
	157	5785	15.10	16.50	0.50
	165	5825	15.30	16.10	0.50
802.11an HT40	155	5755	35.20	36.20	0.50
	159	5795	36.00	35.20	0.50

8.5. Test Result and Data (99% Bandwidth)

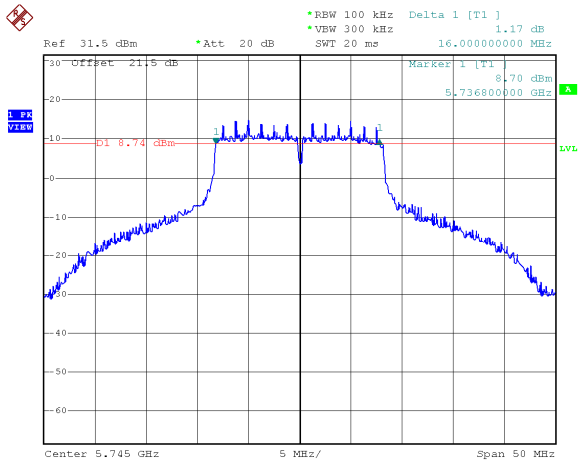
Temperature: 24°C Humidity: 59%

Test Date: May 16, 2018

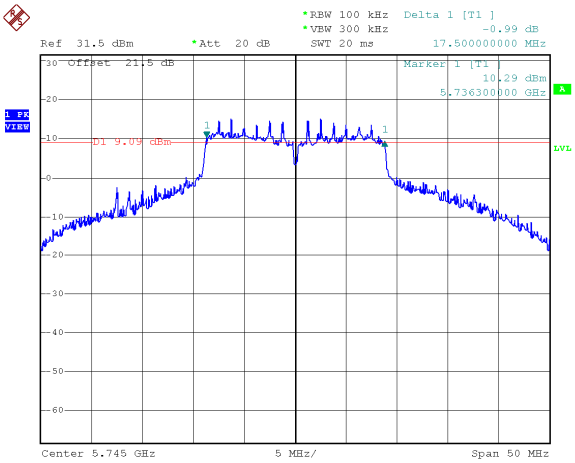
Modulation Type	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			ANT A	ANT B
802.11a	149	5745	20.10	---
	157	5785	20.20	---
	165	5825	22.20	---
802.11an HT20	149	5745	29.20	35.30
	157	5785	21.20	24.80
	165	5825	18.30	23.30
802.11an HT40	155	5755	44.20	51.60
	159	5795	40.00	50.80

6dB Bandwidth
ANT A

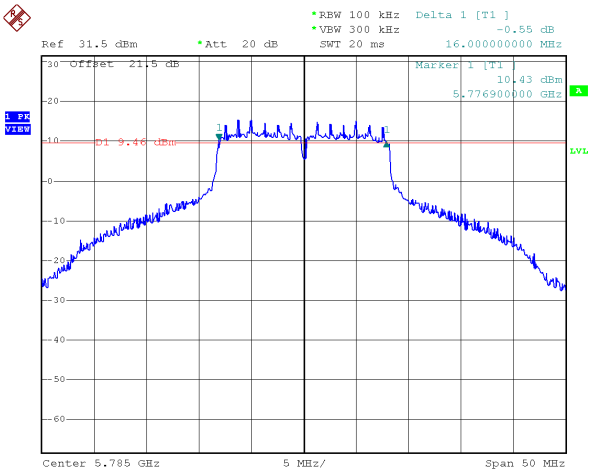
Modulation Standard: 802.11a (6Mbps)
CH149



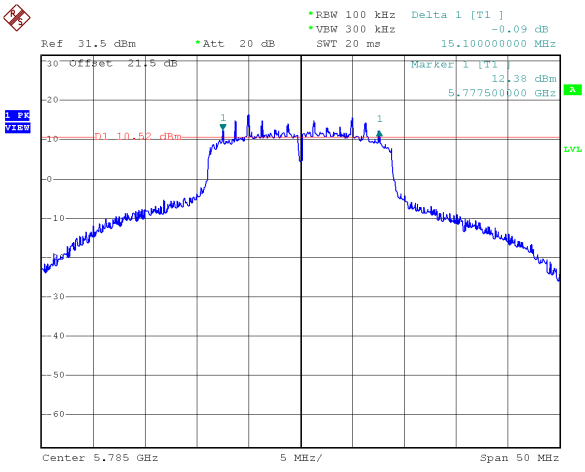
Modulation Standard: 802.11ac, HT20 (6.5Mbps)
CH149



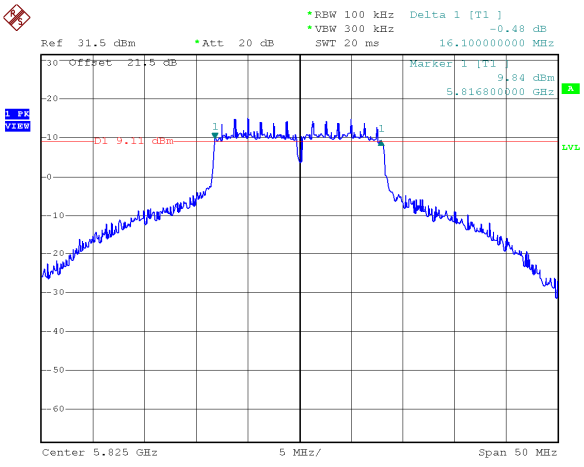
CH157



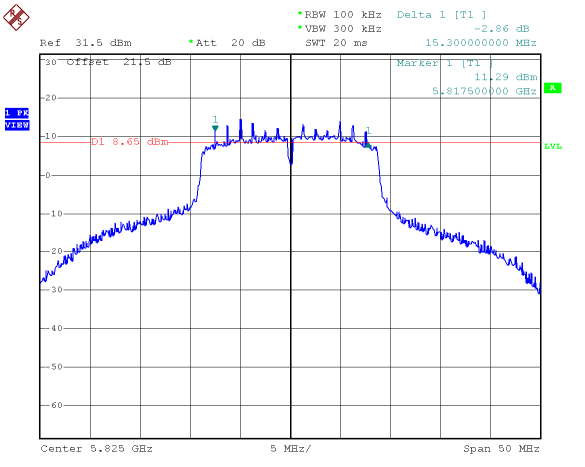
CH157



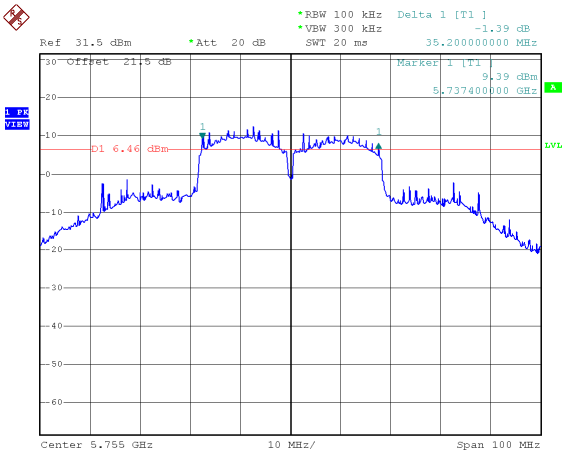
CH165



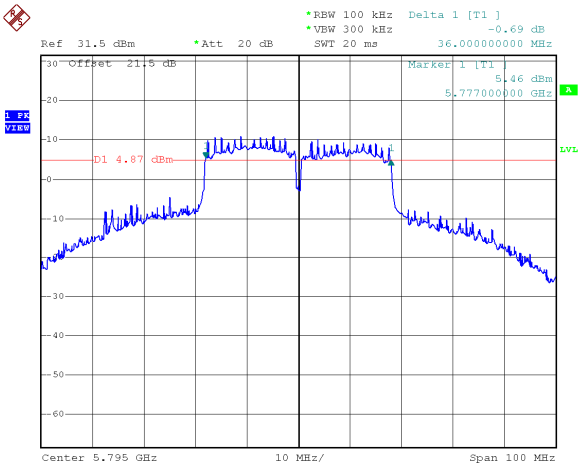
CH165



Modulation Standard: 802.11an, HT40 (13.5Mbps)
CH151



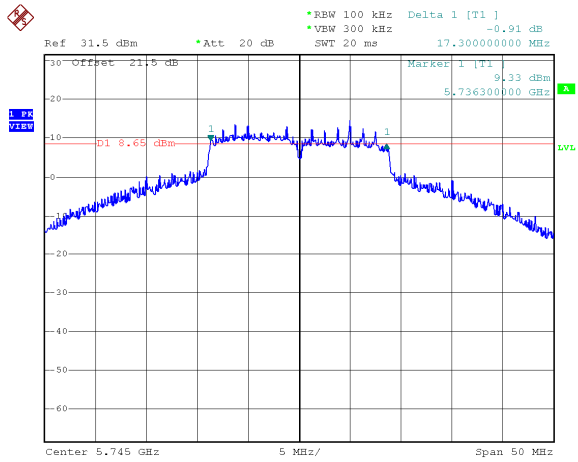
CH159



ANT B

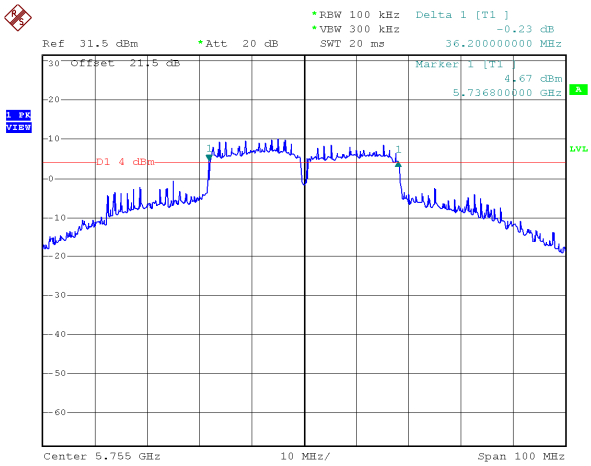
Modulation Standard: 802.11an HT20 (6.5Mbps)

CH149

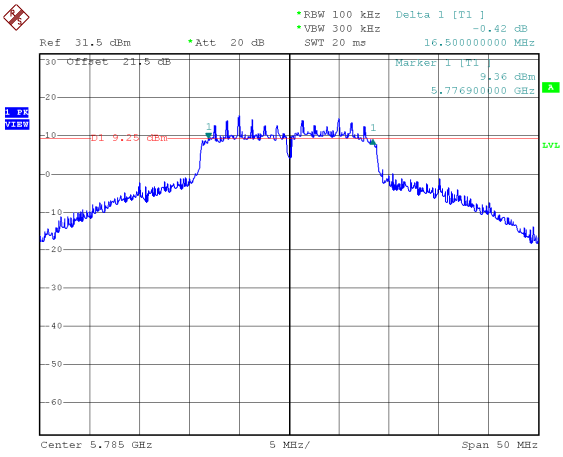


Modulation Standard: 802.11an, HT40 (13.5Mbps)

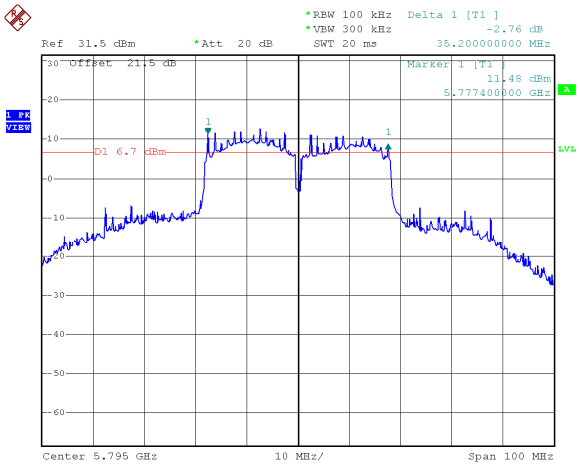
CH151



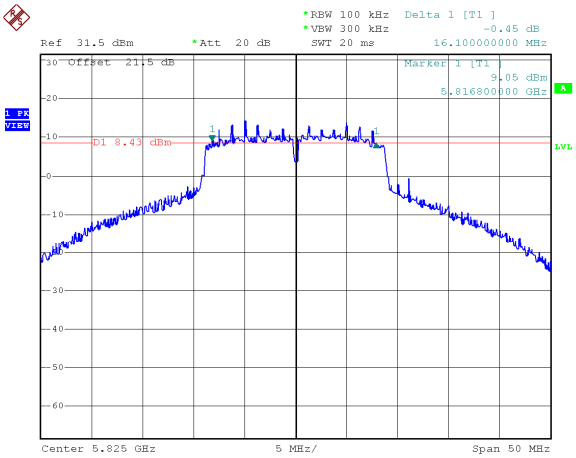
CH157



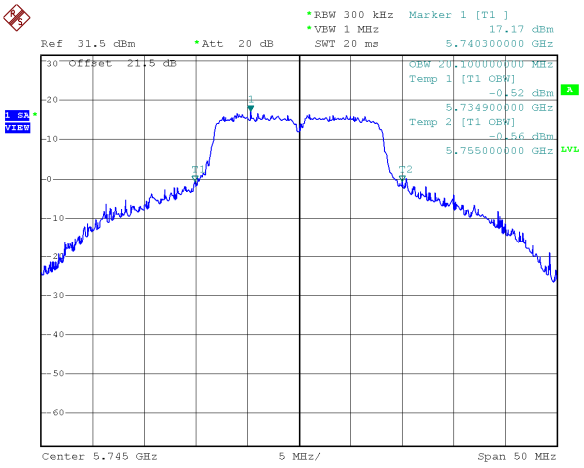
CH159



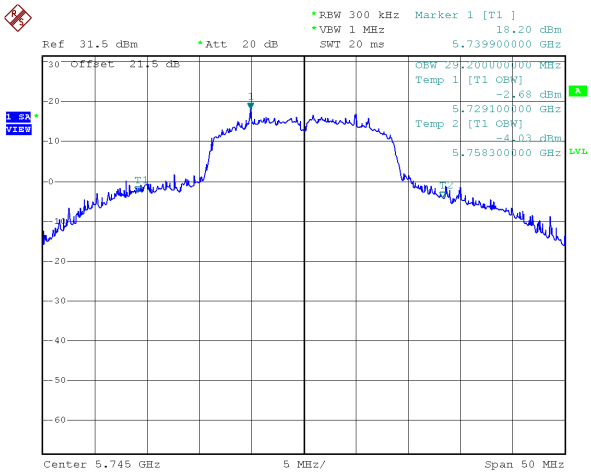
CH165



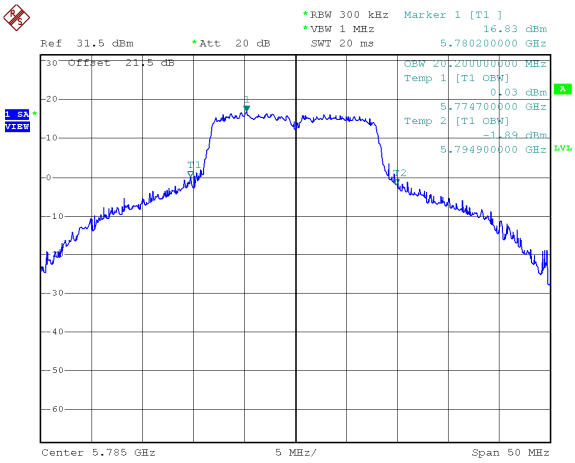
99% Bandwidth
ANT A
Modulation Standard: 802.11a (6Mbps)
CH149



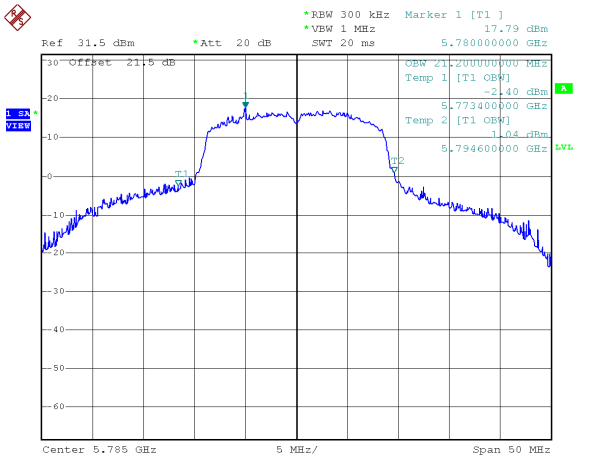
Modulation Standard: 802.11an, HT20 (6.5Mbps)
CH149



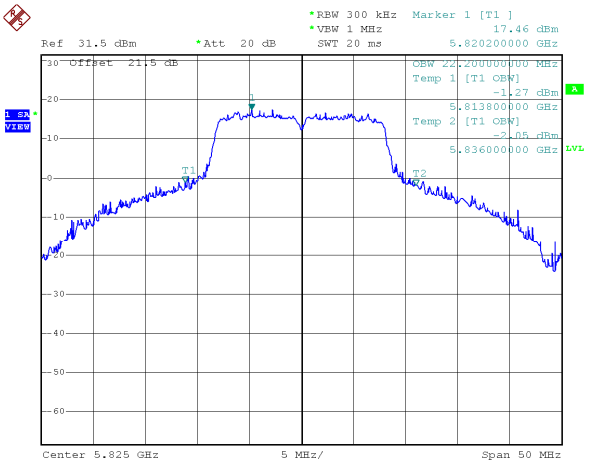
CH157



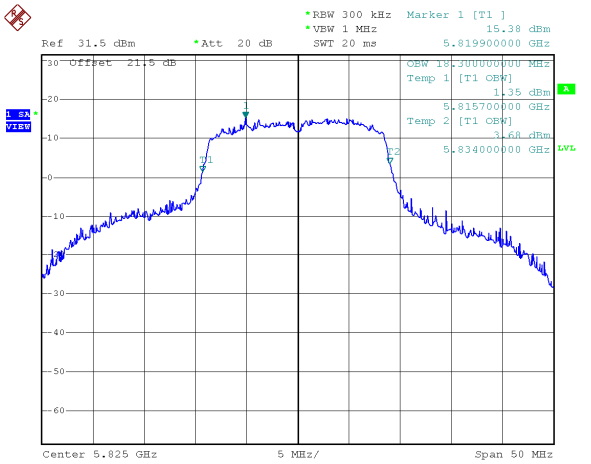
CH157



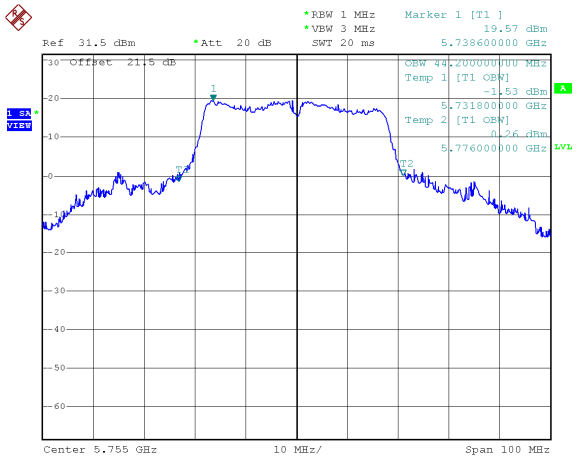
CH165



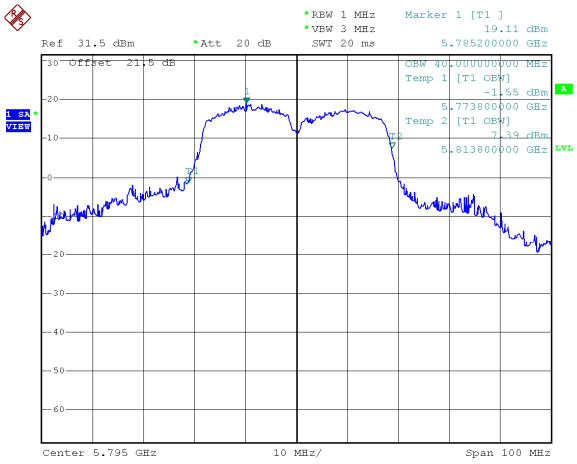
CH165



Modulation Standard: 802.11an, HT40 (13.5Mbps)
CH151



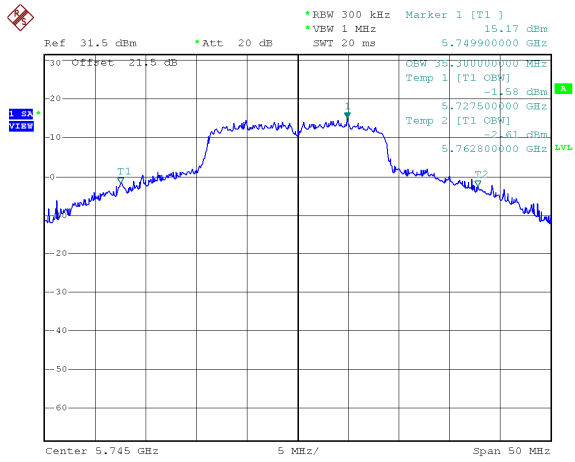
CH159



ANT B

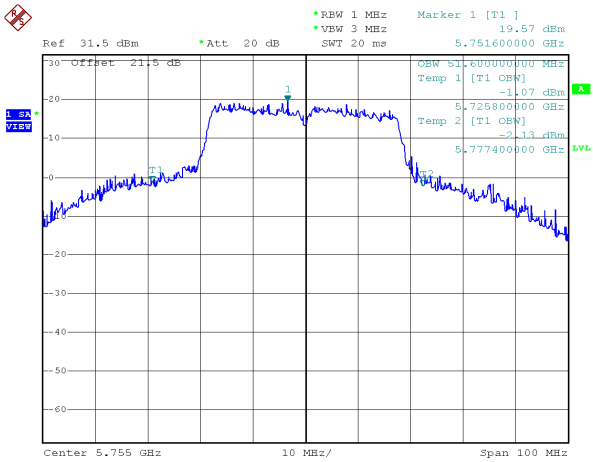
Modulation Standard: 802.11an HT20 (6.5Mbps)

CH149

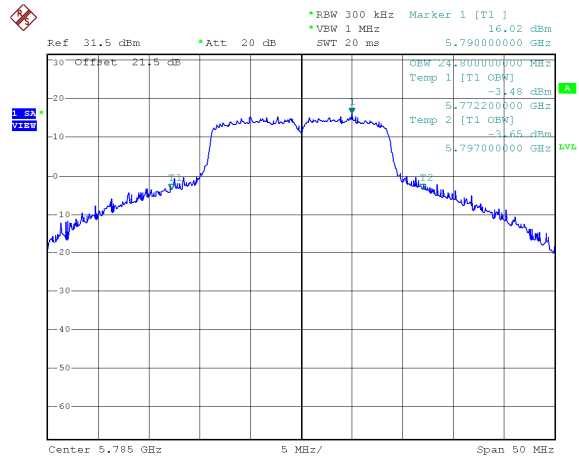


Modulation Standard: 802.11an, HT40 (13.5Mbps)

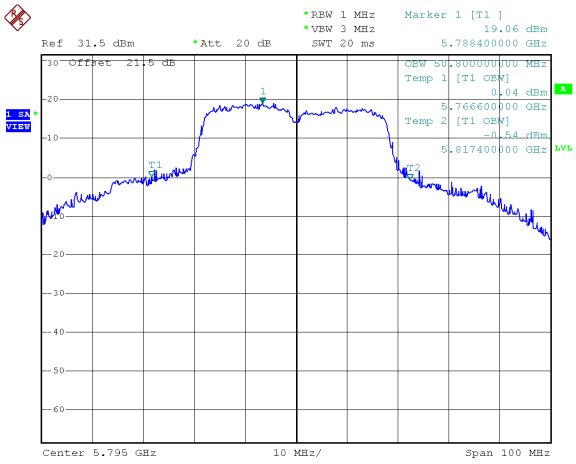
CH151



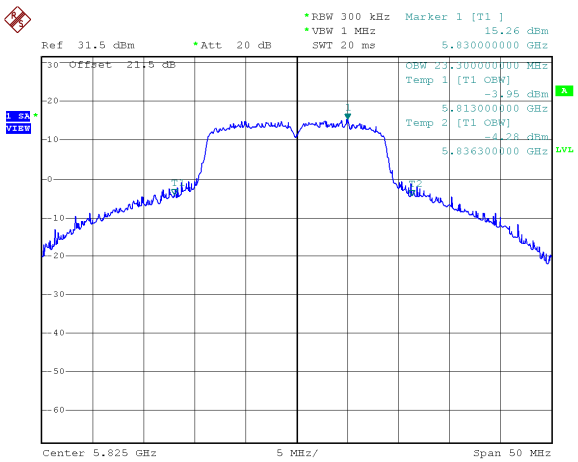
CH157



CH159



CH165



9. 26dB Bandwidth & 99% Bandwidth

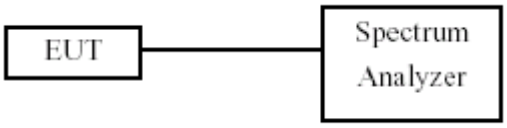
9.1. Test Limit

None; for reporting purposes only.

9.2. Test Procedure

Reference to 789033 D02 General UNII Test Procedures New Rules v01: The transmitter output is connected to a spectrum analyzer with the RBW = approximately 1% of the emission bandwidth, the VBW >= 3 x RBW, peak detector and max hold.

9.3. Test Setup Layout



9.4. Test Result and Data (26dB Bandwidth)

Temperature: 24°C Humidity: 59%

Test Date: May 16, 2018

Modulation Type	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
			ANT A	ANT B
802.11a	36	5180	23.10	---
	44	5220	23.20	---
	48	5240	23.20	---
802.11an HT20	36	5180	24.20	23.80
	44	5220	24.30	23.30
	48	5240	24.20	24.00
802.11an HT40	38	5190	50.40	49.20
	46	5230	49.80	50.00

9.5. Test Result and Data (99% Bandwidth)

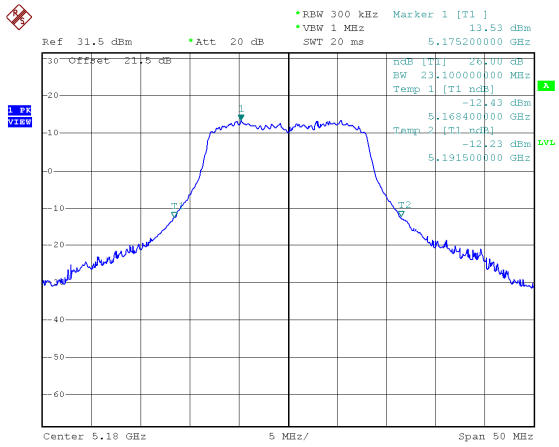
Temperature: 24°C Humidity: 59%

Test Date: May 16, 2018

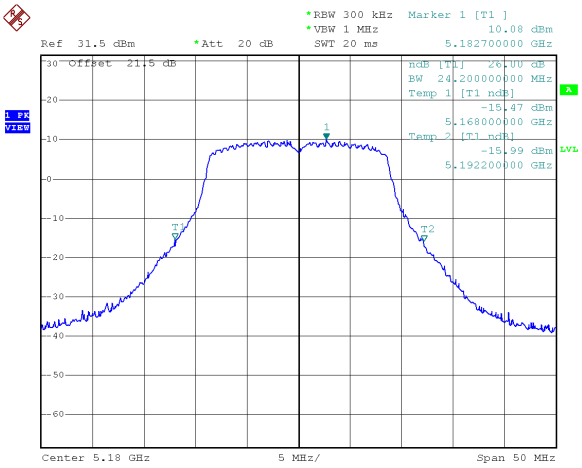
Modulation Type	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			ANT A	ANT B
802.11a	36	5180	18.20	---
	44	5220	18.30	---
	48	5240	18.60	---
802.11an HT20	36	5180	18.90	19.00
	44	5220	19.30	19.20
	48	5240	19.30	19.30
802.11an HT40	38	5190	37.20	37.00
	46	5230	37.60	37.80

26dB Bandwidth
ANT A

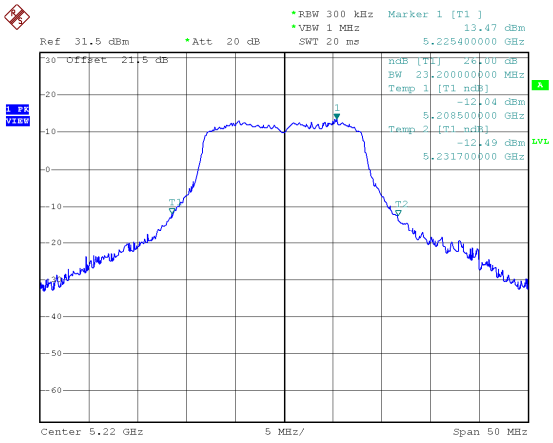
Modulation Standard: 802.11a (6Mbps)
CH36



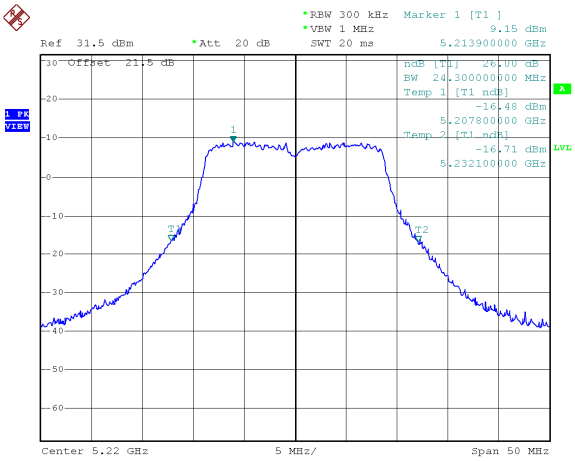
Modulation Standard: 802.11an, HT20 (6.5Mbps)
CH36



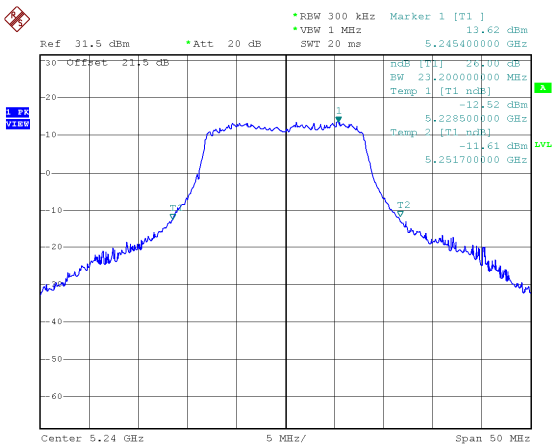
CH44



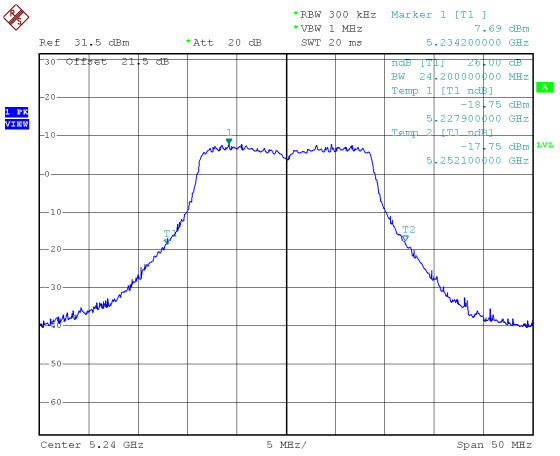
CH44



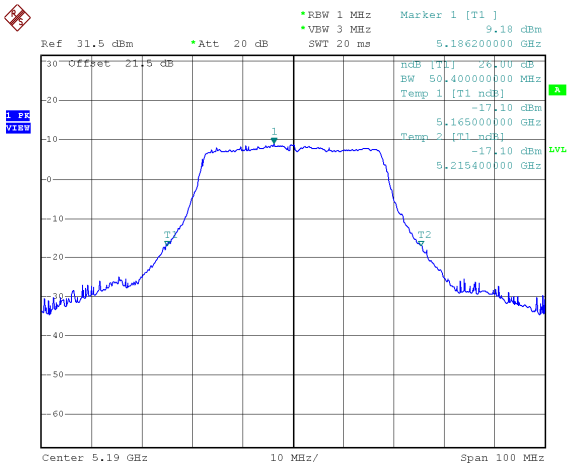
CH48



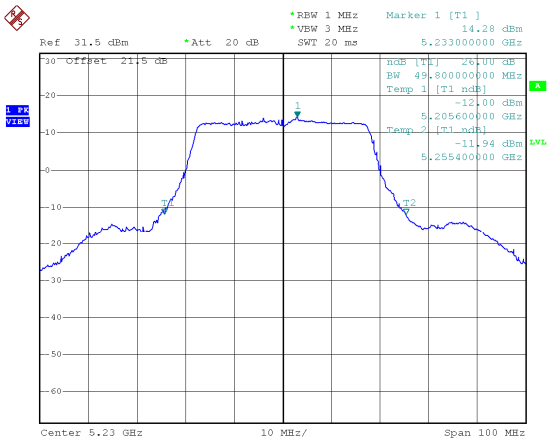
CH48



Modulation Standard: 802.11an, HT40 (13.5Mbps)
CH38



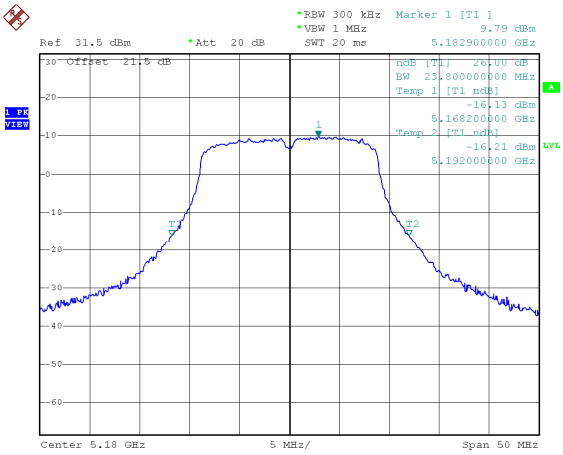
CH46



ANT B

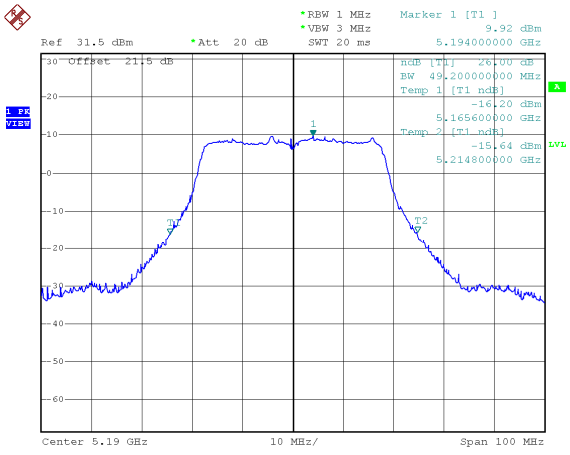
Modulation Standard: 802.11an HT20 (6.5Mbps)

CH36

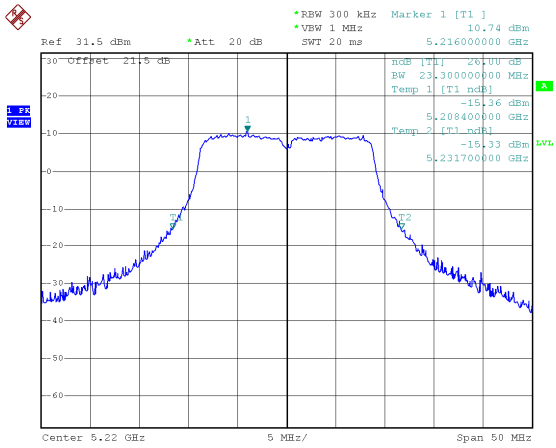


Modulation Standard: 802.11an, HT40 (13.5Mbps)

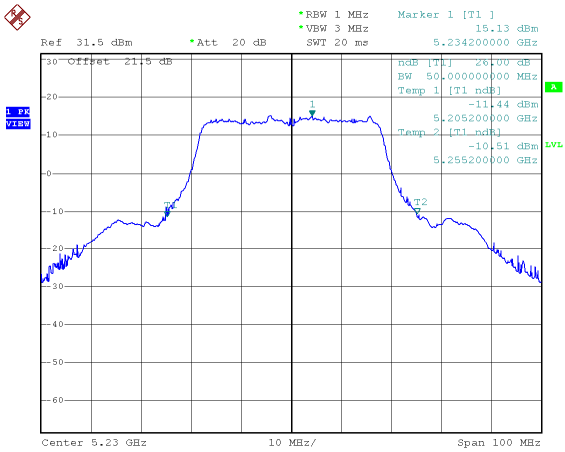
CH38



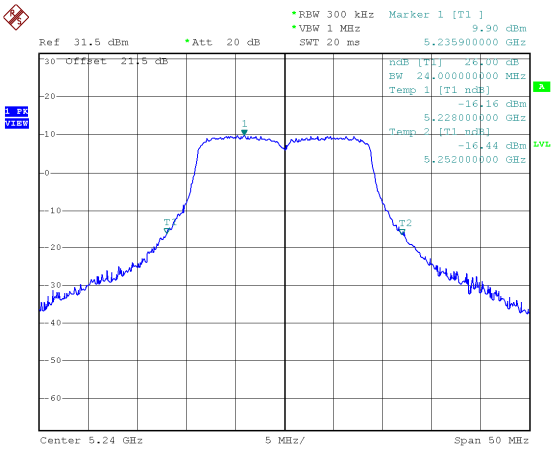
CH44



CH46

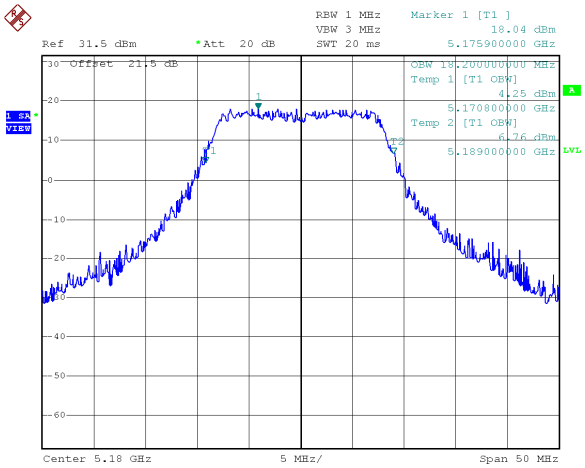


CH48

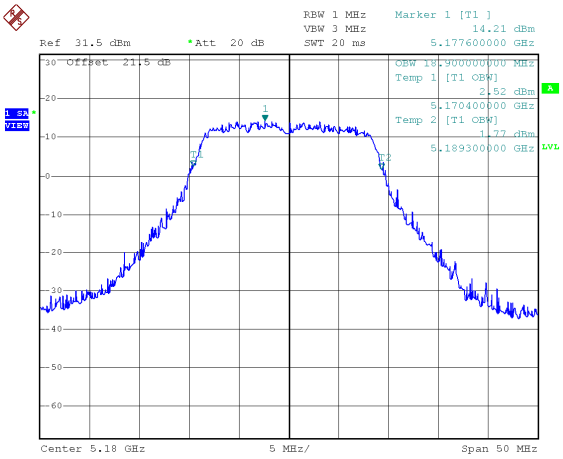


99% Bandwidth
ANT A

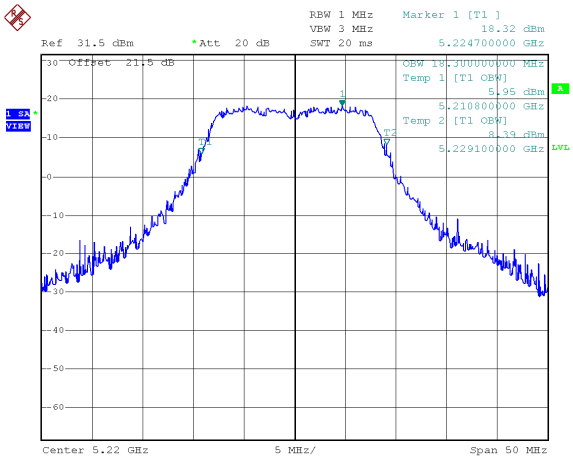
Modulation Standard: 802.11a (6Mbps)
CH36



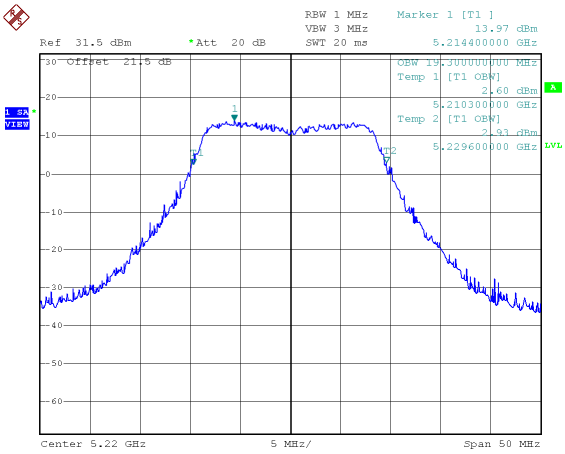
Modulation Standard: 802.11an, HT20 (6.5Mbps)
CH36



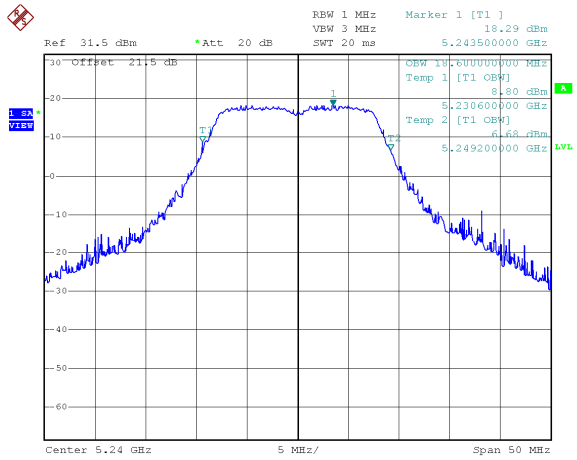
CH44



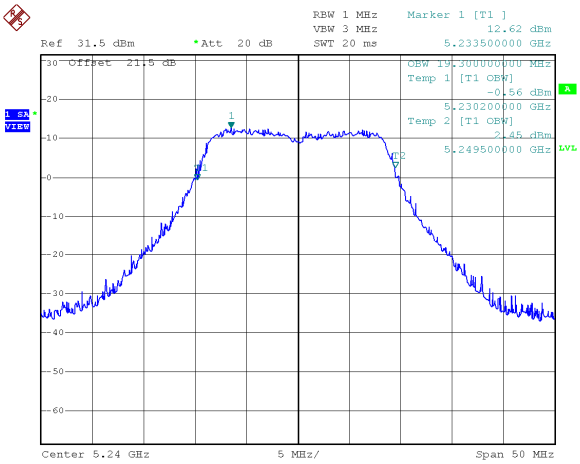
CH44



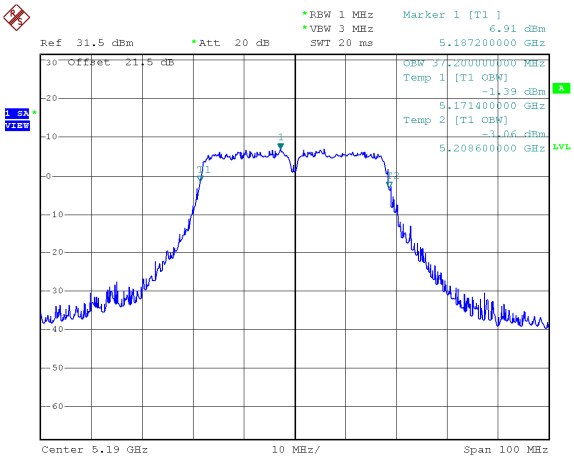
CH48



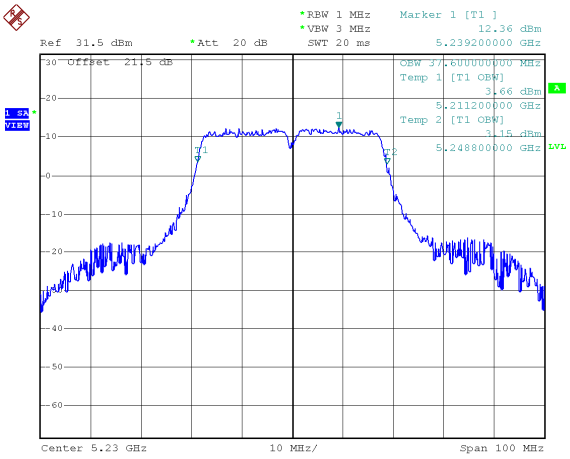
CH48



Modulation Standard: 802.11an, HT40 (13.5Mbps)
CH38



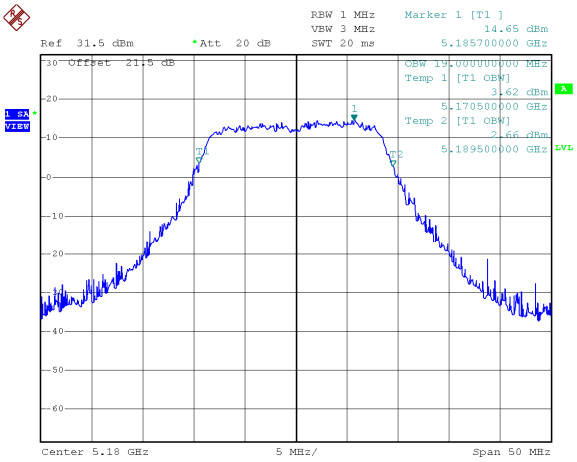
CH46



ANT B

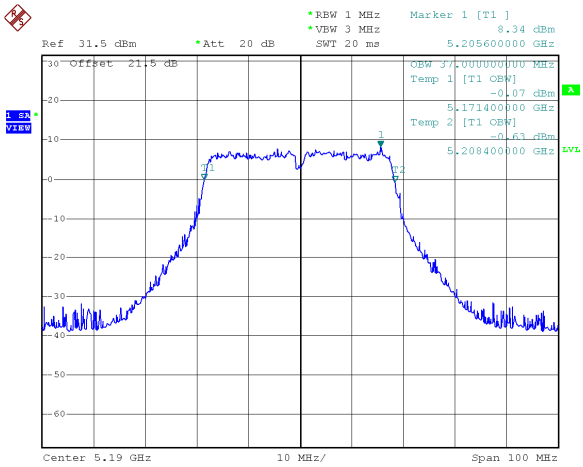
Modulation Standard: 802.11an HT20 (6.5Mbps)

CH36

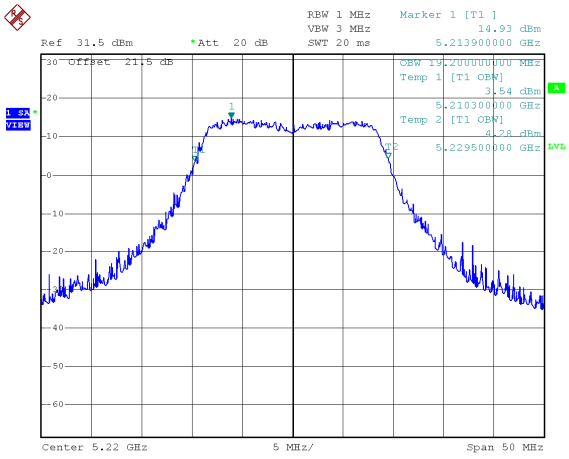


Modulation Standard: 802.11an, HT40 (13.5Mbps)

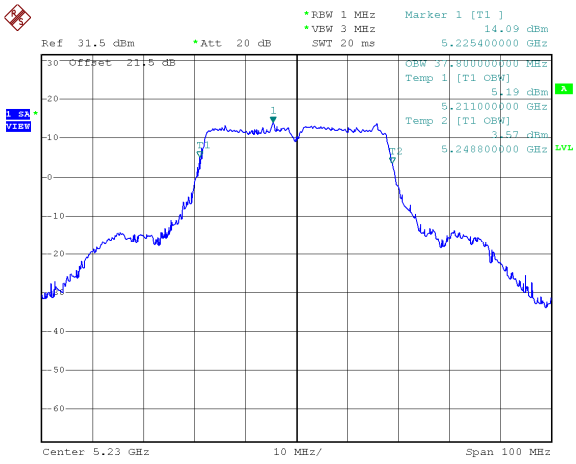
CH38



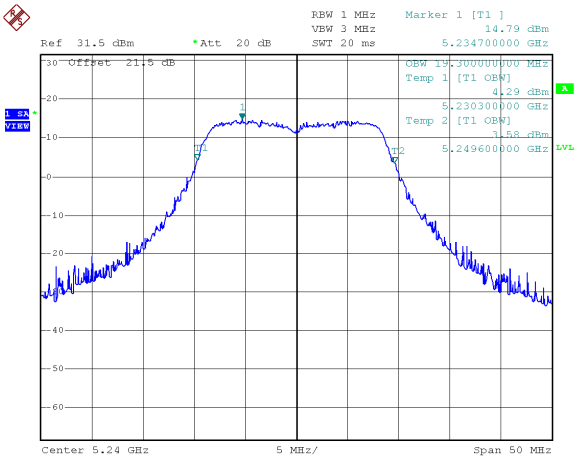
CH44



CH46



CH48



10. Average Power

10.1. Test Limit

Output Power:

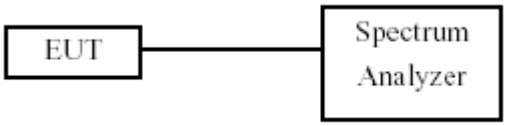
Frequency Band			Limit
☒	5.15~5.25GHz		
	Operating Mode		
	☐	Outdoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30degrees as measured from the horizon must not exceed125 mW (21 dBm).
	☐	Indoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
	☐	Fixed point-to-point access points	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.
	☒	client devices	The maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Frequency Band		Limit
☐	5.25-5.35 GHz	The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
☐	5.470-5.725 GHz	
☒	5.725~5.85 GHz	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.

10.2.Test Procedure

The transmitter output is connected to a power meter.
The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

10.3.Test Setup Layout



10.4.Test Result and Data

Temperature: 24°C Humidity: 59%
Test Date: May 16, 2018

Modulation Type	Channel	Frequency (MHz)	Avg Power Output (dBm)		Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
			ANT A	ANT B			
802.11a	36	5180	19.94	---	19.94	98.628	24.00
	44	5220	20.17	---	20.17	103.992	24.00
	48	5240	20.30	---	20.30	107.152	24.00
802.11an HT20	36	5180	17.39	17.13	20.27	106.469	24.00
	44	5220	16.74	17.89	20.36	108.724	24.00
	48	5240	15.68	17.64	19.78	95.059	24.00
802.11an HT40	38	5190	12.53	12.93	15.74	37.540	24.00
	46	5230	18.56	19.38	22.00	158.476	24.00

Modulation Type	Channel	Frequency (MHz)	Avg Power Output (dBm)		Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
			ANT A	ANT B			
802.11a	149	5745	24.10	---	24.10	257.040	30.00
	157	5785	25.13	---	25.13	325.837	30.00
	165	5825	24.10	---	24.10	257.040	30.00
802.11an HT20	149	5745	25.23	25.31	28.28	673.052	30.00
	157	5785	24.16	25.08	27.65	582.722	30.00
	165	5825	24.68	24.62	27.66	583.499	30.00
802.11an HT40	151	5755	24.28	25.01	27.67	584.874	30.00
	159	5795	24.46	25.01	27.75	596.211	30.00

11. PPSD

11.1.Test Limit

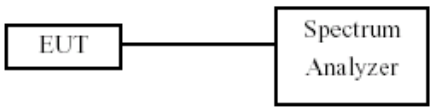
PSD:

Frequency Band			Limit
☒	5.15~5.25GHz		
	Operating Mode		
	☐	Outdoor access point	17 dBm/MHz
	☐	Indoor access point	17 dBm/MHz
	☐	Fixed point-to-point access points	17 dBm/MHz
	☒	client devices	11 dBm/MHz
☐	5.725~5.85 GHz		11 dBm/MHz
☐	5.470-5.725 GHz		11 dBm/MHz
☒	5.725~5.85 GHz		30 dBm/500kHz

11.2.Test Procedure

Reference to KDB789033 D02 General UNII Test Procedures New Rules v02r01

11.3.Test Setup Layout



11.4. Test Result and Data

Temperature: 24°C Humidity: 59%

Test Date: May 16, 2018

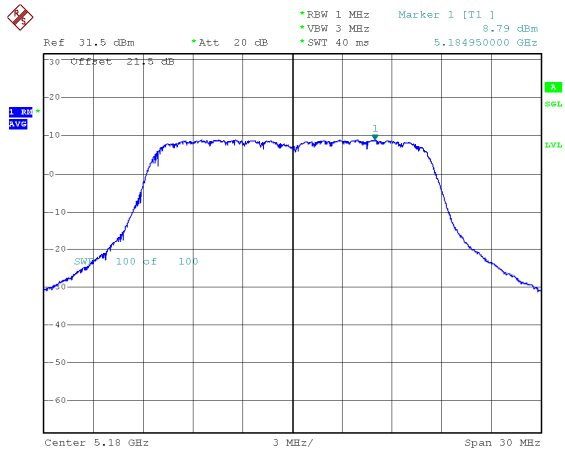
Modulation Type	CH	Freq. (MHz)	Meas PPSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	Total Corr'd PPSD (dBm/MHz)	PPSD Limit (dBm/MHz)
			ANT A	ANT B				
802.11a	36	5180	8.79	---	8.79	0.00	8.79	11.00
	44	5220	8.70	---	8.70	0.00	8.70	11.00
	48	5240	8.54	---	8.54	0.00	8.54	11.00
802.11an HT20	36	5180	5.73	5.64	8.70	0.12	8.82	8.99
	44	5220	5.08	6.22	8.70	0.12	8.82	8.99
	48	5240	4.55	6.26	8.50	0.12	8.62	8.99
802.11an HT40	38	5190	-0.83	-0.68	2.26	0.13	2.39	8.99
	46	5230	5.30	5.82	8.58	0.13	8.71	8.99

Modulation Type	CH	Freq. (MHz)	Meas PPSD (dBm/MHz)		Sum chain (dBm)	Duty Cycle CF(dB)	10log(500KHz/RBW) CF (dB)	Total Corr'd PPSD (dBm/500kHz)	PPSD Limit (dBm/500kHz)
			ANT A	ANT B					
802.11a	149	5745	13.54	---	13.54	0.00	-3.01	10.53	30.00
	157	5785	14.02	---	14.02	0.00	-3.01	11.01	30.00
	165	5825	13.93	---	13.93	0.00	-3.01	10.92	30.00
802.11an HT20	149	5745	12.77	11.66	15.26	0.12	-3.01	12.37	27.99
	157	5785	12.94	13.69	16.34	0.12	-3.01	13.45	27.99
	165	5825	11.95	12.39	15.19	0.12	-3.01	12.30	27.99
802.11an HT40	155	5755	9.80	10.83	13.36	0.13	-3.01	10.48	27.99
	159	5795	11.15	9.84	13.55	0.13	-3.01	10.67	27.99

5.2G Band 1, ANT A

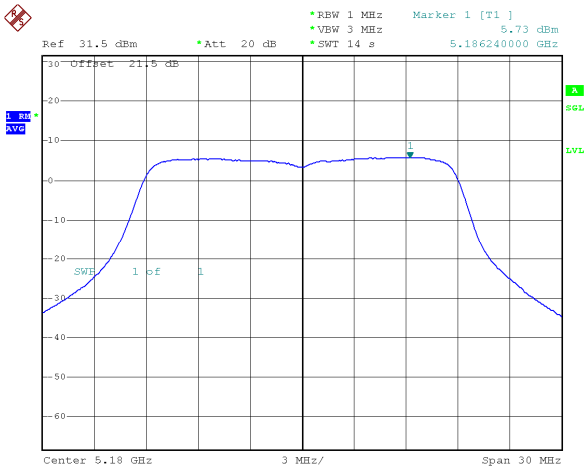
Modulation Standard: 802.11a (6Mbps)

CH36

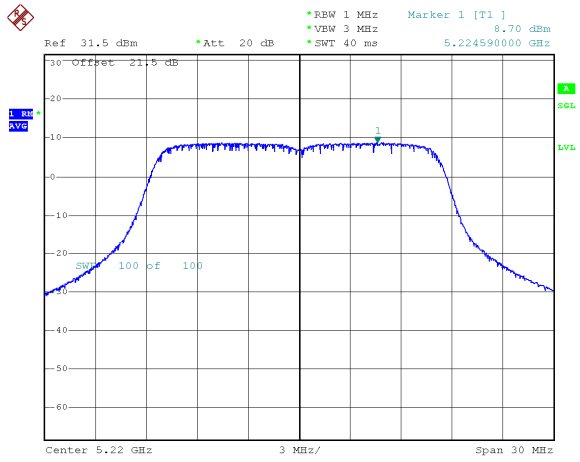


Modulation Standard: 802.11an HT20 (6.5Mbps)

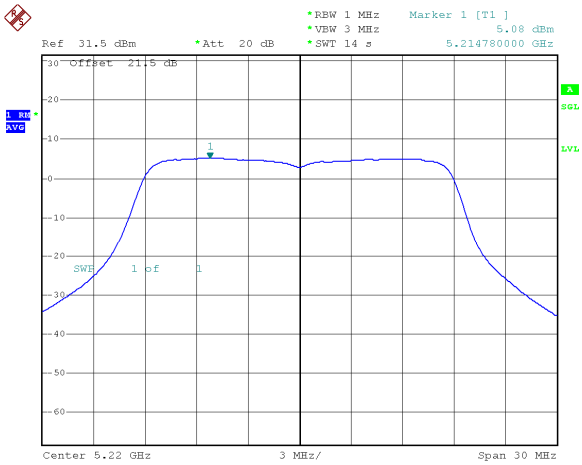
CH36



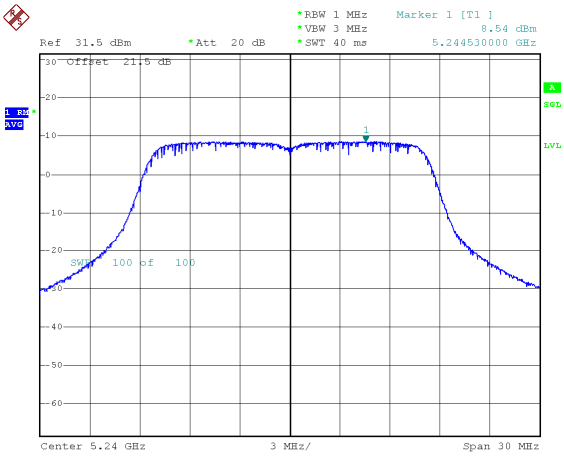
CH44



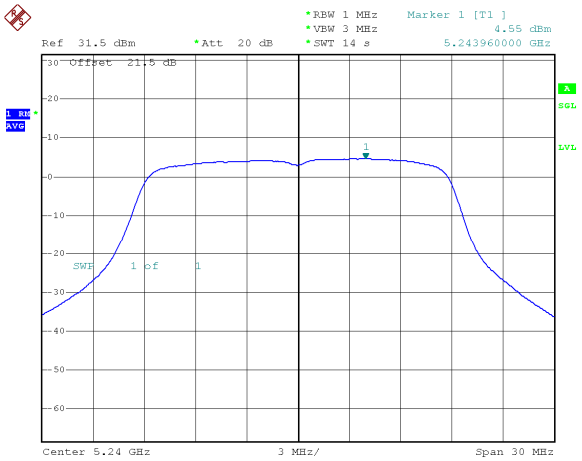
CH44



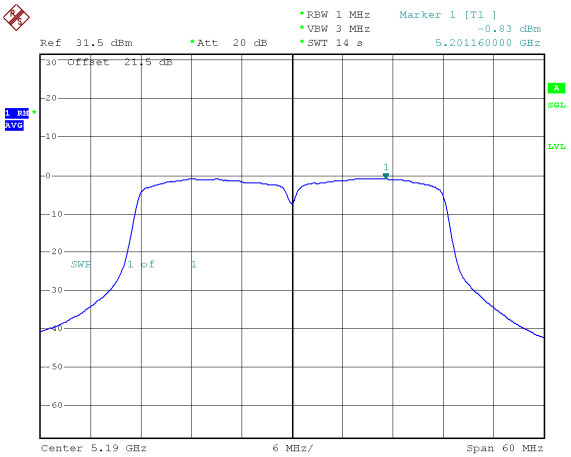
CH48



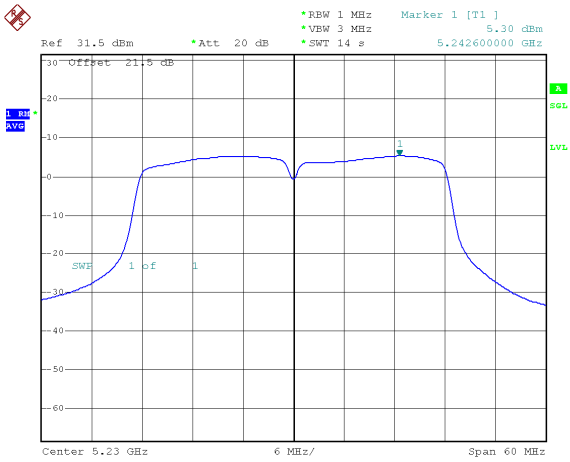
CH48



Modulation Standard: 802.11an HT40 (13.5Mbps)
CH38



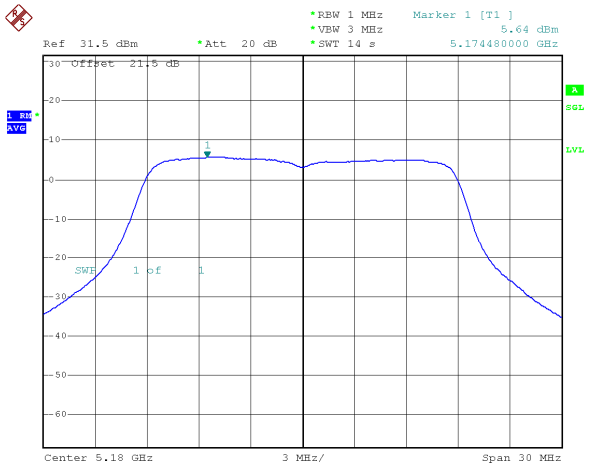
CH46



5.2G Band 1, ANT B

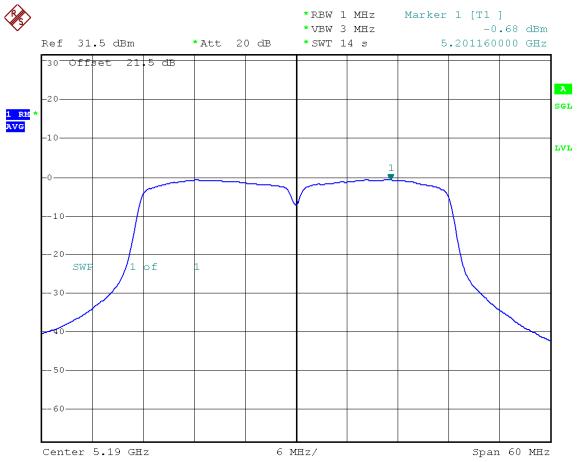
Modulation Standard: 802.11an HT20(6.5Mbps)

CH36

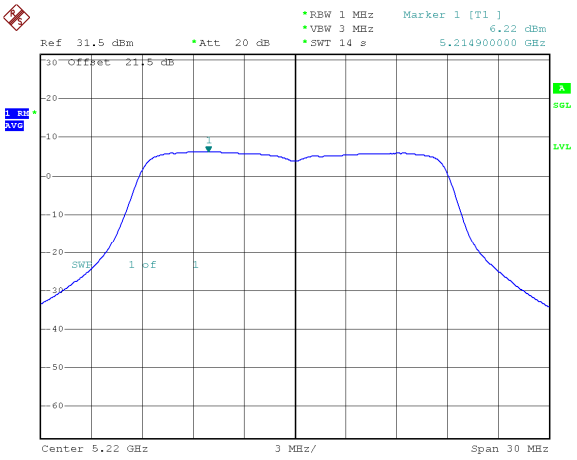


Modulation Standard: 802.11an HT40 (13.5Mbps)

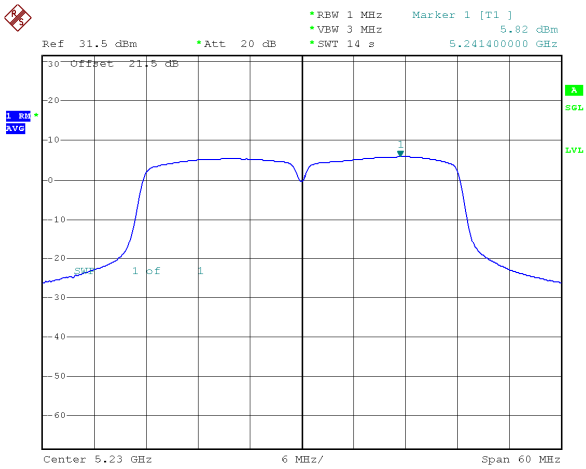
CH38



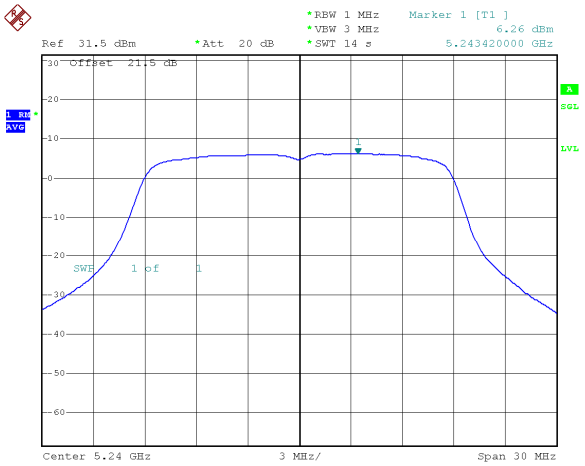
CH44



CH46



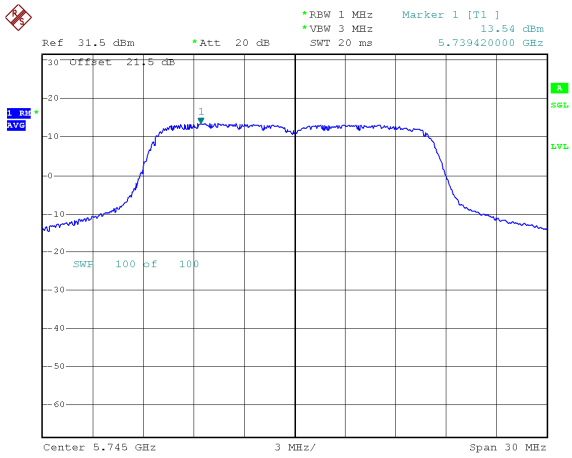
CH48



5.8G Band 4, ANT A

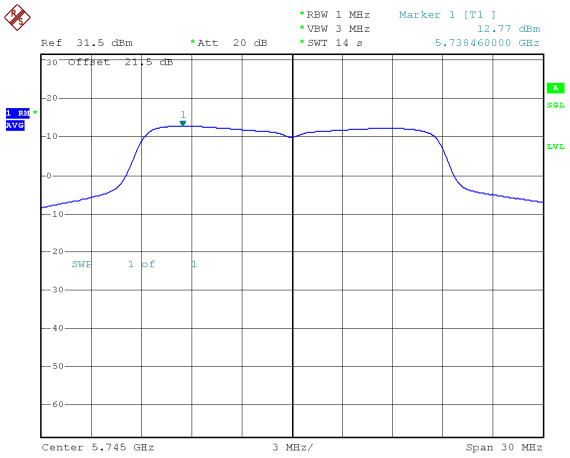
Modulation Standard: 802.11a (6Mbps)

CH149

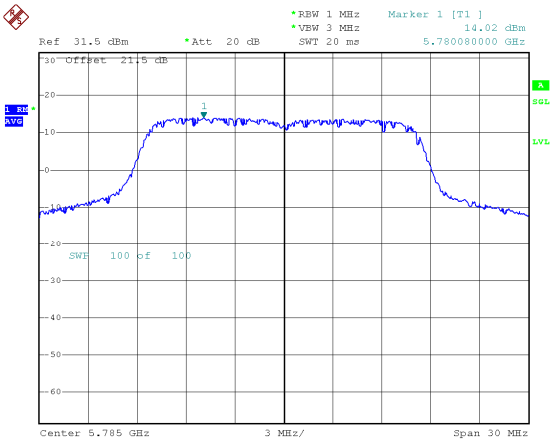


Modulation Standard: 802.11an HT20 (6.5Mbps)

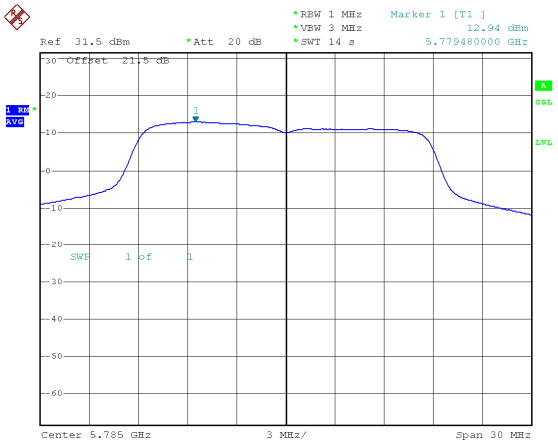
CH149



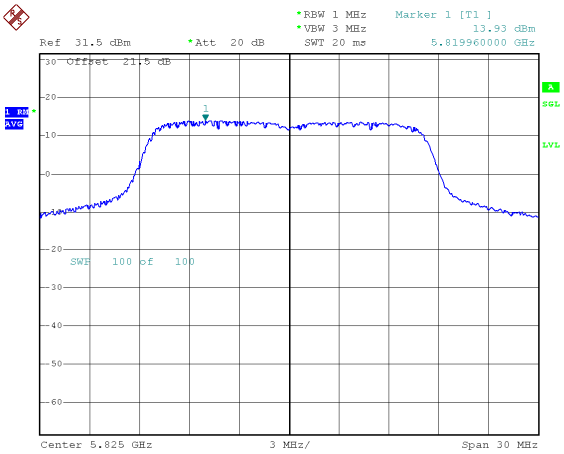
CH157



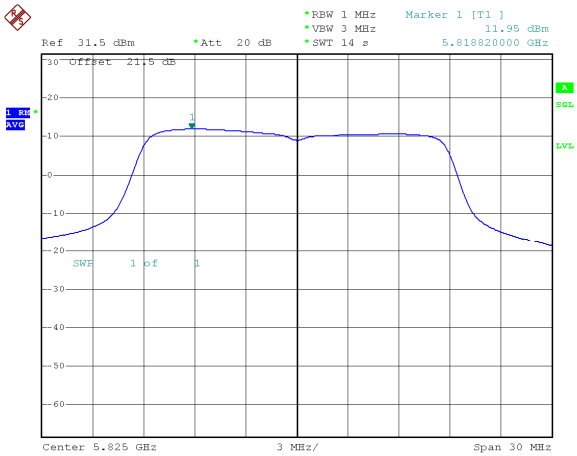
CH157



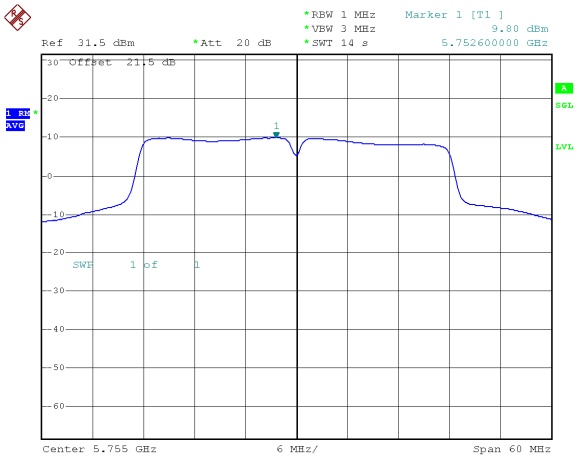
CH165



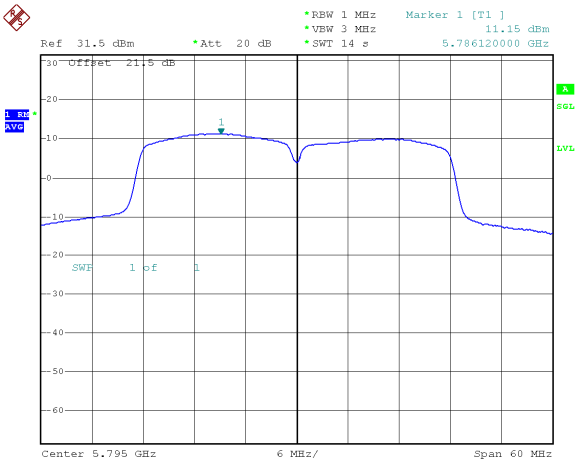
CH165



Modulation Standard: 802.11an HT40(13.5Mbps)
CH151



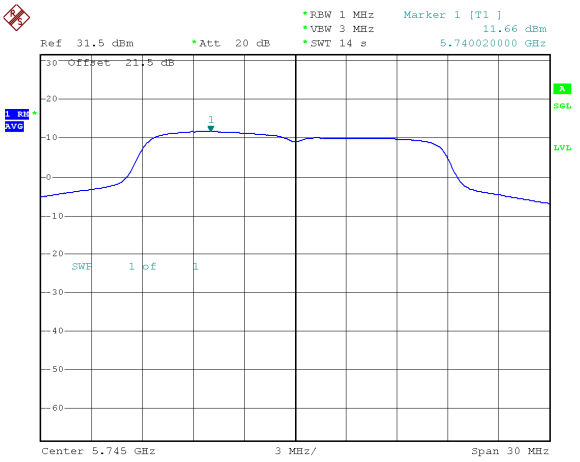
CH159



5.8G Band 4, ANT B

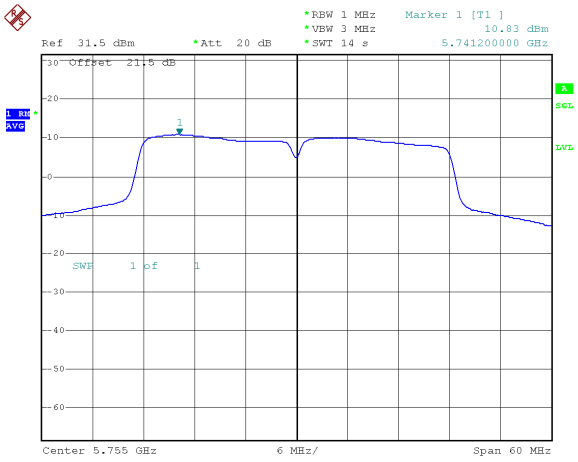
Modulation Standard: 802.11an HT20 (6.5Mbps)

CH149

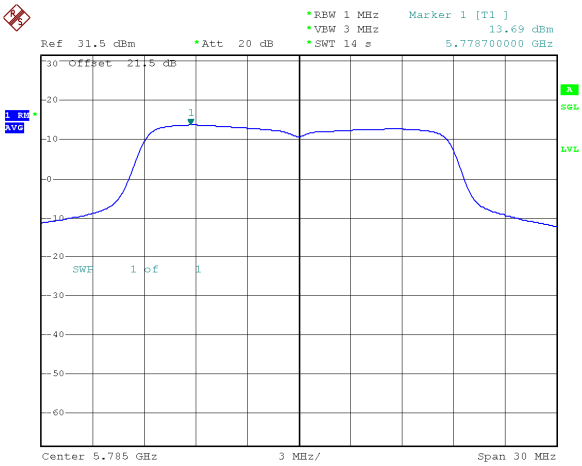


Modulation Standard: 802.11an HT40 (13.5Mbps)

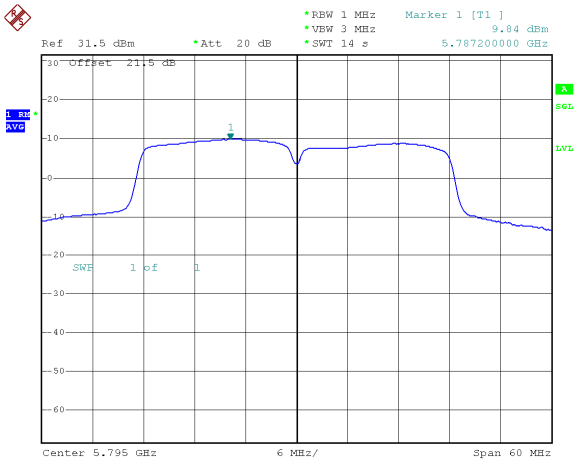
CH155



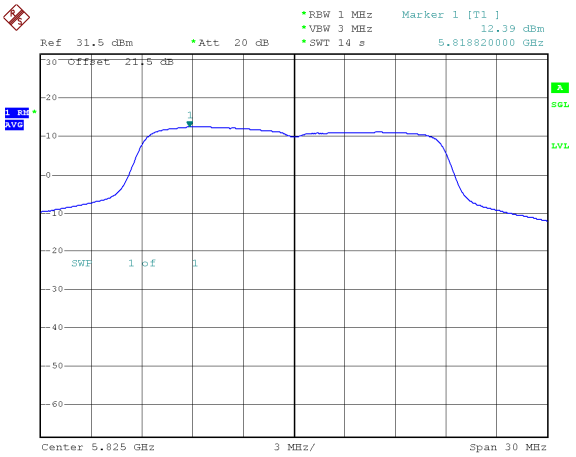
CH157



CH159



CH165

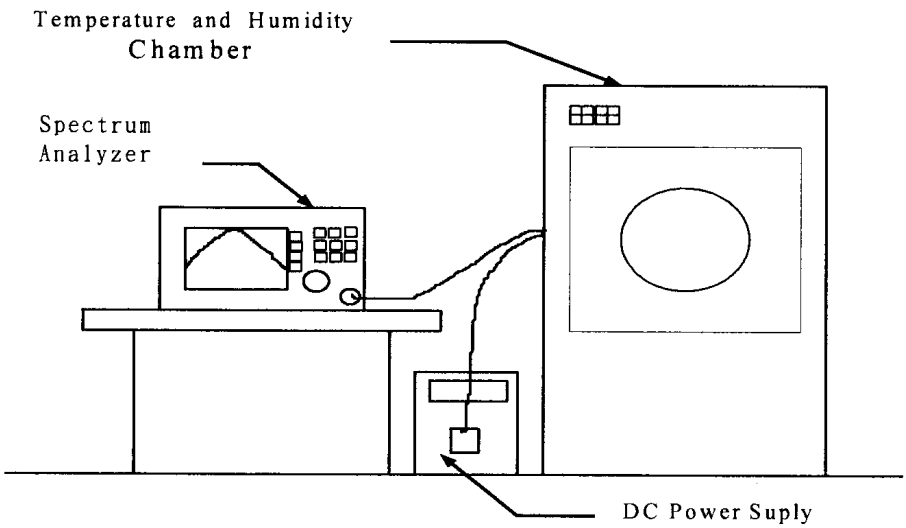


12. Frequency Stability

12.1.Test Procedure

1. The EUT was placed inside the Temperature and Humidity chamber.
2. The transmitter output was connected to spectrum analyzer.
3. Turn the EUT on and couple its output to a spectrum analyzer.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
6. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
7. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

12.2.Test Setup Layout



12.3.Test Result and Data

Temperature: 24°C Humidity: 59%

Test Date: May 16, 2018

Operating frequency: 5180 MHz							
Temp	Power supply	2 minute		5 minute		10 minute	
(℃)	(V)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	102	5179.9243	-0.001461	5179.9656	-0.000665	5179.9709	-0.000562
	120	5179.9193	-0.001558	5180.0693	0.001338	5180.0840	0.001622
	138	5180.0634	0.001223	5180.0854	0.001650	5179.9174	-0.001594
40	102	5179.9775	-0.000434	5179.9586	-0.000800	5179.9970	-0.000059
	120	5179.9930	-0.000135	5180.0383	0.000739	5180.0119	0.000229
	138	5179.9958	-0.000082	5179.9258	-0.001433	5179.9428	-0.001103
30	102	5179.9163	-0.001616	5179.9877	-0.000237	5180.0193	0.000373
	120	5180.0086	0.000167	5180.0132	0.000256	5179.9666	-0.000646
	138	5180.0669	0.001292	5179.9562	-0.000846	5179.9082	-0.001772
20	102	5180.0991	0.001912	5179.9687	-0.000604	5180.0435	0.000839
	120	5180.0445	0.000859	5180.0609	0.001175	5179.9155	-0.001631
	138	5179.9590	-0.000791	5180.0076	0.000146	5180.0461	0.000891
10	102	5179.9636	-0.000703	5180.0631	0.001218	5180.0138	0.000266
	120	5180.0141	0.000271	5179.9803	-0.000381	5180.0664	0.001282
	138	5179.9943	-0.000109	5180.0778	0.001501	5180.0722	0.001395
0	102	5180.0965	0.001863	5179.9865	-0.000261	5179.9363	-0.001230
	120	5180.0948	0.001831	5180.0293	0.000566	5179.9531	-0.000905
	138	5179.9702	-0.000576	5180.0909	0.001755	5179.9694	-0.000591
-10	102	5179.9693	-0.000593	5179.9664	-0.000649	5179.9516	-0.000935
	120	5179.9503	-0.000959	5179.9739	-0.000503	5180.0042	0.000081
	138	5180.0388	0.000750	5179.9153	-0.001635	5179.9876	-0.000240
-20	102	5179.9668	-0.000641	5179.9878	-0.000235	5180.0056	0.000109
	120	5180.0731	0.001411	5179.9383	-0.001191	5179.9569	-0.000832
	138	5179.9456	-0.001050	5179.9687	-0.000605	5179.9496	-0.000972
-30	102	5179.9344	-0.001267	5179.9666	-0.000645	5179.9415	-0.001129
	120	5179.9942	-0.000111	5179.9458	-0.001046	5180.0067	0.000130
	138	5180.0256	0.000495	5179.9326	-0.001302	5179.9217	-0.001511

Limit:

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

13. Automatically Discontinue Transmission

13.1. Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

13.2. Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.