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
TEFI181137	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 C §15.247

KDB558074

KDB662911

FCC Rule	. Description of Test	Result
15.203	. Antenna Requirement	Pass
15.207	. AC Power Line Conducted Emission	Pass
15.209 15.205	. Radiated Spurious Emission	Pass
15.247(d)	. Conducted Spurious Emission	Pass
15.247(a)(2)	. 6dB Bandwidth	Pass
15.247(b)	. Maximum Peak and Average Output Power	Pass
15.247(e)	. Power Spectral Density	Pass
2.1091	. Radio Frequency Exposure	Pass

This EUT has been also tested and compiled with the requirement of FCC Part 15, Subpart B, recorded in a separate test report.

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

802.11b, 802.11g, 802.11n HT20(2412MHz~2462MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
***01**	**2412**	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	***11**	**2462**
***06**	**2437**	---	---

802.11n HT40(2422MHz~2452MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
---	---	07	2442
---	---	08	2447
***03**	**2422**	***09**	**2452**
04	2427	---	---
05	2432	---	---
***06**	**2437**	---	---

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

Radiation Emissions (30MHz ~ 1GHz)	
Test Mode	Operating Description
1	802.11g (6Mbps)
Radiation Emissions (1GHz ~ 25GHz)	
Test Mode	Operating Description
1	802.11b (1Mbps)
2	802.11g (6Mbps)
3	802.11n HT20 (6.5Mbps)
4	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 25,000MHz	
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 15.247 (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.

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; 802.11 n: 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.

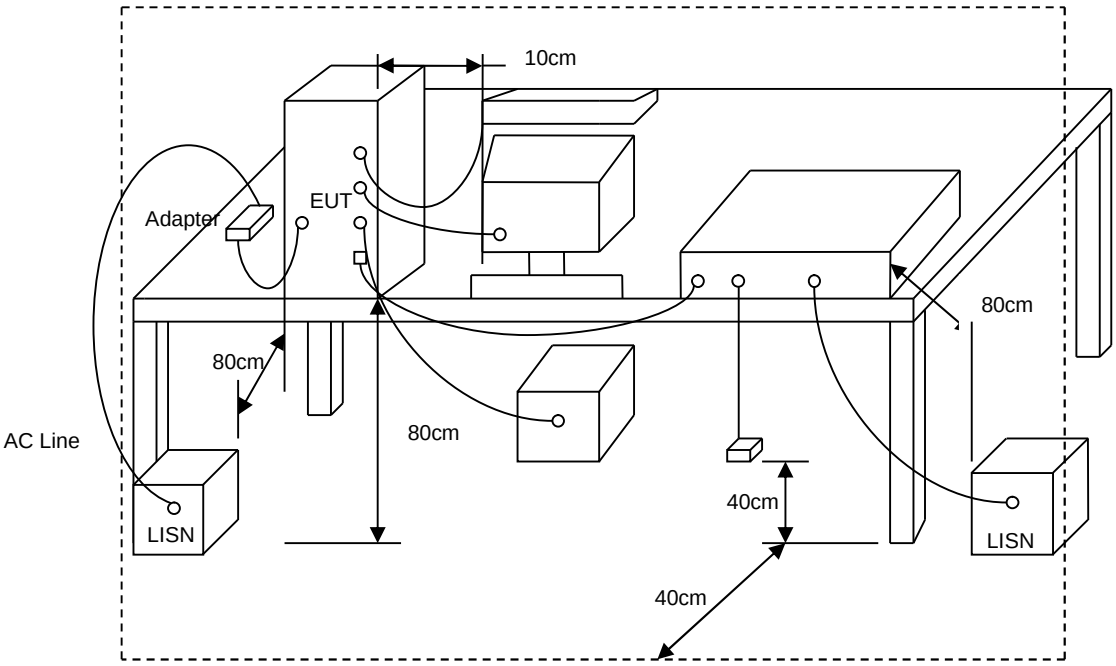
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

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

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

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.

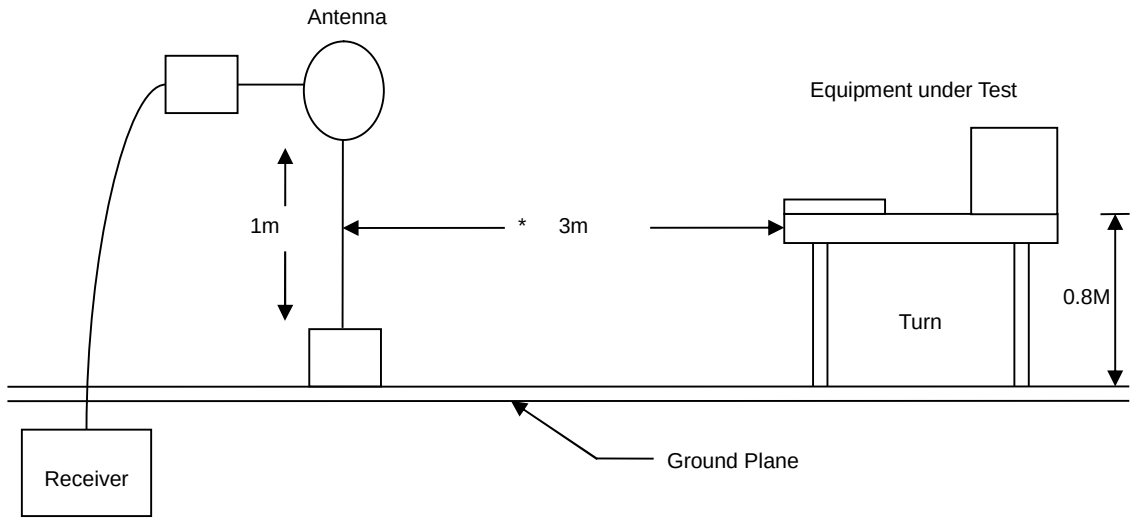
g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

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.

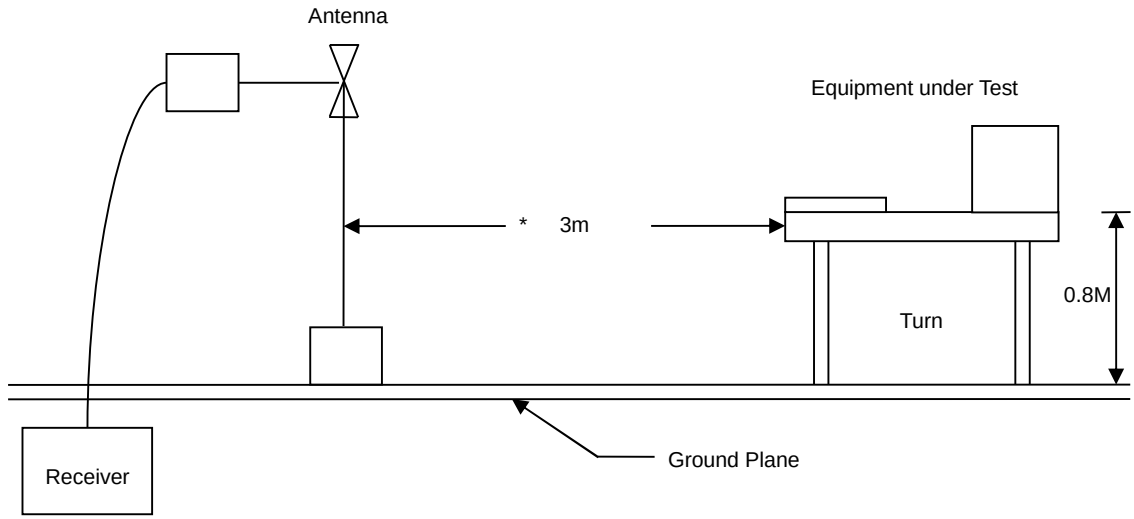
i. “Cone of radiation” has been considered to be 3dB bandwidth of the measurement antenna.

6.3 Typical Test Setup

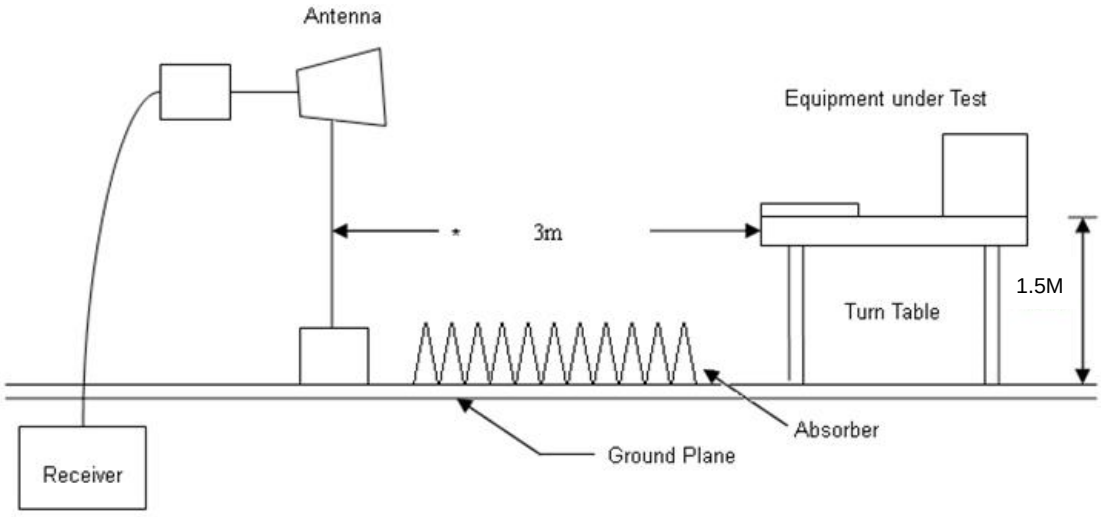
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup

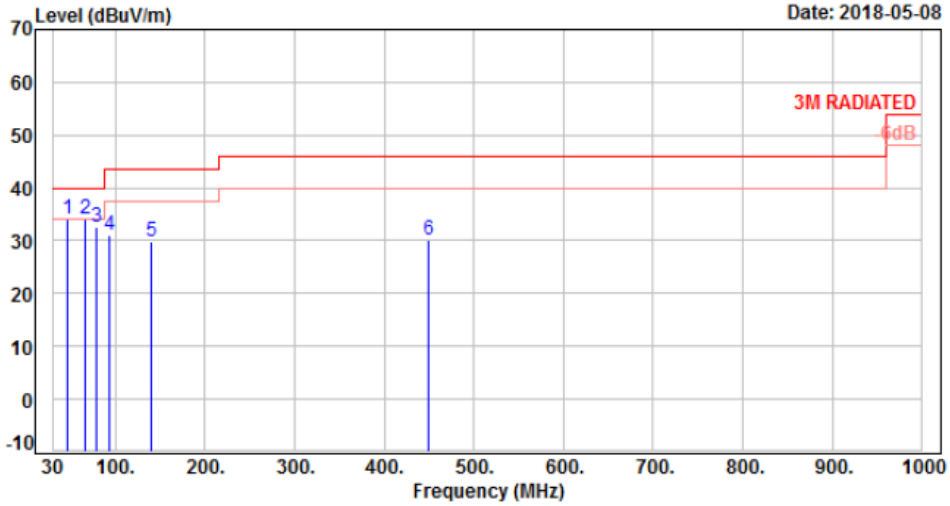


6.4 Test Result and Data (9KHz ~ 30MHz)

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

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

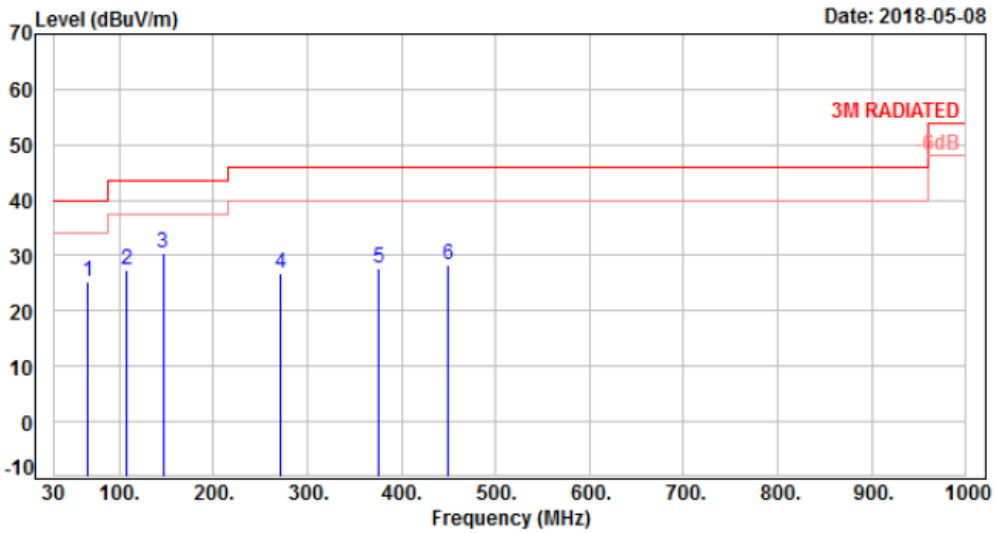
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1	Temperature	:	21 °C
Test Date	:	May 08, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	47.46	-10.69	44.66	33.97	40.00	-6.03	Peak	400	0	P
2	65.89	-12.21	46.34	34.13	40.00	-5.87	Peak	400	0	P
3	78.50	-14.85	47.36	32.51	40.00	-7.49	Peak	400	0	P
4	94.02	-16.39	47.56	31.17	43.50	-12.33	Peak	400	0	P
5	140.58	-11.33	41.22	29.89	43.50	-13.61	Peak	400	0	P
6	450.01	-5.82	36.11	30.29	46.00	-15.71	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	Temperature	:	21 °C
Test Date	:	May 08, 2018	Humidity	:	65 %

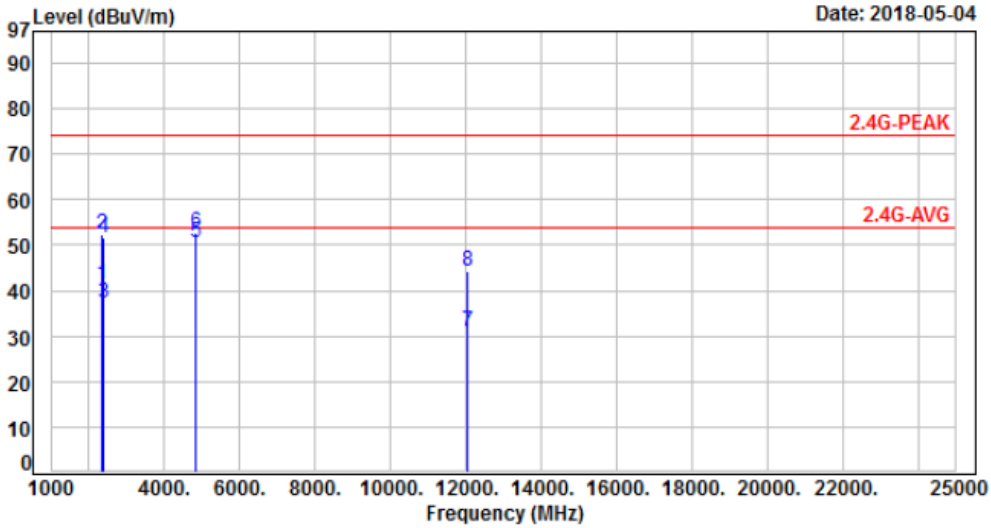


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	65.89	-12.21	37.35	25.14	40.00	-14.86	Peak	100	0	P
2	108.57	-14.45	42.00	27.55	43.50	-15.95	Peak	100	0	P
3	146.40	-11.17	41.56	30.39	43.50	-13.11	Peak	100	0	P
4	270.56	-10.75	37.54	26.79	46.00	-19.21	Peak	100	0	P
5	375.32	-7.83	35.45	27.62	46.00	-18.38	Peak	100	0	P
6	450.01	-5.82	34.08	28.26	46.00	-17.74	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 ~ 25GHz)

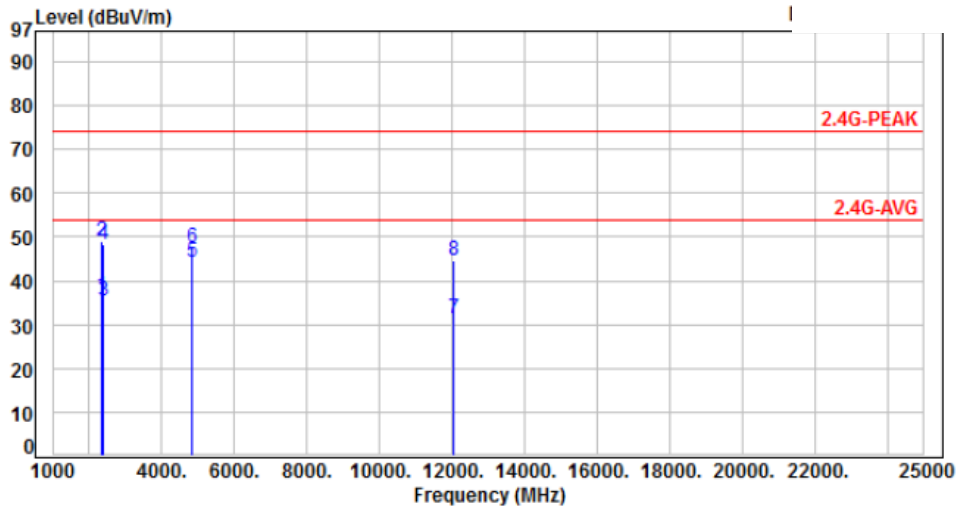
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH01	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2360.00	-16.05	57.20	41.15	54.00	-12.85	Average	118	309	P
2	2360.00	-16.05	68.50	52.45	74.00	-21.55	Peak	118	309	P
3	2390.00	-15.96	53.31	37.35	54.00	-16.65	Average	118	309	P
4	2390.00	-15.96	67.61	51.65	74.00	-22.35	Peak	118	309	P
5	4824.00	-8.80	59.49	50.69	54.00	-3.31	Average	100	224	P
6	4824.00	-8.80	61.69	52.89	74.00	-21.11	Peak	100	224	P
7	12060.00	1.21	29.89	31.10	54.00	-22.90	Average	105	330	P
8	12060.00	1.21	43.11	44.32	74.00	-29.68	Peak	105	330	P

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

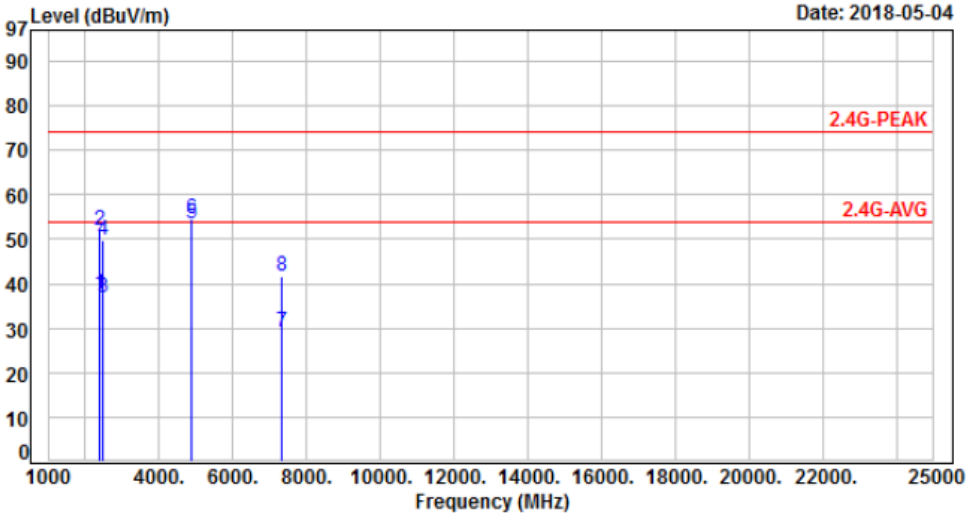
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH01	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2360.00	-16.05	52.40	36.35	54.00	-17.65	Average	298	61	P
2	2360.00	-16.05	65.10	49.05	74.00	-24.95	Peak	298	61	P
3	2390.00	-15.96	51.51	35.55	54.00	-18.45	Average	298	61	P
4	2390.00	-15.96	64.21	48.25	74.00	-25.75	Peak	298	61	P
5	4824.00	-8.80	53.11	44.31	54.00	-9.69	Average	100	220	P
6	4824.00	-8.80	56.19	47.39	74.00	-26.61	Peak	100	220	P
7	12060.00	1.21	30.31	31.52	54.00	-22.48	Average	100	88	P
8	12060.00	1.21	43.53	44.74	74.00	-29.26	Peak	100	88	P

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

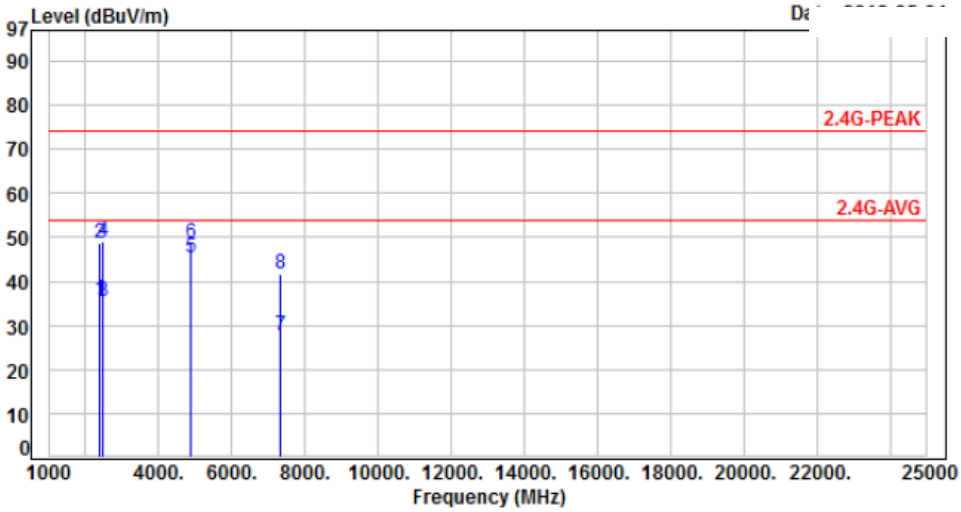
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH06	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	53.51	37.55	54.00	-16.45	Average	100	295	P
2	2390.00	-15.96	67.81	51.85	74.00	-22.15	Peak	100	295	P
3	2483.50	-15.65	52.50	36.85	54.00	-17.15	Average	100	295	P
4	2483.50	-15.65	65.60	49.95	74.00	-24.05	Peak	100	295	P
5	4874.00	-8.65	62.13	53.48	54.00	-0.52	Average	134	340	P
6	4874.00	-8.65	63.42	54.77	74.00	-19.23	Peak	134	340	P
7	7311.00	-4.69	33.84	29.15	54.00	-24.85	Average	107	79	P
8	7311.00	-4.69	46.29	41.60	74.00	-32.40	Peak	107	79	P

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

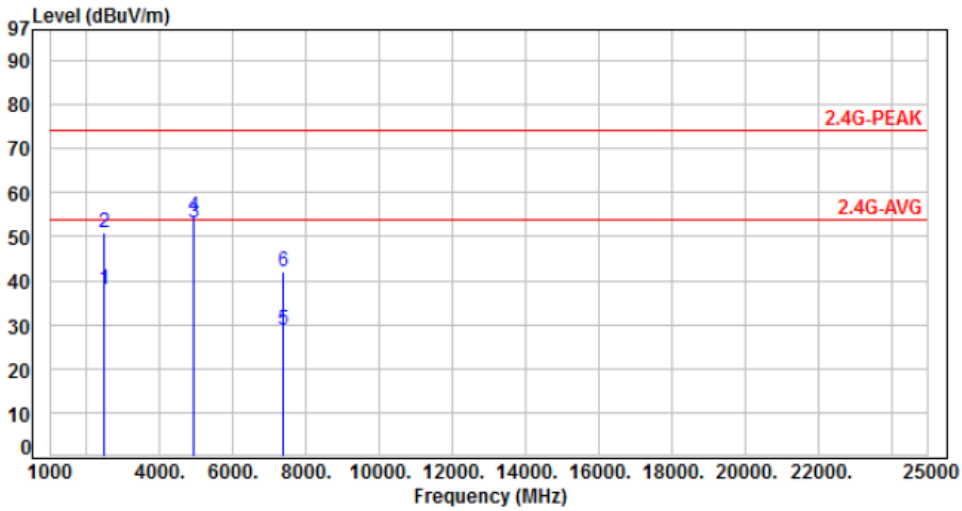
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH06	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	51.61	35.65	54.00	-18.35	Average	100	100	P
2	2390.00	-15.96	64.51	48.55	74.00	-25.45	Peak	100	100	P
3	2483.50	-15.65	51.10	35.45	54.00	-18.55	Average	100	100	P
4	2483.50	-15.65	64.60	48.95	74.00	-25.05	Peak	100	100	P
5	4874.00	-8.65	54.20	45.55	54.00	-8.45	Average	103	216	P
6	4874.00	-8.65	57.20	48.55	74.00	-25.45	Peak	103	216	P
7	7311.00	-4.69	32.29	27.60	54.00	-26.40	Average	100	126	P
8	7311.00	-4.69	46.21	41.52	74.00	-32.48	Peak	100	126	P

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

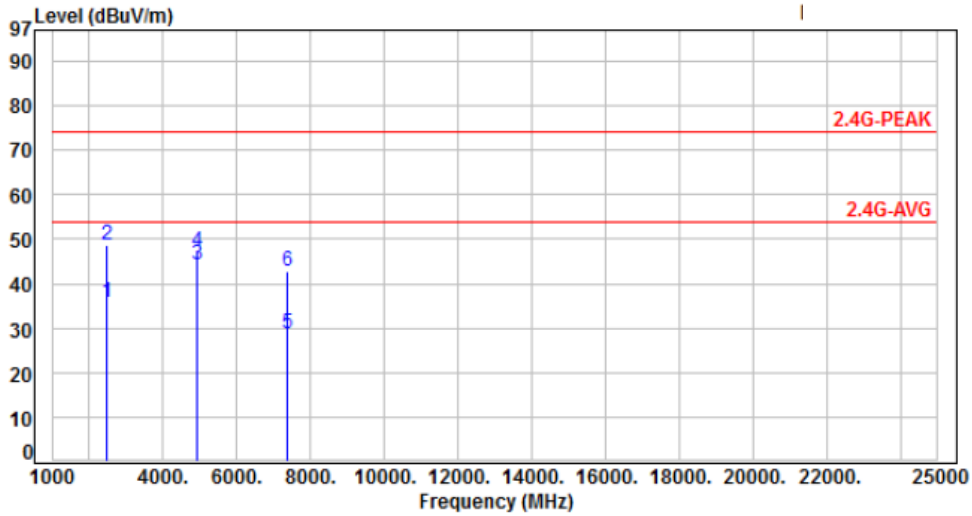
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH11	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	53.50	37.85	54.00	-16.15	Average	100	333	P
2	2483.50	-15.65	66.40	50.75	74.00	-23.25	Peak	100	333	P
3	4924.00	-8.49	61.50	53.01	54.00	-0.99	Average	130	341	P
4	4924.00	-8.49	63.09	54.60	74.00	-19.40	Peak	130	341	P
5	7386.00	-4.48	33.10	28.62	54.00	-25.38	Average	100	76	P
6	7386.00	-4.48	46.60	42.12	74.00	-31.88	Peak	100	76	P

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

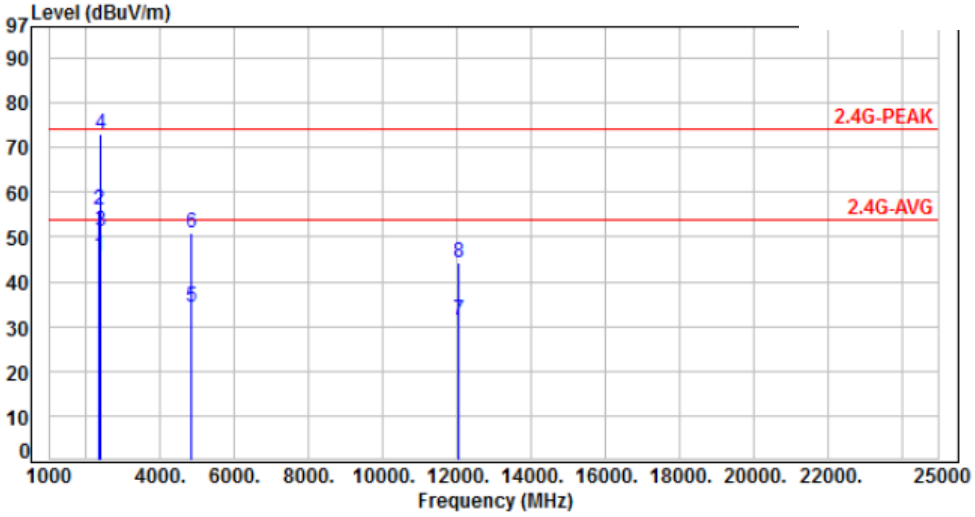
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH11	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	51.50	35.85	54.00	-18.15	Average	104	10	P
2	2483.50	-15.65	64.20	48.55	74.00	-25.45	Peak	104	10	P
3	4924.00	-8.49	52.62	44.13	54.00	-9.87	Average	100	215	P
4	4924.00	-8.49	55.70	47.21	74.00	-26.79	Peak	100	215	P
5	7386.00	-4.48	33.40	28.92	54.00	-25.08	Average	100	122	P
6	7386.00	-4.48	47.22	42.74	74.00	-31.26	Peak	100	122	P

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

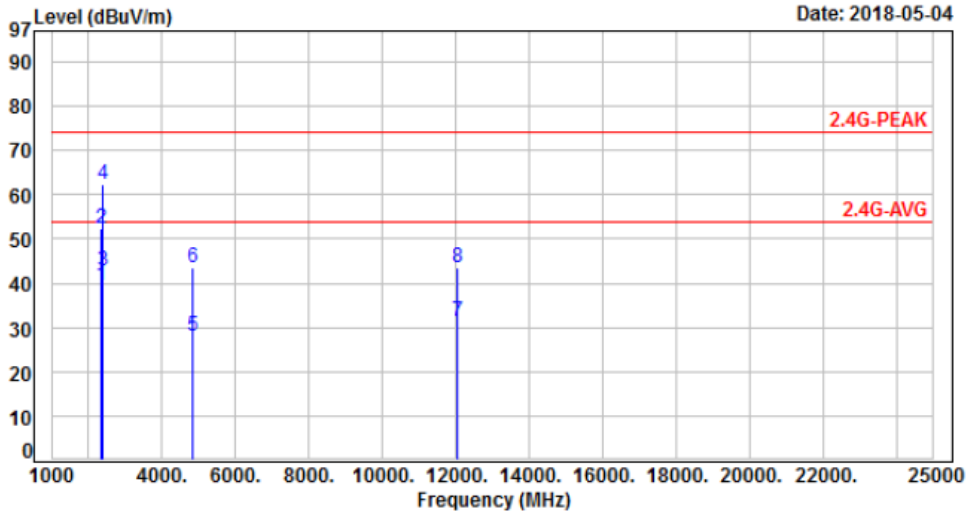
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH01	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2360.00	-16.05	61.72	45.67	54.00	-8.33	Average	138	330	P
2	2360.00	-16.05	72.20	56.15	74.00	-17.85	Peak	138	330	P
3	2390.00	-15.96	67.11	51.15	54.00	-2.85	Average	138	330	P
4	2390.00	-15.96	89.01	73.05	74.00	-0.95	Peak	138	330	P
5	4824.00	-8.80	43.19	34.39	54.00	-19.61	Average	100	62	P
6	4824.00	-8.80	59.59	50.79	74.00	-23.21	Peak	100	62	P
7	12060.00	1.21	30.23	31.44	54.00	-22.56	Average	107	88	P
8	12060.00	1.21	43.11	44.32	74.00	-29.68	Peak	107	88	P

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

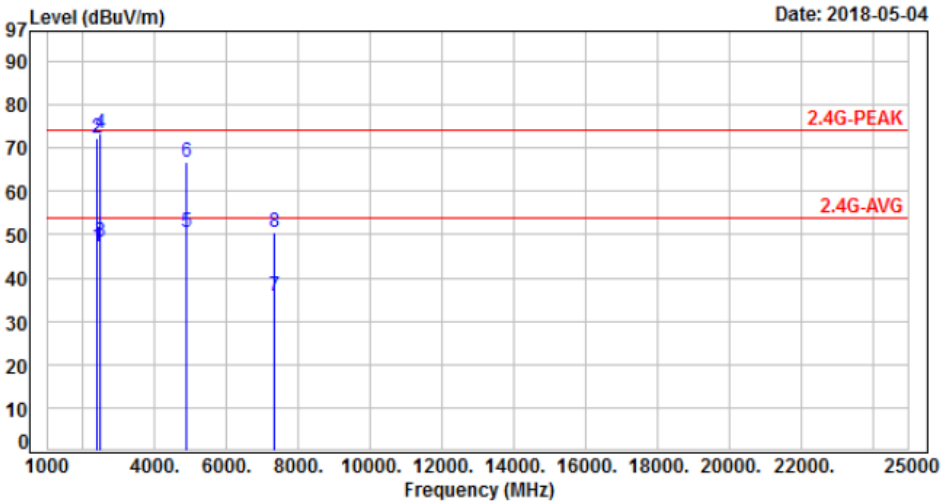
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH01	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2360.00	-16.05	55.60	39.55	54.00	-14.45	Average	297	207	P
2	2360.00	-16.05	68.60	52.55	74.00	-21.45	Peak	297	207	P
3	2390.00	-15.96	58.61	42.65	54.00	-11.35	Average	297	207	P
4	2390.00	-15.96	78.21	62.25	74.00	-11.75	Peak	297	207	P
5	4824.00	-8.80	36.99	28.19	54.00	-25.81	Average	100	61	P
6	4824.00	-8.80	52.49	43.69	74.00	-30.31	Peak	100	61	P
7	12060.00	1.21	30.21	31.42	54.00	-22.58	Average	107	122	P
8	12060.00	1.21	42.17	43.38	74.00	-30.62	Peak	107	122	P

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

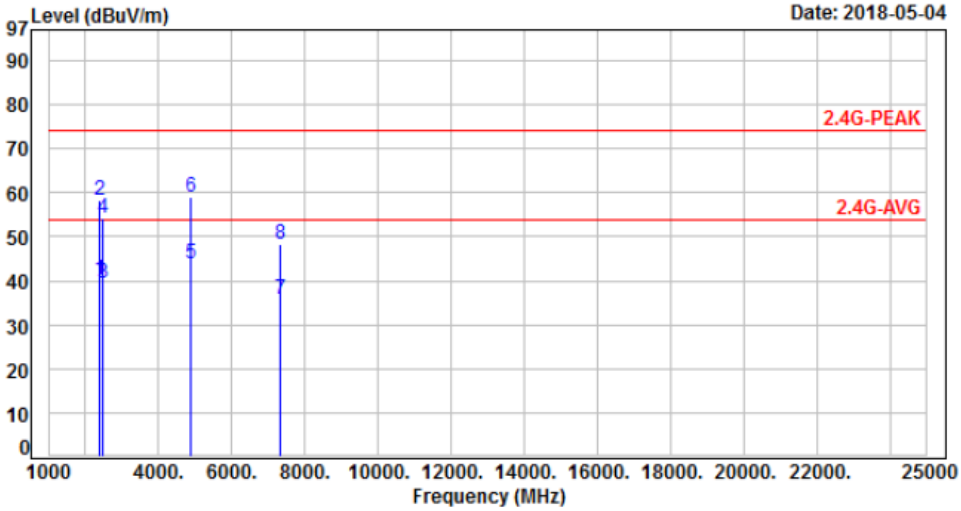
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH06	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	63.21	47.25	54.00	-6.75	Average	100	330	P
2	2390.00	-15.96	88.41	72.45	74.00	-1.55	Peak	100	330	P
3	2483.50	-15.65	64.10	48.45	54.00	-5.55	Average	100	330	P
4	2483.50	-15.65	89.10	73.45	74.00	-0.55	Peak	100	330	P
5	4874.00	-8.65	59.20	50.55	54.00	-3.45	Average	100	330	P
6	4874.00	-8.65	75.50	66.85	74.00	-7.15	Peak	100	330	P
7	7311.00	-4.69	40.49	35.80	54.00	-18.20	Average	160	164	P
8	7311.00	-4.69	55.19	50.50	74.00	-23.50	Peak	160	164	P

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

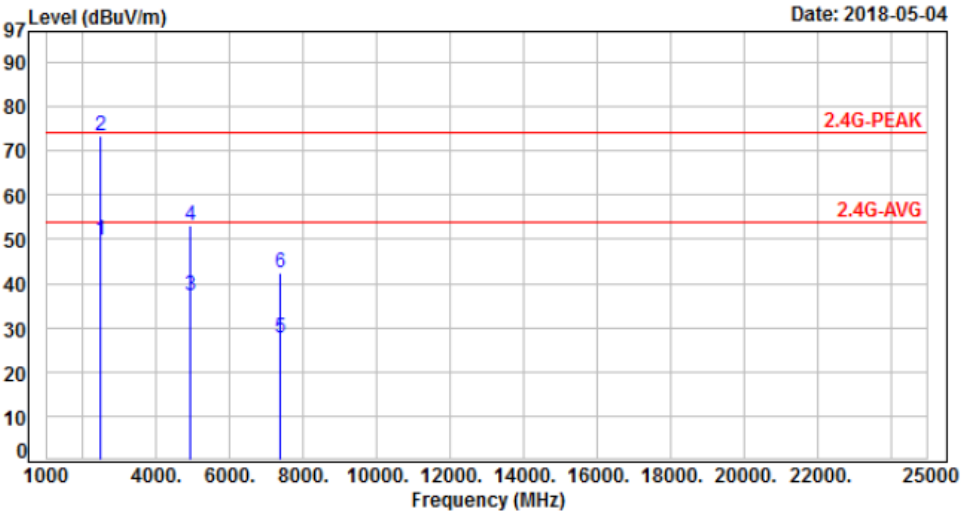
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH06	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	56.11	40.15	54.00	-13.85	Average	329	105	P
2	2390.00	-15.96	74.21	58.25	74.00	-15.75	Peak	329	105	P
3	2483.50	-15.65	55.22	39.57	54.00	-14.43	Average	329	105	P
4	2483.50	-15.65	69.70	54.05	74.00	-19.95	Peak	329	105	P
5	4874.00	-8.65	52.50	43.85	54.00	-10.15	Average	142	283	P
6	4874.00	-8.65	67.50	58.85	74.00	-15.15	Peak	142	283	P
7	7311.00	-4.69	40.31	35.62	54.00	-18.38	Average	260	149	P
8	7311.00	-4.69	53.09	48.40	74.00	-25.60	Peak	260	149	P

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

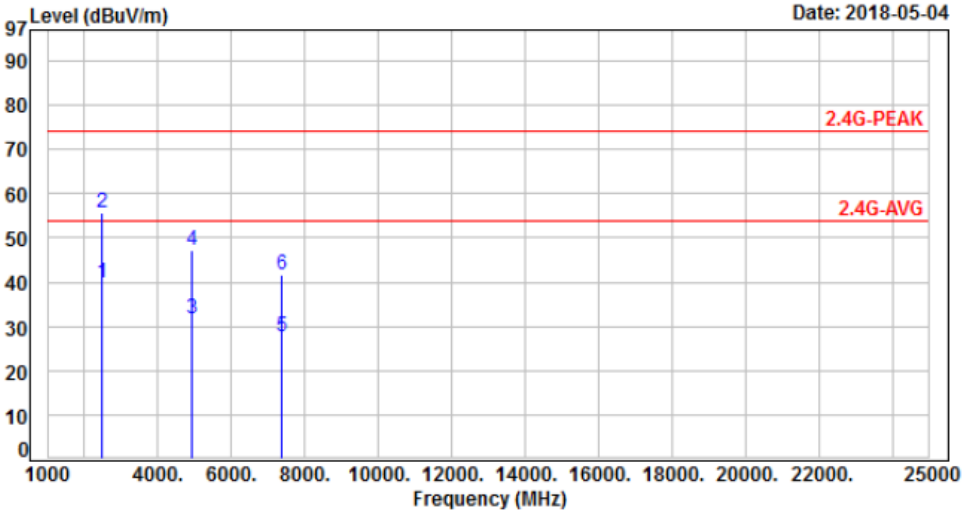
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH11	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	65.60	49.95	54.00	-4.05	Average	144	336	P
2	2483.50	-15.65	88.90	73.25	74.00	-0.75	Peak	144	336	P
3	4924.00	-8.49	45.59	37.10	54.00	-16.90	Average	100	340	P
4	4924.00	-8.49	61.49	53.00	74.00	-21.00	Peak	100	340	P
5	7386.00	-4.48	32.22	27.74	54.00	-26.26	Average	105	71	P
6	7386.00	-4.48	46.80	42.32	74.00	-31.68	Peak	105	71	P

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

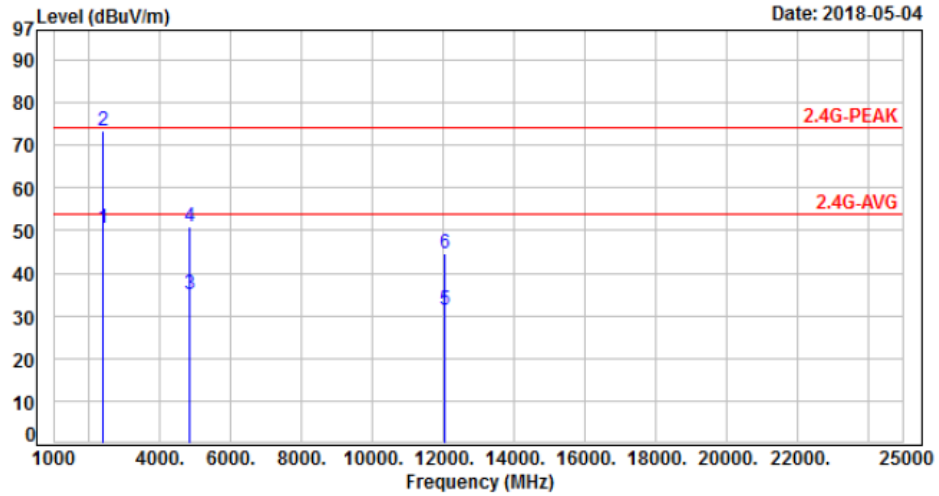
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH11	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	55.50	39.85	54.00	-14.15	Average	100	25	P
2	2483.50	-15.65	71.50	55.85	74.00	-18.15	Peak	100	25	P
3	4924.00	-8.49	40.34	31.85	54.00	-22.15	Average	100	66	P
4	4924.00	-8.49	55.79	47.30	74.00	-26.70	Peak	100	66	P
5	7386.00	-4.48	32.30	27.82	54.00	-26.18	Average	109	125	P
6	7386.00	-4.48	46.33	41.85	74.00	-32.15	Peak	109	125	P

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

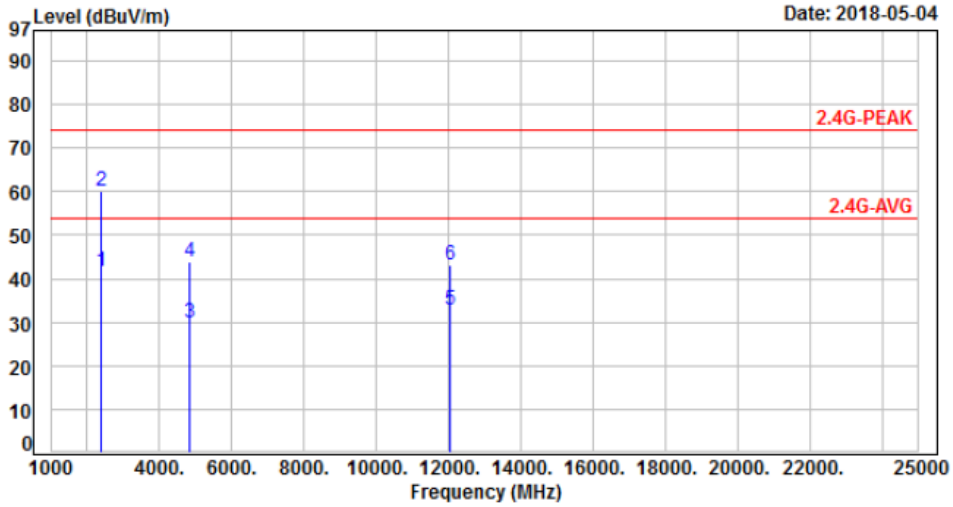
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH01	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	66.31	50.35	54.00	-3.65	Average	100	346	P
2	2390.00	-15.96	89.41	73.45	74.00	-0.55	Peak	100	346	P
3	4824.00	-8.80	43.79	34.99	54.00	-19.01	Average	115	75	P
4	4824.00	-8.80	59.59	50.79	74.00	-23.21	Peak	115	75	P
5	12060.00	1.21	30.13	31.34	54.00	-22.66	Average	100	79	P
6	12060.00	1.21	43.51	44.72	74.00	-29.28	Peak	100	79	P

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

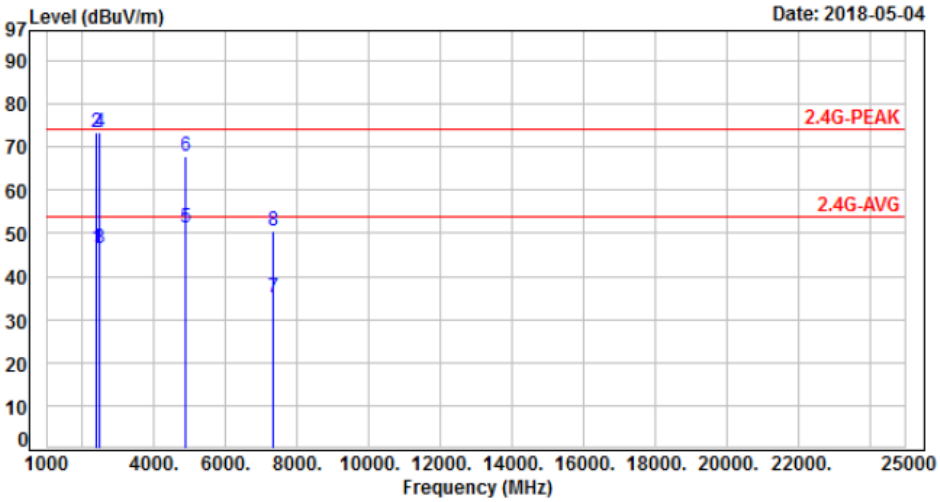
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH01	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	57.51	41.55	54.00	-12.45	Average	360	65	P
2	2390.00	-15.96	76.21	60.25	74.00	-13.75	Peak	360	65	P
3	4824.00	-8.80	38.59	29.79	54.00	-24.21	Average	107	284	P
4	4824.00	-8.80	52.79	43.99	74.00	-30.01	Peak	107	284	P
5	12060.00	1.21	31.56	32.77	54.00	-21.23	Average	100	136	P
6	12060.00	1.21	42.12	43.33	74.00	-30.67	Peak	100	136	P

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

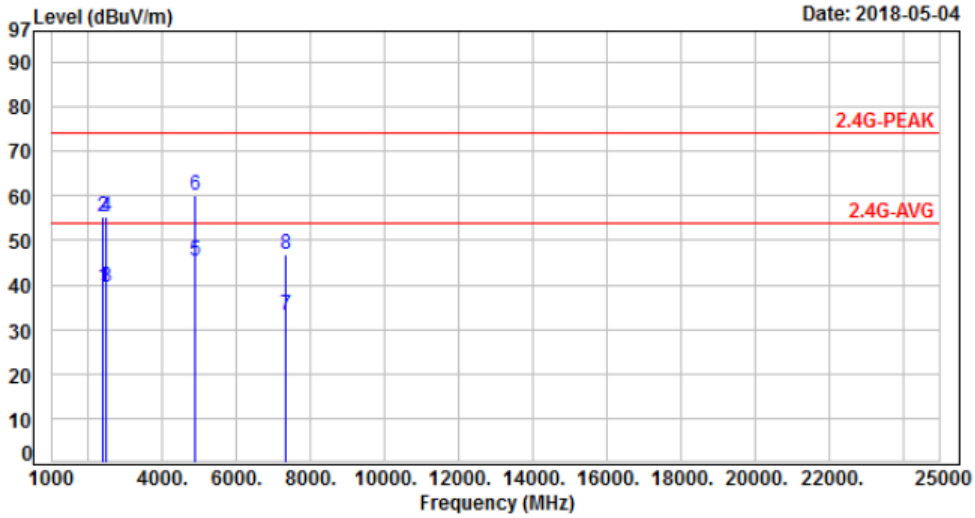
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH06	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	62.31	46.35	54.00	-7.65	Average	130	340	P
2	2390.00	-15.96	89.42	73.46	74.00	-0.54	Peak	130	340	P
3	2483.50	-15.65	62.10	46.45	54.00	-7.55	Average	130	340	P
4	2483.50	-15.65	89.07	73.42	74.00	-0.58	Peak	130	340	P
5	4874.00	-8.65	59.80	51.15	54.00	-2.85	Average	100	350	P
6	4874.00	-8.65	76.50	67.85	74.00	-6.15	Peak	100	350	P
7	7311.00	-4.69	39.59	34.90	54.00	-19.10	Average	105	141	P
8	7311.00	-4.69	55.29	50.60	74.00	-23.40	Peak	105	141	P

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

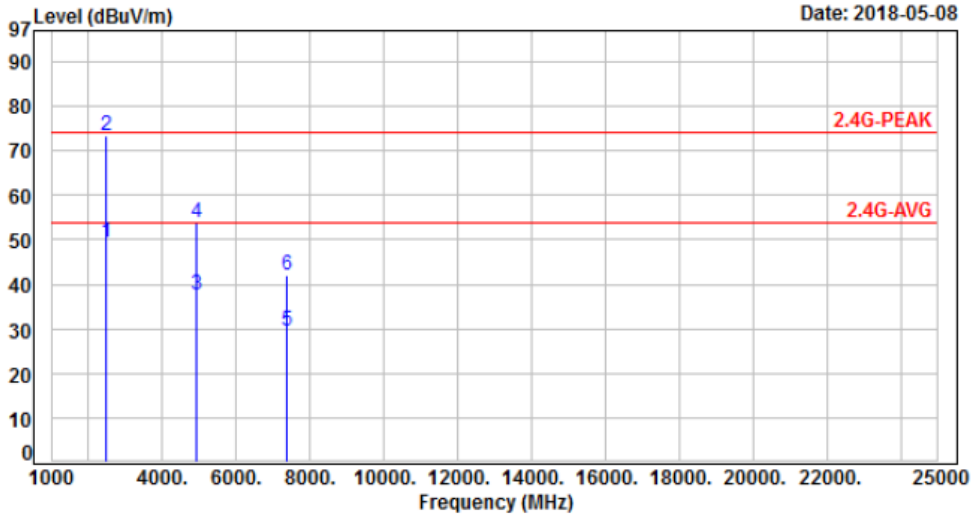
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH06	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	55.51	39.55	54.00	-14.45	Average	384	152	P
2	2390.00	-15.96	71.31	55.35	74.00	-18.65	Peak	384	152	P
3	2483.50	-15.65	55.20	39.55	54.00	-14.45	Average	384	152	P
4	2483.50	-15.65	70.90	55.25	74.00	-18.75	Peak	384	152	P
5	4874.00	-8.65	54.20	45.55	54.00	-8.45	Average	115	282	P
6	4874.00	-8.65	68.60	59.95	74.00	-14.05	Peak	115	282	P
7	7311.00	-4.69	37.79	33.10	54.00	-20.90	Average	100	113	P
8	7311.00	-4.69	51.59	46.90	74.00	-27.10	Peak	100	113	P

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

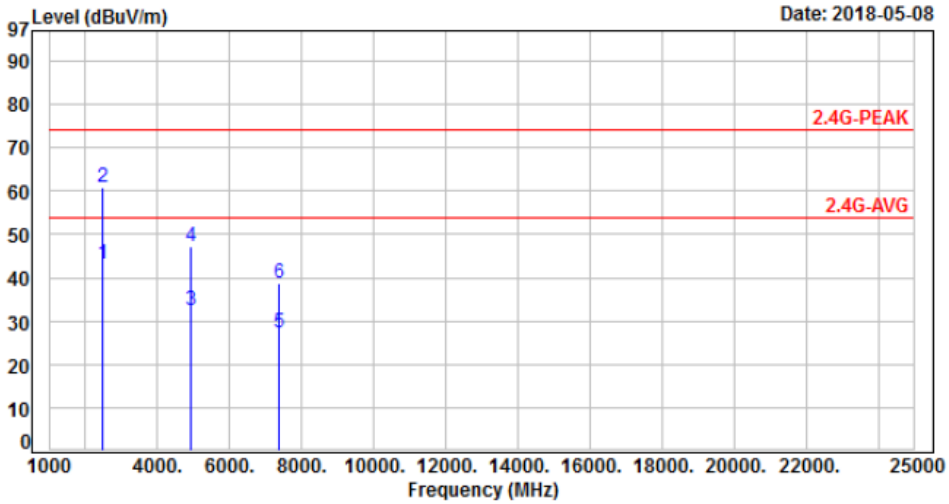
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH11	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	65.10	49.45	54.00	-4.55	Average	128	320	P
2	2483.50	-15.65	89.11	73.46	74.00	-0.54	Peak	128	320	P
3	4924.00	-8.49	45.99	37.50	54.00	-16.50	Average	103	340	P
4	4924.00	-8.49	62.19	53.70	74.00	-20.30	Peak	103	340	P
5	7386.00	-4.48	34.10	29.62	54.00	-24.38	Average	100	55	P
6	7386.00	-4.48	46.50	42.02	74.00	-31.98	Peak	100	55	P

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

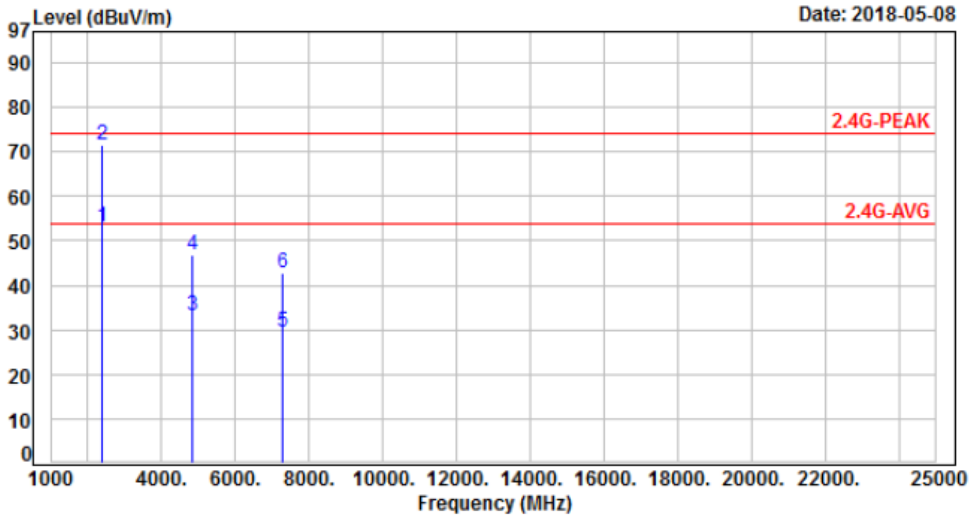
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH11	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	58.90	43.25	54.00	-10.75	Average	130	75	P
2	2483.50	-15.65	76.50	60.85	74.00	-13.15	Peak	130	75	P
3	4924.00	-8.49	40.79	32.30	54.00	-21.70	Average	100	168	P
4	4924.00	-8.49	55.59	47.10	74.00	-26.90	Peak	100	168	P
5	7386.00	-4.48	31.77	27.29	54.00	-26.71	Average	100	193	P
6	7386.00	-4.48	43.25	38.77	74.00	-35.23	Peak	100	193	P

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

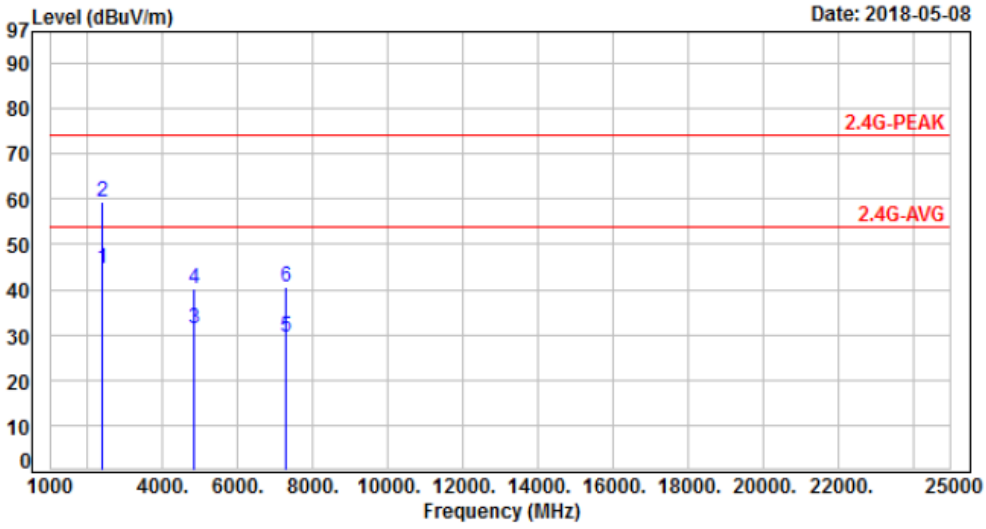
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 4, CH03	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	69.11	53.15	54.00	-0.85	Average	150	360	P
2	2390.00	-15.96	87.51	71.55	74.00	-2.45	Peak	150	360	P
3	4844.00	-8.74	42.10	33.36	54.00	-20.64	Average	100	135	P
4	4844.00	-8.74	55.50	46.76	74.00	-27.24	Peak	100	135	P
5	7266.00	-4.83	34.51	29.68	54.00	-24.32	Average	104	81	P
6	7266.00	-4.83	47.51	42.68	74.00	-31.32	Peak	104	81	P

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

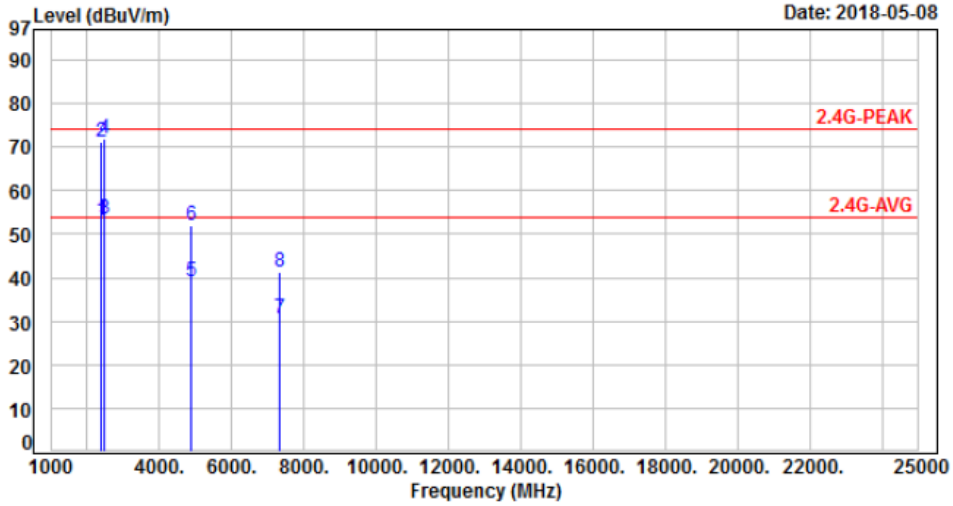
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 4, CH03	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	60.51	44.55	54.00	-9.45	Average	100	103	P
2	2390.00	-15.96	75.51	59.55	74.00	-14.45	Peak	100	103	P
3	4844.00	-8.74	40.11	31.37	54.00	-22.63	Average	100	200	P
4	4844.00	-8.74	48.90	40.16	74.00	-33.84	Peak	100	200	P
5	7266.00	-4.83	34.51	29.68	54.00	-24.32	Average	100	103	P
6	7266.00	-4.83	45.49	40.66	74.00	-33.34	Peak	100	103	P

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

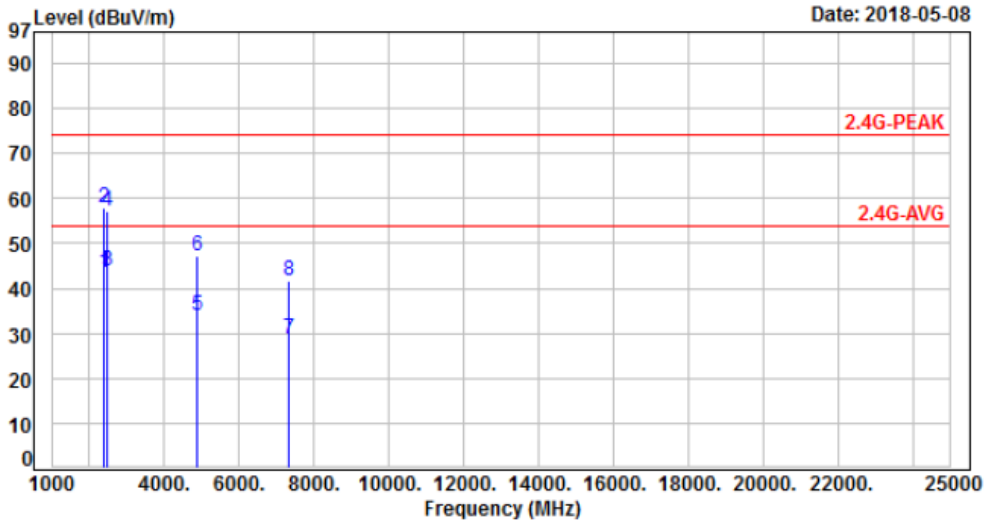
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 4, CH06	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	69.11	53.15	54.00	-0.85	Average	110	344	P
2	2390.00	-15.96	87.31	71.35	74.00	-2.65	Peak	110	344	P
3	2483.50	-15.65	69.20	53.55	54.00	-0.45	Average	110	344	P
4	2483.50	-15.65	87.50	71.85	74.00	-2.15	Peak	110	344	P
5	4874.00	-8.65	47.90	39.25	54.00	-14.75	Average	100	85	P
6	4874.00	-8.65	60.60	51.95	74.00	-22.05	Peak	100	85	P
7	7311.00	-4.69	35.21	30.52	54.00	-23.48	Average	100	108	P
8	7311.00	-4.69	45.89	41.20	74.00	-32.80	Peak	100	108	P

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

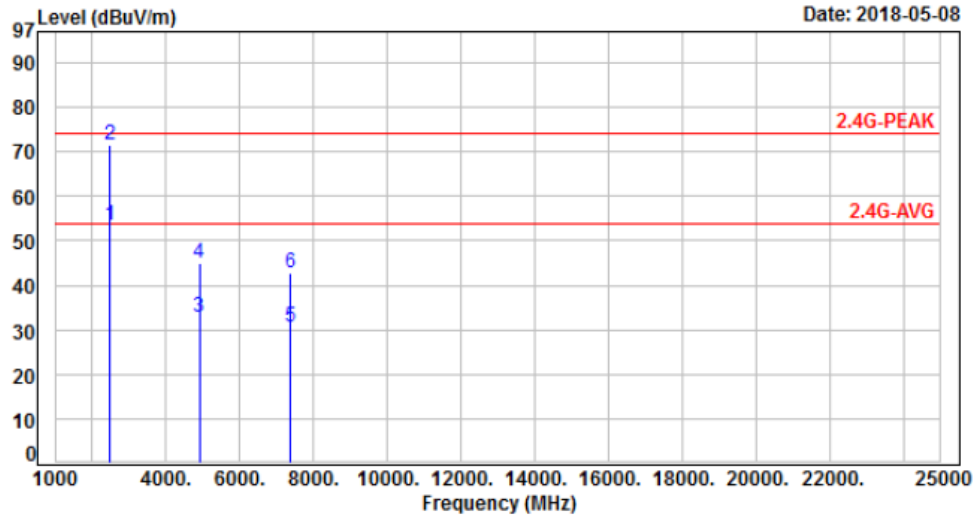
Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 4, CH06	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	59.61	43.65	54.00	-10.35	Average	210	71	P
2	2390.00	-15.96	73.71	57.75	74.00	-16.25	Peak	210	71	P
3	2483.50	-15.65	59.50	43.85	54.00	-10.15	Average	210	71	P
4	2483.50	-15.65	72.66	57.01	74.00	-16.99	Peak	210	71	P
5	4874.00	-8.65	42.50	33.85	54.00	-20.15	Average	100	55	P
6	4874.00	-8.65	55.80	47.15	74.00	-26.85	Peak	100	55	P
7	7311.00	-4.69	33.59	28.90	54.00	-25.10	Average	107	122	P
8	7311.00	-4.69	46.52	41.83	74.00	-32.17	Peak	107	122	P

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

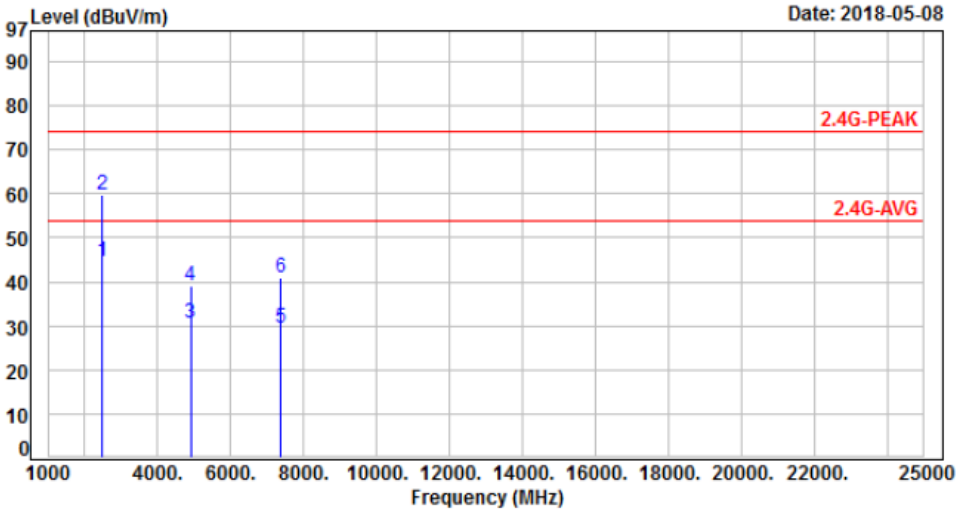
Power	:	DC 12V	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 4, CH09	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	69.14	53.49	54.00	-0.51	Average	152	340	P
2	2483.50	-15.65	87.30	71.65	74.00	-2.35	Peak	152	340	P
3	4904.00	-8.56	41.50	32.94	54.00	-21.06	Average	100	343	P
4	4904.00	-8.56	53.50	44.94	74.00	-29.06	Peak	100	343	P
5	7356.00	-4.57	35.22	30.65	54.00	-23.35	Average	100	76	P
6	7356.00	-4.57	47.33	42.76	74.00	-31.24	Peak	100	76	P

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

Power	:	DC 12V	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 4, CH09	Temperature	:	21 °C
Test Date	:	May 04, 2018	Humidity	:	65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	60.20	44.55	54.00	-9.45	Average	200	81	P
2	2483.50	-15.65	75.30	59.65	74.00	-14.35	Peak	200	81	P
3	4904.00	-8.56	39.22	30.66	54.00	-23.34	Average	100	85	P
4	4904.00	-8.56	47.60	39.04	74.00	-34.96	Peak	100	85	P
5	7356.00	-4.57	34.22	29.65	54.00	-24.35	Average	109	153	P
6	7356.00	-4.57	45.33	40.76	74.00	-33.24	Peak	109	153	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 – 5.250
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. Test of Conducted Spurious Emission

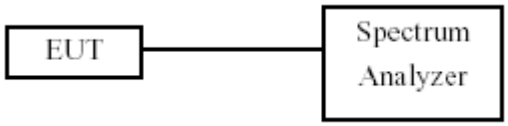
7.1 Test Limit

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

7.2 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.

7.3 Test Setup Layout



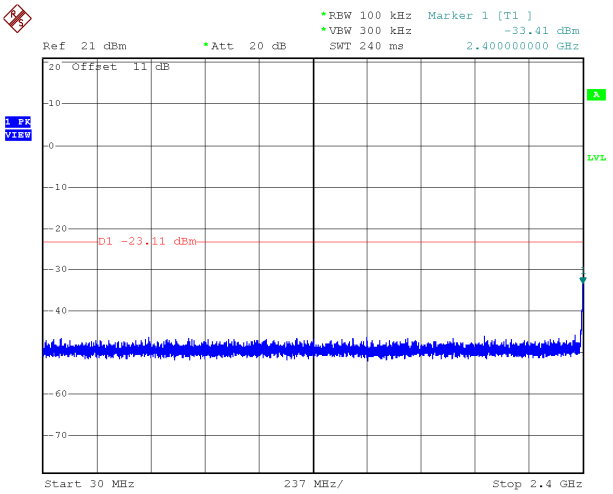
7.4 Test Result and Data

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

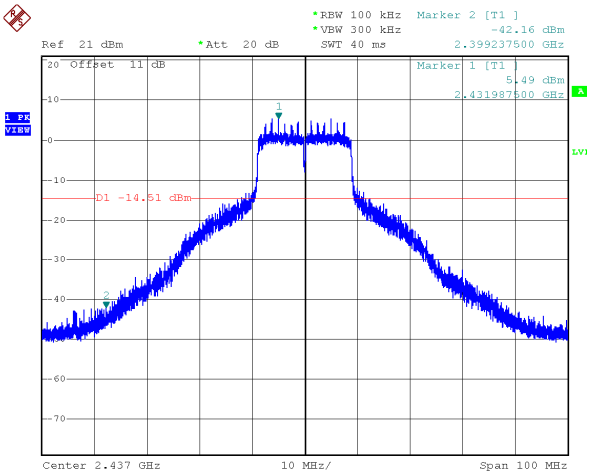
Note: Test plots refers to the following pages.

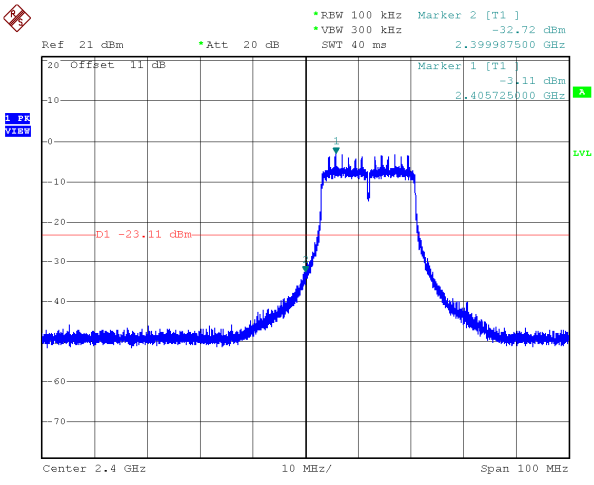
ANT A:

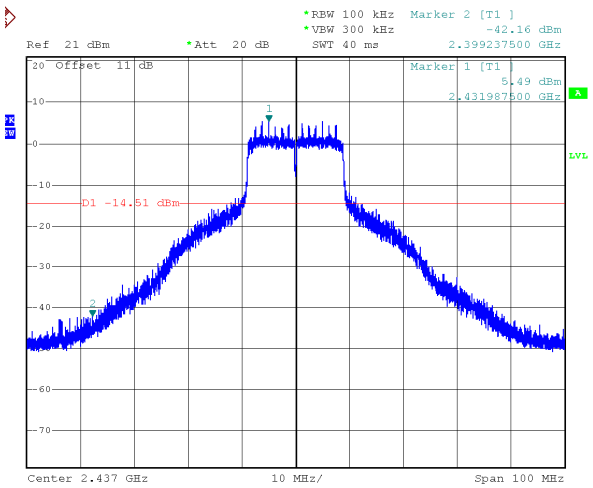
Modulation Type: 802.11n HT20, CH 01

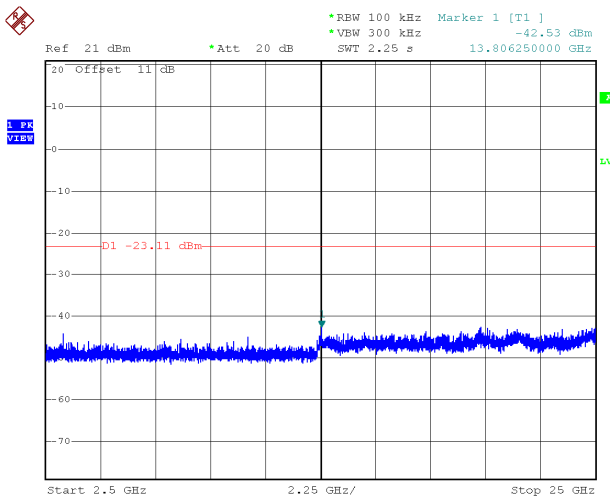


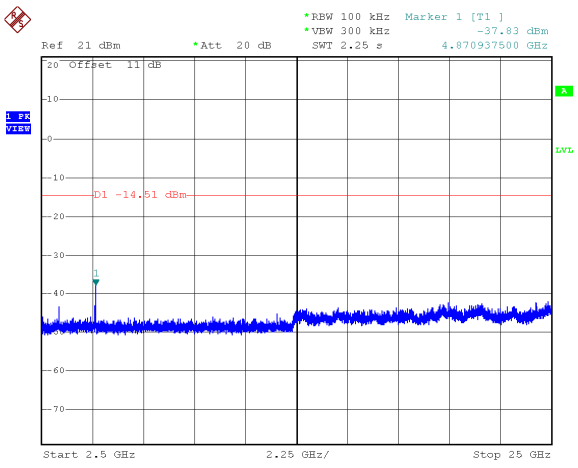
Modulation Type: 802.11n HT20, CH 06



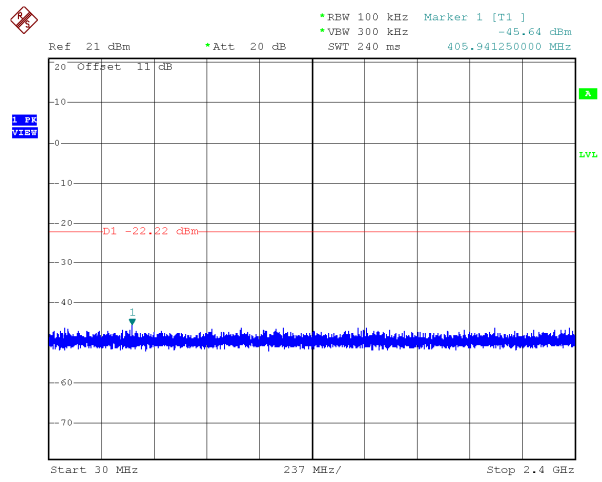




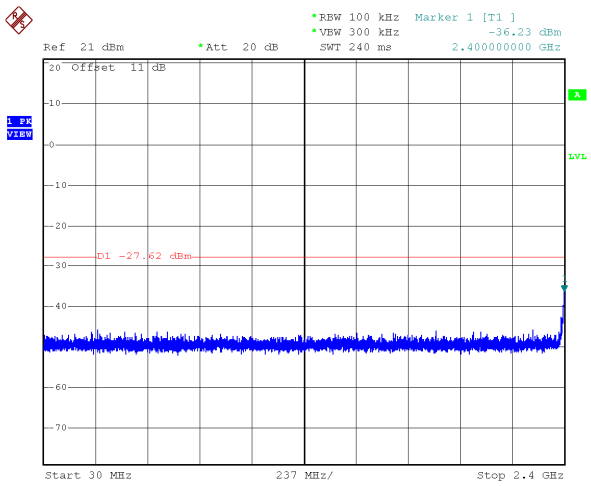


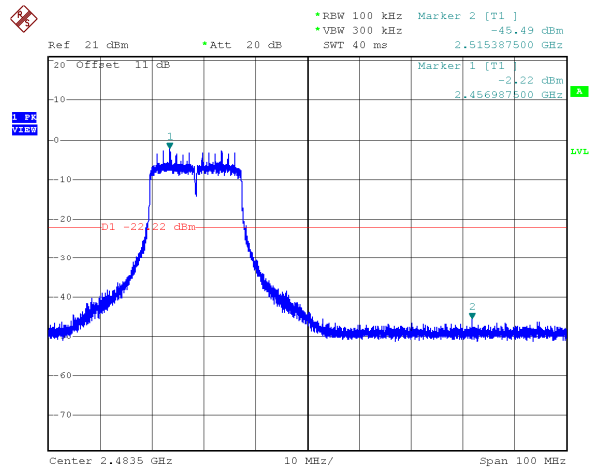


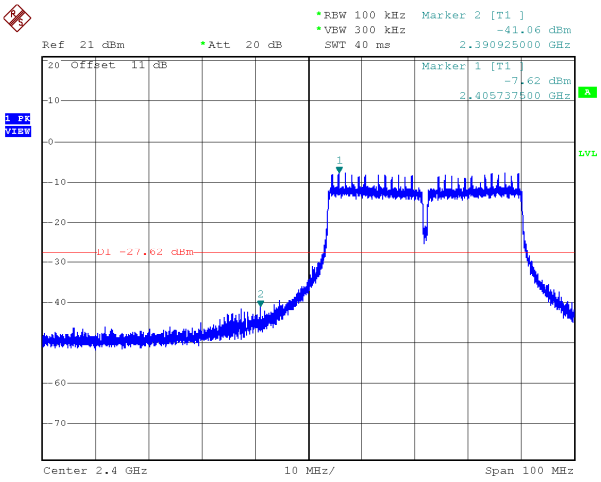
Modulation Type: 802.11n HT20, CH 11

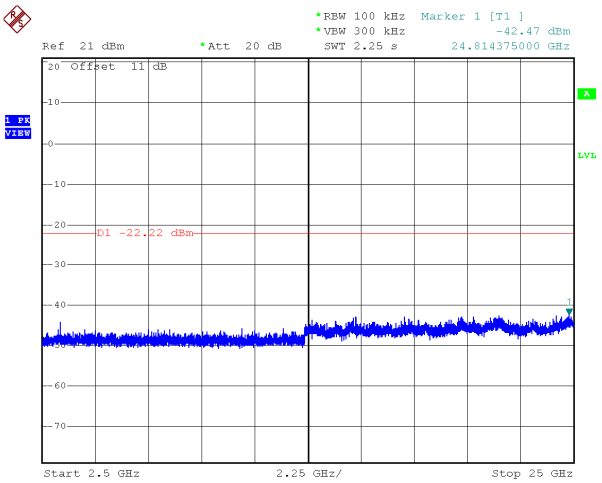


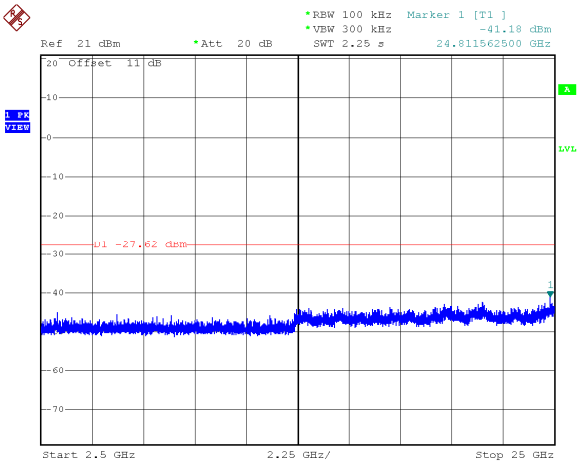
Modulation Type: 802.11n HT40, CH 03



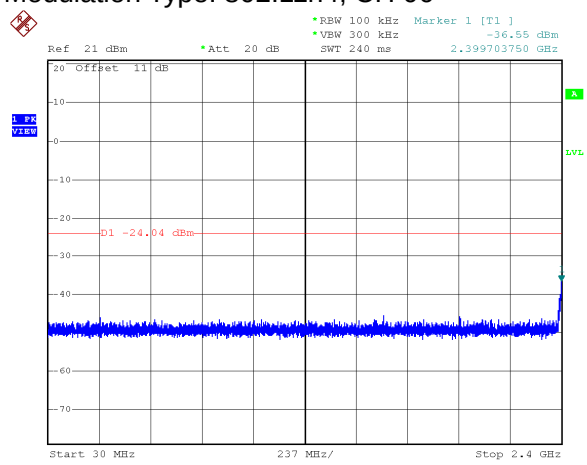




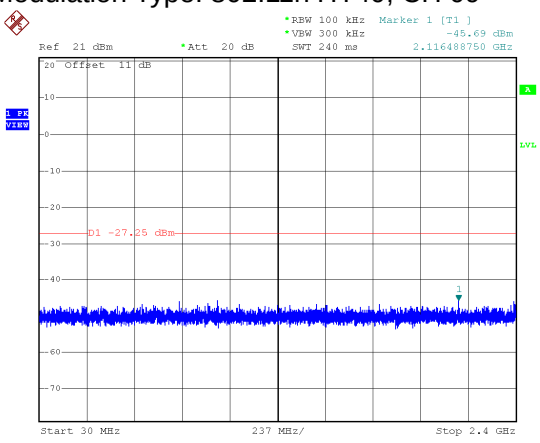


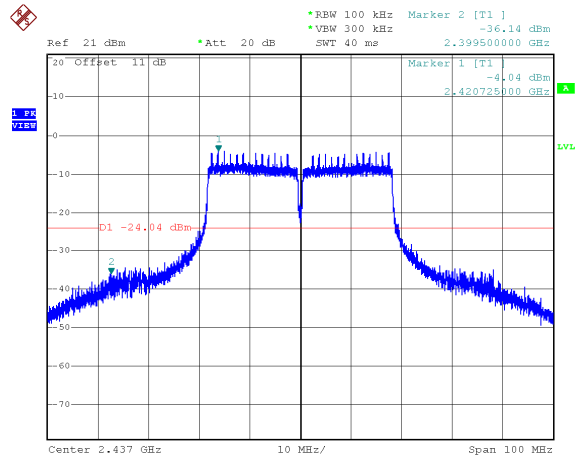


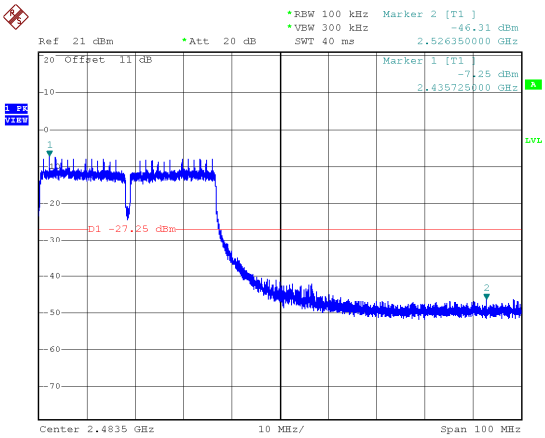
Modulation Type: 802.11n4, CH 06

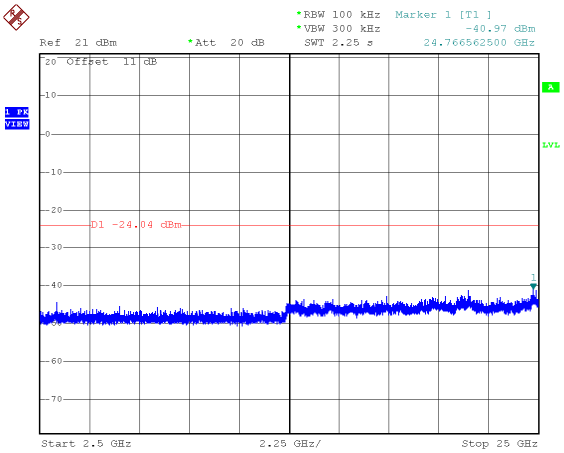


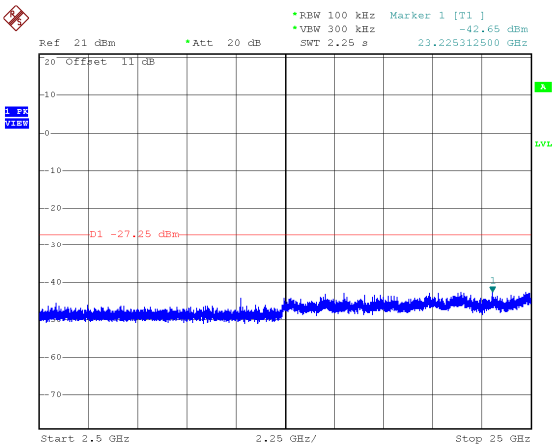
Modulation Type: 802.11n HT40, CH 09





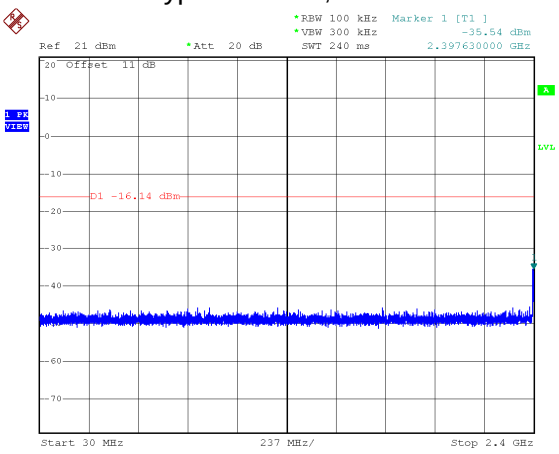




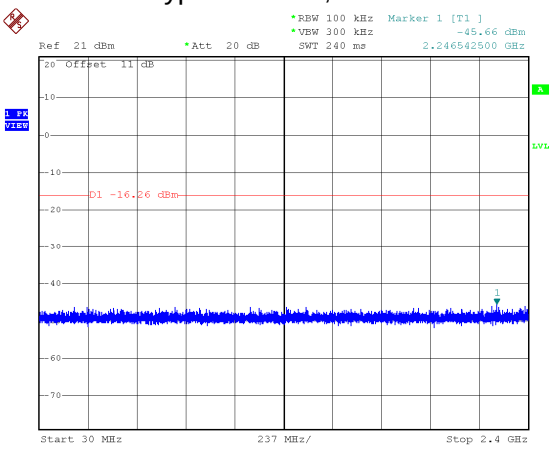


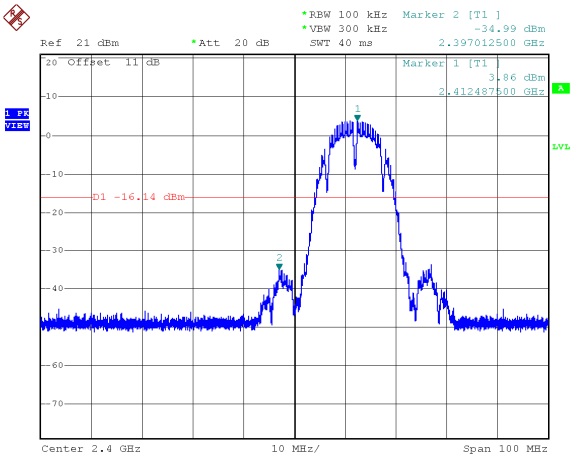
ANT B:

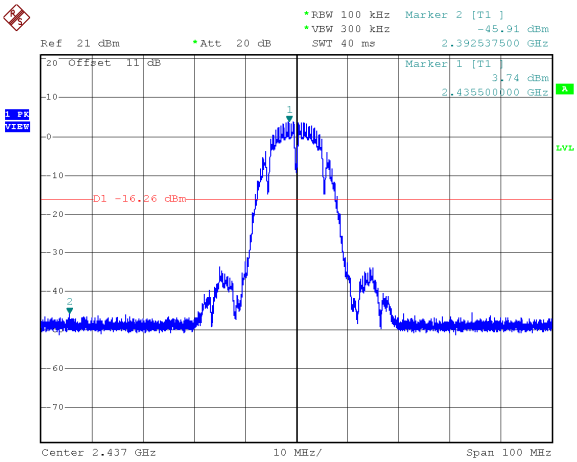
Modulation Type: 802.11b, CH 01

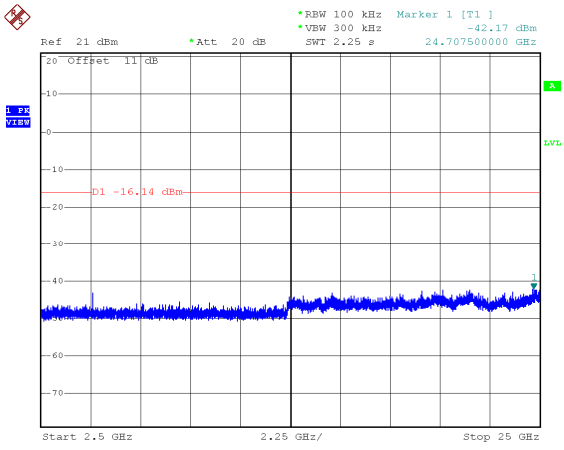


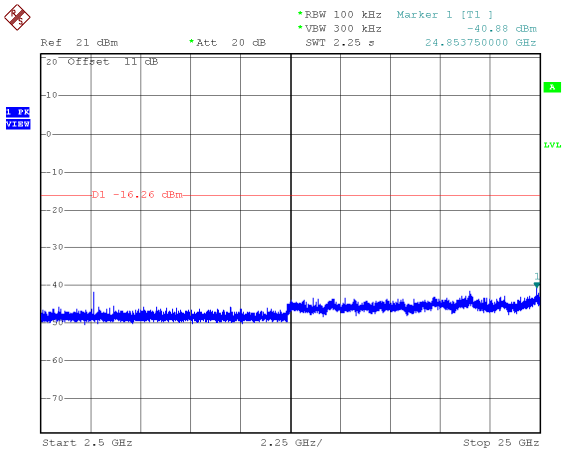
Modulation Type: 802.11b, CH 06



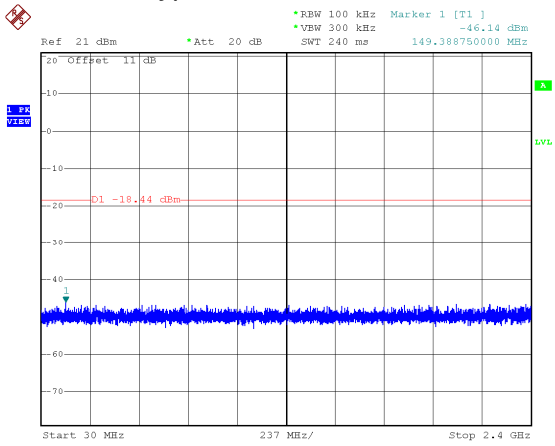




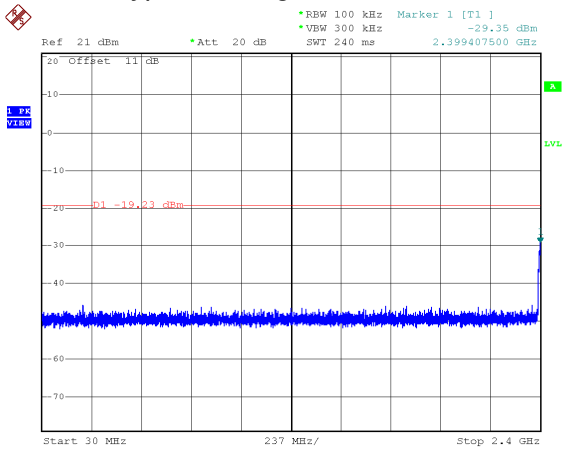


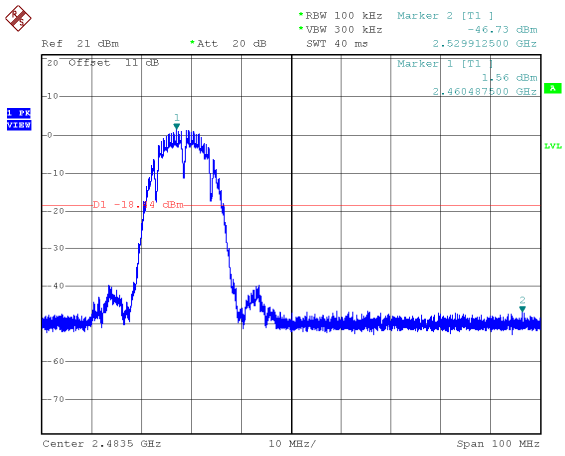


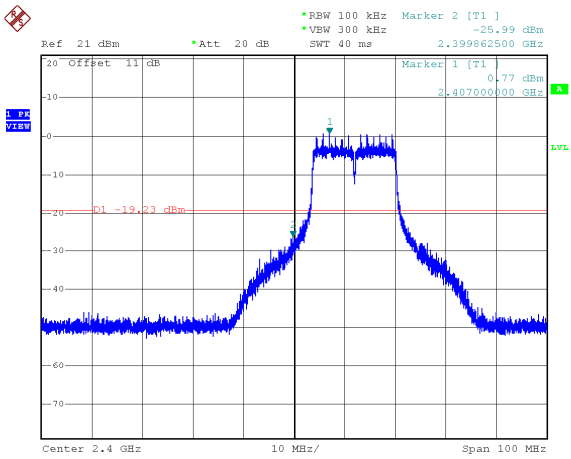
Modulation Type: 802.11b, CH 11

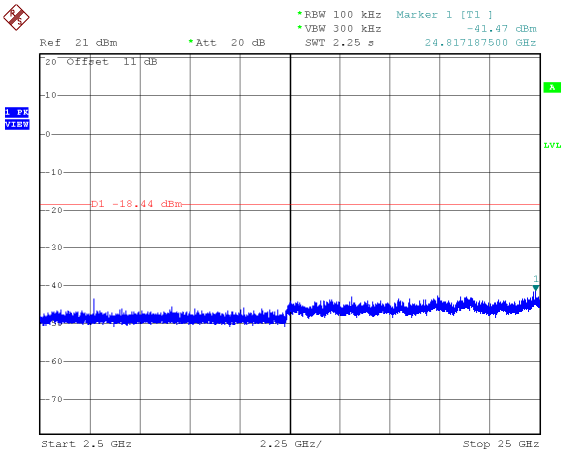


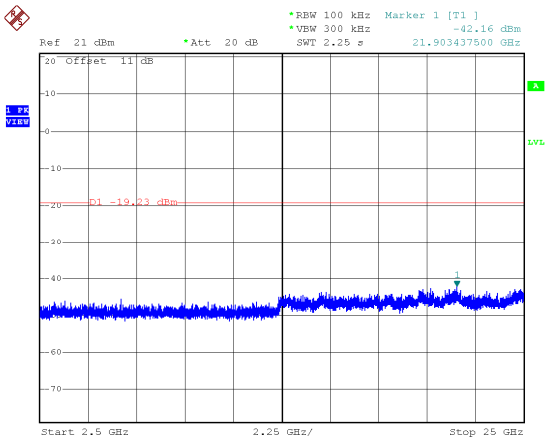
Modulation Type: 802.11g, CH 01



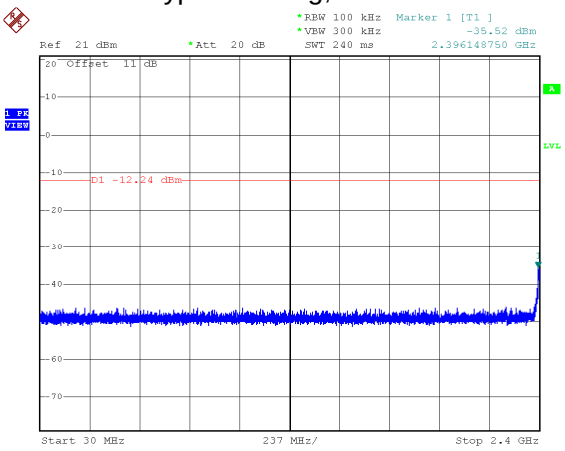




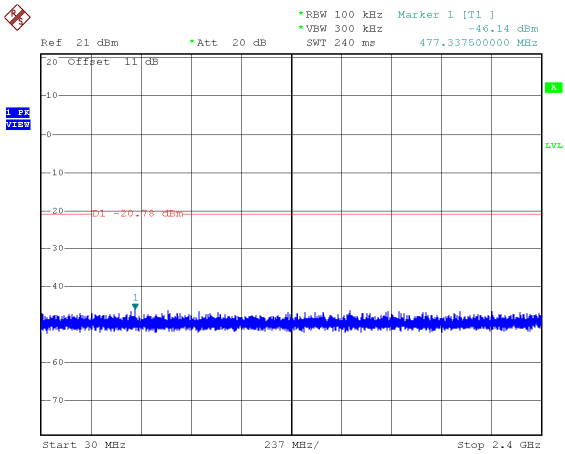


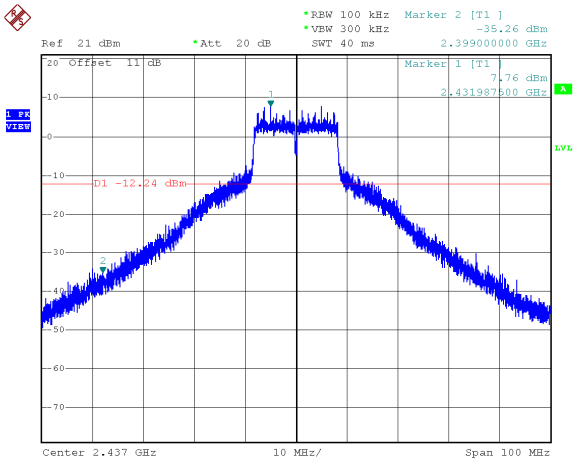


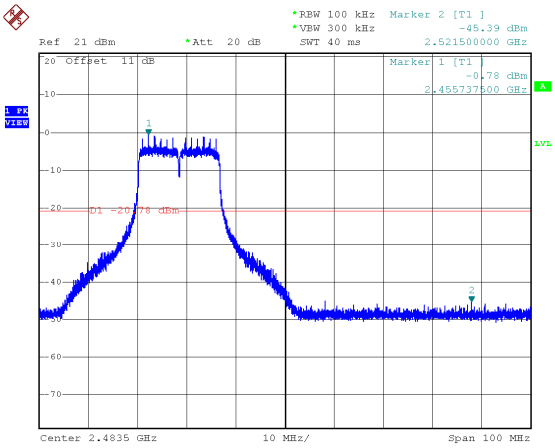
Modulation Type: 802.11g, CH 06

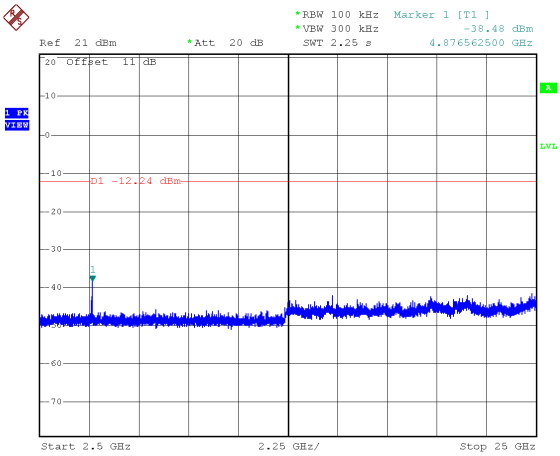


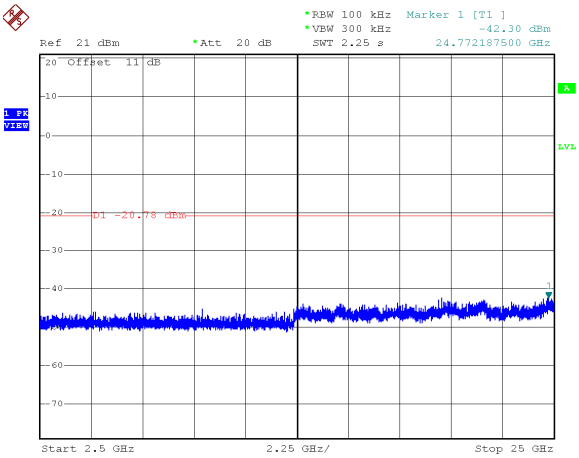
Modulation Type: 802.11g, CH 11



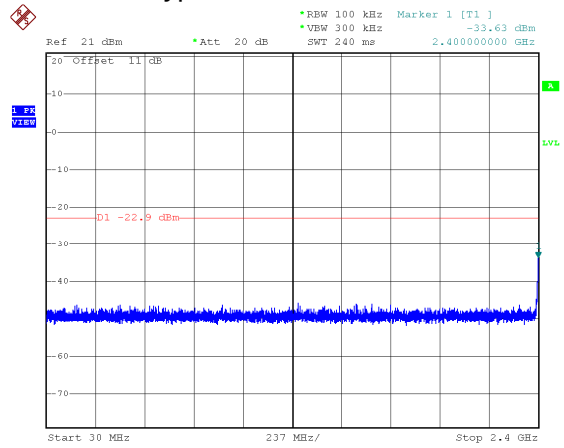




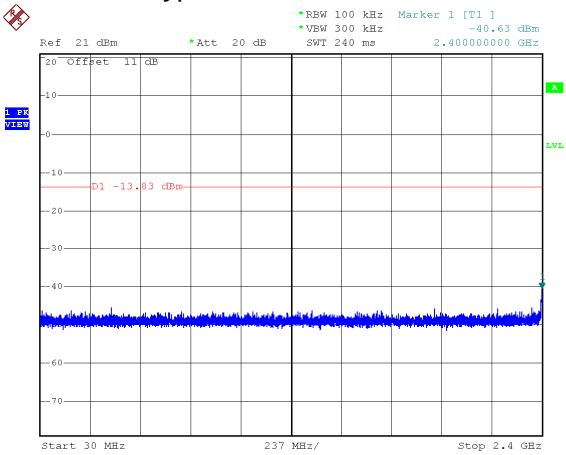


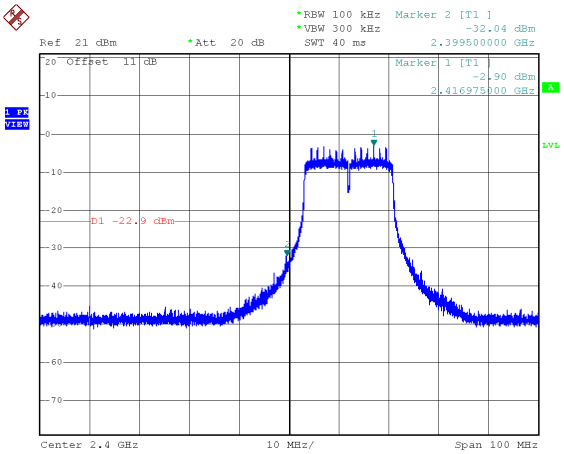


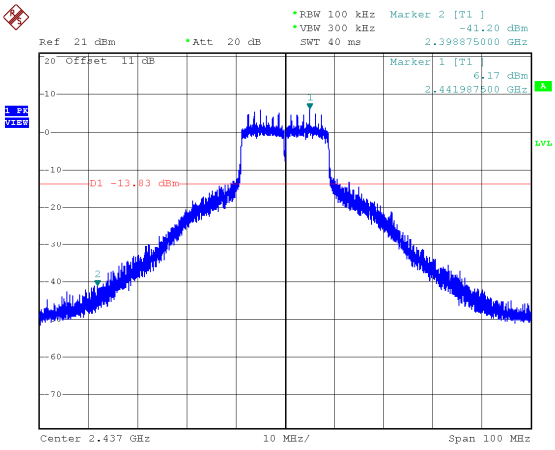
Modulation Type: 802.11n HT20, CH01

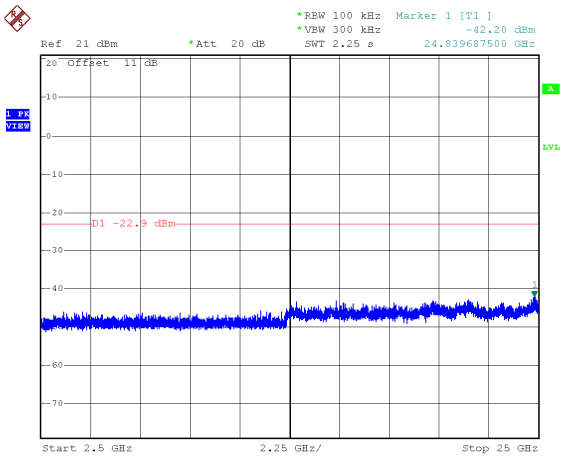


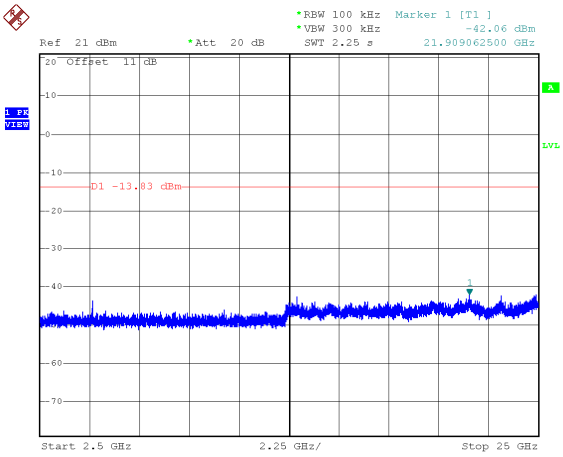
Modulation Type: 802.11n HT20, CH06



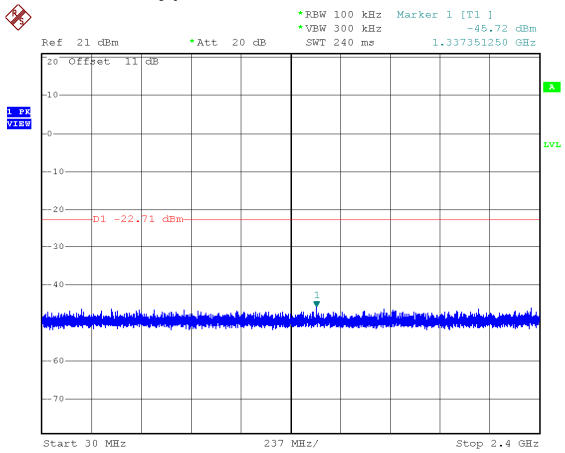




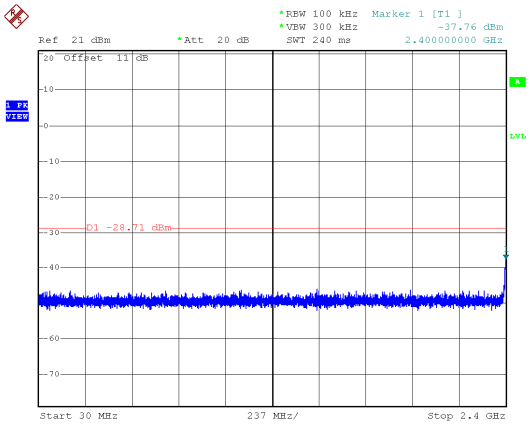




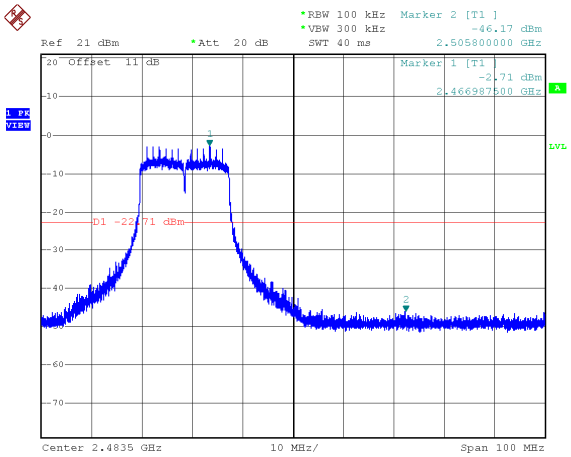
Modulation Type: 802.11n HT20, CH11

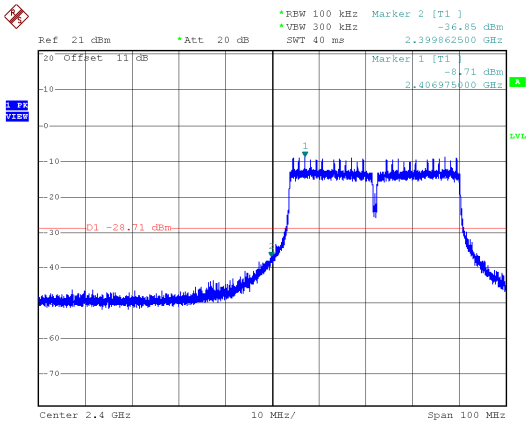


Modulation Type: 802.11n HT40, CH03



Date: 14.MAY.2018 16:29:25





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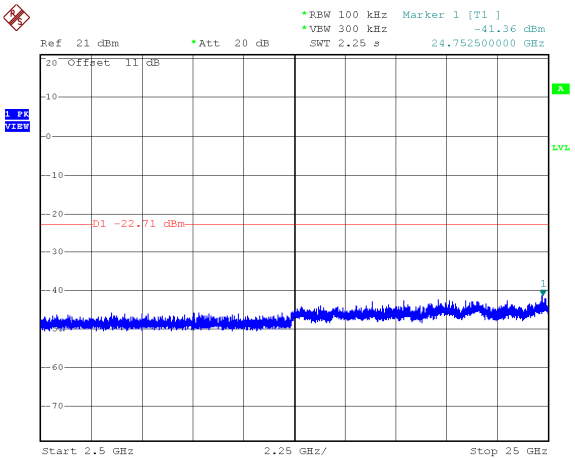
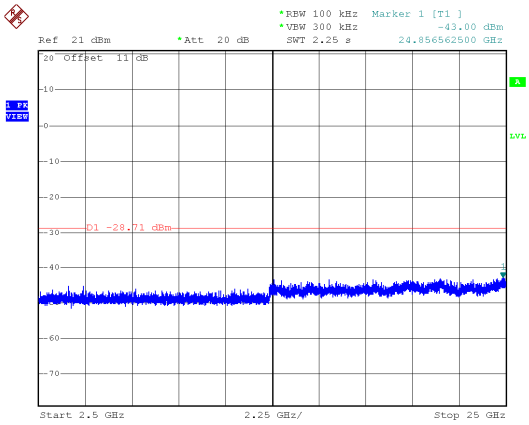
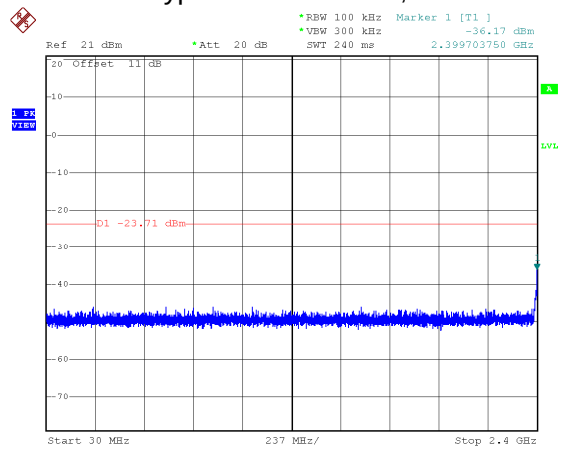


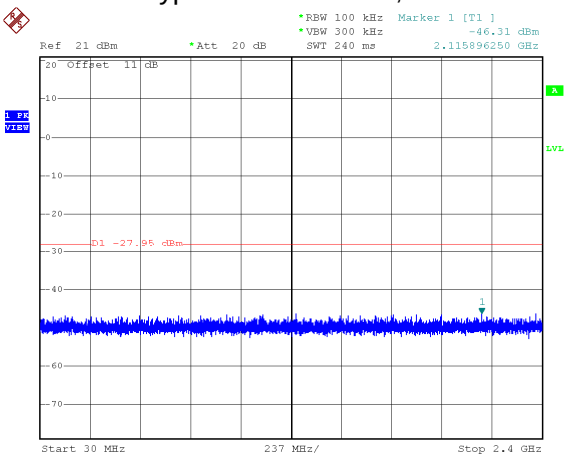


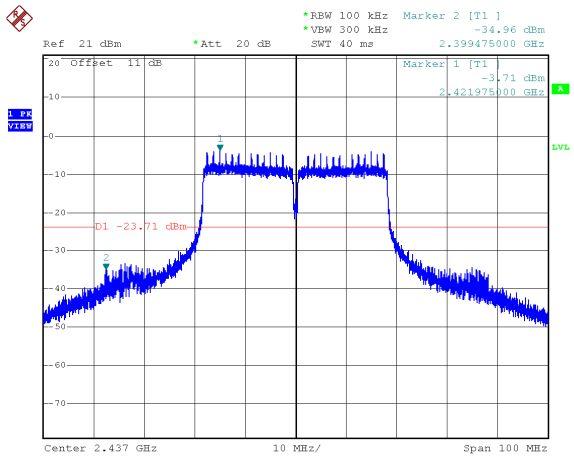
Date: 14.MAY.2018 16:30:06

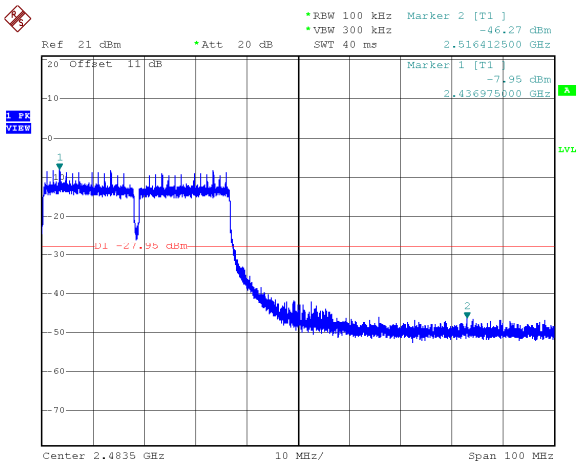
Modulation Type: 802.11n HT40, CH06

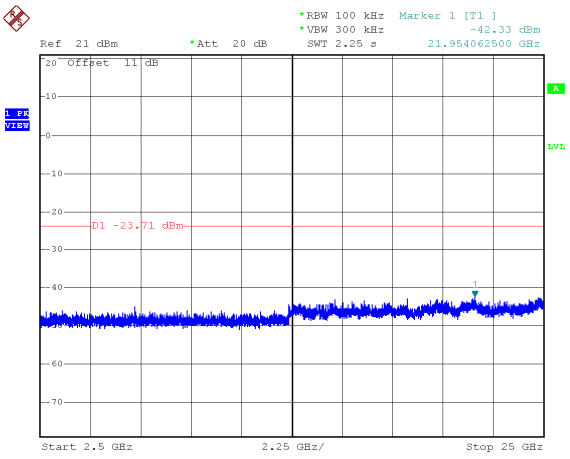


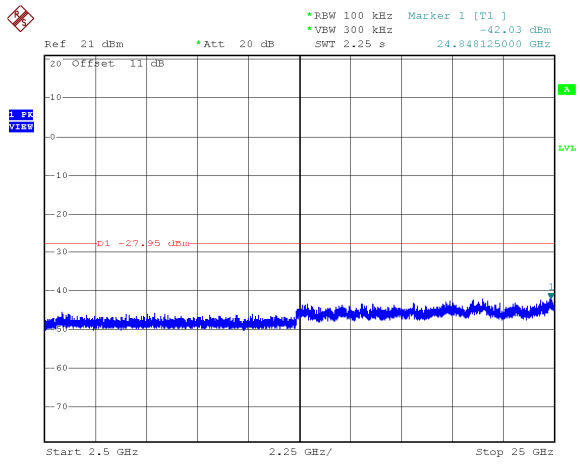
Modulation Type: 802.11n HT40, CH09











8. On Time, Duty Cycle and Measurement methods

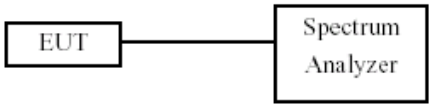
8.1 Test Limit

None; for reporting purposes only.

8.2 Test Procedure

KDB 558074 Zero-Span Spectrum Analyzer Method.

8.3 Test Setup Layout



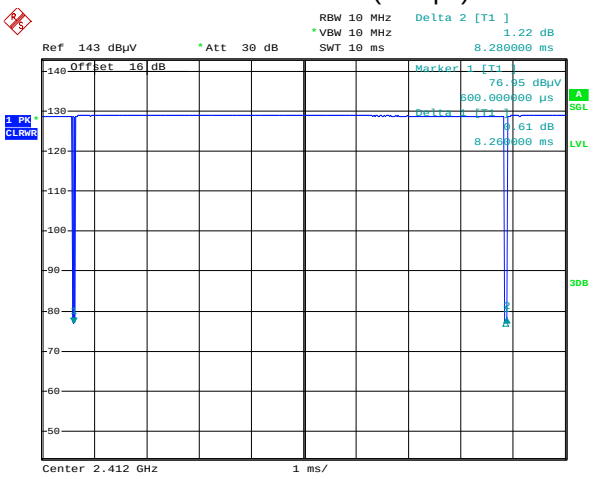
8.4 Test Result and Data

Temperature : 24°C Humidity : 59%

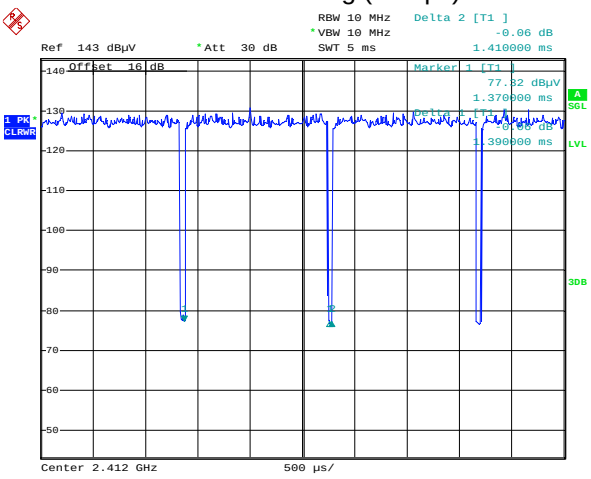
Test Date : May 16, 2018

Modulation Type	On Time (msec)	Period Time (msec)	Duty Cycle (%)	1/T Minimum VBW(Hz)	Duty Cycle correction Factor (dB)
802.11b	8.26	8.28	99.76%	121.07	0.01
802.11g	1.39	1.41	98.58%	719.42	0.06
VHT20	1.31	1.33	98.50%	763.36	0.07
VHT40	0.65	0.68	95.56%	1550.39	0.20

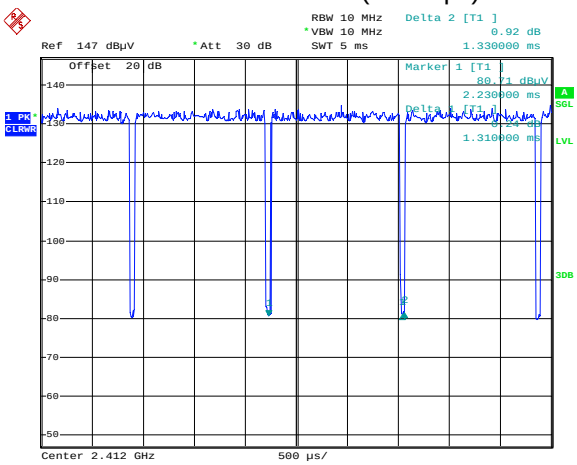
Modulation Standard: 802.11b (1Mbps)



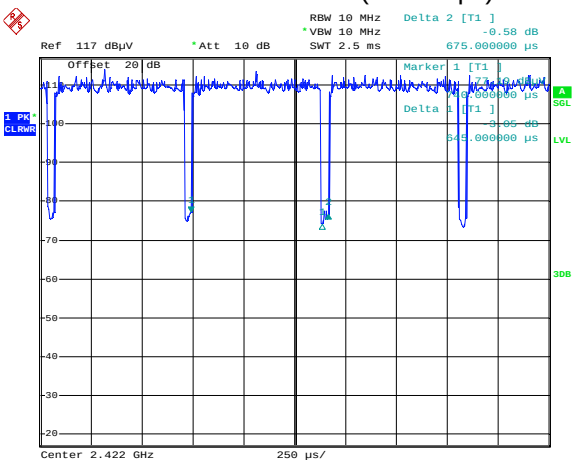
Modulation Standard: 802.11g (6Mbps)



Modulation Standard: VHT20 (6.5Mbps)



Modulation Standard: VHT40 (13.5Mbps)



9. 6dB & 99% Bandwidth Measurement Data

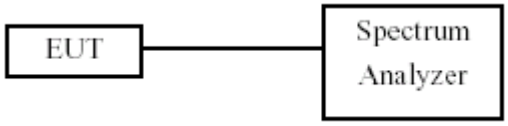
9.1 Test Limit

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

9.2 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.

9.3 Test Setup Layout



9.4 Test Result and Data (6dB Bandwidth)

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

Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Limit (MHz)
			ANT A	ANT B	
IEEE 802.11b (1Mbps)	01	2412	---	10.00	0.5
	06	2437	---	10.10	0.5
	11	2462	---	10.00	0.5
IEEE 802.11g (6Mbps)	01	2412	---	16.40	0.5
	06	2437	---	16.30	0.5
	11	2462	---	16.30	0.5
VHT20 (6.5Mbps)	01	2412	17.60	17.60	0.5
	06	2437	17.60	17.50	0.5
	11	2462	17.60	17.50	0.5
VHT40 (13.5Mbps)	03	2422	36.40	36.20	0.5
	06	2437	36.40	36.20	0.5
	09	2452	36.20	36.40	0.5

9.5 Test Result and Data (99% Bandwidth)

Temperature : 24°C Humidity : 59%

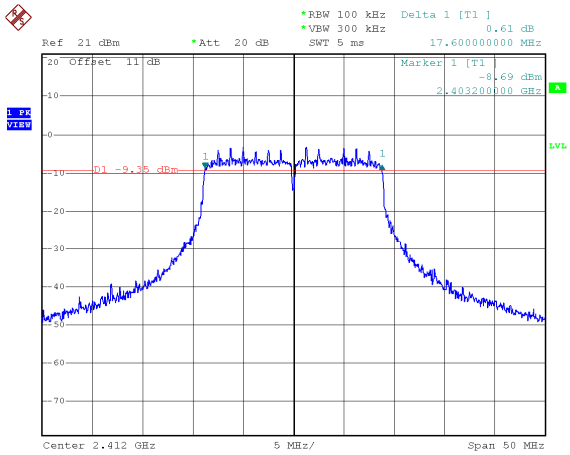
Test Date : May 16, 2018

Modulation Type	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			ANT A	ANT B
IEEE 802.11b (1Mbps)	01	2412	---	14.10
	06	2437	---	14.10
	11	2462	---	14.00
IEEE 802.11g (6Mbps)	01	2412	---	17.30
	06	2437	---	28.50
	11	2462	---	17.20
VHT20 (6.5Mbps)	01	2412	18.20	18.20
	06	2437	24.00	25.80
	11	2462	18.20	18.20
VHT40 (13.5Mbps)	03	2422	38.60	38.00
	06	2437	39.00	38.20
	09	2452	38.80	38.60

6dB Bandwidth
ANT A

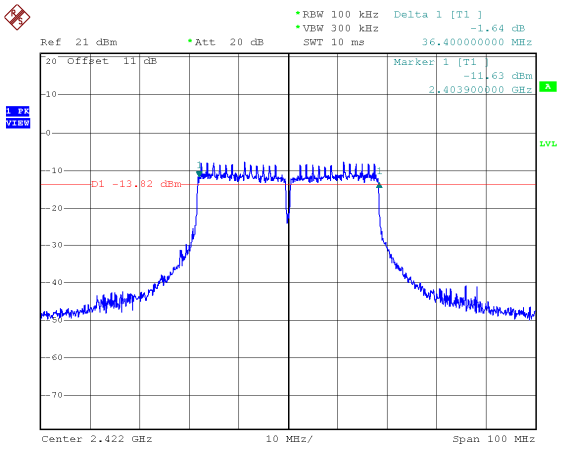
Modulation Type: 802.11n HT20

CH01

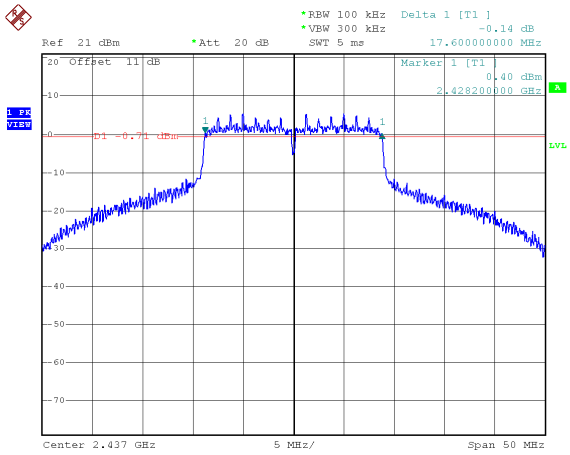


Modulation Type: 802.11n HT40

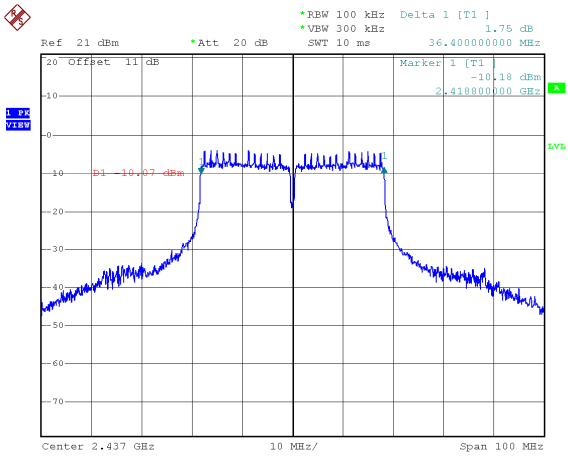
CH03



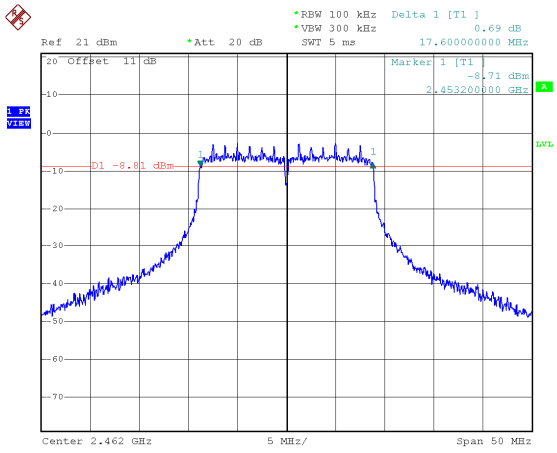
CH06



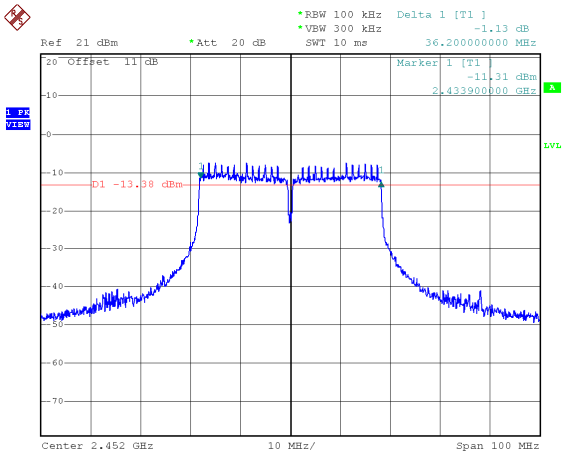
CH06



CH11



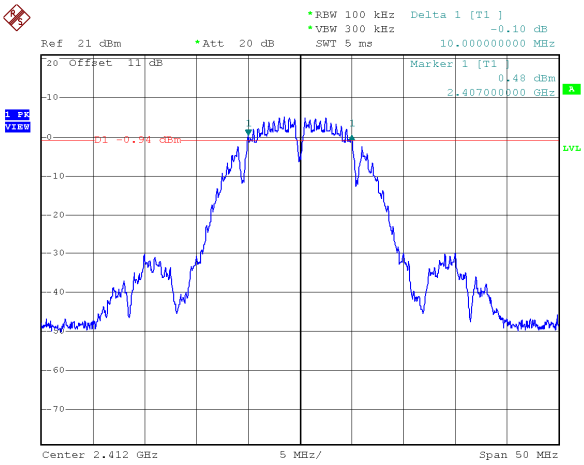
CH09



ANT B

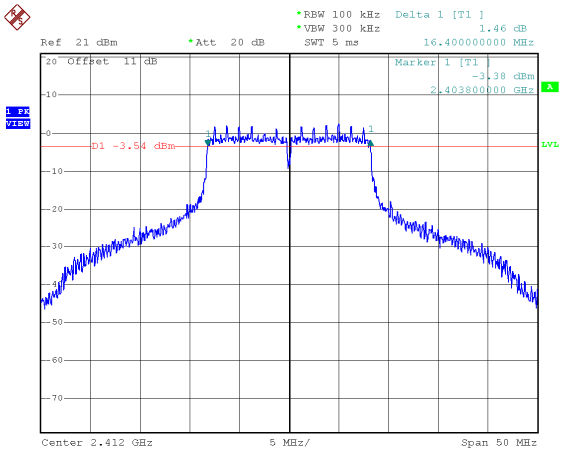
Modulation Type: 802.11b

CH01

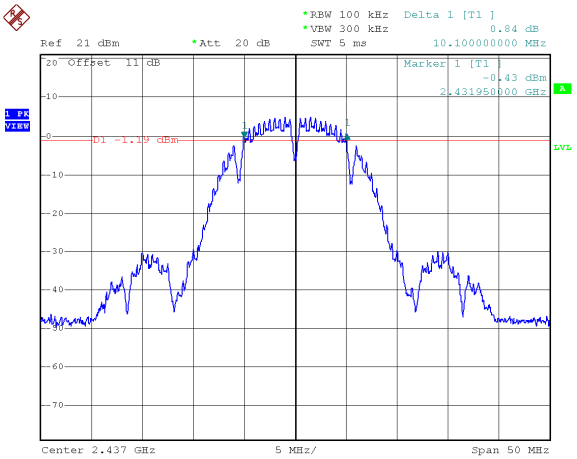


Modulation Type: 802.11g

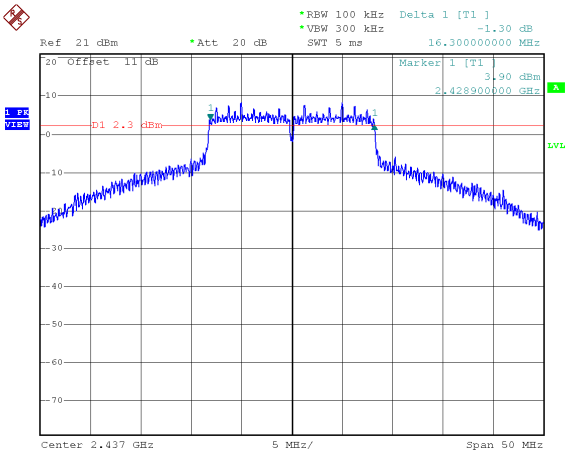
CH01



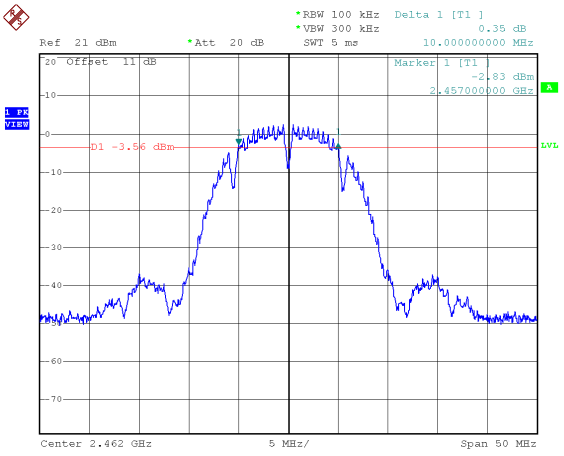
CH06



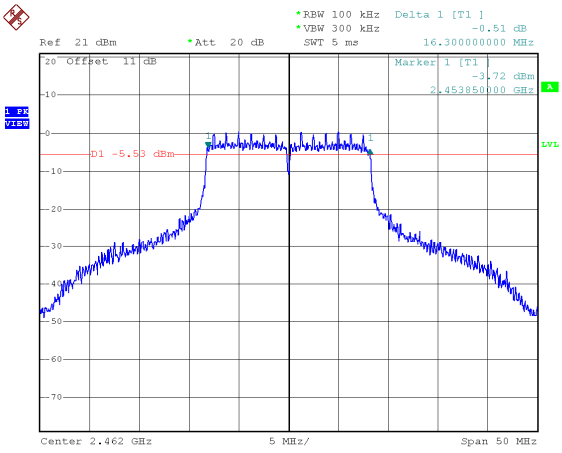
CH06



CH11

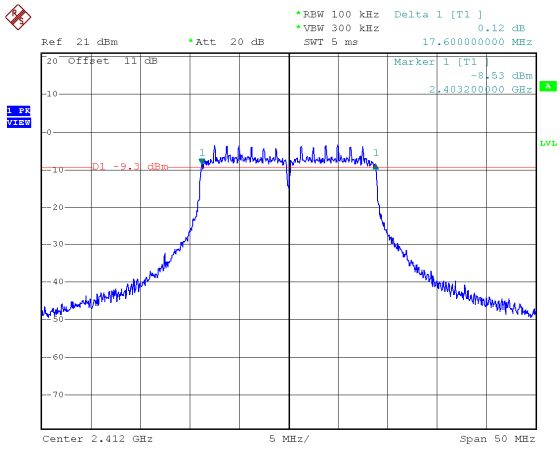


CH11



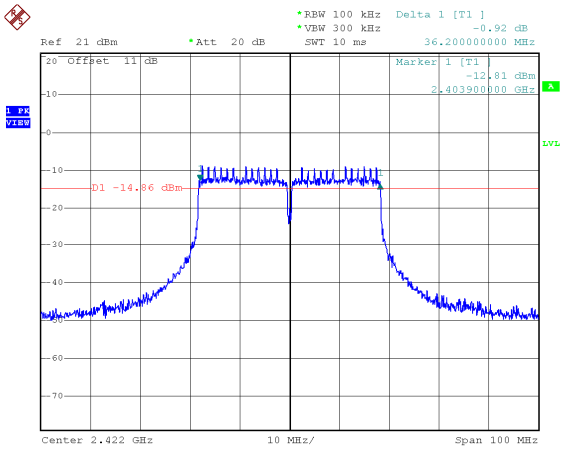
Modulation Type: VHT20

CH01

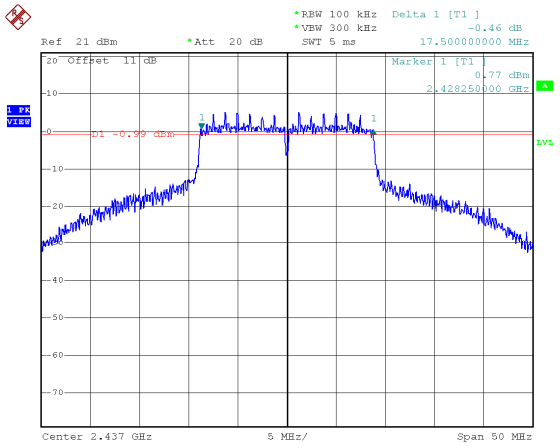


Modulation Type: VHT40

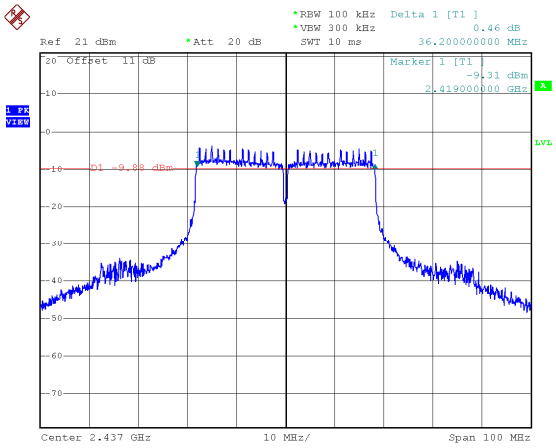
CH03



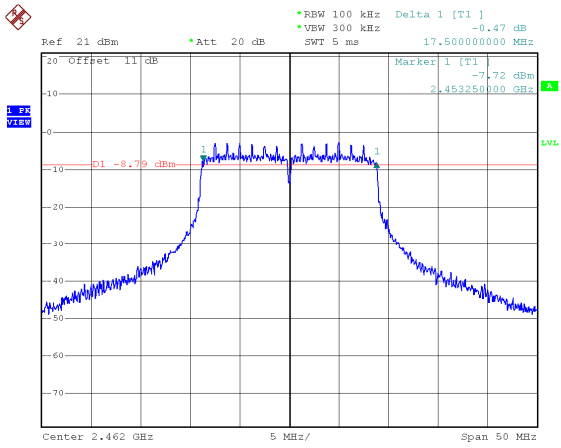
CH06



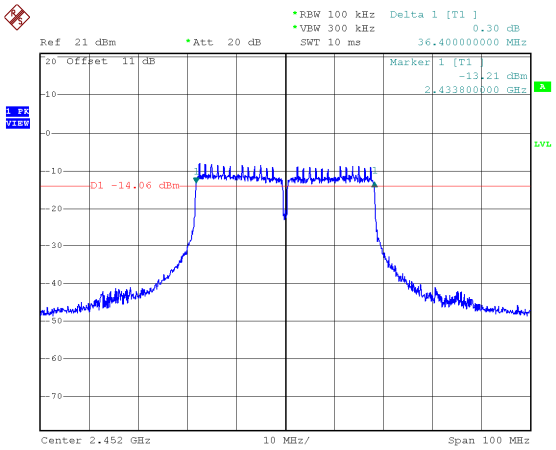
CH06



CH11

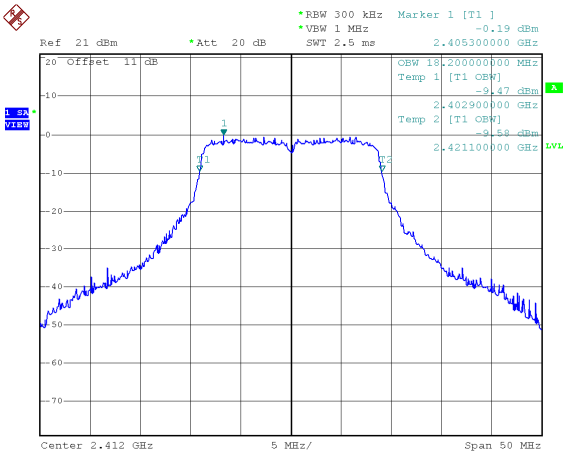


CH09

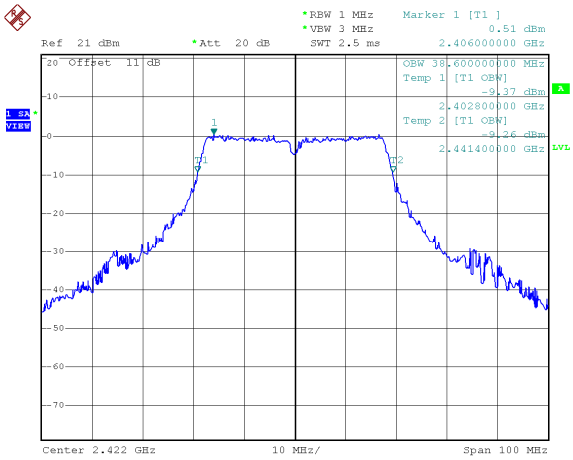


99% Bandwidth
ANT A

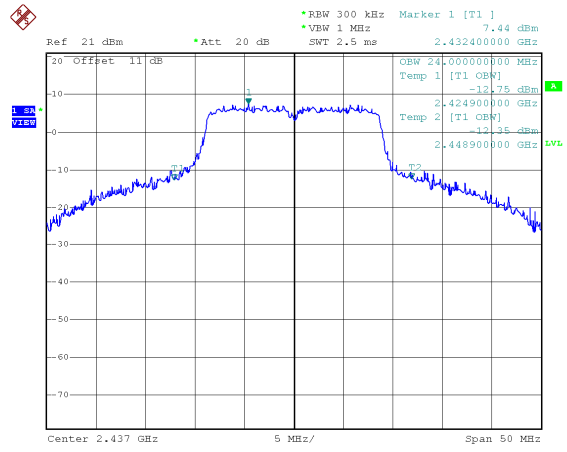
Modulation Type: 802.11n HT20
CH01



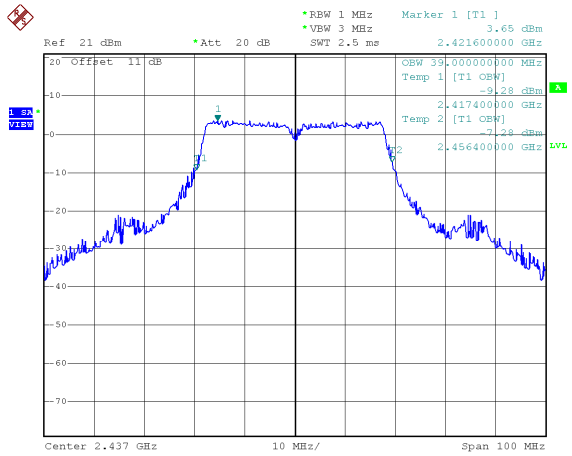
Modulation Type: 802.11n HT40
CH03



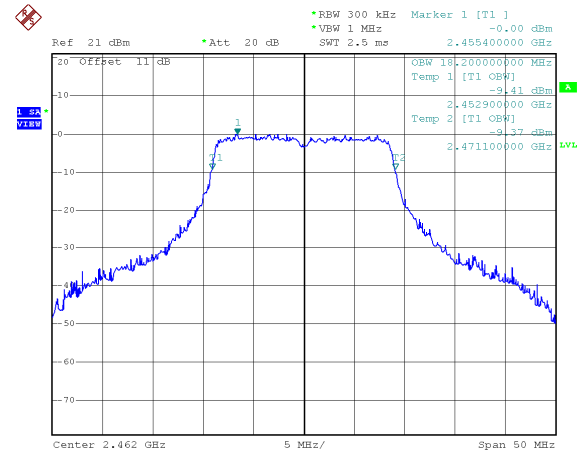
CH06



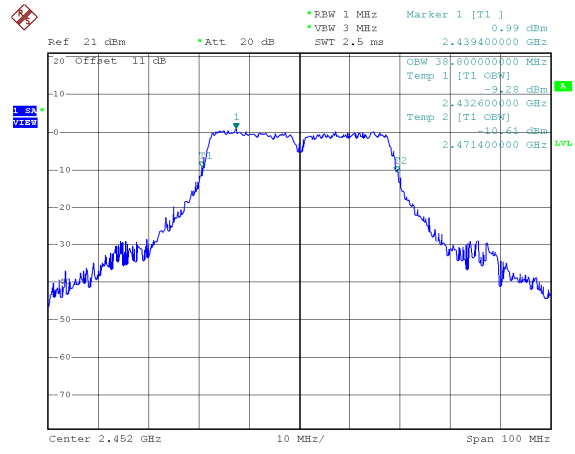
CH06



CH11



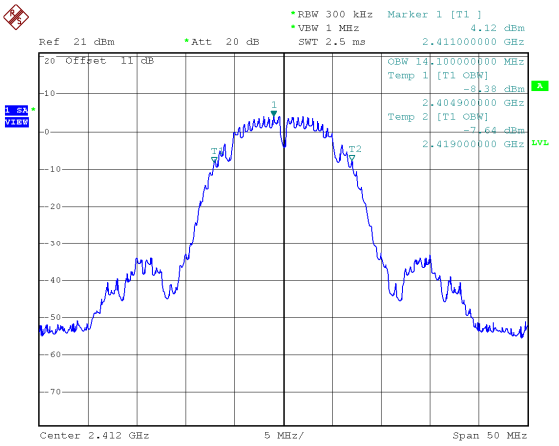
CH09



ANT B

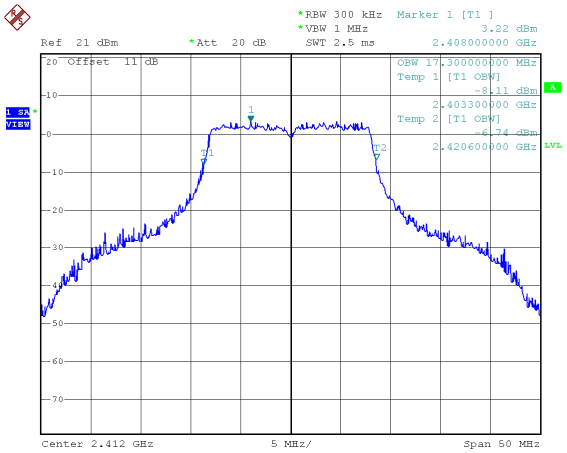
Modulation Type: 802.11b

CH01

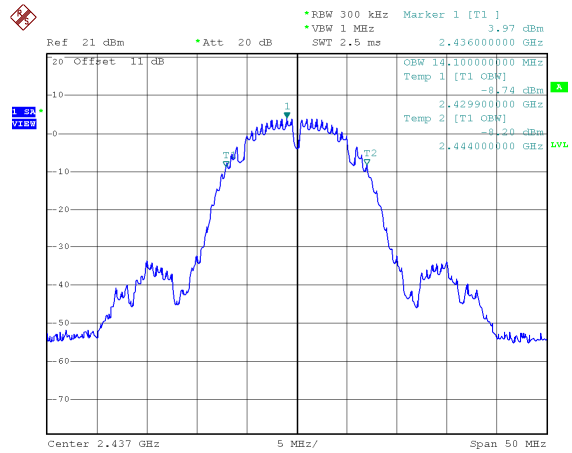


Modulation Type: 802.11g

CH01



CH06



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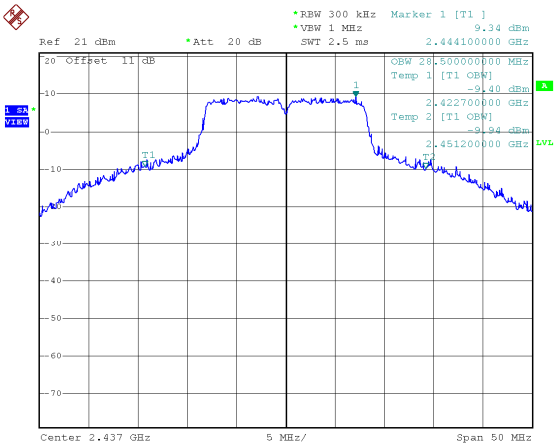
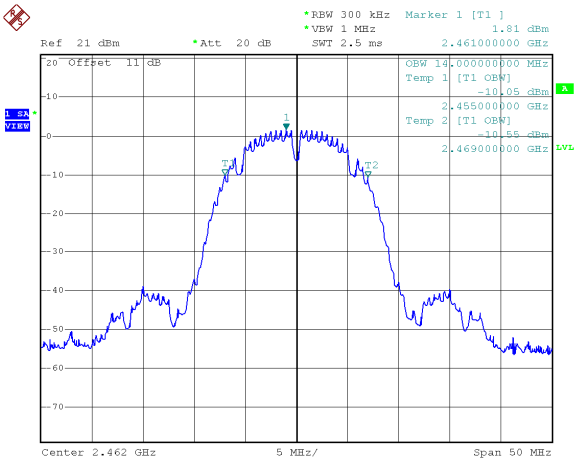
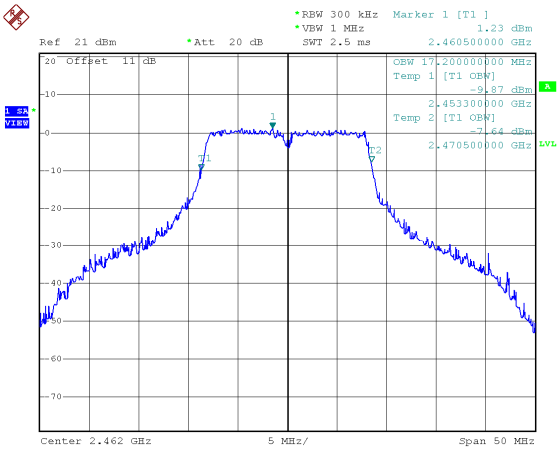


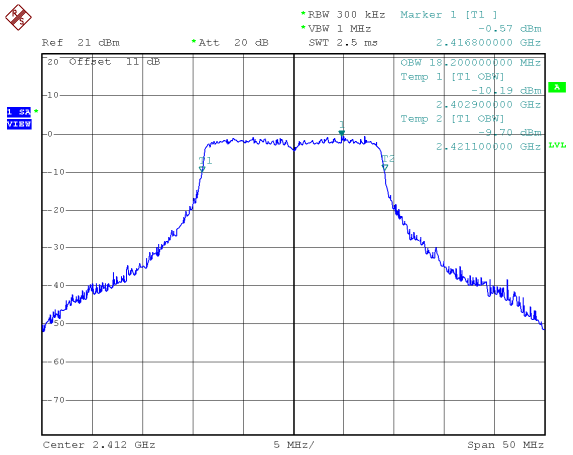
CH11



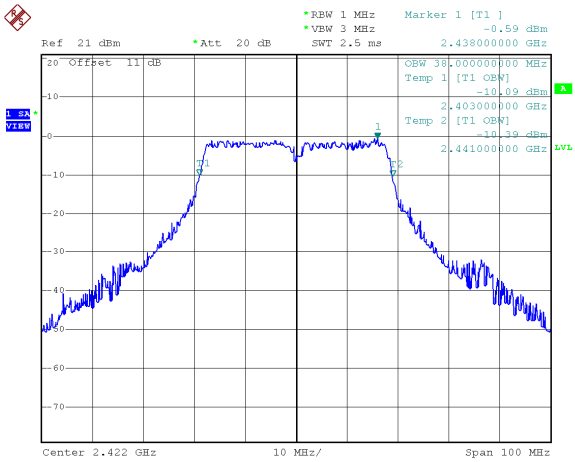
CH11



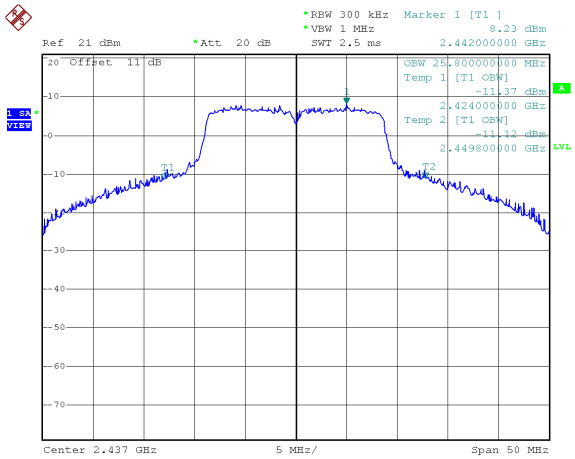
Modulation Type: 802.11n HT20
CH01



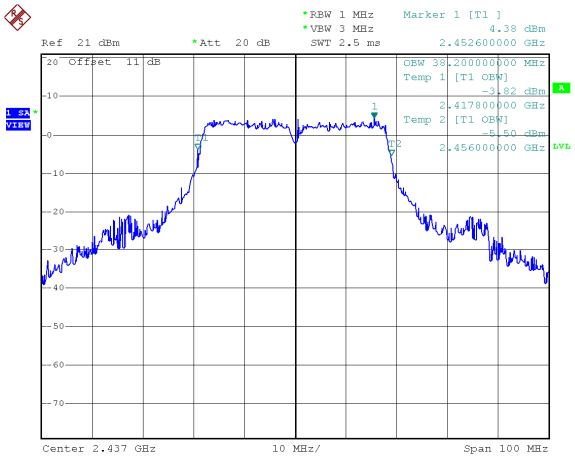
Modulation Type: 802.11n HT40
CH03



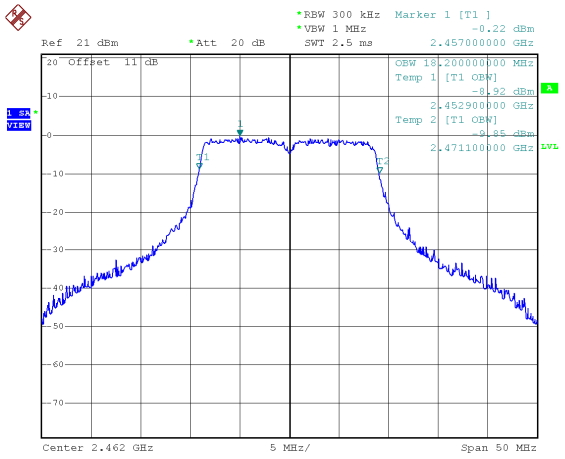
CH06



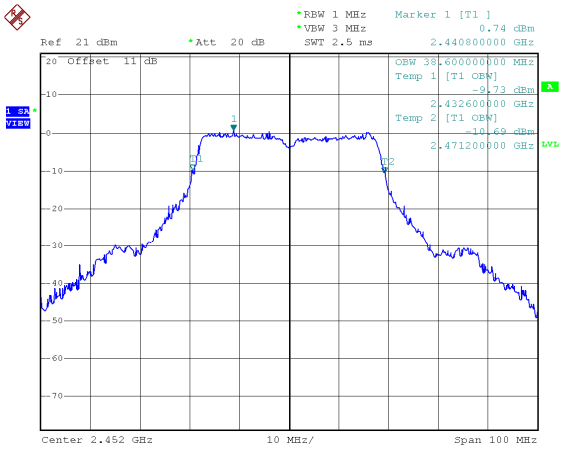
CH06



CH11



CH09



10. Maximum Peak Output Power

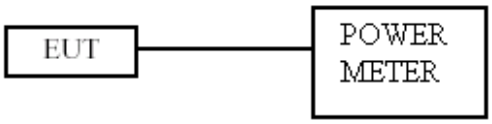
10.1 Test Limit

The Maximum Peak Output Power Measurement is 30dBm.
If transmitting antennas of directional gain greater than 6 dBi are used, the average output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

10.2 Test Procedures

The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

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)	Peak Power Output (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)
			ANT A	ANT B			
IEEE 802.11b (1Mbps)	01	2412	---	15.69	37.068	15.69	30.00
	06	2437	---	15.40	34.674	15.40	30.00
	11	2462	---	13.19	20.845	13.19	30.00
IEEE 802.11g (6Mbps)	01	2412	---	19.34	85.901	19.34	30.00
	06	2437	---	22.10	162.181	22.10	30.00
	11	2462	---	17.65	58.210	17.65	30.00
IEEE 802.11an HT20 (6.5Mbps)	01	2412	16.67	16.70	93.225	19.70	30.00
	06	2437	21.48	21.21	272.734	24.36	30.00
	11	2462	16.85	16.62	94.337	19.75	30.00
IEEE 802.11an HT40 (13.5Mbps)	03	2422	15.17	14.25	59.492	17.74	30.00
	06	2437	17.83	17.77	120.515	20.81	30.00
	09	2452	15.26	14.60	62.414	17.95	30.00

Modulation Type	Channel	Frequency (MHz)	Avg. Power Output (dBm)		Total Power (mW)	Total Power (dBm)
			ANT A	ANT B		
IEEE 802.11b (1Mbps)	01	2412	---	13.54	22.594	13.54
	06	2437	---	13.23	21.038	13.23
	11	2462	---	11.03	12.677	11.03
IEEE 802.11g (6Mbps)	01	2412	---	12.61	18.239	12.61
	06	2437	---	18.01	63.241	18.01
	11	2462	---	10.39	10.940	10.39
IEEE 802.11an HT20 (6.5Mbps)	01	2412	8.61	8.30	14.022	11.47
	06	2437	16.42	16.46	88.112	19.45
	11	2462	8.99	8.80	15.511	11.91
IEEE 802.11an HT40 (13.5Mbps)	03	2422	6.88	5.73	8.616	9.35
	06	2437	10.40	10.40	21.930	13.41
	09	2452	7.07	6.26	9.320	9.69

Note: Average power is for reference only.

11. Power Spectral Density

11.1 Test Limit

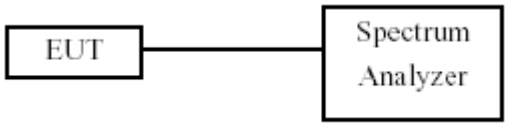
The Maximum of Power Spectral Density Measurement is 8dBm.

If transmitting antennas of directional gain greater than 6 dBi are used, the power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

11.2 Test Procedures

Reference to KDB558074 DTS Meas Guidance v04 D01

11.3 Test Setup Layout



11.4 Test Result and Data

Temperature : 24°C Humidity : 59%

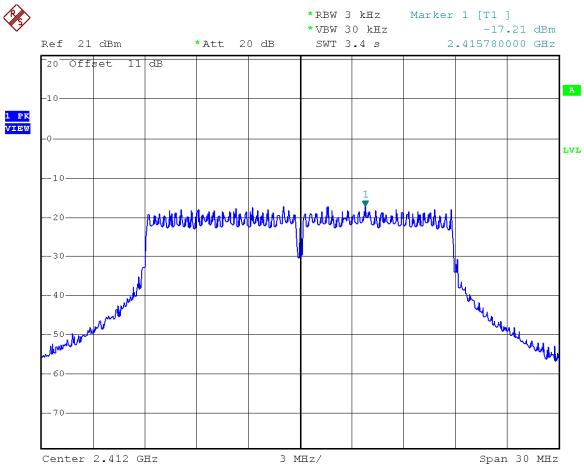
Test Date : May 16, 2018

Modulation Type	Channel	Frequency (MHz)	Maximum Power Density of 10 kHz Bandwidth (dBm)		Sum chain (dBm)	Duty Cycle CF(dB)	Total PSD (dBm)	Limit (dBm)
			ANT A	ANT B				
IEEE 802.11b (1Mbps)	01	2412	---	-11.02	-11.02	0.00	-11.02	8.00
	06	2437	---	-10.72	-10.72	0.00	-10.72	8.00
	11	2462	---	-13.13	-13.13	0.00	-13.13	8.00
IEEE 802.11g (6Mbps)	01	2412	---	-14.56	-14.56	0.00	-14.56	8.00
	06	2437	---	-8.01	-8.01	0.00	-8.01	8.00
	11	2462	---	-15.25	-15.25	0.00	-15.25	8.00
VHT20 (6.5Mbps)	01	2412	-17.21	-17.1	-14.14	0.00	-14.14	6.99
	06	2437	-9.09	-9.03	-6.05	0.00	-6.05	6.99
	11	2462	-16.87	-16.93	-13.89	0.00	-13.89	6.99
VHT40 (6.5Mbps)	03	2422	-20.23	-24.26	-18.78	0.00	-18.78	6.99
	06	2437	-18.86	-18.34	-15.58	0.00	-15.58	6.99
	09	2452	-21.61	-22.57	-19.05	0.00	-19.05	6.99

ANT A

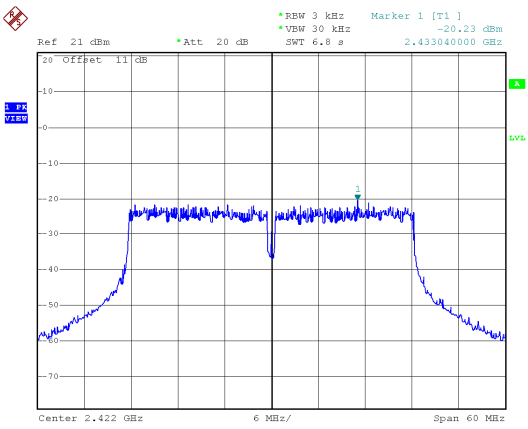
Modulation Type: 802.11n HT20

CH01

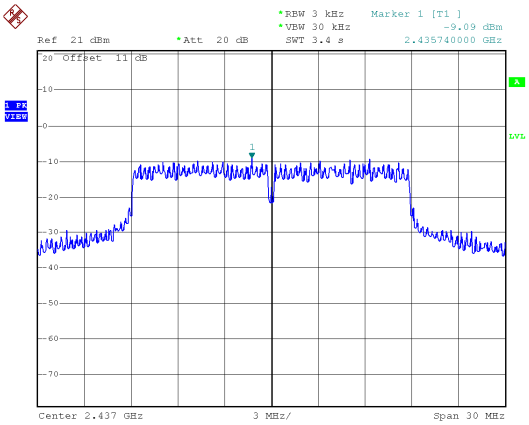


Modulation Type: VHT40

CH03



CH06



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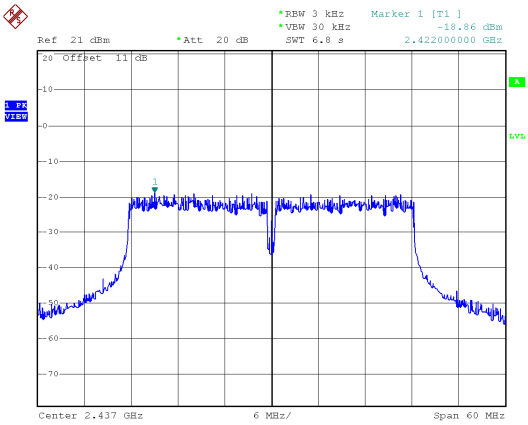
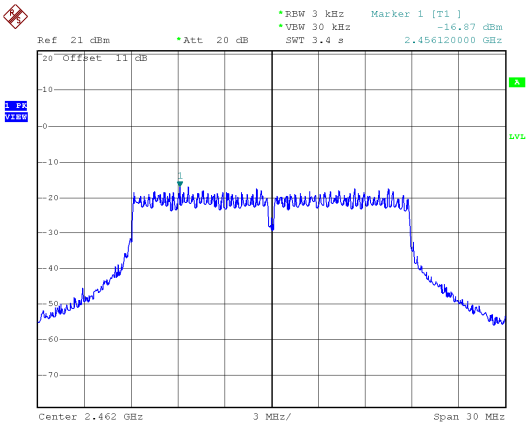
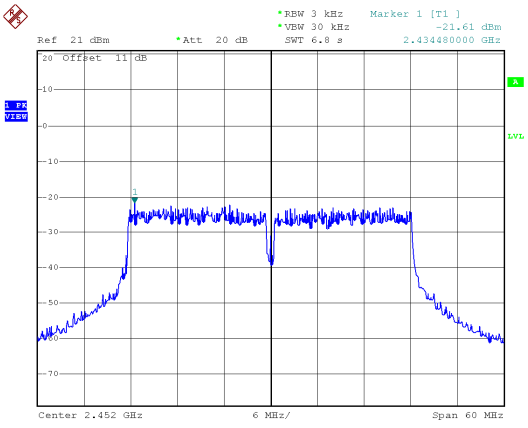


CH11



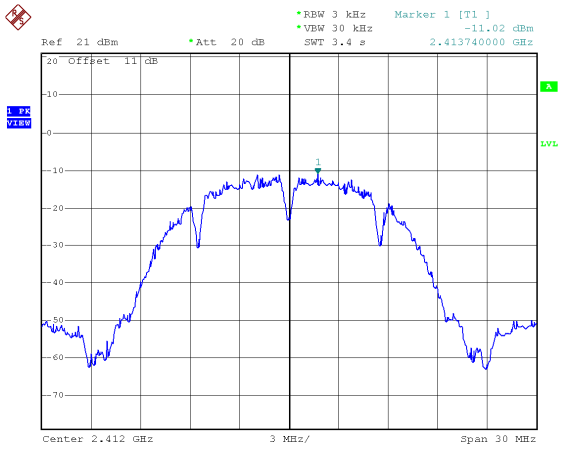
CH09



ANT B

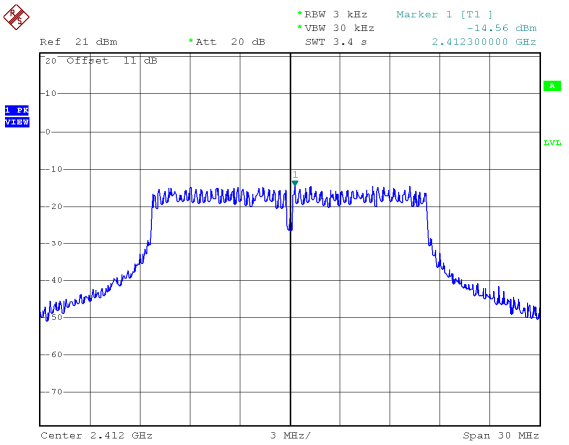
Modulation Type: 802.11b

CH01

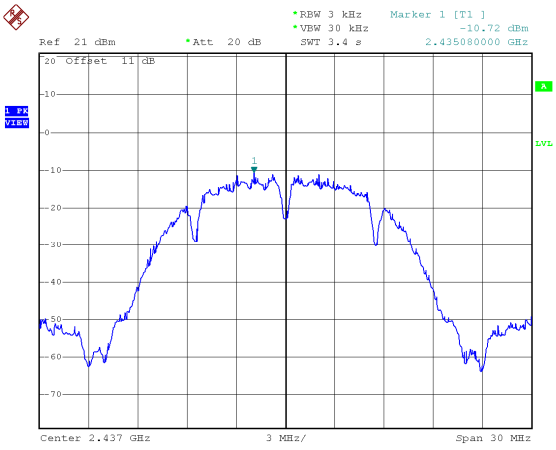


Modulation Type: 802.11g

CH01



CH06



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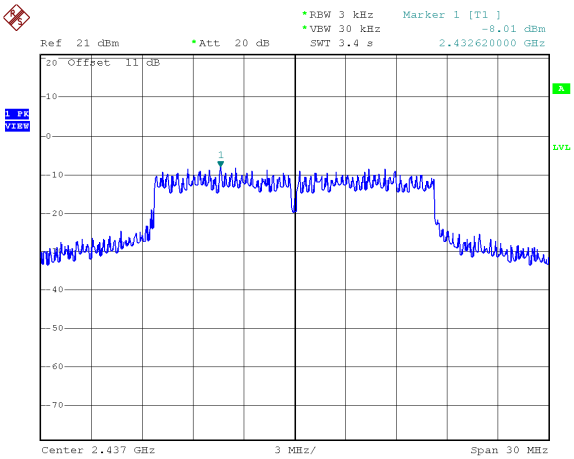
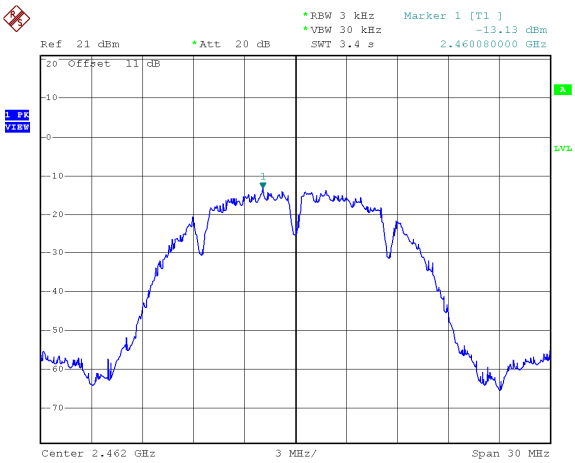
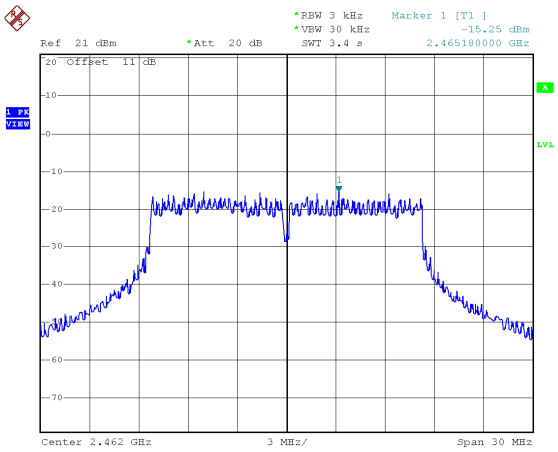


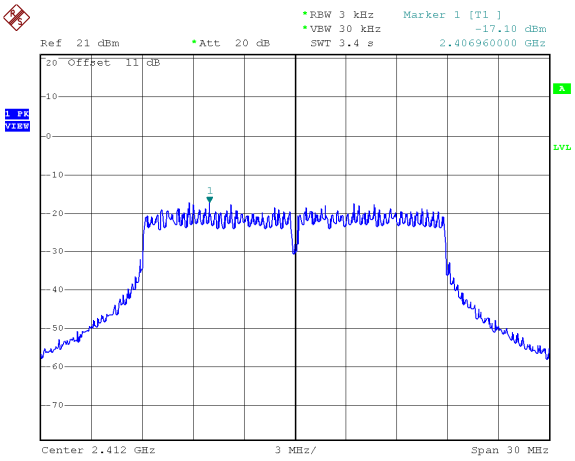
CH11



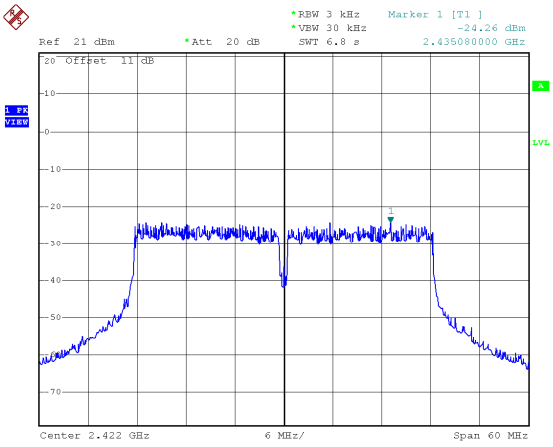
CH11



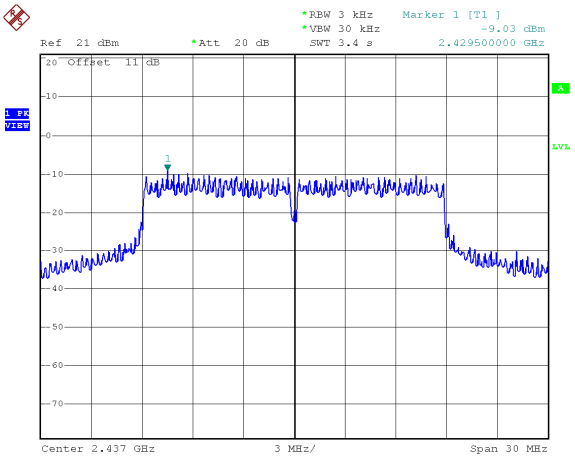
Modulation Type: VHT20
CH01



Modulation Type: VHT40
CH03



CH06



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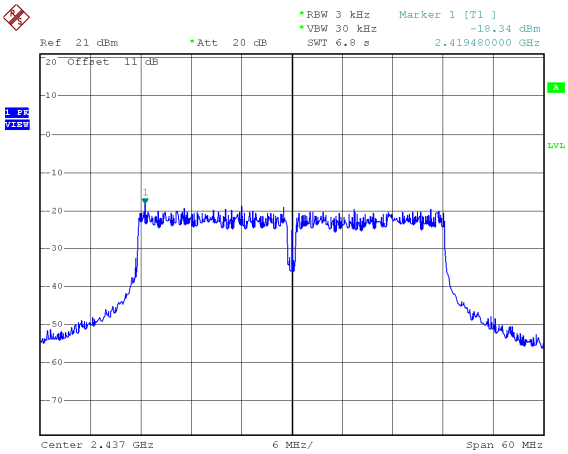
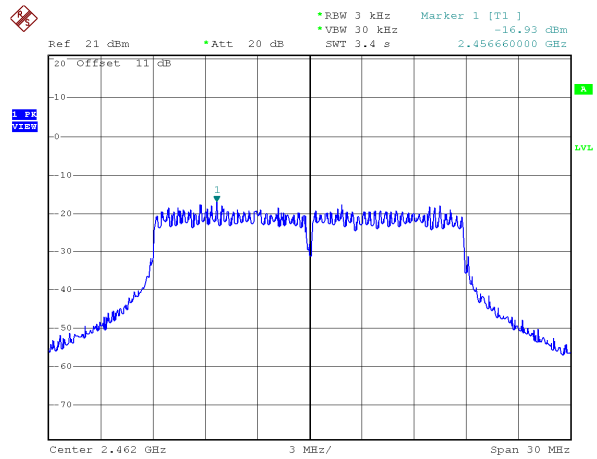


CH11



CH09