



FCC RADIO TEST REPORT

Applicant : CASTLENET TECHNOLOGY INC.

Address : No. 64, Chung-Shan Rd., Tu-Cheng District,
New Taipei City, Taiwan

Equipment : WIFI cable modem router

Model No. : CGA0101

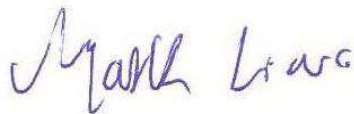
Trade Name : 

FCC ID. : RK9-CGA0101

I HEREBY CERTIFY THAT :

The sample was received on Apr. 20, 2017 and the testing was carried out on Apr. 28, 2017 at CerpPASS Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of CerpPASS 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:

CerpPASS Technology Corporation Test Laboratory





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History of this test report

Report No.	Issue Date	Description
TEF11704036	May 09, 2017	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

KDB447498

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

Frequency Range	2412~2462 MHz
Modulation Type	OFDM, DSSS, FHSS
Data Rate	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40
Antenna Type/ gain	ANT 1: PCB antenna, 3.78dBi ANT 2: Printing antenna, 2.41dBi
AC ADAPTER	AcBel / WAD011 I/P: AC 100-240V~Max. 0.7A, 50/60Hz O/P: DC 12V, 1.5A

Note: For a more detailed please refer to 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, "MTool v2.0.1.0" under WIN 8 was executed to transmit and receive data via WLAN.
- d. The following test modes were performed for the test:
 - Test Mode 1. 802.11b (1Mbps)
 - Test Mode 2. 802.11g (6Mbps)
 - Test Mode 3. 802.11n HT20 (6.5Mbps)
 - Test Mode 4: 802.11n HT40 (13.5Mbps)For conduction test, caused "Test Mode 2" generated the worst case, it was reported as the final data.
For radiation test (below 1GHz), caused "Test Mode 2" generated the worst case, it was reported as the final data.
For radiation test (above 1GHz), caused "Test Mode 1,2,3,4" generated the worst case, they were reported as the final data.

2.4 Description of Test System

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



2.5 General Information of Test

Test Site	CerpPASS 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, 390316, 228391, 641184
	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-812, G-813 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	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	9 kHz ~ 30 MHz	Line / Neutral	±2.9076 dB
Radiated Emission	9 kHz ~ 25,000 MHz	Vertical / Horizontal	±0.948 dB
Spurious Emission (Conducted)	-	-	±4.011 dB
Maximum Peak and Average Output Power	-	-	±0.322 dB
Power Spectral Density	-	-	±0.322 dB
Bandwidth	-	-	74.224Hz



3. Test Equipment and Ancillaries Used for Tests

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
EMI Receiver	R&S	ESCI3	100443	2017/03/07	2018/03/06
LISN	Schwarzbeck	NSLK 8127	8127-740	2016/08/30	2017/08/29
LISN	Schwarzbeck	NSLK 8127	8127-516	2016/09/06	2017/09/05
Pulse Limiter	R&S	ESH3-Z2	101934	2017/02/14	2018/02/13
Bilog Antenna	Schwarzbeck	VULB9168	369	2017/03/15	2018/03/14
Active Loop Antenna	EMCO	6507	40855	2016/05/11	2017/05/10
Horn Antenna	EMCO	3115	31601	2016/09/05	2017/09/04
Horn Antenna	EMCO	3116	31970	2017/03/29	2018/03/28
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200207	2017/03/17	2018/03/16
Preamplifier	EM	EM330	60660	2017/02/25	2018/02/24
Preamplifier	EMC INSTRUMENTS	EMC051845SE	980333	2016/09/13	2017/09/12
Preamplifier	Agilent	8449B	3008A01954	2017/02/09	2018/02/08
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2016/11/04	2017/11/03
MXG MW Analog Signal Generator	KEYSIGHT	N5183A	MY50142931	2017/03/17	2018/03/16
Spectrum Analyzer	R&S	FSP40	100219	2016/09/01	2017/08/31
Bluetooth Tester	R&S	CBT	101133	2017/03/10	2018/03/09
Attenuator	KEYSIGHT	8491B	MY39250703	2017/03/07	2018/03/06
Rotary Attenuator	Agilent	8495B	MY42146680	2017/03/13	2018/03/12
Temp & Humi chamber	T-MACHINE	TMJ-9712	T-12-040111	2016/09/05	2017/09/04
Series Power Meter	Anritsu	ML2495A	1224005	2017/03/01	2018/02/28
Power Sensor	Anritsu	MA2411B	1207295	2017/03/01	2018/02/28
Cable	HUBER SUHNER	SUCOFLEX 102	28422/2	2017/02/25	2018/02/24
Cable	HUBER SUHNER	SUCOFLEX 102	28418/2	2017/02/25	2018/02/24
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	v2.0.0.1	N/A	N/A
Software	Keysight	Inservice MonitorUtility	N/A	N/A	N/A



4. Antenna Requirements

4.1 Antenna Construction and Directional Gain

ANT 1: PCB antenna, 3.78dBi

ANT 2: Printing antenna, 2.41dBi

For Power directional gain= $G_{ant} = 3.78$ dBi

For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / NANT]$
= 6.13 (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

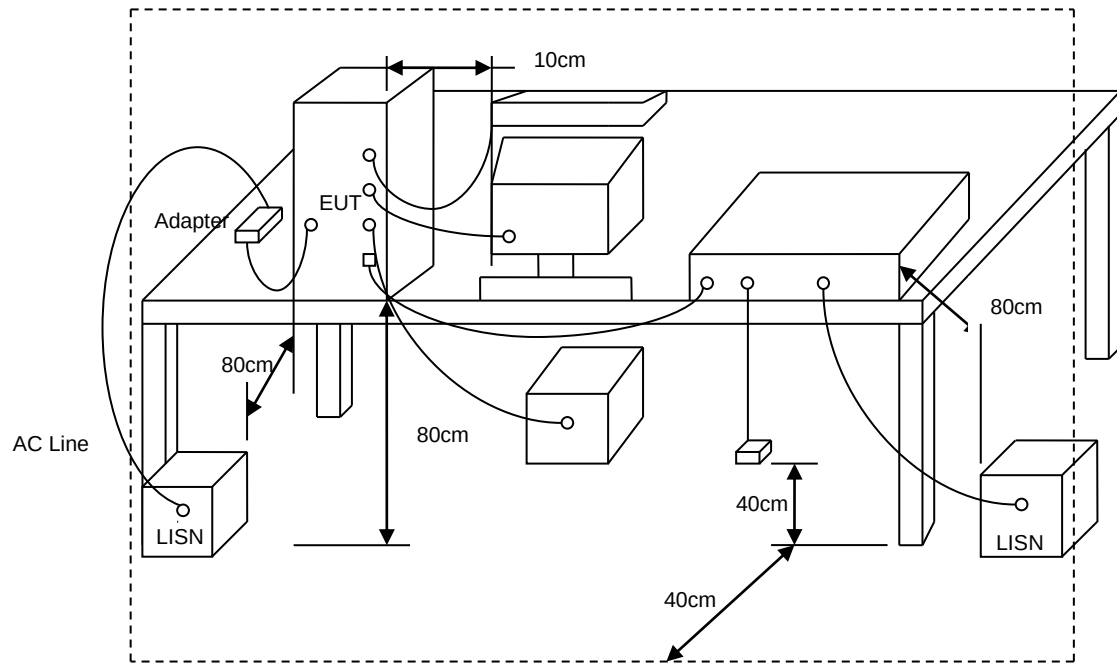
*Decreases with the logarithm of the frequency.

5.2 Test Procedures

- 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.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- 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

Power	: AC 120V	Pol/Phase	: LINE
Test Mode	: Mode 2	Temperature	: 23 °C
Test date	: Apr. 28, 2017	Humidity	: 48 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	3.7860	10.13	36.96	47.09	56.00	-8.91	QP	P
2	3.7860	10.13	21.72	31.85	46.00	-14.15	AVG	P
3	0.4700	9.93	34.47	44.40	56.51	-12.11	QP	P
4	0.4700	9.93	16.41	26.34	46.51	-20.17	AVG	P
5	0.1660	9.91	42.99	52.90	65.15	-12.25	QP	P
6	0.1660	9.91	29.28	39.19	55.15	-15.96	AVG	P
7	0.2220	9.91	33.42	43.33	62.74	-19.41	QP	P
8	0.2220	9.91	20.84	30.75	52.74	-21.99	AVG	P
9	0.2819	9.91	32.50	42.41	60.76	-18.35	QP	P
10	0.2819	9.91	25.41	35.32	50.76	-15.44	AVG	P
11	0.5500	9.94	32.65	42.59	56.00	-13.41	QP	P
12	0.5500	9.94	23.32	33.26	46.00	-12.74	AVG	P

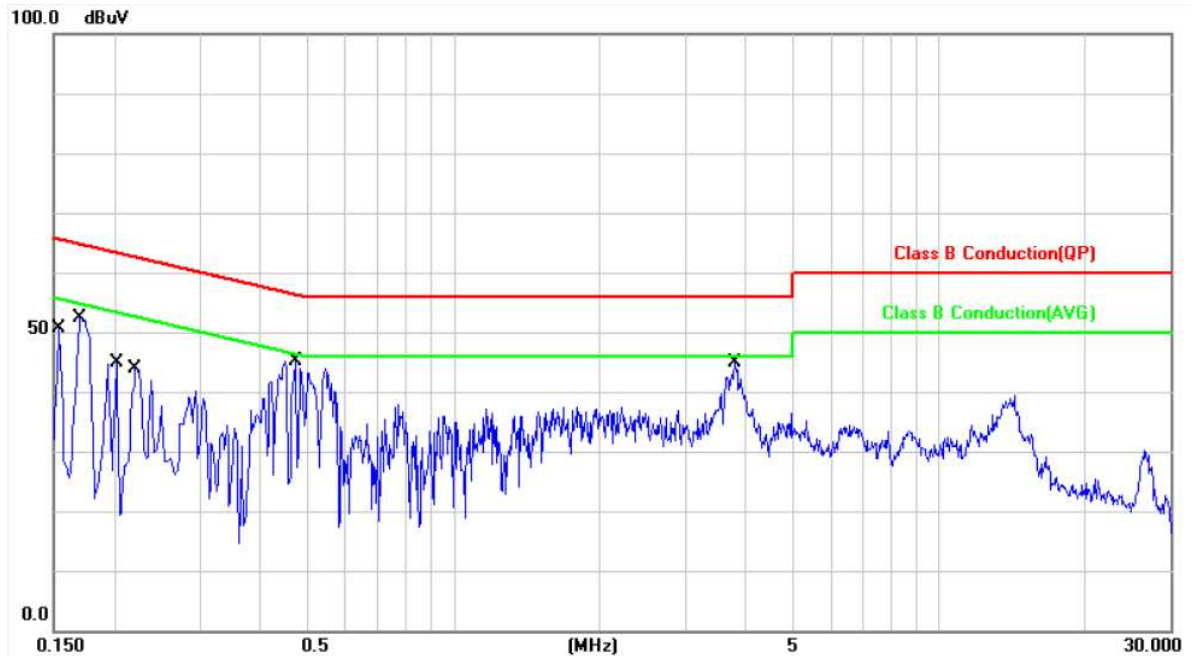
Note: Level = Reading + Factor

Margin = Level – Limit

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss+ Attenuator



Power	: AC 120V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 2	Temperature	: 23 °C
Test date	: Apr. 28, 2017	Humidity	: 48 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1539	9.88	33.93	43.81	65.78	-21.97	QP	P
2	0.1539	9.88	15.48	25.36	55.78	-30.42	AVG	P
3	0.1700	9.88	41.35	51.23	64.96	-13.73	QP	P
4	0.1700	9.88	25.89	35.77	54.96	-19.19	AVG	P
5	0.2020	9.88	27.36	37.24	63.52	-26.28	QP	P
6	0.2020	9.88	6.88	16.76	53.52	-36.76	AVG	P
7	0.2220	9.88	32.65	42.53	62.74	-20.21	QP	P
8	0.2220	9.88	18.86	28.74	52.74	-24.00	AVG	P
9	0.4740	9.89	34.10	43.99	56.44	-12.45	QP	P
10	0.4740	9.89	18.30	28.19	46.44	-18.25	AVG	P
11	3.8180	10.08	27.99	38.07	56.00	-17.93	QP	P
12	3.8180	10.08	16.59	26.67	46.00	-19.33	AVG	P

Note: Level = Reading + Factor

Margin = Level – Limit

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss+ Attenuator



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

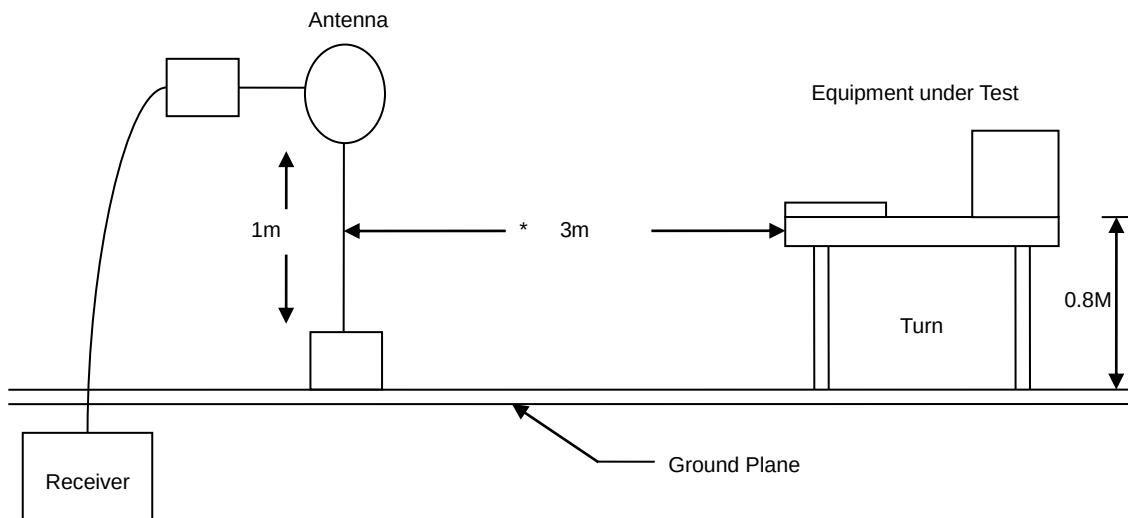
6.2 Test Procedures

- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- 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.
- 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.
- Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- 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.
- 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.
- "Cone of radiation" has been considered to be 3dB bandwidth of the measurement antenna.

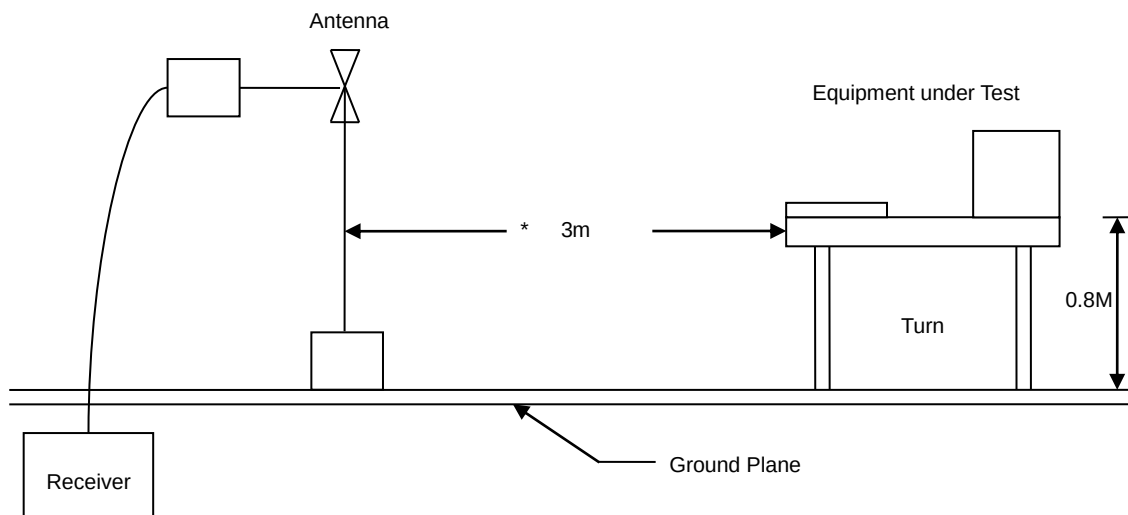


6.3 Typical Test Setup

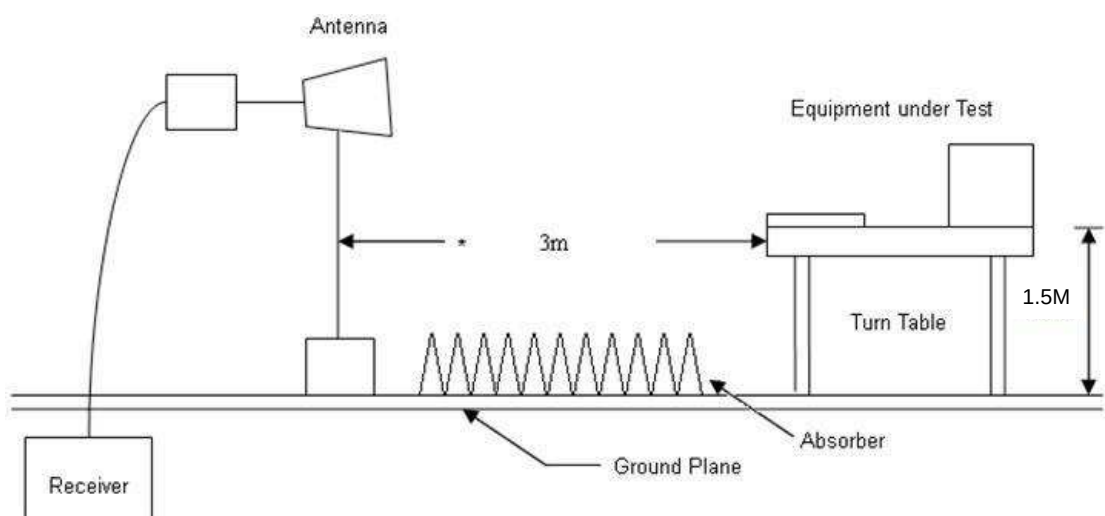
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup



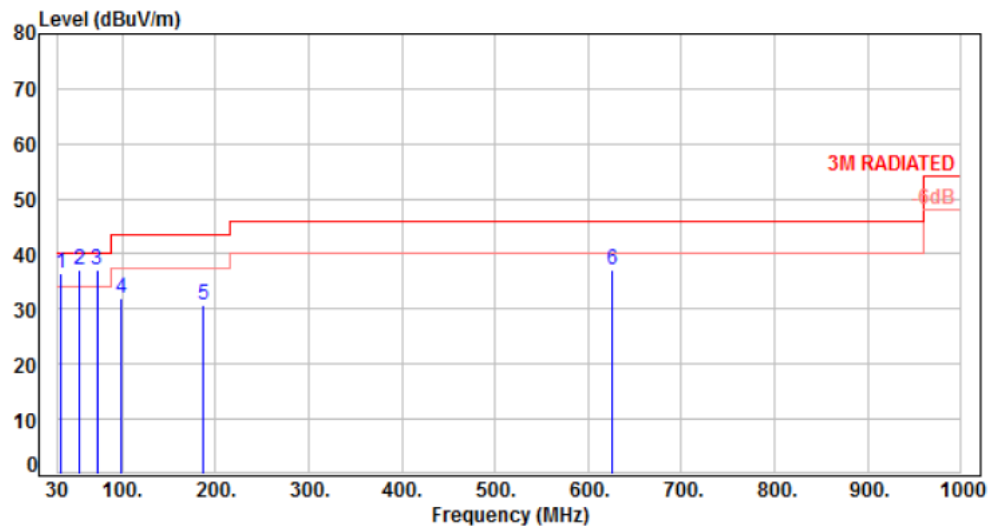


6.4 Test Result and Data (9KHz ~ 30MHz)

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

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

Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2	Temperature	: 24 °C
Test Date	: Apr. 25, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	33.88	-10.80	47.43	36.63	40.00	-3.37	Peak	100	0	P
2	53.28	-9.84	47.03	37.19	40.00	-2.81	QP	100	173	P
3	72.68	-12.54	49.53	36.99	40.00	-3.01	Peak	100	0	P
4	97.90	-15.05	46.95	31.90	43.50	-11.60	Peak	100	0	P
5	187.14	-11.85	42.49	30.64	43.50	-12.86	Peak	100	0	P
6	625.58	-1.59	38.83	37.24	46.00	-8.76	Peak	100	0	P

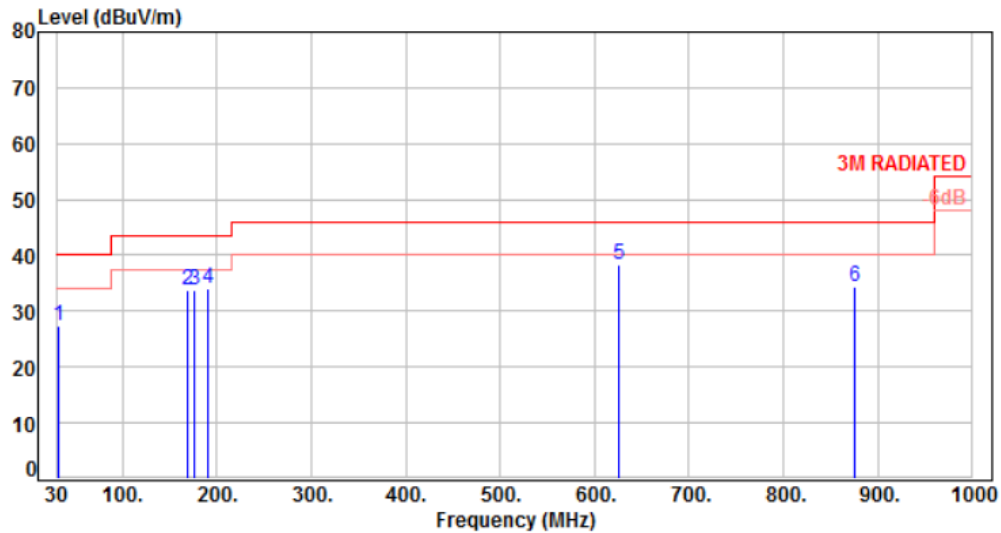
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2	Temperature	: 24 °C
Test Date	: Apr. 25, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	31.94	-10.76	38.12	27.36	40.00	-12.64	Peak	100	0	P
2	169.68	-10.08	43.81	33.73	43.50	-9.77	Peak	100	0	P
3	175.50	-10.71	44.50	33.79	43.50	-9.71	Peak	100	0	P
4	191.02	-12.12	46.15	34.03	43.50	-9.47	Peak	100	0	P
5	625.58	-1.59	40.03	38.44	46.00	-7.56	Peak	100	0	P
6	875.84	2.17	32.29	34.46	46.00	-11.54	Peak	100	0	P

Note: Level=Reading+Factor

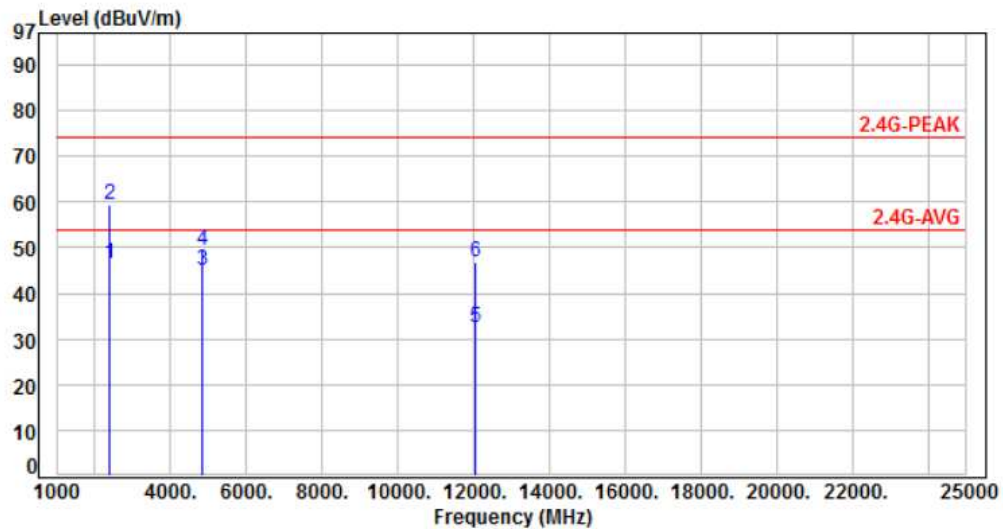
Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



6.6 Test Result and Data (1GHz ~ 25GHz)

Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH01	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	65.57	46.55	54.00	-7.45	Average	100	221	P
2	2390.00	-19.02	78.37	59.35	74.00	-14.65	Peak	100	221	P
3	4824.00	-13.30	58.27	44.97	54.00	-9.03	Average	100	246	P
4	4824.00	-13.30	62.88	49.58	74.00	-24.42	Peak	100	246	P
5	12060.00	-6.02	38.34	32.32	54.00	-21.68	Average	193	262	P
6	12060.00	-6.02	53.03	47.01	74.00	-26.99	Peak	193	262	P

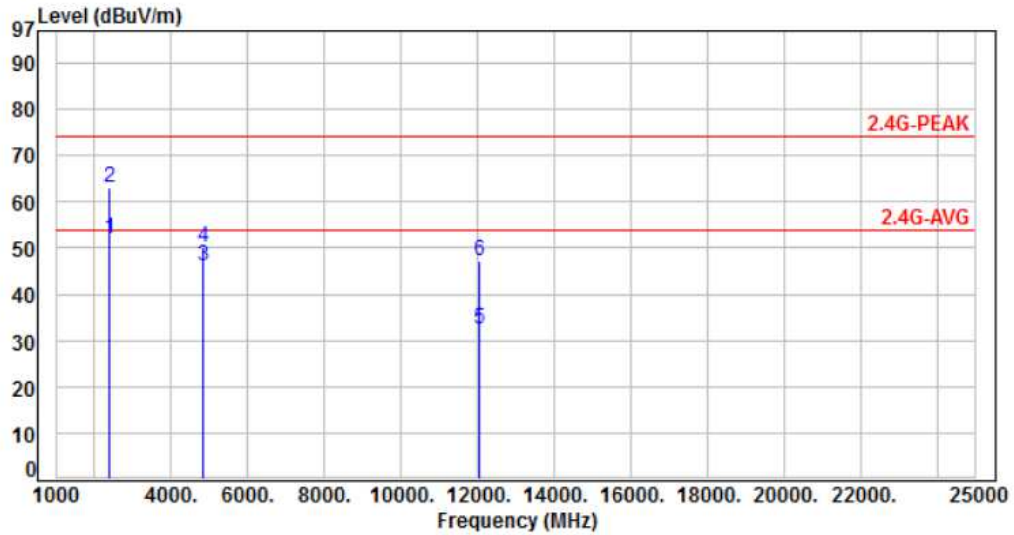
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH01	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	71.14	52.12	54.00	-1.88	Average	100	261	P
2	2390.00	-19.02	82.14	63.12	74.00	-10.88	Peak	100	261	P
3	4824.00	-13.30	59.26	45.96	54.00	-8.04	Average	137	220	P
4	4824.00	-13.30	63.52	50.22	74.00	-23.78	Peak	137	220	P
5	12060.00	-6.02	38.46	32.44	54.00	-21.56	Average	100	198	P
6	12060.00	-6.02	53.41	47.39	74.00	-26.61	Peak	100	198	P

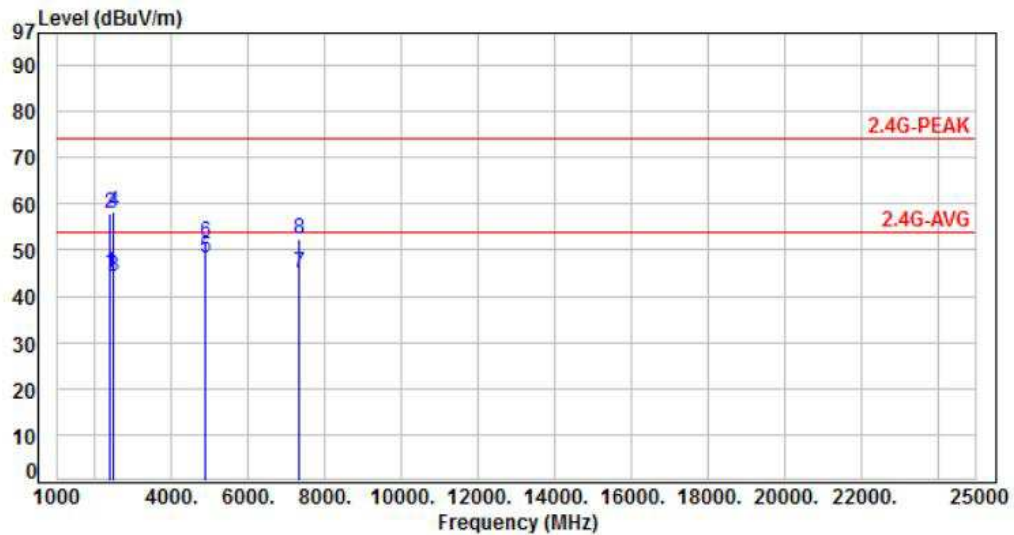
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH06	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	63.89	44.87	54.00	-9.13	Average	100	219	P
2	2390.00	-19.02	76.93	57.91	74.00	-16.09	Peak	100	219	P
3	2483.50	-18.80	63.20	44.40	54.00	-9.60	Average	100	219	P
4	2483.50	-18.80	76.96	58.16	74.00	-15.84	Peak	100	219	P
5	4874.00	-13.21	61.70	48.49	54.00	-5.51	Average	100	250	P
6	4874.00	-13.21	64.84	51.63	74.00	-22.37	Peak	100	250	P
7	7311.00	-10.15	55.02	44.87	54.00	-9.13	Average	258	246	P
8	7311.00	-10.15	62.47	52.32	74.00	-21.68	Peak	258	246	P

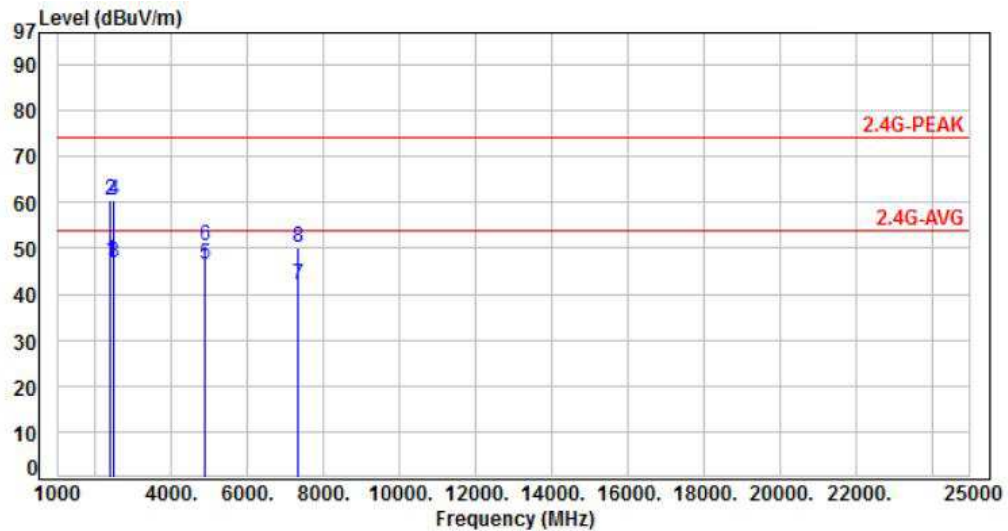
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH06	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	66.25	47.23	54.00	-6.77	Average	100	251	P
2	2390.00	-19.02	79.55	60.53	74.00	-13.47	Peak	100	251	P
3	2483.50	-18.80	65.47	46.67	54.00	-7.33	Average	100	251	P
4	2483.50	-18.80	79.34	60.54	74.00	-13.46	Peak	100	251	P
5	4874.00	-13.21	59.73	46.52	54.00	-7.48	Average	134	224	P
6	4874.00	-13.21	63.91	50.70	74.00	-23.30	Peak	134	224	P
7	7311.00	-10.15	52.18	42.03	54.00	-11.97	Average	100	34	P
8	7311.00	-10.15	60.18	50.03	74.00	-23.97	Peak	100	34	P

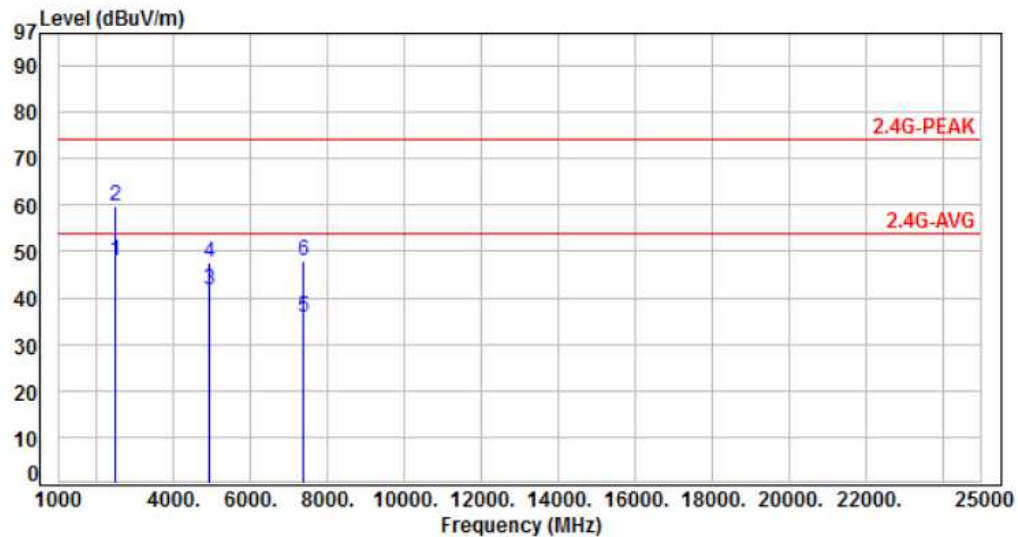
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH11	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.80	66.73	47.93	54.00	-6.07	Average	383	181	P
2	2483.50	-18.80	78.67	59.87	74.00	-14.13	Peak	383	181	P
3	4924.00	-13.11	54.73	41.62	54.00	-12.38	Average	100	252	P
4	4924.00	-13.11	60.84	47.73	74.00	-26.27	Peak	100	252	P
5	7386.00	-9.96	45.66	35.70	54.00	-18.30	Average	268	249	P
6	7386.00	-9.96	57.73	47.77	74.00	-26.23	Peak	268	249	P

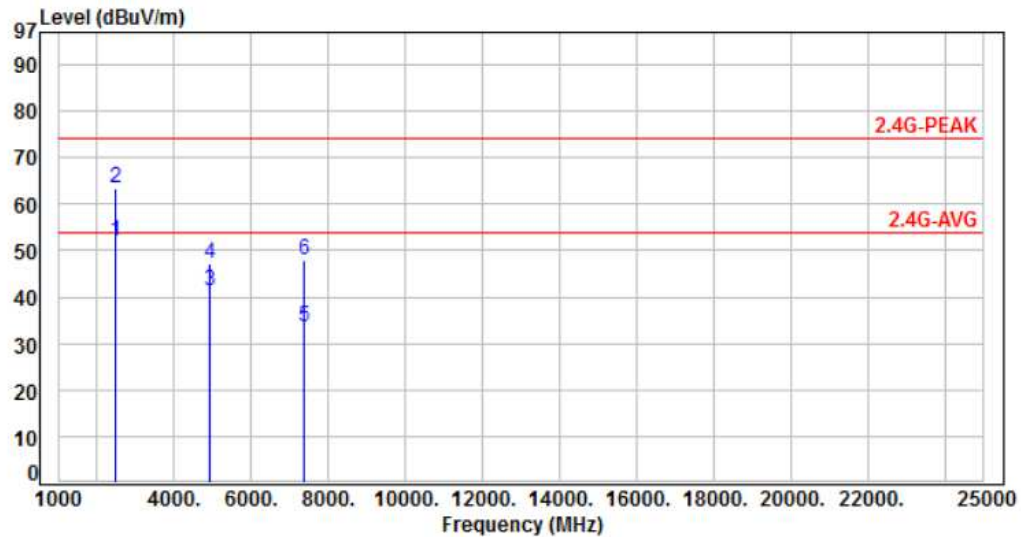
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH11	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.80	70.91	52.11	54.00	-1.89	Average	297	262	P
2	2483.50	-18.80	82.10	63.30	74.00	-10.70	Peak	297	262	P
3	4924.00	-13.11	54.26	41.15	54.00	-12.85	Average	154	209	P
4	4924.00	-13.11	60.36	47.25	74.00	-26.75	Peak	154	209	P
5	7386.00	-9.96	43.41	33.45	54.00	-20.55	Average	100	29	P
6	7386.00	-9.96	57.73	47.77	74.00	-26.23	Peak	100	29	P

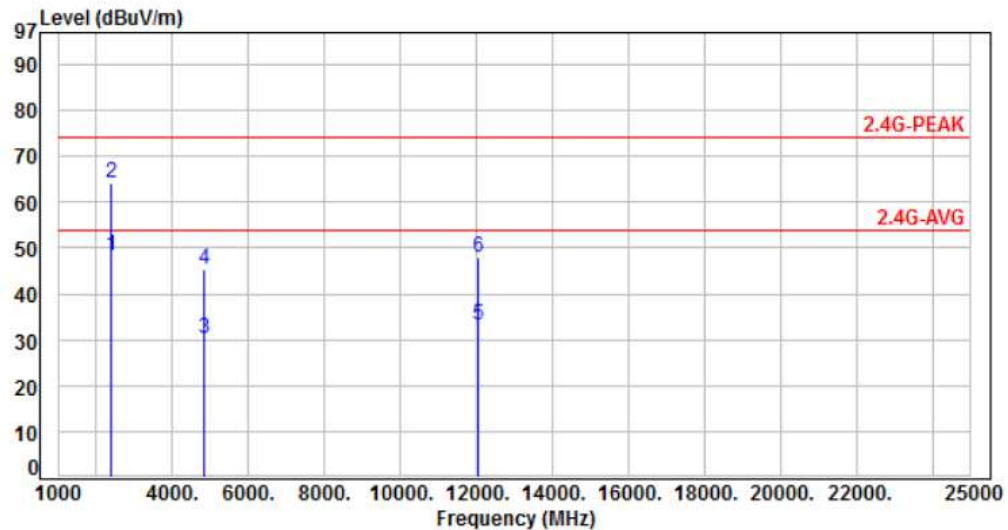
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH01	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	67.41	48.39	54.00	-5.61	Average	158	325	P
2	2390.00	-19.02	83.11	64.09	74.00	-9.91	Peak	158	325	P
3	4824.00	-13.30	43.51	30.21	54.00	-23.79	Average	302	241	P
4	4824.00	-13.30	58.55	45.25	74.00	-28.75	Peak	302	241	P
5	12060.00	-6.02	39.12	33.10	54.00	-20.90	Average	258	202	P
6	12060.00	-6.02	53.82	47.80	74.00	-26.20	Peak	258	202	P

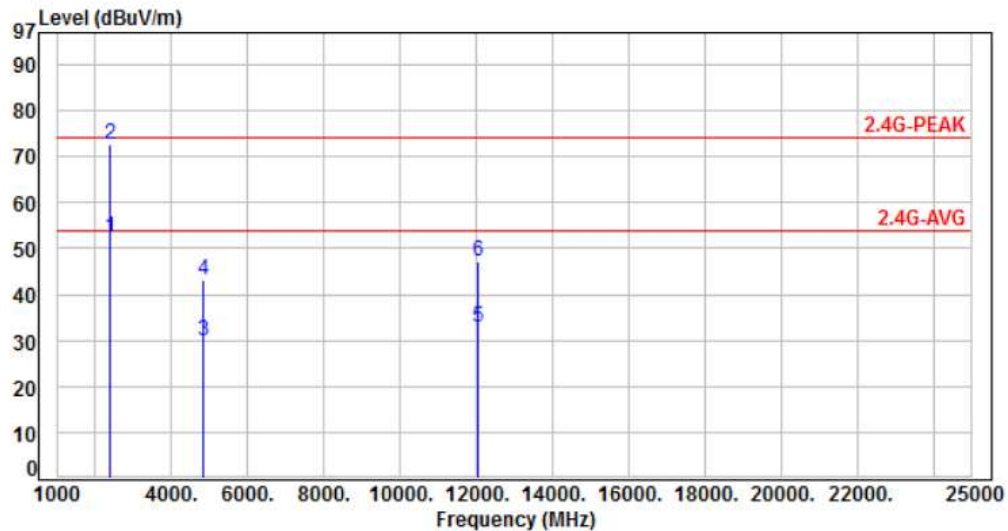
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH01	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	71.46	52.44	54.00	-1.56	Average	100	261	P
2	2390.00	-19.02	91.59	72.57	74.00	-1.43	Peak	100	261	P
3	4824.00	-13.30	43.11	29.81	54.00	-24.19	Average	157	244	P
4	4824.00	-13.30	56.59	43.29	74.00	-30.71	Peak	157	244	P
5	12060.00	-6.02	38.99	32.97	54.00	-21.03	Average	100	159	P
6	12060.00	-6.02	53.08	47.06	74.00	-26.94	Peak	100	159	P

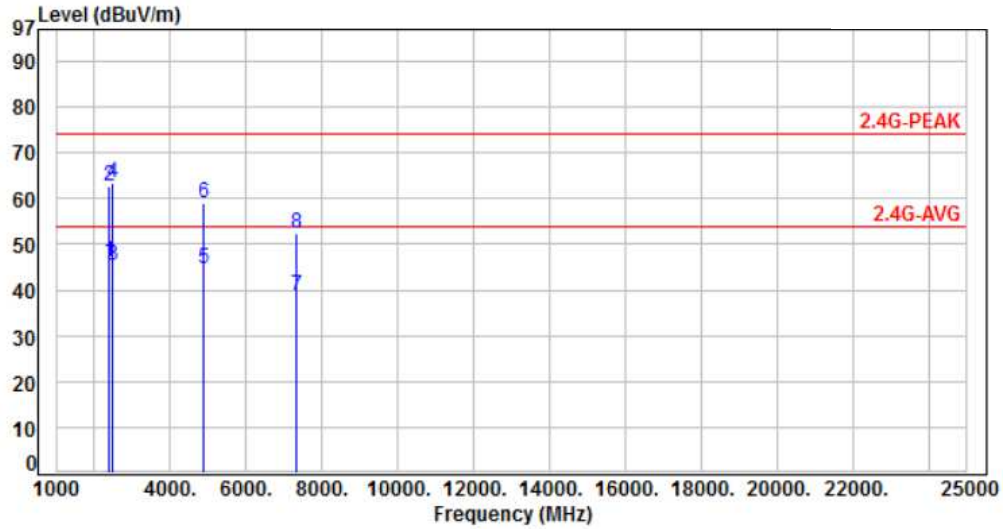
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH06	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	65.20	46.18	54.00	-7.82	Average	164	220	P
2	2390.00	-19.02	81.88	62.86	74.00	-11.14	Peak	164	220	P
3	2483.50	-18.80	64.09	45.29	54.00	-8.71	Average	164	220	P
4	2483.50	-18.80	82.31	63.51	74.00	-10.49	Peak	164	220	P
5	4874.00	-13.21	57.86	44.65	54.00	-9.35	Average	139	251	P
6	4874.00	-13.21	72.37	59.16	74.00	-14.84	Peak	139	251	P
7	7311.00	-10.15	48.71	38.56	54.00	-15.44	Average	212	250	P
8	7311.00	-10.15	62.46	52.31	74.00	-21.69	Peak	212	250	P

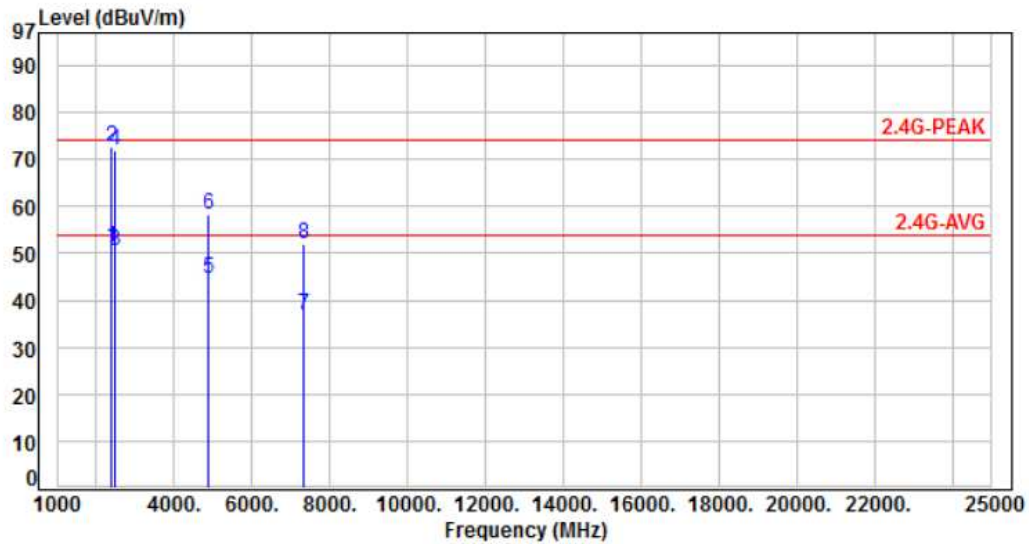
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH06	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	70.12	51.10	54.00	-2.90	Average	100	262	P
2	2390.00	-19.02	91.55	72.53	74.00	-1.47	Peak	100	262	P
3	2483.50	-18.80	69.41	50.61	54.00	-3.39	Average	100	262	P
4	2483.50	-18.80	90.58	71.78	74.00	-2.22	Peak	100	262	P
5	4874.00	-13.21	57.82	44.61	54.00	-9.39	Average	100	213	P
6	4874.00	-13.21	71.64	58.43	74.00	-15.57	Peak	100	213	P
7	7311.00	-10.15	46.91	36.76	54.00	-17.24	Average	100	71	P
8	7311.00	-10.15	62.00	51.85	74.00	-22.15	Peak	100	71	P

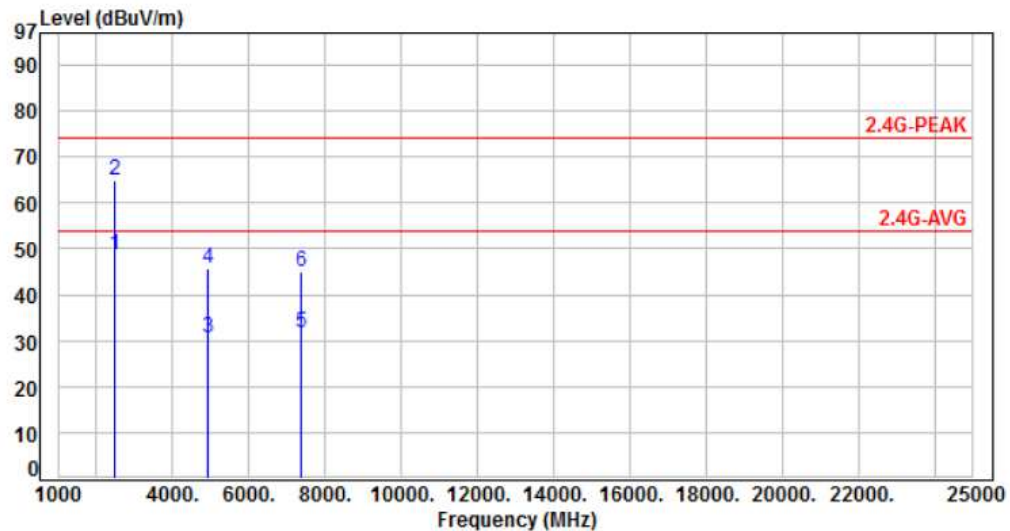
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH11	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.80	67.30	48.50	54.00	-5.50	Average	177	341	P
2	2483.50	-18.80	83.86	65.06	74.00	-8.94	Peak	177	341	P
3	4924.00	-13.11	43.66	30.55	54.00	-23.45	Average	310	257	P
4	4924.00	-13.11	58.68	45.57	74.00	-28.43	Peak	310	257	P
5	7386.00	-9.96	41.53	31.57	54.00	-22.43	Average	237	252	P
6	7386.00	-9.96	55.04	45.08	74.00	-28.92	Peak	237	252	P

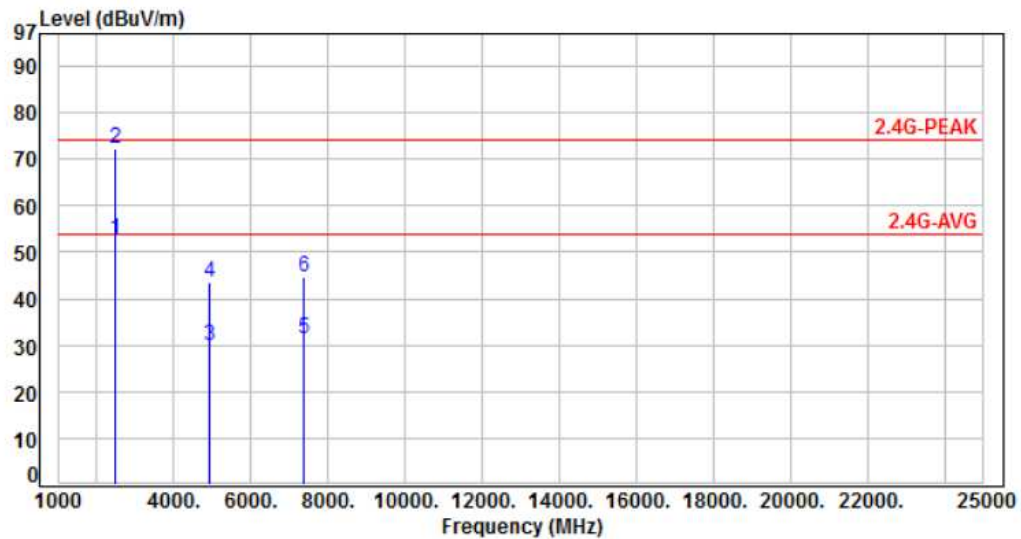
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH11	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.80	71.39	52.59	54.00	-1.41	Average	157	263	P
2	2483.50	-18.80	91.18	72.38	74.00	-1.62	Peak	157	263	P
3	4924.00	-13.11	43.02	29.91	54.00	-24.09	Average	148	216	P
4	4924.00	-13.11	56.54	43.43	74.00	-30.57	Peak	148	216	P
5	7386.00	-9.96	41.32	31.36	54.00	-22.64	Average	100	37	P
6	7386.00	-9.96	54.69	44.73	74.00	-29.27	Peak	100	37	P

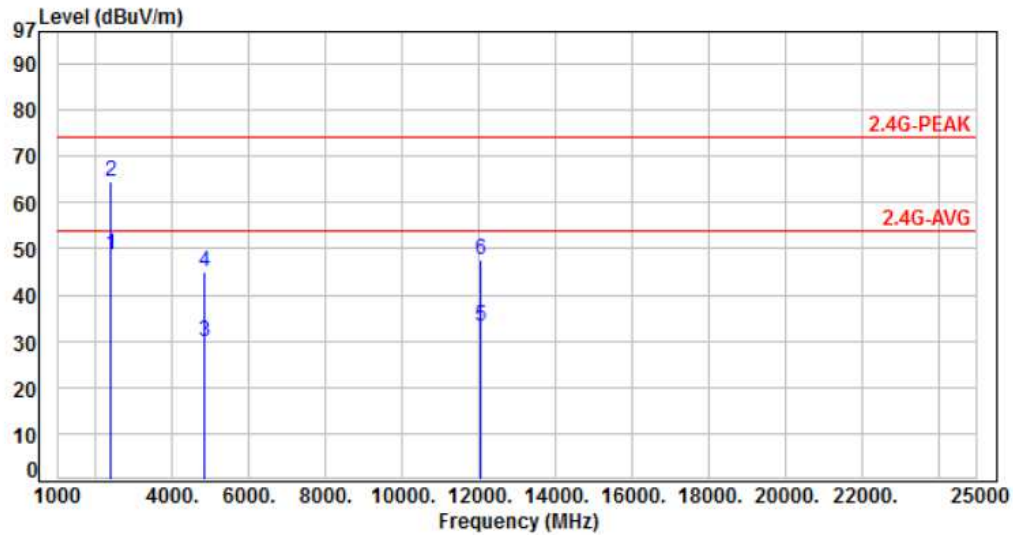
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH01	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	67.87	48.85	54.00	-5.15	Average	154	321	P
2	2390.00	-19.02	83.45	64.43	74.00	-9.57	Peak	154	321	P
3	4824.00	-13.30	43.23	29.93	54.00	-24.07	Average	298	244	P
4	4824.00	-13.30	58.15	44.85	74.00	-29.15	Peak	298	244	P
5	12060.00	-6.02	39.08	33.06	54.00	-20.94	Average	247	211	P
6	12060.00	-6.02	53.75	47.73	74.00	-26.27	Peak	247	211	P

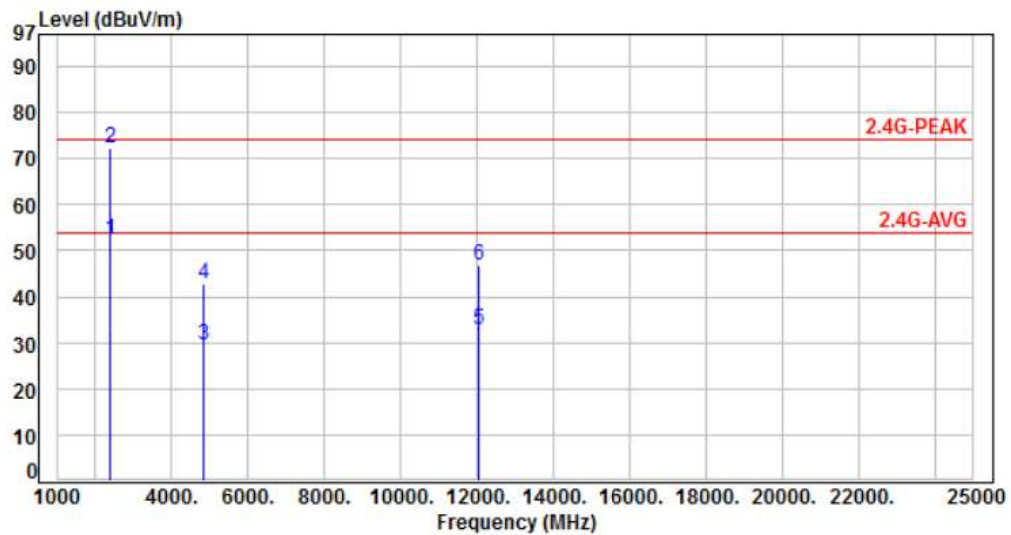
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH01	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	71.56	52.54	54.00	-1.46	Average	100	263	P
2	2390.00	-19.02	91.47	72.45	74.00	-1.55	Peak	100	263	P
3	4824.00	-13.30	42.89	29.59	54.00	-24.41	Average	154	241	P
4	4824.00	-13.30	56.13	42.83	74.00	-31.17	Peak	154	241	P
5	12060.00	-6.02	38.78	32.76	54.00	-21.24	Average	100	153	P
6	12060.00	-6.02	52.78	46.76	74.00	-27.24	Peak	100	153	P

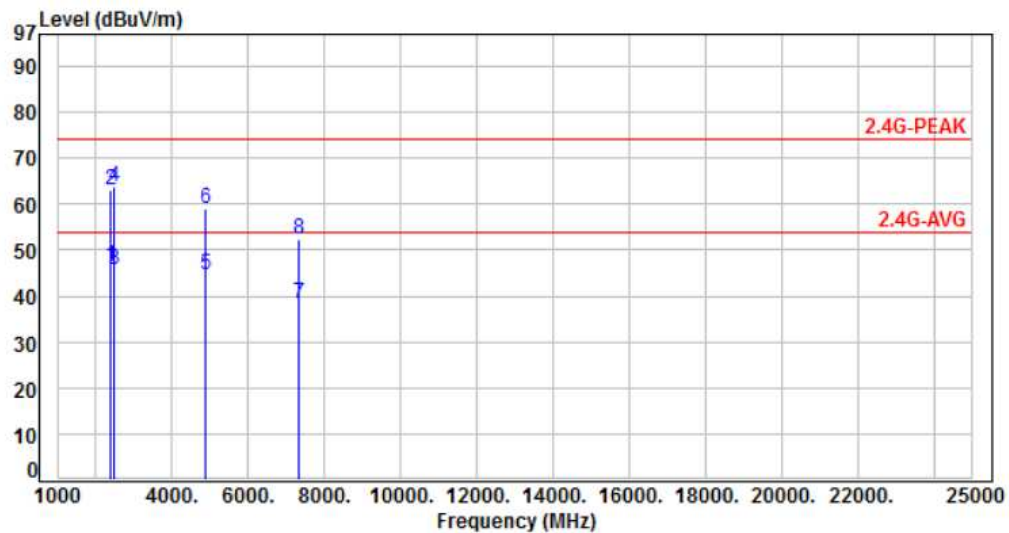
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH06	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	65.37	46.35	54.00	-7.65	Average	163	212	P
2	2390.00	-19.02	81.97	62.95	74.00	-11.05	Peak	163	212	P
3	2483.50	-18.80	64.45	45.65	54.00	-8.35	Average	163	212	P
4	2483.50	-18.80	82.48	63.68	74.00	-10.32	Peak	163	212	P
5	4874.00	-13.21	57.72	44.51	54.00	-9.49	Average	142	254	P
6	4874.00	-13.21	72.28	59.07	74.00	-14.93	Peak	142	254	P
7	7311.00	-10.15	48.52	38.37	54.00	-15.63	Average	224	253	P
8	7311.00	-10.15	62.37	52.22	74.00	-21.78	Peak	224	253	P

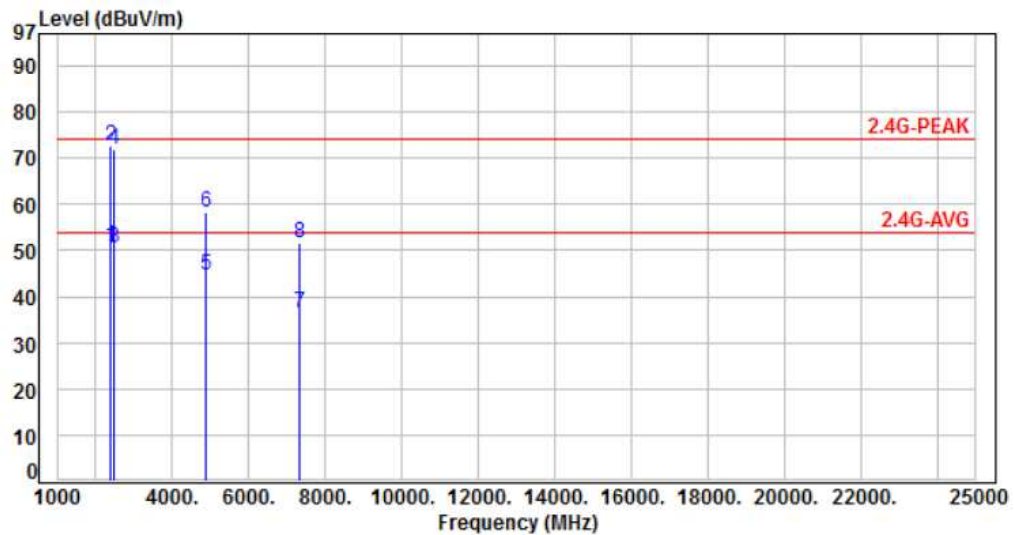
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH06	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	69.78	50.76	54.00	-3.24	Average	100	273	P
2	2390.00	-19.02	91.83	72.81	74.00	-1.19	Peak	100	273	P
3	2483.50	-18.80	69.51	50.71	54.00	-3.29	Average	100	273	P
4	2483.50	-18.80	90.80	72.00	74.00	-2.00	Peak	100	273	P
5	4874.00	-13.21	57.72	44.51	54.00	-9.49	Average	100	216	P
6	4874.00	-13.21	71.45	58.24	74.00	-15.76	Peak	100	216	P
7	7311.00	-10.15	46.68	36.53	54.00	-17.47	Average	100	73	P
8	7311.00	-10.15	61.86	51.71	74.00	-22.29	Peak	100	73	P

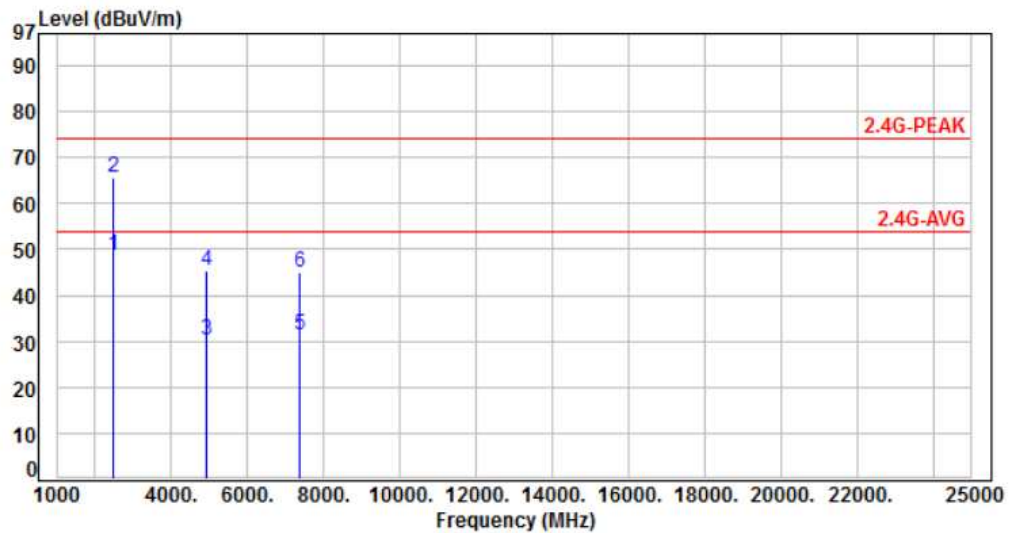
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH11	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.80	67.59	48.79	54.00	-5.21	Average	168	324	P
2	2483.50	-18.80	84.61	65.81	74.00	-8.19	Peak	168	324	P
3	4924.00	-13.11	43.22	30.11	54.00	-23.89	Average	298	247	P
4	4924.00	-13.11	58.35	45.24	74.00	-28.76	Peak	298	247	P
5	7386.00	-9.96	41.16	31.20	54.00	-22.80	Average	244	261	P
6	7386.00	-9.96	54.81	44.85	74.00	-29.15	Peak	244	261	P

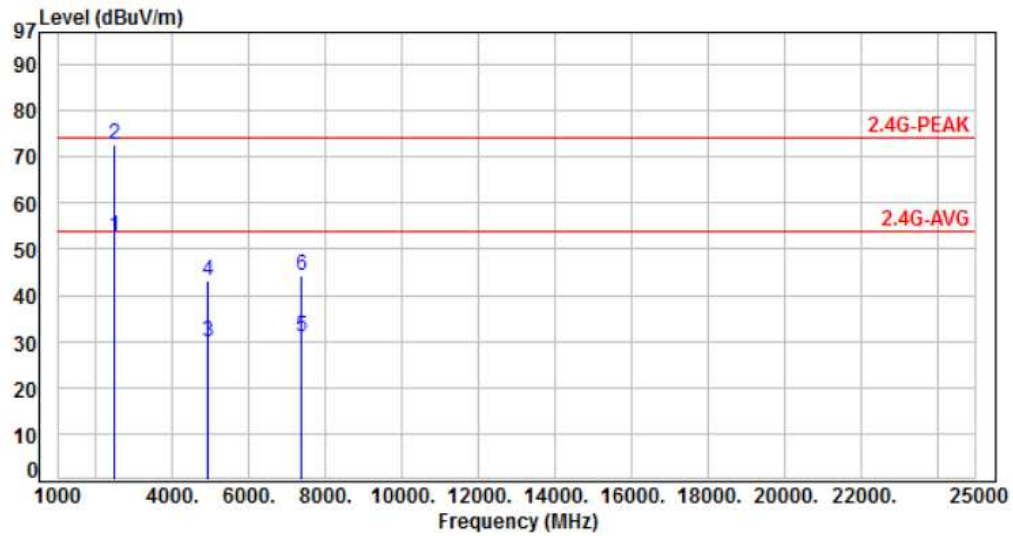
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH11	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.80	71.53	52.73	54.00	-1.27	Average	229	262	P
2	2483.50	-18.80	91.64	72.84	74.00	-1.16	Peak	229	262	P
3	4924.00	-13.11	42.82	29.71	54.00	-24.29	Average	153	214	P
4	4924.00	-13.11	56.17	43.06	74.00	-30.94	Peak	153	214	P
5	7386.00	-9.96	41.05	31.09	54.00	-22.91	Average	100	41	P
6	7386.00	-9.96	54.32	44.36	74.00	-29.64	Peak	100	41	P

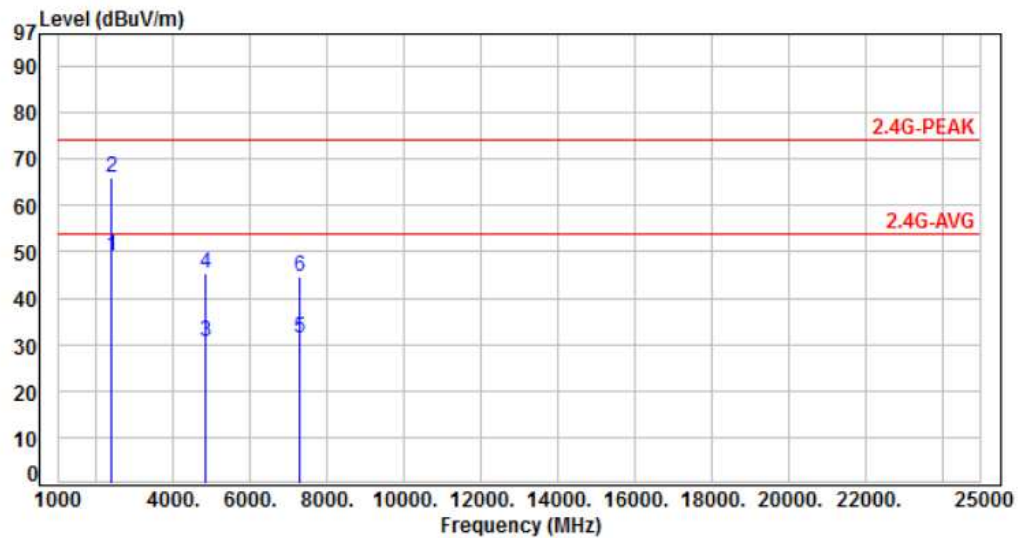
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH03	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	68.04	49.02	54.00	-4.98	Average	299	155	P
2	2390.00	-19.02	85.03	66.01	74.00	-7.99	Peak	299	155	P
3	4844.00	-13.26	43.87	30.61	54.00	-23.39	Average	311	252	P
4	4844.00	-13.26	58.69	45.43	74.00	-28.57	Peak	311	252	P
5	7266.00	-10.26	41.62	31.36	54.00	-22.64	Average	206	211	P
6	7266.00	-10.26	54.87	44.61	74.00	-29.39	Peak	206	211	P

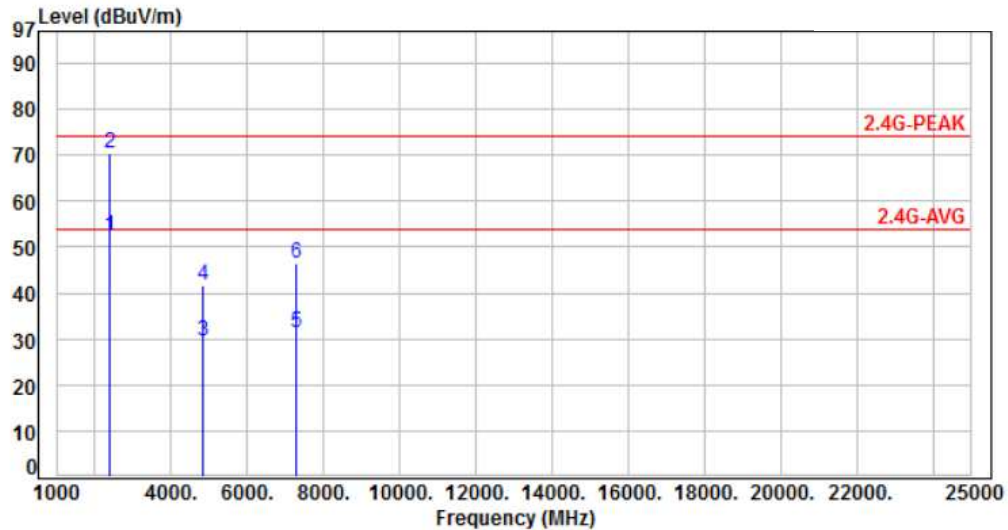
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH03	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	71.40	52.38	54.00	-1.62	Average	116	267	P
2	2390.00	-19.02	89.59	70.57	74.00	-3.43	Peak	116	267	P
3	4844.00	-13.26	42.69	29.43	54.00	-24.57	Average	155	213	P
4	4844.00	-13.26	54.88	41.62	74.00	-32.38	Peak	155	213	P
5	7266.00	-10.26	41.73	31.47	54.00	-22.53	Average	100	65	P
6	7266.00	-10.26	56.67	46.41	74.00	-27.59	Peak	100	65	P

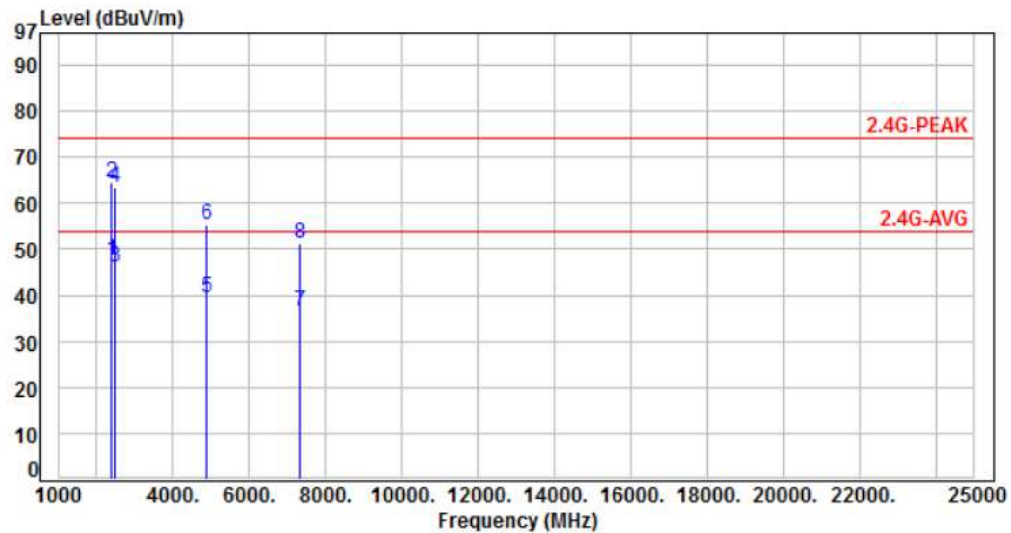
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH06	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	66.53	47.51	54.00	-6.49	Average	159	213	P
2	2390.00	-19.02	83.52	64.50	74.00	-9.50	Peak	159	213	P
3	2483.50	-18.80	64.94	46.14	54.00	-7.86	Average	151	232	P
4	2483.50	-18.80	82.28	63.48	74.00	-10.52	Peak	151	232	P
5	4874.00	-13.21	52.58	39.37	54.00	-14.63	Average	147	268	P
6	4874.00	-13.21	68.38	55.17	74.00	-18.83	Peak	147	268	P
7	7311.00	-10.15	46.53	36.38	54.00	-17.62	Average	231	259	P
8	7311.00	-10.15	61.26	51.11	74.00	-22.89	Peak	231	259	P

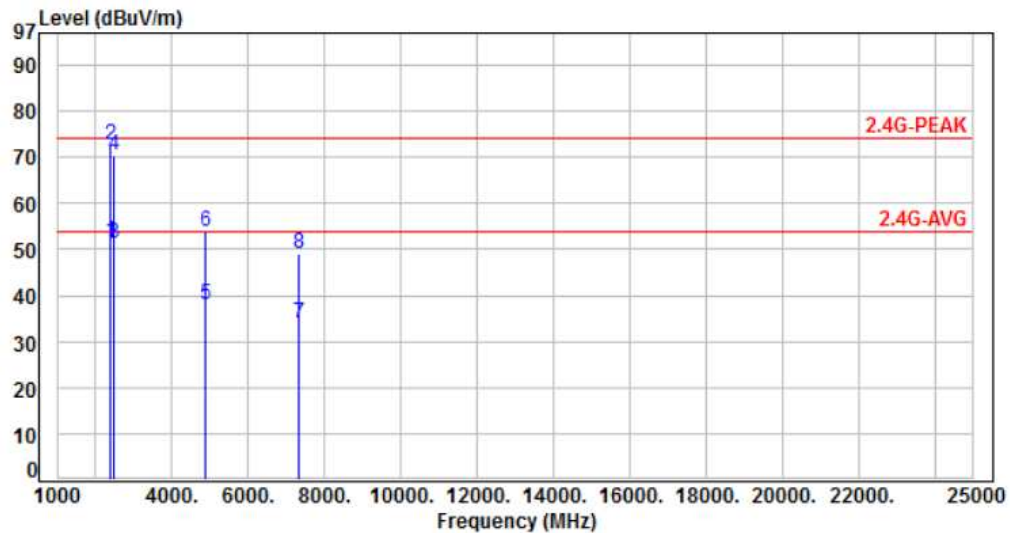
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH06	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-19.02	70.53	51.51	54.00	-2.49	Average	173	262	P
2	2390.00	-19.02	91.52	72.50	74.00	-1.50	Peak	173	262	P
3	2483.50	-18.80	69.94	51.14	54.00	-2.86	Average	170	275	P
4	2483.50	-18.80	89.28	70.48	74.00	-3.52	Peak	170	275	P
5	4874.00	-13.21	51.38	38.17	54.00	-15.83	Average	100	223	P
6	4874.00	-13.21	66.99	53.78	74.00	-20.22	Peak	100	223	P
7	7311.00	-10.15	44.16	34.01	54.00	-19.99	Average	100	81	P
8	7311.00	-10.15	59.26	49.11	74.00	-24.89	Peak	100	81	P

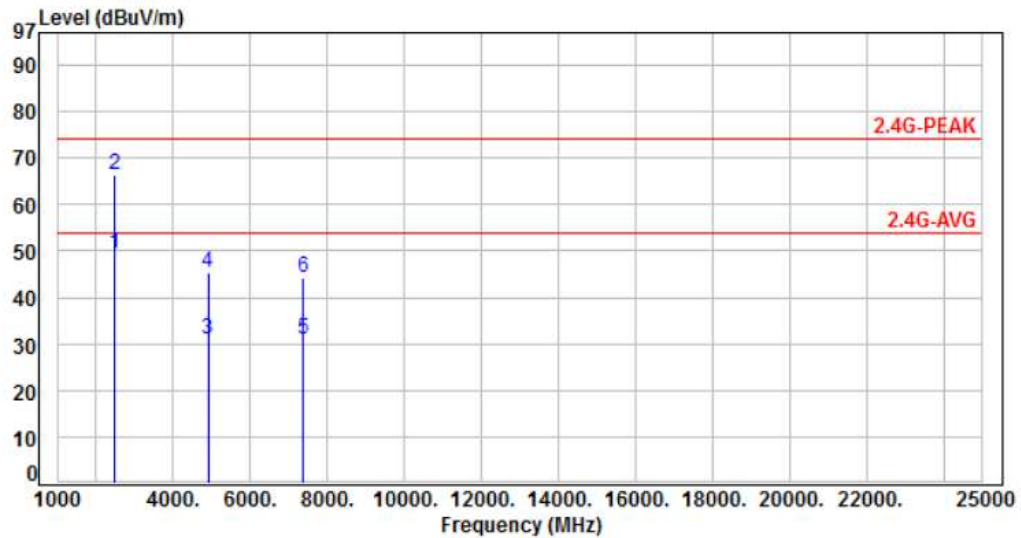
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH09	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.80	68.23	49.43	54.00	-4.57	Average	162	265	P
2	2483.50	-18.80	85.34	66.54	74.00	-7.46	Peak	162	265	P
3	4904.00	-13.14	43.96	30.82	54.00	-23.18	Average	151	232	P
4	4904.00	-13.14	58.55	45.41	74.00	-28.59	Peak	151	232	P
5	7356.00	-10.03	40.97	30.94	54.00	-23.06	Average	100	53	P
6	7356.00	-10.03	54.38	44.35	74.00	-29.65	Peak	100	53	P

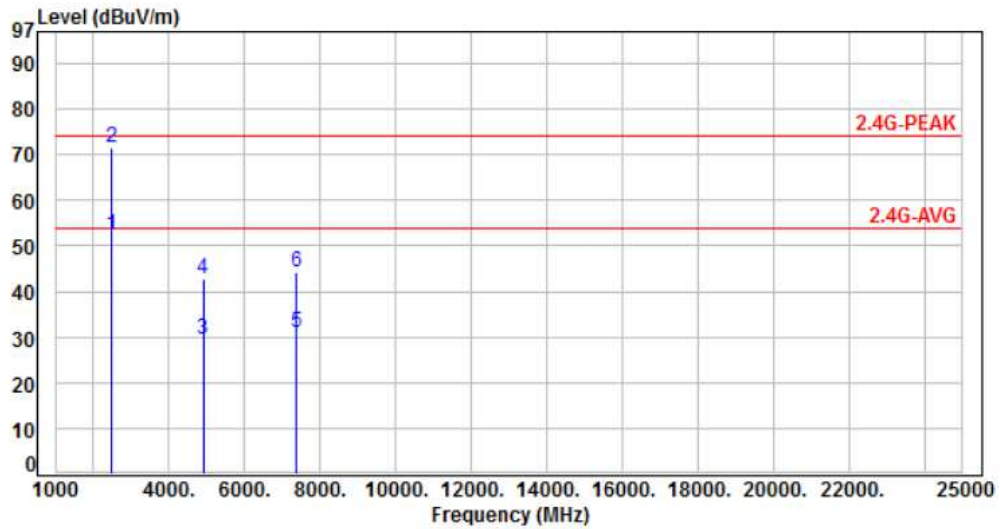
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH09	Temperature	: 24 °C
Test Date	: Apr. 20, 2017	Humidity	: 61 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.80	71.23	52.43	54.00	-1.57	Average	162	265	P
2	2483.50	-18.80	90.34	71.54	74.00	-2.46	Peak	162	265	P
3	4904.00	-13.14	42.73	29.59	54.00	-24.41	Average	266	251	P
4	4904.00	-13.14	56.05	42.91	74.00	-31.09	Peak	266	251	P
5	7356.00	-10.03	40.89	30.86	54.00	-23.14	Average	198	213	P
6	7356.00	-10.03	54.17	44.14	74.00	-29.86	Peak	198	213	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

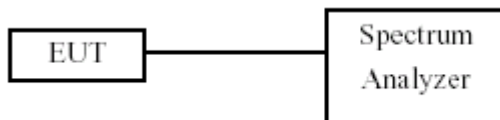
7.1 Test Limit

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

7.2 Test Procedure

- The transmitter output was connected to the spectrum analyzer via a low lose cable.
- 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.
- 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.
- 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 : Apr. 28, 2017

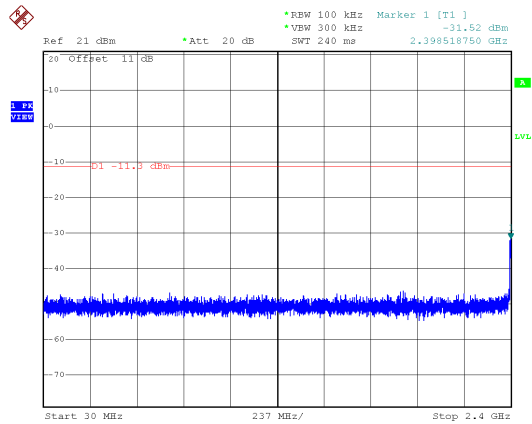
Humidity : 62%

Note: Test plots refers to the following pages.

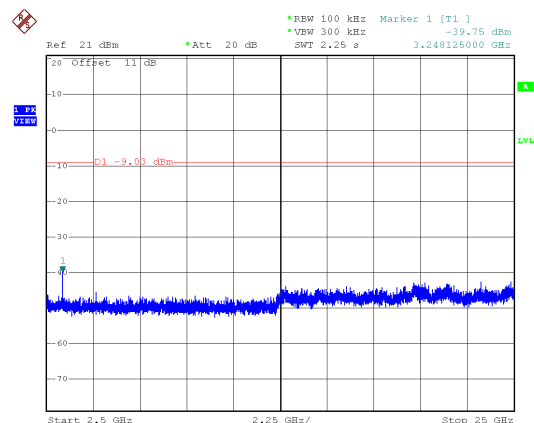
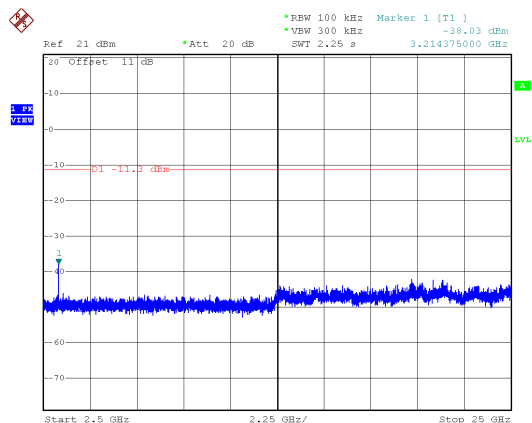
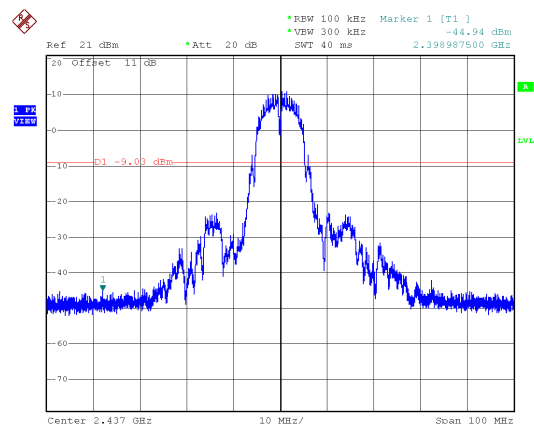
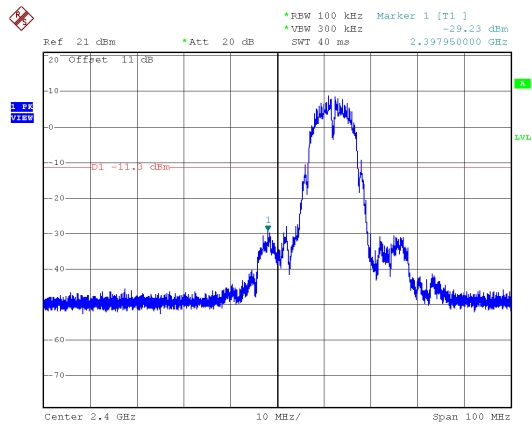
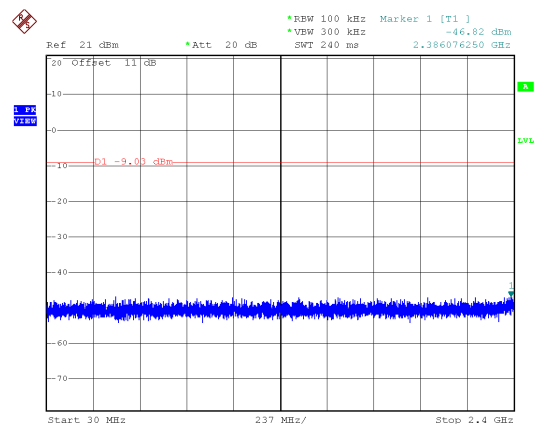


ANT 1

Modulation Type: 802.11b, CH 01



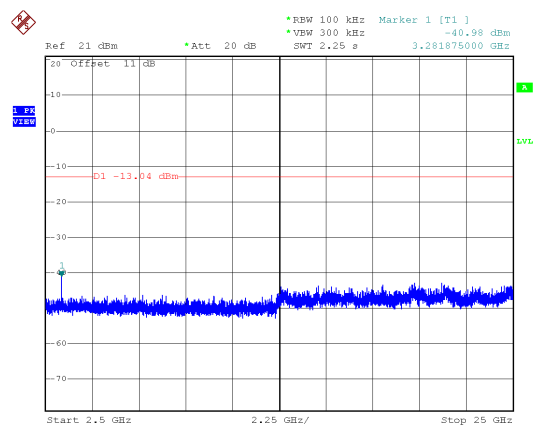
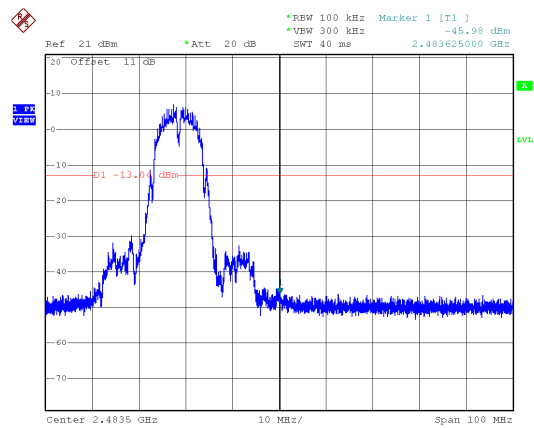
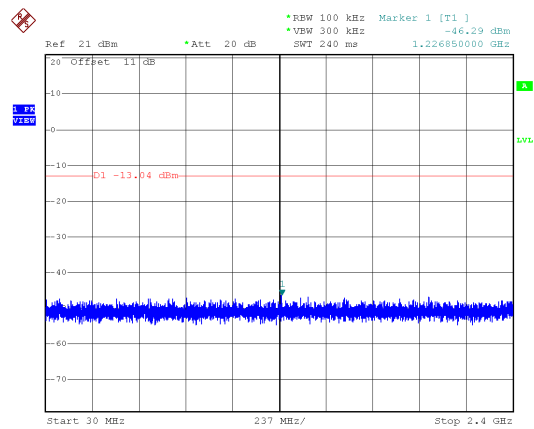
Modulation Type: 802.11b, CH 06





ANT 1

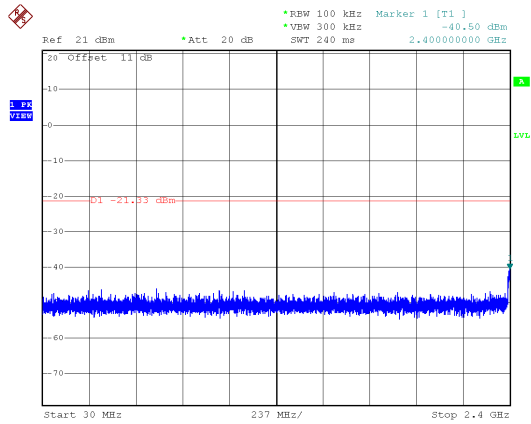
Modulation Type: 802.11b, CH 11



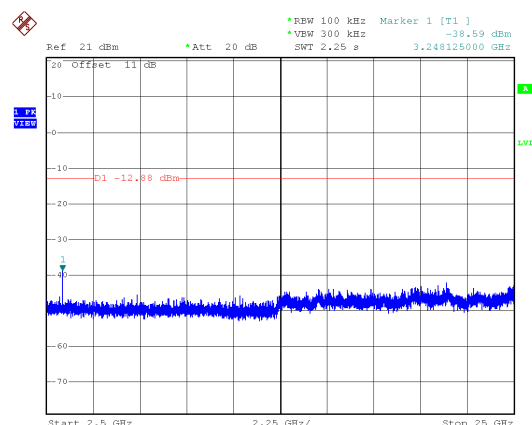
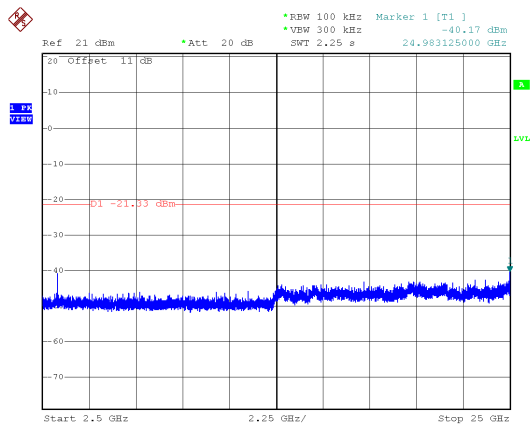
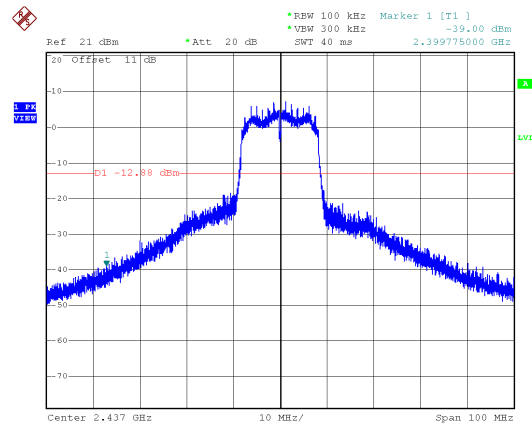
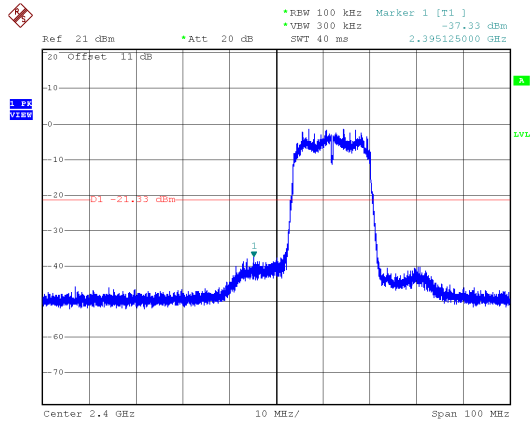
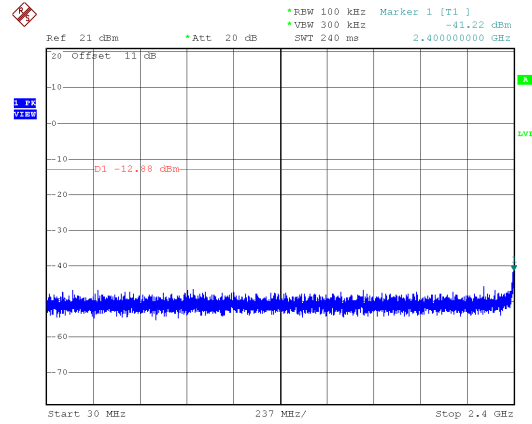


ANT 1

Modulation Type: 802.11g, CH 01



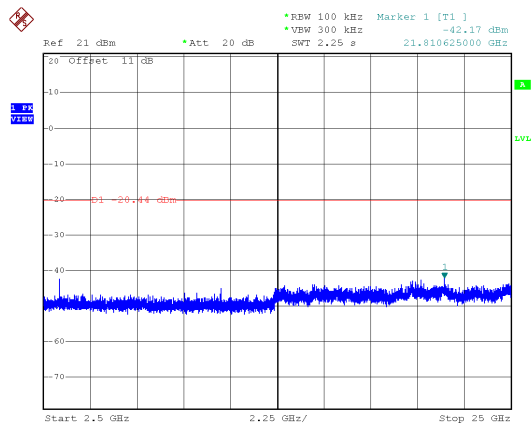
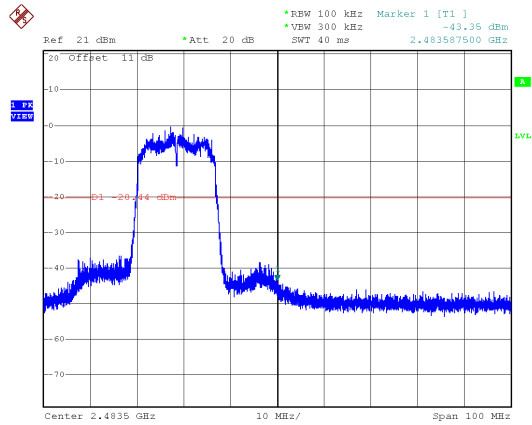
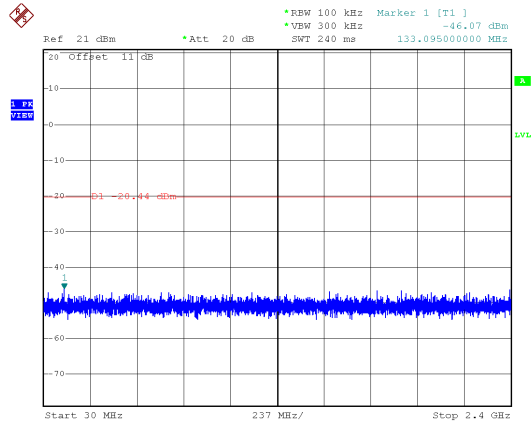
Modulation Type: 802.11g, CH 06





ANT 1

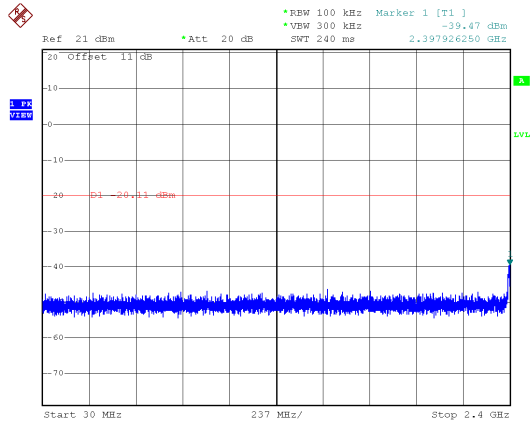
Modulation Type: 802.11g, CH 11



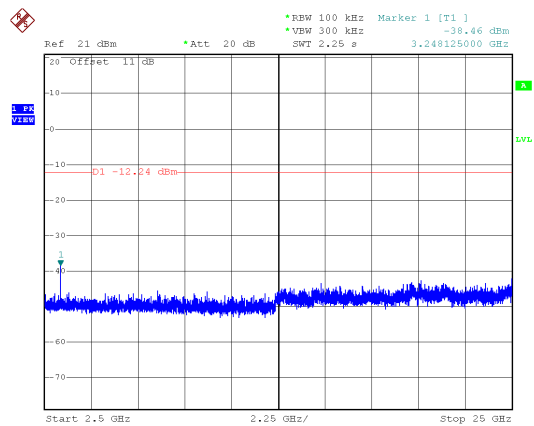
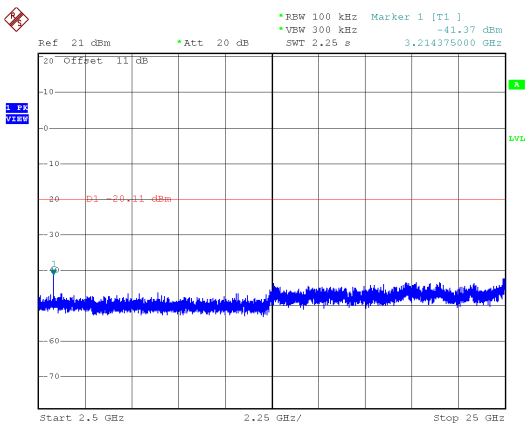
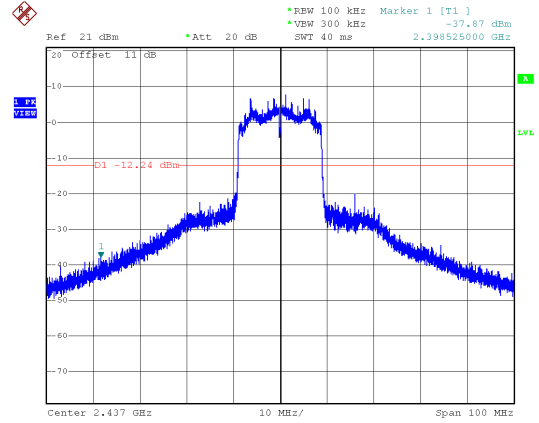
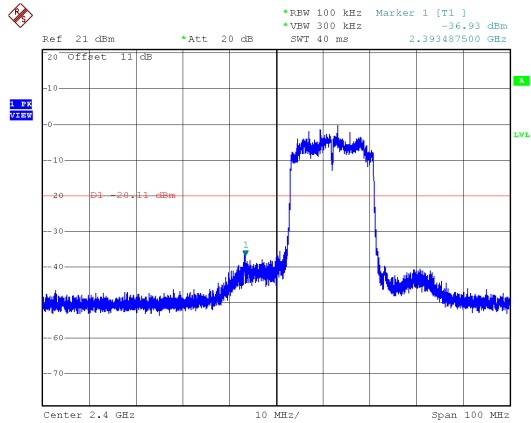
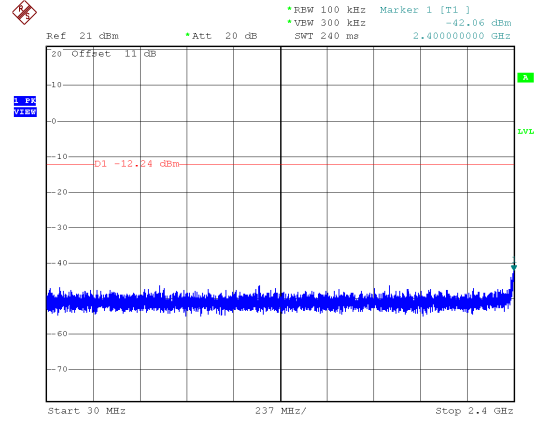


ANT 1

Modulation Type: 802.11n HT20, CH01



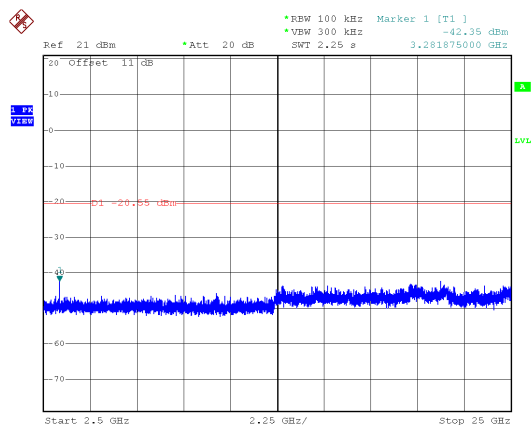
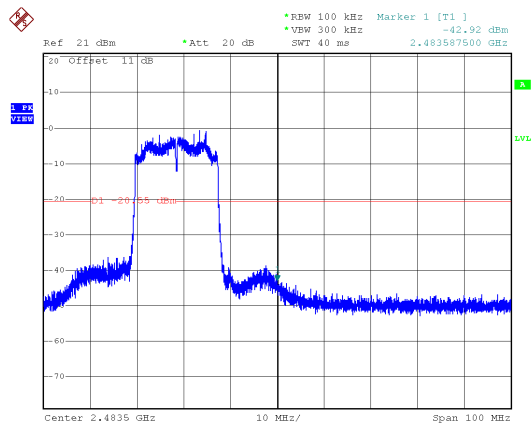
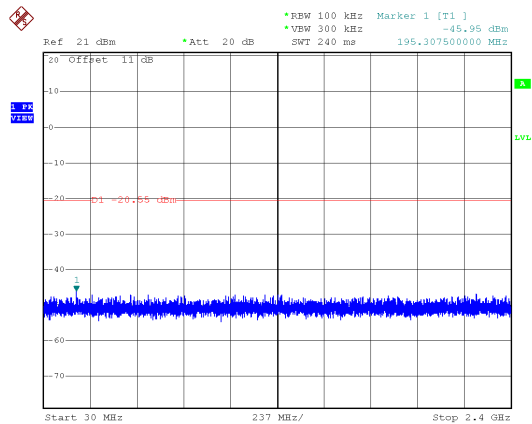
Modulation Type: 802.11n HT20, CH06





ANT 1

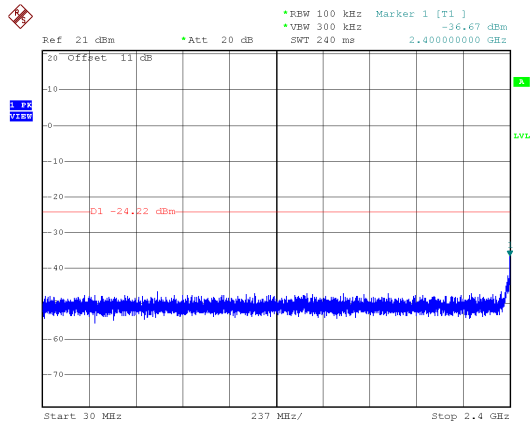
Modulation Type: 802.11n HT20, CH11



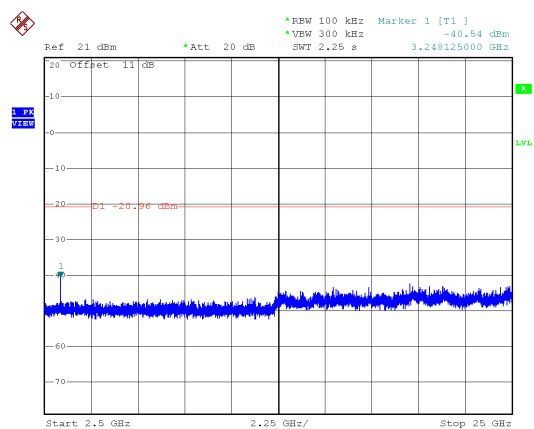
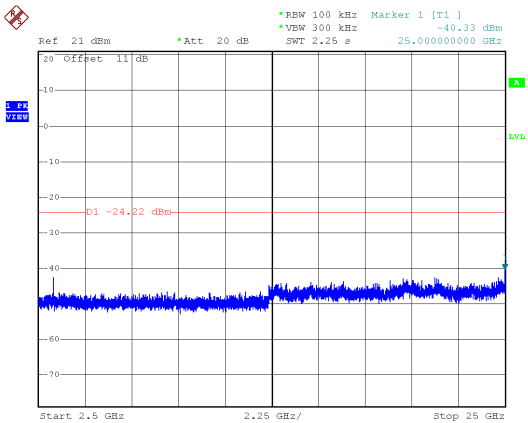
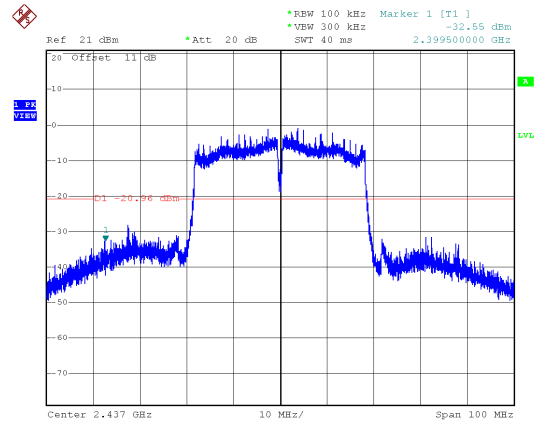
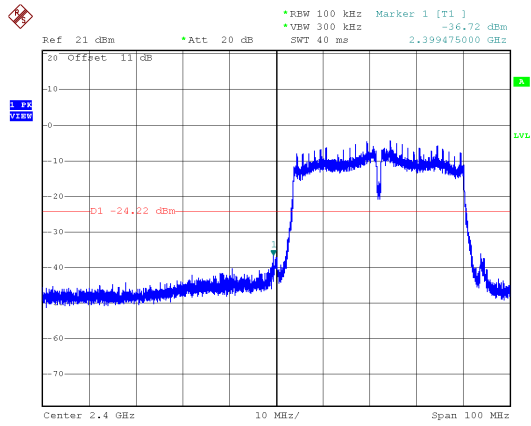
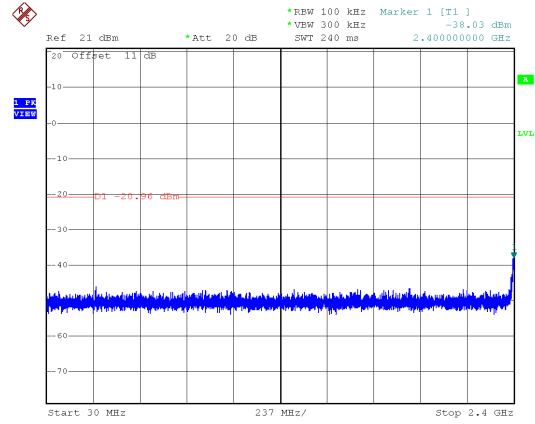


ANT 1

Modulation Type: 802.11n HT40, CH03



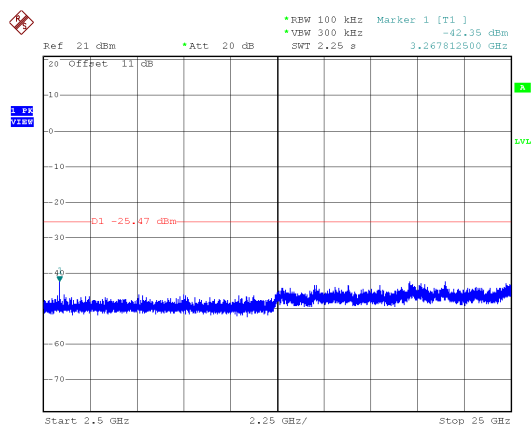
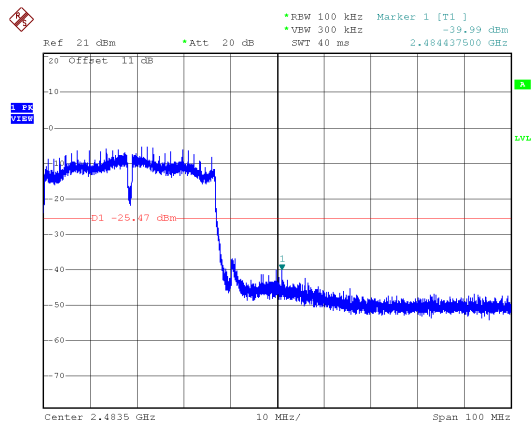
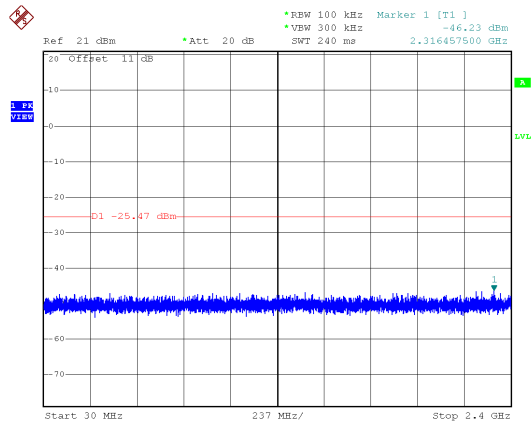
Modulation Type: 802.11n HT40, CH06





ANT 1

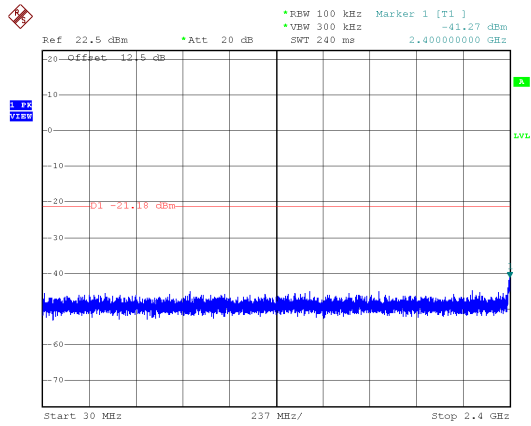
Modulation Type: 802.11n HT40, CH09



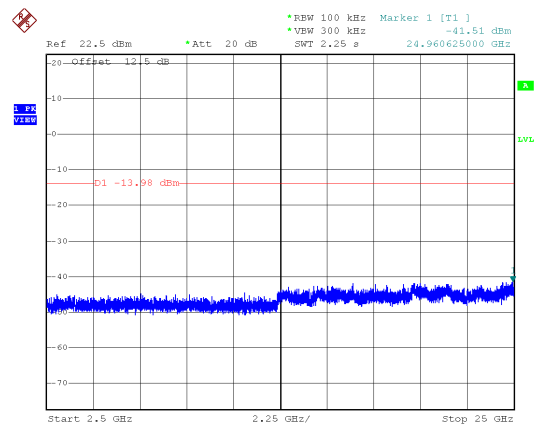
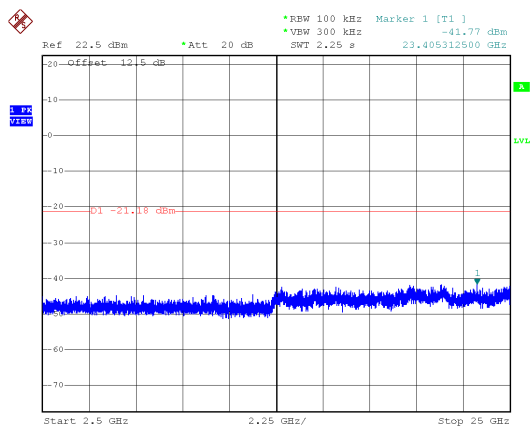
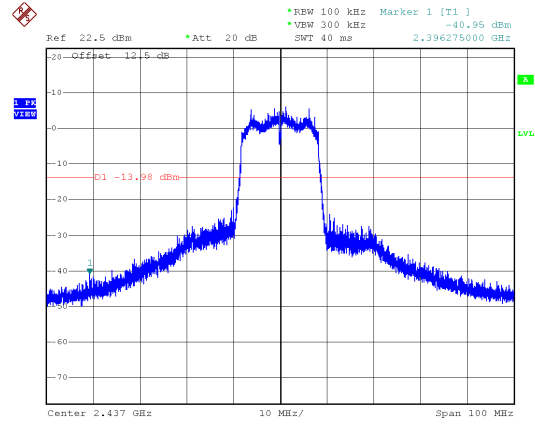
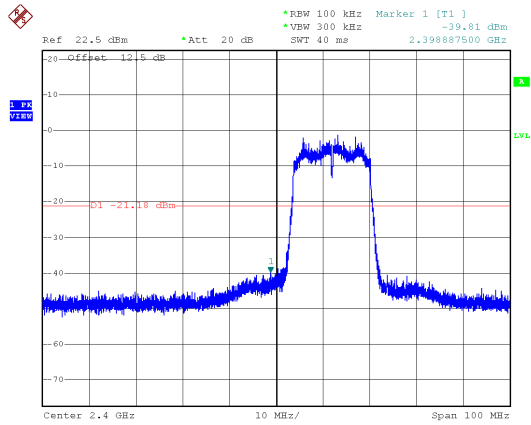
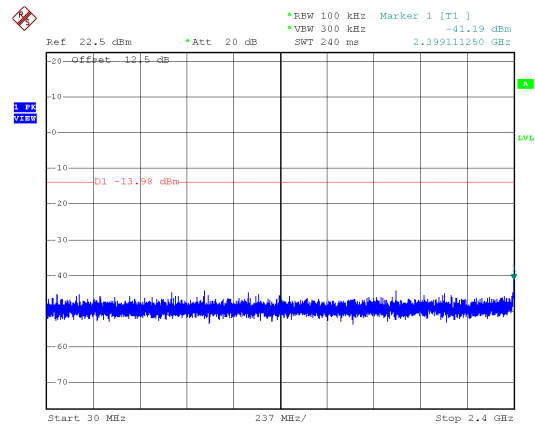


ANT 2

Modulation Type: 802.11g, CH 01



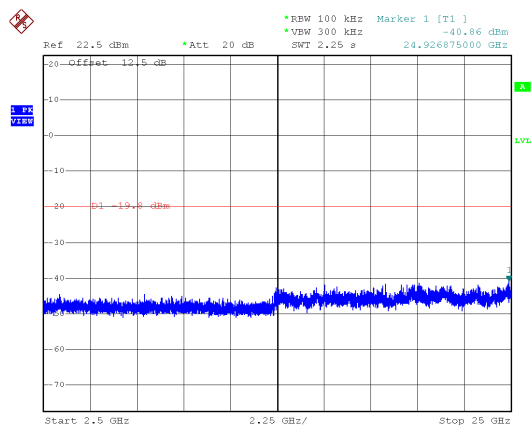
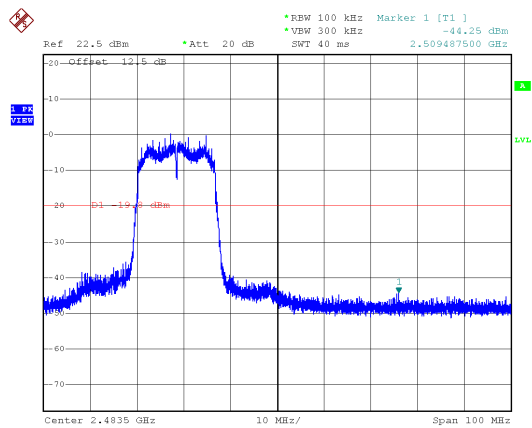
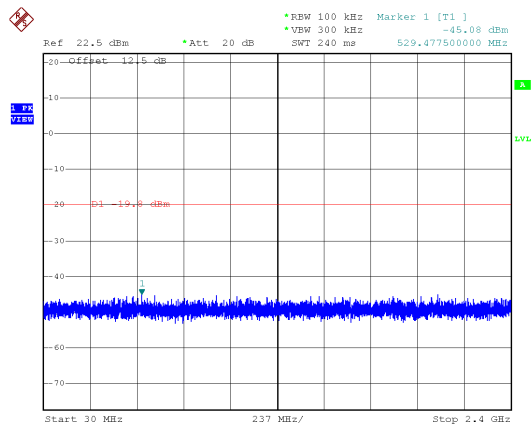
Modulation Type: 802.11g, CH 06





ANT 2

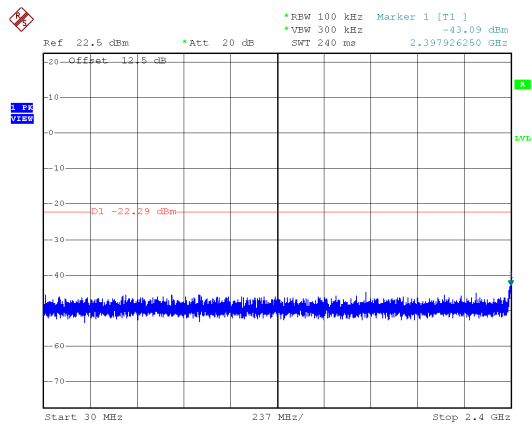
Modulation Type: 802.11g, CH 11



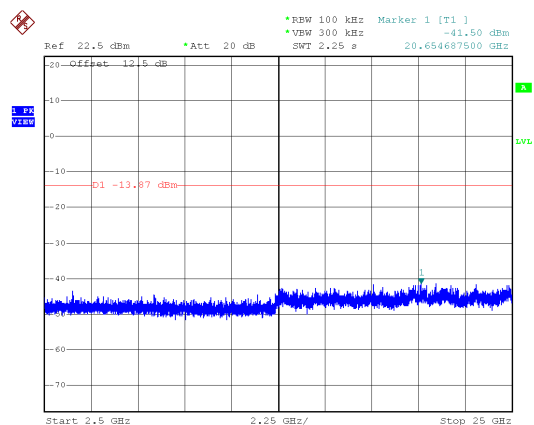
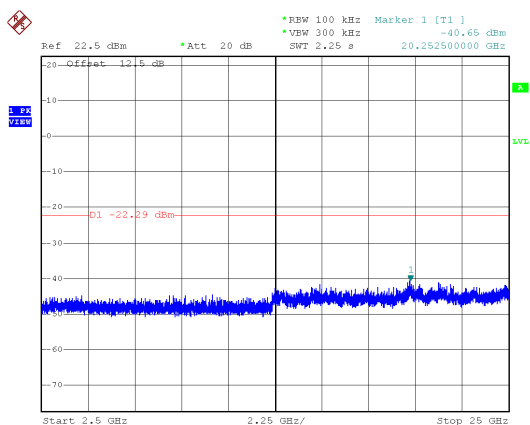
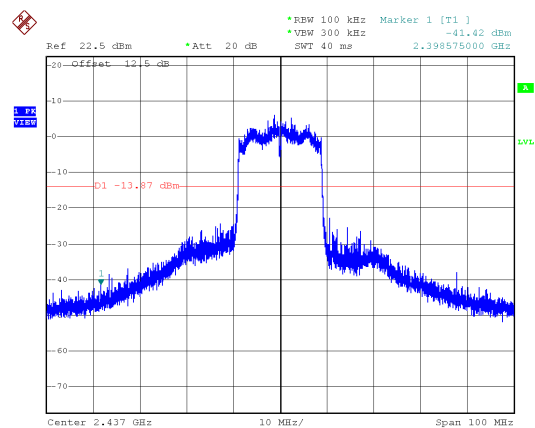
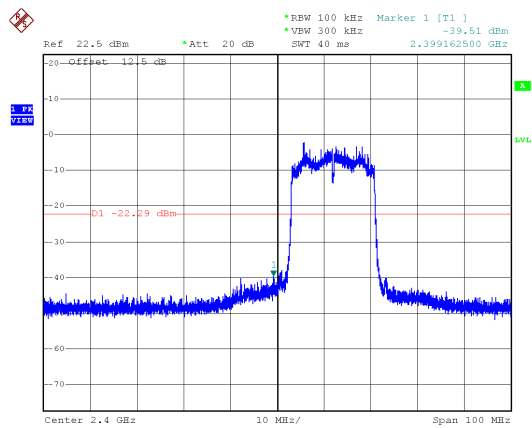
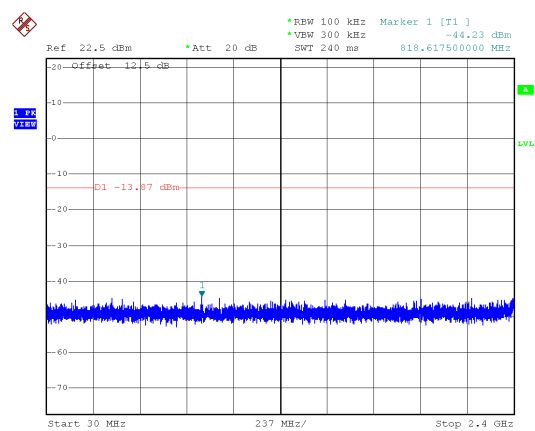


ANT 2

Modulation Type: 802.11n HT20, CH01



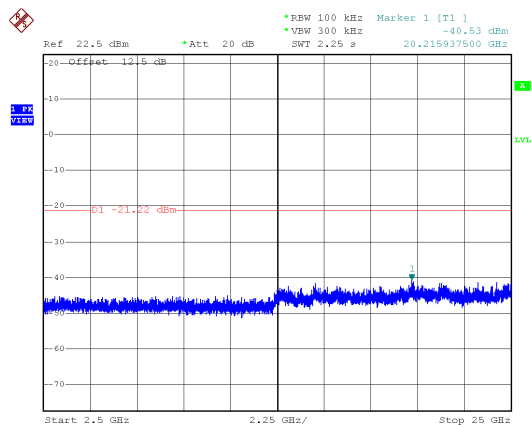
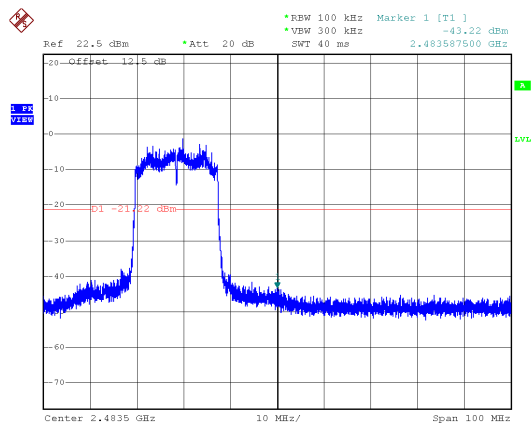
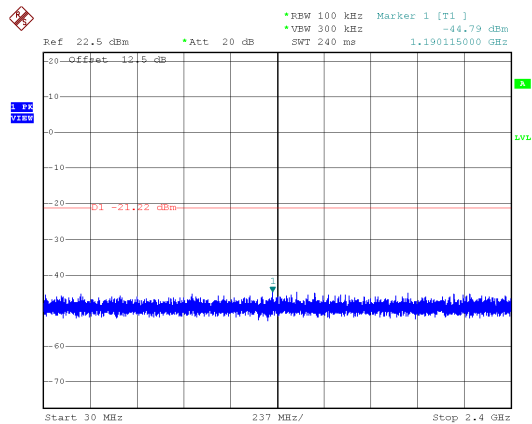
Modulation Type: 802.11n HT20, CH06





ANT 2

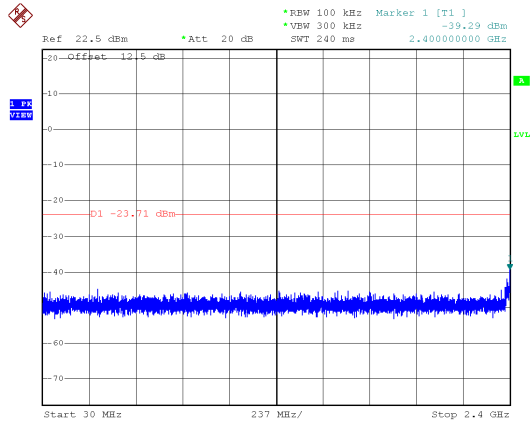
Modulation Type: 802.11n HT20, CH11



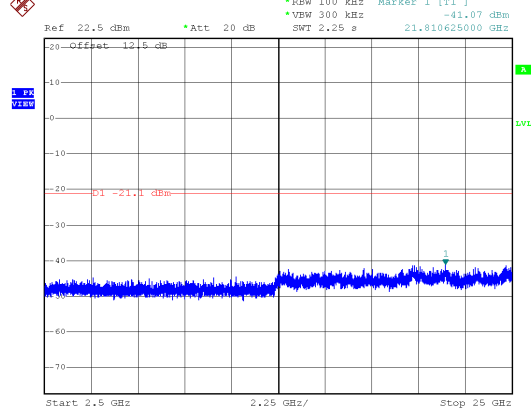
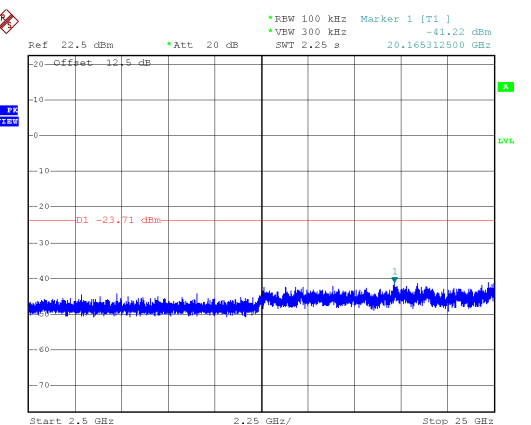
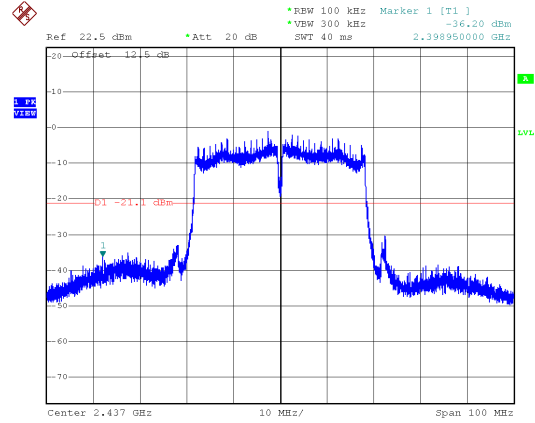
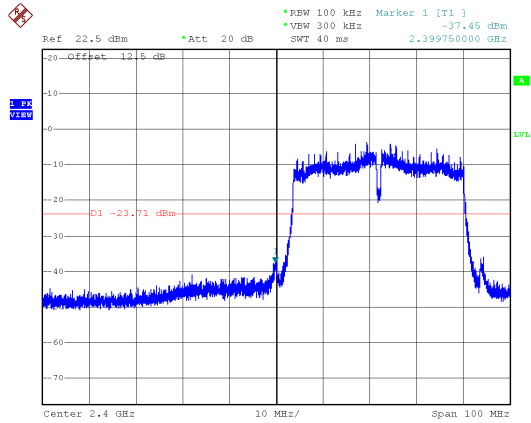
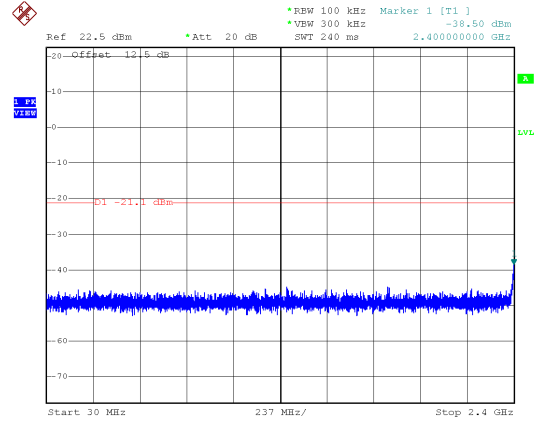


ANT 2

Modulation Type: 802.11n HT40, CH03



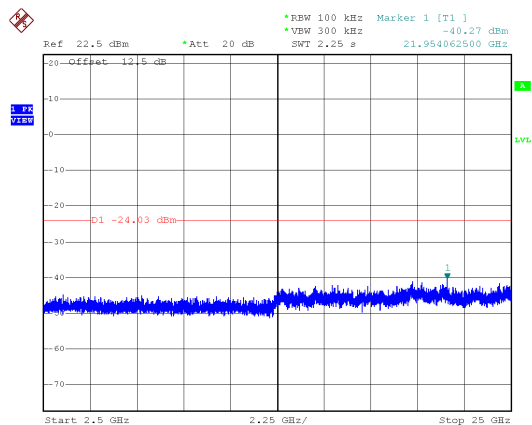
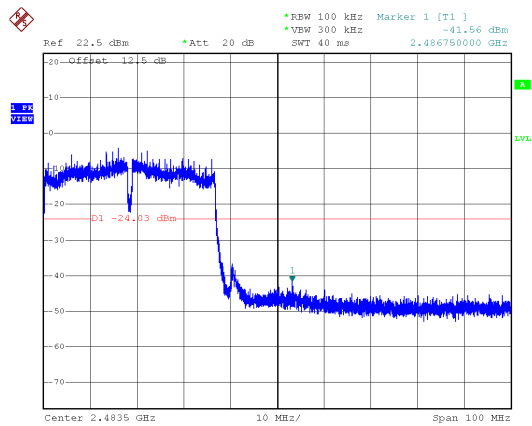
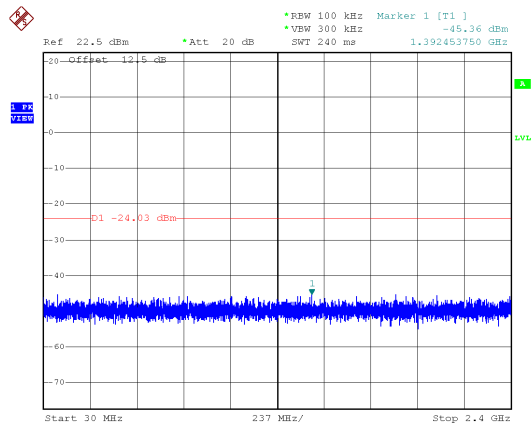
Modulation Type: 802.11n HT40, CH06





ANT 2

Modulation Type: 802.11n HT40, CH09





8. 6dB Bandwidth Measurement Data

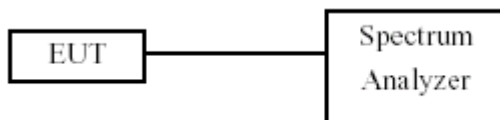
8.1 Test Limit

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

8.2 Test Procedures

- The transmitter output was connected to the spectrum analyzer.
- Set RBW of spectrum analyzer to 1~5% of the emission bandwidth and VBW $\geq 3 \times$ RBW.
- The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.
- The 6dB Bandwidth was measured and recorded.

8.3 Test Setup Layout



8.4 Test Result and Data

Temperature : 24°C

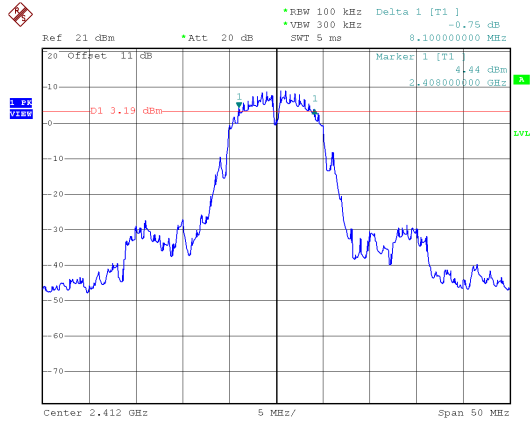
Humidity : 62%

Test Date : Apr. 28, 2017

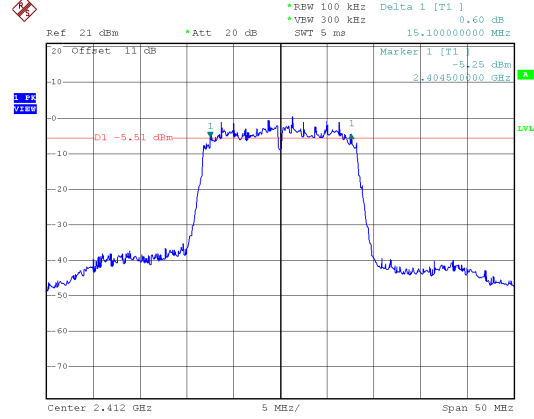
Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Limit (MHz)
			ANT 1	ANT 2	
IEEE 802.11b (1Mbps)	01	2412	8.10	---	0.5
	06	2437	8.60	---	0.5
	11	2462	9.00	---	0.5
IEEE 802.11g (6Mbps)	01	2412	15.10	15.90	0.5
	06	2437	15.10	15.20	0.5
	11	2462	15.10	15.20	0.5
IEEE 802.11n HT20 (6.5Mbps)	01	2412	15.10	17.00	0.5
	06	2437	15.10	16.20	0.5
	11	2462	16.00	16.60	0.5
IEEE 802.11n HT40 (13.5Mbps)	03	2422	35.20	36.40	0.5
	06	2437	35.60	36.20	0.5
	09	2452	35.60	36.20	0.5



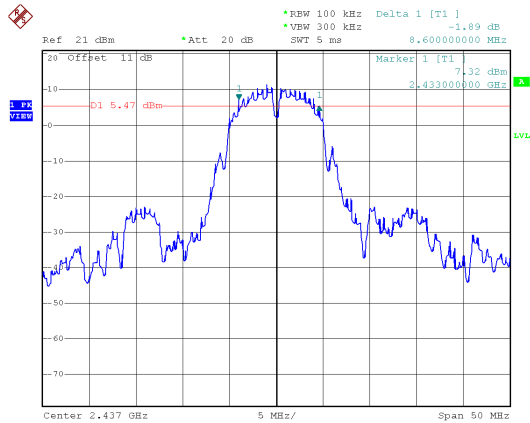
ANT 1
Modulation Type: 802.11b
CH01



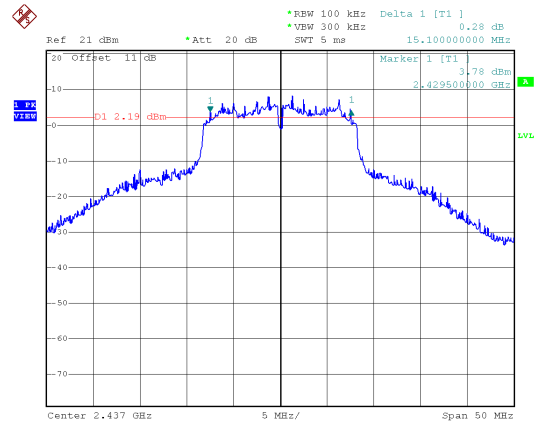
Modulation Type: 802.11g
CH01



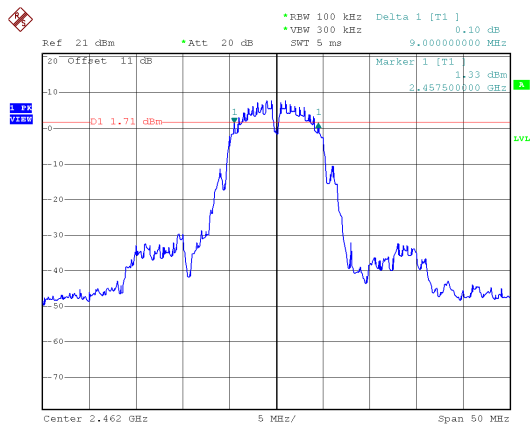
CH06



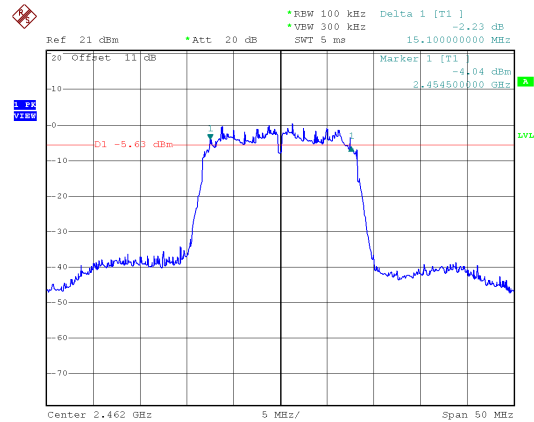
CH06



CH11

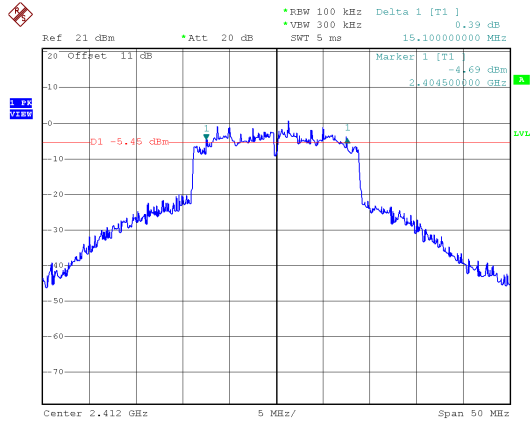
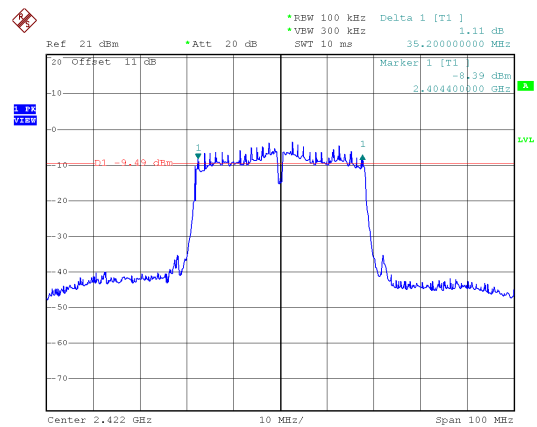


CH11

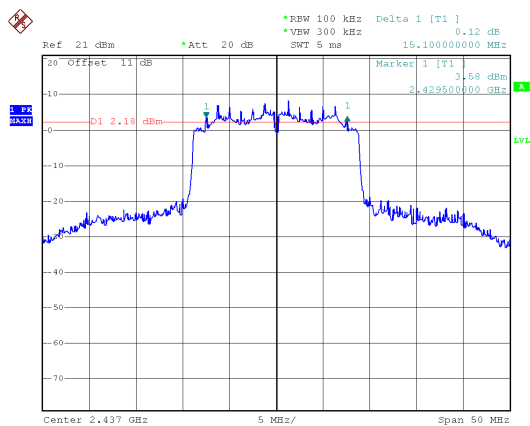




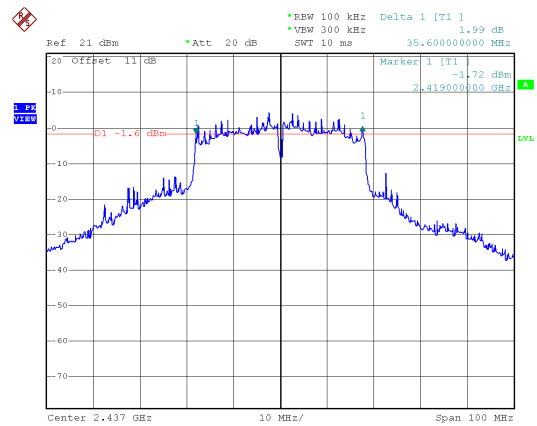
ANT 1

Modulation Type: 802.11n HT20
CH01Modulation Type: 802.11n HT40
CH03

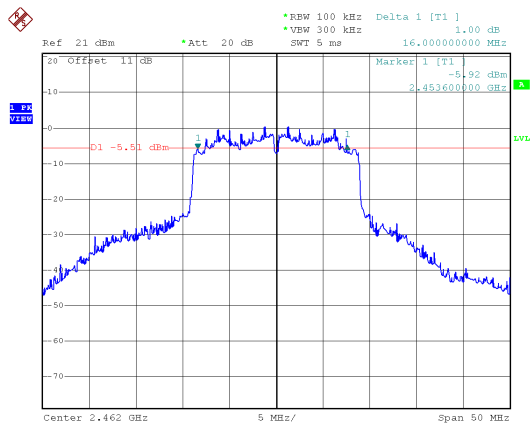
CH06



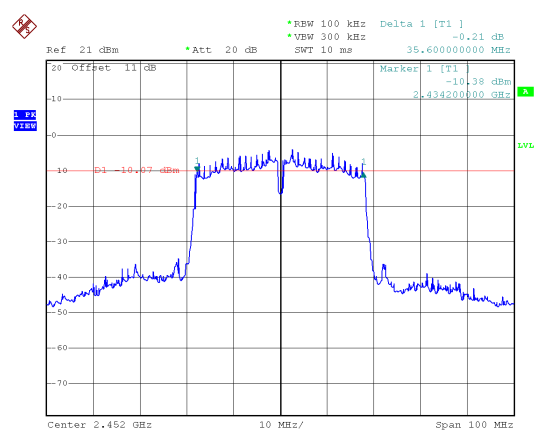
CH06



CH11

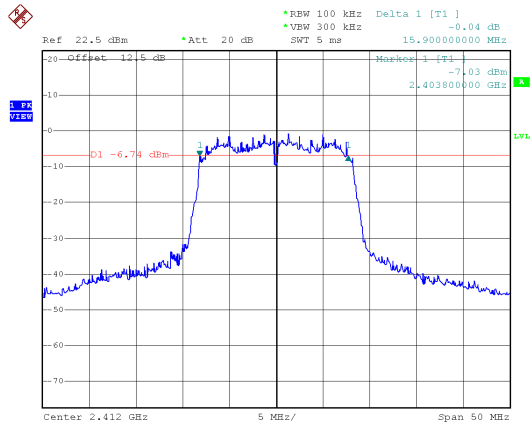


CH09

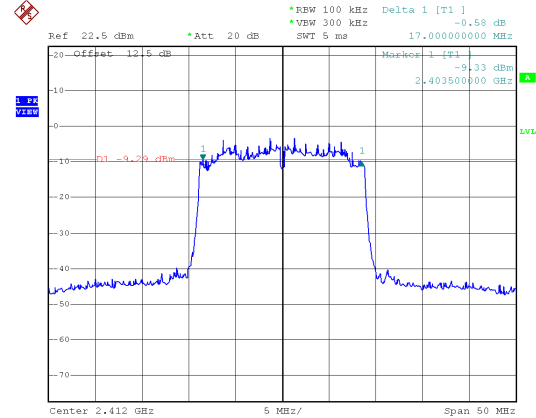




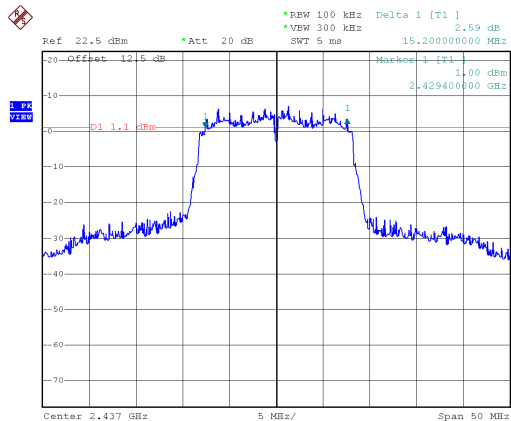
ANT 2
Modulation Type: 802.11g
CH01



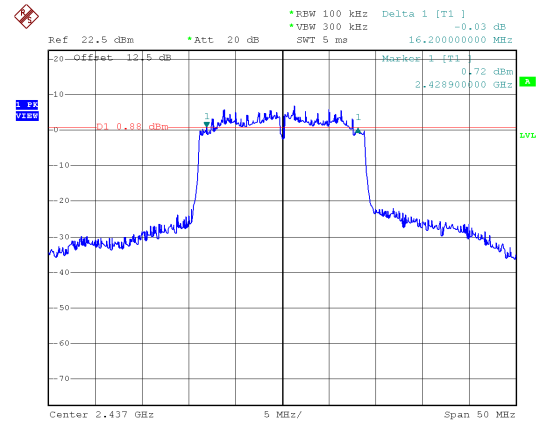
Modulation Type: 802.11n HT20
CH01



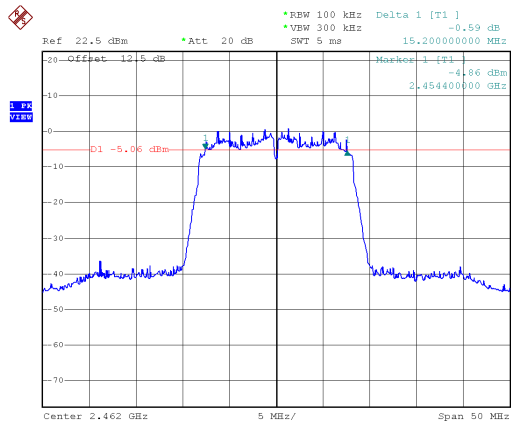
CH06



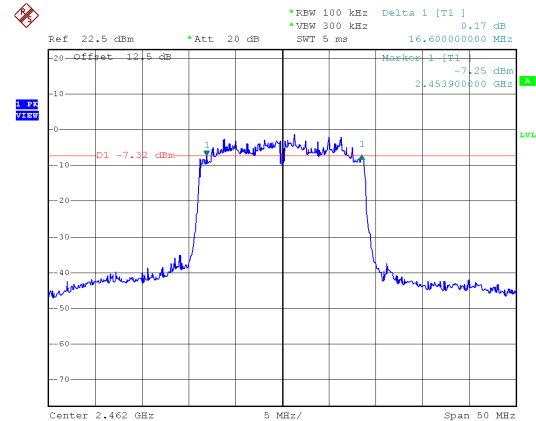
CH06



CH11



CH11

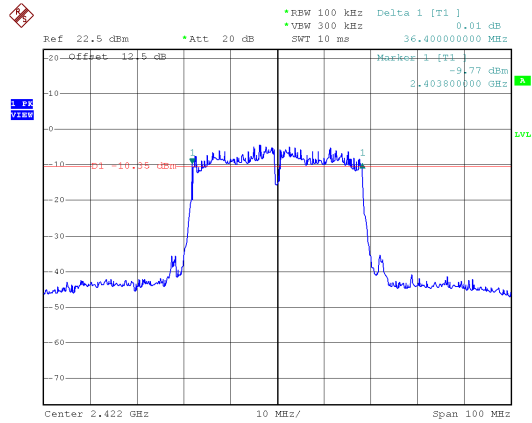




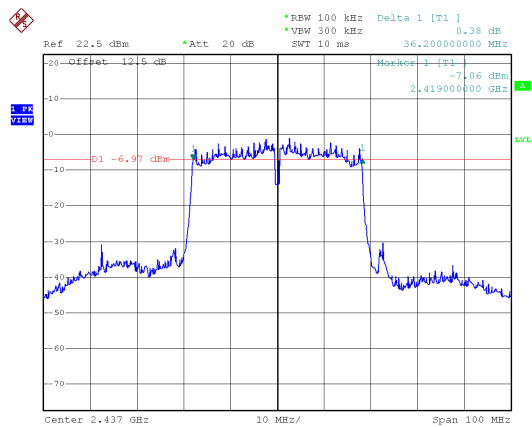
ANT 2

Modulation Type: 802.11n HT40

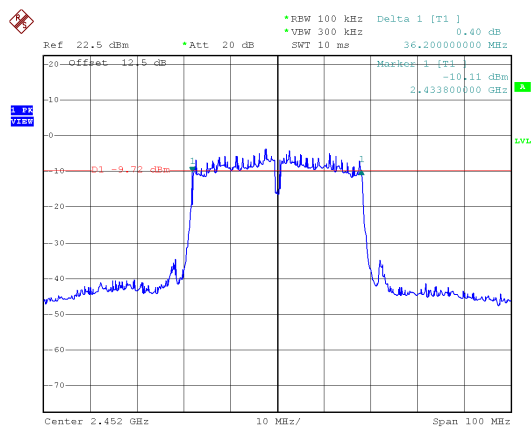
CH03



CH06



CH09





9. Maximum Peak and Average Output Power

9.1 Test Limit

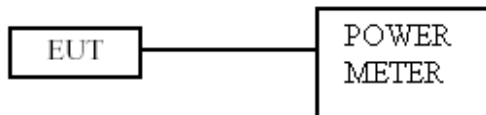
The Maximum Peak Output Power Measurement is 30dBm.

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

9.2 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.

9.3 Test Setup Layout



9.4 Test Result and Data

Temperature : 24°C

Humidity : 62%

Test Date : Apr. 28, 2017

Modulation Type	Channel	Freq. (MHz)	Peak Power Output (dBm)		Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
			ANT 1	ANT 2			
IEEE 802.11b (1Mbps)	01	2412	20.62	---	20.62	115.35	30.00
	06	2437	22.94	---	22.94	196.79	30.00
	11	2462	19.43	---	19.43	87.70	30.00
IEEE 802.11g (6Mbps)	01	2412	14.96	14.47	17.73	59.32	30.00
	06	2437	22.45	21.69	25.10	323.36	30.00
	11	2462	15.42	15.19	18.32	67.87	30.00
IEEE 802.11n HT20 (6.5Mbps)	01	2412	16.95	15.74	19.40	87.04	30.00
	06	2437	24.6	24.13	27.38	547.22	30.00
	11	2462	16.94	16.35	19.67	92.58	30.00
IEEE 802.11n HT40 (13.5Mbps)	03	2422	18.26	17.74	21.02	126.42	30.00
	06	2437	21.03	20.04	23.57	227.69	30.00
	09	2452	17.56	15.47	19.65	92.25	30.00



Modulation Type	Channel	Freq. (MHz)	Avg. Power Output (dBm)		Total Power (dBm)	Total Power (mW)	Power Limit (dBm)
			ANT 1	ANT 2			
IEEE 802.11b (1Mbps)	01	2412	16.8	---	16.80	47.86	30.00
	06	2437	19.41	---	19.41	87.30	30.00
	11	2462	15.67	---	15.67	36.90	30.00
IEEE 802.11g (6Mbps)	01	2412	10.06	9.37	12.74	18.79	30.00
	06	2437	17.72	16.8	20.29	107.02	30.00
	11	2462	10.47	10.11	13.30	21.40	30.00
IEEE 802.11n HT20 (6.5Mbps)	01	2412	9.55	8.16	11.92	15.56	30.00
	06	2437	17.81	16.82	20.35	108.48	30.00
	11	2462	9.54	8.75	12.17	16.49	30.00
IEEE 802.11n HT40 (13.5Mbps)	03	2422	8.52	8.54	11.54	14.26	30.00
	06	2437	11.92	10.51	14.28	26.81	30.00
	09	2452	8.24	6.51	10.47	11.15	30.00

Note: Average power is for reference only.



10. Power Spectral Density

10.1 Test Limit

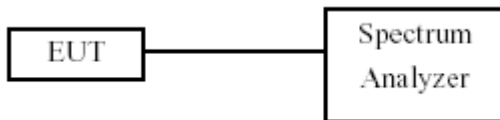
The Maximum of Power Spectral Density Measurement is 8dBm.

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

10.2 Test Procedures

- The transmitter output was connected to spectrum analyzer.
- The spectrum analyzer's resolution bandwidth were set at 3kHz RBW and 30KHz VBW as that of the fundamental frequency. Set the sweep time=auto couple.
- The power spectral density was measured and recorded.

10.3 Test Setup Layout



10.4 Test Result and Data

Temperature : 24°C

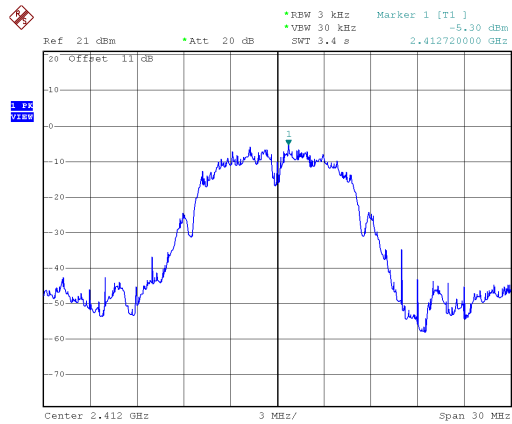
Humidity : 62%

Test Date : Apr. 28, 2017

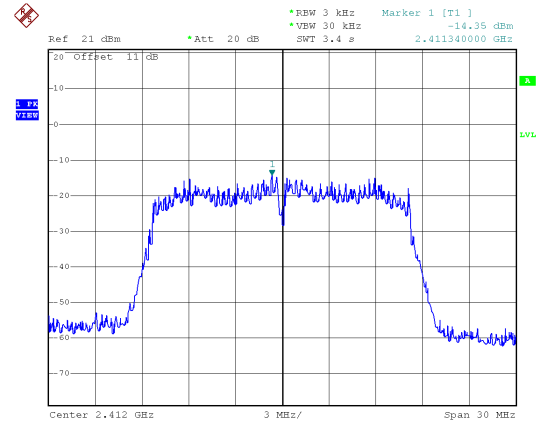
Modulation Type	Channel	Frequency (MHz)	Maximum Power Density of 3 kHz Bandwidth (dBm)		Sum chain (dBm)	Duty Cycle CF(dB)	Total PSD (dBm)	Limit (dBm)
			ANT 1	ANT 2				
IEEE 802.11b (1Mbps)	01	2412	-5.3	---	-5.30	0.00	-5.30	8.00
	06	2437	-3.6	---	-3.60	0.00	-3.60	8.00
	11	2462	-8.07	---	-8.07	0.00	-8.07	8.00
IEEE 802.11g (6Mbps)	01	2412	-14.35	-14.57	-11.45	0.00	-11.45	7.87
	06	2437	-6.36	-6.73	-3.53	0.00	-3.53	7.87
	11	2462	-12.68	-13.94	-10.25	0.00	-10.25	7.87
IEEE 802.11n HT20 (6.5Mbps)	01	2412	-14.39	-16.14	-12.17	0.00	-12.17	7.87
	06	2437	-6.38	-9.1	-4.52	0.00	-4.52	7.87
	11	2462	-12.44	-15.47	-10.69	0.00	-10.69	7.87
IEEE 802.11n HT40 (13.5Mbps)	03	2422	-17.41	-16.52	-13.93	0.00	-13.93	7.87
	06	2437	-13.12	-16.76	-11.56	0.00	-11.56	7.87
	09	2452	-18.83	-19.26	-16.03	0.00	-16.03	7.87



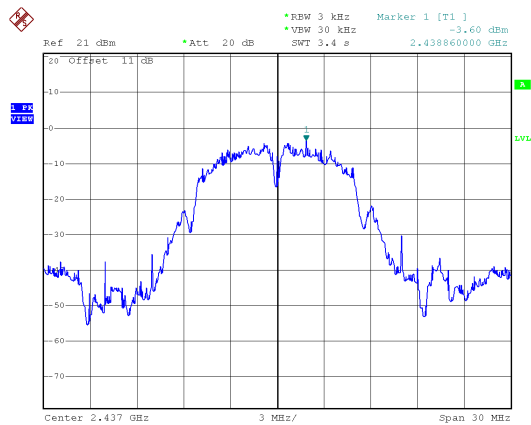
ANT 1
Modulation Type: 802.11b
CH01



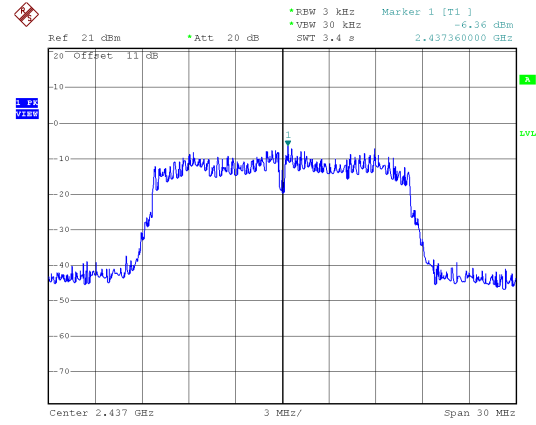
Modulation Type: 802.11g
CH01



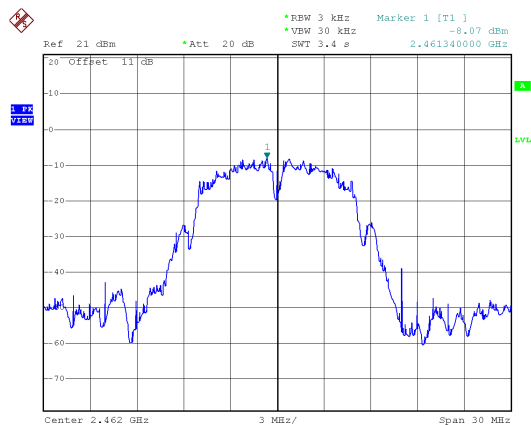
CH06



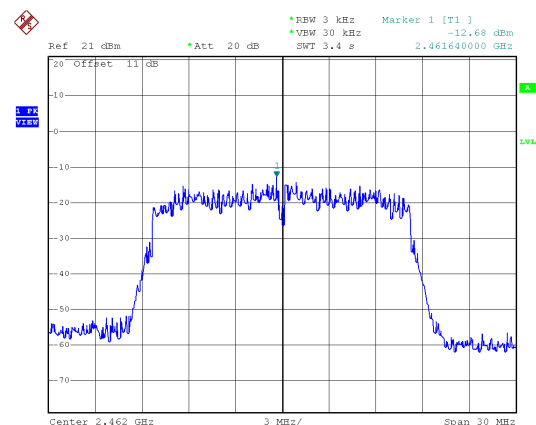
CH06



CH11

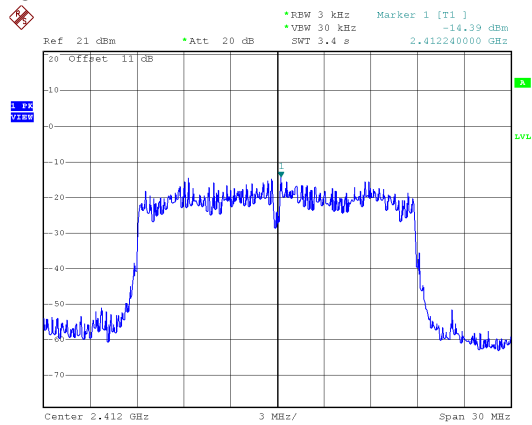


CH11

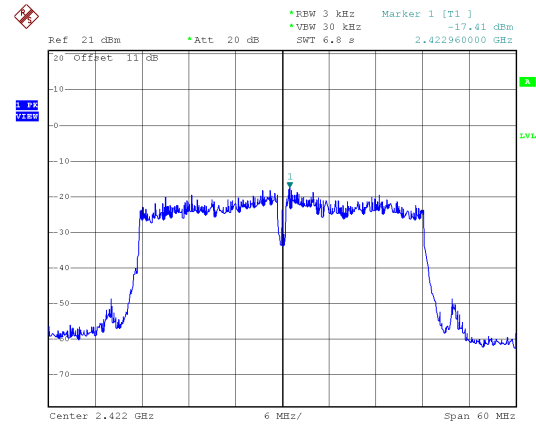




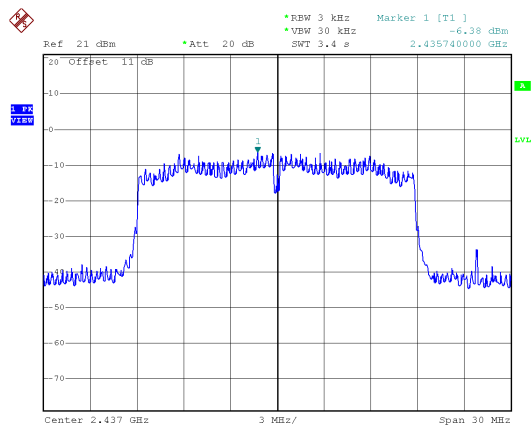
ANT 1
Modulation Type: 802.11n HT20
CH01



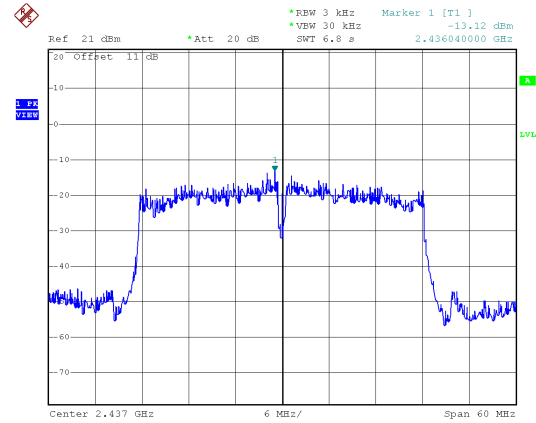
Modulation Type: 802.11n HT40
CH03



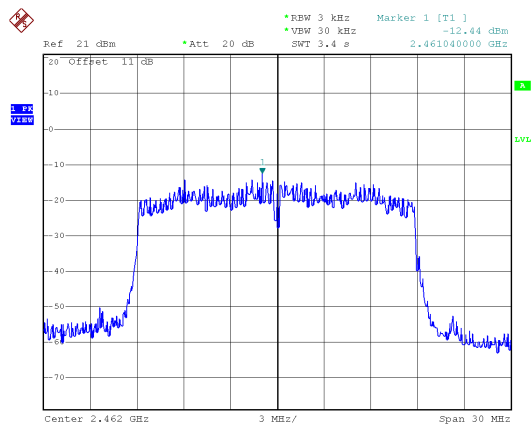
CH06



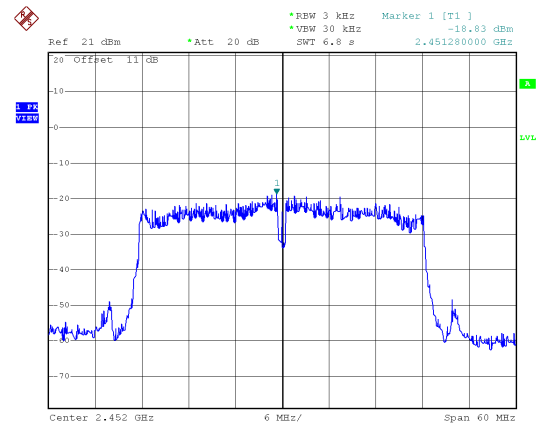
CH06



CH11

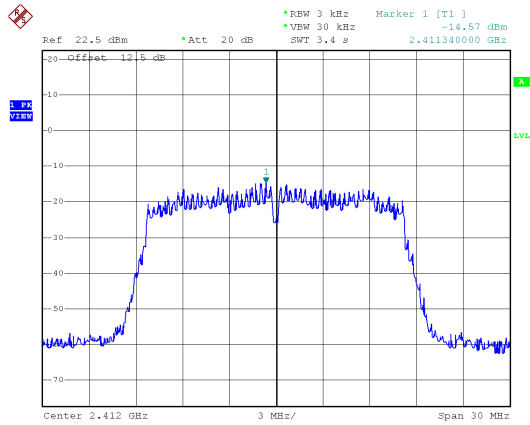


CH09

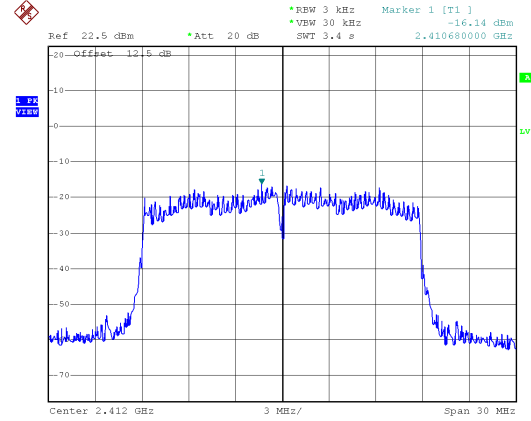




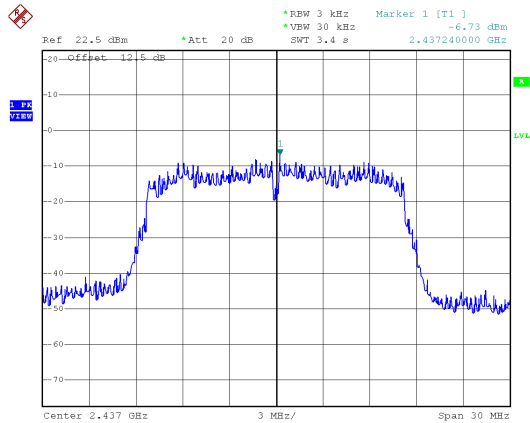
ANT 2
Modulation Type: 802.11g
CH01



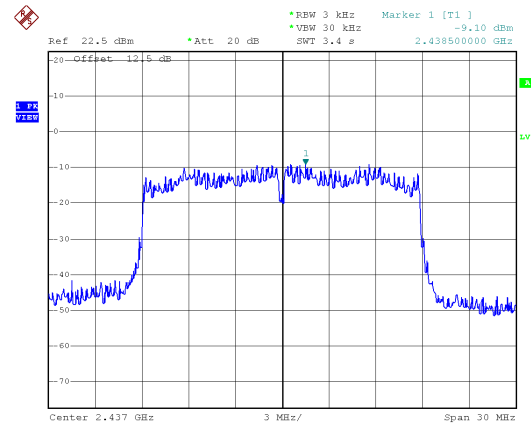
Modulation Type: 802.11n HT20
CH01



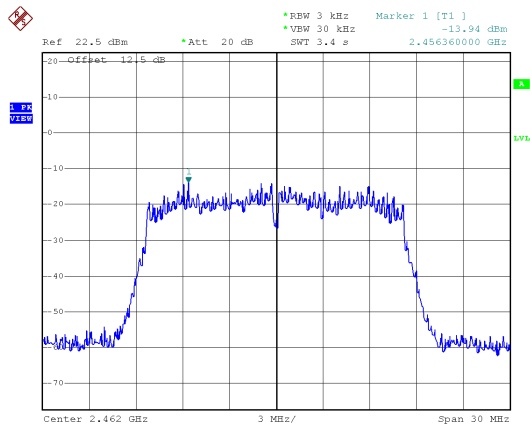
CH06



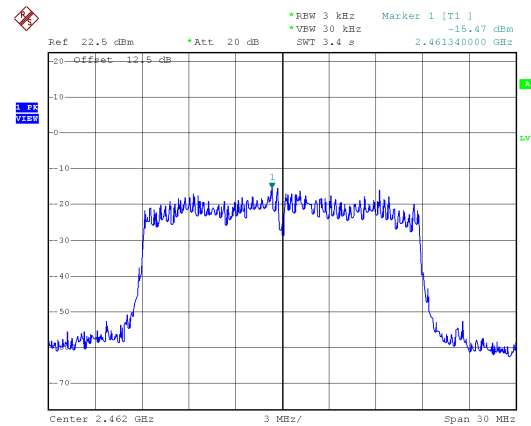
CH06



CH11

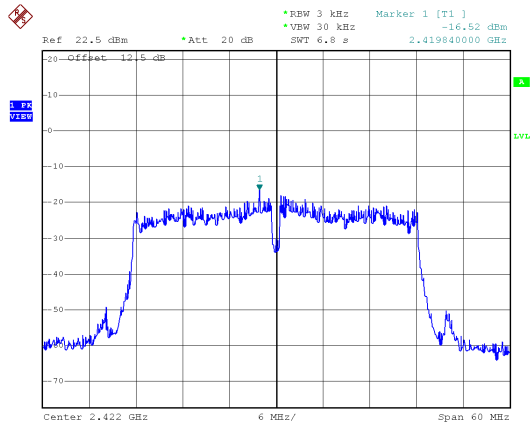


CH11

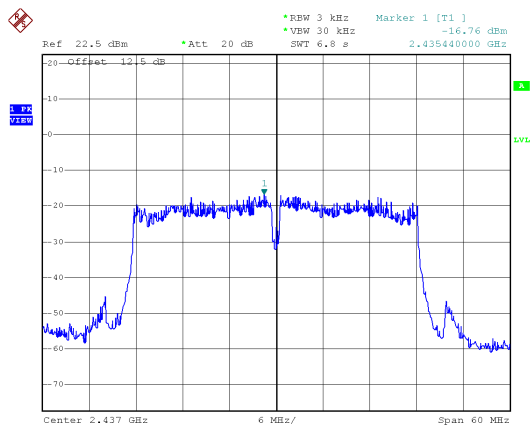




ANT 2
Modulation Type: 802.11n HT40
CH03



CH06



CH09

