



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. : CBWH1000D3, CBW383G1IND, CBW383GU1IND
Trade Name : CASTLENET, **CASTLENET**
FCC ID : RK9-CBW383G1IND

I HEREBY CERTIFY THAT :

The sample was received on Nov. 02, 2016 and the testing was carried out on Nov. 08, 2016 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:

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Laboratory Accreditation:

CerpPASS Technology Corporation Test Laboratory





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History of this test report

Report No.	Issue Date	Description
TEF11610183	Nov. 10, 2016	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 Output Power	Pass
15.247(e)	. Power Spectral Density	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

Modulation Type	DSSS, OFDM
Frequency Range	2412MHz~2462MHz
Data Rate	802.11b: 1- 11Mbps 802.11g: 6- 54Mbps 802.11n HT20: MCS0-MCS7 802.11n HT40: MCS0-MCS7
Channel Spacing	5MHz
Antenna Type	ANT A: Printed Antenna ANT B: Dip Antenna
Antenna Gain	ANT A: 2.88dBi ANT B: 3.26dBi
Power Source	Power Adaptor Brand / Model No.: Atech OEM / ADS012T-W120100 IUPUT:100-240V ~ 50-60Hz 0.5A OUTPUT:12V / 1.0A

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 Notebook and EUT for RF test.
- c. An executive program, " Mtool:V2.0.1.0" under WIN 8 was executed to transmit and receive data via WLAN.
- d. Test modes:
 - Mode 1: 802.11b (1Mbps)
 - Mode 2: 802.11g (6Mbps)
 - Mode 3: 802.11n HT20 (6.5Mbps)
 - Mode 4: 802.11n HT40 (13.5Mbps)For conduction test, "Test Mode 2" generates the worst case; it was reported as the final data.
For radiated test (below 1GHz), "Test Mode 2" generates the worst case, it was reported as the final data.
For radiated test (above 1GHz), "Test Mode 1 、 2 、 3 、 4" were reported as the final data.
*** All Data Rate Pre-Scanned RF Power, The highest powers were chosen for the test.**

2.4 Description of Test System

Device	Manufacturer	Model No.	Description
Notebook	DELL	LatitudeE5450/5450	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-3428, 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.	



3. Test Equipment and Ancillaries Used for Tests

Instrument	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
EMI Receiver	R&S	ESCI3	100443	2016/03/28	2017/03/27
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	2016/03/09	2017/03/08
Bilog Antenna	Schwarzbeck	VULB9168	369	2016/03/22	2017/03/21
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	2016/03/18	2017/03/17
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200207	2016/03/16	2017/03/15
Preamplifier	EM	EM330	60660	2016/03/16	2017/03/15
Preamplifier	EMC INSTRUMENTS	EMC051845SE	980333	2016/09/13	2017/09/12
Preamplifier	Agilent	8449B	3008A01954	2016/03/04	2017/03/03
Preamplifier	MITEQ	AMF-7D-001010 0-30-10P	1860212	2016/03/16	2017/03/15
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2016/11/03	2017/11/02
MXG MW Analog Signal Generator	KEYSIGHT	N5183A	MY50142931	2016/03/18	2017/03/17
Spectrum Analyzer	R&S	FSP40	100219	2016/09/01	2017/08/31
BLUETOOTH TESTER	R&S	CBT	101133	2016/03/18	2017/03/17
Attenuator	KEYSIGHT	8491B	MY39250703	2016/03/07	2017/03/06
Rotary Attenuator	Agilent	8494B	MY42154466	2016/03/08	2017/03/07
Rotary Attenuator	Agilent	8495B	MY42146680	2016/03/08	2017/03/07
Temp & Humi chamber	T-MACHINE	TMJ-9712	T-12-040111	2016/09/05	2017/09/04
Series Power Meter	Anritsu	ML2495A	1224005	2016/03/03	2017/03/02
Power Sensor	Anritsu	MA2411B	1207295	2016/03/03	2017/03/02
Cable	HUBER SUHNER	SUCOFLEX 102	28422/2	2016/03/15	2017/03/14
Cable	HUBER SUHNER	SUCOFLEX 102	28418/2	2016/03/16	2017/03/15
Cable	HUBER SUHNER	SUCOFLEX 102	28417/2	2016/03/04	2017/03/03
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 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

No.	Antenna Type	Antenna Gain
A	Printed Antenna	2.88dBi
B	Dip Antenna	3.26dBi

Note.

802.11b: fix Only Antenna A transmit

802.11g: fix Only Antenna A transmit

802.11n HT20: Antenna A & Antenna B transmit

802.11n HT40: Antenna A & Antenna B transmit

Mode	For Power Directional Gain(dBi)	For PSD Directional Gain(dBi)
11b	2.88	2.88
11g	2.88	2.88
11n	3.26	6.08

Basic methodology with NANT transmit antennas, each with the same directional gain GANT dBi, being driven by NANT transmitter outputs of equal power. Directional gain is to be computed as follows:

- (i) If any transmit signals are correlated with each other,

$$\text{Directional gain} = GANT + 10 \log(\text{NANT}) \text{ dBi}$$
- (ii) If all transmit signals are completely uncorrelated with each other,

$$\text{Directional gain} = GANT$$

Unequal antenna gains, with equal transmit powers. For antenna gains given by G1, G2, ..., GN dBi

- (i) If transmit signals are correlated, then

$$\text{Directional gain} = 10 \log[(10G1 / 20 + 10G2 / 20 + \dots + 10GN / 20)^2 / \text{NANT}] \text{ dBi}$$
- (ii) If all transmit signals are completely uncorrelated, then

$$\text{Directional gain} = 10 \log[(10G1 / 10 + 10G2 / 10 + \dots + 10GN / 10) / \text{NANT}] \text{ dBi}$$



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 on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2009 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

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

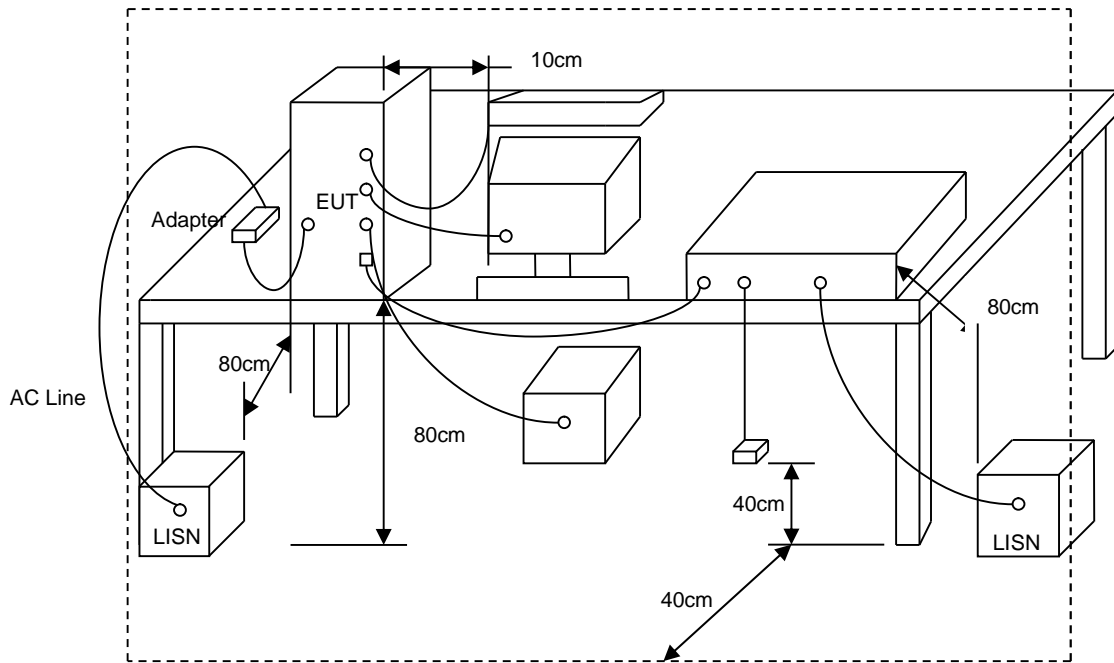
*Decreases with the logarithm of the frequency.

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.



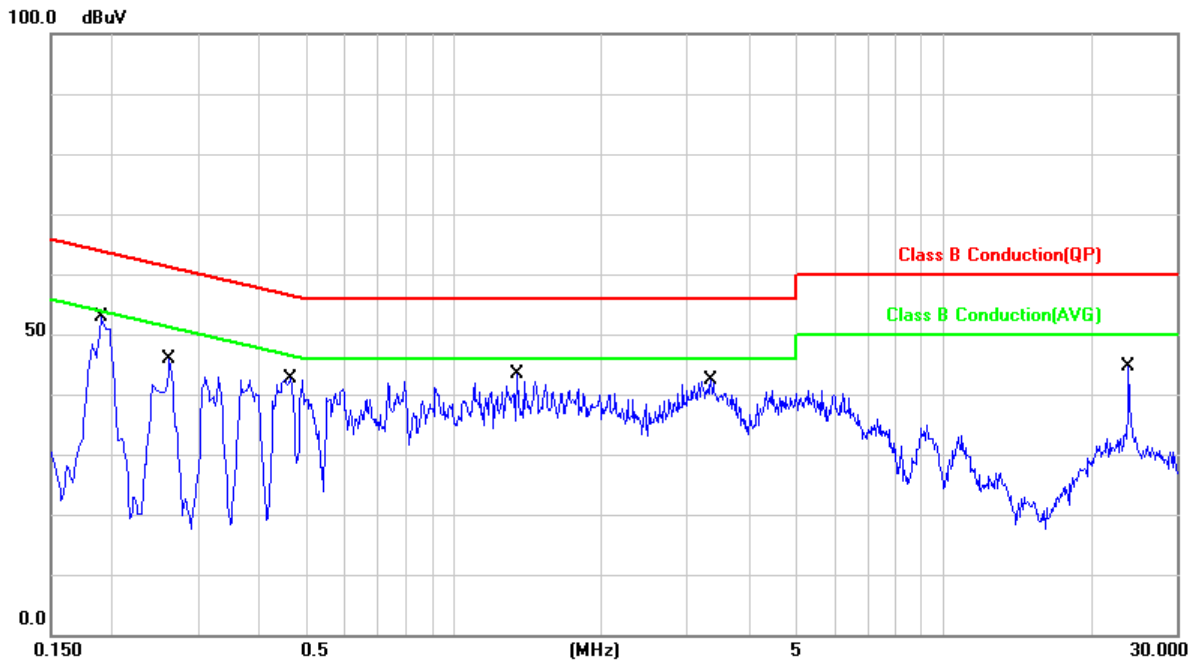
5.3 Typical Test Setup





5.4 Test Result and Data

Power	: AC 120V	Pol/Phase	: LINE
Test Mode	: Mode 2	Temperature	: 22 °C
Test date	: Nov. 03, 2016	Humidity	: 57 %
Memo	:	Atmospheric Pressure	: 1008 hPa

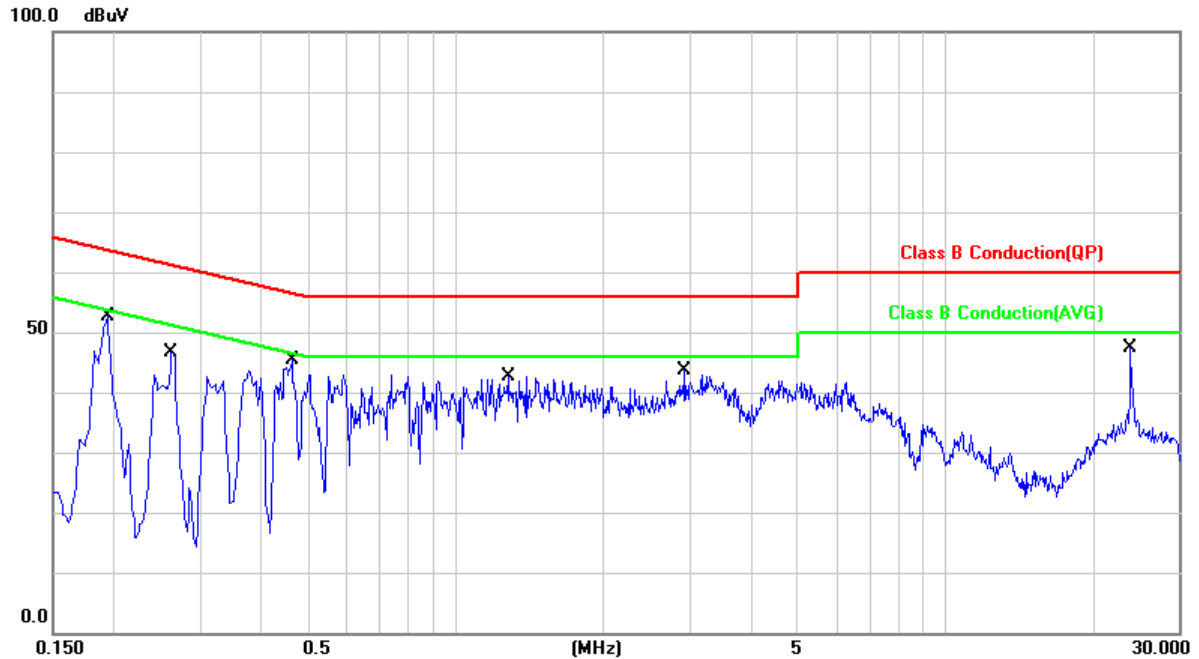


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1900	9.97	40.03	50.00	64.03	-14.03	QP	P
2	0.1900	9.97	30.61	40.58	54.03	-13.45	AVG	P
3	0.2620	9.97	32.59	42.56	61.36	-18.80	QP	P
4	0.2620	9.97	23.85	33.82	51.36	-17.54	AVG	P
5	0.4620	9.97	30.36	40.33	56.66	-16.33	QP	P
6	0.4620	9.97	22.45	32.42	46.66	-14.24	AVG	P
7	1.3460	10.04	28.89	38.93	56.00	-17.07	QP	P
8	1.3460	10.04	19.96	30.00	46.00	-16.00	AVG	P
9	3.3620	10.12	28.12	38.24	56.00	-17.76	QP	P
10	3.3620	10.12	21.80	31.92	46.00	-14.08	AVG	P
11	24.0020	10.60	31.83	42.43	60.00	-17.57	QP	P
12	24.0020	10.60	29.48	40.08	50.00	-9.92	AVG	P

Note: Level = Reading + Factor
Margin = Level – Limit
Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss



Power	: AC 120V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 2	Temperature	: 22 °C
Test date	: Nov. 03, 2016	Humidity	: 57 %
Memo	:	Atmospheric Pressure	: 1008 hPa



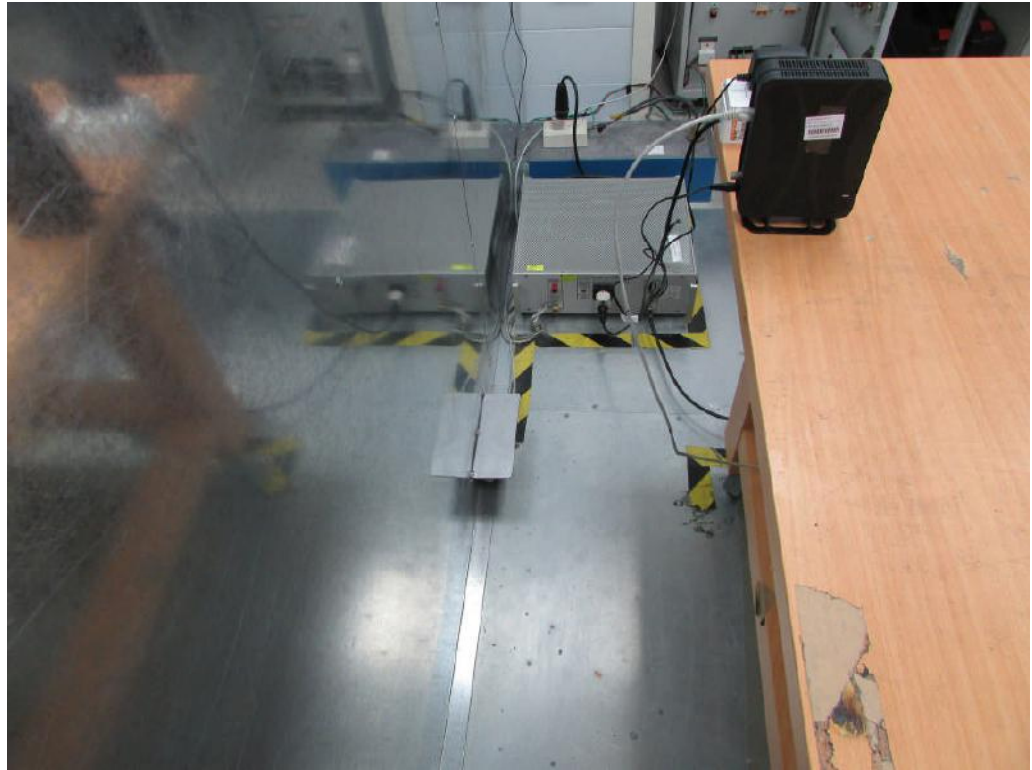
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1940	9.98	39.86	49.84	63.86	-14.02	QP	P
2	0.1940	9.98	30.32	40.30	53.86	-13.56	AVG	P
3	0.2620	9.96	32.91	42.87	61.36	-18.49	QP	P
4	0.2620	9.96	23.84	33.80	51.36	-17.56	AVG	P
5	0.4620	9.94	32.27	42.21	56.66	-14.45	QP	P
6	0.4620	9.94	24.37	34.31	46.66	-12.35	AVG	P
7	1.2820	10.00	29.39	39.39	56.00	-16.61	QP	P
8	1.2820	10.00	21.65	31.65	46.00	-14.35	AVG	P
9	2.9380	10.08	28.63	38.71	56.00	-17.29	QP	P
10	2.9380	10.08	20.90	30.98	46.00	-15.02	AVG	P
11	24.0060	10.65	34.73	45.38	60.00	-14.62	QP	P
12	24.0060	10.65	31.62	42.27	50.00	-7.73	AVG	P

Note: Level = Reading + Factor
 Margin = Level – Limit
 Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss



5.5 Test Photographs

Front View



Rear View





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

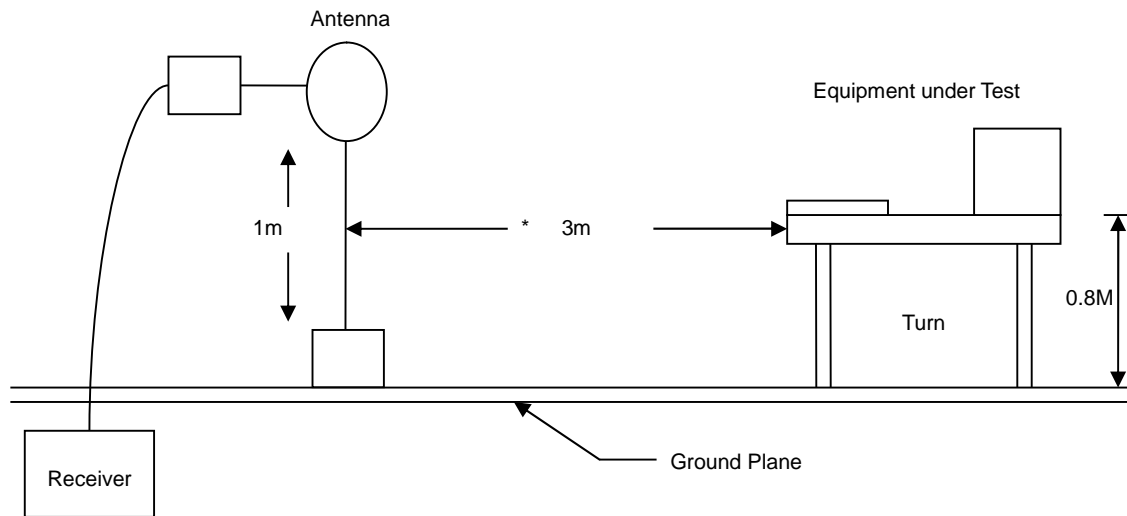
6.2 Test Procedures

- The EUT was placed on a rotatable table top below 1 GHz 0.8 meter above ground. above 1 GHz 1.5 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.

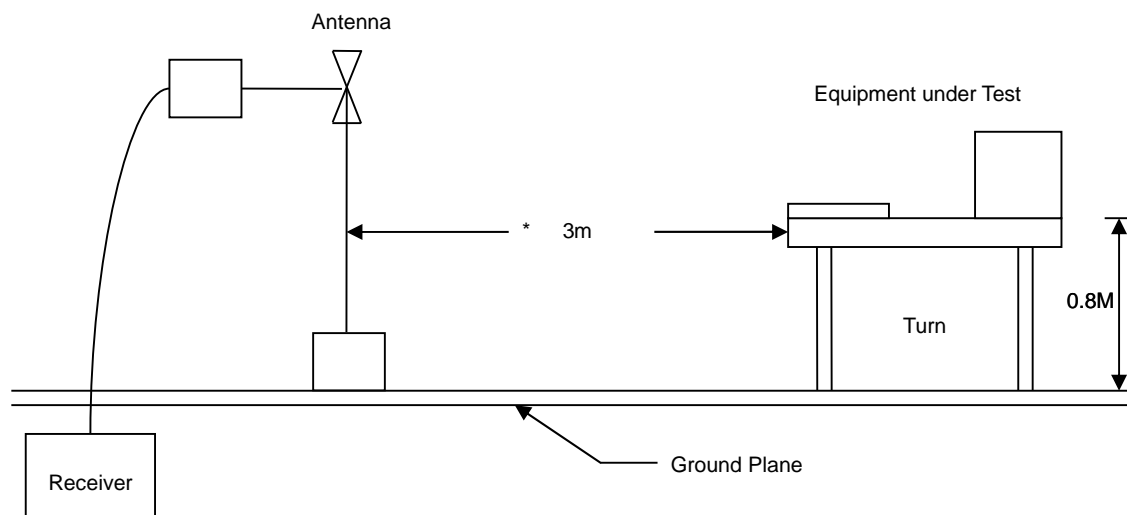


6.3 Typical Test Setup

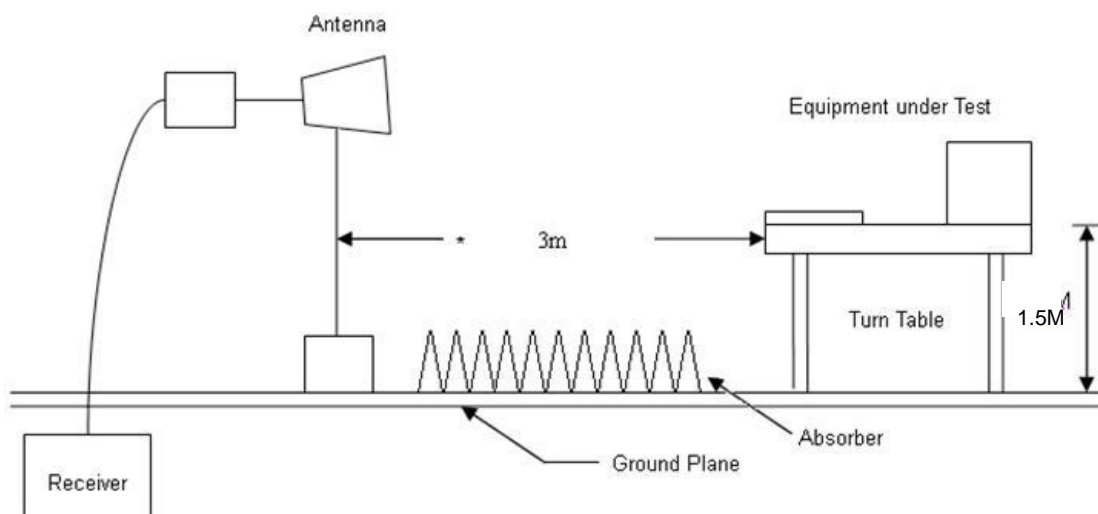
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup



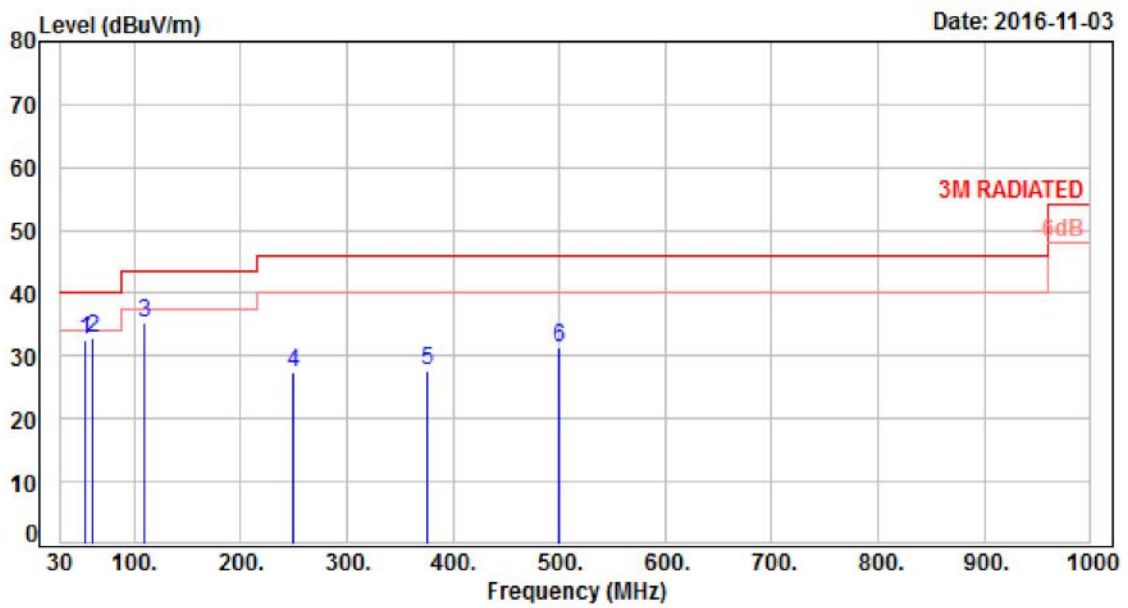


6.4 Test Result and Data (9KHz ~ 30MHz)

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	: Nov. 03, 2016	Humidity	: 61 %
Memo	:	Atmospheric Pressure	: 1029 hPa

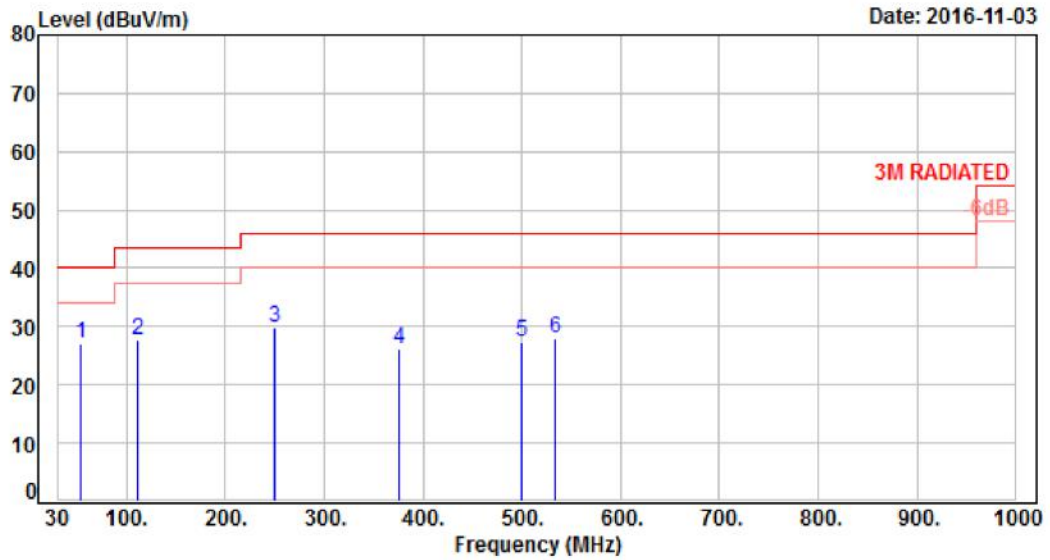


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	53.28	-9.96	42.50	32.54	40.00	-7.46	QP	102	198	P
2	61.04	-10.67	43.50	32.83	40.00	-7.17	QP	110	224	P
3	109.54	-13.04	48.35	35.31	43.50	-8.19	Peak	100	0	P
4	249.22	-11.00	38.43	27.43	46.00	-18.57	Peak	100	0	P
5	375.32	-7.06	34.80	27.74	46.00	-18.26	Peak	100	0	P
6	499.48	-4.19	35.41	31.22	46.00	-14.78	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	: Nov. 03, 2016	Humidity	: 61 %
Memo	:	Atmospheric Pressure	: 1029 hPa



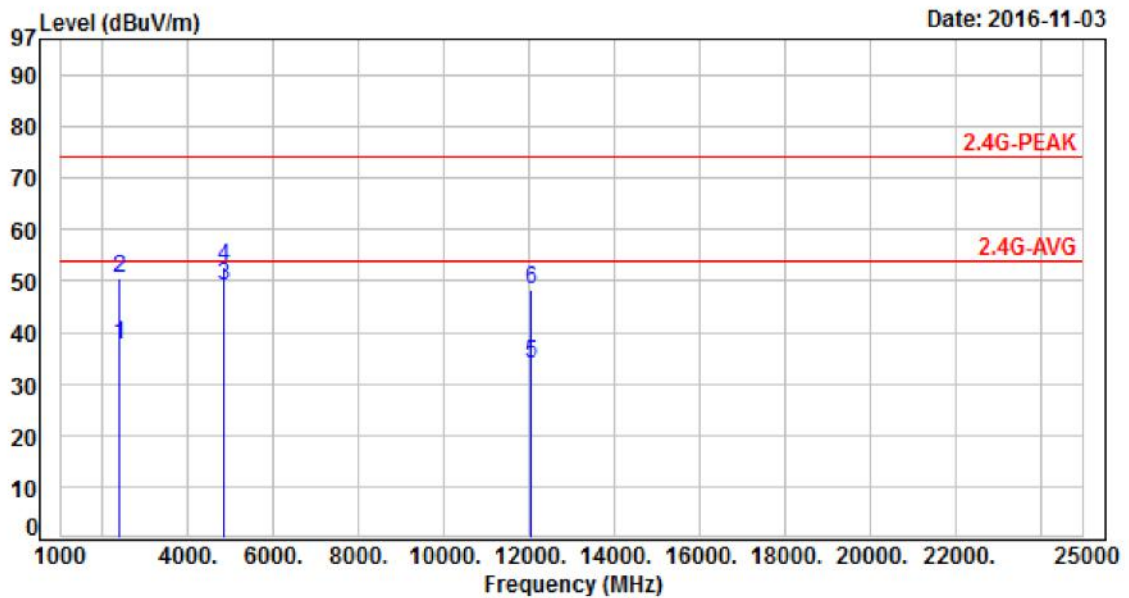
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	53.28	-9.96	36.94	26.98	40.00	-13.02	Peak	100	0	P
2	111.48	-12.89	40.61	27.72	43.50	-15.78	Peak	100	0	P
3	249.22	-11.00	40.86	29.86	46.00	-16.14	Peak	100	0	P
4	375.32	-7.06	33.09	26.03	46.00	-19.97	Peak	100	0	P
5	499.48	-4.19	31.44	27.25	46.00	-18.75	Peak	100	0	P
6	534.40	-3.57	31.70	28.13	46.00	-17.87	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	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 01	Atmospheric Pressure	: 1029 hPa

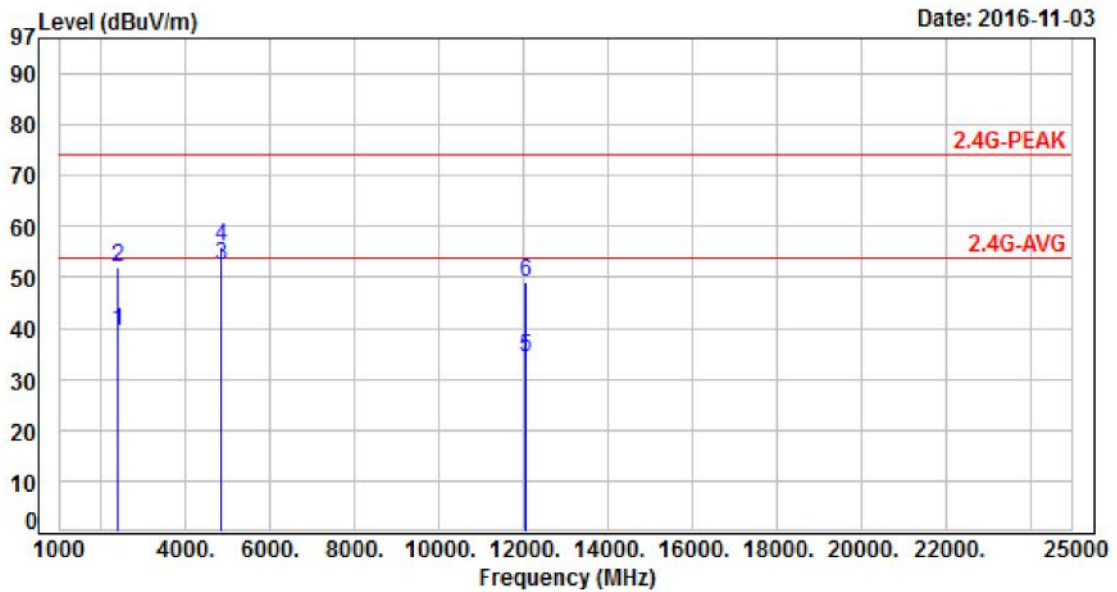


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	53.50	37.75	54.00	-16.25	Average	261	98	P
2	2390.00	-15.75	66.38	50.63	74.00	-23.37	Peak	261	98	P
3	4824.00	-7.58	56.66	49.08	54.00	-4.92	Average	187	196	P
4	4824.00	-7.58	60.21	52.63	74.00	-21.37	Peak	187	196	P
5	12060.00	2.28	31.58	33.86	54.00	-20.14	Average	173	202	P
6	12060.00	2.28	46.18	48.46	74.00	-25.54	Peak	173	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 1	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 01	Atmospheric Pressure	: 1029 hPa

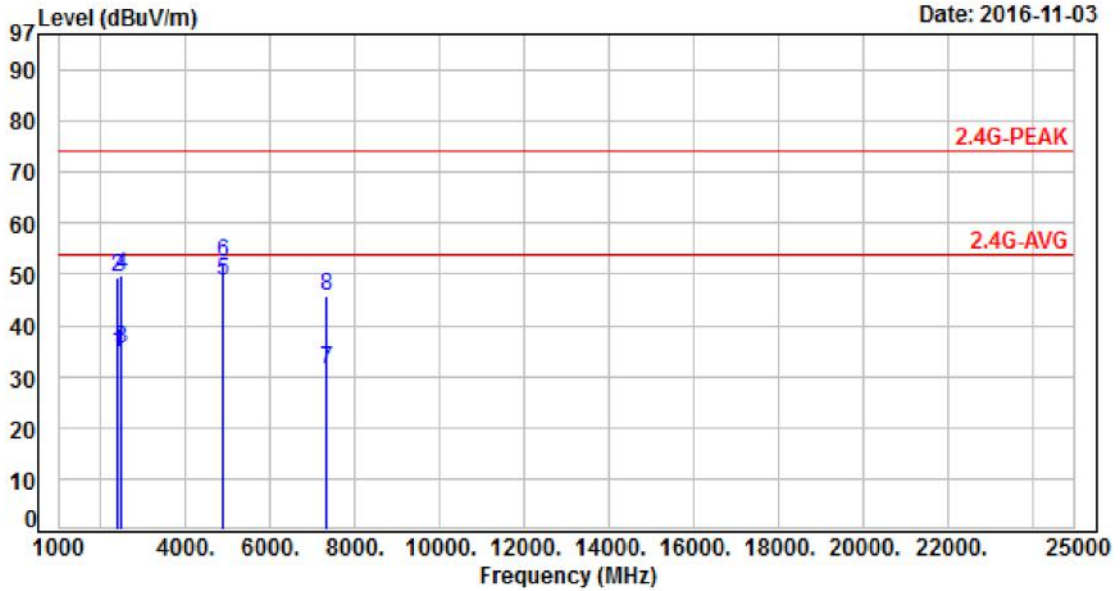


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	55.20	39.45	54.00	-14.55	Average	221	48	P
2	2390.00	-15.75	67.79	52.04	74.00	-21.96	Peak	221	48	P
3	4824.00	-7.58	60.01	52.43	54.00	-1.57	Average	122	288	P
4	4824.00	-7.58	63.65	56.07	74.00	-17.93	Peak	122	288	P
5	12060.00	2.28	32.04	34.32	54.00	-19.68	Average	100	272	P
6	12060.00	2.28	46.75	49.03	74.00	-24.97	Peak	100	272	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	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 06	Atmospheric Pressure	: 1029 hPa

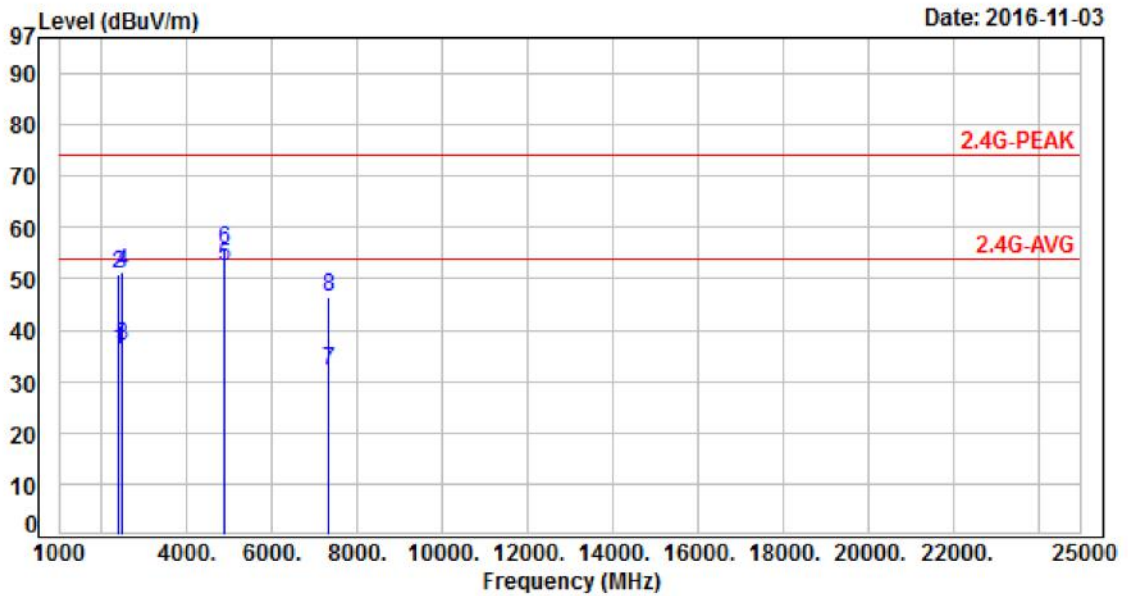


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	50.25	34.50	54.00	-19.50	Average	178	246	P
2	2390.00	-15.75	65.19	49.44	74.00	-24.56	Peak	178	246	P
3	2483.50	-15.48	50.88	35.40	54.00	-18.60	Average	178	246	P
4	2483.50	-15.48	65.34	49.86	74.00	-24.14	Peak	178	246	P
5	4874.00	-7.39	56.13	48.74	54.00	-5.26	Average	124	178	P
6	4874.00	-7.39	59.78	52.39	74.00	-21.61	Peak	124	178	P
7	7311.00	-3.50	35.02	31.52	54.00	-22.48	Average	134	252	P
8	7311.00	-3.50	49.36	45.86	74.00	-28.14	Peak	134	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 1	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 06	Atmospheric Pressure	: 1029 hPa

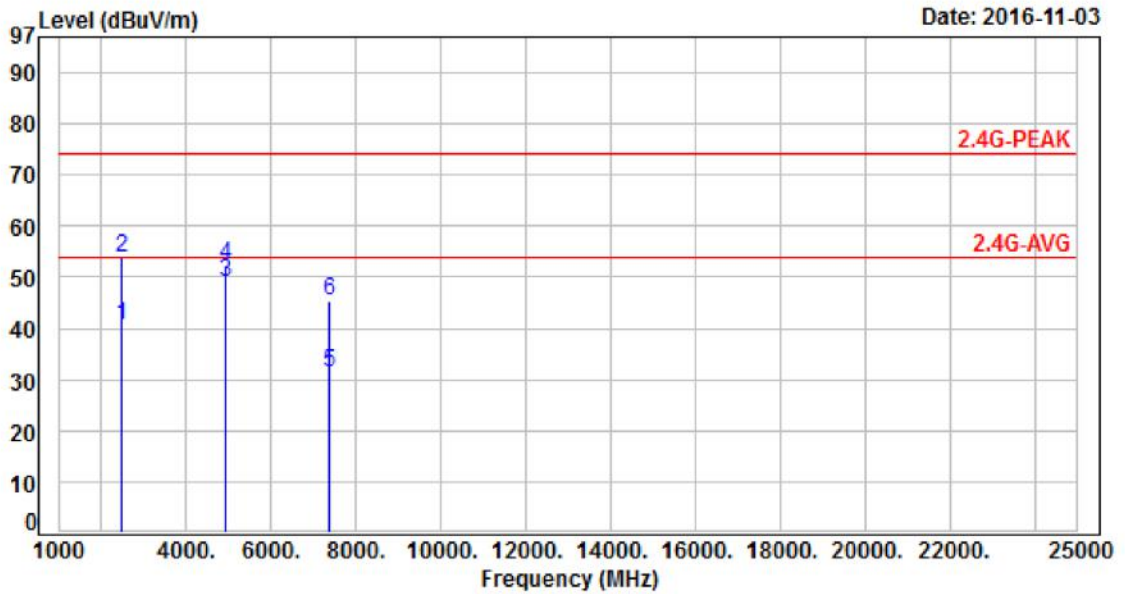


No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	51.84	36.09	54.00	-17.91	Average	100	189	P
2	2390.00	-15.75	66.74	50.99	74.00	-23.01	Peak	100	189	P
3	2483.50	-15.48	52.34	36.86	54.00	-17.14	Average	100	189	P
4	2483.50	-15.48	66.89	51.41	74.00	-22.59	Peak	100	189	P
5	4874.00	-7.39	59.67	52.28	54.00	-1.72	Average	100	211	P
6	4874.00	-7.39	63.16	55.77	74.00	-18.23	Peak	100	211	P
7	7311.00	-3.50	35.55	32.05	54.00	-21.95	Average	102	248	P
8	7311.00	-3.50	49.83	46.33	74.00	-27.67	Peak	102	248	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	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 11	Atmospheric Pressure	: 1029 hPa

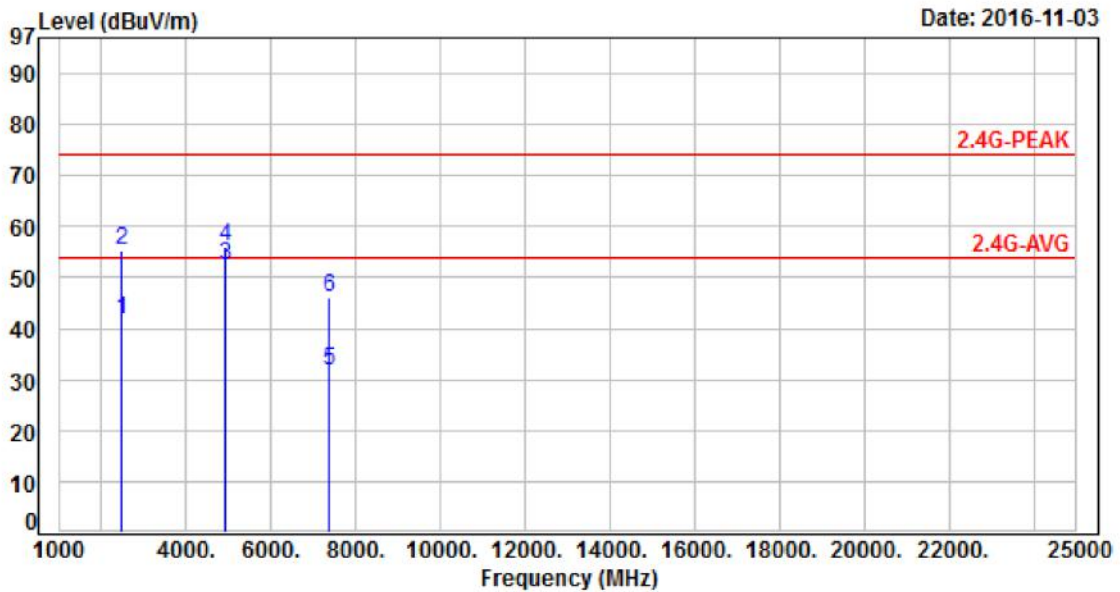


No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.48	55.87	40.39	54.00	-13.61	Average	247	186	P
2	2483.50	-15.48	69.21	53.73	74.00	-20.27	Peak	247	186	P
3	4924.00	-7.19	56.24	49.05	54.00	-4.95	Average	116	162	P
4	4924.00	-7.19	59.58	52.39	74.00	-21.61	Peak	116	162	P
5	7386.00	-3.39	34.77	31.38	54.00	-22.62	Average	134	202	P
6	7386.00	-3.39	48.82	45.43	74.00	-28.57	Peak	134	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 1	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 11	Atmospheric Pressure	: 1029 hPa

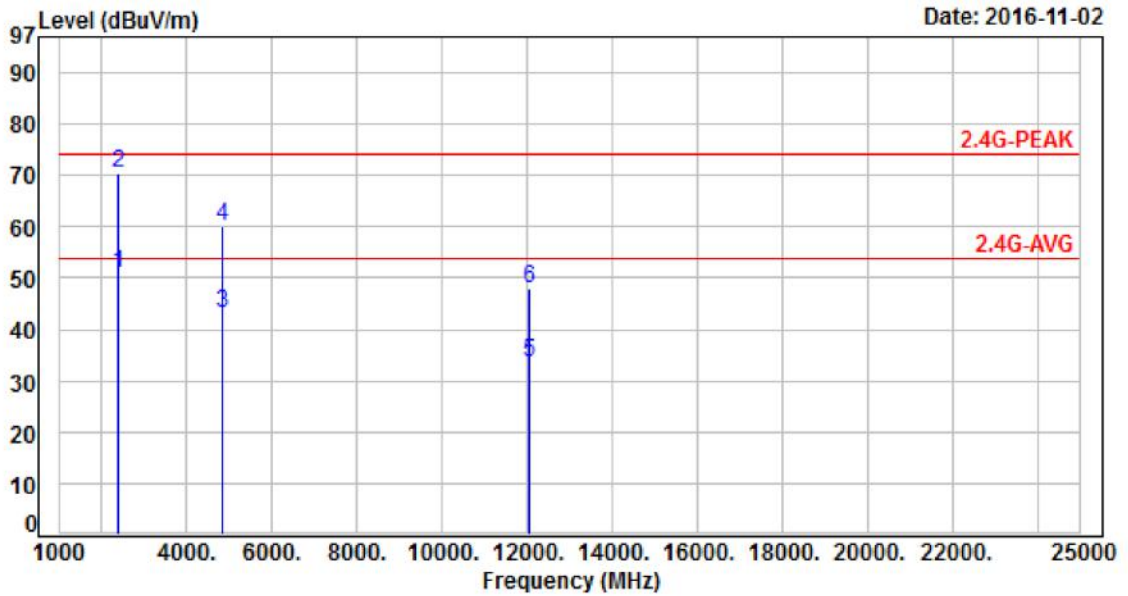


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.48	57.13	41.65	54.00	-12.35	Average	216	215	P
2	2483.50	-15.48	70.63	55.15	74.00	-18.85	Peak	216	215	P
3	4924.00	-7.19	59.63	52.44	54.00	-1.56	Average	100	215	P
4	4924.00	-7.19	63.28	56.09	74.00	-17.91	Peak	100	215	P
5	7386.00	-3.39	35.26	31.87	54.00	-22.13	Average	112	226	P
6	7386.00	-3.39	49.35	45.96	74.00	-28.04	Peak	112	226	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	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 01	Atmospheric Pressure	: 1029 hPa

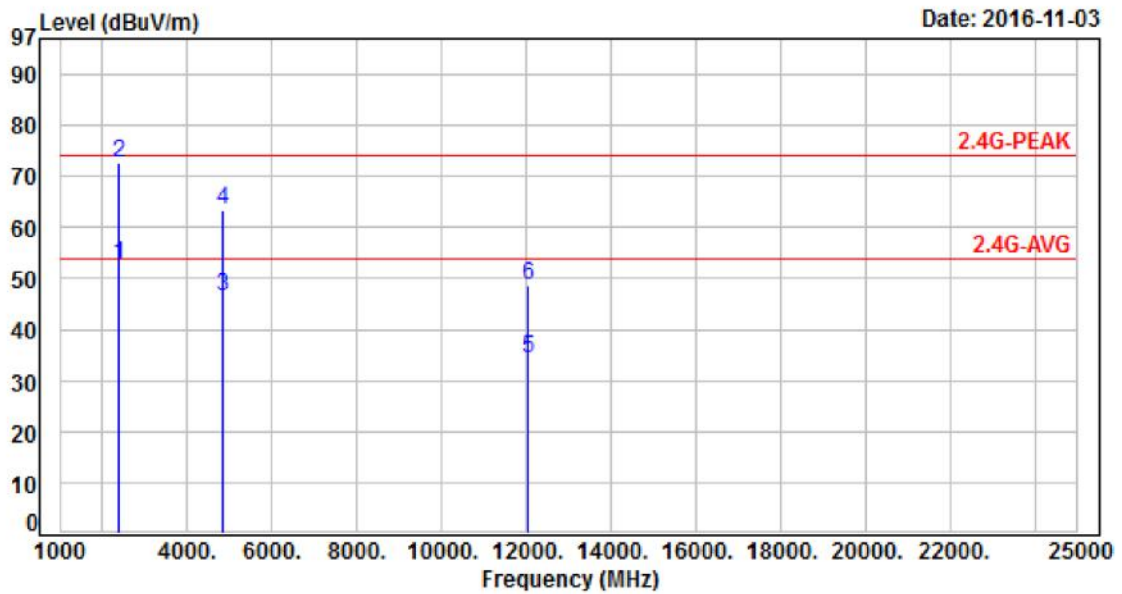


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	66.48	50.73	54.00	-3.27	Average	202	236	P
2	2390.00	-15.75	86.32	70.57	74.00	-3.43	Peak	202	236	P
3	4824.00	-7.58	50.88	43.30	54.00	-10.70	Average	124	186	P
4	4824.00	-7.58	67.76	60.18	74.00	-13.82	Peak	124	186	P
5	12060.00	2.28	31.28	33.56	54.00	-20.44	Average	233	268	P
6	12060.00	2.28	45.75	48.03	74.00	-25.97	Peak	233	268	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	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 01	Atmospheric Pressure	: 1029 hPa

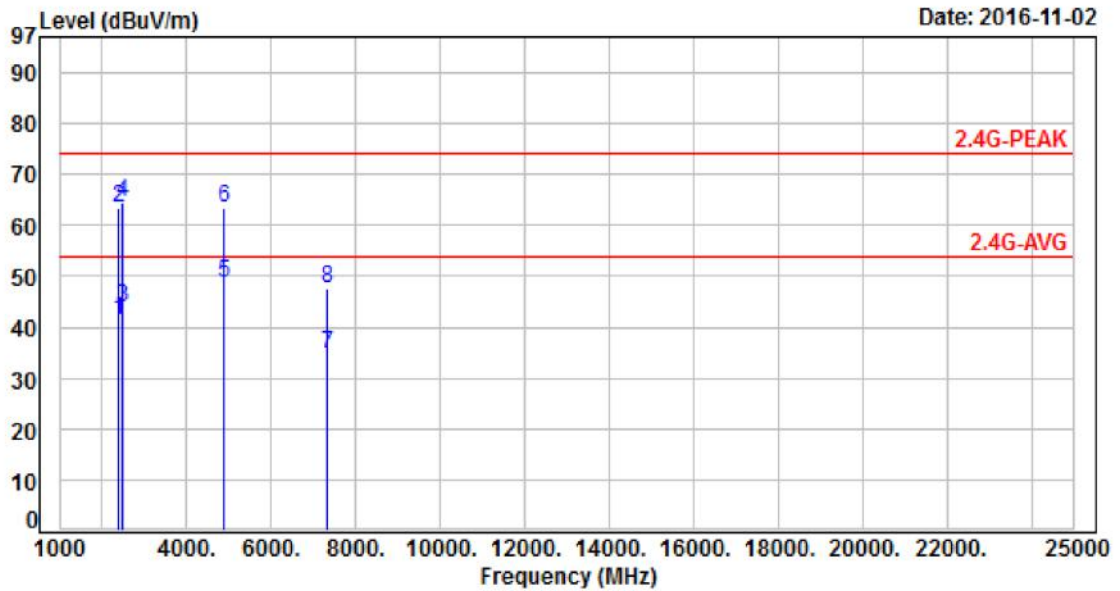


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	68.33	52.58	54.00	-1.42	Average	259	51	P
2	2390.00	-15.75	88.31	72.56	74.00	-1.44	Peak	259	51	P
3	4824.00	-7.58	54.12	46.54	54.00	-7.46	Average	100	210	P
4	4824.00	-7.58	71.15	63.57	74.00	-10.43	Peak	100	210	P
5	12060.00	2.28	31.92	34.20	54.00	-19.80	Average	172	188	P
6	12060.00	2.28	46.22	48.50	74.00	-25.50	Peak	172	188	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	Temperature	: 24 °C
Test Date	: Nov. 02, 2016	Humidity	: 61 %
Memo	: CH 06	Atmospheric Pressure	: 1029 hPa

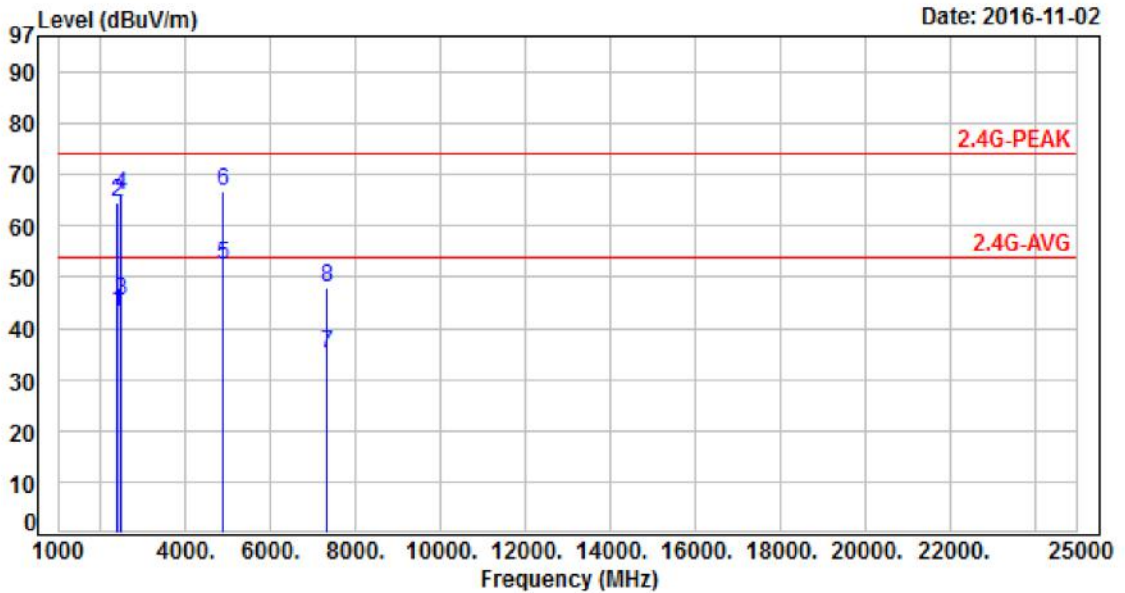


No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	57.17	41.42	54.00	-12.58	Average	188	213	P
2	2390.00	-15.75	79.26	63.51	74.00	-10.49	Peak	188	213	P
3	2483.50	-15.48	59.31	43.83	54.00	-10.17	Average	188	213	P
4	2483.50	-15.48	80.05	64.57	74.00	-9.43	Peak	188	213	P
5	4874.00	-7.39	56.19	48.80	54.00	-5.20	Average	102	185	P
6	4874.00	-7.39	70.90	63.51	74.00	-10.49	Peak	102	185	P
7	7311.00	-3.50	38.21	34.71	54.00	-19.29	Average	189	202	P
8	7311.00	-3.50	51.13	47.63	74.00	-26.37	Peak	189	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	Temperature	: 24 °C
Test Date	: Nov. 02, 2016	Humidity	: 61 %
Memo	: CH 06	Atmospheric Pressure	: 1029 hPa

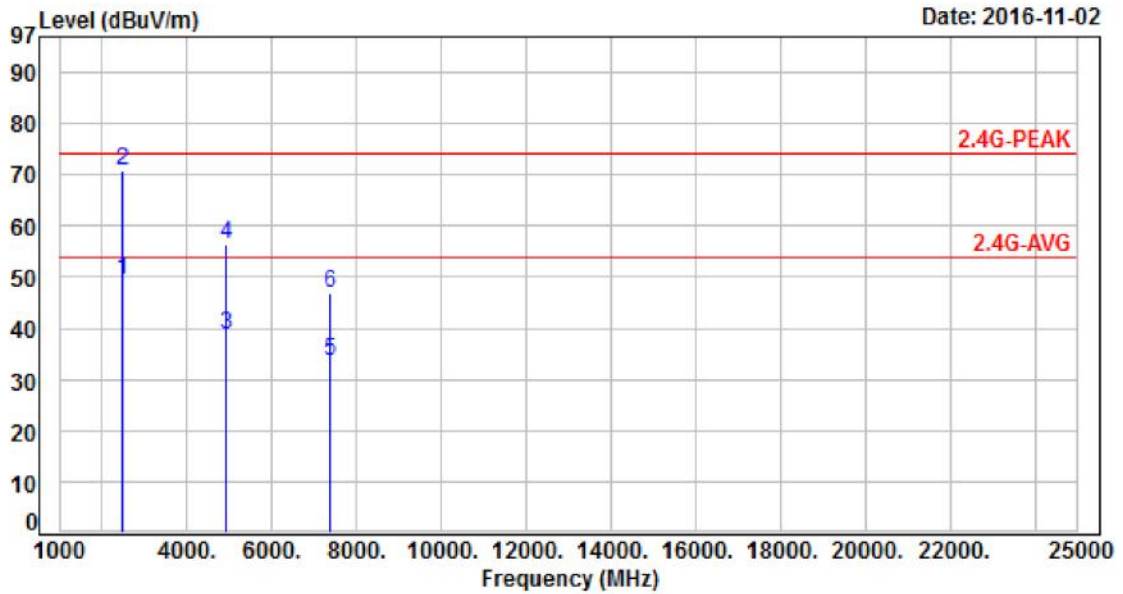


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	58.75	43.00	54.00	-11.00	Average	213	266	P
2	2390.00	-15.75	80.47	64.72	74.00	-9.28	Peak	213	266	P
3	2483.50	-15.48	60.69	45.21	54.00	-8.79	Average	213	266	P
4	2483.50	-15.48	81.34	65.86	74.00	-8.14	Peak	213	266	P
5	4874.00	-7.39	59.62	52.23	54.00	-1.77	Average	117	209	P
6	4874.00	-7.39	74.21	66.82	74.00	-7.18	Peak	117	209	P
7	7311.00	-3.50	38.69	35.19	54.00	-18.81	Average	129	198	P
8	7311.00	-3.50	51.49	47.99	74.00	-26.01	Peak	129	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 2	Temperature	: 24 °C
Test Date	: Nov. 02, 2016	Humidity	: 61 %
Memo	: CH 11	Atmospheric Pressure	: 1029 hPa

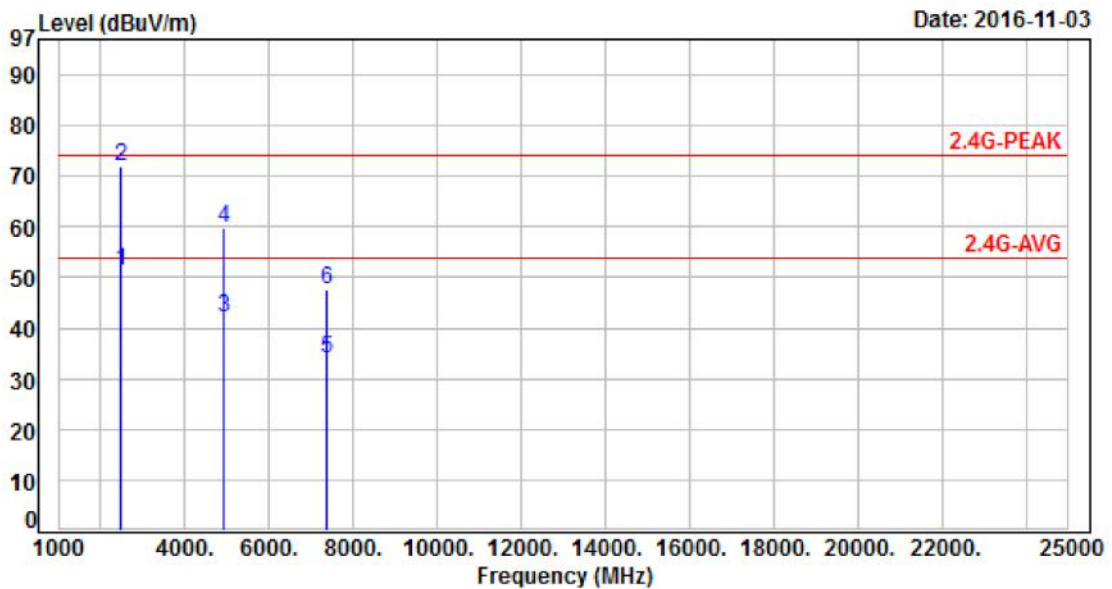


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.48	64.91	49.43	54.00	-4.57	Average	162	213	P
2	2483.50	-15.48	86.35	70.87	74.00	-3.13	Peak	162	213	P
3	4924.00	-7.19	45.73	38.54	54.00	-15.46	Average	149	183	P
4	4924.00	-7.19	63.45	56.26	74.00	-17.74	Peak	149	183	P
5	7386.00	-3.39	37.12	33.73	54.00	-20.27	Average	202	233	P
6	7386.00	-3.39	50.31	46.92	74.00	-27.08	Peak	202	233	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	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 11	Atmospheric Pressure	: 1029 hPa

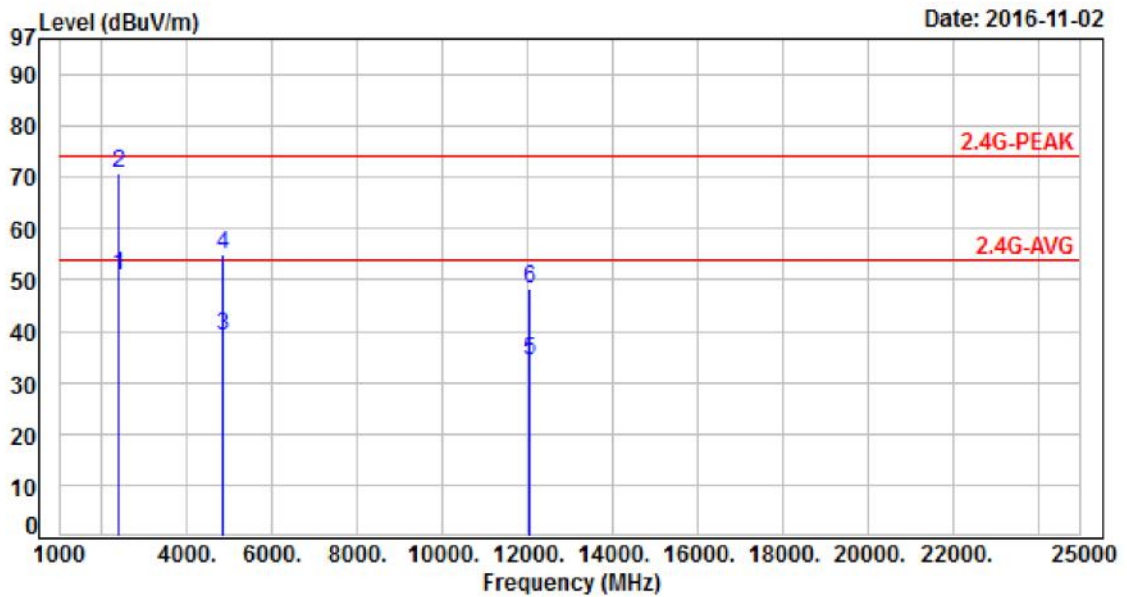


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.48	66.85	51.37	54.00	-2.63	Average	215	216	P
2	2483.50	-15.48	87.58	72.10	74.00	-1.90	Peak	215	216	P
3	4924.00	-7.19	49.19	42.00	54.00	-12.00	Average	128	211	P
4	4924.00	-7.19	66.88	59.69	74.00	-14.31	Peak	128	211	P
5	7386.00	-3.39	37.44	34.05	54.00	-19.95	Average	129	211	P
6	7386.00	-3.39	50.90	47.51	74.00	-26.49	Peak	129	211	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	Temperature	: 24 °C
Test Date	: Nov. 02, 2016	Humidity	: 61 %
Memo	: CH 01	Atmospheric Pressure	: 1029 hPa

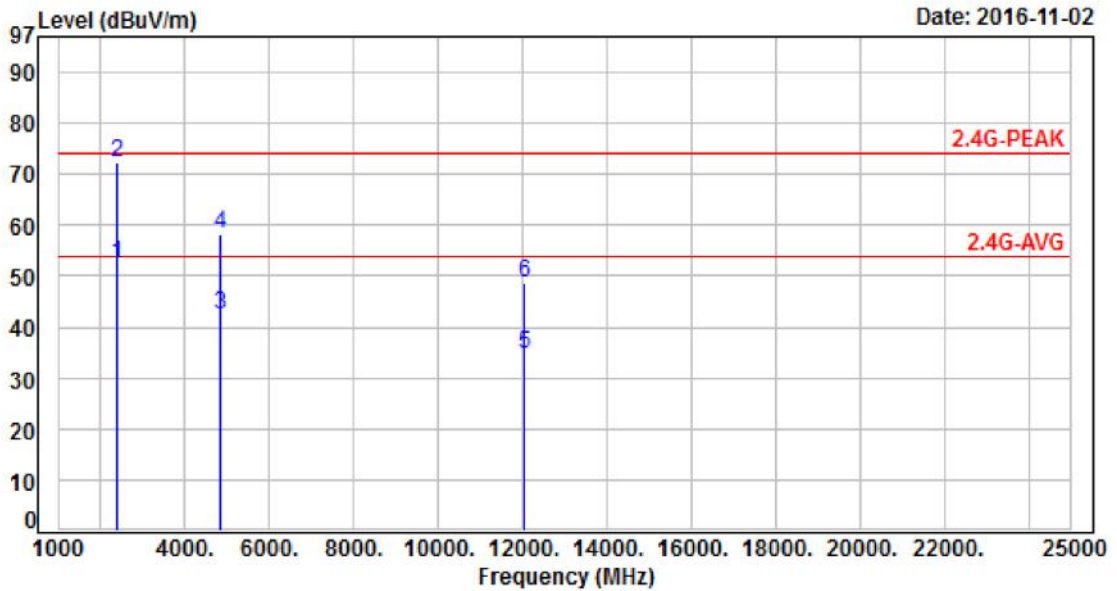


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	66.74	50.99	54.00	-3.01	Average	212	245	P
2	2390.00	-15.75	86.63	70.88	74.00	-3.12	Peak	212	245	P
3	4824.00	-7.58	46.57	38.99	54.00	-15.01	Average	192	216	P
4	4824.00	-7.58	62.41	54.83	74.00	-19.17	Peak	192	216	P
5	12060.00	2.28	31.87	34.15	54.00	-19.85	Average	253	312	P
6	12060.00	2.28	46.13	48.41	74.00	-25.59	Peak	253	312	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	Temperature	: 24 °C
Test Date	: Nov. 02, 2016	Humidity	: 61 %
Memo	: CH 01	Atmospheric Pressure	: 1029 hPa

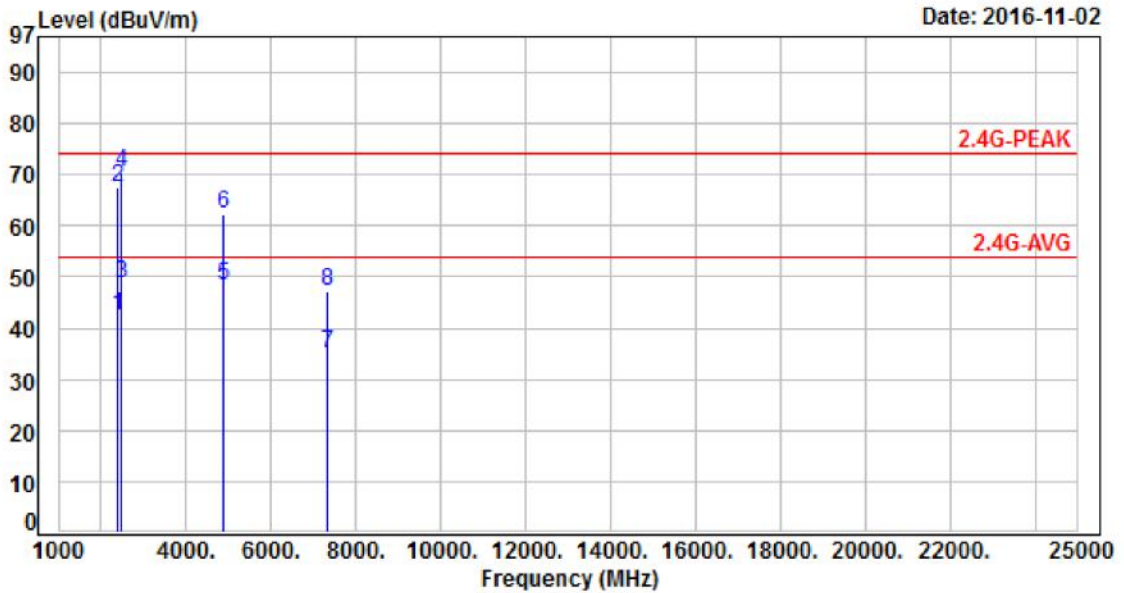


No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	68.22	52.47	54.00	-1.53	Average	100	122	P
2	2390.00	-15.75	88.05	72.30	74.00	-1.70	Peak	100	122	P
3	4824.00	-7.58	49.99	42.41	54.00	-11.59	Average	100	295	P
4	4824.00	-7.58	65.87	58.29	74.00	-15.71	Peak	100	295	P
5	12060.00	2.28	32.34	34.62	54.00	-19.38	Average	202	214	P
6	12060.00	2.28	46.47	48.75	74.00	-25.25	Peak	202	214	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	Temperature	: 24 °C
Test Date	: Nov. 02, 2016	Humidity	: 61 %
Memo	: CH 06	Atmospheric Pressure	: 1029 hPa

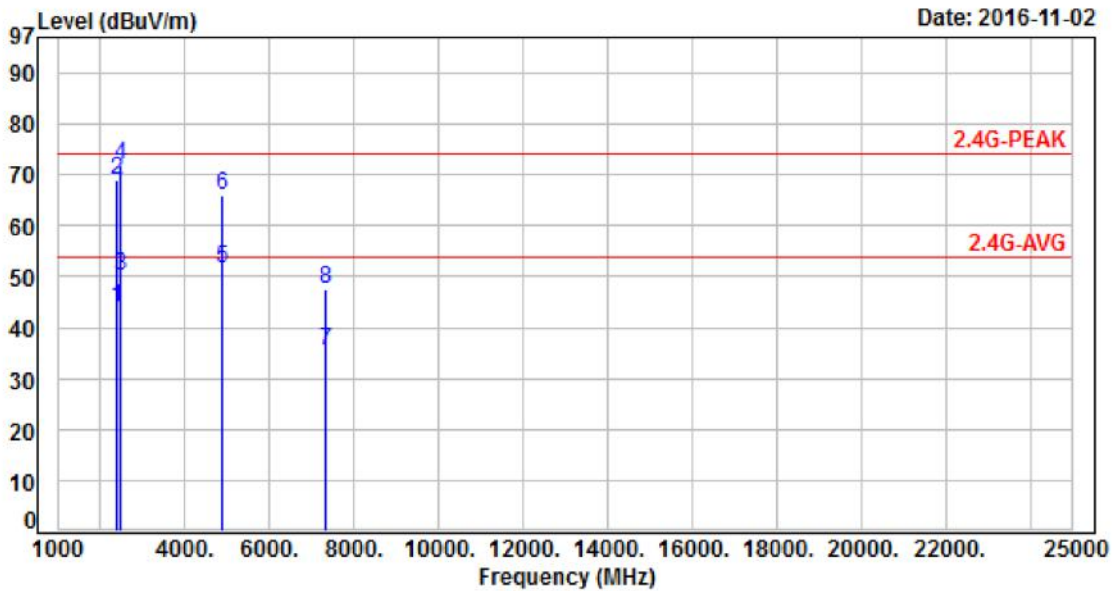


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	58.32	42.57	54.00	-11.43	Average	169	178	P
2	2390.00	-15.75	83.16	67.41	74.00	-6.59	Peak	169	178	P
3	2483.50	-15.48	64.29	48.81	54.00	-5.19	Average	169	178	P
4	2483.50	-15.48	86.03	70.55	74.00	-3.45	Peak	169	178	P
5	4874.00	-7.39	55.79	48.40	54.00	-5.60	Average	203	224	P
6	4874.00	-7.39	69.87	62.48	74.00	-11.52	Peak	203	224	P
7	7311.00	-3.50	38.41	34.91	54.00	-19.09	Average	216	222	P
8	7311.00	-3.50	50.62	47.12	74.00	-26.88	Peak	216	222	P

Note: Level = Reading + Factor
 Margin = Level – Limit
 Factor= Antenna Factor + Cable Loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3	Temperature	: 24 °C
Test Date	: Nov. 02, 2016	Humidity	: 61 %
Memo	: CH 06	Atmospheric Pressure	: 1029 hPa

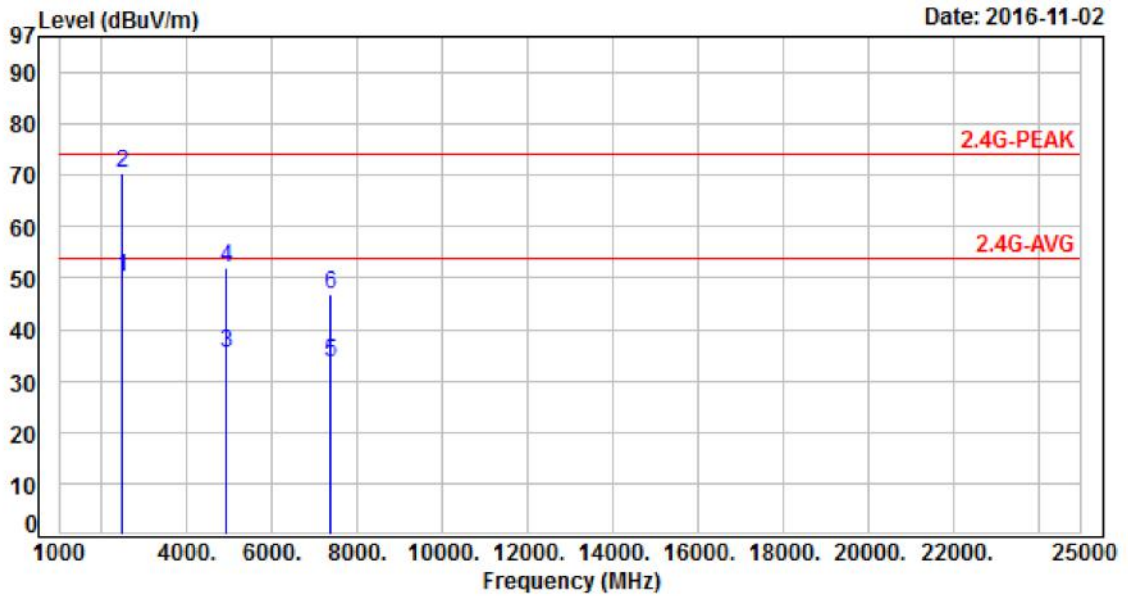


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	59.80	44.05	54.00	-9.95	Average	218	220	P
2	2390.00	-15.75	84.74	68.99	74.00	-5.01	Peak	218	220	P
3	2483.50	-15.48	65.56	50.08	54.00	-3.92	Average	218	220	P
4	2483.50	-15.48	87.53	72.05	74.00	-1.95	Peak	218	220	P
5	4874.00	-7.39	59.18	51.79	54.00	-2.21	Average	117	209	P
6	4874.00	-7.39	73.23	65.84	74.00	-8.16	Peak	117	209	P
7	7311.00	-3.50	38.74	35.24	54.00	-18.76	Average	158	196	P
8	7311.00	-3.50	51.01	47.51	74.00	-26.49	Peak	158	196	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	Temperature	: 24 °C
Test Date	: Nov. 02, 2016	Humidity	: 61 %
Memo	: CH 11	Atmospheric Pressure	: 1029 hPa

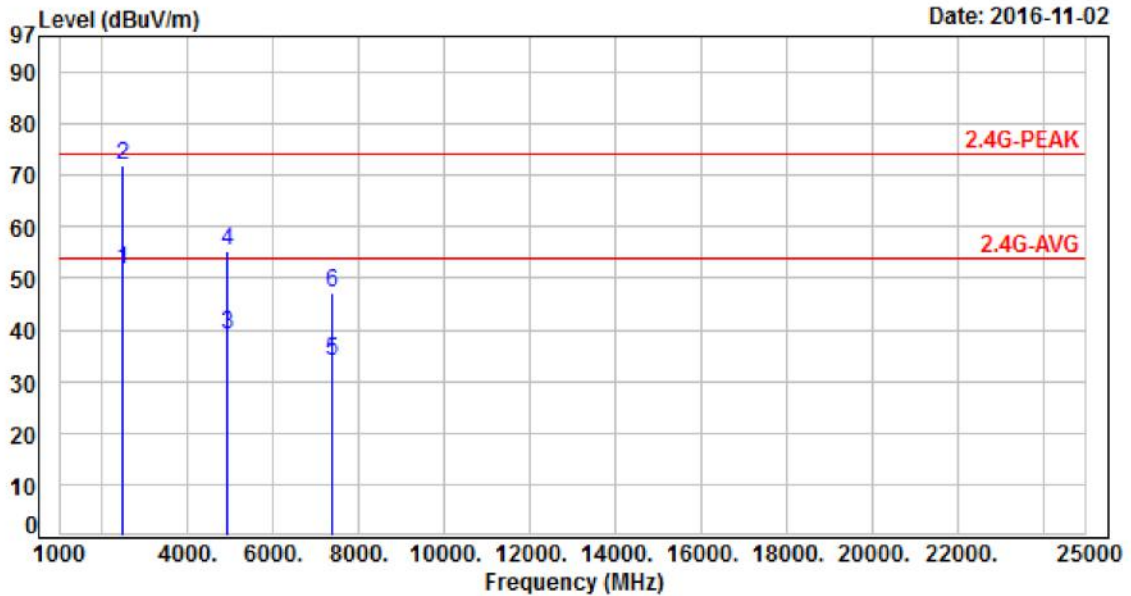


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.48	65.73	50.25	54.00	-3.75	Average	116	245	P
2	2483.50	-15.48	86.02	70.54	74.00	-3.46	Peak	116	245	P
3	4924.00	-7.19	42.71	35.52	54.00	-18.48	Average	168	237	P
4	4924.00	-7.19	59.17	51.98	74.00	-22.02	Peak	168	237	P
5	7386.00	-3.39	36.81	33.42	54.00	-20.58	Average	100	161	P
6	7386.00	-3.39	50.13	46.74	74.00	-27.26	Peak	100	161	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	Temperature	: 24 °C
Test Date	: Nov. 02, 2016	Humidity	: 61 %
Memo	: CH 11	Atmospheric Pressure	: 1029 hPa

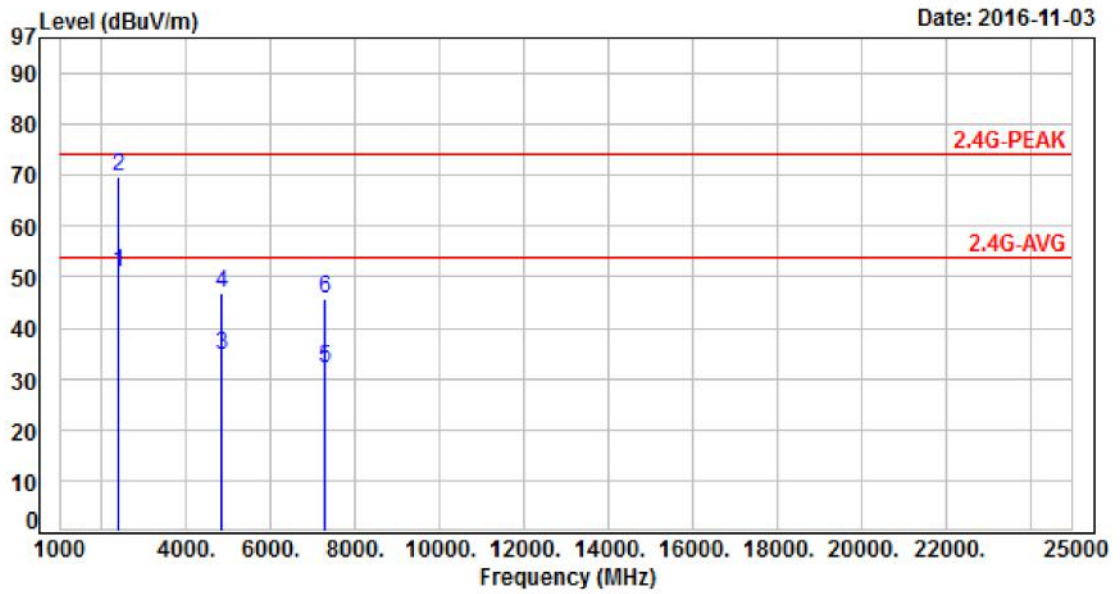


No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.48	67.12	51.64	54.00	-2.36	Average	100	190	P
2	2483.50	-15.48	87.53	72.05	74.00	-1.95	Peak	100	190	P
3	4924.00	-7.19	46.30	39.11	54.00	-14.89	Average	150	209	P
4	4924.00	-7.19	62.40	55.21	74.00	-18.79	Peak	150	209	P
5	7386.00	-3.39	37.37	33.98	54.00	-20.02	Average	206	256	P
6	7386.00	-3.39	50.42	47.03	74.00	-26.97	Peak	206	256	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	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 03	Atmospheric Pressure	: 1029 hPa

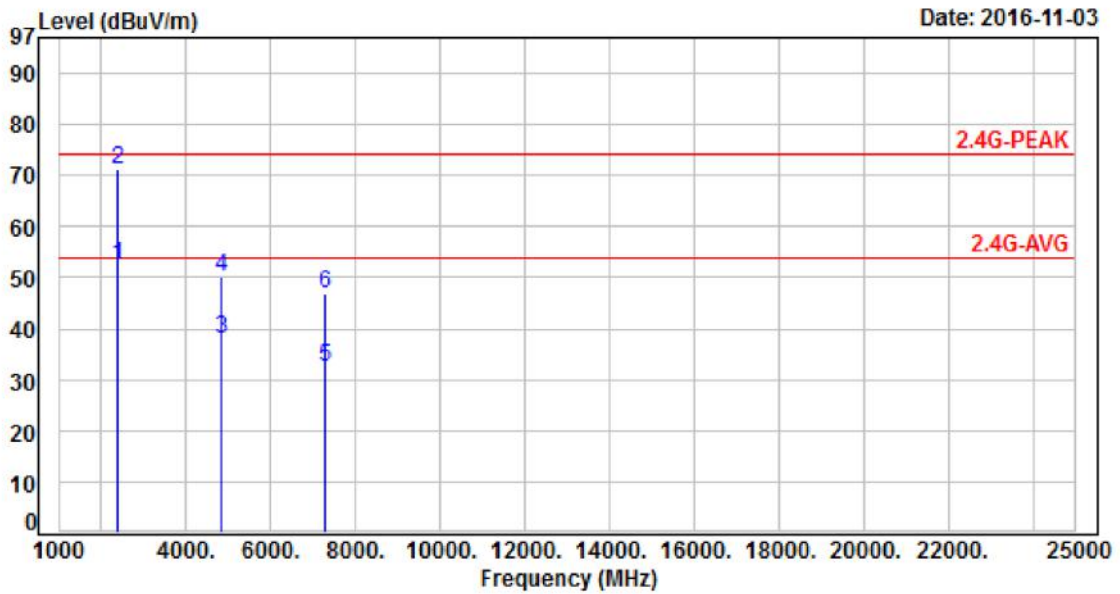


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	66.50	50.75	54.00	-3.25	Average	212	246	P
2	2390.00	-15.75	85.38	69.63	74.00	-4.37	Peak	212	246	P
3	4844.00	-7.50	42.13	34.63	54.00	-19.37	Average	169	198	P
4	4844.00	-7.50	54.29	46.79	74.00	-27.21	Peak	169	198	P
5	7266.00	-3.57	35.55	31.98	54.00	-22.02	Average	184	210	P
6	7266.00	-3.57	49.22	45.65	74.00	-28.35	Peak	184	210	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	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 03	Atmospheric Pressure	: 1029 hPa

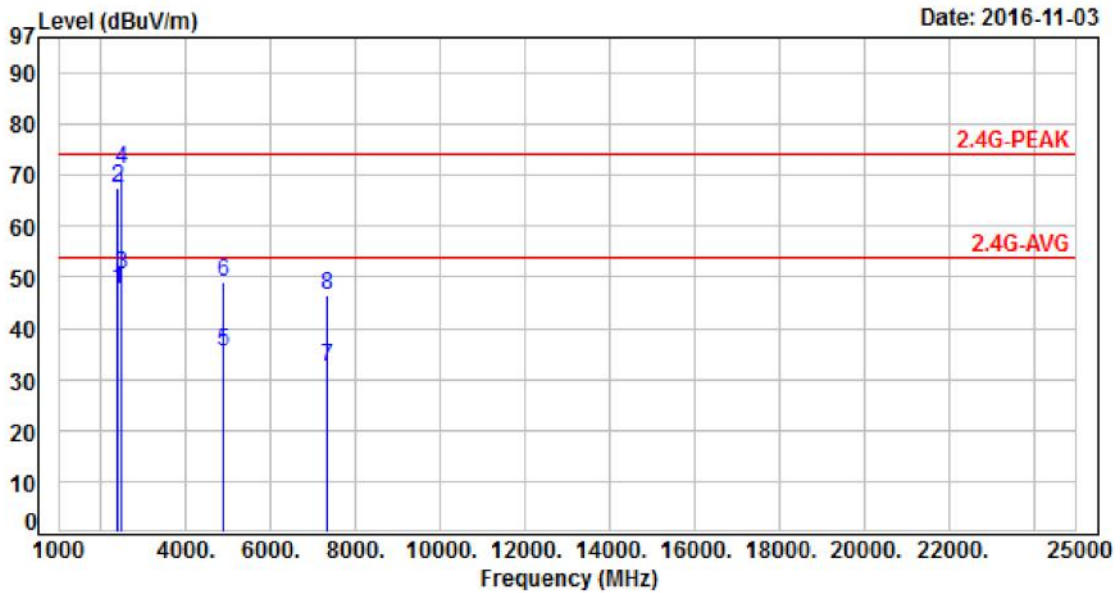


No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	68.03	52.28	54.00	-1.72	Average	100	52	P
2	2390.00	-15.75	86.95	71.20	74.00	-2.80	Peak	100	52	P
3	4844.00	-7.50	45.54	38.04	54.00	-15.96	Average	125	210	P
4	4844.00	-7.50	57.69	50.19	74.00	-23.81	Peak	125	210	P
5	7266.00	-3.57	36.16	32.59	54.00	-21.41	Average	100	221	P
6	7266.00	-3.57	50.39	46.82	74.00	-27.18	Peak	100	221	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	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 06	Atmospheric Pressure	: 1029 hPa

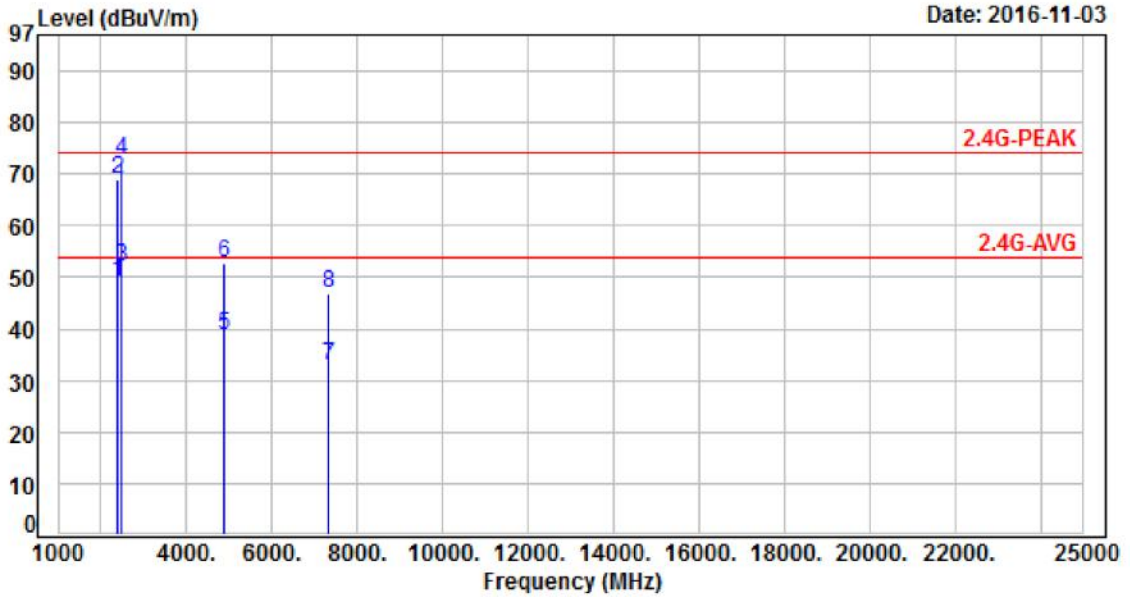


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	63.26	47.51	54.00	-6.49	Average	216	248	P
2	2390.00	-15.75	83.32	67.57	74.00	-6.43	Peak	216	248	P
3	2483.50	-15.48	66.12	50.64	54.00	-3.36	Average	216	248	P
4	2483.50	-15.48	86.65	71.17	74.00	-2.83	Peak	216	248	P
5	4874.00	-7.39	42.62	35.23	54.00	-18.77	Average	172	188	P
6	4874.00	-7.39	56.48	49.09	74.00	-24.91	Peak	172	188	P
7	7311.00	-3.50	35.93	32.43	54.00	-21.57	Average	198	202	P
8	7311.00	-3.50	49.79	46.29	74.00	-27.71	Peak	198	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 4	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 06	Atmospheric Pressure	: 1029 hPa

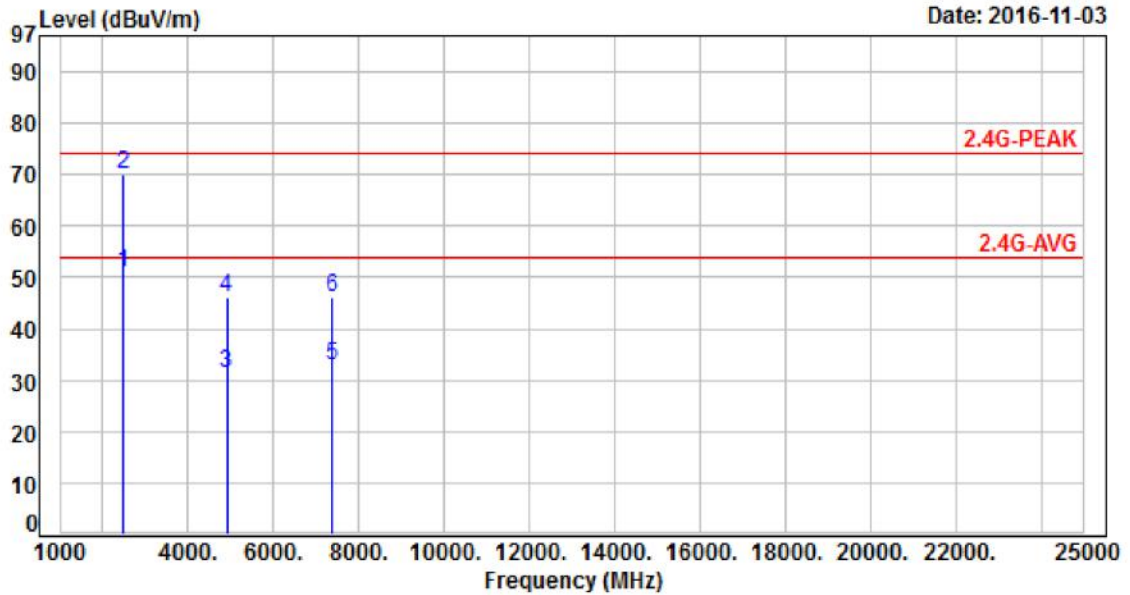


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.75	64.75	49.00	54.00	-5.00	Average	125	204	P
2	2390.00	-15.75	84.77	69.02	74.00	-4.98	Peak	125	204	P
3	2483.50	-15.48	67.40	51.92	54.00	-2.08	Average	125	204	P
4	2483.50	-15.48	88.08	72.60	74.00	-1.40	Peak	125	204	P
5	4874.00	-7.39	45.97	38.58	54.00	-15.42	Average	128	210	P
6	4874.00	-7.39	59.97	52.58	74.00	-21.42	Peak	128	210	P
7	7311.00	-3.50	36.32	32.82	54.00	-21.18	Average	102	224	P
8	7311.00	-3.50	50.31	46.81	74.00	-27.19	Peak	102	224	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	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 09	Atmospheric Pressure	: 1029 hPa

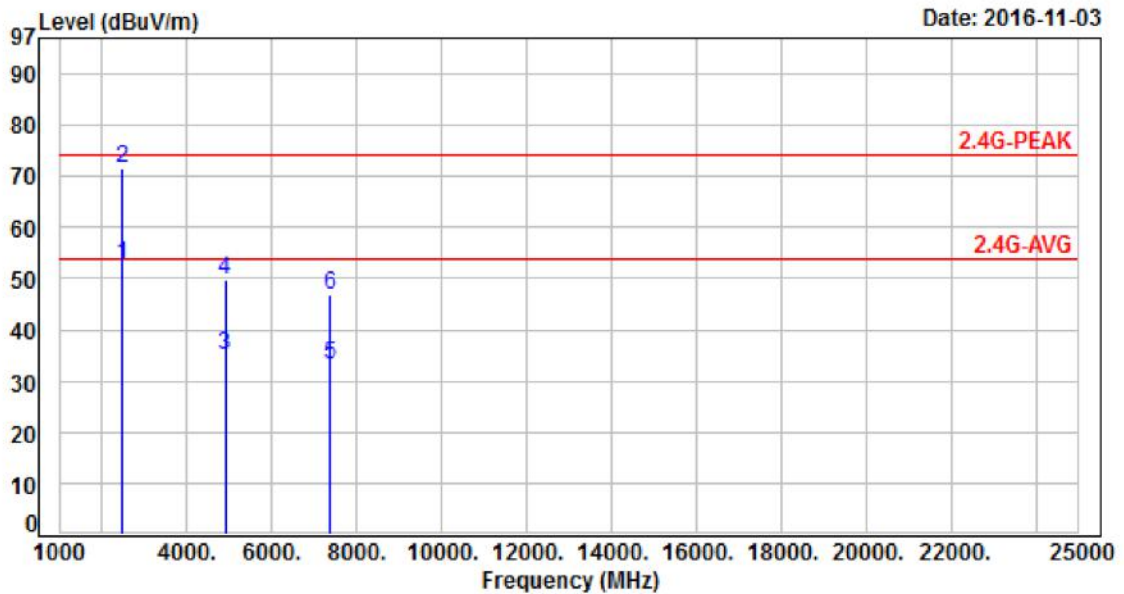


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.48	66.31	50.83	54.00	-3.17	Average	166	182	P
2	2483.50	-15.48	85.42	69.94	74.00	-4.06	Peak	166	182	P
3	4904.00	-7.26	38.66	31.40	54.00	-22.60	Average	205	198	P
4	4904.00	-7.26	53.40	46.14	74.00	-27.86	Peak	205	198	P
5	7356.00	-3.42	36.21	32.79	54.00	-21.21	Average	176	232	P
6	7356.00	-3.42	49.54	46.12	74.00	-27.88	Peak	176	232	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	Temperature	: 24 °C
Test Date	: Nov. 03, 2016	Humidity	: 61 %
Memo	: CH 09	Atmospheric Pressure	: 1029 hPa



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.48	68.09	52.61	54.00	-1.39	Average	132	204	P
2	2483.50	-15.48	87.11	71.63	74.00	-2.37	Peak	132	204	P
3	4904.00	-7.26	42.14	34.88	54.00	-19.12	Average	100	211	P
4	4904.00	-7.26	56.94	49.68	74.00	-24.32	Peak	100	211	P
5	7356.00	-3.42	36.63	33.21	54.00	-20.79	Average	102	188	P
6	7356.00	-3.42	50.12	46.70	74.00	-27.30	Peak	102	188	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

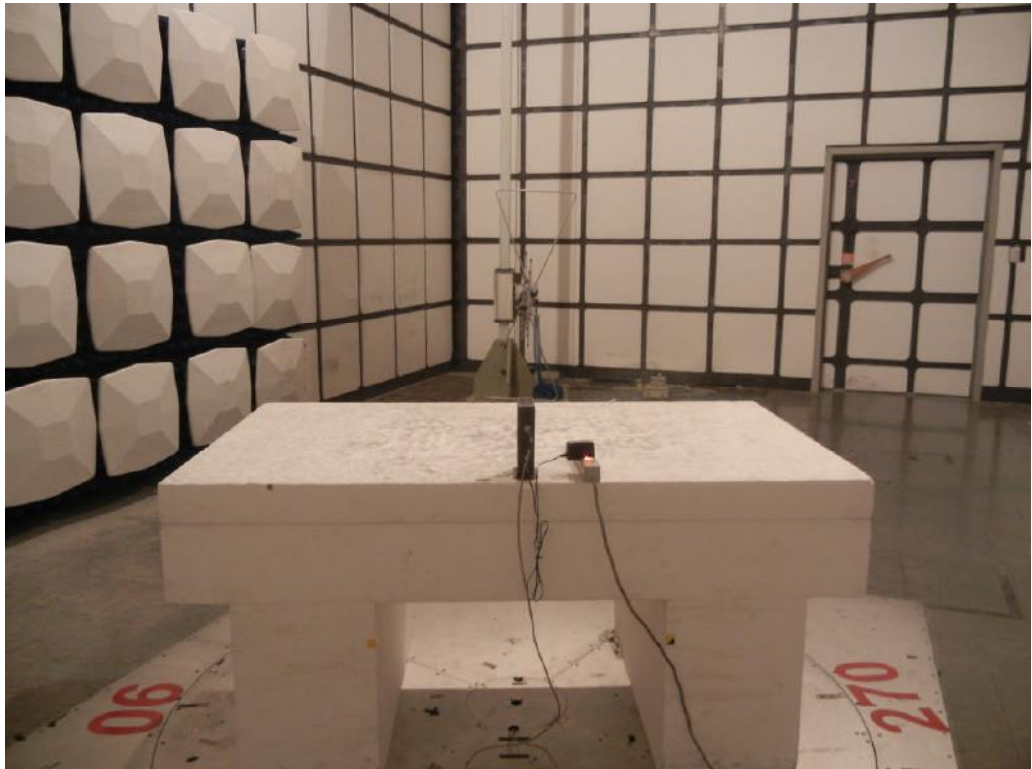


6.8 Test Photographs (30MHz ~ 1GHz)

Front View



Rear View



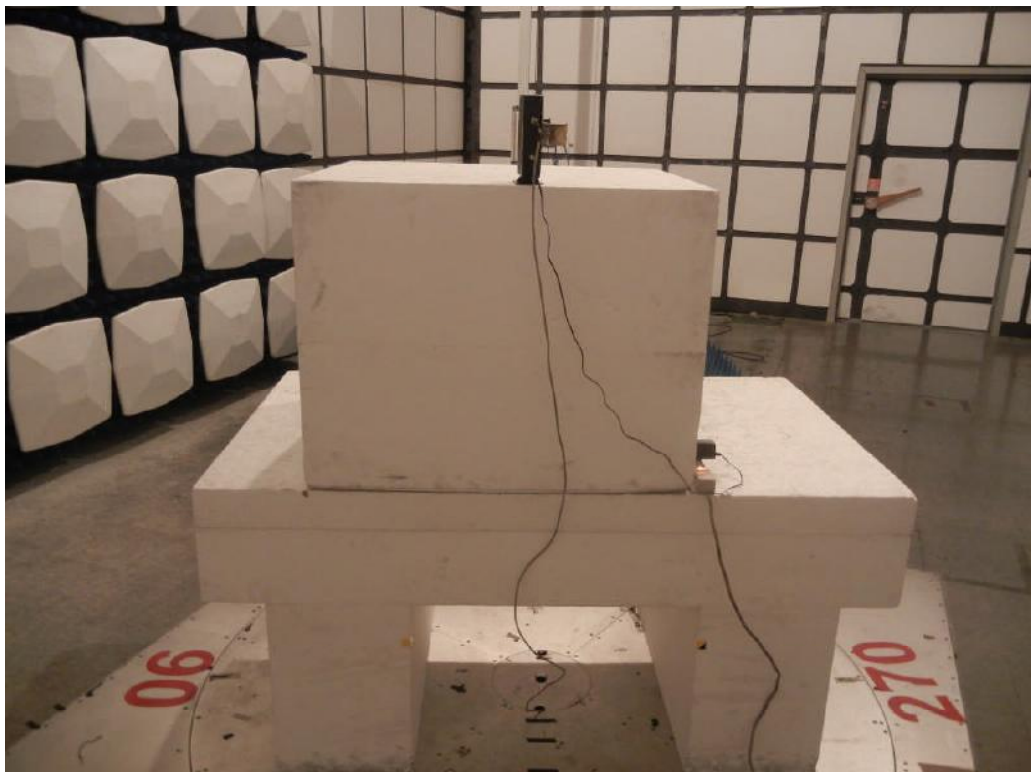


6.9 Test Photographs (1GHz ~ 25GHz)

Front View



Rear View





7. Test of Conducted Spurious Emission

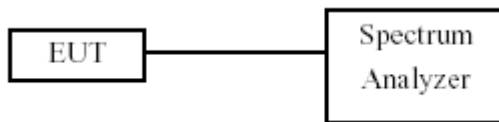
7.1 Test Limit

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

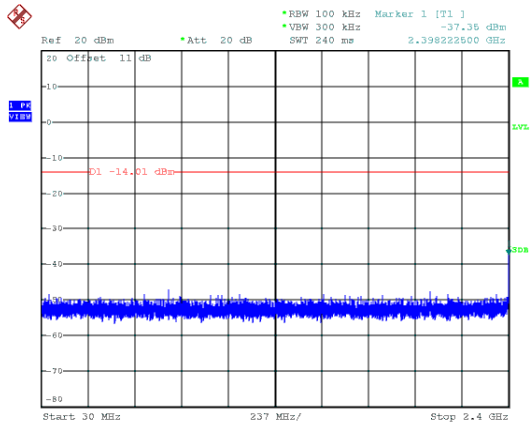
Test Date	: Nov. 08, 2016	Temperature	: 23°C
Atmospheric pressure	: 1007 hPa	Humidity	: 64%
Test Result	: PASS		

Note: Test plots refers to the following pages.

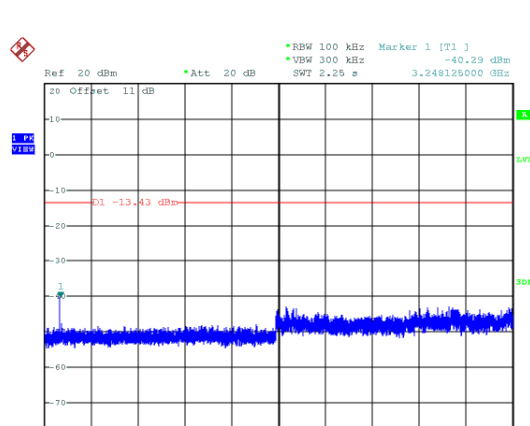
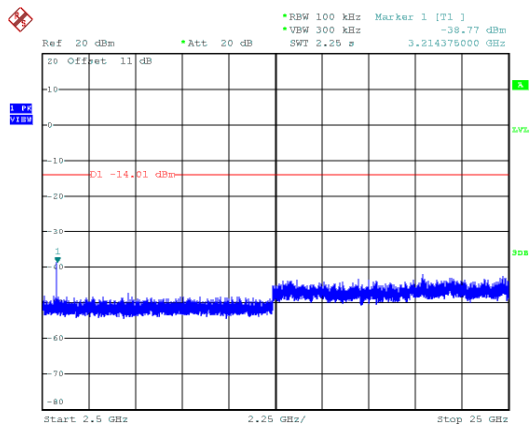
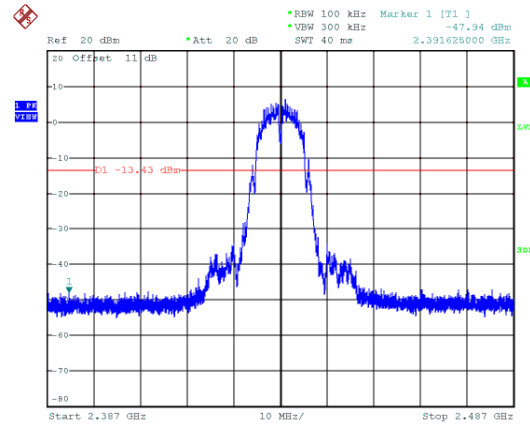
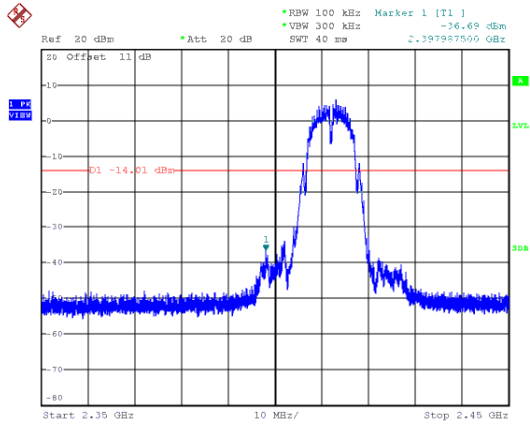
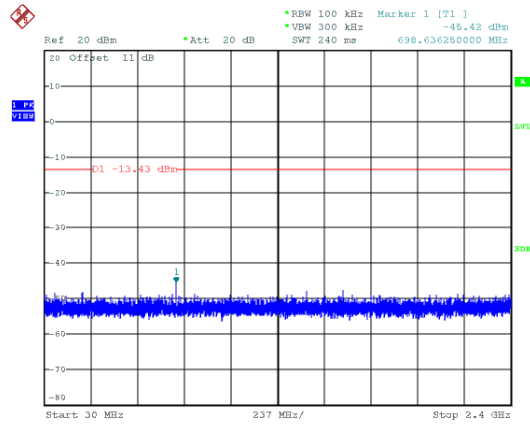


ANT A:

Modulation Type: 802.11b, CH 01

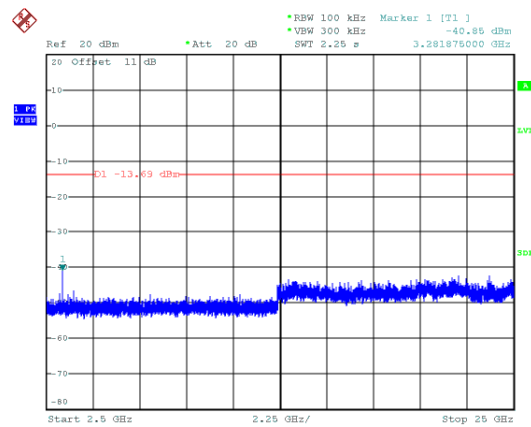
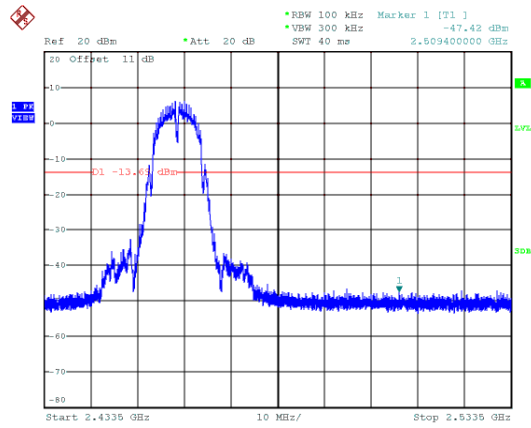
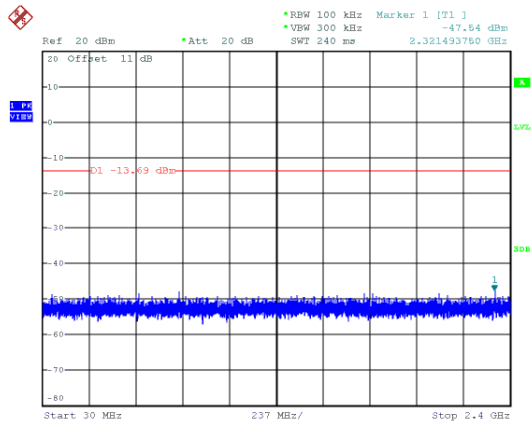


Modulation Type: 802.11b, CH 06



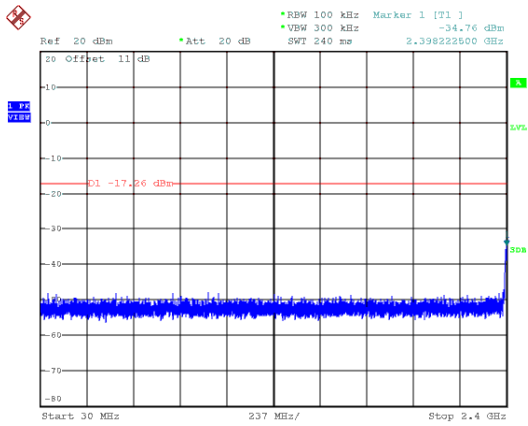


Modulation Type: 802.11b, CH 11

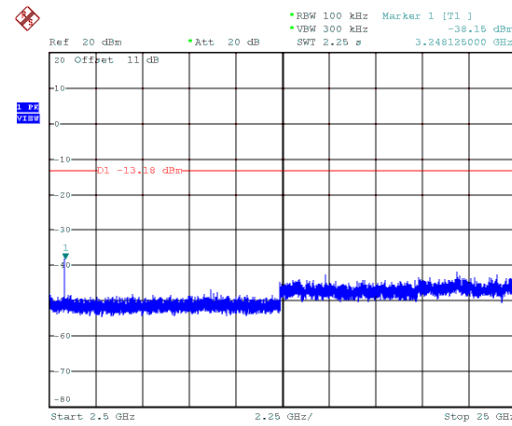
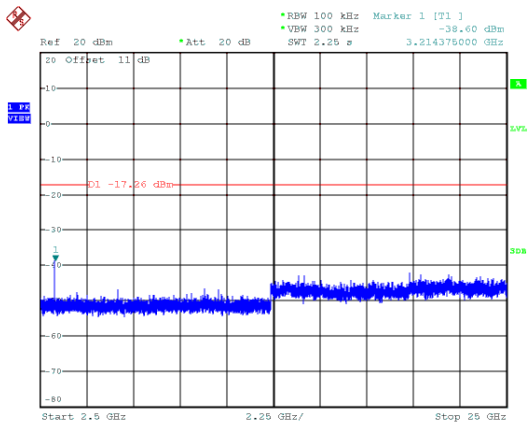
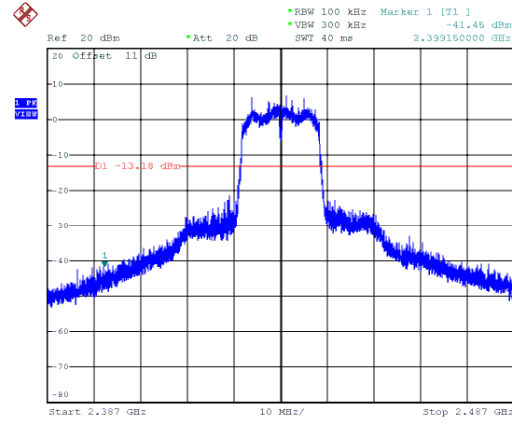
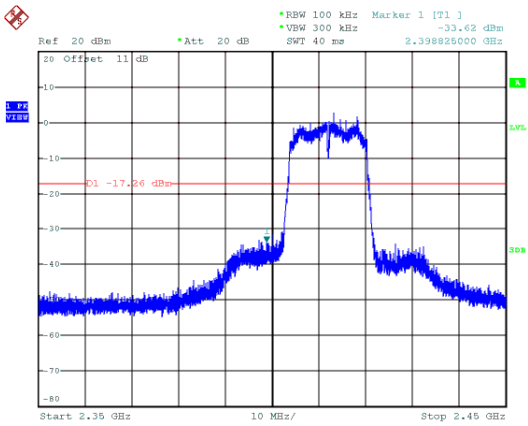
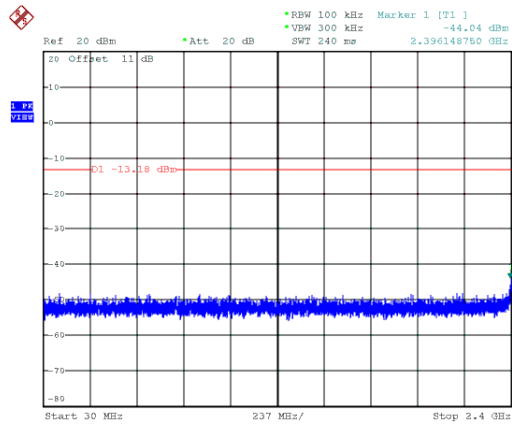




Modulation Type: 802.11g, CH 01

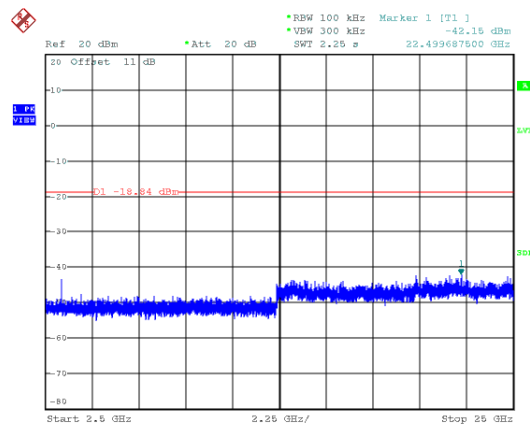
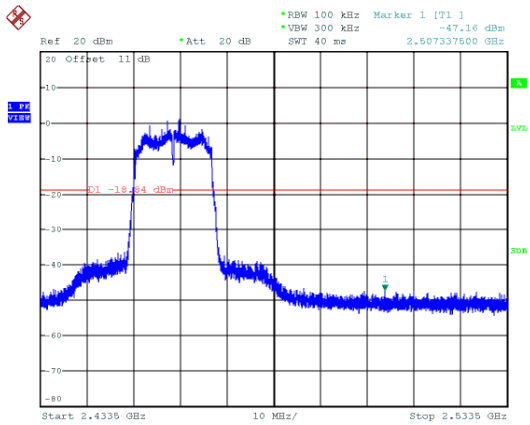
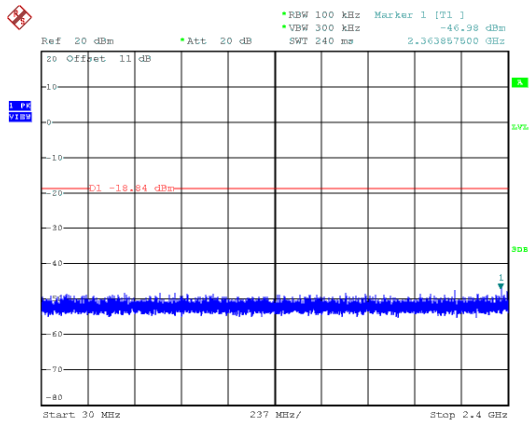


Modulation Type: 802.11g, CH 06



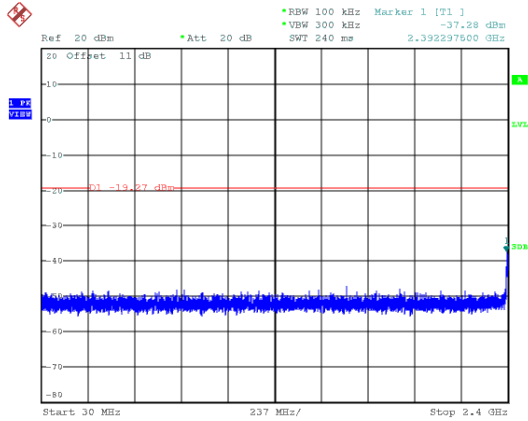


Modulation Type: 802.11g, CH 11

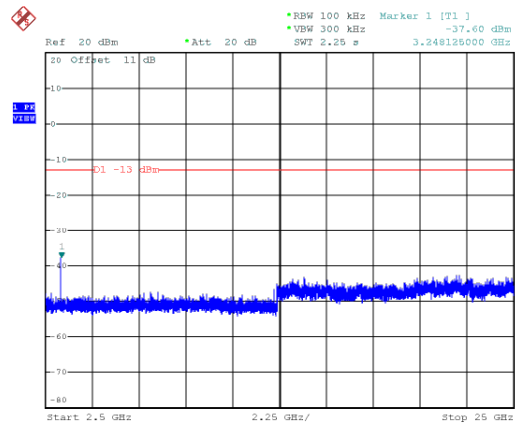
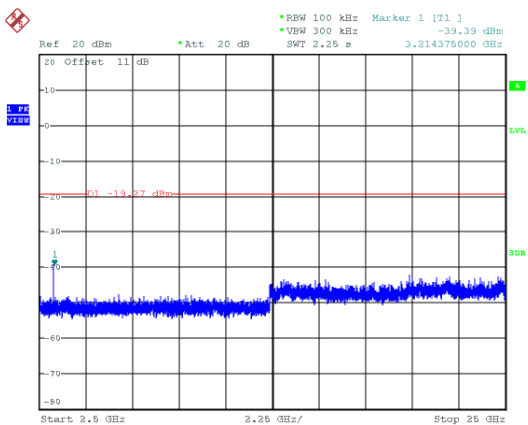
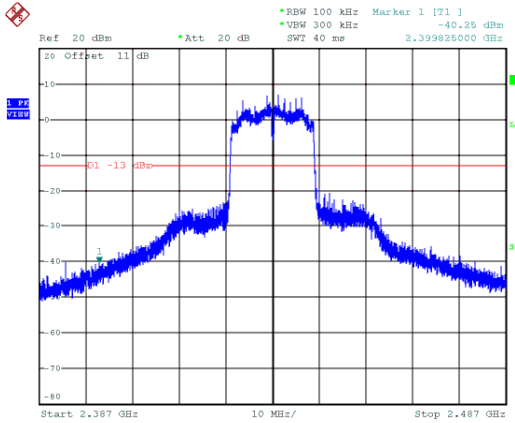
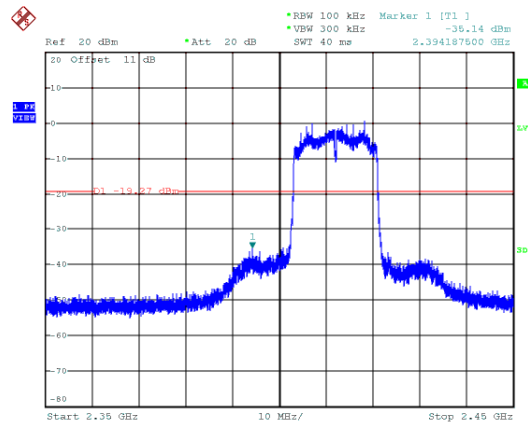
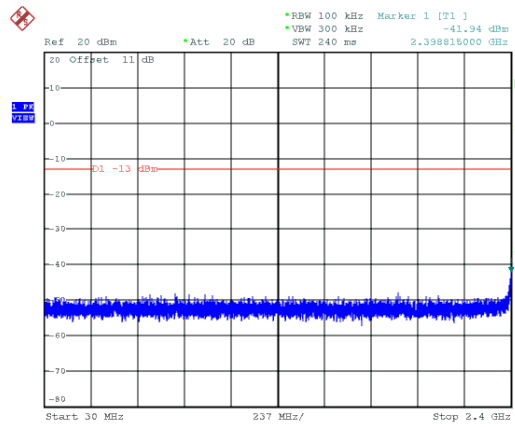




Modulation Type: 802.11n HT20, CH 01

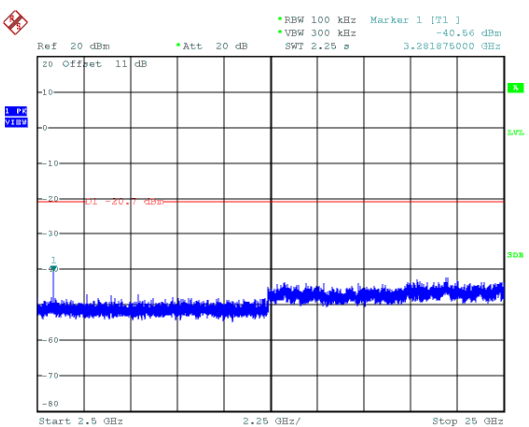
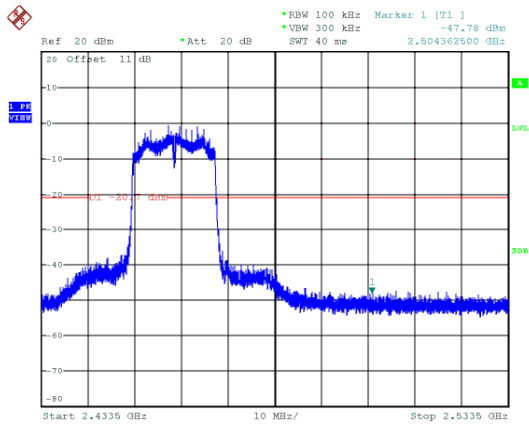
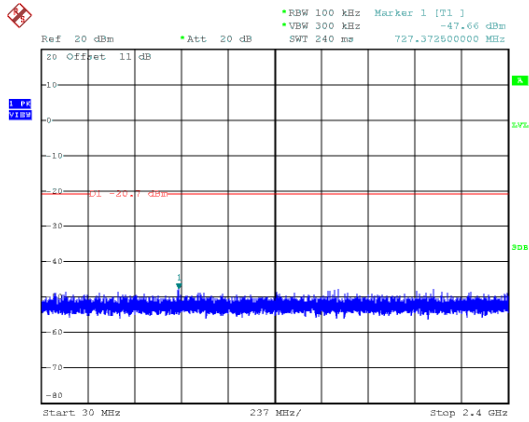


Modulation Type: 802.11n HT20, CH 06



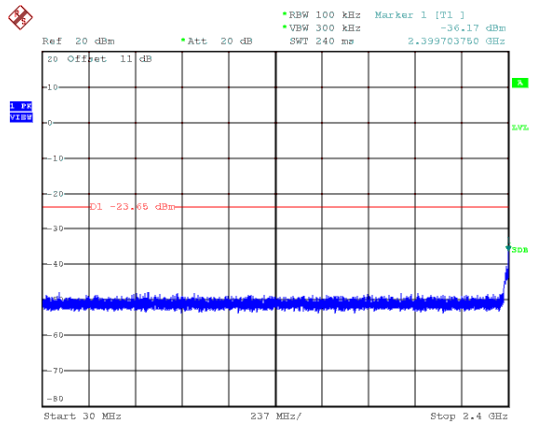


Modulation Type: 802.11n HT20, CH 11

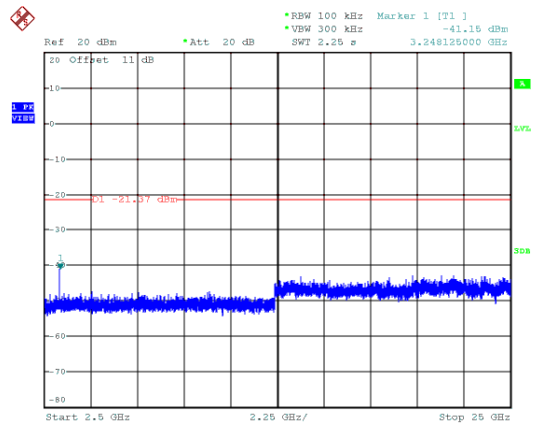
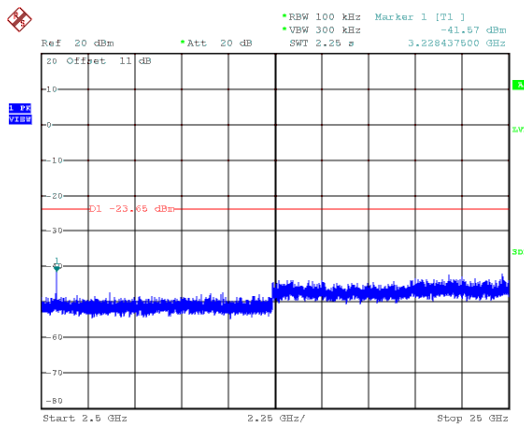
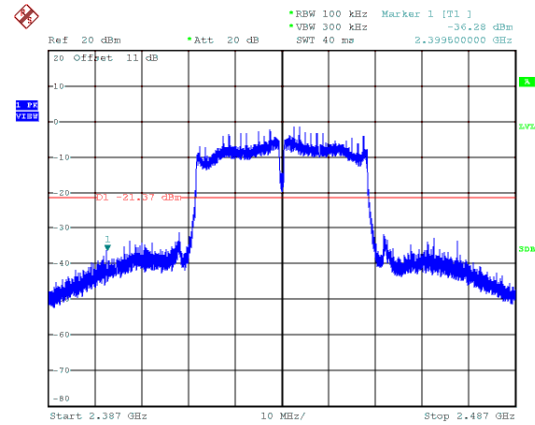
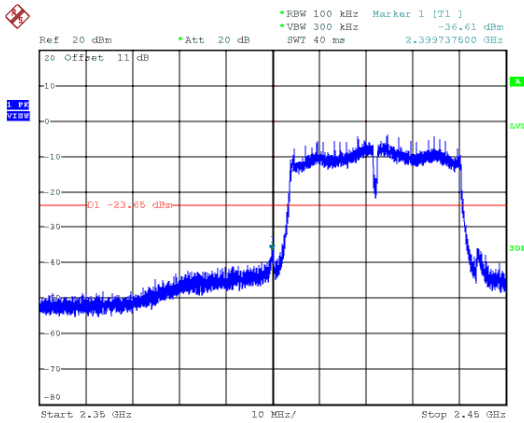
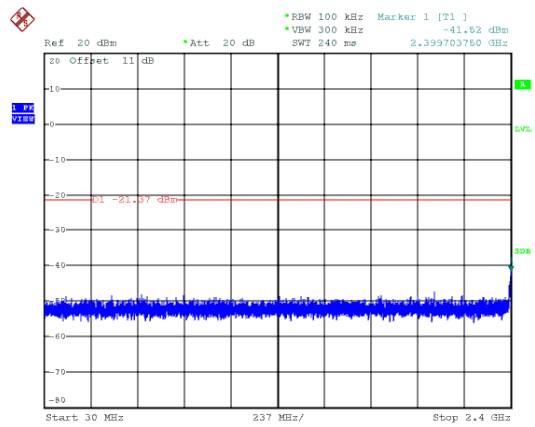




Modulation Type: 802.11n HT40, CH 03

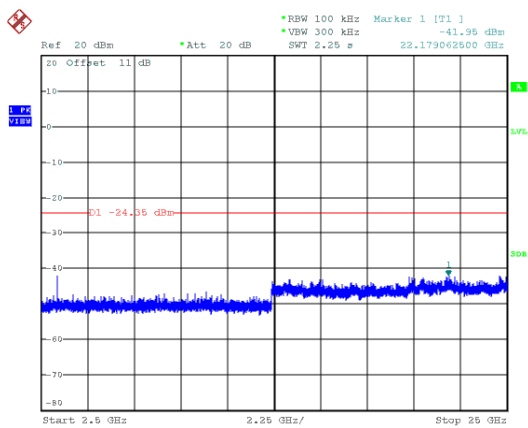
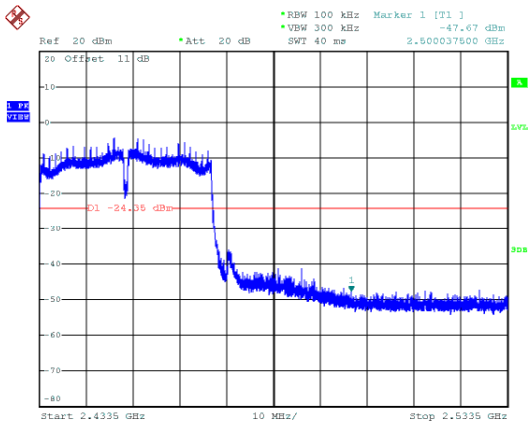
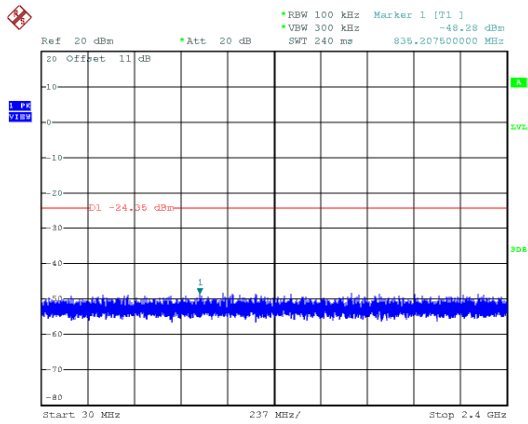


Modulation Type: 802.11n HT40, CH 06





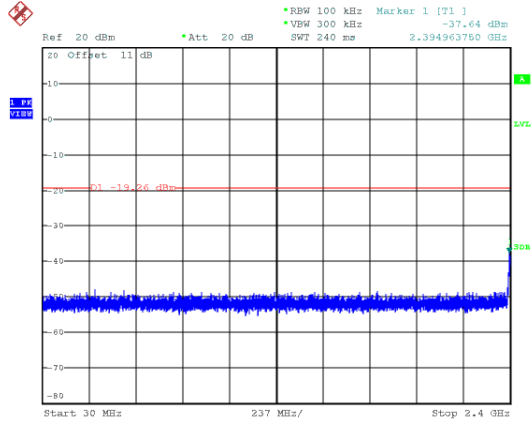
Modulation Type: 802.11n HT40, CH 09



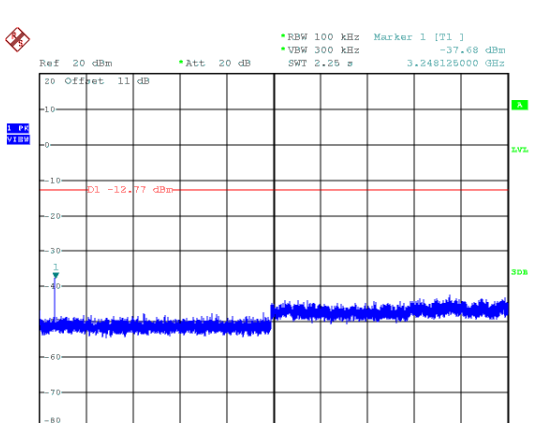
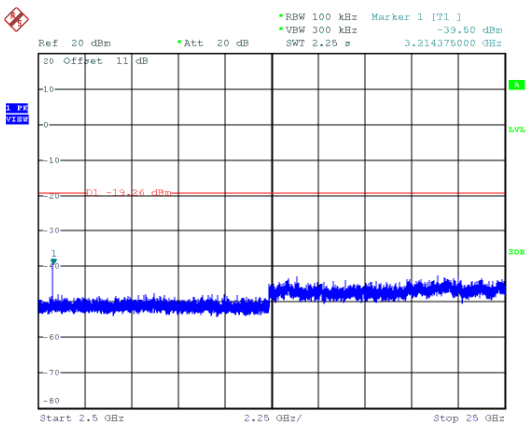
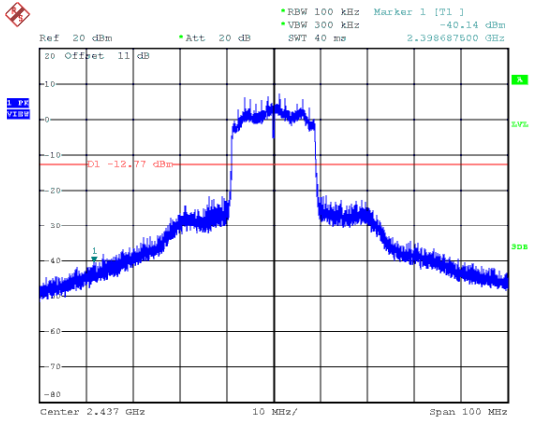
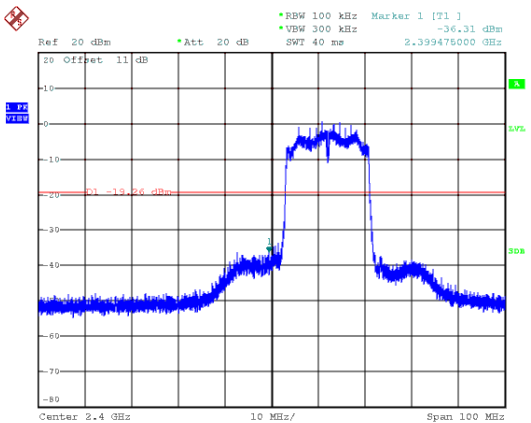
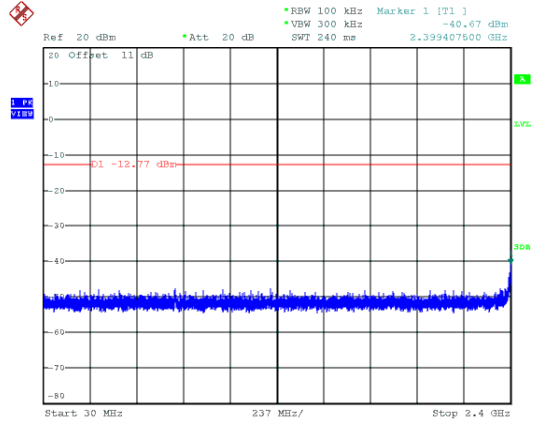


ANT B:

Modulation Type: 802.11n HT20, CH 01

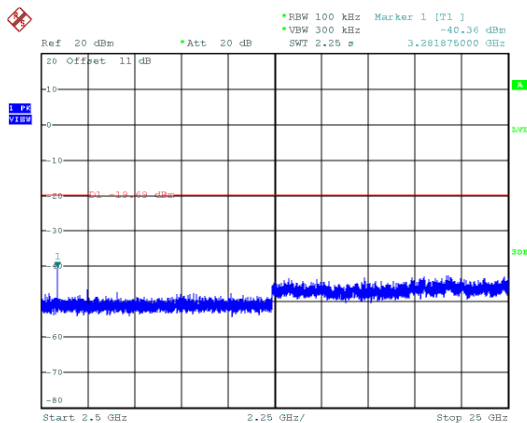
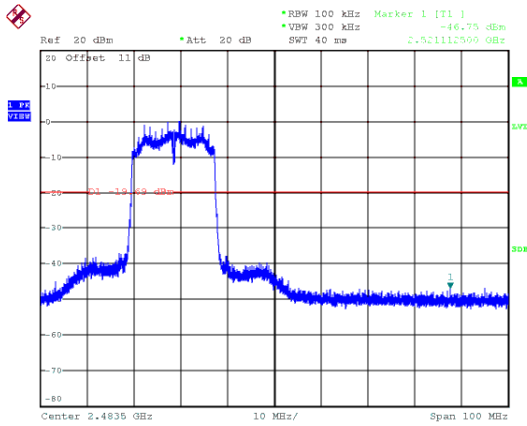
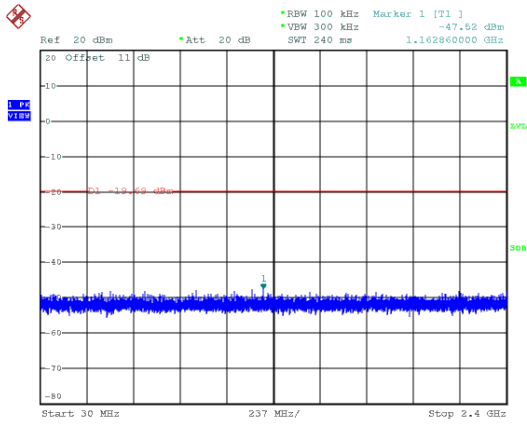


Modulation Type: 802.11n HT20, CH 06



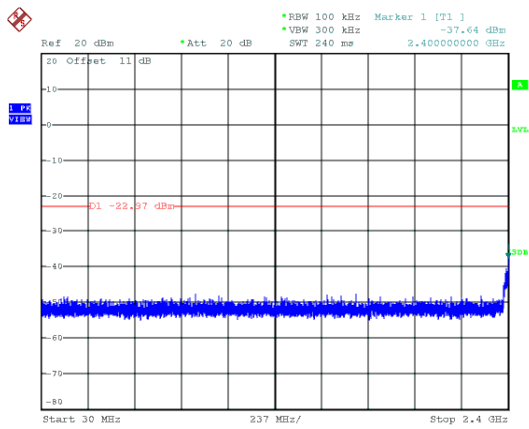


Modulation Type: 802.11n HT20, CH 11

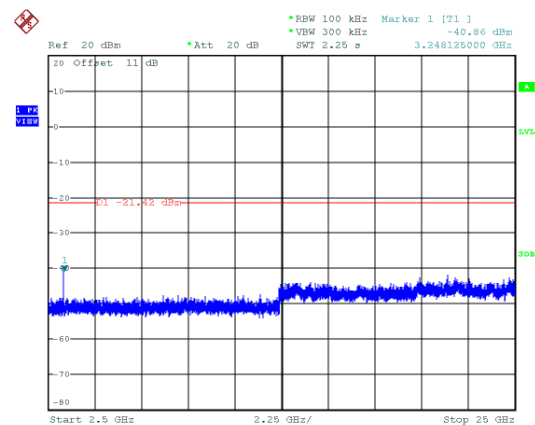
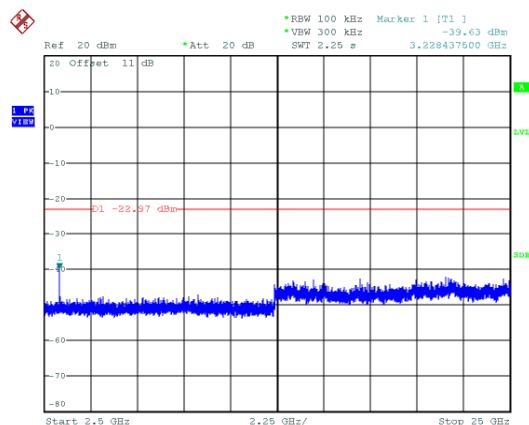
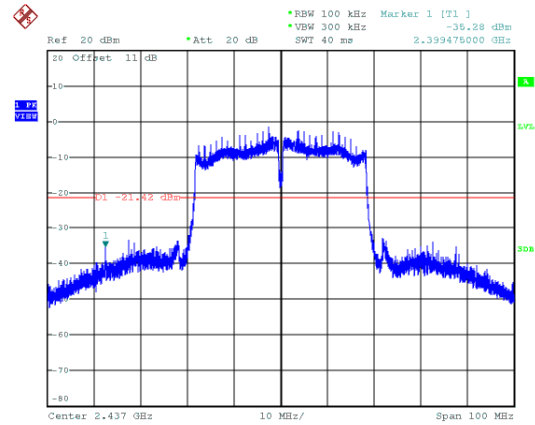
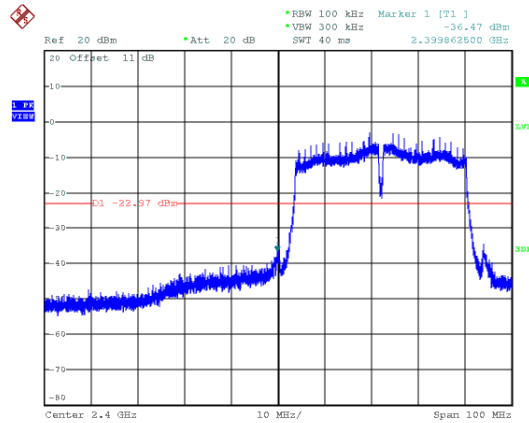
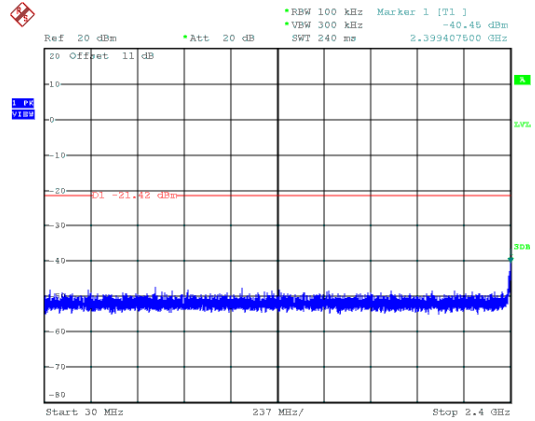




Modulation Type: 802.11n HT40, CH 03

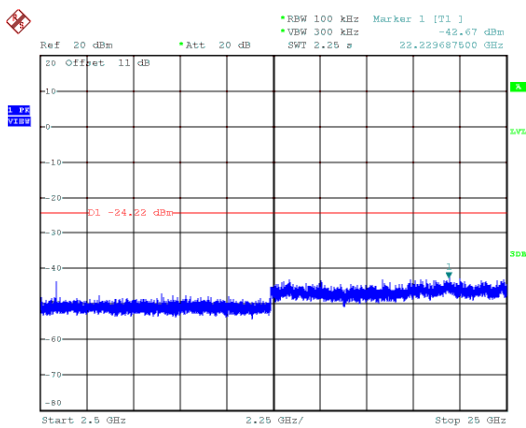
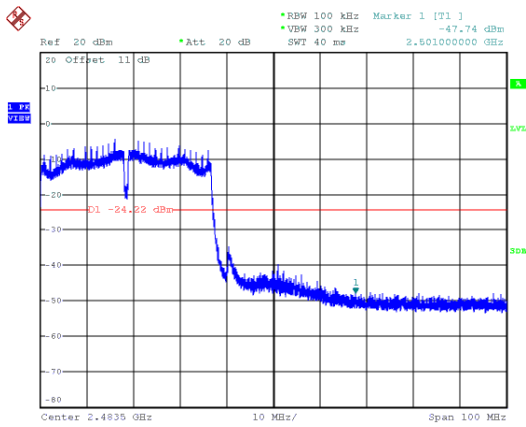
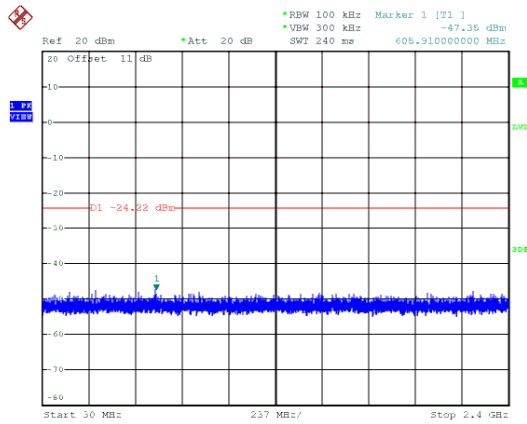


Modulation Type: 802.11n HT40, CH 06





Modulation Type: 802.11n HT40, CH 09





8. 6dB Bandwidth Measurement Data

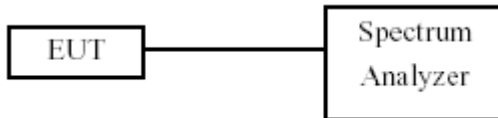
8.1 Test Limit

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

8.2 Test Procedures

- a. The transmitter output was connected to the spectrum analyzer.
- b. Set RBW 100KHz and VBW $\geq 3x$ RBW.
- c. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.
- d. The 6dB Bandwidth was measured and recorded.

8.3 Test Setup Layout





8.4 Test Result and Data

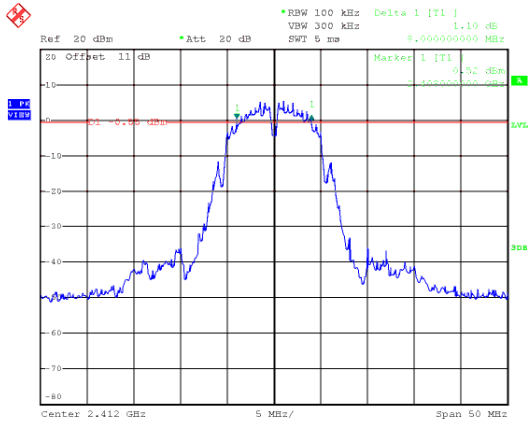
Test Date : Nov. 08, 2016 Temperature : 23°C
 Atmospheric pressure : 1007 hPa Humidity : 64%

Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Limit (MHz)
			ANT A	ANT B	
IEEE 802.11b (1Mbps)	01	2412	8.00	---	0.5
	06	2437	8.10	---	0.5
	11	2462	8.00	---	0.5
IEEE 802.11g (6Mbps)	01	2412	15.20	---	0.5
	06	2437	15.20	---	0.5
	11	2462	15.40	---	0.5
IEEE 802.11n HT20 (6.5Mbps)	01	2412	15.20	15.30	0.5
	06	2437	15.10	15.30	0.5
	11	2462	15.90	15.20	0.5
IEEE 802.11n HT40 (13.5Mbps)	03	2422	35.80	35.40	0.5
	06	2437	35.80	35.60	0.5
	09	2452	35.80	35.60	0.5

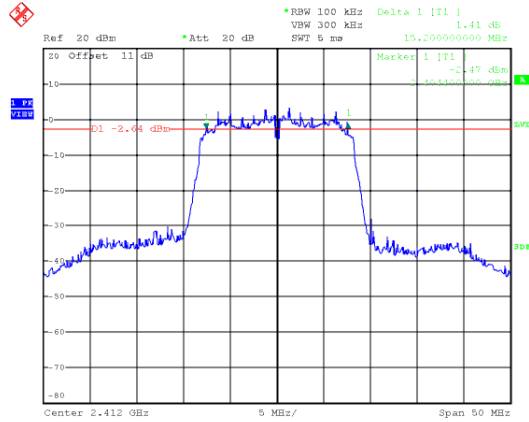


ANT A:

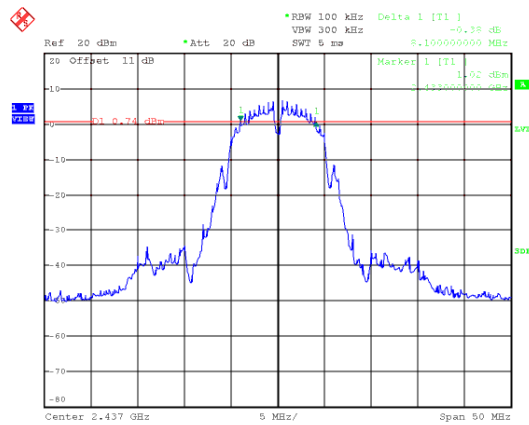
Modulation Type: 802.11b
CH01



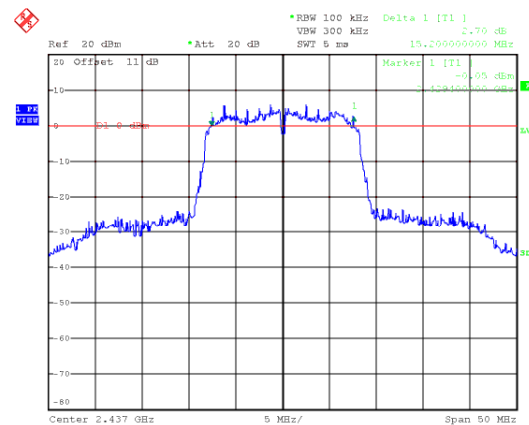
Modulation Type: 802.11g
CH01



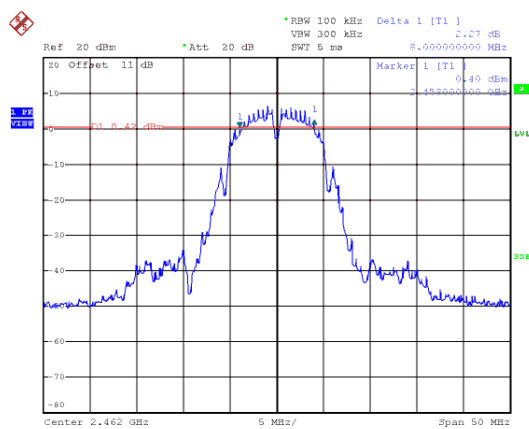
CH06



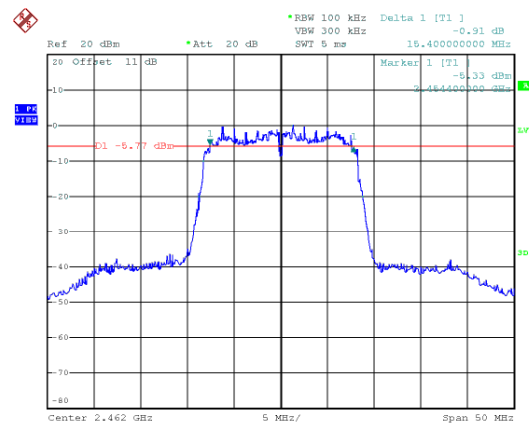
CH06



CH11

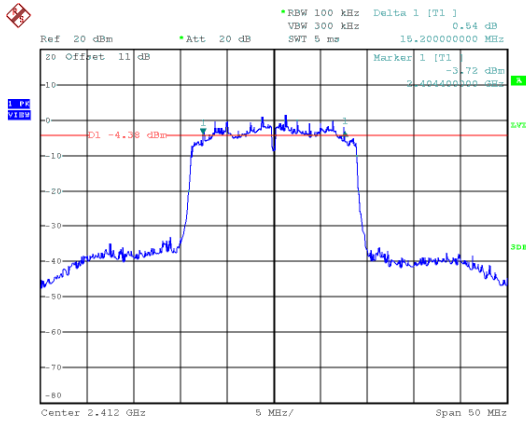


CH11

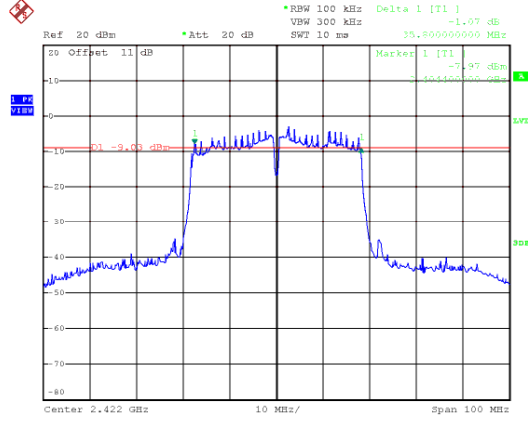




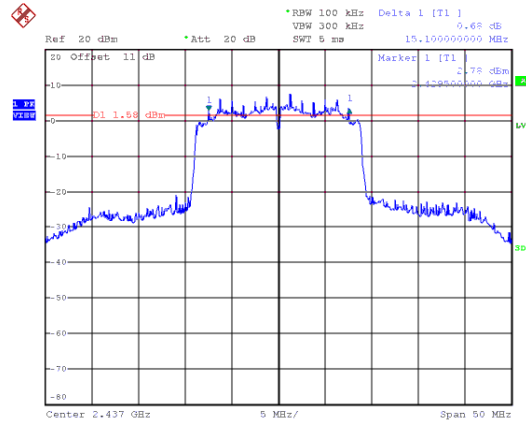
Modulation Type: 802.11n HT20
CH01



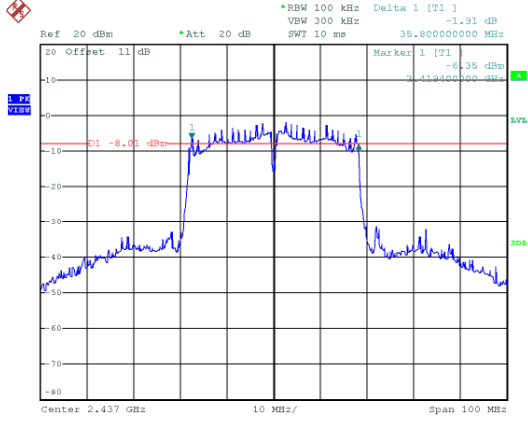
Modulation Type: 802.11n HT40
CH03



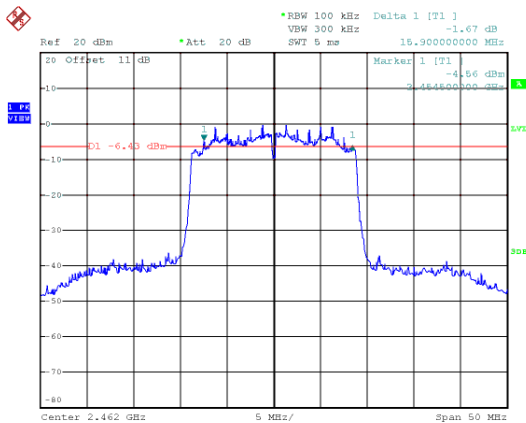
CH06



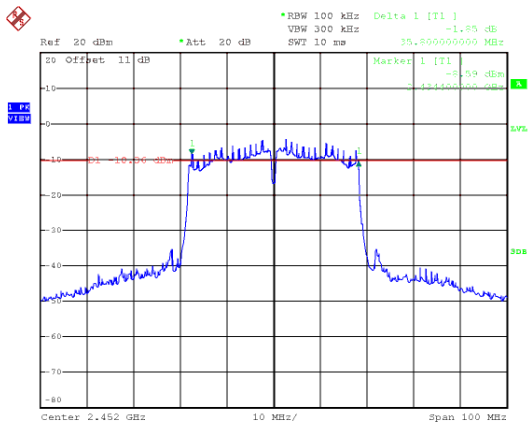
CH06



CH11



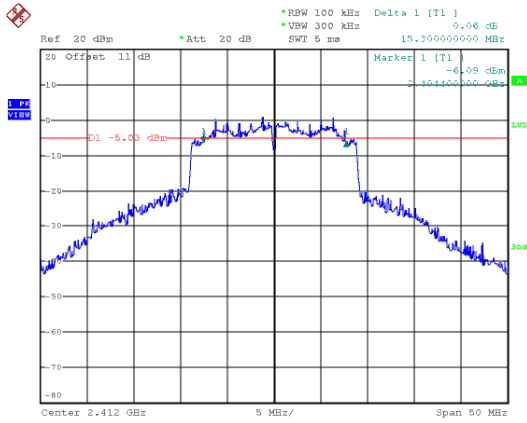
CH09



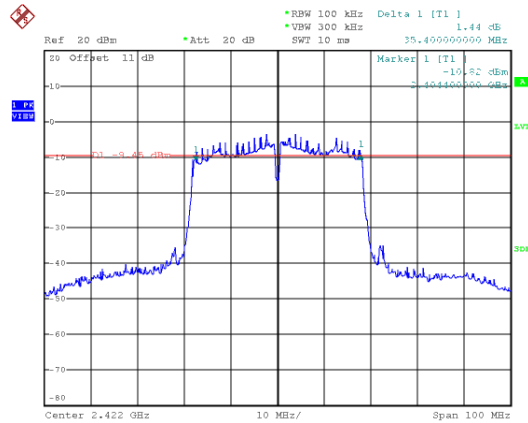


ANT B:

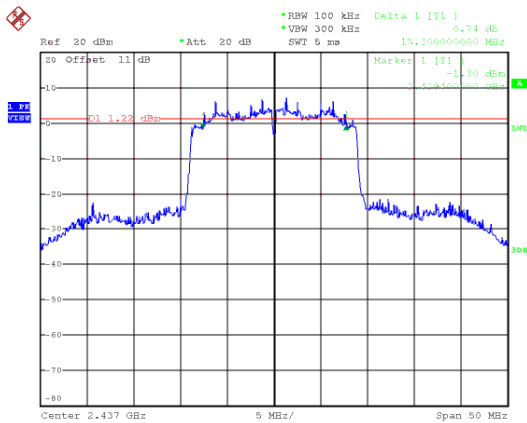
Modulation Type: 802.11n HT20
CH01



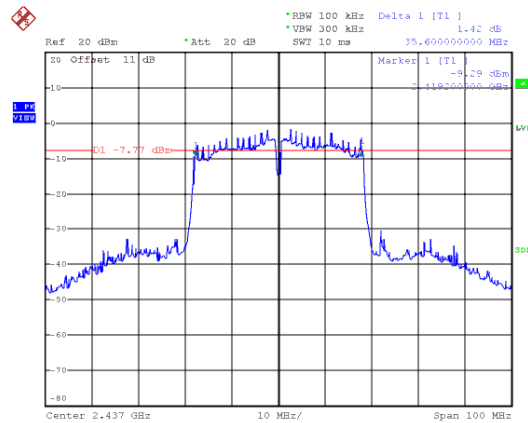
Modulation Type: 802.11n HT40
CH03



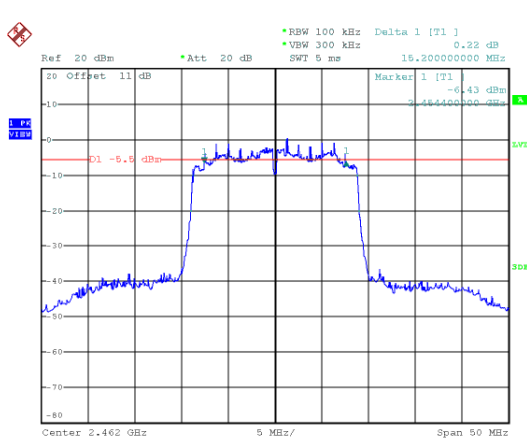
CH06



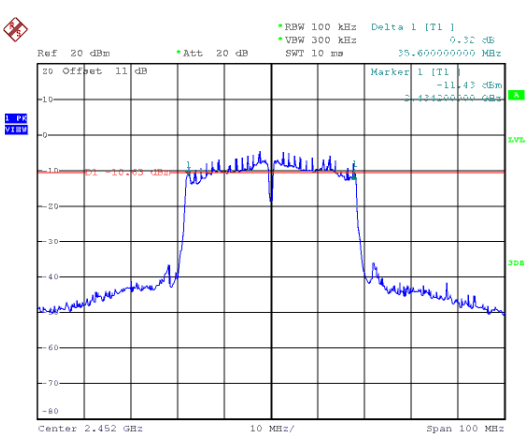
CH06



CH11



CH09





9. Maximum Peak and Average Output Power

9.1 Test Limit

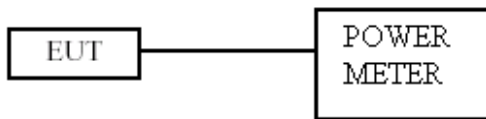
The Maximum Peak Output Power Measurement is 30dBm.

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**

Test Date : Nov. 08, 2016 Temperature : 23°C
 Atmospheric pressure : 1007 hPa Humidity : 64%

Modulation Type	Channel	Frequency (MHz)	Peak Power Output (dBm)	Peak Power Output (dBm)	Peak Power Output (mW)
			ANT A	ANT B	
IEEE 802.11b (1Mbps)	01	2412	17.66	--	58.34
	06	2437	18.15	--	65.31
	11	2462	18.16	--	65.46
IEEE 802.11g (6Mbps)	01	2412	22.68	--	185.35
	06	2437	24.52	--	283.14
	11	2462	20.61	--	115.08
IEEE 802.11n HT20 (6.5Mbps)	01	2412	20.78	20.54	232.91
	06	2437	24.29	24.39	543.32
	11	2462	20.15	20.06	204.91
IEEE 802.11n HT40 (13.5Mbps)	03	2422	18.22	18.26	133.36
	06	2437	19.61	19.85	188.02
	09	2452	16.88	17.04	99.34

Modulation Type	Channel	Frequency (MHz)	Avg. Power Output (dBm)	Avg. Power Output (dBm)	Avg. Power Output (mW)
			ANT A	ANT B	
IEEE 802.11b (1Mbps)	01	2412	13.88	--	24.43
	06	2437	14.31	--	26.98
	11	2462	14.44	--	27.80
IEEE 802.11g (6Mbps)	01	2412	13.2	--	20.89
	06	2437	17.36	--	54.45
	11	2462	11.15	--	13.03
IEEE 802.11n HT20 (6.5Mbps)	01	2412	11.28	11.24	26.73
	06	2437	17.11	17.36	105.85
	11	2462	10.62	10.52	22.81
IEEE 802.11n HT40 (13.5Mbps)	03	2422	9.77	9.32	18.03
	06	2437	11.19	11.14	26.15
	09	2452	8.53	8.28	13.86



10. Power Spectral Density

10.1 Test Limit

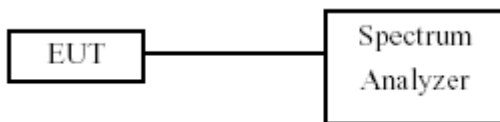
The Maximum of Power Spectral Density Measurement is 8dBm.

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

- a. The transmitter output was connected to spectrum analyzer.
- b. 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.
- c. The power spectral density was measured and recorded.

10.3 Test Setup Layout





10.4 Test Result and Data

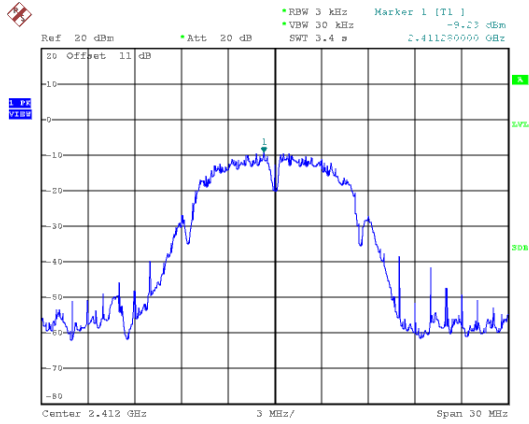
Test Date : Nov. 08, 2016 Temperature : 23°C
 Atmospheric pressure : 1007 hPa Humidity : 64%

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 A	ANT B				
IEEE 802.11b (1Mbps)	01	2412	-9.23	--	-9.23	0.00	-9.23	8.00
	06	2437	-8.25	--	-8.25	0.00	-8.25	8.00
	11	2462	-8.49	--	-8.49	0.00	-8.49	8.00
IEEE 802.11g (6Mbps)	01	2412	-11.06	--	-11.06	0.00	-11.06	8.00
	06	2437	-7.83	--	-7.83	0.00	-7.83	8.00
	11	2462	-14.62	--	-14.62	0.00	-14.62	8.00
IEEE 802.11n HT20 (6.5Mbps)	01	2412	-12.79	-12.72	-9.74	0.00	-9.74	7.92
	06	2437	-6.99	-7.28	-4.12	0.00	-4.12	7.92
	11	2462	-14.82	-13.74	-11.24	0.00	-11.24	7.92
IEEE 802.11n HT40 (13.5Mbps)	03	2422	-15.88	-17.73	-13.70	0.00	-13.70	7.92
	06	2437	-16.1	-16.61	-13.34	0.00	-13.34	7.92
	09	2452	-19.08	-19.18	-16.12	0.00	-16.12	7.92

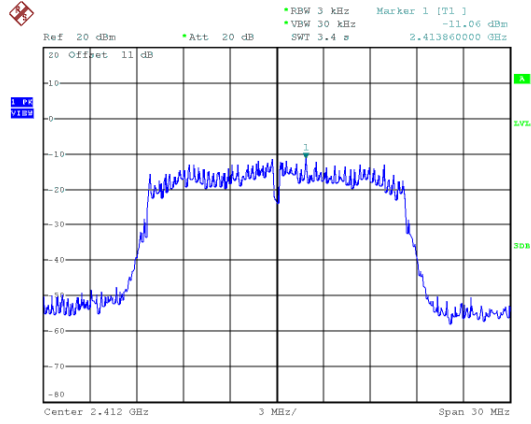


ANT A:

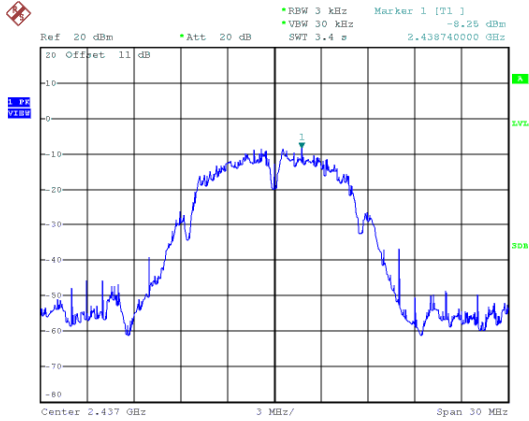
Modulation Type: 802.11b
CH01



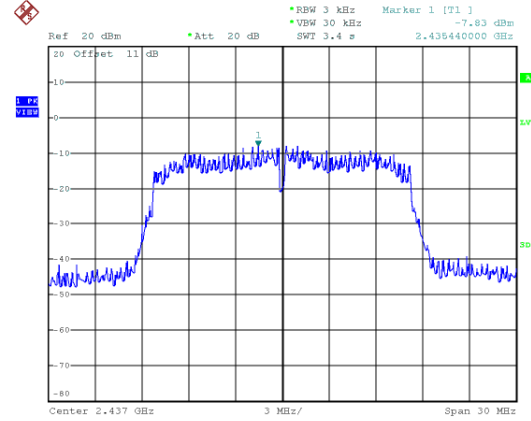
Modulation Type: 802.11g
CH01



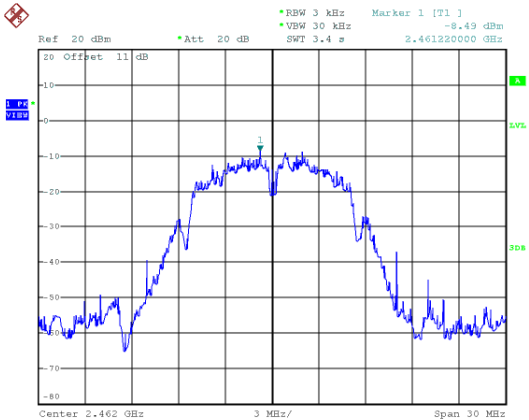
CH06



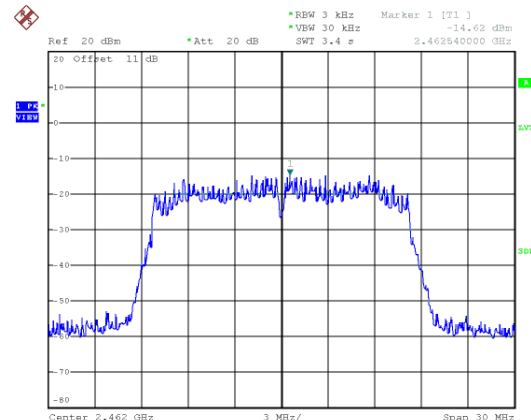
CH06



CH11

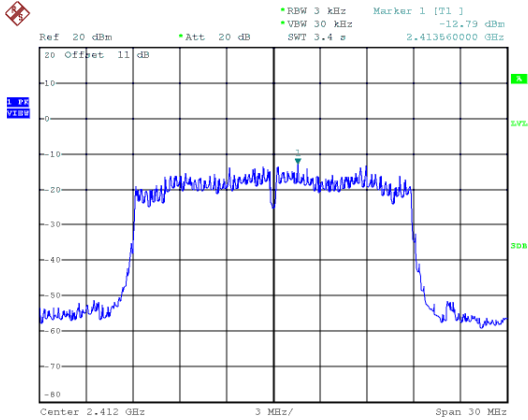


CH11

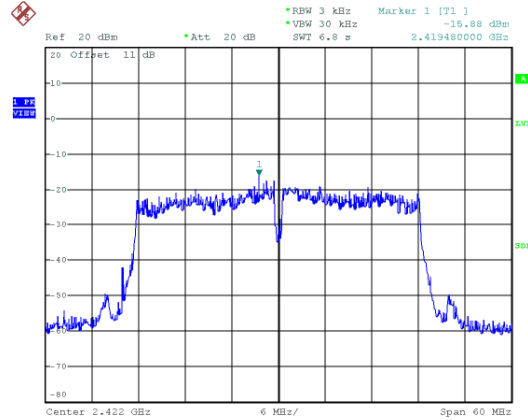




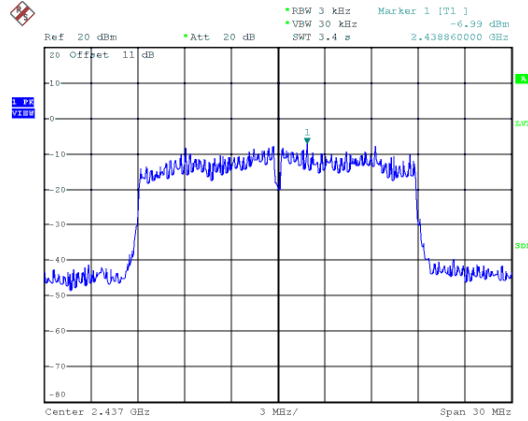
Modulation Type: 802.11n HT20
CH01



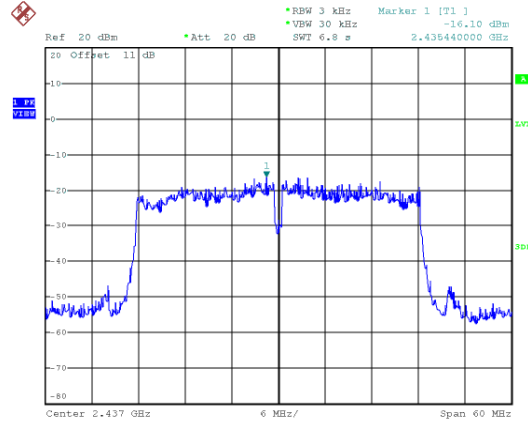
Modulation Type: 802.11n HT40
CH03



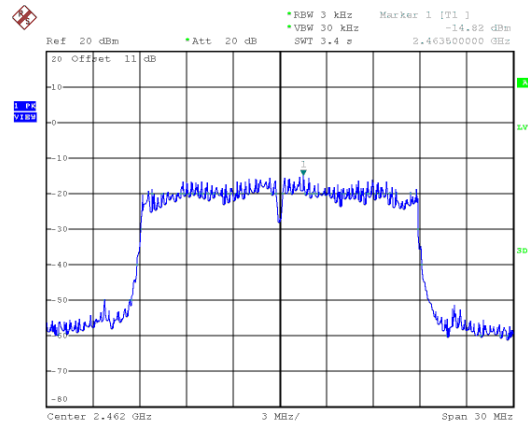
CH06



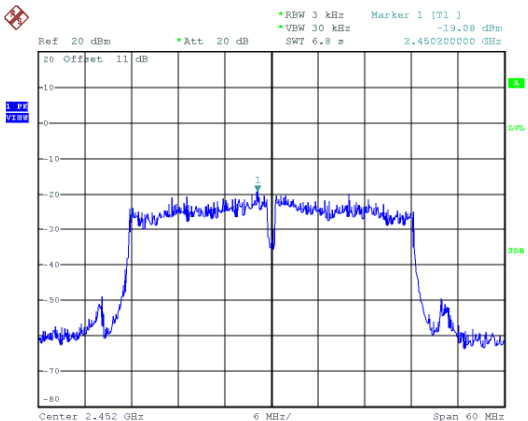
CH06



CH11



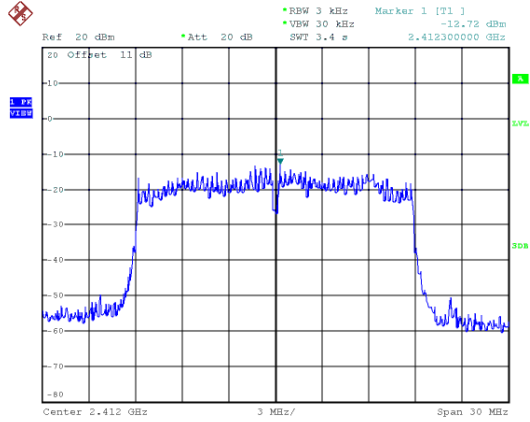
CH09



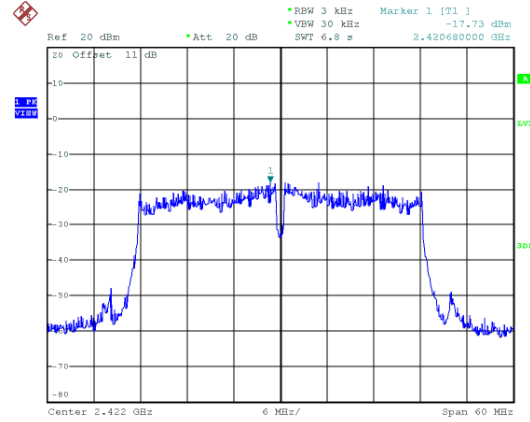


ANT B:

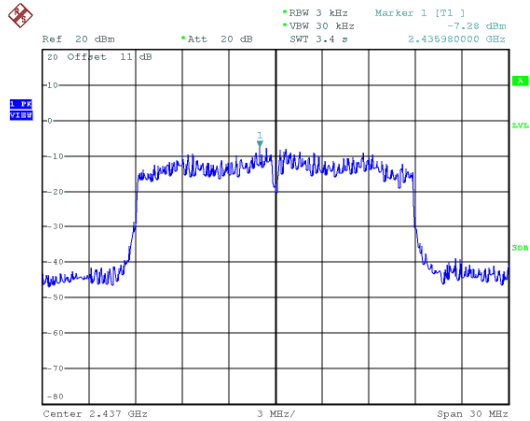
Modulation Type: 802.11n HT20
CH01



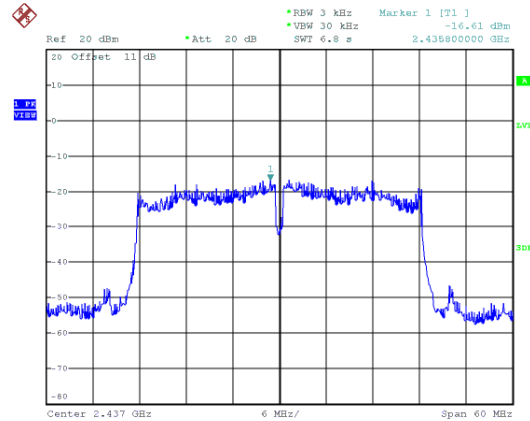
Modulation Type: 802.11n HT40
CH03



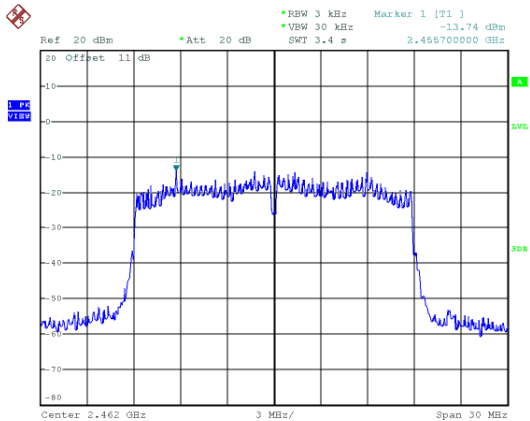
CH06



CH06



CH11



CH09

