



FCC RADIO TEST REPORT

Applicant : Datto, Inc.

Address : 101 Merritt 7, Norwalk, CT 06851 USA

Equipment : WiFi Access Point

Model No. : A42, AP42

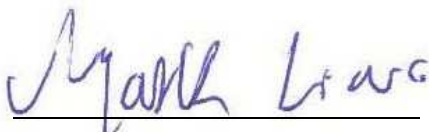
Trade Name :  , 

FCC ID. : WT8OMA42

I HEREBY CERTIFY THAT :

The sample was received on Mar. 15, 2017 and the testing was carried out on Jun. 20, 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

[illegible]



1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

ANSI C63.4:2014

ANSI C63.10:2013

FCC Rules and Regulations Part 15 Subpart C §15.247

KDB558074

KDB662911

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

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

Modulation Type	DSSS, OFDM
Frequency Range	802.11b/g/n/ac: 2412-2462MHz 802.11a/an/ac: 5150-5250MHz, 5725-5850MHz
Data Rate	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11ac: MCS0 – MCS9, VHT 20/40/80
Antenna Type	PIFA Antenna
Antenna Gain	802.11b/g/n/ac: Antenna A: 4.4 dBi Antenna B: 3.9 dBi 802.11a/an/ac: Antenna A: 4.7 dBi Antenna B: 4.7 dBi

2.2 The difference of Model No.

Model No.	Trade Name	Difference
A42		Marketing differentiation
AP42		

2.3 Carrier Frequency of Channels

802.11b, 802.11g, 802.11n, ac 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, ac 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.



2.4 Test Mode and Test Software

- During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
- The complete test system included remote workstation and EUT for RF test. The remote workstation included Notebook.
- An executive program, "QRCT:V3.0.197.0" under WIN 7 was executed to transmit and receive data via WLAN.
- The following test modes were performed for the test:

Test Mode	Operating Description
1	802.11b (1Mbps), PoE 24V
2	802.11g (6Mbps), PoE 24V
3	802.11n HT20 (6.5Mbps), PoE 24V
4	802.11n HT40 (13.5Mbps), PoE 24V
5	802.11ac VHT20 (6.5Mbps), PoE 24V
6	802.11ac VHT40 (13.5Mbps), PoE 24V
7	802.11b (1Mbps), PoE 54V
8	802.11g (6Mbps), PoE 54V
9	802.11n HT20 (6.5Mbps), PoE 54V
10	802.11n HT40 (13.5Mbps), PoE 54V
11	802.11ac VHT20 (6.5Mbps), PoE 54V
12	802.11ac VHT40 (13.5Mbps), PoE 54V
For conduction test, caused "Test Mode 1,7" generated the worst case, they were reported as the final data.	
For radiation test (below 1GHz), caused "Test Mode 2,8" generated the worst case, they were reported as the final data.	
For radiation test (above 1GHz), caused "Test Mode 7,8,11,12" generated the worst case, they were reported as the final data.	
Note: Non-Beamforming was the worst case, so we use this mode for the test result.	

2.5 Description of Test System

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

Use Cable:

Cable	Quantity	Description
Network	1	Unshielding, 15m



2.6 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.	

2.7 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	2017/05/15	2018/05/14
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

Antenna Type	PIFA Antenna
Antenna Gain	2412-2462MHz: ANT A: 4.4 dBi; ANT B: 3.9 dBi 5150MHz-5250MHz: ANT A: 4.7 dBi; ANT B: 4.7 dBi 5725MHz -5850MHz: ANT A: 4.7 dBi; ANT B: 4.7 dBi

2412-2462MHz

For Power directional gain= G_{ant} = 4.4 dBi

For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / NANT]$
= 7.16 (dBi)

5150MHz-5250MHz

For Power directional gain= G_{ant} = 4.71 dBi

For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / NANT]$
= 7.71 (dBi)

5725MHz -5850MHz

For Power directional gain= G_{ant} = 4.71 dBi

For PSD directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / NANT]$
= 7.71 (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

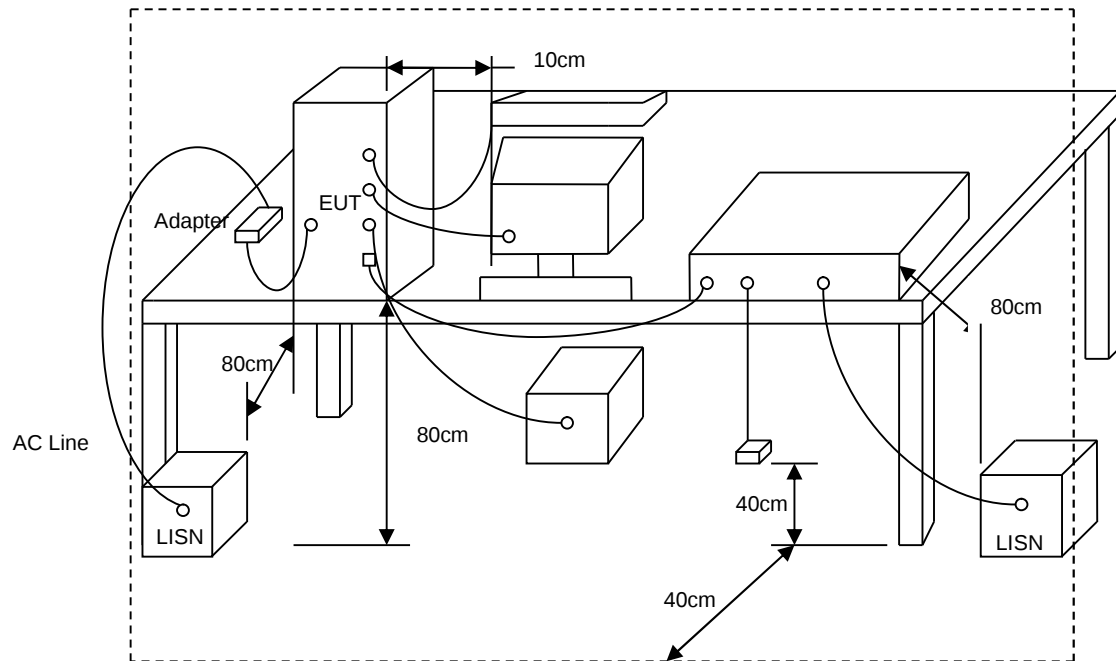
*Decreases with the logarithm of the frequency.

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.



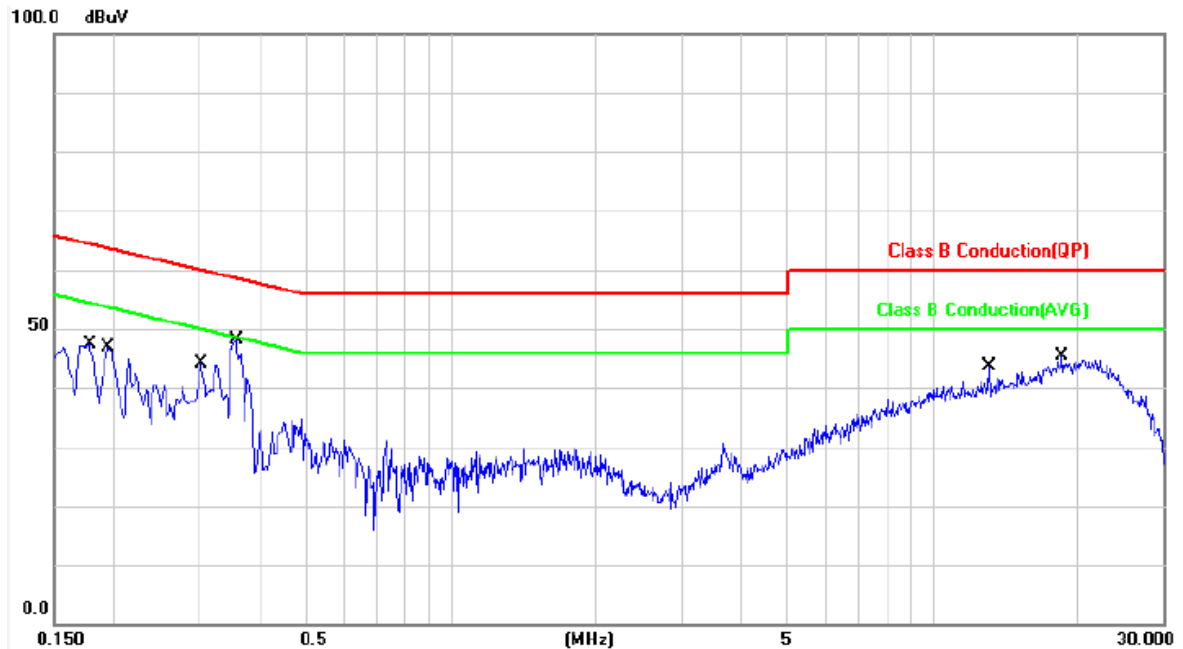
5.3 Typical Test Setup





5.4 Test Result and Data

Power	: PoE 24V	Pol/Phase	: LINE
Test Mode	: Mode 1	Temperature	: 20 °C
Test date	: Jun. 20, 2017	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1780	9.91	36.90	46.81	64.57	-17.76	QP	P
2	0.1780	9.91	27.44	37.35	54.57	-17.22	AVG	P
3	0.1940	9.91	34.21	44.12	63.86	-19.74	QP	P
4	0.1940	9.91	25.11	35.02	53.86	-18.84	AVG	P
5	0.3020	9.92	32.18	42.10	60.19	-18.09	QP	P
6	0.3020	9.92	28.36	38.28	50.19	-11.91	AVG	P
7	0.3580	9.93	35.88	45.81	58.77	-12.96	QP	P
8	0.3580	9.93	29.07	39.00	48.77	-9.77	AVG	P
9	13.0900	10.42	28.27	38.69	60.00	-21.31	QP	P
10	13.0900	10.42	24.10	34.52	50.00	-15.48	AVG	P
11	18.5300	10.57	28.43	39.00	60.00	-21.00	QP	P
12	18.5300	10.57	23.15	33.72	50.00	-16.28	AVG	P

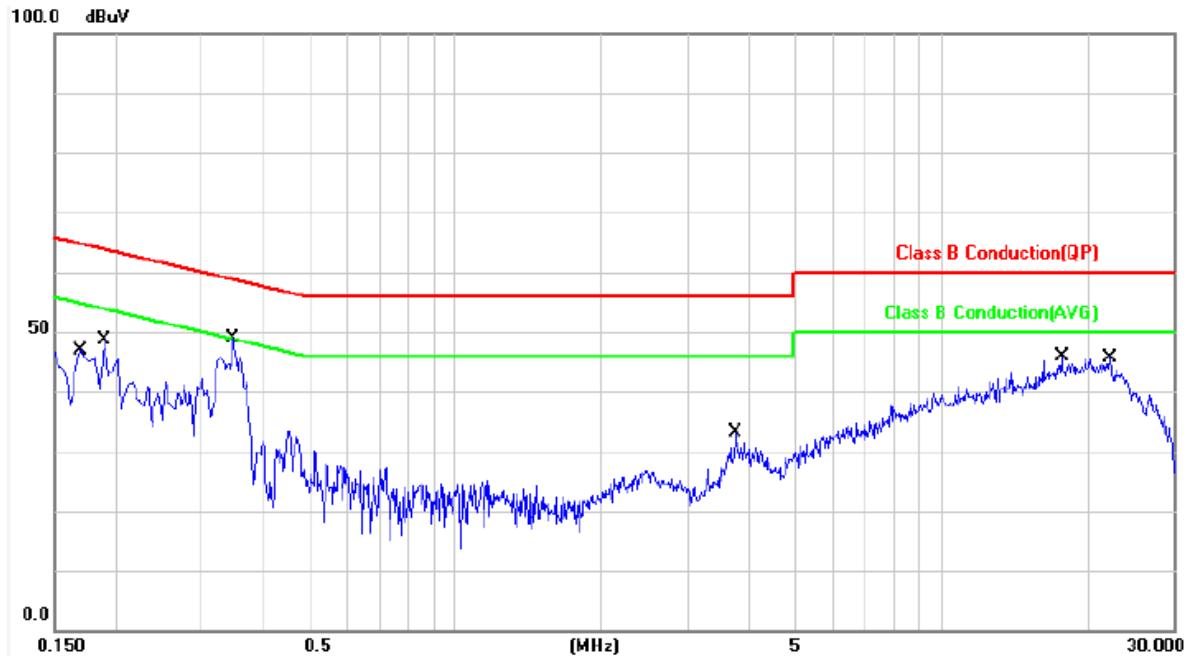
Note: Level = Reading + Factor

Margin = Level – Limit

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



Power	: PoE 24V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 1	Temperature	: 20 °C
Test date	: Jun. 20, 2017	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1700	9.88	34.77	44.65	64.96	-20.31	QP	P
2	0.1700	9.88	26.73	36.61	54.96	-18.35	AVG	P
3	0.1900	9.88	34.46	44.34	64.03	-19.69	QP	P
4	0.1900	9.88	24.38	34.26	54.03	-19.77	AVG	P
5	0.3500	9.88	37.92	47.80	58.96	-11.16	QP	P
6	0.3500	9.88	34.94	44.82	48.96	-4.14	AVG	P
7	3.7900	10.08	16.77	26.85	56.00	-29.15	QP	P
8	3.7900	10.08	10.76	20.84	46.00	-25.16	AVG	P
9	17.6820	10.57	28.59	39.16	60.00	-20.84	QP	P
10	17.6820	10.57	23.22	33.79	50.00	-16.21	AVG	P
11	22.2220	10.69	28.66	39.35	60.00	-20.65	QP	P
12	22.2220	10.69	23.33	34.02	50.00	-15.98	AVG	P

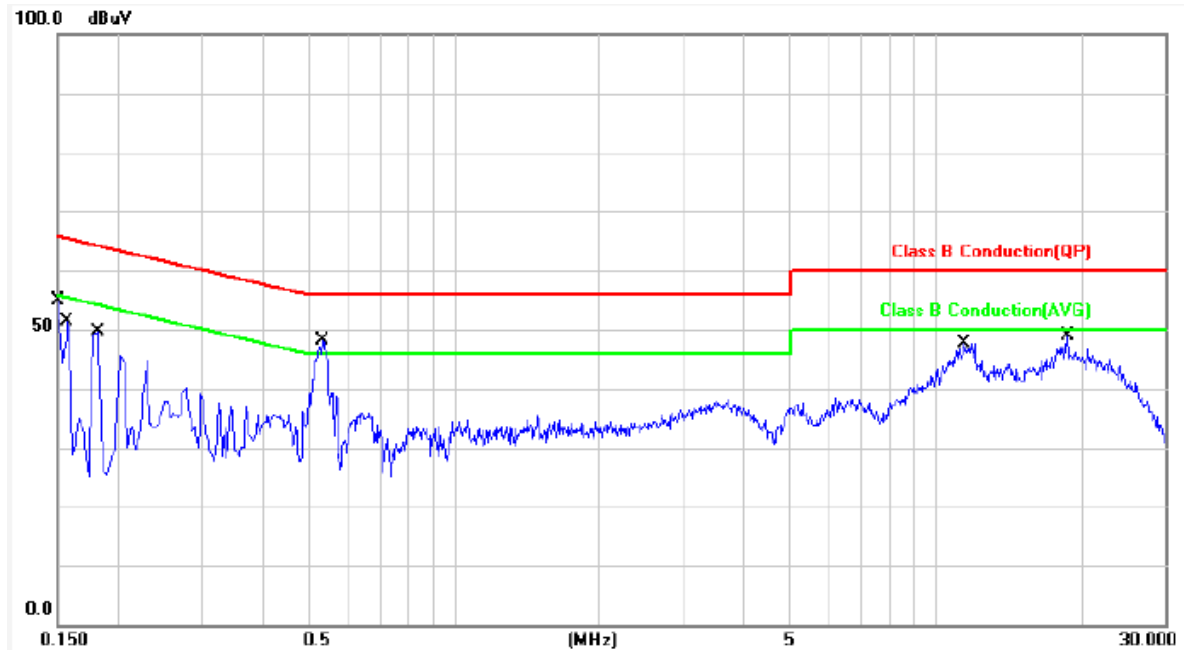
Note: Level = Reading + Factor

Margin = Level – Limit

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



Power	: PoE 54V	Pol/Phase	: LINE
Test Mode	: Mode 1	Temperature	: 20 °C
Test date	: Jun. 20, 2017	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1500	9.91	43.96	53.87	65.99	-12.12	QP	P
2	0.1500	9.91	25.85	35.76	55.99	-20.23	AVG	P
3	0.1580	9.91	42.38	52.29	65.56	-13.27	QP	P
4	0.1580	9.91	24.48	34.39	55.56	-21.17	AVG	P
5	0.1819	9.91	37.74	47.65	64.39	-16.74	QP	P
6	0.1819	9.91	19.72	29.63	54.39	-24.76	AVG	P
7	0.5340	9.93	35.97	45.90	56.00	-10.10	QP	P
8	0.5340	9.93	30.84	40.77	46.00	-5.23	AVG	P
9	11.4420	10.37	33.38	43.75	60.00	-16.25	QP	P
10	11.4420	10.37	28.40	38.77	50.00	-11.23	AVG	P
11	18.7220	10.57	31.39	41.96	60.00	-18.04	QP	P
12	18.7220	10.57	25.95	36.52	50.00	-13.48	AVG	P

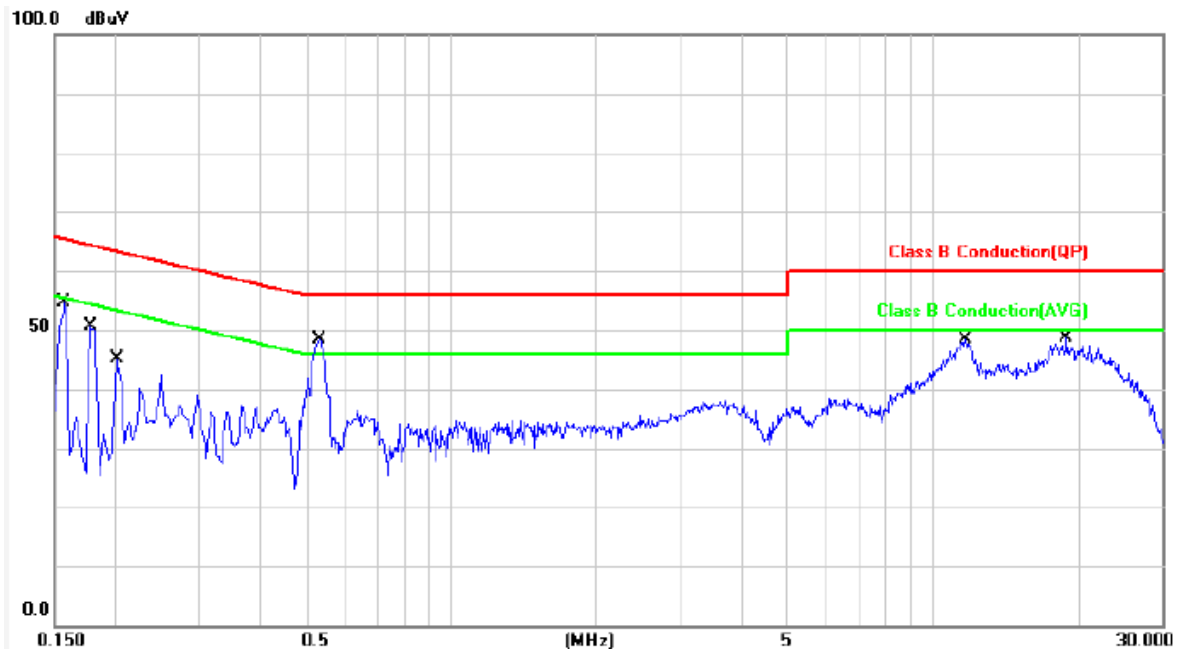
Note: Level = Reading + Factor

Margin = Level – Limit

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



Power	: PoE 54V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 7	Temperature	: 20 °C
Test date	: Jun. 20, 2017	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1580	9.88	42.00	51.88	65.56	-13.68	QP	P
2	0.1580	9.88	24.23	34.11	55.56	-21.45	AVG	P
3	0.1780	9.88	37.29	47.17	64.57	-17.40	QP	P
4	0.1780	9.88	19.94	29.82	54.57	-24.75	AVG	P
5	0.2020	9.88	33.14	43.02	63.52	-20.50	QP	P
6	0.2020	9.88	17.15	27.03	53.52	-26.49	AVG	P
7	0.5340	9.89	35.99	45.88	56.00	-10.12	QP	P
8	0.5340	9.89	30.65	40.54	46.00	-5.46	AVG	P
9	11.7060	10.37	33.73	44.10	60.00	-15.90	QP	P
10	11.7060	10.37	28.91	39.28	50.00	-10.72	AVG	P
11	18.9820	10.60	31.23	41.83	60.00	-18.17	QP	P
12	18.9820	10.60	25.90	36.50	50.00	-13.50	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

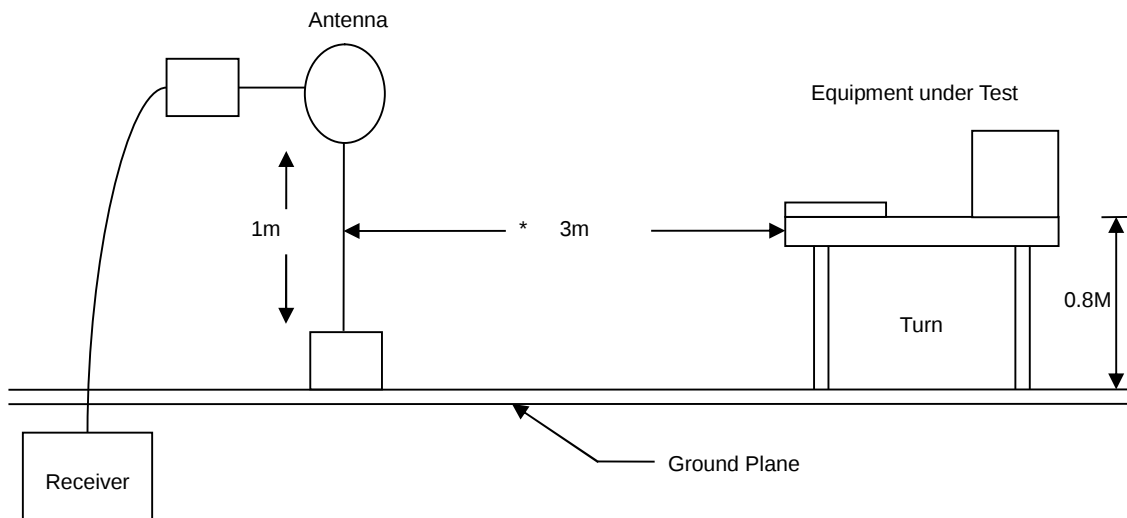
6.2 Test Procedures

- 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.

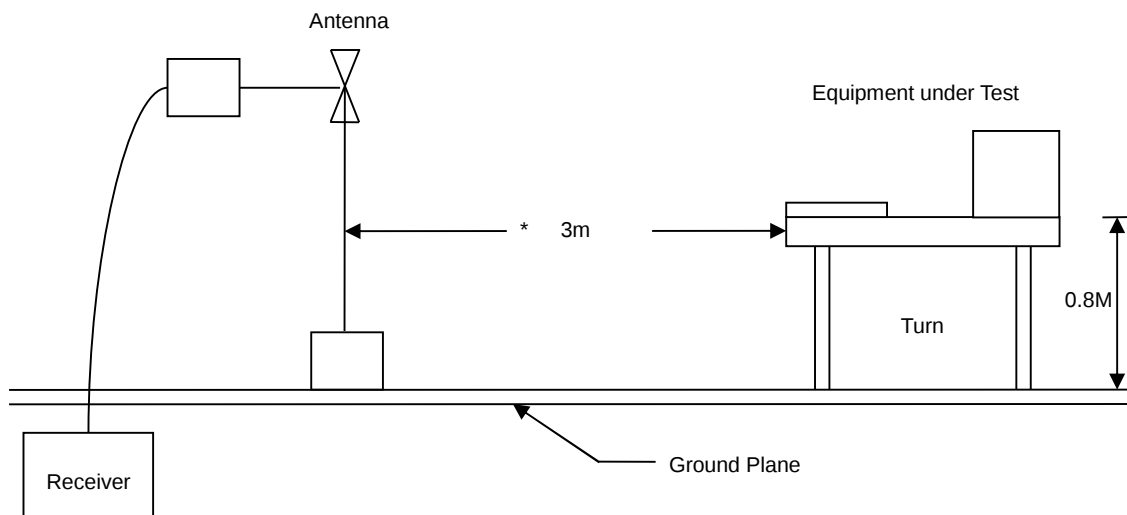


6.3 Typical Test Setup

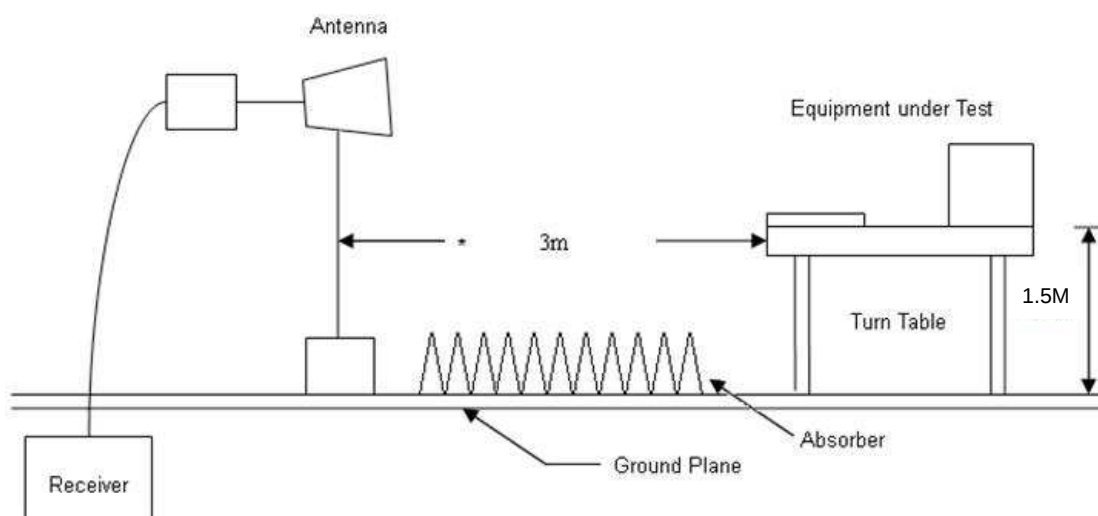
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup



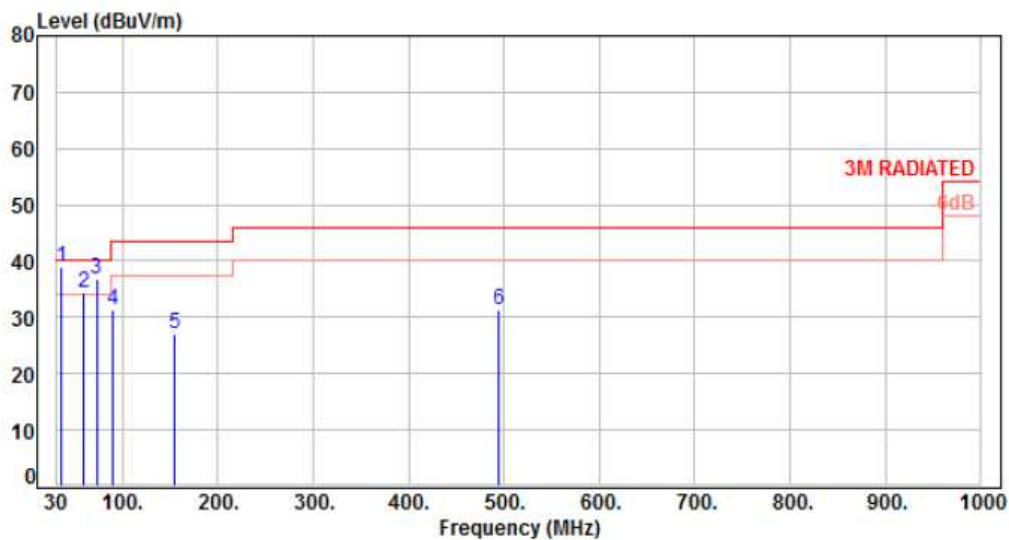


6.4 Test Result and Data (9KHz ~ 30MHz)

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

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

Power	: PoE 24V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2	Temperature	: 22 °C
Test Date	: Jun. 19, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	35.82	-10.67	49.54	38.87	40.00	-1.13	QP	100	167	P
2	59.10	-10.38	44.61	34.23	40.00	-5.77	Peak	100	0	P
3	72.68	-12.54	49.39	36.85	40.00	-3.15	QP	100	166	P
4	90.14	-16.13	47.52	31.39	43.50	-12.11	Peak	100	0	P
5	154.16	-9.91	37.11	27.20	43.50	-16.30	Peak	100	0	P
6	493.66	-4.08	35.51	31.43	46.00	-14.57	Peak	100	0	P

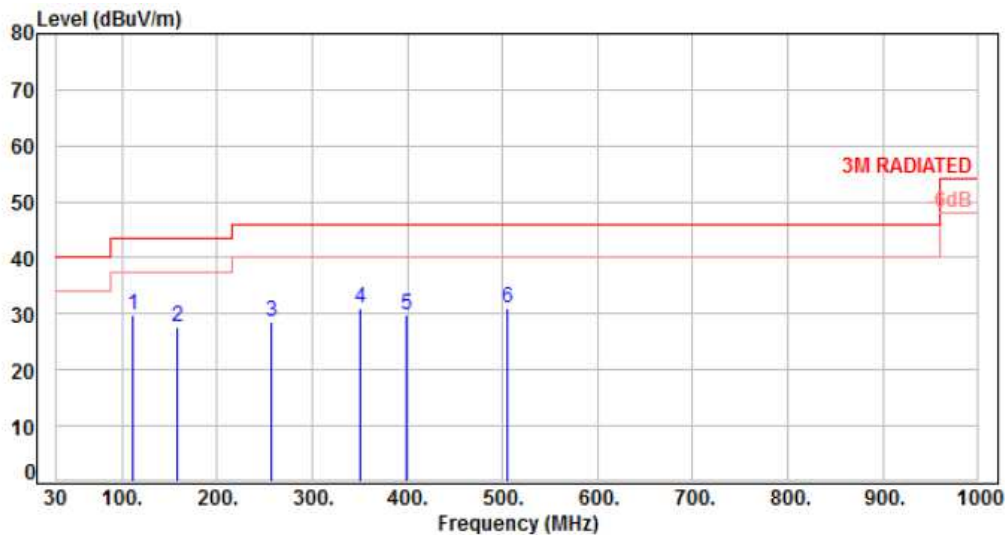
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 24V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2	Temperature	: 22 °C
Test Date	: Jun. 19, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	111.48	-12.76	42.45	29.69	43.50	-13.81	Peak	100	0	P
2	158.04	-9.75	37.42	27.67	43.50	-15.83	Peak	100	0	P
3	256.98	-10.33	38.83	28.50	46.00	-17.50	Peak	100	0	P
4	350.10	-7.63	38.75	31.12	46.00	-14.88	Peak	100	0	P
5	398.60	-6.27	36.15	29.88	46.00	-16.12	Peak	100	0	P
6	505.30	-3.85	35.00	31.15	46.00	-14.85	Peak	100	0	P

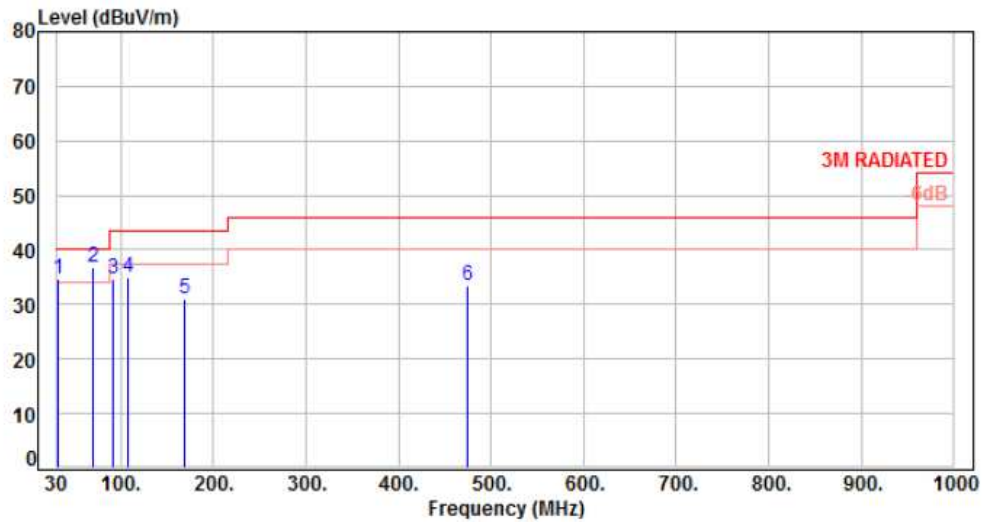
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 8	Temperature	: 22 °C
Test Date	: Jun. 19, 2017	Humidity	: 65 %



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	45.45	34.69	40.00	-5.31	QP	100	158	P
2	70.74	-12.16	48.82	36.66	40.00	-3.34	QP	100	162	P
3	92.08	-15.86	50.51	34.65	43.50	-8.85	Peak	100	0	P
4	107.60	-13.34	48.20	34.86	43.50	-8.64	Peak	100	0	P
5	169.68	-10.08	41.17	31.09	43.50	-12.41	Peak	100	0	P
6	474.26	-4.43	37.98	33.55	46.00	-12.45	Peak	100	0	P

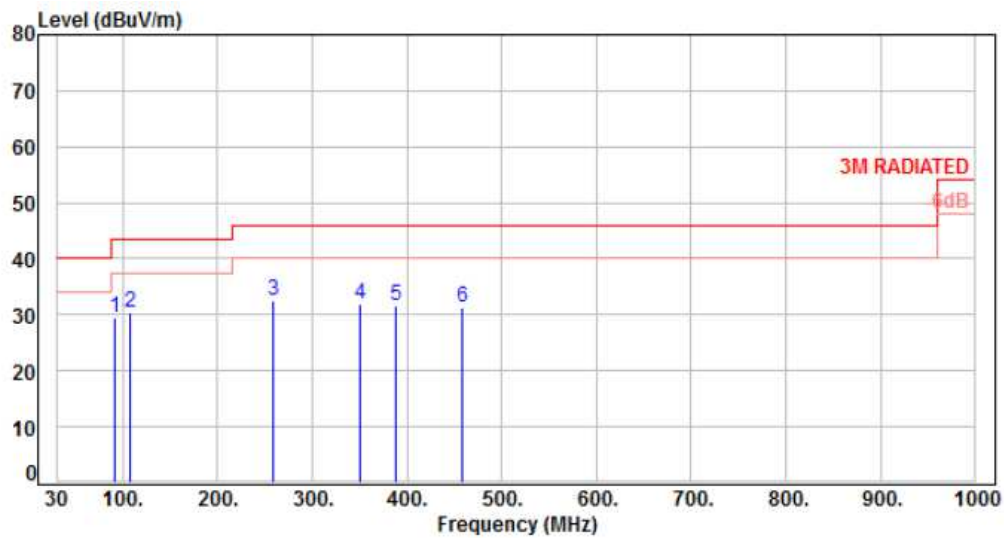
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 8	Temperature	: 22 °C
Test Date	: Jun. 19, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	92.08	-15.86	45.34	29.48	43.50	-14.02	Peak	100	0	P
2	107.60	-13.34	43.74	30.40	43.50	-13.10	Peak	100	0	P
3	258.92	-10.25	42.82	32.57	46.00	-13.43	Peak	100	0	P
4	350.10	-7.63	39.62	31.99	46.00	-14.01	Peak	100	0	P
5	388.90	-6.55	38.17	31.62	46.00	-14.38	Peak	100	0	P
6	458.74	-4.72	36.05	31.33	46.00	-14.67	Peak	100	0	P

Note: Level=Reading+Factor

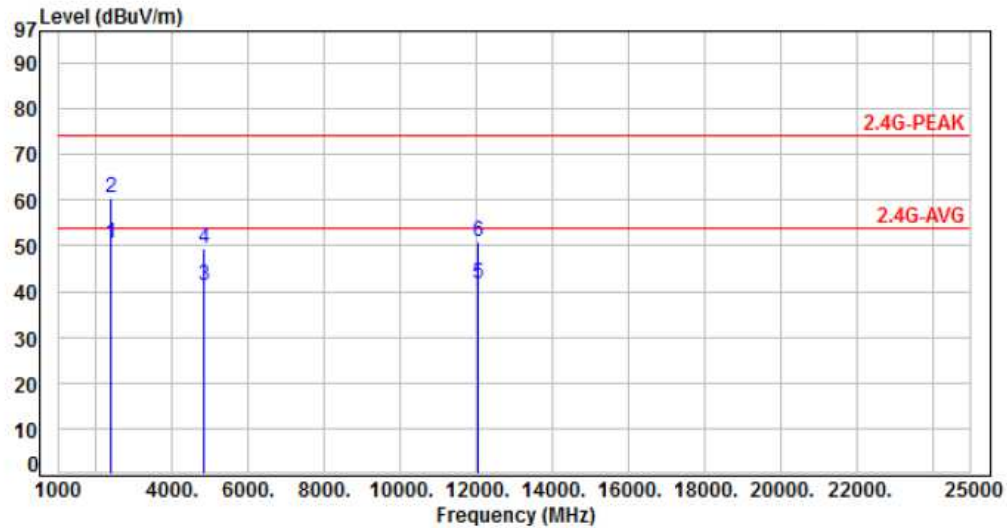
Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



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

Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 7, CH01	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	69.44	50.45	54.00	-3.55	Average	166	233	P
2	2390.00	-18.99	79.54	60.55	74.00	-13.45	Peak	166	233	P
3	4824.00	-13.20	54.64	41.44	54.00	-12.56	Average	249	344	P
4	4824.00	-13.20	62.75	49.55	74.00	-24.45	Peak	249	344	P
5	12060.00	-5.86	47.53	41.67	54.00	-12.33	Average	100	6	P
6	12060.00	-5.86	56.64	50.78	74.00	-23.22	Peak	100	6	P

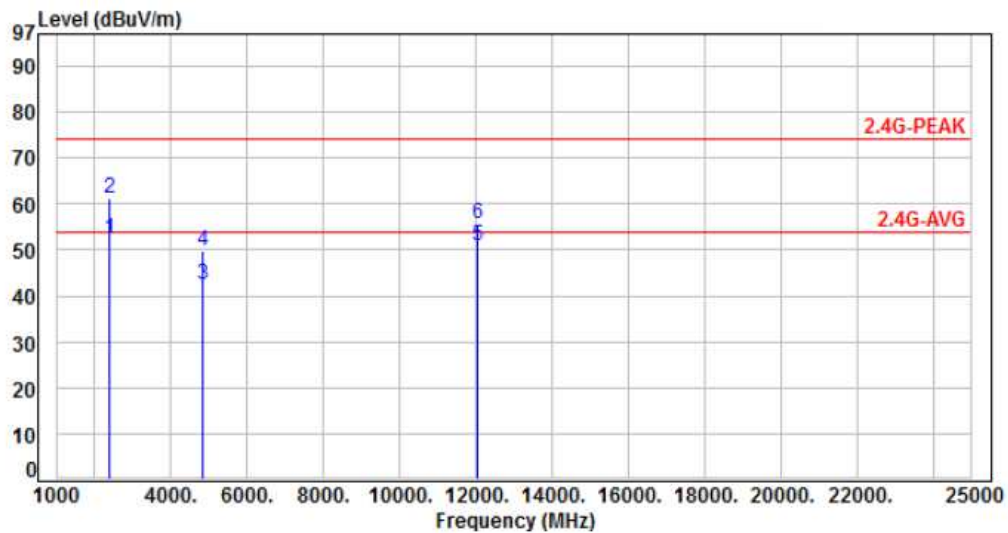
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 7, CH01	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	71.48	52.49	54.00	-1.51	Average	100	272	P
2	2390.00	-18.99	80.07	61.08	74.00	-12.92	Peak	100	272	P
3	4824.00	-13.20	55.60	42.40	54.00	-11.60	Average	227	263	P
4	4824.00	-13.20	62.94	49.74	74.00	-24.26	Peak	227	263	P
5	12060.00	-5.86	56.60	50.74	54.00	-3.26	Average	154	270	P
6	12060.00	-5.86	61.50	55.64	74.00	-18.36	Peak	154	270	P

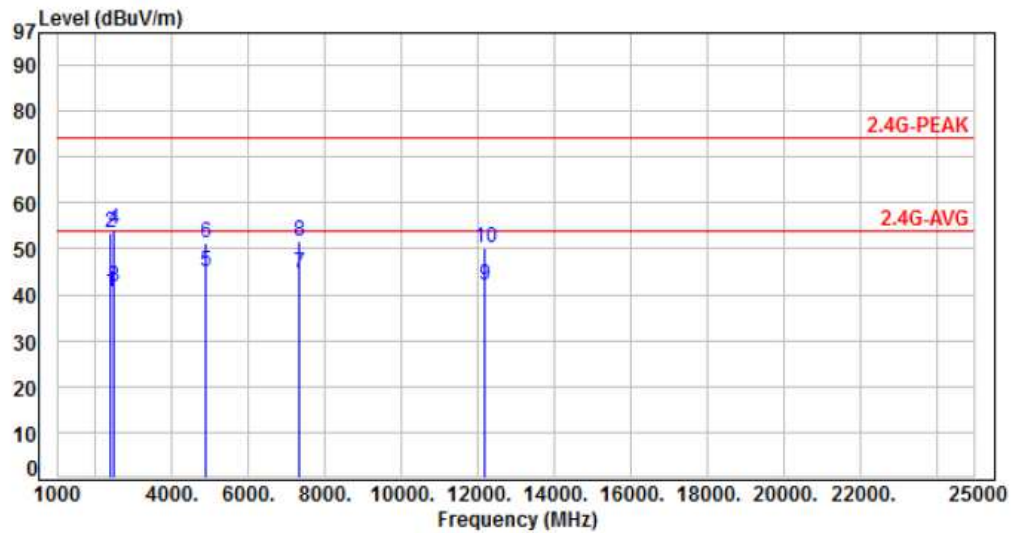
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 7, CH06	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	59.40	40.41	54.00	-13.59	Average	122	201	P
2	2390.00	-18.99	72.60	53.61	74.00	-20.39	Peak	122	201	P
3	2483.50	-18.76	60.40	41.64	54.00	-12.36	Average	122	201	P
4	2483.50	-18.76	72.92	54.16	74.00	-19.84	Peak	122	201	P
5	4874.00	-13.11	58.24	45.13	54.00	-8.87	Average	163	151	P
6	4874.00	-13.11	64.26	51.15	74.00	-22.85	Peak	163	151	P
7	7311.00	-10.03	54.55	44.52	54.00	-9.48	Average	188	94	P
8	7311.00	-10.03	61.74	51.71	74.00	-22.29	Peak	188	94	P
9	12185.00	-5.82	47.72	41.90	54.00	-12.10	Average	167	210	P
10	12185.00	-5.82	55.95	50.13	74.00	-23.87	Peak	167	210	P

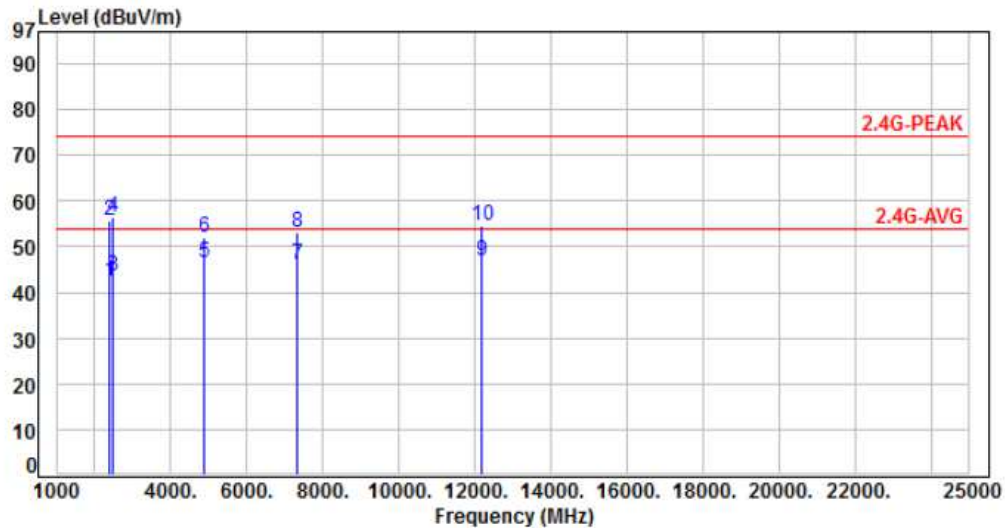
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 7, CH06	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	61.31	42.32	54.00	-11.68	Average	100	274	P
2	2390.00	-18.99	74.83	55.84	74.00	-18.16	Peak	100	274	P
3	2483.50	-18.76	62.12	43.36	54.00	-10.64	Average	100	274	P
4	2483.50	-18.76	75.34	56.58	74.00	-17.42	Peak	100	274	P
5	4874.00	-13.11	59.63	46.52	54.00	-7.48	Average	208	353	P
6	4874.00	-13.11	65.22	52.11	74.00	-21.89	Peak	208	353	P
7	7311.00	-10.03	56.27	46.24	54.00	-7.76	Average	223	51	P
8	7311.00	-10.03	63.14	53.11	74.00	-20.89	Peak	223	51	P
9	12185.00	-5.82	52.61	46.79	54.00	-7.21	Average	196	58	P
10	12185.00	-5.82	60.52	54.70	74.00	-19.30	Peak	196	58	P

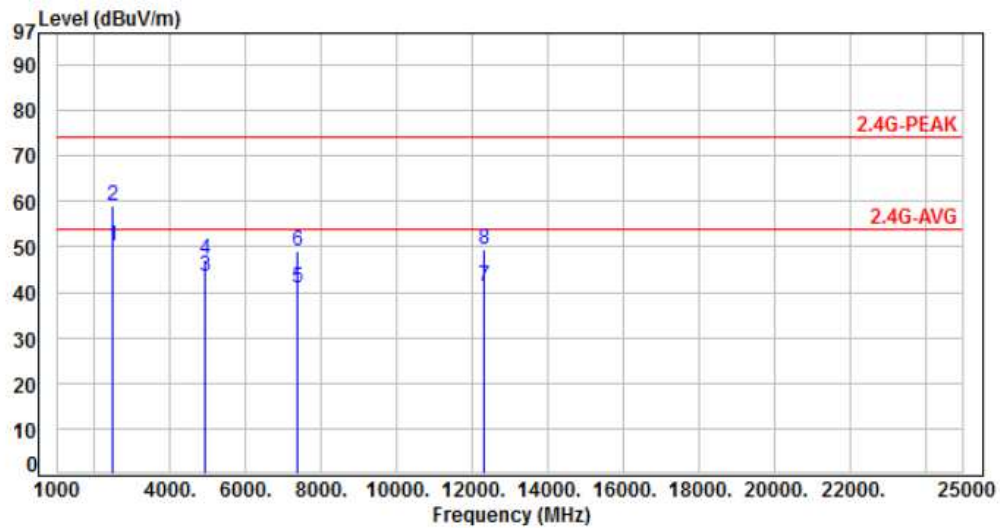
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 7, CH11	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.76	68.88	50.12	54.00	-3.88	Average	210	332	P
2	2483.50	-18.76	77.93	59.17	74.00	-14.83	Peak	210	332	P
3	4924.00	-13.01	56.38	43.37	54.00	-10.63	Average	155	301	P
4	4924.00	-13.01	60.13	47.12	74.00	-26.88	Peak	155	301	P
5	7386.00	-9.84	50.91	41.07	54.00	-12.93	Average	172	188	P
6	7386.00	-9.84	58.99	49.15	74.00	-24.85	Peak	172	188	P
7	12310.00	-5.77	47.25	41.48	54.00	-12.52	Average	125	281	P
8	12310.00	-5.77	55.01	49.24	74.00	-24.76	Peak	142	255	P

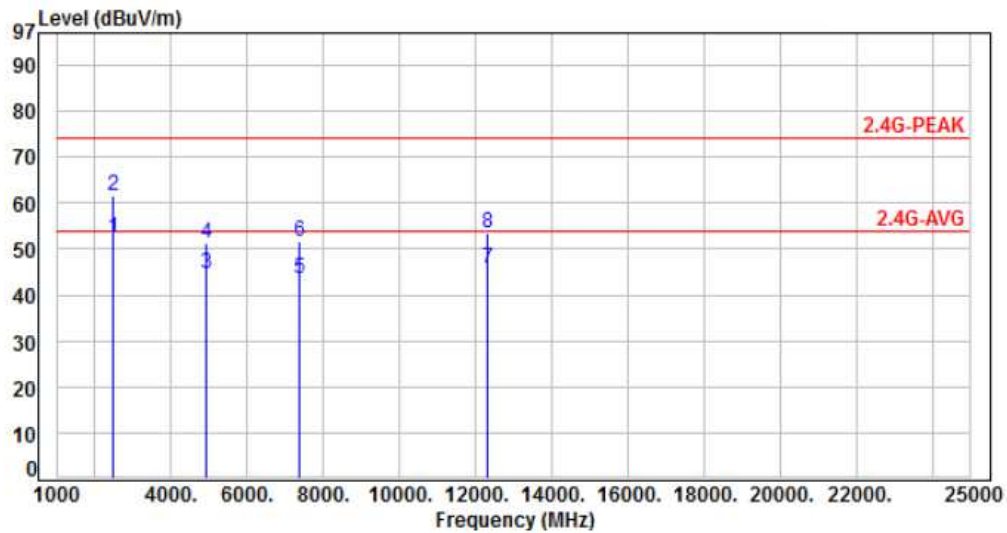
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 7, CH11	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.76	71.07	52.31	54.00	-1.69	Average	286	14	P
2	2483.50	-18.76	80.18	61.42	74.00	-12.58	Peak	286	14	P
3	4924.00	-13.01	57.75	44.74	54.00	-9.26	Average	294	17	P
4	4924.00	-13.01	64.44	51.43	74.00	-22.57	Peak	294	17	P
5	7386.00	-9.84	53.53	43.69	54.00	-10.31	Average	360	277	P
6	7386.00	-9.84	61.37	51.53	74.00	-22.47	Peak	360	277	P
7	12310.00	-5.77	51.62	45.85	54.00	-8.15	Average	137	265	P
8	12310.00	-5.77	59.20	53.43	74.00	-20.57	Peak	137	265	P

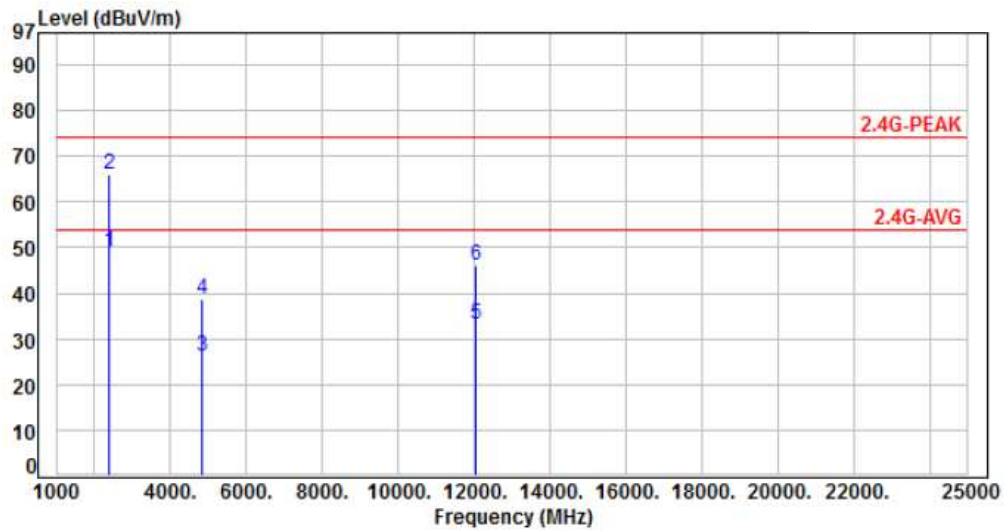
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 8, CH01	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	68.10	49.11	54.00	-4.89	Average	204	216	P
2	2390.00	-18.99	85.11	66.12	74.00	-7.88	Peak	204	216	P
3	4824.00	-13.20	39.53	26.33	54.00	-27.67	Average	172	251	P
4	4824.00	-13.20	52.04	38.84	74.00	-35.16	Peak	172	251	P
5	12060.00	-5.86	38.90	33.04	54.00	-20.96	Average	102	197	P
6	12060.00	-5.86	51.82	45.96	74.00	-28.04	Peak	102	197	P

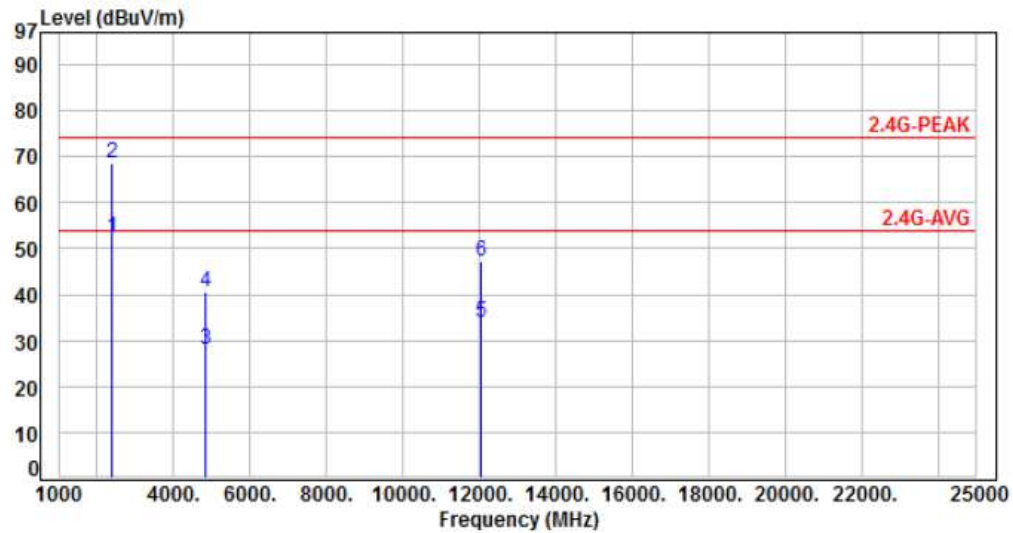
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 8, CH01	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	71.22	52.23	54.00	-1.77	Average	214	275	P
2	2390.00	-18.99	87.41	68.42	74.00	-5.58	Peak	214	275	P
3	4824.00	-13.20	41.25	28.05	54.00	-25.95	Average	100	211	P
4	4824.00	-13.20	53.61	40.41	74.00	-33.59	Peak	100	211	P
5	12060.00	-5.86	39.64	33.78	54.00	-20.22	Average	161	259	P
6	12060.00	-5.86	53.06	47.20	74.00	-26.80	Peak	161	259	P

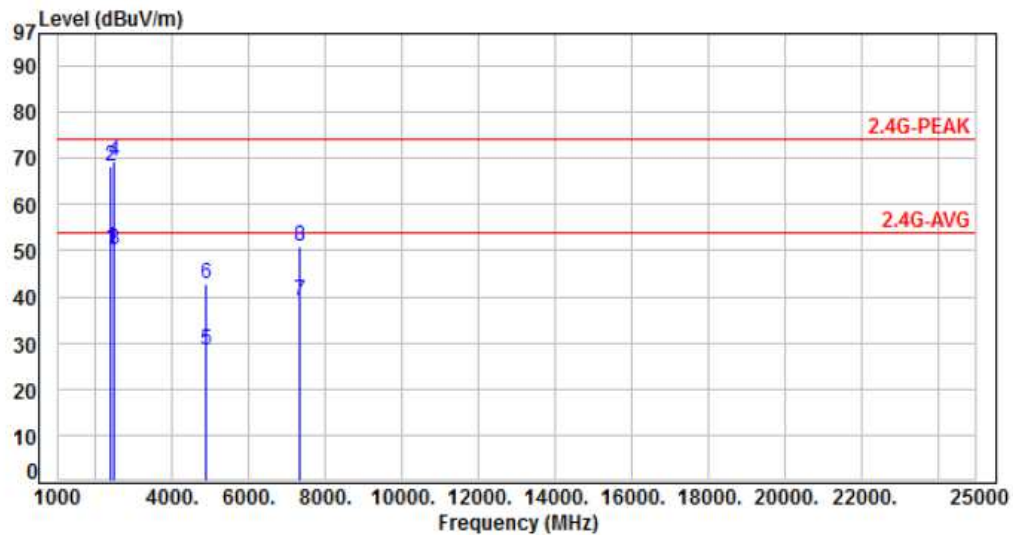
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 8, CH06	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	69.42	50.43	54.00	-3.57	Average	201	341	P
2	2390.00	-18.99	87.15	68.16	74.00	-5.84	Peak	201	341	P
3	2483.50	-18.76	68.89	50.13	54.00	-3.87	Average	201	341	P
4	2483.50	-18.76	88.18	69.42	74.00	-4.58	Peak	201	341	P
5	4874.00	-13.11	41.64	28.53	54.00	-25.47	Average	128	257	P
6	4874.00	-13.11	55.87	42.76	74.00	-31.24	Peak	128	257	P
7	7311.00	-10.03	49.06	39.03	54.00	-14.97	Average	144	157	P
8	7311.00	-10.03	60.85	50.82	74.00	-23.18	Peak	144	157	P

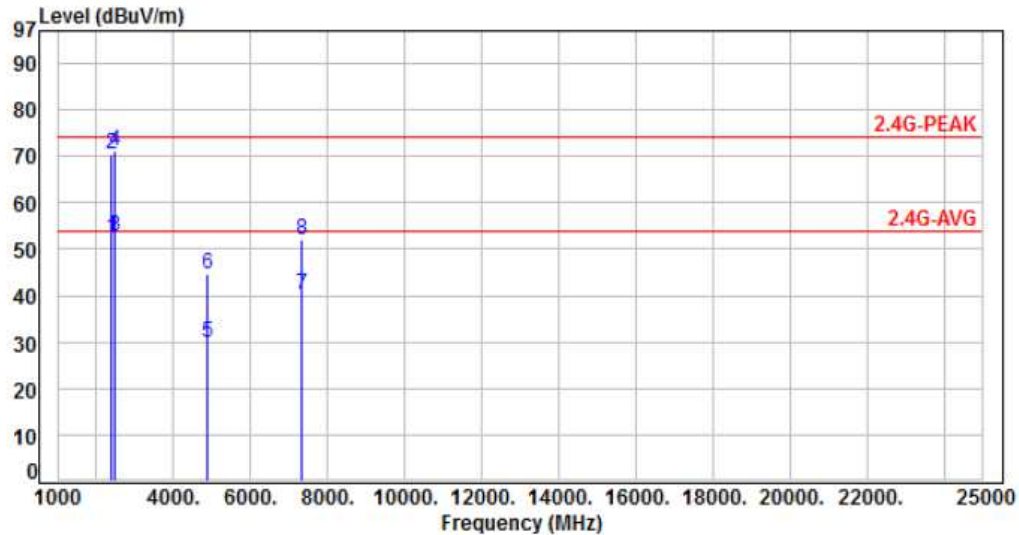
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 8, CH06	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	71.33	52.34	54.00	-1.66	Average	222	291	P
2	2390.00	-18.99	89.60	70.61	74.00	-3.39	Peak	222	291	P
3	2483.50	-18.76	71.43	52.67	54.00	-1.33	Average	114	290	P
4	2483.50	-18.76	89.77	71.01	74.00	-2.99	Peak	114	290	P
5	4874.00	-13.11	43.03	29.92	54.00	-24.08	Average	127	358	P
6	4874.00	-13.11	57.68	44.57	74.00	-29.43	Peak	127	358	P
7	7311.00	-10.03	50.16	40.13	54.00	-13.87	Average	100	289	P
8	7311.00	-10.03	62.16	52.13	74.00	-21.87	Peak	100	289	P

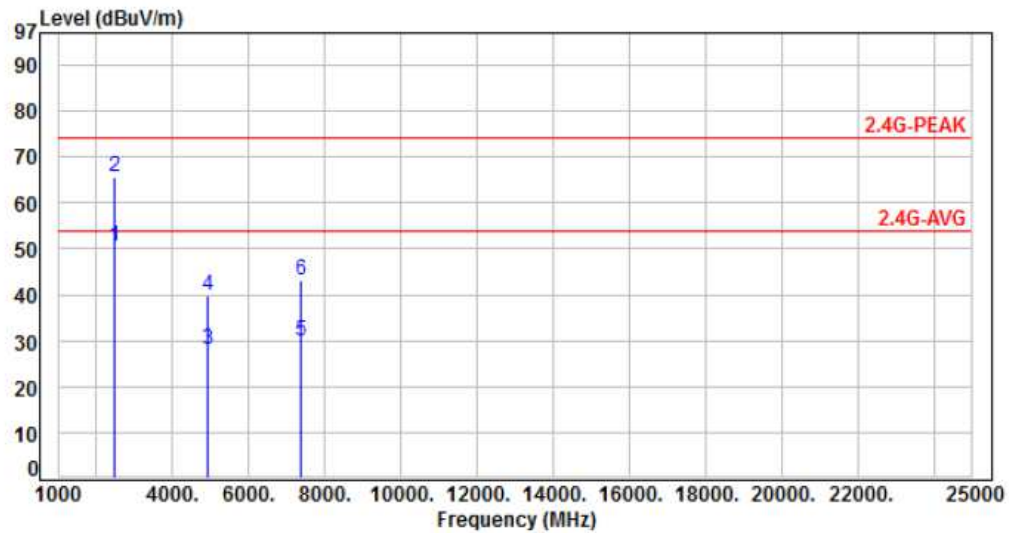
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 8, CH11	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.76	69.24	50.48	54.00	-3.52	Average	133	82	P
2	2483.50	-18.76	84.59	65.83	74.00	-8.17	Peak	133	82	P
3	4924.00	-13.01	41.04	28.03	54.00	-25.97	Average	127	267	P
4	4924.00	-13.01	53.03	40.02	74.00	-33.98	Peak	127	267	P
5	7386.00	-9.84	39.65	29.81	54.00	-24.19	Average	142	72	P
6	7386.00	-9.84	52.99	43.15	74.00	-30.85	Peak	142	72	P

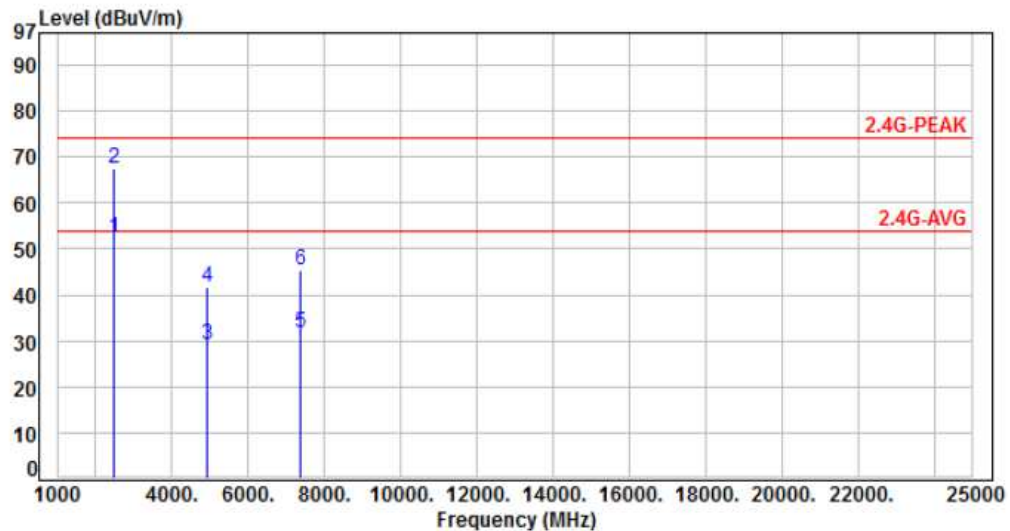
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 8, CH11	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.76	71.14	52.38	54.00	-1.62	Average	114	287	P
2	2483.50	-18.76	86.32	67.56	74.00	-6.44	Peak	114	287	P
3	4924.00	-13.01	42.20	29.19	54.00	-24.81	Average	100	360	P
4	4924.00	-13.01	54.68	41.67	74.00	-32.33	Peak	100	360	P
5	7386.00	-9.84	41.58	31.74	54.00	-22.26	Average	100	299	P
6	7386.00	-9.84	55.33	45.49	74.00	-28.51	Peak	100	299	P

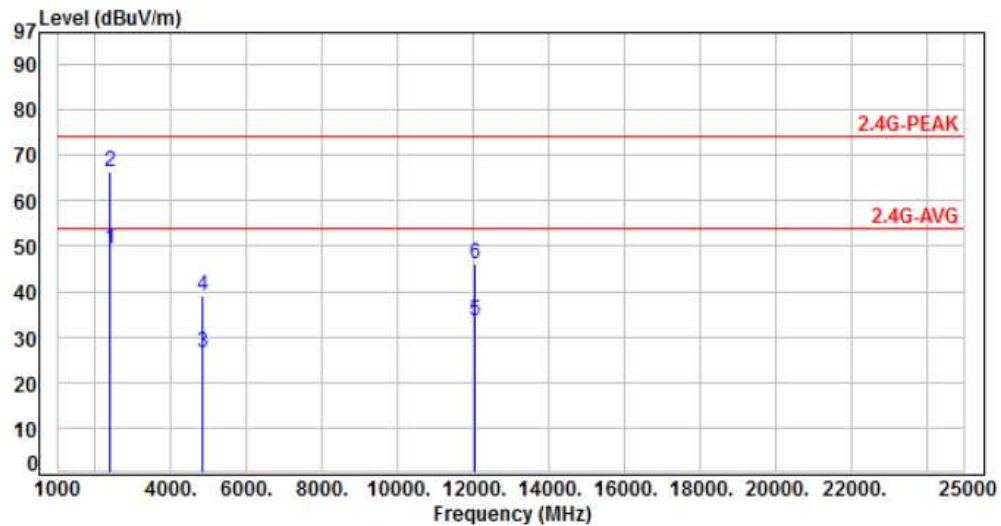
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 11, CH01	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	68.32	49.33	54.00	-4.67	Average	188	224	P
2	2390.00	-18.99	85.54	66.55	74.00	-7.45	Peak	188	224	P
3	4824.00	-13.20	39.71	26.51	54.00	-27.49	Average	175	251	P
4	4824.00	-13.20	52.36	39.16	74.00	-34.84	Peak	175	251	P
5	12060.00	-5.86	39.42	33.56	54.00	-20.44	Average	100	193	P
6	12060.00	-5.86	52.11	46.25	74.00	-27.75	Peak	100	193	P

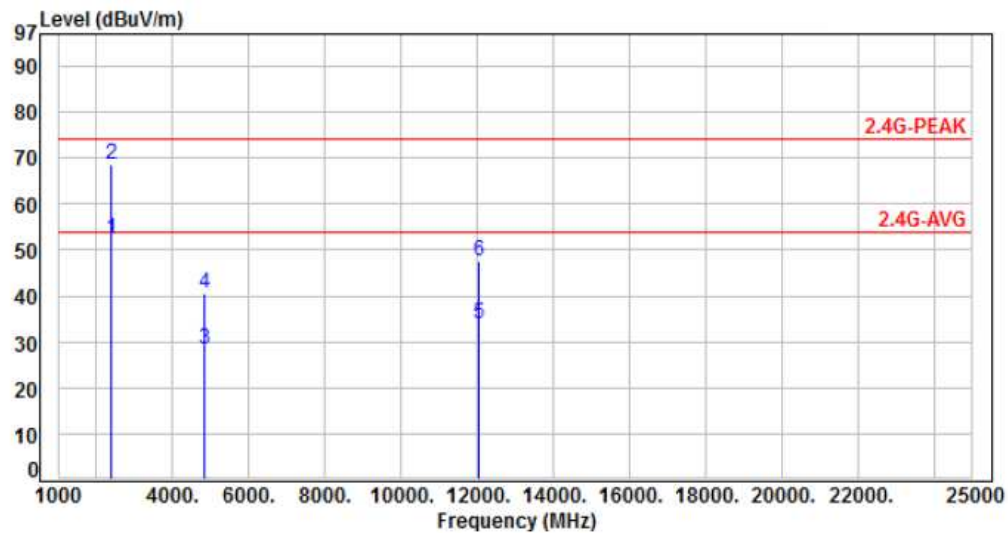
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 11, CH01	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	71.19	52.20	54.00	-1.80	Average	100	290	P
2	2390.00	-18.99	87.52	68.53	74.00	-5.47	Peak	100	290	P
3	4824.00	-13.20	41.61	28.41	54.00	-25.59	Average	112	213	P
4	4824.00	-13.20	53.95	40.75	74.00	-33.25	Peak	112	213	P
5	12060.00	-5.86	39.88	34.02	54.00	-19.98	Average	153	262	P
6	12060.00	-5.86	53.54	47.68	74.00	-26.32	Peak	153	262	P

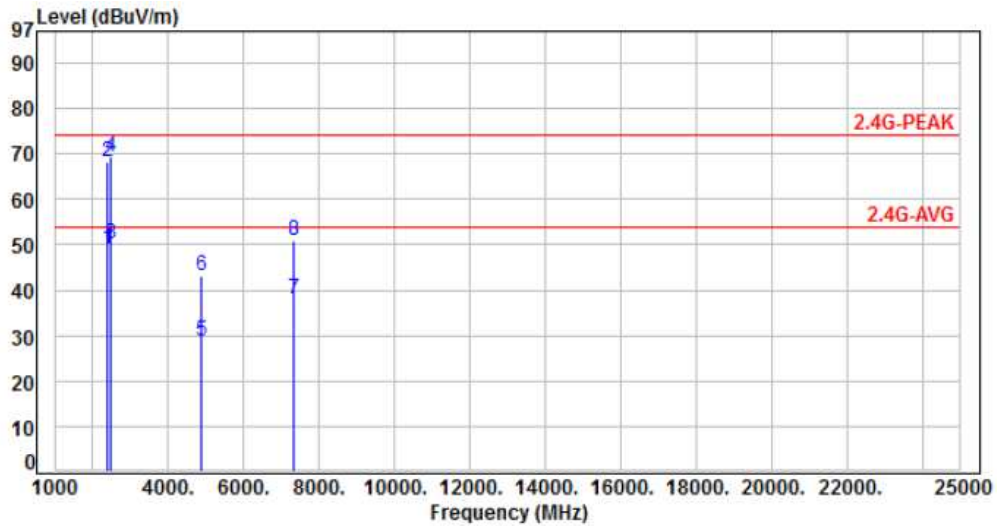
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 11, CH06	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	68.12	49.13	54.00	-4.87	Average	281	155	P
2	2390.00	-18.99	87.27	68.28	74.00	-5.72	Peak	281	155	P
3	2483.50	-18.76	68.91	50.15	54.00	-3.85	Average	281	155	P
4	2483.50	-18.76	88.28	69.52	74.00	-4.48	Peak	281	155	P
5	4874.00	-13.11	41.82	28.71	54.00	-25.29	Average	121	255	P
6	4874.00	-13.11	56.23	43.12	74.00	-30.88	Peak	121	255	P
7	7311.00	-10.03	48.15	38.12	54.00	-15.88	Average	136	251	P
8	7311.00	-10.03	60.97	50.94	74.00	-23.06	Peak	136	251	P

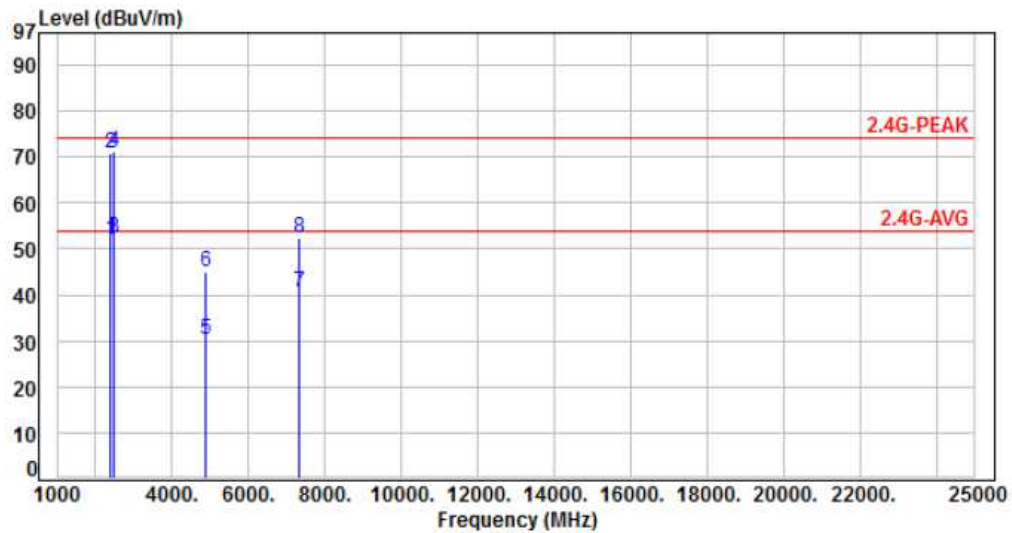
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 11, CH06	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	70.98	51.99	54.00	-2.01	Average	336	25	P
2	2390.00	-18.99	89.91	70.92	74.00	-3.08	Peak	336	25	P
3	2483.50	-18.76	71.23	52.47	54.00	-1.53	Average	115	280	P
4	2483.50	-18.76	89.98	71.22	74.00	-2.78	Peak	115	280	P
5	4874.00	-13.11	43.42	30.31	54.00	-23.69	Average	133	352	P
6	4874.00	-13.11	58.14	45.03	74.00	-28.97	Peak	133	352	P
7	7311.00	-10.03	50.52	40.49	54.00	-13.51	Average	102	273	P
8	7311.00	-10.03	62.48	52.45	74.00	-21.55	Peak	102	273	P

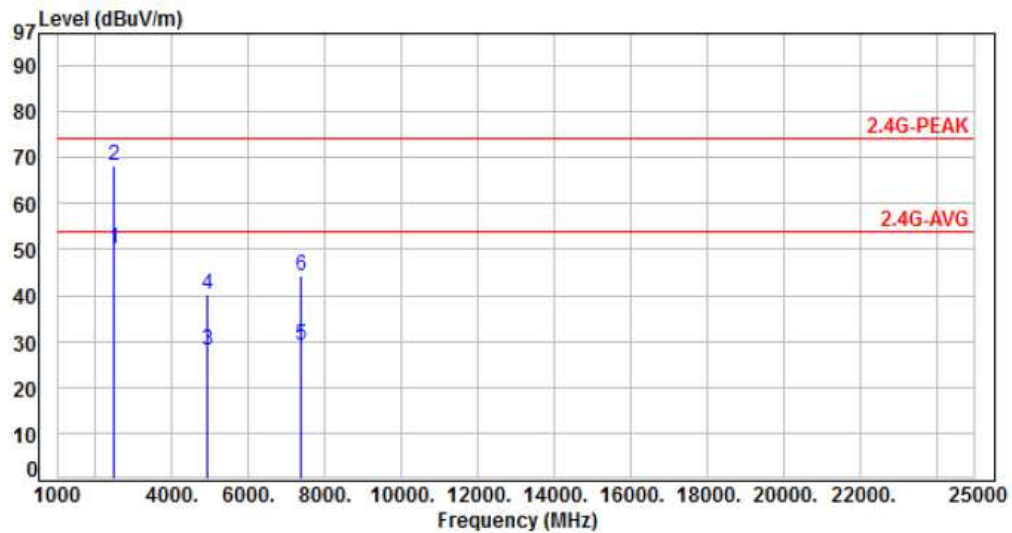
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 11, CH11	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.76	68.98	50.22	54.00	-3.78	Average	118	226	P
2	2483.50	-18.76	87.09	68.33	74.00	-5.67	Peak	118	226	P
3	4924.00	-13.01	41.12	28.11	54.00	-25.89	Average	138	294	P
4	4924.00	-13.01	53.19	40.18	74.00	-33.82	Peak	138	294	P
5	7386.00	-9.84	39.13	29.29	54.00	-24.71	Average	144	37	P
6	7386.00	-9.84	54.02	44.18	74.00	-29.82	Peak	144	37	P

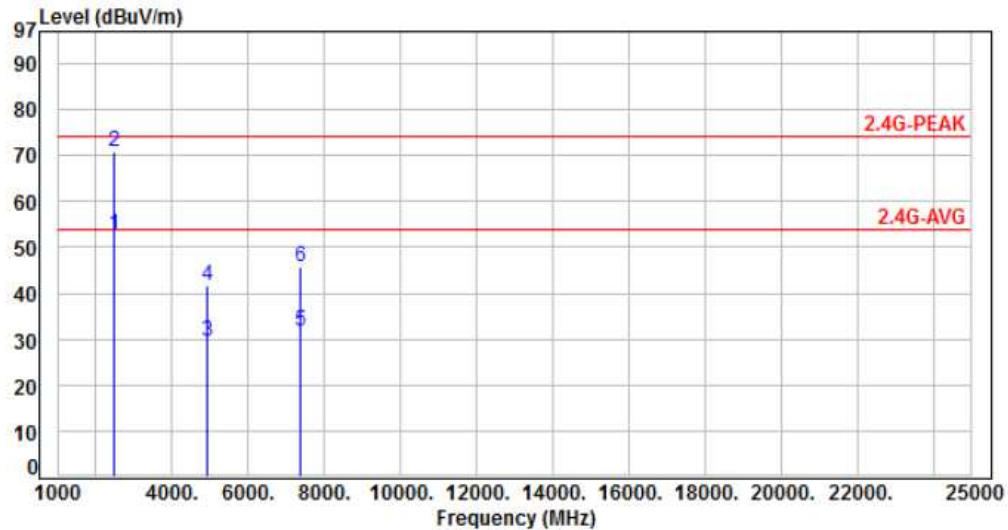
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 11, CH11	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.76	71.66	52.90	54.00	-1.10	Average	104	309	P
2	2483.50	-18.76	89.49	70.73	74.00	-3.27	Peak	104	309	P
3	4924.00	-13.01	42.49	29.48	54.00	-24.52	Average	100	351	P
4	4924.00	-13.01	54.81	41.80	74.00	-32.20	Peak	100	351	P
5	7386.00	-9.84	41.74	31.90	54.00	-22.10	Average	100	312	P
6	7386.00	-9.84	55.62	45.78	74.00	-28.22	Peak	100	312	P

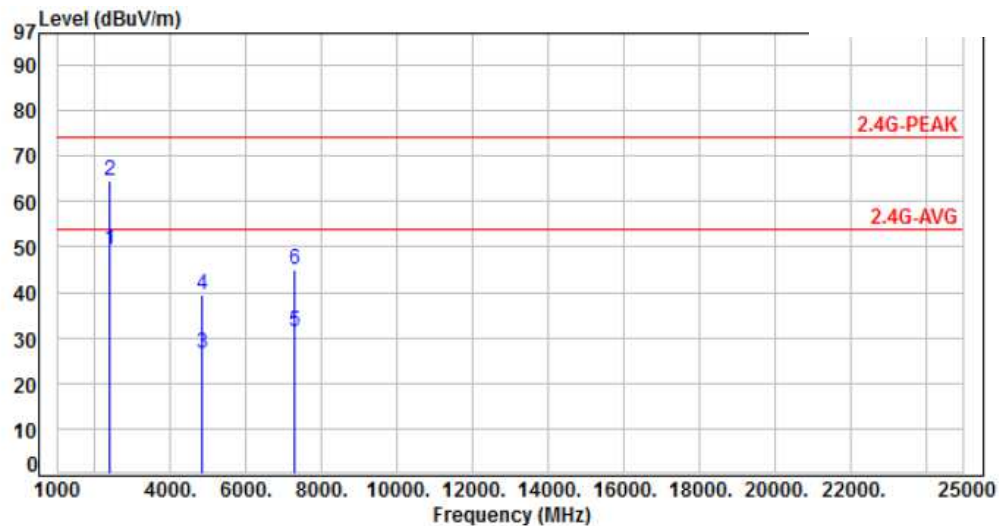
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 12 CH03	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	68.53	49.54	54.00	-4.46	Average	173	252	P
2	2390.00	-18.99	83.68	64.69	74.00	-9.31	Peak	173	252	P
3	4844.00	-13.16	39.88	26.72	54.00	-27.28	Average	173	254	P
4	4844.00	-13.16	52.67	39.51	74.00	-34.49	Peak	173	254	P
5	7266.00	-10.14	41.39	31.25	54.00	-22.75	Average	100	213	P
6	7266.00	-10.14	55.23	45.09	74.00	-28.91	Peak	100	213	P

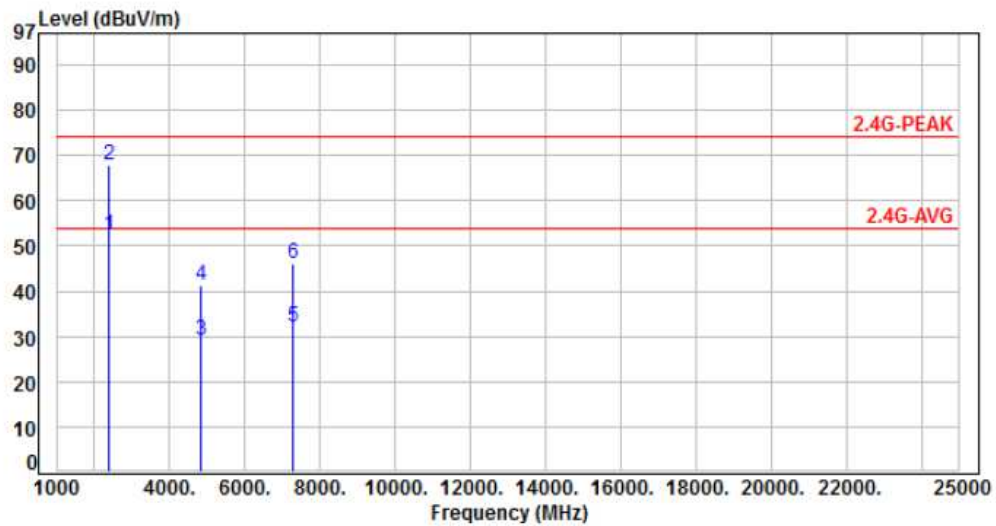
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 12 CH03	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	71.22	52.23	54.00	-1.77	Average	215	281	P
2	2390.00	-18.99	86.70	67.71	74.00	-6.29	Peak	215	281	P
3	4844.00	-13.16	42.39	29.23	54.00	-24.77	Average	118	226	P
4	4844.00	-13.16	54.31	41.15	74.00	-32.85	Peak	118	226	P
5	7266.00	-10.14	42.37	32.23	54.00	-21.77	Average	148	292	P
6	7266.00	-10.14	56.31	46.17	74.00	-27.83	Peak	148	292	P

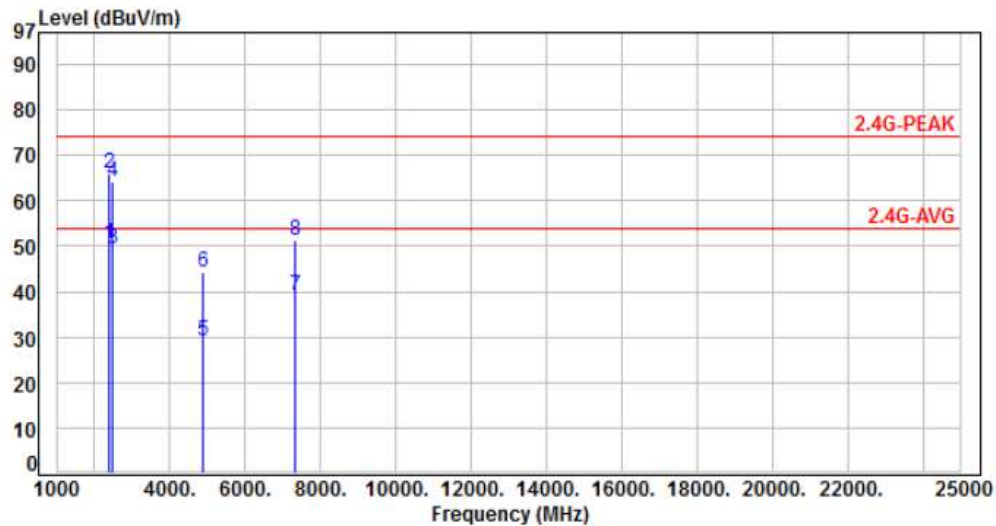
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 12 CH06	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	69.42	50.43	54.00	-3.57	Average	199	137	P
2	2390.00	-18.99	85.17	66.18	74.00	-7.82	Peak	199	137	P
3	2483.50	-18.76	68.12	49.36	54.00	-4.64	Average	199	137	P
4	2483.50	-18.76	82.99	64.23	74.00	-9.77	Peak	199	137	P
5	4874.00	-13.11	42.32	29.21	54.00	-24.79	Average	127	258	P
6	4874.00	-13.11	57.23	44.12	74.00	-29.88	Peak	127	258	P
7	7311.00	-10.03	48.95	38.92	54.00	-15.08	Average	148	294	P
8	7311.00	-10.03	61.36	51.33	74.00	-22.67	Peak	148	294	P

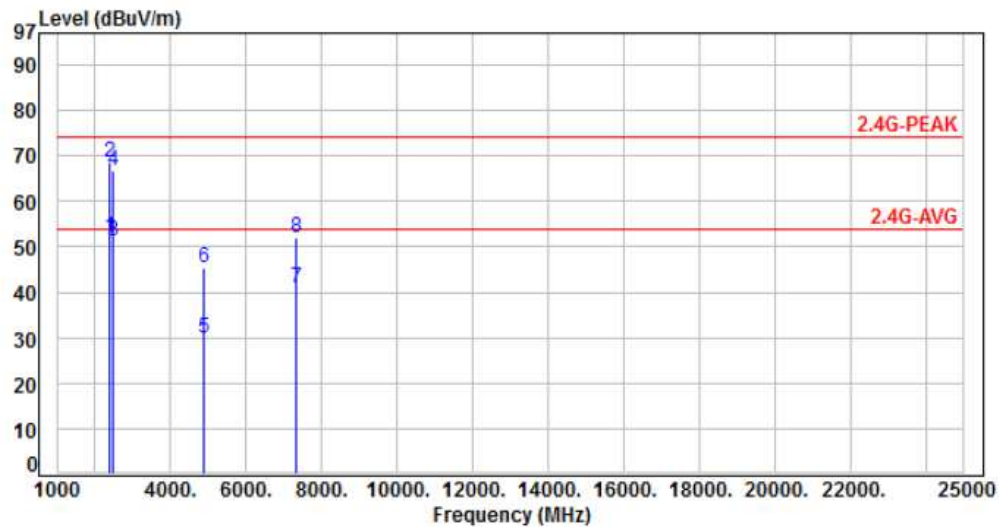
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 12 CH06	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-18.99	71.07	52.08	54.00	-1.92	Average	231	281	P
2	2390.00	-18.99	87.45	68.46	74.00	-5.54	Peak	231	281	P
3	2483.50	-18.76	69.98	51.22	54.00	-2.78	Average	100	306	P
4	2483.50	-18.76	85.44	66.68	74.00	-7.32	Peak	100	306	P
5	4874.00	-13.11	43.13	30.02	54.00	-23.98	Average	148	327	P
6	4874.00	-13.11	58.63	45.52	74.00	-28.48	Peak	148	327	P
7	7311.00	-10.03	50.92	40.89	54.00	-13.11	Average	116	281	P
8	7311.00	-10.03	62.20	52.17	74.00	-21.83	Peak	116	281	P

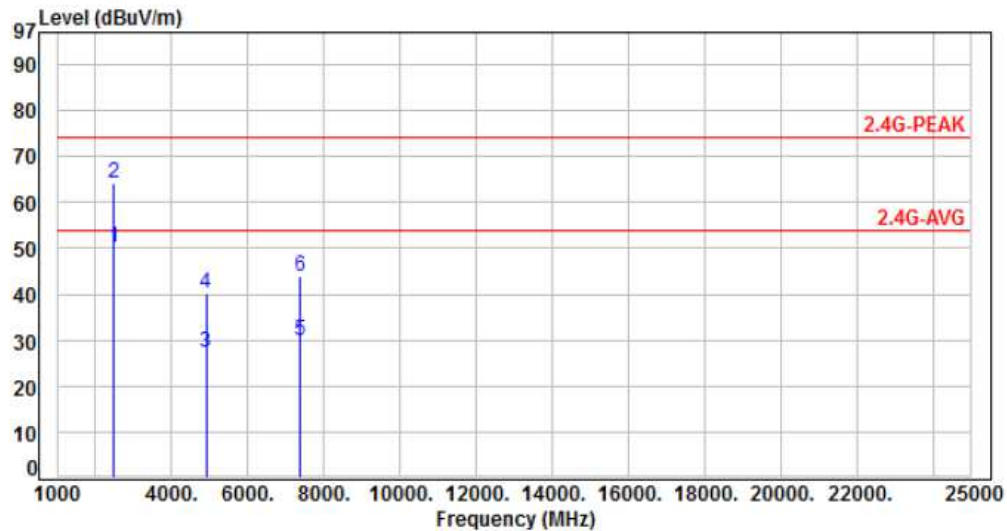
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: VERTICAL
Test Mode	: Mode 12 CH09	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.76	68.89	50.13	54.00	-3.87	Average	184	155	P
2	2483.50	-18.76	82.97	64.21	74.00	-9.79	Peak	184	155	P
3	4904.00	-13.04	40.28	27.24	54.00	-26.76	Average	122	99	P
4	4904.00	-13.04	53.32	40.28	74.00	-33.72	Peak	122	99	P
5	7356.00	-9.91	39.74	29.83	54.00	-24.17	Average	136	100	P
6	7356.00	-9.91	53.94	44.03	74.00	-29.97	Peak	136	100	P

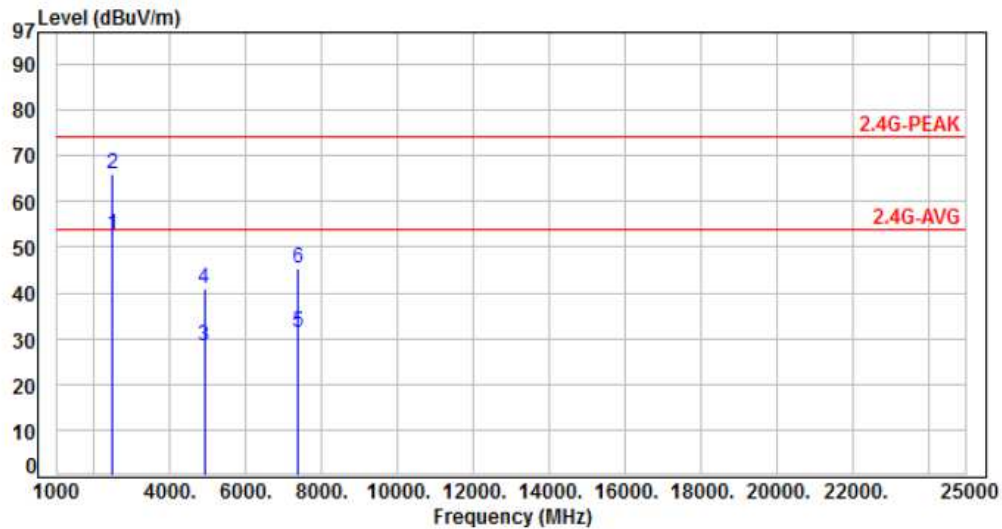
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: PoE 54V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 12 CH09	Temperature	: 22 °C
Test Date	: Mar. 15, 2017	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-18.76	71.32	52.56	54.00	-1.44	Average	256	16	P
2	2483.50	-18.76	84.77	66.01	74.00	-7.99	Peak	256	16	P
3	4904.00	-13.04	41.38	28.34	54.00	-25.66	Average	100	348	P
4	4904.00	-13.04	54.12	41.08	74.00	-32.92	Peak	100	348	P
5	7356.00	-9.91	41.17	31.26	54.00	-22.74	Average	211	298	P
6	7356.00	-9.91	55.18	45.27	74.00	-28.73	Peak	211	298	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

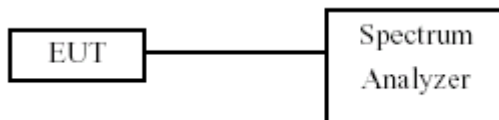
7.1 Test Limit

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

Test Date : Jun. 19, 2017

Temperature : 24°C

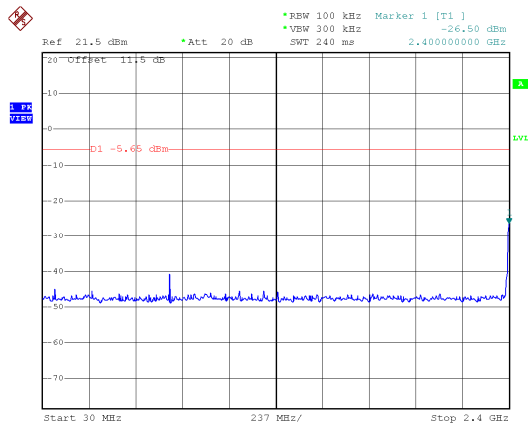
Humidity : 68%

Note: Test plots refers to the following pages.

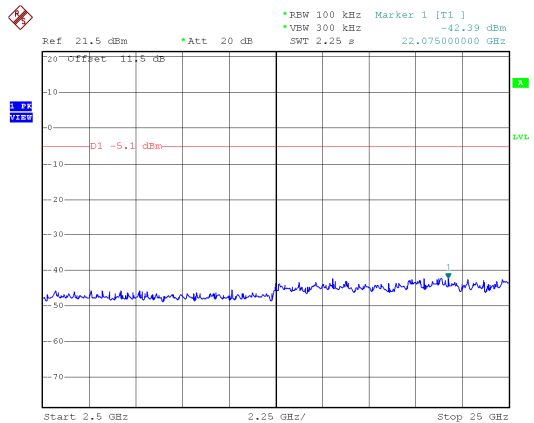
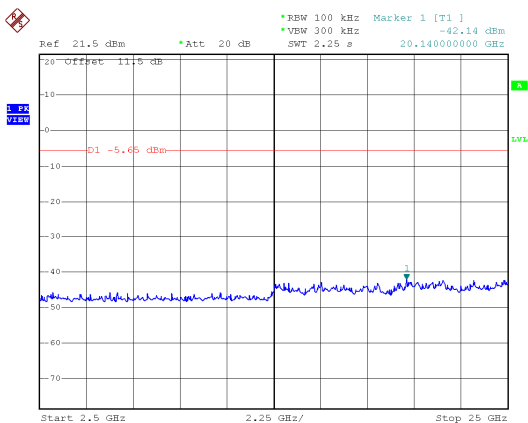
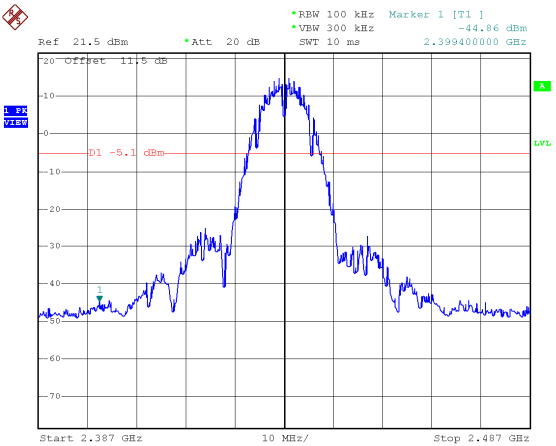
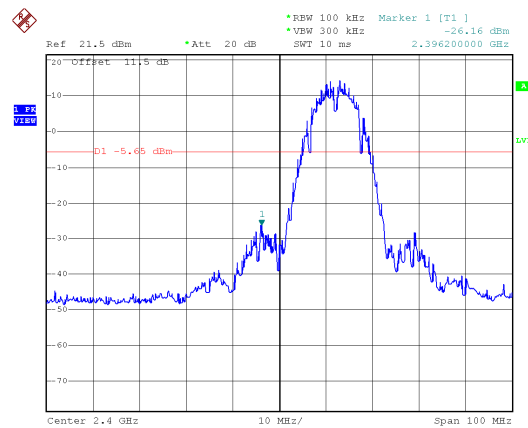
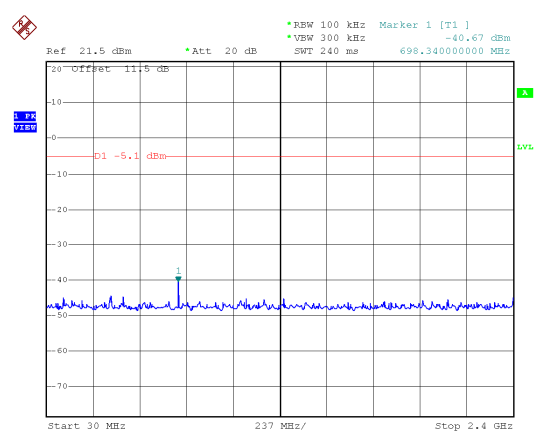


ANT A

Modulation Type: 802.11b, CH 01



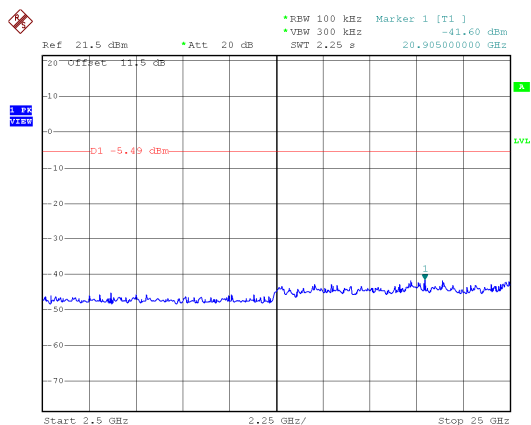
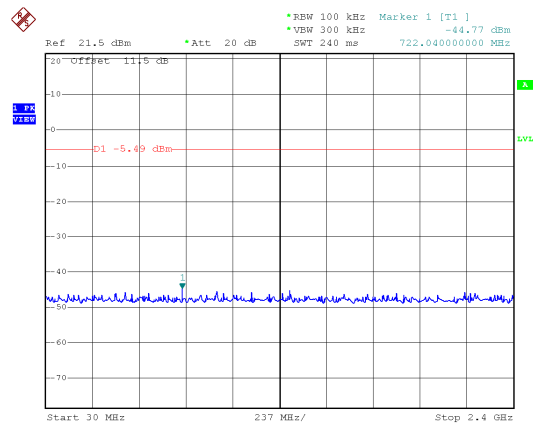
Modulation Type: 802.11b, CH 06





ANT A

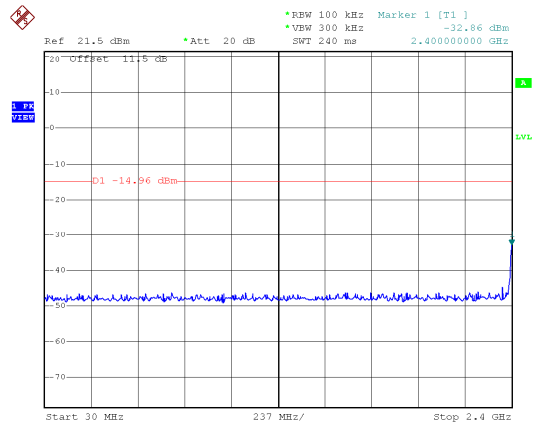
Modulation Type: 802.11b, CH 11



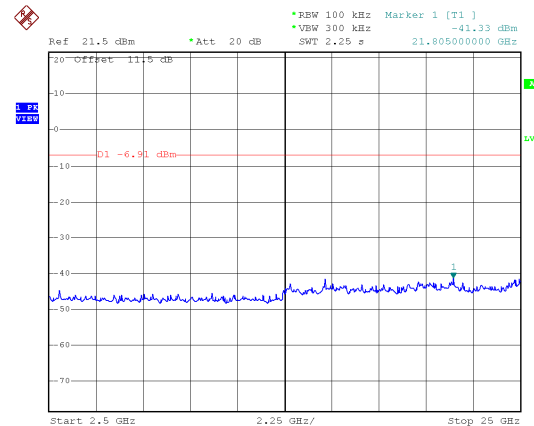
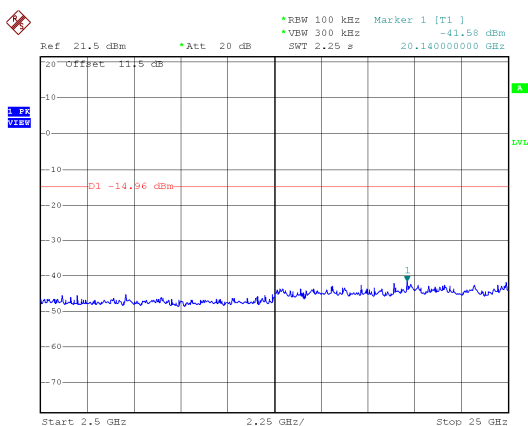
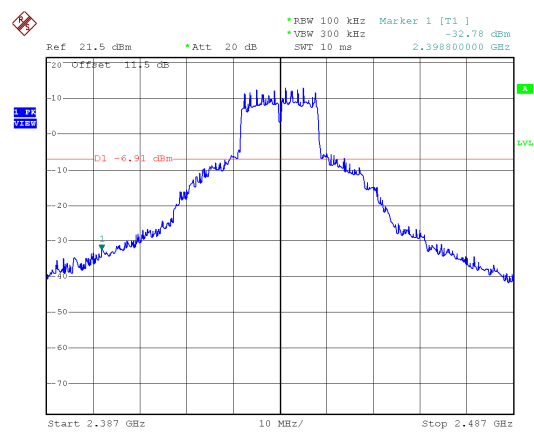
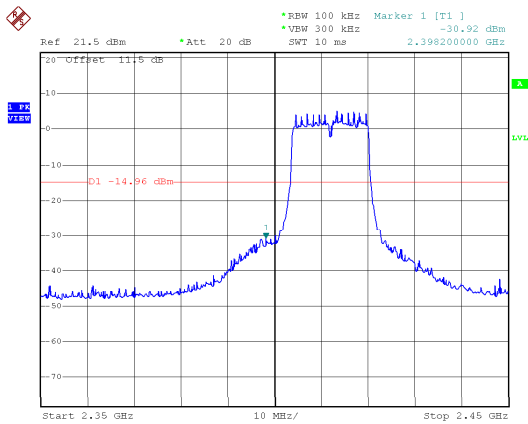
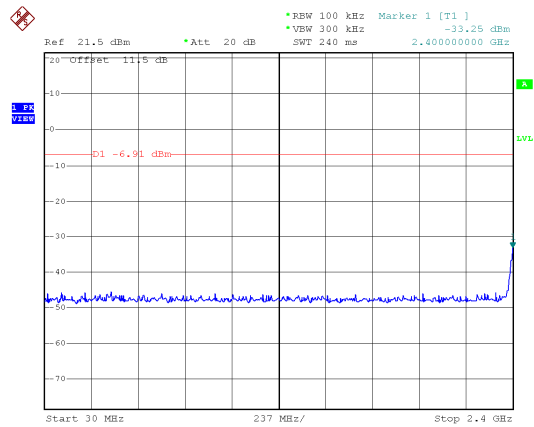


ANT A

Modulation Type: 802.11g, CH 01



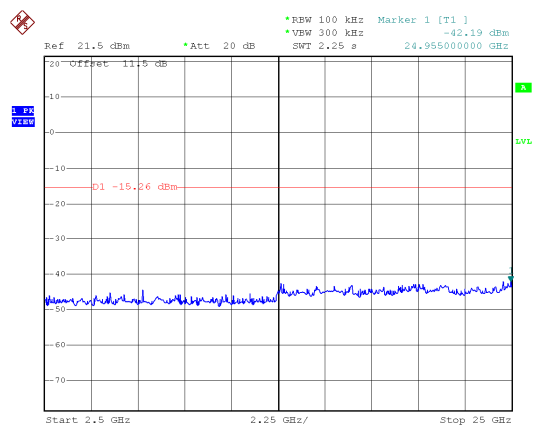
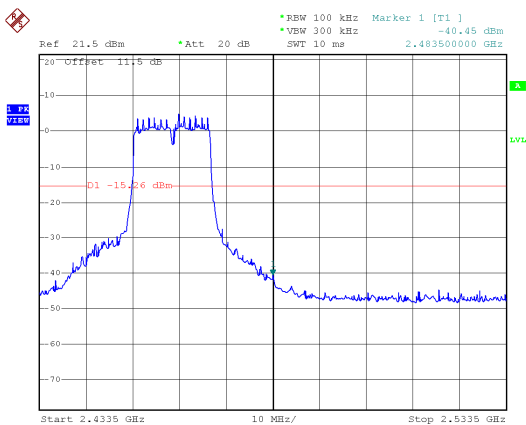
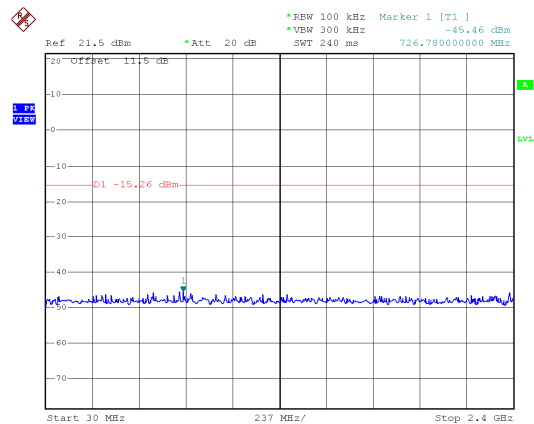
Modulation Type: 802.11g, CH 06





ANT A

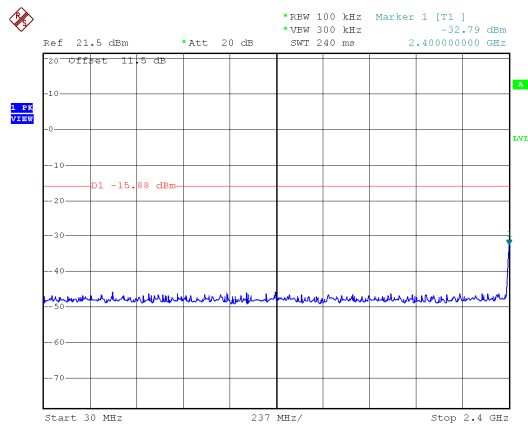
Modulation Type: 802.11g, CH 11



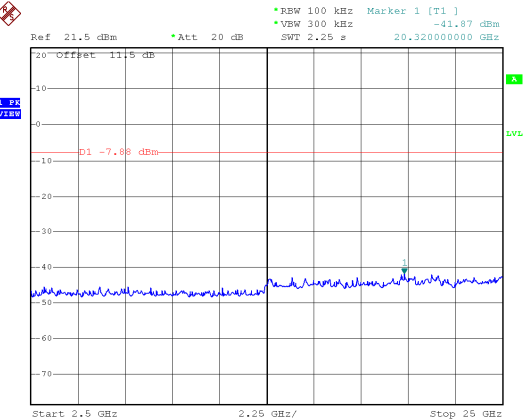
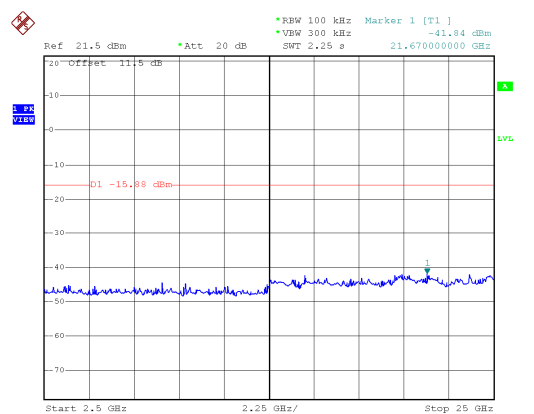
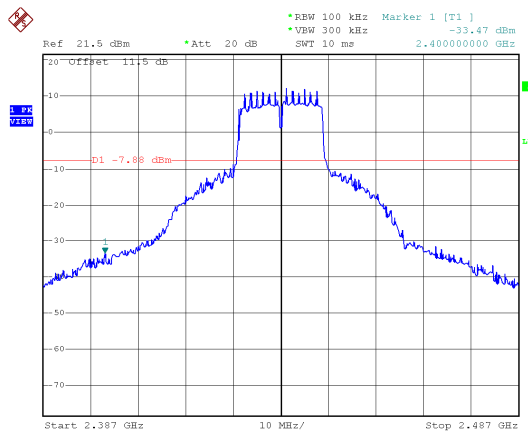
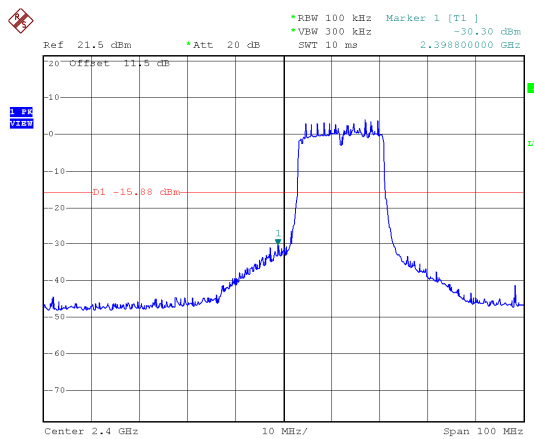
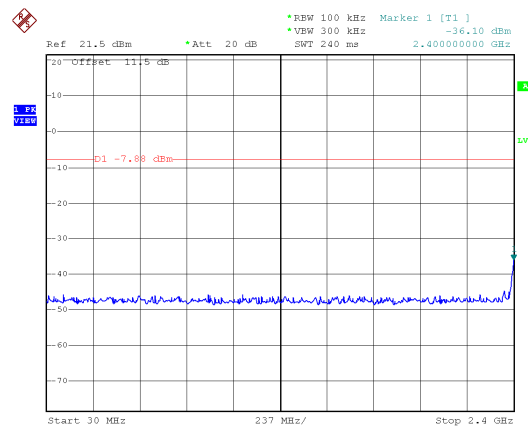


ANT A

Modulation Type: 802.11ac VHT20, CH01



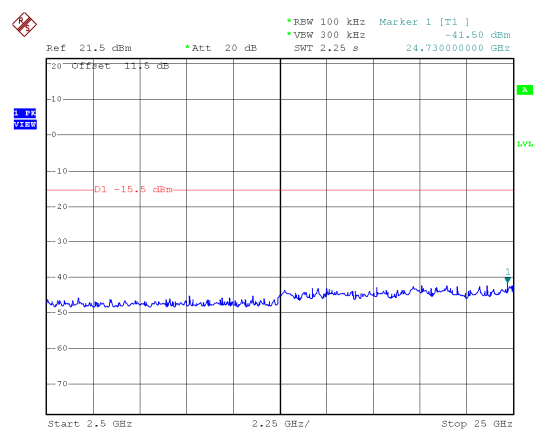
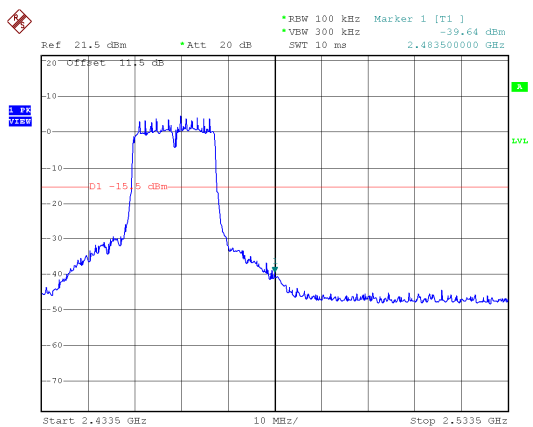
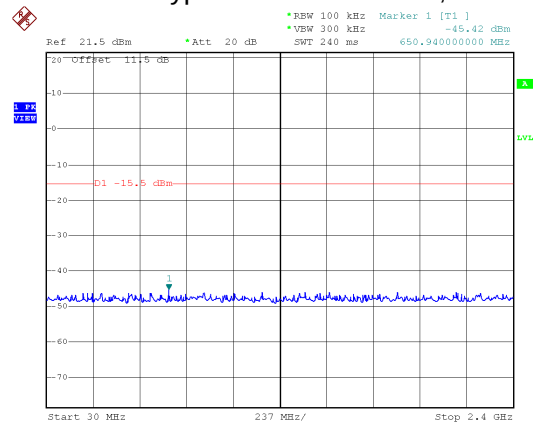
Modulation Type: 802.11ac VHT20, CH06





ANT A

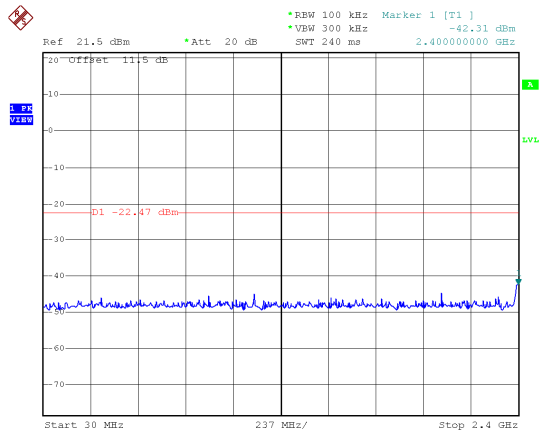
Modulation Type: 802.11ac VHT20, CH11



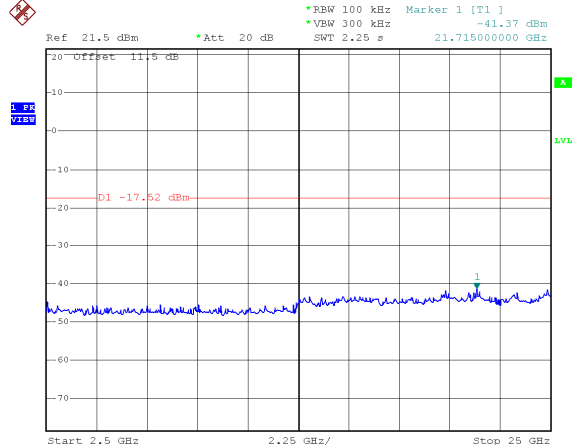
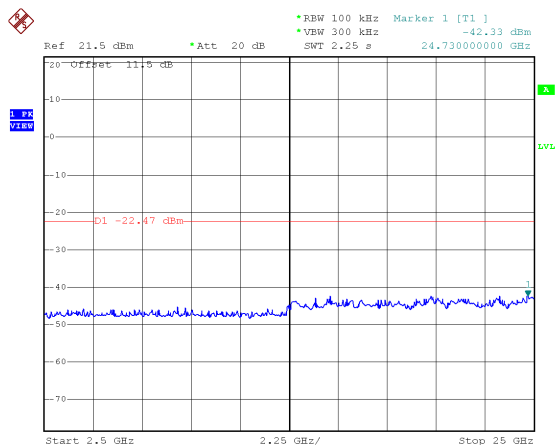
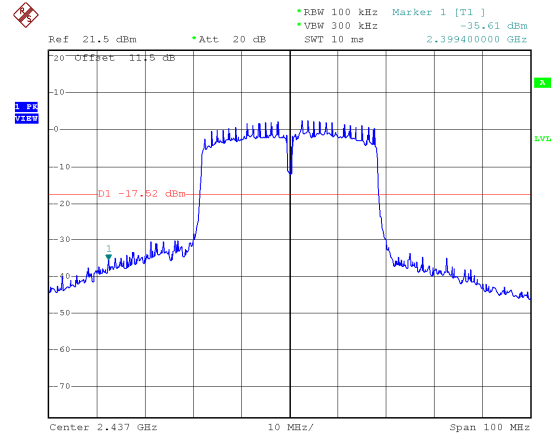
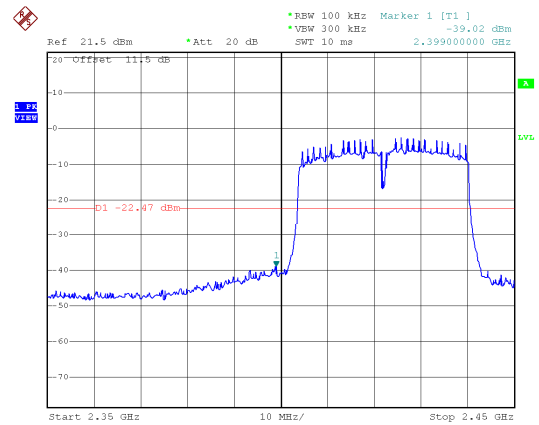
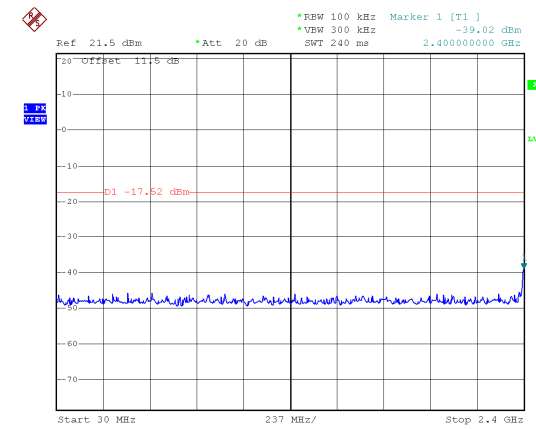


ANT A

Modulation Type: 802.11ac VHT40, CH03



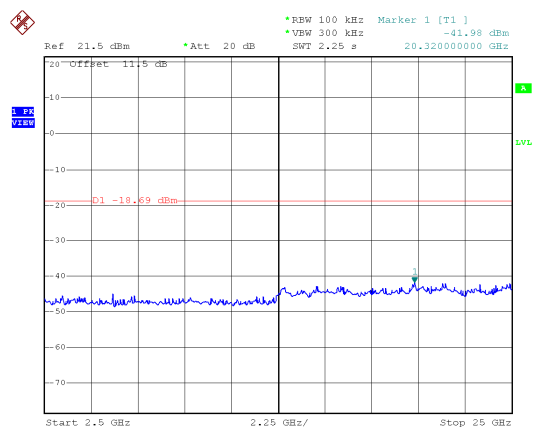
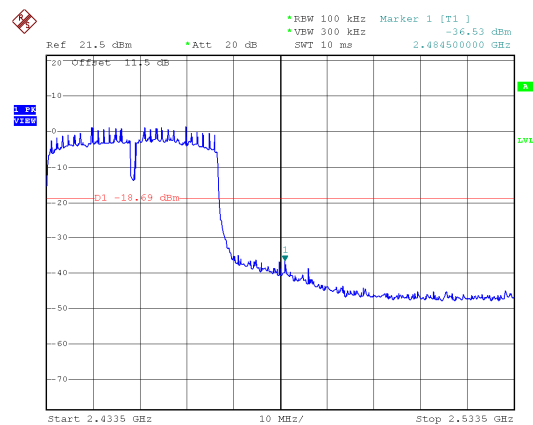
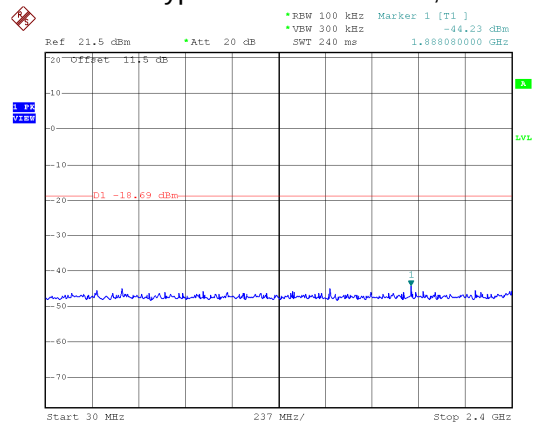
Modulation Type: 802.11ac VHT40, CH06





ANT A

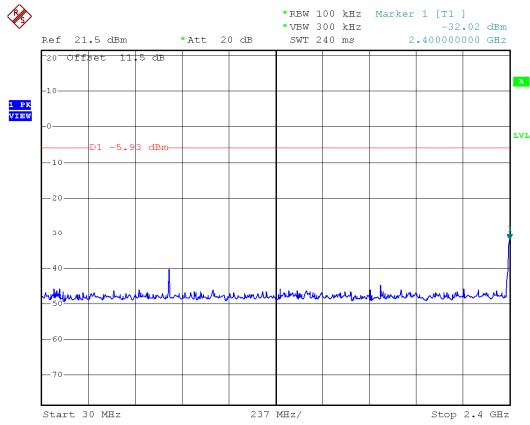
Modulation Type: 802.11ac VHT40, CH09



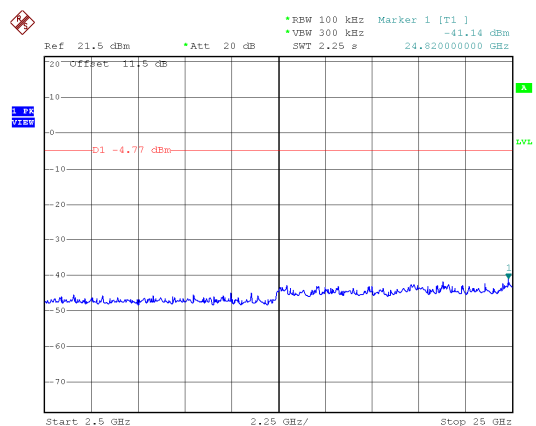
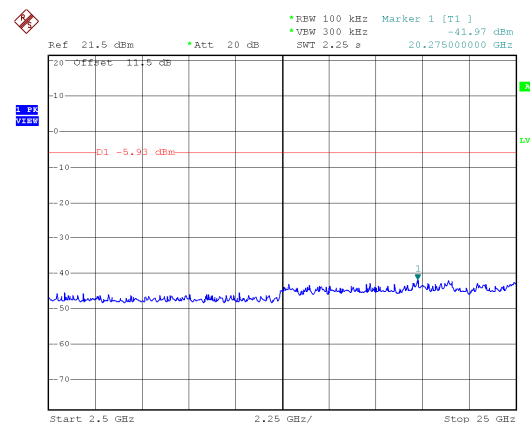
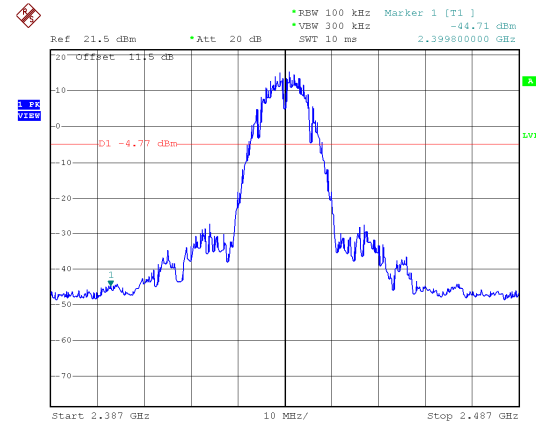
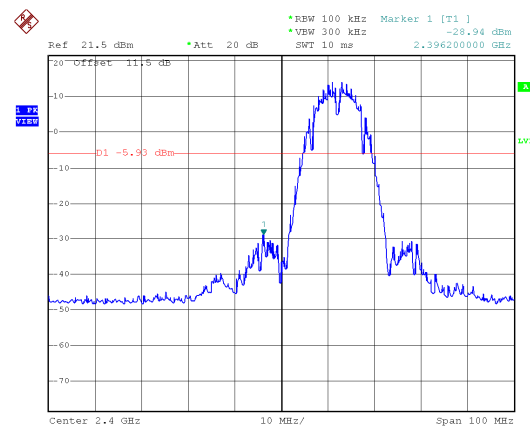
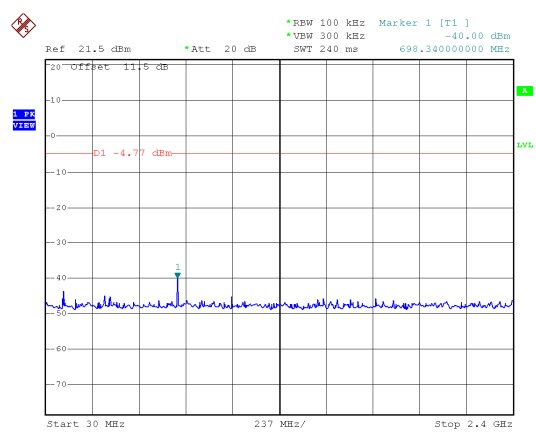


ANT B

Modulation Type: 802.11b, CH 01



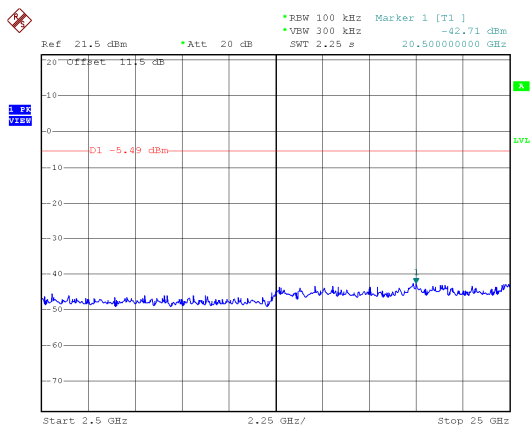
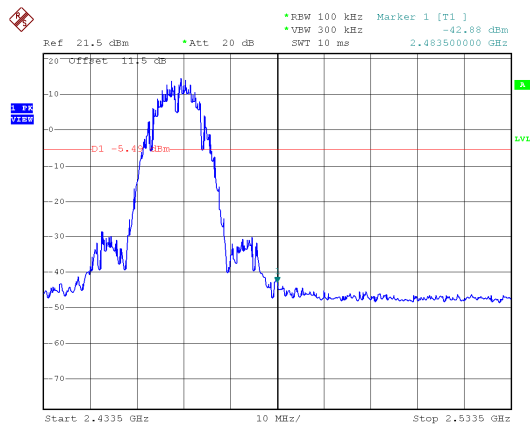
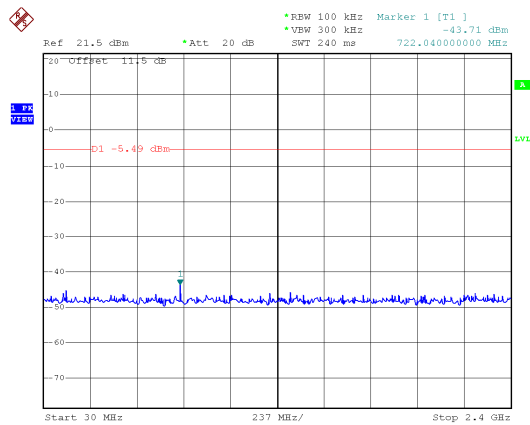
Modulation Type: 802.11b, CH 06





ANT B

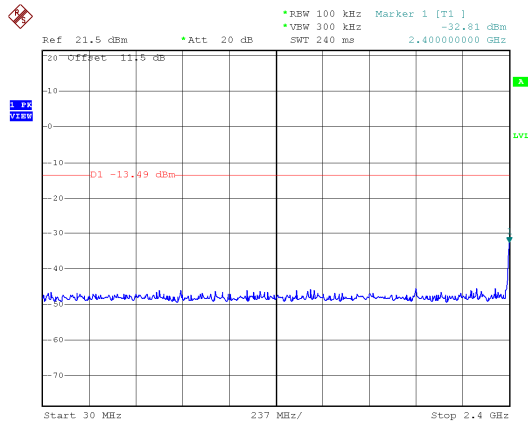
Modulation Type: 802.11b, CH 11



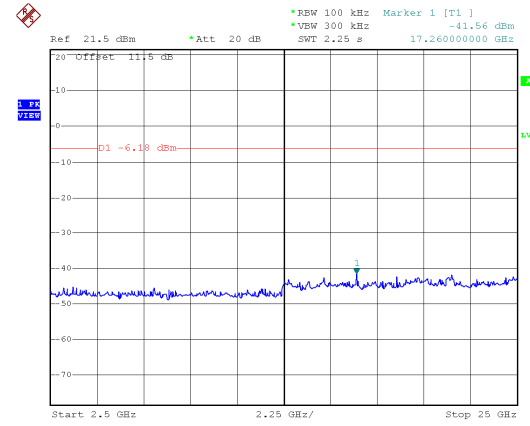
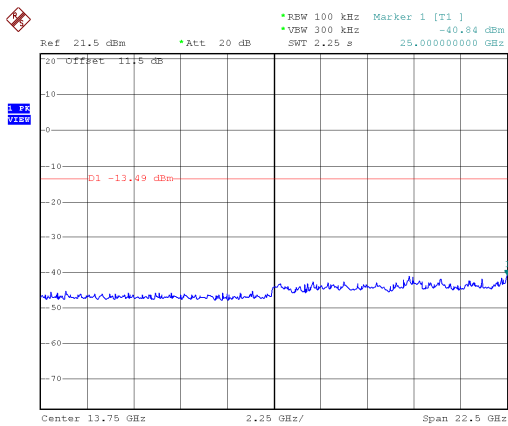
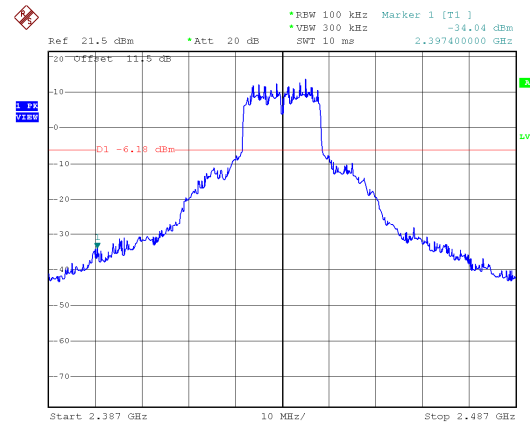
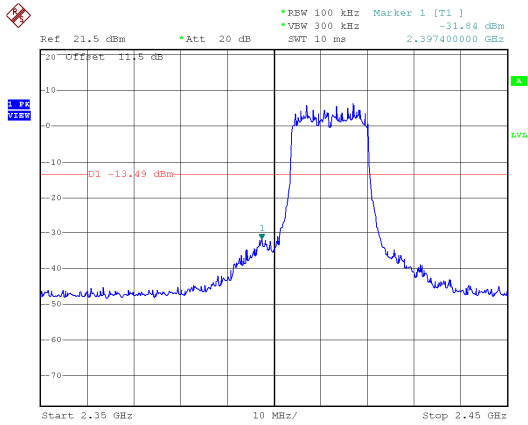
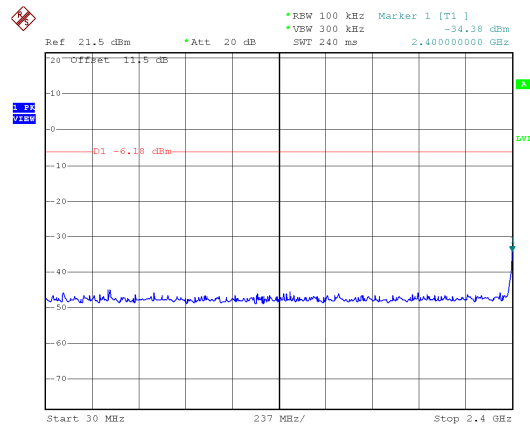


ANT B

Modulation Type: 802.11g, CH 01



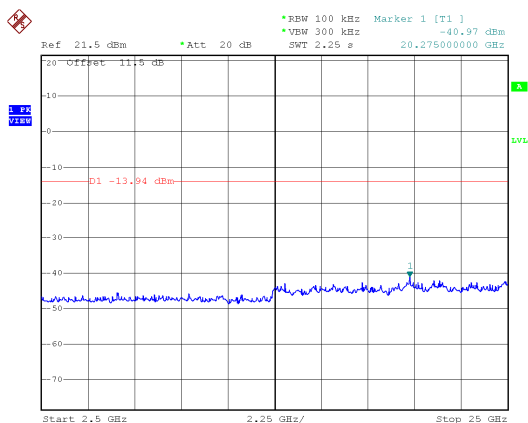
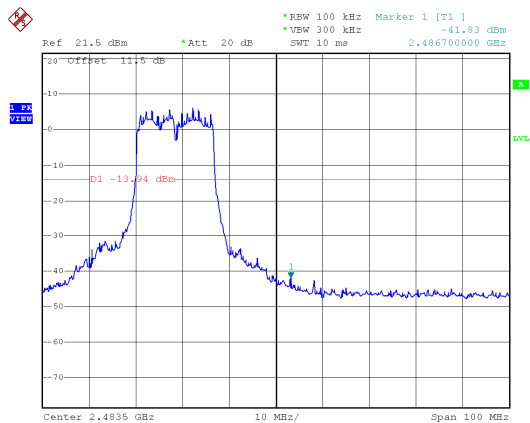
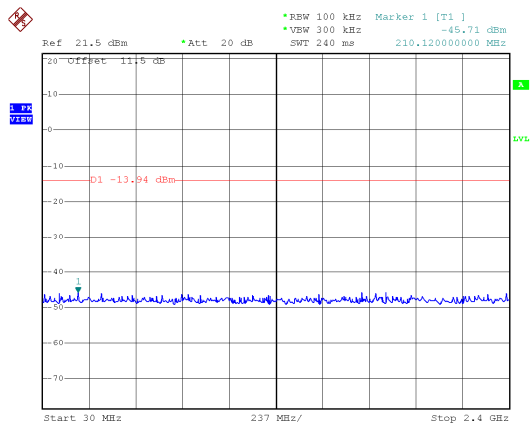
Modulation Type: 802.11g, CH 06





ANT B

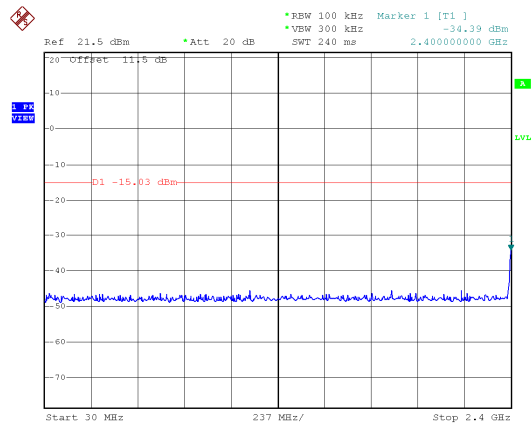
Modulation Type: 802.11g, CH 11



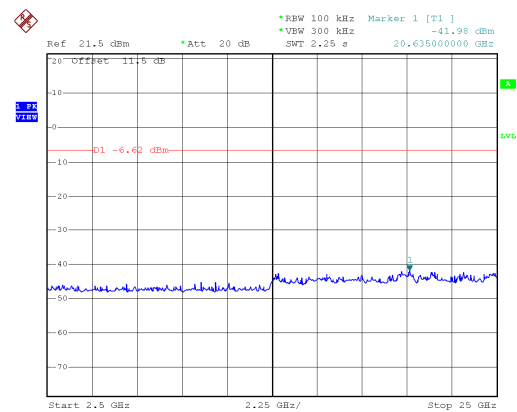
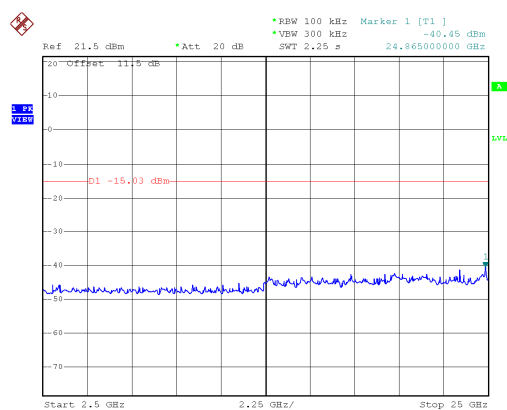
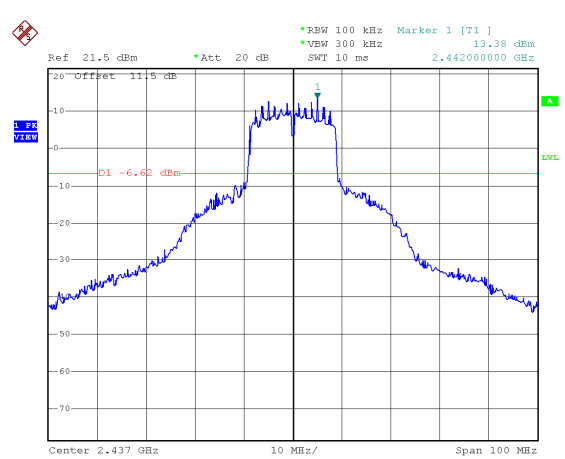
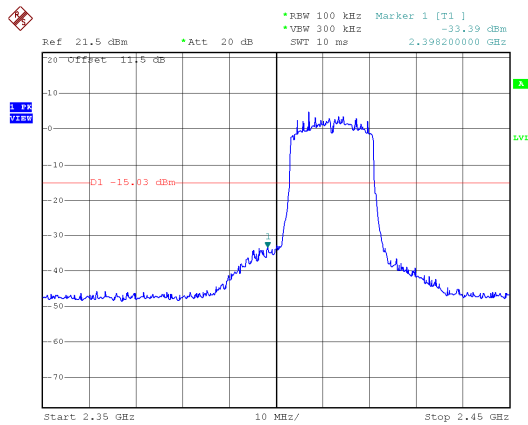
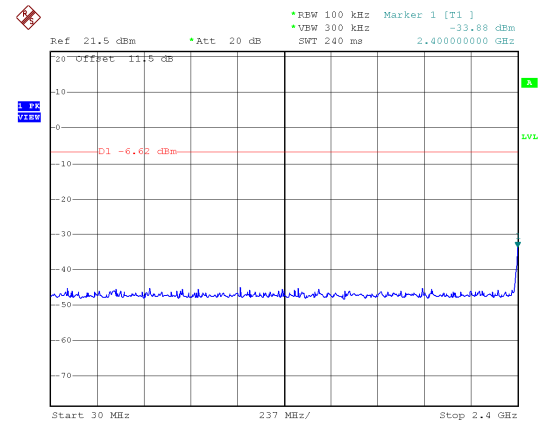


ANT B

Modulation Type: 802.11ac VHT20, CH01



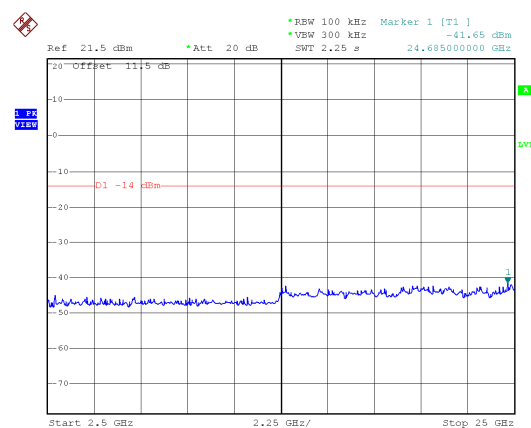
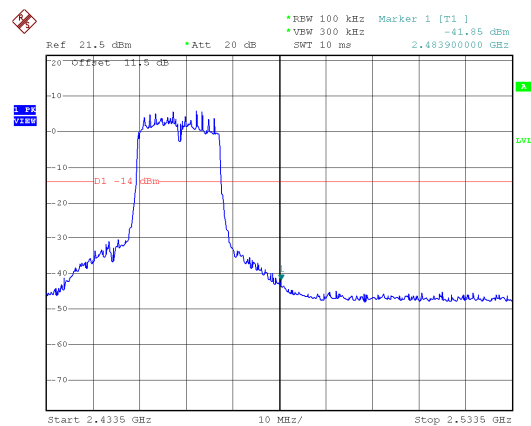
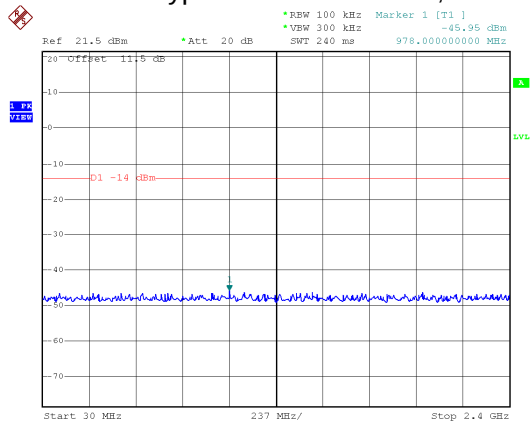
Modulation Type: 802.11ac VHT20, CH06





ANT A

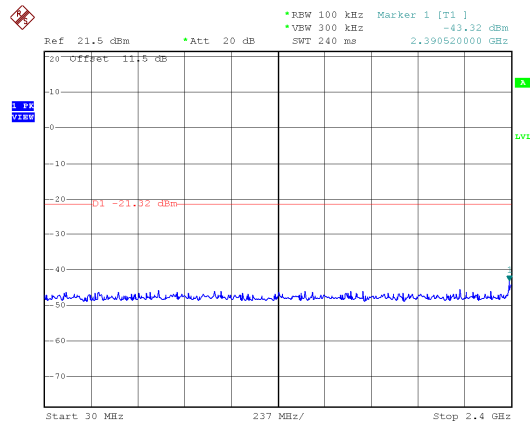
Modulation Type: 802.11ac VHT20, CH11



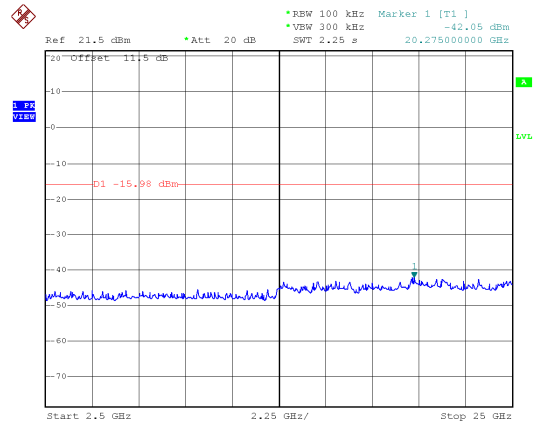
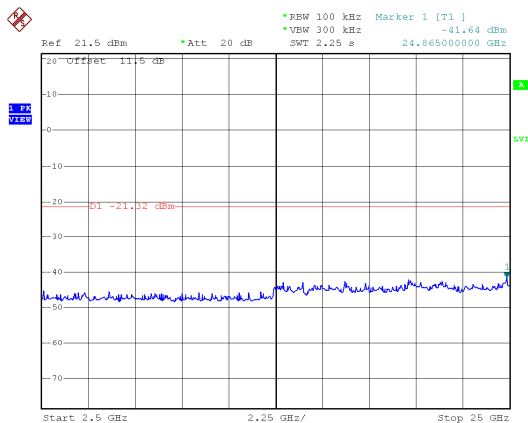
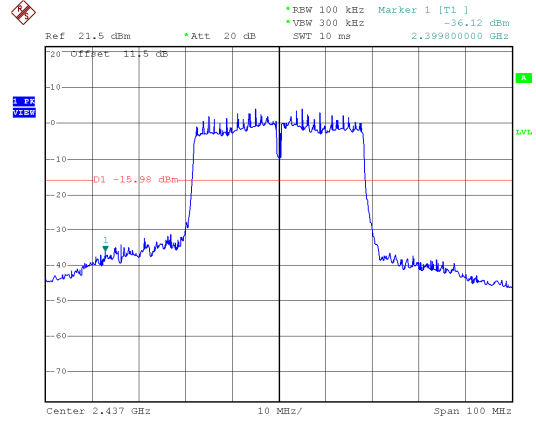
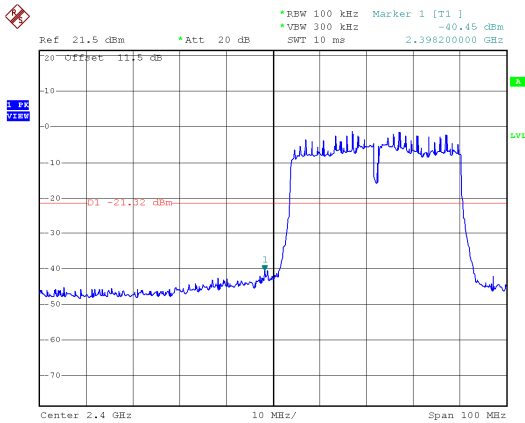
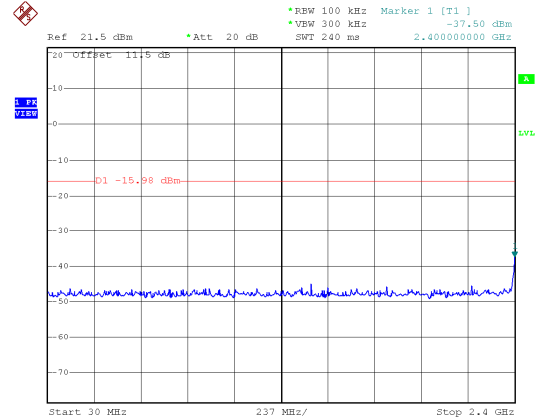


ANT B

Modulation Type: 802.11ac VHT40, CH03



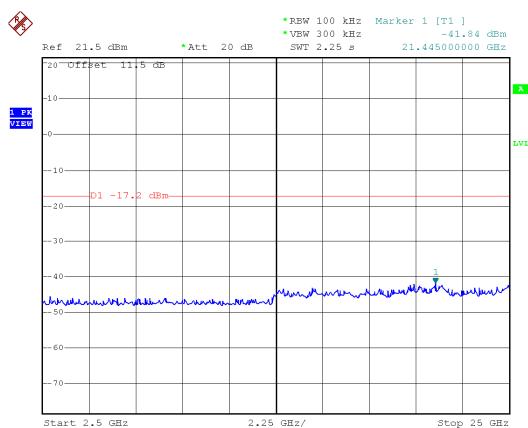
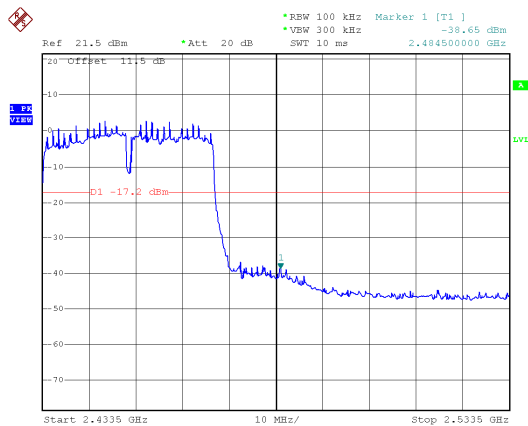
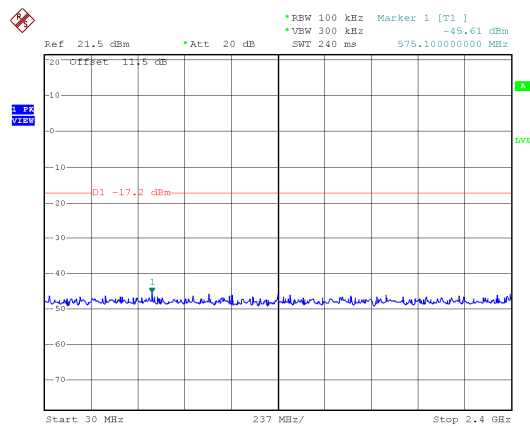
Modulation Type: 802.11ac VHT40, CH06





ANT B

Modulation Type: 802.11ac VHT40, CH09





8. 6dB Bandwidth Measurement Data

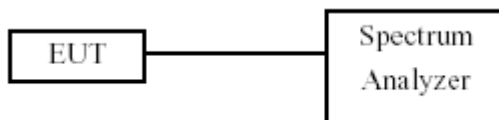
8.1 Test Limit

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

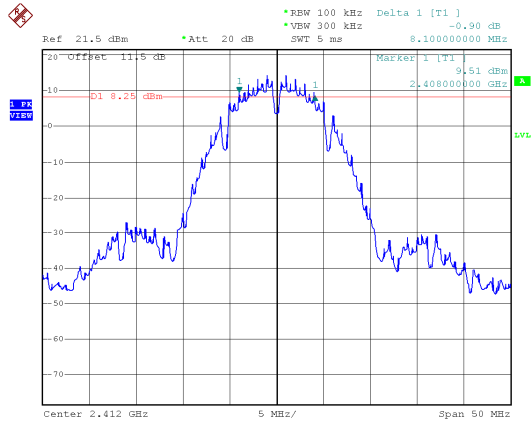
Humidity : 68%

Test Date : Jun. 19, 2017

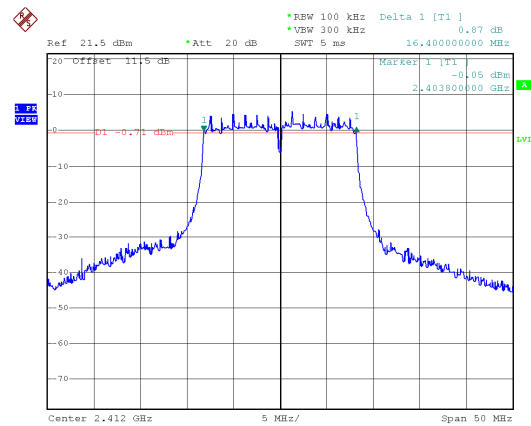
Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Limit (MHz)
			ANT A	ANT B	
IEEE 802.11b (1Mbps)	01	2412	8.10	8.08	0.5
	06	2437	8.00	8.00	0.5
	11	2462	8.00	8.00	0.5
IEEE 802.11g (6Mbps)	01	2412	16.40	16.40	0.5
	06	2437	16.30	15.40	0.5
	11	2462	16.40	16.30	0.5
IEEE 802.11ac VHT20 (6.5Mbps)	01	2412	17.50	16.40	0.5
	06	2437	17.20	17.30	0.5
	11	2462	17.60	16.90	0.5
IEEE 802.11ac VHT40 (13.5Mbps)	03	2422	35.20	35.20	0.5
	06	2437	35.20	35.20	0.5
	09	2452	35.20	35.20	0.5



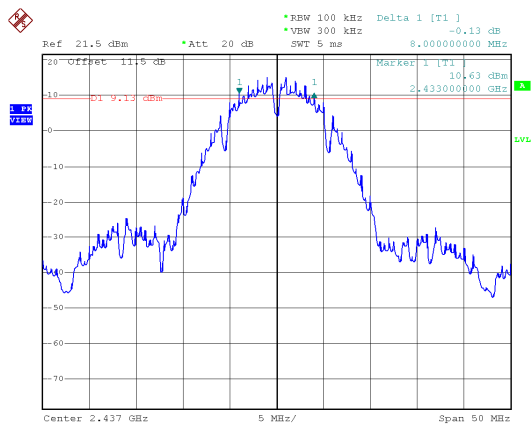
ANT A
Modulation Type: 802.11b
CH01



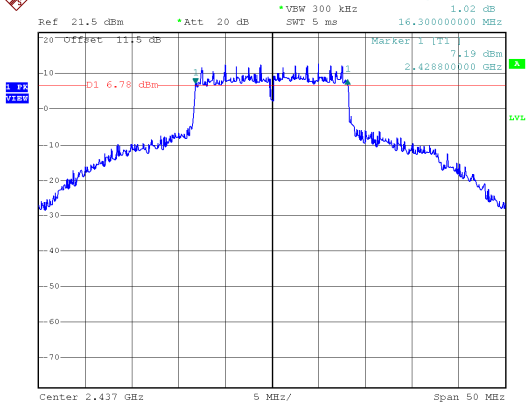
Modulation Type: 802.11g
CH01



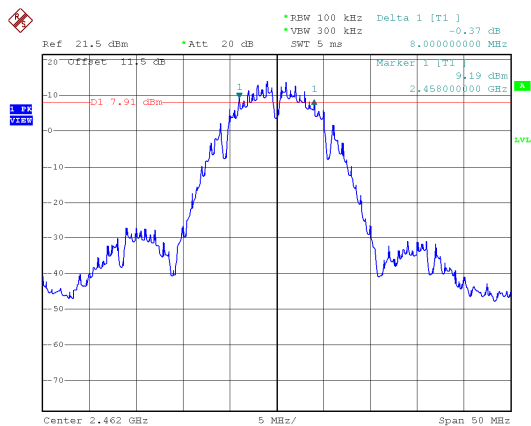
CH06



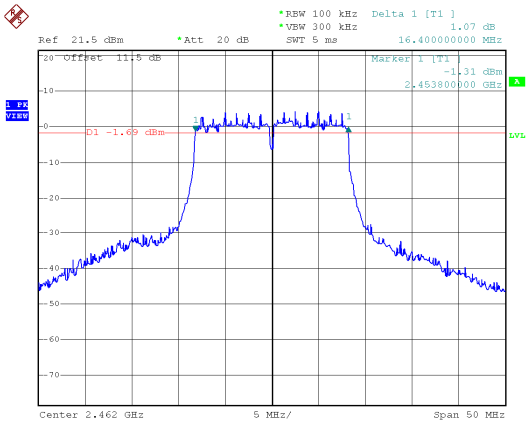
CH06



CH11



CH11

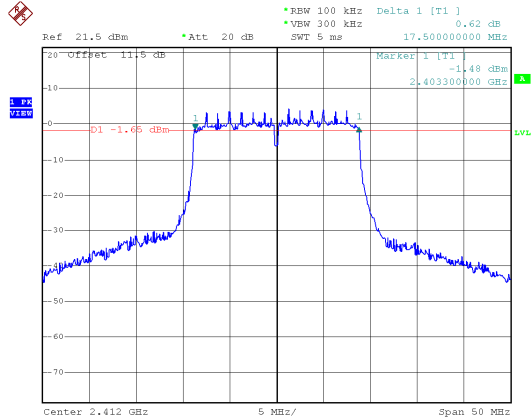




ANT A

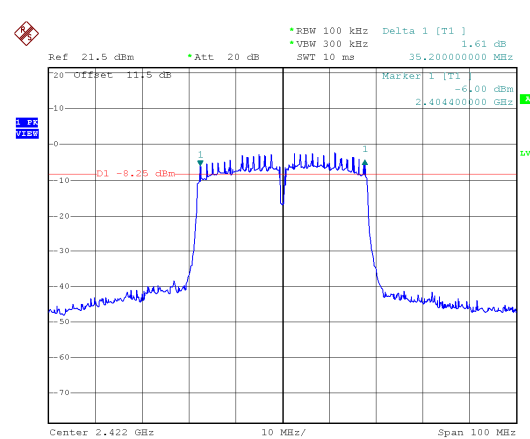
Modulation Type: 802.11ac VHT20

CH01

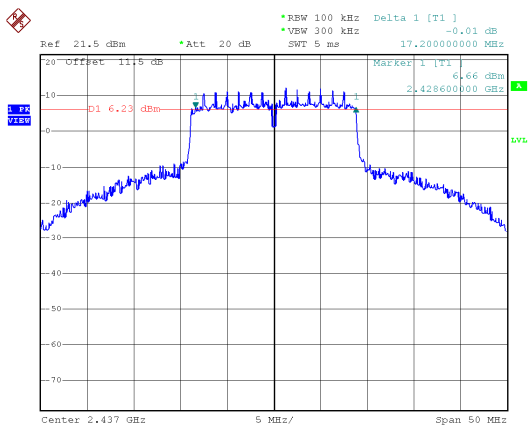


Modulation Type: 802.11ac VHT40

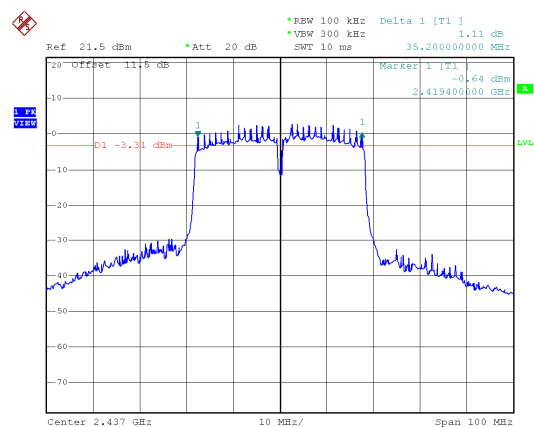
CH03



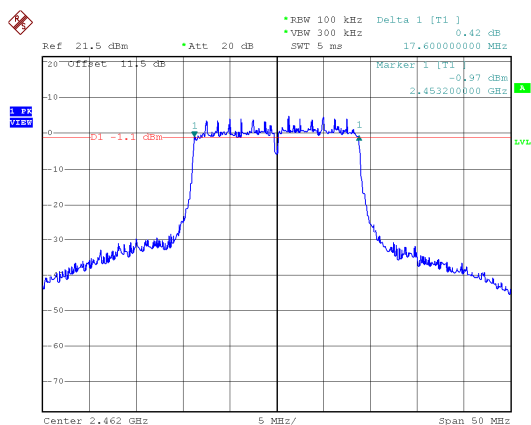
CH06



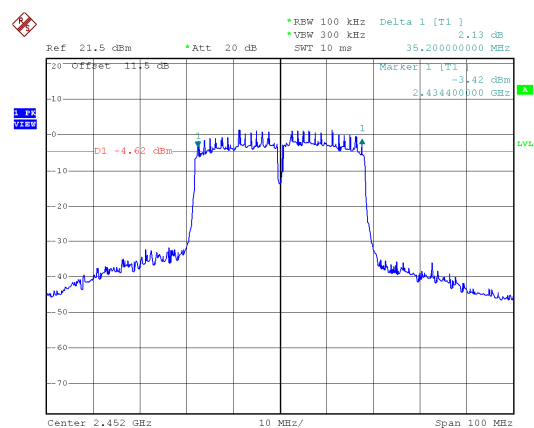
CH06



CH11

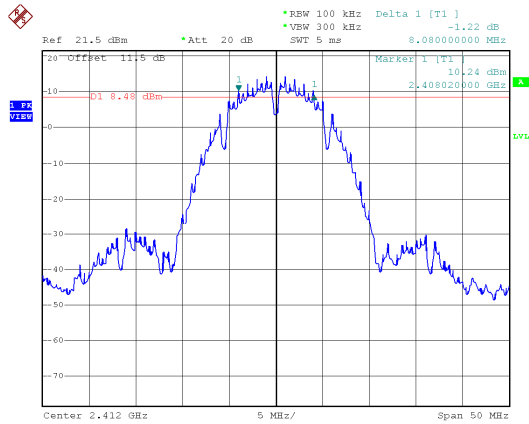
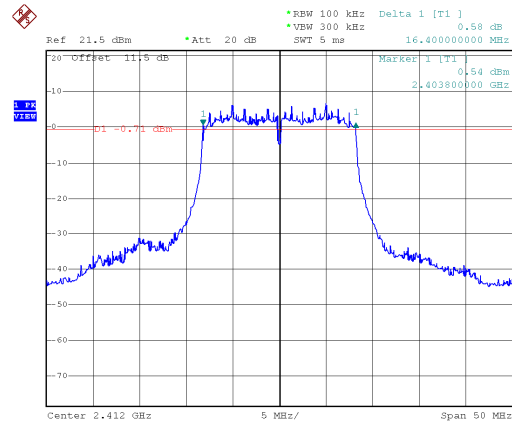


CH09

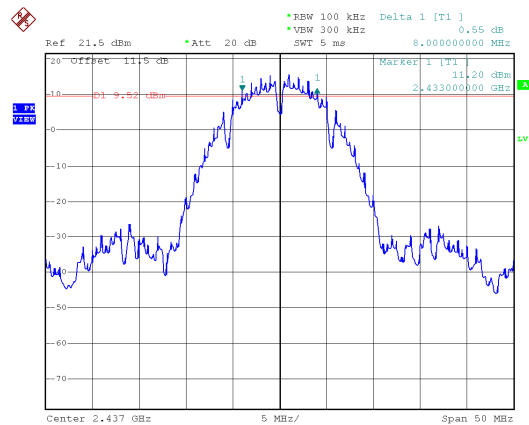




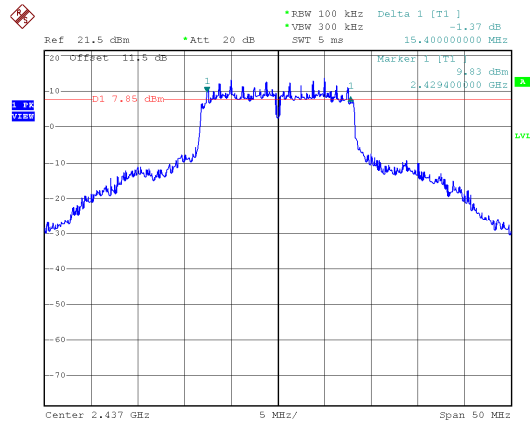
ANT B

Modulation Type: 802.11b
CH01Modulation Type: 802.11g
CH01

CH06



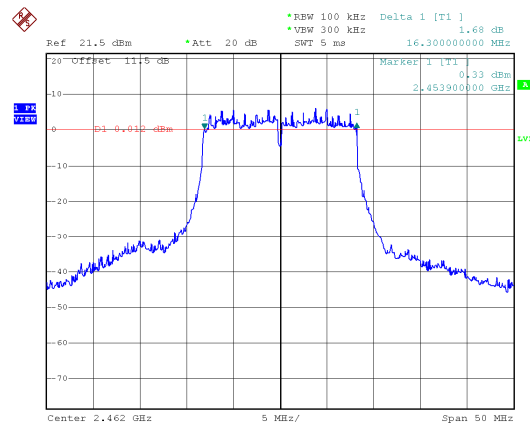
CH06



CH11

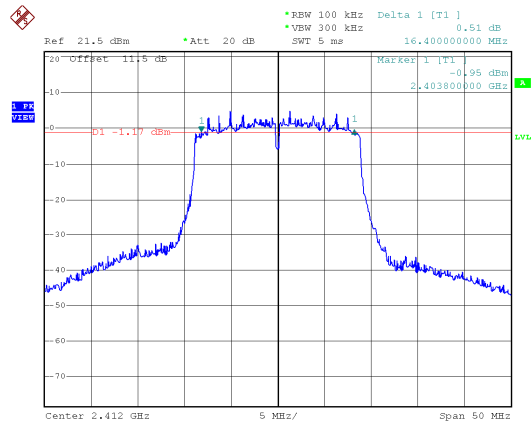
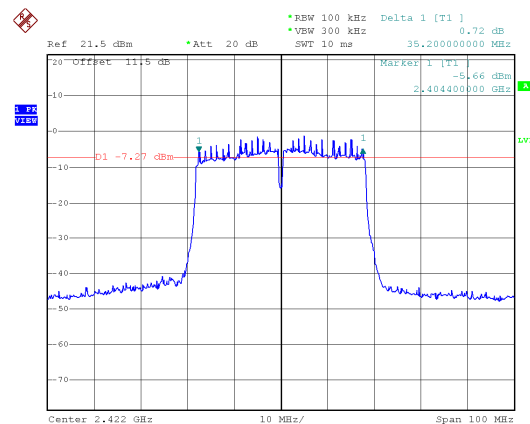


CH11

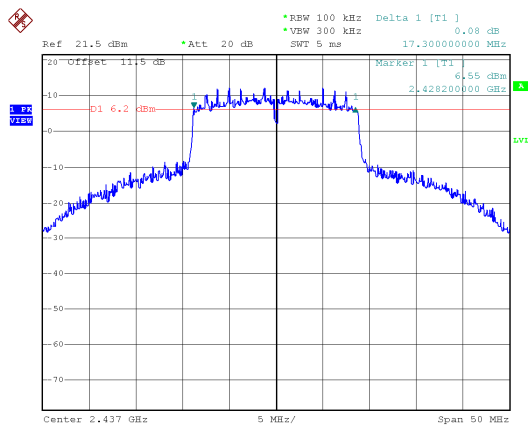




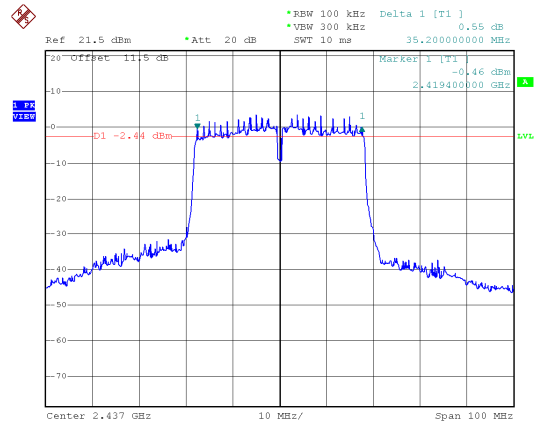
ANT B

Modulation Type: 802.11ac VHT20
CH01Modulation Type: 802.11ac VHT40
CH03

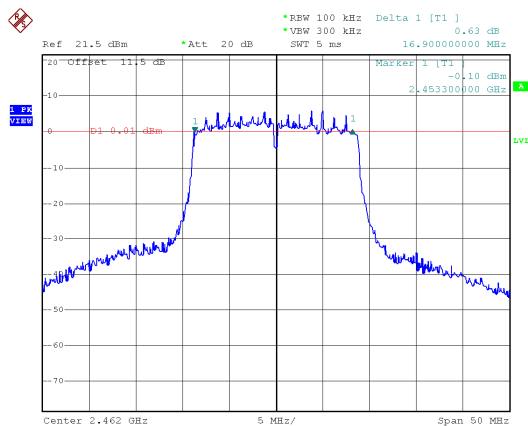
CH06



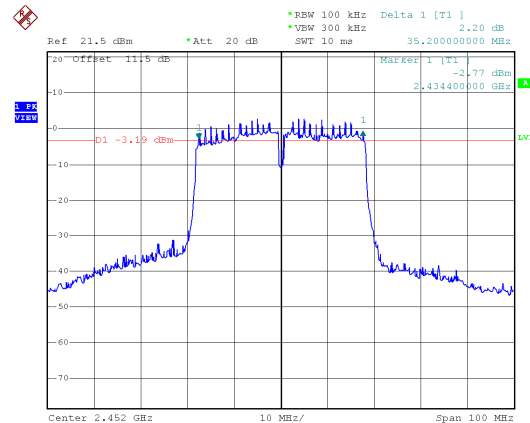
CH06



CH11



CH09





9. Maximum Peak and Average Output Power

9.1 Test Limit

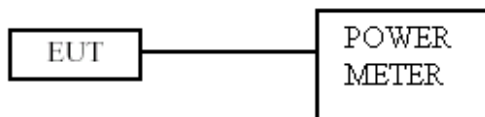
The Maximum Peak Output Power Measurement is 30dBm.

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

Temperature : 24°C

Humidity : 68%

Test Date : Jun. 19, 2017

Non-Beamforming

Modulation Type	Channel	Frequency (MHz)	Peak Power Output (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)
			ANT A	ANT B			
IEEE 802.11b (1Mbps)	01	2412	23.97	23.66	481.733	26.83	30.00
	06	2437	24.89	24.43	585.651	27.68	30.00
	11	2462	23.88	23.23	454.721	26.58	30.00
IEEE 802.11g (6Mbps)	01	2412	24.08	23.42	475.645	26.77	30.00
	06	2437	26.52	25.79	828.060	29.18	30.00
	11	2462	24.17	23.09	464.920	26.67	30.00
IEEE 802.11n HT20 (6.5Mbps)	01	2412	23.29	22.28	382.349	25.82	30.00
	06	2437	26.48	25.80	824.821	29.16	30.00
	11	2462	23.84	22.90	437.087	26.41	30.00
IEEE 802.11n HT40 (13.5Mbps)	03	2422	18.95	18.63	151.469	21.80	30.00
	06	2437	24.02	23.38	470.119	26.72	30.00
	09	2452	22.68	22.18	350.549	25.45	30.00
IEEE 802.11ac VHT20 (6.5Mbps)	01	2412	23.37	22.37	389.854	25.91	30.00
	06	2437	26.53	25.88	837.037	29.23	30.00
	11	2462	23.88	23.02	444.790	26.48	30.00
IEEE 802.11ac VHT40 (13.5Mbps)	03	2422	19.04	18.68	153.958	21.87	30.00
	06	2437	24.08	23.42	475.645	26.77	30.00
	09	2452	22.75	22.25	356.245	25.52	30.00



Modulation Type	Channel	Frequency (MHz)	Avg. Power Output (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)
			ANT A	ANT B			
IEEE 802.11b (1Mbps)	01	2412	22.46	22.07	337.262	25.28	30.00
	06	2437	23.51	23.01	424.374	26.28	30.00
	11	2462	22.37	21.59	316.795	25.01	30.00
IEEE 802.11g (6Mbps)	01	2412	16.82	16.32	90.939	19.59	30.00
	06	2437	23.26	23.37	429.106	26.33	30.00
	11	2462	16.77	15.76	85.204	19.30	30.00
IEEE 802.11n HT20 (6.5Mbps)	01	2412	15.98	15.29	73.434	18.66	30.00
	06	2437	23.11	22.51	382.882	25.83	30.00
	11	2462	16.78	15.69	84.711	19.28	30.00
IEEE 802.11n HT40 (13.5Mbps)	03	2422	11.68	11.27	28.120	14.49	30.00
	06	2437	16.92	16.26	91.471	19.61	30.00
	09	2452	15.27	15.01	65.347	18.15	30.00
IEEE 802.11ac VHT20 (6.5Mbps)	01	2412	16.03	15.35	74.363	18.71	30.00
	06	2437	23.18	22.56	388.271	25.89	30.00
	11	2462	16.87	15.77	86.398	19.37	30.00
IEEE 802.11ac VHT40 (13.5Mbps)	03	2422	11.79	11.34	28.715	14.58	30.00
	06	2437	17.01	16.34	93.287	19.70	30.00
	09	2452	15.35	15.07	66.413	18.22	30.00

Note: Average power is for reference only.

**Beamforming**

Modulation Type	Channel	Frequency (MHz)	Peak Power Output (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)
			ANT A	ANT B			
IEEE 802.11n HT20 (6.5Mbps)	01	2412	20.28	19.27	191.19	22.81	28.84
	06	2437	23.47	22.79	412.44	26.15	28.84
	11	2462	20.83	19.89	218.56	23.40	28.84
IEEE 802.11n HT40 (13.5Mbps)	03	2422	15.94	15.62	75.74	18.79	28.84
	06	2437	21.01	20.37	235.08	23.71	28.84
	09	2452	19.67	19.17	175.29	22.44	28.84
IEEE 802.11ac VHT20 (6.5Mbps)	01	2412	20.36	19.36	194.94	22.90	28.84
	06	2437	23.52	22.87	418.55	26.22	28.84
	11	2462	20.87	20.01	222.41	23.47	28.84
IEEE 802.11ac VHT40 (13.5Mbps)	03	2422	16.03	15.67	76.98	18.86	28.84
	06	2437	21.07	20.41	237.84	23.76	28.84
	09	2452	19.74	19.24	178.13	22.51	28.84

Modulation Type	Channel	Frequency (MHz)	Avg. Power Output (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)
			ANT A	ANT B			
IEEE 802.11n HT20 (6.5Mbps)	01	2412	12.97	12.28	36.72	15.65	-
	06	2437	20.1	19.50	191.45	22.82	-
	11	2462	13.77	12.68	42.36	16.27	-
IEEE 802.11n HT40 (13.5Mbps)	03	2422	8.67	8.26	14.06	11.48	-
	06	2437	13.91	13.25	45.74	16.60	-
	09	2452	12.26	12.00	32.68	15.14	-
IEEE 802.11ac VHT20 (6.5Mbps)	01	2412	13.02	12.34	37.18	15.70	-
	06	2437	20.17	19.55	194.15	22.88	-
	11	2462	13.86	12.76	43.20	16.36	-
IEEE 802.11ac VHT40 (13.5Mbps)	03	2422	8.78	8.33	14.36	11.57	-
	06	2437	14.00	13.33	46.65	16.69	-
	09	2452	12.34	12.06	33.21	15.21	-

Note: Average power is for reference only.



10. Power Spectral Density

10.1 Test Limit

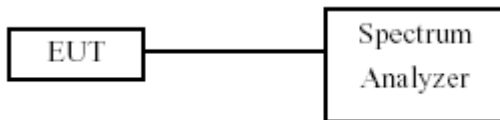
The Maximum of Power Spectral Density Measurement is 8dBm.

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

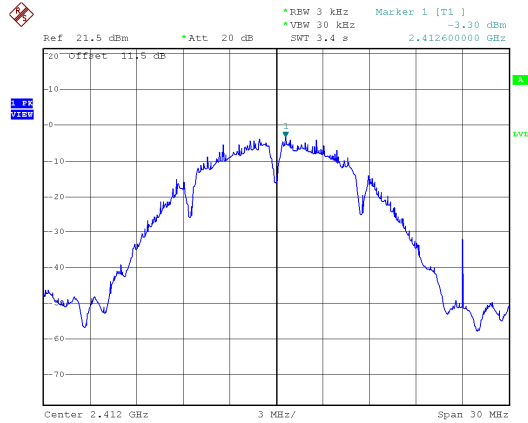
Humidity : 68%

Test Date : Jun. 19, 2017

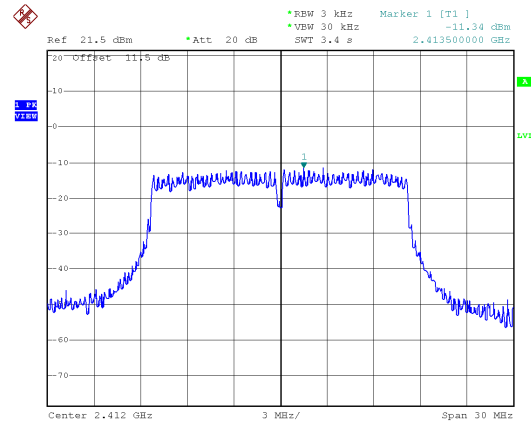
Modulation Type	Channel	Frequency (MHz)	Maximum Power Density of 3 kHz Bandwidth (dBm)		Sum chain (dBm)	Duty Cycle CF(dB)	Total PSD (dBm)	Limit (dBm)
			ANT A	ANT B				
IEEE 802.11b (1Mbps)	01	2412	-3.3	-2.13	0.33	0.00	0.33	6.84
	06	2437	-3.56	-2.69	-0.09	0.00	-0.09	6.84
	11	2462	-4.1	-4.2	-1.14	0.00	-1.14	6.84
IEEE 802.11g (6Mbps)	01	2412	-11.34	-11.1	-8.21	0.00	-8.21	6.84
	06	2437	-3.93	-3.43	-0.66	0.00	-0.66	6.84
	11	2462	-9.95	-11.15	-7.50	0.00	-7.50	6.84
IEEE 802.11ac VHT20 (6.5Mbps)	01	2412	-12.46	-10	-8.05	0.00	-8.05	6.84
	06	2437	-4.32	-3.95	-1.12	0.00	-1.12	6.84
	11	2462	-11.05	-10.06	-7.52	0.00	-7.52	6.84
IEEE 802.11ac VHT40 (13.5Mbps)	03	2422	-16.98	-18.54	-14.68	0.00	-14.68	6.84
	06	2437	-14.23	-13.07	-10.60	0.00	-10.60	6.84
	09	2452	-14	-13.49	-10.73	0.00	-10.73	6.84



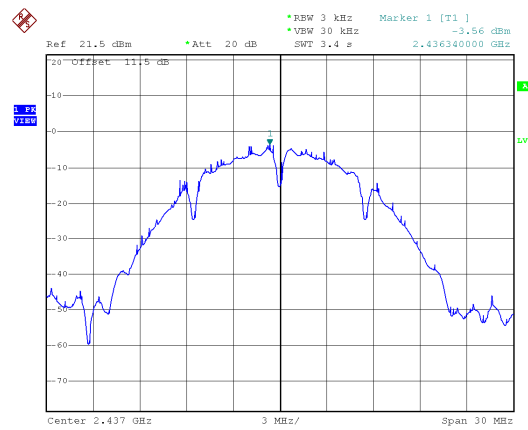
ANT A
Modulation Type: 802.11b
CH01



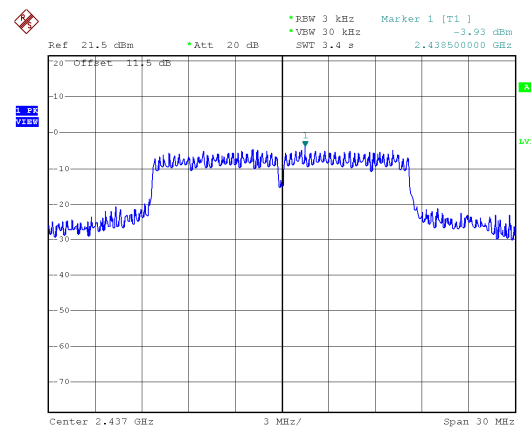
Modulation Type: 802.11g
CH01



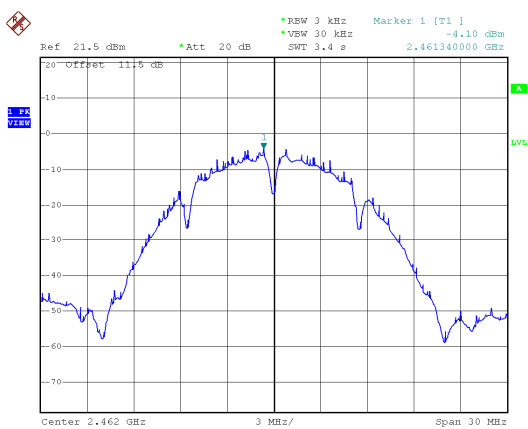
CH06



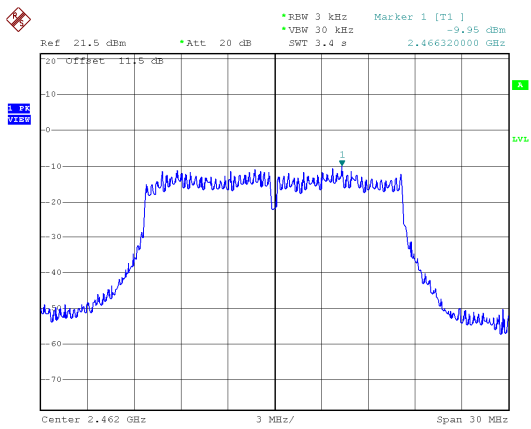
CH06



CH11

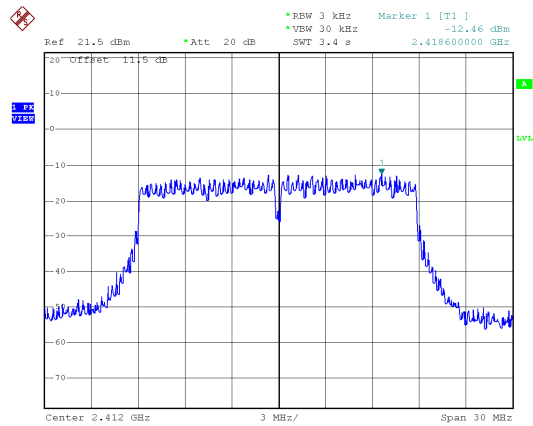


CH11

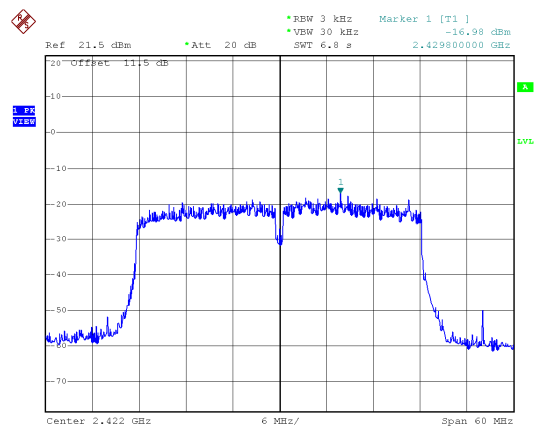




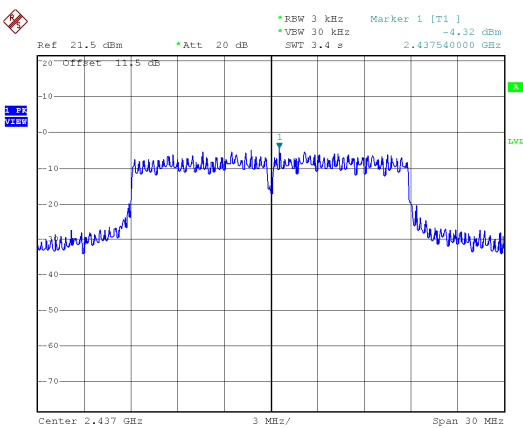
ANT A
Modulation Type: 802.11ac VHT20
CH01



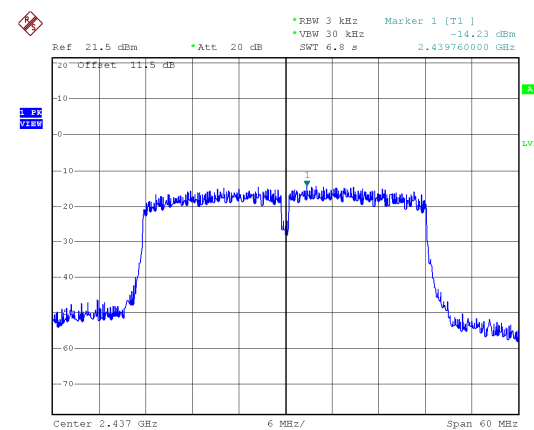
Modulation Type: 802.11ac VHT40
CH03



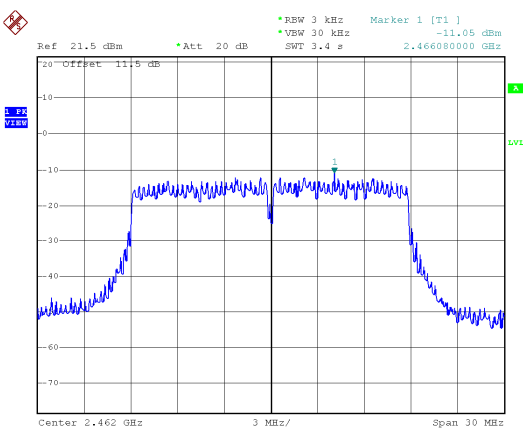
CH06



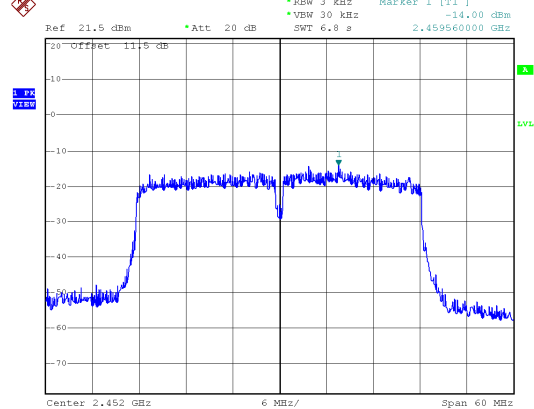
CH06



CH11



CH09

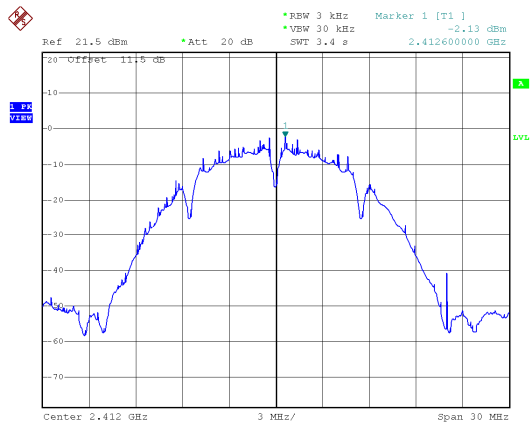




ANT B

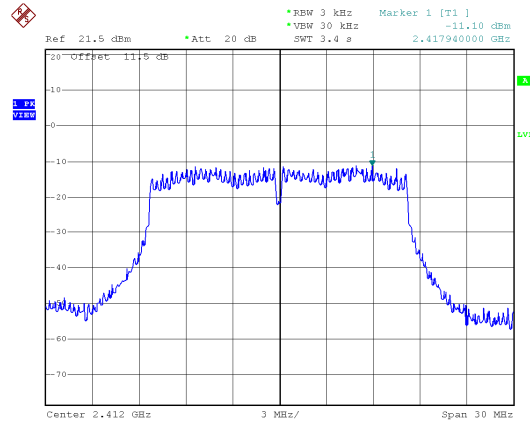
Modulation Type: 802.11b

CH01



Modulation Type: 802.11g

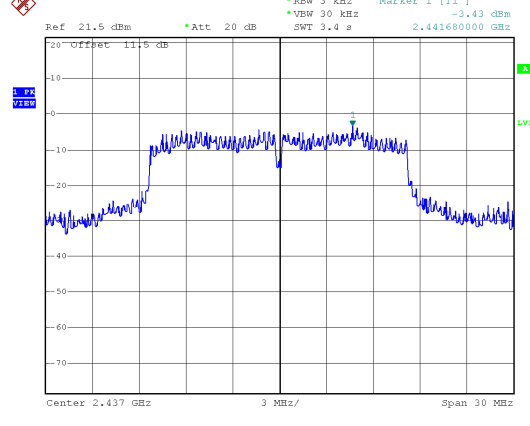
CH01



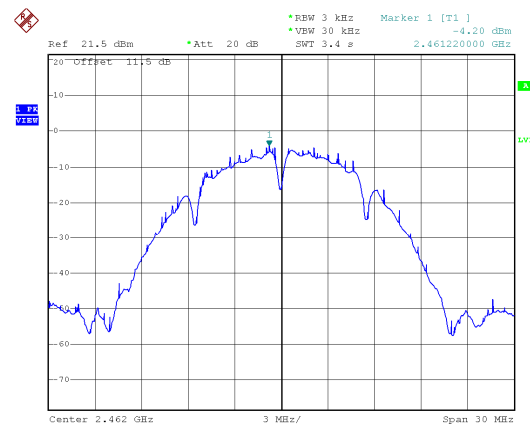
CH06



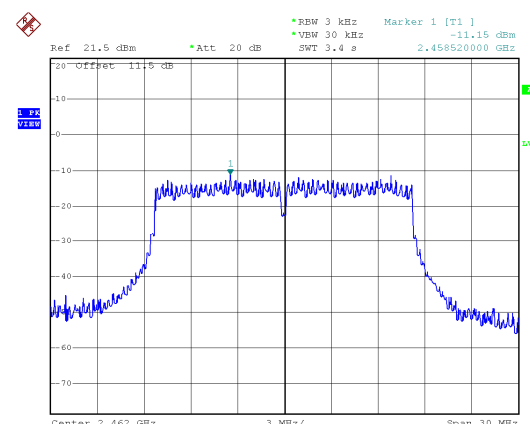
CH06



CH11

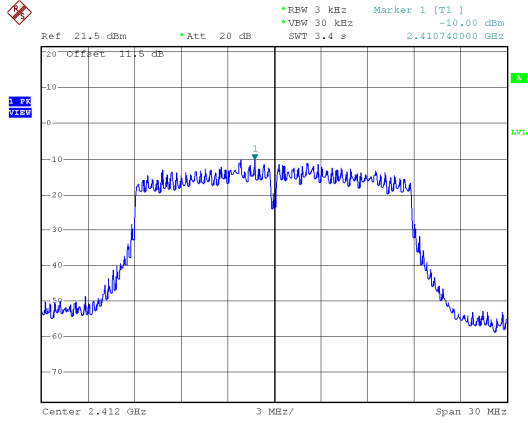


CH11

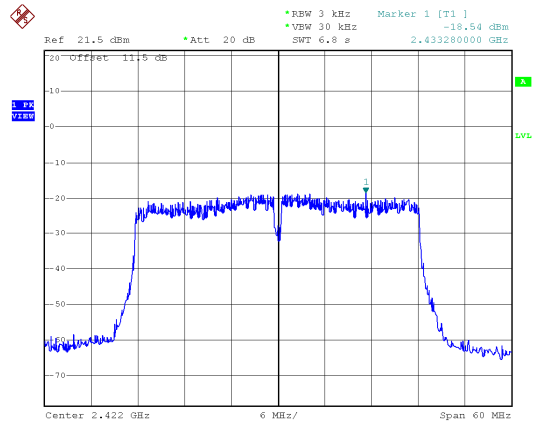




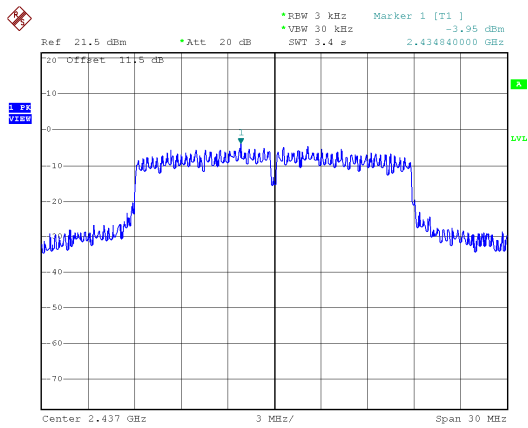
ANT B
Modulation Type: 802.11ac VHT20
CH01



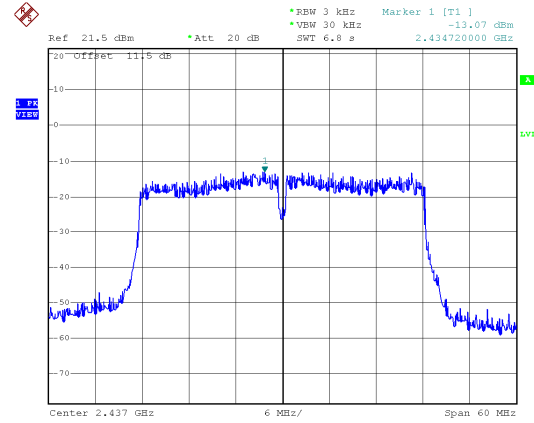
Modulation Type: 802.11ac VHT40
CH03



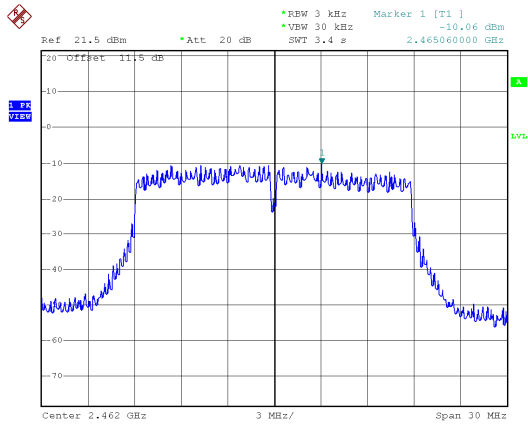
CH06



CH06



CH11



CH09

