



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. : CGA0101v2

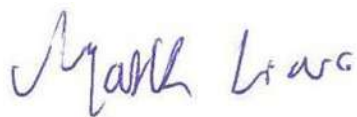
Trade Name : 

FCC ID. : RK9-CGA0101V2

I HEREBY CERTIFY THAT :

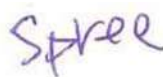
The sample was received on Jun. 19, 2018 and the testing was carried out on Dec. 07, 2018 at CerpPASS Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of CerpPASS Technology Corp., the test report shall not be reproduced except in full.

Approved by:



Mark Liao / Supervisor

Tested by:



Spree Yei / Engineer

Laboratory Accreditation:

CerpPASS Technology Corporation Test Laboratory





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1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

ANSI C63.4:2014

ANSI C63.10:2013

FCC Rules and Regulations Part 15 Subpart C §15.247

KDB558074

KDB662911

KDB447498

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

This EUT has been also tested and compiled with the requirement of FCC Part 15, Subpart B, recorded in a separate test report TEF1806063.



2. Test Configuration of Equipment under Test

2.1 Feature of Equipment

Equipment	WIFI cable modem router
Model No.	CGA0101v2
Brand Name	
Product Description	Please refer to User's Manual.
AC Adapter	Adapter Brand: HONOR Model No.: ADS-18FQ-12 12018EPCU-L Input: 100-120V~Max. 0.7A, 50/60Hz Output: DC 12V, 1.5A
	Adapter Brand: HONOR Model No.: ADS-18FQ-12 12018EPCU Input: 100-240V~Max. 0.7A, 50/60Hz Output: DC 12V, 1.5A
Connecting I/O Port(s)	Please refer to User's Manual.
Memo	V2.0R
Frequency Range	802.11b/g/n: 2412-2462 MHz
Modulation Type	OFDM, DSSS
Data Rate	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40
Antenna Type/ gain	ANT A: PCB antenna / ANT B: Printing antenna 802.11b: ANT A: 3.78dBi 802.11g: ANT A: 3.78dBi, B: 2.41dBi 802.11n: ANT A: 3.78dBi, B: 2.41dBi

Note:

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



2.2 Carrier Frequency of Channels

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

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

802.11n HT40 (2422MHz~2452MHz)

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

Note: Channels remarked * are selected to perform test.

2.3 Test Mode and Test Software

- During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
- The complete test system included Remote workstation, Network cable and EUT for RF test. The Remote workstation included Notebook.
- An executive program, "MTool v2.0.1.0" under WIN 7 was executed to transmit and receive data via WLAN.
- The following test modes were performed for the test:
 - Test Mode 1. 802.11b (1Mbps)
 - Test Mode 2. 802.11g (6Mbps)
 - Test Mode 3. 802.11n HT20 (6.5Mbps)
 - Test Mode 4: 802.11n HT40 (13.5Mbps)For conduction test, caused "Test Mode 2" generated the worst case, it was reported as the final data.
For radiation test (below 1GHz), caused "Test Mode 2" generated the worst case, it was reported as the final data.
For radiation test (above 1GHz), caused "Test Mode 1~4" generated the worst case, they were reported as the final data.

2.4 Description of Test System

Device	Manufacturer	Model No.	Description
Remote workstation			
Notebook	ASUS	P2430U	Power Cable, Unshielding, 1.8m

Use Cable:

Cable	Quantity	Description
Network	1	Unshielding, 15m



2.5 General Information of Test

Test Site	Cerpass Technology Corporation Test Laboratory Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881 Address: No.68-1, Shihbachongsi, Shihding Township, New Taipei City 223, Taiwan, R.O.C. Tel: +886-2-2663-8582	
	FCC	TW1079, TW1061, TW1439
	IC	4934E-1, 4934E-2
	VCCI	T-2205 for Telecommunication Test C-4663 for Conducted emission test R-4399, R-4218 for Radiated emission test G-10812, G-10813 for radiated disturbance above 1GHz
Frequency Range Investigated:	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 25,000MHz	
Test Distance:	The test distance of radiated emission from antenna to EUT is 3 M.	

2.6 Measurement Uncertainty

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



3. Test Equipment and Ancillaries Used for Tests

Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
EMI Receiver	R&S	ESCI3	100443	2018/03/15	2019/03/14
LISN	Schwarzbeck	NSLK 8127	8127-568	2018/02/26	2019/02/25
Pulse Limiter	R&S	ESH3-Z2	101934	2018/02/22	2019/02/21
Bilog Antenna	Schwarzbeck	VULB9168	275	2018/09/17	2019/09/16
Active Loop Antenna	EMCO	6507	40855	2018/05/22	2019/05/21
Horn Antenna	EMCO	3115	31601	2018/09/26	2019/09/25
Horn Antenna	EMCO	3116	31970	2018/03/23	2019/03/22
Preamplifier	EM	EM330	60660	2018/03/08	2019/03/07
Preamplifier	EMC INSTRUMENTS	EMC051845SE	980333	2018/09/18	2019/09/17
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2018/10/31	2019/10/30
MXG MW Analog Signal Generator	KEYSIGHT	N5183A	MY50142931	2018/04/10	2019/04/09
Spectrum Analyzer	R&S	FSP40	100219	2018/07/03	2019/07/02
BLUETOOTH TESTER	R&S	CBT	101133	2018/04/02	2019/04/01
Attenuator	KEYSIGHT	8491B	MY39250705	2018/09/04	2019/09/03
Rotary Attenuator	Agilent	8495B	MY42146680	2018/03/29	2019/03/28
Temp & Humi chamber	T-MACHINE	TMJ-9712	T-12-040111	2018/08/30	2019/08/29
Series Power Meter	Anritsu	ML2495A	1224005	2018/03/23	2019/03/22
Power Sensor	Anritsu	MA2411B	1207295	2018/03/23	2019/03/22
Software	Farad	Ez-EMC	ver.ct3a1	N/A	N/A
Software	AUDIX	E3	V8.2014-8-6	N/A	N/A
Software	Keysight	N7607B Signal Studio	V3.0.0.0	N/A	N/A
Software	Keysight	Inservice MonitorUtility	N/A	N/A	N/A



4. Antenna Requirements

4.1 Antenna Construction and Directional Gain

Antenna Type	ANT A: PCB antenna / ANT B: Printing antenna
Antenna Gain	802.11b: ANT A: 3.78dBi 802.11g: ANT A: 3.78dBi, B: 2.41dBi 802.11n: ANT A: 3.78dBi, B: 2.41dBi

2412-2462MHz

802.11b

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

For PSD directional gain= G_{ant} = 3.78 dBi

802.11g / 802.11n

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

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



5. Test of AC Power Line Conducted Emission

5.1 Test Limit

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

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

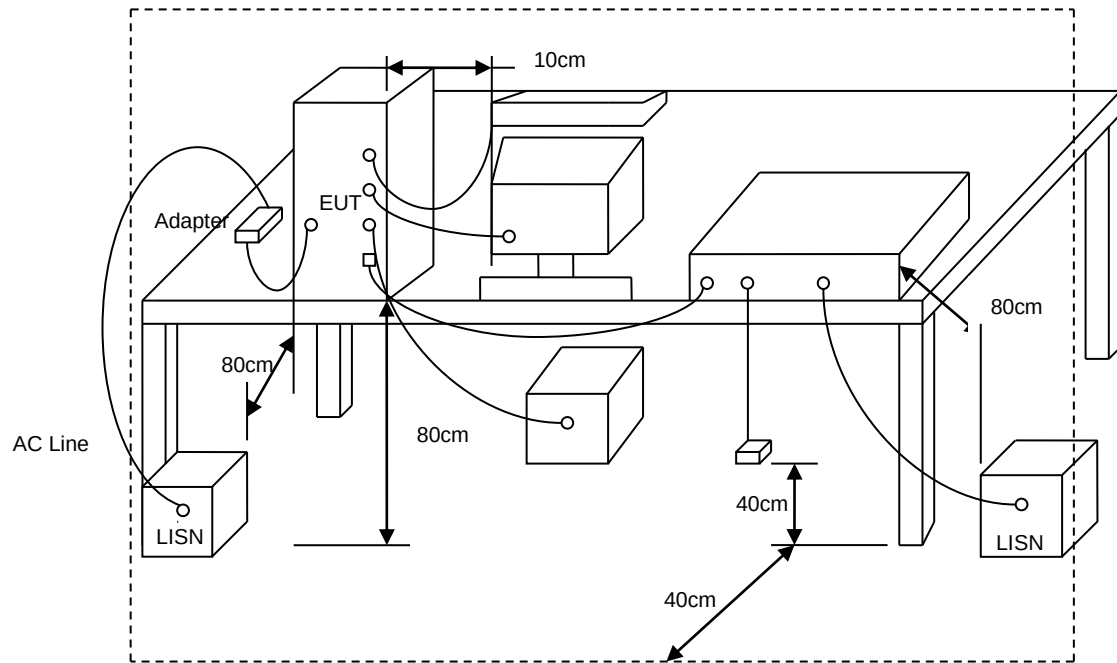
*Decreases with the logarithm of the frequency.

5.2 Test Procedures

- The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



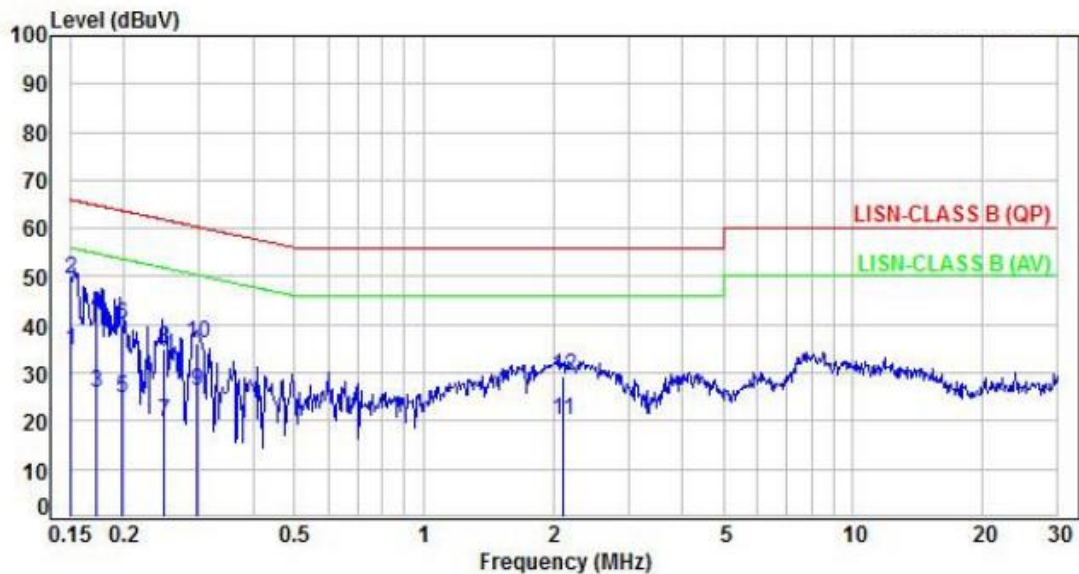
5.3 Typical Test Setup





5.4 Test Result and Data

Power	: AC 110V	Pol/Phase	: LINE
Test Mode	: Mode 2	Temperature	: 21 °C
Test date	: Dec. 07, 2018	Humidity	: 47 %
Adapter	ADS-18FQ-12 12018EPCU-L		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.94	24.83	34.77	55.97	-21.20	Average	P
2	0.15	9.94	39.61	49.55	65.97	-16.42	QP	P
3	0.17	9.94	15.74	25.68	54.82	-29.14	Average	P
4	0.17	9.94	32.39	42.33	64.82	-22.49	QP	P
5	0.20	9.94	14.81	24.75	53.68	-28.93	Average	P
6	0.20	9.94	30.09	40.03	63.68	-23.65	QP	P
7	0.25	9.94	10.01	19.95	51.84	-31.89	Average	P
8	0.25	9.94	25.15	35.09	61.84	-26.75	QP	P
9	0.30	9.94	16.24	26.18	50.37	-24.19	Average	P
10	0.30	9.94	26.30	36.24	60.37	-24.13	QP	P
11	2.10	10.03	10.14	20.17	46.00	-25.83	Average	P
12	2.10	10.03	19.14	29.17	56.00	-26.83	QP	P

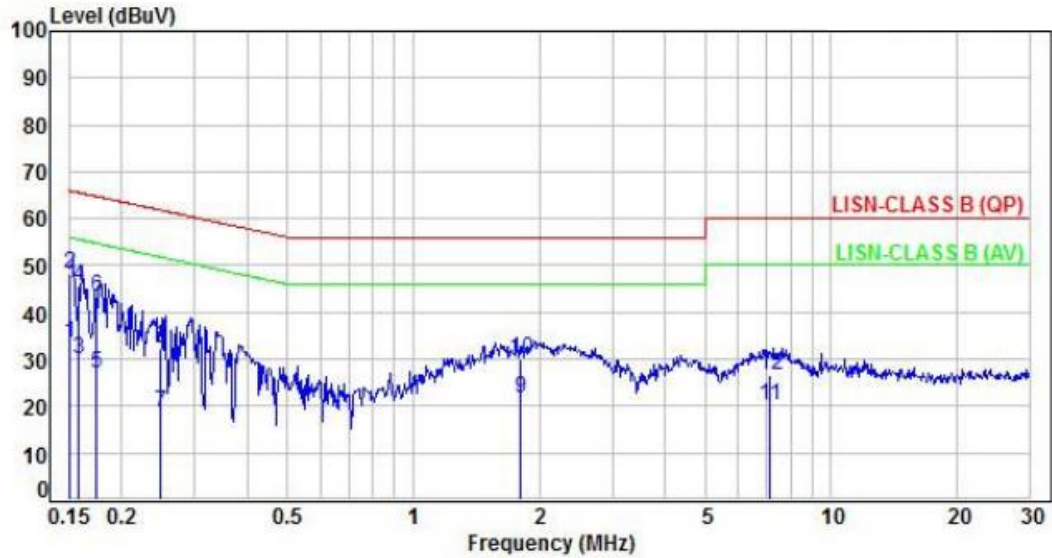
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	: AC 110V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 2	Temperature	: 21 °C
Test date	: Dec. 07, 2018	Humidity	: 47 %
Adapter	ADS-18FQ-12 12018EPCU-L		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.94	23.41	33.35	55.99	-22.64	Average	P
2	0.15	9.94	38.44	48.38	65.99	-17.61	QP	P
3	0.16	9.94	20.07	30.01	55.58	-25.57	Average	P
4	0.16	9.94	35.83	45.77	65.58	-19.81	QP	P
5	0.17	9.94	16.96	26.90	54.78	-27.88	Average	P
6	0.17	9.94	33.36	43.30	64.78	-21.48	QP	P
7	0.25	9.94	8.61	18.55	51.81	-33.26	Average	P
8	0.25	9.94	22.24	32.18	61.81	-29.63	QP	P
9	1.81	10.02	11.66	21.68	46.00	-24.32	Average	P
10	1.81	10.02	19.85	29.87	56.00	-26.13	QP	P
11	7.14	10.21	9.93	20.14	50.00	-29.86	Average	P
12	7.14	10.21	16.58	26.79	60.00	-33.21	QP	P

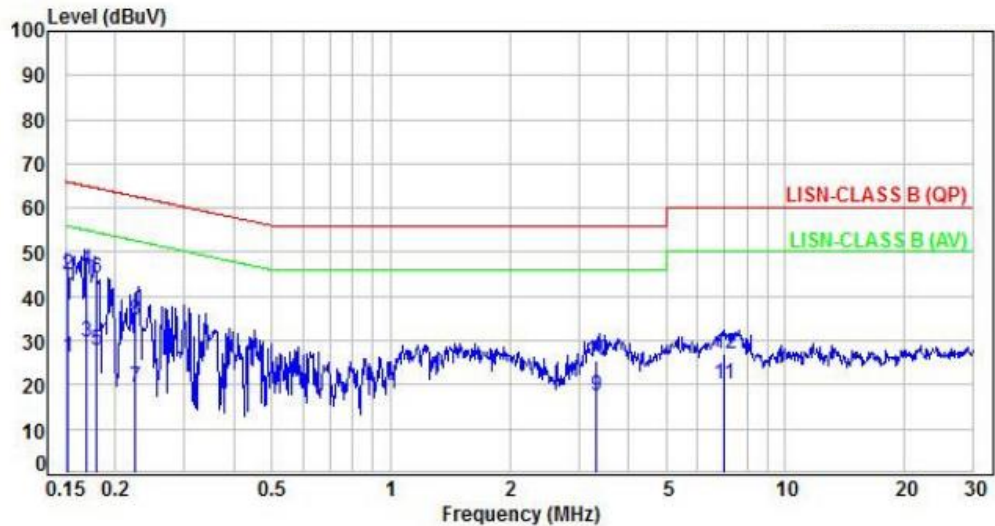
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	: AC 110V	Pol/Phase	: LINE
Test Mode	: Mode 2	Temperature	: 21 °C
Test date	: Dec. 07, 2018	Humidity	: 47 %
Adapter	ADS-18FQ-12 12018EPCU		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.94	16.18	26.12	55.87	-29.75	Average	P
2	0.15	9.94	35.01	44.95	65.87	-20.92	QP	P
3	0.17	9.94	19.74	29.68	55.02	-25.34	Average	P
4	0.17	9.94	35.92	45.86	65.02	-19.16	QP	P
5	0.18	9.94	17.70	27.64	54.48	-26.84	Average	P
6	0.18	9.94	33.98	43.92	64.48	-20.56	QP	P
7	0.22	9.94	9.45	19.39	52.64	-33.25	Average	P
8	0.22	9.94	24.72	34.66	62.64	-27.98	QP	P
9	3.31	10.10	7.41	17.51	46.00	-28.49	Average	P
10	3.31	10.10	15.36	25.46	56.00	-30.54	QP	P
11	6.99	10.21	10.12	20.33	50.00	-29.67	Average	P
12	6.99	10.21	16.67	26.88	60.00	-33.12	QP	P

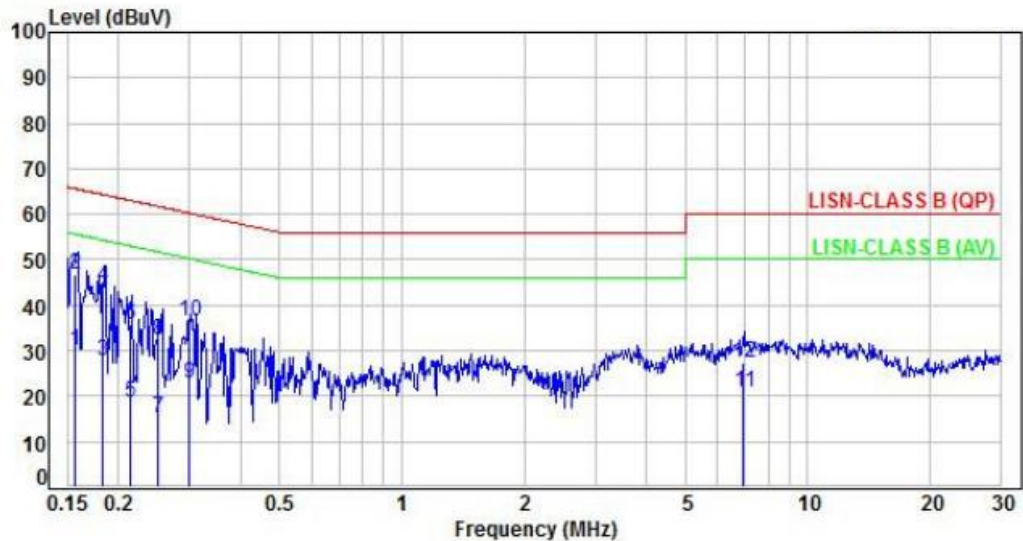
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	: AC 110V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 2	Temperature	: 21 °C
Test date	: Dec. 07, 2018	Humidity	: 47 %
Adapter	ADS-18FQ-12 12018EPCU		



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	P/F
1	0.16	9.94	20.07	30.01	55.63	-25.62	Average	P
2	0.16	9.94	36.65	46.59	65.63	-19.04	QP	P
3	0.18	9.94	17.69	27.63	54.36	-26.73	Average	P
4	0.18	9.94	34.21	44.15	64.36	-20.21	QP	P
5	0.21	9.94	8.82	18.76	53.04	-34.28	Average	P
6	0.21	9.94	25.69	35.63	63.04	-27.41	QP	P
7	0.25	9.94	5.26	15.20	51.73	-36.53	Average	P
8	0.25	9.94	22.40	32.34	61.73	-29.39	QP	P
9	0.30	9.94	12.96	22.90	50.25	-27.35	Average	P
10	0.30	9.94	26.64	36.58	60.25	-23.67	QP	P
11	6.95	10.20	10.58	20.78	50.00	-29.22	Average	P
12	6.95	10.20	17.02	27.22	60.00	-32.78	QP	P

Note: Level=Reading+Factor

Margin=Level-Limit

Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



6. Test of Radiated Spurious Emission

6.1 Test Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 15.205(a) the restricted bands must also comply with the radiated emission limit specified in section 15.209(a).

Frequency (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

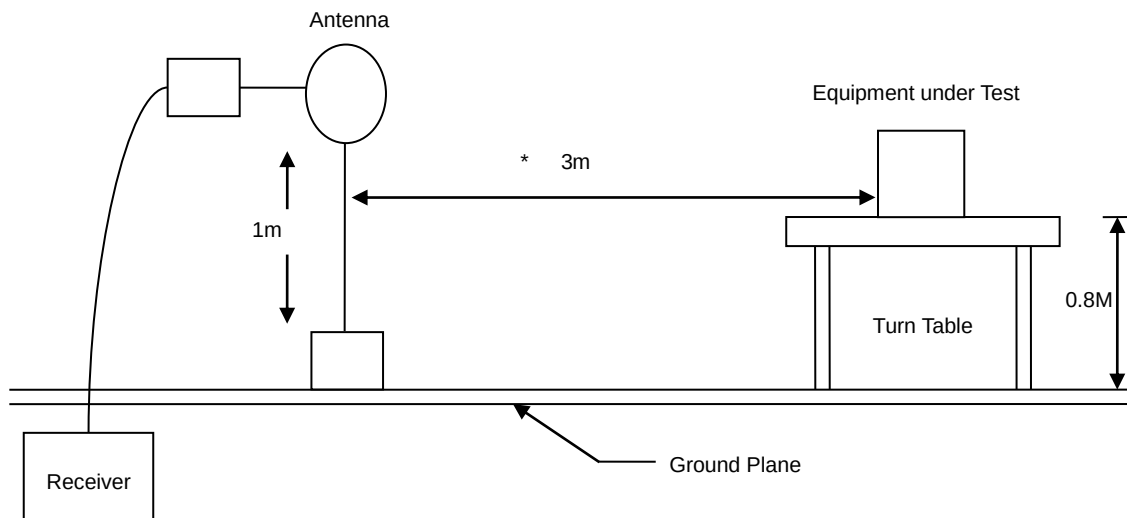
6.2 Test Procedures

- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- "Cone of radiation" has been considered to be 3dB bandwidth of the measurement antenna.

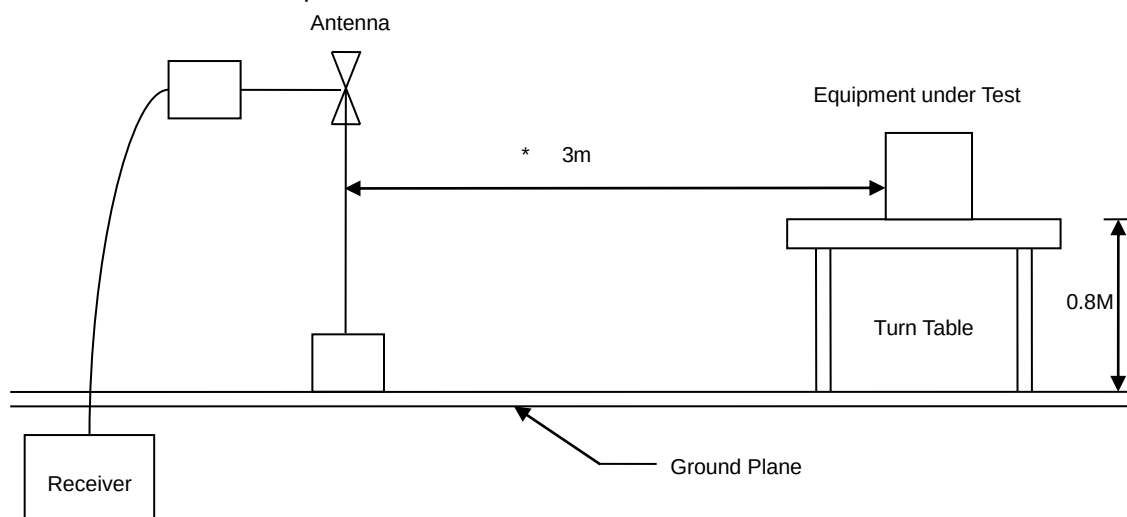


6.3 Typical Test Setup

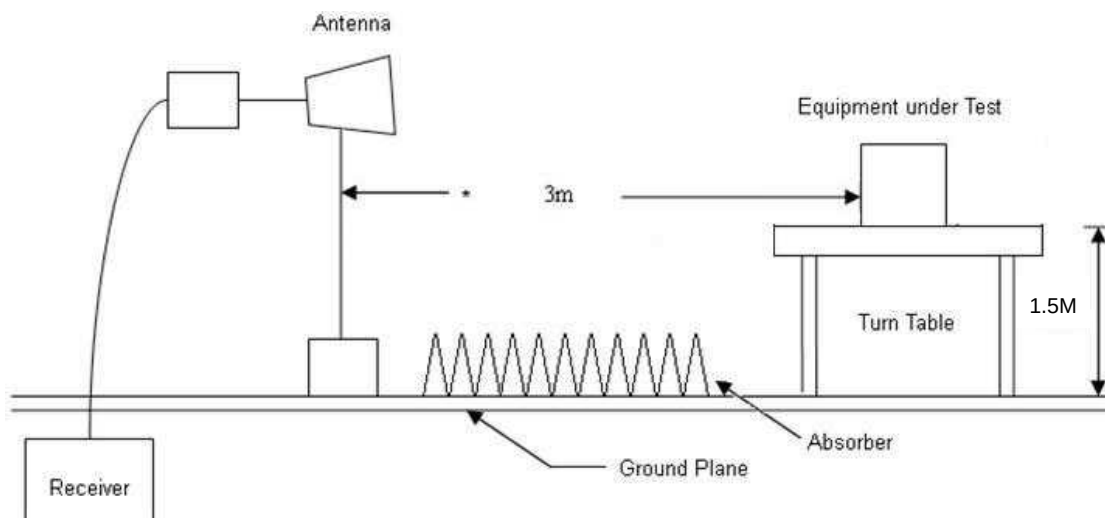
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup



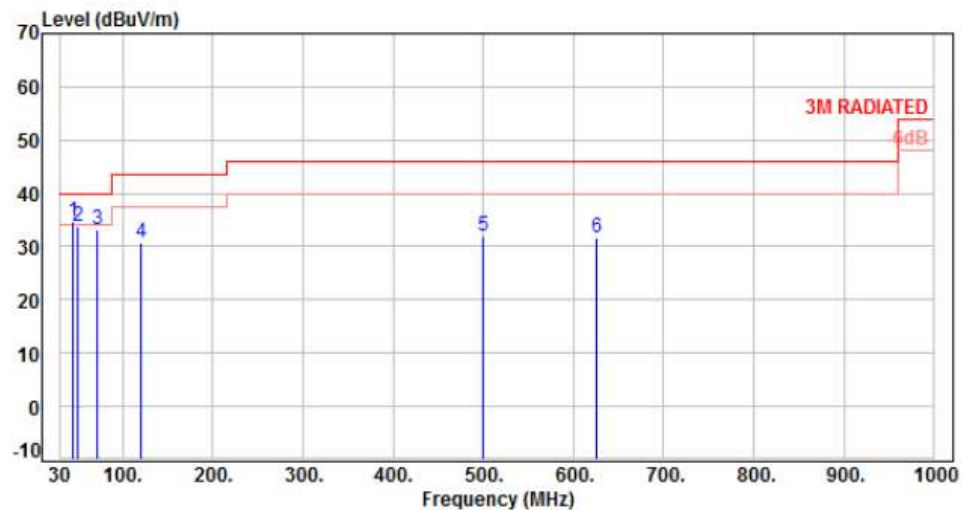


6.4 Test Result and Data (9KHz ~ 30MHz)

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

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

Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2	Temperature	: 24 °C
Test Date	: Dec. 07, 2018	Humidity	: 58 %
Adapter	ADS-18FQ-12 12018EPCU-L		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	44.55	-9.51	44.15	34.64	40.00	-5.36	Peak	400	0	P
2	49.40	-9.40	43.09	33.69	40.00	-6.31	Peak	400	0	P
3	71.71	-11.73	44.93	33.20	40.00	-6.80	Peak	400	0	P
4	120.21	-11.73	42.48	30.75	43.50	-12.75	Peak	400	0	P
5	500.45	-3.64	35.48	31.84	46.00	-14.16	Peak	400	0	P
6	625.58	-1.09	32.71	31.62	46.00	-14.38	Peak	400	0	P

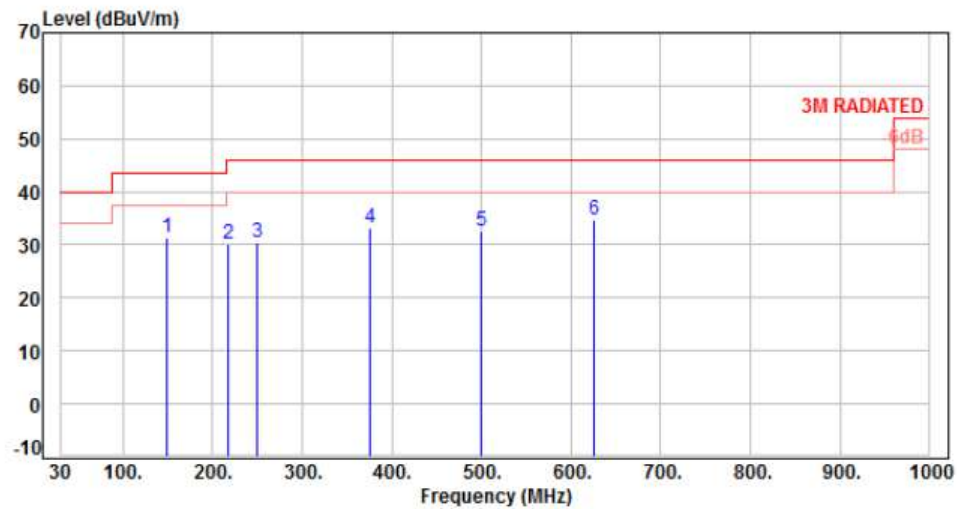
Note: Level=Reading+Factor

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	: Dec. 07, 2018	Humidity	: 58 %
Adapter	ADS-18FQ-12 12018EPCU-L		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	148.34	-9.51	40.84	31.33	43.50	-12.17	Peak	100	0	P
2	218.18	-11.52	41.82	30.30	46.00	-15.70	Peak	100	0	P
3	250.19	-10.23	40.81	30.58	46.00	-15.42	Peak	100	0	P
4	375.32	-6.35	39.60	33.25	46.00	-12.75	Peak	100	0	P
5	500.45	-3.64	36.31	32.67	46.00	-13.33	Peak	100	0	P
6	625.58	-1.09	35.69	34.60	46.00	-11.40	Peak	100	0	P

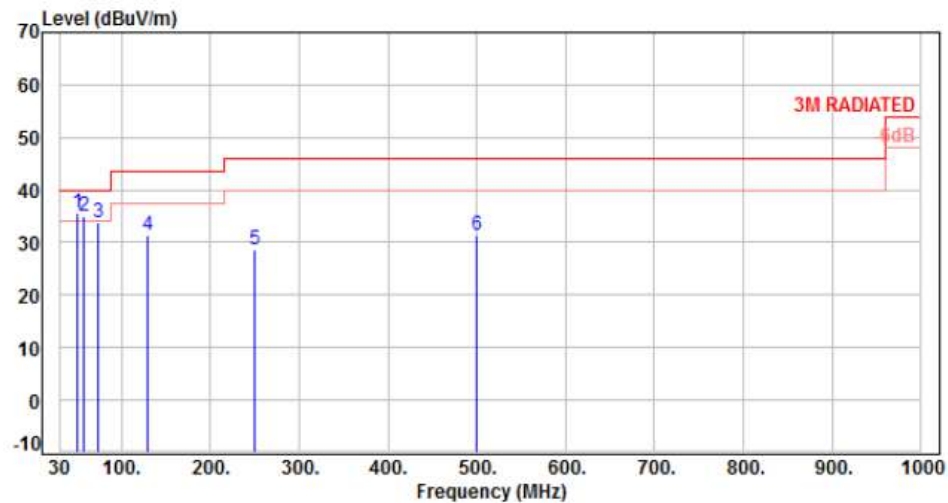
Note: Level=Reading+Factor

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	: Dec. 07, 2018	Humidity	: 58 %
Adapter	ADS-18FQ-12 12018EPCU		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	49.40	-9.40	44.93	35.53	40.00	-4.47	Peak	400	0	P
2	58.13	-9.91	44.78	34.87	40.00	-5.13	Peak	400	0	P
3	73.65	-12.15	46.04	33.89	40.00	-6.11	Peak	400	0	P
4	128.94	-10.86	42.31	31.45	43.50	-12.05	Peak	400	0	P
5	250.19	-10.23	38.83	28.60	46.00	-17.40	Peak	400	0	P
6	500.45	-3.64	35.10	31.46	46.00	-14.54	Peak	400	0	P

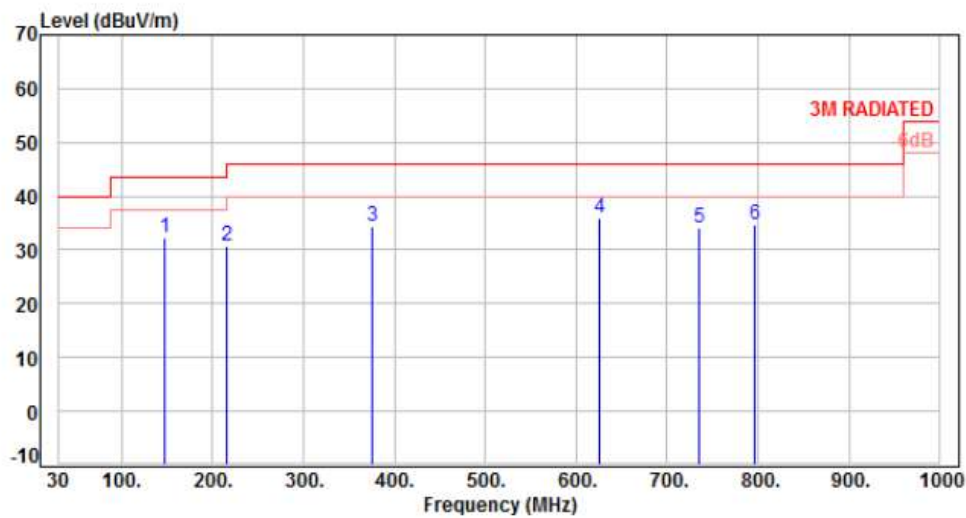
Note: Level=Reading+Factor

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	: Dec. 07, 2018	Humidity	: 58 %
Adapter	ADS-18FQ-12 12018EPCU		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	147.37	-9.58	41.81	32.23	43.50	-11.27	Peak	100	0	P
2	216.24	-11.53	42.36	30.83	46.00	-15.17	Peak	100	0	P
3	375.32	-6.35	40.70	34.35	46.00	-11.65	Peak	100	0	P
4	625.58	-1.09	36.90	35.81	46.00	-10.19	Peak	100	0	P
5	735.19	0.62	33.49	34.11	46.00	-11.89	Peak	100	0	P
6	797.27	1.50	33.35	34.85	46.00	-11.15	Peak	100	0	P

Note: Level=Reading+Factor

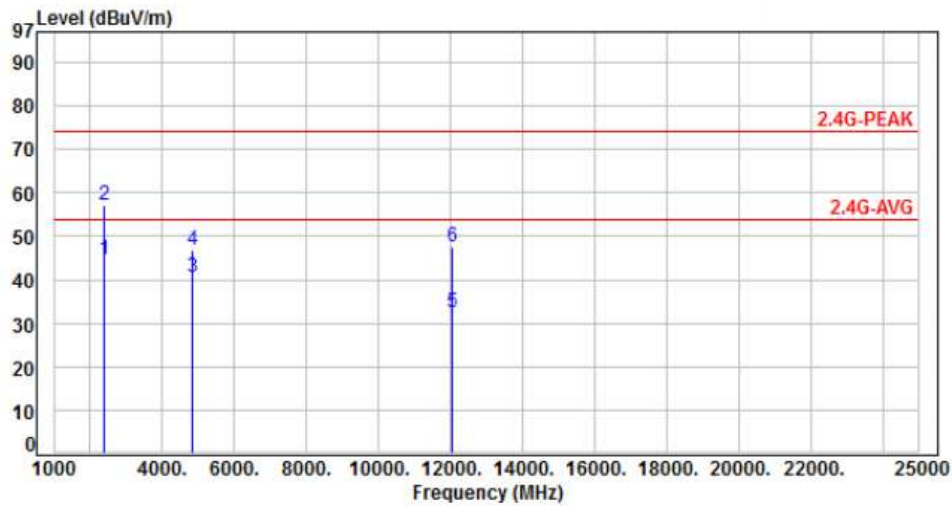
Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



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

Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH01	Temperature	: 23 °C
Test Date	: Jun. 22, 2018	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2387.00	-15.97	60.51	44.54	54.00	-9.46	Average	100	160	P
2	2387.00	-15.97	73.31	57.34	74.00	-16.66	Peak	100	160	P
3	4824.00	-8.80	49.29	40.49	54.00	-13.51	Average	100	315	P
4	4824.00	-8.80	55.59	46.79	74.00	-27.21	Peak	100	315	P
5	12060.00	1.21	31.31	32.52	54.00	-21.48	Average	100	322	P
6	12060.00	1.21	46.34	47.55	74.00	-26.45	Peak	100	322	P

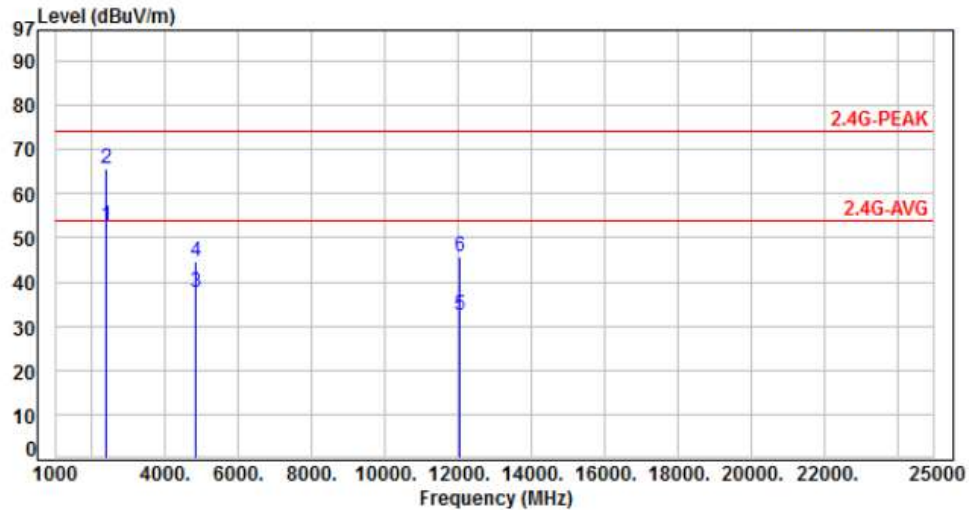
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH01	Temperature	: 23 °C
Test Date	: Jun. 22, 2018	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	68.61	52.65	54.00	-1.35	Average	182	252	P
2	2390.00	-15.96	81.61	65.65	74.00	-8.35	Peak	182	252	P
3	4824.00	-8.80	46.29	37.49	54.00	-16.51	Average	100	50	P
4	4824.00	-8.80	53.29	44.49	74.00	-29.51	Peak	100	50	P
5	12060.00	1.21	31.21	32.42	54.00	-21.58	Average	100	88	P
6	12060.00	1.21	44.71	45.92	74.00	-28.08	Peak	100	88	P

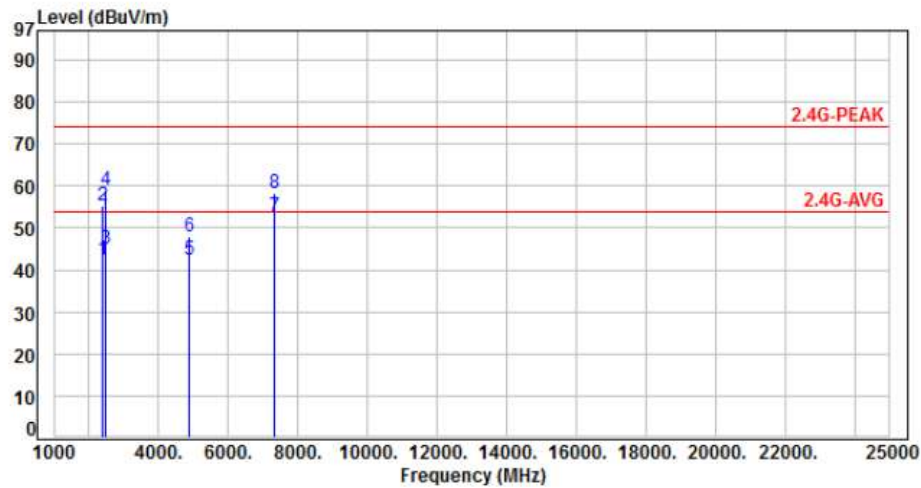
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH06	Temperature	: 23 °C
Test Date	: Jun. 22, 2018	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	58.21	42.25	54.00	-11.75	Average	122	164	P
2	2390.00	-15.96	71.21	55.25	74.00	-18.75	Peak	122	164	P
3	2483.50	-15.65	60.60	44.95	54.00	-9.05	Average	122	164	P
4	2483.50	-15.65	74.60	58.95	74.00	-15.05	Peak	122	164	P
5	4874.00	-8.65	51.10	42.45	54.00	-11.55	Average	100	310	P
6	4874.00	-8.65	56.60	47.95	74.00	-26.05	Peak	100	310	P
7	7311.00	-4.69	57.49	52.80	54.00	-1.20	Average	100	316	P
8	7311.00	-4.69	63.09	58.40	74.00	-15.60	Peak	100	316	P

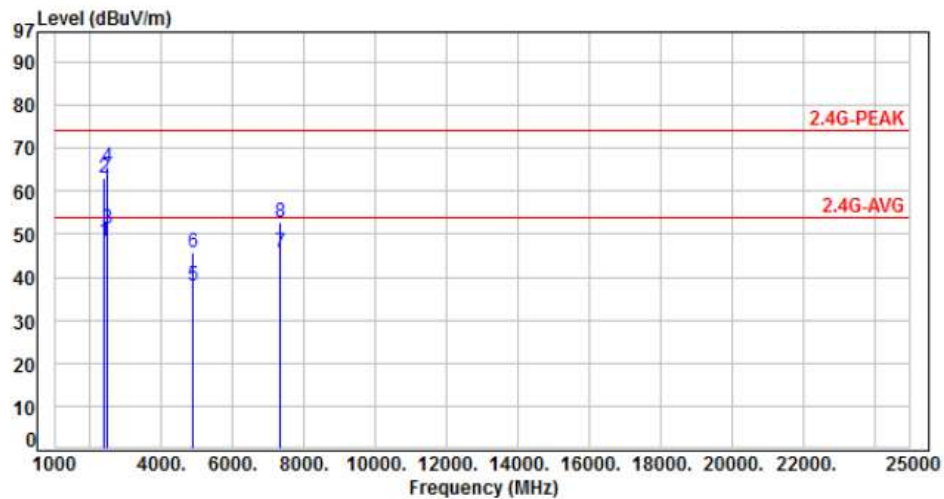
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH06	Temperature	: 23 °C
Test Date	: Jun. 22, 2018	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	64.41	48.45	54.00	-5.55	Average	358	254	P
2	2390.00	-15.96	79.21	63.25	74.00	-10.75	Peak	358	254	P
3	2483.50	-15.65	67.00	51.35	54.00	-2.65	Average	358	254	P
4	2483.50	-15.65	81.30	65.65	74.00	-8.35	Peak	358	254	P
5	4874.00	-8.65	46.80	38.15	54.00	-15.85	Average	100	235	P
6	4874.00	-8.65	54.50	45.85	74.00	-28.15	Peak	100	235	P
7	7311.00	-4.69	50.29	45.60	54.00	-8.40	Average	100	128	P
8	7311.00	-4.69	57.59	52.90	74.00	-21.10	Peak	100	128	P

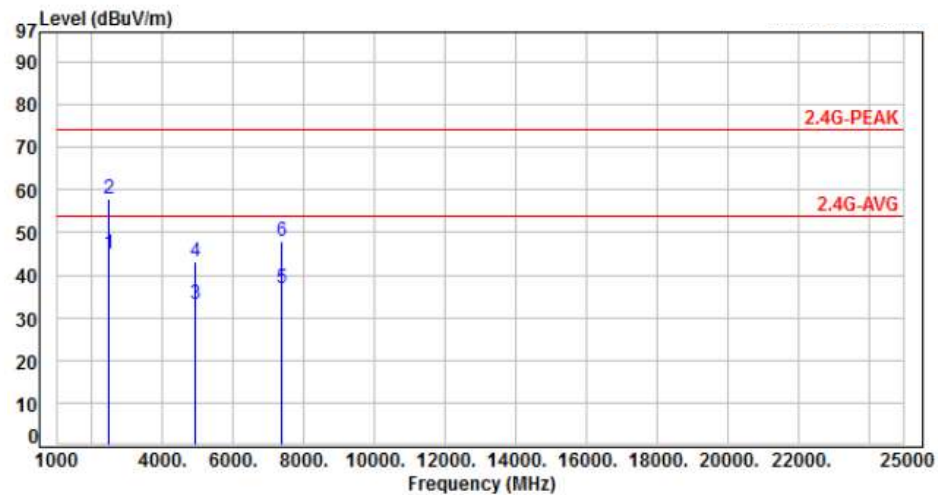
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH11	Temperature	: 23 °C
Test Date	: Jun. 22, 2018	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	60.50	44.85	54.00	-9.15	Average	305	44	P
2	2483.50	-15.65	73.70	58.05	74.00	-15.95	Peak	305	44	P
3	4924.00	-8.49	41.59	33.10	54.00	-20.90	Average	100	311	P
4	4924.00	-8.49	51.79	43.30	74.00	-30.70	Peak	100	311	P
5	7386.00	-4.48	41.50	37.02	54.00	-16.98	Average	100	316	P
6	7386.00	-4.48	52.50	48.02	74.00	-25.98	Peak	100	316	P

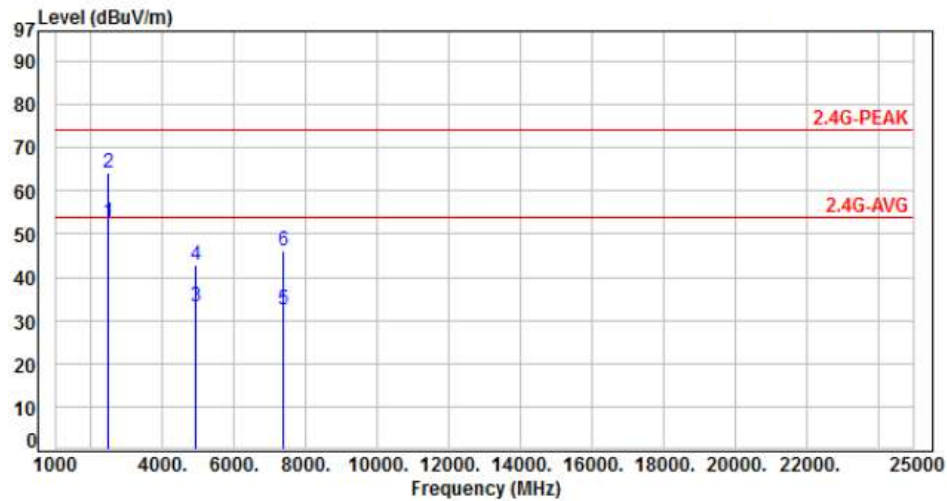
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH11	Temperature	: 23 °C
Test Date	: Jun. 22, 2018	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	68.40	52.75	54.00	-1.25	Average	224	255	P
2	2483.50	-15.65	79.80	64.15	74.00	-9.85	Peak	224	255	P
3	4924.00	-8.49	41.79	33.30	54.00	-20.70	Average	100	230	P
4	4924.00	-8.49	51.29	42.80	74.00	-31.20	Peak	100	230	P
5	7386.00	-4.48	36.90	32.42	54.00	-21.58	Average	100	128	P
6	7386.00	-4.48	50.60	46.12	74.00	-27.88	Peak	100	128	P

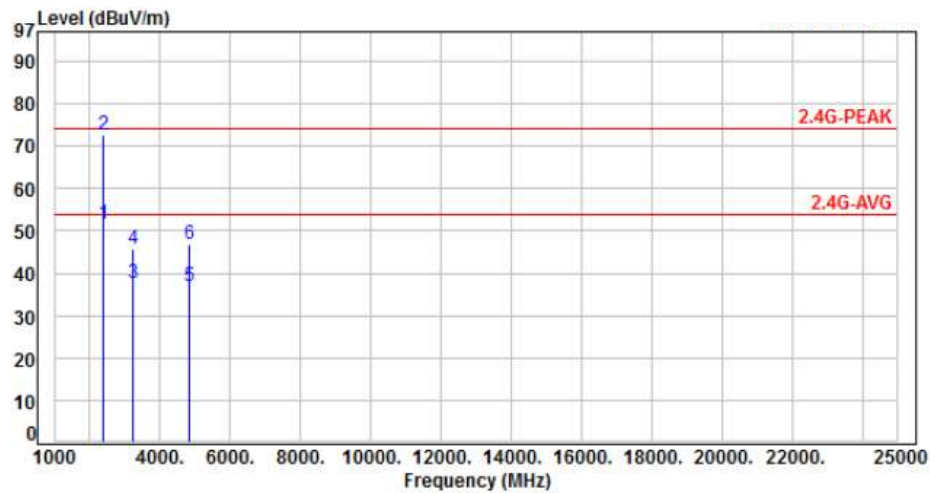
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH01	Temperature	: 24 °C
Test Date	: Jun. 26, 2018	Humidity	: 58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	67.53	51.57	54.00	-2.43	Average	400	50	P
2	2390.00	-15.96	88.76	72.80	74.00	-1.20	Peak	400	50	P
3	3216.00	-12.74	50.30	37.56	54.00	-16.44	Average	100	20	P
4	3216.00	-12.74	58.63	45.89	74.00	-28.11	Peak	100	20	P
5	4824.00	-8.80	45.86	37.06	54.00	-16.94	Average	166	184	P
6	4824.00	-8.80	55.68	46.88	74.00	-27.12	Peak	166	184	P

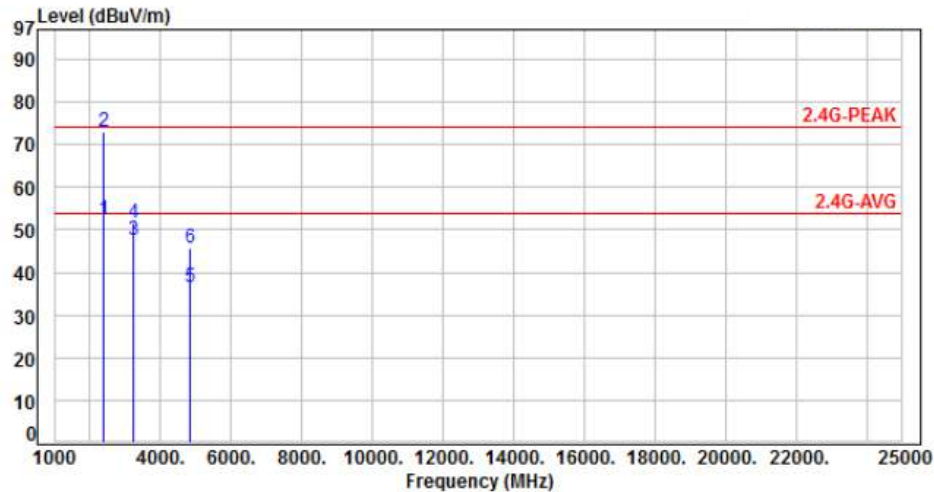
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH01	Temperature	: 24 °C
Test Date	: Jun. 26, 2018	Humidity	: 58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	68.19	52.23	54.00	-1.77	Average	196	260	P
2	2390.00	-15.96	88.82	72.86	74.00	-1.14	Peak	196	260	P
3	3216.16	-12.74	60.40	47.66	54.00	-6.34	Average	125	254	P
4	3216.16	-12.74	64.31	51.57	74.00	-22.43	Peak	125	254	P
5	4824.00	-8.80	45.33	36.53	54.00	-17.47	Average	133	189	P
6	4824.00	-8.80	54.63	45.83	74.00	-28.17	Peak	133	189	P

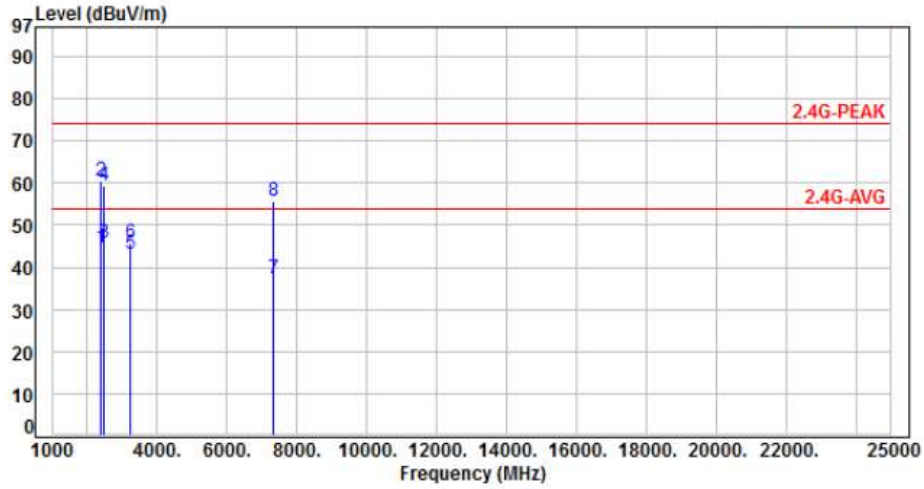
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH06	Temperature	: 24 °C
Test Date	: Jun. 27, 2018	Humidity	: 58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	60.76	44.80	54.00	-9.20	Average	332	105	P
2	2390.00	-15.96	76.51	60.55	74.00	-13.45	Peak	332	105	P
3	2483.50	-15.65	61.32	45.67	54.00	-8.33	Average	299	105	P
4	2483.50	-15.65	75.02	59.37	74.00	-14.63	Peak	299	105	P
5	3249.00	-12.65	55.88	43.23	54.00	-10.77	Average	400	175	P
6	3249.00	-12.65	58.38	45.73	74.00	-28.27	Peak	400	175	P
7	7311.00	-4.69	42.12	37.43	54.00	-16.57	Average	100	90	P
8	7311.00	-4.69	60.43	55.74	74.00	-18.26	Peak	100	90	P

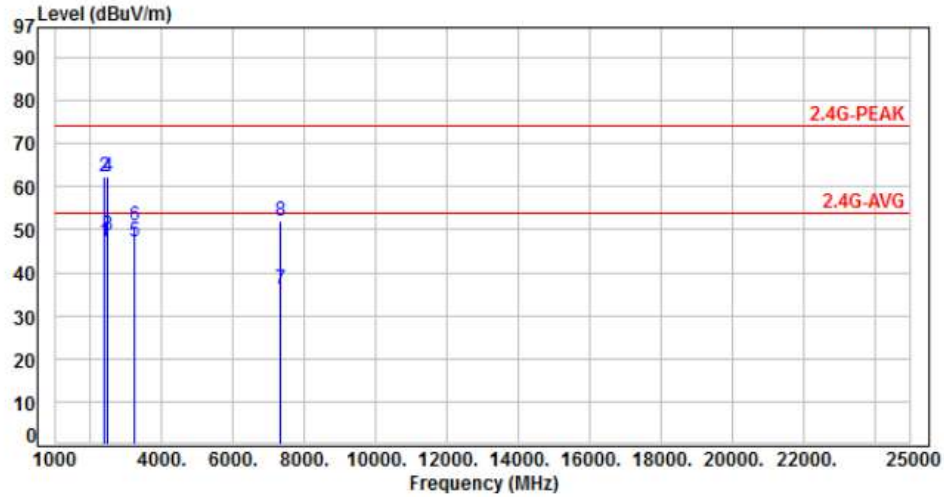
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH06	Temperature	: 24 °C
Test Date	: Jun. 27, 2018	Humidity	: 58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	63.13	47.17	54.00	-6.83	Average	225	250	P
2	2390.00	-15.96	78.40	62.44	74.00	-11.56	Peak	225	250	P
3	2483.50	-15.65	64.21	48.56	54.00	-5.44	Average	225	250	P
4	2483.50	-15.65	78.06	62.41	74.00	-11.59	Peak	225	250	P
5	3249.36	-12.65	59.82	47.17	54.00	-6.83	Average	223	255	P
6	3249.36	-12.65	63.51	50.86	74.00	-23.14	Peak	223	255	P
7	7311.00	-4.69	40.68	35.99	54.00	-18.01	Average	236	343	P
8	7311.00	-4.69	56.73	52.04	74.00	-21.96	Peak	236	343	P

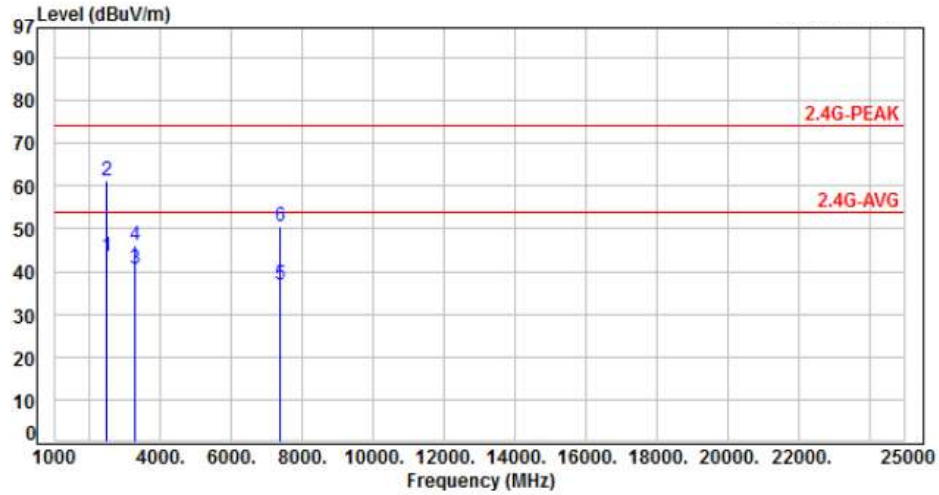
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH11	Temperature	: 24 °C
Test Date	: Jun. 27, 2018	Humidity	: 58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	59.33	43.68	54.00	-10.32	Average	349	59	P
2	2483.50	-15.65	77.00	61.35	74.00	-12.65	Peak	349	59	P
3	3282.90	-12.55	53.10	40.55	54.00	-13.45	Average	392	305	P
4	3282.90	-12.55	58.48	45.93	74.00	-28.07	Peak	392	305	P
5	7386.00	-4.48	41.47	36.99	54.00	-17.01	Average	100	90	P
6	7386.00	-4.48	54.90	50.42	74.00	-23.58	Peak	100	90	P

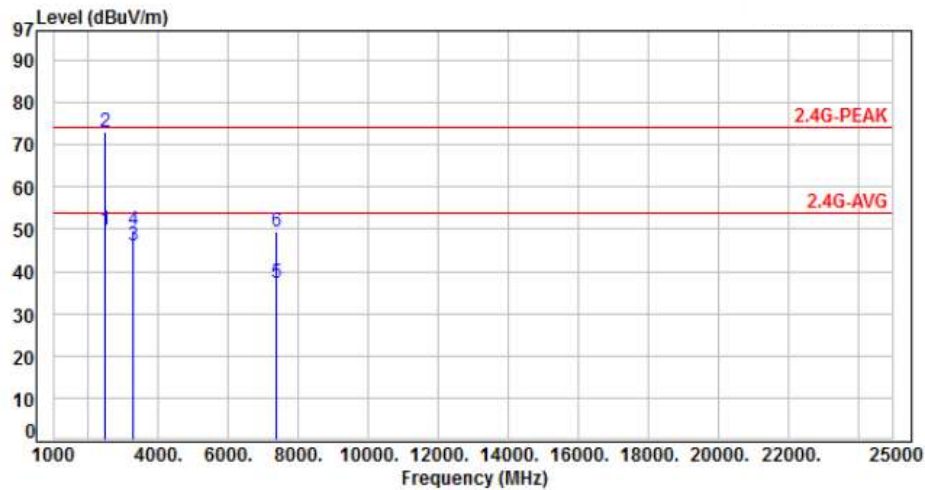
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH11	Temperature	: 24 °C
Test Date	: Jun. 27, 2018	Humidity	: 58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	65.39	49.74	54.00	-4.26	Average	110	260	P
2	2483.50	-15.65	88.61	72.96	74.00	-1.04	Peak	110	260	P
3	3282.80	-12.55	58.57	46.02	54.00	-7.98	Average	145	260	P
4	3282.80	-12.55	62.43	49.88	74.00	-24.12	Peak	145	260	P
5	7386.00	-4.48	41.66	37.18	54.00	-16.82	Average	110	255	P
6	7386.00	-4.48	53.75	49.27	74.00	-24.73	Peak	110	255	P

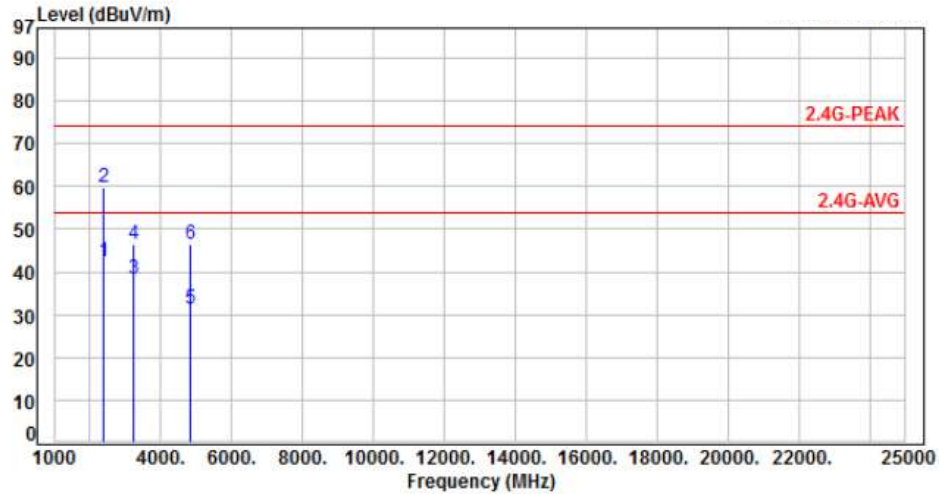
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH01	Temperature	: 24 °C
Test Date	: Jun. 27, 2018	Humidity	: 58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	58.34	42.38	54.00	-11.62	Average	344	103	P
2	2390.00	-15.96	75.64	59.68	74.00	-14.32	Peak	344	103	P
3	3216.00	-12.74	50.95	38.21	54.00	-15.79	Average	391	0	P
4	3216.00	-12.74	59.10	46.36	74.00	-27.64	Peak	391	0	P
5	4824.00	-8.80	40.10	31.30	54.00	-22.70	Average	126	187	P
6	4824.00	-8.80	55.32	46.52	74.00	-27.48	Peak	126	187	P

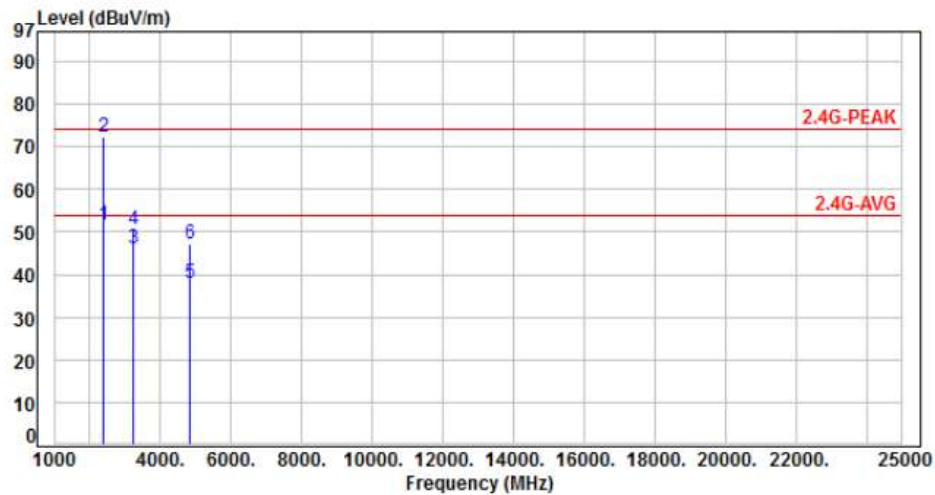
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH01	Temperature	: 24 °C
Test Date	: Jun. 27, 2018	Humidity	: 58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	67.69	51.73	54.00	-2.27	Average	165	253	P
2	2390.00	-15.96	88.37	72.41	74.00	-1.59	Peak	165	253	P
3	3216.00	-12.74	59.00	46.26	54.00	-7.74	Average	204	258	P
4	3216.00	-12.74	63.24	50.50	74.00	-23.50	Peak	204	258	P
5	4824.00	-8.80	46.82	38.02	54.00	-15.98	Average	112	188	P
6	4824.00	-8.80	55.92	47.12	74.00	-26.88	Peak	112	188	P

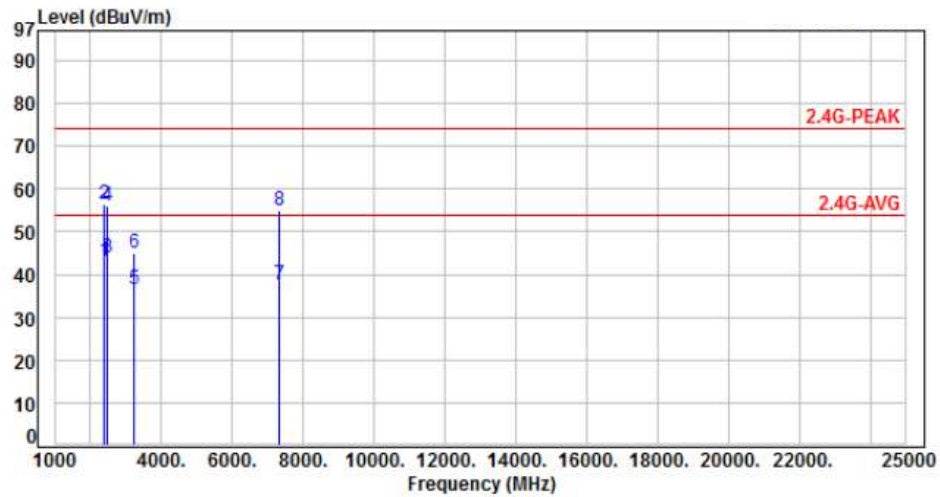
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH06	Temperature	: 24 °C
Test Date	: Jun. 27, 2018	Humidity	: 58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	59.15	43.19	54.00	-10.81	Average	214	150	P
2	2390.00	-15.96	72.39	56.43	74.00	-17.57	Peak	214	150	P
3	2483.50	-15.65	59.43	43.78	54.00	-10.22	Average	400	155	P
4	2483.50	-15.65	71.86	56.21	74.00	-17.79	Peak	400	155	P
5	3249.50	-12.65	49.04	36.39	54.00	-17.61	Average	107	0	P
6	3249.50	-12.65	57.57	44.92	74.00	-29.08	Peak	107	0	P
7	7311.00	-4.69	42.17	37.48	54.00	-16.52	Average	112	26	P
8	7311.00	-4.69	59.79	55.10	74.00	-18.90	Peak	112	26	P

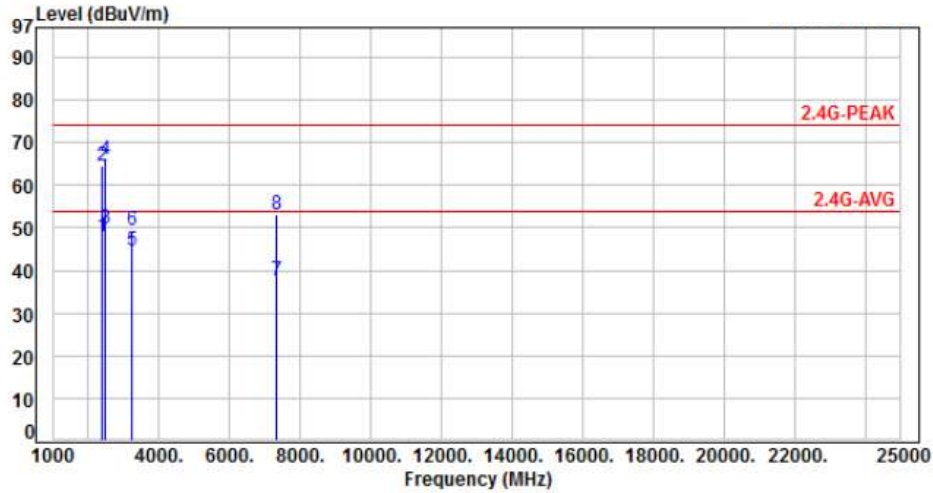
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH06	Temperature	: 24 °C
Test Date	: Jun. 27, 2018	Humidity	: 58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	63.81	47.85	54.00	-6.15	Average	110	260	P
2	2390.00	-15.96	80.68	64.72	74.00	-9.28	Peak	110	260	P
3	2483.50	-15.65	65.36	49.71	54.00	-4.29	Average	115	260	P
4	2483.50	-15.65	81.64	65.99	74.00	-8.01	Peak	115	260	P
5	3249.00	-12.65	57.37	44.72	54.00	-9.28	Average	400	286	P
6	3249.00	-12.65	62.00	49.35	74.00	-24.65	Peak	400	286	P
7	7311.00	-4.69	42.42	37.73	54.00	-16.27	Average	400	190	P
8	7311.00	-4.69	57.64	52.95	74.00	-21.05	Peak	400	190	P

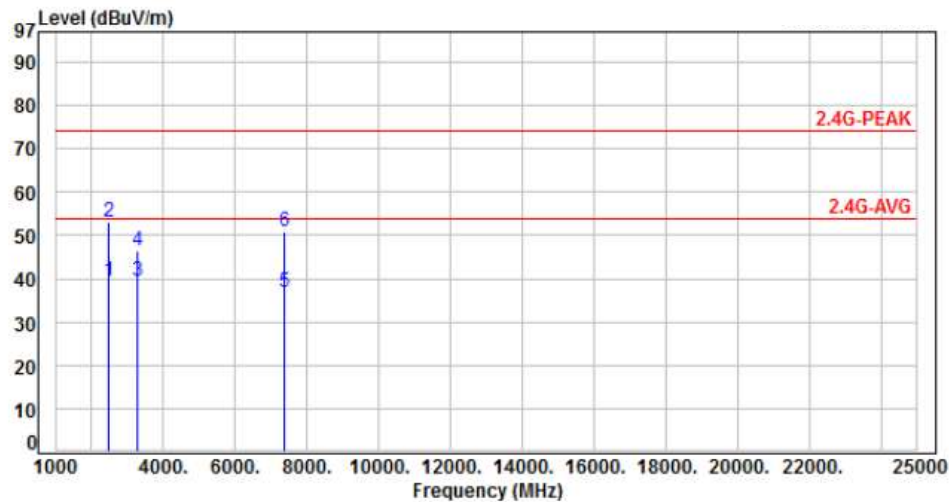
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH11	Temperature	: 24 °C
Test Date	: Jun. 27, 2018	Humidity	: 58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	55.02	39.37	54.00	-14.63	Average	400	186	P
2	2483.50	-15.65	68.82	53.17	74.00	-20.83	Peak	400	186	P
3	3282.60	-12.56	51.96	39.40	54.00	-14.60	Average	400	310	P
4	3282.60	-12.56	58.93	46.37	74.00	-27.63	Peak	400	310	P
5	7386.00	-4.48	41.26	36.78	54.00	-17.22	Average	100	260	P
6	7386.00	-4.48	55.54	51.06	74.00	-22.94	Peak	100	260	P

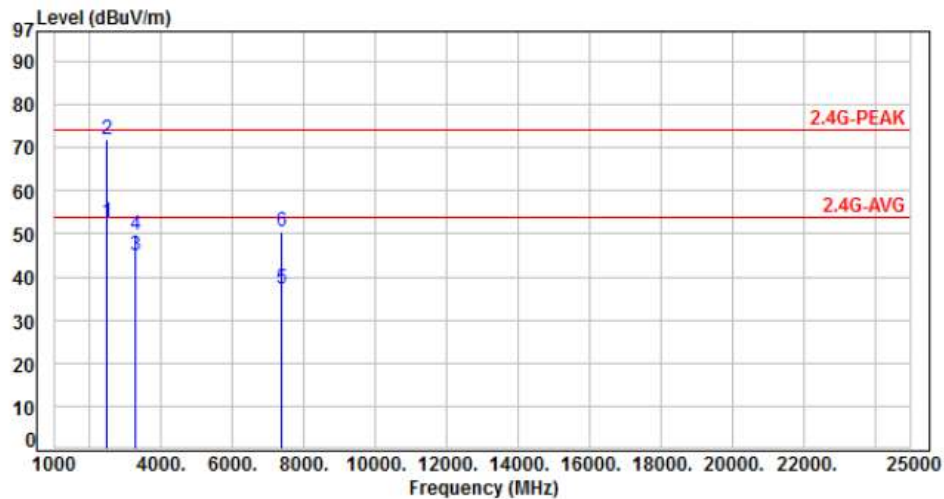
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH06	Temperature	: 24 °C
Test Date	: Jun. 27, 2018	Humidity	: 58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	68.35	52.70	54.00	-1.30	Average	110	260	P
2	2483.50	-15.65	87.66	72.01	74.00	-1.99	Peak	110	260	P
3	3282.60	-12.56	57.69	45.13	54.00	-8.87	Average	149	260	P
4	3282.60	-12.56	62.21	49.65	74.00	-24.35	Peak	149	260	P
5	7386.00	-4.48	41.86	37.38	54.00	-16.62	Average	250	338	P
6	7386.00	-4.48	55.03	50.55	74.00	-23.45	Peak	250	338	P

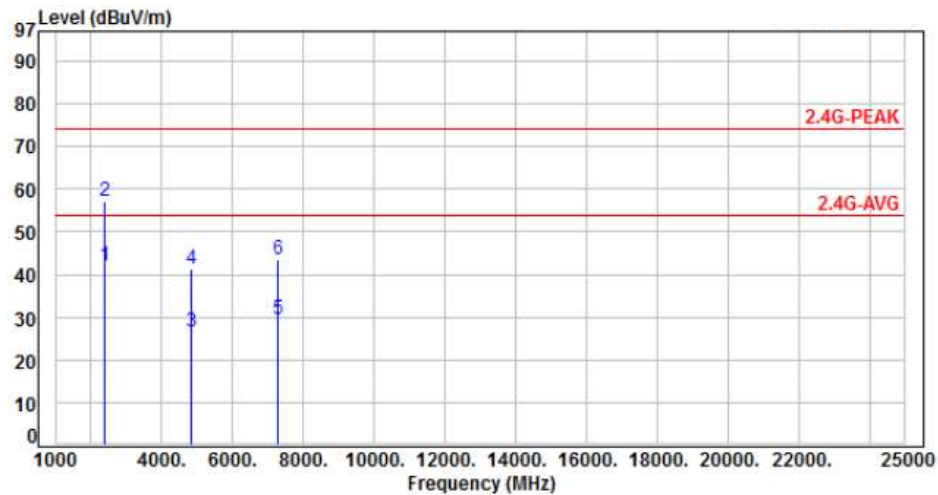
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH03	Temperature	: 23 °C
Test Date	: Jun. 22, 2018	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	58.11	42.15	54.00	-11.85	Average	214	160	P
2	2390.00	-15.96	73.21	57.25	74.00	-16.75	Peak	214	160	P
3	4844.00	-8.74	35.31	26.57	54.00	-27.43	Average	100	147	P
4	4844.00	-8.74	49.88	41.14	74.00	-32.86	Peak	100	147	P
5	7266.00	-4.83	34.36	29.53	54.00	-24.47	Average	100	325	P
6	7266.00	-4.83	48.52	43.69	74.00	-30.31	Peak	100	325	P

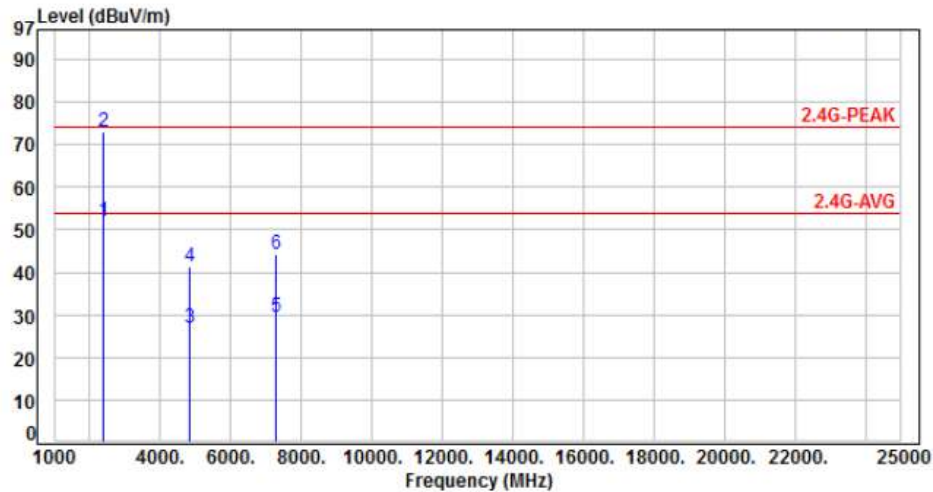
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH03	Temperature	: 23 °C
Test Date	: Jun. 22, 2018	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	68.11	52.15	54.00	-1.85	Average	180	250	P
2	2390.00	-15.96	88.91	72.95	74.00	-1.05	Peak	180	250	P
3	4844.00	-8.74	35.70	26.96	54.00	-27.04	Average	100	81	P
4	4844.00	-8.74	50.20	41.46	74.00	-32.54	Peak	100	81	P
5	7266.00	-4.83	34.51	29.68	54.00	-24.32	Average	100	128	P
6	7266.00	-4.83	49.26	44.43	74.00	-29.57	Peak	100	128	P

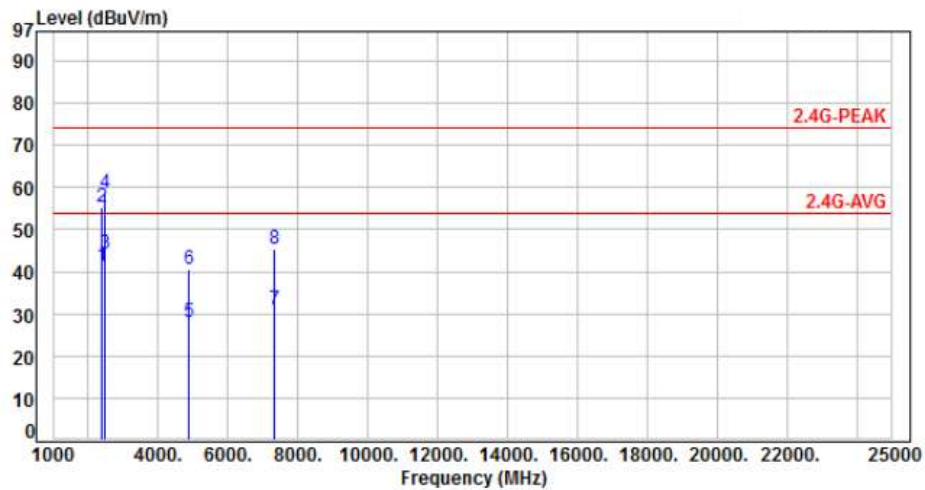
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH06	Temperature	: 23 °C
Test Date	: Jun. 22, 2018	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	57.31	41.35	54.00	-12.65	Average	348	132	P
2	2390.00	-15.96	71.31	55.35	74.00	-18.65	Peak	348	132	P
3	2483.50	-15.65	60.00	44.35	54.00	-9.65	Average	348	132	P
4	2483.50	-15.65	74.20	58.55	74.00	-15.45	Peak	348	132	P
5	4874.00	-8.65	36.50	27.85	54.00	-26.15	Average	100	211	P
6	4874.00	-8.65	49.33	40.68	74.00	-33.32	Peak	100	211	P
7	7311.00	-4.69	35.64	30.95	54.00	-23.05	Average	112	328	P
8	7311.00	-4.69	50.19	45.50	74.00	-28.50	Peak	112	328	P

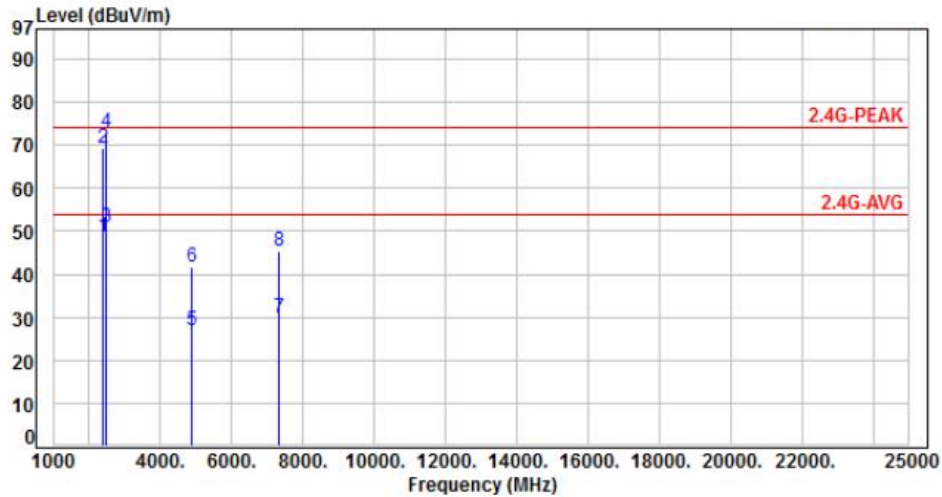
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH06	Temperature	: 23 °C
Test Date	: Jun. 22, 2018	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	64.81	48.85	54.00	-5.15	Average	120	252	P
2	2390.00	-15.96	85.21	69.25	74.00	-4.75	Peak	120	252	P
3	2483.50	-15.65	66.56	50.91	54.00	-3.09	Average	120	252	P
4	2483.50	-15.65	88.50	72.85	74.00	-1.15	Peak	120	252	P
5	4874.00	-8.65	35.70	27.05	54.00	-26.95	Average	100	91	P
6	4874.00	-8.65	50.20	41.55	74.00	-32.45	Peak	100	91	P
7	7311.00	-4.69	34.69	30.00	54.00	-24.00	Average	100	196	P
8	7311.00	-4.69	50.19	45.50	74.00	-28.50	Peak	100	196	P

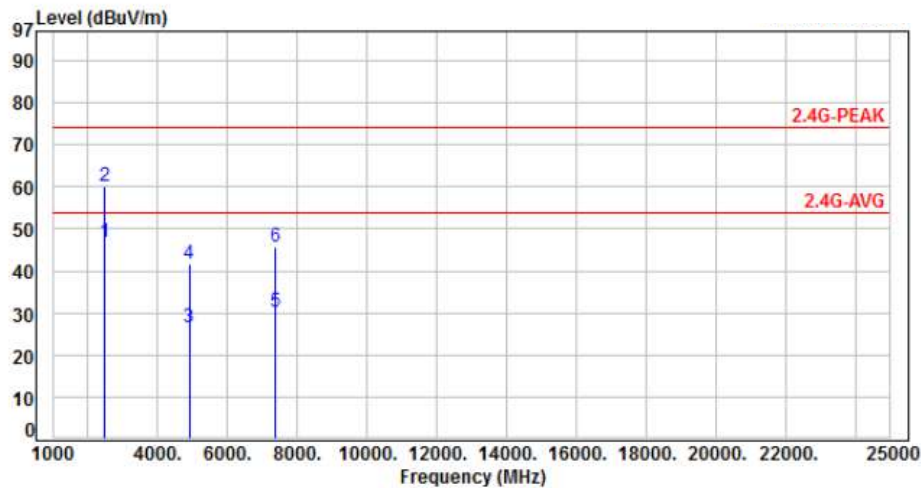
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH09	Temperature	: 23 °C
Test Date	: Jun. 22, 2018	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	62.50	46.85	54.00	-7.15	Average	389	100	P
2	2483.50	-15.65	75.88	60.23	74.00	-13.77	Peak	389	100	P
3	4904.00	-8.56	35.10	26.54	54.00	-27.46	Average	100	145	P
4	4904.00	-8.56	50.40	41.84	74.00	-32.16	Peak	100	145	P
5	7356.00	-4.57	34.88	30.31	54.00	-23.69	Average	100	299	P
6	7356.00	-4.57	50.23	45.66	74.00	-28.34	Peak	100	299	P

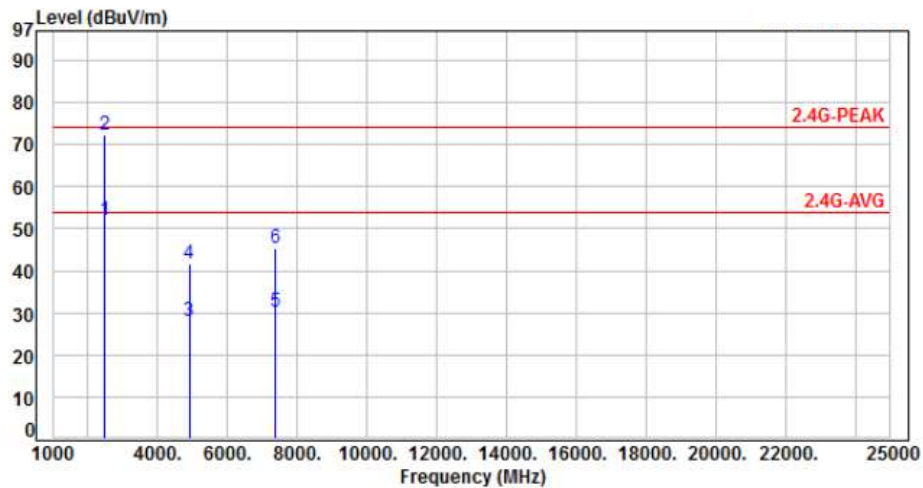
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH09	Temperature	: 23 °C
Test Date	: Jun. 22, 2018	Humidity	: 62 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	67.80	52.15	54.00	-1.85	Average	120	265	P
2	2483.50	-15.65	88.10	72.45	74.00	-1.55	Peak	120	265	P
3	4904.00	-8.56	36.50	27.94	54.00	-26.06	Average	100	345	P
4	4904.00	-8.56	50.20	41.64	74.00	-32.36	Peak	100	345	P
5	7356.00	-4.57	34.80	30.23	54.00	-23.77	Average	100	78	P
6	7356.00	-4.57	49.80	45.23	74.00	-28.77	Peak	100	78	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

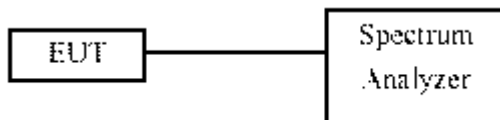
7.1 Test Limit

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 loss 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

Temperature : 21°

Humidity : 47%

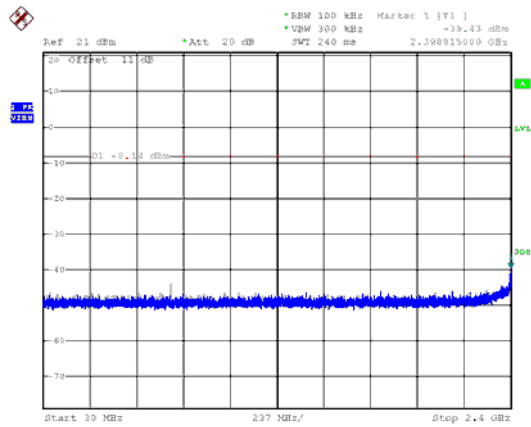
Test Date : Dec. 07, 2018

Note: Test plots refers to the following pages.

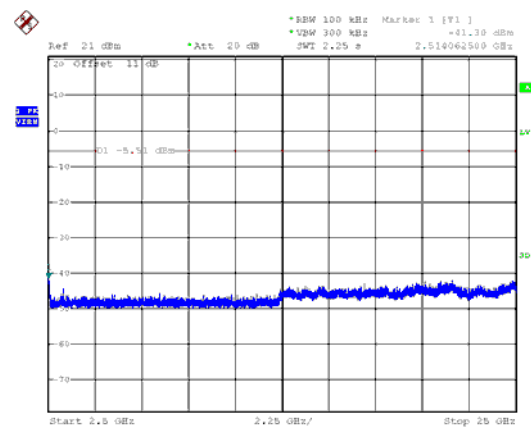
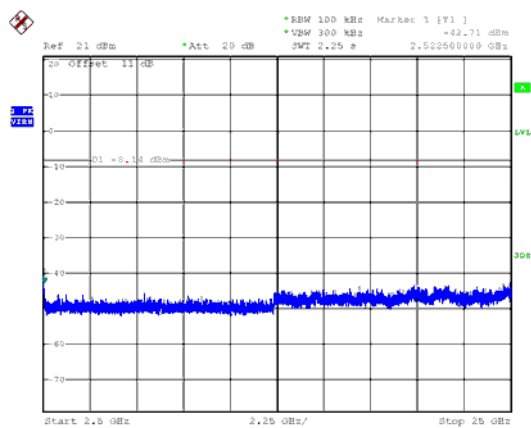
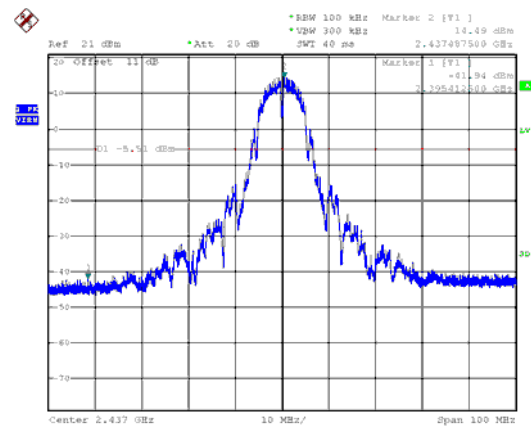
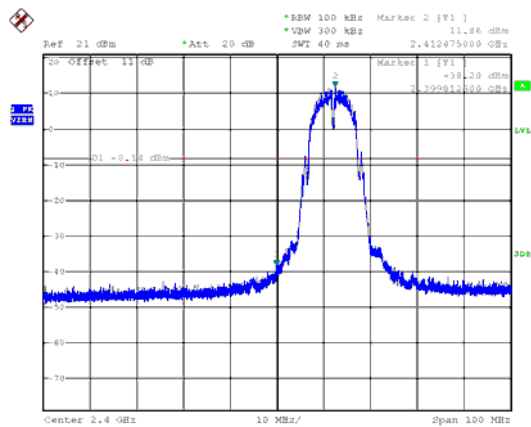
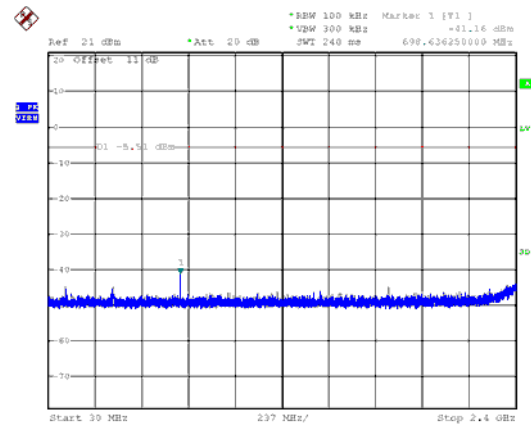


ANT 0

Modulation Type: 802.11b, CH 01

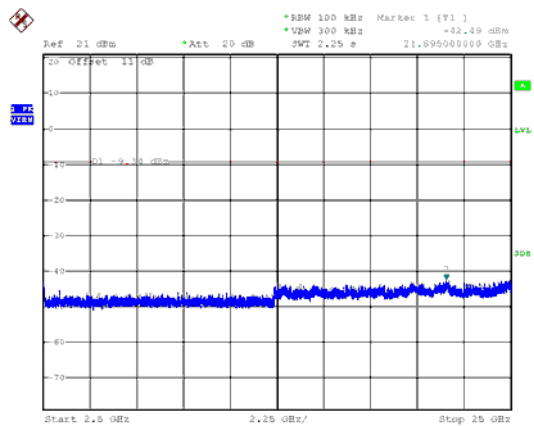
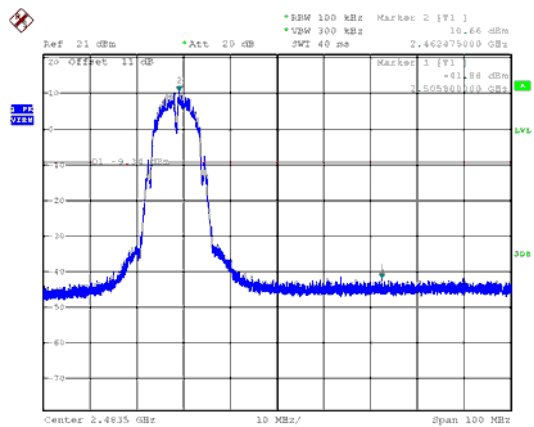


Modulation Type: 802.11b, CH 06





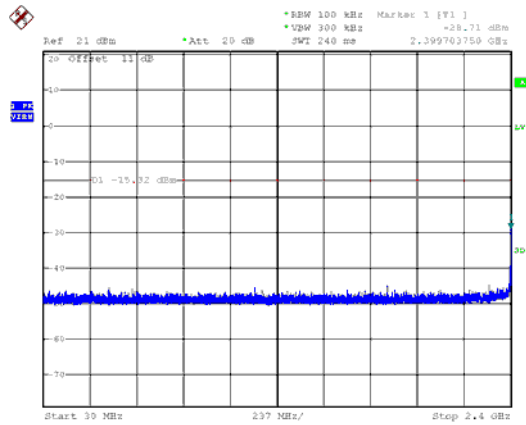
The screenshot shows a Spectrum Analyzer interface. At the top, a small icon of a red and white diamond is visible. The main display area shows a frequency spectrum with a noise floor at approximately -40 dBm and a small signal peak at 2.4 GHz. The x-axis is labeled 'Start 30 MHz', '237 MHz', and 'Stop 2.4 GHz'. The y-axis is labeled '20 Offset 11 dB', '10', '0', '-10', '-20', '-30', '-40', '-50', '-60', and '-70'. The top status bar displays the following information: 'Ref 21 dBm', 'Att 20 dB', 'BW 100 kHz', 'VMW 300 kHz', 'SWT 240 ms', 'Marker 1 [Y1]', and '40.81 dBm'. The bottom status bar displays 'Start 30 MHz', '237 MHz', and 'Stop 2.4 GHz'.



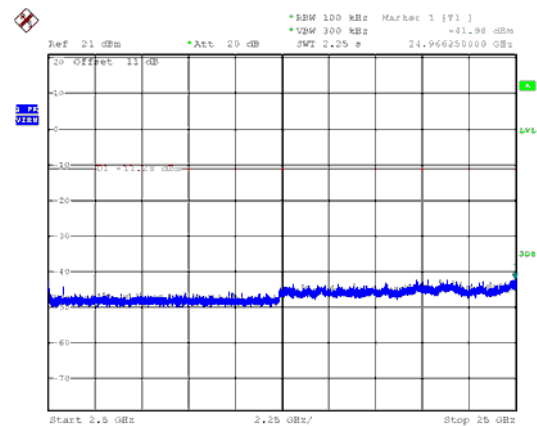
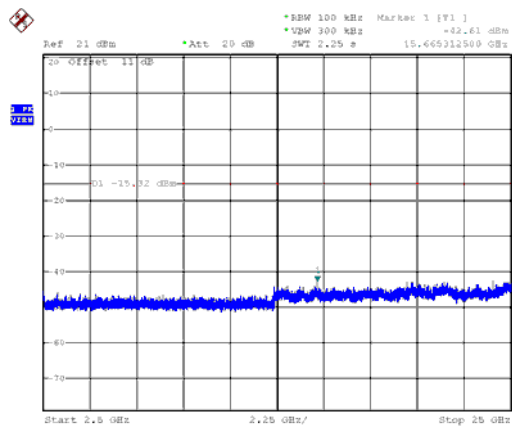
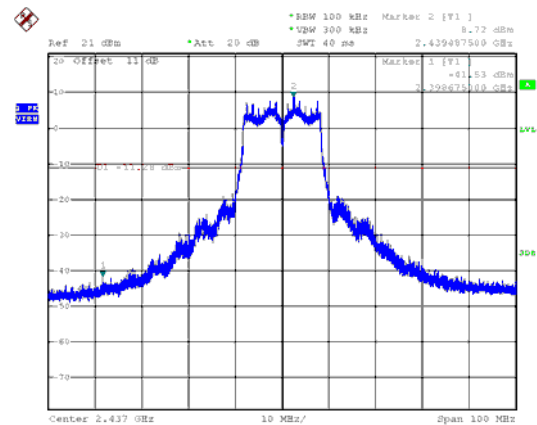
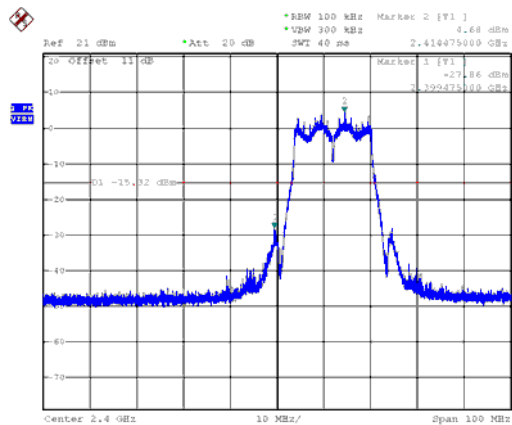
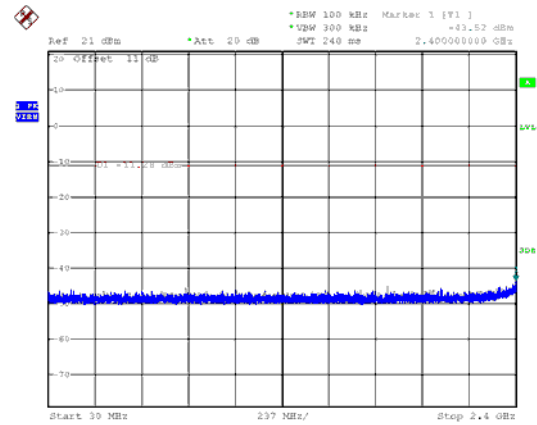


ANT 0

Modulation Type: 802.11g, CH 01



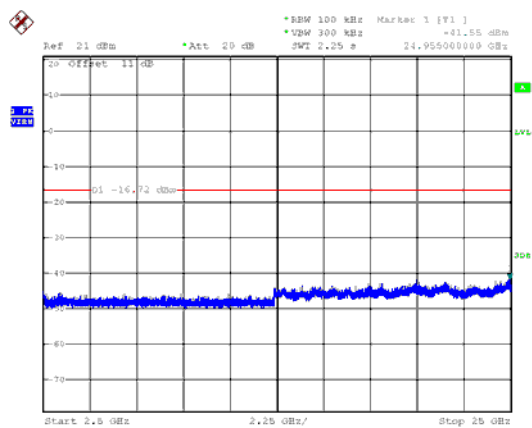
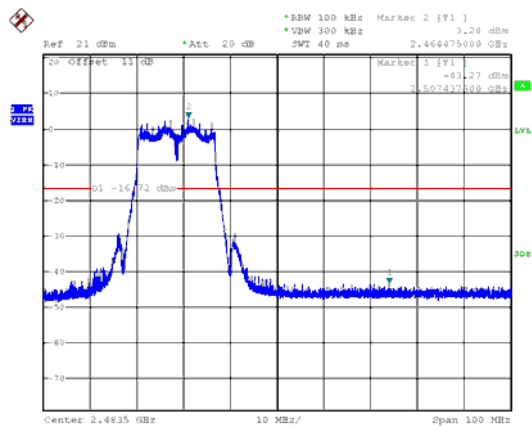
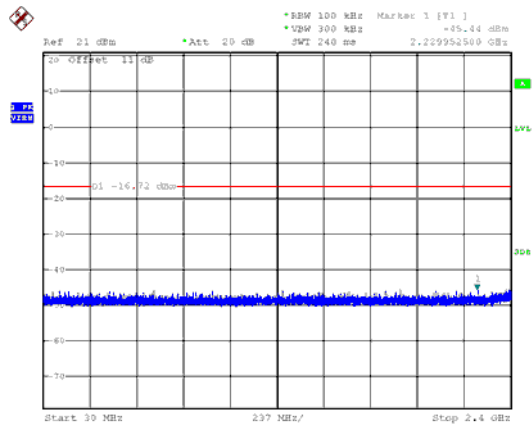
Modulation Type: 802.11g, CH 06





ANT 0

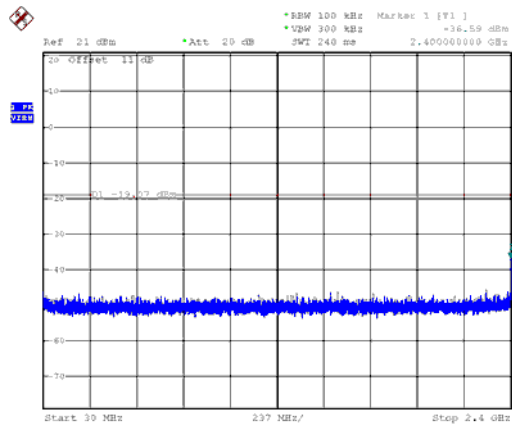
Modulation Type: 802.11g, CH 11



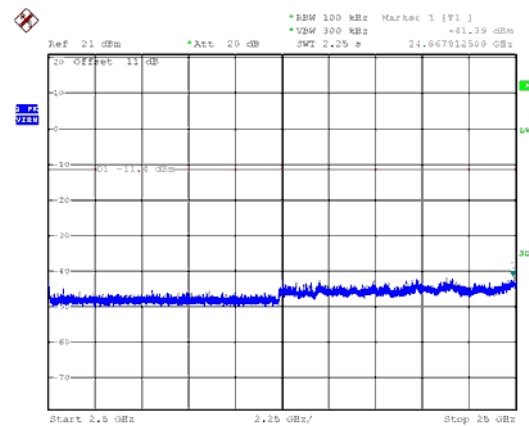
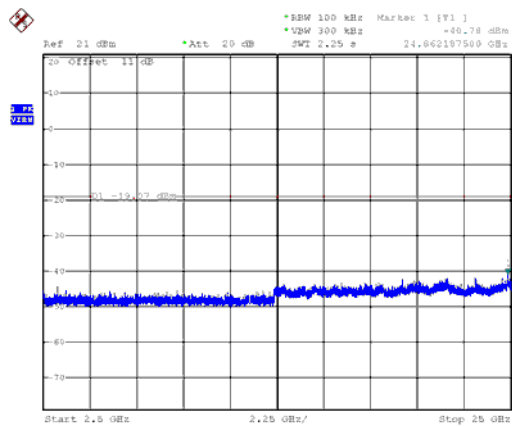
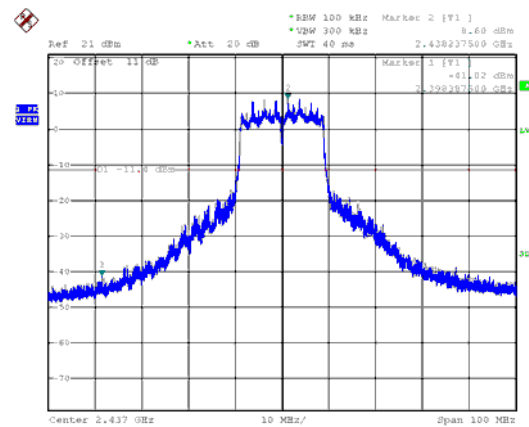
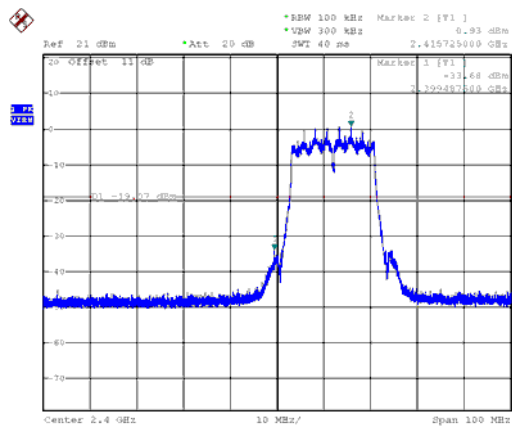
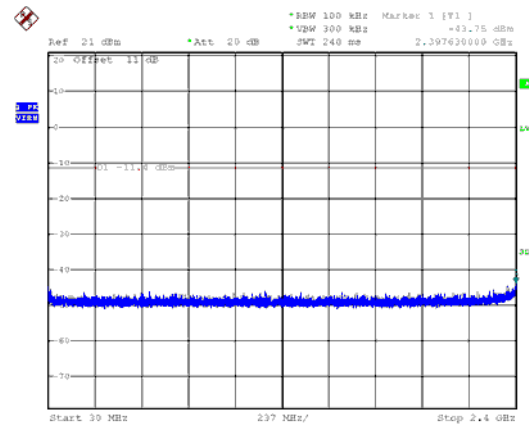


ANT 0

Modulation Type: 802.11n HT20, CH 01



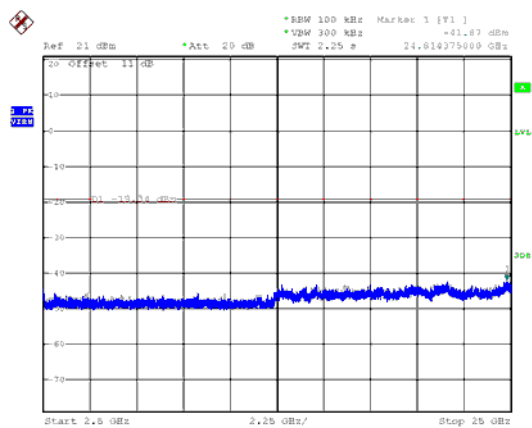
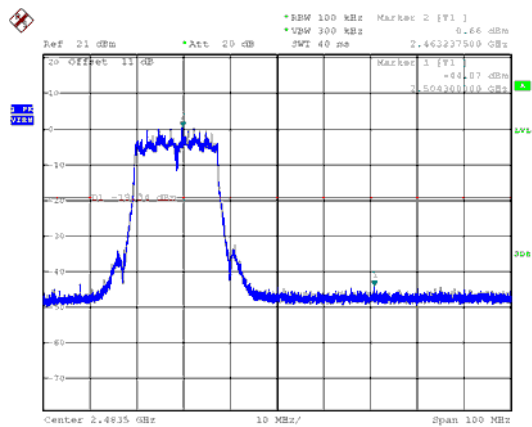
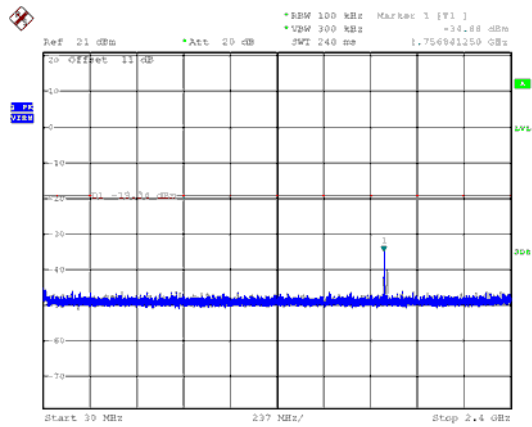
Modulation Type: 802.11n HT20, CH 06





ANT 0

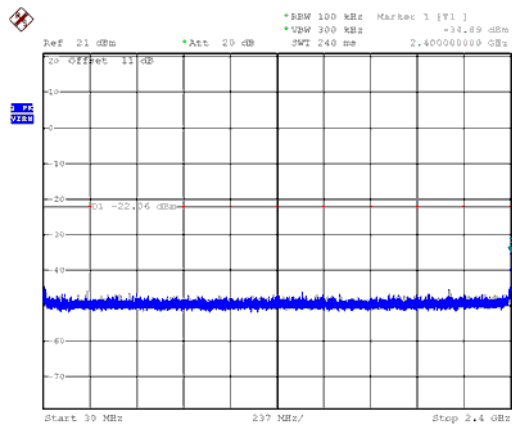
Modulation Type: 802.11n HT20, CH 11



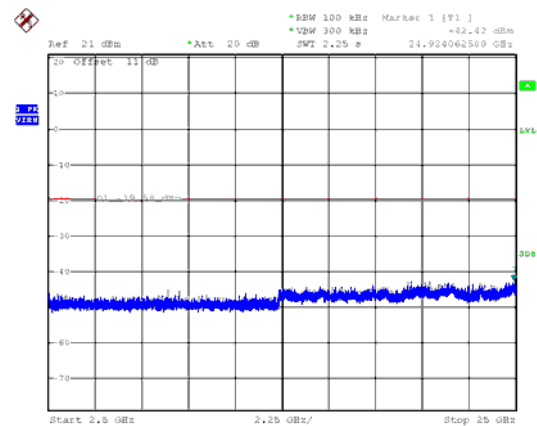
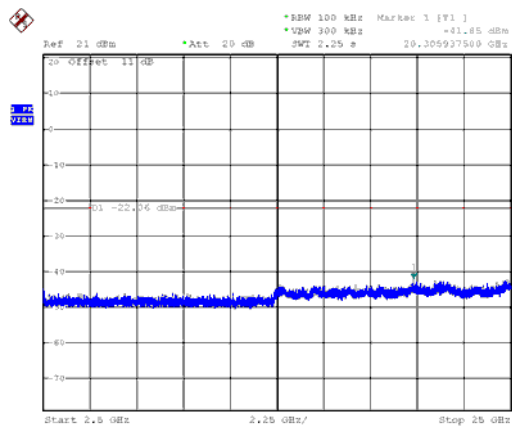
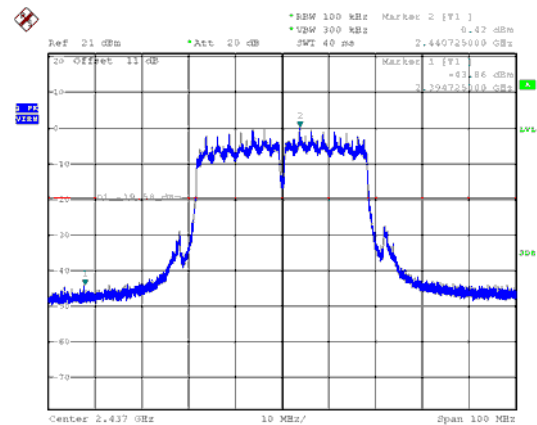
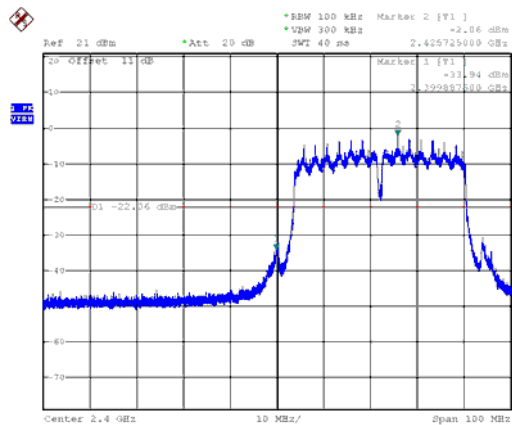
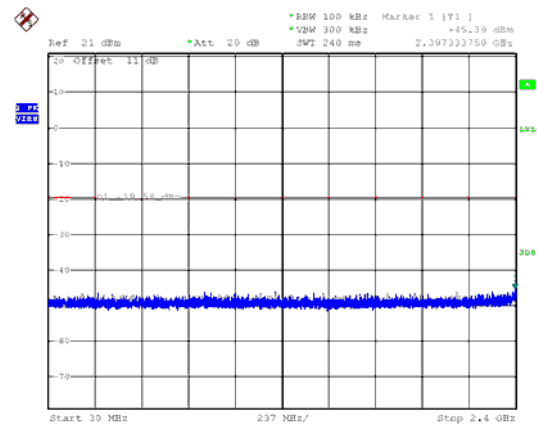


ANT 0

Modulation Type: 802.11n HT40, CH 03



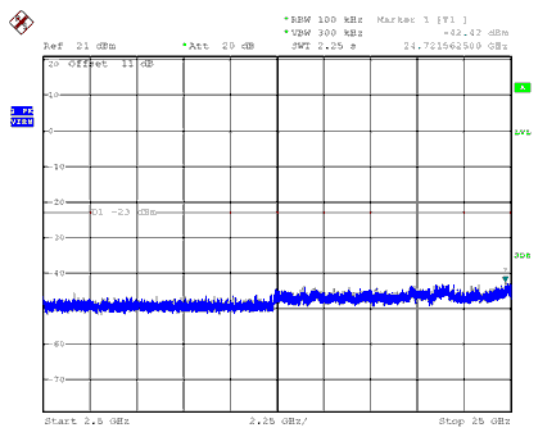
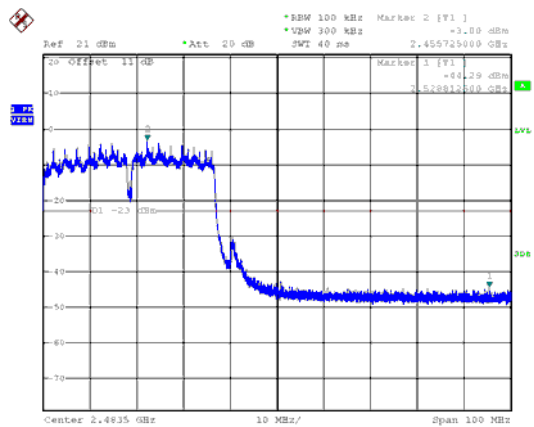
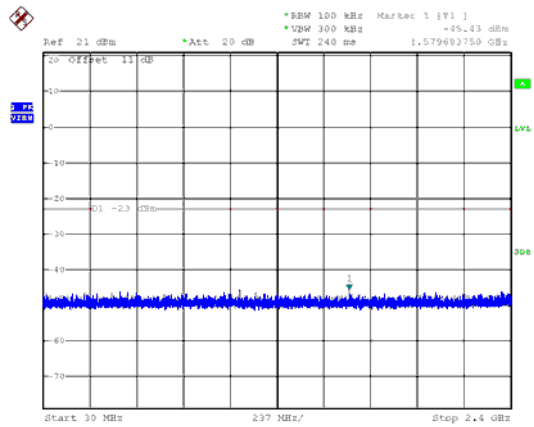
Modulation Type: 802.11n HT40, CH 06





ANT 0

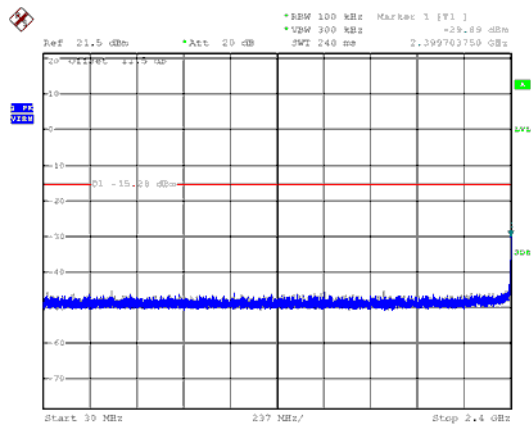
Modulation Type: 802.11n HT40, CH 09



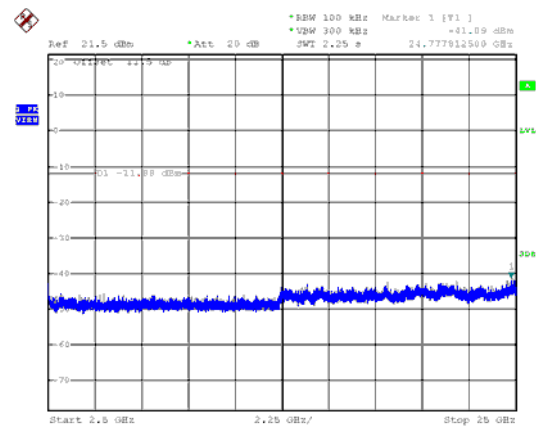
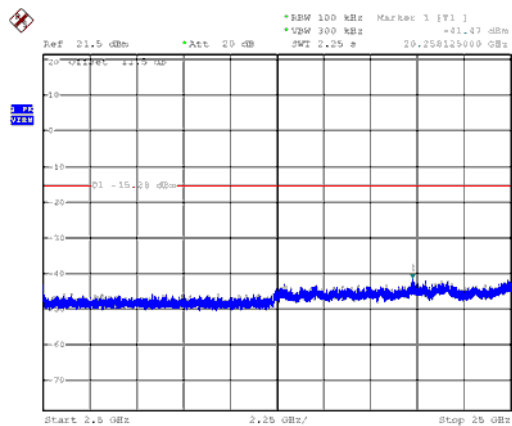
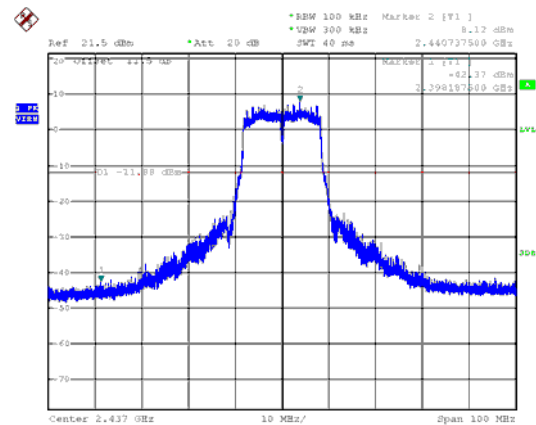
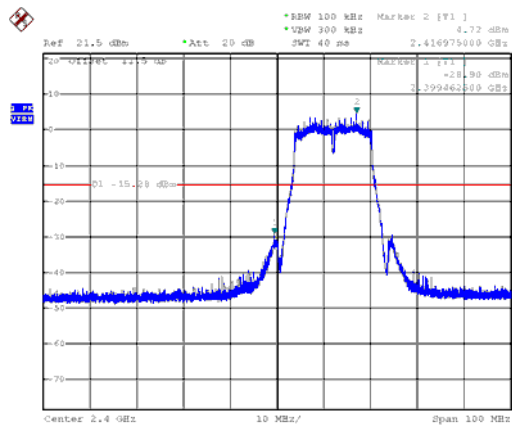
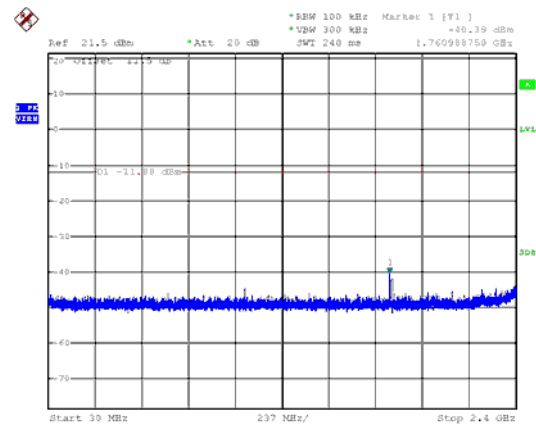


ANT 1

Modulation Type: 802.11g, CH 01



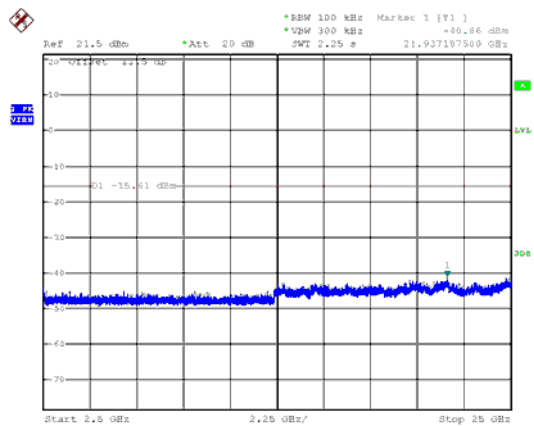
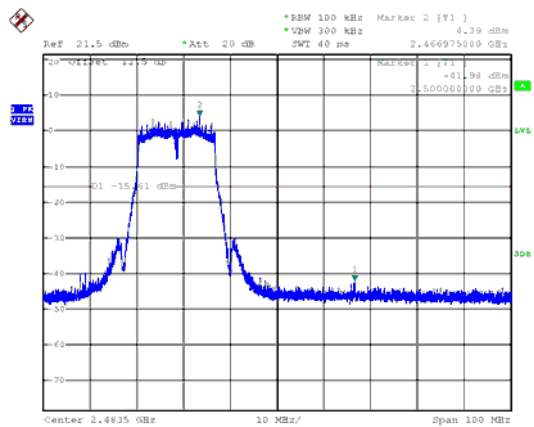
Modulation Type: 802.11g, CH 06





The screenshot shows a Spectrum Analyzer interface with the following details:

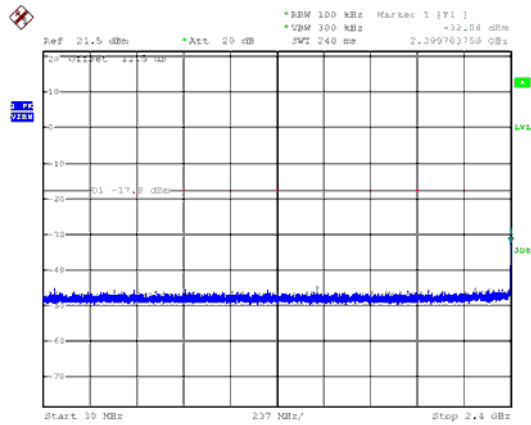
- Top Bar:**
 - Left: A red and white warning icon.
 - Center: "Ref 21.5 dBm" (green), "Att 20 dB" (green).
 - Right: "BW 100 kHz" (green), "Marker 1 [Y1]" (green), "VMW 300 kHz" (green), "SWT 240 ms" (green), "2.185911250 GHz" (green).
- Grid:** A 10x10 grid with major lines every 10 dB and minor lines every 2 dB.
- Y-axis (Left):** Labeled "dBm" in blue. Scale from -70 to 10.
- Y-axis (Right):** Labeled "dBm" in green. Scale from -70 to 10.
- Plot:** A blue noise floor line fluctuating around -44.97 dBm. A red horizontal line is drawn at -15.41 dBm.
- Bottom Bar:**
 - Left: "Start 30 MHz" (green).
 - Center: "237 MHz/" (green).
 - Right: "Stop 2.4 GHz" (green).



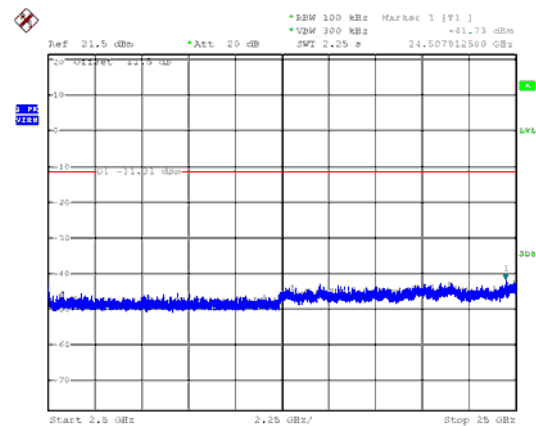
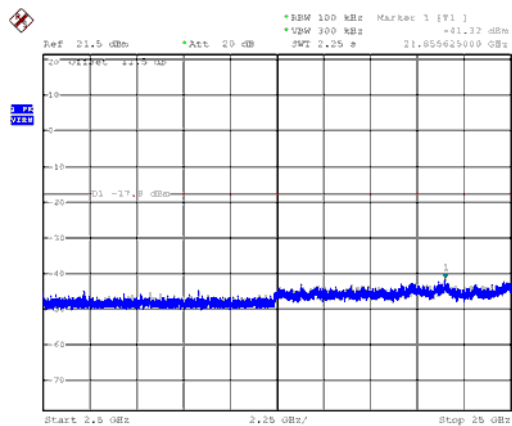
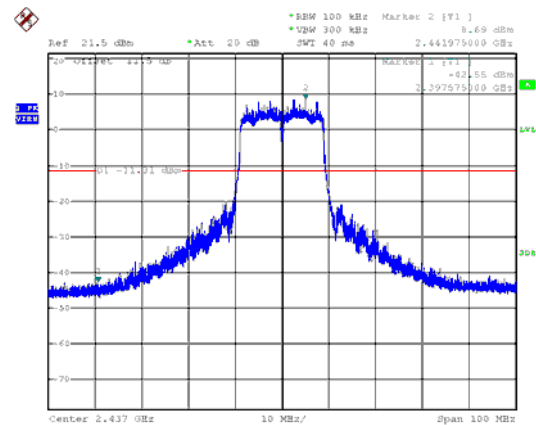
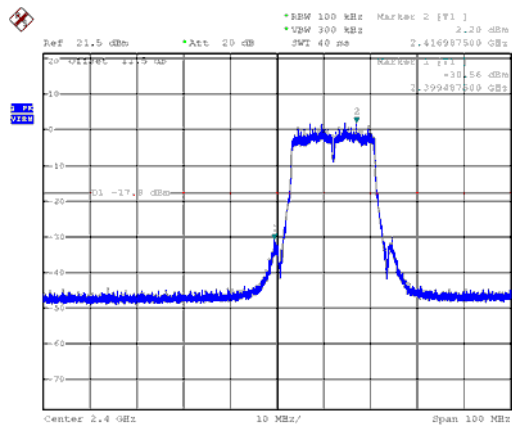
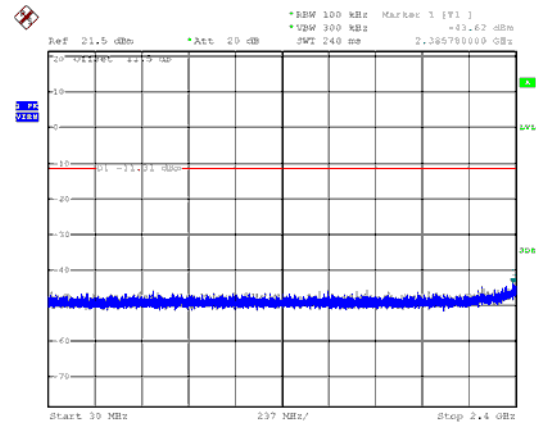


ANT 1

Modulation Type: 802.11n HT20, CH 01



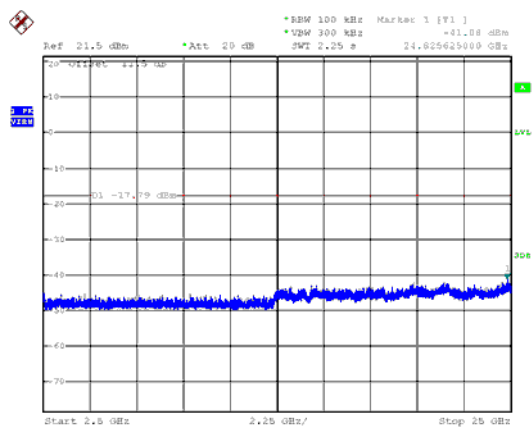
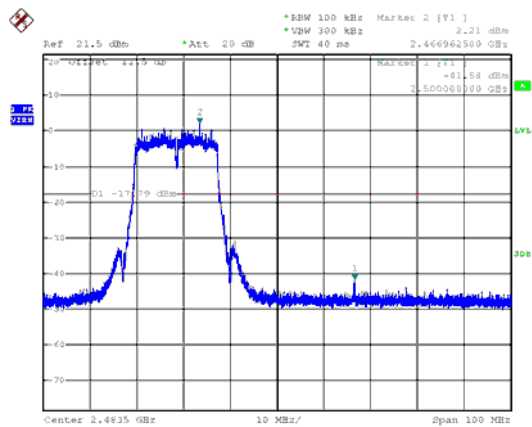
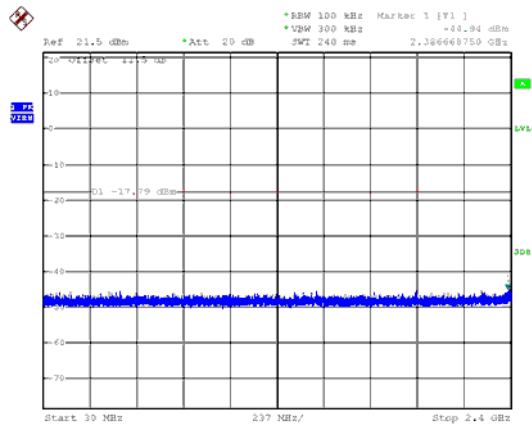
Modulation Type: 802.11n HT20, CH 06





ANT 1

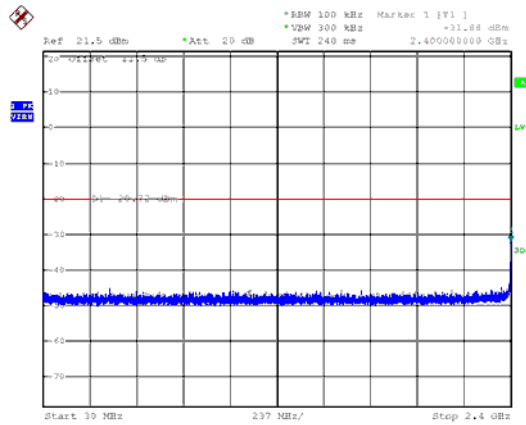
Modulation Type: 802.11n HT20, CH 11



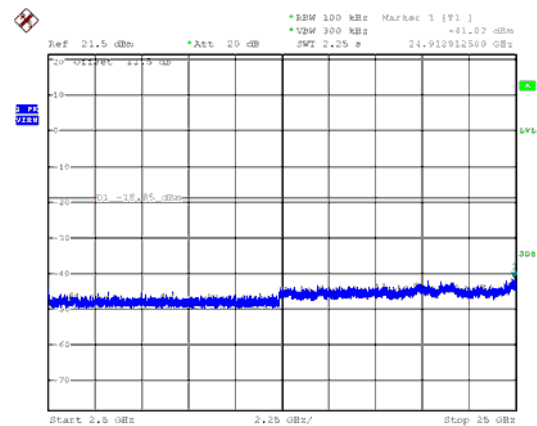
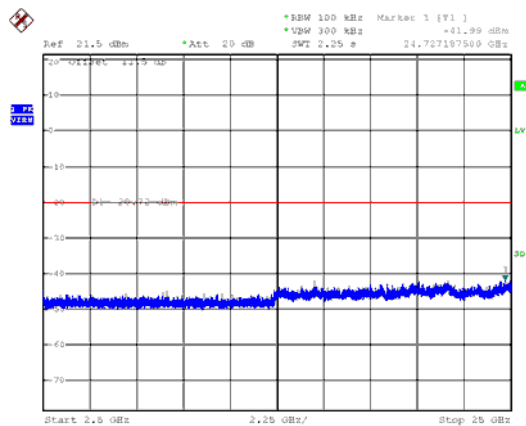
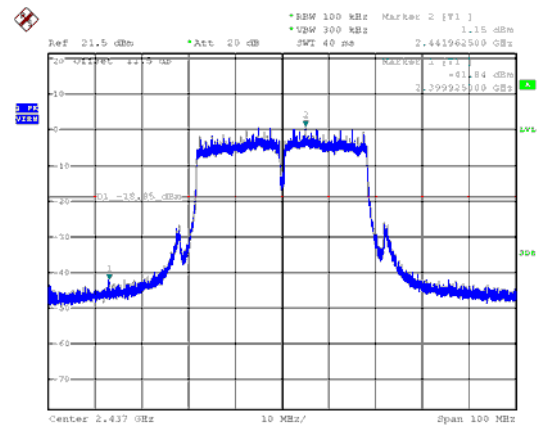
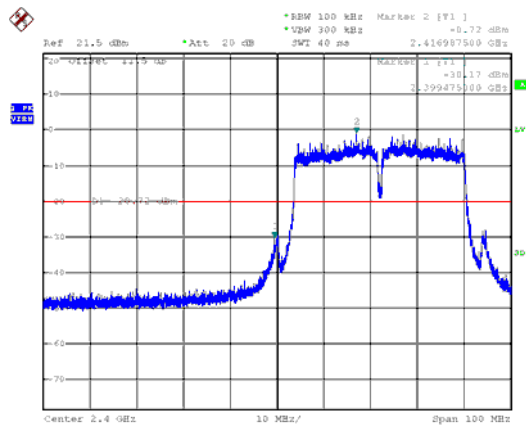
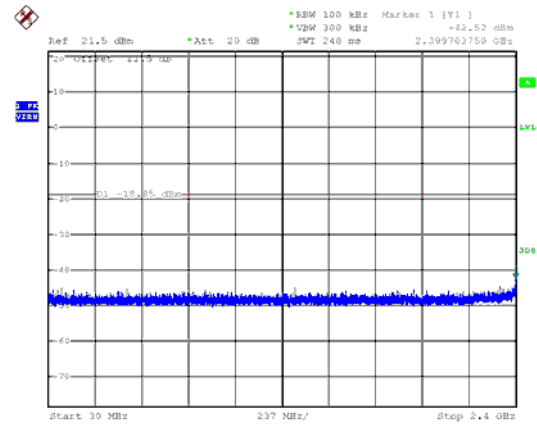


ANT 1

Modulation Type: 802.11n HT40, CH 03



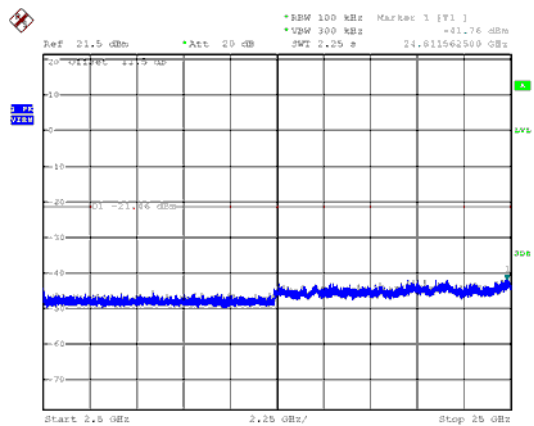
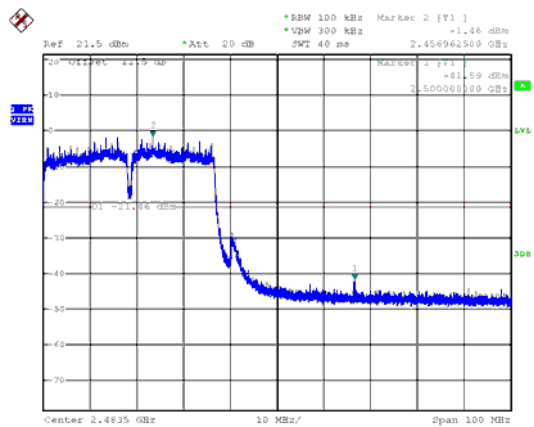
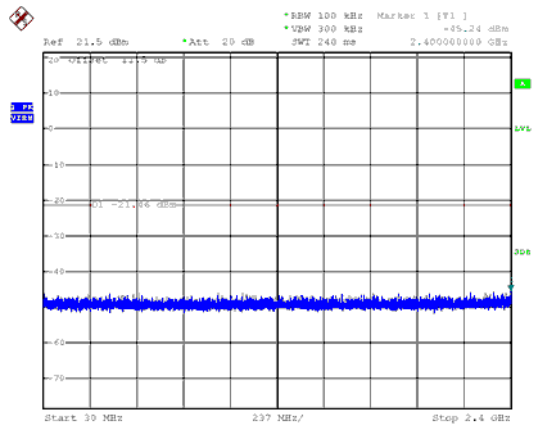
Modulation Type: 802.11n HT40, CH 06





ANT 1

Modulation Type: 802.11n HT40, CH 09





8. On Time, Duty Cycle and Measurement methods

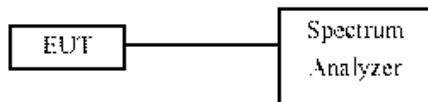
8.1 Test Limit

None; for reporting purposes only.

8.2 Test Procedure

KDB 558074 Zero-Span Spectrum Analyzer Method.

8.3 Test Setup Layout



8.4 Test Result and Data

Temperature : 21°

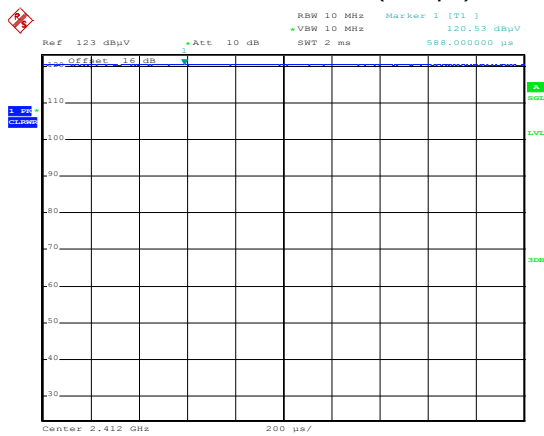
Humidity : 47%

Test Date : Dec. 07, 2018

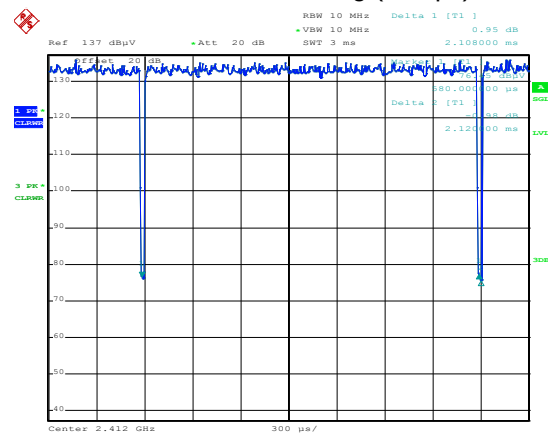
Modulation Mode	On Time (ms)	Period Time (ms)	Duty Cycle (%)
11b,1M	100.00	100.00	100.00%
11g,6M	2.11	2.12	99.43%
11n HT20,M0	1.95	1.96	99.69%
11n HT40,M0	0.96	0.97	98.76%



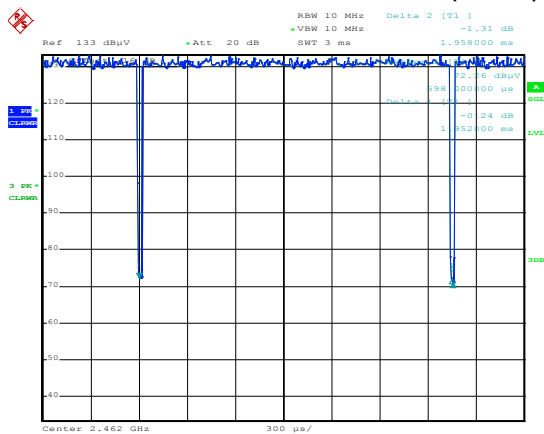
Modulation Standard: 802.11b (1Mbps)



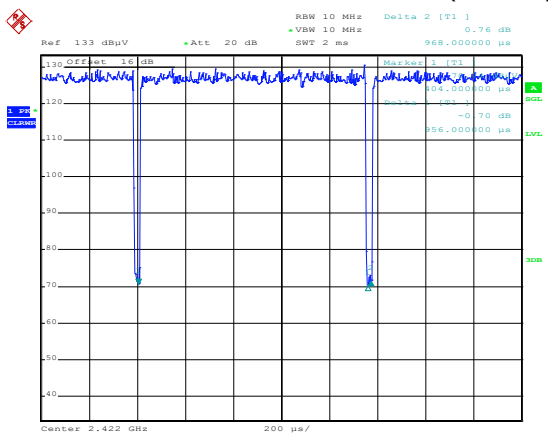
Modulation Standard: 802.11g (6Mbps)



Modulation Standard: 802.11n HT20 (6.5Mbps)



Modulation Standard: 802.11n HT40 (13.5Mbps)





9. 6dB Bandwidth Measurement Data

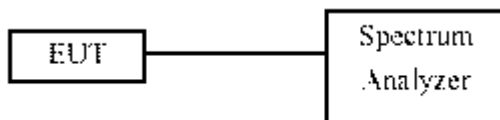
9.1 Test Limit

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

9.2 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.

9.3 Test Setup Layout



9.4 Test Result and Data

Temperature : 21°

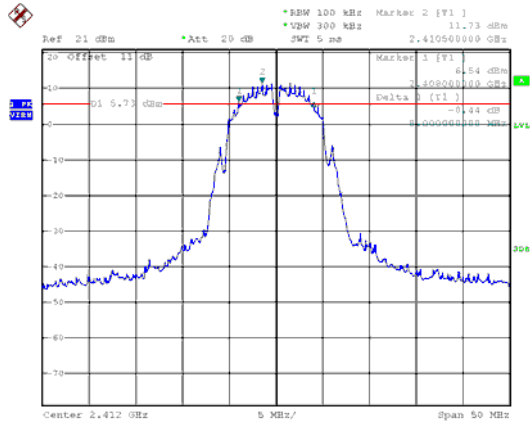
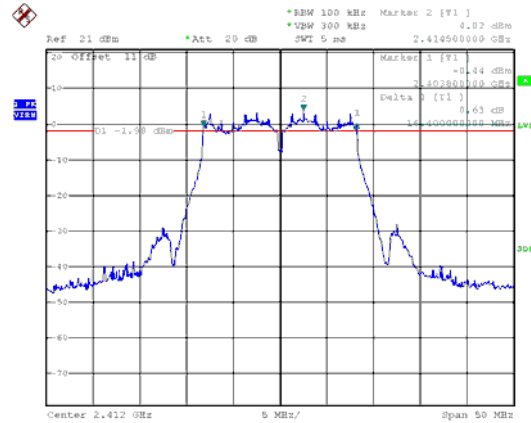
Humidity : 47%

Test Date : Dec. 07, 2018

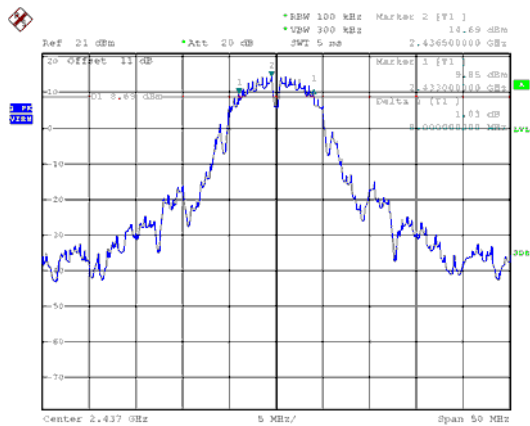
Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Limit (MHz)
			ANT 0	ANT 1	
IEEE 802.11b (1Mbps)	01	2412	8.00	---	0.5
	06	2437	8.00	---	0.5
	11	2462	8.00	---	0.5
IEEE 802.11g (6Mbps)	01	2412	16.40	16.40	0.5
	06	2437	16.40	16.40	0.5
	11	2462	16.40	16.40	0.5
IEEE 802.11n HT20 (6.5Mbps)	01	2412	17.60	17.60	0.5
	06	2437	17.60	17.60	0.5
	11	2462	17.60	17.60	0.5
IEEE 802.11n HT40 (13.5Mbps)	03	2422	35.40	36.00	0.5
	06	2437	35.20	35.40	0.5
	09	2452	35.20	36.00	0.5



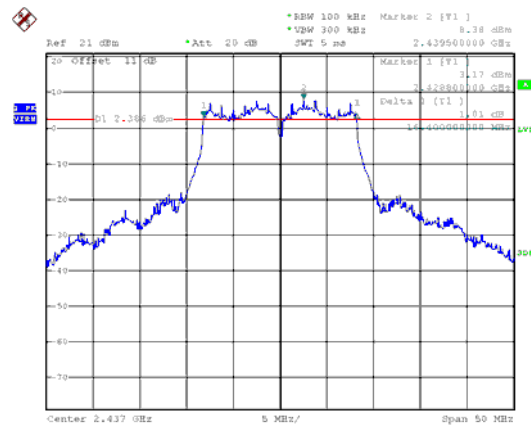
ANT 0

Modulation Type: 802.11b
CH01Modulation Type: 802.11g
CH01

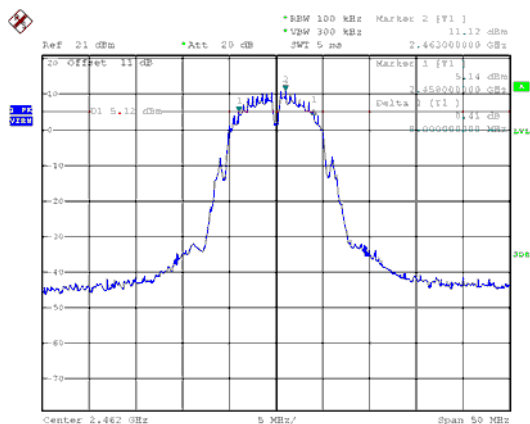
CH06



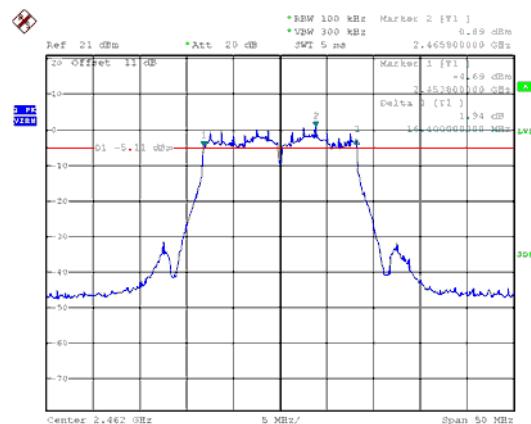
CH06



CH11

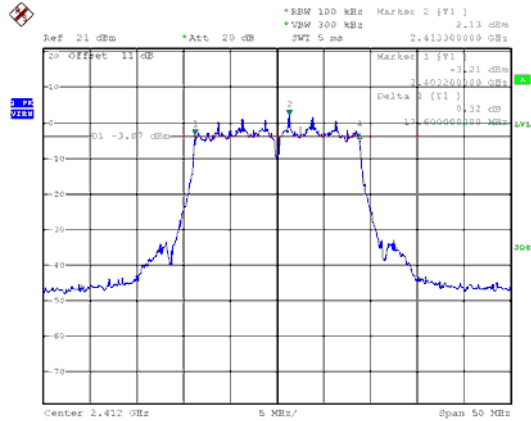
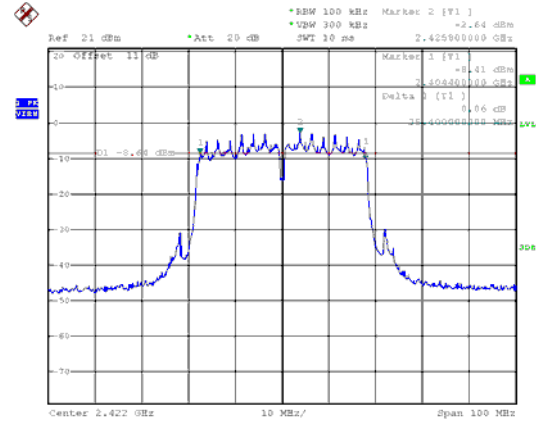


CH11

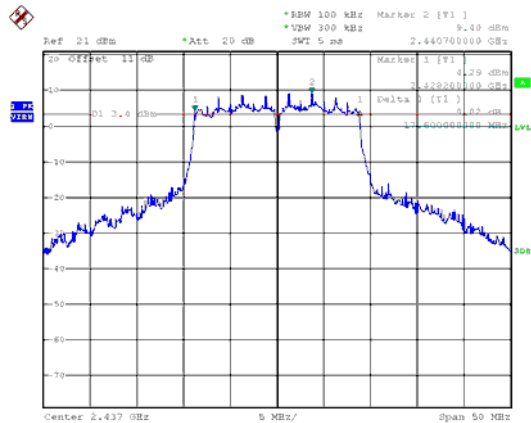




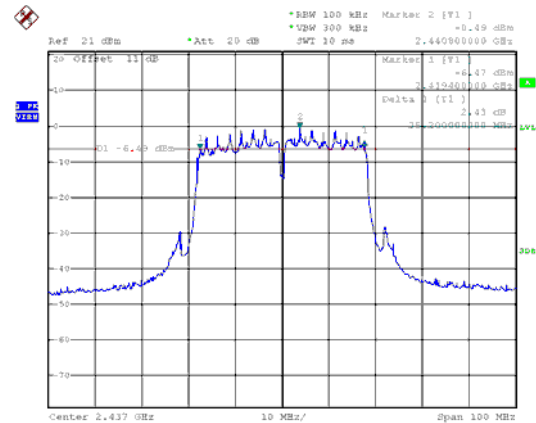
ANT 0

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

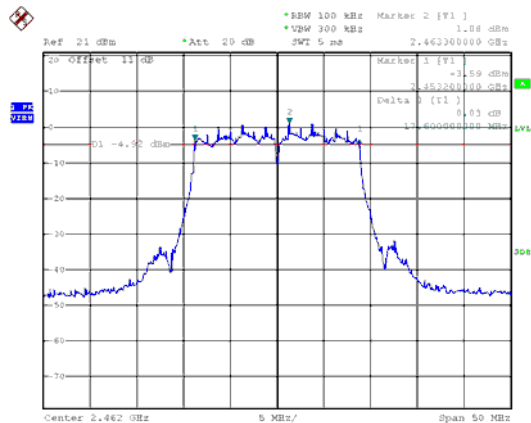
CH06



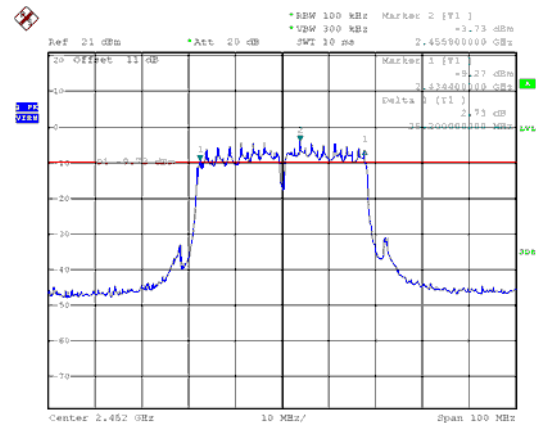
CH06



CH11

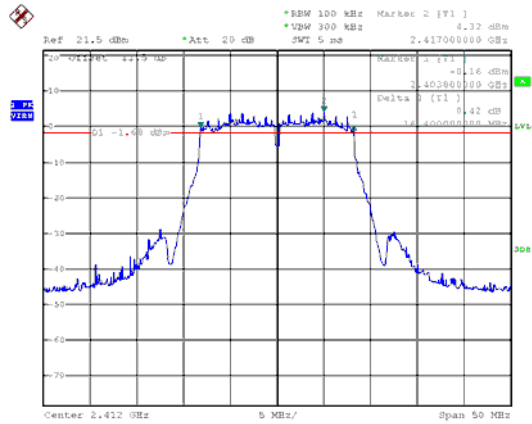


CH09

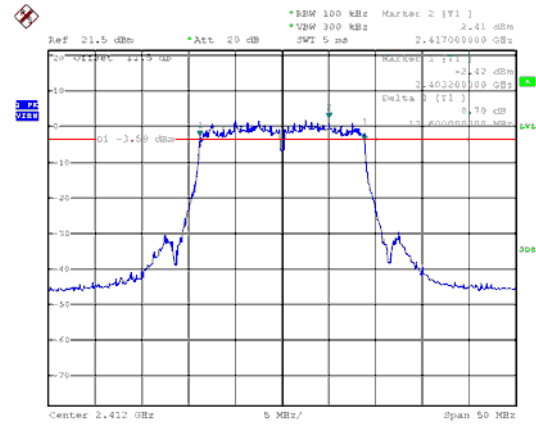




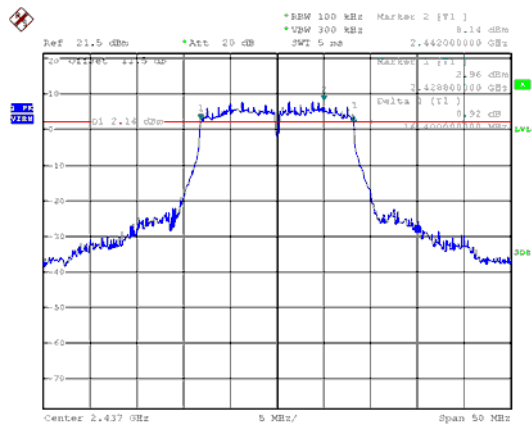
ANT 1
Modulation Type: 802.11g
CH01



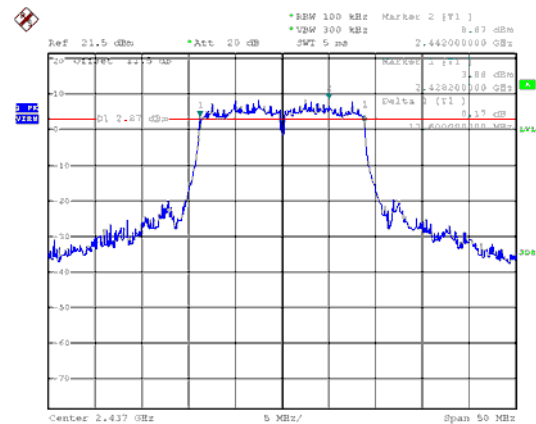
Modulation Type: 802.11n HT20
CH01



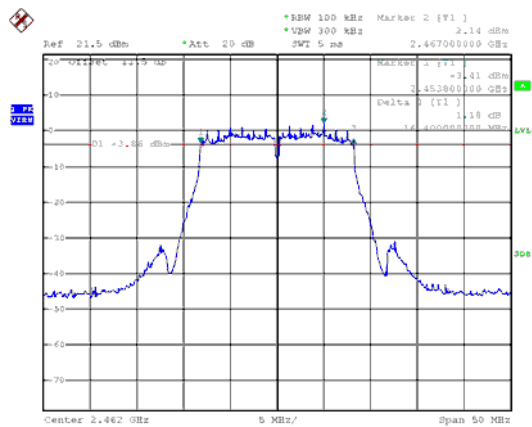
CH06



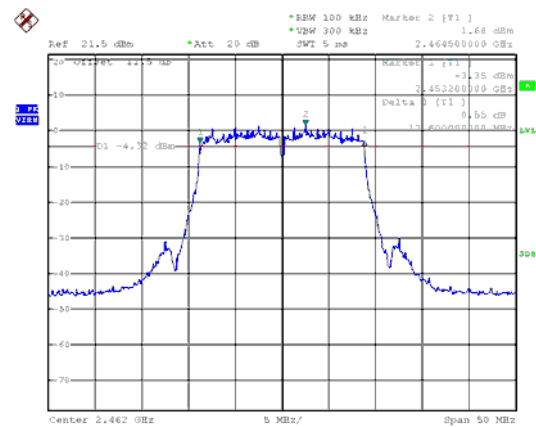
CH06



CH11



CH11

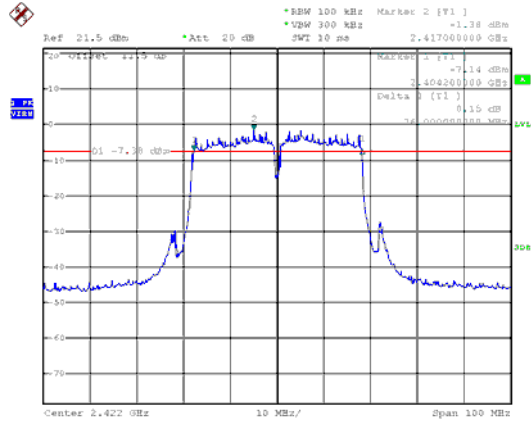




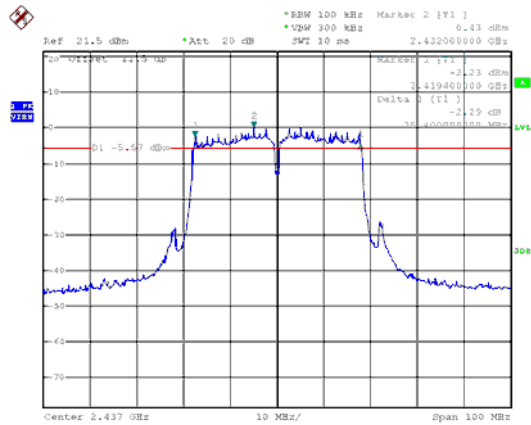
ANT 1

Modulation Type: 802.11n HT40

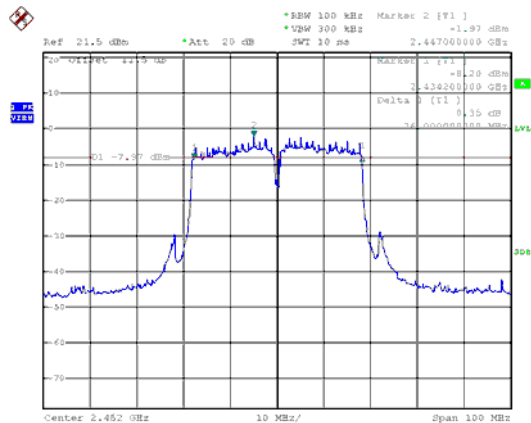
CH03



CH06



CH09





10. Maximum Peak and Average Output Power

10.1 Test Limit

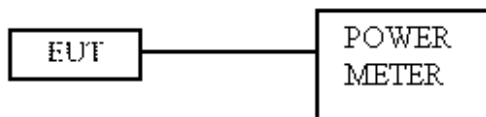
The Maximum Peak Output Power Measurement is 30dBm.

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

10.2 Test Procedures

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

10.3 Test Setup Layout



10.4 Test Result and Data

Temperature : 21°

Humidity : 47%

Test Date : Dec. 07, 2018

Modulation Type	Channel	Frequency (MHz)	Peak Power Output (dBm)		Total PK Power (dBm)	Total PK Power (mW)	Limit (dBm)
			ANT 0	ANT 1			
IEEE 802.11b (1Mbps)	01	2412	23.86	---	23.86	243.22	30.00
	06	2437	25.96	---	25.96	394.46	30.00
	11	2462	22.7	---	22.70	186.21	30.00
IEEE 802.11g (6Mbps)	01	2412	24.21	24.63	27.44	554.04	30.00
	06	2437	26.1	27.3	29.75	944.41	30.00
	11	2462	20.17	21.79	24.07	255.00	30.00
IEEE 802.11n HT20 (6.5Mbps)	01	2412	21.18	22.03	24.64	290.81	30.00
	06	2437	26.34	27.5	29.97	992.87	30.00
	11	2462	20.89	22.04	24.51	282.70	30.00
IEEE 802.11n HT40 (13.5Mbps)	03	2422	19.6	21.31	23.55	226.41	30.00
	06	2437	21.94	23.39	25.74	291.52	30.00
	09	2452	18.5	20.36	22.54	179.44	30.00



Modulation Type	Channel	Frequency (MHz)	Average Power Output (dBm)		Total AV Power (dBm)	Total AV Power (mW)	Limit (dBm)
			ANT 0	ANT 1			
IEEE 802.11b (1Mbps)	01	2412	20.15	---	20.15	103.51	30.00
	06	2437	23.05	---	23.05	201.84	30.00
	11	2462	18.8	---	18.80	75.86	30.00
IEEE 802.11g (6Mbps)	01	2412	15.57	15.64	18.62	72.70	30.00
	06	2437	19.4	19.3	22.36	172.21	30.00
	11	2462	11.26	12.81	15.11	32.46	30.00
IEEE 802.11n HT20 (6.5Mbps)	01	2412	12.21	12.96	15.61	36.40	30.00
	06	2437	19.9	19.57	22.75	188.30	30.00
	11	2462	11.88	12.86	15.41	34.74	30.00
IEEE 802.11n HT40 (13.5Mbps)	03	2422	10.8	12.39	14.68	29.36	30.00
	06	2437	13.07	14.33	16.76	37.61	30.00
	09	2452	9.66	11.4	13.63	23.05	30.00

Note: Average power is for reference only.



11. Power Spectral Density

11.1 Test Limit

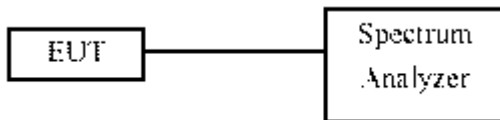
The Maximum of Power Spectral Density Measurement is 8dBm.

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

11.2 Test Procedures

- 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.

11.3 Test Setup Layout



11.4 Test Result and Data

Temperature : 21°

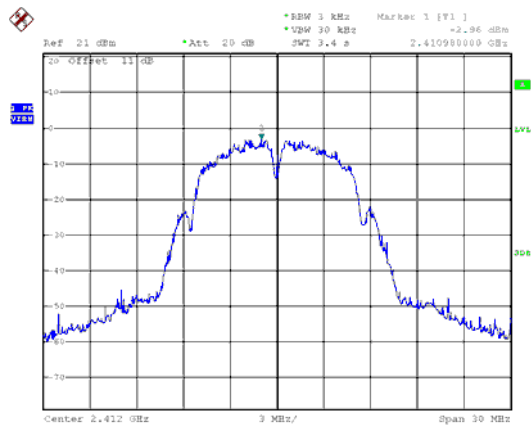
Humidity : 47%

Test Date : Dec. 07, 2018

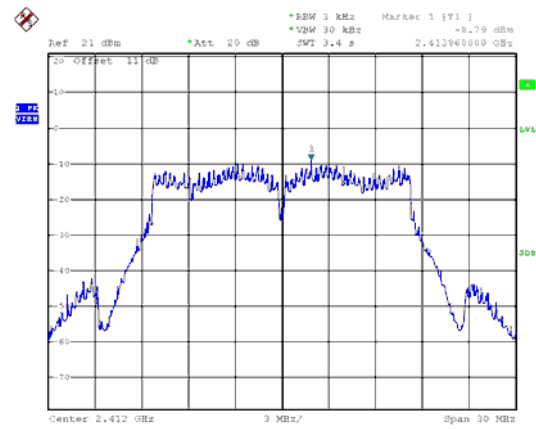
Modulation Type	Channel	Frequency (MHz)	Maximum Power Density of 3KHz Bandwidth(dBm)		Sum chain (dBm)	Duty Cycle CF(dB)	Total PSD (dBm)	Limit (dBm)
			ANT 0	ANT 1				
IEEE 802.11b (1Mbps)	01	2412	-2.96	---	-2.96	0.00	-2.96	8.00
	06	2437	0.9	---	0.90	0.00	0.90	8.00
	11	2462	-3.27	---	-3.27	0.00	-3.27	8.00
IEEE 802.11g (6Mbps)	01	2412	-8.79	-9.28	-6.02	0.00	-6.02	7.87
	06	2437	-5.22	-6.14	-2.65	0.00	-2.65	7.87
	11	2462	-12.73	-11.92	-9.30	0.00	-9.30	7.87
IEEE 802.11n HT20 (6.5Mbps)	01	2412	-13.35	-12.59	-9.94	0.00	-9.94	7.87
	06	2437	-4.84	-4.05	-1.42	0.00	-1.42	7.87
	11	2462	-12.63	-12.27	-9.44	0.00	-9.44	7.87
IEEE 802.11n HT40 (13.5Mbps)	03	2422	-16.88	-14.45	-12.49	0.00	-12.49	7.87
	06	2437	-13.09	-12.48	-9.76	0.00	-9.76	7.87
	09	2452	-18.13	-15.38	-13.53	0.00	-13.53	7.87



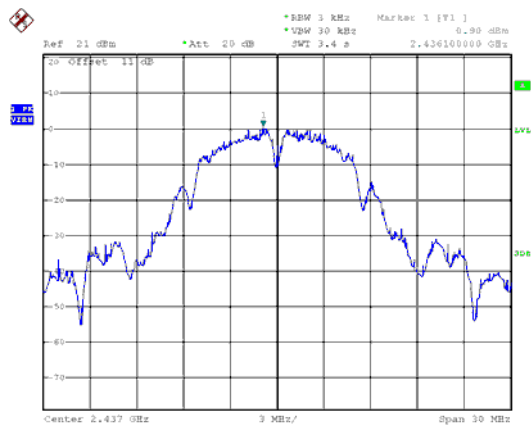
ANT 0
Modulation Type: 802.11b
CH01



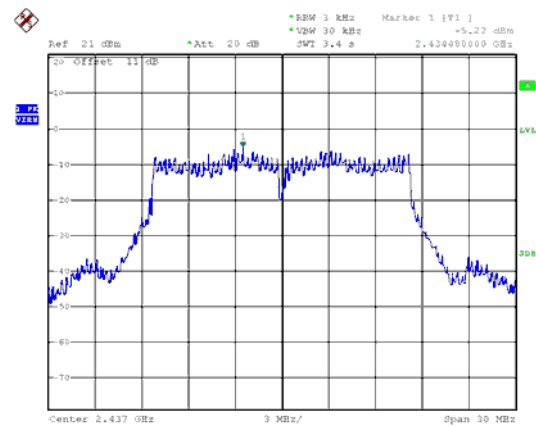
Modulation Type: 802.11g
CH01



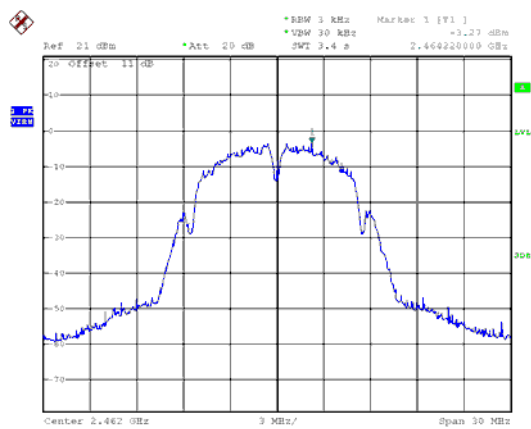
CH06



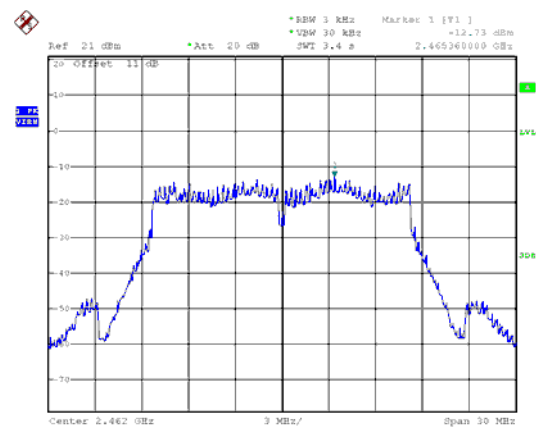
CH06



CH11

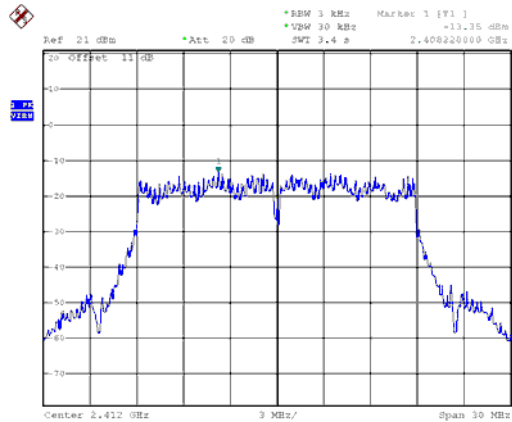


CH11

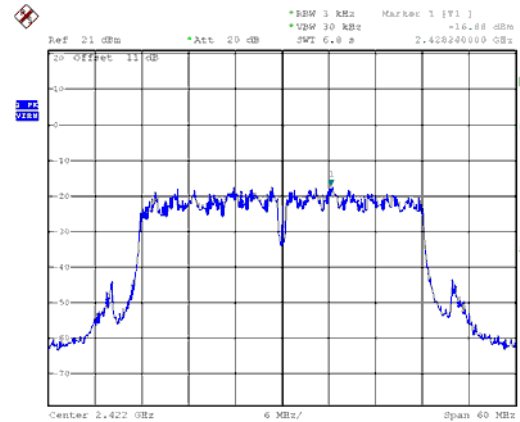




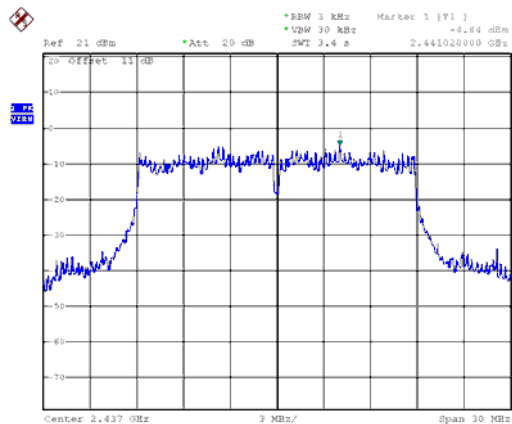
ANT 0
Modulation Type: 802.11n HT20
CH01



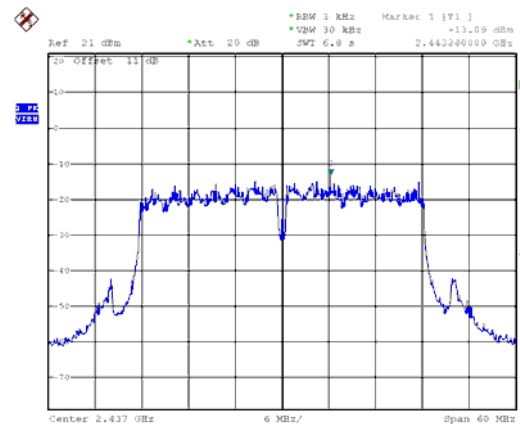
Modulation Type: 802.11n HT40
CH03



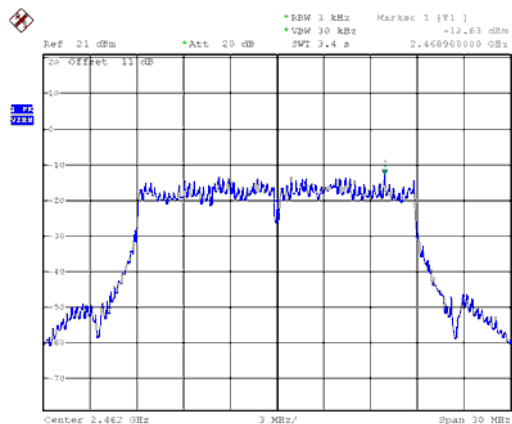
CH06



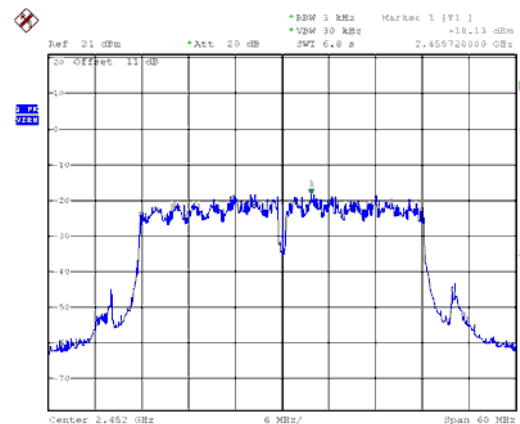
CH06



CH11

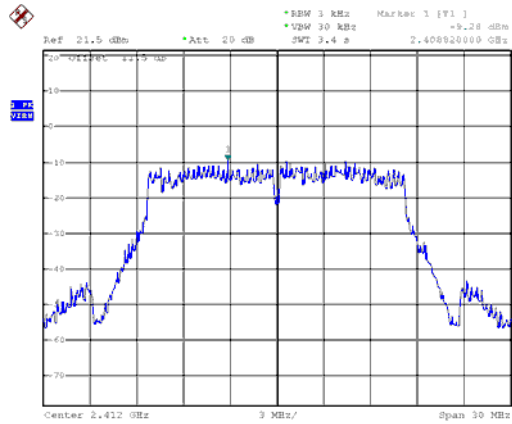


CH09

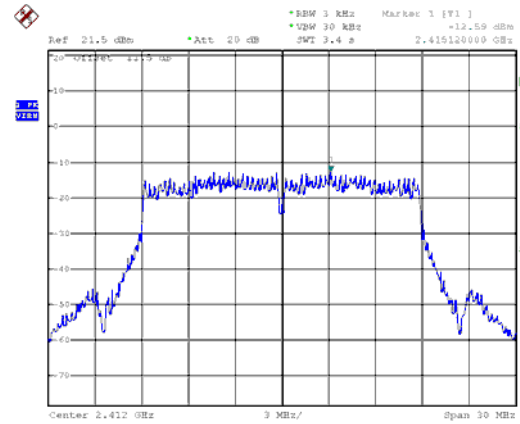




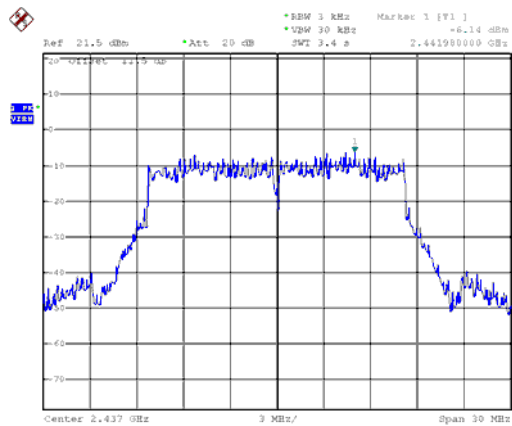
ANT 1
Modulation Type: 802.11g
CH01



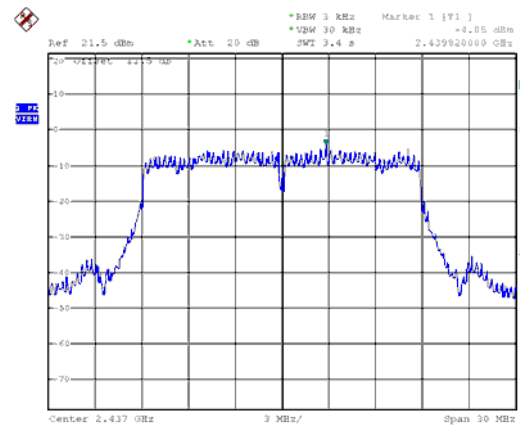
Modulation Type: 802.11n HT20
CH01



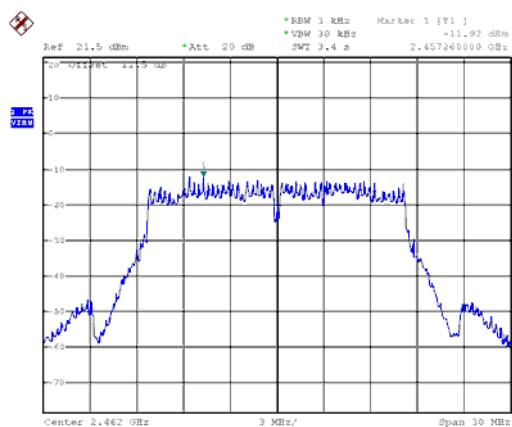
CH06



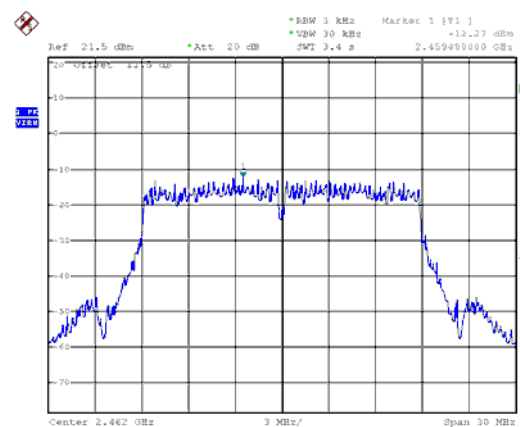
CH06



CH11

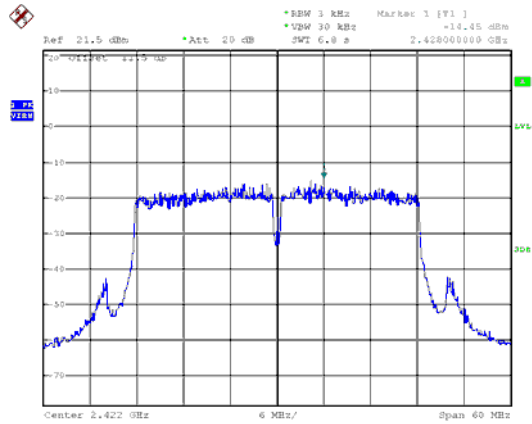


CH11

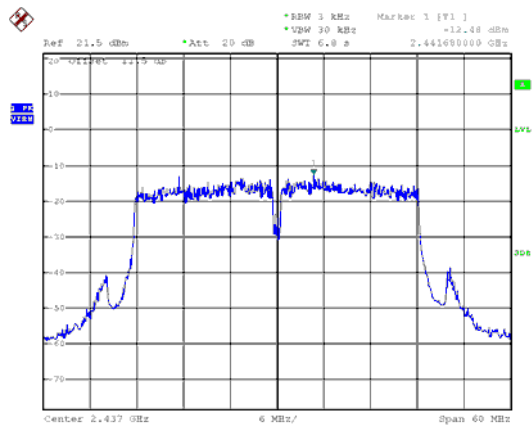




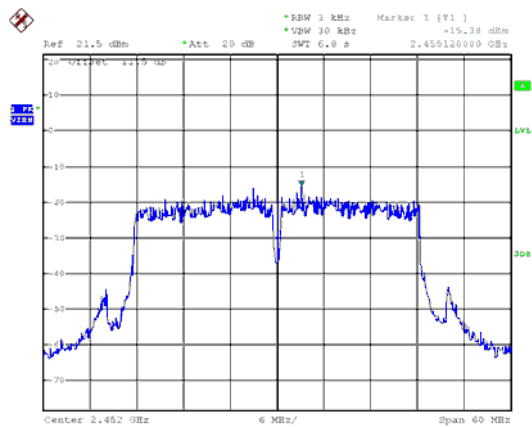
ANT 1
Modulation Type: 802.11n HT40
CH03



CH06



CH09





12. Radio Frequency Exposure

12.1 Applicable Standards

The measurements shown in this test report were made in accordance with the procedures given in FCC Part 2 (Section 2.1091)

KDB 447498

IEEE C95.1:2005

12.2 EUT Specification

Frequency band (Operating)	☒ WLAN: 2412MHz ~ 2462MHz ☐ WLAN: 5150MHz ~ 5250MHz ☐ WLAN: 5250MHz ~ 5350MHz ☐ WLAN: 5470MHz ~ 5725MHz ☐ WLAN: 5725MHz ~ 5850MHz ☐ Bluetooth: 2402MHz ~ 2480MHz
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation)
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm ²) ☒ General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	☐ Single antenna ☒ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☒ Tx/Rx diversity
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A
Remark: 1. The maximum output power is <u>29.97dBm (992.87mW)</u> at <u>2437MHz</u> (with <u>numeric 3.78 antenna gain</u> .) 2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance. 3. For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 0.472 mW/cm ² even if the calculation indicates that the power density would be larger.	



12.3 Test Results

No non-compliance noted.

12.4 Calculation

$$\text{Given } E = \frac{\sqrt{30 \times P \times G}}{d} \quad \& \quad S = \frac{E^2}{3770}$$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

$P \text{ (mW)} = P \text{ (W)} / 1000$ and

$d \text{ (cm)} = d \text{ (m)} / 100$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

12.5 Maximum Permissible Exposure

Channel Frequency (MHz)	Max. Conducted output power(dBm)	Antenna Gain(dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	29.97	3.78	20	0.472	1