



FCC RADIO TEST REPORT

Applicant : Dexatek Technology Ltd.

Address : 16F-1, No81, Sec 1,Xintai 5th Rd., Xizhi Dist.,
New Taipei City 22101, Taiwan

Equipment : Smart Plug

Model No. SA-7150

Trade Name : Dexatek

FCC ID. : SZY-SA7150

I HEREBY CERTIFY THAT :

The sample was received on Apr. 25, 2018 and the testing was carried out on May. 23, 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 / Assistant Manager

Tested by:

Spree Yei / Engineer

Laboratory Accreditation:

CerpPASS Technology Corporation Test Laboratory





Contents

1. Summary of Test Procedure and Test Results.....	5
1.1 Applicable Standards	5
2. Test Configuration of Equipment under Test.....	6
2.1 Feature of Equipment.....	6
2.2 Carrier Frequency of Channels.....	6
2.3 Test Mode and Test Software	7
2.4 Description of Test System.....	7
2.5 General Information of Test.....	8
2.6 Measurement Uncertainty	8
3. Test Equipment and Ancillaries Used for Tests	9
4. Antenna Requirements.....	10
4.1 Antenna Construction and Directional Gain.....	10
5. Test of AC Power Line Conducted Emission	11
5.1 Test Limit	11
5.2 Test Procedures	11
5.3 Typical Test Setup	12
5.4 Test Result and Data.....	13
5.5 Test Photographs	17
6. Test of Radiated Spurious Emission.....	18
6.1 Test Limit	18
6.2 Test Procedures	18
6.3 Typical Test Setup	19
6.4 Test Result and Data (9KHz ~ 30MHz)	20
6.5 Test Result and Data (30MHz ~ 1GHz).....	20
6.6 Test Result and Data (1GHz ~ 25GHz).....	22
6.7 Restricted Bands of Operation	40
6.8 Test Photographs (30MHz ~ 1GHz)	41
6.9 Test Photographs (1GHz ~ 25GHz)	42
7. Test of Conducted Spurious Emission	43
7.1 Test Limit	43
7.2 Test Procedure	43
7.3 Test Setup Layout	43
7.4 Test Result and Data.....	43
8. 6dB Bandwidth Measurement Data	50
8.1 Test Limit	50
8.2 Test Procedures	50
8.3 Test Setup Layout	50
8.4 Test Result and Data.....	50
9. Maximum Peak and Average Output Power	53
9.1 Test Limit	53
9.2 Test Procedures	53
9.3 Test Setup Layout	53



9.4	Test Result and Data.....	54
10.	Power Spectral Density	55
10.1	Test Limit	55
10.2	Test Procedures	55
10.3	Test Setup Layout	55
10.4	Test Result and Data.....	55
11.	Radio Frequency Exposure	58
11.1	Applicable Standards	58
11.2	EUT Specification	58
11.3	Test Results.....	59
11.4	Calculation.....	59
11.5	Maximum Permissible Exposure.....	60

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

KDB447498

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

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



2. Test Configuration of Equipment under Test

2.1 Feature of Equipment

Equipment	Smart Plug
Model No.	SA-7150
Brand Name	Dexatek
Product Description	Please refer to User's Manual.
Connecting I/O Port(s)	Please refer to User's Manual.
Frequency Range	2412MHz~2462MHz
Modulation Type	802.11b, 802.11g, 802.11n HT20
Data Rate	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS7, HT20
Antenna Type/ gain	Chip antenna/ 0.5dBi

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	---	---

Note: Channels remarked * are selected to perform test.



2.3 Test Mode and Test Software

- a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
- b. An executive program, " UI_mptool_1:V14" under WIN 8 was executed to transmit and receive data via WLAN.
- c. The following test modes were performed for the test:

Conducted Emissions from the AC power line and Radiated Spurious Emission (below 1GHz)	
Test Mode	Operating Description
1	802.11g (6Mbps)
Radiated Spurious Emission (above 1GHz)	
Test Mode	Operating Description
1	802.11b (1Mbps)
2	802.11g (6Mbps)
3	802.11n HT20 (6.5Mbps)
Conducted Spurious Emission, 6dB Bandwidth, Maximum Peak Output Power, Power Spectral Density	
Test Mode	Operating Description
1	802.11b (1Mbps)
2	802.11g (6Mbps)
3	802.11n HT20 (6.5Mbps)

2.4 Description of Test System

The EUT is test alone.



2.5 General Information of Test

Test Site	CerpPASS Technology Corporation Test Laboratory Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881 Address: No.68-1, Shihbachongsi, Shihding Township, New Taipei City 223, Taiwan, R.O.C. Tel: +886-2-2663-8582	
	FCC	TW1079, TW1061, 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-812, G-813 for radiated disturbance above 1GHz
Frequency Range Investigated:	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 25,000MHz	
Test Distance:	The test distance of radiated emission from antenna to EUT is 3 M.	

2.6 Measurement Uncertainty

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



3. Test Equipment and Ancillaries Used for Tests

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
EMI Receiver	R&S	ESCI3	100821	2017/09/08	2018/09/07
LISN	Schwarzbeck	NSLK 8127	8127-568	2018/02/26	2019/02/25
Pulse Limiter	R&S	ESH3-Z2	101934	2018/02/22	2019/02/21
Bilog Antenna	Schwarzbeck	VULB9168	275	2017/08/31	2018/08/30
Horn Antenna	EMCO	3115	31601	2017/09/11	2018/09/10
Horn Antenna	EMCO	3116	31970	2018/03/23	2019/03/22
Preamplifier	EM	EM330	60658	2017/09/08	2018/09/07
Preamplifier	EMC INSTRUMENTS	EMC051845SE	980333	2017/09/20	2018/09/19
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2017/11/10	2018/11/09
MXG MW Analog Signal Generator	KEYSIGHT	N5183A	MY50142931	2018/04/10	2019/04/09
Spectrum Analyzer	R&S	FSP40	100219	2017/07/01	2018/06/30
BLUETOOTH TESTER	R&S	CBT	101133	2018/04/02	2019/04/01
Attenuator	KEYSIGHT	8491B	MY39250705	2017/09/04	2018/09/03
Rotary Attenuator	Agilent	8495B	MY42146680	2018/03/29	2019/03/28
Temp & Humi chamber	T-MACHINE	TMJ-9712	T-12-040111	2017/09/04	2018/09/03
Series Power Meter	Anritsu	ML2495A	1224005	2018/03/23	2019/03/22
Power Sensor	Anritsu	MA2411B	1207295	2018/03/23	2019/03/22
Software	Farad	Ez-EMC	ver.ct3a1	N/A	N/A
Software	AUDIX	E3	V8.2014-8-6	N/A	N/A
Software	Keysight	N7607B Signal Studio	V3.0.0.0	N/A	N/A
Software	Keysight	Inservice MonitorUtility	N/A	N/A	N/A



4. Antenna Requirements

4.1 Antenna Construction and Directional Gain

Antenna Type	Chip Antenna
Antenna Gain	0.5 dBi



5. Test of AC Power Line Conducted Emission

5.1 Test Limit

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

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

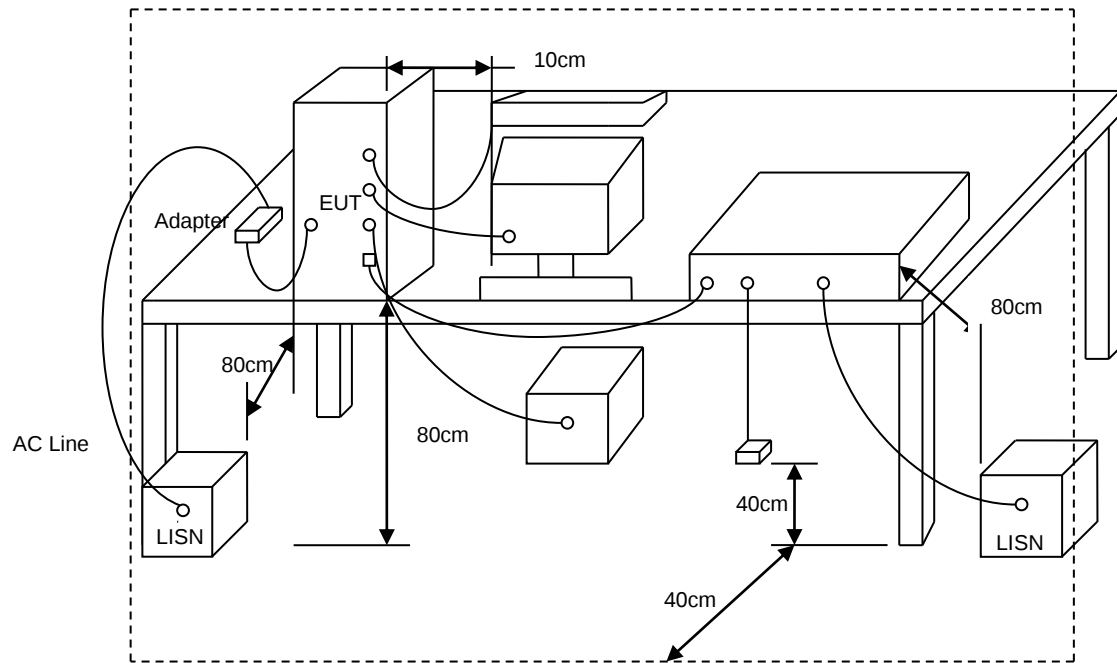
*Decreases with the logarithm of the frequency.

5.2 Test Procedures

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



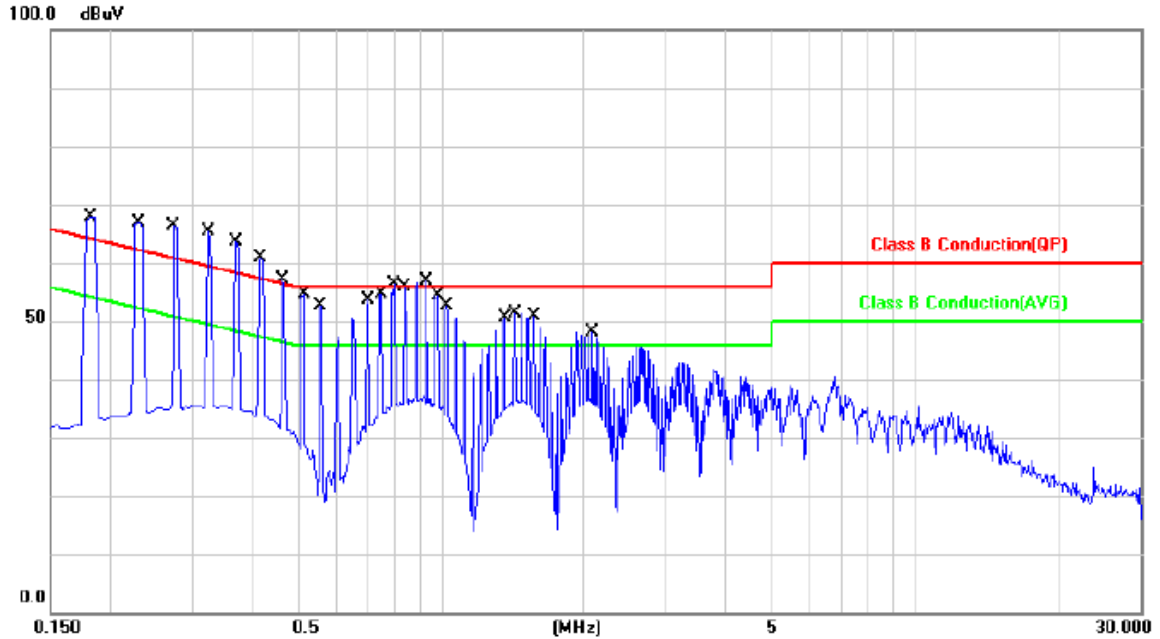
5.3 Typical Test Setup





5.4 Test Result and Data

Power	: AC 120V	Pol/Phase	: LINE
Test Mode	: Mode 1	Temperature	: 20 °C
Test date	: May. 17, 2018	Humidity	: 40 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1819	9.94	51.97	61.91	64.39	-2.48	QP	P
2	0.1819	9.94	27.49	37.43	54.39	-16.96	AVG	P
3	0.2300	9.94	50.73	60.67	62.45	-1.78	QP	P
4	0.2300	9.94	27.14	37.08	52.45	-15.37	AVG	P
5	0.2740	9.94	49.56	59.50	60.99	-1.49	QP	P
6	0.2740	9.94	26.66	36.60	50.99	-14.39	AVG	P
7	0.3220	9.95	48.65	58.60	59.65	-1.05	QP	P
8	0.3220	9.95	26.38	36.33	49.65	-13.32	AVG	P
9	0.3700	9.96	46.57	56.53	58.50	-1.97	QP	P
10	0.3700	9.96	24.95	34.91	48.50	-13.59	AVG	P
11	0.4180	9.96	44.20	54.16	57.49	-3.33	QP	P
12	0.4180	9.96	23.25	33.21	47.49	-14.28	AVG	P
13	0.4620	9.96	41.26	51.22	56.66	-5.44	QP	P
14	0.4620	9.96	20.58	30.54	46.66	-16.12	AVG	P



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
15	0.5140	9.96	38.07	48.03	56.00	-7.97	QP	P
16	0.5140	9.96	17.93	27.89	46.00	-18.11	AVG	P
17	0.5580	9.97	34.05	44.02	56.00	-11.98	QP	P
18	0.5580	9.97	14.02	23.99	46.00	-22.01	AVG	P
19	0.7019	9.98	36.52	46.50	56.00	-9.50	QP	P
20	0.7019	9.98	18.43	28.41	46.00	-17.59	AVG	P
21	0.7500	9.98	38.30	48.28	56.00	-7.72	QP	P
22	0.7500	9.98	20.61	30.59	46.00	-15.41	AVG	P
23	0.7980	9.98	39.29	49.27	56.00	-6.73	QP	P
24	0.7980	9.98	21.86	31.84	46.00	-14.16	AVG	P
25	0.8420	9.98	39.47	49.45	56.00	-6.55	QP	P
26	0.8420	9.98	22.29	32.27	46.00	-13.73	AVG	P
27	0.9380	10.00	40.04	50.04	56.00	-5.96	QP	P
28	0.9380	10.00	22.54	32.54	46.00	-13.46	AVG	P
29	0.9860	10.00	37.88	47.88	56.00	-8.12	QP	P
30	0.9860	10.00	21.18	31.18	46.00	-14.82	AVG	P
31	1.0300	10.00	35.90	45.90	56.00	-10.10	QP	P
32	1.0300	10.00	19.42	29.42	46.00	-16.58	AVG	P
33	1.3619	10.01	33.51	43.52	56.00	-12.48	QP	P
34	1.3619	10.01	19.87	29.88	46.00	-16.12	AVG	P
35	1.4340	10.02	34.61	44.63	56.00	-11.37	QP	P
36	1.4340	10.02	21.11	31.13	46.00	-14.87	AVG	P
37	1.5740	10.03	33.40	43.43	56.00	-12.57	QP	P
38	1.5740	10.03	19.77	29.80	46.00	-16.20	AVG	P
39	2.0900	10.05	31.24	41.29	56.00	-14.71	QP	P
40	2.0900	10.05	20.33	30.38	46.00	-15.62	AVG	P

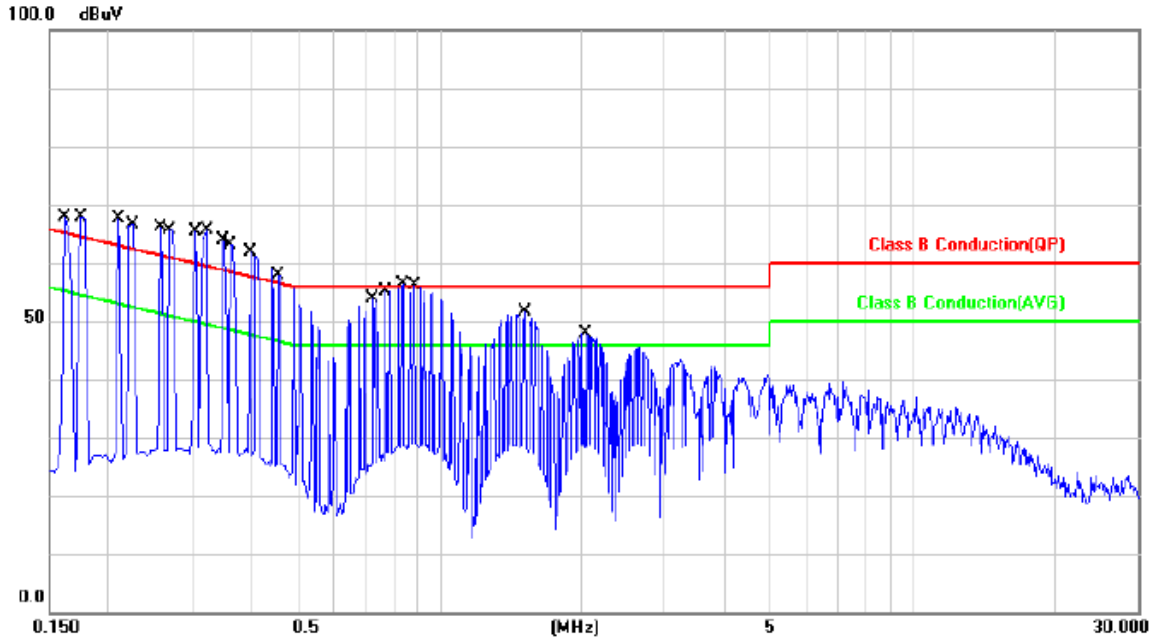
Note: Level = Reading + Factor

Margin = Level – Limit

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



Power	: AC 120V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 1	Temperature	: 20 °C
Test date	: May. 17, 2018	Humidity	: 40 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1620	9.94	52.20	62.14	65.36	-3.22	QP	P
2	0.1620	9.94	26.10	36.04	55.36	-19.32	AVG	P
3	0.1740	9.94	51.66	61.60	64.76	-3.16	QP	P
4	0.1740	9.94	25.71	35.65	54.76	-19.11	AVG	P
5	0.2100	9.94	51.10	61.04	63.20	-2.16	QP	P
6	0.2100	9.94	25.51	35.45	53.20	-17.75	AVG	P
7	0.2260	9.94	50.57	60.51	62.59	-2.08	QP	P
8	0.2260	9.94	25.19	35.13	52.59	-17.46	AVG	P
9	0.2580	9.94	49.91	59.85	61.49	-1.64	QP	P
10	0.2580	9.94	24.72	34.66	51.49	-16.83	AVG	P
11	0.2700	9.94	49.43	59.37	61.12	-1.75	QP	P
12	0.2700	9.94	24.37	34.31	51.12	-16.81	AVG	P
13	0.3060	9.94	48.83	58.77	60.08	-1.31	QP	P
14	0.3060	9.94	24.15	34.09	50.08	-15.99	AVG	P



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
15	0.3220	9.94	48.58	58.52	59.65	-1.13	QP	P
16	0.3220	9.94	23.85	33.79	49.65	-15.86	AVG	P
17	0.3500	9.94	47.42	57.36	58.96	-1.60	QP	P
18	0.3500	9.94	22.93	32.87	48.96	-16.09	AVG	P
19	0.3620	9.95	46.40	56.35	58.68	-2.33	QP	P
20	0.3620	9.95	21.96	31.91	48.68	-16.77	AVG	P
21	0.3980	9.95	45.24	55.19	57.89	-2.70	QP	P
22	0.3980	9.95	21.07	31.02	47.89	-16.87	AVG	P
23	0.4580	9.95	41.08	51.03	56.73	-5.70	QP	P
24	0.4580	9.95	17.23	27.18	46.73	-19.55	AVG	P
25	0.7260	9.97	37.62	47.59	56.00	-8.41	QP	P
26	0.7260	9.97	15.64	25.61	46.00	-20.39	AVG	P
27	0.7740	9.97	38.85	48.82	56.00	-7.18	QP	P
28	0.7740	9.97	17.03	27.00	46.00	-19.00	AVG	P
29	0.8380	9.97	39.30	49.27	56.00	-6.73	QP	P
30	0.8380	9.97	17.70	27.67	46.00	-18.33	AVG	P
31	0.8860	9.98	39.41	49.39	56.00	-6.61	QP	P
32	0.8860	9.98	17.96	27.94	46.00	-18.06	AVG	P
33	1.5220	10.01	34.20	44.21	56.00	-11.79	QP	P
34	1.5220	10.01	15.31	25.32	46.00	-20.68	AVG	P
35	2.0340	10.04	31.33	41.37	56.00	-14.63	QP	P
36	2.0340	10.04	14.49	24.53	46.00	-21.47	AVG	P

Note: Level = Reading + Factor

Margin = Level – Limit

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



6. Test of Radiated Spurious Emission

6.1 Test Limit

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

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

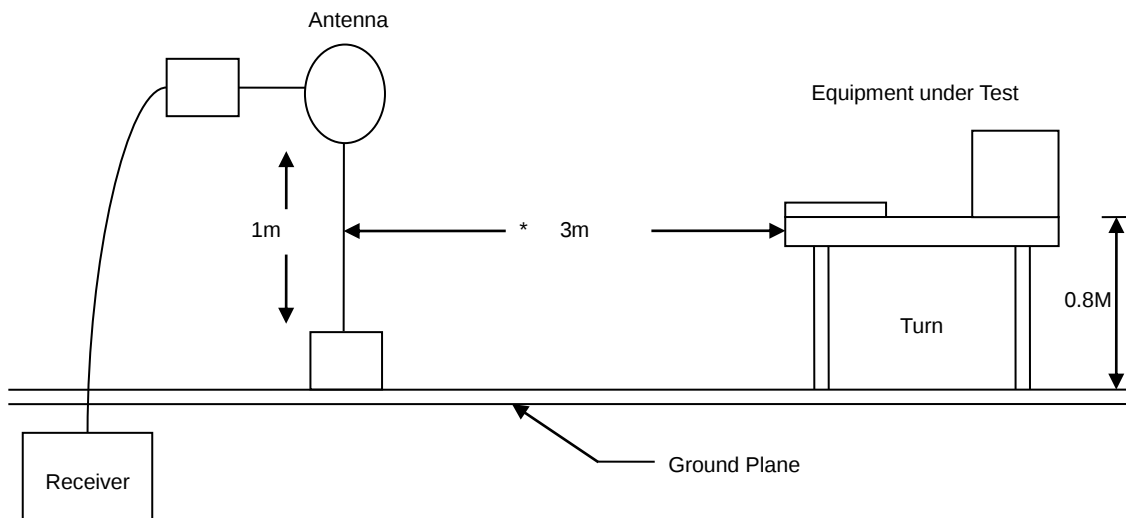
6.2 Test Procedures

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

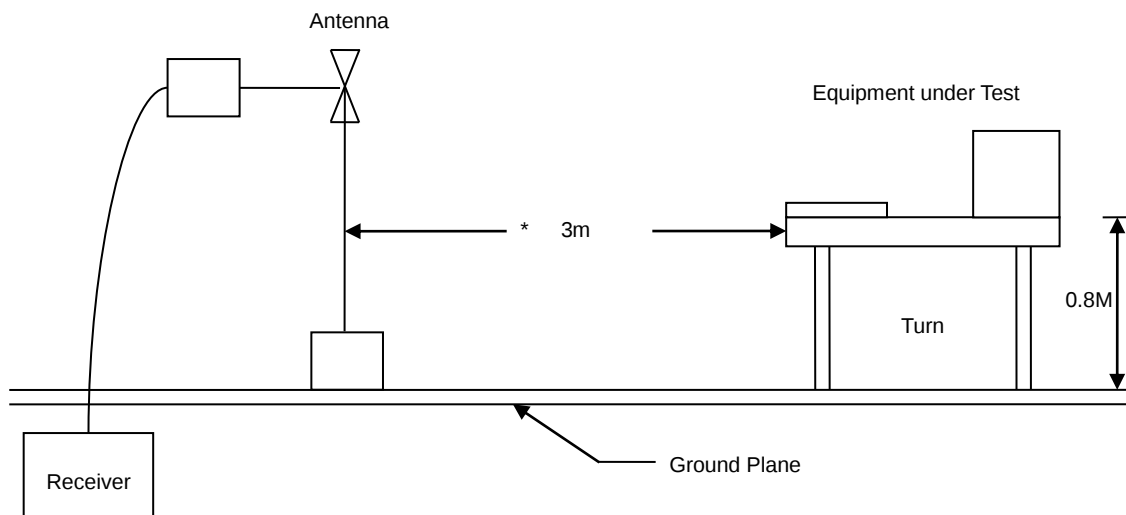


6.3 Typical Test Setup

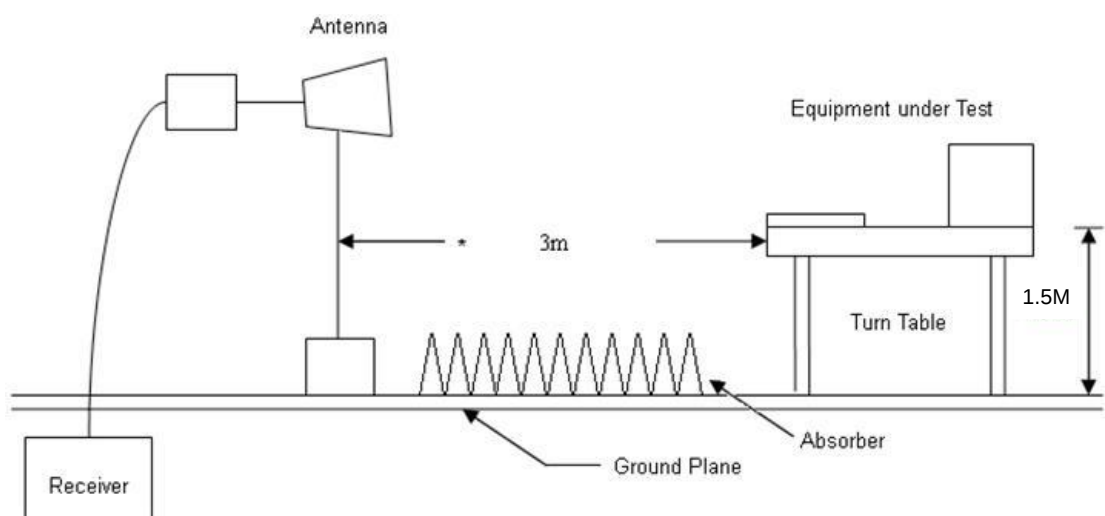
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup



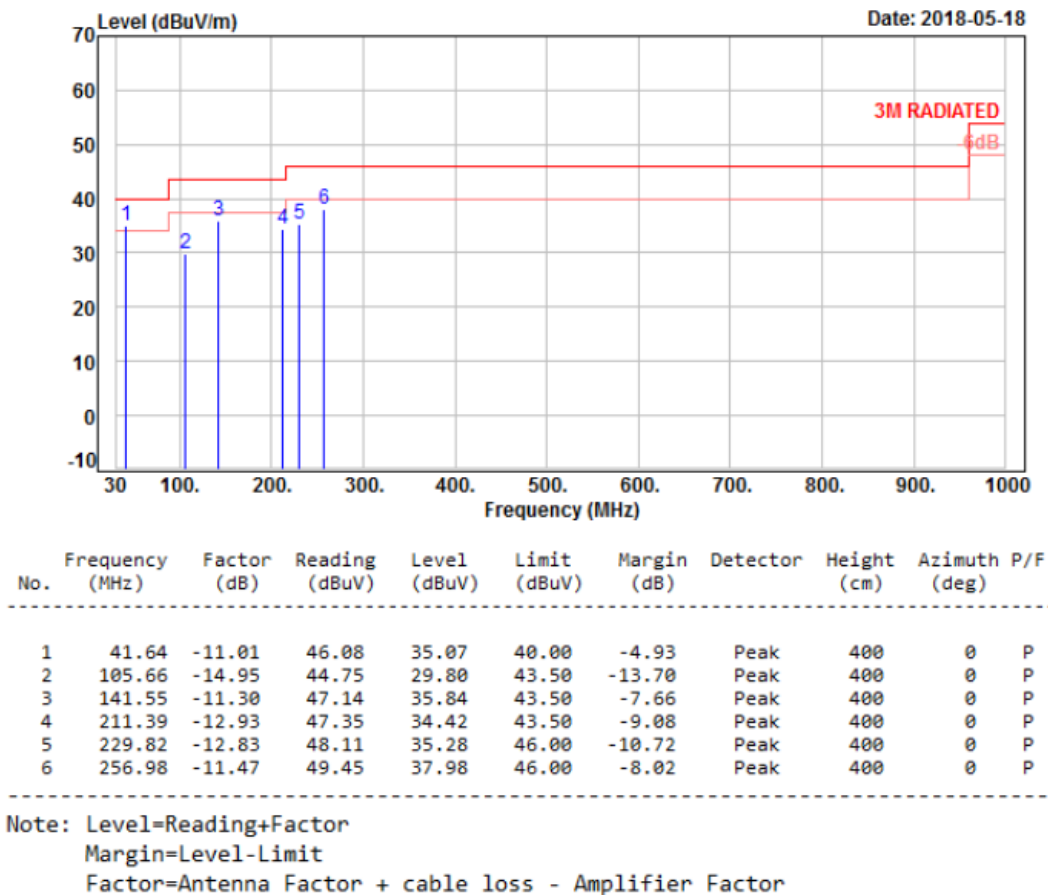


6.4 Test Result and Data (9KHz ~ 30MHz)

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

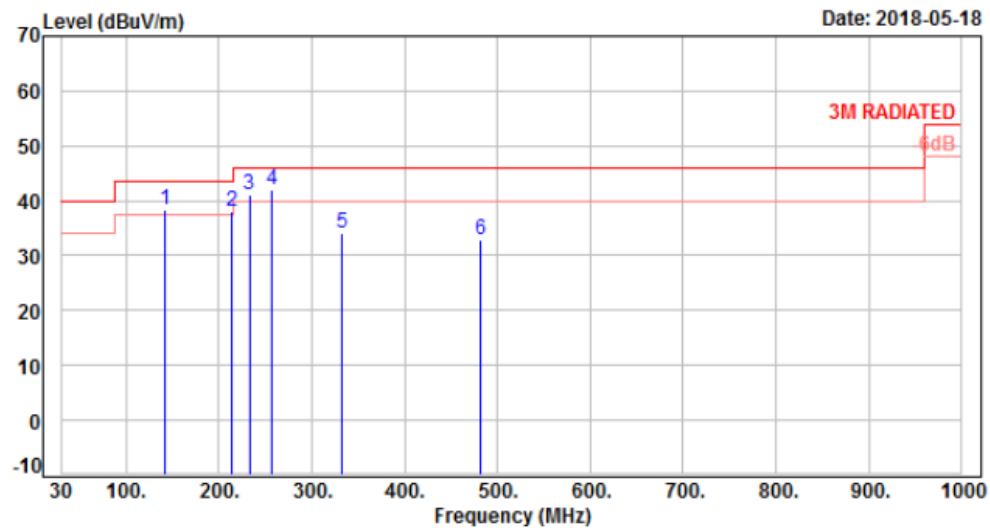
6.5 Test Result and Data (30MHz ~ 1GHz)

Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1	Temperature	: 21 °C
Test Date	: May. 18, 2018	Humidity	: 65 %





Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1	Temperature	: 21 °C
Test Date	: May. 18, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	141.55	-11.30	49.80	38.50	43.50	-5.00	QP	100	89	P
2	214.30	-12.91	51.08	38.17	43.50	-5.33	Peak	100	0	P
3	232.73	-12.55	53.60	41.05	46.00	-4.95	Peak	100	0	P
4	256.98	-11.47	53.60	42.13	46.00	-3.87	QP	100	95	P
5	332.64	-9.02	43.03	34.01	46.00	-11.99	Peak	100	0	P
6	482.02	-5.26	38.10	32.84	46.00	-13.16	Peak	100	0	P

Note: Level=Reading+Factor

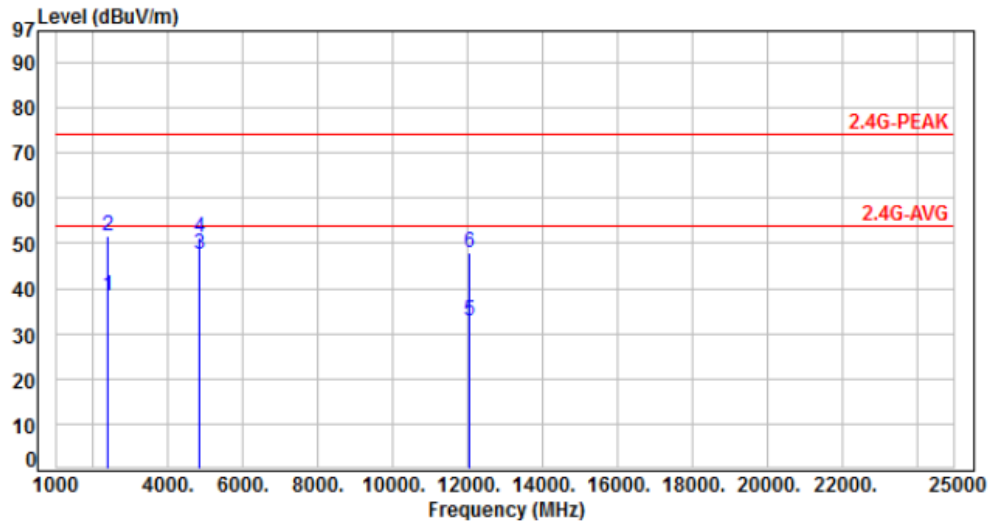
Margin=Level-Limit

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	: 21 °C
Test Date	: May. 18, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	54.31	38.35	54.00	-15.65	Average	100	5	P
2	2390.00	-15.96	67.51	51.55	74.00	-22.45	Peak	100	5	P
3	4824.00	-8.80	56.42	47.62	54.00	-6.38	Average	100	180	P
4	4824.00	-8.80	60.09	51.29	74.00	-22.71	Peak	100	180	P
5	12060.00	1.21	31.68	32.89	54.00	-21.11	Average	100	100	P
6	12060.00	1.21	46.89	48.10	74.00	-25.90	Peak	100	100	P

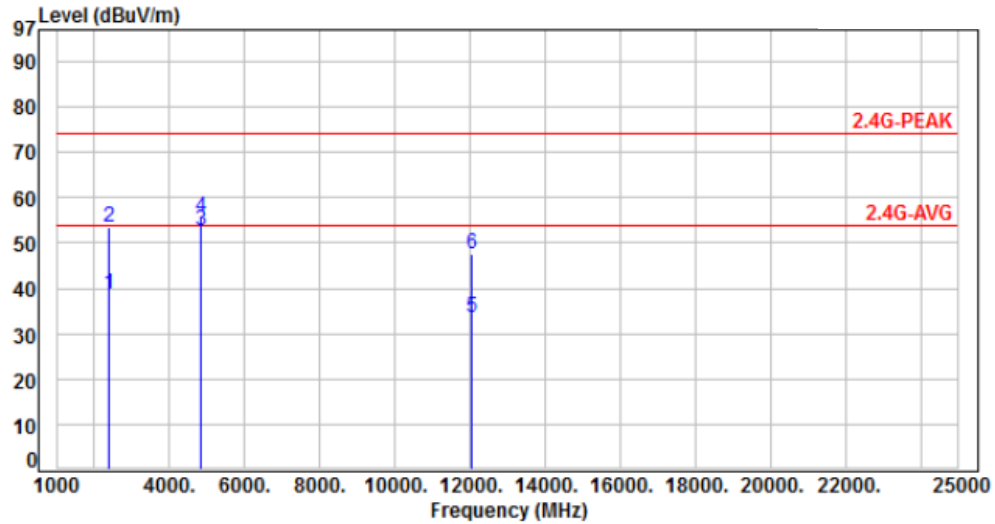
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH01	Temperature	: 21 °C
Test Date	: May. 18, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	54.61	38.65	54.00	-15.35	Average	100	205	P
2	2390.00	-15.96	69.61	53.65	74.00	-20.35	Peak	100	205	P
3	4824.00	-8.80	61.64	52.84	54.00	-1.16	Average	100	114	P
4	4824.00	-8.80	64.32	55.52	74.00	-18.48	Peak	100	114	P
5	12060.00	1.21	32.31	33.52	54.00	-20.48	Average	108	78	P
6	12060.00	1.21	46.51	47.72	74.00	-26.28	Peak	108	78	P

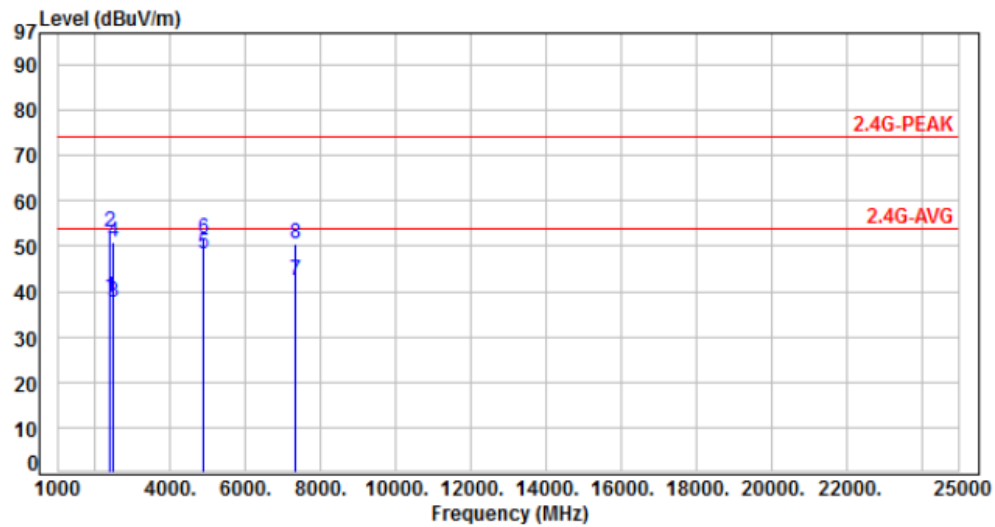
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH06	Temperature	: 21 °C
Test Date	: May. 18, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	54.57	38.61	54.00	-15.39	Average	110	351	P
2	2390.00	-15.96	69.21	53.25	74.00	-20.75	Peak	110	351	P
3	2483.50	-15.65	53.20	37.55	54.00	-16.45	Average	110	351	P
4	2483.50	-15.65	66.60	50.95	74.00	-23.05	Peak	110	351	P
5	4874.00	-8.65	56.80	48.15	54.00	-5.85	Average	100	55	P
6	4874.00	-8.65	60.30	51.65	74.00	-22.35	Peak	100	55	P
7	7311.00	-4.69	47.19	42.50	54.00	-11.50	Average	100	177	P
8	7311.00	-4.69	55.19	50.50	74.00	-23.50	Peak	100	177	P

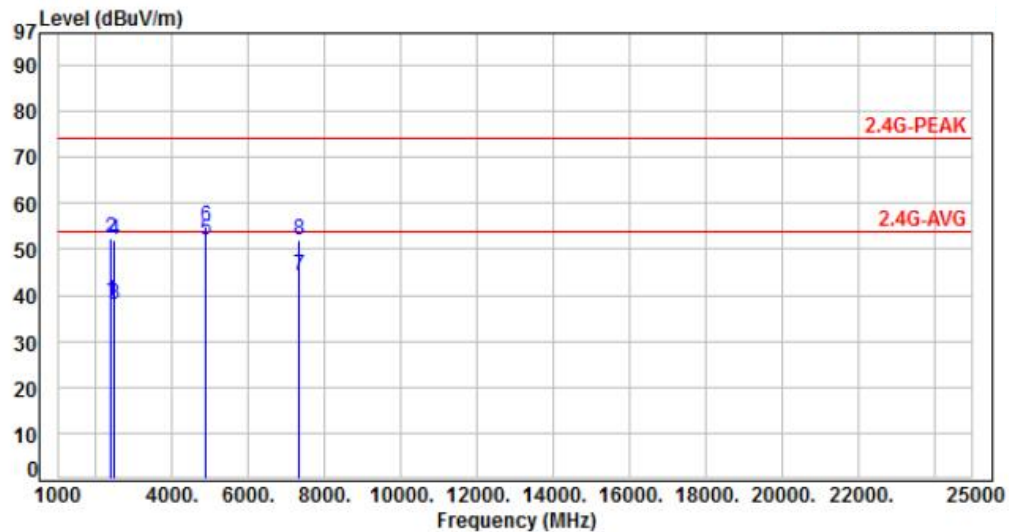
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH06	Temperature	: 21 °C
Test Date	: May. 18, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	54.71	38.75	54.00	-15.25	Average	100	55	P
2	2390.00	-15.96	68.21	52.25	74.00	-21.75	Peak	100	55	P
3	2483.50	-15.65	53.60	37.95	54.00	-16.05	Average	100	55	P
4	2483.50	-15.65	67.50	51.85	74.00	-22.15	Peak	100	55	P
5	4874.00	-8.65	60.55	51.90	54.00	-2.10	Average	114	104	P
6	4874.00	-8.65	63.50	54.85	74.00	-19.15	Peak	114	104	P
7	7311.00	-4.69	49.09	44.40	54.00	-9.60	Average	154	81	P
8	7311.00	-4.69	56.79	52.10	74.00	-21.90	Peak	154	81	P

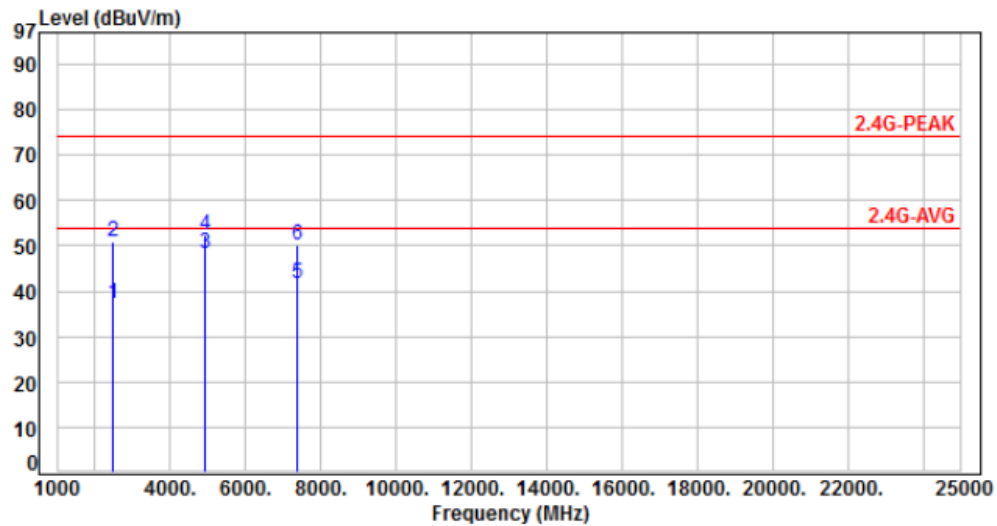
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH11	Temperature	: 21 °C
Test Date	: May. 21, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	52.80	37.15	54.00	-16.85	Average	101	360	P
2	2483.50	-15.65	66.50	50.85	74.00	-23.15	Peak	101	360	P
3	4924.00	-8.49	56.94	48.45	54.00	-5.55	Average	100	210	P
4	4924.00	-8.49	60.99	52.50	74.00	-21.50	Peak	100	210	P
5	7386.00	-4.48	46.10	41.62	54.00	-12.38	Average	100	62	P
6	7386.00	-4.48	54.60	50.12	74.00	-23.88	Peak	100	62	P

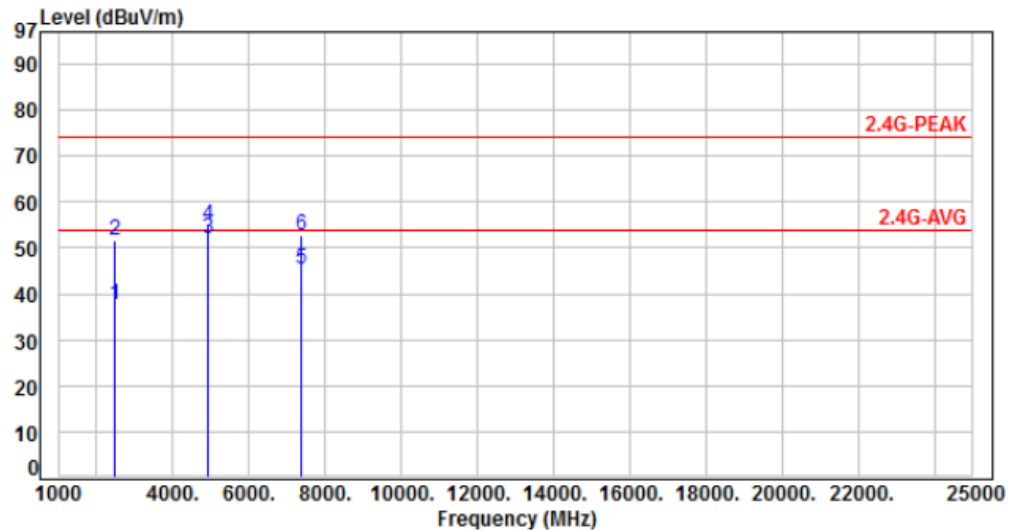
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH11	Temperature	: 21 °C
Test Date	: May. 21, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	53.33	37.68	54.00	-16.32	Average	360	48	P
2	2483.50	-15.65	67.30	51.65	74.00	-22.35	Peak	360	48	P
3	4924.00	-8.49	60.49	52.00	54.00	-2.00	Average	105	126	P
4	4924.00	-8.49	63.52	55.03	74.00	-18.97	Peak	105	126	P
5	7386.00	-4.48	49.70	45.22	54.00	-8.78	Average	189	97	P
6	7386.00	-4.48	57.20	52.72	74.00	-21.28	Peak	189	97	P

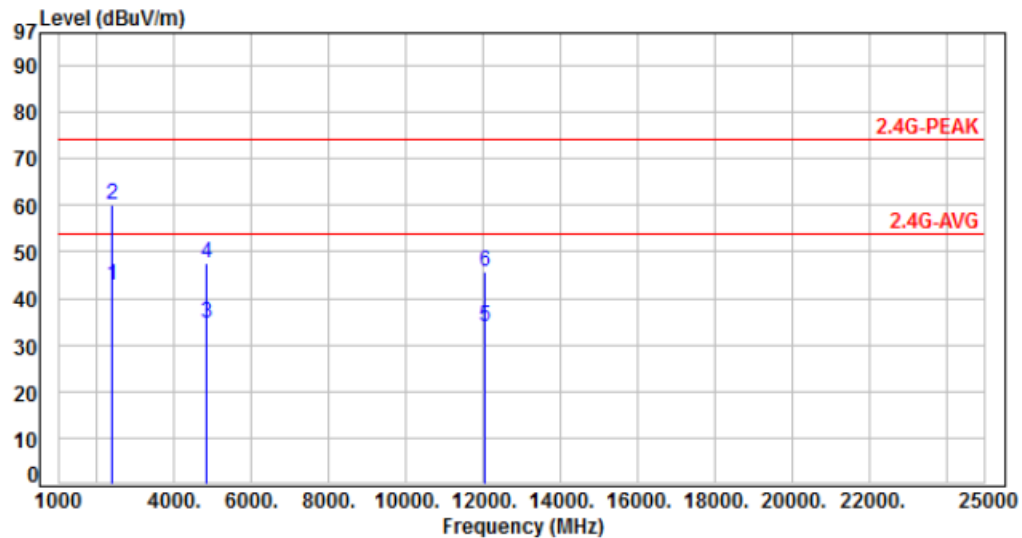
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH01	Temperature	: 21 °C
Test Date	: May. 21, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	58.61	42.65	54.00	-11.35	Average	100	360	P
2	2390.00	-15.96	76.21	60.25	74.00	-13.75	Peak	100	360	P
3	4824.00	-8.80	43.59	34.79	54.00	-19.21	Average	100	184	P
4	4824.00	-8.80	56.19	47.39	74.00	-26.61	Peak	100	184	P
5	12060.00	1.21	32.81	34.02	54.00	-19.98	Average	100	114	P
6	12060.00	1.21	44.39	45.60	74.00	-28.40	Peak	100	114	P

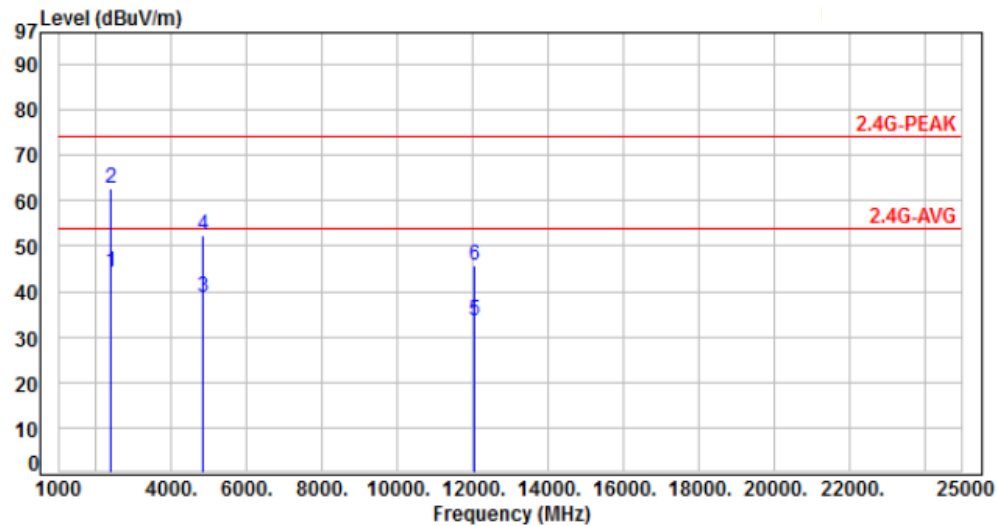
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH01	Temperature	: 21 °C
Test Date	: May. 21, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	60.21	44.25	54.00	-9.75	Average	382	36	P
2	2390.00	-15.96	78.81	62.85	74.00	-11.15	Peak	382	36	P
3	4824.00	-8.80	47.49	38.69	54.00	-15.31	Average	100	120	P
4	4824.00	-8.80	61.29	52.49	74.00	-21.51	Peak	100	120	P
5	12060.00	1.21	32.51	33.72	54.00	-20.28	Average	100	91	P
6	12060.00	1.21	44.51	45.72	74.00	-28.28	Peak	100	91	P

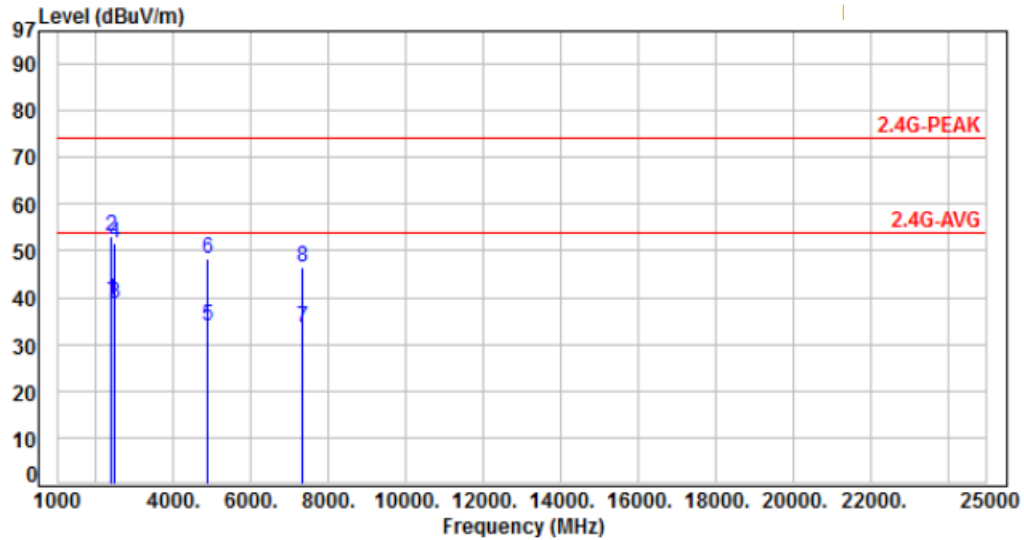
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH06	Temperature	: 21 °C
Test Date	: May. 21, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	55.61	39.65	54.00	-14.35	Average	132	360	P
2	2390.00	-15.96	69.21	53.25	74.00	-20.75	Peak	132	360	P
3	2483.50	-15.65	54.50	38.85	54.00	-15.15	Average	132	360	P
4	2483.50	-15.65	67.33	51.68	74.00	-22.32	Peak	132	360	P
5	4874.00	-8.65	42.50	33.85	54.00	-20.15	Average	100	184	P
6	4874.00	-8.65	56.90	48.25	74.00	-25.75	Peak	100	184	P
7	7311.00	-4.69	38.21	33.52	54.00	-20.48	Average	107	189	P
8	7311.00	-4.69	51.21	46.52	74.00	-27.48	Peak	107	189	P

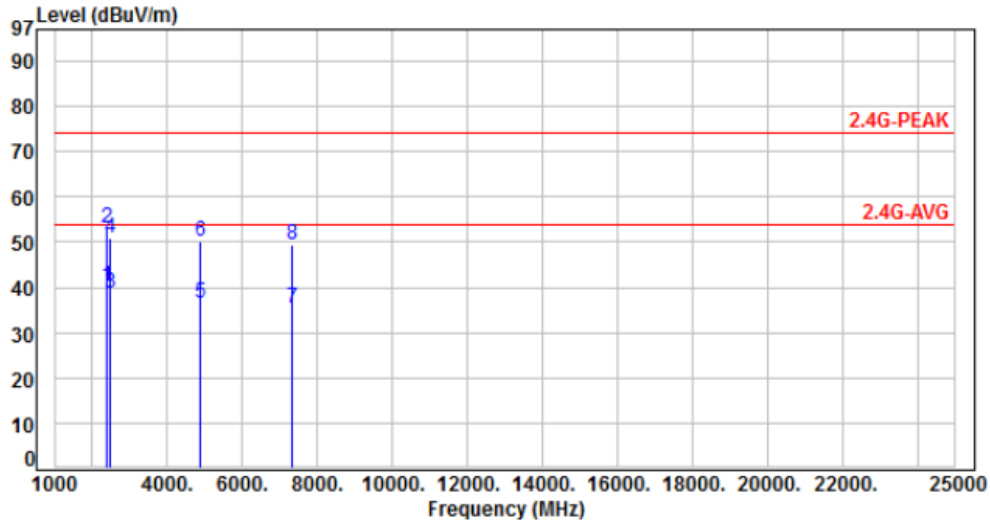
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH06	Temperature	: 21 °C
Test Date	: May. 21, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	56.21	40.25	54.00	-13.75	Average	310	34	P
2	2390.00	-15.96	68.91	52.95	74.00	-21.05	Peak	310	34	P
3	2483.50	-15.65	54.22	38.57	54.00	-15.43	Average	310	34	P
4	2483.50	-15.65	66.45	50.80	74.00	-23.20	Peak	310	34	P
5	4874.00	-8.65	45.20	36.55	54.00	-17.45	Average	100	111	P
6	4874.00	-8.65	58.90	50.25	74.00	-23.75	Peak	100	111	P
7	7311.00	-4.69	40.19	35.50	54.00	-18.50	Average	104	68	P
8	7311.00	-4.69	54.19	49.50	74.00	-24.50	Peak	104	68	P

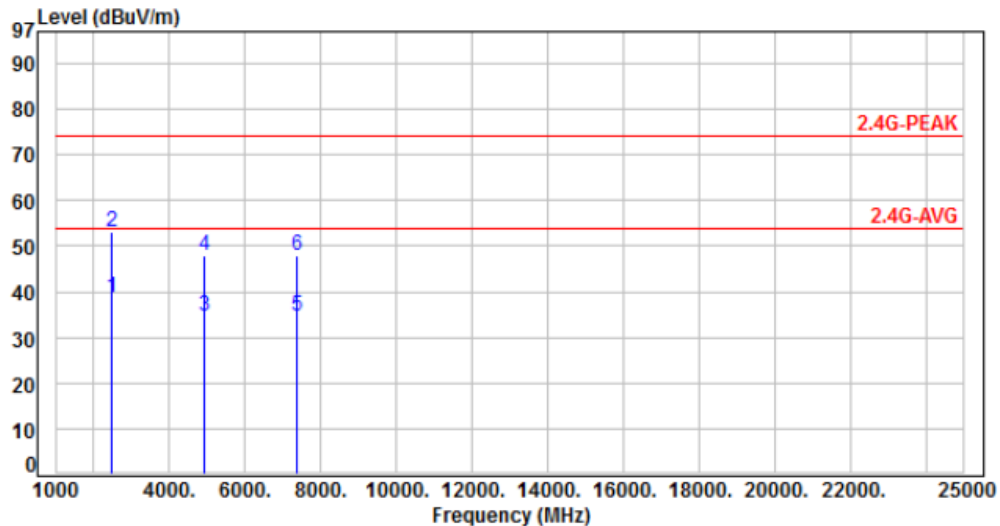
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH11	Temperature	: 21 °C
Test Date	: May. 22, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	54.30	38.65	54.00	-15.35	Average	100	328	P
2	2483.50	-15.65	68.80	53.15	74.00	-20.85	Peak	100	328	P
3	4924.00	-8.49	43.19	34.70	54.00	-19.30	Average	383	200	P
4	4924.00	-8.49	56.29	47.80	74.00	-26.20	Peak	383	200	P
5	7386.00	-4.48	39.20	34.72	54.00	-19.28	Average	100	197	P
6	7386.00	-4.48	52.40	47.92	74.00	-26.08	Peak	100	197	P

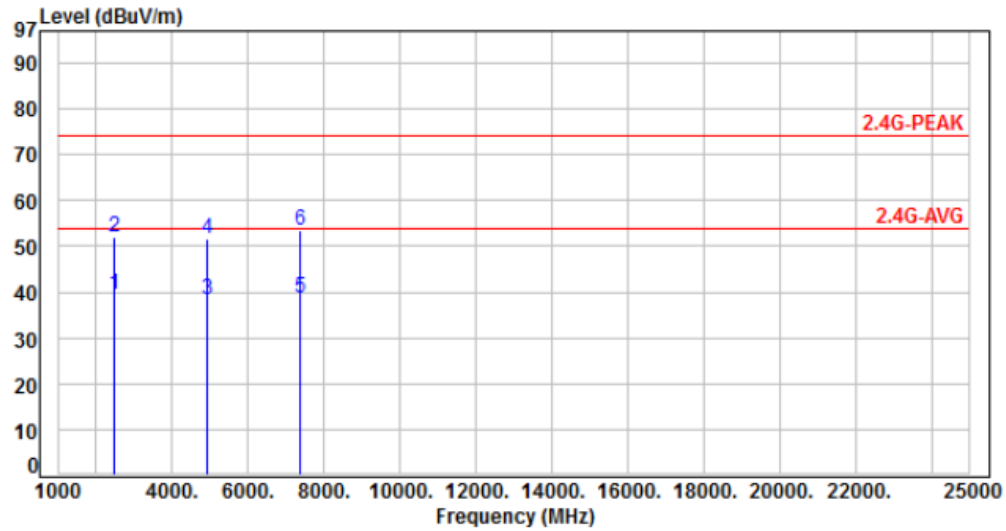
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH11	Temperature	: 21 °C
Test Date	: May. 22, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	55.20	39.55	54.00	-14.45	Average	360	66	P
2	2483.50	-15.65	67.80	52.15	74.00	-21.85	Peak	360	66	P
3	4924.00	-8.49	46.84	38.35	54.00	-15.65	Average	100	125	P
4	4924.00	-8.49	60.29	51.80	74.00	-22.20	Peak	100	125	P
5	7386.00	-4.48	43.20	38.72	54.00	-15.28	Average	273	56	P
6	7386.00	-4.48	57.80	53.32	74.00	-20.68	Peak	273	56	P

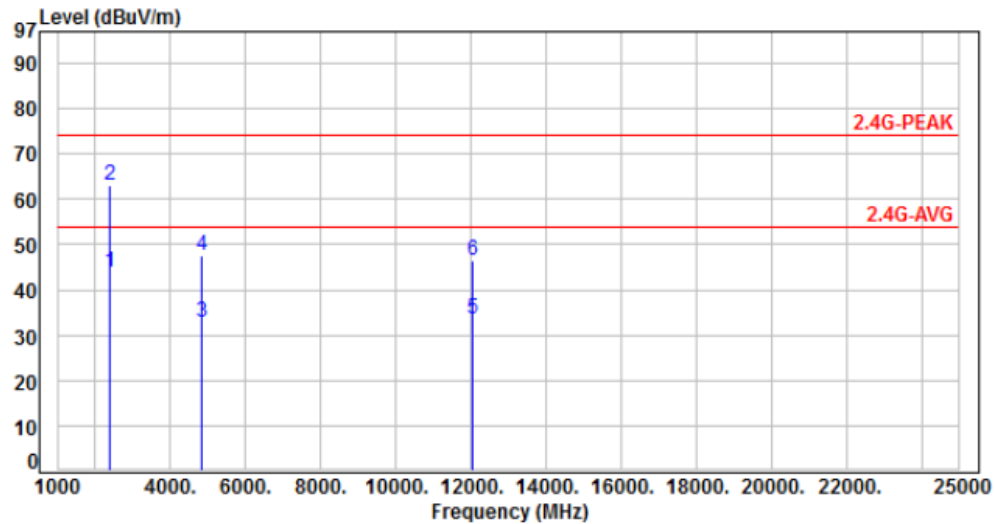
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH01	Temperature	: 21 °C
Test Date	: May. 22, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	60.01	44.05	54.00	-9.95	Average	241	330	P
2	2390.00	-15.96	79.00	63.04	74.00	-10.96	Peak	241	330	P
3	4824.00	-8.80	41.79	32.99	54.00	-21.01	Average	100	185	P
4	4824.00	-8.80	56.19	47.39	74.00	-26.61	Peak	100	185	P
5	12060.00	1.21	32.31	33.52	54.00	-20.48	Average	100	89	P
6	12060.00	1.21	45.34	46.55	74.00	-27.45	Peak	100	89	P

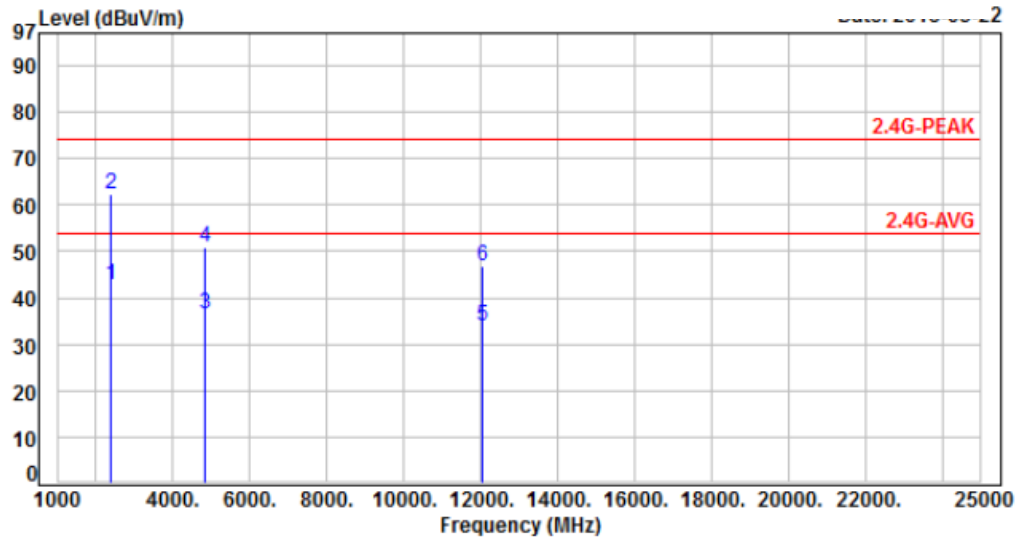
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH01	Temperature	: 21 °C
Test Date	: May. 22, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	58.91	42.95	54.00	-11.05	Average	400	354	P
2	2390.00	-15.96	78.31	62.35	74.00	-11.65	Peak	400	354	P
3	4824.00	-8.80	45.19	36.39	54.00	-17.61	Average	100	96	P
4	4824.00	-8.80	59.59	50.79	74.00	-23.21	Peak	100	96	P
5	12060.00	1.21	32.61	33.82	54.00	-20.18	Average	107	330	P
6	12060.00	1.21	45.61	46.82	74.00	-27.18	Peak	107	330	P

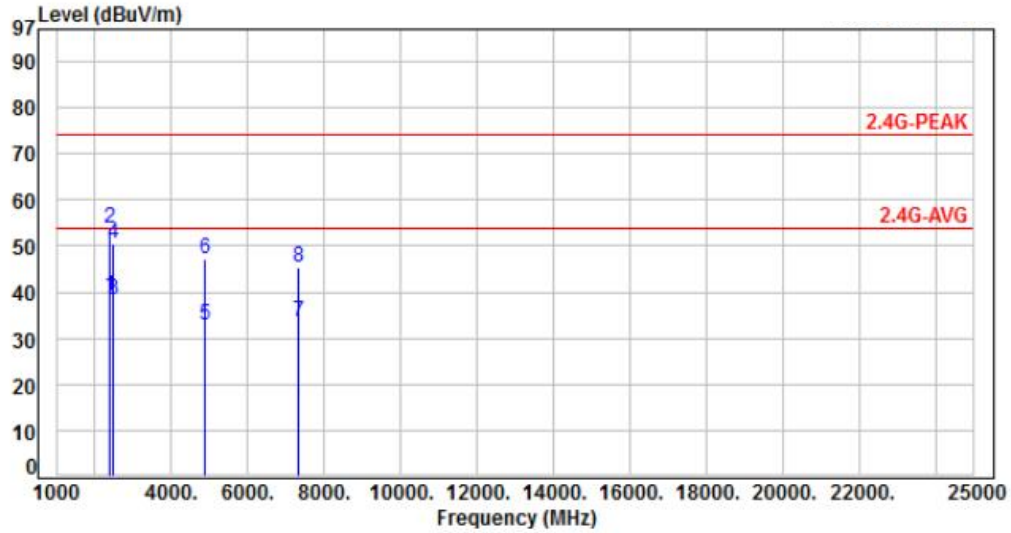
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH06	Temperature	: 21 °C
Test Date	: May. 22, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	55.01	39.05	54.00	-14.95	Average	236	325	P
2	2390.00	-15.96	69.81	53.85	74.00	-20.15	Peak	236	325	P
3	2483.50	-15.65	54.00	38.35	54.00	-15.65	Average	376	66	P
4	2483.50	-15.65	66.11	50.46	74.00	-23.54	Peak	236	325	P
5	4874.00	-8.65	41.60	32.95	54.00	-21.05	Average	100	200	P
6	4874.00	-8.65	55.70	47.05	74.00	-26.95	Peak	100	200	P
7	7311.00	-4.69	38.21	33.52	54.00	-20.48	Average	133	160	P
8	7311.00	-4.69	50.19	45.50	74.00	-28.50	Peak	133	160	P

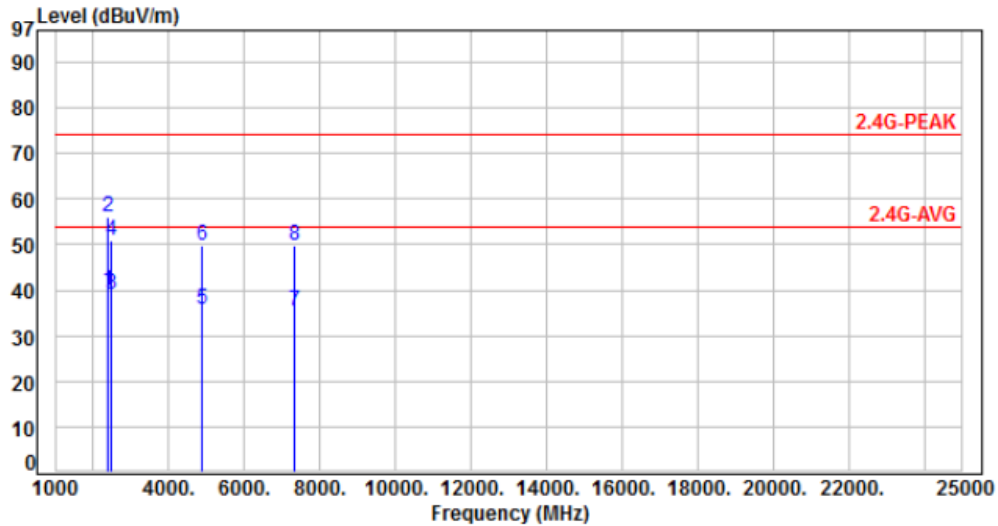
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH06	Temperature	: 21 °C
Test Date	: May. 22, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.96	55.62	39.66	54.00	-14.34	Average	376	66	P
2	2390.00	-15.96	72.12	56.16	74.00	-17.84	Peak	376	66	P
3	2483.50	-15.65	54.80	39.15	54.00	-14.85	Average	376	66	P
4	2483.50	-15.65	66.50	50.85	74.00	-23.15	Peak	376	66	P
5	4874.00	-8.65	44.30	35.65	54.00	-18.35	Average	100	120	P
6	4874.00	-8.65	58.60	49.95	74.00	-24.05	Peak	100	120	P
7	7311.00	-4.69	40.19	35.50	54.00	-18.50	Average	107	119	P
8	7311.00	-4.69	54.49	49.80	74.00	-24.20	Peak	107	119	P

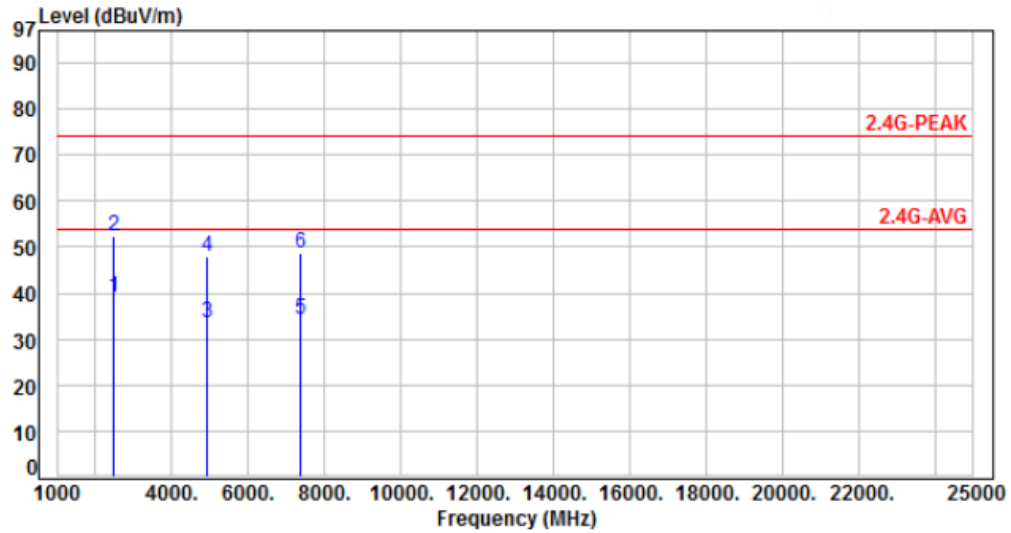
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH11	Temperature	: 21 °C
Test Date	: May. 22, 2018	Humidity	: 65 %

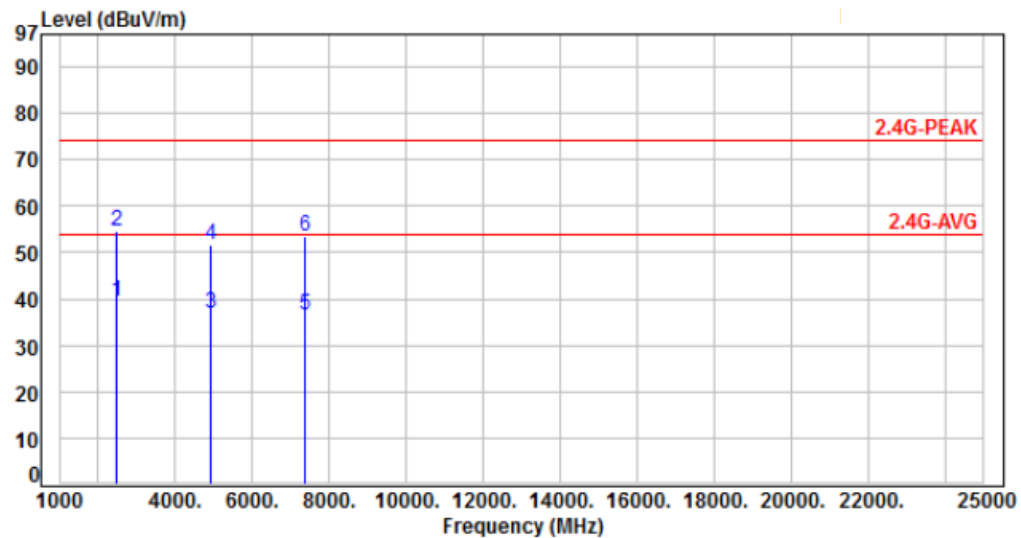


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	54.60	38.95	54.00	-15.05	Average	100	317	P
2	2483.50	-15.65	68.20	52.55	74.00	-21.45	Peak	100	317	P
3	4924.00	-8.49	42.19	33.70	54.00	-20.30	Average	100	193	P
4	4924.00	-8.49	56.49	48.00	74.00	-26.00	Peak	100	193	P
5	7386.00	-4.48	38.66	34.18	54.00	-19.82	Average	100	180	P
6	7386.00	-4.48	53.30	48.82	74.00	-25.18	Peak	100	180	P

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



Power	: AC 120V	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH11	Temperature	: 21 °C
Test Date	: May. 22, 2018	Humidity	: 65 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.65	55.20	39.55	54.00	-14.45	Average	360	70	P
2	2483.50	-15.65	70.10	54.45	74.00	-19.55	Peak	360	70	P
3	4924.00	-8.49	45.21	36.72	54.00	-17.28	Average	100	126	P
4	4924.00	-8.49	60.19	51.70	74.00	-22.30	Peak	100	126	P
5	7386.00	-4.48	40.92	36.44	54.00	-17.56	Average	240	54	P
6	7386.00	-4.48	57.88	53.40	74.00	-20.60	Peak	240	54	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

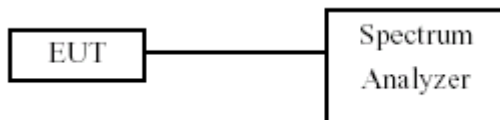
7.1 Test Limit

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 : May. 23, 2018

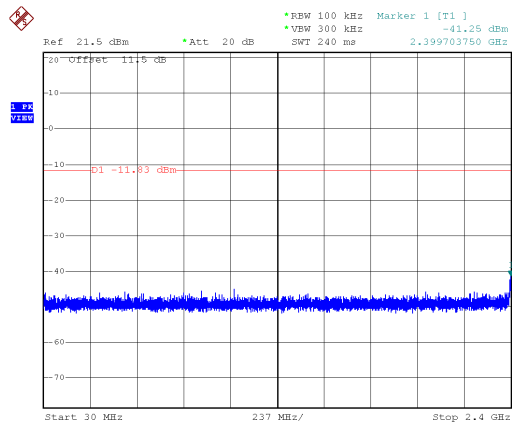
Temperature : 24°C

Humidity : 59%

Note: Test plots refers to the following pages.

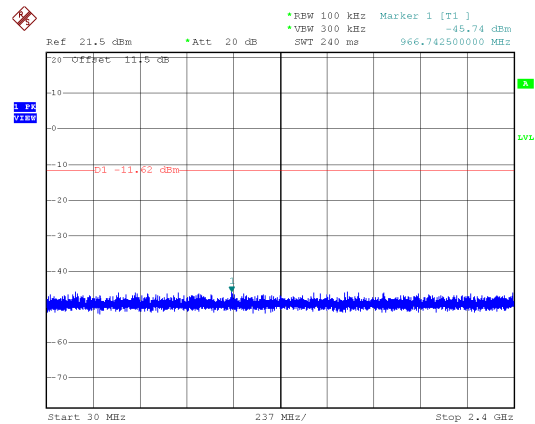


Modulation Type: 802.11b, CH 01

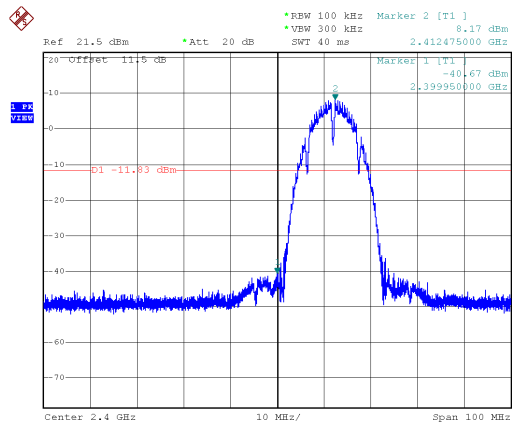


Date: 23.MAY.2018 15:29:00

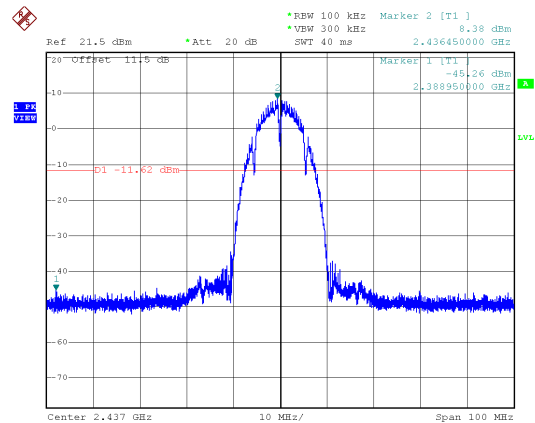
Modulation Type: 802.11b, CH 06



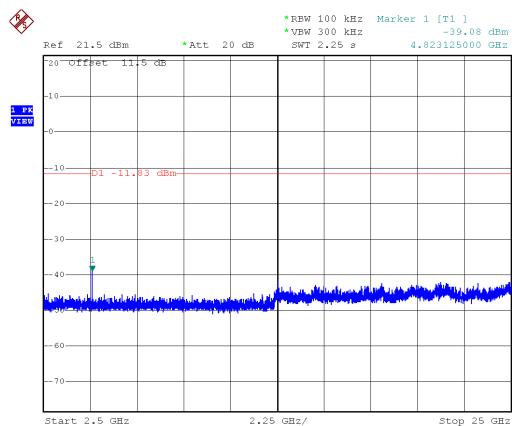
Date: 23.MAY.2018 15:31:13



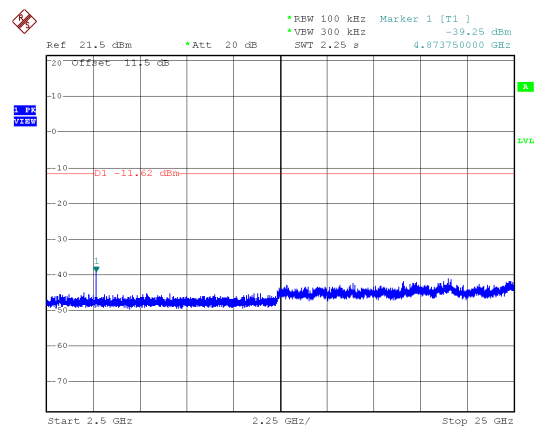
Date: 23.MAY.2018 15:28:19



Date: 23.MAY.2018 15:30:39



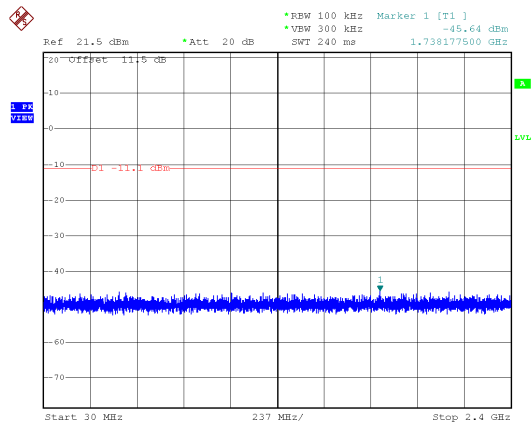
Date: 23.MAY.2018 15:29:38



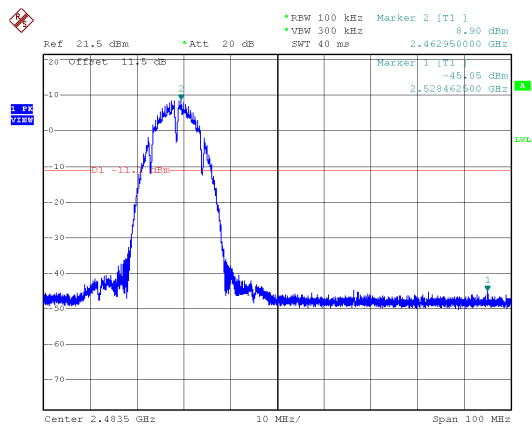
Date: 23.MAY.2018 15:32:59



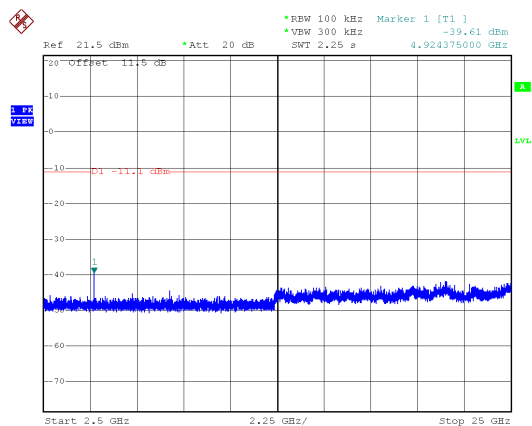
Modulation Type: 802.11b, CH 11



Date: 23.MAY.2018 15:36:14



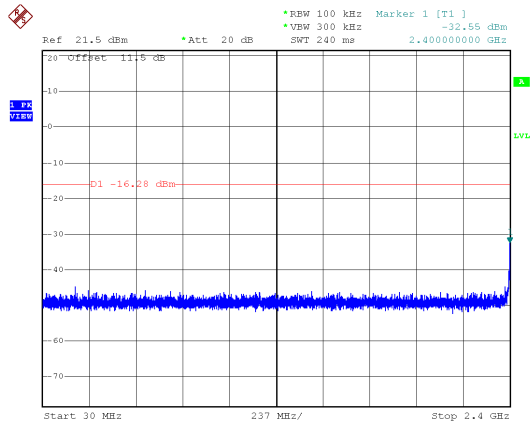
Date: 23.MAY.2018 15:35:45



Date: 23.MAY.2018 15:36:50

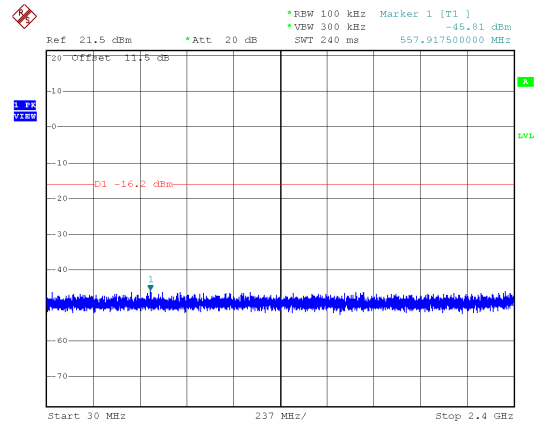


Modulation Type: 802.11g, CH 01

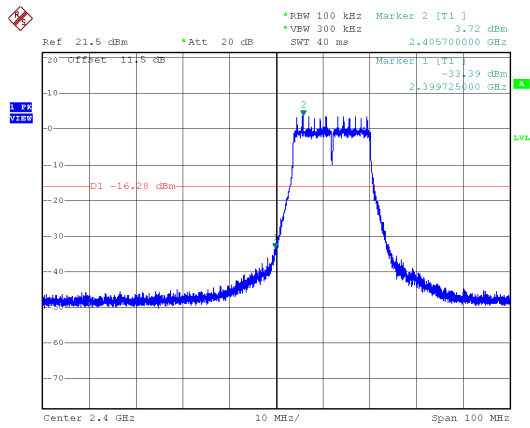


Date: 23.MAY.2018 15:39:38

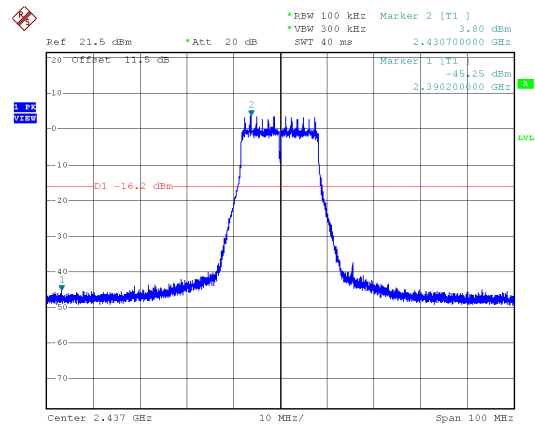
Modulation Type: 802.11g, CH 06



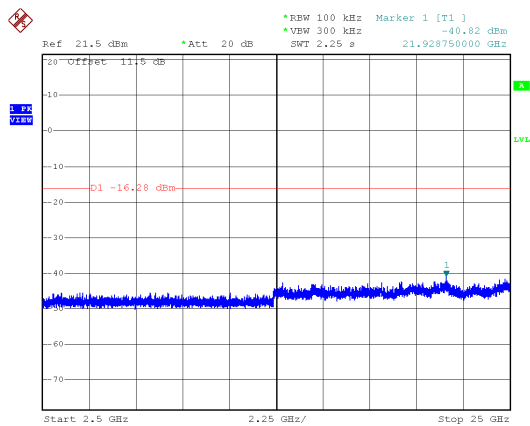
Date: 23.MAY.2018 15:44:22



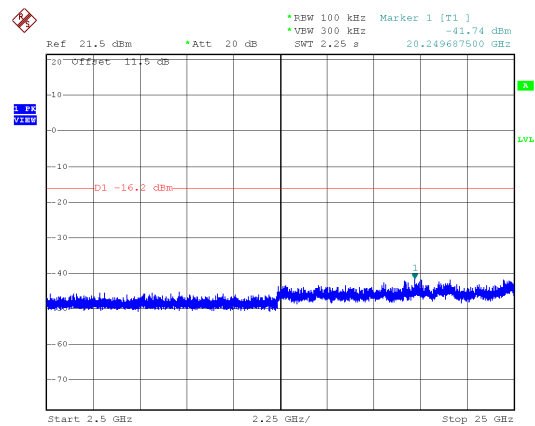
Date: 23.MAY.2018 15:39:07



Date: 23.MAY.2018 15:43:52



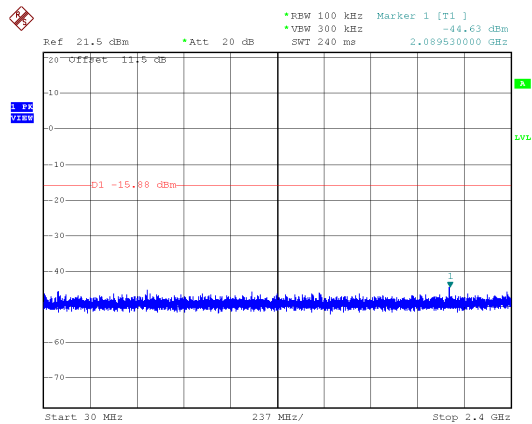
Date: 23.MAY.2018 15:40:40



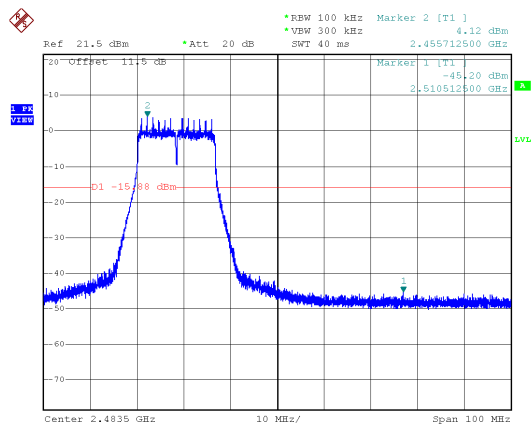
Date: 23.MAY.2018 15:45:00



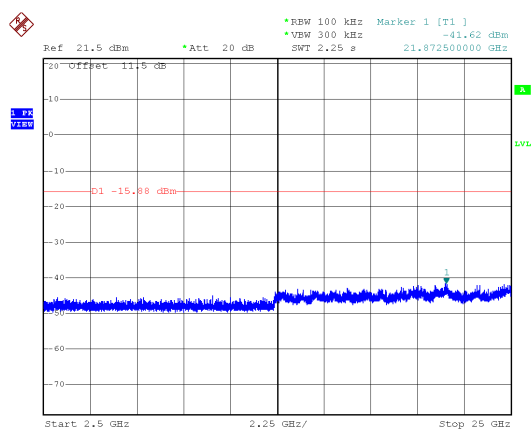
Modulation Type: 802.11g, CH 11



Date: 23.MAY.2018 15:47:29



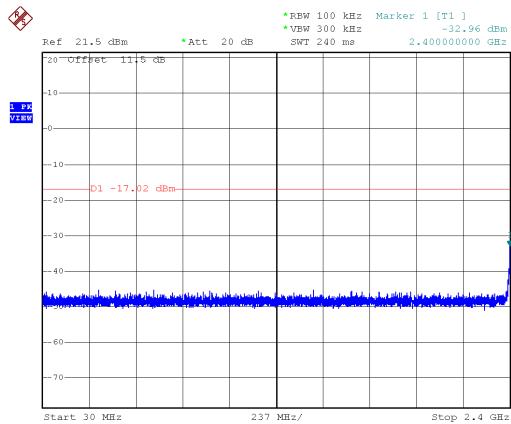
Date: 23.MAY.2018 15:46:53



Date: 23.MAY.2018 15:48:41

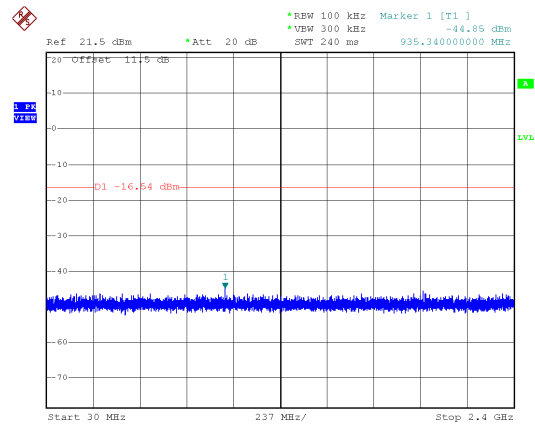


Modulation Type: 802.11n HT20, CH01

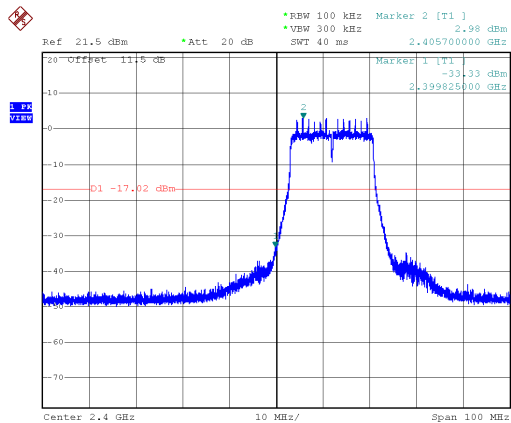


Date: 23.MAY.2018 15:53:34

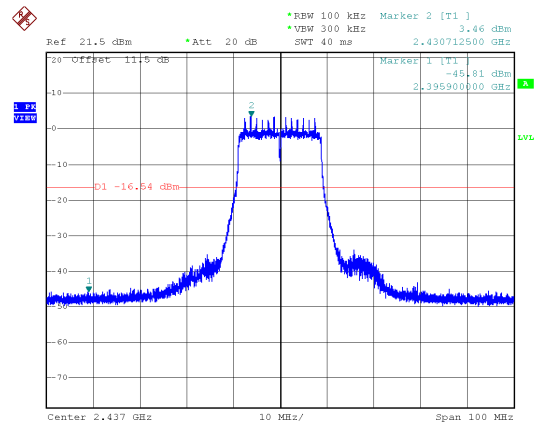
Modulation Type: 802.11n HT20, CH06



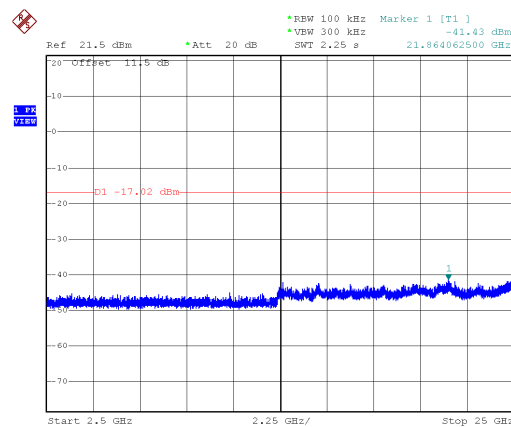
Date: 23.MAY.2018 15:58:32



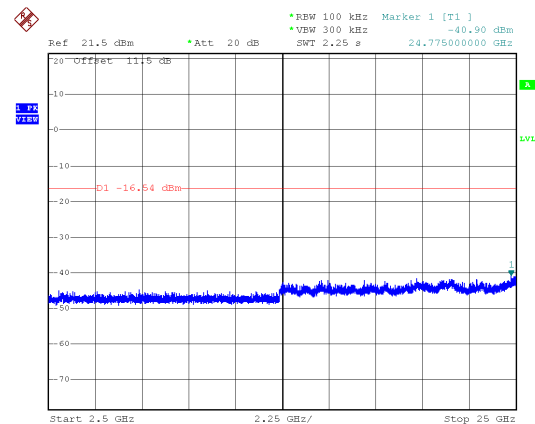
Date: 23.MAY.2018 15:52:14



Date: 23.MAY.2018 15:58:04



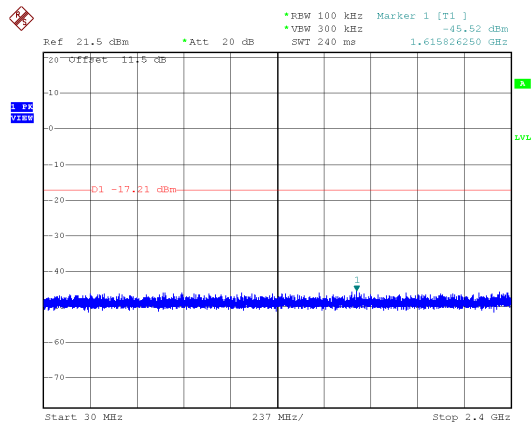
Date: 23.MAY.2018 15:55:24



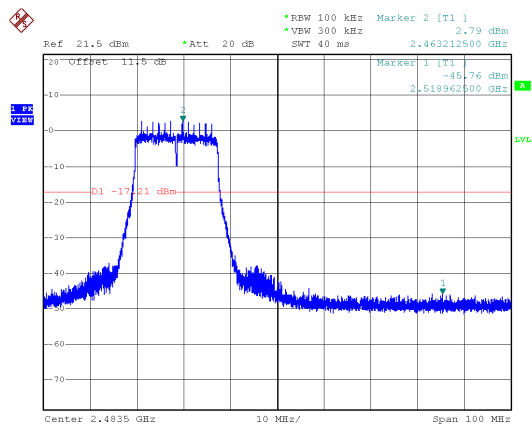
Date: 23.MAY.2018 16:01:56



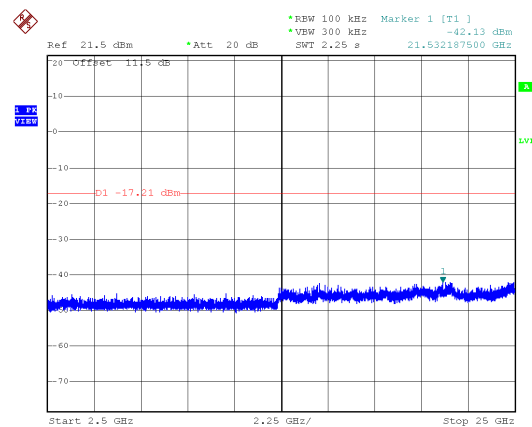
Modulation Type: 802.11n HT20, CH011



Date: 23.MAY.2018 16:03:43



Date: 23.MAY.2018 16:02:57



Date: 23.MAY.2018 16:04:27



8. 6dB Bandwidth Measurement Data

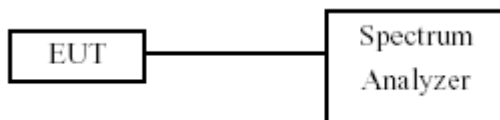
8.1 Test Limit

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



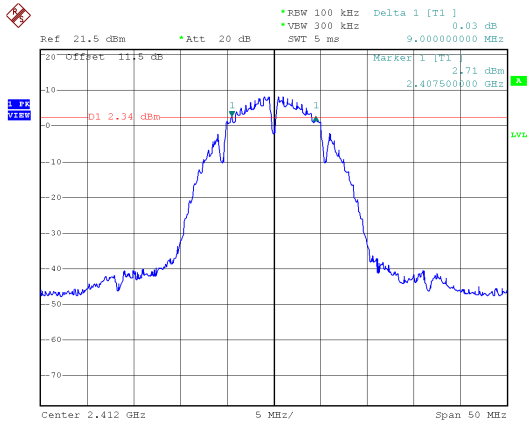
8.4 Test Result and Data

Temperature : 24°C

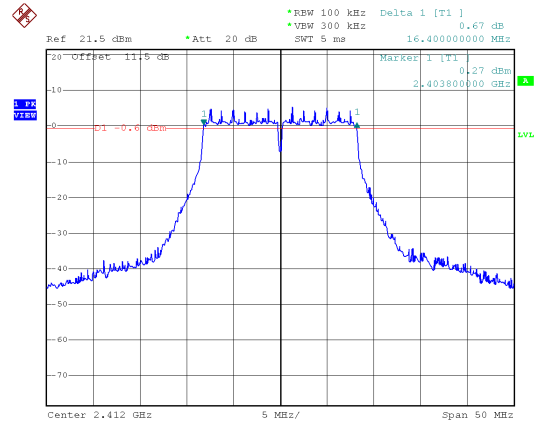
Humidity : 59%

Test Date : May. 23, 2018

Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
IEEE 802.11b (1Mbps)	01	2412	9.00	0.5
	06	2437	9.20	0.5
	11	2462	9.00	0.5
IEEE 802.11g (6Mbps)	01	2412	16.40	0.5
	06	2437	16.40	0.5
	11	2462	16.40	0.5
IEEE 802.11n HT20 (6.5Mbps)	01	2412	17.60	0.5
	06	2437	17.60	0.5
	11	2462	17.40	0.5

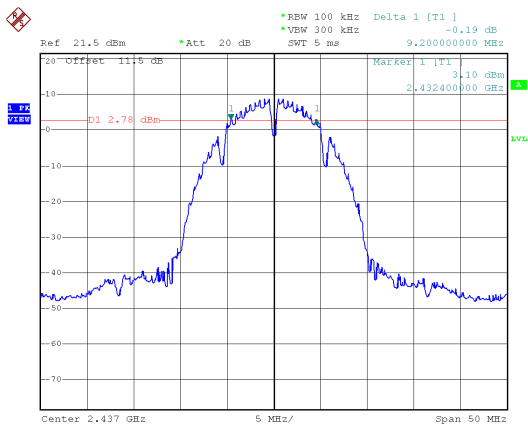
Modulation Type: 802.11b
CH01

Date: 23.MAY.2018 11:48:13

Modulation Type: 802.11g
CH01

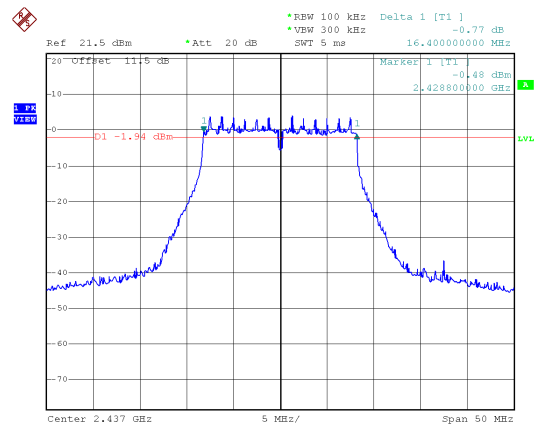
Date: 23.MAY.2018 12:22:55

CH06



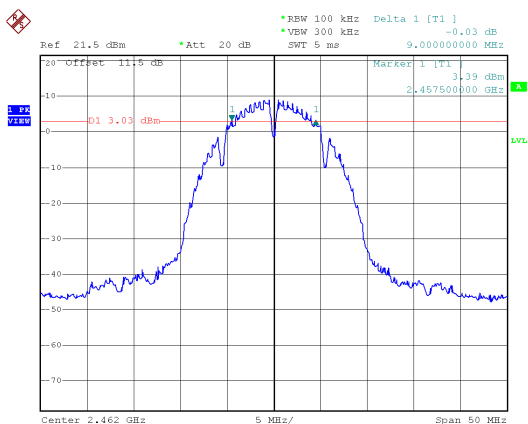
Date: 23.MAY.2018 11:50:38

CH06



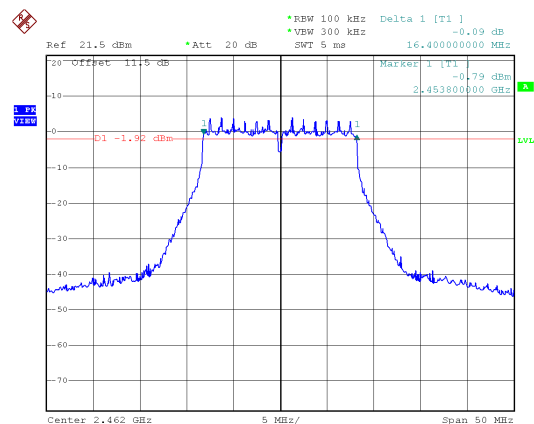
Date: 23.MAY.2018 12:30:58

CH11



Date: 23.MAY.2018 11:54:01

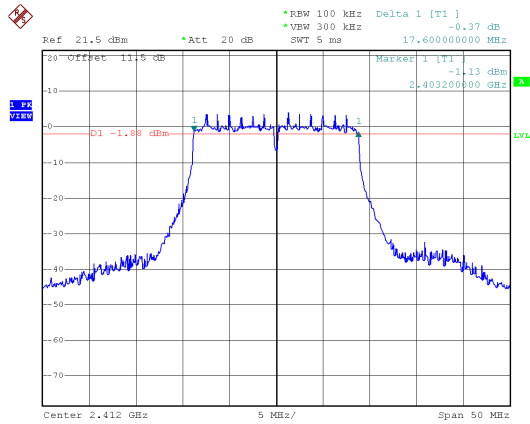
CH11



Date: 23.MAY.2018 12:35:52

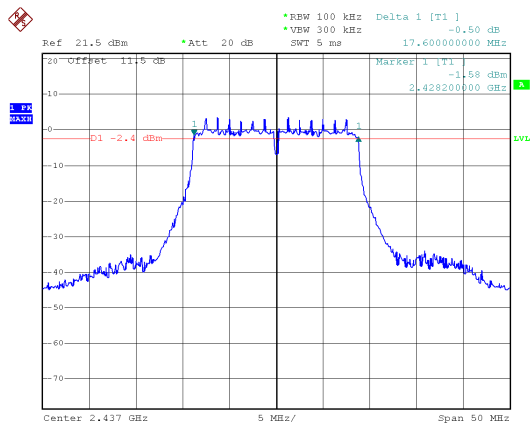


Modulation Type: 802.11n HT20
CH01



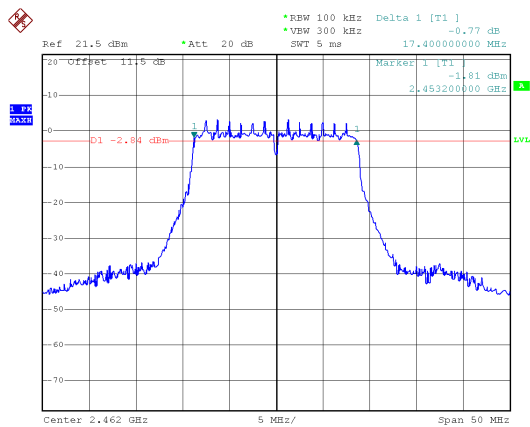
Date: 23.MAY.2018 14:12:56

CH06



Date: 23.MAY.2018 14:19:45

CH11



Date: 23.MAY.2018 14:21:37



9. Maximum Peak and Average Output Power

9.1 Test Limit

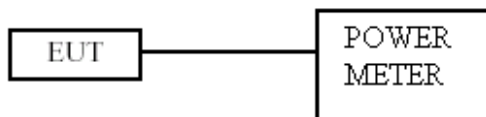
The Maximum Peak Output Power Measurement is 30dBm.

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
Test Date : May. 23, 2018

Humidity : 59%

Modulation Type	Channel	Frequency (MHz)	Peak Power Output (dBm)	Total Peak Power (mW)	Total Peak Power (dBm)	Limit (dBm)
IEEE 802.11b (1Mbps)	01	2412	19.89	97.50	19.89	30.00
	06	2437	19.87	97.05	19.87	30.00
	11	2462	20.09	102.09	20.09	30.00
IEEE 802.11g (6Mbps)	01	2412	23.54	225.94	23.54	30.00
	06	2437	23.42	219.79	23.42	30.00
	11	2462	23.53	225.42	23.53	30.00
IEEE 802.11n HT20 (6.5Mbps)	01	2412	23.68	233.35	23.68	30.00
	06	2437	23.94	247.74	23.94	30.00
	11	2462	23.88	244.34	23.88	30.00

Modulation Type	Channel	Frequency (MHz)	Avg. Power Output (dBm)	Total Avg. Power (mW)	Total Avg. Power (dBm)
IEEE 802.11b (1Mbps)	01	2412	17.21	52.60	17.21
	06	2437	17.2	52.48	17.20
	11	2462	17.44	55.46	17.44
IEEE 802.11g (6Mbps)	01	2412	15.42	34.83	15.42
	06	2437	15.11	32.43	15.11
	11	2462	15.24	33.42	15.24
IEEE 802.11n HT20 (6.5Mbps)	01	2412	14.42	27.67	14.42
	06	2437	14.69	29.44	14.69
	11	2462	14.27	26.73	14.27

Note: Average power is for reference only.



10. Power Spectral Density

10.1 Test Limit

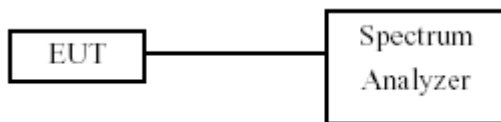
The Maximum of Power Spectral Density Measurement is 8dBm.

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

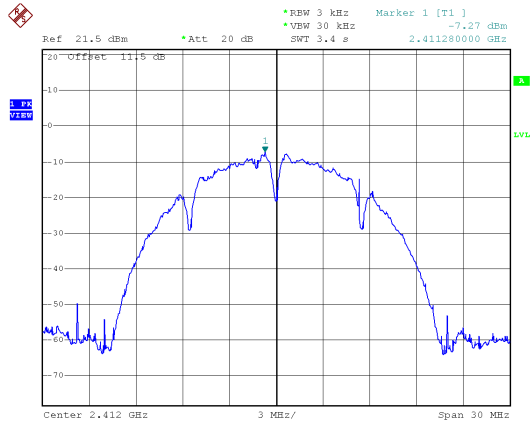
Humidity : 59%

Test Date : May. 23, 2018

Modulation Type	CH	Freq. (MHz)	Maximum Power Density of 3 kHz Bandwidth (dBm)	Sum chain (dBm)	Duty Cycle CF(dB)	Total PSD (dBm)	Limit (dBm)
IEEE 802.11b (1Mbps)	01	2412	-7.27	-7.27	0.00	-7.27	8.00
	06	2437	-8.38	-8.38	0.00	-8.38	8.00
	11	2462	-8.31	-8.31	0.00	-8.31	8.00
IEEE 802.11g (6Mbps)	01	2412	-12.33	-12.33	0.00	-12.33	8.00
	06	2437	-12.39	-12.39	0.00	-12.39	8.00
	11	2462	-13.1	-13.10	0.00	-13.10	8.00
IEEE 802.11n HT20 (6.5Mbps)	01	2412	-13.4	-13.40	0.00	-13.40	8.00
	06	2437	-13.23	-13.23	0.00	-13.23	8.00
	11	2462	-13.84	-13.84	0.00	-13.84	8.00

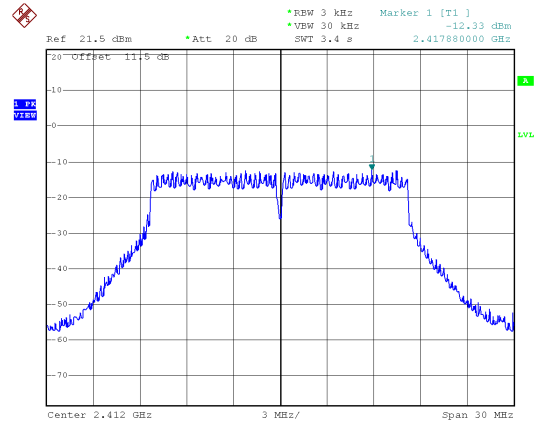


Modulation Type: 802.11b
CH01



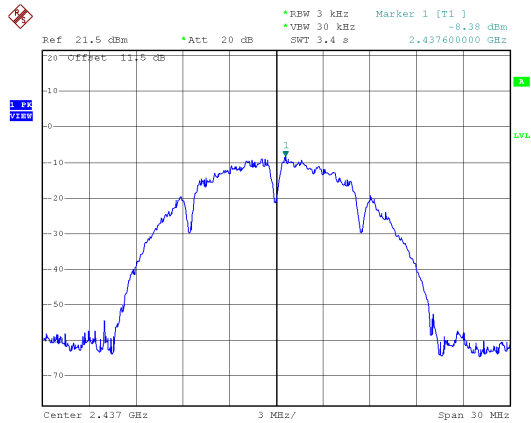
Date: 23.MAY.2018 14:35:24

Modulation Type: 802.11g
CH01



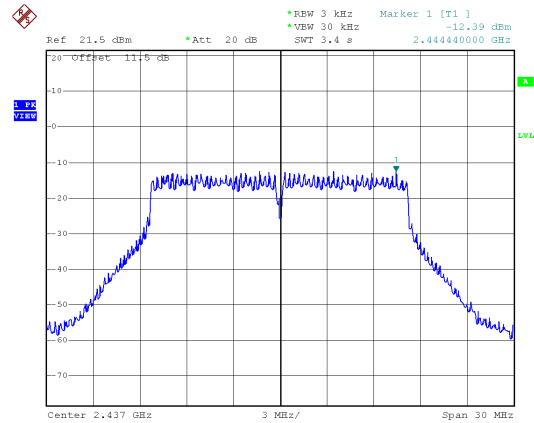
Date: 23.MAY.2018 14:44:39

CH06



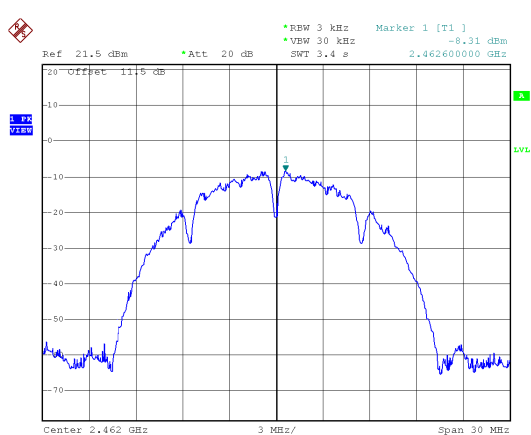
Date: 23.MAY.2018 14:37:12

CH06



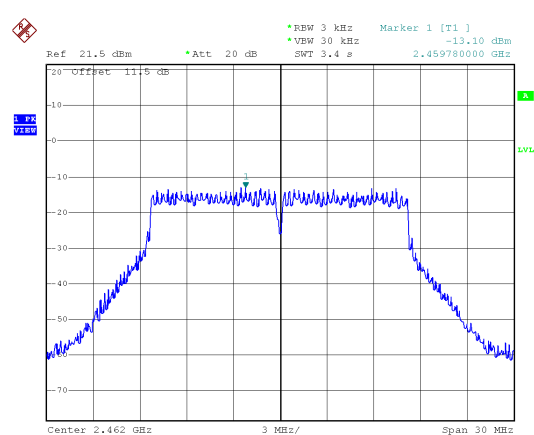
Date: 23.MAY.2018 14:48:18

CH11



Date: 23.MAY.2018 14:41:24

CH11

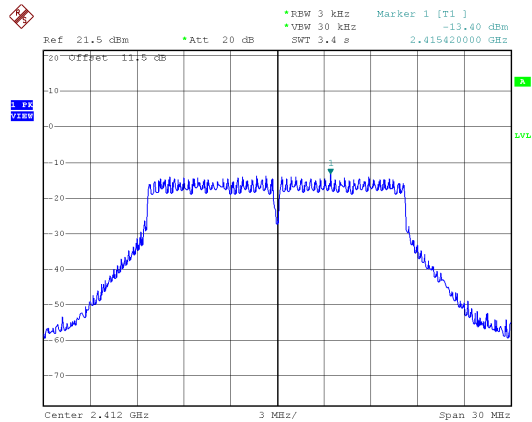


Date: 23.MAY.2018 14:53:44



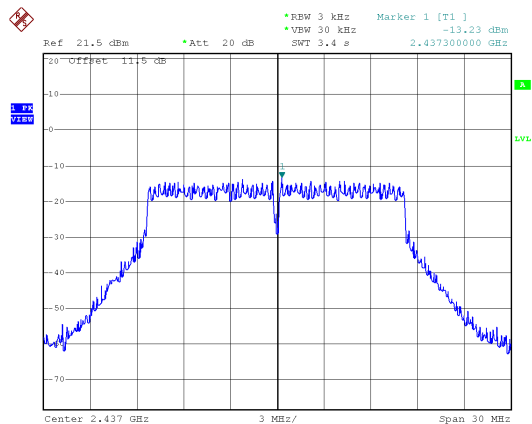
Modulation Type: 802.11n HT20

CH01



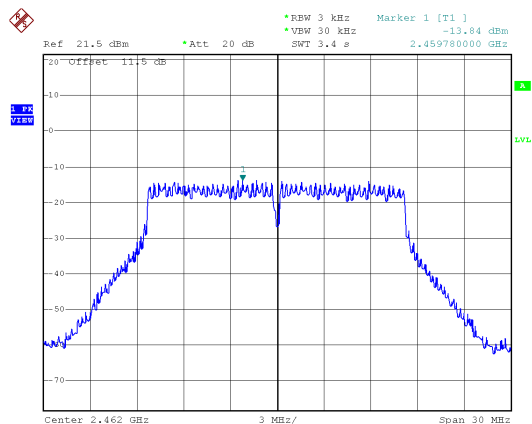
Date: 23.MAY.2018 14:54:33

CH06



Date: 23.MAY.2018 14:57:48

CH11



Date: 23.MAY.2018 14:58:21



11. Radio Frequency Exposure

11.1 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

11.2 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 ($S = 5\text{mW/cm}^2$) ☒ General Population/Uncontrolled exposure ($S=1\text{mW/cm}^2$)
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>23.94dBm (247.74mW)</u> at <u>2437MHz</u> (with <u>numeric 0.5 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 1.0 mW/cm^2 even if the calculation indicates that the power density would be larger.	



11.3 Test Results

No non-compliance noted.

11.4 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

**11.5 Maximum Permissible Exposure**

Max. output power	Band: 2412MHz ~ 2462MHz 802.11b: 20.09dBm (102.09mW) 802.11g: 23.54dBm (225.94mW) 802.11n HT20: 23.94dBm (247.74mW)
Antenna gain (Max)	0.5 dBi

Maximum Permissible Exposure

Modulation Mode	Frequency band (MHz)	Max. Conducted output power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
802.11b	2412-2462	20.09	0.5	20	0.0228	1
802.11g	2412-2462	23.54	0.5	20	0.0504	1
802.11n HT20	2412-2462	23.94	0.5	20	0.0553	1