FCC RADIO TEST REPORT

Applicant	:	Allied Telesis K.K.
Address	:	2nd. TOC Bldg. 721-11 Nishi-Gotanda, Shinagawa-ku, Tokyo Japan, 141-0031
Equipment	:	802.11ac wave2 2x2 tri-radio 2.4G/5G/5G wireless AP
Model No.	:	AT-TQ5403e
Trade Name	:	Allied Telesis
FCC ID	:	RSL-TQ5403E

I HEREBY CERTIFY THAT :

The sample was received on Nov. 07, 2018 and the testing was carried out on Jan. 23, 2019 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Mark Liao / Supervisor

Tested by:

Spree Yei / Engineer

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory

Contents

History of this test report

Report No.	Issue Date	Description
TEFI1804236	Jan. 25, 2019	Original

1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

ANSI C63.4:2014

ANSI C63.10:2013

FCC Rules and Regulations Part 15 Subpart C §15.247

KDB558074

KDB662911

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

Equipment	802.11ac wave2 2x2 tri-radio 2.4G/5G/5G wireless outdoor AP
Model No.	AT-TQ5403e
Brand Name	Allied Telesis
Product Description	Please refer to User's Manual.
Connecting I/O Port(s)	Please refer to User's Manual.
PoE	48Vdc/0.67A
Memo	A1
Frequency Range	802.11b/g/n/ac: 2400-2483.5MHz 802.11a/n/ac: 5150MHz-5250MHz, 5725MHz-5850MHz
Modulation Type	OFDM, DSSS
Data Rate	2.4GHz: 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40, VHT20/40 5GHz: 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40 802.11ac: MCS0 – MCS9, VHT20/40/80
Antenna Type	Dipole Antenna
Antenna Gain	2400-2483.5MHz: ANT A: 5.2dBi, ANT B: 5.2dBi 5150-5250MHz: ANT A: 6.91dBi, ANT B: 6.91dBi 5725-5850MHz: ANT A: 7.08dBi, ANT B: 7.08dBi

Note: 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, VHT20 (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, VHT40 (2422MHz~2452MHz)

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

Note: Channels remarked * are selected to perform test.

2.3 Test Mode and Test Software

a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
b. The complete test system included remote workstation and EUT for RF test. The remote workstation included Notebook.
c. An executive program, ”qdart_conn.win.1.0_installer_00053.1” was executed to transmit and receive data via WLAN.
d. The following test modes were performed for the test:

Test Mode	Operating Description
1	802.11b (1Mbps)
2	802.11g (6Mbps)
3	VHT20 (6.5Mbps)
4	VHT40 (13.5Mbps)
For Conducted Emissions caused “Test Mode 1” generated the worst case, it was reported as the final data. For Radiated Emissions (below 1GHz) caused “Test Mode 1” generated the worst case, it was reported as the final data. For Radiated Emissions (above 1GHz) caused “Test Mode 1~4” generated the worst case, it was reported as the final data.	

Note: Non-Beamforming was worst,used Non-Beamforming mode for the test result.

2.4 Description of Test System

Device	Manufacturer	Model No.	Description
Remote workstation			
Notebook	DELL	Vostro 3560	Power Cable, Unshielding, 1.8m
POE	Bluewave	JS-100GT	-

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 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.2 Antenna Construction and Directional Gain

Antenna Type	Dipole Antenna
Antenna Gain	2400-2483.5MHz: ANT A: 5.2dBi, ANT B: 5.2dBi 5150-5250MHz: ANT A: 6.91dBi, ANT B: 6.91dBi 5725-5850MHz: ANT A: 7.08dBi, ANT B: 7.08dBi

(Non-Beamforming)

2412-2462MHz
For Power directional gain= G_{ant}= 5.20 dBi For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ /NANT] = 8.21 (dBi)
5150MHz -5250MHz
For Power directional gain= G_{ant}= 6.91 dBi For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ /NANT] = 9.92 (dBi)
5725MHz -5850MHz
For Power directional gain= G_{ant}= 7.08 dBi For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ /NANT] = 10.09 (dBi)

(Beamforming)

2412-2462MHz
For Power directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ /NANT] = 8.21 dBi For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ /NANT] = 8.21 (dBi)
5150MHz -5250MHz
For Power directional gain= 10 log[$(10^{G1/20} + 10^{G2/20})^2$ /NANT] = 9.92 (dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ /NANT]= 9.92 (dBi)
5725MHz -5850MHz
For Power directional gain= 10 log[$(10^{G1/20} + 10^{G2/20})^2$ /NANT] = 10.09 (dBi) For PSD directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ /NANT]= 10.09 (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.

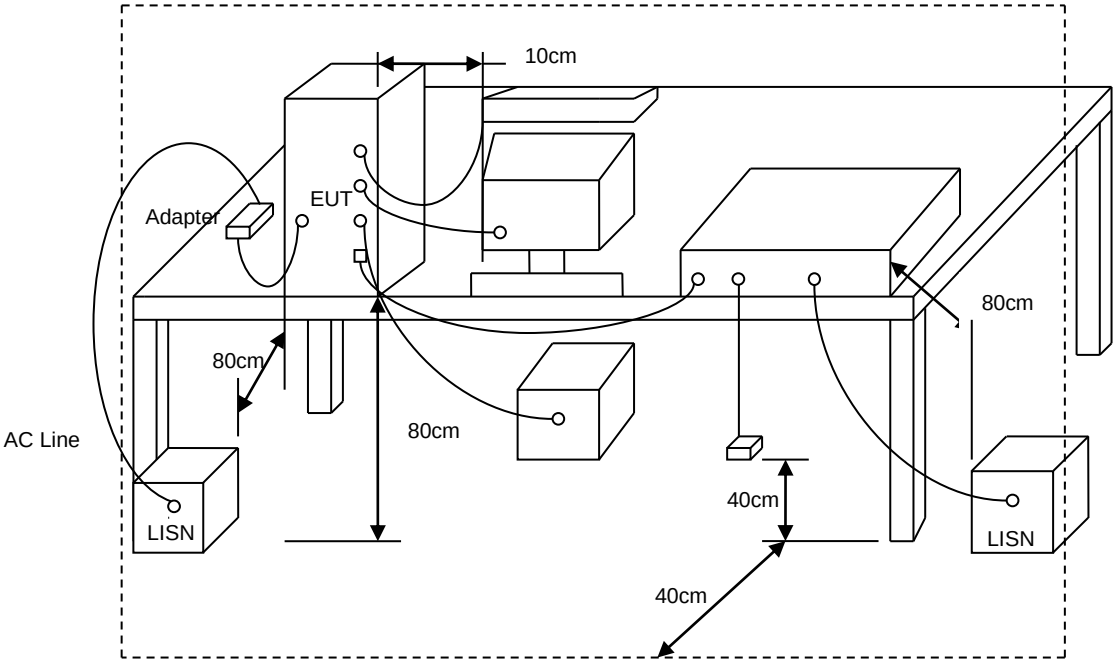
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

5.2 Test Procedures

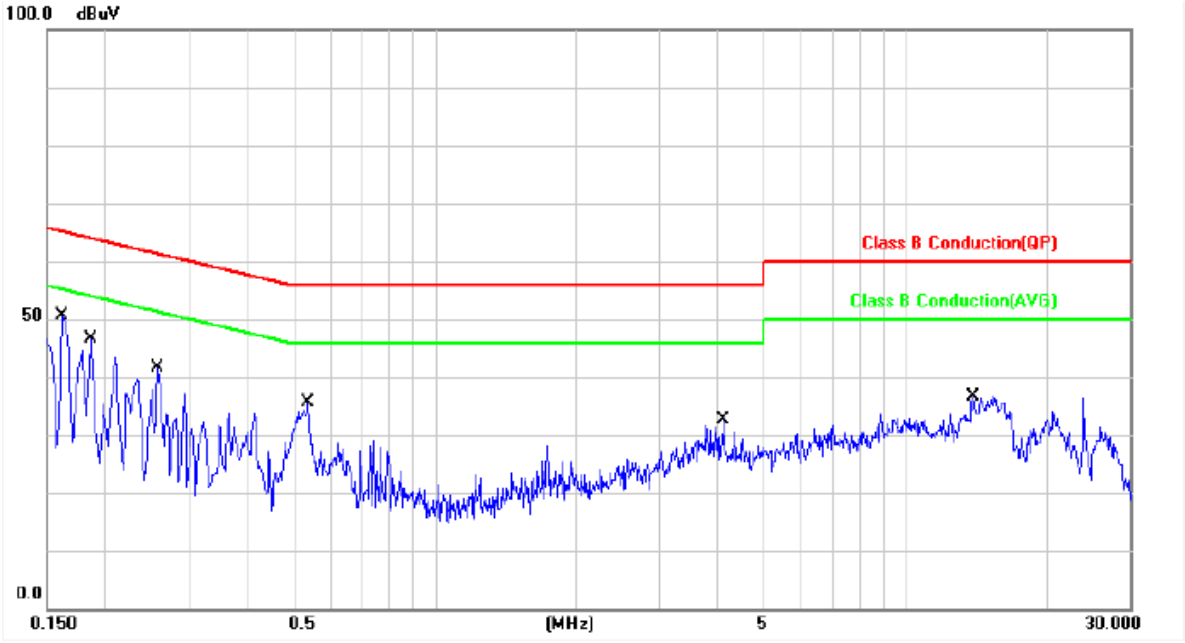
a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connecting to the other LISN.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

5.3 Typical Test Setup



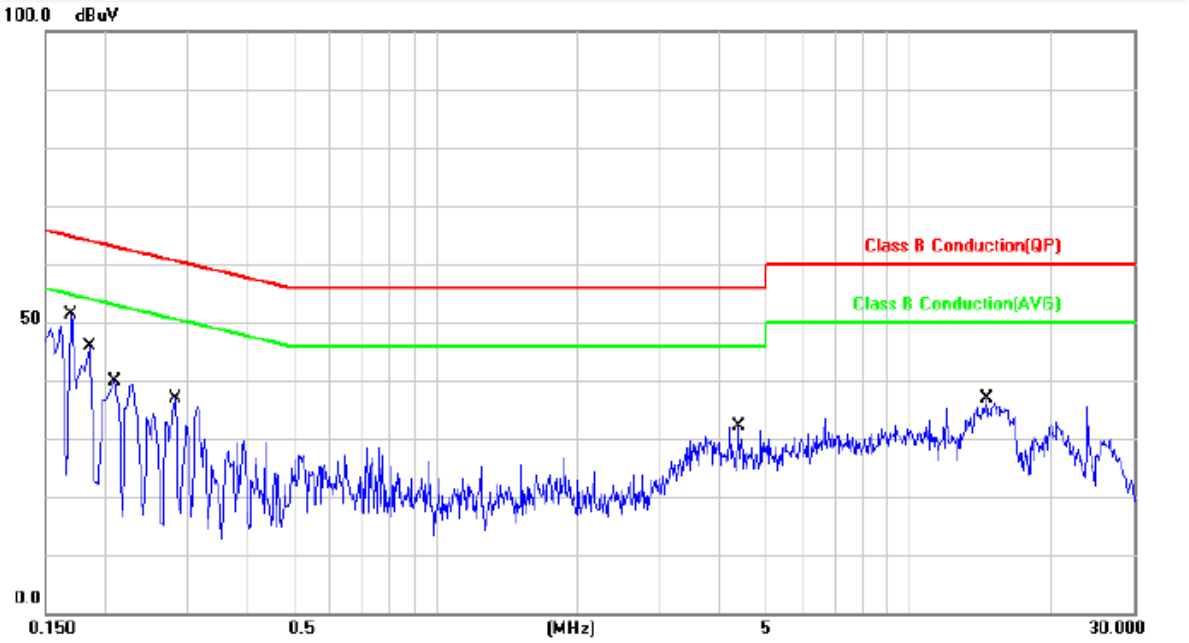
5.4 Test Result and Data

Power	:	AC 120V	Pol/Phase	:	LINE
Test Mode	:	Mode 1	Temperature	:	22 °C
Test date	:	Dec. 06, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1620	9.98	38.89	48.87	65.36	-16.49	QP	P
2	0.1620	9.98	26.04	36.02	55.36	-19.34	AVG	P
3	0.1860	9.97	35.26	45.23	64.21	-18.98	QP	P
4	0.1860	9.97	23.85	33.82	54.21	-20.39	AVG	P
5	0.2580	9.97	25.08	35.05	61.49	-26.44	QP	P
6	0.2580	9.97	12.85	22.82	51.49	-28.67	AVG	P
7	0.5380	9.98	20.20	30.18	56.00	-25.82	QP	P
8	0.5380	9.98	15.80	25.78	46.00	-20.22	AVG	P
9	4.1140	10.15	14.23	24.38	56.00	-31.62	QP	P
10	4.1140	10.15	7.67	17.82	46.00	-28.18	AVG	P
11	13.9220	10.36	23.16	33.52	60.00	-26.48	QP	P
12	13.9220	10.36	20.16	30.52	50.00	-19.48	AVG	P

Power	:	AC 120V	Pol/Phase	:	NEUTRAL
Test Mode	:	Mode 1	Temperature	:	22 °C
Test date	:	Dec. 06, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1700	9.98	32.58	42.56	64.96	-22.40	QP	P
2	0.1700	9.98	17.42	27.40	54.96	-27.56	AVG	P
3	0.1860	9.98	35.21	45.19	64.21	-19.02	QP	P
4	0.1860	9.98	21.16	31.14	54.21	-23.07	AVG	P
5	0.2100	9.98	30.66	40.64	63.20	-22.56	QP	P
6	0.2100	9.98	17.02	27.00	53.20	-26.20	AVG	P
7	0.2819	9.96	20.10	30.06	60.76	-30.70	QP	P
8	0.2819	9.96	6.86	16.82	50.76	-33.94	AVG	P
9	4.3940	10.17	12.36	22.53	56.00	-33.47	QP	P
10	4.3940	10.17	6.23	16.40	46.00	-29.60	AVG	P
11	14.6820	10.45	22.95	33.40	60.00	-26.60	QP	P
12	14.6820	10.45	19.94	30.39	50.00	-19.61	AVG	P

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

a. The EUT was placed on a rotatable table top 0.8 meter above ground.

b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.

c. The table was rotated 360 degrees to determine the position of the highest radiation.

d. 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.

e. 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.

f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.

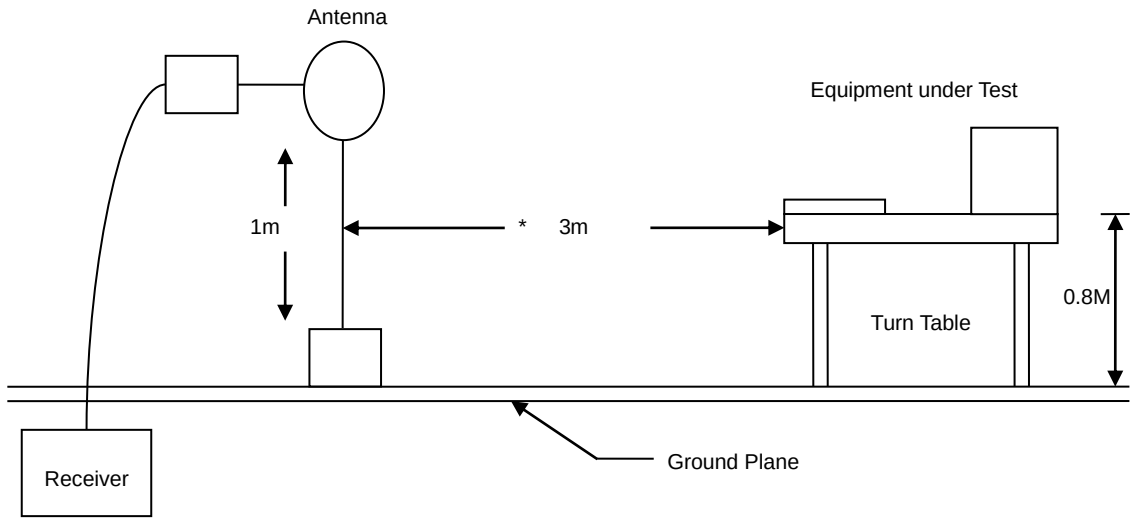
g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

h. 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.

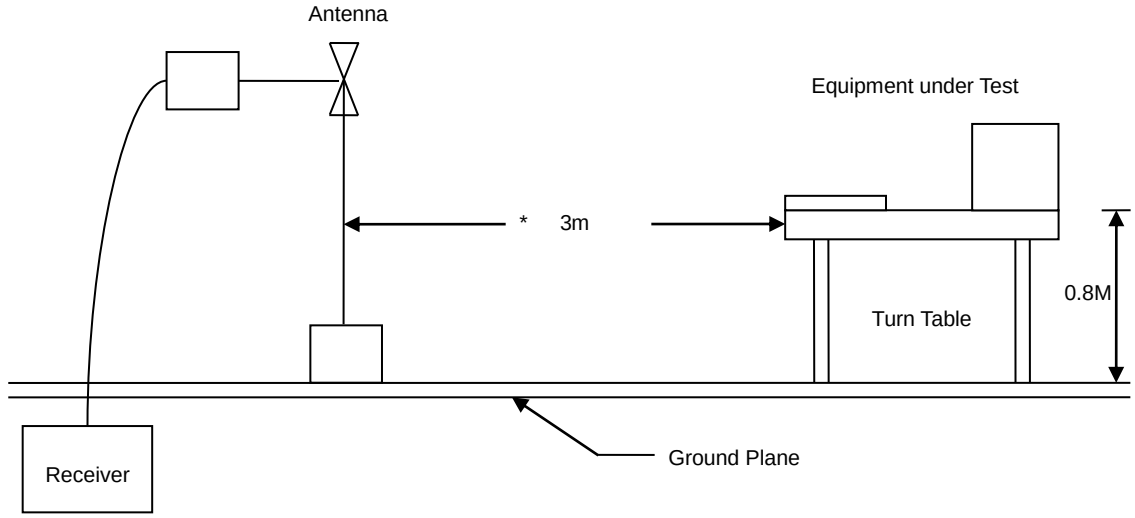
i. “Cone of radiation” has been considered to be 3dB bandwidth of the measurement antenna.

6.3 Typical Test Setup

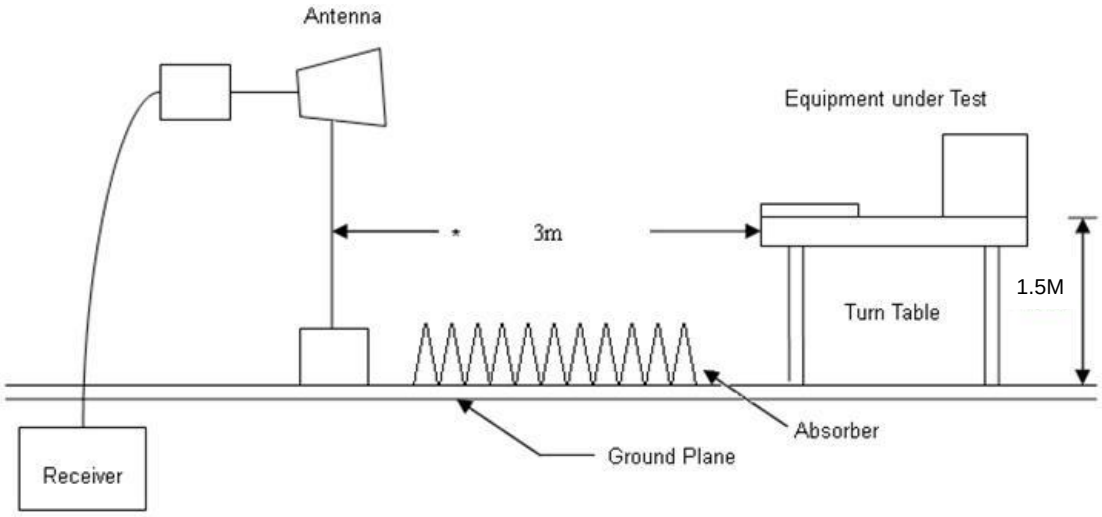
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup

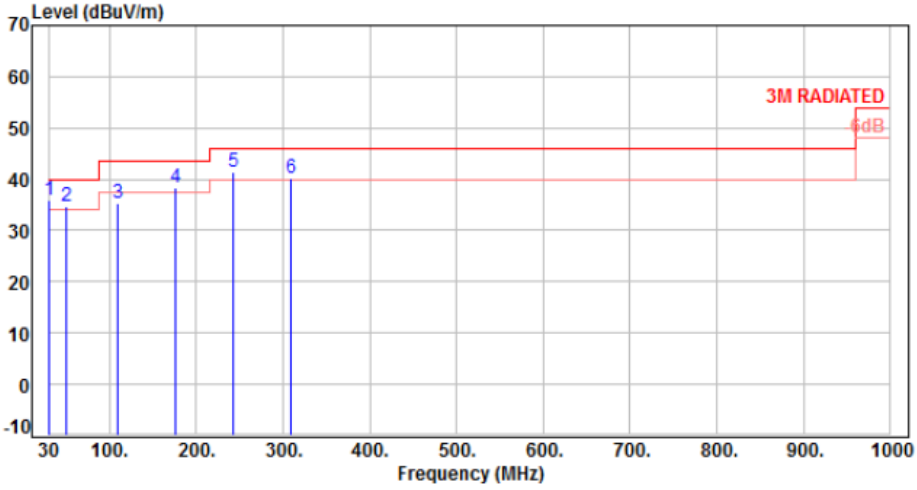


6.4 Test Result and Data (9KHz ~ 30MHz)

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

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

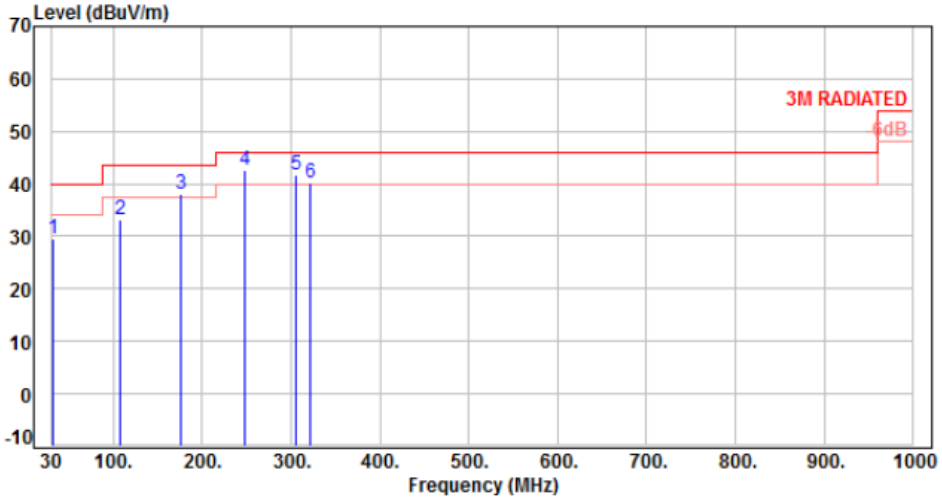
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1	Temperature	:	22 °C
Test Date	:	Dec. 06, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	30.97	-10.58	46.66	36.08	40.00	-3.92	QP	100	173	P
2	50.37	-9.45	44.20	34.75	40.00	-5.25	QP	100	241	P
3	109.54	-12.84	48.07	35.23	43.50	-8.27	Peak	400	0	P
4	175.50	-10.26	48.52	38.26	43.50	-5.24	Peak	400	0	P
5	243.40	-10.40	51.87	41.47	46.00	-4.53	Peak	400	0	P
6	309.36	-8.40	48.71	40.31	46.00	-5.69	Peak	400	0	P

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

Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1	Temperature	:	22 °C
Test Date	:	Dec. 06, 2018	Humidity	:	63 %

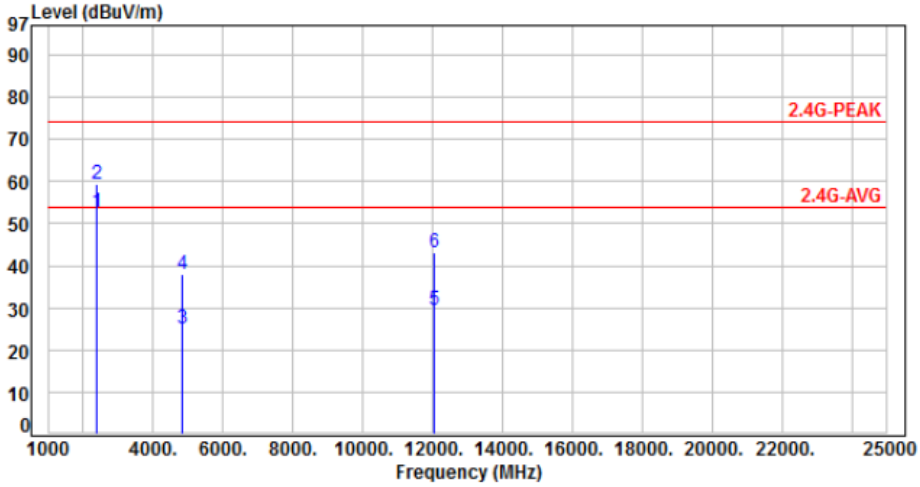


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	32.91	-10.63	40.15	29.52	40.00	-10.48	Peak	100	0	P
2	108.57	-12.99	46.16	33.17	43.50	-10.33	Peak	100	0	P
3	176.47	-10.40	48.50	38.10	43.50	-5.40	QP	100	133	P
4	247.28	-10.30	53.04	42.74	46.00	-3.26	Peak	100	0	P
5	305.48	-8.50	50.10	41.60	46.00	-4.40	QP	100	77	P
6	321.00	-8.07	48.30	40.23	46.00	-5.77	QP	100	86	P

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

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

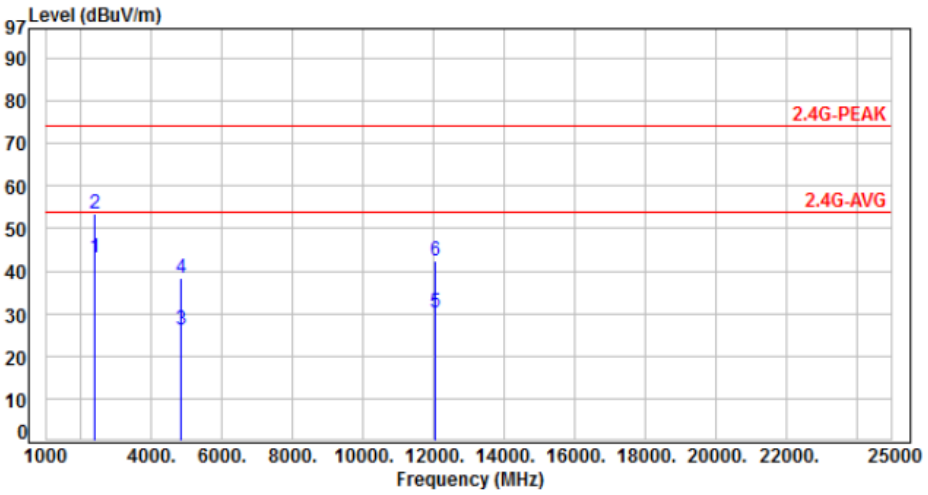
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH01	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2387.00	-15.69	68.50	52.81	54.00	-1.19	Average	245	335	P
2	2387.00	-15.69	75.20	59.51	74.00	-14.49	Peak	245	335	P
3	4824.00	-8.47	33.52	25.05	54.00	-28.95	Average	100	85	P
4	4824.00	-8.47	46.30	37.83	74.00	-36.17	Peak	100	85	P
5	12060.00	1.79	27.66	29.45	54.00	-24.55	Average	100	115	P
6	12060.00	1.79	41.32	43.11	74.00	-30.89	Peak	100	115	P

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

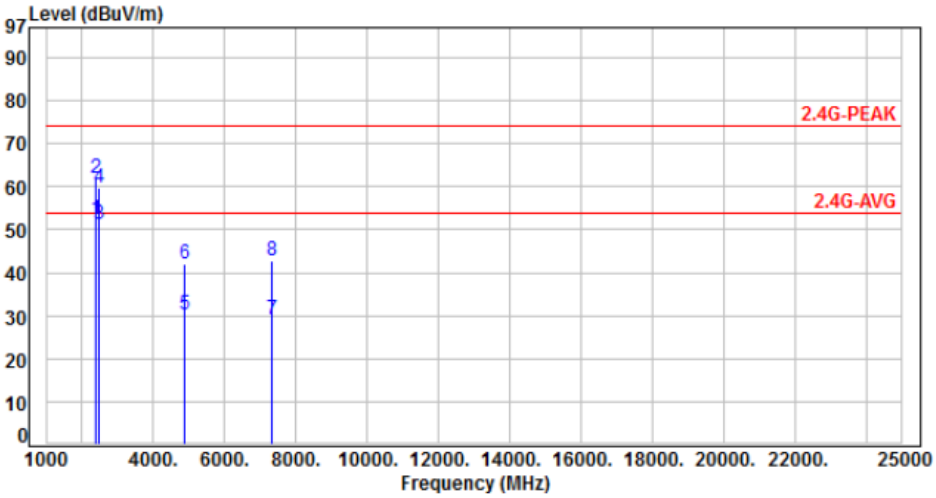
Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH01	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2387.00	-15.69	58.90	43.21	54.00	-10.79	Average	300	270	P
2	2387.00	-15.69	69.10	53.41	74.00	-20.59	Peak	300	270	P
3	4824.00	-8.47	34.55	26.08	54.00	-27.92	Average	100	301	P
4	4824.00	-8.47	46.80	38.33	74.00	-35.67	Peak	100	301	P
5	12060.00	1.79	28.32	30.11	54.00	-23.89	Average	102	334	P
6	12060.00	1.79	40.51	42.30	74.00	-31.70	Peak	102	334	P

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

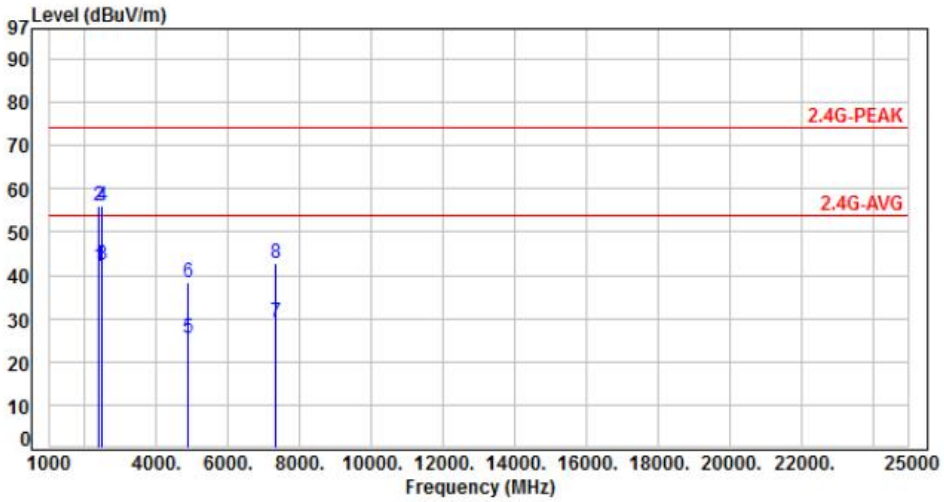
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH06	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2388.00	-15.69	68.21	52.52	54.00	-1.48	Average	221	340	P
2	2388.00	-15.69	77.51	61.82	74.00	-12.18	Peak	221	340	P
3	2483.50	-15.36	66.60	51.24	54.00	-2.76	Average	221	340	P
4	2483.50	-15.36	75.10	59.74	74.00	-14.26	Peak	221	340	P
5	4874.00	-8.33	38.63	30.30	54.00	-23.70	Average	100	132	P
6	4874.00	-8.33	50.20	41.87	74.00	-32.13	Peak	100	132	P
7	7311.00	-3.86	32.86	29.00	54.00	-25.00	Average	100	84	P
8	7311.00	-3.86	46.65	42.79	74.00	-31.21	Peak	100	84	P

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

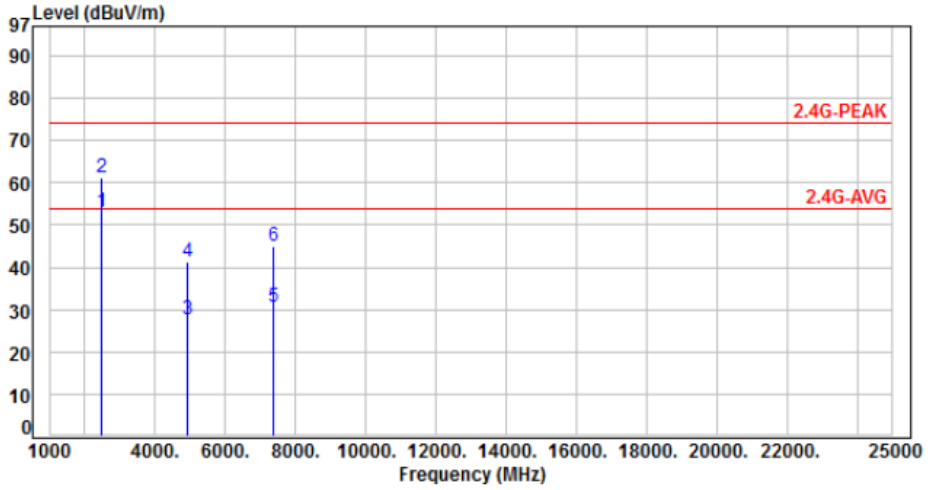
Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH06	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2388.00	-15.69	57.91	42.22	54.00	-11.78	Average	210	335	P
2	2388.00	-15.69	71.61	55.92	74.00	-18.08	Peak	210	335	P
3	2483.50	-15.36	57.85	42.49	54.00	-11.51	Average	210	335	P
4	2483.50	-15.36	71.50	56.14	74.00	-17.86	Peak	210	335	P
5	4874.00	-8.33	33.85	25.52	54.00	-28.48	Average	100	162	P
6	4874.00	-8.33	46.80	38.47	74.00	-35.53	Peak	100	162	P
7	7311.00	-3.86	32.84	28.98	54.00	-25.02	Average	100	322	P
8	7311.00	-3.86	46.82	42.96	74.00	-31.04	Peak	100	322	P

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

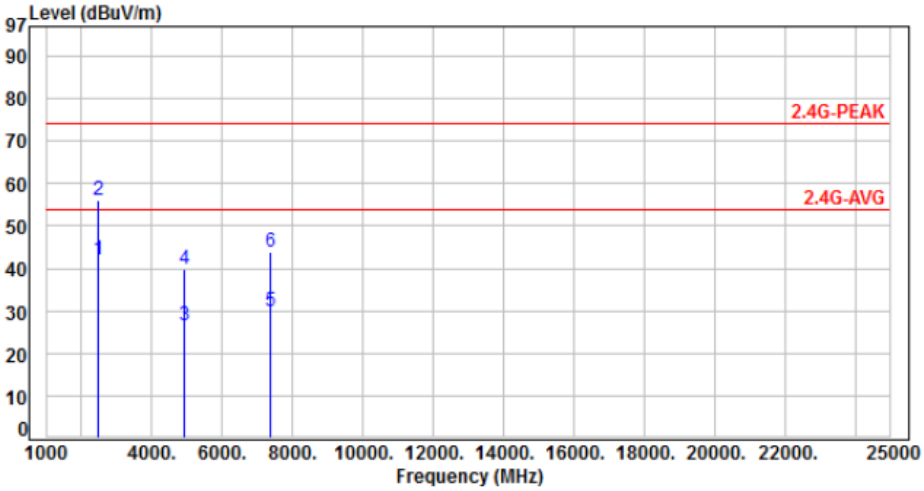
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH11	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2487.00	-15.35	68.31	52.96	54.00	-1.04	Average	223	338	P
2	2487.00	-15.35	76.51	61.16	74.00	-12.84	Peak	223	338	P
3	4924.00	-8.18	36.00	27.82	54.00	-26.18	Average	100	170	P
4	4924.00	-8.18	49.50	41.32	74.00	-32.68	Peak	100	170	P
5	7386.00	-3.67	34.12	30.45	54.00	-23.55	Average	102	112	P
6	7386.00	-3.67	48.52	44.85	74.00	-29.15	Peak	102	112	P

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

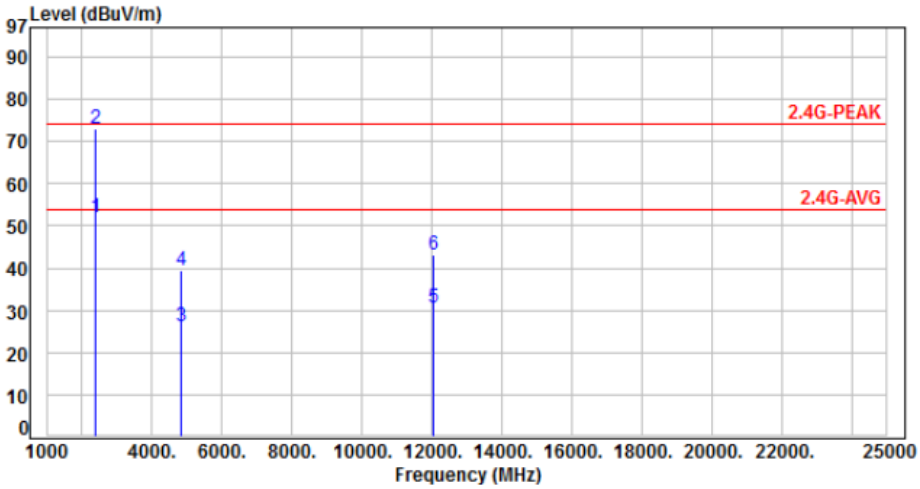
Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH11	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2487.00	-15.35	57.31	41.96	54.00	-12.04	Average	290	262	P
2	2487.00	-15.35	71.49	56.14	74.00	-17.86	Peak	290	262	P
3	4924.00	-8.18	34.88	26.70	54.00	-27.30	Average	100	296	P
4	4924.00	-8.18	47.87	39.69	74.00	-34.31	Peak	100	296	P
5	7386.00	-3.67	33.65	29.98	54.00	-24.02	Average	100	305	P
6	7386.00	-3.67	47.70	44.03	74.00	-29.97	Peak	100	305	P

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

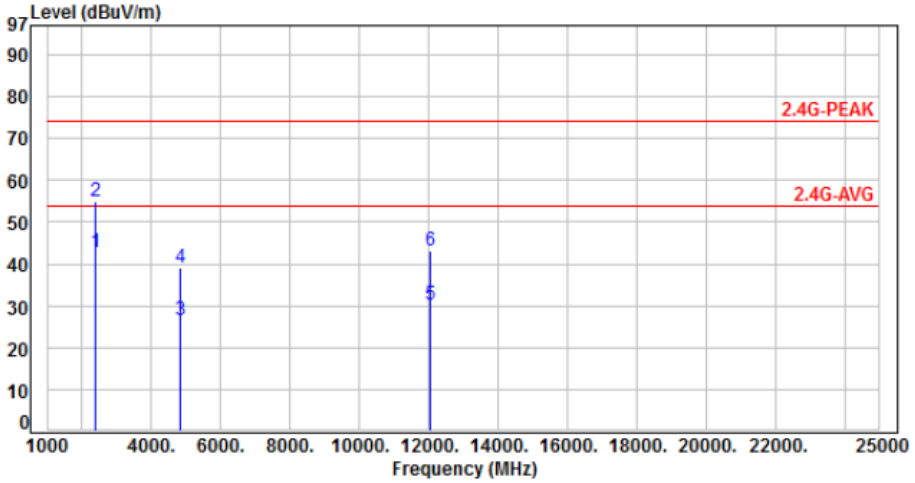
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH01	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	67.86	52.18	54.00	-1.82	Average	245	300	P
2	2390.00	-15.68	88.60	72.92	74.00	-1.08	Peak	245	300	P
3	4824.00	-8.47	34.55	26.08	54.00	-27.92	Average	100	113	P
4	4824.00	-8.47	47.80	39.33	74.00	-34.67	Peak	100	113	P
5	12060.00	1.79	28.65	30.44	54.00	-23.56	Average	100	92	P
6	12060.00	1.79	41.33	43.12	74.00	-30.88	Peak	100	92	P

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

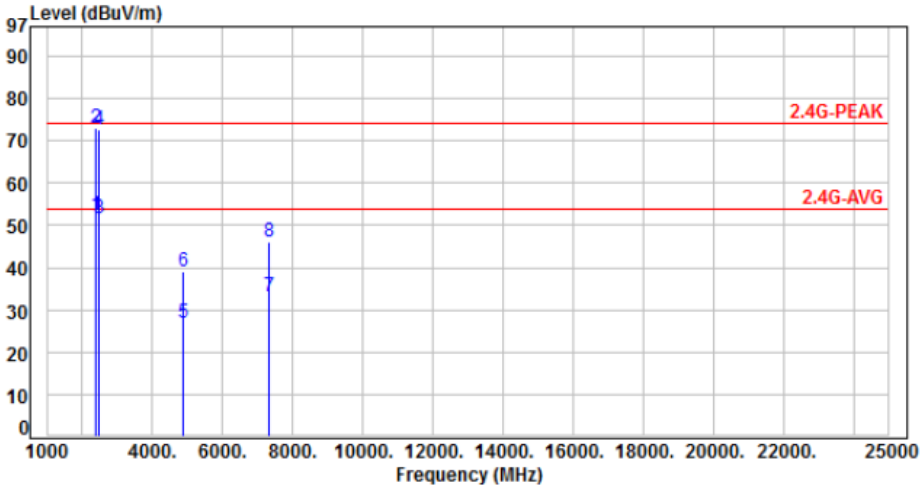
Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH01	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	58.60	42.92	54.00	-11.08	Average	295	166	P
2	2390.00	-15.68	70.70	55.02	74.00	-18.98	Peak	295	166	P
3	4824.00	-8.47	34.88	26.41	54.00	-27.59	Average	100	308	P
4	4824.00	-8.47	47.52	39.05	74.00	-34.95	Peak	100	308	P
5	12060.00	1.79	28.51	30.30	54.00	-23.70	Average	112	299	P
6	12060.00	1.79	41.32	43.11	74.00	-30.89	Peak	112	299	P

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

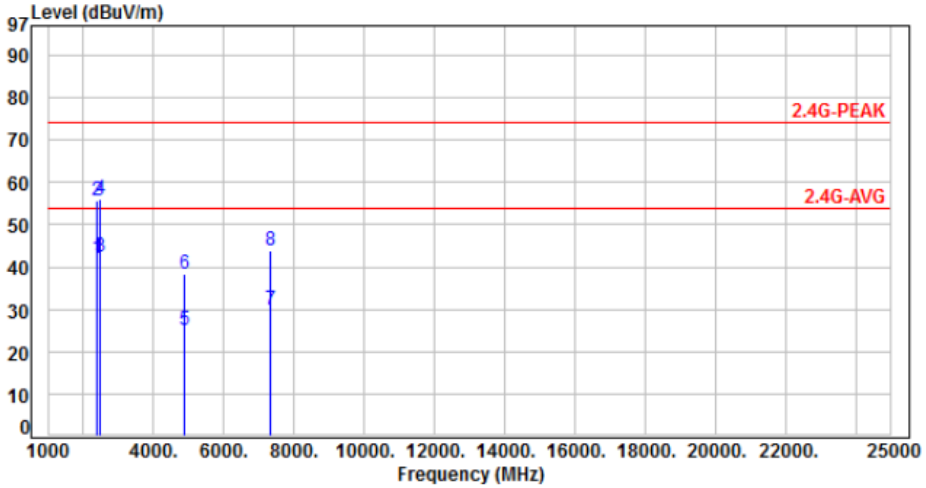
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH06	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	67.92	52.24	54.00	-1.76	Average	263	205	P
2	2390.00	-15.68	88.60	72.92	74.00	-1.08	Peak	263	205	P
3	2483.50	-15.36	66.81	51.45	54.00	-2.55	Average	263	205	P
4	2483.50	-15.36	88.12	72.76	74.00	-1.24	Peak	263	205	P
5	4874.00	-8.33	35.33	27.00	54.00	-27.00	Average	100	86	P
6	4874.00	-8.33	47.52	39.19	74.00	-34.81	Peak	100	86	P
7	7311.00	-3.86	36.90	33.04	54.00	-20.96	Average	100	350	P
8	7311.00	-3.86	49.80	45.94	74.00	-28.06	Peak	100	350	P

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

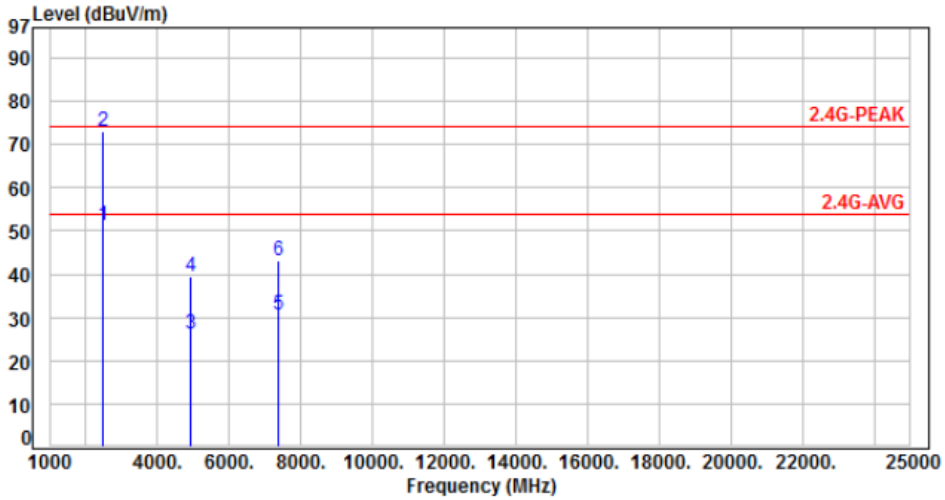
Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH06	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	57.60	41.92	54.00	-12.08	Average	281	329	P
2	2390.00	-15.68	71.40	55.72	74.00	-18.28	Peak	281	329	P
3	2483.50	-15.36	57.86	42.50	54.00	-11.50	Average	281	329	P
4	2483.50	-15.36	71.52	56.16	74.00	-17.84	Peak	281	329	P
5	4874.00	-8.33	33.56	25.23	54.00	-28.77	Average	100	352	P
6	4874.00	-8.33	46.70	38.37	74.00	-35.63	Peak	100	352	P
7	7311.00	-3.86	33.90	30.04	54.00	-23.96	Average	100	300	P
8	7311.00	-3.86	47.88	44.02	74.00	-29.98	Peak	100	300	P

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

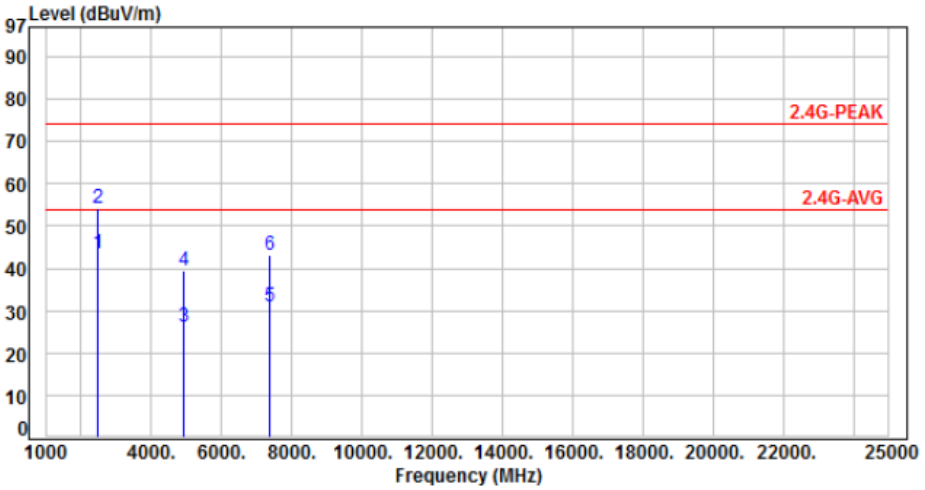
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 2, CH11	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.36	66.76	51.40	54.00	-2.60	Average	232	315	P
2	2483.50	-15.36	88.24	72.88	74.00	-1.12	Peak	232	315	P
3	4924.00	-8.18	34.52	26.34	54.00	-27.66	Average	100	103	P
4	4924.00	-8.18	47.56	39.38	74.00	-34.62	Peak	100	103	P
5	7386.00	-3.67	34.36	30.69	54.00	-23.31	Average	114	78	P
6	7386.00	-3.67	46.83	43.16	74.00	-30.84	Peak	114	78	P

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

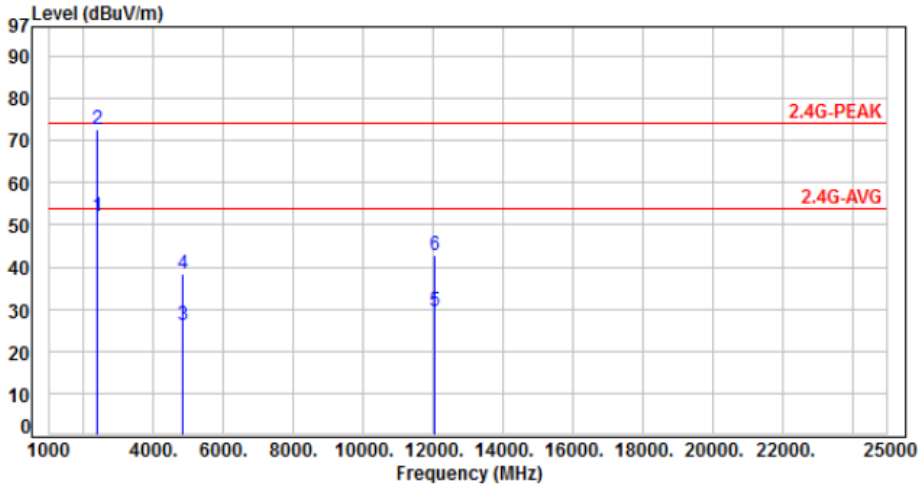
Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 2, CH11	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.36	58.80	43.44	54.00	-10.56	Average	288	226	P
2	2483.50	-15.36	69.50	54.14	74.00	-19.86	Peak	288	226	P
3	4924.00	-8.18	34.55	26.37	54.00	-27.63	Average	100	335	P
4	4924.00	-8.18	47.58	39.40	74.00	-34.60	Peak	100	335	P
5	7386.00	-3.67	34.53	30.86	54.00	-23.14	Average	100	301	P
6	7386.00	-3.67	46.81	43.14	74.00	-30.86	Peak	100	301	P

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

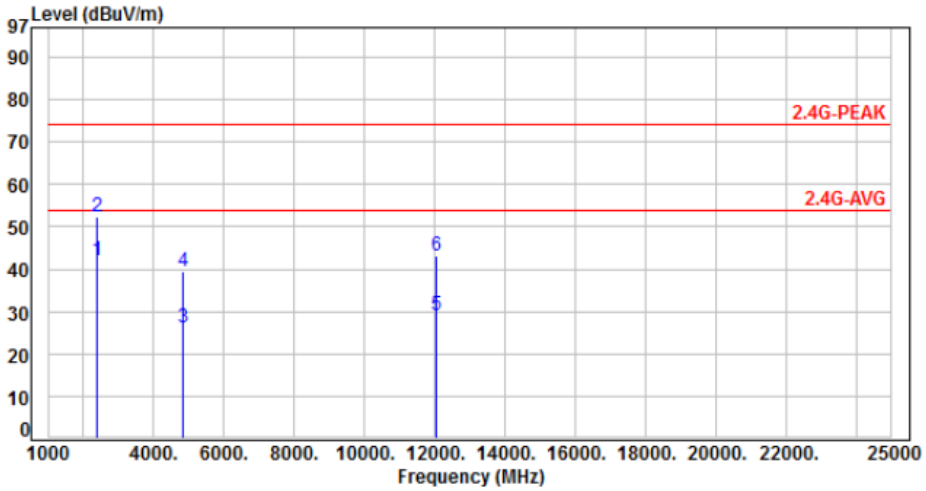
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH01	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	67.70	52.02	54.00	-1.98	Average	246	300	P
2	2390.00	-15.68	88.50	72.82	74.00	-1.18	Peak	246	300	P
3	4824.00	-8.47	34.68	26.21	54.00	-27.79	Average	100	116	P
4	4824.00	-8.47	46.80	38.33	74.00	-35.67	Peak	100	116	P
5	12060.00	1.79	27.59	29.38	54.00	-24.62	Average	100	84	P
6	12060.00	1.79	40.88	42.67	74.00	-31.33	Peak	100	84	P

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

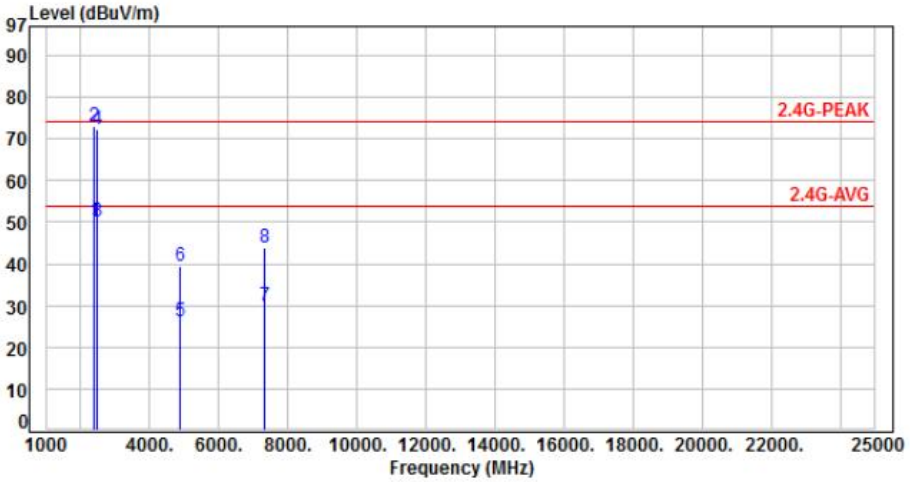
Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH01	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	57.66	41.98	54.00	-12.02	Average	302	107	P
2	2390.00	-15.68	68.20	52.52	74.00	-21.48	Peak	302	107	P
3	4824.00	-8.47	34.55	26.08	54.00	-27.92	Average	100	351	P
4	4824.00	-8.47	47.82	39.35	74.00	-34.65	Peak	100	351	P
5	12060.00	1.79	27.35	29.14	54.00	-24.86	Average	100	302	P
6	12060.00	1.79	41.33	43.12	74.00	-30.88	Peak	100	302	P

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

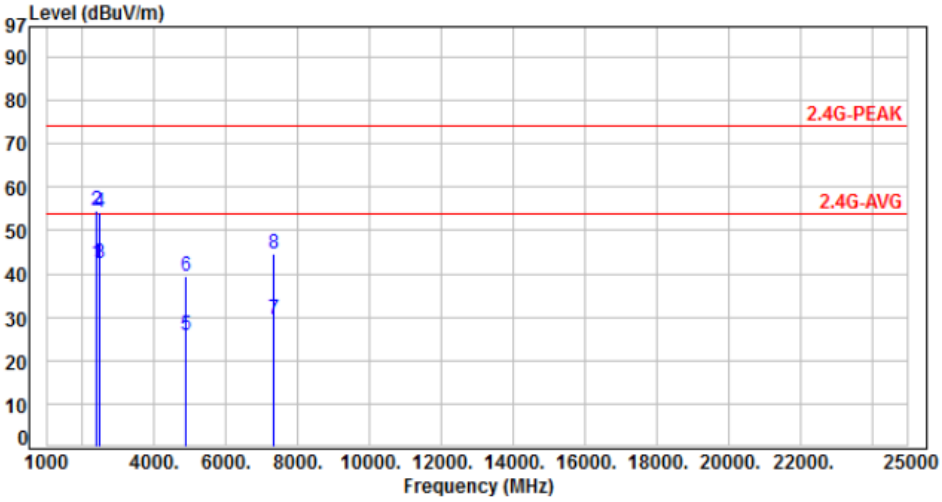
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH06	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	65.90	50.22	54.00	-3.78	Average	270	307	P
2	2390.00	-15.68	88.60	72.92	74.00	-1.08	Peak	270	307	P
3	2483.50	-15.36	65.60	50.24	54.00	-3.76	Average	270	307	P
4	2483.50	-15.36	87.80	72.44	74.00	-1.56	Peak	270	307	P
5	4874.00	-8.33	34.58	26.25	54.00	-27.75	Average	100	155	P
6	4874.00	-8.33	47.61	39.28	74.00	-34.72	Peak	100	155	P
7	7311.00	-3.86	33.58	29.72	54.00	-24.28	Average	100	94	P
8	7311.00	-3.86	47.66	43.80	74.00	-30.20	Peak	100	94	P

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

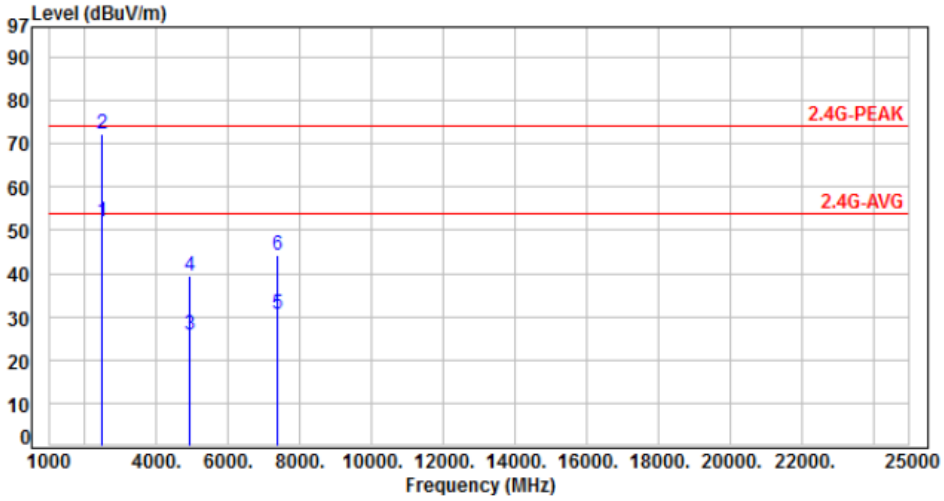
Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH06	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	58.00	42.32	54.00	-11.68	Average	306	345	P
2	2390.00	-15.68	70.20	54.52	74.00	-19.48	Peak	306	345	P
3	2483.50	-15.36	57.70	42.34	54.00	-11.66	Average	306	345	P
4	2483.50	-15.36	69.60	54.24	74.00	-19.76	Peak	306	345	P
5	4874.00	-8.33	34.22	25.89	54.00	-28.11	Average	105	301	P
6	4874.00	-8.33	47.80	39.47	74.00	-34.53	Peak	105	301	P
7	7311.00	-3.86	33.51	29.65	54.00	-24.35	Average	100	327	P
8	7311.00	-3.86	48.55	44.69	74.00	-29.31	Peak	100	327	P

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

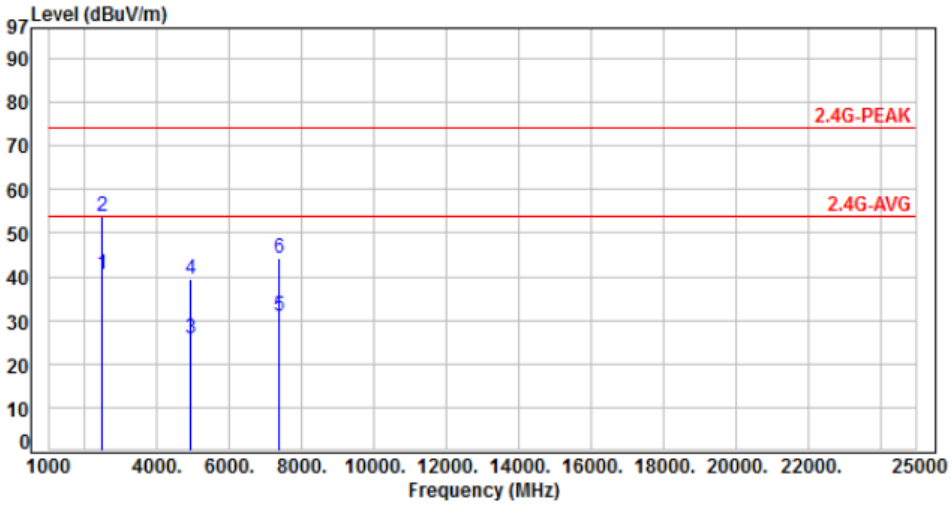
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH11	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.36	67.31	51.95	54.00	-2.05	Average	240	314	P
2	2483.50	-15.36	87.70	72.34	74.00	-1.66	Peak	240	314	P
3	4924.00	-8.18	33.84	25.66	54.00	-28.34	Average	100	78	P
4	4924.00	-8.18	47.64	39.46	74.00	-34.54	Peak	100	78	P
5	7386.00	-3.67	34.23	30.56	54.00	-23.44	Average	105	117	P
6	7386.00	-3.67	47.86	44.19	74.00	-29.81	Peak	105	117	P

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

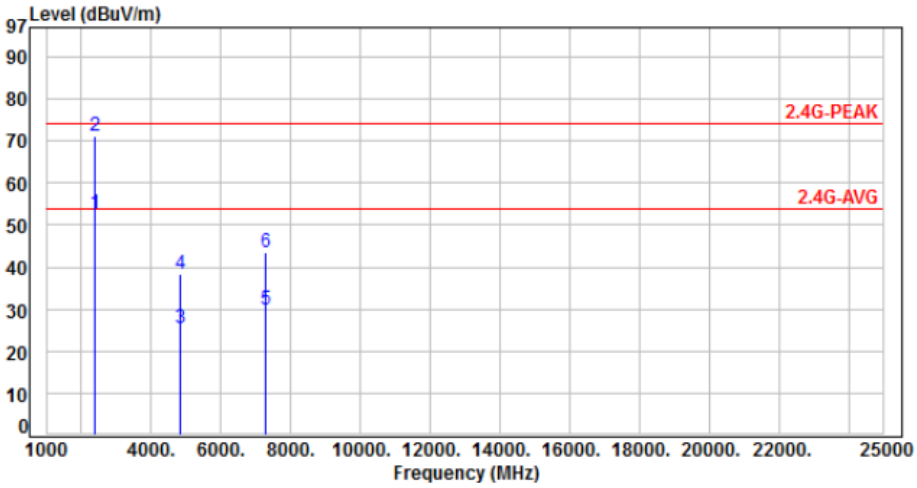
Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH11	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.36	56.10	40.74	54.00	-13.26	Average	130	106	P
2	2483.50	-15.36	69.20	53.84	74.00	-20.16	Peak	130	106	P
3	4924.00	-8.18	33.85	25.67	54.00	-28.33	Average	100	299	P
4	4924.00	-8.18	47.80	39.62	74.00	-34.38	Peak	100	299	P
5	7386.00	-3.67	34.66	30.99	54.00	-23.01	Average	100	327	P
6	7386.00	-3.67	47.89	44.22	74.00	-29.78	Peak	100	327	P

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

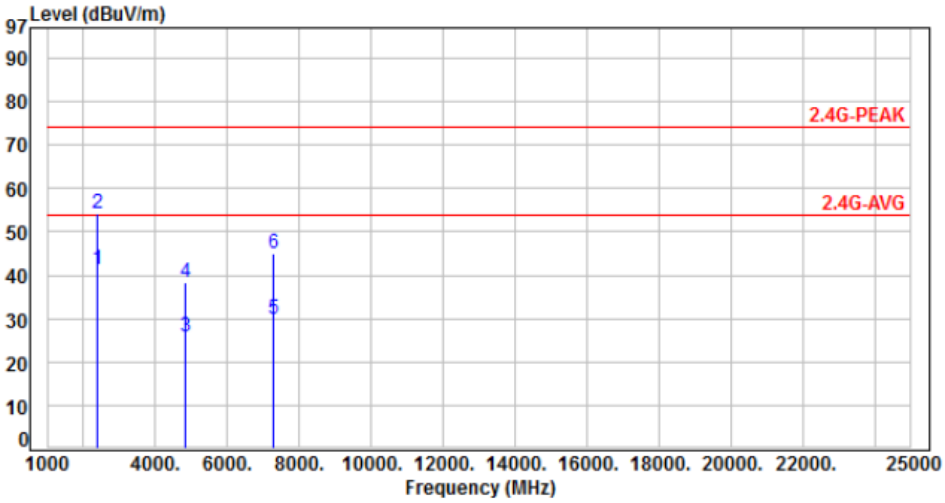
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 4, CH03	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	68.50	52.82	54.00	-1.18	Average	290	310	P
2	2390.00	-15.68	86.70	71.02	74.00	-2.98	Peak	290	310	P
3	4844.00	-8.41	33.86	25.45	54.00	-28.55	Average	100	116	P
4	4844.00	-8.41	46.92	38.51	74.00	-35.49	Peak	100	116	P
5	7266.00	-3.99	33.91	29.92	54.00	-24.08	Average	100	55	P
6	7266.00	-3.99	47.66	43.67	74.00	-30.33	Peak	100	55	P

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

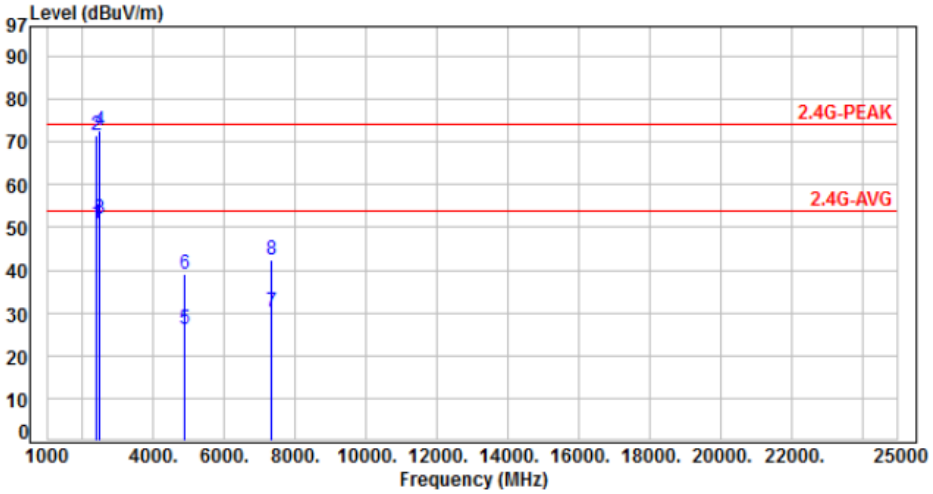
Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 4, CH03	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	56.88	41.20	54.00	-12.80	Average	100	100	P
2	2390.00	-15.68	69.80	54.12	74.00	-19.88	Peak	100	100	P
3	4844.00	-8.41	34.21	25.80	54.00	-28.20	Average	100	351	P
4	4844.00	-8.41	46.60	38.19	74.00	-35.81	Peak	100	351	P
5	7266.00	-3.99	33.86	29.87	54.00	-24.13	Average	100	295	P
6	7266.00	-3.99	48.91	44.92	74.00	-29.08	Peak	100	295	P

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

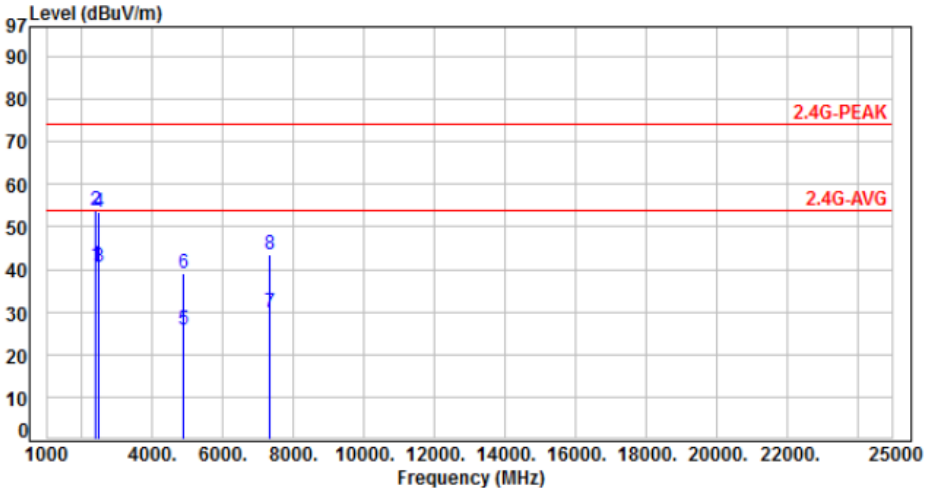
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 4, CH06	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	66.40	50.72	54.00	-3.28	Average	290	345	P
2	2390.00	-15.68	87.30	71.62	74.00	-2.38	Peak	290	345	P
3	2483.50	-15.36	67.35	51.99	54.00	-2.01	Average	290	345	P
4	2483.50	-15.36	88.10	72.74	74.00	-1.26	Peak	290	345	P
5	4874.00	-8.33	34.35	26.02	54.00	-27.98	Average	100	98	P
6	4874.00	-8.33	47.33	39.00	74.00	-35.00	Peak	100	98	P
7	7311.00	-3.86	33.98	30.12	54.00	-23.88	Average	100	152	P
8	7311.00	-3.86	46.45	42.59	74.00	-31.41	Peak	100	152	P

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

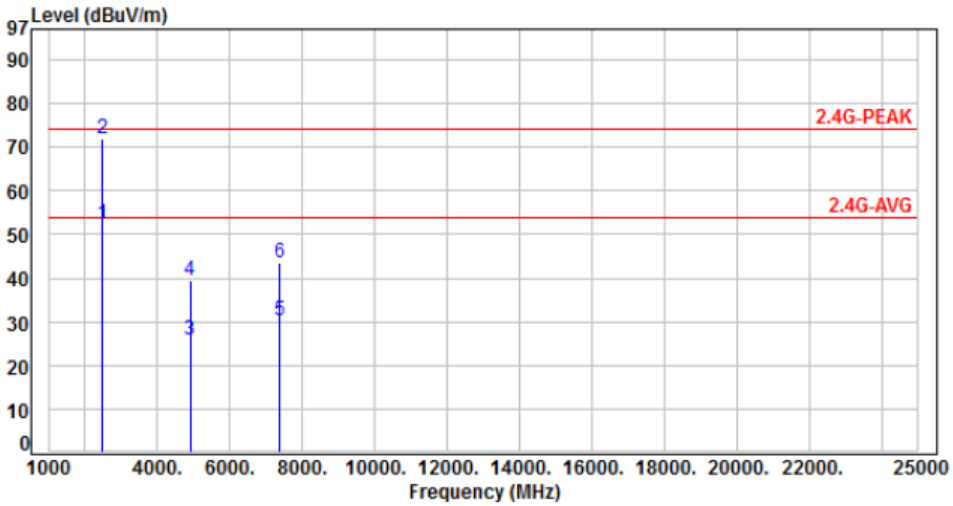
Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 4, CH06	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-15.68	56.50	40.82	54.00	-13.18	Average	100	120	P
2	2390.00	-15.68	69.60	53.92	74.00	-20.08	Peak	100	120	P
3	2483.50	-15.36	55.90	40.54	54.00	-13.46	Average	100	120	P
4	2483.50	-15.36	68.70	53.34	74.00	-20.66	Peak	100	120	P
5	4874.00	-8.33	34.28	25.95	54.00	-28.05	Average	100	300	P
6	4874.00	-8.33	47.52	39.19	74.00	-34.81	Peak	100	300	P
7	7311.00	-3.86	33.85	29.99	54.00	-24.01	Average	100	300	P
8	7311.00	-3.86	47.56	43.70	74.00	-30.30	Peak	100	300	P

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

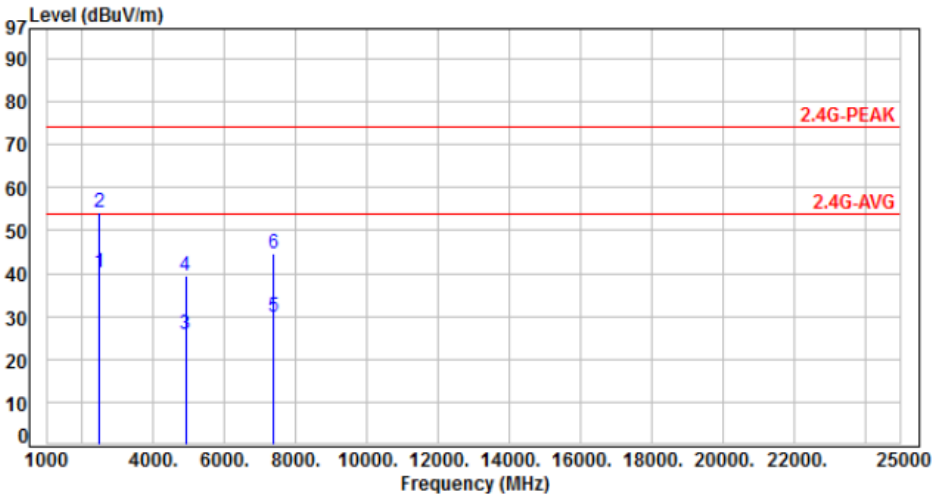
Power	:	From PoE	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 4, CH09	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.36	67.90	52.54	54.00	-1.46	Average	255	342	P
2	2483.50	-15.36	87.20	71.84	74.00	-2.16	Peak	255	342	P
3	4904.00	-8.24	34.22	25.98	54.00	-28.02	Average	100	116	P
4	4904.00	-8.24	47.88	39.64	74.00	-34.36	Peak	100	116	P
5	7356.00	-3.74	33.85	30.11	54.00	-23.89	Average	100	81	P
6	7356.00	-3.74	47.44	43.70	74.00	-30.30	Peak	100	81	P

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

Power	:	From PoE	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 4, CH09	Temperature	:	22 °C
Test Date	:	Nov. 12, 2018	Humidity	:	63 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-15.36	55.70	40.34	54.00	-13.66	Average	100	124	P
2	2483.50	-15.36	69.70	54.34	74.00	-19.66	Peak	100	124	P
3	4904.00	-8.24	34.11	25.87	54.00	-28.13	Average	100	307	P
4	4904.00	-8.24	47.82	39.58	74.00	-34.42	Peak	100	307	P
5	7356.00	-3.74	33.57	29.83	54.00	-24.17	Average	100	318	P
6	7356.00	-3.74	48.52	44.78	74.00	-29.22	Peak	100	318	P

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