



TESTING LABORATORY
CERTIFICATE #4820.01



FCC PART 15.247

TEST REPORT

For

George Patton Associates, Inc

81 Commerce Drive, Fall River, Massachusetts, United States

FCC ID: 2ASCB-DGFS43IN

Report Type: Original Report	Product Name: 43" Indoor Floor Standing Digital Signage
Report Number: RSH190201050-00B	
Report Date: 2019-04-24	
Dean Lau RF Supervisor	
Reviewed By: <i>Dean Lau</i>	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	43" Indoor Floor Standing Digital Signage
EUT Model:	DGFSTCH43
Multiple Models:	DGFSNT43
Rated Input Voltage:	100-240VAC 50/60Hz
External Dimension:	640mm(L)* 50mm(W)* 1760 mm(H)
Serial Number:	190201050
EUT Received Date:	2019.02.13

Notes: Model DGFSTCH43 was selected for fully testing, the detailed information about the difference between DGFSNT43 and model DGFSTCH43 can be referred to the declaration letter which was stated and guaranteed by the manufacturer.

Objective

This report is prepared on behalf of **George Patton Associates, Inc** in accordance with Part 2, Subpart J, Part 15, Subparts A and C of the Federal Communications Commission's rules.

The tests were performed in order to determine the compliance of the EUT with FCC Rules Part 15-Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

FCC Part 15C DSS submissions with FCC ID: 2ASCB-DGFS43IN.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. And 558074 D01 15.247 Meas Guidance v05r01.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	30M~200MHz: 4.55 dB, 200M~1GHz: 5.92 dB, 1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in Engineering Mode, which was provided by the manufacturer.

For 2.4GHz band, total 11 channels are provided:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/

For 802.11b and 802.11g modes were test with channel 1,6,11.

The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates, bandwidths, and modulations.

For Bluetooth LE mode, 40 channels are provided for testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	...	...
...	...	...	...
...	...	...	...
..	...	38	2478
19	2440	39	2480

EUT was tested with channel 0, 19 and 39.

EUT Exercise Software

The software “RFTestTool V5.6” was used for testing, which was provided by manufacturer. The maximum power was configured as below table, that provided by the manufacturer:

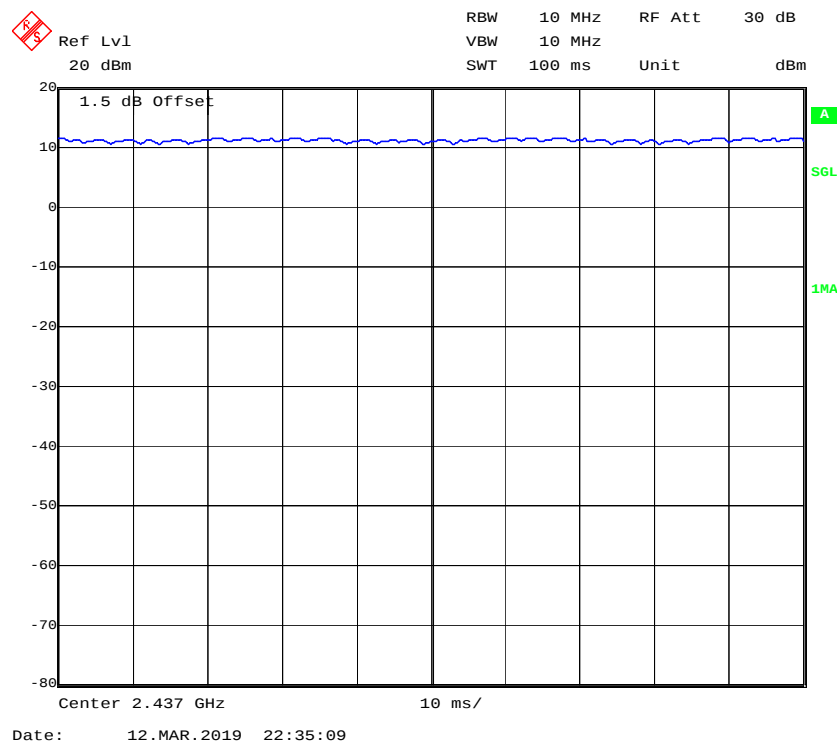
Mode	Channel	Frequency (MHz)	Data Rate	Power level
802.11b	Low	2412	1Mbps	default
	Middle	2437	1Mbps	default
	High	2462	1Mbps	default
802.11g	Low	2412	6Mbps	default
	Middle	2437	6Mbps	default
	High	2462	6Mbps	default

Bluetooth LE mode was configured by the system default setting

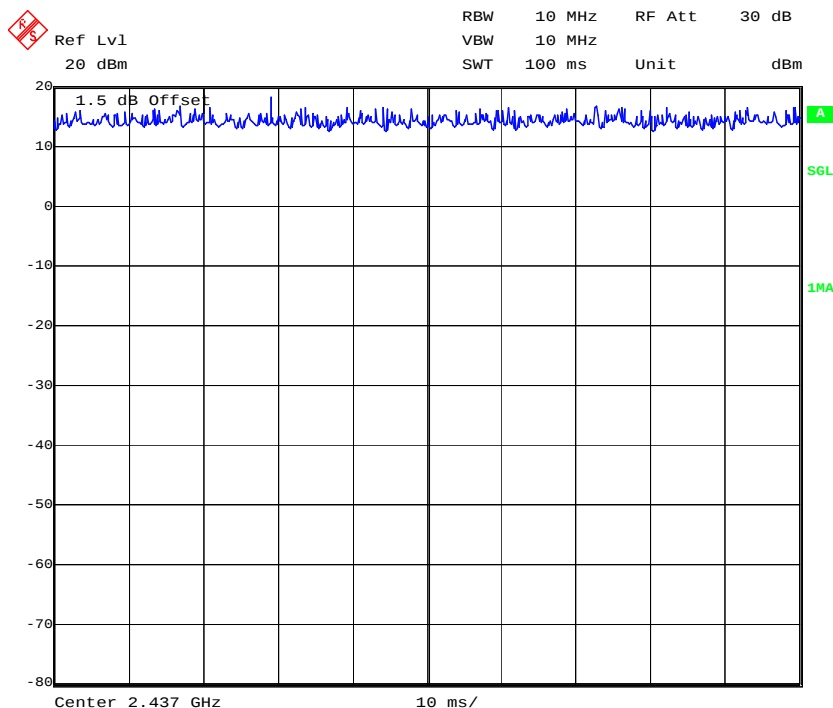
The maximum duty cycle as following table:

Test mode	T _{on} (ms)	T _{on+off} (ms)	Duty Cycle (%)
802.11b	100	100	100
802.11g	100	100	100
BLE	0.415	0.613	67.70

802.11b

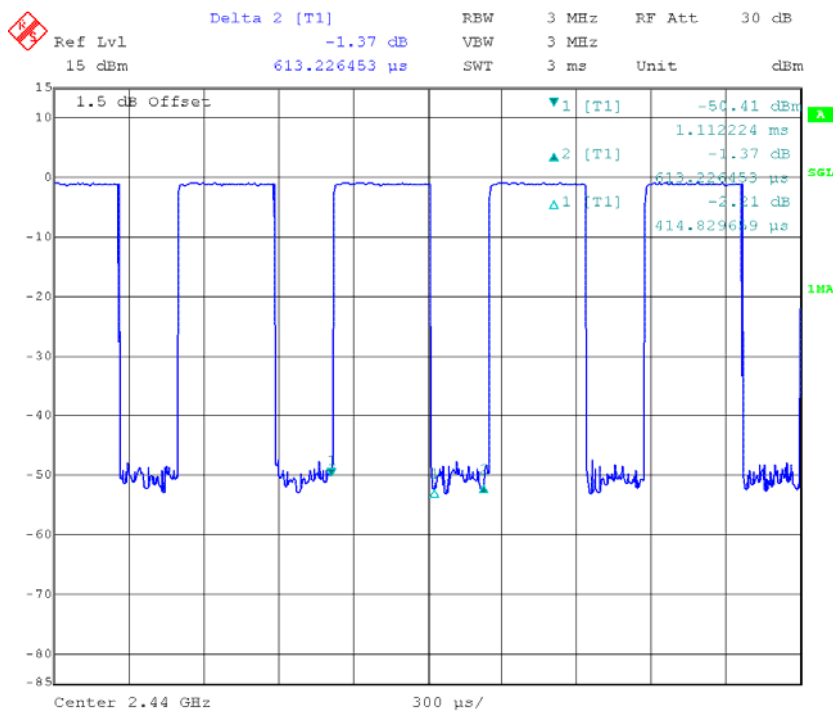


802.11g



Date: 12.MAR.2019 22:35:27

BLE



Date: 11.MAR.2019 23:21:38

Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Sandisk	U-DISK	N/A	N/A
Four-Faith	Router	F7836	N/A
ThinkPad	Notebook	E450	N/A

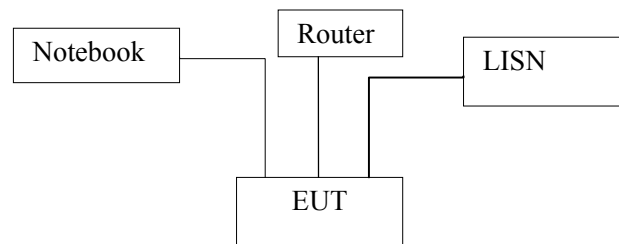
Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From	To
Power cable	No	Yes	1.5	LISN	EUT
RJ45	No	No	5	EUT	Router
HDMI cable	Yes	Yes	1.4	EUT	Notebook

Block Diagram of Test Setup

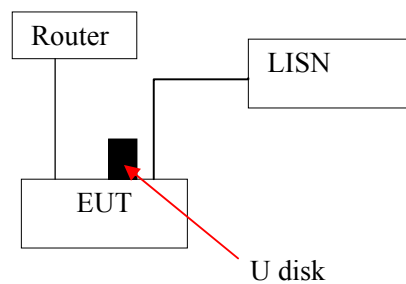
Conducted emission:

HDMI Input:



EUT with wheel on the floor

USB Input:



EUT with wheel on the floor

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Bandwidth	Compliance
§15.247(b)(3)	Maximum Conducted Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

FCC §15.247 (i) & §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247(i) and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Mode	Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
Wi-Fi	2412-2462	5	3.16	16	39.81	20	0.025	1.0
Bluetooth LE	2402-2480	5	3.16	-1	0.79	20	0.001	1.0
Bluetooth	2402-2480	5	3.16	3	2.00	20	0.001	1.0

Note: All modes can't transmit simultaneously.

Result: The device meet FCC MPE at 20 cm distance

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to § 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.
- c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

Antenna Connector Construction

The EUT has one external antenna arrangement for BT and WIFI, and the antenna gain is 5 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

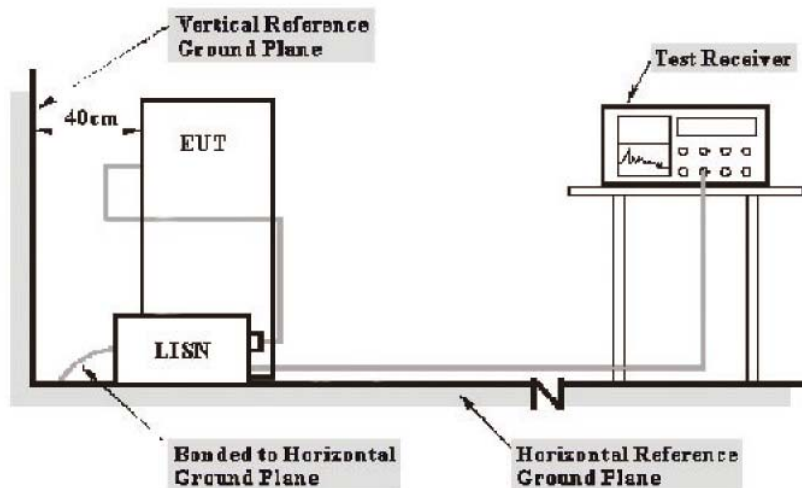
Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207(a)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 30 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207.

The spacing between the peripherals was 10 cm.

The adapter was connected to the main lisen with a 120 V/60 Hz AC power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN

C_f : Correction Factor

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2018-12-11	2019-12-11
N/A	Coaxial Cable	C-NJNJ-50	C-0200-01	2018-09-05	2019-09-05
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
R&S	Two-line V-network	ENV 216	101614	2018-12-08	2019-12-08

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

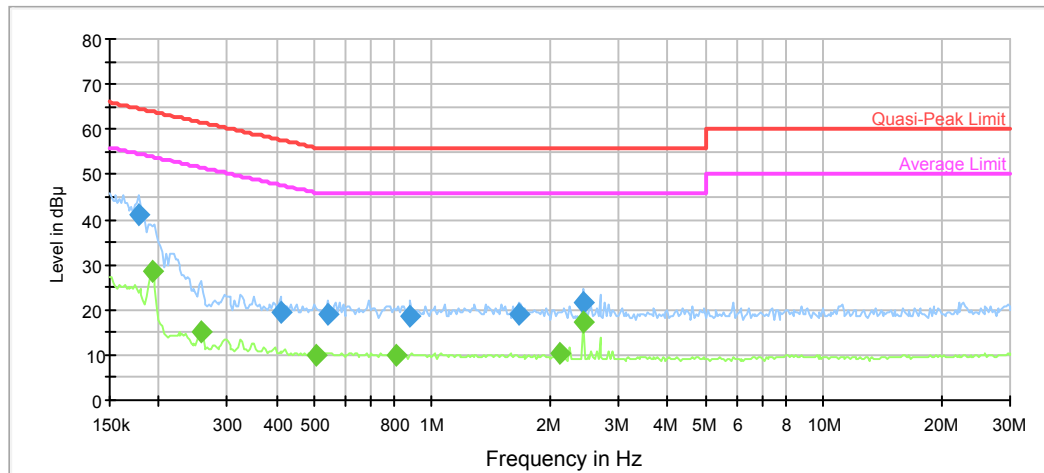
Temperature:	27.4°C
Relative Humidity:	51 %
ATM Pressure:	101.2 kPa

The testing was performed by Lily Xie on 2019-04-22.

Test Mode: Transmitting (Wi-Fi mode 802.11b middle channel was the worst)

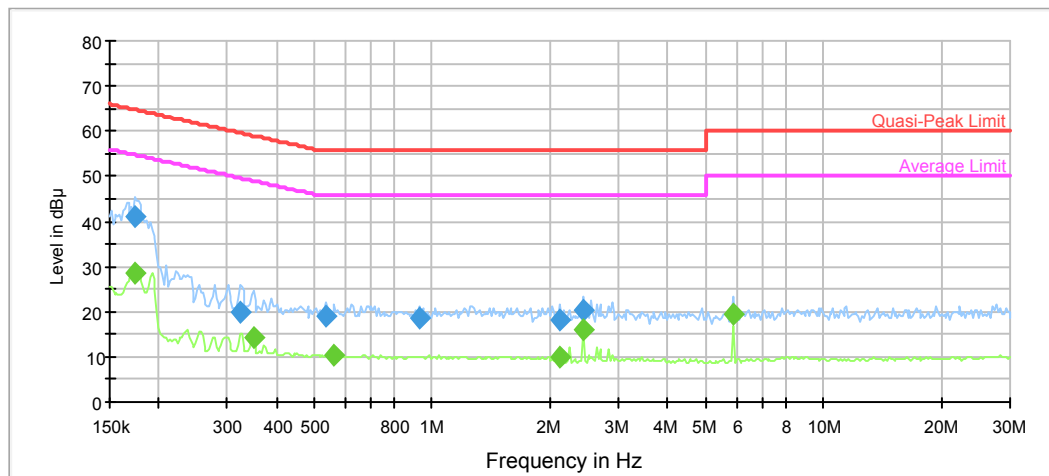
For Model DGFSTCH43 (HDMI):

AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.177646	41.2	9.000	L1	10.8	23.4	64.6	Compliance
0.409780	19.4	9.000	L1	10.0	38.3	57.7	Compliance
0.541438	19.2	9.000	L1	9.9	36.8	56.0	Compliance
0.881650	18.6	9.000	L1	9.8	38.4	56.0	Compliance
1.666725	18.9	9.000	L1	9.7	38.1	56.0	Compliance
2.432631	21.6	9.000	L1	9.8	34.4	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.192365	28.4	9.000	L1	10.7	25.5	53.9	Compliance
0.256712	15.3	9.000	L1	10.3	36.2	51.5	Compliance
0.505009	10.1	9.000	L1	9.9	35.9	46.0	Compliance
0.814189	10.0	9.000	L1	9.8	36.0	46.0	Compliance
2.116299	10.3	9.000	L1	9.7	35.7	46.0	Compliance
2.432631	17.2	9.000	L1	9.8	28.8	46.0	Compliance

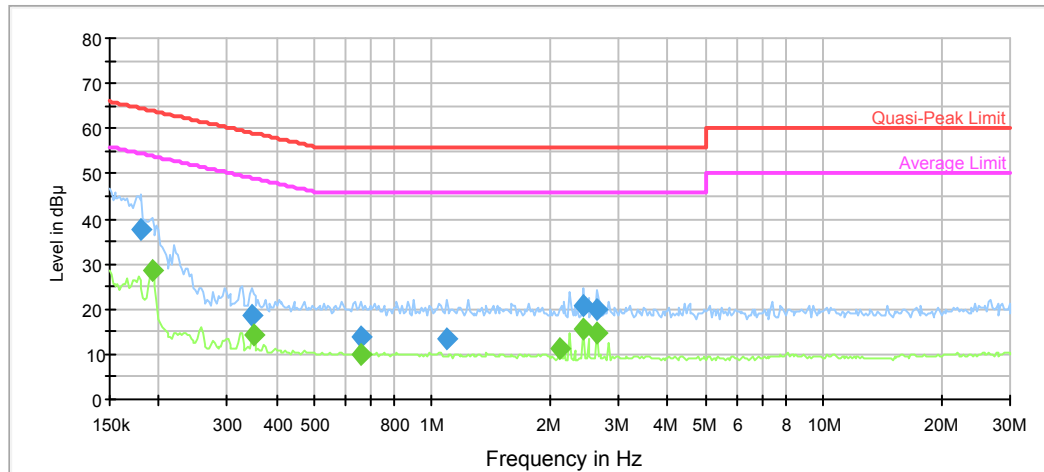
AC120 V, 60 Hz, Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.174145	40.9	9.000	N	10.8	23.9	64.8	Compliance
0.322729	20.0	9.000	N	10.1	39.6	59.6	Compliance
0.536077	18.9	9.000	N	9.9	37.1	56.0	Compliance
0.926623	18.8	9.000	N	9.8	37.2	56.0	Compliance
2.116299	18.2	9.000	N	9.8	37.8	56.0	Compliance
2.432631	20.5	9.000	N	9.8	35.5	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.174145	28.4	9.000	N	10.8	26.4	54.8	Compliance
0.349469	14.2	9.000	N	10.0	34.8	49.0	Compliance
0.563423	10.2	9.000	N	9.8	35.8	46.0	Compliance
2.116299	10.0	9.000	N	9.8	36.0	46.0	Compliance
2.432631	15.9	9.000	N	9.8	30.1	46.0	Compliance
5.897643	19.4	9.000	N	9.8	30.6	50.0	Compliance

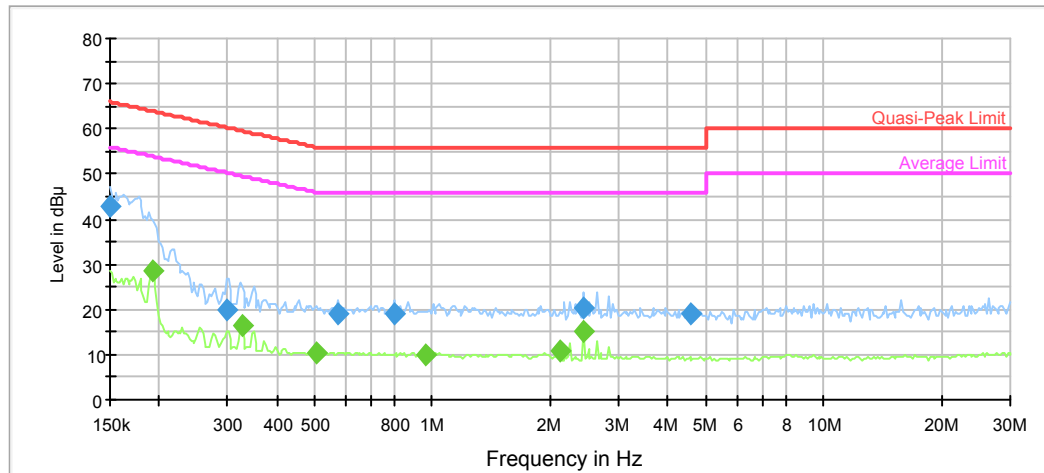
For Model DGFSTCH43 (USB):

AC120V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.181216	37.7	9.000	L1	10.8	26.7	64.4	Compliance
0.346009	18.6	9.000	L1	10.0	40.5	59.1	Compliance
0.660657	14.0	9.000	L1	9.8	42.0	56.0	Compliance
1.086538	13.5	9.000	L1	9.8	42.5	56.0	Compliance
2.432631	20.8	9.000	L1	9.8	35.2	56.0	Compliance
2.634191	20.0	9.000	L1	9.8	36.0	56.0	Compliance

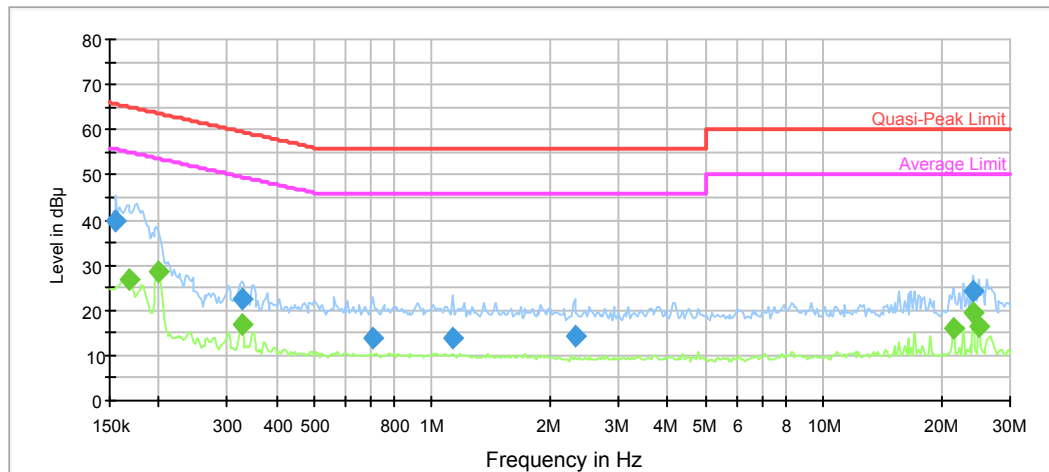
Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.192365	28.7	9.000	L1	10.7	25.2	53.9	Compliance
0.349469	14.4	9.000	L1	10.0	34.6	49.0	Compliance
0.660657	9.8	9.000	L1	9.8	36.2	46.0	Compliance
2.116299	11.1	9.000	L1	9.7	34.9	46.0	Compliance
2.432631	15.7	9.000	L1	9.8	30.3	46.0	Compliance
2.634191	14.7	9.000	L1	9.8	31.3	46.0	Compliance

AC120V, 60 Hz, Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	42.7	9.000	N	11.2	23.3	66.0	Compliance
0.298034	20.1	9.000	N	10.1	40.2	60.3	Compliance
0.574747	18.8	9.000	N	9.8	37.2	56.0	Compliance
0.798146	18.8	9.000	N	9.8	37.2	56.0	Compliance
2.432631	20.2	9.000	N	9.8	35.8	56.0	Compliance
4.553263	18.9	9.000	N	9.8	37.1	56.0	Compliance

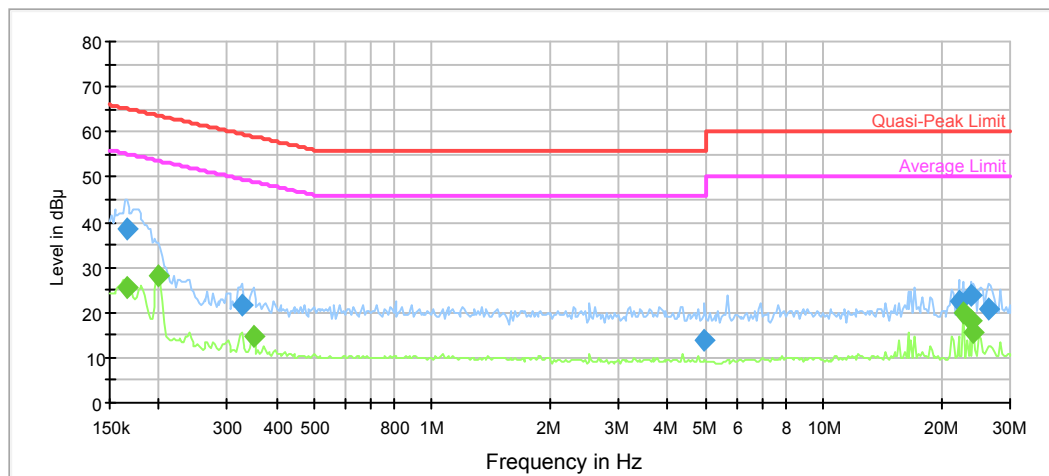
Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.192365	28.5	9.000	N	10.7	25.4	53.9	Compliance
0.325956	16.3	9.000	N	10.1	33.3	49.6	Compliance
0.505009	10.6	9.000	N	9.9	35.4	46.0	Compliance
0.964247	9.9	9.000	N	9.8	36.1	46.0	Compliance
2.116299	10.7	9.000	N	9.8	35.3	46.0	Compliance
2.432631	15.3	9.000	N	9.8	30.7	46.0	Compliance

For Model DGFSNT43 (HDMI):
AC120V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.156091	39.9	9.000	L1	11.1	25.8	65.7	Compliance
0.325956	22.7	9.000	L1	10.1	36.9	59.6	Compliance
0.708314	14.0	9.000	L1	9.8	42.0	56.0	Compliance
1.130656	13.9	9.000	L1	9.8	42.1	56.0	Compliance
2.314565	14.4	9.000	L1	9.8	41.6	56.0	Compliance
24.227776	24.3	9.000	L1	10.1	35.7	60.0	Compliance

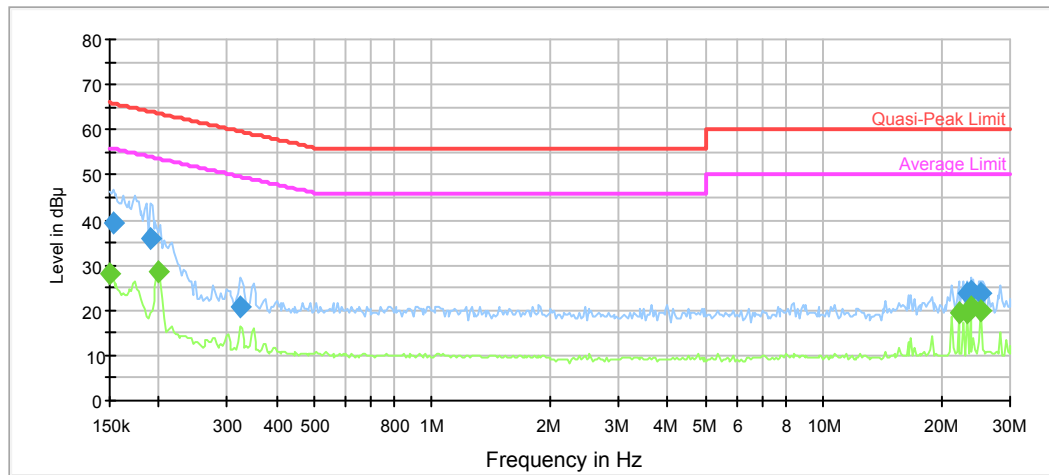
Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.167350	26.6	9.000	L1	10.9	28.5	55.1	Compliance
0.200176	28.4	9.000	L1	10.6	25.2	53.6	Compliance
0.325956	17.0	9.000	L1	10.1	32.6	49.6	Compliance
21.500921	16.0	9.000	L1	10.1	34.0	50.0	Compliance
24.227776	19.4	9.000	L1	10.1	30.6	50.0	Compliance
24.961902	16.6	9.000	L1	10.1	33.4	50.0	Compliance

AC120V, 60 Hz, Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.165693	38.6	9.000	N	10.9	26.6	65.2	Compliance
0.325956	21.5	9.000	N	10.1	38.1	59.6	Compliance
4.979837	13.9	9.000	N	9.8	42.1	56.0	Compliance
22.152421	22.6	9.000	N	10.0	37.4	60.0	Compliance
23.750393	23.6	9.000	N	10.1	36.4	60.0	Compliance
26.497562	20.8	9.000	N	10.1	39.2	60.0	Compliance

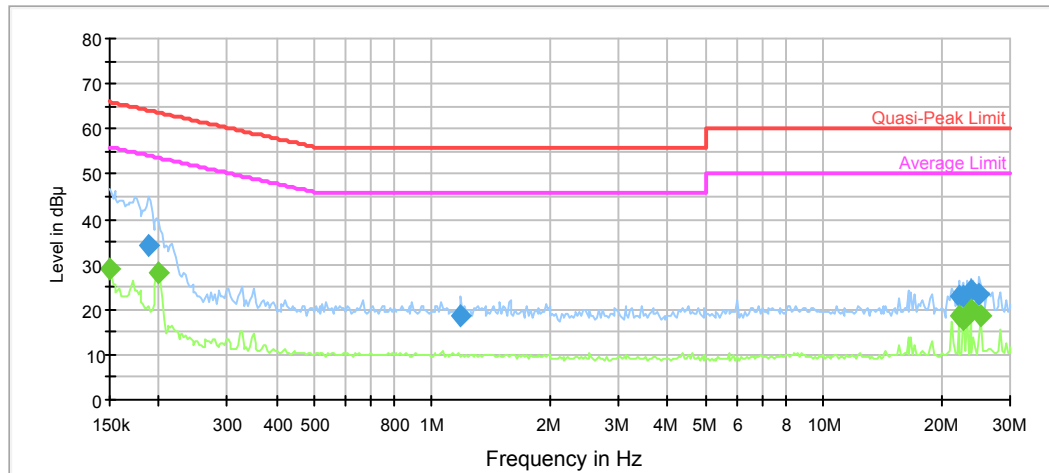
Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.165693	25.4	9.000	N	10.9	29.8	55.2	Compliance
0.200176	28.2	9.000	N	10.6	25.4	53.6	Compliance
0.349469	14.7	9.000	N	10.0	34.3	49.0	Compliance
22.823661	20.1	9.000	N	10.0	29.9	50.0	Compliance
23.750393	18.3	9.000	N	10.1	31.7	50.0	Compliance
24.227776	15.6	9.000	N	10.1	34.4	50.0	Compliance

For Model DGFSNT43 (USB):
AC120V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.153015	39.2	9.000	L1	11.1	26.6	65.8	Compliance
0.190460	35.8	9.000	L1	10.7	28.2	64.0	Compliance
0.322729	20.8	9.000	L1	10.1	38.8	59.6	Compliance
23.282417	23.6	9.000	L1	10.1	36.4	60.0	Compliance
23.750393	24.1	9.000	L1	10.1	35.9	60.0	Compliance
25.211521	24.0	9.000	L1	10.1	36.0	60.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	28.1	9.000	L1	11.2	27.9	56.0	Compliance
0.200176	28.4	9.000	L1	10.6	25.2	53.6	Compliance
22.152421	19.4	9.000	L1	10.1	30.6	50.0	Compliance
23.282417	19.4	9.000	L1	10.1	30.6	50.0	Compliance
23.750393	20.6	9.000	L1	10.1	29.4	50.0	Compliance
25.211521	19.8	9.000	L1	10.1	30.2	50.0	Compliance

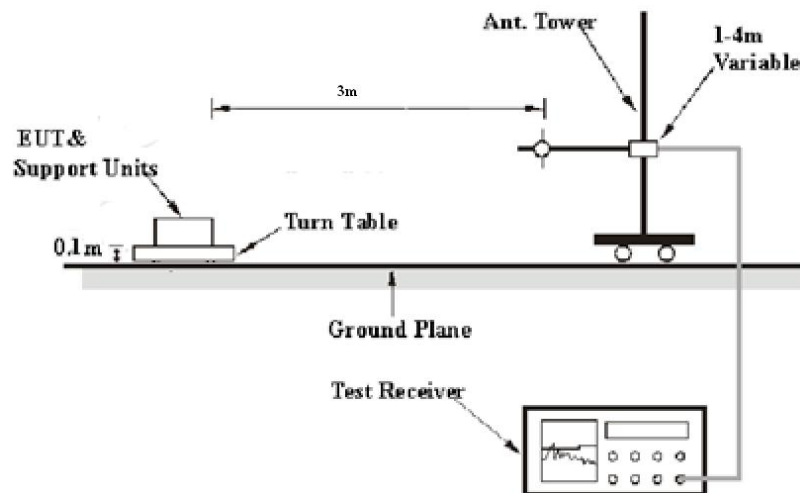
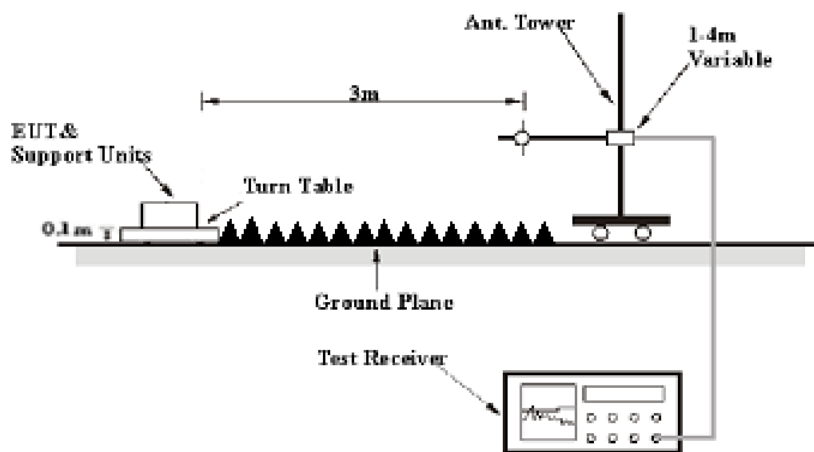
AC120V, 60 Hz, Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.188575	34.0	9.000	N	10.7	30.1	64.1	Compliance
1.188331	18.7	9.000	N	9.8	37.3	56.0	Compliance
22.152421	23.1	9.000	N	10.0	36.9	60.0	Compliance
22.823661	22.8	9.000	N	10.0	37.2	60.0	Compliance
23.750393	24.0	9.000	N	10.1	36.0	60.0	Compliance
24.961902	23.2	9.000	N	10.1	36.8	60.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	29.0	9.000	N	11.2	27.0	56.0	Compliance
0.200176	28.2	9.000	N	10.6	25.4	53.6	Compliance
22.152421	18.4	9.000	N	10.0	31.6	50.0	Compliance
22.823661	17.9	9.000	N	10.0	32.1	50.0	Compliance
23.750393	19.8	9.000	N	10.1	30.2	50.0	Compliance
25.211521	18.5	9.000	N	10.1	31.5	50.0	Compliance

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS**Applicable Standard**

FCC §15.247 (d); §15.209; §15.205;

EUT Setup**Below 1GHz:****Above 1GHz:**

The radiated emission Below 1GHz tests were performed in the 10 meters chamber, above 1GHz tests were performed in the 3 meters chamber test site A, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

30MHz-1000MHz:

Measurement	RBW	Video B/W	IF B/W
QP	120 kHz	300 kHz	120kHz

1GHz- 25GHz:

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
AV	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T is minimum transmission duration

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2018-12-11	2019-12-11
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2018-09-05	2019-09-05
HP	Amplifier	8447D	2727A05902	2018-09-05	2019-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2019-01-04	2020-01-04
ETS-Lindgren	Horn Antenna	3115	000 527 35	2019-01-05	2021-01-04
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2018-06-27	2019-06-27
MITEQ	Amplifier	AFS42-00101800- 25-S-42	2001271	2018-09-05	2019-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2018-06-27	2019-06-27
E-Microwave	Band-stop Filters	OBSF-2400-2483.5- S	OE01601525	2018-06-16	2019-06-16
Micro-tronics	High Pass Filter	HPM50111	S/N-G217	2018-06-16	2019-06-16

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	25.1~27.5 °C
Relative Humidity:	34~37 %
ATM Pressure:	100.1~100.9 kPa

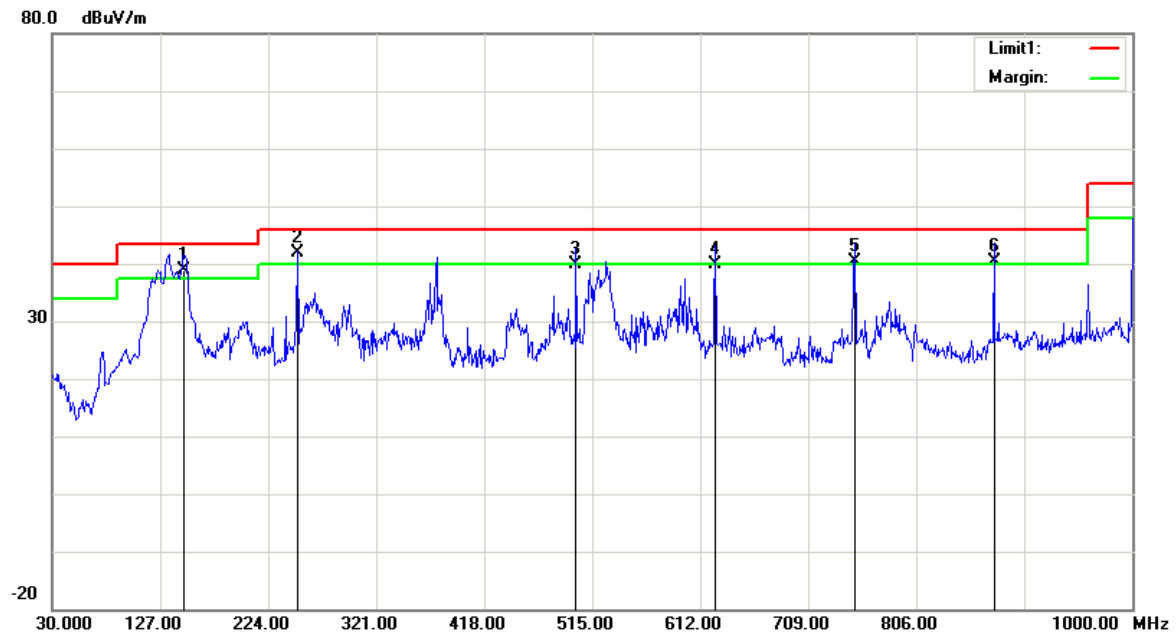
* The testing was performed by Sunny Cen & Blake Yang from 2019-04-11 to 2019-04-22.

Test Result: Compliance, please Refer to the following data

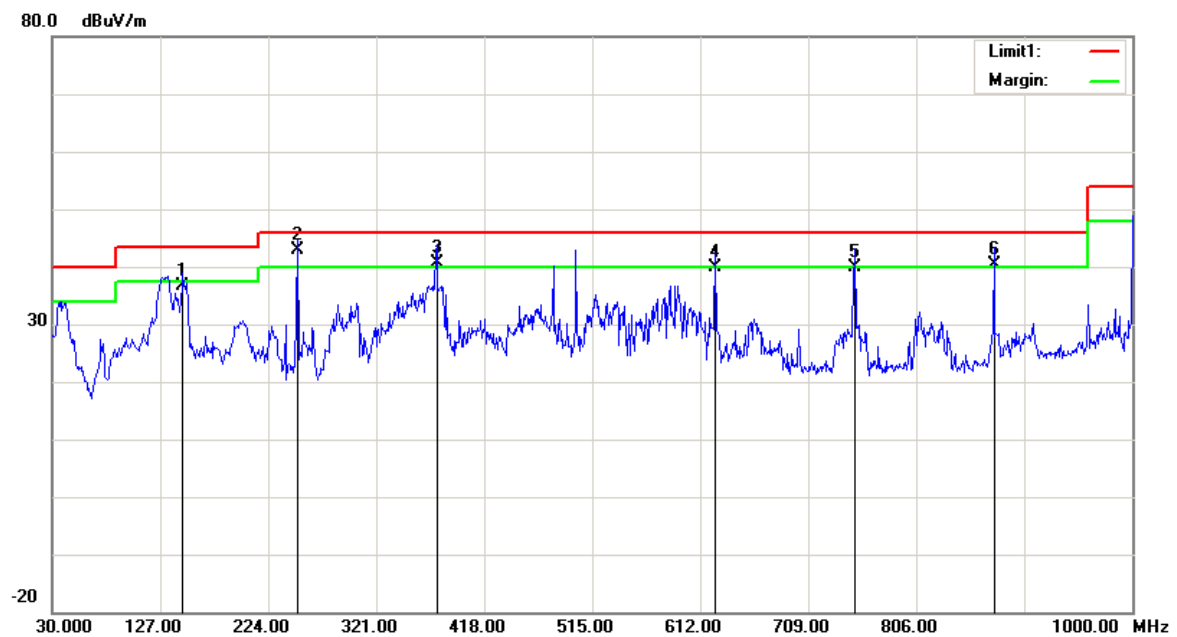
Test Mode: Transmitting

1) 30MHz-1GHz (802.11b mode middle channel was the worst)

For Model DGFSNT43 (USB Input):

Horizontal:

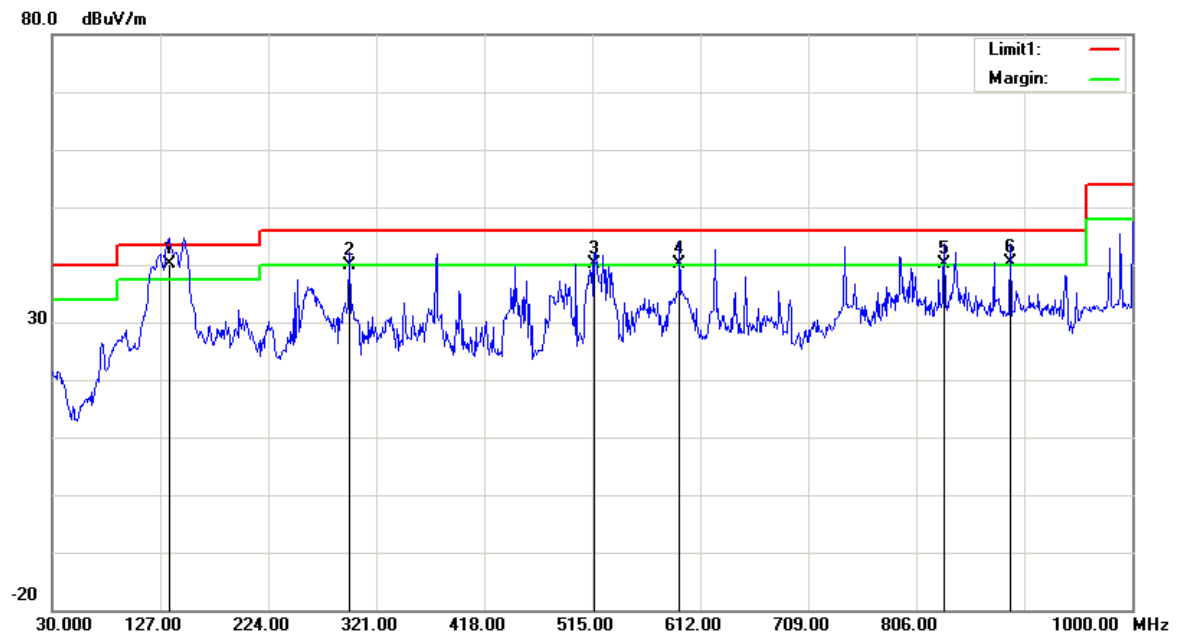
Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
148.3400	51.59	QP	-12.79	38.80	43.50	4.70
250.1900	55.33	QP	-13.33	42.00	46.00	4.00
500.4500	45.88	QP	-6.08	39.80	46.00	6.20
625.5800	43.09	QP	-3.09	40.00	46.00	6.00
750.7100	41.67	QP	-1.17	40.50	46.00	5.50
875.8400	39.71	QP	0.69	40.40	46.00	5.60

Vertical:

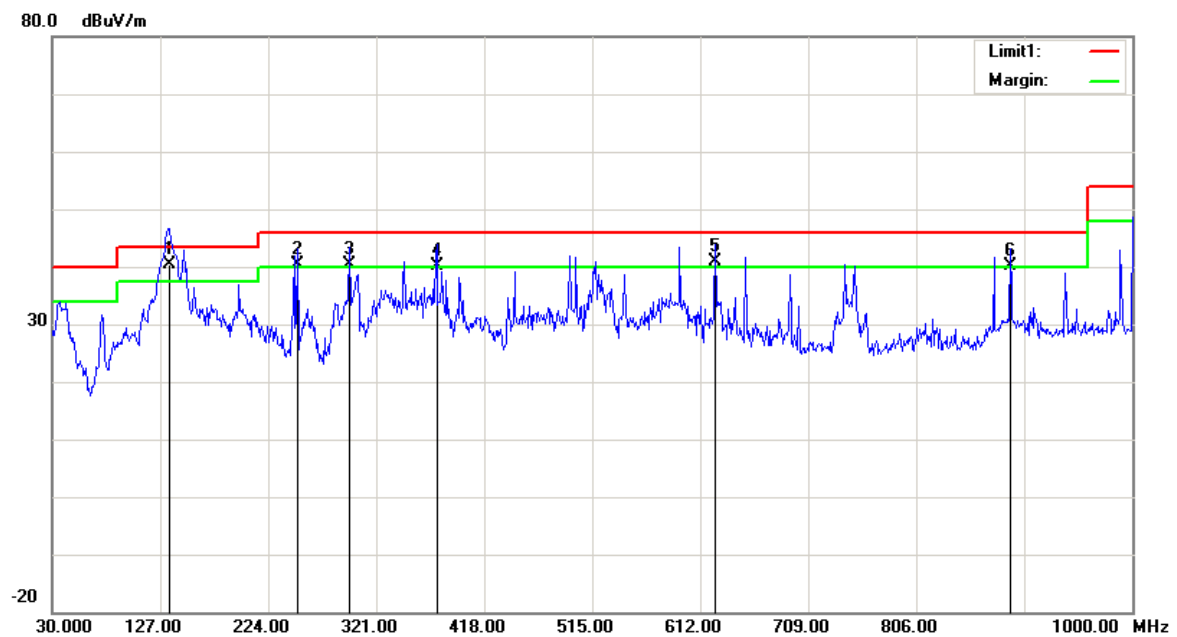
Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
147.3700	49.38	QP	-12.78	36.60	43.50	6.90
250.1900	56.33	QP	-13.33	43.00	46.00	3.00
375.3200	49.30	QP	-8.70	40.60	46.00	5.40
625.5800	42.89	QP	-3.09	39.80	46.00	6.20
750.7100	41.17	QP	-1.17	40.00	46.00	6.00
875.8400	39.61	QP	0.69	40.30	46.00	5.70

For Model DGFSNT43 (HDMI Input):

Horizontal:



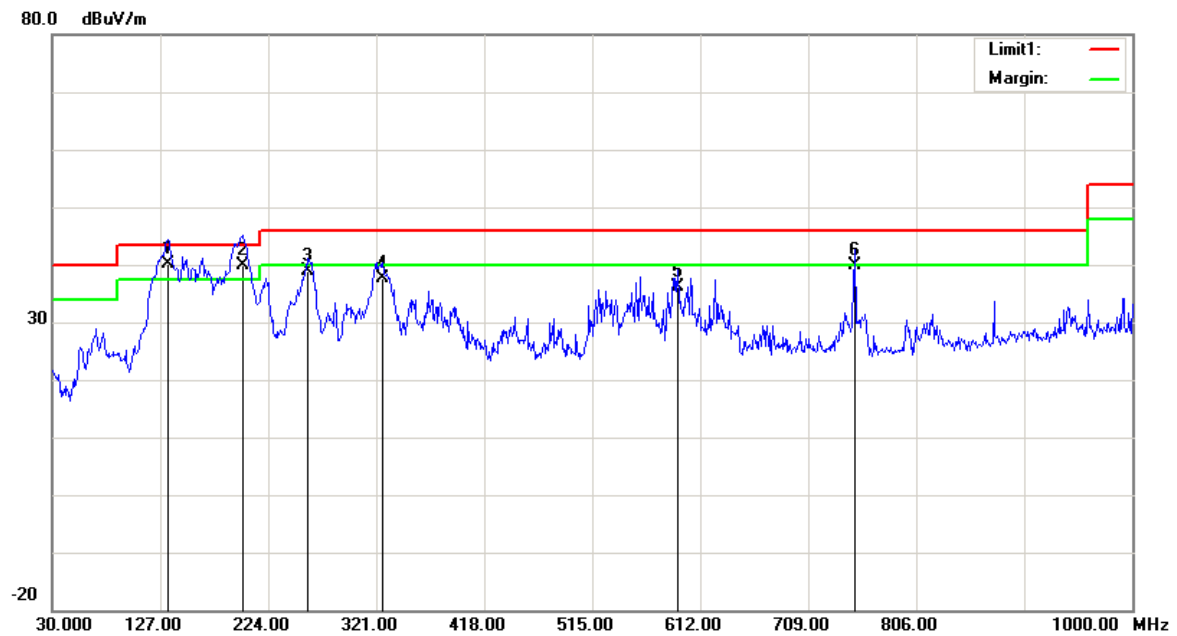
Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
134.7600	53.27	QP	-13.07	40.20	43.50	3.30
296.7500	50.93	QP	-11.03	39.90	46.00	6.10
516.9400	45.72	QP	-5.52	40.20	46.00	5.80
593.5700	43.60	QP	-3.40	40.20	46.00	5.80
831.2200	40.70	QP	-0.60	40.10	46.00	5.90
890.3900	39.27	QP	1.03	40.30	46.00	5.70

Vertical:

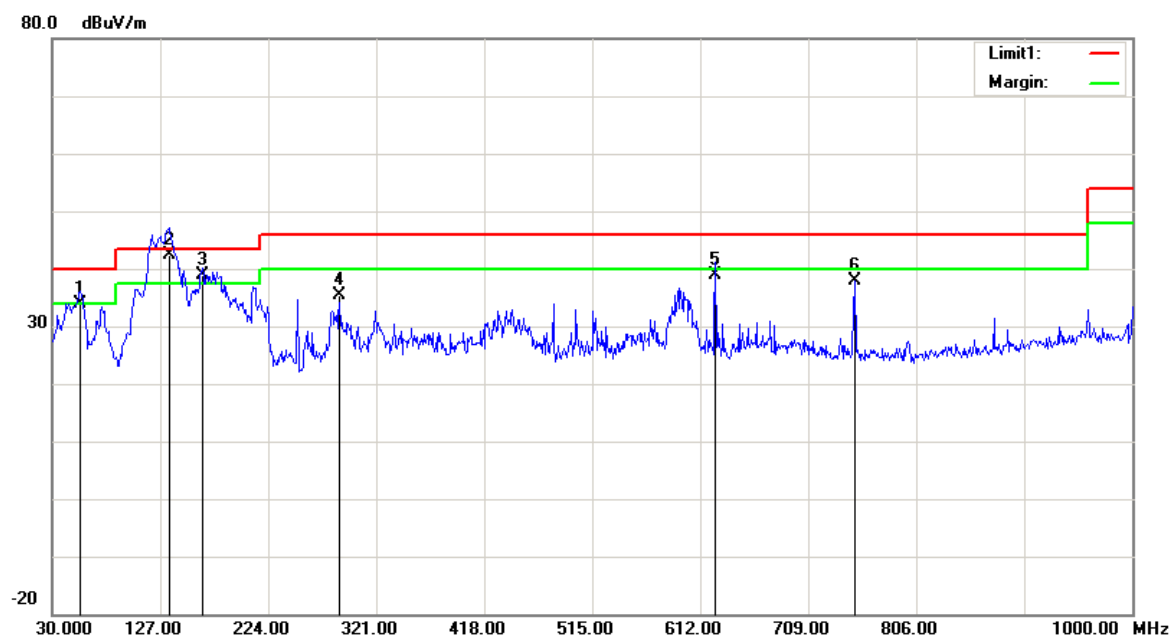
Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
134.7600	53.47	QP	-13.07	40.40	43.50	3.10
250.1900	53.63	QP	-13.33	40.30	46.00	5.70
296.7500	51.53	QP	-11.03	40.50	46.00	5.50
375.3200	48.90	QP	-8.70	40.20	46.00	5.80
625.5800	43.89	QP	-3.09	40.80	46.00	5.20
890.3900	39.07	QP	1.03	40.10	46.00	5.90

For Model DGFSTCH43 (USB Input):

Horizontal:



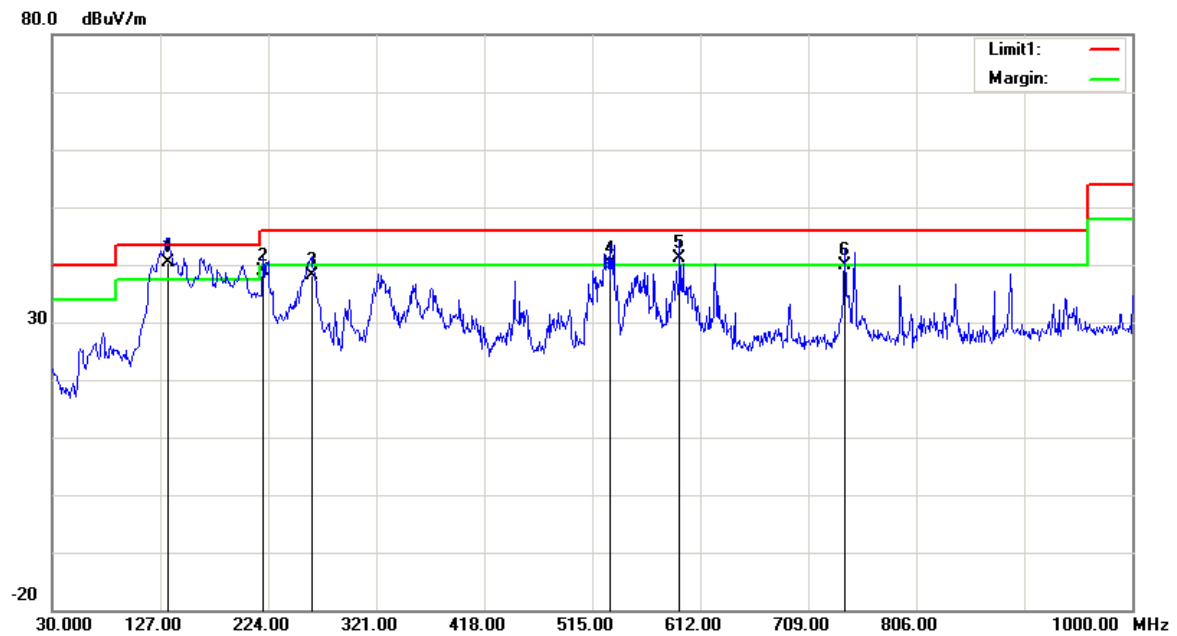
Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
133.7900	53.33	QP	-13.13	40.20	43.50	3.30
200.7200	52.90	QP	-12.90	40.00	43.50	3.50
258.9200	51.60	QP	-12.80	38.80	46.00	7.20
326.8200	47.69	QP	-10.09	37.60	46.00	8.40
591.6300	39.62	QP	-3.42	36.20	46.00	9.80
750.7100	40.97	QP	-1.17	39.80	46.00	6.20

Vertical:

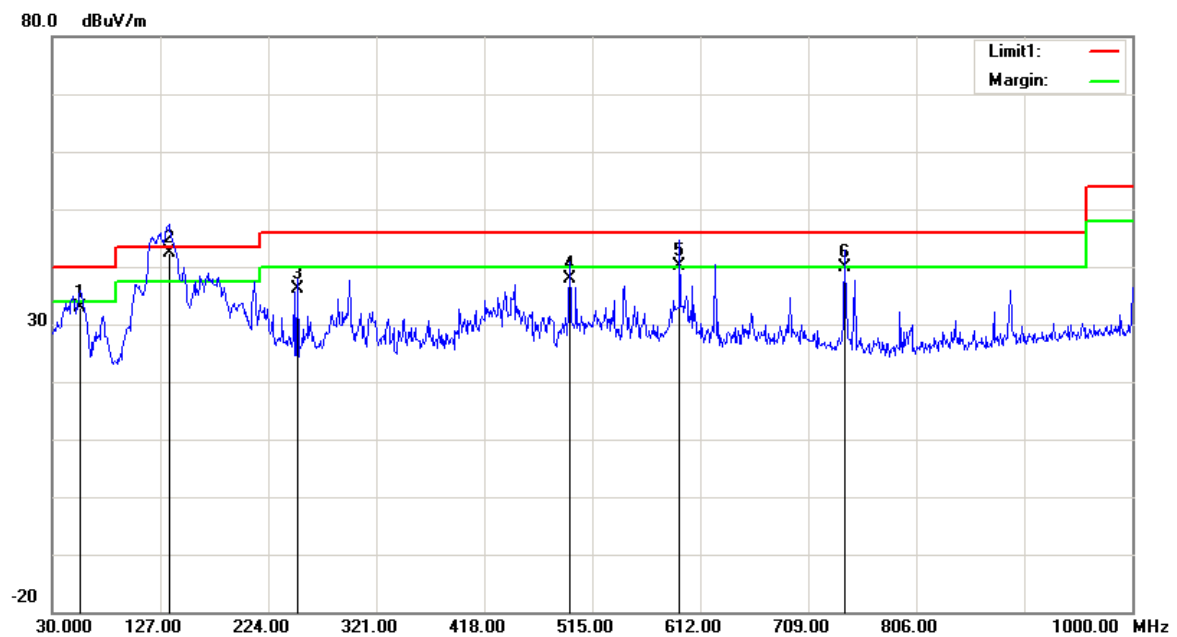
Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
55.2200	53.93	QP	-20.03	33.90	40.00	6.10
134.7600	55.37	QP	-13.07	42.30	43.50	1.20
164.8300	51.67	QP	-12.87	38.80	43.50	4.70
288.0200	46.79	peak	-11.49	35.30	46.00	10.70
625.5800	41.89	QP	-3.09	38.80	46.00	7.20
750.7100	39.09	peak	-1.17	37.92	46.00	8.08

For Model DGFSTCH43 (HDMIInput):

Horizontal:



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
133.7900	53.43	QP	-13.13	40.30	43.50	3.20
219.1500	53.29	QP	-14.49	38.80	46.00	7.20
262.8000	50.71	QP	-12.51	38.20	46.00	7.80
530.5200	45.23	QP	-5.03	40.20	46.00	5.80
593.5700	44.60	QP	-3.40	41.20	46.00	4.80
741.9800	41.24	QP	-1.34	39.90	46.00	6.10

Vertical:

Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
55.2200	52.83	QP	-20.03	32.80	40.00	7.20
134.7600	55.57	QP	-13.07	42.50	43.50	1.00
250.1900	49.53	QP	-13.33	36.20	46.00	9.80
494.6300	44.21	QP	-6.21	38.00	46.00	8.00
593.5700	43.60	QP	-3.40	40.20	46.00	5.80
741.9800	41.14	QP	-1.34	39.80	46.00	6.20

**2) 1-25GHz:
802.11b Mode:**

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2412 MHz									
2412.00	58.02	PK	H	24.84	3.35	0.00	86.21	N/A	N/A
2412.00	53.69	AV	H	24.84	3.35	0.00	81.88	N/A	N/A
2412.00	69.53	PK	V	24.84	3.35	0.00	97.72	N/A	N/A
2412.00	65.18	AV	V	24.84	3.35	0.00	93.37	N/A	N/A
2390.00	25.79	PK	V	24.80	3.33	0.00	53.92	74.00	20.08
2390.00	12.76	AV	V	24.80	3.33	0.00	40.89	54.00	13.11
4824.00	37.29	PK	V	29.75	4.58	27.41	44.21	74.00	29.79
4824.00	23.43	AV	V	29.75	4.58	27.41	30.35	54.00	23.65
7236.00	38.45	PK	V	33.98	5.62	27.22	50.83	74.00	23.17
7236.00	27.03	AV	V	33.98	5.62	27.22	39.41	54.00	14.59
Middle Channel: 2437 MHz									
2437.00	57.89	PK	H	24.89	3.36	0.00	86.14	N/A	N/A
2437.00	53.19	AV	H	24.89	3.36	0.00	81.44	N/A	N/A
2437.00	68.82	PK	V	24.89	3.36	0.00	97.07	N/A	N/A
2437.00	64.76	AV	V	24.89	3.36	0.00	93.01	N/A	N/A
4874.00	37.56	PK	V	29.85	4.57	27.54	44.44	74.00	29.56
4874.00	23.79	AV	V	29.85	4.57	27.54	30.67	54.00	23.33
7311.00	38.85	PK	V	34.10	5.68	27.28	51.35	74.00	22.65
7311.00	25.93	AV	V	34.10	5.68	27.28	38.43	54.00	15.57
High Channel: 2462 MHz									
2462.00	58.95	PK	H	24.93	3.37	0.00	87.25	N/A	N/A
2462.00	54.12	AV	H	24.93	3.37	0.00	82.42	N/A	N/A
2462.00	69.42	PK	V	24.93	3.37	0.00	97.72	N/A	N/A
2462.00	65.32	AV	V	24.93	3.37	0.00	93.62	N/A	N/A
2483.50	25.43	PK	V	24.97	3.38	0.00	53.78	74.00	20.22
2483.50	13.44	AV	V	24.97	3.38	0.00	41.79	54.00	12.21
4924.00	38.01	PK	V	29.95	4.57	27.51	45.02	74.00	28.98
4924.00	23.73	AV	V	29.95	4.57	27.51	30.74	54.00	23.26
7386.00	37.18	PK	V	34.22	5.74	27.18	49.96	74.00	24.04
7386.00	24.65	AV	V	34.22	5.74	27.18	37.43	54.00	16.57

802.11g Mode:

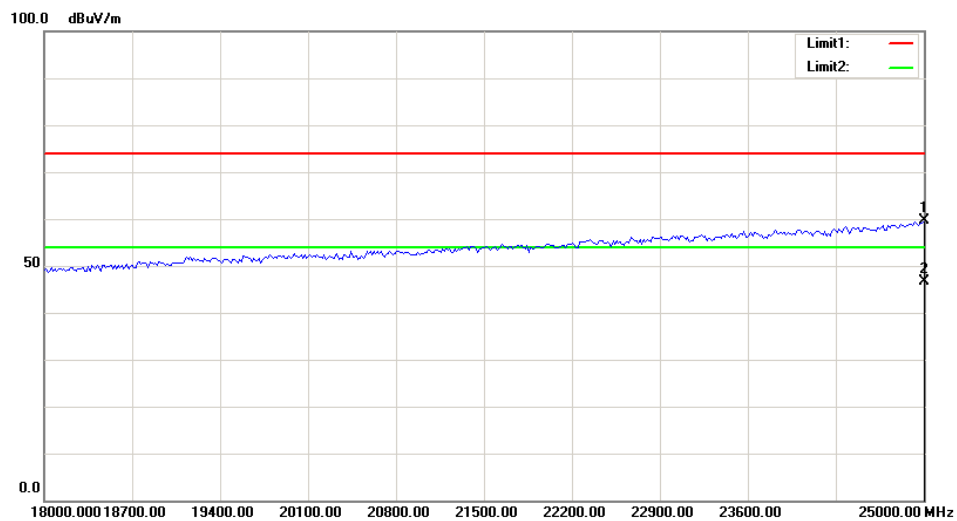
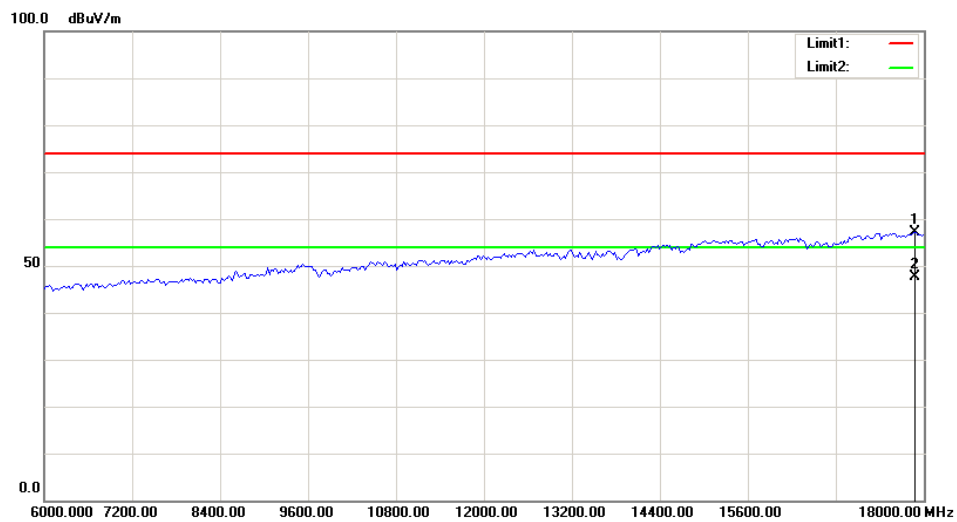
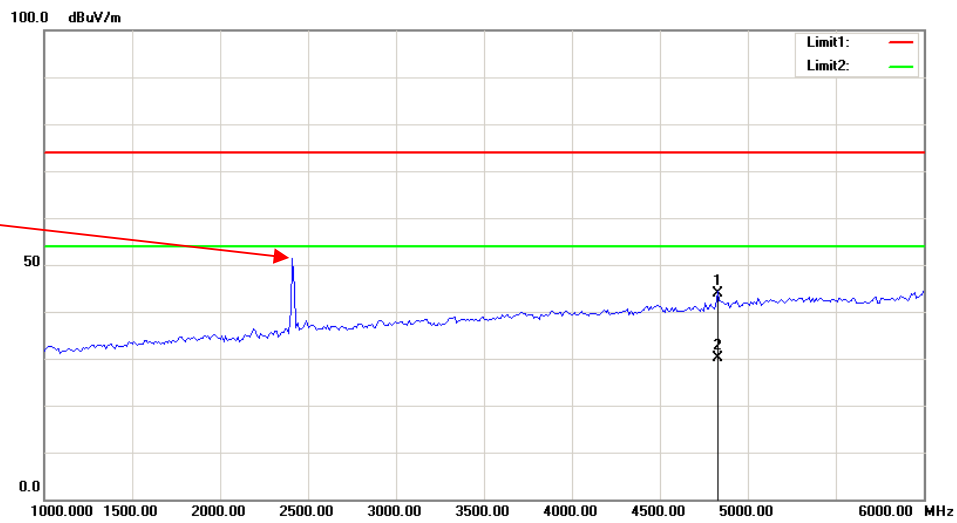
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2412 MHz									
2412.00	59.93	PK	H	24.84	3.35	0.00	88.12	N/A	N/A
2412.00	48.77	AV	H	24.84	3.35	0.00	76.96	N/A	N/A
2412.00	70.93	PK	V	24.84	3.35	0.00	99.12	N/A	N/A
2412.00	59.42	AV	V	24.84	3.35	0.00	87.61	N/A	N/A
2390.00	31.11	PK	V	24.80	3.33	0.00	59.24	74.00	14.76
2390.00	13.67	AV	V	24.80	3.33	0.00	41.80	54.00	12.20
4824.00	37.61	PK	V	29.75	4.58	27.41	44.53	74.00	29.47
4824.00	23.64	AV	V	29.75	4.58	27.41	30.56	54.00	23.44
7236.00	38.73	PK	V	33.98	5.62	27.22	51.11	74.00	22.89
7236.00	24.61	AV	V	33.98	5.62	27.22	36.99	54.00	17.01
Middle Channel: 2437 MHz									
2437.00	60.89	PK	H	24.89	3.36	0.00	89.14	N/A	N/A
2437.00	49.72	AV	H	24.89	3.36	0.00	77.97	N/A	N/A
2437.00	71.12	PK	V	24.89	3.36	0.00	99.37	N/A	N/A
2437.00	60.01	AV	V	24.89	3.36	0.00	88.26	N/A	N/A
4874.00	37.93	PK	V	29.85	4.57	27.54	44.81	74.00	29.19
4874.00	23.65	AV	V	29.85	4.57	27.54	30.53	54.00	23.47
7311.00	38.96	PK	V	34.10	5.68	27.28	51.46	74.00	22.54
7311.00	24.69	AV	V	34.10	5.68	27.28	37.19	54.00	16.81
High Channel: 2462 MHz									
2462.00	58.91	PK	H	24.93	3.37	0.00	87.21	N/A	N/A
2462.00	45.67	AV	H	24.93	3.37	0.00	73.97	N/A	N/A
2462.00	72.14	PK	V	24.93	3.37	0.00	100.44	N/A	N/A
2462.00	59.02	AV	V	24.93	3.37	0.00	87.32	N/A	N/A
2483.50	37.56	PK	V	24.97	3.38	0.00	65.91	74.00	8.09
2483.50	14.86	AV	V	24.97	3.38	0.00	43.21	54.00	10.79
4924.00	27.93	PK	V	29.95	4.57	27.51	34.94	74.00	39.06
4924.00	24.71	AV	V	29.95	4.57	27.51	31.72	54.00	22.28
7386.00	38.85	PK	V	34.22	5.74	27.18	51.63	74.00	22.37
7386.00	25.03	AV	V	34.22	5.74	27.18	37.81	54.00	16.19

BLE Mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector	Polar (H/V)	Factor (dB/m)					
Low Channel: 2402 MHz									
2402.00	56.41	PK	H	24.82	3.34	0.00	84.57	N/A	N/A
2402.00	55.60	AV	H	24.82	3.34	0.00	83.76	N/A	N/A
2402.00	65.45	PK	V	24.82	3.34	0.00	93.61	N/A	N/A
2402.00	64.40	AV	V	24.82	3.34	0.00	92.56	N/A	N/A
2390.00	24.67	PK	V	24.80	3.33	0.00	52.80	74.00	21.20
2390.00	12.91	AV	V	24.80	3.33	0.00	41.04	54.00	12.96
4804.00	37.51	PK	V	29.71	4.58	27.36	44.44	74.00	29.56
4804.00	23.63	AV	V	29.71	4.58	27.36	30.56	54.00	23.44
7206.00	36.30	PK	V	33.93	5.59	27.19	48.63	74.00	25.37
7206.00	23.56	AV	V	33.93	5.59	27.19	35.89	54.00	18.11
Middle Channel: 2440 MHz									
2440.00	56.95	PK	H	24.89	3.36	0.00	85.20	N/A	N/A
2440.00	56.02	AV	H	24.89	3.36	0.00	84.27	N/A	N/A
2440.00	65.86	PK	V	24.89	3.36	0.00	94.11	N/A	N/A
2440.00	64.19	AV	V	24.89	3.36	0.00	92.44	N/A	N/A
4880.00	37.77	PK	V	29.86	4.56	27.55	44.64	74.00	29.36
4880.00	24.33	AV	V	29.86	4.56	27.55	31.20	54.00	22.80
7320.00	27.80	PK	V	34.11	5.69	27.26	40.34	74.00	33.66
7320.00	24.16	AV	V	34.11	5.69	27.26	36.70	54.00	17.30
High Channel: 2480 MHz									
2480.00	57.93	PK	H	24.96	3.38	0.00	86.27	N/A	N/A
2480.00	56.62	AV	H	24.96	3.38	0.00	84.96	N/A	N/A
2480.00	66.29	PK	V	24.96	3.38	0.00	94.63	N/A	N/A
2480.00	65.15	AV	V	24.96	3.38	0.00	93.49	N/A	N/A
2483.50	29.20	PK	V	24.97	3.38	0.00	57.55	74.00	16.45
2483.50	23.32	AV	V	24.97	3.38	0.00	51.67	54.00	2.33
4960.00	37.96	PK	V	30.02	4.58	27.37	45.19	74.00	28.81
4960.00	24.56	AV	V	30.02	4.58	27.37	31.79	54.00	22.21
7440.00	37.65	PK	V	34.30	5.79	27.22	50.52	74.00	23.48
7440.00	24.16	AV	V	34.30	5.79	27.22	37.03	54.00	16.97

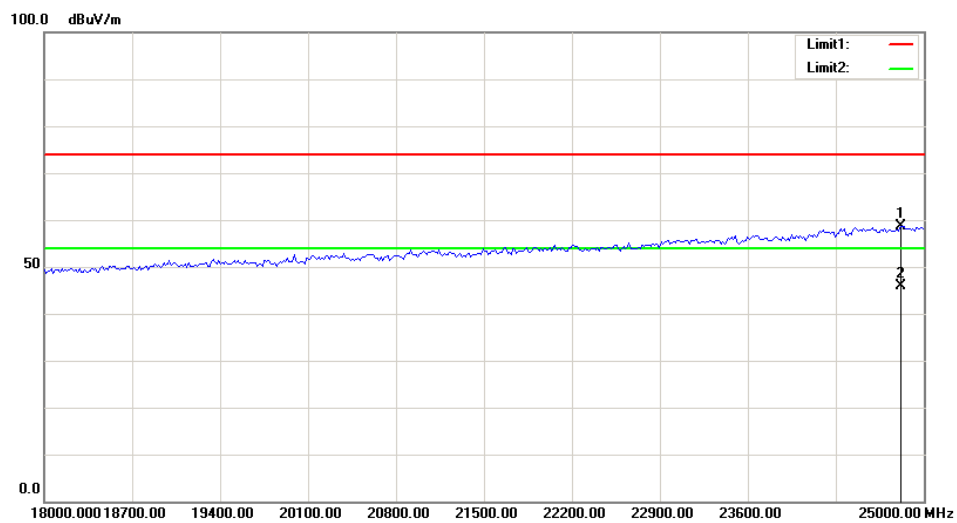
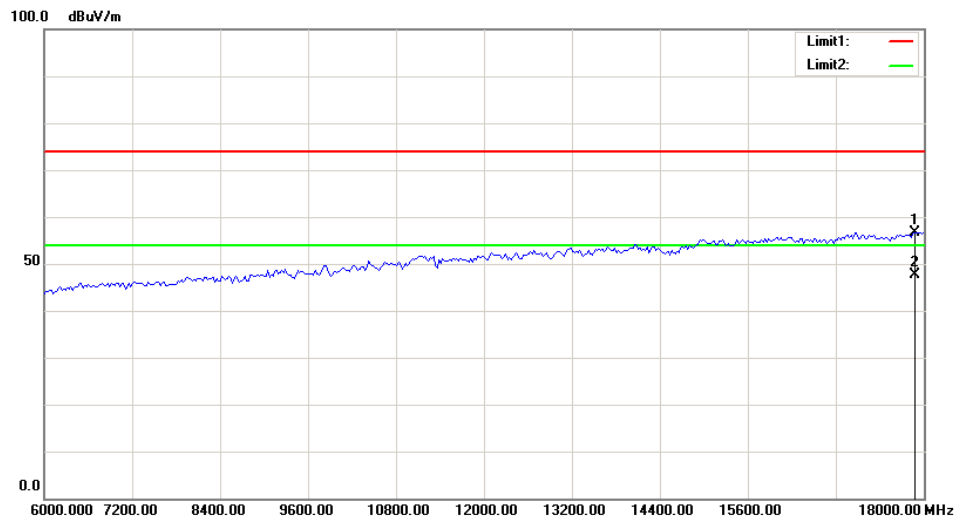
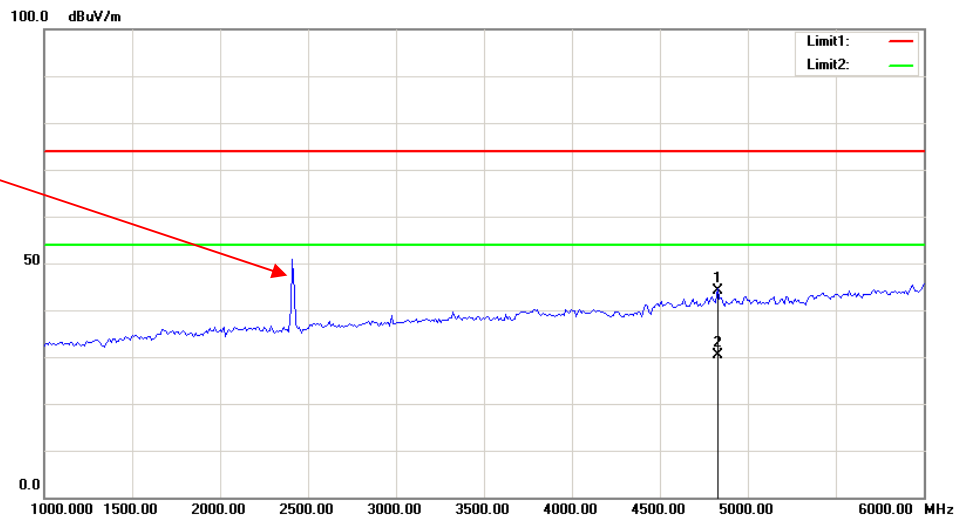
Test plots (802.11 b mode low channel was the worst)
Horizontal:

Fundamental
Test with Band
Rejection Filter



Vertical:

Fundamental
Test with Band
Rejection Filter



FCC §15.247(a) (2)–6 dB EMISSION BANDWIDTH

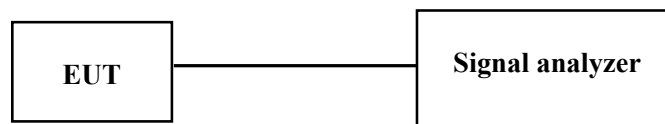
Applicable Standard

According to FCC §15.247(a) (2)

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Procedure

- Set RBW = 100 kHz.
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2018-08-03	2019-08-03
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	26.6~27.3°C
Relative Humidity:	52~62 %
ATM Pressure:	100.3~101.2 kPa

* The testing was performed by Elena Lei from 2019-03-11 to 2019-03-12.

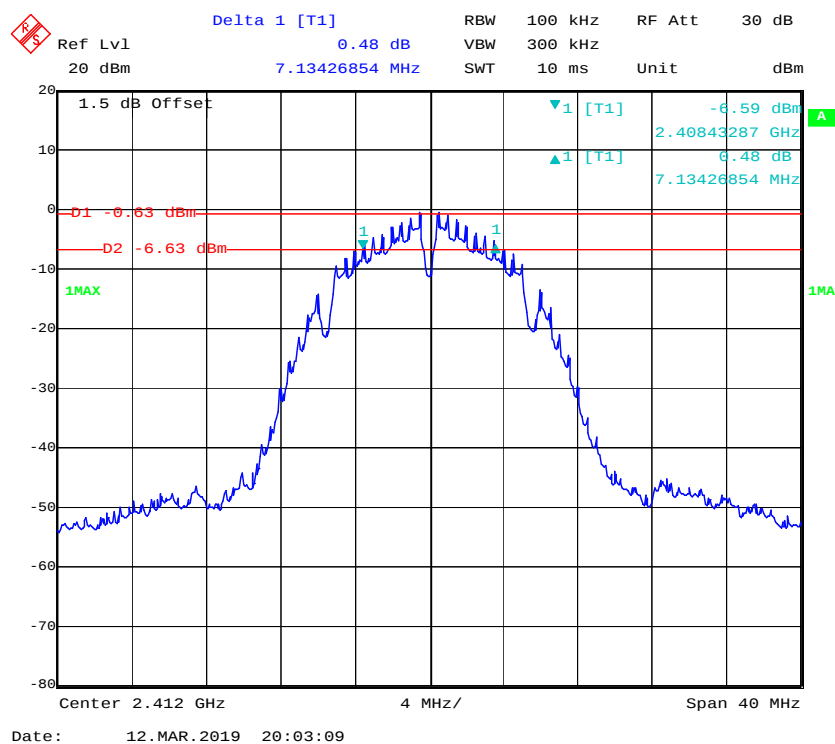
Test Mode: Transmitting

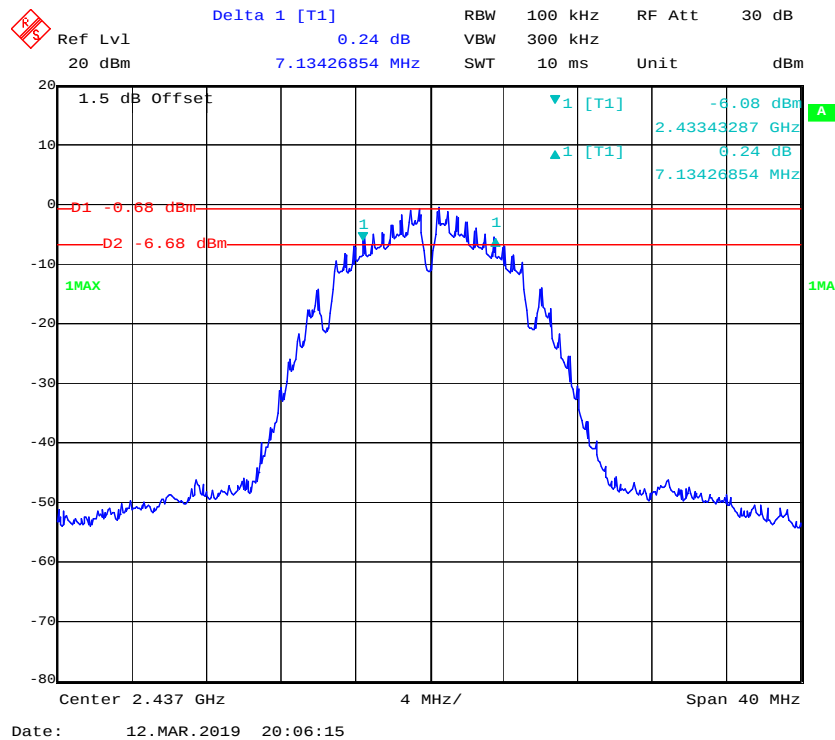
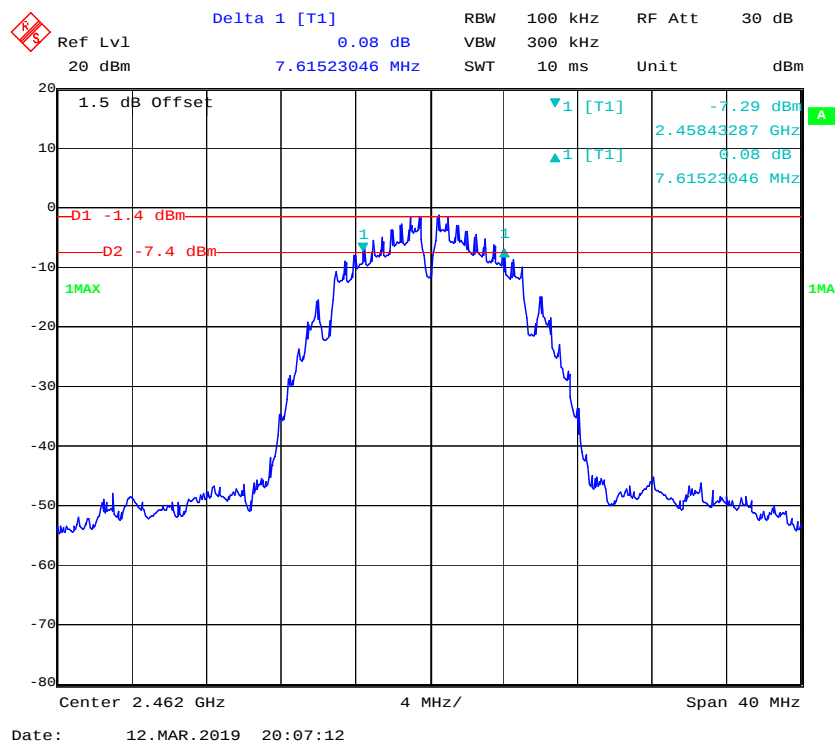
Test Result: Compliant. Please refer to the following table and plots.

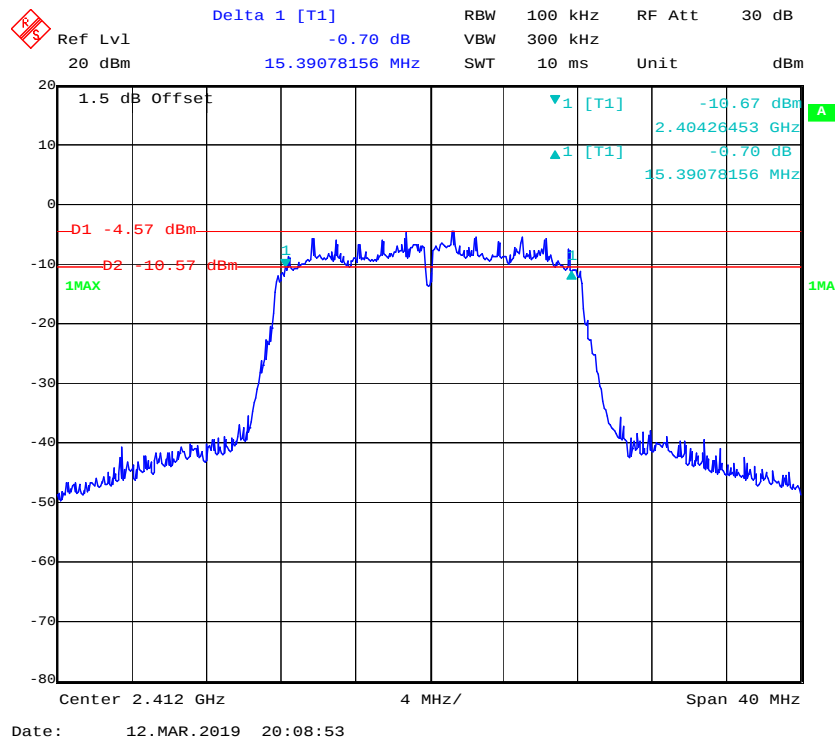
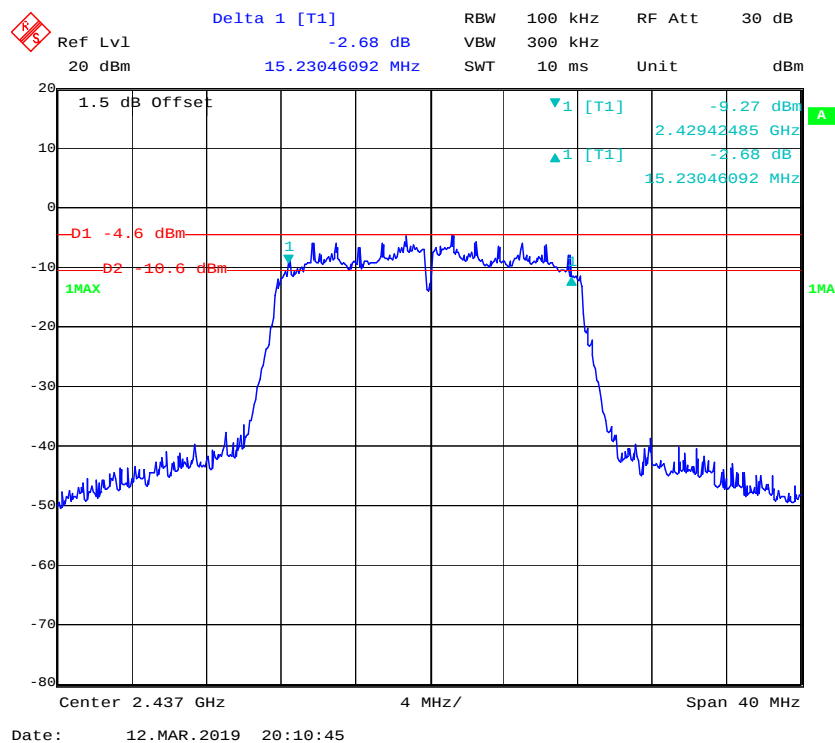
Test mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)
802.11b	Low	2412	7.134	≥ 0.5
	Middle	2437	7.134	≥ 0.5
	High	2462	7.615	≥ 0.5
802.11g	Low	2412	15.391	≥ 0.5
	Middle	2437	15.230	≥ 0.5
	High	2462	15.230	≥ 0.5
BLE	Low	2402	0.749	≥ 0.5
	Middle	2440	0.745	≥ 0.5
	High	2480	0.745	≥ 0.5

6dB bandwidth:

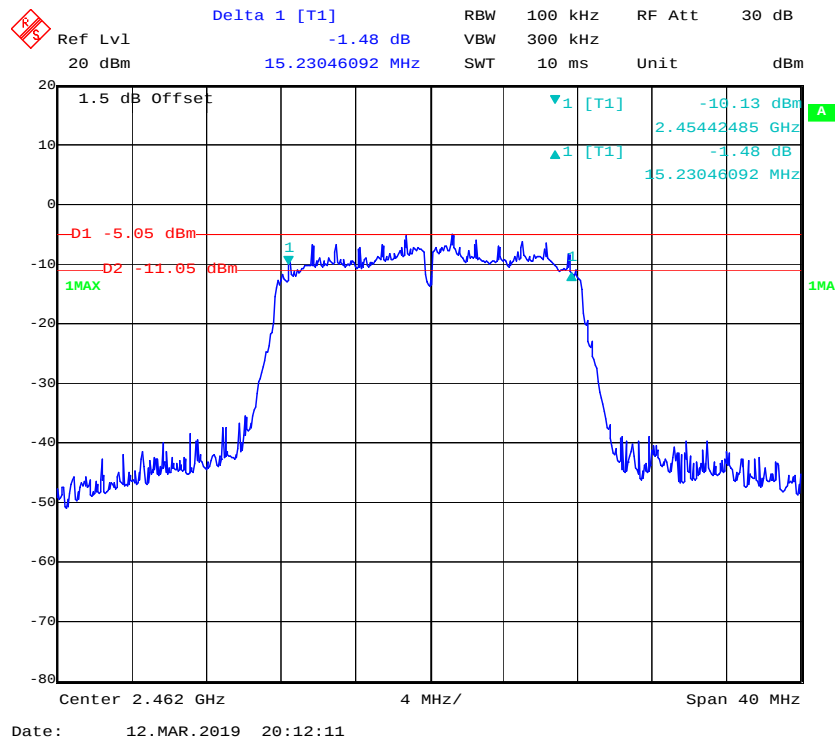
802.11b Low Channel



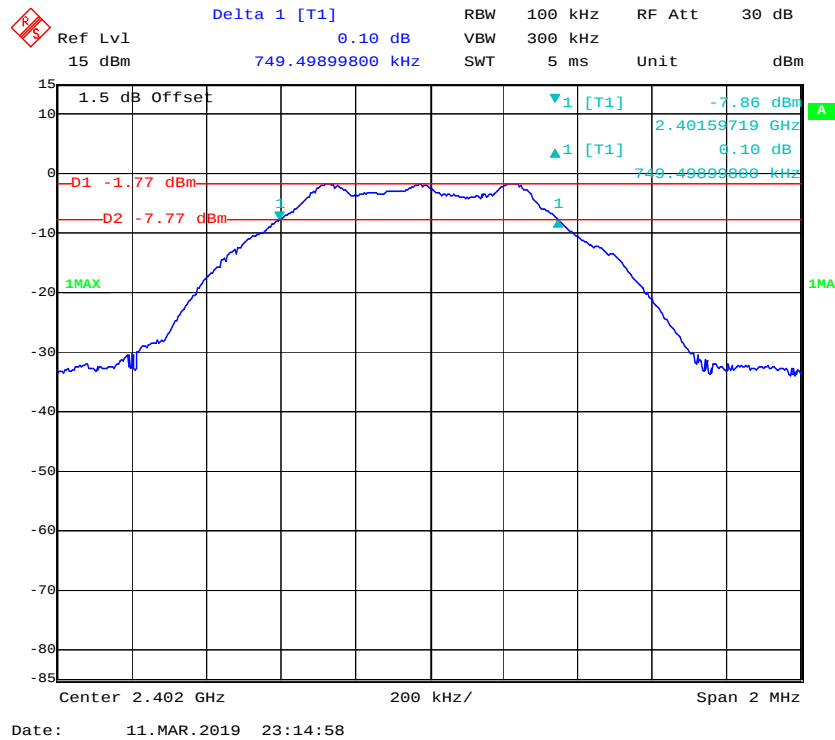
802.11b Middle Channel**802.11b High Channel**

802.11g Low Channel**802.11g Middle Channel**

802.11g High Channel



BLE Low Channel



Delta 1 [T1] 0.19 dB 745.49098196 kHz

RBW 100 kHz VBW 300 kHz RF Att 30 dB

Ref Lvl 15 dBm Unit dBm

1.5 dB Offset

D1 -1.74 dBm D2 -7.74 dBm

1 [T1] 1 [T1]

2.43966120 GHz 0.19 dB 745.49098196 kHz

1MAX 1MA

Center 2.44 GHz 200 kHz/ Span 2 MHz

Date: 11.MAR.2019 23:16:48

Delta 1 [T1] -0.11 dB

RBW 100 kHz RF Att 30 dB

VBW 300 kHz

SWT 5 ms Unit dBm

Ref Lvl 15 dBm

745.49098196 kHz

1.5 dB Offset

-D1 -2.06 dBm

-D2 -8.06 dBm

1MAX

1 [T1] -6.02 dBm

2.47966521 GHz

-6.11 dBm

745.49098196 kHz

1 [T1]

Center 2.48 GHz

200 kHz/

Span 2 MHz

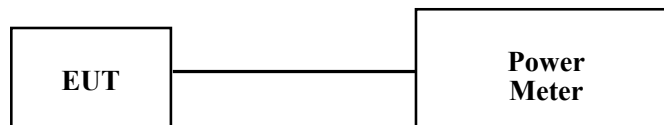
Date: 11.MAR.2019 23:18:11

FCC §15.247(b) (3) - MAXIMUM PEAK CONDUCTED OUTPUT POWER**Applicable Standard**

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to test equipment.
3. Add a correction factor to the display.
4. Set the power Meter to test Peak output power, record the result as peak power.
5. Set the power meter to test average output power, record the result as average power.

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
narda	Attenuator	6dB	04270	2018-09-06	2019-09-06
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
Agilent	USB Wideband Power Sensor	U2022XA	MY5417006	2018-12-11	2019-12-11

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	26.6~27.3°C
Relative Humidity:	52~62 %
ATM Pressure:	100.3~101.2 kPa

* The testing was performed by Elena Lei from 2019-03-11 to 2019-03-12.

Test Mode: Transmitting

Test Result: Compliant. Please refer to the following table.

Test mode	Channel	Frequency (MHz)	Max Peak Conducted Output Power (dBm)	Max Conducted Average Output Power (dBm)	Limit (dBm)
802.11b	Low	2412	10.17	6.85	30
	Middle	2437	9.87	6.66	30
	High	2462	9.43	6.12	30
802.11g	Low	2412	15.27	5.92	30
	Middle	2437	15.64	5.84	30
	High	2462	15.22	5.27	30
BLE	Low	2402	-1.08	/	30
	Middle	2440	-1.08	/	30
	High	2480	-1.34	/	30

FCC §15.247(d)– 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE**Applicable Standard**

According to FCC§15.247(d):In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2018-08-03	2019-08-03
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

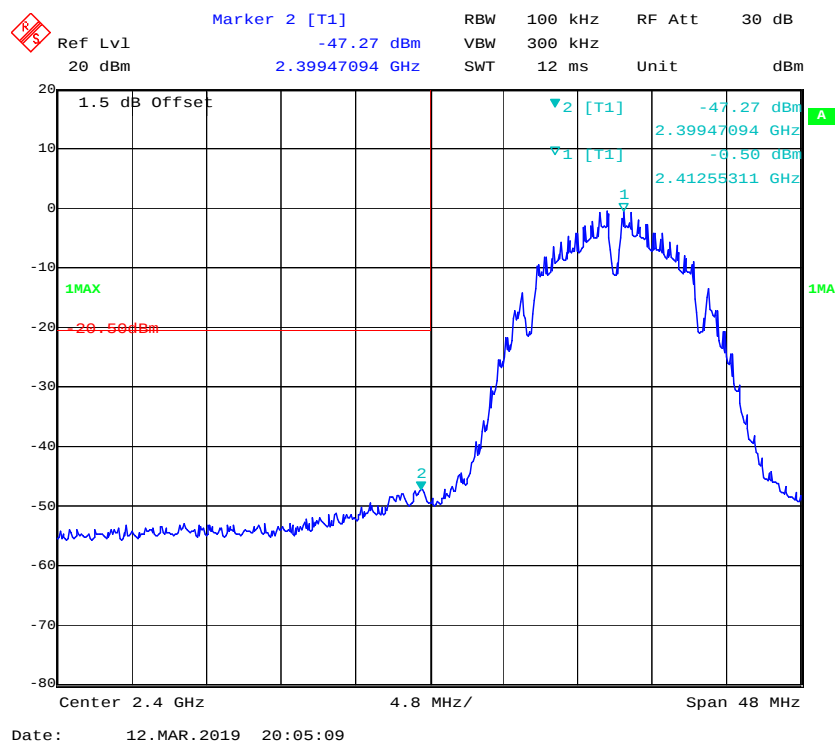
Test Data**Environmental Conditions**

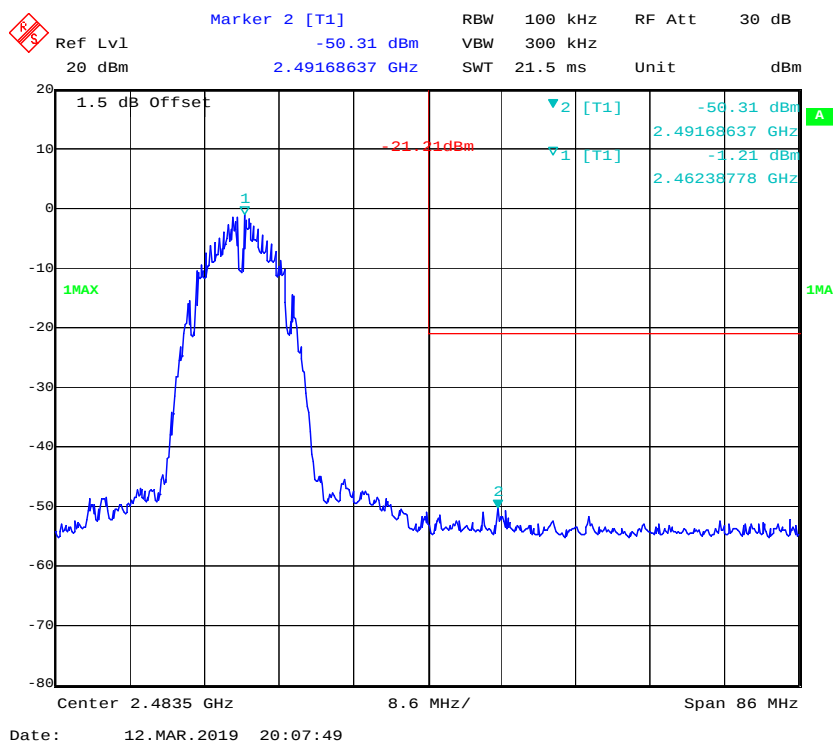
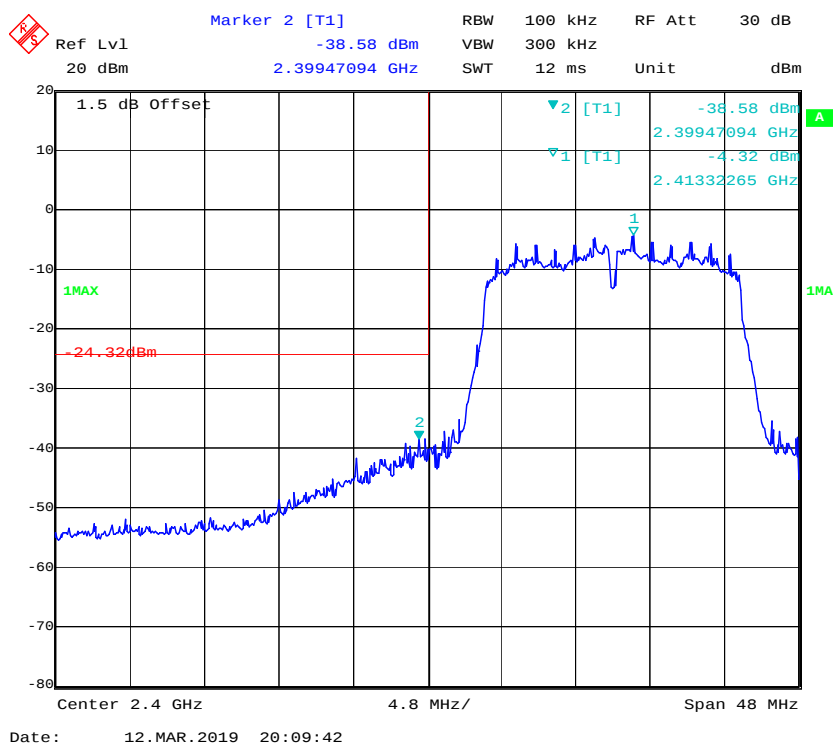
Temperature:	26.6~28.1°C
Relative Humidity:	57~62 %
ATM Pressure:	100.9~101.2 kPa

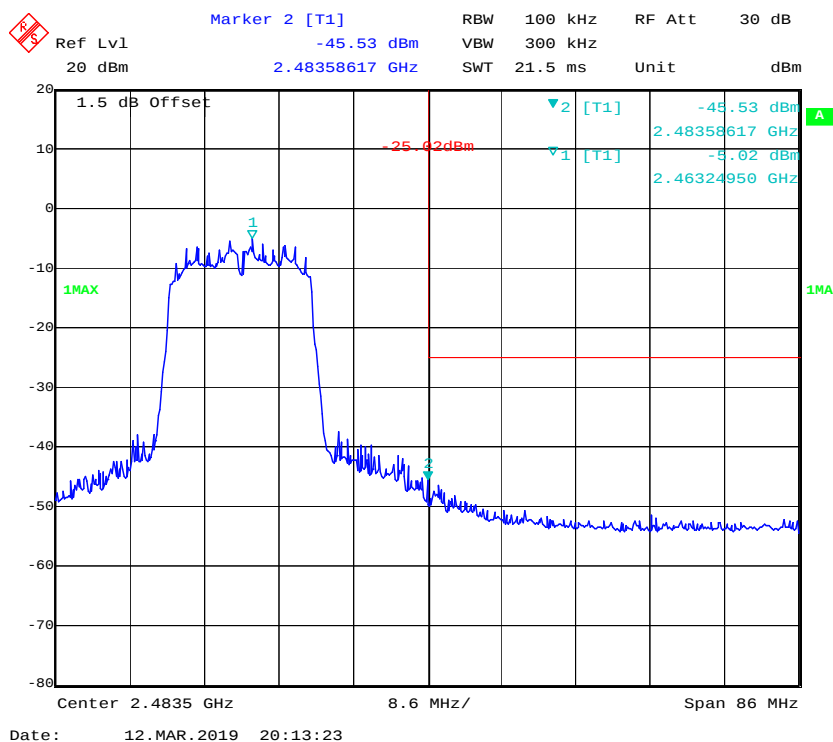
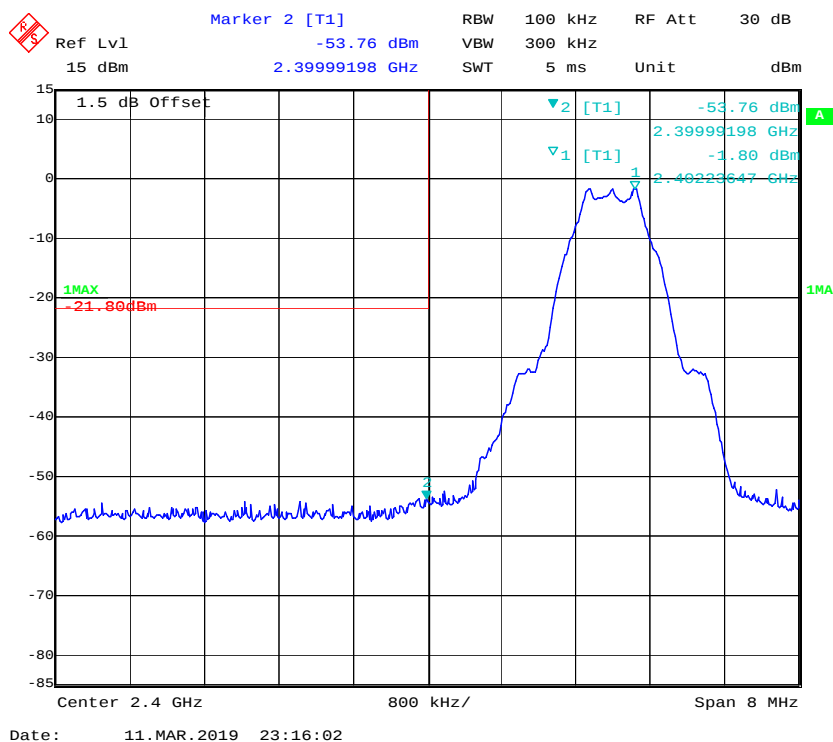
* The testing was performed by Elena Lei from 2019-03-11 to 2019-03-12.

Test mode: Transmitting

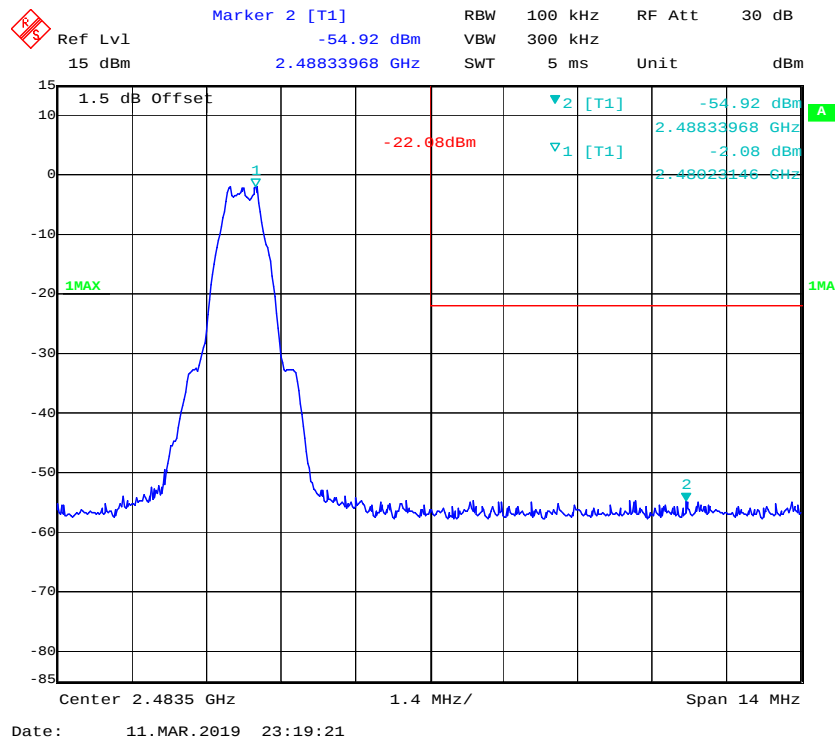
Test Result: Compliant. Please refer to following plots.

802.11b: Band Edge, Left Side

802.11b: Band Edge, Right Side**802.11g: Band Edge, Left Side**

802.11g: Band Edge, Right Side**BLE Band Edge, Left Side**

BLE Band Edge, Right Side



FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set the RBW = 3 kHz, VBW = 10 kHz, Set the span to 1.5 times the DTS bandwidth.
4. Use the peak marker function to determine the maximum amplitude level.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2018-08-03	2019-08-03
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

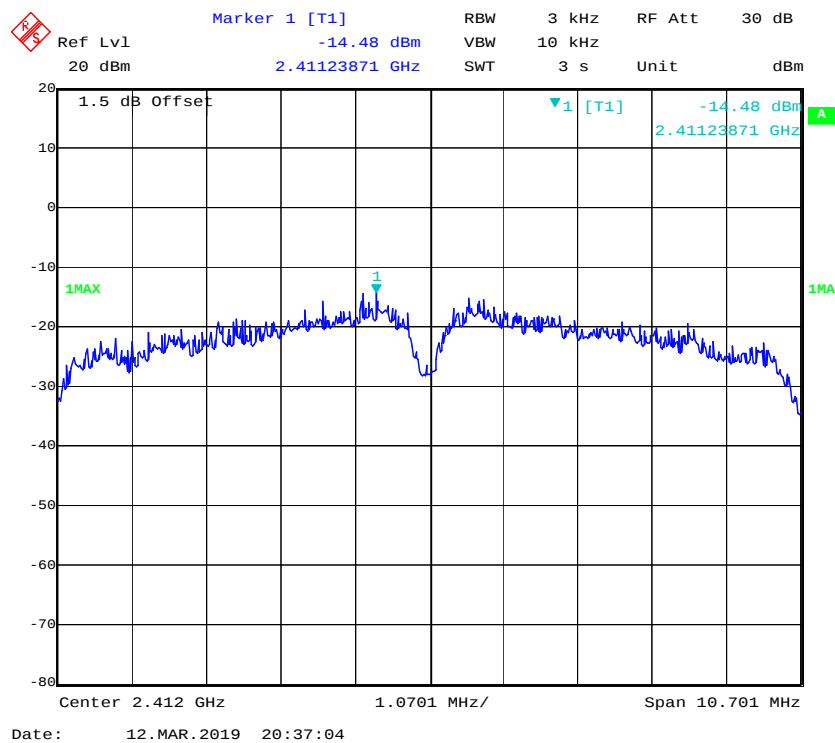
Environmental Conditions

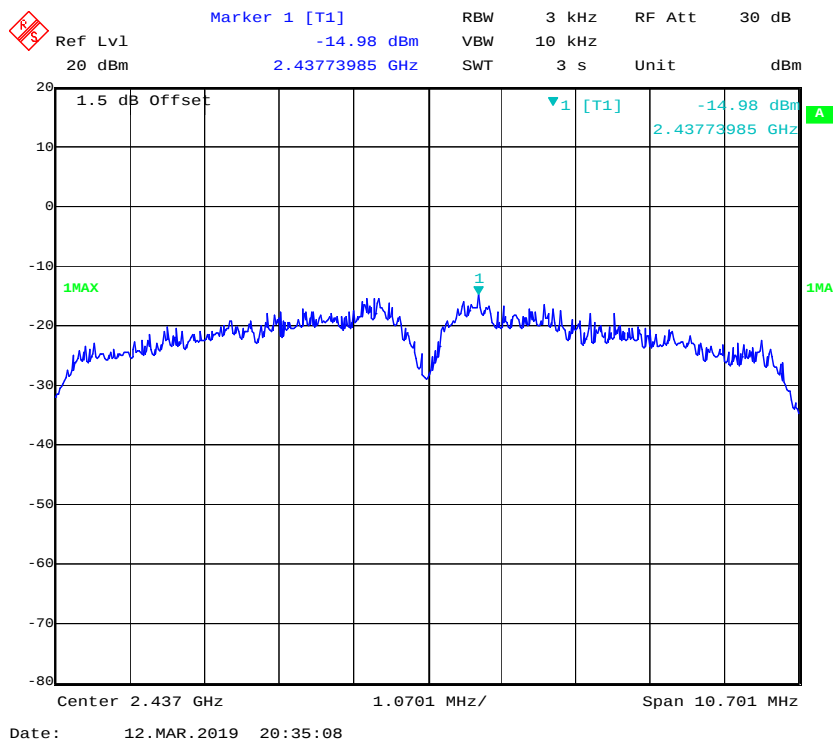
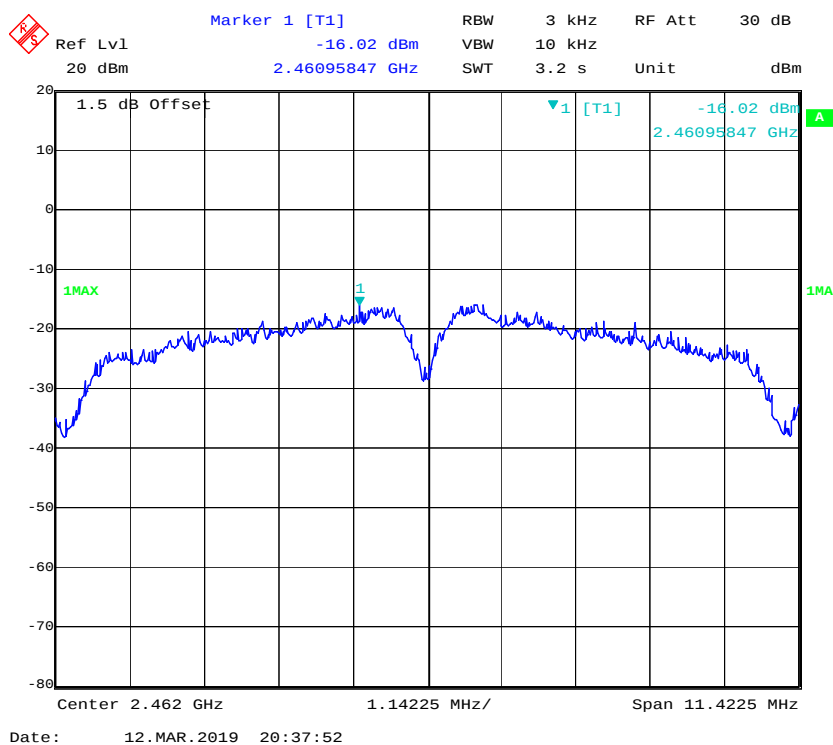
Temperature:	26.6~28.1°C
Relative Humidity:	57~62 %
ATM Pressure:	100.9~101.2 kPa

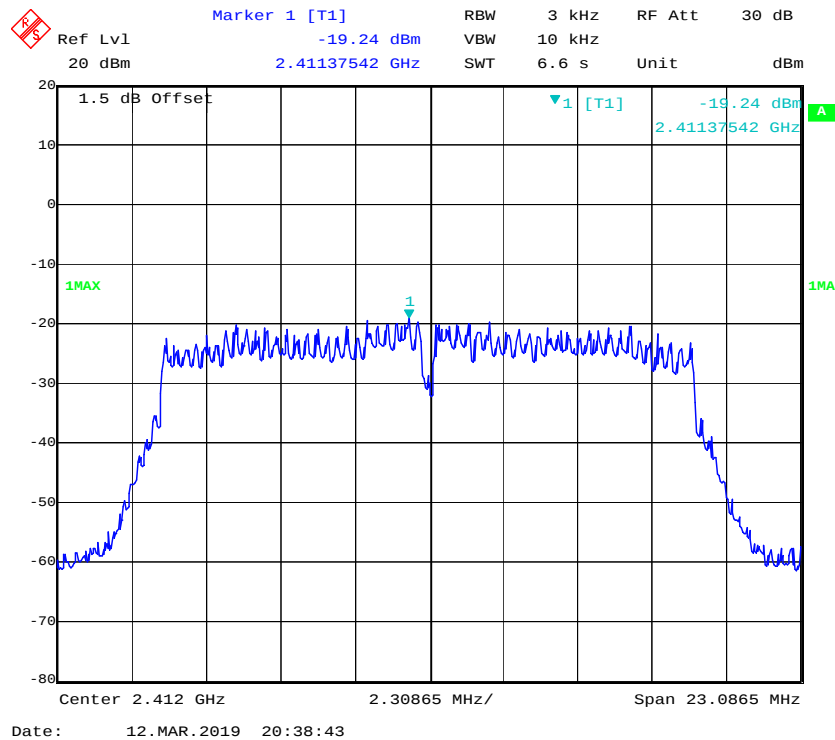
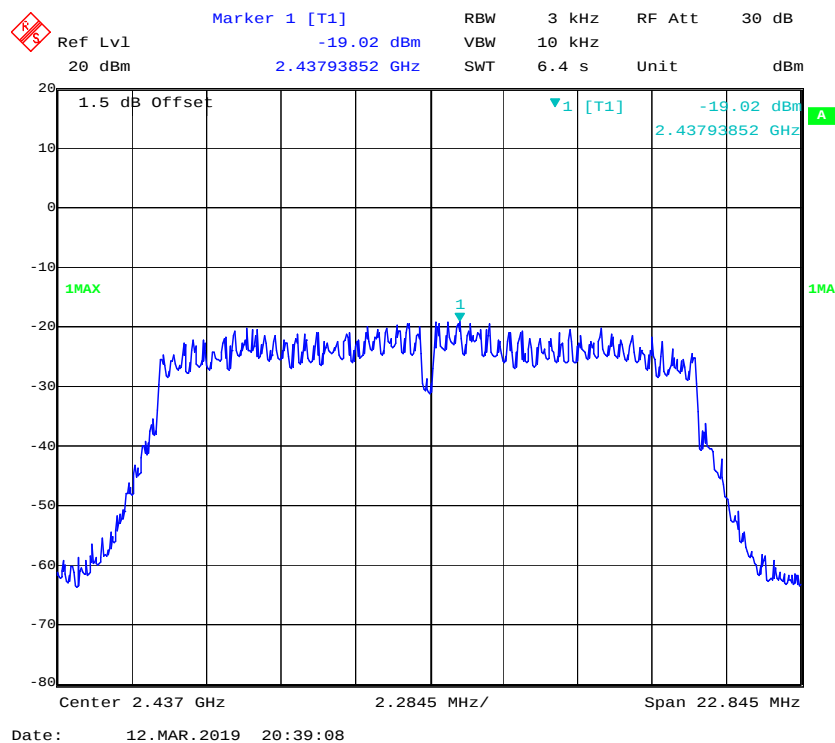
* The testing was performed by Elena Lei from 2019-03-11 to 2019-03-12.

Test Result: Compliance*Test Mode: Transmitting**Test Result: Compliant. Please refer to the following table and plots*

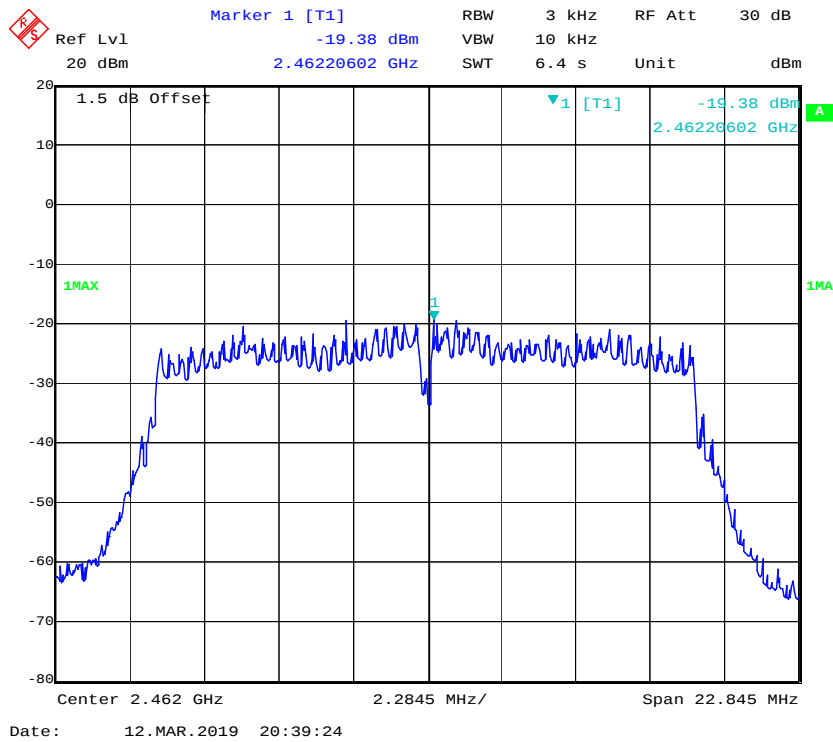
Test mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
802.11b	Low	2412	-14.48	≤8
	Middle	2437	-14.98	≤8
	High	2462	-16.02	≤8
802.11g	Low	2412	-19.24	≤8
	Middle	2437	-19.02	≤8
	High	2462	-19.38	≤8
BLE	Low	2402	-15.98	≤8
	Middle	2440	-16.06	≤8
	High	2480	-16.31	≤8

Power Spectral Density, 802.11b Low Channel

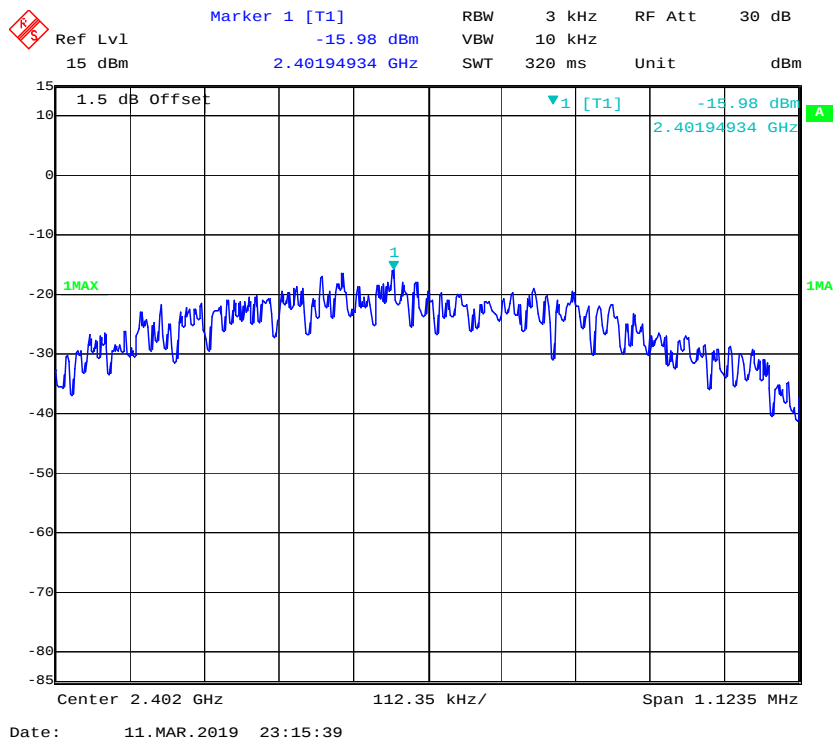
Power Spectral Density, 802.11b Middle Channel**Power Spectral Density, 802.11b High Channel**

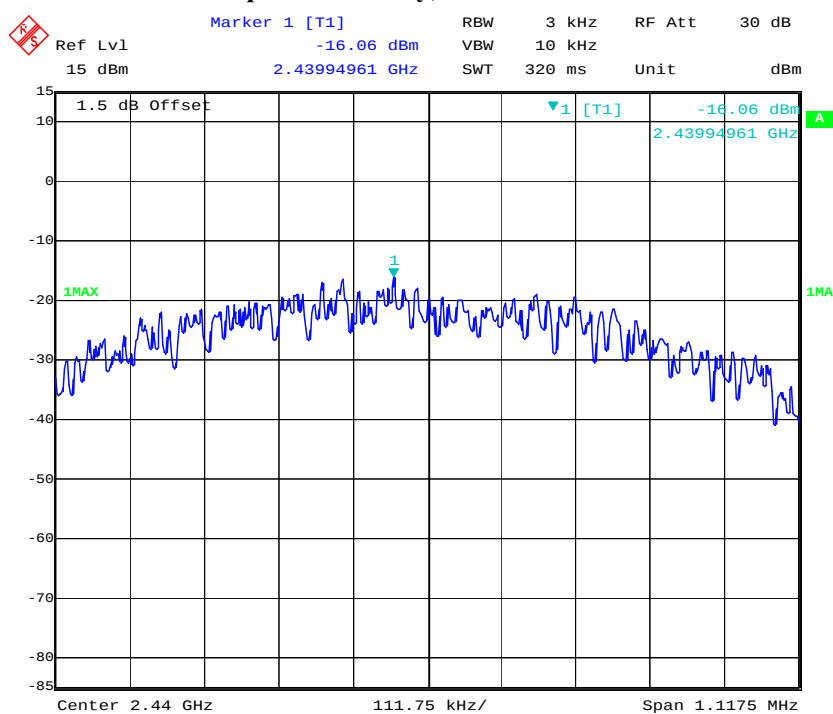
Power Spectral Density, 802.11g Low Channel**Power Spectral Density, 802.11g Middle Channel**

Power Spectral Density, 802.11g High Channel

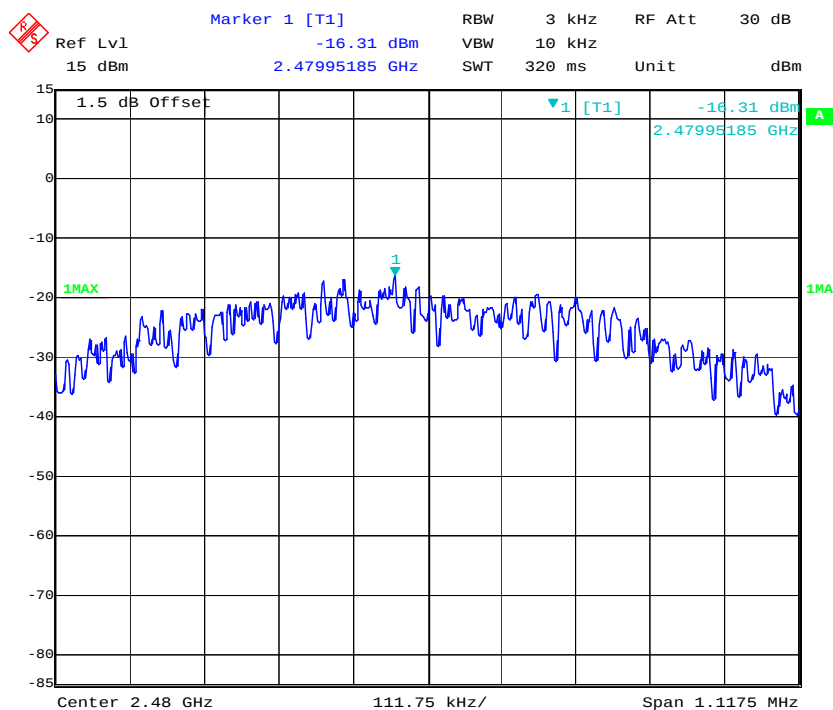


Power Spectral Density, BLE Low Channel



Power Spectral Density, BLE Middle Channel

Date: 11.MAR.2019 23:17:26

Power Spectral Density, BLE High Channel

Date: 11.MAR.2019 23:18:48

******* END OF REPORT *******