FCC Part 15.247

TEST REPORT

For

Chengdu Vantron Technology, Ltd.

No.5 GaoPeng Road, Hi-Tech Zone, Chengdu, SiChuan, P.R. China

FCC ID: 2AAGE-VTDONGLE

Report Type	**Original Report**
Product Name:	**Gateway**
Model Name:	**VT-IoT-Dongle**
Series Model Name:	**VT-IoT-Dongle-CATM**
Report Number :	**RLK190919004-00A**
Report Date :	**2019/10/05**
Reviewed By :	**Zeus Chen** Zeus Chen
Prepared By: **Bay Area Compliance Laboratories Corp.(Linkou Laboratory)** **No. 6, Wende 2Rd., Guishan Dist., Taoyuan City 33382, Taiwan (R.O.C.)** **Tel: +886 (3)3961072; Fax: +886 (3) 3961027** **www.bacl.com.tw**	

Revision History

Revision	Report Number	Issue Date	Description
1.0	RLK190919004-00A	2019/10/05	Original Report

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1 General Information

1.1 Product Description for Equipment under Test (EUT)

Applicant	**Chengdu Vantron Technology, Ltd.** No.5 GaoPeng Road, Hi-Tech Zone, Chengdu, SiChuan, P.R. China
Manufacturer	**Chengdu Vantron Technology, Ltd.** No.5 GaoPeng Road, Hi-Tech Zone, Chengdu, SiChuan, P.R. China
Product (Equipment)	**Gateway**
Model Name	**VT-IoT-Dongle**
Series Model Name	**VT-IoT-Dongle-CATM**
Model Discrepancy	Please refer below Model Discrepancy Table
EUT Function	IEEE 802.11 bgn (HT20/HT40) + BT4.2 (BLE)
Frequency Range	IEEE 802.11 b/g/n HT20/HT40 mode: 2412 - 2462 MHz IEEE 802.11 n HT40 mode: 2422 - 2452 MHz BLE mode: 2402 - 2480 MHz
Number of Channels	IEEE 802.11 b/g/n HT20 mode: 11 Channels IEEE 802.11 n HT40 mode: 9 Channels BLE mode : 40 Channels
Output Power	IEEE 802.11b mode: 22.37 dBm (0.1726 W) IEEE 802.11g mode: 24.35 dBm (0.2723 W) IEEE 802.11n HT20 mode: 24.28 dBm (0.2679 W) IEEE 802.11n HT40 mode: 23.11 dBm (0.2046 W) BLE mode: 3.67 dBm (0.0023 W)
Modulation Type	IEEE 802.11b mode: DSSS IEEE 802.11g/n HT 20/HT40 mode: OFDM BLE mode : GFSK 1Mbps
Related Submittal(s)/Grant(s)	**FCC Part 15.247 DSS with FCC ID : 2AAGE-VTDONGLE** **FCC Part 15.407 NII with FCC ID : 2AAGE-VTDONGLE**
Received Date	Sep. 23, 2019
Date of Test	Sep. 24, 2019 ~ Oct 03, 2019

**All measurement and test data in this report was gathered from production sample serial number: 190919004 (Assigned by BACL, LinKou).*

**Model Discrepancy: Difference was LTE module use and contain FCC ID (Card Plug-in)*

Model Name	Discrepancy
VT-IoT-Dongle	**Contain LTE module FCC ID RI7LE910NAV2** Note 1
VT-IoT-Dongle-CATM	**Contain LTE module FCC ID 2AJYU-SIM7000A** Note 1

Note 1: LTE Module have already get FCC Grants

The major electrical and mechanical constructions of series models are identical to the basic model, except different Market segmentation. The model, VT-IoT-Dongle is the testing sample, and the final test data are shown on this test report.

1.2 Operation Condition of EUT

Power Operation (Voltage Range)	☒ AC 120 V/60 Hz ☒ Adapter (Not for Sale) via power Cable to connector port ☐ By Power Cord.
	☒ DC Type ☒ DC Power Supply: 5Vdc to connector port ☐ Battery ☐ External from USB Cable 5Vdc ☐ External DC Adapter
	☐ Host System

1.3 Objective and Test Methodology

The Objective of this Test Report was to document the compliance of the Chengdu Vantron Technology, Ltd. Appliance (Model: VT-IoT-Dongle, Series Model: VT-IoT-Dongle-CATM) to the requirements of the following Standards:

-Part 2, Subpart J, Part 15, Subparts A and C, section 15.247 of the Federal Communication Commission's rules.

- ANSI C63.10-2013 of t American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

-KDB 558074 D01 15.247 Meas Guidance v05r02.

1.4 Measurement Uncertainty

Parameter	Expanded Measurement uncertainty
RF output power with Power Meter	± 0.55 dB
Occupied Channel Bandwidth	± 4.54 Hz
RF Conducted test with Spectrum	± 1.45 dB
AC Power Line Conducted Emission	± 2.66 dB
Radiated Below 1G	± 3.57 dB
Radiated Above 1G-18G	± 4.29 dB
Radiated Above 18G-40G	± 4.67 dB

1.5 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Linkou) to collect test data is located on

☒ No.6, Wende 2Rd., Guishan Dist., Taoyuan City 33382, Taiwan (R.O.C.).

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database. The FCC Registration No.: 0027578244. Designation No.: TW3546. The Test Firm Registration No.: 181430.

2 System Test Configuration

2.1 Test Channels and Description of Worst Test Configuration

The system was configured for testing in testing mode which was provided by manufacturer.

No special accessory, No modification was made to the EUT and No special equipment used during test.

For Wi-Fi 2.4G mode, there are totally 11 channels.

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/g/n HT20: Channel **1**, **6** and **11** were tested. And for 802.11n HT40: Channel **3**, **6** and **9** were tested.

For BLE, there are totally 40 channels.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	**2402**	20	2442
1	2404	--	--
2	2406	--	--
3	2408	37	2476
--	--	38	2478
19	**2440**	**39**	**2480**

For BLE: Channel **0**, **19** and **39** were tested.

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

VT-IoT-Dongle and VT-IoT-Dongle-CATM all have two mode Wlan + WWan or BT + WWan for Co-location.

AC Line put the worst case co-location mode in the report. Radiation co-location we put the worst case co-location mode (Wlan +WWan $_{(FCC\ ID:\ RI7LE910NAV2)}$) and please refer to RLK190919004-00C Report.

Modulation Used for Conformance Test			
Configuration	**NTX**	**Data Rate**	**Worst Data Rate**
802.11b mode	1	1-11 Mbps	1 Mbps
802.11g mode	1	6-54 Mbps	6 Mbps
802.11n HT 20 mode	1	MCS 0-7	MCS 0
802.11n HT 40 mode	1	MCS 0-7	MCS 0
BLE mode	1	125 kbps-1 Mbps	1 Mbps

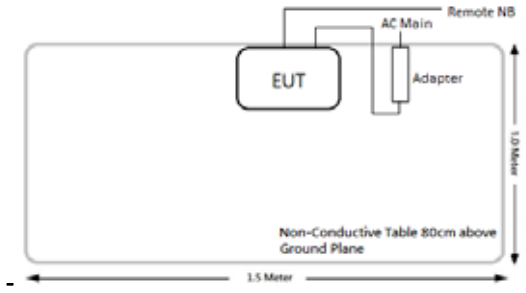
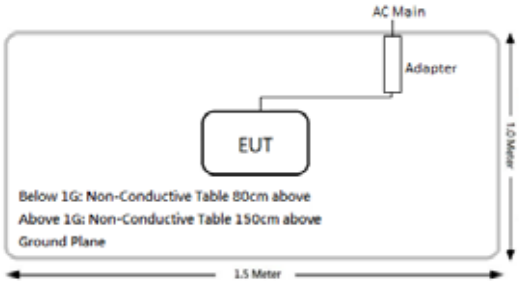
Worst Case of Power Setting				
EUT Exercise Software		Command via Putty		
Configuration	**NTX**	**Low CH**	**Mid CH**	**High CH**
802.11b mode	1	20	20	17.5
802.11g mode	1	18	20	14.5
802.11n HT 20 mode	1	18	20	14.5
802.11n HT 40 mode	1	15	17.5	14.5
BLE mode	1	Default	Default	Default

2.2 Support Equipment List and External Cable List

No.	Description	Manufacturer	Model Number
A	Notebook PC	DELL	Latitude E6410
B	Notebook PC	Lenovo	Y520-151KBN
C	Notebook PC	APPLE	A1706
D	Adapter	FLEX	A1718 (Apple)
E	Adapter	Chicony Power	ADL135NCC3A (Lenovo)
F	Adapter	MYCELL	AC-B04
G	DC Power Source	GW Instek	SPS-2415

No.	Cable Description	Shielding Type	Length (m)	From	To
1	Connector Cable	Non-Shielded	1.0	EUT	Power Apply

2.3 Block Diagram of Test Setup

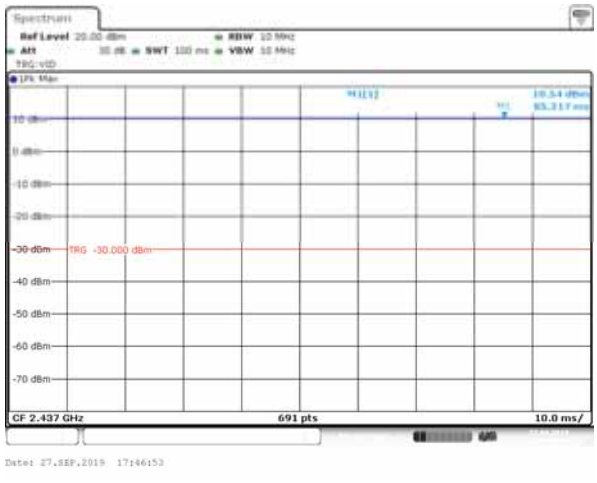
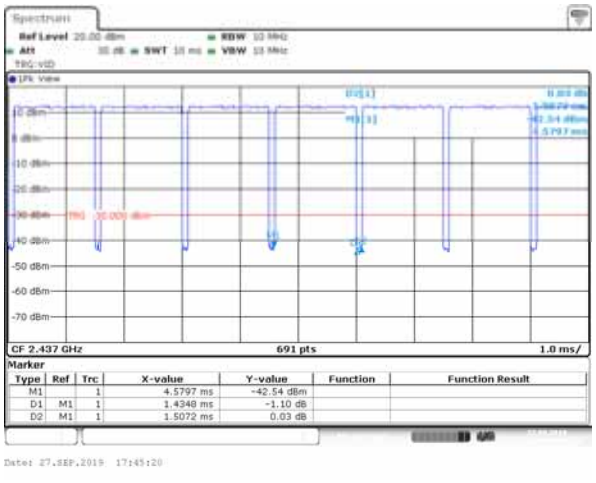
Conduction	Radiation
	

2.4 Duty Cycle

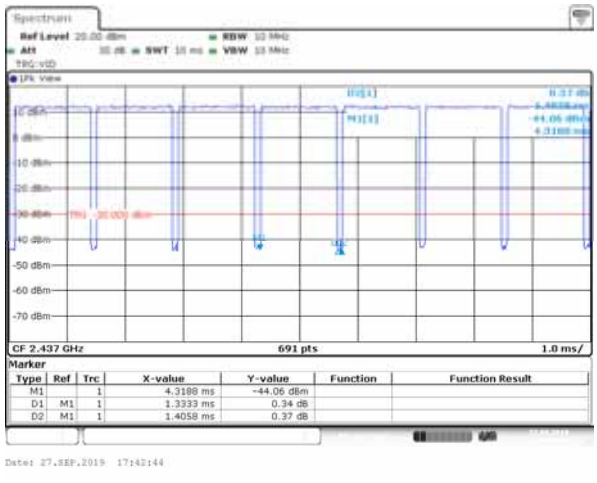
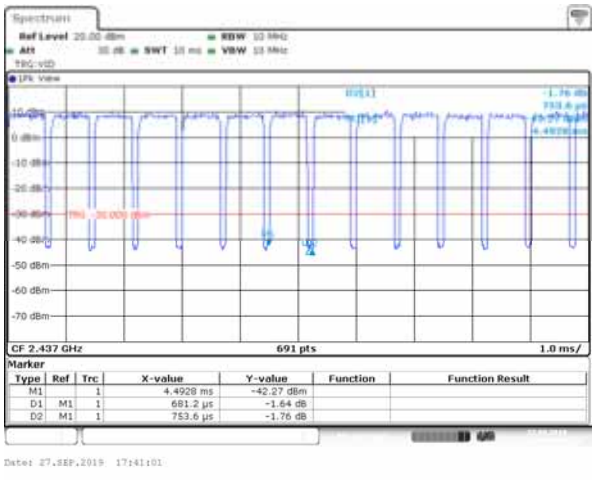
According to KDB 558074 D01 15.247 Meas Guidance v05:

All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x, and maximum power transmission duration, T, are required for each tested mode of operation.

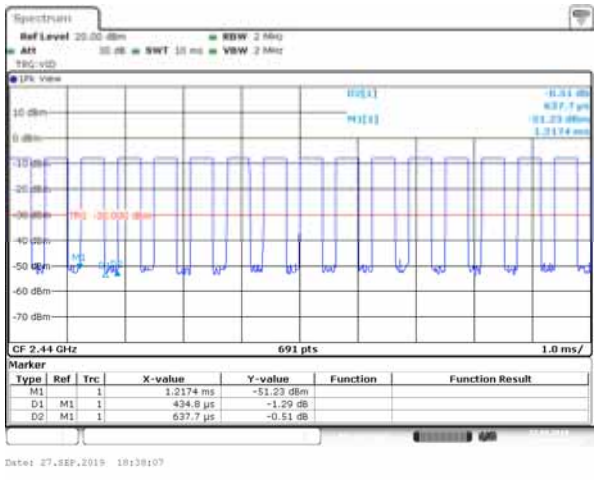
Configuration	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11b mode	100	100	100	0.00
802.11g mode	1.4348	1.5072	95.20	0.21
802.11n HT20 mode	1.3333	1.4058	94.84	0.23
802.11n HT40 mode	0.6812	0.7536	90.39	0.44
BLE mode	0.4348	0.6377	68.18	1.66

802.11b mode	802.11g mode
	

**Note: Duty Factor = 10*log (1/Duty cycle)*

802.11n HT20 mode	802.11n HT40 mode
	

**Note: Duty Factor = 10*log (1/Duty cycle)*

BLE mode	-
	-

**Note: Duty Factor = 10*log (1/Duty cycle)*

3 Summary of Test Results

FCC Rules	Description of Test	Result
§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 Emission Bandwidth	Compliance
§15.247(b)(3)	Maximum Peak Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

4 FCC§15.247(i), §1.1310, § 2.1091 - Maximum Permissible Exposure (MPE)

4.1 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.

Calculated Formulary: Predication of MPE limit at a given distance

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

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);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

4.2 RF Exposure Evaluation Result

MPE Evaluation:

Mode	Frequency Range (MHz)	Antenna Gain		Target Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
Wi-Fi 2.4G	2412-2462	3.00	1.995	25.00	316.2278	20	0.1256	1.0
BLE	2402-2480	3.00	1.995	4.00	2.5119	20	0.0010	1.0
BR+EDR	2402-2480	3.00	1.995	9.00	7.9433	20	0.0032	1.0
Wi-Fi 5G UNII-1	5150-5250	3.00	1.995	20.00	100.0000	20	0.0397	1.0
Wi-Fi 5G UNII-3	5745-5850	3.00	1.995	21.00	125.8925	20	0.0500	1.0

LTE module FCC ID: 2AJYU-SIM7000A

Mode	Frequency Range (MHz)	Antenna Gain		Target Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
LTE B2	1850-1910	0.48	1.117	25.70	371.54	20	0.0826	1.0
LTE B4	1710-1755	-0.73	0.845	25.70	371.54	20	0.0625	1.0
LTE B12	699-716	2.11	1.626	25.70	371.54	20	0.1202	0.466
LTE B13	777-787	2.11	1.626	25.70	371.54	20	0.1202	0.518

LTE module FCC ID: RI7LE910NAV2

Mode	Frequency Range (MHz)	Antenna Gain		Target Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
LTE B2	1850-1910	0.48	1.117	24.00	251.189	20	0.0558	1.0
LTE B4	1710-1755	-0.73	0.845	24.00	251.189	20	0.0422	1.0
LTE B5	824-849	2.65	1.841	24.00	251.189	20	0.0920	0.550
LTE B12	699-716	2.11	0.845	24.00	251.189	20	0.0812	0.466
LTE B13	777-787	2.11	1.626	24.00	251.189	20	0.0812	0.518
LTE B17	704-716	2.11	0.845	24.00	251.189	20	0.0812	0.469

MPE evaluation for simultaneous transmission:

Note:

1. **Wi-Fi (2.4G) or Wi-Fi 5G and BT can't transmit simultaneously.**
2. **Wi-Fi (2.4G) and Wi-Fi 5G can't transmit simultaneously**

Wi-Fi or BT & WWAN can transmit simultaneously, MPE evaluation is as below formula:

PD1/Limit1+PD2/Limit2+……＜1, PD (Power Density)

The worst case is as below:

Max MPE of Wi-Fi + Max MPE of LTE
= 0.1256/1.0+0.1202/0.466 =0.3835＜1.0

Result: MPE evaluation of single and simultaneous transmission meet the requirement of standard.

5 FCC §15.203 - Antenna Requirements

5.1 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.

And according to FCC 47 CFR section 15.247 (b), if the 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 does not exceed 6dBi

5.2 Antenna List and Details

Brand	Model	Antenna Type	Antenna Gain	Result
Jinchang	JCW425	PIFA	3.00 dBi	Compliance

The EUT has an internal antenna arrangement, which was permanently attached, fulfill the requirement of this section.

6 FCC §15.207 - AC Line Conducted Emissions

6.1 Applicable Standard

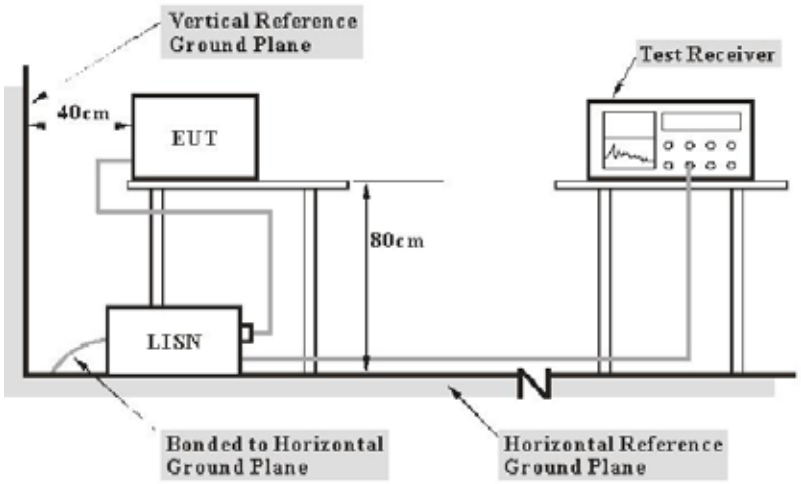
According to FCC §15.207 and §15.407(b)(6),

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 Note 1	56 to 46 Note 2
0.5-5	56	46
5-30	60	50

Note 1: Decreases with the logarithm of the frequency. Note 2: A linear average detector is required

6.2 EUT Setup and Test Procedure



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

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	Receiver RBW
150 kHz - 30 MHz	9 kHz

During the conducted emission test, the adapter was connected to the outlet of the 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.

6.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conduction Room					
LISN	Rohde & Schwarz	ENV216	100010	2019/09/02	2020/09/01
EMI Test Receiver	Rohde & Schwarz	ESR3	102430	2019/03/27	2020/03/26
Pulse Limiter	SCHWARZBECK	VSTD 9561-F	00432	2019/08/28	2020/08/27
RF Cable	EMCI	EMCCFD300-BM-BM-8000	180526	2019/08/08	2020/08/07
Software	Audix	e3 v9	E3LK-03	N.C.R	N.C.R

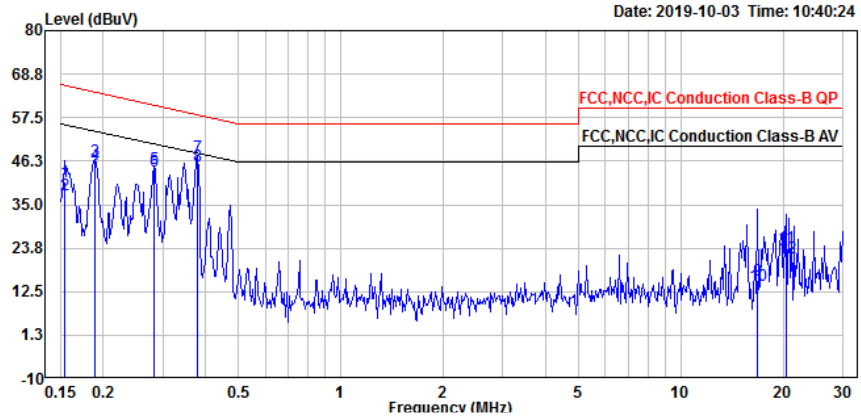
***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

6.4 Test Environmental Conditions

Temperature:	25 ℃	Relative Humidity:	62 %
ATM Pressure:	1010 hPa	Test Engineer:	Ray Huang
Test Date:	2019-10-03		

6.5 Test Data and Test Plot

Mode: AC 120 V/60 Hz, Co-location mode (Wi-Fi +WWan (FCC ID: RI7LE910NAV2)), Line



	Freq	Read Level	Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	
1	0.154	21.11	41.05	19.94	65.80	-24.75	QP
2	0.154	17.65	37.59	19.94	55.80	-18.21	Average
3	0.189	26.30	46.24	19.94	64.08	-17.84	QP
4	0.189	25.38	45.32	19.94	54.08	-8.76	Average
5	0.281	24.39	44.33	19.94	60.77	-16.44	QP
6	0.281	23.69	43.63	19.94	50.77	-7.14	Average
7	0.378	27.38	47.34	19.96	58.32	-10.98	QP
8	0.378	25.07	45.03	19.96	48.32	-3.29	Average
9	16.770	-4.75	15.41	20.16	60.00	-44.59	QP
10	16.770	-6.01	14.15	20.16	50.00	-35.85	Average
11	20.466	3.85	24.02	20.17	60.00	-35.98	QP
12	20.466	1.02	21.19	20.17	50.00	-28.81	Average

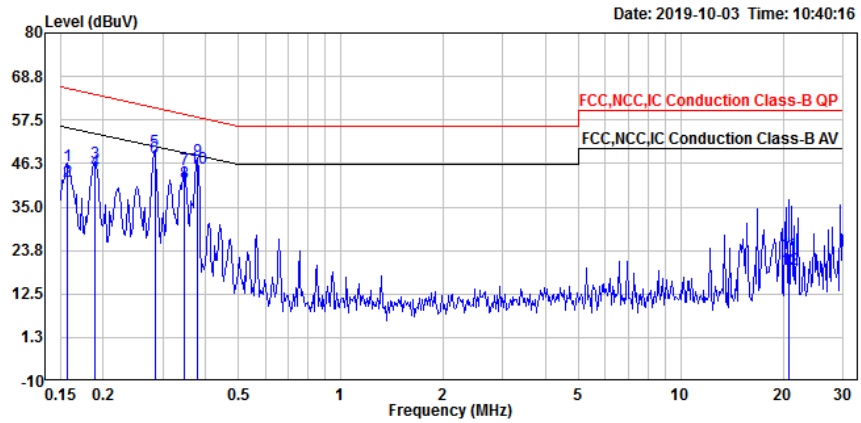
Note:

Level = Read Level + Factor

Over Limit (Margin) = Level – Limit Line

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

Mode: AC 120V/60 Hz, Co-location mode (Wi-Fi +WWan (FCC ID: RI7LE910NAV2)), Neutral



	Freq	Read Level	Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	
1	0.157	25.62	45.57	19.95	65.60	-20.03	QP
2	0.157	21.55	41.50	19.95	55.60	-14.10	Average
3	0.189	26.40	46.34	19.94	64.08	-17.74	QP
4	0.189	24.37	44.31	19.94	54.08	-9.77	Average
5	0.284	29.56	49.50	19.94	60.71	-11.21	QP
6	0.284	27.63	47.57	19.94	50.71	-3.14	Average
7	0.346	24.81	44.77	19.96	59.05	-14.28	QP
8	0.346	21.38	41.34	19.96	49.05	-7.71	Average
9	0.378	27.21	47.18	19.97	58.32	-11.14	QP
10	0.378	25.08	45.05	19.97	48.32	-3.27	Average
11	20.795	2.49	22.81	20.32	60.00	-37.19	QP
12	20.795	-1.39	18.93	20.32	50.00	-31.07	Average

Note:

Level = Read Level + Factor

Over Limit (Margin) = Level – Limit Line

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

7 FCC §15.209, §15.205, §15.247(d) – Spurious Emissions

7.1 Applicable Standard

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1MHz.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	13.36-13.41	399.9-410	4.5-5.15
0.495-0.505	16.42-16.423	608-614	5.35-5.46
2.1735-2.1905	16.69475-16.69525	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6

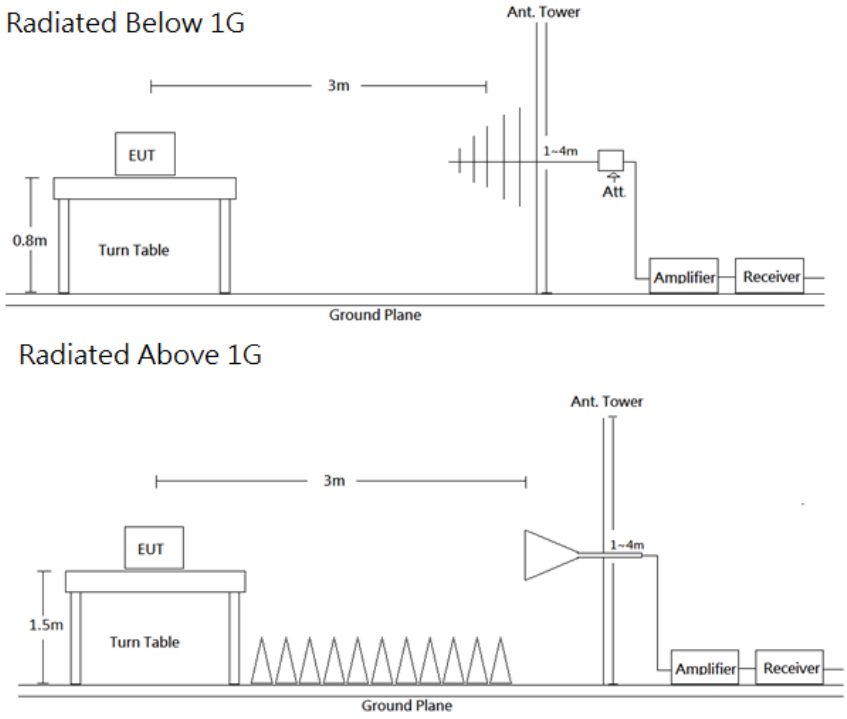
As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (micro volts/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

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As per 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 20dB. 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).

7.2 EUT Setup and Test Procedure



Radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part 15.209 and FCC 15.247 Limits.

The system was investigated from 30 MHz to 26.5 GHz. During the radiated emission test, the EMI test receiver was set with the following configurations measurement method 6.3 in ANSI C63.10.

Frequency Range	RBW	VBW	Detector	Duty cycle	Measurement method
30-1000 MHz	120 kHz	/	QP	-	QP
Above 1 GHz	1 MHz	3 MHz	PK	-	PK
	1 MHz	3 MHz	RMS	>98%	Ave
	1 MHz	1/T	PK	<98%	Ave

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations. All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

7.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
966A Room					
Bilog Antenna/6 dB Attenuator	SUNOL SCIENCES & EMEC /EMCI	JB3/N-6-06	A111513/AT-N0668	2019/03/29	2020/03/28
Horn Antenna	ETS-Lindgren	3115	00109141	2019/07/05	2020/07/04
Horn Antenna	ETS-Lindgren	3160-09	00123852	2019/07/11	2020/07/10
Preamplifier	A.H. Systems	PAM-0118P	478	2019/03/28	2020/03/27
Preamplifier	A.H. Systems	PAM-1840VH	174	2019/02/18	2020/02/17
Signal and Spectrum Analyzer	Rohde & Schwarzr	FSV40	101434	2019/04/17	2020/04/16
Microflex Cable (1m)	EMCI	EMC106-SM-SM-2000	93D0127	2019/05/05	2020/05/04
Microflex Cable (2m)	MTJ	H0919	MFR64639 226389-002	2019/05/05	2020/05/04
Microflex Cable (8m)	UTIFLEX	UFA210A-1-3149-300300	160309-1	2019/05/05	2020/05/04
Turn Table	Chaintek	T-200-S-1	003501	N.C.R	N.C.R
Antenna Tower	Chaintek	MBD-400-1	003504	N.C.R	N.C.R
Controller	Chaintek	3000-1	003507	N.C.R	N.C.R
Software	Audix	e3 v9	E3LK-01	N.C.R	N.C.R
Conducted Room					
Signal Analyzer 40GHZ	Rohde & Schwarz	FSV40-N	102248	2019/09/11	2020/09/10
Cable	MTJ	MT40S	620620-MT40S-100	2018/12/28	2019/12/27

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

7.4 Test Environmental Conditions

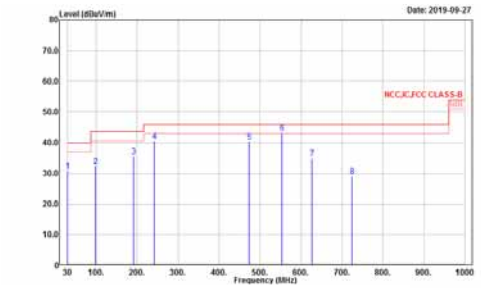
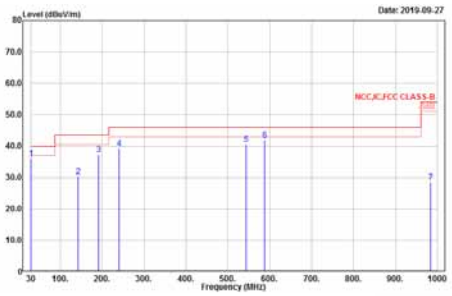
Temperature:	25 ℃	**Relative Humidity:**	45 %
ATM Pressure:	1014hPa	**Test Engineer:**	Leo Chang / Ethan Shao
Radiated Test Date:	2019-09-24 to 2019-09-27	**Conducted Test Date:**	2019-09-27

7.5 Test Result

Wi-Fi Mode:

Transmitting mode (Pre-scan with three orthogonal axis, and worse case as Y axis)

Below 1G (30 MHz-1 GHz) test the output power worst mode

Horizontal	Vertical
	

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1	30.000	30.84	40.00	-9.16	36.67	-5.83	Peak	horizontal
2	98.870	32.31	43.50	-11.19	53.09	-20.78	Peak	horizontal
3	191.020	35.58	43.50	-7.92	55.41	-19.83	Peak	horizontal
4	242.430	40.50	46.00	-5.50	59.89	-19.39	QP	horizontal
5	473.290	40.29	46.00	-5.71	54.43	-14.14	QP	horizontal
6 !	552.830	43.21	46.00	-2.79	55.95	-12.74	QP	horizontal
7	626.550	34.99	46.00	-11.01	46.46	-11.47	Peak	horizontal
8	724.520	29.03	46.00	-16.97	39.18	-10.15	Peak	horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1	30.000	35.92	40.00	-4.08	41.75	-5.83	Peak	vertical
2	142.520	30.34	43.50	-13.16	48.14	-17.80	Peak	vertical
3	191.020	37.36	43.50	-6.14	57.19	-19.83	Peak	vertical
4	240.490	39.15	46.00	-6.85	58.53	-19.38	QP	vertical
5	543.130	40.50	46.00	-5.50	53.41	-12.91	QP	vertical
6	586.780	41.90	46.00	-4.10	54.17	-12.27	Peak	vertical
7	983.510	28.33	54.00	-25.67	35.36	-7.03	Peak	vertical

Level = Read Level + Factor

Over Limit = Level – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

Above 1G (1 GHz-26.5 GHz)

802.11b mode:

Low CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2389.968	51.21	54.00	-2.79	58.84	-7.63	Average
2389.968	57.34	74.00	-16.66	64.97	-7.63	Peak
2413.152	97.04			104.63	-7.59	Average
2413.152	99.49			107.08	-7.59	Peak
4824.000	46.41	54.00	-7.59	45.77	0.64	Average
4824.000	51.39	74.00	-22.61	50.75	0.64	Peak
7236.000	47.33	54.00	-6.67	41.94	5.39	Average
7236.000	55.94	74.00	-18.06	50.55	5.39	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2389.968	52.37	54.00	-1.63	60.00	-7.63	Average
2389.968	58.53	74.00	-15.47	66.16	-7.63	Peak
2410.576	98.6[illegible]			[illegible]3	106.20	-7.60	Average
2410.576	101.3[illegible]			[illegible]4	108.94	-7.60	Peak
4824.000	44.23	54.00	-9.77	43.59	0.64	Average
4824.000	50.47	74.00	-23.53	49.83	0.64	Peak
7236.000	43.25	54.00	-10.75	37.87	5.38	Average
7236.000	53.33	74.00	-20.67	47.95	5.38	Peak

Middle CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2334.684	37.33	54.00	-16.67	45.11	-7.78	Average
2334.684	50.62	74.00	-23.38	58.40	-7.78	Peak
2436.324	99.20			106.74	-7.54	Average
2436.324	102.05			109.59	-7.54	Peak
2516.910	39.95	54.00	-14.05	47.21	-7.26	Average
2516.910	52.99	74.00	-21.01	60.25	-7.26	Peak
4874.000	48.46	54.00	-5.54	47.66	0.80	Average
4874.000	51.70	74.00	-22.30	50.90	0.80	Peak
7311.000	48.52	54.00	-5.48	42.90	5.62	Average
7311.000	54.62	74.00	-19.38	49.00	5.62	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2346.058	37.22	54.00	-16.78	44.97	-7.75	Average
2346.058	50.68	74.00	-23.32	58.43	-7.75	Peak
2436.324	99.42			106.96	-7.54	Average
2436.324	102.32			109.86	-7.54	Peak
2498.518	39.23	54.00	-14.77	46.55	-7.32	Average
2498.518	52.21	74.00	-21.79	59.53	-7.32	Peak
4874.000	47.00	54.00	-7.00	46.20	0.80	Average
4874.000	51.60	74.00	-22.40	50.80	0.80	Peak
7311.000	41.80	54.00	-12.20	36.18	5.62	Average
7311.000	51.63	74.00	-22.37	46.01	5.62	Peak

High CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2463.000	98.54			105.96	-7.42	Average
2463.000	101.54			108.96	-7.42	Peak
2483.600	52.53	54.00	-1.47	59.87	-7.34	Average
2483.600	59.91	74.00	-14.09	67.25	-7.34	Peak
4924.000	45.27	54.00	-8.73	44.44	0.83	Average
4924.000	50.48	74.00	-23.52	49.65	0.83	Peak
7386.000	44.89	54.00	-9.11	38.96	5.93	Average
7386.000	52.89	74.00	-21.11	46.96	5.93	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2463.500	97.0[illegible]			[illegible]3	104.50	-7.42	Average
2463.500	100.1[illegible]			[illegible]	107.53	-7.42	Peak
2483.500	51.97	54.00	-2.03	59.31	-7.34	Average
2483.500	58.57	74.00	-15.43	65.91	-7.34	Peak
4924.000	41.72	54.00	-12.28	40.89	0.83	Average
4924.000	48.65	74.00	-25.35	47.82	0.83	Peak
7386.000	36.91	54.00	-17.09	30.99	5.92	Average
7386.000	49.55	74.00	-24.45	43.63	5.92	Peak

802.11g mode:

Low CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2390.000	51.89	54.00	-2.11	59.52	-7.63	Average
2390.000	71.53	74.00	-2.47	79.16	-7.63	Peak
2412.704	91.12			98.71	-7.59	Average
2412.704	101.06			108.65	-7.59	Peak
4824.000	34.35	54.00	-19.65	33.71	0.64	Average
4824.000	48.44	74.00	-25.56	47.80	0.64	Peak
7236.000	36.04	54.00	-17.96	30.66	5.38	Average
7236.000	49.31	74.00	-24.69	43.93	5.38	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2389.856	52.55	54.00	-1.45	60.18	-7.63	Average
2389.856	72.71	74.00	-1.29	80.34	-7.63	Peak
2410.352	92.77			100.37	-7.60	Average
2410.352	103.28			110.88	-7.60	Peak
4824.000	33.39	54.00	-20.61	32.75	0.64	Average
4824.000	48.61	74.00	-25.39	47.97	0.64	Peak
7236.000	35.10	54.00	-18.90	29.72	5.38	Average
7236.000	48.08	74.00	-25.92	42.70	5.38	Peak

Middle CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2387.924	41.27	54.00	-12.73	48.90	-7.63	Average
2387.924	57.49	74.00	-16.51	65.12	-7.63	Peak
2435.356	95.18			102.72	-7.54	Average
2435.356	104.99			112.53	-7.54	Peak
2485.692	43.58	54.00	-10.42	50.92	-7.34	Average
2485.692	57.08	74.00	-16.92	64.42	-7.34	Peak
4874.000	35.05	54.00	-18.95	34.32	0.73	Average
4874.000	50.02	74.00	-23.98	49.29	0.73	Peak
7311.000	40.62	54.00	-13.38	35.00	5.62	Average
7311.000	55.32	74.00	-18.68	49.70	5.62	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2388.650	42.83	54.00	-11.17	50.46	-7.63	Average
2388.650	60.25	74.00	-13.75	67.88	-7.63	Peak
2435.356	95.10			102.64	-7.54	Average
2435.356	105.50			113.04	-7.54	Peak
2485.450	43.40	54.00	-10.60	50.74	-7.34	Average
2485.450	57.81	74.00	-16.19	65.15	-7.34	Peak
4874.000	34.73	54.00	-19.27	33.93	0.80	Average
4874.000	46.79	74.00	-27.21	45.99	0.80	Peak
7311.000	35.48	54.00	-18.52	29.84	5.64	Average
7311.000	48.45	74.00	-25.55	42.81	5.64	Peak

High CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2462.600	90.73			98.15	-7.42	Average
2462.600	102.50			109.92	-7.42	Peak
2483.500	52.70	54.00	-1.30	60.04	-7.34	Average
2483.500	72.17	74.00	-1.83	79.51	-7.34	Peak
4924.000	32.43	54.00	-21.57	31.60	0.83	Average
4924.000	46.41	74.00	-27.59	45.58	0.83	Peak
7386.000	36.25	54.00	-17.75	30.33	5.92	Average
7386.000	49.23	74.00	-24.77	43.31	5.92	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2462.800	90.45			97.87	-7.42	Average
2462.800	101.17			108.59	-7.42	Peak
2483.500	49.63	54.00	-4.37	56.97	-7.34	Average
2483.500	69.58	74.00	-4.42	76.92	-7.34	Peak
4924.000	32.06	54.00	-21.94	31.23	0.83	Average
4924.000	45.16	74.00	-28.84	44.33	0.83	Peak
7386.000	35.19	54.00	-18.81	29.27	5.92	Average
7386.000	48.54	74.00	-25.46	42.62	5.92	Peak

802.11n HT20 mode:

Low CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2389.072	52.09	54.00	-1.91	59.72	-7.63	Average
2389.072	72.13	74.00	-1.87	79.76	-7.63	Peak
2410.128	90.30			97.90	-7.60	Average
2410.128	101.99			109.59	-7.60	Peak
4824.000	31.71	54.00	-22.29	31.07	0.64	Average
4824.000	43.54	74.00	-30.46	42.90	0.64	Peak
7236.000	35.69	54.00	-18.31	30.31	5.38	Average
7236.000	47.91	74.00	-26.09	42.53	5.38	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2388.400	52.55	54.00	-1.45	60.18	-7.63	Average
2388.400	72.55	74.00	-1.45	80.18	-7.63	Peak
2410.016	91.73			99.33	-7.60	Average
2410.016	104.06			111.66	-7.60	Peak
4824.000	31.73	54.00	-22.27	31.09	0.64	Average
4824.000	44.36	74.00	-29.64	43.72	0.64	Peak
7236.000	35.00	54.00	-19.00	29.62	5.38	Average
7236.000	46.99	74.00	-27.01	41.61	5.38	Peak

Middle CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2388.408	43.78	54.00	-10.22	51.41	-7.63	Average
2388.408	60.99	74.00	-13.01	68.62	-7.63	Peak
2439.470	94.05			101.57	-7.52	Average
2439.470	105.00			112.52	-7.52	Peak
2487.386	47.50	54.00	-6.50	54.84	-7.34	Average
2487.386	63.34	74.00	-10.66	70.68	-7.34	Peak
4874.000	35.22	54.00	-18.78	34.42	0.80	Average
4874.000	51.43	74.00	-22.57	50.63	0.80	Peak
7311.000	39.08	54.00	-14.92	33.44	5.64	Average
7311.000	53.05	74.00	-20.95	47.41	5.64	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2389.618	44.20	54.00	-9.80	51.83	-7.63	Average
2389.618	61.00	74.00	-13.00	68.63	-7.63	Peak
2436.808	94.12			101.66	-7.54	Average
2436.808	104.99			112.53	-7.54	Peak
2484.966	44.76	54.00	-9.24	52.10	-7.34	Average
2484.966	60.99	74.00	-13.01	68.33	-7.34	Peak
4874.000	35.55	54.00	-18.45	34.75	0.80	Average
4874.000	48.86	74.00	-25.14	48.06	0.80	Peak
7311.000	35.45	54.00	-18.55	29.81	5.64	Average
7311.000	48.02	74.00	-25.98	42.38	5.64	Peak

High CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2464.100	90.32			97.73	-7.41	Average
2464.100	101.95			109.36	-7.41	Peak
2483.500	46.19	54.00	-7.81	53.53	-7.34	Average
2483.500	72.16	74.00	-1.84	79.50	-7.34	Peak
4924.000	31.85	54.00	-22.15	31.02	0.83	Average
4924.000	46.63	74.00	-27.37	45.80	0.83	Peak
7386.000	35.73	54.00	-18.27	29.81	5.92	Average
7386.000	49.86	74.00	-24.14	43.94	5.92	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2459.700	88.96			96.39	-7.43	Average
2459.700	99.94			107.37	-7.43	Peak
2483.600	44.48	54.00	-9.52	51.82	-7.34	Average
2483.600	69.05	74.00	-4.95	76.39	-7.34	Peak
4924.000	31.84	54.00	-22.16	31.01	0.83	Average
4924.000	46.35	74.00	-27.65	45.52	0.83	Peak
7386.000	35.58	54.00	-18.42	29.66	5.92	Average
7386.000	48.62	74.00	-25.38	42.70	5.92	Peak

802.11n HT40 mode:

Low CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2389.992	52.28	54.00	-1.72	59.91	-7.63	Average
2389.992	72.24	74.00	-1.76	79.87	-7.63	Peak
2423.388	85.25			92.82	-7.57	Average
2423.388	97.91			105.48	-7.57	Peak
4844.000	31.58	54.00	-22.42	30.90	0.68	Average
4844.000	43.92	74.00	-30.08	43.24	0.68	Peak
7266.000	34.70	54.00	-19.30	29.27	5.43	Average
7266.000	46.06	74.00	-27.94	40.63	5.43	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2389.992	52.95	54.00	-1.05	60.58	-7.63	Average
2389.992	72.46	74.00	-1.54	80.09	-7.63	Peak
2423.388	85.28			92.85	-7.57	Average
2423.388	97.77			105.34	-7.57	Peak
4844.000	31.54	54.00	-22.46	30.86	0.68	Average
4844.000	44.17	74.00	-29.83	43.49	0.68	Peak
7266.000	34.61	54.00	-19.39	29.18	5.43	Average
7266.000	46.56	74.00	-27.44	41.13	5.43	Peak

Middle CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2389.860	50.54	54.00	-3.46	58.17	-7.63	Average
2389.860	66.64	74.00	-7.36	74.27	-7.63	Peak
2438.744	88.09			95.61	-7.52	Average
2438.744	100.07			107.59	-7.52	Peak
2483.756	50.52	54.00	-3.48	57.86	-7.34	Average
2483.756	69.67	74.00	-4.33	77.01	-7.34	Peak
4874.000	32.03	54.00	-21.97	31.23	0.80	Average
4876.000	44.78	74.00	-29.22	43.98	0.80	Peak
7311.000	35.60	54.00	-18.40	29.96	5.64	Average
7311.000	48.54	74.00	-25.46	42.90	5.64	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2388.892	52.27	54.00	-1.73	59.90	-7.63	Average
2388.892	70.80	74.00	-3.20	78.43	-7.63	Peak
2439.228	88.28			95.80	-7.52	Average
2439.228	100.23			107.75	-7.52	Peak
2484.240	50.16	54.00	-3.84	57.50	-7.34	Average
2484.240	70.72	74.00	-3.28	78.06	-7.34	Peak
4874.000	31.63	54.00	-22.37	30.83	0.80	Average
4874.000	44.42	74.00	-29.58	43.62	0.80	Peak
7311.000	35.10	54.00	-18.90	29.46	5.64	Average
7311.000	47.70	74.00	-26.30	42.06	5.64	Peak

High CH

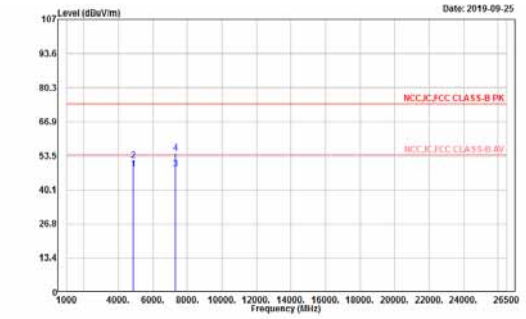
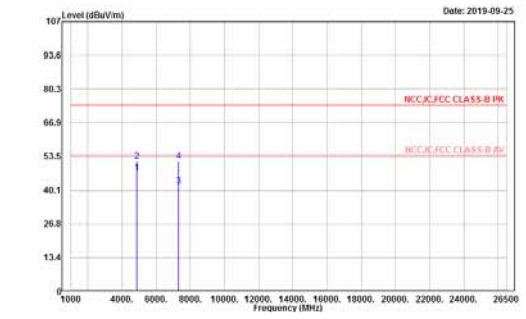
Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2448.800	85.04			92.52	-7.48	Average
2448.800	97.65			105.13	-7.48	Peak
2483.360	51.59	54.00	-2.41	58.93	-7.34	Average
2483.360	73.32	74.00	-0.68	80.66	-7.34	Peak
4904.000	31.64	54.00	-22.36	30.80	0.84	Average
4904.000	44.22	74.00	-29.78	43.38	0.84	Peak
7356.000	35.00	54.00	-19.00	29.18	5.82	Average
7356.000	46.96	74.00	-27.04	41.14	5.82	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2456.960	84.87			92.32	-7.45	Average
2456.960	97.66			105.11	-7.45	Peak
2486.600	49.17	54.00	-4.83	56.51	-7.34	Average
2486.600	68.73	74.00	-5.27	76.07	-7.34	Peak
4904.000	31.89	54.00	-22.11	31.05	0.84	Average
4904.000	44.89	74.00	-29.11	44.05	0.84	Peak
7356.000	34.94	54.00	-19.06	29.12	5.82	Average
7356.000	47.24	74.00	-26.76	41.42	5.82	Peak

Above 1G (1 GHz-26.5 GHz): The worst mode:

Horizontal	Vertical
	

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 !	4874.000	48.46	54.00	-5.54	47.66	0.80	Average	horizontal
2	4874.000	51.70	74.00	-22.30	50.90	0.80	Peak	horizontal
3 !	7311.000	48.52	54.00	-5.48	42.90	5.62	Average	horizontal
4 !	7311.000	54.62	74.00	-19.38	49.00	5.62	Peak	horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 !	4874.000	47.00	54.00	-7.00	46.20	0.80	Average	vertical
2	4874.000	51.60	74.00	-22.40	50.80	0.80	Peak	vertical
3 !	7311.000	41.80	54.00	-12.20	36.18	5.62	Average	vertical
4	7311.000	51.63	74.00	-22.37	46.01	5.62	Peak	vertical

Level = Read Level + Factor

Over Limit = Level – Limit

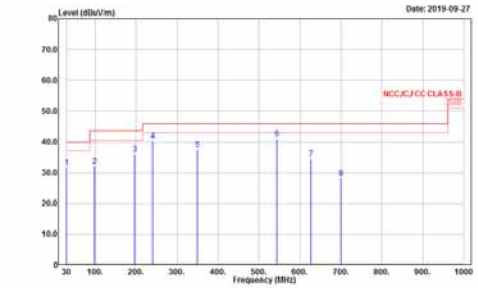
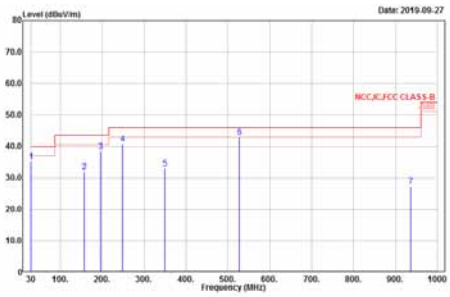
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

BLE Mode:

Transmitting mode (Pre-scan with three orthogonal axis, and worse case as Y axis)

Below 1G (30 MHz-1 GHz) test the output power worst mode

Horizontal	Vertical
	

	Freq	Level	Line	Limit	Level	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1	30.000	31.55	40.00	-8.45	37.38	-5.83	Peak	horizontal
2	98.870	32.10	43.50	-11.40	52.88	-20.78	Peak	horizontal
3	195.870	36.09	43.50	-7.41	55.11	-19.02	Peak	horizontal
4	240.490	40.32	46.00	-5.68	59.70	-19.38	QP	horizontal
5	349.130	37.51	46.00	-8.49	54.22	-16.71	Peak	horizontal
6	543.130	40.95	46.00	-5.05	53.86	-12.91	QP	horizontal
7	626.550	34.55	46.00	-11.45	46.02	-11.47	Peak	horizontal
8	700.270	28.26	46.00	-17.74	38.76	-10.50	Peak	horizontal

	Freq	Level	Line	Limit	Level	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1	30.000	35.06	40.00	-4.94	40.89	-5.83	Peak	vertical
2	157.070	31.87	43.50	-11.63	50.23	-18.36	Peak	vertical
3	195.870	38.41	43.50	-5.09	57.43	-19.02	Peak	vertical
4	249.220	40.69	46.00	-5.31	60.11	-19.42	QP	vertical
5	349.130	32.97	46.00	-13.03	49.68	-16.71	Peak	vertical
6	527.610	42.94	46.00	-3.06	56.11	-13.17	Peak	vertical
7	936.950	27.28	46.00	-18.72	34.96	-7.68	Peak	vertical

Result = Reading + Correct Factor

Margin = Result – Limit

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

Above 1G (1 GHz-26.5 GHz)

BLE mode:

Low CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2386.800	32.51	54.00	-21.49	40.15	-7.64	Average
2386.800	45.58	74.00	-28.42	53.22	-7.64	Peak
2401.900	91.34			98.96	-7.62	Average
2401.900	92.11			99.73	-7.62	Peak
4804.000	34.32	54.00	-19.68	33.70	0.62	Average
4804.000	45.43	74.00	-28.57	44.81	0.62	Peak
7206.000	34.61	54.00	-19.39	29.36	5.25	Average
7206.000	47.42	74.00	-26.58	42.17	5.25	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2368.600	32.82	54.00	-21.18	40.50	-7.68	Average
2368.600	45.28	74.00	-28.72	52.96	-7.68	Peak
2401.900	92.48			100.10	-7.62	Average
2401.900	93.45			101.07	-7.62	Peak
4804.000	33.72	54.00	-20.28	33.10	0.62	Average
4804.000	45.48	74.00	-28.52	44.86	0.62	Peak
7206.000	35.15	54.00	-18.85	29.90	5.25	Average
7206.000	47.58	74.00	-26.42	42.33	5.25	Peak

Middle CH

Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2352.592	33.08	54.00	-20.92	40.81	-7.73	Average
2352.592	44.64	74.00	-29.36	52.37	-7.73	Peak
2439.954	93.31			100.83	-7.52	Average
2439.954	94.35			101.87	-7.52	Peak
2526.106	34.46	54.00	-19.54	41.71	-7.25	Average
2526.106	45.22	74.00	-28.78	52.47	-7.25	Peak
4880.000	36.55	54.00	-17.45	35.75	0.80	Average
4880.000	46.41	74.00	-27.59	45.61	0.80	Peak
7320.000	35.28	54.00	-18.72	29.58	5.70	Average
7320.000	47.69	74.00	-26.31	41.99	5.70	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2346.058	32.22	54.00	-21.78	39.97	-7.75	Average
2346.058	45.01	74.00	-28.99	52.76	-7.75	Peak
2440.438	92.54			100.06	-7.52	Average
2440.438	93.71			101.23	-7.52	Peak
2499.728	33.40	54.00	-20.60	40.72	-7.32	Average
2499.728	45.54	74.00	-28.46	52.86	-7.32	Peak
4880.000	35.79	54.00	-18.21	34.99	0.80	Average
4880.000	46.60	74.00	-27.40	45.80	0.80	Peak
7320.000	35.28	54.00	-18.72	29.58	5.70	Average
7320.000	46.60	74.00	-27.40	40.90	5.70	Peak

High CH

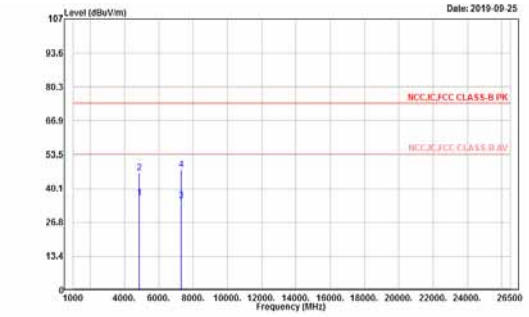
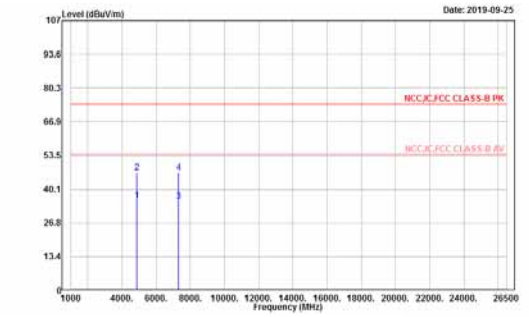
Horizontal

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2480.250	97.57			104.92	-7.35	Average
2480.250	98.64			105.99	-7.35	Peak
2483.500	34.77	54.00	-19.23	42.11	-7.34	Average
2483.500	46.16	74.00	-27.84	53.50	-7.34	Peak
4960.000	35.48	54.00	-18.52	34.66	0.82	Average
4960.000	46.92	74.00	-27.08	46.10	0.82	Peak
7440.000	35.93	54.00	-18.07	29.87	6.06	Average
7440.000	47.29	74.00	-26.71	41.23	6.06	Peak

Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
2480.250	95.50			102.85	-7.35	Average
2480.250	96.61			103.96	-7.35	Peak
2485.170	34.30	54.00	-19.70	41.64	-7.34	Average
2485.170	45.88	74.00	-28.12	53.22	-7.34	Peak
4960.000	35.33	54.00	-18.67	34.51	0.82	Average
4960.000	46.46	74.00	-27.54	45.64	0.82	Peak
7440.000	35.35	54.00	-18.65	29.29	6.06	Average
7440.000	47.34	74.00	-26.66	41.28	6.06	Peak

Above 1G (1 GHz-26.5 GHz): The worst mode

Horizontal	Vertical
	

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 !	4880.000	36.55	54.00	-17.45	35.75	0.80	Average	horizontal
2	4880.000	46.41	74.00	-27.59	45.61	0.80	Peak	horizontal
3 !	7320.000	35.28	54.00	-18.72	29.58	5.70	Average	horizontal
4	7320.000	47.69	74.00	-26.31	41.99	5.70	Peak	horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		
1 !	4880.000	35.79	54.00	-18.21	34.99	0.80	Average	vertical
2	4880.000	46.60	74.00	-27.40	45.80	0.80	Peak	vertical
3 !	7320.000	35.28	54.00	-18.72	29.58	5.70	Average	vertical
4	7320.000	46.60	74.00	-27.40	40.90	5.70	Peak	vertical

Level = Read Level + Factor

Over Limit = Level – Limit

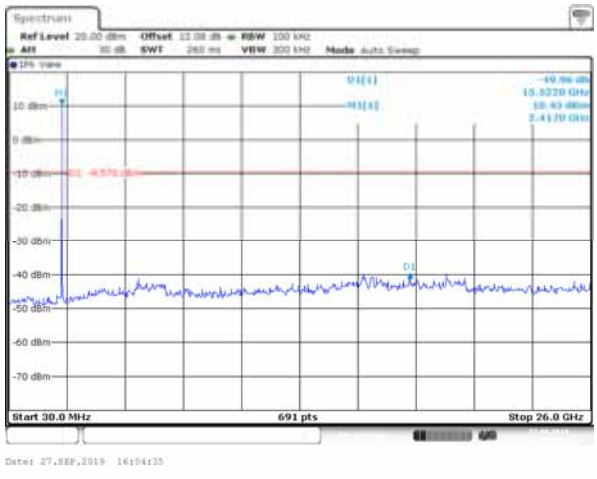
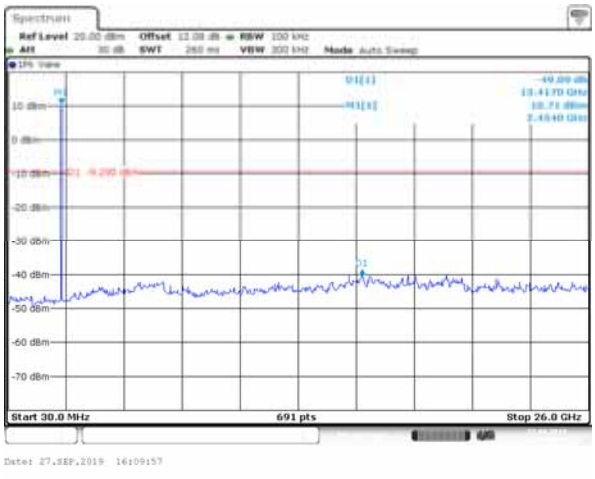
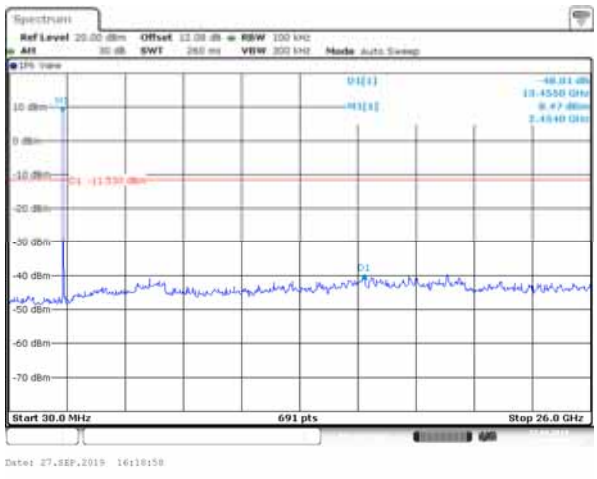
Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain

Spurious emissions more than 20 dB below the limit were not reported

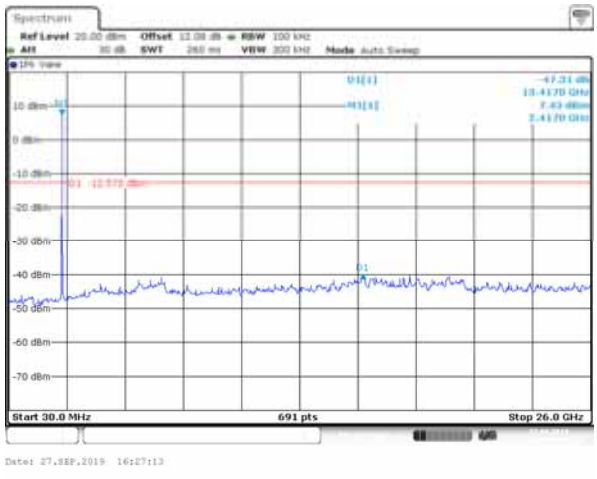
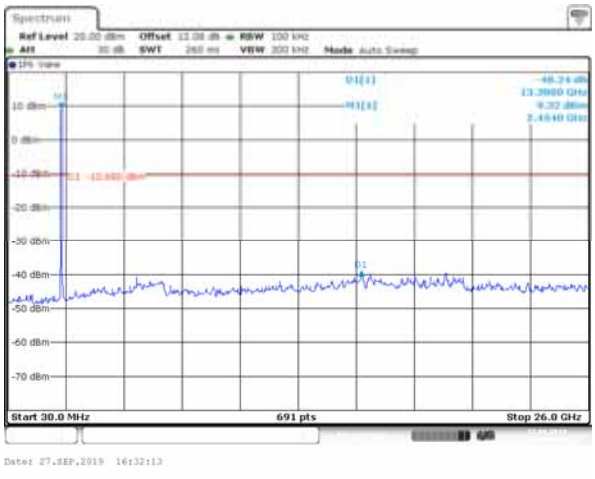
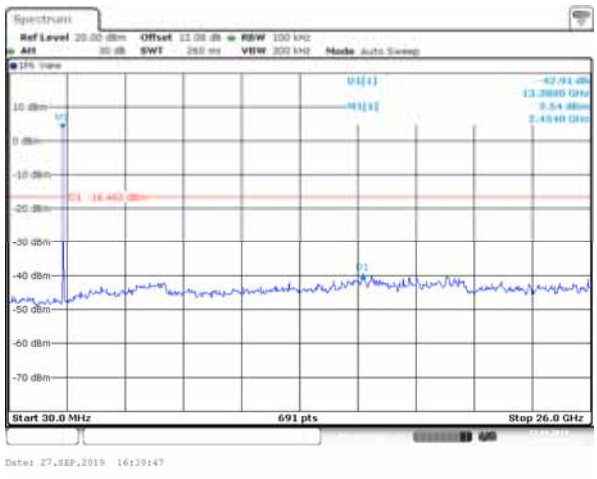
Conducted Spurious Emissions:

Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
802.11b mode				
Low	2412	49.96	≥ 20	Compliance
Mid	2437	49.09	≥ 20	Compliance
High	2462	48.01	≥ 20	Compliance
802.11g mode				
Low	2412	47.31	≥ 20	Compliance
Mid	2437	48.24	≥ 20	Compliance
High	2462	42.91	≥ 20	Compliance
802.11n HT20 mode				
Low	2412	46.79	≥ 20	Compliance
Mid	2437	46.67	≥ 20	Compliance
High	2462	41.90	≥ 20	Compliance
802.11n HT40 mode				
Low	2422	39.79	≥ 20	Compliance
Mid	2437	41.63	≥ 20	Compliance
High	2452	40.17	≥ 20	Compliance
BLE mode				
Low	2402	42.43	≥ 20	Compliance
Mid	2440	42.98	≥ 20	Compliance
High	2480	41.87	≥ 20	Compliance

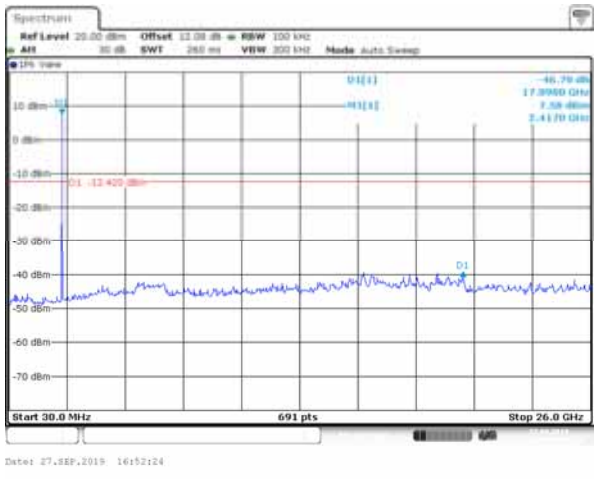
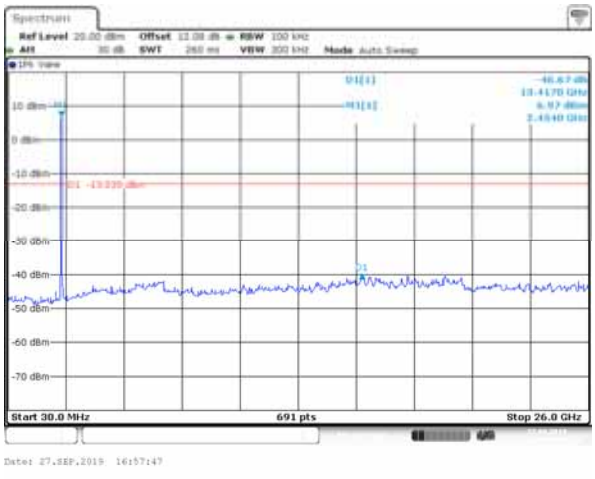
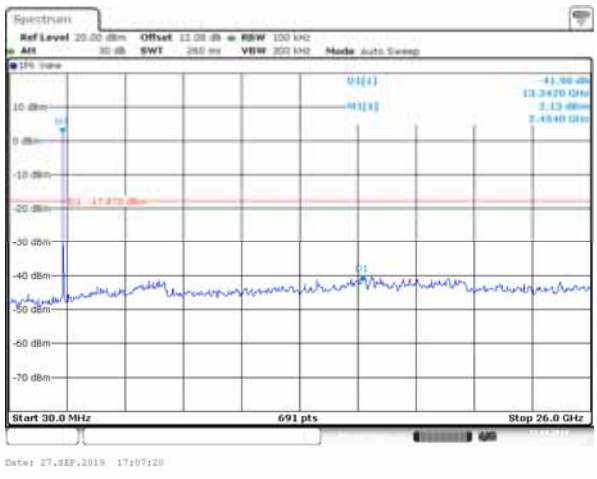
802.11b mode

Low CH	Middle CH
	
High CH	**-**
	-

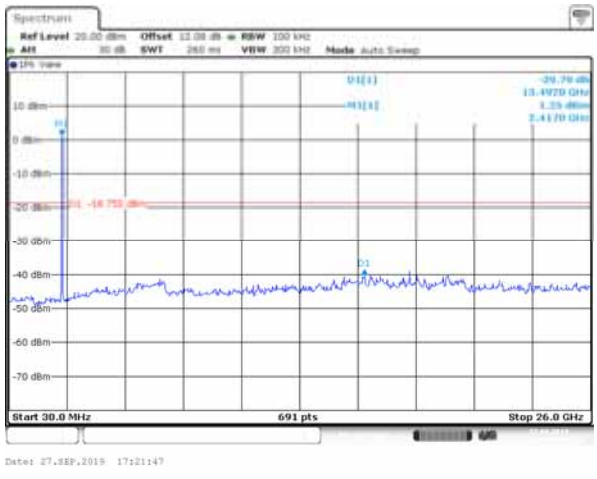
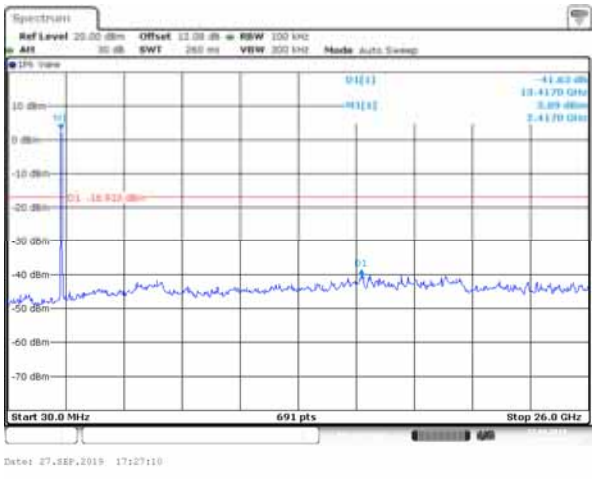
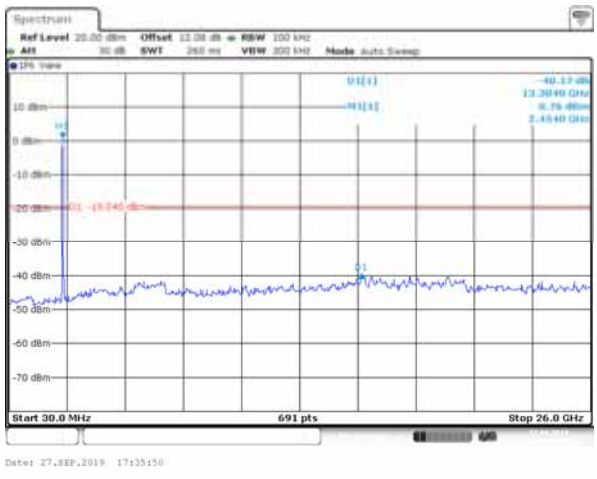
802.11g mode

Low CH	Middle CH
	
High CH	**-**
	-

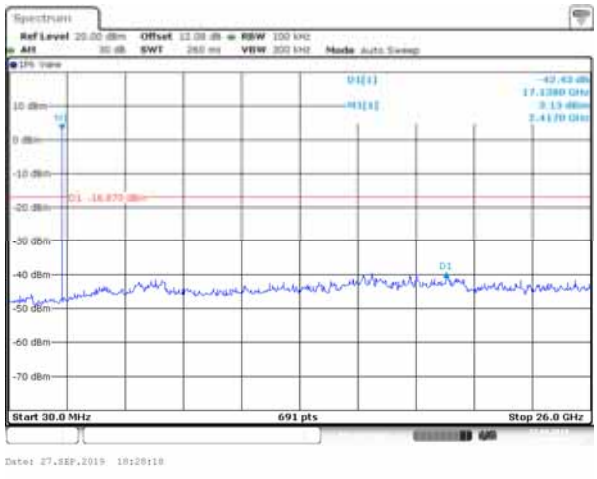
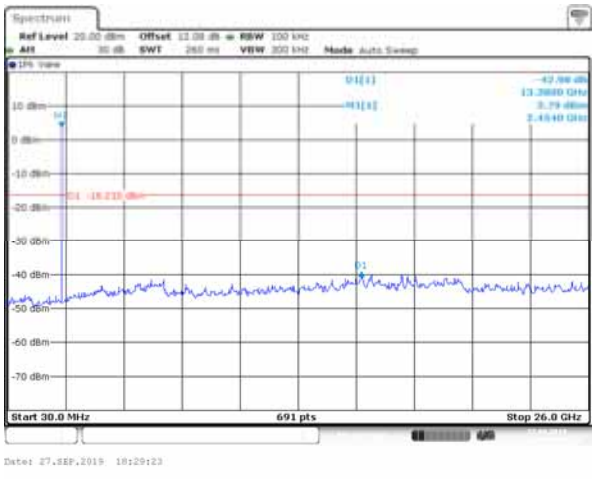
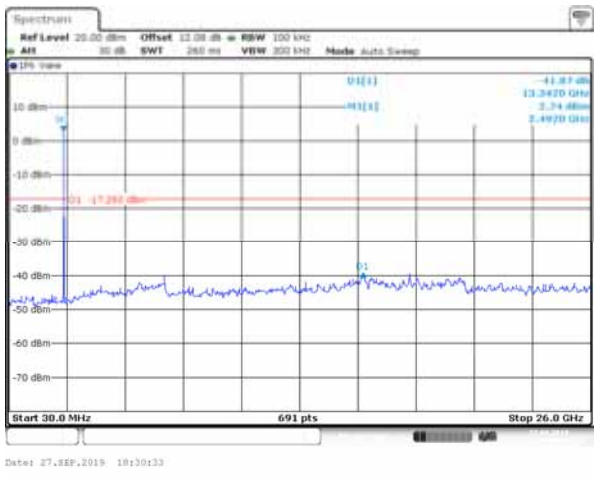
802.11n HT20 mode:

Low CH	Middle CH
	
High CH	**-**
	-

802.11n HT40 mode:

Low CH	Middle CH
	
High CH	**-**
	-

BLE mode:

Low CH	Middle CH
	
High CH	**-**
	-

8 FCC §15.247(a)(2) – 6 dB Emission Bandwidth

8.1 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.

8.2 Test Procedure

According to ANSI C63.10-2013, the steps for the first option are as follows:
(1) Set RBW = 100 kHz. (2) Set the VBW ≥ [3 × RBW]. (3) Detector = peak. (4) Trace mode = max hold.
(5) Sweep = auto couple. (6) Allow the trace to stabilize. (7) 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.

8.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room					
Signal Analyzer 40GHZ	Rohde & Schwarz	FSV40-N	102248	2019/09/11	2020/09/10
Cable	MTJ	MT40S	620620-MT40S-100	2018/12/28	2019/12/27

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

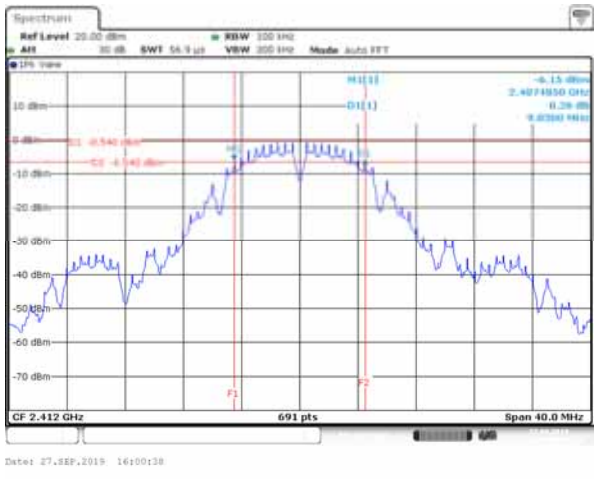
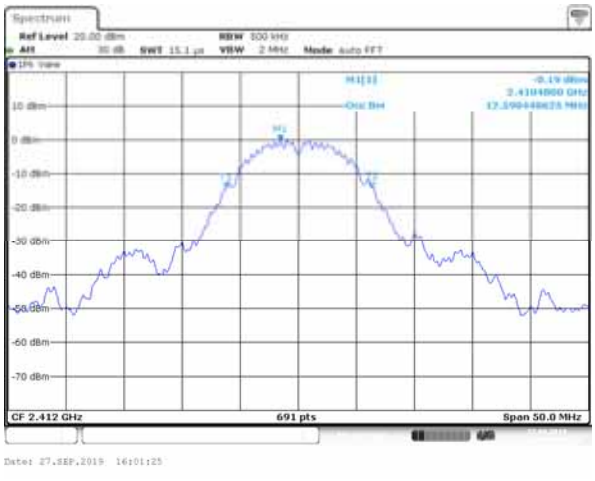
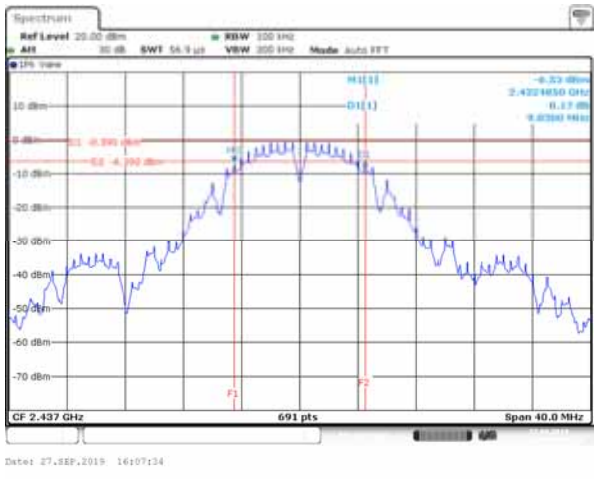
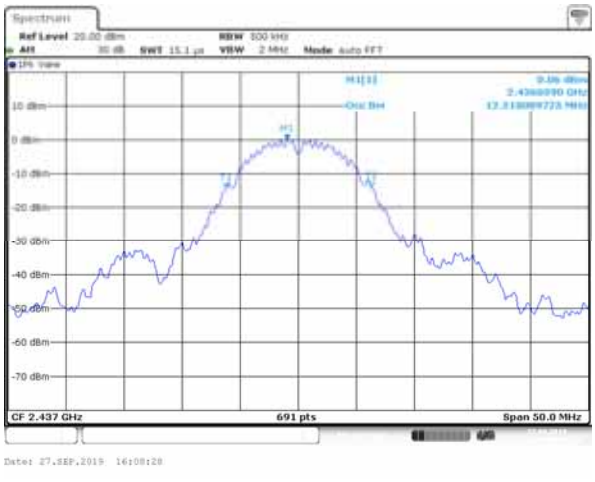
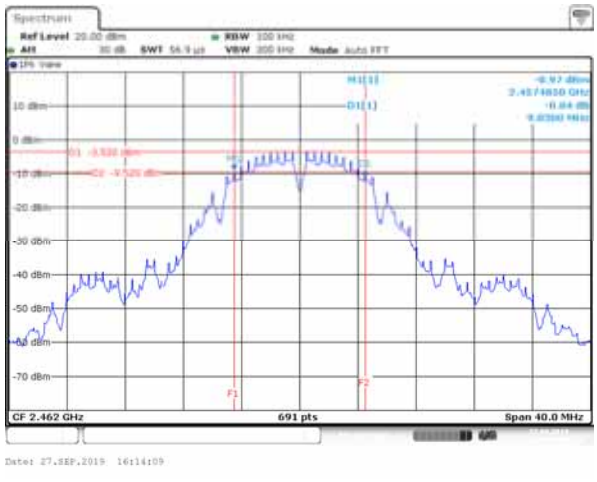
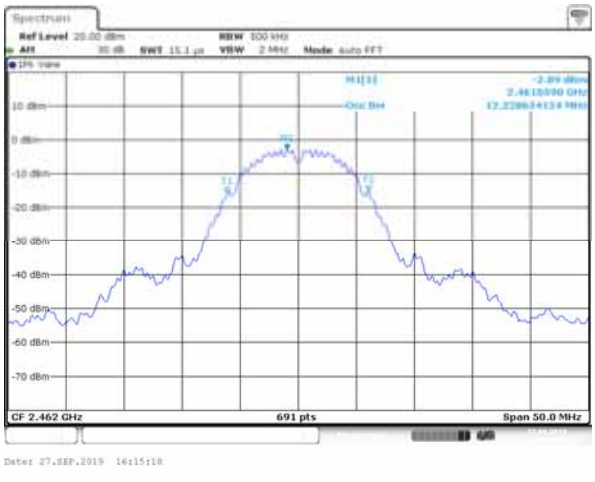
8.4 Test Environmental Conditions

Temperature:	22.9°C	**Relative Humidity:**	57 %
ATM Pressure:	1015hPa	**Test Engineer:**	Ethan Shao
Conducted Test Date:	2019-09-27	-	-

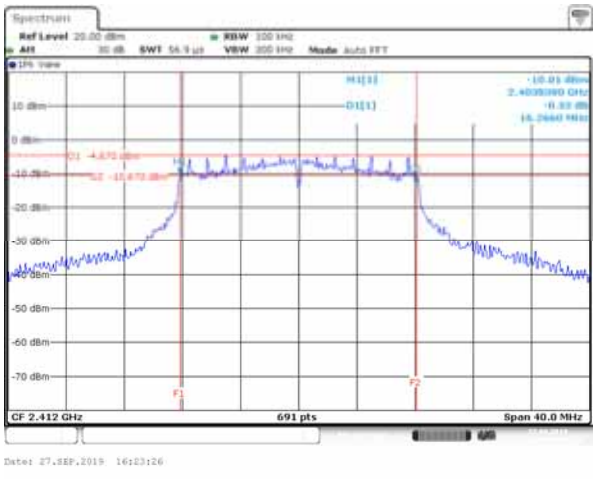
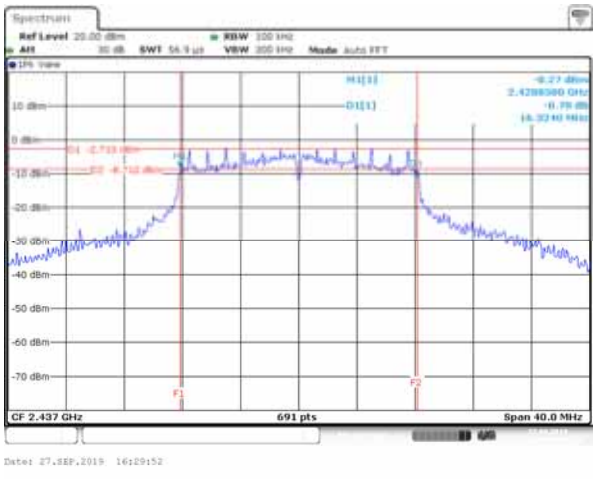
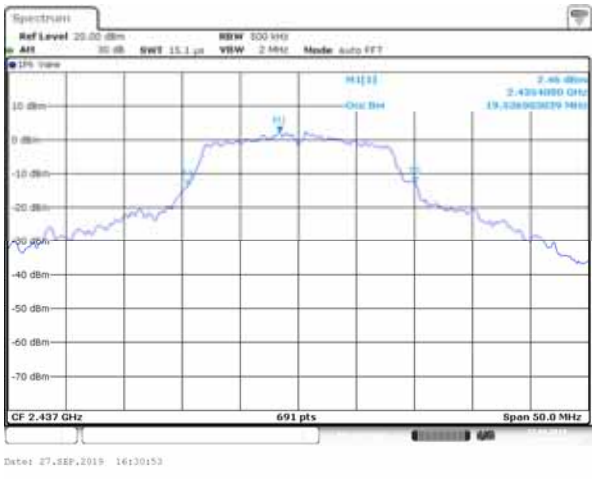
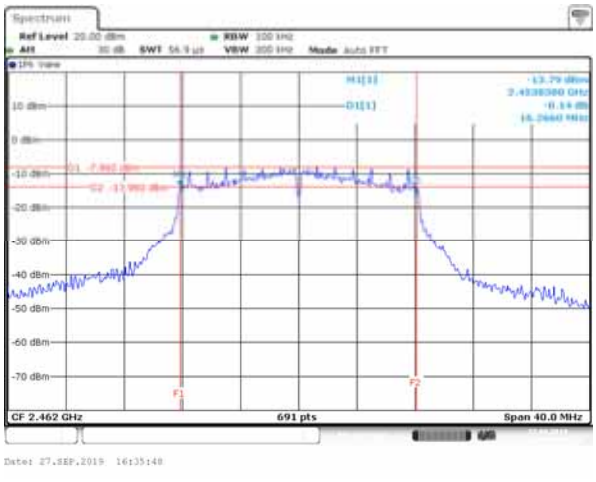
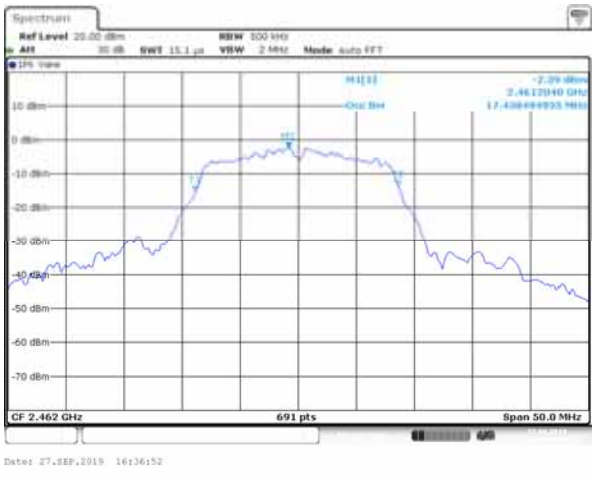
8.5 Test Results

Channel	Frequency (MHz)	6 dB BW (MHz)	99% OBW (MHz)	6dB Limit (MHz)	Result
802.11b mode					
Low	2412	9.0300	12.5904	> 0.5	Compliance
Middle	2437	9.0300	12.5181	> 0.5	Compliance
High	2462	9.0300	12.2287	> 0.5	Compliance
802.11g mode					
Low	2412	16.2660	18.6686	> 0.5	Compliance
Middle	2437	16.3240	19.5369	> 0.5	Compliance
High	2462	16.2660	17.4385	> 0.5	Compliance
802.11 n HT20 mode					
Low	2412	17.4820	18.6686	> 0.5	Compliance
Middle	2437	17.5980	20.3329	> 0.5	Compliance
High	2462	17.0190	18.3792	> 0.5	Compliance
802.11n HT40 mode					
Low	2422	35.6600	37.0478	> 0.5	Compliance
Middle	2437	35.8900	36.6136	> 0.5	Compliance
High	2452	35.5400	36.4689	> 0.5	Compliance
BLE mode					
Low	2402	0.7207	1.0507	> 0.5	Compliance
Middle	2440	0.7207	1.0507	> 0.5	Compliance
High	2480	0.7250	1.0550	> 0.5	Compliance

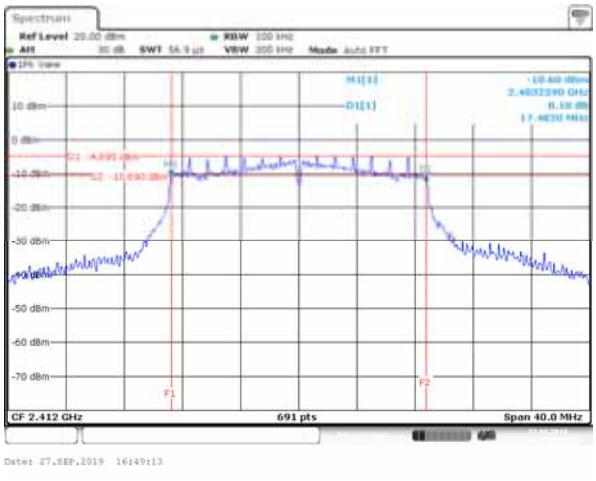
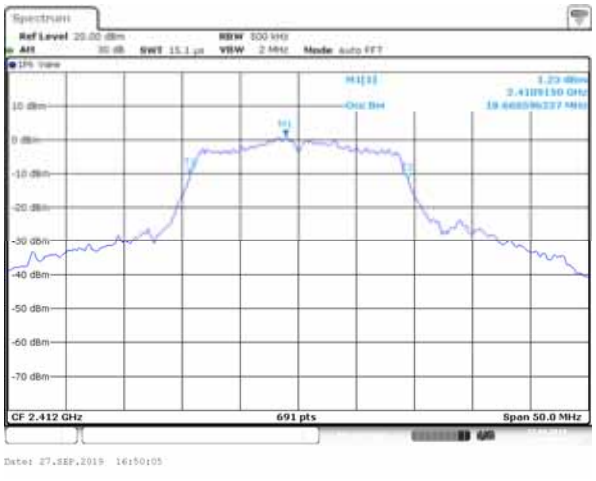
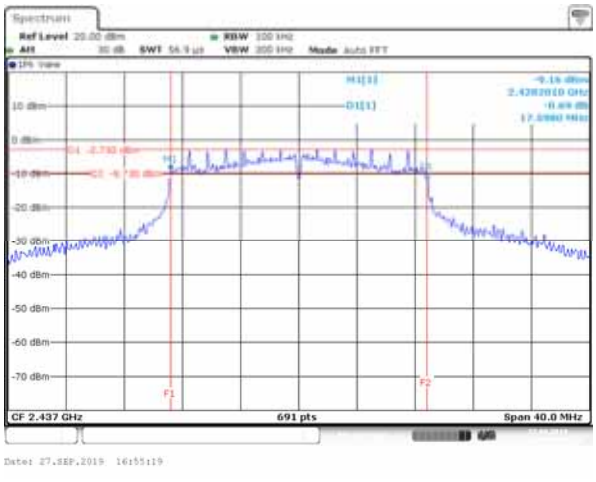
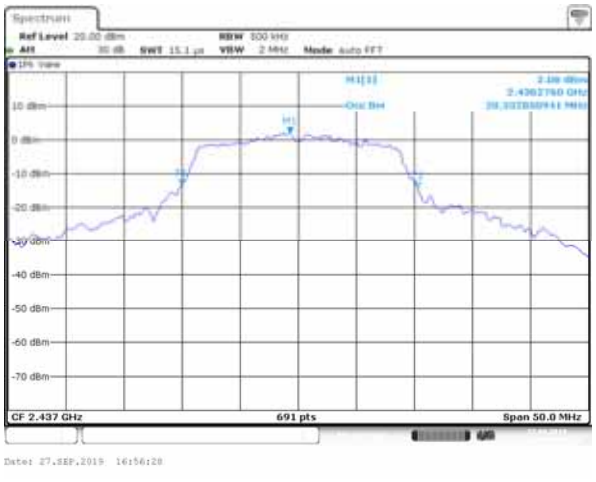
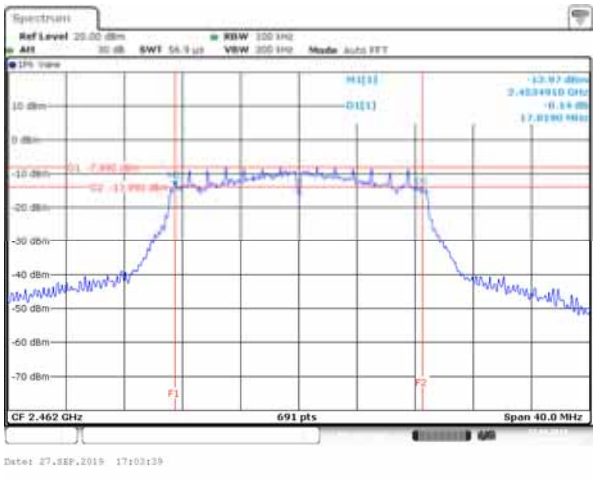
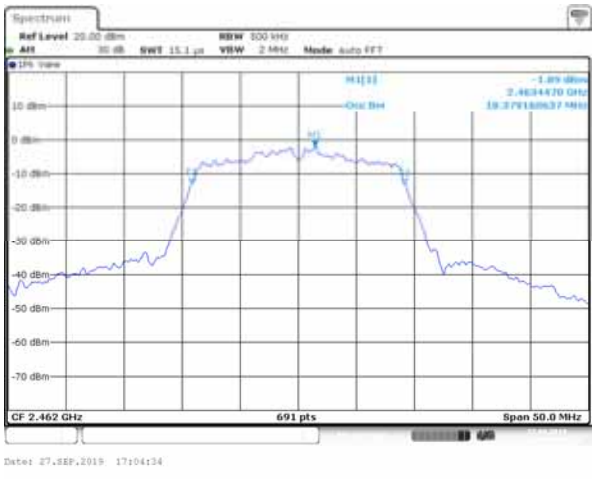
802.11b mode:

6 dB BW Low CH	99% OBW Low CH
	
6 dB BW Middle CH	**99% OBW Middle CH**
	
6 dB BW High CH	**99% OBW High CH**
	

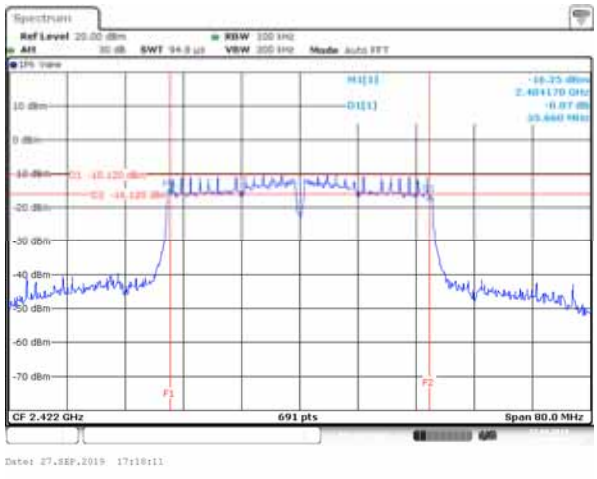
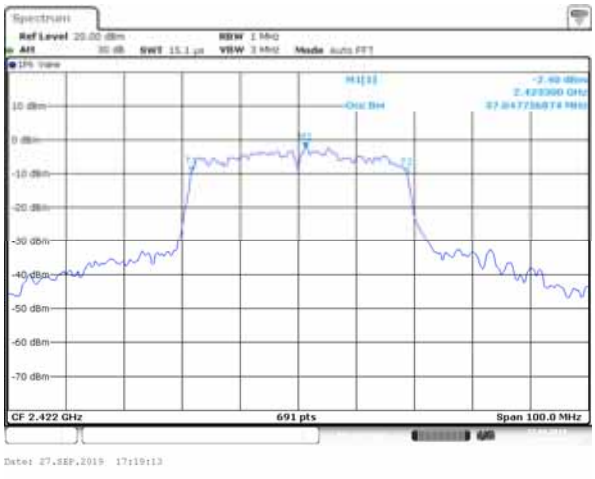
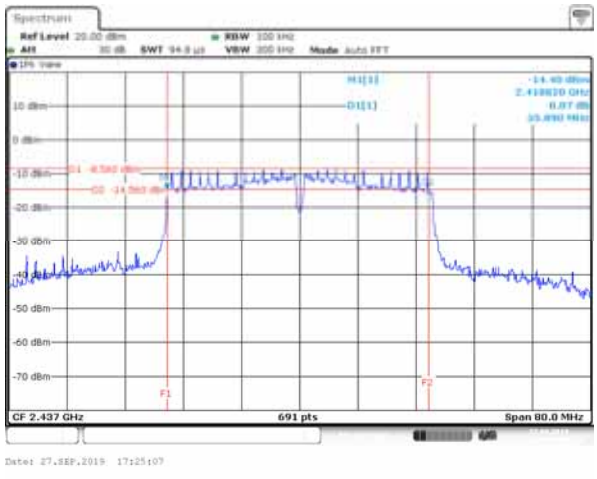
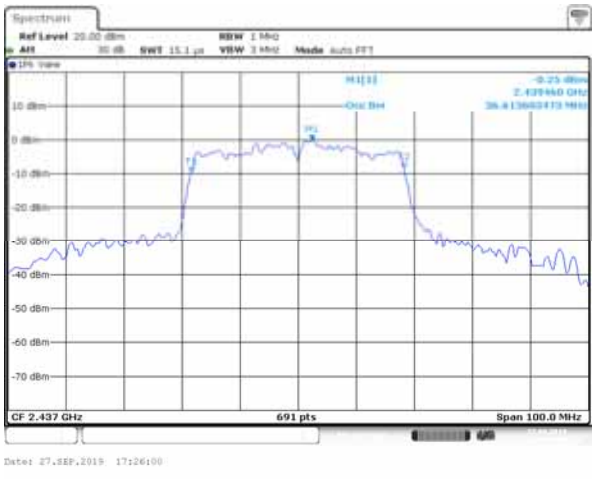
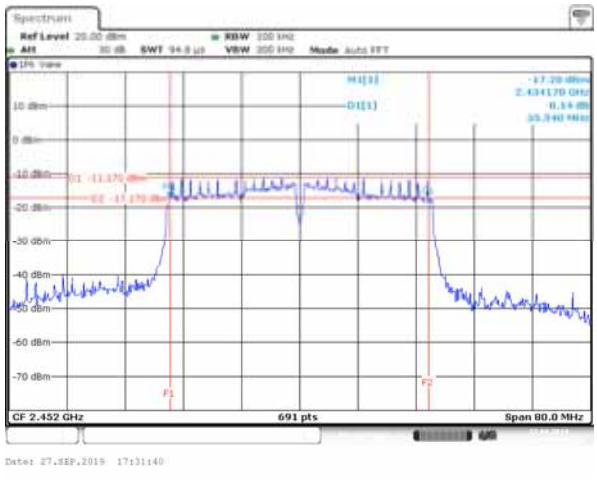
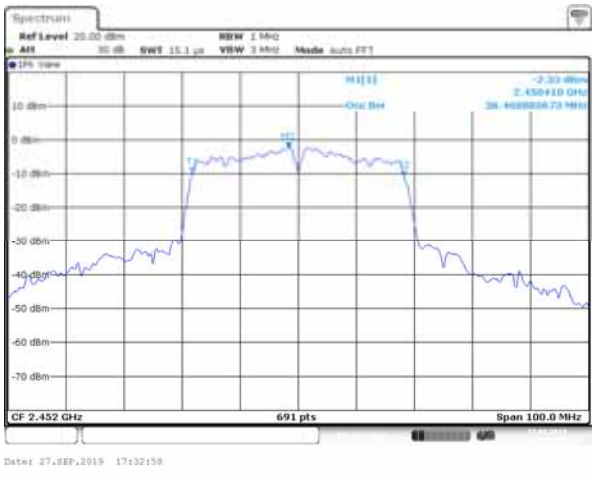
802.11g mode:

6 dB BW Low CH	99% OBW Low CH
	
6 dB BW Middle CH	**99% OBW Middle CH**
	
6 dB BW High CH	**99% OBW High CH**
	

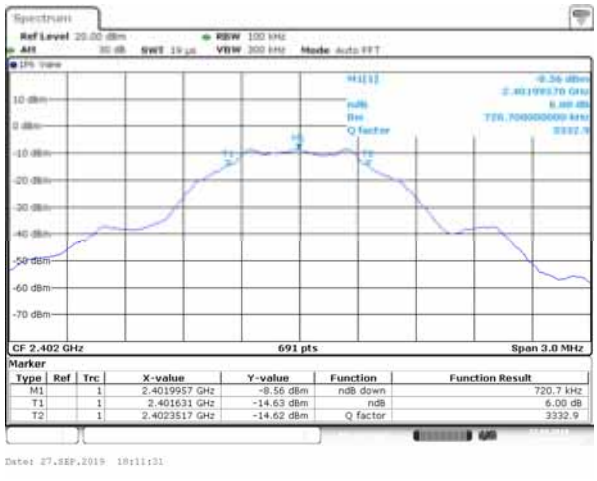
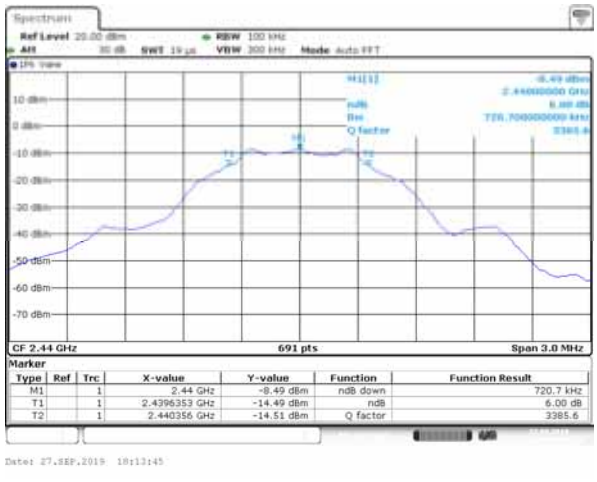
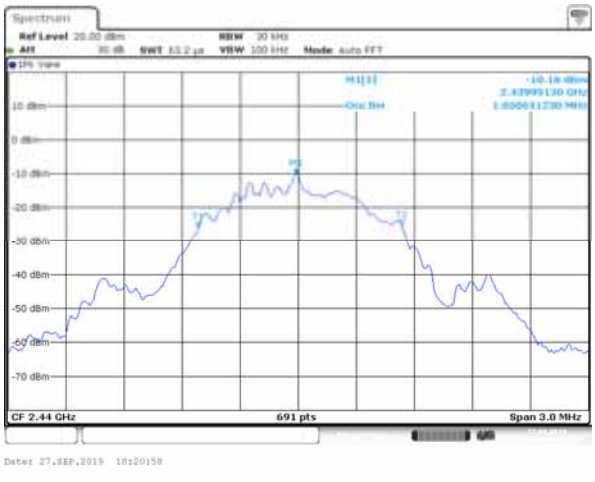
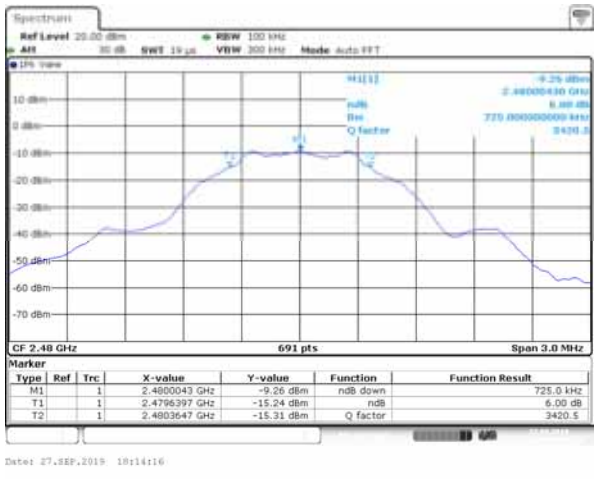
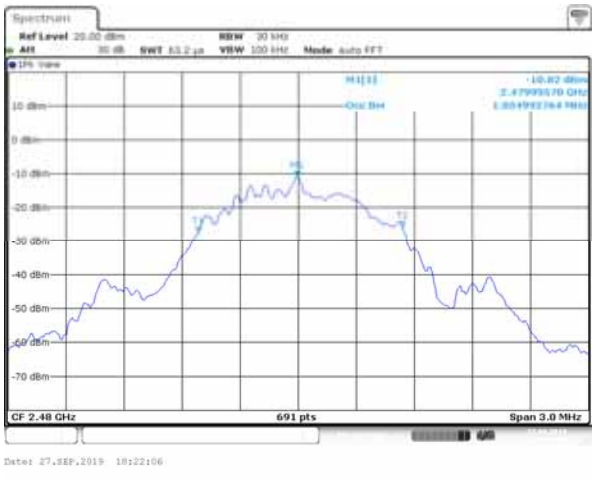
802.11n HT20 mode:

6 dB BW Low CH	99% OBW Low CH
	
6 dB BW Middle CH	**99% OBW Middle CH**
	
6 dB BW High CH	**99% OBW High CH**
	

802.11n HT40 mode:

6 dB BW Low CH	99% OBW Low CH
	
6 dB BW Middle CH	**99% OBW Middle CH**
	
6 dB BW High CH	**99% OBW High CH**
	

BLE mode:

6 dB BW Low CH	99% OBW Low CH
	
6 dB BW Middle CH	**99% OBW Middle CH**
	
6 dB BW High CH	**99% OBW High CH**
	

9 FCC §15.247(b) (3) – Maximum Output Power

9.1 Applicable Standard

According to FCC §15.247(b) (3),

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.

9.2 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 measuring equipment. (3). Add a correction factor to the display.

9.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room					
Power Sensor	Agilent	U2021XA	MY54250014	2018/11/12	2019/11/11
Cable	MTJ	MT40S	620620-MT40S-100	2018/12/28	2019/12/27

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

9.4 Test Environmental Conditions

Temperature:	22.9°C	**Relative Humidity:**	57 %
ATM Pressure:	1015hPa	**Test Engineer:**	Ethan Shao
Conducted Test Date:	2019-09-27	-	-

9.5 Test Results

Channel	Frequency (MHz)	Maximum Peak Output Power (dBm)	Maximum Peak Output Power (W)	Limit (dBm)	Result
802.11b mode:					
Low	2412	22.23	0.1671	30	Compliance
Middle	2437	**22.37**	**0.1726**	30	Compliance
High	2462	19.72	0.0938	30	Compliance
802.11g mode:					
Low	2412	24.20	0.2630	30	Compliance
Middle	2437	**24.35**	**0.2723**	30	Compliance
High	2462	23.16	0.2070	30	Compliance
802.11n HT20 mode:					
Low	2412	24.10	0.2570	30	Compliance
Middle	2437	**24.28**	**0.2679**	30	Compliance
High	2462	22.67	0.1849	30	Compliance
802.11n HT40 mode:					
Low	2422	21.97	0.1574	30	Compliance
Middle	2437	**23.11**	**0.2046**	30	Compliance
High	2452	21.83	0.1524	30	Compliance
BLE mode:					
Low	2402	3.62	0.0023	30	Compliance
Middle	2440	**3.67**	**0.0023**	30	Compliance
High	2480	3.11	0.0020	30	Compliance

10 FCC §15.247(d) – 100 kHz Bandwidth of Frequency Band Edge

10.1 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)).

10.2 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.

10.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room					
Signal Analyzer 40GHZ	Rohde & Schwarz	FSV40-N	102248	2019/09/11	2020/09/10
Cable	MTJ	MT40S	620620-MT40S-100	2018/12/28	2019/12/27

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

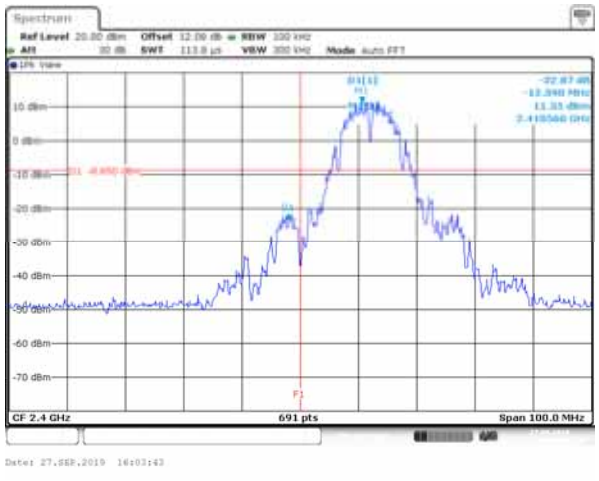
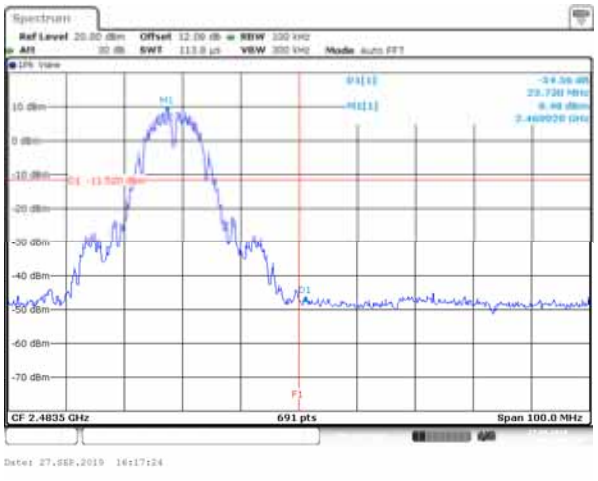
10.4 Test Environmental Conditions

Temperature:	22.9°C	**Relative Humidity:**	57 %
ATM Pressure:	1015hPa	**Test Engineer:**	Ethan Shao
Conducted Test Date:	2019-09-27	-	-

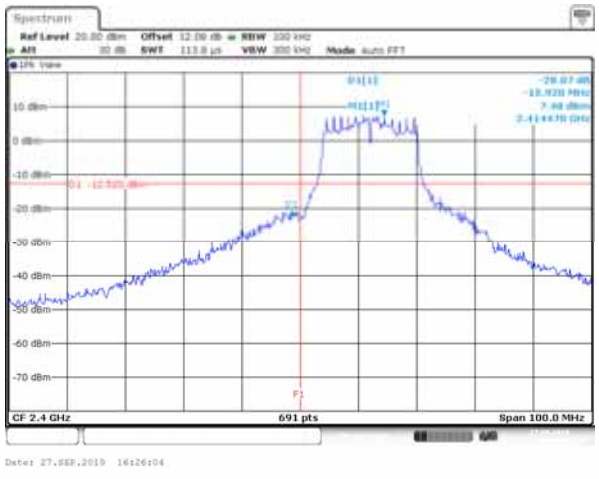
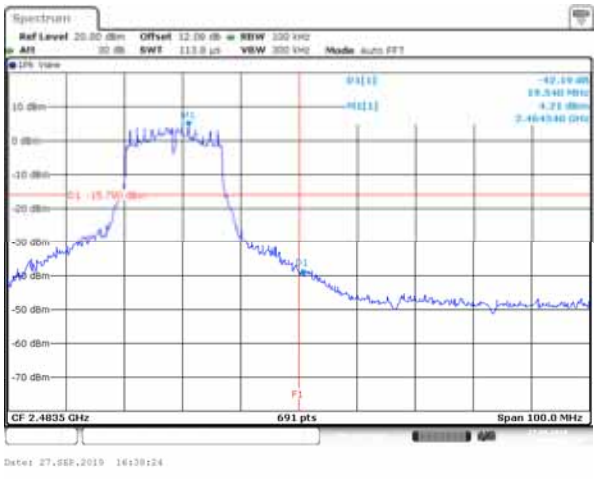
10.5 Test Results

Channel	Frequency (MHz)	Delta Peak to Band Emission (dBc)	Limit (dBc)	Result
802.11b mode				
Low	2412	32.87	≥ 20	Compliance
High	2462	54.56	≥ 20	Compliance
802.11g mode				
Low	2412	28.07	≥ 20	Compliance
High	2462	42.19	≥ 20	Compliance
802.11n HT20 mode				
Low	2412	27.45	≥ 20	Compliance
High	2462	43.37	≥ 20	Compliance
802.11n HT40 mode				
Low	2422	30.08	≥ 20	Compliance
High	2452	34.84	≥ 20	Compliance
BLE mode				
Low	2402	50.27	≥ 20	Compliance
High	2480	50.85	≥ 20	Compliance

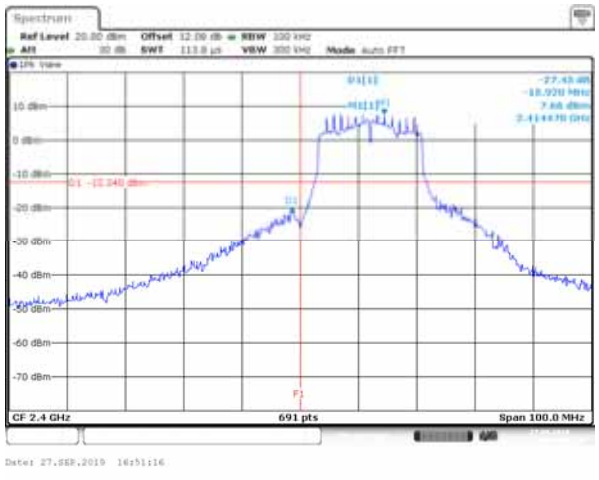
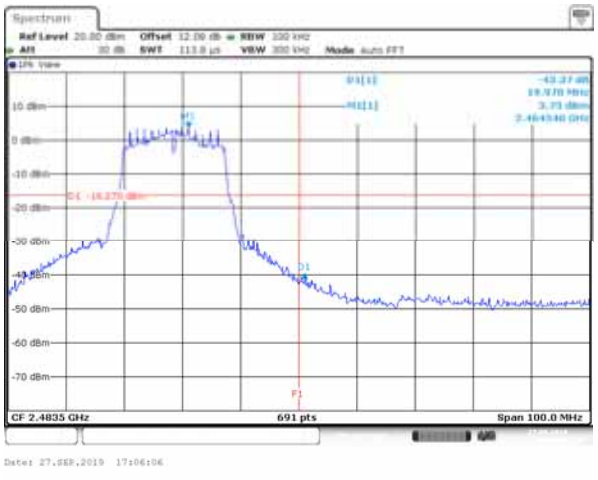
802.11b mode:

Left Side	Right Side
	

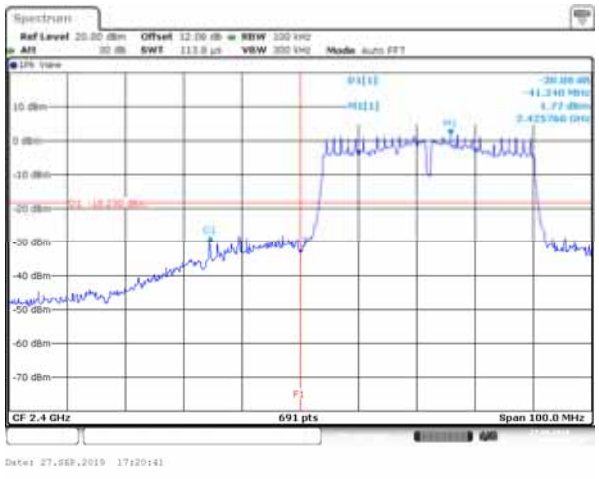
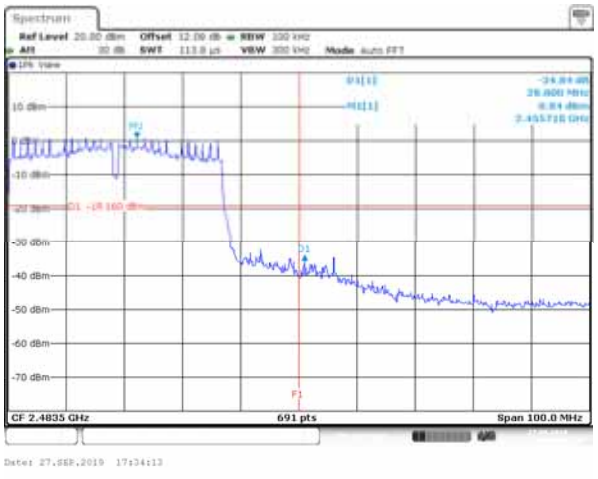
802.11g mode:

Left Side	Right Side
	

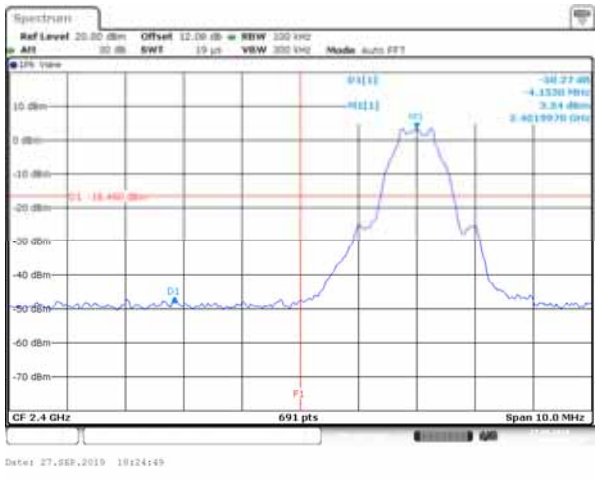
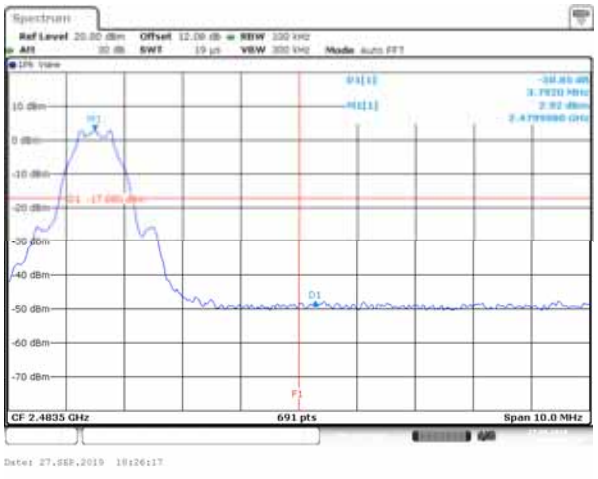
802.11n HT20 mode:

Left Side	Right Side
	

802.11n HT40 mode:

Left Side	Right Side
	

BLE mode:

Left Side	Right Side
	

11 FCC §15.247(e) – Power Spectral Density

11.1 Applicable Standard

According to FCC §15.247(e),

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.

11.2 Test Procedure

According to ANSI C63.10-2013,

(1) Set analyzer center frequency to DTS channel center frequency.

(2) Set the span to 1.5 times the DTS bandwidth. (3) Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz.

(4) Set the VBW ≥ [3 × RBW]. (5) Detector = peak. (6) Sweep time = auto couple.

(7) Trace mode = max hold. (8) Allow trace to fully stabilize.

(9) Use the peak marker function to determine the maximum amplitude level within the RBW.

(10) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

11.3 Test Equipment List and Details

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
Conducted Room					
Signal Analyzer 40GHZ	Rohde & Schwarz	FSV40-N	102248	2019/09/11	2020/09/10
Cable	MTJ	MT40S	620620-MT40S-100	2018/12/28	2019/12/27

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).*

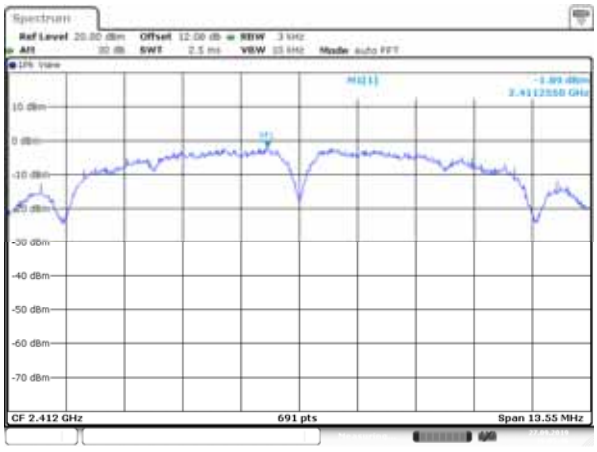
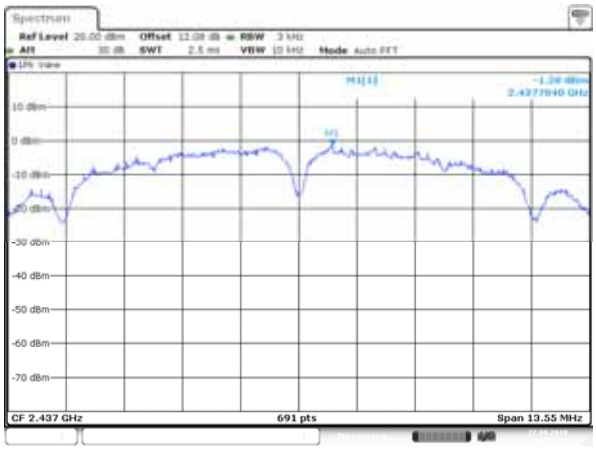
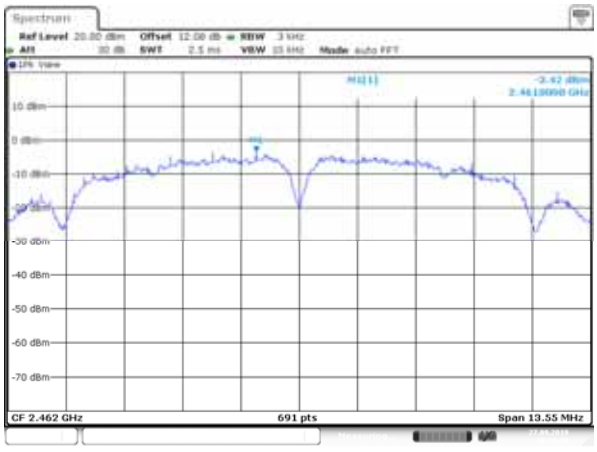
11.4 Test Environmental Conditions

Temperature:	22.9°C	**Relative Humidity:**	57 %
ATM Pressure:	1015hPa	**Test Engineer:**	Ethan Shao
Conducted Test Date:	2019-09-27	-	-

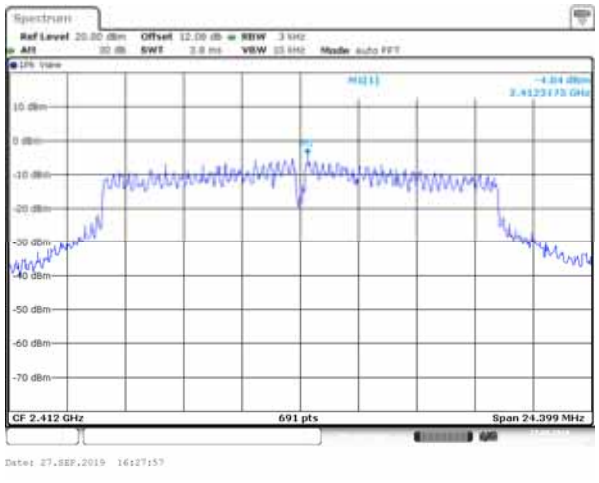
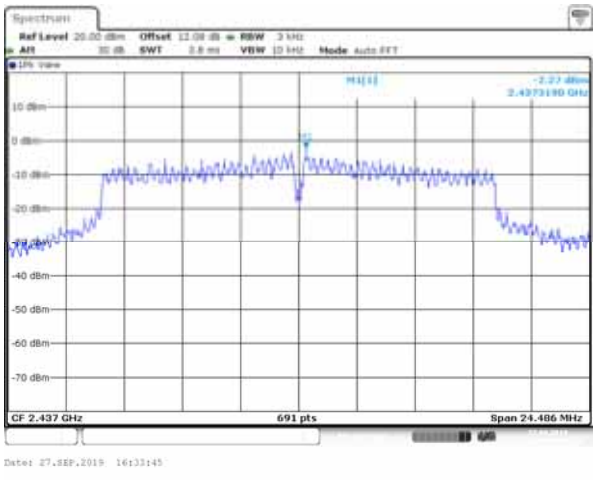
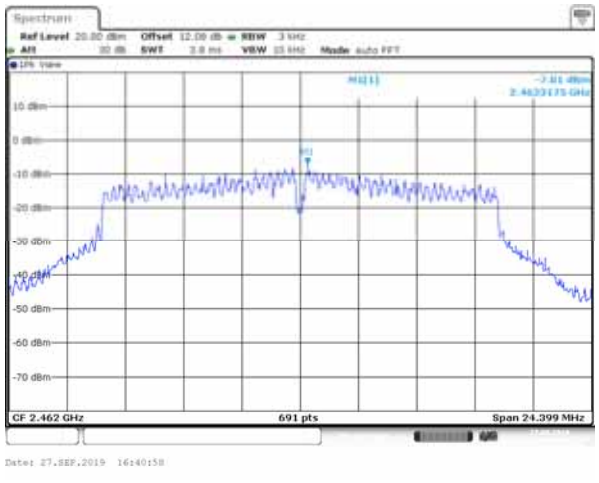
11.5 Test Results

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Result
802.11b mode				
Low	2412	-1.89	8	Compliance
Middle	2437	-1.28	8	Compliance
High	2462	-3.42	8	Compliance
802.11g mode				
Low	2412	-4.04	8	Compliance
Middle	2437	-2.27	8	Compliance
High	2462	-7.01	8	Compliance
802.11n HT20 mode				
Low	2412	-4.56	8	Compliance
Middle	2437	-2.42	8	Compliance
High	2462	-7.44	8	Compliance
802.11n HT40 mode				
Low	2422	-9.02	8	Compliance
Middle	2437	-8.17	8	Compliance
High	2452	-11.04	8	Compliance
BLE mode				
Low	2402	-9.91	8	Compliance
Middle	2440	-9.85	8	Compliance
High	2480	-10.57	8	Compliance

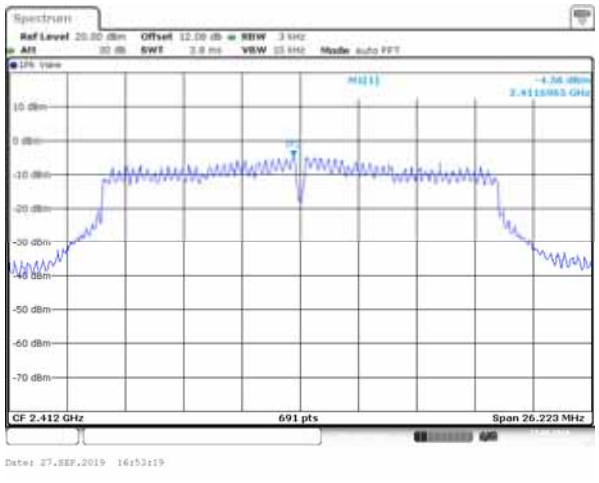
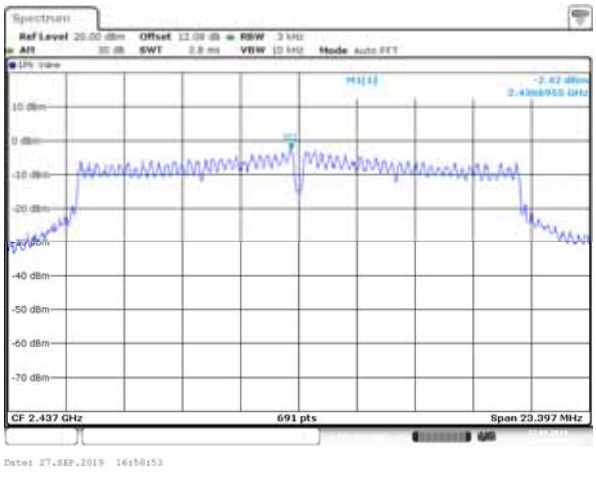
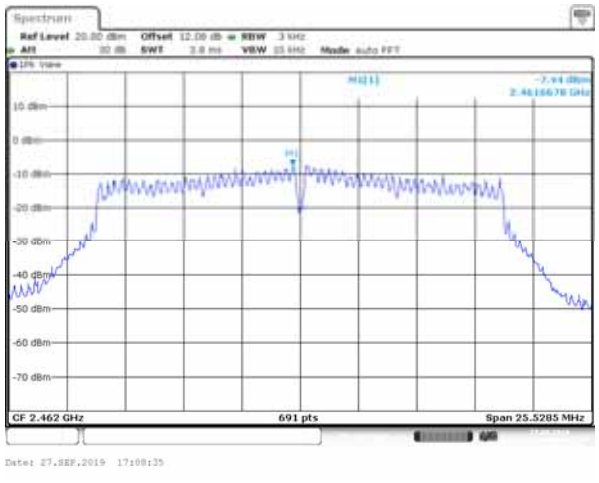
802.11b mode:

Low CH	Middle CH
	
High CH	**-**
	-

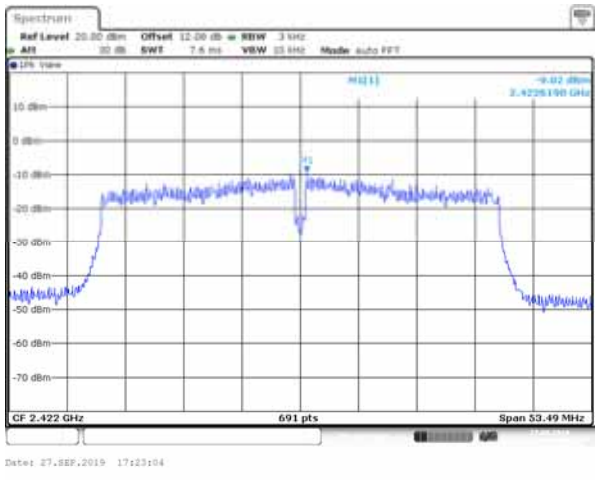
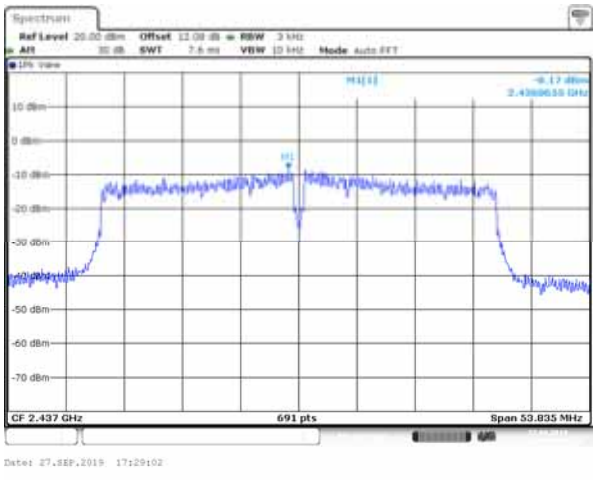
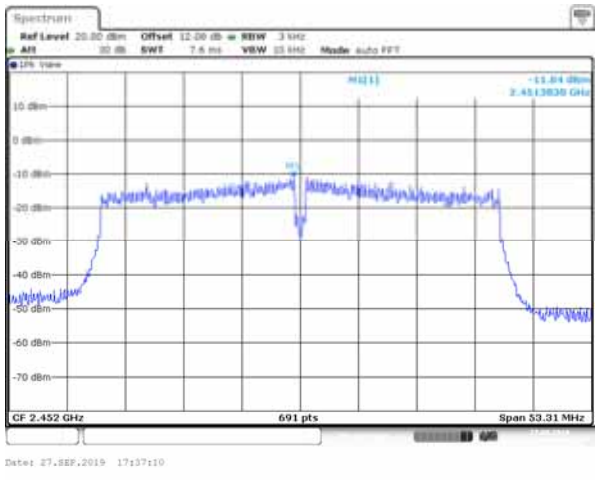
802.11g mode:

Low CH	Middle CH
	
High CH	**-**
	-

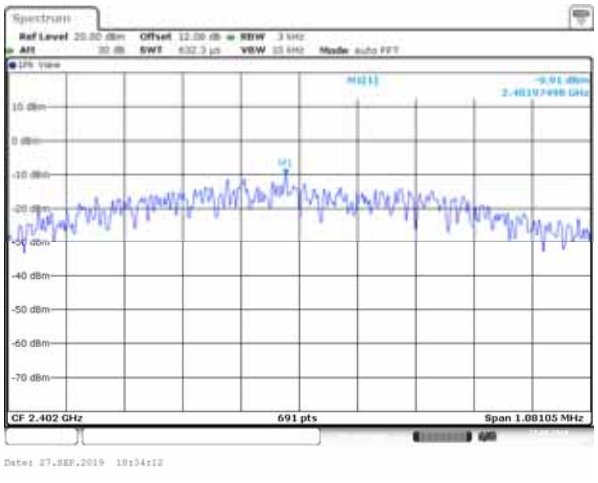
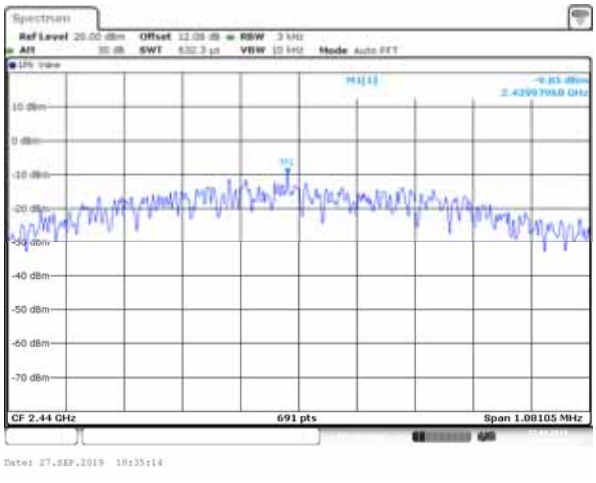
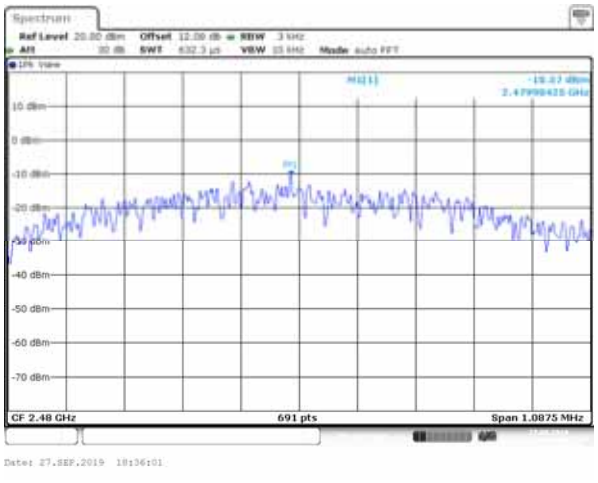
802.11n HT20 mode:

Low CH	Middle CH
	
High CH	**-**
	-

802.11n HT40 mode:

Low CH	Middle CH
	
High CH	**-**
	-

802.11n BLE mode:

Low CH	Middle CH
	
High CH	**-**
	-

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