FCC Test Report

Product Name	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Model No	BEC 6600VAL, BEC 6600AEL, BEC 6600X, BiPAC 4520VAOZ R3, BiPAC 4520VAPZ R3, BiPAC 4500VAOZ R3, BiPAC 4500VAPZ R3, BiPAC 4520AZ R3, BiPAC 4520AZL R3, BiPAC 4500AZ R3, BiPAC 4500AZL R3, BiPAC 4520VNOZ R3, BiPAC 4520VNPZ R3, BiPAC 4500VNOZ R3, BiPAC 4500VNPZ R3, BiPAC 4520NZ R3, BiPAC 4520NZL R3, BiPAC 4500NZ R3, BiPAC 4500NZL R3, BiPAC 4520Z R3, BiPAC 4520ZL R3, BiPAC 4500Z R3, BiPAC 4500ZL R3
FCC ID.	QI3BEC-6600AEL

Applicant	Billion Electric Co., Ltd.
Address	8F., No.192, Sec. 2, Zhongxing Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)

Date of Receipt	Aug. 28, 2020
Issue Date	Oct. 28, 2020
Report No.	2080882R-E3032110113
Report Version	V1.0

Testing Laboratory
3023

Test Report

Issue Date: Oct. 28, 2020
Report No.: 2080882R-E3032110113

Product Name	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Applicant	Billion Electric Co., Ltd.
Address	8F., No.192, Sec. 2, Zhongxing Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)
Manufacturer	Billion Electric Co., Ltd.
Model No.	BEC 6600VAL, BEC 6600AEL, BEC 6600X, BiPAC 4520VAOZ R3, BiPAC 4520VAPZ R3, BiPAC 4500VAOZ R3, BiPAC 4500VAPZ R3, BiPAC 4520AZ R3, BiPAC 4520AZL R3, BiPAC 4500AZ R3, BiPAC 4500AZL R3, BiPAC 4520VNOZ R3, BiPAC 4520VNPZ R3, BiPAC 4500VNOZ R3, BiPAC 4500VNPZ R3, BiPAC 4520NZ R3, BiPAC 4520NZL R3, BiPAC 4500NZ R3, BiPAC 4500NZL R3, BiPAC 4520Z R3, BiPAC 4520ZL R3, BiPAC 4500Z R3, BiPAC 4500ZL R3
FCC ID.	QI3BEC-6600AEL
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V / 60Hz
Trade Name	BEC, Billion
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By : Genie Chang

(Senior Adm. Specialist / Genie Chang)

Tested By : Jason Tuan

(Engineer / Jason Tuan)

Approved By :

(Director / Vincent Lin)

TABLE OF CONTENTS

Revision History

Report No.	Version	Description	Issued Date
2080882R-E3032110113	V1.0	Initial issue of report.	2020-10-28

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Trade Name	BEC, Billion
Model No.	BEC 6600VAL, BEC 6600AEL, BEC 6600X, BiPAC 4520VAOZ R3, BiPAC 4520VAPZ R3, BiPAC 4500VAOZ R3, BiPAC 4500VAPZ R3, BiPAC 4520AZ R3, BiPAC 4520AZL R3, BiPAC 4500AZ R3, BiPAC 4500AZL R3, BiPAC 4520VNOZ R3, BiPAC 4520VNPZ R3, BiPAC 4500VNOZ R3, BiPAC 4500VNPZ R3, BiPAC 4520NZ R3, BiPAC 4520NZL R3, BiPAC 4500NZ R3, BiPAC 4500NZL R3, BiPAC 4520Z R3, BiPAC 4520ZL R3, BiPAC 4500Z R3, BiPAC 4500ZL R3
FCC ID.	QI3BEC-6600AEL
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW, 2422-2452MHz for 802.11n-40BW
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 450Mbps
Channel separation	802.11b/g/n: 5 MHz
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	PCB/Dipole Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
Power Adapter	MFR: Billion, M/N: BA040-150200EXU Input: AC 100-240V~1A 50/60Hz Output: 15V⎓2.0A Cable Out: Non-shielded, 1.5m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Master Wave	98PH7PIPF000(2.4GHz 3)	PCB Antenna	3.30dBi for 2.4 GHz
		98612PRSX000(2.4GHz 1) 98612PRSX000(2.4GHz 2)	Dipole Antenna	2.56dBi for 2.4 GHz

Note: The antenna of EUT is conforming to FCC 15.203.

The EUT is including twenty three models for different marketing requirement, please see the following table for differences, only the worst-case model (BiPAC 4520VAOZ R3) was tested and recorded in this report.
Note: The different of the each model is shown as below:

Model Name: BEC 6600AEL Gigabit LTE Multi-Service Router
Model Name: BiPAC 4520VAOZ R3 LTE Dual-SIM Dual-Band Wireless VoIP VPN Router

	Trade Name	External LTE Antenna	Wi-Fi Antenna	VPN	VoIP	WiFi 5GHz/2.4GHz	SIM Slot	USB Host	Power Adapter
BEC 6600VAL	BEC	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *2pcs	X	O	5GHz+2.4GHz	1	O	DC 15V/ 2.0A
BEC 6600AEL	BEC	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *2pcs	O	X	5GHz+2.4GHz	1	O	DC 15V/ 2.0A
BEC 6600X	BEC	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *2pcs	O	O	5GHz+2.4GHz	1	O	DC 15V/ 2.0A
BiPAC 4520VAOZ R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *2pcs	O	O	5GHz+2.4GHz	2	O	DC 15V/ 2.0A
BiPAC 4520VAPZ R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *2pcs	X	O	5GHz+2.4GHz	2	O	DC 15V/ 2.0A
BiPAC 4500VAOZ R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *2pcs	O	O	5GHz+2.4GHz	1	O	DC 15V/ 2.0A
BiPAC 4500VAPZ R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *2pcs	X	O	5GHz+2.4GHz	1	O	DC 15V/ 2.0A
BiPAC 4520AZ R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *2pcs	O	X	5GHz+2.4GHz	2	O	DC 15V/ 2.0A
BiPAC 4520AZL R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *2pcs	X	X	5GHz+2.4GHz	2	O	DC 15V/ 2.0A
BiPAC 4500AZ R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *2pcs	O	X	5GHz+2.4GHz	1	O	DC 15V/ 2.0A
BiPAC 4500AZL R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *2pcs	X	X	5GHz+2.4GHz	1	O	DC 15V/ 2.0A
BiPAC 4520VNOZ R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *1pcs	O	O	2.4GHz	2	O	DC 15V/ 2.0A
BiPAC 4520VNPZ R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *1pcs	X	O	2.4GHz	2	O	DC 15V/ 2.0A
BiPAC 4500VNOZ R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *1pcs	O	O	2.4GHz	1	O	DC 15V/ 2.0A
BiPAC 4500VNPZ R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *1pcs	X	O	2.4GHz	1	O	DC 15V/ 2.0A
BiPAC 4520NZ R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *1pcs	O	X	2.4GHz	2	O	DC 15V/ 2.0A
BiPAC 4520NZL R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *1pcs	X	X	2.4GHz	2	O	DC 15V/ 2.0A
BiPAC 4500NZ R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *1pcs	O	X	2.4GHz	1	O	DC 15V/ 2.0A
BiPAC 4500NZL R3	Billion	LTE Wide-band Antenna *4pcs	5/ 2.4GHz External WiFi Antenna *2pcs 5/ 2.4GHz Embedded WiFi Antenna *1pcs	X	X	2.4GHz	1	O	DC 15V/ 2.0A
BiPAC 4520Z *R3*	Billion	LTE Wide-band Antenna *4pcs	X	O	X	X	2	O	DC 15V/ 2.0A
BiPAC 4520ZL *R3*	Billion	LTE Wide-band Antenna *4pcs	X	X	X	X	2	O	DC 15V/ 2.0A
BiPAC 4500Z *R3*	Billion	LTE Wide-band Antenna *4pcs	X	O	X	X	1	O	DC 15V/ 2.0A
BiPAC 4500ZL *R3*	Billion	LTE Wide-band Antenna *4pcs	X	X	X	X	1	O	DC 15V/ 2.0A

Note: "O" means YES, and "X" means NO support in hardware and firmware

802.11b/g/n-20MHz Center Frequency of Each Channel:

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

802.11n-40MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 03:	2422 MHz	Channel 04:	2427 MHz	Channel 05:	2432 MHz	Channel 06:	2437 MHz
Channel 07:	2442 MHz	Channel 08:	2447 MHz	Channel 09:	2452 MHz		

Note:

1. The EUT is a Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router with a built-in 2.4GHz & 5GHz WLAN transceiver, this report for 2.4GHz WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report.
4. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.

Test Mode:	Mode 1: Transmit (802.11b)
	Mode 2: Transmit (802.11g)
	Mode 3: Transmit (802.11n-20MBW)
	Mode 4: Transmit (802.11n-40MBW)

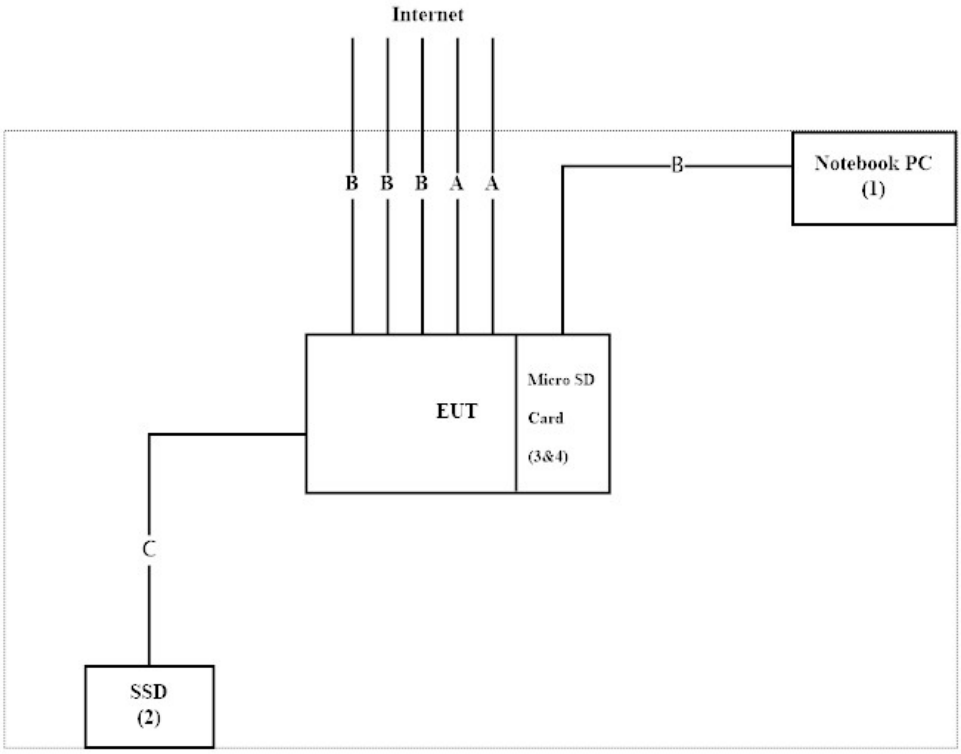
1.2. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	Lenovo	R400	L3AAF9A	N/A
2	SSD(256G)	HP	Portable SSD P600	HBSC28311800016	N/A
3	Micro SD Card 1GB	SanDisk	N/A	0734502841D9M	N/A
4	Micro SD Card 1GB	SanDisk	N/A	0734502841DA7	N/A

Signal Cable Type		Signal cable Description
A	Telecom Cable	Non-shielded, 2m, two PCS.
B	RJ 45 Cable	Non-shielded, 2m, four PCS.
C	USB Cable	Non-shielded, 0.2m

1.3. Configuration of Tested System



1.4. EUT Exercise Software

1. Setup the EUT as shown in Section 1.3.
2. Execute software “QATool V0.0.1.7.1” on the Notebook PC.
3. Configure the test mode, the test channel, and the data rate.
4. Press “OK” to start the continuous Transmit.
5. Verify that the EUT works properly.

1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	21.4°C
	Humidity (%RH)	10~90 %	58%
Radiated Emission	Temperature (°C)	10~40 °C	24°C
	Humidity (%RH)	10~90 %	71%
Conductive	Temperature (°C)	10~40 °C	24°C
	Humidity (%RH)	10~90 %	58%

USA : FCC Registration Number: TW3023

Canada : IC Registration Number: 4075A

Site Description: Accredited by TAF
Accredited Number: 3023

Test Laboratory: DEKRA Testing and Certification Co., Ltd
Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
Phone number: 886-2-8601-3788
Fax number: 886-2-8601-3789
Email address: info.tw@dekra.com
Website: http://www.dekra.com.tw

1.6. List of Test Item and Equipment

For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2020/04/06	2021/04/05
	Spectrum Analyzer	Agilent	N9010A	MY53470892	2019/09/25	2020/09/24
X	Spectrum Analyzer	R&S	FSV30	103466	2019/12/16	2020/12/15
X	Peak Power Analyzer	Keysight	8990B	MY51000410	2020/05/12	2021/05/11
X	Wideband Power Sensor	Keysight	N1923A	MY56080003	2020/05/12	2021/05/11
X	Wideband Power Sensor	Keysight	N1923A	MY56080004	2020/05/12	2021/05/11
X	EMI Test Receiver	R&S	ESCS 30	100369	2019/11/27	2020/11/26
X	LISN	R&S	ENV216	101105	2020/04/27	2021/04/26
X	LISN	R&S	ESH3-Z5	836679/014	2020/04/26	2021/04/25
X	Coaxial Cable	DEKRA	RG 400	LC018-RG	2020/06/19	2021/06/18

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Conduction Test SystemV9.0.5.

For Radiated measurements /Site3/CB8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
X	Test Receiver	R&S	ESR7	101602	2019/12/16	2020/12/15
X	Signal Analyzer	R&S	FSV40	101869	2020/06/24	2021/06/23
X	Loop Antenna	Teseq	HLA6121	37133	2019/10/15	2021/10/14
	Bilog Antenna	Schaffner Chase	CBL6112B	2916	2020/01/20	2021/01/19
	Coaxial Cable	DEKRA	L1907-001C	280280.F141.1000D	2019/07/10	2020/07/09
	Amplifier	EMCI	EMC001330	980254	2019/08/22	2020/08/21
	Horn Antenna	ETS-LINDGREN	3117	00228113	2020/05/28	2021/05/27
	Coaxial Cable	DEKRA	L1907-002C	280280.F141.1000D	2019/07/10	2020/07/09
	Amplifier	EMCI	EMC05820SE	980362	2020/06/30	2021/06/29
	Amplifier	EMCI	EMC051845SE	980632	2019/08/08	2020/08/07
	Horn Antenna	Com-Power	AH-1840	101101	2019/10/31	2020/10/30
	Amplifier + Cable	EMCI	EMC184045SE	980369	2020/04/23	2021/04/22
X	Bilog Antenna	Schaffner Chase	CBL6112B	2925	2020/02/20	2021/02/19
X	Coaxial Cable	DEKRA	L1907-003C	00100A1B3A120M	2020/07/09	2021/07/08
X	Amplifier	EMCI	EMC001330	980255	2020/03/17	2021/03/16
X	Horn Antenna	ETS-LINDGREN	3117	00228111	2020/05/28	2021/05/27
X	Amplifier	SGH	PRAMP0510	20200206	2020/03/17	2021/03/16
X	Amplifier	SGH	PRAMP118	20200202	2020/03/17	2021/03/16
X	Filter	MICRO-TRONICS	BRM50702	G270	2020/08/17	2021/08/16
	Filter	MICRO-TRONICS	BRM50716	G196	2020/08/17	2021/08/16

Note:

1. Loop Antenna is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Test SystemV1.1.

1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document, and is described in each test chapter of this report.

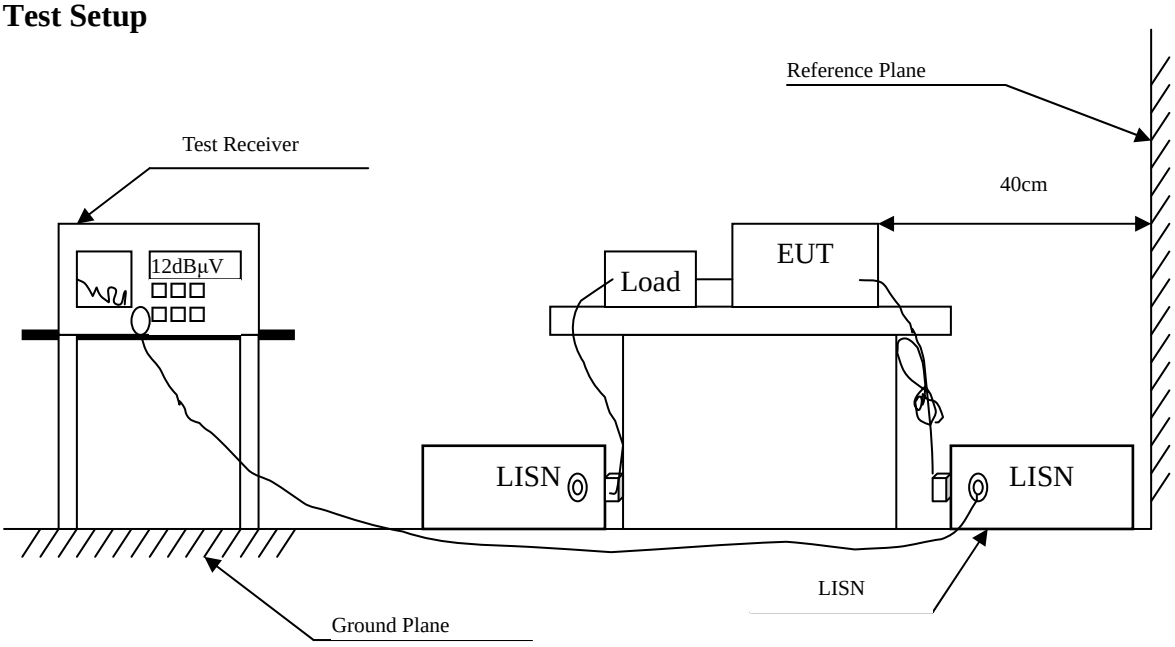
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test item	Uncertainty	
Conducted Emission	±3.42dB	
Peak Power Output	Power Meter ±0.89dB	Spectrum Analyzer ±2.06dB
Radiated Emission	9kHz~30MHz: ±3.88dB 30MHz~1GHz: ±4.06dB 1GHz~18GHz: ±3.71dB 18GHz~40GHz: ±3.73dB 40GHz~50GHz: ±3.75dB 50GHz~325GHz: ±4.39dB	
RF antenna conducted test	±2.06dB	
Band Edge	9kHz~30MHz: ±3.88dB 30MHz~1GHz: ±4.06dB 1GHz~18GHz: ±3.71dB 18GHz~40GHz: ±3.73dB 40GHz~50GHz: ±3.75dB 50GHz~325GHz: ±4.39dB	
6dB Bandwidth	±1544.74Hz	
Power Density	±2.06dB	
Duty Cycle (2.4GHz)	±2.31msec	

2. Conducted Emission

2.1. Test Setup



2.2. Limits

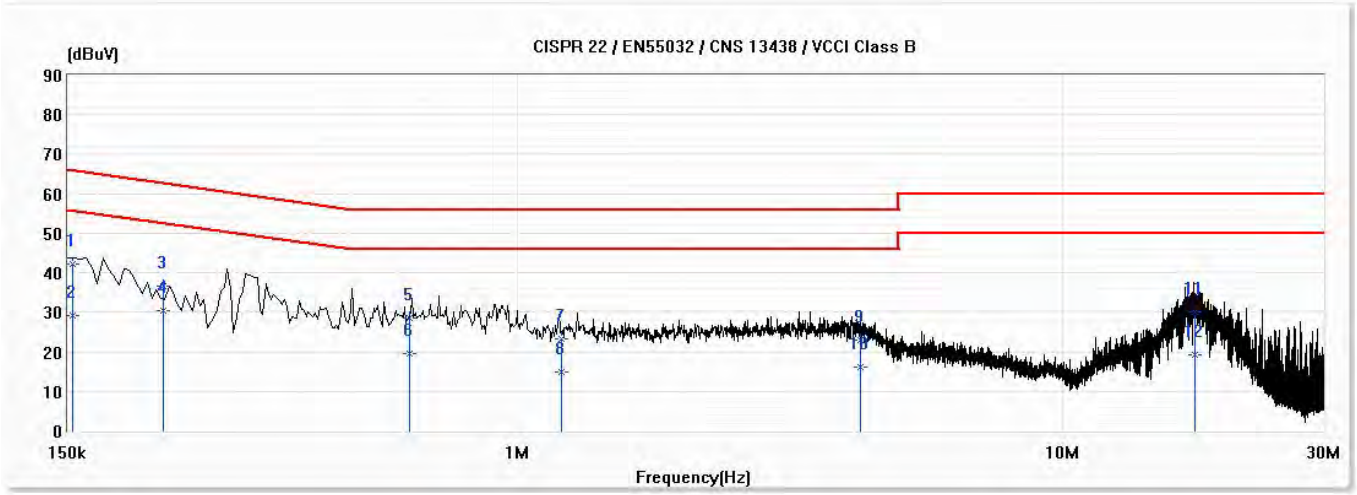
FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit		
Frequency MHz	Limits	
	QP	AVG
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Test Result of Conducted Emission

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Conducted Emission Test
Power Line : L1
Test Mode : Mode 4: Transmit (802.11n-40MBW) (2437MHz)
Test Date : 2020/10/22

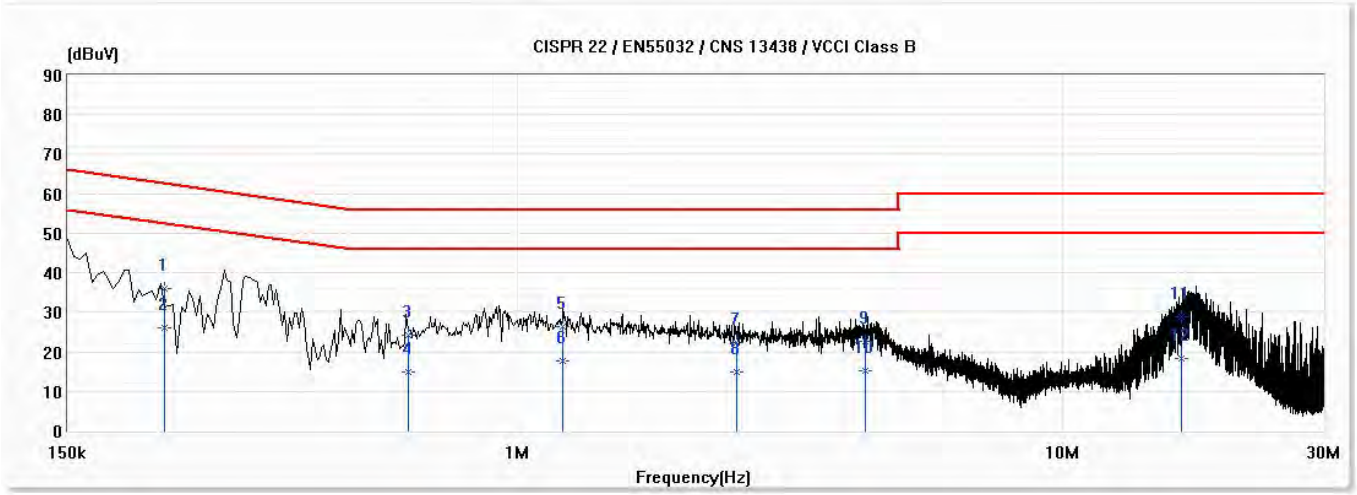


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.153	42.30	65.83	-23.53	32.64	9.66	QP
2	0.153	29.27	55.83	-26.56	19.61	9.66	AV
3	0.224	36.73	62.67	-25.94	27.08	9.65	QP
*4	0.224	30.53	52.67	-22.13	20.88	9.65	AV
5	0.633	28.50	56.00	-27.50	18.83	9.67	QP
6	0.633	19.62	46.00	-26.38	9.95	9.67	AV
7	1.202	23.19	56.00	-32.81	13.49	9.70	QP
8	1.202	15.02	46.00	-30.98	5.32	9.70	AV
9	4.259	23.10	56.00	-32.90	13.33	9.78	QP
10	4.259	16.07	46.00	-29.93	6.29	9.78	AV
11	17.431	30.12	60.00	-29.88	20.17	9.95	QP
12	17.431	19.36	50.00	-30.64	9.41	9.95	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * " means the worst emission level.
3. Emission Level = Reading Level + Correct Factor

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Conducted Emission Test
Power Line	:	N
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2437MHz)
Test Date	:	2020/10/22



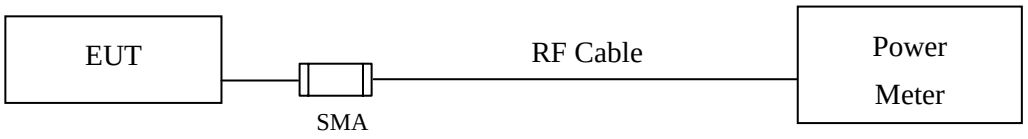
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
*1	0.225	35.97	62.62	-26.64	26.30	9.67	QP
2	0.225	25.97	52.62	-26.64	16.30	9.67	AV
3	0.633	24.34	56.00	-31.66	14.67	9.68	QP
4	0.633	15.02	46.00	-30.98	5.34	9.68	AV
5	1.208	26.32	56.00	-29.68	16.62	9.70	QP
6	1.208	17.76	46.00	-28.24	8.06	9.70	AV
7	2.517	22.47	56.00	-33.53	12.73	9.74	QP
8	2.517	14.82	46.00	-31.18	5.08	9.74	AV
9	4.349	22.73	56.00	-33.27	12.94	9.79	QP
10	4.349	15.14	46.00	-30.86	5.35	9.79	AV
11	16.504	28.74	60.00	-31.26	18.72	10.01	QP
12	16.504	18.44	50.00	-31.56	8.43	10.01	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ * “ means the worst emission level.
3. Emission Level = Reading Level + Correct Factor

3. Peak Power Output

3.1. Test Setup



3.2. Limits

The maximum peak power shall be less 1 Watt.

3.3. Test Procedure

The EUT was tested according to C63.10:2013 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using C63.10:2013 Section 11.9.1.3 PKPM1 Peak power meter method. The maximum average conducted output power using C63.10:2013 Section 11.9.2.3 Measurement using a power meter (PM). (Measurement using a gated RF average-reading power meter).

3.4. Test Result of Peak Power Output

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Peak Power Output Data
Test Mode : Mode 1: Transmit (802.11b)
Test Date : 2020/10/19

Chain A

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	14.7	--	--	--	17.28	<30dBm	Pass
06	2437	14.9	14.86	14.81	14.74	17.52	<30dBm	Pass
11	2462	14.66	--	--	--	17.27	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain B

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	14.34	--	--	--	16.88	<30dBm	Pass
06	2437	14.91	14.84	14.81	14.76	17.46	<30dBm	Pass
11	2462	15.17	--	--	--	17.7	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain C

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	13.99	--	--	--	16.52	<30dBm	Pass
06	2437	12.98	12.93	12.89	12.83	15.54	<30dBm	Pass
11	2462	14.21	--	--	--	16.79	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain A+B+C

Channel No	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Chain C Power (dBm)	Chain A+B+C Power (dBm)	Limit (dBm)	Result
01	2412	17.28	16.88	16.52	21.68	<30dBm	Pass
06	2437	17.52	17.46	15.54	21.70	<30dBm	Pass
11	2462	17.27	17.70	16.79	22.04	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW)+ Chain C (mW))

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Peak Power Output Data
Test Mode : Mode 2: Transmit (802.11g)
Test Date : 2020/10/19

Chain A

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	16.14	--	--	--	--	--	--	--	25.85	<30dBm	Pass
06	2437	16.88	16.81	16.75	16.7	16.64	16.59	16.54	16.5	25.16	<30dBm	Pass
11	2462	16.02	--	--	--	--	--	--	--	24.75	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain B

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	15.85	--	--	--	--	--	--	--	24.86	<30dBm	Pass
06	2437	16.53	16.5	16.43	16.38	16.34	16.27	16.24	16.18	25.43	<30dBm	Pass
11	2462	15.7	--	--	--	--	--	--	--	24.85	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain C

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	14.98	--	--	--	--	--	--	--	24.81	<30dBm	Pass
06	2437	14.96	14.89	14.86	14.81	14.75	14.72	14.66	14.59	24.81	<30dBm	Pass
11	2462	15.8	--	--	--	--	--	--	--	25.93	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain A+B+C

Channel No	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Chain C Power (dBm)	Chain A+B+C Power (dBm)	Limit (dBm)	Result
03	2422	25.85	24.86	24.81	29.97	<30dBm	Pass
06	2437	25.16	25.43	24.81	29.91	<30dBm	Pass
09	2452	24.75	24.85	25.93	29.98	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW)+ Chain C (mW))

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Peak Power Output Data
Test Mode : Mode 3: Transmit (802.11n-20MBW)
Test Date : 2020/10/19

Chain A

Channel No	Frequency (MHz)	Average Power For different Data Rate (MCS index)								Peak Power	Required Limit	Result
		16	17	18	19	20	21	22	23	16		
		Measurement Level (dBm)										
01	2412	16.6	--	--	--	--	--	--	--	24.94	<30dBm	Pass
06	2437	16.42	16.38	16.33	16.29	16.24	16.19	16.13	16.07	24.85	<30dBm	Pass
11	2462	15.88	--	--	--	--	--	--	--	25.03	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain B

Channel No	Frequency (MHz)	Average Power For different Data Rate (MCS index)								Peak Power	Required Limit	Result
		16	17	18	19	20	21	22	23	16		
		Measurement Level (dBm)										
01	2412	16.21	--	--	--	--	--	--	--	25.36	<30dBm	Pass
06	2437	16.41	16.38	16.33	16.28	16.24	16.18	16.14	16.08	24.98	<30dBm	Pass
11	2462	15.62	--	--	--	--	--	--	--	24.95	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain C

Channel No	Frequency (MHz)	Average Power For different Data Rate (MCS index)								Peak Power	Required Limit	Result
		16	17	18	19	20	21	22	23	16		
		Measurement Level (dBm)										
01	2412	15.72	--	--	--	--	--	--	--	24.81	<30dBm	Pass
06	2437	14.67	14.62	14.58	14.52	14.48	14.41	14.35	14.31	23.57	<30dBm	Pass
11	2462	15.82	--	--	--	--	--	--	--	24.94	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain A+B+C

Channel No	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Chain C Power (dBm)	Chain A+B+C Power (dBm)	Limit (dBm)	Result
01	2412	24.94	25.36	24.81	29.81	<30dBm	Pass
06	2437	24.85	24.98	23.57	29.28	<30dBm	Pass
11	2462	25.03	24.95	24.94	29.74	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW)+ Chain C (mW))

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Peak Power Output Data
Test Mode : Mode 4: Transmit (802.11n-40MBW)
Test Date : 2020/10/19

Chain A

Channel No	Frequency (MHz)	Average Power For different Data Rate (MCS index)								Peak Power	Required Limit	Result
		16	17	18	19	20	21	22	23	16		
		Measurement Level (dBm)										
03	2422	16	--	--	--	--	--	--	--	25.78	<30dBm	Pass
06	2437	15.7	15.66	15.61	15.58	15.54	15.5	15.45	15.41	24.98	<30dBm	Pass
09	2452	15.93	--	--	--	--	--	--	--	25.53	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain B

Channel No	Frequency (MHz)	Average Power For different Data Rate (MCS index)								Peak Power	Required Limit	Result
		16	17	18	19	20	21	22	23	16		
		Measurement Level (dBm)										
03	2422	15.83	--	--	--	--	--	--	--	24.77	<30dBm	Pass
06	2437	15.74	15.7	15.67	15.64	15.59	15.54	15.51	15.45	24.89	<30dBm	Pass
09	2452	15.92	--	--	--	--	--	--	--	24.82	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain C

Channel No	Frequency (MHz)	Average Power For different Data Rate (MCS index)								Peak Power	Required Limit	Result
		16	17	18	19	20	21	22	23	16		
		Measurement Level (dBm)										
03	2422	14.78	--	--	--	--	--	--	--	24.94	<30dBm	Pass
06	2437	14.14	14.1	14.06	14	13.94	13.88	13.84	13.79	24.97	<30dBm	Pass
09	2452	14.34	--	--	--	--	--	--	--	25.14	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Chain A+B+C

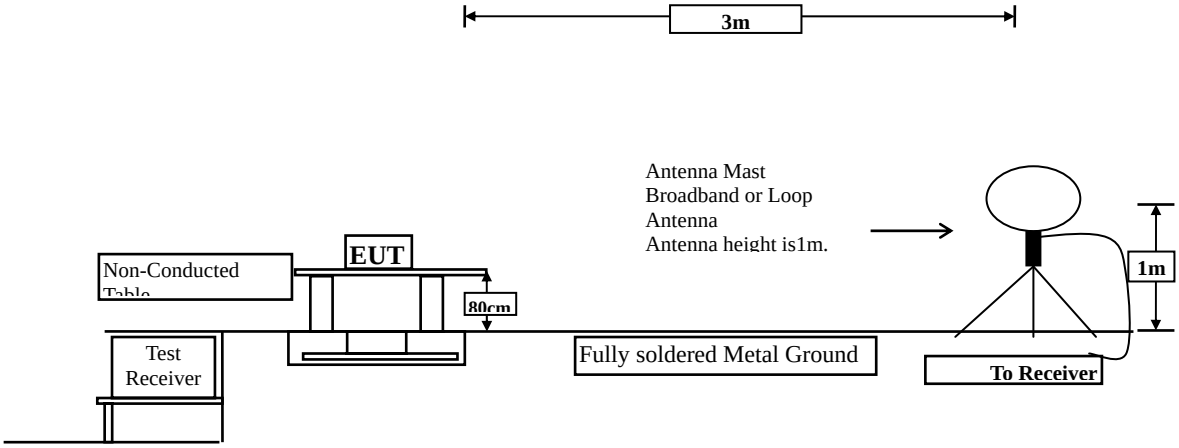
Channel No	Frequency (MHz)	Chain A Power (dBm)	Chain B Power (dBm)	Chain C Power (dBm)	Chain A+B+C Power (dBm)	Limit (dBm)	Result
03	2422	25.78	24.77	24.94	29.96	<30dBm	Pass
06	2437	24.98	24.89	24.97	29.72	<30dBm	Pass
09	2452	25.53	24.82	25.14	29.94	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10*LOG (Chain A (mW)+ Chain B (mW)+ Chain C (mW))

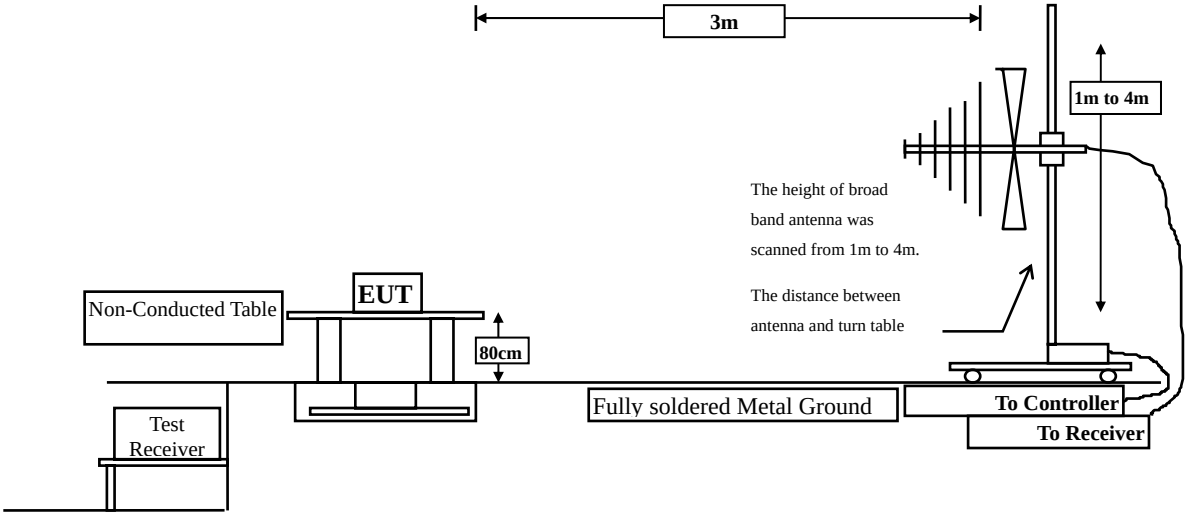
4. Radiated Emission

4.1. Test Setup

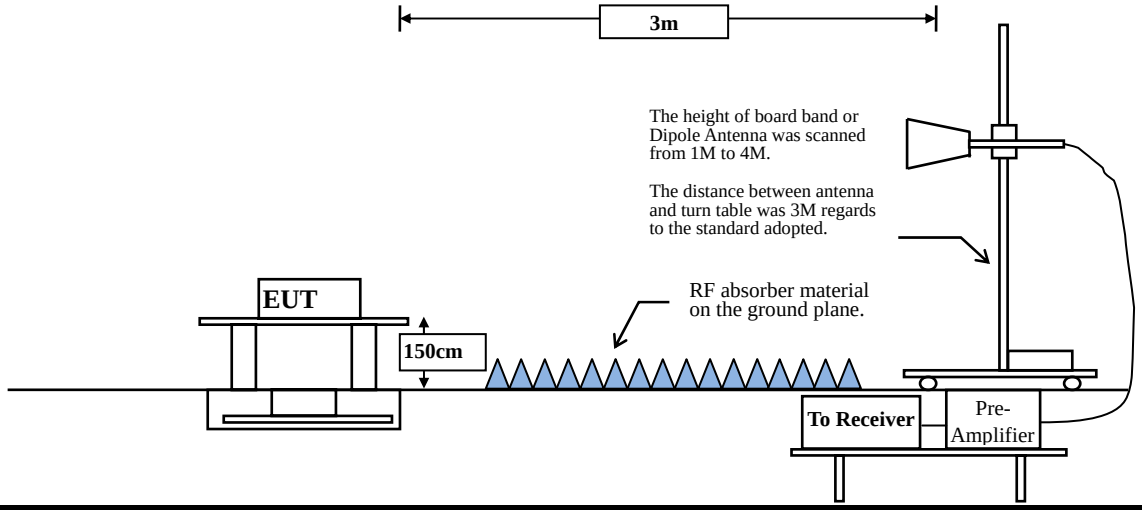
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.2. Limits

➢ **General Radiated Emission Limits**

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to C63.10:2013 Section 11.12.1 for compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground,when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

RBW and VBW Parameter setting:

According to C63.10 Section 11.12.2.4 Peak measurement procedure.

RBW = as specified in Table 1.

VBW ≥ 3 x RBW.

Table 1 —RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to C63.10 Section 11.12.2.5 Average measurement procedure.

RBW = 1MHz.

VBW = 10Hz, when duty cycle ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

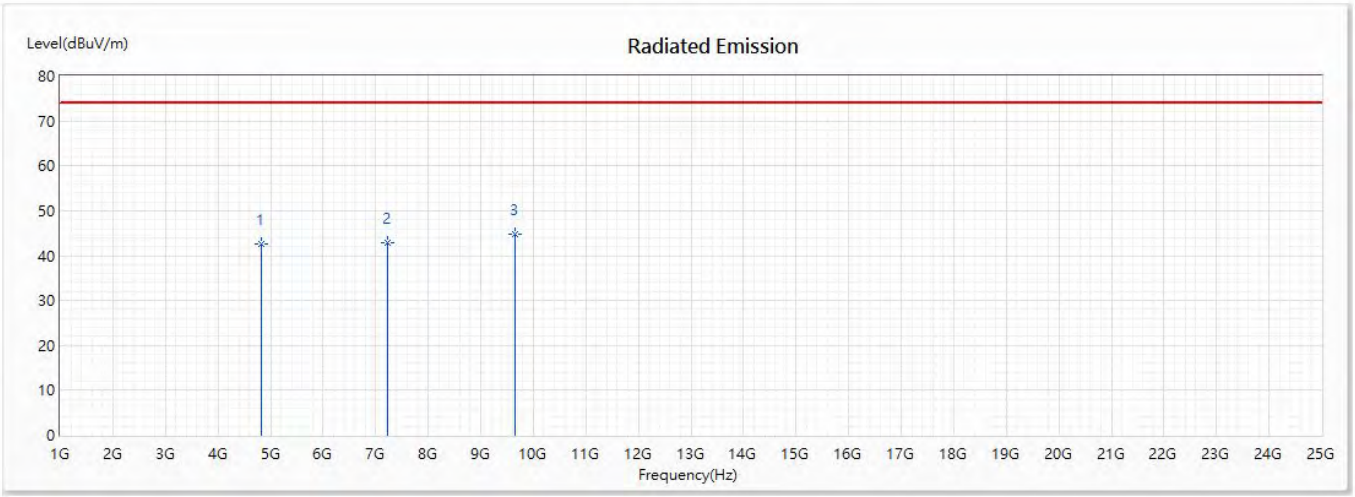
2.4GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11b	95.09	8.4203	119	200
802.11g	79.83	1.3768	726	1000
802.11n20	54.79	0.4638	2156	3000
802.11n40	60.85	0.3739	2674	3000

Note: Duty Cycle Refer to Section 9.

4.4. Test Result of Radiated Emission

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b) (2412MHz)
Test Date	:	2020/10/06

Horizontal



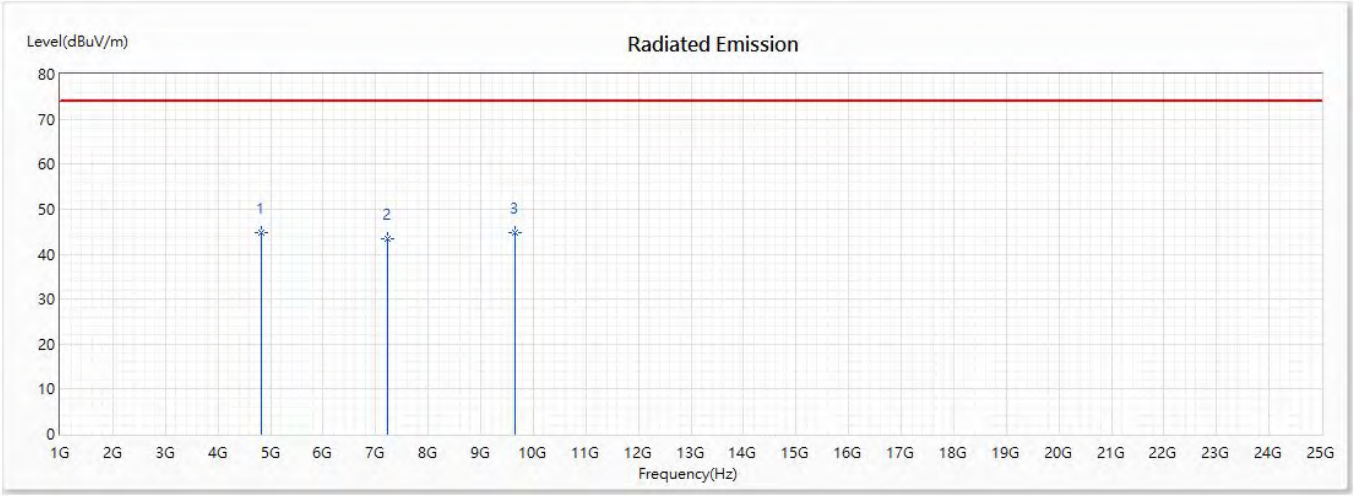
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	42.61	74.00	-31.39	53.09	-10.48	PK
2	7236	42.99	74.00	-31.01	51.86	-8.87	PK
* 3	9648	44.77	74.00	-29.23	53.91	-9.14	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b) (2412MHz)
Test Date	:	2020/10/06

Vertical



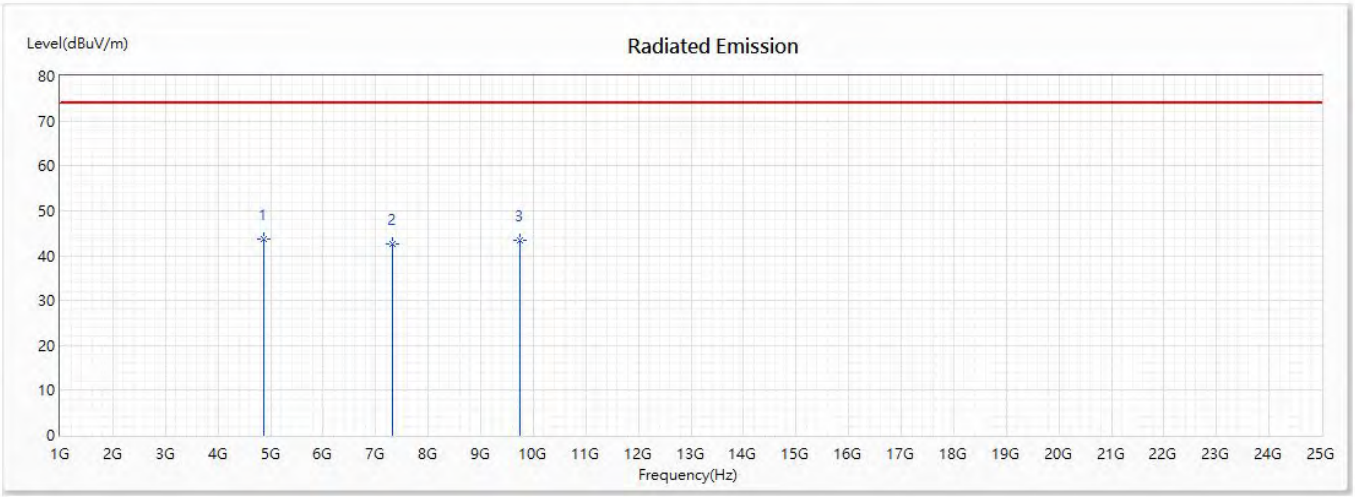
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4824	44.87	74.00	-29.13	55.35	-10.48	PK
2	7236	43.46	74.00	-30.54	52.33	-8.87	PK
3	9648	44.86	74.00	-29.14	54.00	-9.14	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b) (2437 MHz)
Test Date	:	2020/10/06

Horizontal



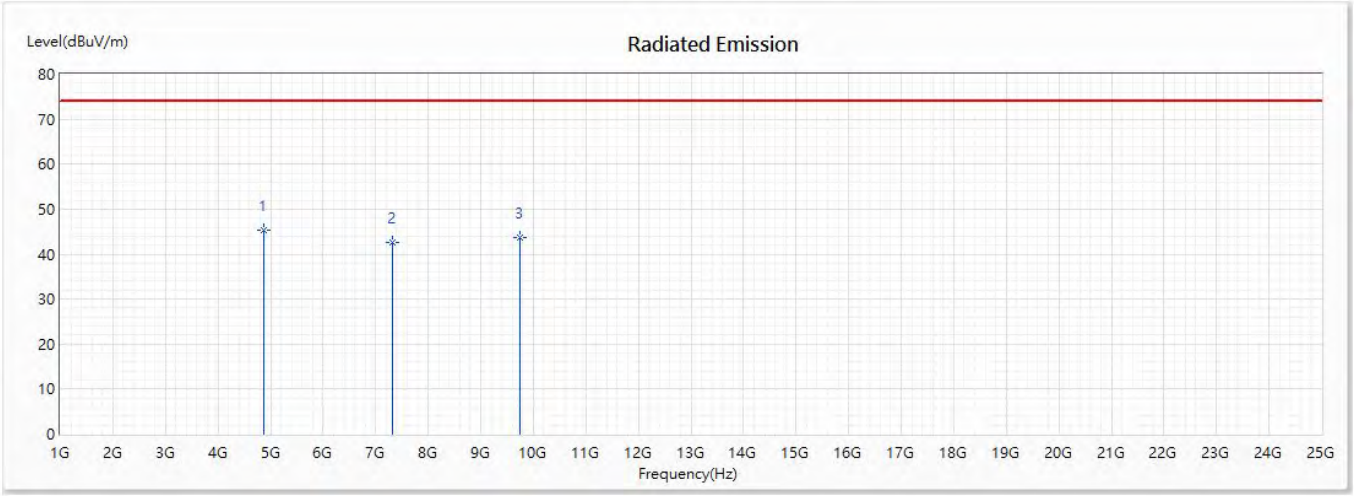
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4874	43.60	74.00	-30.40	53.86	-10.26	PK
2	7311	42.60	74.00	-31.40	51.72	-9.12	PK
3	9748	43.51	74.00	-30.49	52.69	-9.18	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b) (2437 MHz)
Test Date	:	2020/10/06

Vertical



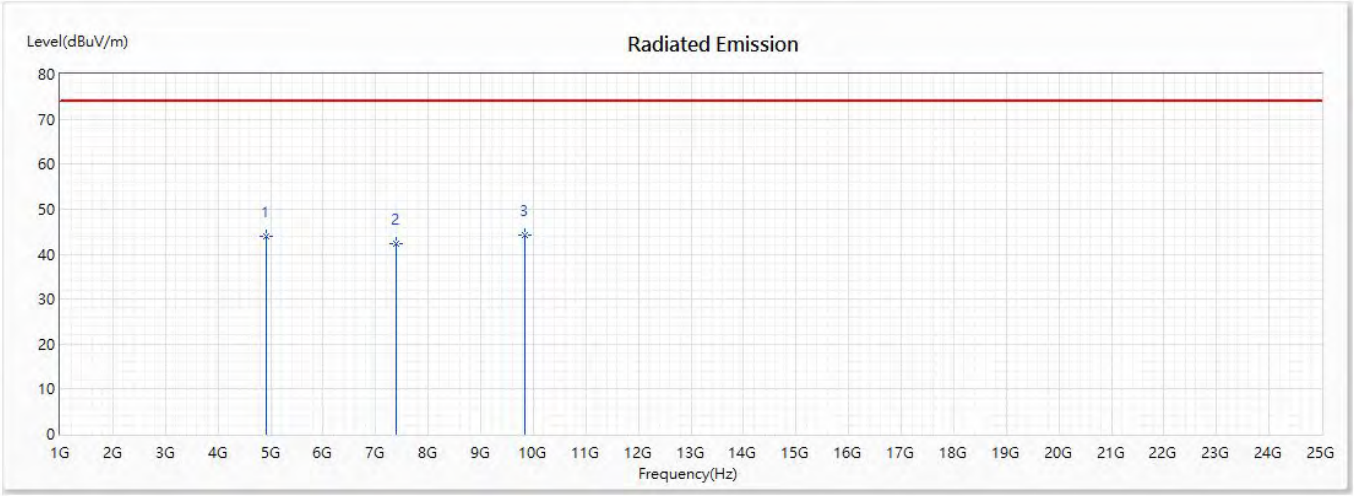
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4874	45.41	74.00	-28.59	55.67	-10.26	PK
2	7311	42.66	74.00	-31.34	51.78	-9.12	PK
3	9748	43.57	74.00	-30.43	52.75	-9.18	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b) (2462 MHz)
Test Date	:	2020/10/06

Horizontal



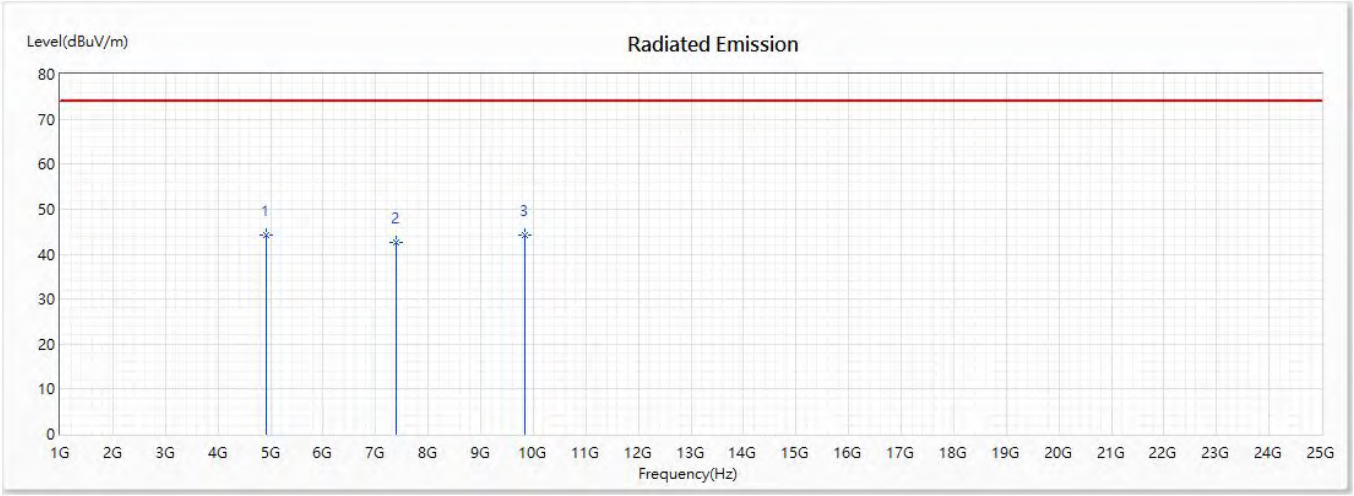
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	43.88	74.00	-30.12	54.02	-10.14	PK
2	7386	42.41	74.00	-31.59	51.74	-9.33	PK
* 3	9848	44.30	74.00	-29.70	52.92	-8.62	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b) (2462 MHz)
Test Date	:	2020/10/06

Vertical



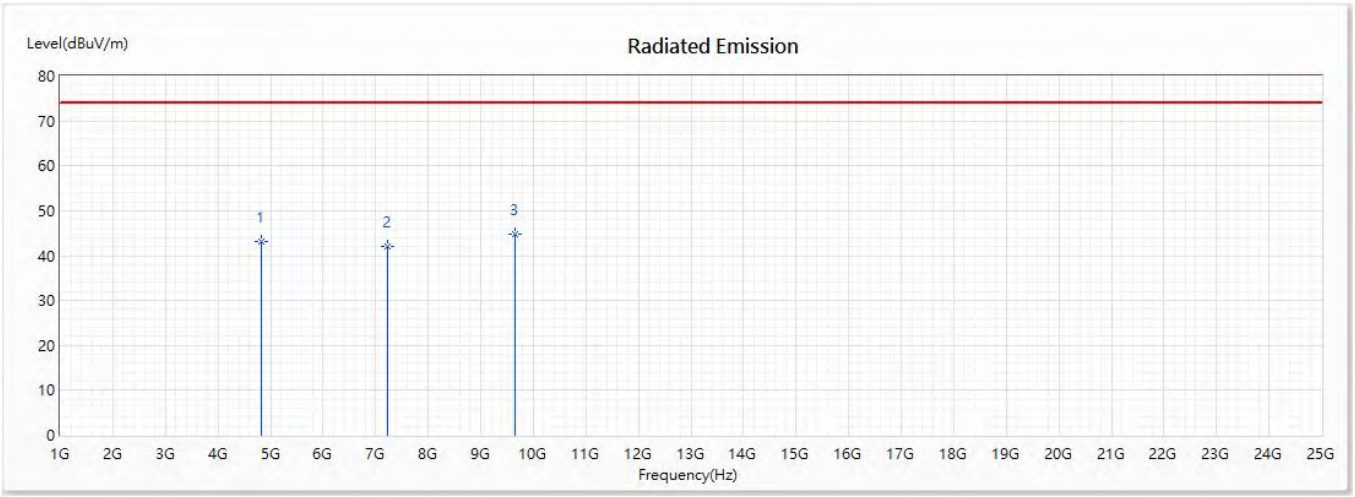
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4924	44.31	74.00	-29.69	54.45	-10.14	PK
2	7386	42.61	74.00	-31.39	51.94	-9.33	PK
3	9848	44.22	74.00	-29.78	52.84	-8.62	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g) (2412MHz)
Test Date	:	2020/10/06

Horizontal



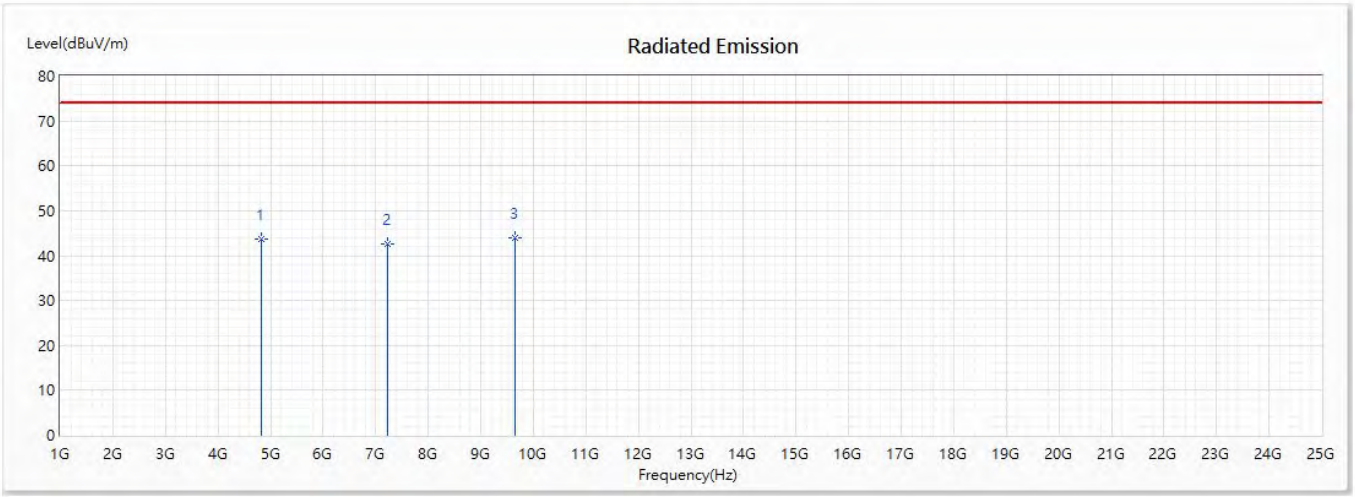
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	43.03	74.00	-30.97	53.51	-10.48	PK
2	7236	42.12	74.00	-31.88	50.99	-8.87	PK
* 3	9648	44.81	74.00	-29.19	53.95	-9.14	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g) (2412MHz)
Test Date	:	2020/10/06

Vertical



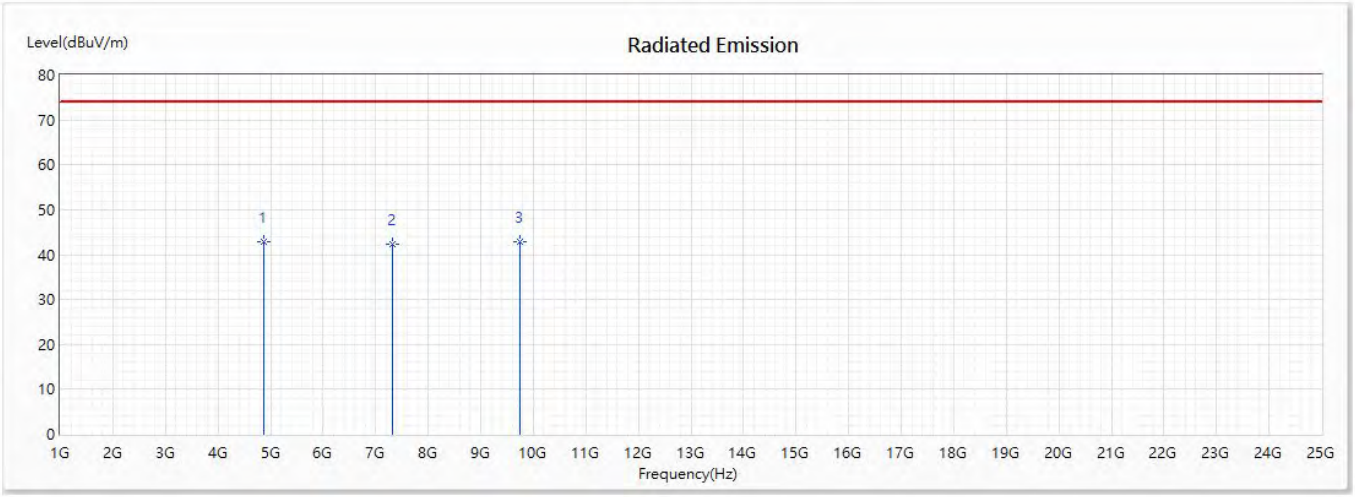
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	43.78	74.00	-30.22	54.26	-10.48	PK
2	7236	42.71	74.00	-31.29	51.58	-8.87	PK
* 3	9648	44.07	74.00	-29.93	53.21	-9.14	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g) (2437 MHz)
Test Date	:	2020/10/06

Horizontal



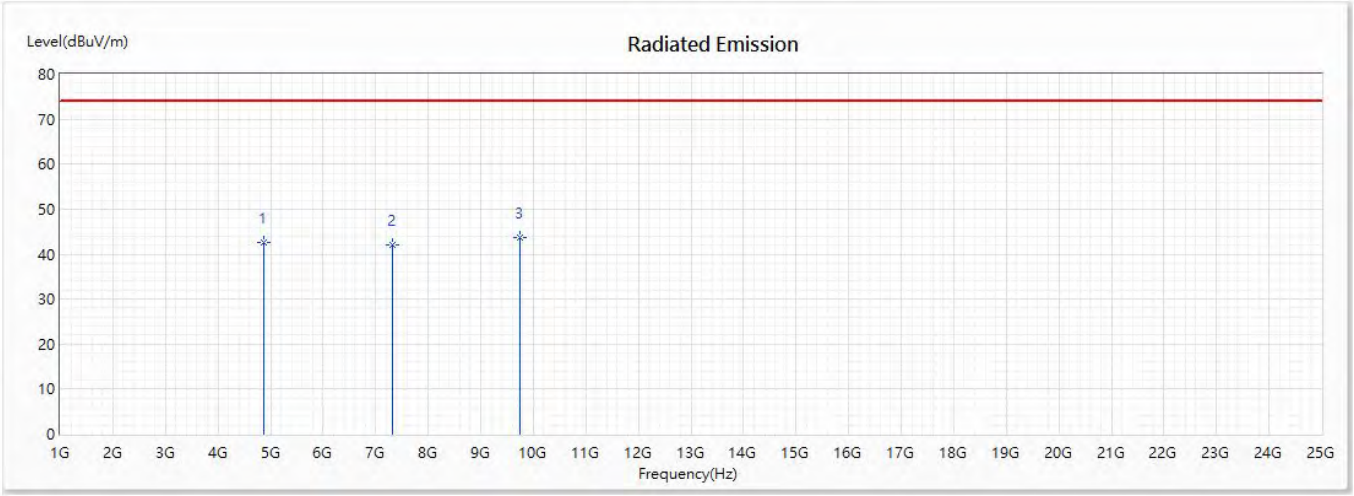
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4874	43.00	74.00	-31.00	53.26	-10.26	PK
2	7311	42.24	74.00	-31.76	51.36	-9.12	PK
3	9748	42.82	74.00	-31.18	52.00	-9.18	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g) (2437 MHz)
Test Date	:	2020/10/06

Vertical



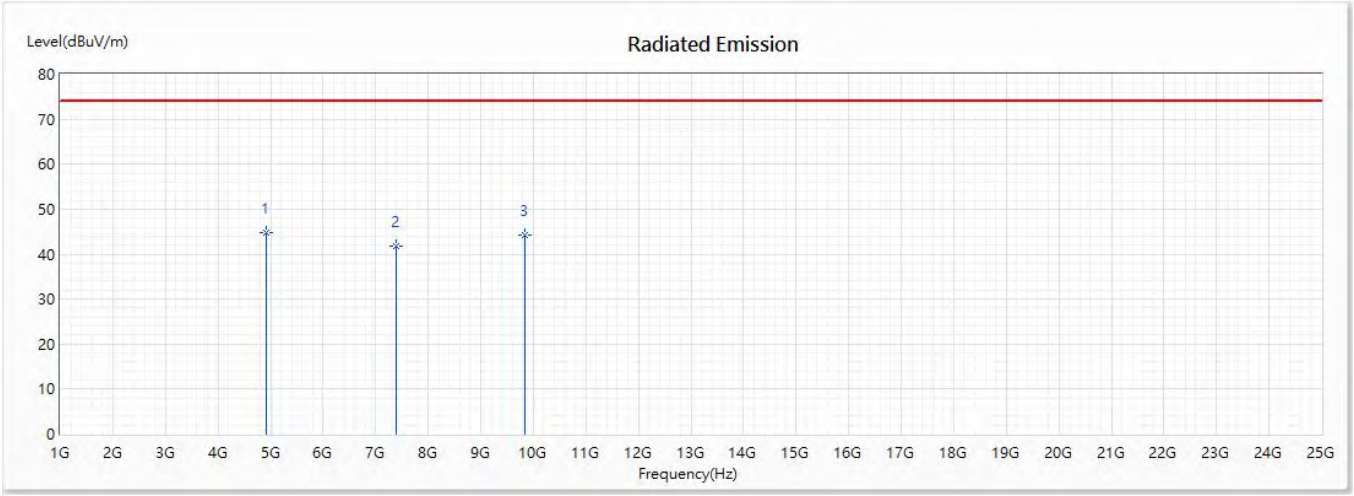
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	42.60	74.00	-31.40	52.86	-10.26	PK
2	7311	42.14	74.00	-31.86	51.26	-9.12	PK
* 3	9748	43.67	74.00	-30.33	52.85	-9.18	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g) (2462 MHz)
Test Date	:	2020/10/06

Horizontal



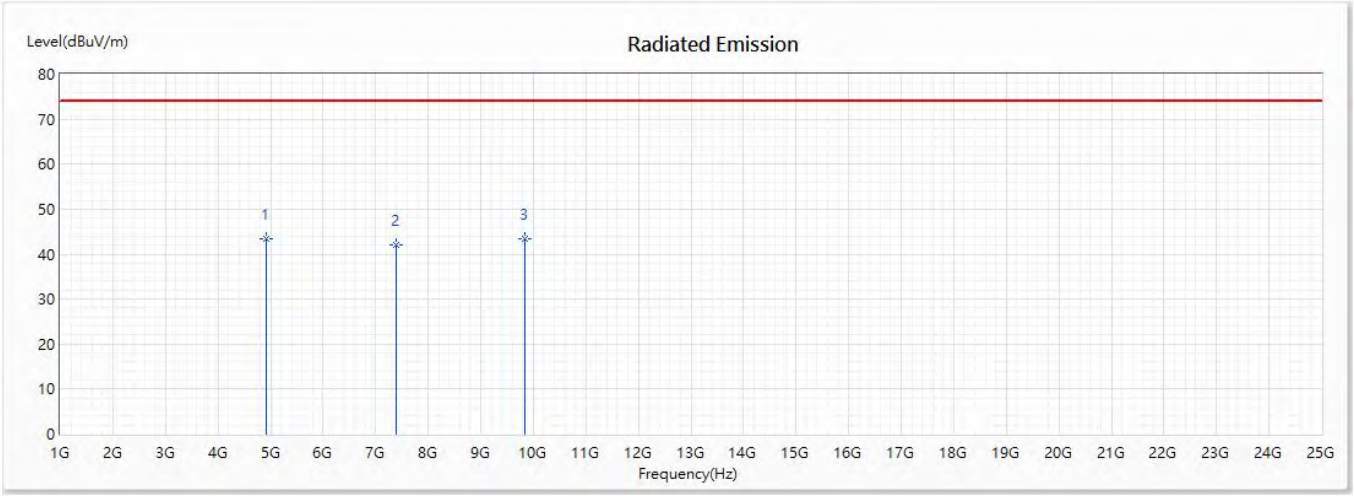
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4924	44.84	74.00	-29.16	54.98	-10.14	PK
2	7386	41.91	74.00	-32.09	51.24	-9.33	PK
3	9848	44.23	74.00	-29.77	52.85	-8.62	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g) (2462 MHz)
Test Date	:	2020/10/06

Vertical



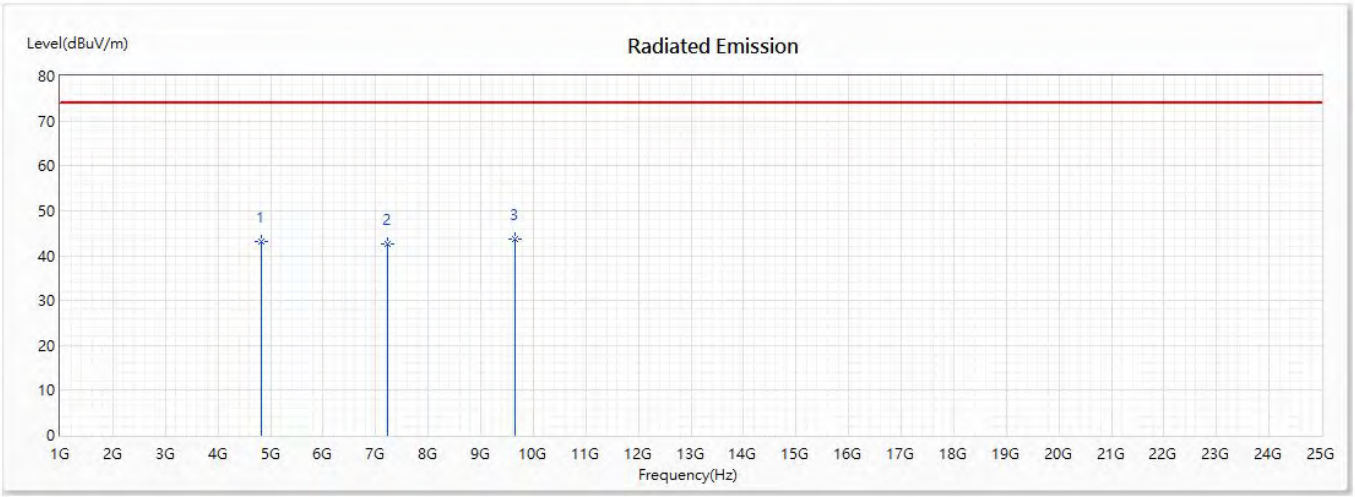
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	43.29	74.00	-30.71	53.43	-10.14	PK
2	7386	42.18	74.00	-31.82	51.51	-9.33	PK
* 3	9848	43.46	74.00	-30.54	52.08	-8.62	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW)(2412MHz)
Test Date	:	2020/10/06

Horizontal



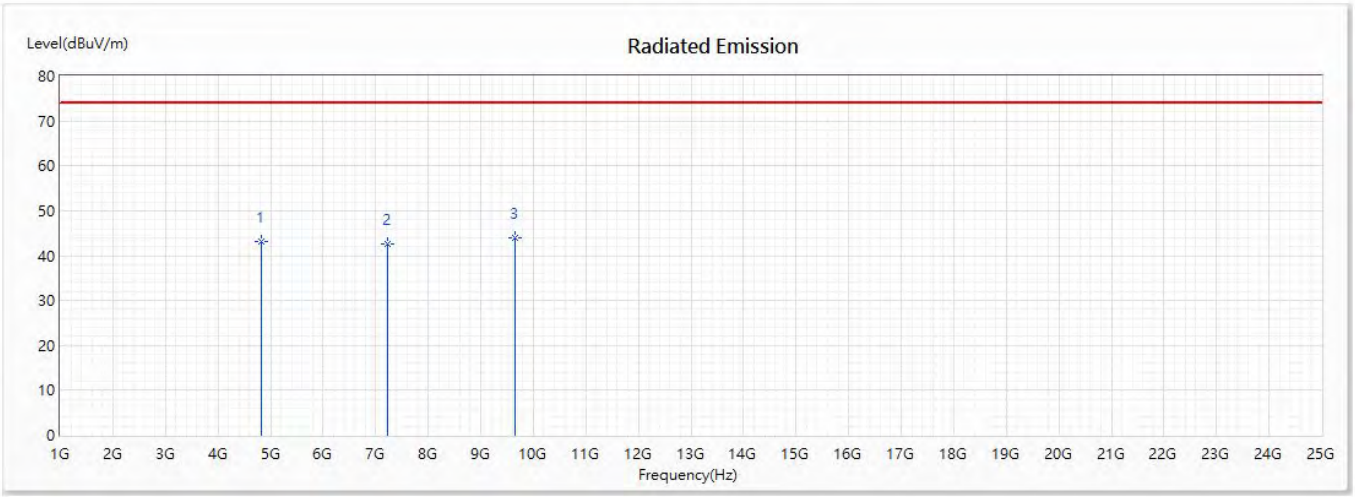
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	43.19	74.00	-30.81	53.67	-10.48	PK
2	7236	42.54	74.00	-31.46	51.41	-8.87	PK
* 3	9648	43.80	74.00	-30.20	52.94	-9.14	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW)(2412MHz)
Test Date	:	2020/10/06

Vertical



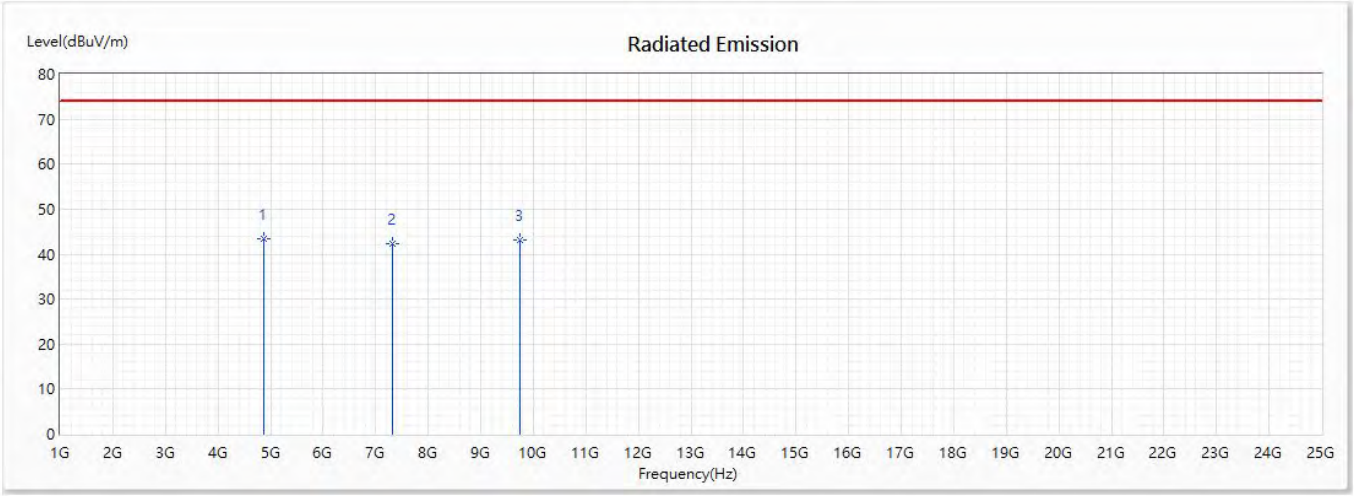
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	43.08	74.00	-30.92	53.56	-10.48	PK
2	7236	42.54	74.00	-31.46	51.41	-8.87	PK
* 3	9648	44.09	74.00	-29.91	53.23	-9.14	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW) (2437 MHz)
Test Date	:	2020/10/06

Horizontal



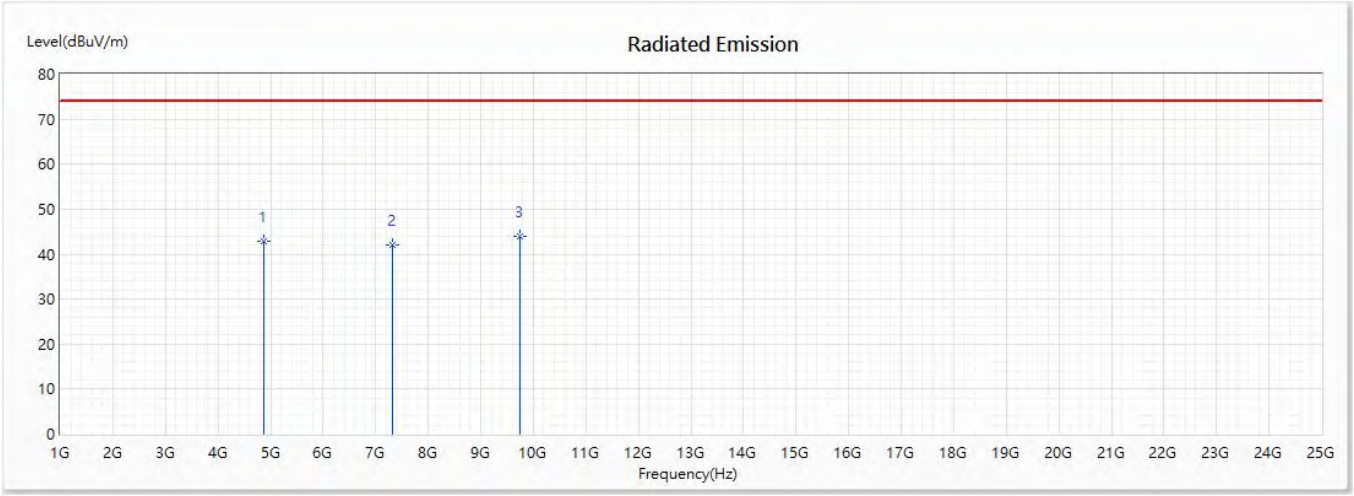
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4874	43.50	74.00	-30.50	53.76	-10.26	PK
2	7311	42.19	74.00	-31.81	51.31	-9.12	PK
3	9748	43.25	74.00	-30.75	52.43	-9.18	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW) (2437 MHz)
Test Date	:	2020/10/06

Vertical



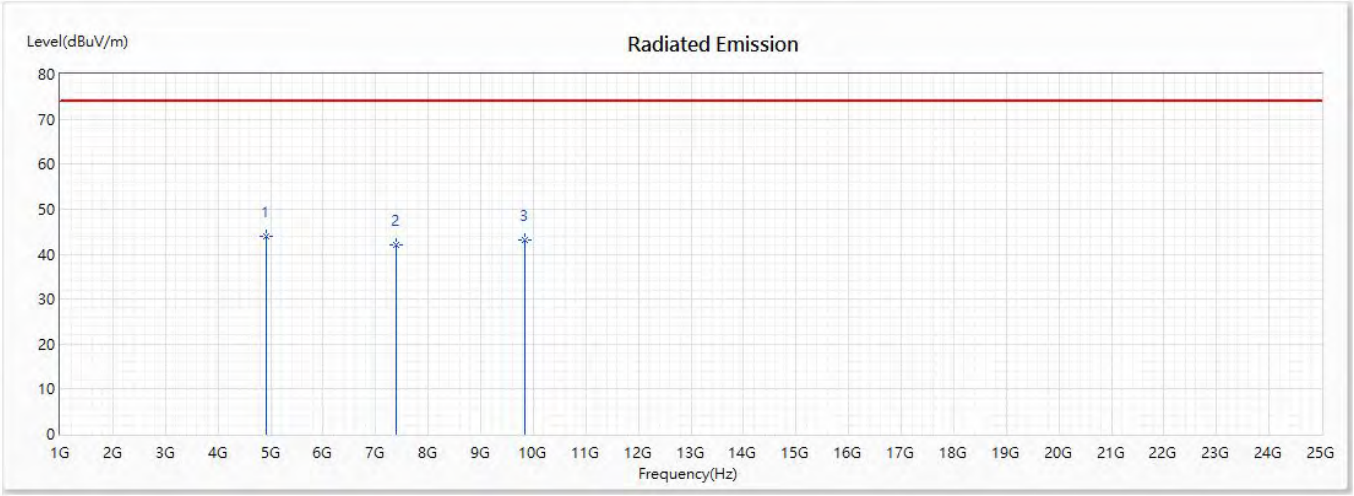
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	42.95	74.00	-31.05	53.21	-10.26	PK
2	7311	42.04	74.00	-31.96	51.16	-9.12	PK
* 3	9748	43.88	74.00	-30.12	53.06	-9.18	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Harmonic Radiated Emission Data
Test Mode : Mode 3: Transmit (802.11n-20MBW) (2462 MHz)
Test Date : 2020/10/06

Horizontal



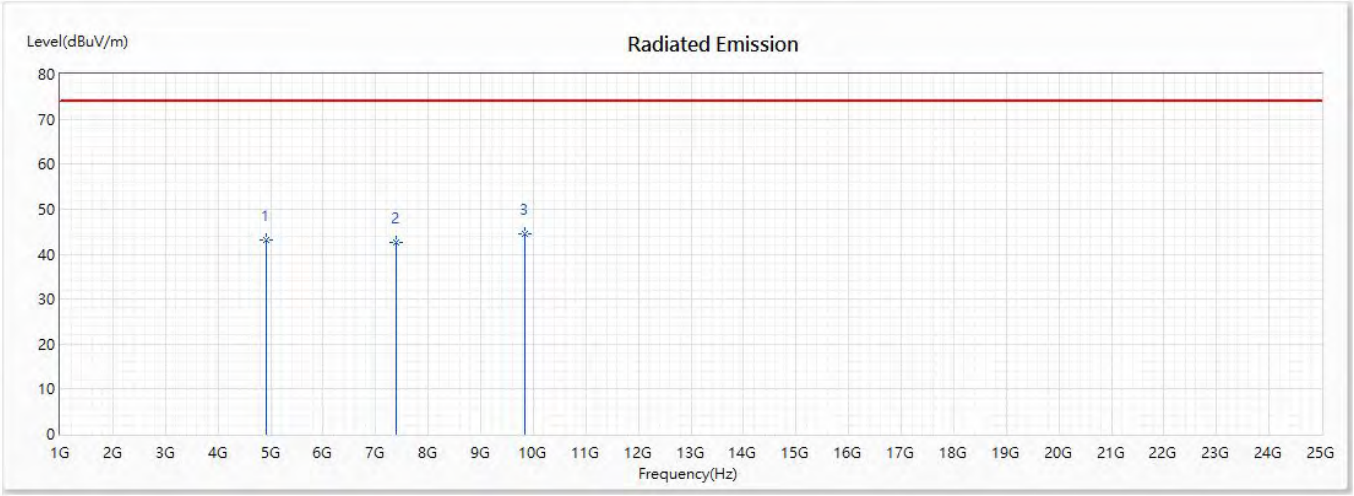
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4924	43.85	74.00	-30.15	53.99	-10.14	PK
2	7386	42.00	74.00	-32.00	51.33	-9.33	PK
3	9848	43.10	74.00	-30.90	51.72	-8.62	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Harmonic Radiated Emission Data
Test Mode : Mode 3: Transmit (802.11n-20MBW) (2462 MHz)
Test Date : 2020/10/06

Vertical



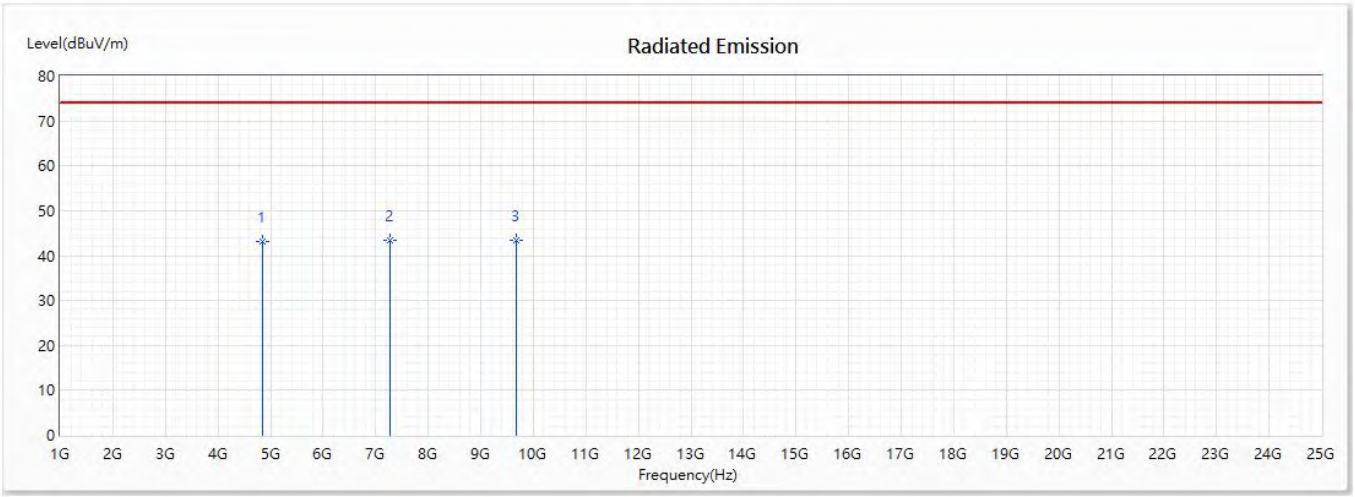
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	43.06	74.00	-30.94	53.20	-10.14	PK
2	7386	42.67	74.00	-31.33	52.00	-9.33	PK
* 3	9848	44.37	74.00	-29.63	52.99	-8.62	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW)(2422MHz)
Test Date	:	2020/10/06

Horizontal



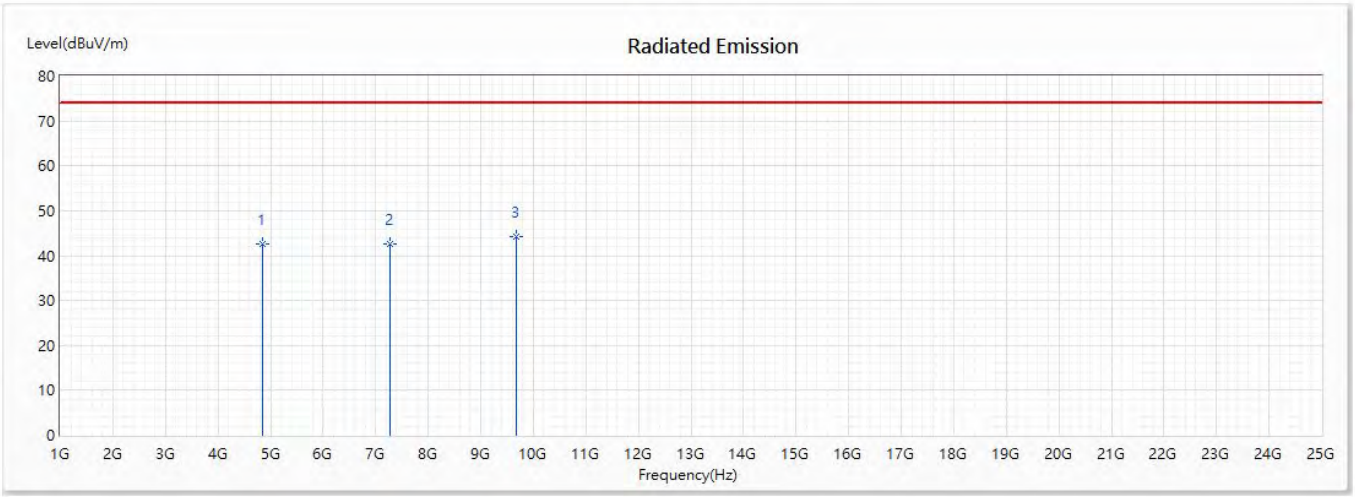
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4844	43.15	74.00	-30.85	53.51	-10.36	PK
* 2	7266	43.50	74.00	-30.50	52.50	-9.00	PK
3	9688	43.50	74.00	-30.50	52.65	-9.15	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW)(2422MHz)
Test Date	:	2020/10/06

Vertical



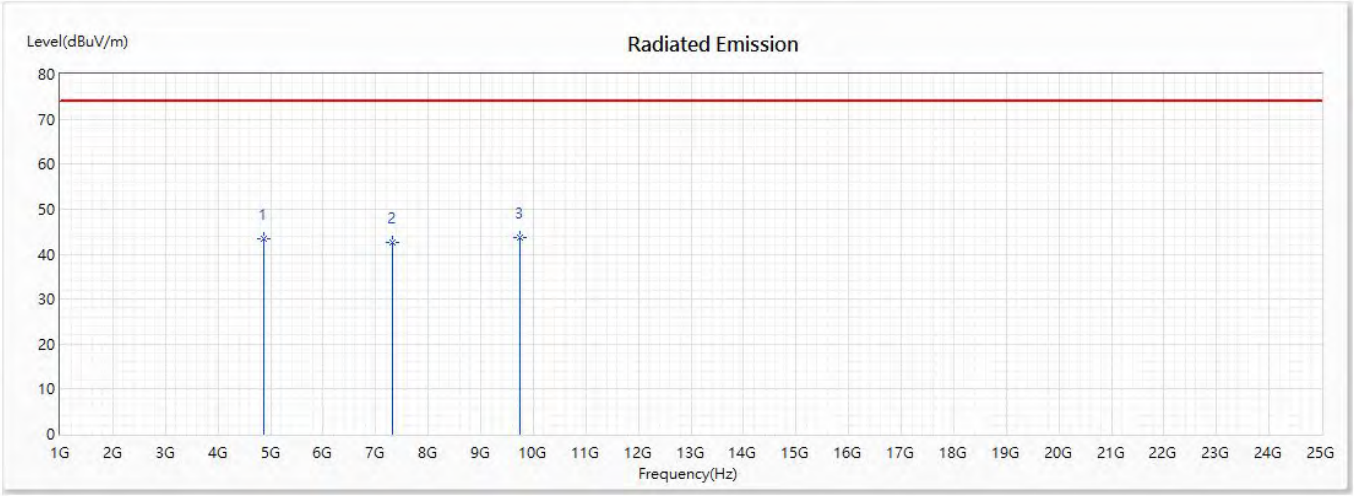
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4844	42.63	74.00	-31.37	52.99	-10.36	PK
2	7266	42.73	74.00	-31.27	51.73	-9.00	PK
* 3	9688	44.19	74.00	-29.81	53.34	-9.15	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2437 MHz)
Test Date	:	2020/10/06

Horizontal



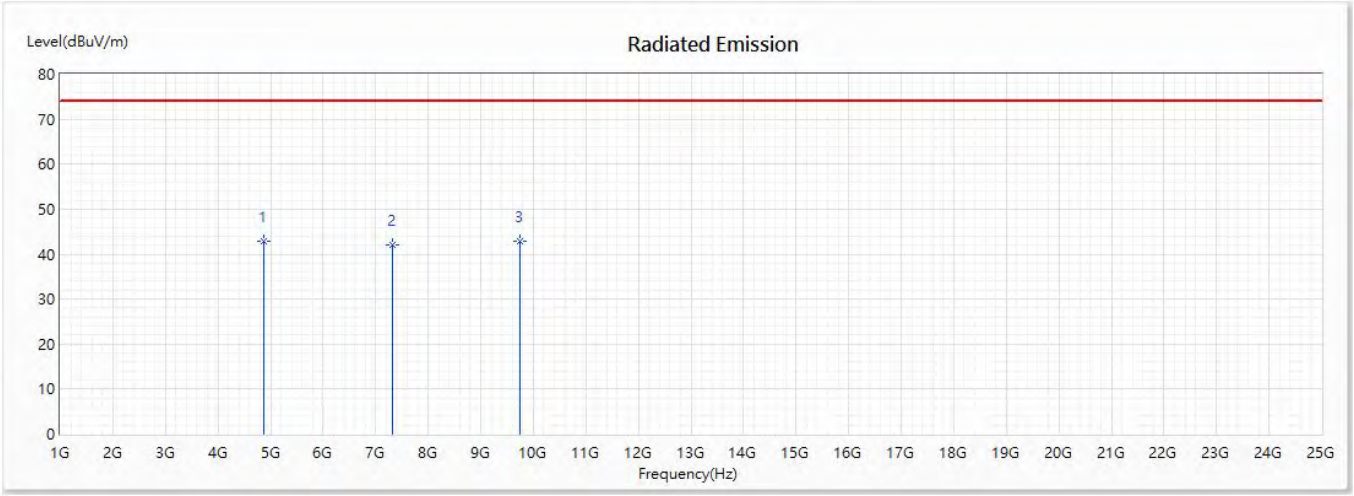
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	43.48	74.00	-30.52	53.74	-10.26	PK
2	7311	42.69	74.00	-31.31	51.81	-9.12	PK
* 3	9748	43.59	74.00	-30.41	52.77	-9.18	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Harmonic Radiated Emission Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2437 MHz)
Test Date	:	2020/10/06

Vertical



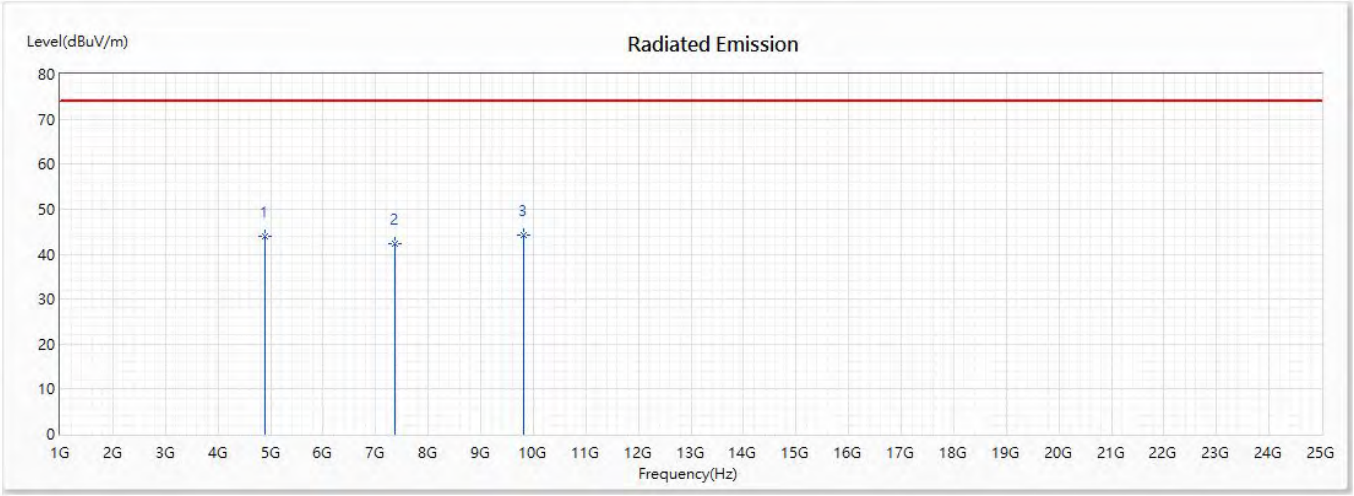
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4874	42.88	74.00	-31.12	53.14	-10.26	PK
2	7311	42.15	74.00	-31.85	51.27	-9.12	PK
3	9748	42.87	74.00	-31.13	52.05	-9.18	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Harmonic Radiated Emission Data
Test Mode : Mode 4: Transmit (802.11n-40MBW) (2452 MHz)
Test Date : 2020/10/06

Horizontal



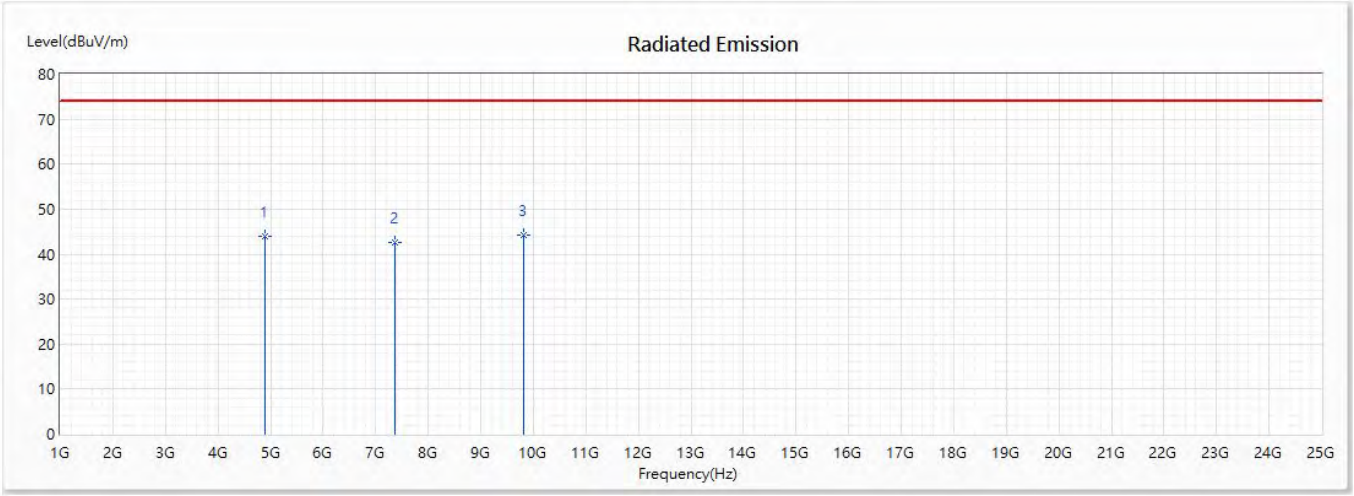
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4904	43.85	74.00	-30.15	54.03	-10.18	PK
2	7356	42.24	74.00	-31.76	51.49	-9.25	PK
* 3	9808	44.11	74.00	-29.89	52.92	-8.81	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Harmonic Radiated Emission Data
Test Mode : Mode 4: Transmit (802.11n-40MBW) (2452 MHz)
Test Date : 2020/10/06

Vertical



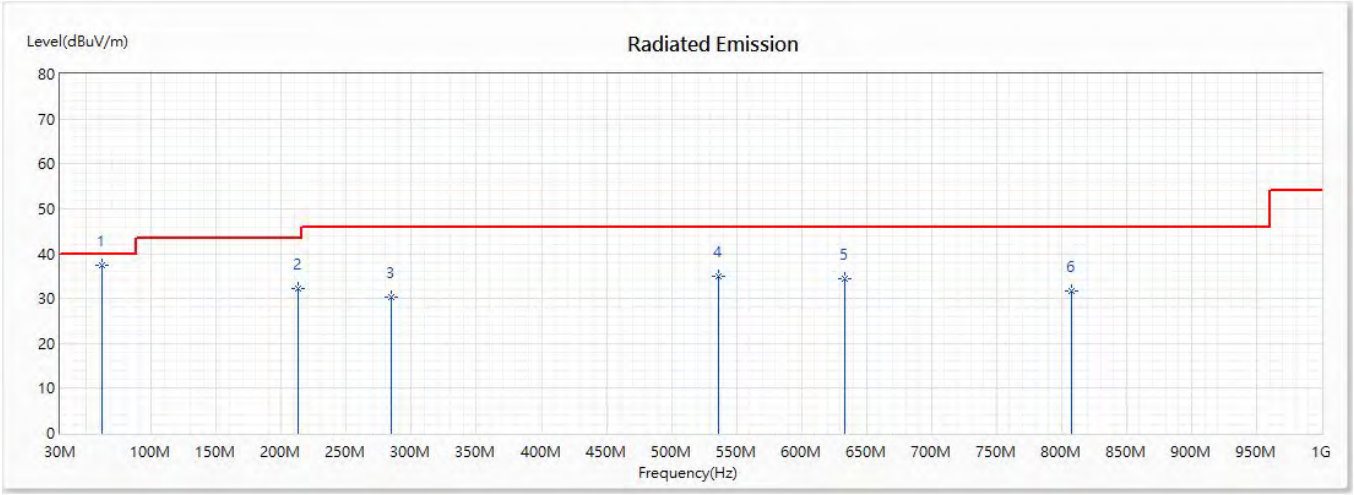
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4904	43.94	74.00	-30.06	54.12	-10.18	PK
2	7356	42.65	74.00	-31.35	51.90	-9.25	PK
* 3	9808	44.29	74.00	-29.71	53.10	-8.81	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b) (2437 MHz)
Test Date	:	2020/10/06

Horizontal



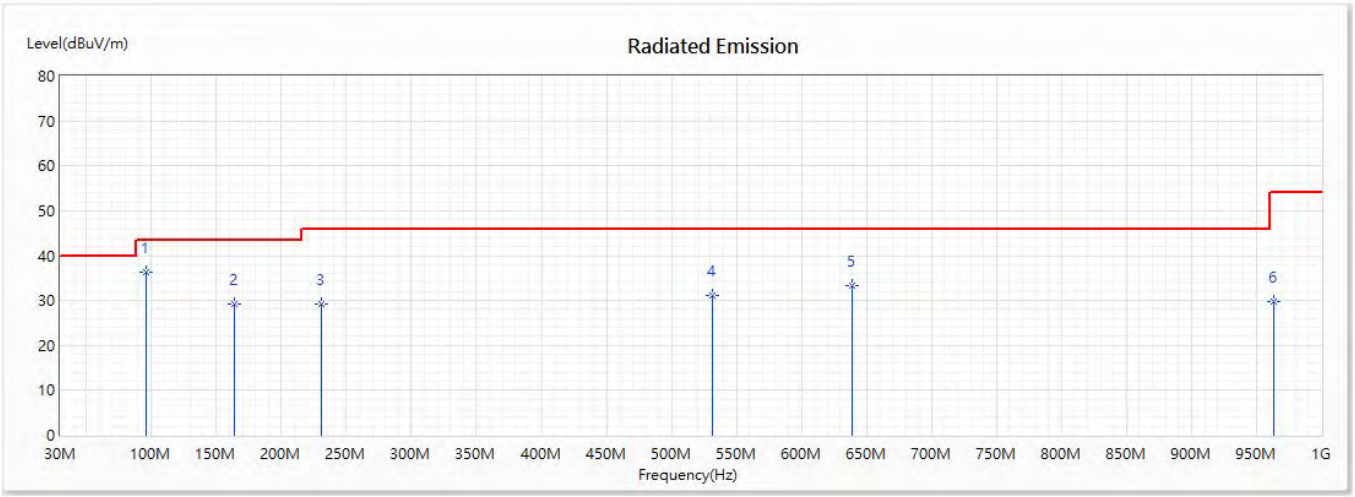
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	62.333	37.53	40.00	-2.47	51.11	-13.58	QP
2	212.754	32.18	43.50	-11.32	43.37	-11.19	QP
3	284.449	30.35	46.00	-15.65	40.56	-10.21	QP
4	536.087	34.86	46.00	-11.14	37.34	-2.48	QP
5	633.087	34.42	46.00	-11.58	35.66	-1.24	QP
6	807.406	31.65	46.00	-14.35	33.00	-1.35	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 1: Transmit (802.11b) (2437 MHz)
Test Date	:	2020/10/06

Vertical



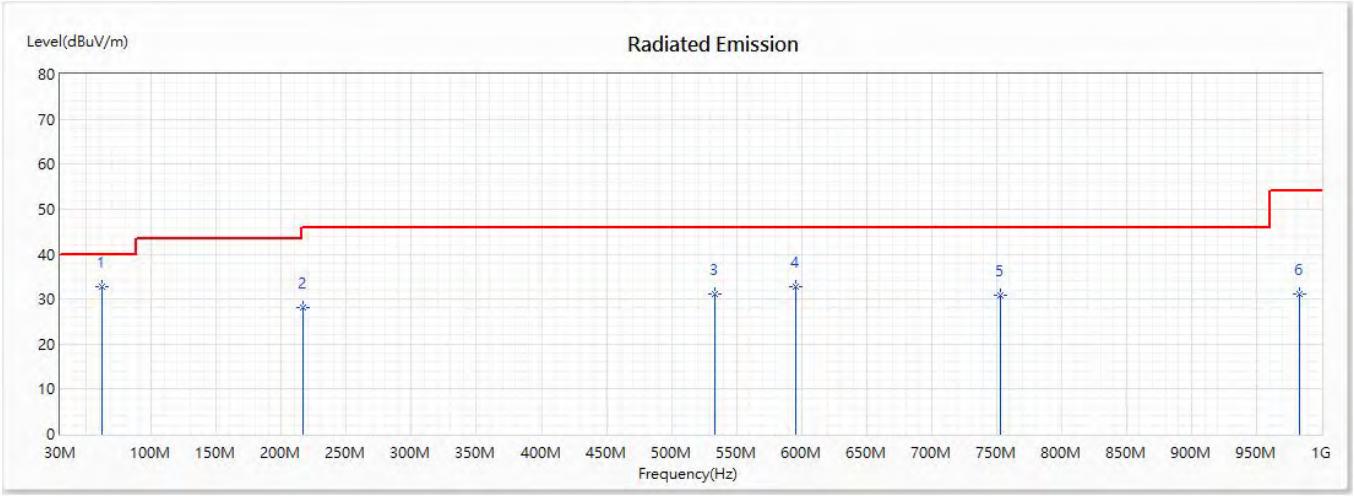
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	96.072	36.20	43.50	-7.30	46.47	-10.27	QP
2	163.551	29.10	43.50	-14.40	42.67	-13.57	QP
3	231.029	29.22	46.00	-16.78	39.35	-10.13	QP
4	531.87	31.21	46.00	-14.79	33.82	-2.61	QP
5	638.71	33.20	46.00	-12.80	34.51	-1.31	QP
6	963.449	29.74	54.00	-24.26	30.97	-1.23	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g) (2437 MHz)
Test Date	:	2020/10/06

Horizontal



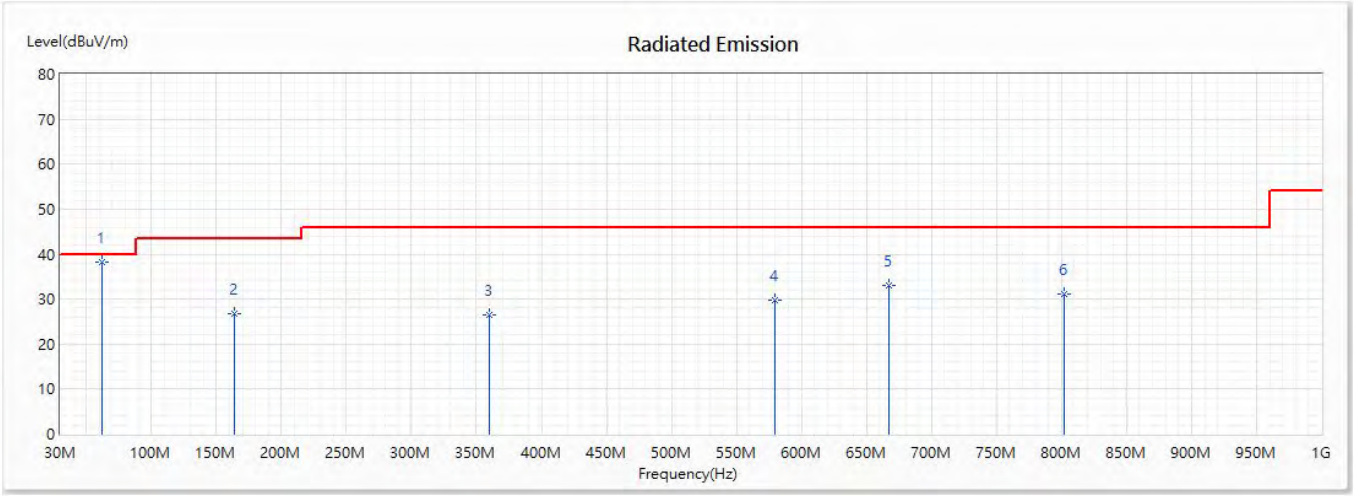
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	62.333	32.82	40.00	-7.18	46.40	-13.58	QP
2	216.971	28.11	46.00	-17.89	38.97	-10.86	QP
3	533.275	31.04	46.00	-14.96	33.61	-2.57	QP
4	595.13	32.63	46.00	-13.37	34.46	-1.83	QP
5	752.58	30.81	46.00	-15.19	31.91	-1.10	QP
6	983.13	31.04	54.00	-22.96	31.57	-0.53	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 2: Transmit (802.11g) (2437 MHz)
Test Date	:	2020/10/06

Vertical



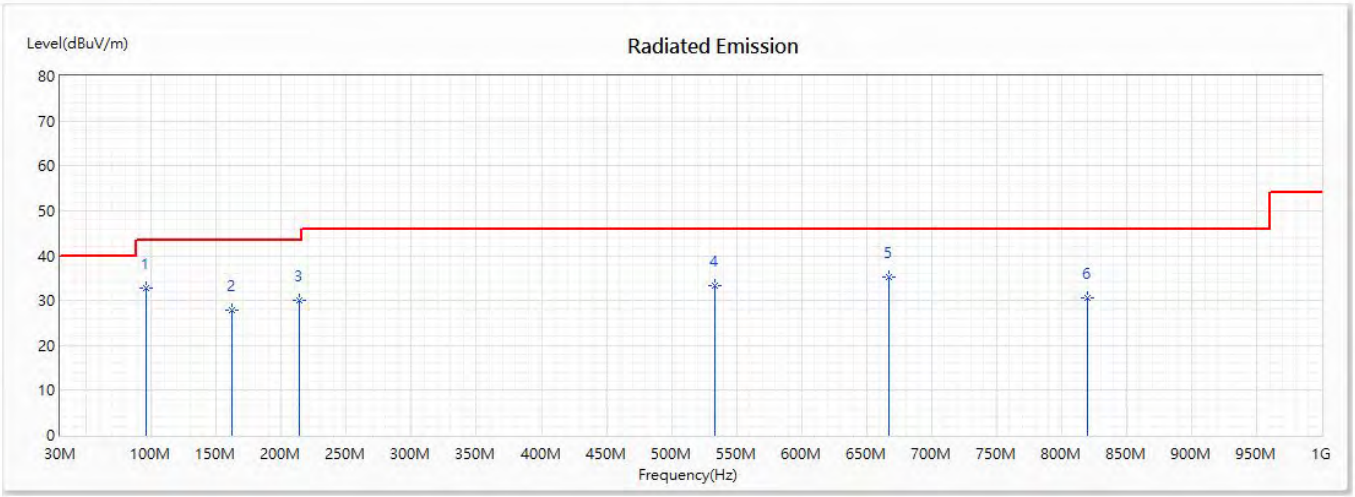
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	62.333	38.20	40.00	-1.80	51.78	-13.58	QP
2	163.551	26.69	43.50	-16.81	40.26	-13.57	QP
3	360.362	26.41	46.00	-19.59	31.61	-5.20	QP
4	579.667	29.78	46.00	-16.22	32.85	-3.07	QP
5	666.826	33.11	46.00	-12.89	34.66	-1.55	QP
6	801.783	31.10	46.00	-14.90	32.00	-0.90	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW) (2437 MHz)
Test Date	:	2020/10/06

Horizontal



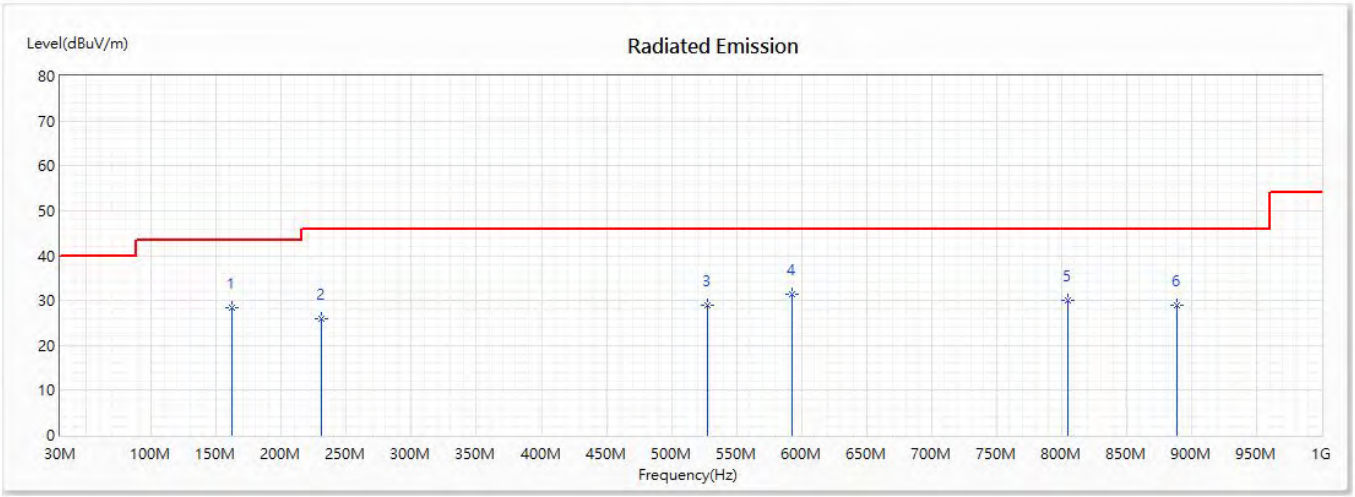
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	96.072	32.87	43.50	-10.63	43.14	-10.27	QP
2	162.145	27.79	43.50	-15.71	41.36	-13.57	QP
3	214.159	30.17	43.50	-13.33	41.23	-11.06	QP
4	533.275	33.20	46.00	-12.80	35.77	-2.57	QP
5	666.826	35.20	46.00	-10.80	36.75	-1.55	QP
6	820.058	30.60	46.00	-15.40	31.46	-0.86	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW) (2437 MHz)
Test Date	:	2020/10/06

Vertical



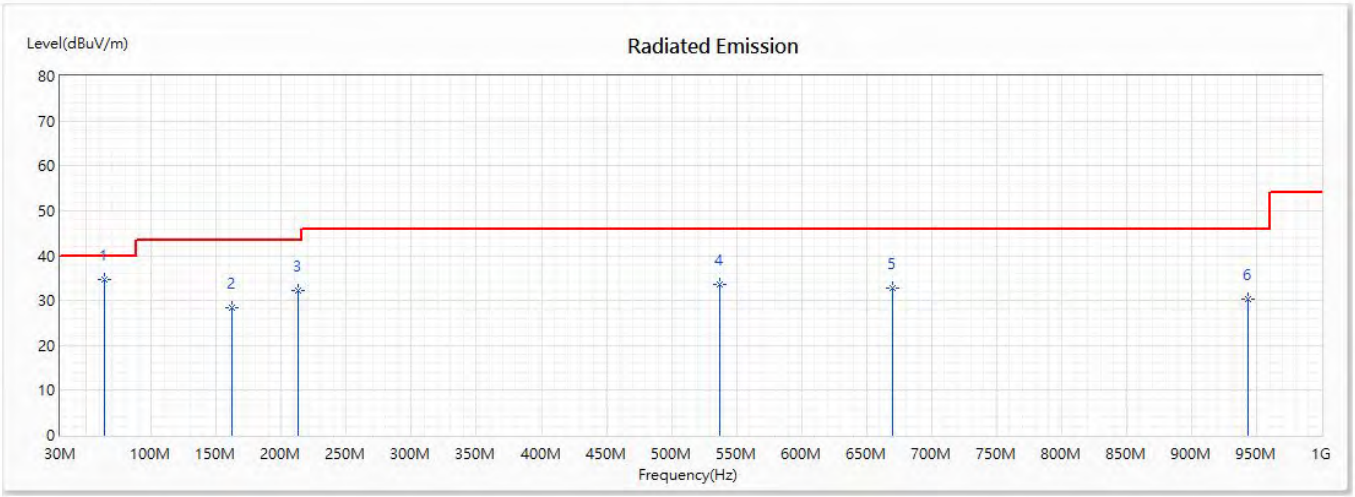
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	162.145	28.35	43.50	-15.15	41.92	-13.57	QP
2	231.029	25.95	46.00	-20.05	36.08	-10.13	QP
3	527.652	28.92	46.00	-17.08	31.61	-2.69	QP
* 4	592.319	31.29	46.00	-14.71	33.31	-2.02	QP
5	804.594	30.07	46.00	-15.93	30.97	-0.90	QP
6	888.942	28.96	46.00	-17.04	30.59	-1.63	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2437 MHz)
Test Date	:	2020/10/06

Horizontal



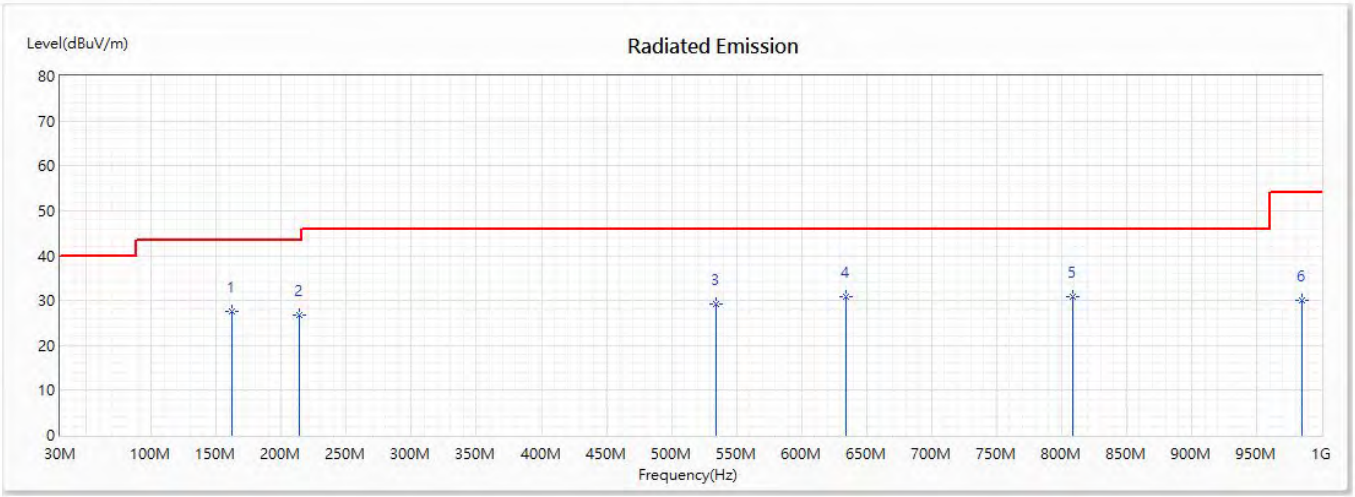
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	63.739	34.64	40.00	-5.36	48.54	-13.90	QP
2	162.145	28.34	43.50	-15.16	41.91	-13.57	QP
3	212.754	32.20	43.50	-11.30	43.39	-11.19	QP
4	537.493	33.49	46.00	-12.51	35.92	-2.43	QP
5	669.638	32.76	46.00	-13.24	34.31	-1.55	QP
6	943.768	30.27	46.00	-15.73	30.87	-0.60	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	General Radiated Emission Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2437 MHz)
Test Date	:	2020/10/06

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	162.145	27.57	43.50	-15.93	41.14	-13.57	QP
2	214.159	26.73	43.50	-16.77	37.79	-11.06	QP
3	534.681	29.17	46.00	-16.83	31.70	-2.53	QP
4	634.493	30.86	46.00	-15.14	32.16	-1.30	QP
* 5	808.812	30.95	46.00	-15.05	32.57	-1.62	QP
6	984.536	29.99	54.00	-24.01	30.56	-0.57	QP

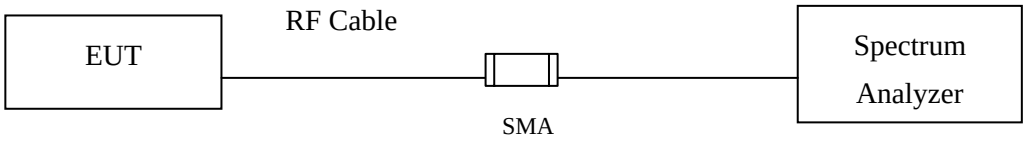
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

5. RF antenna conducted test

5.1. Test Setup

RF antenna Conducted Measurement:



5.2. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.3. Test Procedure

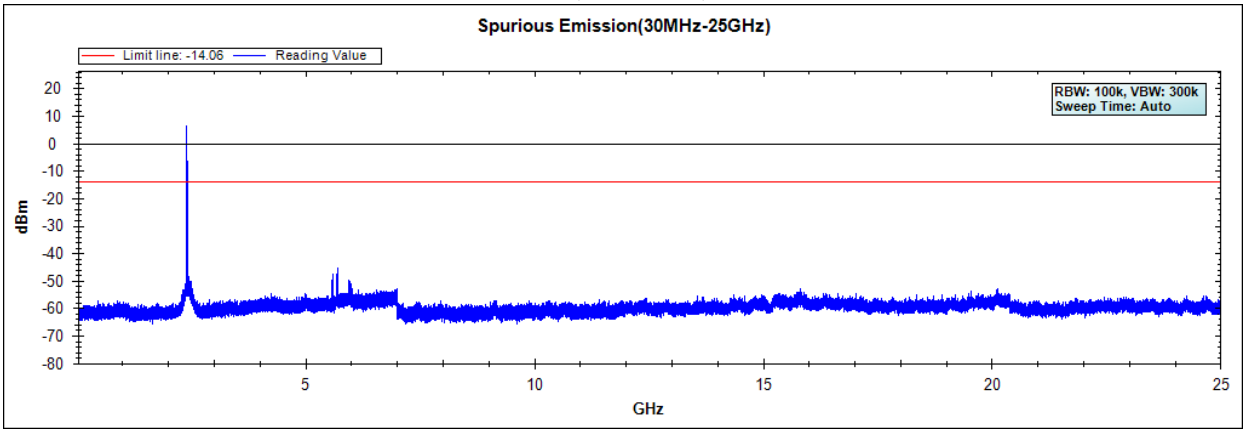
The EUT was tested according to C63.10:2013 Section 11.11 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

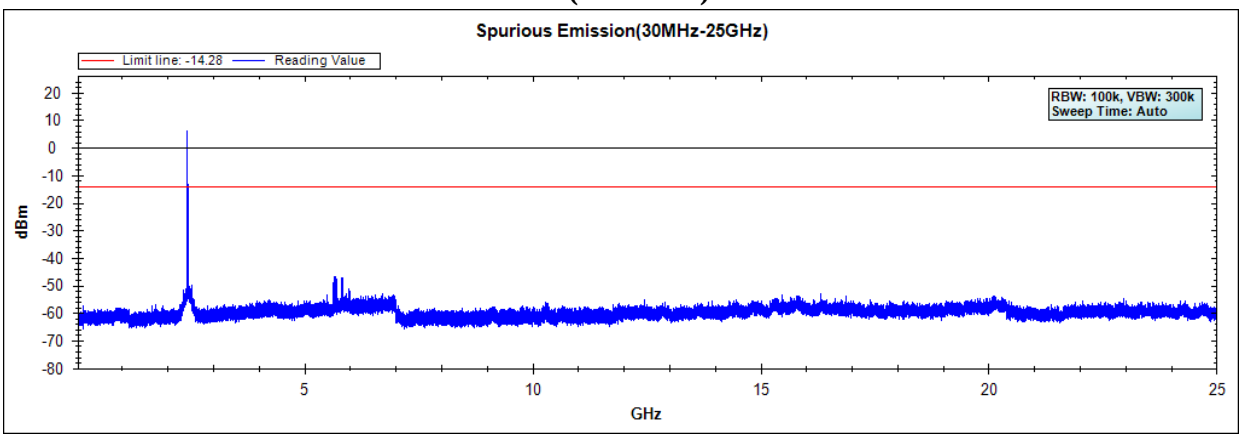
5.4. Test Result of RF antenna conducted test

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	RF antenna conducted test
Test Mode	:	Mode 1: Transmit (802.11b)
Test Date	:	2020/10/16

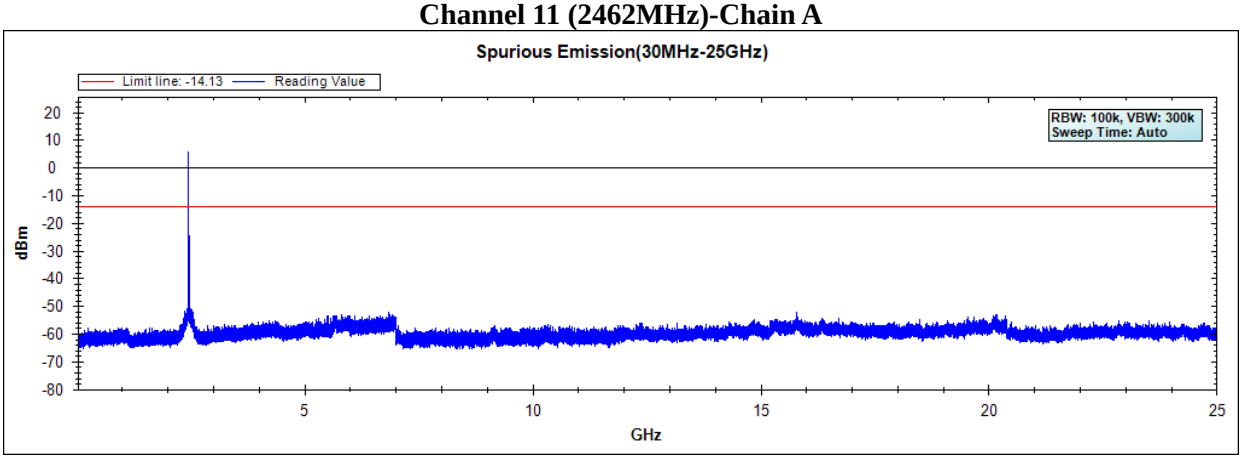
Channel 01 (2412MHz)-Chain A



Channel 06 (2437MHz)-Chain A



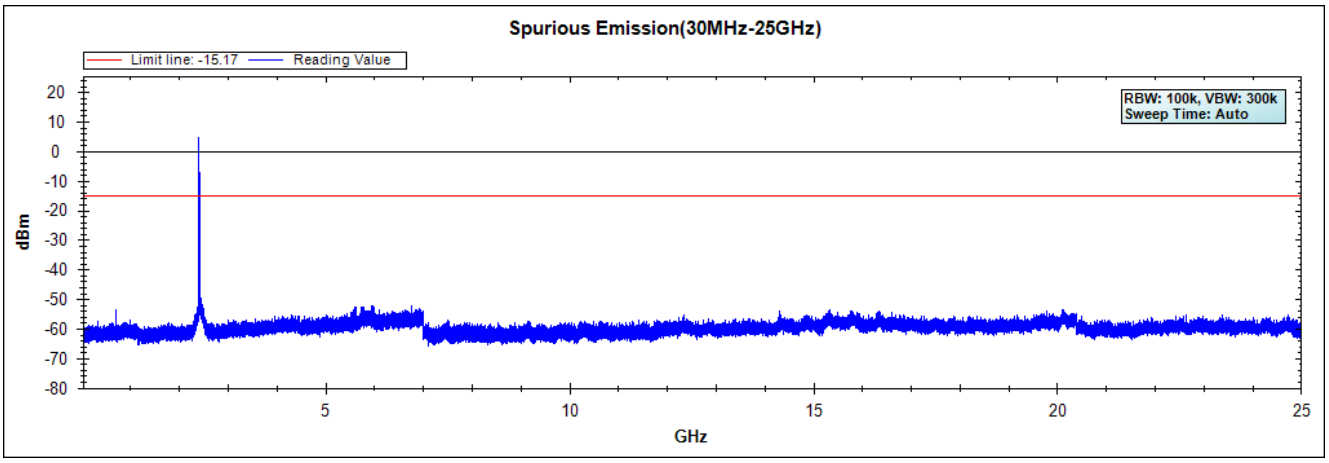
Channel 11 (2462MHz)-Chain A



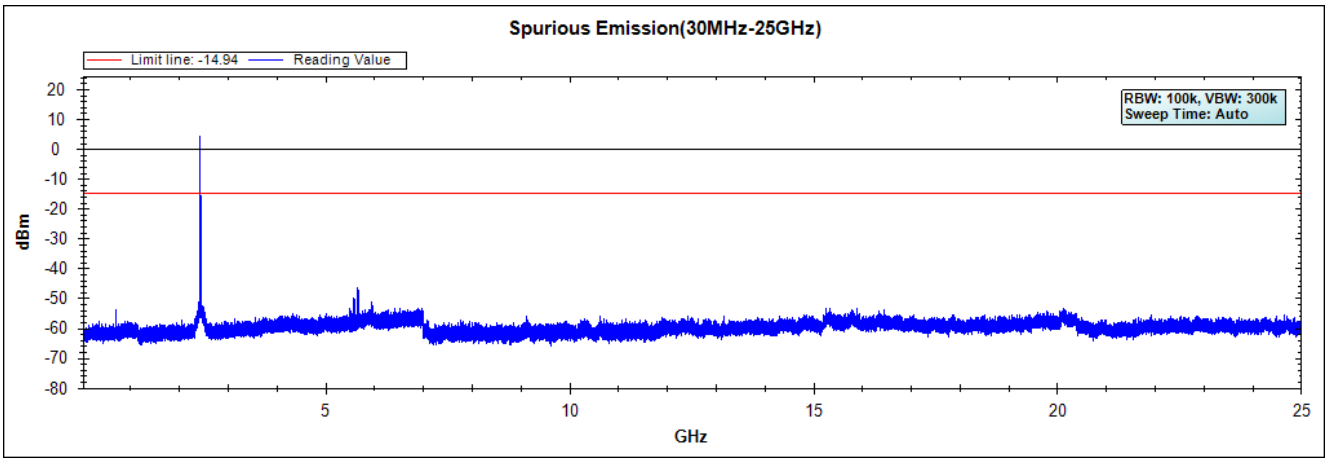
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	RF antenna conducted test
Test Mode	:	Mode 1: Transmit (802.11b)
Test Date	:	2020/10/16

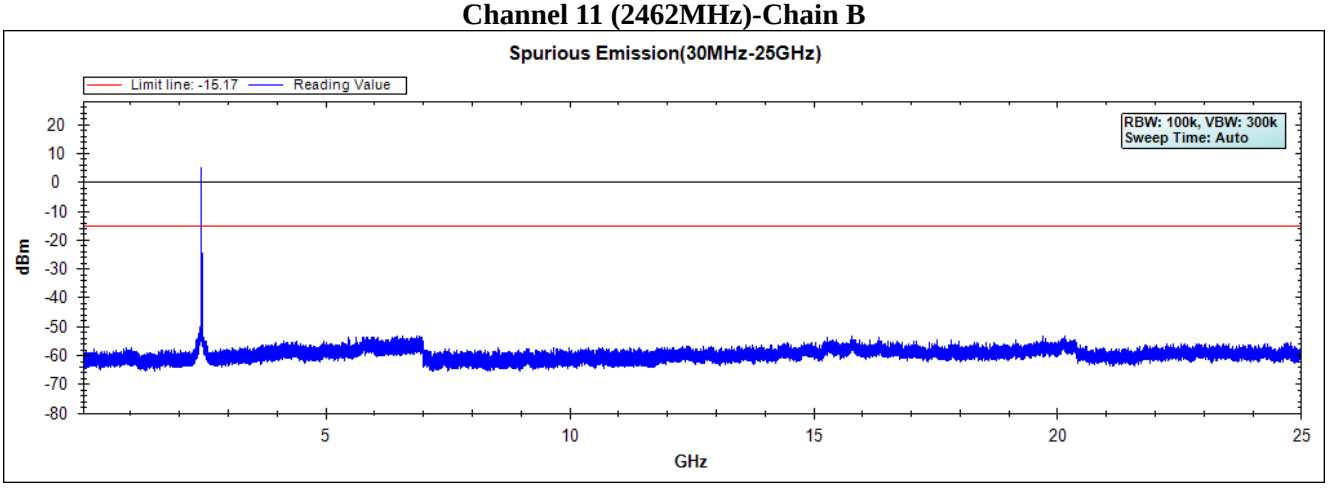
Channel 01 (2412MHz)-Chain B



Channel 06 (2437MHz)-Chain B



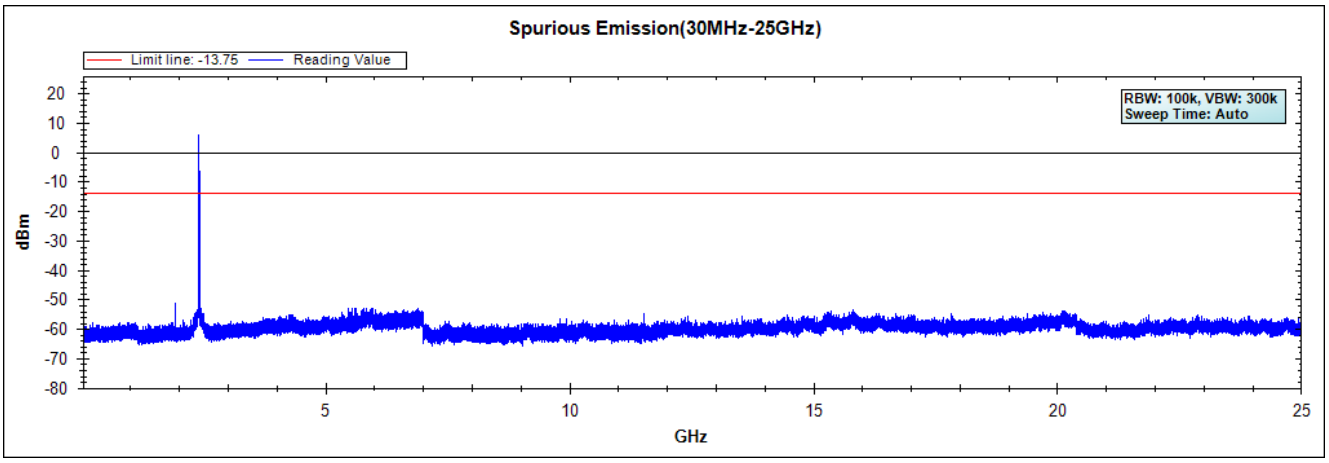
Channel 11 (2462MHz)-Chain B



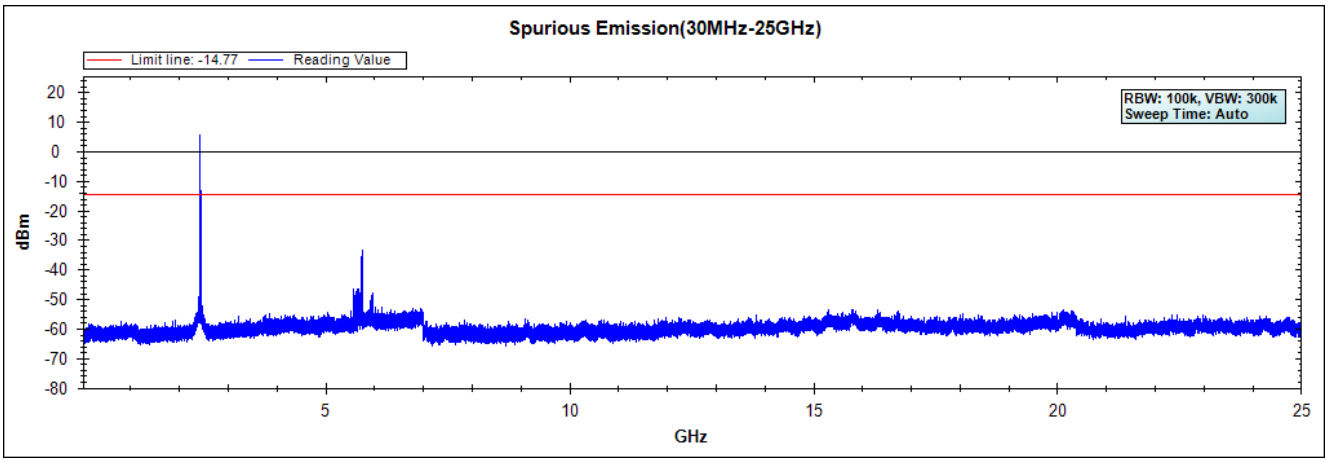
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	RF antenna conducted test
Test Mode	:	Mode 1: Transmit (802.11b)
Test Date	:	2020/10/16

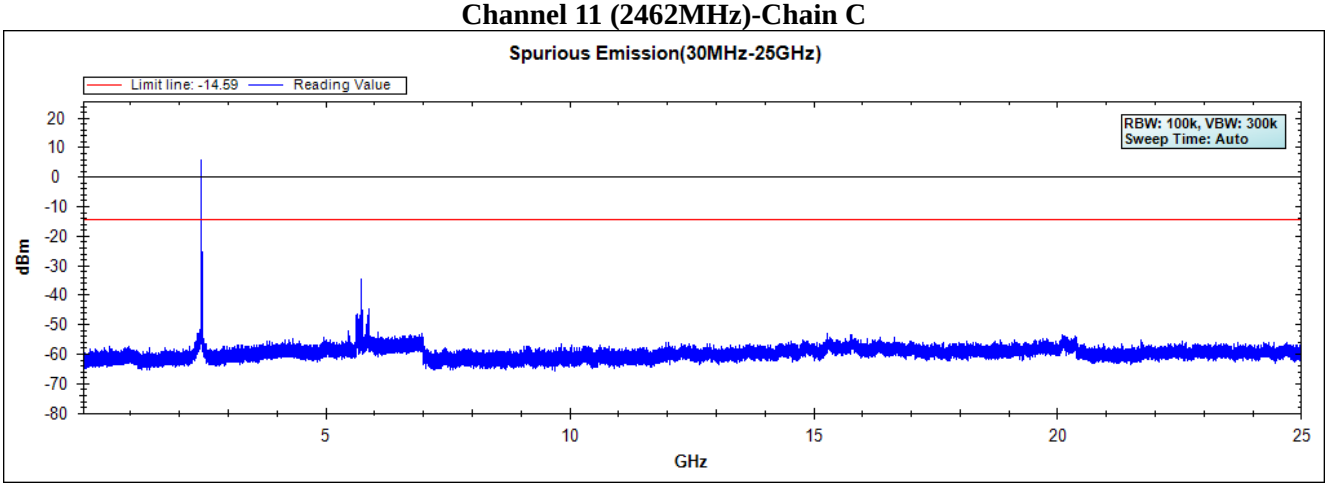
Channel 01 (2412MHz)-Chain C



Channel 06 (2437MHz)-Chain C



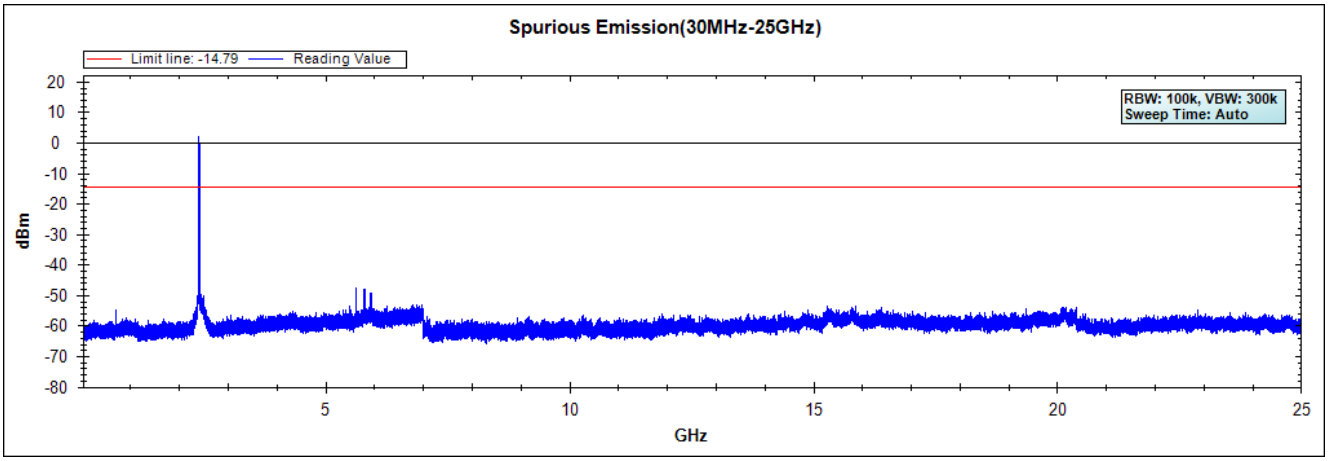
Channel 11 (2462MHz)-Chain C



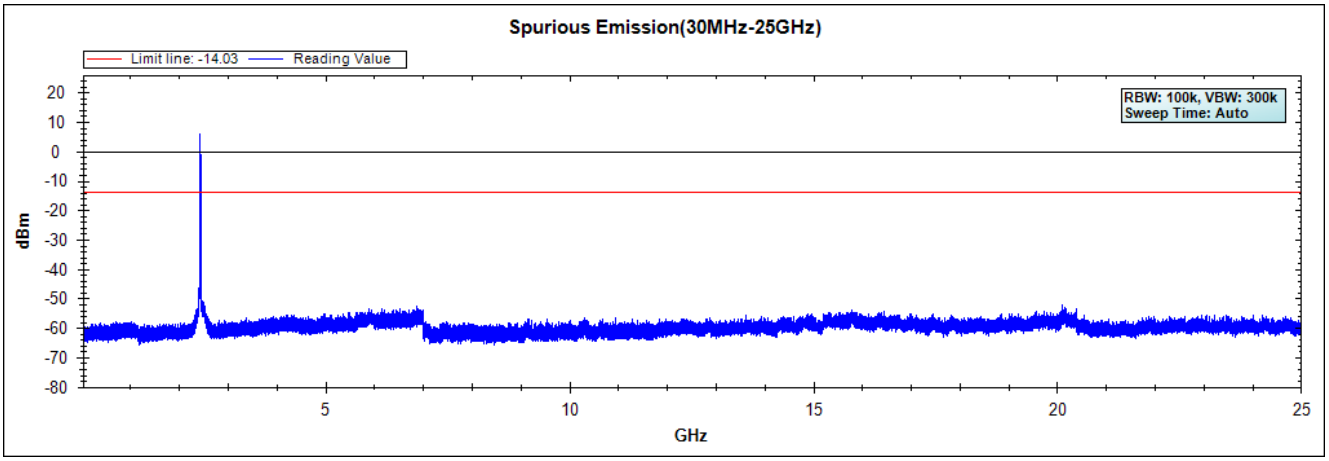
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 2: Transmit (802.11g)
Test Date	:	2020/10/16

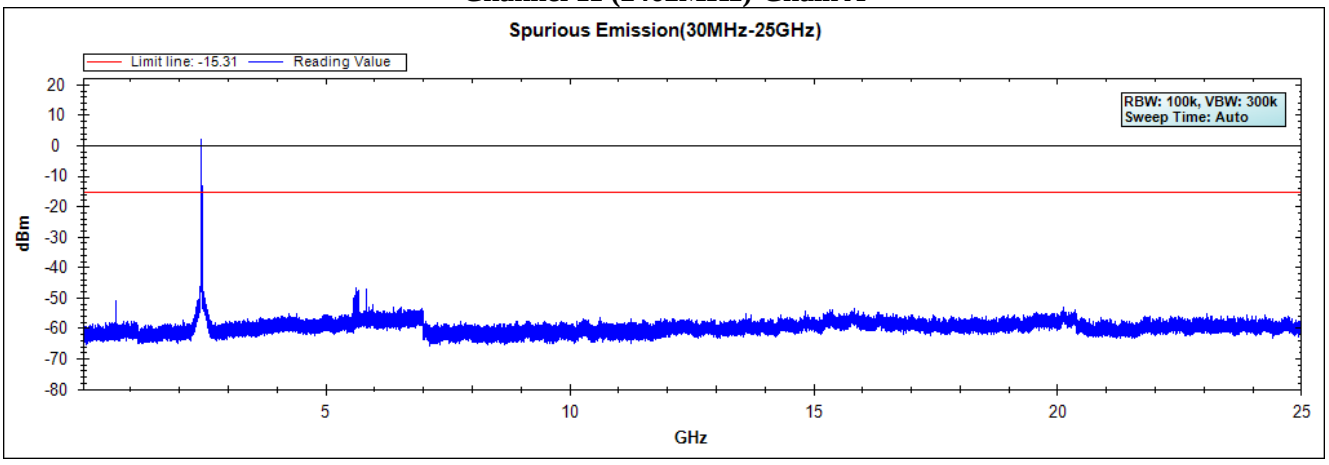
Channel 01 (2412MHz)-Chain A



Channel 06 (2437MHz)-Chain A



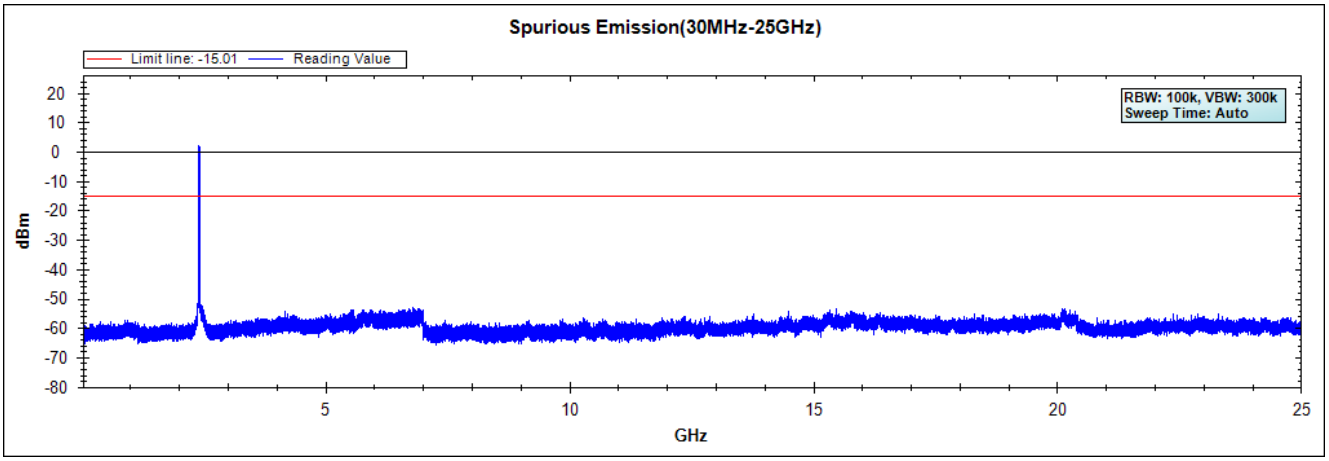
Channel 11 (2462MHz)-Chain A



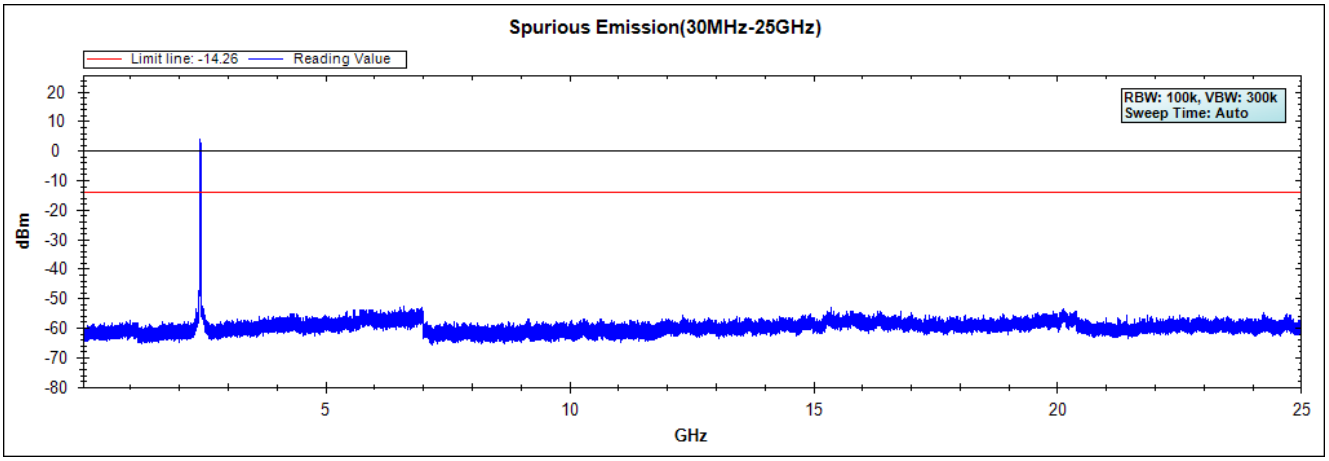
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 2: Transmit (802.11g)
Test Date	:	2020/10/16

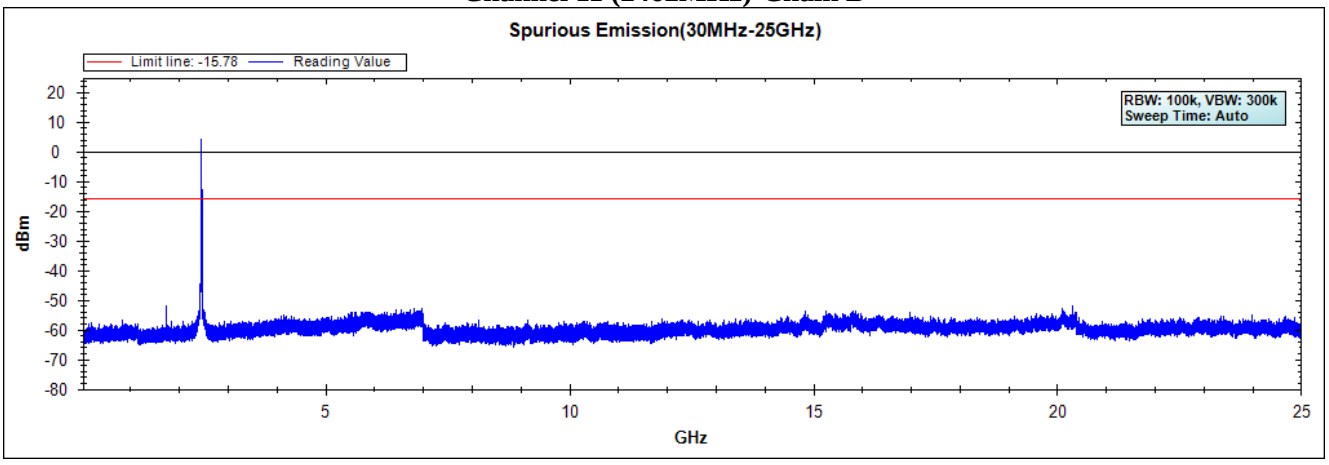
Channel 01 (2412MHz)-Chain B



Channel 06 (2437MHz)-Chain B



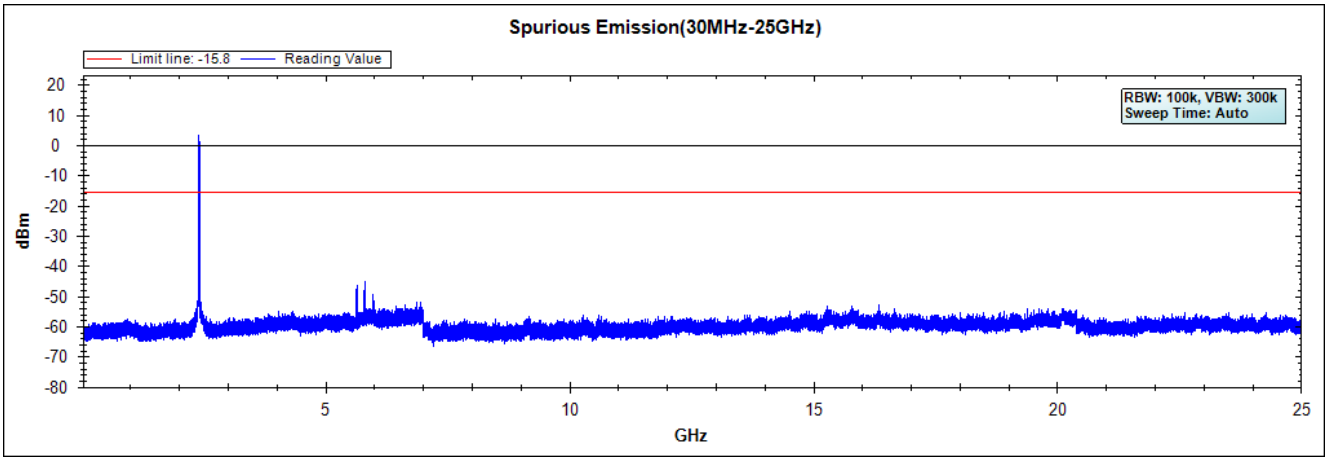
Channel 11 (2462MHz)-Chain B



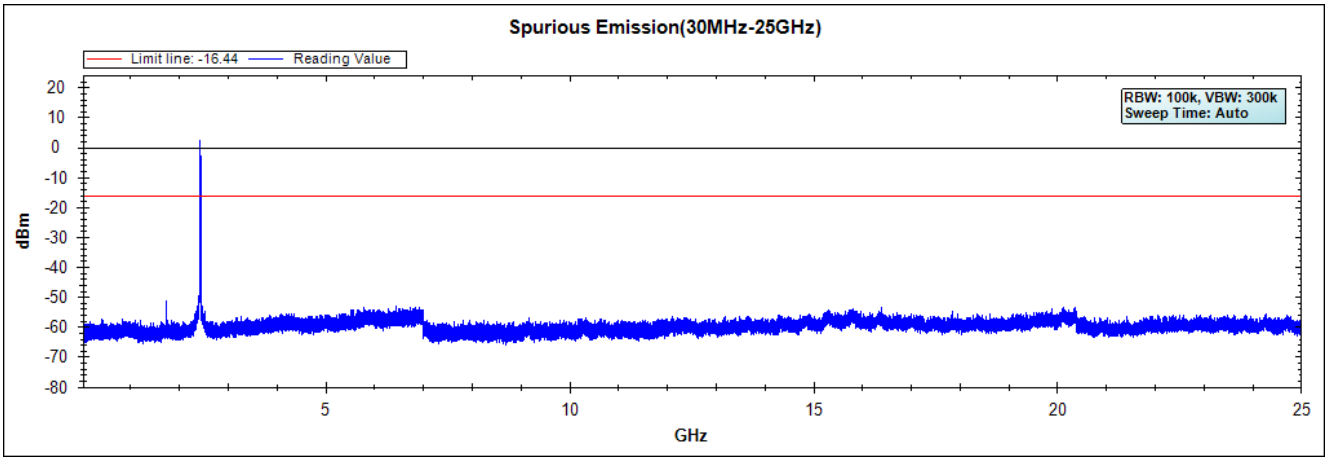
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 2: Transmit (802.11g)
Test Date	:	2020/10/16

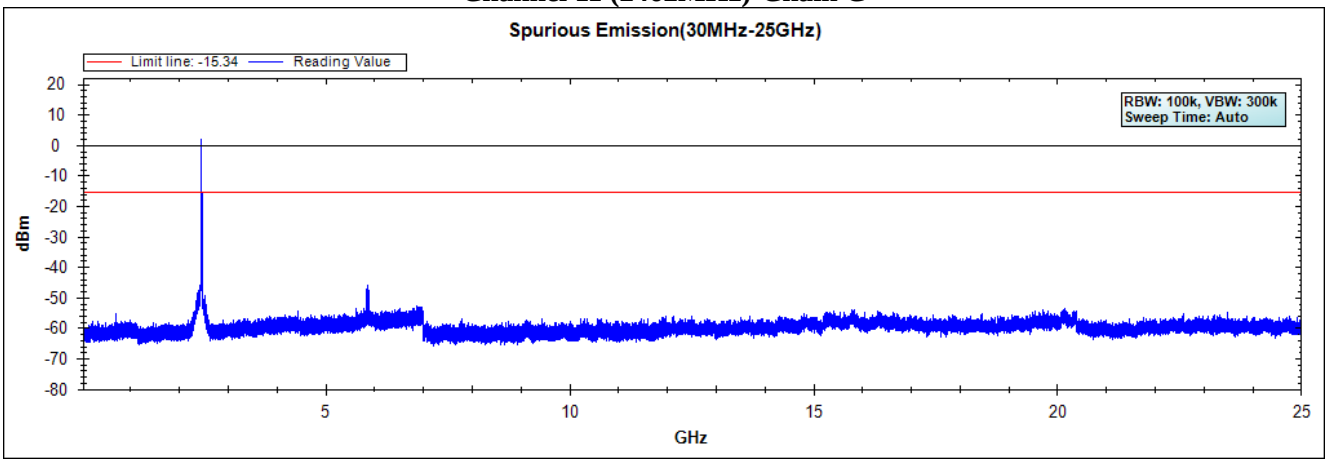
Channel 01 (2412MHz)-Chain C



Channel 06 (2437MHz)-Chain C



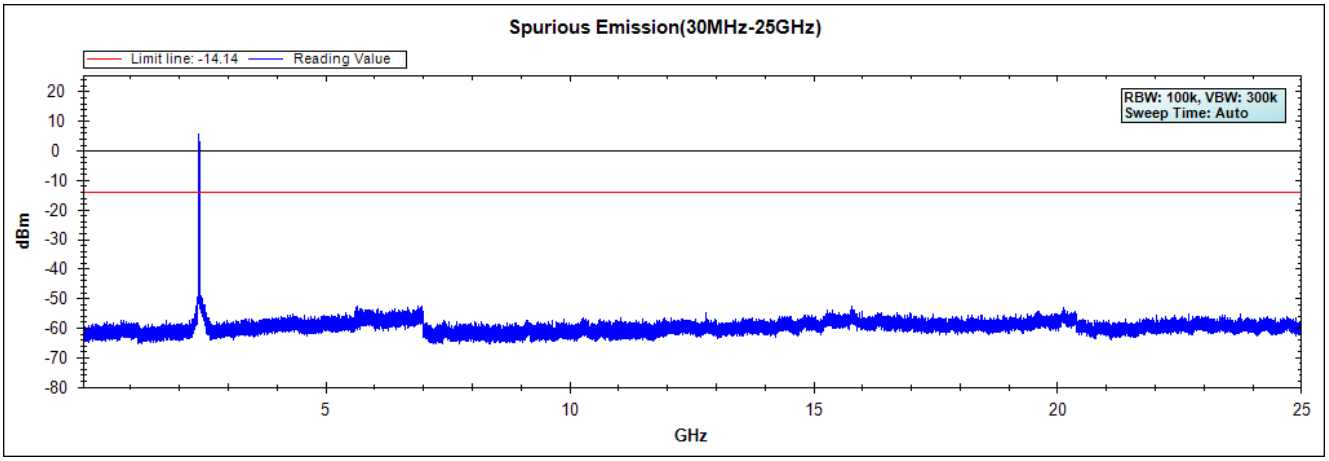
Channel 11 (2462MHz)-Chain C



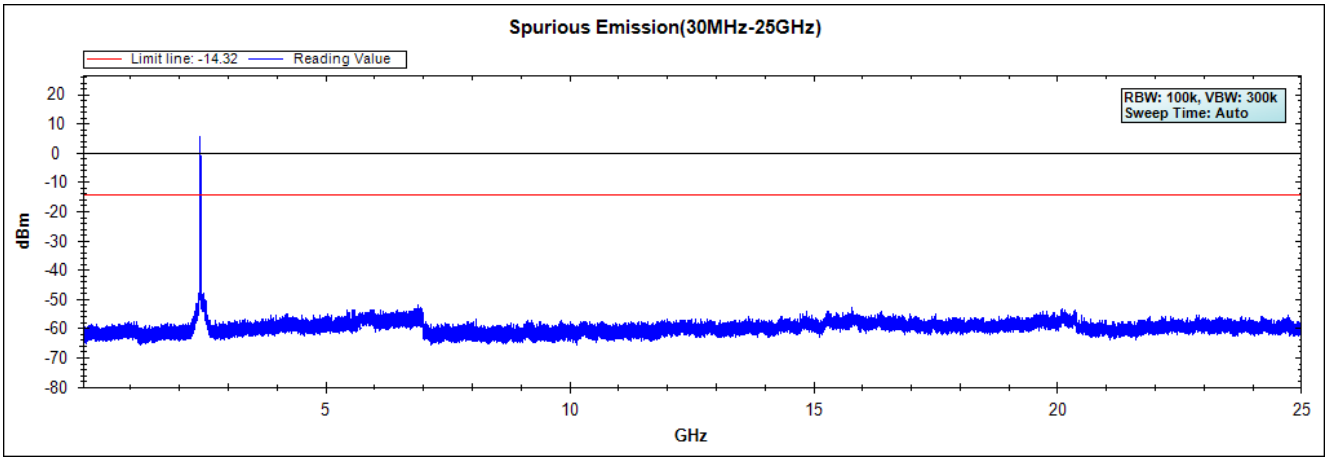
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 3: Transmit (802.11n-20MBW)
Test Date	:	2020/10/16

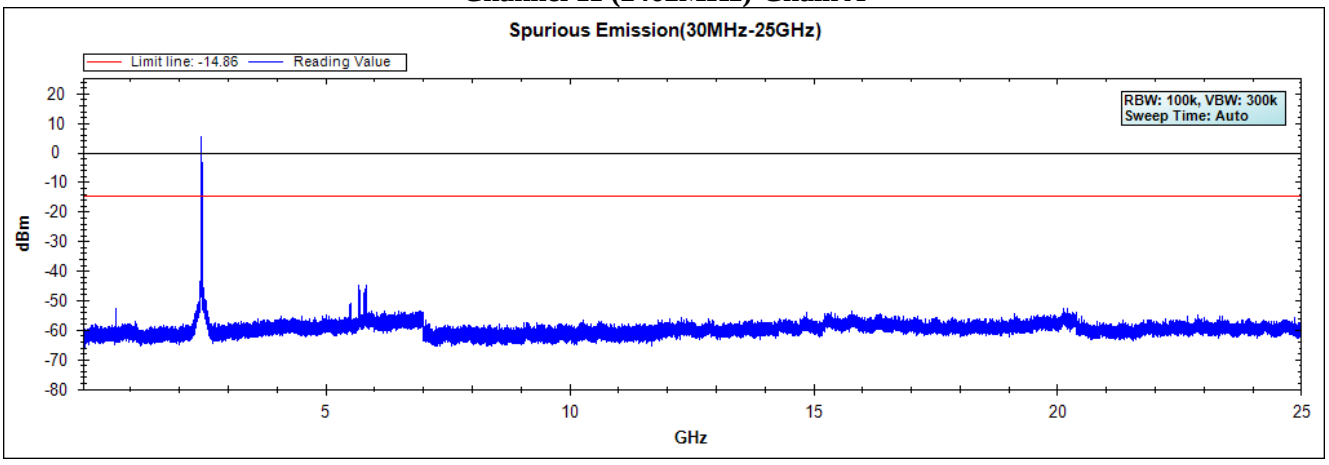
Channel 01 (2412MHz)-Chain A



Channel 06 (2437MHz)-Chain A



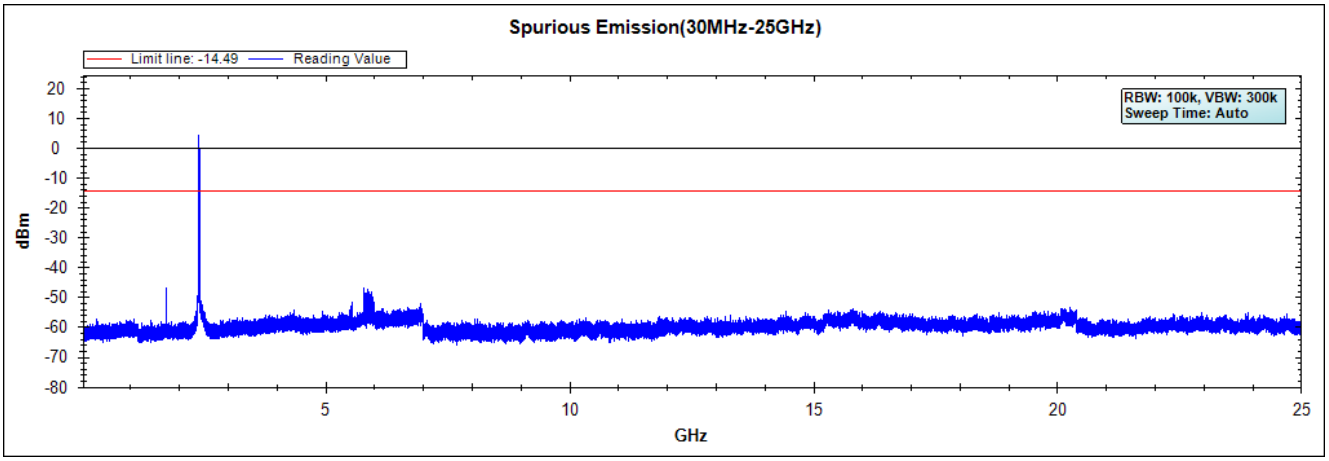
Channel 11 (2462MHz)-Chain A



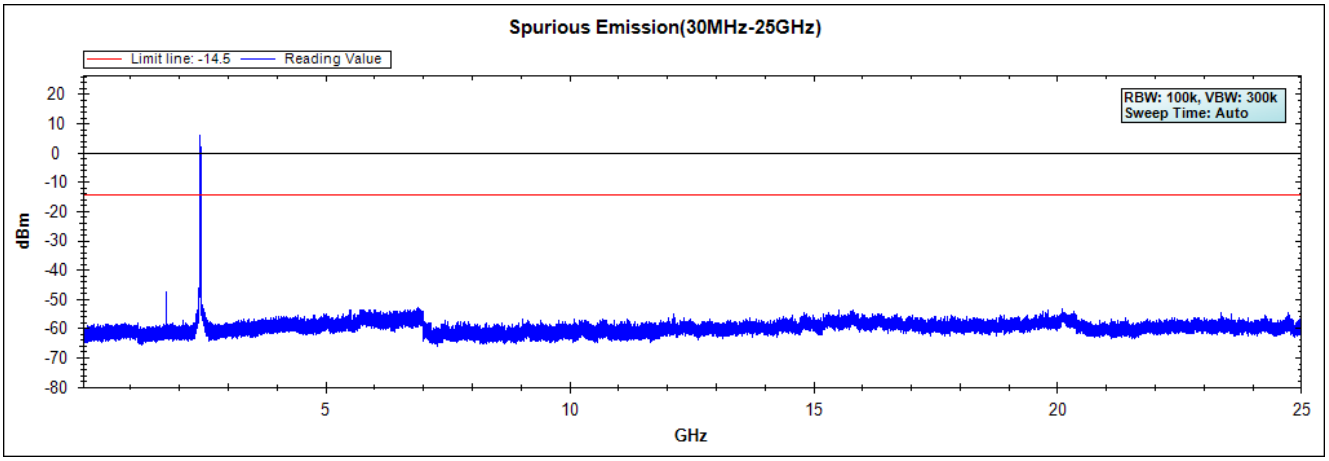
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 3: Transmit (802.11n-20MBW)
Test Date	:	2020/10/16

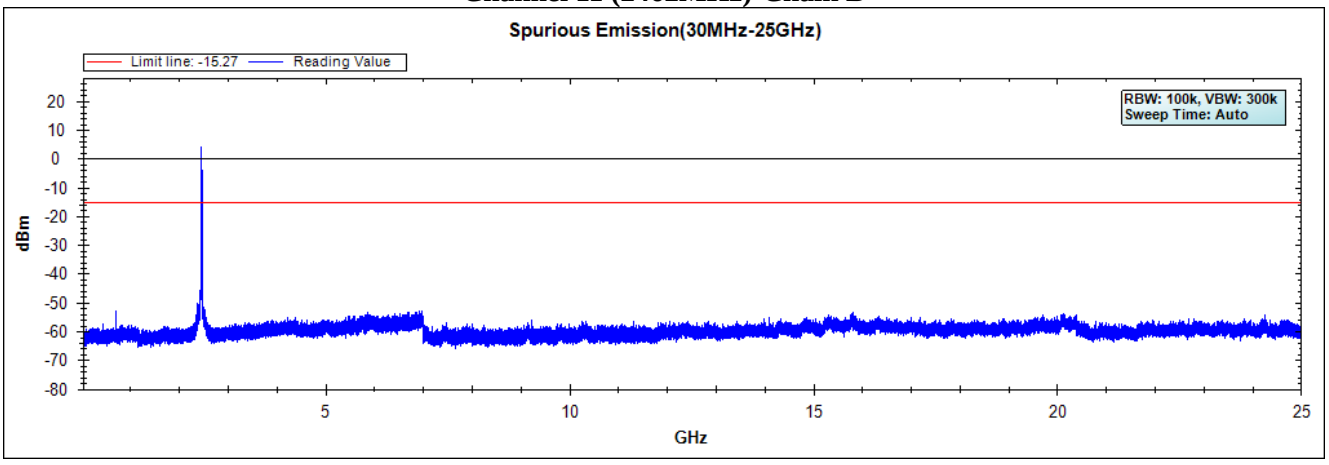
Channel 01 (2412MHz)-Chain B



Channel 06 (2437MHz)-Chain B



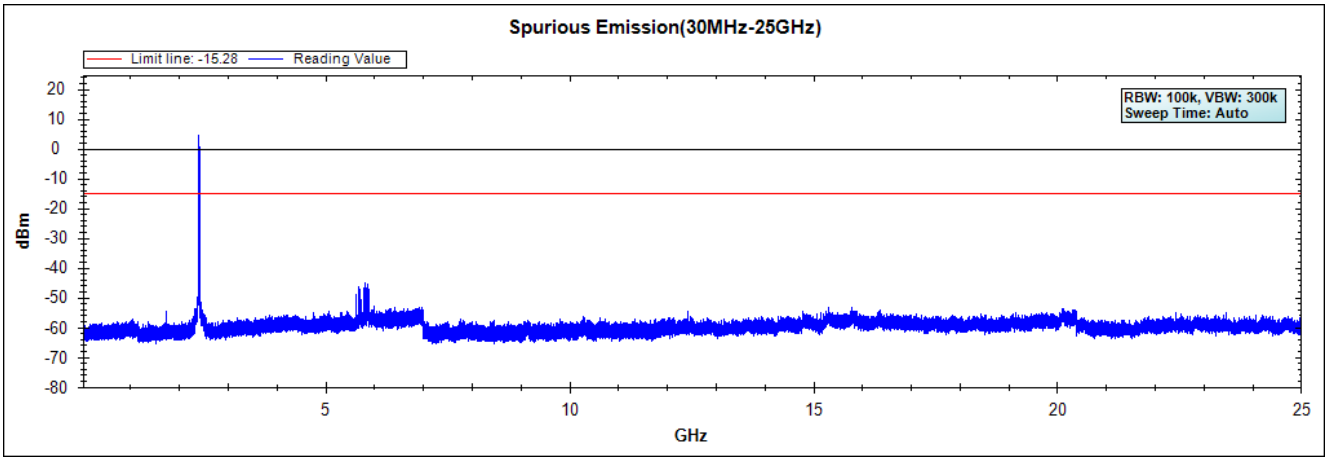
Channel 11 (2462MHz)-Chain B



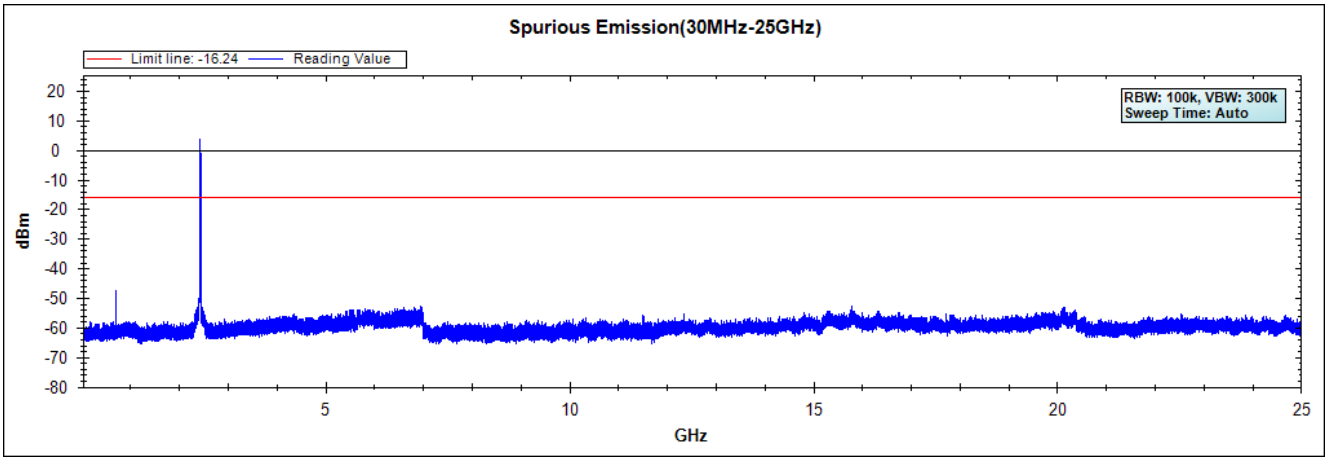
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 3: Transmit (802.11n-20MBW)
Test Date	:	2020/10/16

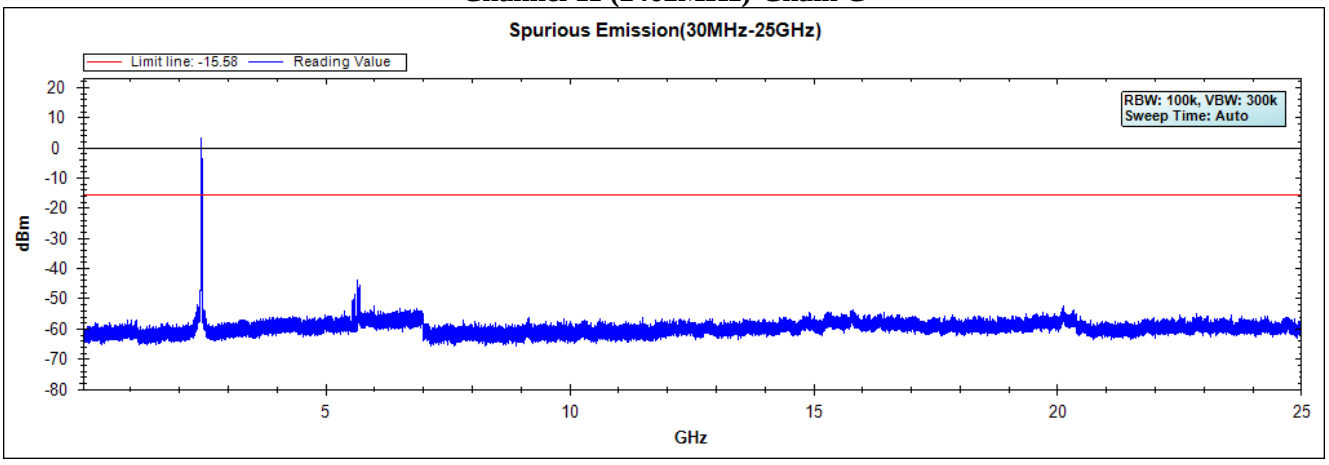
Channel 01 (2412MHz)-Chain C



Channel 06 (2437MHz)-Chain C



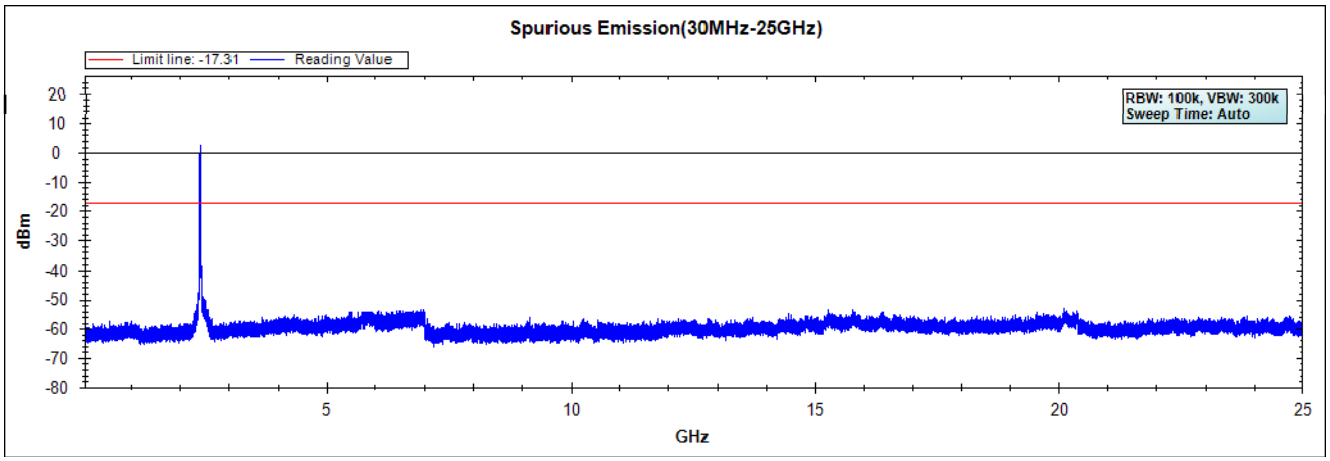
Channel 11 (2462MHz)-Chain C



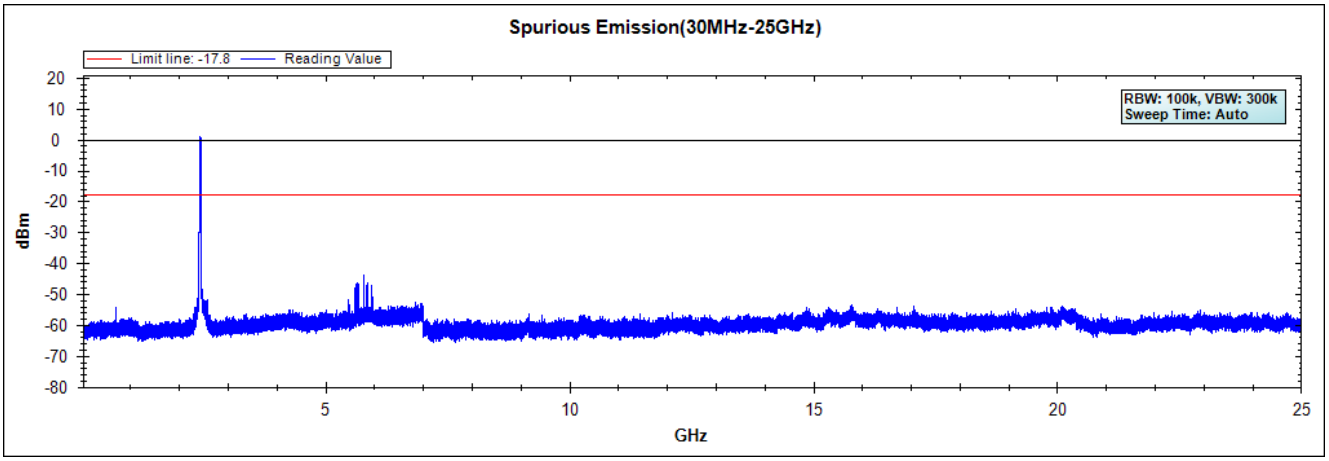
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 4: Transmit (802.11n-40MBW)
Test Date	:	2020/10/16

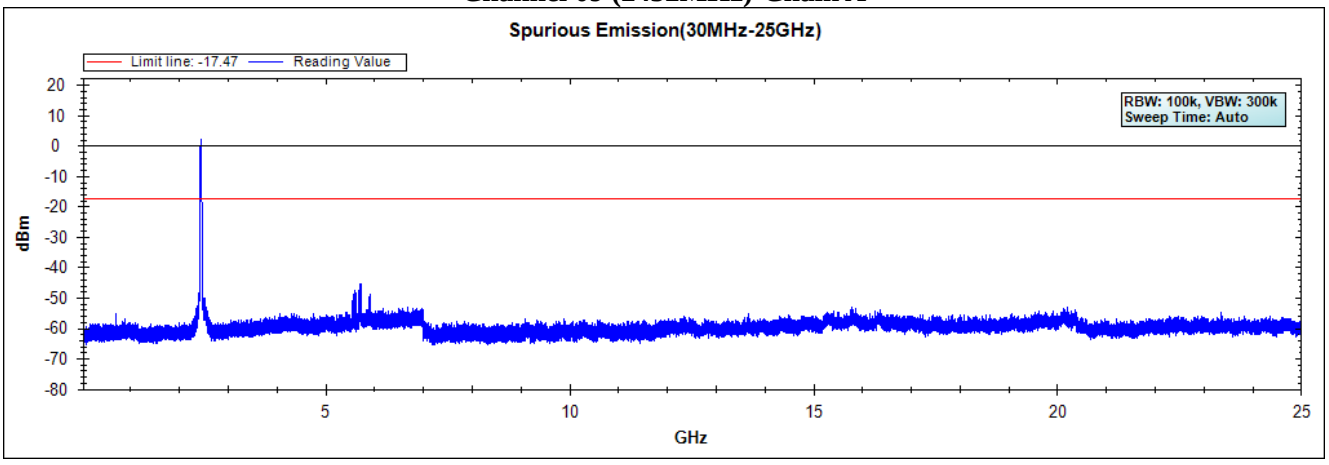
Channel 03 (2422MHz)-Chain A



Channel 06 (2437MHz)-Chain A



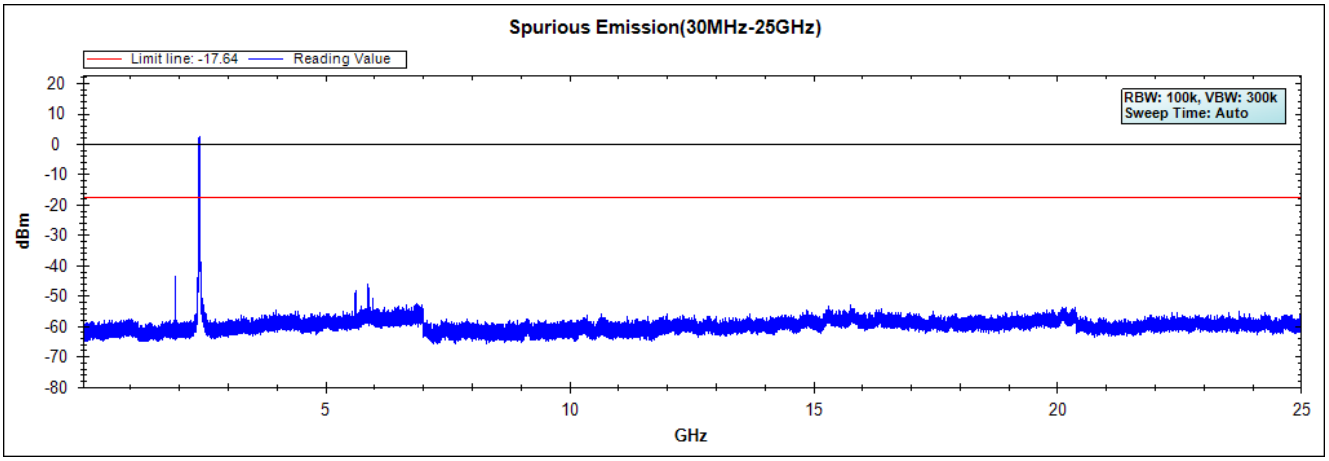
Channel 09 (2452MHz)-Chain A



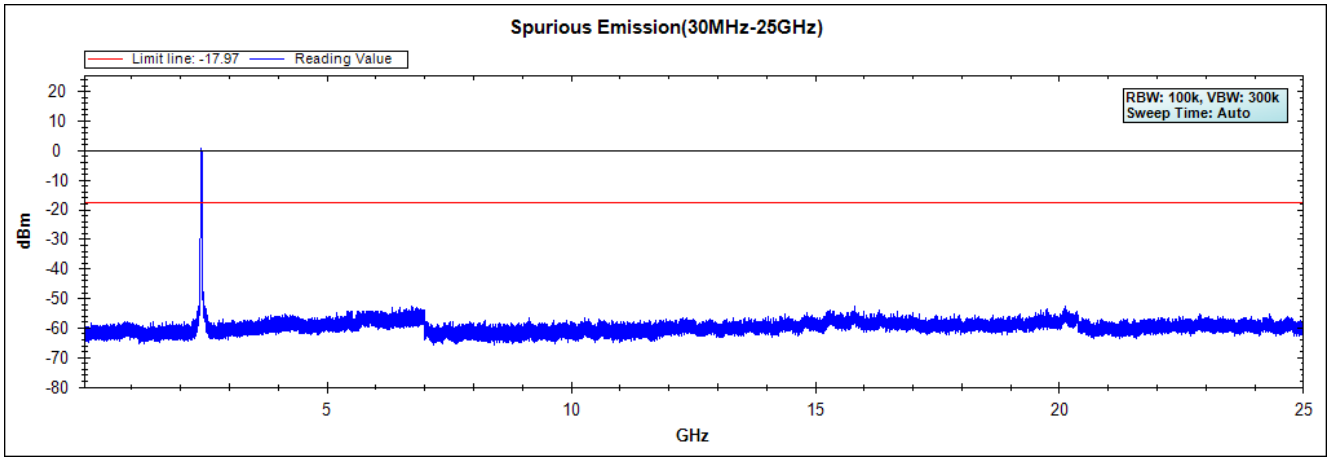
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 4: Transmit (802.11n-40MBW)
Test Date	:	2020/10/16

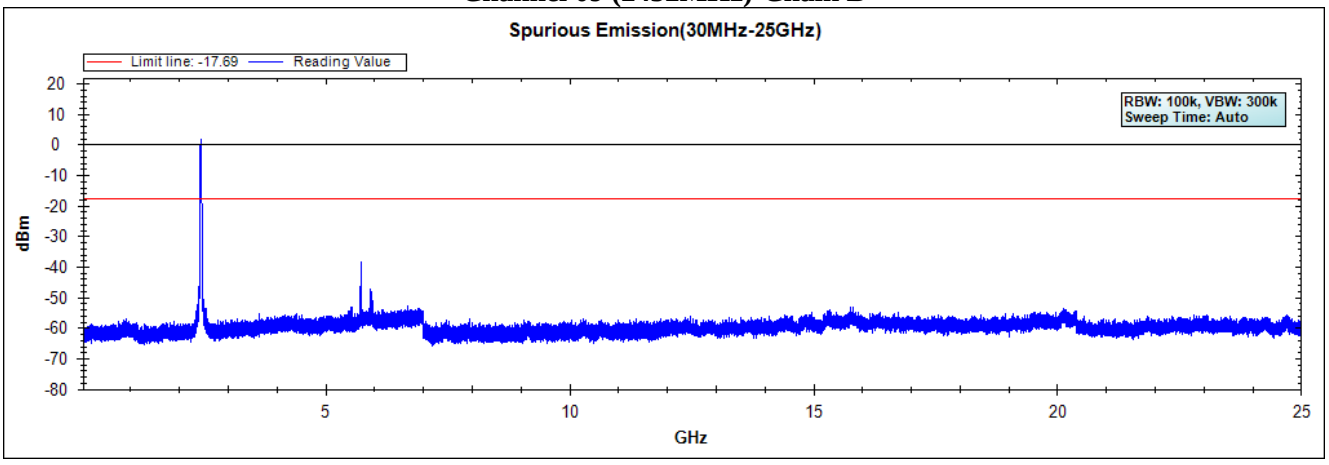
Channel 03 (2422MHz)-Chain B



Channel 06 (2437MHz)-Chain B



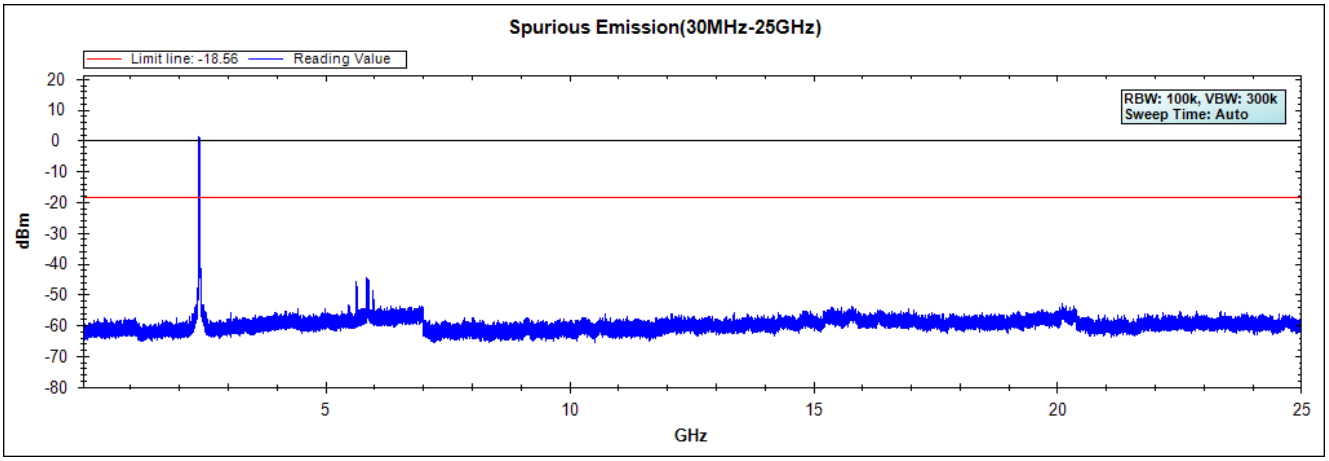
Channel 09 (2452MHz)-Chain B



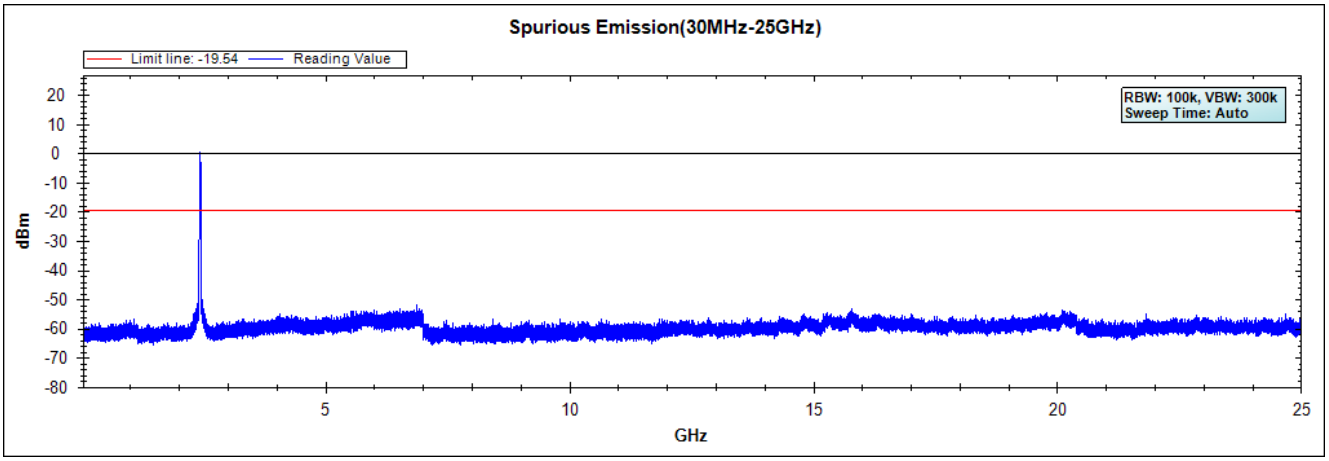
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	RF Antenna Conducted Spurious
Test Mode	:	Mode 4: Transmit (802.11n-40MBW)
Test Date	:	2020/10/16

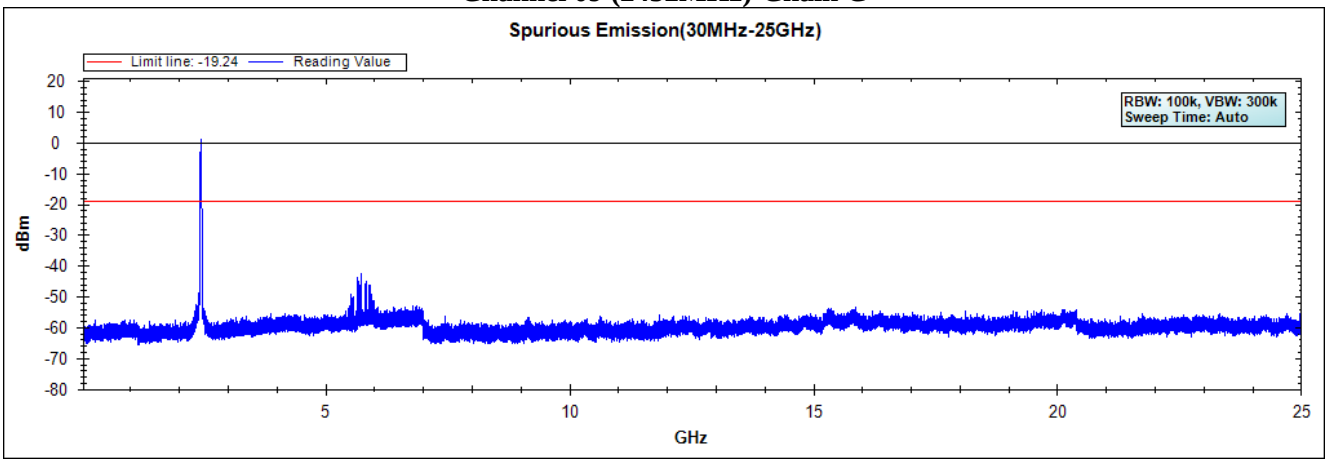
Channel 03 (2422MHz)-Chain C



Channel 06 (2437MHz)-Chain C



Channel 09 (2452MHz)-Chain C

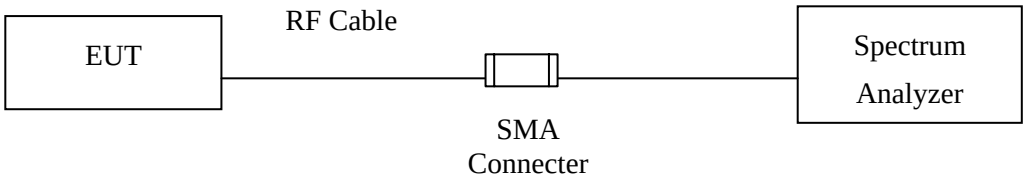


Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

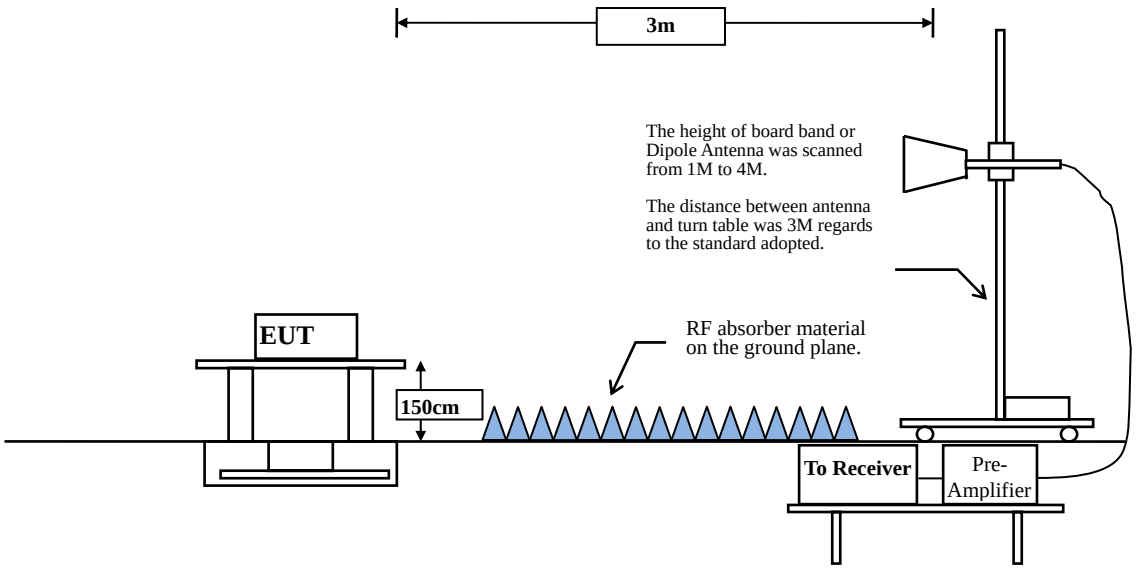
6.1. Test Setup

RF Conducted Measurement



RF Radiated Measurement:

Above 1GHz



6.2. Limits

According to FCC Section 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 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, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to C63.10:2013 Section 11.12.1 for compliance to FCC 47CFR 15.247 requirements.
The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.

RBW and VBW Parameter setting:

According to C63.10 Section 11.12.2.4 Peak measurement procedure.

RBW = as specified in Table 1.

VBW ≥ 3 x RBW.

Table 1 —RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to C63.10 Section 11.12.2.5 Average measurement procedure.

RBW = 1MHz.

VBW = 10Hz, when duty cycle ≥ 98 %

VBW ≥ 1/T, when duty cycle < 98 %

(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

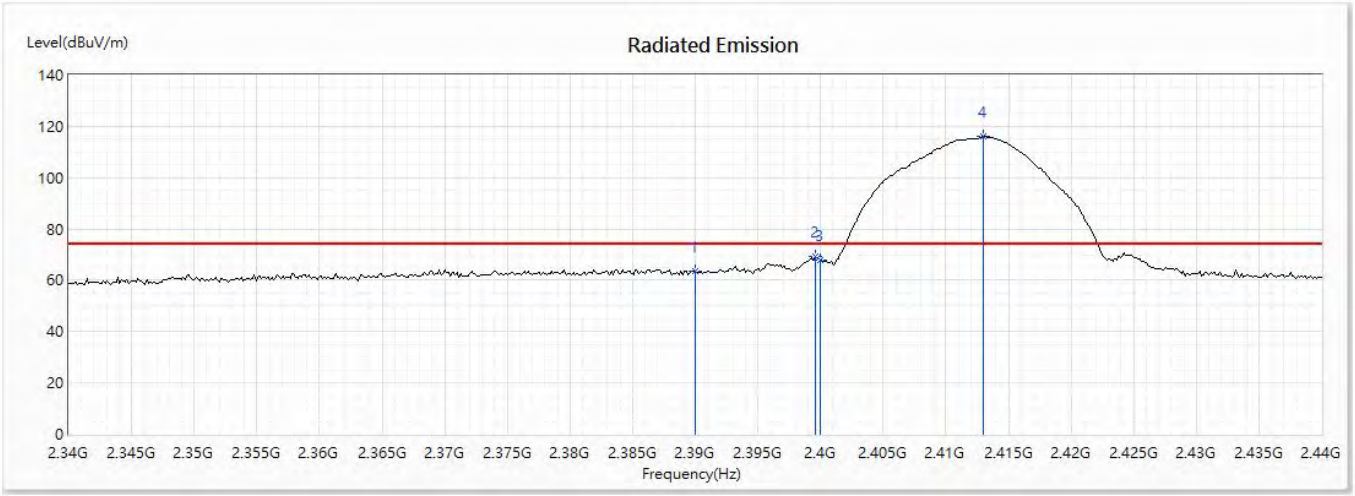
2.4GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11b	95.09	8.4203	119	200
802.11g	79.83	1.3768	726	1000
802.11n20	54.79	0.4638	2156	3000
802.11n40	60.85	0.3739	2674	3000

Note: Duty Cycle Refer to Section 9

6.4. Test Result of Band Edge

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b) (2412MHz)
Test Date	:	2020/09/23

Horizontal



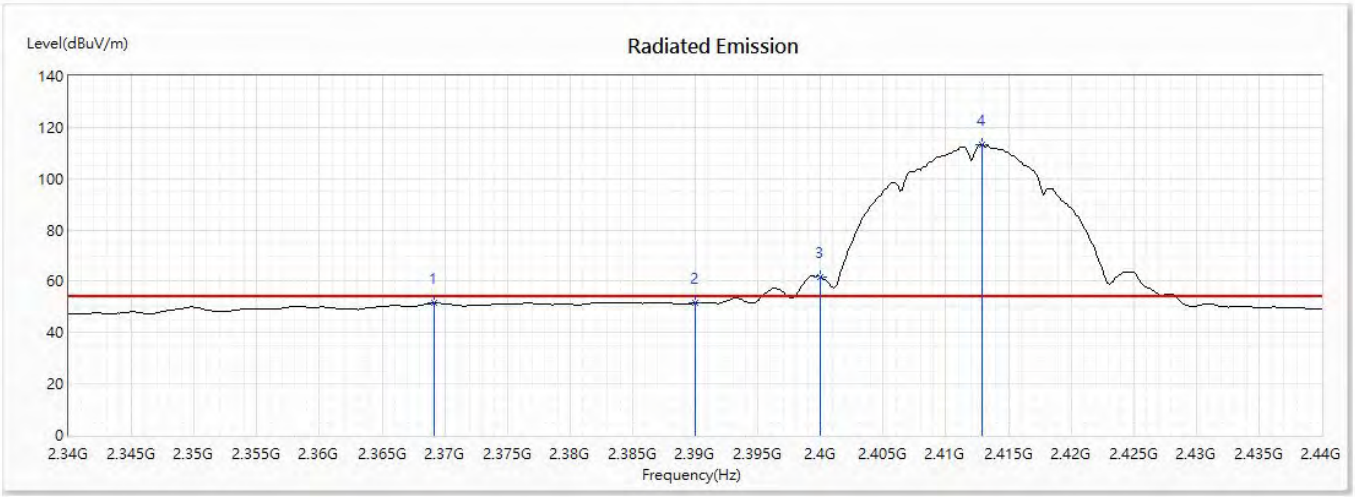
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	63.59	74.00	-10.41	49.58	14.01	PK
2	2399.565	69.07	74.00	-4.93	55.08	13.99	PK
3	2400	67.80	--	--	53.81	13.99	PK
! 4	2413.043	116.01	--	--	102.03	13.98	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b) (2412MHz)
Test Date	:	2020/09/23

Horizontal



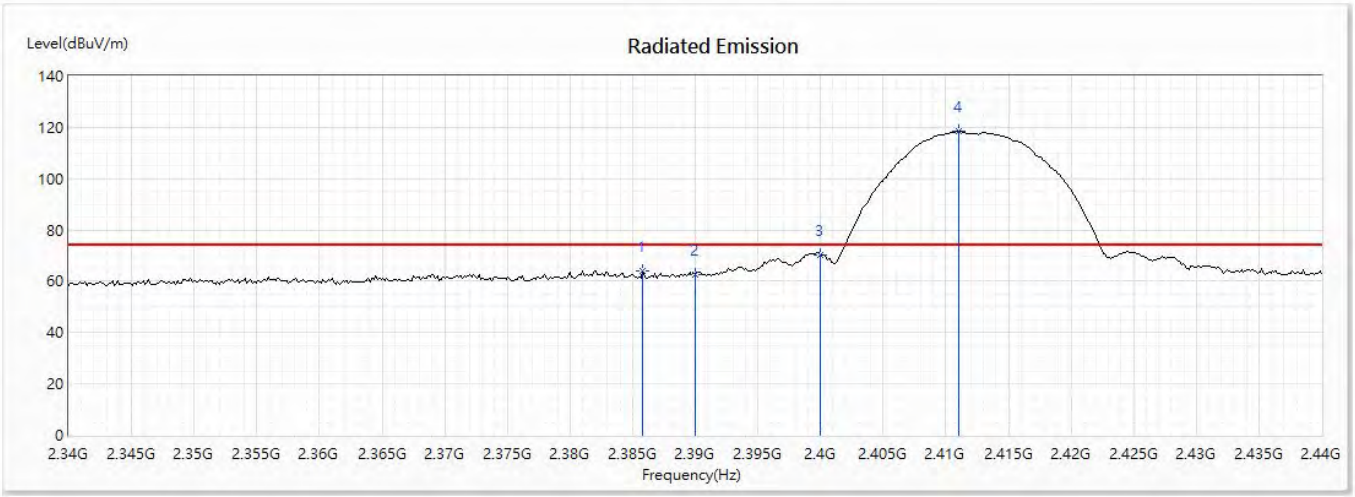
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2369.13	51.46	54.00	-2.54	37.43	14.03	AV
2	2390	51.40	54.00	-2.60	37.39	14.01	AV
! 3	2400	61.65	--	--	47.66	13.99	AV
! 4	2412.899	113.19	--	--	99.21	13.98	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b) (2412MHz)
Test Date	:	2020/09/23

Vertical



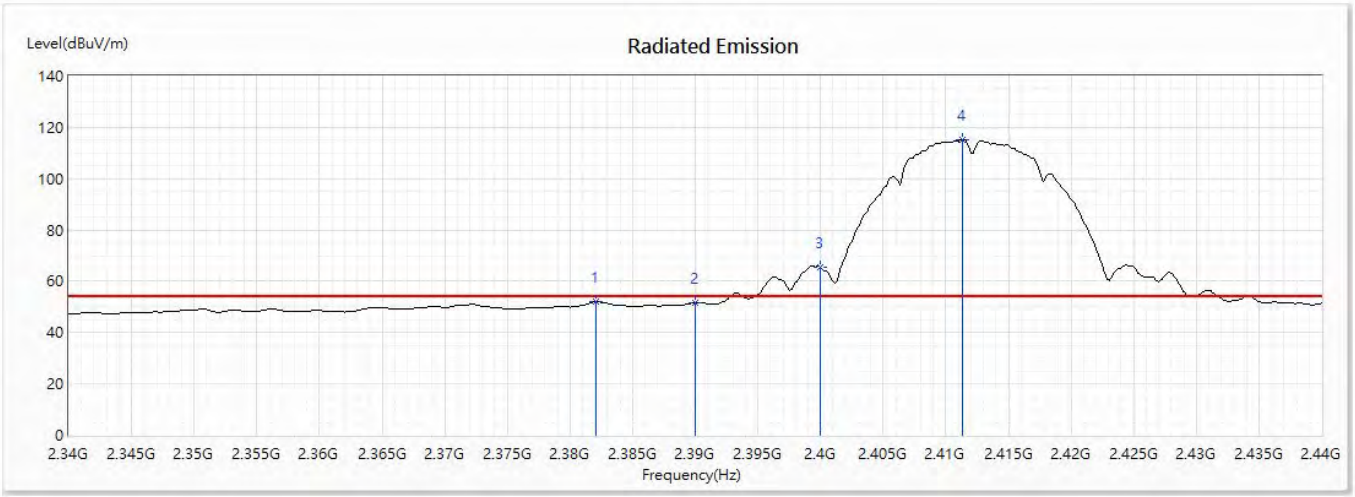
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2385.797	63.87	74.00	-10.13	49.86	14.01	PK
2	2390	62.55	74.00	-11.45	48.54	14.01	PK
3	2400	70.33	--	--	56.34	13.99	PK
! 4	2411.014	118.36	--	--	104.38	13.98	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b) (2412MHz)
Test Date	:	2020/09/23

Vertical



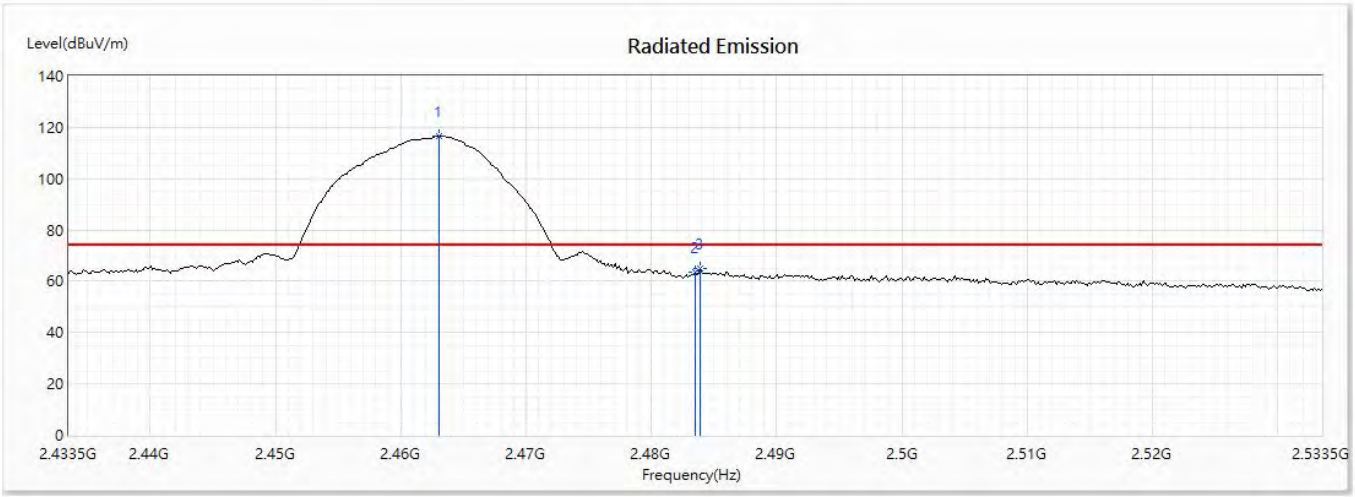
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2382.029	51.97	54.00	-2.03	37.96	14.01	AV
2	2390	51.63	54.00	-2.37	37.62	14.01	AV
! 3	2400	65.49	--	--	51.50	13.99	AV
! 4	2411.304	115.29	--	--	101.32	13.97	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b) (2462MHz)
Test Date	:	2020/09/23

Horizontal



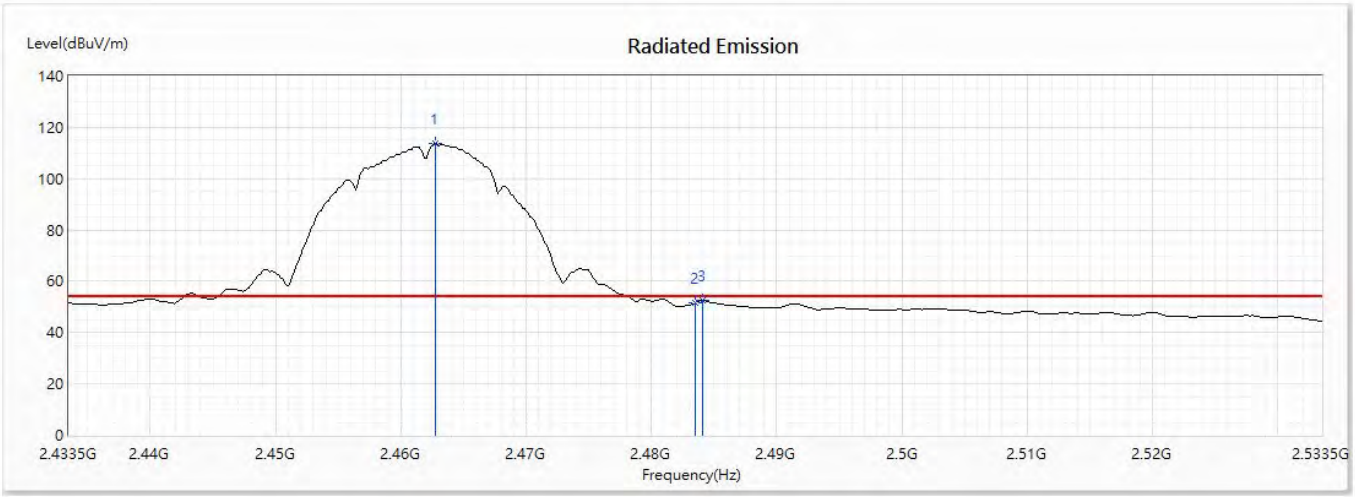
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2463.065	116.66	--	--	102.78	13.88	PK
2	2483.5	63.49	74.00	-10.51	49.68	13.81	PK
3	2483.935	65.05	74.00	-8.95	51.24	13.81	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b) (2462MHz)
Test Date	:	2020/09/23

Horizontal



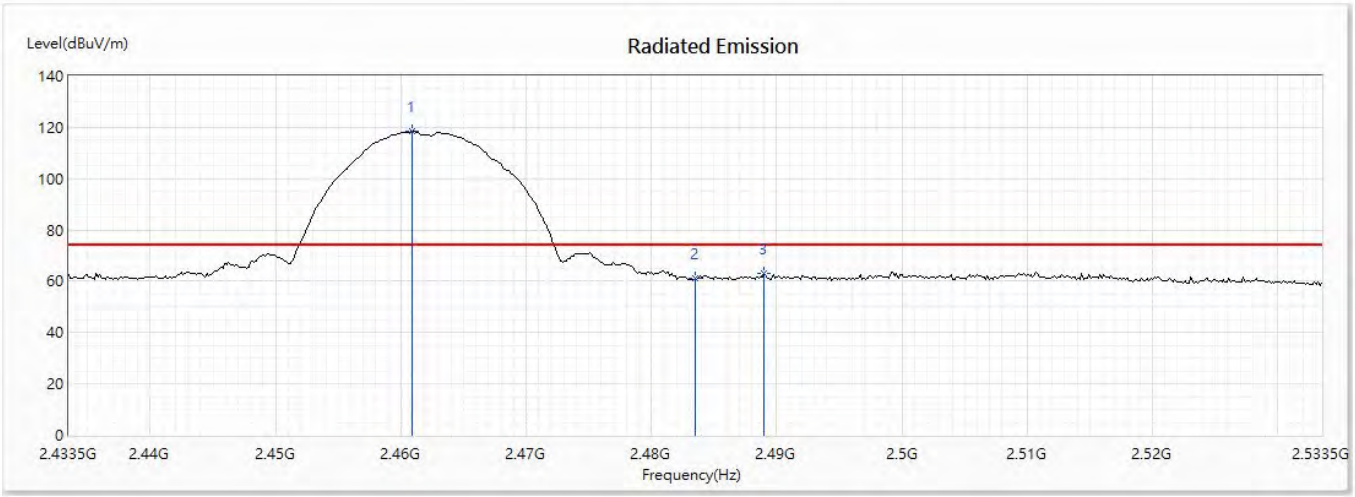
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2462.775	113.62	--	--	99.74	13.88	AV
2	2483.5	51.58	54.00	-2.42	37.77	13.81	AV
3	2484.08	52.42	54.00	-1.58	38.61	13.81	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b) (2462MHz)
Test Date	:	2020/09/23

Vertical



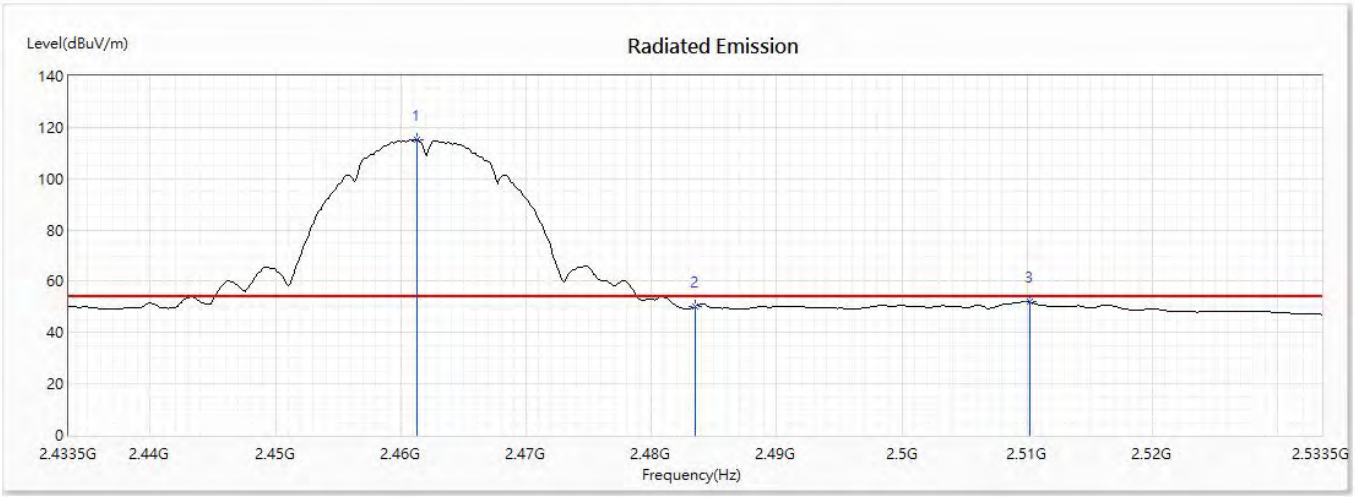
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2460.891	118.34	--	--	104.45	13.89	PK
2	2483.5	60.98	74.00	-13.02	47.17	13.81	PK
3	2489.007	63.21	74.00	-10.79	49.41	13.80	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit (802.11b) (2462MHz)
Test Date	:	2020/09/23

Vertical



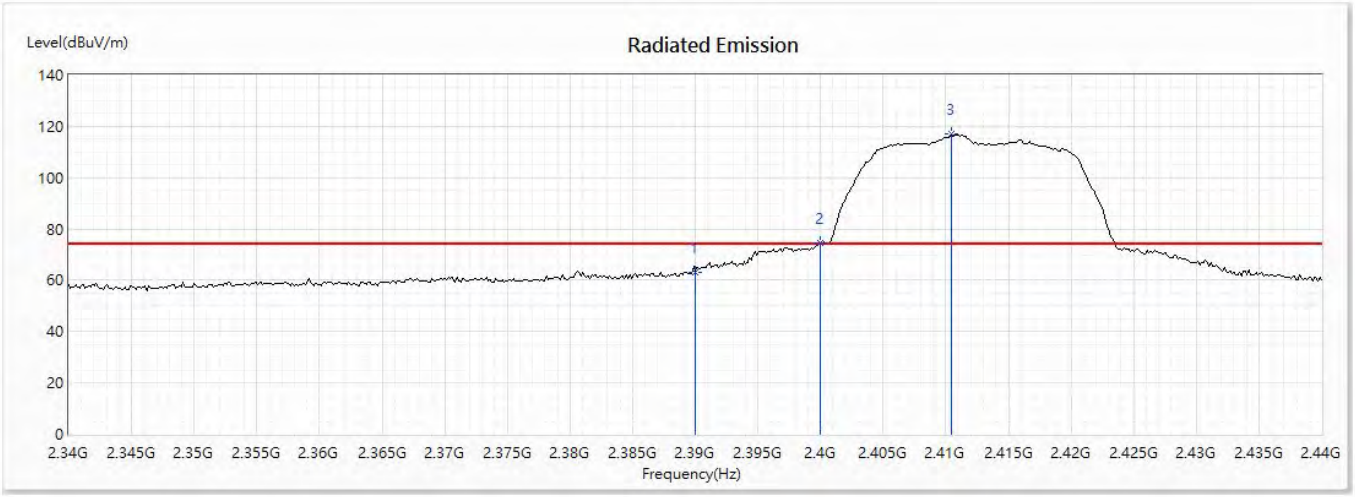
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2461.326	115.24	--	--	101.35	13.89	AV
2	2483.5	50.05	54.00	-3.95	36.24	13.81	AV
3	2510.167	52.05	54.00	-1.95	38.35	13.70	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g) (2412MHz)
Test Date	:	2020/09/23

Horizontal



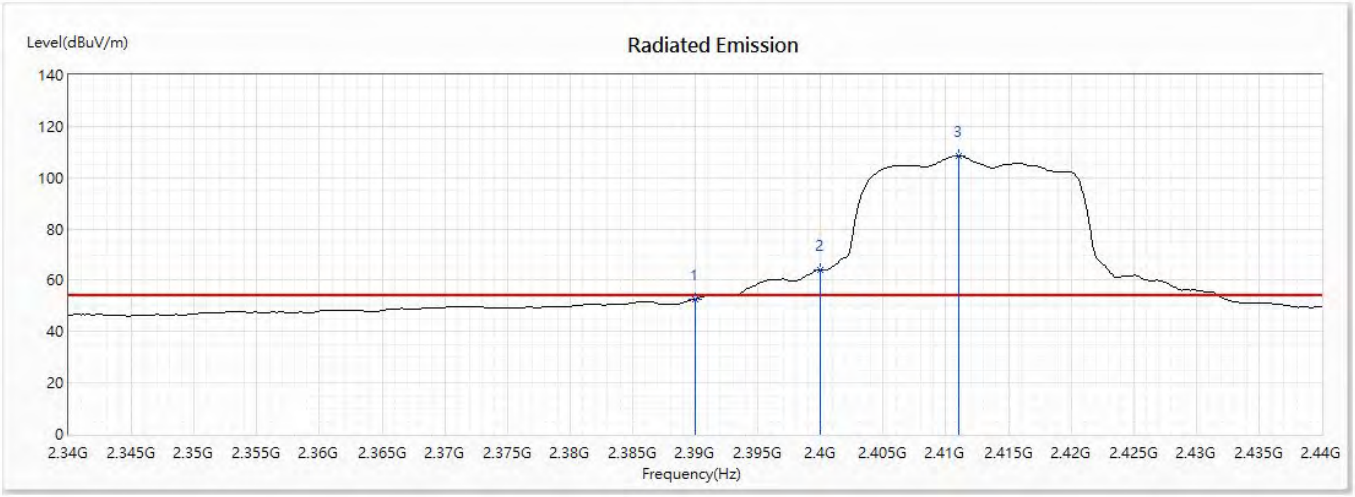
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	63.15	74.00	-10.85	49.14	14.01	PK
! 2	2400	74.36	--	--	60.37	13.99	PK
! 3	2410.435	116.85	--	--	102.87	13.98	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g) (2412MHz)
Test Date	:	2020/09/23

Horizontal



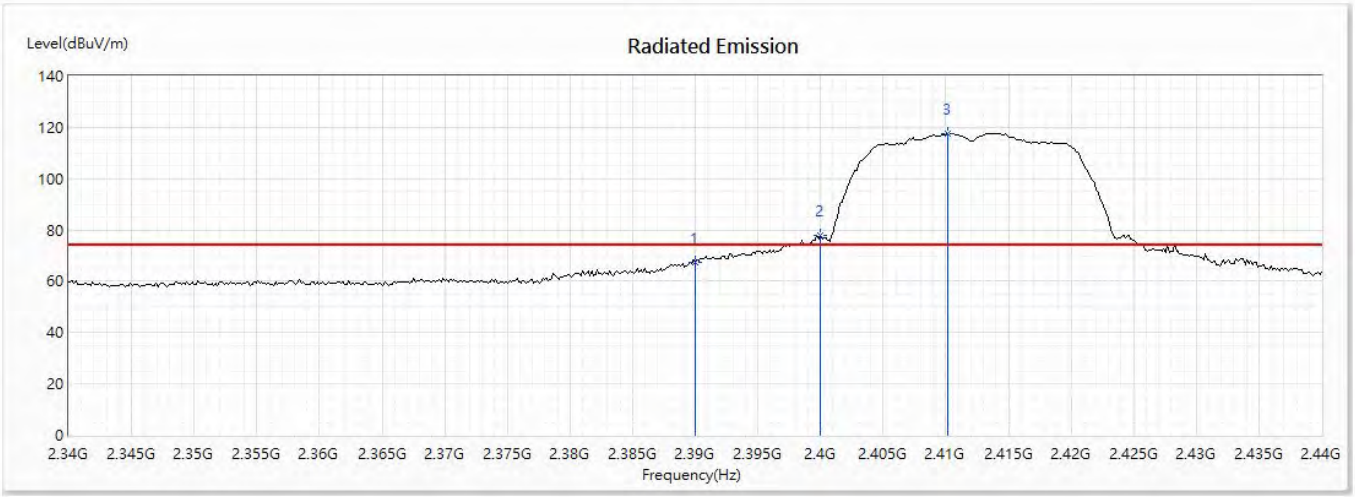
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	52.63	54.00	-1.37	38.62	14.01	AV
! 2	2400	64.14	--	--	50.15	13.99	AV
! 3	2411.014	108.55	--	--	94.57	13.98	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g) (2412MHz)
Test Date	:	2020/09/23

Vertical



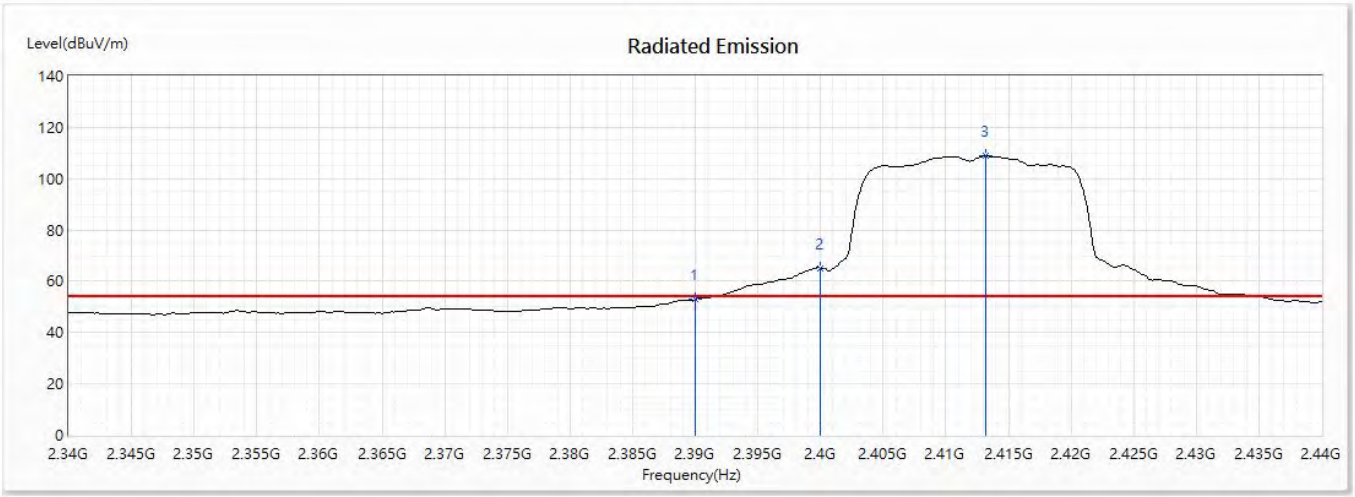
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	67.37	74.00	-6.63	53.36	14.01	PK
! 2	2400	77.68	--	--	63.69	13.99	PK
! 3	2410.145	117.71	--	--	103.73	13.98	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g) (2412MHz)
Test Date	:	2020/09/23

Vertical



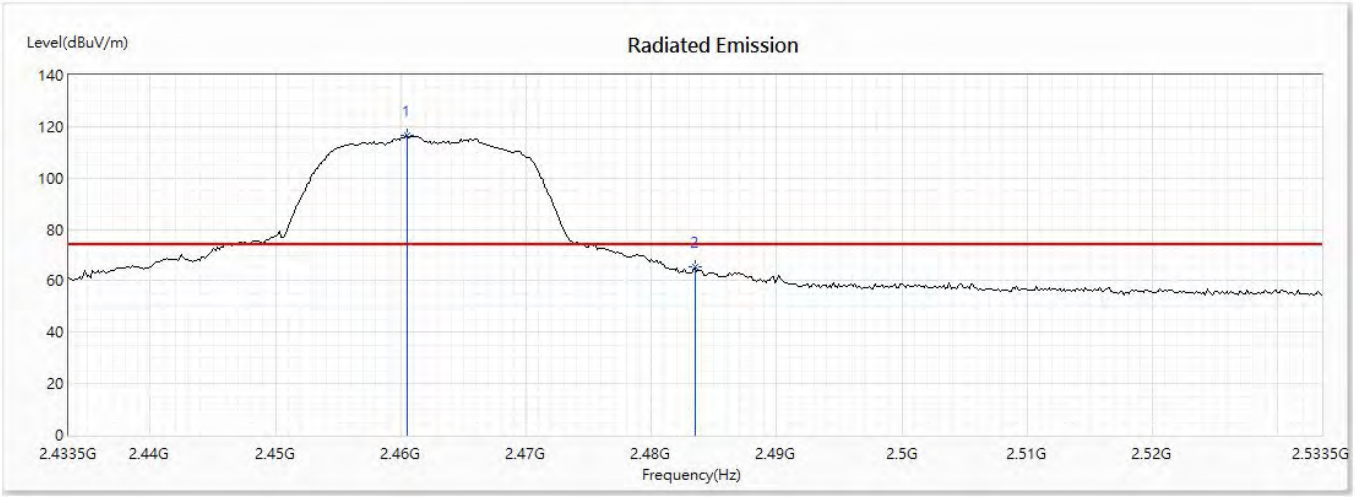
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	52.97	54.00	-1.03	38.96	14.01	AV
! 2	2400	65.12	--	--	51.13	13.99	AV
! 3	2413.188	108.82	--	--	94.84	13.98	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g) (2462MHz)
Test Date	:	2020/09/23

Horizontal



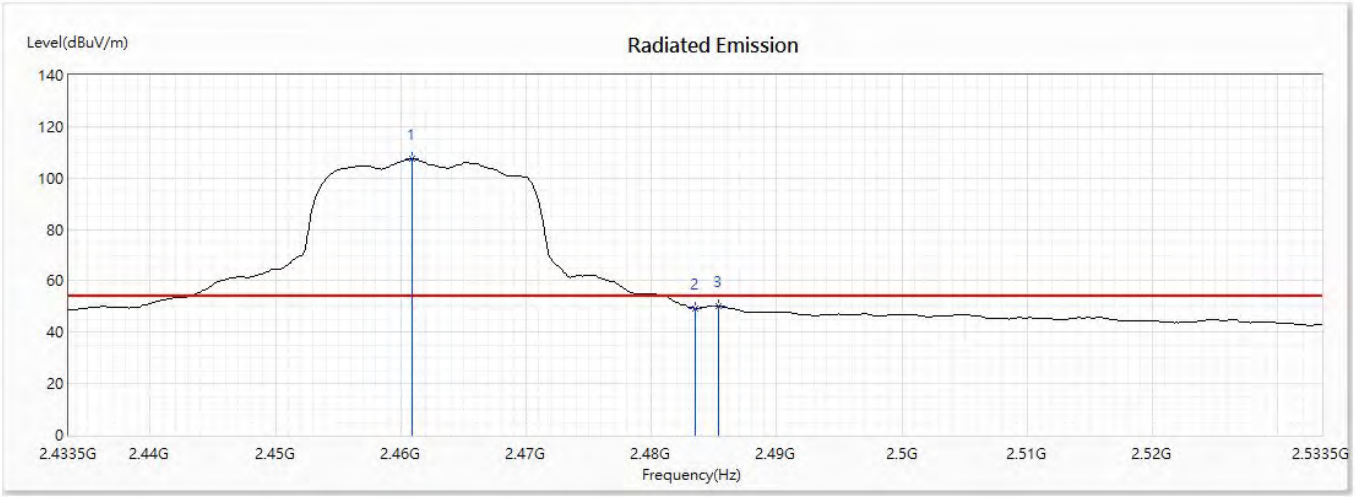
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2460.457	116.60	--	--	102.71	13.89	PK
2	2483.5	65.33	74.00	-8.67	51.52	13.81	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g) (2462MHz)
Test Date	:	2020/09/23

Horizontal



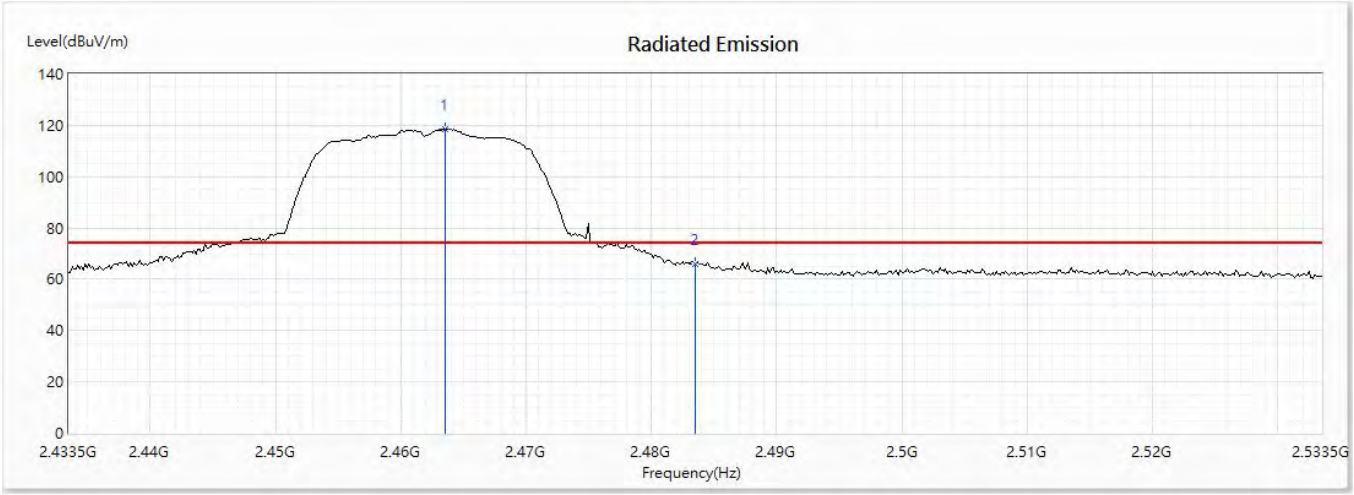
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2460.891	107.42	--	--	93.53	13.89	AV
2	2483.5	49.25	54.00	-4.75	35.44	13.81	AV
3	2485.384	50.15	54.00	-3.85	36.34	13.81	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g) (2462MHz)
Test Date	:	2020/09/23

Vertical



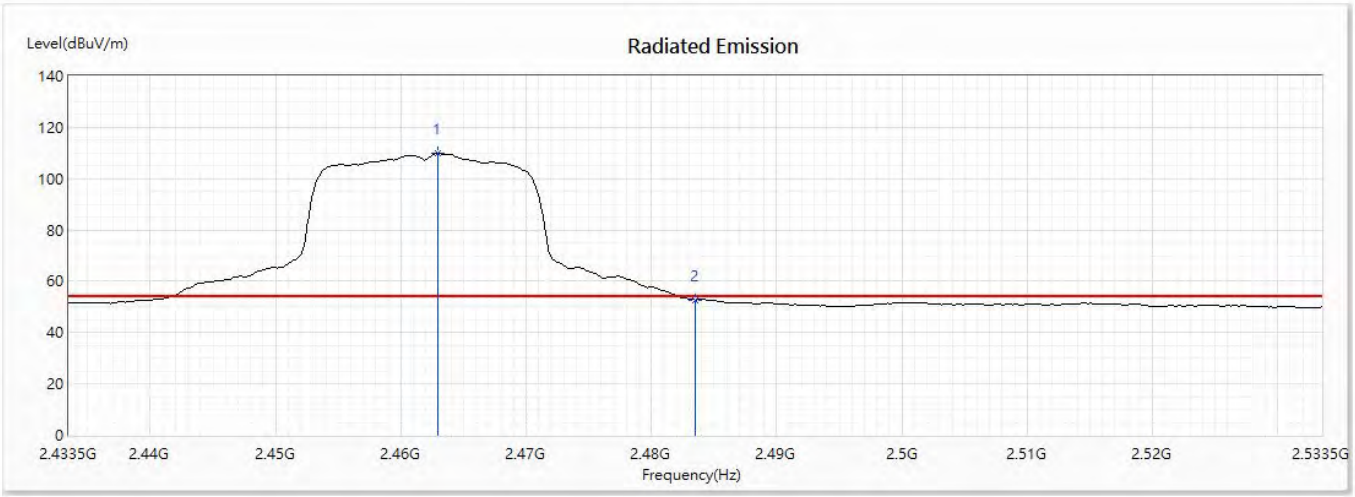
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2463.5	118.56	--	--	104.68	13.88	PK
2	2483.5	66.04	74.00	-7.96	52.23	13.81	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 2: Transmit (802.11g) (2462MHz)
Test Date	:	2020/09/23

Vertical



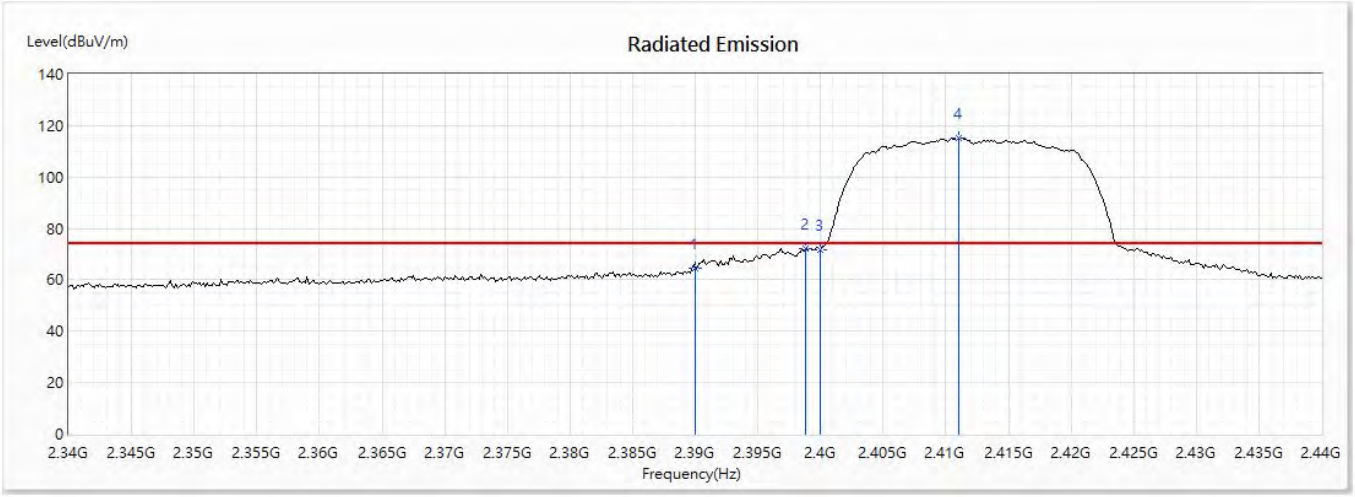
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2462.92	109.77	--	--	95.89	13.88	AV
2	2483.5	52.62	54.00	-1.38	38.81	13.81	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW) (2412MHz)
Test Date	:	2020/09/23

Horizontal



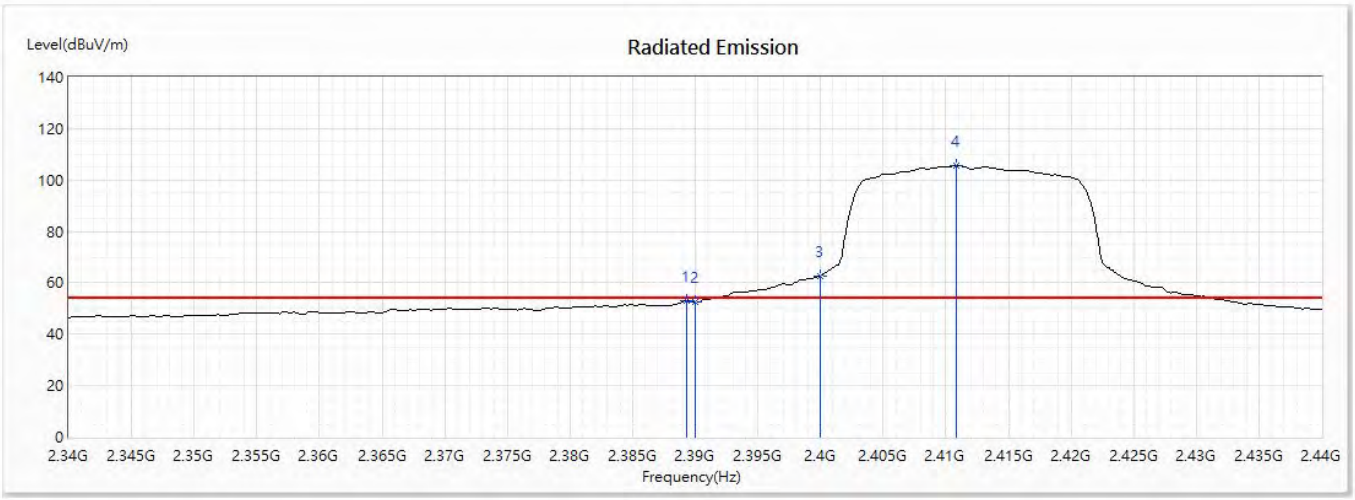
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	64.56	74.00	-9.44	50.55	14.01	PK
2	2398.841	72.13	--	--	58.13	14.00	PK
3	2400	71.85	--	--	57.86	13.99	PK
! 4	2411.014	115.11	--	--	101.13	13.98	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW) (2412MHz)
Test Date	:	2020/09/23

Horizontal



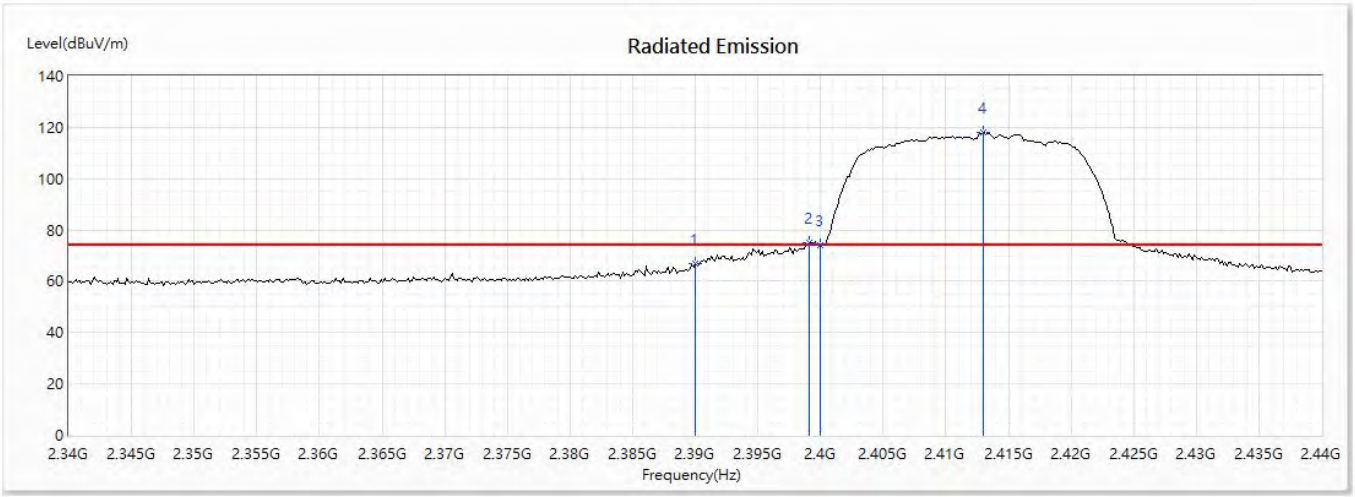
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2389.275	53.00	54.00	-1.00	38.99	14.01	AV
2	2390	52.40	54.00	-1.60	38.39	14.01	AV
! 3	2400	62.57	--	--	48.58	13.99	AV
! 4	2410.87	105.70	--	--	91.72	13.98	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW) (2412MHz)
Test Date	:	2020/09/23

Vertical



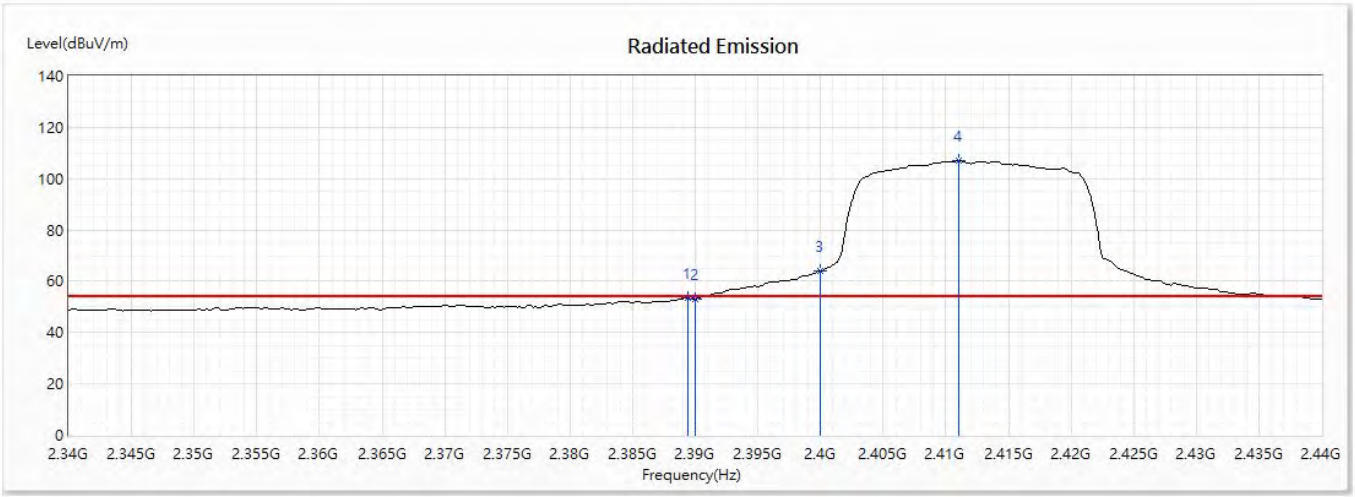
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	66.76	74.00	-7.24	52.75	14.01	PK
! 2	2399.13	75.18	--	--	61.19	13.99	PK
! 3	2400	74.23	--	--	60.24	13.99	PK
! 4	2413.043	118.08	--	--	104.10	13.98	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW) (2412MHz)
Test Date	:	2020/09/23

Vertical



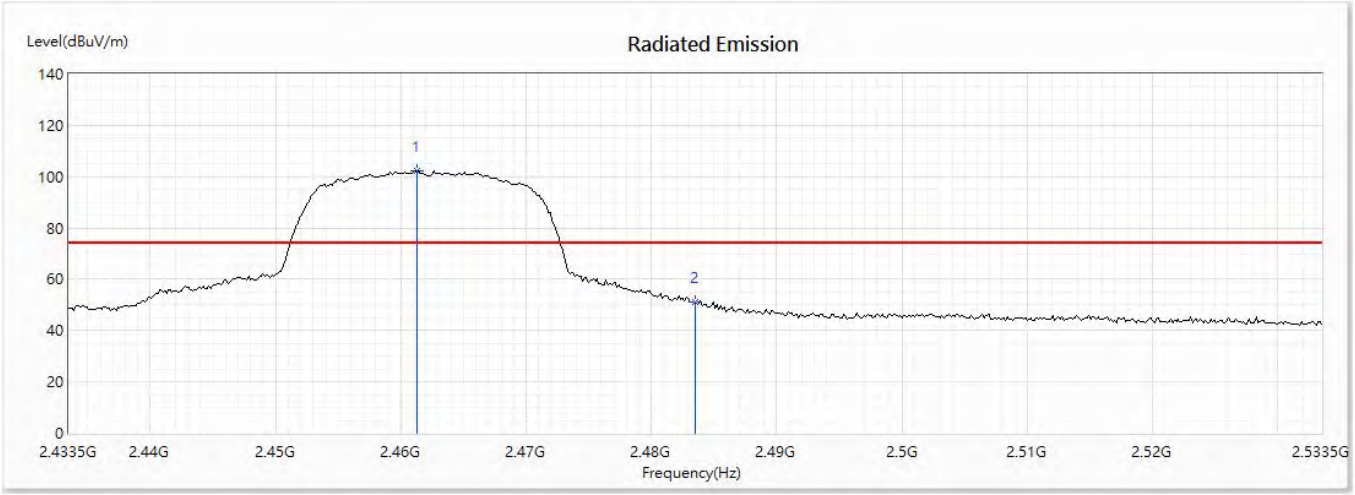
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2389.42	53.45	54.00	-0.55	39.44	14.01	AV
2	2390	53.04	54.00	-0.96	39.03	14.01	AV
! 3	2400	63.94	--	--	49.95	13.99	AV
! 4	2411.014	106.84	--	--	92.86	13.98	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW) (2462MHz)
Test Date	:	2020/09/23

Horizontal



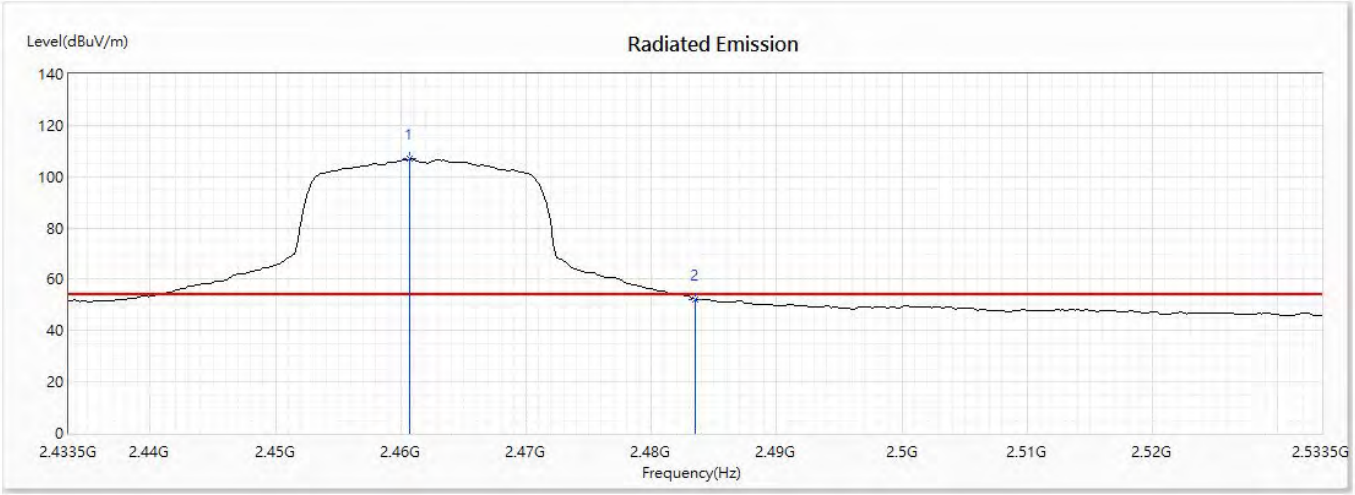
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2461.326	102.16	--	--	88.27	13.89	PK
2	2483.5	51.04	74.00	-22.96	37.23	13.81	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW) (2462MHz)
Test Date	:	2020/09/23

Horizontal



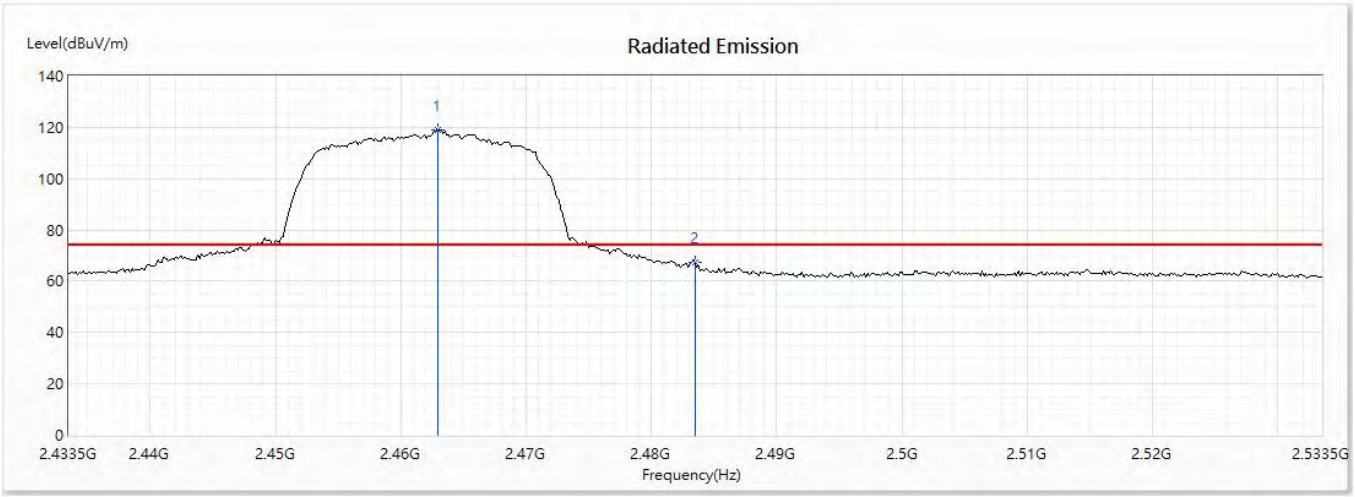
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2460.746	106.85	--	--	92.96	13.89	AV
2	2483.5	52.26	54.00	-1.74	38.45	13.81	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW) (2462MHz)
Test Date	:	2020/09/23

Vertical



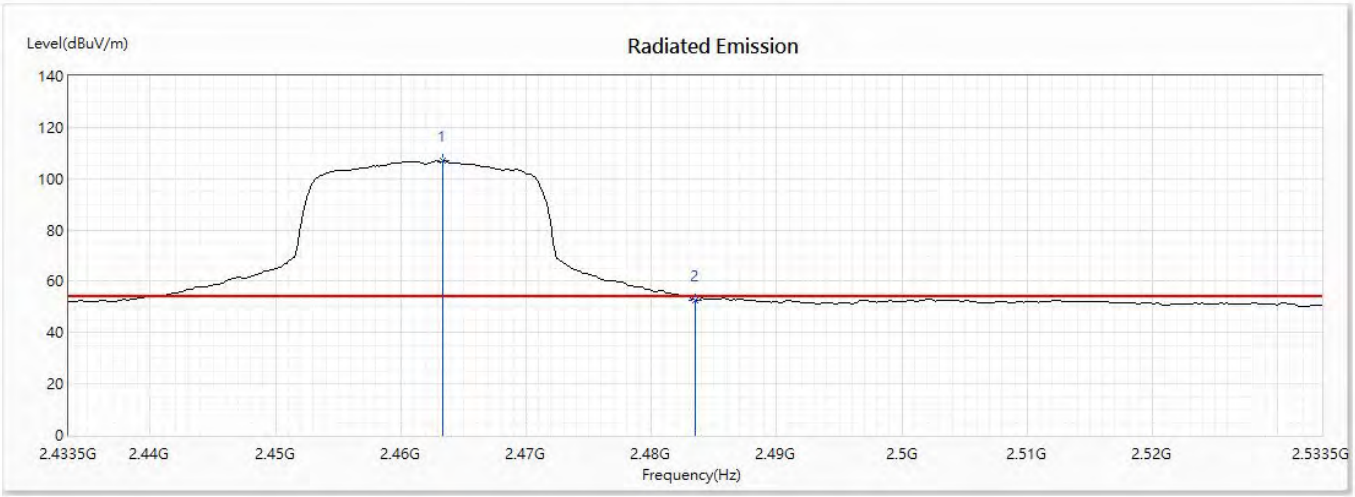
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2462.92	119.06	--	--	105.18	13.88	PK
2	2483.5	67.32	74.00	-6.68	53.51	13.81	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 3: Transmit (802.11n-20MBW) (2462MHz)
Test Date	:	2020/09/23

Vertical



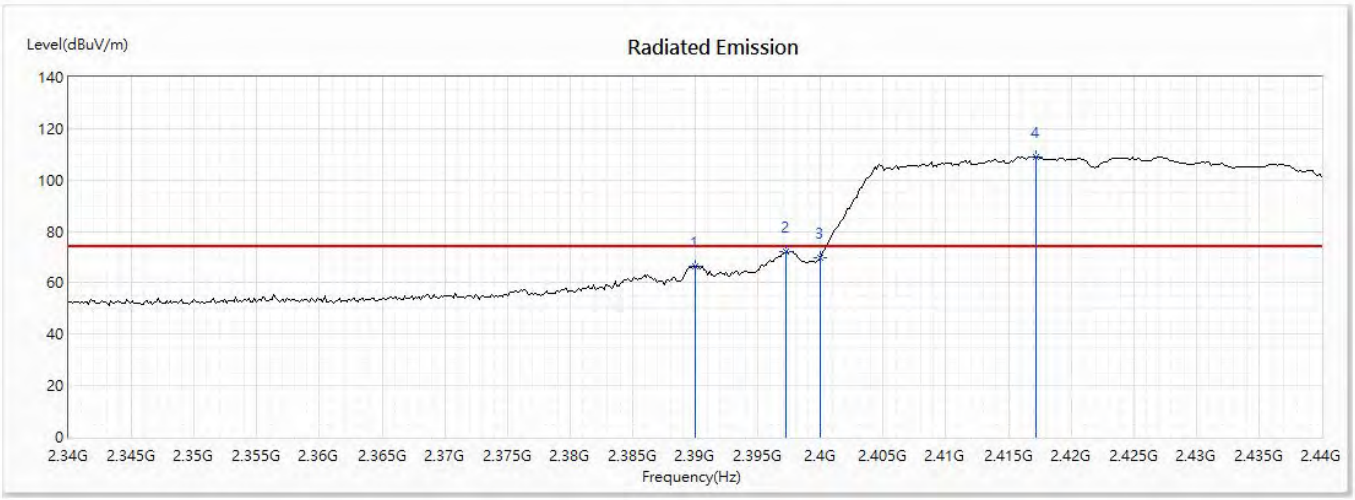
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2463.355	106.88	--	--	93.00	13.88	AV
2	2483.5	52.79	54.00	-1.21	38.98	13.81	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2422MHz)
Test Date	:	2020/09/23

Horizontal



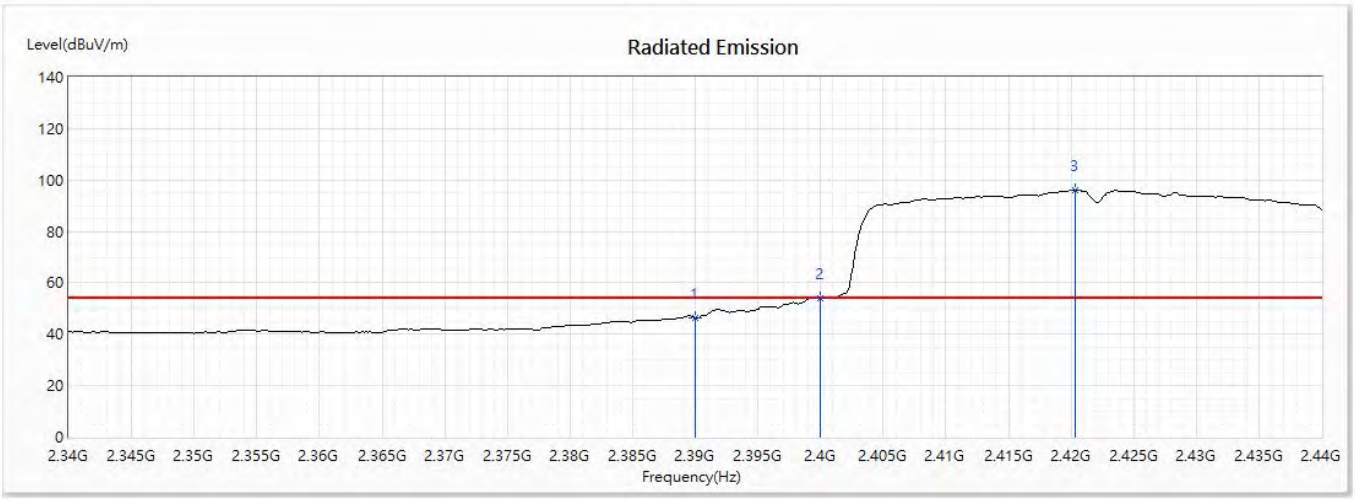
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	66.61	74.00	-7.39	52.60	14.01	PK
2	2397.246	72.04	--	--	58.05	13.99	PK
3	2400	69.66	--	--	55.67	13.99	PK
! 4	2417.246	108.97	--	--	95.01	13.96	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2422MHz)
Test Date	:	2020/09/23

Horizontal



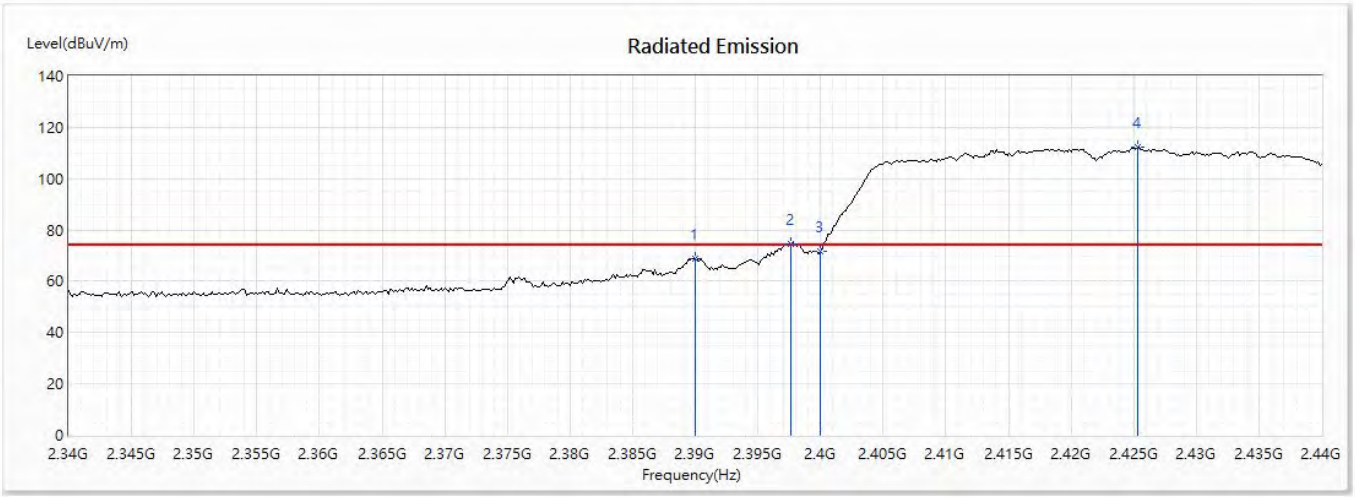
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	46.23	54.00	-7.77	32.22	14.01	AV
! 2	2400	54.17	--	--	40.18	13.99	AV
! 3	2420.29	96.17	--	--	82.21	13.96	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2422MHz)
Test Date	:	2020/09/23

Vertical



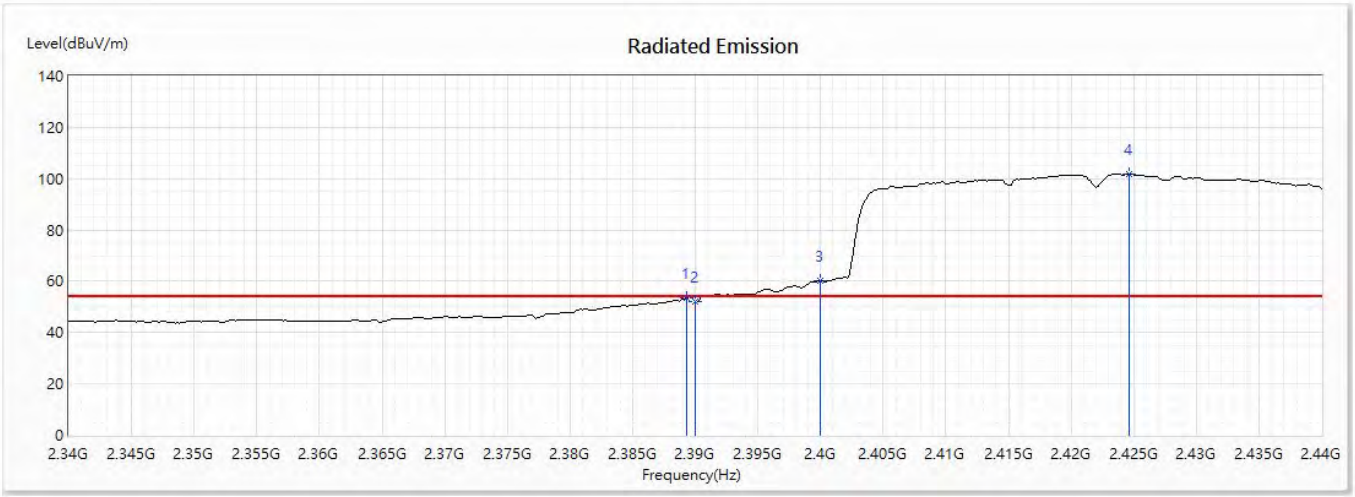
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	68.94	74.00	-5.06	54.93	14.01	PK
! 2	2397.681	74.46	--	--	60.46	14.00	PK
3	2400	71.73	--	--	57.74	13.99	PK
! 4	2425.362	112.05	--	--	98.09	13.96	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2422MHz)
Test Date	:	2020/09/23

Vertical



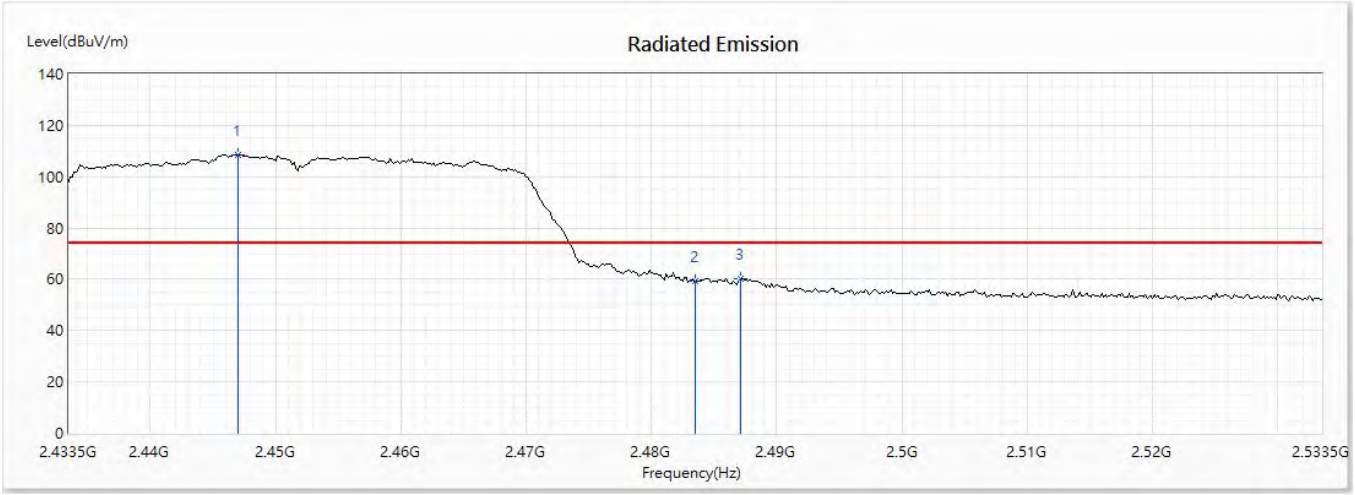
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2389.275	53.59	54.00	-0.41	39.58	14.01	AV
2	2390	52.15	54.00	-1.85	38.14	14.01	AV
! 3	2400	60.10	--	--	46.11	13.99	AV
! 4	2424.638	101.92	--	--	87.96	13.96	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2452MHz)
Test Date	:	2020/09/23

Horizontal



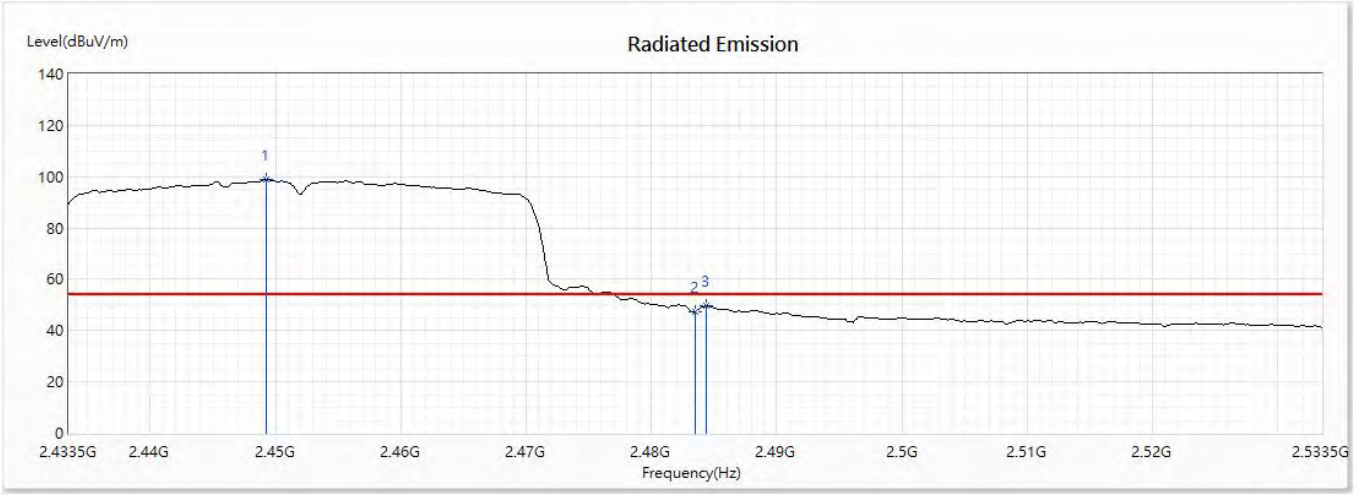
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2446.978	108.58	--	--	94.65	13.93	PK
2	2483.5	59.12	74.00	-14.88	45.31	13.81	PK
3	2487.123	60.18	74.00	-13.82	46.38	13.80	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2452MHz)
Test Date	:	2020/09/23

Horizontal



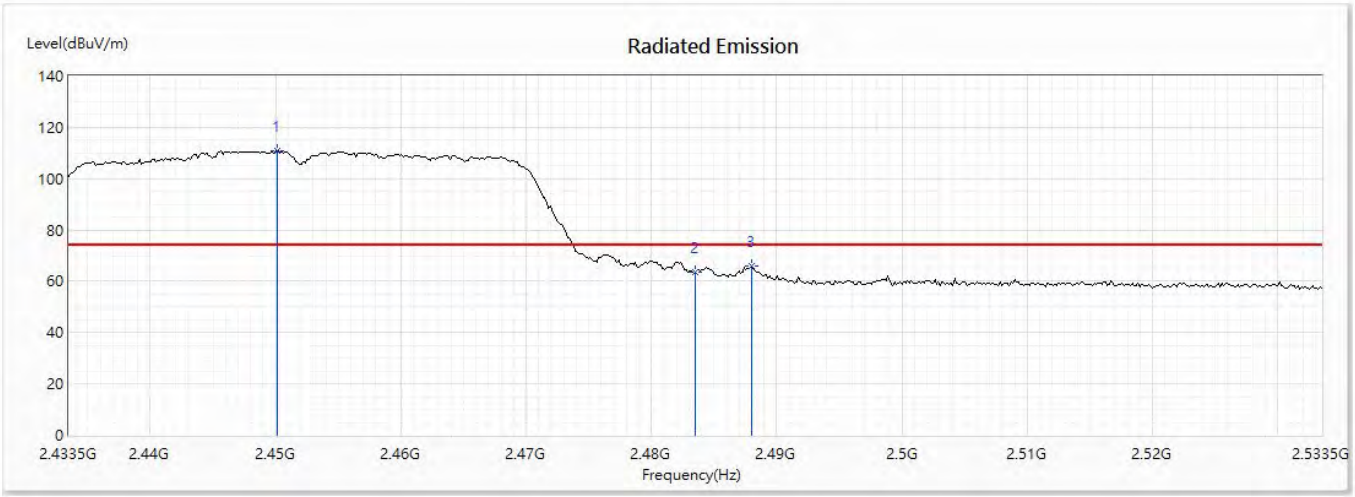
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2449.297	98.95	--	--	85.02	13.93	AV
2	2483.5	47.30	54.00	-6.70	33.49	13.81	AV
3	2484.37	49.56	54.00	-4.44	35.75	13.81	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2452MHz)
Test Date	:	2020/09/23

Vertical



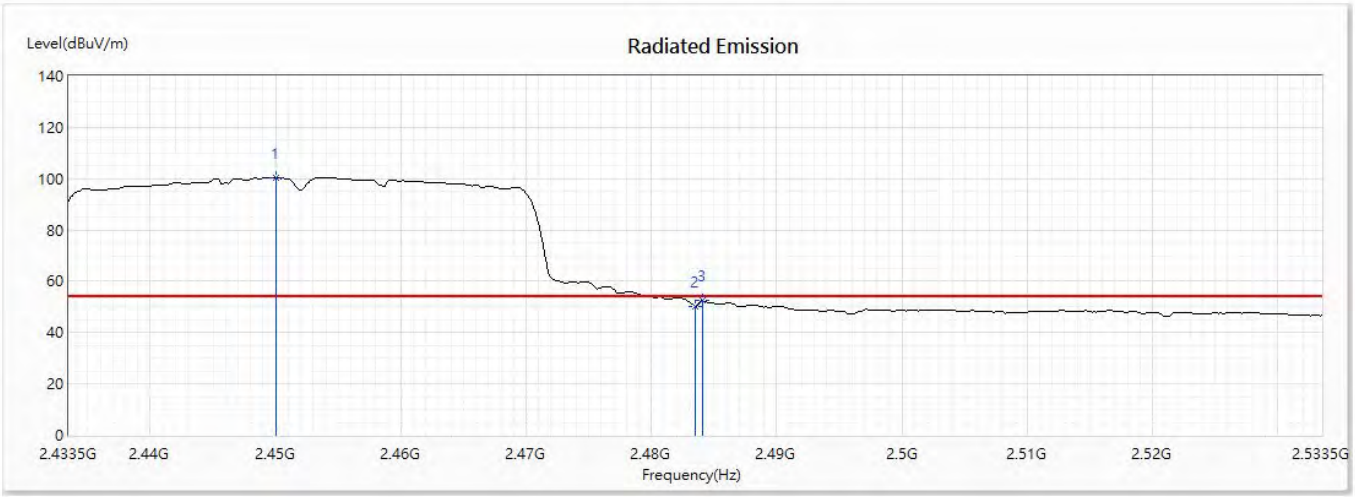
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2450.167	110.74	--	--	96.81	13.93	PK
2	2483.5	63.41	74.00	-10.59	49.60	13.81	PK
3	2487.993	66.10	74.00	-7.90	52.30	13.80	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	Band Edge Data
Test Mode	:	Mode 4: Transmit (802.11n-40MBW) (2452MHz)
Test Date	:	2020/09/23

Vertical



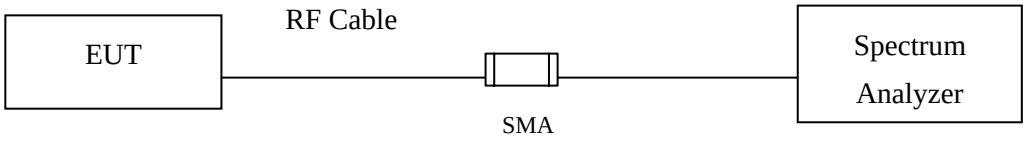
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2450.022	100.54	--	--	86.61	13.93	AV
2	2483.5	50.07	54.00	-3.93	36.26	13.81	AV
3	2484.08	52.44	54.00	-1.56	38.63	13.81	AV

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection.

7. 6dB Bandwidth

7.1. Test Setup



7.2. Limits

The minimum bandwidth shall be at least 500 kHz.

7.3. Test Procedure

The EUT was setup according to ANSI C63.4, 2014; tested according to ANSI C63.10 Section 11.8 for compliance to FCC 47CFR 15.247 requirements.

7.4. Test Result of 6dB Bandwidth

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : 6dB Bandwidth Data
Test Mode : Mode 1: Transmit (802.11b)

Chain A

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	8150	>500	Pass
06	2437	8150	>500	Pass
11	2462	8200	>500	Pass

Figure Channel 01: (Chain A)

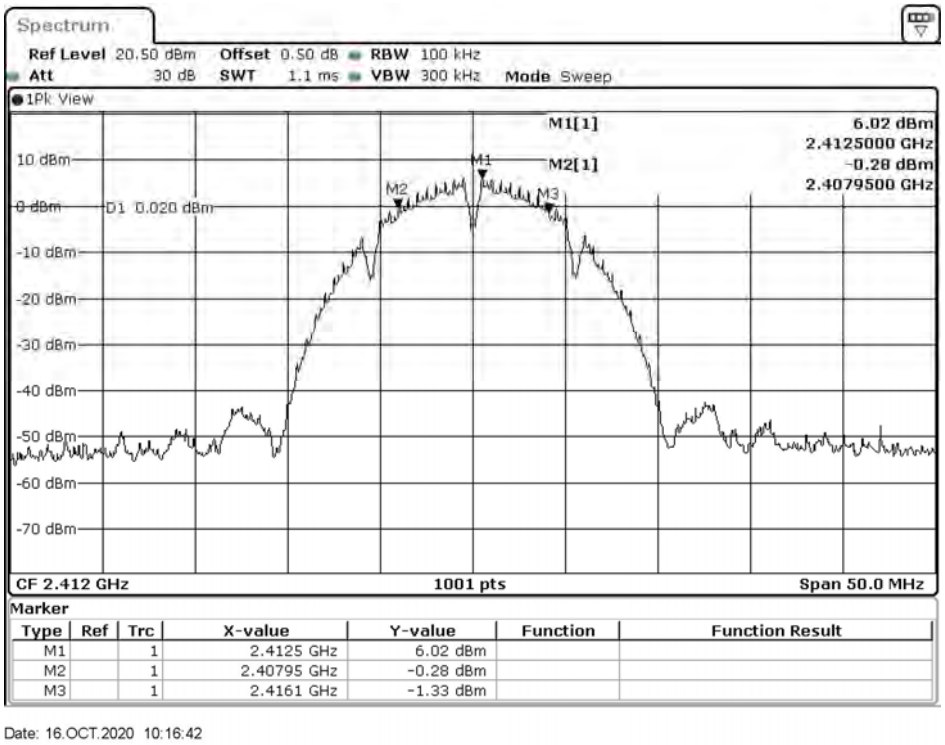
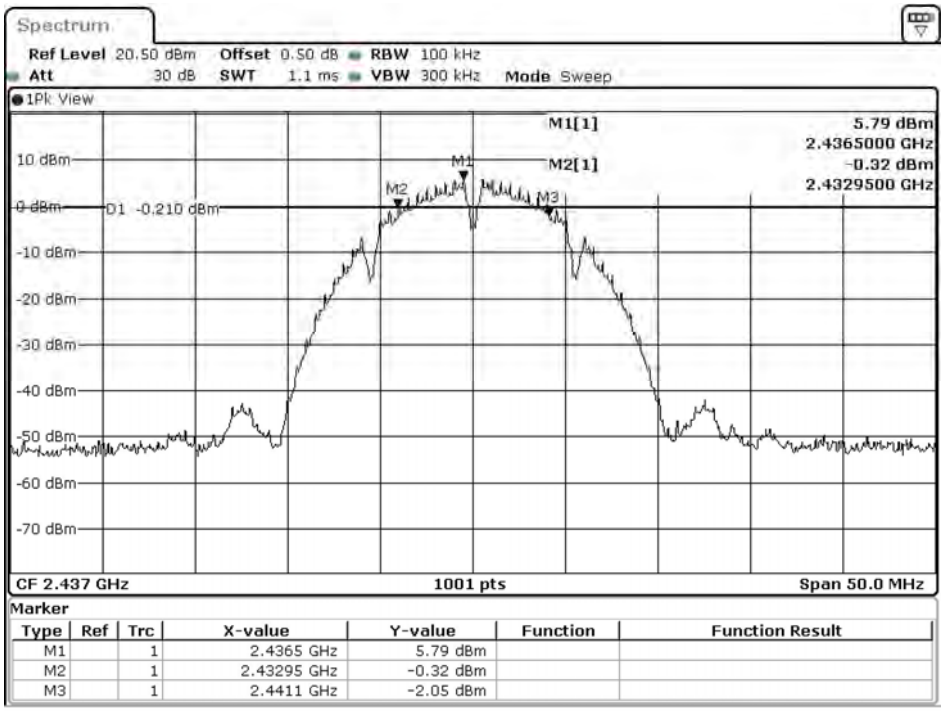
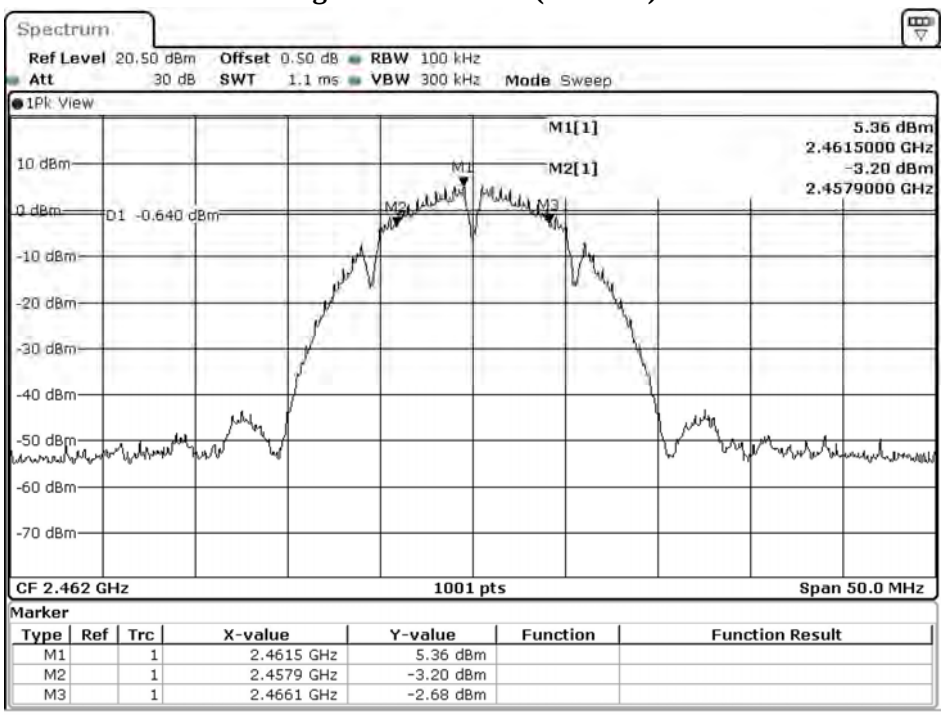


Figure Channel 06: (Chain A)



Date: 16.OCT.2020 10:19:50

Figure Channel 11: (Chain A)



Date: 16.OCT.2020 10:22:49

Product	:	Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item	:	6dB Bandwidth Data
Test Mode	:	Mode 1: Transmit (802.11b)

Chain B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	8150	>500	Pass
06	2437	8150	>500	Pass
11	2462	8200	>500	Pass

Figure Channel 01: (Chain B)

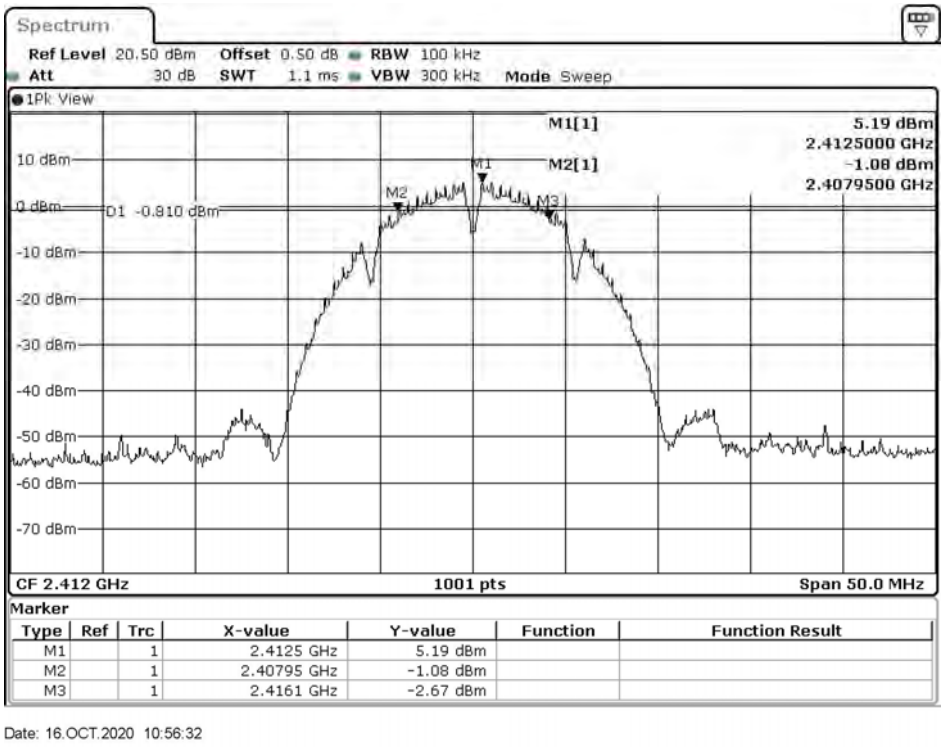
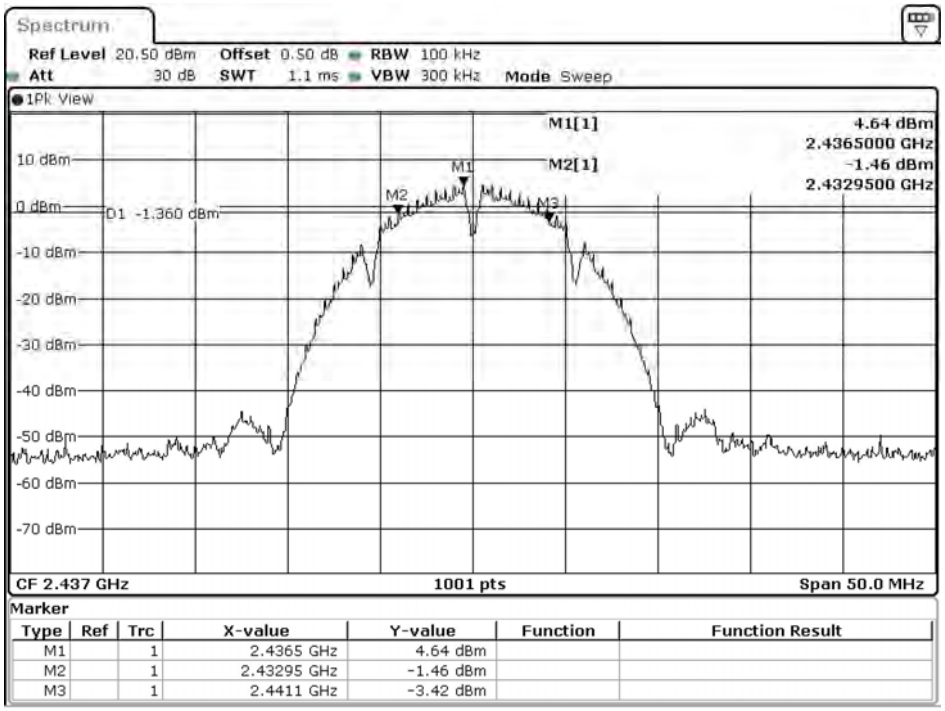


Figure Channel 06: (Chain B)

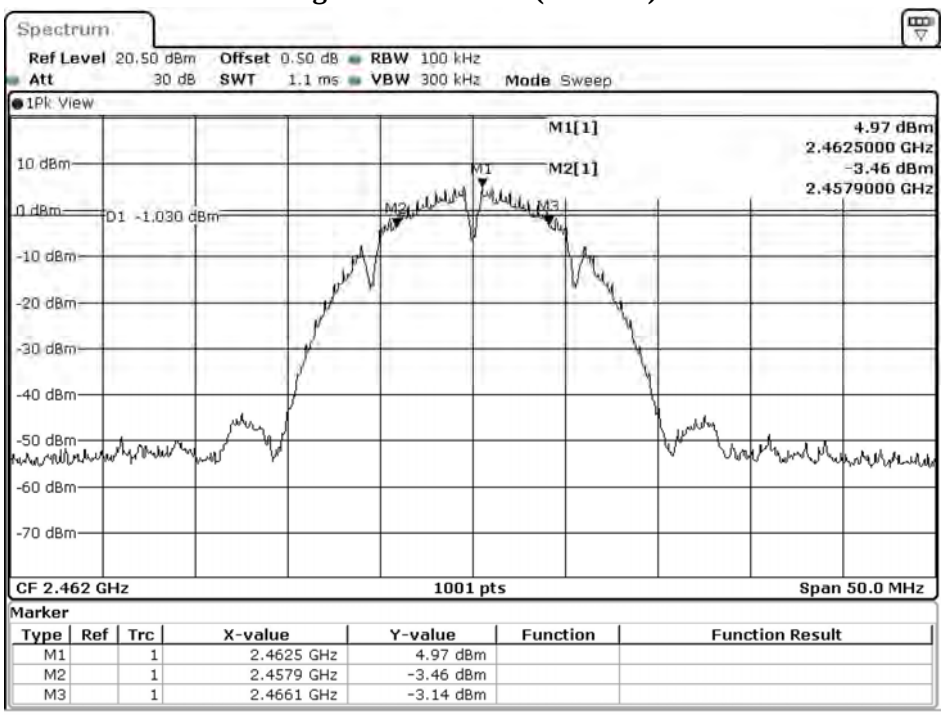


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4365 GHz	4.64 dBm		
M2		1	2.43295 GHz	-1.46 dBm		
M3		1	2.4411 GHz	-3.42 dBm		

Date: 16.OCT.2020 10:59:43

Figure Channel 11: (Chain B)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4625 GHz	4.97 dBm		
M2		1	2.4579 GHz	-3.46 dBm		
M3		1	2.4661 GHz	-3.14 dBm		

Date: 16.OCT.2020 11:03:10

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : 6dB Bandwidth Data
Test Mode : Mode 1: Transmit (802.11b)

Chain C

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	8150	>500	Pass
06	2437	7150	>500	Pass
11	2462	8200	>500	Pass

Figure Channel 01: (Chain C)

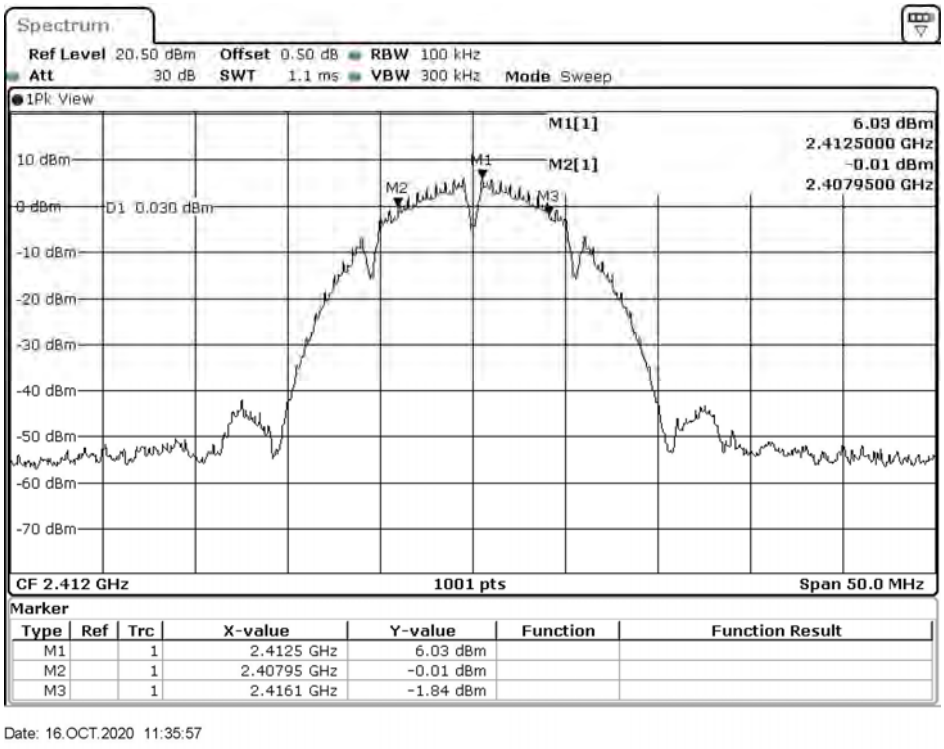
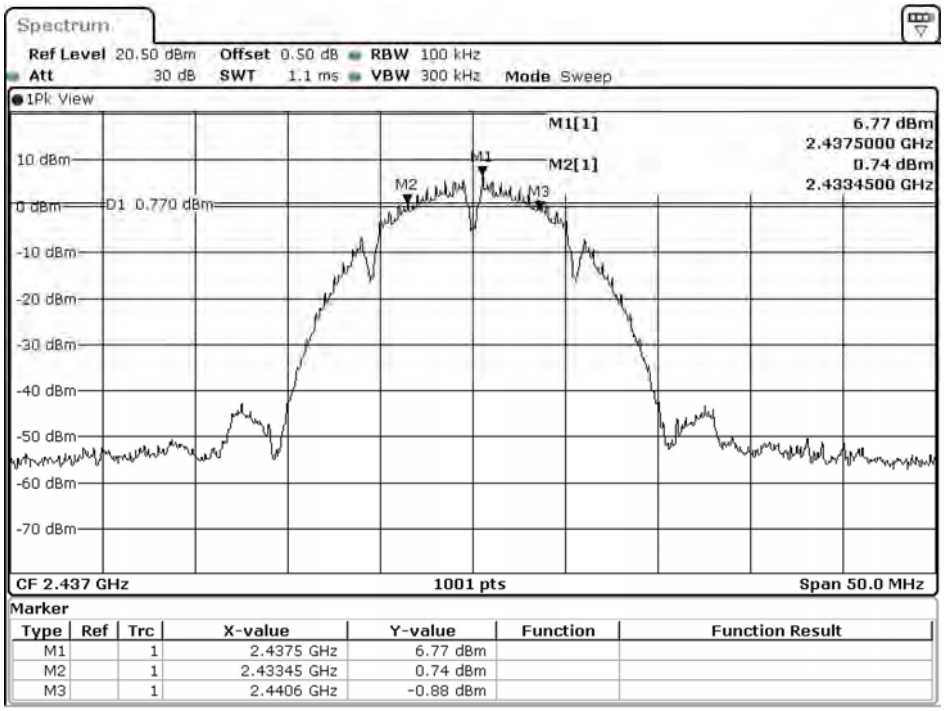
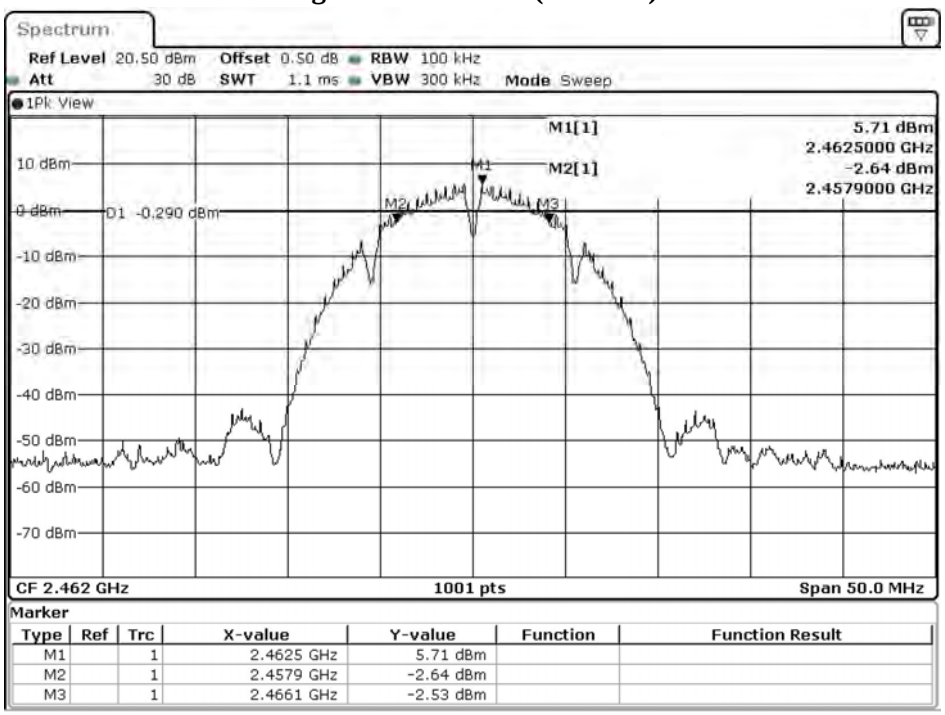


Figure Channel 06: (Chain C)



Date: 16.OCT.2020 11:39:39

Figure Channel 11: (Chain C)



Date: 16.OCT.2020 11:43:48

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : 6dB Bandwidth Data
Test Mode : Mode 2: Transmit (802.11g)

Chain A

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	15100	>500	Pass
06	2437	15150	>500	Pass
11	2462	13900	>500	Pass

Figure Channel 01: (Chain A)

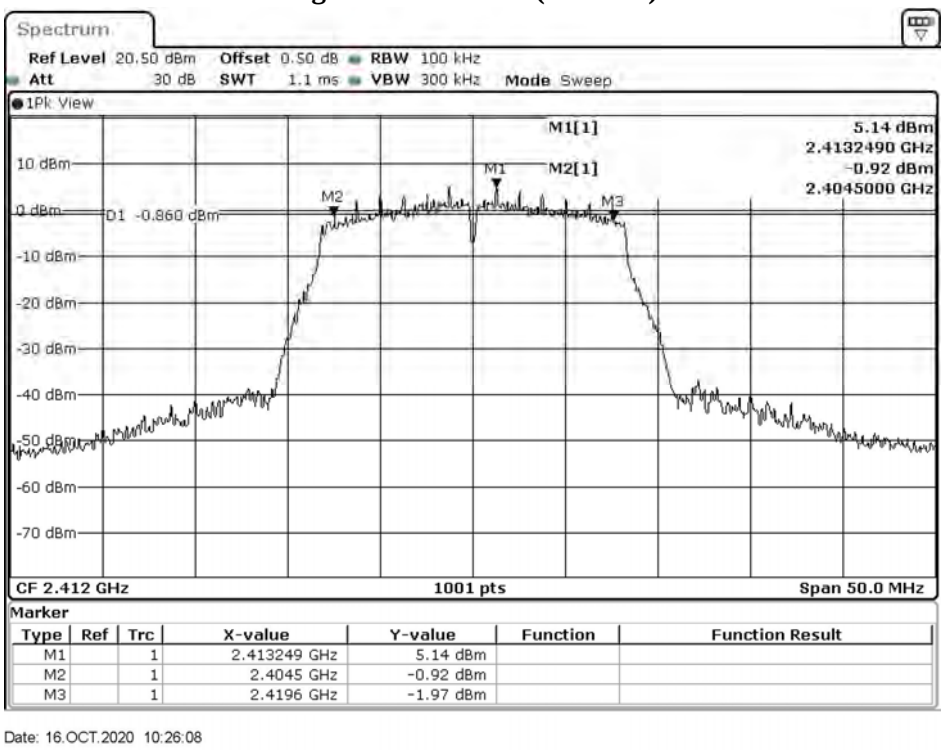
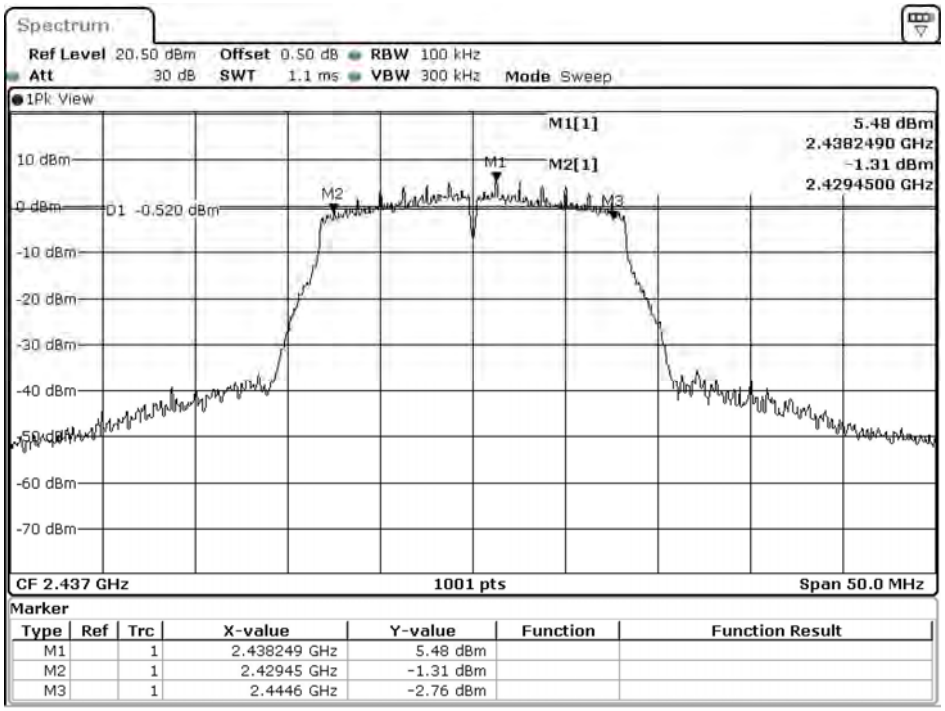
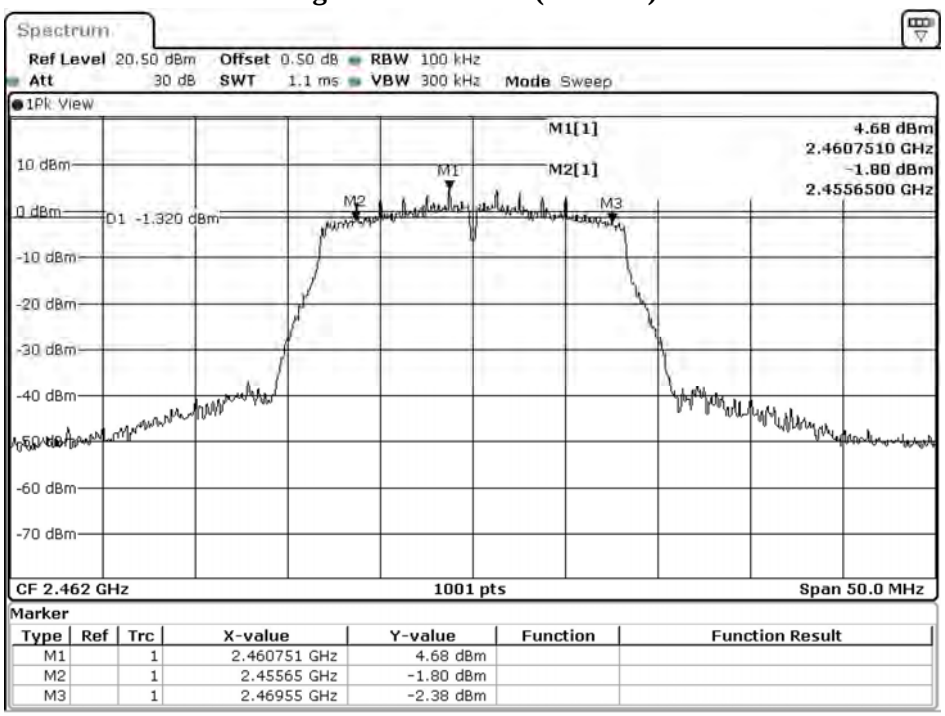


Figure Channel 06: (Chain A)



Date: 16.OCT.2020 10:29:15

Figure Channel 11: (Chain A)



Date: 16.OCT.2020 10:32:15

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : 6dB Bandwidth Data
Test Mode : Mode 2: Transmit (802.11g)

Chain B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	15200	>500	Pass
06	2437	15200	>500	Pass
11	2462	15200	>500	Pass

Figure Channel 01: (Chain A)

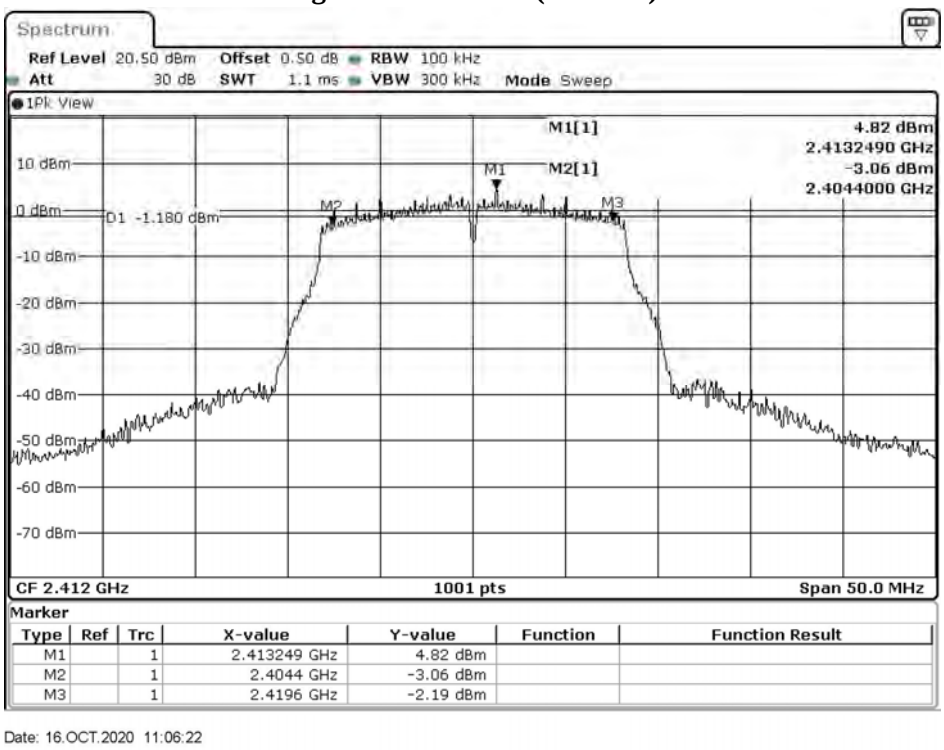
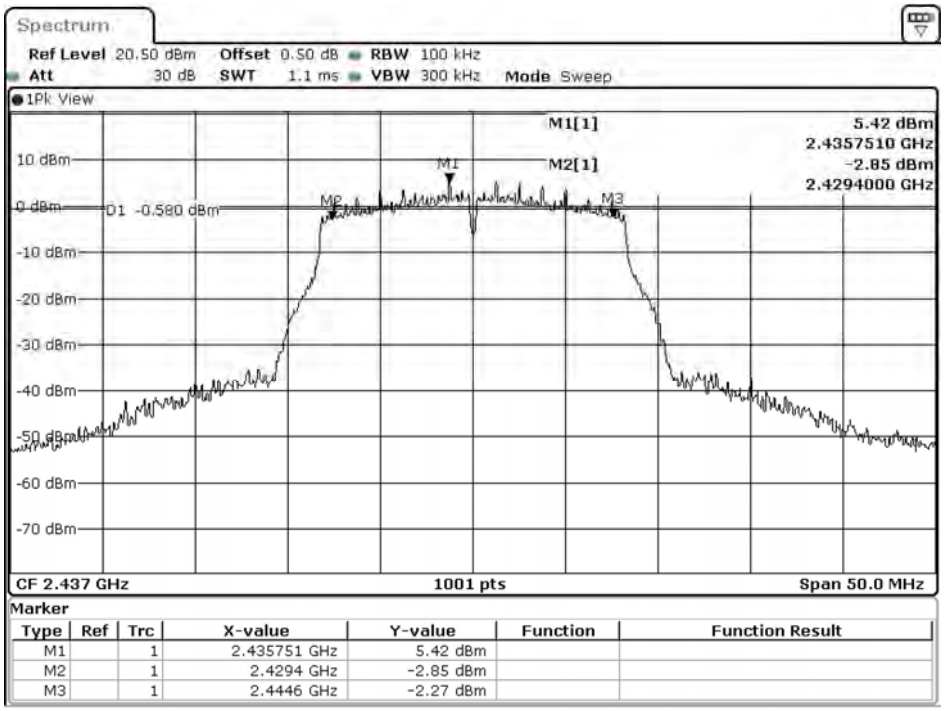
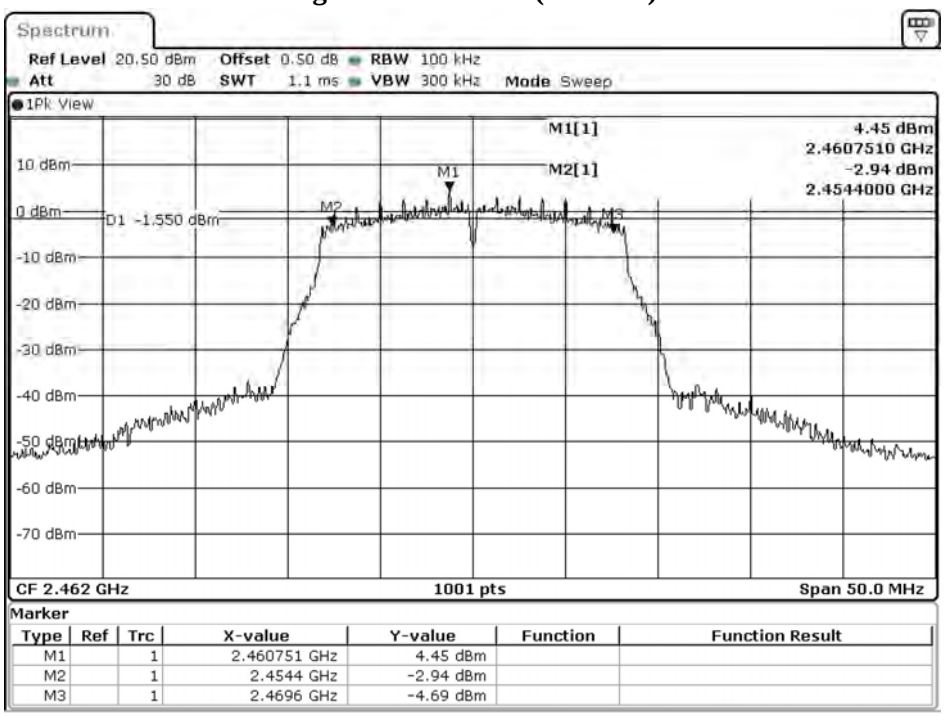


Figure Channel 06: (Chain B)



Date: 16.OCT.2020 11:09:28

Figure Channel 11: (Chain B)



Date: 16.OCT.2020 11:12:15

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : 6dB Bandwidth Data
Test Mode : Mode 2: Transmit (802.11g)

Chain C

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	15200	>500	Pass
06	2437	15200	>500	Pass
11	2462	15200	>500	Pass

Figure Channel 01: (Chain C)

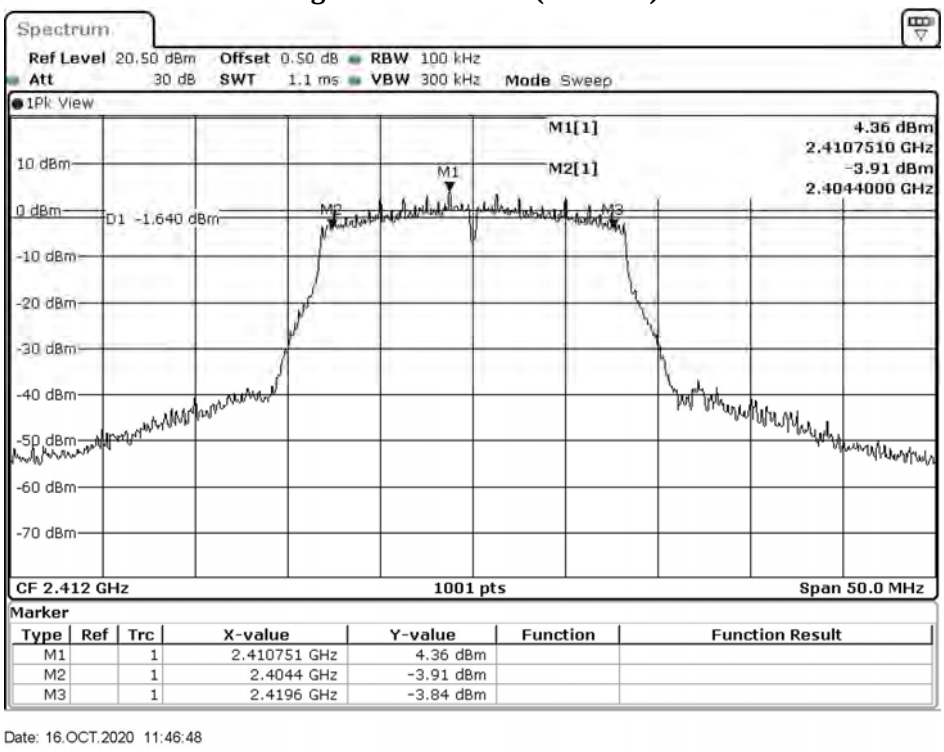
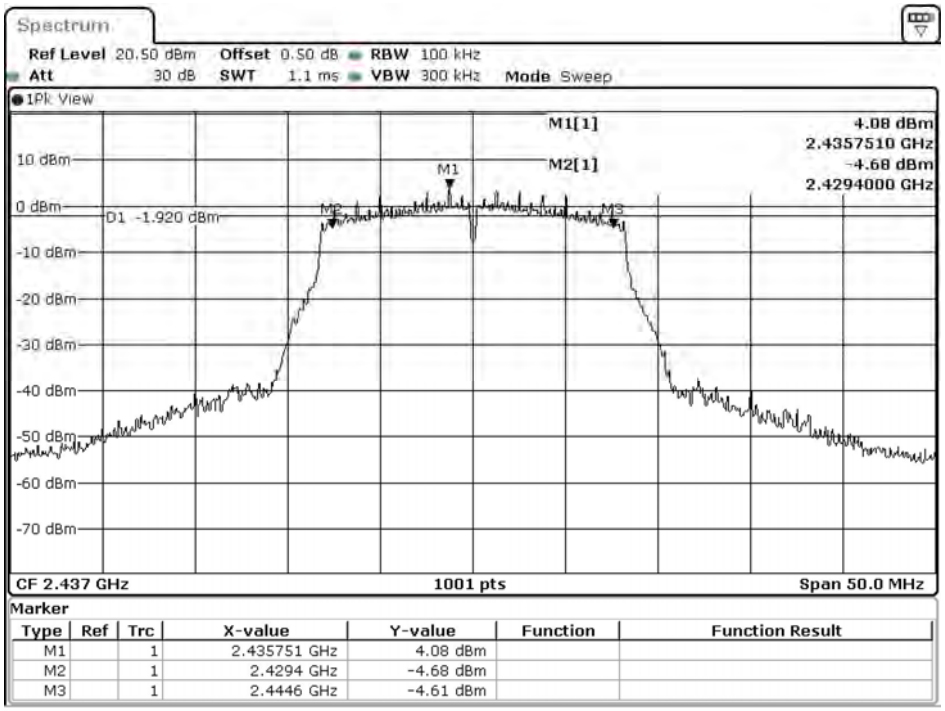
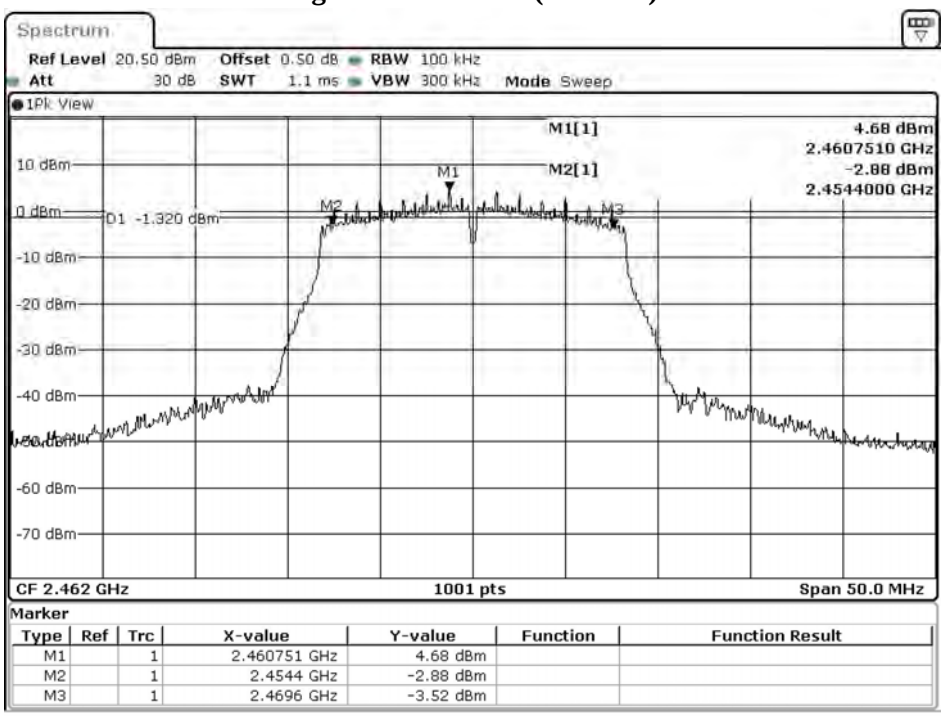


Figure Channel 06: (Chain C)



Date: 16.OCT.2020 11:49:42

Figure Channel 11: (Chain C)



Date: 16.OCT.2020 11:52:37

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : 6dB Bandwidth Data
Test Mode : Mode 3: Transmit (802.11n-20MBW)

Chain A

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	15200	>500	Pass
06	2437	15200	>500	Pass
11	2462	15200	>500	Pass

Figure Channel 01: (Chain A)

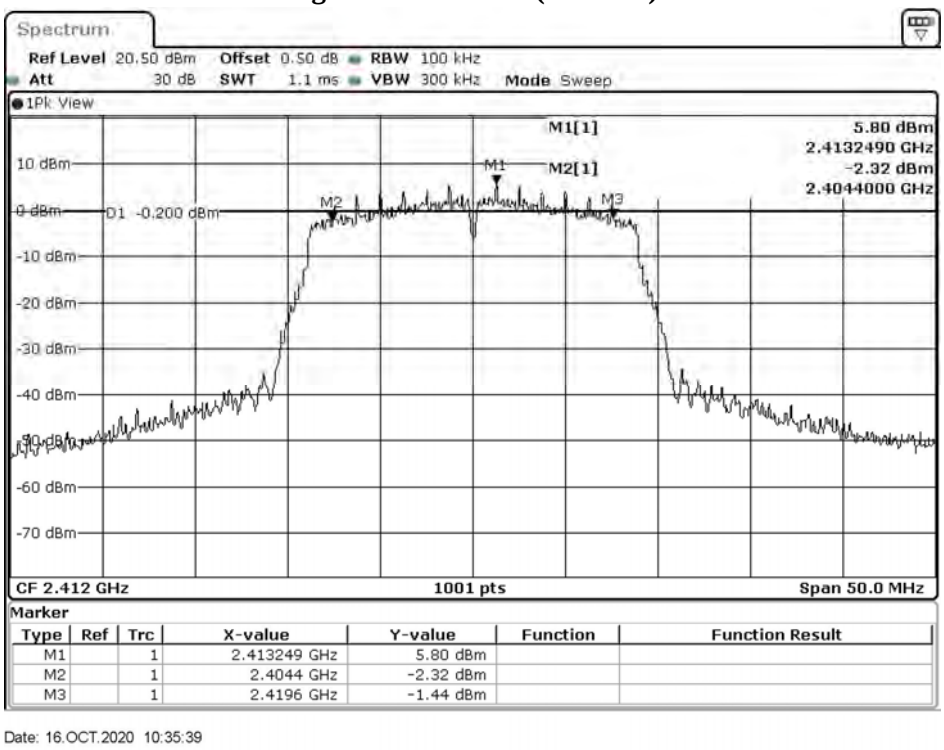
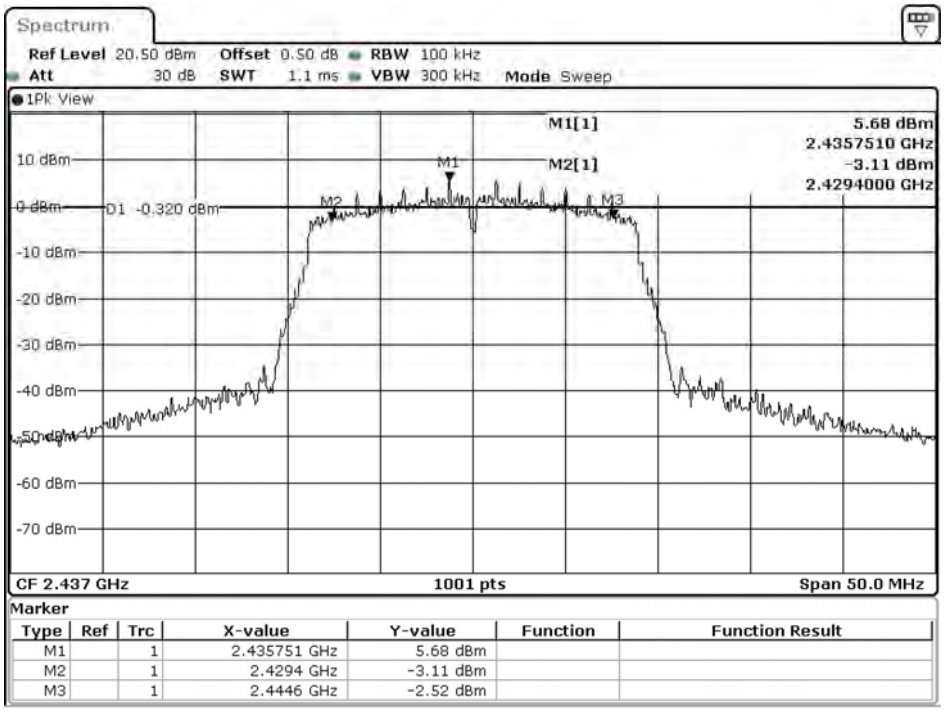
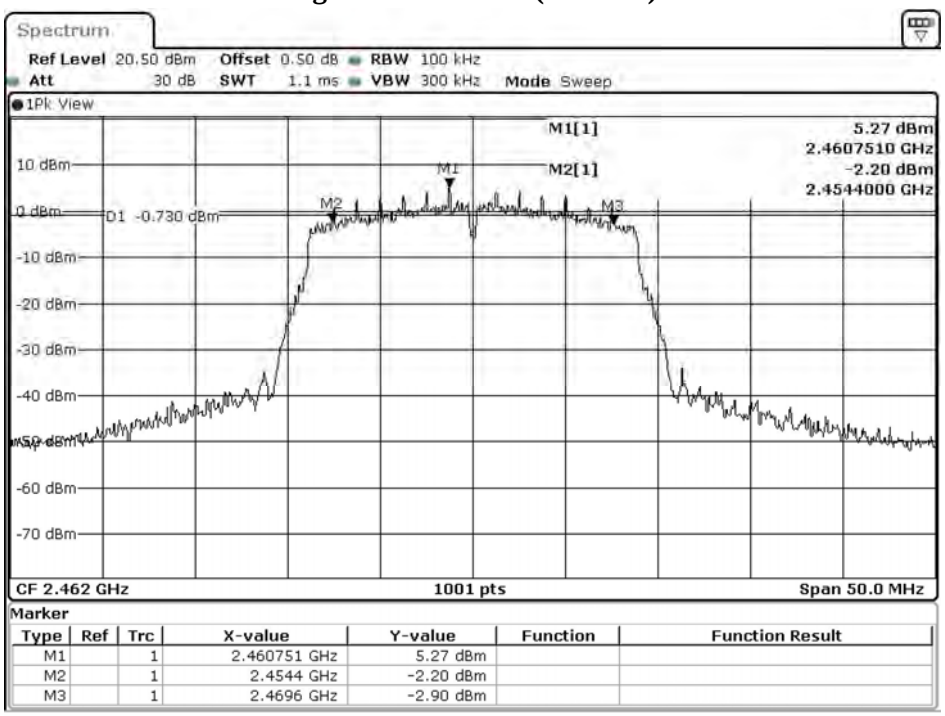


Figure Channel 06: (Chain A)



Date: 16.OCT.2020 10:38:38

Figure Channel 11: (Chain A)



Date: 16.OCT.2020 10:41:33

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : 6dB Bandwidth Data
Test Mode : Mode 3: Transmit (802.11n-20MBW)

Chain B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	15400	>500	Pass
06	2437	15200	>500	Pass
11	2462	15200	>500	Pass

Figure Channel 01: (Chain B)

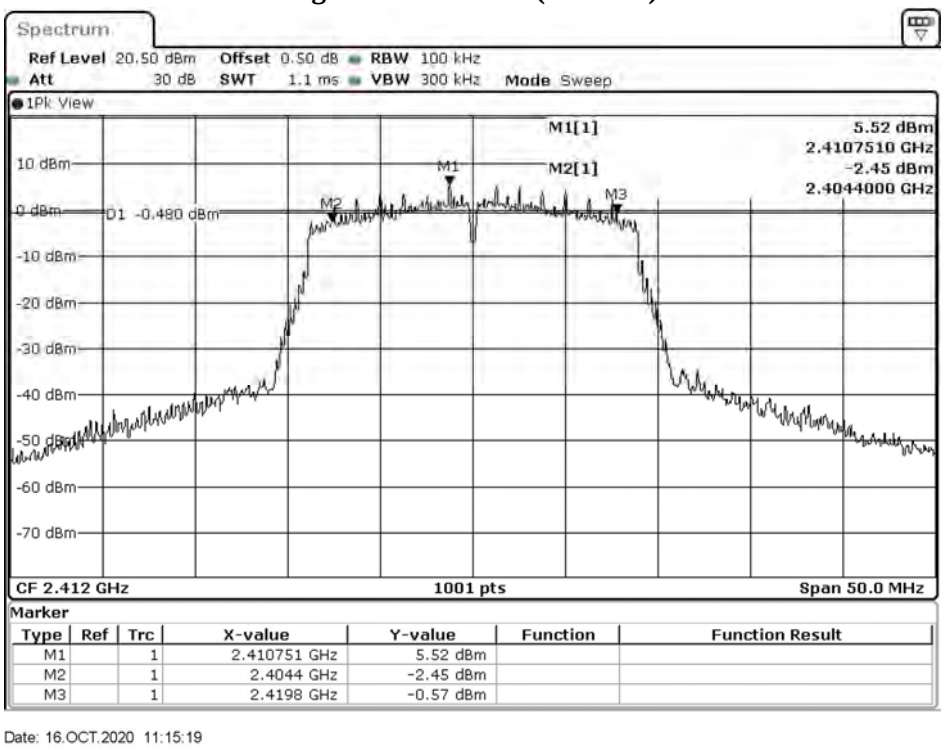
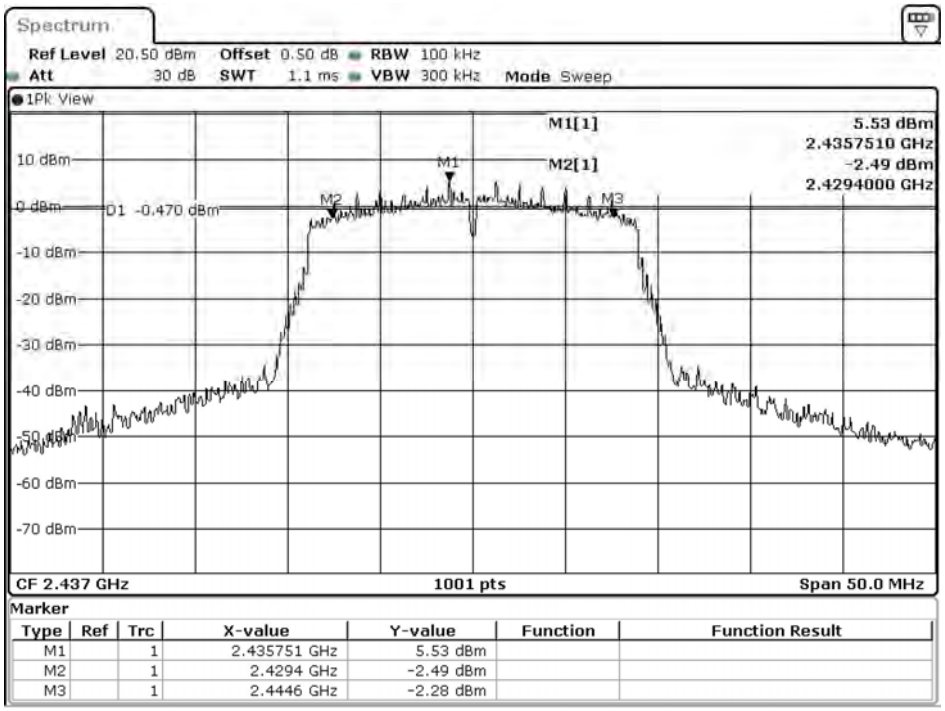
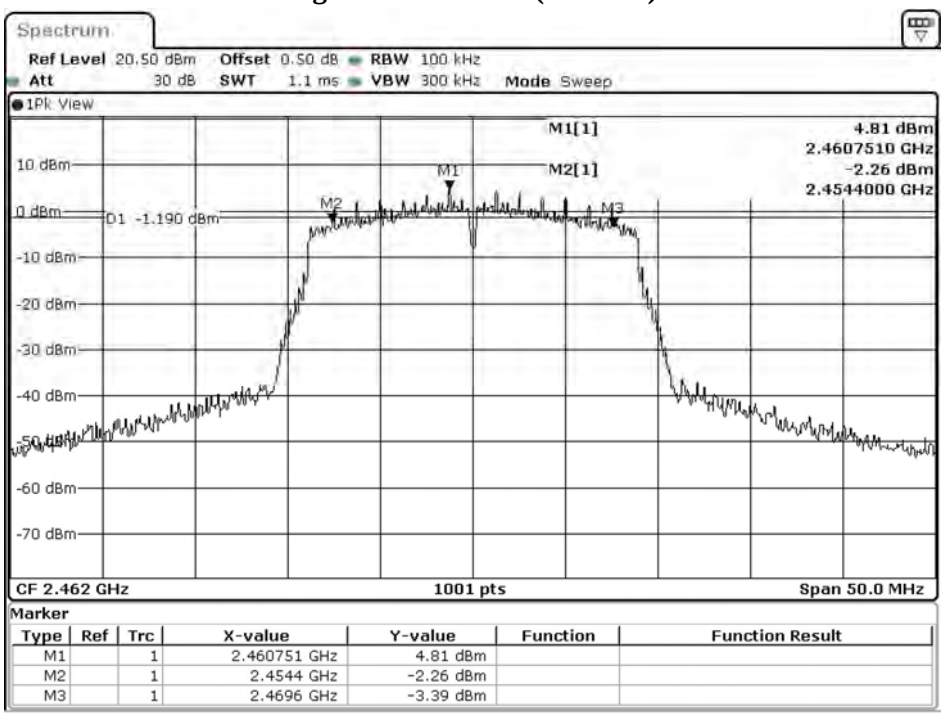


Figure Channel 06: (Chain B)



Date: 16.OCT.2020 11:18:15

Figure Channel 11: (Chain B)



Date: 16.OCT.2020 11:21:24

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : 6dB Bandwidth Data
Test Mode : Mode 3: Transmit (802.11n-20MBW)

Chain C

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	15200	>500	Pass
06	2437	15200	>500	Pass
11	2462	15200	>500	Pass

Figure Channel 01: (Chain C)

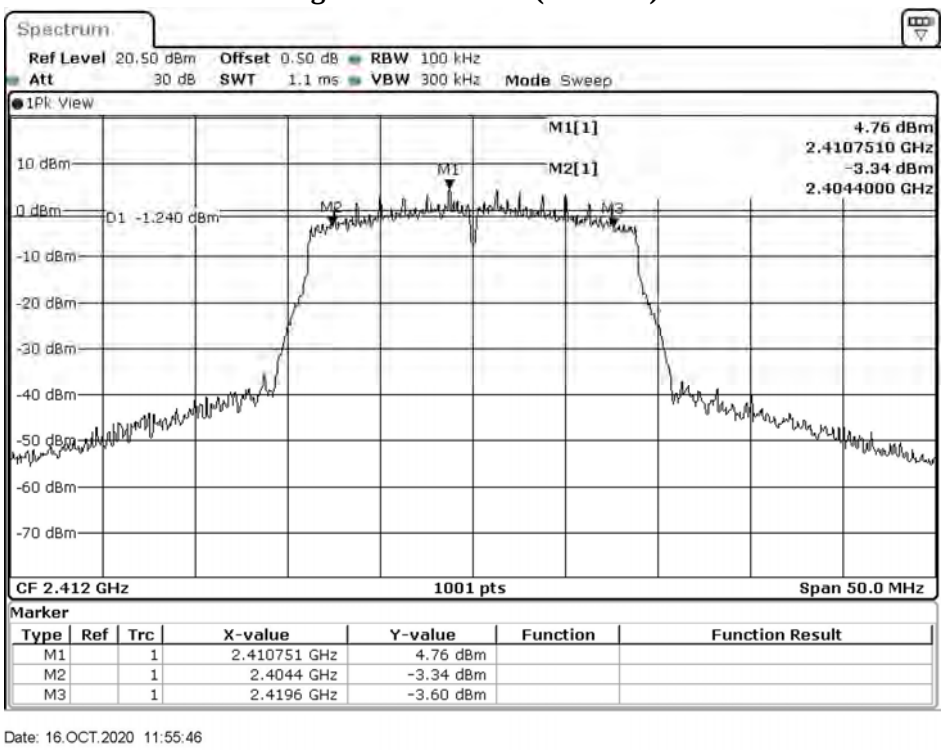
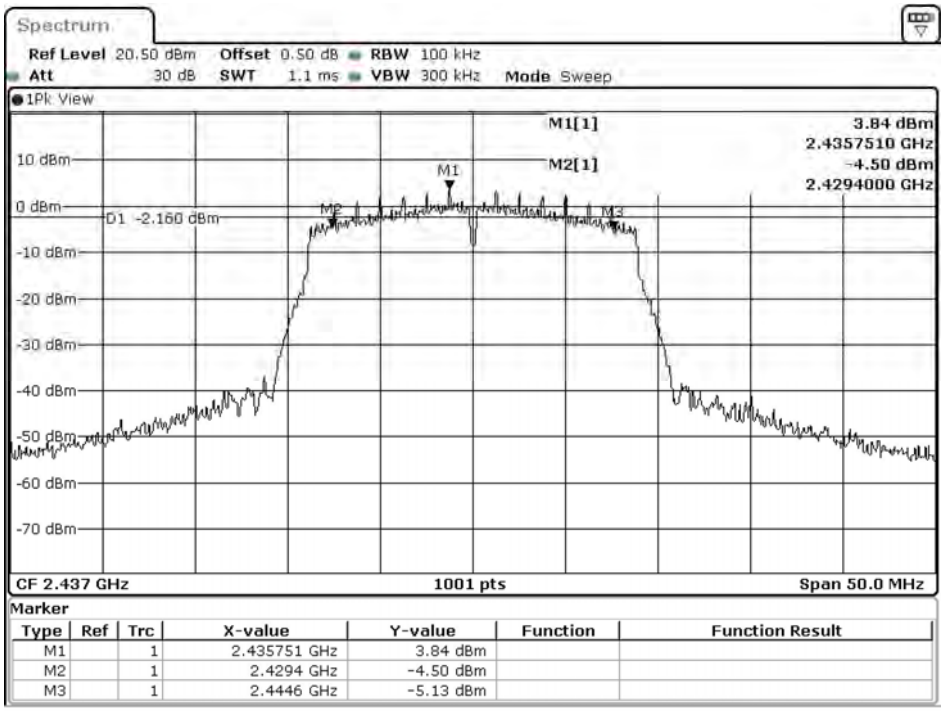


Figure Channel 06: (Chain C)

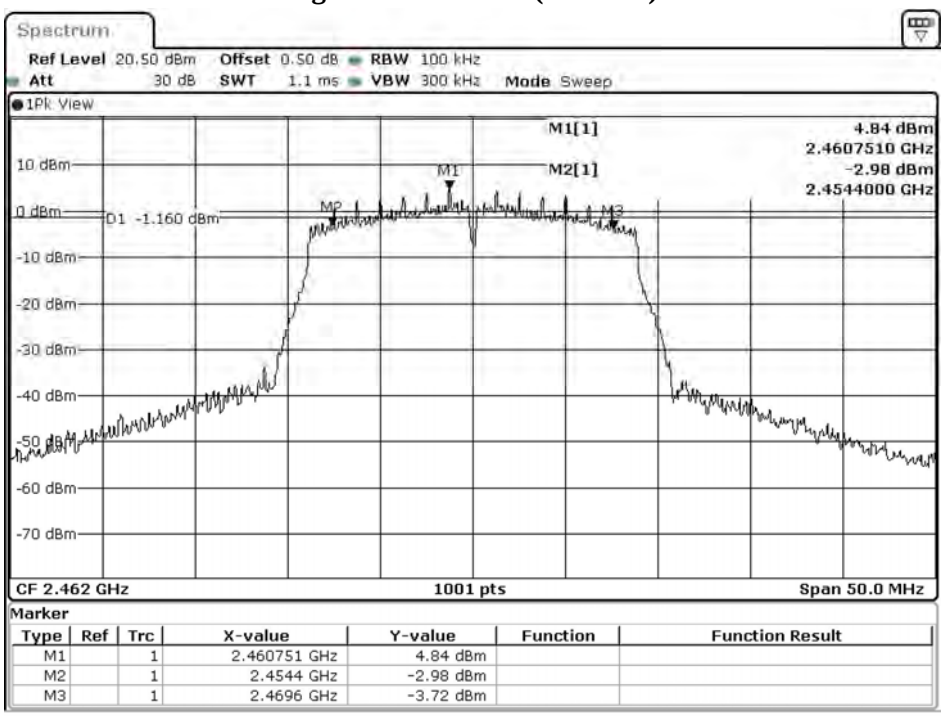


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.435751 GHz	3.84 dBm		
M2		1	2.4294 GHz	-4.50 dBm		
M3		1	2.4446 GHz	-5.13 dBm		

Date: 16.OCT.2020 11:58:47

Figure Channel 11: (Chain C)



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.460751 GHz	4.84 dBm		
M2		1	2.4544 GHz	-2.98 dBm		
M3		1	2.4696 GHz	-3.72 dBm		

Date: 16.OCT.2020 13:09:48

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : 6dB Bandwidth Data
Test Mode : Mode 4: Transmit (802.11n-40MBW)

Chain A

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	35200	>500	Pass
06	2437	35300	>500	Pass
09	2452	35300	>500	Pass

Figure Channel 03: (Chain A)

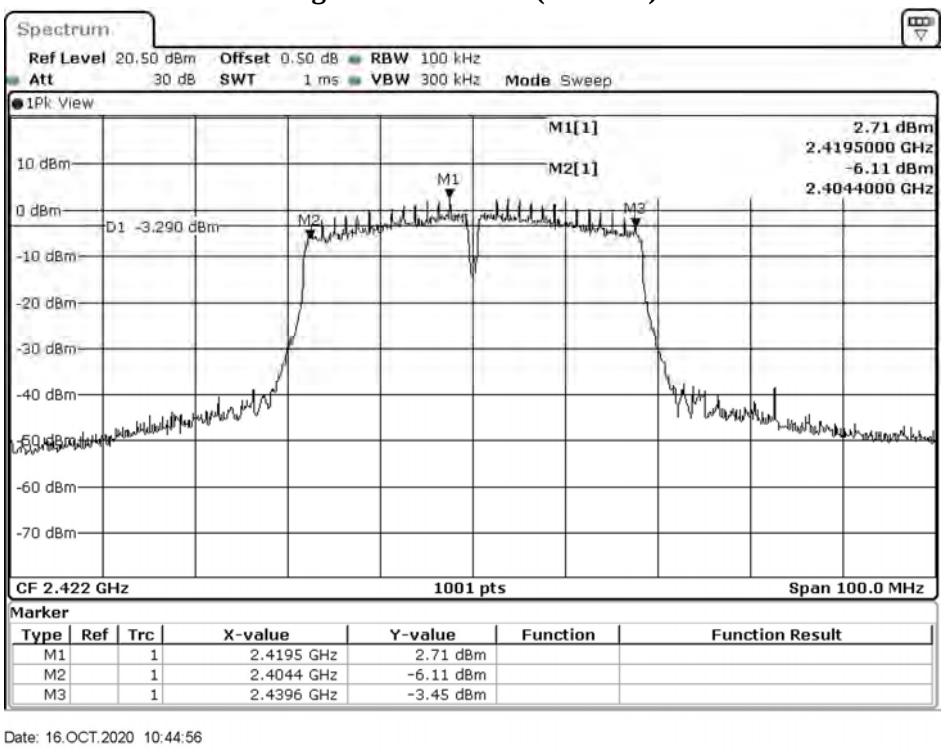
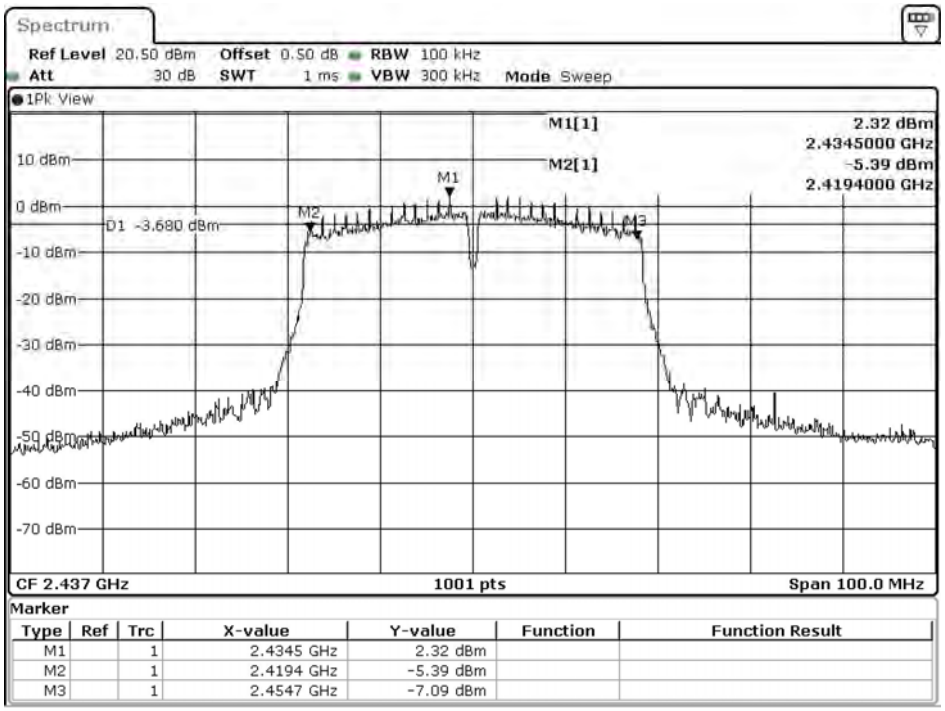
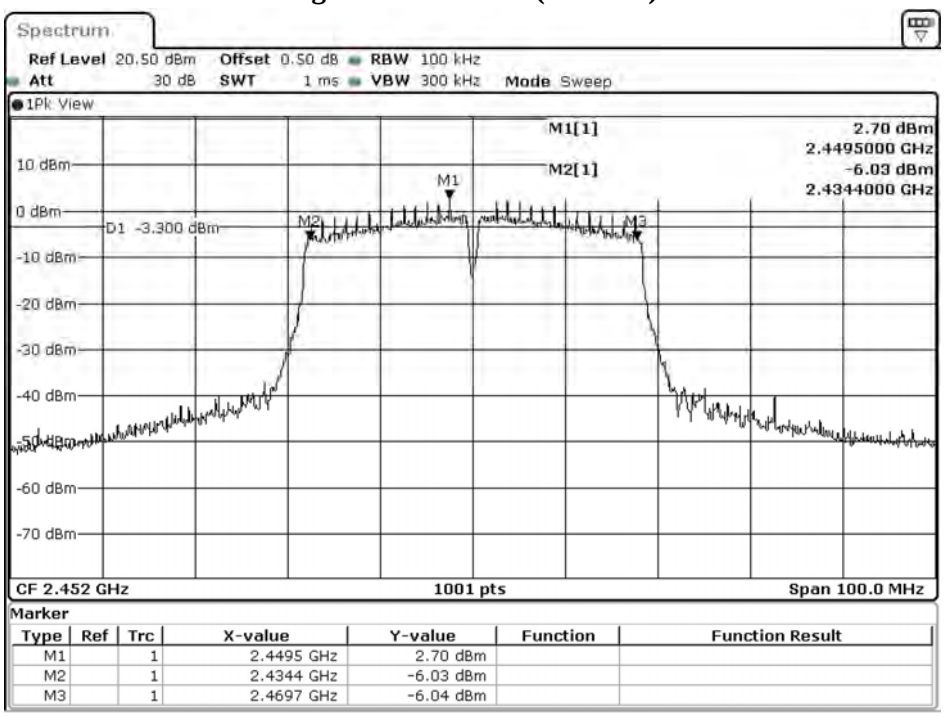


Figure Channel 06: (Chain A)



Date: 16.OCT.2020 10:47:51

Figure Channel 09: (Chain A)



Date: 16.OCT.2020 10:50:42

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : 6dB Bandwidth Data
Test Mode : Mode 4: Transmit (802.11n-40MBW)

Chain B

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	35200	>500	Pass
06	2437	35300	>500	Pass
09	2452	35300	>500	Pass

Figure Channel 03: (Chain B)

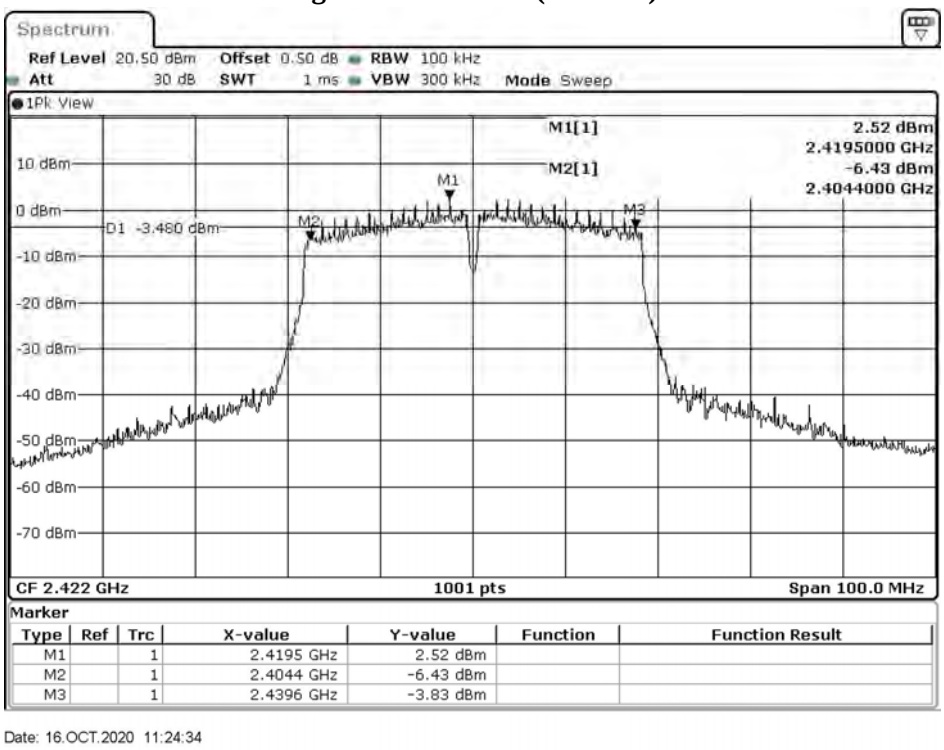
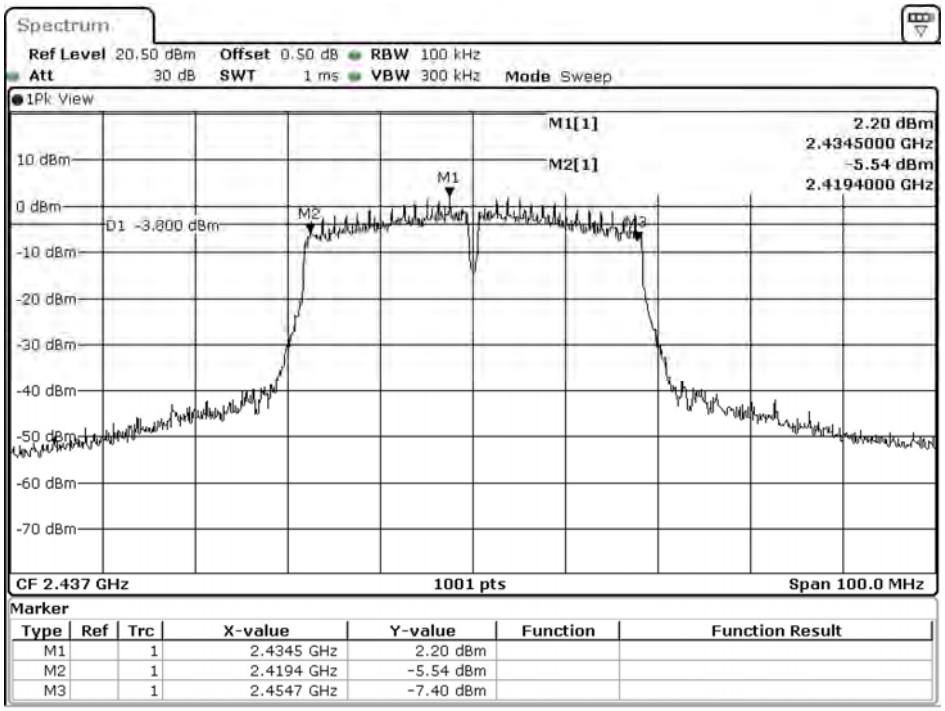
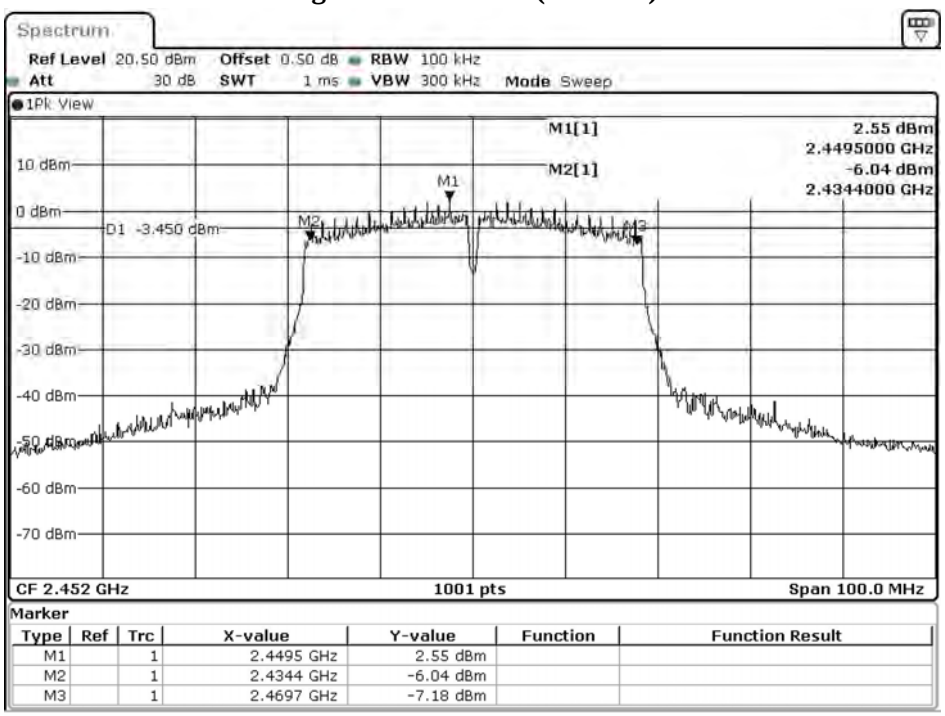


Figure Channel 06: (Chain B)



Date: 16.OCT.2020 11:27:29

Figure Channel 09: (Chain B)



Date: 16.OCT.2020 11:30:31

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : 6dB Bandwidth Data
Test Mode : Mode 4: Transmit (802.11n-40MBW)

Chain C

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	35200	>500	Pass
06	2437	35300	>500	Pass
09	2452	35200	>500	Pass

Figure Channel 03: (Chain C)

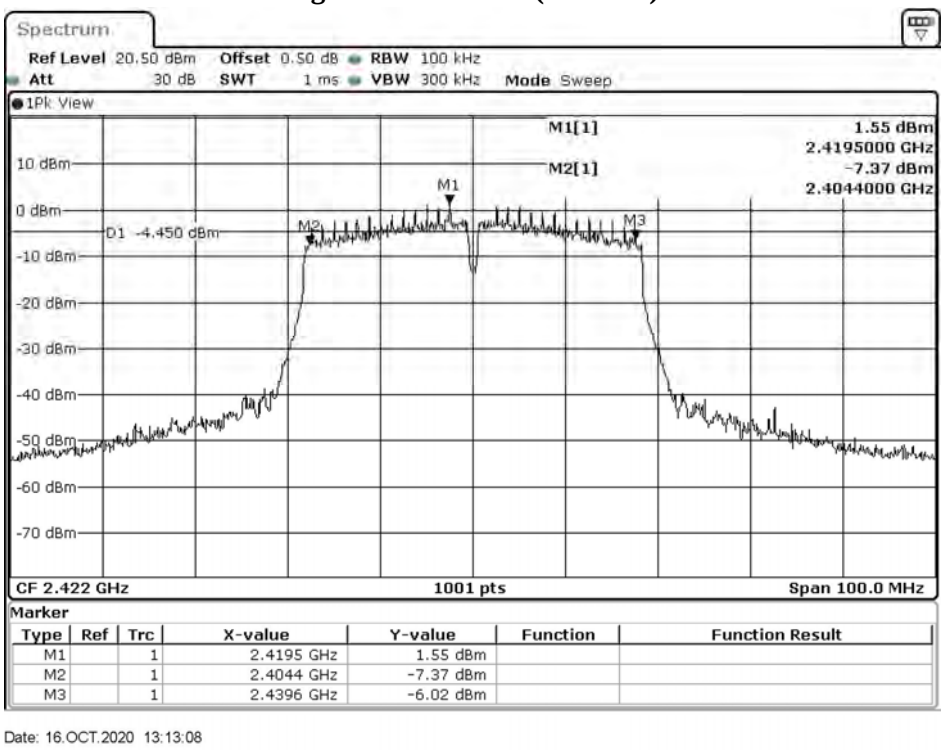
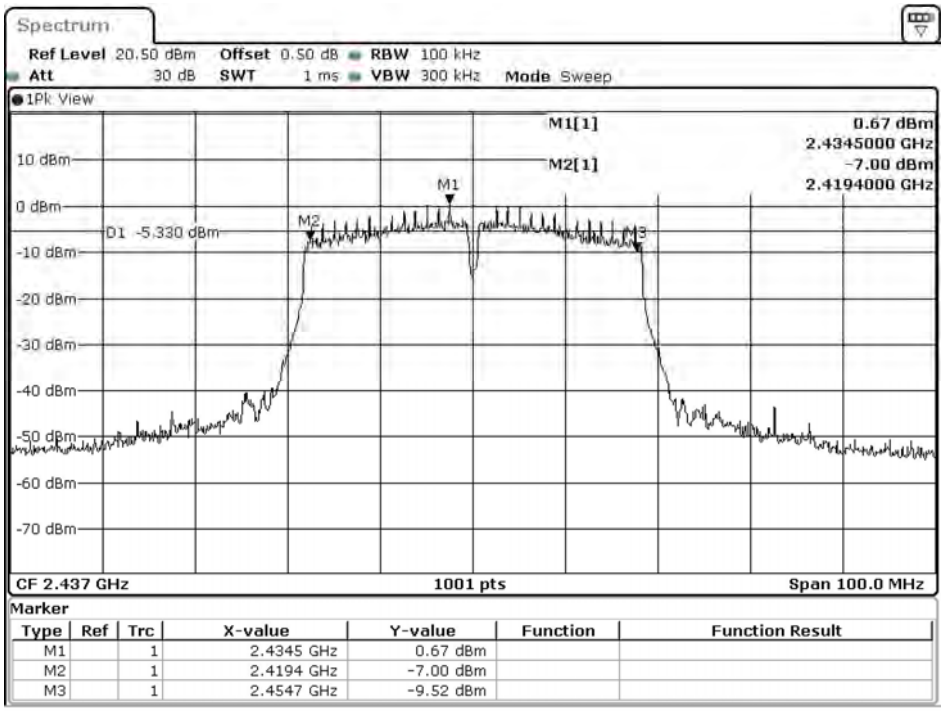


Figure Channel 06: (Chain C)

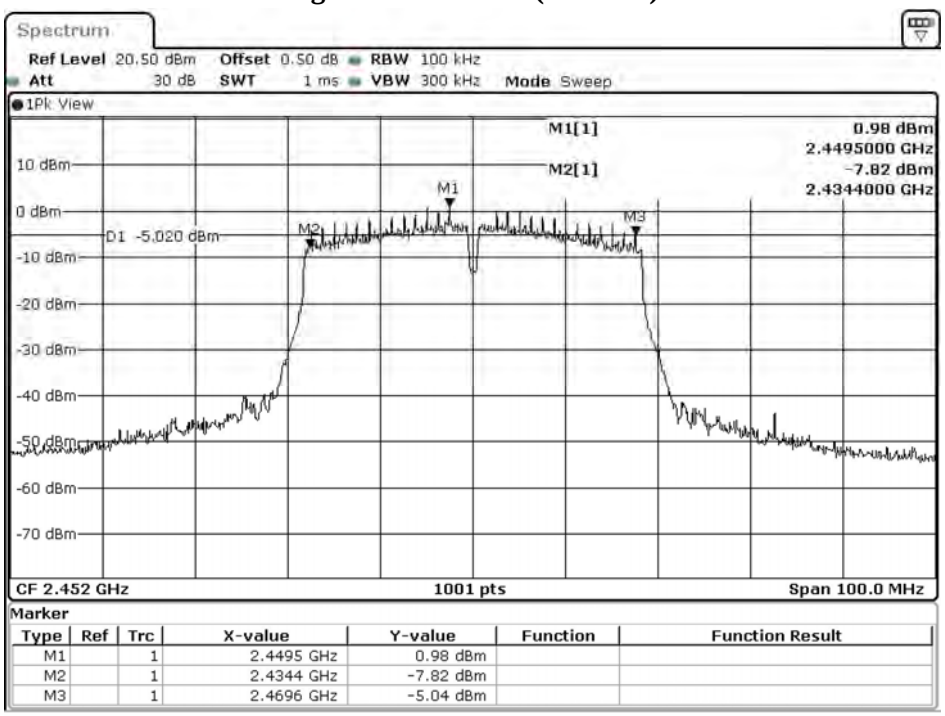


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4345 GHz	0.67 dBm		
M2		1	2.4194 GHz	-7.00 dBm		
M3		1	2.4547 GHz	-9.52 dBm		

Date: 16.OCT.2020 13:16:00

Figure Channel 09: (Chain C)



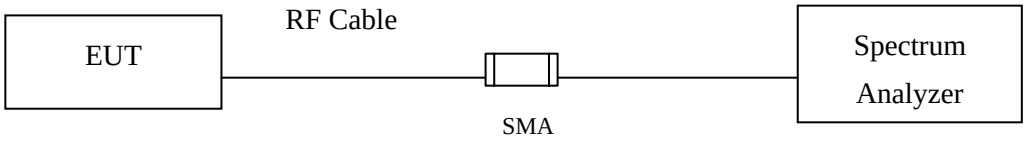
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4495 GHz	0.98 dBm		
M2		1	2.4344 GHz	-7.82 dBm		
M3		1	2.4696 GHz	-5.04 dBm		

Date: 16.OCT.2020 13:18:55

8. Power Density

8.1. Test Setup



8.2. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

8.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013; tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.
The maximum power spectral density using C63.10 Section 11.10.2 Method PKPSD (peak PSD)

8.4. Test Result of Power Density

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Power Density Data
Test Mode : Mode 1: Transmit (802.11b)

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Duty Factor (dB)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
01	2412.000	A	2.860	0.220	7.851	≦8dBm	Pass
		B	2.990	0.220	7.981	≦8dBm	Pass
		C	2.690	0.220	7.681	≦8dBm	Pass
06	2437.000	A	2.540	0.220	7.531	≦8dBm	Pass
		B	2.640	0.220	7.631	≦8dBm	Pass
		C	2.600	0.220	7.591	≦8dBm	Pass
11	2462.000	A	2.820	0.220	7.811	≦8dBm	Pass
		B	2.630	0.220	7.621	≦8dBm	Pass
		C	2.910	0.220	7.901	≦8dBm	Pass

Note :
The quantity 10*log 3 (three antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 1: (Chain A)

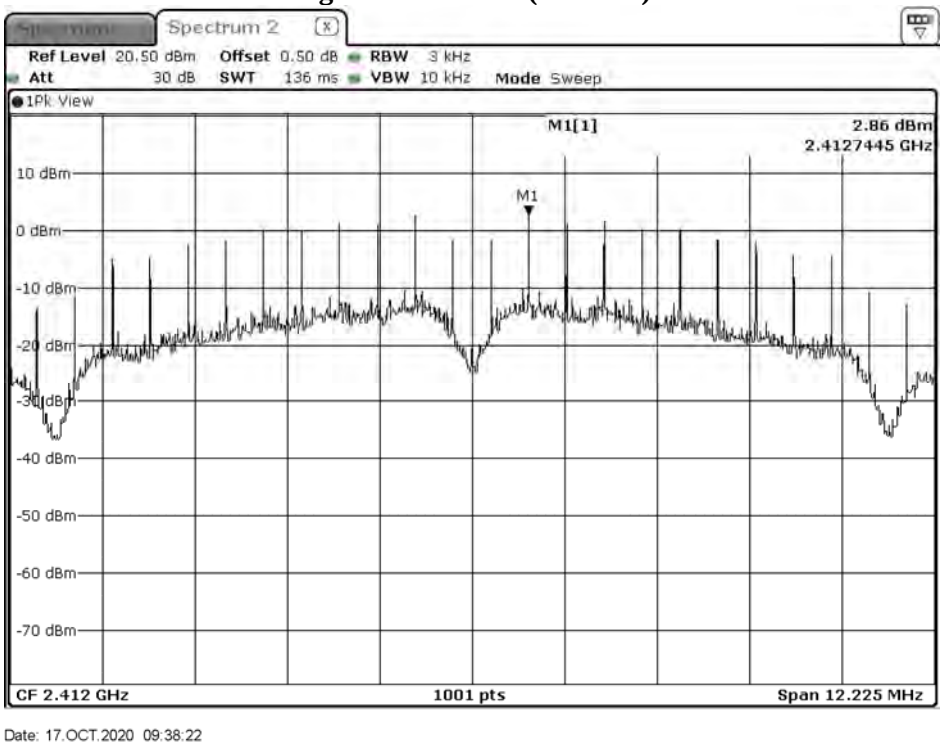
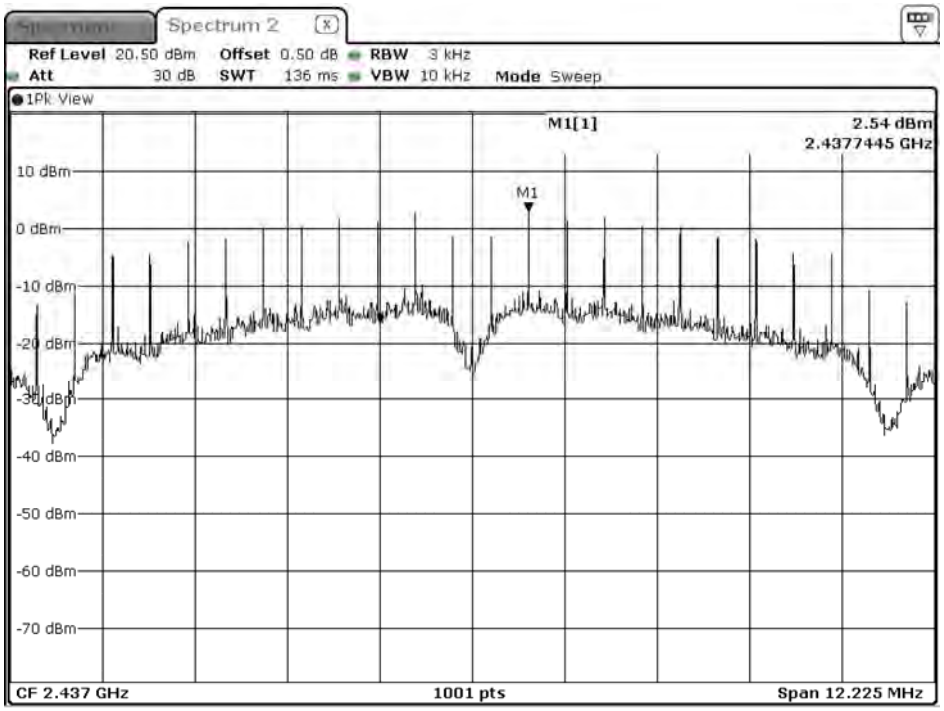
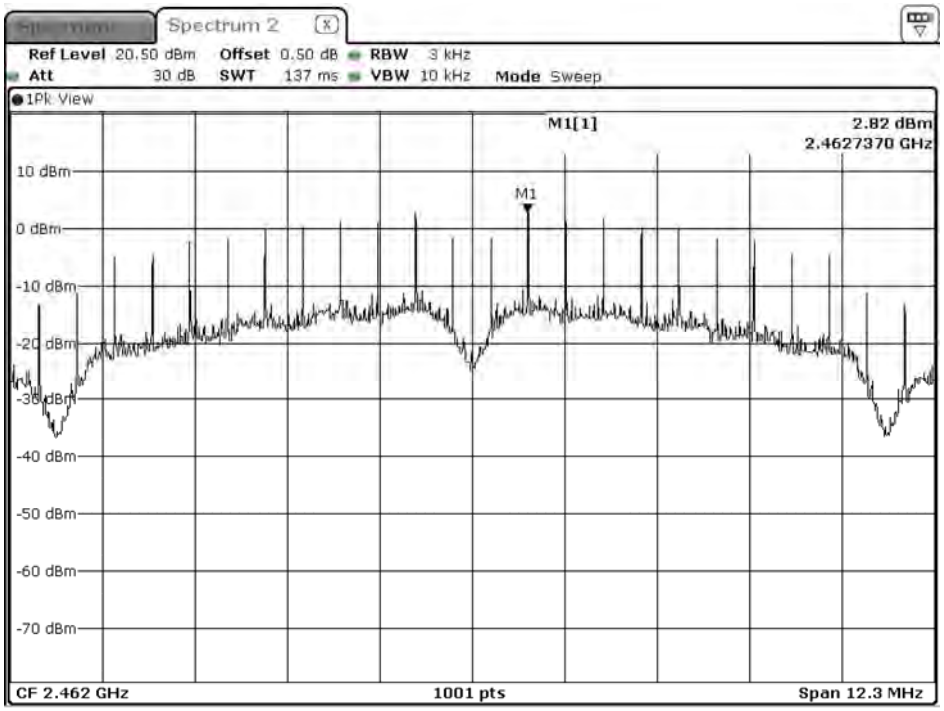


Figure Channel 6: (Chain A)



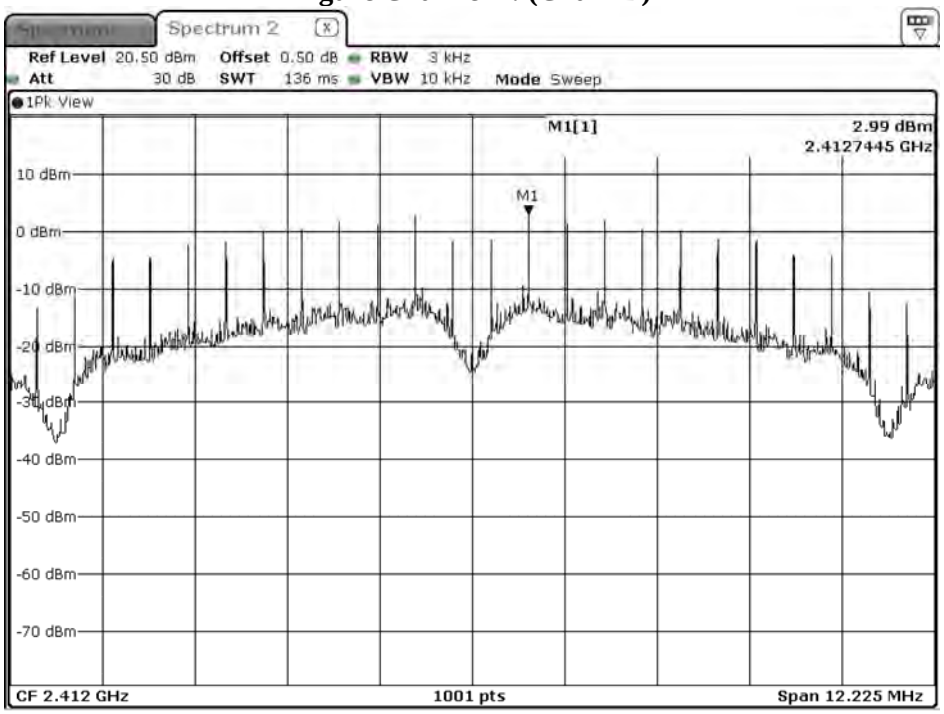
Date: 17.OCT.2020 09:48:41

Figure Channel 11: (Chain A)



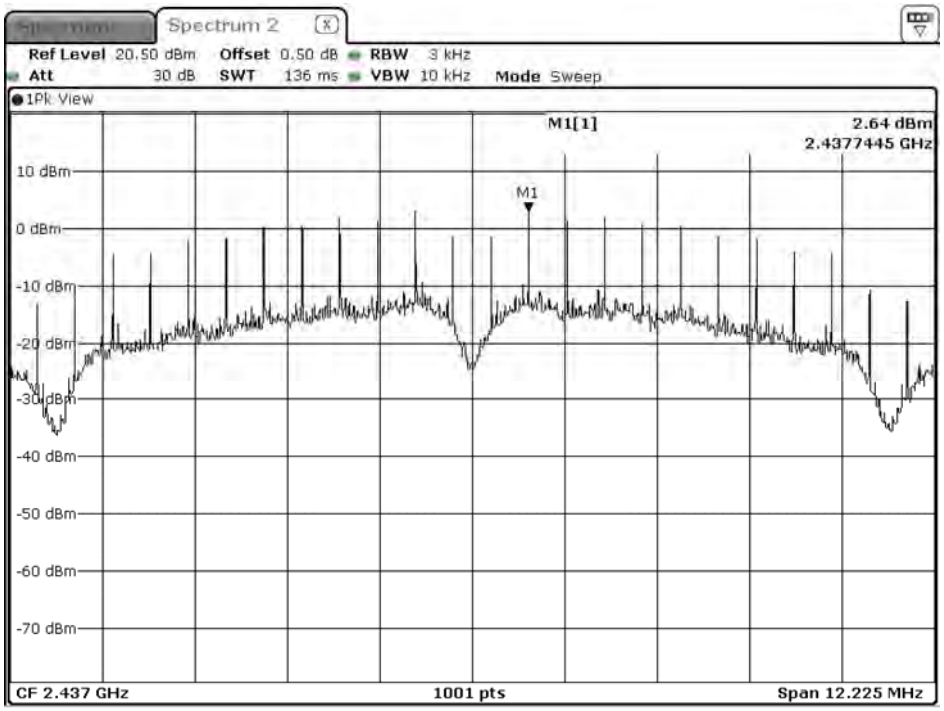
Date: 17.OCT.2020 10:13:22

Figure Channel 1: (Chain B)



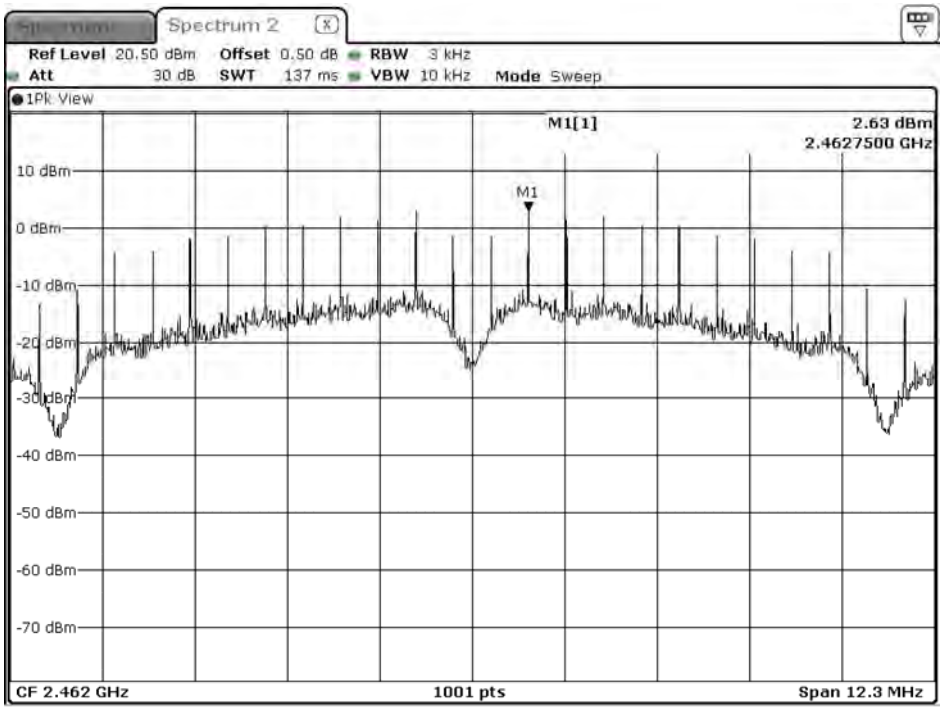
Date: 16.OCT.2020 16:50:32

Figure Channel 6: (Chain B)



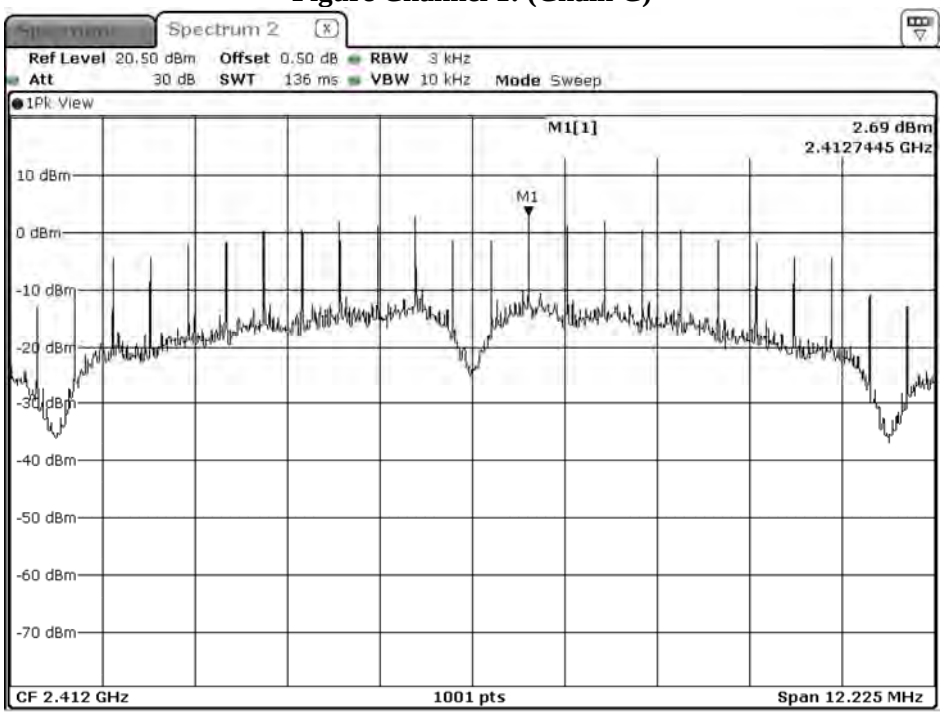
Date: 16.OCT.2020 17:10:57

Figure Channel 11: (Chain B)



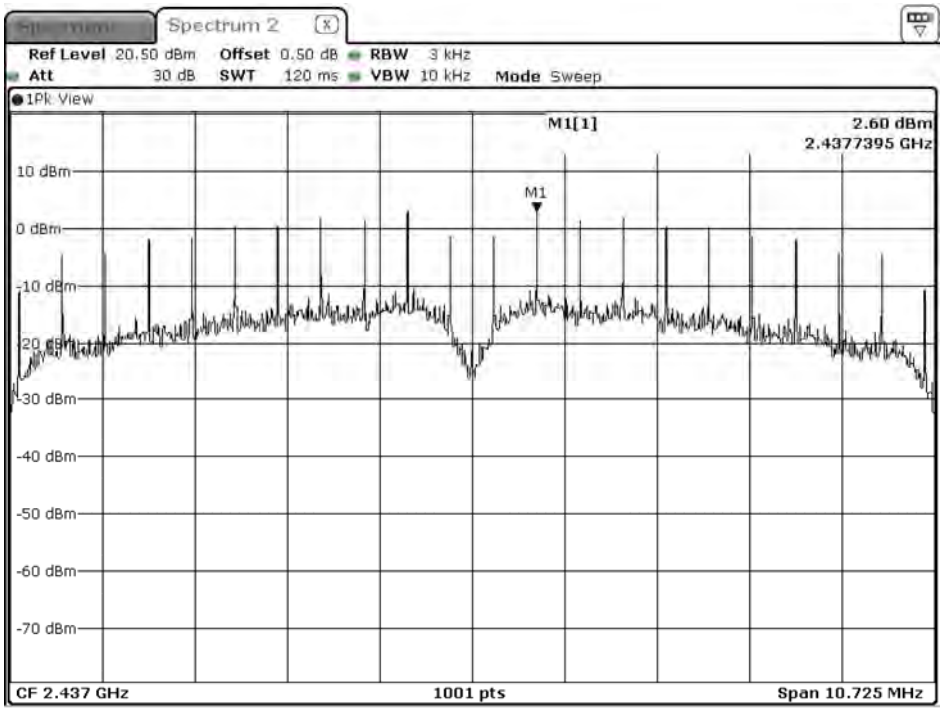
Date: 16.OCT.2020 17:21:39

Figure Channel 1: (Chain C)



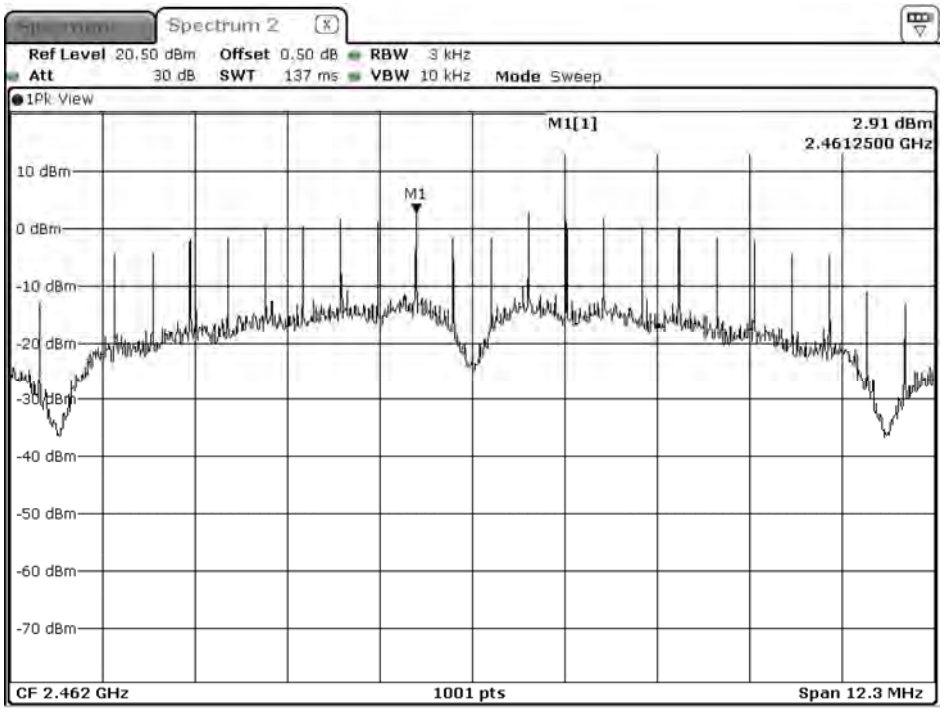
Date: 16.OCT.2020 15:39:12

Figure Channel 6: (Chain C)



Date: 16.OCT.2020 15:47:20

Figure Channel 11: (Chain C)



Date: 16.OCT.2020 15:59:54

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Power Density Data
Test Mode : Mode 2: Transmit (802.11g)

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Duty Factor (dB)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
01	2412.000	A	-10.400	0.980	-4.649	≦8dBm	Pass
		B	-11.850	0.980	-6.099	≦8dBm	Pass
		C	-9.860	0.980	-4.109	≦8dBm	Pass
06	2437.000	A	-8.660	0.980	-2.909	≦8dBm	Pass
		B	-10.220	0.980	-4.469	≦8dBm	Pass
		C	-10.950	0.980	-5.199	≦8dBm	Pass
11	2462.000	A	-10.900	0.980	-5.149	≦8dBm	Pass
		B	-11.380	0.980	-5.629	≦8dBm	Pass
		C	-10.060	0.980	-4.309	≦8dBm	Pass

Note :

The quantity 10*log 3 (three antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 1: (Chain A)

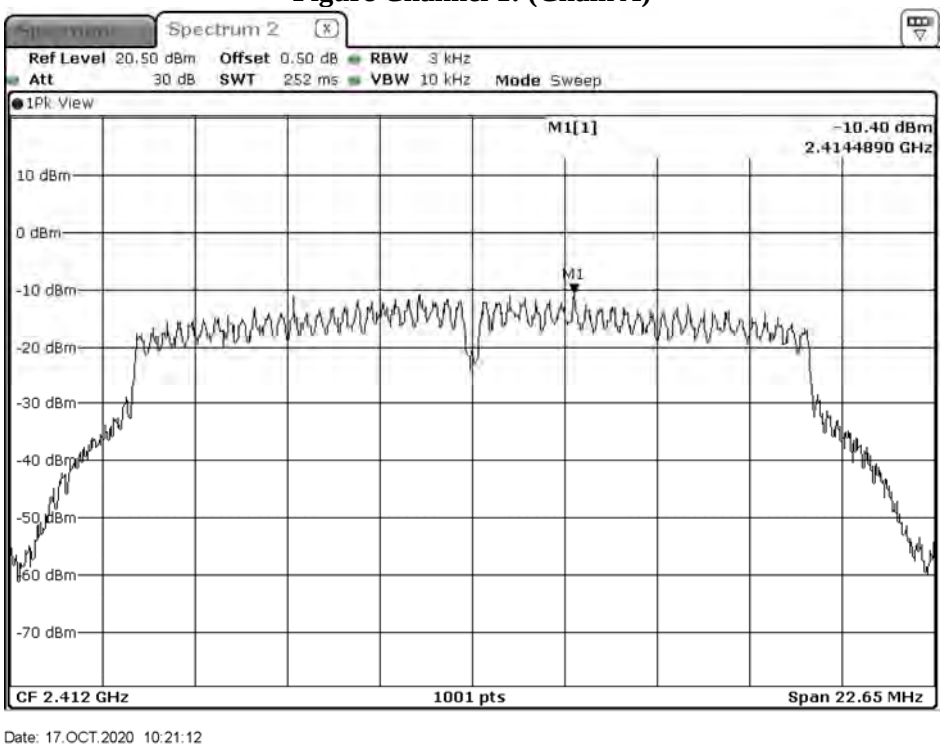
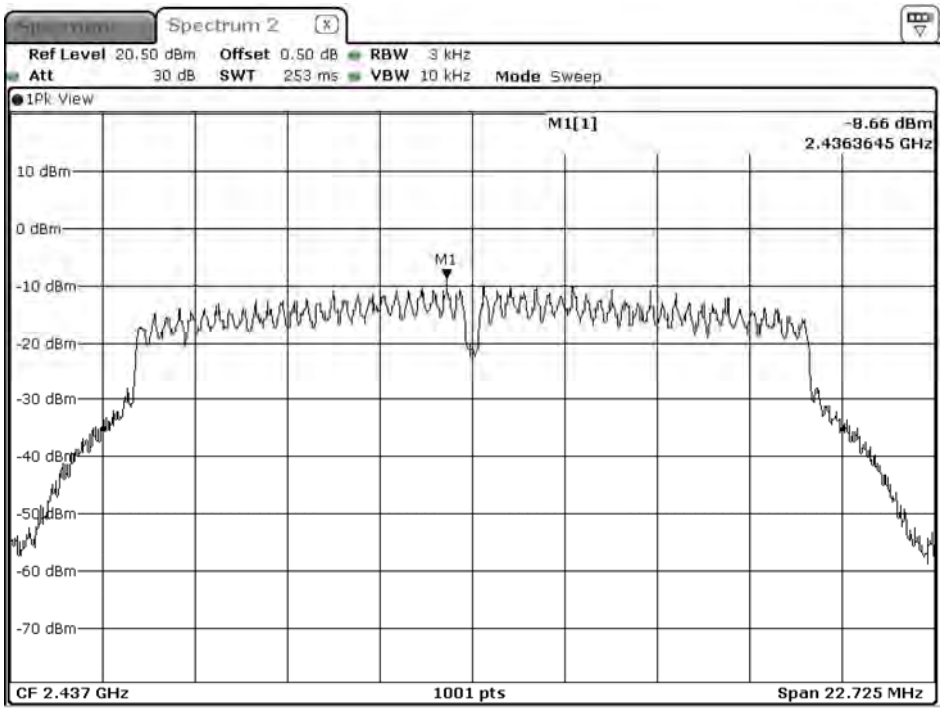
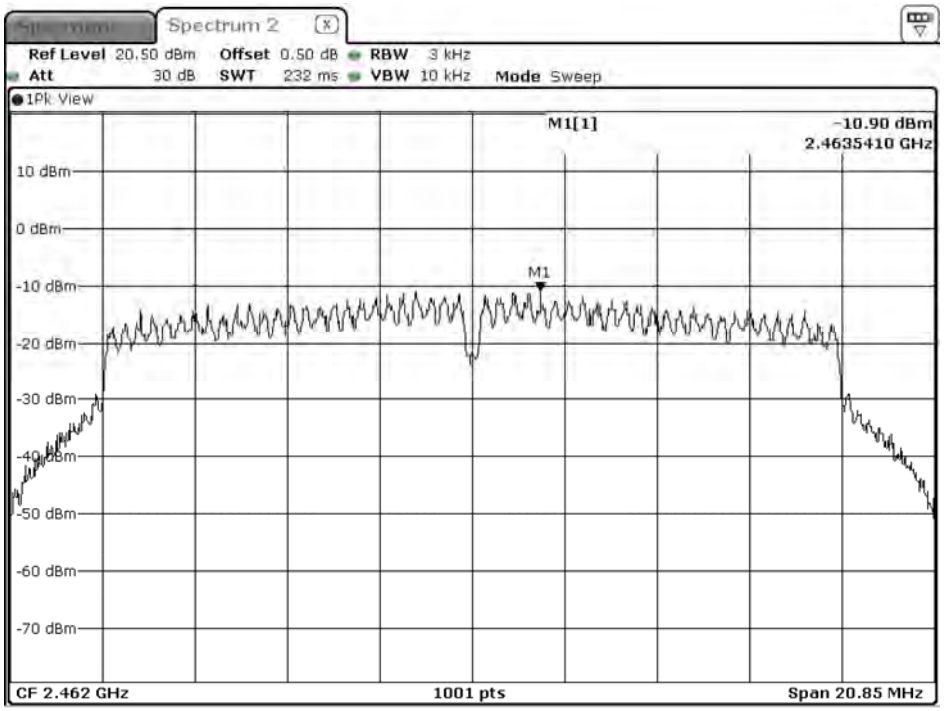


Figure Channel 6: (Chain A)



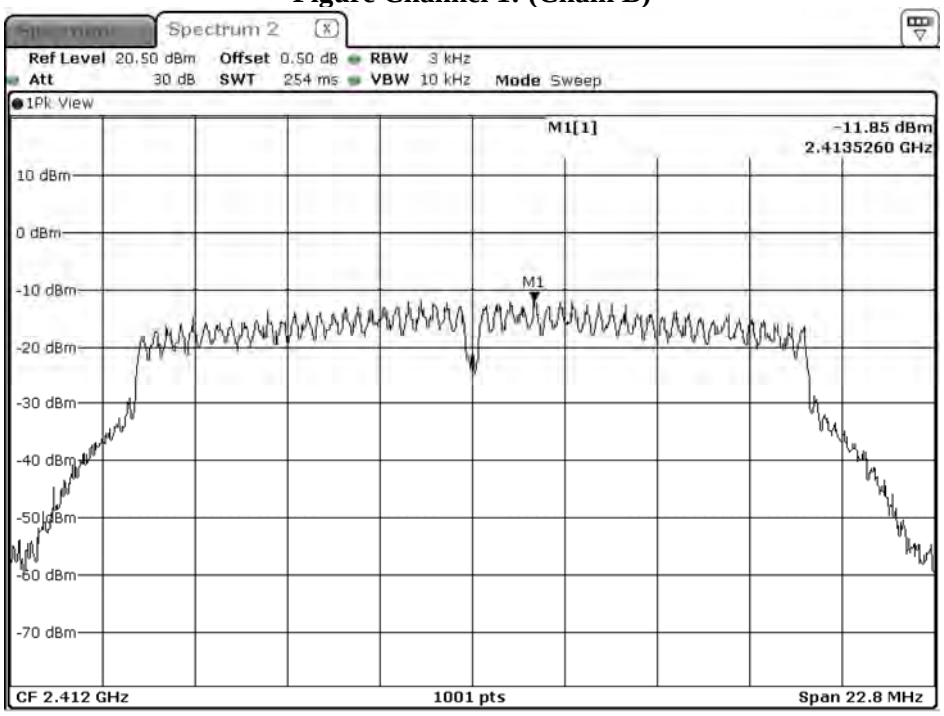
Date: 17.OCT.2020 10:25:10

Figure Channel 11: (Chain A)



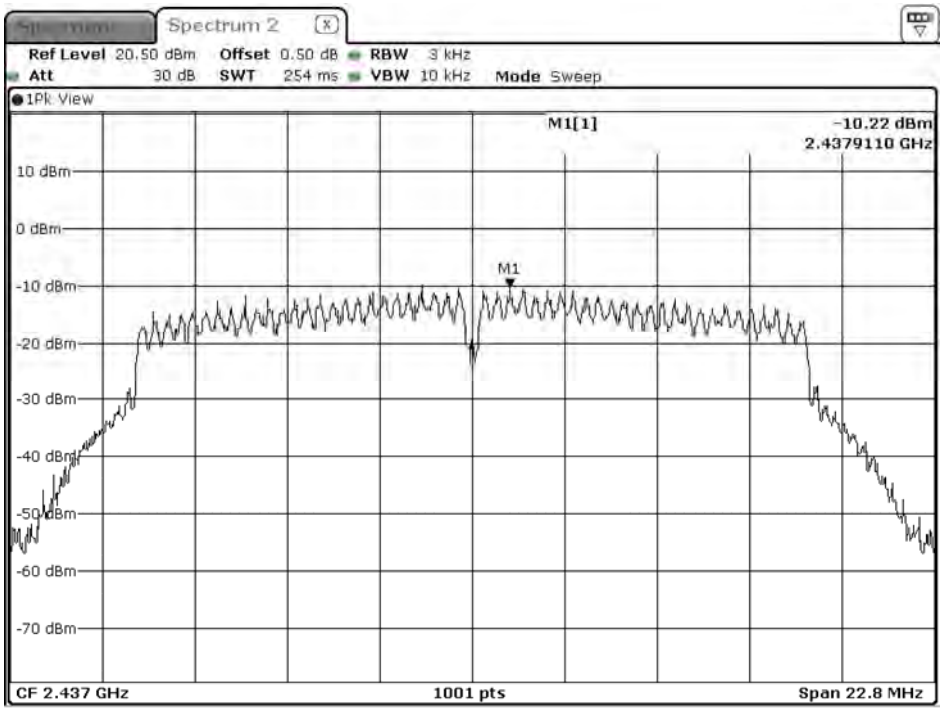
Date: 17.OCT.2020 10:28:41

Figure Channel 1: (Chain B)



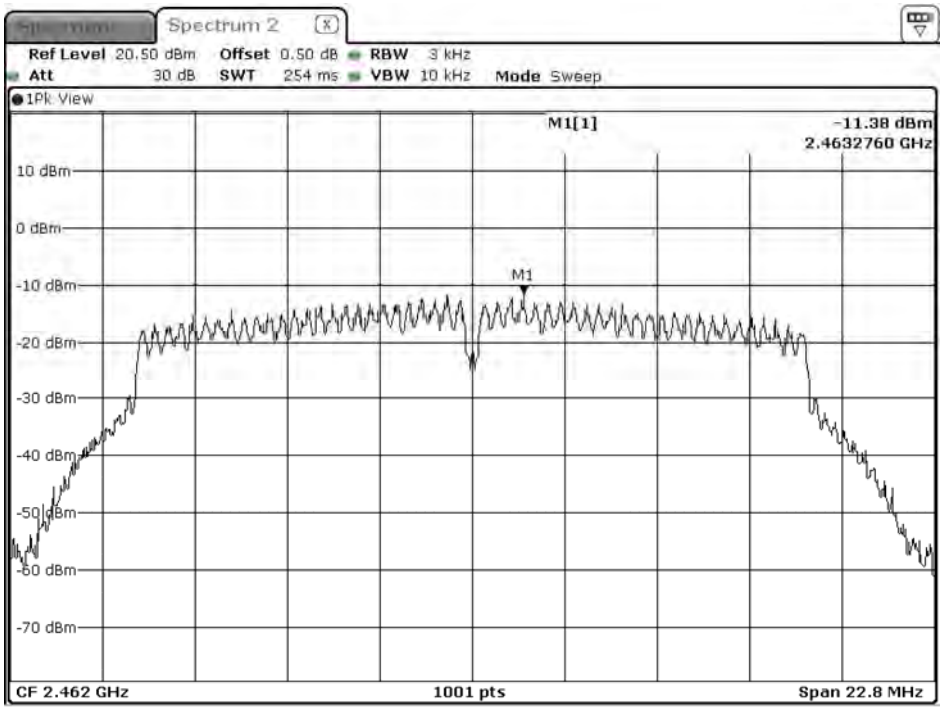
Date: 16.OCT.2020 17:25:03

Figure Channel 6: (Chain B)



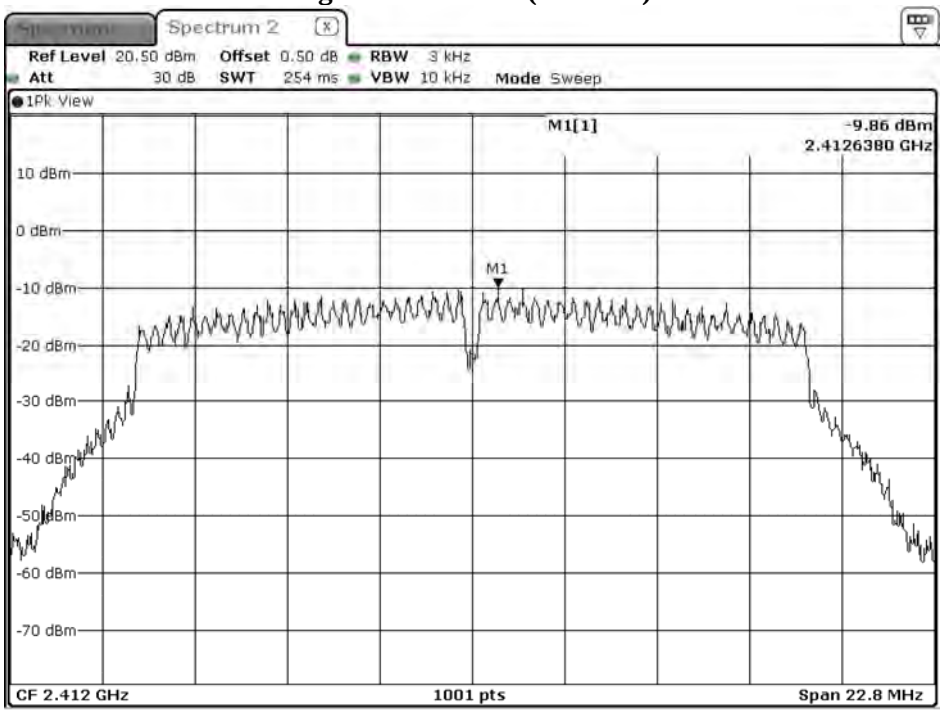
Date: 16.OCT.2020 17:28:04

Figure Channel 11: (Chain B)



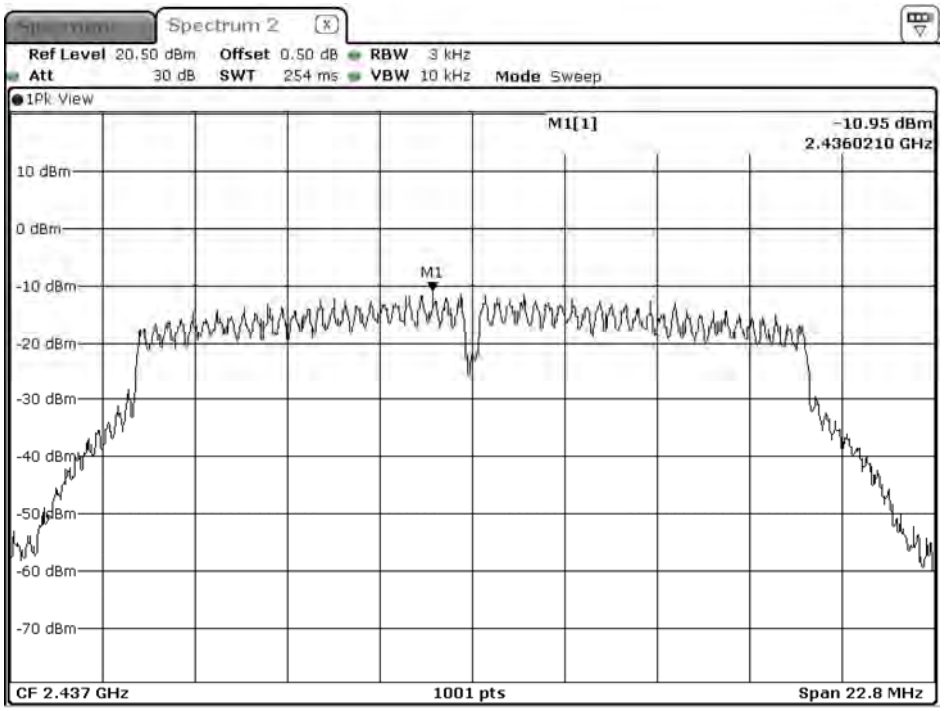
Date: 16.OCT.2020 17:29:59

Figure Channel 1: (Chain C)



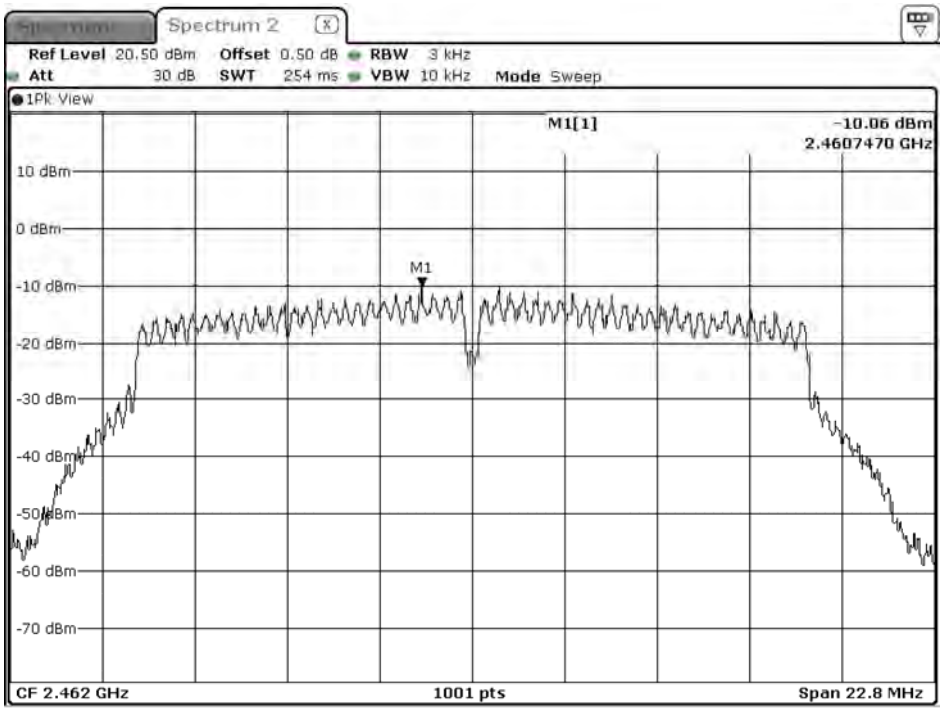
Date: 16.OCT.2020 16:20:25

Figure Channel 6: (Chain C)



Date: 16.OCT.2020 16:23:04

Figure Channel 11: (Chain C)



Date: 16.OCT.2020 16:25:51

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Power Density Data
Test Mode : Mode 3: Transmit (802.11n-20MBW)

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Duty Factor (dB)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
01	2412.000	A	-8.800	2.610	-1.419	≦8dBm	Pass
		B	-9.730	2.610	-2.349	≦8dBm	Pass
		C	-10.220	2.610	-2.839	≦8dBm	Pass
06	2437.000	A	-10.500	2.610	-3.119	≦8dBm	Pass
		B	-8.900	2.610	-1.519	≦8dBm	Pass
		C	-10.700	2.610	-3.319	≦8dBm	Pass
11	2462.000	A	-9.730	2.610	-2.349	≦8dBm	Pass
		B	-10.340	2.610	-2.959	≦8dBm	Pass
		C	-9.810	2.610	-2.429	≦8dBm	Pass

Note :

The quantity 10*log 3 (three antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 1: (Chain A)

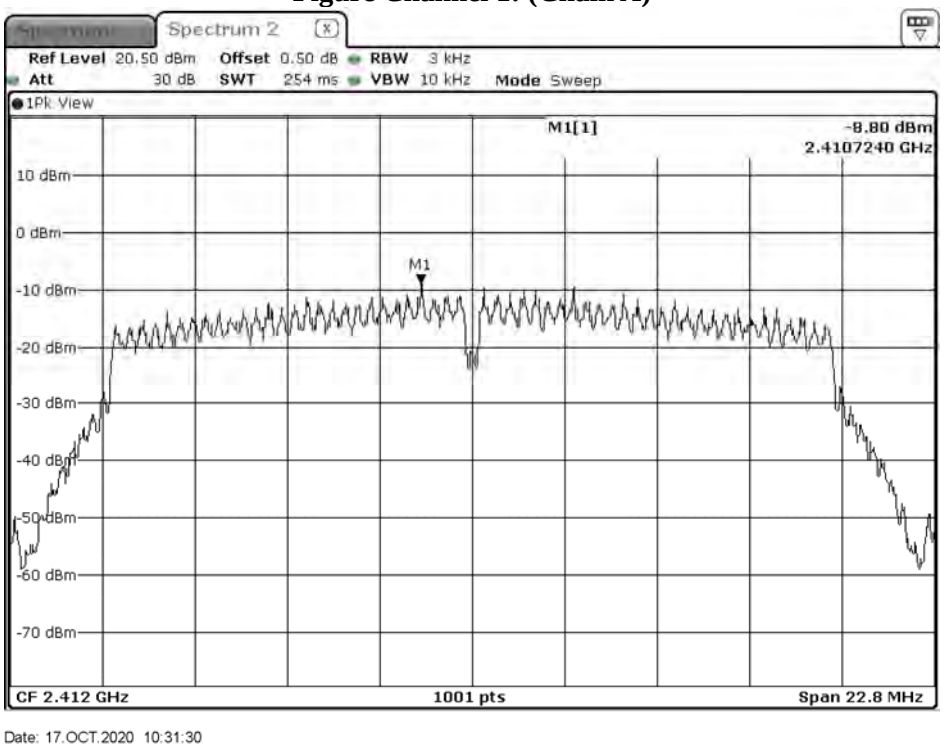
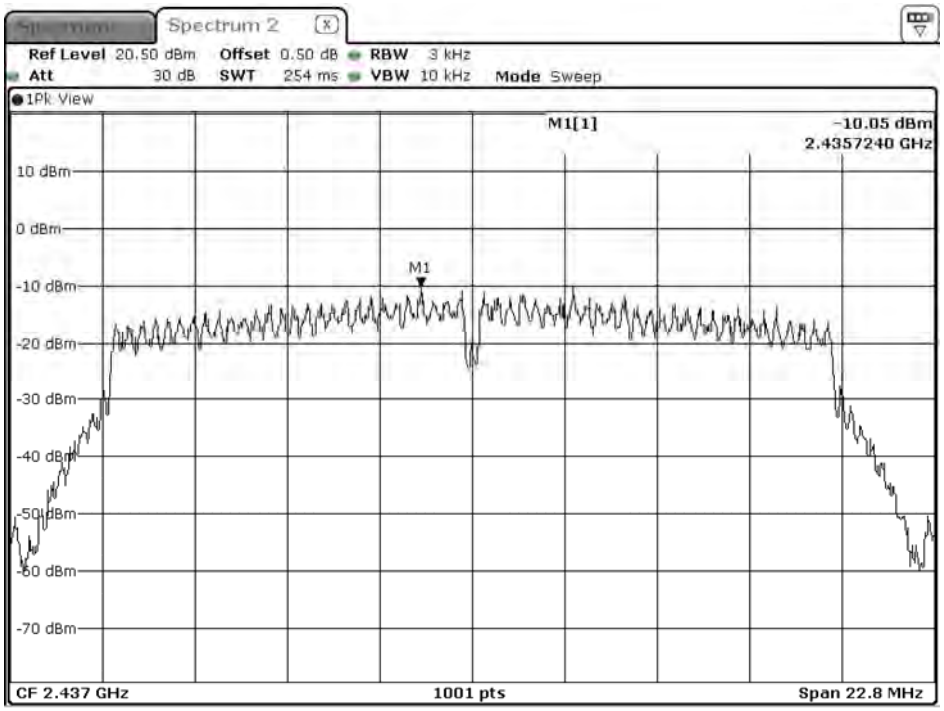
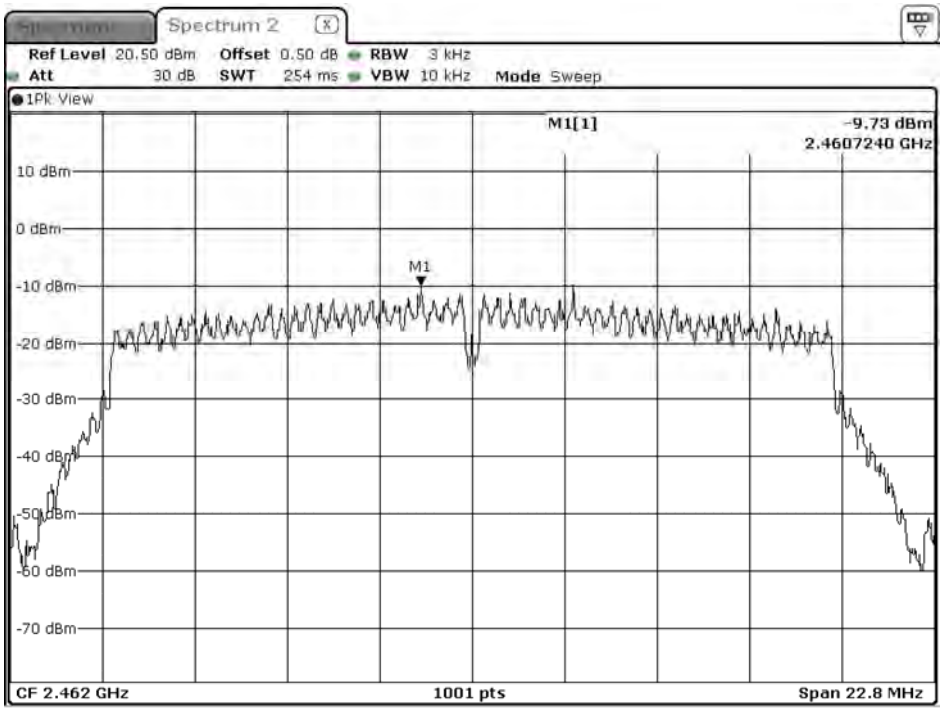


Figure Channel 6: (Chain A)



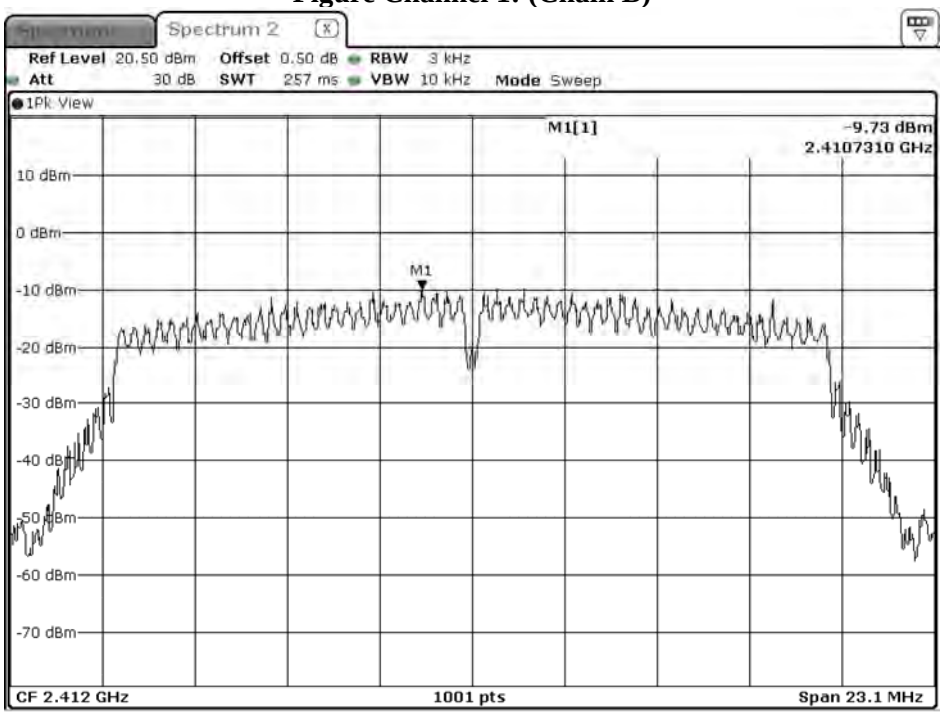
Date: 17.OCT.2020 10:33:34

Figure Channel 11: (Chain A)



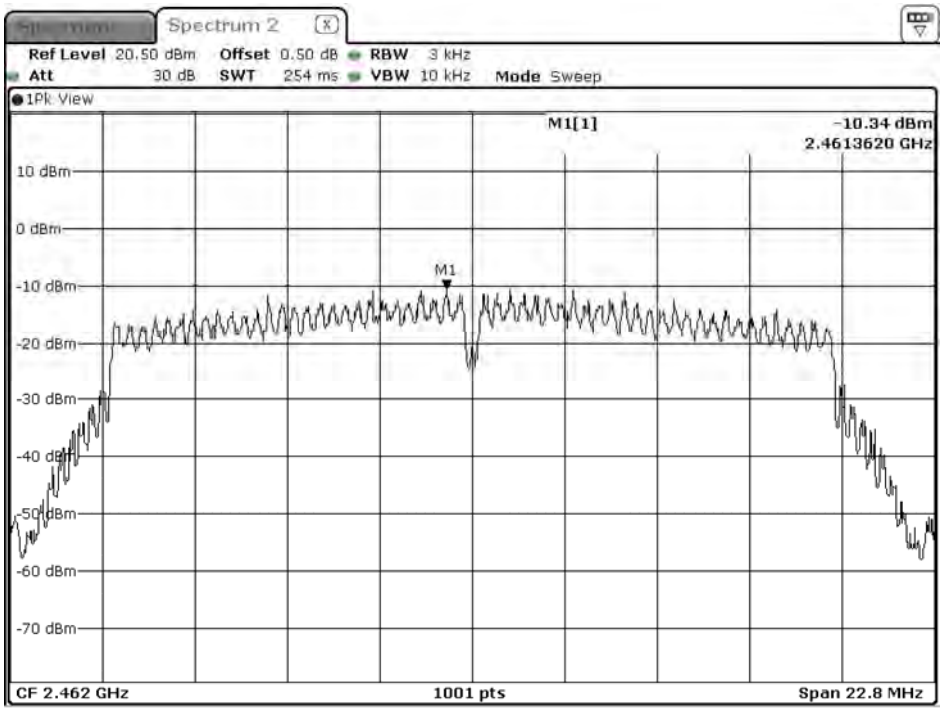
Date: 17.OCT.2020 10:35:30

Figure Channel 1: (Chain B)



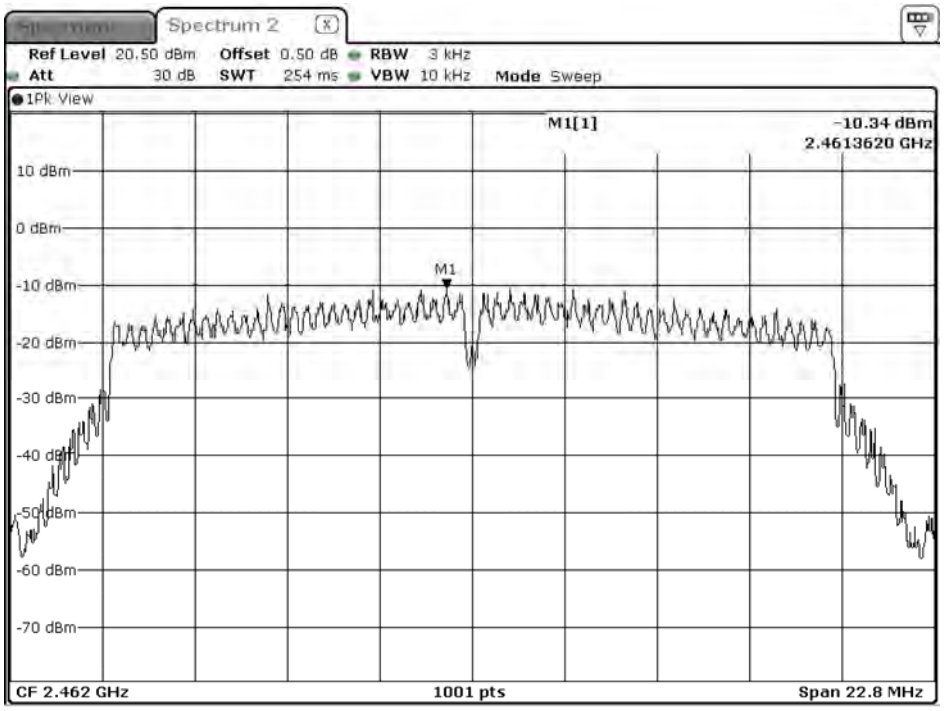
Date: 16.OCT.2020 17:35:18

Figure Channel 6: (Chain B)



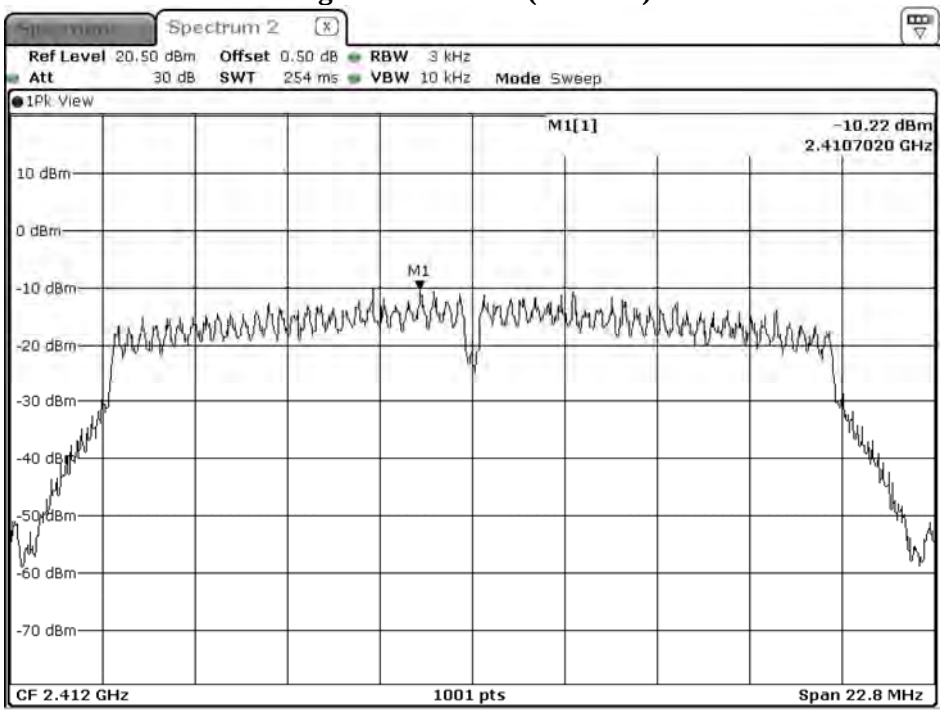
Date: 16.OCT.2020 17:40:05

Figure Channel 11: (Chain B)



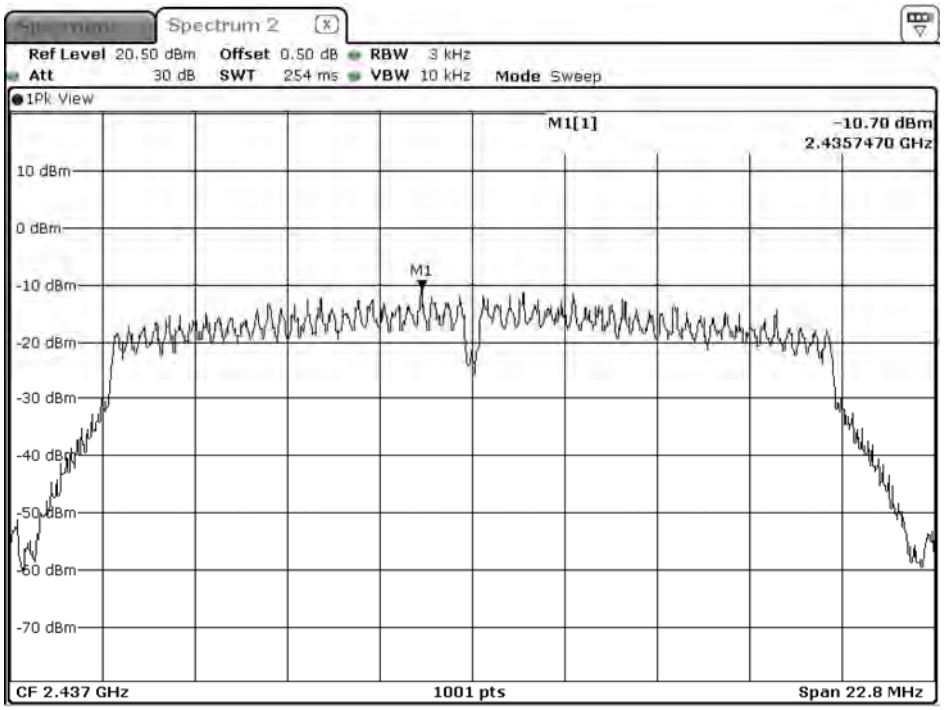
Date: 16.OCT.2020 17:40:05

Figure Channel 1: (Chain C)



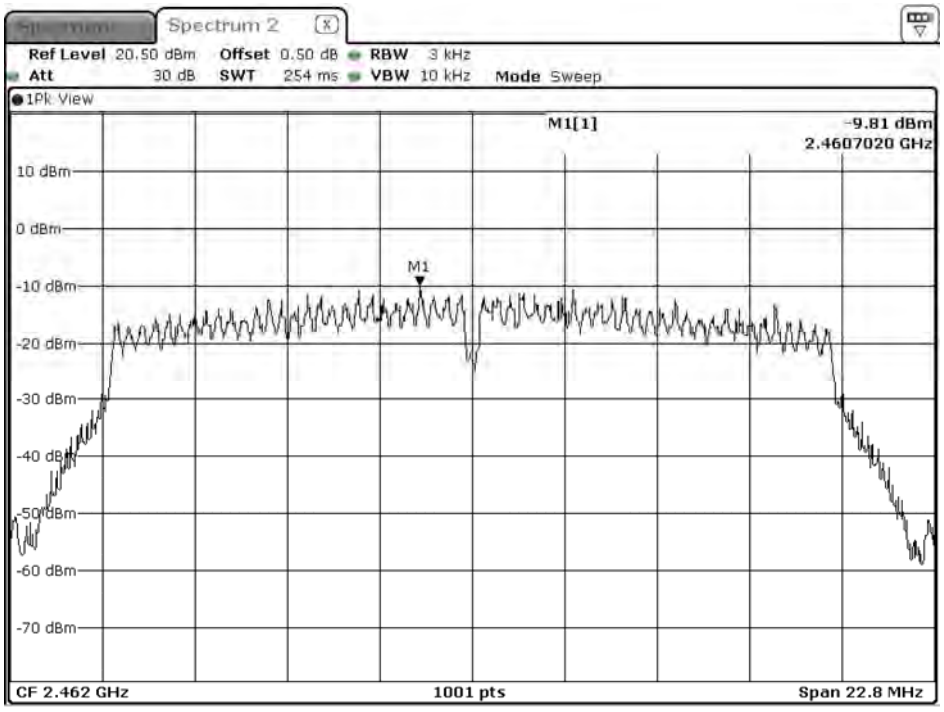
Date: 16.OCT.2020 16:28:31

Figure Channel 6: (Chain C)



Date: 16.OCT.2020 16:30:32

Figure Channel 11: (Chain C)



Date: 16.OCT.2020 16:33:37

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Power Density Data
Test Mode : Mode 4: Transmit (802.11n-40MBW)

Channel No.	Frequency (MHz)	Chain	PPSD/MHz (dBm)	Duty Factor (dB)	Total PPSD/MHz (dBm)	Limit (dBm)	Result
03	2422.000	A	-9.470	2.160	-2.539	≦8dBm	Pass
		B	-10.460	2.160	-3.529	≦8dBm	Pass
		C	-10.350	2.160	-3.419	≦8dBm	Pass
06	2437.000	A	-10.750	2.160	-3.819	≦8dBm	Pass
		B	-10.220	2.160	-3.289	≦8dBm	Pass
		C	-11.890	2.160	-4.959	≦8dBm	Pass
09	2452.000	A	-9.820	2.160	-2.889	≦8dBm	Pass
		B	-9.980	2.160	-3.049	≦8dBm	Pass
		C	-11.540	2.160	-4.609	≦8dBm	Pass

Note :

The quantity 10*log 3 (three antennas) is added to the spectrum peak value according to document 662911 D01.

Figure Channel 3: (Chain A)

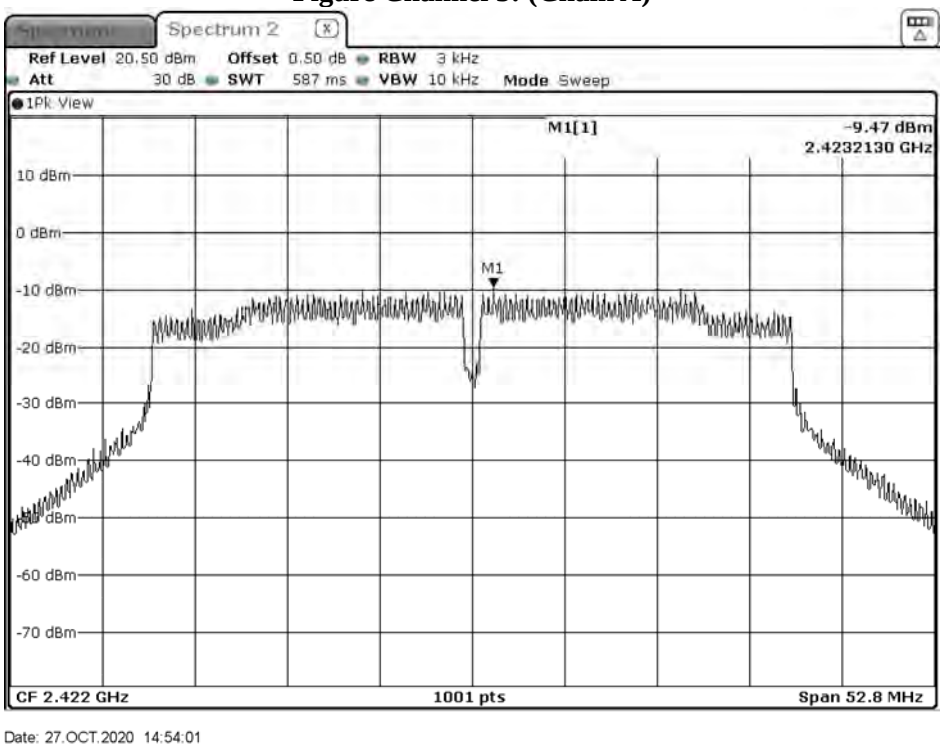
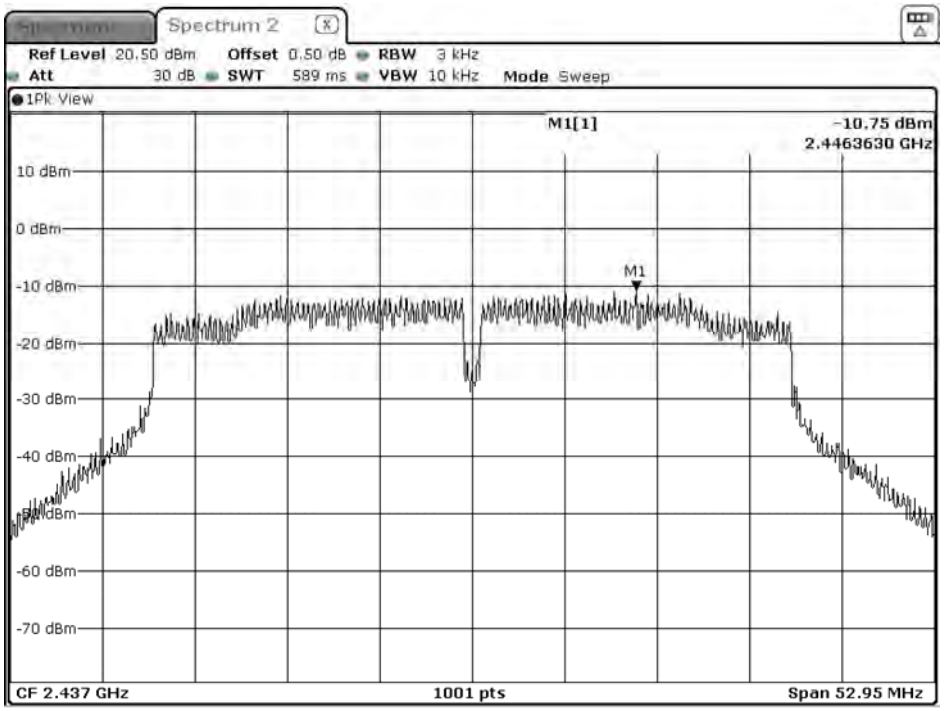
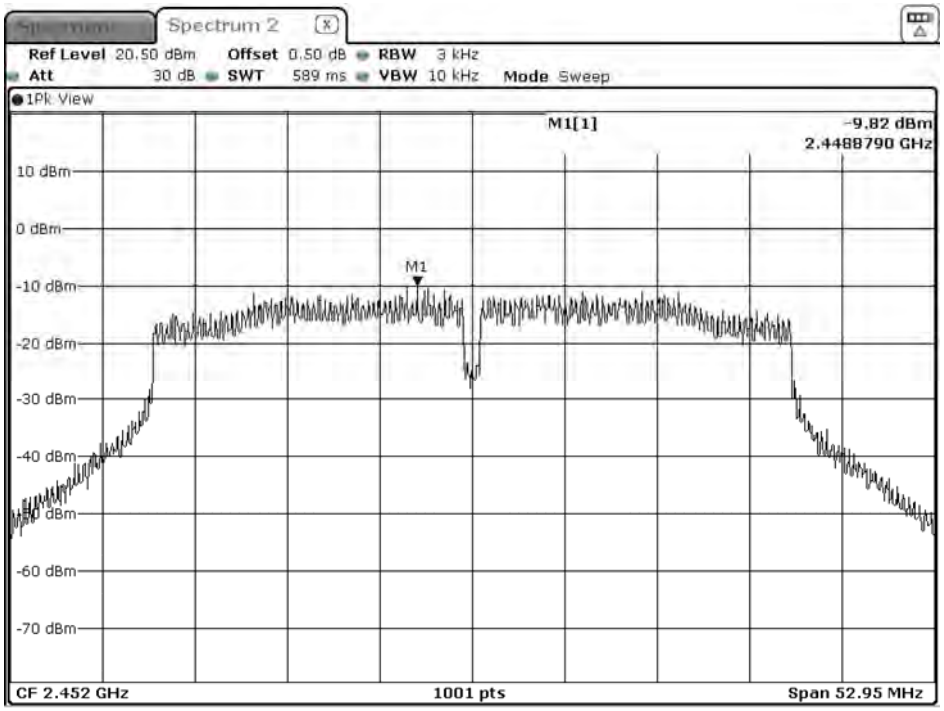


Figure Channel 6: (Chain A)



Date: 27.OCT.2020 14:59:40

Figure Channel 9: (Chain A)



Date: 27.OCT.2020 15:09:22

Figure Channel 3: (Chain B)

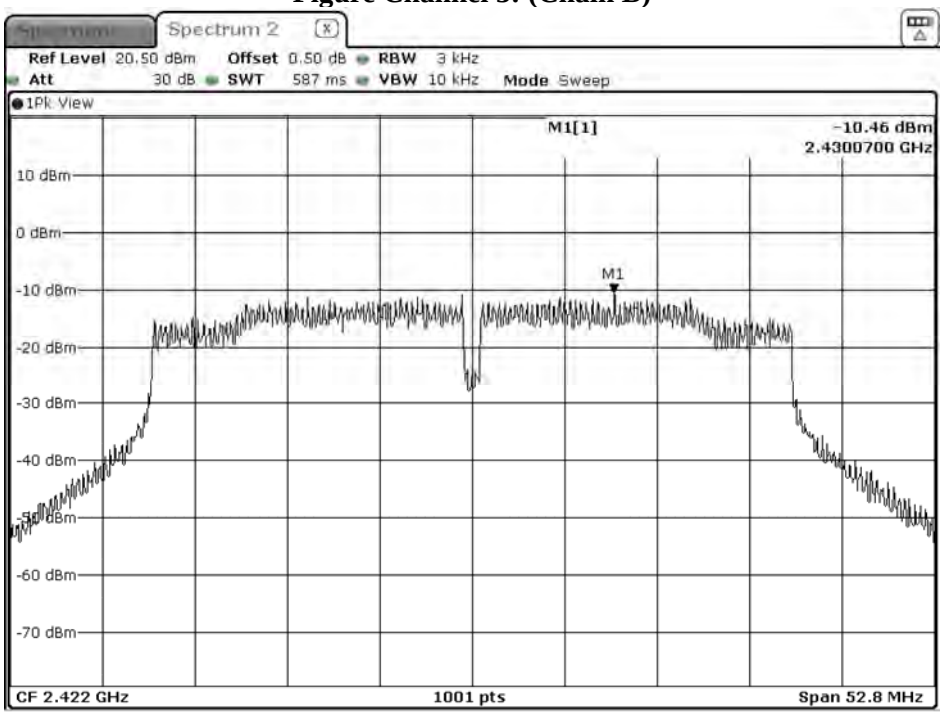


Figure Channel 6: (Chain B)

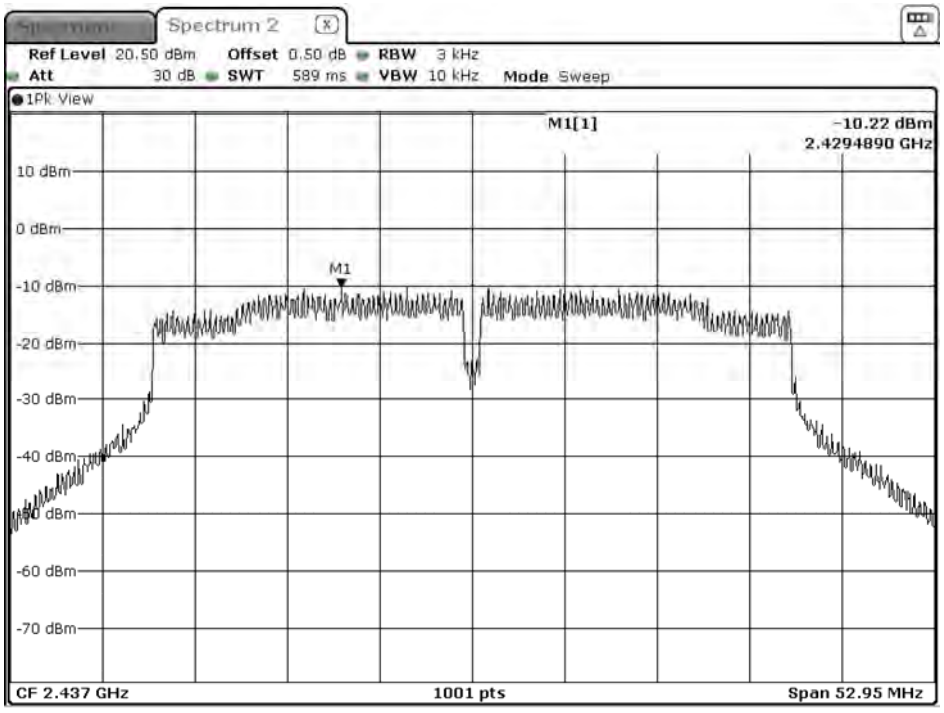
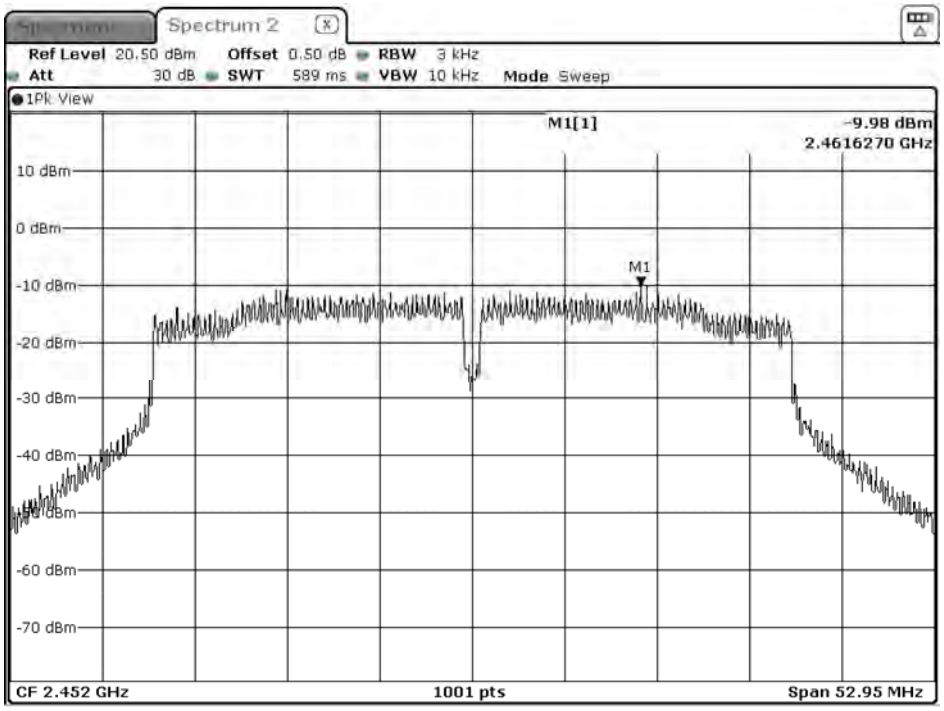
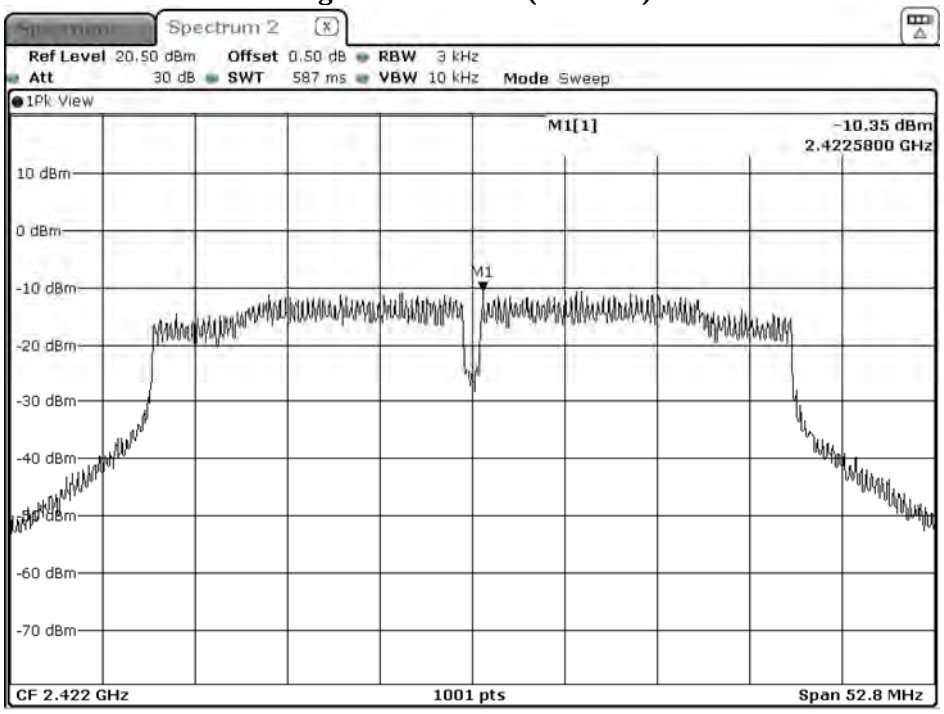


Figure Channel 9: (Chain B)



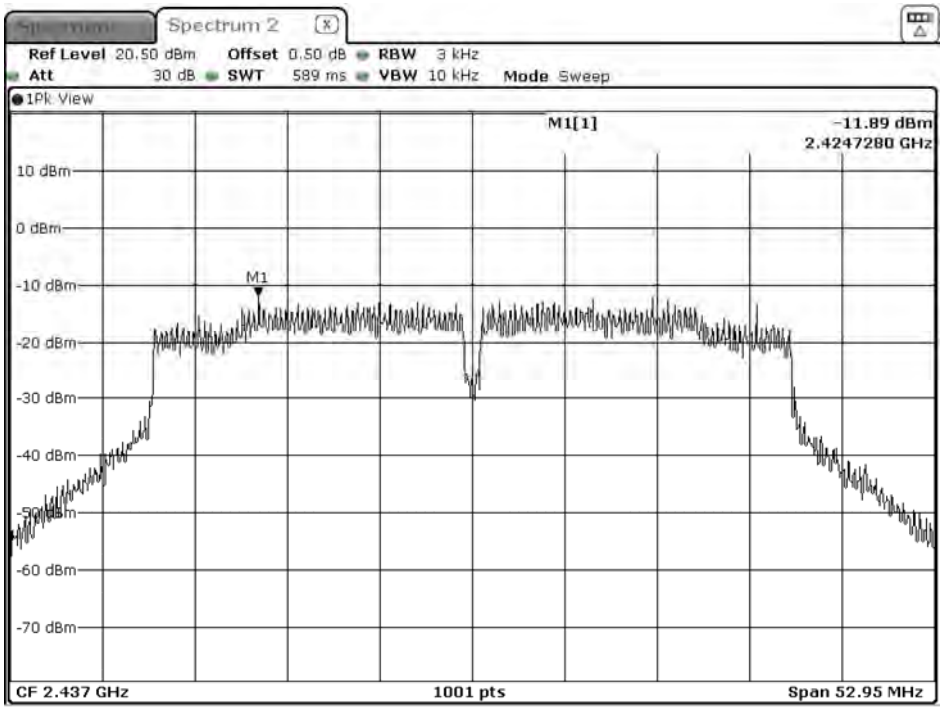
Date: 27.OCT.2020 15:10:13

Figure Channel 3: (Chain C)



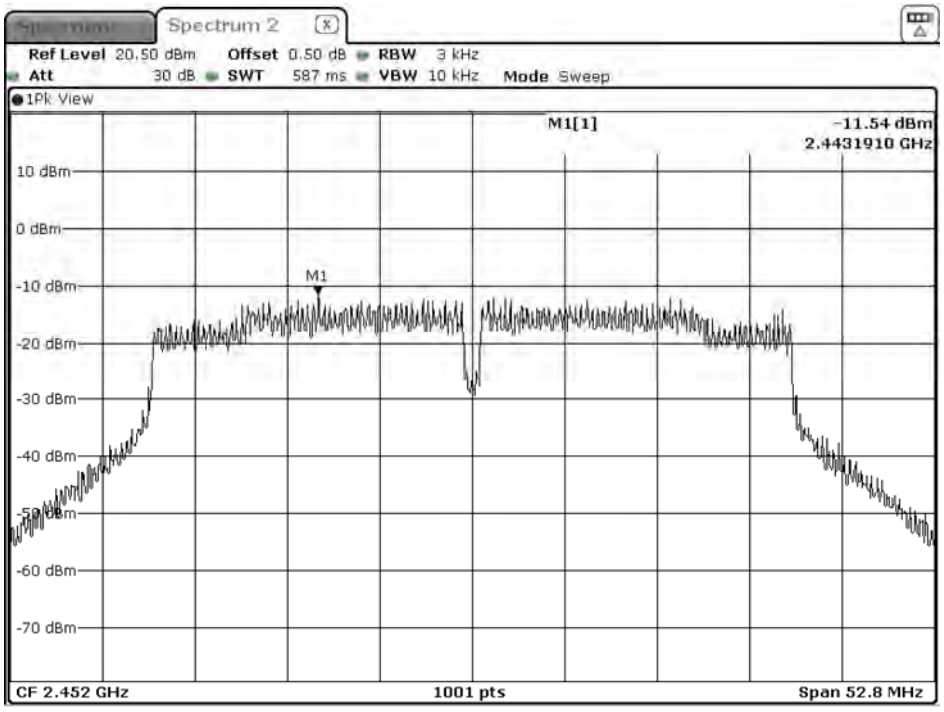
Date: 27.OCT.2020 14:55:27

Figure Channel 6: (Chain C)



Date: 27.OCT.2020 15:07:08

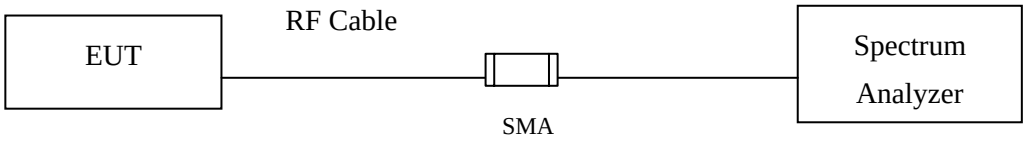
Figure Channel 9: (Chain C)



Date: 27.OCT.2020 15:13:28

9. Duty Cycle

9.1. Test Setup



9.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to ANSI C63.10 2013 for compliance to FCC 47CFR 15.247 requirements.

9.3. Test Result of Duty Cycle

Product : Gigabit LTE Multi-Service Router / LTE Dual-SIM Dual-Band Wireless VoIP VPN Router
Test Item : Duty Cycle
Test Mode : Transmit

Duty Cycle Formula:

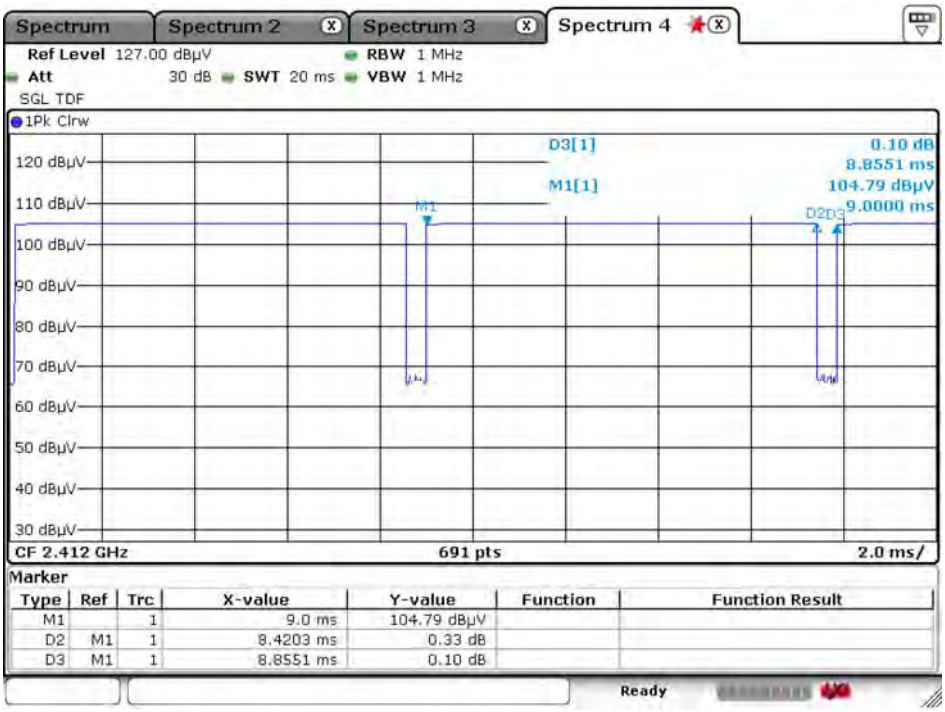
Duty Cycle = Ton / (Ton + Toff)

Duty Factor = 10 Log (1/Duty Cycle)

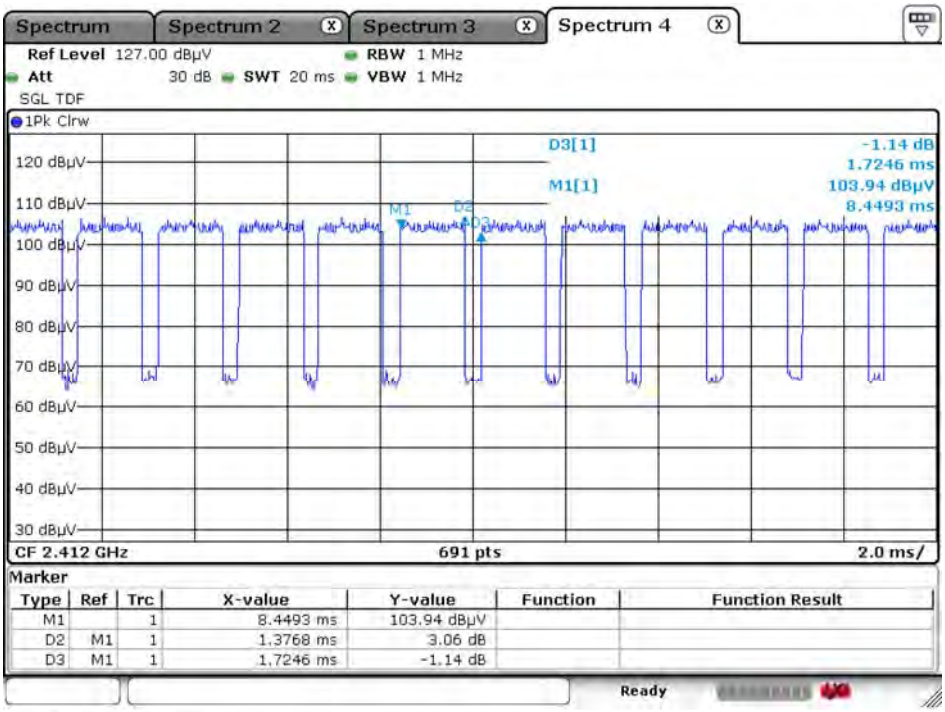
Results:

2.4GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11b	8.4203	8.8551	95.09	0.22
802.11g	1.3768	1.7246	79.83	0.98
802.11n20	0.4638	0.8464	54.79	2.61
802.11n40	0.3739	0.6145	60.85	2.16

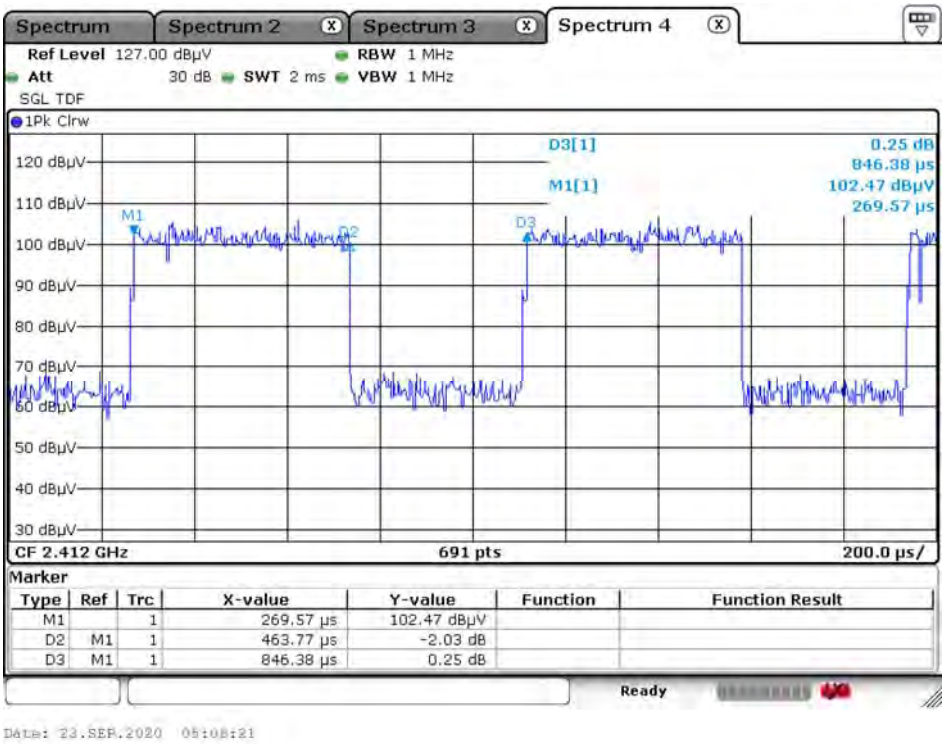
802.11b



802.11g



802.11n20



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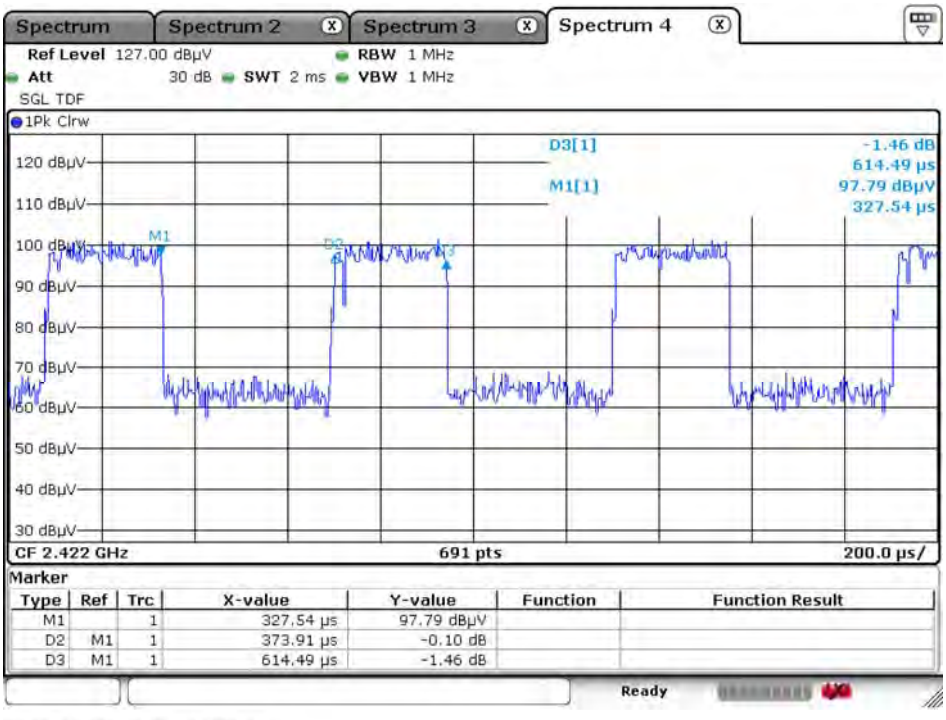
802.11n40



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10. EMI Reduction Method During Compliance Testing

No modification was made during testing.