

FCC Test Report

Product Name : Vehicle Gateway
Trade Name : Samsara
Model No. : VG54-NA, VG54-NAE
FCC ID : 2AIHD0054

Applicant : SAMSARA NETWORKS INC
Address : 1900 Alameda Street, San Francisco, CA 94103

Date of Receipt : Jul. 02, 2020
Issued Date : Sep. 07, 2020
Report No. : 2070056R-E3032110109
Report Version : V1.0



The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of DEKRA Testing and Certification Co., Ltd..

Test Report Certification

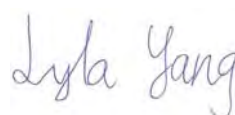
Issued Date : Sep. 07, 2020

Report No.: 2070056R-E3032110109



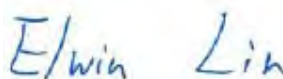
Product Name : Vehicle Gateway
Applicant : SAMSARA NETWORKS INC
Address : 1900 Alameda Street, San Francisco, CA 94103
Manufacturer : Wistron Neweb Corporation
Address : 20 Park Avenue II, Hsinchu Science Park, Hsinchu 308, Taiwan,
R.O.C
Trade Name : Samsara
Model No. : VG54-NA, VG54-NAE
FCC ID : 2AIHD0054
EUT Test Voltage : DC 12/24/48V
Testing Voltage : DC 12V
Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2019
ANSI C63.10: 2013
Laboratory Name : Hsin Chu Laboratory
Address : No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu
County 310, Taiwan, R.O.C.
TEL: +886-3-582-8001 / FAX: +886-3-582-8958
Test Result : Complied

Documented By :



(Lyla Yang / Engineering Adm. Specialist)

Tested By :



(Elwin Lin / Engineer)

Approved By :



(Louis Hsu / Deputy Manager)

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Sep. 07, 2020

TABLE OF CONTENTS

Description	Page
1. General Information.....	6
1.1. EUT Description	6
1.2. Test Mode	10
1.3. Tested System Details	11
1.4. Configuration of tested System	11
1.5. EUT Exercise Software	12
1.6. Comments and Remarks.....	12
1.7. Test Facility.....	13
1.8. List of Test Equipment	15
1.9. Duty Cycle	18
1.10. Uncertainty	21
2. Conducted Emission	22
2.1. Test Setup	22
2.2. Limits	22
2.3. Test Procedure	23
2.4. Test Specification.....	23
2.5. Test Result.....	23
3. Maximum peak conducted output power.....	24
3.1. Test Setup	24
3.2. Limits	24
3.3. Test procedures	24
3.4. Test Specification.....	24
3.5. Test Result.....	25
4. Radiated Emission	29
4.1. Test Setup	29
4.2. Limits	30
4.3. Test Procedure	30
4.4. Test Specification.....	30
4.5. Test Result.....	31
5. RF antenna conducted test	63
5.1. Test Setup	63
5.2. Limits	63
5.3. Test Procedure	63

5.4.	Test Specification.....	63
5.5.	Test Result.....	64
6.	Radiated Emission Band Edge.....	80
6.1.	Test Setup	80
6.2.	Limits	80
6.3.	Test Procedure	80
6.4.	Test Specification.....	80
6.5.	Test Result.....	81
7.	DTS Bandwidth.....	113
7.1.	Test Setup	113
7.2.	Limits	113
7.3.	Test Procedures	113
7.4.	Test Specification.....	113
7.5.	Test Result.....	114
8.	Occupied Bandwidth.....	122
8.1.	Test Setup	122
8.2.	Limits	122
8.3.	Test Procedures	122
8.4.	Test Specification.....	122
8.5.	Test Result.....	123
9.	Power Density	131
9.1.	Test Setup	131
9.2.	Limits	131
9.3.	Test Procedures	131
9.4.	Test Specification.....	131
9.5.	Test Result.....	132
Attachment 1		140
	Test Setup Photograph.....	140
Attachment 2		142
	EUT External Photograph.....	142
Attachment 3		148
	EUT Internal Photograph.....	148
Attachment 4		179
	Test Result of co-location	179

1. General Information

1.1. EUT Description

Product Name	Vehicle Gateway	
Trade Name	Samsara	
Model No.	VG54-NA, VG54-NAE	
Frequency Range/ Channel Number	IEEE 802.11b/g	2412~2462MHz / 11 Channels
	IEEE 802.11n (20MHz)	
	IEEE 802.11n (40MHz)	2422~2452MHz / 7 Channels
Type of Modulation	IEEE 802.11b	Direct Sequence Spread Spectrum
	IEEE 802.11g/n	Orthogonal Frequency Division Multiplexing
Data Speed	IEEE 802.11b	1, 2, 5.5, 11Mbps
	IEEE 802.11g	6, 12, 18, 24, 36, 48, 54Mbps
	IEEE 802.11n	Support a subset of the combination of GI, MCS 0~MCS 7 and bandwidth defined in 802.11n
HW Version	1.0	
SW Version	10	

Antenna Information				
No.	Brand	Model No.	Antenna Type	Antenna Gain
0	WNC	JVS1	PIFA Antenna	BT5.0: 2.7dBi WiFi 2.4G: 2.7dBi WiFi 5G Band 1: 3.28dBi WiFi 5G Band 4: 3.9dBi

ANT-TX / RX & Bandwidth

ANT-TX / RX	TX			RX		
Mode/ Channel Bandwidth	20MHz	40MHz	80MHz	20MHz	40MHz	80MHz
IEEE802.11b	✓			✓		
IEEE802.11g	✓			✓		
IEEE802.11n	✓	✓		✓	✓	

IEEE 802.11n

MCS Index	Modulation	R	N _{BPSCS}	N _{CBPS}		N _{DBPS}		Data Rate(Mb/s)			
				20MHz	40MHz	20MHz	40MHz	800ns GI		400ns GI	
								20MHz	40MHz	20MHz	40MHz
0	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.2	15.0
1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.4	30.0
2	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.7	45.0
3	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.9	60.0
4	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.3	90.0
5	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.8	120.0
6	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.0	135.0
7	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.2	150.0

Note 1: Support of 400ns GI is optional on transmit and receive.

Table 1 – MCS parameters for TX Antenna number = 1

Symbol	Explanation
R	Code rate
N _{BPSC}	Number of coded bits per single carrier
N _{CBPS}	Number of coded bits per symbol
N _{DBPS}	Number of data bits per symbol
GI	guard interval

IEEE 802.11b/g & IEEE 802.11n (20MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
001	2412 MHz	002	2417 MHz	003	2422 MHz	004	2427 MHz
005	2432 MHz	006	2437 MHz	007	2442 MHz	008	2447 MHz
009	2452 MHz	010	2457 MHz	011	2462 MHz	--	--

IEEE 802.11n (40MHz)

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
003	2422 MHz	004	2427 MHz	005	2432 MHz	006	2437 MHz
007	2442 MHz	008	2447 MHz	009	2452 MHz	--	--

Note:

1. This device is a Vehicle Gateway including 2.4GHz b/g/n, 5GHz a/n and BT 5.0 transmitting functions.
2. The difference of each model is shown as below:

Model Number	Difference
VG54-NA	With internal GPS Antenna
VG54-NAE	With external GPS Antenna
3. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart C Paragraph 15.247.
4. Regards to the frequency band operation; the lowest, middle and highest frequency of channel were selected to perform the test, and then shown on this report.
5. The spurious emission was measured in three position (X, Y & Z axis), and the worst case (Z axis) was recorded in the report.
6. This device contains a certified WWAN module (FCC ID: NKRM18QF).
7. The EUT description is from the customer declaration.

1.2. Test Mode

DEKRA has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

Test Mode	Mode 1: Transmit Mode		
Test Items	Modulation	Channel	Result
Conducted Emission	11n(40MHz)	6	--
Maximum peak conducted output power	11b/g	1/6/11	Complies
	11n(20MHz)	1/6/11	Complies
	11n(40MHz)	3/6/9	Complies
Radiated Emission	11b/g	1/6/11	Complies
	11n(20MHz)	1/6/11	Complies
	11n(40MHz)	3/6/9	Complies
RF antenna conducted test	11b/g	1/6/11	Complies
	11n(20MHz)	1/6/11	Complies
	11n(40MHz)	3/6/9	Complies
Radiated Emission Band Edge	11b/g	1/6/11	Complies
	11n(20MHz)	1/6/11	Complies
	11n(40MHz)	3/6/9	Complies
DTS Bandwidth	11b/g	1/6/11	Complies
	11n(20MHz)	1/6/11	Complies
	11n(40MHz)	3/6/9	Complies
Occupied Bandwidth	11b/g	1/6/11	Complies
	11n(20MHz)	1/6/11	Complies
	11n(40MHz)	3/6/9	Complies
Power Density	11b/g	1/6/11	Complies
	11n(20MHz)	1/6/11	Complies
	11n(40MHz)	3/6/9	Complies

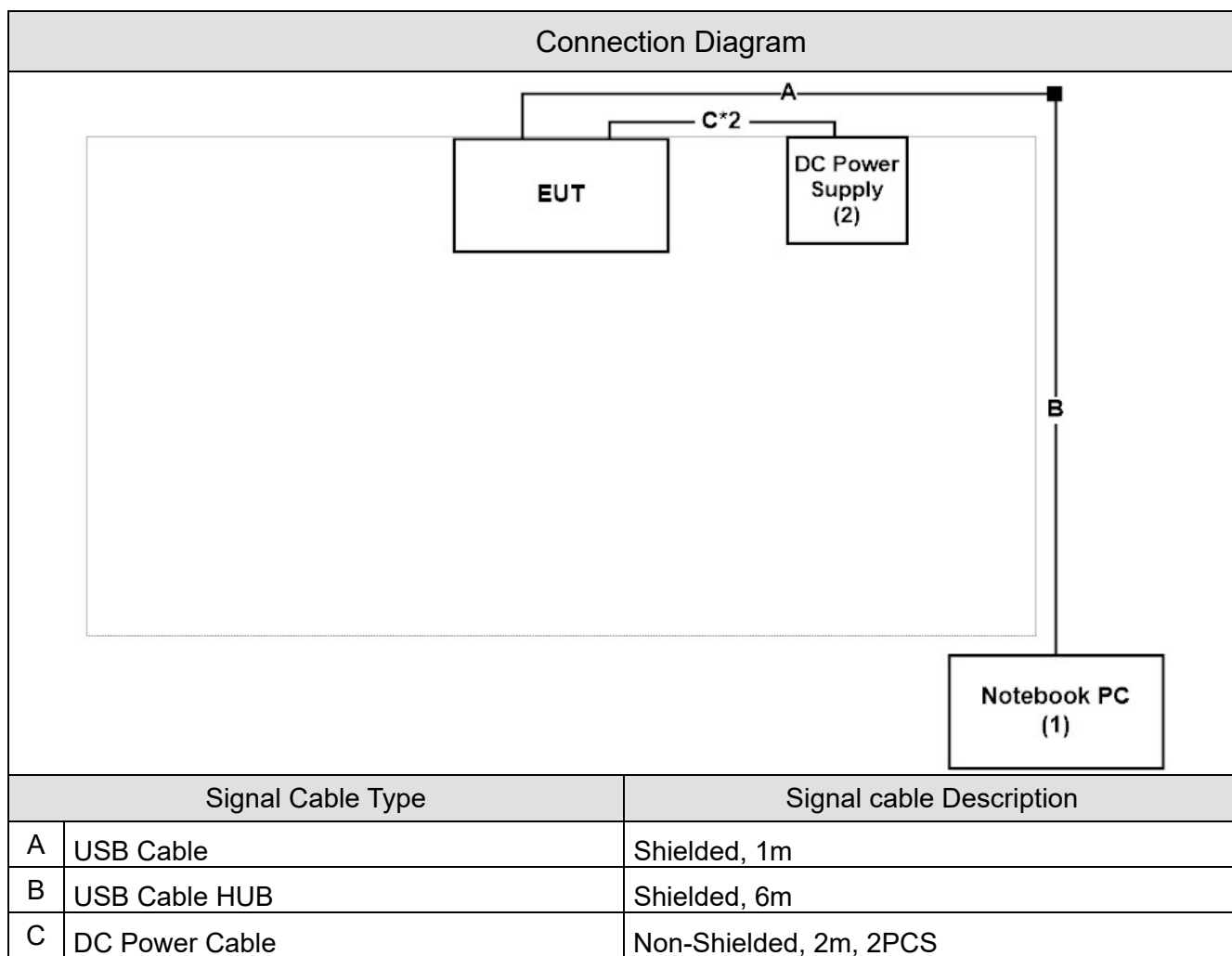
Note: Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

1.3. 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.	FCC ID	Power Cord
1 Notebook PC	Lenove	80SJ	MP16Z7TB	DoC	Non-Shielded, 1.8m
2 DC Power Supply	Topward	6303D	809497	DoC	--

1.4. Configuration of tested System



1.5. EUT Exercise Software

1	Set the EUT as shown in Section 1.4.
2	Execute QPST software on the laptop.
3	Configure test mode, test channel and data rate.
4	Let the EUT start sending or receiving continuously.
5	Verify that the device is working properly.

1.6. Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required	Test Site
Temperature (°C)	FCC PART 15 C 15.207 Conducted Emission	15 - 35	--
Humidity (%RH)		25 - 75	
Temperature (°C)	FCC PART 15 C 15.247 Maximum peak conducted output power	15 - 35	3
Humidity (%RH)		25 - 75	
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission	15 - 35	2
Humidity (%RH)		25 - 75	
Temperature (°C)	FCC PART 15 C 15.247 RF antenna conducted test	15 - 35	3
Humidity (%RH)		25 - 75	
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission Band Edge	15 - 35	2
Humidity (%RH)		25 - 75	
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth & DTS Bandwidth	15 - 35	3
Humidity (%RH)		25 - 75	
Temperature (°C)	FCC PART 15 C 15.247 Power Density	15 - 35	3
Humidity (%RH)		25 - 75	

Note: Test site information refers to Laboratory Information.

Laboratory Information

USA	:	FCC Registration Number: TW3024
Canada	:	IC Registration Number: 22397-1 / 22397-2 / 22397-3

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: <http://www.dekra.com.tw>

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No. 75-2, 3rd Lin, WangYe Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C. 2. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 3. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-592-8858 2. +886-3-582-8001 3. +886-3-582-8001
Fax number	1. +886-3-592-8859 2. +886-3-582-8958 3. +886-3-582-8958
Email address	info.tw@dekra.com
Website	http://www.dekra.com.tw

1.8. List of Test Equipment

Maximum peak conducted output power / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2019/12/02	2020/12/01
Pulse Power Sensor	Anritsu	MA2411B	1531043	2019/12/02	2020/12/01
Pulse Power Sensor	Anritsu	MA2411B	1531044	2019/12/02	2020/12/01
Power Meter	Keysight	8990B	MY51000248	2020/05/20	2021/05/19
Power Sensor	Keysight	N1923A	MY57240005	2020/05/20	2021/05/19

Radiated Emission / CB2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2019/10/21	2020/10/20
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2020/02/21	2021/02/20
Bilog Antenna	Teseq	CBL6112D	23191	2020/06/12	2021/06/11
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2020/06/04	2021/06/03
Horn Antenna	Schwarzbeck	BBHA 9170	202	2019/12/27	2020/12/26
Pre-Amplifier	DEKRA	AP-025C	12183122	2019/09/24	2020/09/23
Pre-Amplifier	EMCI	EMC11830I	980366	2019/12/03	2020/12/02
Pre-Amplifier	DEKRA	AP-400C	201801231	2019/12/03	2020/12/02
Horn Antenna	Schwarzbeck	BBHA 9120D	01656	2019/10/25	2020/10/24
Band Reject Filter	Micro-Tronics	BRM50702	G192	2020/03/09	2021/03/08
Signal Analyzer	R&S	FSV40	101435	2020/06/24	2021/06/23
Coaxial Cable(16m)	Huber+Suhner	SF104	CB2-H	2019/07/25	2020/07/24
EMI system	DEKRA	Version 1.0	CB2-H	NA	NA

RF antenna conducted test / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Keysight	N9030B	MY57140404	2020/06/03	2021/06/02
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Spectrum Analyzer	Agilent	N9010A	US47140172	2020/06/18	2021/06/17
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29

Radiated Emission Band Edge / CB2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2019/10/21	2020/10/20
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2020/02/21	2021/02/20
Bilog Antenna	Teseq	CBL6112D	23191	2020/06/12	2021/06/11
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2020/06/04	2021/06/03
Horn Antenna	Schwarzbeck	BBHA 9170	202	2019/12/27	2020/12/26
Pre-Amplifier	DEKRA	AP-025C	12183122	2019/09/24	2020/09/23
Pre-Amplifier	EMCI	EMC11830I	980366	2019/12/03	2020/12/02
Pre-Amplifier	DEKRA	AP-400C	201801231	2019/12/03	2020/12/02
Horn Antenna	Schwarzbeck	BBHA 9120D	01656	2019/10/25	2020/10/24
Band Reject Filter	Micro-Tronics	BRM50702	G192	2020/03/09	2021/03/08
Signal Analyzer	R&S	FSV40	101435	2020/06/24	2021/06/23
Coaxial Cable(16m)	Huber+Suhner	SF104	CB2-H	2019/07/25	2020/07/24
EMI system	DEKRA	Version 1.0	CB2-H	NA	NA

DTS Bandwidth / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Keysight	N9030B	MY57140404	2020/06/03	2021/06/02
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Spectrum Analyzer	Agilent	N9010A	US47140172	2020/06/18	2021/06/17
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29

Occupied Bandwidth / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Keysight	N9030B	MY57140404	2020/06/03	2021/06/02
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Spectrum Analyzer	Agilent	N9010A	US47140172	2020/06/18	2021/06/17
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29

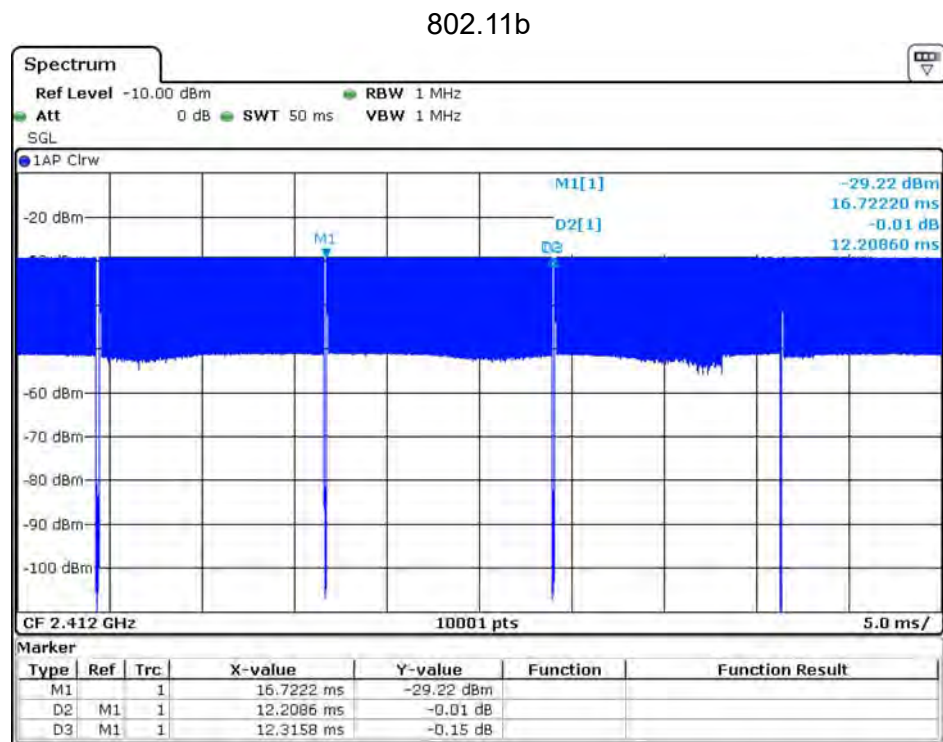
Power Density / SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Keysight	N9030B	MY57140404	2020/06/03	2021/06/02
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Spectrum Analyzer	Agilent	N9010A	US47140172	2020/06/18	2021/06/17
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

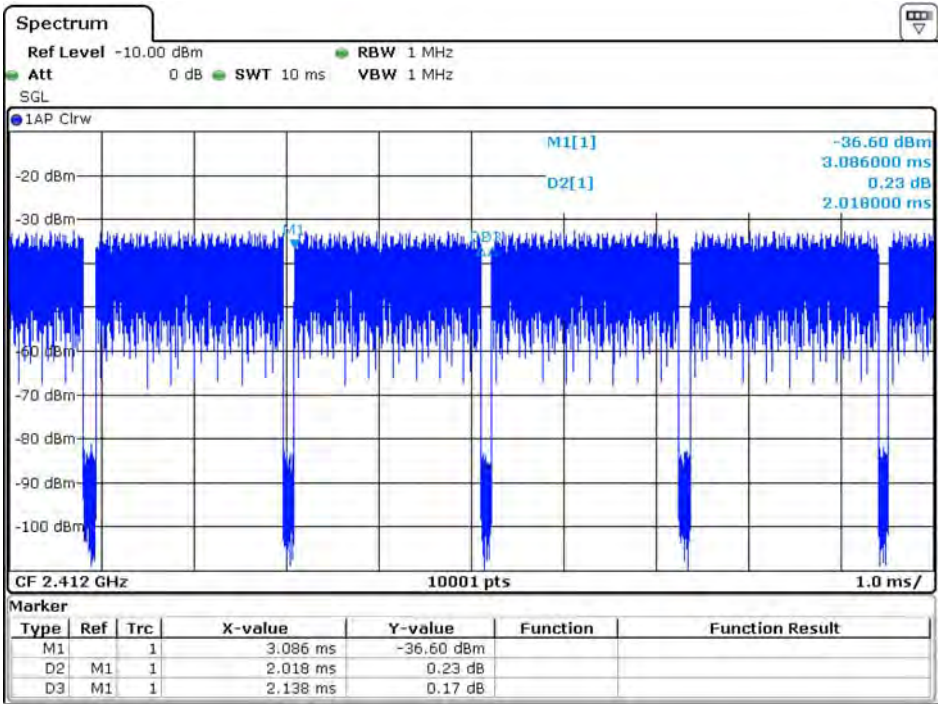
1.9. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor(dB) linear voltage	Duty Factor(dB) Power	1/T Minimum VBW (kHz)
11b	12.209	12.316	99.13%	0.075935	0.04	0.010
11g	2.018	2.138	94.39%	0.501731	0.25	0.496
HT20	1.876	2.040	91.96%	0.727947	0.36	0.533
HT40	0.920	1.035	88.93%	1.018853	0.51	1.087



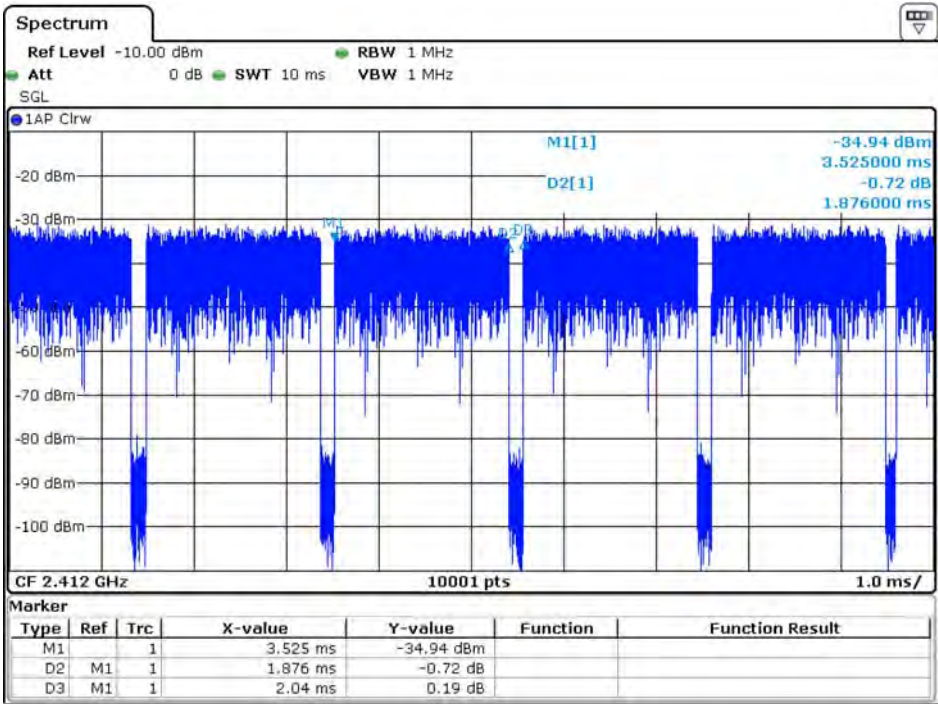
Date: 8 JUL 2020 18:51:18

802.11g



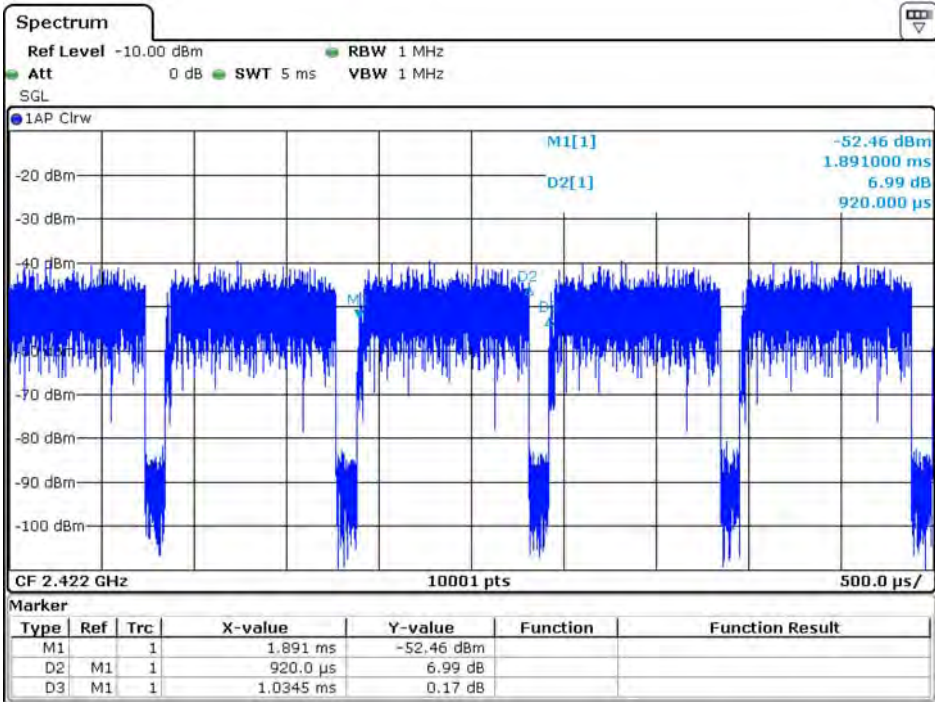
Date: 8 JUL 2020 18:53:47

802.11n (20M)



Date: 8 JUL 2020 18:55:11

802.11n (40M)



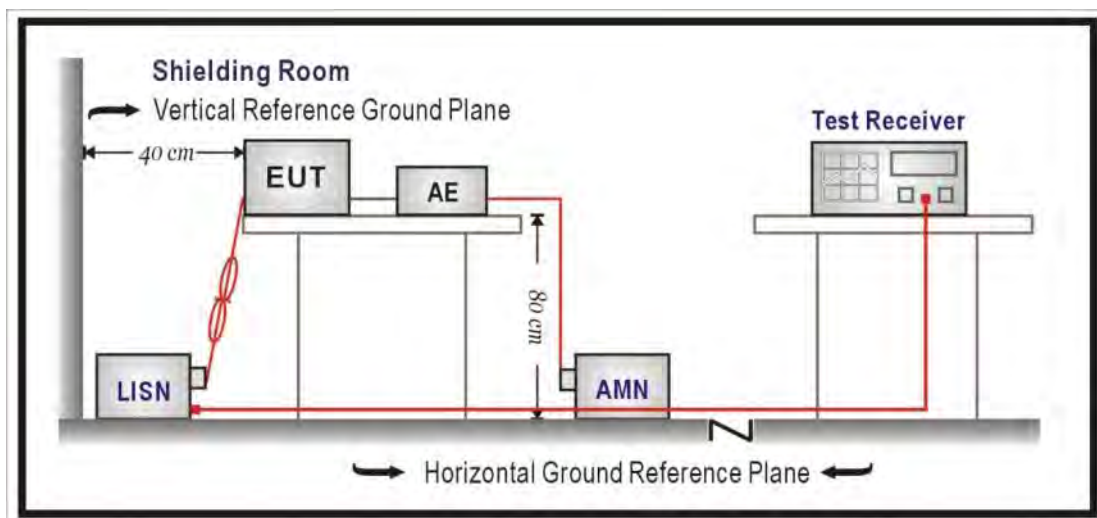
Date: 8 JUL 2020 18:57:13

1.10. Uncertainty

Test item	Uncertainty
Conducted Emission	± 2.26 dB
Maximum peak conducted output power	± 1.27 dB
Radiated Emission	30MHz~1GHz as ± 3.43 dB 1GHz~26.5GHz as ± 3.65 dB
RF antenna conducted test	± 1.27 dB
Radiated Emission Band Edge	± 3.65 dB
DTS Bandwidth	± 50 Hz
Occupied Bandwidth	± 50 Hz
Power Density	± 1.27 dB

2. Conducted Emission

2.1. Test Setup



2.2. Limits

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

Remarks: In the above table, the tighter limit applies at the band edges.

2.3. Test Procedure

The EUT was setup according to ANSI C63.4: 2013 and tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

2.4. Test Specification

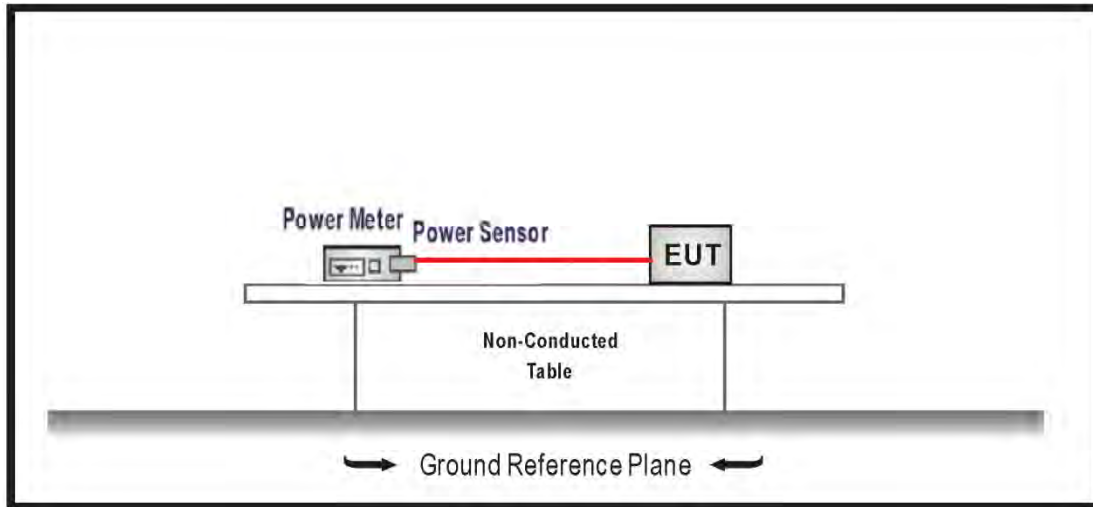
According to FCC Part 15 Subpart C Paragraph 15.207: 2019

2.5. Test Result

Owing to the DC operation of EUT, this test item is not performed.

3. Maximum peak conducted output power

3.1. Test Setup



3.2. Limits

The maximum peak power shall be less 1 Watt.

3.3. Test procedures

The EUT was tested according to DTS test procedure section 9.1.2 of KDB 558074 D01 v05r02, Measurement to FCC 47CFR 15.247 requirements.

3.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2019

3.5. Test Result

Product	Vehicle Gateway		
Test Item	Maximum peak conducted output power		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/13	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	62

IEEE 802.11b (ANT 0)			
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)
1	2412	22.030	≤30
6	2437	21.560	≤30
11	2462	22.760	≤30

The worst emission of data rate is 1 Mbps

Maximum peak conducted output power (dBm)						
Channel No.	Frequency (MHz)	Data Rate (Mbps)				Required Limit (dBm)
		1	2	5.5	11	
1	2412	22.030	--	--	--	≤30
6	2437	21.560	21.420	21.280	21.140	≤30
11	2462	22.760	--	--	--	≤30

Product	Vehicle Gateway		
Test Item	Maximum peak conducted output power		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/13	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	62

IEEE 802.11g (ANT 0)			
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)
1	2412	17.28	≤ 30
6	2437	20.89	≤ 30
11	2462	18.53	≤ 30

The worst emission of data rate is 6Mbps

Maximum peak conducted output power (dBm)										
Channel No	Frequency (MHz)	Data Rate (Mbps)								Limit (dBm)
		6	9	12	18	24	36	48	54	
1	2412	17.280	--	--	--	--	--	--	--	≤ 30
6	2437	20.890	20.750	20.620	20.480	20.350	20.210	20.070	19.920	≤ 30
11	2462	18.530	--	--	--	--	--	--	--	≤ 30

Product	Vehicle Gateway		
Test Item	Maximum peak conducted output power		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/13	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	62

IEEE 802.11n 20M (ANT 0)			
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)
1	2412	16.69	≤ 30
6	2437	22.26	≤ 30
11	2462	20.83	≤ 30

The worst emission of data rate is MCS 0

Maximum peak conducted output power (dBm)										
Channel No	Frequency (MHz)	MCS Index								Limit (dBm)
		0	1	2	3	4	5	6	7	
1	2412	16.690	--	--	--	--	--	--	--	≤ 30
6	2437	22.260	22.110	21.970	21.830	21.700	21.550	21.410	21.280	≤ 30
11	2462	20.830	--	--	--	--	--	--	--	≤ 30

Product	Vehicle Gateway		
Test Item	Maximum peak conducted output power		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/13	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	62

IEEE 802.11n 40M (ANT 0)			
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)
3	2422	13.92	≤ 30
6	2437	18.47	≤ 30
9	2452	16.42	≤ 30

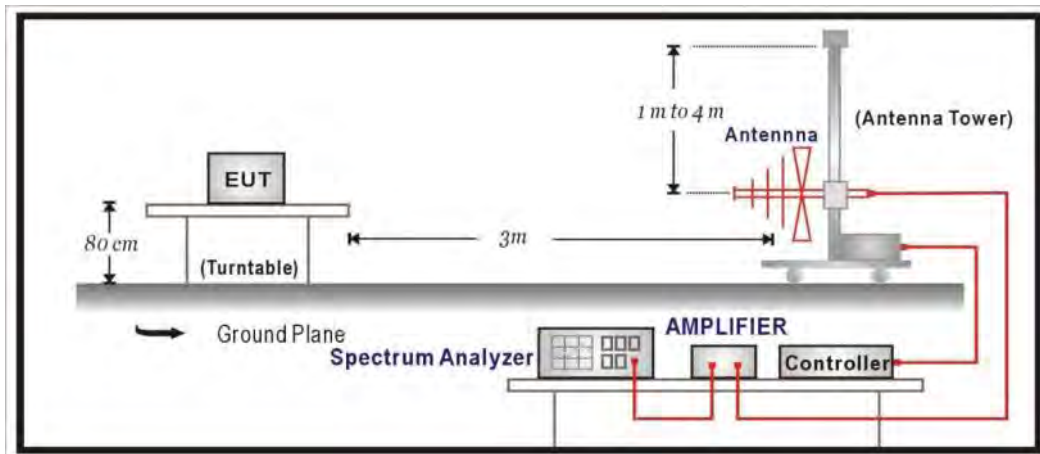
The worst emission of data rate is MCS 0

Maximum peak conducted output power (dBm)										
Channel No	Frequency (MHz)	MCS Index								Limit (dBm)
		0	1	2	3	4	5	6	7	
3	2422	13.920	--	--	--	--	--	--	--	≤ 30
6	2437	18.470	18.340	18.190	18.050	17.910	17.780	17.630	17.500	≤ 30
9	2452	16.420	--	--	--	--	--	--	--	≤ 30

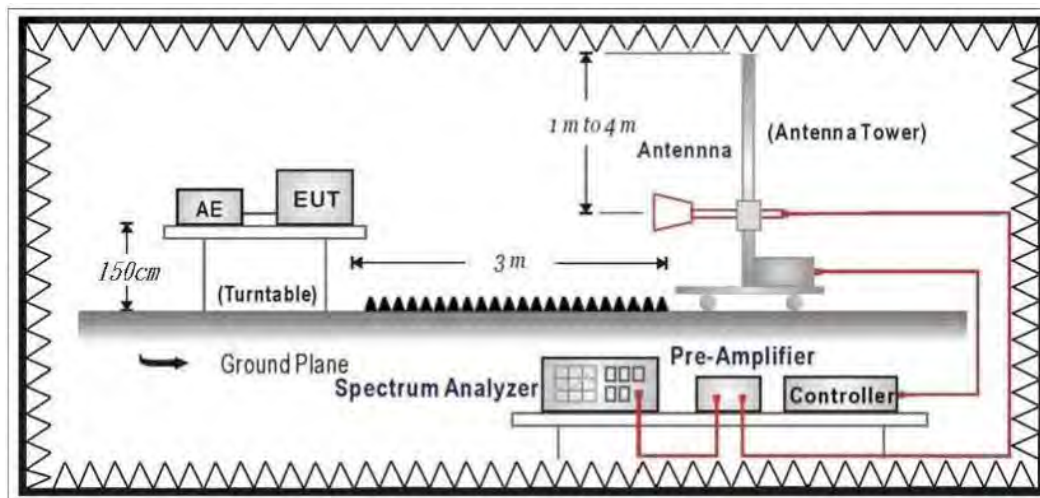
4. Radiated Emission

4.1. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.2. 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	dBuV/m	dBuV/m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.3. Test Procedure

The EUT was setup according to ANSI C63.10:2013 and tested according to DTS test procedure of KDB 558074 D01 v05r02 for compliance to FCC 47CFR 15.247 requirements.

The EUT and its simulators are placed on a turn table which is 1.5 meter above ground (under 1GHz) or 1.5 meter above ground (above 1GHz). The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

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

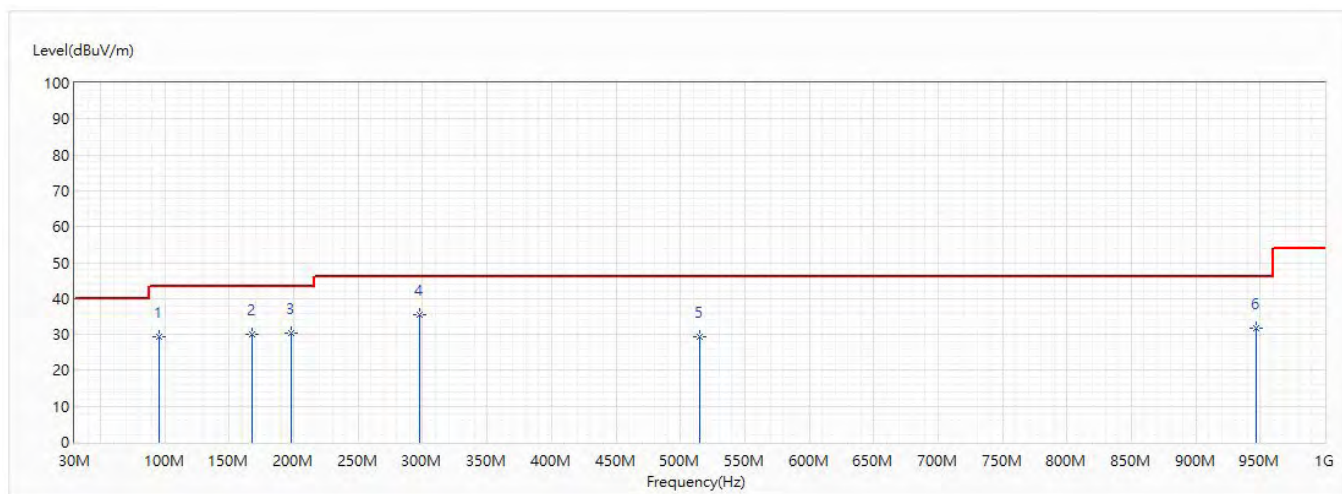
4.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2019

4.5. Test Result

30MHz-1GHz Spurious

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/14
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Horizontal	Temperature (°C)	22.0
Test Condition	SISO_802.11b_Ch6_2.437G	Humidity (%RH)	54.0

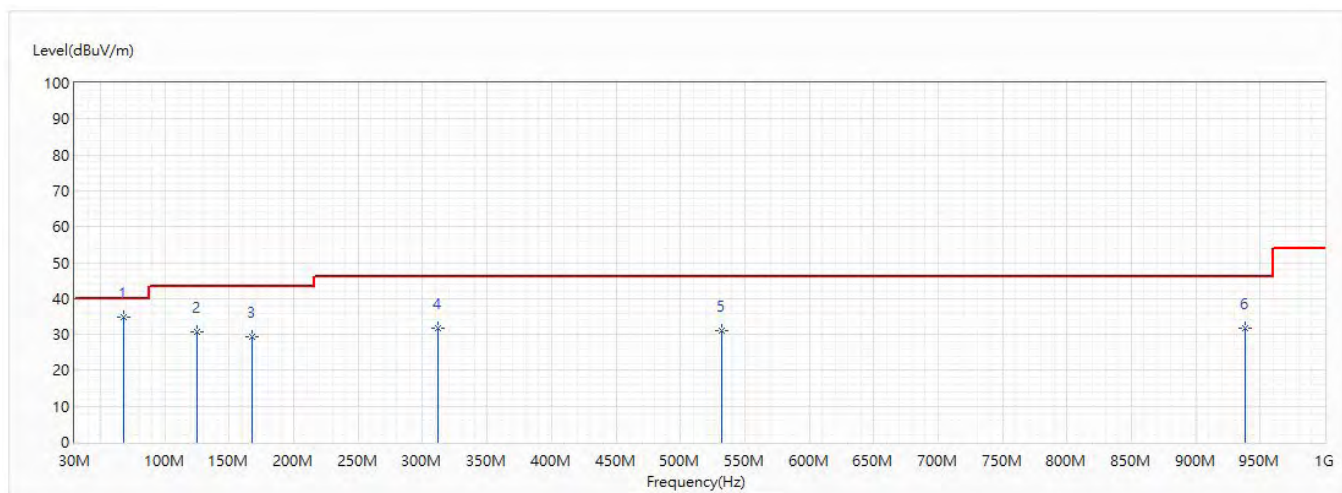


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	95.475	29.37	43.50	-14.13	34.12	-4.75	QP
2	167.983	30.16	43.50	-13.34	34.20	-4.04	QP
3	197.689	30.50	43.50	-13.00	34.76	-4.26	QP
* 4	297.478	35.59	46.00	-10.41	36.06	-0.47	QP
5	515	29.19	46.00	-16.81	24.32	4.87	QP
6	946.771	31.80	46.00	-14.20	21.51	10.29	QP

Note:

1. All reading levels is Quasi-Peak value.
2. " * ", means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/14
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Vertical	Temperature (°C)	22.0
Test Condition	SISO_802.11b_Ch6_2.437G	Humidity (%RH)	54.0

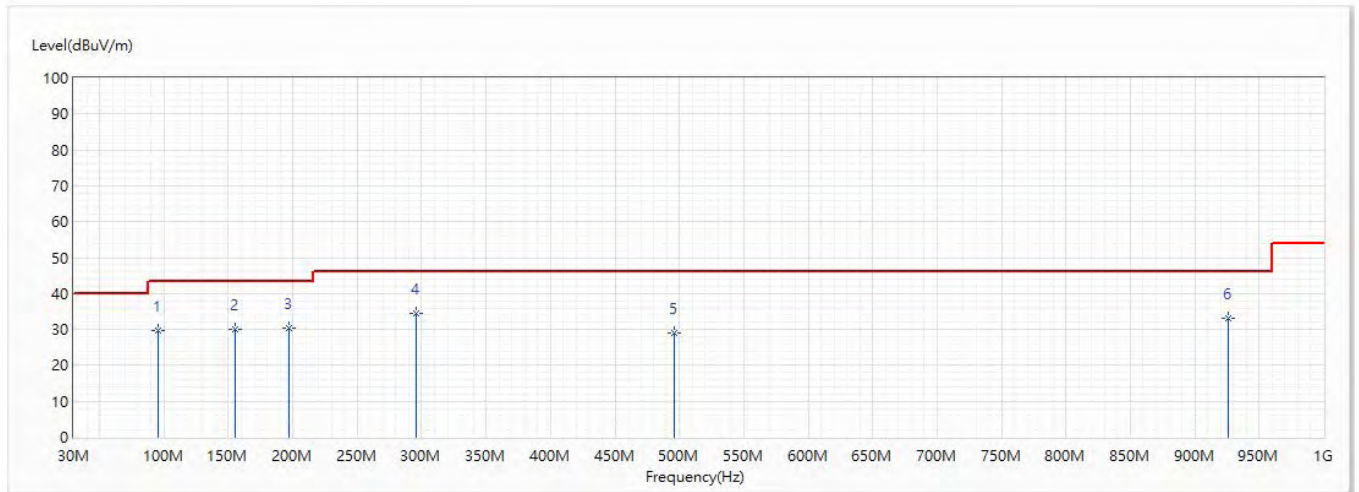


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	67.588	34.81	40.00	-5.19	42.97	-8.16	QP
2	124.939	30.83	43.50	-12.67	32.73	-1.90	QP
3	167.983	29.47	43.50	-14.03	33.51	-4.04	QP
4	312.028	31.74	46.00	-14.26	31.77	-0.03	QP
5	532.096	31.10	46.00	-14.90	26.00	5.10	QP
6	938.526	31.91	46.00	-14.09	21.74	10.17	QP

Note:

1. All reading levels is Quasi-Peak value.
2. " * ", means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/14
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Horizontal	Temperature (°C)	22.0
Test Condition	SISO_802.11g_Ch6_2.437G	Humidity (%RH)	54.0

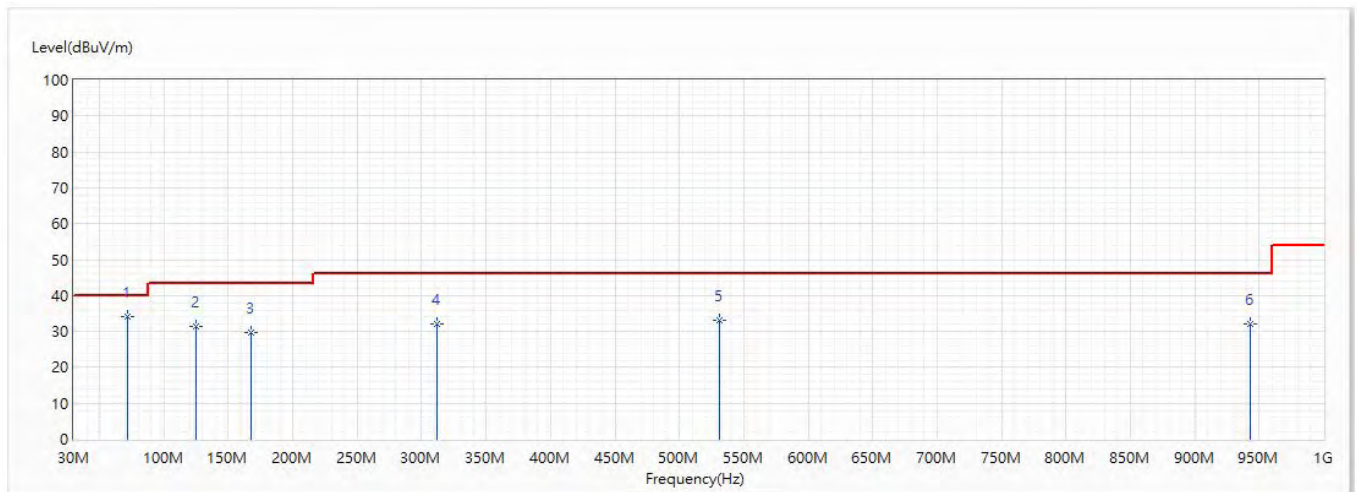


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	95.354	29.58	43.50	-13.92	34.35	-4.77	QP
2	155.736	29.90	43.50	-13.60	33.14	-3.24	QP
3	196.961	30.23	43.50	-13.27	34.50	-4.27	QP
* 4	295.416	34.52	46.00	-11.48	35.03	-0.51	QP
5	495.6	29.10	46.00	-16.90	24.50	4.60	QP
6	926.159	33.20	46.00	-12.80	23.25	9.95	QP

Note:

1. All reading levels is Quasi-Peak value.
2. " * ", means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/14
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Vertical	Temperature (°C)	22.0
Test Condition	SISO_802.11g_Ch6_2.437G	Humidity (%RH)	54.0

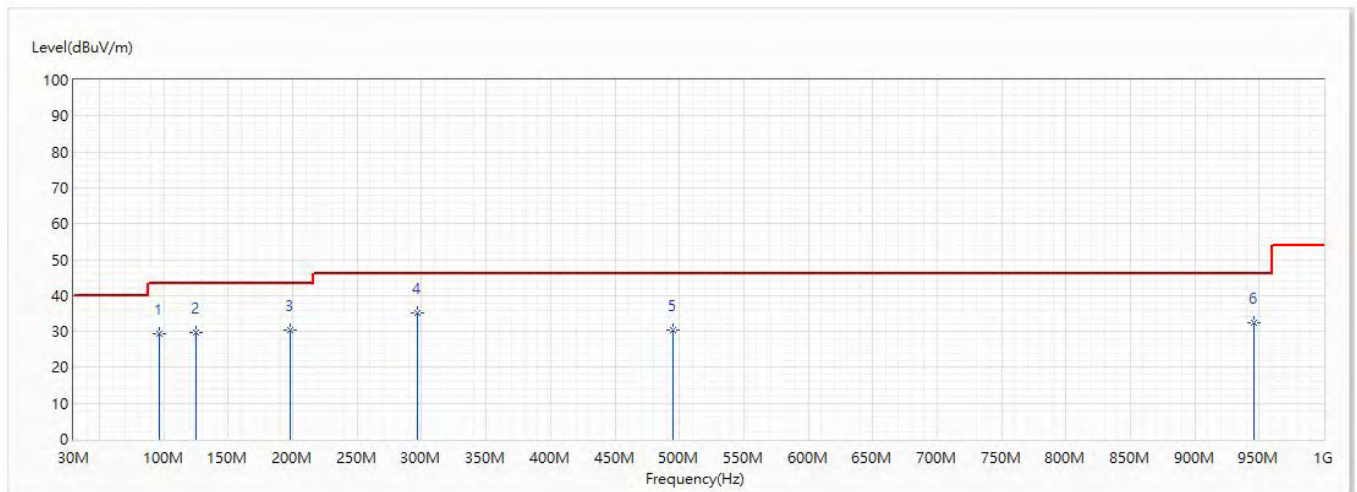


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	71.589	34.24	40.00	-5.76	42.23	-7.99	QP
2	124.939	31.48	43.50	-12.02	33.38	-1.90	QP
3	167.983	29.84	43.50	-13.66	33.88	-4.04	QP
4	312.028	31.99	46.00	-14.01	32.02	-0.03	QP
5	531.126	33.16	46.00	-12.84	28.08	5.08	QP
6	942.891	32.20	46.00	-13.80	21.96	10.24	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/14
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Horizontal	Temperature (°C)	22.0
Test Condition	SISO_802.11n_20M_Ch6_2.437G	Humidity (%RH)	54.0

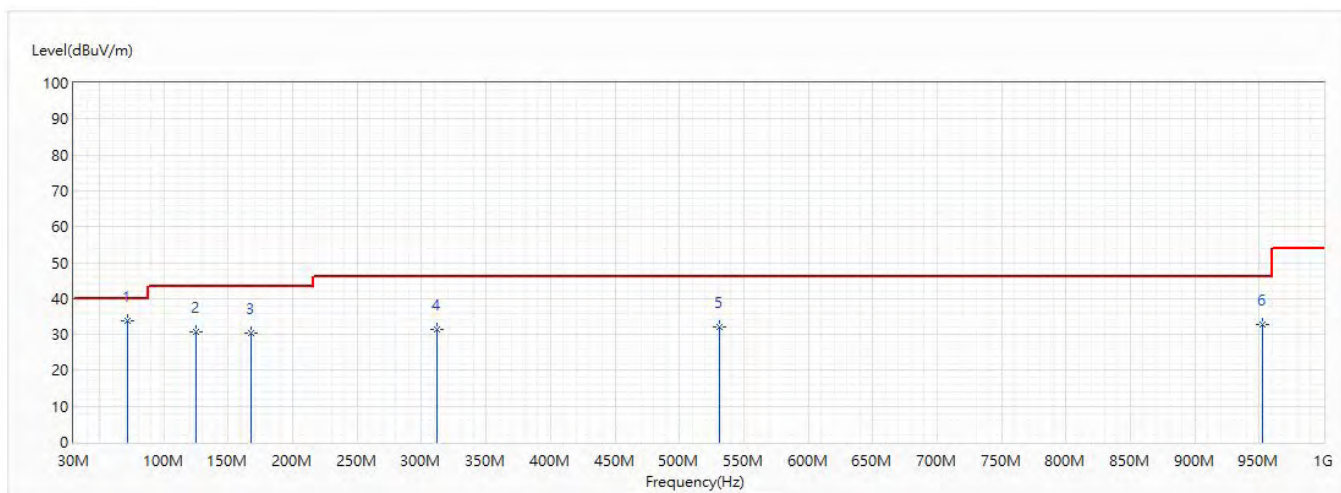


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	96.203	29.44	43.50	-14.06	34.03	-4.59	QP
2	124.939	29.75	43.50	-13.75	31.65	-1.90	QP
3	198.295	30.36	43.50	-13.14	34.59	-4.23	QP
* 4	296.629	35.20	46.00	-10.80	35.69	-0.49	QP
5	494.63	30.26	46.00	-15.74	25.69	4.57	QP
6	945.923	32.43	46.00	-13.57	22.15	10.28	QP

Note:

1. All reading levels is Quasi-Peak value.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/14
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Vertical	Temperature (°C)	22.0
Test Condition	SISO_802.11n_20M_Ch6_2.437G	Humidity (%RH)	54.0

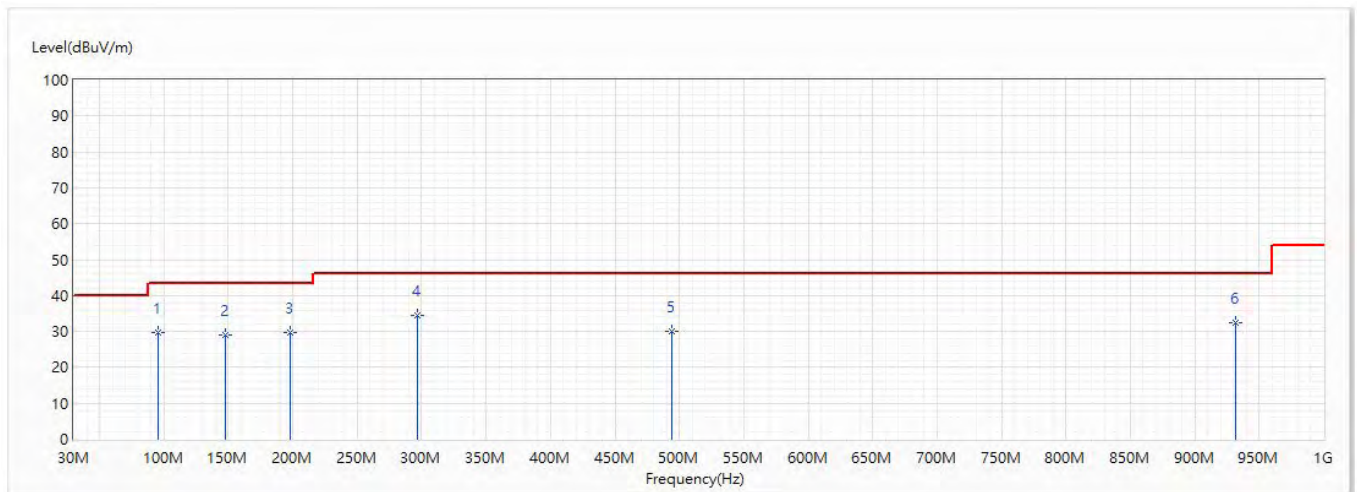


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	71.589	33.93	40.00	-6.07	41.92	-7.99	QP
2	124.939	30.86	43.50	-12.64	32.76	-1.90	QP
3	167.983	30.33	43.50	-13.17	34.37	-4.04	QP
4	312.028	31.50	46.00	-14.50	31.53	-0.03	QP
5	531.126	32.20	46.00	-13.80	27.12	5.08	QP
6	952.713	32.80	46.00	-13.20	22.41	10.39	QP

Note:

1. All reading levels is Quasi-Peak value.
2. " * ", means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/14
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Horizontal	Temperature (°C)	22.0
Test Condition	SISO_802.11n_40M_Ch6_2.437G	Humidity (%RH)	54.0

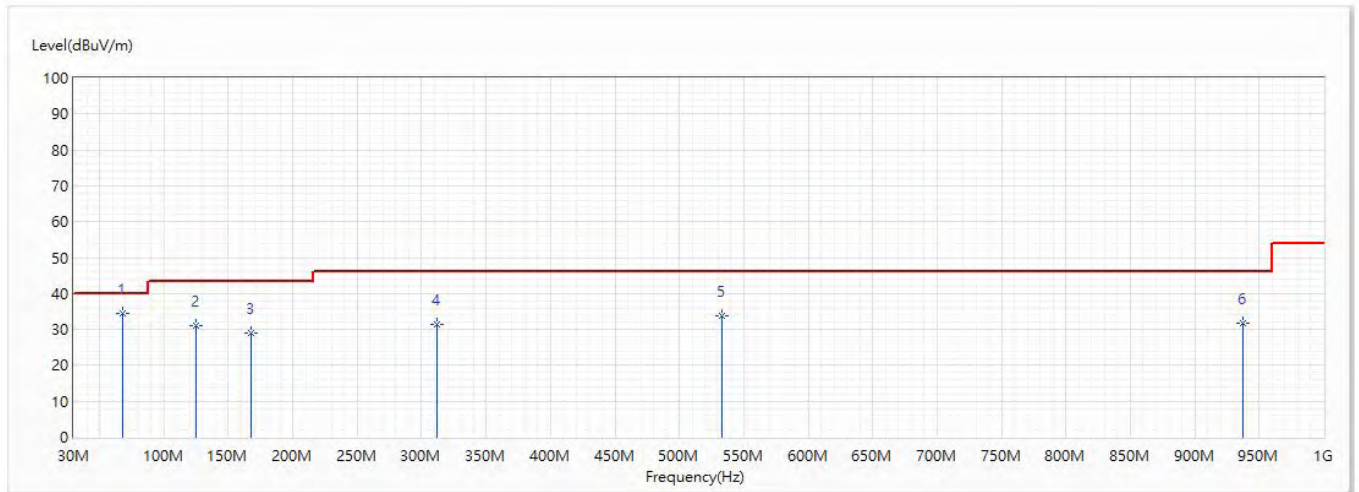


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	95.596	29.80	43.50	-13.70	34.53	-4.73	QP
2	147.976	29.17	43.50	-14.33	31.93	-2.76	QP
3	197.81	29.83	43.50	-13.67	34.09	-4.26	QP
* 4	296.75	34.52	46.00	-11.48	35.01	-0.49	QP
5	494.509	29.93	46.00	-16.07	25.36	4.57	QP
6	931.494	32.28	46.00	-13.72	22.24	10.04	QP

Note:

1. All reading levels is Quasi-Peak value.
2. " * ", means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/14
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Vertical	Temperature (°C)	22.0
Test Condition	SISO_802.11n_40M_Ch6_2.437G	Humidity (%RH)	54.0



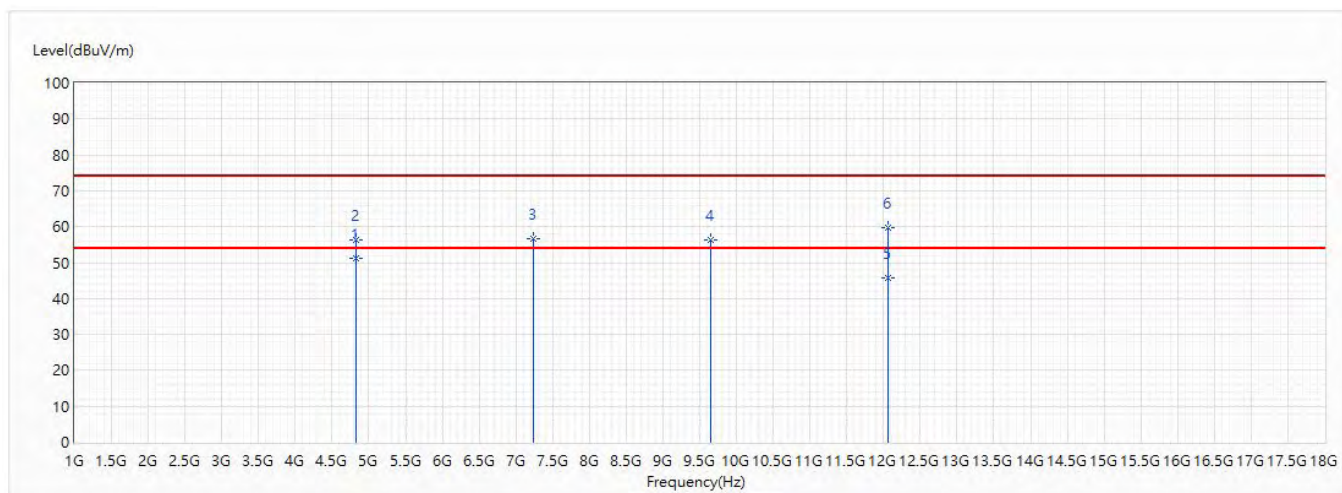
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	67.588	34.44	40.00	-5.56	42.60	-8.16	QP
2	124.939	31.04	43.50	-12.46	32.94	-1.90	QP
3	167.983	28.84	43.50	-14.66	32.88	-4.04	QP
4	312.028	31.28	46.00	-14.72	31.31	-0.03	QP
5	533.188	33.70	46.00	-12.30	28.59	5.11	QP
6	937.193	31.90	46.00	-14.10	21.76	10.14	QP

Note:

1. All reading levels is Quasi-Peak value.
2. " * ", means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor
4. The emission under 30MHz were not included is because their levels are lower than 20dB from limit.

Above 1GHz Spurious

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11b_Ch1_2.412G	Humidity (%RH)	55.0

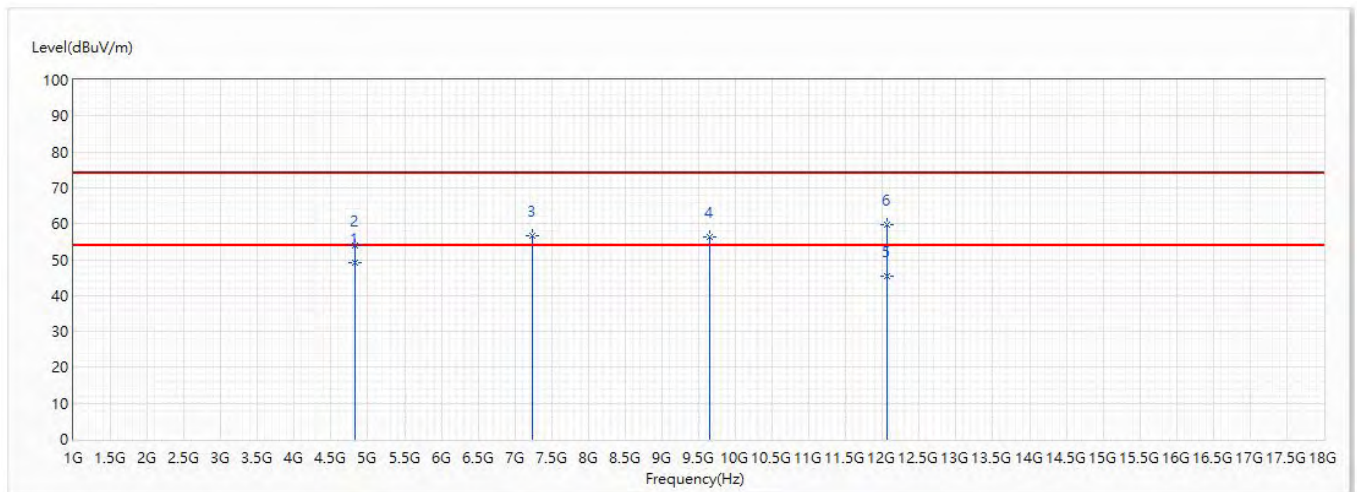


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4824	51.13	54.00	-2.87	62.61	-11.48	AV
2	4824	56.27	74.00	-17.73	67.75	-11.48	PK
3	7236	56.61	74.00	-17.39	59.74	-3.13	PK
4	9648	56.46	74.00	-17.54	55.60	0.86	PK
5	12060	45.68	54.00	-8.32	40.32	5.36	AV
6	12060	59.84	74.00	-14.16	54.48	5.36	PK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11b_Ch1_2.412G	Humidity (%RH)	55.0

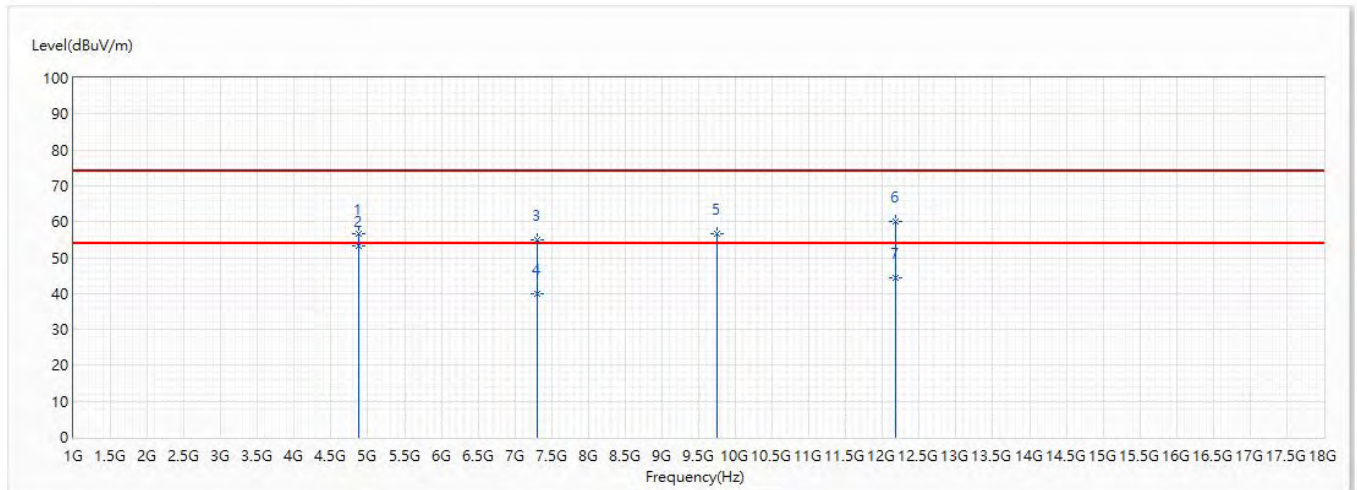


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	4824	49.09	54.00	-4.91	60.57	-11.48	AV
2	4824	54.05	74.00	-19.95	65.53	-11.48	PK
3	7236	56.55	74.00	-17.45	59.68	-3.13	PK
4	9648	56.38	74.00	-17.62	55.52	0.86	PK
5	12060	45.36	54.00	-8.64	40.00	5.36	AV
6	12060	59.61	74.00	-14.39	54.25	5.36	PK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11b_Ch6_2.437G_21	Humidity (%RH)	55.0

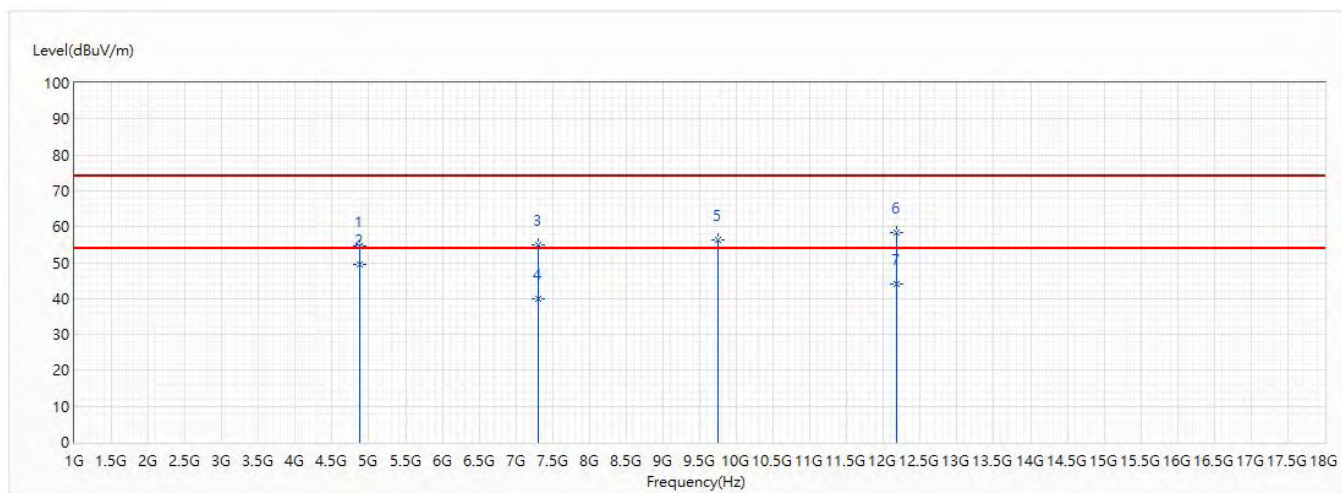


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	56.82	74.00	-17.18	68.13	-11.31	PK
* 2	4874	53.34	54.00	-0.66	64.65	-11.31	AV
3	7311	55.02	74.00	-18.98	57.91	-2.89	PK
4	7311	40.06	54.00	-13.94	42.95	-2.89	AV
5	9748	56.71	74.00	-17.29	55.78	0.93	PK
6	12185	59.98	74.00	-14.02	54.88	5.10	PK
7	12185	44.37	54.00	-9.63	39.27	5.10	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11b_Ch6_2.437G	Humidity (%RH)	55.0

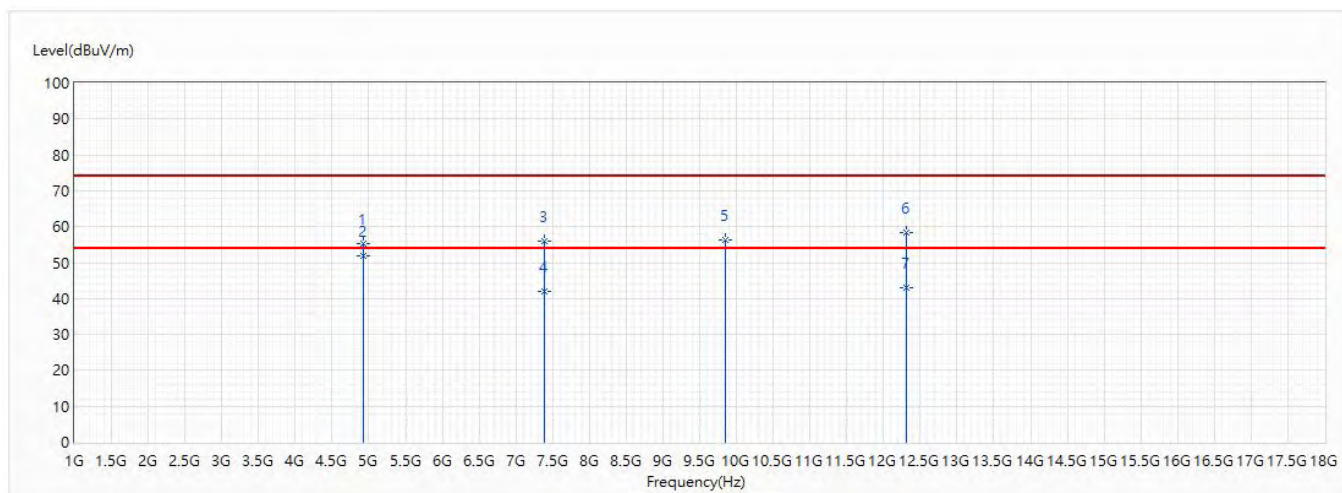


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	54.50	74.00	-19.50	65.81	-11.31	PK
* 2	4874	49.37	54.00	-4.63	60.68	-11.31	AV
3	7311	54.94	74.00	-19.06	57.83	-2.89	PK
4	7311	39.86	54.00	-14.14	42.75	-2.89	AV
5	9748	56.36	74.00	-17.64	55.43	0.93	PK
6	12185	58.53	74.00	-15.47	53.43	5.10	PK
7	12185	44.11	54.00	-9.89	39.01	5.10	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11b_Ch11_2.462G	Humidity (%RH)	55.0

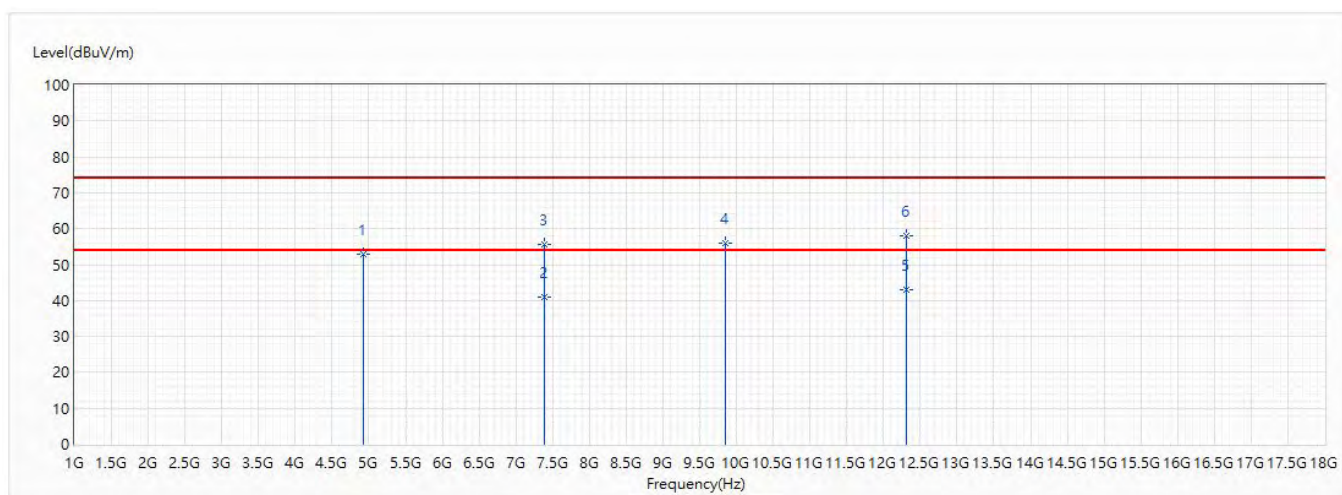


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	55.31	74.00	-18.69	66.49	-11.18	PK
* 2	4924	51.80	54.00	-2.20	62.98	-11.18	AV
3	7386	56.13	74.00	-17.87	58.63	-2.50	PK
4	7386	42.15	54.00	-11.85	44.65	-2.50	AV
5	9848	56.36	74.00	-17.64	55.30	1.06	PK
6	12310	58.34	74.00	-15.66	53.72	4.62	PK
7	12310	43.15	54.00	-10.85	38.53	4.62	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11b_Ch11_2.462G	Humidity (%RH)	55.0

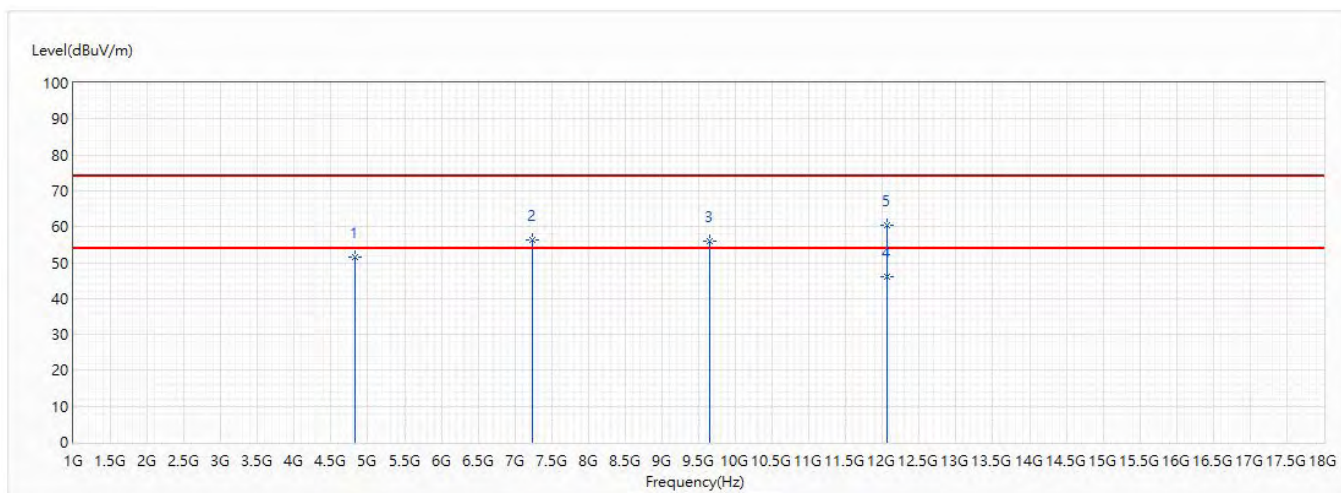


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	53.02	74.00	-20.98	64.20	-11.18	PK
2	7386	41.09	54.00	-12.91	43.59	-2.50	AV
3	7386	55.49	74.00	-18.51	57.99	-2.50	PK
4	9848	55.96	74.00	-18.04	54.90	1.06	PK
* 5	12310	42.86	54.00	-11.14	38.24	4.62	AV
6	12310	58.01	74.00	-15.99	53.39	4.62	PK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11g_Ch1_2.412G	Humidity (%RH)	55.0

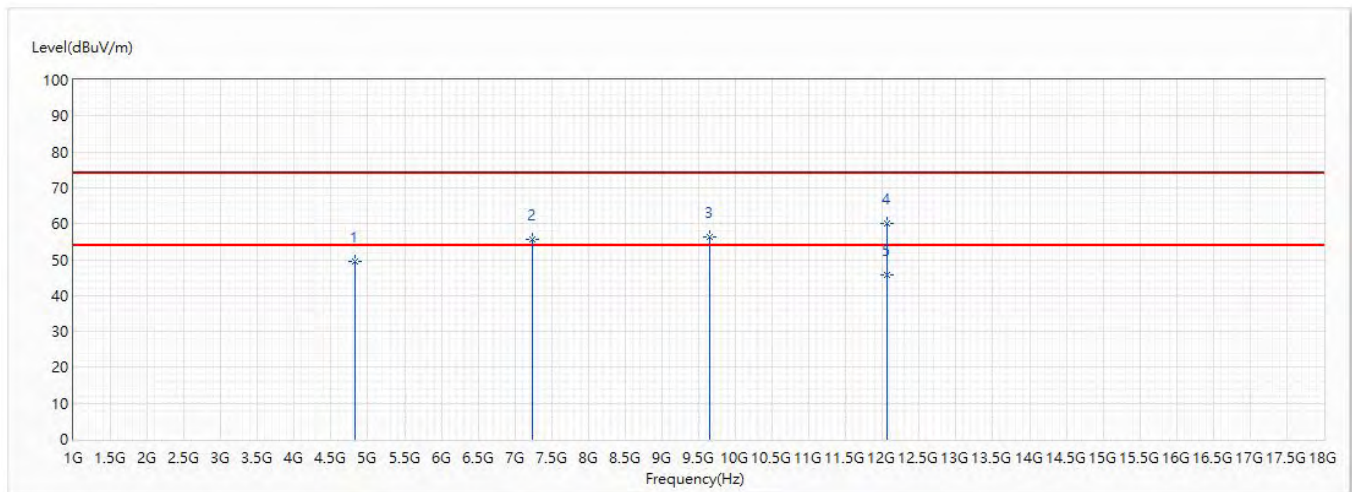


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	51.62	74.00	-22.38	63.10	-11.48	PK
2	7236	56.41	74.00	-17.59	59.54	-3.13	PK
3	9648	55.94	74.00	-18.06	55.08	0.86	PK
* 4	12060	45.94	54.00	-8.06	40.58	5.36	AV
5	12064.634	60.49	74.00	-13.51	55.16	5.33	PK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11g_Ch1_2.412G	Humidity (%RH)	55.0

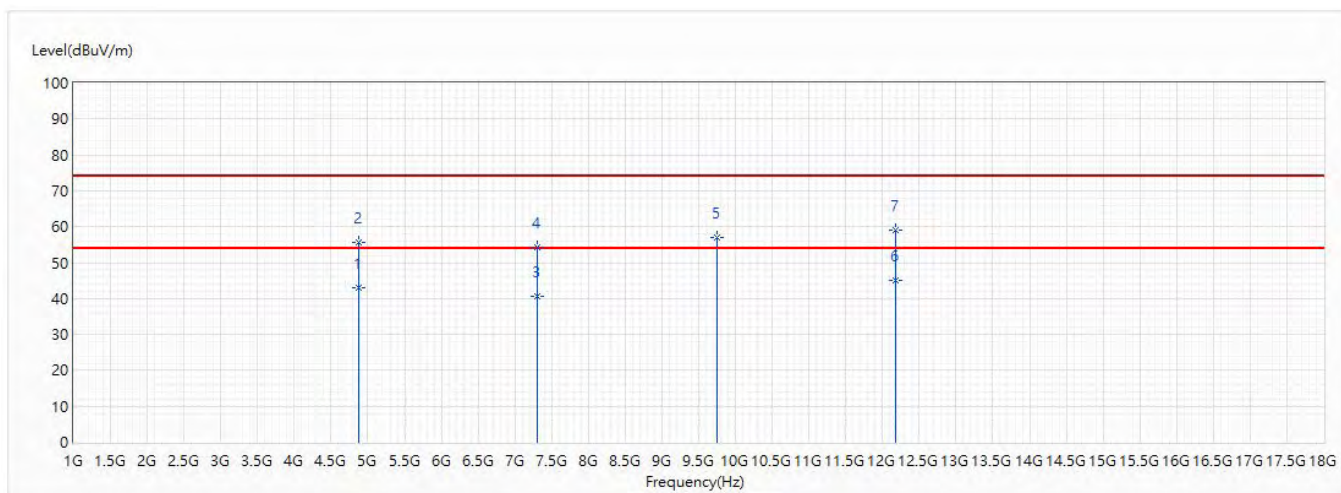


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	49.40	74.00	-24.60	60.88	-11.48	PK
2	7236	55.71	74.00	-18.29	58.84	-3.13	PK
3	9648	56.24	74.00	-17.76	55.38	0.86	PK
4	12060	60.12	74.00	-13.88	54.76	5.36	PK
* 5	12060	45.58	54.00	-8.42	40.22	5.36	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11g_Ch6_2.437G	Humidity (%RH)	55.0

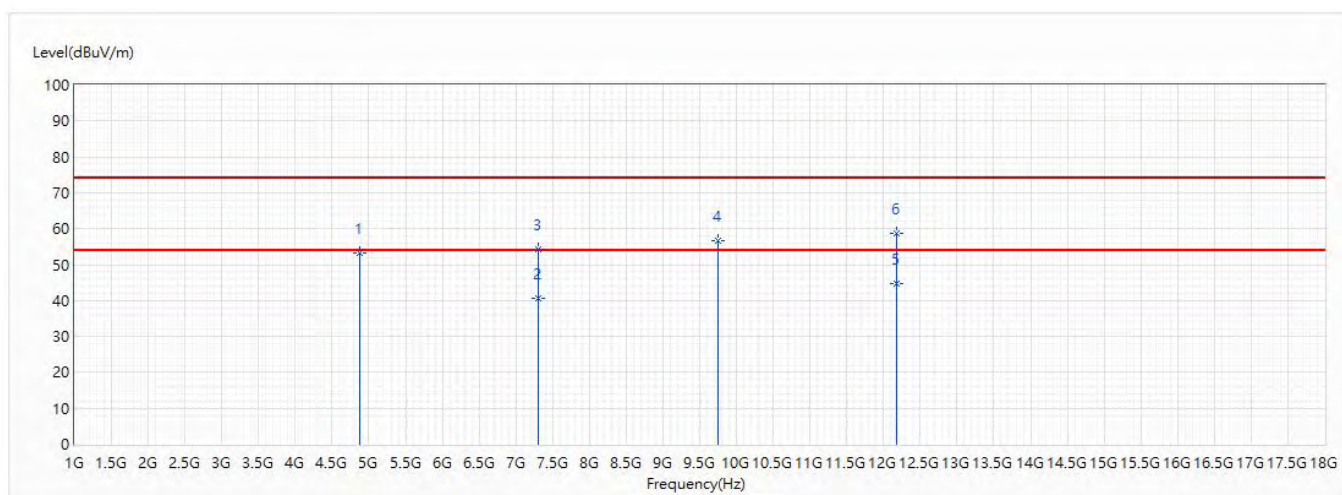


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	43.17	54.00	-10.83	54.48	-11.31	AV
2	4874	55.52	74.00	-18.48	66.83	-11.31	PK
3	7311	40.70	54.00	-13.30	43.59	-2.89	AV
4	7311	54.30	74.00	-19.70	57.19	-2.89	PK
5	9748	57.01	74.00	-16.99	56.08	0.93	PK
* 6	12185	44.95	54.00	-9.05	39.85	5.10	AV
7	12185	59.06	74.00	-14.94	53.96	5.10	PK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11g_Ch6_2.437G	Humidity (%RH)	55.0

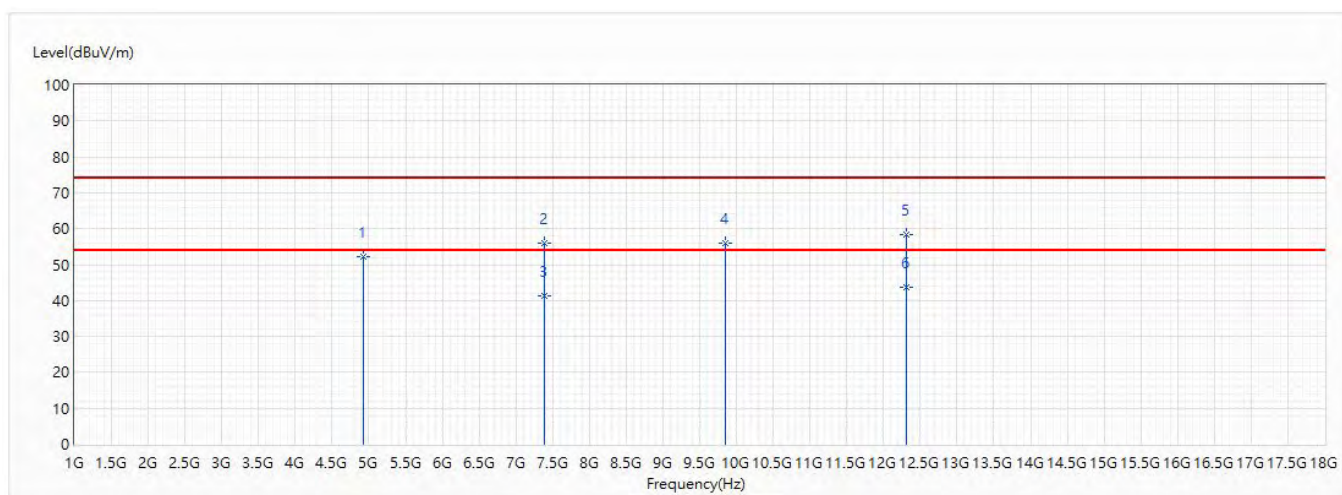


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	53.38	74.00	-20.62	64.69	-11.31	PK
2	7311	40.51	54.00	-13.49	43.40	-2.89	AV
3	7311	54.22	74.00	-19.78	57.11	-2.89	PK
4	9748	56.69	74.00	-17.31	55.76	0.93	PK
* 5	12185	44.87	54.00	-9.13	39.77	5.10	AV
6	12185	58.67	74.00	-15.33	53.57	5.10	PK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11g_Ch11_2.462G	Humidity (%RH)	55.0

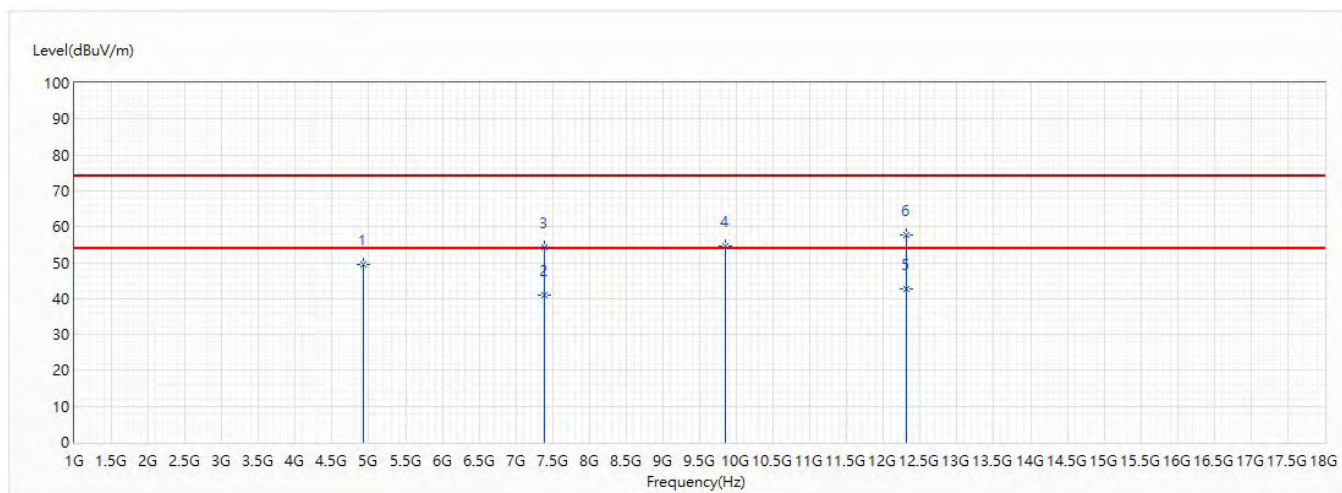


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	52.29	74.00	-21.71	63.47	-11.18	PK
2	7386	55.90	74.00	-18.10	58.40	-2.50	PK
3	7386	41.38	54.00	-12.62	43.88	-2.50	AV
4	9848	55.95	74.00	-18.05	54.89	1.06	PK
5	12310	58.52	74.00	-15.48	53.90	4.62	PK
* 6	12310	43.72	54.00	-10.28	39.10	4.62	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11g_Ch11_2.462G	Humidity (%RH)	55.0

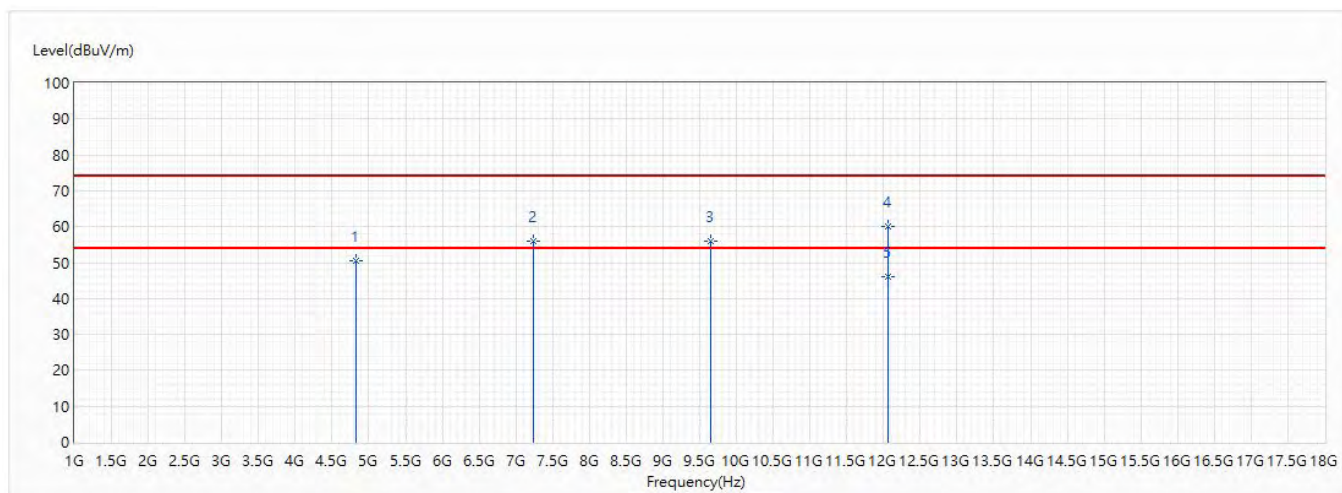


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	49.46	74.00	-24.54	60.64	-11.18	PK
2	7386	40.95	54.00	-13.05	43.45	-2.50	AV
3	7386	54.16	74.00	-19.84	56.66	-2.50	PK
4	9848	54.61	74.00	-19.39	53.55	1.06	PK
* 5	12310	42.68	54.00	-11.32	38.06	4.62	AV
6	12310	57.69	74.00	-16.31	53.07	4.62	PK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11n_20M_Ch1_2.412G	Humidity (%RH)	55.0

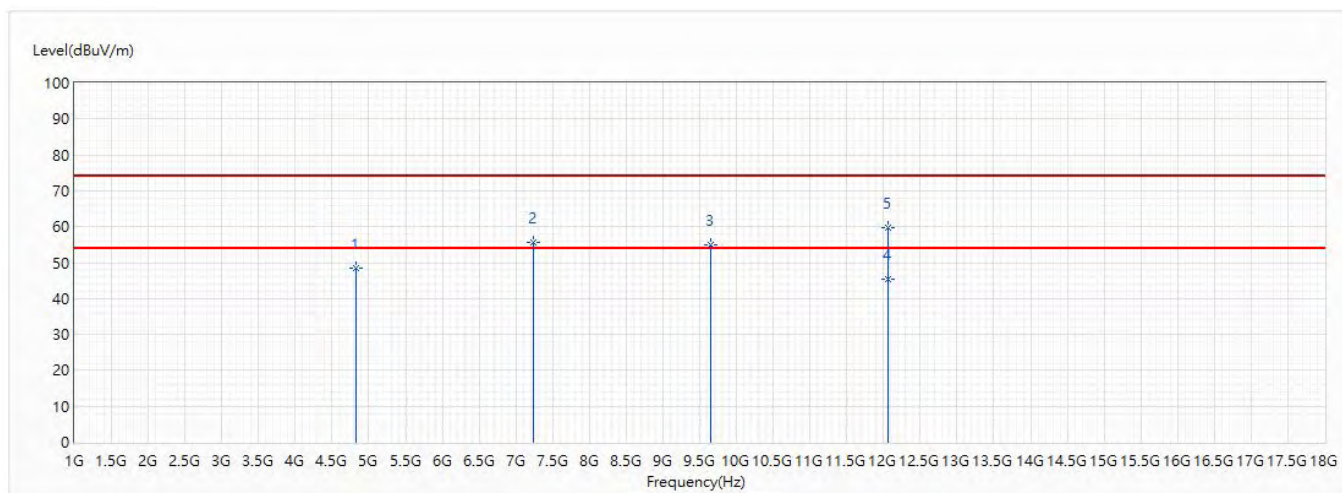


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	50.44	74.00	-23.56	61.92	-11.48	PK
2	7236	56.00	74.00	-18.00	59.13	-3.13	PK
3	9648	55.98	74.00	-18.02	55.12	0.86	PK
4	12060	60.00	74.00	-14.00	54.64	5.36	PK
* 5	12060	46.00	54.00	-8.00	40.64	5.36	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11n_20M_Ch1_2.412G	Humidity (%RH)	55.0

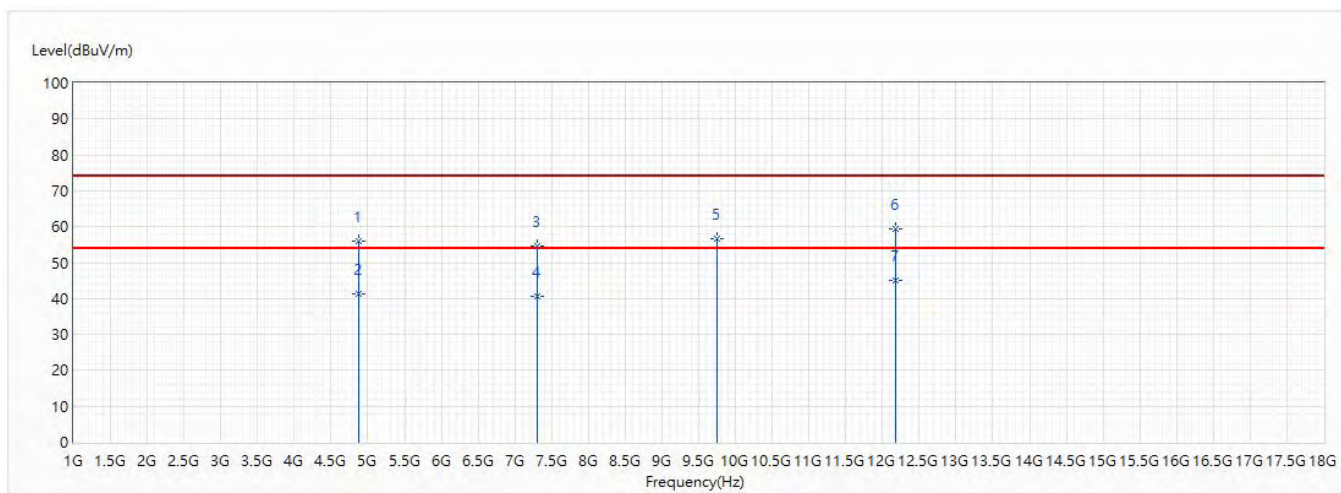


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4824	48.37	74.00	-25.63	59.85	-11.48	PK
2	7236	55.73	74.00	-18.27	58.86	-3.13	PK
3	9648	55.07	74.00	-18.93	54.21	0.86	PK
* 4	12060	45.52	54.00	-8.48	40.16	5.36	AV
5	12060	59.88	74.00	-14.12	54.52	5.36	PK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11n_20M_Ch6_2.437G	Humidity (%RH)	55.0

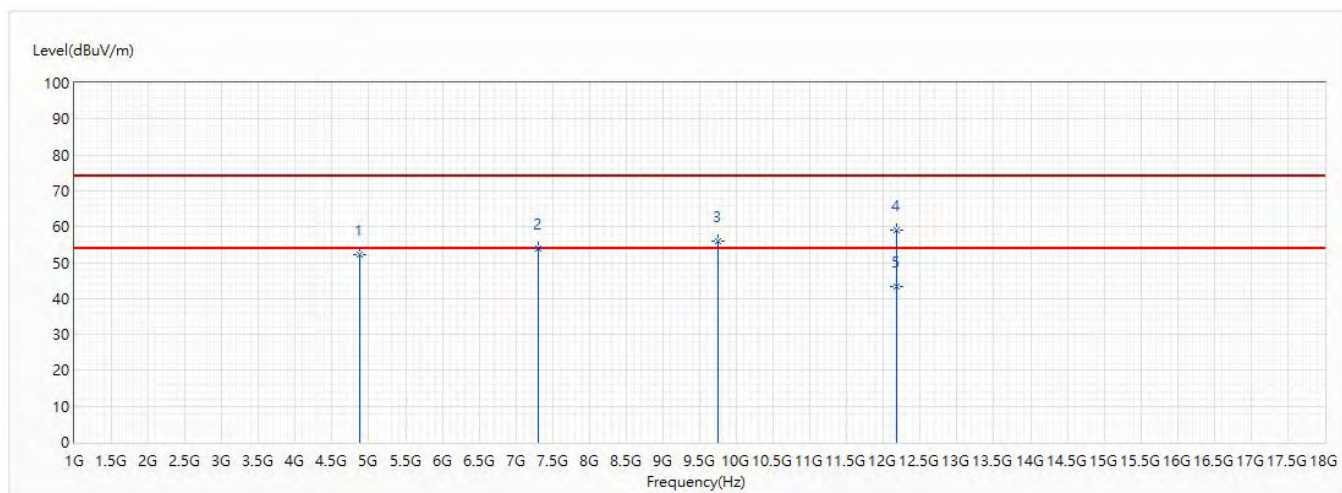


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	56.04	74.00	-17.96	67.35	-11.31	PK
2	4874	41.30	54.00	-12.70	52.61	-11.31	AV
3	7311	54.71	74.00	-19.29	57.60	-2.89	PK
4	7311	40.74	54.00	-13.26	43.63	-2.89	AV
5	9748	56.79	74.00	-17.21	55.86	0.93	PK
6	12185	59.49	74.00	-14.51	54.39	5.10	PK
* 7	12185	44.91	54.00	-9.09	39.81	5.10	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11n_20M_Ch6_2.437G	Humidity (%RH)	55.0

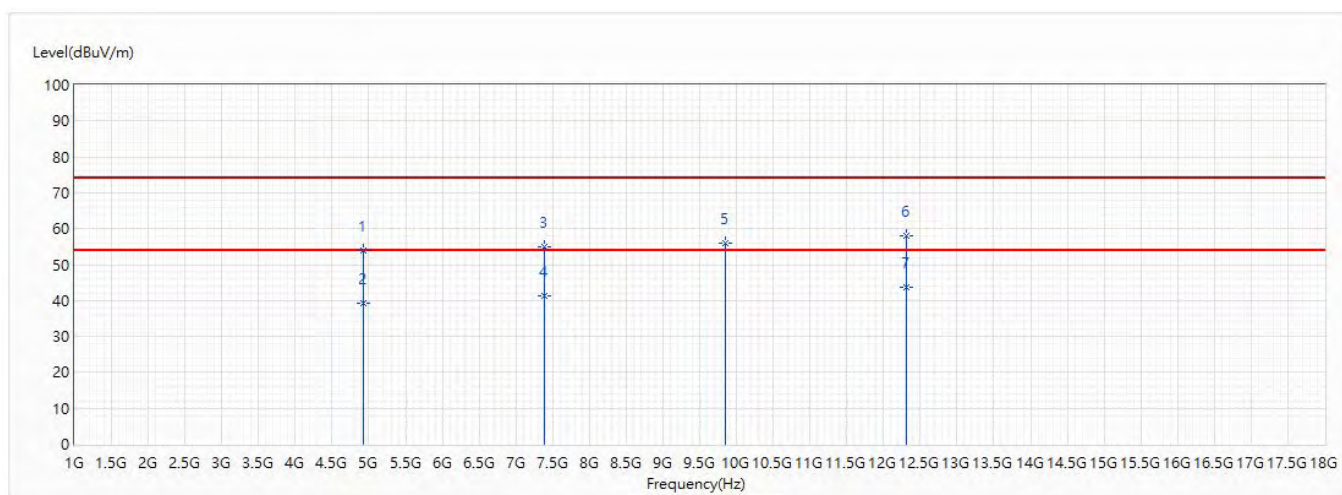


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	52.17	74.00	-21.83	63.48	-11.31	PK
2	7311	53.89	74.00	-20.11	56.78	-2.89	PK
3	9748	56.09	74.00	-17.91	55.16	0.93	PK
4	12185	59.17	74.00	-14.83	54.07	5.10	PK
* 5	12185	43.50	54.00	-10.50	38.40	5.10	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11n_20M_Ch11_2.462G	Humidity (%RH)	55.0

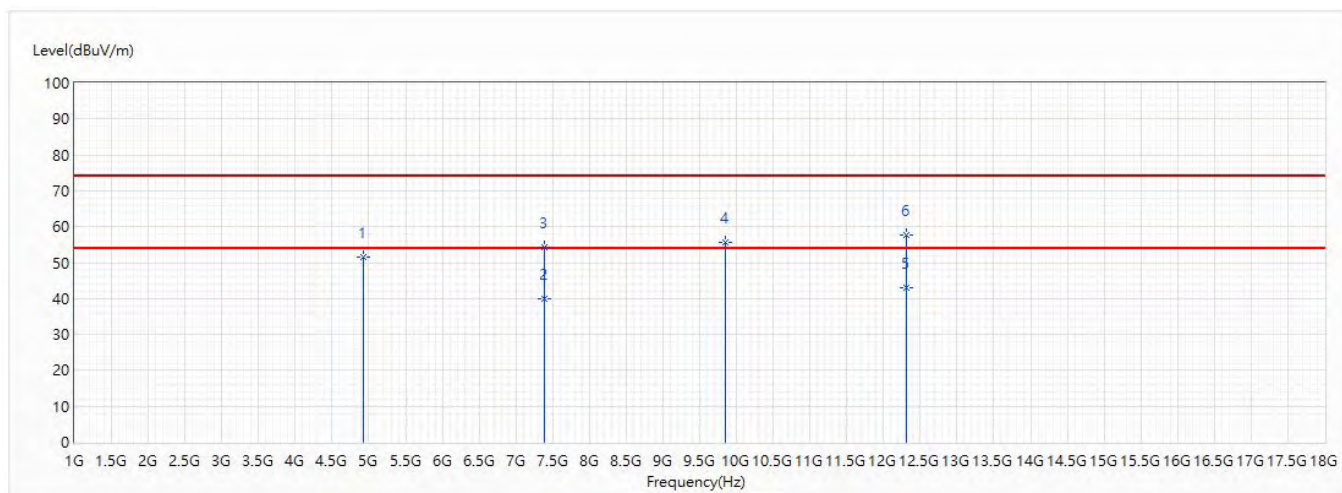


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	54.07	74.00	-19.93	65.25	-11.18	PK
2	4924	39.13	54.00	-14.87	50.31	-11.18	AV
3	7386	55.06	74.00	-18.94	57.56	-2.50	PK
4	7386	41.22	54.00	-12.78	43.72	-2.50	AV
5	9848	56.07	74.00	-17.93	55.01	1.06	PK
6	12310	58.06	74.00	-15.94	53.44	4.62	PK
* 7	12310	43.65	54.00	-10.35	39.03	4.62	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11n_20M_Ch11_2.462G	Humidity (%RH)	55.0

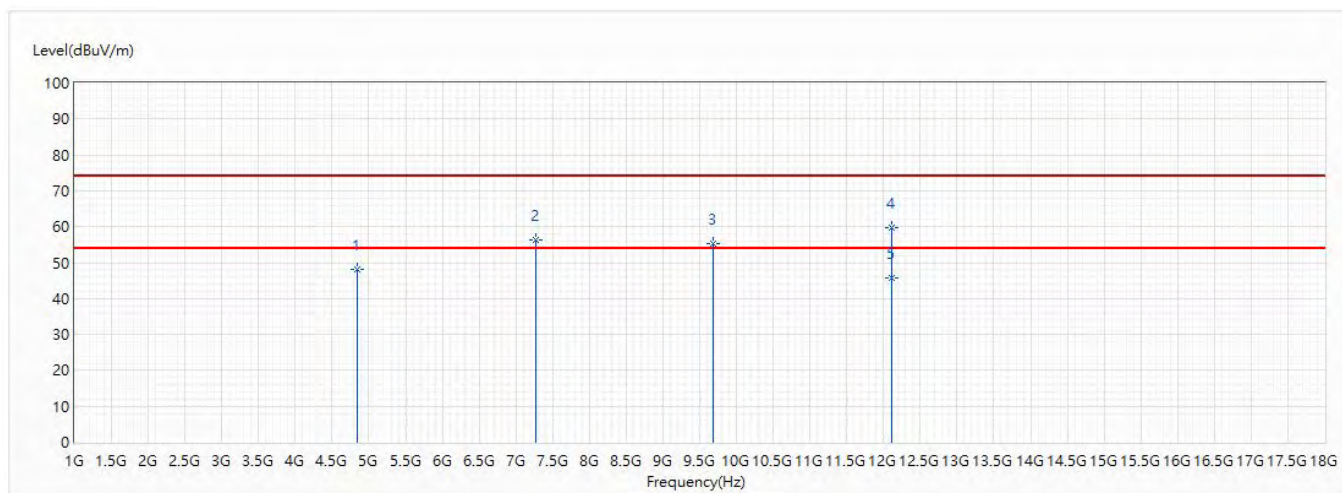


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4924	51.66	74.00	-22.34	62.84	-11.18	PK
2	7386	39.99	54.00	-14.01	42.49	-2.50	AV
3	7386	54.36	74.00	-19.64	56.86	-2.50	PK
4	9848	55.78	74.00	-18.22	54.72	1.06	PK
* 5	12310	42.93	54.00	-11.07	38.31	4.62	AV
6	12310	57.83	74.00	-16.17	53.21	4.62	PK

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch3_2.422G	Humidity (%RH)	55.0

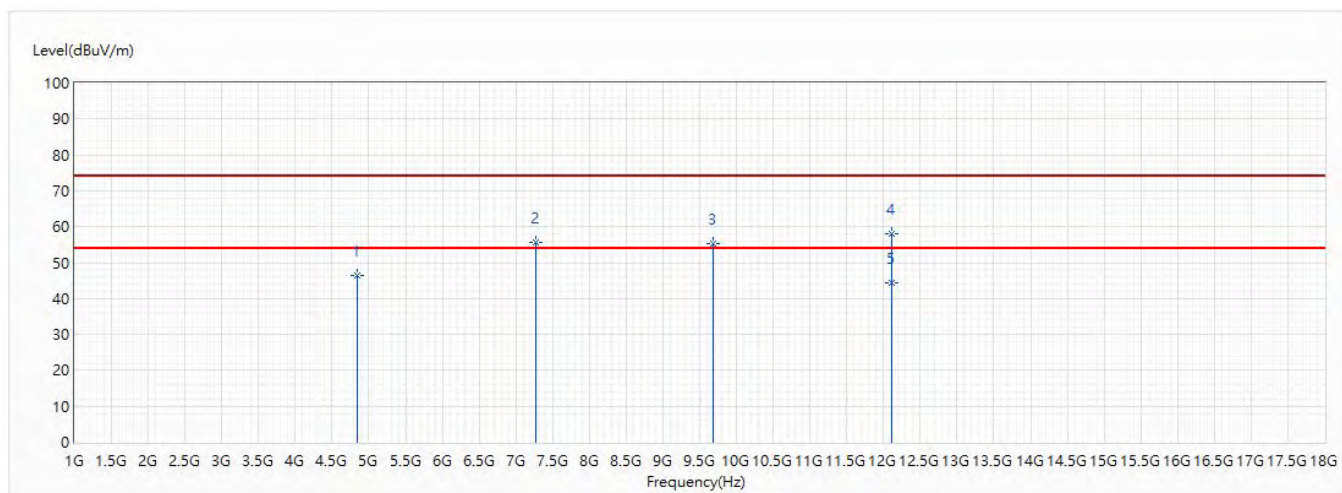


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4844	48.29	74.00	-25.71	59.70	-11.41	PK
2	7266	56.29	74.00	-17.71	59.33	-3.04	PK
3	9688	55.22	74.00	-18.78	54.37	0.85	PK
4	12110	59.65	74.00	-14.35	54.46	5.19	PK
* 5	12110	45.59	54.00	-8.41	40.40	5.19	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch3_2.422G	Humidity (%RH)	55.0

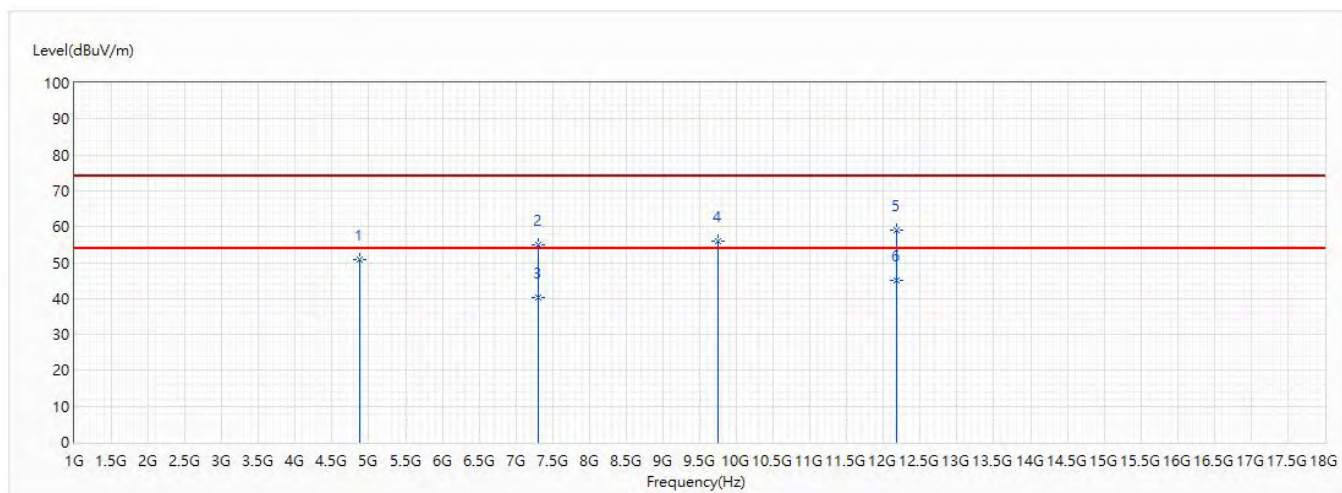


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4844	46.38	74.00	-27.62	57.79	-11.41	PK
2	7266	55.51	74.00	-18.49	58.55	-3.04	PK
3	9688	55.19	74.00	-18.81	54.34	0.85	PK
4	12110	58.08	74.00	-15.92	52.89	5.19	PK
* 5	12110	44.28	54.00	-9.72	39.09	5.19	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch6_2.437G	Humidity (%RH)	55.0

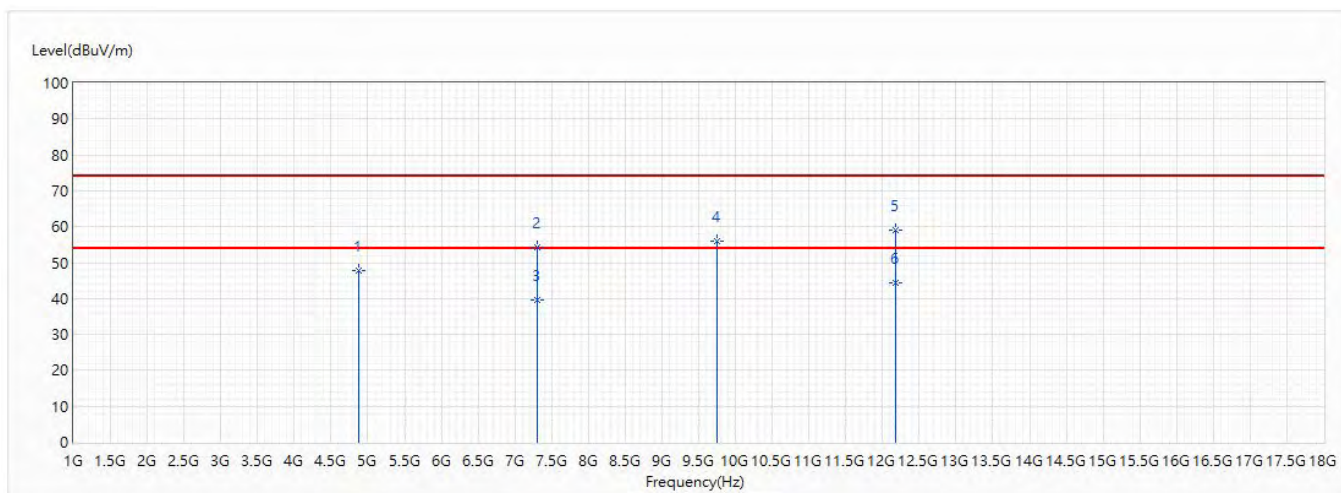


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	50.69	74.00	-23.31	62.00	-11.31	PK
2	7311	54.98	74.00	-19.02	57.87	-2.89	PK
3	7311	40.15	54.00	-13.85	43.04	-2.89	AV
4	9748	56.03	74.00	-17.97	55.10	0.93	PK
5	12185	59.20	74.00	-14.80	54.10	5.10	PK
* 6	12185	44.97	54.00	-9.03	39.87	5.10	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch6_2.437G	Humidity (%RH)	55.0

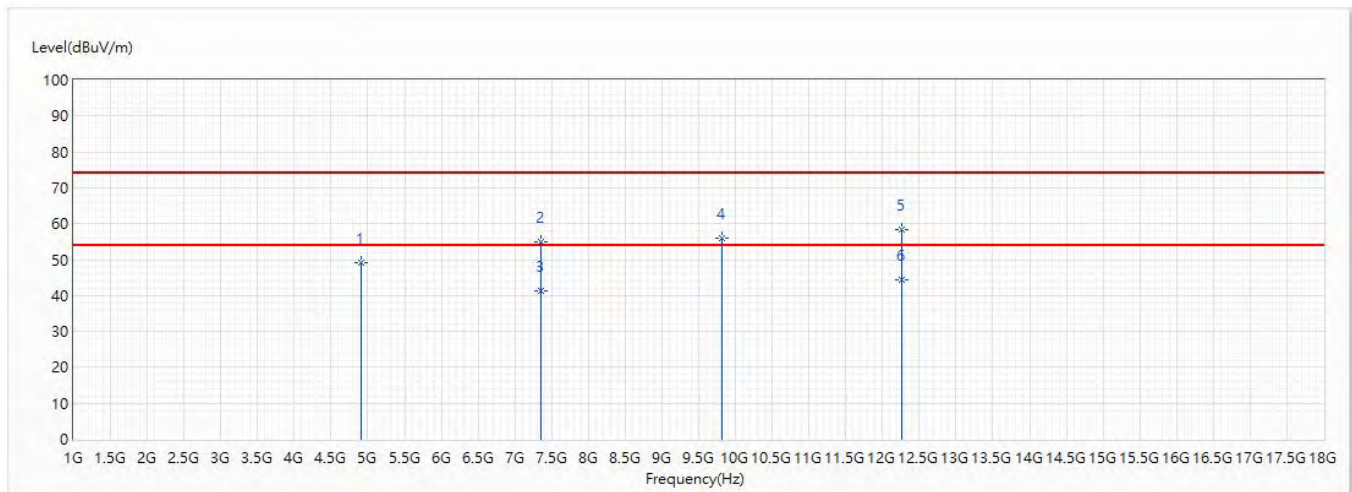


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4874	47.74	74.00	-26.26	59.05	-11.31	PK
2	7311	54.23	74.00	-19.77	57.12	-2.89	PK
3	7311	39.70	54.00	-14.30	42.59	-2.89	AV
4	9748	55.82	74.00	-18.18	54.89	0.93	PK
5	12185	58.95	74.00	-15.05	53.85	5.10	PK
* 6	12185	44.48	54.00	-9.52	39.38	5.10	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch9_2.452G	Humidity (%RH)	55.0

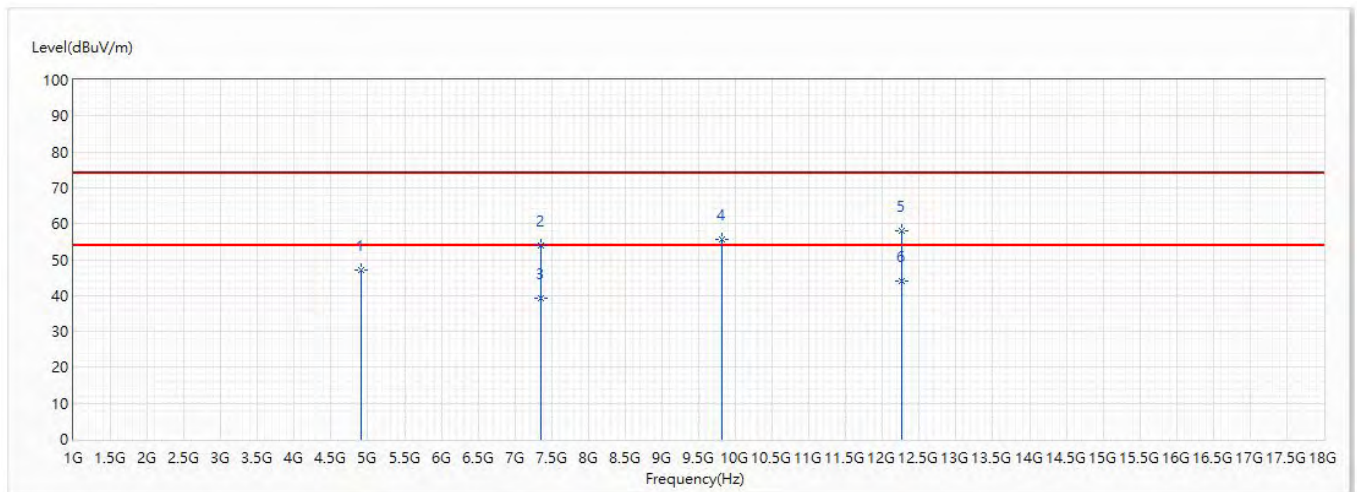


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4904	49.29	74.00	-24.71	60.50	-11.21	PK
2	7356	55.00	74.00	-19.00	57.65	-2.65	PK
3	7356	41.33	54.00	-12.67	43.98	-2.65	AV
4	9808	56.12	74.00	-17.88	55.10	1.02	PK
5	12260	58.34	74.00	-15.66	53.53	4.81	PK
* 6	12260	44.40	54.00	-9.60	39.59	4.81	AV

Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch9_2.452G	Humidity (%RH)	55.0



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4904	47.20	74.00	-26.80	58.41	-11.21	PK
2	7356	53.85	74.00	-20.15	56.50	-2.65	PK
3	7356	39.23	54.00	-14.77	41.88	-2.65	AV
4	9808	55.80	74.00	-18.20	54.78	1.02	PK
5	12260	57.94	74.00	-16.06	53.13	4.81	PK
* 6	12260	43.96	54.00	-10.04	39.15	4.81	AV

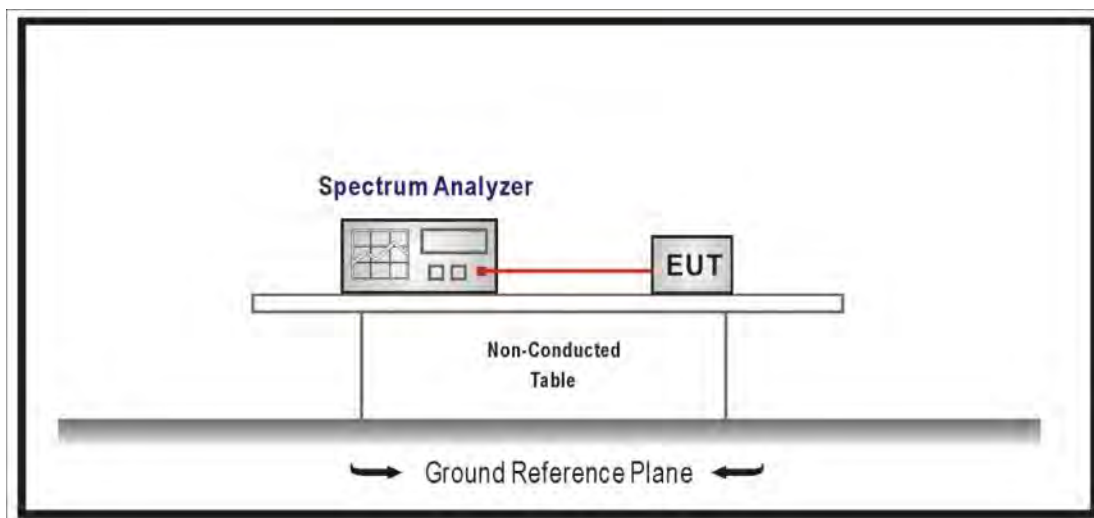
Note:

1. All reading above 1GHz is performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst value.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission above 13GHz were not included is because their levels are lower than 20dB form limit.

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 an RF conducted or 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 setup according to ANSI C63.10: 2013 and tested according to DTS test procedure section 11.2 of KDB 558074 D01 v05r02 for compliance to FCC 47CFR 15.247 requirements. Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

5.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2019

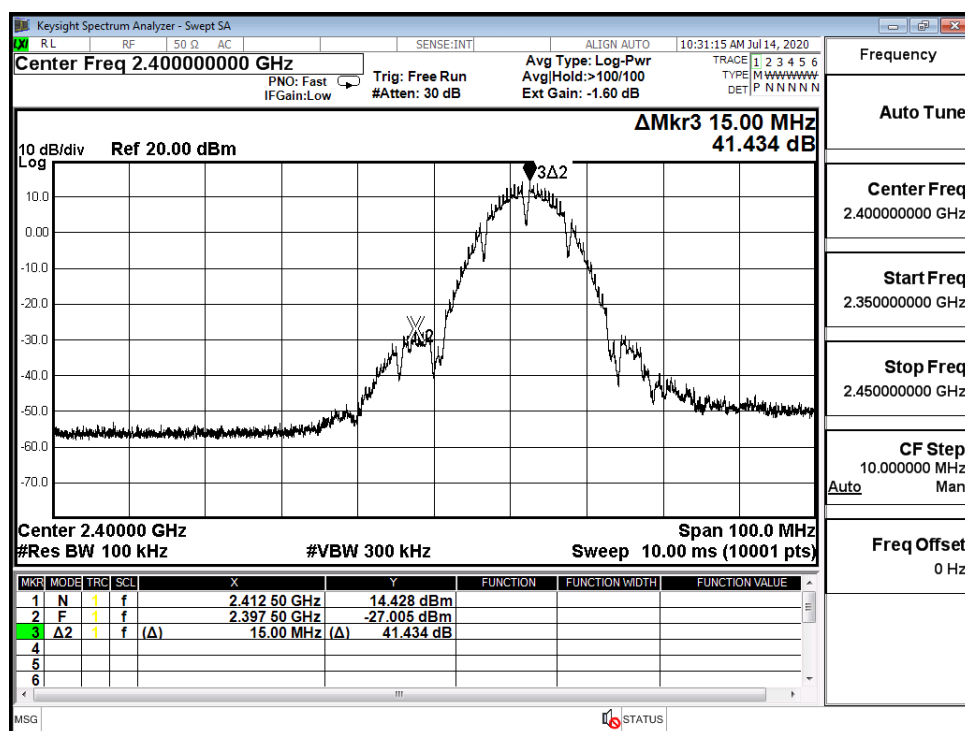
5.5. Test Result

Product	Vehicle Gateway		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

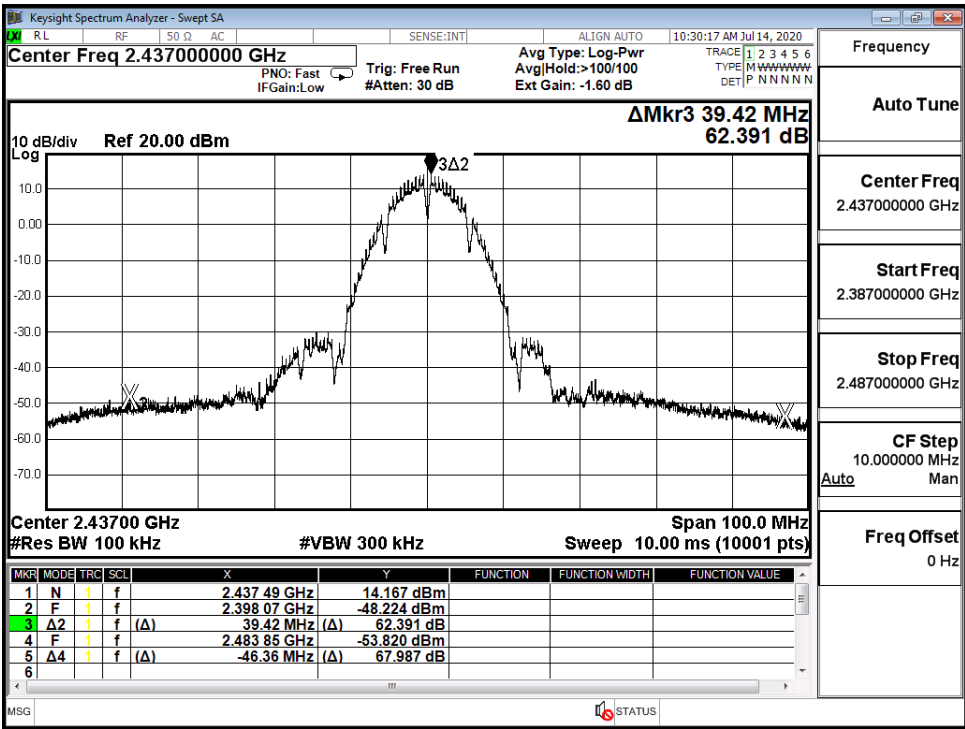
IEEE 802.11b (ANT 0)

Channel	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	41.434	≥ 20	Pass
6	2437	51.490	≥ 20	Pass
11	2462	53.616	≥ 20	Pass

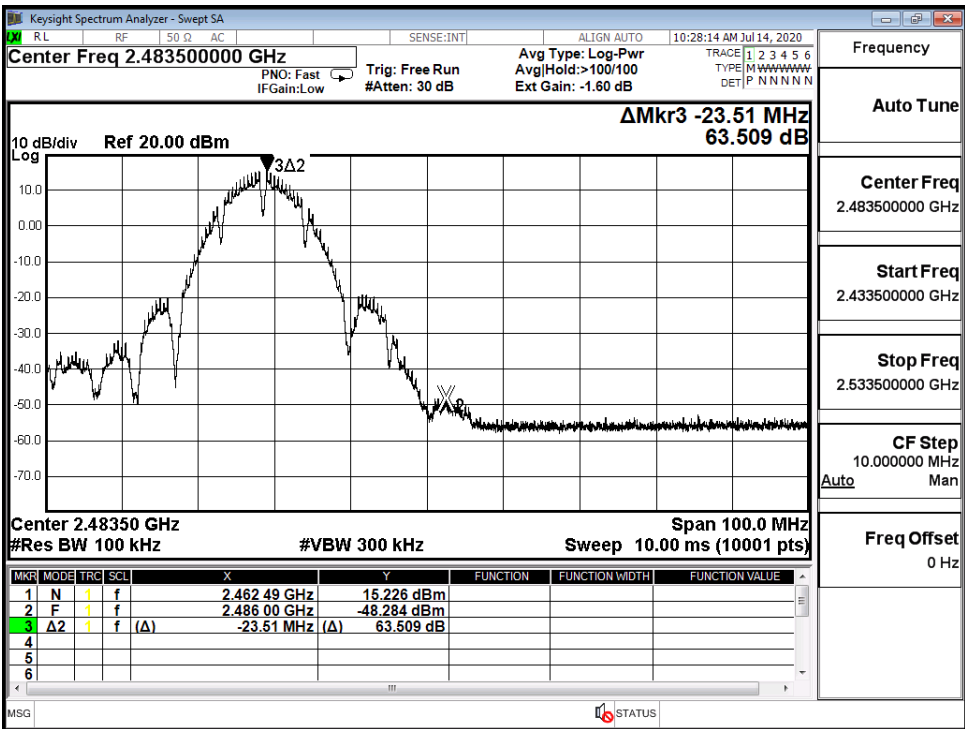
802.11b - 2412MHz



IEEE 802.11b - 2437MHz



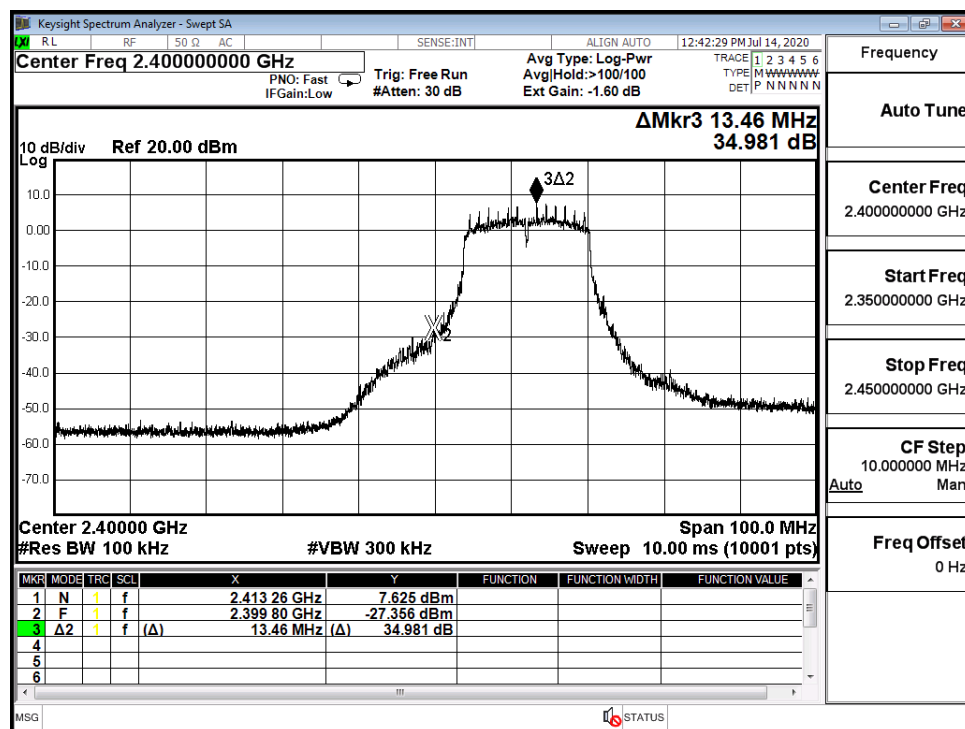
IEEE 802.11b - 2462MHz



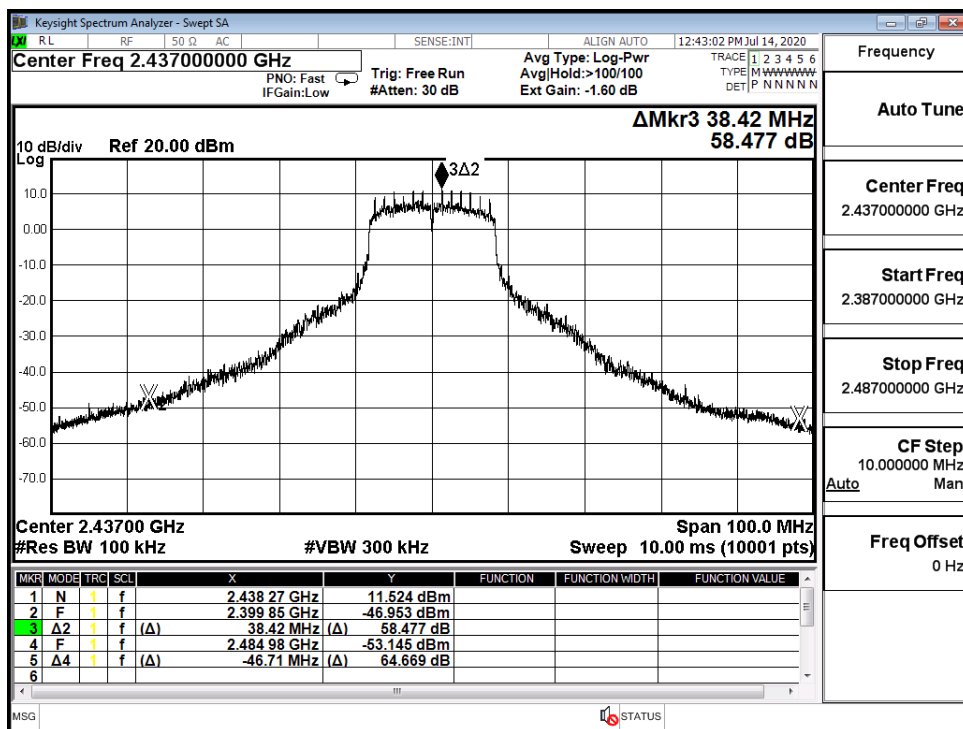
Product	Vehicle Gateway		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

IEEE 802.11g (ANT 0)				
Channel	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	34.981	≥ 20	Pass
6	2437	49.721	≥ 20	Pass
11	2462	43.768	≥ 20	Pass

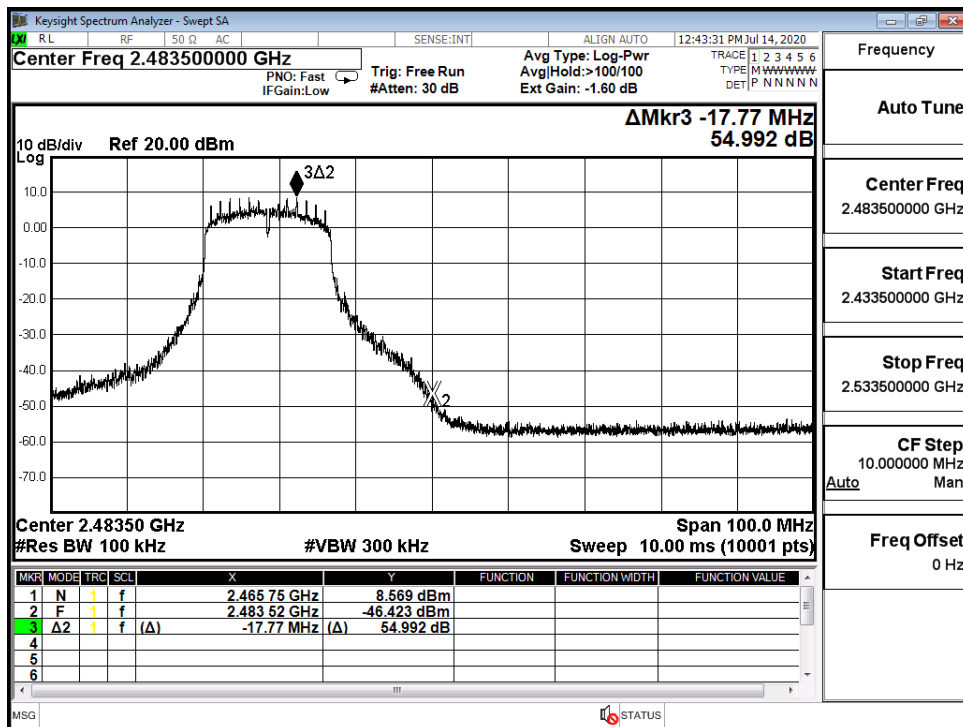
802.11g - 2412MHz



IEEE 802.11g - 2437MHz



IEEE 802.11g - 2462MHz

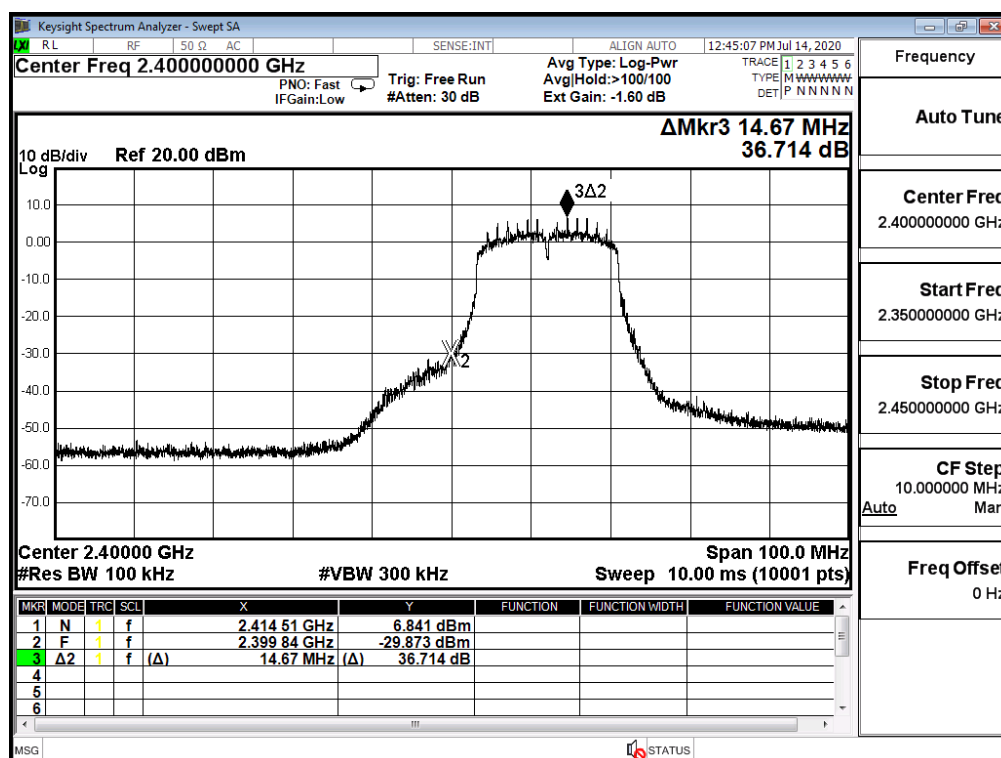


Product	Vehicle Gateway		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

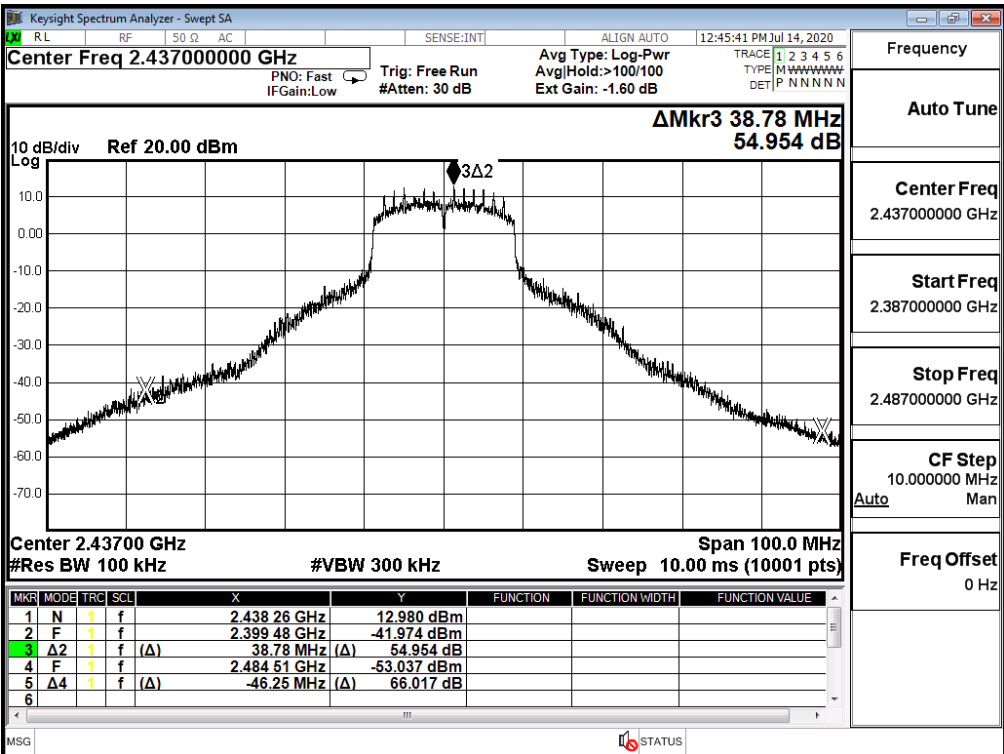
IEEE 802.11n 20M (ANT 0)

Channel	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
1	2412	36.714	≥ 20	Pass
6	2437	47.358	≥ 20	Pass
11	2462	46.673	≥ 20	Pass

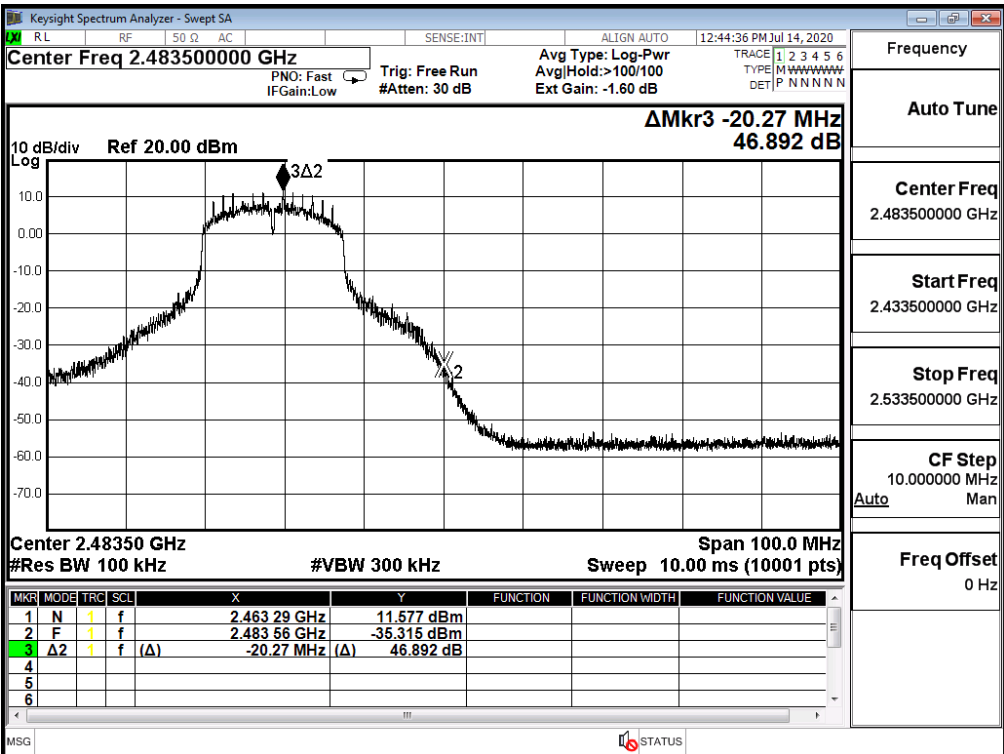
IEEE 802.11n (20MHz) - 2412MHz



IEEE 802.11n (20MHz) - 2437MHz



IEEE 802.11n (20MHz) - 2462MHz

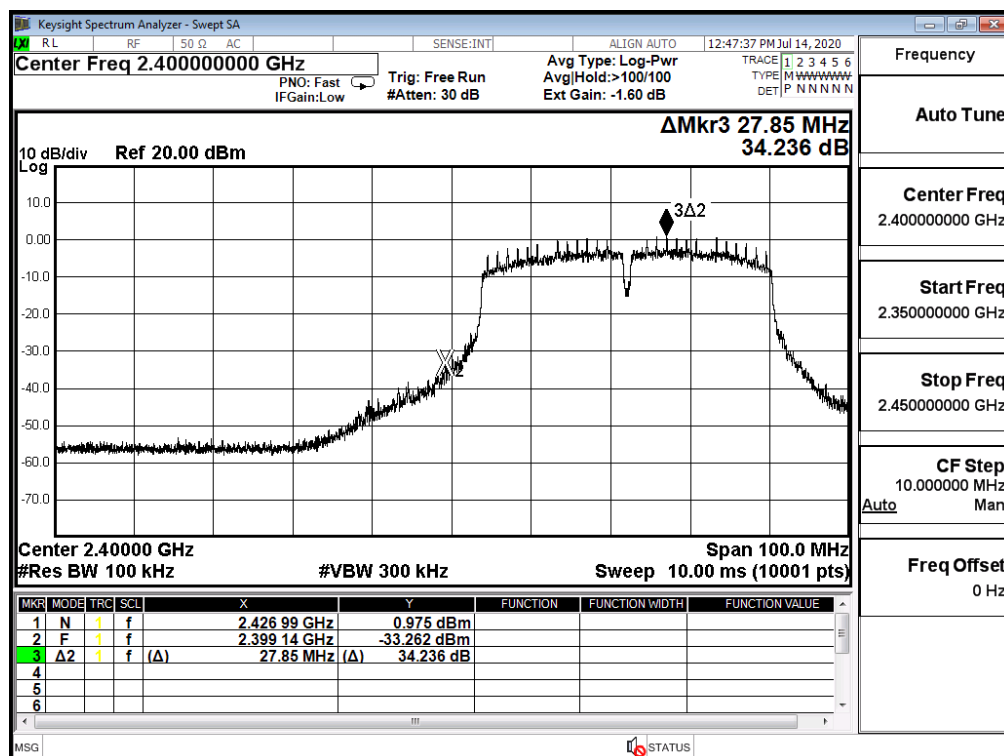


Product	Vehicle Gateway		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

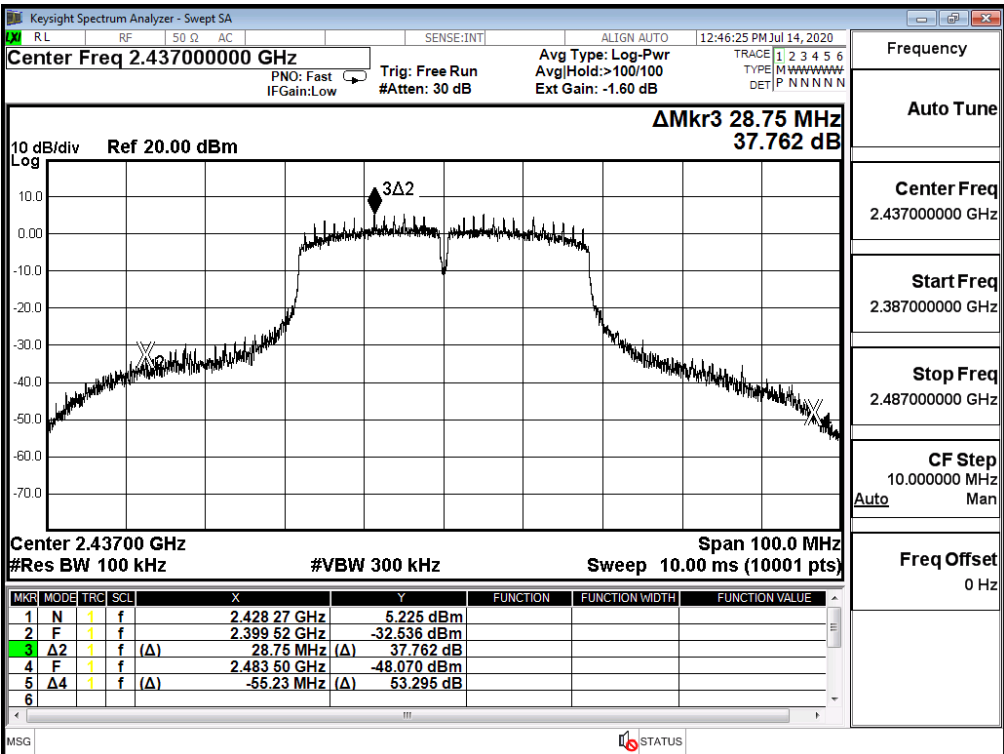
IEEE 802.11n 40M (ANT 0)

Channel	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
3	2422	34.236	≥ 20	Pass
6	2437	37.762	≥ 20	Pass
9	2452	41.030	≥ 20	Pass

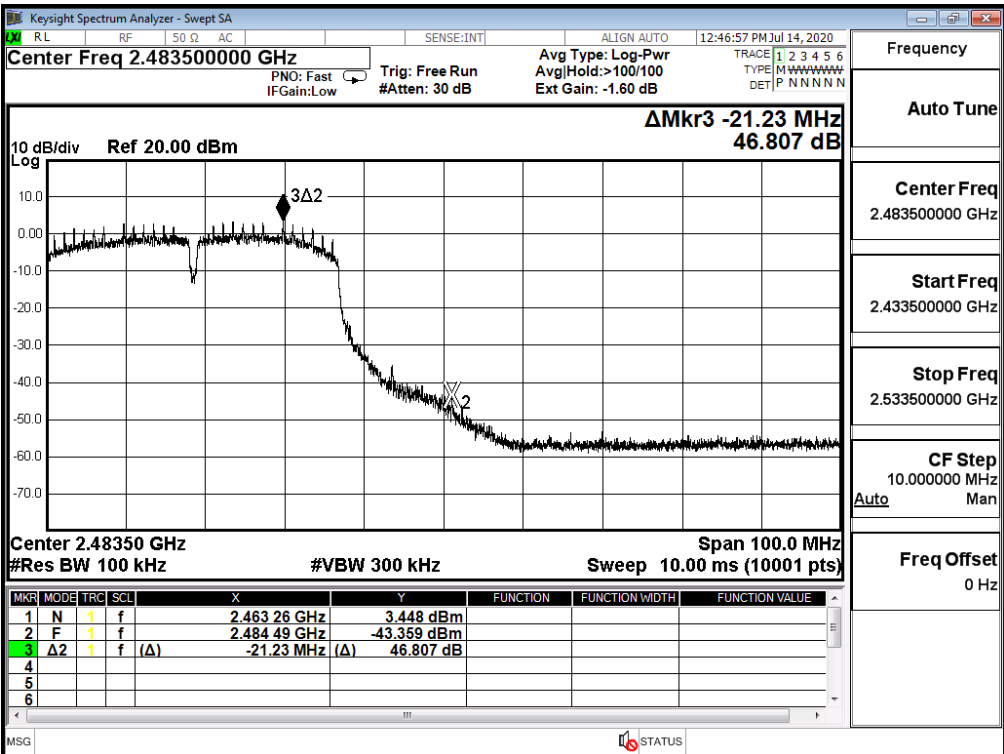
IEEE 802.11n (40MHz) - 2422MHz



IEEE 802.11n (40MHz) - 2437MHz



IEEE 802.11n (40MHz) - 2452MHz

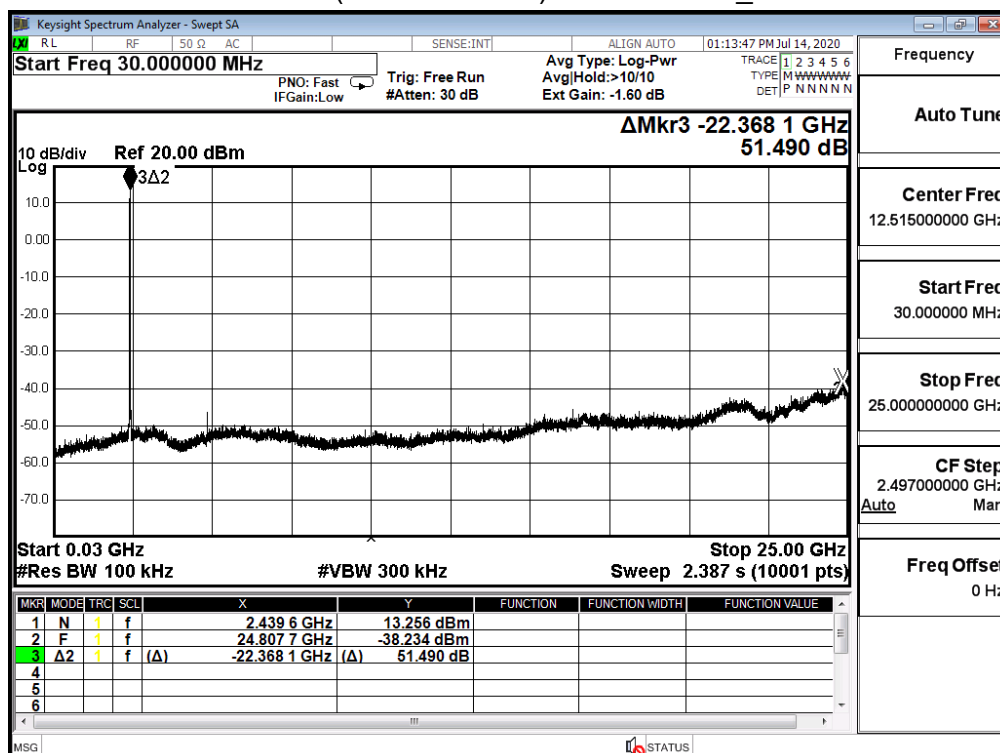


Product	Vehicle Gateway		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

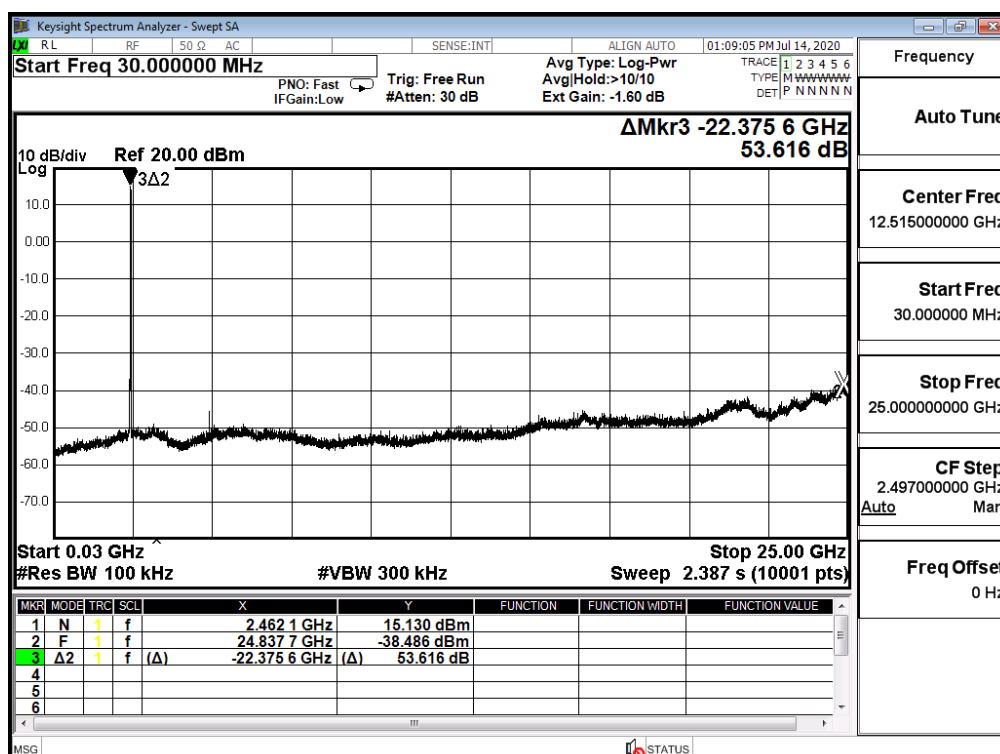
2412MHz (30MHz-25GHz)-IEEE 802.11b_Ant 0



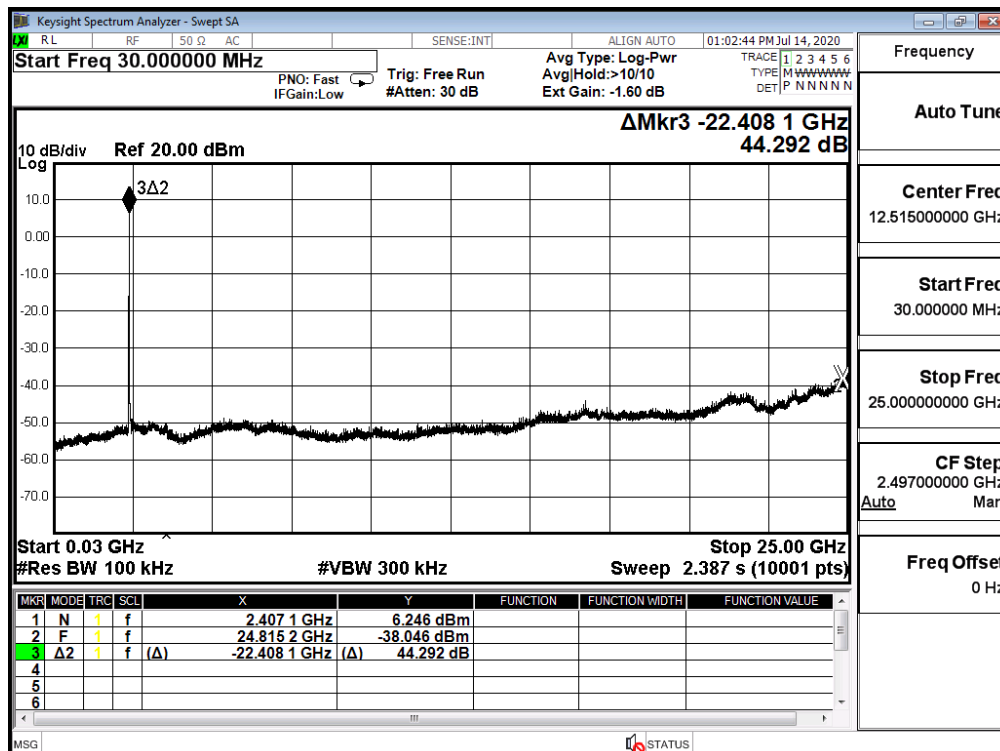
2437MHz (30MHz-25GHz)-IEEE 802.11b_Ant 0



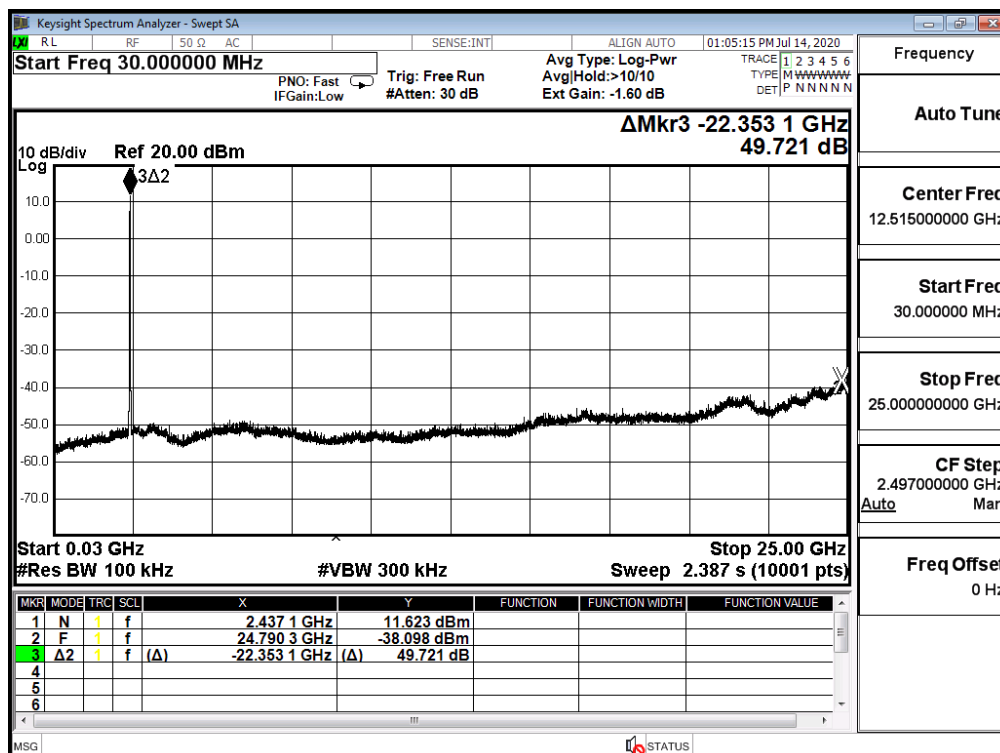
2462MHz (30MHz-25GHz)-IEEE 802.11b_Ant 0



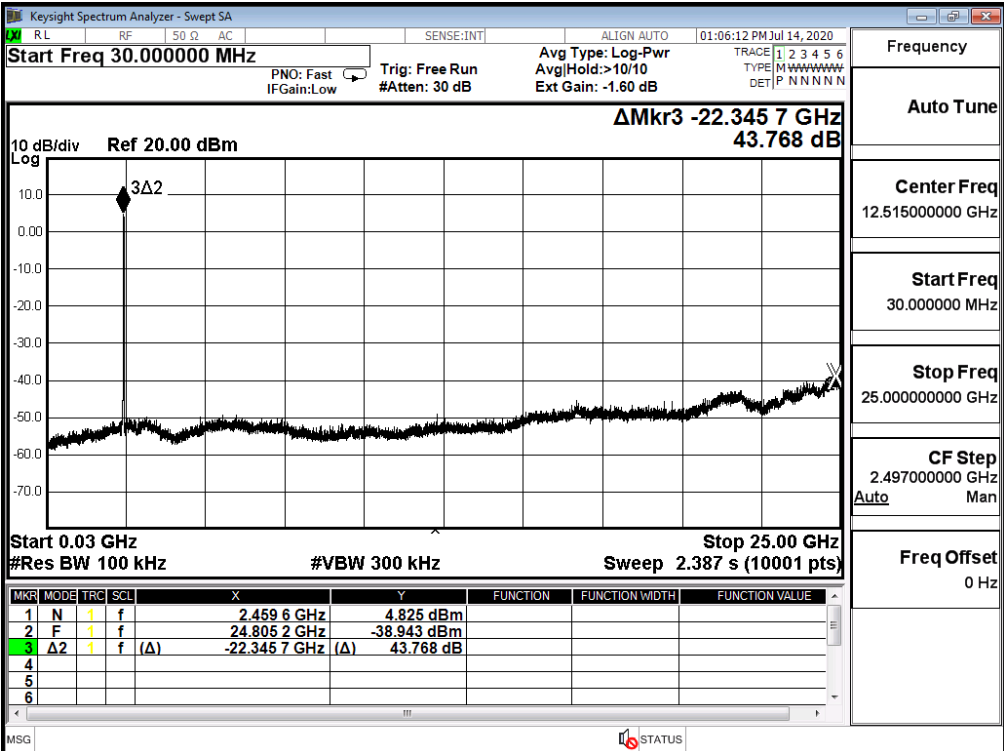
2412MHz (30MHz-25GHz)-IEEE 802.11g_Ant 0



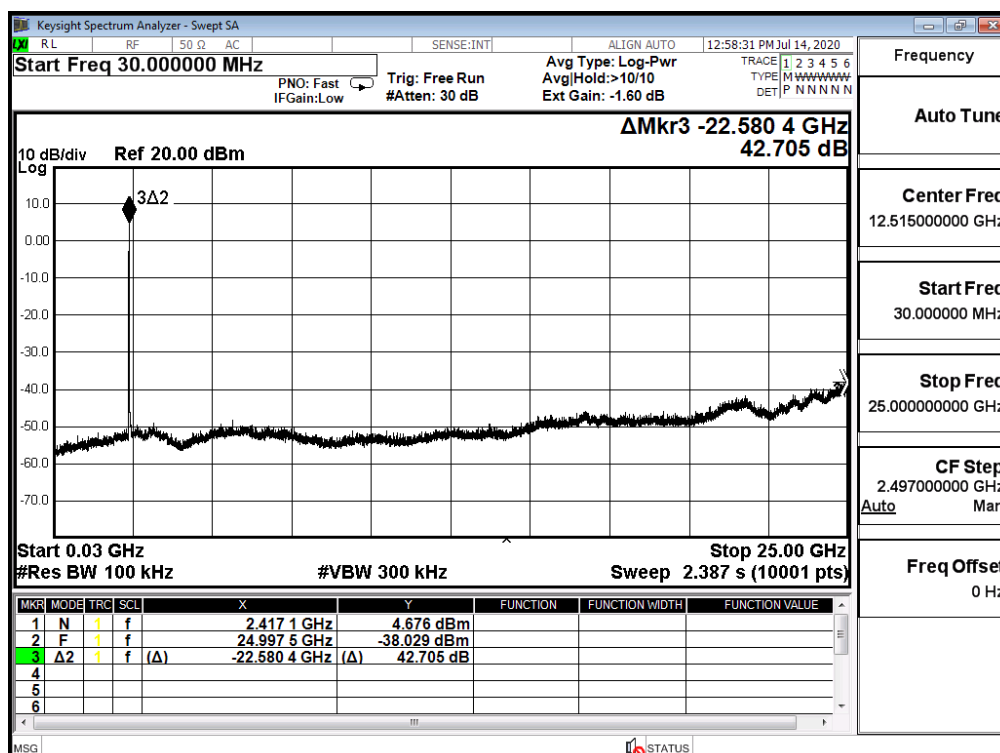
2437MHz (30MHz-25GHz)-IEEE 802.11g_Ant 0



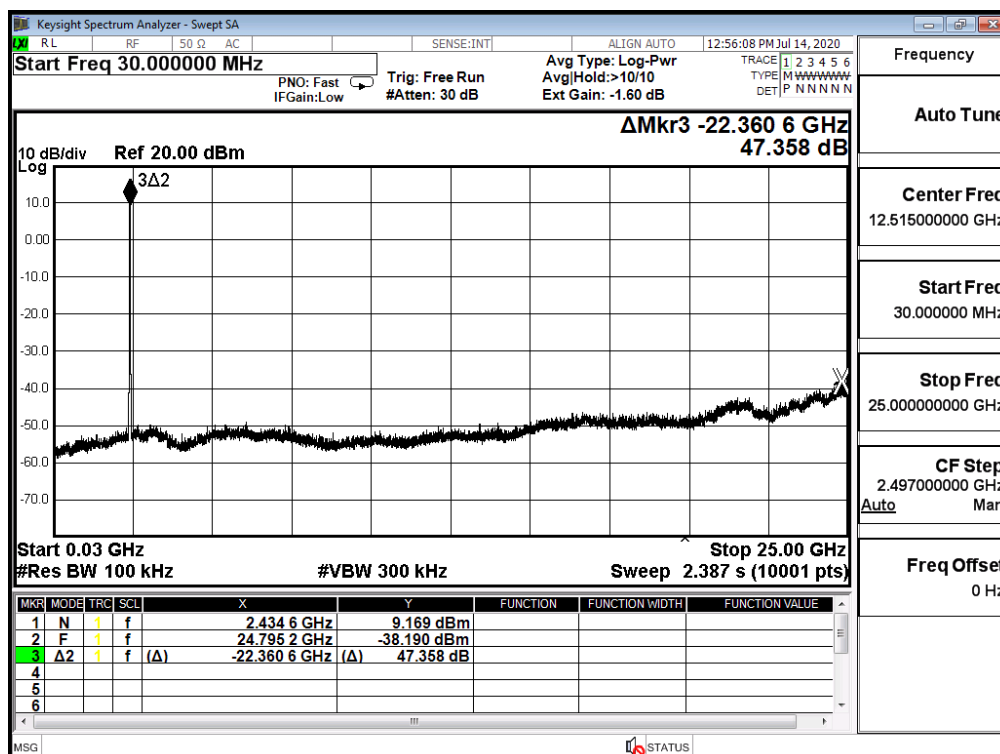
2462MHz (30MHz-25GHz)-IEEE 802.11g_Ant 0



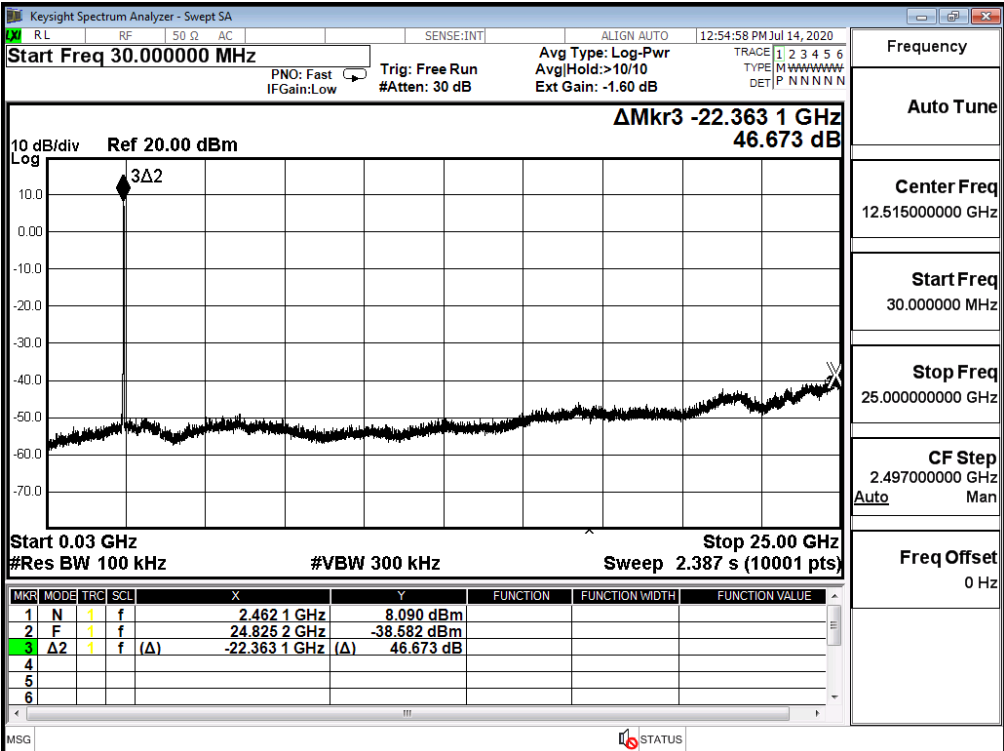
2412MHz (30MHz-25GHz)-IEEE 802.11n (20MHz) _Ant 0



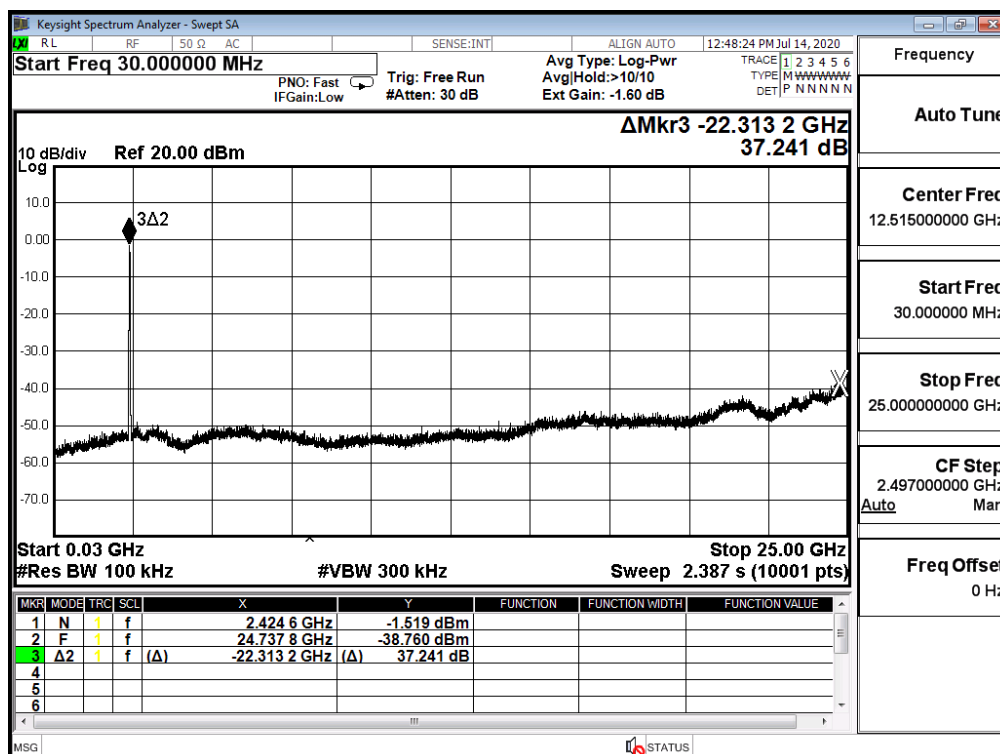
2437MHz (30MHz-25GHz)-IEEE 802.11n (20MHz) _Ant 0



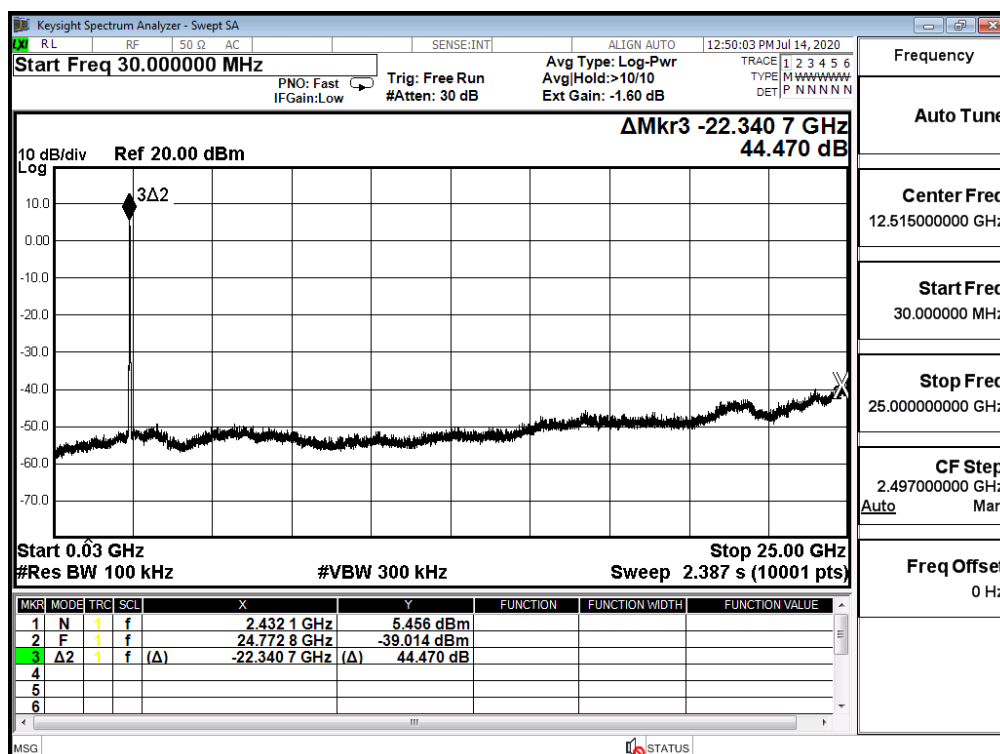
2462MHz (30MHz-25GHz)-IEEE 802.11n (20MHz) _Ant 0



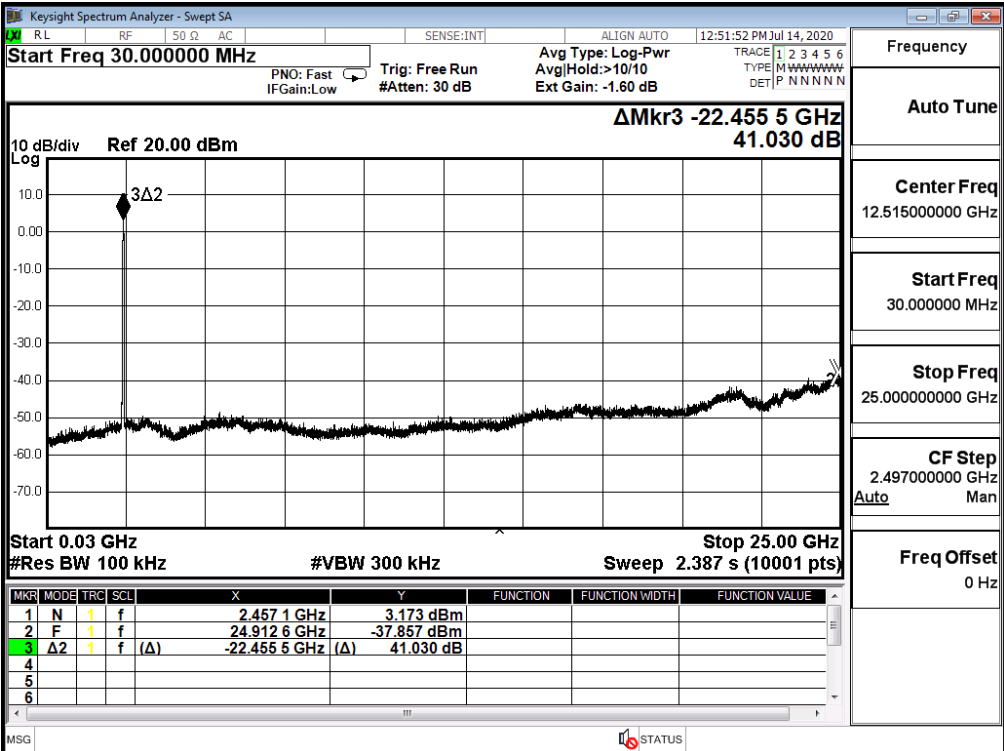
2422MHz (30MHz-25GHz)-IEEE 802.11n (40MHz) _Ant 0



2437MHz (30MHz-25GHz)-IEEE 802.11n (40MHz) _Ant 0

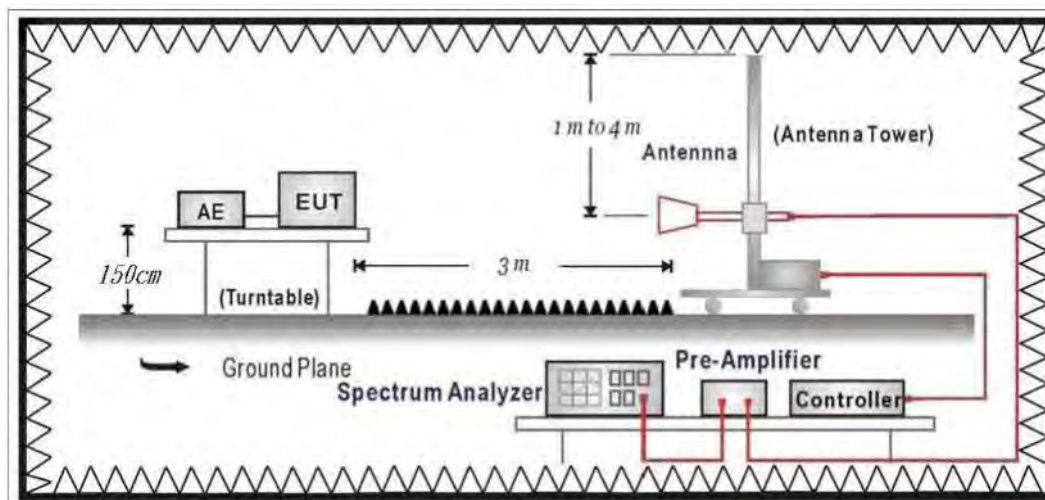


2452MHz (30MHz-25GHz)-IEEE 802.11n (40MHz) _Ant 0



6. Radiated Emission Band Edge

6.1. Test Setup



6.2. 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.

6.3. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB 558074 D01 v05r02 for compliance to FCC 47CFR 15.247 requirements. The EUT and its simulators are placed on a turn table which is 1.5 meter above ground. The turn table can rotate 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 can move up and down between 1 meter and 4 meters to find out the maximum emission level.

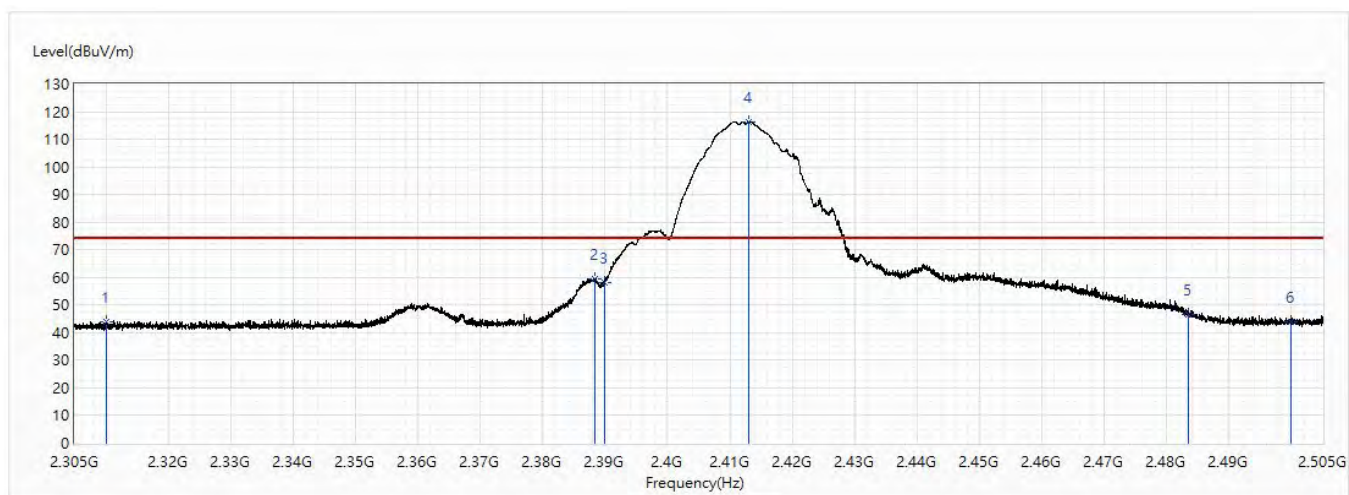
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

6.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2019

6.5. Test Result

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	25.0
Test Condition	SISO_802.11b_Ch1_2.412G	Humidity (%RH)	54.0

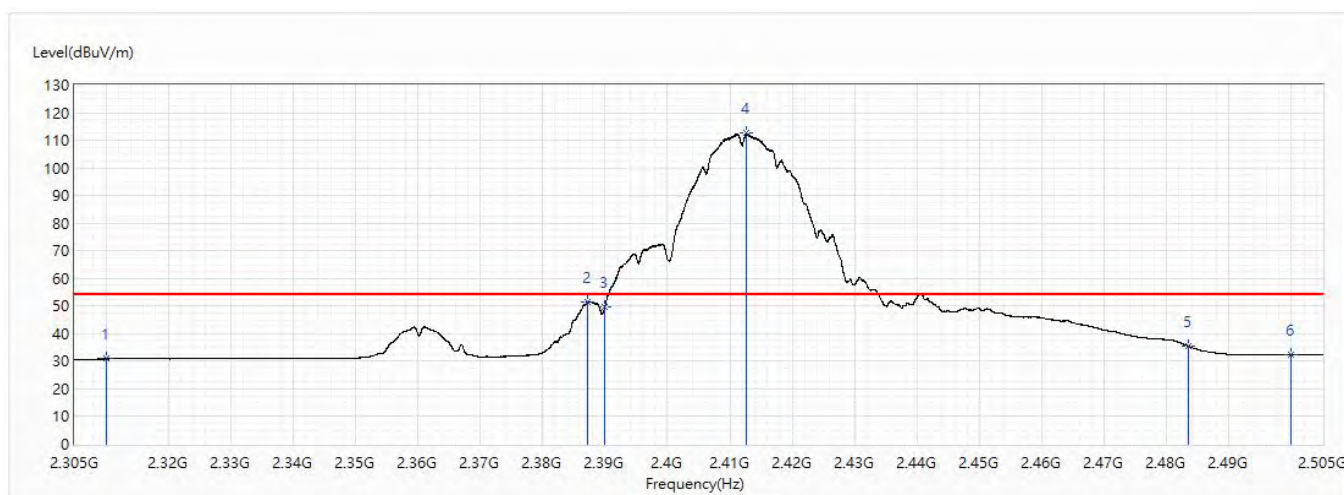


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	44.09	74.00	-29.91	31.11	12.98	PK
2	2388.275	59.51	74.00	-14.49	45.99	13.52	PK
3	2390	58.19	74.00	-15.81	44.67	13.52	PK
! 4	2413.1	116.42	74.00	42.42	102.73	13.69	PK
5	2483.5	46.54	74.00	-27.46	32.33	14.21	PK
6	2500	43.93	74.00	-30.07	29.60	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	25.0
Test Condition	SISO_802.11b_Ch1_2.412G	Humidity (%RH)	54.0

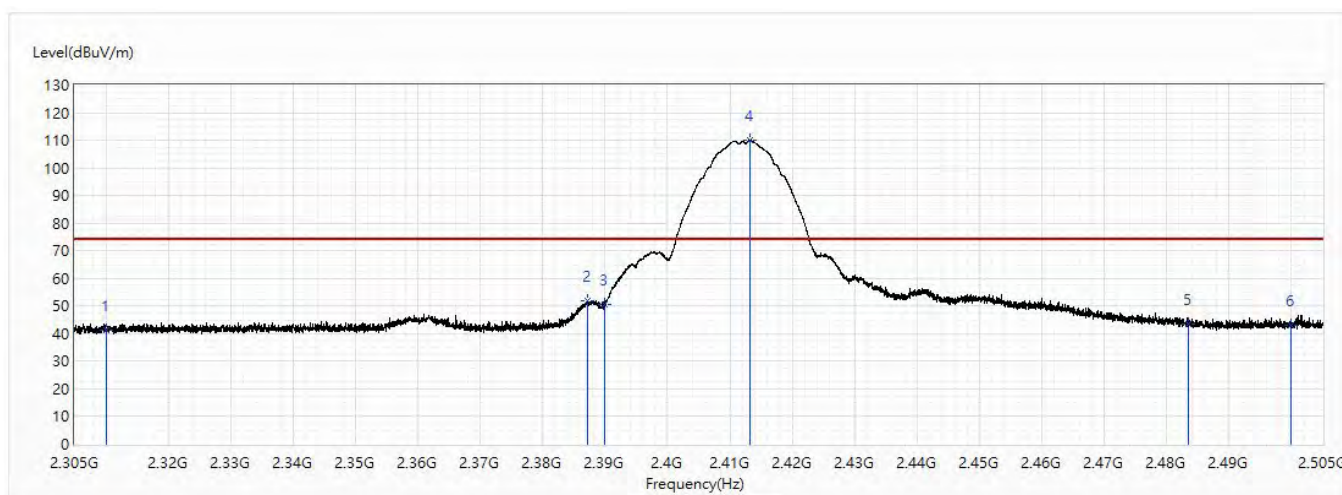


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	30.84	54.00	-23.16	17.86	12.98	AV
2	2387.1	51.38	54.00	-2.62	37.87	13.51	AV
3	2390	49.75	54.00	-4.25	36.23	13.52	AV
! 4	2412.675	112.48	54.00	58.48	98.79	13.69	AV
5	2483.5	35.42	54.00	-18.58	21.21	14.21	AV
6	2500	32.36	54.00	-21.64	18.03	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	25.0
Test Condition	SISO_802.11b_Ch1_2.412G	Humidity (%RH)	54.0

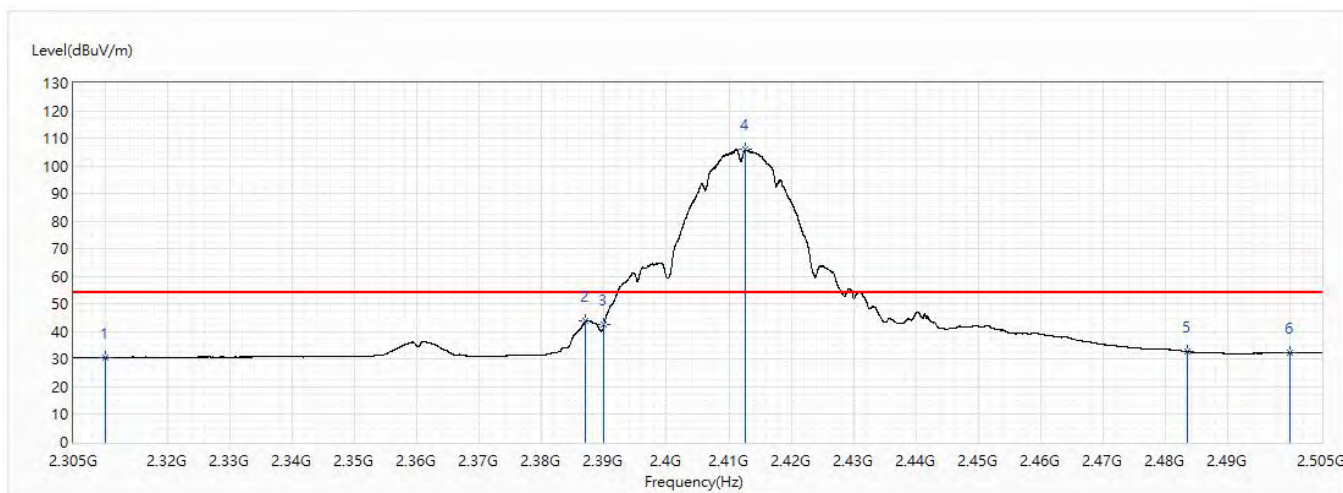


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	41.20	74.00	-32.80	28.22	12.98	PK
2	2387.1	51.78	74.00	-22.22	38.27	13.51	PK
3	2390	50.40	74.00	-23.60	36.88	13.52	PK
! 4	2413.2	109.93	74.00	35.93	96.23	13.70	PK
5	2483.5	43.32	74.00	-30.68	29.11	14.21	PK
6	2500	42.95	74.00	-31.05	28.62	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	25.0
Test Condition	SISO_802.11b_Ch1_2.412G	Humidity (%RH)	54.0

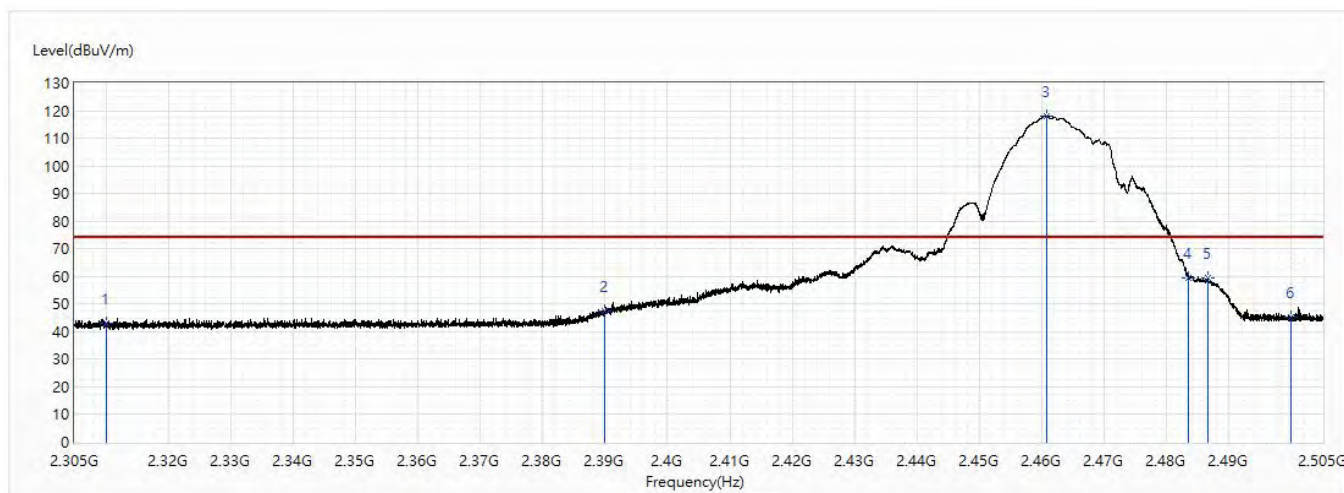


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	30.66	54.00	-23.34	17.68	12.98	AV
2	2386.975	43.72	54.00	-10.28	30.21	13.51	AV
3	2390	42.55	54.00	-11.45	29.03	13.52	AV
! 4	2412.675	105.97	54.00	51.97	92.28	13.69	AV
5	2483.5	32.76	54.00	-21.24	18.55	14.21	AV
6	2500	32.27	54.00	-21.73	17.94	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	25.0
Test Condition	SISO_802.11b_Ch11_2.462G	Humidity (%RH)	54.0

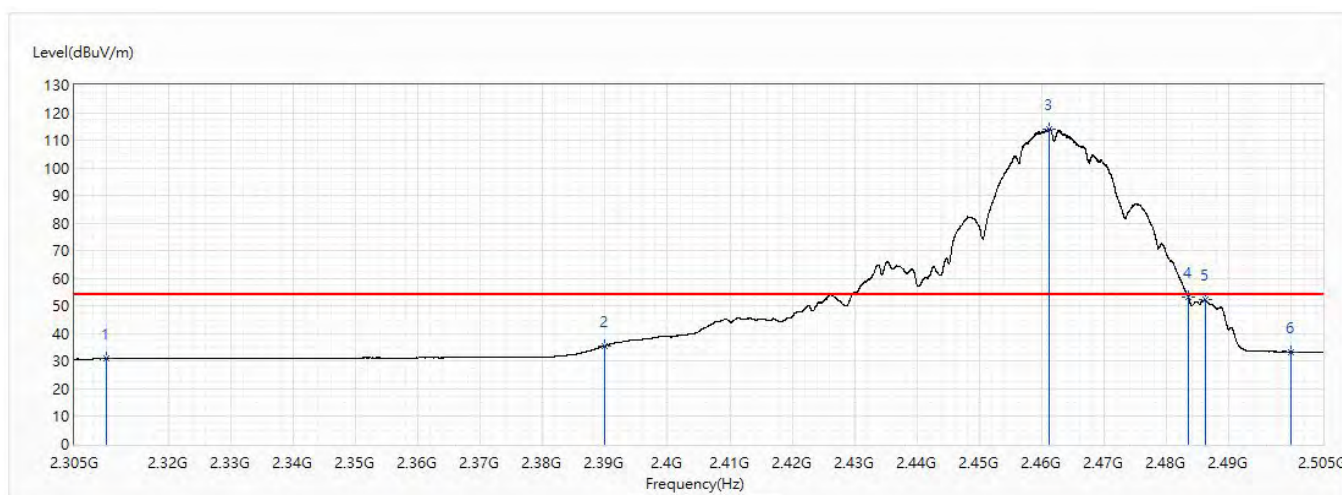


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	42.88	74.00	-31.12	29.90	12.98	PK
2	2390	47.29	74.00	-26.71	33.77	13.52	PK
! 3	2460.725	118.10	74.00	44.10	104.05	14.05	PK
4	2483.5	59.66	74.00	-14.34	45.45	14.21	PK
5	2486.625	59.51	74.00	-14.49	45.28	14.23	PK
6	2500	45.09	74.00	-28.91	30.76	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	25.0
Test Condition	SISO_802.11b_Ch11_2.462G	Humidity (%RH)	54.0

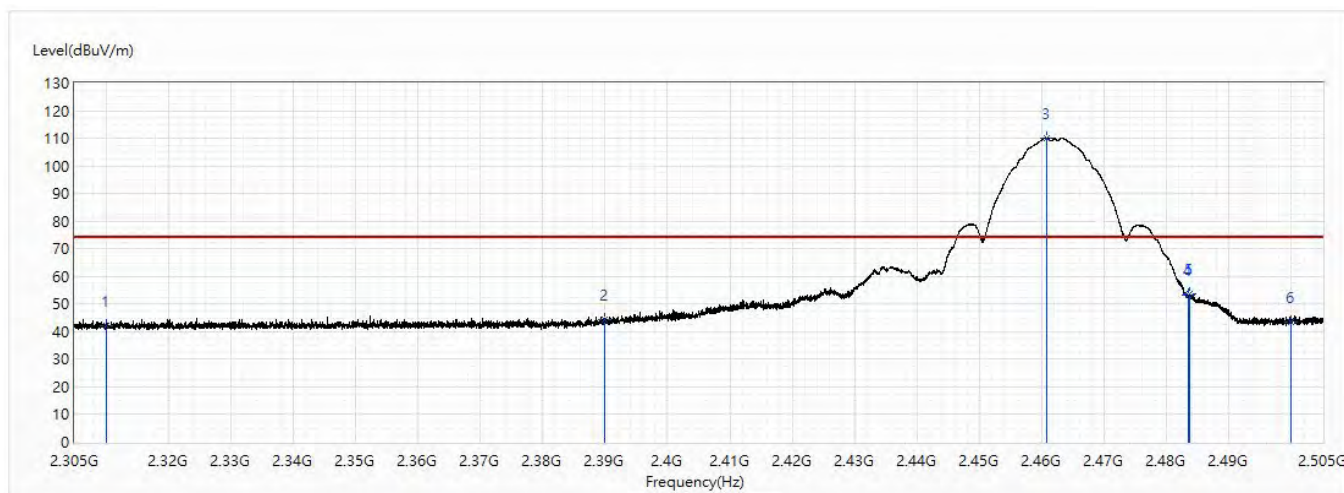


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	30.89	54.00	-23.11	17.91	12.98	AV
2	2390	35.61	54.00	-18.39	22.09	13.52	AV
! 3	2461.2	114.09	54.00	60.09	100.04	14.05	AV
4	2483.5	53.03	54.00	-0.97	38.82	14.21	AV
5	2486.15	52.34	54.00	-1.66	38.11	14.23	AV
6	2500	33.48	54.00	-20.52	19.15	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	25.0
Test Condition	SISO_802.11b_Ch11_2.462G	Humidity (%RH)	54.0

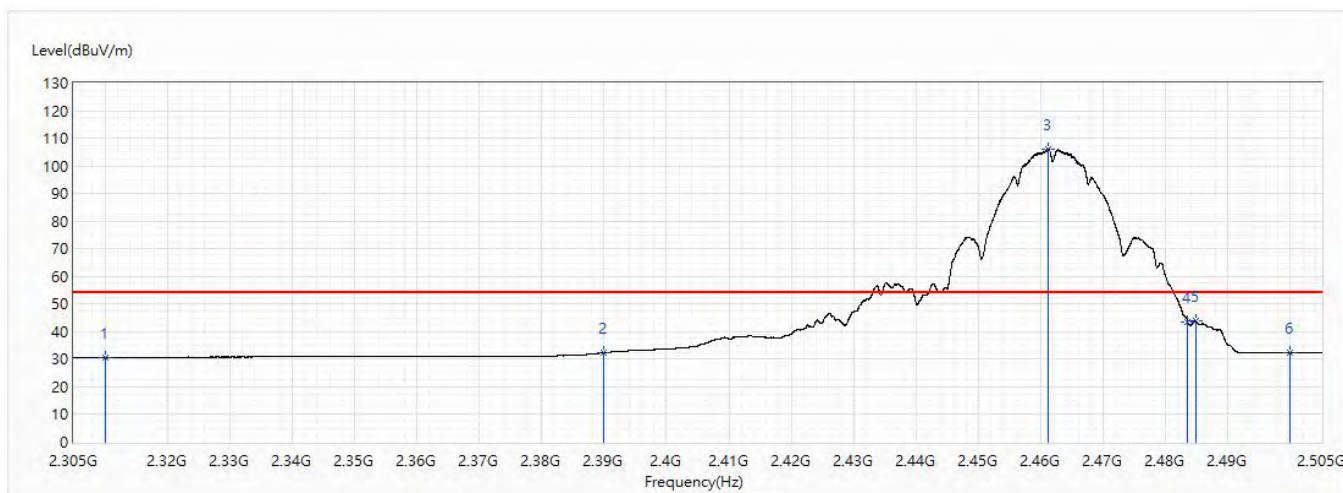


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	41.94	74.00	-32.06	28.96	12.98	PK
2	2390	44.24	74.00	-29.76	30.72	13.52	PK
! 3	2460.75	110.10	74.00	36.10	96.05	14.05	PK
4	2483.5	53.24	74.00	-20.76	39.03	14.21	PK
5	2483.75	53.64	74.00	-20.36	39.43	14.21	PK
6	2500	43.54	74.00	-30.46	29.21	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	25.0
Test Condition	SISO_802.11b_Ch11_2.462G	Humidity (%RH)	54.0

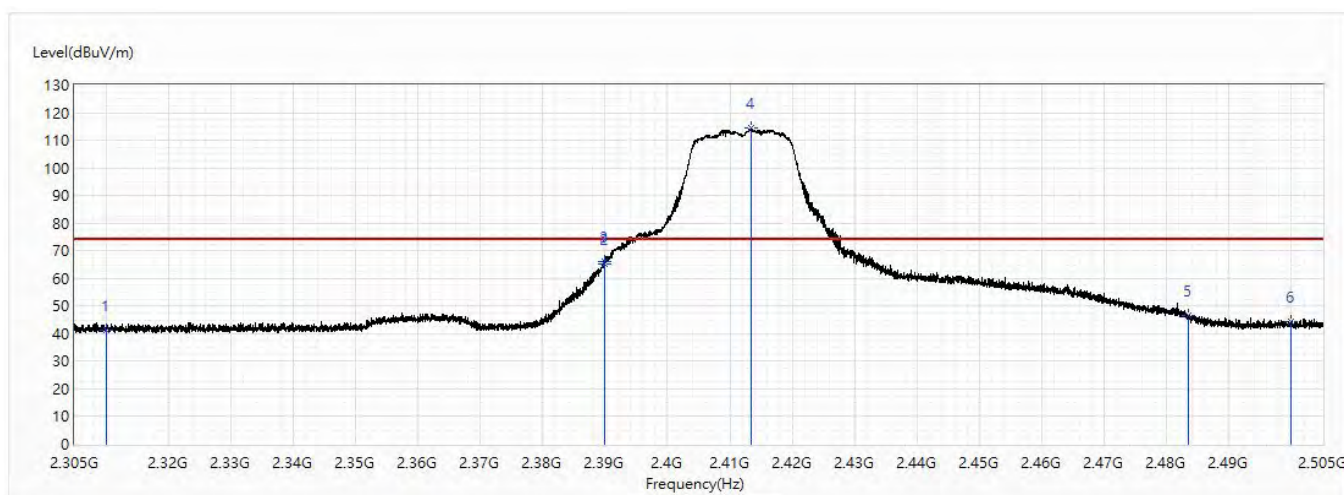


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	30.70	54.00	-23.30	17.72	12.98	AV
2	2390	32.35	54.00	-21.65	18.83	13.52	AV
! 3	2461.15	106.20	54.00	52.20	92.15	14.05	AV
4	2483.5	43.49	54.00	-10.51	29.28	14.21	AV
5	2484.75	43.85	54.00	-10.15	29.63	14.22	AV
6	2500	32.45	54.00	-21.55	18.12	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	25.0
Test Condition	SISO_802.11g_Ch1_2.412G	Humidity (%RH)	54.0

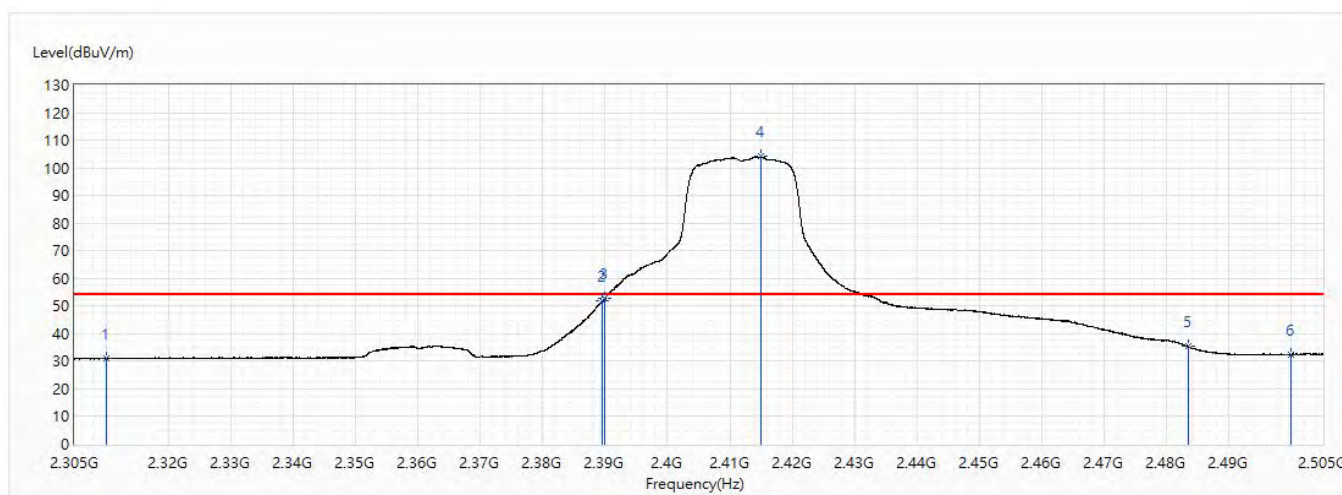


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	41.43	74.00	-32.57	28.45	12.98	PK
2	2389.85	65.43	74.00	-8.57	51.91	13.52	PK
3	2390	66.22	74.00	-7.78	52.70	13.52	PK
! 4	2413.4	114.29	74.00	40.29	100.59	13.70	PK
5	2483.5	46.65	74.00	-27.35	32.44	14.21	PK
6	2500	44.31	74.00	-29.69	29.98	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	25.0
Test Condition	SISO_802.11g_Ch1_2.412G	Humidity (%RH)	54.0

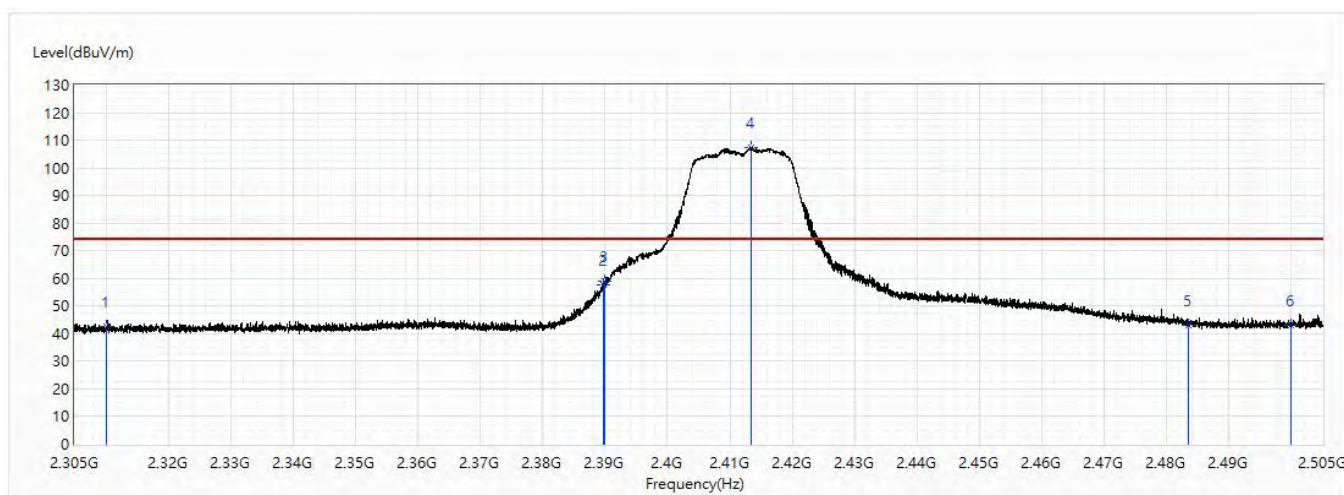


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	31.02	54.00	-22.98	18.04	12.98	AV
2	2389.625	51.88	54.00	-2.12	38.36	13.52	AV
3	2390	52.79	54.00	-1.21	39.27	13.52	AV
! 4	2415.025	104.07	54.00	50.07	90.36	13.71	AV
5	2483.5	35.31	54.00	-18.69	21.10	14.21	AV
6	2500	32.52	54.00	-21.48	18.19	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	25.0
Test Condition	SISO_802.11g_Ch1_2.412G	Humidity (%RH)	54.0

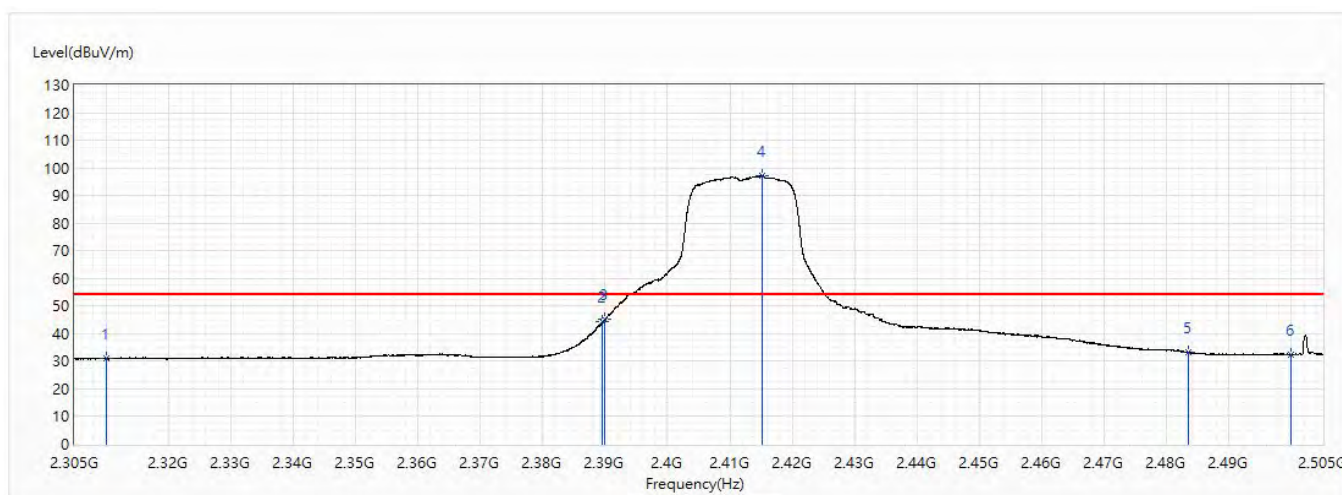


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	42.68	74.00	-31.32	29.70	12.98	PK
2	2389.675	57.59	74.00	-16.41	44.07	13.52	PK
3	2390	59.16	74.00	-14.84	45.64	13.52	PK
! 4	2413.45	107.37	74.00	33.37	93.67	13.70	PK
5	2483.5	42.85	74.00	-31.15	28.64	14.21	PK
6	2500	43.02	74.00	-30.98	28.69	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	25.0
Test Condition	SISO_802.11g_Ch1_2.412G	Humidity (%RH)	54.0

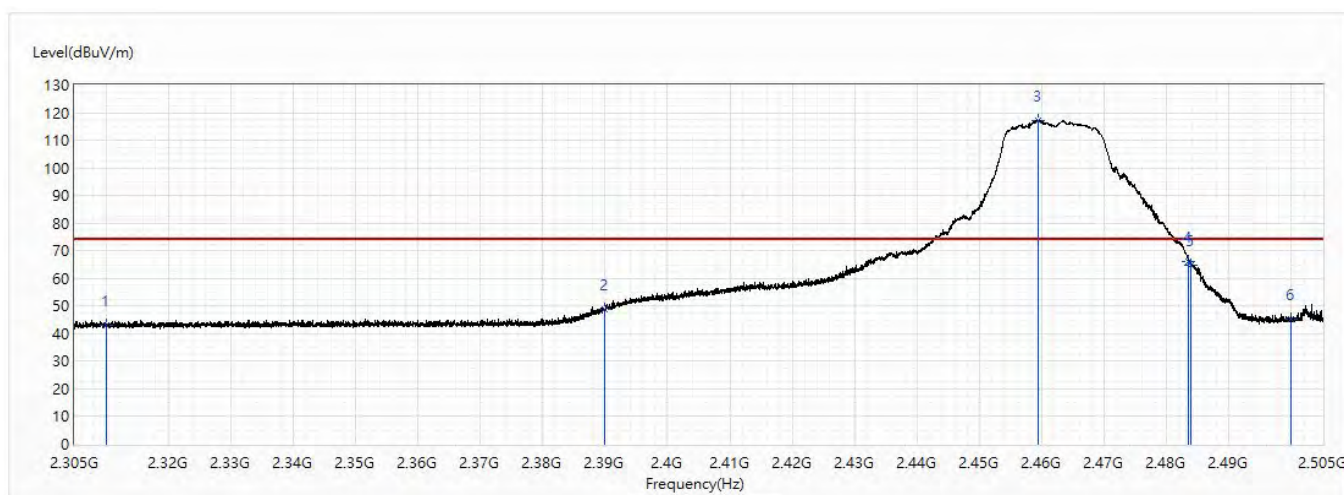


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	30.96	54.00	-23.04	17.98	12.98	AV
2	2389.625	44.17	54.00	-9.83	30.65	13.52	AV
3	2390	45.30	54.00	-8.70	31.78	13.52	AV
! 4	2415.1	97.22	54.00	43.22	83.51	13.71	AV
5	2483.5	33.27	54.00	-20.73	19.06	14.21	AV
6	2500	32.55	54.00	-21.45	18.22	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	25.0
Test Condition	SISO_802.11g_Ch11_2.462G	Humidity (%RH)	54.0

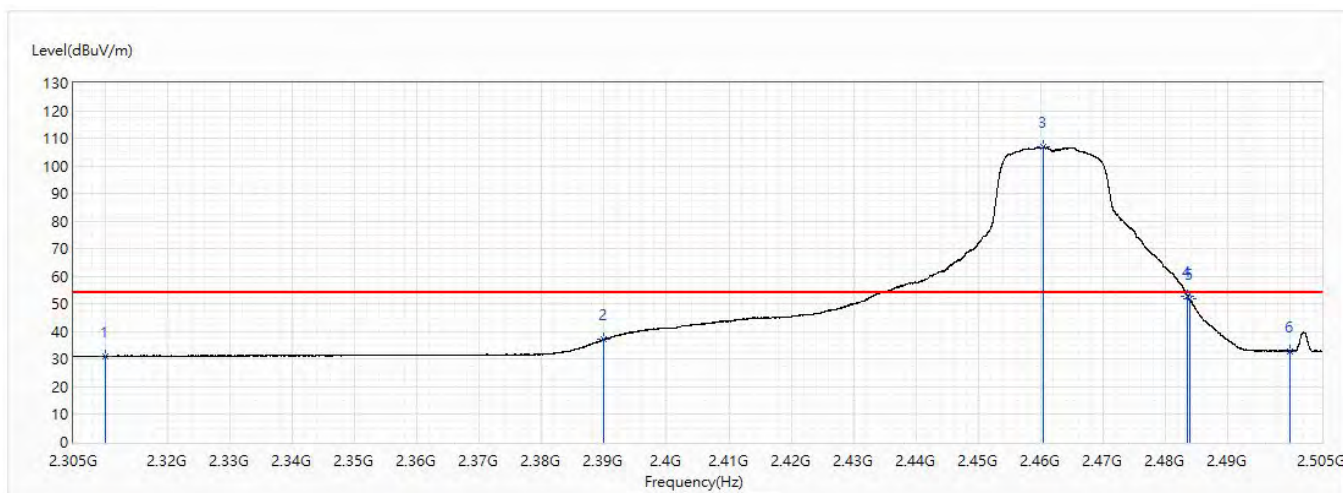


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	43.17	74.00	-30.83	30.19	12.98	PK
2	2390	48.69	74.00	-25.31	35.17	13.52	PK
! 3	2459.425	117.34	74.00	43.34	103.31	14.03	PK
4	2483.5	66.22	74.00	-7.78	52.01	14.21	PK
5	2483.85	64.83	74.00	-9.17	50.62	14.21	PK
6	2500	45.25	74.00	-28.75	30.92	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	25.0
Test Condition	SISO_802.11g_Ch11_2.462G	Humidity (%RH)	54.0

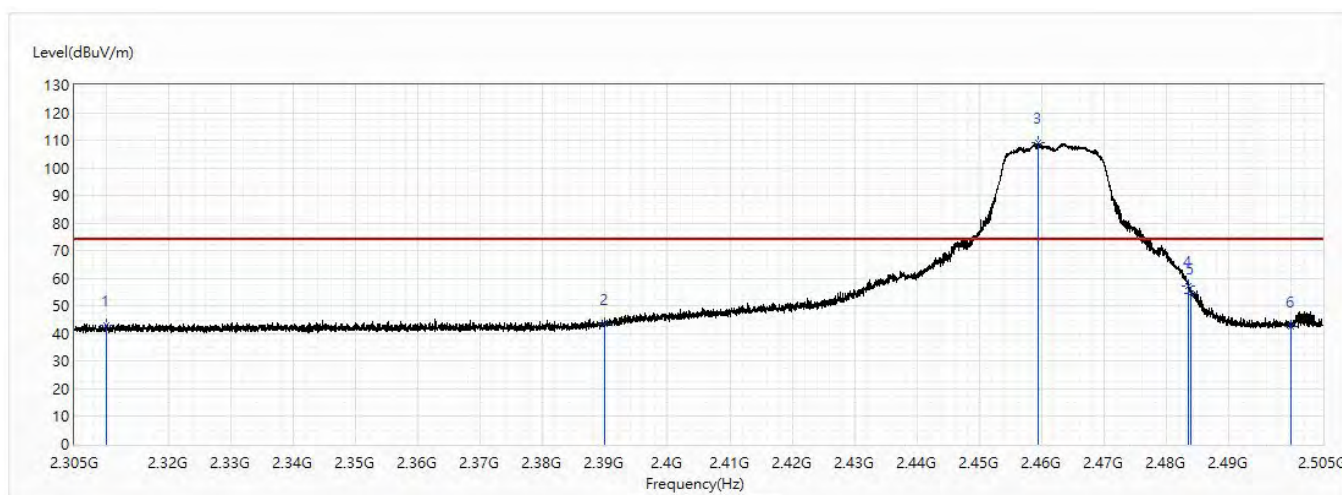


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	31.14	54.00	-22.86	18.16	12.98	AV
2	2390	37.31	54.00	-16.69	23.79	13.52	AV
! 3	2460.45	106.83	54.00	52.83	92.79	14.04	AV
4	2483.5	52.98	54.00	-1.02	38.77	14.21	AV
5	2483.825	51.76	54.00	-2.24	37.55	14.21	AV
6	2500	33.01	54.00	-20.99	18.68	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	25.0
Test Condition	SISO_802.11g_Ch11_2.462G	Humidity (%RH)	54.0

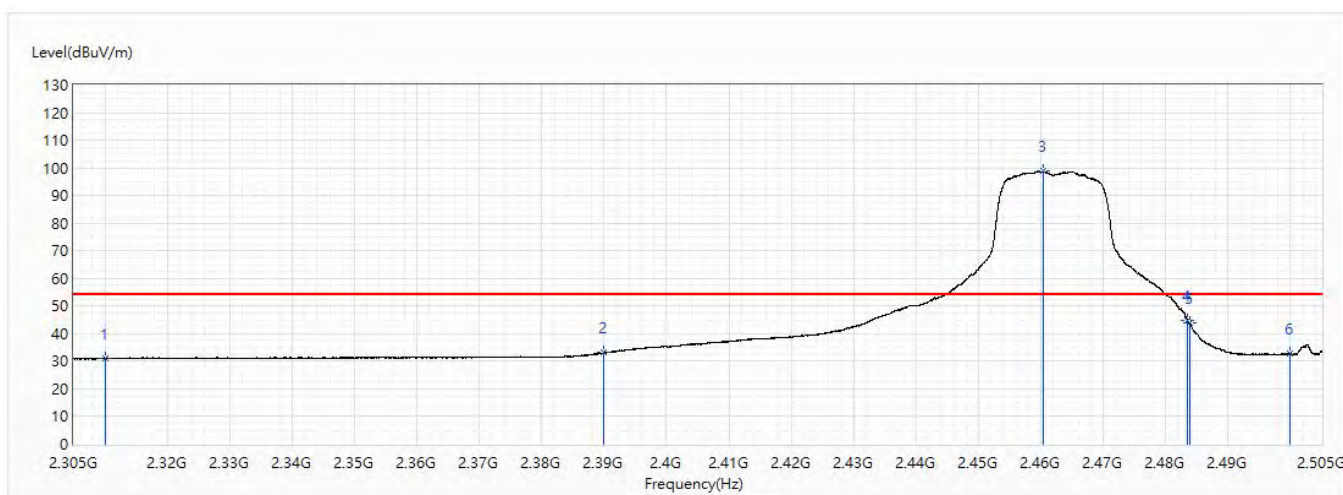


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	42.88	74.00	-31.12	29.90	12.98	PK
2	2390	43.35	74.00	-30.65	29.83	13.52	PK
! 3	2459.475	109.09	74.00	35.09	95.06	14.03	PK
4	2483.5	57.02	74.00	-16.98	42.81	14.21	PK
5	2483.9	54.78	74.00	-19.22	40.57	14.21	PK
6	2500	42.64	74.00	-31.36	28.31	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	25.0
Test Condition	SISO_802.11g_Ch11_2.462G	Humidity (%RH)	54.0

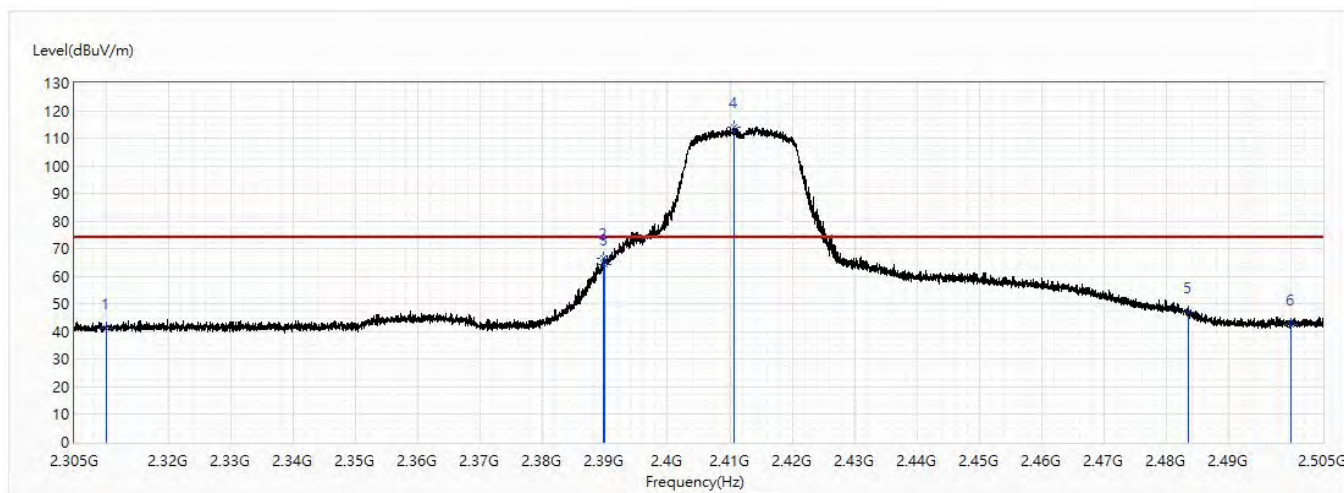


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	31.05	54.00	-22.95	18.07	12.98	AV
2	2390	33.12	54.00	-20.88	19.60	13.52	AV
! 3	2460.425	98.74	54.00	44.74	84.70	14.04	AV
4	2483.5	44.93	54.00	-9.07	30.72	14.21	AV
5	2483.825	43.85	54.00	-10.15	29.64	14.21	AV
6	2500	32.72	54.00	-21.28	18.39	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	25.0
Test Condition	SISO_802.11n_20M_Ch1_2.412G	Humidity (%RH)	54.0

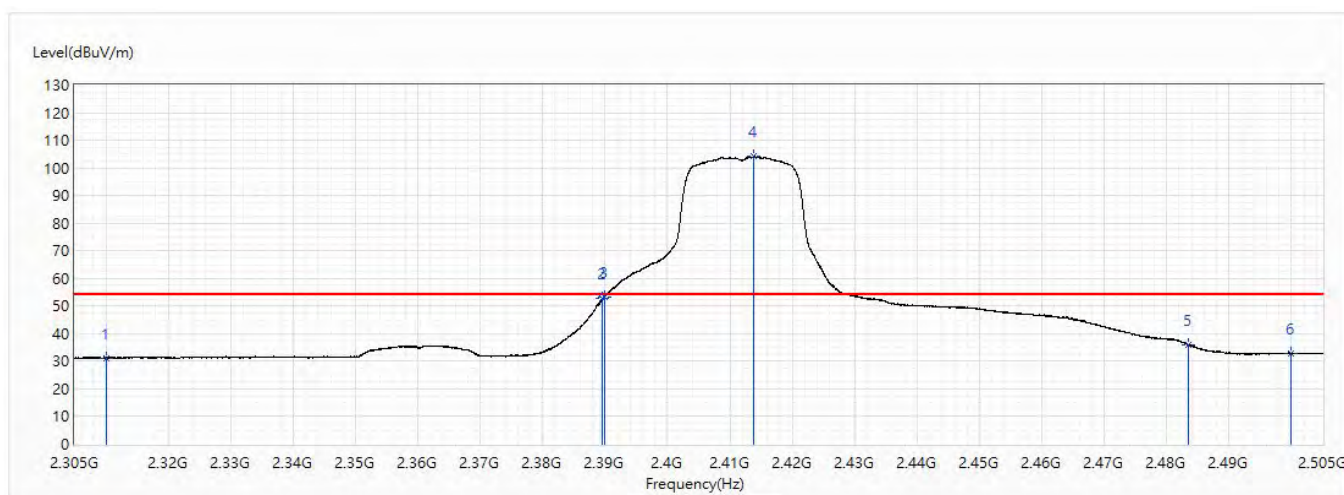


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	41.11	74.00	-32.89	28.13	12.98	PK
2	2389.75	66.46	74.00	-7.54	52.94	13.52	PK
3	2390	64.22	74.00	-9.78	50.70	13.52	PK
! 4	2410.6	114.08	74.00	40.08	100.40	13.68	PK
5	2483.5	47.21	74.00	-26.79	33.00	14.21	PK
6	2500	42.81	74.00	-31.19	28.48	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Horizontal	Temperature (°C)	25.0
Test Condition	SISO_802.11n_20M_Ch1_2.412G	Humidity (%RH)	54.0

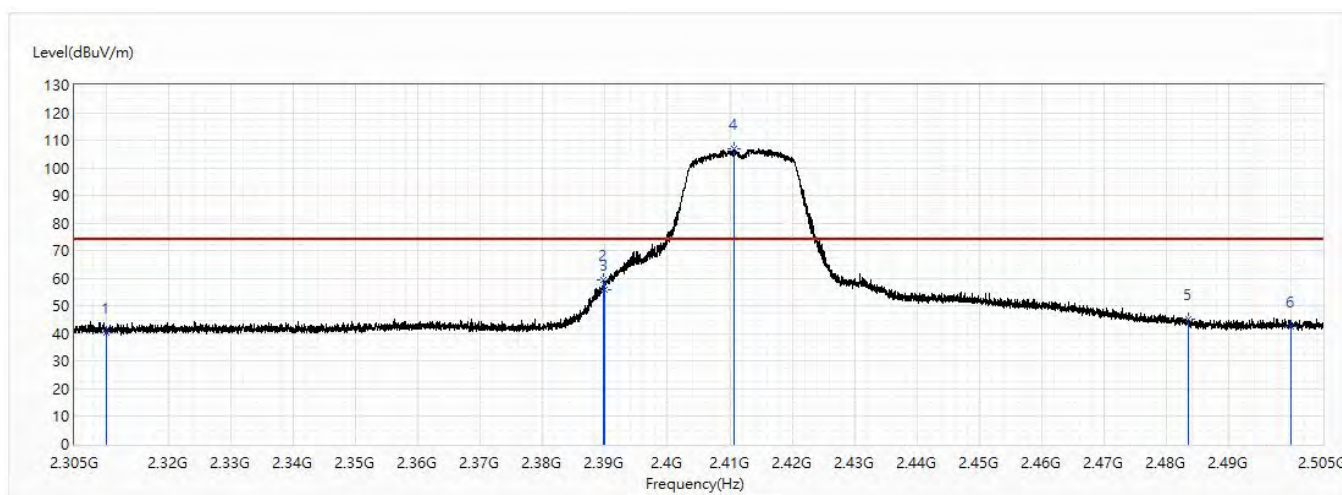


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	31.22	54.00	-22.78	18.24	12.98	AV
2	2389.625	52.74	54.00	-1.26	39.22	13.52	AV
3	2390	53.42	54.00	-0.58	39.90	13.52	AV
! 4	2413.85	104.16	54.00	50.16	90.46	13.70	AV
5	2483.5	35.90	54.00	-18.10	21.69	14.21	AV
6	2500	32.87	54.00	-21.13	18.54	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	25.0
Test Condition	SISO_802.11n_20M_Ch1_2.412G	Humidity (%RH)	54.0

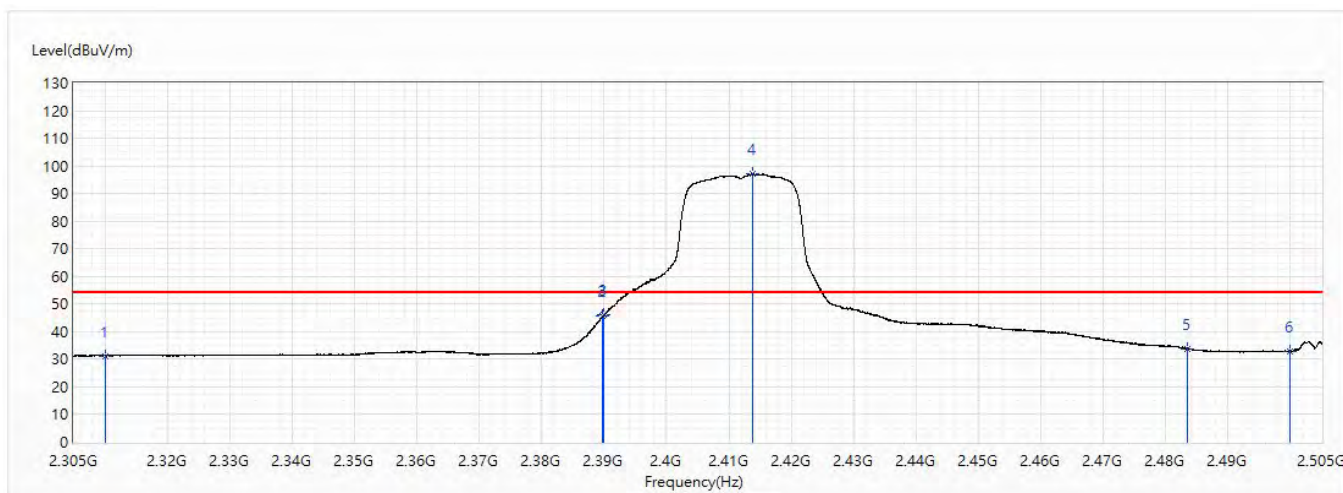


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	40.29	74.00	-33.71	27.31	12.98	PK
2	2389.8	59.61	74.00	-14.39	46.09	13.52	PK
3	2390	55.85	74.00	-18.15	42.33	13.52	PK
! 4	2410.65	106.74	74.00	32.74	93.06	13.68	PK
5	2483.5	45.13	74.00	-28.87	30.92	14.21	PK
6	2500	42.67	74.00	-31.33	28.34	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/9
Test Mode	Mode1: Transmit Mode	Engineer	Elwin
Polarity	Vertical	Temperature (°C)	25.0
Test Condition	SISO_802.11n_20M_Ch1_2.412G	Humidity (%RH)	54.0

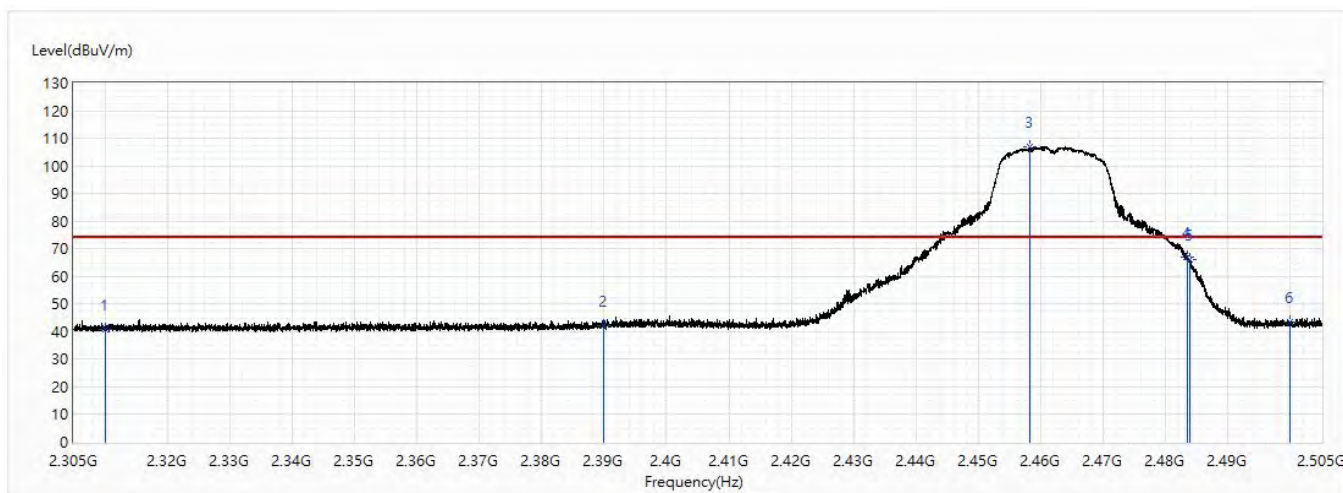


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	31.26	54.00	-22.74	18.28	12.98	AV
2	2389.825	45.59	54.00	-8.41	32.07	13.52	AV
3	2390	46.04	54.00	-7.96	32.52	13.52	AV
! 4	2413.9	97.16	54.00	43.16	83.45	13.71	AV
5	2483.5	33.73	54.00	-20.27	19.52	14.21	AV
6	2500	32.84	54.00	-21.16	18.51	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11n_20M_Ch11_2.462G	Humidity (%RH)	55.0

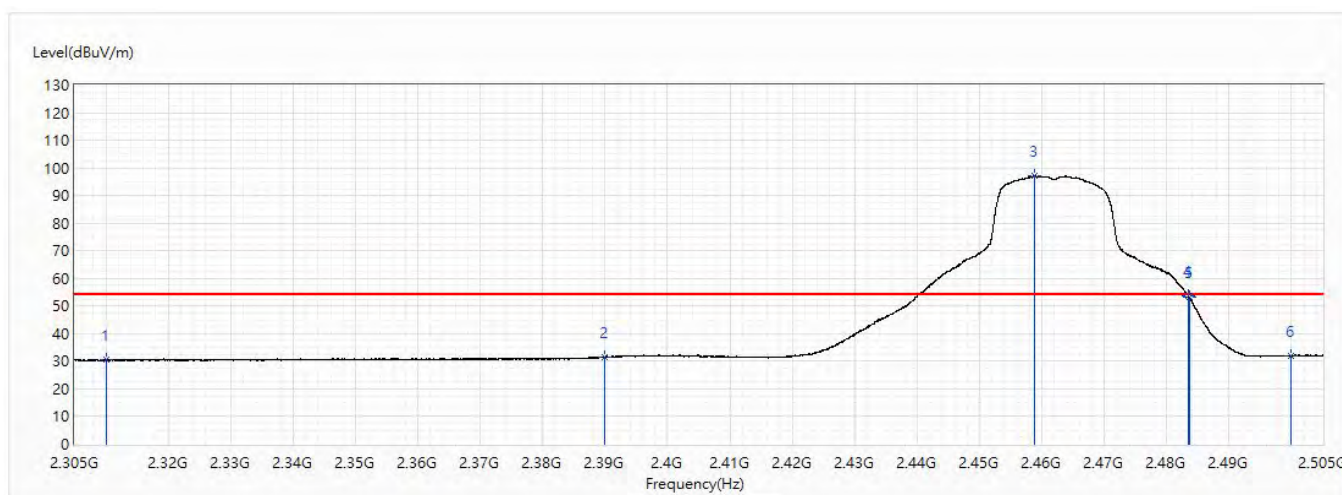


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	40.78	74.00	-33.22	27.80	12.98	PK
2	2390	42.13	74.00	-31.87	28.61	13.52	PK
! 3	2458.225	107.12	74.00	33.12	93.10	14.02	PK
4	2483.5	66.84	74.00	-7.16	52.63	14.21	PK
5	2483.875	66.17	74.00	-7.83	51.96	14.21	PK
6	2500	43.49	74.00	-30.51	29.16	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11n_20M_Ch11_2.462G	Humidity (%RH)	55.0

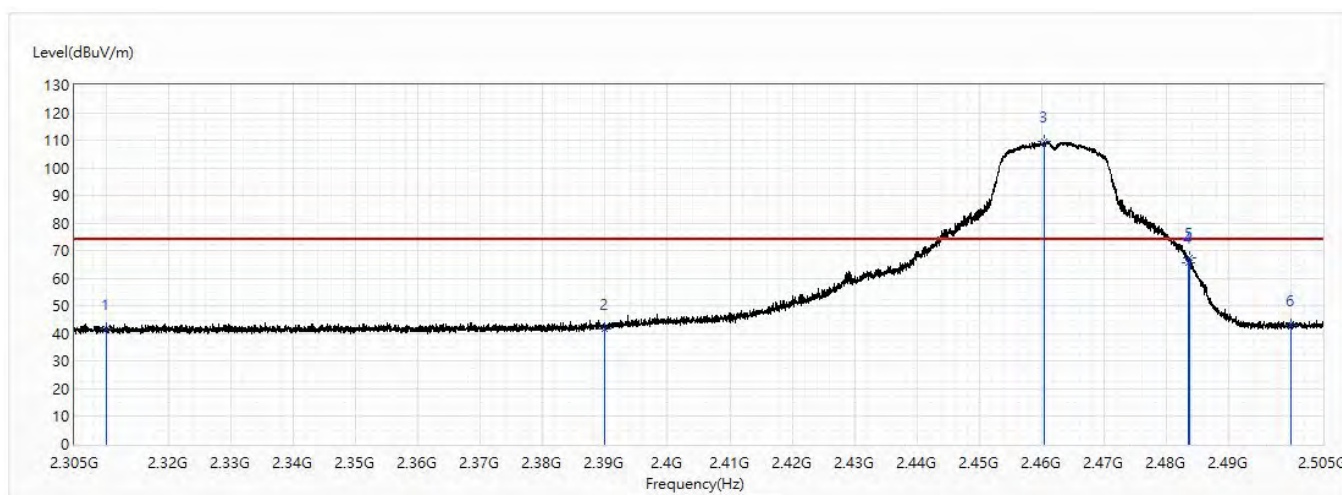


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	30.54	54.00	-23.46	17.56	12.98	AV
2	2390	31.48	54.00	-22.52	17.96	13.52	AV
! 3	2458.85	97.17	54.00	43.17	83.14	14.03	AV
4	2483.5	53.53	54.00	-0.47	39.32	14.21	AV
5	2483.6	53.06	54.00	-0.94	38.85	14.21	AV
6	2500	31.94	54.00	-22.06	17.61	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11n_20M_Ch11_2.462G	Humidity (%RH)	55.0

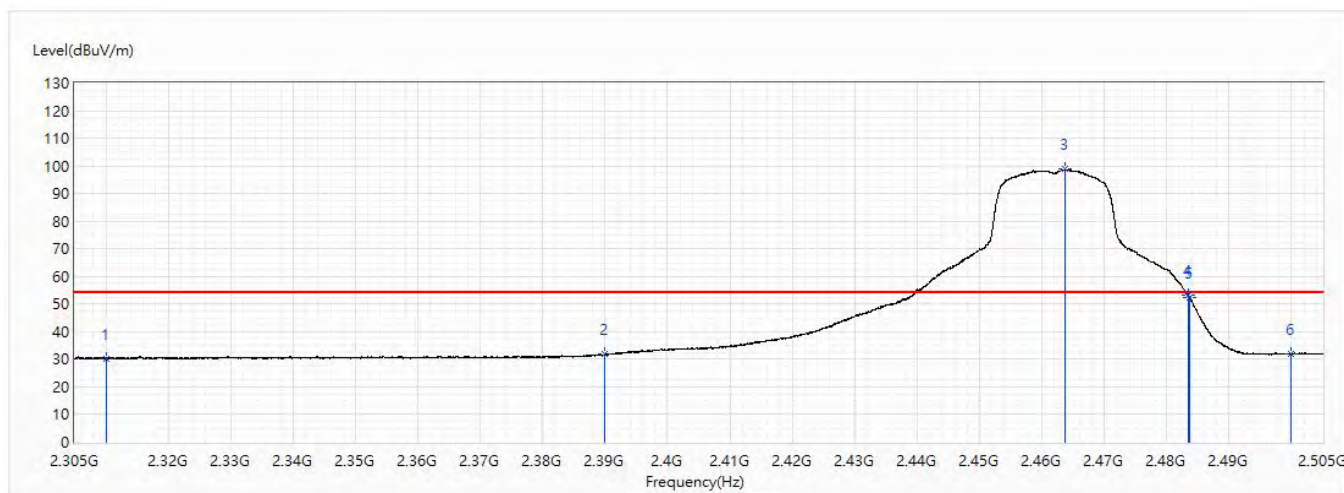


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	41.51	74.00	-32.49	28.53	12.98	PK
2	2390	41.88	74.00	-32.12	28.36	13.52	PK
! 3	2460.475	109.55	74.00	35.55	95.51	14.04	PK
4	2483.5	65.70	74.00	-8.30	51.49	14.21	PK
5	2483.65	67.55	74.00	-6.45	53.34	14.21	PK
6	2500	43.24	74.00	-30.76	28.91	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11n_20M_Ch11_2.462G	Humidity (%RH)	55.0

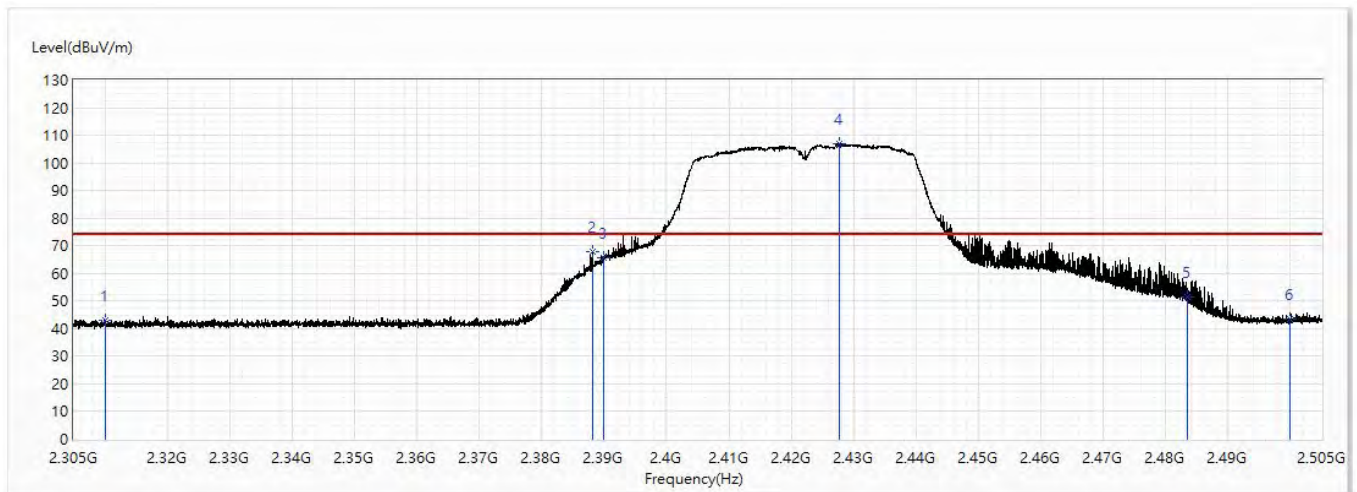


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	30.36	54.00	-23.64	17.38	12.98	AV
2	2390	31.89	54.00	-22.11	18.37	13.52	AV
! 3	2463.775	98.75	54.00	44.75	84.69	14.06	AV
4	2483.5	53.07	54.00	-0.93	38.86	14.21	AV
5	2483.6	52.47	54.00	-1.53	38.26	14.21	AV
6	2500	31.98	54.00	-22.02	17.65	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch3_2.422G	Humidity (%RH)	55.0

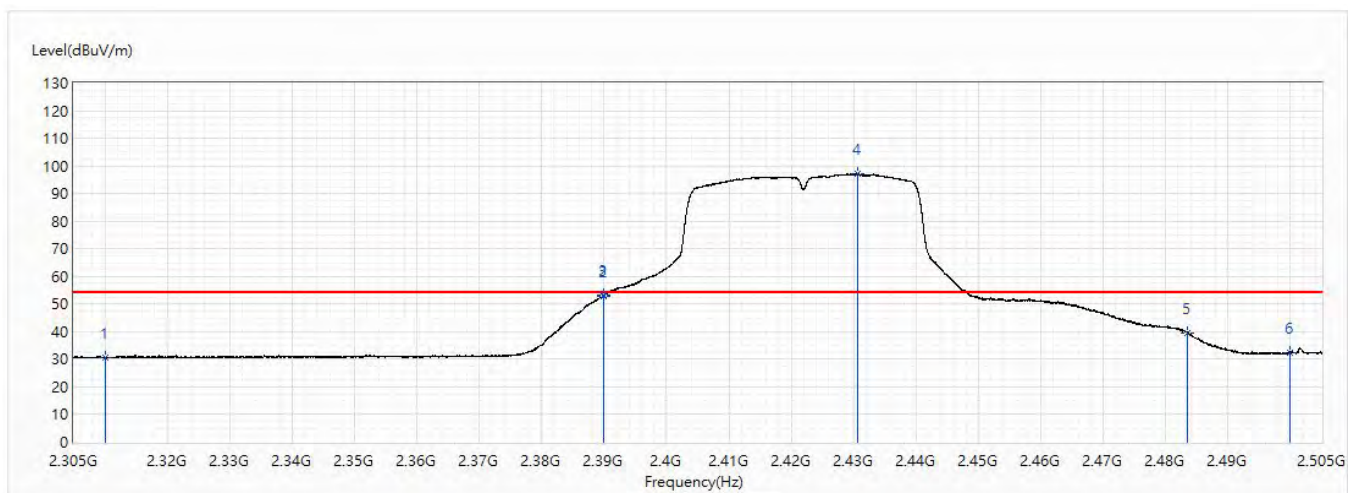


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	43.10	74.00	-30.90	30.12	12.98	PK
2	2388.2	67.88	74.00	-6.12	54.36	13.52	PK
3	2390	65.47	74.00	-8.53	51.95	13.52	PK
! 4	2427.725	106.94	74.00	32.94	93.14	13.80	PK
5	2483.5	51.65	74.00	-22.35	37.44	14.21	PK
6	2500	43.65	74.00	-30.35	29.32	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch3_2.422G	Humidity (%RH)	55.0

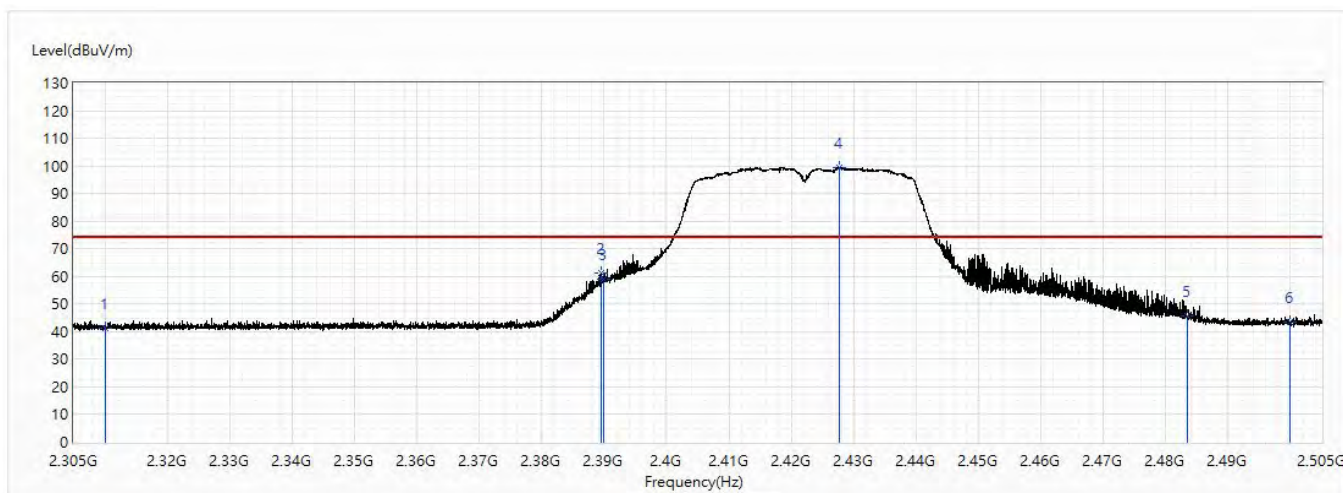


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	30.60	54.00	-23.40	17.62	12.98	AV
2	2389.9	52.84	54.00	-1.16	39.32	13.52	AV
3	2390	53.05	54.00	-0.95	39.53	13.52	AV
! 4	2430.625	97.07	54.00	43.07	83.24	13.83	AV
5	2483.5	39.62	54.00	-14.38	25.41	14.21	AV
6	2500	32.38	54.00	-21.62	18.05	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch3_2.422G	Humidity (%RH)	55.0

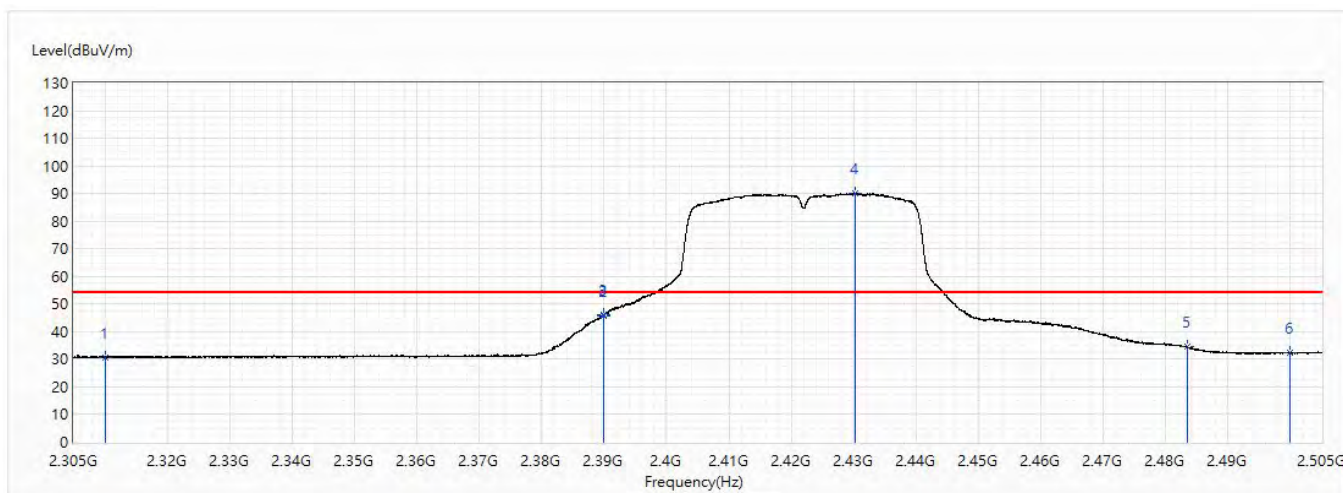


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	41.32	74.00	-32.68	28.34	12.98	PK
2	2389.6	61.32	74.00	-12.68	47.80	13.52	PK
3	2390	59.19	74.00	-14.81	45.67	13.52	PK
! 4	2427.75	99.48	74.00	25.48	85.68	13.80	PK
5	2483.5	45.81	74.00	-28.19	31.60	14.21	PK
6	2500	43.45	74.00	-30.55	29.12	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch3_2.422G	Humidity (%RH)	55.0

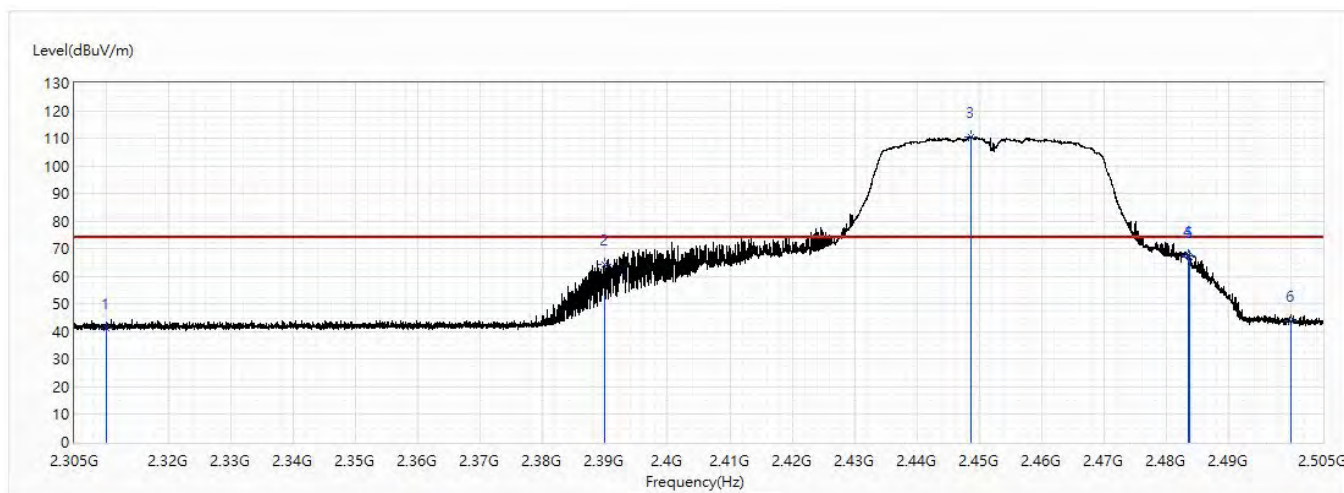


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	30.74	54.00	-23.26	17.76	12.98	AV
2	2389.9	45.71	54.00	-8.29	32.19	13.52	AV
3	2390	46.07	54.00	-7.93	32.55	13.52	AV
! 4	2430.15	90.18	54.00	36.18	76.36	13.82	AV
5	2483.5	34.39	54.00	-19.61	20.18	14.21	AV
6	2500	32.41	54.00	-21.59	18.08	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch9_2.452G	Humidity (%RH)	55.0

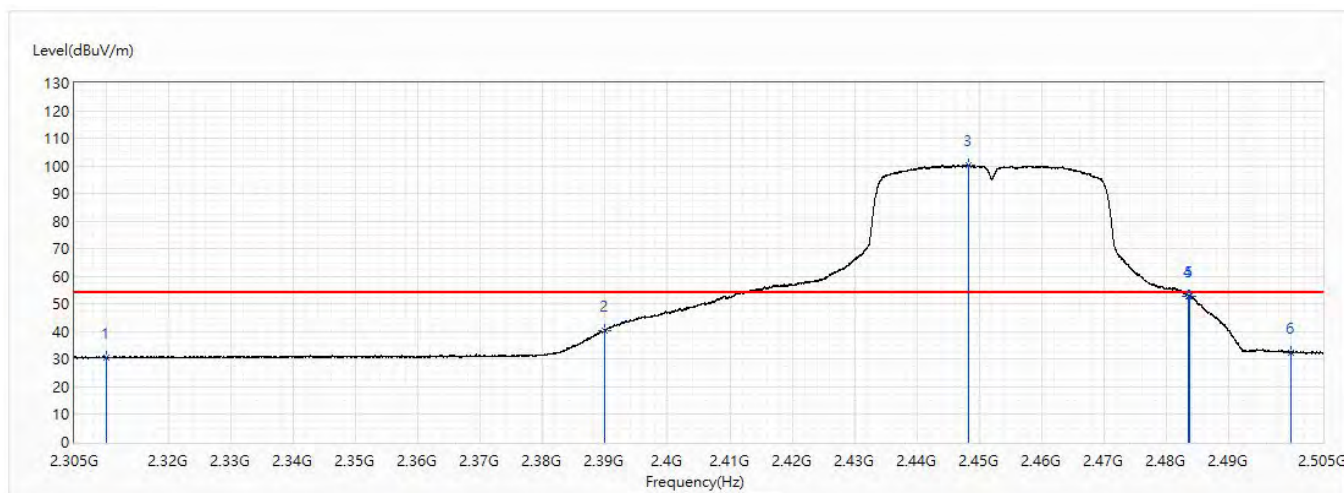


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	41.23	74.00	-32.77	28.25	12.98	PK
2	2390	64.26	74.00	-9.74	50.74	13.52	PK
! 3	2448.55	110.48	74.00	36.48	96.53	13.95	PK
4	2483.5	67.35	74.00	-6.65	53.14	14.21	PK
5	2483.6	66.81	74.00	-7.19	52.60	14.21	PK
6	2500	43.88	74.00	-30.12	29.55	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Horizontal	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch9_2.452G	Humidity (%RH)	55.0

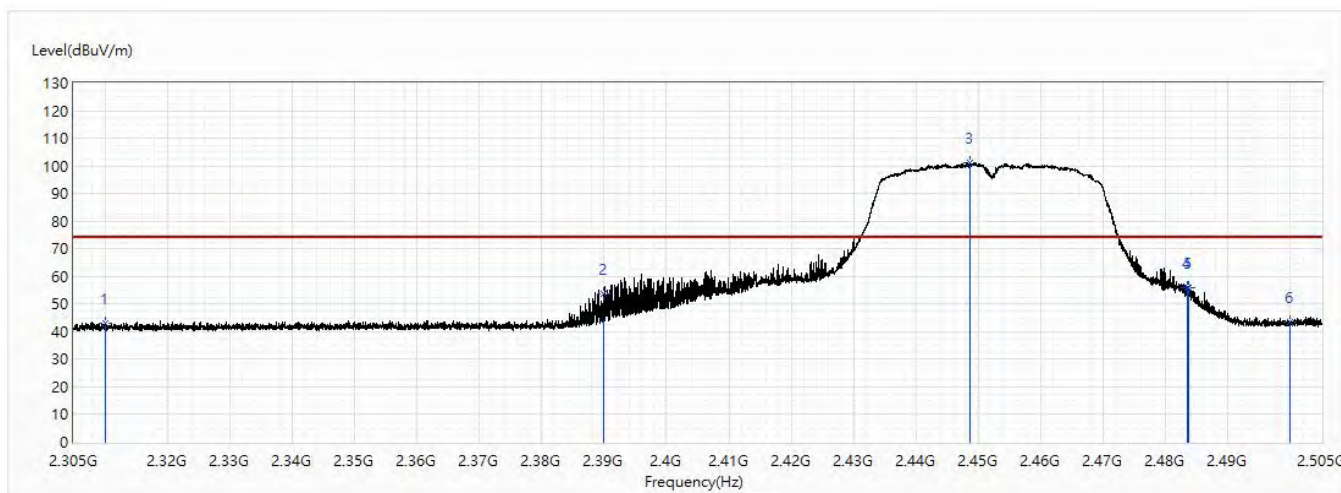


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	30.58	54.00	-23.42	17.60	12.98	AV
2	2390	40.55	54.00	-13.45	27.03	13.52	AV
! 3	2448.225	100.22	54.00	46.22	86.27	13.95	AV
4	2483.5	52.98	54.00	-1.02	38.77	14.21	AV
5	2483.6	52.76	54.00	-1.24	38.55	14.21	AV
6	2500	32.53	54.00	-21.47	18.20	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch9_2.452G	Humidity (%RH)	55.0

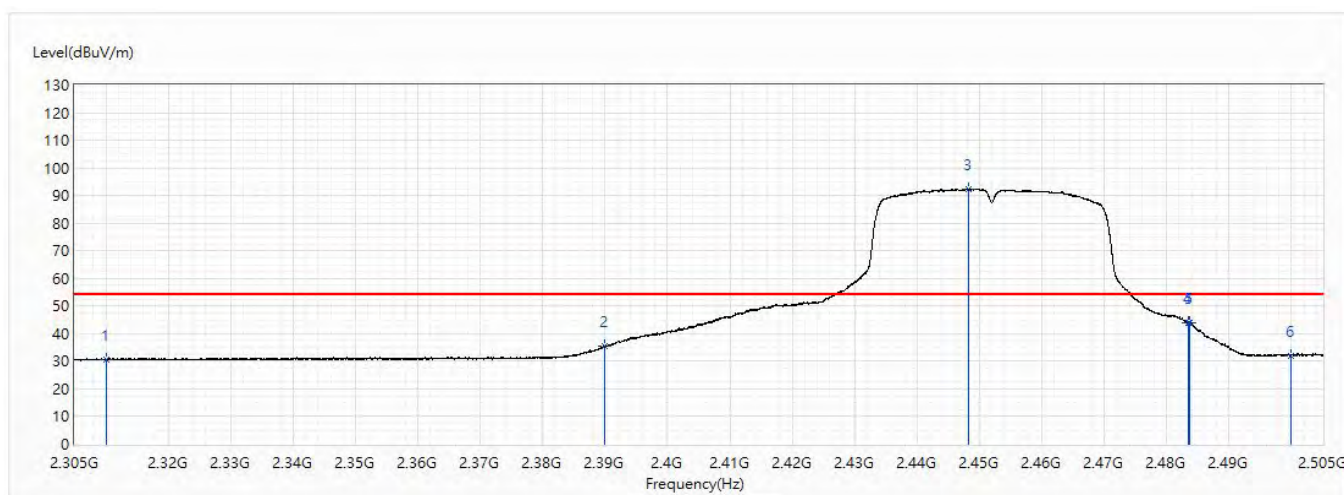


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	43.00	74.00	-31.00	30.02	12.98	PK
2	2390	53.51	74.00	-20.49	39.99	13.52	PK
! 3	2448.675	101.22	74.00	27.22	87.26	13.96	PK
4	2483.5	55.73	74.00	-18.27	41.52	14.21	PK
5	2483.6	55.86	74.00	-18.14	41.65	14.21	PK
6	2500	43.57	74.00	-30.43	29.24	14.33	PK

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

Model No	VG54-NA	Site	CB2-H
Test Voltage	DC 12V	Test Date	2020/7/11
Test Mode	Mode1: Transmit Mode	Engineer	Lion
Polarity	Vertical	Temperature (°C)	23.0
Test Condition	SISO_802.11n_40M_Ch9_2.452G	Humidity (%RH)	55.0



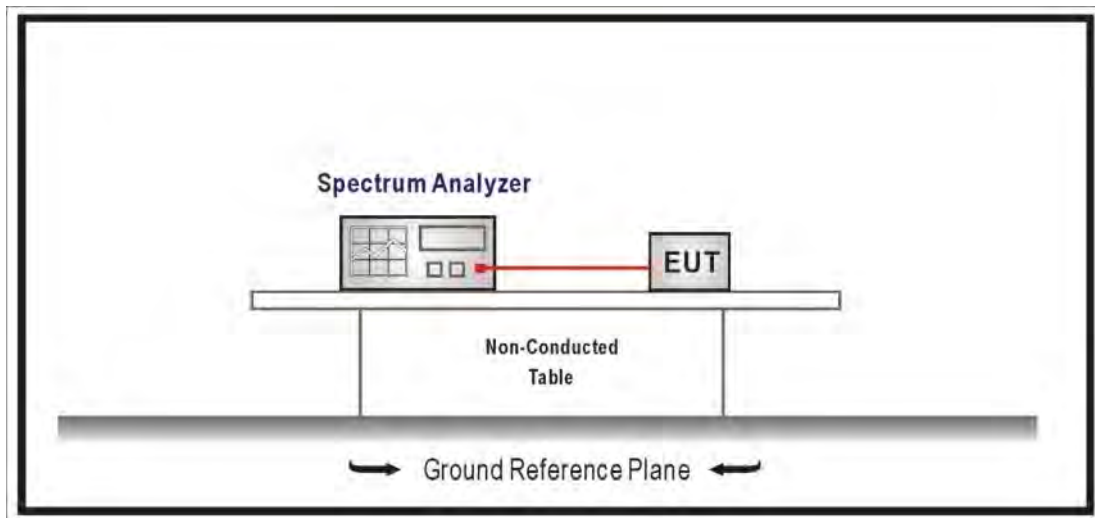
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2310	30.70	54.00	-23.30	17.72	12.98	AV
2	2390	35.65	54.00	-18.35	22.13	13.52	AV
! 3	2448.3	92.33	54.00	38.33	78.38	13.95	AV
4	2483.5	43.77	54.00	-10.23	29.56	14.21	AV
5	2483.6	43.79	54.00	-10.21	29.58	14.21	AV
6	2500	32.07	54.00	-21.93	17.74	14.33	AV

Note:

1. All reading above 1GHz is 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. If the readings given are average, peak measurement should also be supplied.
4. The fundamental for reference only, it's not restricted by unwanted emission limit.

7. DTS Bandwidth

7.1. Test Setup



7.2. Limits

The 6 dB bandwidth must be greater than 500 kHz.

7.3. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested procedure section 8.1 of KDB 558074 D01 v05r02 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100KHz, Set the $VBW \geq 3 \times RBW$, Sweep Time=Auto, Set Peak Detector.

7.4. Test Specification

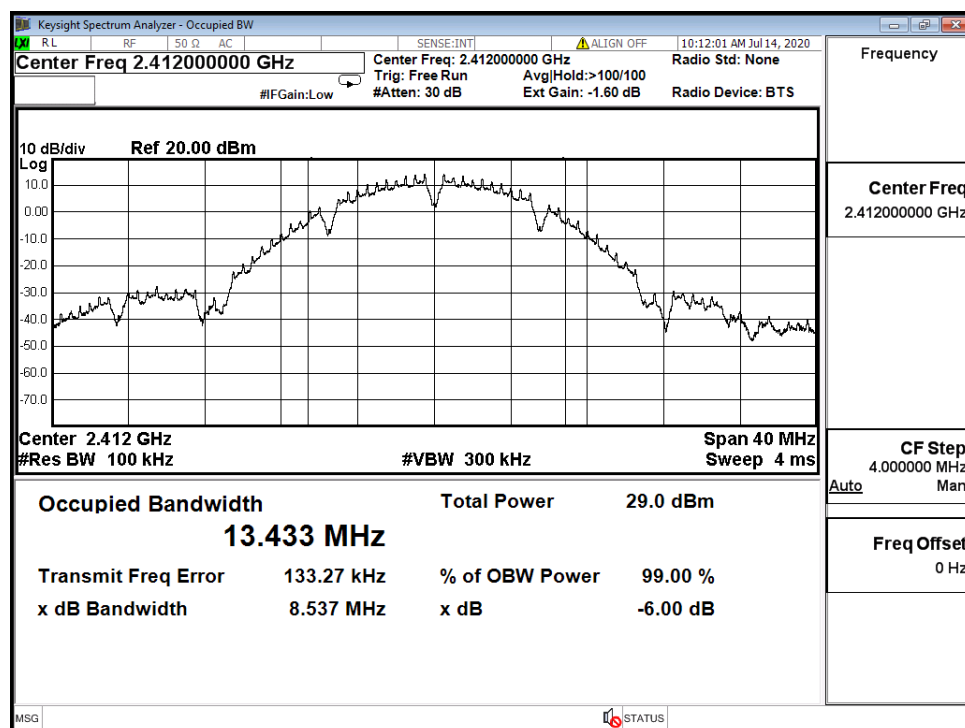
According to FCC Part 15 Subpart C Paragraph 15.247: 2019

7.5. Test Result

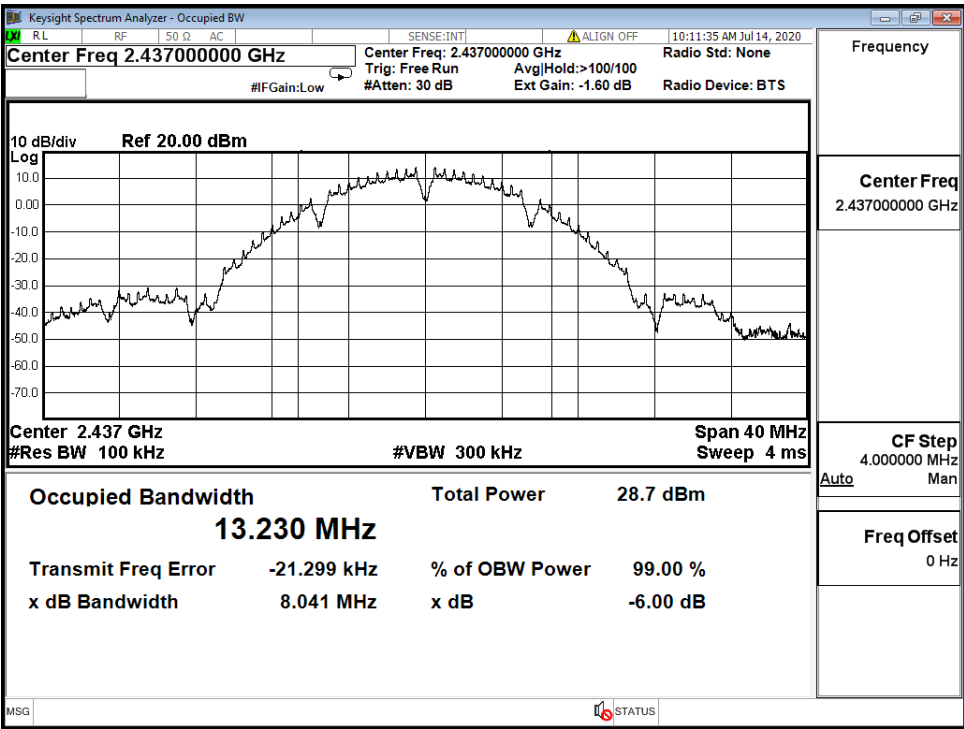
Product	Vehicle Gateway		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

802.11b (ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
1	2412	8.537	≥ 0.5	Pass
6	2437	8.041	≥ 0.5	Pass
11	2462	8.553	≥ 0.5	Pass

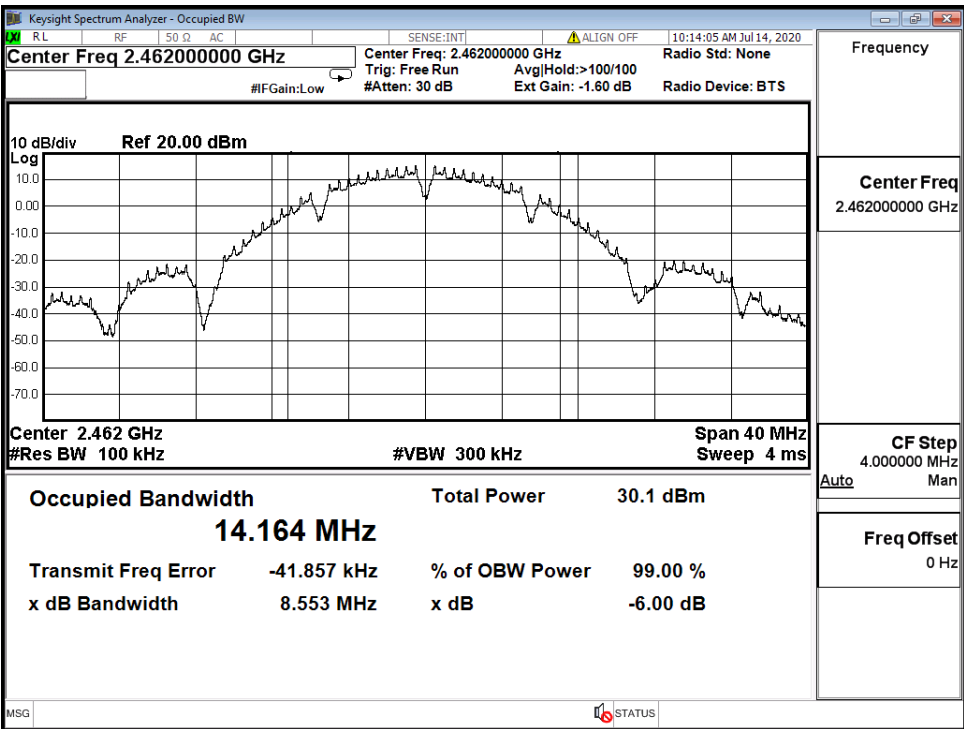
802.11b - 2412MHz



IEEE 802.11b - 2437MHz



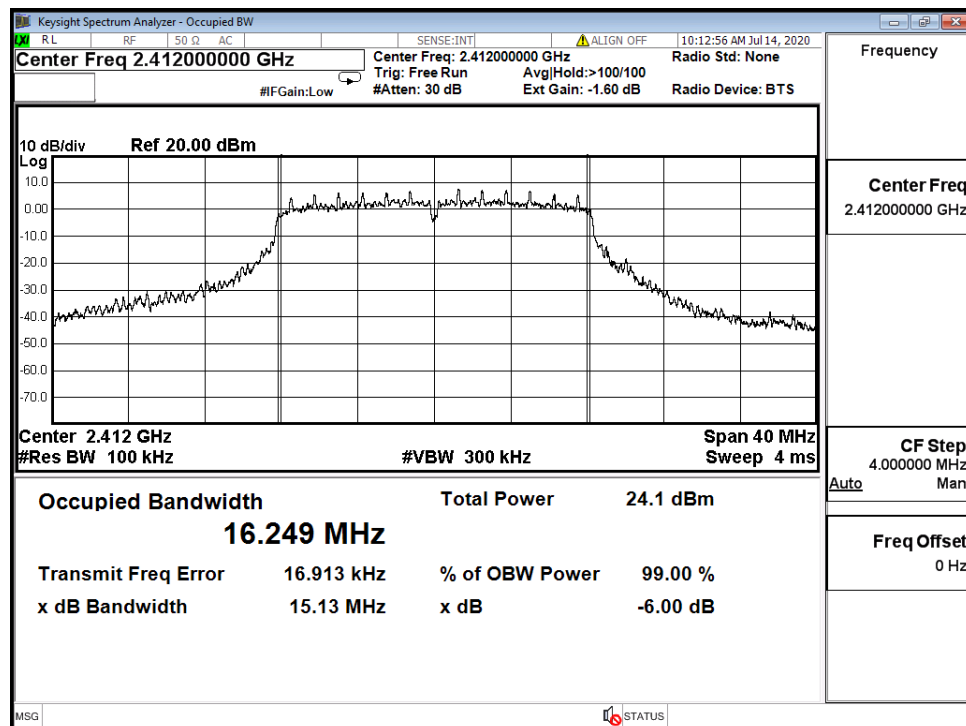
IEEE 802.11b - 2462MHz



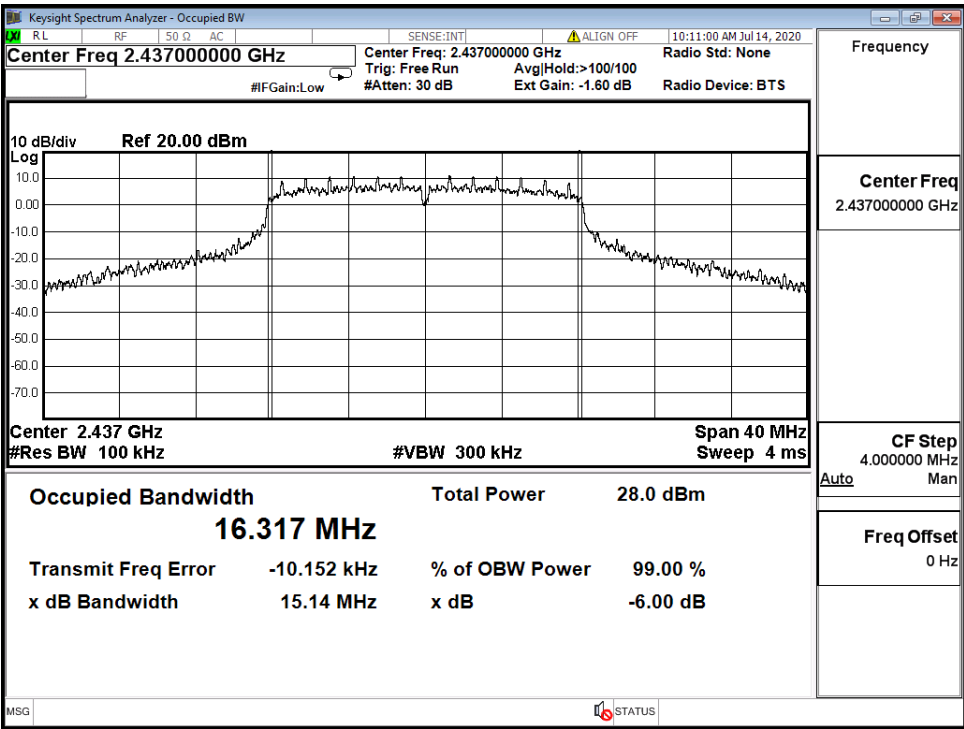
Product	Vehicle Gateway		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

802.11g (ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
1	2412	15.130	≥ 0.5	Pass
6	2437	15.140	≥ 0.5	Pass
11	2462	15.080	≥ 0.5	Pass

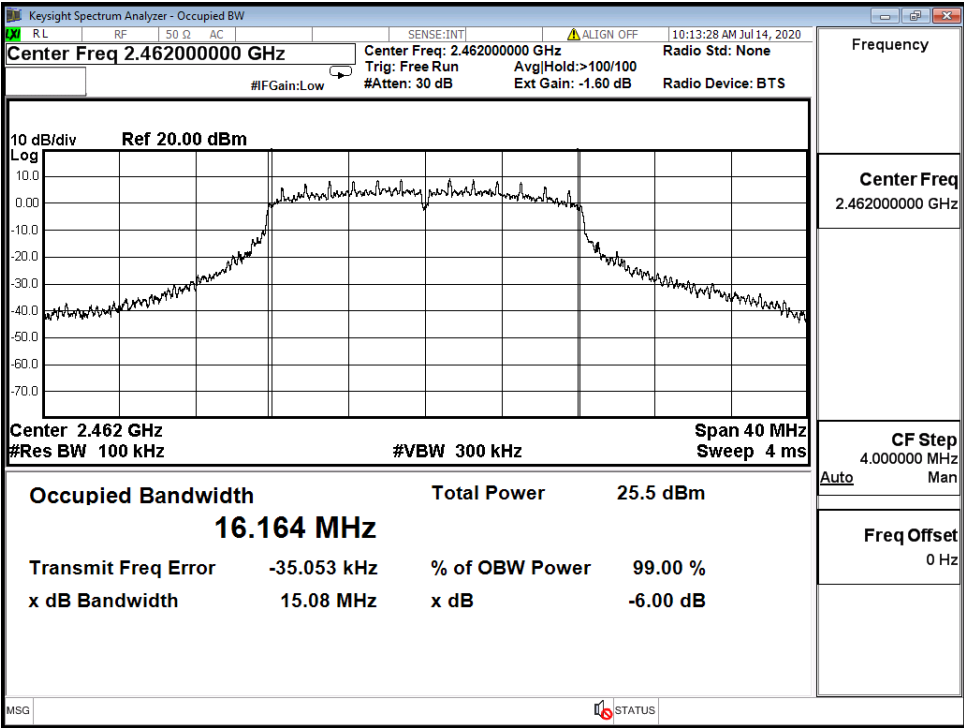
802.11g - 2412MHz



IEEE 802.11g - 2437MHz



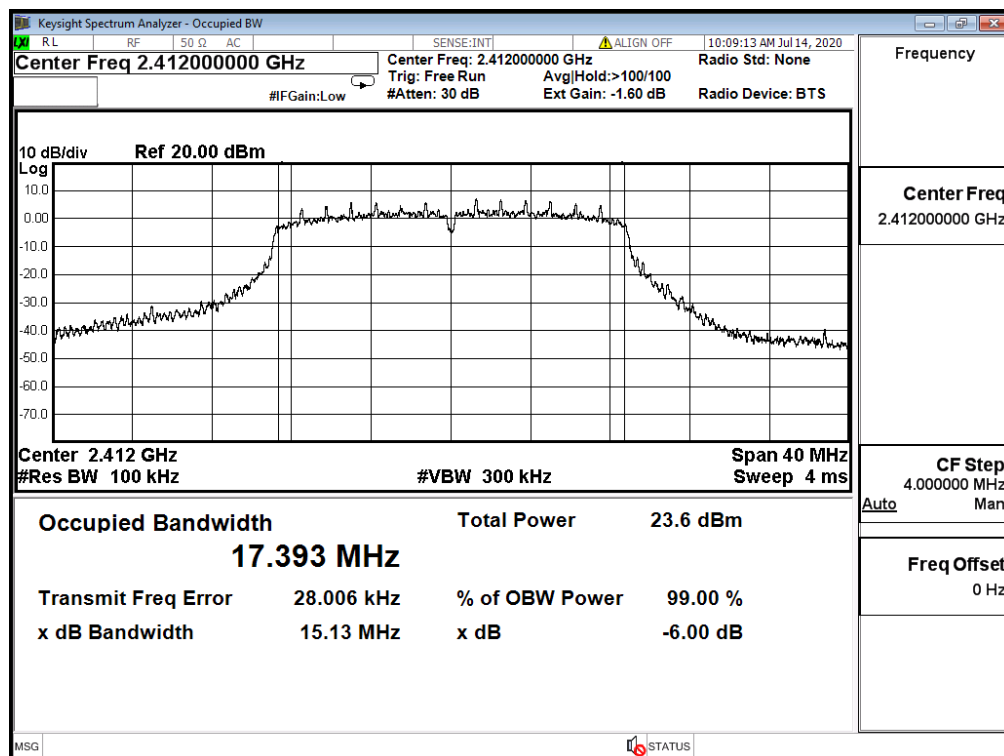
IEEE 802.11g - 2462MHz



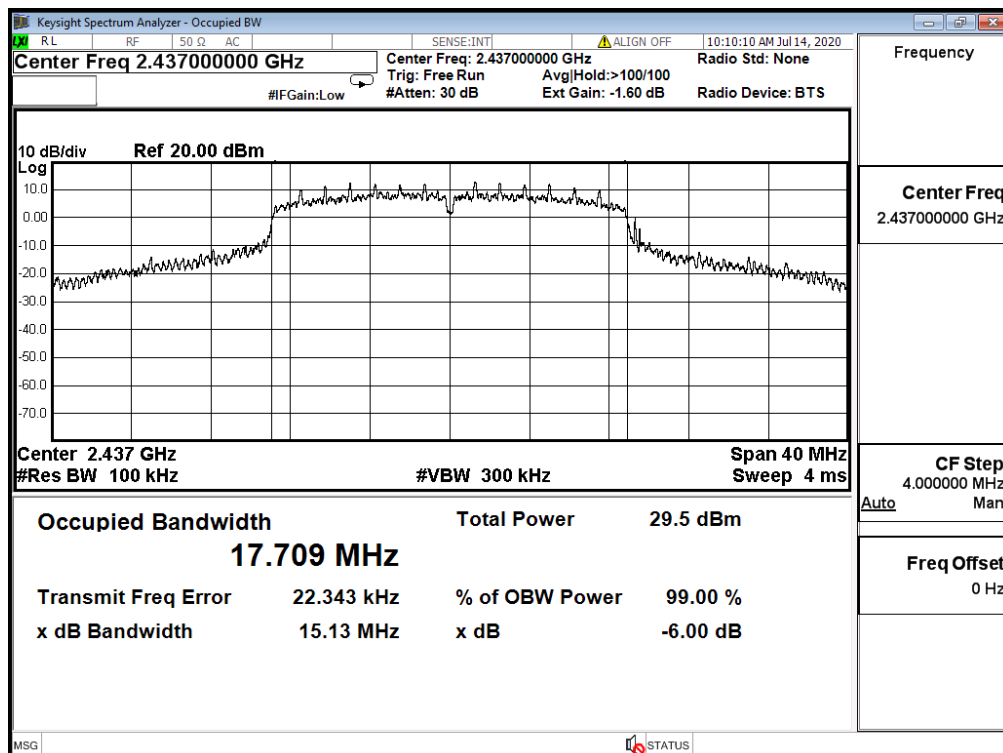
Product	Vehicle Gateway		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

IEEE 802.11n 20M (ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
1	2412	15.130	≥ 0.5	Pass
6	2437	15.130	≥ 0.5	Pass
11	2462	15.100	≥ 0.5	Pass

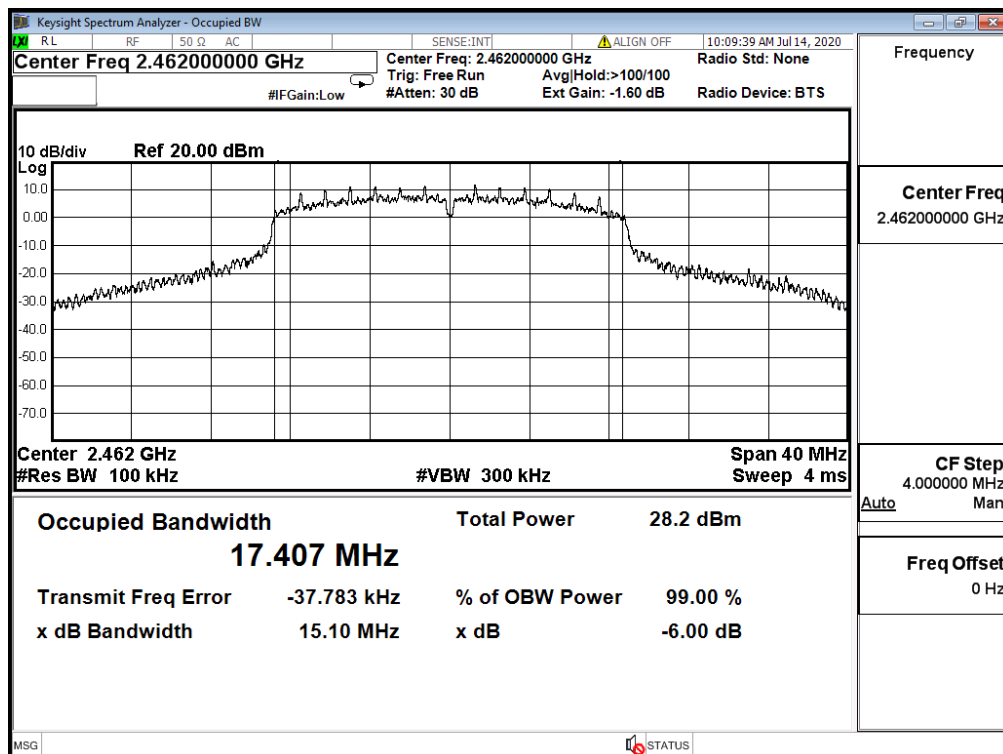
IEEE 802.11n (20MHz) - 2412MHz



IEEE 802.11n (20MHz) - 2437MHz



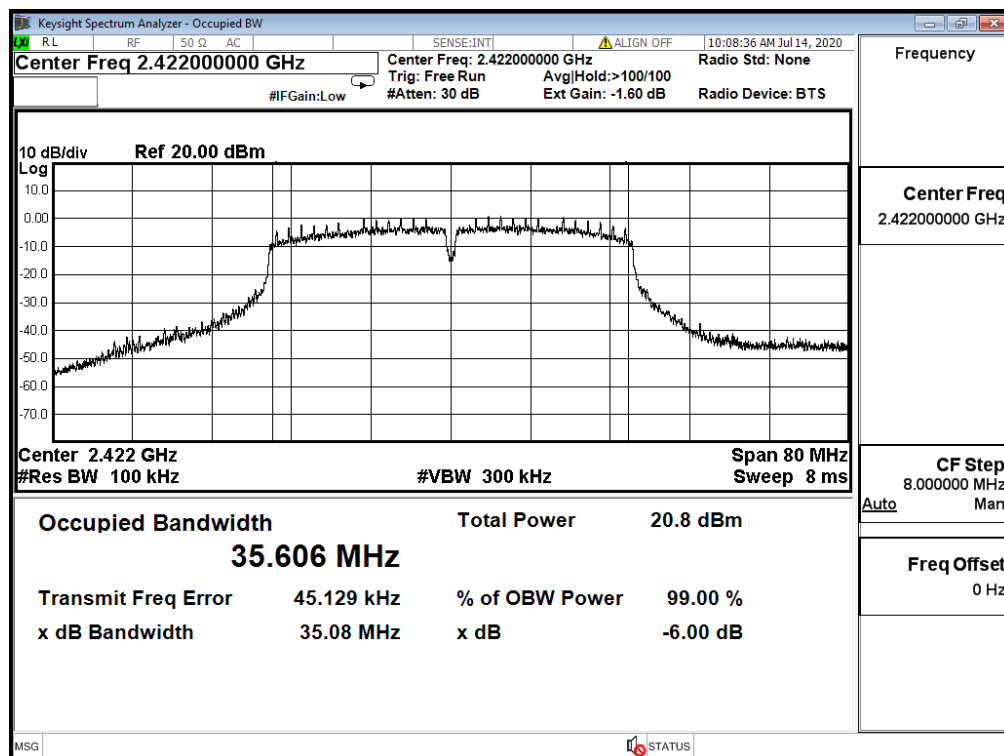
IEEE 802.11n (20MHz) - 2462MHz



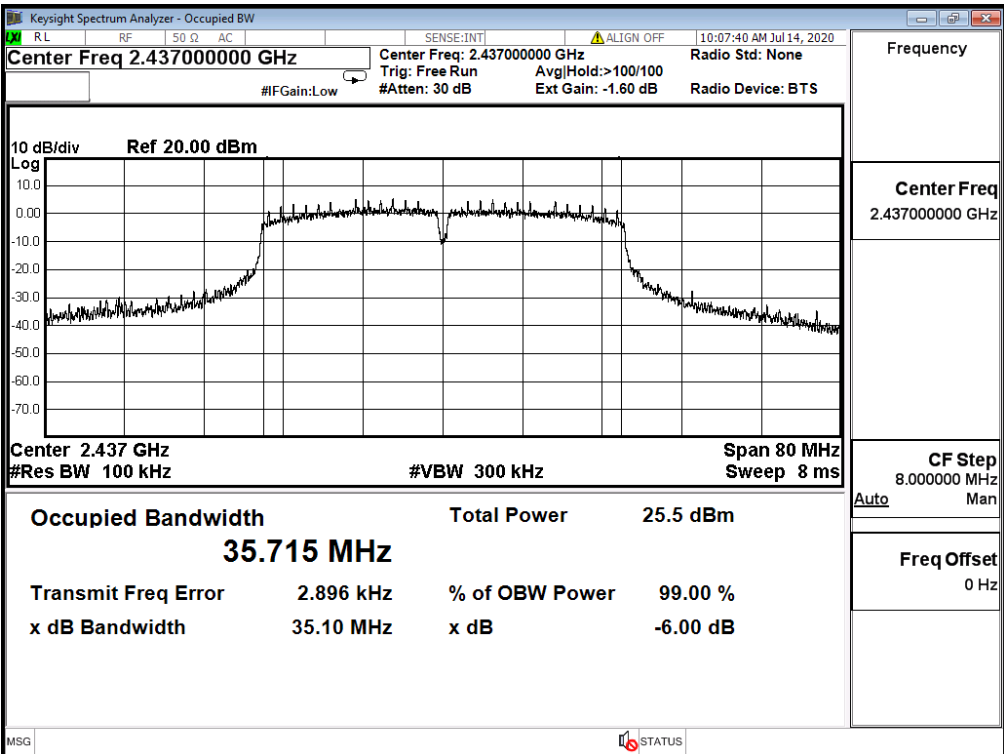
Product	Vehicle Gateway		
Test Item	DTS Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

IEEE 802.11n 40M (ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
3	2422	35.080	≥ 0.5	Pass
6	2437	35.100	≥ 0.5	Pass
9	2452	35.090	≥ 0.5	Pass

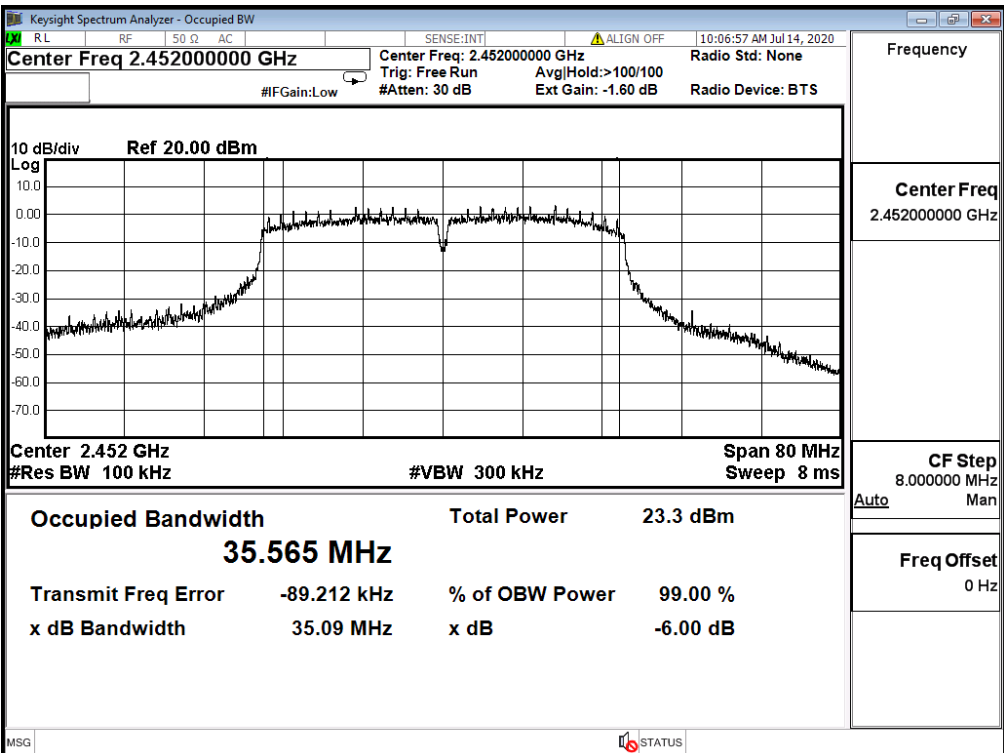
IEEE 802.11n (40MHz) - 2422MHz



IEEE 802.11n (40MHz) - 2437MHz

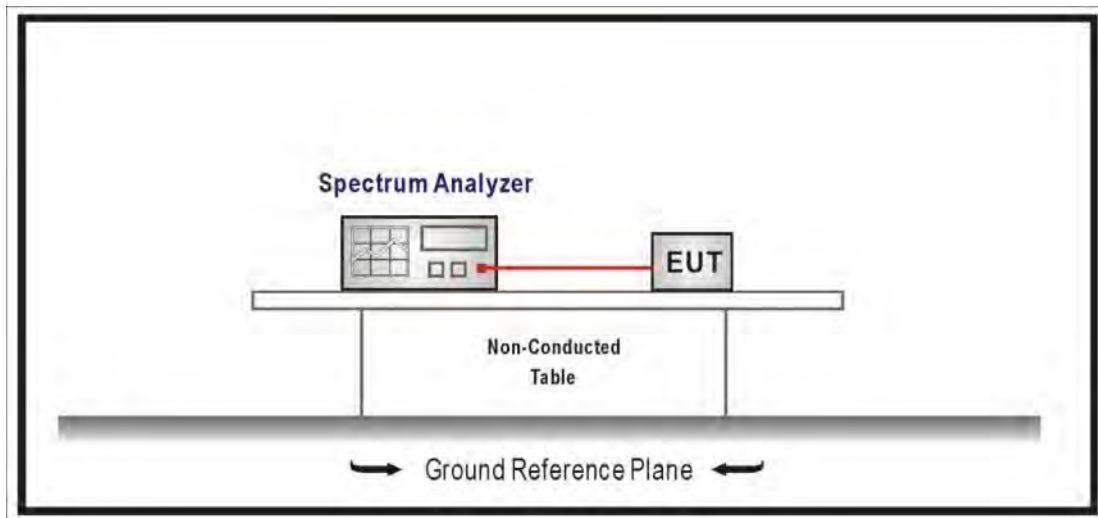


IEEE 802.11n (40MHz) - 2452MHz



8. Occupied Bandwidth

8.1. Test Setup



8.2. Limits

No Required

8.3. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB 558074 D01 v05r02 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 1-5% of the OBW, Set the VBW $\geq 3 \times$ RBW, Sweep Time=Auto.

8.4. Test Specification

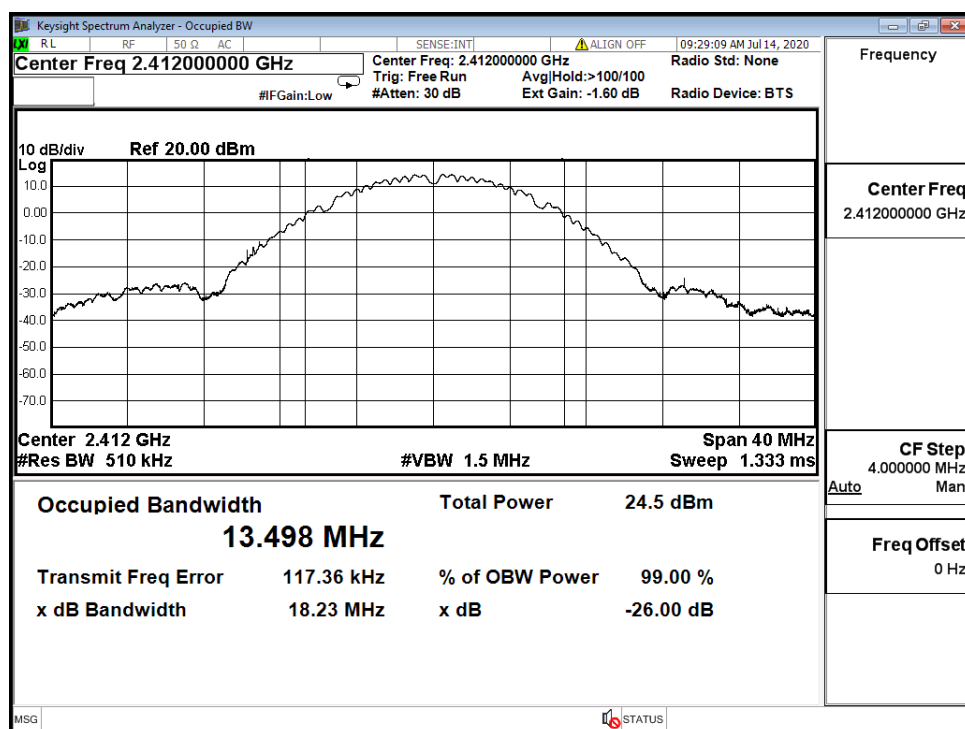
According to FCC Part 15 Subpart C Paragraph 15.247: 2019

8.5. Test Result

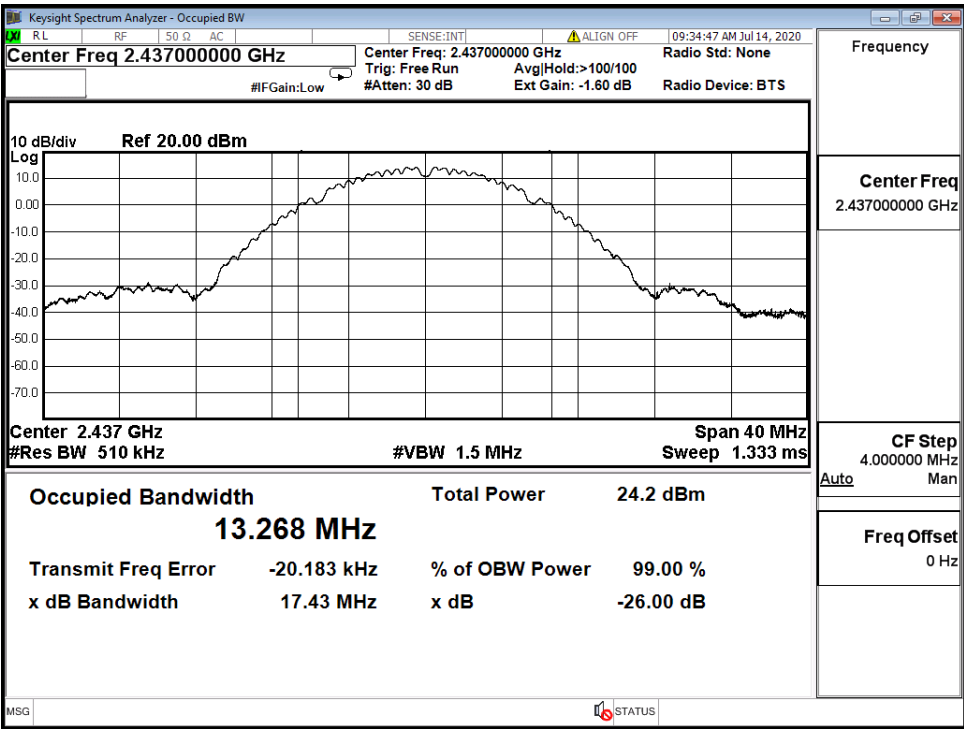
Product	Vehicle Gateway		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

802.11b (ANT 0)			
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)
1	2412	13.498	---
6	2437	13.268	---
11	2462	14.173	---

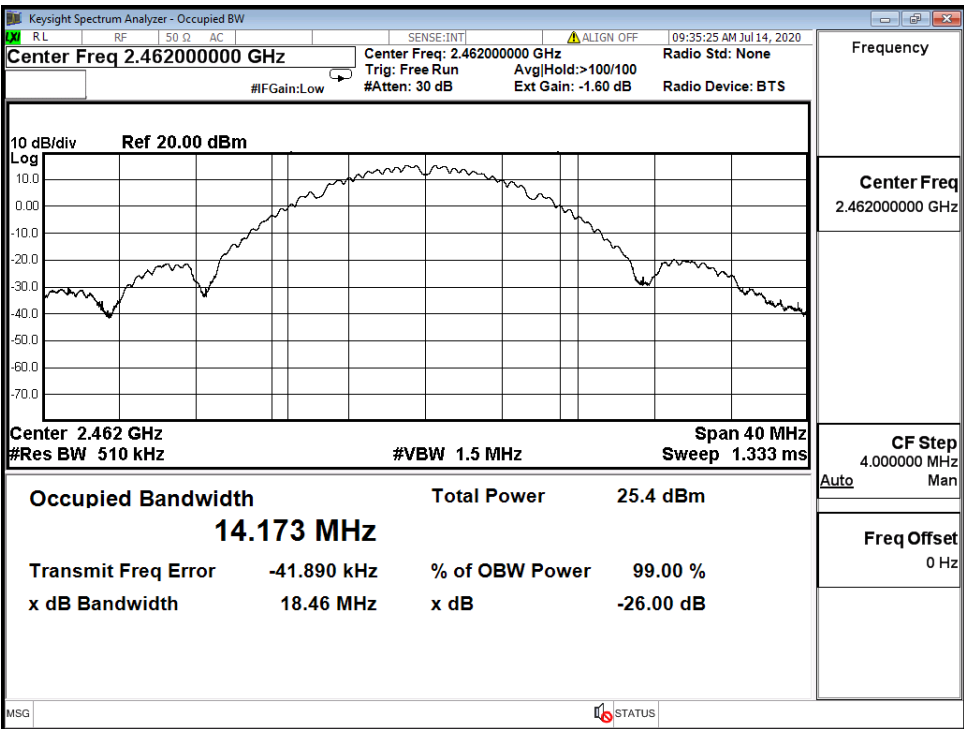
802.11b - 2412MHz



IEEE 802.11b - 2437MHz



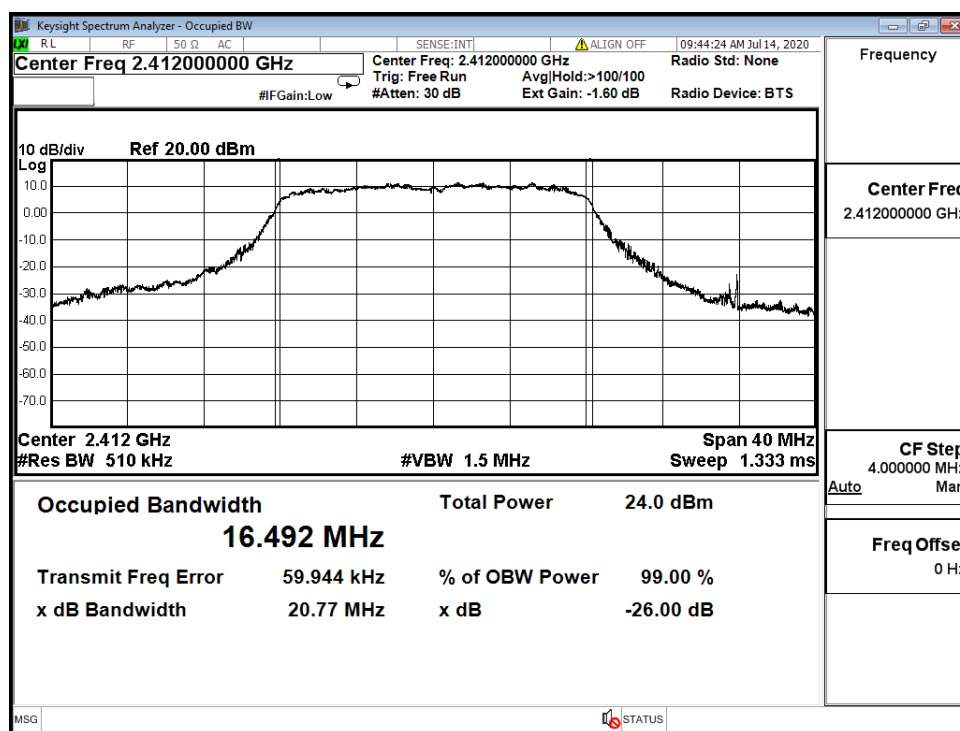
IEEE 802.11b - 2462MHz



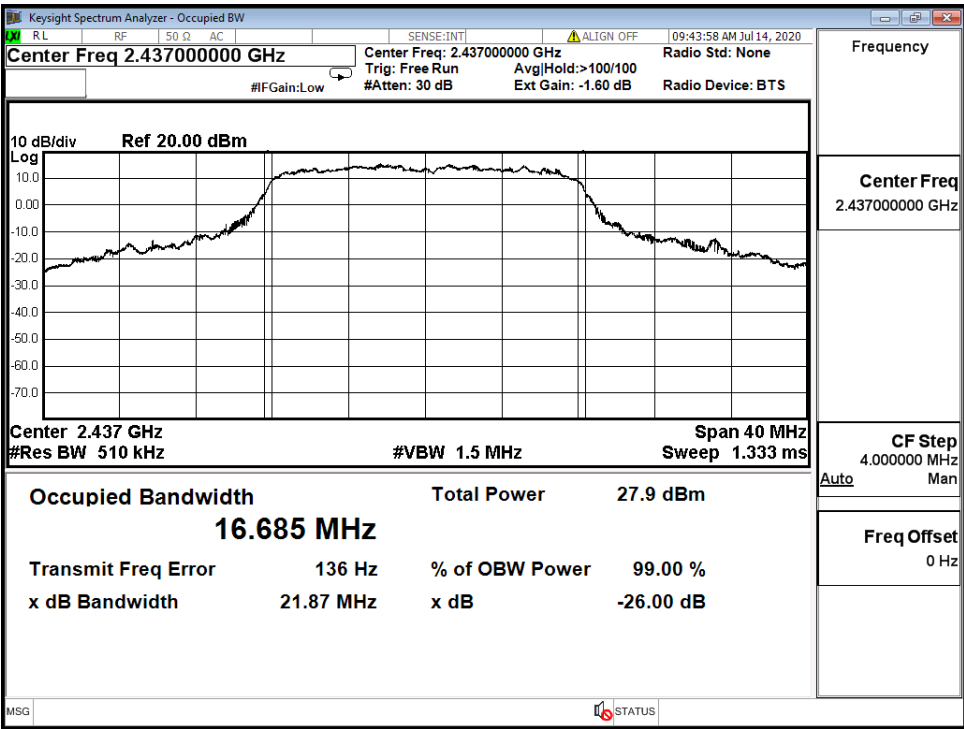
Product	Vehicle Gateway		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

802.11g (ANT 0)			
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)
1	2412	16.492	---
6	2437	16.685	---
11	2462	16.325	---

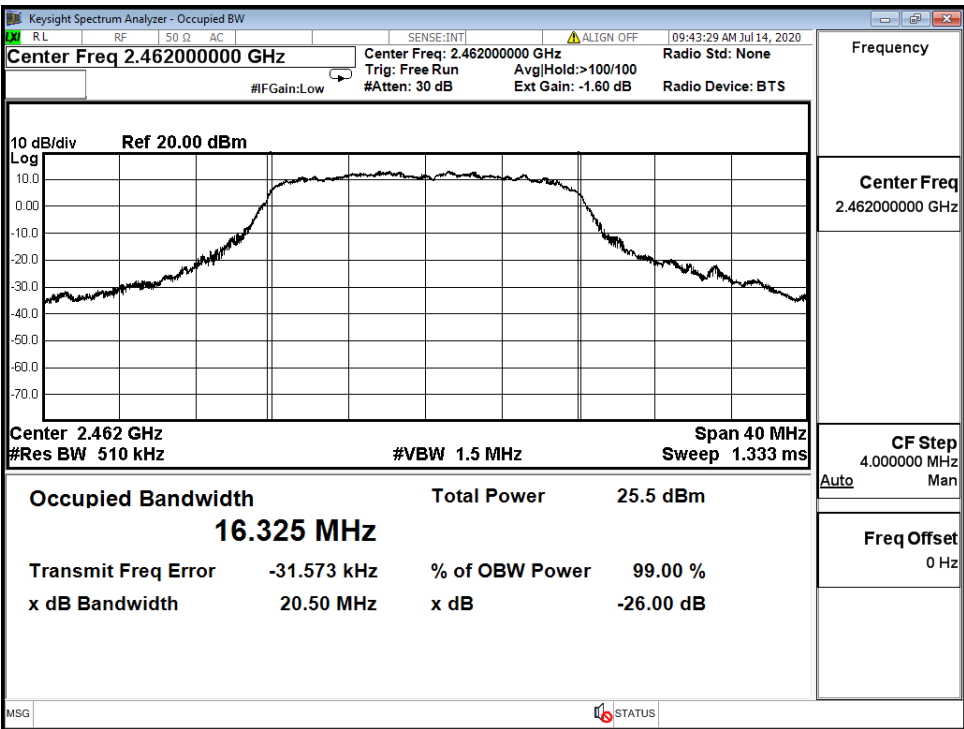
802.11g - 2412MHz



IEEE 802.11g - 2437MHz



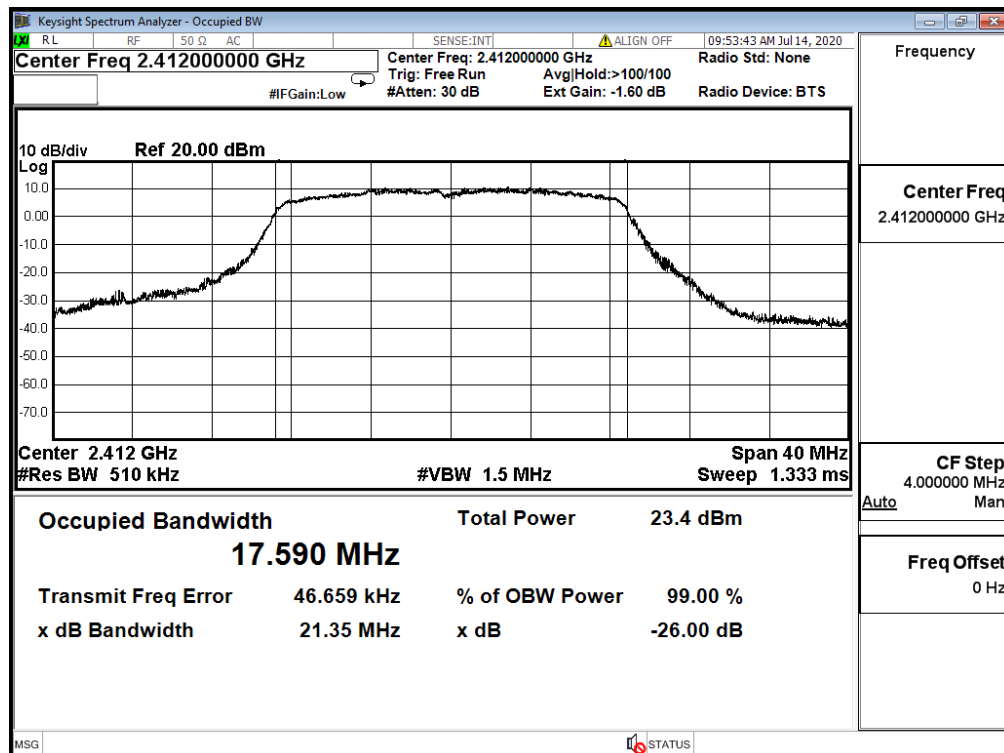
IEEE 802.11g - 2462MHz



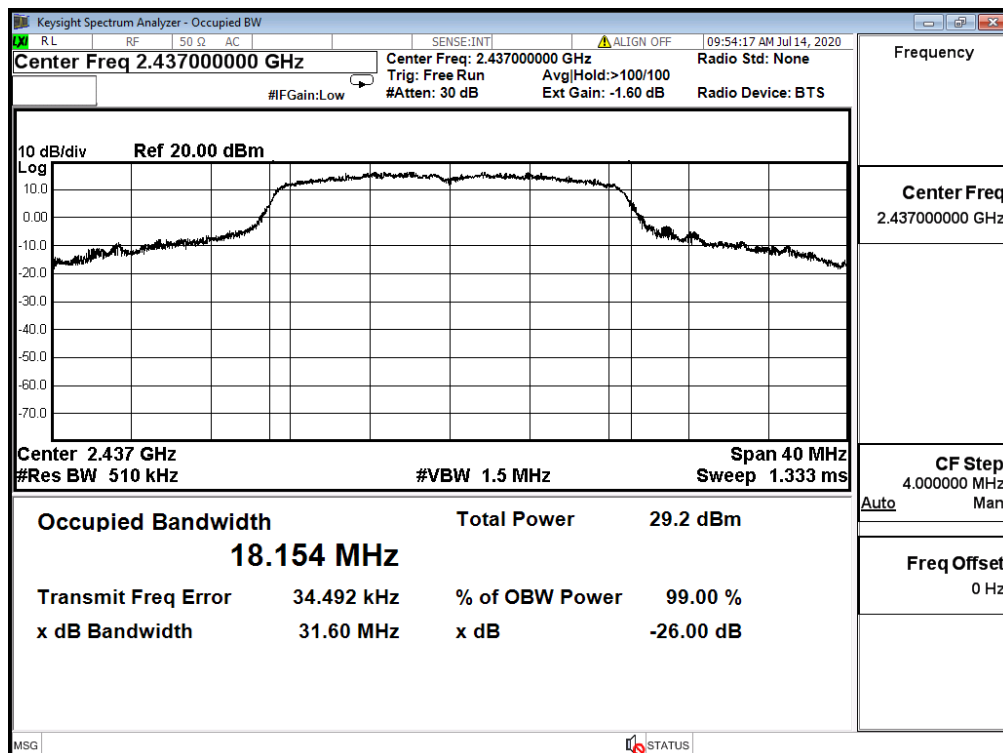
Product	Vehicle Gateway		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

IEEE 802.11n 20M (ANT 0)			
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)
1	2412	17.590	---
6	2437	18.154	---
11	2462	17.621	---

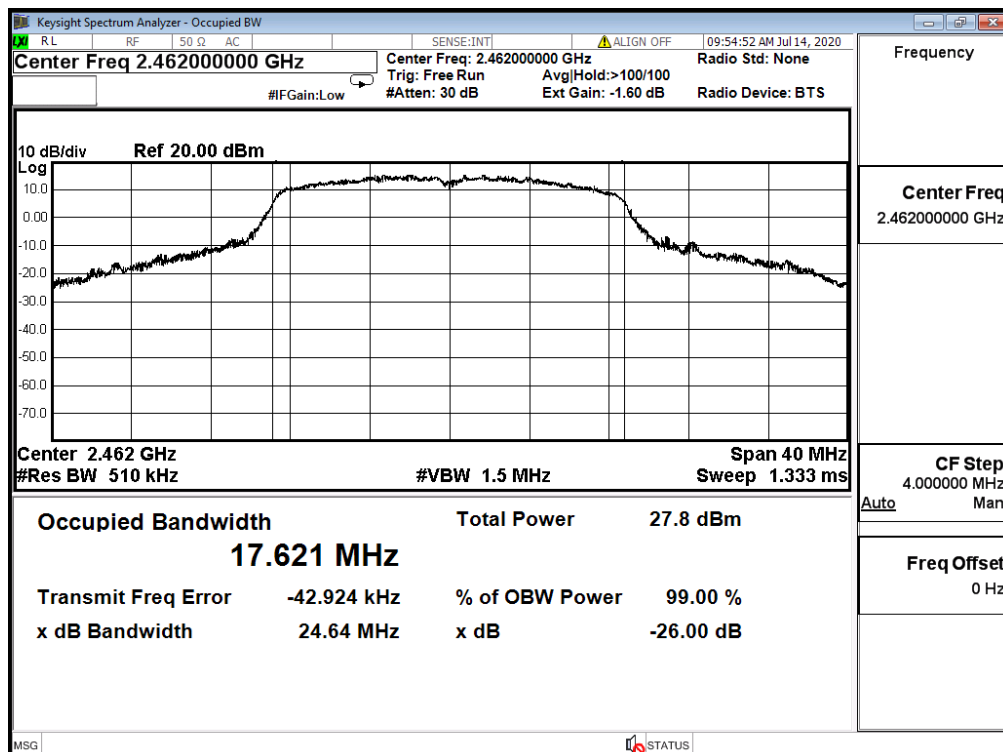
IEEE 802.11n (20MHz) - 2412MHz



IEEE 802.11n (20MHz) - 2437MHz



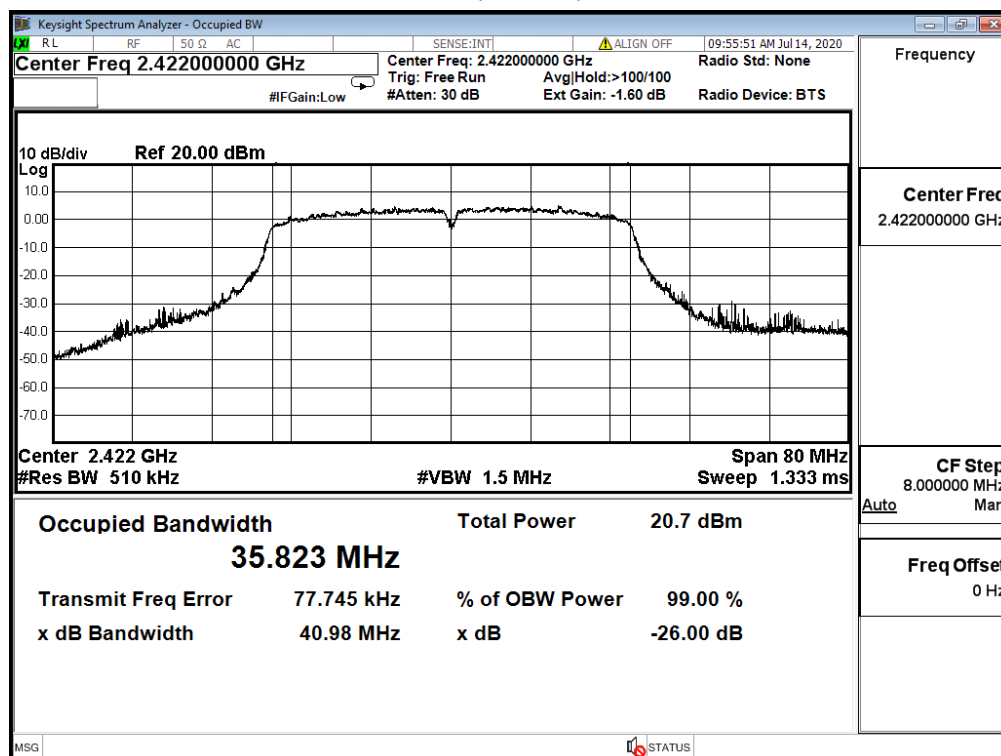
IEEE 802.11n (20MHz) - 2462MHz



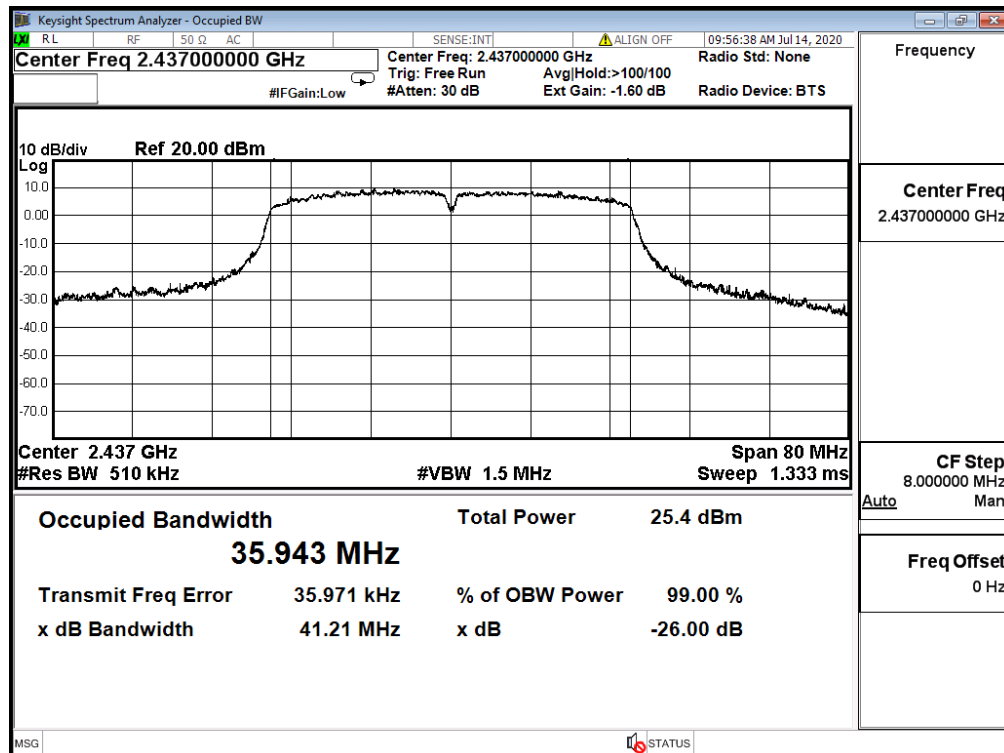
Product	Vehicle Gateway		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

IEEE 802.11n 40M (ANT 0)			
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)
3	2422	35.823	---
6	2437	35.943	---
9	2452	35.783	---

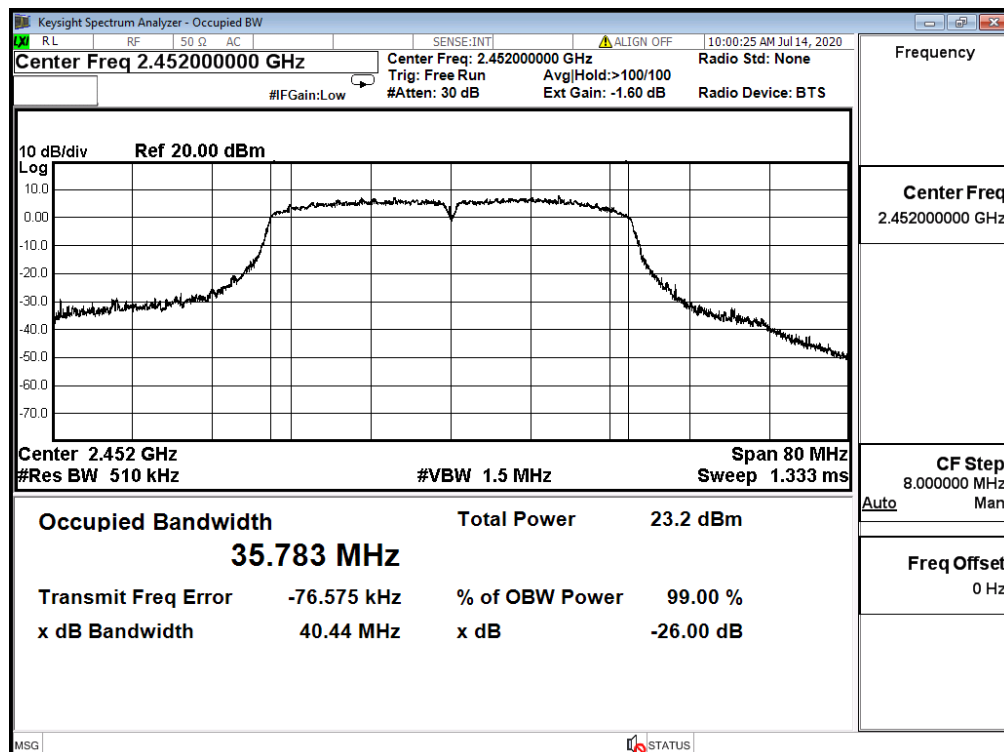
IEEE 802.11n (40MHz) - 2422MHz



IEEE 802.11n (40MHz) - 2437MHz

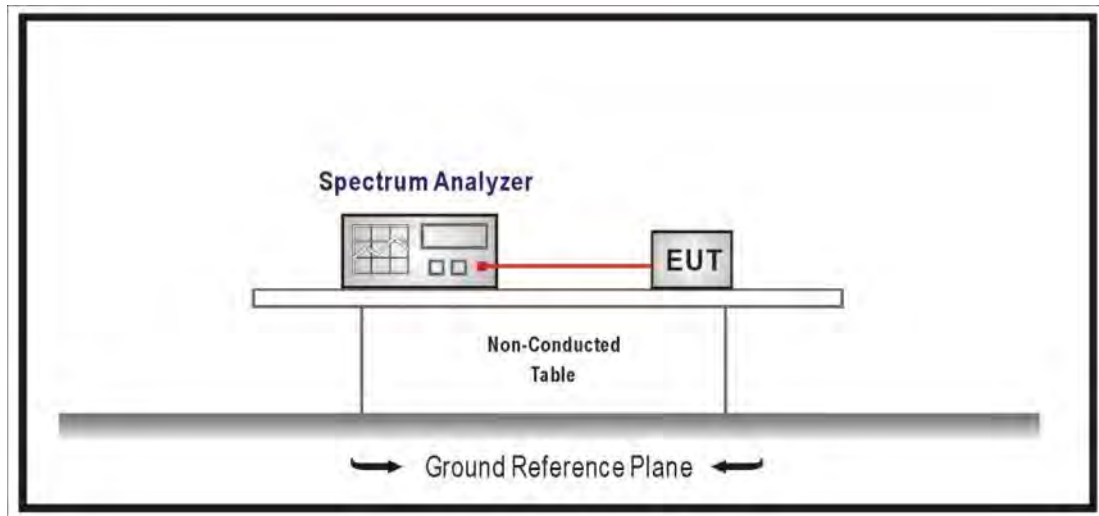


IEEE 802.11n (40MHz) - 2452MHz



9. Power Density

9.1. Test Setup



9.2. Limits

The peak power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8dBm in any 3kHz band during any time interval of continuous transmission.

9.3. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure section 10.2 of KDB 558074 D01 v05r02 for compliance to FCC 47CFR 15.247 requirements.

Set 3KHz $\leq$ RBW $\leq$ 100 kHz, Set VBW $\geq$ 3xRBW, Sweep time=Auto, Set Peak detector.

9.4. Test Specification

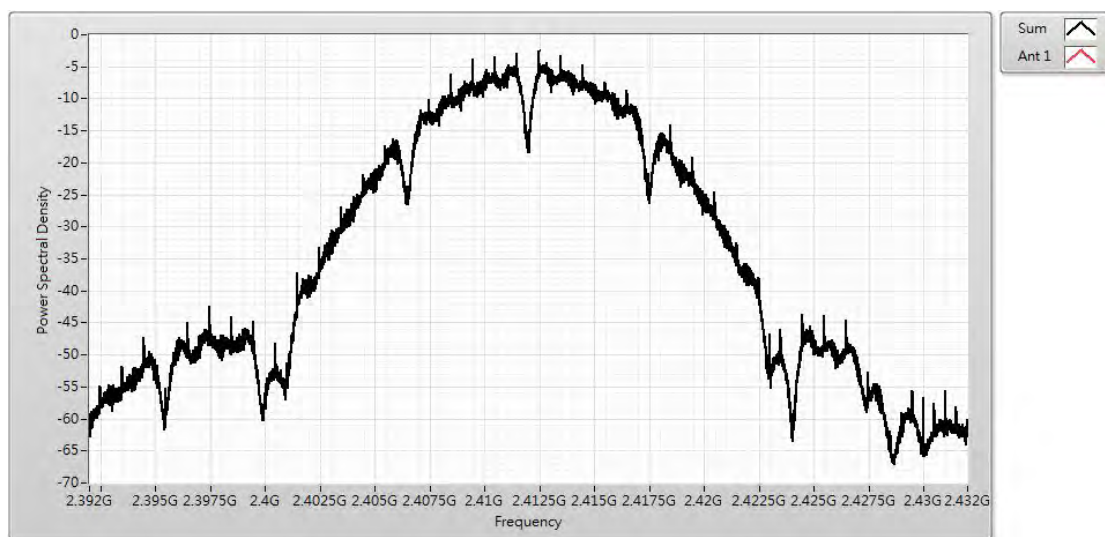
According to FCC Part 15 Subpart C Paragraph 15.247: 2019

9.5. Test Result

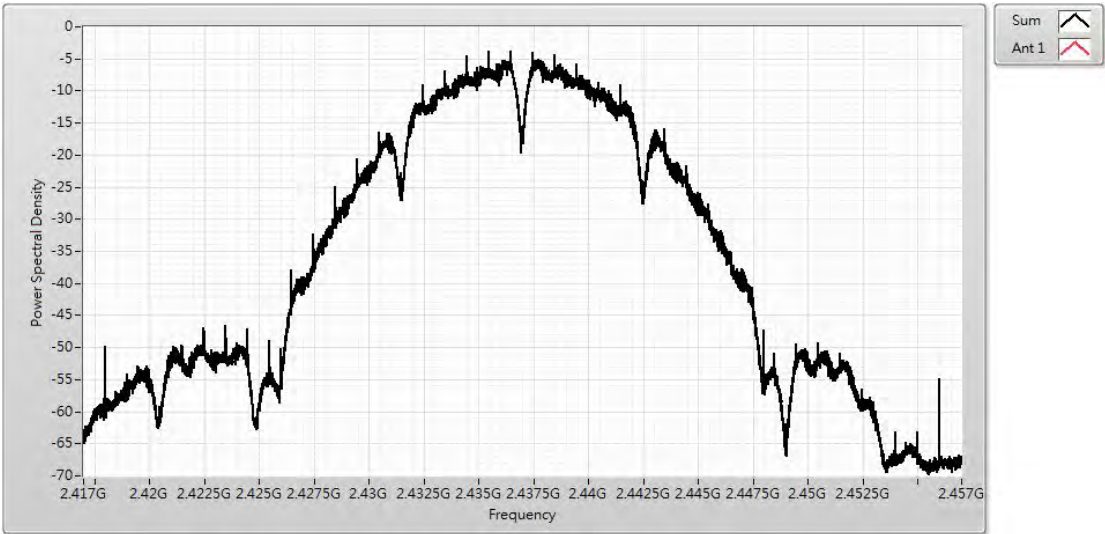
Product	Vehicle Gateway		
Test Item	Power Density		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

IEEE 802.11b (ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm/RBW)	Limit (dBm/3kHz)	Result
1	2412	-2.440	≤ 8	Pass
6	2437	-3.700	≤ 8	Pass
11	2462	-1.010	≤ 8	Pass

802.11b - Channel 1 (2412MHz)



802.11b - Channel 6 (2437MHz)



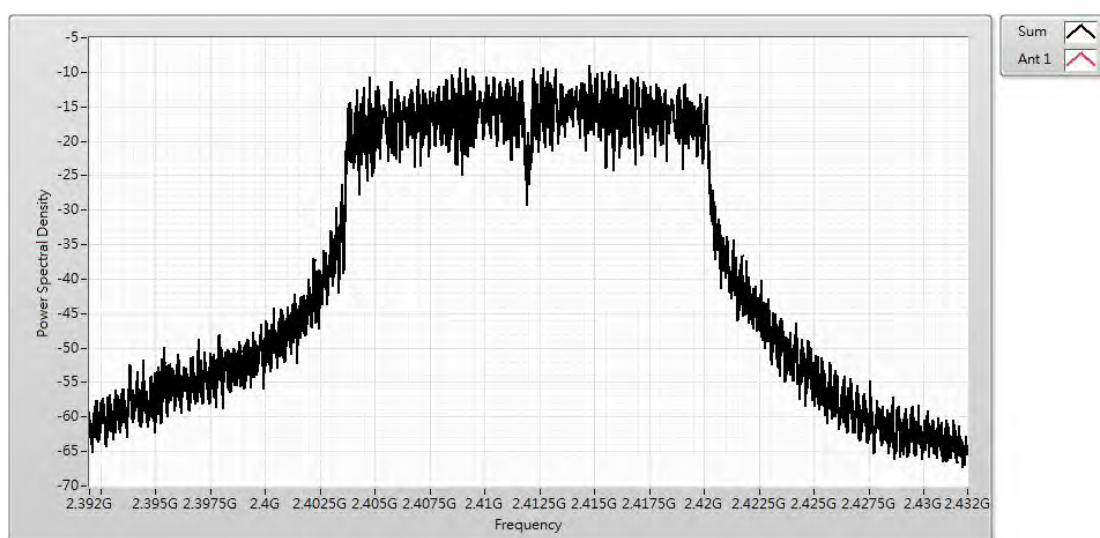
802.11b - Channel 11 (2462MHz)



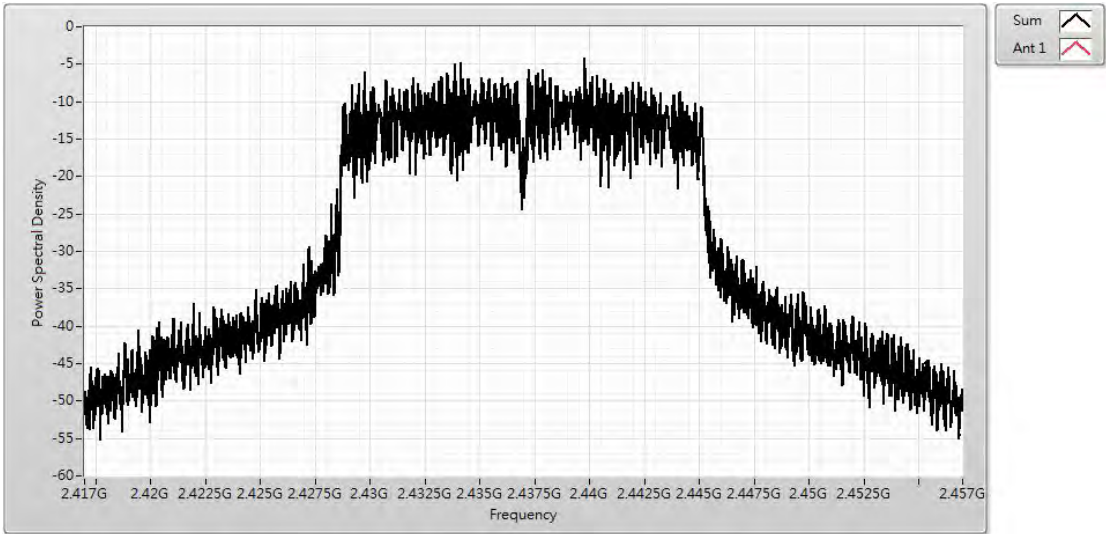
Product	Vehicle Gateway		
Test Item	Power Density		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

IEEE 802.11g (ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm/RBW)	Limit (dBm/3kHz)	Result
1	2412	-8.970	≤ 8	Pass
6	2437	-4.220	≤ 8	Pass
11	2462	-6.750	≤ 8	Pass

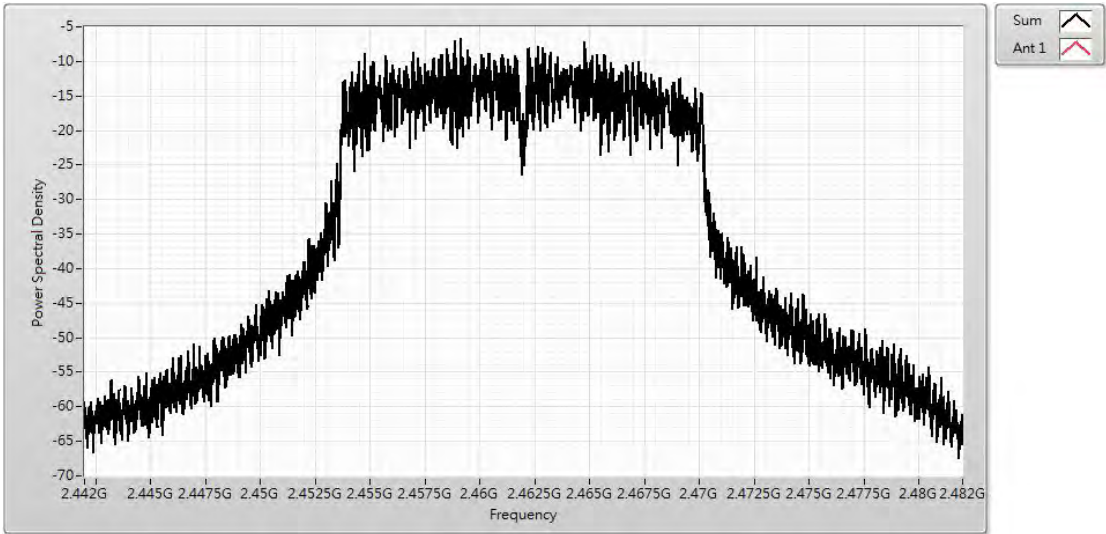
802.11g - Channel 1 (2412MHz)



802.11g - Channel 6 (2437MHz)



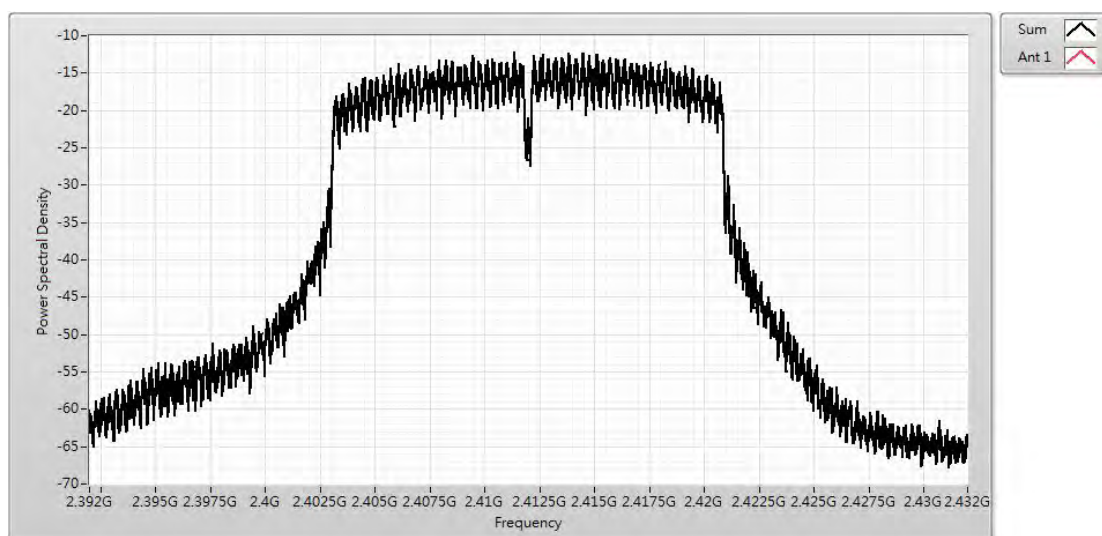
802.11g - Channel 11 (2462MHz)



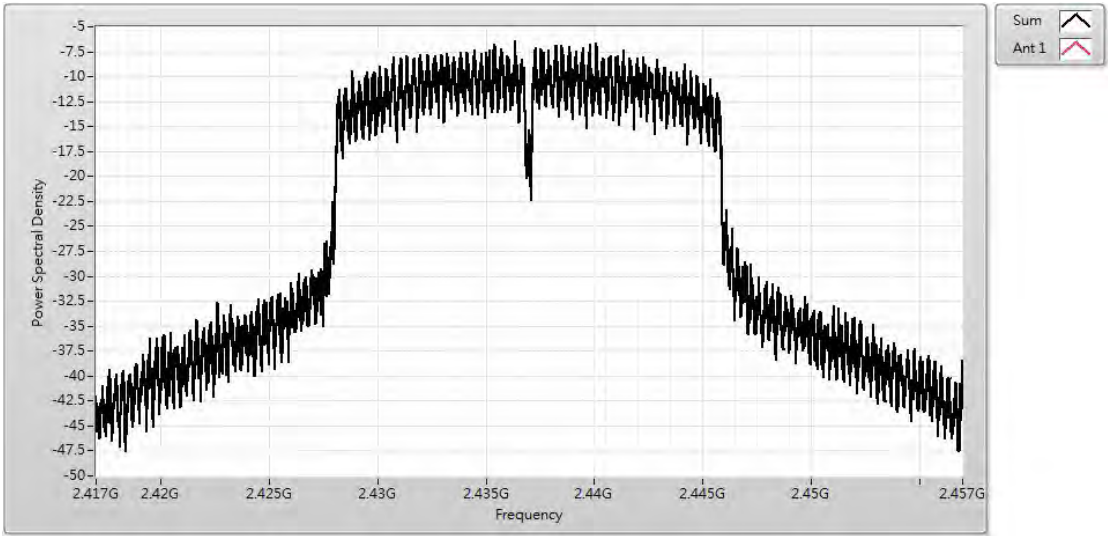
Product	Vehicle Gateway		
Test Item	Power Density		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

IEEE 802.11n 20M (ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm/RBW)	Limit (dBm/3kHz)	Result
1	2412	-12.190	≤ 8	Pass
6	2437	-6.340	≤ 8	Pass
11	2462	-7.170	≤ 8	Pass

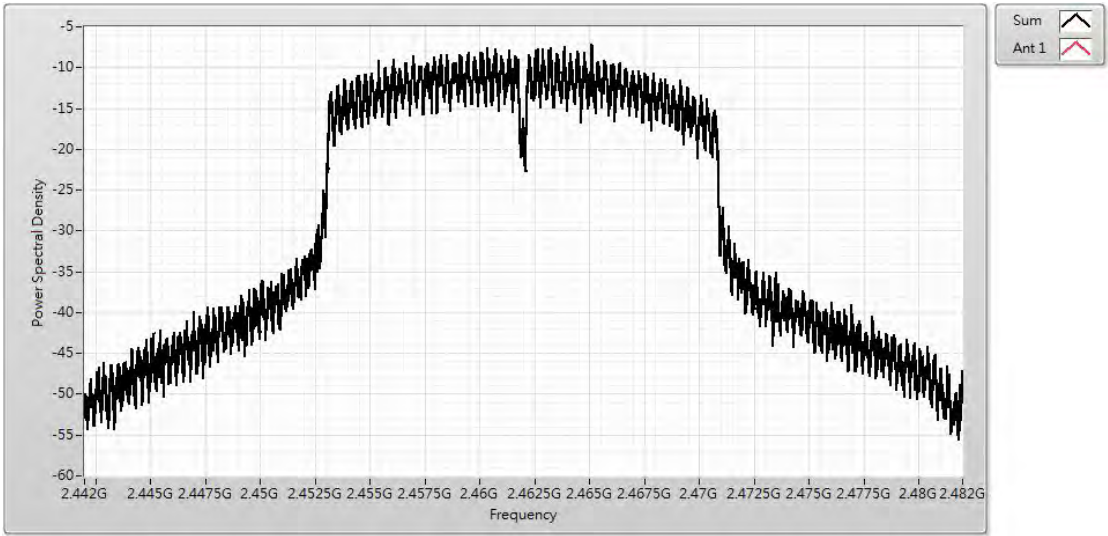
IEEE 802.11n (20MHz) - Channel 1 (2412MHz)



IEEE 802.11n (20MHz) - Channel 6 (2437MHz)



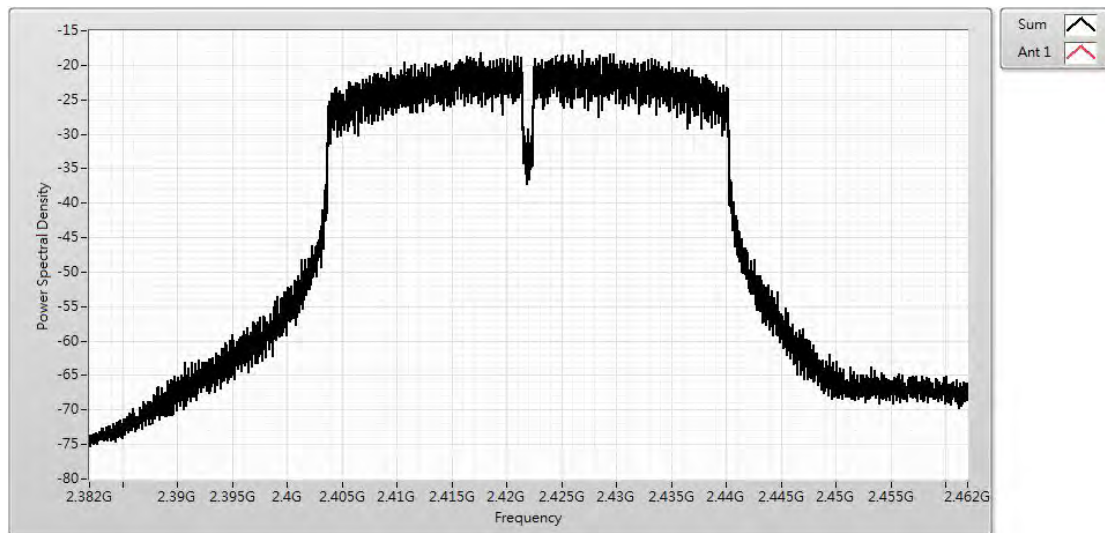
IEEE 802.11n (20MHz) - Channel 11 (2462MHz)



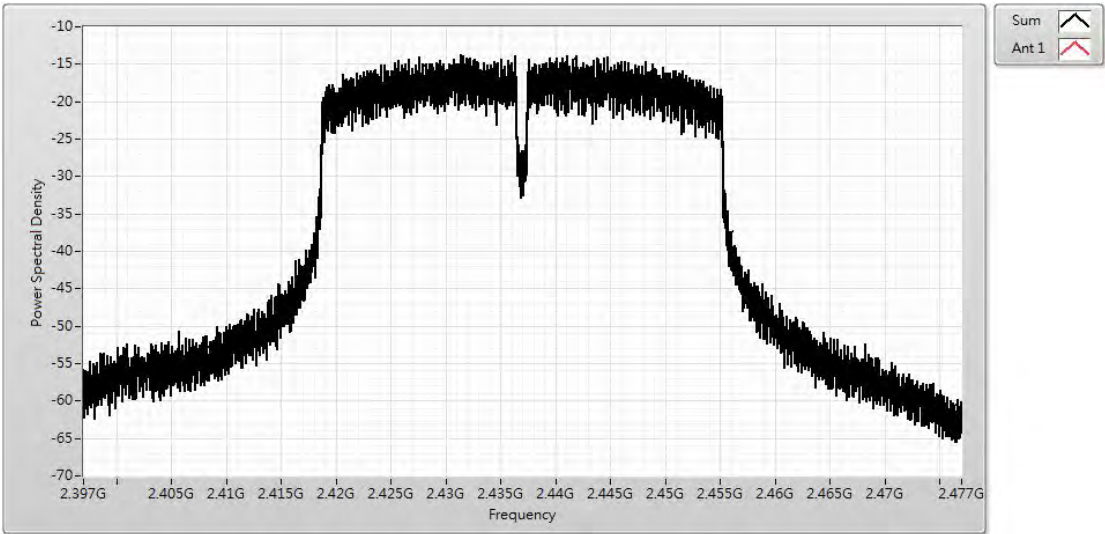
Product	Vehicle Gateway		
Test Item	Power Density		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2020/07/14	Test Site	SR12-H
Temperature(°C)	24	Humidity (%RH)	61

IEEE 802.11n 40M (ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm/RBW)	Limit (dBm/3kHz)	Result
3	2422	-17.870	≤ 8	Pass
6	2437	-13.640	≤ 8	Pass
9	2452	-14.810	≤ 8	Pass

IEEE 802.11n (40MHz) - Channel 3 (2422MHz)



IEEE 802.11n (40MHz) - Channel 6 (2437MHz)



IEEE 802.11n (40MHz) - Channel 9 (2452MHz)

