RADIO TEST REPORT
FCC 47 CFR PART 15 SUBPART C

Test Standard	**FCC Part 15.247**
FCC ID	**2AVTJ-CP13**
Brand name	**Connectpoint**
Product name	**SPX Sandpiper Digital Display**
Model No.	**CP13**
Test Result	**Pass**
Statements of Conformity	**Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.**

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.
The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory).

Approved by:

Kevin Tsai
Deputy Manager

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	May 14, 2020	Initial Issue	ALL	Angel Cheng
01	May 25, 2020	See the following note Rev.(01)	P.4-5, P.8-9, P.12, P.19, P.29, P.31, P.35	Allison Chen
02	May 26, 2020	See the following note Rev.(02)	P.4, P.8, P.31-35	Allison Chen

Rev.(01)
1. Added S/N, SW test tool and SW tool version in section 1.1.
2. Revised antenna type in section 1.3.
3. Revised calibration date and adapter for support equipment in section 1.6 & 1.7.
4. Revised the worst mode of measurement in section 3.2.
5. Revised 6dB test plot for high channel in section 4.2.
6. Revised power density and frequency range for 11n40.
Rev.(02)
1. Revised date of test and test procedure in section 1.1
2. Revised conducted cal. date in section 1.6.
3. Revised test data of power density in section 4.4.

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Connectpoint Inc. 175 Cremona, Goleta, 93117 CA
Manufacturer	Sable Corporation 4F, No.945, Boai Street, Jubei City, Hsinchu, 302 Taiwan
Equipment	SPX Sandpiper Digital Display
Model Name	CP13
Model Discrepancy	N/A
Received Date	March 11, 2020
Date of Test	April 9 ~ May 25, 2020
Output Power(W)	IEEE 802.11b mode: 0.2291 IEEE 802.11g mode: 0.2500 IEEE 802.11n HT 20 MHz mode: 0.2495 IEEE 802.11n HT 40 MHz mode: 0.2399
Power Supply	Power from power adapter.
S/N	M13Q46TCA350047
SW Test Tool	Android Debug Bridge
SW Tool version	Version 1.0.32
Test Procedure	1. Install Android Debug Bridge software. 2. Open the command prompt in the ADB folder. 3. Enter Command to test.

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1.2 EUT CHANNEL INFORMATION

Frequency Range	802.11b/g/n HT 20: 2412MHz ~ 2462MHz 802.11n HT40: 2422MHz ~ 2452MHz
Modulation Type	1. IEEE 802.11b mode: CCK 2. IEEE 802.11g mode: OFDM 3. IEEE 802.11n HT 20 MHz mode : OFDM 4. IEEE 802.11n HT40 MHz mode: OFDM
Number of channel	1. IEEE 802.11b mode: 11 Channels 2. IEEE 802.11g mode: 11 Channels 3. IEEE 802.11n HT 20 MHz mode : 11 Channels 4. IEEE 802.11n HT 40 MHz mode : 7 Channels

Remark:
Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	**Number of frequencies**	**Location in frequency range of operation**
☐ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☒ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Type	☐ PIFA ☒ PCB ☐ Dipole ☐ Coils
Antenna Gain	Gain: 5.82dBi
Antenna Connector	I-PEX

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1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 1.4003
RF output power, conducted	+/- 1.1372
Power density, conducted	+/- 1.4003
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389

***Remark**:*
1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

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1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	Dally Hong	-
Radiation	Jerry Chang	-
RF Conducted	Dally Hong	-

Remark: *The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.*

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1.6 INSTRUMENT CALIBRATION

3M 966 Chamber Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/25/2020	02/24/2021
Bilog Antenna	Sunol Sciences	JB3	A030105	07/26/2019	07/25/2020
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/25/2020	02/24/2021
Coaxial Cable	EMCI	EMC105	190914+25111	09/20/2019	09/19/2020
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/15/2020	01/14/2021
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	10/04/2019	10/03/2020
Loop Ant	COM-POWER	AL-130	121051	03/27/2020	03/26/2021
Pre-Amplifier	EMEC	EM330	060609	02/25/2020	02/24/2021
Pre-Amplifier	HP	8449B	3008A00965	02/25/2020	02/24/2021
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	05/29/2019	05/28/2020
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	e3 6.11-20180413				

Conducted Emission Room # B					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
CABLE	EMCI	CFD300-NL	CERF	06/27/2019	06/26/2020
EMI Test Receiver	R&S	ESCI	100064	07/26/2019	07/25/2020
LISN	SCHAFFNER	NNB 41	03/10013	02/13/2020	02/12/2021
Software	EZ-EMC(CCS-3A1-CE-Wugu)				

Test date: April 9 ~ 15, 2020

RF Conducted Test Site					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Coaxial Cable	Woken	WC12	CC001	06/28/2019	06/27/2020
Coaxial Cable	Woken	WC12	CC003	06/28/2019	06/27/2020
Signal Analyzer	R&S	FSV 40	101073	09/25/2019	09/24/2020
Power Meter	Anritsu	ML2487A	6K00003260	05/23/2019	05/22/2020
Power Seneor	Anritsu	MA2490A	32910	05/23/2019	05/22/2020
Software	N/A				

Test date: May 25, 2020

RF Conducted Test Site					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Coaxial Cable	Woken	WC12	CC001	06/28/2019	06/27/2020
Coaxial Cable	Woken	WC12	CC003	06/28/2019	06/27/2020
Signal Analyzer	R&S	FSV 40	101073	09/25/2019	09/24/2020
Power Meter	Anritsu	ML2487A	6K00003260	05/22/2020	05/21/2021
Power Seneor	Anritsu	MA2490A	32910	05/22/2020	05/21/2021
Software	N/A				

Remark: *Each piece of equipment is scheduled for calibration once a year.*

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1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
	N/A				

Support Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
1	NB(J)	TOSHIBA	PT345T-00L002	N/A	PD97260H
2	Adapter	CWT	KPL-050F-VI	N/A	N/A

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247, KDB 558074 D01.

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2. TEST SUMMERY

FCC Standard Section	Report Section	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207(a)	4.1	AC Conducted Emission	Pass
15.247(a)(2)	4.2	6 dB Bandwidth	Pass
-	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)	4.3	Output Power Measurement	Pass
15.247(e)	4.4	Power Spectral Density	Pass
15.247(d)	4.5	Conducted Band Edge	Pass
15.247(d)	4.5	Conducted Spurious Emission	Pass
15.247(d)	4.6	Radiation Band Edge	Pass
15.247(d)	4.6	Radiation Spurious Emission	Pass

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3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	IEEE 802.11b mode :1Mbps IEEE 802.11g mode :6Mbps IEEE 802.11n HT20 mode :MCS0 IEEE 802.11n HT40 mode: MCS0
Test Channel Frequencies	**IEEE 802.11b mode :** 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz **IEEE 802.11g mode :** 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz **IEEE 802.11n HT20 mode :** 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz **IEEE 802.11n HT40 mode:** 1. Lowest Channel: 2422MHz 2. Middle Channel: 2437MHz 3. Highest Channel: 2452MHz
Operation Transmitter	IEEE 802.11b mode :1T1R IEEE 802.11g mode : 1T1R IEEE 802.11n HT20 mode : 1T1R IEEE 802.11n HT40 mode : 1T1R

Remark:
1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.

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3.2 THE WORST MODE OF MEASUREMENT

Radiated Emission Measurement Above 1G	
Test Condition	**Radiated Emission Above 1G**
Power supply Mode	**Mode 1: EUT power by Adapter**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**
Worst Position	☐ **Placed in fixed position.** ☐ **Placed in fixed position at X-Plane (E2-Plane)** ☒ **Placed in fixed position at Y-Plane (E1-Plane)** ☐ **Placed in fixed position at Z-Plane (H-Plane)**

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
Power supply Mode	**Mode 1: EUT power by Adapter**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**

AC Power Line Conducted Emission	
Test Condition	**AC Power line conducted emission for line and neutral**
Power supply Mode	**Mode 1: EUT power by Supply (120Vac)** **Mode 2: EUT power by Supply (240Vac)**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**

Remark:
1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(Y-Plane) were recorded in this report
3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.

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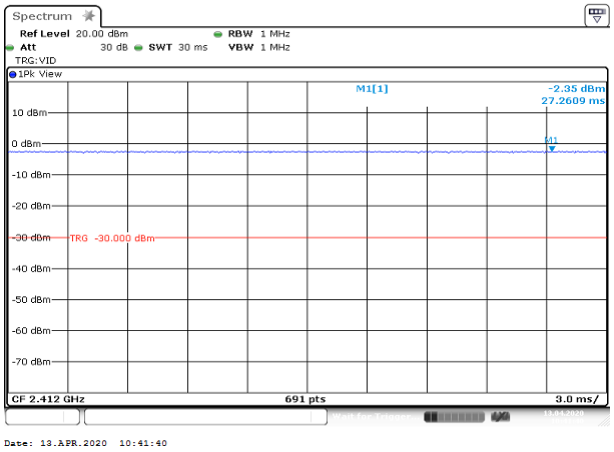
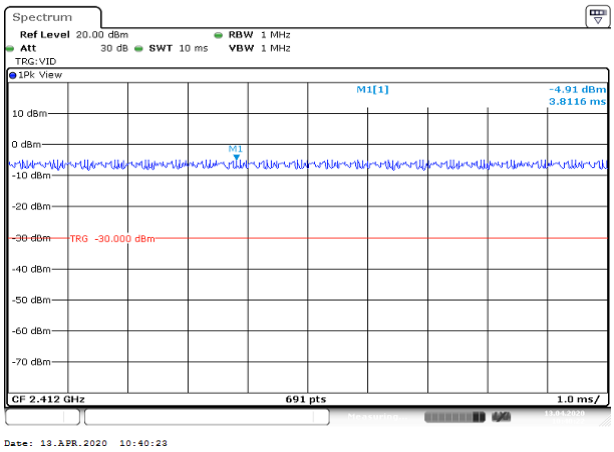
3.3 EUT DUTY CYCLE

Duty Cycle				
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11b	100.00%	0.00	N/A	0.01
802.11g	100.00%	0.00	N/A	0.01
802.11n HT20	100.00%	0.00	N/A	0.01
802.11n HT40	100.00%	0.00	N/A	0.01

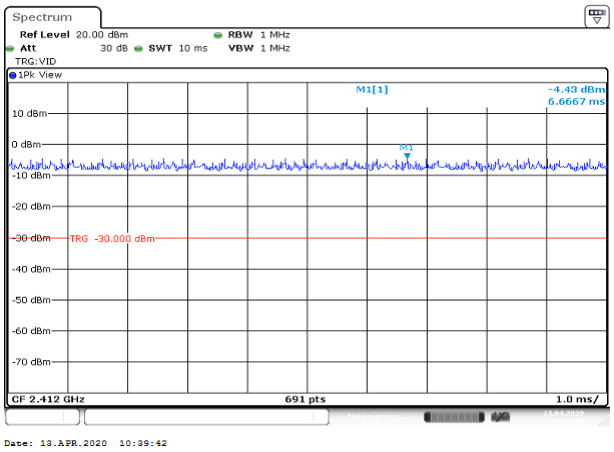
802.11b



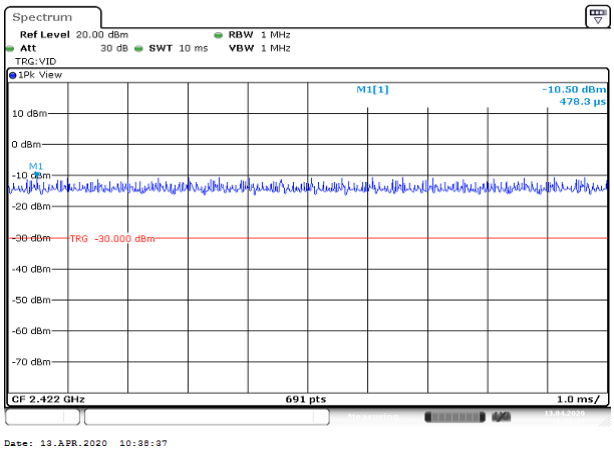
802.11g



802.11n HT20



802.11n HT40



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4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a)(2),

Frequency Range (MHz)	Limits(dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

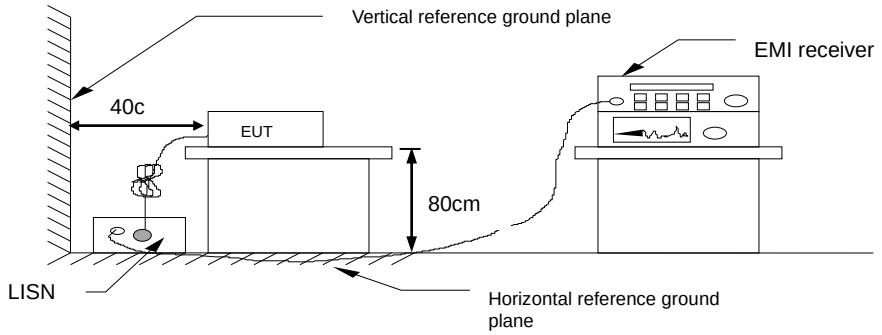
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

4.1.3 Test Setup



4.1.4 Test Result

Pass.

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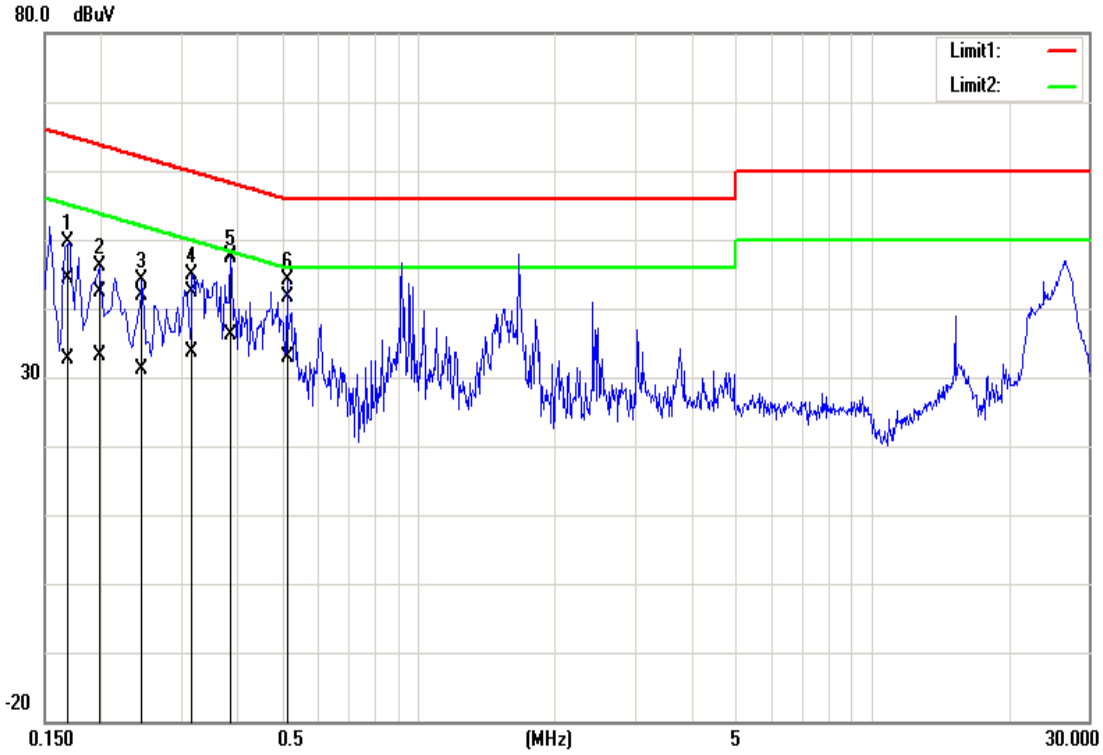
Test Data

Test Mode:	Mode 1	Temp/Hum	24(℃)/ 50%RH
Phase:	Line	Test Date	April 15, 2020
		Test Engineer	Dally Hong



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1700	34.13	22.49	10.22	44.35	32.71	64.96	54.96	-20.61	-22.25	Pass
2	0.1980	32.09	22.85	10.21	42.30	33.06	63.69	53.69	-21.39	-20.63	Pass
3	0.2460	31.60	20.81	10.21	41.81	31.02	61.89	51.89	-20.08	-20.87	Pass
4	0.3180	32.18	23.32	10.22	42.40	33.54	59.76	49.76	-17.36	-16.22	Pass
5*	0.3860	37.49	25.89	10.22	47.71	36.11	58.15	48.15	-10.44	-12.04	Pass
6	0.5140	31.46	22.73	10.22	41.68	32.95	56.00	46.00	-14.32	-13.05	Pass

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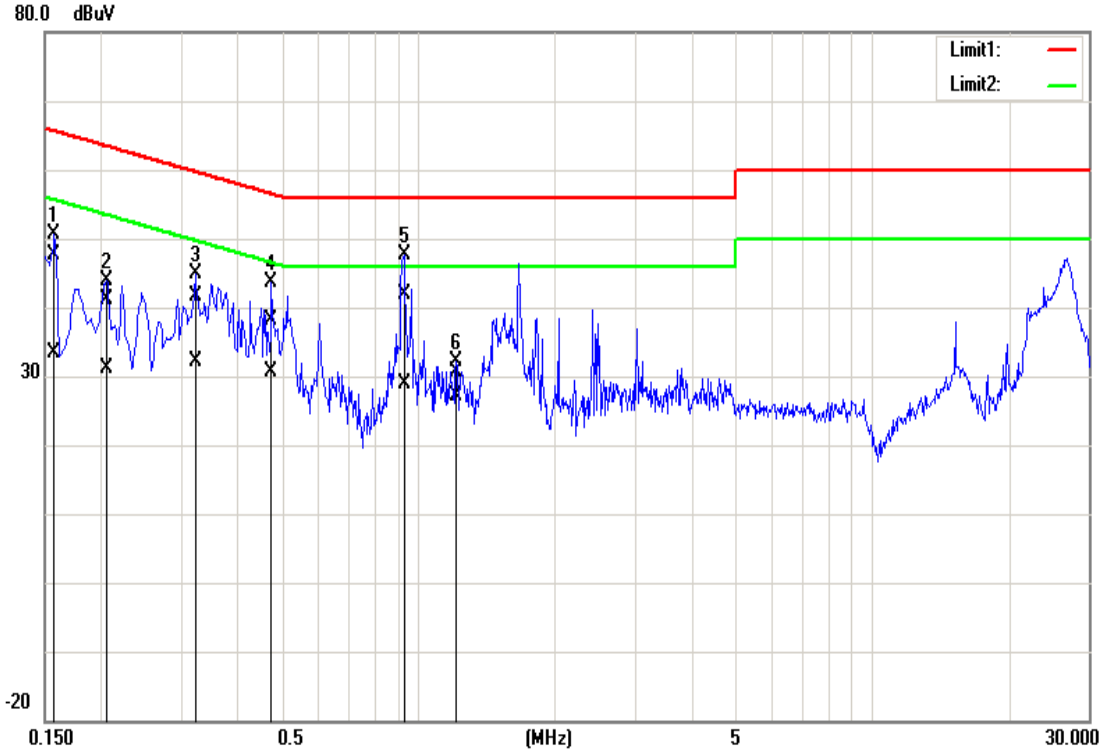
Test Mode:	Mode 1	Temp/Hum	24(℃)/ 50%RH
Phase:	Neutral	Test Date	April 15, 2020
		Test Engineer	Dally Hong



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1580	37.45	23.30	10.19	47.64	33.49	65.57	55.57	-17.93	-22.08	Pass
2	0.2060	30.83	21.04	10.19	41.02	31.23	63.37	53.37	-22.35	-22.14	Pass
3	0.3220	31.42	21.90	10.19	41.61	32.09	59.66	49.66	-18.05	-17.57	Pass
4	0.4740	28.04	20.34	10.19	38.23	30.53	56.44	46.44	-18.21	-15.91	Pass
5*	0.9300	31.61	18.75	10.21	41.82	28.96	56.00	46.00	-14.18	-17.04	Pass
6	1.2140	20.31	17.00	10.21	30.52	27.21	56.00	46.00	-25.48	-18.79	Pass

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4.2 6dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

4.2.1 Test Limit

According to §15.247(a)(2),

6 dB Bandwidth ：

Limit	Shall be at least 500kHz

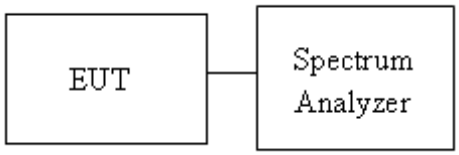
Occupied Bandwidth(99%) ： For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as KDB 558074 D01 and ANSI C63.10: 2013 clause 6.9.2,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth.
4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
5. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

4.2.3 Test Setup



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4.2.4 Test Result

Test mode: IEEE 802.11b mode / 2412-2462 MHz						
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)	6dB limit (kHz)
Low	2412	15.0651	-	10.087	-	≥500
Mid	2437	15.0651	-	10.087	-	
High	2462	15.0217	-	10.087	-	

Test mode: IEEE 802.11g mode / 2412-2462 MHz						
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)	6dB limit (kHz)
Low	2412	17.7568	-	16.4348	-	≥500
Mid	2437	17.7568	-	16.4783	-	
High	2462	17.7568	-	16.4783	-	

Test mode: IEEE 802.11n HT 20 MHz mode / 2412-2462 MHz						
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)	6dB limit (kHz)
Low	2412	18.6251	-	17.6522	-	≥500
Mid	2437	18.5383	-	17.6522	-	
High	2462	18.4949	-	17.6522	-	

Test mode: IEEE 802.11n HT 40 MHz mode / 2422-2452 MHz						
Channel	Frequency (MHz)	Chain 0 OBW(99%) (MHz)	Chain 1 OBW(99%) (MHz)	Chain 0 6dB BW (MHz)	Chain 1 6dB BW (MHz)	6dB limit (kHz)
Low	2422	37.5108	-	36.406	-	≥500
Mid	2437	42.8364	-	36.406	-	
High	2452	42.3733	-	36.406	-	

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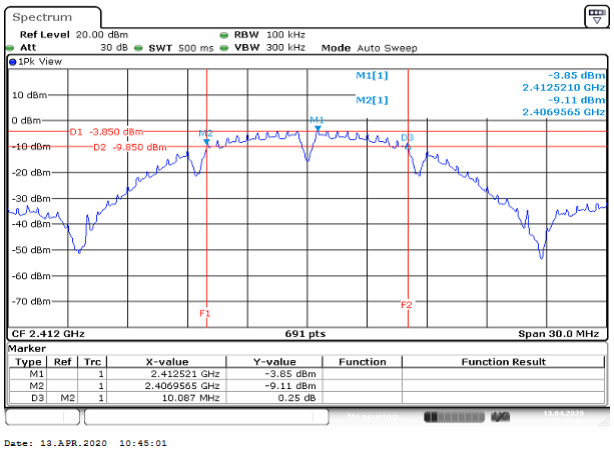
Test Data

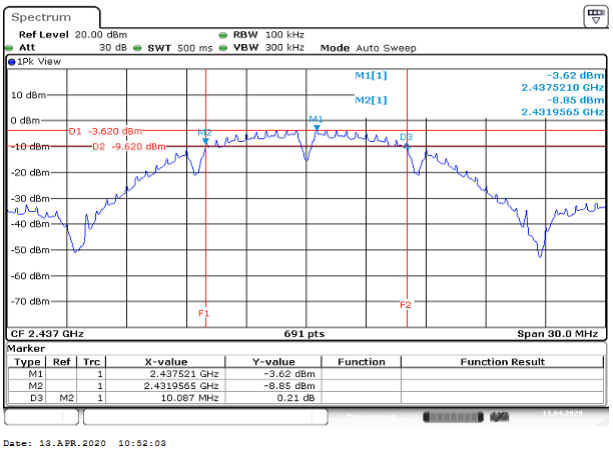
6dB BANDWIDTH

IEEE 802.11b mode- chain 0

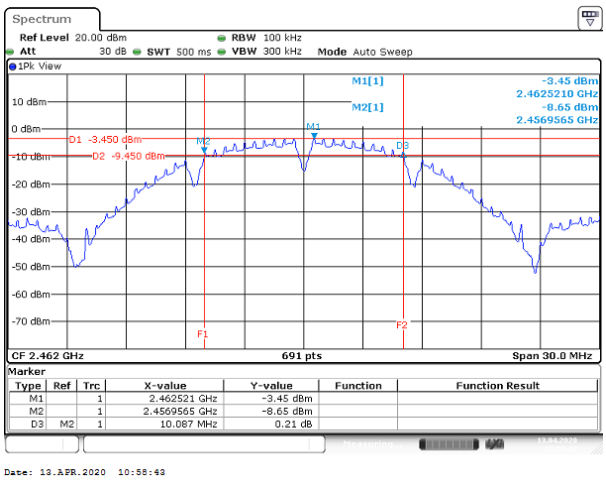
Low CH



Mid CH



High CH



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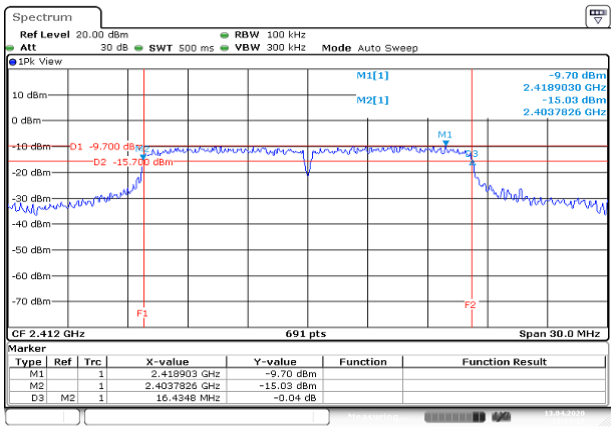
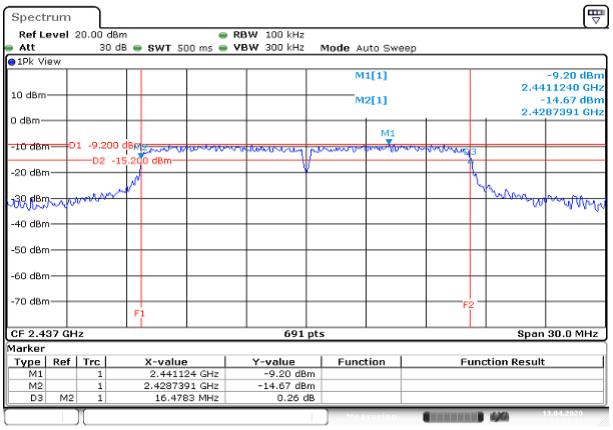
IEEE 802.11g mode- chain 0

Low CH



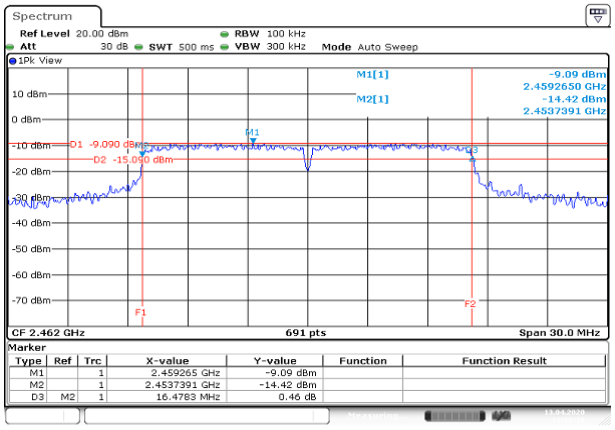
Date: 13.APR.2020 11:13:17

Mid CH



Date: 13.APR.2020 11:21:16

High CH



Date: 13.APR.2020 11:28:18

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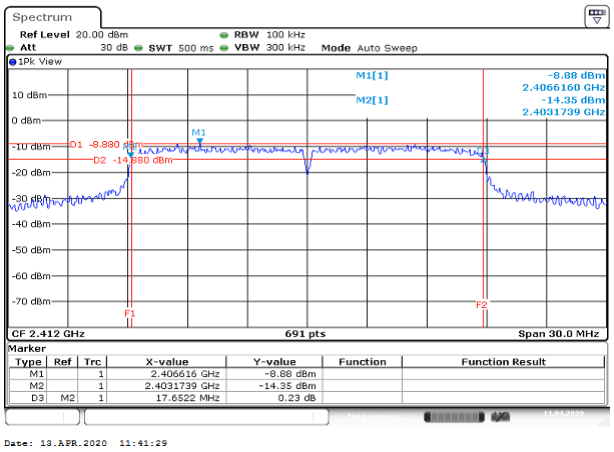
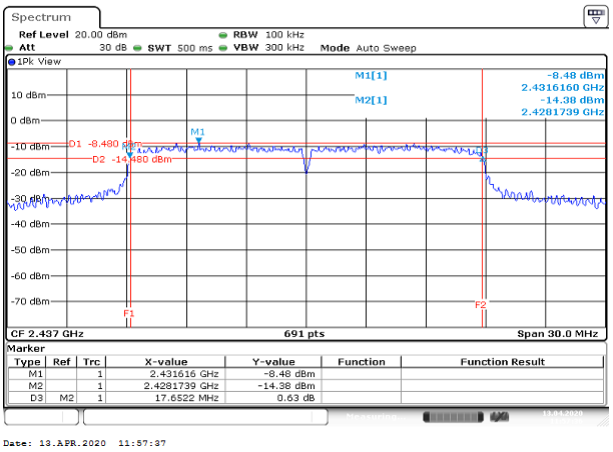
IEEE 802.11n HT20 mode- chain 0

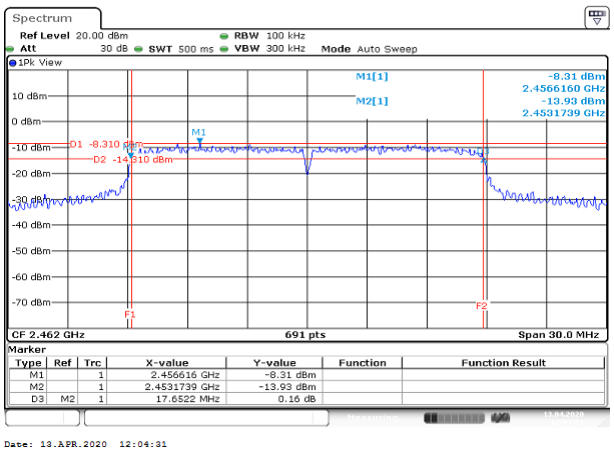
Low CH



Mid CH



High CH



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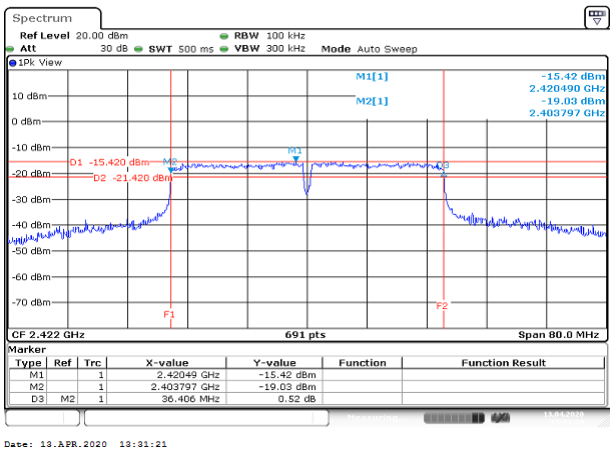
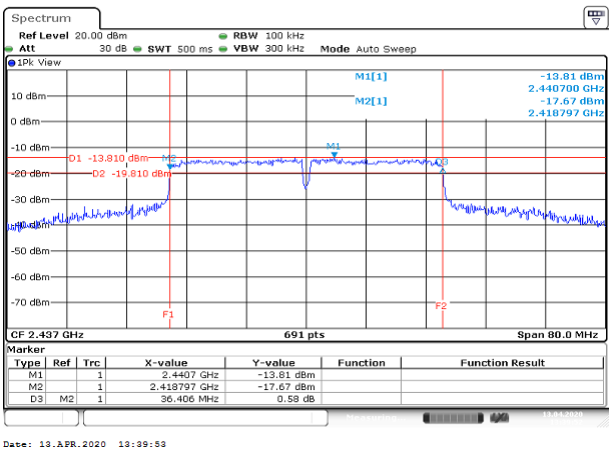
IEEE 802.11n HT40 mode- chain 0

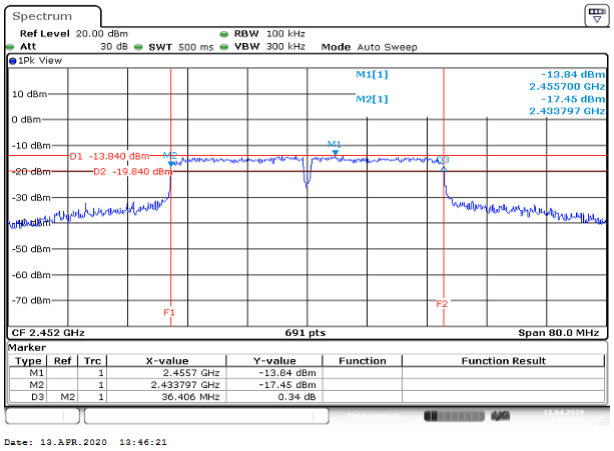
Low CH



Mid CH



High CH



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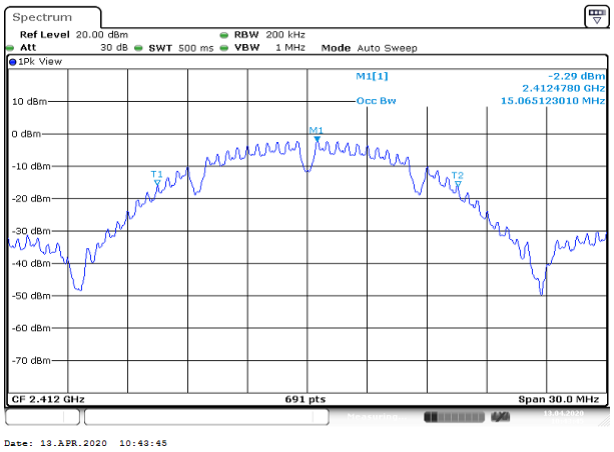
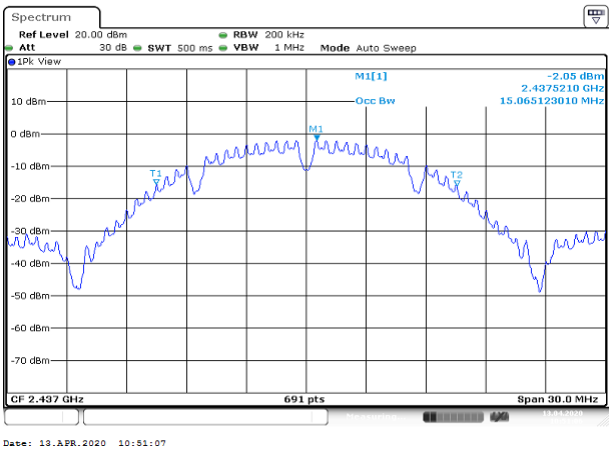
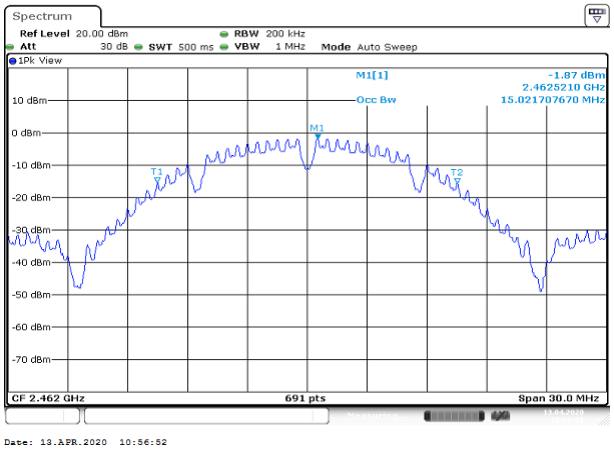
Test Data

BANDWIDTH 99%

IEEE 802.11b mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

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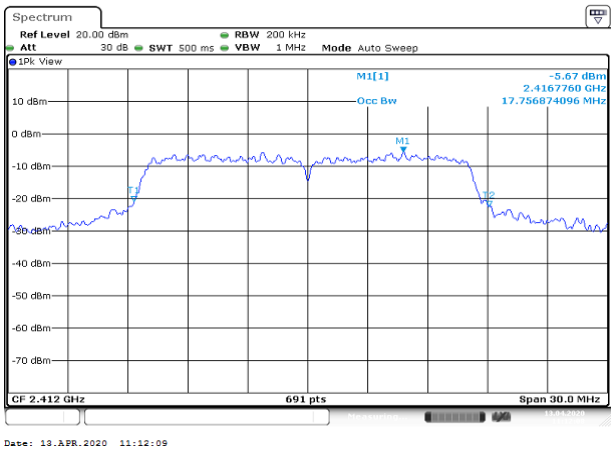
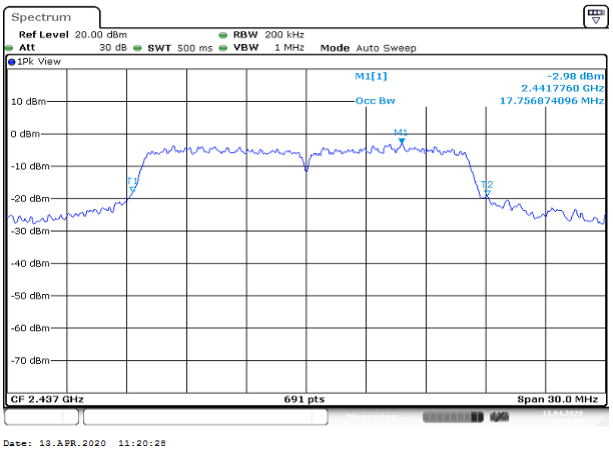
IEEE 802.11g mode- chain 0

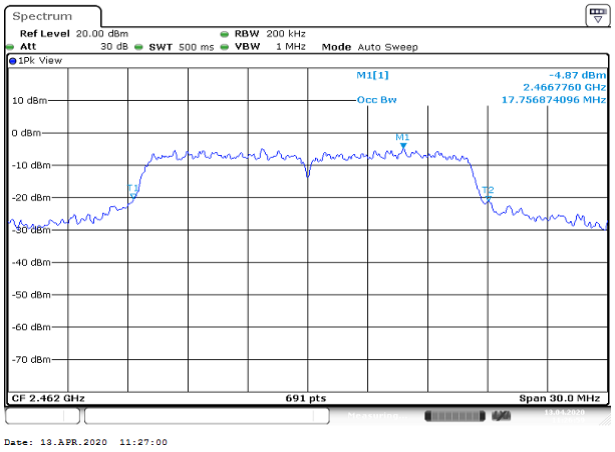
Low CH



Mid CH



High CH



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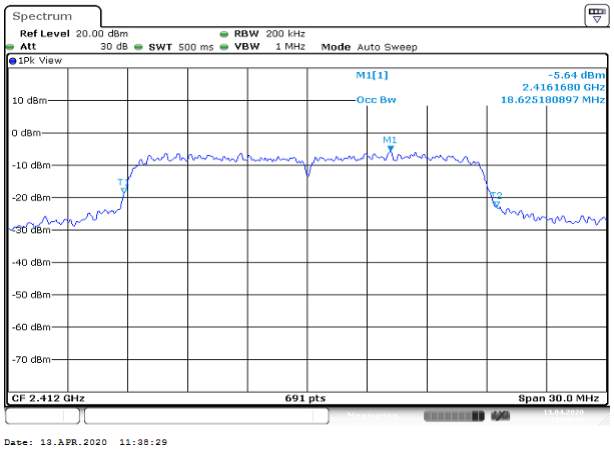
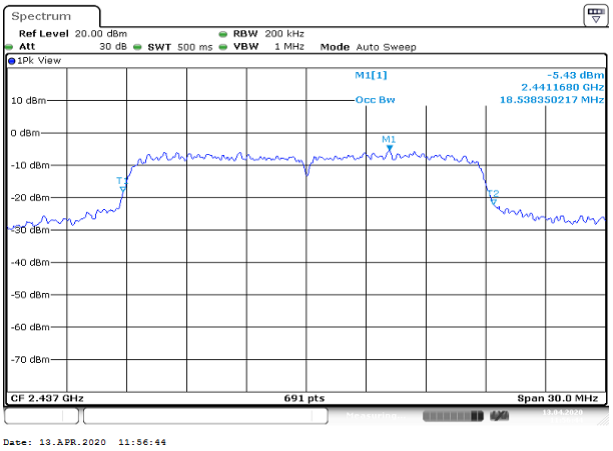
IEEE 802.11n HT20 mode- chain 0

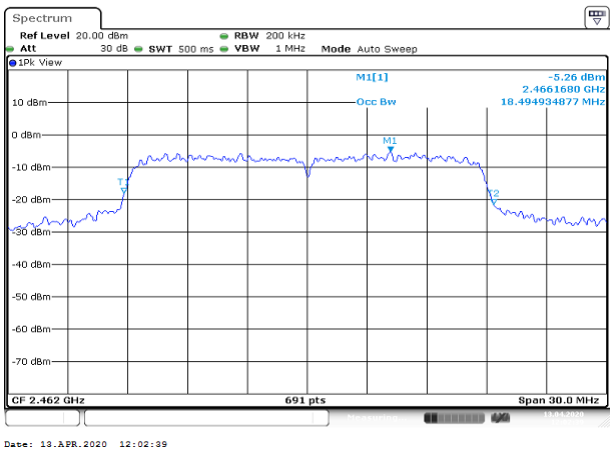
Low CH



Mid CH



High CH



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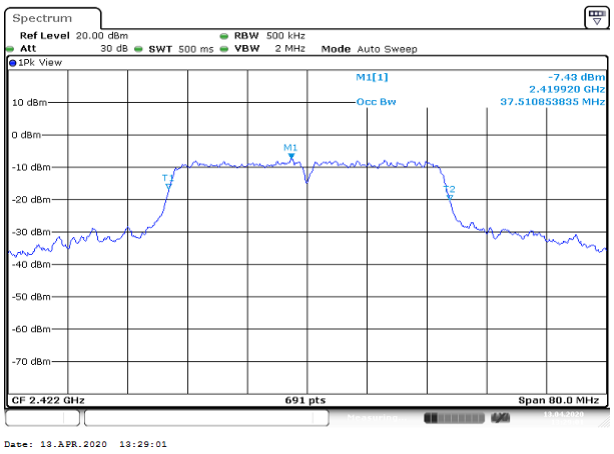
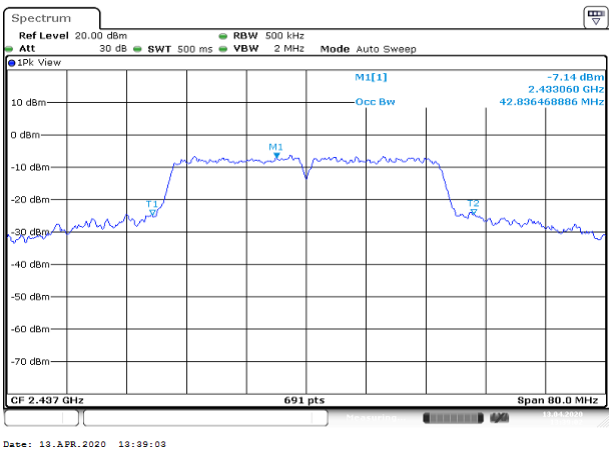
IEEE 802.11n HT40 mode- chain 0

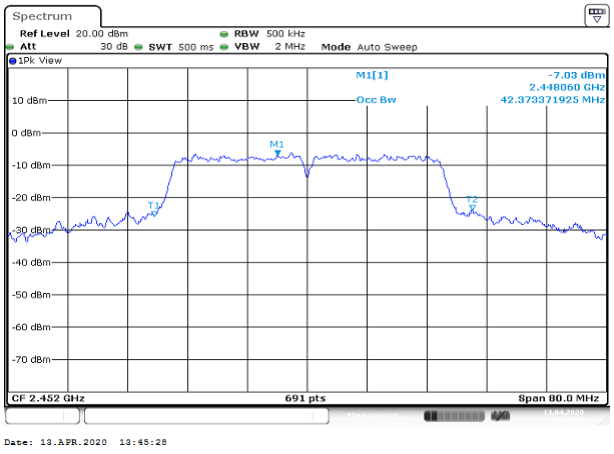
Low CH



Mid CH



High CH



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4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(b),

Peak output power：

For systems using digital modulation in the 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt(30 dBm) and the e.i.r.p. shall not exceed 4Watt(36 dBm), base on the use of antennas with directional gain not exceed 6 dBi If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Limit	☒ Antenna not exceed 6 dBi：30dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 30 – (DG – 6)] ☐ Point-to-point operation：

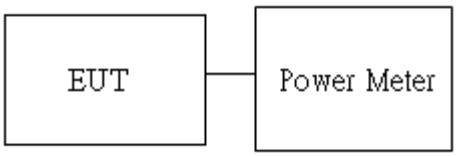
Average output power：For reporting purposes only.

4.3.2 Test Procedure

Test method Refer as KDB 558074 D01, Section 9.1.2.

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

4.3.3 Test Setup



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4.3.4 Test Result

Peak output power：

Wifi 2.4G							
Config	**CH**	**Freq. (MHz)**	**power set**	**PK Power (dBm)**	**PK Total Power (W)**	**DG (dBi)**	**Limit (dBm)**
IEEE 802.11b Data rate: 1Mbps	Low	2412	63	23.02	0.2004	5.82	30
	Mid	2437	63	23.50	0.2239		
	High	2462	63	23.60	0.2291		
IEEE 802.11g Data rate: 6Mbps	Low	2412	63	23.73	0.2360		
	Mid	2437	63	23.90	0.2455		
	High	2462	63	23.98	0.2500		
IEEE 802.11n HT20 Data rate: MCS0	Low	2412	63	23.72	0.2355		
	Mid	2437	63	23.77	0.2382		
	High	2462	63	23.97	0.2495		
IEEE 802.11n HT40 Data rate: MCS0	Low	2422	59	23.58	0.2280		
	Mid	2437	63	23.80	0.2399		
	High	2452	59	23.79	0.2393		

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Average output power：

Wifi 2.4G				
Config	**CH**	**Freq. (MHz)**	**Power Setting**	**AV Power (dBm)**
IEEE 802.11b Data rate: 1Mbps	Low	2412	63	21.38
	Mid	2437	63	21.79
	High	2462	63	21.93
IEEE 802.11g Data rate: 6Mbps	Low	2412	63	19.54
	Mid	2437	63	19.76
	High	2462	63	19.91
IEEE 802.11n HT20 Data rate: MCS0	Low	2412	63	19.51
	Mid	2437	63	19.63
	High	2462	63	19.79
IEEE 802.11n HT40 Data rate: MCS0	Low	2422	59	18.55
	Mid	2437	63	19.74
	High	2452	59	18.66

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4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.247(e),

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

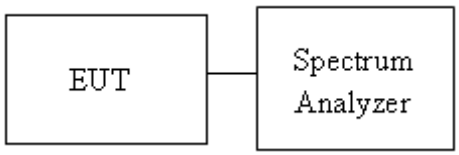
Limit	☒ Antenna not exceed 6 dBi：8dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 8 – (DG – 6)] ☐ Point-to-point operation：

4.4.2 Test Procedure

Test method Refer as KDB 558074 D01, Section 10.2

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 3kHz, VBW = 30kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
4. The path loss and Duty Factor were compensated to the results for each measurement by SA.
5. Mark the maximum level.
6. Measure and record the result of power spectral density. in the test report.

4.4.3 Test Setup



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4.4.4 Test Result

Test mode: IEEE 802.11b mode / 2412-2462 MHz					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PSSD (dBm)**	**Limit (dBm)**
Low	2412	-13.02	-	-13.02	8
Mid	2437	-11.75	-	-11.75	
High	2462	-12.40	-	-12.40	

Test mode: IEEE 802.11g mode / 2412-2462 MHz					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PSSD (dBm)**	**Limit (dBm)**
Low	2412	-13.28	-	-13.28	8
Mid	2437	-11.49	-	-11.49	
High	2462	-12.57	-	-12.57	

Test mode: IEEE 802.11n HT 20 MHz mode / 2412-2462 MHz					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PSSD (dBm)**	**Limit (dBm)**
Low	2412	-12.51	-	-12.51	8
Mid	2437	-11.84	-	-11.84	
High	2462	-11.03	-	-11.03	

Test mode: IEEE 802.11n HT 40 MHz mode / 2422-2452 MHz					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PSSD (dBm)**	**Limit (dBm)**
Low	2422	-14.71	-	-14.71	8
Mid	2437	-12.15	-	-12.15	
High	2452	-14.29	-	-14.29	

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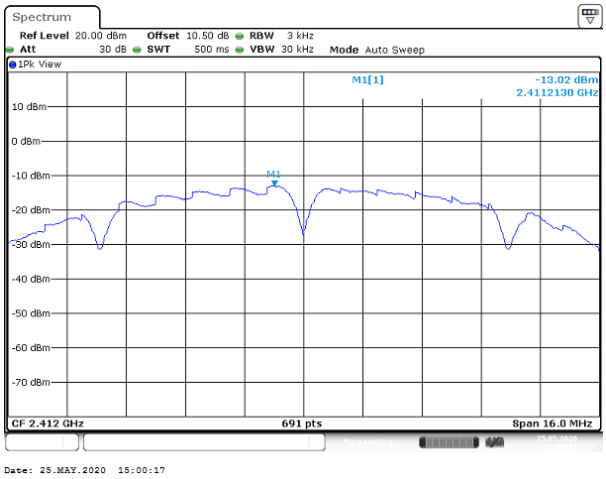
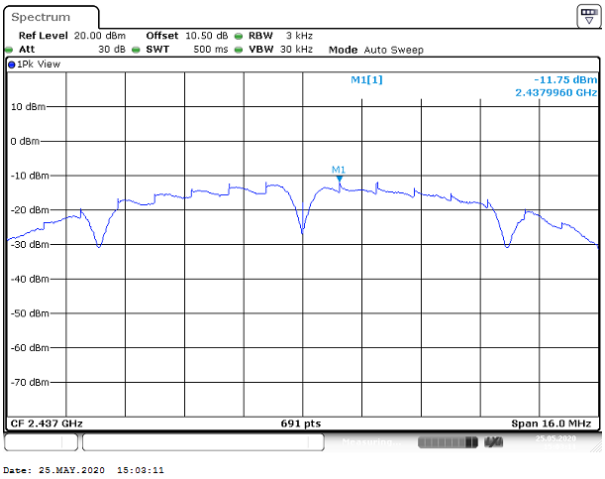
Test Data

IEEE 802.11b mode- chain 0

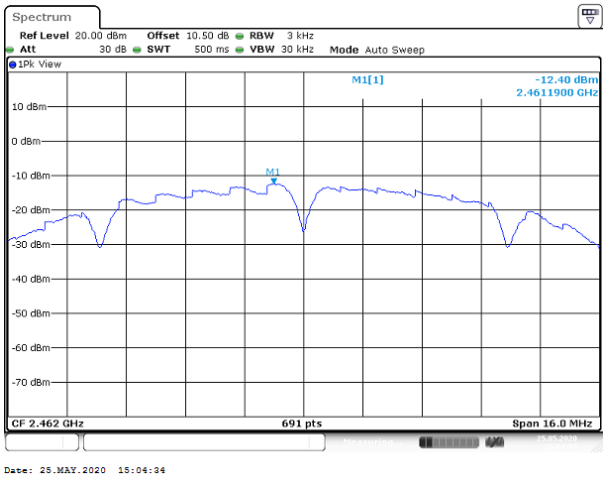
Low CH



Mid CH



High CH



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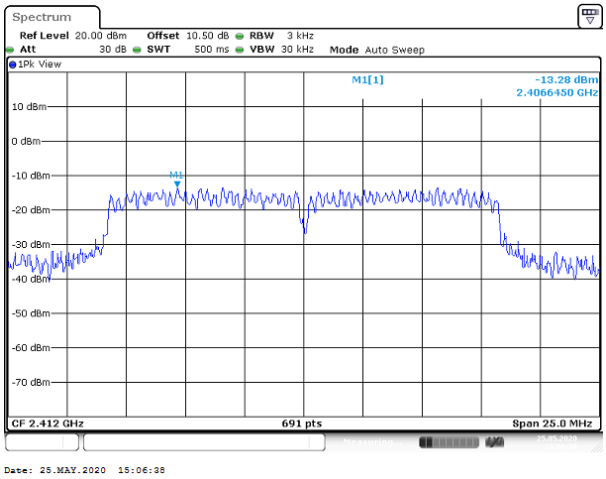
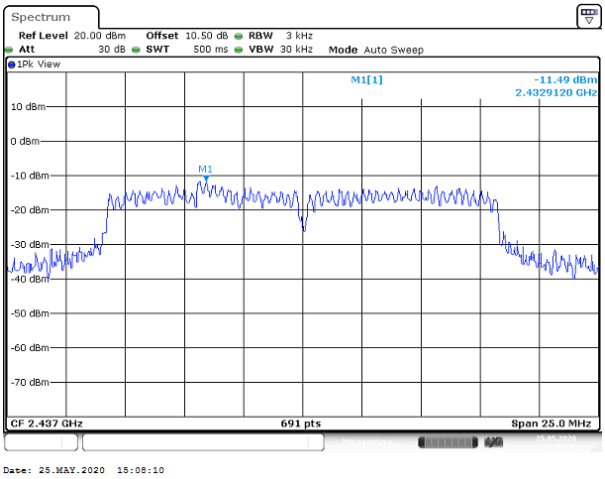
IEEE 802.11g mode- chain 0

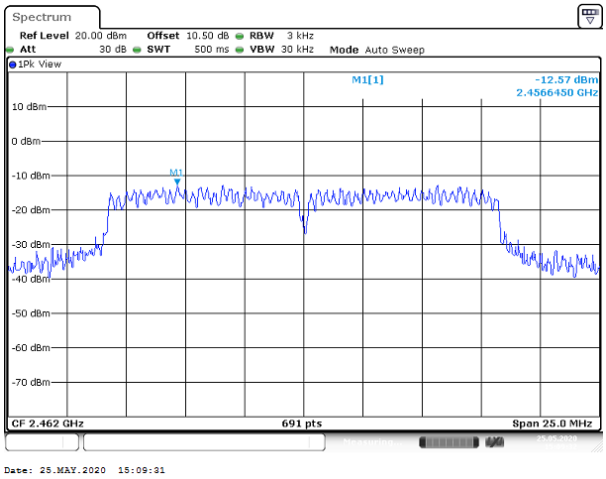
Low CH



Mid CH



High CH



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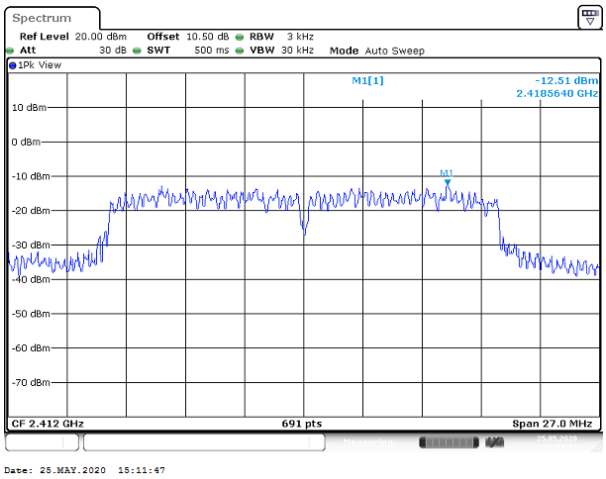
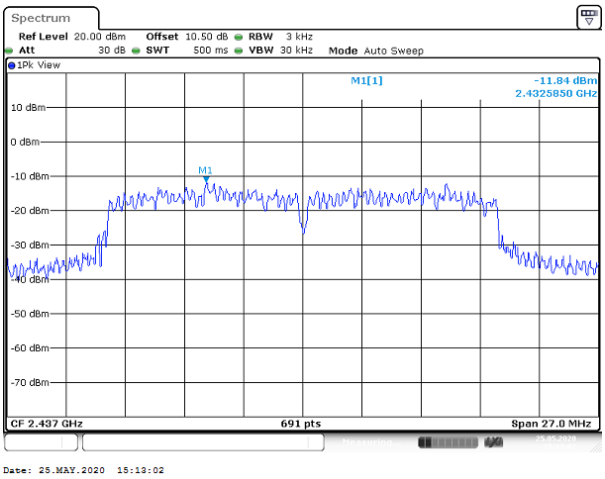
IEEE 802.11n HT20 mode- chain 0

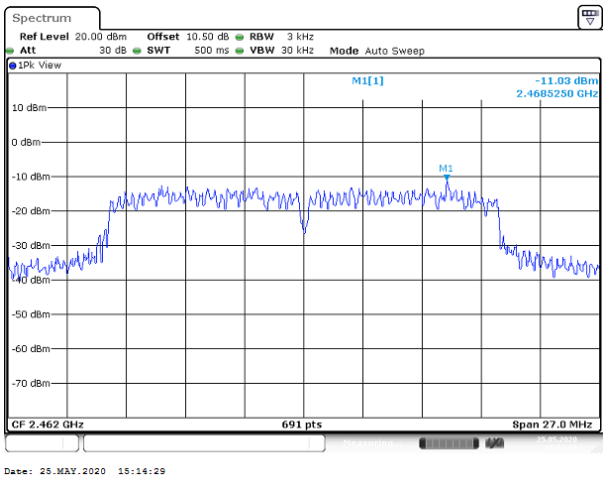
Low CH



Mid CH



High CH



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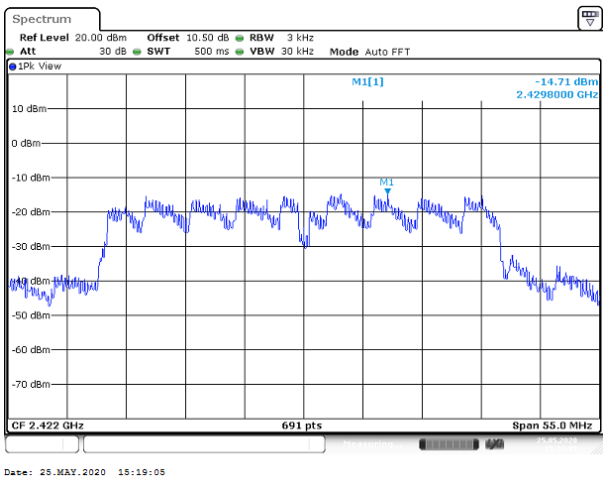
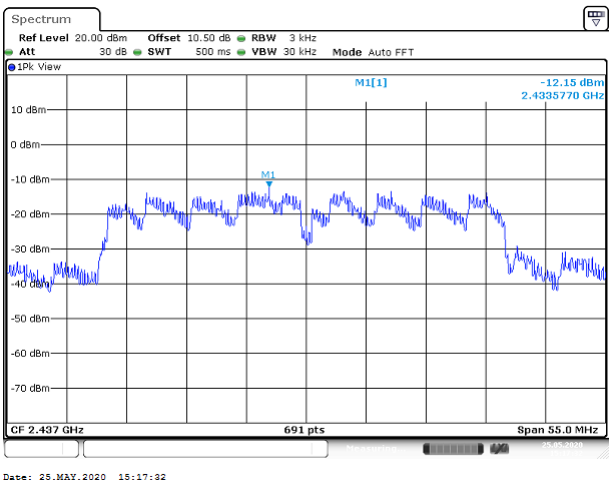
IEEE 802.11n HT40 mode- chain 0

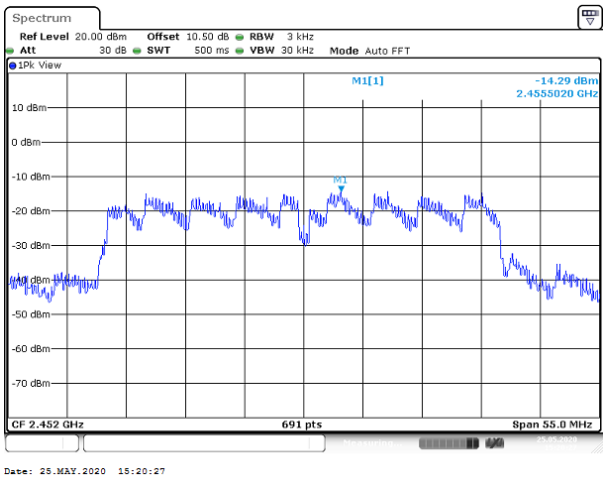
Low CH



Mid CH



High CH



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4.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

4.5.1 Test Limit

According to §15.247(d),

In any 100 kHz bandwidth outside the authorized frequency band,

Non-restricted bands shall be attenuated at least 20 dB/30 dB relative to the maximum PSD level in 100 kHz by RF conducted or a radiated measurement which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

4.5.2 Test Procedure

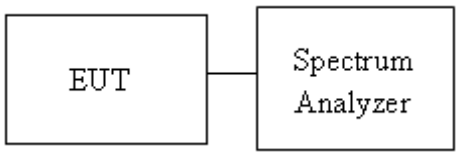
Test method Refer as KDB 662911 D01, KDB 558074 D01.

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. f the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

4.5.3 Test Setup



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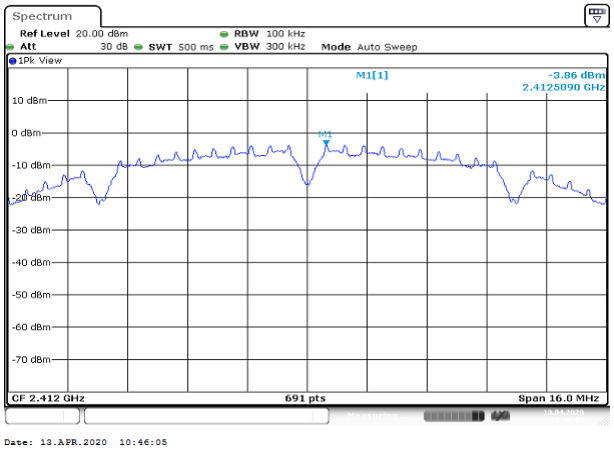
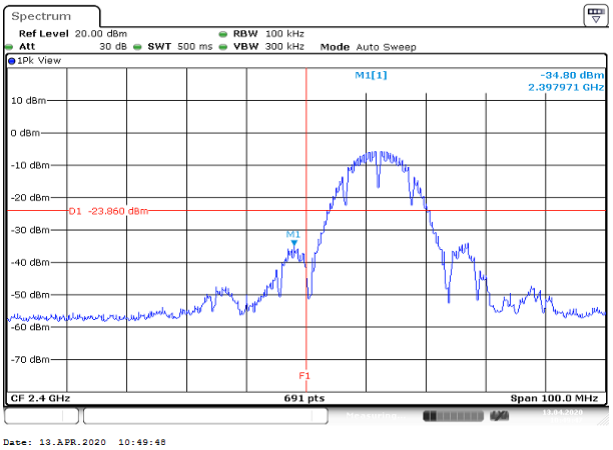
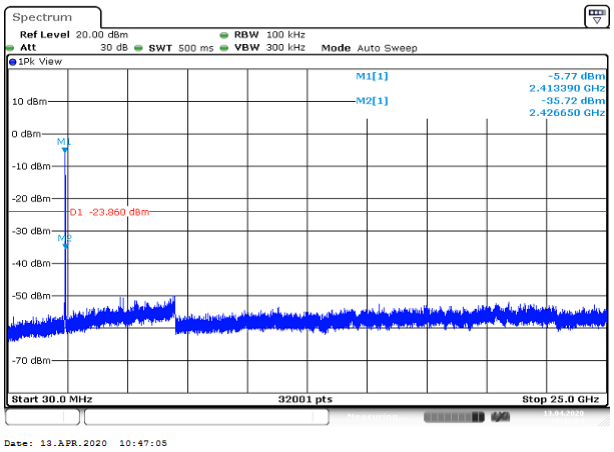
4.5.4 Test Result

Test Data

IEEE 802.11b mode Low CH chain 0	
Reference Level of PSD in 100kHz	**Band Edge**
	
Spurious Emission 30MHz-25GHz	
	

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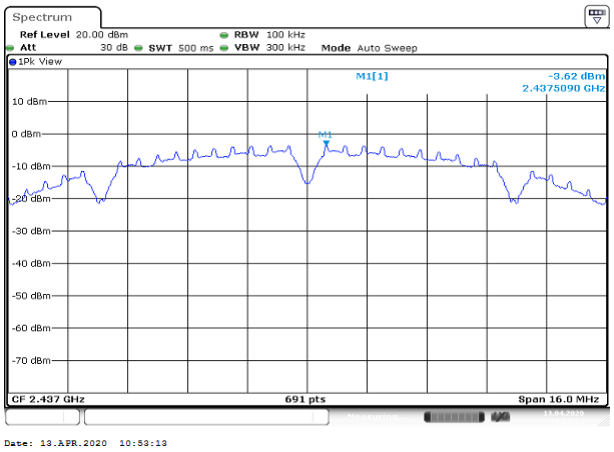
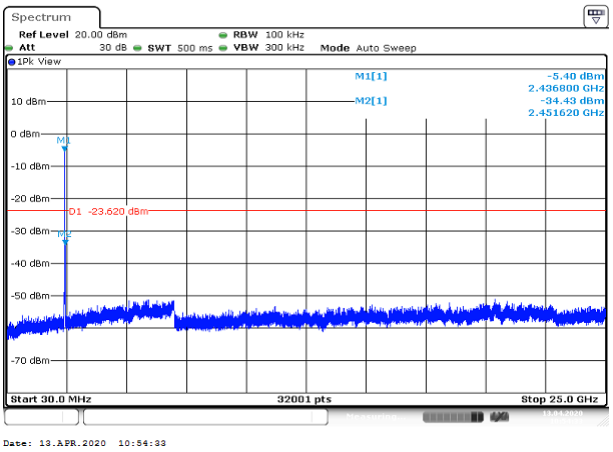
IEEE 802.11b mode Mid CH chain 0	
Reference Level of PSD in 100kHz	**Spurious Emission 30MHz-25GHz**
	

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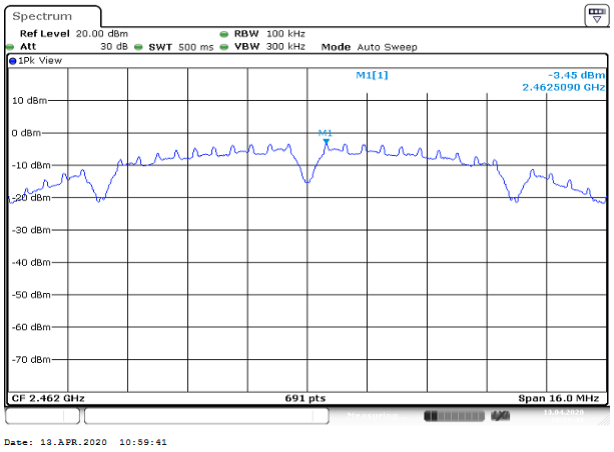
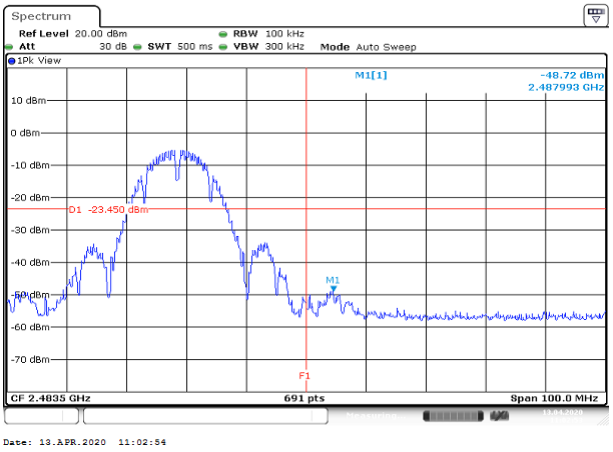
IEEE 802.11b mode High CH chain 0

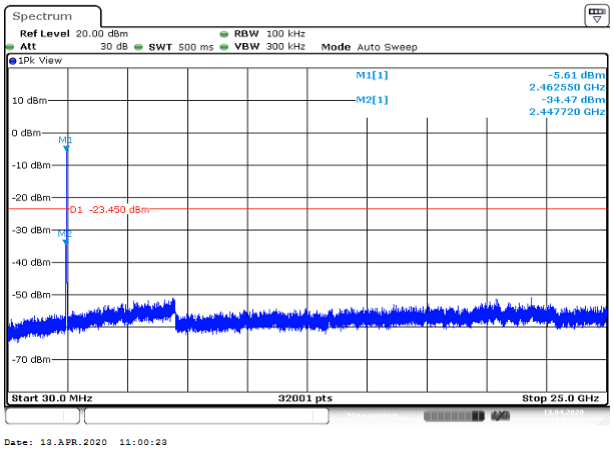
Reference Level of PSD in 100kHz



Band Edge



Spurious Emission 30MHz-25GHz



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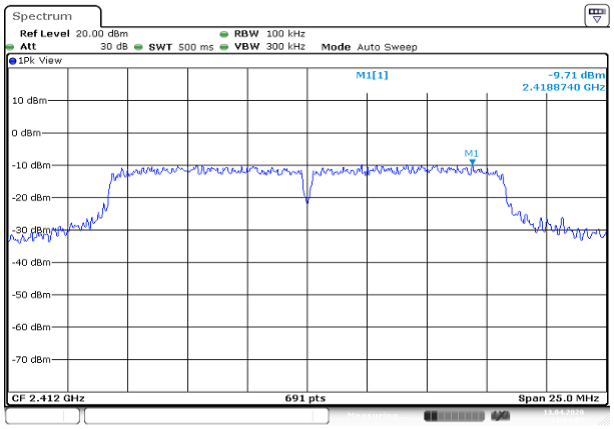
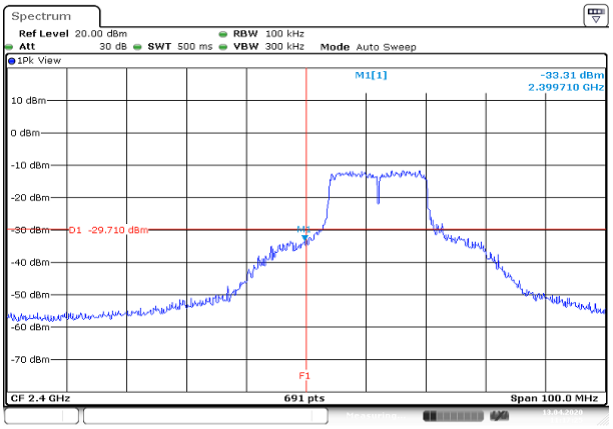
IEEE 802.11g mode Low CH chain 0

Reference Level of PSD in 100kHz



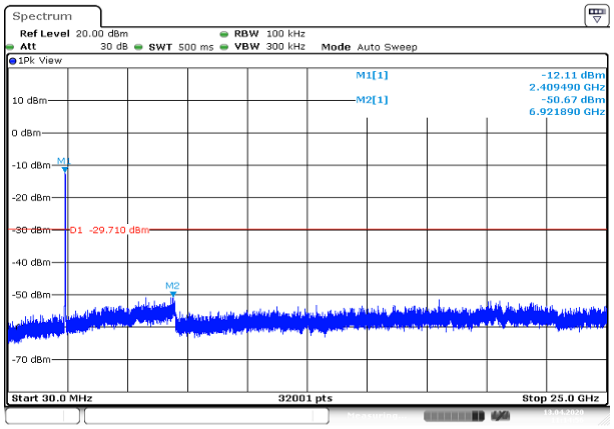
Date: 13.APR.2020 11:14:06

Band Edge



Date: 13.APR.2020 11:17:26

Spurious Emission 30MHz-25GHz



Date: 13.APR.2020 11:14:56

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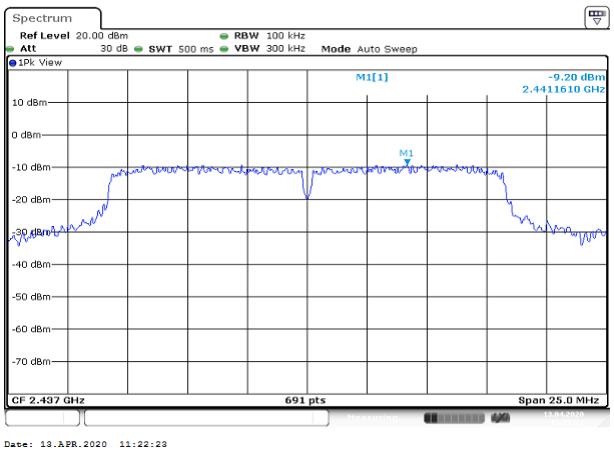
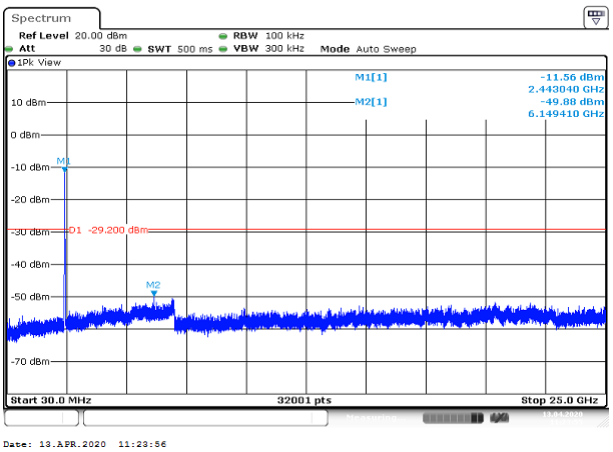
IEEE 802.11g mode Mid CH chain 0	
Reference Level of PSD in 100kHz	**Spurious Emission 30MHz-25GHz**
	

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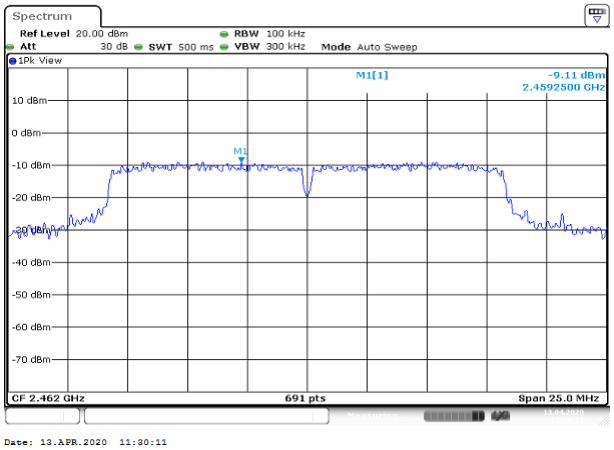
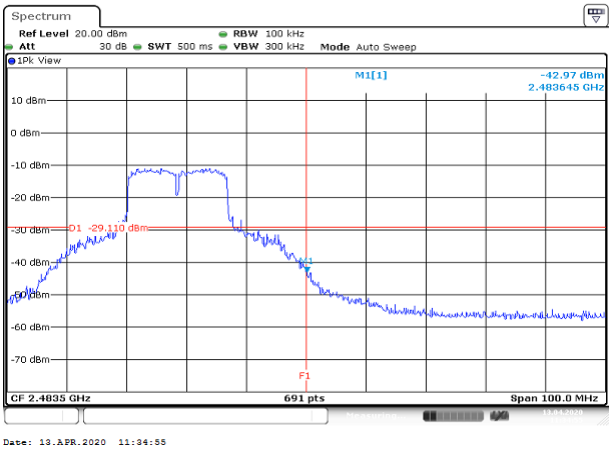
IEEE 802.11g mode High CH chain 0

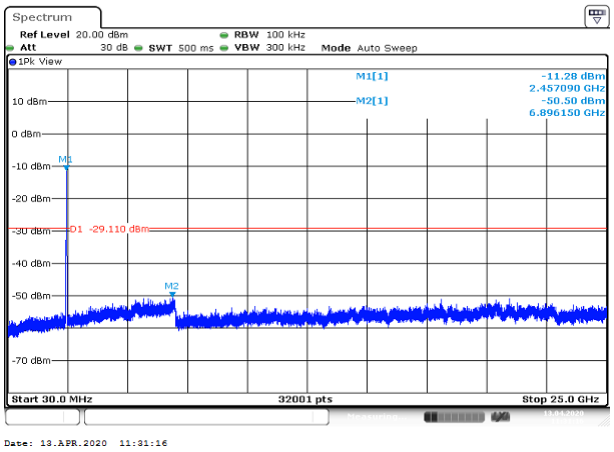
Reference Level of PSD in 100kHz



Band Edge



Spurious Emission 30MHz-25GHz



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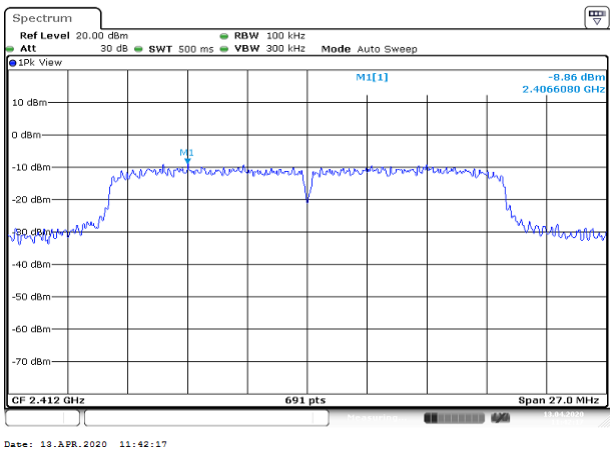
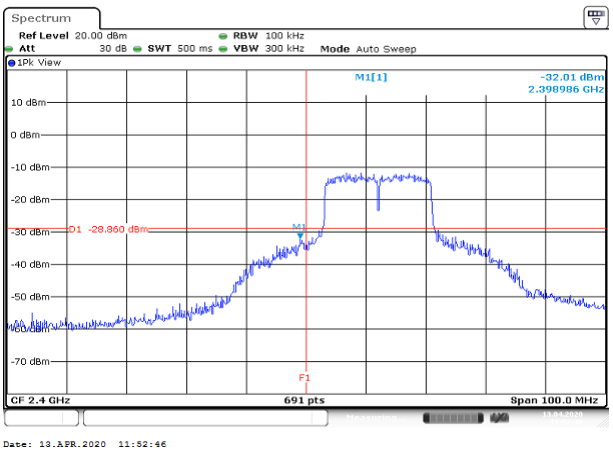
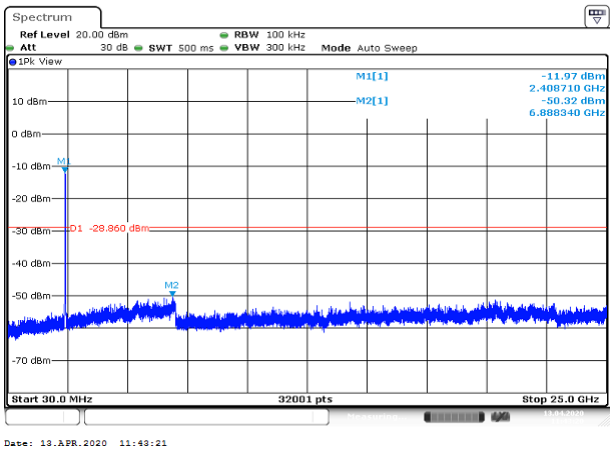
IEEE 802.11 n HT20 mode Low CH chain 0	
Reference Level of PSD in 100kHz	**Band Edge**
	
Spurious Emission 30MHz-25GHz	
	

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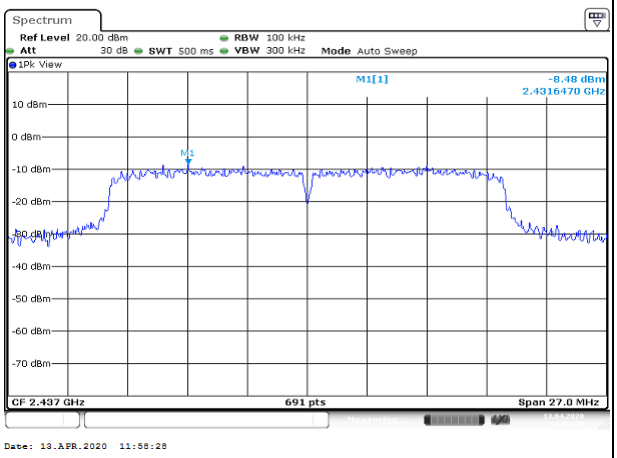
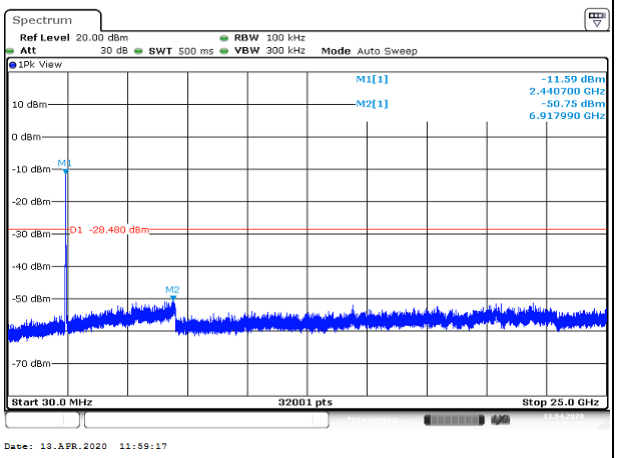
IEEE 802.11 n HT20 mode Mid CH chain 0	
Reference Level of PSD in 100kHz	**Spurious Emission 30MHz-25GHz**
	

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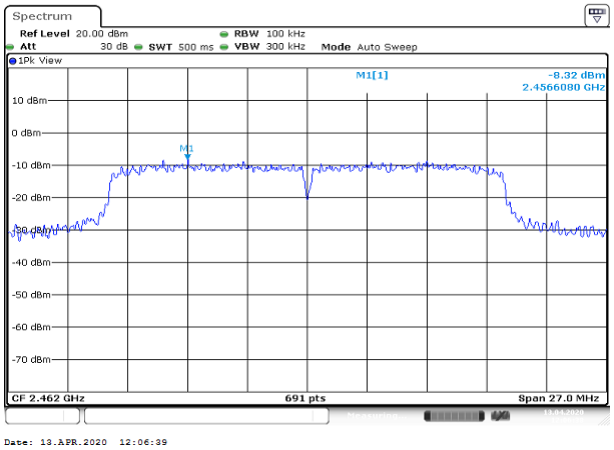
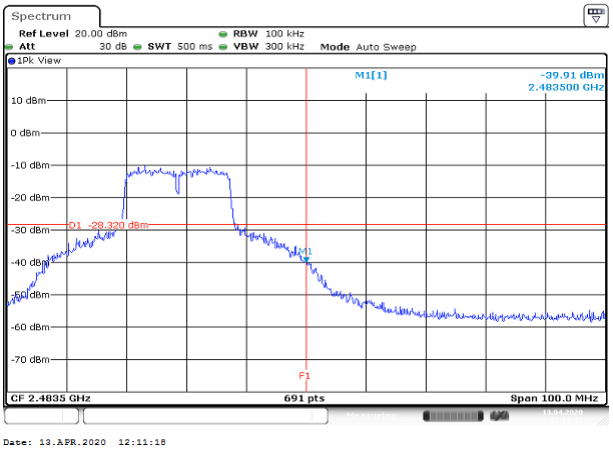
IEEE 802.11n HT20 mode High CH chain 0

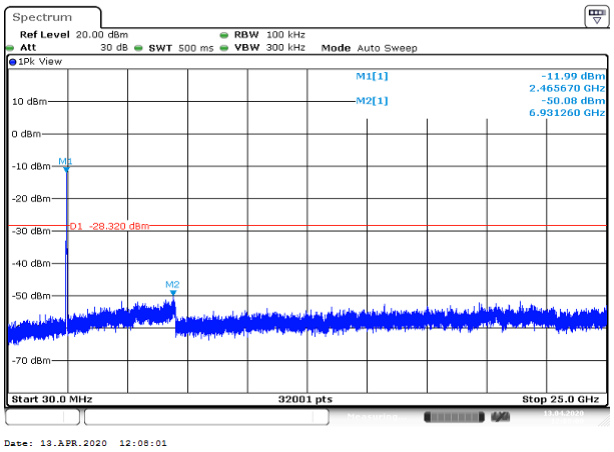
Reference Level of PSD in 100kHz



Band Edge



Spurious Emission 30MHz-25GHz



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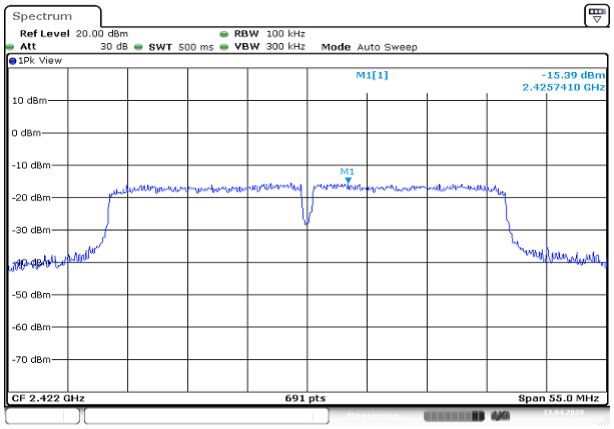
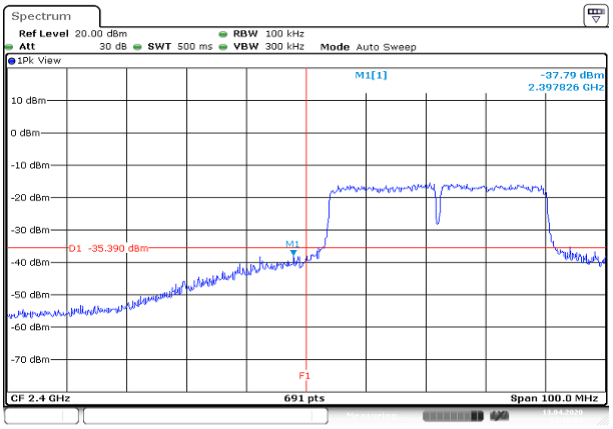
IEEE 802.11 n HT40 mode Low CH chain 0

Reference Level of PSD in 100kHz



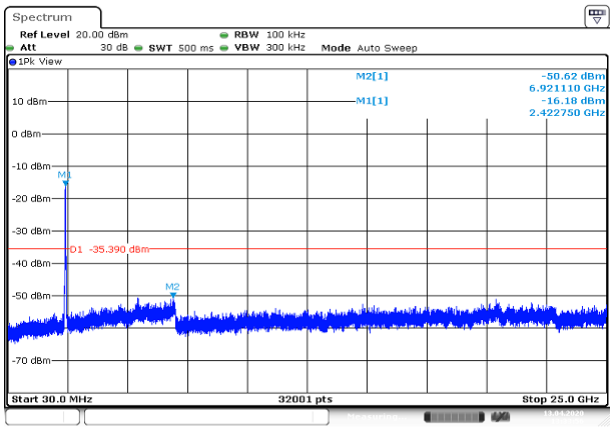
Date: 13.APR.2020 13:32:39

Band Edge



Date: 13.APR.2020 13:36:52

Spurious Emission 30MHz-25GHz



Date: 13.APR.2020 13:33:57

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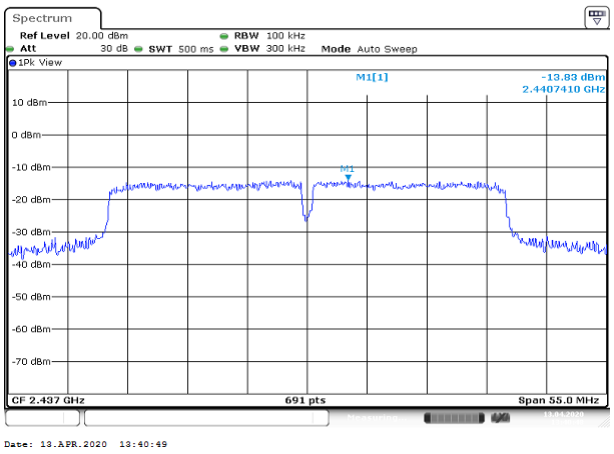
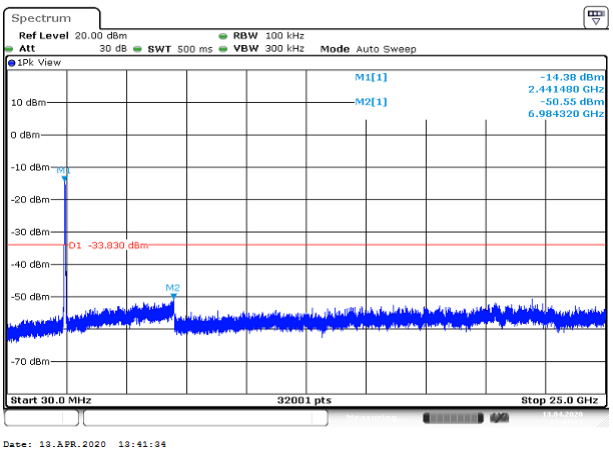
IEEE 802.11 n HT40 mode Mid CH chain 0	
Reference Level of PSD in 100kHz	**Spurious Emission 30MHz-25GHz**
	

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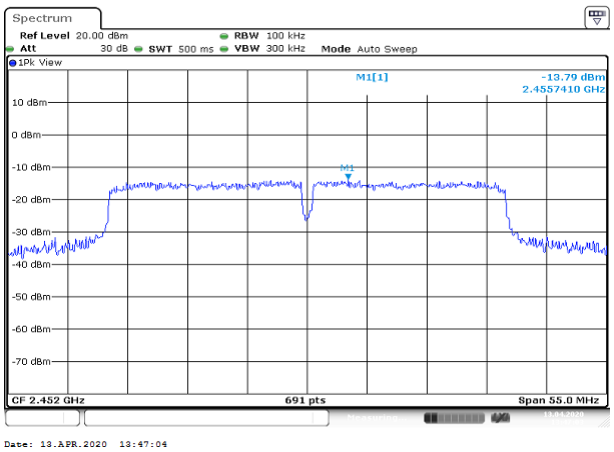
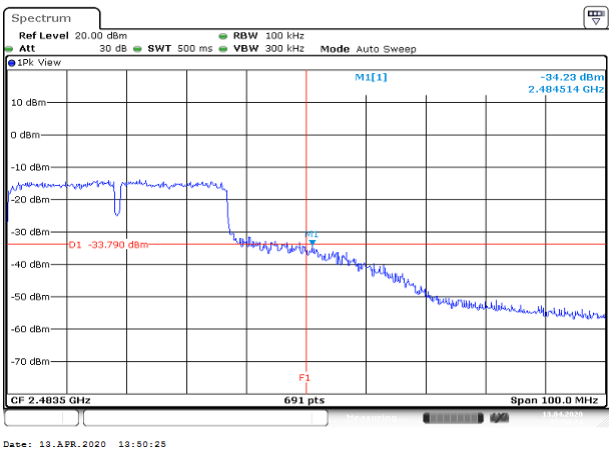
IEEE 802.11n HT40 mode High CH chain 0

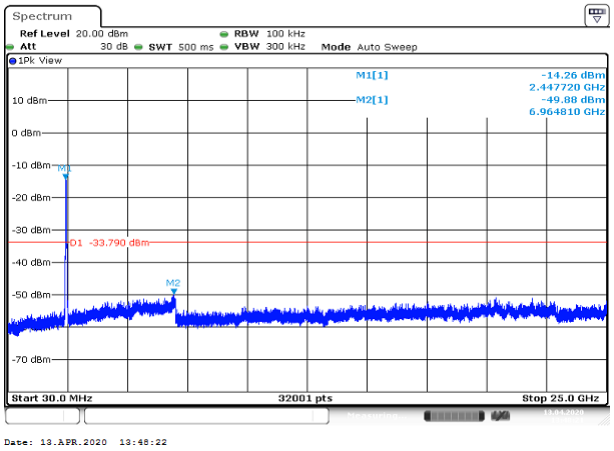
Reference Level of PSD in 100kHz



Band Edge



Spurious Emission 30MHz-25GHz



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4.6 RADIATION BANDEDGE AND SPURIOUS EMISSION

4.6.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Above 30 MHz

Frequency	Field Strength (microvolts/m)	Measurement Distance (metres)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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4.6.2 Test Procedure

Test method Refer as KDB 662911 D01, KDB 558074 D01.

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10: 2013, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Note: No emission found between lowest internal used/generated frequency to 30MHz (9KHz~30MHz)

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

4. The SA setting following：

(1) Below 1G：RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2) Above 1G：

(2.1) For Peak measurement：RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2.2) For Average measurement：RBW = 1MHz, VBW

˙If Duty Cycle ≥ 98%, VBW=10Hz.

˙If Duty Cycle < 98%, VBW=1/T.

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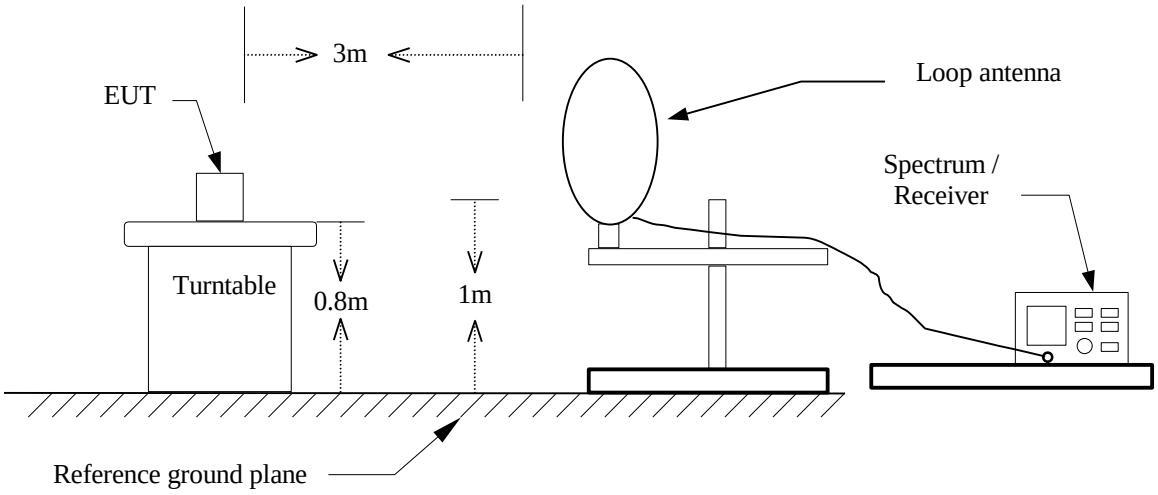
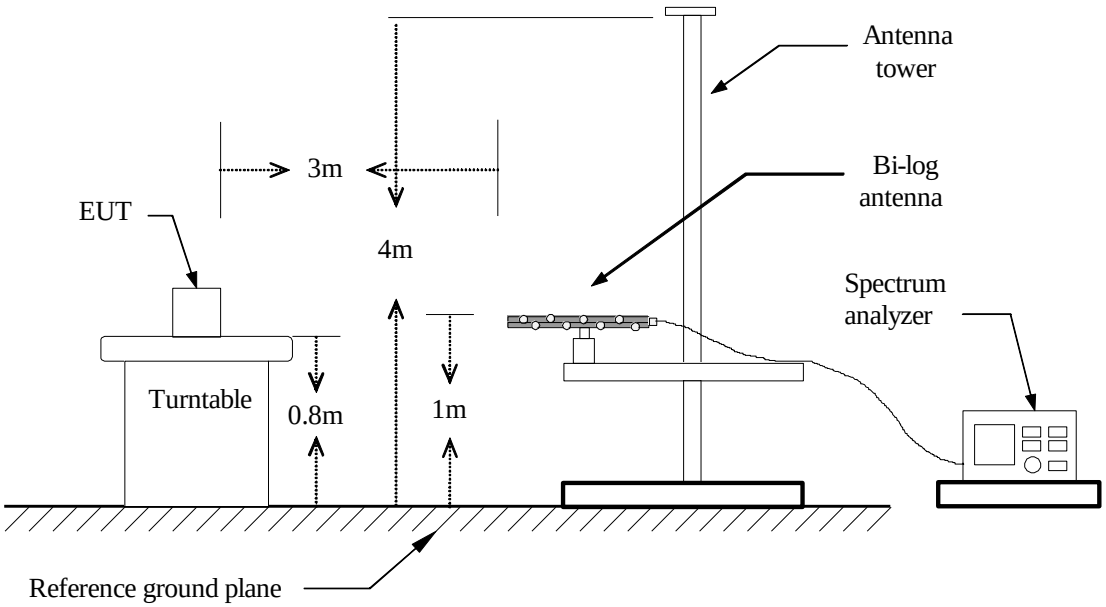
4.6.3 Test Setup

9kHz ~ 30MHz



30MHz ~ 1GHz



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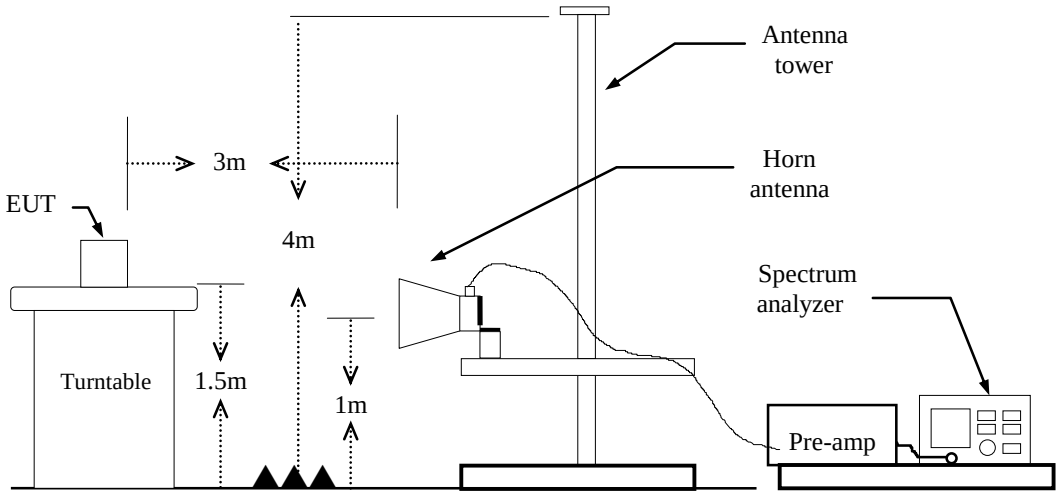
Above 1 GHz



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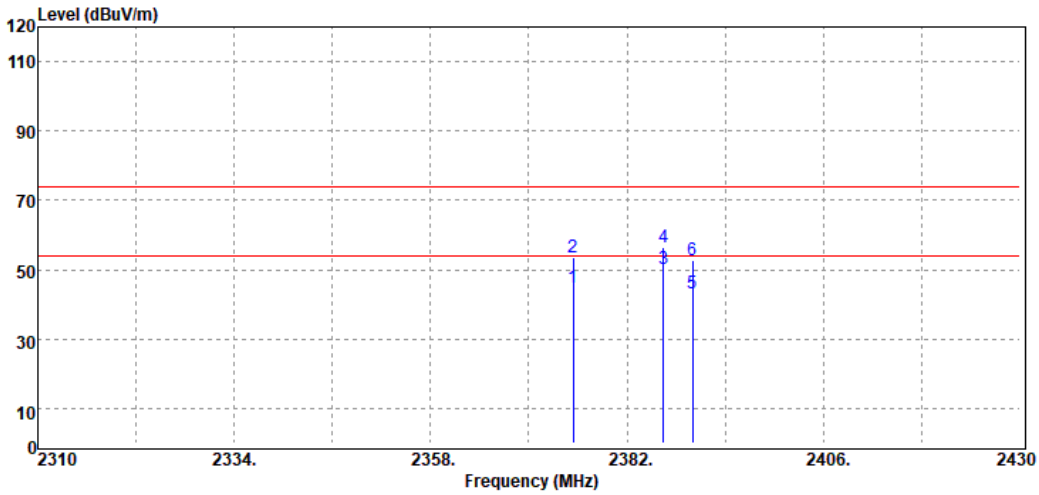
4.6.4 Test Result

Band Edge Test Data

Test Mode	IEEE 802.11b Low CH 2412MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak / Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2375.40	Average	48.12	-3.15	44.97	54.00	-9.03
2375.40	Peak	56.92	-3.15	53.77	74.00	-20.23
2386.44	Average	53.26	-3.16	50.10	54.00	-3.90
2386.44	Peak	59.47	-3.16	56.31	74.00	-17.69
2390.00	Average	46.56	-3.17	43.39	54.00	-10.61
2390.00	Peak	55.95	-3.17	52.78	74.00	-21.22

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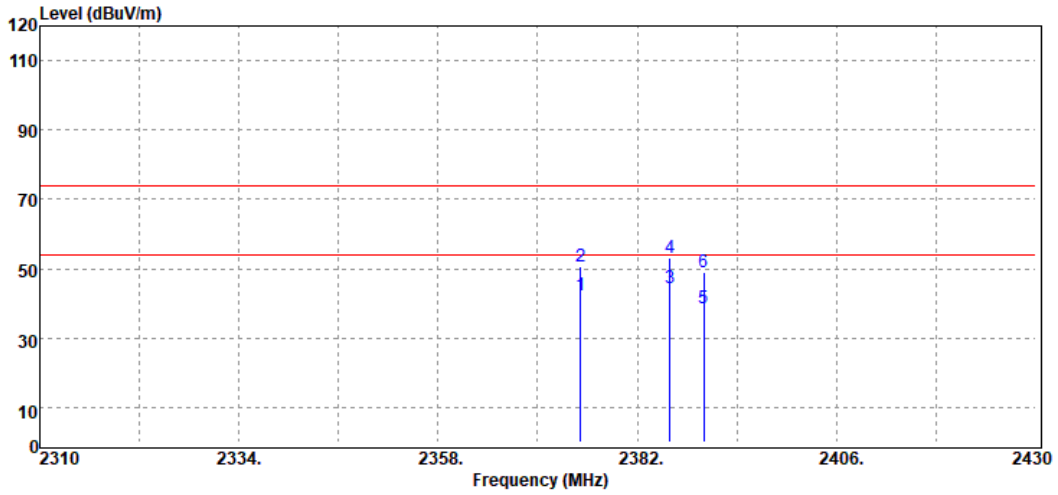
Test Mode	IEEE 802.11b Low CH 2412MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak & Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2375.16	Average	45.43	-3.15	42.28	54.00	-11.72
2375.16	Peak	53.70	-3.15	50.55	74.00	-23.45
2385.96	Average	47.55	-3.16	44.39	54.00	-9.61
2385.96	Peak	56.32	-3.16	53.16	74.00	-20.84
2390.00	Average	41.92	-3.17	38.75	54.00	-15.25
2390.00	Peak	52.10	-3.17	48.93	74.00	-25.07

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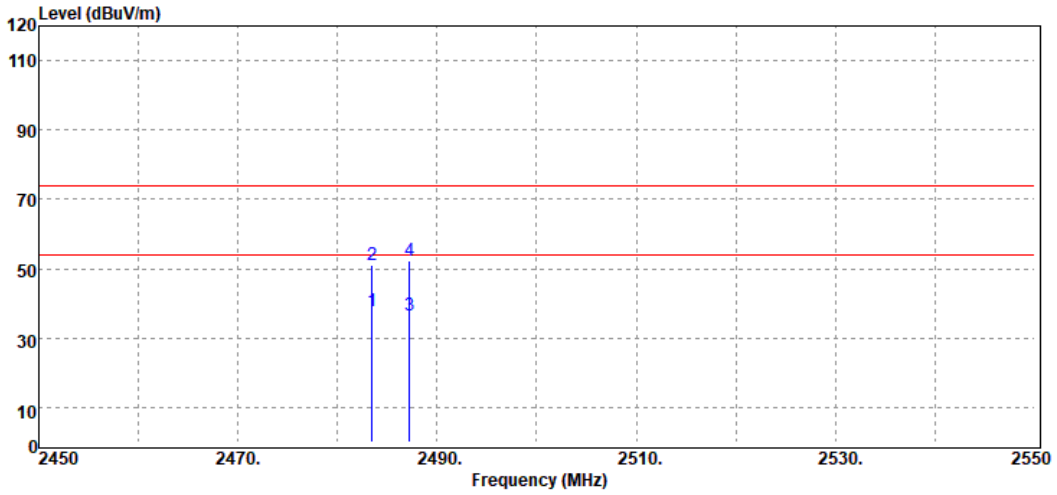
Test Mode	IEEE 802.11b High CH 2462MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak / Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2483.50	Average	40.52	-2.71	37.81	54.00	-16.19
2483.50	Peak	53.96	-2.71	51.25	74.00	-22.75
2487.20	Average	39.19	-2.69	36.50	54.00	-17.50
2487.20	Peak	54.87	-2.69	52.18	74.00	-21.82

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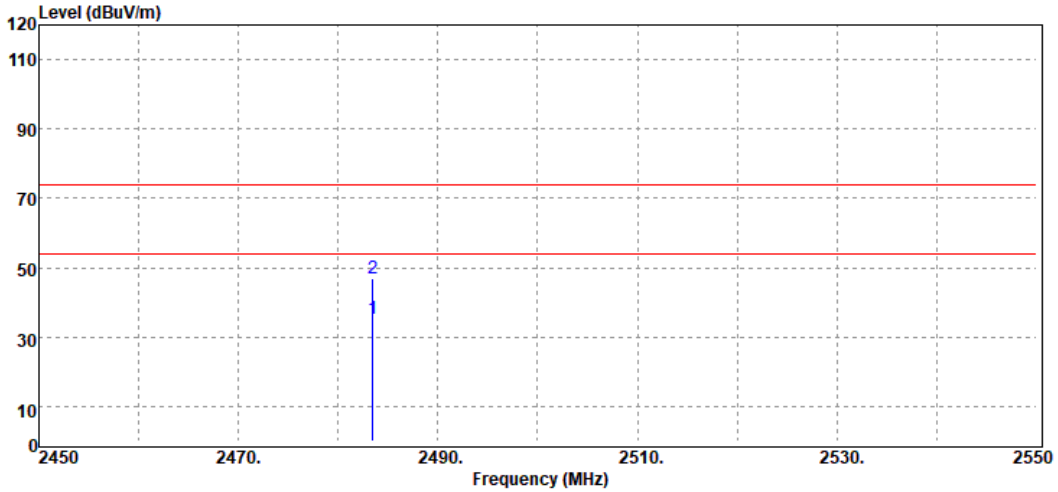
Test Mode	IEEE 802.11b High CH 2462MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak & Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Average	38.00	-2.71	35.29	54.00	-18.71
2483.50	Peak	49.51	-2.71	46.80	74.00	-27.20

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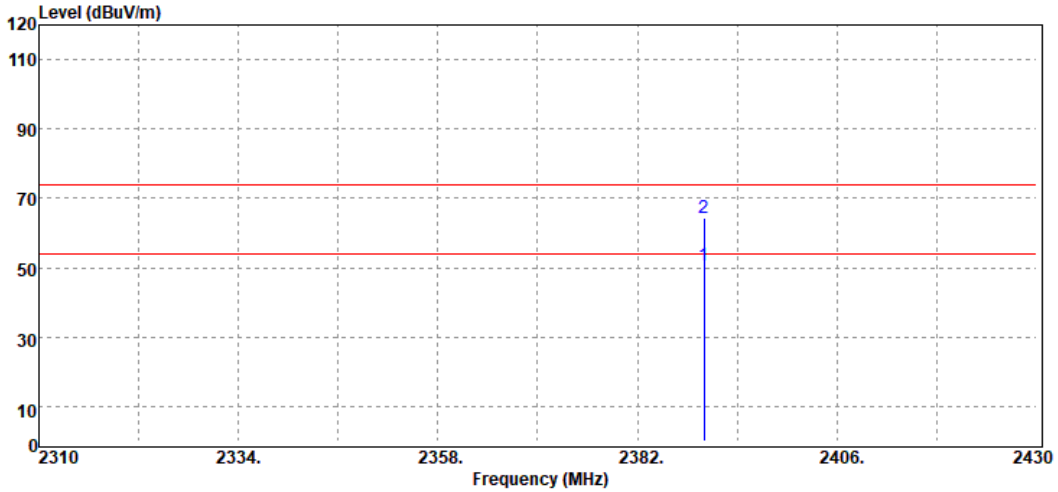
Test Mode	IEEE 802.11g Low CH 2412MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak / Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Average	53.97	-3.17	50.80	54.00	-3.20
2390.00	Peak	67.51	-3.17	64.34	74.00	-9.66

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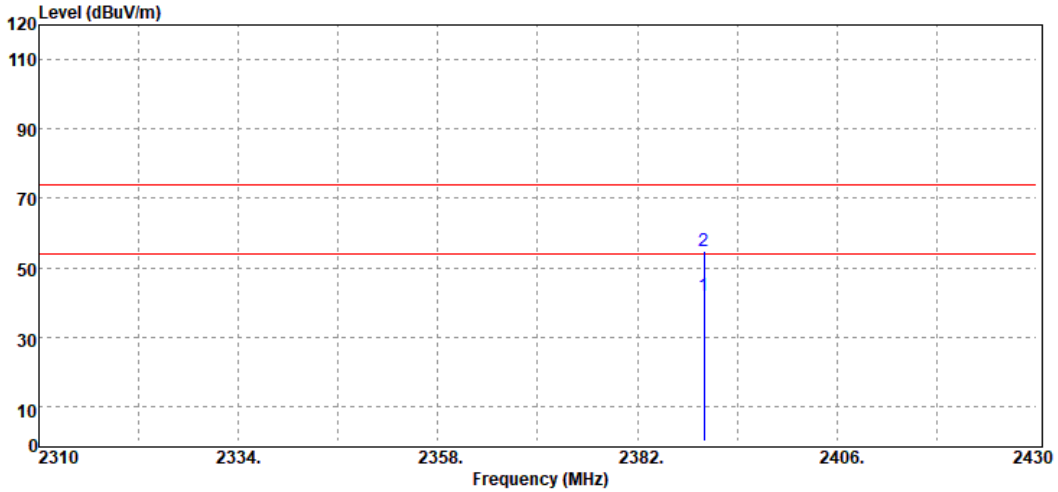
Test Mode	IEEE 802.11g Low CH 2412MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak & Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Average	45.04	-3.17	41.87	54.00	-12.13
2390.00	Peak	58.11	-3.17	54.94	74.00	-19.06

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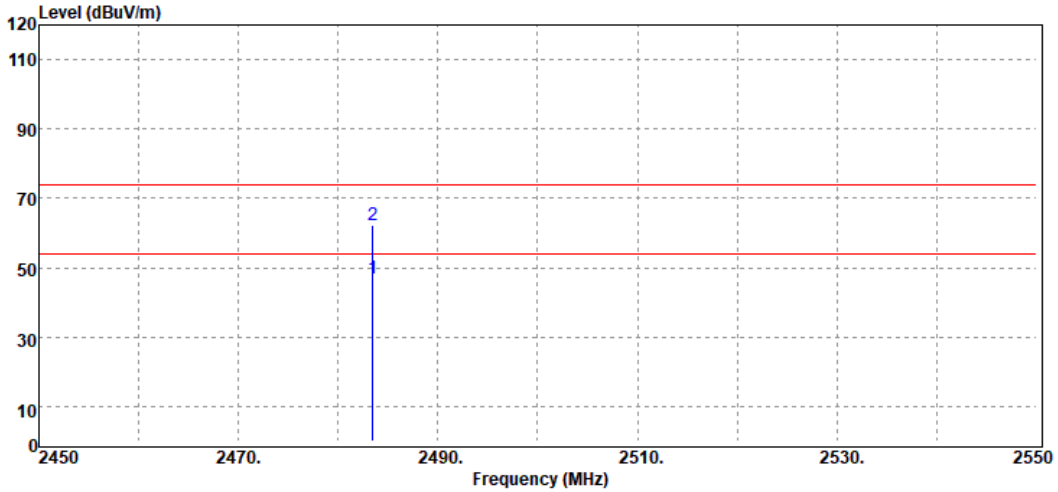
Test Mode	IEEE 802.11g High CH 2462MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak / Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Average	49.60	-2.71	46.89	54.00	-7.11
2483.50	Peak	64.92	-2.71	62.21	74.00	-11.79

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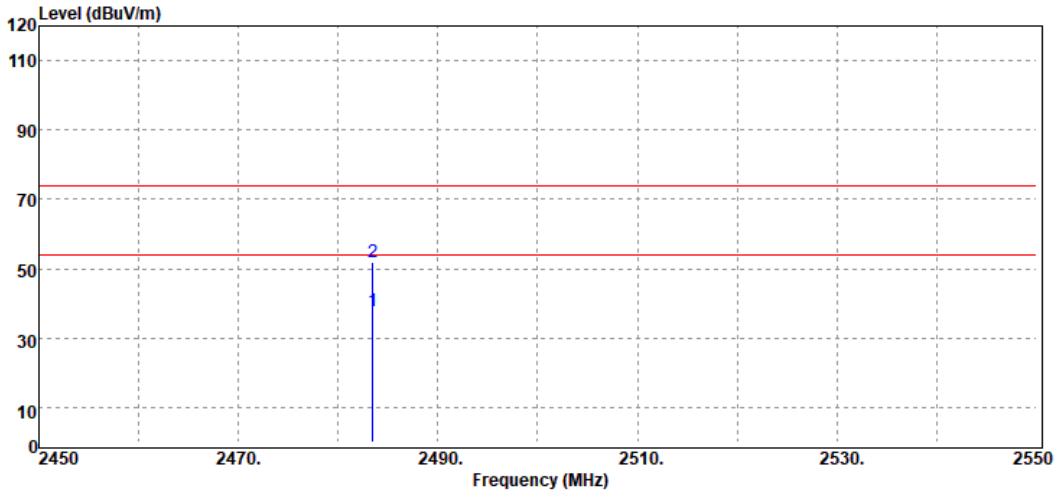
Test Mode	IEEE 802.11g High CH 2462MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak & Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Average	40.64	-2.71	37.93	54.00	-16.07
2483.50	Peak	54.48	-2.71	51.77	74.00	-22.23

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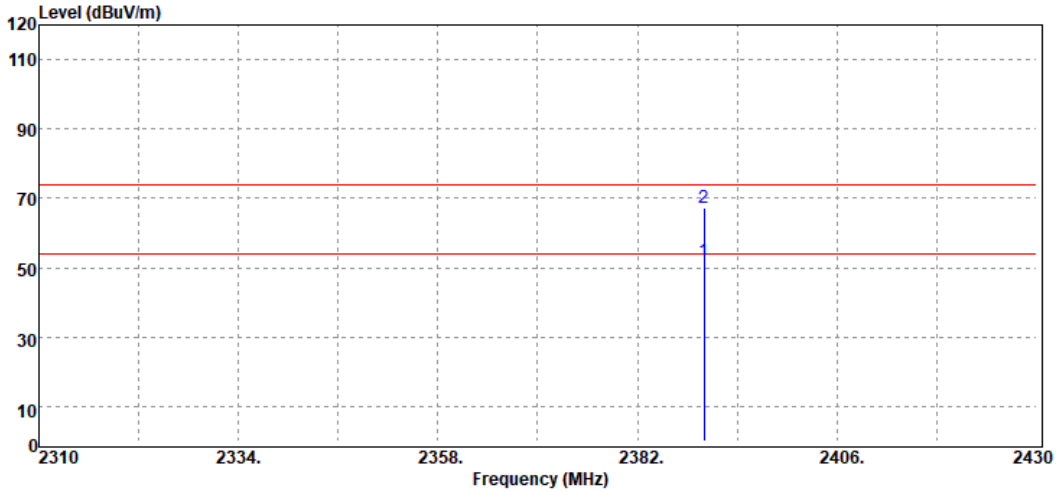
Test Mode	IEEE 802.11n HT20 Low CH 2412MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak / Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Average	54.98	-3.17	51.81	54.00	-2.19
2390.00	Peak	70.25	-3.17	67.08	74.00	-6.92

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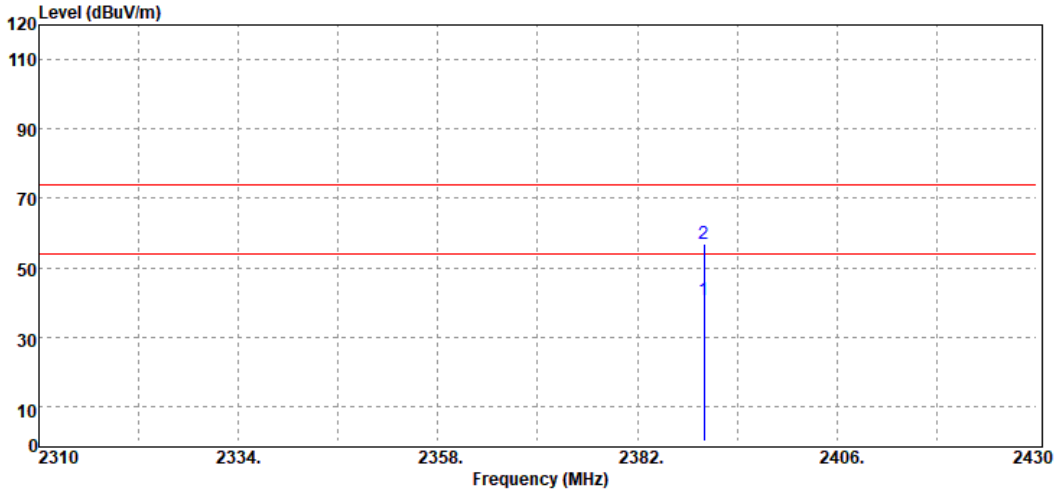
Test Mode	IEEE 802.11 n20 Low CH 2412MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak & Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
2390.00	Average	43.84	-3.17	40.67	54.00	-13.33
2390.00	Peak	59.95	-3.17	56.78	74.00	-17.22

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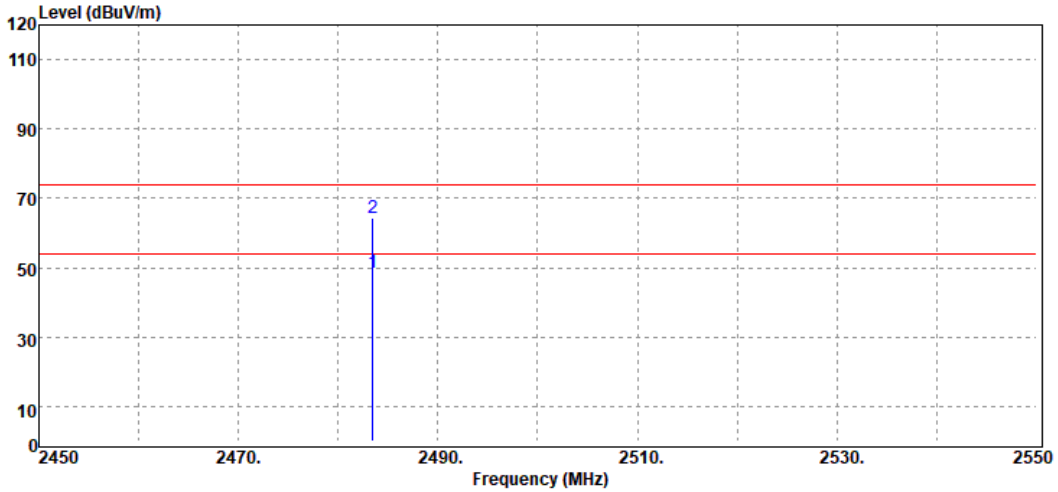
Test Mode	IEEE 802.11n HT20 High CH 2462MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak / Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Average	51.13	-2.71	48.42	54.00	-5.58
2483.50	Peak	67.27	-2.71	64.56	74.00	-9.44

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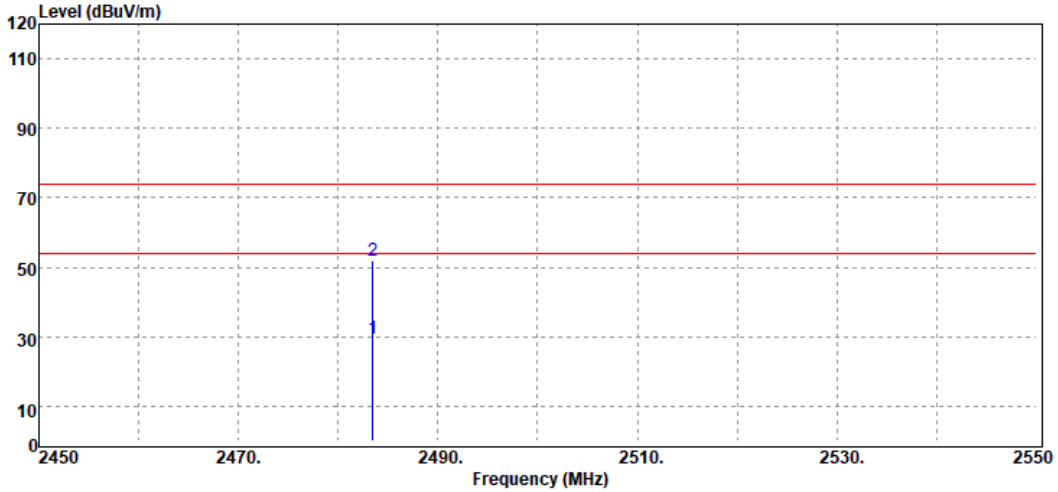
Test Mode	IEEE 802.11n20 High CH 2462MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak & Average		



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Average	32.33	-2.71	29.62	54.00	-24.38
2483.50	Peak	54.65	-2.71	51.94	74.00	-22.06

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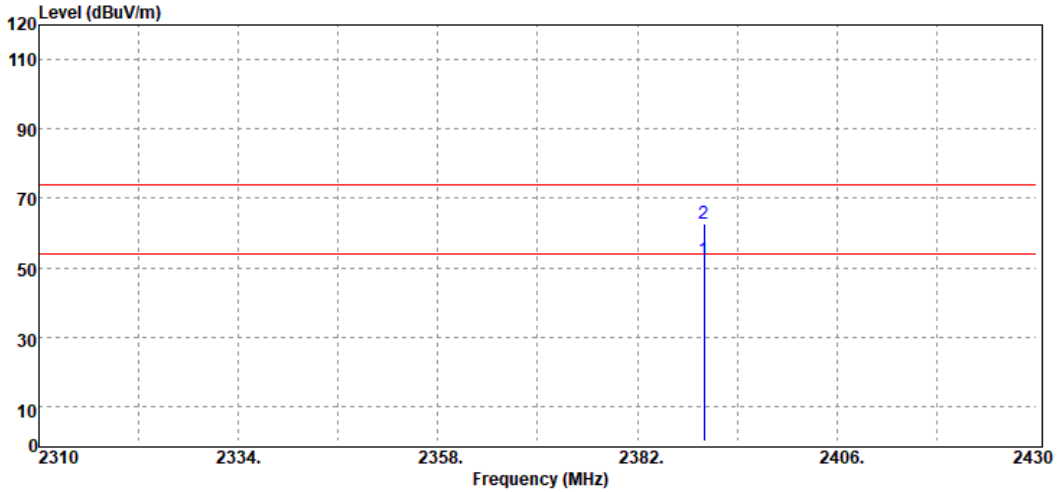
Test Mode	IEEE 802.11n HT40 Low CH 2422MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak / Average	Test Voltage	



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Average	55.51	-3.17	52.34	54.00	-1.66
2390.00	Peak	65.93	-3.17	62.76	74.00	-11.24

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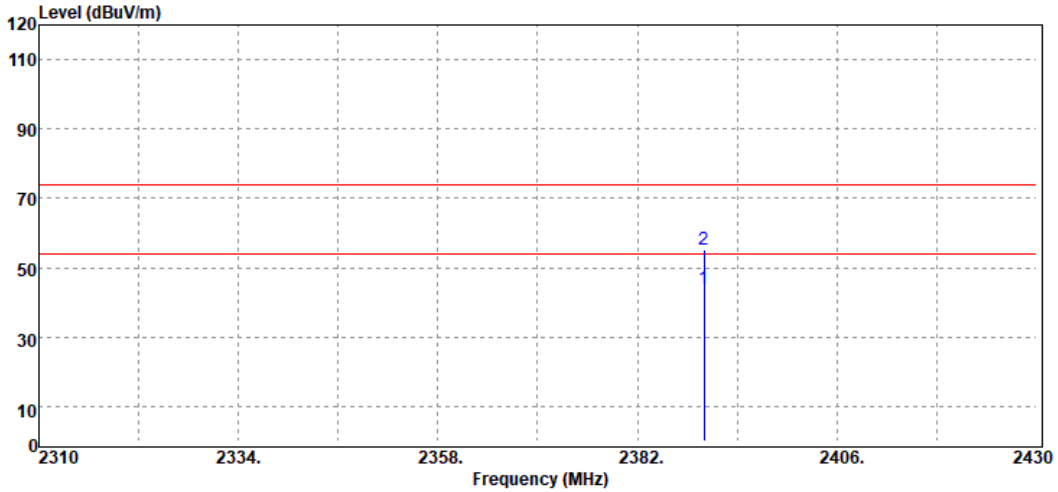
Test Mode	IEEE 802.11n HT40 Low CH 2422MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 9, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak / Average	Test Voltage	



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Average	47.09	-3.17	43.92	54.00	-10.08
2390.00	Peak	58.57	-3.17	55.40	74.00	-18.60

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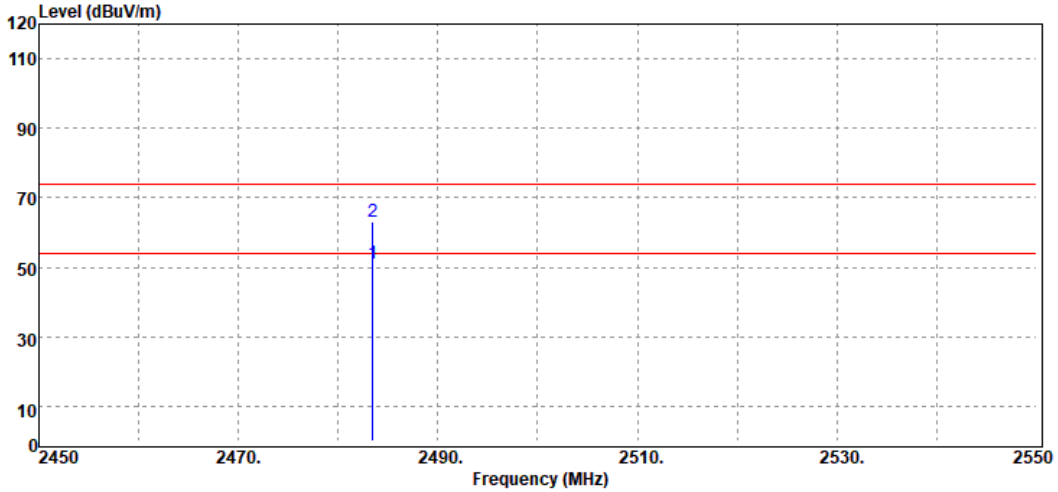
Test Mode	IEEE 802.11n HT40 High CH 2452MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak / Average	Test Voltage	



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Average	53.65	-2.71	50.94	54.00	-3.06
2483.50	Peak	65.82	-2.71	63.11	74.00	-10.89

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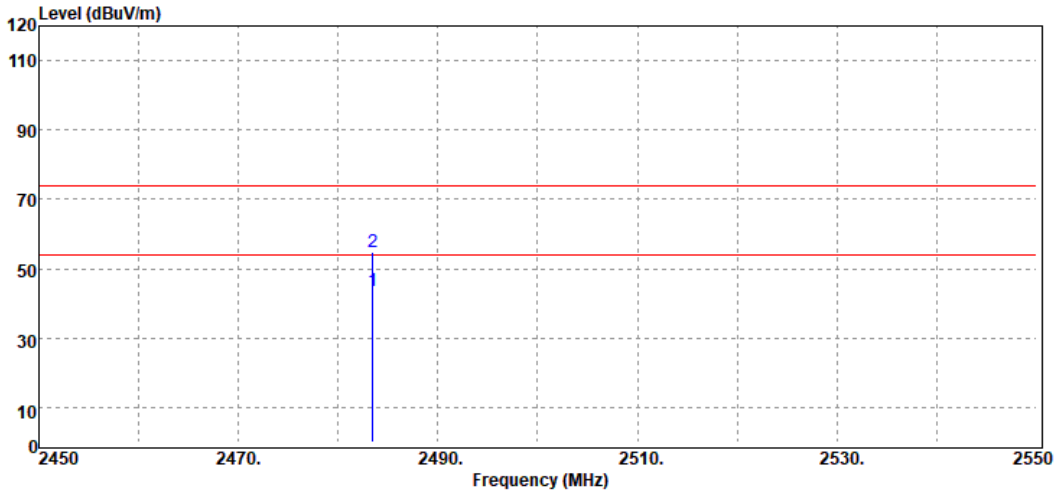
Test Mode	IEEE 802.11n HT40 High CH 2452MHz	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Band Edge	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak / Average	Test Voltage	



Frequency (MHz)	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Average	46.33	-2.71	43.62	54.00	-10.38
2483.50	Peak	57.44	-2.71	54.73	74.00	-19.27

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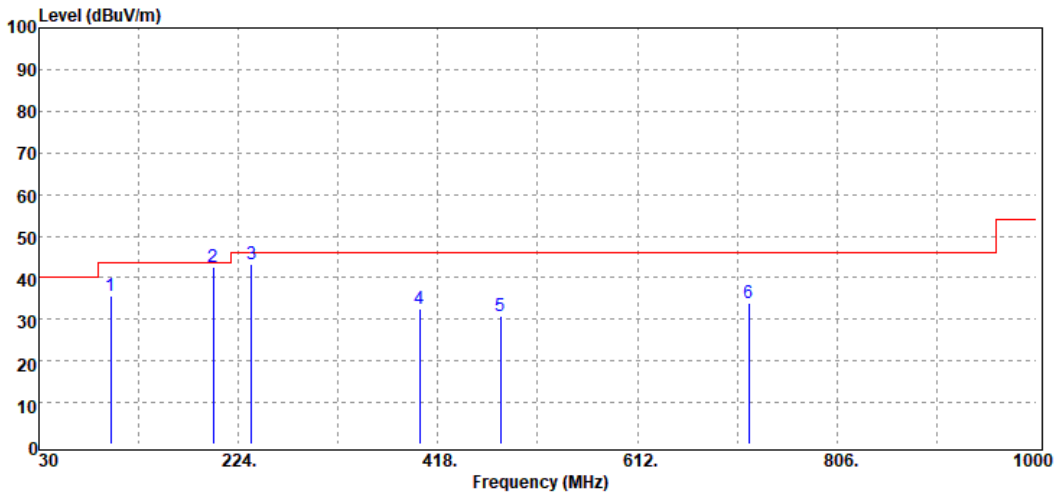
Below 1G Test Data

Test Mode	Mode 1	Temp/Hum	22.5(℃)/ 59%RH
Test Item	30MHz-1GHz	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak	Test Voltage	



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
99.84	Peak	48.48	-12.98	35.50	43.50	-8.00
199.75	Peak	52.04	-9.58	42.46	43.50	-1.04
236.61	Peak	53.96	-10.76	43.20	46.00	-2.80
400.54	Peak	38.39	-5.88	32.51	46.00	-13.49
479.11	Peak	34.09	-3.29	30.80	46.00	-15.20
720.64	Peak	33.49	0.52	34.01	46.00	-11.99

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

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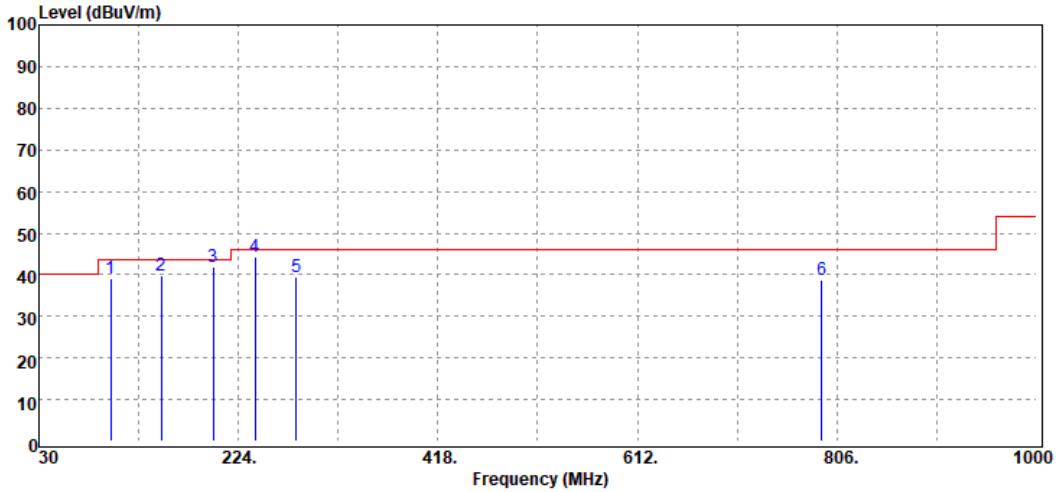
Test Mode	Mode 1	Temp/Hum	22.5(℃)/ 59%RH
Test Item	30MHz-1GHz	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak	Test Voltage	



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
99.84	Peak	52.04	-12.98	39.06	43.50	-4.44
149.31	Peak	50.12	-10.40	39.72	43.50	-3.78
199.75	Peak	51.35	-9.58	41.77	43.50	-1.73
240.49	Peak	54.98	-10.55	44.43	46.00	-1.57
280.26	Peak	48.19	-8.58	39.61	46.00	-6.39
791.45	Peak	37.37	1.49	38.86	46.00	-7.14

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

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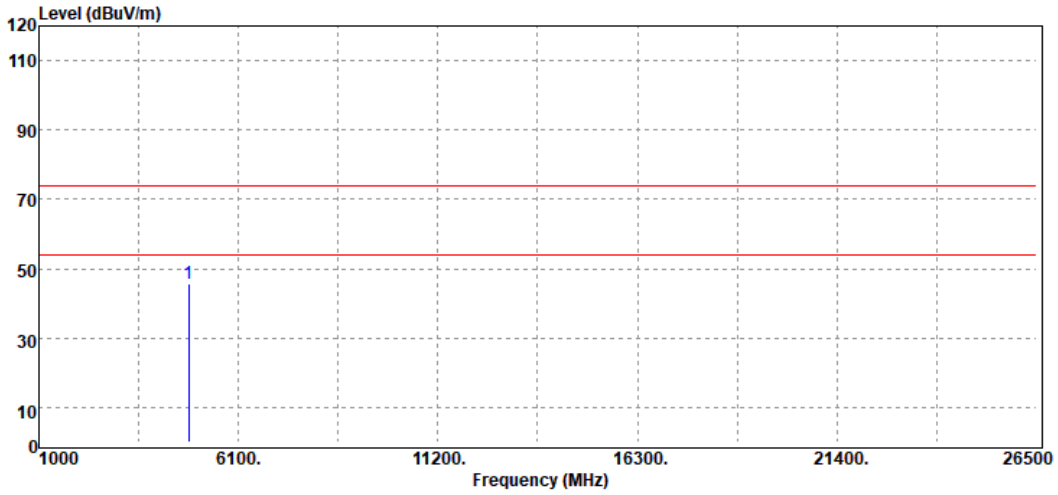
Above 1G Test Data

Test Mode	IEEE 802.11b Low CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4824.00	Peak	42.49	3.35	45.84	74.00	-28.16
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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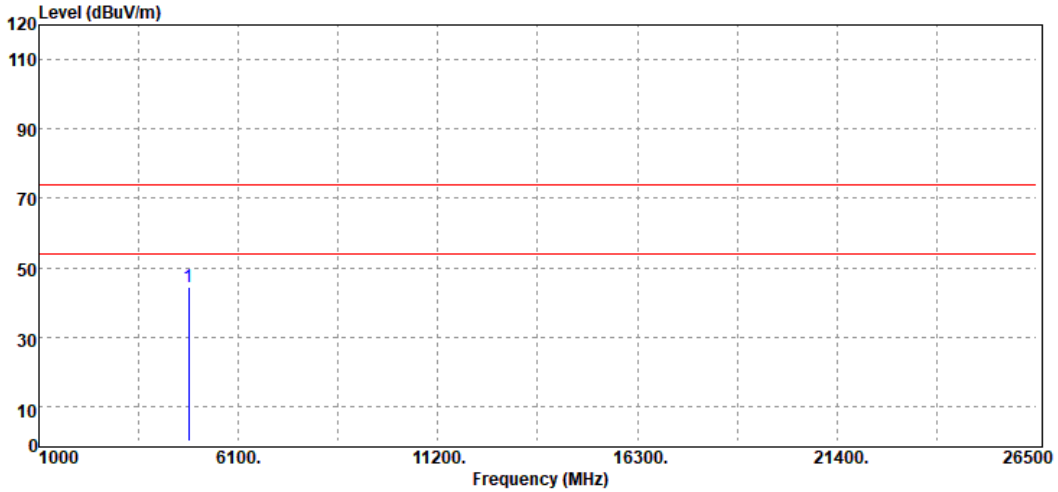
Test Mode	IEEE 802.11b Low CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4824.00	Peak	40.99	3.35	44.34	74.00	-29.66
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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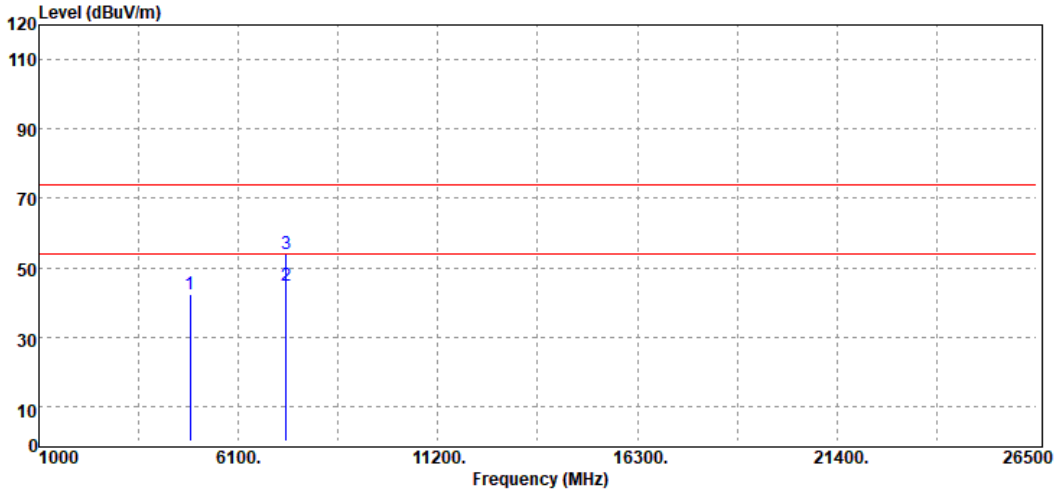
Test Mode	IEEE 802.11b Mid CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak & Average		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4874.00	Peak	39.06	3.48	42.54	74.00	-31.46
7311.00	Average	33.68	11.06	44.74	54.00	-9.26
7311.00	Peak	42.87	11.06	53.93	74.00	-20.07
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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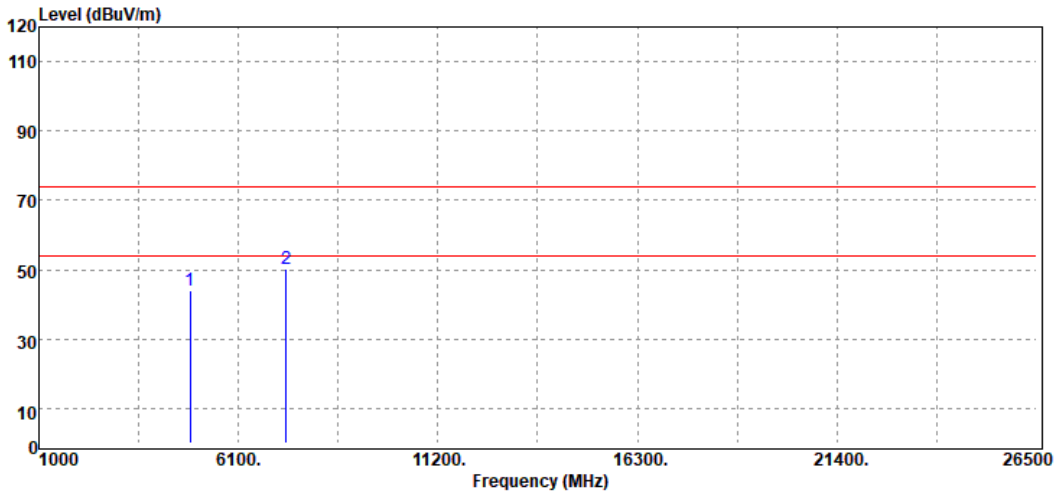
Test Mode	IEEE 802.11b Mid CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak & Average		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
4874.00	Peak	40.71	3.48	44.19	74.00	-29.81
7311.00	Peak	39.29	11.06	50.35	74.00	-23.65
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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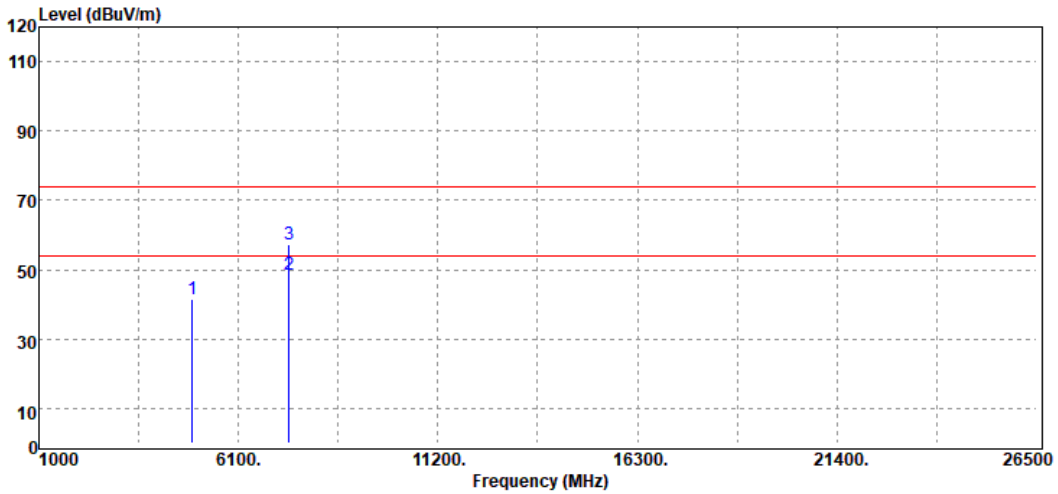
Test Mode	IEEE 802.11b High CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4924.00	Peak	37.54	4.01	41.55	74.00	-32.45
7390.00	Average	37.94	10.78	48.72	54.00	-5.28
7390.00	Peak	46.71	10.78	57.49	74.00	-16.51
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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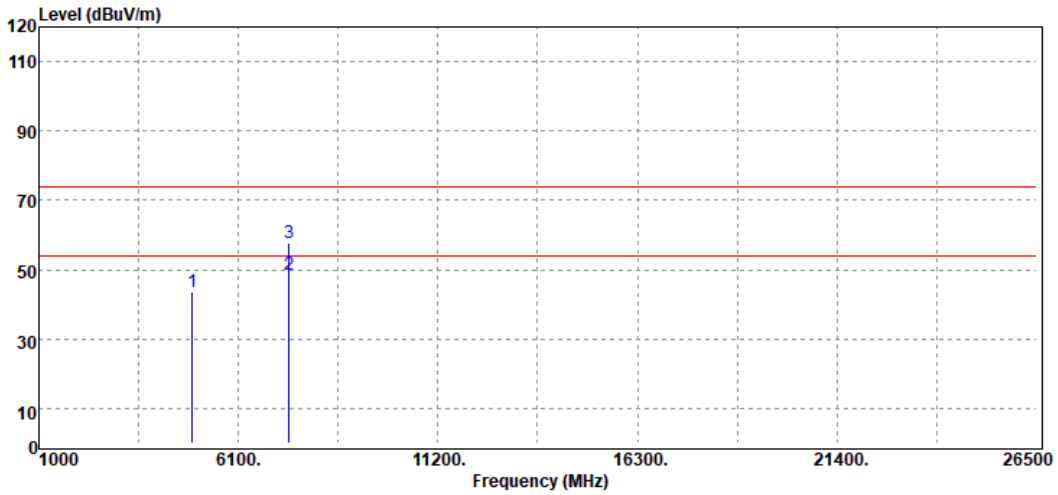
Test Mode	IEEE 802.11b High CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4924.00	Peak	39.61	4.01	43.62	74.00	-30.38
7390.00	Average	37.91	10.78	48.69	54.00	-5.31
7390.00	Peak	46.80	10.78	57.58	74.00	-16.42
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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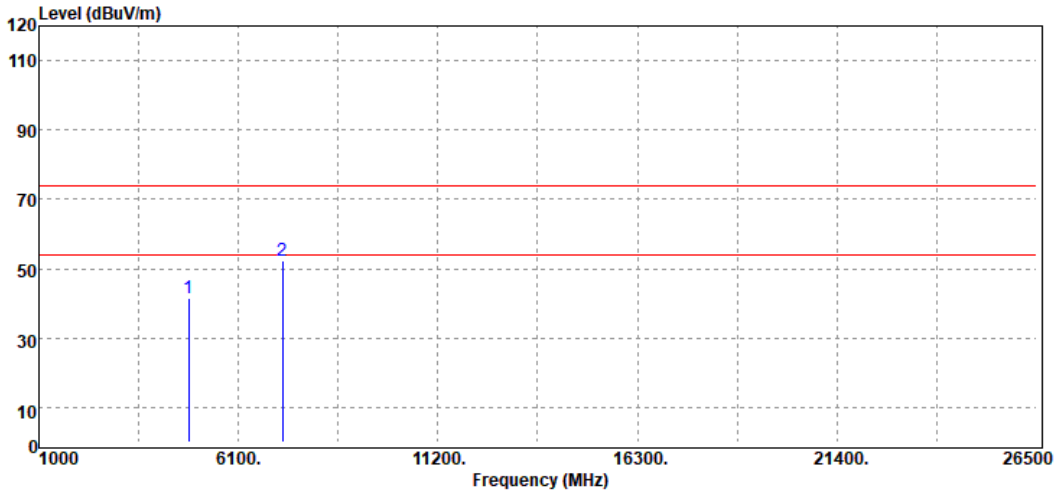
Test Mode	IEEE 802.11g Low CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4824.00	Peak	38.21	3.35	41.56	74.00	-32.44
7236.00	Peak	41.61	10.79	52.40	74.00	-21.60
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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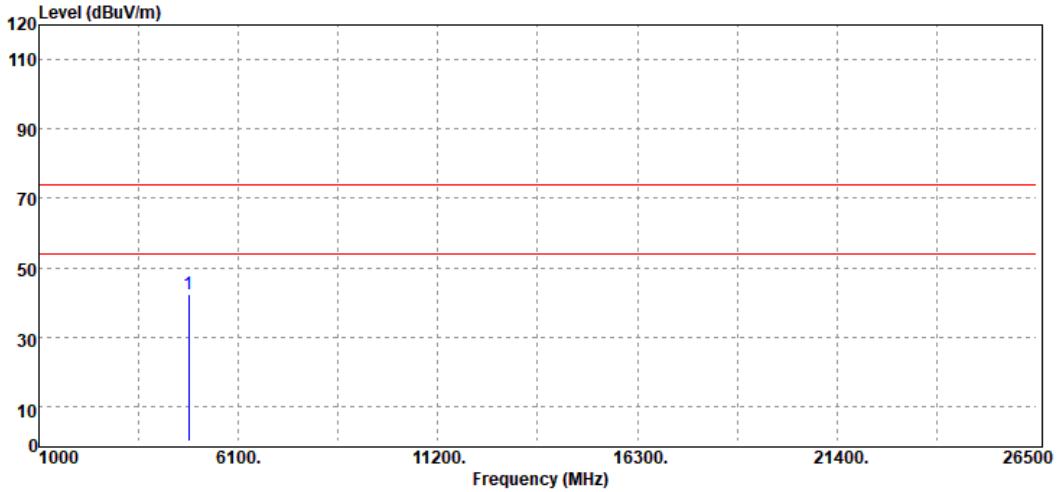
Test Mode	IEEE 802.11g Low CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4824.00	Peak	39.01	3.35	42.36	74.00	-31.64
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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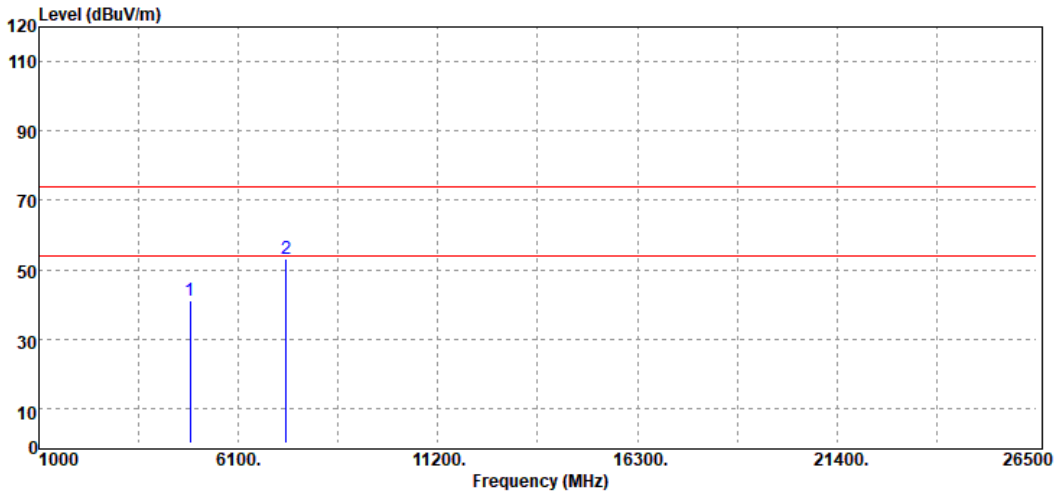
Test Mode	IEEE 802.11g Mid CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak & Average		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4874.00	Peak	37.60	3.48	41.08	74.00	-32.92
7311.00	Peak	42.16	11.06	53.22	74.00	-20.78
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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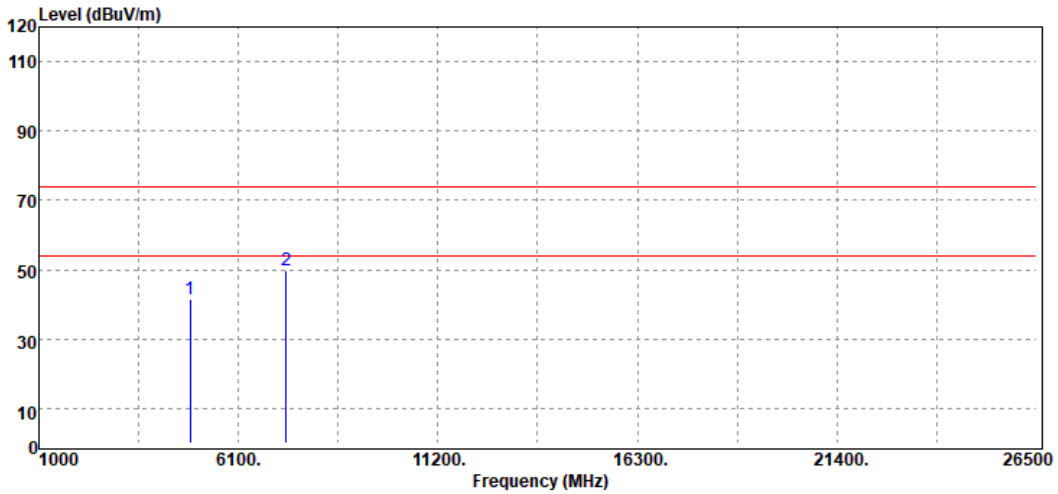
Test Mode	IEEE 802.11g Mid CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak & Average		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4874.00	Peak	38.12	3.48	41.60	74.00	-32.40
7311.00	Peak	38.64	11.06	49.70	74.00	-24.30
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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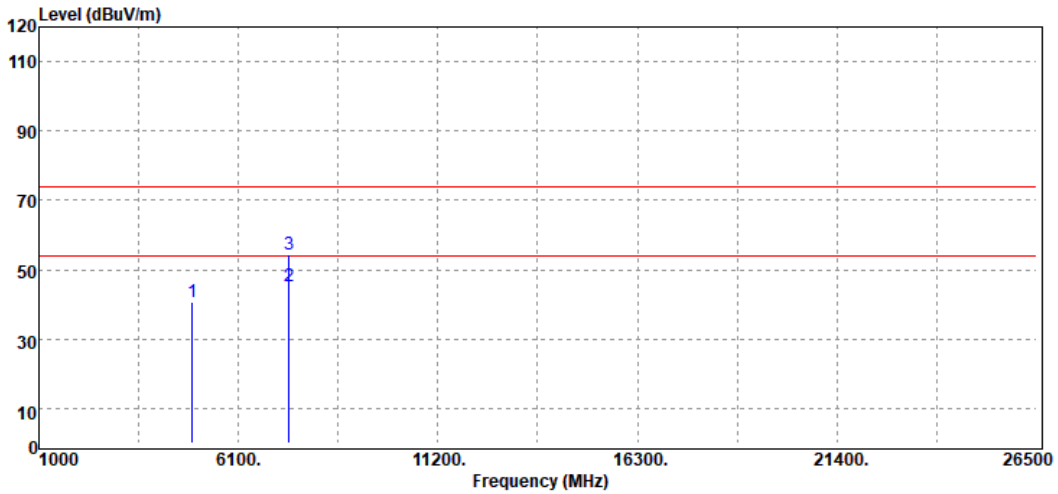
Test Mode	IEEE 802.11g High CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4924.00	Peak	36.50	4.01	40.51	74.00	-33.49
7386.00	Average	34.31	10.80	45.11	54.00	-8.89
7386.00	Peak	43.49	10.80	54.29	74.00	-19.71
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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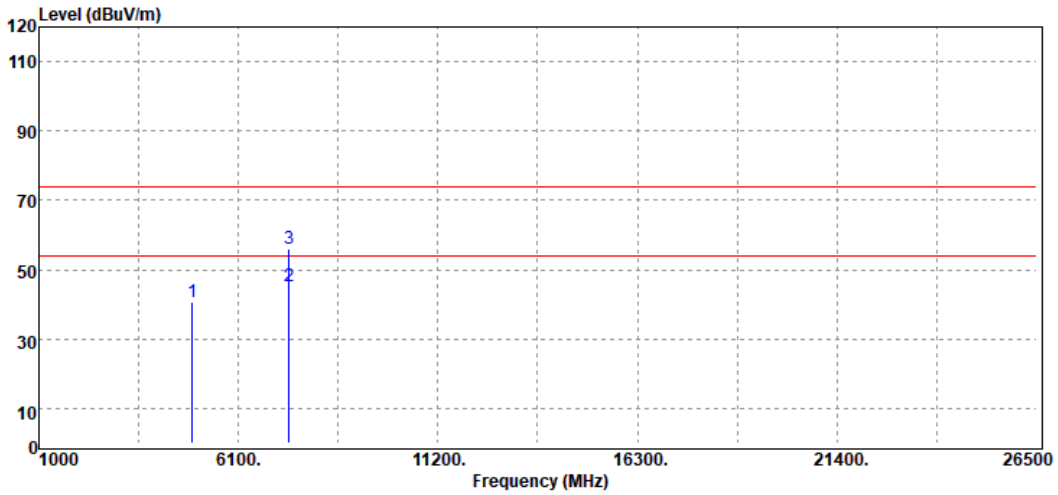
Test Mode	IEEE 802.11g High CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4924.00	Peak	36.66	4.01	40.67	74.00	-33.33
7386.00	Average	34.25	10.80	45.05	54.00	-8.95
7386.00	Peak	45.08	10.80	55.88	74.00	-18.12

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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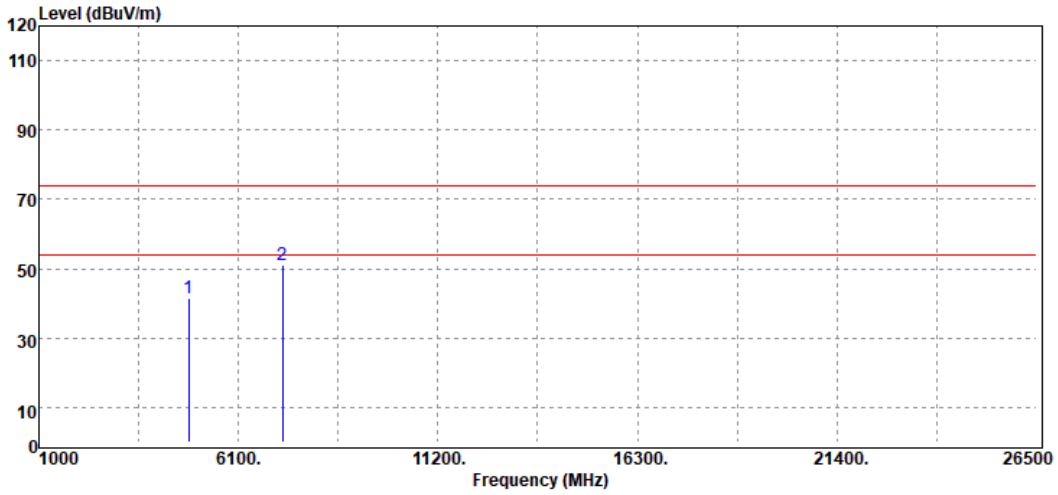
Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak & Average		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4824.00	Peak	38.27	3.35	41.62	74.00	-32.38
7236.00	Peak	40.19	10.79	50.98	74.00	-23.02
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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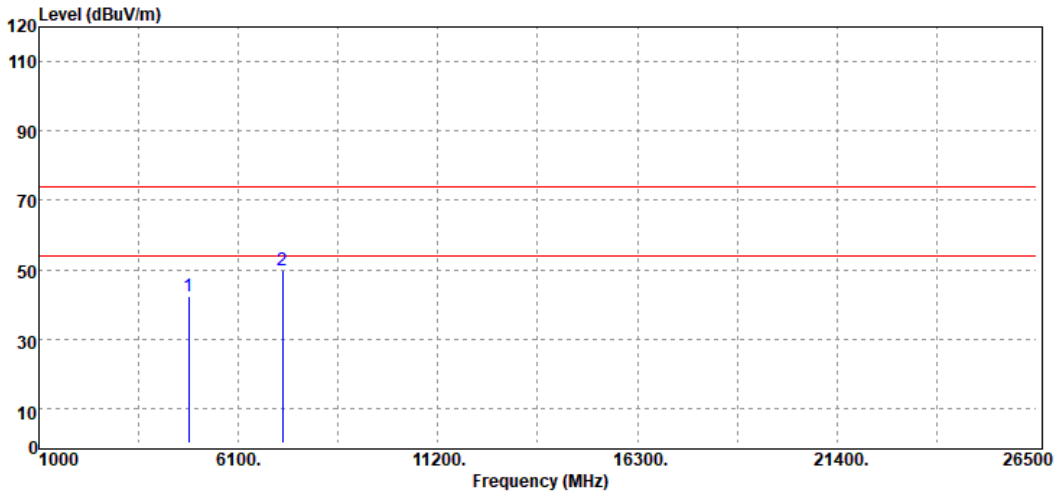
Test Mode	IEEE 802.11n HT20 Low CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4824.00	Peak	39.02	3.35	42.37	74.00	-31.63
7236.00	Peak	38.86	10.79	49.65	74.00	-24.35
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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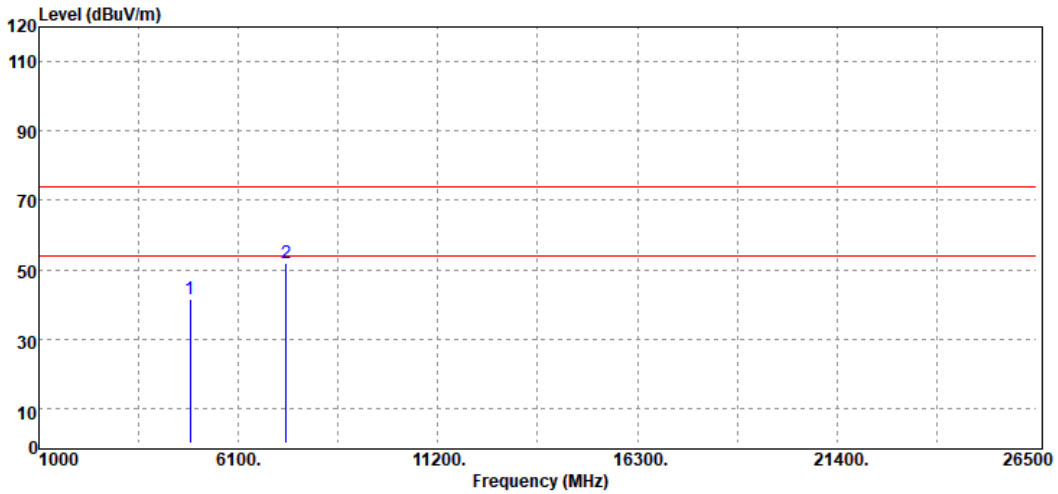
Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak & Average		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4874.00	Peak	37.85	3.48	41.33	74.00	-32.67
7311.00	Peak	40.96	11.06	52.02	74.00	-21.98
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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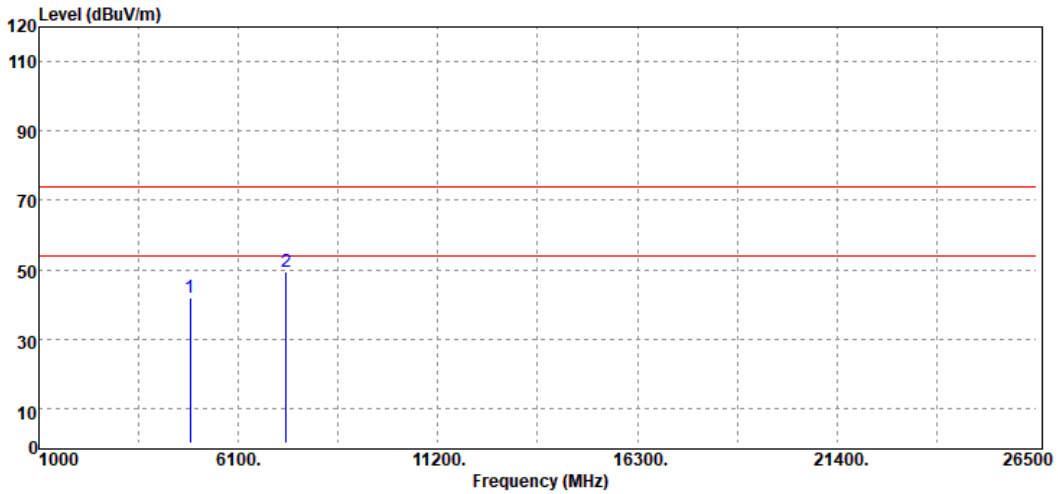
Test Mode	IEEE 802.11n HT20 Mid CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak & Average		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4874.00	Peak	38.55	3.48	42.03	74.00	-31.97
7311.00	Peak	38.16	11.06	49.22	74.00	-24.78
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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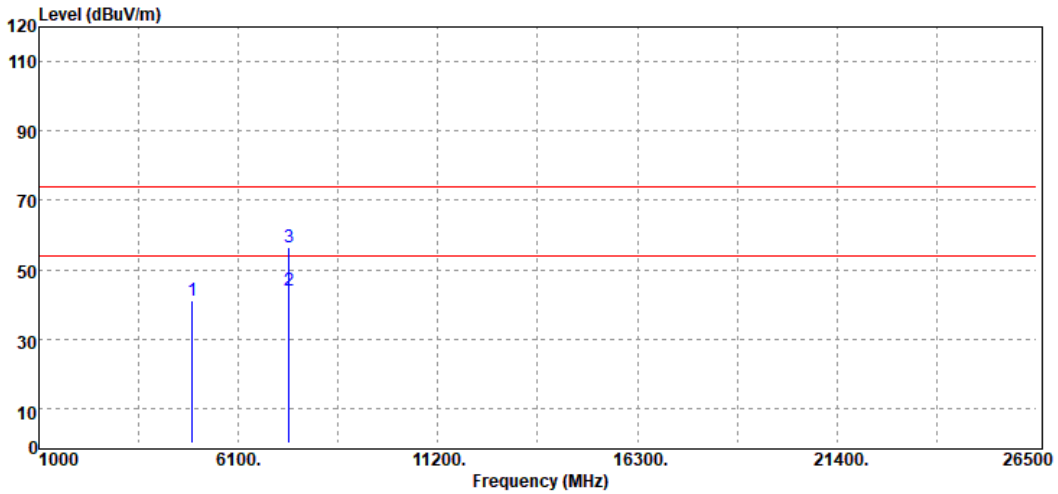
Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4924.00	Peak	37.25	4.01	41.26	74.00	-32.74
7386.00	Average	33.34	10.80	44.14	54.00	-9.86
7386.00	Peak	45.51	10.80	56.31	74.00	-17.69
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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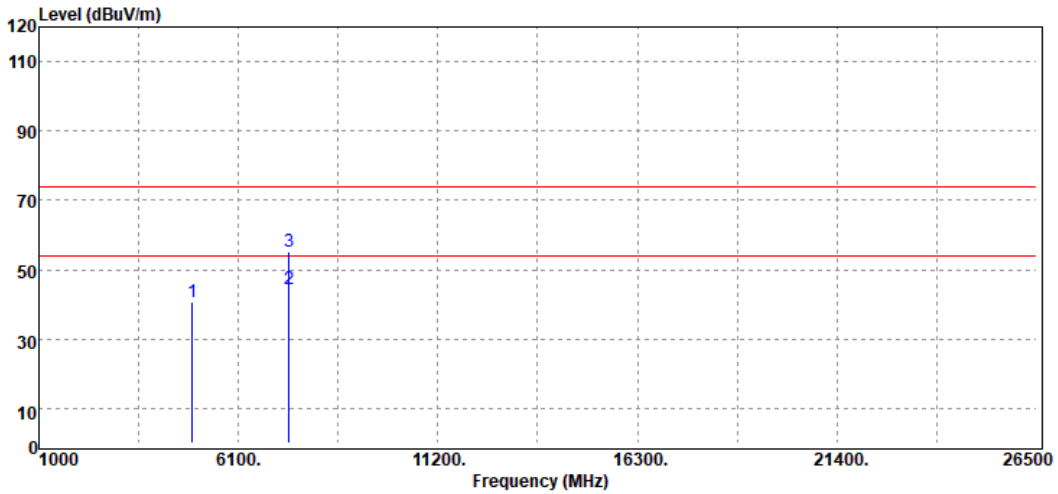
Test Mode	IEEE 802.11n HT20 High CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4924.00	Peak	36.57	4.01	40.58	74.00	-33.42
7386.00	Average	33.60	10.80	44.40	54.00	-9.60
7386.00	Peak	44.43	10.80	55.23	74.00	-18.77
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

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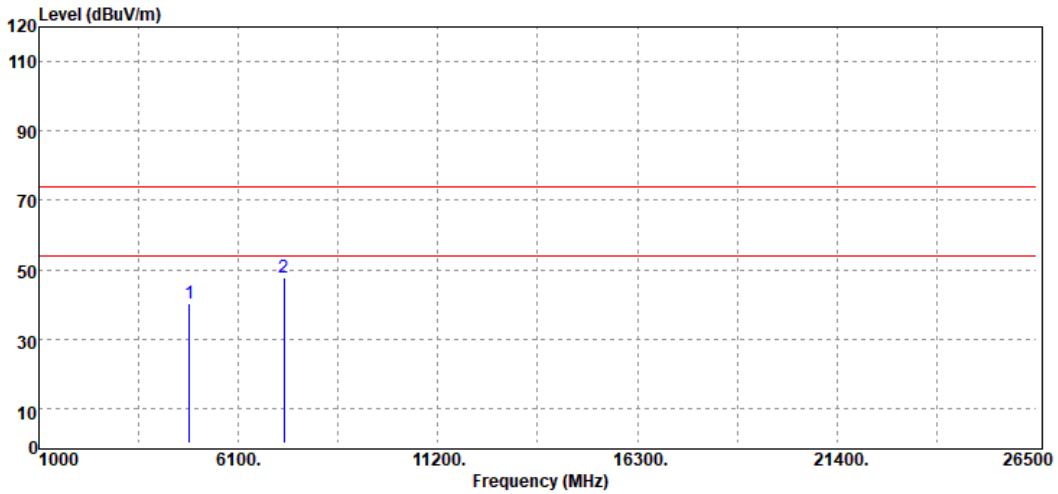
Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4844.00	Peak	36.90	3.35	40.25	74.00	-33.75
7266.00	Peak	36.74	10.88	47.62	74.00	-26.38
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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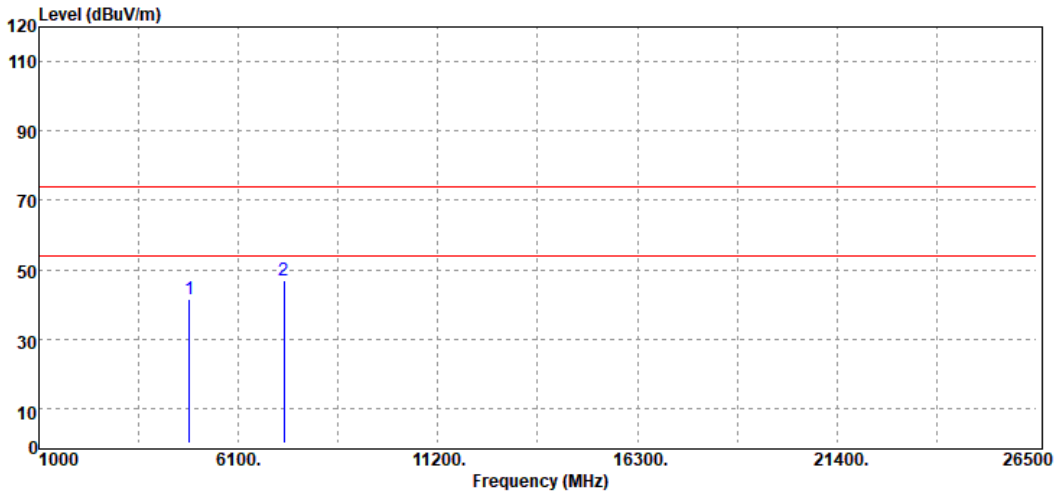
Test Mode	IEEE 802.11n HT40 Low CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4844.00	Peak	38.22	3.35	41.57	74.00	-32.43
7266.00	Peak	36.17	10.88	47.05	74.00	-26.95
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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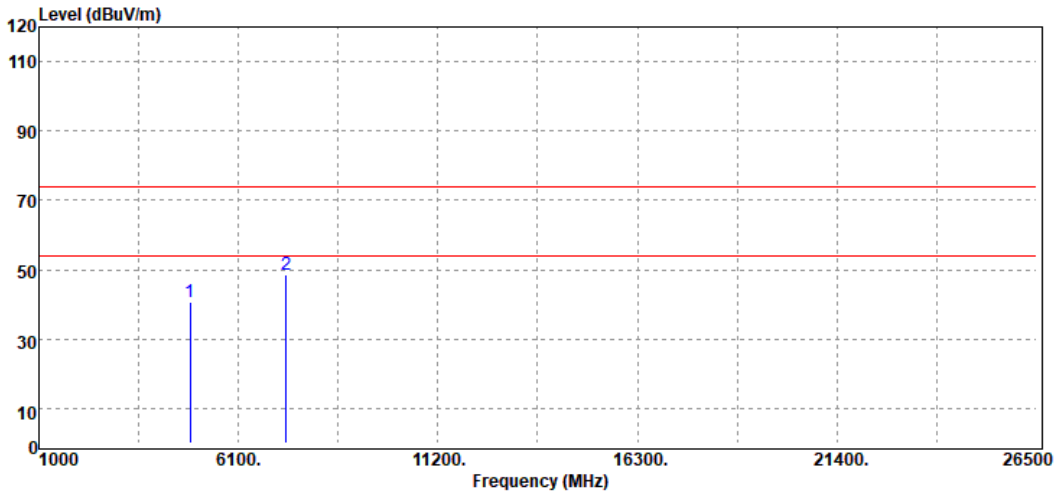
Test Mode	IEEE 802.11n HT40 Mid CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak & Average		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4874.00	Peak	37.39	3.48	40.87	74.00	-33.13
7311.00	Peak	37.73	11.06	48.79	74.00	-25.21
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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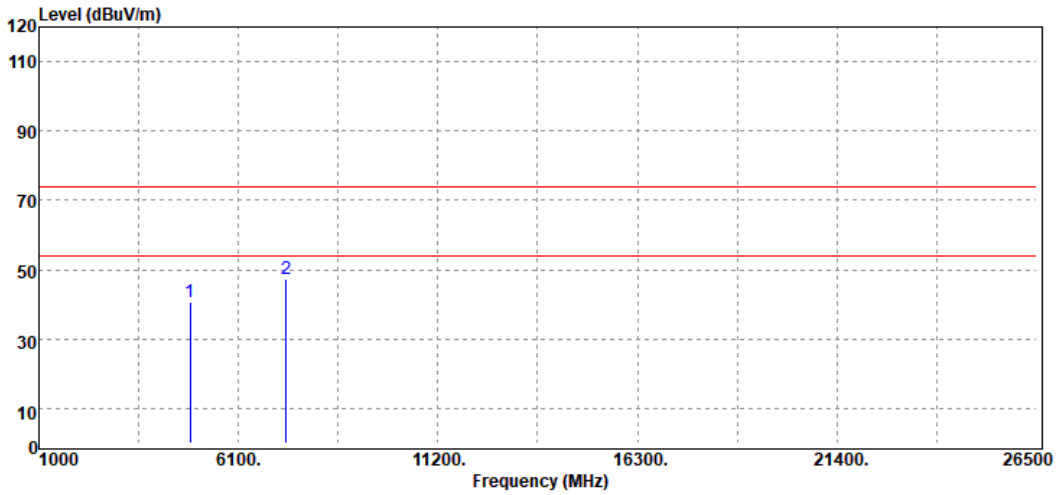
Test Mode	IEEE 802.11n HT40 Mid CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4874.00	Peak	37.12	3.48	40.60	74.00	-33.40
7311.00	Peak	36.31	11.06	47.37	74.00	-26.63
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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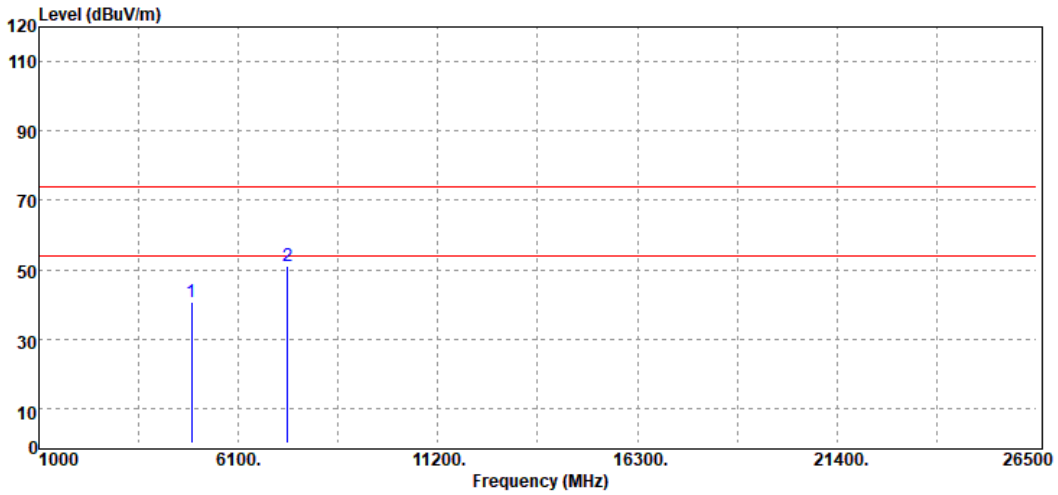
Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Vertical	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4904.00	Peak	36.95	3.69	40.64	74.00	-33.36
7356.00	Peak	39.99	10.89	50.88	74.00	-23.12
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

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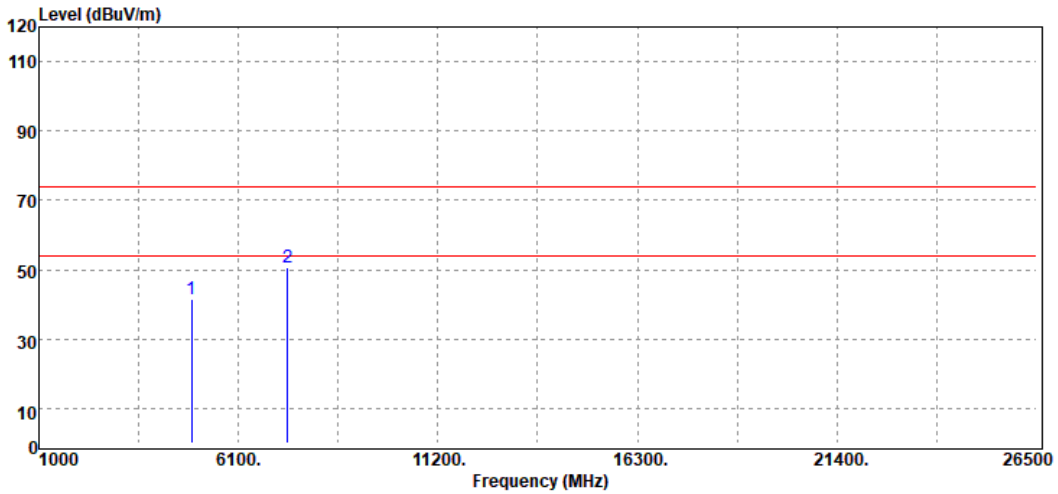
Test Mode	IEEE 802.11n HT40 High CH	Temp/Hum	22.5(℃)/ 59%RH
Test Item	Harmonic	Test Date	April 10, 2020
Polarize	Horizontal	Test Engineer	Jerry Chang
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4904.00	Peak	37.92	3.69	41.61	74.00	-32.39
7356.00	Peak	39.61	10.89	50.50	74.00	-23.50
N/A						

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit*

- End of Test Report -

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