



<b>Prüfbericht-Nr.:</b> <i>Test report no.:</i>	CN22V0IL (P15C-WiFi) 001	<b>Auftrags-Nr.:</b> <i>Order no.:</i>	238524547	Seite 1 von 26 Page 1 of 26
<b>Kunden-Referenz-Nr.:</b> <i>Client reference no.:</i>	N/A	<b>Auftragsdatum:</b> <i>Order date:</i>	2021-11-23	
<b>Auftraggeber:</b> <i>Client:</i>	Ademco Inc 1985 Douglas Drive N, Golden Valley, USA			
<b>Prüfgegenstand:</b> <i>Test item:</i>	L1 WiFi Water Leak and Freeze Detector			
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type no.:</i>	RWLD3001-001, RWLD3002-001, CHW3610W8001, YCHW3000W3003			
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	FCC Part 15C Test report (WiFi 2.4GHz)			
<b>Prüfgrundlage:</b> <i>Test specification:</i>	FCC 47CFR Part 15: Subpart C Section 15.247			
<b>Wareneingangsdatum:</b> <i>Date of sample receipt:</i>	2022-05-25			
<b>Prüfmuster-Nr.:</b> <i>Test sample no.:</i>	A003267737-004 A003267737-003			
<b>Prüfzeitraum:</b> <i>Testing period:</i>	2022-06-01 - 2022-06-20			
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	EMC/RF Taipei Testing Site			
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	Taipei Testing Laboratories			
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass			
<b>überprüft von:</b> <i>compiled by:</i>	 Ryan Chen	<b>genehmigt von:</b> <i>authorized by:</i>	 Brenda Chen	
<b>Datum:</b> <i>Date:</i>	2022-08-17	<b>Ausstellungsdatum:</b> <i>Issue date:</i>	2022-08-17	
<b>Stellung / Position:</b>	Senior Project Manager	<b>Stellung / Position:</b>	Senior Project Manager	
<b>Sonstiges / Other:</b>				
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht getestet
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested
<p><b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b>  <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i></p>				

## TEST SUMMARY

Report Section	FCC Clause	Test Item	Result
5.1.1	15.247(b) & 15.203	Antenna Requirement	Pass
5.1.2	15.247(b)(3)	Peak Output Power	Pass
5.1.3	15.247(a)(2)	6 dB Bandwidth	Pass
5.1.3	2.1049	99% Occupied Bandwidth	Pass
5.1.4	15.247(e)	Power Spectral Density	Pass
5.1.5	15.247(d)	Conducted Spurious Emissions and Band Edges	Pass
5.1.6	15.247(d) & 15.205 & 15.209	Radiated Spurious Emissions and Band Edges	Pass
-	15.207	Mains Conducted Emission	N/A

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

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**APPENDIX A - TEST RESULT OF CONDUCTED**

**APPENDIX B - TEST RESULT OF RADIATED EMISSIONS**

**APPENDIX SP - PHOTOGRAPHS OF TEST SETUP**

**APPENDIX EP - PHOTOGRAPHS OF EUT**

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### HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
CN22V0IL (P15C-WiFi) 001	Original Release	2022-08-17

## 1. General Remarks

### 1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

**Appendix A - Test Result of Conducted**

**Appendix B - Test Result of Radiated Emissions**

**Appendix SP - Photographs of Test Setup**

**Appendix EP - Photographs of EUT**

### Applied Standard and Test Levels

Radio
FCC 47CFR Part 15: Subpart C Section 15.247
FCC 47CFR Part 2: Subpart J Section 2.1049
ANSI C63.10:2013
KDB 558074 D01 15.247 Meas Guidance v05r02

### 1.2 Decision Rule of Conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard.

## 2. Test Sites

### 2.1 Test Laboratory

Taipei Testing Laboratories

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.  
Taipei City 105  
Taiwan (R.O.C.)

### 2.2 Test Facility

Taipei Testing Laboratories

No.458-18, Sec. 2, Fenliao Rd., Linkou Dist.,  
New Taipei City 244  
Taiwan (R.O.C.)  
FCC Registration No.: 226631  
ISED Registration No.: 25563

## 2.3 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

## 2.4 Calibration

Equipment requiring calibration is calibrated periodically in a suitably accredited Calibration Lab. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

## 2.5 Measurement Uncertainty

All measurement uncertainty values are shown with a coverage factor of  $k=2$  to indicate a 95% level of confidence.

### Emission Measurement Uncertainty

Parameter	Uncertainty
Radiated Emission (9 kHz ~ 30 MHz)	$\pm 1.15$ dB
Radiated Emission (30 MHz ~ 200 MHz)	$\pm 1.32$ dB
Radiated Emission (200 MHz ~ 1 GHz)	$\pm 1.31$ dB
Radiated Emission (1 GHz ~ 18 GHz)	$\pm 1.53$ dB
Radiated Emission (18 GHz ~ 40 GHz)	$\pm 2.50$ dB
Mains Conducted Emission	$\pm 1.65$ dB



### 3. General Product Information

#### 3.1 Product Function and Intended Use

The EUT is a L1 WiFi Water Leak and Freeze Detector. It contains a WLAN compatible module enabling the user to communicate data through a Wireless interface.

For details refer to the User Guide, Data Sheet and Circuit Diagram.

#### 3.2 System Details and Ratings

##### Basic Information of EUT

Item	EUT information
Kind of Equipment/Test Item	L1 WiFi Water Leak and Freeze Detector
Type Identification	RWLD3001-001, RWLD3002-001, CHW3610W8001, YCHW3000W3003
Trademark	Resideo
FCC ID	HS9-RWLD3L1

##### Technical Specification of EUT

Item	EUT information
Operating Frequency	2412 MHz ~ 2462 MHz
Channel Number	802.11b/g/n HT20: 11 802.11n HT40: 7
Data Rate	802.11b: 11.0 / 5.5 / 2.0 / 1.0 Mbps 802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to MCS7
Operation Voltage	3 Vdc (AA Battery*2)
Modulation	DSSS (DBPSK, DQPSK, CCK) OFDM (BPSK, QPSK, 16QAM, 64QAM)
Maximum Output Power (mW)	802.11b: 13.49 802.11g: 125.31 802.11n HT20: 138.68 802.11n HT40: 169.04
Antenna Information	Refer to 5.1.1
Accessory Device	Refer to 4.4

Note:

- All models are listed as below.

Main model	Series model	Difference
RWLD3001-001	RWLD3002-001	All models are electrically identical, different model names are for marketing purpose.
	CHW3610W8001	
	YCHW3000W3003	

### **3.3 Noise Generating and Noise Suppressing Parts**

Refer to the Circuit Diagram.

### **3.4 Submitted Documents**

- Circuit Diagram
- Instruction Manual
- Rating Label
- Technical Description

## 4. Test Set-up and Operation Modes

### 4.1 Principle of Configuration Selection

The test modes were adapted accordingly in reference to the instructions for use.

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output expected by the customer and is going to be fixed on the firmware of the final end product.

#### Table for Parameters of Test Software Setting

802.11b		802.11g		802.11n HT20		802.11n HT40	
Channel	Power Setting	Channel	Power Setting	Channel	Power Setting	Channel	Power Setting
1	60	1	67	1	68	3	75
6	60	6	67	6	68	6	74
11	60	11	67	11	68	9	72

### 4.2 Carrier Frequency and Channel

802.11b, 802.11g and 802.11n HT20:

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

802.11n HT40:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	7	2442
4	2427	8	2447
5	2432	9	2452
6	2437		

### 4.3 Test Operation and Test Software

Setup for testing: Test samples are provided with Uart interface which makes it possible to control them through a test software installed on a notebook computer.

This software was running on the laptop computer connected to the EUT. It was used to enable the operation modes listed as below.

Test Software	UI_mptool
---------------	-----------

The samples were used as follows:

A003267737-004

A003267737-003

Full test was applied on all test modes, but only worst case was shown.

EUT Configure Mode	Applicable To			Mains Conducted Emission	Description
	Antenna Port Conducted Measurement	Radiated Spurious Emissions above 1 GHz	Radiated Spurious Emissions below 1 GHz		
-	√	√	√	-	-

Note:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when position on **Y-plane**.
2. "-" means no effect.

#### Antenna Port Conducted Measurement

Pre-Scan full test was applied on all test modes, but only worst case was shown.

Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11b	1 to 11	1, 6, 11	1.0
-	802.11g	1 to 11	1, 6, 11	6.0
-	802.11n HT20	1 to 11	1, 6, 11	MCS0
-	802.11n HT40	3 to 9	3, 6, 9	MCS0

#### Radiated Spurious Emissions (Above 1 GHz)

Pre-Scan full test was applied on all test modes, but only worst case was shown.

Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11b	1 to 11	1, 6, 11	1.0
-	802.11g	1 to 11	1, 6, 11	6.0
-	802.11n HT20	1 to 11	1, 6, 11	MCS0
-	802.11n HT40	3 to 9	3, 6, 9	MCS0

#### Radiated Spurious Emissions (Below 1 GHz)

Pre-Scan full test was applied on all test modes, but only worst case was shown.

Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11n HT20	1 to 11	1	MCS0

**Test Condition**

Test Item	Ambient Temperature	Relative Humidity	Tested by
Conducted Measurement	23.7-24.2 °C	67-69 %	Andy Chen
Radiated Spurious Emissions above 1 GHz	23.9-24.8 °C	53-54 %	Ivan Chiang
Radiated Spurious Emissions below 1 GHz	23.9-24.8 °C	53-54 %	Ivan Chiang

## 4.4 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

**Accessory of EUT**

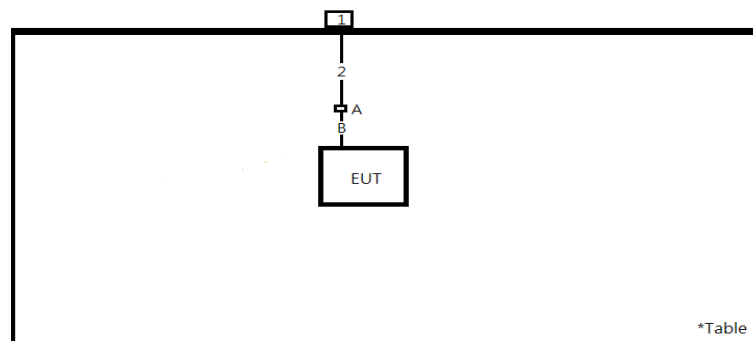
None

**Support Unit**

Support Unit								
No	Description	Brand	Model	S/N	Shielded	Ferrite Core (Qty)	Length (cm)	Remark
A	Uart	MODULES	CP2102	N/A	-	-	-	--
B	Fixture Cable	Dexatek-001	Dexatek-001	N/A	NO	NO	31	--
1	NB	HP	15s-du0007TX	CND93662VF	-	-	-	--
2	USB Cable	TUV-001	TUV-001	N/A	YES	NO	300	--

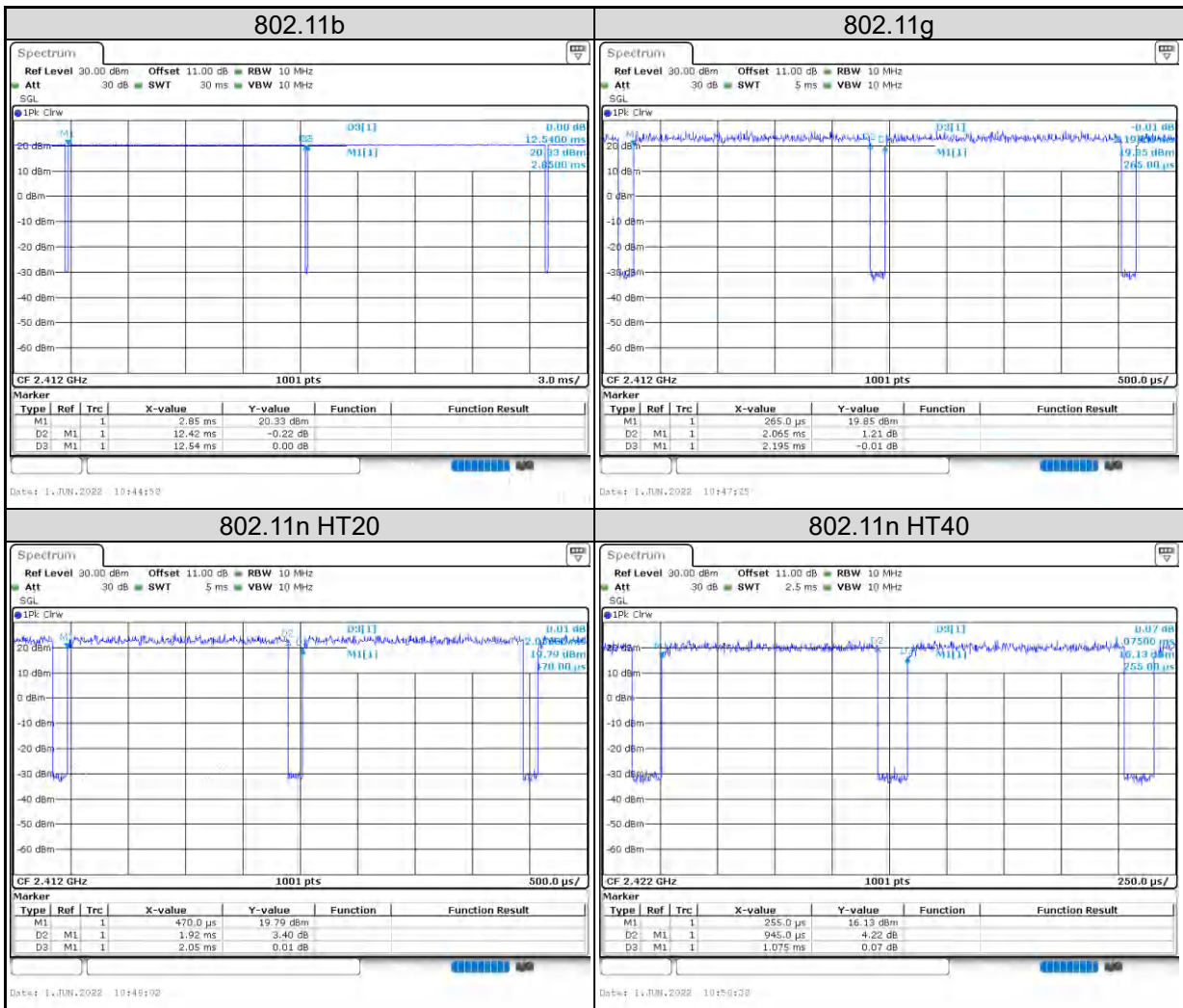
## 4.5 Test Setup Diagram

<Radiated Spurious Emissions mode>



## 4.6 Duty Cycle of Test Signal

Mode	On + Off Time (ms)	On Time (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11b	12.54	12.42	99.04	0.04
802.11g	2.20	2.07	94.08	0.27
802.11n HT20	2.05	1.92	93.66	0.28
802.11n HT40	1.08	0.95	87.91	0.56



## 5. Test Results

### 5.1 Transmitter Requirement & Test Suites

#### 5.1.1 Antenna Requirement

**Requirement** Use of approved antennas only

According to the manufacturer declaration, the EUT has an antenna with a directional gain of 4.10 dBi. The antenna is a PCB antenna with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.

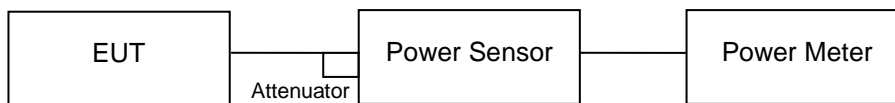
Refer to EUT photo for details.

### 5.1.2 Peak Output Power

**Limit** 1 watt (30 dBm)

**Kind of Test Site** Shielded room

#### Test Setup



#### Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Power Meter	Anritsu	ML2495A	1901008	2022/3/15	2023/3/14	2022/6/1	2022/6/20
Power Sensor	Anritsu	MA2411B	1725269	2022/3/15	2023/3/14	2022/6/1	2022/6/20

#### Test Procedures

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.



**Test Result**
**Peak Output Power**
**<802.11b>**

Channel	Channel Frequency (MHz)	Peak Output Power		Limit (dBm)
		(dBm)	(mW)	
1	2412	10.03	10.07	30
6	2437	10.88	12.25	30
11	2462	11.30	13.49	30

**<802.11g>**

Channel	Channel Frequency (MHz)	Peak Output Power		Limit (dBm)
		(dBm)	(mW)	
1	2412	20.58	114.29	30
6	2437	20.98	125.31	30
11	2462	20.43	110.41	30

**<802.11n HT20>**

Channel	Channel Frequency (MHz)	Peak Output Power		Limit (dBm)
		(dBm)	(mW)	
1	2412	21.42	138.68	30
6	2437	20.59	114.55	30
11	2462	20.30	107.15	30

**<802.11n HT40>**

Channel	Channel Frequency (MHz)	Peak Output Power		Limit (dBm)
		(dBm)	(mW)	
3	2422	22.28	169.04	30
6	2437	22.22	166.72	30
9	2452	21.85	153.11	30

**Average Power**
**<802.11b>**

Channel	Channel Frequency (MHz)	Average Power	
		(dBm)	(mW)
1	2412	7.49	5.61
6	2437	8.44	6.98
11	2462	8.78	7.55

**<802.11g>**

Channel	Channel Frequency (MHz)	Average Power	
		(dBm)	(mW)
1	2412	11.32	13.55
6	2437	10.86	12.19
11	2462	11.30	13.49

**<802.11n HT20>**

Channel	Channel Frequency (MHz)	Average Power	
		(dBm)	(mW)
1	2412	11.59	14.42
6	2437	11.05	12.74
11	2462	11.07	12.79

**<802.11n HT40>**

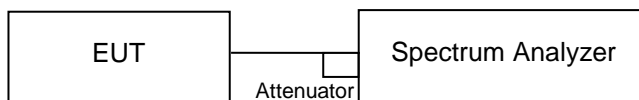
Channel	Channel Frequency (MHz)	Average Power	
		(dBm)	(mW)
3	2422	13.05	20.18
6	2437	13.22	20.99
9	2452	12.81	19.10

### 5.1.3 6 dB Bandwidth and 99% Occupied Bandwidth

**Limit** The minimum 6 dB bandwidth shall be at least 500 kHz.

**Kind of Test Site** Shielded room

#### Test Setup



#### Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV40	101512	2022/2/24	2023/2/23	2022/6/1	2022/6/20

#### Test Procedure

- a. Set resolution bandwidth (RBW) = 100 kHz
- b. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
- f. For 99% occupied bandwidth measurement, the transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to PEAK. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean power of a given emission.

#### Test Results

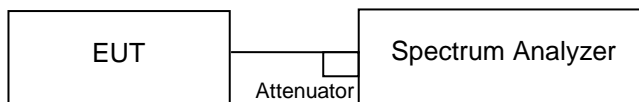
Please refer to Appendix A.

### 5.1.4 Power Spectral Density

**Limit**

The power spectral density shall not be greater than 8 dBm in any 3 kHz band.

**Kind of Test Site**                                      Shielded room

**Test Setup**

**Test Instruments**

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV40	101512	2022/2/24	2023/2/23	2022/6/1	2022/6/20

**Test Procedure**

- a. Set analyzer center frequency to DTS channel center frequency.
- b. Set the span to 1.5 times the DTS bandwidth.
- c. Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d. Set the VBW  $\geq 3 \times \text{RBW}$ .
- e. Detector = peak.
- f. Sweep time = auto couple.
- g. Trace mode = max hold.
- h. Allow trace to fully stabilize.
- i. Use the peak marker function to determine the maximum amplitude level within the RBW.

**Test Results**

Please refer to Appendix A.

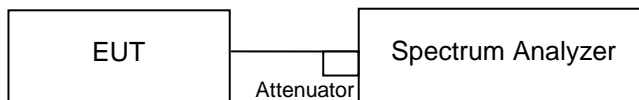
## 5.1.5 Conducted Spurious Emissions and Frequency Band Edges Measured in 100 kHz Bandwidth

### Limit

20 dB (below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.)

**Kind of Test Site**                      Shielded room

### Test Setup



### Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV40	101512	2022/2/24	2023/2/23	2022/6/1	2022/6/20

### Test Procedure

Measurement procedure REF

1. Set the RBW = 100 kHz.
2. Set the VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

Measurement procedure OOBE

1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

### Test Results

Please refer to Appendix A.

## 5.1.6 Radiated Spurious Emissions and Band Edges

### Limit

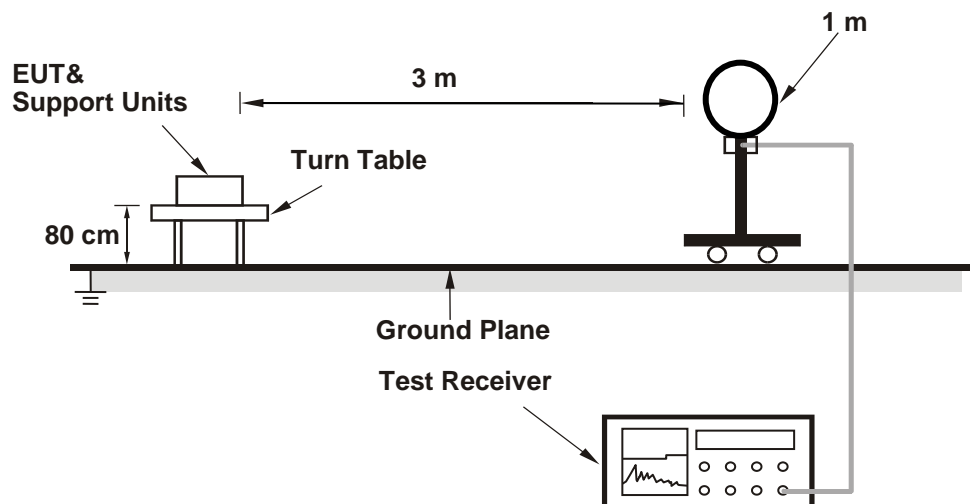
Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a).

Emissions radiated outside the restricted and authorized frequency bands must either comply with the radiated emission limits specified for the restricted bands or in §15.247(d).

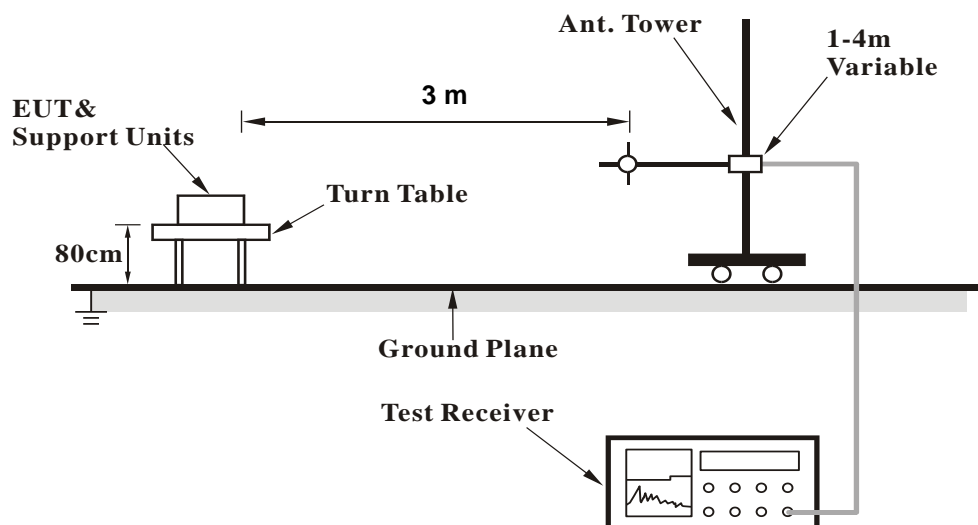
**Kind of Test Site**                      3m Semi-Anechoic Chamber

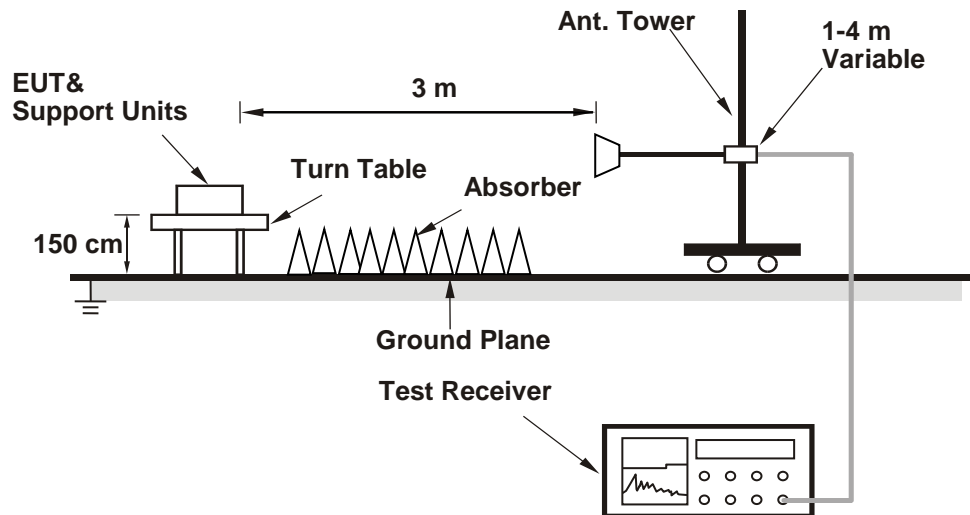
### Test Setup

**<Radiated Emissions below 30 MHz>**



**<Radiated Emissions 30 MHz to 1 GHz>**



**<Radiated Emissions above 1 GHz>**


For the actual test configuration, please refer to the attached file (Test Setup Photo).

**Test Instruments**

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Above 1 GHz					
Signal Analyzer	R&S	FSV40	101512	2022/2/24	2023/2/23
Horn Antenna	ETS-Lindgren	3117	00218929	2021/11/25	2022/11/24
HF-AMP + AC source	EMCI	EMC051845SE	980635	2022/1/20	2023/1/19
HF-AMP + AC source	EMCI	EMC184045SE	980656	2022/1/20	2023/1/19
Horn Antenna	SCHWARZBECK	BBHA 9170	00890	2022/5/6	2023/5/5
30 MHz ~ 1 GHz					
Receiver	R&S	ESR7	102109	2022/2/25	2023/2/24
Bilog Antenna	SCHWARZBECK	VULB-9168	00951	2022/4/6	2023/4/5
LF-AMP	Agilent	8447D	2727A05146	2022/2/16	2023/2/15
Below 30 MHz					
Receiver	R&S	ESR7	102109	2022/2/25	2023/2/24
Loop Antenna	SCHWARZBECK	FMZB 1519B	00215	2021/12/8	2022/12/7



**Test Procedures****For Radiated Emissions below 30 MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel (OPEN), perpendicular (CLOSE), and ground-parallel (GROUND) orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

## Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

**For Radiated Emissions above 30 MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

## Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98 %) or 10 Hz (Duty cycle  $\geq$  98 %) for Average detection (AV) at frequency above 1 GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The Radiated Emissions testing was performed in the X(E1), Y(H) and Z(E2) axis orientation. The worst-case Axis orientation is recorded in this test report.

**Prüfbericht - Nr.:**      **CN22V0IL (P15C-WiFi) 001**  
*Test Report No.*

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**Test Results**

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)  
Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)

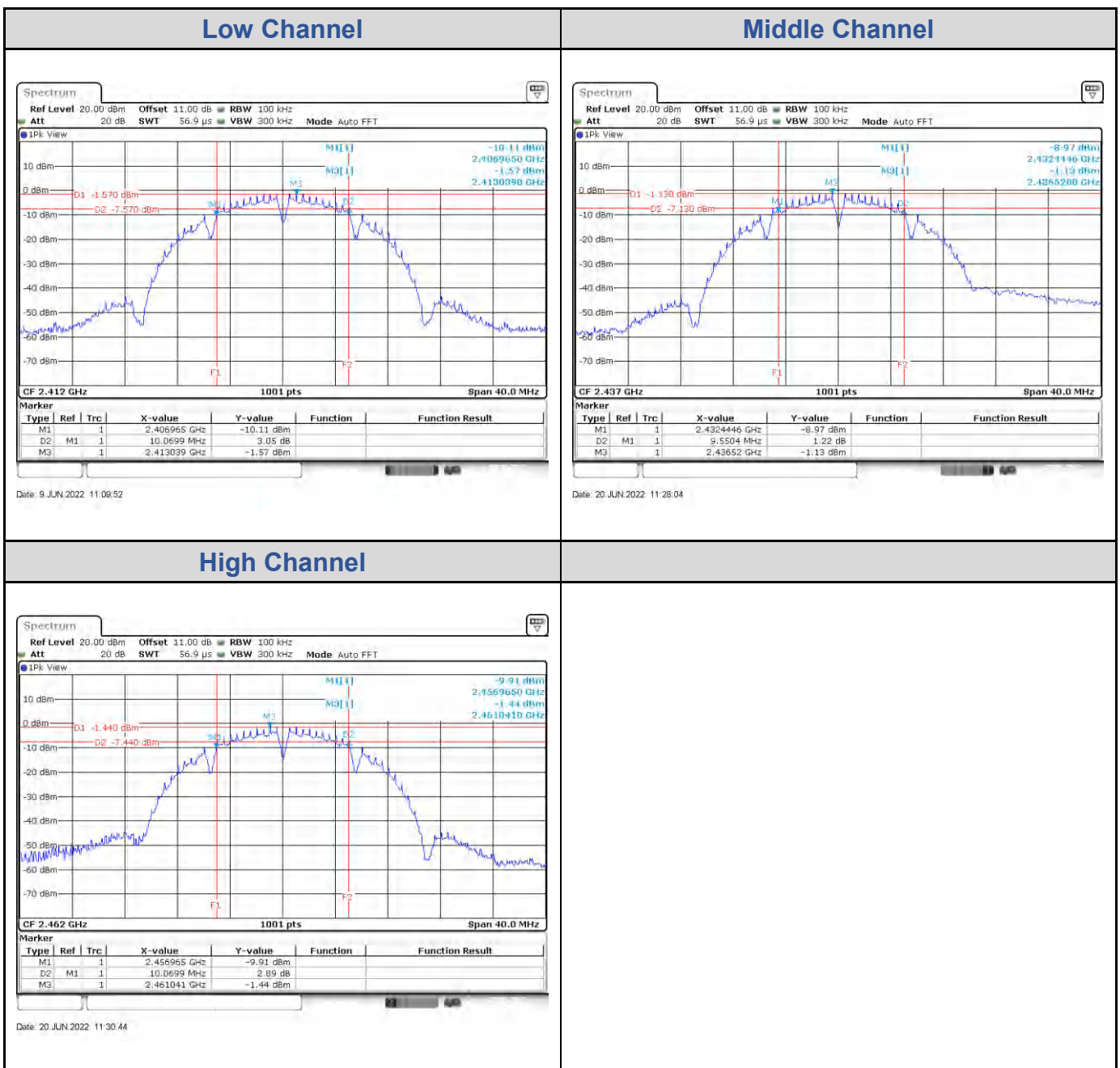
Please refer to Appendix B.

## Appendix A: Test Results of Conducted Test

### Test Result of 6 dB Bandwidth

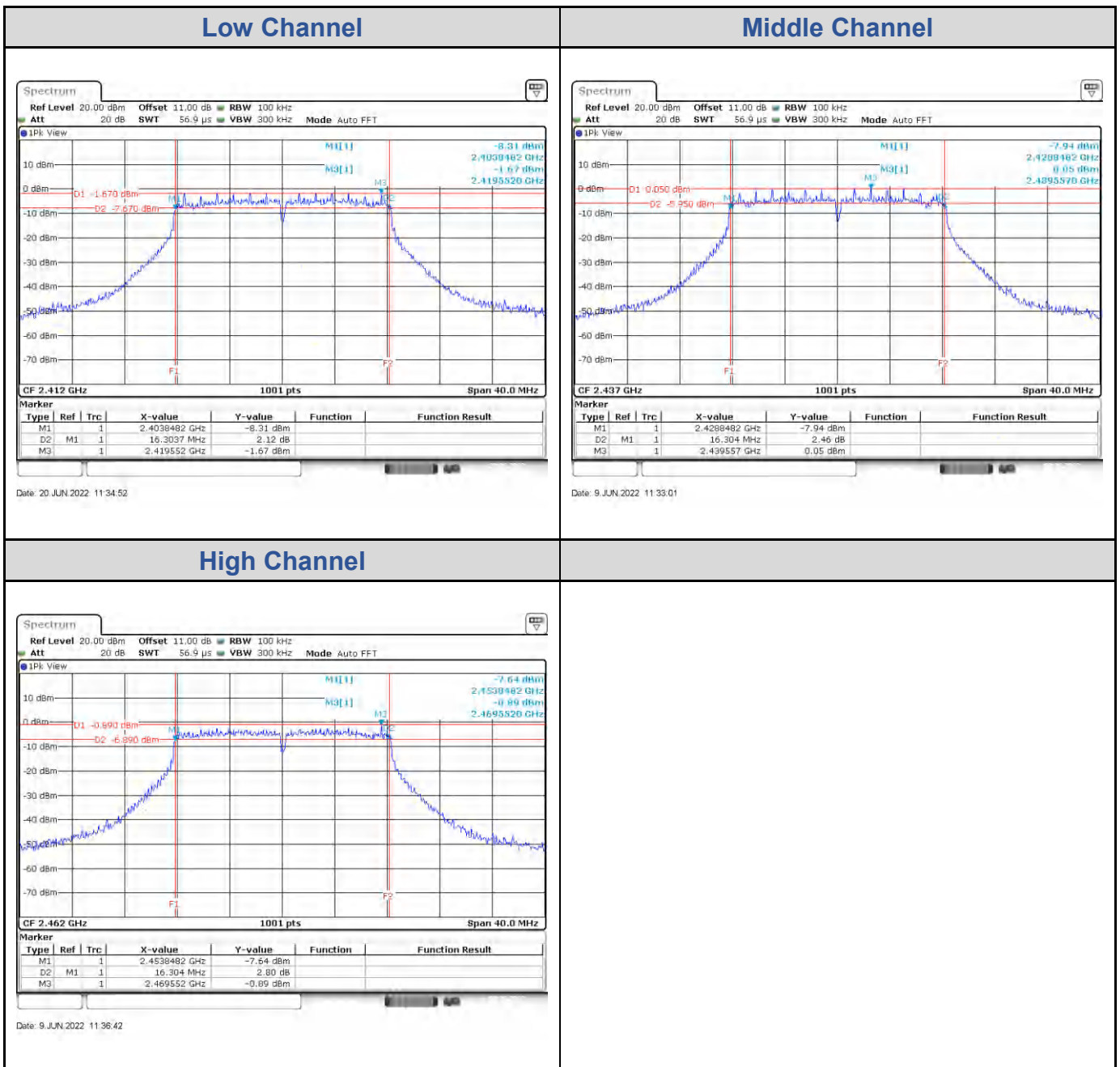
#### 802.11b

Channel	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
Low Channel	2412	10.07	> 0.5	Pass
Middle Channel	2437	9.55	> 0.5	Pass
High Channel	2462	10.07	> 0.5	Pass



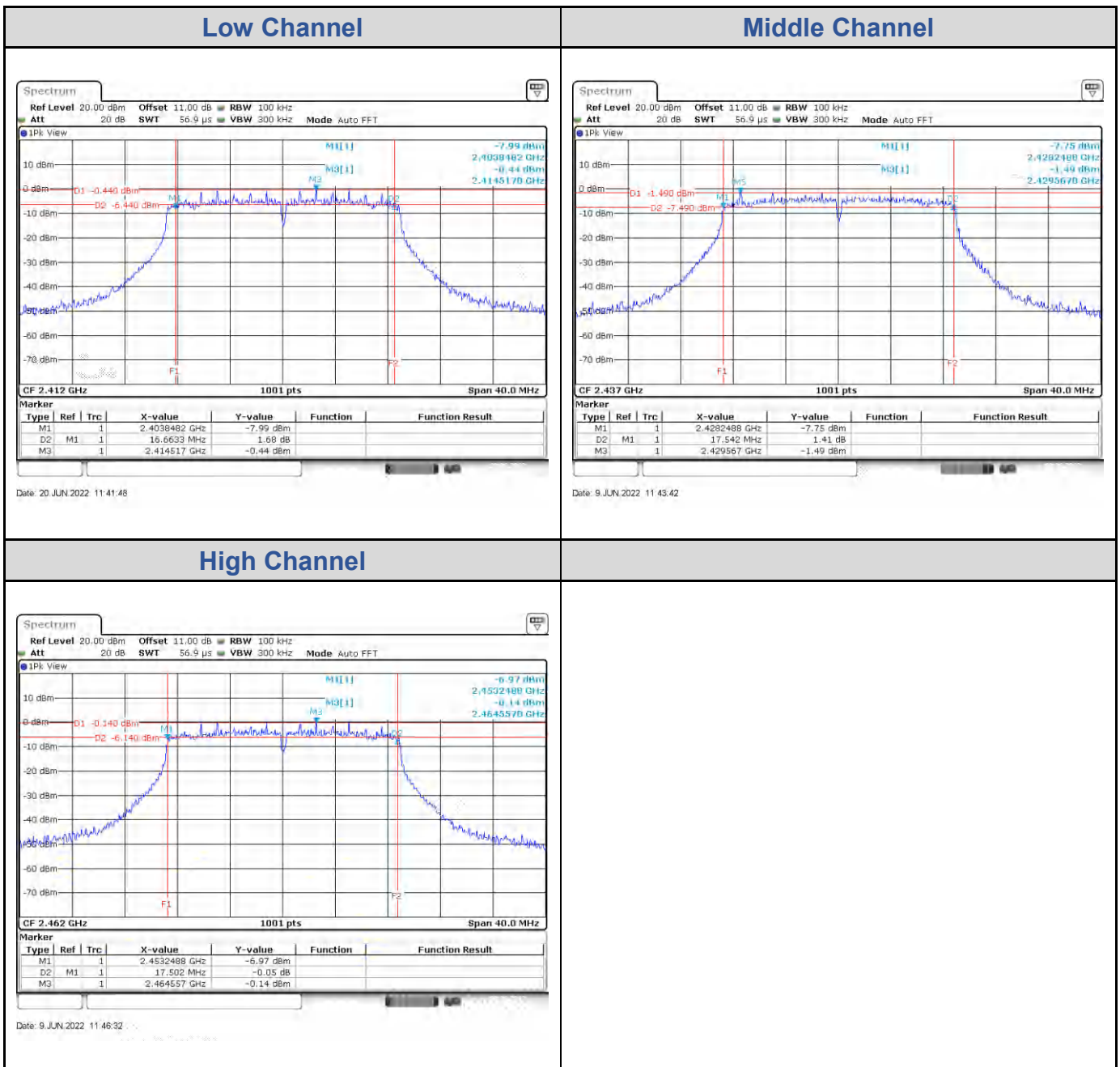
**802.11g**

Channel	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
Low Channel	2412	16.30	> 0.5	Pass
Middle Channel	2437	16.30	> 0.5	Pass
High Channel	2462	16.30	> 0.5	Pass



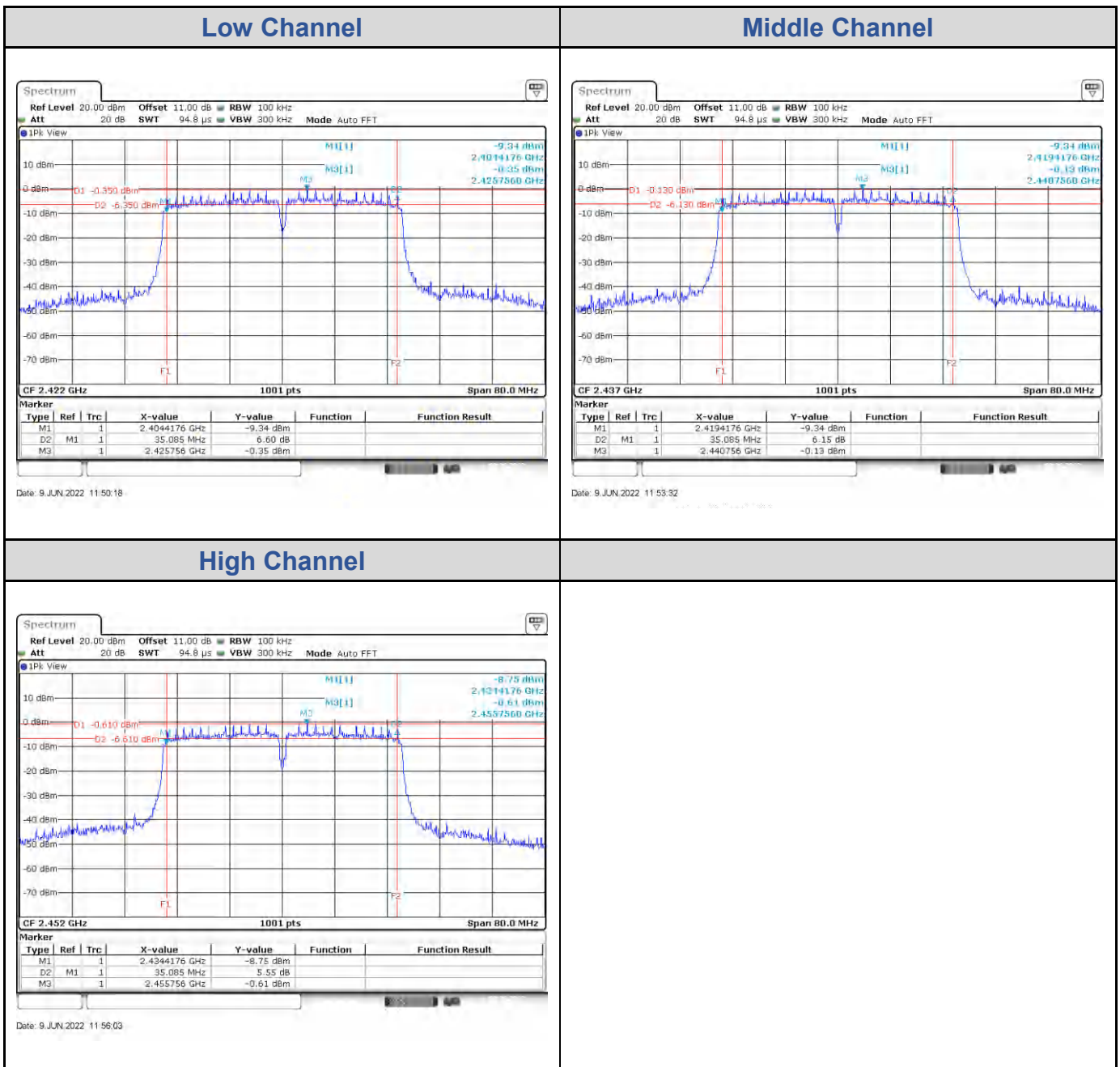
**802.11n HT20**

Channel	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
Low Channel	2412	16.66	> 0.5	Pass
Middle Channel	2437	17.54	> 0.5	Pass
High Channel	2462	17.50	> 0.5	Pass



**802.11n HT40**

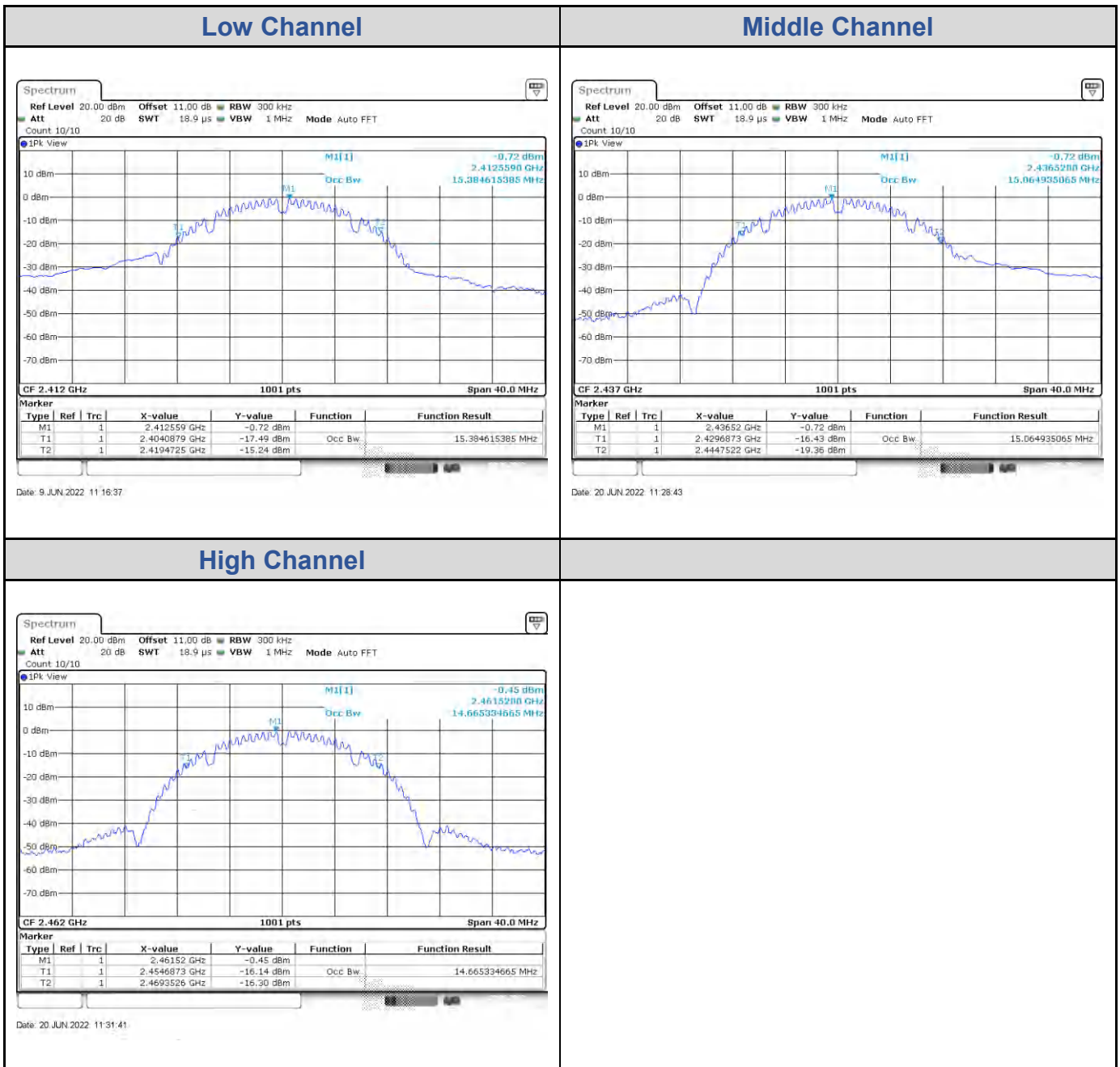
Channel	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
Low Channel	2422	35.09	> 0.5	Pass
Middle Channel	2437	35.09	> 0.5	Pass
High Channel	2452	35.09	> 0.5	Pass



## Test Result of 99% Occupied Bandwidth

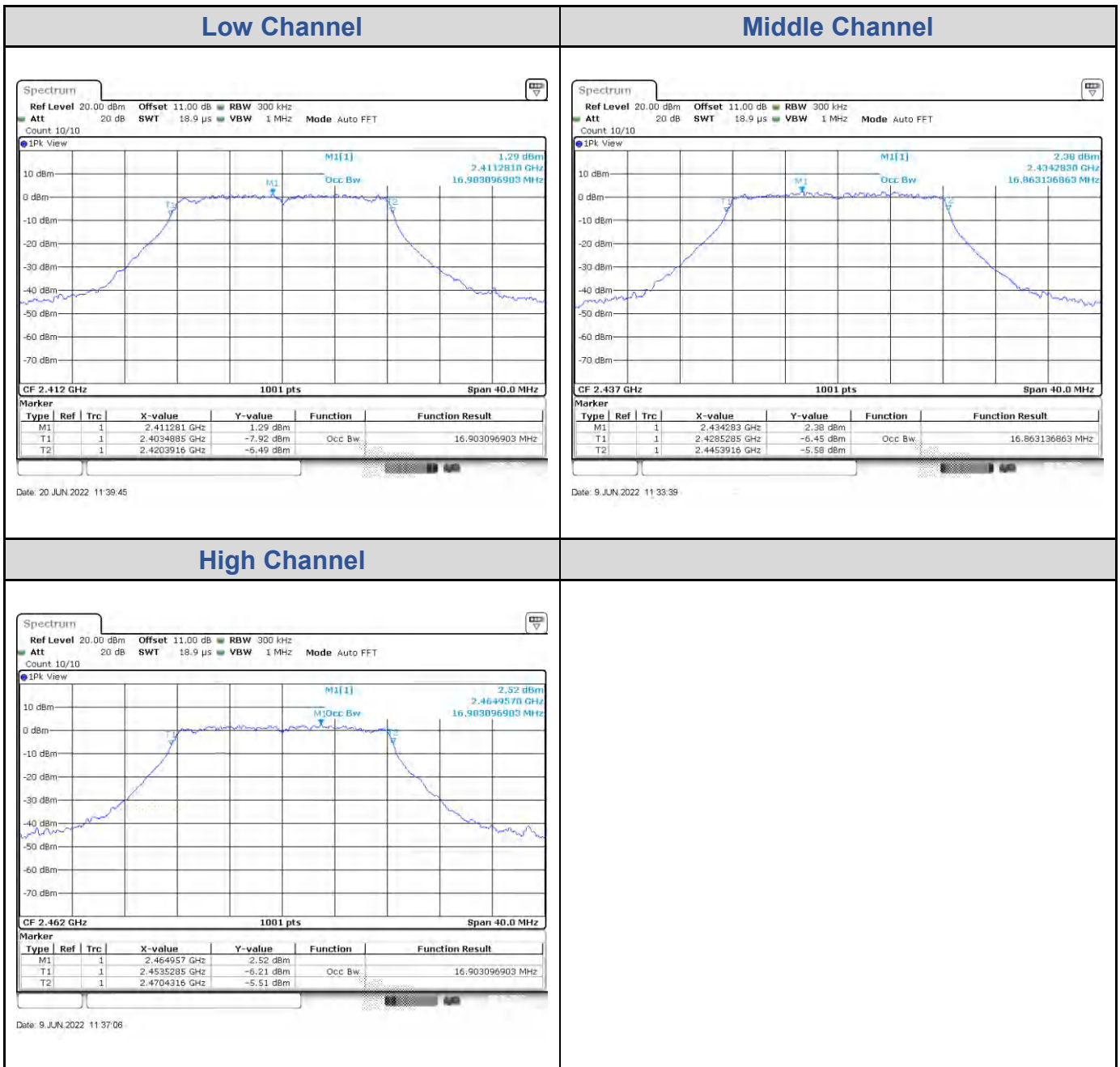
### 802.11b

Channel	Channel Frequency (MHz)	99% Bandwidth (MHz)
Low Channel	2412	15.38
Middle Channel	2437	15.06
High Channel	2462	14.67



**802.11g**

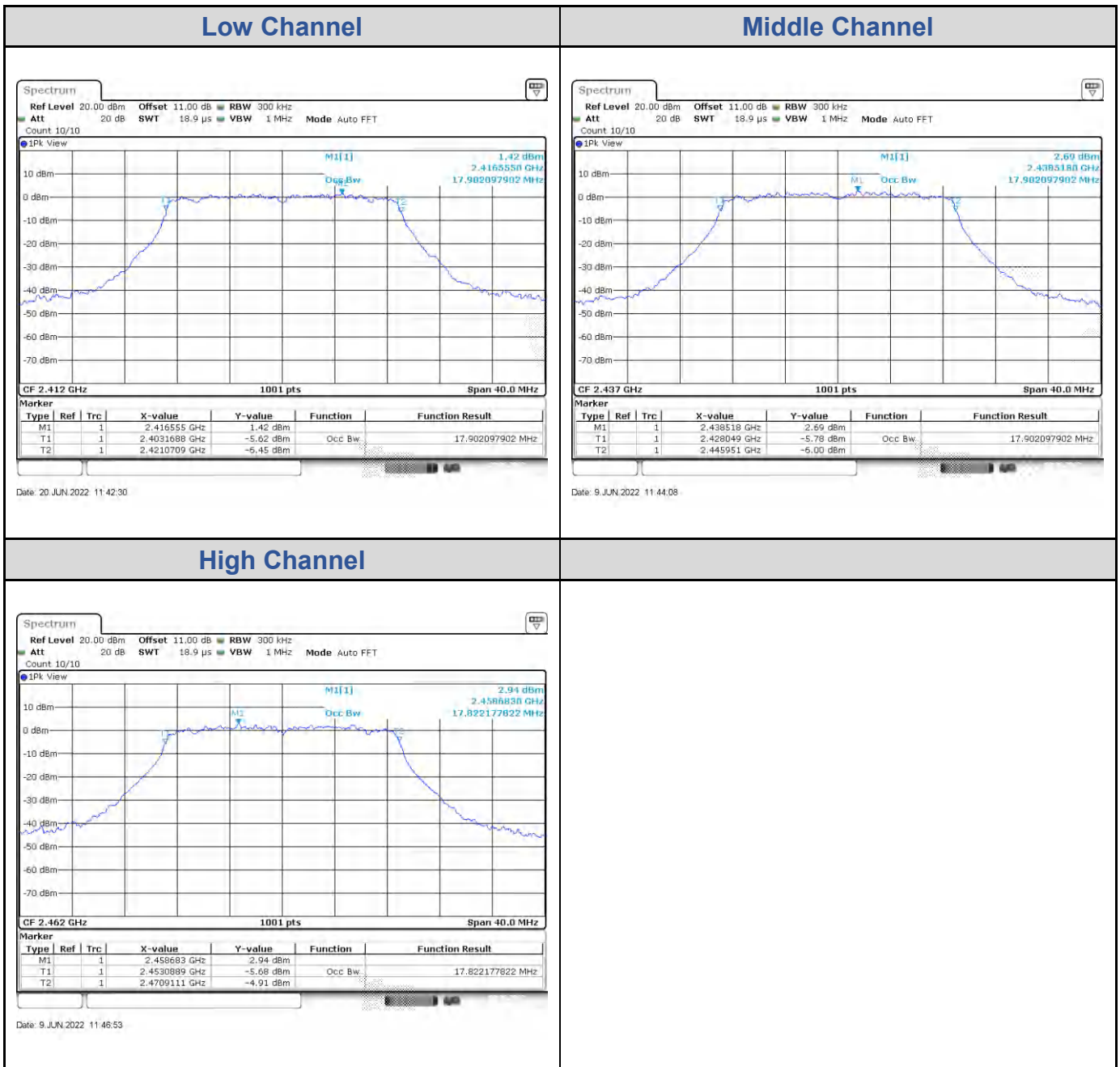
Channel	Channel Frequency (MHz)	99% Bandwidth (MHz)
Low Channel	2412	16.90
Middle Channel	2437	16.86
High Channel	2462	16.90





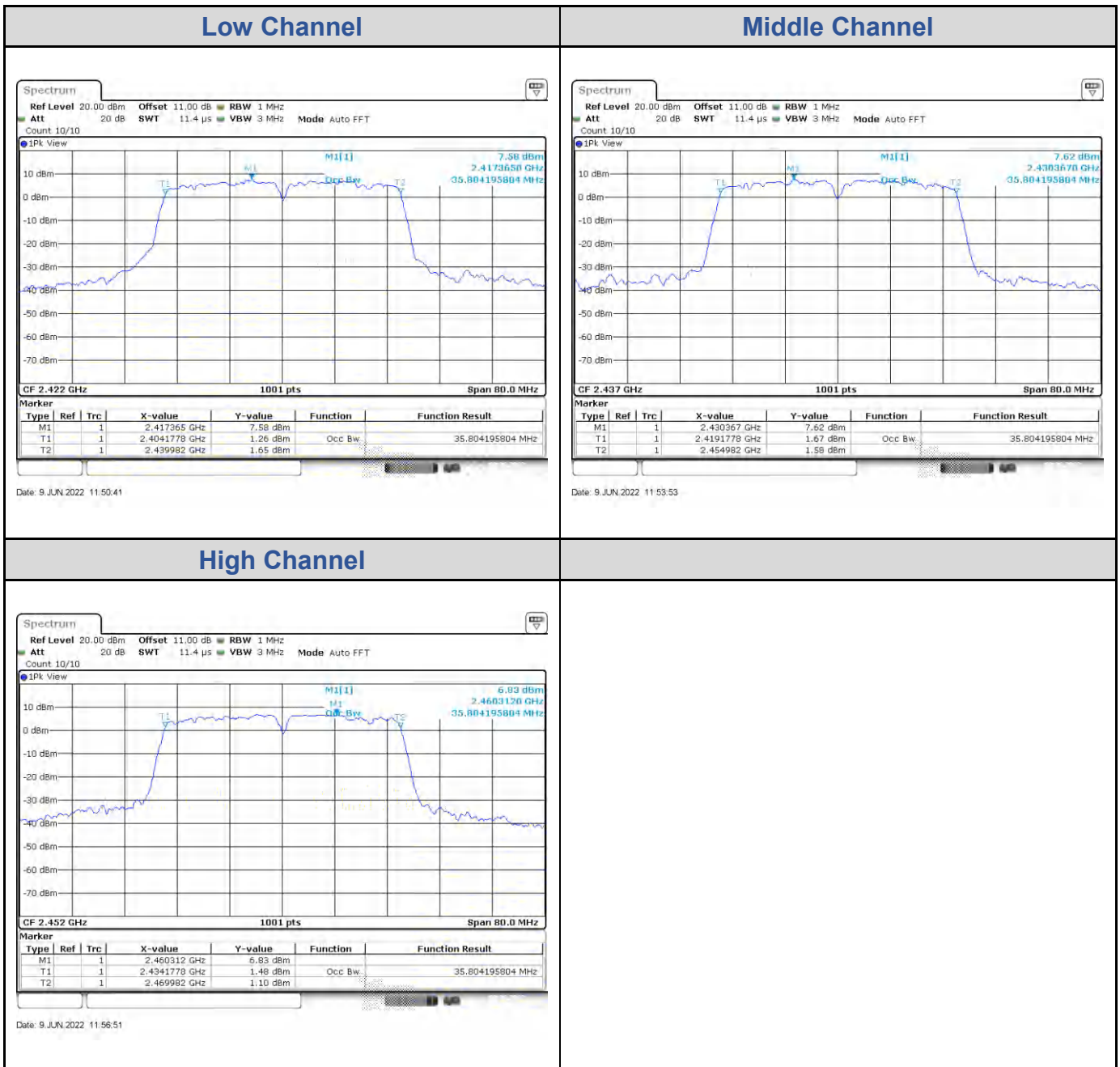
**802.11n HT20**

Channel	Channel Frequency (MHz)	99% Bandwidth (MHz)
Low Channel	2412	17.90
Middle Channel	2437	17.90
High Channel	2462	17.82



**802.11n HT40**

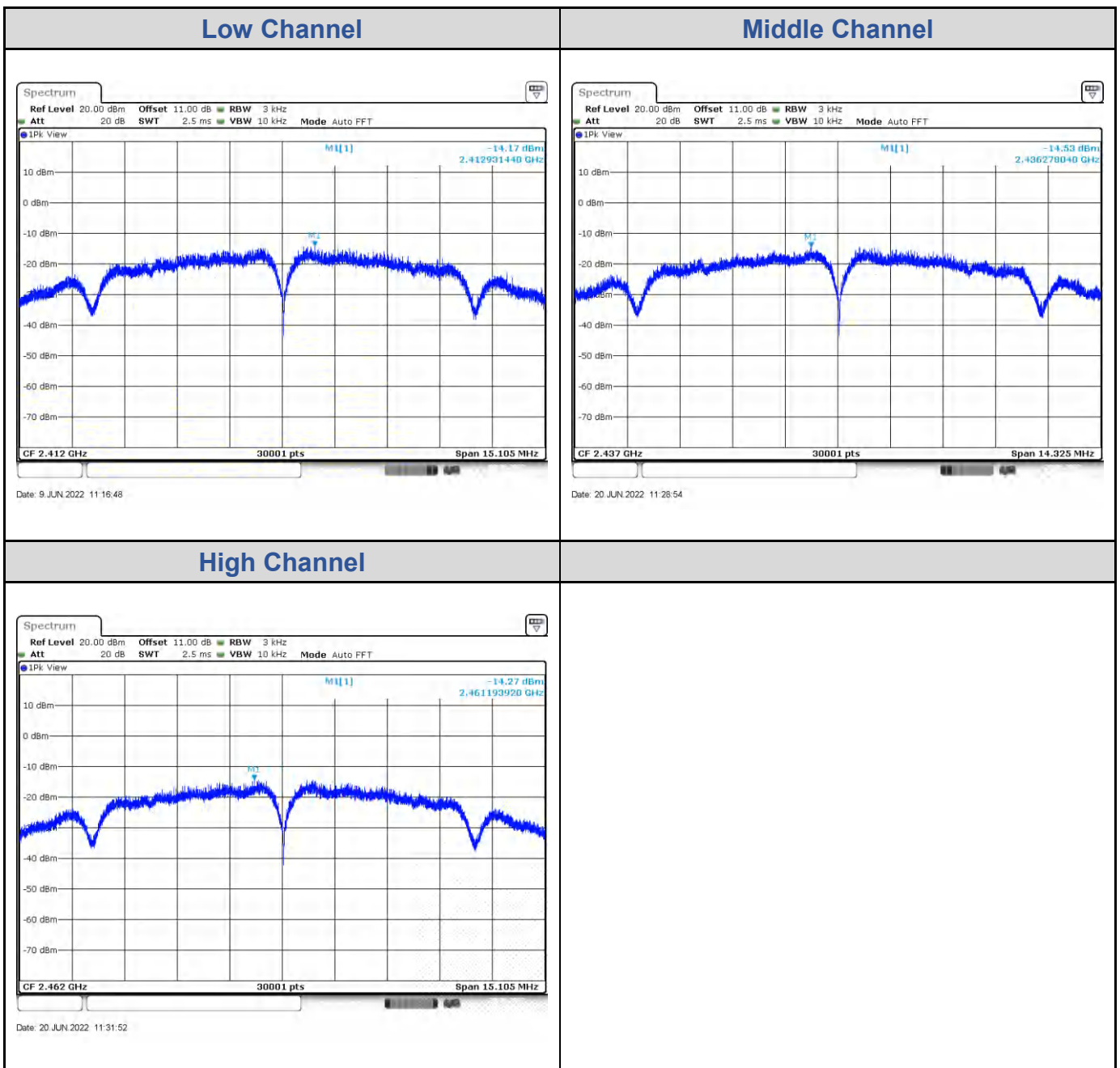
Channel	Channel Frequency (MHz)	99% Bandwidth (MHz)
Low Channel	2422	35.80
Middle Channel	2437	35.80
High Channel	2452	35.80



## Test Result of Power Spectral Density

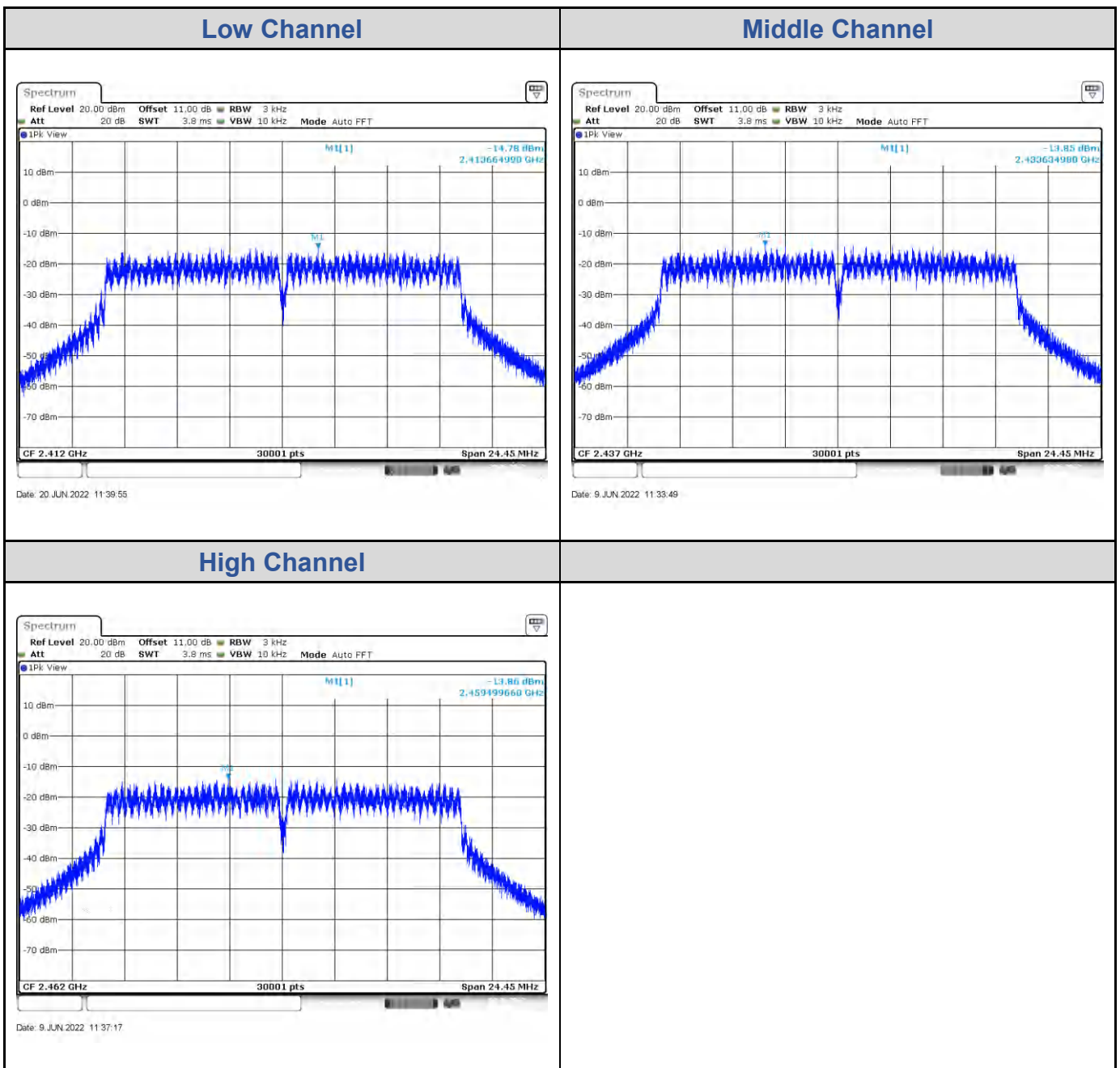
**802.11b**

Channel	Channel Frequency (MHz)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)
Low Channel	2412	-14.17	8
Middle Channel	2437	-14.53	8
High Channel	2462	-14.27	8



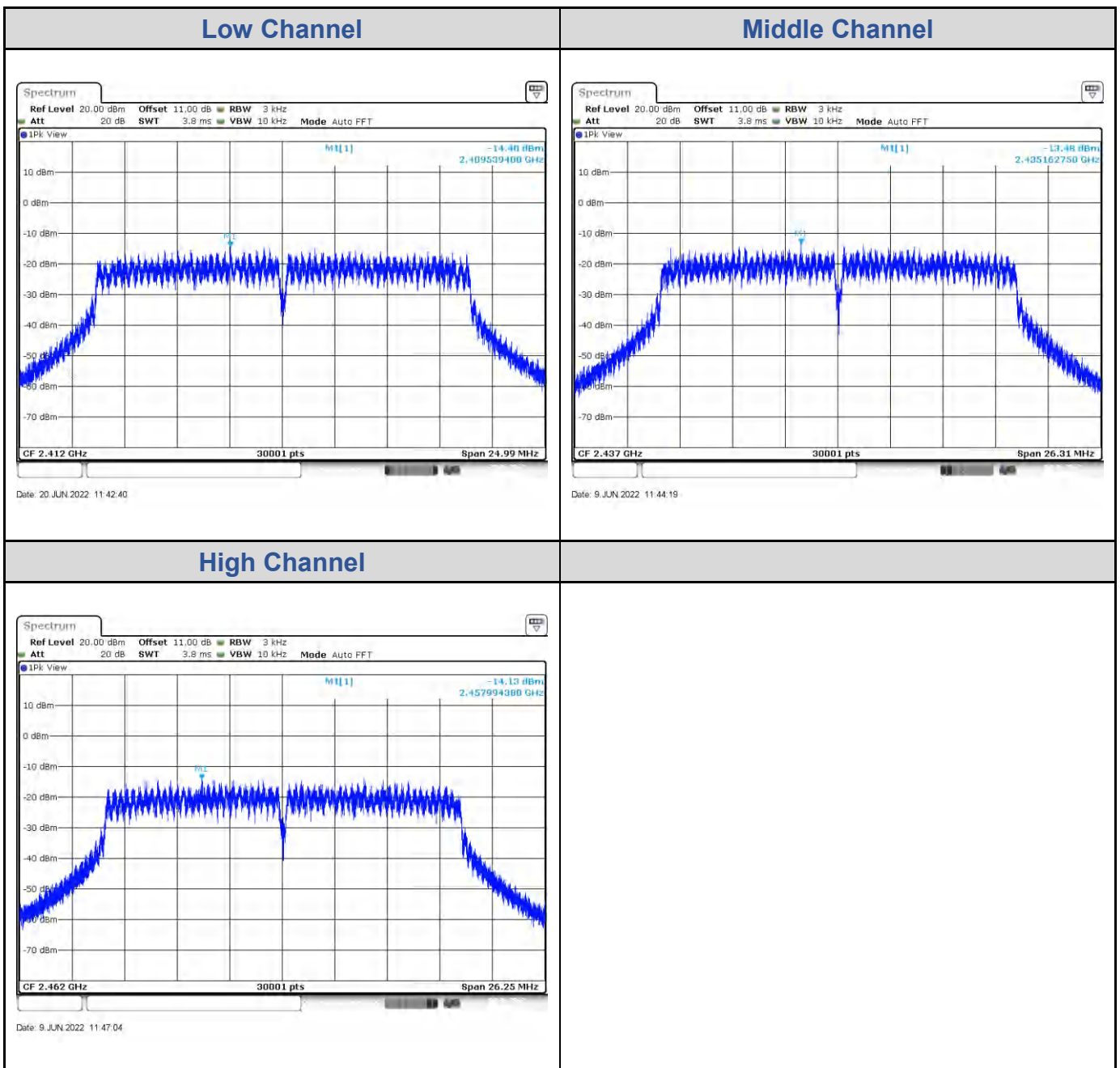
**802.11g**

Channel	Channel Frequency (MHz)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)
Low Channel	2412	-14.78	8
Middle Channel	2437	-13.85	8
High Channel	2462	-13.86	8



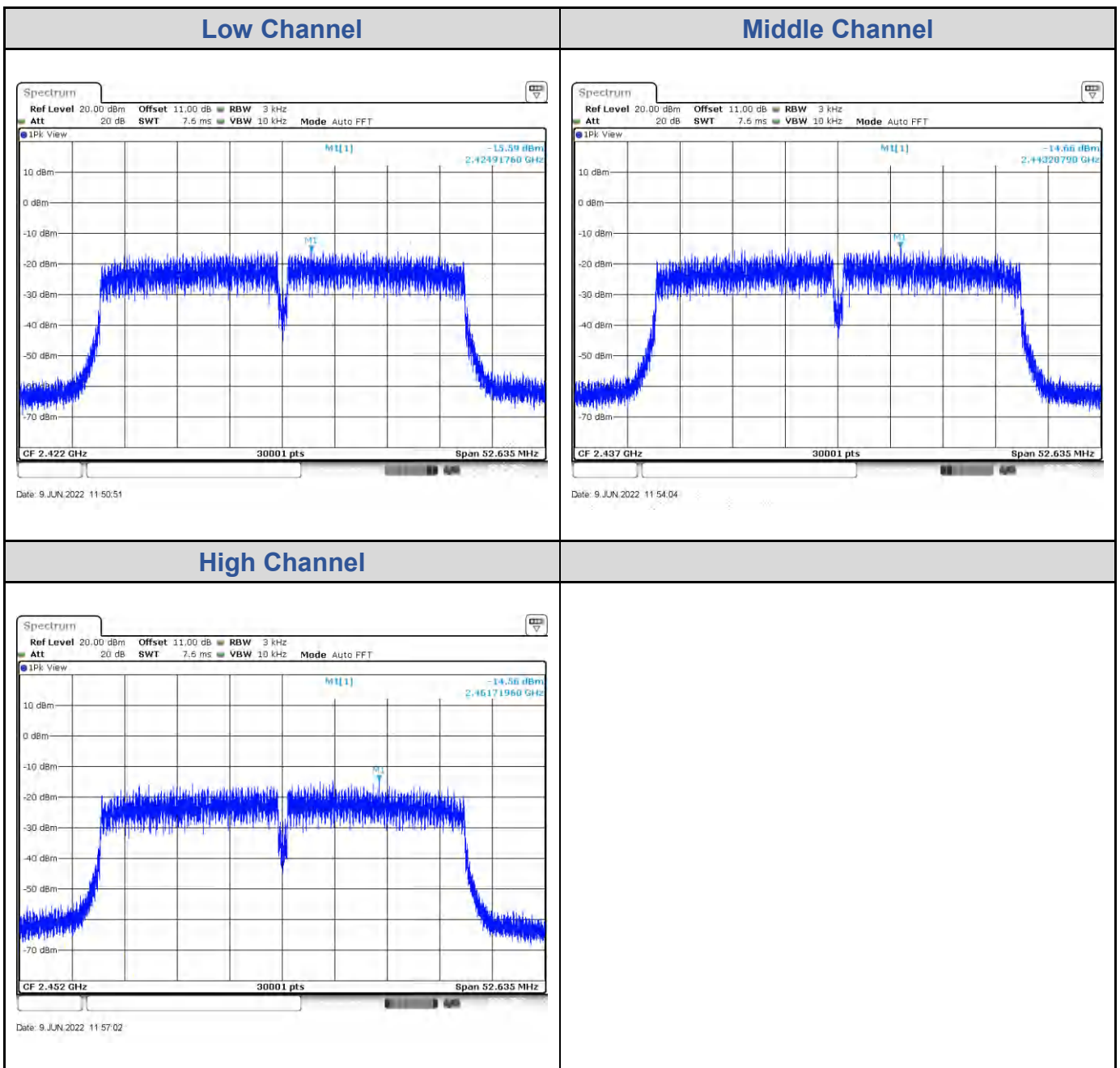
**802.11n HT20**

Channel	Channel Frequency (MHz)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)
Low Channel	2412	-14.40	8
Middle Channel	2437	-13.48	8
High Channel	2462	-14.13	8



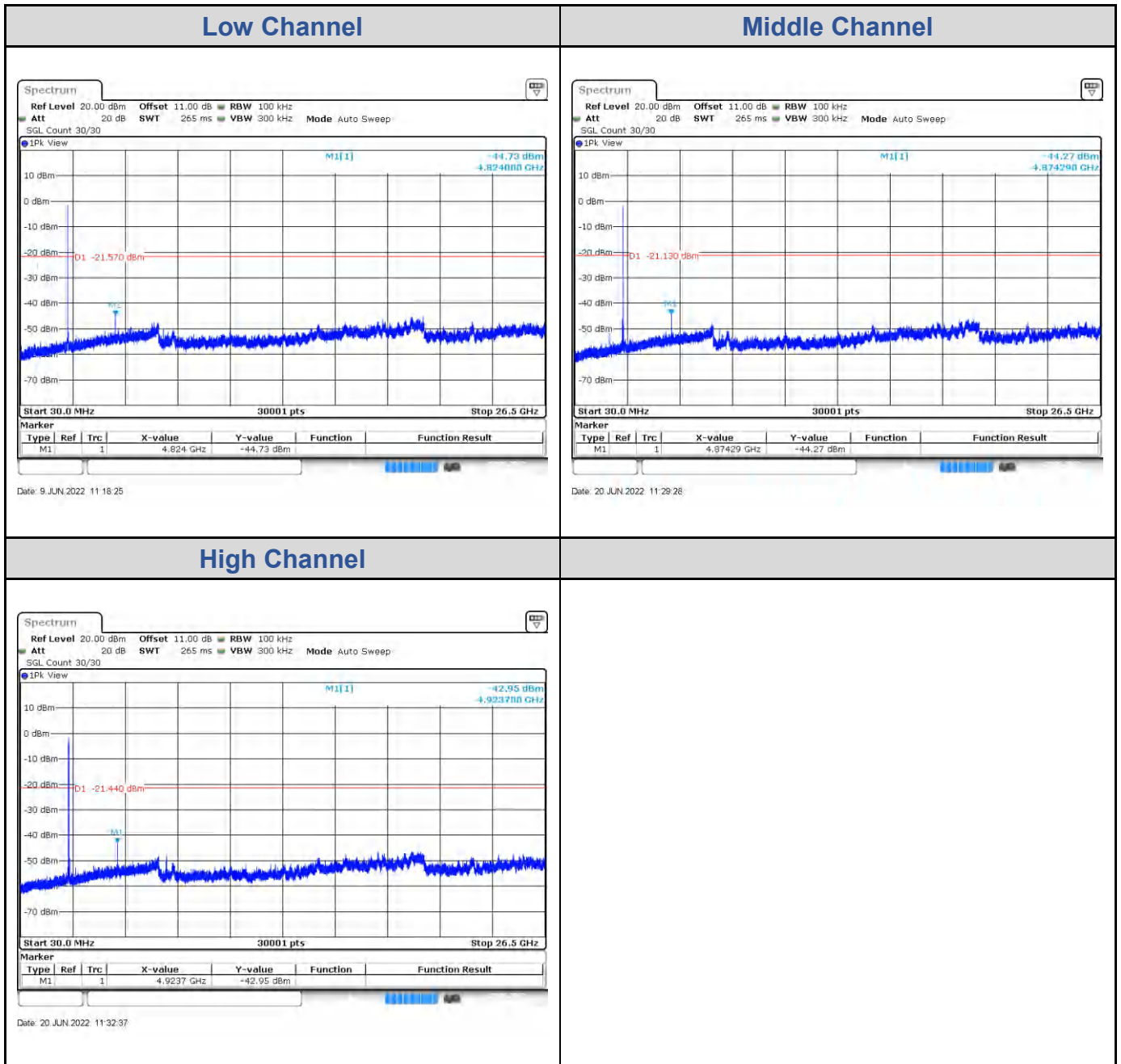
**802.11n HT40**

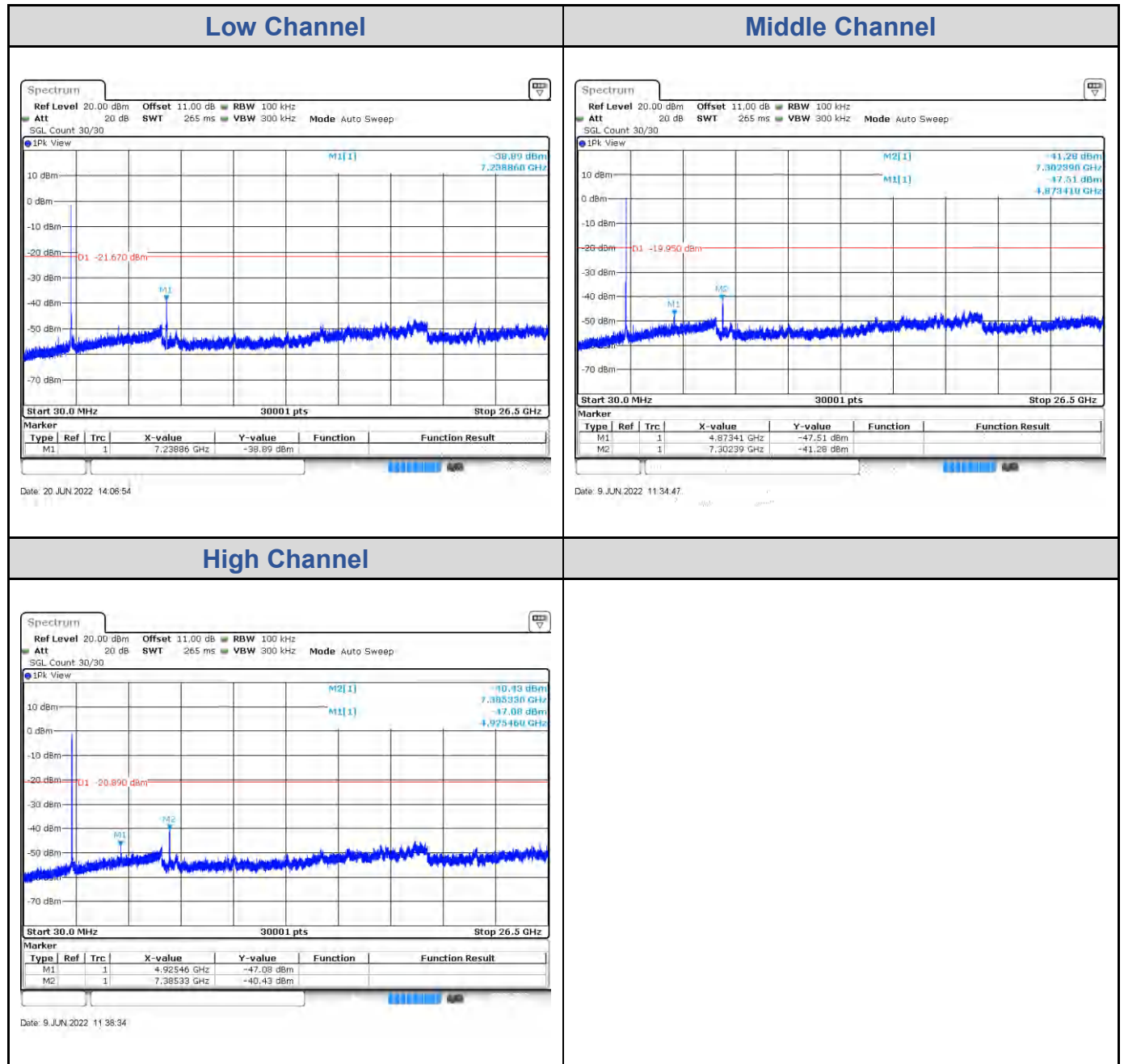
Channel	Channel Frequency (MHz)	Power Density (dBm/3kHz)	Limit (dBm/3kHz)
Low Channel	2422	-15.59	8
Middle Channel	2437	-14.66	8
High Channel	2452	-14.56	8



### Test Result of Conducted Spurious Emissions

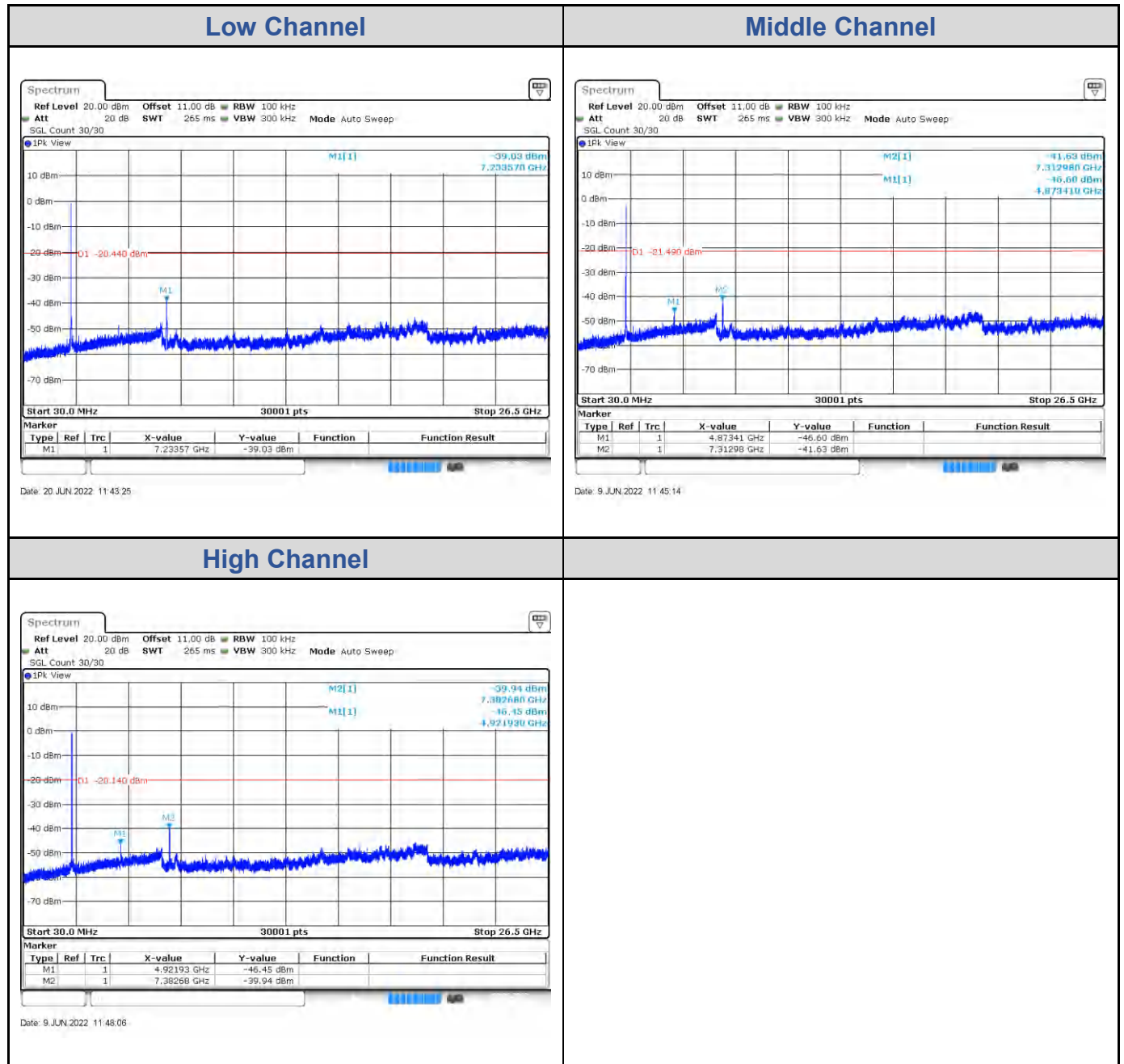
#### 802.11b



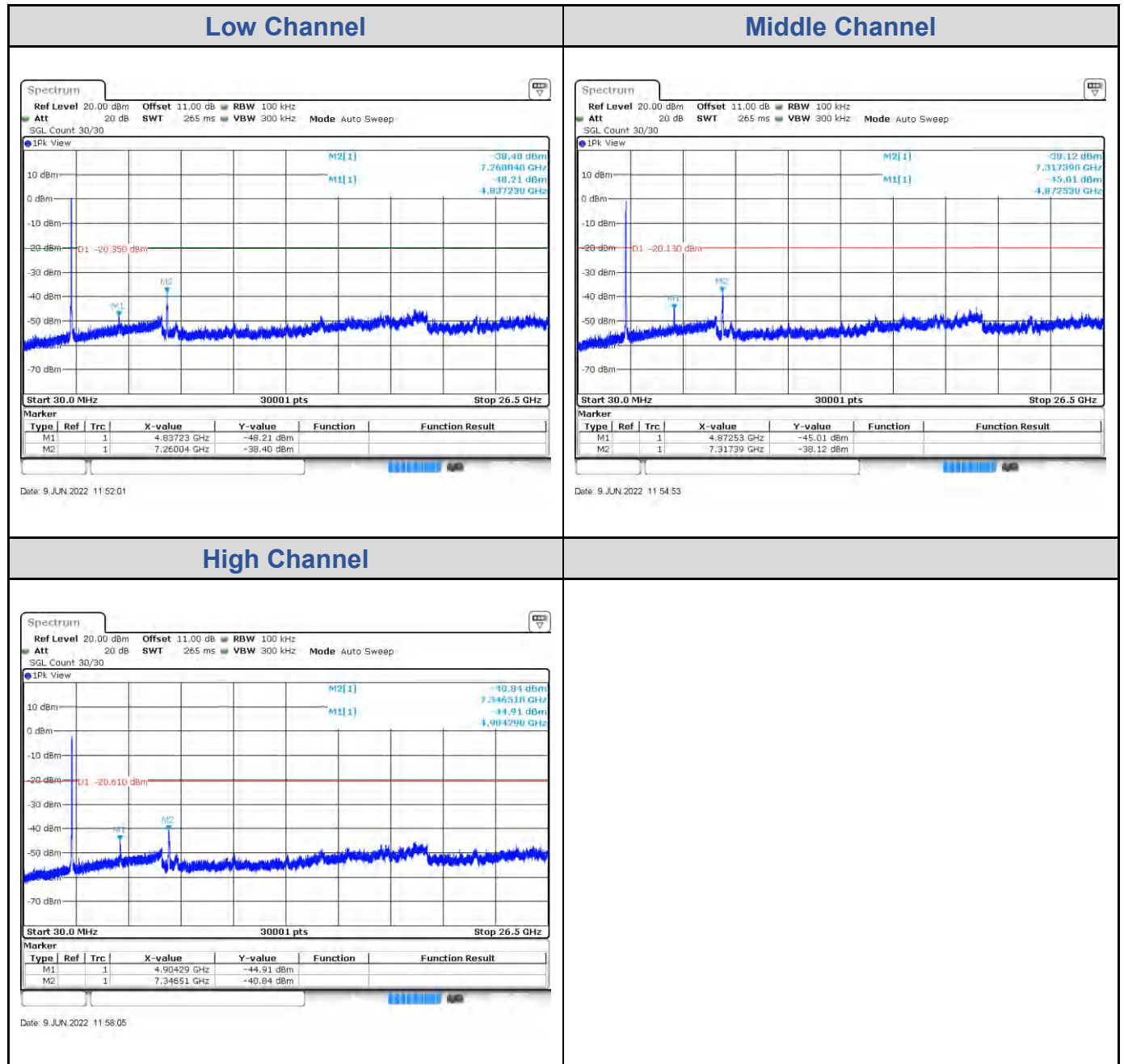
**802.11g**


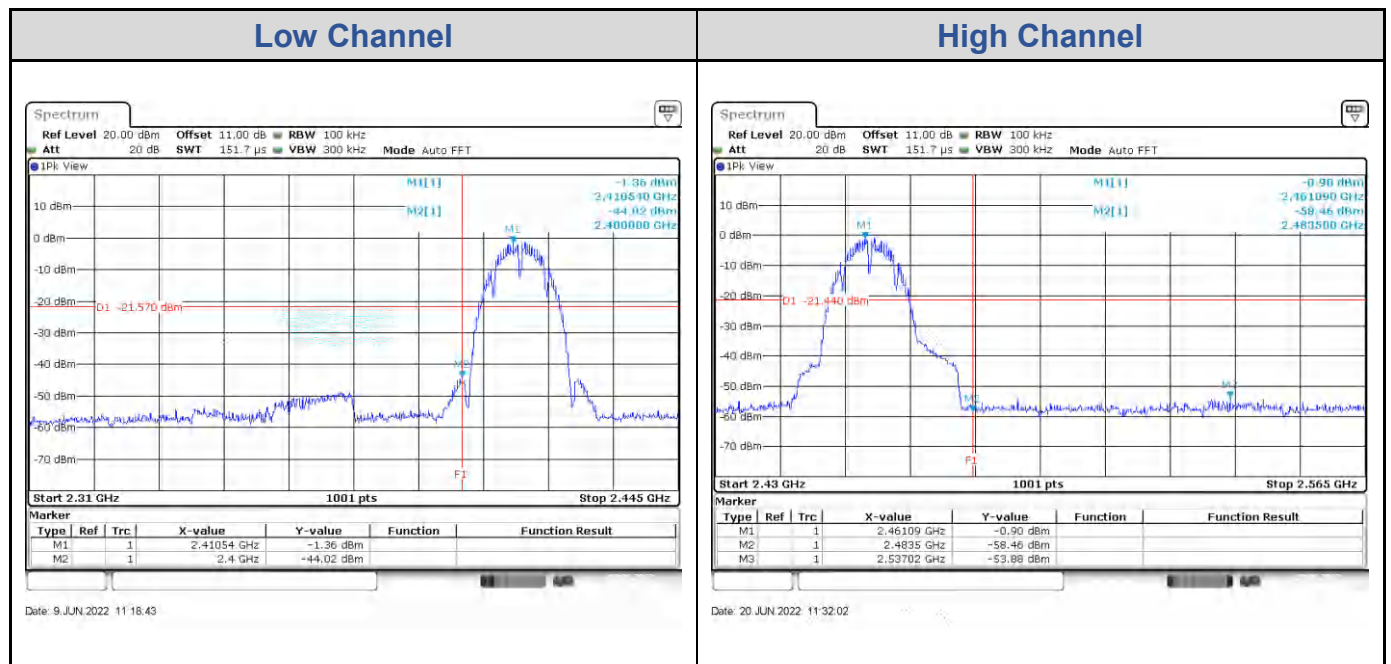
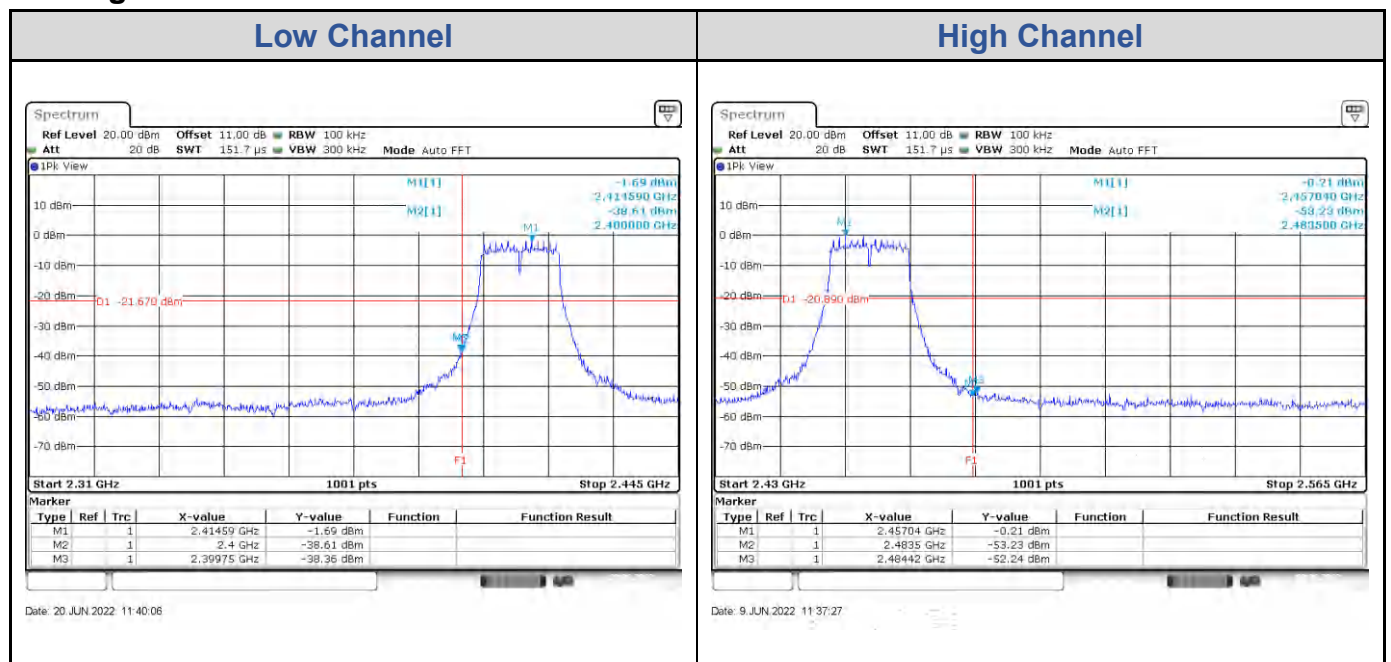


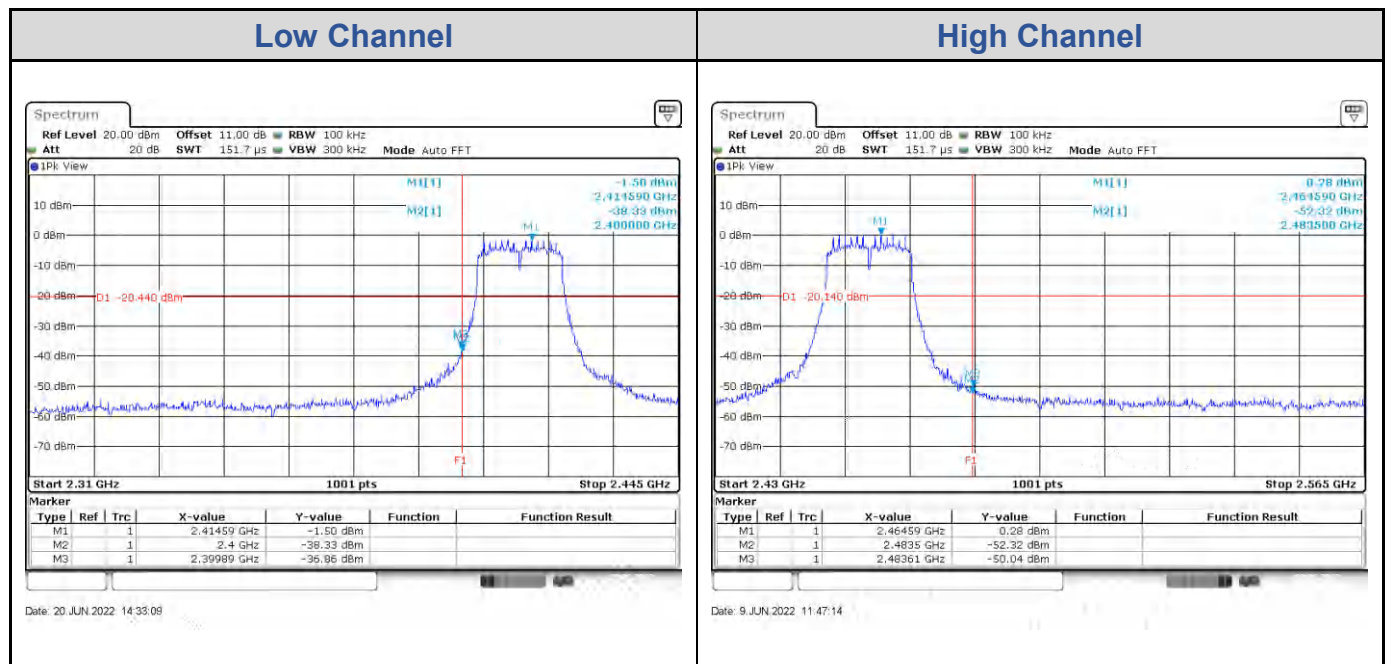
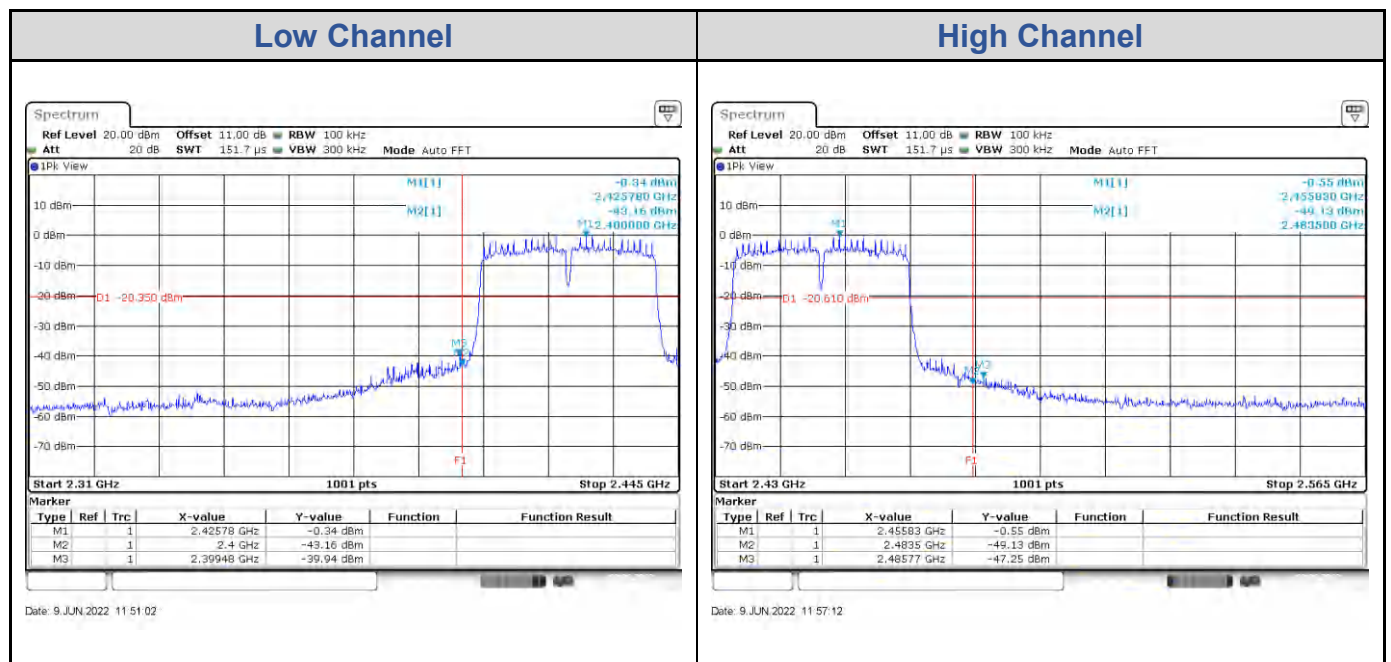
802.11n HT20



802.11n HT40



**Test Result of Conducted Bandedge, Tx Mode**
**802.11b**

**802.11g**


**802.11n HT20**

**802.11n HT40**


## Appendix B: Test Results of Radiated Spurious Emissions

### Band Edges, 2.31GHz ~ 2.9GHz

#### 802.11b

##### Low Channel (Horizontal) Peak

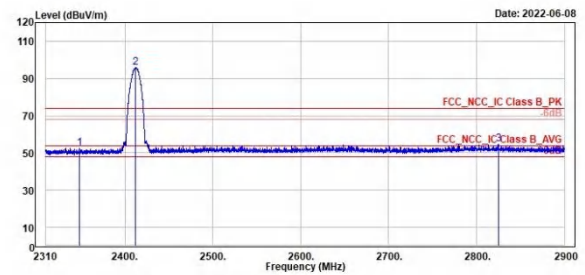
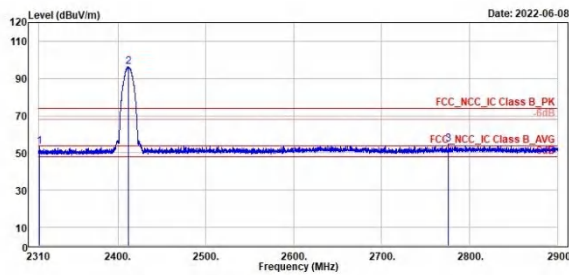
##### Low Channel (Vertical) Peak



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Tel: +886-2172-1000 Fax: +886-2172-1322



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No. 438-18, Sec. 2, Fenliiao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)  
Tel: +886-2172-1000 Fax: +886-2172-1322

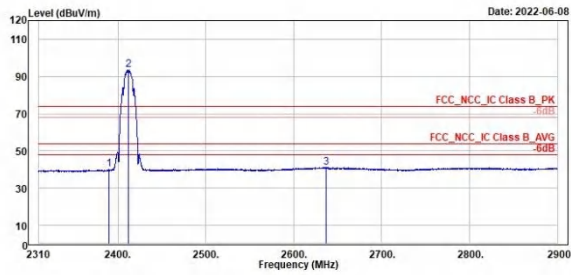


1	2	3							
Freq	Level	Read	Limit	Over	Apos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
2310.59	53.41	16.00	37.33	74.00	-20.59	317	161 Peak	Horizontal	
2412.00	96.35	58.72	37.63	74.00	22.35	317	161 Peak	Horizontal	
2775.98	54.57	16.52	38.05	74.00	-19.43	317	161 Peak	Horizontal	

1	2	3							
Freq	Level	Read	Limit	Over	Apos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
2348.82	52.42	15.18	37.24	74.00	-21.58	240	270 Peak	Vertical	
2412.00	96.00	58.65	37.35	74.00	22.00	240	270 Peak	Vertical	
2824.60	54.56	16.35	38.21	74.00	-19.44	240	270 Peak	Vertical	

**802.11b**
**Low Channel (Horizontal) Average**
**Low Channel (Vertical) Average**

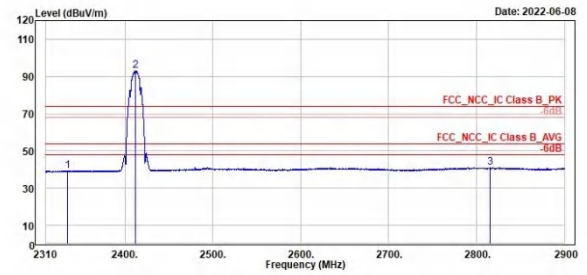

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Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	2398.00	39.97	2.39	37.58	54.00	-14.03	317	161	Average	Horizontal	
2 *	2412.00	95.57	55.94	37.63	54.00	39.57	317	161	Average	Horizontal	
3	2636.62	41.07	2.88	38.19	54.00	-12.93	317	161	Average	Horizontal	



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Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	2334.70	39.38	2.23	37.15	54.00	-14.62	240	270	Average	Vertical	
2 *	2412.00	95.26	55.91	37.35	54.00	39.26	240	270	Average	Vertical	
3	2815.39	41.05	2.85	38.20	54.00	-12.95	240	270	Average	Vertical	

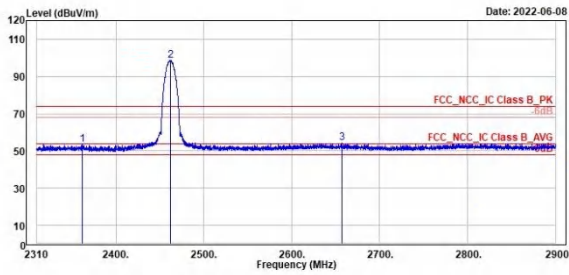
802.11b

High Channel (Horizontal) Peak

High Channel (Vertical) Peak



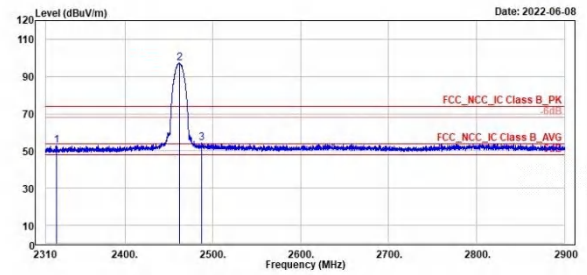
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Freq	Level	Read	Level	Factor	Limit	Over	Apos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	cm	deg			
1	2361.45	53.26	15.77	37.49	74.00	-20.74	304	159	Peak	Horizontal	
2 *	2462.00	98.74	61.10	37.64	74.00	24.74	304	159	Peak	Horizontal	
3	2656.68	54.26	16.06	38.20	74.00	-19.74	304	159	Peak	Horizontal	



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Freq	Level	Read	Level	Factor	Limit	Over	Apos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	cm	deg			
1	2321.92	53.11	16.06	37.05	74.00	-20.89	239	270	Peak	Vertical	
2 *	2462.00	97.26	59.79	37.56	74.00	23.26	239	270	Peak	Vertical	
3	2487.00	54.30	16.57	37.73	74.00	-19.70	239	270	Peak	Vertical	

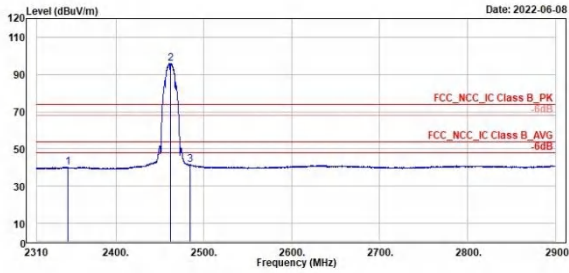
802.11b

High Channel (Horizontal) Average

High Channel (Vertical) Average



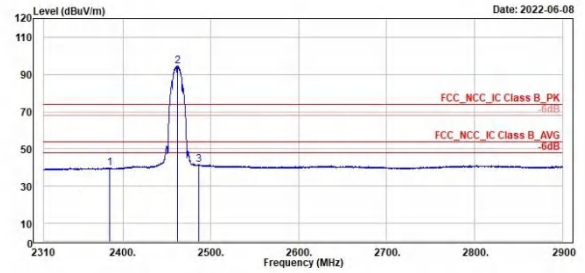
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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2345.75	48.23	2.79	37.44	54.00	-13.77	384	159 Average	Horizontal
2 *	2462.00	96.01	56.37	37.64	54.00	42.01	384	159 average	Horizontal
3	2494.40	41.48	3.91	37.57	54.00	-12.52	384	159 Average	Horizontal



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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2384.81	39.78	2.48	37.30	54.00	-14.22	239	278 Average	Vertical
2 *	2462.00	94.58	56.94	37.56	54.00	40.58	239	278 Average	Vertical
3	2486.65	41.51	3.78	37.73	54.00	-12.49	239	278 Average	Vertical



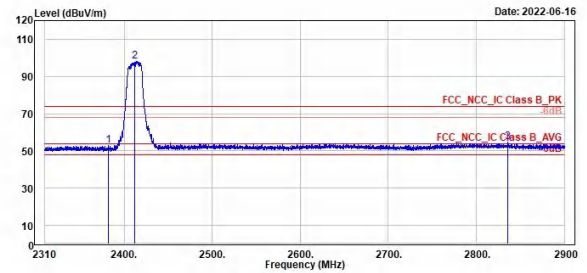
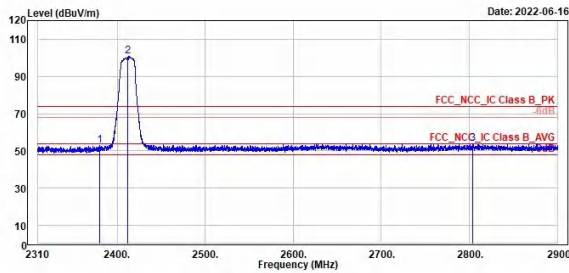
802.11g

Low Channel (Horizontal) Peak

Low Channel (Vertical) Peak

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TÜVRheinland Taiwan Ltd.  
No. 458-18, Sec. 2, Fenliiao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)  
Tel: +886-2172-1000 Fax: +886-2172-1322

TÜVRheinland  
TÜVRheinland Taiwan Ltd.  
No. 458-18, Sec. 2, Fenliiao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)  
Tel: +886-2172-1000 Fax: +886-2172-1322



Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2379.97	52.06	15.31	37.55	74.00	-21.14	311	189 Peak	Horizontal
2 *	2412.00	100.04	63.21	37.63	74.00	26.84	311	189 Peak	Horizontal
3	2803.36	54.03	15.96	38.07	74.00	-19.97	311	189 Peak	Horizontal

Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2381.98	52.81	15.52	37.29	74.00	-21.19	223	340 Peak	Vertical
2 *	2412.00	96.01	60.66	37.35	74.00	24.01	223	340 Peak	Vertical
3	2835.22	54.65	16.43	38.22	74.00	-19.35	223	340 Peak	Vertical

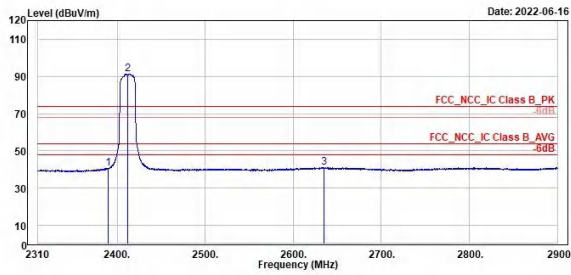
802.11g

Low Channel (Horizontal) Average

Low Channel (Vertical) Average



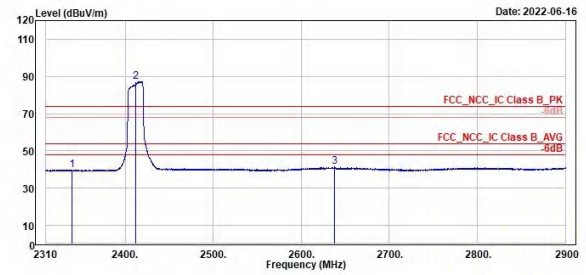
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MHz	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note								
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg												
2389.77	40.61	3.03	37.58	54.00	-13.39	311	189	Average	Horizontal										
2412.00	91.36	53.75	37.63	54.00	37.38	311	189	Average	Horizontal										
2635.09	41.04	2.85	38.19	54.00	-12.96	311	189	Average	Horizontal										



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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MHz	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note								
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg												
2339.62	39.76	2.34	37.42	54.00	-14.24	223	340	Average	Vertical										
2412.00	87.30	49.67	37.63	54.00	33.30	223	340	Average	Vertical										
2637.92	41.29	3.10	38.19	54.00	-12.71	223	340	Average	Vertical										

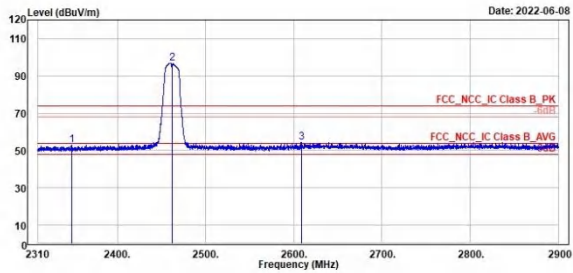
802.11g

High Channel (Horizontal) Peak

High Channel (Vertical) Peak



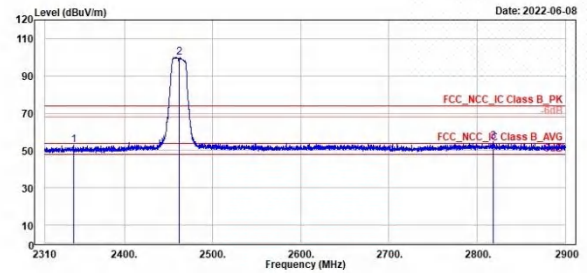
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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2348.35	52.98	15.45	37.45	74.00	-21.10	117	132 Peak	Horizontal
2 *	2462.00	96.79	59.15	37.64	74.00	22.79	117	132 Peak	Horizontal
3	2608.54	54.27	16.11	38.16	74.00	-19.73	117	132 Peak	Horizontal



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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2342.21	53.82	15.82	37.20	74.00	-20.98	239	270 Peak	Vertical
2 *	2462.00	100.82	62.46	37.56	74.00	26.82	239	270 Peak	Vertical
3	2818.46	54.58	16.38	38.20	74.00	-19.42	239	270 Peak	Vertical

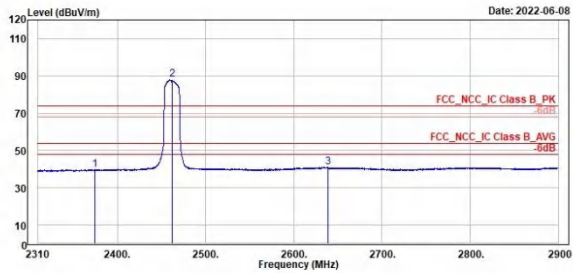
802.11g

High Channel (Horizontal) Average

High Channel (Vertical) Average



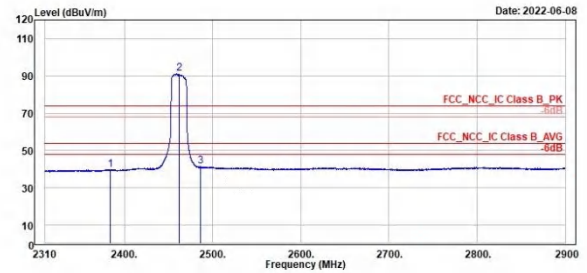
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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2374.31	39.09	2.36	37.53	54.00	-14.11	117	132 Average	Horizontal
2 *	2462.00	87.98	50.34	37.64	54.00	33.98	117	132 Average	Horizontal
3	2638.39	41.14	2.95	38.19	54.00	-12.86	117	132 Average	Horizontal



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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2383.63	39.75	2.45	37.30	54.00	-14.25	239	270 Average	Vertical
2 *	2462.00	91.04	53.48	37.56	54.00	37.04	239	270 Average	Vertical
3	2486.76	41.37	3.64	37.73	54.00	-12.63	239	270 Average	Vertical

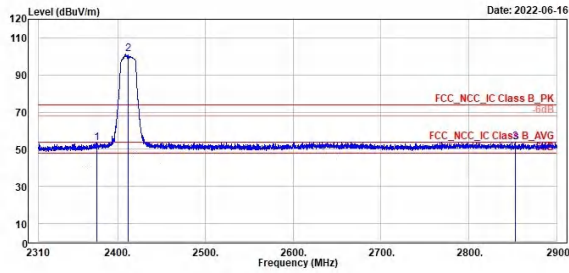
802.11n HT20

Low Channel (Horizontal) Peak

Low Channel (Vertical) Peak



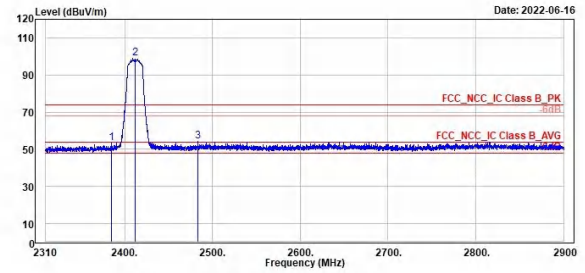
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Peak	Freq (MHz)	Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit Line (dBuV/m)	Over Limit (dB)	APos (cm)	TPos (deg)	Remark	Pol/Phase	Note
1	2376.43	53.57	16.03	37.54	74.00	-20.43	110	186	Peak	Horizontal	
2 *	2412.00	101.19	63.56	37.63	74.00	27.19	110	186	Peak	Horizontal	
3	2853.04	53.98	15.93	38.05	74.00	-20.02	110	186	Peak	Horizontal	



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Peak	Freq (MHz)	Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit Line (dBuV/m)	Over Limit (dB)	APos (cm)	TPos (deg)	Remark	Pol/Phase	Note
1	2385.20	53.54	16.24	37.30	74.00	-20.46	222	350	Peak	Vertical	
2 *	2412.00	98.87	61.52	37.35	74.00	24.87	222	350	Peak	Vertical	
3	2483.46	54.10	16.39	37.71	74.00	-19.90	222	350	Peak	Vertical	

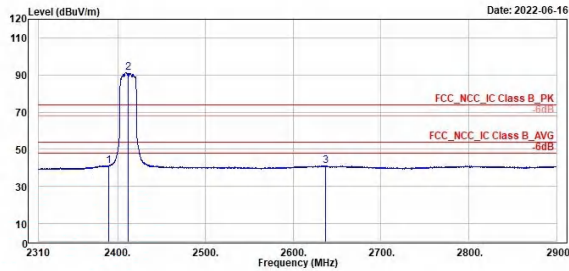
802.11n HT20

Low Channel (Horizontal) Average

Low Channel (Vertical) Average



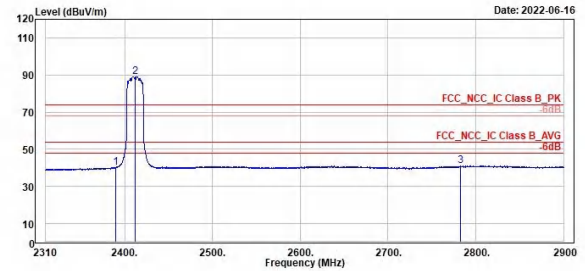
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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2390.00	41.26	3.68	37.58	54.00	-12.74	110	186 Average	Horizontal
2 *	2412.00	91.30	53.67	37.63	54.00	37.30	110	186 Average	Horizontal
3	2637.10	41.17	2.98	38.19	54.00	-12.83	110	186 Average	Horizontal



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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2389.77	40.35	3.05	37.30	54.00	-13.65	222	350 Average	Vertical
2 *	2412.00	89.13	51.78	37.35	54.00	35.13	222	350 Average	Vertical
3	2782.94	41.08	2.95	38.13	54.00	-12.92	222	350 Average	Vertical

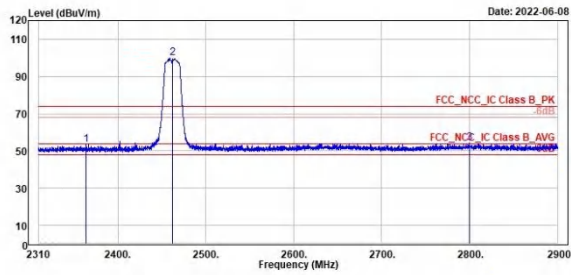
802.11n HT20

High Channel (Horizontal) Peak

High Channel (Vertical) Peak



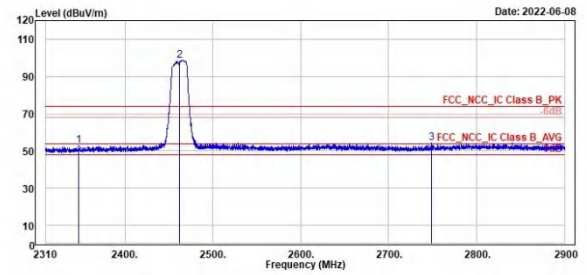
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Peak	Freq (MHz)	Level (dBuV/m)	Read Level (dBuV)	Level Factor (dB/m)	Limit Line (dBuV/m)	Over Limit (dB)	APos (cm)	TPos (deg)	Remark	Pol/Phase	Note
1	2363.57	53.58	16.08	37.50	74.00	-20.42	334	143	Peak	Horizontal	
2 *	2462.00	99.88	62.24	37.64	74.00	25.88	334	143	Peak	Horizontal	
3	2799.70	54.15	16.07	38.08	74.00	-19.85	334	143	Peak	Horizontal	



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Peak	Freq (MHz)	Level (dBuV/m)	Read Level (dBuV)	Level Factor (dB/m)	Limit Line (dBuV/m)	Over Limit (dB)	APos (cm)	TPos (deg)	Remark	Pol/Phase	Note
1	2347.41	52.83	15.60	37.23	74.00	-21.17	135	271	Peak	Vertical	
2 *	2462.00	98.70	61.14	37.56	74.00	24.70	135	271	Peak	Vertical	
3	2749.20	54.48	16.46	38.02	74.00	-19.52	135	271	Peak	Vertical	

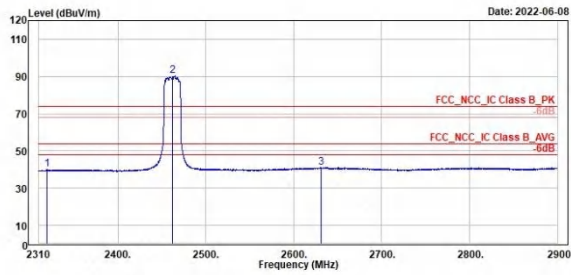
802.11n HT20

High Channel (Horizontal) Average

High Channel (Vertical) Average



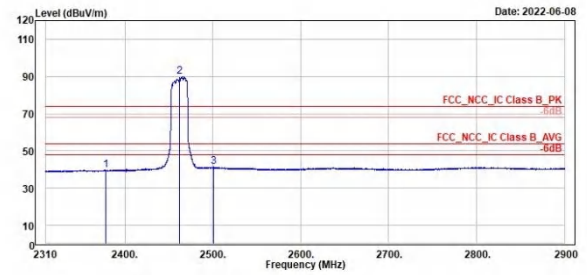
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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2319.68	39.95	2.59	37.36	54.00	-14.05	334	143 Average	Horizontal
2 *	2462.00	98.18	52.54	37.64	54.00	36.18	334	143 Average	Horizontal
3	2630.84	41.12	2.94	38.18	54.00	-12.88	334	143 Average	Horizontal



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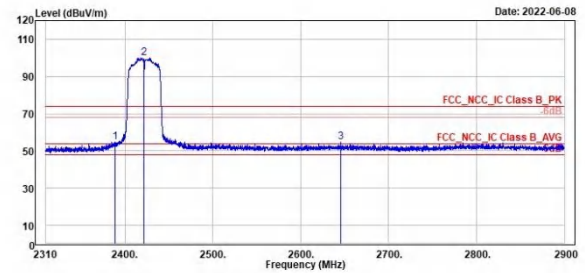
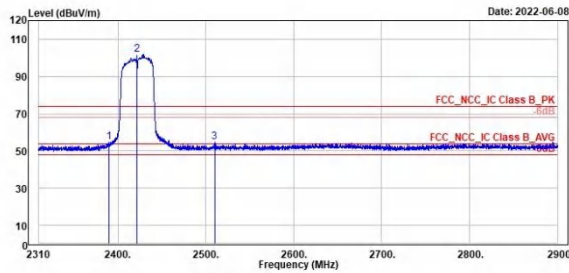
Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2378.20	39.64	2.35	37.29	54.00	-14.36	135	271 Average	Vertical
2 *	2462.00	89.78	52.22	37.56	54.00	35.78	135	271 Average	Vertical
3	2500.92	41.58	3.75	37.83	54.00	-12.42	135	271 Average	Vertical



802.11n HT40

Low Channel (Horizontal) Peak

Low Channel (Vertical) Peak



Peak	Freq (MHz)	Level (dBuV/m)	Read Level (dBuV)	Level Factor (dB/m)	Limit Line (dBuV/m)	Over Limit (dB)	APos (cm)	TPos (deg)	Remark	Pol/Phase	Note
1	2389.65	54.58	17.00	37.58	74.00	-19.42	345		4 Peak	Horizontal	
2 *	2422.00	101.67	64.83	37.64	74.00	27.67	345		4 Peak	Horizontal	
3	2510.01	54.85	17.29	37.56	74.00	-19.15	345		4 Peak	Horizontal	

Peak	Freq (MHz)	Level (dBuV/m)	Read Level (dBuV)	Level Factor (dB/m)	Limit Line (dBuV/m)	Over Limit (dB)	APos (cm)	TPos (deg)	Remark	Pol/Phase	Note
1	2388.59	54.83	17.53	37.30	74.00	-19.17	243		268 Peak	Vertical	
2 *	2422.00	100.01	62.63	37.38	74.00	26.01	243		268 Peak	Vertical	
3	2645.59	54.93	17.82	37.91	74.00	-19.07	243		268 Peak	Vertical	

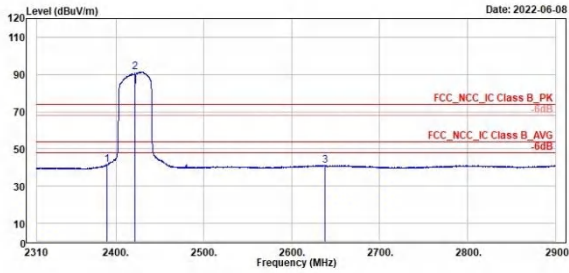
802.11n HT40

Low Channel (Horizontal) Average

Low Channel (Vertical) Average



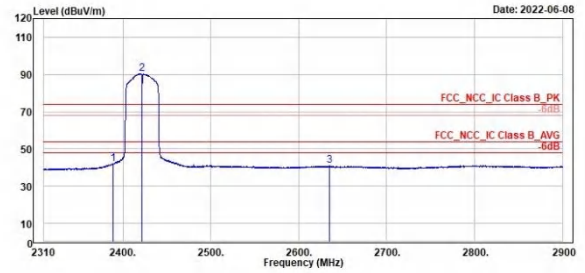
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Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	2389.65	41.39	3.81	37.58	54.00	-12.61	345		4 Average	Horizontal	
2 *	2422.00	91.30	53.66	37.64	54.00	37.30	345		4 average	Horizontal	
3	2637.69	41.18	2.99	38.19	54.00	-12.82	345		4 Average	Horizontal	



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Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg				
1	2388.82	42.14	4.04	37.30	54.00	-11.86	243	268	Average	Vertical	
2 *	2422.00	90.54	53.16	37.38	54.00	36.54	243	268	Average	Vertical	
3	2634.85	41.20	3.28	37.92	54.00	-12.80	243	268	Average	Vertical	

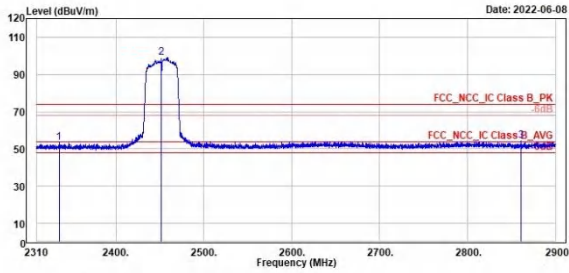
802.11n HT40

High Channel (Horizontal) Peak

High Channel (Vertical) Peak



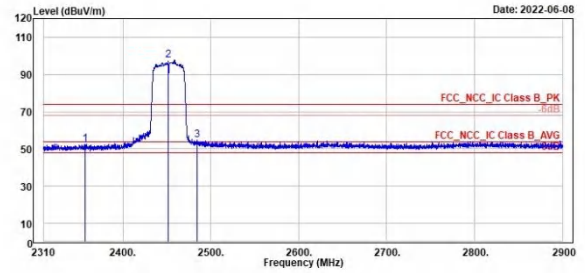
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Peak	Freq (MHz)	Level (dBuV/m)	Read Level (dBuV)	Level Factor (dB/m)	Limit Line (dBuV/m)	Over Limit (dB)	APos (cm)	TPos (deg)	Remark	Pol/Phase	Note
1	2335.37	53.20	15.79	37.41	74.00	-20.80	332	351	Peak	Horizontal	
2 *	2452.00	99.14	61.48	37.66	74.00	25.14	332	351	Peak	Horizontal	
3	2868.23	54.19	16.10	38.09	74.00	-19.81	332	351	Peak	Horizontal	



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Peak	Freq (MHz)	Level (dBuV/m)	Read Level (dBuV)	Level Factor (dB/m)	Limit Line (dBuV/m)	Over Limit (dB)	APos (cm)	TPos (deg)	Remark	Pol/Phase	Note
1	2357.32	52.34	15.08	37.26	74.00	-21.66	147	288	Peak	Vertical	
2 *	2452.00	97.52	68.84	37.48	74.00	23.52	147	288	Peak	Vertical	
3	2484.52	54.76	17.84	37.72	74.00	-19.24	147	288	Peak	Vertical	

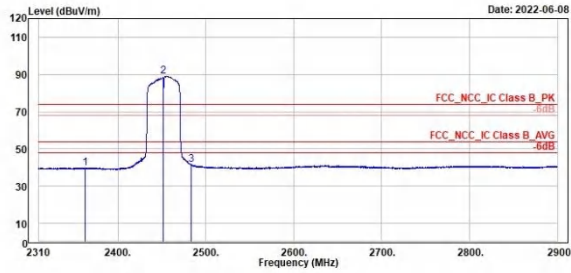
802.11n HT40

High Channel (Horizontal) Average

High Channel (Vertical) Average



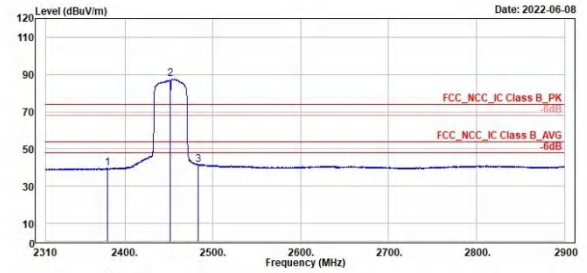
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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2352.63	39.77	2.27	37.50	54.00	-14.23	332	351 Average	Horizontal
2 *	2452.00	89.02	51.36	37.66	54.00	35.02	332	351 Average	Horizontal
3	2483.58	41.55	3.97	37.58	54.00	-12.45	332	351 Average	Horizontal



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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2379.97	39.65	2.36	37.29	54.00	-14.35	147	288 Average	Vertical
2 *	2452.00	87.42	49.94	37.48	54.00	33.42	147	288 Average	Vertical
3	2483.46	41.54	3.83	37.71	54.00	-12.46	147	288 Average	Vertical

Spurious Emissions, Tx Mode, 9kHz ~ 30MHz

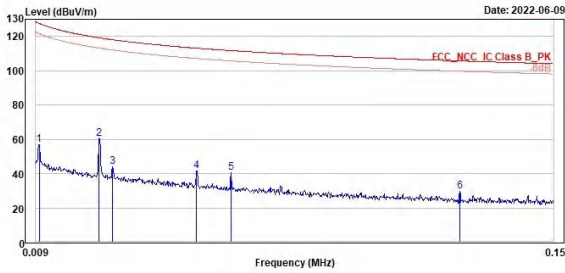
802.11n HT20

Low Channel(Open) 9kHz~150kHz

Low Channel(Open) 150kHz~30MHz



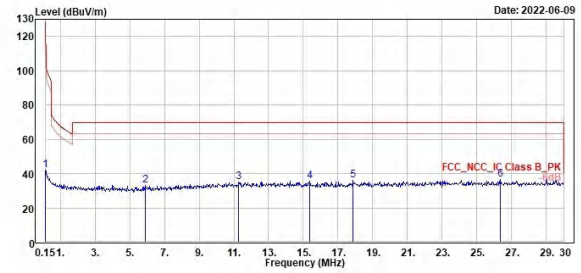
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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	0.01	57.02	39.31	17.71	127.60	-70.58	100	250 QP	Open
2	0.03	60.41	41.23	19.18	119.18	-58.77	100	261 QP	Open
3	0.03	44.23	24.72	19.51	118.05	-73.82	100	250 QP	Open
4	0.05	41.51	22.26	19.25	113.13	-71.62	100	261 QP	Open
5	0.06	40.70	21.66	19.04	111.72	-71.02	100	17 QP	Open
6	0.12	29.46	11.15	18.31	105.70	-76.24	100	91 QP	Open



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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	0.15	41.88	23.48	18.40	104.00	-62.20	100	168 QP	Open
2	5.91	33.00	13.21	19.69	69.50	-36.50	100	198 QP	Open
3	11.28	35.26	13.77	21.49	69.50	-34.24	100	266 QP	Open
4	15.37	35.74	13.99	21.75	69.50	-33.76	100	168 QP	Open
5	17.85	35.85	13.93	21.92	69.50	-33.65	100	352 QP	Open
6	26.36	36.49	14.19	22.30	69.50	-33.01	100	304 QP	Open

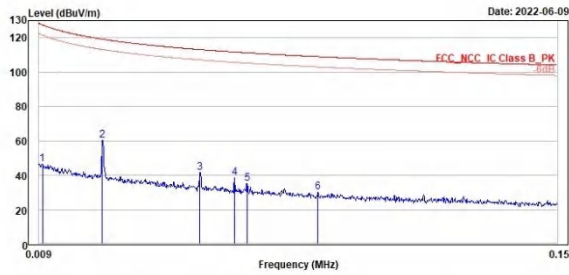
802.11n HT20

Low Channel(Close) 9kHz~150kHz

Low Channel(Close) 150kHz~30MHz



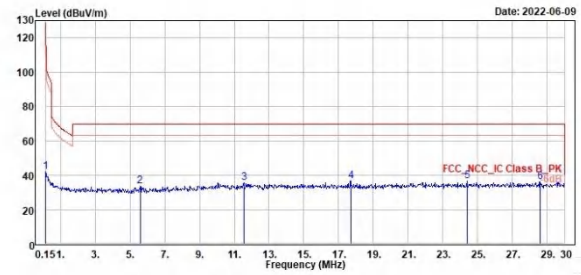
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Freq	Level	Read	Limit	Over	Apos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	0.01	46.44	28.73	17.71	127.60	-81.16	100	67 QP	Close
2	0.03	60.42	41.24	19.18	119.18	-58.76	100	291 QP	Close
3	0.05	41.69	22.44	19.25	113.13	-71.44	100	266 QP	Close
4	0.06	38.50	19.46	19.04	111.72	-73.22	100	287 QP	Close
5	0.07	35.03	16.07	18.96	111.25	-76.22	100	81 QP	Close
6	0.08	30.17	11.63	18.54	109.02	-78.85	100	140 QP	Close



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Freq	Level	Read	Limit	Over	Apos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	0.15	41.93	23.53	18.40	104.00	-62.15	100	179 QP	Close
2	5.58	33.37	13.01	19.56	69.50	-36.13	100	340 QP	Close
3	11.55	35.00	14.30	21.50	69.50	-33.70	100	124 QP	Close
4	17.70	36.41	14.50	21.91	69.50	-33.09	100	11 QP	Close
5	24.39	36.49	14.26	22.23	69.50	-33.01	100	72 QP	Close
6	28.60	36.31	13.92	22.39	69.50	-33.19	100	224 QP	Close

Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

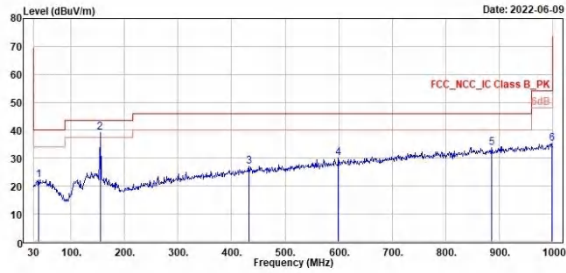
802.11n HT20

Low Channel (Horizontal)

Low Channel (Vertical)



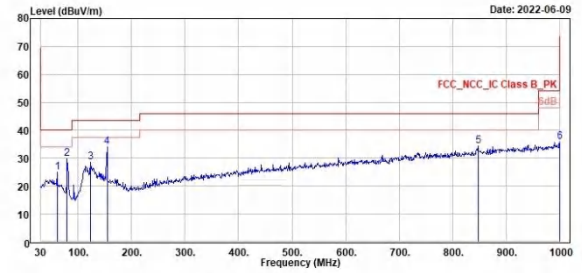
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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	38.73	22.22	28.69	-6.47	48.00	-17.78	200	42 QP	Horizontal
2	154.16	39.30	45.19	-5.89	43.50	-4.20	200	285 QP	Horizontal
3	432.55	27.14	29.41	-2.27	46.00	-18.86	400	139 QP	Horizontal
4	599.39	30.08	29.79	0.29	46.00	-15.92	200	354 QP	Horizontal
5	885.54	33.91	29.35	4.56	46.00	-12.09	200	125 QP	Horizontal
6	998.06	35.15	28.93	6.22	54.00	-18.85	100	68 QP	Horizontal



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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	61.04	25.01	32.28	-7.27	48.00	-14.99	100	200 QP	Vertical
2	79.47	29.84	40.16	-10.32	48.00	-10.16	100	322 QP	Vertical
3	123.12	28.47	36.51	-8.04	43.50	-15.03	100	236 QP	Vertical
4	154.16	34.07	39.96	-5.89	43.50	-9.43	100	93 QP	Vertical
5	847.71	34.25	30.20	4.05	46.00	-11.75	300	134 QP	Vertical
6	1000.00	35.77	29.51	6.26	54.00	-18.23	395	360 QP	Vertical

Spurious Emissions, Tx Mode, 1GHz ~ 26.5GHz

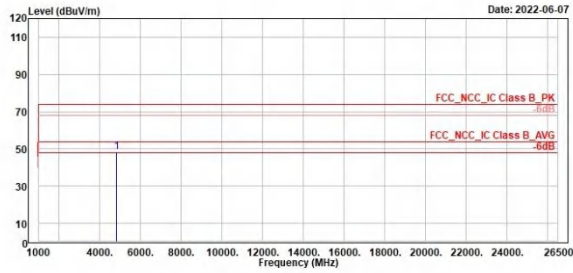
802.11b

Low Channel (Horizontal)

Low Channel (Vertical)



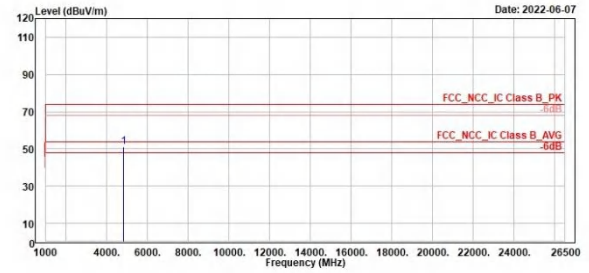
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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	4824.00	48.25	57.26	-9.01	74.00	-25.75	311	233 Peak	Horizontal



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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	4824.00	50.94	60.30	-9.36	74.00	-23.06	200	213 Peak	Vertical



802.11b

Middle Channel (Horizontal)

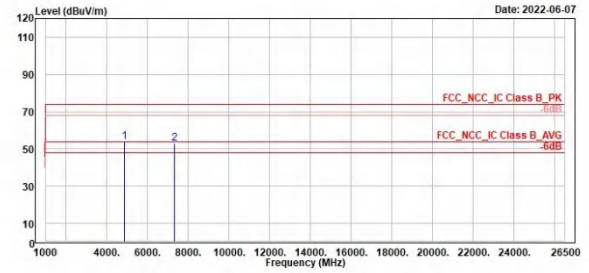
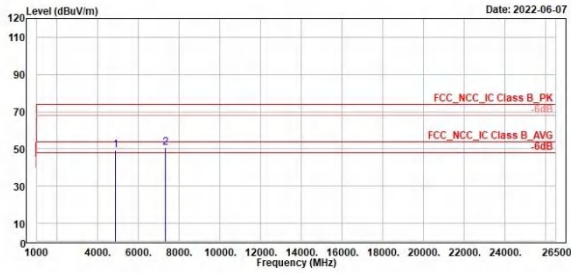
Middle Channel (Vertical)



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Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	4874.00	49.07	58.06	-8.99	74.00	-24.93	383	73 Peak	Horizontal	
2	7311.00	50.72	57.22	-6.50	74.00	-23.28	376	133 Peak	Horizontal	

Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	4874.00	53.66	63.00	-9.34	74.00	-20.34	200	272 Peak	Vertical	
2	7311.00	53.00	59.66	-6.66	74.00	-21.00	200	279 Peak	Vertical	

802.11b

High Channel (Horizontal)

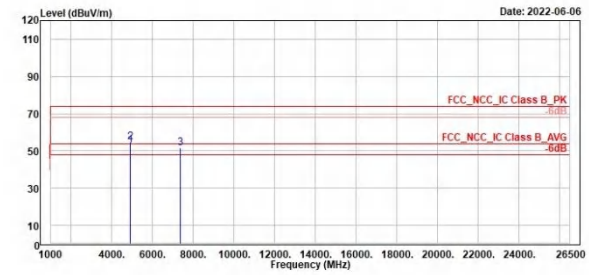
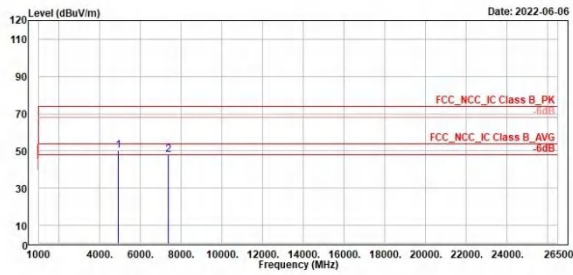
High Channel (Vertical)



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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	4924.00	50.38	59.30	-8.92	74.00	-23.62	200	211 Peak	Horizontal
2	7386.00	47.87	54.27	-6.40	74.00	-26.13	180	272 Peak	Horizontal

Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	4924.00	52.92	62.24	-9.32	54.00	-1.08	177	282 Average	Vertical
2	4924.00	54.97	64.29	-9.32	74.00	-19.03	177	282 Peak	Vertical
3	7386.00	51.69	58.23	-6.54	74.00	-22.31	173	286 Peak	Vertical

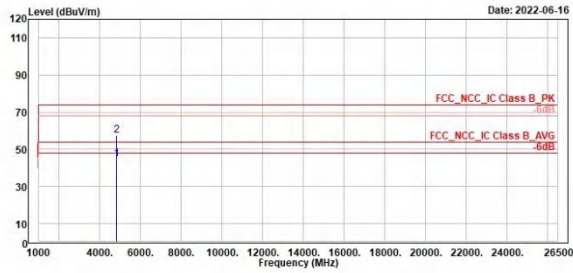
802.11g

Low Channel (Horizontal)

Low Channel (Vertical)



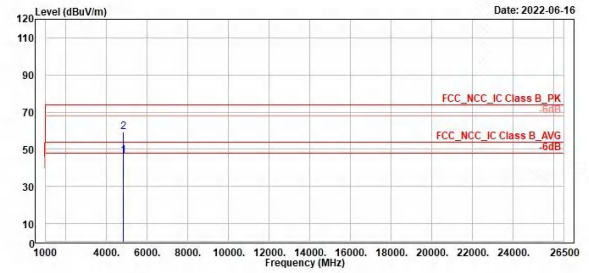
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1	2
4824.00	4824.00
44.54	57.67
53.55	66.68
-9.01	-9.01
54.00	74.00
-9.46	-16.33
346	346
297	297
Average	Peak
Horizontal	Horizontal



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1	2
4824.00	4824.00
46.69	59.51
56.05	68.67
-9.36	-9.36
54.00	74.00
-7.31	-14.49
284	284
65	65
Average	Peak
Vertical	Vertical

802.11g

Middle Channel (Horizontal)

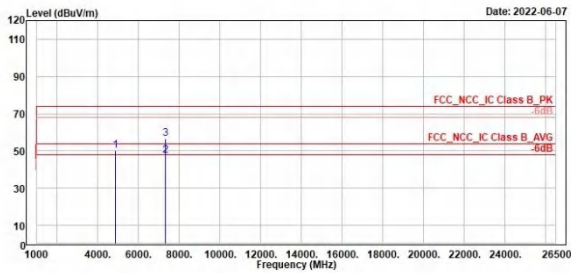
Middle Channel (Vertical)



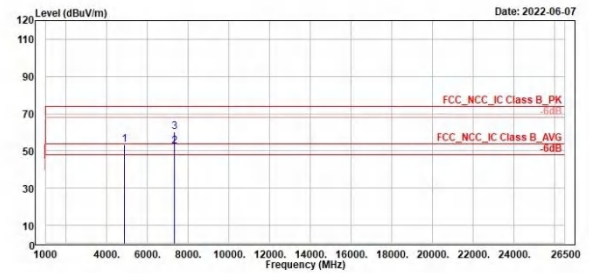
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Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	4874.00	58.15	59.14	-8.99	74.00	-23.85	276	368 Peak	Horizontal	
2	7311.00	47.49	53.99	-6.50	54.00	-6.51	113	288 Average	Horizontal	
3	7311.00	56.69	63.19	-6.50	74.00	-17.31	113	288 Peak	Horizontal	



Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	4874.00	53.58	62.92	-9.34	74.00	-20.42	280	273 Peak	Vertical	
2	7311.00	52.40	59.06	-6.66	54.00	-1.60	170	287 Average	Vertical	
3	7311.00	60.38	67.04	-6.66	74.00	-13.62	170	287 Peak	Vertical	

802.11g

High Channel (Horizontal)

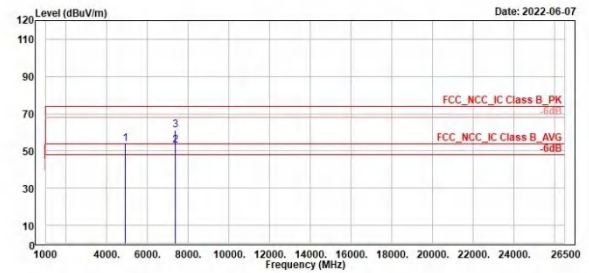
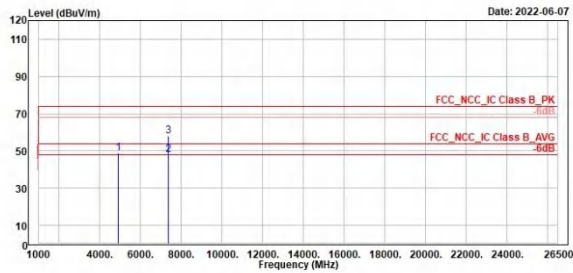
High Channel (Vertical)



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Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	4924.00	48.01	57.74	-8.93	74.00	-25.19	290	276 Peak	Horizontal	
2	7386.00	47.85	54.25	-6.40	54.00	-6.15	193	287 Average	Horizontal	
3	7386.00	58.05	64.45	-6.40	74.00	-15.95	183	287 Peak	Horizontal	

Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	4924.00	54.01	63.33	-9.32	74.00	-19.99	180	277 Peak	Vertical	
2	7386.00	52.83	59.27	-6.54	54.00	-1.17	180	298 Average	Vertical	
3	7386.00	61.25	67.79	-6.54	74.00	-12.75	180	298 Peak	Vertical	

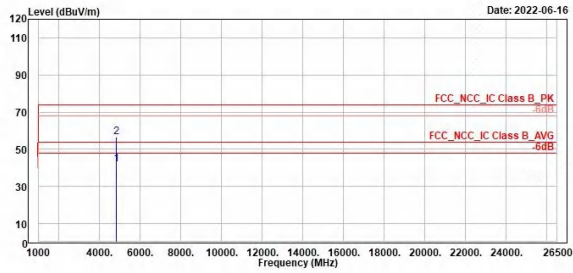
802.11n HT20

Low Channel (Horizontal)

Low Channel (Vertical)



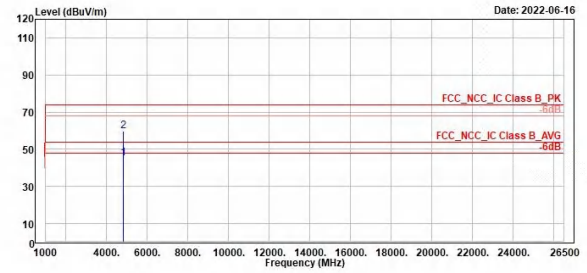
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1	2
Level	Level
Factor	Factor
Line	Line
Limit	Limit
Over	Over
Limit	Limit
APos	APos
TPos	TPos
Remark	Remark
Pol/Phase	Pol/Phase
Note	Note
1	2
4824.00	4824.00
41.96	56.64
58.97	65.65
-9.01	-9.01
54.00	74.00
-12.04	-17.36
330	330
294 Average	294 Peak
Horizontal	Horizontal



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1	2
Level	Level
Factor	Factor
Line	Line
Limit	Limit
Over	Over
Limit	Limit
APos	APos
TPos	TPos
Remark	Remark
Pol/Phase	Pol/Phase
Note	Note
1	2
4824.00	4824.00
45.06	59.57
54.42	68.93
-9.36	-9.36
54.00	74.00
-8.94	-14.43
382	382
63 Average	63 Peak
Vertical	Vertical

802.11n HT20

Middle Channel (Horizontal)

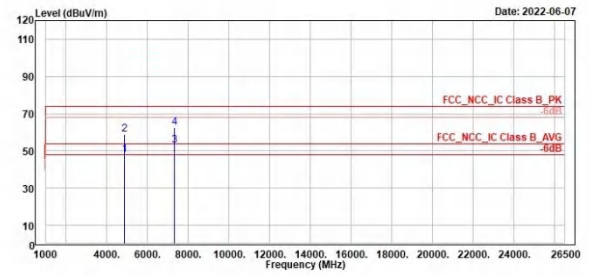
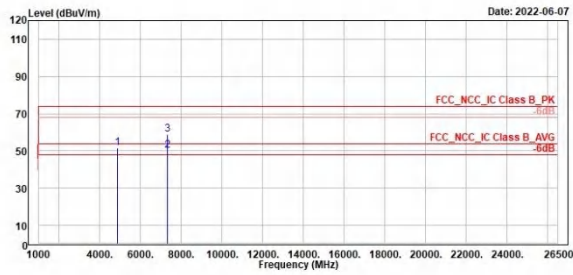
Middle Channel (Vertical)



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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	4874.00	51.78	66.77	-8.99	74.00	-22.22	200	293 Peak	Horizontal
2	7311.00	58.48	56.98	-6.50	54.00	-3.60	100	114 Average	Horizontal
3	7311.00	58.81	65.31	-6.50	74.00	-15.19	100	114 Peak	Horizontal

Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	4874.00	48.03	57.37	-9.34	54.00	-5.97	211	295 Average	Vertical
2	4874.00	58.66	67.99	-9.33	74.00	-15.34	211	295 Peak	Vertical
3	7311.00	52.82	59.48	-6.66	54.00	-1.18	101	291 Average	Vertical
4	7311.00	62.71	69.37	-6.66	74.00	-11.29	101	291 Peak	Vertical

802.11n HT20

High Channel (Horizontal)

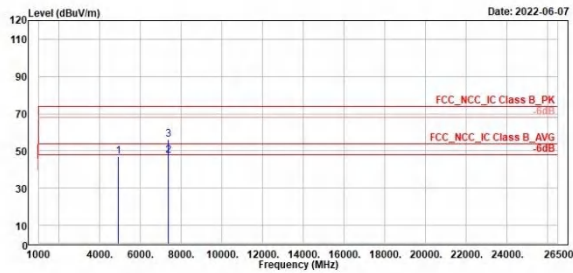
High Channel (Vertical)



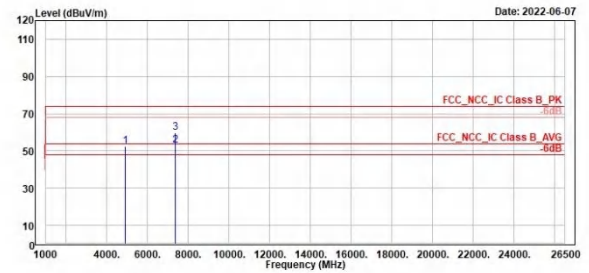
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Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	4924.00	47.17	56.10	-8.93	74.00	-26.83	380	146 Peak	Horizontal	
2	7386.00	47.33	53.73	-6.40	54.00	-6.67	182	295 Average	Horizontal	
3	7386.00	56.15	62.55	-6.40	74.00	-17.85	182	295 Peak	Horizontal	



Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	4924.00	52.25	61.59	-9.34	74.00	-21.75	280	297 Peak	Vertical	
2	7386.00	52.98	59.52	-6.54	54.00	-1.02	187	287 Average	Vertical	
3	7386.00	59.85	66.39	-6.54	74.00	-14.15	187	287 Peak	Vertical	



802.11n HT40

Low Channel (Horizontal)

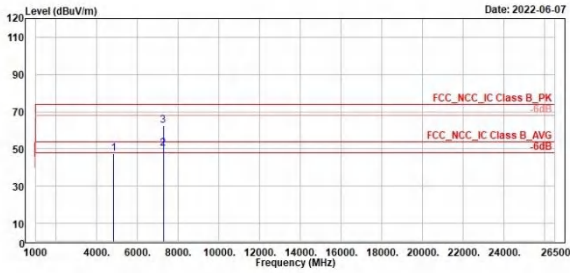
Low Channel (Vertical)



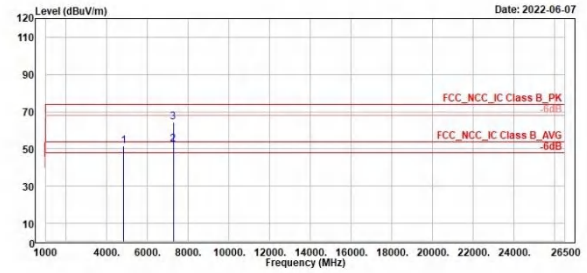
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Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	4844.00	47.31	56.32	-9.01	74.00	-26.69	490	53 Peak	Horizontal
2	7266.00	50.36	56.86	-6.50	54.00	-3.64	390	142 Average	Horizontal
3	7266.00	62.57	69.07	-6.50	74.00	-11.43	300	142 Peak	Horizontal



Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	4844.00	51.69	61.01	-9.32	74.00	-22.31	290	305 Peak	Vertical
2	7266.00	52.27	58.90	-6.63	54.00	-1.73	184	279 Average	Vertical
3	7266.00	64.48	71.11	-6.63	74.00	-9.52	184	279 Peak	Vertical

802.11n HT40

Middle Channel (Horizontal)

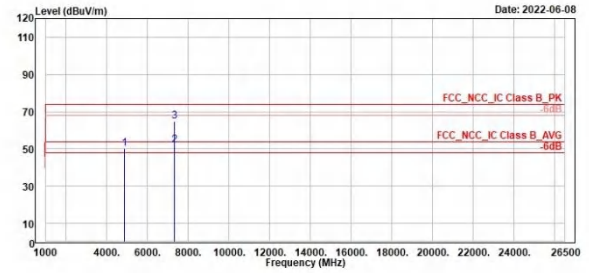
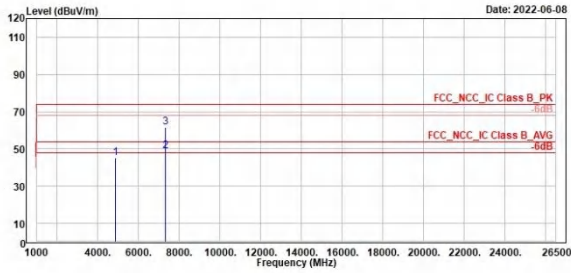
Middle Channel (Vertical)



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Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	4874.00	45.08	54.07	-8.99	74.00	-28.92	200	148 Peak	Horizontal	
2	7311.00	48.87	55.37	-6.50	54.00	-5.13	210	216 Average	Horizontal	
3	7311.00	61.65	68.15	-6.50	74.00	-12.35	210	216 Peak	Horizontal	

Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	4874.00	50.41	59.75	-9.34	74.00	-23.59	200	296 Peak	Vertical	
2	7311.00	52.05	58.71	-6.66	54.00	-1.95	200	269 Average	Vertical	
3	7311.00	64.76	71.42	-6.66	74.00	-9.24	200	269 Peak	Vertical	

802.11n HT40

High Channel (Horizontal)

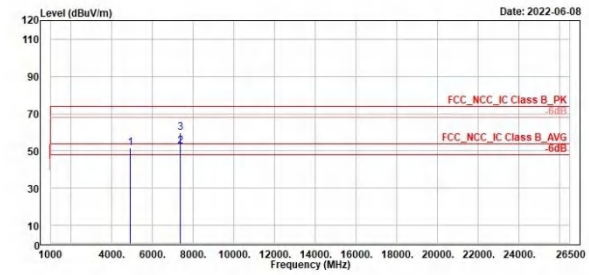
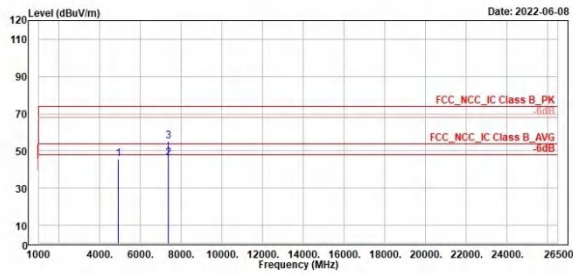
High Channel (Vertical)



TUV Rheinland Taiwan Ltd.  
No. 438-18, Sec. 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)  
Tel: +886-2172-1000 Fax: +886-2172-1322



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No. 438-18, Sec. 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)  
Tel: +886-2172-1000 Fax: +886-2172-1322



Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	4984.00	45.62	54.59	-8.97	74.00	-28.38	100	261 Peak	Horizontal	
2	7356.00	46.07	52.60	-6.53	54.00	-7.93	100	293 Average	Horizontal	
3	7356.00	55.23	61.76	-6.53	74.00	-18.77	100	293 Peak	Horizontal	

Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	4984.00	51.67	61.04	-9.37	74.00	-22.33	200	233 Peak	Vertical	
2	7356.00	52.48	59.03	-6.55	54.00	-1.52	100	287 Average	Vertical	
3	7356.00	59.98	66.53	-6.55	74.00	-14.02	100	287 Peak	Vertical	