



中认信通

CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)

JAPAN MIC TEST REPORT

Applicant: D-ROBOTICS HOLDING LIMITED

Address: SUITE 603,6/F LAWS COMM PLAZA 788 CHEUNG SHA WAN RD KLN
HONG KONG

Product Name: RDK X5

Standard(s): Radio Law of Japan item 19-3 of Article 2 Paragraph 1

The above device has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

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Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

Declarations

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Each test item follows the test standard(s) without deviation.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2403Z107561E-RF-07D	Original Report	2024/12/27

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	RDK X5
EUT Model:	RDK X5 8G
Multiple Model:	RDK X5 4G
Operation Frequency:	802.11a/n ht20/ac vht20/ax he20: 5180-5240MHz 802.11n ht40/ac vht40/ax he40: 5190/5230MHz 802.11ac vht80/ax he80: 5210MHz
Maximum Peak Output Power (Conducted):	802.11a: 0.30mW/MHz 802.11n ht20/ac vht20: 0.19mW/MHz 802.11n ht40/ac vht40: 0.09mW/MHz 802.11ac vht80: 0.05mW/MHz 802.11ax hew20: 0.09mW/MHz 802.11ax hew40: 0.07mW/MHz 802.11ax hew80: 0.04mW/MHz
Number of TX Chain(s):	1
Number of RX Chain(s):	1
Antenna Gain(dBi)▲:	2.86
Modulation Type:	802.11a/n/ac: OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM 802.11ax: OFDMA- BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM
Emission Type:	G1D, D1D
Rated Input Voltage:	DC 5V from Type-C Port
Sample Number:	2V9D-1
EUT Received Date:	2024/11/29
EUT Received Status:	Good
Note: The multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer.	

Operation Frequency Detail

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210	/	/
The below frequencies were performed to test:			
Test Mode	Test Channel	Frequency (MHz)	
		W52	
802.11a/n ht20/ax he20	Lowest	5180	
	Middle	5200	
	Highest	5240	
802.11n ht40/ax he40	Lowest	5190	
	Highest	5230	
802.11ac vht80/ax he80	Middle	5210	
Note: The system support 802.11a/n ht20/n ht40/ac vht20/ac vht40/ac vht80/ax he20/ax he40/ax he80, the802.11ac vht20/vht40 were reduced since the identical parameters with 802.11n ht20 and ht40.			

Accessory Information

Accessory Description	Manufacturer	Model
/	/	/

1.2 Objective

The objective of this current document is to demonstrate the EUT, as equipment type in Certification Ordinance Article 2-1-19-3 of Specific Radio Equipment Specified in Article 38-2-2 Paragraph 1 Item 1 of the Radio Law, compliant with Article 49-20 of Radio equipment regulations.

1.3 Test Methodology

All measurements contained in this report were conducted with the temporarily test method “5 GHz 帯小電力データ通信システムの特性試験方法” which determined by TAC.

1.4 Description of Test Configuration

1.4.1 EUT Operation Condition

EUT Operation Mode:	The system was configured for testing in Engineering Mode, which was provided by the manufacturer.		
Equipment Modifications:	No		
EUT Exercise Software:	MobaXterm.exe		
The software was provided by manufacturer. The maximum power was configured as below, that was provided by the manufacturer▲:			
Test Modes	Power Level Setting		
	Lowest Channel	Middle Channel	Highest Channel
802.11a	12	12	12
802.11n ht20	10	10	10
802.11n ht40	10	/	10
802.11ac vht80	/	10	/
802.11ax he20	7	7	7
802.11ax he40	9	/	9
802.11ax he80	/	10	/
Note: 802.11ax mode only support full RU configuration.			

1.4.2 EUT Extremity Condition

Environment Element	Range	Declared Voltage Value (Vdc)	Measured Voltage (Vdc)	Voltage Variation (%)
Voltage Fluctuation:	NV	5	3.30	/
	LV	4.75	3.30	0
	HV	5.25	3.30	0

Note:

1. Voltage Variation (%) = (Measured Voltage at High or Low Voltage - Measured Voltage at Normal Voltage)/Measured Voltage at Normal Voltage*100.
2. The Measured Voltage for the Radio Part fluctuation is verified at the power input PIN of the RF circuit.

The EUT be operated at $\pm 5\%$ from the normal supply voltage which was provided by manufacturer, the supply voltage of RF part was varied within $\pm 1\%$. All test cases were done under the **Normal Voltage (NV)** only.

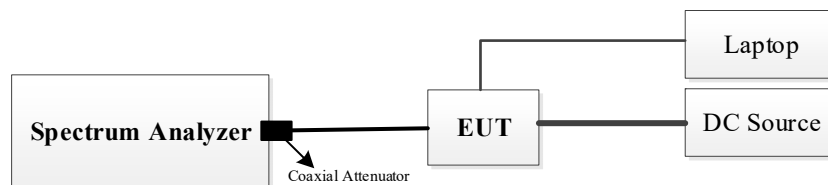
1.4.3 Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	T460S	60PDTEK7
Lenovo	Laptop	T460S	60PDTEK8
Tenda	Wireless Router	RX12 Pro	ED331010215000033

1.4.4 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Detachable Power Cable	No	No	1.0	DC Power Supply	EUT
USB Cable	No	No	1.0	EUT	Laptop

1.4.5 Block Diagram of Test Setup



1.5 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Frequency Error	$\pm 0,5$ ppm
Occupied Bandwidth	± 5 %
RF Output Power, Conducted	± 0.61 dB
Unwanted Emissions (TX&RX), Conducted	± 2.47 dB
Temperature	± 1 °C
Humidity	± 5 %
DC and Low Frequency Voltages	± 0.4 %
Duty Cycle	1 %

2. SUMMARY OF TEST RESULTS

Certification Ordinance Article 2-1-19-3 Conducted with: MIC Notice No.88	Description Of Test	Result
1	Frequency Tolerance	Compliant
2	Occupied Bandwidth	Compliant
3	Transmitter Spurious Emission Strength	Compliant
	Transmitter Spurious Emission Strength - (Out-Band Leakage Power)	Compliant
4	Output Power and Output Power Tolerance	Compliant
5	Adjacent Channel Power	Compliant
6	Secondary Radiated Emission Strength	Compliant
7	Radio Interference Prevention Capability	Compliant
8	Transmission Burst Length	Compliant
9	Transmission Power Control Function (TPC)	Not Applicable*
10	Carrier Sense Capability	Compliant
11	Dynamic Frequency Selection (DFS)	Not Applicable**
12	Construction Protection Confirmation	Compliant

Note:

Not Applicable:* The manufacturer declared that the device does not support TPC functionality.

*Not Applicable**:* The device does not work on the DFS bands.

3. REQUIREMENTS AND TEST PROCEDURES

3.1 Frequency Error

3.1.1 Limit

Within $\pm 20\text{ppm}$.

3.1.2 Test Procedure

Set the EUT to the measurement frequency without modulation.

Setting of SA is following as: Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold.

Record the peak spot frequency.

If the EUT can't set at un-modulation mode, measure the 10dBc center frequency.

3.2 Occupied Bandwidth and Spreading Bandwidth

3.2.1 Limit

Item	Limits
Occupied Bandwidth:	W52/W53/W56: $\leq 18\text{MHz}$ (20MHz Mode DSSS) $\leq 20\text{MHz}$ (20MHz Mode OFDM) $\leq 40\text{MHz}$ (40MHz Mode OFDM) $\leq 80\text{MHz}$ (80MHz Mode OFDM)

3.2.2 Test Procedure

1. Setting of SA is following as: RB: 300 kHz / VB: 300 kHz / SPAN: 2*Nominal Bandwidth/ Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold

2. EUT have transmitted the maximum modulation signal and fixed channelize. SA set to 99% of occupied bandwidth to measure occupied bandwidth.

3.3 Transmitter Spurious Emission Strength and Unwanted Emission Intensity

3.3.1 Limit

* Attachment 1 (Unwanted Emission Strength)

W52			
20MHz system		40MHz system	80MHz system
OBW : 18MHz or less	OBW : 18 - 20 MHz		
5,142 MHz or less : 2.5 μ W/MHz	5,142 MHz or less : 2.5 μ W/MHz	5,141.6 MHz or less : 2.5 μ W/MHz	5,123.2 MHz or less : 2.5 μ W/MHz
5,142 - 5,150 MHz : 15 μ W/MHz	5,142 - 5,150 MHz : 15 μ W/MHz	5,141.6 - 5,150 MHz : 15 μ W/MHz	5,123.2 - 5,150 MHz : 15 μ W/MHz
5,250 - 5,250.2 MHz : $10^{1-(f-5250)/10}$ mW/MHz	5,250.2 - 5,251 MHz : $10^{1-(f-5250)/10}$ mW/MHz	5,250 - 5,251 MHz : $10^{-(f-5250)+\log(1/2)}$ mW/MHz	5,250 - 5,251 MHz : $10^{-(f-495)+\log(1/4)}$ mW/MHz
5,251 - 5,260 MHz : $10^{1-(f-5250)/10}$ mW/MHz	5,251 - 5,260 MHz : $10^{1-(f-5250)/10}$ mW/MHz	5,251 - 5,270 MHz : $10^{-(f-5250)+\log(1/2)}$ mW/MHz	5,251 - 5,260 MHz : $10^{-(f-495)+\log(1/4)}$ mW/MHz
5,260 - 5,266.7 MHz : $10^{1-(f-5250)/10}$ mW/MHz	5,260 - 5,266.7 MHz : $10^{1-(f-5250)/10}$ mW/MHz	5,270 - 5,278.4 MHz : $10^{-(f-5250)+\log(1/2)}$ mW/MHz	5,260 - 5,266.7 MHz : $10^{-(f-495)+\log(1/4)}$ mW/MHz
5,266.7 MHz or more : 2.5 μ W/MHz	5,266.7 MHz or more : 2.5 μ W/MHz	5,278.4 MHz or more : 2.5 μ W/MHz	5,266.7 MHz or more : 2.5 μ W/MHz
f = MHz, Difference from 5240 (MHz)	f = MHz, Difference from 5240 (MHz)	f = MHz, Difference from 5230 (MHz)	f = MHz, Difference from 5210 (MHz)

W53			
20MHz system		40MHz system	80MHz system
OBW : 18MHz or less	OBW : 18 - 20 MHz		
5,233.3 MHz or less : 2.5 μ W/MHz	5,233.3 MHz or less : 2.5 μ W/MHz	5,221.6 MHz or less : 2.5 μ W/MHz	5,203.3 MHz or less : 2.5 μ W/MHz
5,233.3 - 5,240 MHz : $10^{1-(f-5233.3)/10}$ mW/MHz	5,233.3 - 5,240 MHz : $10^{1-(f-5233.3)/10}$ mW/MHz	5,221.6 - 5,230 MHz : $10^{-(f-5230)+\log(1/2)}$ mW/MHz	5,203.3 - 5,210 MHz : $10^{-(f-490)+\log(1/4)}$ mW/MHz
5,240 - 5,249 MHz : $10^{1-(f-5233.3)/10}$ mW/MHz	5,240 - 5,249 MHz : $10^{1-(f-5233.3)/10}$ mW/MHz	5,230 - 5,249 MHz : $10^{-(f-5230)+\log(1/2)}$ mW/MHz	5,210 - 5,249 MHz : $10^{-(f-490)+\log(1/4)}$ mW/MHz
5,249 - 5,250 MHz : $10^{1-(f-5233.3)/10}$ mW/MHz	5,249 - 5,249.8 MHz : $10^{1-(f-5233.3)/10}$ mW/MHz	5,249 - 5,250 MHz : $10^{-(f-5230)+\log(1/2)}$ mW/MHz	5,249 - 5,250 MHz : $10^{-(f-490)+\log(1/4)}$ mW/MHz
5,250 MHz or more : 2.5 μ W/MHz	5,249.8 - 5,250 MHz : $10^{1-(f-5233.3)/10}$ mW/MHz	5,250 - 5,258.4 MHz : 15 μ W/MHz	5,250 - 5,258.4 MHz : 15 μ W/MHz
f = MHz, Difference from 5260 (MHz)	f = MHz, Difference from 5260 (MHz)	f = MHz, Difference from 5270 (MHz)	f = MHz, Difference from 5290 (MHz)

W56			
20MHz system		40MHz system	80MHz system
DSSS, etc.	OFDM		
5,470 MHz or less : 12.5 μ W/MHz	5,460 MHz or less : 2.5 μ W/MHz	5,460 MHz or less : 12.5 μ W/MHz	5,460 MHz or less : 12.5 μ W/MHz
	5,460 - 5,470 MHz : 12.5 μ W/MHz	5,460 - 5,470 MHz : 50 μ W/MHz	5,460 - 5,469.5 MHz : 50 μ W/MHz
	5,745 - 5,765 MHz : 12.5 μ W/MHz		5,469.5 - 5,470 MHz : 51.2 μ W/MHz
5,730 MHz or more : 12.5 μ W/MHz	Over 5,765 MHz : 2.5 μ W/MHz	5,770 MHz or more : 12.5 μ W/MHz	5,770 MHz or more : 12.5 μ W/MHz

3.3.2 Test Procedure

❖ Conditions of Application Equipment (EUT)

- The modulation state shall be in continuously transmitting mode.

3.4 Output Power and Output Power Tolerance

3.4.1 Limit

For W52, W53 Band:

Item	Band	Limits
Antenna Power	W52/W53	20M System: $\leq 10\text{mW/MHz}$ 40M System: $\leq 5\text{mW/MHz}$ 80M System: $\leq 2.5\text{mW/MHz}$
E.I.R.P.	W52	20M System: $\leq 10\text{mW/MHz}$ 40M System: $\leq 5\text{mW/MHz}$ 80M System: $\leq 2.5\text{mW/MHz}$
	W53	With TPC: 20M System: $\leq 10\text{mW/MHz}$ 40M System: $\leq 5\text{mW/MHz}$ 80M System: $\leq 2.5\text{mW/MHz}$ Without TPC: 20M System: $\leq 5\text{mW/MHz}$ 40M System: $\leq 2.5\text{mW/MHz}$ 80M System: $\leq 1.25\text{mW/MHz}$
Antenna Power Tolerance	W52/W53	$\leq +20\%$, $\geq -80\%$

For W56 Band:

Item	Band	Limits
Antenna Power	W56	20M System: $\leq 10\text{mW/MHz}$ 40M System: $\leq 5\text{mW/MHz}$ 80M System: $\leq 2.5\text{mW/MHz}$
E.I.R.P.	W56	With TPC: 20M System: $\leq 50\text{mW/MHz}$ 40M System: $\leq 25\text{mW/MHz}$ 80M System: $\leq 12.5\text{mW/MHz}$ Without TPC: 20M System: $\leq 25\text{mW/MHz}$ 40M System: $\leq 12.5\text{mW/MHz}$ 80M System: $\leq 6.25\text{mW/MHz}$
Antenna Power Tolerance	W56	$\leq +50\%$, $\geq -50\%$

3.4.2 Test Procedure

- Set the UUT as transmitting the modulation signal.
- The settings of the spectrum analyzer when providing frequency search for the maximum power should be set as follows:
 - Center Frequency: The center frequency of the channel under test
 - Span: Approximately 2 times of the occupied frequency bandwidth.
 - RBW: 1 MHz
 - VBW: same as RBW
 - Y-axis Scale: 10 dB/Div
 - Sweep time: Minimum time that ensures measurement accuracy
(For burst waves, the time should be long enough to include at least one burst per sample)
 - Trigger Condition: Free run
 - Sweep Points: 1001 points or more
 - Sweep Mode: Continuous Sweep
 - Detect Mode: Positive Peak
 - Trace Mode: Max Hold

3. The settings of the spectrum analyzer when measuring power shall be as follows:

- Center Frequency: Searched frequency for the maximum power in step 2.
- Span: 0 Hz
- RBW: 1MHz
- VBW: Same as RBW
- Sweep Mode: Continuous Sweep

4. When using the spectrum analyzer's computation function to measure antenna power, set the spectrum analyzer as follows:

- Center Frequency: Frequency where maximum power is observed (searched frequency)
- Sweep Frequency Width: About 10 MHz
- Calculation Bandwidth: 1 MHz
- Resolution Bandwidth: Between 30 kHz and 300 kHz
- Video Bandwidth: About three times the resolution bandwidth
- Y-axis Scale: 10 dB/Div
- Sweep time: Minimum time that ensures measurement accuracy
(For burst waves, the time should be long enough to include at least one burst per sample)
- Trigger Condition: Free run
- Sweep Points: 1001 points or more
- Sweep Mode: Continuous Sweep
- Detection Mode: RMS

5. Measurement of antenna power via power meter

(1) For Systems using OFDM or Direct Sequence Spread Spectrum (DSSS):

- a. Set the spectrum analyzer as step 2 to search for the frequency providing maximum antenna power.
- b. Sweep repeatedly until no further changes are observed on the display, then measure the frequency that yields the maximum power per 1 MHz.
- c. If the radio equipment uses two carrier frequencies simultaneously, measure the frequency that gives the maximum power per MHz for each of the carrier frequencies.
- d. Then set the spectrum analyzer as step 3 to measure the antenna power at that frequency.
- e. Connect a power meter to the IF output port of the spectrum analyzer.
- f. The antenna power is defined as:
 - For continuous wave: value corrected as spread bandwidth to calculate the average power per 1 MHz.
 - For burst wave: the adjusted reading from the corrected value (as in continuous wave) and the duty cycle, representing the average power within the burst.
- g. For OFDM systems with multiple subcarrier modulation schemes:
 - Measure the antenna power for each modulation type and select the highest value as the final result.
- h. If the radio equipment uses two carrier frequencies simultaneously, measure the antenna power for each carrier frequency.
- i. If there are multiple antenna terminals, perform measurements at each antenna terminal.

(2) For other systems:

- a. Connect a power meter and measure the total power.
- b. The antenna power is defined as:
 - For continuous wave: the value from step a above.
 - For burst wave: the adjusted reading from the corrected value (as in continuous wave) and the duty cycle, representing the average power within the burst.

6. Measurement of antenna power via the computation function of spectrum analyzer

(1) For Systems using OFDM or Direct Sequence Spread Spectrum (DSSS):

- a. Set the spectrum analyzer as step 2 to search for the frequency providing maximum antenna power.
- b. Sweep repeatedly until no further changes are observed on the display, then measure the frequency that yields the maximum power per 1 MHz.

- c. If the radio equipment uses two carrier frequencies simultaneously, measure the frequency that gives the maximum power per MHz for each of the carrier frequencies.
- d. Then set the spectrum analyzer as step 4 to measure the antenna power at that frequency.
- e. The antenna power is defined as:
 - For continuous wave: Use the value obtained from the spectral analyzer's calculation.
 - For burst wave: Calculate the average power within the burst by using the value obtained from the calculation and considering the duty cycle.
- f. For OFDM systems with multiple subcarrier modulation schemes:
 - Measure the antenna power for each case and adopt the largest value as the measurement result.
- g. If the radio equipment uses two carrier frequencies simultaneously, measure the antenna power for each carrier frequency.
- h. If there are multiple antenna terminals, perform measurements at each antenna terminal.

(2) For other systems:

Same as step 5 (2).

3.5 Adjacent Channel Power

3.5.1 Limit

Bandwidth System	Limits
20MHz System	$\geq 25\text{dB (fc}\pm 20\text{MHz)}$
	$\geq 40\text{dB (fc}\pm 40\text{MHz)}$
40MHz System	$\geq 25\text{dB (fc}\pm 40\text{MHz)}$
	$\geq 40\text{dB (fc}\pm 80\text{MHz)}$
80MHz System	$\geq 25\text{dB (fc}\pm 80\text{MHz)}$

3.5.2 Test Procedure

1. EUT have transmitted the maximum modulation signal and fixed channelize.
2. Setting of SA is following as: RB: 300 kHz / VB: 300 kHz / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Sample / Trace mode: Max hold
3. SA set the Channel Power Function and Channel Bandwidth: 20MHz and Center Frequency: The center frequency of testing for EUT (Such as 5180MHz). Then SA automatically calculate the channel power of EUT and A is representative of this channel power
4. SA set the Channel Power Function and Channel Bandwidth: 20MHz and Center Frequency: The center frequency of testing for EUT (Such as 5180MHz) $\pm 20\text{MHz}$. Then SA automatically subtract the first adjacent channel power of EUT from channel power, the value must more than 25dB.
5. SA set the Channel Power Function and Channel Bandwidth: 20MHz and Center Frequency: The center frequency of testing for EUT (Such as 5180MHz) $\pm 40\text{MHz}$. Then SA automatically subtract the second adjacent channel power of EUT form channel power, the value must more than 40dB.

3.6 Receiver Secondary Radiated Emission Strength

3.6.1 Limit

4nW or below (Frequency range: 30MHz – 1GHz); 20n W or below (frequency range: 1GHz – 26GHz).

3.6.2 Test Procedure

Conditions of Application Equipment (EUT)

The modulation state shall be “continuous receiving mode”.

Spectrum Analyzer Conditions

Start Frequency: Start Frequency of frequency range to measure (30MHz or 1GHz)

Stop Frequency: Stop Frequency of frequency range to measure (1GHz or 26GHz)

Span: AUTO (Measurement Range)

RBW: 100 kHz, VBW: 100 kHz for Frequency < 1 GHz

RBW: 1MHz, VBW: 1MHz for Frequency > 1 GHz

Sweep time: AUTO or more

Log scale: 10dB/Div, Data points: 501points (400 points or more)

Detection: Positive Peak

Reference Level: Enough level for maximum dynamic range

3.7 Radio Interference Prevention Capability

3.7.1 Requirement

Article 6 - 2.3 of Regulations for Enforcement of the radio law

A wireless device used mainly in the same premises to automatically transmit or receive identification codes.

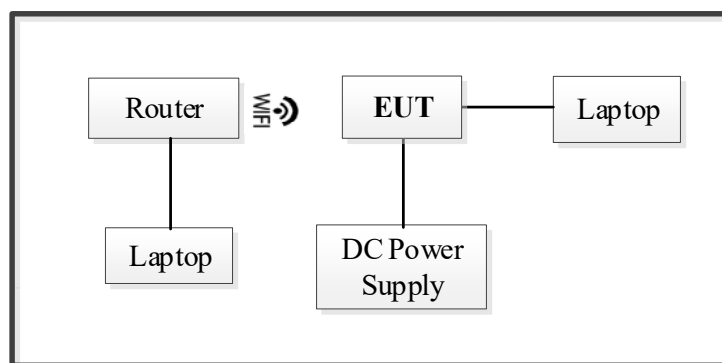
Article 1.8 of MPT Ministerial Notice No. 424 of 1994 (the last revision: Notice No. 374 of Nov. 10, 2023)

48 bits or more. However, for radio of the following frequencies, the requirement is 19 bits or more:

- (1) 5150-5250MHz; 5470-5730MHz; 5925-6425MHz;
- (2) 24.77-25.23GHz;
- (3) 57-66GHz.

3.7.2 Test Procedure

Measurement System Diagram:



In the case that the EUT has the function of automatically transmitting the identification code:

Transmit the predetermined identification codes from EUT

Check the transmitted identification codes with the demodulator.

In the case of receiving the identification codes:

Transmit the predetermined identification codes from the counterpart.

Check if communication is normal

Transmit the signal other than predetermined ID codes from the counterpart.

Check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

3.8 Transmission Burst Length

3.8.1 Limit

Item	Limit
Transmission Burst Length	≤ 8 ms

3.8.2 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer
2. Set RBW of spectrum analyzer to 10MHz and VBW to 10MHz.
3. Use a video trigger with the trigger level set to enable triggering only on full pulses.
4. Sweep Time is more than once pulse time.
5. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
6. Measure the maximum time duration of one single pulse.

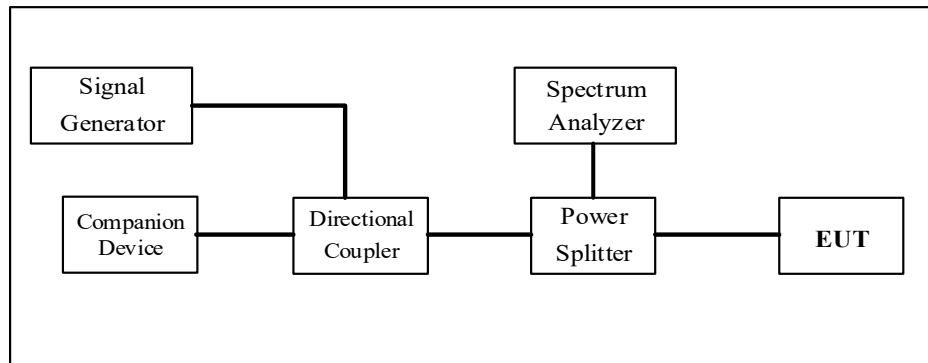
3.9 Carrier Sense Capability

3.9.1 Requirement

EUT stop RF transmission signal after carrier inject to EUT

3.9.2 Test Procedure

3.9.2.1 Measurement System Diagram:



3.9.2.2 Conditions of Application Equipment (EUT):

The EUT state shall be “normal mode link with Companion Device (wireless router)”

3.9.2.3 Conditions of SG

SG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SG and power level is

$$P_{CS} = \frac{G \lambda^2}{480 \pi^2} \times E^2$$

turn off the RF signal of the SG.

EUT have transmitted the maximum modulation signal and fixed channelize.

3.9.2.4 Setting the SA as following:

- Center Frequency: Center frequency of the receiving frequency band
- Span: 50MHz
- RBW: 1MHz
- VBW: Same as RBW
- Trigger type: Free-run
- Detector: Peak

and confirm that it emits radio wave, using spectrum analyzer.

3.9.2.5 Set the EUT in receiving state.

3.9.2.6 Set the EUT to the transmitting operation with the signal generator goes ON, and confirm that it does not emit radio wave, using spectrum analyzer.

3.10 Construction Protection Confirmation

3.10.1 Requirement

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

4. TEST DATA AND RESULTS

4.1 Test Environmental Conditions & Test Equipment List and Details

Test Date:		2024/12/11~2024/12/20			
Tester:		Chin Qin			
Environmental Conditions:					
Temperature: (°C):	25.6-26.1	Relative Humidity: (%)	47-52	ATM Pressure: (kPa)	101.5-102.5

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date	Calibration Agency	Calibration Method ^{Note}
UNI-T	Multimeter	UT39A+	C210582554	2024/01/23	2025/01/22	BACL Cal	C
R&S	Spectrum Analyzer	FSU26	200256	2024/04/01	2025/03/31	BACL Cal	C
Agilent	MXG Vector Signal Generator	N5182B	MY51350144	2024/04/01	2025/03/31	BACL Cal	C
Narda	Directional Coupler	4226-20	03328	Each Time	N/A	CCICT	D
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D091 2386	Each time	N/A	CCICT	D
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A	CCICT	D
Minl-Circuits	Power Splitter	ZFRSC-183-S+	S F448201619	Each time	N/A	CCICT	D
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A	CCICT	D

*** Statement of Traceability:** China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Note:

A. Calibration conducted by the National Institute of Information and Communications Technology (NICT) (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1).

B. Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Law (Law No. 51 of 1992).

C. Calibration conducted in foreign countries, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).

D. Calibration conducted by using measuring instruments and other equipment which shall have been given any of calibration, etc. listed above from a) to c)

4.2 Frequency Error

Test Result: Compliant. Please refers to following table and plots.

Test Mode: Carrier transmitting mode

W52

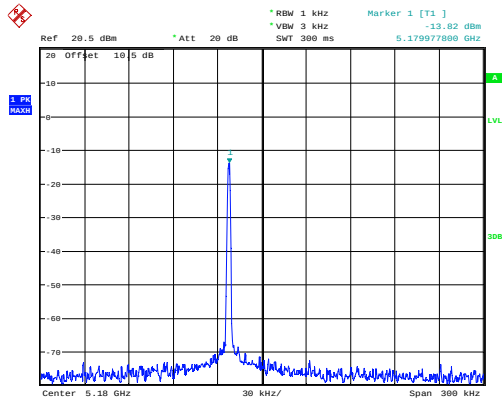
Mode	Frequency (MHz)	Measure Frequency (MHz)	Frequency Error (ppm)	Limit (ppm)	Verdict
Single Carrier	5180	5179.97780	-4.29	±20	Pass
	5190	5189.97780	-4.28	±20	Pass
	5200	5199.97810	-4.21	±20	Pass
	5210	5209.97780	-4.26	±20	Pass
	5230	5229.97780	-4.24	±20	Pass
	5240	5239.97780	-4.24	±20	Pass

Note:

Frequency Error = (Measure Frequency - Frequency)/Frequency*10⁶

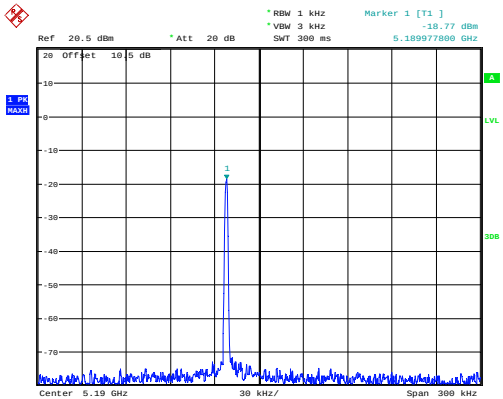
W52, Test Condition: NV

5180MHz



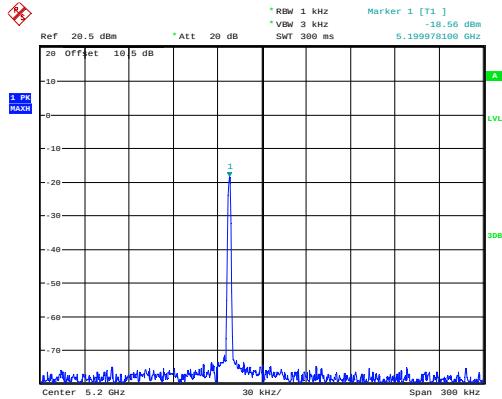
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:29:35

5190MHz



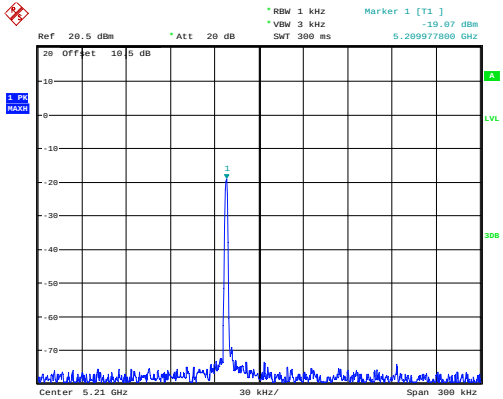
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Date: 12.DEC.2024 00:32:09

5200MHz



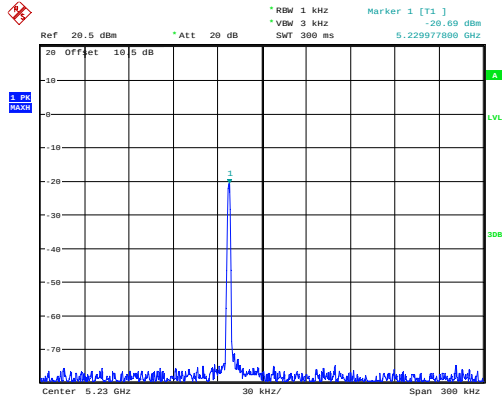
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Date: 12.DEC.2024 00:30:26

5210MHz



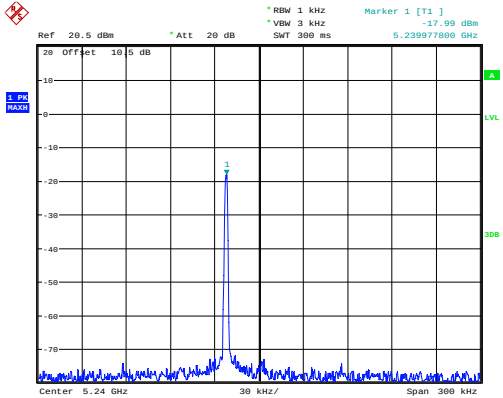
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:34:09

5230MHz



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:33:23

5240MHz



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:31:19

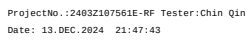
4.3 Occupied Bandwidth

Test Condition: NV

W52

Mode	Result (MHz)			Limit (MHz)	Verdict
	Low Channel	Middle Channel	High Channel		
802.11a	17.00	17.04	17.04	≤ 20	Pass
802.11n ht20	18.28	18.28	18.24	≤ 20	Pass
802.11n ht40	36.40	/	36.40	≤ 40	Pass
802.11ac vht80	/	75.84	/	≤ 80	Pass
802.11ax he20	19.32	19.32	19.28	≤ 20	Pass
802.11ax he40	38.00	/	38.00	≤ 40	Pass
802.11ax he80	/	77.44	/	≤ 80	Pass

802.11a, Low Channel



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 21:51:33

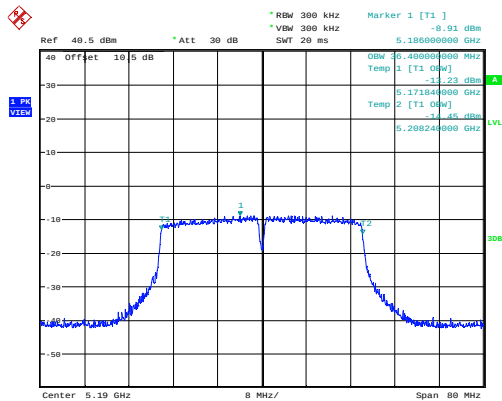
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 22:31:02

ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:09:20

ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:12:32

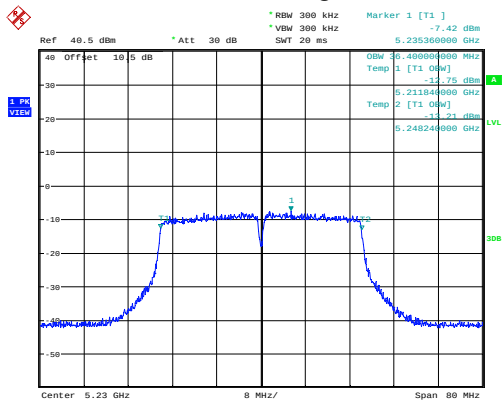
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:03:45

802.11n ht40, Low Channel



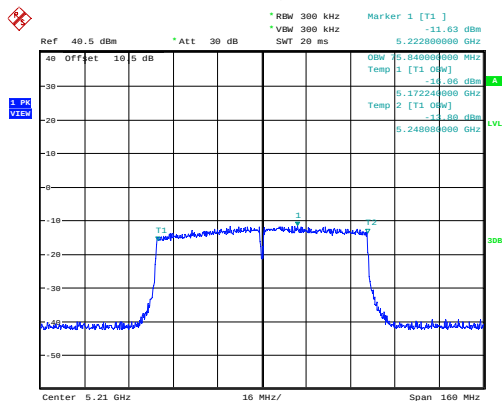
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Date: 11.DEC.2024 23:15:56

802.11n ht40, High Channel



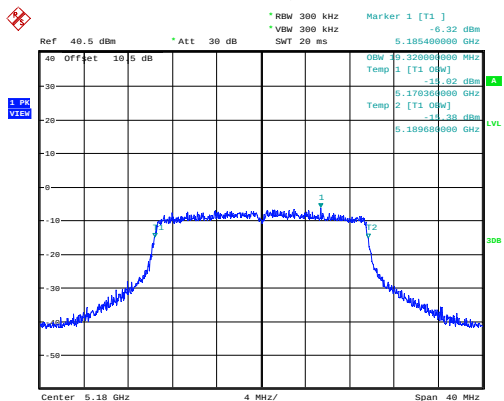
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:17:29

802.11ac vht80, Middle Channel



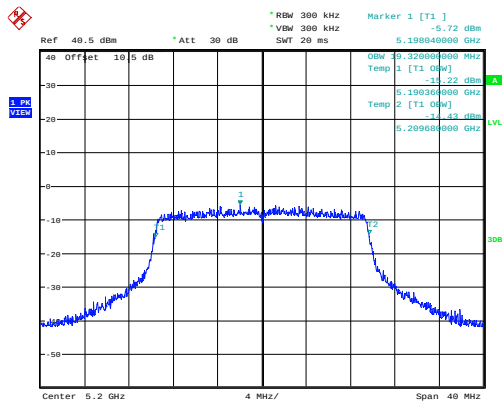
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:27:05

802.11ax he20, Low Channel



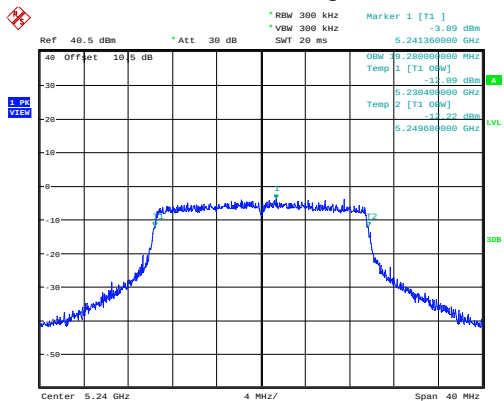
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:39:22

802.11ax he20, Middle Channel



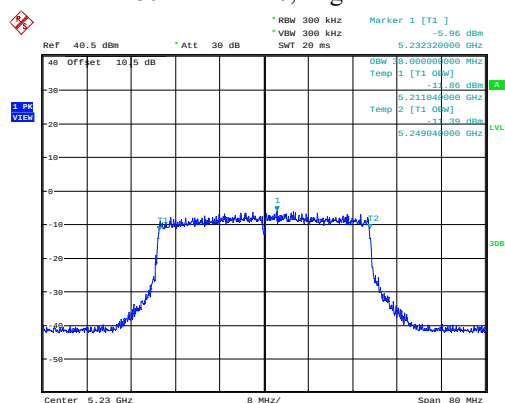
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:43:22

802.11ax he20, High Channel



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:32:02

802.11ax he40, High Channel



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:12:41

Ref 40.5 dBm * Att 30 dB SMT 20 ms

* RBW 300 kHz * VBW 300 kHz

Marker 1 [T1] -0.05 dBm 5.22320000 GHz

dBm 17.44000000 MHz 1 [T1.00w] -1.00 dBm 5.173200000 GHz 2 [T1.00w] -1.00 dBm 5.240720000 GHz

Temp 1 [T1.00w] -1.00 dBm 5.173200000 GHz 2 [T1.00w] -1.00 dBm 5.240720000 GHz

center 5.21 GHz 10 MHz/ Span 160 MHz

ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 19.DEC.2024 17:45:55

4.4 Transmitter Spurious Emission Strength and Unwanted Emission Intensity

Test Condition: NV

W52, 802.11a

Channel	Frequency Range		Max.Emission Located(MHz)	Max.Emission		Limit (μ W/MHz)	Verdict
	Start(MHz)	Stop(MHz)		Reading (dBm/MHz)	Result (μ W/MHz)		
Low	30	5100	3173.15	-34.18	0.382	2.50	Pass
	5100	5142	5121.29	-36.13	0.244	2.50	Pass
	5142	5150	5146.17	-36.02	0.250	15	Pass
	5250	5251	5250.91	-37.08	0.196	123.03	Pass
	5251	5260	5259.84	-36.70	0.214	16.38	Pass
	5260	5266.7	5266.63	-37.58	0.175	2.54	Pass
	5266.7	5300	5293.76	-36.20	0.240	2.50	Pass
	5300	26000	25525.97	-34.57	0.349	2.50	Pass
Middle	30	5100	3174.92	-31.44	0.718	2.50	Pass
	5100	5142	5111.26	-35.55	0.279	2.50	Pass
	5142	5150	5146.80	-36.14	0.243	15	Pass
	5250	5251	5250.96	-37.12	0.194	109.65	Pass
	5251	5260	5259.98	-36.70	0.214	15.91	Pass
	5260	5266.7	5266.62	-36.54	0.222	2.54	Pass
	5266.7	5300	5294.74	-35.98	0.252	2.50	Pass
	5300	26000	25573.58	-34.77	0.333	2.50	Pass
High	30	5100	3173.15	-32.89	0.514	2.50	Pass
	5100	5142	5138.41	-35.99	0.252	2.50	Pass
	5142	5150	5145.74	-35.70	0.269	15	Pass
	5250	5251	5250.98	-10.89	81.470	104.71	Pass
	5251	5260	5251.07	-11.56	69.823	98.58	Pass
	5260	5266.7	5263.20	-29.90	1.023	6.55	Pass
	5266.7	5300	5270.15	-34.63	0.344	2.50	Pass
	5300	26000	24794.23	-35.35	0.292	2.50	Pass

W52, 802.11n ht20

Channel	Frequency Range		Max.Emission Located(MHz)	Max.Emission		Limit (μ W/MHz)	Verdict
	Start(MHz)	Stop(MHz)		Reading (dBm/MHz)	Result (μ W/MHz)		
Low	30	5100	3172.64	-31.94	0.640	2.50	Pass
	5100	5142	5124.74	-36.14	0.243	2.50	Pass
	5142	5150	5142.60	-36.44	0.227	15	Pass
	5250	5250.2	5250.19	-36.58	0.220	670.91	Pass
	5250.2	5251	5250.97	-36.65	0.216	107.15	Pass
	5251	5260	5258.77	-36.31	0.234	20.39	Pass
	5260	5266.7	5265.89	-37.11	0.195	3.11	Pass
	5266.7	5300	5275.76	-35.71	0.269	2.50	Pass
	5300	26000	25878.91	-36.08	0.247	2.50	Pass
Middle	30	5100	3171.88	-31.90	0.646	2.50	Pass
	5100	5142	5136.08	-35.52	0.281	2.50	Pass
	5142	5150	5149.22	-35.72	0.268	15	Pass
	5250	5250.2	5250.19	-36.45	0.226	670.91	Pass
	5250.2	5251	5251.00	-36.91	0.204	100.00	Pass
	5251	5260	5259.34	-36.99	0.200	18.14	Pass
	5260	5266.7	5265.93	-37.29	0.187	3.08	Pass
	5266.7	5300	5287.52	-35.69	0.270	2.50	Pass
	5300	26000	24899.80	-35.78	0.264	2.50	Pass
High	30	5100	3171.12	-32.81	0.524	2.50	Pass
	5100	5142	5126.75	-36.35	0.232	2.50	Pass
	5142	5150	5142.86	-35.71	0.269	15	Pass
	5250	5250.2	5250.13	-6.57	220.293	969.77	Pass
	5250.2	5251	5251.00	-11.24	75.162	100.00	Pass
	5251	5260	5251.00	-11.40	72.444	100.00	Pass
	5260	5266.7	5265.54	-36.10	0.245	3.43	Pass
	5266.7	5300	5297.55	-35.57	0.277	2.50	Pass
	5300	26000	24854.26	-35.60	0.275	2.50	Pass

W52, 802.11n ht40

Channel	Frequency Range		Max.Emission Located(MHz)	Max.Emission		Limit (μW/MHz)	Verdict
	Start(MHz)	Stop(MHz)		Reading (dBm/MHz)	Result (μW/MHz)		
Low	30	5100	3170.36	-33.16	0.483	2.50	Pass
	5100	5141.6	5106.61	-36.19	0.240	2.50	Pass
	5141.6	5150	5146.12	-36.14	0.243	15	Pass
	5250	5251	5250.95	-36.76	0.211	56.10	Pass
	5251	5270	5269.98	-37.37	0.183	7.94	Pass
	5270	5278.4	5278.15	-36.77	0.210	2.57	Pass
	5278.4	5300	5280.06	-36.26	0.237	2.50	Pass
	5300	26000	25390.39	-35.43	0.286	2.50	Pass
High	30	5100	3170.87	-31.42	0.721	2.50	Pass
	5100	5141.6	5114.44	-36.05	0.248	2.50	Pass
	5141.6	5150	5143.74	-34.76	0.334	15	Pass
	5250	5251	5251.00	-15.26	29.785	50.00	Pass
	5251	5270	5251.09	-16.87	20.559	49.57	Pass
	5270	5278.4	5278.39	-36.73	0.212	2.49	Pass
	5278.4	5300	5293.76	-35.59	0.276	2.50	Pass
	5300	26000	25562.20	-35.51	0.281	2.50	Pass

W52, 802.11ac vht80

Channel	Frequency Range		Max.Emission Located(MHz)	Max.Emission		Limit (μW/MHz)	Verdict
	Start(MHz)	Stop(MHz)		Reading (dBm/MHz)	Result (μW/MHz)		
Middle	30	5100	3175.68	-33.61	0.436	2.50	Pass
	5100	5123.2	5114.66	-36.33	0.233	2.50	Pass
	5123.2	5150	5142.28	-35.97	0.253	15	Pass
	5250	5251	5250.98	-19.36	11.588	26.18	Pass
	5251	5290	5251.31	-21.29	7.430	24.64	Pass
	5290	5296.7	5294.17	-34.40	0.363	2.97	Pass
	5296.7	5350	5297.39	-35.42	0.287	2.50	Pass
	5350	26000	24891.10	-35.32	0.294	2.50	Pass

W52, 802.11ax he20

Channel	Frequency Range		Max.Emission Located(MHz)	Max.Emission		Limit (μ W/MHz)	Verdict
	Start(MHz)	Stop(MHz)		Reading (dBm/MHz)	Result (μ W/MHz)		
Low	30	5100	3172.89	-32.01	0.630	2.50	Pass
	5100	5142	5132.09	-36.65	0.216	2.50	Pass
	5142	5150	5148.37	-35.81	0.262	15	Pass
	5250	5250.2	5250.18	-36.56	0.221	713.40	Pass
	5250.2	5251	5250.97	-36.57	0.220	107.15	Pass
	5251	5260	5259.74	-36.25	0.237	16.72	Pass
	5260	5266.7	5265.90	-37.30	0.186	3.10	Pass
	5266.7	5300	5273.82	-36.33	0.233	2.50	Pass
	5300	26000	25790.93	-35.68	0.270	2.50	Pass
Middle	30	5100	3174.41	-32.02	0.628	2.50	Pass
	5100	5142	5110.67	-36.20	0.240	2.50	Pass
	5142	5150	5147.58	-36.08	0.247	15	Pass
	5250	5250.2	5250.20	-36.94	0.202	630.96	Pass
	5250.2	5251	5251.00	-37.24	0.189	100.00	Pass
	5251	5260	5259.84	-37.56	0.175	16.38	Pass
	5260	5266.7	5265.71	-37.07	0.196	3.27	Pass
	5266.7	5300	5293.51	-36.38	0.230	2.50	Pass
	5300	26000	25404.88	-35.00	0.316	2.50	Pass
High	30	5100	3172.39	-33.76	0.421	2.50	Pass
	5100	5142	5110.25	-35.82	0.262	2.50	Pass
	5142	5150	5145.91	-35.77	0.265	15	Pass
	5250	5250.2	5250.19	-4.13	386.367	670.91	Pass
	5250.2	5251	5250.92	-9.63	108.893	120.23	Pass
	5251	5260	5251.21	-10.68	85.507	95.79	Pass
	5260	5266.7	5265.98	-36.99	0.200	3.04	Pass
	5266.7	5300	5287.22	-36.62	0.218	2.50	Pass
	5300	26000	24996.05	-35.01	0.316	2.50	Pass

W52, 802.11ax he40

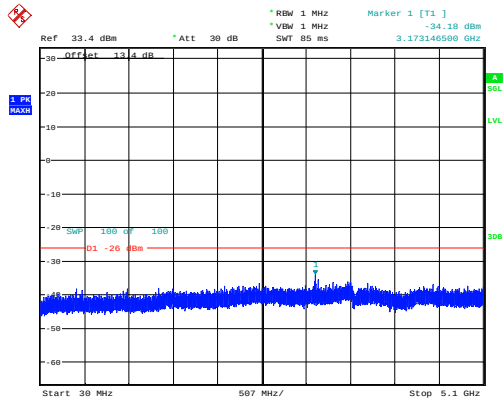
Channel	Frequency Range		Max.Emission Located(MHz)	Max.Emission		Limit (μW/MHz)	Verdict
	Start(MHz)	Stop(MHz)		Reading (dBm/MHz)	Result (μW/MHz)		
Low	30	5100	3174.16	-30.62	0.867	2.50	Pass
	5100	5141.6	5120.18	-36.02	0.250	2.50	Pass
	5141.6	5150	5142.89	-33.96	0.402	15	Pass
	5250	5251	5251.00	-36.94	0.202	50.00	Pass
	5251	5270	5269.75	-37.09	0.195	8.12	Pass
	5270	5278.4	5278.17	-36.69	0.214	2.56	Pass
	5278.4	5300	5289.52	-36.08	0.247	2.50	Pass
	5300	26000	24847.01	-35.56	0.278	2.50	Pass
High	30	5100	3173.15	-31.80	0.661	2.50	Pass
	5100	5141.6	5107.32	-35.64	0.273	2.50	Pass
	5141.6	5150	5142.71	-35.79	0.264	15	Pass
	5250	5251	5250.99	-13.43	45.394	51.16	Pass
	5251	5270	5251.23	-15.98	25.235	48.90	Pass
	5270	5278.4	5274.72	-32.27	0.593	4.13	Pass
	5278.4	5300	5278.59	-31.76	0.667	2.50	Pass
	5300	26000	24891.52	-35.44	0.286	2.50	Pass

W52, 802.11ax he80

Channel	Frequency Range		Max.Emission Located(MHz)	Max.Emission		Limit (μW/MHz)	Verdict
	Start(MHz)	Stop(MHz)		Reading (dBm/MHz)	Result (μW/MHz)		
Middle	30	5100	3153.12	-30.92	0.809	2.50	Pass
	5100	5123.2	5120.28	-36.48	0.225	2.50	Pass
	5123.2	5150	5149.14	-34.45	0.359	15	Pass
	5250	5251	5250.95	-16.17	24.155	28.05	Pass
	5251	5290	5251.12	-18.61	13.772	24.86	Pass
	5290	5296.7	5296.23	-34.13	0.386	2.58	Pass
	5296.7	5350	5297.82	-34.05	0.394	2.50	Pass
	5350	26000	24837.41	-35.83	0.261	2.50	Pass

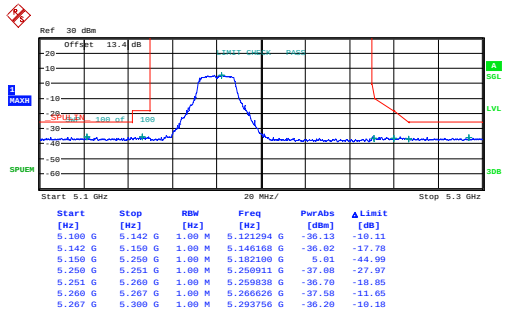
W52, Test Condition: NV

802.11a, Low Channel(30MHz~5.1GHz)



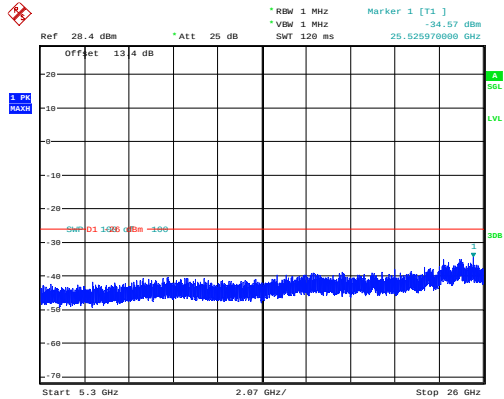
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:04:23

802.11a, Low Channel(5.1GHz~5.3GHz)



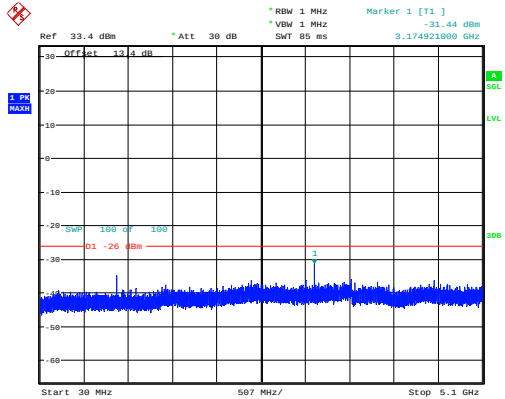
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 21:49:24

802.11a, Low Channel(5.3GHz~26GHz)



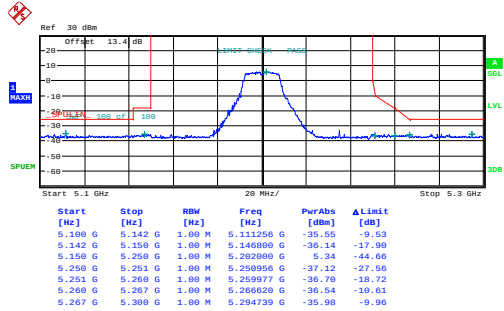
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:05:10

802.11a, Middle Channel(30MHz~5.1GHz)



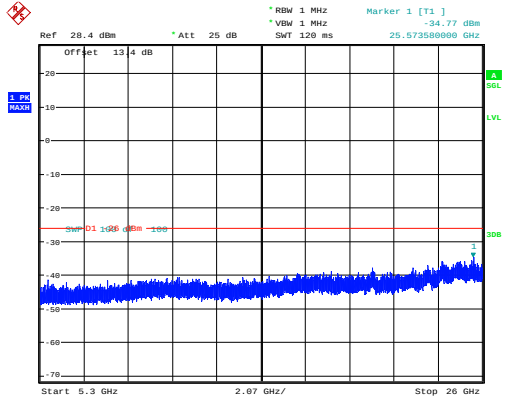
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:01:22

802.11a, Middle Channel(5.1GHz~5.3GHz)



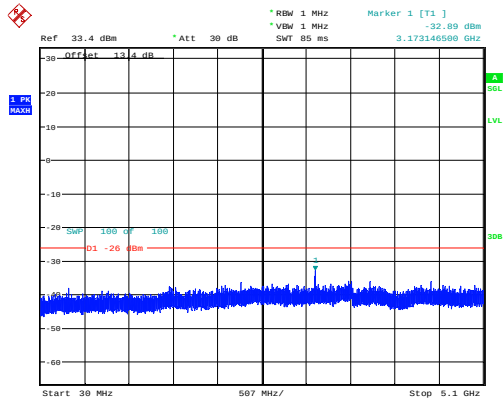
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 21:53:15

802.11a, Middle Channel(5.3GHz~26GHz)



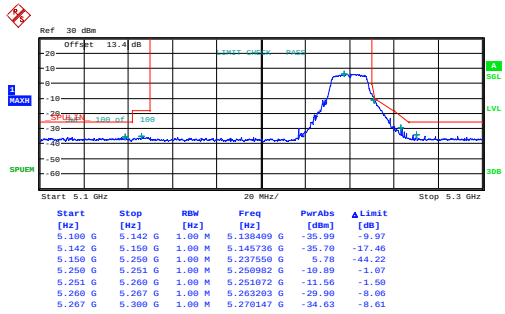
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:02:08

802.11a, High Channel(30MHz~5.1GHz)



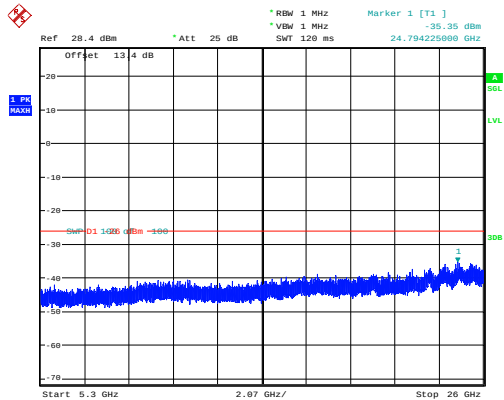
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:45:43

802.11a, High Channel(5.1GHz~5.3GHz)



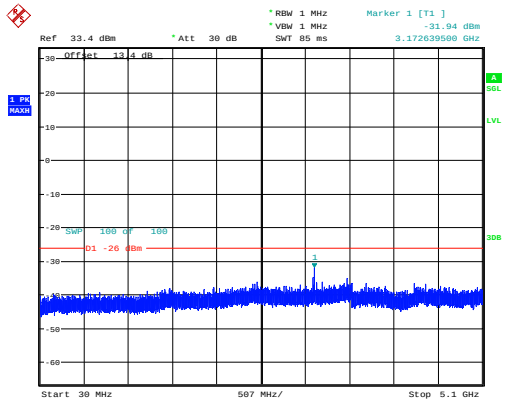
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 22:32:46

802.11a, High Channel(5.3GHz~26GHz)



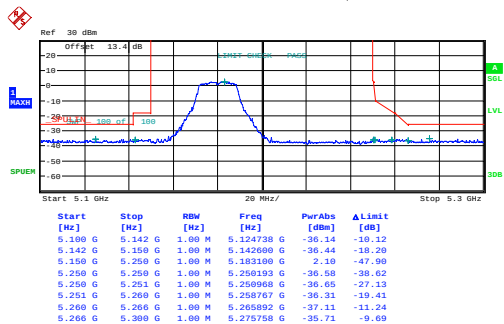
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:46:28

802.11n ht20, Low Channel(30MHz~5.1GHz)



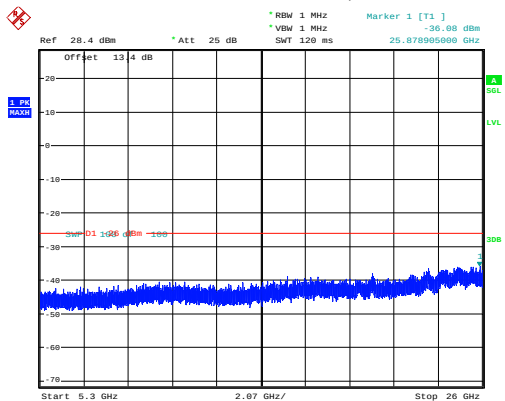
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:04:34

802.11n ht20, Low Channel(5.1GHz~5.3GHz)



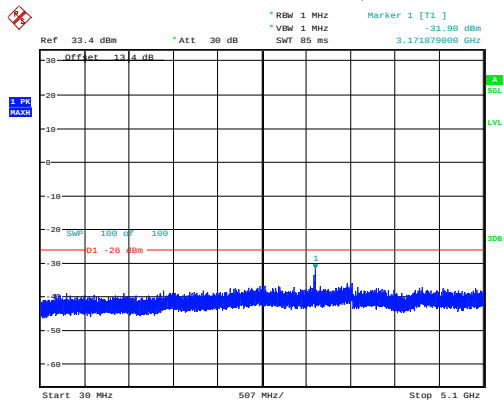
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:10:49

802.11n ht20, Low Channel(5.3GHz~26GHz)



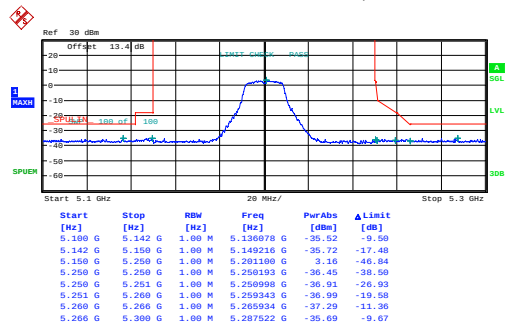
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:05:19

802.11n ht20, Middle Channel(30MHz~5.1GHz)



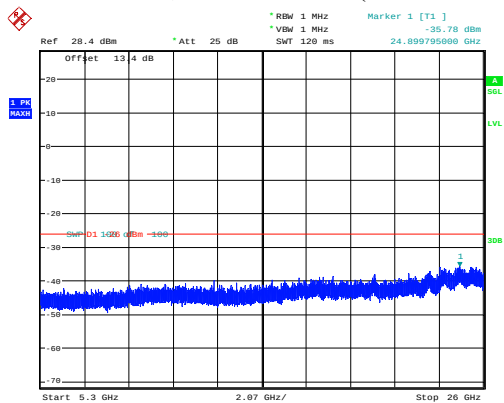
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:06:14

802.11n ht20, Middle Channel(5.1GHz~5.3GHz)



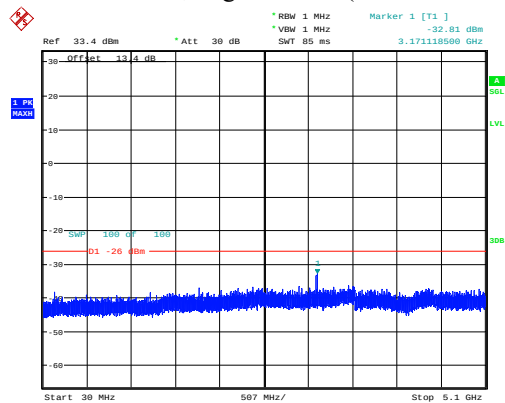
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:14:00

802.11n ht20, Middle Channel(5.3GHz~26GHz)



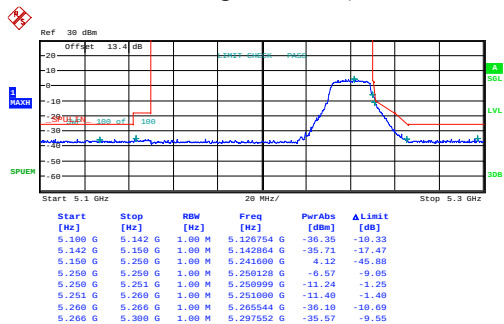
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:06:59

802.11n ht20, High Channel(30MHz~5.1GHz)



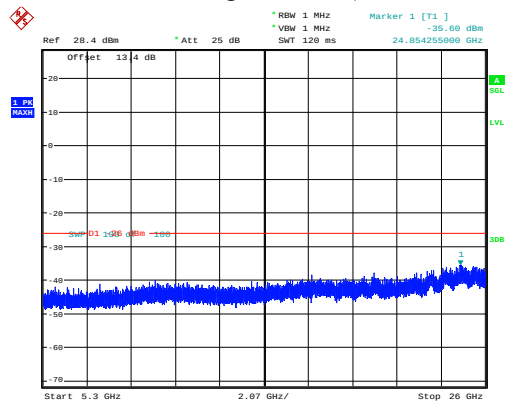
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:07:52

802.11n ht20, High Channel(5.1GHz~5.3GHz)



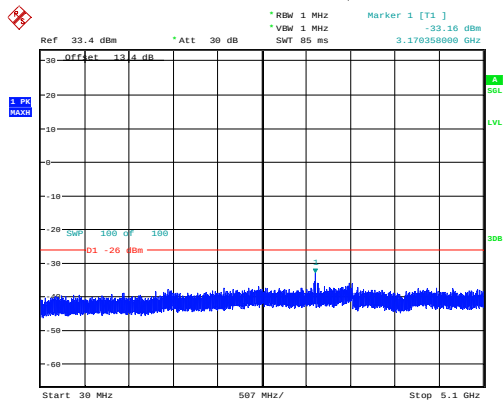
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:07:01

802.11n ht20, High Channel(5.3GHz~26GHz)



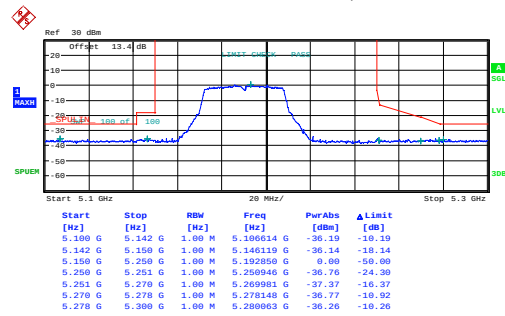
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:08:37

802.11n ht40, Low Channel(30MHz~5.1GHz)



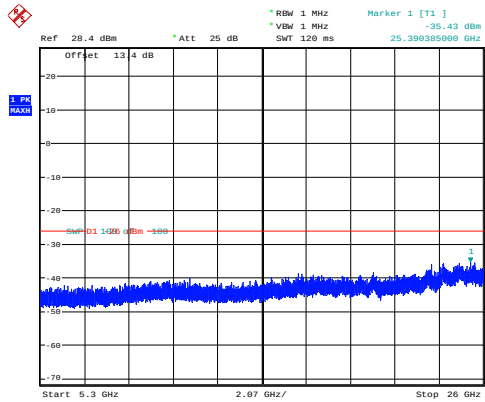
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:09:44

802.11n ht40, Low Channel(5.1GHz~5.3GHz)



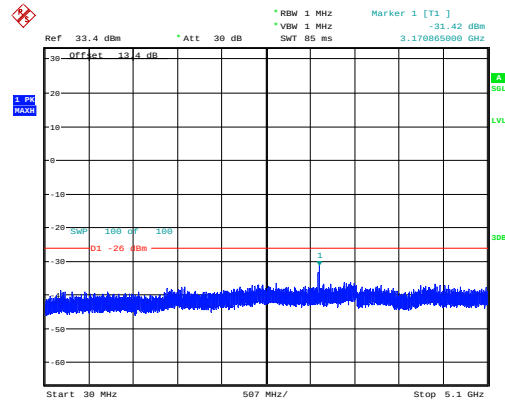
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:23:25

802.11n ht40, Low Channel(5.3GHz~26GHz)



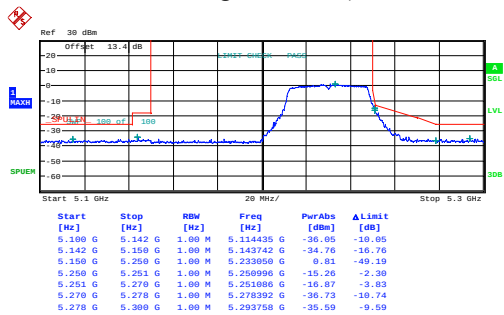
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:10:29

802.11n ht40, High Channel(30MHz~5.1GHz)



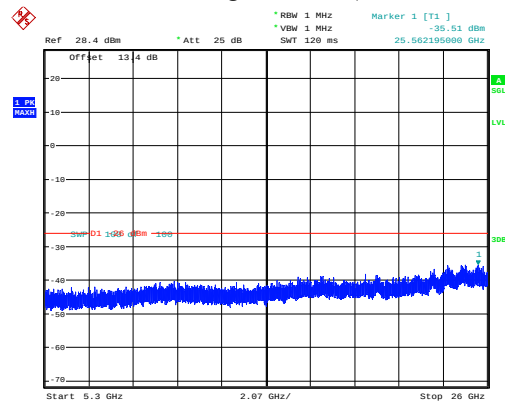
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:11:31

802.11n ht40, High Channel(5.1GHz~5.3GHz)



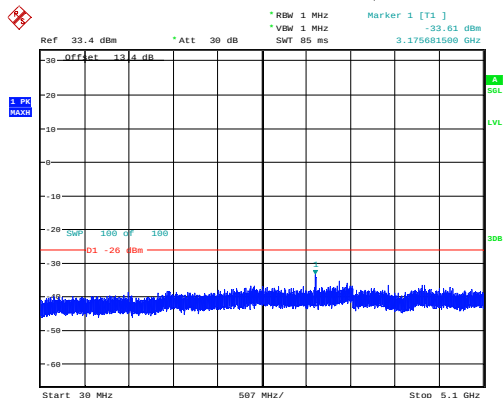
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:20:56

802.11n ht40, High Channel(5.3GHz~26GHz)



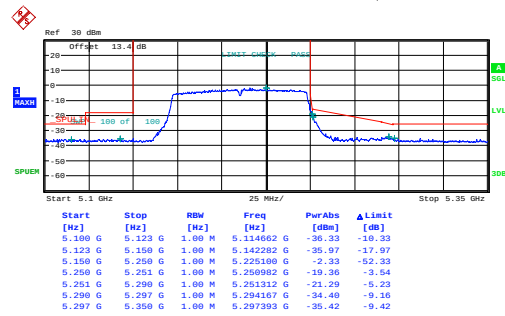
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:12:16

802.11ac vht80, Middle Channel(30MHz~5.1GHz)



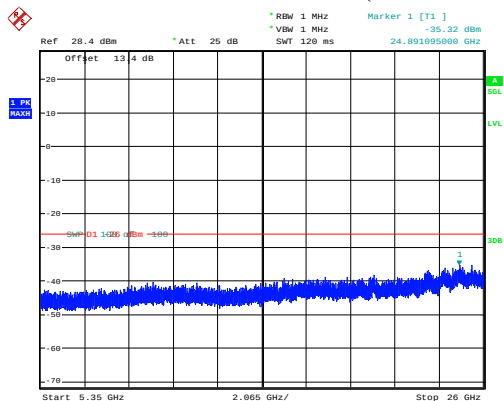
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:30:09

802.11ac vht80, Middle Channel(5.1GHz~5.3GHz)



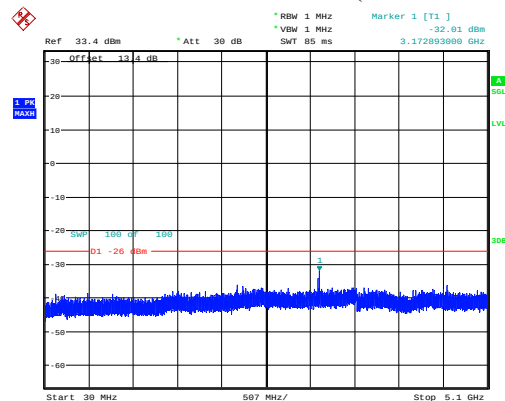
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:28:26

802.11ac vht80, Middle Channel(5.35GHz~26GHz)



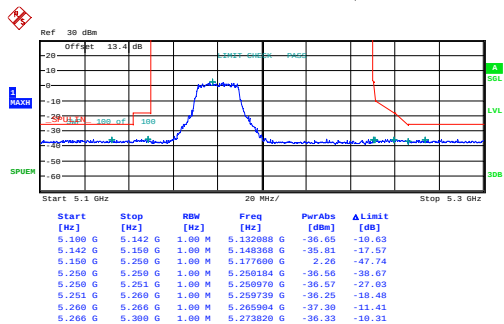
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:30:56

802.11ax he20, Low Channel(30MHz~5.1GHz)



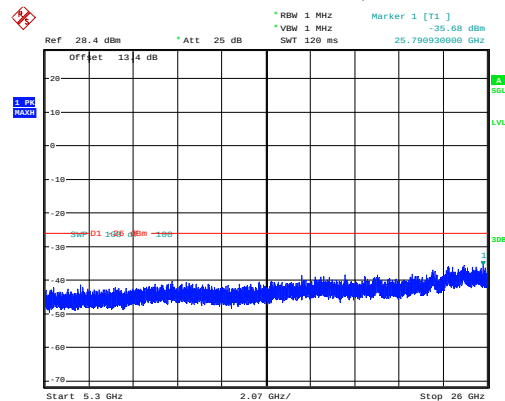
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:53:00

802.11ax he20, Low Channel(5.1GHz~5.3GHz)



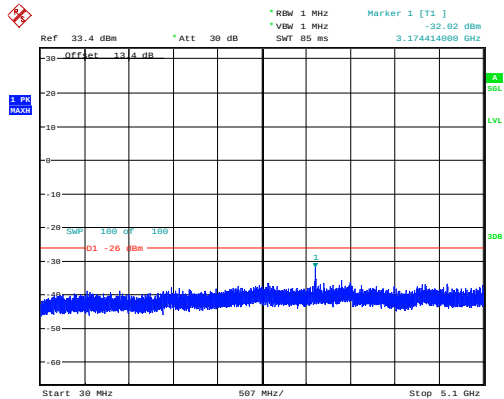
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:40:48

802.11ax he20, Low Channel(5.3GHz~26GHz)



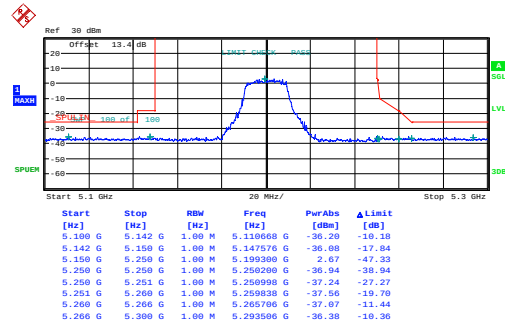
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:53:46

802.11ax he20, Middle Channel(30MHz~5.1GHz)



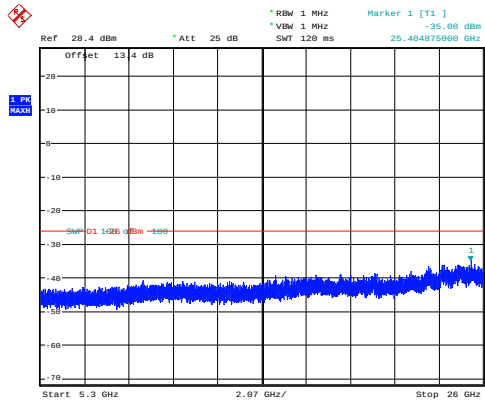
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:50:53

802.11ax he20, Middle Channel(5.1GHz~5.3GHz)



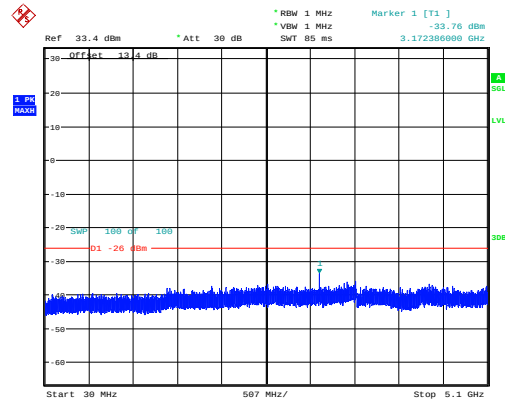
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Date: 13.DEC.2024 22:44:48

802.11ax he20, Middle Channel(5.3GHz~26GHz)



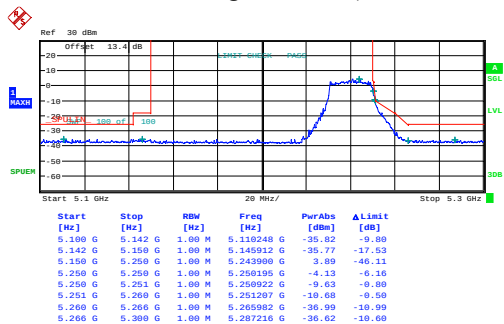
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:51:39

802.11ax he20, High Channel(30MHz~5.1GHz)



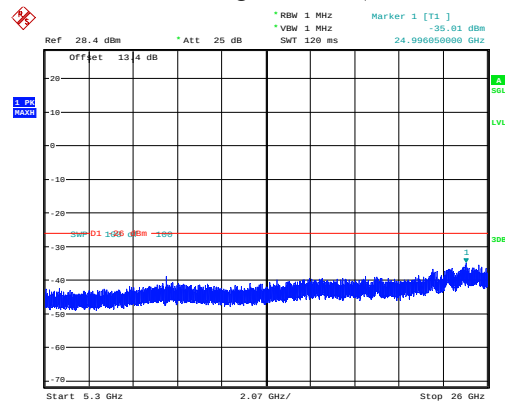
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:05:13

802.11ax he20, High Channel(5.1GHz~5.3GHz)



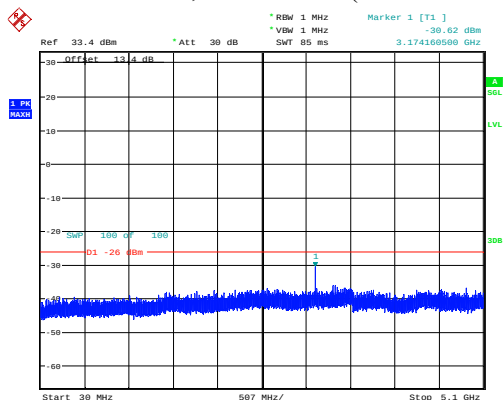
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:36:45

802.11ax he20, High Channel(5.3GHz~26GHz)



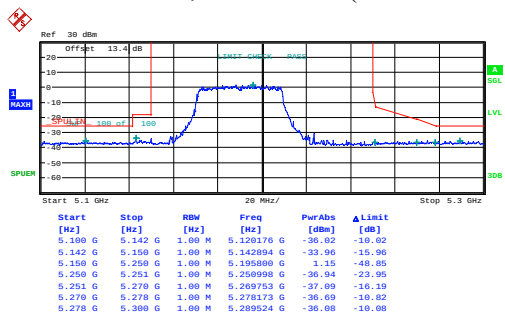
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:05:59

802.11ax he40, Low Channel(30MHz~5.1GHz)



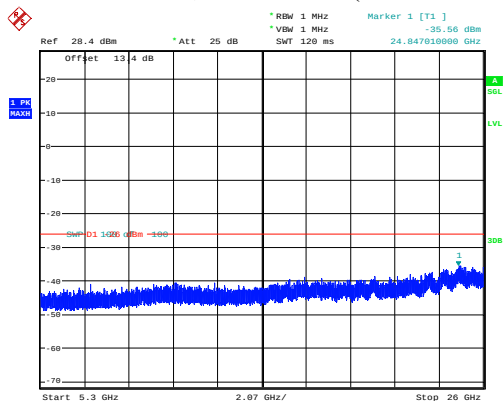
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:23:14

802.11ax he40, Low Channel(5.1GHz~5.3GHz)



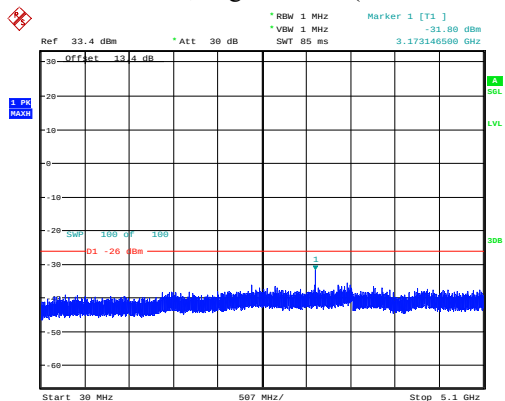
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:21:23

802.11ax he40, Low Channel(5.3GHz~26GHz)



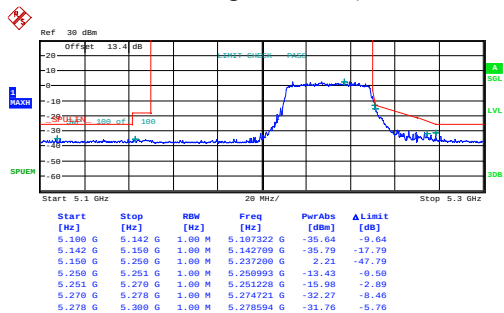
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Date: 13.DEC.2024 23:24:00

802.11ax he40, High Channel(30MHz~5.1GHz)



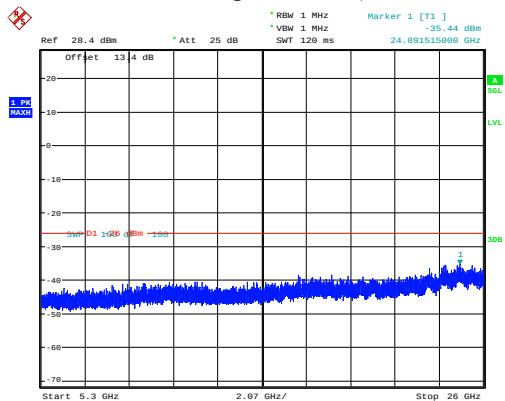
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Date: 13.DEC.2024 23:15:53

802.11ax he40, High Channel(5.1GHz~5.3GHz)



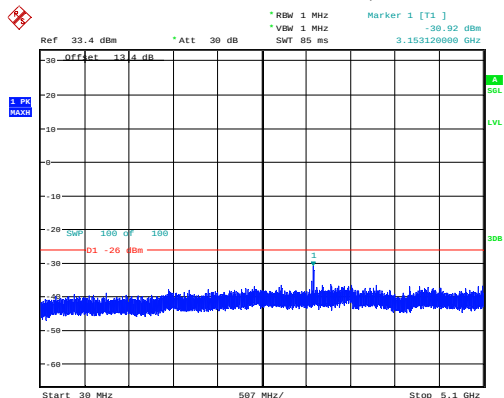
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:14:13

802.11ax he40, High Channel(5.3GHz~26GHz)

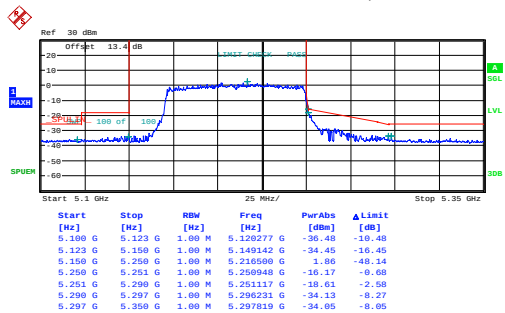


ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:16:39

802.11ax he80, Middle Channel(30MHz~5.1GHz)



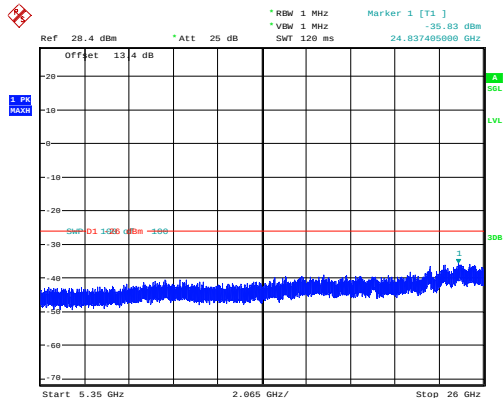
802.11ax he80, Middle Channel(5.1GHz~5.3GHz)



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 19.DEC.2024 17:52:07

ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 19.DEC.2024 17:47:14

802.11ax he80, Middle Channel(5.35GHz~26GHz)



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 19.DEC.2024 17:52:53

4.5 Adjacent Channel Power

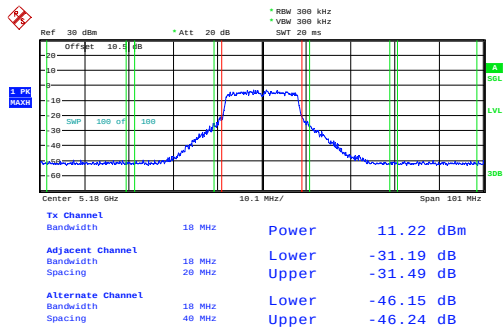
Test Condition: NV

W52

Mode	Frequency Offset (MHz)	Result(dBc)			Limit (dBc)	Verdict
		Low Channel	Middle Channel	High Channel		
802.11a	-20	31.19	31.63	31.72	≥ 25	Pass
	+20	31.49	31.15	30.99	≥ 25	Pass
	-40	46.15	46.75	40.77	≥ 40	Pass
	+40	46.24	46.60	40.86	≥ 40	Pass
802.11n ht20	-20	27.81	27.78	27.70	≥ 25	Pass
	+20	27.62	27.58	27.76	≥ 25	Pass
	-40	43.11	43.73	44.71	≥ 40	Pass
	+40	42.88	43.68	44.61	≥ 40	Pass
802.11n ht40	-40	32.48	/	32.88	≥ 25	Pass
	+40	31.44	/	31.88	≥ 25	Pass
	-80	40.62	/	41.49	≥ 40	Pass
	+80	40.61	/	41.37	≥ 40	Pass
802.11ac vht80	-80	/	34.91	/	≥ 25	Pass
	+80	/	33.44	/	≥ 25	Pass
802.11ax he20	-20	27.67	27.28	28.32	≥ 25	Pass
	+20	27.42	27.80	27.02	≥ 25	Pass
	-40	42.00	42.32	43.31	≥ 40	Pass
	+40	41.97	42.41	43.33	≥ 40	Pass
802.11ax he40	-40	32.78	/	32.98	≥ 25	Pass
	+40	32.64	/	32.60	≥ 25	Pass
	-80	41.38	/	42.22	≥ 40	Pass
	+80	41.41	/	42.24	≥ 40	Pass
802.11ax he80	-80	/	36.08	/	≥ 25	Pass
	+80	/	34.15	/	≥ 25	Pass

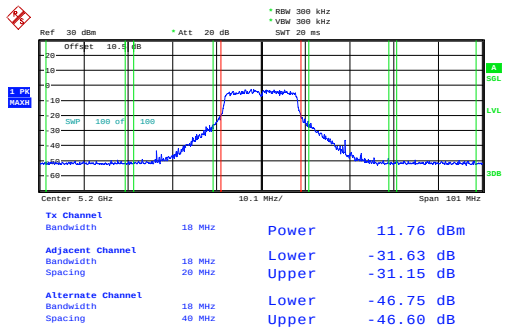
W52, Test Condition: NV

802.11a, Low Channel



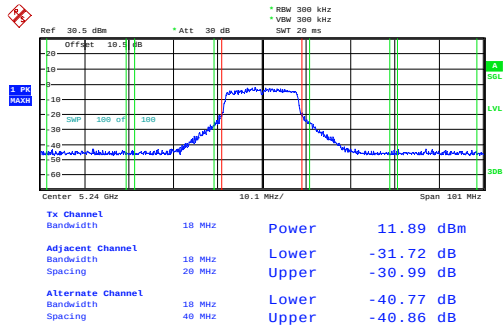
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:10:02

802.11a, Middle Channel



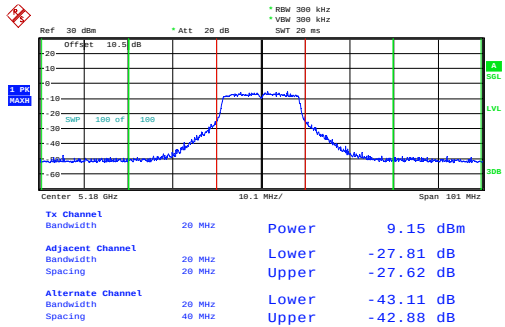
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 21:59:28

802.11a, High Channel



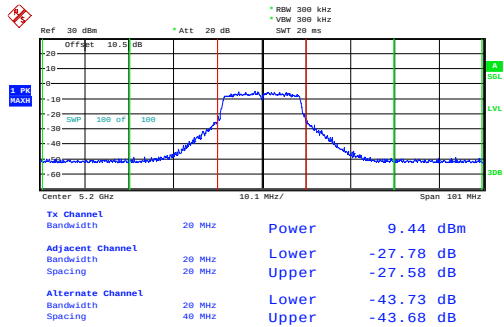
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:47:38

802.11n ht20, Low Channel



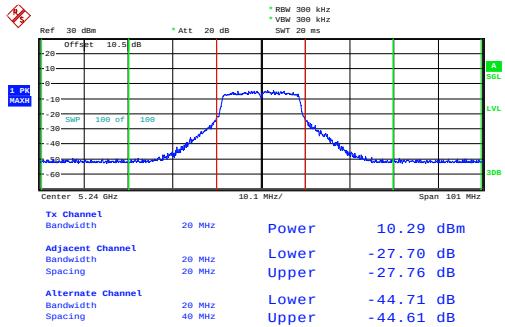
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:01:49

802.11n ht20, Middle Channel



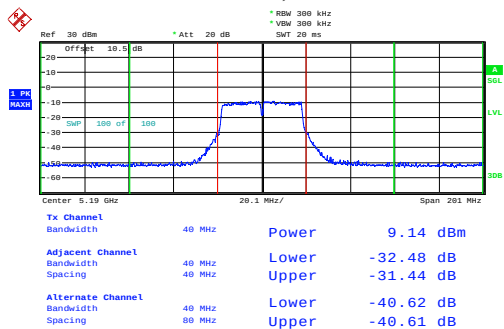
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:02:26

802.11n ht20, High Channel



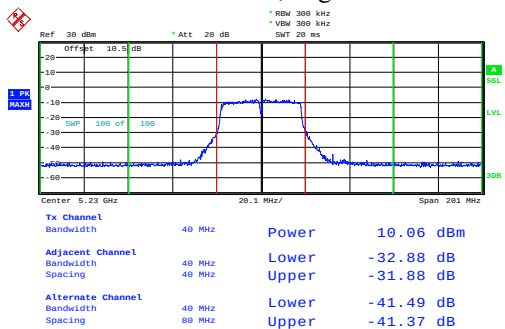
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:03:03

802.11n ht40, Low Channel



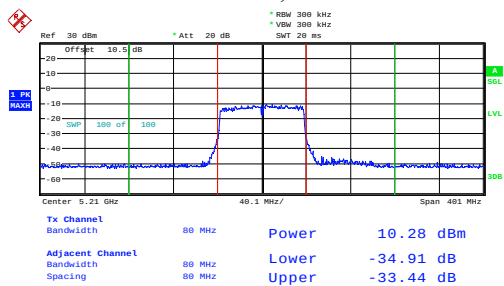
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11.DEC.2024 23:59:45

802.11n ht40, High Channel



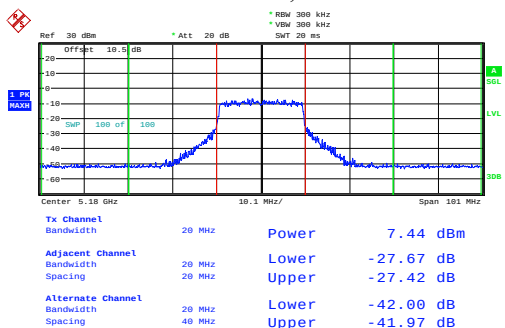
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:00:48

802.11ac vht80, Middle Channel



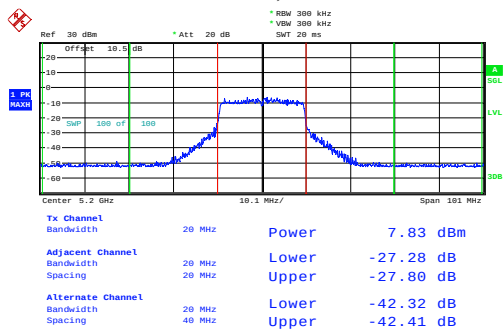
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 17:08:50

802.11ax he20, Low Channel



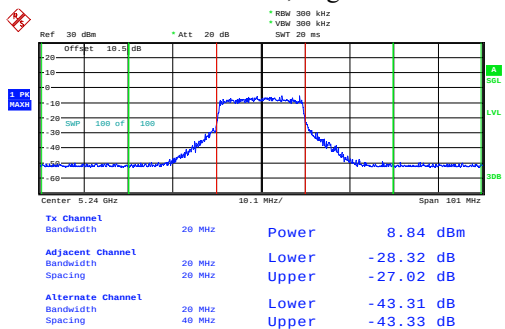
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:57:48

802.11ax he20, Middle Channel



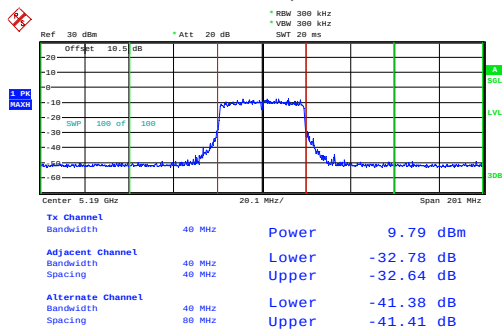
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:49:51

802.11ax he20, High Channel



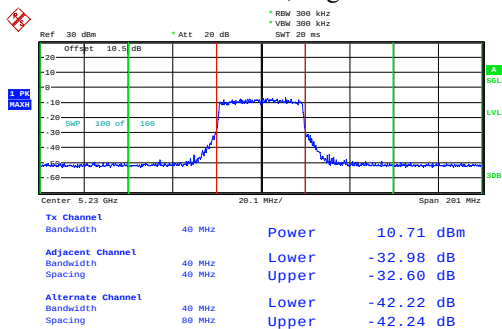
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:00:42

802.11ax he40, Low Channel



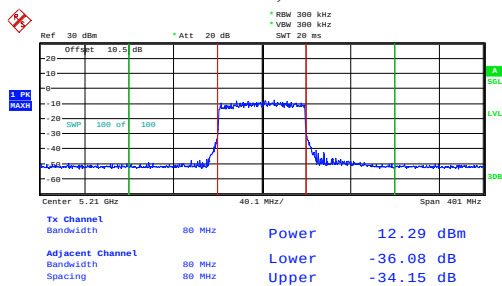
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:27:12

802.11ax he40, High Channel



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:29:22

802.11ax he80, Middle Channel



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 19.DEC.2024 17:51:08

4.6 Antenna Output Power and Antenna Power Tolerance

Declared Power:

Mode	Antenna Gain (dBi)	Declared Power (mW/MHz)
802.11a	2.86	0.30
802.11n ht20		0.19
802.11n ht40		0.09
802.11ac vht80		0.05
802.11ax he20		0.09
802.11ax he40		0.07
802.11ax he80		0.04

Mode	Channel	Reading (dBm/MHz)	Antenna Output Power(mW/MHz)		Antenna Output Tolerance (%)		EIRP (mW/MHz)		Verdict
			Result	Limit	Result	Limit	Result	Limit	
802.11a	Low	-5.19	0.303	≤ 10	1.00	-80~+20	0.585	10	Pass
	Middle	-5.63	0.274	≤ 10	-8.67	-80~+20	0.529	10	Pass
	High	-5.20	0.302	≤ 10	0.67	-80~+20	0.583	10	Pass
802.11n ht20	Low	-7.61	0.173	≤ 10	-8.95	-80~+20	0.334	10	Pass
	Middle	-7.34	0.185	≤ 10	-2.63	-80~+20	0.357	10	Pass
	High	-7.41	0.182	≤ 10	-4.21	-80~+20	0.352	10	Pass
802.11n ht40	Low	-10.46	0.090	≤ 5	0.00	-80~+20	0.174	5	Pass
	High	-10.40	0.091	≤ 5	1.11	-80~+20	0.176	5	Pass
802.11ac vht80	Middle	-13.43	0.045	≤ 2.5	-10.00	-80~+20	0.087	2.5	Pass
802.11ax he20	Low	-10.41	0.091	≤ 10	1.11	-80~+20	0.176	10	Pass
	Middle	-10.69	0.085	≤ 10	-5.56	-80~+20	0.164	10	Pass
	High	-10.74	0.084	≤ 10	-6.67	-80~+20	0.162	10	Pass
802.11ax he40	Low	-11.60	0.069	≤ 5	-1.43	-80~+20	0.133	5	Pass
	High	-12.06	0.062	≤ 5	-11.43	-80~+20	0.120	5	Pass
802.11ax he80	Middle	-13.68	0.043	≤ 2.5	7.50	-80~+20	0.083	2.5	Pass

Note:

Antenna output power(mW/MHz) = $10^{\{\text{Reading(dBm/MHz)} / 10\}}$

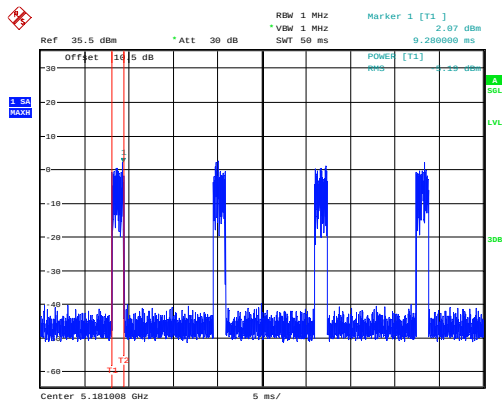
Antenna output power tolerance (%) = (Antenna output power - declared power) / declared power * 100

EIRP (mW/MHz) = Antenna output power(mW/MHz) * $10^{\{\text{Antenna gain(dBi)} / 10\}}$.

Test Plots for Antenna Power:

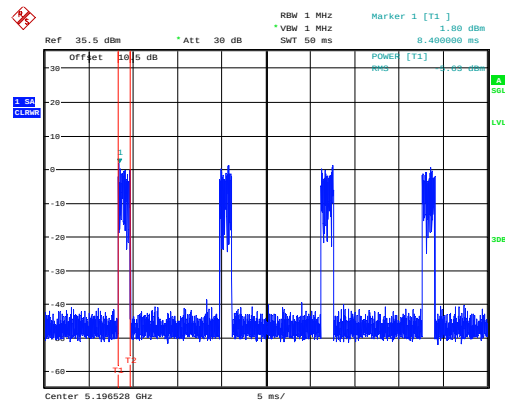
W52, Test Condition: NV

802.11a, Low Channel



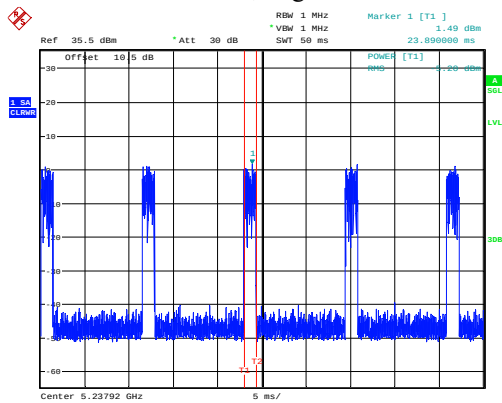
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 20.DEC.2024 20:17:41

802.11a, Middle Channel



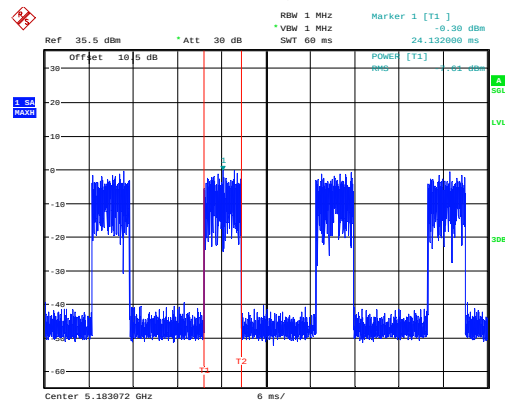
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 20.DEC.2024 20:28:22

802.11a, High Channel



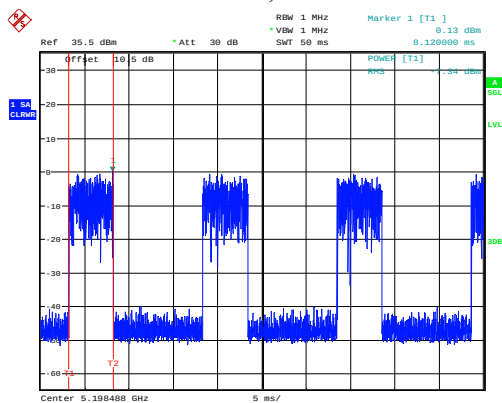
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 20.DEC.2024 20:38:12

802.11n ht20, Low Channel



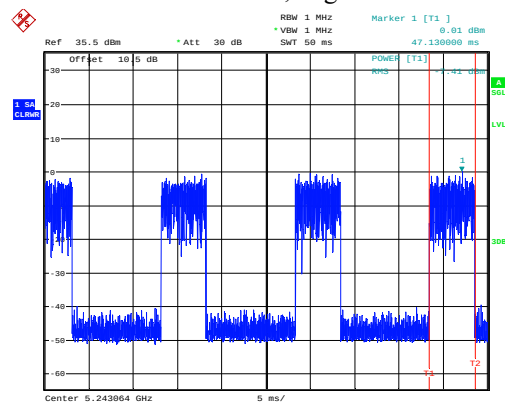
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 20.DEC.2024 20:44:43

802.11n ht20, Middle Channel



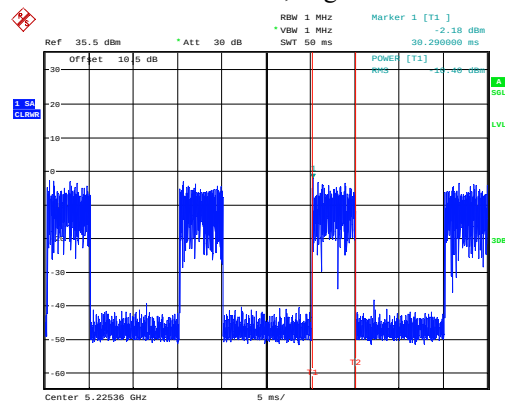
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 20.DEC.2024 20:50:19

802.11n ht20, High Channel



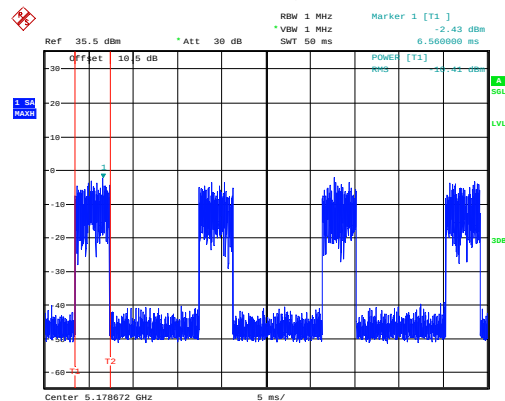
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 20.DEC.2024 20:56:35

802.11n ht40, High Channel



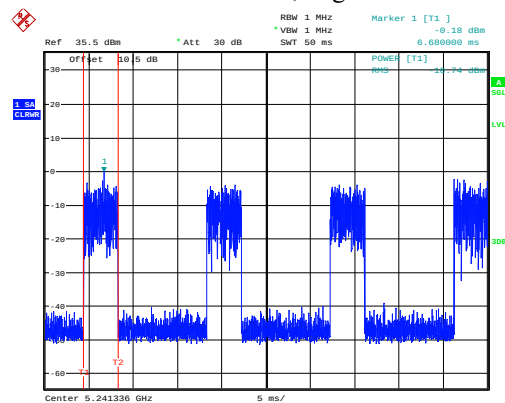
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 20.DEC.2024 20:11:41

802.11ax he20, Low Channel



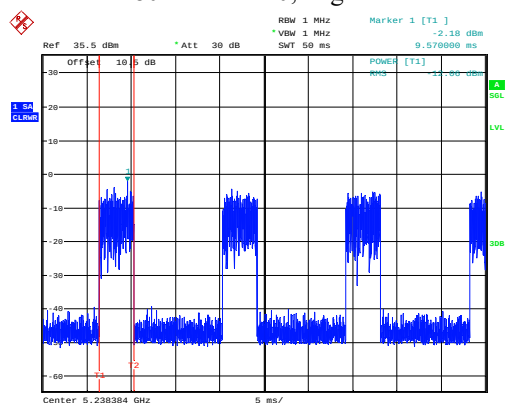
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 20.DEC.2024 21:05:04

802.11ax he20, High Channel



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 20.DEC.2024 21:15:51

802.11ax he40, High Channel



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 20.DEC.2024 21:27:33

Ref 35.5 dBm * Att 30 dB RBW 1 MHz Marker 1 [T1] -4.19 dBm
 * VBW 1 MHz SWT 50 ms 19.070000 ms

Offset 10.5 dB POWER [T1] 11.08 dBm
 1 SA 1.50 dBm

Center 5.218768 GHz 5 ms/

ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 20.DEC.2024 21:33:34

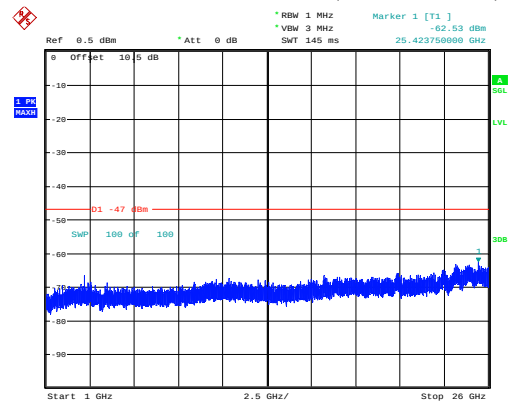
4.7 Receiver Secondary Radiated Emission Strength

Test Condition: NV

W52

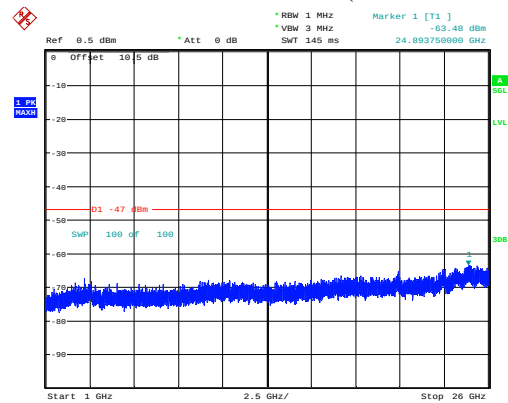
Mode	Channel	Frequency Range		Max.Emission Located(MHz)	Max.Emission		Limit (nW)	Verdict
		Start(MHz)	Stop(MHz)		Result (dBm)	Result (nW)		
802.11a	Low	30	1000	267.89	-73.42	0.045	4	Pass
		1000	26000	25423.75	-62.53	0.558	20	Pass
	Middle	30	1000	902.61	-73.69	0.043	4	Pass
		1000	26000	24893.75	-63.48	0.449	20	Pass
	High	30	1000	222.69	-72.69	0.054	4	Pass
		1000	26000	24992.50	-63.06	0.494	20	Pass
802.11n ht20	Low	30	1000	733.40	-73.43	0.045	4	Pass
		1000	26000	24911.25	-62.62	0.547	20	Pass
	Middle	30	1000	692.12	-73.76	0.042	4	Pass
		1000	26000	24913.75	-62.25	0.596	20	Pass
	High	30	1000	935.93	-72.40	0.058	4	Pass
		1000	26000	24878.75	-62.66	0.542	20	Pass
802.11n ht40	Low	30	1000	173.03	-73.53	0.044	4	Pass
		1000	26000	2401.25	-60.78	0.836	20	Pass
	High	30	1000	478.92	-73.02	0.050	4	Pass
		1000	26000	24891.25	-61.80	0.661	20	Pass
802.11ac vht80	Middle	30	1000	631.89	-73.60	0.044	4	Pass
		1000	26000	25728.75	-62.00	0.631	20	Pass
802.11ax he20	Low	30	1000	366.93	-73.61	0.044	4	Pass
		1000	26000	24865.00	-62.97	0.505	20	Pass
	Middle	30	1000	919.64	-73.54	0.044	4	Pass
		1000	26000	24862.50	-62.83	0.521	20	Pass
	High	30	1000	539.74	-73.53	0.044	4	Pass
		1000	26000	25006.25	-62.86	0.518	20	Pass
802.11ax he40	Low	30	1000	690.13	-72.01	0.063	4	Pass
		1000	26000	24880.00	-62.86	0.518	20	Pass
	High	30	1000	658.66	-72.95	0.051	4	Pass
		1000	26000	24922.50	-63.07	0.493	20	Pass
802.11ax he80	Middle	30	1000	923.86	-73.15	0.048	4	Pass
		1000	26000	2460.00	-60.26	0.942	20	Pass

802.11a, Low Channel(30MHz~1GHz)



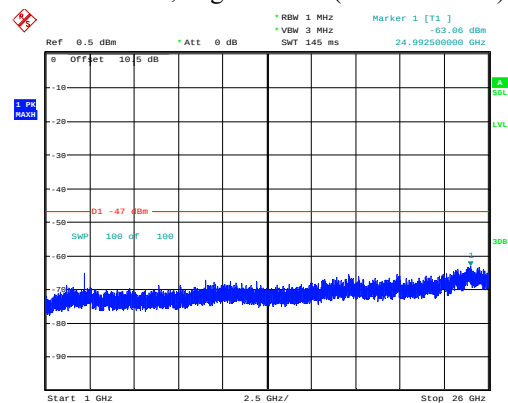
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:36:30

802.11a, Middle Channel(1GHz~26GHz)



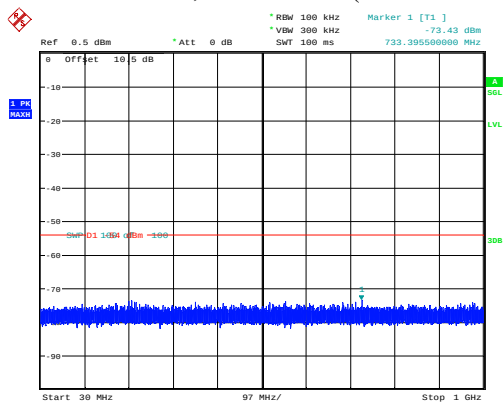
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:38:01

802.11a, High Channel(1GHz~26GHz)



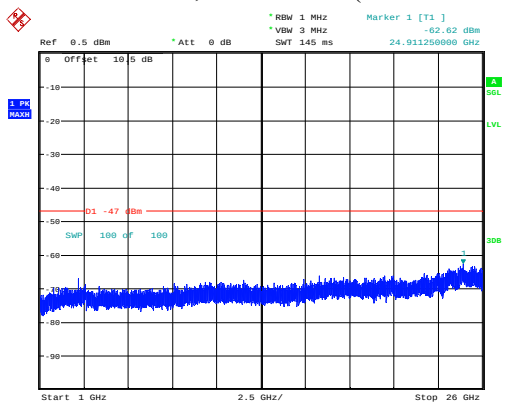
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:39:38

802.11n ht20, Low Channel(30MHz~1GHz)



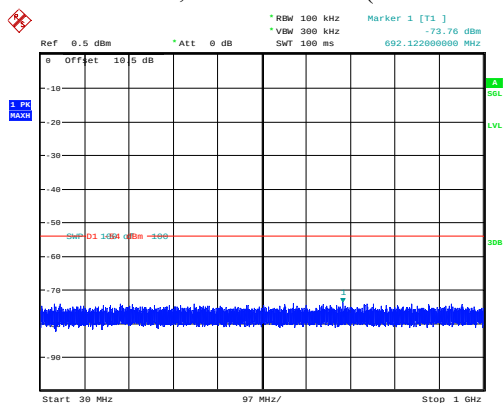
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:40:16

802.11n ht20, Low Channel(1GHz~26GHz)



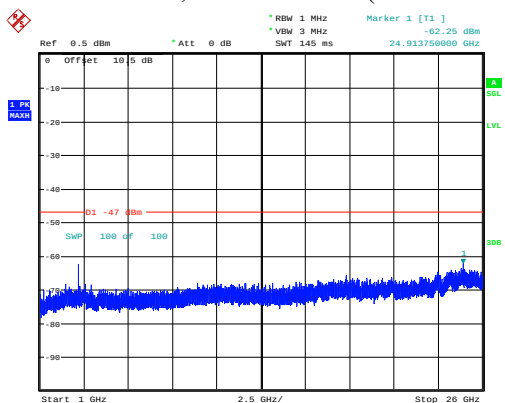
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:41:12

802.11n ht20, Middle Channel(30MHz~1GHz)



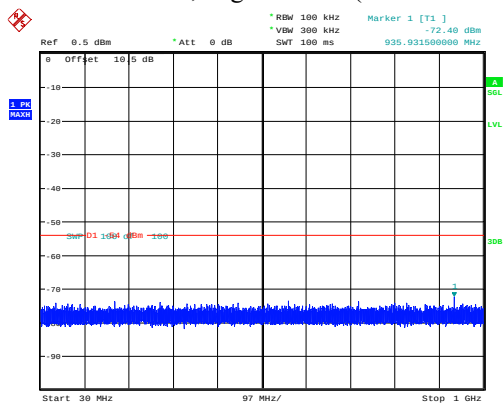
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:41:48

802.11n ht20, Middle Channel(1GHz~26GHz)



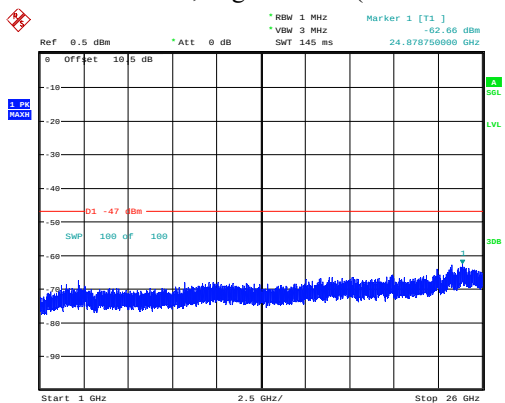
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:42:44

802.11n ht20, High Channel(30MHz~1GHz)



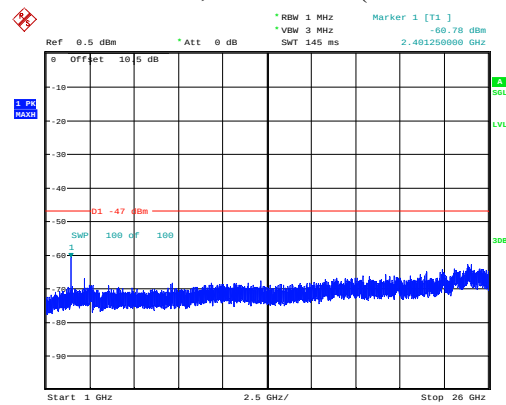
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:43:20

802.11n ht20, High Channel(1GHz~26GHz)



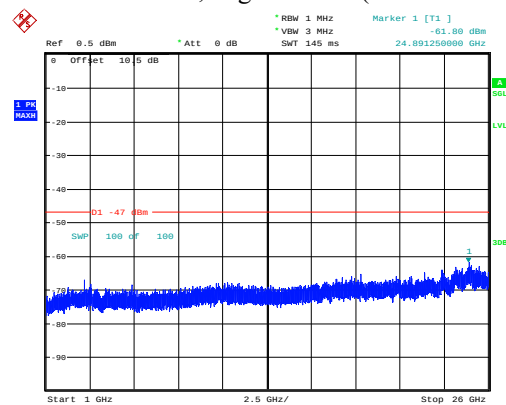
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:44:16

802.11n ht40, Low Channel(1GHz~26GHz)



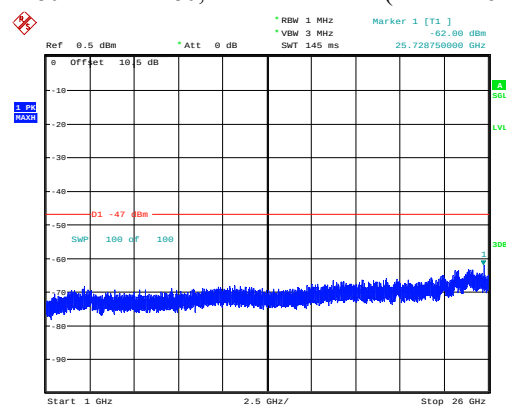
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:45:49

802.11n ht40, High Channel(1GHz~26GHz)



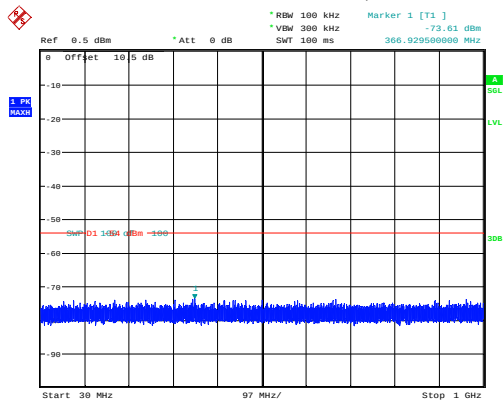
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:47:21

802.11ac vht80, Middle Channel(1GHz~26GHz)



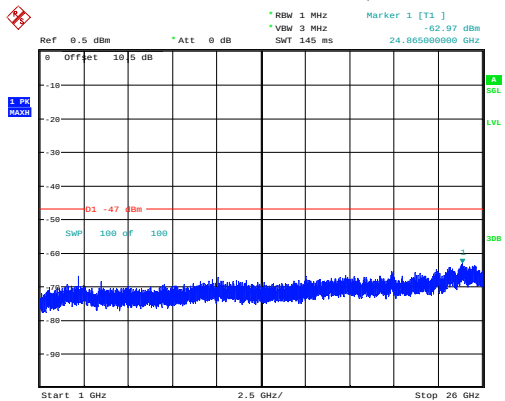
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12.DEC.2024 00:48:56

802.11ax he20, Low Channel(30MHz~1GHz)



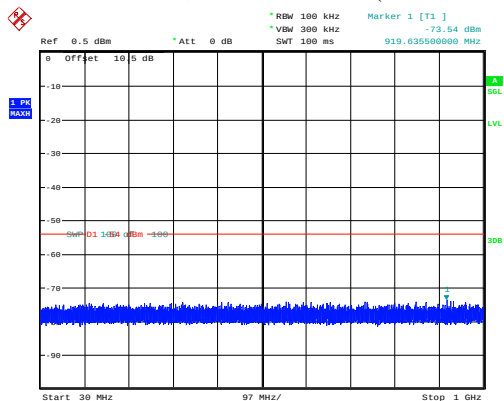
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:35:00

802.11ax he20, Low Channel(1GHz~26GHz)



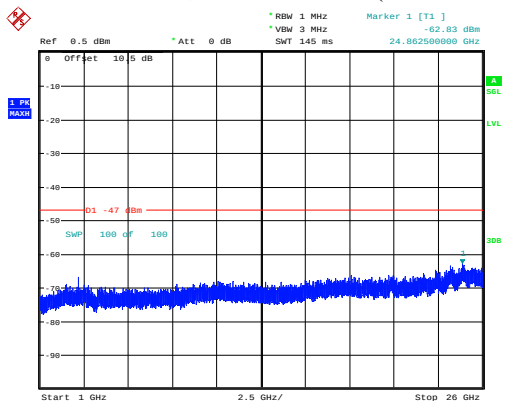
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:35:55

802.11ax he20, Middle Channel(30MHz~1GHz)



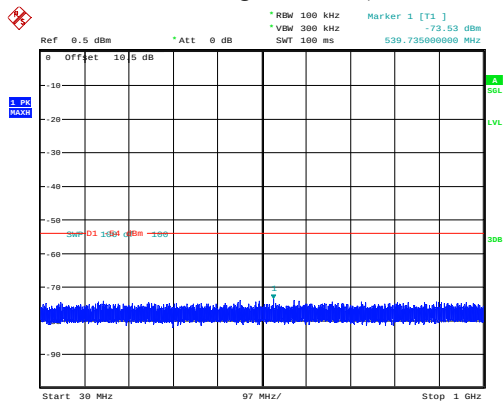
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:36:32

802.11ax he20, Middle Channel(1GHz~26GHz)



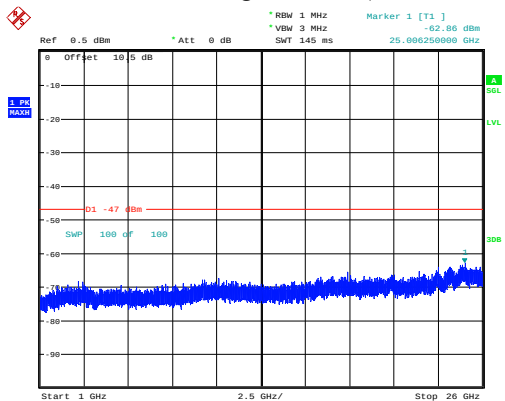
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:37:27

802.11ax he20, High Channel(30MHz~1GHz)



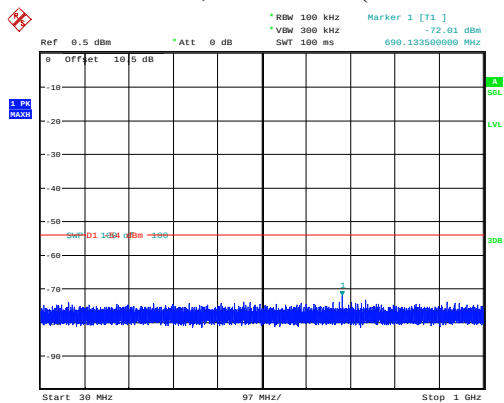
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:38:04

802.11ax he20, High Channel(1GHz~26GHz)



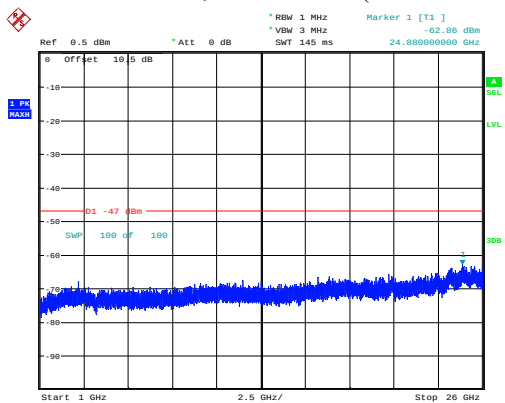
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:38:59

802.11ax he40, Low Channel(30MHz~1GHz)



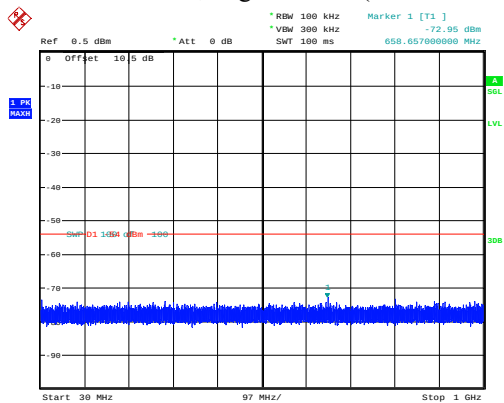
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:39:36

802.11ax he40, Low Channel(1GHz~26GHz)



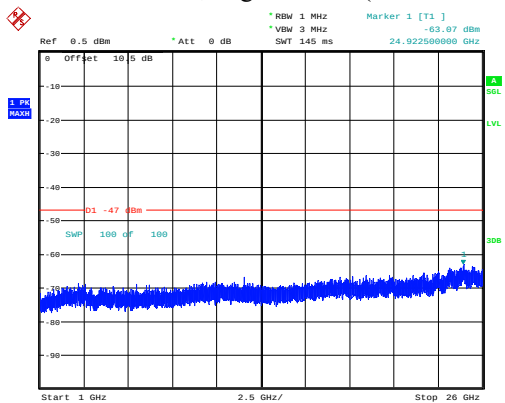
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:40:31

802.11ax he40, High Channel(30MHz~1GHz)



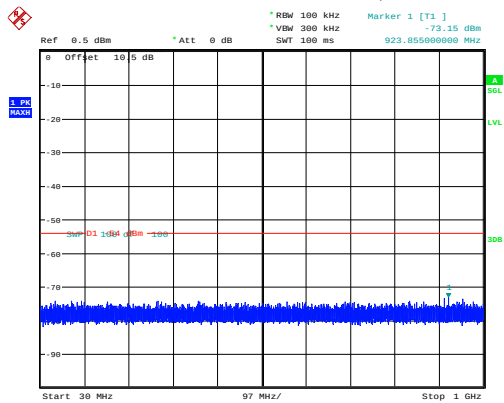
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:41:07

802.11ax he40, High Channel(1GHz~26GHz)



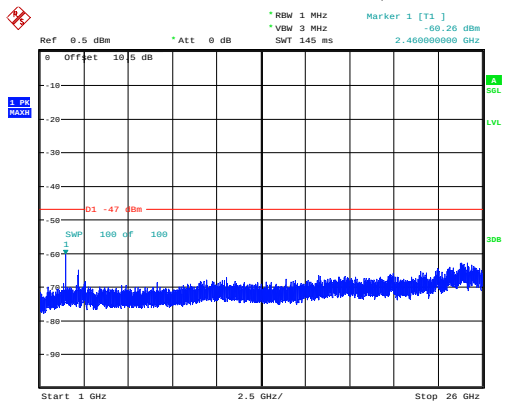
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:42:03

802.11ax he80, Middle Channel(30MHz~1GHz)



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 19.DEC.2024 18:19:51

802.11ax he80, Middle Channel(1GHz~26GHz)



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 19.DEC.2024 18:20:46

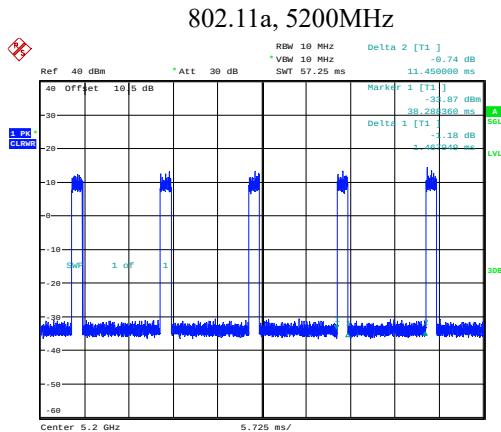
4.8 Transmission Burst Length

Test Result: Compliant. Please refers to following table and plots

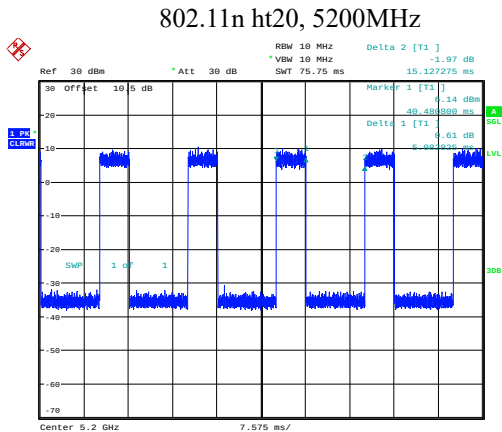
Test Condition: NV

W52

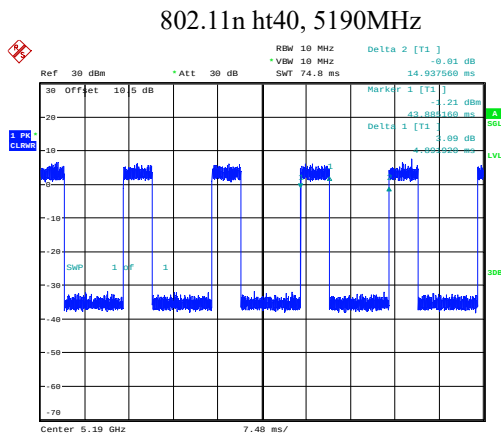
Test Mode	Test Frequency (MHz)	Transmission Burst Length (ms)	Limit	Verdict
802.11a	5200	1.468	≤ 8	Pass
802.11n ht20	5200	5.083	≤ 8	Pass
802.11n ht40	5190	4.892	≤ 8	Pass
802.11ac vht80	5210	4.516	≤ 8	Pass
802.11ax he20	5200	3.861	≤ 8	Pass
802.11ax he40	5190	3.854	≤ 8	Pass
802.11ax he80	5210	3.688	≤ 8	Pass



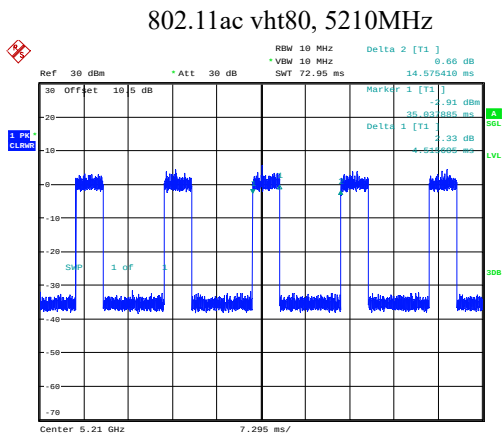
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13. DEC. 2024 21:55:19



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12. DEC. 2024 00:20:06

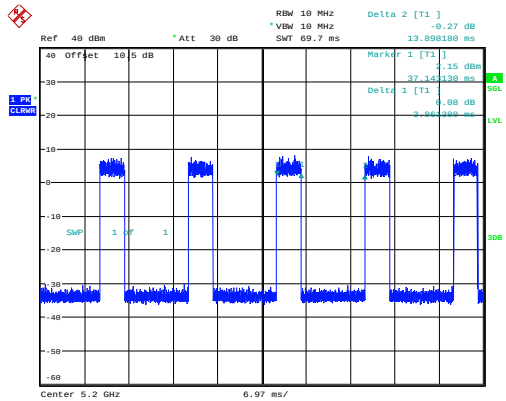


ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 12. DEC. 2024 00:14:18



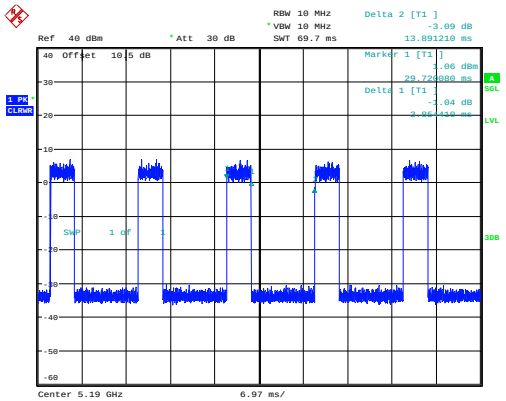
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 11. DEC. 2024 23:33:09

802.11ax he20, 5200MHz



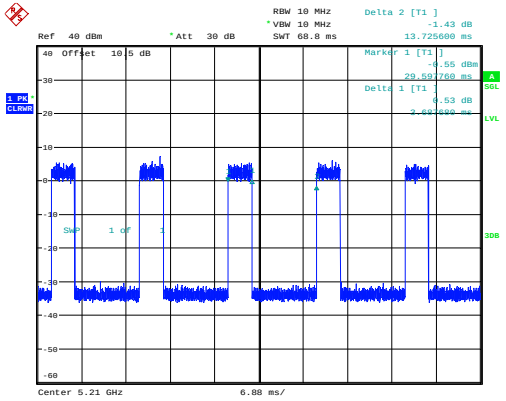
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 22:46:51

802.11ax he40, 5190MHz



ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 13.DEC.2024 23:18:03

802.11ax he80, 5210MHz



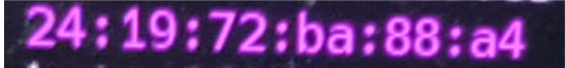
ProjectNo.:2403Z107561E-RF Tester:Chin Qin
Date: 19.DEC.2024 17:48:10

4.9 Carrier Sense Capability

Test Result: Compliant. EUT stop RF transmission signal after carrier inject to EUT, the test result is good

4.10 Interference Prevention Function

Test Result: Compliant, please see the below table.

Item	Result	Requirement	Verdict
Methodology to transmit ID Code:	Automatically	Automatically	Good
Methodology to receive ID Code:	Automatically	Automatically	Good
Identification Codes (ID Codes):	24:19:72:ba:88:a4	/	/
Bits of ID Codes:	48 bits	48 bits or more	Compliant
Screenshot:			

4.11 Construction Protection Confirmation

Result: Compliant. please see the below table.

☐	Sealed with screws.
☐	Plastic chassis is being welded using ultrasonic waves.
☐	Cover is glued using a special adhesive.
☐	Metal covers are spot-fused.
☐	Cover is specially interlocked.
☒	RF and Modulation components are covered with shielding case and this shielding case is interlocked.
☐	Other
If 'Other', describe the method here. Then delete this text.	

Photographs



5. EUT PHOTOGRAPHS

Please refer to the attachment 2403Z107561E-RF-EXP EUT External Photographs and 2403Z107561E-RF-INP EUT Internal Photographs.

6. TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2403Z107561E-RF-TSP for Test Setup Photographs.

===== END OF REPORT =====