

TEST REPORT

Applicant Name: Shenzhen Neutop Optoelectronics Co., Ltd
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Report Number: 2401A110151E-RF-07A

Test Standard (s)

Item 19 of Article 2 Paragraph 1

Sample Description

Product Type: CastPlay
Model No.: WD-TX01
Multiple Model(s) No.: TX02
Trade Mark: N/A
Date Received: 2024-12-12
Issue Date: 2025-03-24

Test Result:	Pass▲
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▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Allen Bai

Allen Bai
RF Engineer

Approved By:

Nancy Wang

Nancy Wang
RF Supervisor

Note: The information marked # is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401A110151E-RF-07A	Original Report	2025-03-24

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product		CastPlay
Tested Model		WD-TX01
Multiple Model(s)		TX02
Technical Parameters	Support Technical	Wi-Fi
	Mode	802.11b/g/n20
	Modulation Type	DSSS, OFDM
	Frequency Range	2412-2472MHz
	Rated Output Power[#]	802.11b: 7.5 mW/MHz; 802.11g: 4 mW/MHz; 802.11n20: 1.8 mW/MHz
	Antenna Gain[#]	0 dBi (It is provided by the applicant)
Nominal Power Supply		DC 5V from HDMI Port or USB Port
Sample serial number		2X1J-2 (Assigned by BACL, Shenzhen)
Sample/EUT Status		Good condition
Adapter Information		N/A

Note: The Multiple models are electrically identical with the test model except for model name and colors. Please refer to the declaration letter[#] for more detail, which was provided by manufacturer.

Objective

The objective of the manufacturer is to demonstrate compliance with Radio Law of Japan item 19 of Article 2 Paragraph 1, rules and limits for this device including:

- Frequency Error
- Occupied Bandwidth and Spreading Bandwidth
- Transmitter Spurious Emission and Unwanted Emission Intensity
- Antenna Output Power And Output Power Tolerance
- Interference Prevention Function
- Receiver Spurious Emission Strength
- Carrier sense capability
- Construction Protection Confirmation

Test Method

MIC Notice No.88 Appendix No.43

Measurement Uncertainty

Item	Expanded Measurement uncertainty
Frequency Error	56.6Hz(k=2, 95% level of confidence)
Occupied Channel Bandwidth	109.2kHz(k=2, 95% level of confidence)
RF output power, conducted	0.86dB(k=2, 95% level of confidence)
Unwanted Emission, conducted	1.60dB(k=2, 95% level of confidence)
Duty Cycle	±1%
Temperature	±1°C
Supply voltages	±0.4%
Humidity	±1%

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

Each test item follows test standards and with no deviation.

EUT TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a testing mode by MP_Tool

For 2.4G band, 13 channels are provided to test:

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13	2472
7	2442	/	/

For 802.11b/g/n20 mode, channel 1, 7 and 13 were tested.

The EUT has a power manage chip: STI34061, the fluctuation of power supply to the RF circuit of EUT (excluding power source) is equal to or less than +/- 1%. Exempt extremely high and low supply voltage condition tests, EUT only operated in normal voltage to test all regulations.

EUT Exercise Software

EUT was test in engineering mode and the power level set is as below. The power level was provided by applicant. The worst case as below:

Mode	Data rate	Power Level [#]		
		Low Channel	Middle Channel	High Channel
802.11b	1Mbps	95	95	95
802.11g	6Mbps	90	90	90
802.11n20	MCS0	80	80	80

Equipment Modifications

No modification was made to the EUT tested.

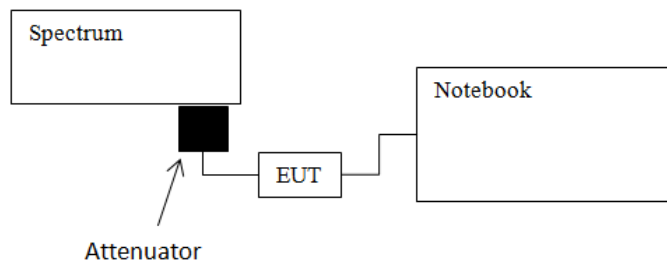
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Dell	Notebook	Latitude E6410	HRYGPM1

External I/O Cable

Cable Description	Length(m)	From/Port	To
Unshielded un-detachable USB cable	0.3	EUT	Notebook

Configuration of Test Setup



SUMMARY OF TEST RESULTS

Item	Description of Test	Result
1	Frequency Error	Compliant
2	Occupied Bandwidth and Spreading Bandwidth	Compliant
3	Transmitter Spurious Emission and Unwanted Emission Intensity	Compliant
4	Antenna Output Power and Output Power Tolerance	Compliant
5	Receiver Spurious Emission and Unwanted Emission Intensity	Compliant
6	Interference Prevention Function	Compliant
7	Construction Protection Confirmation	Compliant
8	Carrier Sensing Function	Not Applicable**
9	Transmission Antenna Gain	Not Applicable
10	Transmission Radiation Angle Width	Not Applicable
11	Frequency Hopping Dwell Time	Not Applicable*
Not Applicable* - Testing is only required for FHSS system devices. Not Applicable - This test item was not required for the output power less than 12.14 dBm/MHz (E.I.R.P) for 20MHz system and 9.13dBm/MHz (E.I.R.P) for 40MHz system. Not Applicable**- The EUT does not have a 40MHz mode		

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date	Calibration Authority	Calibration Method
R&S	Spectrum Analyzer	FSU26	200120	2024/12/04	2025/12/03	BACL Cal	c)
MARCONI	10dB Attenuator	6534/3	2942	2024/06/27	2025/06/26	BACL	d)
Rohde&Schwarz	Wideband Radio Communication Tester	CMW500	141718	2024/08/06	2025/08/05	BACL Cal	c)
WEINSCHTEL	Power Splitter	1515	RH476	2024/06/27	2025/06/26	BACL	d)

Note: Calibration Method

a) Calibration conducted by the National Institute of Information and Communications Technology (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) ~Japan Calibration Service System~

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 other equipment that listed above from a) to c)

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

REQUIREMENTS AND TEST PROCEDURES

Frequency Error

Limit

50 ppm or below

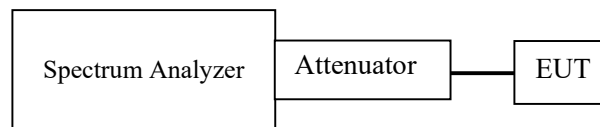
Test Procedure

Set the EUT to the measurement frequency without modulation.

Setting of SA is following as: RB: 10 kHz / VB: 10 kHz / 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.



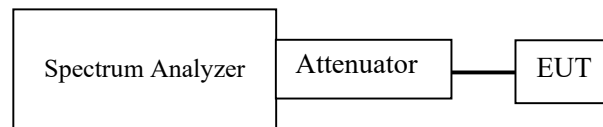
Occupied Bandwidth and Spread Bandwidth

Limit

- Occupied bandwidth: FH $\leq$ 83.5 MHz; DS: $\leq$ 26 MHz; OFDM: $\leq$ 26 MHz & $26 \leq$ OBW $\leq$ 40 MHz, Others $\leq$ 26 MHz
- Spread Bandwidth: $\geq$ 500 kHz (FH, DS), Spread factor $>$ 5.

Test Procedure

1. Setting of SA is following as: RB: 300 kHz / VB: 300 kHz / 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. EUT have transmitted the maximum modulation signal and fixed channelize. SA set to 90% of occupied bandwidth to measure spread bandwidth.
4. Spread Factor=Spread Bandwidth/modulation rate. The modulation rate: MR=1.375 for 802.11b

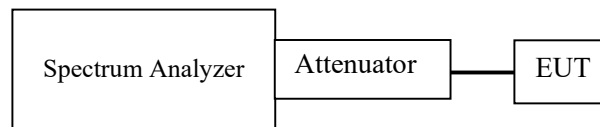


Transmitter spurious emission strength and unwanted emission intensity**Limit**

- $f < 2387 \text{ MHz}, f > 2496.5 \text{ MHz}: \leq 2.5 \mu\text{W/MHz}$
- $2387 \text{ MHz} \leq f \leq 2400 \text{ MHz}; 2483.5 \text{ MHz} < f \leq 2496.5 \text{ MHz}: \leq 25 \mu\text{W/MHz}$

Test Procedure

Measurement System Diagram

**Conditions of Application Equipment (EUT)**

- The modulation state shall be in continuously transmitting mode.

Spectrum Analyzer Conditions

- Span: Measuring Frequency Range
- RBW: 1MHz (frequency range; 1GHz over), 100kHz (frequency range; 30MHz to 1GHz)
- VBW: Same as RBW (1MHz or 100kHz)
- Sweep time: Auto (Minimum time to ensure measurement accuracy.)
- Data points : 400 points or more
- Reference level: Enough level for maximum dynamic range
- Detection: Positive Peak

If the measured value is under the technical standard value, do not need to measure more detail.

Antenna Output Power and Antenna Power Tolerance

Limit

- ≤ 3 mW /MHz(FHSS from 2402-2480 MHz)
- ≤ 10 mW/MHz (OFDM(20MHz system), DSSS from 2400-2483.5 MHz)
- ≤ 5 mW/MHz (OFDM(40MHz system) from 2400-2483.5 MHz)
- ≤ 10 mW (other from 2400-2483.5 MHz)

The Output Power Tolerance must be within +20%, -80%.

E.i.r.p:

- ≤ 12.14 dBm/MHz(OFDM(20MHz system),DSSS form 2400-2483.5MHz)
- ≤ 9.13 dBm/MHz (OFDM(40MHz system) from 2400-2483.5 MHz)

Test Procedure

For FHSS UUT:

Connect the UUT to the spectrum analyzer and use the following settings:

- Frequency to measure (2402 MHz, 2441MHz, and 2480MHz)
- RBW : 1MHz
- VBW : 1MHz
- Span: Wide enough to cover the complete power envelope of the signal of the UUT.
- Detector: Average (see note).
- Trace Mode: Max Hold.

For OFDM, DSSS UUT:

Step 1:

Connect the UUT to the spectrum analyzer and use the following settings:

- Centre Frequency: The centre frequency of the channel under test.
- RBW: 1 MHz.
- VBW: 1 MHz.
- Span: Wide enough to cover the complete power envelope of the signal of the UUT.
- Detector: Peak.
- Trace Mode: Max Hold.

Step 2:

When the trace is complete, find the peak value of the power envelope and record the frequency.

Step 3:

Make the following changes to the settings of the spectrum analyzer:

- Measurement Mode: Time Domain Power
- Centre Frequency: Equal to the frequency recorded in step 2.
- Span: Zero Span.
- Resolution BW: 1 MHz.
- Video BW: 1 MHz.
- Sweep Mode: Single.
- Detector: Sample.
- Trace Mode: Clear Write.

For other UUT:

Make the following changes to the settings of the spectrum analyser:

- Centre Frequency: The centre frequency of the channel under test.
- Span: 5MHz.
- RBW: 3 MHz.
- VBW: 10 MHz.
- Detector: Peak
- Trace Mode: Max Hold.

NOTE: The detector mode "Average" is often referred to as "RMS Average" or "Sample" but do not use Video Average.

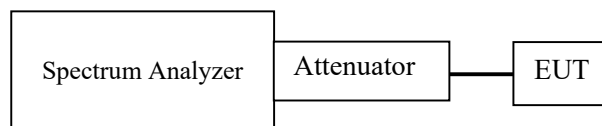
When the trace is complete, use the time domain power function of the analyzer measure the mean power average across one pulse on period, this level is recorded as D.

D shall be recorded in the test report.

The maximum PD, which is e.i.r.p. PSD (spectral density power) or power, is calculated from the above measured value D, and the applicable antenna assembly gain "G" in dBi, according to the formula below. If more than one antenna assembly is intended for this power setting, the gain of the antenna assembly with the highest gain shall be used.

$$PD = D + G$$

Test Setup Block diagram



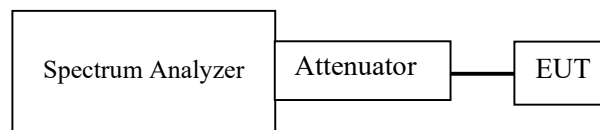
Receiver Spurious Emission and Unwanted Emission Intensity

Limit

- $\leq 4 \text{ nW}$ ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)
- $\leq 20 \text{ nW}$ ($1 \text{ GHz} \leq f \leq 12.5 \text{ GHz}$)

Test Procedure

Measurement System Diagram



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 12.5GHz)
- 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
- Sweep mode: Auto Sweep
- Detection: Positive Peak
- Reference Level: Enough level for maximum dynamic range

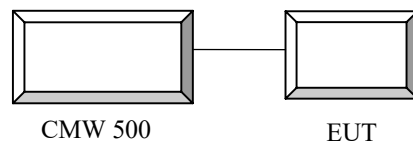
Interference Prevention Function

Requirement

The EUT shall have the interference prevention capability to transmit or to receive the identification automatically, so that sender and receiver shall exclude other equipment.

Test Procedure

Measurement System Diagram



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

1. Transmit the predetermined identification codes from EUT
2. Check the transmitted identification codes with the demodulator.

In the case of receiving the identification codes:

1. Transmit the predetermined identification codes from the counterpart.
2. Check if communication is normal
3. Transmit the signal other than predetermined ID codes from the counterpart.
4. Check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

TEST DATA AND RESULTS

Frequency Error

Test Information:

Sample No.:	2X1J-2	Test Date:	2024/12/24
Test Site:	RF	Test Mode:	Transmitting
Tester:	Kungfumaster Liang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C):	24.4	Relative Humidity: (%)	46	ATM Pressure: (kPa)	101
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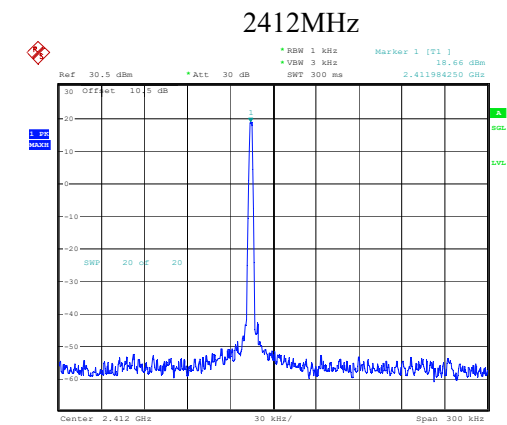
Test Condition: NV

Mode	Frequency (MHz)	Measure Frequency(MHz)	Frequency Tolerance(ppm)	Limit (ppm)	Verdict
Single Carrier	2412	2411.98425	-6.63	± 50	Pass
	2442	2441.97263	-11.06	± 50	Pass
	2472	2471.97263	-10.92	± 50	Pass

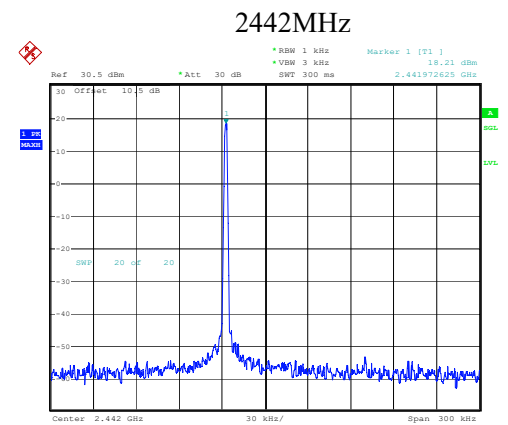
Note:

Frequency Tolerance = (Measure Frequency - Frequency)/Frequency*10^6

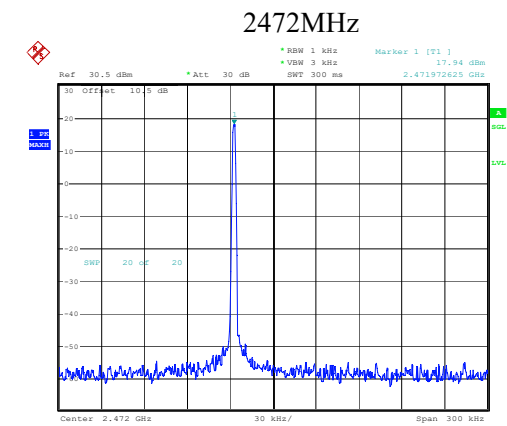
Test Condition: NV



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Date: 24.DEC.2024 14:51:41



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:52:51



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:53:50

Occupied Bandwidth and Spreading Bandwidth

Test Information:

Sample No.:	2X1J-2	Test Date:	2024/12/24
Test Site:	RF	Test Mode:	Transmitting
Tester:	Kungfumaster Liang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C):	24.4	Relative Humidity: (%)	46	ATM Pressure: (kPa)	101
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Test Condition: NV

Mode	Occupied bandwidth (MHz)			Limit(MHz)	Verdict
	Low Channel	Middle Channel	High Channel		
802.11b	13.75	13.90	13.95	≤ 26	Pass
802.11g	16.35	16.35	16.30	≤ 26	Pass
802.11n20	17.45	17.45	17.25	≤ 26	Pass

Spreading bandwidth and Spreading Factor for 802.11b (DSSS)

Test Items	Low Channel	Middle Channel	High Channel	Limit	Verdict
Spreading bandwidth (MHz)	9.05	9.10	9.15	≥ 0.5	Pass
Spreading Factor	6.58	6.62	6.65	≥ 5	Pass

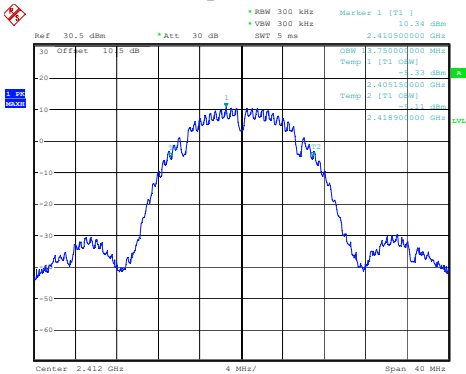
Note1: Spread factor = spread bandwidth/modulation rate

Note2: Modulation rate: 802.11b = 1.375

Test Condition: NV

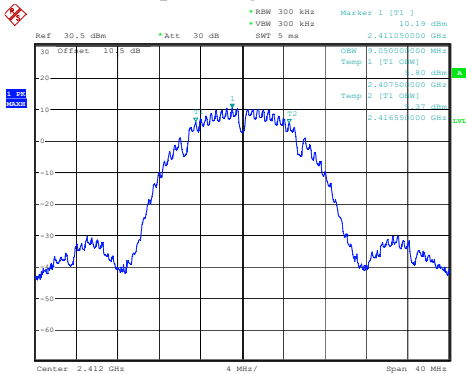
802.11b, Low Channel

Occupied Bandwidth



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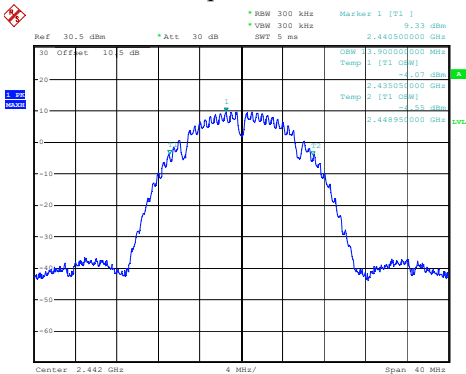
Spreading Bandwidth



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
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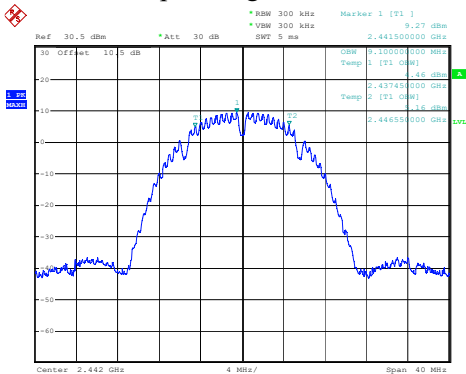
802.11b, Middle Channel

Occupied Bandwidth



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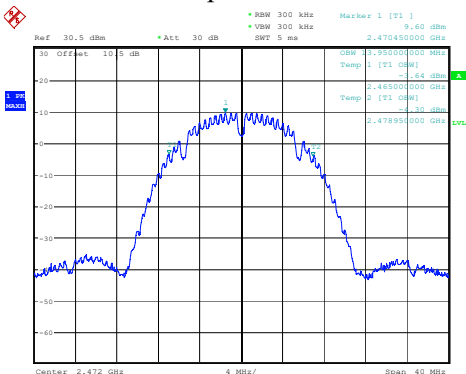
Spreading Bandwidth



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:46:28

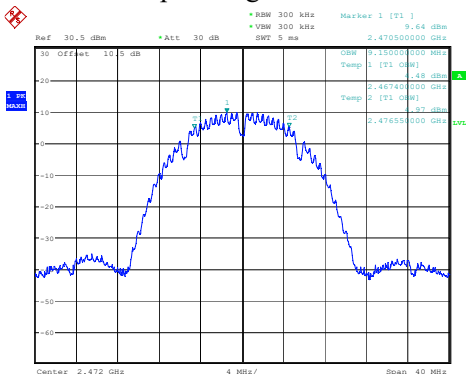
802.11b, High Channel

Occupied Bandwidth



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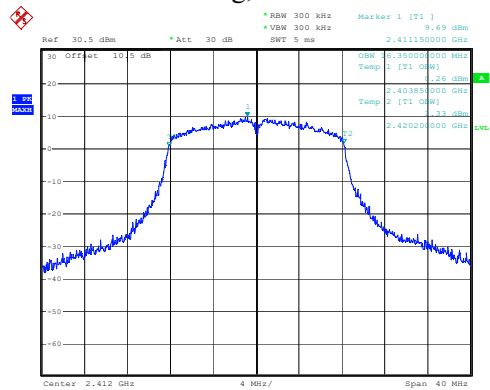
Spreading Bandwidth



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:48:26

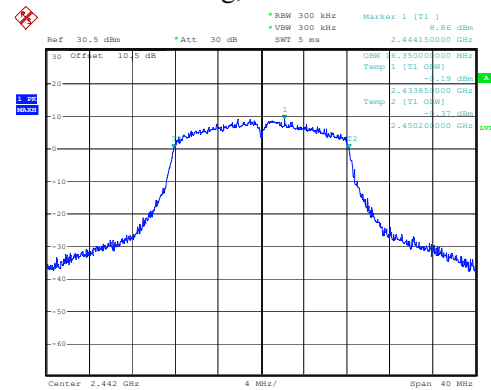
Occupied Bandwidth

802.11g, Low Channel



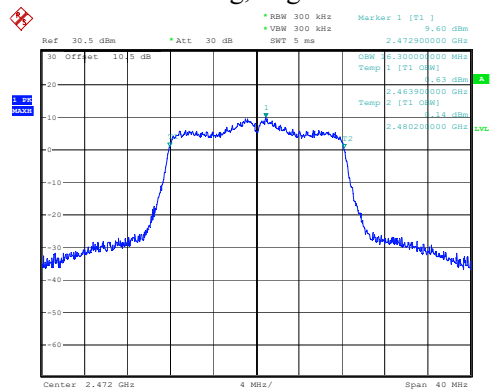
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Date: 24.DEC.2024 13:42:18

802.11g, Middle Channel



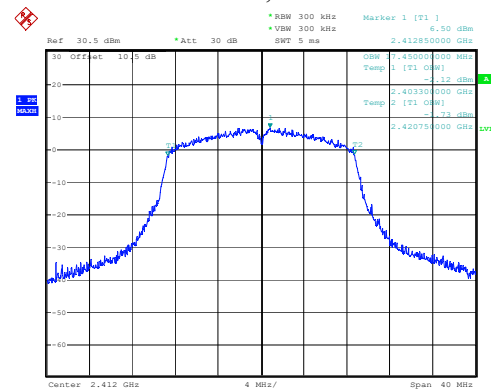
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Date: 24.DEC.2024 13:43:17

802.11g, High Channel



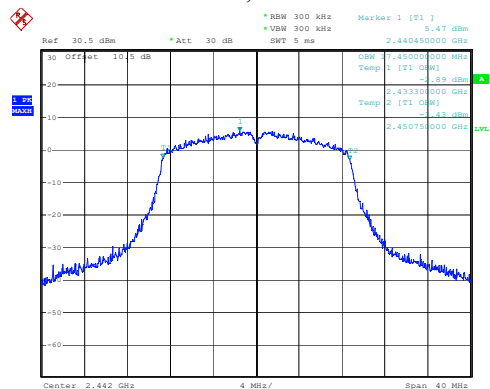
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Date: 24.DEC.2024 13:45:02

802.11n20, Low Channel



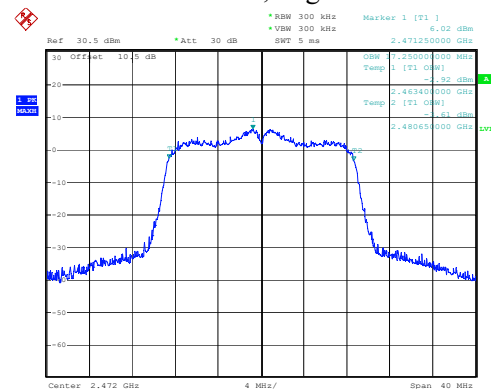
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:54:48

802.11n20, Middle Channel



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:55:50

802.11n20, High Channel



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:57:04

Transmitter Spurious Emission Strength

Test Information:

Sample No.:	2X1J-2	Test Date:	2024/12/24
Test Site:	RF	Test Mode:	Transmitting
Tester:	Kungfumaster Liang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C):	24.4	Relative Humidity: (%)	46	ATM Pressure: (kPa)	101
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Test Condition: NV

802.11b

Channel	Test Band (RBW)	Frequency Range		Max.Emission Located(MHz)	Result (dBm/RBW)	Result (μW/RBW)	Limit (μW/RBW)	Verdict
		Start (MHz)	Stop (MHz)					
Low	Band I (100kHz)	30	1000	97.48	-43.71	0.043	0.25	Pass
	Band II (1MHz)	1000	2387	2386.31	-38.05	0.157	2.50	Pass
	Band III (1MHz)	2387	2400	2397.01	-27.72	1.690	25	Pass
	Band IV (1MHz)	2483.5	2496.5	2484.91	-36.94	0.202	25	Pass
	Band V (1MHz)	2496.5	12500	7237.90	-37.15	0.193	2.50	Pass
Middle	Band I (100kHz)	30	1000	127.58	-44.61	0.035	0.25	Pass
	Band II (1MHz)	1000	2387	2332.85	-38.39	0.145	2.50	Pass
	Band III (1MHz)	2387	2400	2392.44	-38.09	0.155	25	Pass
	Band IV (1MHz)	2483.5	2496.5	2489.93	-37.15	0.193	25	Pass
	Band V (1MHz)	2496.5	12500	10161.84	-37.04	0.198	2.50	Pass
High	Band I (100kHz)	30	1000	157.68	-43.78	0.042	0.25	Pass
	Band II (1MHz)	1000	2387	2283.57	-38.26	0.149	2.50	Pass
	Band III (1MHz)	2387	2400	2389.06	-37.41	0.182	25	Pass
	Band IV (1MHz)	2483.5	2496.5	2488.59	-31.66	0.682	25	Pass
	Band V (1MHz)	2496.5	12500	10777.68	-37.00	0.200	2.50	Pass

802.11g

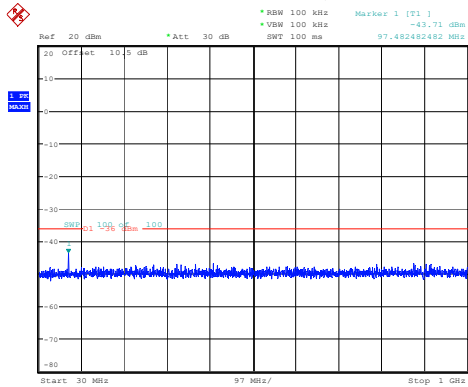
Channel	Test Band (RBW)	Frequency Range		Max.Emission Located(MHz)	Result (dBm/RBW)	Result (μW/RBW)	Limit (μW/RBW)	Verdict
		Start (MHz)	Stop (MHz)					
Low	Band I (100kHz)	30	1000	122.73	-46.91	0.020	0.25	Pass
	Band II (1MHz)	1000	2387	2387	-37.90	0.162	2.50	Pass
	Band III (1MHz)	2387	2400	2400	-18.39	14.488	25	Pass
	Band IV (1MHz)	2483.5	2496.5	2490.77	-37.50	0.178	25	Pass
	Band V (1MHz)	2496.5	12500	12224.63	-37.35	0.184	2.50	Pass
Middle	Band I (100kHz)	30	1000	415.96	-46.75	0.021	0.25	Pass
	Band II (1MHz)	1000	2387	2346.04	-38.70	0.135	2.50	Pass
	Band III (1MHz)	2387	2400	2397.20	-37.31	0.186	25	Pass
	Band IV (1MHz)	2483.5	2496.5	2491.32	-36.92	0.203	25	Pass
	Band V (1MHz)	2496.5	12500	3497.85	-36.80	0.209	2.50	Pass
High	Band I (100kHz)	30	1000	226.62	-46.27	0.024	0.25	Pass
	Band II (1MHz)	1000	2387	2351.60	-38.57	0.139	2.50	Pass
	Band III (1MHz)	2387	2400	2388.76	-38.44	0.143	25	Pass
	Band IV (1MHz)	2483.5	2496.5	2484.40	-21.06	7.834	25	Pass
	Band V (1MHz)	2496.5	12500	2496.50	-36.82	0.208	2.50	Pass

802.11n20

Channel	Test Band (RBW)	Frequency Range		Max.Emission Located(MHz)	Result (dBm/RBW)	Result (μW/RBW)	Limit (μW/RBW)	Verdict
		Start (MHz)	Stop (MHz)					
Low	Band I (100kHz)	30	1000	257.21	-46.87	0.021	0.25	Pass
	Band II (1MHz)	1000	2387	2382.83	-38.55	0.140	2.50	Pass
	Band III (1MHz)	2387	2400	2399.86	-19.26	11.858	25	Pass
	Band IV (1MHz)	2483.5	2496.5	2492.48	-37.26	0.188	25	Pass
	Band V (1MHz)	2496.5	12500	11338.43	-37.52	0.177	2.50	Pass
Middle	Band I (100kHz)	30	1000	690.75	-43.75	0.042	0.25	Pass
	Band II (1MHz)	1000	2387	2338.41	-38.99	0.126	2.50	Pass
	Band III (1MHz)	2387	2400	2388.02	-38.64	0.137	25	Pass
	Band IV (1MHz)	2483.5	2496.5	2492.11	-37.89	0.163	25	Pass
	Band V (1MHz)	2496.5	12500	11703.93	-36.65	0.216	2.50	Pass
High	Band I (100kHz)	30	1000	252.84	-47.22	0.019	0.25	Pass
	Band II (1MHz)	1000	2387	2189.85	-38.93	0.128	2.50	Pass
	Band III (1MHz)	2387	2400	2390.81	-38.49	0.142	25	Pass
	Band IV (1MHz)	2483.5	2496.5	2485.39	-23.96	4.018	25	Pass
	Band V (1MHz)	2496.5	12500	11338.43	-37.04	0.198	2.50	Pass

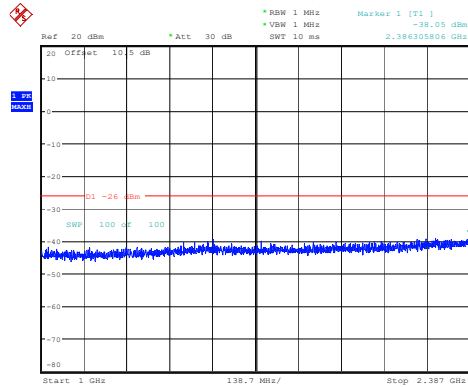
Test Condition: NV

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



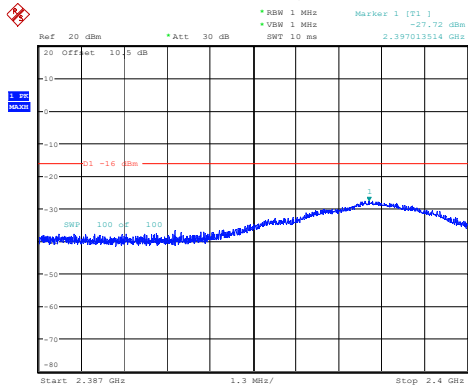
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:44:56

802.11b, Low Channel(1GHz~2.387GHz)



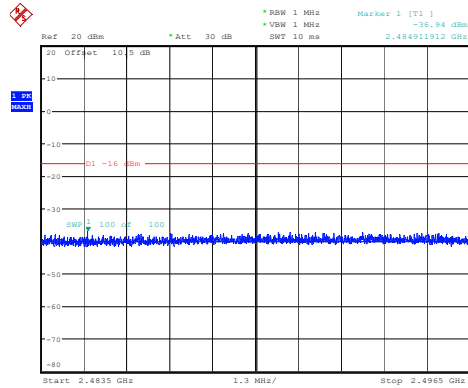
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:45:06

802.11b, Low Channel(2.387GHz~2.4GHz)



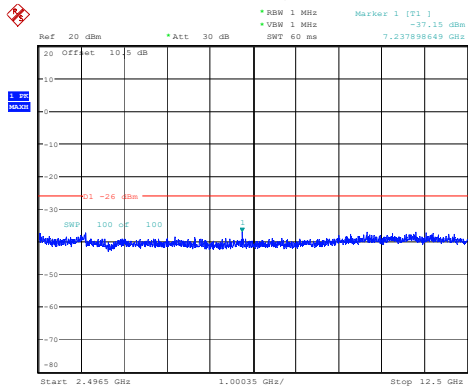
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:45:14

802.11b, Low Channel(2.4835GHz~2.4965GHz)



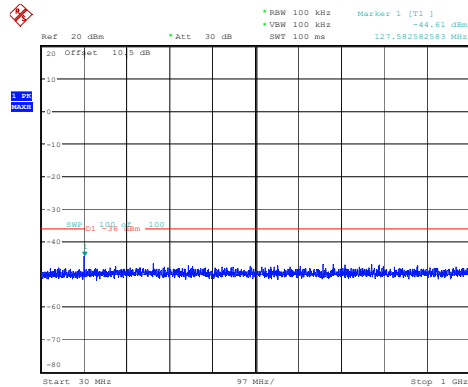
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:45:21

802.11b, Low Channel(2.4965GHz~12.5GHz)



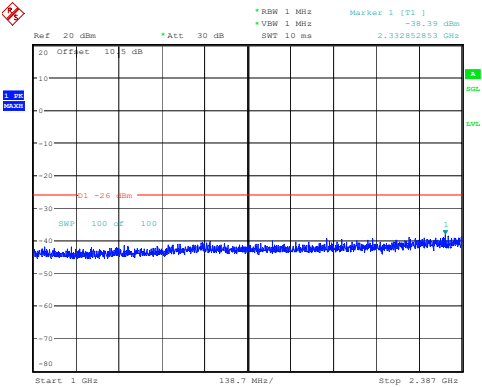
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:45:46

802.11b, Middle Channel(30MHz~1GHz)



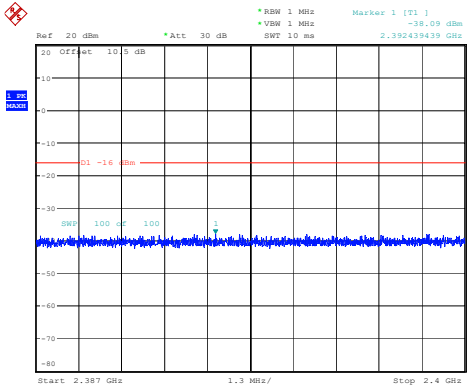
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:46:43

802.11b, Middle Channel(1GHz~2.387GHz)



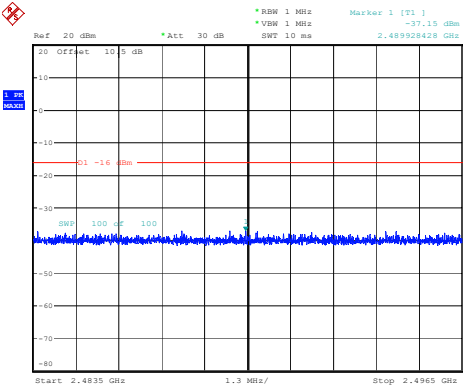
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Date: 24.DEC.2024 14:46:53

802.11b, Middle Channel(2.387GHz~2.4GHz)



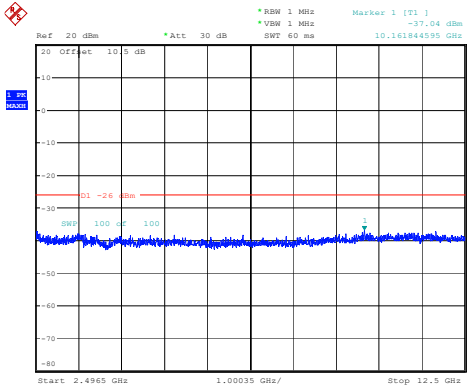
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:47:01

802.11b, Middle Channel(2.4835GHz~2.4965GHz)



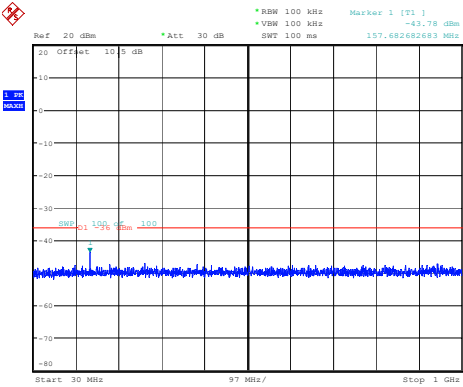
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Date: 24.DEC.2024 14:47:09

802.11b, Middle Channel(2.4965GHz~12.5GHz)



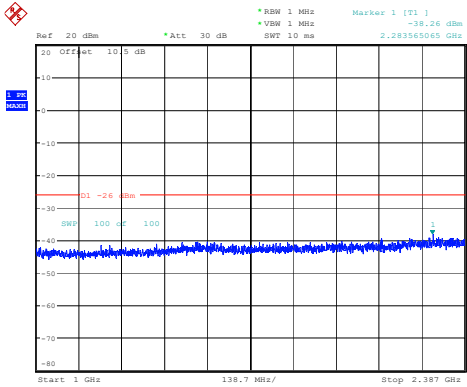
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:47:34

802.11b, High Channel(30MHz~1GHz)



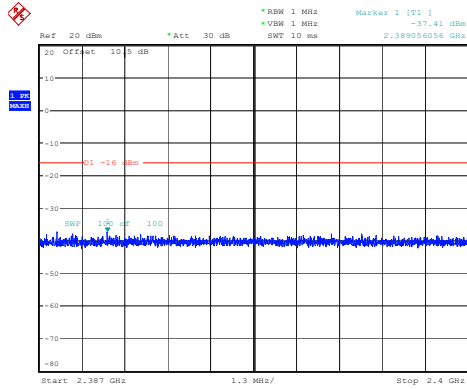
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:48:42

802.11b, High Channel(1GHz~2.387GHz)



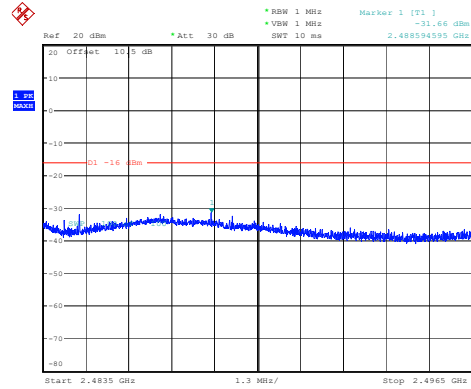
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:48:52

802.11b, High Channel(2.387GHz~2.4GHz)



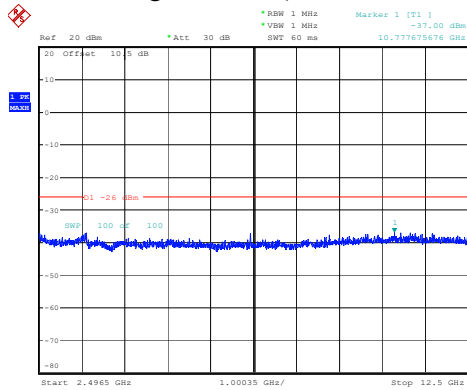
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:49:00

802.11b, High Channel(2.4835GHz~2.4965GHz)



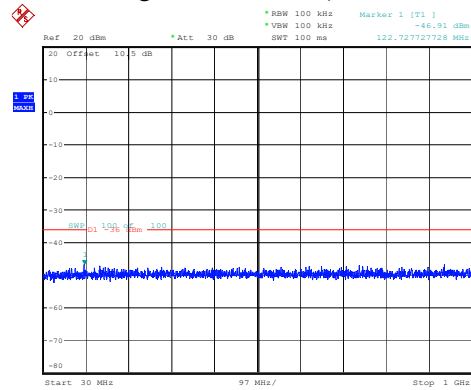
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:49:08

802.11b, High Channel(2.4965GHz~12.5GHz)



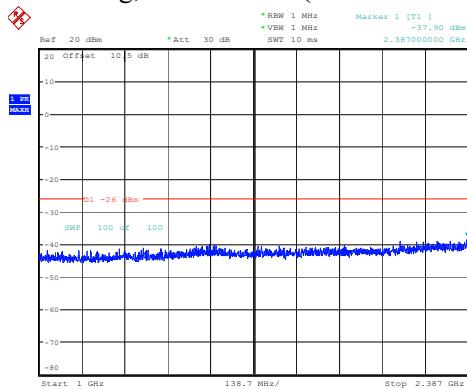
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Date: 24.DEC.2024 14:49:33

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



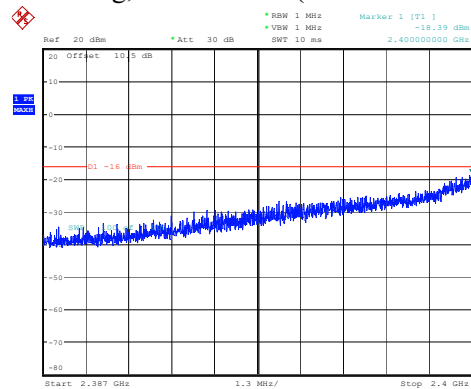
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Date: 24.DEC.2024 13:24:11

802.11g, Low Channel(1GHz~2.387GHz)



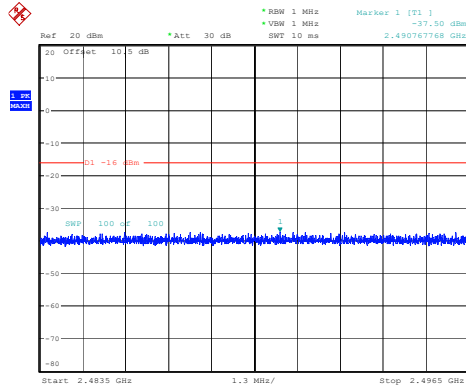
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Date: 24.DEC.2024 13:24:21

802.11g, Low Channel(2.387GHz~2.4GHz)



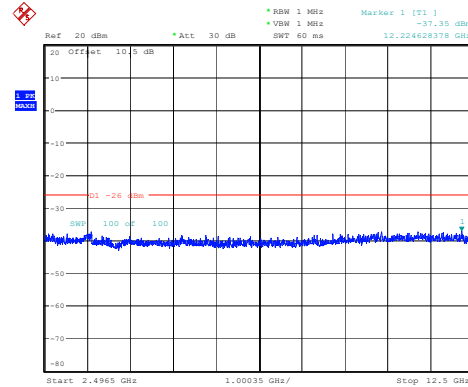
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:24:28

802.11g, Low Channel(2.4835GHz~2.4965GHz)



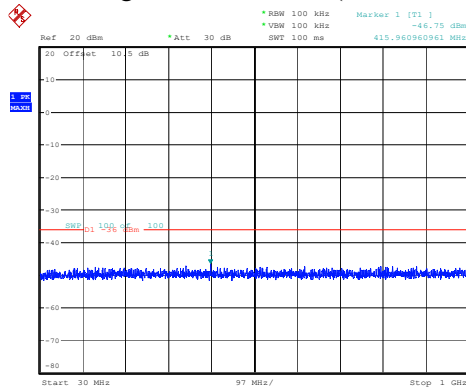
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Date: 24.DEC.2024 13:24:36

802.11g, Low Channel(2.4965GHz~12.5GHz)



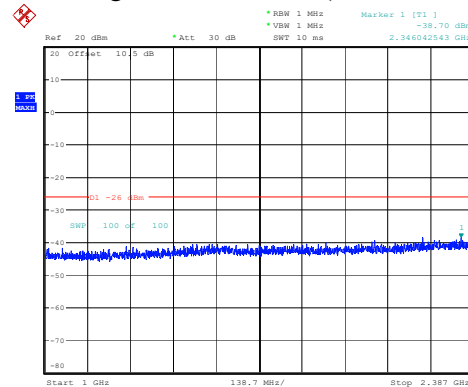
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:25:00

802.11g, Middle Channel(30MHz~1GHz)



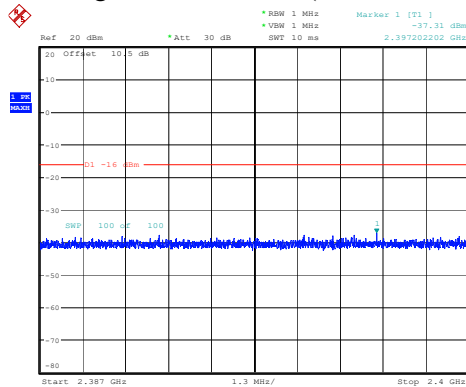
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:25:29

802.11g, Middle Channel(1GHz~2.387GHz)



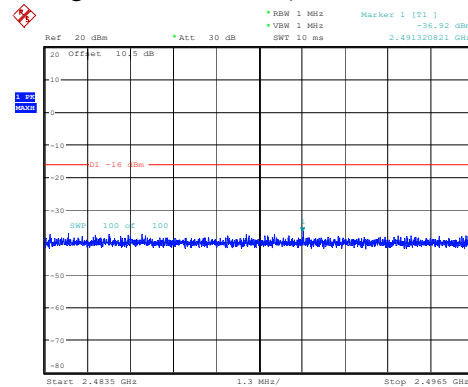
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:25:39

802.11g, Middle Channel(2.387GHz~2.4GHz)



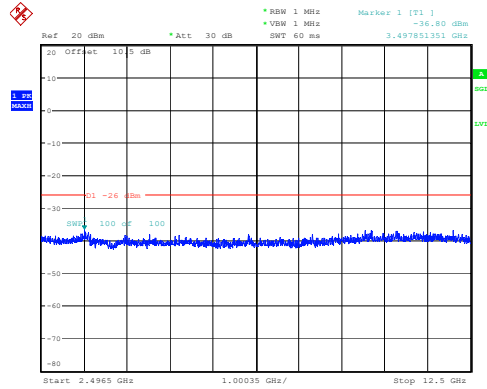
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Date: 24.DEC.2024 13:25:47

802.11g, Middle Channel(2.4835GHz~2.4965GHz)



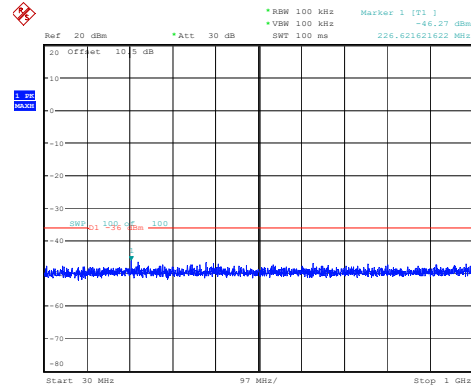
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Date: 24.DEC.2024 13:25:54

802.11g, Middle Channel(2.4965GHz~12.5GHz)



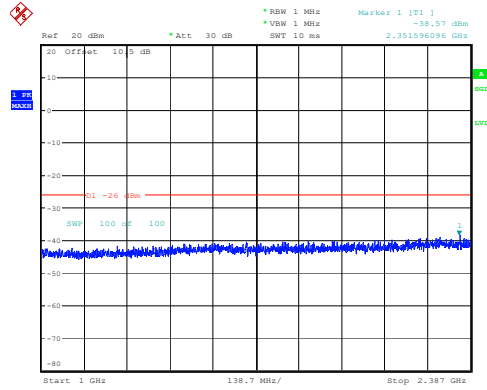
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:26:19

802.11g, High Channel(30MHz~1GHz)



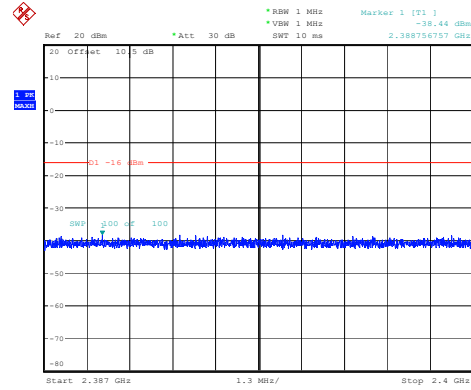
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:00:18

802.11g, High Channel(1GHz~2.387GHz)



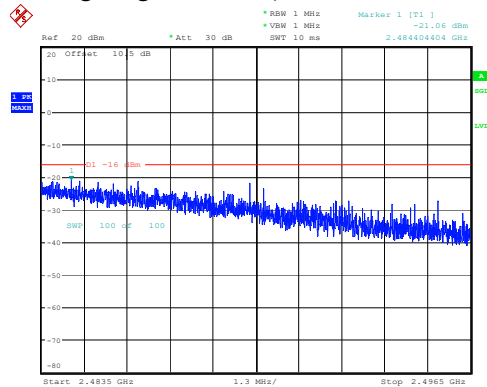
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:00:28

802.11g, High Channel(2.387GHz~2.4GHz)



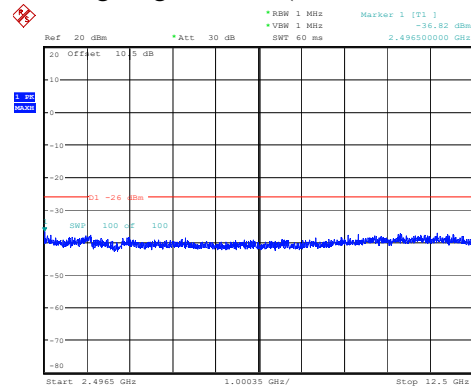
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Date: 24.DEC.2024 13:00:35

802.11g, High Channel(2.4835GHz~2.4965GHz)



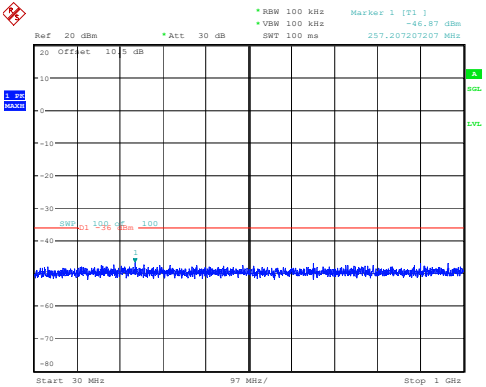
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:00:42

802.11g, High Channel(2.4965GHz~12.5GHz)



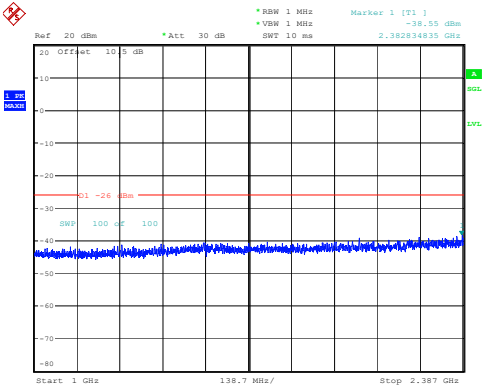
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:01:07

802.11n20, Low Channel(30MHz~1GHz)



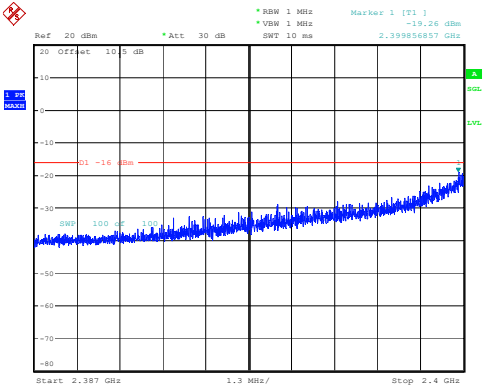
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:28:43

802.11n20, Low Channel(1GHz~2.387GHz)



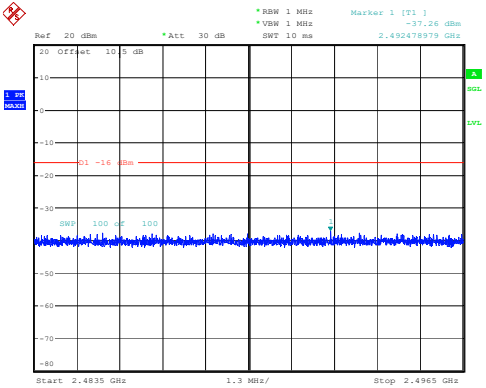
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Date: 24.DEC.2024 13:28:53

802.11n20, Low Channel(2.387GHz~2.4GHz)



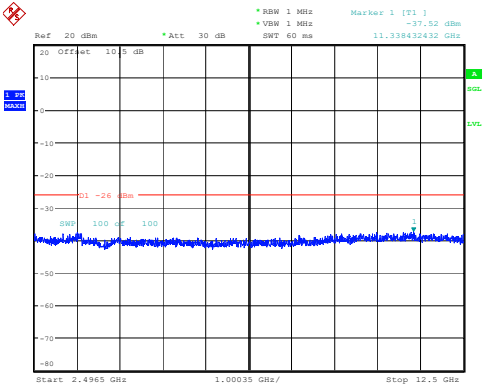
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:29:01

802.11n20, Low Channel(2.4835GHz~2.4965GHz)



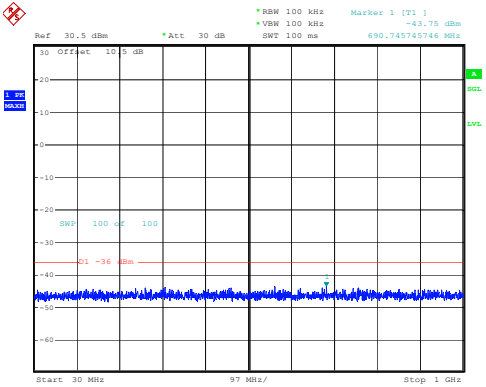
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:29:08

802.11n20, Low Channel(2.4965GHz~12.5GHz)



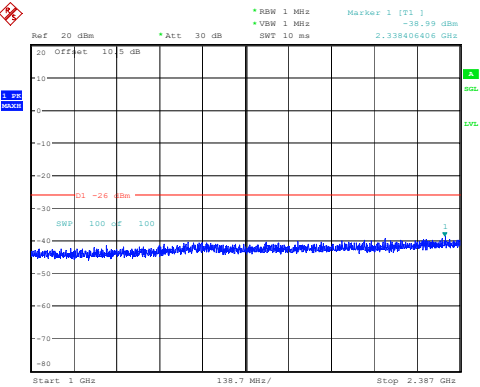
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:29:33

802.11n20, Middle Channel(30MHz~1GHz)



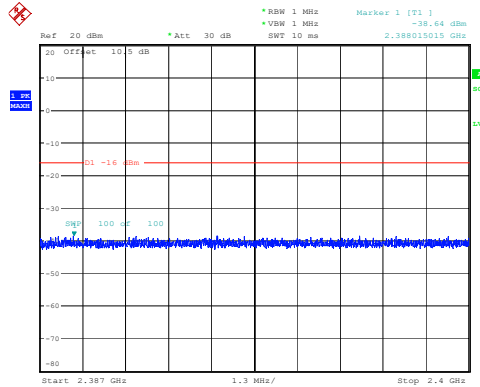
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:30:41

802.11n20, Middle Channel(1GHz~2.387GHz)



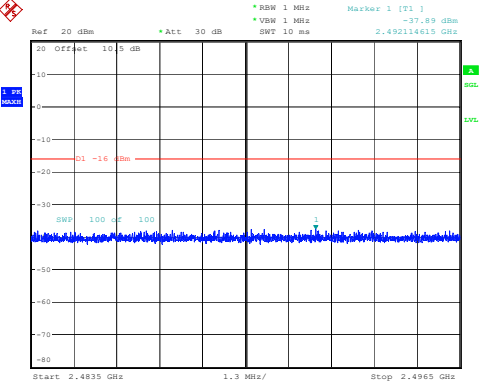
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:30:51

802.11n20, Middle Channel(2.387GHz~2.4GHz)



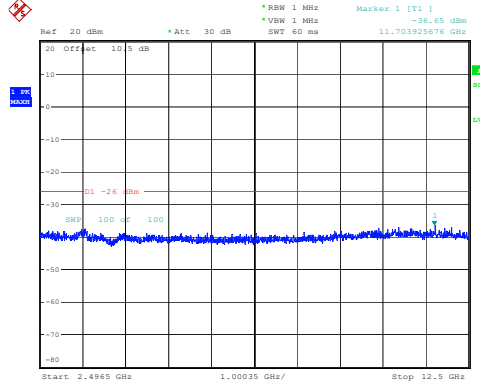
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:30:58

802.11n20, Middle Channel(2.4835GHz~2.4965GHz)



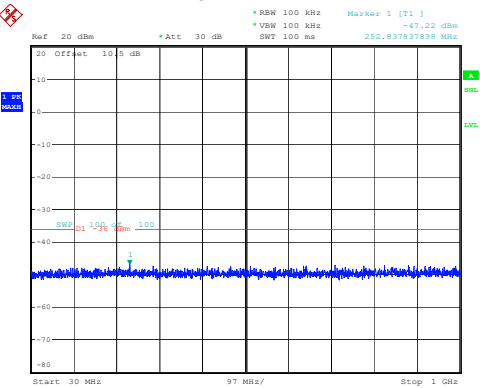
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Date: 24.DEC.2024 13:31:06

802.11n20, Middle Channel(2.4965GHz~12.5GHz)



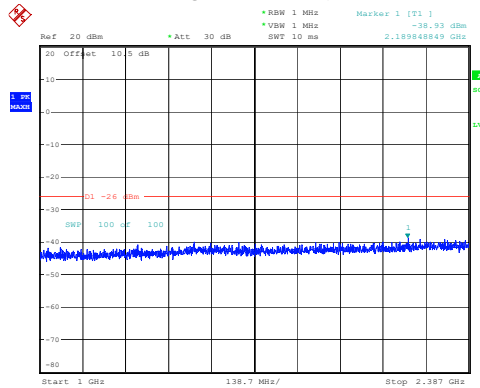
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:31:30

802.11n20, High Channel(30MHz~1GHz)



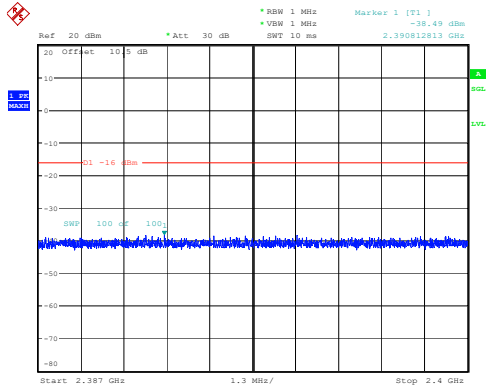
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:32:13

802.11n20, High Channel(1GHz~2.387GHz)



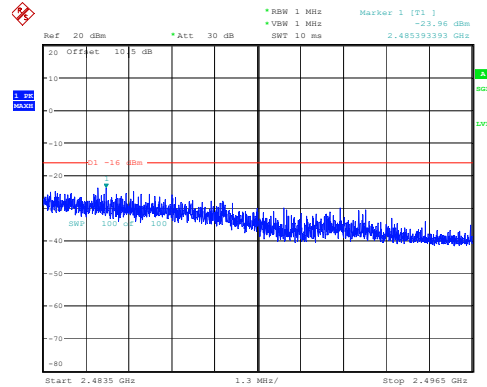
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:32:23

802.11n20, High Channel(2.387GHz~2.4GHz)



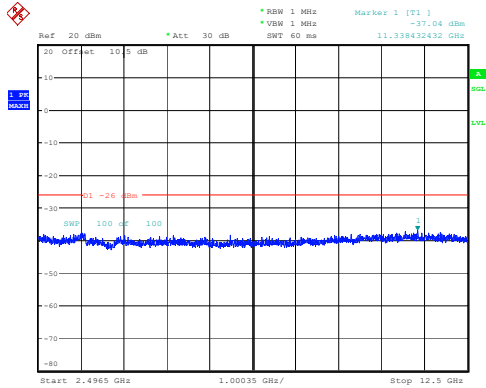
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:32:30

802.11n20, High Channel(2.4835GHz~2.4965GHz)



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:32:38

802.11n20, High Channel(2.4965GHz~12.5GHz)



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 13:33:02

Antenna Output Power and Output Power Tolerance

Test Information:

Sample No.:	2X1J-2	Test Date:	2024/12/24
Test Site:	RF	Test Mode:	Transmitting
Tester:	Kungfumaster Liang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C):	24.4	Relative Humidity: (%)	46	ATM Pressure: (kPa)	101
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Test Condition: NV

Antenna	Mode	Antenna gain (dBi)	Declared power (mW/MHz)
Chain 0	802.11b	0	7.5
	802.11g	0	4
	802.11n20	0	1.8

Antenna	Mode	Channel	Reading (dBm/MHz)	Antenna output power(mW/MHz)		Antenna output tolerance(%)		EIRP (dBm/MHz)		Verdict
				Result	Limit	Result	Limit	Result	Limit	
Chain 0	802.11b	Low	8.80	7.586	≤ 10	1.15	-80~+20	8.80	≤ 12.14	Pass
		Middle	8.56	7.178	≤ 10	-4.29	-80~+20	8.56	≤ 12.14	Pass
		High	7.74	5.943	≤ 10	-20.76	-80~+20	7.74	≤ 12.14	Pass
	802.11g	Low	6.02	3.999	≤ 10	-0.02	-80~+20	6.02	≤ 12.14	Pass
		Middle	5.76	3.767	≤ 10	-5.83	-80~+20	5.76	≤ 12.14	Pass
		High	5.78	3.784	≤ 10	-5.40	-80~+20	5.78	≤ 12.14	Pass
	802.11n20	Low	2.43	1.750	≤ 10	-2.78	-80~+20	2.43	≤ 12.14	Pass
		Middle	2.21	1.663	≤ 10	-7.61	-80~+20	2.21	≤ 12.14	Pass
		High	2.61	1.824	≤ 10	1.33	-80~+20	2.61	≤ 12.14	Pass

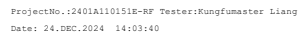
Note:

Reading(mW/MHz) = 10^{ Reading(dBm/MHz) / 10 }

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

EIRP(dBm/MHz) = Antenna output power(dBm/MHz) + Antenna gain.

802.11b, Low Channel



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:05:54

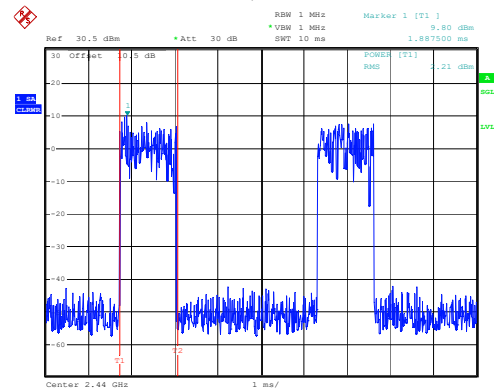
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:09:10

ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:24:25

ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:28:01

ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:30:50

802.11n20, Middle Channel



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:38:16

Version 4.0

Receiver Spurious Emission and Unwanted Emission Intensity**Test Information:**

Sample No.:	2X1J-2	Test Date:	2024/12/24
Test Site:	RF	Test Mode:	Transmitting
Tester:	Kungfumaster Liang	Test Result:	Pass

Environmental Conditions:

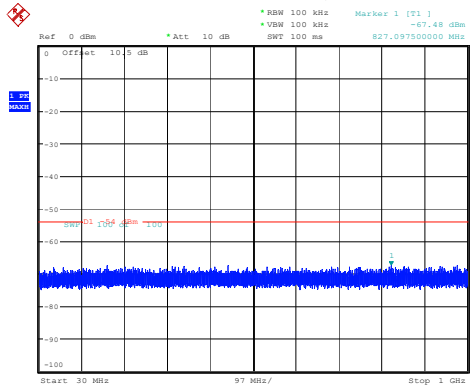
Temperature: (°C):	24.4	Relative Humidity: (%)	46	ATM Pressure: (kPa)	101
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Test Condition: NV

Mode	Channel	Test Band (RBW)	Frequency Range		Max.Emission Located(MHz)	Result (dBm)	Result (nW)	Limit (nW)	Verdict
			Start (MHz)	Stop (MHz)					
802.11b	Low	Band I (100kHz)	30	1000	827.10	-67.48	0.179	4	Pass
		Band II (1MHz)	1000	12500	10791.68	-57.81	1.656	20	Pass
	Middle	Band I (100kHz)	30	1000	704.05	-64.76	0.334	4	Pass
		Band II (1MHz)	1000	12500	10174.70	-57.84	1.644	20	Pass
	High	Band I (100kHz)	30	1000	856.20	-67.64	0.172	4	Pass
		Band II (1MHz)	1000	12500	11165.43	-58.40	1.445	20	Pass
802.11g	Low	Band I (100kHz)	30	1000	826.03	-65.42	0.287	4	Pass
		Band II (1MHz)	1000	12500	10877.35	-58.11	1.545	20	Pass
	Middle	Band I (100kHz)	30	1000	825.25	-65.29	0.296	4	Pass
		Band II (1MHz)	1000	12500	10420.23	-57.48	1.786	20	Pass
	High	Band I (100kHz)	30	1000	968.91	-65.93	0.255	4	Pass
		Band II (1MHz)	1000	12500	11247.08	-57.92	1.614	20	Pass
802.11n20	Low	Band I (100kHz)	30	1000	380.70	-67.00	0.200	4	Pass
		Band II (1MHz)	1000	12500	10823.88	-58.04	1.570	20	Pass
	Middle	Band I (100kHz)	30	1000	646.05	-66.84	0.207	4	Pass
		Band II (1MHz)	1000	12500	10756.03	-57.74	1.683	20	Pass
	High	Band I (100kHz)	30	1000	772.29	-66.21	0.239	4	Pass
		Band II (1MHz)	1000	12500	11630.60	-57.29	1.866	20	Pass

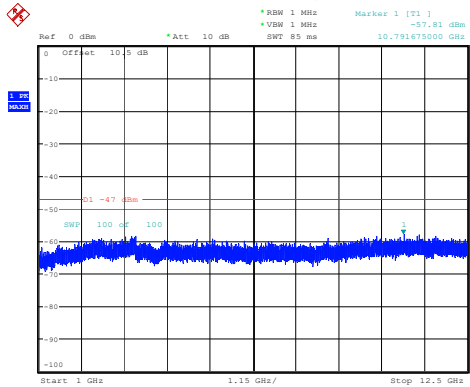
Test Condition: NV

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



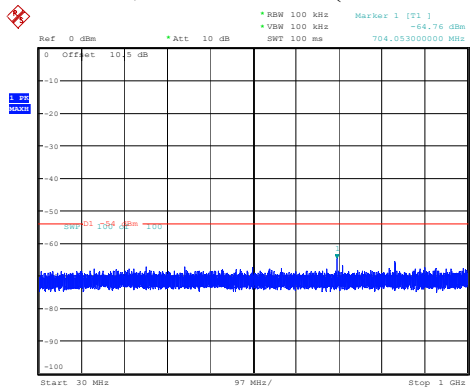
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:57:10

802.11b, Low Channel(1GHz~12.5GHz)



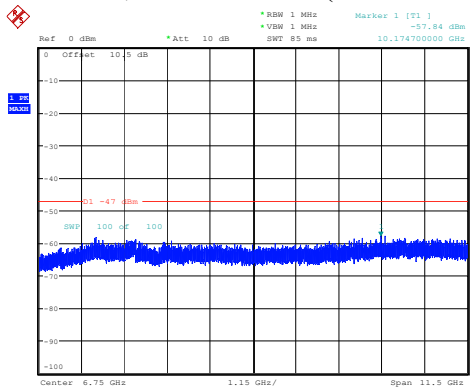
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 15:08:48

802.11b, Middle Channel(30MHz~1GHz)



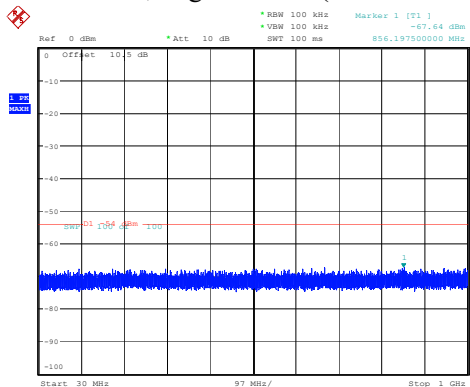
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:58:08

802.11b, Middle Channel(1GHz~12.5GHz)



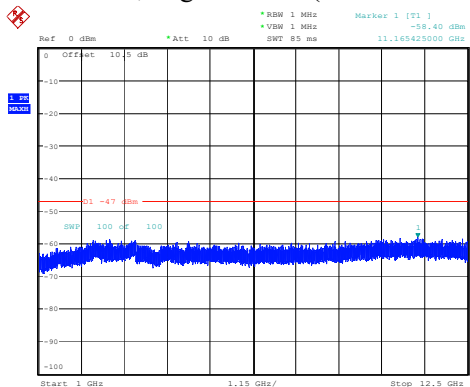
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 14:59:56

802.11b, High Channel(30MHz~1GHz)



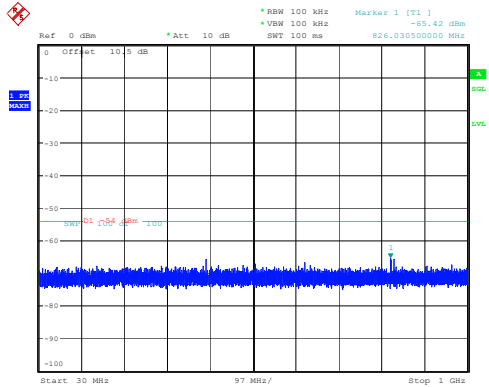
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 15:00:20

802.11b, High Channel(1GHz~12.5GHz)



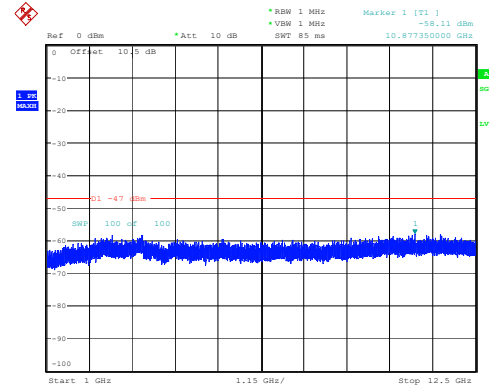
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 15:00:52

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



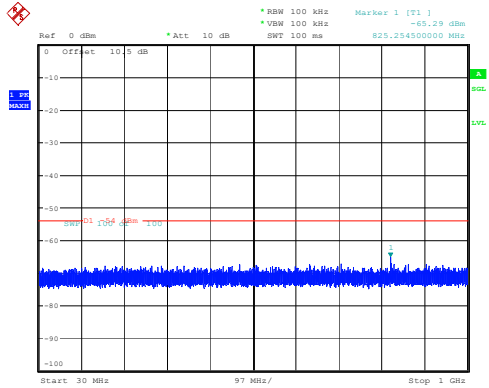
ProjectNo.:2401A110151E-RF Tester:Kungfmaster Liang
Date: 24.DEC.2024 15:01:26

802.11g, Low Channel(1GHz~12.5GHz)



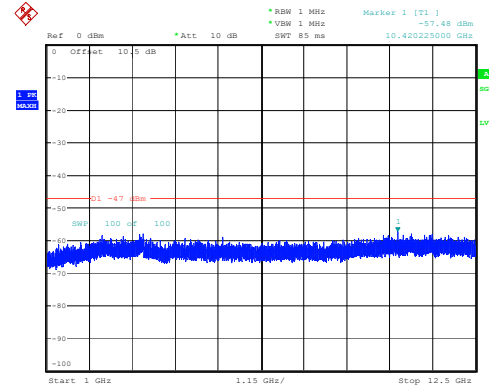
ProjectNo.:2401A110151E-RF Tester:Kungfmaster Liang
Date: 24.DEC.2024 15:01:58

802.11g, Middle Channel(30MHz~1GHz)



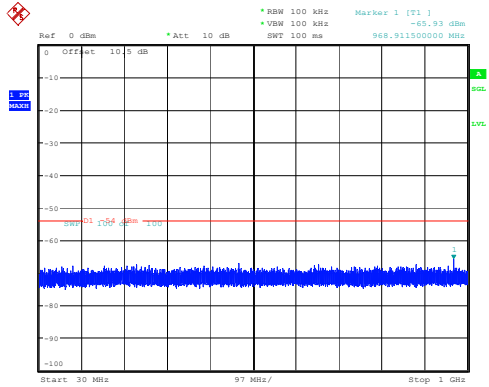
ProjectNo.:2401A110151E-RF Tester:Kungfmaster Liang
Date: 24.DEC.2024 15:02:28

802.11g, Middle Channel(1GHz~12.5GHz)



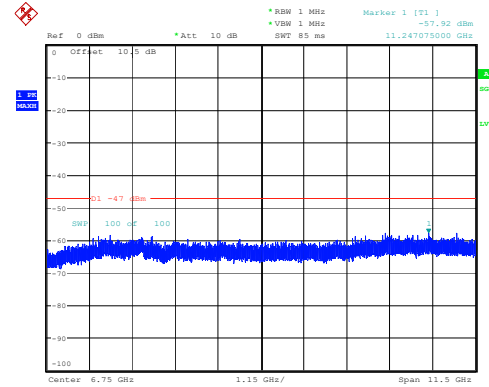
ProjectNo.:2401A110151E-RF Tester:Kungfmaster Liang
Date: 24.DEC.2024 15:03:00

802.11g, High Channel(30MHz~1GHz)



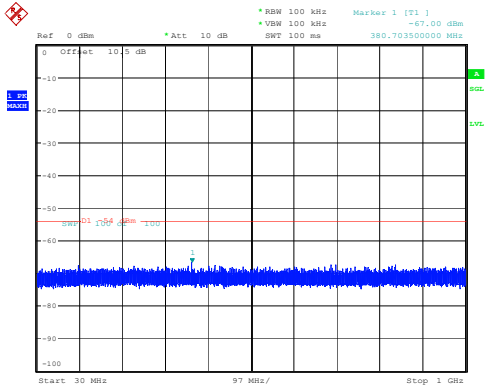
ProjectNo.:2401A110151E-RF Tester:Kungfmaster Liang
Date: 24.DEC.2024 15:03:24

802.11g, High Channel(1GHz~12.5GHz)



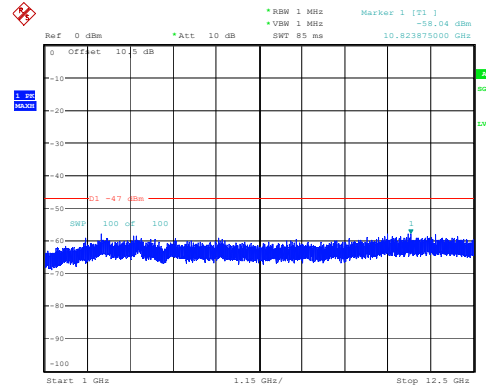
ProjectNo.:2401A110151E-RF Tester:Kungfmaster Liang
Date: 24.DEC.2024 15:04:15

802.11n20, Low Channel(30MHz~1GHz)



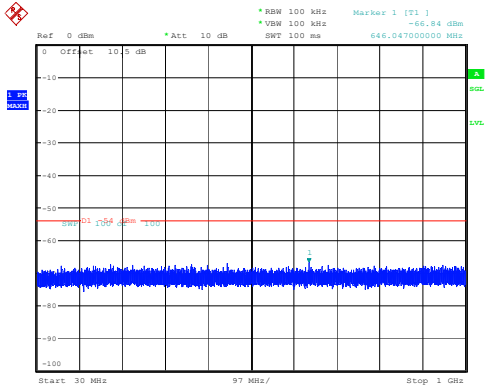
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 15:04:37

802.11n20, Low Channel(1GHz~12.5GHz)



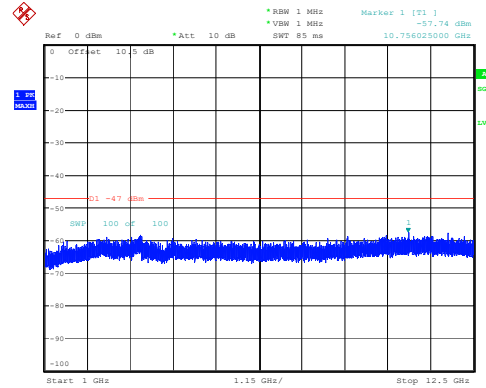
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 15:05:28

802.11n20, Middle Channel(30MHz~1GHz)



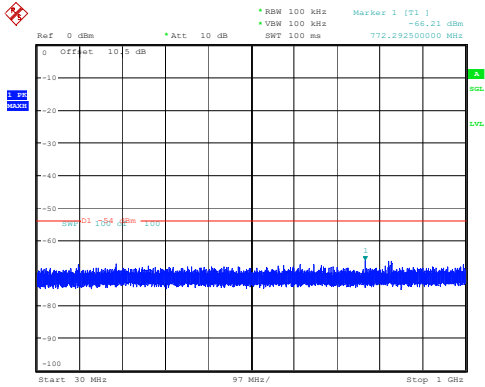
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 15:05:50

802.11n20, Middle Channel(1GHz~12.5GHz)



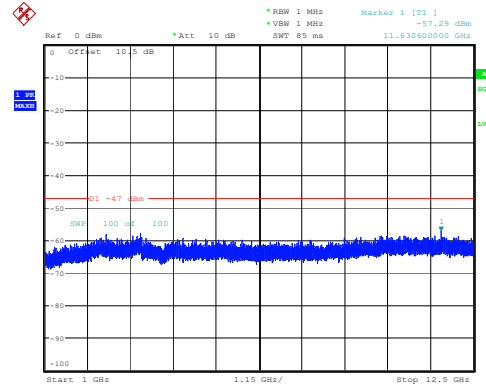
ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 15:09:22

802.11n20, High Channel(30MHz~1GHz)



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 15:06:49

802.11n20, High Channel(1GHz~12.5GHz)



ProjectNo.:2401A110151E-RF Tester:Kungfumaster Liang
Date: 24.DEC.2024 15:07:21

Interference Prevention Function

Test Information:

Sample No.:	2X1J-2	Test Date:	2024/12/24
Test Site:	RF	Test Mode:	Communicating
Tester:	Kungfumaster Liang	Test Result:	Good

Environmental Conditions:

Temperature: (°C):	24.4	Relative Humidity: (%)	46	ATM Pressure: (kPa)	101
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CONSTRUCTION PROTECTION CONFIRMATION

Limit

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

Confirmation Method

EUT uses special fasteners to secure the outer box , which is not easy to open, please see the EUT photos.

EUT PHOTOGRAPHS

Please refer to the attachment 2401A110151E-RF External photo and 2401A110151E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401A110151E-RF-07A Test Setup photo.

******* END OF REPORT *******