



RADIO TEST REPORT

Equipment : 11ax RTL8852CE Combo module
Brand Name : REALTEK
Model Name : RTL8852CE
Applicant : Realtek Semiconductor Corp.
No. 2, Innovation Road II, Hsinchu Science Park,
Hsinchu 300, Taiwan
Manufacturer : Realtek Semiconductor Corp.
No. 2, Innovation Road II, Hsinchu Science Park,
Hsinchu 300, Taiwan
Standard : MIC Certification Rule, Article 2 Paragraph 1 Item 19-2

The product was received on Nov. 05, 2021, and testing was started from Nov. 06, 2021 and completed on May 13, 2022. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in MIC Notice No.88 Appendix No.44 and shown compliance with the applicable MIC Ordinance Regulating Radio Equipment Article 49.20 technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.



Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory
No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan



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TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-D3_2 Ver1.1



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.1	RLE:6	Frequency Band	PASS	-
3.1	ORE:5	Frequency Error	PASS	-
3.2	ORE:6	Occupied Bandwidth	PASS	-
3.2	ORE:49.20	Spread Bandwidth / Factor	PASS	-
3.3	ORE:49.20	Antenna Power	PASS	-
3.3	ORE:14	Antenna Power Error	PASS	-
-	ORE:49.20	Antenna Gain, EIRP Limit	N/A	-
3.4	ORE:7, Table 3	Transmitter Spurious Emissions	PASS	-
3.5	ORE:24	Receiver Spurious Emissions	PASS	-
3.6	TR:9	Identification Code	PASS	-
3.7	TR:9	Carrier Sense	PASS	-
3.8	ORE:49.20	EUT Construction Protection	N/A	Declared by manufacturer

RLE: Radio Law Enforcement Regulations

ORE: Ordinance Regulating Radio Equipment

TR: Terminal and Other Equipment Regulations

NT: Notification of the Ministry of Internal Affairs and Communications

Note: Reference to Sporton Project No.: 1N0223.

Declaration of Conformity:

1. The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to report "Measurement Uncertainty".

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Wendy Pan



1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
2471-2497	b	2484	14 [1]

Band	Mode	BWch (MHz)	Nant
2.471-2.497GHz	11b	20	1TX/2TX

Note:

- ♦ 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
- ♦ BWch is the nominal channel bandwidth.

<1TX>

Mode	Declared Power (mW/MHz)
802.11b_Nss1,(1Mbps)_1TX	7.26106

<2TX>

Mode	Declared Power (mW/MHz)
802.11b_Nss1,(1Mbps)_2TX	7.26106



1.1.2 Antenna Information

Ant.	Port		Brand	Model Name	Antenna Type	Connector	Gain (dBi)
	WLAN 2.4GHz / 5GHz / 6GHz	Bluetooth					
1	1/2	1	ARISTOTLE	RFA-27-JP378-4B-200	Monopole	I-PEX	Note 1
2	1/2	1	ARISTOTLE	RFA-27-JP326-MHF4300	PIFA	I-PEX	
3	1/2	1	ARISTOTLE	RFA-27-C38H1-MHF4300	Dipole	I-PEX	

Note 1

Ant.	Port		Gain (dBi)			
	WLAN 2.4GHz / 5GHz / 6GHz	Bluetooth	WLAN 2.4GHz	WLAN 5GHz UNII~UNII2C	WLAN 6GHz UNII 5	Bluetooth
1	1/2	1	3.38	4.86	4.86	3.38
2	1/2	1	3.50	5.00	5.00	3.50
3	1/2	1	3.00	5.00	5.00	3.00

Note 2: The above information was declared by manufacturer.

Note 3: Only the highest gain antenna (antenna 2) was selected to test and record in this report.

<For WLAN 2.4GHz function>

For IEEE 802.11b/g/n/VHT/ax (1TX/2RX):

The EUT supports the antenna with TX diversity functions.

Both Port 1 and Port 2 support transmit and receive functions, but only one of them will be used at one time.

The Port 2 generated the worst case, so it was selected to test and record in the report.

Port 1 and Port 2 could receive simultaneously

For IEEE 802.11b/g/n/VHT/ax (2TX/2RX):

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

<For WLAN 5GHz function>

For IEEE 802.11a/n/ac/ax (1TX/2RX):

The EUT supports the antenna with TX diversity functions.

Both Port 1 and Port 2 support transmit and receive functions, but only one of them will be used at one time.

The Port 2 generated the worst case, so it was selected to test and record in the report.

Port 1 and Port 2 could receive simultaneously

For IEEE 802.11a/n/ac/ax (2TX/2RX):

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

<For WLAN 6GHz function>

For IEEE 802.11ax (1TX/2RX):

The EUT supports the antenna with TX diversity functions.

Both Port 1 and Port 2 support transmit and receive functions, but only one of them will be used at one time.

The Port 1 generated the worst case, so it was selected to test and record in the report.

Port 1 and Port 2 could receive simultaneously

**For IEEE 802.11a/n/ac/ax (2TX/2RX):**

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

<For Bluetooth function> (1TX/1RX):

Only Port 1 can be used as transmitting/receiving antenna.

1.1.3 EUT Information

EUT Power Type	From host system
Test Software Version	REALTEK MP V:homo_V1.1.1
Software / Firmware Version	V6001.0.16.102

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)
802.11b	0.999	0

1.1.5 Power Supply Voltage Fluctuation

Fluctuation	AC Input Power(V)	DC Output Power(V)	Variation (%)
Normal Vol	100	3.3	-
High Vol	110	3.3	0.00
Low Vol	90	3.3	0.00

Note: Voltage Variation (%) = (Output High or Low Voltage - Output Normal Voltage)/Output Normal Voltage X 100.
During the input supply voltage to the EUT from the external power source is varied by +/- 10%, if output voltage had been confirmed that 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.



1.2 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ MIC Ordinance Regulating Radio Equipment Article 49.20
- ♦ MIC Notice No.88 Appendix No.44

1.3 Testing Location Information

Testing Location Information				
Test Lab. : Sporton International Inc. Hsinchu Laboratory				
Hsinchu	ADD: No.8, Ln. 724, Bo' ai St., Zhubei City, Hsinchu County 302010, Taiwan			
(TAF: 3787)	TEL: 886-3-656-9065	FAX: 886-3-656-9085		

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH03-CB	Owen Hsu	22.9-23.5 / 61-63	Nov. 06, 2021~ May 13, 2022

1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

Test Items	Uncertainty	Remark
Conducted Emission	2.5 dB	Confidence levels of 95%
Radio frequency	9.7×10^{-7} MHz	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Channel Mode

<1TX>

Mode	Power Setting
802.11b_Nss1,(1Mbps)_1TX	-
2484MHz	20.5

<2TX>

Mode	Power Setting
802.11b_Nss1,(1Mbps)_2TX	-
2484MHz	17.5

2.2 The Worst Case Measurement Configuration

Tests Item	Frequency Error, Occupied Bandwidth, Spread Bandwidth, Spread Factor, Antenna Power, Antenna Power Error, EIRP Power, Transmitter Spurious Emissions, Receiver Spurious Emissions, Identification Code, Carrier Sense
Test Condition	Conducted measurement at transmit chains.
Test Mode	
1	EUT with Ant.2 (3.50 dBi)



2.3 EUT Operation during Test

During the test, "REALTEK MP V:homo_V1.1.1" under WIN 7 was executed the test program to control the EUT continuously transmit/receive RF signal.

2.4 Accessories

N/A

2.5 Support Equipment

For Other test:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Notebook	DELL	E4300	N/A
B	Fixture	REALTEK	Ameba adapter	N/A

For Carrier Sense test:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Notebook	DELL	E4300	N/A
B	Notebook	DELL	E4300	N/A
C	WLAN AP	ASUS	RT-AX88U	MSQ-RTAXHP00
D	Fixture	REALTEK	Ameba adapter	N/A

3 Test Result

3.1 Frequency Error

3.1.1 Frequency Error Limit

Frequency Error Limit
$\leq \pm 50$ ppm

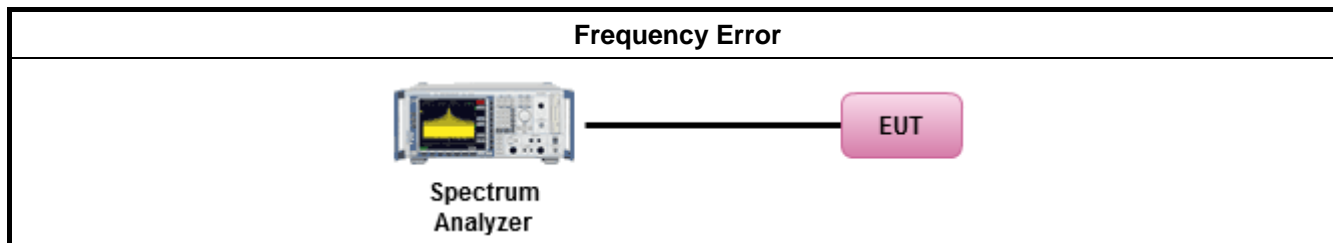
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method	
Measuring Equipment Conditions	MIC Notice No.88 Appendix No.44, clause 3.2
Conditions of Equipment under Test	MIC Notice No.88 Appendix No.44, clause 3.3
Measuring Operation Procedures	MIC Notice No.88 Appendix No.44, clause 3.4
Presentation of Results	MIC Notice No.88 Appendix No.44, clause 3.5
Other Conditions	MIC Notice No.88 Appendix No.44, clause 3.6

3.1.4 Test Setup



3.1.5 Test Result of Frequency Error

Refer as Appendix A

3.2 Occupied Bandwidth, Spread Bandwidth and Spread Factor

3.2.1 Occupied Bandwidth, Spread Bandwidth and Spread Factor Limit

Occupied Bandwidth Limit	
≥26 MHz	

Spread Bandwidth and Spread Factor Limit	
Spread Bandwidth	≥ 500 kHz
Spread Factor	≥10

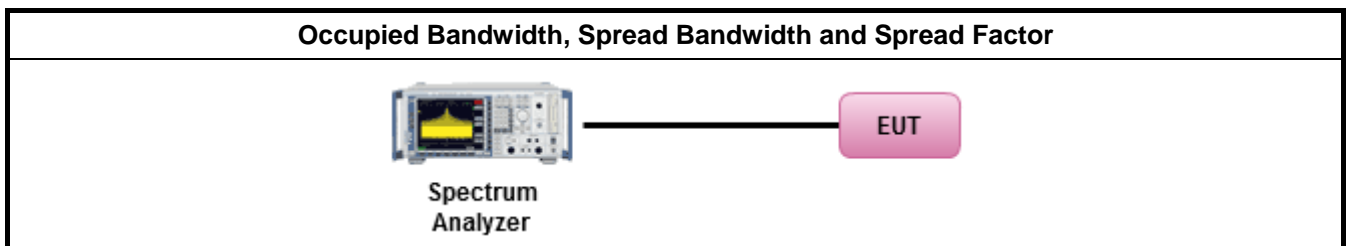
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method	
Measuring Equipment Conditions	MIC Notice No.88 Appendix No.44, clause 4.2
Conditions of Equipment under Test	MIC Notice No.88 Appendix No.44, clause 4.3
Measuring Operation Procedures	MIC Notice No.88 Appendix No.44, clause 4.4
Presentation of Results	MIC Notice No.88 Appendix No.44, clause 4.5
Other Conditions	MIC Notice No.88 Appendix No.44, clause 4.6

3.2.4 Test Setup



3.2.5 Test Result of Occupied Bandwidth / Spread Bandwidth / Spread Factor

Refer as Appendix B



3.3 Antenna Power, Antenna Power Error and EIRP Power

3.3.1 Antenna Power, Antenna Power Error and EIRP Power Limit

Antenna Power Limit (mW/MHz)
$\leq 10\text{mW/MHz}$

Antenna Power Error Limit (%)
+20% ~ -80%

EIRP Limit (dBm/MHz)
$\leq 12.14\text{dBm/MHz}$

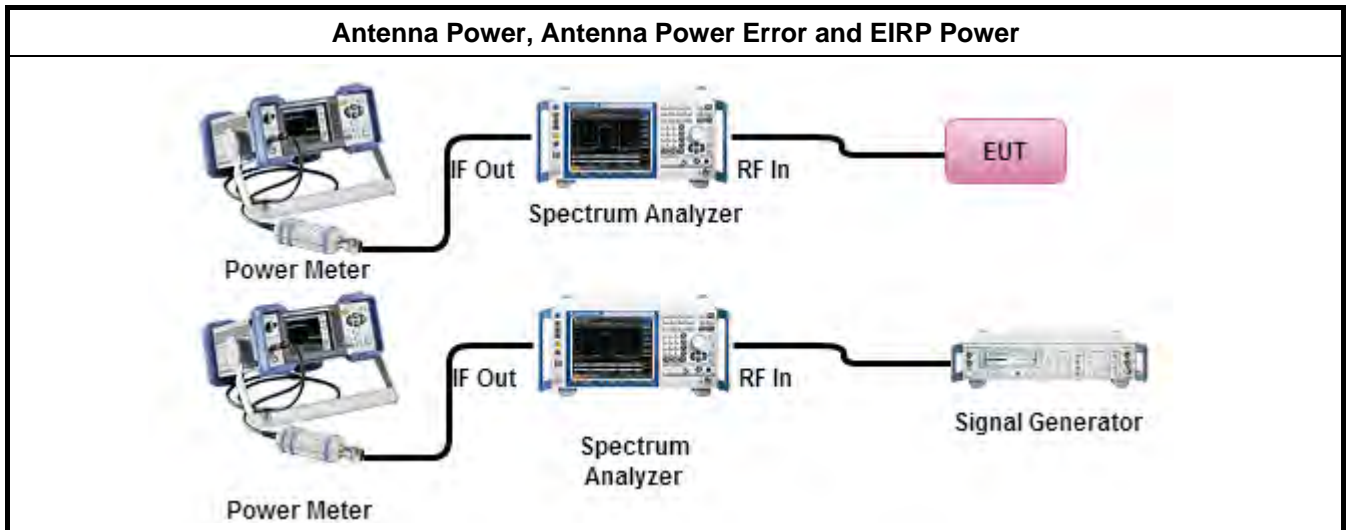
3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method	
Measuring Equipment Conditions	MIC Notice No.88 Appendix No.44, clause 6.2
Conditions of Equipment under Test	MIC Notice No.88 Appendix No.44, clause 6.3
Measuring Operation Procedures	MIC Notice No.88 Appendix No.44, clause 6.4
Presentation of Results	MIC Notice No.88 Appendix No.44, clause 6.5
Other Conditions	MIC Notice No.88 Appendix No.44, clause 6.6

3.3.4 Test Setup



3.3.5 Test Result of Antenna Power, Antenna Power Error and EIRP Power

Refer as Appendix C

3.4 Transmitter Spurious Emissions

3.4.1 Transmitter Spurious Emissions Limit

Transmitter Spurious Emissions		Limit	
Range (MHz)		uW/MHz	dBm/MHz
30	2458	2.5	-26
2458	2471	25	-16
2497	2510	25	-16
2510	12500	2.5	-26

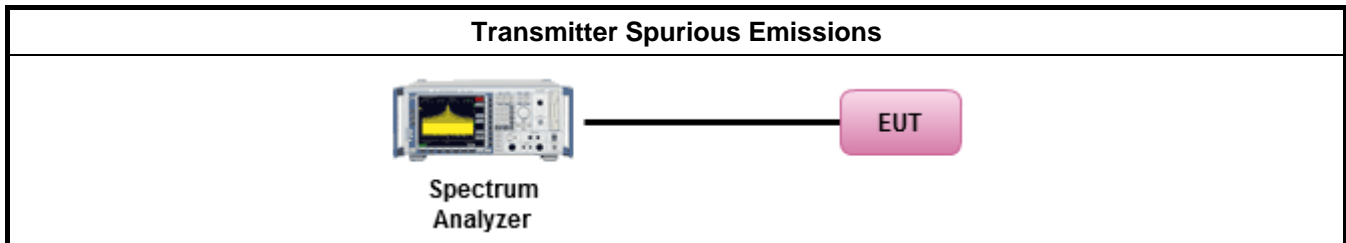
3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method	
Measuring Equipment Conditions	MIC Notice No.88 Appendix No.1, clause 1.3
Conditions of Equipment under Test	MIC Notice No.88 Appendix No.1, clause 1.4
Measuring Operation Procedures	MIC Notice No.88 Appendix No.1, clause 1.5
Presentation of Results	MIC Notice No.88 Appendix No.1, clause 1.6

3.4.4 Test Setup



3.4.5 Test Result of Transmitter Spurious Emissions

Refer as Appendix D

3.5 Receiver Spurious Emissions

3.5.1 Receiver Spurious Emissions Limit

RX Spurious Emission		Limit			
Range (MHz)		nW		dBm	
30	1000	4	4	-54	-54
1000	12500	20	20	-47	-47

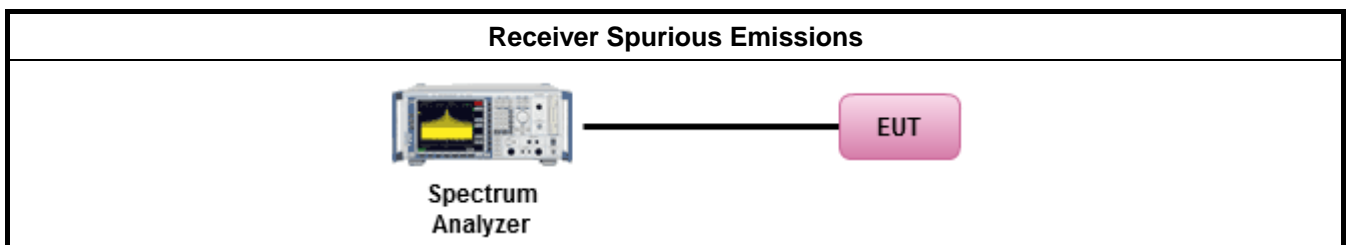
3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method	
Measuring Equipment Conditions	MIC Notice No.88 Appendix No.44, clause 7.2
Conditions of Equipment under Test	MIC Notice No.88 Appendix No.44, clause 7.3
Measuring Operation Procedures	MIC Notice No.88 Appendix No.44, clause 7.4
Presentation of Results	MIC Notice No.88 Appendix No.44, clause 7.5
Other Conditions	MIC Notice No.88 Appendix No.44, clause 7.6

3.5.4 Test Setup



3.5.5 Test Result of Receiver Spurious Emissions

Refer as Appendix E

3.6 Identification Code

3.6.1 Identification Code Limit

Identification Code Limit
≤ 48 bits

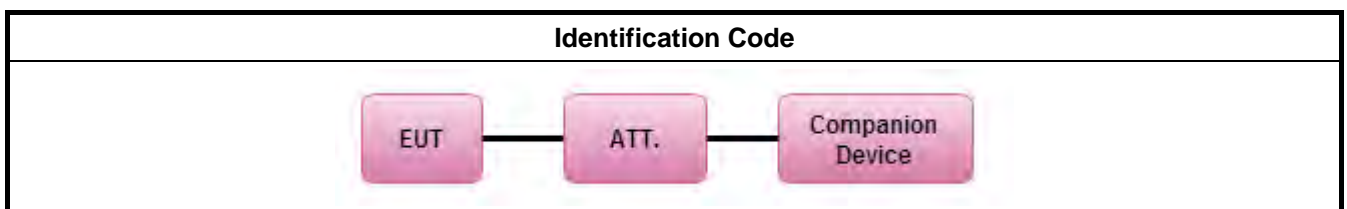
3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Test Method	
Measuring Equipment Conditions	MIC Notice No.88 Appendix No.44, clause 8.2
Conditions of Equipment under Test	MIC Notice No.88 Appendix No.44, clause 8.3
Measuring Operation Procedures	MIC Notice No.88 Appendix No.44, clause 8.4
Presentation of Results	MIC Notice No.88 Appendix No.44, clause 8.5
Other Conditions	MIC Notice No.88 Appendix No.44, clause 8.6

3.6.4 Test Setup



3.6.5 Test Result of Identification Code

Refer as Appendix F

3.7 Carrier Sense

3.7.1 Carrier Sense Limit

Carrier Sense Limit	
Stop transmission for interference signal level above 100mV/m (or level at $22.79 + Gr - 20 \cdot \log(f)$ [dBm])	

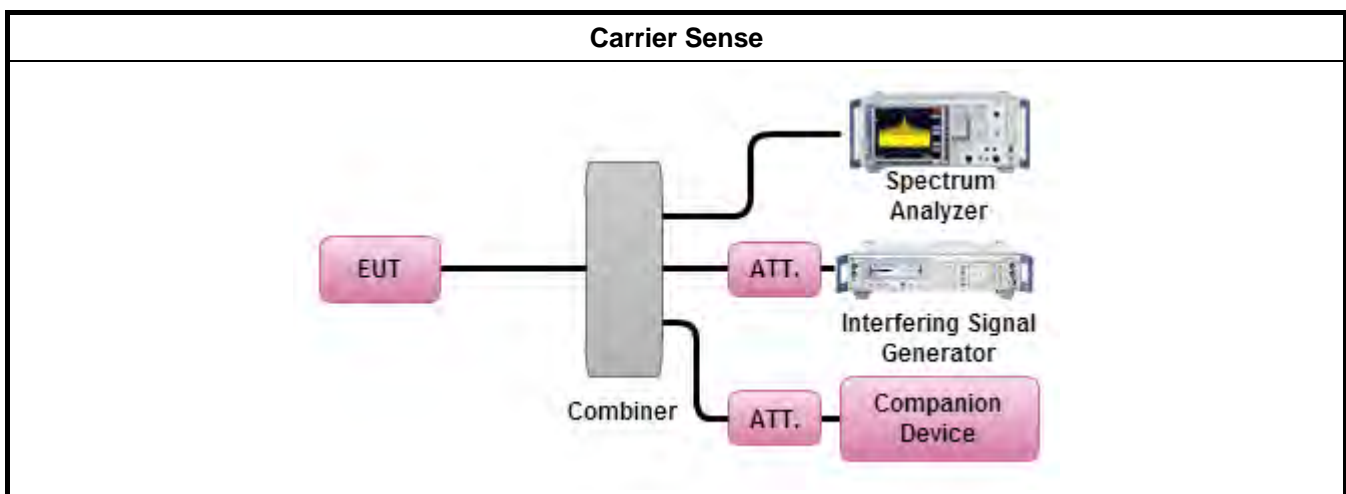
3.7.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.7.3 Test Procedures

Test Method	
Measuring Equipment Conditions	MIC Notice No.88 Appendix No.44, clause 12.2
Conditions of Equipment under Test	MIC Notice No.88 Appendix No.44, clause 12.3
Measuring Operation Procedures	MIC Notice No.88 Appendix No.44, clause 12.4
Presentation of Results	MIC Notice No.88 Appendix No.44, clause 12.5
Other Conditions	MIC Notice No.88 Appendix No.44, clause 12.6

3.7.4 Test Setup



3.7.5 Test Result of Carrier Sense

Refer as Appendix G

3.8 EUT Construction Protection

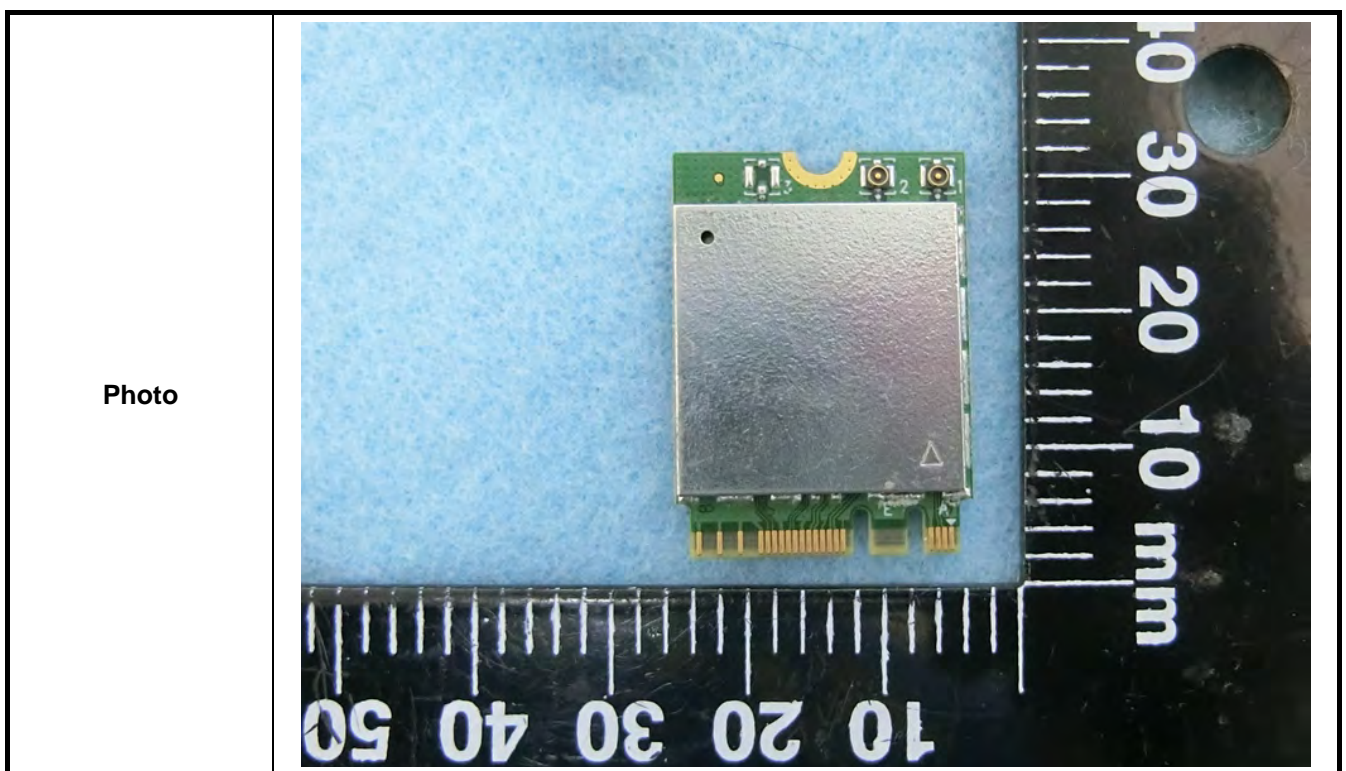
3.8.1 EUT Construction Protection Limit

EUT Construction Protection 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.	

3.8.2 EUT Construction Protection

EUT Construction Protection	
Protected Method	Description
Shielding Case	RF and Modulation components are covered with shielding case and this shielding case is soldered

3.8.3 Reference Documents





4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Calibration Method	Calibration Agent Name	Remark
Signal Analyzer	R&S	FSV40	101904	9kHz ~ 40GHz	Apr. 15, 2021	Apr. 14, 2022	c)	A	Conducted (TH03-CB)
Spectrum analyzer	R&S	FSV40	101028	9kHz~40GHz	Jan. 07, 2022	Jan. 06, 2023	c)	A	Conducted (TH03-CB)
Power Sensor	Anritsu	MA2411B	1726195	300MHz~40GHz	Aug. 22, 2021	Aug. 21, 2022	d)	A	Conducted (TH03-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Aug. 22, 2021	Aug. 21, 2022	d)	A	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-11	1 GHz ~18 GHz	Oct. 04, 2021	Oct. 03, 2022	d)	B	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-12	1 GHz ~18 GHz	Oct. 04, 2021	Oct. 03, 2022	d)	B	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-13	1 GHz ~18 GHz	Oct. 04, 2021	Oct. 03, 2022	d)	B	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-14	1 GHz ~18 GHz	Oct. 04, 2021	Oct. 03, 2022	d)	B	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-15	1 GHz ~18 GHz	Oct. 04, 2021	Oct. 03, 2022	d)	B	Conducted (TH03-CB)
Digital Multimeters	Fluke	15B+	42390498WS	-	Oct. 27, 2021	Oct. 26, 2022	c)	A	Conducted (TH03-CB)
Signal generator	R&S	SMB100A	177785	1MHz-40GHz	Sep. 23, 2021	Sep. 22, 2022	c)	A	Conducted (TH03-CB)
RF Power Divider	STI	2 Way	DV-2way -07	1GHz ~ 8GHz	Oct. 04, 2021	Oct. 03, 2022	d)	B	Conducted (TH03-CB)
RF Power Divider	STI	2 Way	DV-2way -08	1GHz ~ 8GHz	Oct. 04, 2021	Oct. 03, 2022	d)	B	Conducted (TH03-CB)
RF Power Divider	Woken	4 Way	DFS02-DV-02	1GHz ~ 6GHz	Oct. 04, 2021	Oct. 03, 2022	d)	B	Conducted (TH03-CB)
RF Power Divider	Woken	4 Way	DFS02-DV-04	1GHz ~ 6GHz	Oct. 04, 2021	Oct. 03, 2022	d)	B	Conducted (TH03-CB)
RF Power Divider	Woken	4 Way	DFS02-DV-05	1GHz ~ 6GHz	Oct. 04, 2021	Oct. 03, 2022	d)	B	Conducted (TH03-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	N/A	N/A	Conducted (TH03-CB)

Note:

- Calibration Interval of instruments listed above is one year.
- N.C.R. means Non-Calibration required.
- Calibration Agent Name: Describe calibration agent name with its country name, and symbols in "Calibration Agent Name" shows the agent names as follows,
A: Electronics Testing Center, Taiwan.
B: Sporton International Inc., Taiwan.
C: ROHDE&SCHWARZ, Taiwan.
- Calibration Method
a) : Calibration conducted by the National Institute of Information and Communications Technology 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 other equipment that listed above from a) to c)
- The second Spectrum analyzer (101028) is a spare for the first Signal Analyzer (101904), when the first one expires, we will use the second one for testing. So from Nov. 06, 2021 to Apr. 14, 2022, we use Signal Analyzer(101904) for testing, and from Apr. 15, 2022 to May 13, 2022 we use Spectrum analyzer(101028) for testing.



Summary

Mode	Result	Ch (Hz)	Center (Hz)	ppm	Limit (ppm)	Port	Remark
2.471-2.497GHz	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	2.484G	2.48400142G	0.5707	±50	2	-



Frequency Tolerance <1TX>

Appendix A.1

Result

Mode	Result	Ch (Hz)	Center (Hz)	ppm	Limit (ppm)	Port	Remark
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-
2484MHz_TnomVnom	Pass	2.484G	2.48400142G	0.5707	±50	2	-



Frequency Tolerance <2TX>

Appendix A.2

Summary

Mode	Result	Ch (Hz)	Center (Hz)	ppm	Limit (ppm)	Port	Remark
2.471-2.497GHz	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	2.484G	2.48400142G	0.5707	±50	2	-



Frequency Tolerance <2TX>

Appendix A.2

Result

Mode	Result	Ch (Hz)	Center (Hz)	ppm	Limit (ppm)	Port	Remark
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-
2484MHz_TnomVnom	Pass	2.484G	2.48400142G	0.5707	±50	2	-



Summary

Mode	Max-OBW (Hz)	ITU-Code	Min-OBW (Hz)
2.471-2.497GHz	-	-	-
802.11b_Nss1,(1Mbps)_1TX	19.64M	19M6G1D	19.64M

Max-OBW = Maximum 99% occupied bandwidth; Min-OBW = Minimum 99% occupied bandwidth;



Result

Mode	Result	Limit (Hz)	P2-OBW (Hz)
802.11b_Nss1,(1Mbps)_1TX	-	-	-
2484MHz_TnomVnom	Pass	26M	19.64M

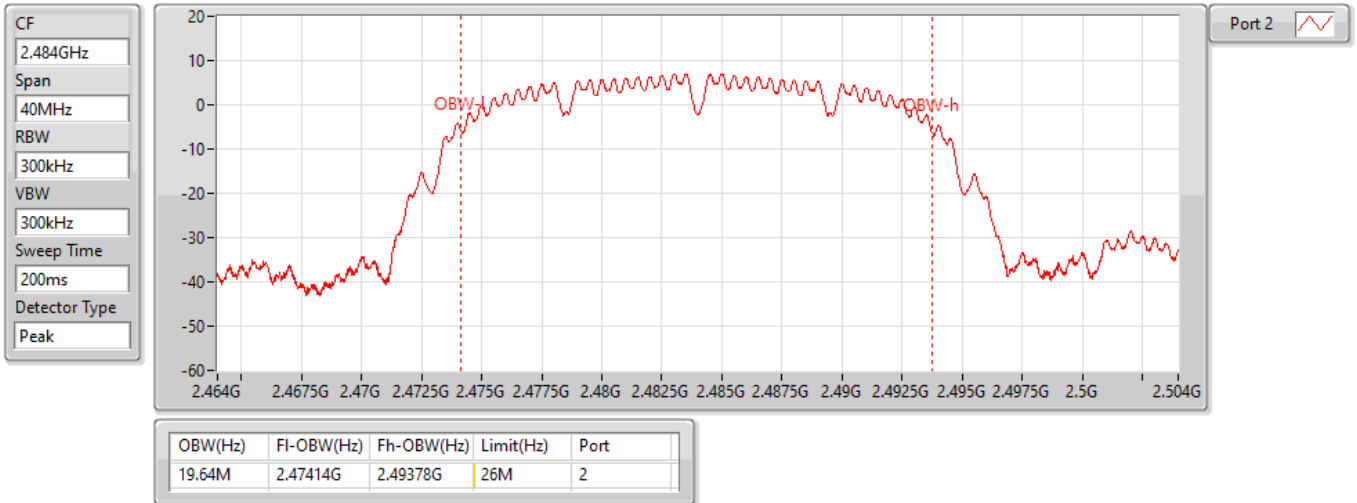
P1-OBW = Port 1 99% occupied bandwidth; P2-OBW = Port 2 99% occupied bandwidth; Pn-OBW = Port n 99% occupied bandwidth

802.11b_Nss1,(1Mbps)_1TX

OBW

2484MHz_TnomVnom

06/11/2021





Summary

Mode	Max-OBW (Hz)	ITU-Code	Min-OBW (Hz)
2.471-2.497GHz	-	-	-
802.11b_Nss1,(1Mbps)_2TX	19.68M	19M7G1D	19.68M

Max-OBW = Maximum 99% occupied bandwidth; Min-OBW = Minimum 99% occupied bandwidth;



Result

Mode	Result	Limit (Hz)	P1-OBW (Hz)	P2-OBW (Hz)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-
2484MHz_TnomVnom	Pass	26M	19.68M	19.68M

P1-OBW = Port 1 99% occupied bandwidth; P2-OBW = Port 2 99% occupied bandwidth; Pn-OBW = Port n 99% occupied bandwidth

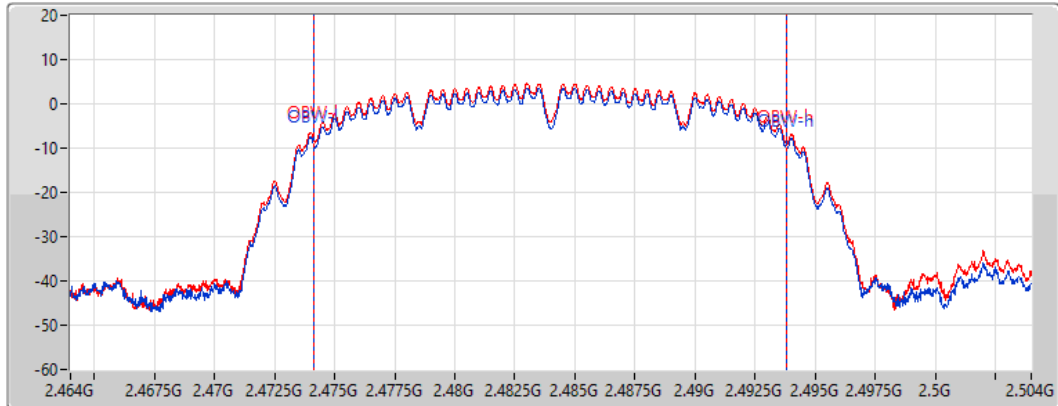
802.11b_Nss1,(1Mbps)_2TX



OBW

2484MHz_TnomVnom

06/11/2021

CF
2.484GHz
Span
40MHz
RBW
300kHz
VBW
300kHz
Sweep Time
200ms
Detector Type
Peak



Port 1 
Port 2 

OBW(Hz)	FI-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
19.68M	2.47412G	2.4938G	26M	1
19.68M	2.47412G	2.4938G	26M	2



Summary

Mode	Max-SBW (Hz)	Min-SBW (Hz)	Max-SF	Min-SF
2.471-2.497GHz	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	15.2M	15.2M	11.055	11.055

Max-SBW = Maximum spreading bandwidth; Min-SBW = Minimum spreading bandwidth;
Max-SF = Maximum spreading factor; Min-SF = Minimum spreading factor;



Result

Mode	Result	SBW Limit (Hz)	Symbol Rate (MSPS)	SF Limit	P2-SBW (Hz)	P2-SF
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-
2484MHz_TnomVnom	Pass	500k	1.375M	10	15.2M	11.055

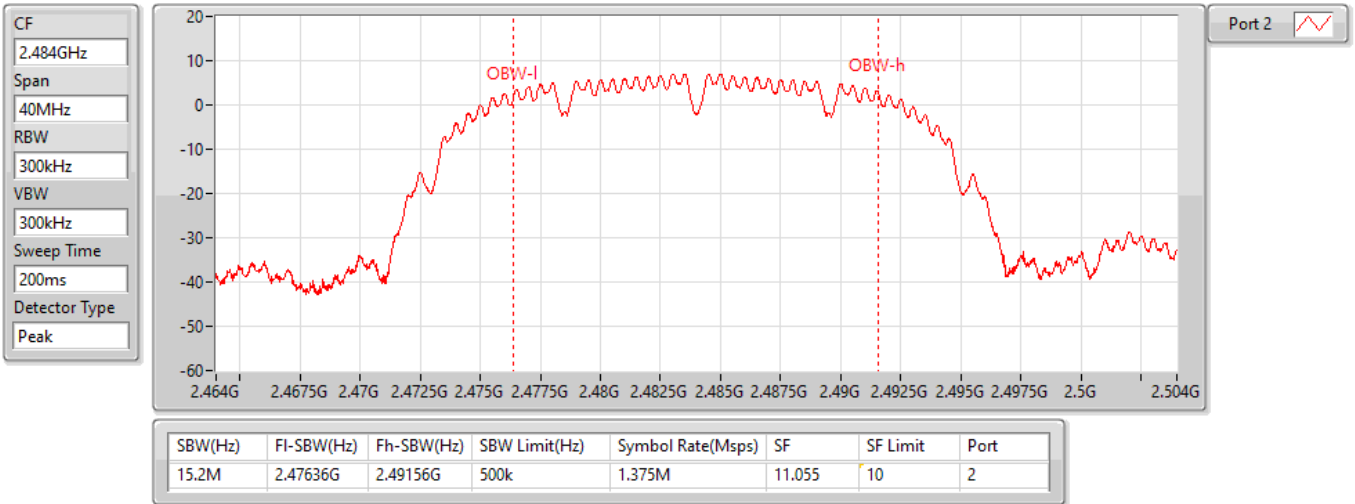
P1-SBW = Port 1 spreading bandwidth; P2-SBW = Port 2 spreading bandwidth; Pn-SBW = Port n spreading bandwidth;
P1-SF = Port 1 spreading factor; P2-SF = Port 2 spreading factor; Pn-SF = Port n spreading factor;

802.11b_Nss1,(1Mbps)_1TX

SBW

2484MHz_TnomVnom

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Summary

Mode	Max-SBW (Hz)	Min-SBW (Hz)	Max-SF	Min-SF
2.471-2.497GHz	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	15.26M	15.24M	11.098	11.084

Max-SBW = Maximum spreading bandwidth; Min-SBW = Minimum spreading bandwidth;
Max-SF = Maximum spreading factor; Min-SF = Minimum spreading factor;

Result

Mode	Result	SBW Limit (Hz)	Symbol Rate (MSPS)	SF Limit	P1-SBW (Hz)	P1-SF	P2-SBW (Hz)	P2-SF
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-	-	-
2484MHz_TnomVnom	Pass	500k	1.375M	10	15.24M	11.084	15.26M	11.098

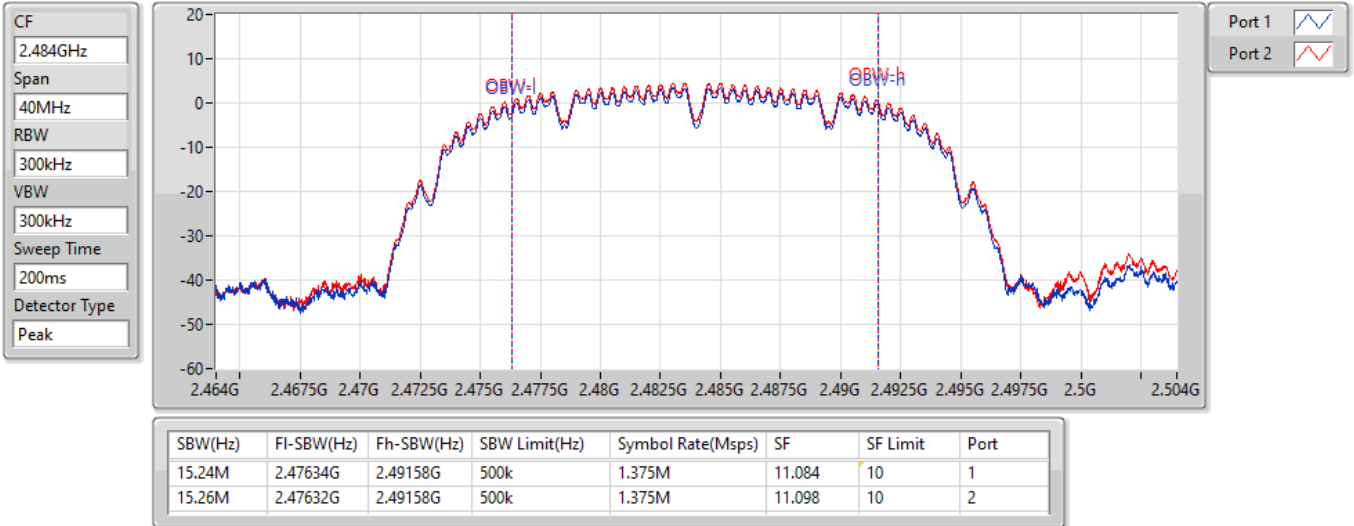
P1-SBW = Port 1 spreading bandwidth; P2-SBW = Port 2 spreading bandwidth; Pn-SBW = Port n spreading bandwidth;
P1-SF = Port 1 spreading factor; P2-SF = Port 2 spreading factor; Pn-SF = Port n spreading factor;

802.11b_Nss1,(1Mbps)_2TX

SBW

2484MHz_TnomVnom

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Summary

Mode	Antenna Power (dBm/MHz)	Antenna Power (mW/MHz)	EIRP Antenna Power (dBm/MHz)	EIRP Antenna Power (mW/MHz)
2.471-2.497GHz	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	8.61	7.26106	12.11	16.25549

**Result**

Mode	Result	Gain (dBi)	P2 (dBm/MHz)	Antenna Power (dBm/MHz)	Antenna Power (mW/MHz)	Antenna Power Lim. (mW/MHz)	EIRP Antenna Power (dBm/MHz)	EIRP Antenna Power (mW/MHz)	EIRP Antenna Power Lim. (mW/MHz)
802.11b_Nss1.(1Mbps)_1TX	-	-	-	-	-	-	-	-	-
2484MHz_TnomVnom	Pass	3.50	8.61	8.61	7.26106	10	12.11	16.25549	16.368

P1 = Port 1 Antenna Power; P2 = Port 2 Antenna Power; Pn = Port n Antenna Power;
Antenna Power = Sum by P1-Pn;



Summary

Mode	Antenna Power (dBm/MHz)	Antenna Power (mW/MHz)	EIRP Antenna Power (dBm/MHz)	EIRP Antenna Power (mW/MHz)
2.471-2.497GHz	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	8.51	7.09578	12.01	15.88547



Result

Mode	Result	Gain (dBi)	P1 (dBm/MHz)	P2 (dBm/MHz)	Antenna Power (dBm/MHz)	Antenna Power (mW/MHz)	Antenna Power Lim. (mW/MHz)	EIRP Antenna Power (dBm/MHz)	EIRP Antenna Power (mW/MHz)	EIRP Antenna Power Lim. (mW/MHz)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-	-	-	-	-
2484MHz_TnomVnom	Pass	3.50	5.62	5.38	8.51	7.09578	10	12.01	15.88547	16.368

P1 = Port 1 Antenna Power; P2 = Port 2 Antenna Power; Pn = Port n Antenna Power;
Antenna Power = Sum by P1~Pn;

**Summary**

Mode	Result	Antenna Power (dBm/MHz)	Antenna Power (mW/MHz)	Declare (mW/MHz)	Tolerance (%)	Limit+ (%)	Limit- (%)
2.471-2.497GHz	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	8.61	7.26106	7.26106	0.00	20	-80
802.11b_Nss1,(1Mbps)_2TX	Pass	8.51	7.09578	7.26106	-2.28	20	-80

Result

Mode	Result	Antenna Power (dBm/MHz)	Antenna Power (mW/MHz)	Declare (mW/MHz)	Tolerance (%)	Limit+ (%)	Limit- (%)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-
2484MHz_TnomVnom	Pass	8.61	7.26106	7.26106	0.00	20	-80
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-	-
2484MHz_TnomVnom	Pass	8.51	7.09578	7.26106	-2.28	20	-80



Summary

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	Freq (Hz)	P1 (dBm/MHz)	Psum (dBm/MHz)	Psum (uW/MHz)	Limit (dBm/MHz)	Limit (uW/MHz)	P2 (dBm/MHz)
2.471-2.497GHz	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	2.497G	2.51G	1M	2.50225G	-	-22.15	6.09537	-16.02	25	-22.15

Result

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	Freq (Hz)	P1 (dBm/MHz)	Psum (dBm/MHz)	Psum (uW/MHz)	Limit (dBm/MHz)	Limit (uW/MHz)	P2 (dBm/MHz)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-	-	-	-	-
2484MHz_TnomVnom	Pass	30M	2.458G	1M	745.65M	-	-37.20	0.19055	-26.02	2.5	-37.20
2484MHz_TnomVnom	Pass	2.458G	2.471G	1M	2.46588G	-	-26.67	2.15278	-16.02	25	-26.67
2484MHz_TnomVnom	Pass	2.497G	2.51G	1M	2.50225G	-	-22.15	6.09537	-16.02	25	-22.15
2484MHz_TnomVnom	Pass	2.51G	12.5G	1M	2.5125G	-	-34.34	0.36813	-26.02	2.5	-34.34

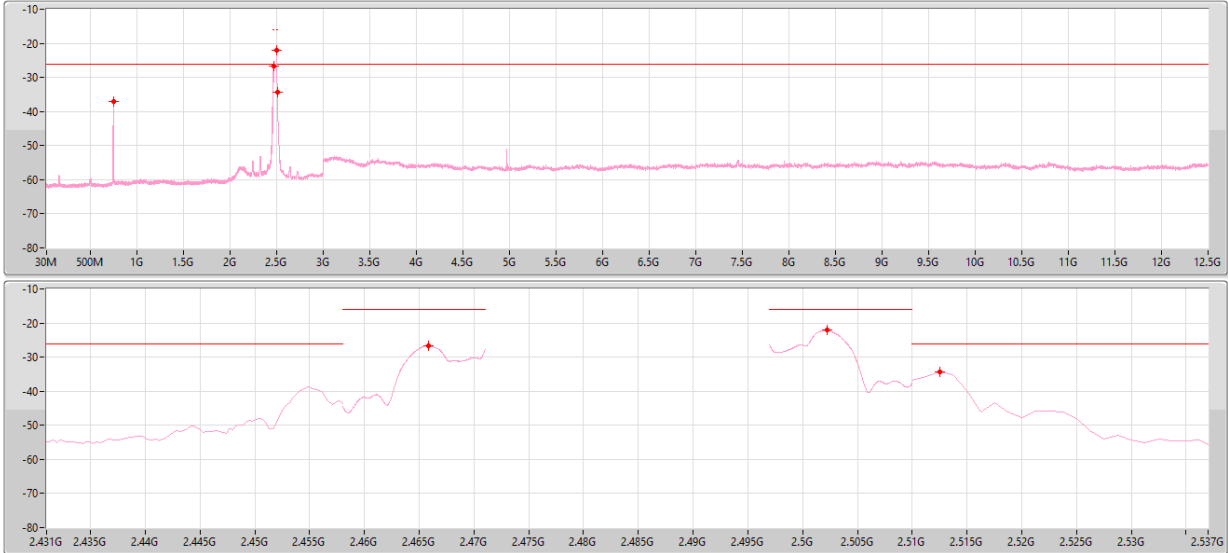
802.11b_Nss1,(1Mbps)_1TX

2484MHz_TnomVnom

CSE-TX

04/12/2021

Limit
Port 2



F-Start(Hz)	F-Stop(Hz)	Freq(Hz)	Psum(dBm)	Limit(dBm)	Margin(dB)	P1(dBm)	P2(dBm)
30M	2.458G	745.65M	-37.20	-26.02	-11.18	-	-37.20
2.458G	2.471G	2.46588G	-26.67	-16.02	-10.65	-	-26.67
2.497G	2.51G	2.50225G	-22.15	-16.02	-6.13	-	-22.15
2.51G	12.5G	2.5125G	-34.34	-26.02	-8.32	-	-34.34



Summary

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	Freq (Hz)	P1 (dBm/MHz)	P2 (dBm/MHz)	Psum (dBm/MHz)	Psum (uW/MHz)	Limit (dBm/MHz)	Limit (uW/MHz)
2.471-2.497GHz	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	Pass	2.497G	2.51G	1M	2.50217G	-29.51	-30.34	-26.89	2.04414	-16.02	25



Result

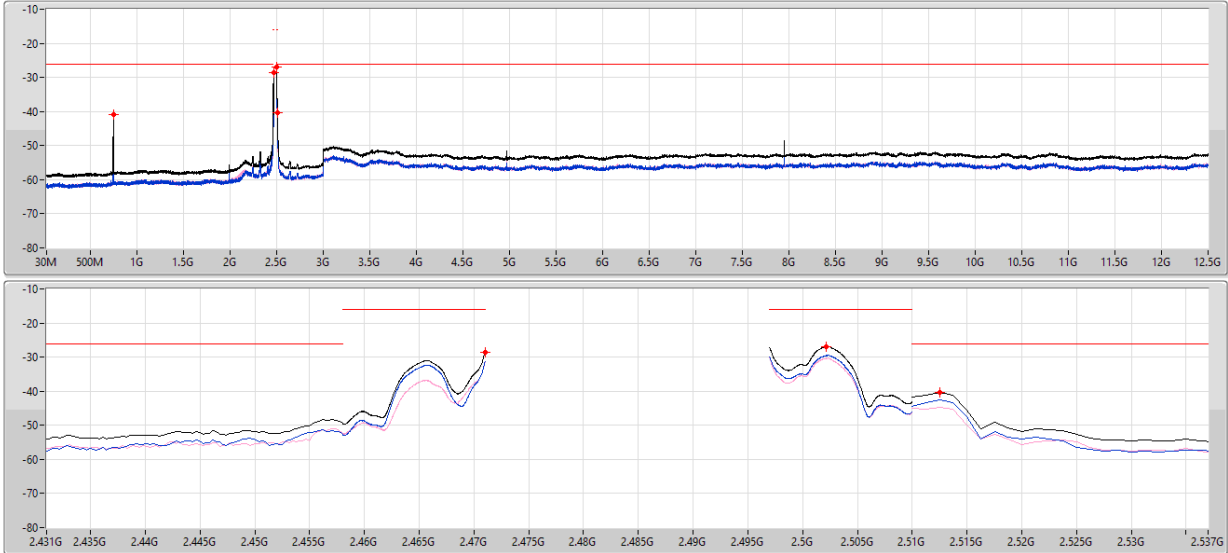
Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	Freq (Hz)	P1 (dBm/MHz)	P2 (dBm/MHz)	Psum (dBm/MHz)	Psum (uW/MHz)	Limit (dBm/MHz)	Limit (uW/MHz)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-	-	-	-	-	-
2484MHz_TnomVnom	Pass	30M	2.458G	1M	745.65M	-43.55	-44.05	-40.78	0.08351	-26.02	2.5
2484MHz_TnomVnom	Pass	2.458G	2.471G	1M	2.471G	-31.41	-31.58	-28.48	1.41779	-16.02	25
2484MHz_TnomVnom	Pass	2.497G	2.51G	1M	2.50217G	-29.51	-30.34	-26.89	2.04414	-16.02	25
2484MHz_TnomVnom	Pass	2.51G	12.5G	1M	2.5125G	-42.47	-44.81	-40.47	0.08966	-26.02	2.5

802.11b_Nss1,(1Mbps)_2TX

2484MHz_TnomVnom

CSE-TX

04/12/2021



F-Start(Hz)	F-Stop(Hz)	Freq(Hz)	Psum(dBm)	Limit(dBm)	Margin(dB)	P1(dBm)	P2(dBm)
30M	2.458G	745.65M	-40.78	-26.02	-14.76	-43.55	-44.05
2.458G	2.471G	2.471G	-28.48	-16.02	-12.46	-31.41	-31.58
2.497G	2.51G	2.50217G	-26.89	-16.02	-10.87	-29.51	-30.34
2.51G	12.5G	2.5125G	-40.47	-26.02	-14.45	-42.47	-44.81



Summary

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	Freq (Hz)	P1 (dBm)	Psum (dBm)	Psum (nW)	Limit (dBm)	Limit (nW)	P2 (dBm)
2.471-2.497GHz	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	1G	12.5G	1M	7.94888G	-	-59.58	1.10154	-46.99	20	-59.58



Result

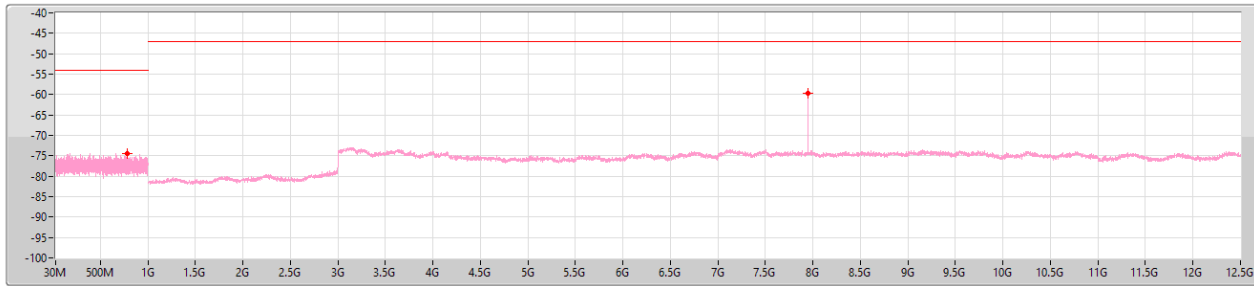
Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	Freq (Hz)	P2 (dBm)	Psum (dBm)	Psum (nW)	Limit (dBm)	Limit (nW)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-	-	-	-
2484MHz_TnomVnom	Pass	30M	1G	100k	787.81M	-74.39	-74.39	0.03639	-53.98	4
2484MHz_TnomVnom	Pass	1G	12.5G	1M	7.94888G	-59.58	-59.58	1.10154	-46.99	20

802.11b_Nss1,(1Mbps)_1TX

2484MHz_TnomVnom

CSE-RX

06/11/2021



Limit
Port 2

F-Start(Hz)	F-Stop(Hz)	Freq(Hz)	Psum(dBm)	Limit(dBm)	Margin(dB)	P1(dBm)	P2(dBm)
30M	1G	787.81M	-74.39	-53.98	-20.41	-	-74.39
1G	12.5G	7.94888G	-59.58	-46.99	-12.59	-	-59.58



Summary

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	Freq (Hz)	P1 (dBm)	P2 (dBm)	Psum (dBm)	Psum (nW)	Limit (dBm)	Limit (nW)
2.471-2.497GHz	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	Pass	1G	12.5G	1M	7.94888G	-55.37	-59.66	-54.00	3.98546	-46.99	20



Result

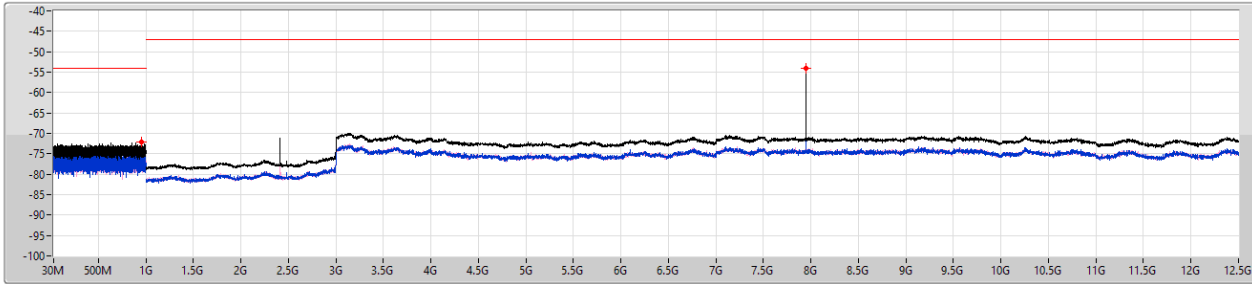
Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	Freq (Hz)	P1 (dBm)	P2 (dBm)	Psum (dBm)	Psum (nW)	Limit (dBm)	Limit (nW)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-	-	-	-	-	-
2484MHz_TnomVnom	Pass	30M	1G	100k	954.53M	-75.98	-74.42	-72.12	0.06138	-53.98	4
2484MHz_TnomVnom	Pass	1G	12.5G	1M	7.94888G	-55.37	-59.66	-54.00	3.98546	-46.99	20

802.11b_Nss1,(1Mbps)_2TX

2484MHz_TnomVnom

CSE-RX

06/11/2021



Limit	
Sum	
Port 1	
Port 2	

F-Start(Hz)	F-Stop(Hz)	Freq(Hz)	Psum(dBm)	Limit(dBm)	Margin(dB)	P1(dBm)	P2(dBm)
30M	1G	954.53M	-72.12	-53.98	-18.14	-75.98	-74.42
1G	12.5G	7.94888G	-54.00	-46.99	-7.01	-55.37	-59.66



Interference Prevention Function <1TX>

Appendix F.1

Summary

Mode	Result	MAC (ID Length)	ID Limit	Function
2.471-2.497GHz	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	00-E0-4C-C8-22-19	48 bits	Good



Interference Prevention Function <1TX>

Appendix F.1

Result

Mode	Result	MAC (ID Length)	ID Limit	Function
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-
2484MHz_TnomVnom	Pass	00-E0-4C-C8-22-19	48 bits	Good



Summary

Mode	Result	MAC (ID Length)	ID Limit	Function
2.471-2.497GHz	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	Pass	00-E0-4C-C8-22-19	48 bits	Good



Interference Prevention Function

Appendix F.2

Result

Mode	Result	MAC (ID Length)	ID Limit	Function
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-
2484MHz_TnomVnom	Pass	00-E0-4C-C8-22-19	48 bits	Good



Carrier Sensing Function <1TX>

Appendix G.1

Summary

Mode	Result	Interference Pin (dBm)	Function
2.471-2.497GHz	-	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	Undefined	Good



Carrier Sensing Function <1TX>

Appendix G.1

Result

Mode	Result	Interference Pin (dBm)	Function
802.11b_Nss1,(1Mbps)_1TX	-	-	-
2484MHz_TnomVnom	Pass	Undefined	Good



Carrier Sensing Function <2TX>

Appendix G.2

Summary

Mode	Result	Interference Pin (dBm)	Function
2.471-2.497GHz	-	-	-
802.11b_Nss1,(1Mbps)_2TX	Pass	Undefined	Good



Carrier Sensing Function <2TX>

Appendix G.2

Result

Mode	Result	Interference Pin (dBm)	Function
802.11b_Nss1,(1Mbps)_2TX	-	-	-
2484MHz_TnomVnom	Pass	Undefined	Good