

FCC Radio Test Report

FCC ID : PPQ-WCBN3509R
Equipment : Wireless LAN Module
Brand Name : LITEON
Model Name : WCBN3509R, WCBN3509R(AU)
Applicant : LITE-ON TECHNOLOGY CORP.
Bldg. C, 90, Chien 1 Road, Chung Ho, New Taipei City
23585, Taiwan, R.O.C
Manufacturer : LITE-ON TECHNOLOGY (Changzhou) CO., LTD
A9 Building, No.88 Yanghu Road, Wujin Hi-Tech
Industrial Development Zone, Changzhou City, Jiangsu
Province 213100 China
Standard : 47 CFR FCC Part 15.407

The product was received on Aug. 12, 2019, and testing was started from Aug. 18, 2019 and completed on Jun. 18, 2020. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Hsinhua Laboratory, the test report shall not be reproduced except in full.



Approved by: Allen Lin

SPORTON INTERNATIONAL INC. Hsinhua Laboratory

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Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
-	15.207	AC Power-line Conducted Emissions	PASS	Refer 1.1.5
-	15.407(a)	Emission Bandwidth	PASS	Refer 1.1.5
-	15.407(a)	Maximum Conducted Output Power	PASS	Refer 1.1.5
-	15.407(a)	Peak Power Spectral Density	PASS	Refer 1.1.5
-	15.407(b)	Unwanted Emissions	PASS	Refer 1.1.5

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and explanations:
None

Reviewed by: Sam Tsai

Report Producer: Debby Hung



1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5150-5250	a, n (HT20), ac (VHT20)	5180-5240	36-48 [4]
5250-5350		5260-5320	52-64 [4]
5470-5725		5500-5700	100-140 [8]
Straddle 5720		5720	144 [1]
5725-5850		5745-5825	149-165 [5]
5150-5250	n (HT40), ac (VHT40)	5190-5230	38-46 [2]
5250-5350		5270-5310	54-62 [2]
5470-5725		5510-5670	102-134 [3]
Straddle 5710		5710	142 [1]
5725-5850		5755-5795	151-159 [2]
5150-5250	ac (VHT80)	5210	42 [1]
5250-5350		5290	58 [1]
5470-5725		5530	106 [1]
Straddle 5690		5690	138 [1]
5725-5850		5775	155 [1]

Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11a	20	2TX
5.25-5.35GHz	802.11a	20	2TX
5.47-5.725GHz	802.11a	20	2TX
5.725-5.85GHz	802.11a	20	2TX
5.15-5.25GHz	802.11ac VHT20	20	2TX
5.25-5.35GHz	802.11ac VHT20	20	2TX
5.47-5.725GHz	802.11ac VHT20	20	2TX
5.725-5.85GHz	802.11ac VHT20	20	2TX
5.15-5.25GHz	802.11ac VHT40	40	2TX
5.25-5.35GHz	802.11ac VHT40	40	2TX
5.47-5.725GHz	802.11ac VHT40	40	2TX
5.725-5.85GHz	802.11ac VHT40	40	2TX
5.15-5.25GHz	802.11ac VHT80	80	2TX



Band	Mode	BWch (MHz)	Nant
5.25-5.35GHz	802.11ac VHT80	80	2TX
5.47-5.725GHz	802.11ac VHT80	80	2TX
5.725-5.85GHz	802.11ac VHT80	80	2TX

Note:

- ♦ 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- ♦ VHT20, VHT40, VHT80 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- ♦ BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Support	Remark
1	HONGBO	290-10569	PIFA	I-Pex	2.4G+5G	Group 1
2	HONGBO	290-10569	PIFA	I-Pex	2.4G+5G	
3	HONGBO	290-10569	PIFA	I-Pex	BT	
4	PSA	RFMTA401030IML B702	PIFA	I-Pex	2.4G+5G	Group 2
5	PSA	RFMTA401030IML B702	PIFA	I-Pex	2.4G+5G	
6	PSA	RFMTA401030IML B702	PIFA	I-Pex	BT	
7	HONGBO	290-10843	PIFA	I-Pex	2.4G+5G	Group 3
8	HONGBO	290-10843	PIFA	I-Pex	2.4G+5G	
9	HONGBO	290-10843	PIFA	I-Pex	BT	
10	PSA	RFMTA401050IML B706	PIFA	I-Pex	2.4G+5G	Group 4
11	PSA	RFMTA401050IML B706	PIFA	I-Pex	2.4G+5G	
12	PSA	RFMTA401050IML B706	PIFA	I-Pex	BT	
13	HONGBO	290-10844	PIFA	I-Pex	2.4G+5G	Group 5
14	HONGBO	290-10844	PIFA	I-Pex	2.4G+5G	
15	HONGBO	290-10844	PIFA	I-Pex	BT	
16	PSA	RFMTA401080IML B704	PIFA	I-Pex	2.4G+5G	Group 6
17	PSA	RFMTA401080IML B704	PIFA	I-Pex	2.4G+5G	
18	PSA	RFMTA401080IML B704	PIFA	I-Pex	BT	



Ant.	Brand	Model Name	Antenna Type	Connector	Support	Remark
19	PSA	RFMTA340730IML B305	PIFA	I-Pex	2.4G+5G	Group 7
20	PSA	RFMTA340715IML B302	PIFA	I-Pex	2.4G+5G	
21	PSA	RFMTA340730IML B305	PIFA	I-Pex	BT	
22	ANAM Electronics	DH350	Dipole	I-Pex	5G	Group 8
23	ANAM Electronics	DH350	Dipole	I-Pex	5G	
24	ANAM Electronics	SB550	Dipole	I-Pex	5G	Group 9
25	ANAM Electronics	SB550	Dipole	I-Pex	5G	

Ant.	Port	Gain (dBi)			Remark
		2.4G	5G	BT	
1	1	3.74	3.8	-	Group 1
2	2	3.74	3.8	-	
3	3	-	-	3.74	
4	1	3.74	3.8	-	Group 2
5	2	3.74	3.8	-	
6	3	-	-	3.74	
7	1	3.05	1.59	-	Group 3
8	2	3.05	1.59	-	
9	3	-	-	3.05	
10	1	3.05	1.59	-	Group 4
11	2	3.05	1.59	-	
12	3	-	-	3.05	
13	1	2.38	1.49	-	Group 5
14	2	2.38	1.49	-	
15	3	-	-	2.38	



Ant.	Port	Gain (dBi)			Remark
		2.4G	5G	BT	
16	1	1.72	1.25	-	Group 6
17	2	1.72	1.25	-	
18	3	-	-	1.72	
19	1	-0.5	3.28	-	Group 7
20	2	-1.68	3.08	-	
21	3	-	-	-0.5	
22	1	-	2.1	-	Group 8
23	2	-	2.1	-	
24	1	-	2.1	-	Group 9
25	2	-	2.1	-	

Note 1: The EUT has twenty five antennas.

For 2.4GHz function:

For IEEE 802.11 b/g/n/ac mode (2TX/2RX)

Ant. 1~2, 4~5, 7~8, 10~11, 13~14, 16~17, 19~20 could transmit/receive simultaneously.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Ant. 3, 6, 9, 12, 15, 18, 21 could transmit/receive simultaneously.

For 5GHz function:

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

Ant. 1~2, 4~5, 7~8, 10~11, 13~14, 16~17, 19~20, 22~23, 24~25 could transmit/receive simultaneously.



1.1.3 EUT Information

Operational Condition			
EUT Power Type	From Host System		
EUT Function	<input checked="" type="checkbox"/> AP	<input checked="" type="checkbox"/> Client	
Beamforming Function	<input type="checkbox"/> With beamforming	<input checked="" type="checkbox"/> Without beamforming	
TPC Function	<input checked="" type="checkbox"/> With TPC Function	<input type="checkbox"/> Without TPC Function	
Weather Band	<input type="checkbox"/> With 5600~5650MHz	<input checked="" type="checkbox"/> Without 5600~5650MHz	
Type of EUT			
<input checked="" type="checkbox"/>	Stand-alone for Client mode		
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device)		
	Combined Equipment - Brand Name / Model No.:	...	
<input checked="" type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems) for AP mode		
	Host System - Brand Name :DENON/ Model No.: DENON HOME SOUND BAR 550		
<input type="checkbox"/>	Other:		

1.1.4 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
WCBN3509R	All the models are identical, the difference are "chip model name" and "software".
WCBN3509R(AU)	

Note: The Model Name WCBN3509R was measured during the test..

1.1.5 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FR980219AN & FR980219-01AN. Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. Master SKU was added 2. Antenna 24,25 was added (For Limit Module Master DFS)	After evaluating, DFS test is required to be re-tested.



1.2 Testing Applied Standards

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

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013
- ♦ KDB 789033 D02 v02r01

The following reference test guidance is not within the scope of accreditation of TAF:

- ♦ KDB 662911 D01 v02r01
- ♦ KDB 414788 D01 v01r01

1.3 Testing Location Information

Test Lab. : Sporton International Inc. Hsinhua Laboratory		
<input checked="" type="checkbox"/> Hsinhua	ADD: No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)	
(TAF: 3785)	TEL: 886-3-327-3456	FAX: 886-3-327-0973
Test site Designation No. TW1190 with FCC.		
<input type="checkbox"/> Wen 33rd.St.	ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)	
(TAF: 3785)	TEL: 886-3-318-0787	FAX: 886-3-318-0287
Test site Designation No. TW0008 with FCC.		

Laboratory number TAF 3785 is a spin-off from the original Laboratory number TAF 1190.

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