



FCC RADIO TEST REPORT

FCC ID : S9GR550
Equipment : Wireless Access Point
Brand Name : Ruckus
Model Name : R550
Applicant : Ruckus Wireless Inc.
350 W. Java Dr., Sunnyvale CA 94089 USA
Manufacturer : Ruckus Wireless Inc.
350 W. Java Dr., Sunnyvale CA 94089 USA
Standard : FCC Part 15 Subpart C §15.247

The product was received on Jan. 22, 2020 and testing was started from Feb. 25, 2020 and completed on Feb. 25, 2020. We, Sporton International (USA) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of government.

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

Approved by: Ken Chen

Sporton International (USA) Inc.
1175 Montague Expressway, Milpitas, CA 95035



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History of this test report

Report No.	Version	Description	Issued Date
FR200117001A	01	Initial issue of report	Apr. 01, 2020
FR200117001A	02	Revise Antenna information in section 1.1	Apr. 17, 2020



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.207	AC Conducted Emission	Pass	Under limit 2.48 dB at 0.461 MHz
3.2	15.203 & 15.247(b)	Antenna Requirement	Pass	-

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:

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.



1 General Description

1.1 Product Feature of Equipment Under Test

Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ax, Wi-Fi 5GHz 802.11a/n/ac/ax and Zigbee.

Product Specification subjective to this standard	
Antenna Type	WLAN <Ant. 1>: Internal Antenna <Ant. 2>: Internal Antenna Bluetooth: Metal Antenna Zigbee: Metal Antenna

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Location

Test Site	Sporton International (USA) Inc.
Test Site Location	1175 Montague Expressway, Milpitas, CA 95035 TEL : 408 9043300
Test Site No.	Sporton Site No.
	CO01-CA

1.4 Applicable Standards

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01
- ♦

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	0	2402	21	2444
	1	2404	22	2446
	2	2406	23	2448
	3	2408	24	2450
	4	2410	25	2452
	5	2412	26	2454
	6	2414	27	2456
	7	2416	28	2458
	8	2418	29	2460
	9	2420	30	2462
	10	2422	31	2464
	11	2424	32	2466
	12	2426	33	2468
	13	2428	34	2470
	14	2430	35	2472
	15	2432	36	2474
	16	2434	37	2476
	17	2436	38	2478
	18	2438	39	2480
	19	2440	-	-
20	2442	-	-	

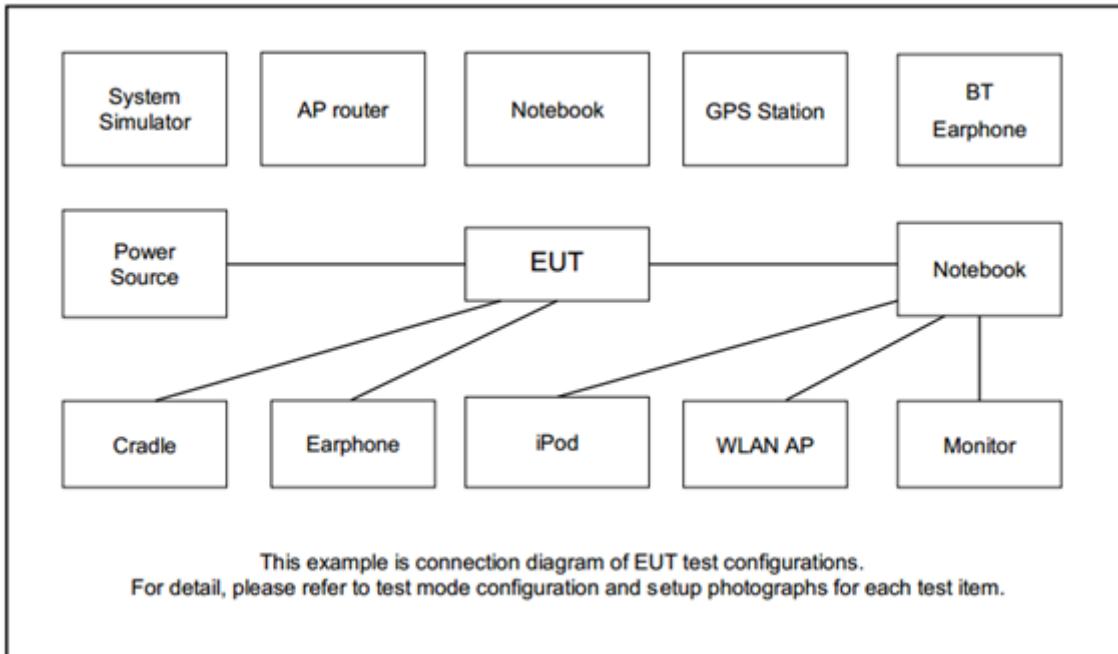
2.2 Test Mode

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz),
- b. AC power line Conducted Emission was tested under maximum output power.

The following summary table is showing all test modes to demonstrate in compliance with the standard.

Summary table of Test Cases	
Test Item	Data Rate / Modulation
	Bluetooth – LE / GFSK
AC Conducted Emission	Mode 1: WLAN (2.4GHz) Link + WLAN (5GHz) Idle + zigbee Idle + PoE + LAN Link

2.3 Connection Diagram of Test System





2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Laptop	DELL	P79G	FCC DoC	N/A	N/A
2.	Notebook	HP	15t-cu000	PD97265NG	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	USB Flash drive	SanDisk	N/A	N/A	N/A	N/A
4.	PoE Adapter	Ruckus Wireless Inc.	N/A	N/A	N/A	N/A
5.	Adapter	Ruckus Wireless Inc.	APH-5020	N/A	N/A	N/A



3 Test Result

3.1 AC Conducted Emission Measurement

3.1.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

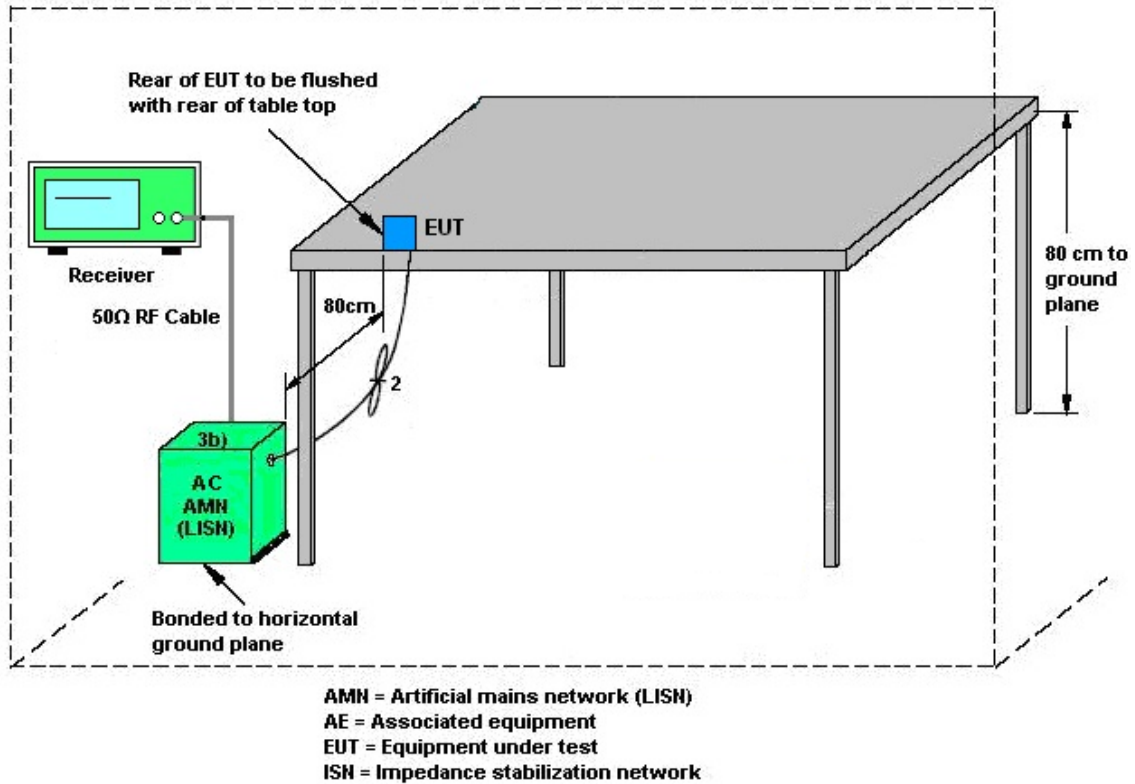
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

3.1.4 Test Setup



3.1.5 Test Result of AC Conducted Emission

Please refer to Appendix A.



3.2 Antenna Requirements

3.2.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

3.2.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.2.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
LISN	TESEQ	NNB51	47407	N/A	Jun. 26, 2019	Feb. 25, 2020	Jun. 25, 2020	Conduction (CO01-CA)
EMI Test Receiver	R&S	ESR7	102177	9KHz~7GHz	Jun. 27, 2019	Feb. 25, 2020	Jun. 26, 2020	Conduction (CO01-CA)
Pulse limiter with 10dB attenuation	R&S	VTSD 9561-F N	9561-F- N00412	N/A	Jun. 11, 2019	Feb. 25, 2020	Jun. 10, 2020	Conduction (CO01-CA)
Test Software	EMC32	N/A	N/A	N/A	N/A	Feb. 25, 2020	N/A	Conduction (CO01-CA)



5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	1.7
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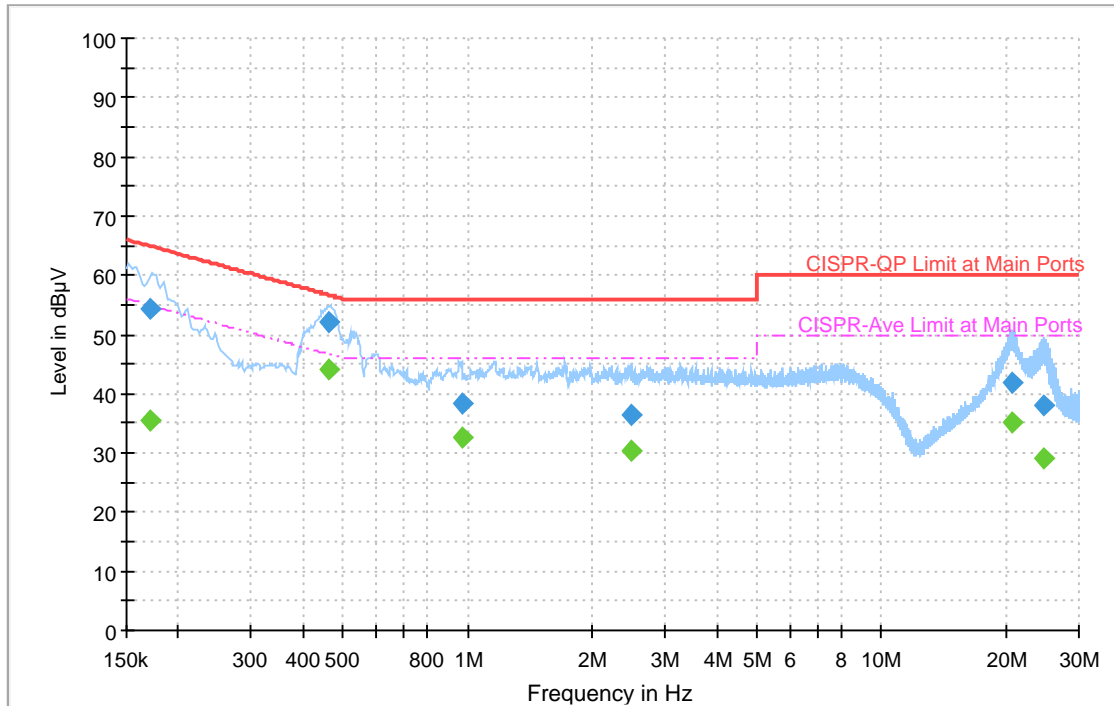
Appendix A. AC Conducted Emission Test Results

Test Engineer : JC Liang	Temperature :	24~26°C
	Relative Humidity :	22~25%

EUT Information

Site: CO01-CA
 Project: 200117001
 Power: 120Vac/60Hz
 Mode: 1

Full Spectrum



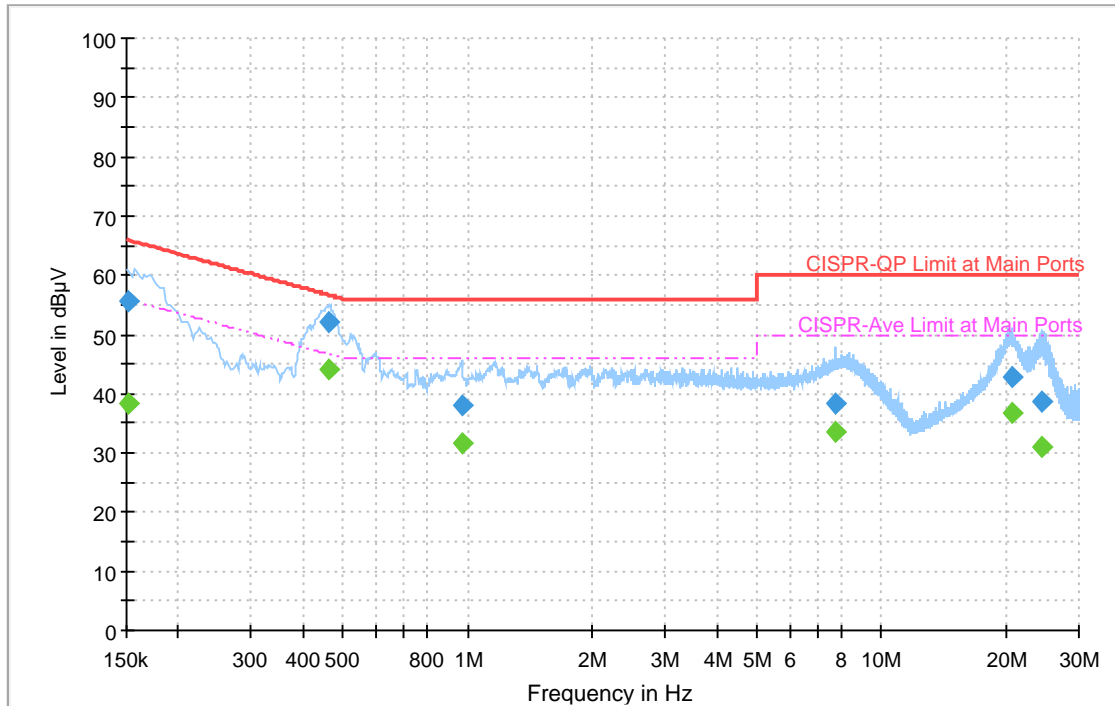
Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.170250	---	35.62	54.95	19.33	L1	OFF	20.3
0.170250	54.31	---	64.95	10.64	L1	OFF	20.3
0.460500	---	44.12	46.68	2.56	L1	OFF	20.4
0.460500	51.95	---	56.68	4.73	L1	OFF	20.4
0.971250	---	32.49	46.00	13.51	L1	OFF	20.4
0.971250	38.47	---	56.00	17.53	L1	OFF	20.4
2.484330	---	30.21	46.00	15.79	L1	OFF	20.4
2.484330	36.36	---	56.00	19.64	L1	OFF	20.4
20.640750	---	35.14	50.00	14.86	L1	OFF	20.7
20.640750	41.76	---	60.00	18.24	L1	OFF	20.7
24.702000	---	29.18	50.00	20.82	L1	OFF	20.8
24.702000	37.87	---	60.00	22.13	L1	OFF	20.8

EUT Information

Site: CO01-CA
 Project: 200117001
 Power: 120Vac/60Hz
 Mode: 1

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	38.43	55.88	17.45	N	OFF	20.3
0.152250	55.63	---	65.88	10.25	N	OFF	20.3
0.460500	---	44.20	46.68	2.48	N	OFF	20.4
0.460500	51.93	---	56.68	4.75	N	OFF	20.4
0.971250	---	31.73	46.00	14.27	N	OFF	20.4
0.971250	37.90	---	56.00	18.10	N	OFF	20.4
7.741500	---	33.48	50.00	16.52	N	OFF	20.5
7.741500	38.49	---	60.00	21.51	N	OFF	20.5
20.715000	---	36.76	50.00	13.24	N	OFF	20.7
20.715000	42.79	---	60.00	17.21	N	OFF	20.7
24.384750	---	30.98	50.00	19.02	N	OFF	20.8
24.384750	38.52	---	60.00	21.48	N	OFF	20.8