

RF Exposure Evaluation Declaration

Product Name : AB-R1
Model No. : AB-R1
FCC ID : 2AB6UABR1
IC : 12163A-ABR1

Applicant : August Home, INC.

Address : 657 Bryant Street San Francisco, CA 94107 USA

Date of Receipt : Jul. 17, 2015
Issued Date : Aug. 20, 2015
Report No. : 1570462R-RF-US-P20V01
Report Version : V1.1



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of QuieTek Corporation.

Test Report Certification

Issued Date : Jul. 31, 2015

Report No. : 1570462R-RF-US-P20V01

Quietek

a  **DEKRA** company

Product Name : AB-R1
 Applicant : August Home, INC.
 Address : 657 Bryant Street San Francisco, CA 94107 USA
 Manufacturer : August Home, INC.
 Address : 657 Bryant Street San Francisco, CA 94107 USA
 Model No. : AB-R1
 FCC ID : 2AB6UABR1
 IC : 12163A-ABR1
 EUT Voltage : AC 16V
 Brand Name : AB-R1
 Applicable Standard : KDB 447498D01V05V02
 FCC Part1.1310(b)
 Test Result : Complied
 Performed Location : Suzhou EMC Laboratory
 No.99 Hongye Rd., Suzhou Industrial Park Loufeng
 Hi-Tech Development Zone., Suzhou, China
 TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
 FCC Registration Number: 800392

Documented By : Elaine Wang Senior Engineer

Reviewed By : Harry Zhao RF Engineering Manager

Approved By : Dream Cao Director

Laboratory Information

We, **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	:	BSMI, NCC, TAF
USA	:	FCC
Japan	:	VCCI
China	:	CNAS

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site :<http://www.quietek.com/tw/ctg/cts/accreditations.htm>
The address and introduction of Quietek Corporation's laboratories can be founded in our Web site :
<http://www.quietek.com/>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory :

No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : service@quietek.com

LinKou Testing Laboratory :

No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : service@quietek.com

Suzhou Testing Laboratory :

No.99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone., SuZhou, China
TEL : +86-512-6251-5088 / FAX : 86-512-6251-5098 E-Mail : service@quietek.com

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1570462R-RF-US-P20V01	V1.0	Initial Issued Report	Jul. 31, 2015
1570462R-RF-US-P20V01	V1.1	Added simultaneous evaluation for RF exposure.	Aug. 20, 2015

1. RF Exposure Evaluation

1.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	:	AB-R1
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

- Antenna Gain:

No.	Peak Gain
ANT	2.4GHz band: 3.13dBi 5GHz Band: 2.65dBi

1.3.1 Standalone transmission of RF Exposure Evaluation

- Output Power into Antenna & RF Exposure Evaluation Distance:

Test Mode	Frequency Band (MHz)	Maximum Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
802.11b/g/n(20MHz)	2412~2462MHz	160.6941	0.0657
802.11a/n(20MHz)	5180~5240MHz	7.1779	0.0026
802.11a/n(20MHz)	5260-5320MHz	8.3560	0.0031
802.11a/n(20MHz)	5500~5700MHz	11.0662	0.0041
802.11a/n(20MHz)	5745~5825MHz	11.5080	0.0042
802.11n(40MHz)	5190~5230MHz	5.7412	0.0021
802.11n(40MHz)	5270~5310MHz	6.7764	0.0025
802.11n(40MHz)	5510~5670MHz	8.6099	0.0032
802.11n(40MHz)	5755~5795MHz	10.5925	0.0039
Bluetooth	2402~2480MHz	2.7606	0.0011

Note: The standalone power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is below the limit of 1 mW/cm².

1.3.2 Simultaneous transmission of RF Exposure Evaluation

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 . The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

- The $[\sum \text{ of (the highest measured or estimated SAR for each standalone antenna configuration, adjusted for maximum tune-up tolerance) / 1.6 W/kg}] + [\sum \text{ of MPE ratios}]$ is ≤ 1.0 .
- The SAR to peak location separation ratios of all simultaneous transmitting antenna pairs operating in portable exposure conditions are all ≤ 0.04 and the $[\sum \text{ of MPE ratios}]$ is ≤ 1.0 .

Frequency Band (MHz)	WIFI Power Density at R = 20 cm (mW/cm ²)	BT Power Density at R = 20 cm (mW/cm ²)	\sum Power Density at R = 20 cm (mW/cm ²)
2412~2462MHz	0.0657	0.0011	0.0668
5180~5240MHz	0.0026	0.0011	0.0037
5260~5320MHz	0.0031	0.0011	0.0042
5500~5700MHz	0.0041	0.0011	0.0052
5745~5825MHz	0.0042	0.0011	0.0053
5190~5230MHz	0.0021	0.0011	0.0032
5270~5310MHz	0.0025	0.0011	0.0036
5510~5670MHz	0.0032	0.0011	0.0043
5755~5795MHz	0.0039	0.0011	0.0050

Note: The simultaneous power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is below the limit of 1 mW/cm².

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