



SAR Exclusion Evaluation Report

Applicant : ALCHEMA Inc.
Product Type : ALCHEMA Hard Cider Maker
Trade Name : ALCHEMA
Model Number : ALC-CLAWHI02
Date of Received : Oct. 30, 2017
Test Period : Nov. 07, 2017
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Issue by

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Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010



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Revision History

Rev.	Issue Date	Revisions	Revised By
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1. Description of Equipment under Test (EUT)

Applicant	ALCHEMA Inc. 4900 California Avenue Tower B, 2nd Floor Bakersfield California CA 93309 United States of America			
Manufacturer	ALCHEMA Inc. 4900 California Avenue Tower B, 2nd Floor Bakersfield California CA 93309 United States of America			
Product Type	ALCHEMA Hard Cider Maker			
Trade Name	ALCHEMA			
Model Number	ALC-CLAWHI02			
FCC ID	2AODH-ALCCLAWHI02			
Frequency Range	Operate Band		Frequency Range (MHz)	
	IEEE 802.11b / 802.11g IEEE 802.11n 2.4GHz 20MHz		2412 - 2462	
	Bluetooth LE		2402 - 2480	
Antenna Information	Band	Type	Model	Max. Gain (dBi)
	WLAN	PCB Antenna	---	-0.27
	Bluetooth LE	PCB Antenna	LB-BLE-005 (A8105 BQB BLE Module)	2.23

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1093. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

2. Reference Testing Standards

Standard	Description	Version
ANSI/IEEE C95.1	American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 KHz to 100 GHz, New York.	1992
IEEE 1528	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head From Wireless Communications Devices: Measurement Techniques.	2013
FCC 47 CFR Part 2.1093	Radiofrequency radiation exposure evaluation: portable devices.	---
FCC KDB 865664 D01	SAR measurement 100 MHz to 6 GHz - describes SAR measurement procedures for devices operating between 100 MHz to 6 GHz	v01r04
FCC KDB 865664 D02	RF Exposure Reporting - provides general reporting requirements as well as certain specific information required to support MPE and SAR compliance.	v01r02
FCC KDB 447498 D01	General RF Exposure Guidance - provides guidance pertaining to RF exposure requirements for mobile and portable device equipment authorizations.	v06
FCC KDB 248227 D01	SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS	v02r02



3. SAR Test Exclusion

As RF exposure evaluation of portable device, SAR test is not required when the evaluation results. According to KDB 447498 4.3.1, unless excluded by specific FCC test procedures, portable devices shall include SAR data for equipment approval. SAR test necessity will be based on the exclusion result.

The test exclusion refers KDB 447498 as below:

≤50mm:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR

>50mm and <200mm:

- [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
- [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

3.1 Conducted Power

The conducted power turn-up tolerance, please reference manufacturer specification.

WLAN conducted power reference report number:D50814R1.

There was no max average power can be refer in original wifi report.

Therefore, the Max average power checked by wifi test mode and the Max average tune-up power confirmed through module manufacturer.

Band	Data Rate (Mbps)	Frequency (MHz)	Average Power (dBm)
IEEE 802.11b	1	2412.0	18.11
		2437.0	18.15
		2462.0	18.20
IEEE 802.11g	6	2412.0	18.00
		2437.0	18.10
		2462.0	18.03
IEEE 802.11n 2.4GHz 20MHz	6.5	2412.0	18.10
		2437.0	18.18
		2462.0	18.02

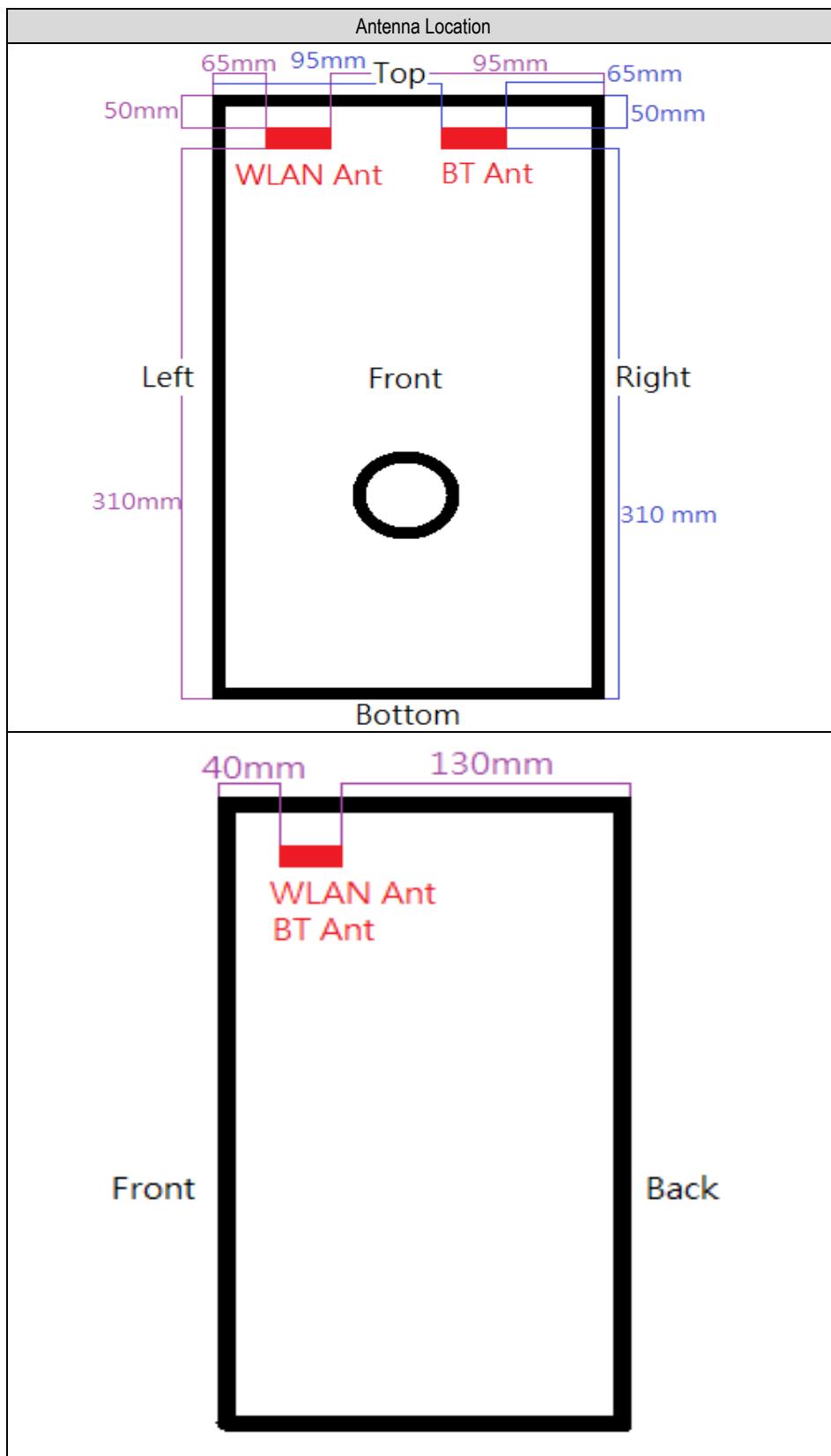
Band	Modulation Type	Data Rate (Mbps)	Frequency (MHz)	Average Power (dBm)
Bluetooth LE	GFSK	1	2402.0	2.02
			2440.0	1.38
			2480.0	0.89



3.2 Antenna Location

Transmitter and antenna implementation		
Band	WLAN Antenna	Bluetooth Antenna
WLAN	V	---
Bluetooth LE	---	V

Ant. Used	Antenna to user distance (mm)					
	To Front (mm)	To Back (mm)	To Left (mm)	To Right (mm)	To Top (mm)	To Bottom (mm)
WLAN Antenna	40	130	65	95	50	310
Bluetooth Antenna	40	130	95	65	50	310





3.3 Evaluation Results

The evaluation of SAR test reduction according to KDB447498

SAR test is not required when the results showed "EXEMPT".

SAR test reduction										
Ant. Used	Band	Frequency (GHz)	Tune-Power		Calculated threshold value					
			(dBm)	(mW)	Front	Back	Left	Right	Top	Bottom
WLAN Antenna	IEEE 802.11b	2.462	19.00	79	3.1	895.6mW	245.6mW	545.6mW	2.5	2695.6mW
					EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT
	IEEE 802.11g	2.462	19.00	79	3.1	895.6mW	245.6mW	545.6mW	2.5	2695.6mW
					EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT
	IEEE 802.11n 2.4GHz 20MHz	2.462	18.50	71	2.8	895.6mW	245.6mW	545.6mW	2.2	2695.6mW
					EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT
Bluetooth Antenna	Bluetooth LE	2.480	2.50	2	0.1	895.3mW	545.3mW	245.3mW	0.1	2695.3mW
					EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT

Exclusion Considerations: SAR is not required

Note:

1. Calculated Value include string "mW", that is mean through compare output power with threshold, if the output power more than threshold value the SAR test should be perform. Otherwise, the SAR test could be exempt. (> 50mm)
2. Calculated Value only include number format, that is mean through compare output power with threshold, if the Calculated value more than 7.5, the SAR test should be perform. Otherwise, the SAR test could be exempt. (<=50mm)
3. When an antenna qualifies for the standalone SAR test exclusion of KDB 447498 section 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to KDB 447498 section "4.3.2. Simultaneous transmission SAR test exclusion considerations b)"
4. We used highest frequency and power, that result should be evaluated the worst case.
5. Power and distance are rounded to the nearest mW and mm before calculation.
6. The result is rounded to one decimal place for comparison.