



Report No.: TW2109244E File reference No.: 2021-10-29

Applicant: Shenzhen ELET Technology Co.,Ltd.

Product: Chessnut AIR

Model No.: CA100, CA101, CA102, CA103, CA104

Trademark: Chessnut

Test Standards: FCC Part 15.249

Test result:

It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.10 &FCC Part 15 Subpart C,

Paragraph 15.249 regulations for the evaluation of

electromagnetic compatibility

Approved By

## Jack Chung

Jack Chung

Manager

Dated: October 29, 2021

Results appearing herein relate only to the sample tested The technical reports is issued errors and omissions exempt and is subject to withdrawal at

#### SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com

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### **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

#### **CNAS-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

#### FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

### Industry Canada (IC) — Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

#### A2LA (Certification Number: 5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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## Test Report Conclusion

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The report refers only to the sample tested and does not apply to the bulk.

11.0

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Photo of Test Setup and EUT View.

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#### 1.0 General Details

#### 1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le

Village, Nanshan District, Shenzhen, China

Telephone: (755) 83448688 Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 744189 For 3m Anechoic Chamber

#### 1.2 Applicant Details

Applicant: Shenzhen ELET Technology Co.,Ltd.

Address: 506 Room, building A, wenle Industrial Zone, Longzhu community, Xixiang street, Bao'an

District, Shenzhen

Telephone: -Fax: --

#### 1.3 Description of EUT

Product: Chessnut AIR

Manufacturer: Shenzhen ELET Technology Co.,Ltd.

Address: 506 Room, building A, wenle Industrial Zone, Longzhu community, Xixiang

street, Bao'an District, Shenzhen

Trademark: Chessnut
Additional Trademark: N/A
Model Number: CA100

Additional Model Name CA101, CA102, CA103, CA104

Hardware Version: HW V1.2 Software Version: SW V2.2

Rating: DC5.0V, 500mA

Battery: DC3.7V, 1000mAh Li-ion battery

Modulation Type: GFSK, π/4D-QPSK, 8DPSK (Bluetooth)

Operation Frequency: 2402-2480MHz

Channel Separate: 1MHz Channel Number: 79

Antenna Designation PCB antenna with gain 1.49dBi maximum (Get from the antenna specification

provided by the Manufacturer)

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1.4 Submitted Sample: 1 pc

1.5 Test Duration 2021-09-24 to 2021-10-29

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty = 5%

Conducted Emissions Uncertainty = 3.6dB

Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

1.7 Test Engineer

Terry Tang

The sample tested by

Print Name: Terry Tang

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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2021-06-18	2022-06-17
LISN	R&S	EZH3-Z5	100294	2021-06-18	2022-06-17
LISN	R&S	EZH3-Z5	100253	2021-06-18	2022-06-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2021-06-18	2022-06-17
Loop Antenna	EMCO	6507	00078608	2021-06-18	2024-06-17
Spectrum	R&S	FSIQ26	100292	2021-06-18	2022-06-17
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2021-07-02	2024-07-01
Horn Antenna	R&S	BBHA 9120D	9120D-631	2021-07-02	2024-07-01
Power meter	Anritsu	ML2487A	6K00003613	2021-06-18	2022-06-17
Power sensor	Anritsu	MA2491A	32263	2021-06-18	2022-06-17
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2021-07-02	2024-07-01
9*6*6 Anechoic			N/A	2021-07-02	2022-07-01
EMI Test Receiver	RS	ESVB	826156/011	2021-06-18	2022-06-17
EMI Test Receiver	RS	ESH3	860904/006	2021-06-18	2022-06-17
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2021-06-18	2022-06-17
Spectrum	HP/Agilent	E4407B	MY50441392	2021-06-18	2022-06-17
Spectrum	RS	FSP	1164.4391.38	2021-01-16	2022-01-15
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/FA		2021-06-18	2022-06-17
RF Cable	Zhengdi	7m		2021-06-18	2022-06-17
RF Switch	EM	EMSW18	060391	2021-06-18	2022-06-17
Pre-Amplifier	Schwarebeck	BBV9743	#218	2021-06-18	2022-06-17
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2021-06-18	2022-06-17
LISN	SCHAFFNER	NNB42	00012	2021-01-06	2022-01-05

#### 2.2 Automation Test Software

#### For Conducted Emission Test

Name	Version		
EZ-EMC	Ver.EMC-CON 3A1.1		

#### For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

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#### 3.0 Technical Details

#### 3.1 Summary of test results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.207	Conducted Emission Test	Pass	Complies
FCC Part 15 Subpart C Paragraph 15.249(a) & 15.249(b) Limit	Field Strength of Fundamental	Pass	Complies
FCC Part 15, Paragraph 15.209	Radiated Emission Test	Pass	Complies
FCC Part 15 Subpart C Paragraph 15.249(d) Limit	Band Edge Test	Pass	Complies

#### 3.2 Test Standards

FCC Part 15 Subpart C, Paragraph 15.249, ANSI C63.4:2014 and ANSI C63.10:2013

#### 4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

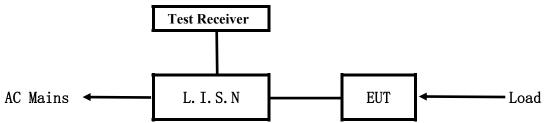
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#### 5. Power Line Conducted Emission Test

#### 5.1 Schematics of the test

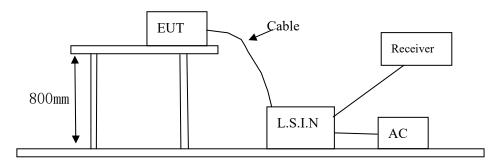


**EUT: Equipment Under Test** 

#### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum from 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10 –2013.

Test Voltage: 120V~, 60Hz Block diagram of Test setup



#### 5.3 Configuration of the EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

79 channels are provided to the EUT

#### A. EUT

Device	Manufacturer	Model	FCC ID
		CA100, CA101,	
Chessnut AIR	Shenzhen ELET Technology Co.,Ltd.	CA102, CA103,	2A3RB-CA100
		CA104	

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#### B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

#### C. Peripherals

Device	Manufacturer	Model Rating		
Power Supply	KEYU	KA23-0502000DEU	Input: 100-240V~, 50/60Hz, 0.35A;	

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency	Limits (dB µ V)				
(MHz)	Quasi-peak Lev 1	Average Level			
$0.15 \sim 0.50$	66.0~56.0*	56.0~46.0*			
$0.50 \sim 5.00$	56.0	46.0			
$5.00 \sim 30.00$	60.0	50.0			

Notes: 1. \*Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

#### 5.6 Test Results:

Pass

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#### A: Conducted Emission on Live Terminal (150kHz to 30MHz)

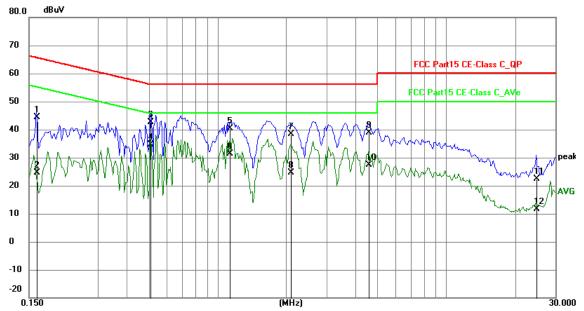
#### **EUT Operating Environment**

Temperature: 25°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

**EUT set Condition: Communication by BT** 

**Results: Pass** 

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1617	34.53	9.78	44.31	65.38	-21.07	QP	Р
2	0.1617	14.96	9.78	24.74	55.38	-30.64	AVG	Р
3	0.5088	32.93	9.77	42.70	56.00	-13.30	QP	Р
4	0.5088	24.86	9.77	34.63	46.00	-11.37	AVG	Р
5	1.1328	30.64	9.79	40.43	56.00	-15.57	QP	А
6	1.1328	21.53	9.79	31.32	46.00	-14.68	AVG	Л
7	2.0961	28.51	9.80	38.31	56.00	-17.69	QP	Р
8	2.0961	14.78	9.80	24.58	46.00	-21.42	AVG	Р
9	4.5834	29.04	9.91	38.95	56.00	-17.05	QP	Р
10	4.5834	17.35	9.91	27.26	46.00	-18.74	AVG	Р
11	24.6801	11.34	10.97	22.31	60.00	-37.69	QP	Р
12	24.6801	0.75	10.97	11.72	50.00	-38.28	AVG	Р

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## B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

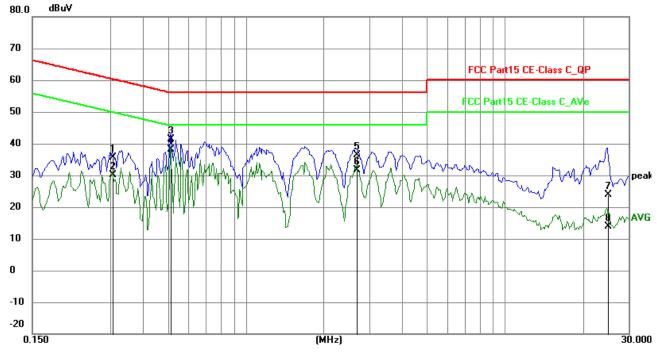
**EUT Operating Environment** 

Temperature: 25°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

**EUT set Condition: Communication by BT** 

**Results: Pass** 

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.3060	25.86	9.76	35.62	60.08	-24.46	QP	Р
2	0.3060	20.25	9.76	30.01	50.08	-20.07	AVG	Р
3	0.5127	31.57	9.77	41.34	56.00	-14.66	QP	Р
4	0.5127	28.43	9.77	38.20	46.00	-7.80	AVG	Р
5	2.6694	26.57	9.83	36.40	56.00	-19.60	QP	Р
6	2.6694	21.92	9.83	31.75	46.00	-14.25	AVG	Р
7	24.9375	12.84	10.99	23.83	60.00	-36.17	QP	Р
8	24.9375	2.77	10.99	13.76	50.00	-36.24	AVG	Р

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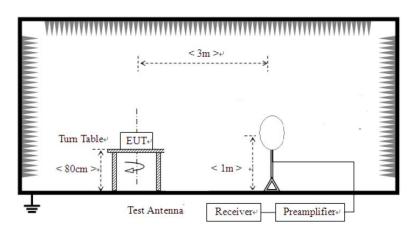


#### **6** Radiated Emission Test

- 6.1 Test Method and test Procedure:
- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. All readings are above 1 GHz, peak values with a resolution bandwidth of 1 MHz (Note: for Fundamental frequency radiated emission measurement, RBW=3MHz, VBW=10MHz). Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) The antenna polarization: Vertical polarization and Horizontal polarization.

#### **Block diagram of Test setup**

For radiated emissions from 9kHz to 30MHz



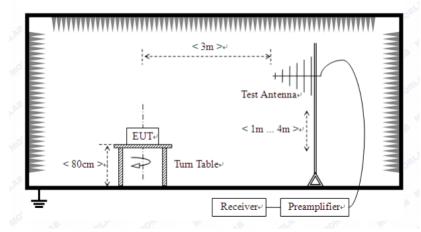
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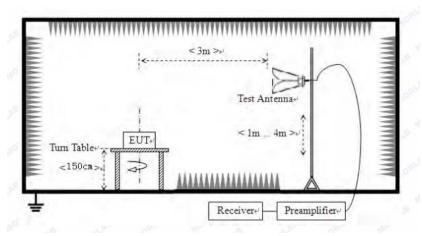
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For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



- 6.2 Configuration of The EUT
  Same as section 5.3 of this report
- 6.3 EUT Operating Condition

  Same as section 5.4 of this report.

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#### 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

#### A FCC Part 15 Subpart C Paragraph 15.249(a) Limit

Fundamental Frequency	Field Strength of Fundamental (3m)			Field S	trength of Harmo	nics (3m)
(MHz)	mV/m	dBuV/m		uV/m	dBu	V/m
2400-2483.5	50	94 (Average)	114 (Peak)	500	54 (Average)	74 (Peak)

Note:

- 1. RF Field Strength (dBuV) = 20 log RF Voltage (uV)
- 2.Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
- 3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

#### B. Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/m)
0.009-0.049	3	20log(2400/F(kHz)) +40log (300/3)
0.490-1.705	3	20log(24000/F(kHz)) +40log (30/3)
1.705-30	3	69.5
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
- 2. In the Above Table, the tighter limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
- 4. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-25G, the final emission level got using PK. For fundamental measurement, PK detector used.
- 5. The three modulation modes of GFSK,  $\pi$  /4D-QPSK and 8DPSK were tested. And only the worst case was recorded in the test report. GFSK was the worst case.
- 6. For radiated emissions from 9kHz to 30MHz, the emission level is much less than the limit for more than 20dB. No necessary to take down the record.

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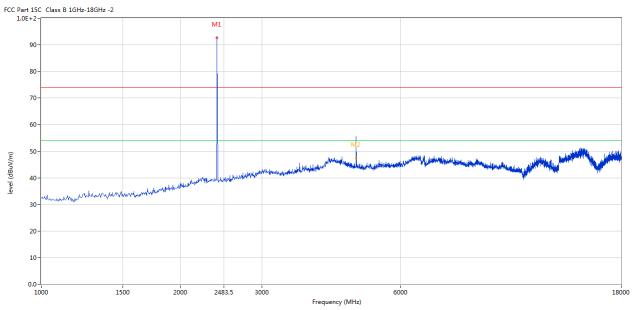


#### 6.5 Test result

#### A Fundamental & Harmonics Radiated Emission Data

Please refer to the following test plots for details: Low Channel-2402MHz

#### Horizontal



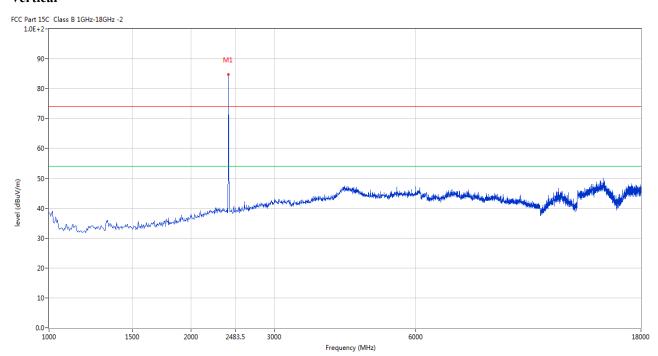
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2402.149	92.68	-3.57	114.0	-21.32	Peak	133.00	100	Horizontal	Pass
2	4802.799	55.59	3.12	74.0	-18.41	Peak	129.00	100	Horizontal	Pass
2**	4802.799	47.47	3.12	54.0	-6.53	AV	129.00	100	Horizontal	Pass

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#### Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2402.149	84.73	-3.57	114.0	-29.27	Peak	234.00	100	Vertical	Pass

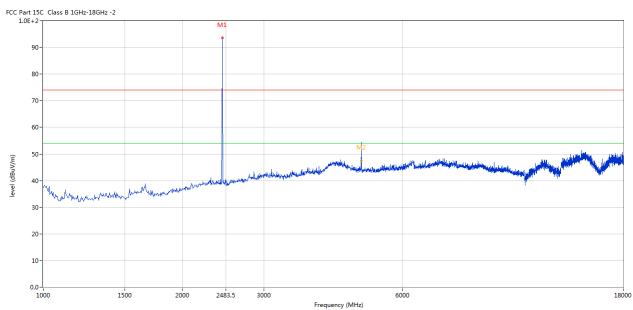
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Please refer to the following test plots for details: Middle Channel-2441MHz

#### Horizontal



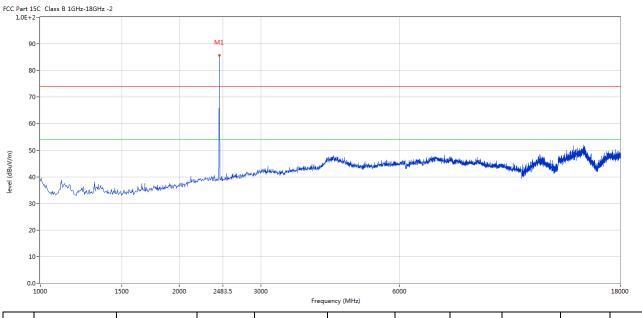
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2440.390	93.51	-3.57	114.0	-20.49	Peak	98.00	100	Horizontal	Pass
2	4883.529	54.49	3.20	74.0	-19.51	Peak	102.00	100	Horizontal	Pass
2**	4883.529	47.51	3.20	54.0	-6.49	AV	102.00	100	Horizontal	Pass

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#### Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(0)	(cm)		
1	2440.390	85.65	-3.57	114.0	-28.35	Peak	234.00	100	Vertical	Pass

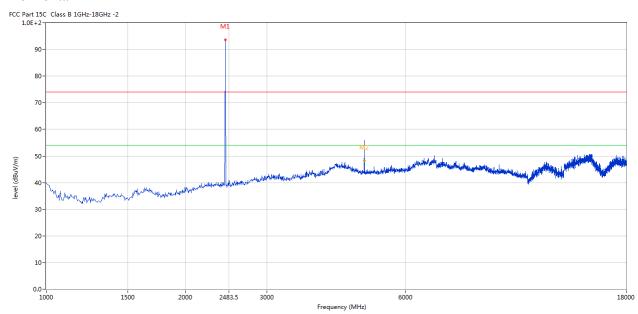
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Please refer to the following test plots for details: High Channel-2480MHz

#### Horizontal



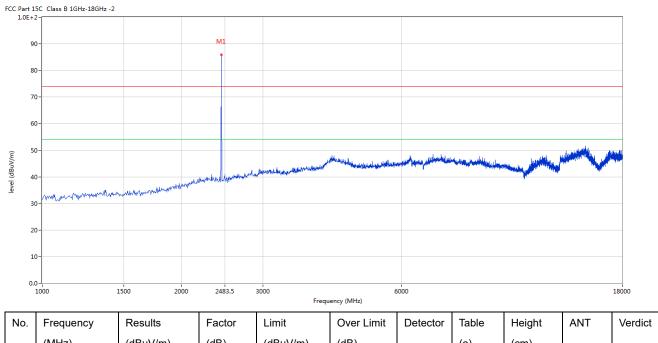
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2440.390	93.69	-3.57	114.0	-20.31	Peak	99.00	100	Horizontal	Pass
2	4883.529	55.93	3.20	74.0	-18.07	Peak	99.00	100	Horizontal	Pass
2**	4883.529	48.30	3.20	54.0	-5.70	AV	99.00	100	Horizontal	Pass

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#### Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2440.390	85.89	-3.57	114.0	-28.11	Peak	236.00	100	Vertical	Pass

Note: (2) Emission Level = Reading Level + Antenna Factor + Cable Loss-Amplifier

- (3) Margin=Emission-Limits
- (4) According to section 15.35(b), the peak limit is 20dB higher than the average limit
- (5) For test purpose, keep EUT continuous transmitting
- (5) For emission above 18GHz and Below 30MHz, It is only the floor noise. No necessary to take down.
- (6) the measured PK value less than the AV limit.

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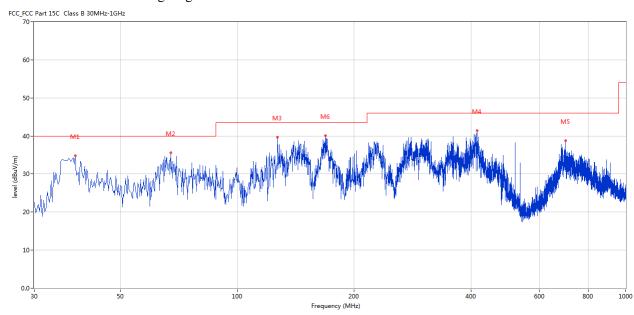


# B. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

**Results:** Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Over	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)		(o)	(cm)		
1	37.031	37.86	-13.17	40.0	-2.14	Peak	350.00	100	Horizontal	Pass
2	67.336	35.56	-14.40	40.0	-4.44	Peak	246.00	100	Horizontal	Pass
3	126.976	39.69	-16.60	43.5	-3.81	Peak	320.00	100	Horizontal	Pass
4	413.782	41.37	-8.27	46.0	-4.63	Peak	277.00	100	Horizontal	Pass
5	700.830	38.79	-4.13	46.0	-7.21	Peak	289.00	100	Horizontal	Pass
6	168.675	40.05	-16.12	43.5	-3.45	Peak	360.00	100	Horizontal	Pass

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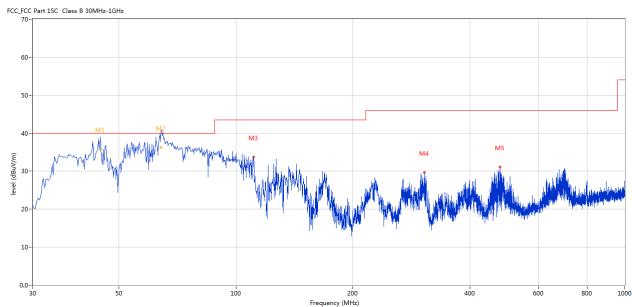


#### Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Keep Tx transmitting

Results: Pass

Please refer to following diagram for individual



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	44.789	39.07	-11.42	40.0	-0.93	Peak	17.00	150	Vertical	Pass
1*	44.789	35.92	-11.42	40.0	-4.08	QP	17.00	150	Vertical	Pass
2	64.184	41.94	-13.37	40.0	1.94	Peak	48.00	150	Vertical	N/A
2*	64.184	36.31	-13.37	40.0	-3.69	QP	48.00	150	Vertical	Pass
3	110.975	33.72	-13.65	43.5	-9.78	Peak	100.00	150	Vertical	Pass
4	305.654	29.65	-10.92	46.0	-16.35	Peak	81.00	150	Vertical	Pass
5	477.301	31.16	-7.44	46.0	-14.84	Peak	0.00	150	Vertical	Pass

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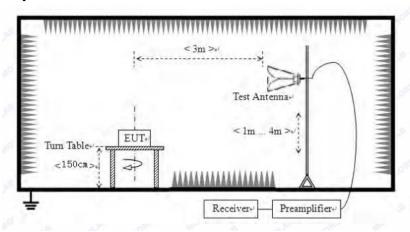


#### 7. Band Edge

#### 7.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10–2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) Set Spectrum as RBW=1MHz, VBW=3MHz and Peak detector used for PK value. RBW=1MHz, VBW=10Hz and Peak detector used for AV value.
- (3) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (4) The antenna polarization: Vertical polarization and Horizontal polarization.

#### 7. 2 Radiated Test Setup



For the actual test configuration, please refer to the related items – Photos of Testing

#### 7.3 Configuration of The EUT

Same as section 5.3 of this report

#### 7.4 EUT Operating Condition

Same as section 5.4 of this report.

#### 7.5 Band Edge Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

The report refers only to the sample tested and does not apply to the bulk.

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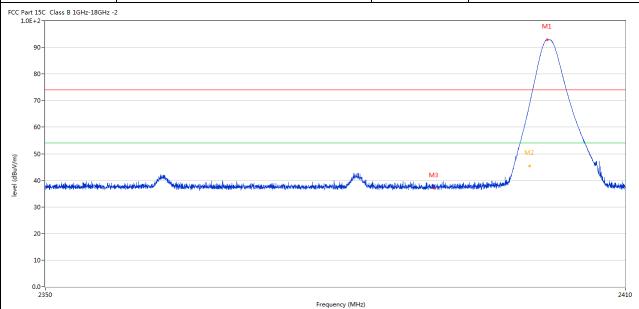
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#### 7.6 Test Result

Product:	Chessnut AIR	Polarity	Horizontal
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
2	2400.027	68.05	-3.57	74.0	-5.95	Peak	134.00	100	Horizontal	Pass
2**	2400.027	45.41	-3.57	54.0	-8.59	AV	134.00	100	Horizontal	Pass
3	2390.070	37.13	-3.53	74.0	-36.87	Peak	160.00	100	Horizontal	Pass

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]	Product:		Chessnu	t AIR		Detector		Ve	rtical	
	Mode	K	eeping Tra	nsmitting	Te	est Voltage	;	DC	3.7V	
Te	mperature		24 deg	g. C,	]	Humidity		56%	6 RH	
Te	est Result:		Pas	S						
CC Part 1	L5C Class B 1GHz-18GHz -	2								
9	0-							M	1	
								<u></u>	\	
8	0-									
7	0-								$\overline{}$	
6	0-								-	
<b>≘</b> 5	0-							110		
evel (dBuV/m)	0-					M3		M2		
	Agente congressive transfers professive to the design and agent block for the	<del>akilikisi, idiqdisisise</del> qii.de <del>ddoodaspeegas</del> pai <del>ai.</del>	<del>lateral discussion de la lateral</del> de la discussión de la	halle had a far a state of the desired of the desired of the state of	ni alika di karakan di Karakan di karakan di	iaphileseileseileseileseileseileseile	of professional and state of	04e04e1fqatti-x <sup>b</sup>	44	k, mar politica
3	0-									
2	0-									
1	0-									
0.	0-									
	2350			Fr	equency (MHz)					2410
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
2	2400.072	62.31	-3.57	74.0	-11.69	Peak	235.00	100	Vertical	Pass
2**	2400.072	42.36	-3.57	54.0	-11.64	AV	235.00	100	Vertical	Pass
3	2390.040	38.19	-3.53	74.0	-35.81	Peak	182.00	100	Vertical	Pass

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]	Product:		Chessni	ıt AIR		Polarity		Н	orizontal	
	Mode	K	eeping Tra	ansmitting		Test Voltag	ge	Γ	OC3.7V	
Te	mperature		24 de	g. C,		Humidity	7	5	6% RH	
Te	est Result:		Pas	SS						
CC Part 1 1.0E+	.5C Class B 1GHz-18GHz -	2								
9										
7	0-									
6	0-									
5	0-			M2						
(iii/angn) 4	O-	and the place of the second second		•	Why William	وخواله فيعتم ومحمان فالمجالة	الماسوع مبار والمام أمار المار والمار وا	halffyl de skierdynt saat in olf he	Altibergelesse likkingskapter problektiv	<del>kilginesistist</del>
3	0-									
2	0-									
1	0-									
0.	0- <del> </del> 2470			2483.	5 Frequency (MHz)					2500
No.	Frequency	Results	Factor	Limit	Over	Detector	Table	Height	ANT	Verdic
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	Limit (dB)		(o)	(cm)		
2	2483.257	55.83	-3.57	74.0	-18.17	Peak	108.00	100	Horizontal	Pass
2**	2483.257	43.30	-3.57	54.0	-10.70	AV	108.00	100	Horizontal	Pass

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ŀ	Product:		Chessnu	t AIR	] ]	Detector				
	Mode	Ke	eeping Tra	nsmitting	Te	st Voltage	oltage DC3.7V			
Te	mperature		24 deg	g. C,	I	Humidity				
Te	est Result:		Pas	s						
C Part 1	.5C Class B 1GHz-18GHz	-2								
90	0-									
80										
70	0-									
60	0-									
50	0-				<u> </u>					
5(		معصاره التبعانية والماء			Note the section of t	haiindag a agaah a gada da bir a bha a c	Paraphased a transport of the board	المراجعة والمعارضة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة والمراجعة و	المارية والمارية والم	Hardensky.
40	O -	intelligibility de la constitución			Night and the second section of the section of th	ingin ika njuknjeka ketrastan	أمضاء وطدا ومتاطاته أصار	નેત્રુપત્ત તેમાં સમાનું કર્યું અને ભાગ હોલ્સ છે. તે કે અને ક્ષેત્ર અને સ્ટેસ્ટર અને સ્ટેસ્ટર અને સ્ટેસ્ટર અને સ	عامليانك معصول والمانة الريالية المعالمة والمعالمة والمعالمة والمعالمة والمعالمة والمعالمة والمعالمة والمعالمة	n parting and part
41	O - Mariellanian ( hid , s. d. sensi , s. singularian d. s.	inkidi kiludoni insida shaqar			a del legica positivamentes	haiseabhai naghadh an ag dhaidh ag a	İndeler açlan eyeli elekti de kend	المراجعة والمراجعة و	માં ત્રો કર્યું કર્યો કૃષ્ય ભાગમાં ત્રામાં કર્યા ક	in which we have the second
31	O- - Marikatingal-sahlaya-laya-laya-laya-laya-laya-laya-lay	interior interior in the contract of the contr			4 William management has	itaria dan sejenden yaka kista ai fenera	habendara, ardallahabenda	જે.જુ	والمرابعة	in which will be
30		which the surround end has been a			A MAN LAST A COMMISSION AND AND AND AND AND AND AND AND AND AN	il anima da que migrado de proposições de la compansa de la compansa de la compansa de la compansa de la compa	historianiquiseleptikisudi	<del>ng, pangkaping dan panda</del>	ir hjejs <del>aml</del> privst <sub>e</sub> vije ann	ing the substitute
30 20 10	O- - Marikatingal-sahlaya-laya-laya-laya-laya-laya-laya-lay	indial-betturensia sulda a brasa		2483.		teritoritani esperitani esperitani esperitani esperitani esperitani esperitani esperitani esperitani esperitani	hainadara windapahainda	handaday kayin etti kalifi ka qaraba	eringisk veerlevisk uit geven	2500
44 36 20 10		Results	Factor	z483.	.5	Detector	Table	Height	ANT	2500
44 30 20	0-		Factor (dB)	1	.5 Frequency (MHz)					

Note: 1. The PK emission level less than the AV limit. No necessary to record the AV emission level.

2. The three modulation modes of GFSK,  $\pi$ /4D-QPSK and 8DPSK were tested. And only the worst case was recorded in the test report. GFSK was the worst case.

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#### 8.0 Antenna Requirement

#### **Applicable Standard**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. 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 provisions of this section.

This product has a PCB antenna with gain 1.49dBi maximum. It fulfills the requirement of this section.

Test Result: Pass

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SK Modulation							1				
Product:	Chessnut AIR				T	est Mode:		Keep transmitting			
Mode	Keeping Transmitting				Test Voltage			DC3.7V			
Temperature		24 deg. C,			I	Humidity		56%	RH		
Test Result:		Pass				Detector		Pl	K		
dB Bandwidth	{	865.73kHz	Z						-		
Ref Lvl	ndB		.00 dB	VI	3W 3W	30 k	Hz	F Att	20 dE		
10 dBm	BW 865	5.731462	293 kHz	SI	ЛT	8.5 m	s U:	nit	dE	m	
						<b>v</b> <sub>1</sub>	[T1]	- (	.18 dB	m	
			1					2.40180	461 GH		
0			M	\		ndE	3	20	.00 dB		
				*		BW ▽ <sub>T1</sub>	86 [T1]	5.73146	293 kH .78 dB		
10		/ ا	V	\ \ \	٦	. 13		2.40151			
		TA /			٧)	$\checkmark_{\Gamma 2}  \triangledown_{\Gamma 1}$	P [T1]	-20			
20						Ty I		2.40238	176 GH		
30 1MAX	~	)~				M				1	
40							<b>λ</b> η				
50								<b>\</b>			
60								N.	moun	~4	
70										4	
80										-	
90											
Center 2.402	GHz		300	kHz/				Spa	ın 3 MH	z	

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Product:	Ch	essnut AIR		Test Mode:	Keep to	ransmitting	
Mode	Keepin	g Transmitting		Test Voltage	De	C3.7V	
Temperature	2	4 deg. C,		Humidity	56	6% RH	
Test Result:		Pass		Detector	PK		
20dB Bandwidth	80	65.73kHz					
Ŕ	Marker	1 [T1 ndB]	RBW	30 kHz	RF Att	20 dB	
Ref Lvl	ndB	20.00 dB	VBW				
10 dBm	BW 865	5.73146293 kHz	SWT	8.5 ms	Unit	dBm	
10				<b>▼</b> 1 [:	r1] -	0.01 dBm	
		1			2.4408	0461 GHz	
0		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	M <sub>A</sub>	ndB	2	0.00 dB	
			• 0	BW ▽ <sub>T1</sub>	865.7314 1- T11	6293 kHz 9.42 dBm	
-10		7/	\	1	2.4405		
		T1		V <sub>T2</sub> ∇ <sub>T2</sub>			
-20		~		1	2.4413	8176 GHz	
1MAX	~			M		1M2	
-30							
				7	۲		
-40	Mal						
	) W						
-50					<u> </u>	All III	
W W V						Told Told	
-60							
-70							
-80							
-90							
Center 2.4	441 GHz	300	kHz/		Sp	an 3 MHz	

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Product:	Chessnut AIR				T	est Mode:		Keep transmitting				
Mode		Keepin	g Transmi	tting		Te	est Voltage		DC3.7V			
Temperature			4 deg. C,			Humidity			56% RH			
Test Result:	Pass						Detector		PK			
0dB Bandwidth		88	39.78kHz									
<u>————</u>		Marker	1 [T1 r	ndB]	R	BW	30 k	Hz R	F Att	20 dB		
Ref Lvl		ndB	20.	00 dB	V	BW	100 k	Hz				
10 dBm		BW 889	779559	12 kHz	SI	TW	8.5 m	s U	nit	dBm	ı	
10							<b>v</b> <sub>1</sub>	[T1]	-0	.24 dBm	A	
				1					2.47980	461 GHz		
0				M	M,		ndE	0.7	20	.00 dB		
				J	\ \		BW ▼ <sub>T1</sub>	88 . [T1]	39.77955 -20	912 kHz 1.90 dBm		
-10			_/	V					2.47951			
			TA			-	<b>√</b> T2 ▼T2	[T1]	-20	.14 dBm		
-20 1MAX		^					The second		2.48039	980 GHz	1M2	
-30							\ 	L <sub>y</sub>				
-40	~~~								M			
-50								-	m	who		
-60												
-70												
-80												
-90												
Center 2	.48 GHz	Z		300	kHz/				Spa	ın 3 MHz		

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π/4D-QPSK Mo	dulation							
Product:	Che	ssnut AIR		Test Mode:	]	Keep transmi	tting	
Mode	Keeping	Transmitting	,	Test Voltage	DC3.7V			
Temperature	24	deg. C,		Humidity	56% RH			
Test Result:			Detector	PK				
20dB Bandwidth	1.3	805MHz						
₩.	Marker	1 [T1 ndB]	RBW	30 kHz	z RF	Att 20	dВ	
Ref Lvl	ndB	20.00 dB	VBW					
10 dBm	BW 1	.30460922 MHz	SWT	' 8.5 ms	Uni	t	dBm	
				<b>v</b> <sub>1</sub> [	T1]	-0.77	dBm	
0			1		2 .	.40212926		
		$\wedge \wedge$	$\bigwedge$	ndB BW	1	20.00	dB MII-	
1.0			$\sim$	$ \sqrt{} \nabla_{\text{T1}} $	[T1]		MHz dBm	
-10		<del>/                                    </del>	·	7		.40130561		
	<u>T</u> 1			<b>▽</b> [122	[T1]	-20.43	dBm	
-20					2.	.40261022	GHz 1MA	
-30				\				
-40					hu	, my	<u>~~~</u>	
	V							
-50								
-60								
7.0								
-70								
-80								
-90								
Center 2.	402 GHz	300	kHz/			Span 3	MHz	
Date: 25.	OCT.2021 14:	45:09						

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π/4D-QPSK Moo	dulation						
Product:	Chessnut AIR		Test Mode:	Keep tra	nsmitting		
Mode	Keeping Transmit	tting	Test Voltage	DC	3.7V		
Temperature	24 deg. C,		Humidity	56% RH PK			
Test Result:	Pass		Detector				
20dB Bandwidth	1.311MHz						
r)	Marker 1 [T1 n	ndB] R	BW 30 kHz	RF Att	20 dB		
Ref Lvl			BW 100 kHz				
10 dBm	BW 1.310621	24 MHz S	WT 8.5 ms	Unit	dBm		
10			<b>▼</b> 1 [3	r1] -0	.68 dBm		
0		1		2.44112	325 GHz		
		$\wedge \wedge \wedge$	ndB	20	.00 dB		
	~ ^	$\sqrt{N}$	$\bigvee_{T_1}^{BW}$	1.31062 [T1] -20	124 MHz .46 dBm		
-10				2.44030			
	T1		<b>▽</b> \	[T1] -21	.01 dBm		
-20			7	2.44161	623 GHz <b>1MA</b>		
					IMA		
-30	)		1	\			
-40	~~~\\			man	man		
-40				· ·			
-50							
-50							
-60							
-70							
-80							
-90 Center 2.4	141 CH2	300 kHz/		C	n 3 MHz		
		SUU KHZ/		spa.	II 2 MUZ		
Date: 25.0	OCT.2021 14:52:51						

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π/4D-QPSK Mo	odulation								
Product:		Chessnut AIR		Test Mod	le:	Keep tra	nsmitting		
Mode	Kee	ping Transmitting	Ţ,	Test Volta	ge	DC3.7V			
Temperature		24 deg. C,		Humidit	у	56% RH			
Test Result:		Detecto	r	PK					
20dB Bandwidth		1.311MHz							
- R	Marke	er 1 [T1 ndB]	R	BW 30	kHz R	F Att	20 dB		
Ref Lvl	ndB	20.00	dB V	BW 100	kHz				
10 dBm	BW	1.31062124	MHz S	WT 8.5	ms U	nit	dBm		
10				_	1 [T1]	- C	.86 dBm	7	
			1			2.48012	325 GHz	A	
0			$\wedge$	n		20	.00 dB		
			$\bigvee\bigvee$	W V B		1.31062	124 MHz		
-10		\\\		7	11 [11]	2.47929			
	т	<u></u>		ightharpoons	Г <sub>т2</sub> [Т1]	-20			
-20	7	1				2.48061	022 GHz	1MA	
1MAX								IMA	
-30									
~ ~							<i>^</i> ~- ~		
-40	V-v-v				3 40	~~~	- A		
-50									
-60									
-70									
-80									
-90									
Center 2	.48 GHz		300 kHz/			Spa	n 3 MHz		
Date: 25	.OCT.2021	14:54:32							

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Product:	Chessnut AIR	2	Test Mode:	Keep tra	nsmitting		
Mode	Keeping Transmi	tting	Test Voltage	DC	3.7V		
Temperature	24 deg. C,		Humidity	56% RH PK			
Test Result:	Pass		Detector				
20dB Bandwidth	1.311MHz						
, A	Marker 1 [T1 n	ndB] F	BW 30 kHz	RF Att	20 dB		
Ref Lvl	ndB 20.	00 dB V	BW 100 kHz				
10 dBm	BW 1.310621	24 MHz S	8.5 ms	Unit	dBm		
10			<b>▼</b> 1 [3	r1] -0	.80 dBm		
		1			926 GHz		
0		. ^ /	ndB	20	.00 dB		
	_	/\	BW	1.31062	124 MHz		
-10		$\mathcal{N}$	VV W <sub>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</sub>	T1] -20	.50 dBm		
	\ \frac{1}{2}			2.40130			
-20	T1/		· Ef2	[T1] -21	.11 dBm		
1MAX				2.40261	623 GHz <b>1M2</b>		
-30			1	\ .			
-40	~~~			WW ~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
-50							
-60							
-70							
-80							
-90							
Center 2.40	2 GHz	300 kHz/		Spa	n 3 MHz		

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8QPSK Modul	ation									
Product:		Chessnut AIR		Т	est Mode:		Keep tr	ansmitting		
Mode	Ke	eping Transmi	tting	Te	est Voltage		DO	C3.7V		
Temperature		24 deg. C,		-	Humidity		56% RH			
Test Result:	Pass				Detector					
20dB Bandwidth		1.305MHz								
Ŕ	Mark	er 1 [T1 n	ıdB]	RBW	30 kH:	z RI	7 Att	20 dB		
Ref Lvl	ndB		00 dB	VBW	100 kH:					
10 dBm	BW	1.304609	22 MHz	SWT	8.5 ms	Ur	nit	dBm		
10					▼1 [	T1]	- 1	0.68 dBm	A	
				<u>1</u>			2.44112	2926 GHz	T.	
0			$\wedge$ $\wedge$		ndB		20	0.00 dB		
		$\sim$	, /  / \	$\sqrt{\ \ }$	BW ▼T1		1.30460			
-10			•	7	Why TI	[T1]	2.44030	0.38 dBm		
		r1			∇m <sub>2</sub>	[T1]	-2			
-20					<u> </u>		2.44163	1022 GHz		
1MAX									1MA	
-30						\ \ \ \				
-40	V-my					VW		- Jany		
-50										
-60										
-70										
-80										
-90										
Center 2	.441 GHz		300 }	<hz <="" td=""><td></td><td></td><td>Spa</td><td>an 3 MHz</td><td></td></hz>			Spa	an 3 MHz		
Date: 25	OCT.2021	14:50:00								

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8QPSK Modula	ation										
Product:		Cho	essnut AIR	<u> </u>		T	est Mode:		Keep tr	ansmitting	
Mode		Keepin	g Transmi	tting		Test Voltage		e	DC3.7V		
Temperature	24 deg. C,					]	Humidity		56% RH		
Test Result:			Pass				Detector		-	PK	
20dB Bandwidth		1.	311MHz								
(F)		Marker	1 [T1 r	ndB]	R	BW	30 k	Hz R	F Att	20 dB	
Ref Lvl		ndB		00 dB		BW	100 k				
10 dBm		BW 1	.310621	24 MHz	S	WT	8.5 m	ns U	nit	dBm	<u>.</u>
							$\mathbf{v}_1$	[T1]	- (	0.82 dBm	A
0					1				2.48012	2325 GHz	
				$\wedge \wedge$	$\wedge$		ndI BW	B 	1.31062	0.00 dB	
1.0			$\sim $	$J \ V \ V$	$\sim$ $\setminus$	~~	V <sub>T</sub>	[ [T1]	-21	$2124~\mathrm{MHz}$	
-10			<u> </u>				7		2.47929	960 GHz	
		T1					$\triangle \int_{\mathbb{T}^2}$	7 <sub>2</sub> [T1]	-20	0.87 dBm	
-20		7						<u> </u>	2.48061	1022 GHz	1MA
-30											
^^ ^ <del>^</del>		A /						\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		^ 1	
-40	**************************************	<u> </u>						47~	~~~~		
-50											
-60											
-70											
-80											
-90											
Center 2	Center 2.48 GHz								Spa	an 3 MHz	
Date: 2	5.OCT.2	021 14	:56:37								

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Date: 2021-10-29



#### 10.0 FCC ID Label

#### FCC ID: 2A3RB-CA100

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

#### Mark Location:



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#### 11.0 Photo of testing

#### 11.1 Conducted test View--



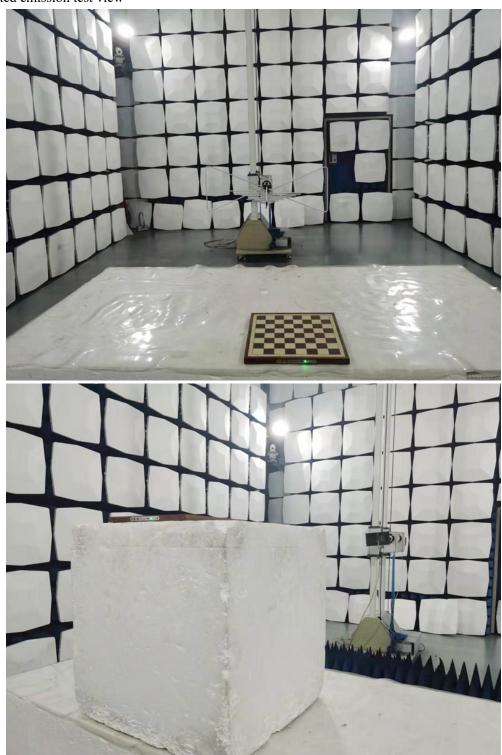
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#### Radiated emission test view



The report refers only to the sample tested and does not apply to the bulk.

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#### 11.2 Photographs – EUT

#### Outside View



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Outside View



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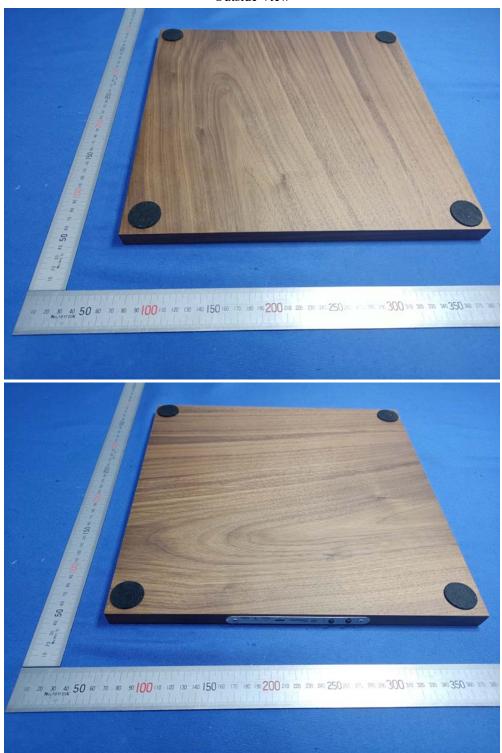
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Outside View



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Outside View



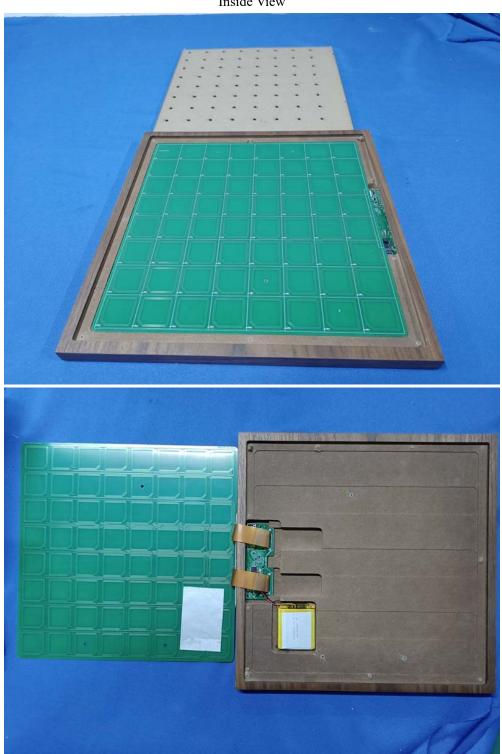
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Inside View



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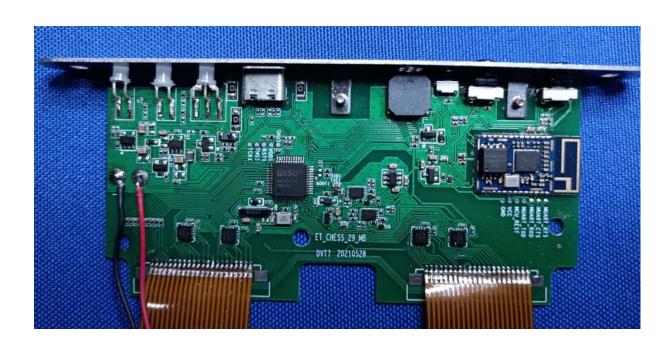
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Inside View





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Inside View



-- End of the report--

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