



# TEST REPORT

Report Number: C21T00056-SAR01-V01

Applicant	Toast, Incorporated
Product Name	Data Processing machine
Model Name	TT204W, TT204, TT202W, TT203, TK200, TT203W
Brand Name	Toast
FCC ID	2AMNG-TT200B
IC ID	23177-TT200B

Industrial Internet Innovation Center (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in FCC 47 CFR Part 2 2.1091, RSS 102.

Prepared by

Reviewed by

Approved by

Issue Date

2021-08-18

**Industrial Internet Innovation Center (Shanghai) Co., Ltd.**



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11. After confirmation with the customer, the Max power and antenna gain information provided by the customer may affect the validity of the measurement results in this report, and the customer shall bear the impact and consequences.

### **Test Laboratory:**

Industrial Internet Innovation Center (Shanghai) Co., Ltd.

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### Revision Version

Report Number	Revision	Date	Memo
C21T00056-SAR01-V00	00	2021-06-09	Initial creation of test report
C21T00056-SAR01-V01	01	2021-08-18	Update Chapter 8



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## 1. Test Laboratory

### 1.1. Testing Location

Primary Lab:

Company Name	Industrial Internet Innovation Center (Shanghai) Co., Ltd.
Address	Building 4, No. 766 Jingang Rd, Pudong, Shanghai, China
FCC Registration No.	958356
FCC Designation No.	CN1177
IC Designation No.	10766A

### 1.2. Testing Environment

Normal Temperature	18°C~25°C
Relative Humidity	25%RH~75%RH

### 1.3. Project Information

Project Leader	Lu Fang
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## 2. Client Information

### 2.1. Applicant Information

Company Name	Toast, Incorporated
Address	401 Park Drive, Suite 801, Boston, MA 02215, USA
Telephone	5625462272

### 2.2. Manufacturer Information

Company Name	Toast, Incorporated
Address	401 Park Drive, Suite 801, Boston, MA 02215, USA
Telephone	5625462272

### 3. Equipment under Test (EUT) and Ancillary Equipment (AE)

#### 3.1. About EUT

Product Name	Data Processing machine
Model name	TT204W, TT204, TT202W, TT203, TK200, TT203W
Supported Radio Technology and Bands	BT4.2 WLAN 802.11b,g,n WLAN 802.11a,n,ac
Hardware Version	CT541MB80C 20210226
Software Version	Sunmi-ct541-v2.1.59p69

Note: Photographs of EUT are shown in ANNEX A of this test report.

#### 3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of Receipt
N/A	N/A	N/A	N/A	N/A

\*EUT ID: is internally used to identify the test sample in the lab.

#### 3.3. Internal Identification of AE used during the test

AE ID*	Description	Model	SN/Remark
N/A	N/A	N/A	N/A

\*AE ID: is internally used to identify the test sample in the lab.



## 4. Reference Documents for FCC

### 4.1. Reference Documents for evaluation

The following documents listed in this section are referred for evaluation.

Reference	Title
FCC 47 CFR Part 2 2.1091	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS. Section 2.1091 Radiofrequency radiation exposure evaluation: mobile devices

### 4.2. Criteria

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with the reference this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

Limits for Occupational / Controlled Exposure				
Frequency (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Times  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3 – 3.0	614	1.63	(100)*	6
3.0 – 30	1824/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1	6
300 – 1500	--	--	F/300	6
1500 - 100000	--	--	5	6
Limits for General Population / Uncontrolled Exposure				
Frequency (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Times  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3 – 1.34	614	1.63	(100)*	30
1.34 – 30	824/f	2.19/f	(180/f)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	--	--	F/1500	30
1500 - 100000	--	--	1	30
Note: f = frequency in MHz; * Plane-wave equivalent power density. For the DUT, the limits for General Population / Uncontrolled Exposure are applicable.				

### 4.3. Reference Information from client

All technical documents are supplied by the client or manufacturer, which is the basis of testing. (such as antenna gain, etc.)

### 4.4. Calculation Method

For conservative evaluation consideration, only maximum power of each frequency band based on the tighter limits respectively are used to calculate the boundary power density.

Based on the FCC KDB 447498 D01 and 47 CFR §2.1091, the DUT is evaluated as a mobile device.

$$S = \frac{P \times G}{4\pi d^2}$$

Where

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter



## 5. Evaluation Summary for FCC

### 5.1. RF Power Output

Band	Max power(dBm)	Highest Output Power (dBm)	Antenna Gain(dBi)
BT 4.2	8.00	8.00	1.92
BLE	7.00	7.00	1.92
WI-FI2.4G 802.11b	17.50	17.50	1.92
WI-FI2.4G 802.11g	15.00	15.00	1.92
WI-FI2.4G 802.11n	14.50	14.50	1.92
WI-FI5G U-NII-1 802.11a	9.00	9.00	1.92
WI-FI5G U-NII-1 802.11n	9.00	9.00	1.92
WI-FI5G U-NII-1 802.11ac	9.50	9.50	1.92
WI-FI5G U-NII-3 802.11a	8.00	8.00	2.04
WI-FI5G U-NII-3 802.11n	10.50	10.50	2.04
WI-FI5G U-NII-3 802.11ac	12.50	12.50	2.04

### 5.2. Duty Cycle

Mode	Duty Cycle
BT4.2	1:1
BLE	1:1
WLAN	1:1

### 5.3. Summary of Evaluation Results

Band	Frequency	Highest Output Power (dBm)	Highest Output Power (mW)	Antenna Gain(dBi)	Numeric antenna gain	Power density at 20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
BT 4.2	2402	8.00	6.31	1.92	1.556	0.002	1.000
BLE	2402	7.00	5.01	1.92	1.556	0.002	1.000
WI-FI2.4G 802.11b	2412	17.50	56.23	1.92	1.556	0.017	1.000
WI-FI2.4G 802.11g	2412	15.00	31.62	1.92	1.556	0.010	1.000
WI-FI2.4G 802.11n	2412	14.50	28.18	1.92	1.556	0.009	1.000
WI-FI5G U-NII-1 802.11a	5180	9.00	7.94	1.92	1.556	0.002	1.000
WI-FI5G U-NII-1 802.11n	5180	9.00	7.94	1.92	1.556	0.002	1.000
WI-FI5G U-NII-1 802.11ac	5180	9.50	8.91	1.92	1.556	0.003	1.000
WI-FI5G U-NII-3 802.11a	5745	8.00	6.31	2.04	1.600	0.002	1.000
WI-FI5G U-NII-3 802.11n	5745	10.50	11.22	2.04	1.600	0.004	1.000
WI-FI5G U-NII-3 802.11ac	5745	12.50	17.78	2.04	1.600	0.006	1.000

The product is under the MPE limits. All is pass.

## 6. Reference Documents for IC

### 6.1. Reference Documents for evaluation

The following documents listed in this section are referred for evaluation.

Reference	Title	Version
RSS 102	Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)	2015

### 6.2. Criteria

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

Frequency (MHz)	Base	Maximum e.i.r.p (w)
< 20	Source	1
20 – 48	Source	$22.48/f^{0.5}$
48 – 300	Source	0.6
300 – 6000	Source	$1.31 * 10^{-2} * f^{0.6834}$
> 6000	Source	5

Note:

f = frequency in MHz;

The result should be adjusted for tune-up tolerance.

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

### 6.3. Reference Information from client

All technical documents are supplied by the client or manufacturer, which is the basis of testing. (such as antenna gain, etc.)

### 6.4. Calculation Method

At or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $1.31 \times 10^{-2} f^{0.6834}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz.

## 7. Test Summary for IC

### 7.1. RF Power Output

Band	Max power(dBm)	Highest Output Power (dBm)	Antenna Gain(dBi)
BT 4.2	8.00	8.00	1.92
BLE	7.00	7.00	1.92
WI-FI2.4G 802.11b	17.50	17.50	1.92
WI-FI2.4G 802.11g	15.00	15.00	1.92
WI-FI2.4G 802.11n	14.50	14.50	1.92
WI-FI5G U-NII-1 802.11a	9.00	9.00	1.92
WI-FI5G U-NII-1 802.11n	9.00	9.00	1.92
WI-FI5G U-NII-1 802.11ac	9.50	9.50	1.92
WI-FI5G U-NII-3 802.11a	8.00	8.00	2.04
WI-FI5G U-NII-3 802.11n	10.50	10.50	2.04
WI-FI5G U-NII-3 802.11ac	12.50	12.50	2.04

### 7.2. Duty Cycle

Mode	Duty Cycle
BT4.2	1:1
BLE	1:1
WLAN	1:1

### 7.3. Summary of Evaluation Results

Band	Frequency	Highest Output Power (dBm)	Highest Output Power (mW)	Antenna Gain (dBi)	Numeric antenna gain	e.i.r.p (W)	Limit (W)
BT 5.0	2402	8.00	6.31	1.92	1.556	0.008	2.676
BLE	2402	7.00	5.01	1.92	1.556	0.007	2.676
WI-FI2.4G 802.11b	2412	17.50	56.23	1.92	1.556	0.058	2.684
WI-FI2.4G 802.11g	2412	15.00	31.62	1.92	1.556	0.033	2.684
WI-FI2.4G 802.11n	2412	14.50	28.18	1.92	1.556	0.030	2.684
WI-FI5G U-NII-1 802.11a	5180	9.00	7.94	1.92	1.556	0.009	4.525
WI-FI5G U-NII-1 802.11n	5180	9.00	7.94	1.92	1.556	0.009	4.525
WI-FI5G U-NII-1 802.11ac	5180	9.50	8.91	1.92	1.556	0.010	4.525
WI-FI5G U-NII-3 802.11a	5745	8.00	6.31	2.04	1.600	0.008	4.857
WI-FI5G U-NII-3 802.11n	5745	10.50	11.22	2.04	1.600	0.013	4.857
WI-FI5G U-NII-3 802.11ac	5745	12.50	17.78	2.04	1.600	0.019	4.857

The product is under the MPE limits. All is pass.

## 8. Statements

The TT204W, TT204, TT202W, TT203, TK200, TT203W, manufactured by Toast, Inc. are new products for evaluation.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. has verified that the compliance of the evaluated device specified in section 3 of this evaluation report is successfully evaluated according to the procedure and evaluation methods as defined in type certification requirement listed in section 4 of this evaluation report.

The description of the differences between the models is updated as follows:

Mainly Supply	TT204	Main LCD panel Terminal + Sub LCD panel Terminal + Attached base support
	TT204W	The same with TT204, just the color is White
Secondary Supply	TT203	Main LCD panel Terminal + Attached base support
	TT202W, TT203W	The same with TT203, just the color is White
Thirdly Supply	TK200	Main LCD panel Terminal + Add POE module + Add one speaker



## Annex A: EUT Photos



**Figure A-1: Front view photo(TT204)**



**Figure A-2: Rear view photo(TT204)**



**Figure A-3: Front view photo(TT203)**



**Figure A-4: Rear view photo(TT203)**



Figure A-5: Rear view photo(TK200)



Figure A-5: Rear view photo(TK200)

\*\*\*\*\*END OF REPORT\*\*\*\*\*