



# 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 |
|----------------|---------|

## 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<br>WLAN 802.11b,g,n<br>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<br>2.1091 | FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS.<br>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 | $1.31 \times 10^{-2} \times f^{0.6834}$ |
| > 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\*\*\*\*\*