



# MPE REPORT

Certificate #4312.01

**Product Name:** Global LTE Cat.M1/lte Cat.nb2 Data-only Module  
**Trade Mark:** CINTERION  
**Model No. / HVIN:** TX62-W-B  
**Report Number:** 220613001RFC-1  
**Test Standards:** FCC 47 CFR Part 1 Subpart I  
RSS-102 Issue 5  
**FCC ID:** QIPTX62-W-B  
**IC:** 7830A-TX62WB  
**Test Result:** PASS  
**Date of Issue:** September 26, 2022

Prepared for:

**THALES DIS AIS Deutschland GmbH**  
**Siemensdamm 50, 13629 Berlin, Germany**

Prepared by:

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Date: September 26, 2022

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**Version**

| Version No. | Date               | Description |
|-------------|--------------------|-------------|
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**1. Test Laboratory**

|                      |                                                                                                                              |
|----------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Company Name:</b> | Shenzhen UnionTrust Quality and Technology Co., Ltd.                                                                         |
| <b>Address:</b>      | Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China 518109 |
| <b>Postal Code:</b>  | 518109                                                                                                                       |
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## 2. Client Information

### 2.1. Applicant Information

**Company Name:** Thales DIS AIS Deutschland GmbH  
**Address /Post:** Siemensdamm 50, 13629 Berlin, Germany  
**Telephone:** /  
**Postcode:** /

### 2.2. Manufacturer Information

**Company Name:** Thales DIS AIS Deutschland GmbH  
**Address /Post:** Werinherstr.81, 81541 Munich, Germany  
**Telephone:** /  
**Postcode:** /

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

#### 3.1. About EUT

|                                                               |                                                                                           |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>EUT Description</b>                                        | Global LTE Cat.M1/lte Cat.nb2 Data-only Module                                            |
| <b>Model name</b>                                             | TX62-W-B(See Note)                                                                        |
| <b>LTE Frequency Band</b>                                     | LTE Band 2/ Band 4/ Band 5/ Band 12/ Band 13/ Band 25/ Band 26/ Band 66/ Band 71/ Band 85 |
| <b>Antenna Type</b>                                           | External Antenna                                                                          |
| <b>FCC ID:</b>                                                | QIPTX62-W-B                                                                               |
| <b>IC:</b>                                                    | 7830A-TX62WB                                                                              |
| Note:<br>This product TX62-W-B has two forms of SIM and ESIM. |                                                                                           |

### 4. Power Output Test Results

#### 4.1. RF Power Output

| Frequency Band | Highest Power Output(dBm) |
|----------------|---------------------------|
| LTE Band 85    | 25                        |

#### 4.2. Duty cycle

| Mode | Duty Cycle |
|------|------------|
| LTE  | 1:1        |

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## 5. Reference Documents for FCC

### 5.1. Applicable Standards

The MPE report was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2.1091.

FCC CFR 47, Part 2, FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS, Oct 1, 2011

Section 2.1091 Radiofrequency radiation exposure evaluation.

### 5.2. Test Limits

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 47 CFR FCC Part 2 Subpart J, section 2.1091 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 Range [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                             | 1.0                                     | 6                                                                  |
| 300 – 1500            | --                                | --                                | F/300                                   | 6                                                                  |
| 1500 - 100000         | --                                | --                                | 5                                       | 6                                                                  |

Limits for General Population / Uncontrolled Exposure

| Frequency Range [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         | --                                | --                                | 1.0                                     | 30                                                                 |

Note: f=frequency in MHz; \*Plane-wave equivalent power density

For the DUT, the limits for General Population / Uncontrolled Exposure are applicable.

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|                     |                                                                                                                                                                                                                                                                                                                       |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FCC: §1.1307        | Cellular Radiotelephone Service (subpart H of part 22)<br>Non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and total power of all channels > 1000 W ERP (1640 W EIRP)                                                                                                       |
| FCC §1.1307         | Personal Communications Services (part 24)<br>Broadband PCS (subpart E): non-building-mounted antennas: height above ground level to lowest point of antenna < 10 m and total power of all channels > 2000 W ERP (3280 W EIRP)                                                                                        |
| FCC §1.1310         | LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)<br>Table 1(B) Limits for General Population/Uncontrolled Exposure 300–1500 MHz: f/1500 mW/cm <sup>2</sup><br>1500–100,000 MHz: 1.0 mW/cm <sup>2</sup><br>Subject to routine evaluation is required when the device operate at frequencies of 1.5 GHz or below and their |
| FCC §2.1091         | effective radiated power (ERP) is 1.5 watts or more, or if they operate at frequencies above 1.5 GHz and their ERP is 3 watts or more.(a) Base stations are limited to 1640 watts peak equivalent isotropically radiated power (e.i.r.p.) with an antenna                                                             |
| FCC §27.50 (C )(10) | (10) Portable stations (hand-held devices) are limited to 3 watts ERP; and                                                                                                                                                                                                                                            |

### 5.3. Calculation Information

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.

$$\text{Given } S = \frac{P \times G}{4\pi d^2} \quad \text{Equation 1}$$

Where

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

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#### 5.4. Max. Antenna gain calculations

Maximum antenna gain considerations for fixed/mobile operations for complying with limits:

| Band        | Highest Frame-Averaged Output Power (dBm) | Limit (mW/cm <sup>2</sup> ) | Max antenna gain at 20cm (dBi) |
|-------------|-------------------------------------------|-----------------------------|--------------------------------|
| LTE Band 85 | 25                                        | 0.465                       | 8.68                           |

Power limit according to §27.50(c)(10):

| Band        | Highest Frame-Averaged Output Power (dBm) | Limit (W) (ERP/EIRP) | Max antenna gain at 20cm(dBi) |
|-------------|-------------------------------------------|----------------------|-------------------------------|
| LTE Band 85 | 25                                        | 3                    | 9.77                          |

#### 5.5. Conclusion for maximum admissible antenna gain (FCC)

| Band        | Maximum admissible antenna gain (dBi) |
|-------------|---------------------------------------|
| LTE Band 85 | 8.68                                  |

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## 6. Reference Documents for IC

### 6.1. Applicable Standards

RSS 102 Issue 5: Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)

### 6.2. Test Limits

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:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $22.48/f^{0.5}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- 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;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (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.

|          |                                                                                                                                                                                                                                                          |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RSS -130 | 4.6.3 Frequency bands 698-756 MHz and 777-787 MHz<br>The e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment. |
| SRSP-510 | 5.1.2 Mobile Stations<br>Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p. The equipment shall employ means to limit the power to the minimum necessary for successful communication.                                      |

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### 6.3. Calculation Information

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  $1.31 \times 10^{-2} f^{0.6834} \text{ W}$  (adjusted for tune-up tolerance), where  $f$  is in MHz;

### 6.4. Max. Antenna gain calculations

Maximum antenna gain considerations for fixed/mobile operations for complying with limits according to RSS 102:

| Band        | Highest Output Power (dBm) | MPE limit (W) | Max antenna gain at 20cm (dBi) |
|-------------|----------------------------|---------------|--------------------------------|
| LTE Band 85 | 25                         | 1.15          | 5.60                           |

Power limit according to RSS-130:

| Band        | Highest Frame-Averaged Output Power (dBm) | Limit (W) ERP/EIRP | Max antenna gain (dBi) |
|-------------|-------------------------------------------|--------------------|------------------------|
| LTE Band 85 | 25                                        | 3                  | 9.77                   |

### 6.5. Conclusion for maximum admissible antenna gain (IC)

| Band        | Maximum admissible antenna gain (dBi) |
|-------------|---------------------------------------|
| LTE Band 85 | 5.60                                  |

## 7. Summary

| Band        | FCC Maximum admissible antenna gain (dBi) | IC Maximum admissible antenna gain (dBi) | Total Maximum admissible antenna gain (dBi) |
|-------------|-------------------------------------------|------------------------------------------|---------------------------------------------|
| LTE Band 85 | 8.68                                      | 5.60                                     | 5.60                                        |

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\*\*\* End of Report \*\*\*

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