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**IEEE C95.1 2005  
KDB 447498 D01 V06  
47 C.F.R. Part 1, Subpart I, Section 1.1310  
47 C.F.R. Part 2, Subpart J, Section 2.1091**

## **RF EXPOSURE REPORT**

**For**

**ALETA S2C**

**Model: S2C, S2P**

**Trade Name: ALETA**

*Issued to*

**Ultracker Technology Co. Ltd  
14F-1, No.888, Jingguo Rd., Taoyuan Dist**

*Issued by*

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No.11, Wugong 6th Rd., Wugu Dist.,  
New Taipei City 24891, Taiwan. (R.O.C.)  
Issue Date: July 30, 2018**

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## Revision History

| Rev. | Issue Date    | Revisions     | Effect Page | Revised By |
|------|---------------|---------------|-------------|------------|
| 00   | July 30, 2018 | Initial Issue | ALL         | Becca Chen |



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## 1. LIMIT

According to §15.247(i), 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 levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

## 2. EUT SPECIFICATION

|                                     |                                                                                                                                                                                             |  |  |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>EUT</b>                          | ALETA S2C                                                                                                                                                                                   |  |  |
| <b>Model</b>                        | S2C, S2P                                                                                                                                                                                    |  |  |
| <b>Model Discrepancy</b>            | Difference of the model numbers (list on this report) is just for difference UI ICON only.                                                                                                  |  |  |
| <b>RF Module</b>                    | EZ200                                                                                                                                                                                       |  |  |
| <b>Frequency band (Operating)</b>   | <input checked="" type="checkbox"/> 802.11b/g/n HT 20: 2.412GHz ~ 2.462GHz<br>802.11n HT 40: 2.422GHz ~ 2.452GHz<br><input type="checkbox"/> Others                                         |  |  |
| <b>Device category</b>              | <input type="checkbox"/> Portable (<20cm separation)<br><input checked="" type="checkbox"/> Mobile (>20cm separation)<br><input type="checkbox"/> Others                                    |  |  |
| <b>Exposure classification</b>      | <input type="checkbox"/> Occupational/Controlled exposure ( $S = 5\text{mW/cm}^2$ )<br><input checked="" type="checkbox"/> General Population/Uncontrolled exposure ( $S=1\text{mW/cm}^2$ ) |  |  |
| <b>Antenna Specification</b>        | PIFA Antenna : Gaobo / GA16-02701100B1-107<br>2.4GHz:<br>Antenna Gain : 3.66 dBi (Numeric gain: 2.32)                                                                                       |  |  |
| <b>Maximum Average output power</b> | IEEE 802.11b Mode: 15.23 dBm (33.343 mW)<br>IEEE 802.11g Mode: 12.84 dBm (19.231 mW)<br>IEEE 802.11n HT 20 Mode: 17.23 dBm (52.845 mW)<br>IEEE 802.11n HT 40 Mode: 18.09 dBm (64.417 mW)    |  |  |
| <b>Maximum Tune up Power</b>        | IEEE 802.11b Mode: 15.50 dBm (35.481 mW)<br>IEEE 802.11g Mode: 13.00 dBm (19.953 mW)<br>IEEE 802.11n HT 20 Mode: 17.50 dBm (56.234 mW)<br>IEEE 802.11n HT 40 Mode: 18.50 dBm (70.795 mW)    |  |  |
| <b>Evaluation applied</b>           | <input checked="" type="checkbox"/> MPE Evaluation*<br><input type="checkbox"/> SAR Evaluation<br><input type="checkbox"/> N/A                                                              |  |  |

### 3. TEST RESULTS

No non-compliance noted.

#### Calculation

Given  $E = \frac{\sqrt{30 \times P \times G}}{d}$  &  $S = \frac{E^2}{377}$

Where  $E$  = Field strength in Volts / meter

$P$  = Power in Watts

$G$  = Numeric antenna gain

$d$  = Distance in meters

$S$  = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where  $d$  = Distance in cm

$P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power density in mW / cm<sup>2</sup>

## 4. MAXIMUM PERMISSIBLE EXPOSURE

Substituting the MPE safe distance using  $d = 20$  cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where  $P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power density in mW / cm<sup>2</sup>

### IEEE 802.11b mode:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm <sup>2</sup> | Limit (mW/cm2) |
|-----|-----------|--------|-------------|--------|---------------------------------------|----------------|
| 11  | 2462      | 35.481 | 2.32        | 20     | 0.0164                                | 1              |

### IEEE 802.11g mode:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm <sup>2</sup> | Limit (mW/cm2) |
|-----|-----------|--------|-------------|--------|---------------------------------------|----------------|
| 11  | 2462      | 19.953 | 2.32        | 20     | 0.0092                                | 1              |

### IEEE 802.11n HT 20 mode:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm <sup>2</sup> | Limit (mW/cm2) |
|-----|-----------|--------|-------------|--------|---------------------------------------|----------------|
| 11  | 2462      | 56.234 | 2.32        | 20     | 0.0260                                | 1              |

### IEEE 802.11n HT 40 mode:

| Ch. | Frq.(MHz) | P (mW) | Gain (num.) | D (cm) | Power density in mW / cm <sup>2</sup> | Limit (mW/cm2) |
|-----|-----------|--------|-------------|--------|---------------------------------------|----------------|
| 3   | 2422      | 70.795 | 2.32        | 20     | 0.0327                                | 1              |