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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 802.11n HT 40: 2.422GHz ~ 2.452GHz <input type="checkbox"/> Others
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )
<b>Antenna Specification</b>	PIFA Antenna : Gaobo / GA16-02701100B1-107 2.4GHz: 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) IEEE 802.11g Mode: 12.84 dBm (19.231 mW) IEEE 802.11n HT 20 Mode: 17.23 dBm (52.845 mW) 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) IEEE 802.11g Mode: 13.00 dBm (19.953 mW) IEEE 802.11n HT 20 Mode: 17.50 dBm (56.234 mW) IEEE 802.11n HT 40 Mode: 18.50 dBm (70.795 mW)
<b>Evaluation applied</b>	<input checked="" type="checkbox"/> MPE Evaluation* <input type="checkbox"/> SAR Evaluation <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:

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

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>

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## 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