

# Antenna Test Report

**Report No.: EO/2014/20002**  
**Test Plan: Non-compliance with ISO17025**

**Applicant Name: ALATECH Technology Limited Co.**  
**Manufacturer Name: ZHEJIANG ALA FITNESS TECHNOLOGY LTD**

**Product Name: Runaid 10**  
**Model Number: FB006**

**Measurements performed at**  
**SGS Taiwan Ltd.**  
**Taipei, Taiwan**

**Issued Date: March 19, 2014**

|              | Name                      | Date & Signature                  | Distribution |
|--------------|---------------------------|-----------------------------------|--------------|
| Prepared by: | Jose Ho<br>Sr. Engineer   | <i>Jose Ho</i><br>March 19, 2014  |              |
| Approved by: | Nick Hsu<br>Asst. Manager | <i>Nick Hsu</i><br>March 19, 2014 |              |

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**Revision Version**

| Report Number | Revision | Date       | Memo                             |
|---------------|----------|------------|----------------------------------|
| EO/2014/20002 | 00       | 2014/03/19 | Initial creation of test report. |
|               |          |            |                                  |
|               |          |            |                                  |
|               |          |            |                                  |
|               |          |            |                                  |
|               |          |            |                                  |
|               |          |            |                                  |
|               |          |            |                                  |
|               |          |            |                                  |

**This test report contains a reference to the previous version test report that it replaces.**

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## Measurement System Information

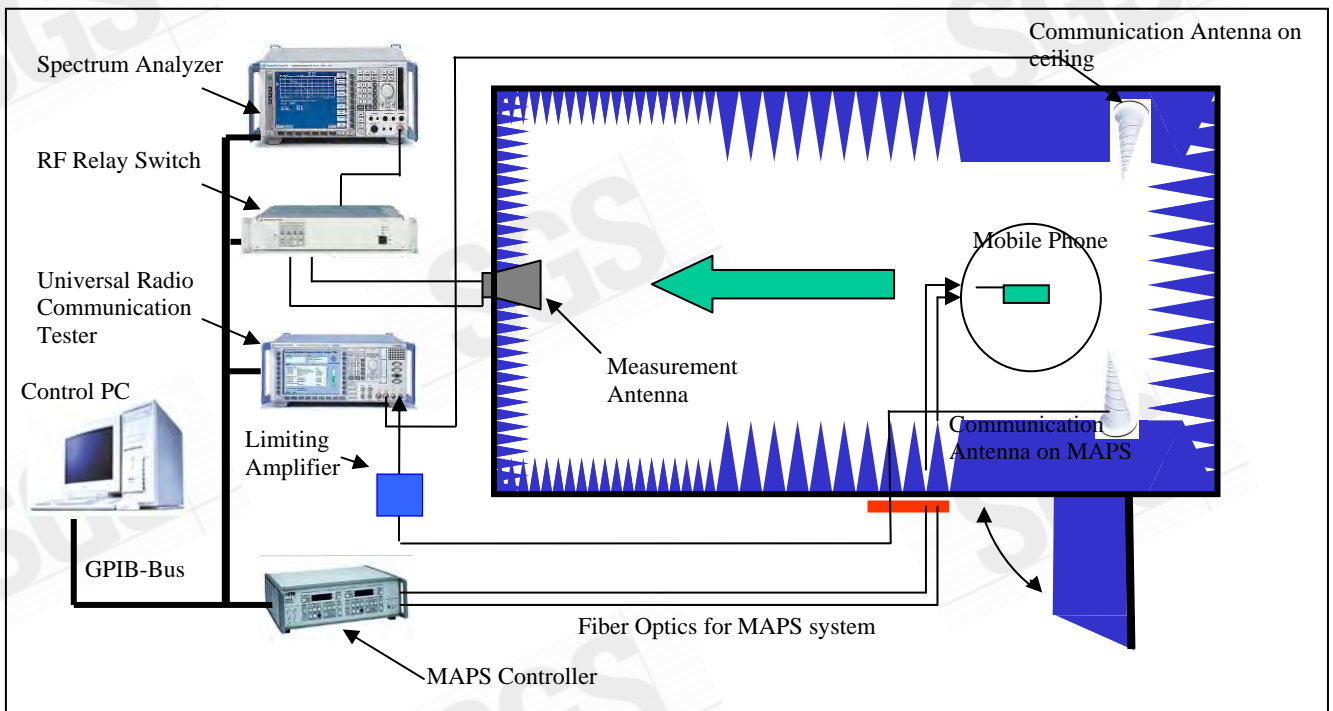
### General Information

#### Testing Condition:

- Temperature: 25±3°C
- Humidity: <80%

#### Measurement Facility:

- Measurement Chamber: ETS-Lindgren 3D fully anechoic chamber and its measuring system (AMS-8500)
- Base Station Simulator: Agilent E5515C (or R&S CMU200)
- ETS-Lindgren EMCO-2090 Auxiliary Ports RF Relay Switches
- Spectrum Analyzer: Agilent N9010A
- Network Analyzer: Agilent E5071C



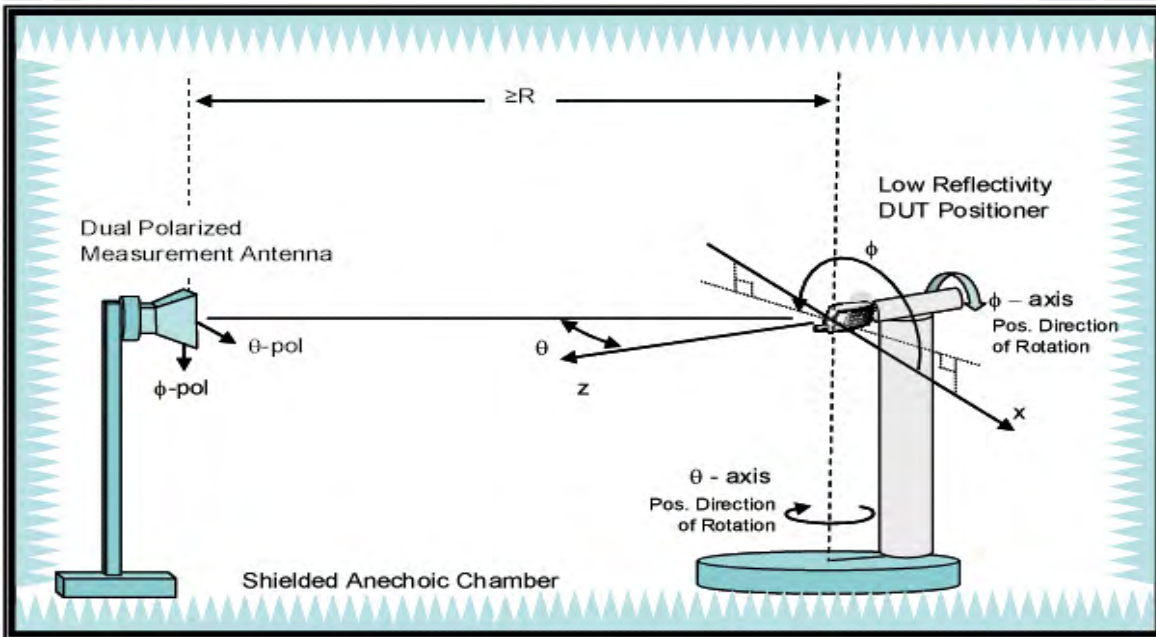
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Measurements are performed in a ETS-Lindgren **AMS-8500** 3D fully anechoic test system. The test system includes a high-performance RF-shielded, rectangular anechoic chamber, a Multi-Axis Positioning System (MAPS), and *EMQuest™* **EMQ-100** data acquisition and analysis software. The geometry of the setup is specified below for reference.

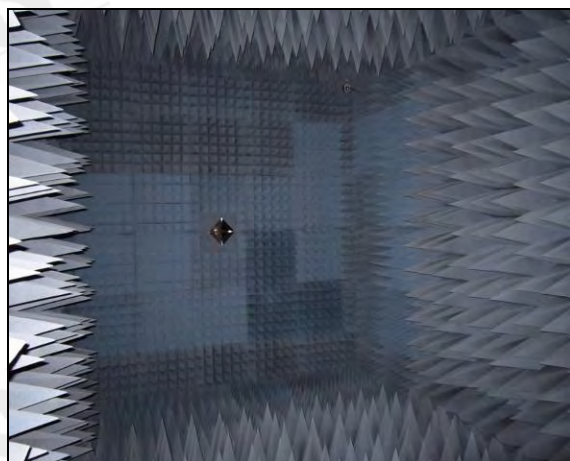
**Typical Setup for ETS-Lindgren AMS-8500:**



**Instruments View**



**Inside View**



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**Testing Laboratory: Identification of the Responsible Test Laboratory.**

- **OTA Laboratory:**  
**SGS Taiwan Ltd. Electronics & Communication Laboratory**  
 No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803.  
 Telephone: +886 2 2299 3279  
 Fax: +886 2 2298 0488  
 Internet: <http://www.tw.sgs.com>
- **Testing Location:**  
 No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803.

**Details of Applicant:**

|                             |   |
|-----------------------------|---|
| <b>Applicant's name:</b>    | <b>ALATECH Technology Limited Co.</b>                                 |
| <b>Applicant's address:</b> | <b>39F., No.758, Jungming S.RD. Taichung, Taiwan, R.O.C.</b>          |
| <b>Contact person:</b>      | <b>Brian</b>  |
| <b>Telephone:</b>           | <b>886-4-22608341</b>   |
| <b>Fax:</b>                 | <b>886-4-22608346</b>   |
| <b>E-mail:</b>              | <b><a href="mailto:brian@alatech.com.tw">brian@alatech.com.tw</a></b> |

**Details of Manufacturer:**

|                                |  |
|--------------------------------|--|
| <b>Manufacturer's name:</b>    | <b>ZHEJIANG ALA FITNESS TECHNOLOGY LTD</b>                     |
| <b>Manufacturer's address:</b> | <b>NO.99 GUANGHUA ROAD TONGXIANG ECONOMIC DEVELOPMENT ZONE</b> |
| <b>Contact person:</b>         | <b>Sky</b>   |
| <b>Telephone:</b>              | <b>0573-88628666</b>   |
| <b>Fax:</b>                    | <b>N/A</b>   |
| <b>E-mail:</b>                 | <b><a href="mailto:Sky@zjala.com">Sky@zjala.com</a></b>        |

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**Details of EUT:**

|                             |   |
|-----------------------------|---|
| <b>Device Description:</b>  | <b>Runaid 10</b>                                    |
| <b>Device Manufacturer:</b> | <b>ALATECH Technology Limited Co.</b>               |
| <b>Device Model:</b>        | <b>FB006</b>  |
| <b>Hardware Version:</b>    | <b>1.0</b>  |
| <b>Software Version:</b>    | <b>1.0</b>  |
| <b>IMEI:</b>                | <b>N/A</b>  |
| <b>FCC ID:</b>              | <b>YQOFB006</b>                                     |
| <b>Frequency Range:</b>     | <b>2400MHz ~ 2500MHz</b><br><b>Step size: 10MHz</b> |
| <b>Antenna Type:</b>        | <b>Internal antenna</b>                             |

**Duration of Tests:**

|                             |                   |
|-----------------------------|-------------------|
| <b>Sample Receive Date:</b> | <b>2014-02-07</b> |
| <b>Test Starting Date:</b>  | <b>2014-02-11</b> |
| <b>Test Ending Date:</b>    | <b>2014-02-19</b> |
| <b>Report Issued Date:</b>  | <b>2014-03-19</b> |

**Photographs of EUT:**

**Front View**



**Back View**



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**List of Equipment**

## Equipment Summary Sheet

| Equipment Description                 | Manufacturer | Identification no. | Current calibration date | Next calibration date |
|---------------------------------------|--------------|--------------------|--------------------------|-----------------------|
| Base station                          | Agilent      | E5515C             | 2013/3/18                | 2015/3/18             |
| Spectrum analyzer                     | Agilent      | N9010A             | 2013/11/29               | 2015/11/29            |
| Network analyzer                      | Agilent      | E5071C             | 2013/10/28               | 2014/10/28            |
| Measurement software                  | ETS-Lindgren | EMQuest 1.08       | N/A                      | N/A                   |
| Multi axis positioning system(MAPSTM) | ETS-Lindgren | EMCO 2115          | N/A                      | N/A                   |
| Multi axis positioning system(MAPSTM) | ETS-Lindgren | EMCO 2110          | N/A                      | N/A                   |
| MAPSTM controller                     | ETS-Lindgren | EMCO 2090          | N/A                      | N/A                   |
| Horn antenna                          | ETS-Lindgren | 3164-04            | N/A                      | N/A                   |

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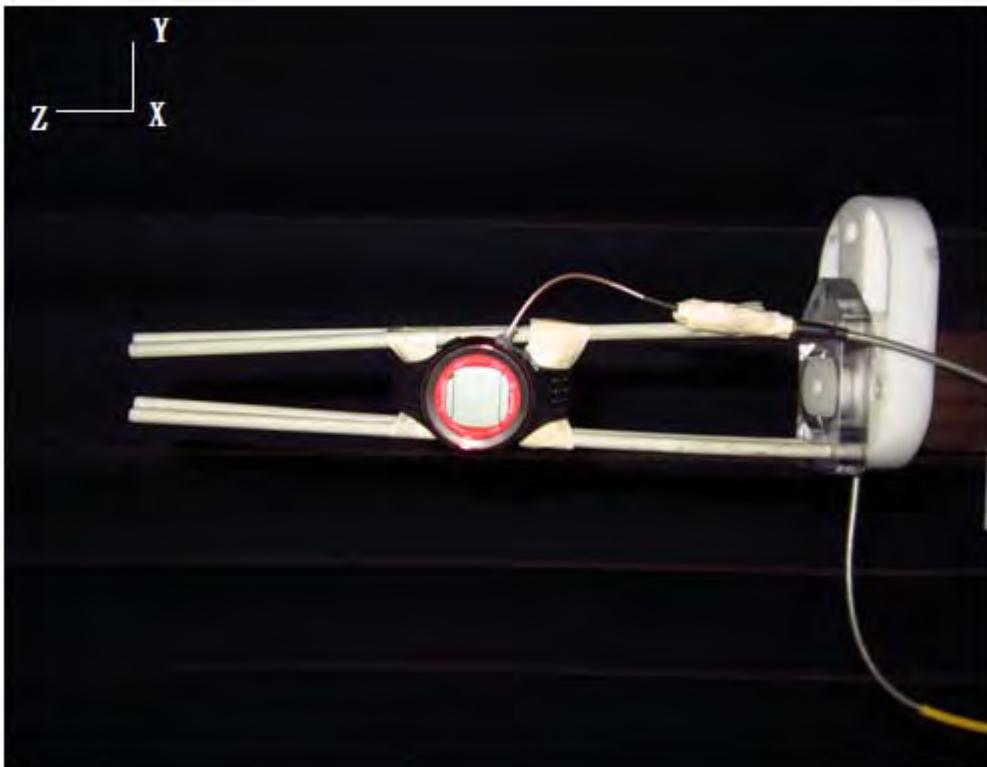
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## Antenna Gain and Efficiency

| Test Results               |       |       |       |       |       |       |       |       |       |       |       |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Frequency (MHz)            | 2400  | 2410  | 2420  | 2430  | 2440  | 2450  | 2460  | 2470  | 2480  | 2490  | 2500  |
| Point Values               |       |       |       |       |       |       |       |       |       |       |       |
| Ant. Port Input Pwr. (dBm) | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Tot. Rad. Pwr. (dBm)       | -4.60 | -4.42 | -4.23 | -4.25 | -4.17 | -4.16 | -4.11 | -4.04 | -4.04 | -4.06 | -4.16 |
| Peak EIRP (dBm)            | 2.16  | 2.37  | 2.60  | 2.67  | 2.81  | 2.82  | 2.86  | 2.93  | 2.93  | 2.88  | 2.73  |
| Directivity (dBi)          | 6.76  | 6.79  | 6.83  | 6.91  | 6.98  | 6.98  | 6.97  | 6.97  | 6.96  | 6.94  | 6.89  |
| Efficiency (dB)            | -4.60 | -4.42 | -4.23 | -4.25 | -4.17 | -4.16 | -4.11 | -4.04 | -4.04 | -4.06 | -4.16 |
| Efficiency (%)             | 34.68 | 36.18 | 37.78 | 37.59 | 38.27 | 38.40 | 38.82 | 39.45 | 39.48 | 39.29 | 38.34 |
| Gain (dBi)                 | 2.16  | 2.37  | 2.60  | 2.67  | 2.81  | 2.82  | 2.86  | 2.93  | 2.93  | 2.88  | 2.73  |
| NHPRP ±Pi/4 (dBm)          | -6.15 | -5.94 | -5.74 | -5.75 | -5.67 | -5.65 | -5.60 | -5.52 | -5.51 | -5.53 | -5.63 |
| NHPRP ±Pi/6 (dBm)          | -7.47 | -7.26 | -7.06 | -7.09 | -7.02 | -7.01 | -6.98 | -6.92 | -6.93 | -6.96 | -7.09 |
| NHPRP ±Pi/8 (dBm)          | -8.57 | -8.37 | -8.17 | -8.20 | -8.14 | -8.14 | -8.13 | -8.09 | -8.11 | -8.16 | -8.31 |
| Upper Hem. PRP (dBm)       | -8.64 | -8.43 | -8.20 | -8.18 | -8.07 | -8.02 | -7.94 | -7.84 | -7.81 | -7.80 | -7.88 |
| Lower Hem. PRP (dBm)       | -6.77 | -6.61 | -6.45 | -6.50 | -6.45 | -6.46 | -6.43 | -6.38 | -6.40 | -6.44 | -6.57 |

## Test Setup



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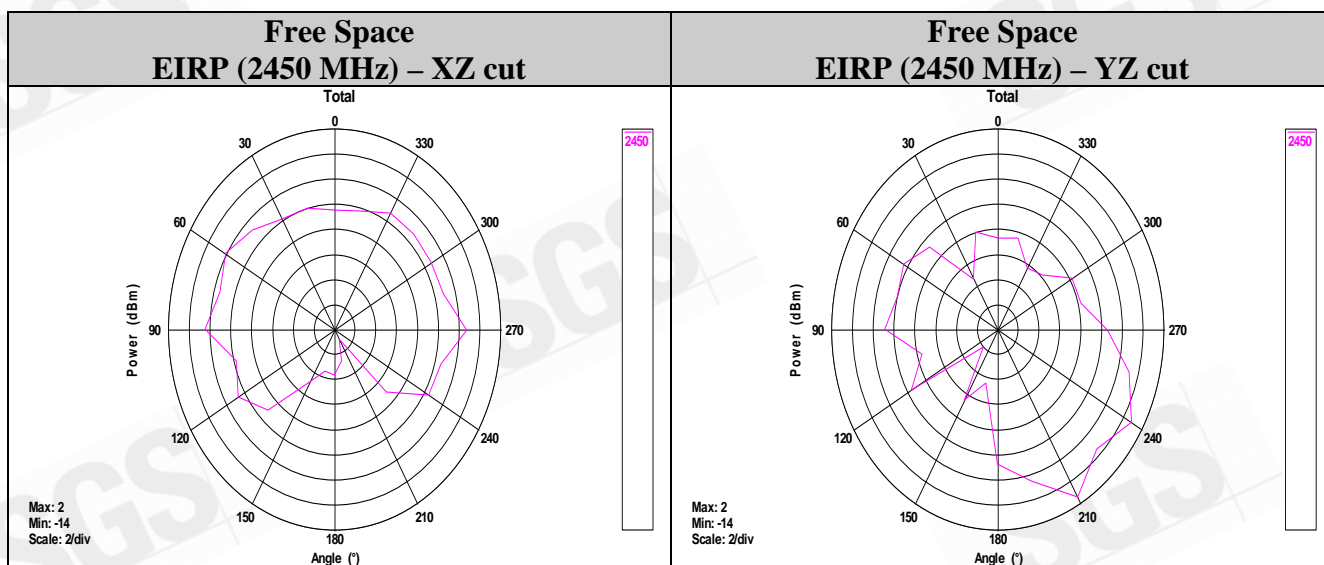
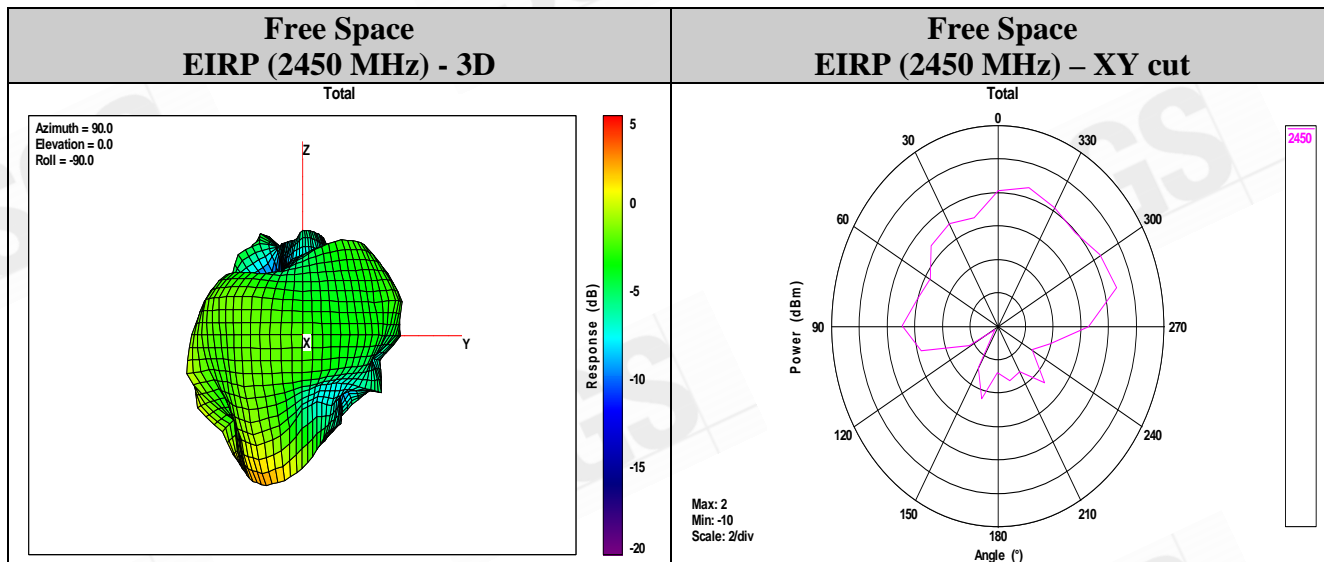
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## Antenna 3D Plot Matrix

All plots in this section show the total EIRP ( $EIRP_{\theta} + EIRP_{\phi}$ ) with the +x-axis pointing out of the page, +y-axis pointing right, and +z-axis pointing up.



## End of Report

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