

## Antenna Test Report

**Report No.: EO/2010/90050**  
**CTIA Test Plan for OTA Revision 2.2.2**

**Applicant Name: ORtek Technology Inc.**  
**Manufacturer Name: ORtek Technology Inc.**

**Product Name: Wireless Smart Pad and Mini Keyboard**  
**Model Number: PKB-1800**

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

**Issued Date: November 03, 2010**

|              | Name                   | Date & Signature                     |
|--------------|------------------------|--------------------------------------|
| Prepared by: | Jose Ho<br>Engineer    | <i>Jose Ho</i><br>November 03, 2010  |
| Approved by: | Nick Hsu<br>Supervisor | <i>Nick Hsu</i><br>November 03, 2010 |

| Distribution |
|--------------|
|              |

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

## Measurement System Information

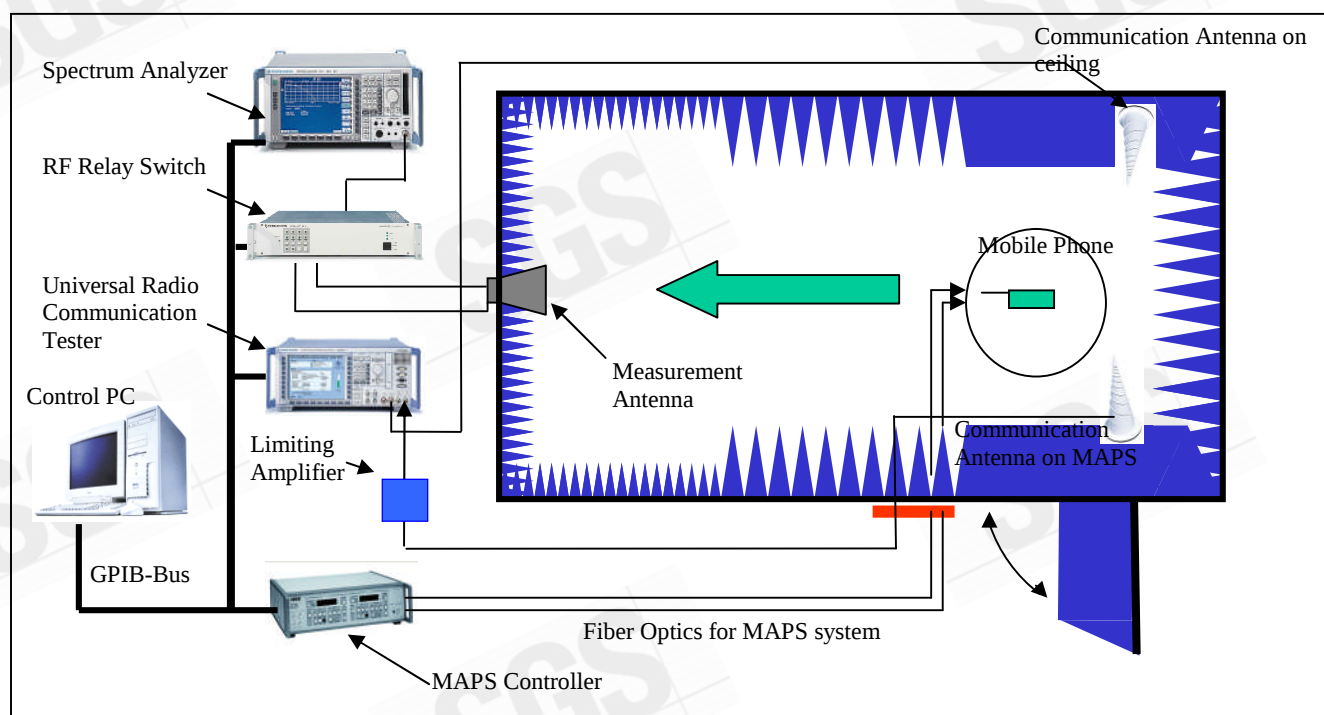
### General Information

#### Testing Condition:

- Temperature :  $25 \pm 3^{\circ}\text{C}$
- Humidity : <60%

#### 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 E4405B
- Network Analyzer: Agilent E5071C

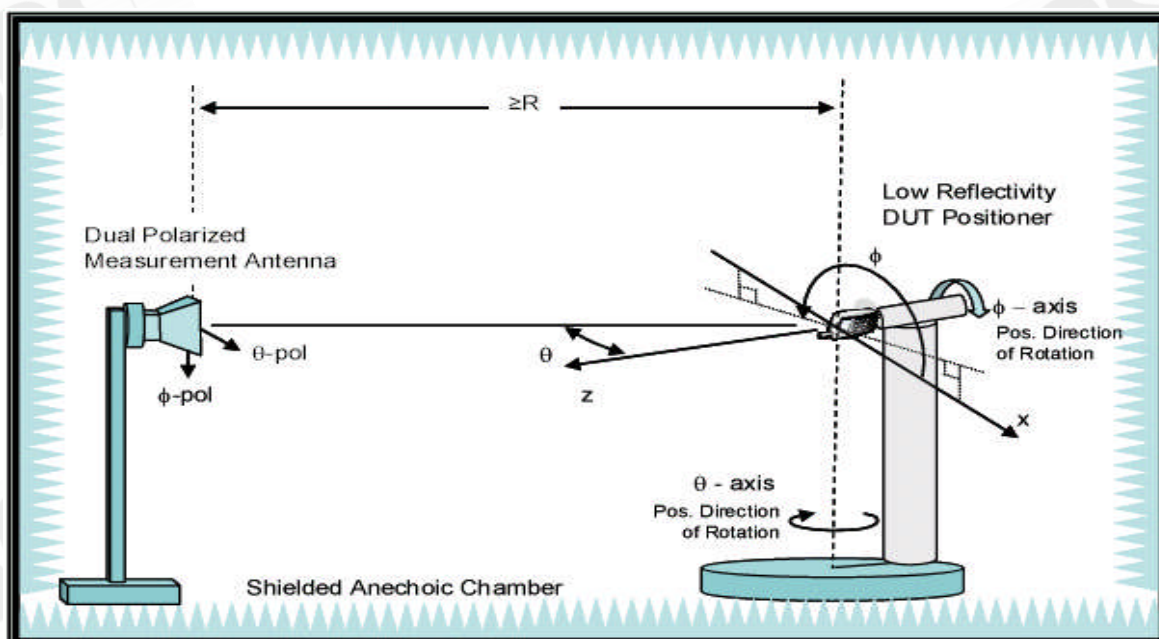


Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.  
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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.

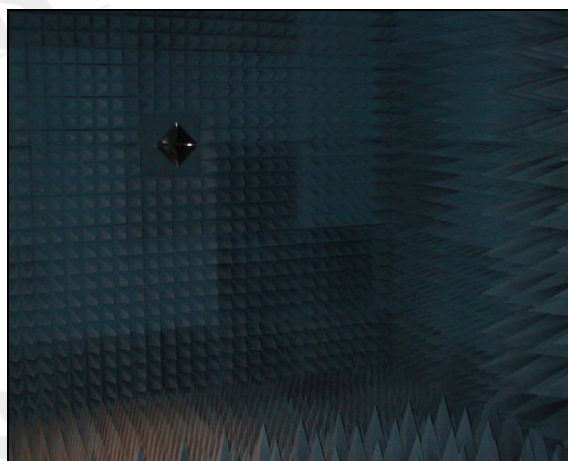
## Typical Setup for ETS-Lindgren AMS-8500:



## Instruments View



## Inside View



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.  
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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

SGS Taiwan Ltd. Electronics &amp; Communication Laboratory

5F, No.134, Wu Kung Road, Wuku Industrial zone, Taipei County, Taiwan 248, R.O.C.

Telephone: +886 2 2299 3279

Fax: +886 2 2298 0488

Internet: <http://www.sgs.com>**Details of Applicant:**

|                             |                                                                                 |
|-----------------------------|---------------------------------------------------------------------------------|
| <b>Applicant's name:</b>    | <b>ORtek Technology Inc.</b>                                                    |
| <b>Applicant's address:</b> | <b>13F, Number 150, Jian Yi Rd. Chung Ho City, Taipei Hsien, Taiwan, R.O.C.</b> |
| <b>Contact person:</b>      | <b>Andy Chow / Engineer</b>                                                     |
| <b>Telephone:</b>           | <b>02-82265123 ext.119</b>                                                      |
| <b>Fax:</b>                 | <b>02-8226-5125</b>                                                             |
| <b>E-mail:</b>              | <b><a href="mailto:rd8@ortek.com.tw">rd8@ortek.com.tw</a></b>                   |

**Details of Manufacturer:**

|                                |                                                                               |
|--------------------------------|-------------------------------------------------------------------------------|
| <b>Manufacturer's name:</b>    | <b>ORtek Technology Inc.</b>                                                  |
| <b>Manufacturer's address:</b> | <b>Factory Number 6, Hsin-His-Chiao Da Dong, Dong An Dist, Xiamen. P.R.C.</b> |
| <b>Contact person:</b>         | <b>Andy Chow / Engineer</b>                                                   |
| <b>Telephone:</b>              | <b>02-82265123 ext.119</b>                                                    |
| <b>Fax:</b>                    | <b>02-8226-5125</b>                                                           |
| <b>E-mail:</b>                 | <b><a href="mailto:rd8@ortek.com.tw">rd8@ortek.com.tw</a></b>                 |

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

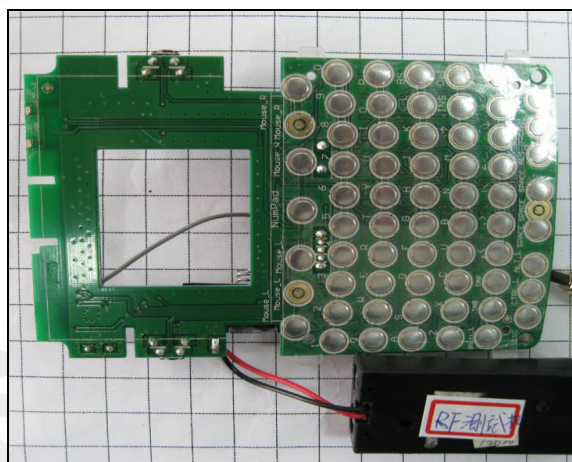
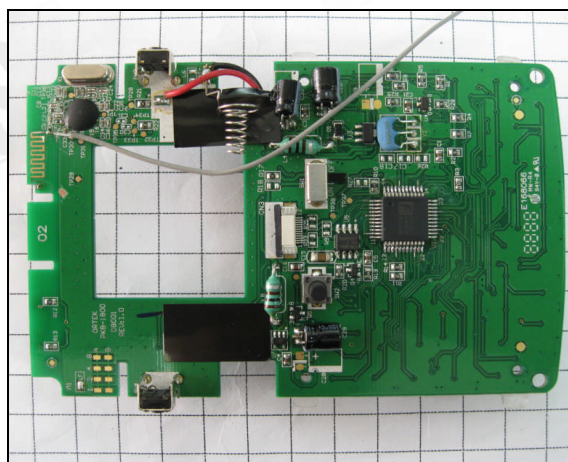
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

**Details of EUT:**

|                      |                                                                        |
|----------------------|------------------------------------------------------------------------|
| Device Description:  | Wireless Smart Pad and Mini Keyboard                                   |
| Device Manufacturer: | ORtek Technology Inc.                                                  |
| Device Model:        | PKB-1800                                                               |
| Hardware Version:    | Keyboard:1.1 / dongle:1.0                                              |
| Software Version:    | Keyboard:1.0 / dongle:1.0                                              |
| IMEI:                | N/A                                                                    |
| FCC ID:              | GM8PKB1800                                                             |
| Frequency Range:     | 2425MHz, 2430MHz, 2435MHz, 2445MHz, 2455MHz, 2460MHz, 2465MHz, 2475MHz |

**Duration of Tests:**

|                      |            |
|----------------------|------------|
| Sample Receive Date: | 2010-11-02 |
| Test Starting Date:  | 2010-11-03 |
| Test Ending Date:    | 2010-11-03 |
| Report Issued Date:  | 2010-11-03 |

**Photographs of EUT:****Front View****Back View**

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.  
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

## Equipment Summary Sheet

| Equipment Description                 | Manufacturer | Identification no. | Current calibration date | Next calibration date |
|---------------------------------------|--------------|--------------------|--------------------------|-----------------------|
| Base station                          | Agilent      | E5515C             | 2008/12/31               | 2010/12/31            |
| Spectrum analyzer                     | Agilent      | E4405B             | 2010/7/6                 | 2011/7/6              |
| Network analyzer                      | Agilent      | E5071C             | 2010/9/6                 | 2011/9/6              |
| Measurement software                  | ETS-Lindgren | EMQuest 1.07       | 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                   |

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

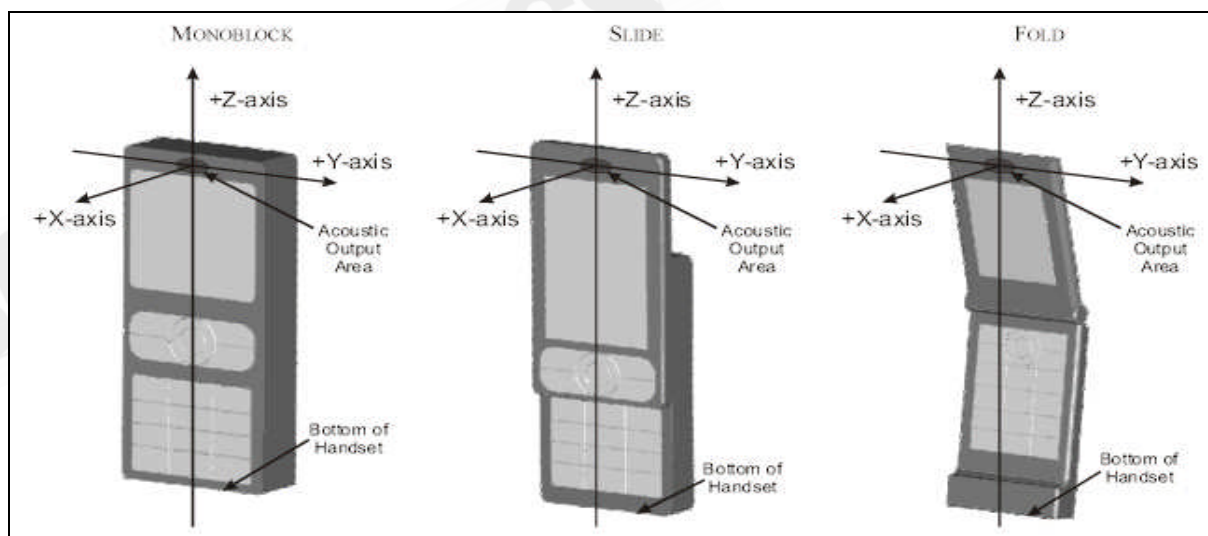
## Antenna Gain and Efficiency

| Free Space                 |       |       |       |       |       |       |       |       |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Frequency (MHz)            | 2425  | 2430  | 2435  | 2445  | 2455  | 2460  | 2465  | 2475  |
| Point Values               |       |       |       |       |       |       |       |       |
| Ant. Port Input Pwr. (dBm) | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  | 0.00  |
| Tot. Rad. Pwr. (dBm)       | -4.06 | -4.05 | -4.05 | -4.12 | -4.11 | -4.13 | -4.14 | -4.11 |
| Peak EIRP (dBm)            | 1.01  | 0.98  | 0.96  | 0.84  | 0.82  | 0.78  | 0.80  | 0.93  |
| Directivity (dBi)          | 5.07  | 5.04  | 5.01  | 4.96  | 4.93  | 4.91  | 4.94  | 5.04  |
| Efficiency (dB)            | -4.06 | -4.05 | -4.05 | -4.12 | -4.11 | -4.13 | -4.14 | -4.11 |
| Efficiency (%)             | 39.28 | 39.34 | 39.39 | 38.74 | 38.80 | 38.61 | 38.59 | 38.86 |
| Gain (dBi)                 | 1.01  | 0.98  | 0.96  | 0.84  | 0.82  | 0.78  | 0.80  | 0.93  |
| 11HPRP $\pm\pi/4$ (dBm)    | -5.06 | -5.05 | -5.04 | -5.11 | -5.10 | -5.12 | -5.13 | -5.11 |
| 11HPRP $\pm\pi/6$ (dBm)    | -6.73 | -6.72 | -6.71 | -6.79 | -6.79 | -6.81 | -6.83 | -6.81 |
| 11HPRP $\pm\pi/8$ (dBm)    | -8.27 | -8.27 | -8.27 | -8.35 | -8.36 | -8.38 | -8.40 | -8.39 |
| Upper Hem. PRP (dBm)       | -7.24 | -7.24 | -7.25 | -7.37 | -7.42 | -7.47 | -7.51 | -7.54 |
| Lower Hem. PRP (dBm)       | -6.91 | -6.89 | -6.87 | -6.90 | -6.85 | -6.84 | -6.81 | -6.73 |

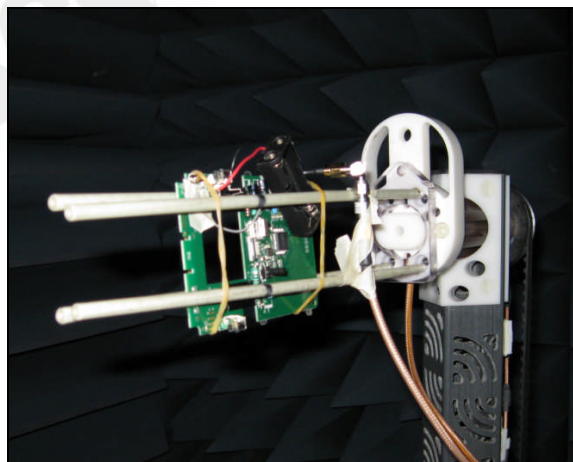
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

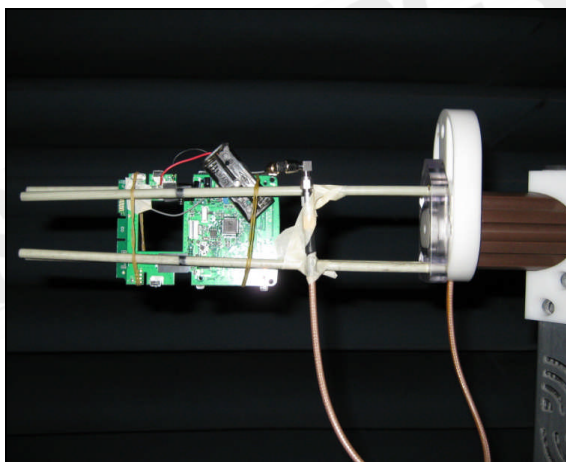
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Free Space - Front View



Free Space - Side View



## Coordinate System

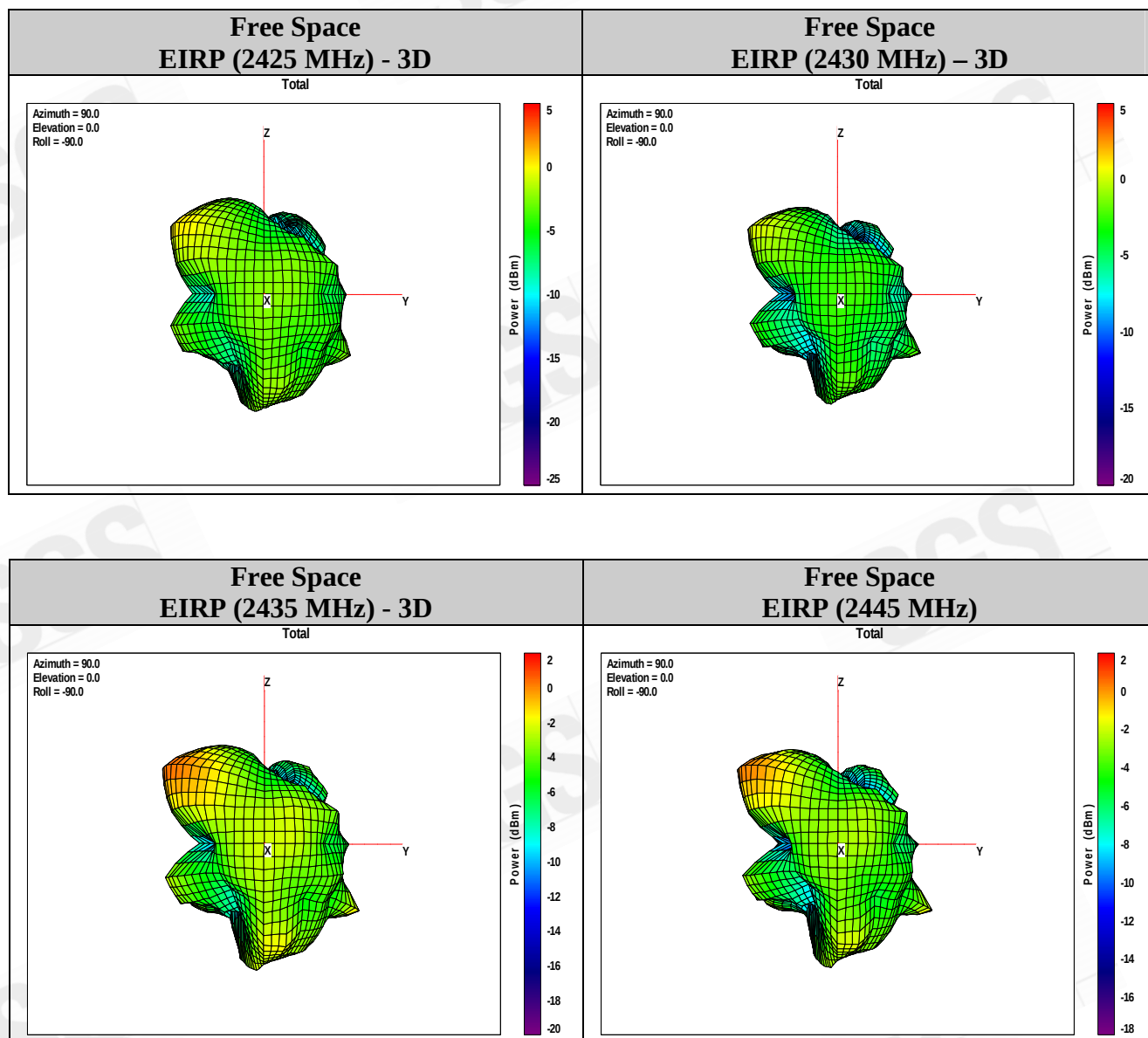
The coordinate system is centered on the antenna of the EUT, with the **+X-axis** pointing front side of the EUT (out of the picture), the **+Y-axis** pointing right side of the EUT (top side of the picture), and the **+Z-axis** pointing top side of the EUT (left side of the picture).

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.  
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

## Antenna 3D Plot Matrix

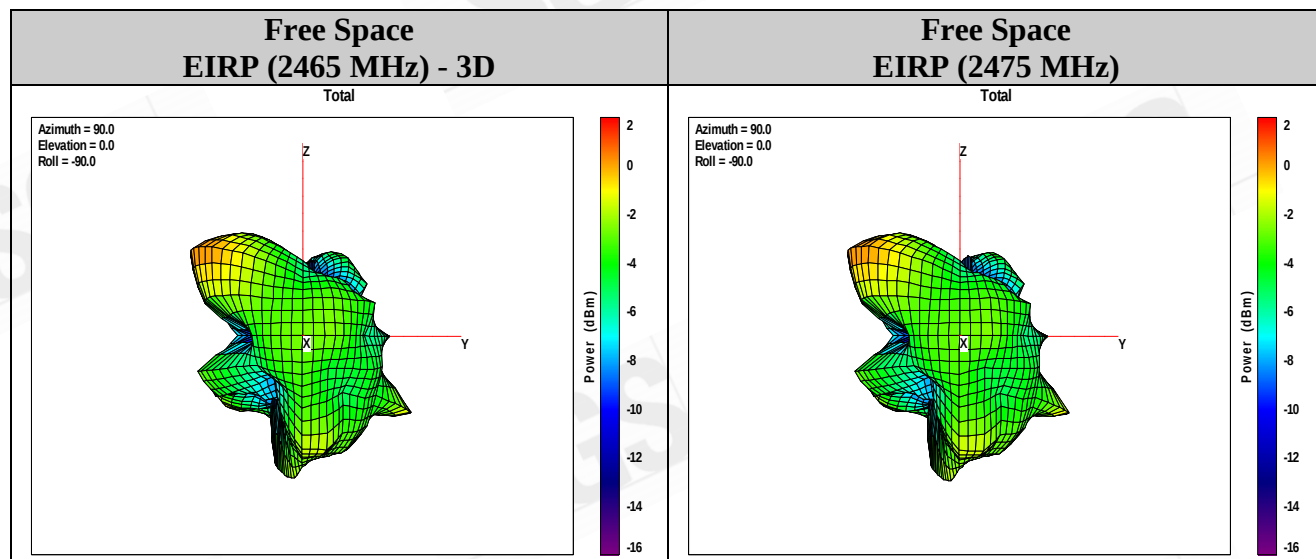
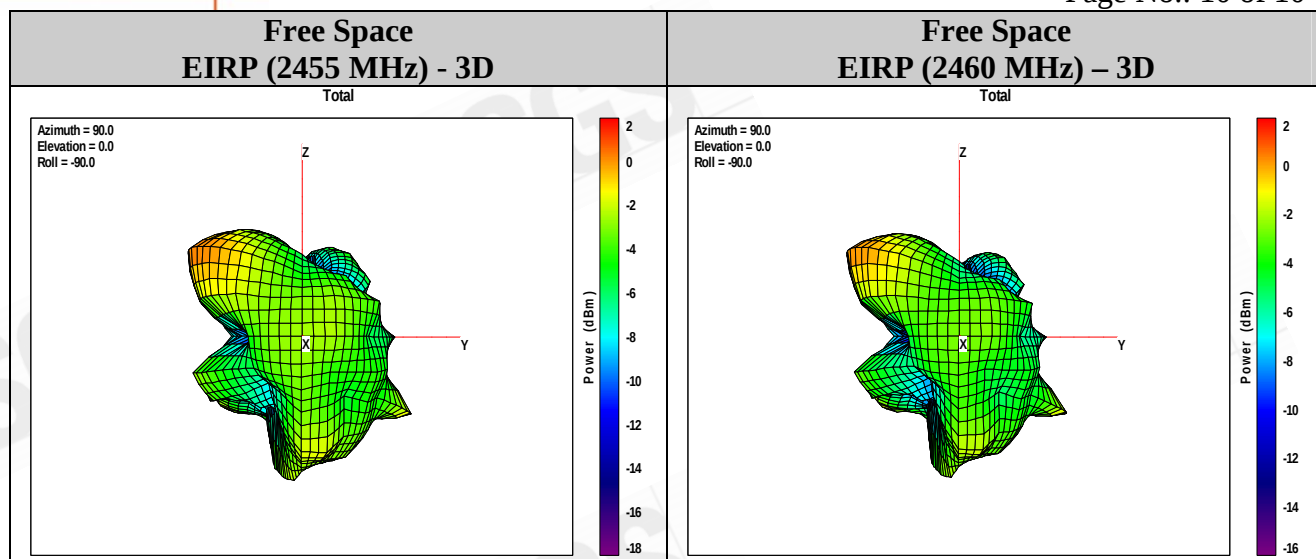
All plots in this section show the total EIRP ( $EIRP_{\theta} + EIRP_{\phi}$ ) with the +x-axis pointing out of the page, +y-axis pointing right, and +z-axis pointing up.



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



End of Report

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at [www.sgs.com/terms\\_and\\_conditions.htm](http://www.sgs.com/terms_and_conditions.htm) and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at [www.sgs.com/terms\\_e-document.htm](http://www.sgs.com/terms_e-document.htm). Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.