

## Antenna Test Report

**Report No.: EO/2011/70032**
**Test Plan: Non-compliance with ISO17025**
**Applicant Name: EGIGA TECHNOLOGIES CO LTD**
**Manufacturer Name: EGIGA TECHNOLOGIES CO LTD /  
STOLLMANN E+V GmbH**
**Product Name: Bluetooth Module**
**Model Number: eGM-A03(BlueMod+B20)**
**Measurements performed at  
SGS Taiwan Ltd.  
Taipei, Taiwan**
**Issued Date: July 22, 2011**

	Name	Date & Signature
Prepared by:	Jacob Chiou Engineer	<i>Jacob Chiou</i> July 22, 2011
Approved by:	Nick Hsu Supervisor	<i>Nick Hsu</i> July 22, 2011

Distribution

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## Measurement System Information

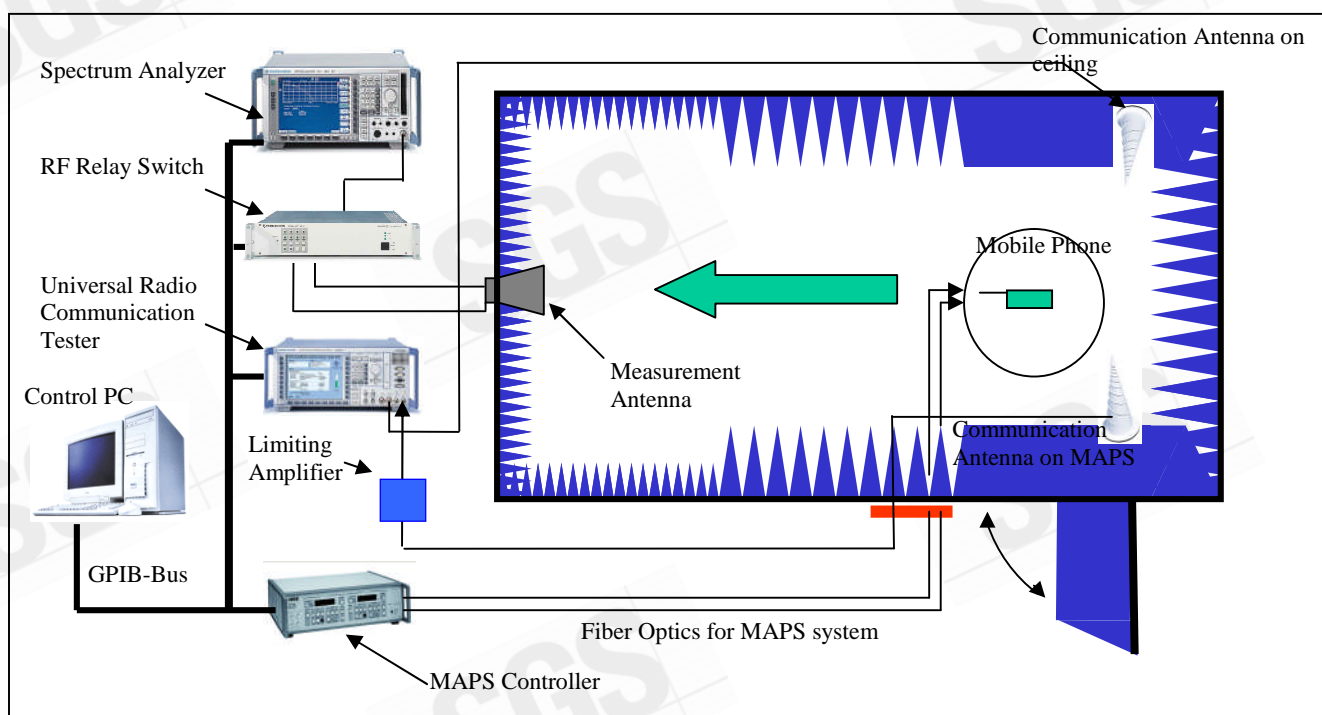
### General Information

#### Testing Condition:

- Temperature:  $25 \pm 3^{\circ}\text{C}$
- 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 E4405B
- Network Analyzer: Agilent E5071C

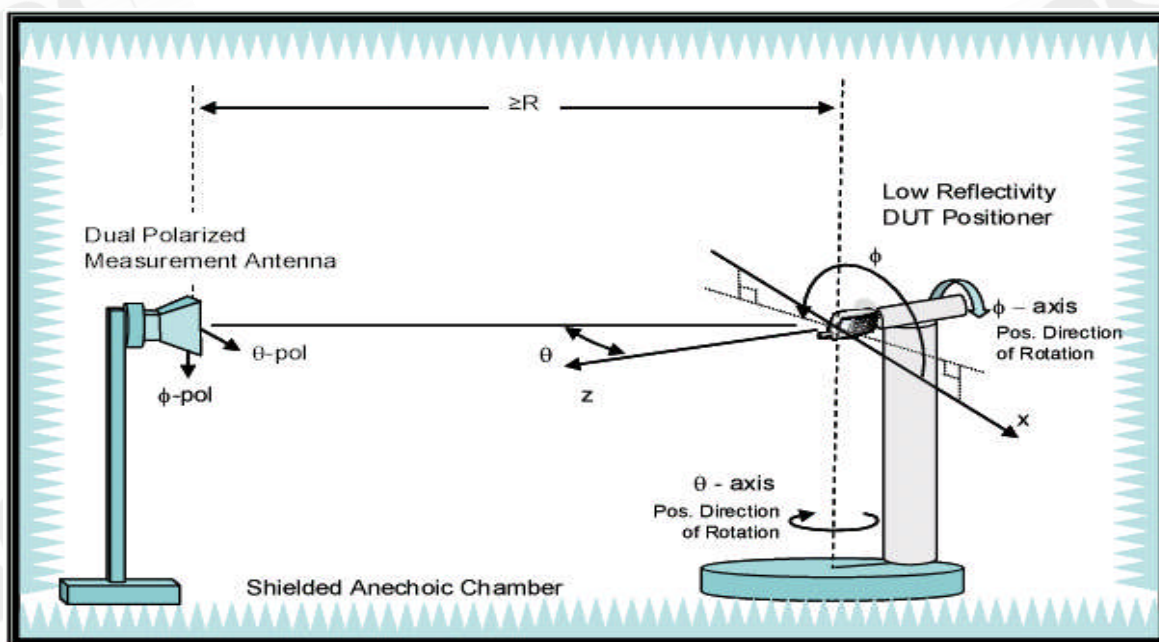


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Measurements are performed in a ETS-Lindgren **AMS-8500** 3D fully anechoic test system. The test system includes a high-performance RF-shielded, rectangular anechoic chamber, a Multi-Axis Positioning System (MAPS), and *EMQuest™* *EMQ-100* data acquisition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

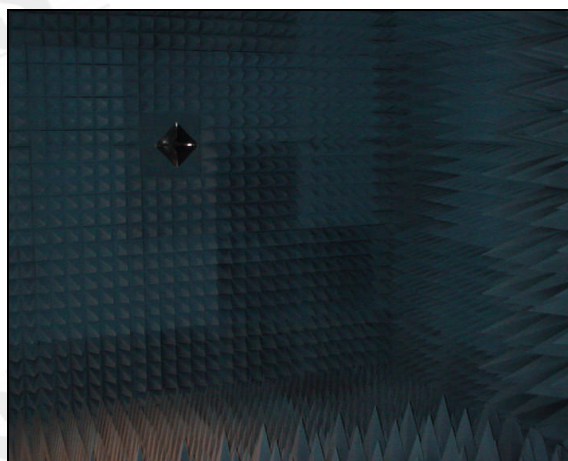
## Typical Setup for ETS-Lindgren AMS-8500:



## Instruments View



## Inside View



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

SGS Taiwan Ltd. Electronics &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.tw.sgs.com>**Details of Applicant:**

<b>Applicant's name:</b>	<b>EGIGA TECHNOLOGIES CO LTD</b>
<b>Applicant's address:</b>	<b>3F, No.200, Sec.2, Nanchang Rd., Jhongjheng District, 10084Taipei, Taiwan</b>
<b>Contact person:</b>	<b>Jasen Ho/ GM</b>
<b>Telephone:</b>	<b>+886-2-23681235</b>
<b>Fax:</b>	<b>+886-2-23670093</b>
<b>E-mail:</b>	<b><a href="mailto:Jasen@egigatek.com.tw">Jasen@egigatek.com.tw</a></b>

**Details of Manufacturer:**

<b>Manufacturer's name:</b>	<b>EGIGA TECHNOLOGIES CO LTD / STOLLMANN E+V GmbH</b>
<b>Manufacturer's address:</b>	<b>3F, No.200, Sec.2, Nanchang Rd., Jhongjheng District, 10084Taipei, Taiwan</b>
<b>Contact person:</b>	<b>Tony Kuan, CTO</b>
<b>Telephone:</b>	<b>+886-2-23681235</b>
<b>Fax:</b>	<b>+886-2-23670093</b>
<b>E-mail:</b>	<b><a href="mailto:tony@egigatek.com.tw">tony@egigatek.com.tw</a></b>

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## Details of EUT:

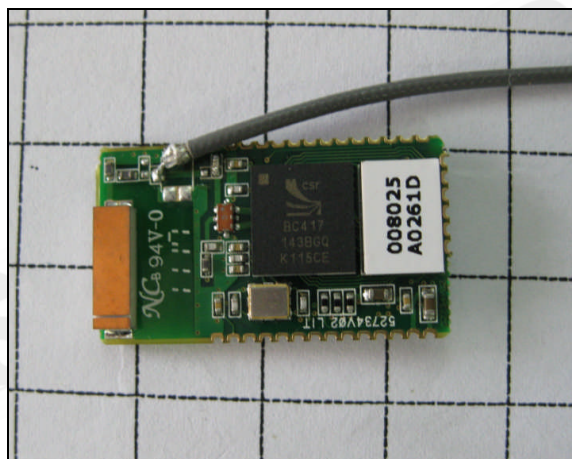
<b>Device Description:</b>	<b>Bluetooth Module</b>
<b>Device Manufacturer:</b>	<b>EGIGA TECHNOLOGIES CO LTD / STOLLMANN E+V GmbH</b>
<b>Device Model:</b>	<b>eGM-A03(BlueMod+B20)</b>
<b>BD serial number:</b>	<b>008025 A0261D</b>
<b>Hardware version:</b>	<b>V1.0</b>
<b>Software version:</b>	<b>V1.102</b>
<b>Frequency Band:</b>	<b>2400MHz ~ 2483.5MHz</b>
<b>Modulation Type:</b>	<b>GFSK</b>
<b>Number of Channels:</b>	<b>79</b>
<b>Antenna:</b>	<b>Internal antenna</b>

## Duration of Tests:

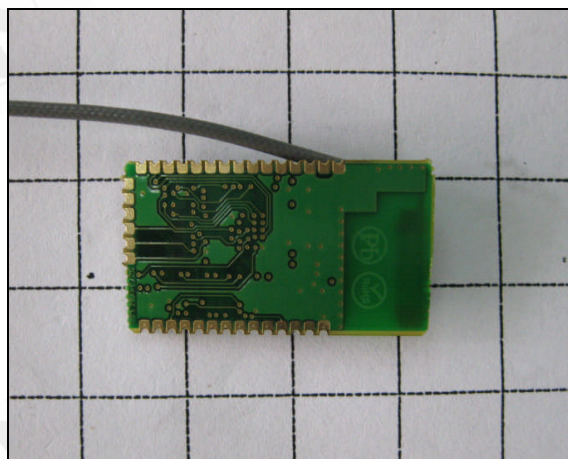
<b>Sample Receive Date:</b>	<b>2011-07-19</b>
<b>Test Starting Date:</b>	<b>2011-07-19</b>
<b>Test Ending Date:</b>	<b>2011-07-19</b>
<b>Report Issued Date:</b>	<b>2011-07-22</b>

## 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	2011/1/6	2013/1/6
Spectrum analyzer	Agilent	E4405B	2011/7/12	2012/7/12
Network analyzer	Agilent	E5071C	2010/9/6	2011/9/6
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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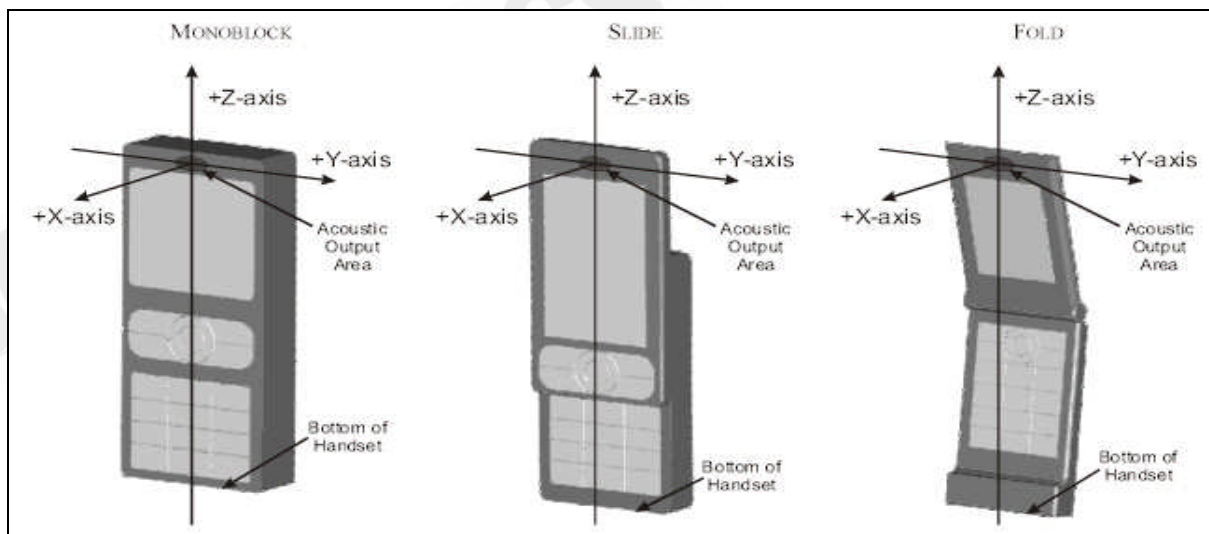
## Antenna Gain and Efficiency

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)	-5.03	-4.74	-4.42	-4.17	-3.89	-3.68	-3.45	-3.15	-2.87	-2.65	-2.58
Peak EIRP (dBm)	-2.17	-1.84	-1.41	-0.88	-0.38	0.03	0.44	0.93	1.40	1.80	2.03
Directivity (dBi)	2.85	2.90	3.00	3.29	3.52	3.71	3.89	4.08	4.27	4.45	4.60
Efficiency (dB)	-5.03	-4.74	-4.42	-4.17	-3.89	-3.68	-3.45	-3.15	-2.87	-2.65	-2.58
Efficiency (%)	31.43	33.57	36.16	38.26	40.81	42.87	45.19	48.41	51.67	54.34	55.23
Gain (dBi)	-2.17	-1.84	-1.41	-0.88	-0.38	0.03	0.44	0.93	1.40	1.80	2.03
11HPRP $\pm$ Pi/4 (dBm)	-5.86	-5.58	-5.26	-5.02	-4.75	-4.54	-4.32	-4.02	-3.75	-3.54	-3.48
11HPRP $\pm$ Pi/6 (dBm)	-7.08	-6.80	-6.49	-6.26	-5.99	-5.78	-5.55	-5.26	-4.98	-4.77	-4.71
11HPRP $\pm$ Pi/8 (dBm)	-8.15	-7.87	-7.57	-7.33	-7.07	-6.87	-6.64	-6.35	-6.07	-5.85	-5.79
Upper Hem. PRP (dBm)	-8.11	-7.90	-7.65	-7.49	-7.30	-7.17	-7.01	-6.78	-6.55	-6.39	-6.37
Lower Hem. PRP (dBm)	-7.96	-7.61	-7.21	-6.89	-6.54	-6.26	-5.97	-5.62	-5.29	-5.03	-4.93

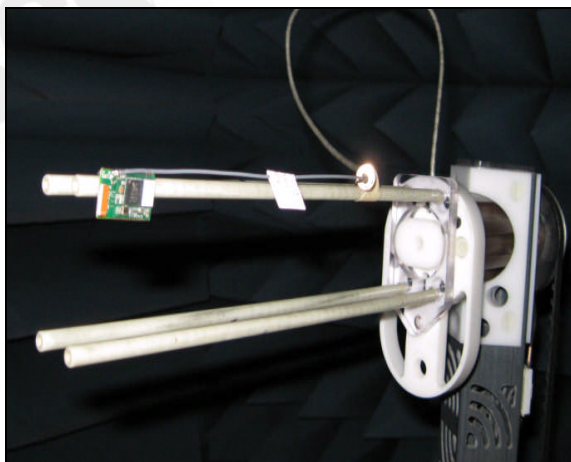
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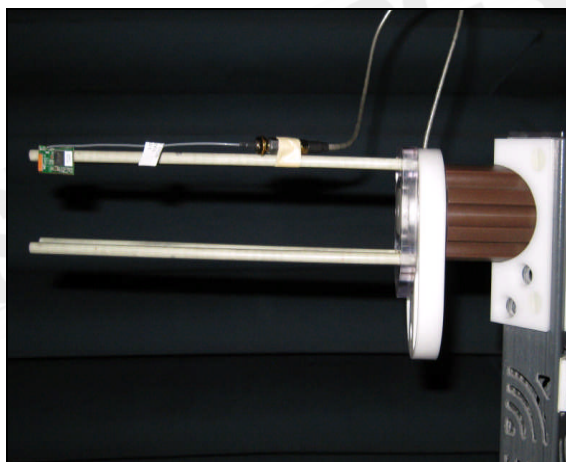
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Free Space - Front View



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).

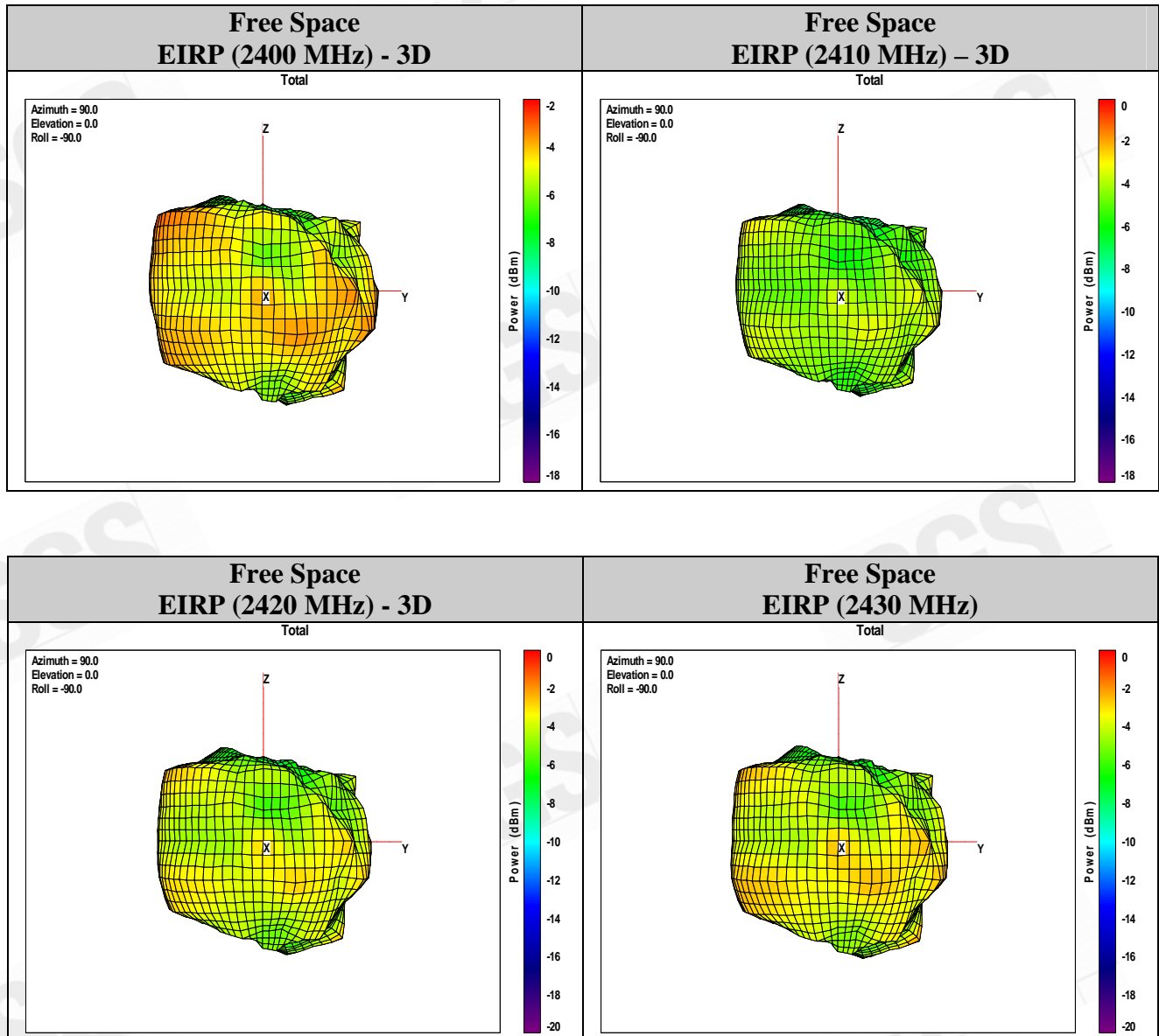
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## Antenna 3D Plot Matrix

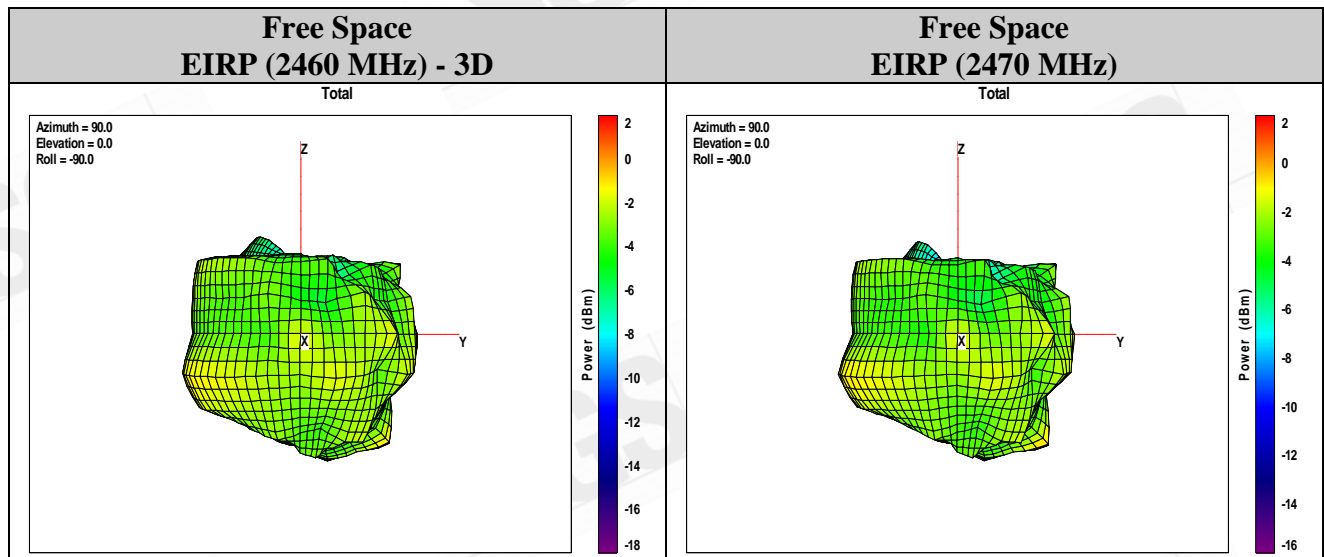
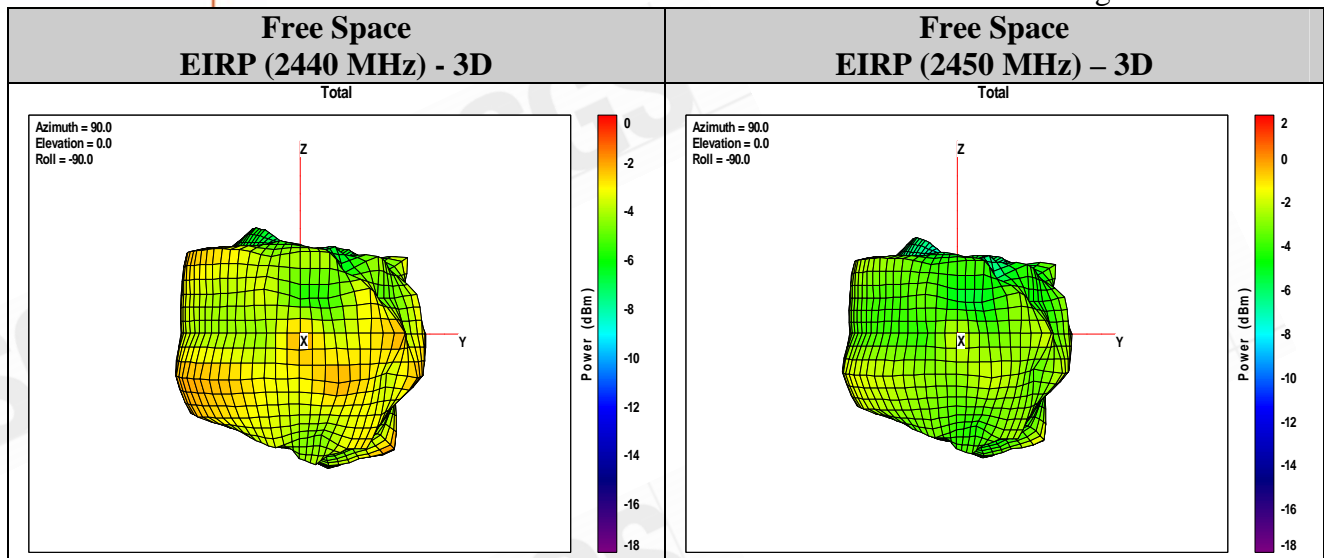
All plots in this section show the total EIRP ( $EIRP_{\theta} + EIRP_{\phi}$ ) with the +x-axis pointing out of the page, +y-axis pointing right, and +z-axis pointing up.



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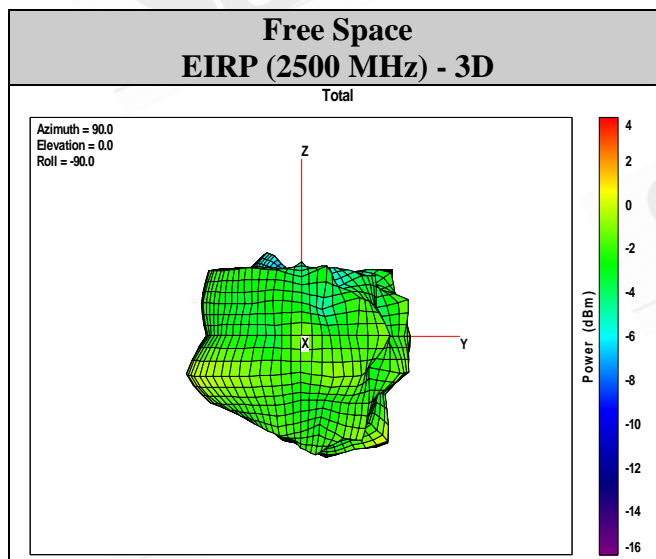
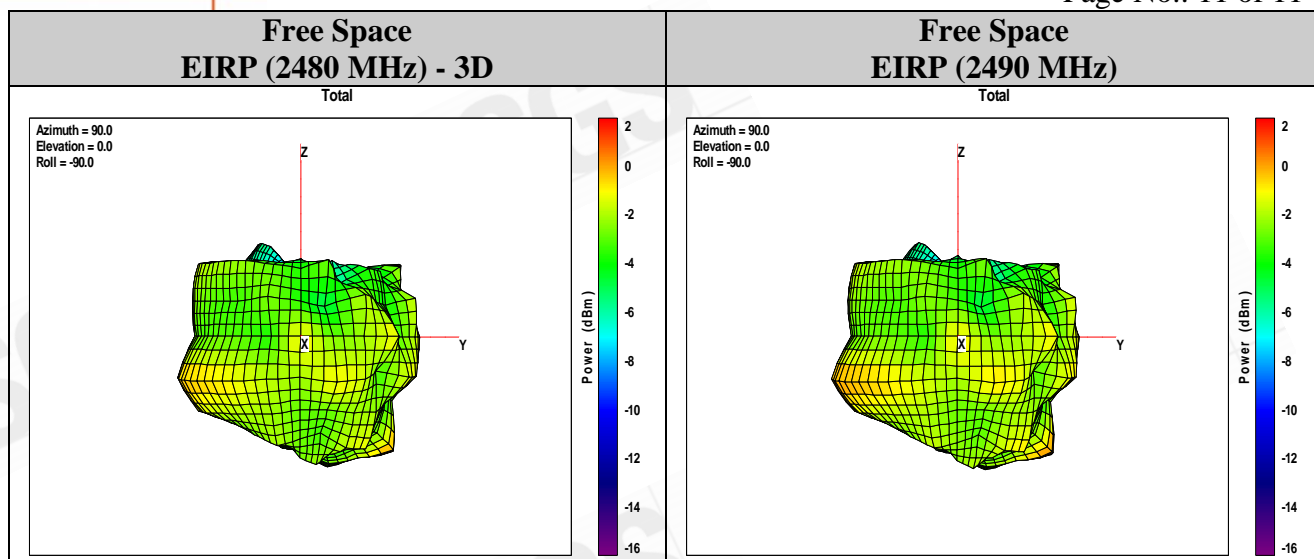
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