

Antenna Test Report



Report No.: TEOT2311000711EO

**Applicant Name: CHAO LONG MOTOR PARTS CORP.
 Manufacturer Name: PT Chao Long Motor Parts Indonesia.**

**Product Name: COMMUN.CONT.UNIT ASSY(BT Dongle)
 Model Name: YE97-A00**

**Measurements performed at
 SGS Taiwan Ltd.
 WuKu District, Taiwan**

Issued Date: November 30, 2023

	Name	Date & Signature	Distribution
Prepared by:	Eric Cheng Asst. Supervisor	 November 30, 2023	
Approved by:	Eason Chou Supervisor	 November 30, 2023	

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Revision Version

Report Number	Revision	Date	Memo
TEOT2311000711EO	00	2023/11/30	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

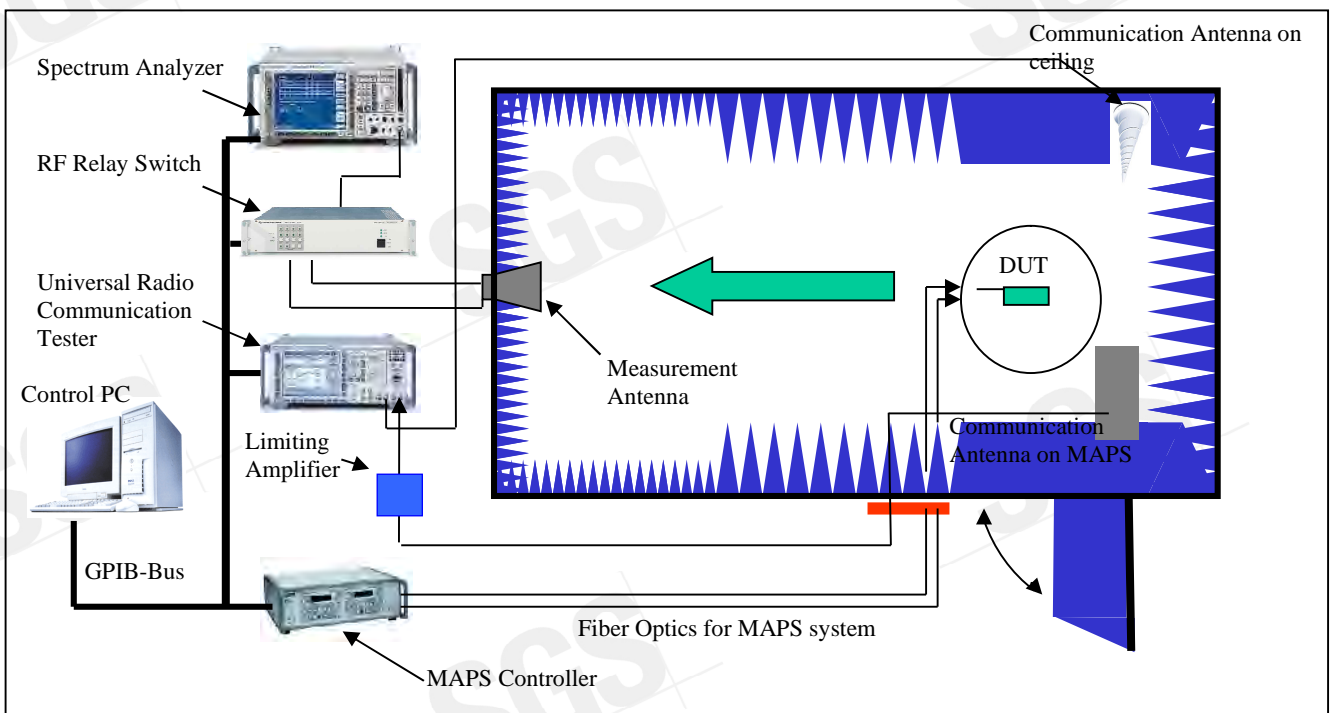
General Information

Testing Condition:

- Temperature: $25 \pm 3^\circ\text{C}$
- Humidity: $< 80\%$

Measurement Facility:

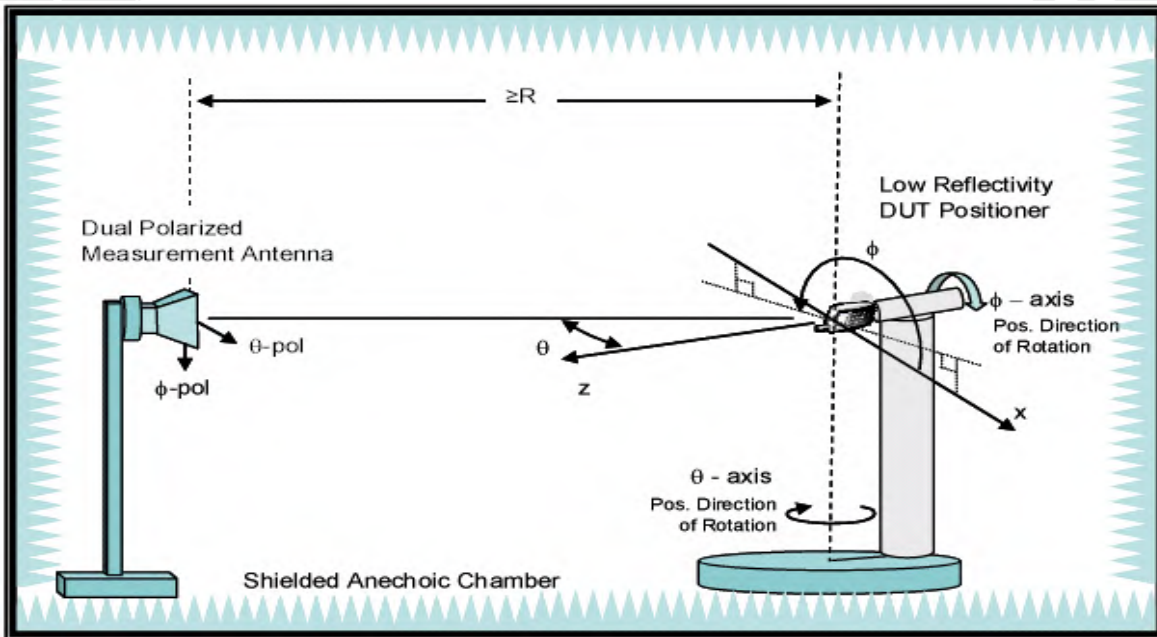
- Measurement Chamber: ETS-Lindgren 3D fully anechoic chamber and its measuring system (AMS-8500)
- Base Station Simulator: Agilent E5515C
- ETS-Lindgren EMCO-2090 Auxiliary Ports RF Relay Switches
- Spectrum Analyzer: Agilent N9010A
- Network Analyzer: Agilent E5071C



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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.

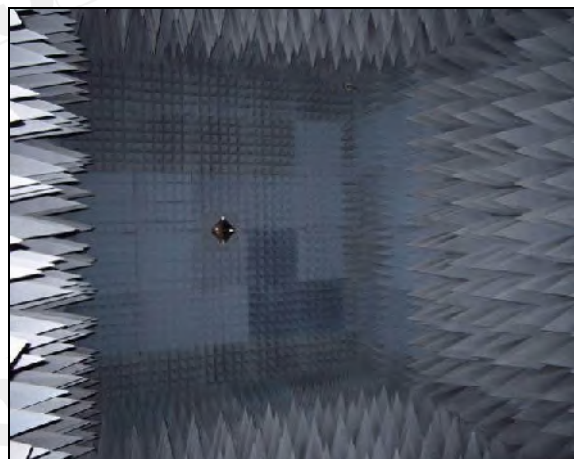
Typical Setup for ETS-Lindgren AMS-8500:



Instruments View



Inside View



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Testing Laboratory: Identification of the Responsible Test Laboratory.

- OTA Laboratory:**
SGS Taiwan Ltd. Wireless 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:

Applicant's name:	CHAO LONG MOTOR PARTS CORP.
Applicant's address:	No.10, Lane 151, Sec.2, Guangming Rd., Luzhu Dist., Taoyuan City, 33848, Taiwan.
Contact person:	Eugene Chang
Telephone:	03-3223711
Fax:	03-3224046
E-mail:	rdelec@chaolong-global.com

Details of Manufacturer:

Manufacturer's name:	PT Chao Long Motor Parts Indonesia.
Manufacturer's address:	Jl. Meranti I Blok L2 No.5-6, Delta Silicon Industrial Park Lippo Cikarang,Bekasi, Jawa Barat 17750 Indonesia
Contact person:	Chien Zhi Hung
Telephone:	+628118908288
Fax:	+622189118287
E-mail:	Kenji.hung@chaolong.co.id

Details of EUT:

Product Name:	COMMUN.CONT.UNIT ASSY(BT Dongle)
Device Manufacturer:	PT Chao Long Motor Parts Indonesia.
Device Model Name:	YE97-A00
Hardware Version:	N/A
Software Version:	N/A
Frequency Range:	2400MHz ~ 2500MHz Step size: 10MHz
Antenna Type:	PCB antenna

Duration of Tests:

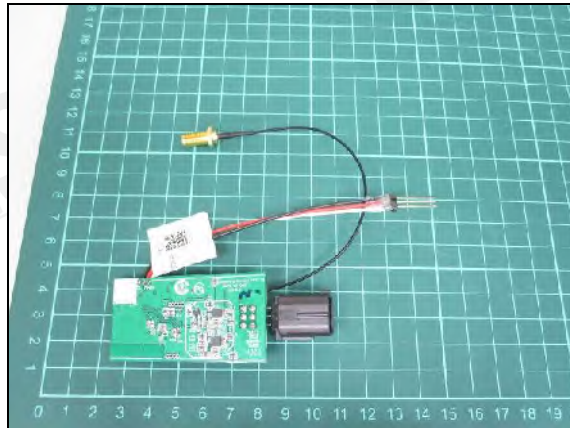
Sample Receive Date:	2023-11-14
Test Starting Date:	2023-11-15
Test Ending Date:	2023-11-15
Report Issued Date:	2023-11-30

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
Network analyzer	Agilent	E5071C	2022/12/19	2023/12/18
Measurement software	ETS-Lindgren	EMQuest 1.14	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
Fully anechoic test system	ETS-Lindgren	AMS-8500	2023/11/07	2024/11/06
Horn antenna	ETS-Lindgren	3164-04	2023/11/07	2024/11/06

Reference Measurement Procedure

The reference measurement procedure is described in SGS Working Instruction WI-TESP-EO-101 to 108 for OTA service. Measurements are made by placing the probe in contact with the sample and measuring the admittance or reflection coefficient with respect to the open-circuit end, using a network analyzer or equivalent instrumentation.

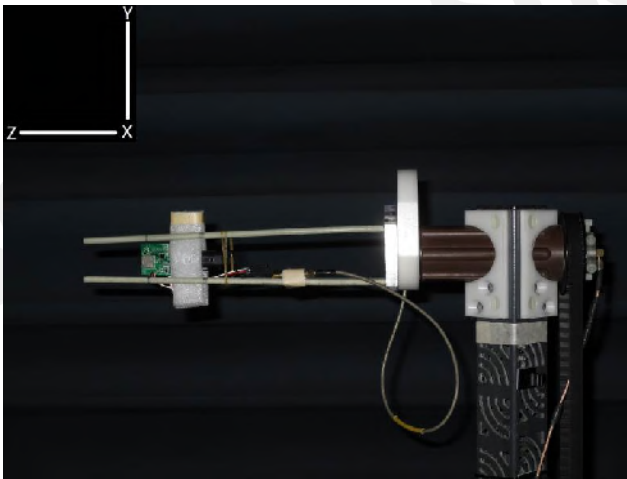
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Antenna Gain and Efficiency

Test Result											
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)	-20.97	-21.32	-21.62	-22.04	-22.28	-22.21	-21.98	-21.67	-21.40	-20.95	-20.55
Peak EIRP (dBm)	-16.00	-16.36	-16.49	-16.67	-17.27	-17.04	-16.85	-16.39	-16.12	-15.59	-15.09
Directivity (dBi)	4.97	4.96	5.13	5.37	5.01	5.17	5.13	5.29	5.28	5.36	5.46
Efficiency (dB)	-20.97	-21.32	-21.62	-22.04	-22.28	-22.21	-21.98	-21.67	-21.40	-20.95	-20.55
Efficiency (%)	0.80	0.74	0.69	0.62	0.59	0.60	0.63	0.68	0.72	0.80	0.88
Gain (dBi)	-16.00	-16.36	-16.49	-16.67	-17.27	-17.04	-16.85	-16.39	-16.12	-15.59	-15.09
NHPRP $\pm\pi/4$ (dBm)	-22.09	-22.46	-22.76	-23.19	-23.43	-23.36	-23.13	-22.82	-22.53	-22.06	-21.65
NHPRP $\pm\pi/6$ (dBm)	-23.46	-23.82	-24.13	-24.54	-24.77	-24.69	-24.46	-24.15	-23.83	-23.35	-22.93
NHPRP $\pm\pi/8$ (dBm)	-24.57	-24.91	-25.22	-25.61	-25.83	-25.74	-25.51	-25.19	-24.86	-24.38	-23.94
Upper Hem. PRP (dBm)	-24.70	-25.11	-25.46	-25.89	-26.14	-26.05	-25.81	-25.51	-25.26	-24.84	-24.49
Lower Hem. PRP (dBm)	-23.36	-23.67	-23.93	-24.35	-24.58	-24.53	-24.30	-23.99	-23.71	-23.22	-22.79

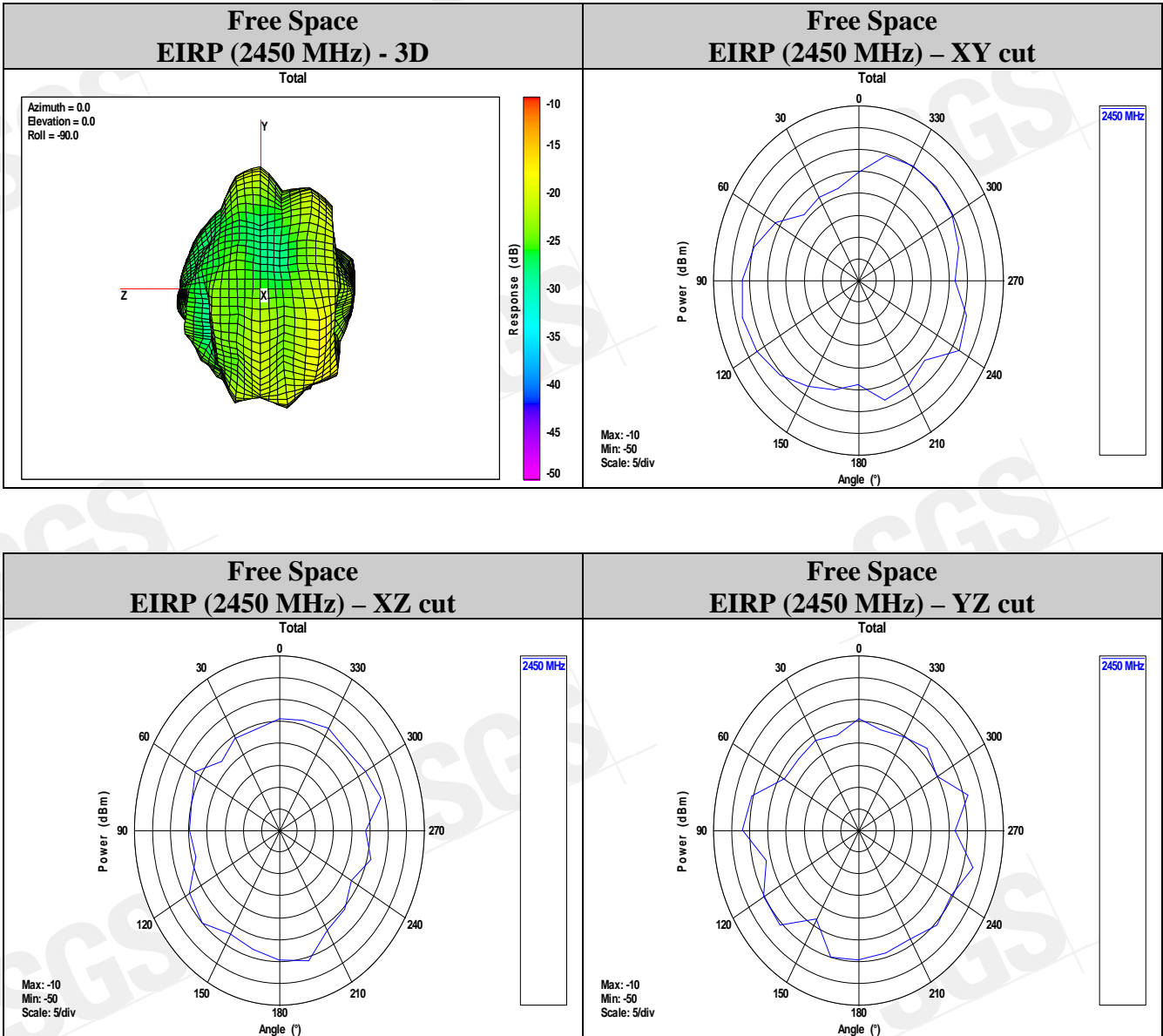
Test Setup



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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 top of the page, and +z-axis pointing left of the page.



End of Report

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