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ANTENNA PASSIVE TEST REPORT

Application No:	ZO/2020/70017
Applicant:	HCS (Suzhou) Limited
Manufacturer:	HCS (Suzhou) Limited
Product Name:	Remote Control
Model No.(EUT):	RC4213402/02BR
Standards:	ANSI/IEEE Std 149-2008
Date of Receipt:	2020/07/14
Date of Test:	2020/07/14
Date of Issue:	2020/07/14

Approved & Released by
Justin Feng

OTA Manager

Tested by
Roc Zhou

OTA Engineer

Authorized Signature:

Derek Yang
Wireless Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

REVISION HISTORY

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2020/07/14		Original

CONTENTS

1 General Information

1.1 Details of Client

Applicant	HCS (Suzhou) Limited
Address:	19F-20F, Building B-3rd, 209 ZhuYuan road, Building B-3rd, NEW District, Suzhou new district, PRC
Manufacturer	HCS (Suzhou) Limited
Address:	19F-20F, Building B-3rd, 209 ZhuYuan road, Building B-3rd, NEW District, Suzhou new district, PRC

1.2 Test Location

Company:	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab
Address:	No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China
Post code:	518057
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E-mail:	ee.shenzhen@sgs.com

1.3 Test Specification

Identity	Document Title
ANSI/IEEE Std 149-2008	IEEE Standard Test Procedures for Antennas

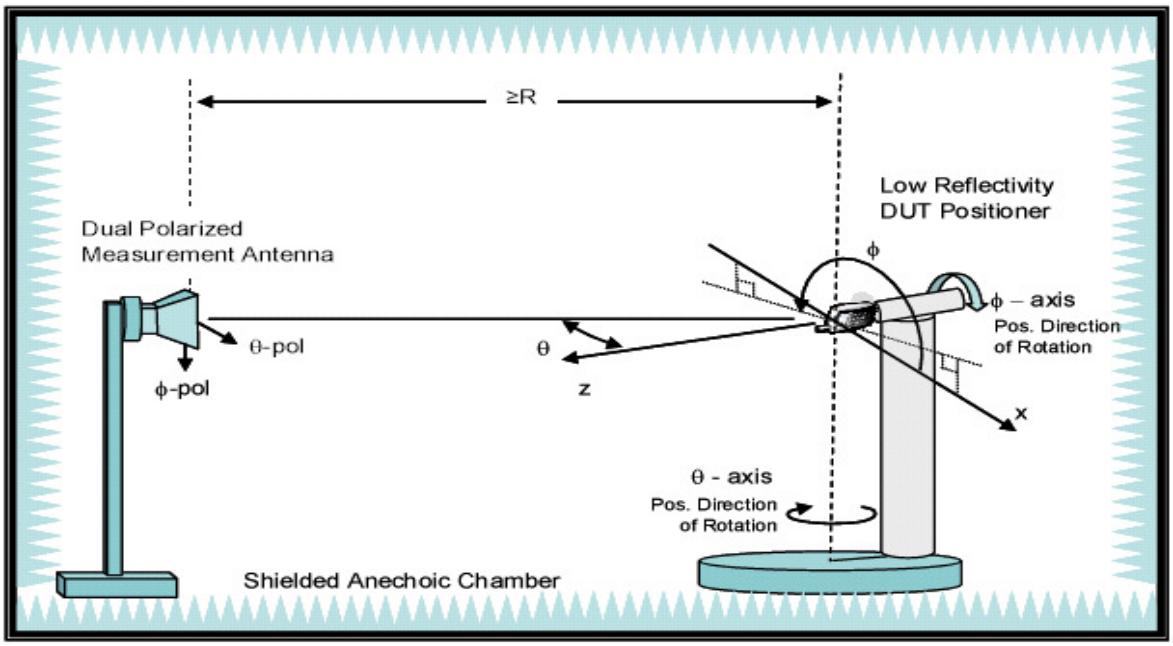
1.4 Laboratory Environment

Temperature	Min. =19℃，Max. = 25℃	
Relative humidity	Min. =40%，Max. =72%	
Shield effect	0.7-6GHz	> 100dB
Ground resistance	<0.5Ω	

2 OTA Measurements System Configuration

2.1 Test Configuration

Great-Circle-Cut method is used to measure the antenna 3D GAIN of EUT in OTA qualified anechoic chamber. Equipment Under Test (EUT) geometry centre vertical projection at the centre of platform, the distance from EUT to measurement antenna is 5m



F-1. OTA Measurement System Configuration

2.2 Test Measurement

Spherical coordinate system

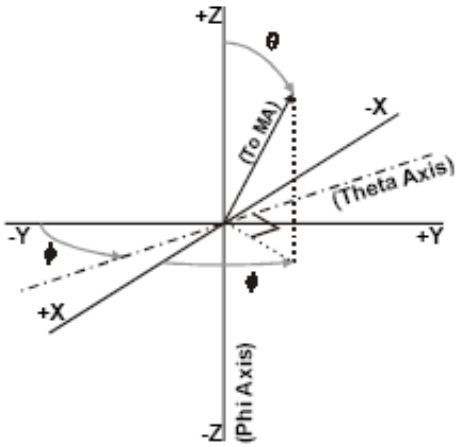


Figure 1 Test coordinate system

Note: Theta is from 0~180 degree. Phi is from 0~360. Rotate the EUT and record the Data, the step of rotation is 15 degree.

3 Test Equipment List

Type of Equipment	Model Number	Manufacture	Calibration Date	Valid Period
Network Analyzer	E5071C S/N MY46523591	Keysight	2020-04-09	2021-04-08
Quad-Ridge Horn Antenna 700 MHz-10 GHz	EMCO 3164-08 S/N 161915	ETS-Lindgren L.P.	N/A	N/A
MAPS Controller	EMCENTER S/N 160485	ETS-Lindgren L.P.	N/A	N/A

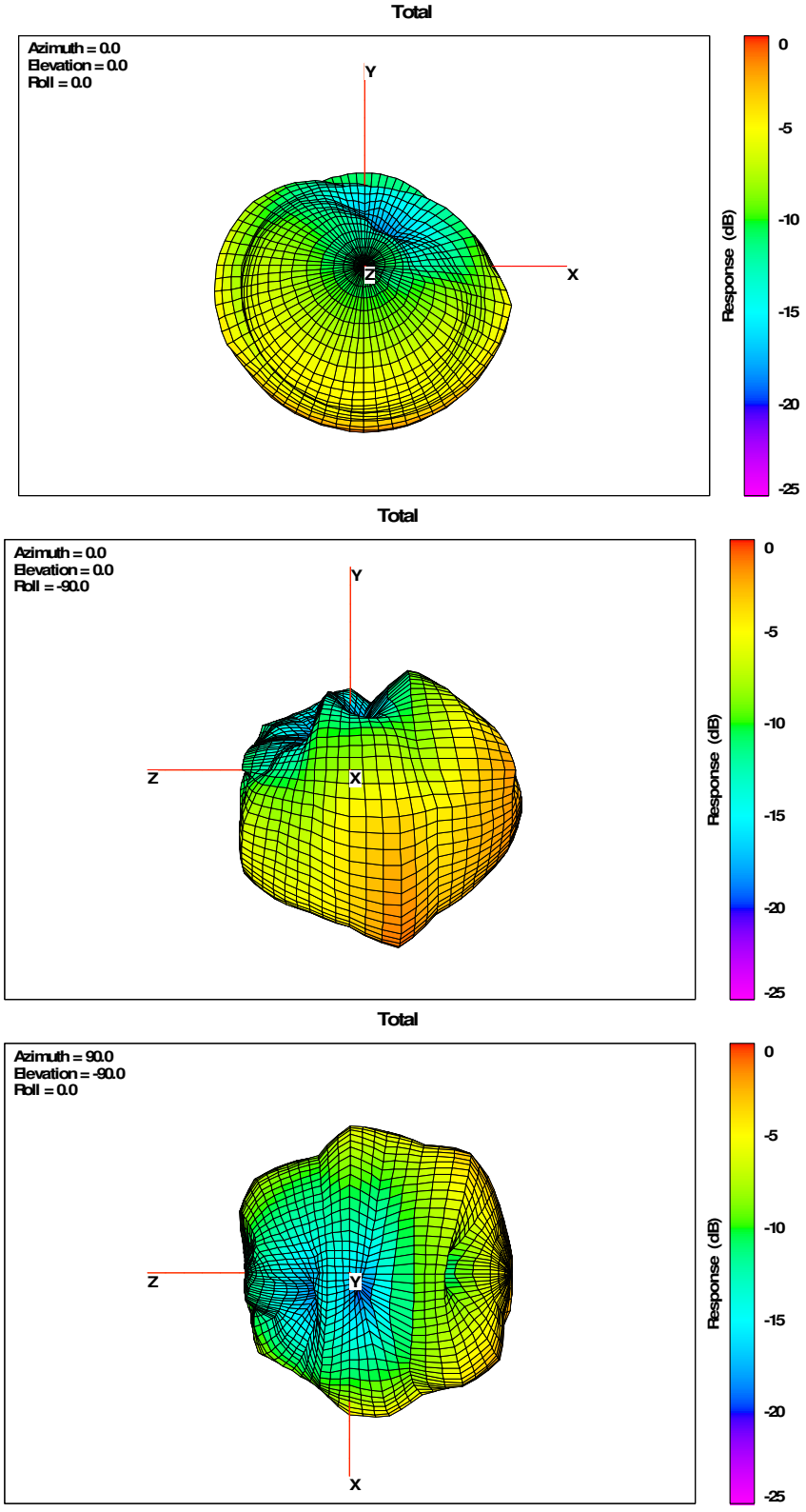
4 Measurement Uncertainty

Item	2400-2500 MHz (dB)
Gain	0.88
Efficiency	0.88
Measurement Uncertainty (95% CONFIDENCE INTERVAL) K=2	

5 Test Results

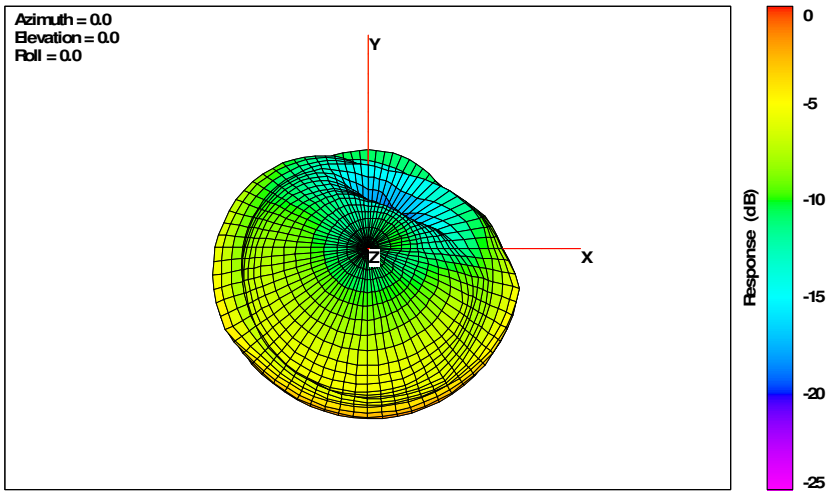
FreeSpace			
Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
2400	-5.77	26.47	-0.35
2402	-5.79	26.38	-0.38
2405	-5.80	26.28	-0.42
2410	-5.90	25.72	-0.52
2415	-5.96	25.36	-0.62
2420	-5.99	25.15	-0.70
2425	-6.03	24.92	-0.78
2430	-6.04	24.90	-0.84
2435	-6.13	24.37	-0.95
2440	-6.13	24.36	-0.94
2441	-6.15	24.29	-0.96
2445	-6.11	24.47	-0.95
2450	-6.06	24.76	-0.87
2455	-6.12	24.45	-0.93
2460	-6.20	23.96	-0.98
2465	-6.20	23.97	-0.87
2470	-6.36	23.13	-0.92
2475	-6.41	22.85	-0.94
2480	-6.38	22.99	-0.80
2482	-6.40	22.90	-0.76
2485	-6.44	22.71	-0.75
2490	-6.51	22.35	-0.78
2495	-6.57	22.03	-0.80
2500	-6.46	22.57	-0.64

6 3-D Antenna Pattern



FS_2402MHz

Total



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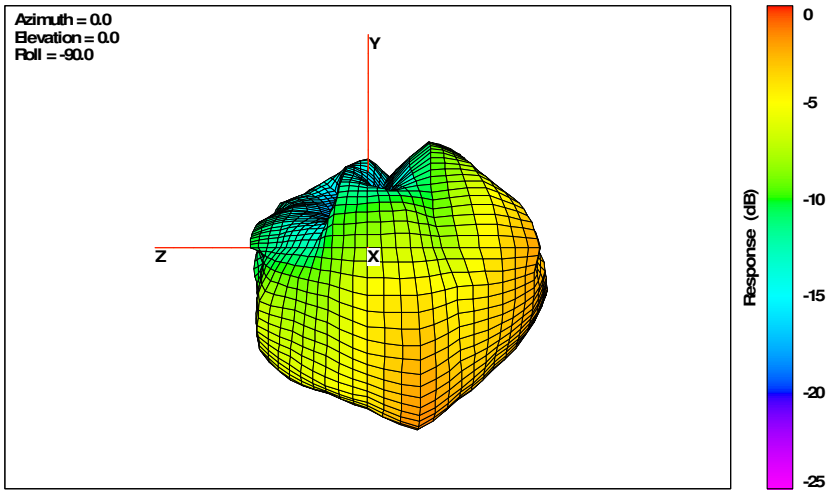

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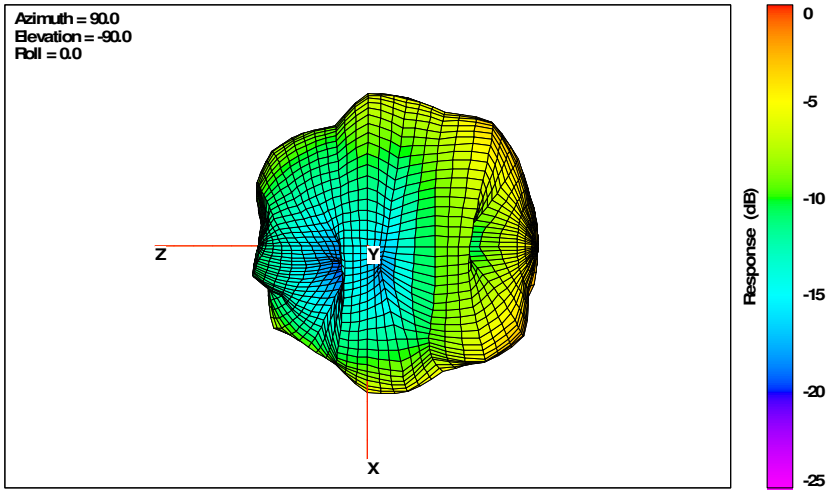
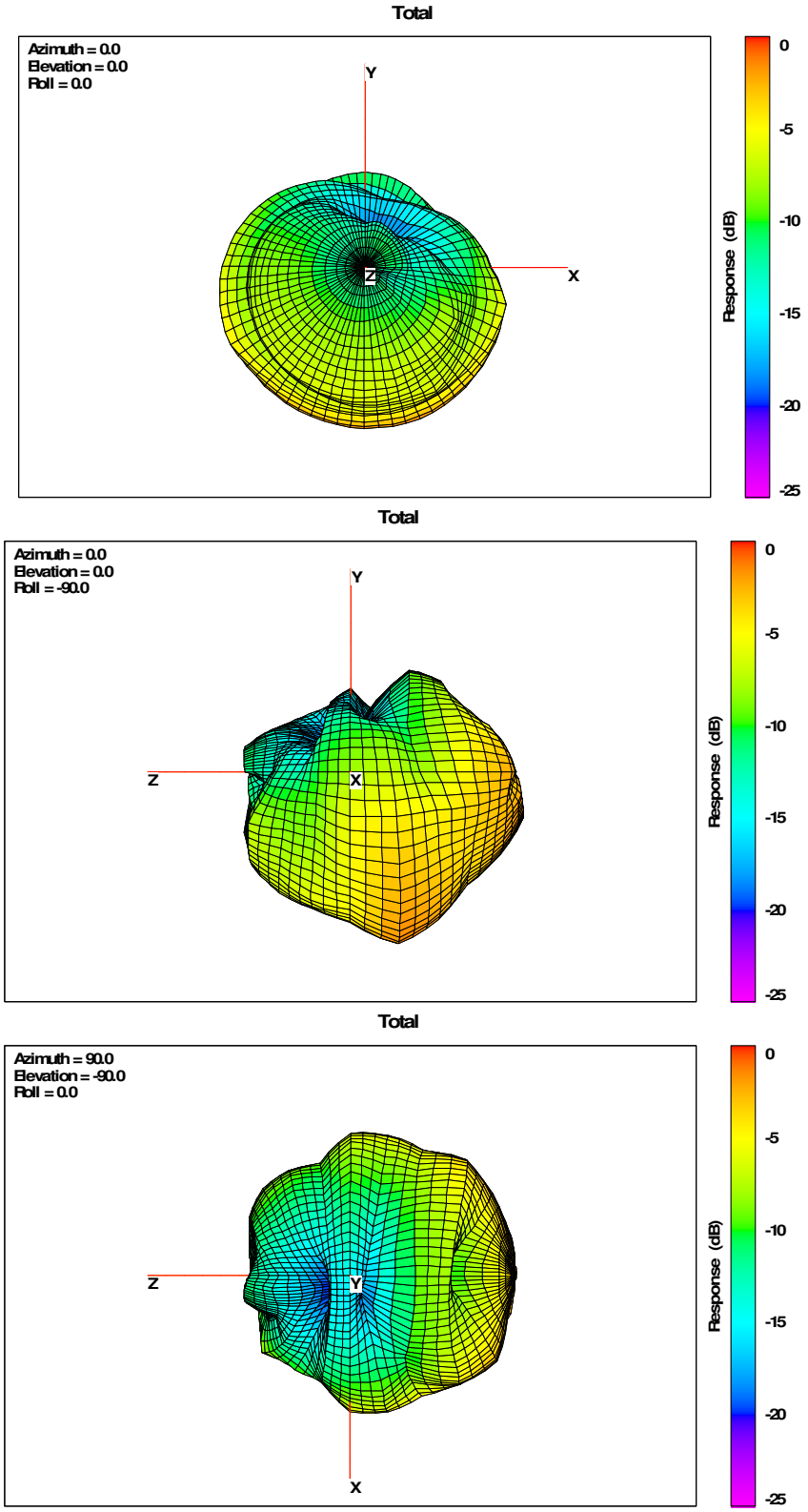
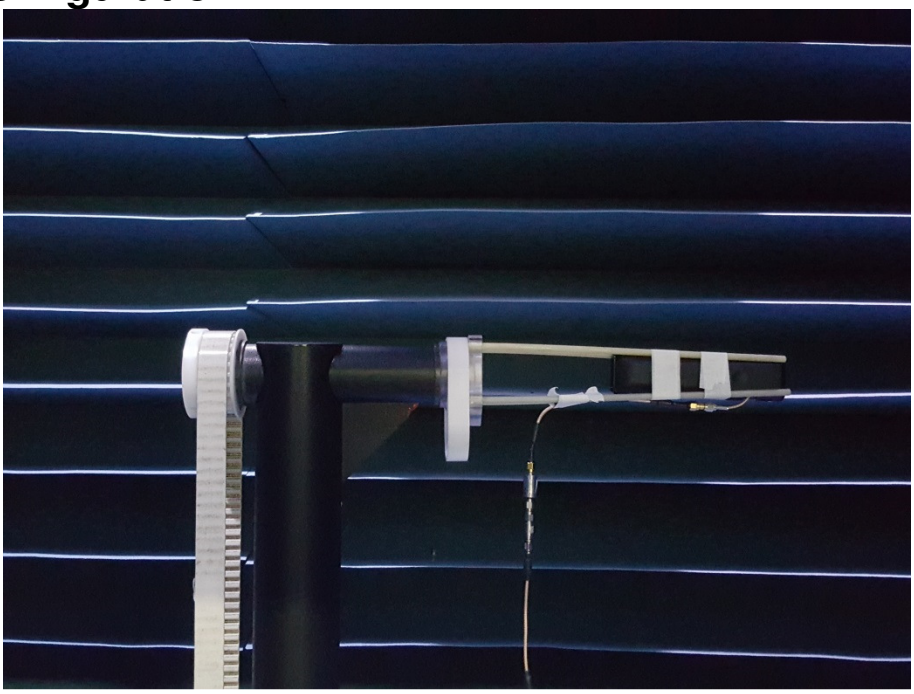


FS_2441MHz



FS_2480MHz

7 Test Configuration



Free Space View

EUT Photo

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