



SGS-CSTC Standards Technical Services Co., Ltd Shenzhen Branch

Report No.: SZOA2501000012AT01
Rev.: 01
Page: 1 of 18

ANTENNA PASSIVE TEST REPORT

Application No.	SZOA2501000012AT
Applicant	Innovation First Trading SARL
Manufacturer	Innovation First Trading SARL
Product Name	VEX AIM Coding Robot
Model No.	249-8581-000
Standards	ANSI/IEEE Std 149-2021
Date Initial Sample(s) Received	Jan.17, 2025
Testing Start Date	Jan.22, 2025
Testing Finish Date	Jan.22, 2025
Report Issue Date	Jan.24, 2025

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Turner He

Prepared by: Turner He/ Test Engineer

Ervin Li

Approved by: Ervin Li/ Technical Manager

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Revision History

Revision	Issue Date	Description
01	Jan.24, 2025	Initial creation of report



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1 General Information

1.1 Testing Laboratory

Test Lab	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Address	No. 1 Workshop, M-10, Middle section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China 518057
Contact	Ervin Li
Tel.	+86 18823369694
Fax	+86-755-25328600
E-mail	Ervin.Li@sgs.com

1.2 Details of Applicant

Applicant's Name	Innovation First Trading SARL
Applicant's Address	Z.A.E. Wolser G, 315, 3434 – Dudelange, Luxembourg
Contact	Gene Lu
Tel.	0755-82872586
Fax	0755-82872586
E-mail	ap-regulatory@innovationfirst.com

1.3 Details of Manufacturer

Manufacturer's Name	Innovation First Trading SARL
Manufacturer's Address	Z.A.E. Wolser G, 315, 3434 – Dudelange, Luxembourg
Contact	Gene Lu
Tel.	0755-82872586
Fax	0755-82872586
E-mail	ap-regulatory@innovationfirst.com



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1.4 General Description of EUT

Device Description:	VEX AIM Coding Robot
Device Manufacturer:	Innovation First Trading SARL
Device Model:	249-8581-000
Hardware Version:	N/A
Software Version:	N/A
Air Interface Supported	2.4GHz BLE
Antenna dimension:	14.40mm*5.40mm

1.5 Test Procedure

Testing is performed according to the **ANSI/IEEE Std 149-2021**.



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Shenzhen Branch Wireless Laboratory

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1.6 Test Specification

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

1.7 Laboratory Environment

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



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2 OTA Measurements System Configuration

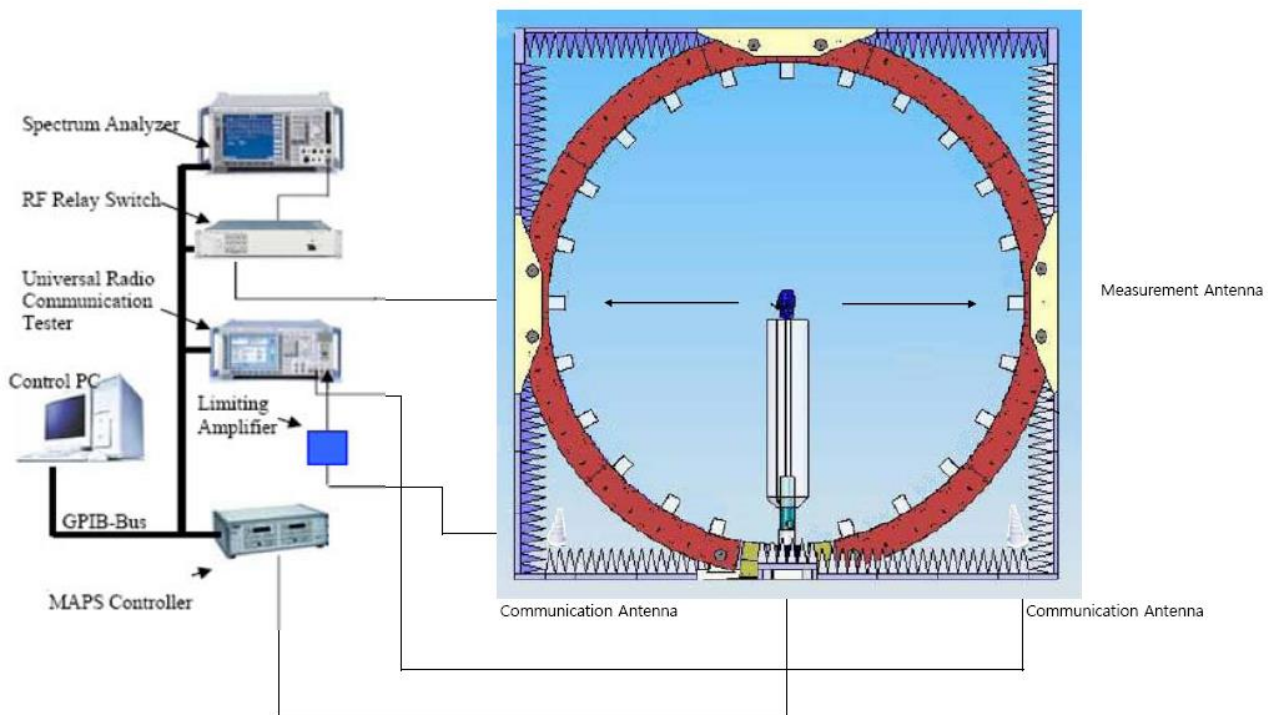
2.1 Test Configuration

Testing Condition:

- Temperature: $22 \pm 3^{\circ}\text{C}$
- Humidity: $< 80\%$

Measurement Facility:

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



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3 Test Equipment List

Type of Equipment	Model Number	Manufacture	Calibration Date	Valid Period
Network Analyzer	E5071C S/N MY46523591	Keysight	2024/01/30	2025/01/29
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
SAM V4.5BS Head Phantom	Head Phantom S/N 3609	SPEAG	NCR	NCR

Definition of Acronyms:

NCR: No Calibration Requirement.

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4 Measurement Uncertainty

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



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5 Test Results

Free Space VEX AIM Coding Robot			
Frequency (MHz)	Efficiency (dB)	Efficiency (%)	Gain (dBi)
2350	-8.90	12.87	-4.23
2355	-8.58	13.87	-3.72
2360	-8.35	14.63	-3.59
2365	-8.07	15.60	-3.21
2370	-8.18	15.22	-3.29
2375	-7.95	16.02	-3.10
2380	-7.76	16.75	-2.84
2385	-7.63	17.27	-2.77
2390	-7.44	18.04	-2.54
2395	-7.33	18.51	-2.38
2400	-6.99	19.98	-2.11
2402	-6.85	20.65	-1.98
2405	-6.70	21.40	-1.76
2410	-6.43	22.74	-1.51
2415	-6.27	23.62	-1.37
2420	-6.06	24.78	-1.07
2425	-5.91	25.63	-0.98
2430	-5.89	25.75	-0.96
2435	-5.71	26.86	-0.76
2440	-5.56	27.82	-0.71
2441	-5.51	28.13	-0.67
2445	-5.29	29.58	-0.45



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2450	-5.11	30.81	-0.36
2455	-4.96	31.91	-0.29
2460	-4.78	33.26	-0.10
2465	-4.78	33.27	-0.30
2470	-4.70	33.88	-0.33
2475	-4.72	33.70	-0.39
2480	-4.81	33.05	-0.63
2485	-4.72	33.70	-0.58
2490	-4.63	34.42	-0.60
2495	-4.47	35.73	-0.57
2500	-4.39	36.40	-0.46
2505	-4.38	36.50	-0.54
2510	-4.45	35.92	-0.59
2515	-4.47	35.75	-0.66
2520	-4.56	35.03	-0.80
2525	-4.56	35.01	-0.71
2530	-4.49	35.53	-0.72
2535	-4.41	36.23	-0.63
2540	-4.35	36.71	-0.51
2545	-4.38	36.50	-0.58
2550	-4.43	36.06	-0.61
2555	-4.56	35.02	-0.71
2560	-4.62	34.51	-0.78
2565	-4.64	34.39	-0.70
2570	-4.77	33.36	-0.85
2575	-4.81	33.06	-0.85
2580	-4.72	33.69	-0.64



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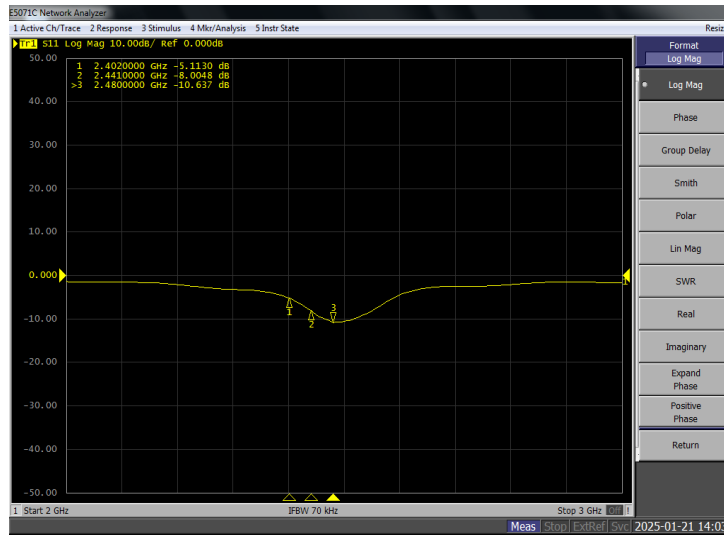
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6 Pattern Plots

6.1 Return Loss



Free Space VEX AIM Coding Robot

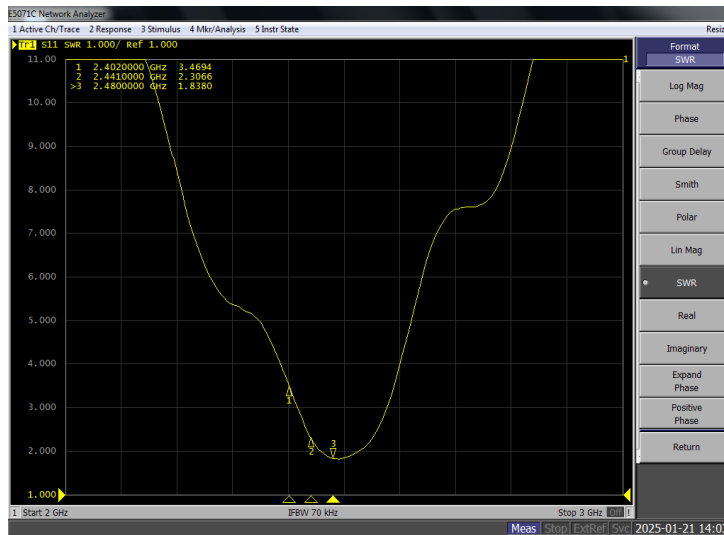


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6.2 VSWR



Free Space VEX AIM Coding Robot

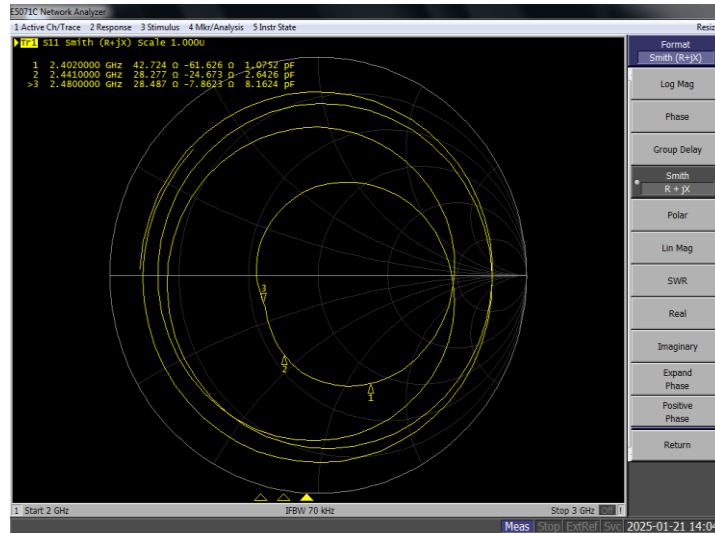


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6.3 Stimulus



Free Space VEX AIM Coding Robot



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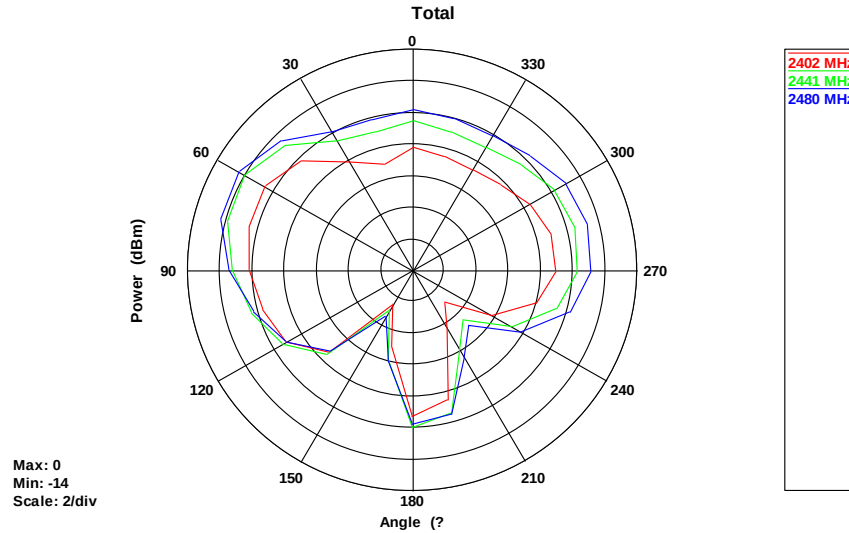
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Rev.: 01

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7 2-D Antenna Pattern(Theta=90°)



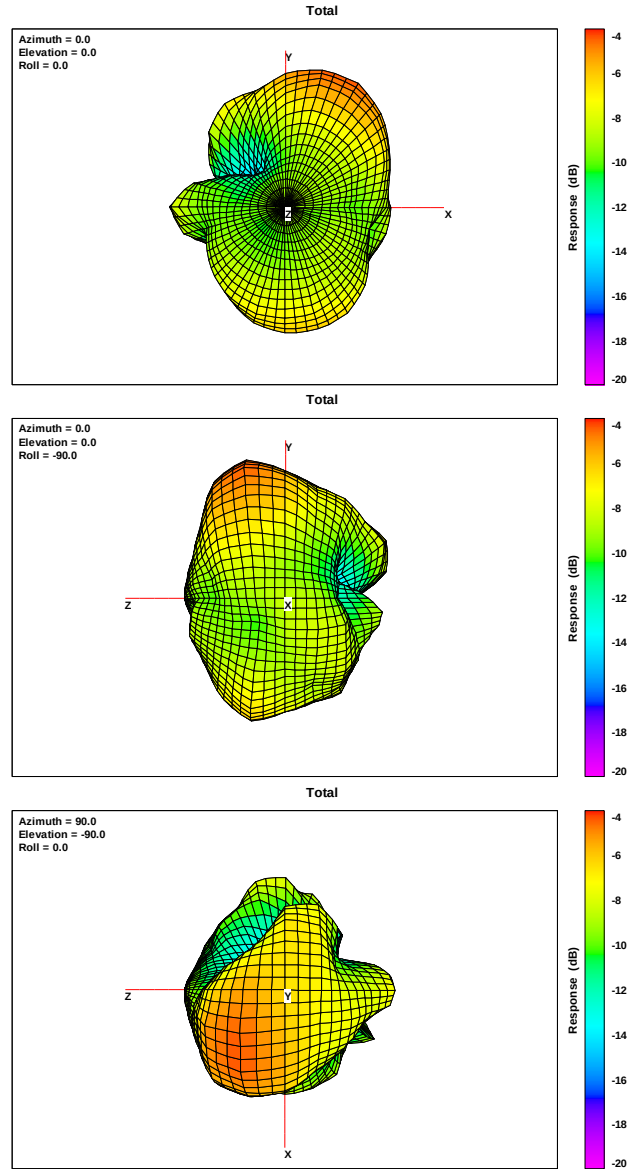
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8 3-D Antenna Pattern



Free Space VEX AIM Coding Robot



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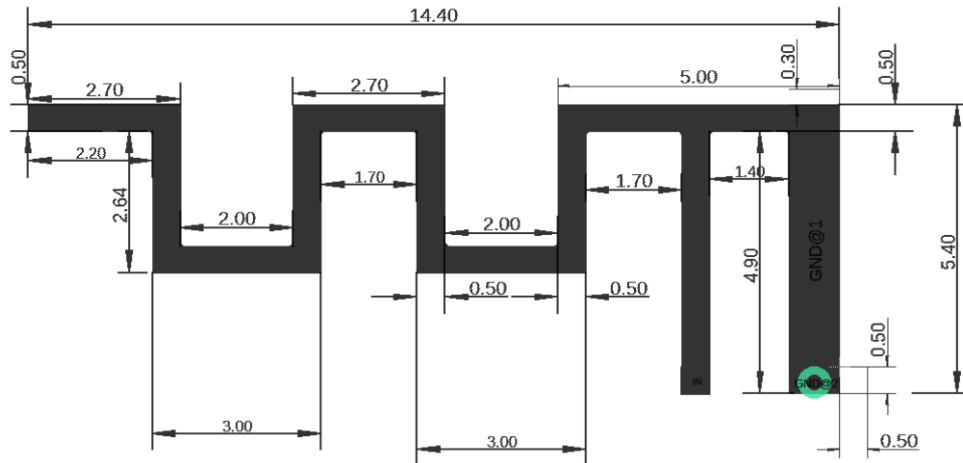
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9 The EUT and Test Configuration



Photo of EUT



Antenna Dimensions

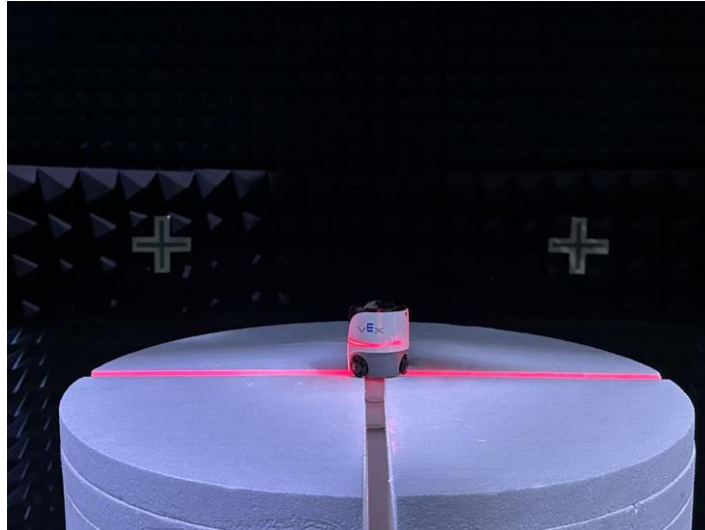


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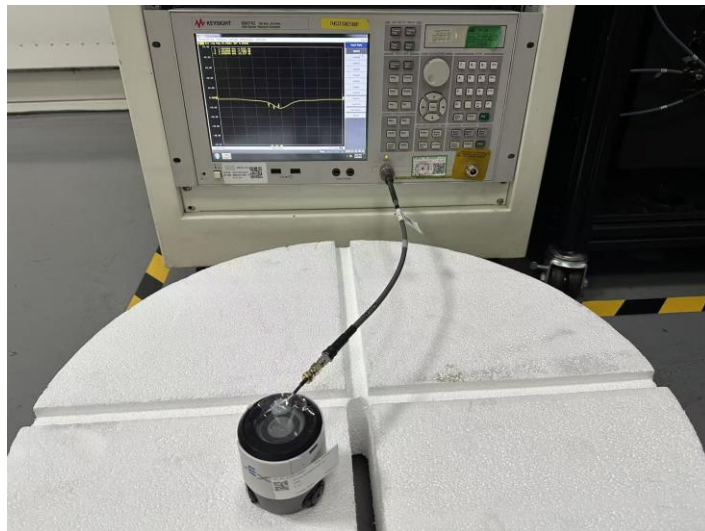
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Free Space View



Free Space Setup

---END---



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