

TEST REPORT

Reference No...... : WTX25X05137081W
Applicant : Shen Zhen Broadwell Technology co. ltd
Address : 719 Mintai Mansion, Minkang Road, Minzhi, Shenzhen, 518000, China
Manufacturer : Shen Zhen Broadwell Technology co. ltd
Address : 719 Mintai Mansion, Minkang Road, Minzhi, Shenzhen, 518000, China
Product Name : Z-WAVE Antenna
Model No...... : ANT-Zwave-02
Standards : ANSI/ IEEE 149-2021
Date of Receipt sample : 2025-05-28
Date of Test..... : 2025-05-28 to 2025-06-11
Date of Issue : 2025-06-11
Test Report Form No. : WTX_IEEE 149
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:

Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road,
Block 70 Bao'an District, Shenzhen, Guangdong, China

Tel.: +86-755-33663308 Fax.: +86-755-33663309 Email: sem@waltek.com.cn

Tested by:

Tris Li

Tris Li/ Project Engineer

Approved by:

Jason Su

Jason Su/ Manager

TABLE OF CONTENTS

1.GENERAL INFORMATION	4
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	4
2. SUMMARY OF TEST RESULTS	5
3. ANTENNA TEST CONFIGURATIONS	6
3.1 TEST LOCATION	6
3.2 TEST ENVIRONMENTS.....	6
3.3 TEST EQUIPMENT LIST	6
3.4 MEASUREMENT UNCERTAINTY	6
3.5 TEST SETUP	6
4. ANTENNA TEST RESULT	7
4.1 GAIN AND EFFICIENCY	7
4.2 RADIATION PATTERN 2D VIEW	8
4.3 RADIATION PATTERN 3D VIEW	10
EXHIBIT 1 - EUT PHOTOGRAPHS.....	12
EXHIBIT 2 - TEST SETUP PHOTOGRAPHS	13

Report version

Version No.	Date of issue	Description
Rev.00	2025-06-11	Original
/	/	/

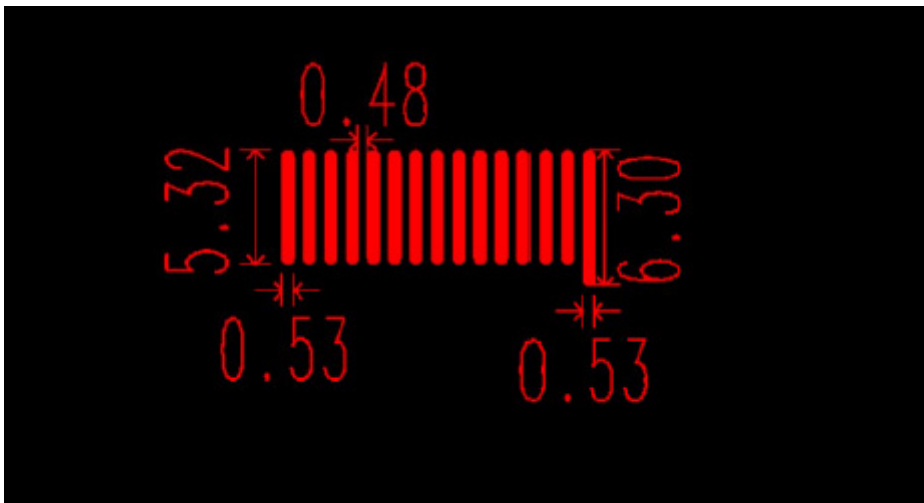
1.GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Z-WAVE Antenna
Trade Name:	/
Model No.:	ANT-Zwave-02
Adding Model(s):	/
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Frequency Range:	902-928MHz
Gain of Antenna:	-7.89dBi (Max.)
Type of Antenna:	PCB Antenna

Dimension:



2. SUMMARY OF TEST RESULTS

Standards	Description of Test Item	Result
ANSI/ IEEE 149-2021	IEEE Recommended Practice for Antenna Measurements	Compliant

N/A: not applicable

3. Antenna Test Configurations

3.1 Test Location

Name:	Sushi TOWE Wireless Testing(Shenzhen)Co., Ltd.
Address:	F 401/101, Building E, Hongwei Industrial Zone, No. 6, Liuxian 3rd Road, Bao'an District, Shenzhen,518133

3.2 Test Environments

Environments Parameter	Temperature	Voltage	Humidit
NTNV	25° C	--	50%

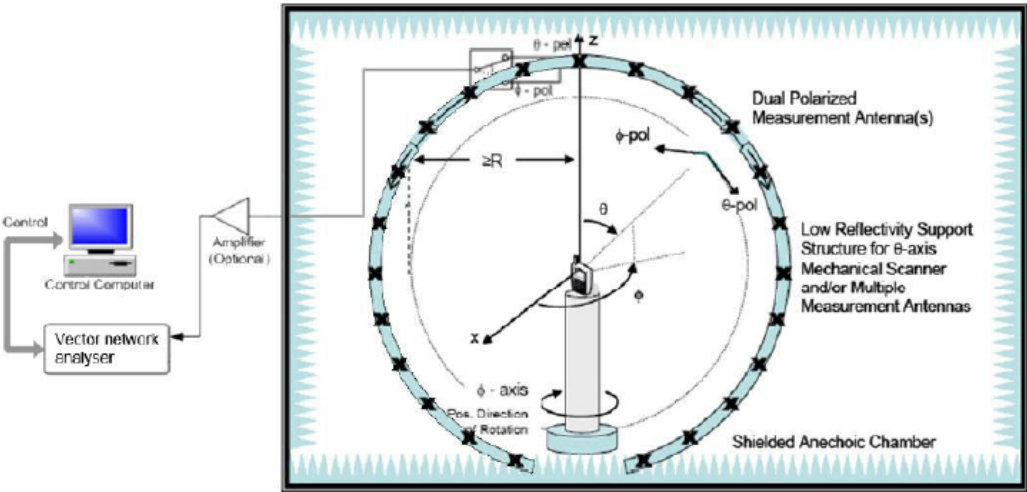
3.3 Test Equipment List

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Anechoic Chamber	ETS	AMS8923	Q2225	2023-06-09	2028-06-08
RF Switch	ETS	EMCenter	251211	/	/
Vector network analyzer	R&S	ZNB8	101413	2024-07-17	2025-07-16

3.4 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the“Guide to the Expression of Uncertainty in Measurement” (GUM) published by ISO. When the test result is a critical value,we will use the measurement uncertainty give the judgment result based on the 95%Confidence intervals.

3.5 Test Setup



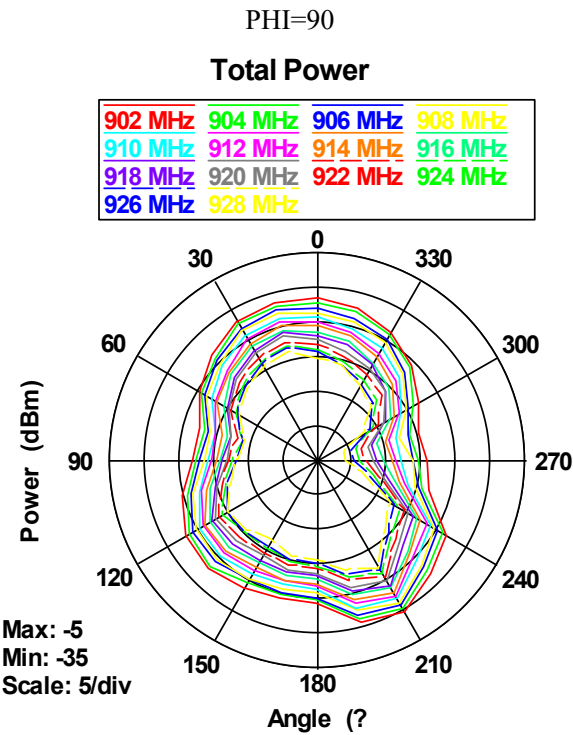
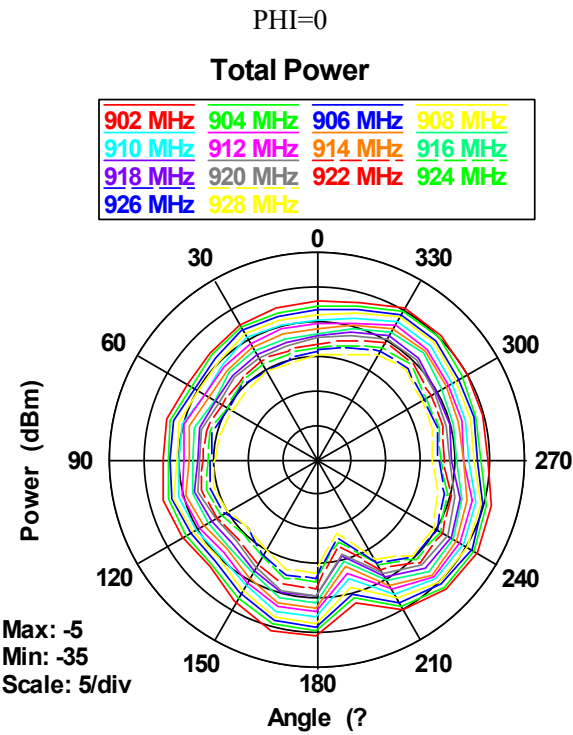
4. Antenna Test Result

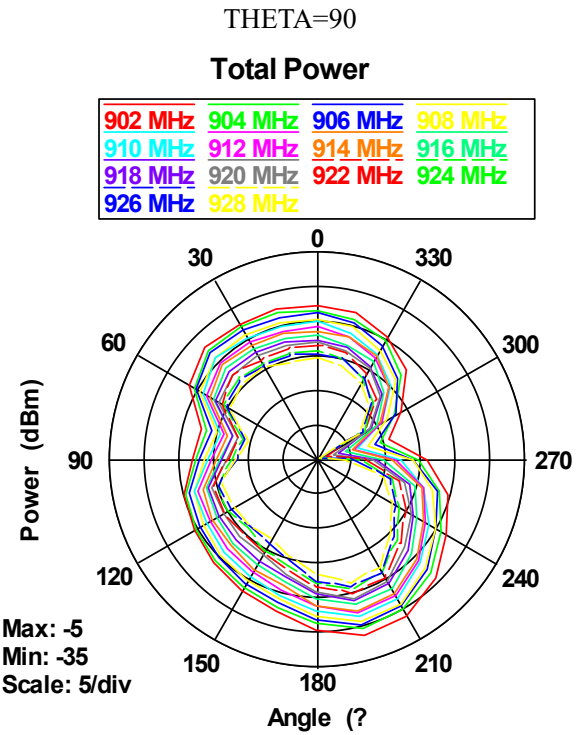
4.1 Gain and Efficiency

Frequency(MHz)	Gain(dBi)	Efficiency (%)
902	-7.89	5.64
904	-8.49	4.84
906	-9.10	4.26
908	-9.46	3.77
910	-10.04	3.20
912	-10.79	2.80
914	-11.12	2.48
916	-11.66	2.10
918	-12.52	1.83
920	-13.06	1.64
922	-13.76	1.40
924	-14.27	1.20
926	-14.59	1.09
928	-15.00	0.95

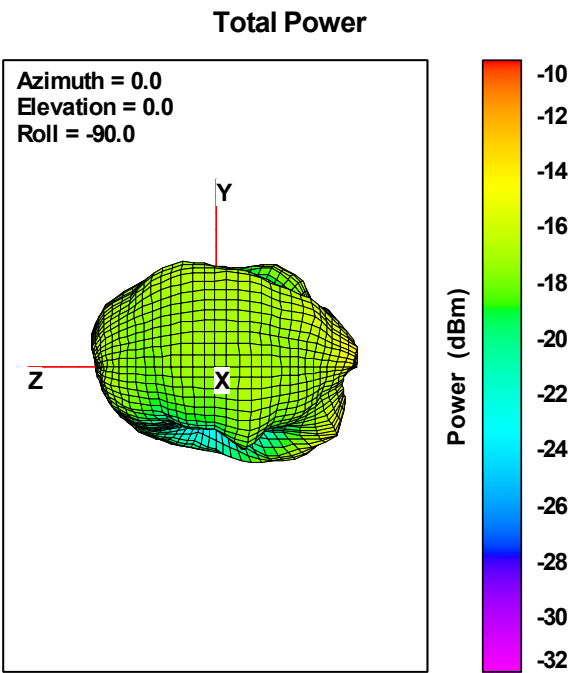
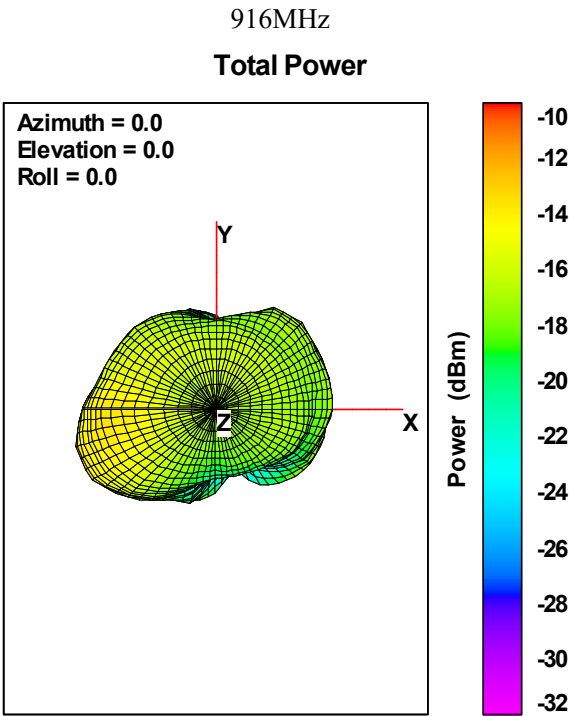
4.2 Radiation Pattern 2D View

EUT #1:





4.3 Radiation Pattern 3D View



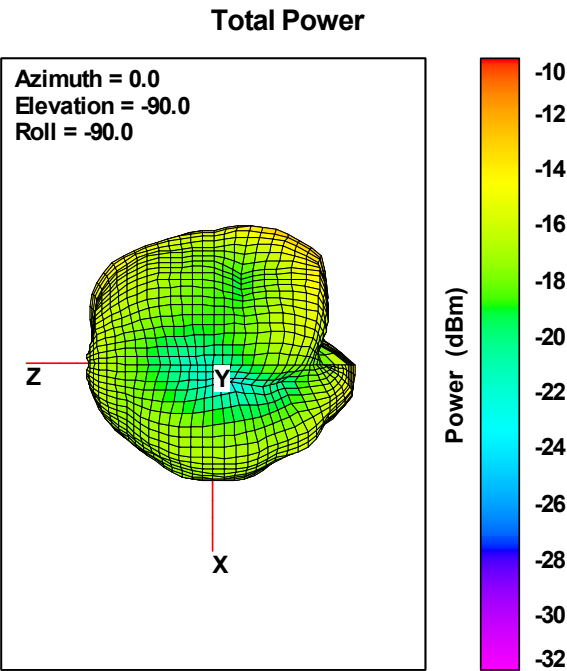


EXHIBIT 1 - EUT PHOTOGRAPHS

EUT View 1

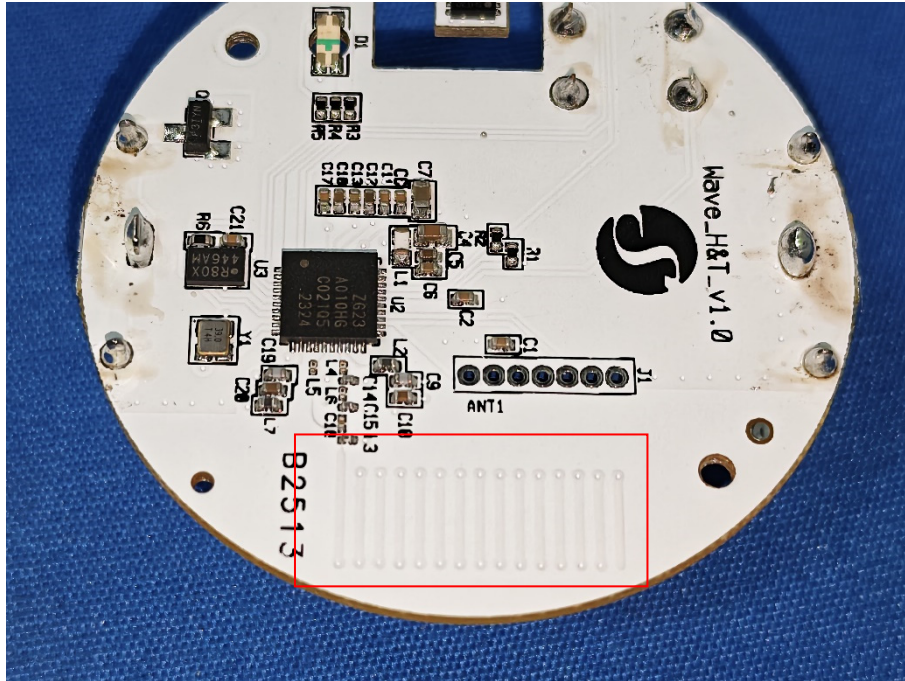
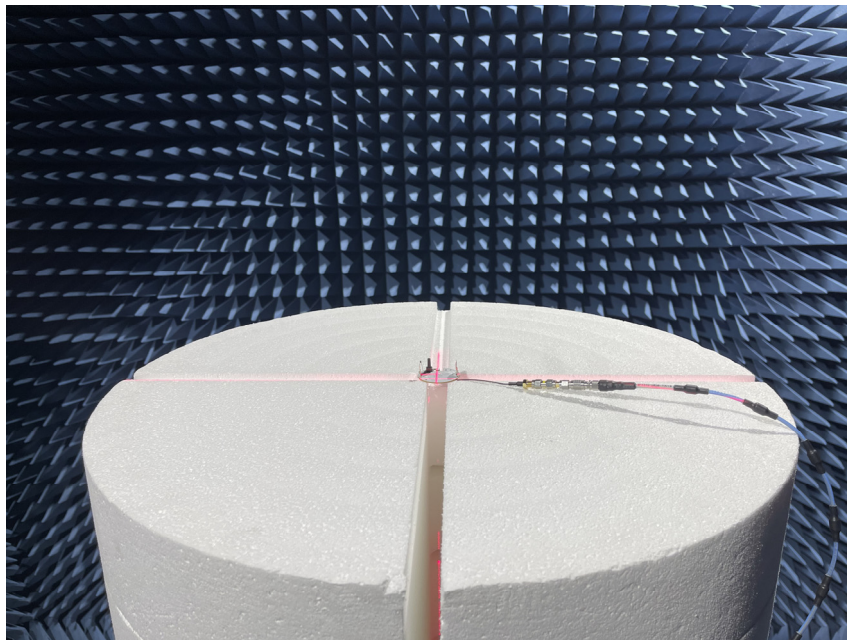


EXHIBIT 2 - TEST SETUP PHOTOGRAPHS

OTA Test View 1:



***** END OF REPORT *****