Antenna Pattern Report

Equipment	:	**PCB antennam**
Model No.	:	**APEX_BGM039 onboard PCB ANT**
Brand	:	**ApexBio**
Applicant	:	**Apex Biotechnology Corp.**
Address	:	**No. 7, Li-Hsin Rd. V, Hsinchu Science Park, Hsinchu, Taiwan, R.O.C.**
Received Date	:	**Jan. 02, 2024**
Tested Date	:	**Jan. 19, 2024**

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:

Gary Chang / Manager

Table of Contents

Release Record

Report No.	Version	Description	Issued Date
AP3D0601	Rev. 01	Initial issue	Apr. 30, 2024
AP3D0601	Rev. 02	Remove test setup and internal photo	Jun. 18, 2024

1 General Description

1.1 Information

Brand	Model	Product name	Type / Connector
ApexBio	APEX_BGM039 onboard PCB ANT	PCB antenna	PCB / NA

1.2 The Equipment List

Test Item	Radiated Emissions				
Test Site	Fully-anechoic chamber 1 / (05CH01-WS)				
Test Date	Jan. 19, 2024				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	Agilent	N9010A	MY52221474	Nov. 14, 2023	Nov. 13, 2024
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	9120D-1205	Feb. 03, 2023	Feb. 02, 2024
Preamplifier	Agilent	83017A	MY53270013	Feb. 04, 2023	Feb. 03, 2024
Preamplifier	EMC	EMC02325	980188	Jan. 02, 2024	Jan. 01, 2025
RF Cable-1M	EMC	EMC104-35M-35M-1000	S/N:210926	Oct. 11, 2023	Oct. 10, 2024
RF Cable-1M	EMC	EMC104-35M-35M-1000	S/N:210927	Oct. 11, 2023	Oct. 10, 2024
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22621/4	Oct. 11, 2023	Oct. 10, 2024
RF cable-4M	HUBER+SUHNER	SUCOFLEX104	MY32489/4	Oct. 11, 2023	Oct. 10, 2024
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-002	Oct. 11, 2023	Oct. 10, 2024
LF cable-3M	EMC	EMC8D-NM-NM-3000	131102	Oct. 11, 2023	Oct. 10, 2024
LF cable-10M	EMC	EMC8D-NM-NM-10000	131101	Oct. 11, 2023	Oct. 10, 2024
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.3 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Measurement Uncertainty	
Parameters	**Uncertainty**
Antenna gain	±2.787 dB

1.4 Reference Standard

FCC KDB 412172 D01

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	05CH01-WS
Address of Test Site	No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

2.2 Testing Condition and Location Information

Test Item	Test Site	Ambient Condition	Tested By
Antenna Pattern	05CH01-WS	22°C / 69%	Hugo Zheng

2.3 Test Modes and Frequency Details

Test item	Test Frequency (GHz)
Antenna Pattern	2.402 / 2.44 / 2.48

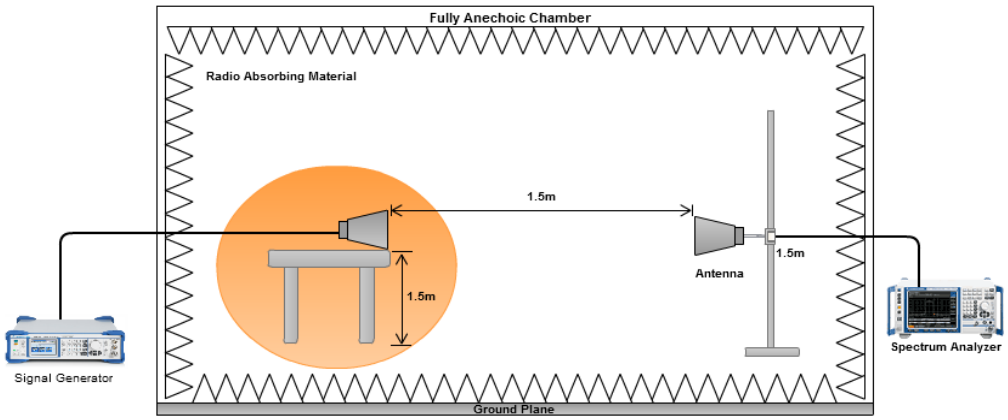
3 Test Results

3.1 Test Procedures

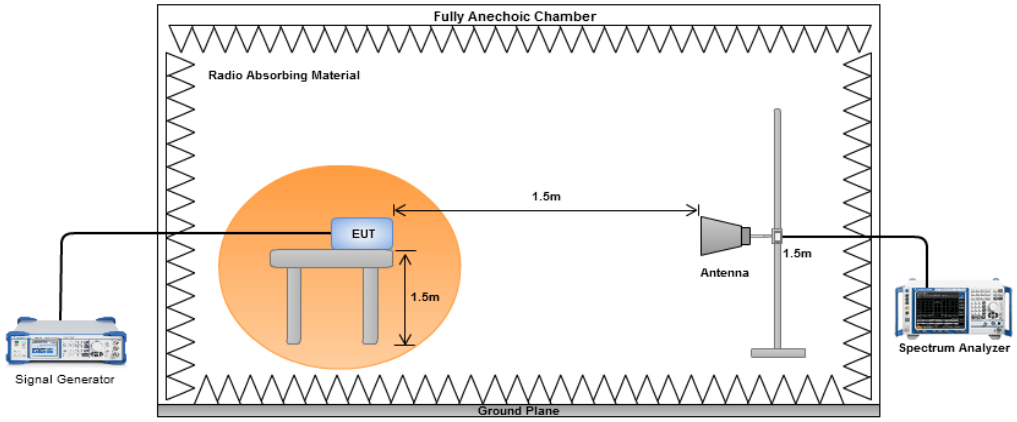
1. Use a calibrated antenna to get reference value.Put the calibrated antenna on the test table and connected to signal generator via a RF cable. Signal generator outputs CW signal to calibrated antenna and power level of CW signal is 0 dBm. Test table is turned around 360 degree and test tool records the max value of spectrum analyzer. This value is the reference value R1.
2. Remove calibrated antenna and put EUT at the same position. Follow condition of step 1, test tool records max value (R2) of spectrum analyzer
3. Antenna gain of EUT can be compared and calculated by below formula
   Gain = R2 - R1 + Antenna gain of calibrated antenna

3.2 Test Setup

Test setup for Calibrated antenna



Test setup for EUT

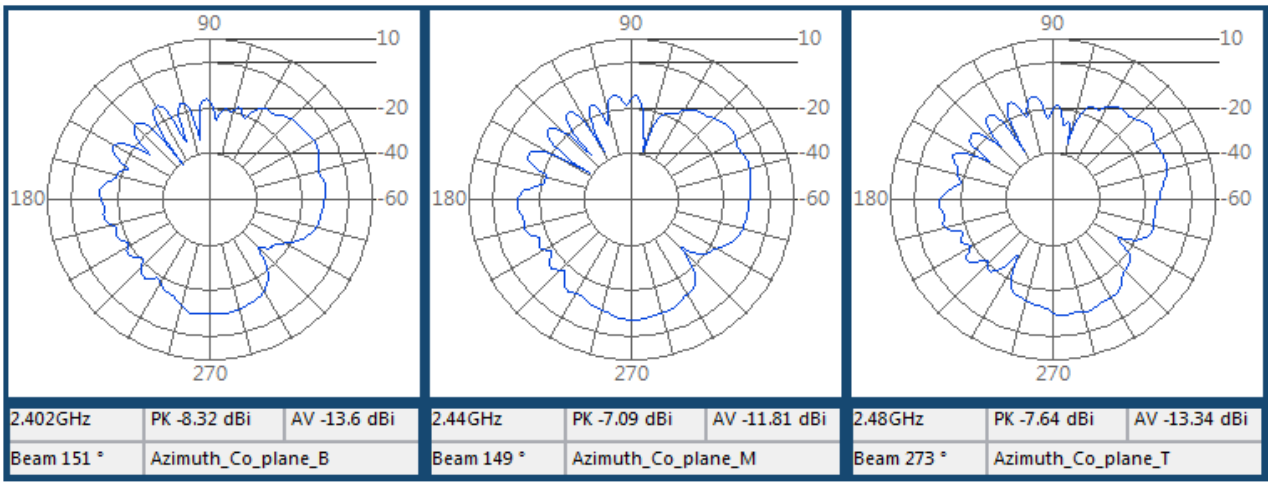


3.3 Test Results

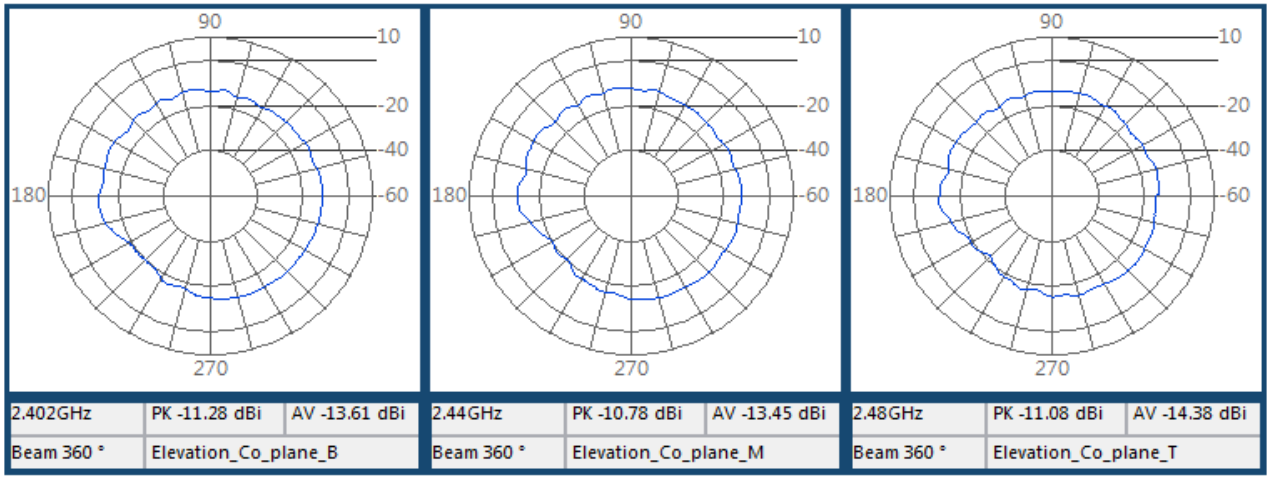
Polarization	Frequency (GHz)	Gain (dBi)
Horizontal	2.402	-8.32
	2.44	-7.09
	2.48	-7.64
Vertical	2.402	-11.28
	2.44	-10.78
	2.48	-11.08

Antenna Pattern Plot

Polarization	Horizontal



Polarization	Vertical



4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

Linkou

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

Kwei Shan

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666
Fax: 886-3-318-0345
Email: ICC_Service@icertifi.com.tw

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