Antenna Gain test report

FCC ID：2ABZ2-AA541

Equipment：Mobile Phone

Brand Name：ONEPLUS

Model Name：CPH2551

Manufacturer： OnePlus Technology (Shenzhen) Co., Ltd.
18C02, 18C03, 18C04, and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, P.R. China

Issue Date： Jun 12, 2023

Project Engineer: Tao Wang Date:2023/6/12

Checked by: Zhijian Yang Date:2023/6/12

Approved by: Tianping Liang Date:2023/6/12

Antenna Gain and Antenna Type specification:

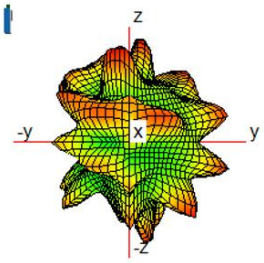
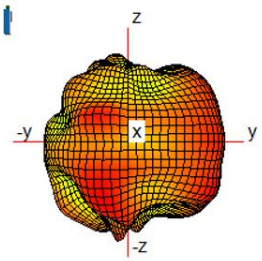
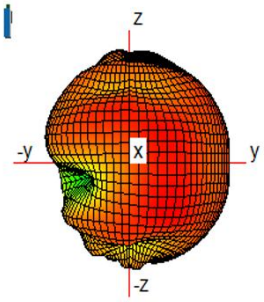
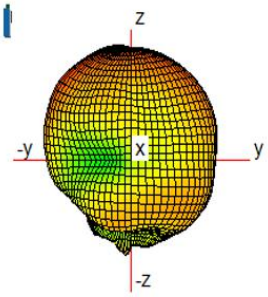
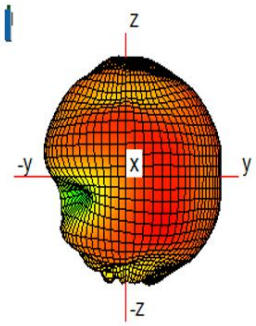
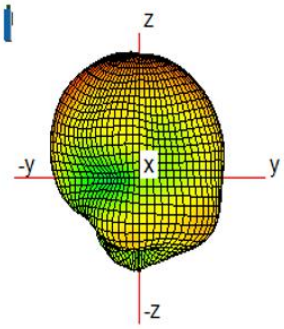
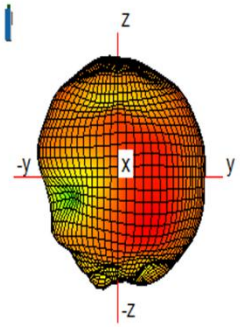
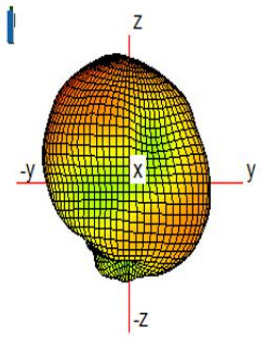
Antenna Gain (dBi)		Ant 6	Ant 5	Antenna Type	Antenna model name	Manufacturer
2.4G WiFi	2412~2462MHz	-0.5	-3	IFA(Inverted F Antenna)	AC052	OnePlus
BT BLE only support in ANT6	2402~2480MHz	-0.5	-3	IFA(Inverted F Antenna)	AC052	OnePlus
Antenna Gain (dBi)		**Ant 7**	**Ant 10**	**Antenna Type**	AC052	Oneplus
5G WiFi	5150~5250 MHz	-1	-1.5	IFA(Inverted F Antenna)& FPC(Flexible Printed Circuit)	AC052	OnePlus
	5250~5350 MHz	-1	-1.5	IFA(Inverted F Antenna)& FPC(Flexible Printed Circuit)	AC052	OnePlus
	5470~5725 MHz	-1	-1.5	IFA(Inverted F Antenna)& FPC(Flexible Printed Circuit)	AC052	OnePlus
	5725~5850 MHz	-1	-1.5	IFA(Inverted F Antenna)& FPC(Flexible Printed Circuit)	AC052	OnePlus
6G WiFi	5925-6425 MHz	-4.5	-0.5	IFA(Inverted F Antenna)& FPC(Flexible Printed Circuit)	AC052	OnePlus
	6425-6525 MHz	-4.5	-0.5	IFA(Inverted F Antenna)& FPC(Flexible Printed Circuit)	AC052	OnePlus
	6525-6875 MHz	-4.5	-0.5	IFA(Inverted F Antenna)& FPC(Flexible Printed Circuit)	AC052	OnePlus
	6875-7125 MHz	-4.5	-0.5	IFA(Inverted F Antenna)& FPC(Flexible Printed Circuit)	AC052	OnePlus
NFC	13.56MHz	/	/	FPC(Flexible Printed Circuit)	AC052	OnePlus

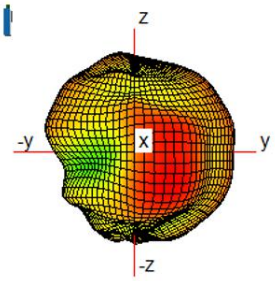
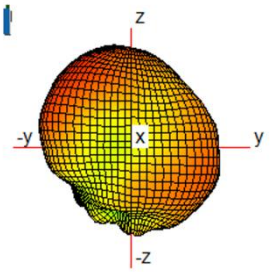
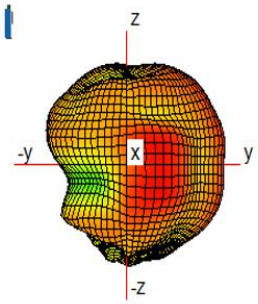
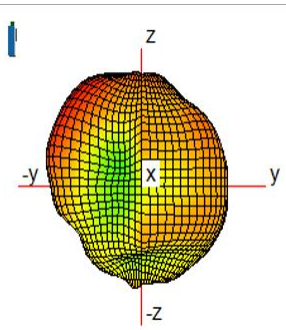
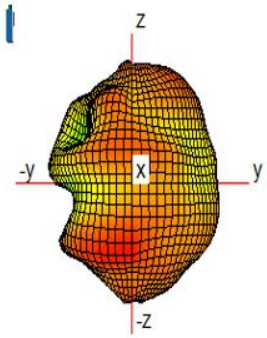
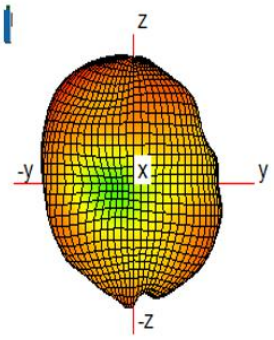
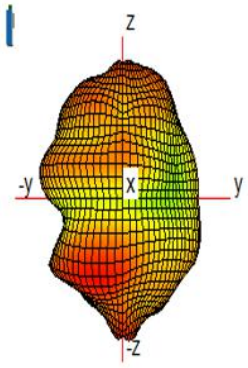
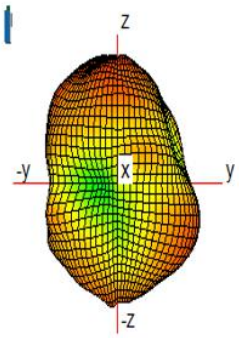
Table1 Antenna Gain and Antenna Type specification

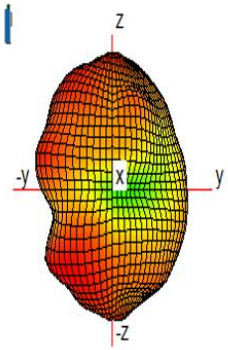
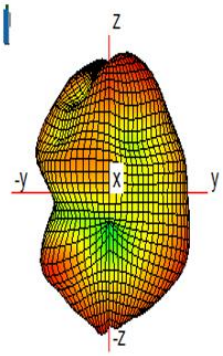
Note: Antenna gain was measured in the anechoic chamber, 3D scan was exercised, and the highest numbers are reported in this document.

Accoring toTest standard: IEEE Std 149-2021,we measure antenna gain .

Antenna Radiation Pattern:

	
ANT6 WiFi 2.4G&BT chain0 Gain: -0.5dB	ANT5 WiFi 2.4G &BT chain1 Gain: -3dB
	
ANT7 WiFi 5G B1 chain0 Gain: -1dB	ANT10 WiFi 5G B1 chain1 Gain: -1.5dB
	
ANT7 WiFi 5G B2 chain0 Gain: -1dB	ANT10 WiFi 5G B2 chain1 Gain:-1.5dB
	
ANT7 WiFi 5G B3 chain0 Gain: -1dB	ANT10 WiFi 5G B3 chain1 Gain:-1.5dB

	
ANT7 WiFi 5G B4 chain0 Gain:-1dB	ANT10 WiFi 5G B4 chain1 Gain: -1.5dB
	
ANT7 WiFi 6G B5 chain0 Gain: -4.5dB	ANT10 WiFi 6G B5 chain1 Gain: -0.5dB
	
ANT7 WiFi 6G B6 chain0 Gain: -4.5dB	ANT10 WiFi 6G B6 chain1 Gain: -0.5dB
	
ANT7 WiFi 6G B7 chain0 Gain: -4.5dB	ANT10 WiFi 6G B7 chain1 Gain:-0.5dB

	
ANT7 WiFi 6G B8 chain0 Gain: -4.5dB	ANT10 WiFi 6G B8 chain1 Gain:-0.5dB

List of Test and Measurement Instruments

TEST EQUIPMENT

NO.	Equipment	Manufacturer	Model No.	Cal.data	Cal.due
1	GTS RayZone-2800	General Test	SN636692864	2023/06/14	2024/06/14
2	Network Analyzer 5071C	Kesight	MY4690575	2023/06/10	2024/06/10
3.	MaxSign Libra Test softwave	General Test	Version-1.1.16	NA	NA

	
Fig 1 dipole model RA-L2329DP frequency 2300~2900 MHz	Fig 2 dipole model RA-L4959DP frequency 4900~5900 MHz

	
Fig 3 dipole model RA-L5969DP frequency 5900~6900 MHz	Fig 4 dipole model RA-L6989DP frequency 6900~8000 MHz

I. Measurement Setup:

A. Reflection Coefficient Measurement:

Instrument: Network Analyzer (Kesight E5071C).
Setup:
1. Calibrate the Network Analyzer by one port calibration using Kesight 85093C Electronic calibration module .
2. Connect the antenna under test to the Network Analyzer.
3. Measure the S11(reflection coefficient),Return Loss….

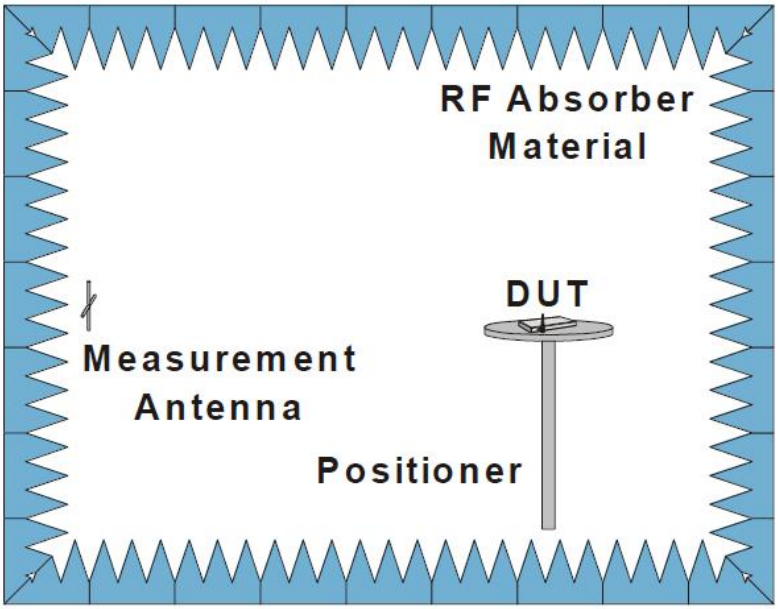
B. Pattern Measurement:

A Fully Anechoic Chamber is used to simulate free-space conditions.

A Fully Anechoic Chamber is a shielded room lined with RF/microwave absorber on all walls, ceiling, and floor.

RF/microwave absorber reduces reflections from the inner walls of the shield. Absorber performance depends on the depth and design of the absorber and the angle of incidence of the field.

Normal incidence is best, shallower angles are worse.



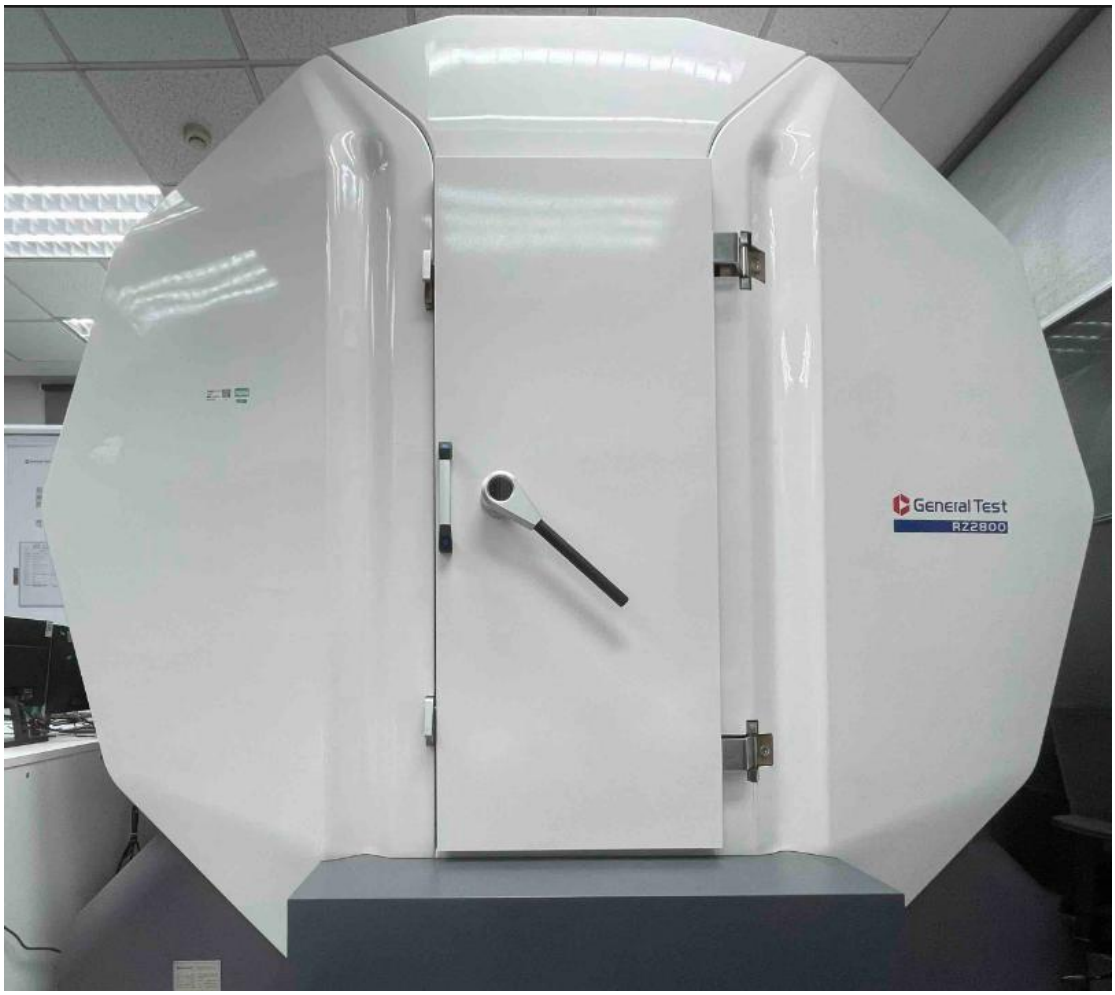


Fig. 5. The fully anechoic chamber

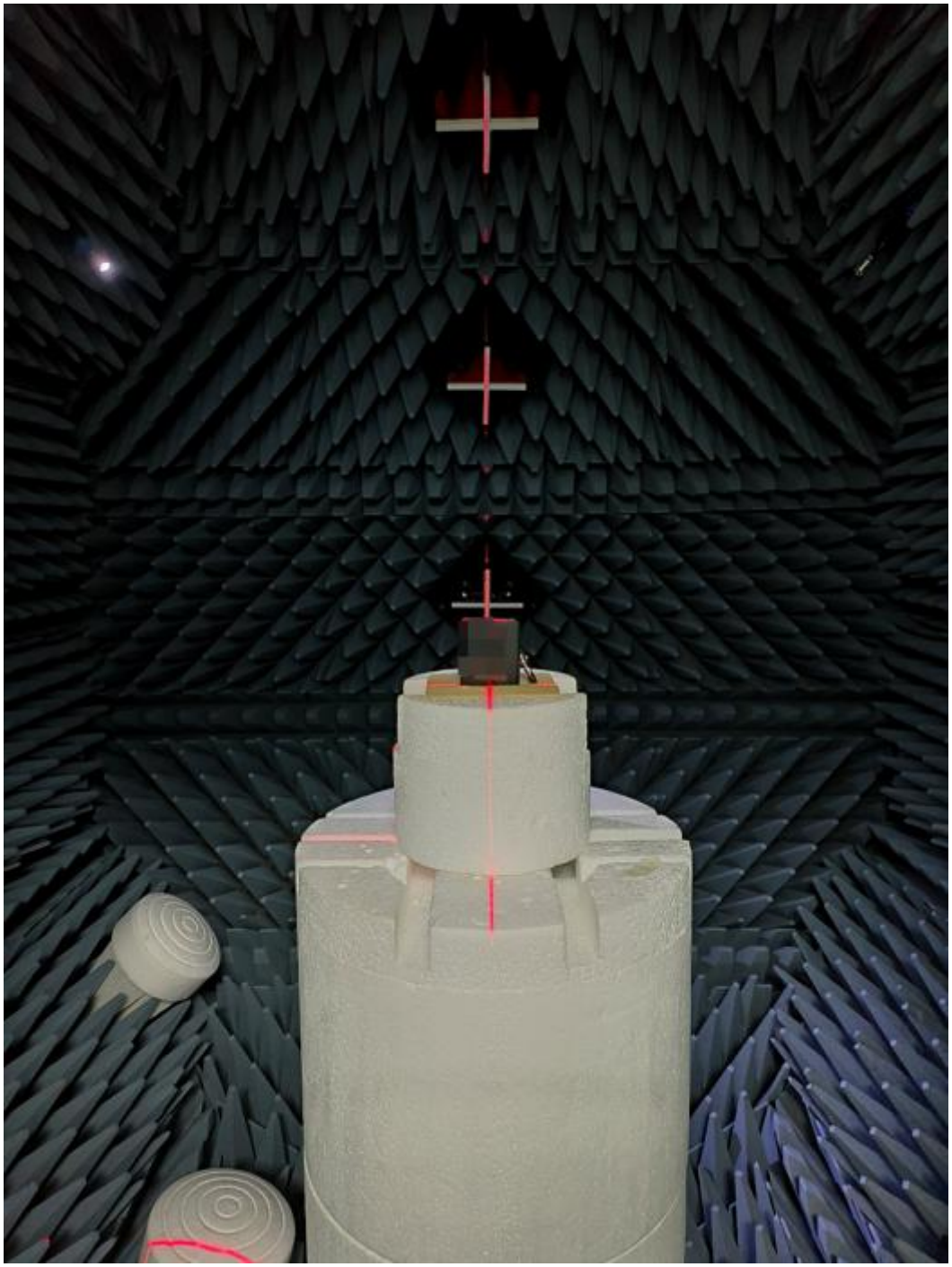


Fig.6. The DUT in the fully anechoic chamber