Shenzhen Etheta Communication

Technology Co., Ltd.

（Shenzhen Etheta）

Customer：TCL Communication Ltd.

Project name：T803E

Product name：T803E - cellular & wifi antenna

Date：2024.03.15

1. Antenna specification and test location

Antenna 0/1/2/3/4/5/6/7
Material: FPC
Manufacturer: Shenzhen Haitong
Manufacturer Address: Block B, 3rd Floor, Building 1, Baisha Science and Technology Industrial Park, No. 3011 Shahe West Road, Nanshan District, Shenzhen
Antenna gain and radiation pattern measured in SATIMO anechoic chamber.
Test engineer: qi.ma

2. Test system introduction

2.1 Test Equipment list

| Description	Manufacturer	Model	version	Cal Date
Vector Network Analyzer	Agilent Technologies	E5071C	13.30	2023.12.14
Anechoic Chamber	SATIMO	SG16	SPM 1.3.1	2023.12.14

2.2 Anechoic chamber

Our company has a number of anechoic chamber for OTA test. It is ranging from 400 MHz to 8.5 GHz, which can provide passive test and active test, including OTA overall 2G, 3G, 4G, 5G FR test, WiFi multi-mode test, GPS active test, Bluetooth active test. The test system can provide antenna gain, efficiency, radiation pattern, upper and lower hemisphere efficiency values and mutual disturbance correlation coefficient analysis.

2.3 test system introduction:

The figure above shows the connection and control process between the anechoic chamber of our company and the testing system and computer. The testing system has the characteristics of accurate, fast and simple testing. The operation interface is simple and

humanized.
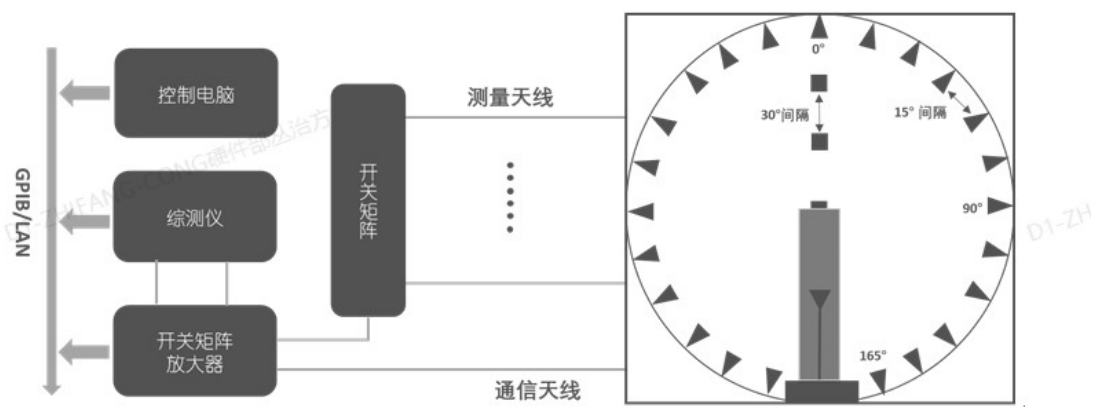
3. Test result

3.1 Antenna information

Antenna number	Type	Model name	Description
0	FPC	Goldfinch GL-ANT0	LB TRX+MHB MIMO PRX antenna
1	FPC	Goldfinch GL-ANT1	LB DRX + MHB DRX + MB TRX2(EN-DC) + HB TRX2 antenna
2	FPC	Goldfinch GL-ANT2	MB TRX + UHB TRX1 antenna
3	FPC	Goldfinch GL-ANT3	UHB MIMO DRX antenna
4	FPC	Goldfinch GL-ANT4	HB TRX1 antenna
5	FPC	Goldfinch GL-ANT5	MB MIMO DRX + UHB MIMO PRX antenna
6	FPC	Goldfinch GL-ANT6	B40 TRX1 + UHB TRX2 + UHB DRX antenna
7	FPC	Goldfinch GL-ANT7	GPS + WIFI 2.4G/5G antenna

NFC antenna information

Type	Dimension
Loop	30.3*41.3

3.2 Antenna Gain

Gain of Antenna 0

Band	Gain average(dBi)	Gain Peak (dBi)
GSM850	-7.7	-4.3
WCDMA B5	-7.7	-4.3
LTE B5	-7.7	-4.3
LTE B12	-7	-3.2
LTE B13	-7.7	-4
LTE B26	-7.7	-4.3
LTE B17	-7	-3.2
NR n5	-7.7	-4.3

Gain of Antenna 1

Band	Gain average(dBi)	Gain Peak (dBi)
(ENDC)LTE B4	-6.9	-3.4
(ENDC)LTE B66	-6.9	-3.4
(ENDC)LTE B7	-4.5	-1.4
(ENDC)LTE B38	-4.3	-1.1

Gain of Antenna 2

Band	Gain average(dBi)	Gain Peak (dBi)
GSM1900	-5	-1.5
WCDMA B2	-5	-1.5
WCDMA B4	-5	-1.6
LTE B2	-5	-1.5
LTE B4	-5	-1.6
LTE B25	-5	-1.5
LTE B66	-5	-1.6
LTE B42	-3.7	-1
LTE B48	-3.7	-1
n2	-5	-1.5
n66	-5	-1.6
n77	-3.7	-1
n78	-3.7	-1

Gain of Antenna 4

Band	Gain average(dBi)	Gain Peak (dBi)
LTE B7	-3.5	-0.1
LTE B38	-3.8	-0.8
LTE B41	-3.8	-0.8
NR n7	-3.5	-0.1

Gain of Antenna 6

Band	Gain average(dBi)	Gain Peak (dBi)
LTE B40	-8	-4.1

Gain of Antenna 7
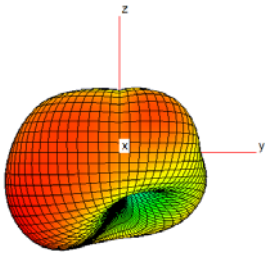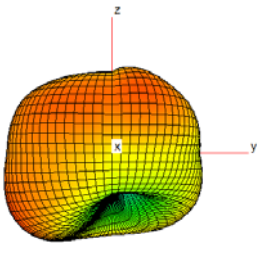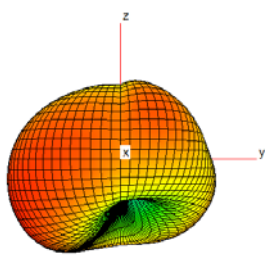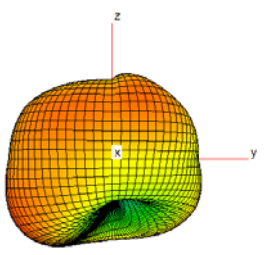
Band	Gain average(dBi)	Gain Peak (dBi)
Wi-Fi 2.4G/BT	-5	-1.5
Wi-Fi 5G	-6.3	-4.2

NFC antenna gain description:

The device does not support the test of NFC gain. In addition, all measurements were performed radiated and therefore additional antenna gain documentation is not required.
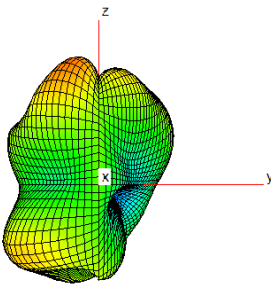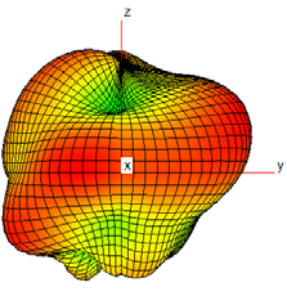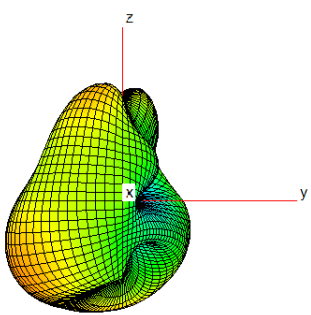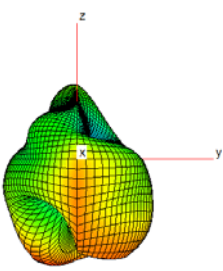
3.3 Radiation Pattern

Antenna 0
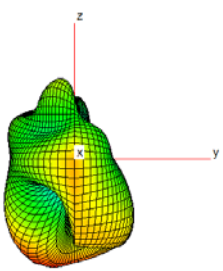
(Frequency Band)	GSM850/LTE B5/LTE B26/NR n5	B12
3D Radiation Pattern		
Efficiency[%]	17	20
Avg Gain [dBi]	-7.7	-7
Peak Gain [dBi]	-4.3	-3.2
(Frequency Band)	B13	B17
3D Radiation Pattern		
Efficiency[%]	17	20
Avg Gain [dBi]	-7.7	-7
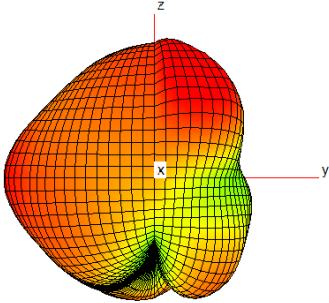
Peak Gain [dBi]	-4	-3.2

Antenna 1
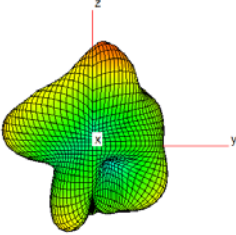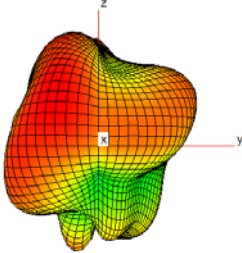
(Frequency Band)	LTE B7	LTE B38
3D Radiation Pattern		
Efficiency[%]	30	32
Avg Gain [dBi]	-4.5	-4.3
Peak Gain [dBi]	-1.4	-1.1
(Frequency Band)	LTE B4/66	
3D Radiation Pattern		
Efficiency[%]	23	
Avg Gain [dBi]	-6.9	
Peak Gain [dBi]	-3.4	
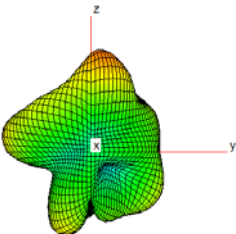
Antenna 2

(Frequency Band)	GSM1900/ WCDMA B2/ LTE B2/B25/ NR n2/n25	WCDMA B4/ LTE B4/B66/ NR n4/n66
3D Radiation Pattern		
Efficiency[%]	31	30
Avg Gain [dBi]	-5.0	-5
Peak Gain [dBi]	-1.5	-1.6
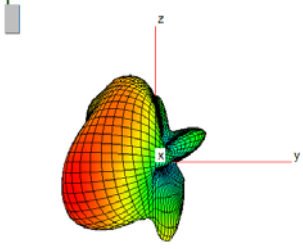
(Frequency Band)	LTE B42/B48/NR n77/n78	
3D Radiation Pattern		
Efficiency[%]	34	
Avg Gain [dBi]	-3.7	
Peak Gain [dBi]	-1	

Antenna 4
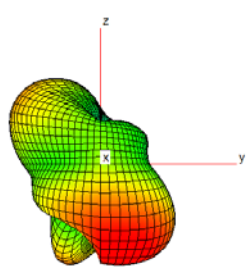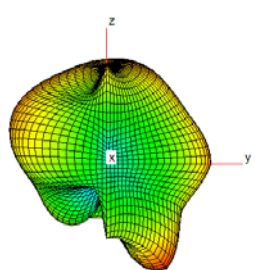
(Frequency Band)	B7	B38
3D Radiation Pattern		
Efficiency[%]	45	40
Avg Gain [dBi]	-3.5	-3.8
Peak Gain [dBi]	-0.1	-0.8

(Frequency Band)	LTE B41/NR n41	
3D Radiation Pattern		
Efficiency[%]	41	
Avg Gain [dBi]	-3.8	
Peak Gain [dBi]	-0.8	

Antenna 6

(Frequency Band)	B40
3D Radiation Pattern	
Efficiency[%]	16
Avg Gain [dBi]	-8
Peak Gain [dBi]	-4.1

Antenna 7

(Frequency Band)	WiFi 2.4G/BT	WiFi 5G
3D Radiation Pattern		
Efficiency[%]	30	26
Avg Gain [dBi]	-5	-6.3
Peak Gain [dBi]	-1.5	-4.2