

Test report of Bells antenna field diagram

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Date: 20220913

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Part 1. Dongle Antenna :

1. PiFa onboard Antenna (Model: 9.03.36040.00125)

Antenna dimension drawing

a. Antenna type: PiFa onboard antenna

b. Antenna specification: Onboard snake antenna

c. Antenna dimension diagram: please check with the picture on the right

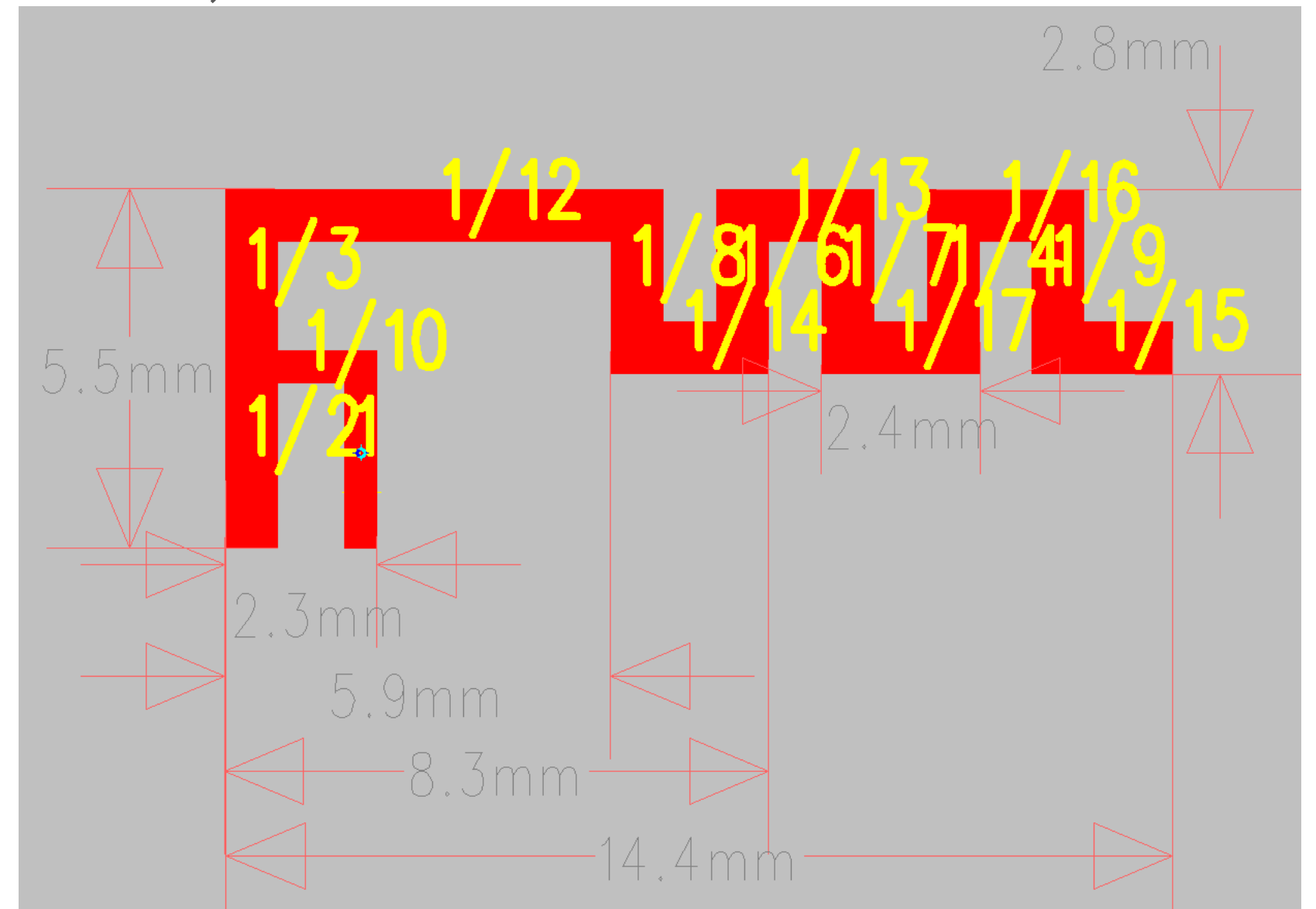
d. Antenna manufacturer company: 广东得胜电子有限公司

GUANGDONG TAKSTAR ELECTRONIC CO., LTD.

地址: 广东省惠州市博罗县龙溪镇富康一路2号

NO.2 Fu Kang Yi Rd., Longxi Boluo Huizhou,

Guangdong 516121 China



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Part 1. Dongle Antenna:

1. PiFa onboard Antenna

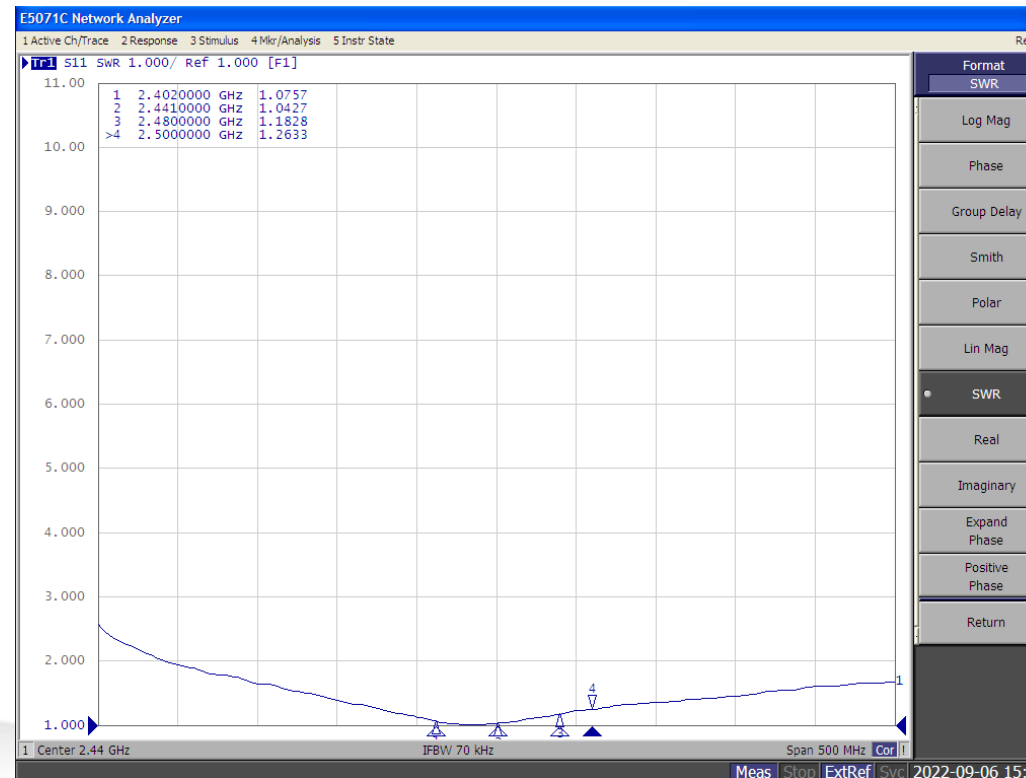
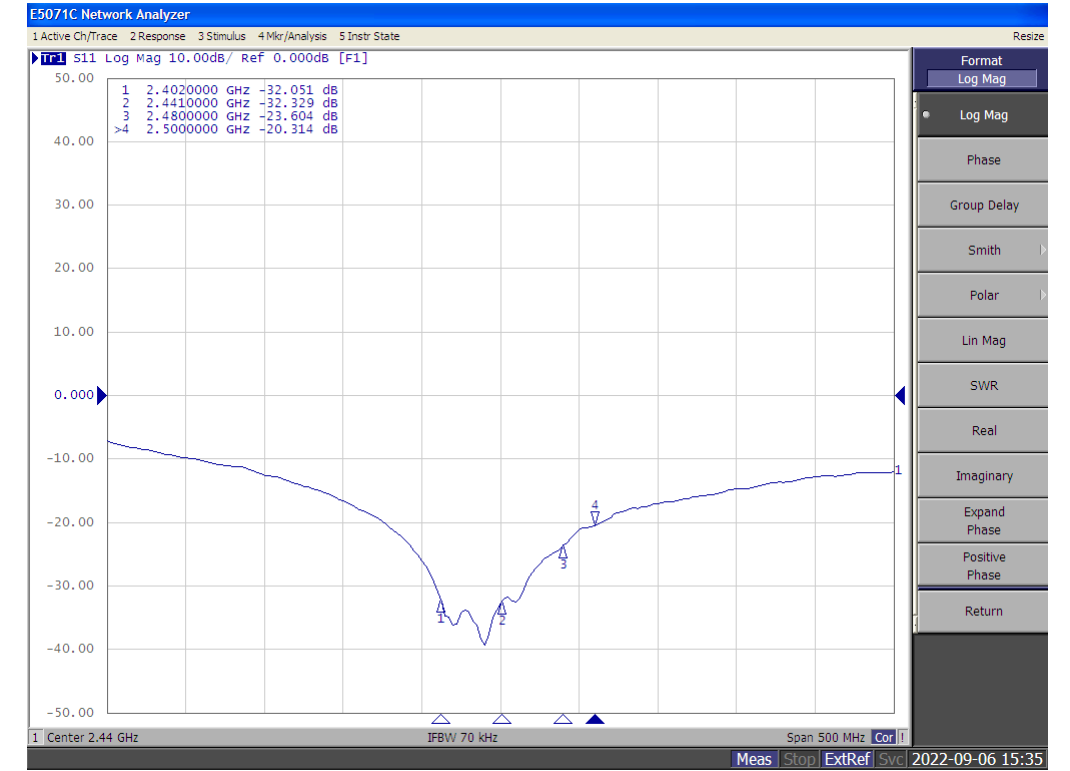
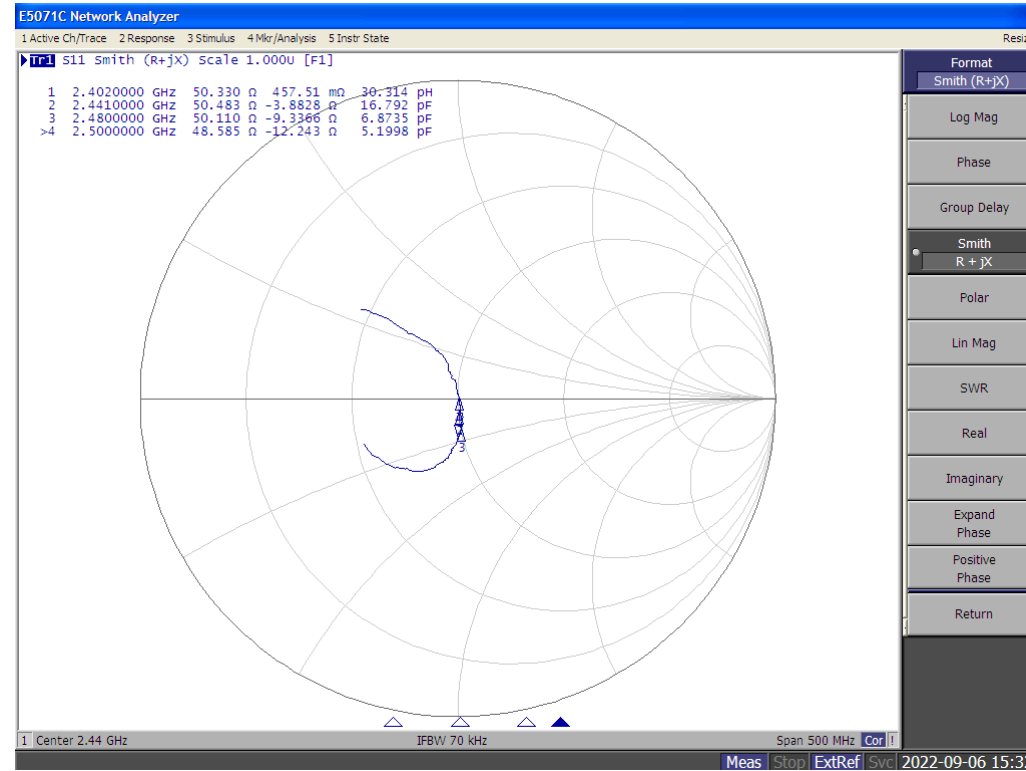
--Schematic & PCB

a. π -type network $L1=0.75\text{pF}$,
 $L2=0\text{R}$, the capacitance to
the ground is NC, which is
not attached

b. On the basis of the
original PiFa shape
thickened, the shape of the
figure on the right

Part 1. Dongle Antenna: 2. S11 feature parameters

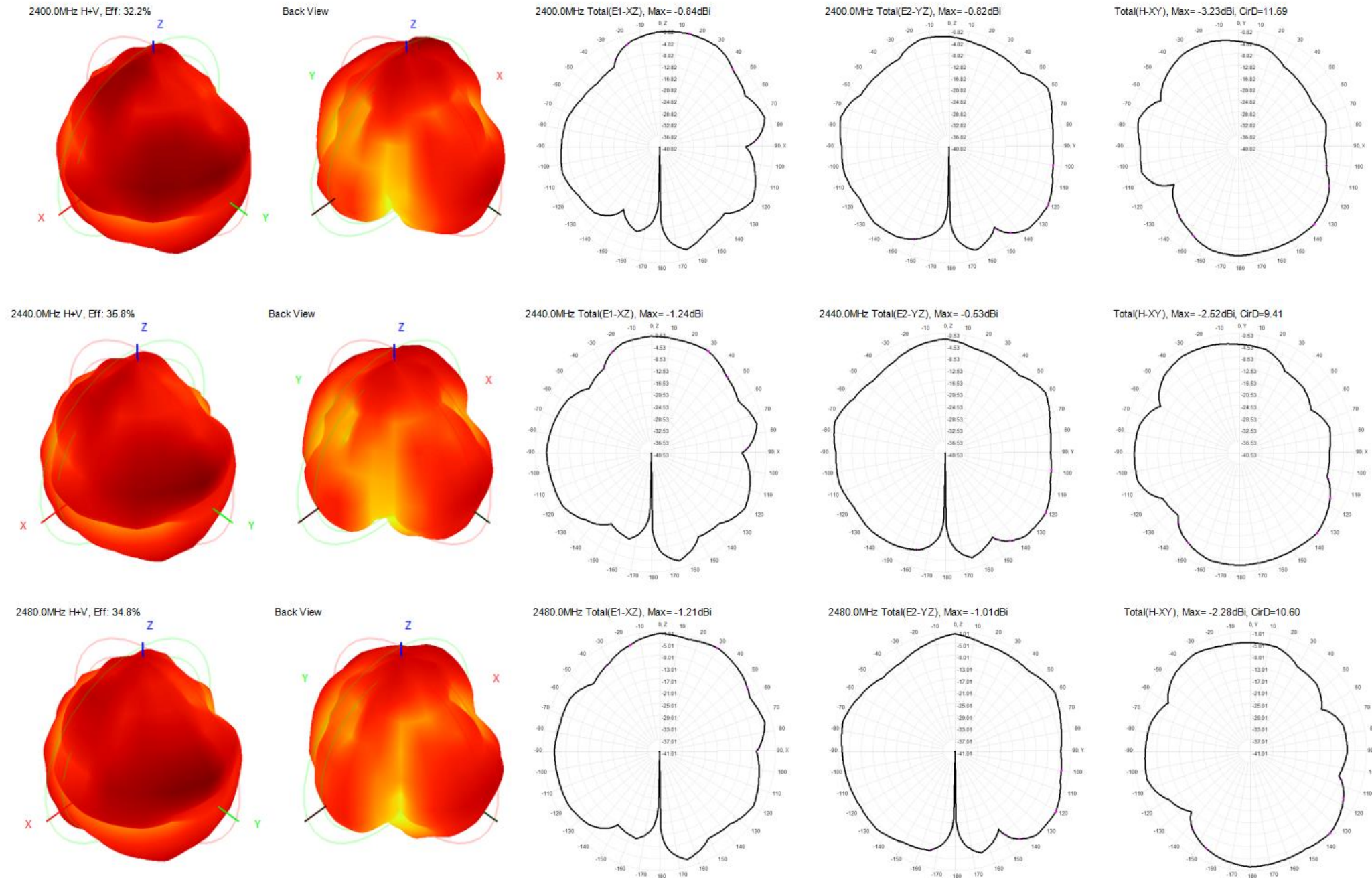
- a. Log Mag $-23 \sim 32$ dB
- b. SWR $1.0 \sim 1.1$
- d. Smith (R+jx) 50Ω



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Part 1. Dongle Antenna:

3. Metal PiFa Antenna, Free space Passive AppleField graph, Antenna efficiency and

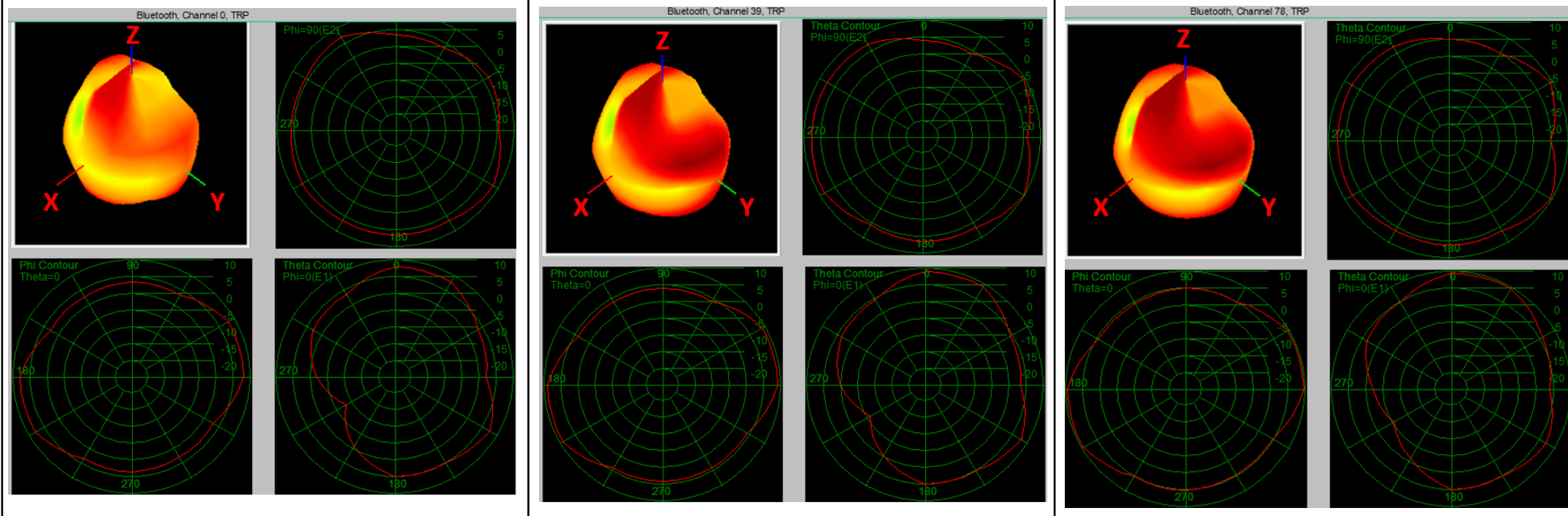


PCB Antenna passive Free state		
Frequency point(MHz)	Gain (dBi)	Efficiency (%)
Frequency (MHz)	Gain (dBi)	Efficiency (%)
2400	0.14	32.23
2410	0.58	33.77
2420	0.86	34.53
2430	1.11	35.61
2440	1.22	35.78
2450	1.33	36.57
2460	1.30	36.30
2470	1.09	35.27
2480	0.93	34.77
2490	0.78	33.51
2500	0.76	32.64

一、The Part of Dongle:

4. Metal PiFa Antenna, Active Apple Field graph, Antenna efficiency and gain

OTA
free
field



PCB Antenna OTA free field	
Channel	TRP/TIS(dBm)
BlueTh-0000-TX	4.38
BlueTh-0039-TX	5.24
BlueTh-0078-TX	5.28
BlueTh-0000-RX	-79.26
BlueTh-0039-RX	-78.91
BlueTh-0078-RX	-81.60

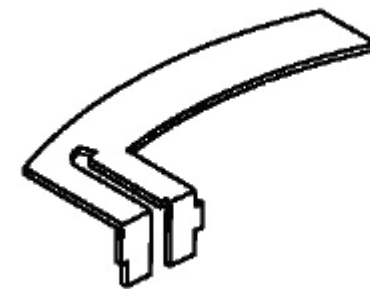
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Part 2. Headset Antenna:

1. PiFa onboard Antenna--Schematic & PCB

a. π -type network, L1 and L3 use 0R, L2=4.7nH, the capacitance to the ground is NC, which is not attached

b. The antenna uses external metal antenna, SUS304 nickel plated, thickness 0.4mm, the physical appearance, please check with the picture on the right



Antenna outline drawing

Part 2. Headset Antenna:

1. Metal PiFa antenna (Model:178-BELLS-10A)

a. Antenna type: Metal PiFa antenna

b. Antenna specification: SUS304 1/2H Nickel preplating T=0.4mm / 23*10.81*3.9mm

c. Antenna dimension diagram: please check with the picture on the right

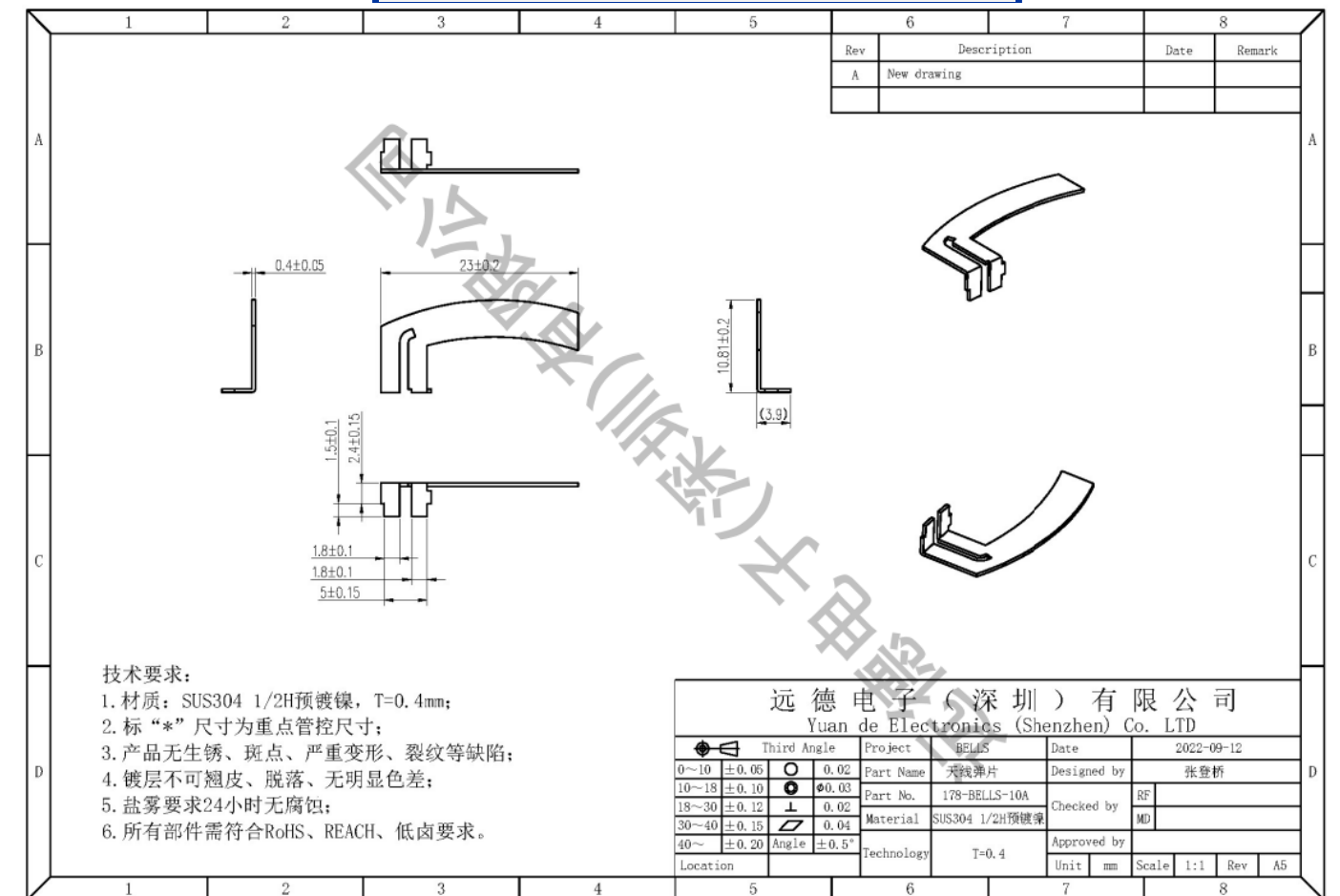
d. Antenna manufacturer company: 远德电子（深圳）有限公司

Yuan de Electronics(shenzhen) CO., LTD.

地址： 深圳市龙岗区龙岗街道龙岗社区龙盛路8号香玉儿化妆品龙岗厂区4号厂房101-1

101-1, Plant 4, Xiangyuer Cosmetics Longgang Factory, No. 8, Longsheng Road, Longgang Community, Longgang Street, Longgang District, Shenzhen

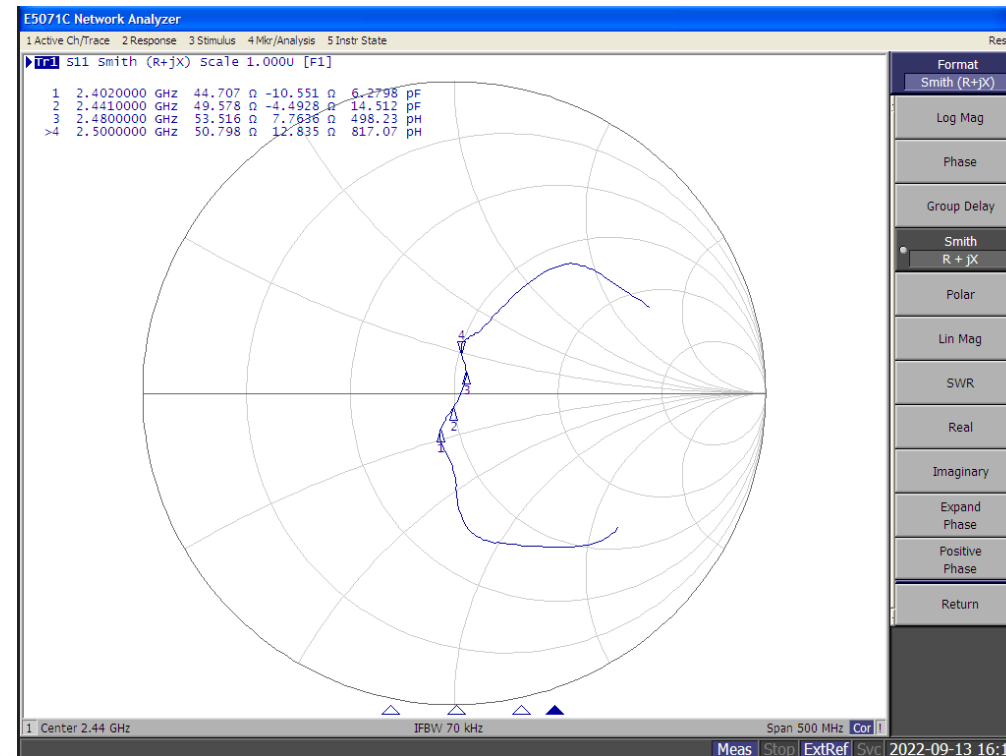
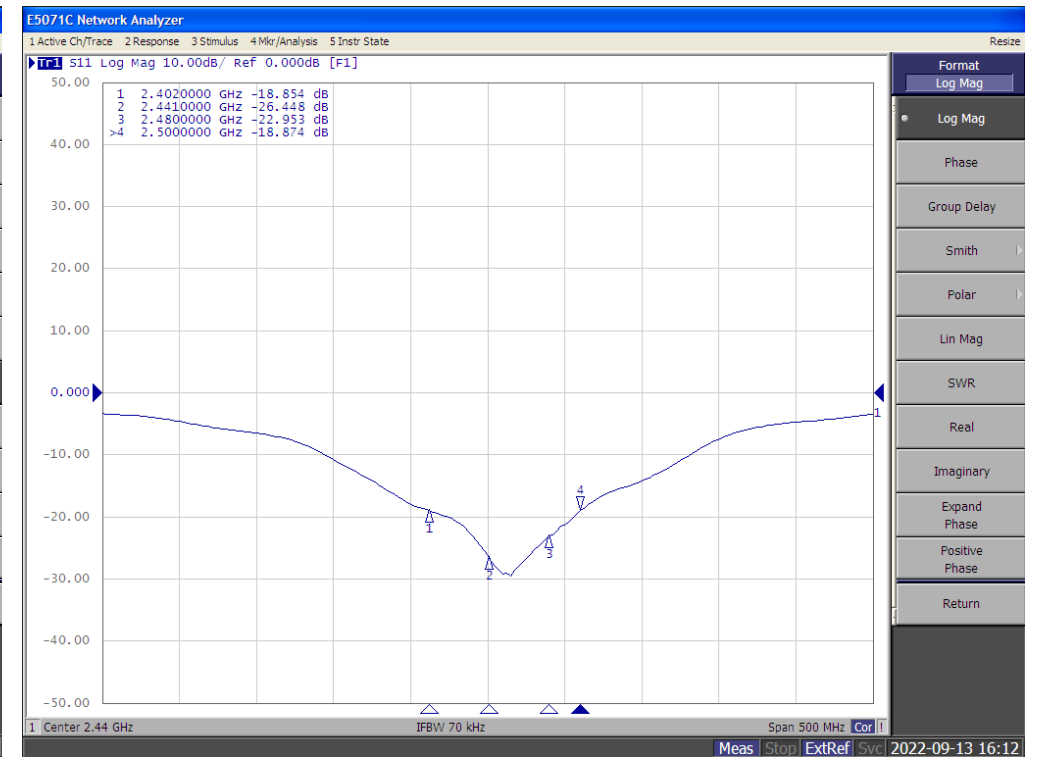
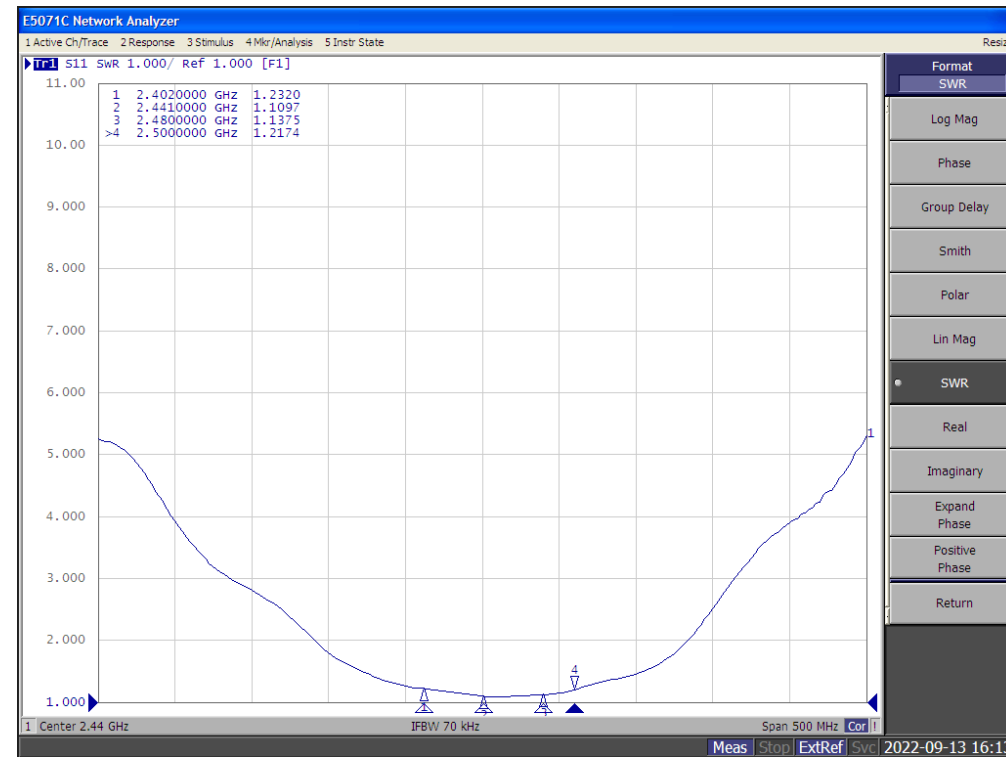
Antenna dimension drawing



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Part 2. Headset Antenna: 2. S11feature parameters

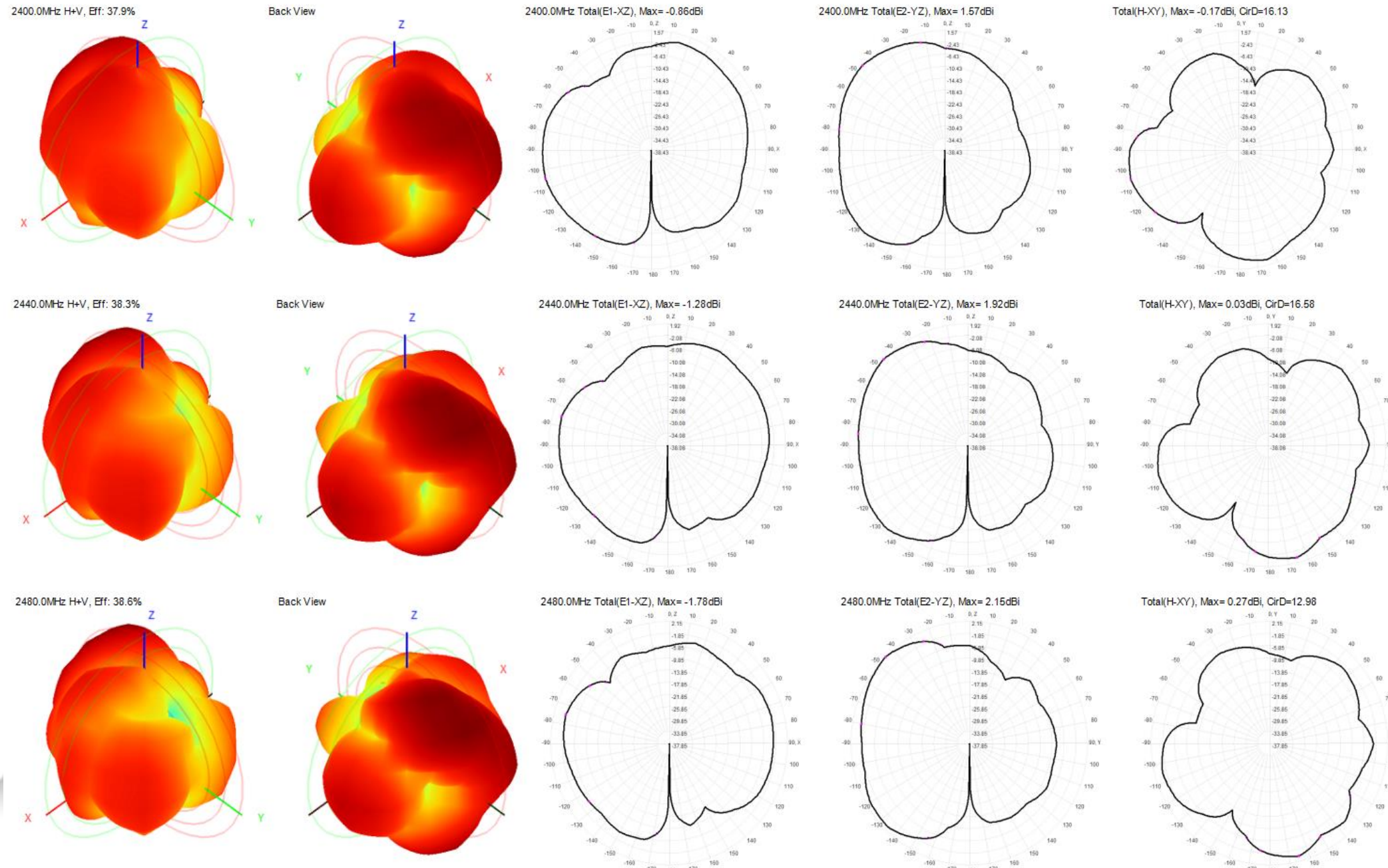
- a. SWR 1.1~1.2
- b. Log Mag -18.8~-26.4dB
- c. Smith (R+jx) 44.7~53.5 Ω



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Part 2. Headset Antenna:

3. Metal PiFa Antenna, Free space Passive AppleField graph, Antenna efficiency and

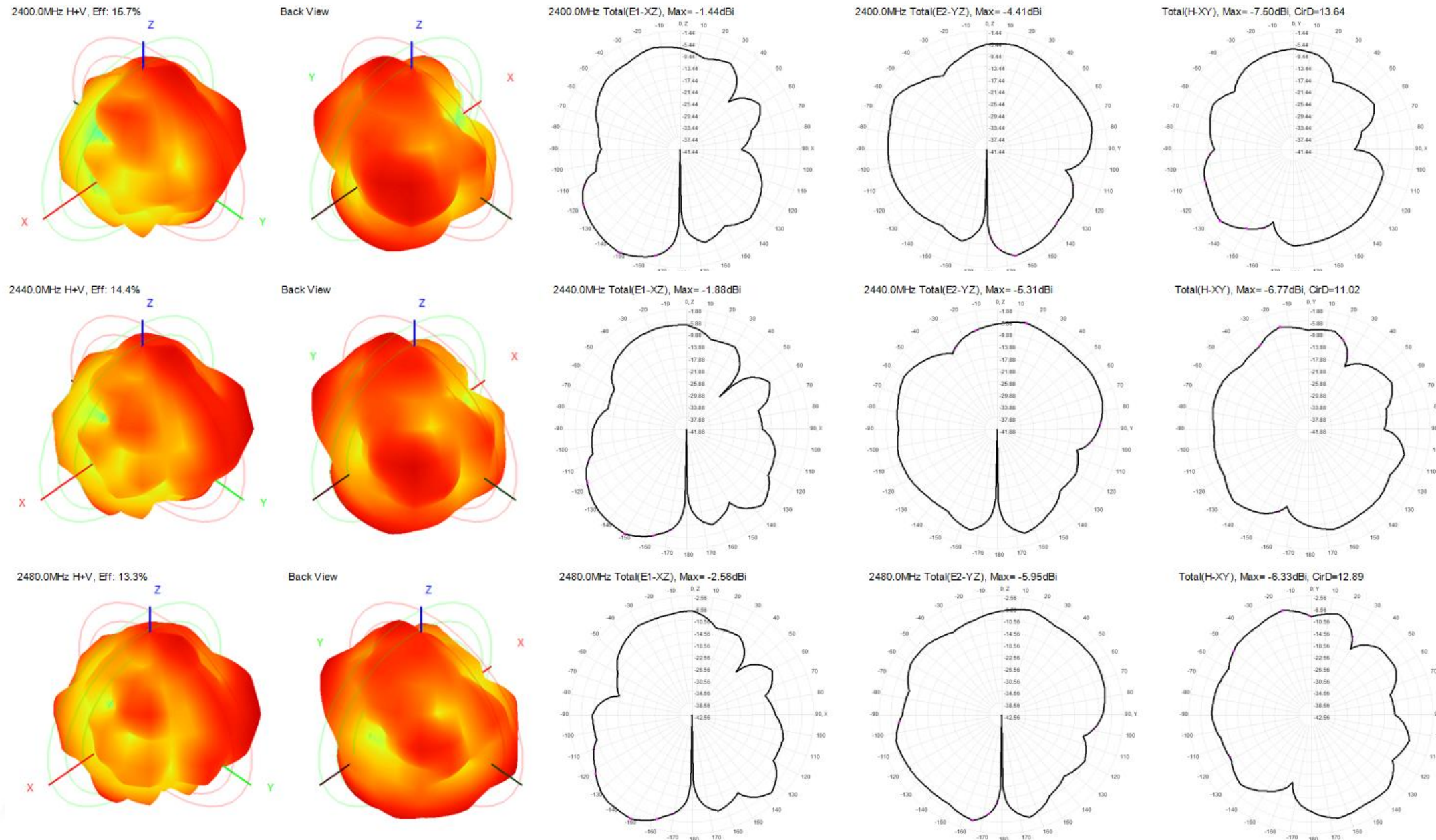


PCB Antenna passive Free state		
Frequency(MHz)	Gain(dBi)	Effi (%)
2400	2.24	37.91
2410	2.17	38.42
2420	2.01	37.96
2430	2.07	38.42
2440	2.16	38.31
2450	2.41	39.04
2460	2.49	38.74
2470	2.48	38.20
2480	2.56	38.63
2490	2.65	38.97
2500	2.75	40.19

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Part 2. Headset Antenna:

4. Metal PiFa Antenna, Headform Passive AppleField graph, Antenna efficiency and

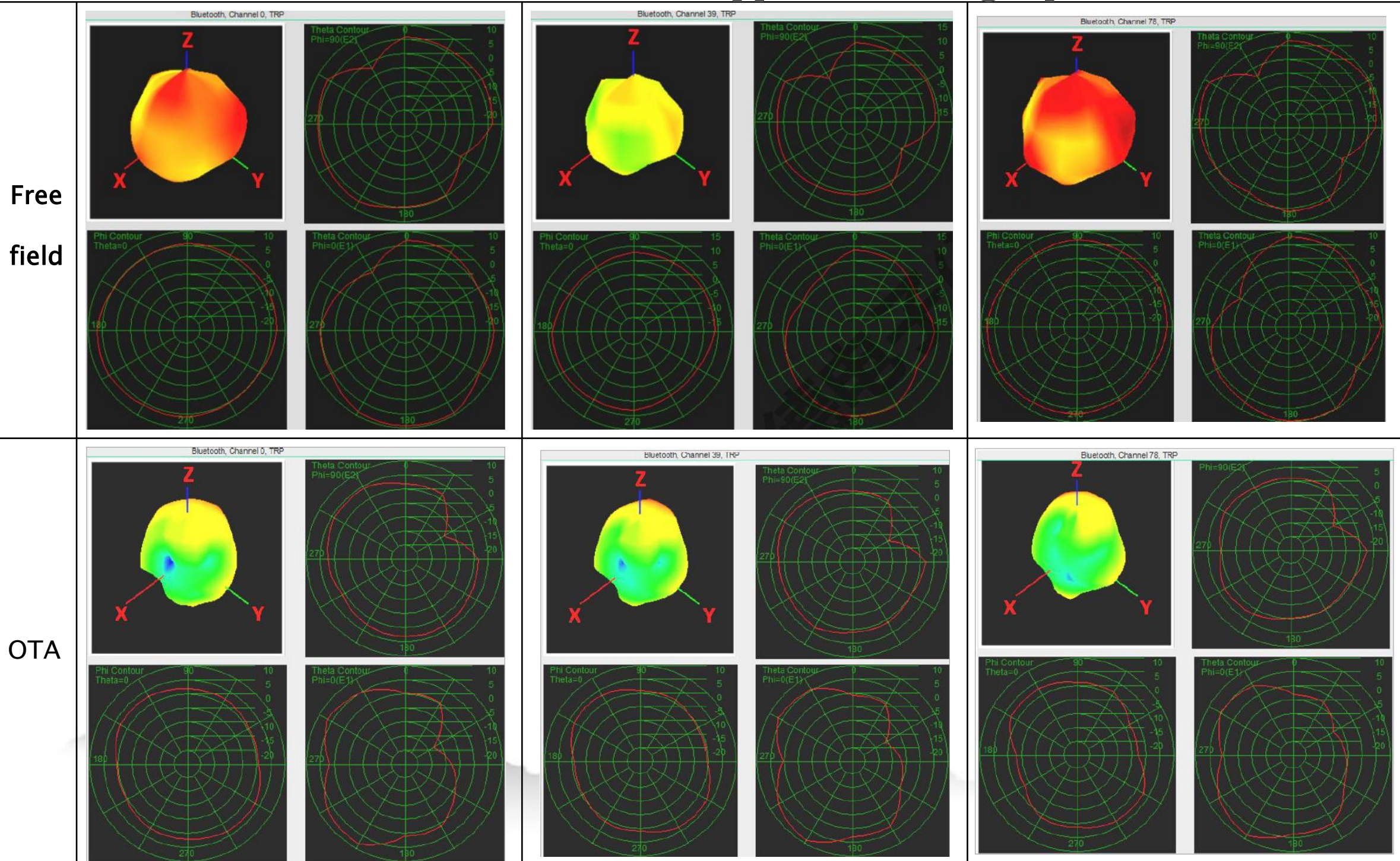


PCB Antenna passive Free state		
Frequency(MHz)	Gain(dBi)	Effi (%)
2400	-0.26	15.74
2410	-0.41	15.68
2420	-0.70	15.11
2430	-0.88	14.82
2440	-1.11	14.37
2450	-1.28	14.26
2460	-1.40	13.94
2470	-1.63	13.45
2480	-1.77	13.29
2490	-2.06	13.12
2500	-2.19	13.24

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Part 2. Headset Antenna:

4. Metal PiFa Antenna, Active Apple Field graph, Antenna efficiency and gain



PCB Antenna OTA 头模		
state	Free field	Headform
Channel	TRP/TIS(dBm)	TRP/TIS(dBm)
BlueTh-0000-TX	5.15	2.8
BlueTh-0039-TX	5.93	2.65
BlueTh-0078-TX	5.44	2.0
BlueTh-0000-RX	-92.41	-90.91
BlueTh-0039-RX	-90.14	-88.66
BlueTh-0078-RX	-90.43	-87.49

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Part 3. Distance Test:

Product Model : Bells	Project Stage :	Test Result	Pass
Software Version : V4010	Hardware Version :		Fail
Test Quantity : 1PCS	APP: KuGou		NA
Tester : Siyuan Tan	Test Date : 2022/9/13		Pass Rate
Test Place : GUANGDONG TAKSTAR ELECTRONIC CO., LTD	Weather : Sunny 、 breeze		

Bluetooth Long-distance test

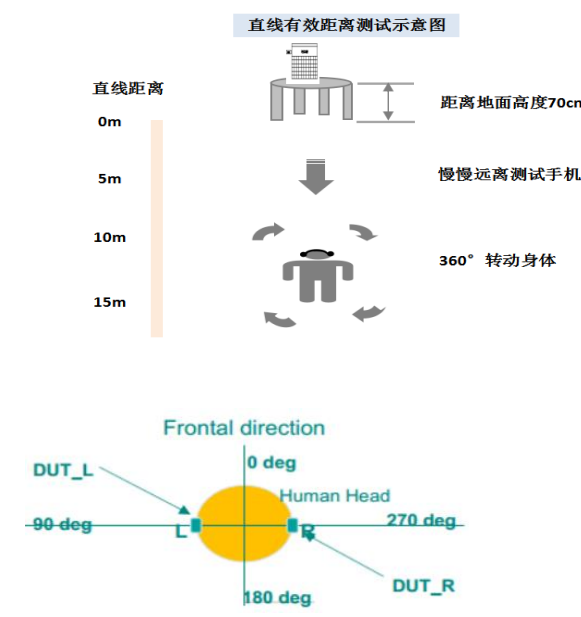
Direction	Environment (Temp./RH)	Redmi K30 Ultra				Test condition & method
0 deg	33°C/45%	80m				<p>1. Test condition : In the case of TAKSTAR's front gate field simulation normal use, to confirm the furthest transmission distance that Bluetooth can reach.</p> <p>2. Test method : After the phone is connected to the Bluetooth headset, it is placed 80cm above the ground. There should be no metal in the measuring stand of the phone. The phone is placed vertically on the measuring stand with the screen facing the tester.</p>
90 deg	33°C/45%	80m				
180 deg	33°C/45%	80m				
270 deg	33°C/45%	80m				

2.4G Long-distance test

Direction	Environment (Temp./RH)	Computer 90°	Computer 180°	Computer 270°	Computer 0°
People (90°)	33°C/45%	30m	30m	30m	30m
People (180°)	33°C/45%	35m	35m	35m	35m
People (270°)	33°C/45%	40m	40m	40m	40m
People (0°)	33°C/45%	35m	35m	35m	35m

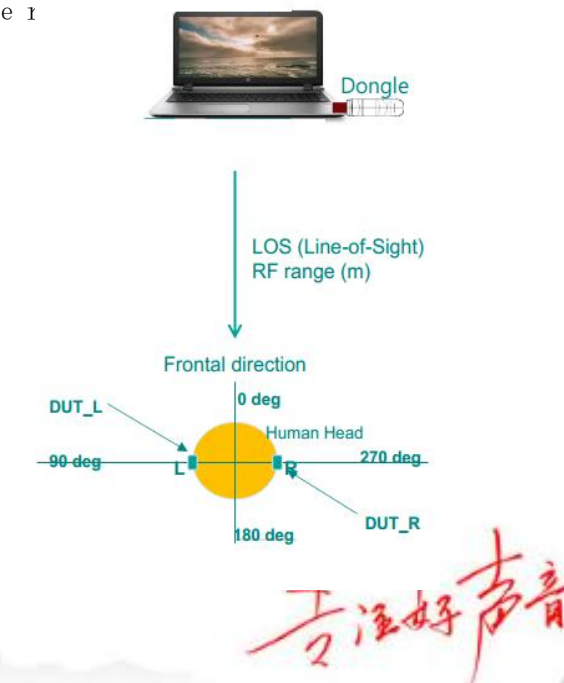
1. Test condition : In the case of TAKSTAR's front gate field simulation normal use, to confirm the furthest transmission distance that Bluetooth can reach.

2. Test method : After the phone is connected to the Bluetooth headset, it is placed 80cm above the ground. There should be no metal in the measuring stand of the phone. The phone is placed vertically on the measuring stand with the screen facing the tester.



1. Test condition : In the case of TAKSTAR's front gate field simulation normal use, to confirm the furthest transmission distance that 2.4G can reach.

2. Test method : After the computer is connected to the headset, it is placed 80 centimeters above the ground. The computer is placed horizontally on the bench. The Dongle is plugged into the r



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Thanks for your listening

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