



Shenzhen Yingfeng Antenna Technology Co., Ltd.

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Street, Nanshan District, Shenzhen, China

HT02 Test Report

Client	Liansheng Electronics
Product	TWS earphone
Engineer	Mr.Liu
Telephone	18118726256
Postbox	lyg@yingfengtianxian.com
Date	2025.12.23
Editor	Simon



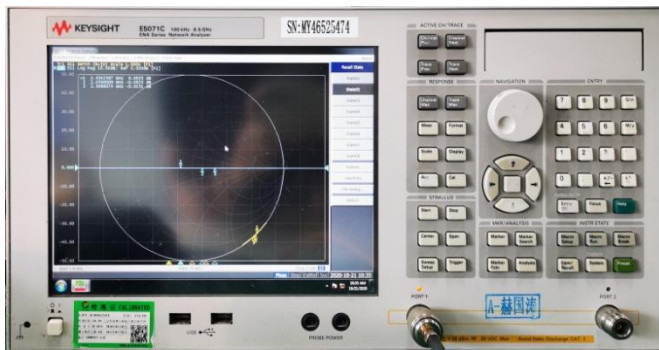
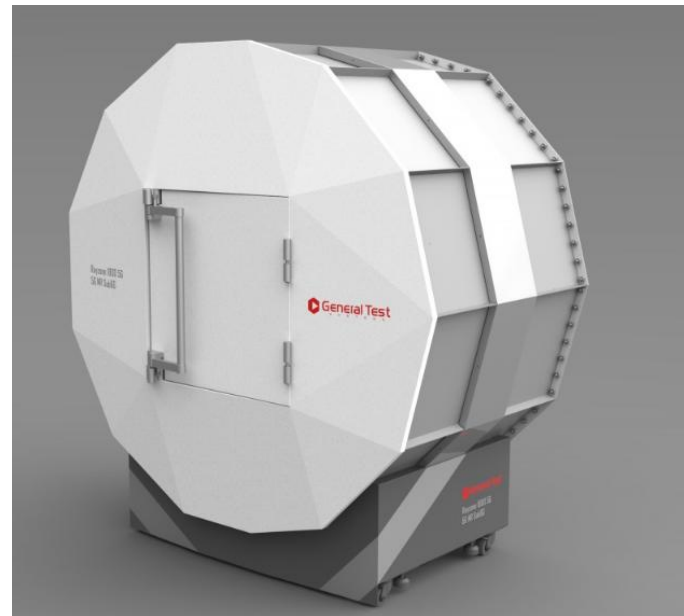
Report Directory

- testing facility
- Prototype appearance
- Match Parameter
- Network segmentation debugging S parameters
- The passive efficiency of the entire machine in its free-field state
- The entire machine features a passive field configuration with a free-field pattern.
- Whole-unit OTA free-field data
- The entire device supports OTA (Over-The-Air) updates for free-field operation modes.
- Whole machine OTA head data
- Whole-unit OTA head-mounted field model
- Pull-off test



Test Condition

- 1. S-parameter measurement
- 2. Equipment: Network analyzer (Agilent E5062A), microwave anechoic chamber, MT8852B
- 3. Items: Impedance, Echo Loss, VSWR, Efficiency, Gain, Radiation Pattern, Sensitivity, Power, Frequency Deviation; Active Data: TRP, TIS



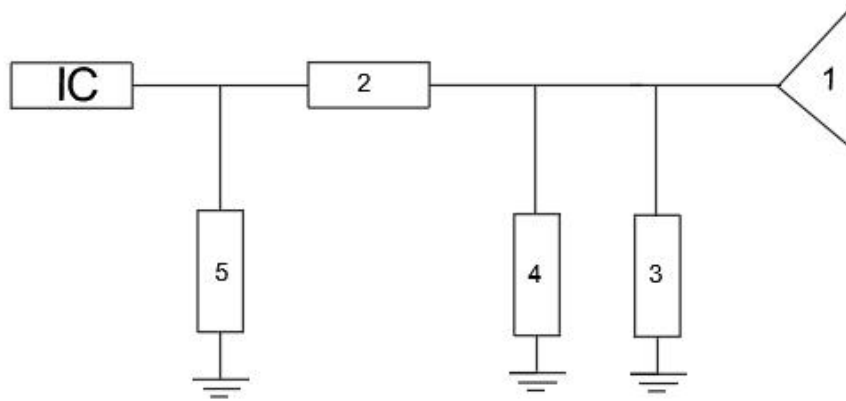


Prototype Appearance





Match Parameters (same LR Parameters)



Number	Model	Specifications	Manufacturer	P / N	Common difference	
1	FPC	T021-V2	Yingfeng			
2	Electric capacity	1PF/0201	Murata		$\pm 0.1\text{PF}$	
3	ESD					
4	NC					
5	Inductance	3.9NH/0201	Murata		$\pm 0.3\text{NH}$	



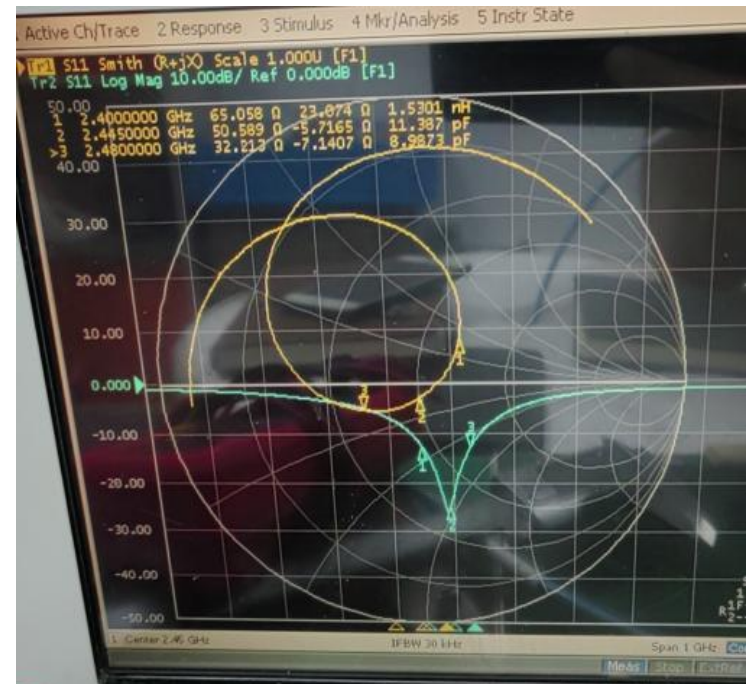
Network debugging antenna S-parameters

Debugging waveform

L



R





The Passive Efficiency of the Entire Machine in Its Free-Field State

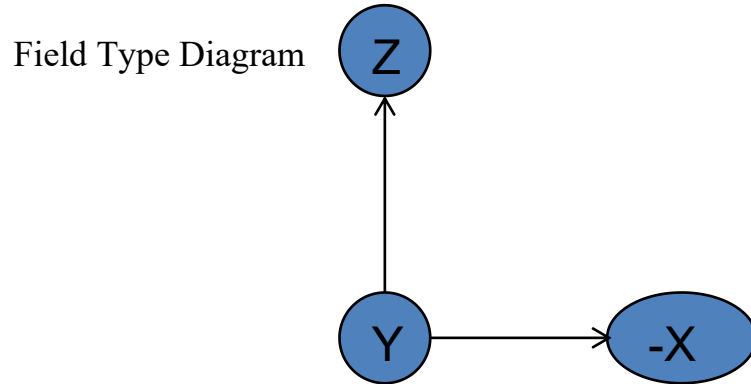
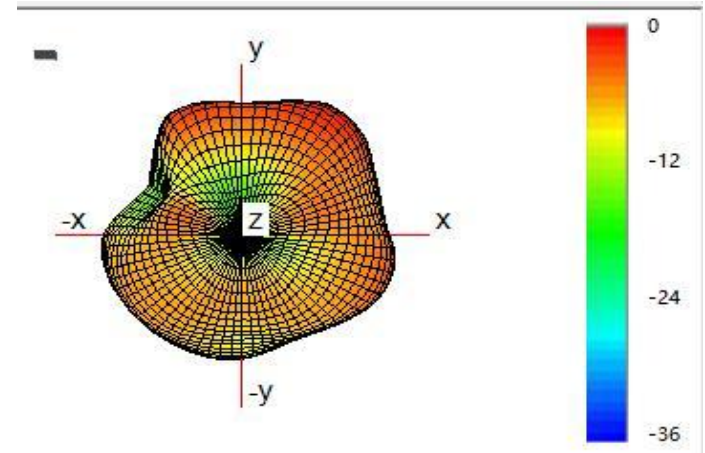
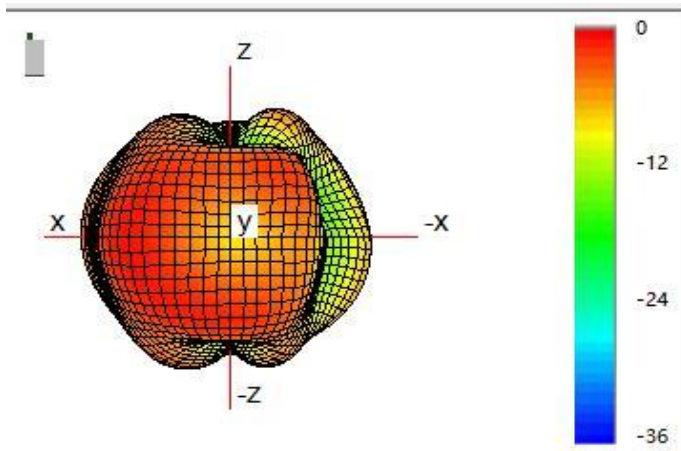
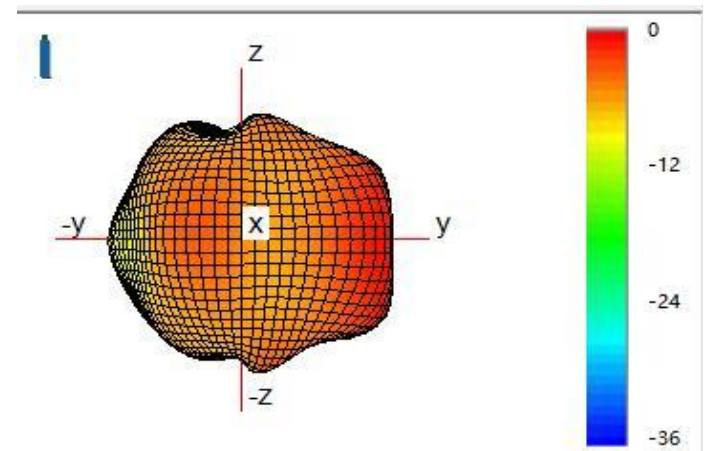
L.

Freq(MHz)	Gain(dBi)	Efficiency(dB)	Efficiency(%)
2400	-0.877819653	-5.864678358	25.91386335
2410	-0.67663446	-5.677773626	27.05344881
2420	-0.575467496	-5.629646665	27.35491273
2430	-0.264211119	-5.487388474	28.2657916
2440	-0.018592202	-5.298717114	29.52081129
2450	-0.071123711	-5.313961238	29.41737225
2460	-0.172331305	-5.456652438	28.46654476
2470	-0.084849578	-5.405247838	28.80548661
2480	-0.128282146	-5.344316703	29.21247338
2490	-0.145890446	-5.493796616	28.22411535
2500	-0.137063423	-5.474313823	28.35101538



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The Entire Machine Features a Passive Field
Configuration With a Free-Field Pattern.





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The Passive Efficiency of the Entire Machine in Its
Free-Field State

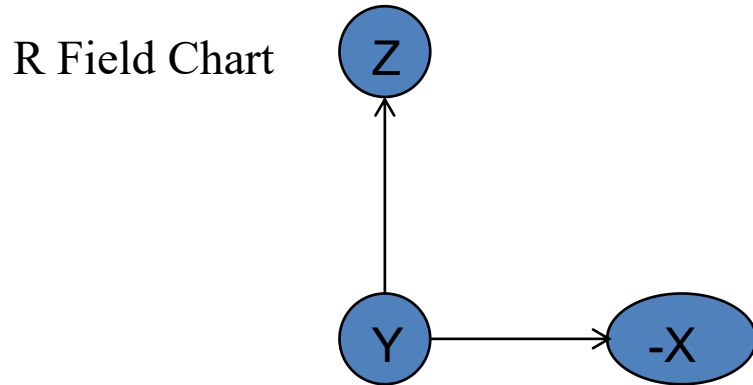
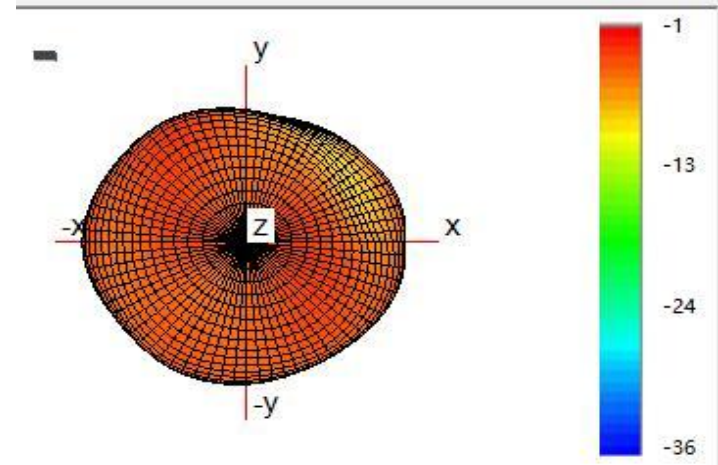
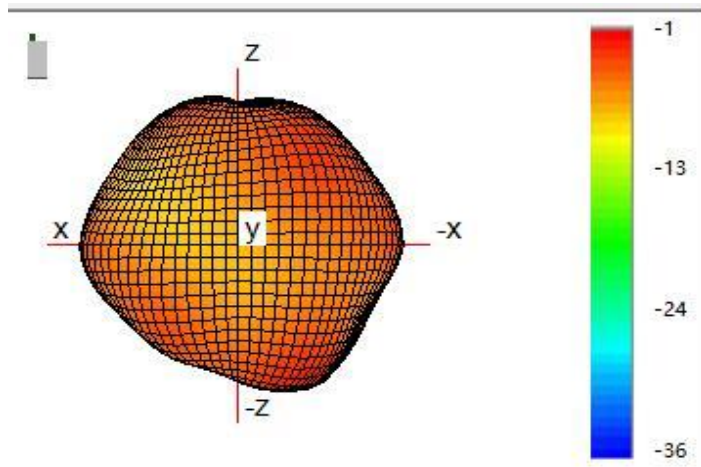
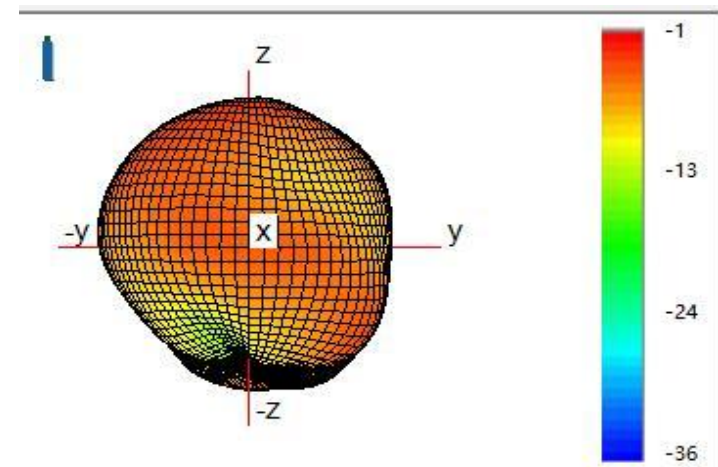
R.

Freq(MHz)	Gain(dBi)	Efficiency(dB)	Efficiency(%)
2400	-1.951964183	-5.127862931	30.70532559
2410	-1.964426597	-5.150766917	30.54381695
2420	-2.020638928	-5.26583006	29.74520689
2430	-2.011340264	-5.274342774	29.68695968
2440	-1.83223849	-5.14026283	30.61778133
2450	-1.867378866	-5.218925376	30.06820222
2460	-1.960792229	-5.39790182	28.85425184
2470	-1.828624899	-5.314995624	29.41036657
2480	-1.60394164	-5.232176711	29.97659696
2490	-1.674499338	-5.356734193	29.12906742
2500	-1.5951476	-5.421419716	28.69842272



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The Entire Machine Features a Passive Field
Configuration With a Free-Field Pattern.





Whole-Unit OTA Free-Field Data

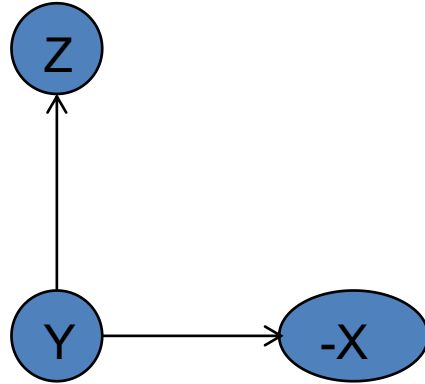
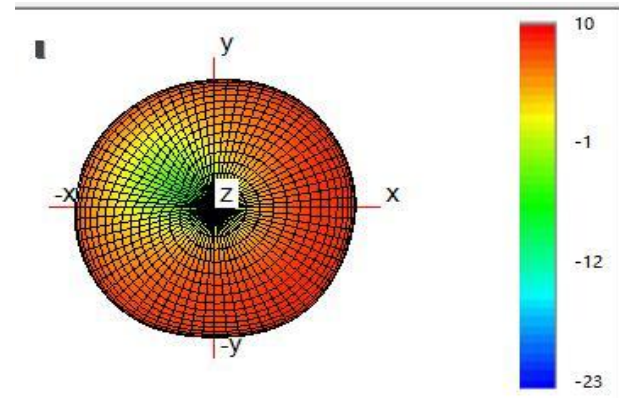
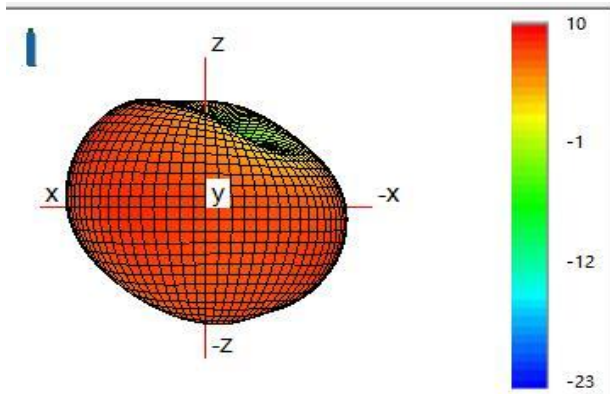
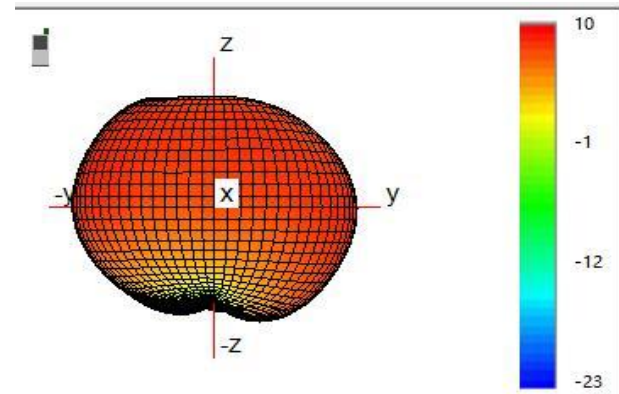
	Channel	TRP power (dBm)	TIS sensitivity (dBm)
L	CH 0	3.75	-87.42
	CH 39	4.78	-88.68
	CH 78	3.35	-87.32

	Channel	TRP power (dBm)	TIS sensitivity (dBm)
R	CH 0	3.04	-87.79
	CH 39	4.02	-88.04
	CH 78	5.71	-88.44



device supports OTA (Over-The-Air) updates for free-field operation modes.

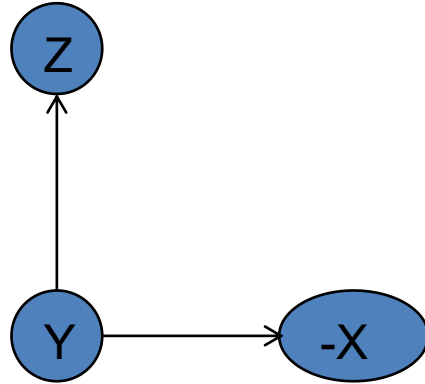
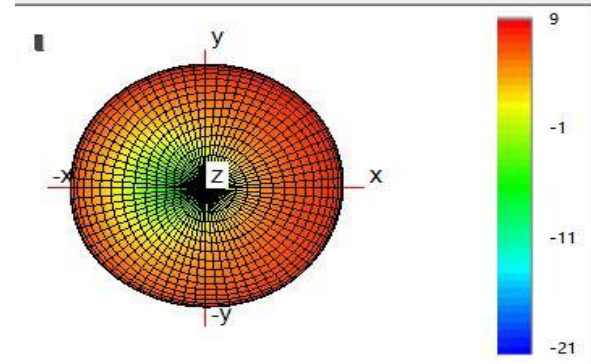
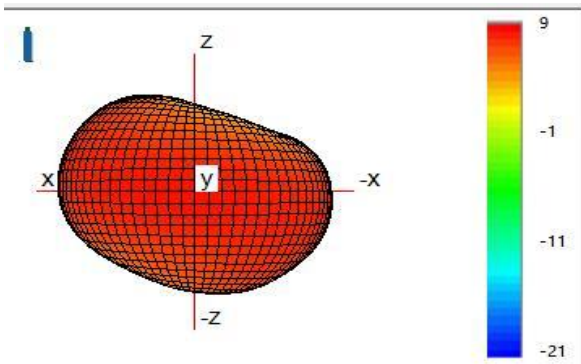
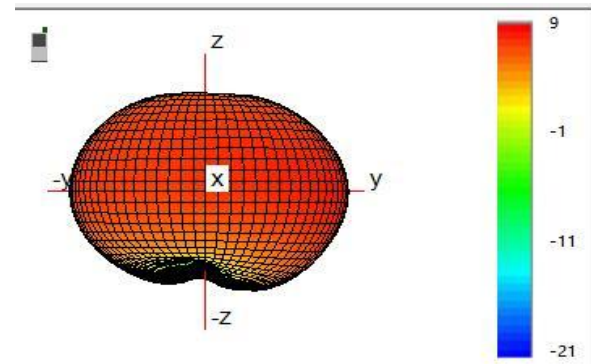
L: Field pattern diagram





device supports OTA (Over-The-Air) updates for free-field operation modes.

R: Field pattern diagram





Whole Machine OTA Head Data

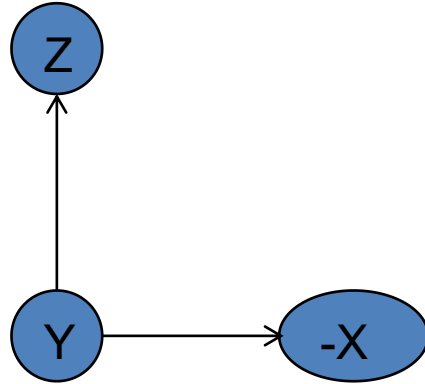
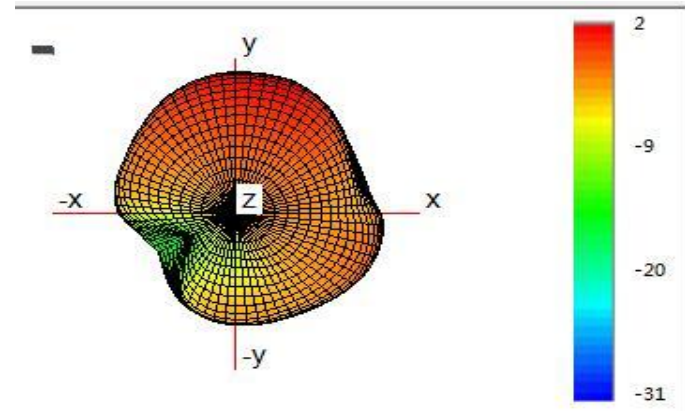
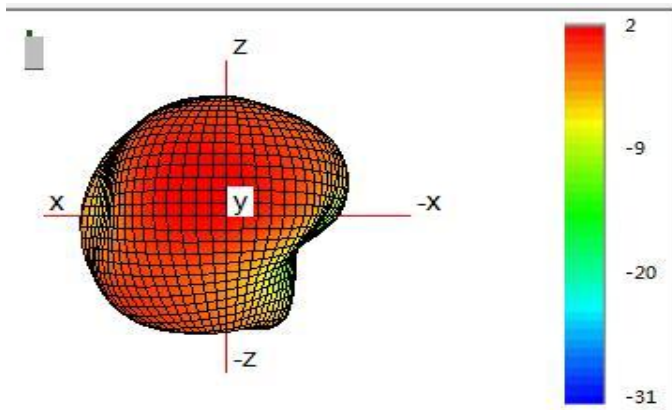
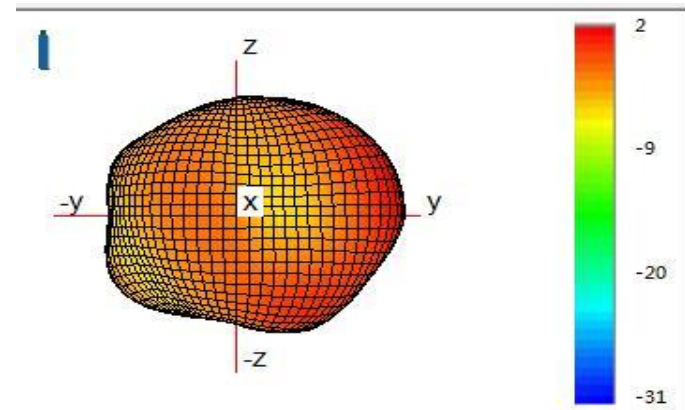
	Channel	TRP power (dBm)	TIS sensitivity (dBm)
L	CH 0	-3.25	-81.62
	CH 39	-2.32	-82.36
	CH 78	-3.02	-82.11

	Channel	TRP power (dBm)	TIS sensitivity (dBm)
R	CH 0	-3.10	-81.86
	CH 39	-2.76	-82.71
	CH 78	-3.31	-81.69



Whole-Unit OTA Head-Mounted Field Model

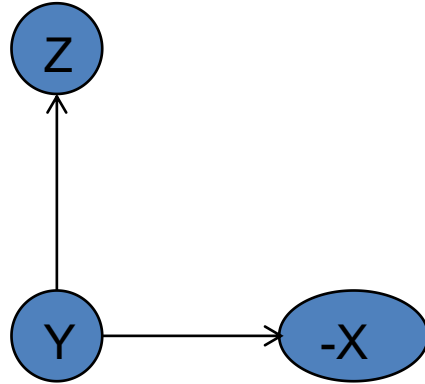
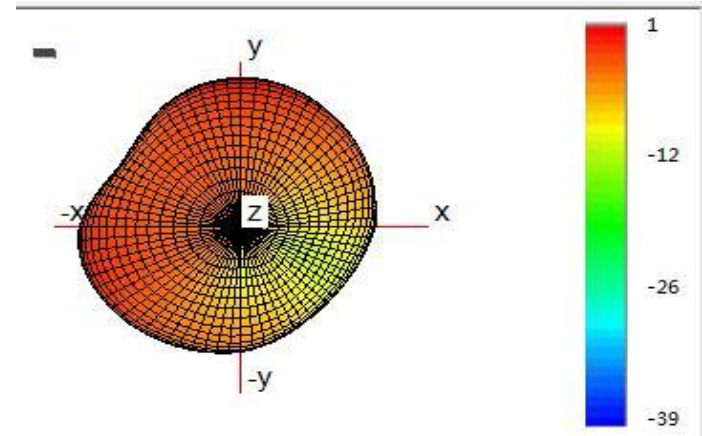
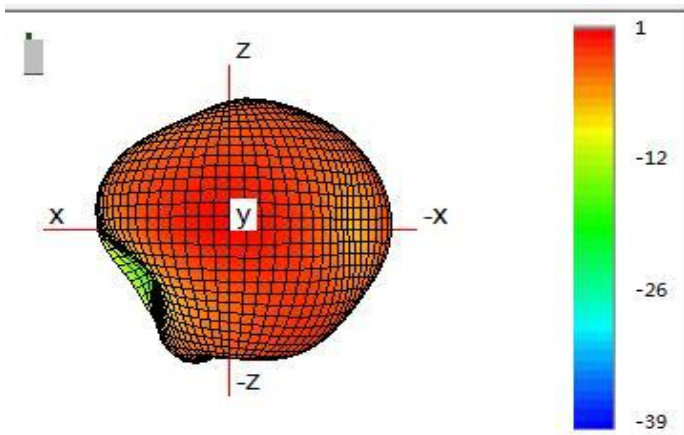
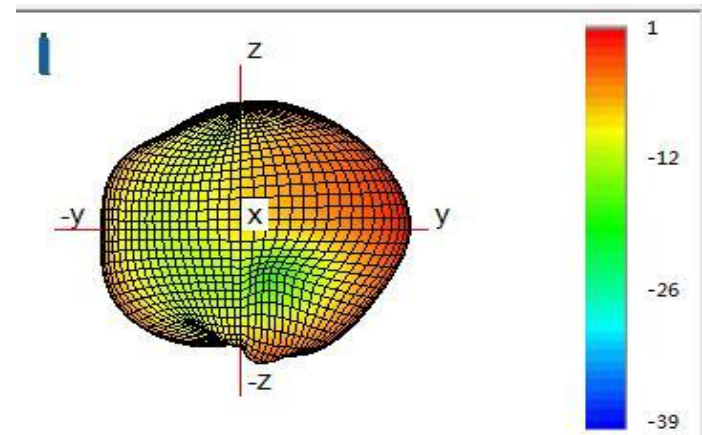
L. Field Pattern Diagram





Whole-Unit OTA Head-Mounted Field Model

R.Field Pattern Diagram





Pull-off Test

a. Environment/Phone

Test item	Measuring distance			Overtaking test requirements (please specify the testing distances for the following items)		Remarks
Apple 6	6m	Low	☐	Right front	OK	The rooftop test covers a 360-degree area with no blind spots, spanning a distance of 20 meters.
	8m	Middle	☐	Left Front	OK	
				Right rear	OK	
	10m	Gao	☒	Left rear	OK	



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Thanks for Your Attention