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TNP-26XXX Antenna Test Report

(Model: TCL Smart Door Knob on board BT Antenna)

Version: 1.0

Released Date: 2026/06/24

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Reviewed by: Daniel

Outline

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- Specification
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Revised History



Released Date	Version	Revised Records
2026/06/24	1.0	Antenna evaluation report

Specification



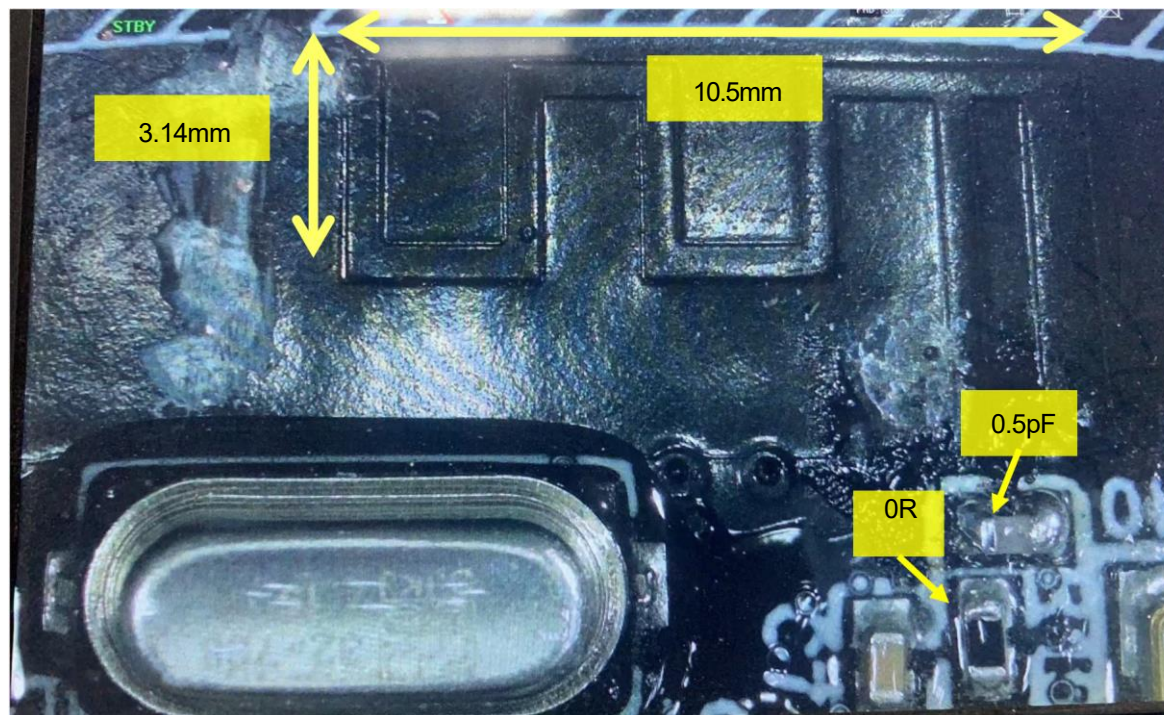
Requirements of Antenna Design

RF Function	Number of ANT	Frequency Band	Remark
BT	1	2400-2500MHz	

Requirements of Measurement

Test Item	Specification	Remark
VSWR	2.0:1 Max	
Peak Gain	>-2.37dBi	
Efficiency	>20%	
Radiation Pattern	Scale: Auto	

Antenna Placement & Solution

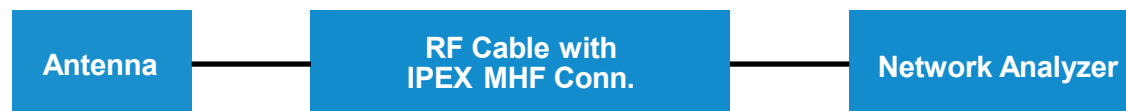


Antenna	BW	Antenna Type	Size (L * W * H)	Cable Length (mm)	Cable Type
BT	2.4GHz	PIFA (on board)	10.5*3.14*0.25mm ³	65	Φ1.13mm low loss

Test Setup for Return Loss Test



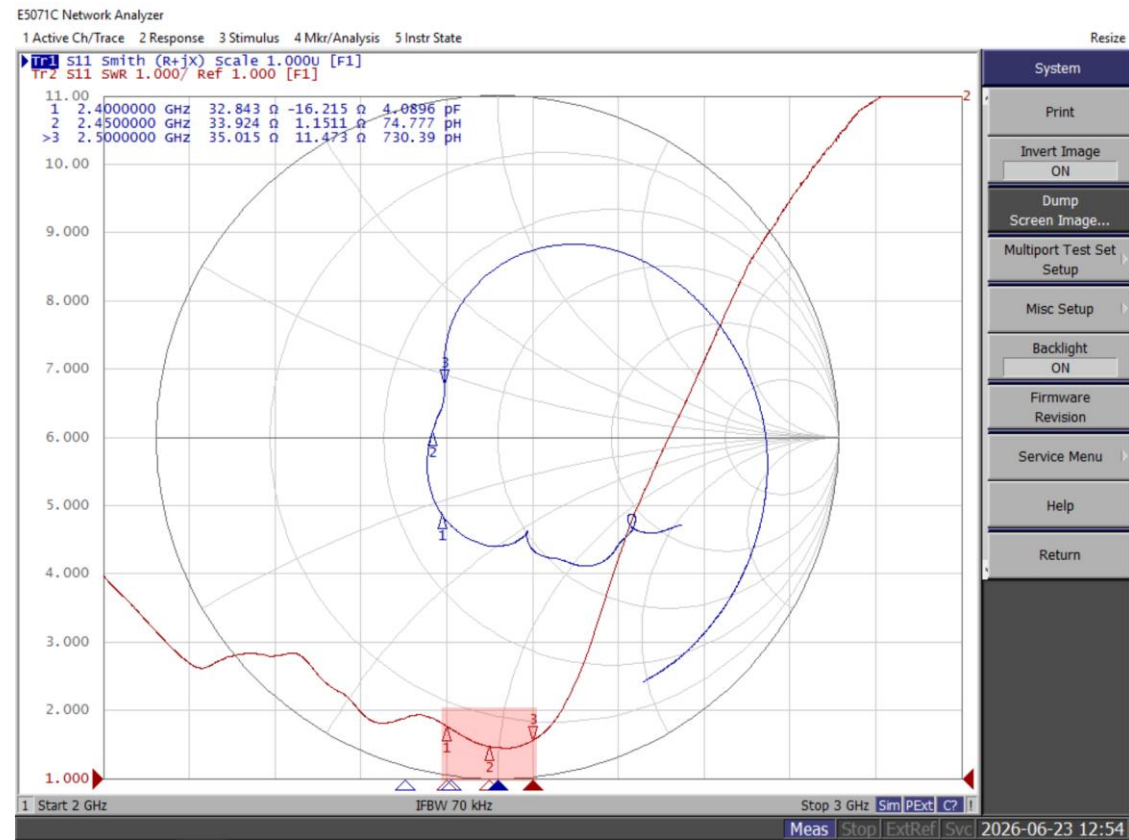
Equipment	Brand	Model	S/N	Calibration date
Network Analyzer	Keysight	E5071C	MY46417759	2026/12/11



VSWR Test

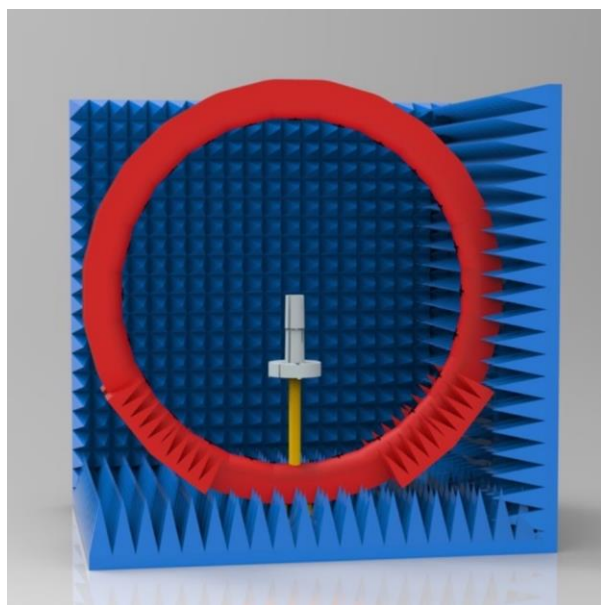
VSWR Test

BT (2400-2500MHz)(Criterion: 2.0:1 Max)

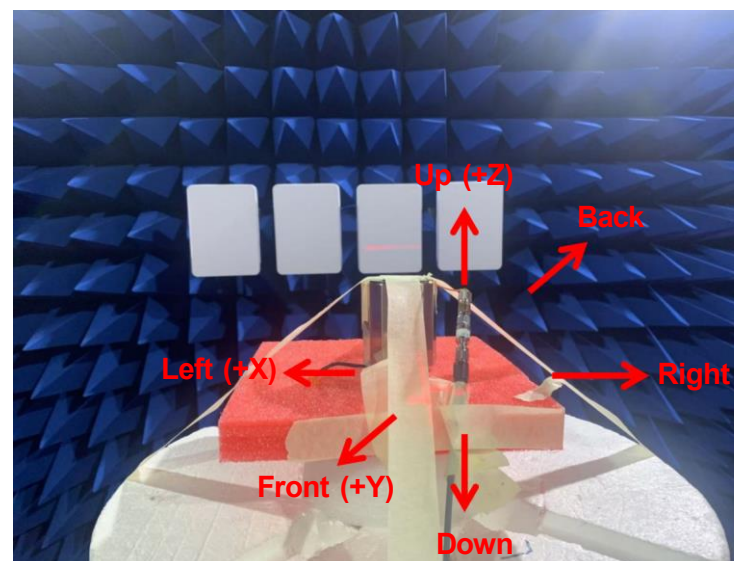


Test Setup for OTA Measurement

Chamber Information



Test Setup for DUT

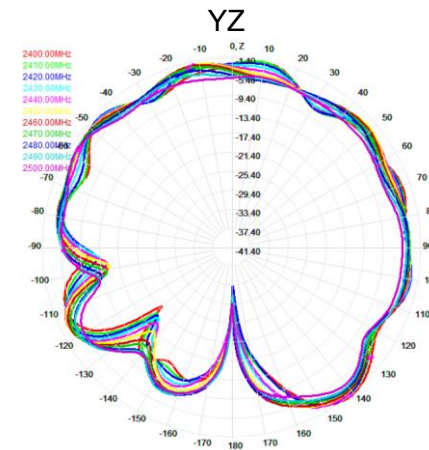
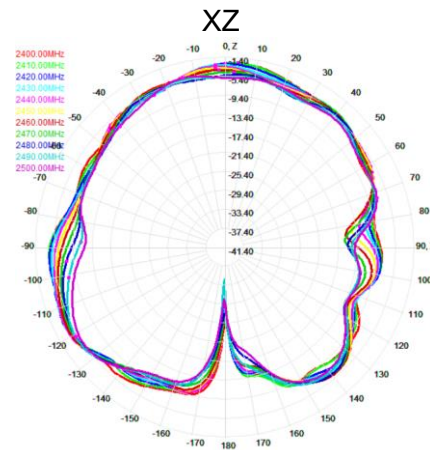
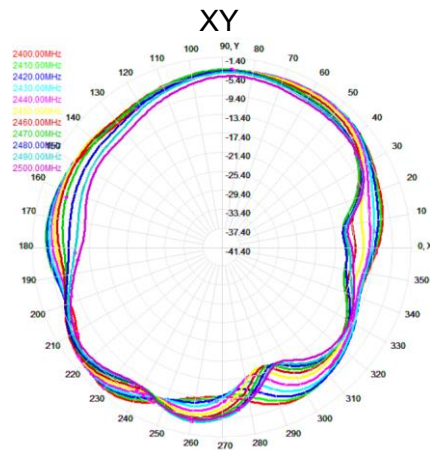
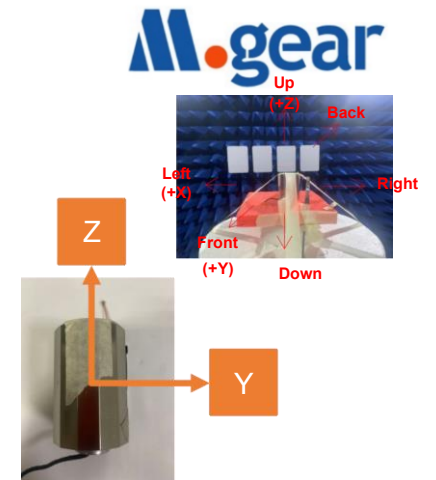
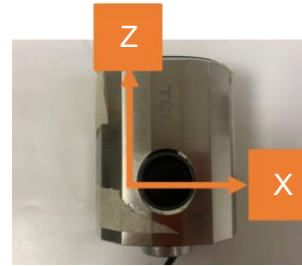
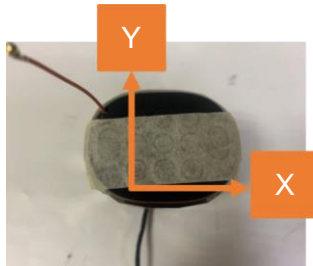


Chamber	Brand	Model	Dimension	Freq. Range	Max DUT Size	Function	Location
Multi-probe	Fei-Tu	FT-OTA24	4*4*4M	0.4-8.5GHz	0.6-1.2M (base on different freq. band)	• Gain and Efficiency • TRP & TIS: 2G/3G/4G LTE/NB-IOT • 802.11 a/b/g/n/ac/ax • WI-FI / WI-FI 6 Throughput	China, Dongguan

Radiation Patterns

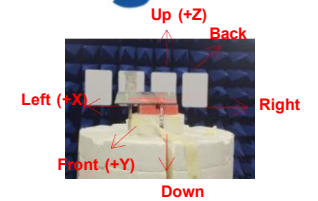
2D Radiation Patterns

WI-FI

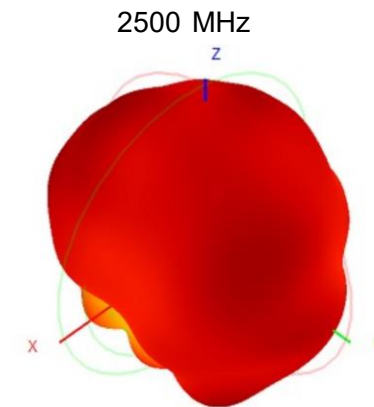
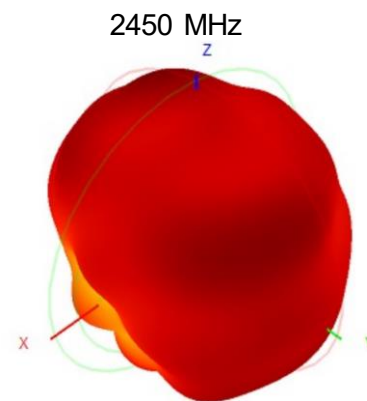
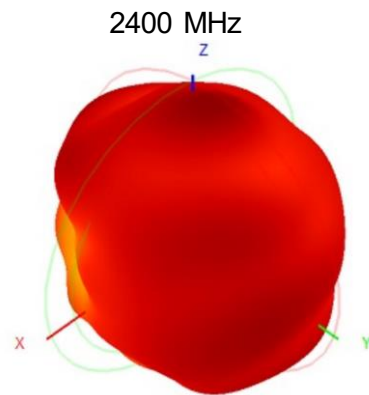


3D Radiation Patterns

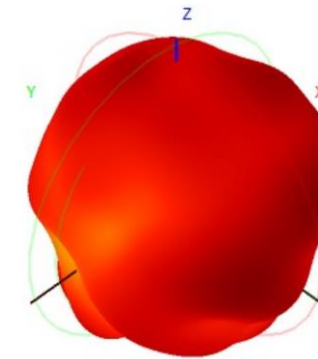
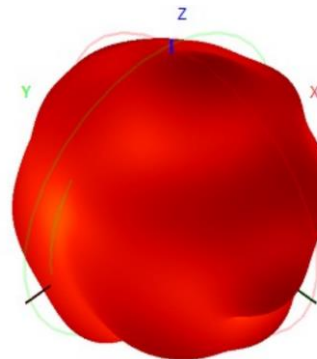
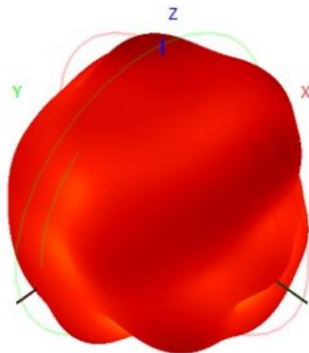
BT



Front View



Back View



Results Summary

VSWR

(Criterion: 2.0:1 Max)

Frequency (MHz)	BT
2400	1.74
2450	1.57
2500	1.66

Peak Gain & Efficiency

BT

Frequency (MHz)	Peak Gain (dBi)	Efficiency (%)
2400	-1.24	26
2410	-1.62	26
2420	-1.67	26
2430	-1.82	26
2440	-1.91	26
2450	-2.11	25
2460	-2.19	25
2470	-2.25	24
2480	-2.24	23
2490	-2.37	24
2500	-2.33	23

Conclusion & Comments

Antenna Performance Summary

- VSWR : 2.0:1 Max
- Peak Gain: >-2.37dBi Typ.
- Efficiency: >20%
- Due to the large amount of metal in the antenna's surrounding environment, its performance will be significantly affected. Currently, this represents the best achievable performance for a passive antenna under these conditions. Therefore, it is recommended to test the overall system performance. A plastic front panel is also recommended.

Comments for Further Improvement



Address of antenna manufacturer:

3rd Floor, No. 22 Qing'er Street, Liansheng South Road, Gaosha Community, Xiaolan Town, Zhongshan City, Guangdong Province (Guangdong Chenjia Intelligent Technology Co., Ltd.)



Thank You

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