

	Date	2024.06.28	Version No	V1.0
	Subject	YAA003R219-TPC101 RK99-NFC		

Approval Sheet



Customer	Vantron Technology Inc
Customer Project No.	YAA003R219-TPC101 RK99-NFC
Deman Project No.	F1814
Deman Part No.	TFPA02F18140011

Deman	RF	ID	PE	QE	PM

Customer	ID	RD	QE	PM

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Catalogue

- 1、 Specification
- 2、 Antenna drawing
- 3、 FAI
- 4、 Packaging specifications
- 5、 Electrical performance report

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1. Specification

1.1 General Standard

General Specification	
Model name	YAA003R219-TPC101 RK99-NFC
Antenna type	NFC

1.2 Packing, Shipping, Handling

1.2.1 Exterior Option

1. The names of the customers and manufacturers should be indicated.

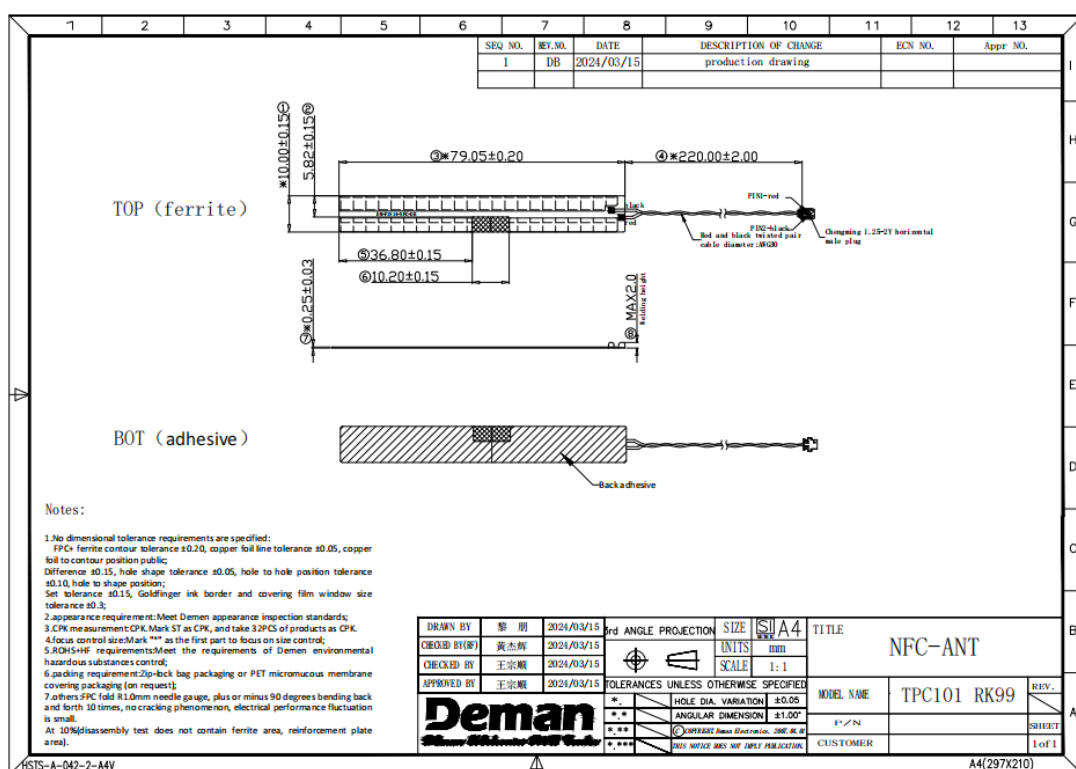
1.2.2 Packing

1. The products should be carefully packed, in order to avoid collision and vibration in transit.
2. The Packing material should be a paper box, and this type of carton cannot damage the products in the box.

2. Antenna drawing and parameter specifications



TPC101
RK99-NFC-ANT^{III}



Design Specifications	Typical
ANT Typical	NFC
working Frequency	13.56MHz
Gain	NA
Antenna efficiency	NA
VSWR	NA
Ploriaztion	NA
Axial Ratio	NA
Radiation pattern	bottom
impedance	32
Power handling	NA
Interface	Pad
Overall dimensions	299.05mm×10mm
Weight	None required
Operatin Temp	-20~80
Storing Temp	-20~80

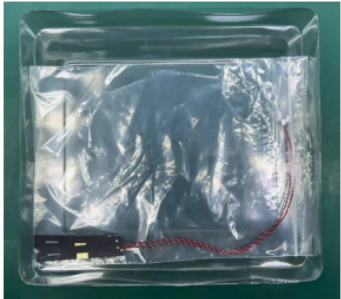
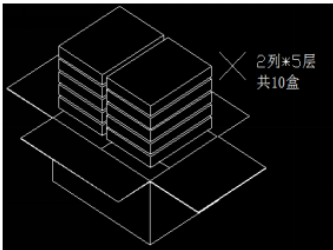
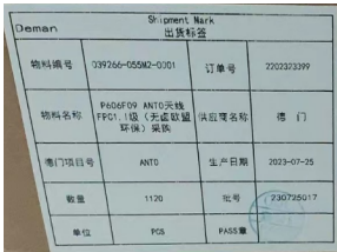
3. FAI

F-042-005-20			Full size inspection report						
Product model			F1814		Product batch number		\		
date of observation			2024/5/21		Sample size for testing		5		
Testing equipment			projector		Tested by				
NO.	Standard size	Positive tolerance	Negative tolerance	Actual measured value					determine
1	10	0.15	0.15	10.11	10.07	10.06	10.14	10.10	OK
2	5.82	0.15	0.15	5.84	5.81	5.79	5.77	5.83	OK
3	79.05	0.2	0.2	79.08	79.13	79.08	79.02	79.01	OK
4	220	2	2	219.65	201.11	218.45	219.89	201.56	OK
5	36.8	0.15	0.15	36.80	36.87	36.83	36.89	36.81	OK
6	10.2	0.15	0.15	10.16	10.14	10.29	10.24	10.22	OK
7	0.25	0.03	0.03	0.24	0.24	0.23	0.24	0.25	OK
8	2	0	0.2	1.95	1.92	1.94	1.96	1.97	OK

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4. Packaging specifications

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			Part number	YAA003R219	
			product name	TPC101 RK99-NFC	
		Figure 2: Bags are estimated at about 50/ bag	modes of packing	Ziplock bag + blister box + outer box	
			Bagged/coated	quantity	50pcs/bag
			outer box	Number of inner boxes	300pcs/box
			remark 1. Place 50pcs of products judged OK by QC in a bag neatly in a blister box, with a total of 300PCS in each box. Label the blister box with shipping label (material number, material name, specification, model, quantity, production date), ROHS label, weight label, etc.; 2. The actual shipping label is subject to the layout content required by the business according to the customer; 3. If the quantity is less than one ziplock bag or one inner box, pack it according to the original packaging. If the quantity is less than one box, place it according to the actual number of boxes.		
			storage condition	temperature: 10-30°C humidity: 30-70%RH Normal temperature and humidity, avoid direct light	
			operating life	Production date +6 months	

5. Electrical performance

Electrical Specification Requirements

Test project	Test environment	N1814				
		Min	Typ	Max	Units	Notes
Type of chip			NXP			P7150
Day frequency			13.56		MHz	
Antenna inductance	1 MHz	1.45	1.50	1.54	uH	± 3%
Antenna resistance	1 MHz	3.27	3.47	3.67	Ω	± 0.2
Ferrite permeability U	13.56 MHz	135	150	165		>120
Ferrite magnetic loss μ	13.56 MHz			5		≤5

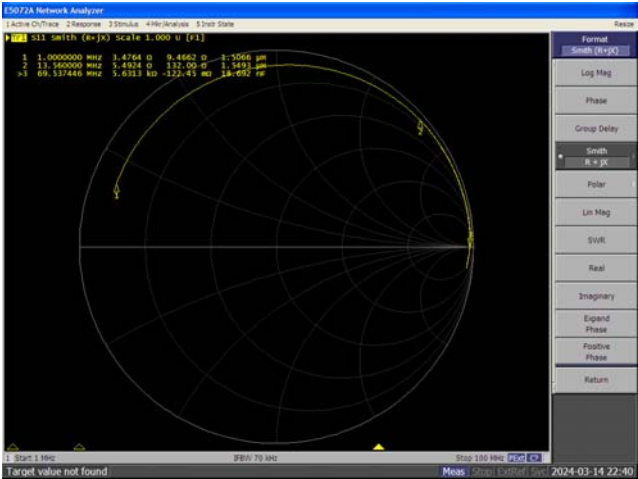
LCR Control

Control range: 1 MHz inductance: ± 3%

1MHz under by Yang, + 02.

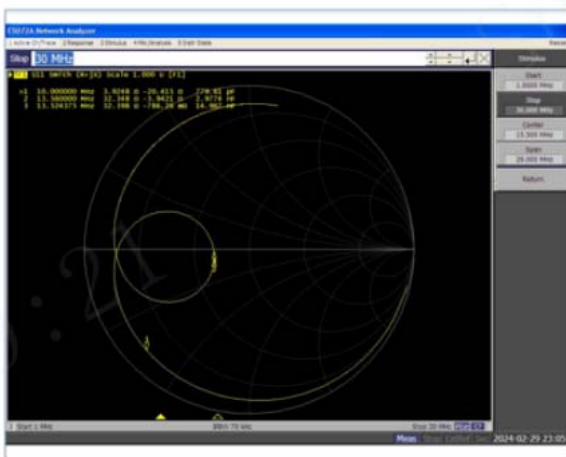
Antenna parameter test

<u>Rs (Ω) @1M</u>	3. 47
<u>La (μ H) @1M</u>	1. 50
<u>Rp (k Ω)</u>	5. 63
<u>Fra (MHz)</u>	69. 53
<u>Rs (Ω)@13. 56M</u>	5. 49
<u>La (μ H) @13. 56M</u>	1. 55



matching impedance

Electrical parameters	numerical value
$Z_{load}@13.56\text{MHz}$	$32\ \Omega$
F_{re}	13.52



match circuit

The original matching circuit diagram is shown in the figure, the red component is replaced by the table value, the other component values have not changed, the component brand uses Murata, and the tolerance difference is $\pm 2\%$.

	Components and parts	Design values	Material type
L0	L178/L179	160nH	unmodified (ferromagnetic inductance)
C0	C1144/C1246 (original plan C1146)	680pF	Not modified
	C1234/C1235	NC	Not modified
Cs	C1142/C1147	56pF	GRM155C1H560GA01D
	C1140/C1148	9pF	GRM155C1H9R0BA01D
Cp	C1230/C1231	82pF	GRM155C1H820GA01D
	C1143/C1145	NC	modify
Rrx	R1960/R1961	1kΩ	Not modified
Crx	C1141/C1149	1000pF	Not modified



Performance test

R/W mode distance
vs.
Tag 1/2/3/4

Tag 1 (Topaz)	45 mm
Tag 2 (Ultralight)	48 mm
Tag 3 (Sony-Felica)	32 mm
Tag 4 (Desfire)	22 mm

Card mode distance
vs.
POS Vivo 4800

140 mm

Tag1(Topaz-512)

Tag 2 (Ultralight)

Tag3(Sony-Felica)

Tag 4 (Desfire)