

Material Confirmation Letter

Yidao	brand name	Venus8.7-4G DIV Antenna
	material number	01. WF7.T86310HT002
	Specification	4G DIV Antenna, Antenna FPC+Backing, Silkscreen Message, 52.86*37.26*0.12mm, RoHS+REACH+HF
	models	Venus 8.7
supplier	company identification	Etheta Communication Technology (shenzhen) co.,Ltd
	brand name	RD022408-DIV-FPC
	material number	RD022408NB87-2
	Specification	Antenna FPC
	Material Description	Surface black half-and-half PI cover film, half-and-half substrate, electrolytic copper, Ni $\geq$ 3-8um Au $\geq$ 0.03um, adhesive backing 3M467, half-cut packaging
	production date	2024.06.20

Acknowledgement of signature	Confirmation by the supplier						
	plait		audits		approvals		
	EVERYTHING acknowledges that						
	procure	framework	software	beta	hardware	NPI	DQA

Supplier's address, contact details	Etheta Communication Technology (shenzhen) co.,Ltd Liu Qifu 18688794456 B and D, 3/F, Building 1, Baysha Science and Technology Industrial Park, No.3011 Shahe West Road, Nanshan District, Shenzhen, China.
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Description:
1. This cover is used uniformly for all material acknowledgements;
2. Five copies of the acknowledgement of electronic material and five copies of the acknowledgement of assembled material, which are consistent with the acknowledgement of electronic filing;
3. The content pages must be placed in the order of the catalogue (e.g. cover, drawings, package gauge, dimensional CPK, salt spray test report, film thickness test report, physical property test report, etc.);
4. Drawings are clear, no omissions, errors, product appearance and colour, size, material, plating, plating specifications, tolerance range, etc. to be marked;
5. All reports should be in Chinese or in both English and Chinese.



ShenZhen Etheta Communication Technology Co., LTD.

Specification for Approval

Client Name: TCL

Brand Name: Etheta

Part No: RD022408NB87-2

Part Description: Venus8.7-4G DIVAntenna

Manufacturer: Etheta

Part Name: FPC

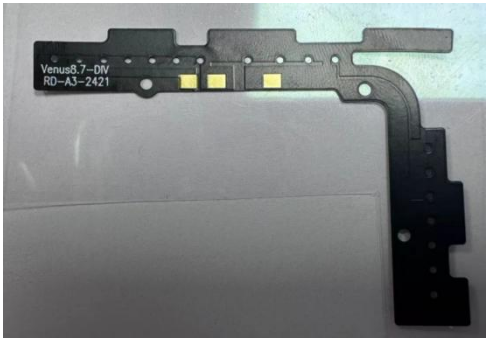
Materiel No.: 01. WF7. T86310HT002

Supplier Signature		dates	Customer Signature
framework			Acknowledged:
RF			
recognition			

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1.Project Pictures

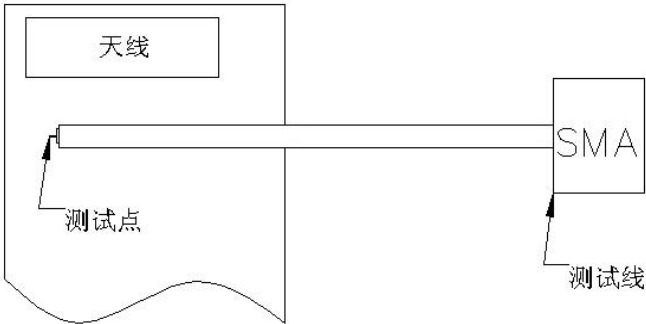


2. Test Fixture

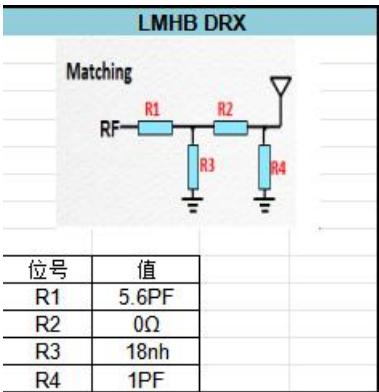
Purpose: To test the passive parameters of the antenna as accurately as possible.

Production method: The mobile phone fixture is a 50 ohm coaxial cable, one end of which is connected to the back end of the matching circuit of the mobile phone's main board (the front end of the RF test hole).

(One end of the cable is connected to the back end of the matching circuit of the main board of the mobile phone (the front end of the RF test hole) and the other end is connected to the SMA connector. The diagram is as follows:



3.Matching circuits



4. RF Test Data:

4.1 PI0 releases

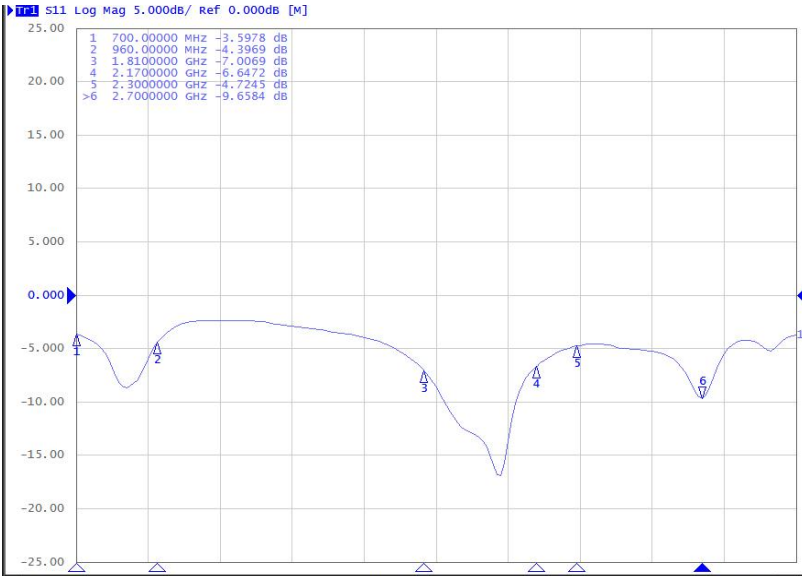
(radio) band	reproach	TRP	TIS
B1	Low	20.23	
	Mid	20.4	
	High	20.44	-97.51
B2	Low	20.31	
	Mid	20.12	
	High	20.2	-98.76
B3	Low	18.78	
	Mid	19.22	
	High	19.45	-97.16
B4	Low	19.14	
	Mid	19.42	
	High	19.68	-95.94
B5	Low	19.23	
	Mid	19.72	
	High	19.87	-98.64
B7	Low	19.22	
	Mid	19.24	
	High	18.98	-95.19
B8	Low	17.73	
	Mid	18.36	
	High	18.99	-96.48
B12	Low	15.88	
	Mid	16.38	
	High	16.59	-96.05
B13	Low		
	Mid	18.62	-94.5
	High		
B17	Low	16.28	
	Mid	16.24	
	High	16.24	-94.38
B20	Low	19.13	
	Mid	19.87	
	High	19.77	-96.42
B28	Low	16.42	
	Mid	16.54	

	High	17.2	-96.34
B66	Low	18.64	
	Mid	19.07	
	High	19.52	-94.58

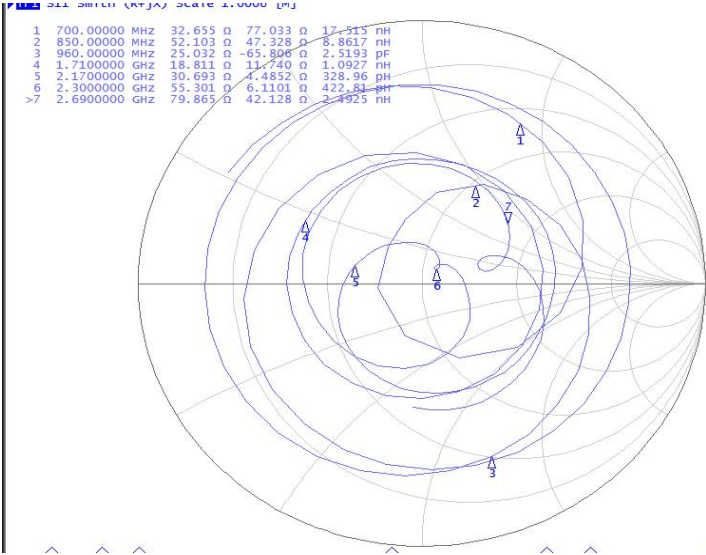
B34	Low	21	
	Mid	21.02	
	High	20.93	-98.4
B38	Low	18.87	
	Mid	18.83	
	High	18.83	-92.37
B39	Low	20.52	
	Mid	20.57	
	High	20.84	-95.08
B40	Low	19.93	
	Mid	19.98	
	High	19.66	-93.04
B41	Low	19.34	
	Mid	19.29	
	High	18.6	-92.32

f(MHz)	E (%)	E (dB)
1700	16%	-8.01
1720	16%	-7.89
1740	17%	-7.76
1760	19%	-7.31
1780	21%	-6.88
1800	22%	-6.61
1820	24%	-6.26
1840	26%	-5.87
1860	28%	-5.51
1880	31%	-5.15
1900	33%	-4.85
1920	34%	-4.66
1940	35%	-4.52
1960	35%	-4.54
1980	34%	-4.68
2000	33%	-4.84
2020	31%	-5.10
2040	29%	-5.41
2060	27%	-5.68
2080	26%	-5.85
2100	25%	-6.00
2120	25%	-6.07
2140	25%	-6.01
2160	25%	-6.00
2180	26%	-5.81
2200	26%	-5.78
2300	20%	-7.02
2320	19%	-7.33
2340	18%	-7.55
2360	16%	-7.84
2380	15%	-8.14
2400	14%	-8.47
2420	14%	-8.52
2440	14%	-8.64
2460	14%	-8.67
2480	14%	-8.62
2500	15%	-8.38
2520	15%	-8.30
2540	15%	-8.21
2560	17%	-7.74
2580	18%	-7.34
2600	20%	-7.09
2620	21%	-6.82
2640	22%	-6.59
2660	23%	-6.46
2680	24%	-6.24
2700	25%	-6.09
700	6%	-12.14
710	7%	-11.61
720	8%	-11.08
730	9%	-10.57
740	10%	-10.17
750	11%	-9.51
760	13%	-8.96
770	15%	-8.30
780	18%	-7.54
790	19%	-7.15
800	21%	-6.80
810	22%	-6.57
820	24%	-6.17
830	27%	-5.63
840	30%	-5.25
850	32%	-4.98
860	33%	-4.81
870	35%	-4.59
880	34%	-4.68
890	33%	-4.81
900	31%	-5.05
910	28%	-5.48
920	26%	-5.84
930	23%	-6.40
940	20%	-6.99
950	17%	-7.62
960	15%	-8.31

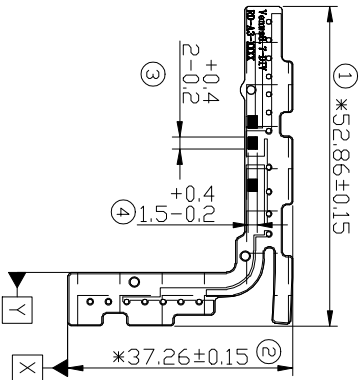
S11



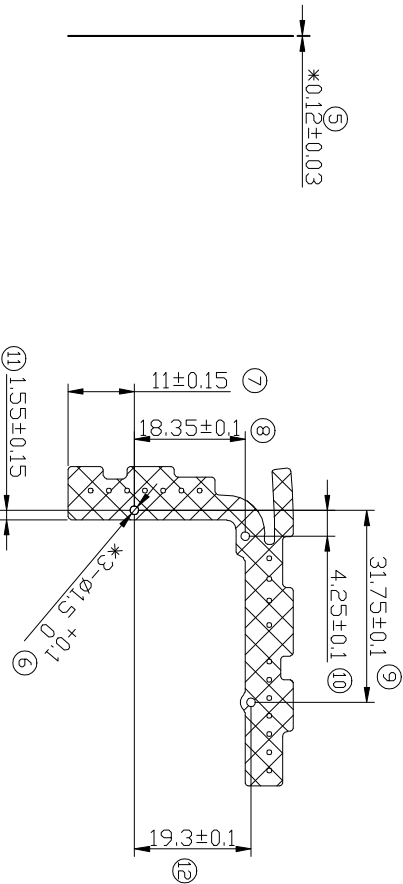
Smith



Version		Modifications		Modifier	Date
TA		Proto trial production drawings		Deng Ping	24.04.08
TB		PI0 trial production drawing TB version antenna routing modification		Deng Ping	24.04.20
TC		PPT trial production drawing TC version antenna routing modification		Deng Ping	24.05.21
RA		Mass production and release		Deng Ping	24.06.13



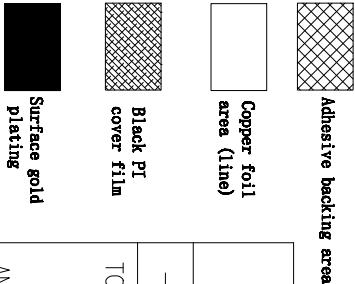
Front copper wire



Reverse adhesive backing

technical requirement

1. Single panel, black PI covering film on the surface, T=27.5um, white characters (10um~15um);
2. Use PI as the substrate, T=12.5um, half to half substrate;
3. Electrolytic copper, with a copper foil thickness of 0.5oz;
4. Use 3M 467 adhesive for backing;
5. The gold plating thickness in the gold-plated area is above 0.03um, and the nickel plating thickness is 3-8um;
6. Sizes marked with “*” are the key dimensions
7. The unmarked rounded corners are all 0.2, and the process edge is 0.2mm;
8. For unmarked dimensions, follow the 2D drawing, and for unmarked tolerances, follow the general tolerance table.
9. The material must meet the requirements of ROHS2.0+halogen-free+REACH, and there should be no oxidation phenomenon after 48 hours of salt spray test.
10. Packaging method: Full page half cut, layout should refer to the requirements of the shell factory, and the recommended weight for release film (transparent film) is $\leq 20g$.



Etheta Communication Technology (shenzhen) co. Ltd				
				
TOLERANCE X.X ±0.20 .XX ±0.10 .XXX±0.05 ANGULAR $\angle \pm 0.5^{\circ}$	PART NAME: RD022408-DIV-FPC	DATE:	24.06.13	
	PART NO: RD022408NB87-2 RD022408NB17-2	DRAWN:	Deng Ping	
	MATERIAL: ED	CHECKED:	Yu Jinsheng	
	FINISHING: Au/Ni	APPROVED:	Guan Wei	
UNIT: mm	COLOUR: black	SCALE: 1:1	TER: R:A	

Etheta Communication Technology (shenzhen) co.,Ltd

Final Shipment Inspection Record

Factory number	Customer Model	Product number	client version	Sample delivery date
RD022408-DIV	Venus8. 7-4G DIV Antenna	RD022408NB17-2	/	2024. 6. 19

Size (Unit:MM)

[illegible]

Preparation; Wan

Audit: Zhou Zheng

Focus Size CPK Report

Etheta Communication Technology (shenzhen) co.,Ltd

Factory number	RD022408-DIV			Client Name			Etheta		Customer Model		Venus8.7-4G DIV			material number	RD022408NB17-2		
Production cycle of our factory	2024.6.19																
Description of customer's material number	“Half to Half Reddened Adhesive Single Side Electrolytic 1/2milPI 1/2mil AD Black Overlay Film Adhesive backing 3M467 Electroless nickel gold: NI:3-8UM AU:0.03UM”							Number of tests		30pcs			Findings				
								quantity shipped		135pcs							
								Date of commencement of		2024.6.19			ACC				
								Test end date		2024.6.19							
Test Equipment/Equipment Accuracy				Quadratic/±0.02													
	Location1	Location2															
Spec (mm)	52.86	37.26															
positive tolerance	0.150	0.150															
negative tolerance	0.150	0.150															
USL (mm)	53.010	37.410															
LSL (mm)	52.710	37.110															
Max. (mm)	52.939	37.338															
Min. (mm)	52.861	37.263															
Mean (mm)	52.909	37.302															
Std Dev.	0.023	0.022															
Ca	0.327	0.279															
Cpu	1.454	1.627															
CpL	2.864	2.884															
Cp	2.159	2.255															
Cpk	1.454	1.627															
Judgement	ACC	ACC															
Seq 1	52.935	37.311															
Seq 2	52.903	37.303															
Seq 3	52.906	37.274															
Seq 4	52.937	37.287															
Seq 5	52.923	37.333															
Seq 6	52.921	37.282															
Seq 7	52.894	37.321															
Seq 8	52.900	37.292															
Seq 9	52.906	37.305															
Seq 10	52.933	37.326															
Seq 11	52.937	37.268															
Seq 12	52.889	37.270															
Seq 13	52.878	37.295															
Seq 14	52.909	37.338															
Seq 15	52.869	37.290															
Seq 16	52.937	37.263															
Seq 17	52.936	37.336															
Seq 18	52.878	37.312															
Seq 19	52.880	37.333															
Seq 20	52.872	37.287															
Seq 21	52.922	37.307															
Seq 22	52.922	37.287															
Seq 23	52.890	37.270															
Seq 24	52.927	37.324															
Seq 25	52.861	37.324															
Seq 26	52.917	37.289															
Seq 27	52.909	37.294															
Seq 28	52.924	37.293															
Seq 29	52.913	37.284															
Seq 30	52.939	37.325															
Seq 31	52.932	37.307															
Seq 32	52.889	37.328															

Nickel and Gold Thickness Measurement Report

Customer	Yidao	DateCode	/	PartNO	Venus8.7-4G DIV
CJ Ppart NO	RD022408-DIV-FPC	SampleSiae	10PCS	DATE	2024.6.19
Requiremment	NickelThickness	GoldThickness		Remark	
	3-8um	>0.03um			
1	5.184	0.045			
2	5.696	0.056			
3	5.275	0.059			
4	5.333	0.055			
5	5.309	0.040			
6	5.267	0.046			
7	5.365	0.048			
8	5.257	0.042			
9	5.197	0.045			
10	5.420	0.040			
MAX	5.696	0.059			
MIN	5.184	0.040			
AVG	5.349	0.048			
Disposition	ACC	ACC			

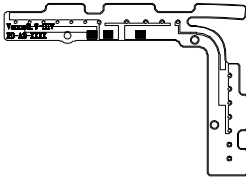
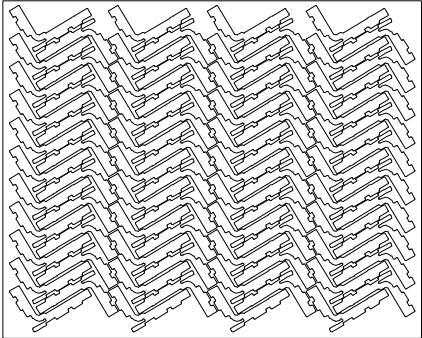
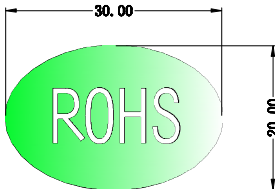
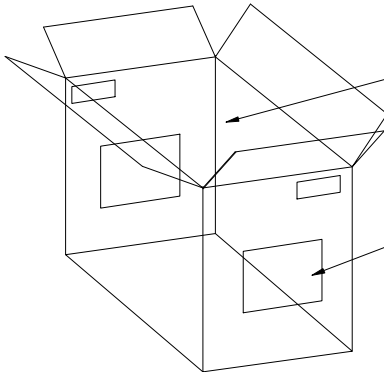
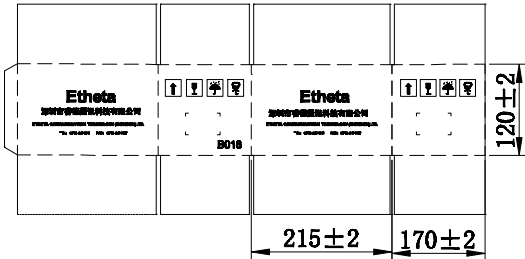
Disposition: ☒Accept ☐Reject

Preparation; Wang Qin

Audit: Zhou Zheng

Etheta Communication Technology (shenzhen) co.,Ltd

Packaging Practice

Customer:TCL		Package Name: Venus8.7-4G DIV		Packaging code: RD022408NB87-2		Packaging Version:R:A																													
Package material details	No.	name of product	Specification	dosage	Packaging product illustration																														
		Semi-Cut Packaging	300*195mm																																
	C009	Inner box labelling	80*60mm	1/1000																															
	B018	Carton Boxes	325*215*210mm	1/10000																															
	C001	ROHS labelling	30*20mm	1/10000																															
operating procedure	1. Prepare the required packages and place them in a position favourable to work. 2. Packed in cartons (B018) according to RD022408; half-cut. 260*327=84PCS/sheet*119+4PCS=10000PCS Each PE bag is labelled with C001(ROHS) in the upper right corner. 3. 10,000PCS per carton. After filling the carton, seal the carton with transparent tape and stick a label on one side of the carton, and fill in the total quantity on the C009 label. 4. Require the packer to carefully review the quantity of each bag before operation to prevent short shipment.				delivery label	现品票标签 <table><tr><td>客 户</td><td colspan="3"></td></tr><tr><td>客户P/O</td><td></td><td>客户P/N</td><td></td></tr><tr><td>规格型号</td><td></td><td>物料名称</td><td></td></tr><tr><td>物料编码</td><td></td><td>数 量</td><td></td></tr><tr><td>出厂日期</td><td></td><td>批 次</td><td></td></tr><tr><td>供 应 商</td><td colspan="3">深圳市睿德通讯科技有限公司</td></tr><tr><td>备注: (空)</td><td colspan="3">品质检验:</td></tr></table>		客 户				客户P/O		客户P/N		规格型号		物料名称		物料编码		数 量		出厂日期		批 次		供 应 商	深圳市睿德通讯科技有限公司			备注: (空)	品质检验:		
								客 户																											
客户P/O		客户P/N																																	
规格型号		物料名称																																	
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供 应 商	深圳市睿德通讯科技有限公司																																		
备注: (空)	品质检验:																																		
caveat	1. Operators should wear gloves. 2. Pay attention to the number of boxes, not more, less. The last number of boxes should be specified(i.e. green 'end number' labels on the top left corner of both sides of the carton to differentiate). 3. Cartons should not be stacked too high (within three layers) to prevent deformation under heavy pressure.																																		
illustrate	Half-cut package size: 260*327=84PCS/sheet			ROHS labelling:																															
																																			
	Carton size:																																		
		Arrange 1 set in each box. Total 10000PCS.																																	
		outsized labelling																																	
Criteria		Audit		Production		Date																													
Ma Chao		Liu Fei Ming		Liu Qi Fu		2024. 06. 19																													

Salt spray test report

our customers	Yidao	Surface treatment type	/
model number	Venus8.7-4G DIV	sample size	5PCS
Test standard: APC-TM-650			
Salt Spray Test Specifications	NSS Neutral Salt Spray Test	solution value	5%NaCl
atmospheric pressure	1Mpa	Temperature of Salt Spray Chamber	47℃
Spraying method	contiguity	Salt spray deposition number (h.80cm)	2ml
Hydrochloric Acid Ingredients	NSS	Material	FPC
Remarks: Commonly used salt spray test methods are: NSS neutral salt spray test: AASS Acidic Salt Spray Test (add glacial acid to NSS neutral salt spray test to adjust PH=3.0 3.3) CASS ketoacid accelerated test (add 0.26g/L copper chloride to NSS neutral salt spray test solution)			
Test results:			
Spray start time	2024.6.13	Test end time	2024.6.15
Test observation date	Test Observation Time	observation of phenomena	
2024.6.13	16:25	The boards are checked and entered into the lab without any abnormalities	
2024.6.14	16:25	Continuous spraying for 24h without any abnormality	
2024.6.15	16:25	Continuous spraying for 48h without any abnormality	
			in the end
			PASS

Preparation; Wang Qin

Audit: Zhou Zheng

Harmful material questionnaire

No.	Parts Name	Part Number	Vendor Part Number	Disassembly Unit/component description (e.g. Resistor, Capacitor, Inductor)	Substance Name (e.g. Copper (Cu))	CAS No	Content (%)	Lab analysis	Test report No	Test report date	*The test items of the report (unit: ppm)																ICP Data	MSDS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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1				Half to half adhesive of copper electrolytic	Polyimide film Copper foil Halogen-free adhesive of epoxy resin Bisphenol-A type rubber Curing agent PI Film Bisphenol-A type epoxy resin ATH	25038-81-7 7440-50-8 Trade secret 25085-99-8 9003-18-3 80-08-0 62929-02-6 61788-97-4 21645-51-2	13.00% 55.00% 16.00% 6.45% 8.25% 1.29% 44.50% 22.59% 8.87%	CTI CTI CTI CTI CTI SGS SGS SGS	A2240082746101006E	2024.3.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND