



PRODUCT SPECIFICATION

TITLE

RECTANGULAR STANDARD NFC ANTENNA

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DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
PS-1462360001	Kang Cheng 2021/03/17	Cooper Zhou 2021/03/17	Ma Horace 2021/03/17



PRODUCT SPECIFICATION

RECTANGULAR STANDARD NFC ANTENNA

1.0 SCOPE

This Product Specification Covers the Mechanical, Electrical And Environmental Performances Specification For Rectangular Standard NFC Antenna.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER (S)

Product name: Rectangular Standard NFC Antenna
Series Number: 146236

2.2 DESCRIPTION

Series 146236 is rectangular, flexible, NFC (Near Field Communication) antennas for use in applications like payment system, boarding pass, tagging reader, access control system...

2.3 FEATURES

- NFC Five Shape Sizes
- Cable: AWG28 twisted pair
- Connector: Wire to board (Molex P/N 505565-0201), mate with header 505567 or 505568.
- The position of ferrite paste can be changed.
- Cable and connector can be customized
- RoHS Compliant

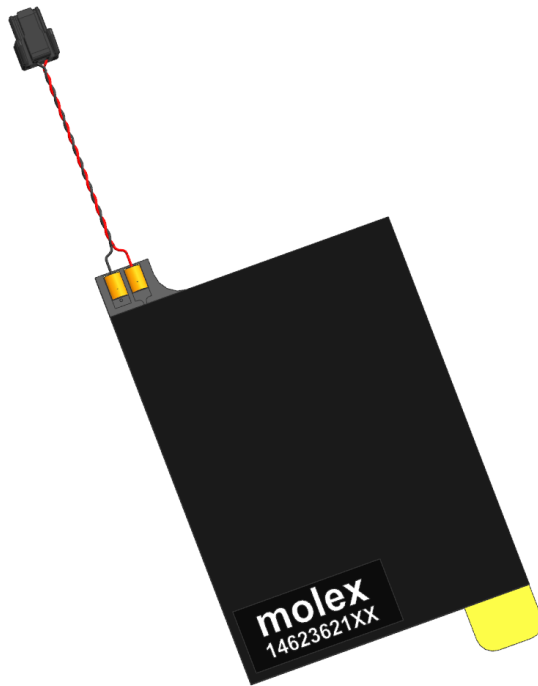


Molex 14623600XX RECTANGLE STANDARD NFC MODULE 3D VIEW

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Molex 1462360XXX RECTANGLE STANDARD NFC WITH FERRITE MODULE 3D VIEW



Molex 14623621XX RECTANGLE STANDARD NFC WITH AWG28 WIRE MODULE 3D VIEW

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2.4 DESCRIPTION OF MOLEX MATERIAL P/N

146236 **XXXX**

Different product sizes correspond to different tail numbers.

***Refer to the next page for details**

MATERIAL P/N	DESCRIPTION	A	B
1462360051	Rectangular NFC antenna without ferrite	15	15
1462360001	Rectangular NFC antenna without ferrite	15	25
1462360011	Rectangular NFC antenna without ferrite	23	27.3
1462360021	Rectangular NFC antenna without ferrite	34.39	46.1
1462360031	Rectangular NFC antenna without ferrite	45	55
1462360151	Rectangular NFC antenna with ferrite	15	15
1462360101	Rectangular NFC antenna with ferrite	15	25
1462360111	Rectangular NFC antenna with ferrite	23	27.3
1462360121	Rectangular NFC antenna with ferrite	34.39	46.1
1462360131	Rectangular NFC antenna with ferrite	45	55
1462362151	NFC coil with AWG28 wire 102mm and connector	15	15
1462362102	NFC coil with AWG28 wire 102mm and connector	15	25
1462362111	NFC coil with AWG28 wire 102mm and connector	23	27.3
1462362122	NFC coil with AWG28 wire 102mm and connector	34.39	46.1
1462362131	NFC coil with AWG28 wire 102mm and connector	45	55

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2.5 PRODUCT STRUCTURE INFORMATION

P/N	146236 OXXX
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NFC ANTENNA WITH FERRITE
THICKNESS 0.27+/-0.07MM

NFC ANTENNA WITHOUT FERRITE
THICKNESS 0.17+/-0.05MM

Ferrite

FPC

STACK UP

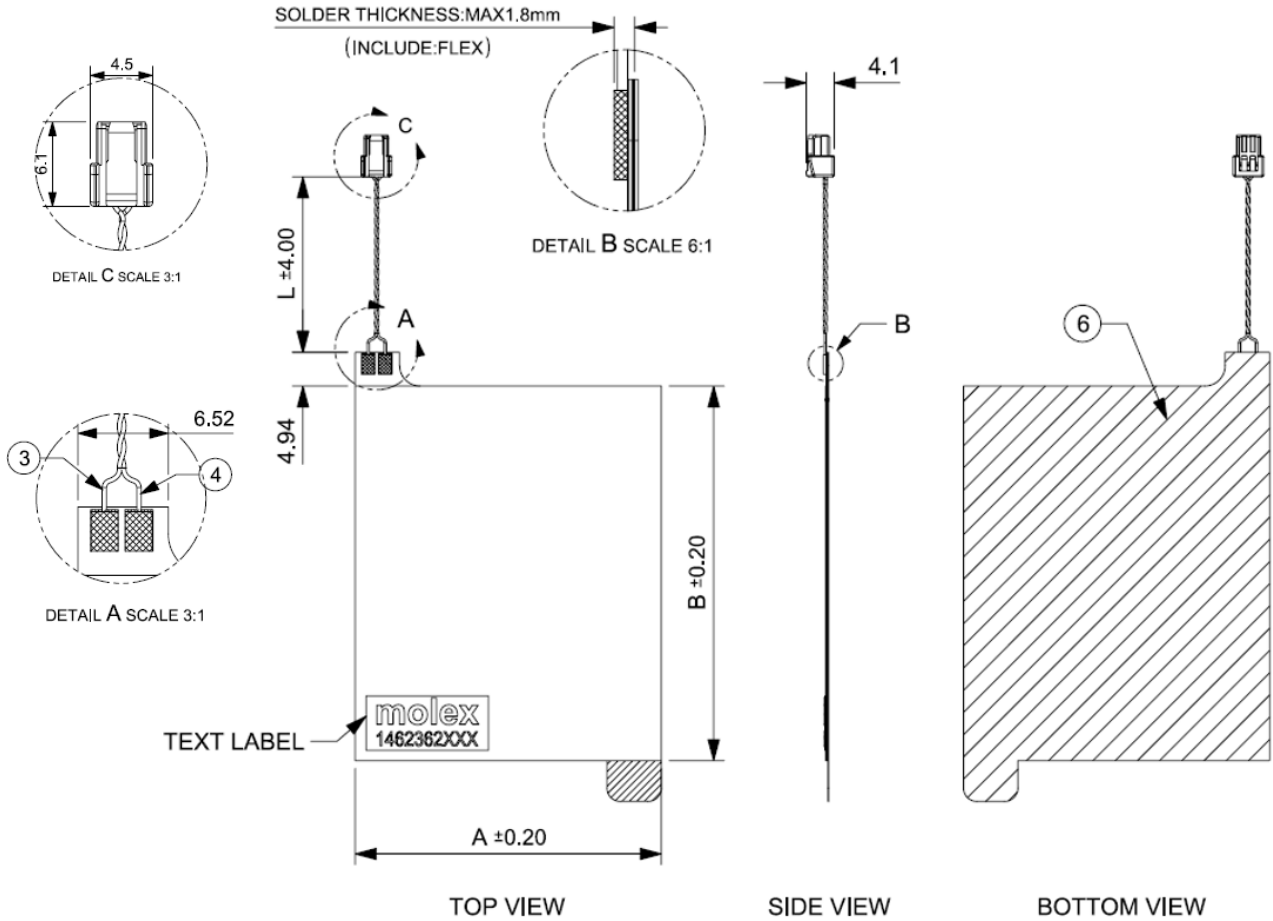
NOTES:

1. NFC SOLDER MASK COLOR:BLUCK.
2. FERRITE PET COLOR:BLUCK.
3. ADHESIVE(NFC):3M 9077 (50um).
4. MOLEX MATTERIAL P/N SEE TABLE A.

MATERIAL P/N	DESCRIPTION	A	B	PRINT TEXT
1462360051	RECTANGLE NFC ANTENNA WITHOUT FERRITE	15	15	molex 1462360051
1462360001	RECTANGLE NFC ANTENNA WITHOUT FERRITE	15	25	molex 1462360001
1462360011	RECTANGLE NFC ANTENNA WITHOUT FERRITE	23	27.3	molex 1462360011
1462360021	RECTANGLE NFC ANTENNA WITHOUT FERRITE	34.39	46.1	molex 1462360021
1462360031	RECTANGLE NFC ANTENNA WITHOUT FERRITE	45	55	molex 1462360031
1462360151	RECTANGLE NFC ANTENNA WITH FERRITE	15	15	molex 1462360151
1462360101	RECTANGLE NFC ANTENNA WITH FERRITE	15	25	molex 1462360101
1462360111	RECTANGLE NFC ANTENNA WITH FERRITE	23	27.3	molex 1462360111
1462360121	RECTANGLE NFC ANTENNA WITH FERRITE	34.39	46.1	molex 1462360121
1462360131	RECTANGLE NFC ANTENNA WITH FERRITE	45	55	molex 1462360131

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P/N 146236 [2XXX](#)



NOTES:

- NFC ANTENNA THICKNESS 0.17±0.05mm.
NFC ANTENNA WITH FERRITE THICKNESS 0.27±0.07mm
- CABLE INFORMATION: WIRE RANGE: 28 AWG;
(MODEL: UL3302#28-7/0.13TA OD=0.7)
- CONNECTOR MATERIAL:
HOUSINGS (MOLEX P/N: 505565-0201)
TERMINALS (MOLEX P/N: 505431-1000)
- NFC ADHESIVE: 3M 9077, THICKNESS: 50um.

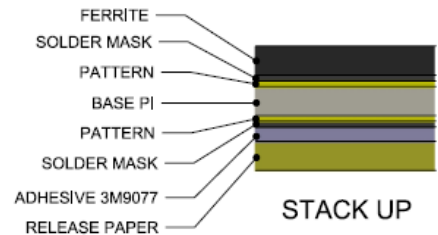


TABLE A

MATERIAL P/N	A	B	"L" LENGTH	PRINT TEXT LABEL
1462362151	15	15	102mm	molex 1462362151
1462362102	15	25	102mm	molex 1462362102
1462362111	23	27.3	102mm	molex 1462362111
1462362122	34.39	46.10	102 mm	molex 1462362122
1462362131	45	55	102 mm	molex 1462362131

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DOCUMENT NUMBER:

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PRODUCT SPECIFICATION

3.0 APPLICABLE DOCUMENTS

DOCUMENT	NUMBER	DESCRIPTION
Sale Drawing (SD)	SD-1462360001	Rectangle standard NFC
	SD-1462362131	NFC coil with AWG28 wire and connector
Application Specification (AS)	AS-1462360001	Antenna Application and surrounding
Packing Drawing (PK)	PK-1462360001	Product packaging specifications
	PK-1462362131	

4.0 GENERAL SPECIFICATION

Product name	Rectangular Standard NFC Antenna		
Part number	146236		
NFC with ferrite thickness	0.27mm		
NFC without ferrite thickness	0.17mm		
Operation temperature	-40°C to 85°C		
Storage temperature	-40°C to 85°C		
Antenna type	Flex		
Cable type	Twisted pair		
User Implementation type	Adhesive 3M9077		
Single weight			
1462360001	0.121g	1462360101	0.315g
1462360011	0.189g	1462360111	0.499g
1462360021	0.44g	1462360121	1.27g
1462360031	0.671g	1462360131	0.962g
1462360051	0.083g	1462360151	0.198g
1462362102	1.82g	1462362111	2.011g
1462362122	2.161g	1462362131	2.431g
1462362151	1.088g		

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5.0 ANTENNA SPECIFICATION

Part No.	1462360001	1462360011	1462360021	1462360031	1462360051
Antenna Type	Near-field coupling				
Operating Frequency	13.56MHz				
La	2.0uH	2.0uH	2.6uH	2.4uH	1.4uH
Ra	3.4Ω	3.4Ω	3.2Ω	3.1Ω	2.3Ω
Ca	1.1pF	1.4 pF	2.3 pF	2.7 pF	0.9 pF
Fra	108.0MHz	96.9MHz	66.6MHz	62.7MHz	143.2MHz
Rp	41.5kΩ	28.0kΩ	18.9kΩ	14.8kΩ	50.0kΩ
Q	50.4	50.9	68.4	66.8	51.1

Part No.	1462360101	1462360111	1462360121	1462360131	1462360151
Material	With Ferrite				
Antenna Type	Near-field coupling				
Operating Frequency	13.56MHz				
La	3.1uH	3.0uH	3.8uH	3.5uH	2.1uH
Ra	5.1Ω	5.2Ω	6.2Ω	5.7Ω	3.6Ω
Ca	1.3 pF	1.8 pF	3.0 pF	3.7 pF	1.0 pF
Fra.	80.1MHz	70.7MHz	48.7MHz	45.8MHz	109.0MHz
Rp	12.7kΩ	12.4kΩ	10.3kΩ	10.8kΩ	10.0kΩ
Q	51.8	48.5	52.4	52.5	50.4

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Part No.	1462362102	1462362111	1462362122	1462362131	1462362151
Material	With Ferrite and twisted pair				
Antenna Type	Near-field coupling				
Operating Frequency	13.56MHz				
La	3.3uH	3.3uH	4.2uH	4.1uH	2.4uH
Ra	6.0Ω	5.3Ω	7.8Ω	7.8Ω	5.1Ω
Ca	4.9 pF	5.3 pF	6.0 pF	7.9 pF	5.2 pF
Fra	41.8MHz	40.2MHz	34.3MHz	31.0MHz	46.8MHz
Rp	11.8kΩ	10.9kΩ	11.8kΩ	10.4kΩ	8.8kΩ
Q	46.8	53.5	46.0	44.2	40.6

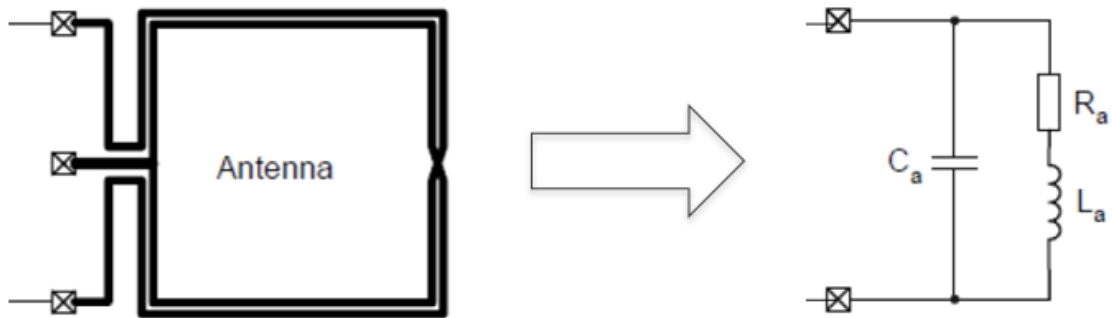


FIGURE4.2 ANTENNA EQUIVALENT CIRCUIT

Fra: Self-resonance frequency of the antenna
 Rp: Parallel resistance @ self-resonance frequency
 Q: Quality factor

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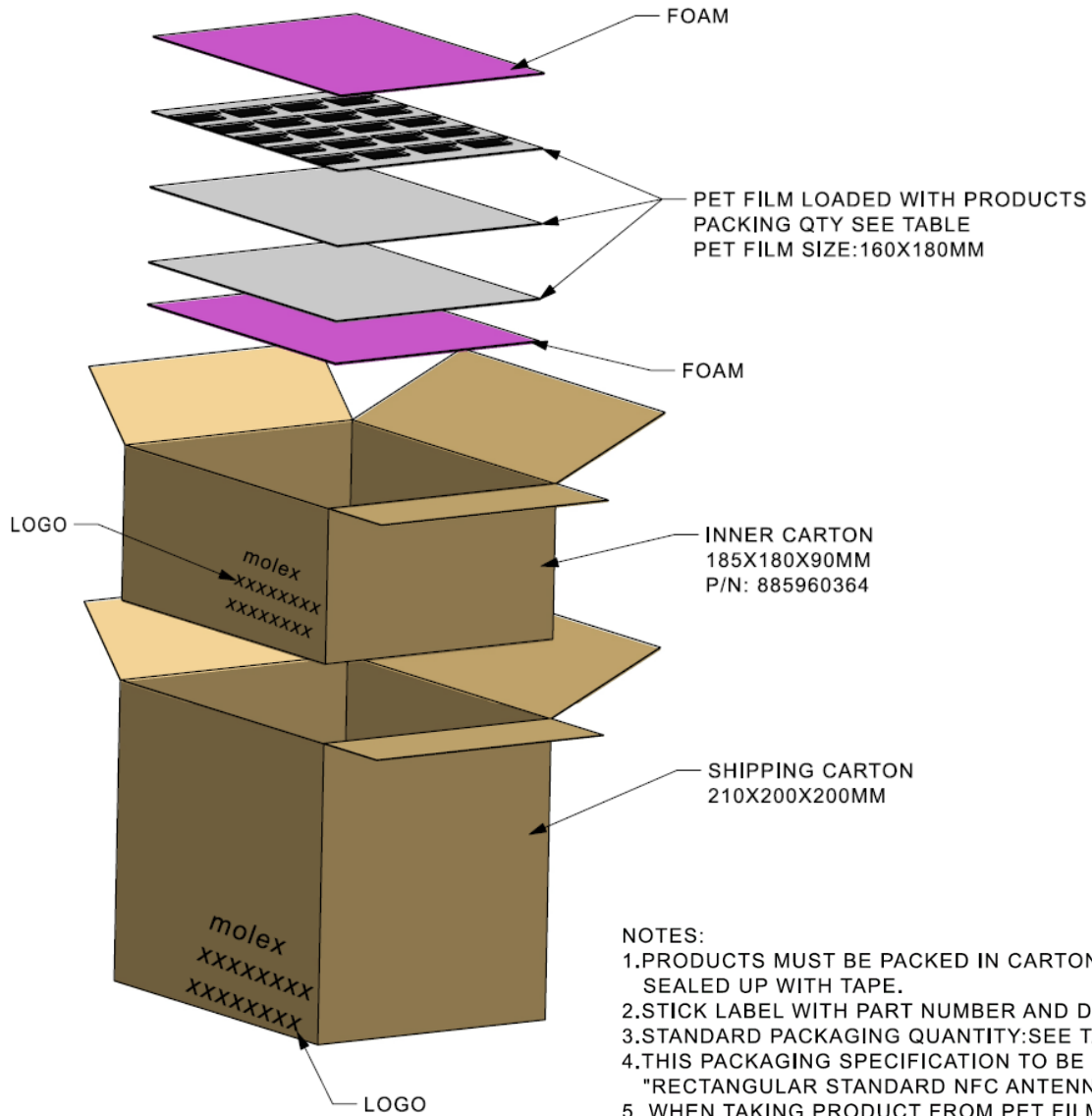
PRODUCT SPECIFICATION

6.0 ENVIRONMENTAL SPECIFICATION

DESCRIPTION	SPECIFICATION
High Temperature	<ol style="list-style-type: none"> 1. Temperature:85°C (±2°C), Time:240H 2. No cosmetic problem (No soldering problem; No adhesion problem of glue.
Low Temperature	<ol style="list-style-type: none"> 1. Temperature:-40°C (±3°C), Time:240H 2. No cosmetic problem (No soldering problem; No adhesion problem of glue) .
High Humidity & High Temperature	<ol style="list-style-type: none"> 1. Temperature:85°C (±2°C), Humidity:85%, Time:96H 2. No cosmetic problem (No soldering problem; No adhesion problem of glue) .
Temperature Cycling	<ol style="list-style-type: none"> 1. Mate antenna and subject to the following conditions for 48 cycles. 1 cycle of: a. - 40±3°C 30 minutes b. + 85±2°C 30 minutes Shift time: Within 5 minutes 2. No cosmetic problem (No soldering problem; No adhesion problem of glue) .
Salt Mist Test	<ol style="list-style-type: none"> 1. NaCl solution Concentration: 5±1 % Spray time: 48±4 hours Ambient temperature: 35±2 °C 2. No visible corrosion. 3. Discoloration accepted.
Pull Test	<ol style="list-style-type: none"> 1. Stick the NFC on a metal board, Cable keeps parallel to flex plane. pull cable in horizontal direction. 2. Test speed: 10-15 mm/min. 3. Pull force >8N

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7.0 PACKING



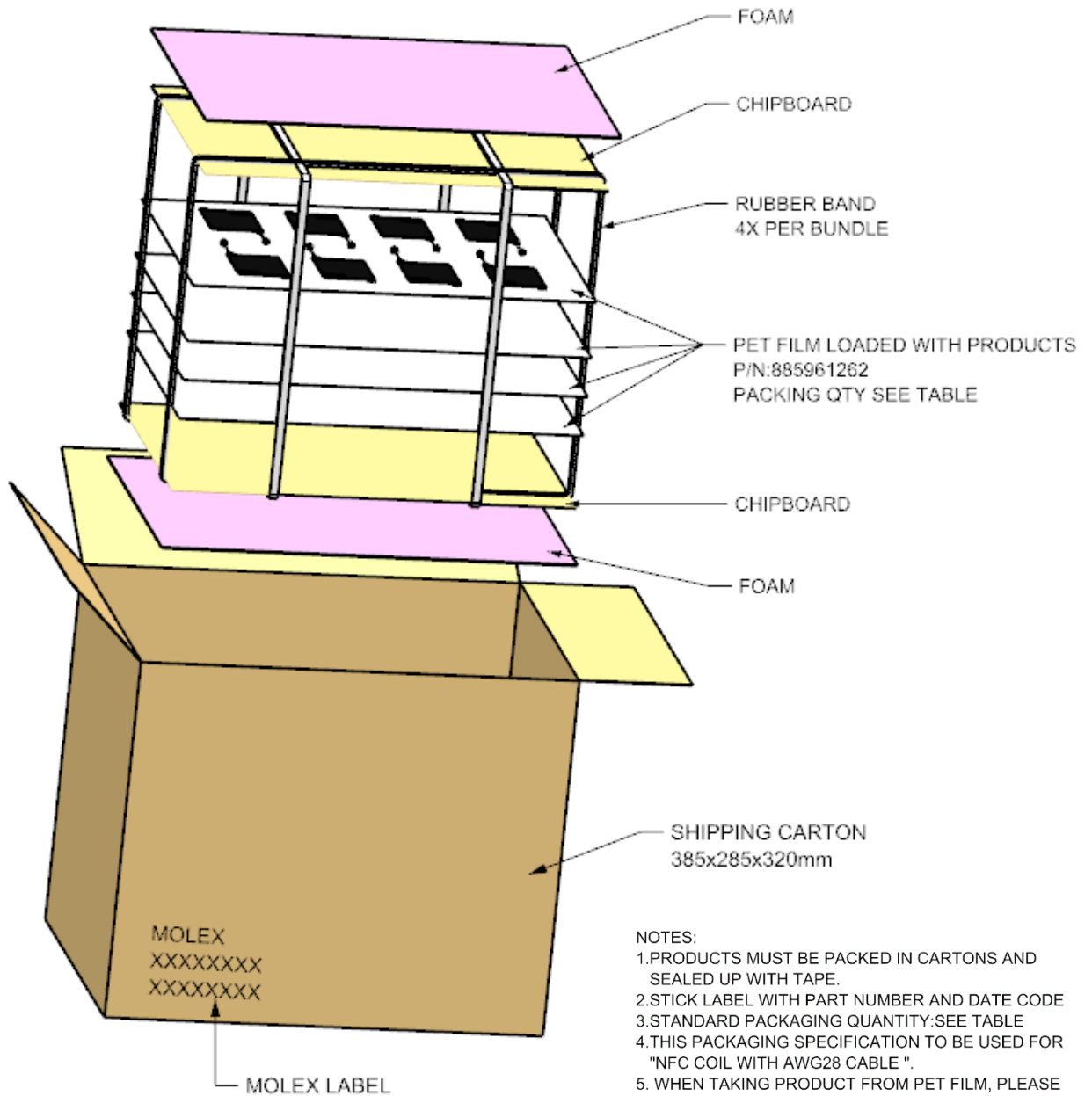
- NOTES:
- 1.PRODUCTS MUST BE PACKED IN CARTONS AND SEALED UP WITH TAPE.
 - 2.STICK LABEL WITH PART NUMBER AND DATE CODE
 - 3.STANDARD PACKAGING QUANTITY:SEE TABLE
 - 4.THIS PACKAGING SPECIFICATION TO BE USED FOR "RECTANGULAR STANDARD NFC ANTENNA".
 5. WHEN TAKING PRODUCT FROM PET FILM, PLEASE REMOVE THE COVER TAPE FIRST, THEN PICK UP .

Part Number	PCS/FILM	FILM/INNER CARTON	INNER CARTON/SHIPPING CARTON	QTY/CARTON(SPQ)
1462360001	20	100	2	4000 PCS
1462360011	20	100	2	4000 PCS
1462360021	9	100	2	1800 PCS
1462360031	6	100	2	1200 PCS
1462360051	20	100	2	4000 PCS
1462360101	20	100	2	4000 PCS
1462360111	20	100	2	4000 PCS
1462360121	9	100	2	1800 PCS
1462360131	6	100	2	1200 PCS
1462360151	20	100	2	4000 PCS

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PART NUMBER	PCS/FILM	FILMS/BUNDLE	BUNDLES/CARTON	QTY/CARTON
1462362102	14	40	3	1680PCS
1462362111	12	40	3	1440PCS
1462362122	10	40	3	1200PCS
1462362131	8	36	5	1440PCS
1462362151	14	40	3	1680PCS



- NOTES:
- 1.PRODUCTS MUST BE PACKED IN CARTONS AND SEALED UP WITH TAPE.
 - 2.STICK LABEL WITH PART NUMBER AND DATE CODE
 - 3.STANDARD PACKAGING QUANTITY:SEE TABLE
 - 4.THIS PACKAGING SPECIFICATION TO BE USED FOR "NFC COIL WITH AWG28 CABLE".
 5. WHEN TAKING PRODUCT FROM PET FILM, PLEASE REMOVE THE COVER TAPE FIRST, THEN PICK UP THE PART FROM FLEX NOT THE CABLE, TO AVOID SOLDER JOINT DAMAGE.

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REV	DATE	DESCRIPTION
B3	2021/05/06	Updated 4.0 General Specification

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