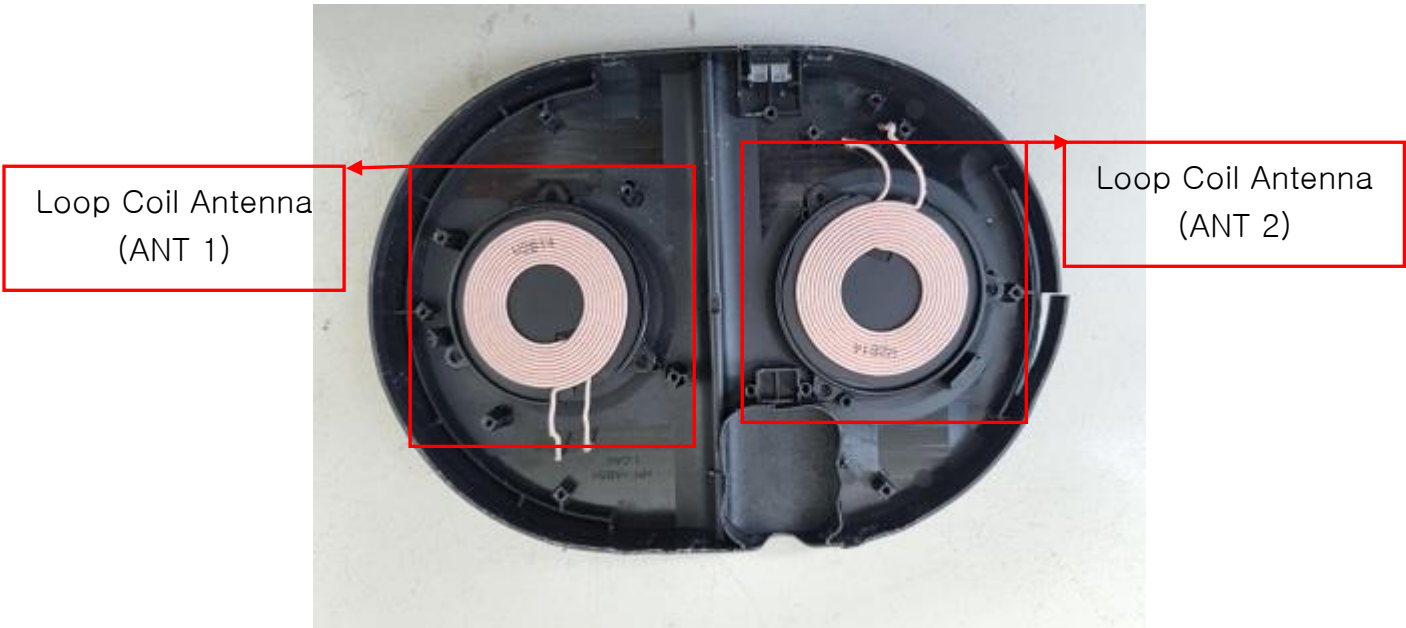




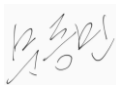

# Antenna Information

Item	Contents
Antenna Type	Loop Coil Antenna
Antenna peak gain	N/A
Manufacturer / Model name	WITS / H03010161A
Test laboratory	N/A



Customer	Wits	Date	2022. 06. 07.
		Version	Version 00

# Product Spec. & Approval Sheet

Product Name	Tx Module for Wireless Charger				Product Picture 
Part Number	H03010161A				
Application Model	WWP-T2200 Coil Block				
Application Model	ALMUS Single Coil Block				
Specification	Ls(Inductance)		6.3uH±10% (@1V, 100kHz)		
	Rs (Resistance)		42.0mΩ±20% (@1V,100kHz)		
	Block	Width	48.8±0.5mm		
		Length	49.5±0.5mm		
	Ass'Y	Lead Length	59.6±1.0mm <b>(From center of coil to end of lead)</b>		
Thickness		Max 2.6mm <b>(Release paper included)</b>			
Customer		Drawing	Reviewer	Reviewer 2	Approver
Wits	Department / Name				
	Data				
	Sign				
Supplier		Drawing	Reviewer	Approver	
Wits	Department / Name	Development Team SJ Kwon	Development Team D.M Moon	Development Team E.G Jung	
	Data	2022. 06. 07.	2022. 06. 07.	2022. 06. 07.	
	Sign				

MAKER		WITS CO., LTD	TEL	070-4925-9512
ADD	H.Q	35, hyungje-ro Namsa-myeon, Choin-gu, Yongin-si, Gyeonggi-do		
	Research Center	Floor 3, block B9, Maeyoung-ro, Yongtong-gu, Suwon-si, Gyeonggi-do		
	Factroy	LOT CN7, DIEM THUY IP(A AREA), HONG TIEN COMMUNE, PHO YEN TOWN, THAI NGUYEN PROVINCE, VIETNAM 24709		

35, Hyungje-ro Namsa-myeon, Choin-gu, Yongin-si, Gyeonggi-do  
TEL : 070-4925-9512 , FAX : 070-4925-9699

## Contents

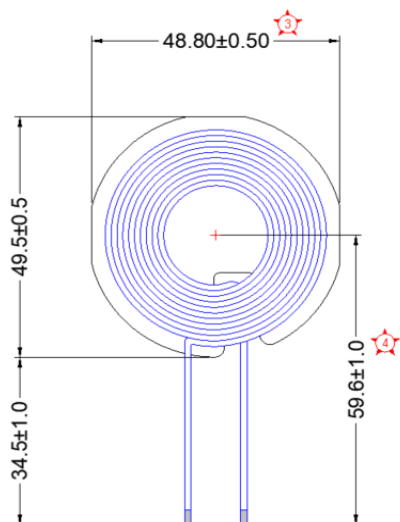
1. Revision history
2. Product Specification
  - 2.1. Product Drawing
  - 2.2. Electrical Spec.
  - 2.3. Coil Drawing
  - 2.4. Winding Specification
  - 2.5. Lot. Notation
  - 2.6 Manufacturing Area
  - 2.7 Part List
  - 2.8 Raw Material Drawing
    - 2.8.1 Coil Drawing
    - 2.8.2 Ferrite Sheet Drawing
3. Manufacturing Process & Management Chart
4. Appearance Limit
5. Measuring Instrument List
6. Reliability test warranty conditions
7. Storage



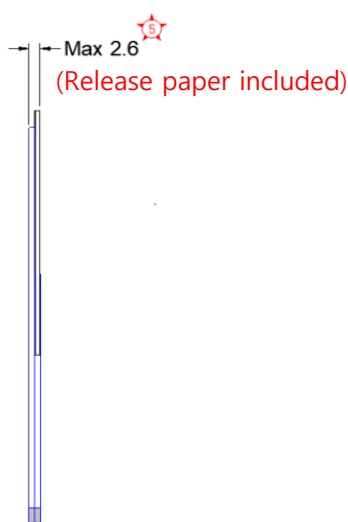
2. Product Specification

2. 1 Product Drawing

- Top view



- Side view



- Pic view

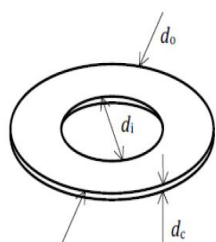


2. 2 Electrical Spec. < CTQ >

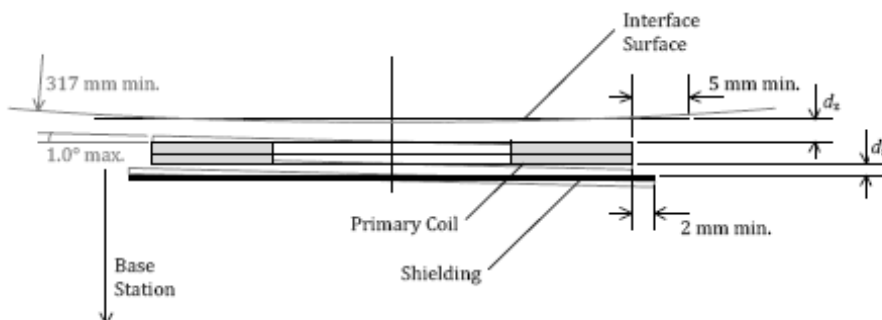
NO.	항목	규격
1	<del>CTQ</del> Ls (Inductance)	6.3uH±10%
2	<del>CTQ</del> Rs (Resistance)	42mΩ±20%

- LCR Meter - 1) Tong Hui TH2837LX (@ 1V, 100kHz)
- 2) HIOKI LCR Meter (@ 1V, 100kHz)

2. 3 Coil Drawing



Parameter	Symbol	Value
Outer Diameter	$d_o$	44.0±1.5mm
Inner Diameter	$d_i$	20.5±0.5mm
Thickness	$d_c$	2.1±0.5mm
Number of Turns	N	10
Number of Layers	-	1Layer or 2Layer / Full Overlap



Parameter	Symbol	Value
Pad surface / coil distance	$d_z$	1.75~2.5mm
Shielding agent/coil distance	$d_s$	1.0mm under
Shielding agent thickness	-	0.5mm upper

Part Number : H03010161A  
 Application Model : WWP-T2200 Coil Block



2. 4 Winding Specification

No	Terminal No.		Winding		Winding Method
	Start	Finish	Wire	Turns	
1	1	1	USTC 0.08 Φ × 105	10	STANDARD SOLENOID (Winding Direction : Counterclockwise)

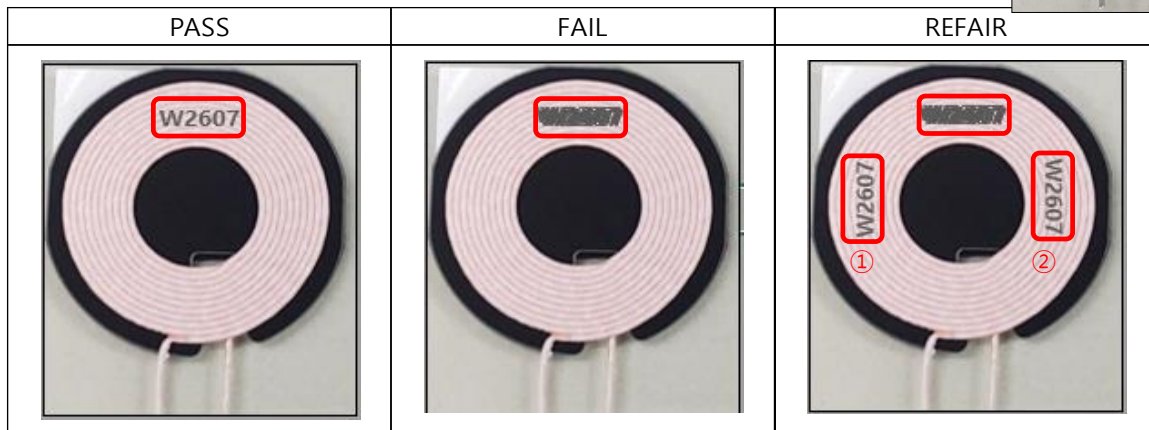
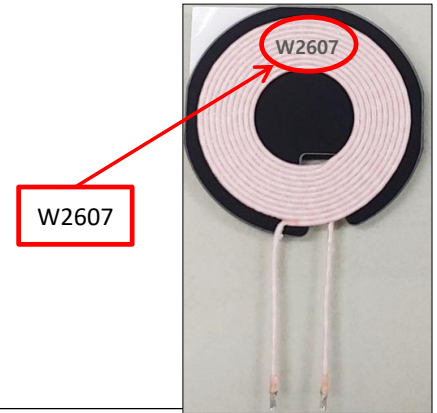
\* Wire Temp. Class : 155°C

\* Solder Thermal Resistance : 380±5°C (Time : 3 sec)

2. 5 LOT NUMBER Notation

Lot : W 2 6 07  
 (1) (2) (3) (4)

- (1) Wits
- (2) Production year : 0 ~ 9
- (3) Production Month : 1 ~ 9, A, B, C (Oct : A, Nov : B, Dec : C)
- (4) Production Day : 01~31



2.6 Manufacturing Site

(1) Wits(Vietnam Factory) : LOT CN7, DIEM THUY IP(A AREA), HONG TIEN COMMUNE,  
 PHO YEN TOWN, THAI NGUYEN PROVINCE, VIETNAM 24709


2.7 Parts List

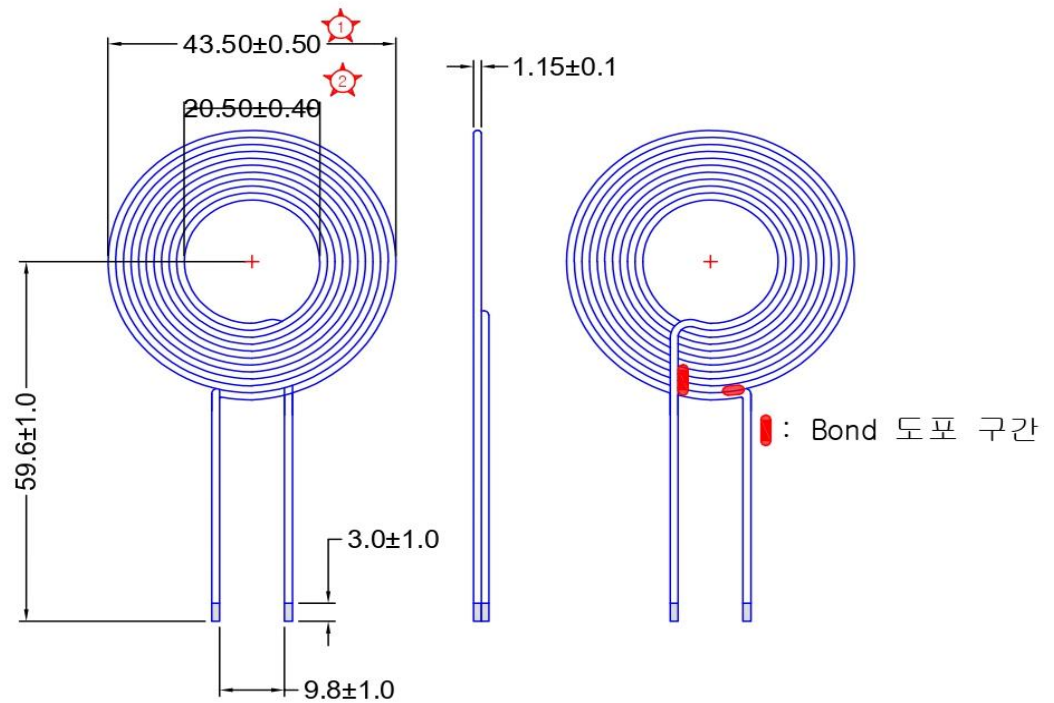
No.	Code	Product Name	Specification	Vender	Q'ty	Hazardous Substances
1	M01730036A	Ferrite block	48.8 * 49.5 * 1.0T(Tape포함)	EMI/ MOSTA	1EA	PASS
2	H03010162A	Coil Unit	A11 Coil CW_시계, 1Layer 10turns	Wits	1EA	PASS
3	M01020018A	Bond	AF04	BOSTIC	0.02g	PASS

2. 8 Raw Material Drawing  
 2. 8. 1 Coil Drawing

CHANGED CONTENT				
Rev	Content	Drafted	Approved	Date.
00	INITIAL RELEASE	S.J Kwon	E.G Jung	2022.05.24

※ NOTE

1. Wire : USTC Wire 0.08 \* 105 strands(2UEW)
2. Turns : 10 Turns
3. Coil Thickness :  $1.15 \pm 0.1\text{mm}$
4. 측정 위치 : Coil Outer - 정형 제품 기준 최 외곽을 측정  
 Coil Thickness - 권선된 Coil의 2 Layer 측을 측정
5.  : CPK



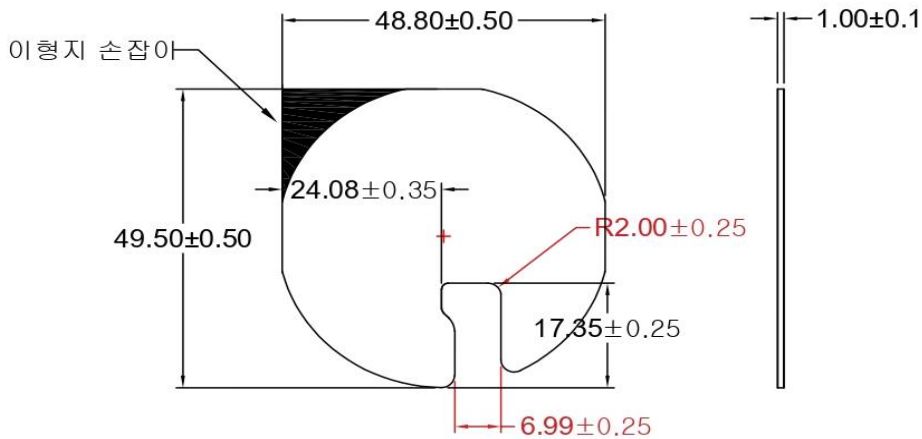
Part List			Data 2022. 05. 24.			WITS		
ERP Code	SPEC	Q'Ty	Approved Department					
			Approver			Single Coil		
			Reviewer					
			Drafter			Drawing Size		
			Department			Drawing Number		
Stock Number			Scale 1/1			A4		
			Unit mm			1 of 1		
			Weight					

2. 8 Raw Material Drawing  
 2. 8. 2 Ferrite Sheet Drawing

CHANGED CONTENT				
Rev	Content	Drafted	Approved	Date.
00	INITIAL RELEASE	S.J Kwon	E.G Jung	2022.05.24

※ NOTE

1. 재질 : Mn-Zn
2. Tape : Top - 단면 Block 무광(0.05mmT) / Bot - 양면 Tape(0.05mmT)
3. Thickness : 1.0 ± 0.1mm
4. 이형지 Color : White



Part List			Data 2022. 05. 24.			WITS	
ERP Code	SPEC	Q'Ty	Approved Department				
			Approver			Ferrite	
			Reviewer				
			Drafter				
Stock Number			Department			Drawing Size	Drawing Number
			Scale 1/1	Unit mm	Weight	A4	1 of 1



### 3. Manufacturing Process & Management Chart

Process Step Number	Process flow chart			Machine, Device, Jig, Tools for Manufacturing	Product / Process Characteristics			Special Characteristic	Control Methods				Control Position	Reaction Plan	Remarks (Special Process)																			
	Coil	SMD	Mah		NO	Product	Process		Measurement Technique	Sample Frequency	Control Method	Manufacturing Department				OC																		
	△			Incoming parts	1	Incoming raw materials			Item/Quantity					Relevant team notification and return																				
C10	○		IOC		1	Fente	Size	CTF	<p>1) Fente Size : 44.8 ± 0.5 mm x 49.5 ± 0.5 mm 2) Fente Thickness : 1.0 ± 0.1 mm</p>	3D Measuring Machine	Sampling/Lot	Import inspection report	○	Relevant team notification and return																				
																2	Wire	Exterior	Check the condition based on the visual inspection	Visually	Sampling/Lot	Import inspection report	○	Selection/Return/Discard/Special										
																		Model	USTC Wire 0.08+105 Strands (ZUEW)	Visually														
																		Size characteristic	Check the external condition (break, disconnection x) Pin Hole :1M 18point under	pinhole meter, voltage meter														
3	raw materials	Hazardous Substance Analysis						Acquisition of environmental data report from certified institutions (PbMS, HF, MSDS, Phthalates, Sb)		once/year	Certification body report	○	Return																					
															Category	Cd	Cr	Pb	Hg	Sb	Ci	Sr												
C20	△			Raw material input	1				Check the raw material input identification tag	Visually	before input			Check again after taking action																				
C30	○		Coil winding	Winding machine	1	Winding equipment setting		CTF	Reference to work standards		JIG Tension Meter Thermometer	2 times/day	Facility Daily Inspection Sheet	○	equipment readjustment																			
																	2	USTC Wire	Coil winding	CTF	Winding : 10 Turns 1 Layer	Vernier calipers	Outer/Inner Diameter Inspection Early/Middle/Last 10ea (n=30ea/LOT)	Daily Inspection Sheet	○	Selection/disposal								
																											3	Coil Dimension Inspection	CTF	1) Coil Size Check - Inner Diameter : 20.5 ± 0.4 - Outer Diameter : 43.5 ± 0.1	Vernier calipers	Outer/Inner Diameter Inspection Early/Middle/Last 10ea (n=30ea/LOT)	Daily Inspection Sheet	○
																	4	Coil Thickness Inspection	CTF	Coil Thickness Check - Thickness : 1.15 ± 0.1mm	Vernier calipers	Sampling/Lot	Daily Inspection Sheet	○	Selection and reconditioning									
C40	○		Make a shape of Coil Lead and bonding.	Dipping Fixture JIG Dispenser	1				Apply Bond at the designated location. (2 points) 1) Coil lead application (replacement of lead tape) Application amount: 0.01 ± 0.002g Do not apply to the top of the coil based on the application direction. Lead shape shaping	Dipping Fixture JIG	ALL	Daily Inspection Sheet	○	Selection/disposal																				
C50	○		Dipping	Dipping machine	1	A11 Coil	Dipping JIG Coil settled Alignment after Wire Lead Cutting	CTF	Check if the lead of the coil assembly is seated in the designated position of the dipping fixture jig. Cutting proceeds according to the end of the wire seated on the Dipping Fixture JIG. Cutting standard: The standard at the bottom of the coil that has been shaped: 11.5±1.0mm		ALL	Daily Inspection Sheet	○	Selection/disposal																				
																2	Dipping equipment setting	Reference to work standards	Daily Inspection Sheet	○														
																						3	Solder	Dipping	Solder : HF Dipping Length : 3mm ± 1mm	Dipping Fixture JIG	Early/Middle/Last 10ea (n=30ea/LOT)	Daily Inspection Sheet	○	repair / disposal				
																															4	Tar removal.	CTF	Removal of foreign matter at the boundary between coil lead and dipping. There should be no damage to the coil lead or breakage of the lead.
																						6	Coil Visual Check		Wire engraved/unwrapped should be less than standard. Coil twist/damage should be less than standard. Sheet damage / dents should be less than the standard.	Visual Inspection	ALL	Daily Inspection Sheet	○	Selection / repair				
C60	○		bonding	Dimension JIG Dispenser machine	1	A11 Coil	Non-woven Tape attach.		Attach the tape in the right position. Check tape attachment surface.	Visual Inspection	ALL	Daily Inspection Sheet	○	repair / disposal																				
																2	Fente Sheet assembly	Dimension JIG	Coil + Fente Assembly	Check the coil seating position. The lead inside the coil should not be caught in the sheet. Check the sheet attachment method. The ferrite should be seated according to the hole of the JIG.	Visual Inspection	ALL	Daily Inspection Sheet	○	repair / disposal									
C70	○		Coil Assy pressure.	Press machine	1				Thickness measurement after pressure : Max 2.6mm	Visual Inspection	ALL	Daily Inspection Sheet	○	repair / disposal																				
C80	○		Thickness Check	Thickness gauge / GO NO JIG	1	Thickness Check			Thickness : Max 2.6mm (Release film include)	Vernier calipers	ALL	Daily Inspection Sheet	○	repair / disposal																				
																2	LOR Meter Setting	100kHz / 1V	Daily Inspection Sheet	○														
																						3	Coil Assy	Measure Inductance & Resistance	CTQ	1) Ls : 6.3uH±10% (@1V, 100kHz) 2) Rb : 42.0mΩ±20% (@1V, 100kHz)	ALL	Daily Inspection Sheet	○					
																															4	Coil Assy	Dimension Check	Check the position marked on the JIG by placing the product at the reference point (left side of the jig) on the Dimension JIG
																						5	Coil Assy	Visual Check	Check Lot Making Specifications Lot Making Location Check	ALL	Daily Inspection Sheet	○						
C100	○		Product measurement	Ink Making machine	1	Coil Assy	Visual Check		Wire engraved/unwrapped should be less than standard. Coil twist/damage should be less than standard. Sheet damage / dents should be less than the standard.	Visual Inspection	initial product 3lot ALL Test Sampling (S-4, AQL 0.1)	Daily Inspection Sheet	○	disposal																				
																2	Coil Assy	Measure Inductance & Resistance	CTQ	1) Ls : 6.3uH±10% (@1V, 100kHz) 2) Rb : 42.0mΩ±20% (@1V, 100kHz)	LOR Meter	initial product 3lot ALL Test Sampling (S-4, AQL 0.1)	Daily Inspection Sheet	○	disposal									
																										3	Coil Assy	Width size check	CTQ	Vernier calipers	initial product 3lot ALL Test Sampling (S-4, AQL 0.1)	Daily Inspection Sheet	○	disposal
																										5	Coil Assy	Thickness Check	CTQ	Thickness : Max 2.6mm (Release film include)	Thickness gauge / GO NO JIG	initial product 3lot ALL Test Sampling (S-4, AQL 0.1)	Daily Inspection Sheet	○

4. Appearance Limit

<b>Visual Inspection Standard</b> ( H03010161A [WWP-T2200 Coil Block] )	No.	
	Release	-
	Revision	00

1. Purpose : The standard is applied at the time of shipment inspection to prevent the visual defects and leakage of defective products.
2. Application : Only for H03010161A [WWP-T2200 Coil Block]
3. Composition : Product Size

Item	Inspection item	Spec.	Inspection Method	Instrument	Drawing
Ferrite Sheet	Width	48.8±0.5 mm	Measure width of ferrite sheet		
	Length	49.5±0.5 mm	Measure length of ferrite sheet		
Ass'y	Coil Lead Length	59.6±1.0 mm	From center of coil to end of lead		
	Thickness	Max 2.6 mm	UpperCoil and Under Coil Overlap for area Thickness. (Release film include)		

4. Inspection Method

- 1>. A inspector shall carry out the inspection with a finger coat after removing contaminants that can occur during inspection.
- 2>. A inspector shall do a visual inspection basically.  
 When an unusual matter occurs, the inspector shall not judge alone but shall make a judgment after agreement with the engineer in charge.
- 3>. After use, the instrument should be in position. The inspector shall contact the quality team when the instrument is unusual.

5. Criteria

Defect Type	Picture	Cause	Criteria	Exception
Contamination		- Coil and ferrite surfaces are contaminated ⇒ Adhesive tape stain Contamination due to careless handling	<b>Defective /</b> - Size should be irrelevant ※ Both coil and ferrite are subject to inspection.	- Discoloration of the surface of the coil by acetone and the milky white crumbs generated during curing are judged to be non-defective.
Coil damage		- Damage due to physical force during handling	<b>Accepted /</b> - When the copper wire is not broken and the damage is 3 mm or less in the longitudinal direction. Manage the winding and bending part the same (see photo on the right)  <b>Defective /</b> - When copper wire is broken regardless of its length (bare copper wire)	 If there is no disconnection of copper wire (Within 3 mm in longitudinal direction)
Ferrite Sheet Film Damage			<b>Accepted /</b> - When the surface of the ferrite sheet is not exposed  <b>Defective /</b> - When the surface of the ferrite sheet is exposed	When it is damaged indirectly by external damages
Foreign Matter		- Poor lamination ⇒ Foreign matter or air bubbles are inserted when attaching the film	<b>Accepted /</b> - When the foreign body is not inserted but simply air bubbles are generated ⇒ Up to 2 bubbles within 3 mm in longitudinal direction  <b>Defective /</b> - When foreign matter is inserted, it is defective regardless of size and quantity. - When air bubbles are out of the range of 3 mm in the longitudinal direction	
Chipping		- It occurs when cutting a ferrite sheet ⇒ It is damaged indirectly by external damage	<b>Defective /</b> - When the number of chipping defect is more than 5 and its each size is less than 4.0 mm <sup>2</sup> . - When the size exceeds 4.0 mm <sup>2</sup>	
Surface exposure		- Poor Film Lamination	<b>Defective /</b> - When the exposed area of edge exceeds 5 mm <sup>2</sup>	In case of simple exposure due to poor adhesion
Poor Punching		- It occurs when blanking film. ⇒ Burr occurs due to poor punching condition	<b>Defective /</b> - When the outer diameter dimension exceeds spec. - When the hole dimension is less than spec	
Poor Winding		- It occurs when winding coils under wrong winding condition and foreign body is inserted in winding	<b>Accepted /</b> - when the gap is 0.5 mm or less  <b>Defective /</b> - When the gap is over 0.5 mm - When foreign body is inserted in between coils	
Coil Loosening		- Coil is loosened by damage ⇒ Tape melts excessively due to heat during dipping	<b>Accepted /</b> - Tape Melting without loosening is good ※ During dipping, Tape Melting is an inevitable with sticking phenomenon  <b>Defective /</b> -When coil is loosened more than 1/3 of tape width	 No Loosening
Low lead		- Wrong dipping condition - The coil end is cut excessively.	<b>Defective /</b> - When the uniform coating area length is less than Solder Min. SPEC (Solder Length Spec : Max 4 mm)	
Copper exposure		- It occurs during winding or bending coil	<b>Accepted /</b> - When the exposed part is 3mm or less - The copper exposure at the bottom of the solder part is classified as bad only when the wire is broken regardless of the length.  <b>Defective /</b> - When the exposed part exceeds 3 mm ※ Management of winding part and bending part are same.	 When there is no bare copper wire.

Part Number : H03010161A  
 Application Model : WWP-T2200 Coil Block



5 Measuring Instrument List

No.	Instrument Name	Purpose of Use
1	LCR Meter TONG HUI : TH2837LX	Inductance check Resistance check
2	LCR Meter HIOKI LCR Meter	



< LCR Meter >

6. Reliability test warranty conditions

No	Test item	Test condition	Specification
1	Temperature Cycle Test	-40°C ±5°C ↔ 85°C ±5°C, -40°C ↔ 85°C ≤ 30 min. Preceding descriptions condition 1 cycle application 72 cycle enforcements	Initial Inductance within ± 10%
		Under the condition of normal temperature measuring data after keeping more than 12Hr	
2	Humidity Test	Temperature: 80°C, Humidity: 80% RH, Time: 120Hr	
3	Salt Spray Test	Salt concentration 5±0.5% / 35±2°C / PH 6.2~7.2 8 Hrs Spray / 16 Hrs Waiting / 3 Cycle(72 Hrs)	

7. Storage

- Temperature: -45~40°C
- Humidity: Less than 70%RH
- Warranty is within 12 months after shipment
- Operating Temperature: -40~85°C