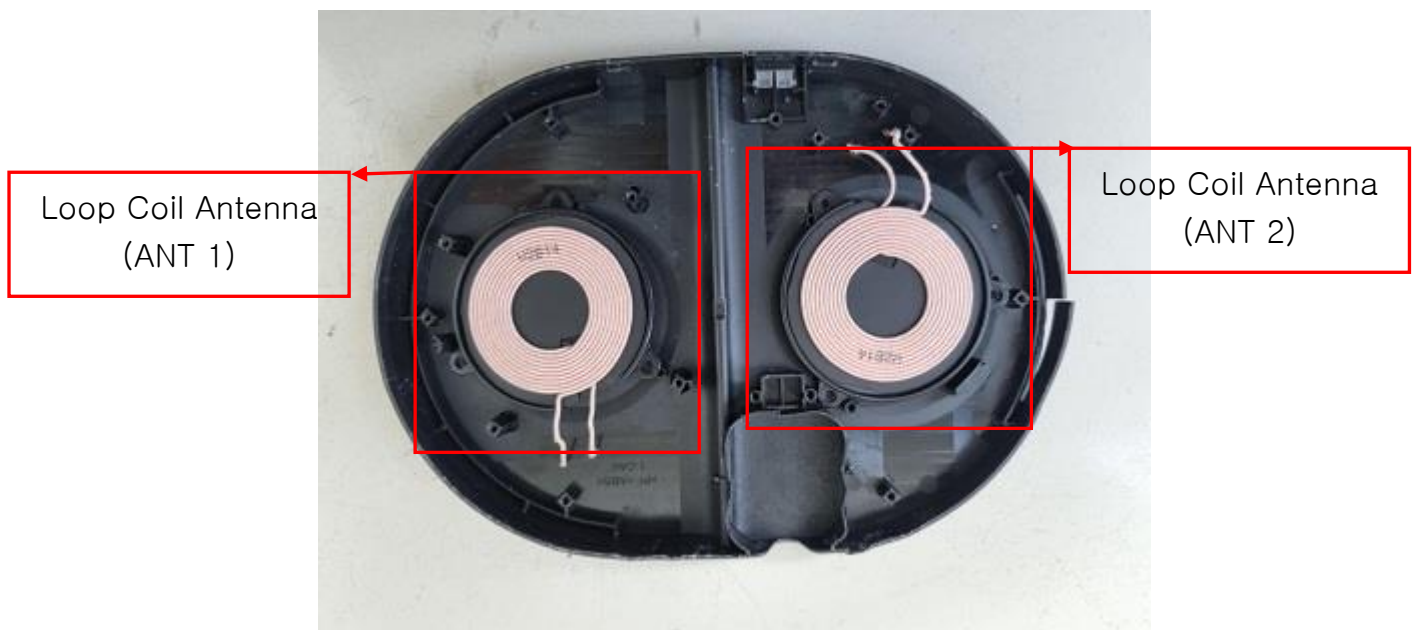


Antenna Information

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 (From center of coil to end of lead)		
		Thickness	Max 2.6mm(Release paper included)		
Customer		Drawing	Reviewer	Reviewer 2	Approver
Wits	Department / Name				
	Data				
	Sign				
Supplier		Drawing	Reviewer	Approver	
Wits	Department / Name	Development Team S.J 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

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6. Reliability test warranty conditions
7. Storage

Application Model : WWP-T2200 Coil Block



Revision history

[illegible]

Part Number : H03010161A

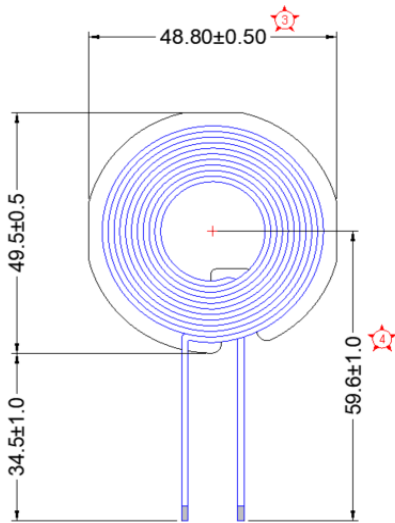
Application Model : WWP-T2200 Coil Block



2. Product Specification

2. 1 Product Drawing

- Top view



- Side view



- Pic view



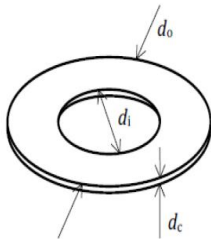
2. 2 Electrical Spec. < CTQ >

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

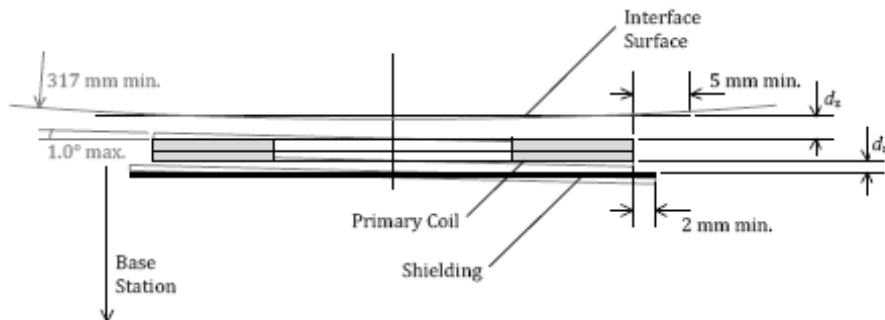
- LCR Meter - 1) Tong Hui TH2837LX (@ 1V, 100kHz)

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



PASS	FAIL	REPAIR

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

Part Number : H03010161A

Application Model : WWP-T2200 Coil Block



2. 8 Raw Material Drawing

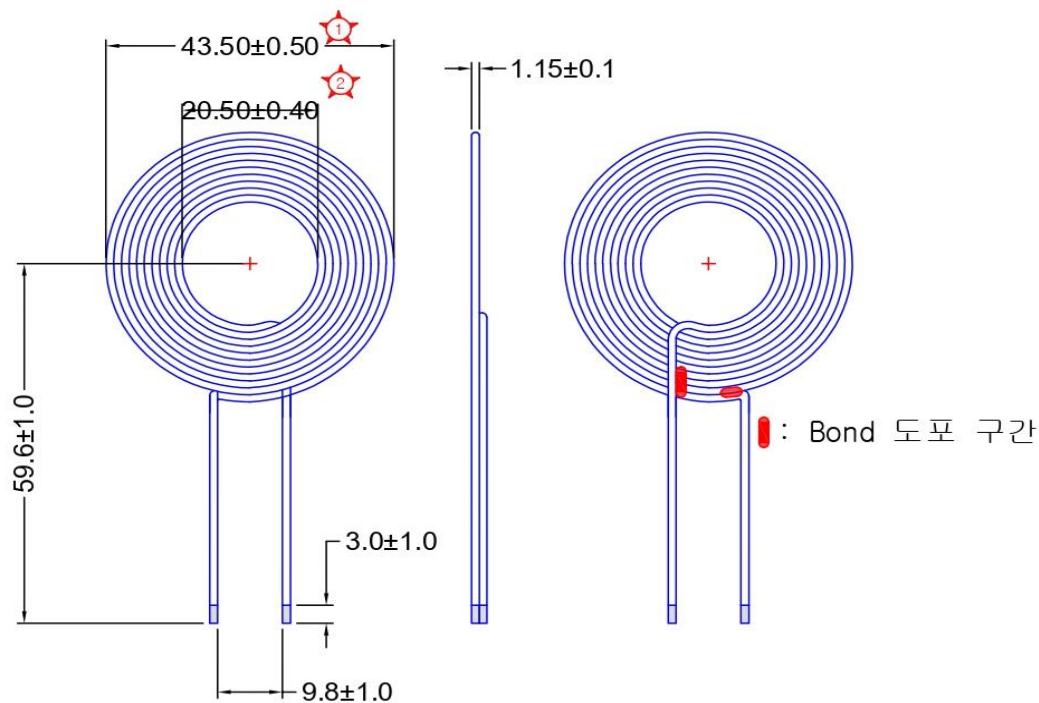
2. 8. 1 Coil Drawing

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

ERP Code	SPEC	Q'Ty

Stock Number

Data 2022. 05. 24.

Approved Department

Approver

Reviewer

Drafter

Department

Scale 1/1

Unit mm

Weight

WITS

Drawing Name

Single Coil

Drawing Size

A4

Drawing Number

1

of

1

Part Number : H03010161A

Application Model : WWP-T2200 Coil Block



2. 8 Raw Material Drawing

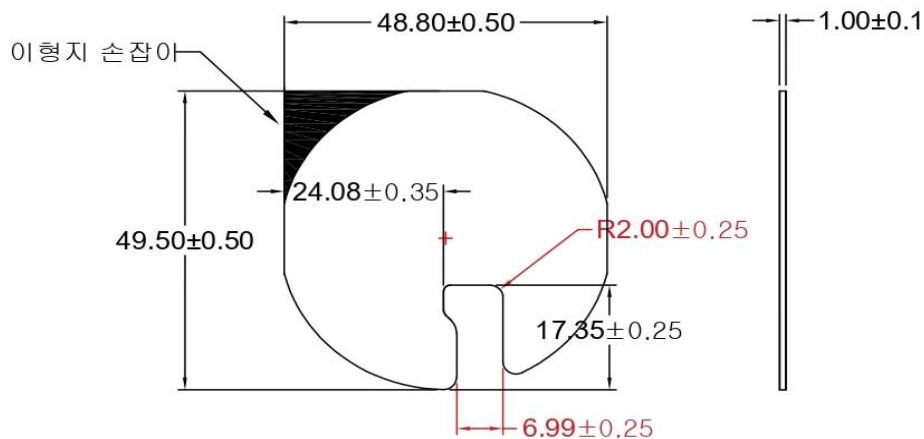
2. 8. 2 Ferrite Sheet Drawing

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 : $1.0 \pm 0.1\text{mm}$
4. 이형지 Color : White



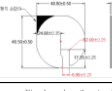
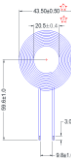
Part List			Data 2022. 05. 24.			WITS	
ERP Code	SPEC	Q'Ty	Approved Department				
			Approver				Drawing Name
			Reviewer				
			Drafter				
Stock Number			Department			Drawing Size	Drawing Number
			Scale 1/1 Unit mm Weight			A4	1 of 1
						Ferrite	

Part Number : H03010161A

Application Model : WWP-T2200 Coil Block



3. Manufacturing Process & Management Chart

Process Step Number	Process flow chart			Process Name / Operation Description	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		standard	Measurement Technique	Sample Frequency	Control Method	Manufacturing Department	QC														
		△		Incoming parts		1	Incoming raw materials			Item/Quantity				○		Relevant team notification and return													
C10	◇		IOC		1	Fente	Size	CTF	1) Fente Size : 44.8 ± 0.5 mm x 49.5 ± 0.5 mm 2) Fente Thickness : 1.0 ± 0.1 mm 	3D Measuring Machine	Sampling/Lot	Import inspection report		○		Relevant team notification and return													
							Exterior		Check the condition based on the visual inspection	Visually																			
					2	Wire	Model		USTC Wire 0.08+105 Strands (ZUEW)	Visually								○		Selection/Return/Discard/Special									
							Size		Check the external condition (break, disconnection x)	Visually																			
							characteristic		Pin Hole :1M 18point under	pinhole meter, voltage meter	Sampling/Lot	Import inspection report		○															
							Thickness		1.16 ± 0.03mm (1.13 ~ 1.19mm) (Overall Diameter)	Visual, line diameter measuring instrument																			
					3	raw materials	Hazardous Substance Analysis		Acquisition of environmental data report from certified institutions (ROHS, H/P, MSDS, Pinnholes, Sb) <table border="1"><tr><td>Category</td><td>Cr</td><td>Cd</td><td>Pb</td><td>Hg</td><td>Br</td><td>Cl</td><td>Sb</td></tr><tr><td>Organic</td><td>650</td><td>50</td><td>150</td><td>650</td><td>800</td><td>800</td><td>650</td></tr></table>	Category	Cr	Cd	Pb	Hg	Br	Cl	Sb	Organic	650	50	150	650	800	800	650	-	once/year	Certification body report	
Category	Cr	Cd	Pb	Hg	Br	Cl	Sb																						
Organic	650	50	150	650	800	800	650																						
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		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	Vermer callipers	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	Vermer callipers	Outer/Inner Diameter Inspection Early/Middle/Last 10ea (n=30ea/LOT)	Daily Inspection Sheet		○		Selection/disposal													
					4		Coil Thickness Inspection	CTF	Coil Thickness Check - Thickness : 1.15 ± 0.1mm	Vermer callipers	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 fixed 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 Fixture JIG Cutting 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±1.0w		ALL	Daily Inspection Sheet		○		Selection/disposal													
					2		Dipping equipment setting		Reference to work standards			Daily Inspection Sheet		○															
				Dipping machine	3	Solder	Dipping		Solder : H/P Dipping Length : 3mm ± 1mm	Dipping Fixture JIG	Early/Middle/Last 10ea (n=30ea/LOT)	Daily Inspection Sheet		○		refair / 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.		ALL	Daily Inspection Sheet		○		Selection / refair													
					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 / refair													
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		○		refair / disposal													
				Fente Sheet assembly	Dimension JIG	2	Fente	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 fente should be seated according to the hole of the JIG.	Visual Inspection	ALL	Daily Inspection Sheet		○		refair / disposal												
C70		○		Coil Assy pressure.	Press machine	1		Coil Assy press		Thickness measurement after pressure : Max 2.6mm 	Visual Inspection	ALL	Daily Inspection Sheet		○		refair / disposal												
C80		○		Thickness Check	Thickness gauge / GO NO JIG	1		Thickness Check		Thickness : Max 2.6w (Release film include)	Vermer callipers	ALL	Daily Inspection Sheet		○		refair / disposal												
C90	◇		Product measurement	LOR Meter	1		LOR Meter Setting		1000Hz / 1V			Daily Inspection Sheet																	
					2	Coil Ass'y	Measure Inductance & Resistance	CTQ	1) Ls : 6.3uH±10% (@1V, 100kHz) 2) Rs : 42.0mΩ±20% (@1V, 100kHz)	ALL	Daily Inspection Sheet		○																
					3	Coil Ass'y	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	Dimension JIG	ALL	Daily Inspection Sheet		○															
				Ink Making machine	4		Lot Making		Check Lot Making Specifications Lot Making Location Check		ALL	Daily Inspection Sheet		○		Selection / refair													
					5	Coil Ass'y	Visual Check		Check Lot Label Specifications. Check the final appearance of the product.	Visual Inspection	ALL	Daily Inspection Sheet		○															
C100	◇		OOC		1		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		Measure Inductance & Resistance	CTQ	1) Ls : 6.3uH±10% (@1V, 100kHz) 2) Rs : 42.0mΩ±20% (@1V, 100kHz)	LOR Meter	Initial product 3Lot ALL Test Sampling (S=4, AQL 0.1)	Daily Inspection Sheet		○		disposal													
					3	Coil Ass'y	Width size check	CTQ		Vermer callipers	Initial product 3Lot ALL Test Sampling (S=4, AQL 0.1)	Daily Inspection Sheet		○		disposal													
					4		Length size check	CTQ		Vermer callipers	Initial product 3Lot ALL Test Sampling (S=4, AQL 0.1)	Daily Inspection Sheet		○		disposal													
					5		Thickness Check	CTQ	Thickness : Max 2.6w (Release film include)	Thickness gauge / GO NO JIG	Initial product 3Lot ALL Test Sampling (S=4, AQL 0.1)	Daily Inspection Sheet		○		disposal													

Part Number : H03010161A

Application Model : WWP-T2200 Coil Block



4. Appearance Limit



Visual Inspection Standard (H03010161A [WWP-T2200 Coil Block])

No.	
Release	
Revision	-
Version	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	Defective / - 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	Accepted / - 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) Defective / - 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			Accepted / - When the surface of the ferrite sheet is not exposed Defective / - 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	Accepted / - When the foreign body is not inserted but simply air bubbles are generated Up to 2 bubbles within 3 mm in longitudinal direction Defective / - 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	Defective / - When the number of chipping defect is more than 5 and its each size is less than 4.0 mm². - When the size exceeds 4.0 mm²	
Surface exposure		- Poor Film Lamination	Defective / - When the exposed area of edge exceeds 5 mm²	In case of simple exposure due to poor adhesion
Poor Punching		- It occurs when blanking film. ⇒ Burr occurs due to poor punching condition	Defective / - 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	Accepted / - when the gap is 0.5 mm or less Defective / - 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	Accepted / - Tape Melting without loosening is good ※ During dipping, Tape Melting is an inevitable with sticking phenomenon Defective / -When coil is loosened more than 1/3 of tape width	 No Loosening
Low lead		- Wrong dipping condition - The coil end is cut excessively.	Defective / - 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	Accepted / - 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. Defective / - When the exposed part exceeds 3 mm ※ Management of winding part and bending part are same.	 When there is no bare copper wire

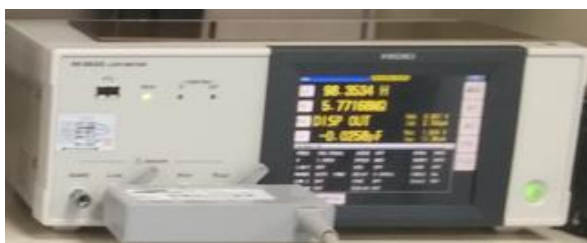
Part Number : H03010161A

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 then 70%RH
- Warranty is within 12 months after shipment
- Operating Temperature: -40~85°C