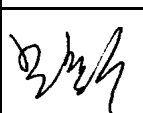
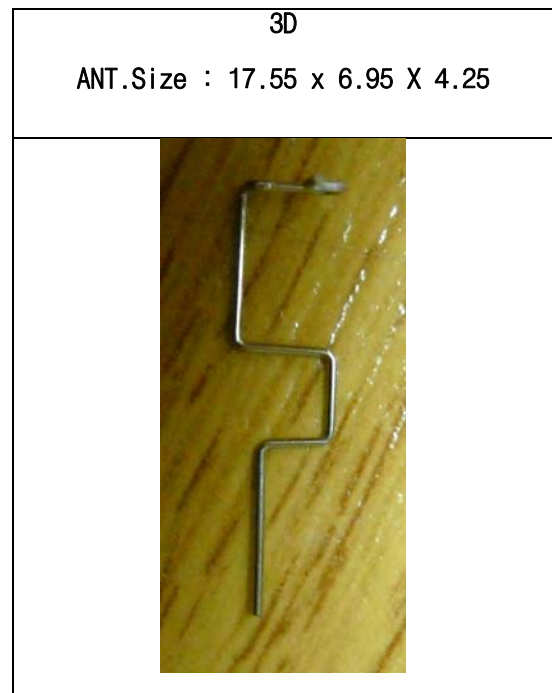




ANTENNA SPECIFICATIONS

S I G N	Drafting	Check		Approval
				
	DH.KIM	CS.MON	BH.JO	SH.LEE
	12/09/13	12/09/13	12/09/13	12/09/13



CUSTOMER	BLUECOM
MODEL NAME	DWD-300
PART NAME	B.T ANTENNA
BLUECOM CODE	-
ARRO CODE	IWD-0458

205-11, Anyang7-Dong, Manan-Gu, Anyang, Gyeonggi-Do, KOREA
TEL : 031)448-8172 / FAX : 031)448-4194

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1. Approval LIST

Approval LIST					
NO	DATE	Before a change	After a change	Reason	REV
1	12.09.12		New Revision		1.0
2					
3					
4					
5					
6					
7					
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※ ※ A change of REV can be changed about mass producing antennas after the approval.

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2. Technical Properties

2.1 Electrical Properties

FREQUENCY BW	2,400 ~ 2,484 MHz
Min VSWR	Less then 2.5 :1
Max gain(dBi)	2.53(3D test)
Input IMPEDANCE	50Ω
POLARIZATION	VERTICAL
RADIATION PATTERN	OMNI-DIRECTIONAL

2.2 Mechanical Properties

CONNECTOR TYPE	N/A
SIZE	Reference Drawings(7.2 Reference)
Operating temperature	-20 °C ~ +70 °C
Weight	0.02g

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3. TEST CONDITION

3.1 Examination Environmental Condition

The antenna is placed at temperature $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and humidity 25%~80%(Under 55% RH) for executing all testes (Electrical, Mechanical and Environmental Tests).

3.2 TEST Equipments

We need equipments for the antenna measurement

Equipments	Purpose	Remarks
Network analyzer	Measurement for VSWR & IMPEDANCE	
Standard(Horn)antenna	BT FreQuency spec	
Anechoic Chamber	Measurement for antenna gain	cable, connector
Projector and Vernier calipers	Measurement For Dimension	
Measurement tester for Plating thickness	Measurement for Plating thickness	

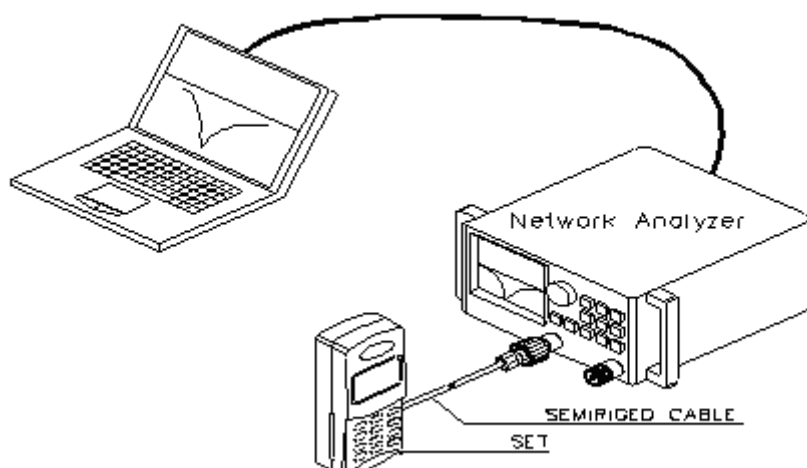
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4. ELETRICAL PROPERTIES

4.1 V S W R

Antenna must be satisfied with electrical specifications by indicated VSWR requirements.

FREQUENCY BW	2,400 ~ 2,484 MHz
MIN VSWR	2.5 :1



4.2 Radiation Pattern

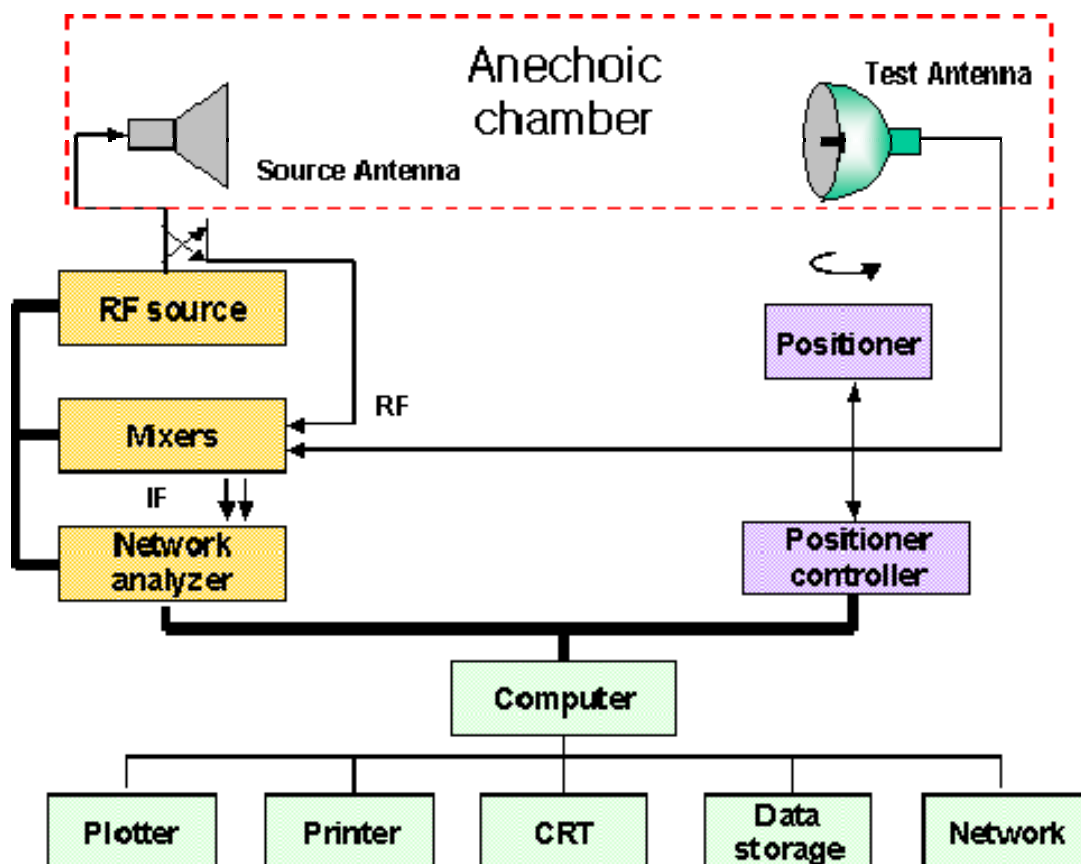
This radiation of antenna pattern must have Omni-directional Patterns

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4.3 Antenna gain

Measurement Method : As shown in fig , setting the horn antenna as standard antenna, measure the gain by [dBi].

FREQUENCY BW	2,400 ~ 2,484 MHz
MAX gain(dBi)	2.53 (3D test)



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5. Structural requirement pacts

5.1 Plating thickness test

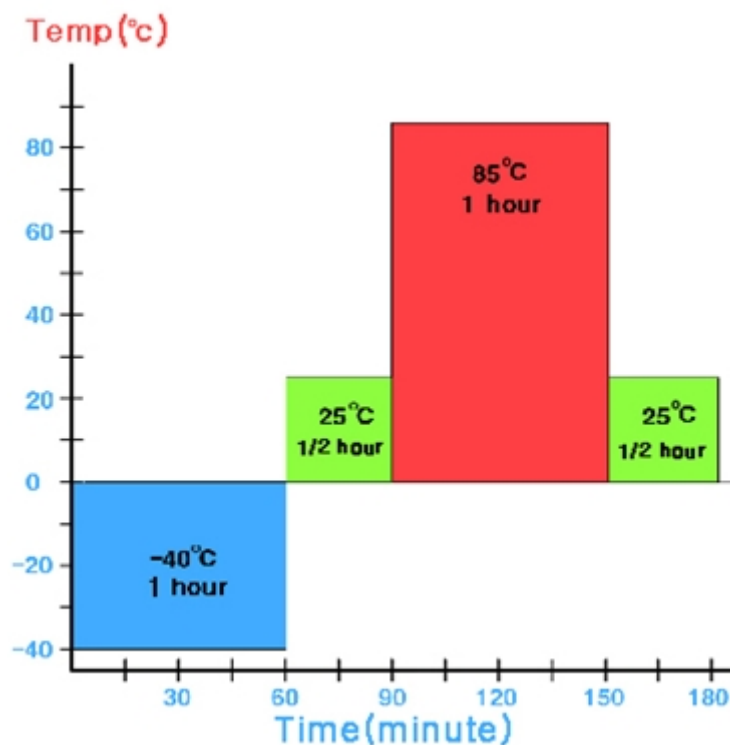
Shall meet the specified plating thickness.

Ni	Min : 1 um
----	------------

6. . Environmental requirement

6.1 Temperature Cycling

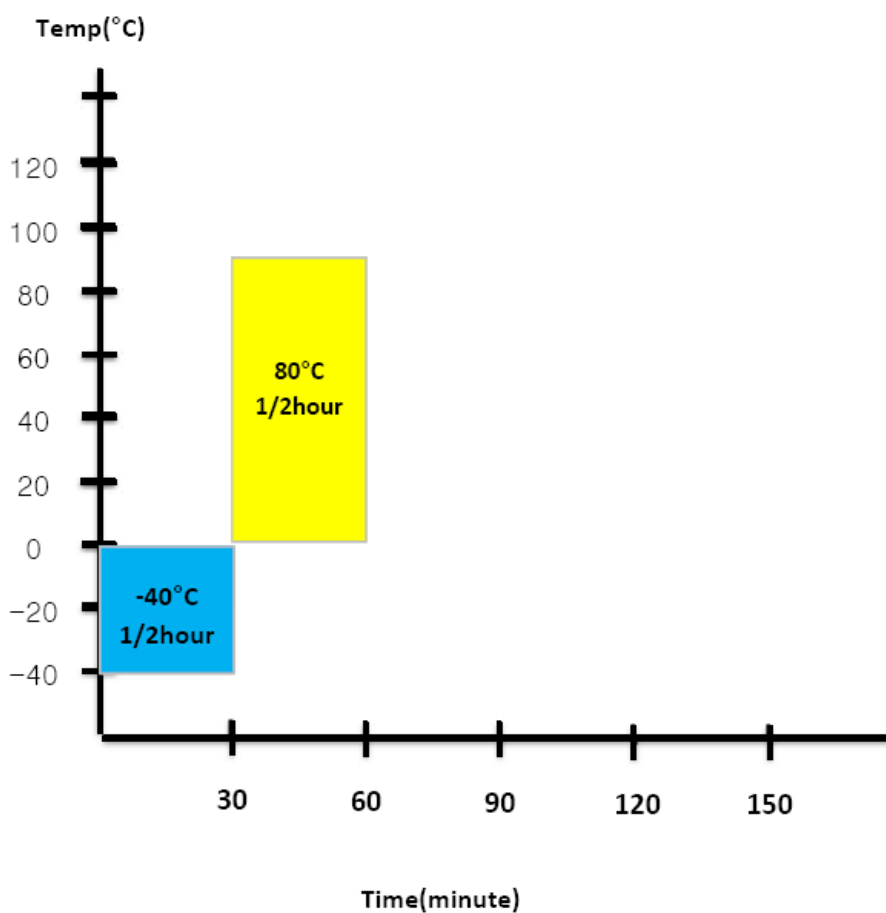
- The antenna is placed in a climate chamber. The temperature is cycled as follows:
 - The temperature is kept constant at -40°C for 1 hour, kept constant at $+25^{\circ}\text{C}$ for 1/2 hour, kept constant at $+85^{\circ}\text{C}$ for 1 hour, kept at $+25^{\circ}\text{C}$ for 1/2 hour.
- This procedure is repeated 5 times. The procedures are executed based on KSC-0222.



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6.2 Temperature Impact Test

- The antenna is placed in a climate chamber. The temperature is cycled as follows:
- The temperature is kept constant at -40°C for 1/2 hour, kept constant at $+85^{\circ}\text{C}$ for 1/2 hour.
4 hour Leaving.
- This procedure is repeated 30 times . The procedures are executed based on KSC-0222.
- It not must be above in appearance and function.



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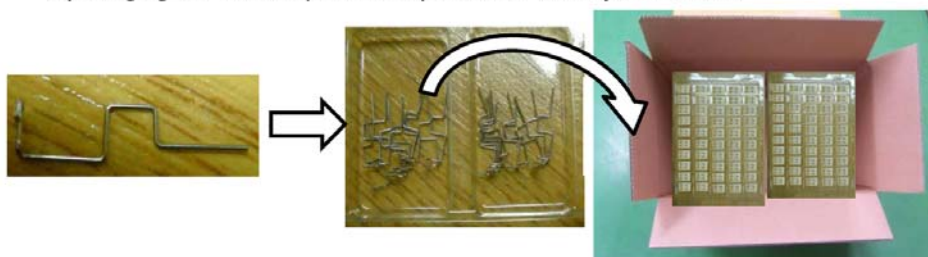
7. Other Documents

7.1 Packing Conditions

1.Put in the hard paper bottom of prepared carton box



2.packaging the finished product inspection on the tray.(1cell=10ea)



3.After checking the number of complete products and the tray, packing in the carton box

Tray 1cell	10 pcs
1 tray	50 cell
1 tray	500 pcs
1carton	50 tray
1carton 최대	25000 pcs



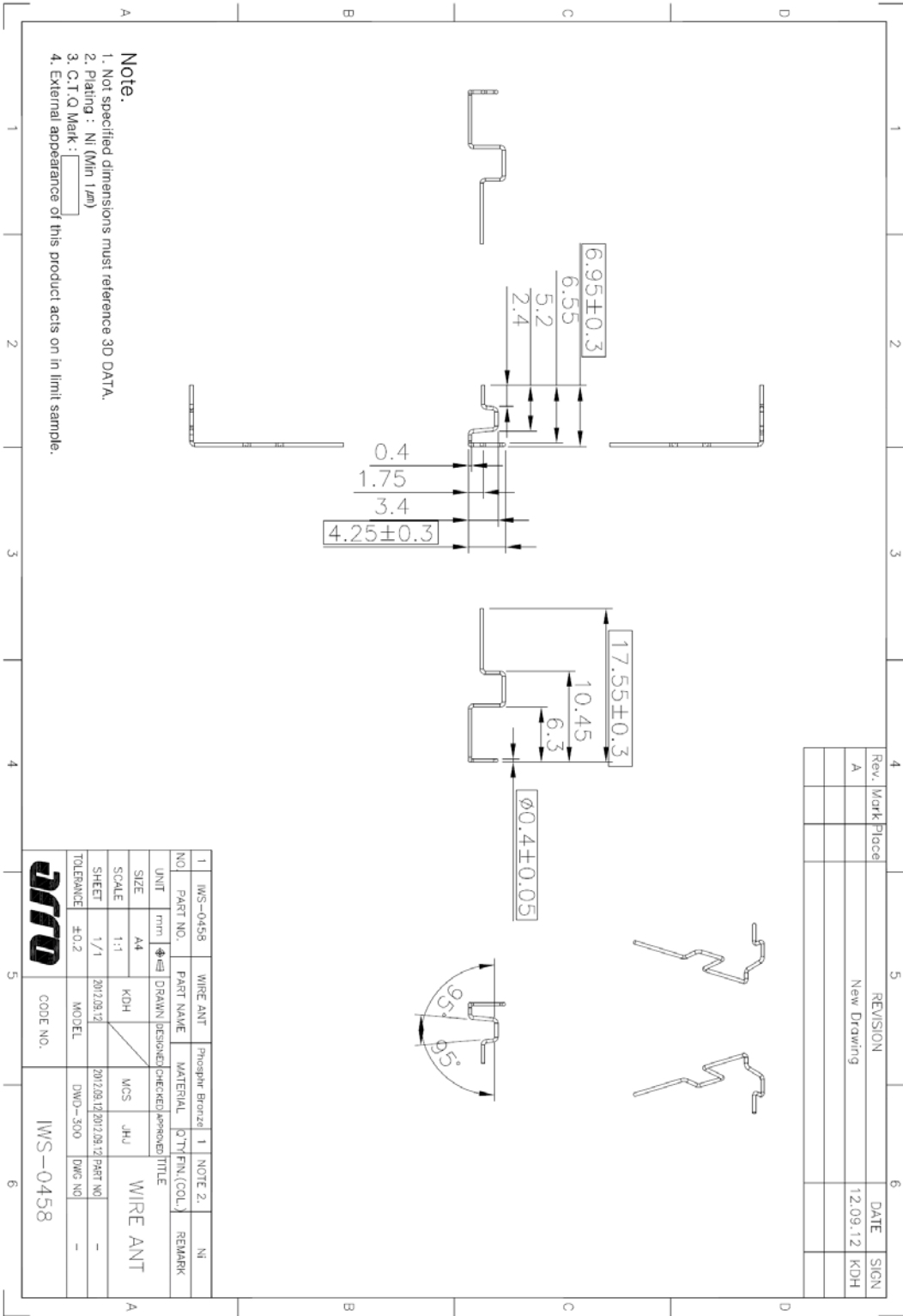
4.After packing, attach the itemized account.



	itemized account		
customer	BLUECOM		
model	DWD-300		
Part name	BT WIRE ANTENNA		
Code No.	IWS-0458		
Lot No.	-		
Q'ty	EA		
Date	2012.09.12	QC Decision	
Inspector	J.S Lee		
Packer	Y.I Yu		

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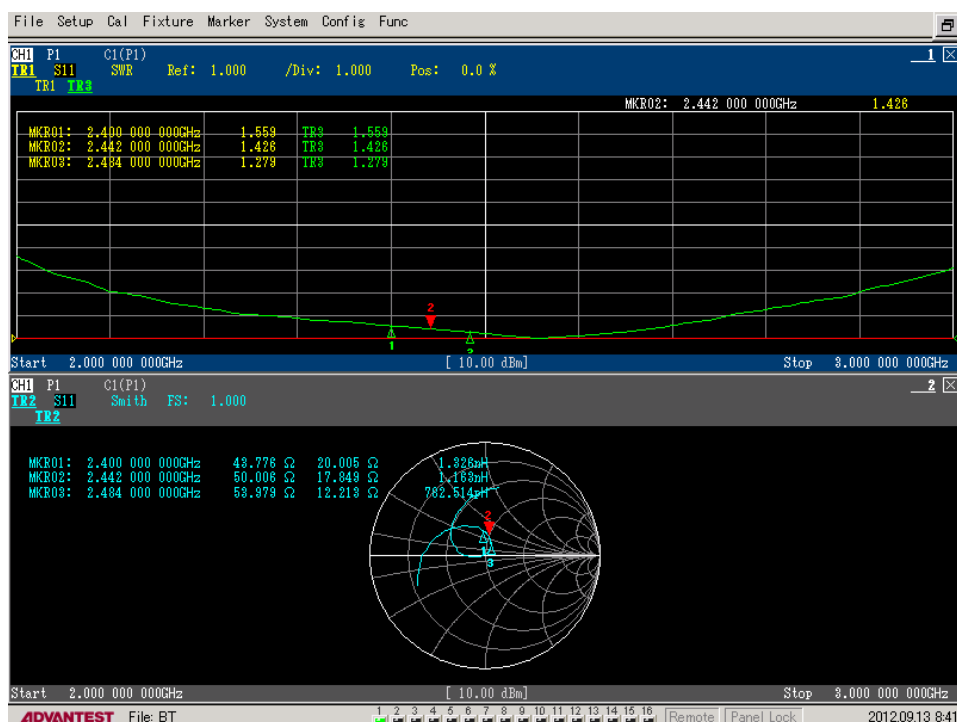
7.2 Mechanical Specifications



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7.3 Electrical characteristic data

7.3.1 VSWR & SMITH chart



7.3.2 Passive gain

Frequency [MHz]	1	2	3	4	5
Efficiency [dB]	-1.20	-0.88	-0.83	-0.86	-0.79
Efficiency [%]	75.90	81.67	82.64	82.09	83.29
TRG [dB]	-1.20	-0.88	-0.83	-0.86	-0.79
TRG ₀ [dB]	-6.17	-5.68	-5.50	-5.44	-5.19
Gain _{Peak} [dB]	1.56	1.94	1.91	1.94	2.01
Gain _{avg} [dB]	-25.68	-26.76	-27.12	-26.31	-27.26
TRG ₀ [dB]	-2.86	-2.63	-2.64	-2.71	-2.75
Gain _{Peak} [dB]	2.20	2.46	2.41	2.51	2.53
Gain _{avg} [dB]	-26.99	-27.81	-31.26	-29.52	-26.02
UHRG [dB]	-3.41	-3.09	-3.06	-3.14	-3.13
UHRG/TRG [%]	60.04	60.18	59.89	59.10	58.45
H-Plane	-7.87	-7.28	-6.88	-6.48	-5.75
E1-Plane, AVG [dB]	-15.29	-14.43	-14.08	-14.31	-14.49
E2-Plane, AVG [dB]	-2.54	-2.15	-1.99	-1.88	-1.58
Peak Gain [dB]	2.90	3.21	3.25	3.16	3.15
Directivity [dB]	4.09	4.09	4.08	4.01	3.95
Minimum Gain [dB]	-9.98	-9.29	-8.44	-8.11	-7.89

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7.4 Manufacture Process chart

DATE	Rev.No	Page No	Q C Process Chart						Management No.	Department in charge	Draft	Review	Approval		
2012.09.12	0	1/1							QC-120912	Q.C	L.J.S		C.B.H		
MODEL		DWD-300													
Material/ part	FLOW CHART			Process Name	Applicable Standards	Factor Management				Property Management				Defect	Managed By
Material/ part	Material/ part	Production Process	Q.C			Facility Tool	Item	Management Frequency	Recording Method	Inspection Method	Measuring Tool	Inspection Frequency	Recording Method		
STEEL WIRE				Import inspection	Inspection	GONO GAGUGE	* CTQ(Pattern) (plating thickness) Ni : Min 1μm	Everyday	job sheet	appearance Dim's	Visual V/C	毎LOT SPL'	Inspection log book	appearance Dim's	Inspector
				Sub-Ass'y	Work instruction paper					appearance	Visual	Every Lot	Job sheet	appearance	Worker
				Process Inspection * CTQ	Inspection standard paper					Visual	GONO GAUGE	Every Lot	Inspection log book		Inspector 1人
				Process Inspection LOT	Inspection standard paper					appearance	Visual	Every Lot	Job sheet	appearance	Inspector 1人
				Shipment inspection	Inspection standard paper					appearance Dim's RF	Visual V/C VNA	SPL'	Shipment Inspection Report	appearance	Inspector 1人
Box Paper Box Tape				packaging	Work instruction paper	전공정 장갑 및, 실내용 착용									
TOTAL														4人	

*. Factory : Anyang Factory(ARRO.co.Ltd)

7.5 Plating Specification by component

Model name	Name	material	Plating	Remarks
DWD-300	STEEL WIRE	Phosphr Bronze	NI : Min 1um	-

7.6 PART_LIST

DWD-300 PART LIST

NO	Part name	Spec	Maker	Code	Remarks
1	STEEL WIRE	Phosphr Bronze	Shinwa	IWD-0458	Ni Plating