

MJ TELCOM	SPECIFICATION	Engineering Div.
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Specification for approval
WLL 800MHz BASE ANTENNA

- Customer : [LG ELECTRONICS INC.]
- Description : WLL BASE ANTENNA
- Model Number : HCD-800-1
(IVORY COLOR)
- Spec. : See Attached
- Date : 2005.JUN.3

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PRODUCT SPECIFICATION	WLL BASE ANTENNA(800MHz band) HCD-8001	Sheet No.	Rev No.
		1 OF 17	3

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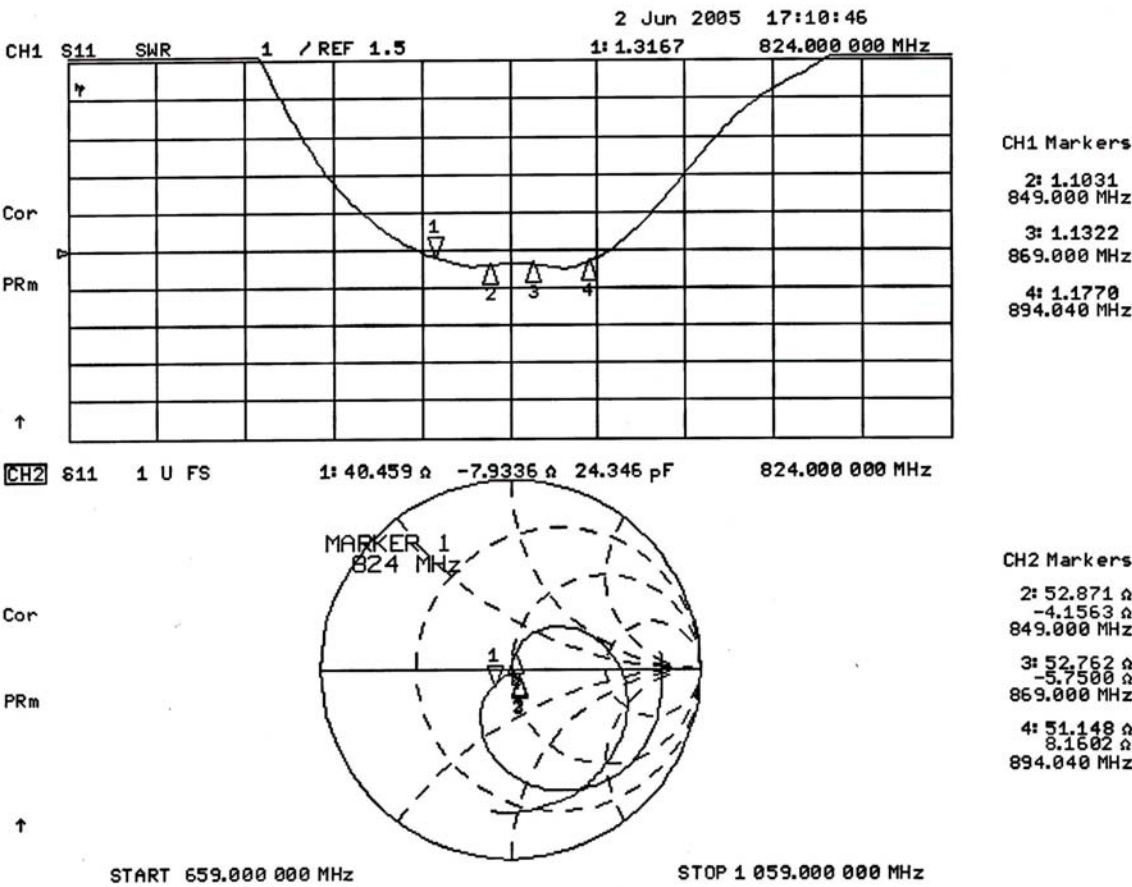
HISTORY				
Revision	DATE	DESCRIPTION	SUBJECT	REMARK
1	2003.6.11	ANT.TNC COUPLING	COUPLING SIZE 13.5mm=>13.3mm	
2	2004.11.11	ANT.TNC BODY	CUTTING => NO CUTTING	
3	2005.6.3	ANT.GAIN	GAIN 2±0.5 => 2±1 dBi	

MJ TELCOM	SPECIFICATION	Engineering Div.	
CONTENTS 1.DESRIPTION 2. ELECTRICAL SPECIFICATIONS 3 MECHANICAL SPECIFICATIONS 4. V.S.W.R CHARACTERISTICS 5. RADIATION PATTERN 6. ANTENNA DRAWING 7. ELECTRICAL TEST PROCEDURE 8. MECHANICAL TEST PROCEDURE 9. ENVIRONMENTAL TEST PROCEDURE 10.TEST FACILITIES 11.PACKING METHOD			
PRODUCT SPECIFICATION	WLL BASE ANTENNA(800MHz band) HCD-8001	Sheet No.	Rev No.
		3 OF 17	31
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MJ TELCOM	SPECIFICATION	Engineering Div.
1. DESCRIPTION 1.1 Scope A sleeve dipole antenna, consisting of copper cylinder and a thin radiator which is a inner conductor of a coaxial line, is a half wave dipole antenna used for a portable and base station unit for wireless communication. 1.2 Part Number MJtelcom Antenna Part No. : HCD-8001 1.3 Units and Definitions V.S.W.R : Voltage Standing Wave Ratio dBi : Antenna gain in dB relative to a isotropic antenna g : Acceleration of gravity (about 9.8 m/sec²) RH : Relative Humidity 1.4 Conditions Unless otherwise stated all temperature tolerance are $\pm 3^{\circ}\text{C}$ and all RH tolerance are ± 5 percentage units. Unless otherwise stated all values are valid at $\pm 20^{\circ}\text{C}$ and 50% RH.		
PRODUCT SPECIFICATION	WLL BASE ANTENNA(800MHz band) HCD-8001	Sheet No. 4 OF 17Rev No. 3
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MJ TELCOM	SPECIFICATION	Engineering Div.
2. ELECTRICAL SPECIFICATIONS 2-1 Frequency range : 824~894 MHz 2-2 V.S.W.R : Less than 1.9:1 2-3 Gain (dBi) : 2 ± 1 (max) 2-4 Radiation pattern : Omni-directional 2-5 Polarization : VERTICAL 2-6 Power input(Watts) : 5(Max) 2-7 Antenna Type : Sleeve half Wave length dipole 2-8 Impedance : 50 Ω Nominal 3.MECHANICAL SPECIFICATIONS 3-1 Overall Length of Ant.: 210.0 ± 2.0 mm 3-2 Weight : 35 g 3-3 Connector Type : TNC-Male(Nickel plate) 3-4 Temperature : -30℃~+70℃ 3-5 Cover material : Urethane x Ivory 3-6 joint color : Nylon 66 x Ivory color 3-7 Joint pin : BsBM x Nickel plate		
PRODUCT SPECIFICATION	WLL BASE ANTENNA(800MHz band) HCD-8001	Sheet No. 5 OF 17 Rev No. 3
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4.V.S.W.R CHARACTERISTICS



PRODUCT
SPECIFICATION

WLL BASE ANTENNA(800MHz band)
HCD-8001

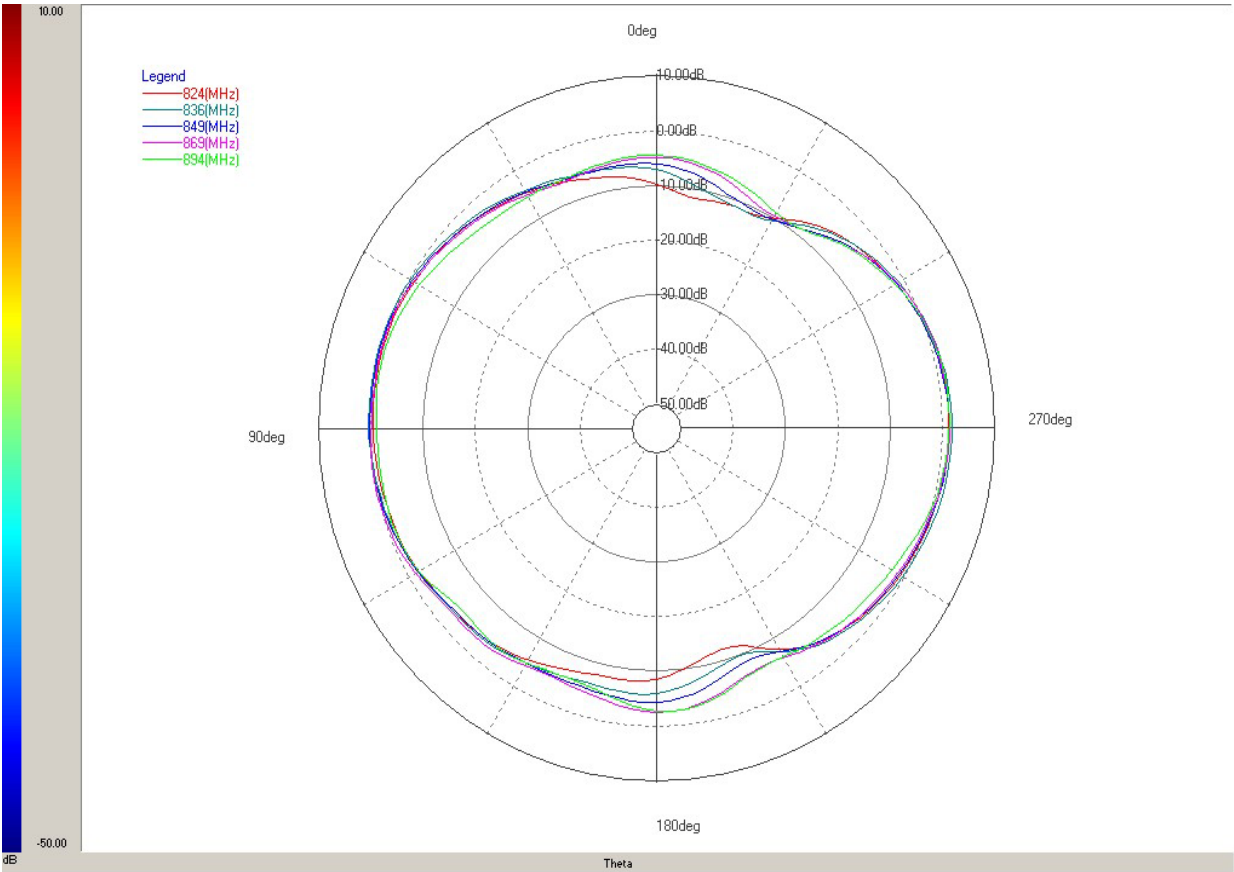
Sheet No.
6 OF 17

Rev No.
3

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5. RADIATION PATTERN

5-1. E1 (x-z) [dBi]



E1 (x-x) PLANE [dBi]

Layer	Max value	Position	Min value	Position	BeamWidth	Average
824(MHz)	1.26 dB	-88.57 deg	-12.40 dB	-162.86 deg	67.41 deg	-3.59 dB
836(MHz)	1.84 dB	-88.57 deg	-11.54 dB	-22.86 deg	65.20 deg	-2.87 dB
849(MHz)	1.34 dB	-91.43 deg	-10.73 dB	-25.71 deg	63.76 deg	-2.99 dB
869(MHz)	1.43 dB	-88.57 deg	-9.86 dB	-28.57 deg	61.34 deg	-2.65 dB
894(MHz)	1.32 dB	-85.71 deg	-9.26 dB	-31.43 deg	52.68 deg	-3.21 dB

PRODUCT
SPECIFICATION

WLL BASE ANTENNA(800MHz band)
HCD-8001

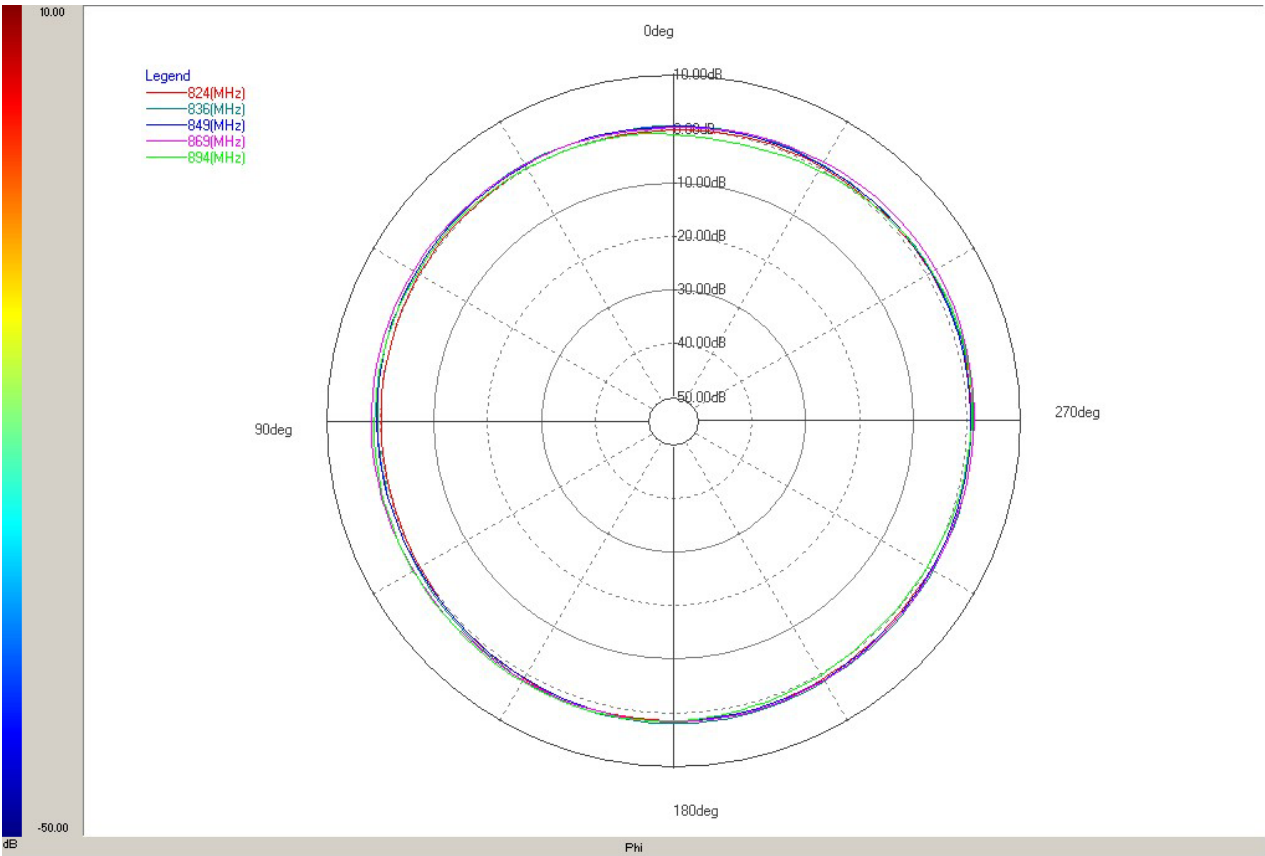
Sheet No.
7 OF 17

Rev No.
3

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5. RADIATION PATTERN

5-2. H (x-y) [dBi]



H (x-y) PLANE [dBi]

Layer	Max value	Position	Min value	Position	BeamWidth	Average
824(MHz)	1.26 dB	175.76 deg	-0.52 dB	14.17 deg	----	0.40 dB
836(MHz)	1.84 dB	178.59 deg	0.31 dB	113.39 deg	----	0.94 dB
849(MHz)	1.36 dB	175.76 deg	0.18 dB	121.90 deg	----	0.71 dB
869(MHz)	1.76 dB	297.66 deg	-0.01 dB	2.83 deg	----	1.18 dB
894(MHz)	1.62 dB	164.42 deg	-1.53 dB	348.68 deg	----	0.50 dB

PRODUCT
SPECIFICATION

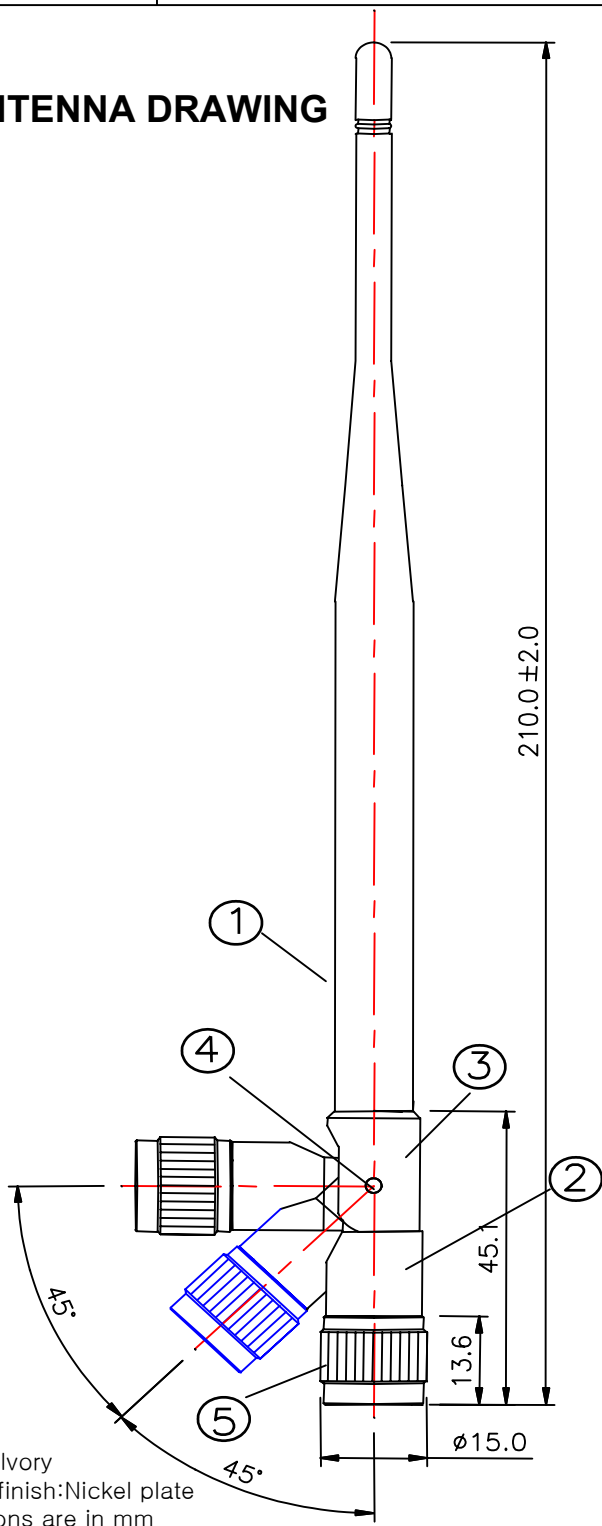
WLL BASE ANTENNA(800MHz band)
HCD-8001

Sheet No.
8 OF 17

Rev No.
3

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6. ANTENNA DRAWING



NOTE:
1.Ant. Color :Ivory
2.Connector finish:Nickel plate
3.All dimensions are in mm

NO	DESCRIPTION	MATERIAL
1	COVER	URETHANE
2	JOINT "B"	Nylon 66
3	JOINT "A"	Nylon 66
4	JOINT PIN	BsBm NixPLATE
5	TNC-MALE	BsBm NixPLATE

PRODUCT
SPECIFICATION

WLL BASE ANTENNA(800MHz band)
HCD-8001

Sheet No.
9 OF 17

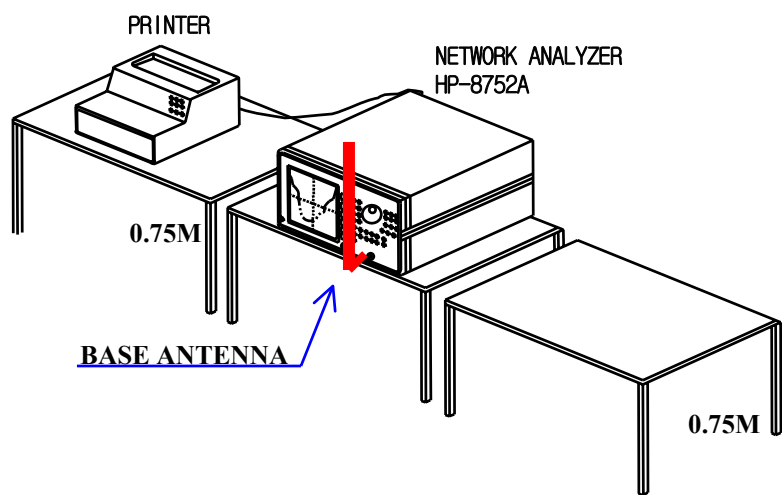
Rev No.
3

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7. ELECTRICAL TEST PROCEDURE

ITEM	Specifications	Measuring method
Frequency Range	824 ~849,869~894 MHz	
Impedance Nominal value	50 Ω	
V.S.W.R	Less than 1.9 : 1	

** Calibration Cal.kit [S11 PORT] Open→Short →Load



A 50 ohms coaxial cable is connected to the WLL SET TNC-FEMALE connector. In the other end the coaxial cable is connected to a network analyzer. The analyzer calibrated so that the reference plane is at the end the coaxial cable connected to the antenna.

8. MECHANICAL TEST PROCEDURE

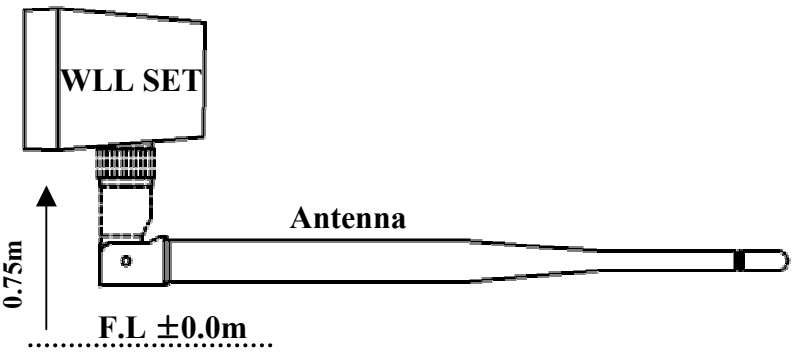
8-1. Tensile Load

ITEM	Specifications	Demand
Appearance	210.0 ± 2 mm	Refer to 6. DRAWING
Tensile Load	Force 3Kgf	Without mechanical damage, electrical performance according to 2.(VSWR) after test

The antenna is assembled to the test equipment according to figure.
The specified force is applied during 10 sec to the top of the sleeve parallel to the antenna axis.

8-2. Drop

ITEM	Specifications	Demand
Drop	Drop height : 0.75M No. of drop : 3 times Set weight : 600 Kg	No visual change and the fitting and mold shall be unchanged mechanically and satisfy the electrical data after test



The antenna is dropped downwards onto a wood sur face

PRODUCT SPECIFICATION	WLL BASE ANTENNA(800MHz band) HCD-8001	Sheet No.	Rev No.
		11 OF 17	3

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Mj telcom and should not be used without prior written permission.

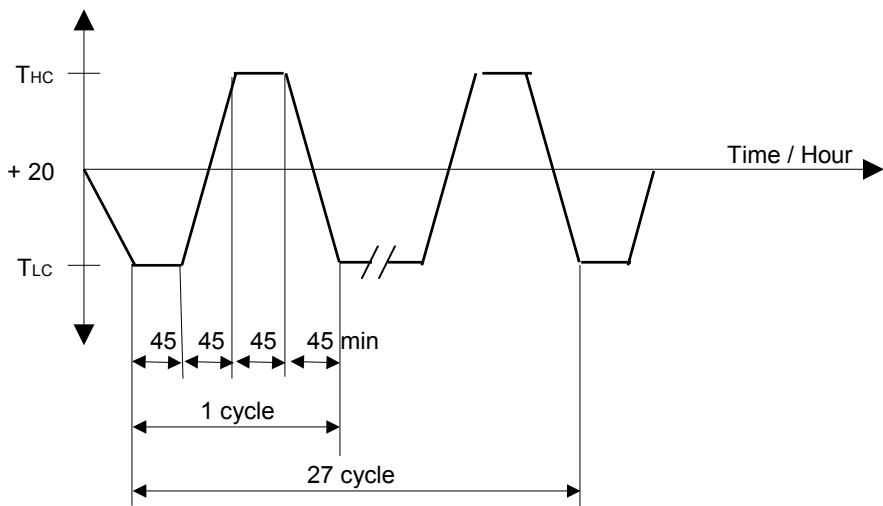
MJ TELCOM	SPECIFICATION		Engineering Div.
8. MECHANICAL TEST PROCEDURE			
8-3. Rotation			
ITEM	Specifications	Demand	
Rotation 360 degree (1 cycle)	No. of rotation : 100 cycle	No visual change and the fitting and mold shall be unchanged mechanically and satisfy the electrical data after test	
The antenna is assembled to the test equipment. The rotation is done in random direction. One direction 1 cycle is from 0 degree→90 degree→180 degree→360 degree. And another 1 cycle is from 360 degree→180 degree→90 degree→0 degree.			
8-4. Tilted			
ITEM	Specifications	Demand	
Tilted 0°→45°→90° (1 cycle)	No. of rotation : 100 cycle	No visual change and the fitting and mold shall be unchanged mechanically and satisfy the electrical data after test	
The antenna is assembled to the test equipment. The rotation is done in random direction.			
PRODUCT SPECIFICATION	WLL BASE ANTENNA(800MHz band) HCD-8001	Sheet No.	Rev No.
		12 OF 17	3
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9. ENVIRONMENTAL TEST PROCEDURE

9-1 Thermal shock

ITEM	Specifications	Demand
Thermal shock	Cycling Temperature : -10°C ~ +60°C at 50%RH	No visual change and the fitting and mold shall be unchanged mechanically and satisfy the electrical data after 1 hour relaxing period at +20°C and 50%RH

The antenna is placed in a climatic chamber. The temperature is cycled as follows : The temperature is kept constant at low cycling temperature for 45min, increased to high cycling temperature during 45min, kept constant for 45min and then decreased to low cycling temperature during 45min. This procedure is repeated 27 times ending at room temperature, see figure.



PRODUCT SPECIFICATION	WLL BASE ANTENNA(800MHz band) HCD-8001	Sheet No.	Rev No.
		13 OF 17	3

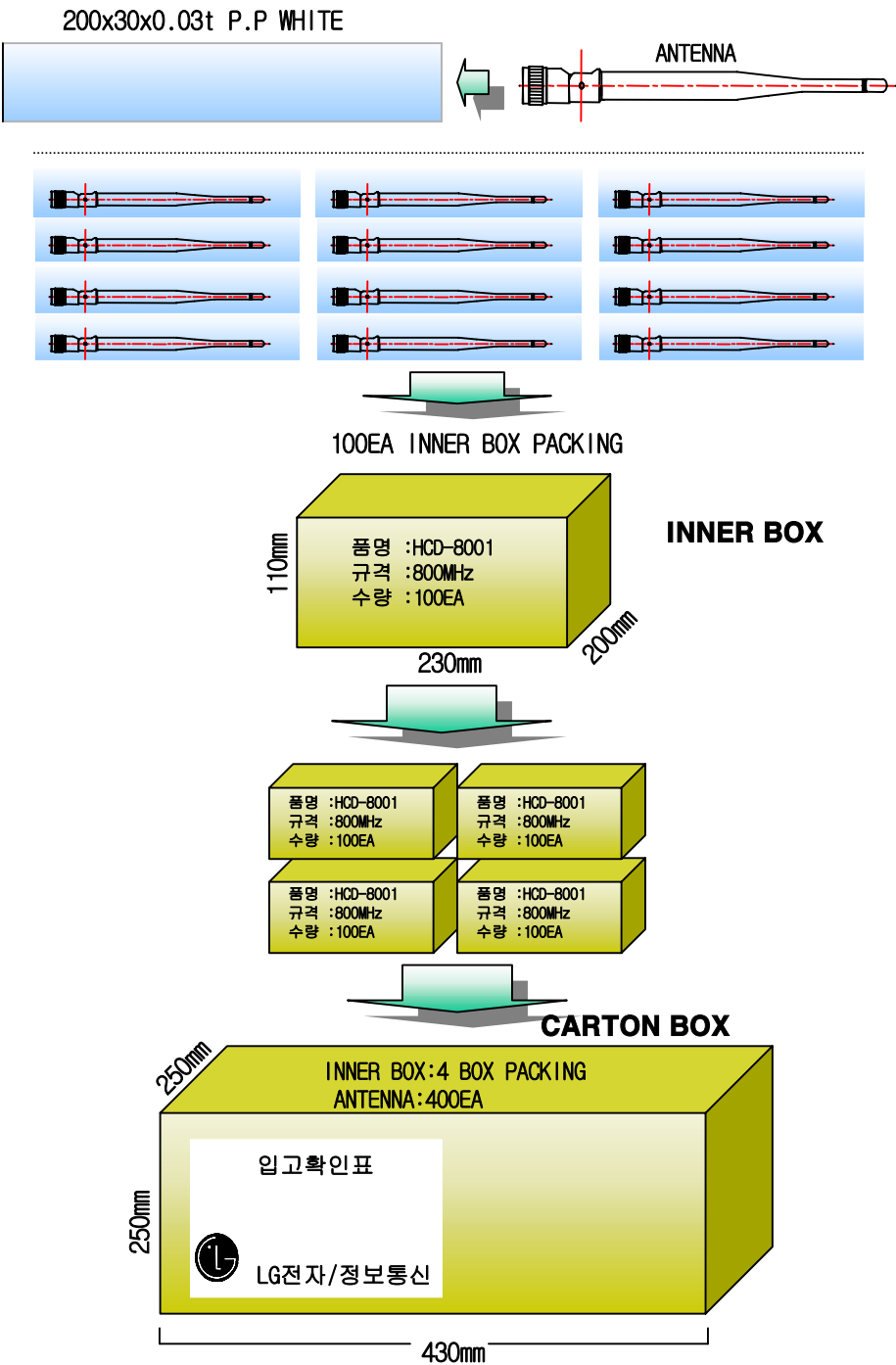
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MJ TELCOM	SPECIFICATION		Engineering Div.
9. ENVIRONMENTAL TEST PROCEDURE			
9-2. Operating Temperature			
ITEM	Specifications	Demand	
Operating Temperature	- 30°C ~ + 70°C at 50%RH	No visual change and the fitting and mold shall be unchanged mechanically and satisfy the electrical data during the test	
The antenna is kept at +20°C and 50%RH for at least 1 hour. The antenna is placed at low temperature. The antenna is taken out after 1 hour, and VSWR performance less than 1.9:1. The antenna is kept at +20°C and 50%RH for at least 1 hour. The antenna is placed at high temperature. The antenna is taken out after 1 hour, and VSWR performance less than 1.9:1.			
9-3. Humidity			
ITEM	Specifications	Demand	
Humidity	Condition : +60°C and 90%RH	No visual change and the fitting and mold shall be unchanged mechanically and satisfy the electrical data after the test.	
The antenna is placed in climatic chamber for 24 hours. The antenna is taken out from the chamber and measured after another 24 hours in room temperature.			
PRODUCT SPECIFICATION	WLL BASE ANTENNA(800MHz band) HCD-8001	Sheet No. 14 OF 17	Rev No. 3
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MJ TELCOM	SPECIFICATION		Engineering Div.
9. ENVIRONMENTAL TEST PROCEDURE 9-4 Salt Spray Test The antenna shall be exposed for 48 hours at +35℃ to a 5% Soldium Chloride fog and have no appearance or function changes after the test			
PRODUCT SPECIFICATION	WLL BASE ANTENNA(800MHz band) HCD-8001	Sheet No.	Rev No.
		15 OF 17	3
This product specification contains information proprietary to Mj telcom and should not be used without prior written permission.			

MJ TELCOM	SPECIFICATION	Engineering Div.
10. TEST FACILITIES Electrical - Anechoic Chamber - Far-field Antenna Measurement System (FR/Orbit) - Network Analyzer (HP-8753ES) : VSWR, Impedance Mechanical - Torque gage - Calipers - Test Zig Environmental - Climatic chamber		
PRODUCT SPECIFICATION	WLL BASE ANTENNA(800MHz band) HCD-8001	Sheet No. 16 OF 17Rev No. 3
This product specification contains information proprietary to Mj telcom and should not be used without prior written permission.		

11.PACKING METHOD



PRODUCT
SPECIFICATION

WLL BASE ANTENNA(800MHz band)
HCD-8001

Sheet No.
17 OF 17

Rev No.
3

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