COMPANY CONFIDENTIAL

UWB ANTENNA APPROVAL SHEET

Document Title	**UWB ANTENNA Approval Sheet**
Samsung P/N	**BN42-xxxxxx**
Hanshin IT P/N	**BWT-UWBH-002**
Latest Revision Number	**V1.0**
Latest Revised Date	**01/10/2011**

Confidential

Revision No.:	**V1.0**
Authors:	**DC KIM**
Project Leader:	**DC KIM**
Project Code:	**SS-UWB-201004**
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Title	Name	Signature	Date
Supervisor	**JS Chae**		
Project Leader	**DC Kim**		
Hardware Leader	**DC Kim**		
PM	**DC Kim**		
Sales	**YS Cho**		

Revision History List

Reporting Date	Version	Description	Reason	Remarks
09 – FEB – 2011	Rev01	Initial Released		P18

* Remarks*

CONTENT

1. Summaries

1.1 Function and Features

This specification of approval is explained information of UWB(Ultra Wide Band) Antenna (BWT-UWBH-002) including general information, general specification, result of examination, examination procedure and assembling.

2. Specification

2.1 Applicable Boundary

This specification data is applicable to define the patch antenna's specification of Ultra Wide Band Antenna for Video data transmitting and receiving.

2.2 Electrical Specification

Model	**BWT-UWBH-002**		
Type	**Microstrip Patch Type**		
Characteristic	Electrical Char.	Frequency Range	3.1GHz ~ 10.6GHz
		Polarization	Linear (Vertical)
		Gain	2.9 dBi (max.)
		V. S. W. R	1 : 3.2
		Power Capability	≤ 5 Watt
		Impedance	50 Ω
	Physical Char.	Radiation Element Material	Copper
		Dimension	13 × 36 × 0.6 mm
		Weight	0.5 g
		Input Connector	MCBG(F)

2.3 Physical Specification

2.3.1 Internal and external structures

1) Product dimension should be satisfied according to defined specification of supplier. (within tolerances)
2) External painting, plating and silk of product should be in the range which is provided by supplier and according to PANTONE color.
3) Material should be anti-corrosion according to Korean Industrial Standards and should not influence on human body, specification of product and function of system.
4) All parts for coupling such as Bolt, Nut, Washer and Spacer should be stable.
5) All stickers on side of product should be stable and be attached on designated location.
6) Other specification of approval should be satisfied.

2.3.2 Specification of Assembling Parts

	Item Name	Specification	Formal/After treatment	Remarks
1	ANT PCB	FR4, 13*36*0.6t	PSR	
2	CABLE ASS’Y 70mm	MCBG-SH-53-070	-	
3	Double Coated Tapes	SK800	-	

3. Examination Procedure

3.1 Physical Examination

3.1.1 Dimensional examination

Dimensions of each product are confirmed in accordance with designated drawing and catalogue.

3.1.2 Visual Examination

1) The surface of product should not be stabbed, scratched or defecting such as no plating, no painting and different color.
2) Former and after treatments should be confirmed in accordance with designated specification and limit sample.
3) The screen printing of product should not be scratched, defecting or cutting.
4) Specification, Vender and dimension of Assembling Parts such as SMA Type/N Type/MCB-Type/Header Connector and Cable should be confirmed.

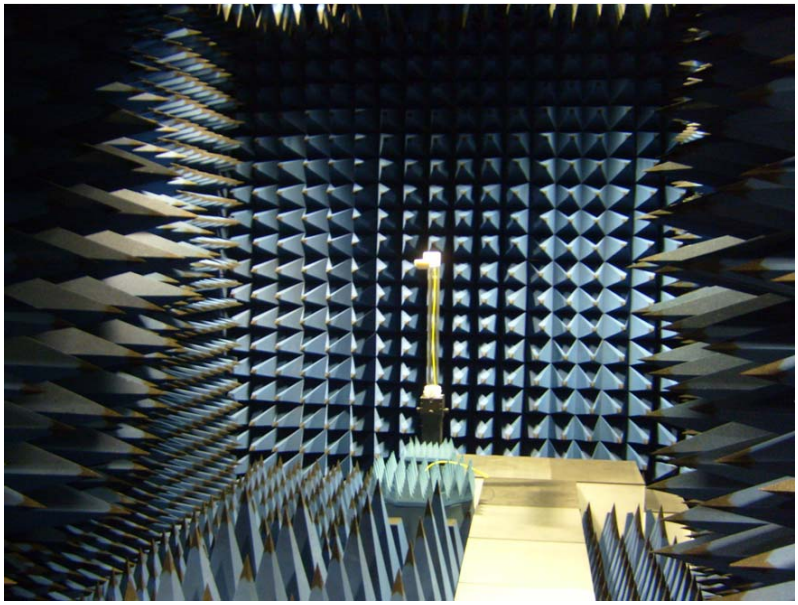
3.1.3 Assembling Examination

1) Assembling status of Assembled parts should be checked.
2) Assembling parts should not be omitted, wrongly assembled.
3) Coupling parts such as Bolt, Nut, Washer and Spacer should not be omitted, different.
4) The exterior of product should be confirmed through visual check.

* Above specification of examination is standard. When further specification is occurred, further specification will be added.
* Examination procedure for standard dimension, Appearance and assembling or exterior drawing and supplier requirements should be described.
* When own check sheet of examination and standard examination clause are occurred, relevant specification of examination or table should be completed.

3.2 Examination of electrical specification

3.2.1 Examination Environment



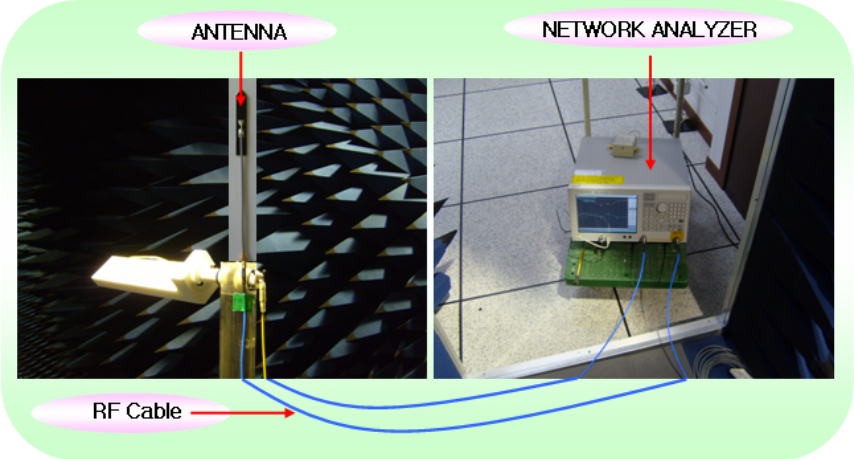
Anechoic Chamber System

3.2.2 Electrical test

1) Electrical specification of Antenna should be tested within appointed frequency range.
2) Electrical specification of Antenna is tested by using the antenna measurement system of supplier.
3) When electrical specification of Antenna is tested, the distance between the Source Antenna and the Measurement Antenna should be more than the Far Field minimum distance (d=400/wavelength) in Open Sight.
4) The uncertainty in the measurement is below 5%.

3.2.3 Voltage Standing Wave Ratio : V.S.W.R

1) Purpose: to check status of Antenna impedance matching.
2) Reference: V.S.W.R ≤ 3.2 (toward wave absorber or Open Sight)
3) Formation of examination



4) Measurement equipment

- Network Analyzer, SMA Calibration Kit, RF Cable

5) Examination procedure

A. 50Ω RF cable is Connected between S11 Port and S22 Port of Network Analyzer.

B. Network Analyzer Measurement parameter is setting S11 or S22.

C. Set up Frequency range, Scale and Marker. At this time, Marker should indicate measured frequency.

D. According to Calibration Menu of measurement equipment, calibrate connecting in order (Open, Short, Load).

E. Check calibration of Network Analyzer in each frequency.

F. Measure S11 (Return loss) after RF cable is connected to AUT input connector.

G. When measurement is complete, check measurement data and evaluate suitability in accordance with designated specification.

6) Remarks

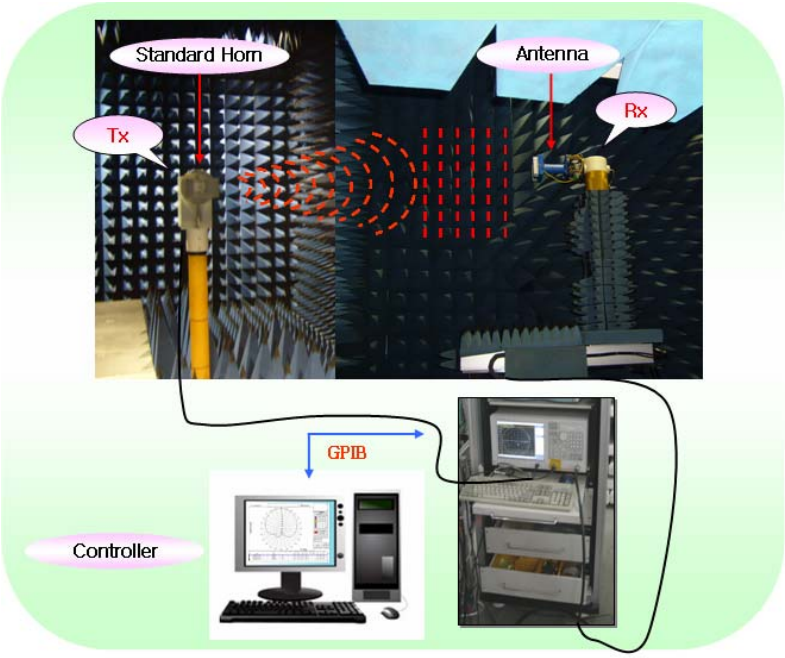
- None

3.2.4 Measurement of Radiation Pattern and Gain

1) Purpose: to check Antenna radiation pattern and gain according to specification.

2) Reference: By using the pattern recording equipment in chamber or open sight, the horizontal and vertical beam pattern are measured. The gain of antenna is recorded refer to MAX figures.

3) Formation of examination



4) Measurement equipment

- Network Analyzer, Source Antenna, Standard Gain Horn, Positioner, Controller, RF Cable

5) Examination procedure

A. All equipment in the test measurement system should be warming up and calibrated.

B. Polarization plan of transmission Antenna should be maintained to synchronize with the Measurement Antenna.

C. Measurement Antenna should be located at center of measurement equipment.

D. After cable is connected, enter such parameter as frequency, output power, measuring speed, gain of standard antenna and level of mark in test measurement system.

E. When measurement is complete, check measurement data and evaluate suitability in accordance with designated specification through Antenna Radiation Pattern Analyzer.

F. When measurement is complete, data is printed or saved.

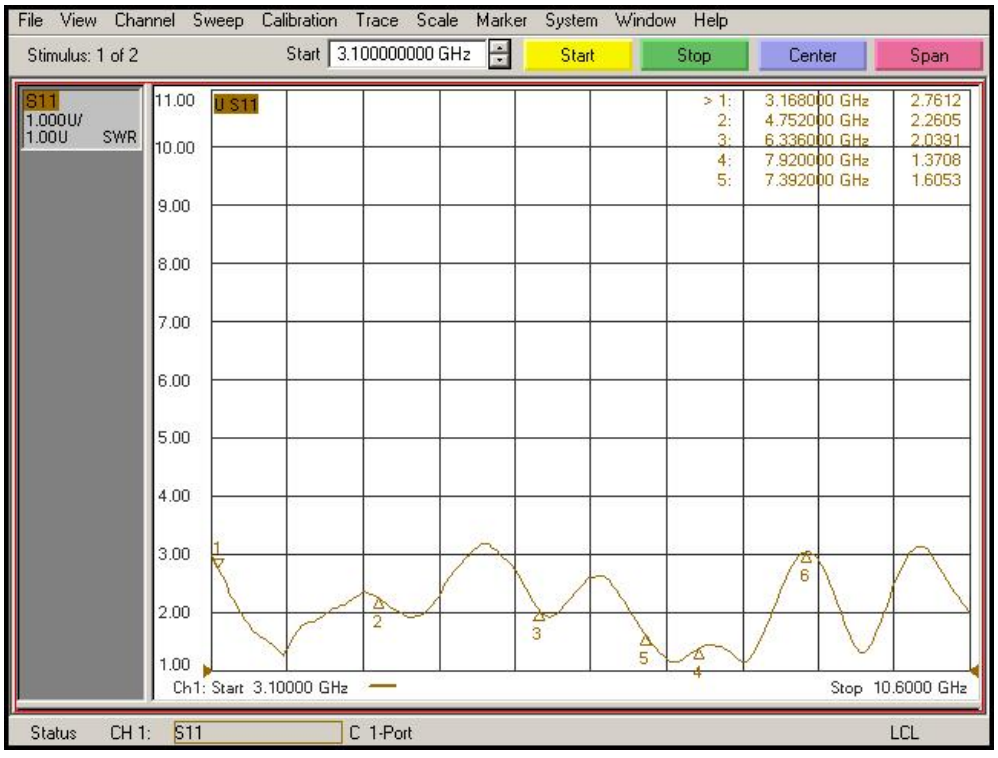
6) Remarks

- None

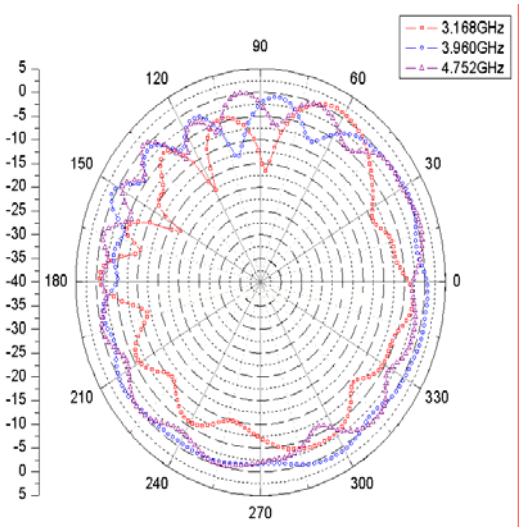
4. Results of Antenna Measurement

4.1 Antenna Return Loss

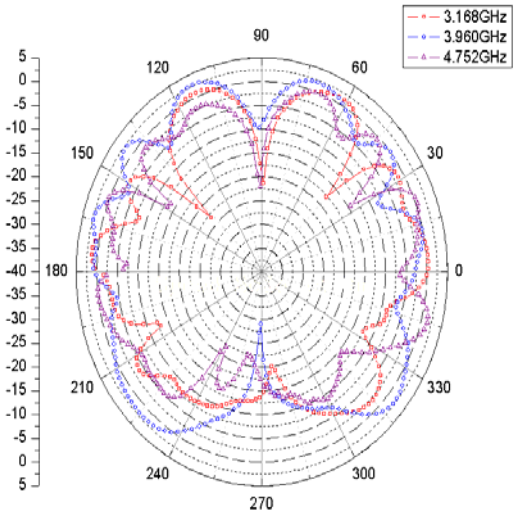
4.2 Antenna VSWR



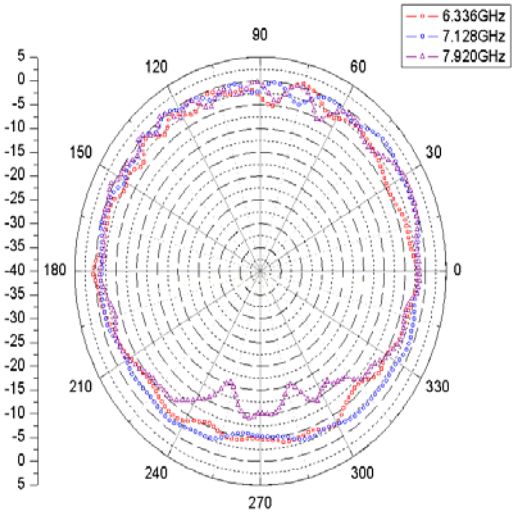
4.3 Antenna Radiation Pattern



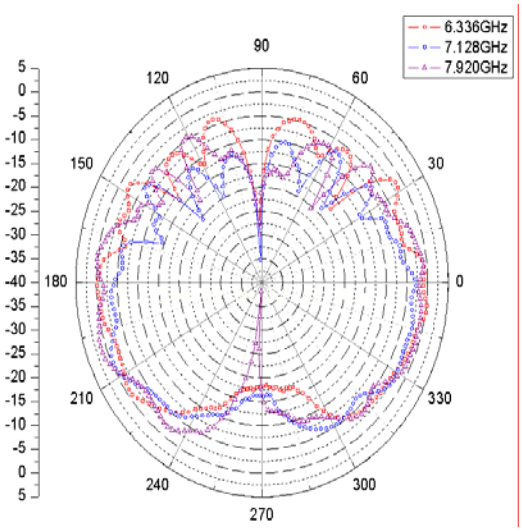
Picture 1. 3.168GHz~3.4.752GHz (Vertical)



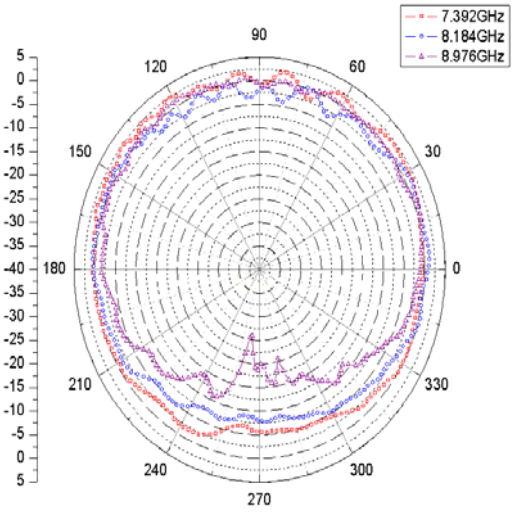
Picture 2. 3.168GHz~3.4.752GHz (Horizontal)



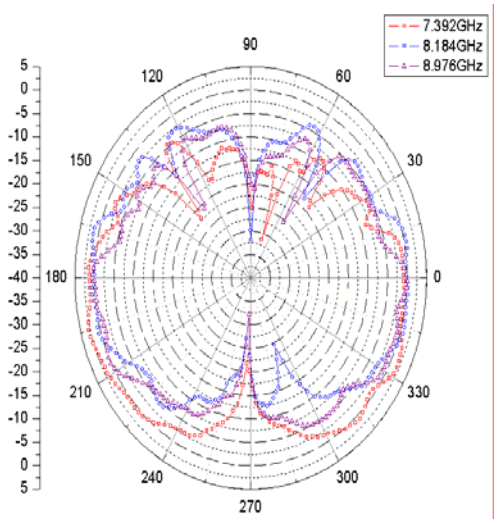
Picture 3. 6.336GHz~7.920GHz (Vertical)



Picture 4. 6.336GHz~7.920GHz (Horizontal)



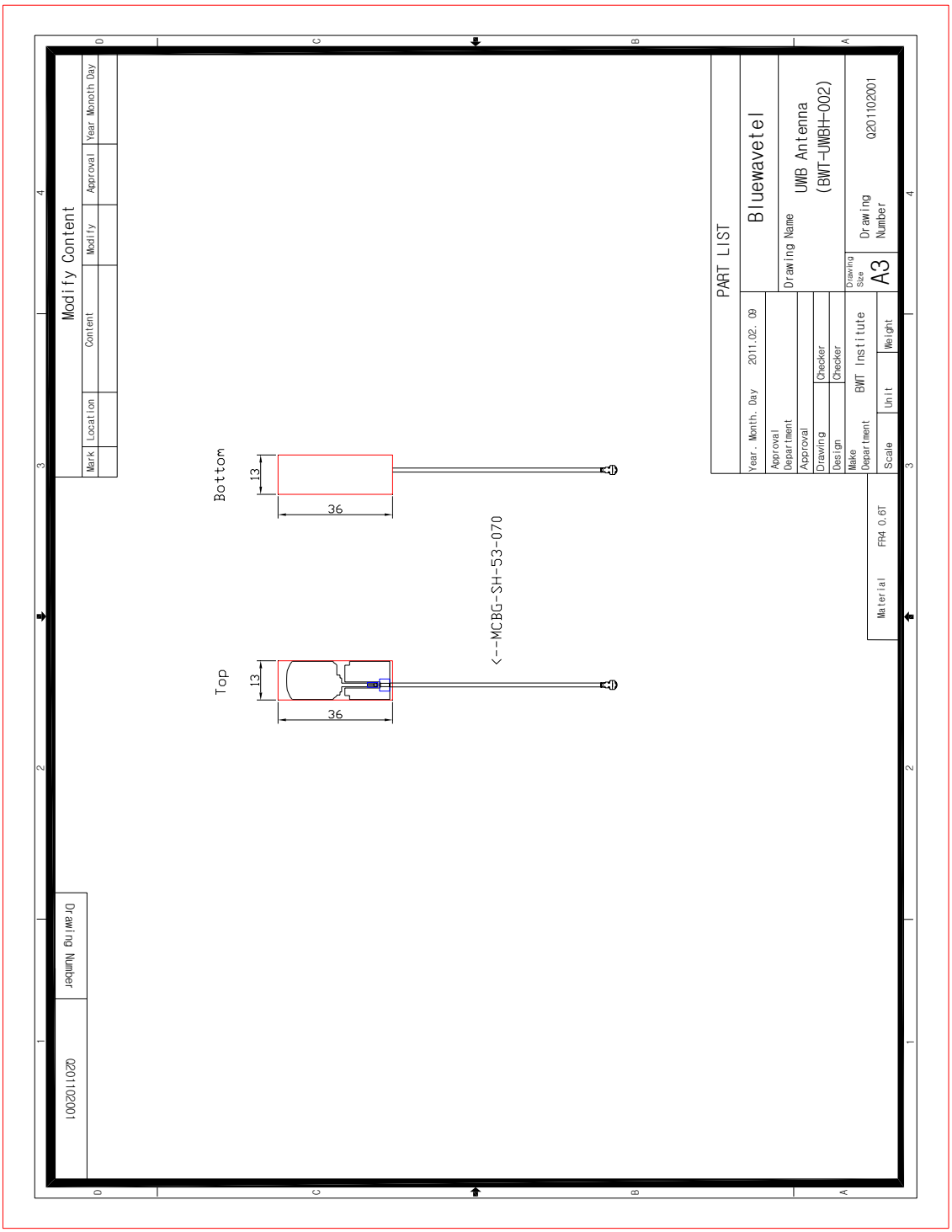
Picture 5. 7.392 GHz~8.976GHz (Vertical)



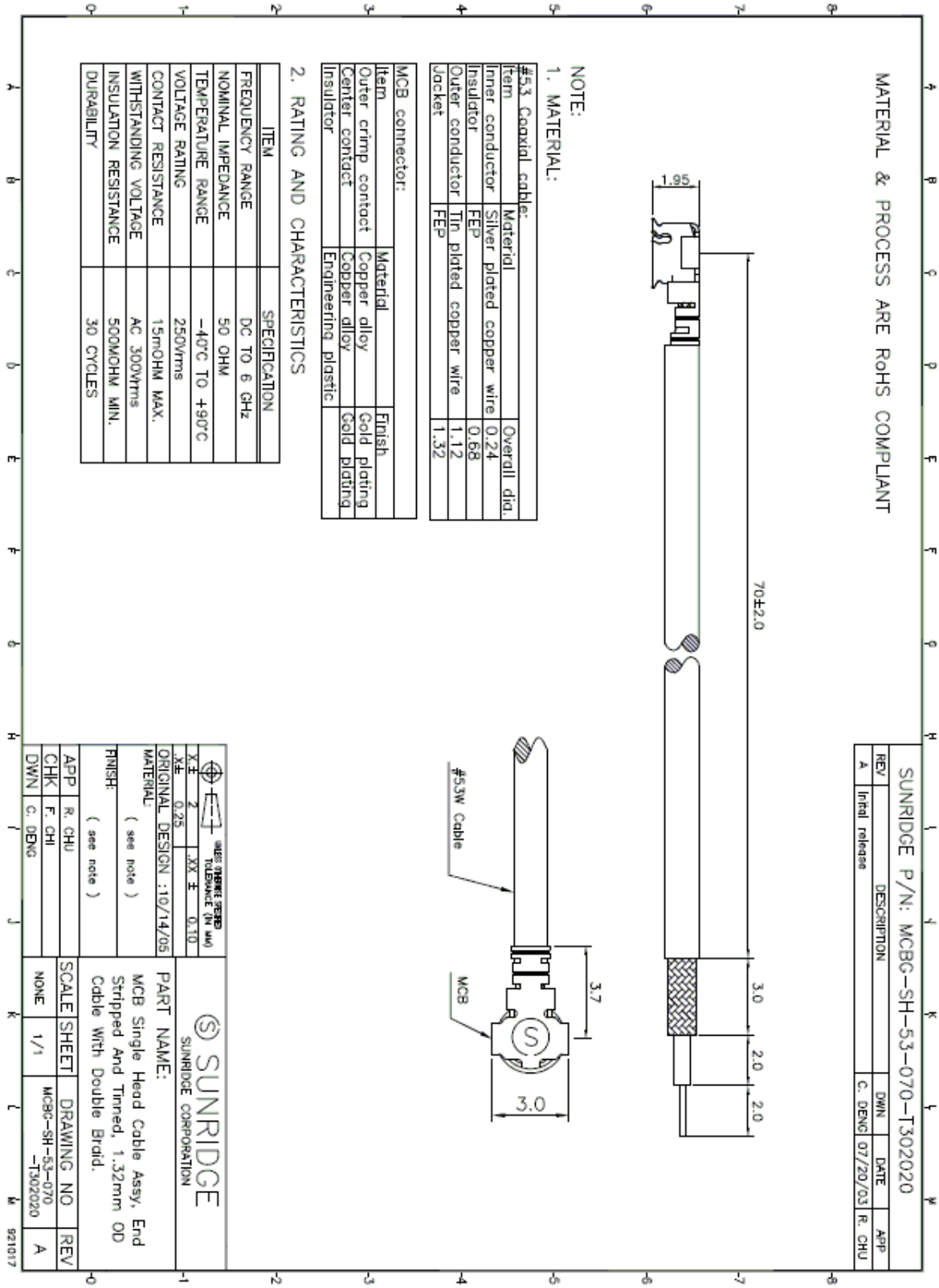
Picture 6. 7.392 GHz~8.976GHz (Horizontal)

5. Drawing

5.1 Antenna Drawing



5.2 Cable Drawing



5.3 PART LIST

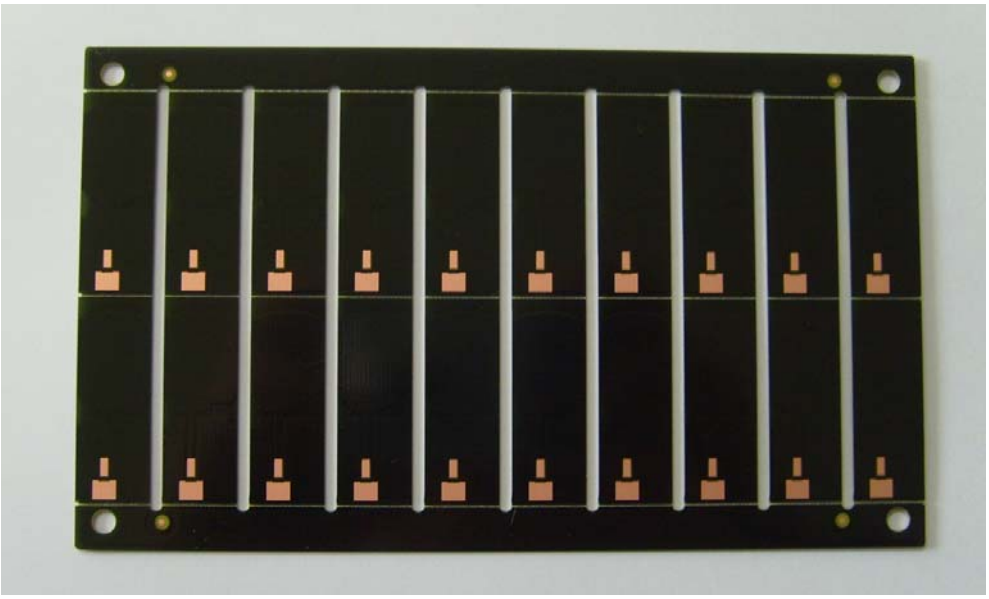
NO.	NAME	SPEC.	QTY	UNIT	MAKER	REMARKS
1	ANT PCB	FR4, 13*36*0.6t	1	EA	Dowoopcb	-
2	CABLE ASS'Y 70mm	MCBG-SH-53-070	1	EA	SCI Gigalane	-
3	Double Coated Tapes	SK800	1	EA	sookwang	-

5.4 Picture

* When those pictures are printed, screen printing should be distinct.

5.4.1 Cable picture

5.4.2 Antenna picture



6. Packing and Mark

6.1 Packing

6.1.1 Packing should be fixed to protect product from being defected by vibrating, shock or static during storage and transportation.

6.1.2 The plastic package should be using antistatic material.

6.1.3. The cover package should be using cardboards box in order to protect product from being defected.

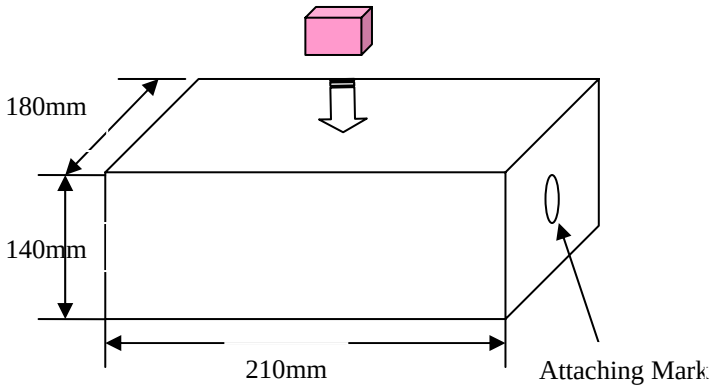
6.2 Mark

6.2.1 Product name and quantity should be marked on the cover package.

MODEL	BWT-UWBH-002
PART NAME	
DESCRIPTION	
QTY(EA)/LOT	
DATE	2011, , ,
BlueWaveTel	

6.3 CARTON PACKING

6.3.1 Product should be packed in Normalized box.



1. SIZE
   210(L)*180(W)*140(H)

2. QUANTITY
   Less than 500EA

7. Remarks and Specific Modification

- None