



Wistron NeWeb Corp.

# APPROVAL SHEET

Customer Name: Celrun **Corporation.**

Date: **2007/7/26**

Doc. Version: **0**

OEM P/N	<b>(81.EEW15.012)</b>	<b>(81.EEW15.013)</b>	
WNC P/N	<b>(81.EEW15.012)</b>	<b>(81.EEW15.013)</b>	
Description	<b>Main、 AUX Antenna for Hana set-up box System</b>		
Version	<b>A00</b>		

Provided By Wistron NeWeb Corp	Reviewed By Wistron NeWeb Corp	Approved By Customer
<b>Wilber Chiu</b>	<b>Patrick Lee</b>	

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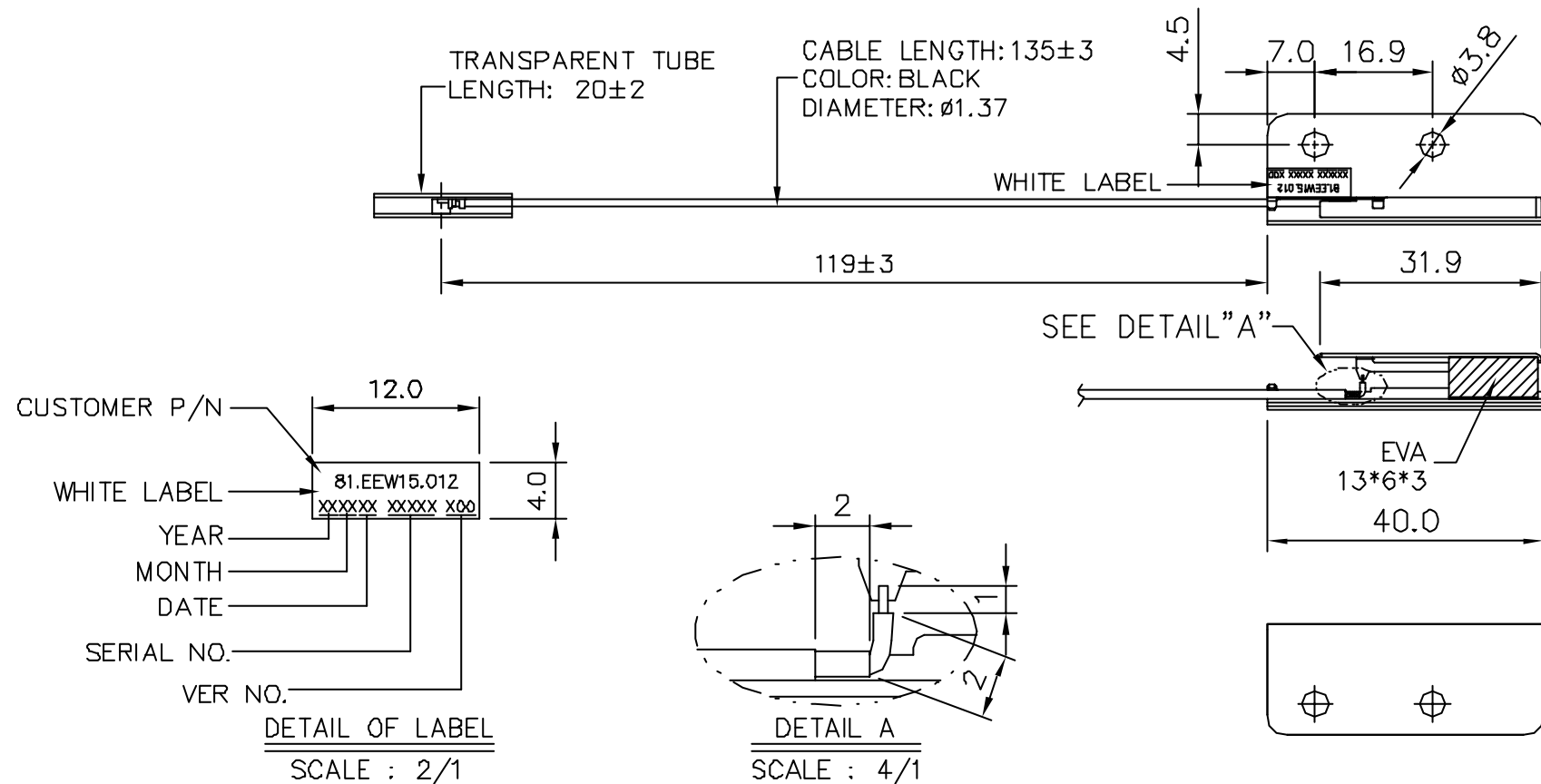
- 1. Introduction**
- 2. Revision History**
- 3. Product Specifications**
- 4. Antenna Performance**


## PART NUMBER BLOCK

PART NUMBER	REV
81.EEW15.012	A

## REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	NEW RELEASE	07/26/07	QUECK LO



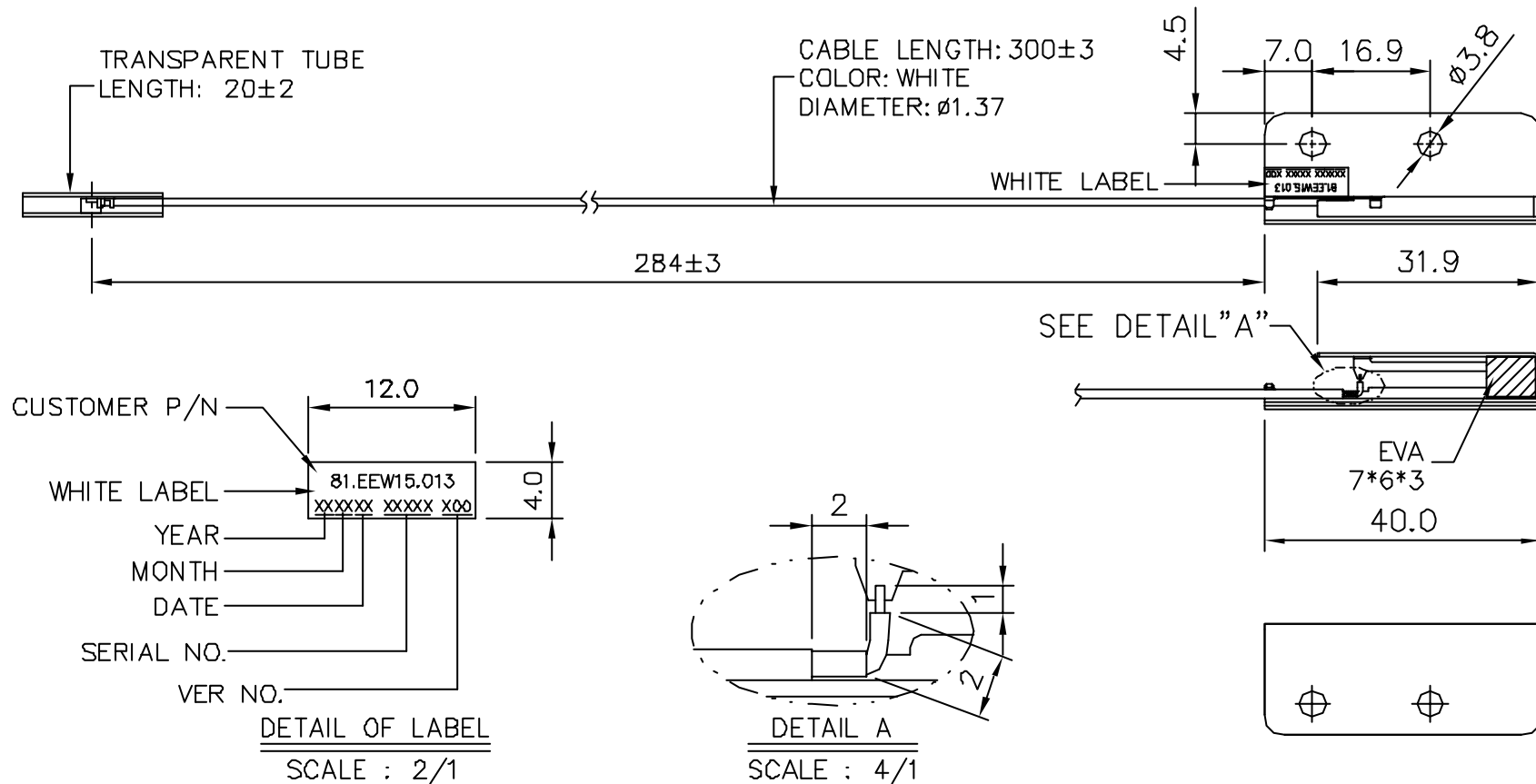
		UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN mm AND TOLERANCES ARE:				<b>WNC</b> 啟基科技股份有限公司 <i>Wistron NetWeb Corp.</i> No. 10-1, Li-fa-hs Road 1, Hsinchu Science Park, Hsinchu 300, Taiwan, R.O.C. Tel: 886-3-6667789 Fax: 886-3-6667322		
		INTEGRAL DIMENSIONS ±0.2		ANGULAR DIMENSIONS ±1°				
		1 PLACE DECIMAL ±0.1		HOLES UNDER Ø5.00 ±D.05				
		2 PLACE DECIMALS ±0.05						
		MATERIAL: NA				DWG TITLE		
		FINISH: NA				HANA SET-UP BOX, ANTENNA, MAIN, EEW-E		
81.EEW15.012	EEW-E	THIRD ANGLE PROJECTION	DRAWN	DANIEL HUANG	07/26/07	SIZE	DWG NO.	REV
NEXT ASSY	USED ON		ENGR	WILBER CHIU	07/26/07	A4	81.EEW15.012	A
APPLICATION			APVD	HEN AN CHEN	07/26/07	SCALE 1/1		SHEET 1 OF 2


## PART NUMBER BLOCK

PART NUMBER	REV
81.EEW15.013	A

## REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	NEW RELEASE	07/26/07	QUECK LO



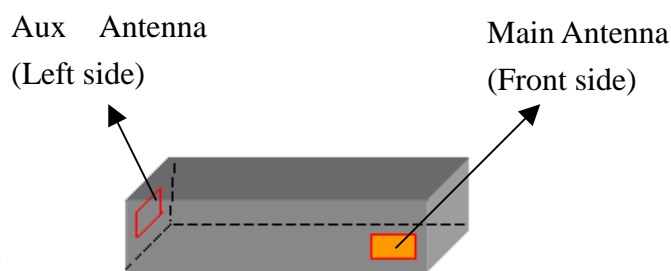
		UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN mm AND TOLERANCES ARE:				<b>WNC</b> 啟基科技股份有限公司 <b>Wintron NetWeb Corp.</b> No. 10-1, Li-fan Road I, Hsinchu Science Park, Hsinchu 300, Taiwan, R.O.C. Tel: 886-3-6667789 Fax: 886-3-6667322		
		INTEGRAL DIMENSIONS ±0.2		ANGULAR DIMENSIONS ±1°				
		1 PLACE DECIMAL ±0.1		HOLES UNDER Ø5.00 ±0.05				
							DWG TITLE	
		MATERIAL: NA					HANA SET-UP BOX, ANTENNA, AUX, EEW-E	
		FINISH: NA						
81.EEW15.013	EEW-E	THIRD ANGLE PROJECTION	DRAWN	DANIEL HUANG	07/26/07	SIZE	DWG NO.	REV
NEXT ASSY	USED ON		ENGR	WILBER CHIU	07/26/07	A4	81.EEW15.013	A
APPLICATION			APVD	HEN AN CHEN	07/26/07	SCALE 1/1		SHEET 1 OF 2

## 1. Introduction

### Antennas for 802.11a+b+g system

#### Main, AUX antenna (PIFA type)

1. Location: Front/Left of the celruntv
2. Cable length of Main antenna: 135 mm, Black  
Cable length of Aux antenna: 300 mm, White  
(connector with 1.37mm RF cable)



## 2. Revision History

Date	Version	Revision History
07/25/2007	A00	New Release

## 3. Product Specifications

### 3.1 Specifications of Antenna Design

Measurement condition: LCD angle 110 degree

#### 3.1.1 VSWR

VSWR	2G4 ISM (2.400 GHz - 2.4835 GHz)			U-NII (5.150 GHz - 5.350 GHz)			HyperLAN (5.470 GHz - 5.825 GHz)		
	2.40 GHz	2.45 GHz	2.50GHz	5.15 GHz	5.25 GHz	5.35 GHz	5.47 GHz	5.5975 GHz	5.825 GHz
MAIN/AUX	<2.5			<2.5			<2.5		

### 3.2 Mechanical Specifications

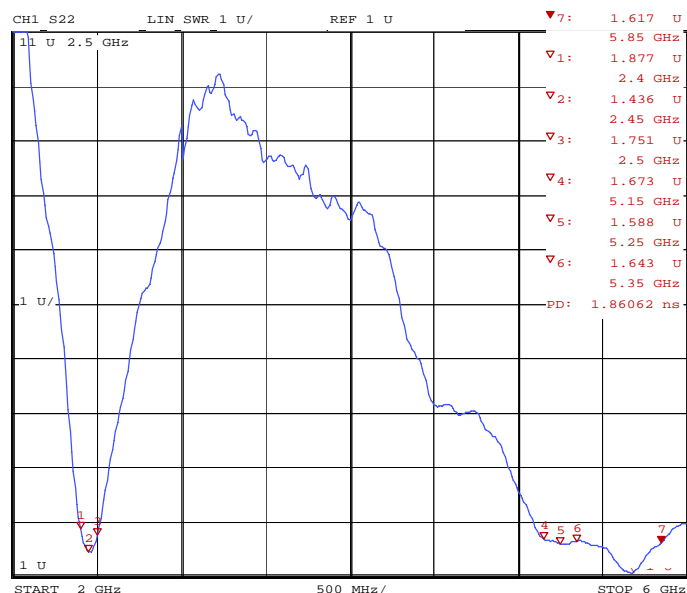
### 3.3 Antenna Material List

#### Main, Aux antenna

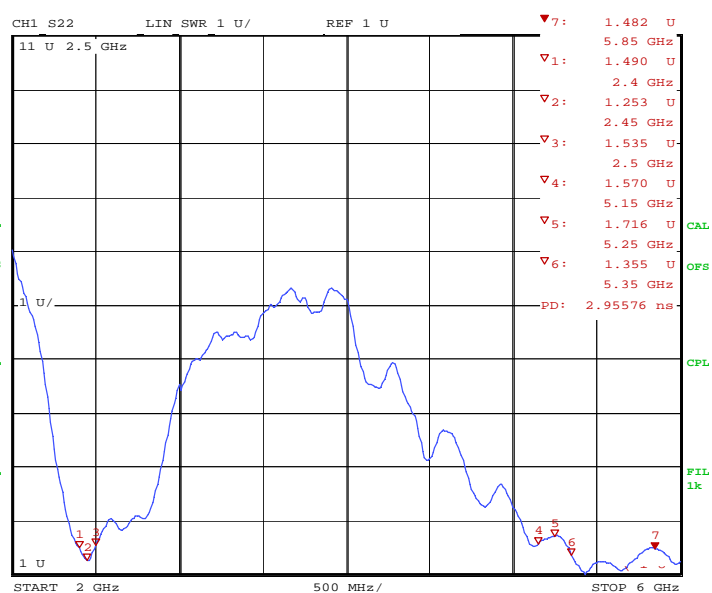
1. Stamped metal
2. Coaxial cable and IPEX connector
3. Label
4. EVA
5. Net weight: Main 4.55g  
Aux 4.01g

### 4 Antenna Performance

#### 4.1 VSWR



**Main**



**AUX**

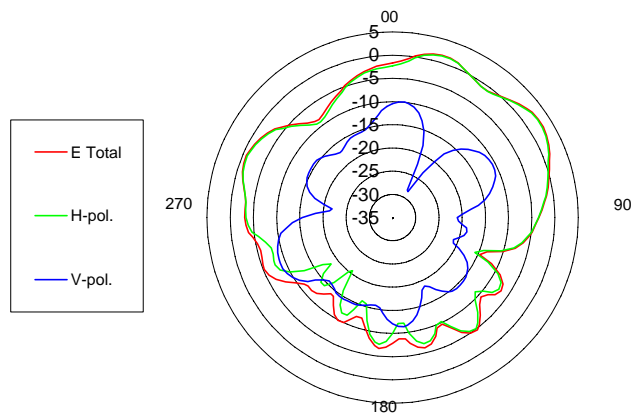
## 4.2 Peak Gain and Average Gain

Main antenna Gain						
Frequency	Max value			Average		
	H-pol	V pol	Total (H-pol+V-pol)	H-pol	V pol	Total (H-pol+V-pol)
2400(MHz)	2.69	-8.86	2.87	-4.55	-14.35	-3.93
2450(MHz)	2.82	-9.16	2.93	-4.46	-13.92	-3.82
2500(MHz)	1.66	-7.35	1.99	-4.73	-13.03	-3.86
5150(MHz)	4.66	-5.43	4.68	-5.90	-12.06	-4.31
5250(MHz)	4.44	-5.71	4.49	-5.94	-12.06	-4.39
5350(MHz)	3.83	-5.21	4.08	-5.93	-12.02	-4.46
5470(MHz)	4.15	-3.17	4.38	-5.12	-11.04	-3.72
5600(MHz)	4.47	-3.28	4.57	-5.35	-11.24	-3.93
5725(MHz)	4.56	-2.69	4.59	-5.45	-10.88	-3.85
5785(MHz)	3.82	-2.64	3.84	-6.22	-10.97	-4.33
5850(MHz)	3.14	-2.44	3.23	-6.20	-10.96	-4.38
Aux antenna Gain						
Frequency	Max value			Average		
	H-pol	V pol	Total (H-pol+V-pol)	H-pol	V pol	Total (H-pol+V-pol)
2400(MHz)	1.11	0.40	2.71	-5.85	-8.21	-3.41
2450(MHz)	1.85	0.58	2.97	-5.62	-7.81	-3.29
2500(MHz)	1.69	0.67	2.95	-6.00	-7.78	-3.57
5150(MHz)	5.32	-4.43	5.36	-6.38	-10.61	-4.16
5250(MHz)	4.74	-3.93	4.81	-6.67	-9.61	-4.12
5350(MHz)	3.97	-3.37	4.02	-6.70	-9.74	-4.19
5470(MHz)	3.79	-2.69	4.01	-5.52	-9.13	-3.26
5600(MHz)	3.74	-2.28	3.99	-5.22	-9.06	-3.04
5725(MHz)	3.85	-2.49	3.88	-4.98	-9.04	-2.76
5785(MHz)	3.51	-3.18	3.61	-5.29	-8.69	-2.92
5850(MHz)	3.65	-3.92	3.81	-5.07	-9.02	-2.86

## 4.3 Antenna Pattern

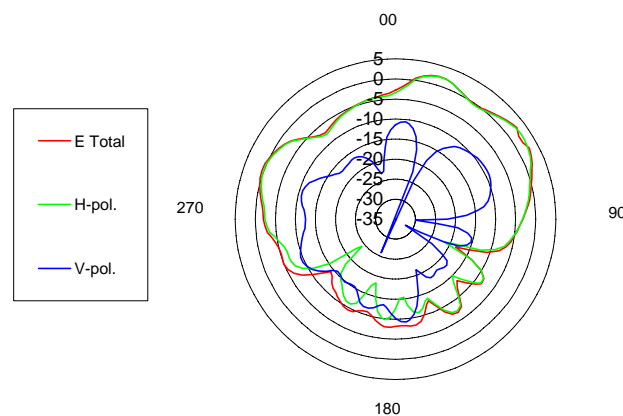
## 2G4 ISM (2.400 GHz - 2.4835 GHz) Antenna Radiation Patterns

**Main antenna @2.40 GHz**



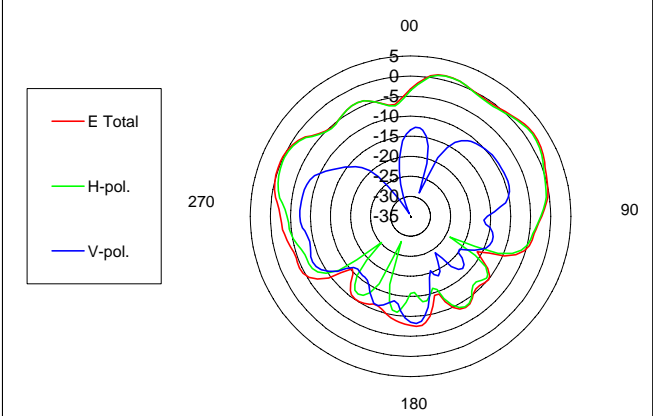
	Total	H-pol	V pol
Peak Gain	2.87	2.69	-8.86
Average Gain	-3.93	-4.55	-14.35

**Main antenna @2.45 GHz**



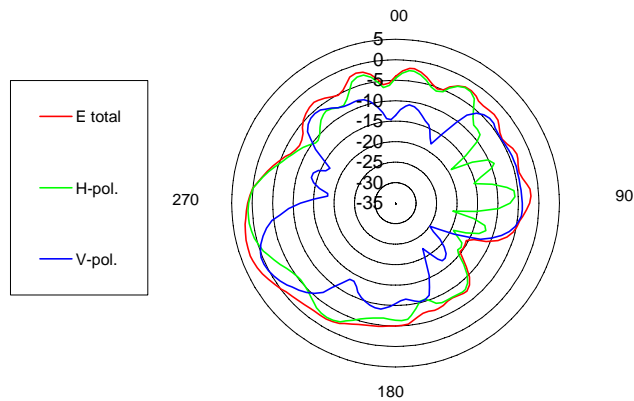
	Total	H-pol	V pol
Peak Gain	2.93	2.82	-9.16
Average Gain	-3.82	-4.46	-13.92

**Main antenna @2.50 GHz**



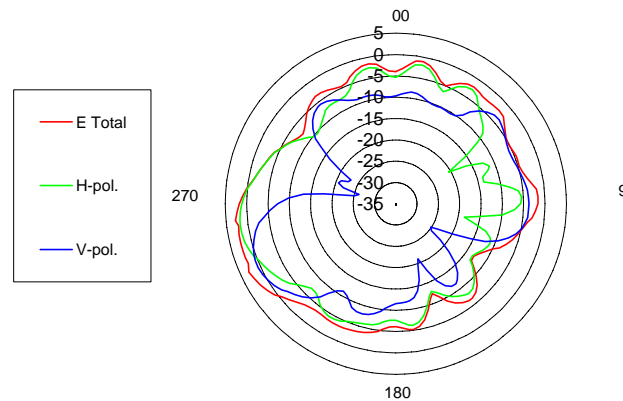
	Total	H-pol	V pol
Peak Gain	1.99	1.66	-7.35
Average Gain	-3.86	-4.73	-13.03

**Aux antenna @2.40 GHz**



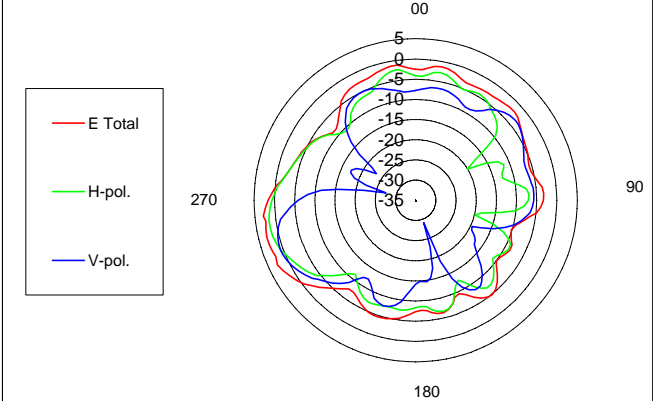
	Total	H-pol	V pol
Peak Gain	2.71	1.11	0.40
Average Gain	-3.41	-5.85	-8.21

**Aux antenna @2.45 GHz**



	Total	H-pol	V pol
Peak Gain	2.97	1.85	0.58
Average Gain	-3.29	-5.62	-7.81

**Aux antenna @2.50 GHz**

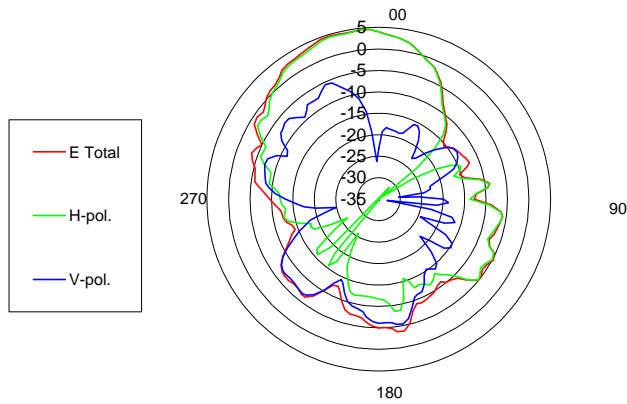


	Total	H-pol	V pol
Peak Gain	2.95	1.69	0.67
Average Gain	-3.57	-6.00	-7.78



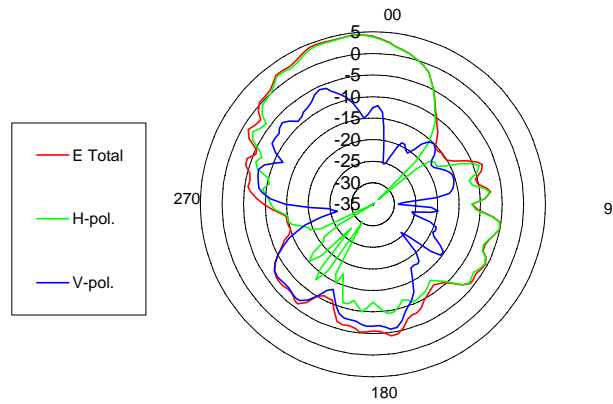
## UII Band (5.150 GHz - 5.350 GHz) Antenna Radiation Patterns

**Main antenna @5.15 GHz**



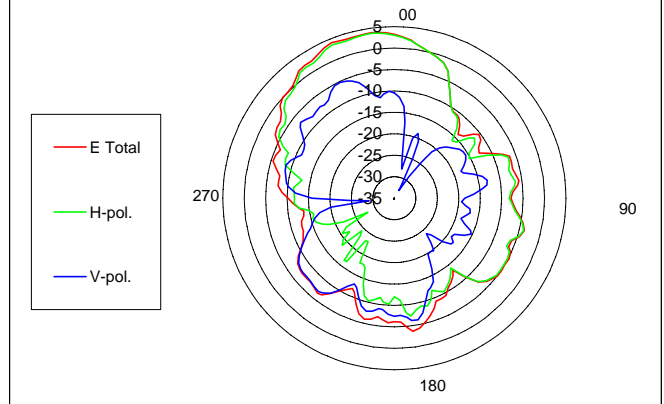
	Total	H-pol	V pol
Peak Gain	4.68	4.66	-5.43
Average Gain	-4.31	-5.90	-12.06

**Main antenna @5.25 GHz**



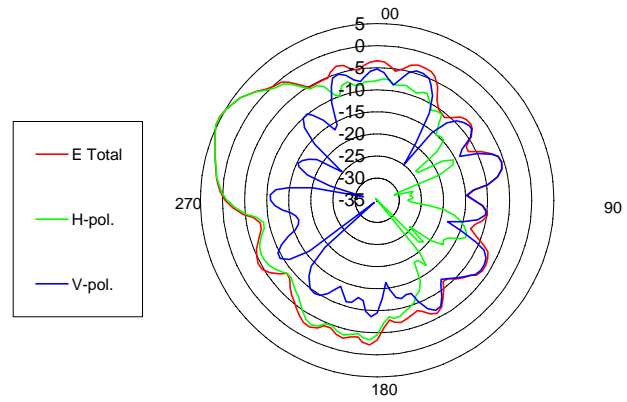
	Total	H-pol	V pol
Peak Gain	4.49	4.44	-5.71
Average Gain	-4.39	-5.94	-12.06

**Main antenna @5.35 GHz**



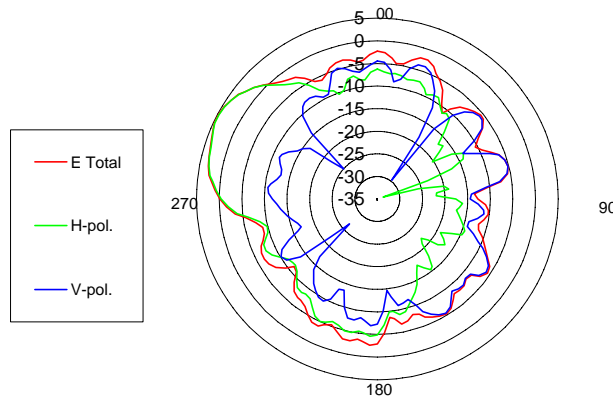
	Total	H-pol	V pol
Peak Gain	4.08	3.83	-5.21
Average Gain	-4.46	-5.93	-12.02

**Aux antenna @5.15 GHz**



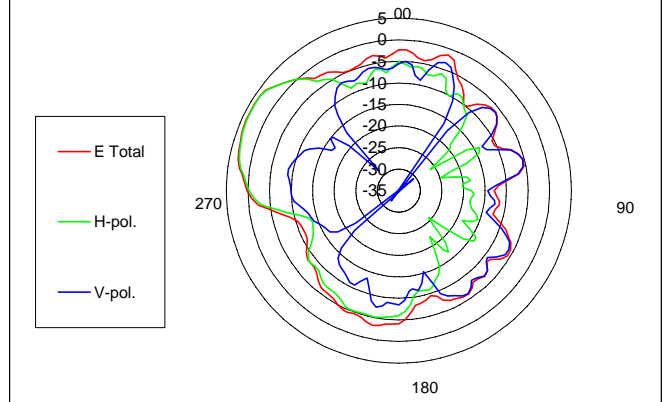
	Total	H-pol	V pol
Peak Gain	5.36	5.32	-4.43
Average Gain	-4.16	-6.38	-10.61

**Aux antenna @5.25 GHz**



	Total	H-pol	V pol
Peak Gain	4.81	4.74	-3.93
Average Gain	-4.12	-6.67	-9.61

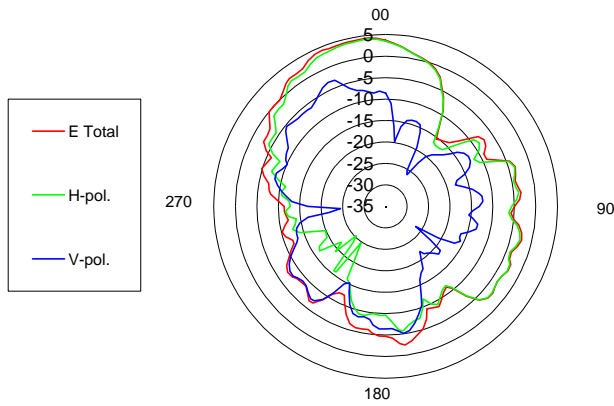
**Aux antenna @5.35 GHz**



	Total	H-pol	V pol
Peak Gain	4.02	3.97	-3.37
Average Gain	-4.19	-6.70	-9.74

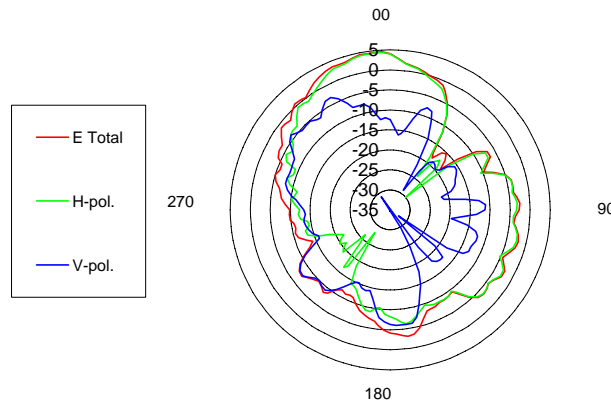
## HyperLAN (5.470 GHz - 5.725 GHz) Antenna Radiation Patterns

**Main antenna @5.47 GHz**



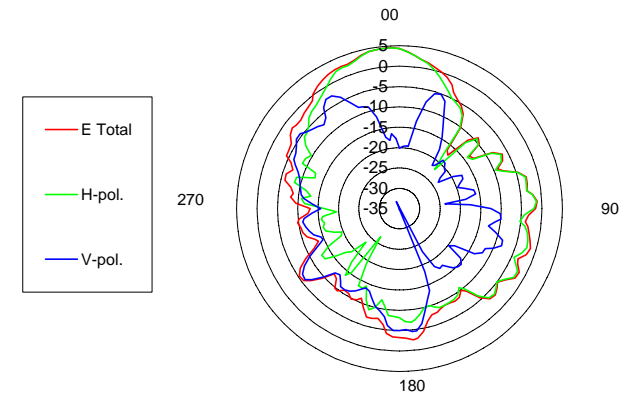
	Total	H-pol	V pol
Peak Gain	4.38	4.15	-3.17
Average Gain	-3.72	-5.12	-11.04

**Main antenna @5.600 GHz**



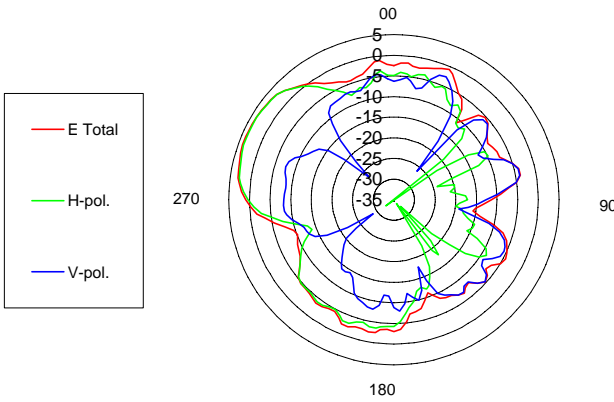
	Total	H-pol	V pol
Peak Gain	4.57	4.47	-3.23
Average Gain	-3.93	-5.35	-11.24

**Main antenna @5.725 GHz**



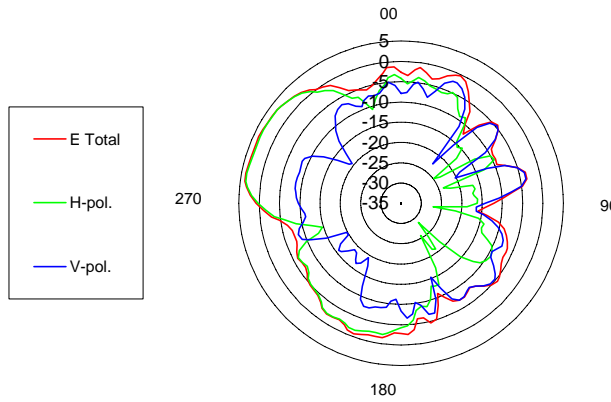
	Total	H-pol	V pol
Peak Gain	4.59	4.56	-2.69
Average Gain	-3.85	-5.45	-10.88

**Aux antenna @5.47 GHz**



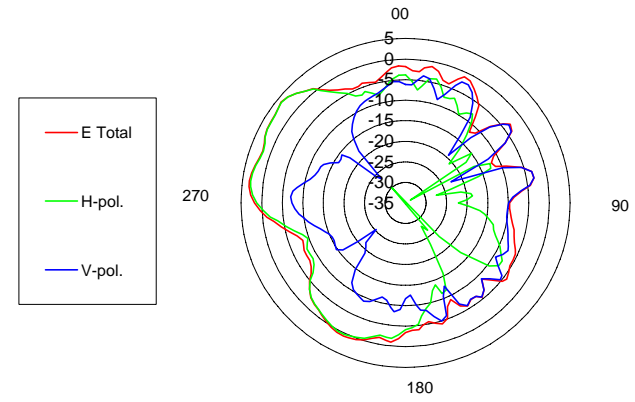
	Total	H-pol	V pol
Peak Gain	4.01	3.79	-2.69
Average Gain	-3.26	-5.52	-9.13

**AUX antenna @5.600 GHz**



	Total	H-pol	V pol
Peak Gain	3.99	3.74	-2.28
Average Gain	-3.04	-5.22	-9.06

**Aux antenna @5.725 GHz**

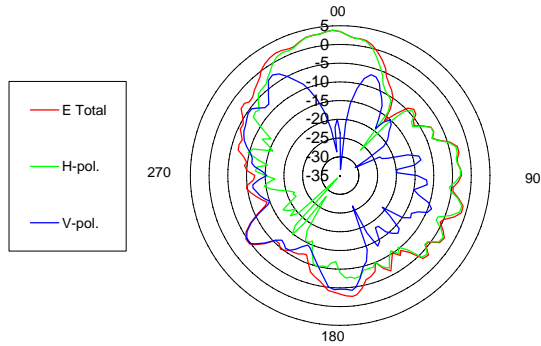


	Total	H-pol	V pol
Peak Gain	3.88	3.85	-2.49
Average Gain	-2.76	-4.98	-9.04

Note: The outer circle approximately represents the 5 dBi gain circle.  
Each circle with 5 dBi difference (Max=5 dBi and Min=-35 dBi)

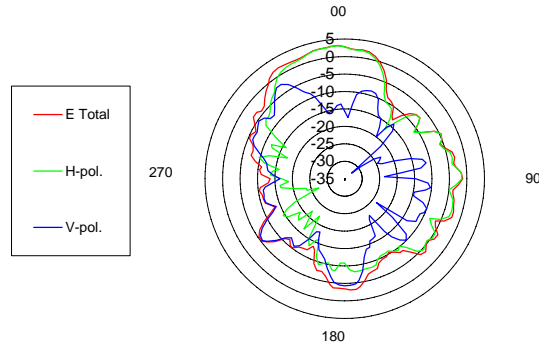
## HyperLAN (5.785 GHz - 5.850 GHz) Antenna Radiation Patterns

**Main antenna @5.785 GHz**



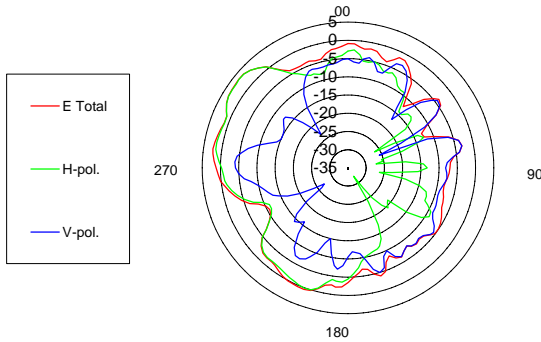
	Total	H-pol	V pol
Peak Gain	3.84	3.82	-2.64
Average Gain	-4.33	-6.22	-10.97

**Main antenna @5.850 GHz**



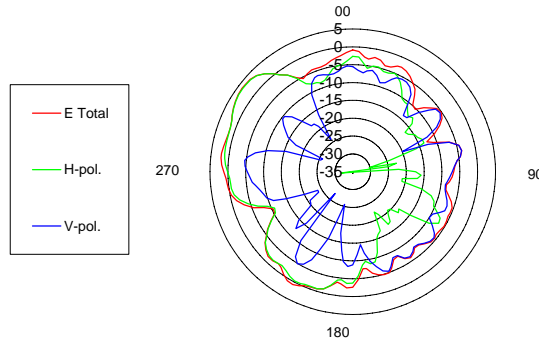
	Total	H-pol	V pol
Peak Gain	3.23	3.14	-2.44
Average Gain	-4.38	-6.20	-10.96

**Aux antenna @5.785 GHz**



	Total	H-pol	V pol
Peak Gain	3.61	3.51	-3.18
Average Gain	-2.92	-5.29	-8.69

**Aux antenna @5.850 GHz**



	Total	H-pol	V pol
Peak Gain	3.81	3.65	-3.92
Average Gain	-2.86	-5.07	-9.02

Note: The outer circle approximately represents the 5 dBi gain circle.  
Each circle with 5 dBi difference (Max=5 dBi and Min=-35 dBi)