

# WiMAX Antenna Information

## ThinkPad Rocky 30

### [ Amphenol antenna ]

<b>Platform</b>	
Platform owner	Lenovo
Platform name	ThinkPad Rocky30
Model name	Rocky30
ODM	Pegatron
Target FCC Grant	
Target Launch Date	
<b>Antenna</b>	
Brand name	Amphenol Taiwan Corporation
Parts Number	WLAN Aux : 14G152168131LV
	WLAN Main : 14G152168231LV
<b>Transmitter Module</b>	
WLAN Tx Module	533ANXMMW, FCC ID: PD9533ANXMU

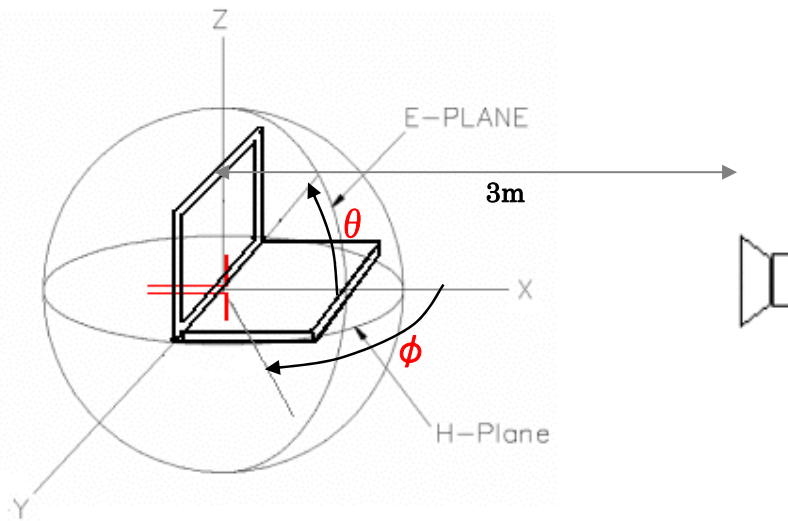
## Section 1. Antenna Assembly Specifications

### 1. Antenna Assembly Summary:

1A Antenna Part Number	1B Manufacture	1C Antenna Type	1D Cable Assembly Part Number and Information	1E *Peak Gain			
				Frequency	Horizontal (dBi)	Vertical (dBi)	
(P/N: 14G152168231LV)  Main antenna	Amphenol Taiwan Corporation	Coupling antenna & Carrier	P/N: GBE RF 113XL5 50 ohm Coaxial. length: 616.5mm Black diameter: 1.13mm low loss Connector: IPEX	2.3GHz band	2300MHz	<b>-3.38</b>	<b>-2.50</b>
					2350MHz	<b>-1.88</b>	<b>-1.06</b>
					2400MHz	<b>-2.06</b>	<b>-1.57</b>
				2.5/2.6GHz band	2496MHz	<b>-3.68</b>	<b>-0.59</b>
					2593MHz	<b>-3.54</b>	<b>-1.21</b>
					2690MHz	<b>-3.76</b>	<b>-2.47</b>
				3.3/3.7GHz band	3300MHz	<b>-5.63</b>	<b>-1.61</b>
					3500MHz	<b>-3.41</b>	<b>-0.10</b>
					3700MHz	<b>-3.63</b>	<b>-0.03</b>
(P/N: 14G152168131LV)  Auxiliary antenna	Amphenol Taiwan Corporation	Coupling antenna & Carrier	P/N: GBE RF 113XL5 50 ohm Coaxial. length: 834.5mm Black diameter: 1.13mm low loss Connector: IPEX	2.3GHz band	2300MHz	<b>-4.35</b>	<b>-1.52</b>
					2350MHz	<b>-3.24</b>	<b>-1.41</b>
					2400MHz	<b>-3.53</b>	<b>-1.37</b>
				2.5/2.6GHz band	2496MHz	<b>-4.18</b>	<b>-1.00</b>
					2593MHz	<b>-4.71</b>	<b>-1.01</b>
					2690MHz	<b>-4.94</b>	<b>-1.52</b>
				3.3/3.7GHz band	3300MHz	<b>-2.64</b>	<b>-2.37</b>
					3500MHz	<b>-3.83</b>	<b>-2.08</b>
					3700MHz	<b>-2.12</b>	<b>-1.97</b>

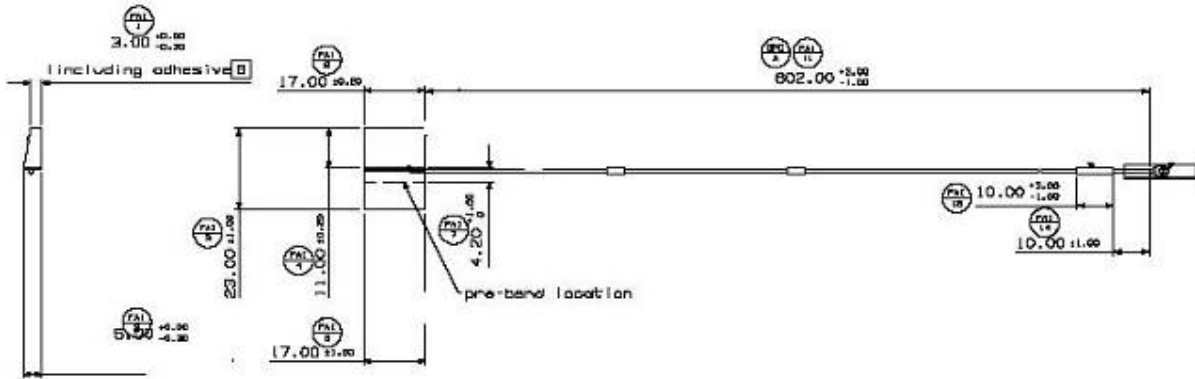
## 2. Antenna Gain Measuring Facility

Radiation characteristic of antenna is measured in regard to the rotation angle  $\phi$  (0~360degree), and the loft angle  $\theta$ (0~90 degree) as shown below.



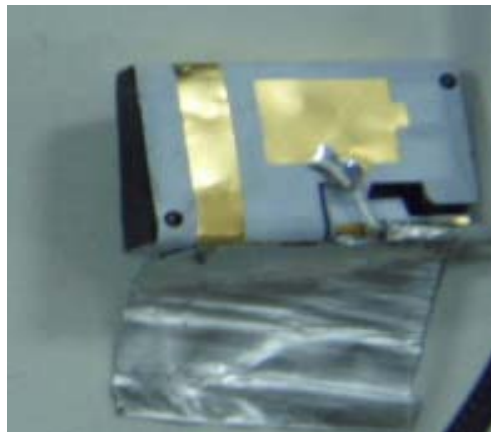
## Section 2. Dimensioned Photos or Drawings of Antennas

### Main Antenna Dimensioned Drawing:

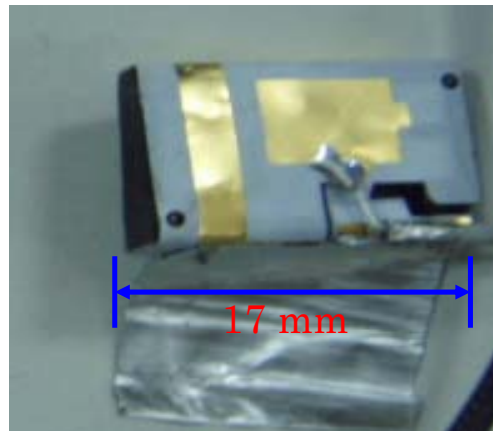


Main WLAN Antenna

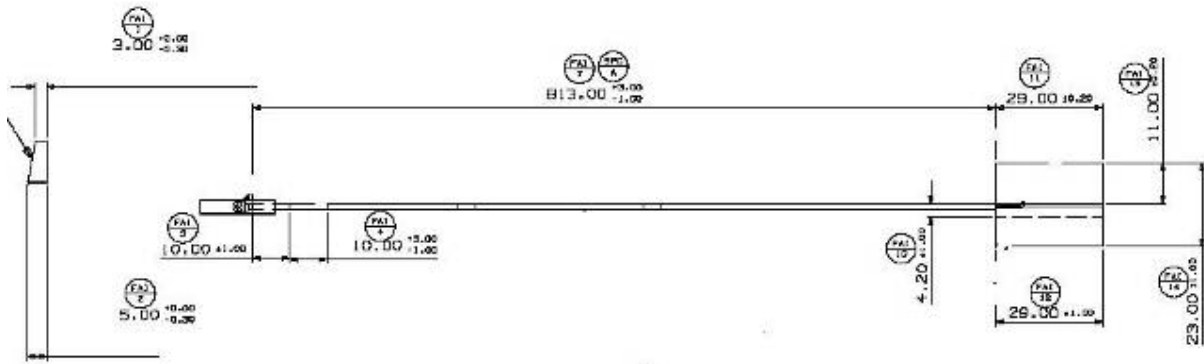
### Main Antenna Photo:



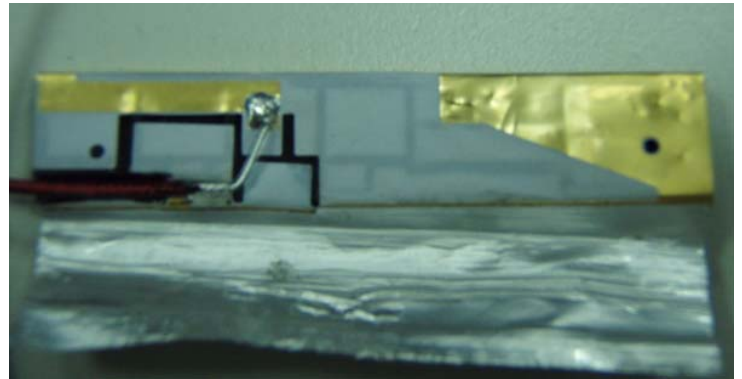
Main Antenna



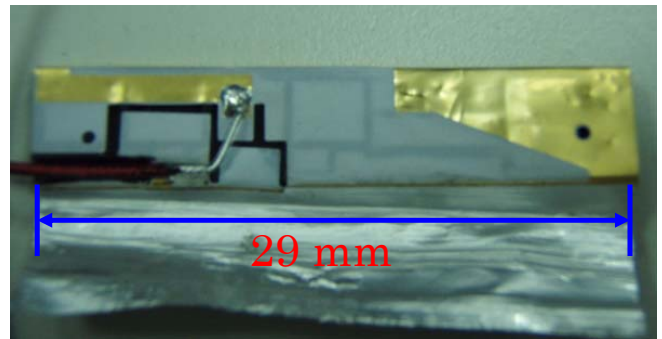
**Aux Antenna Dimensioned Drawing:**



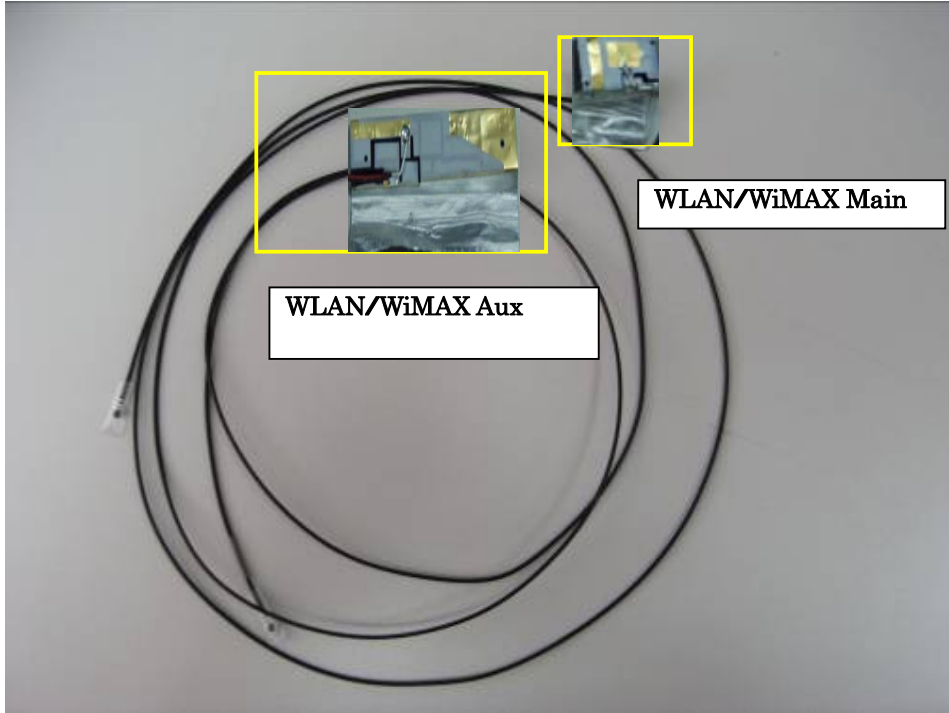
Aux WLAN Antenna  
**Aux Antenna Photo:**



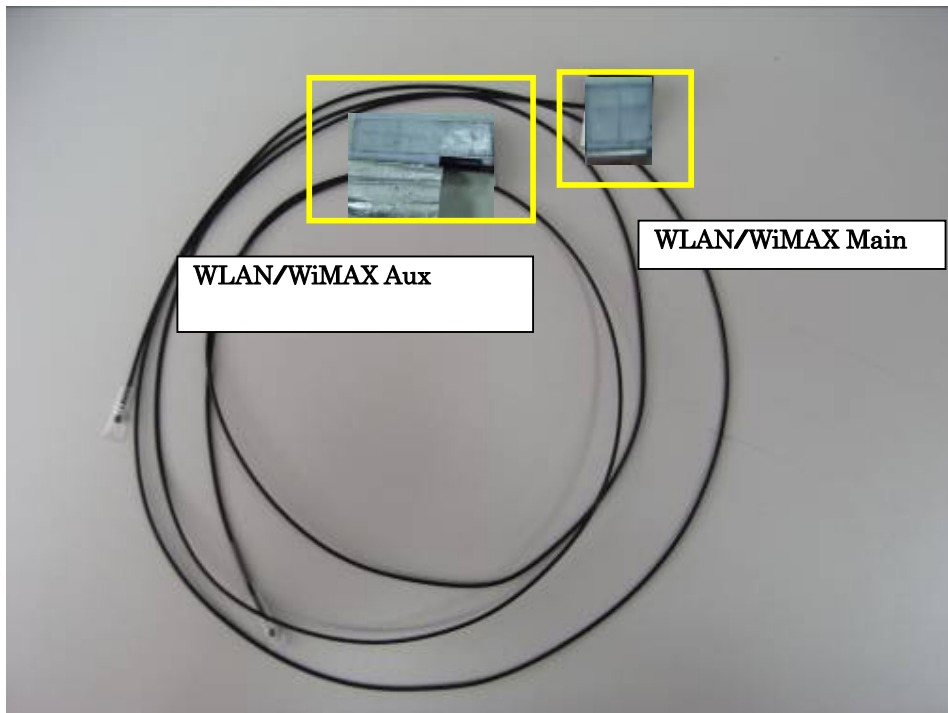
*AUX WLAN Antenna*



Trade Name: Amphenol Taiwan Corporation  
Model No.: WLAN Main : 14G152168231LV  
WLAN Aux : 14G152168131LV



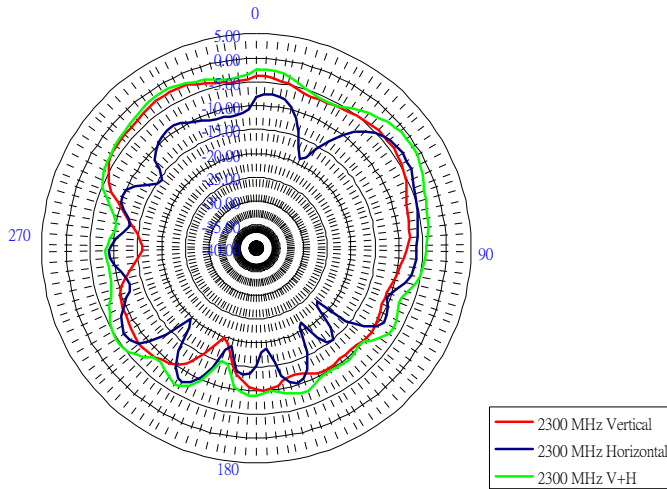
Trade Name: Amphenol Taiwan Corporation  
Model No.: WLAN Main : 14G152168231LV  
WLAN Aux : 14G152168131LV



## Section 3. Radiation characteristics of antennae Loaded in Host Platform

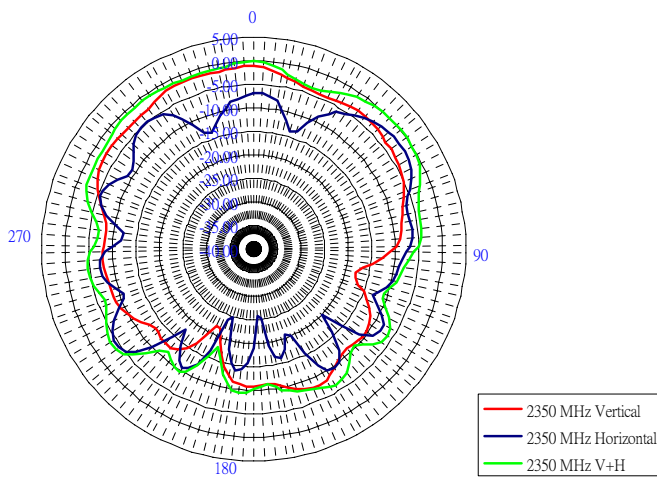
### 2300-2400MHz radiation characteristic

Main antenna: 2300 MHz



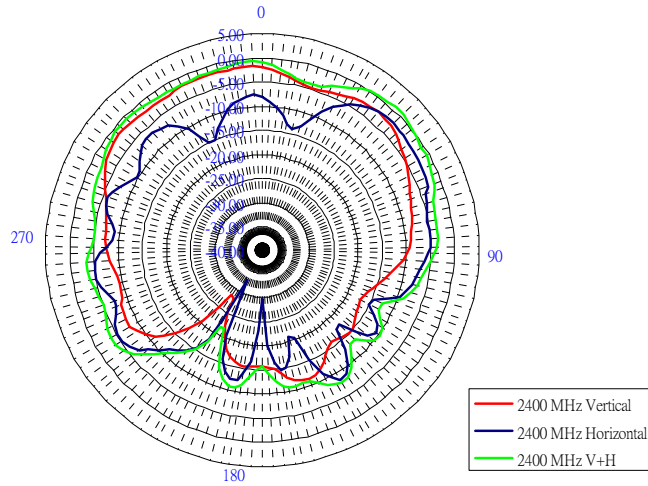
Center Frequency	2300 MHz
Vertical ( Peak )	-2.50 dB
Horizontal ( Peak )	-3.38 dB

Main antenna: 2350 MHz



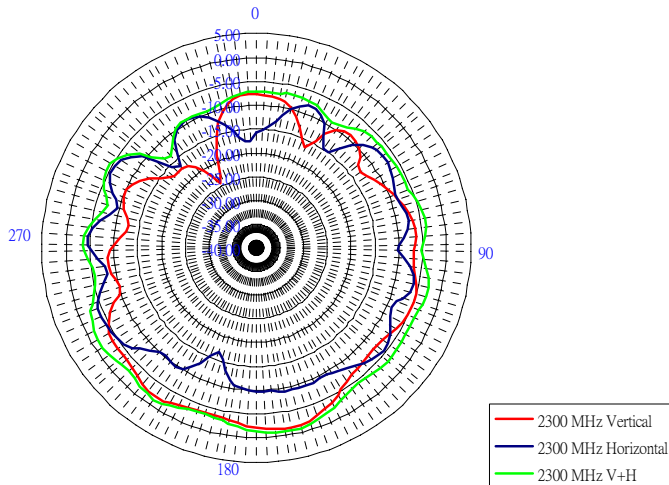
Center Frequency	2350 MHz
Vertical ( Peak )	-1.06 dB
Horizontal ( Peak )	-1.88 dB

**Main antenna: 2400 MHz**



Center Frequency	2400 MHz
Vertical ( Peak )	-1.57 dB
Horizontal ( Peak )	-2.06 dB

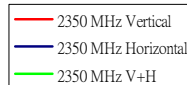
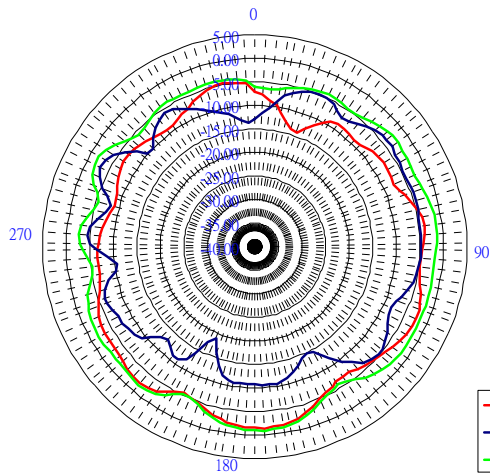
**Auxiliary antenna: 2300 MHz**



Center Frequency	2300 MHz
Vertical ( Peak )	-1.52 dB
Horizontal ( Peak )	-4.35 dB

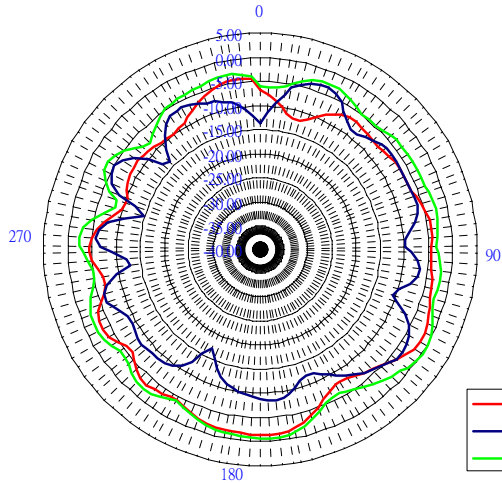


**Auxiliary antenna: 2350 MHz**



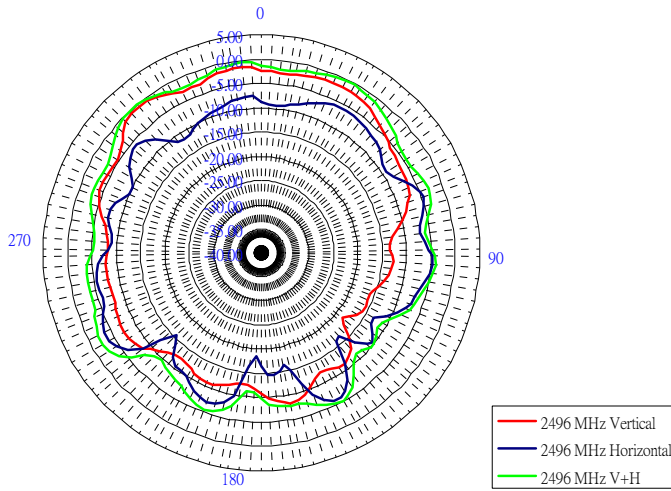
Center Frequency	2350 MHz
Vertical ( Peak )	-1.41 dB
Horizontal ( Peak )	-3.24 dB

**Auxiliary antenna: 2400 MHz**



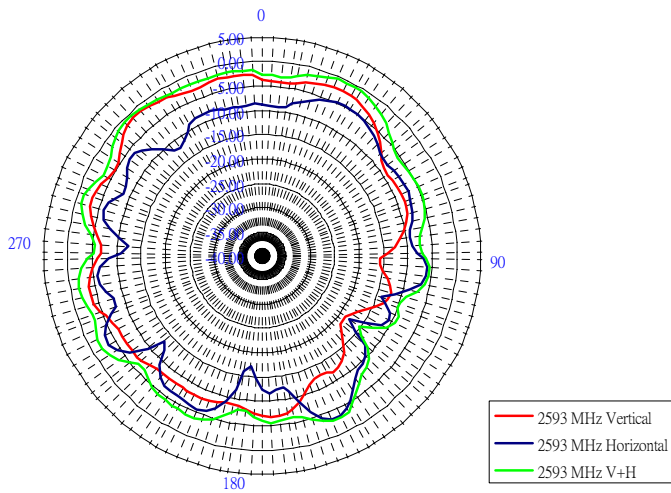
Center Frequency	2400 MHz
Vertical ( Peak )	-1.37 dB
Horizontal ( Peak )	-3.53 dB

**2496-2690MHz radiation characteristic**  
**Main antenna: 2496 MHz**



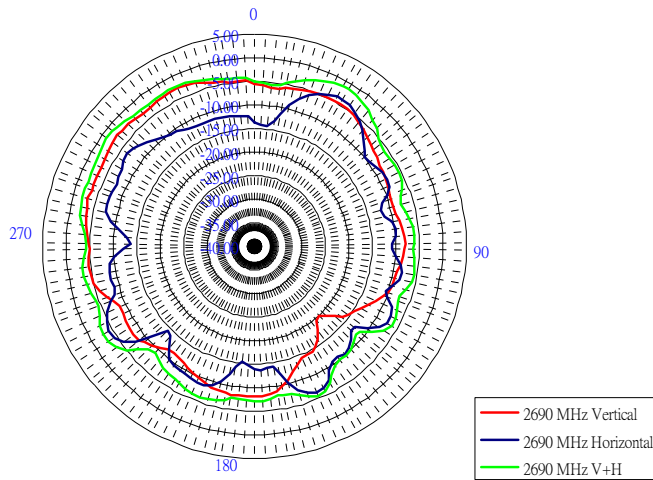
Center Frequency	2496 MHz
Vertical ( Peak )	-0.59 dB
Horizontal ( Peak )	-3.68 dB

**Main antenna: 2593 MHz**



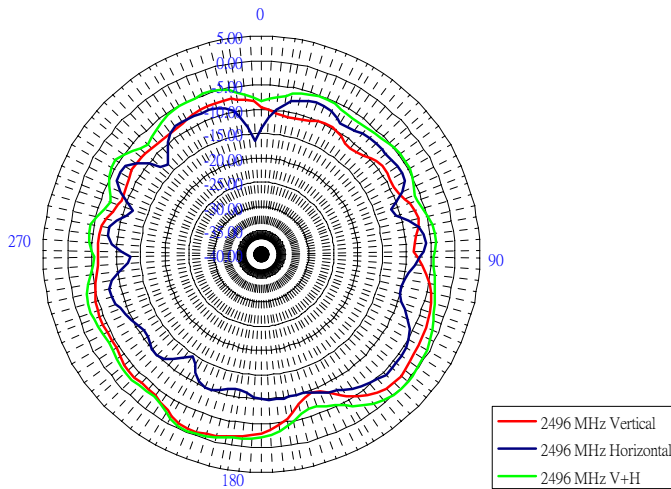
Center Frequency	2593 MHz
Vertical ( Peak )	-1.21 dB
Horizontal ( Peak )	-3.54 dB

**Main antenna: 2690 MHz**



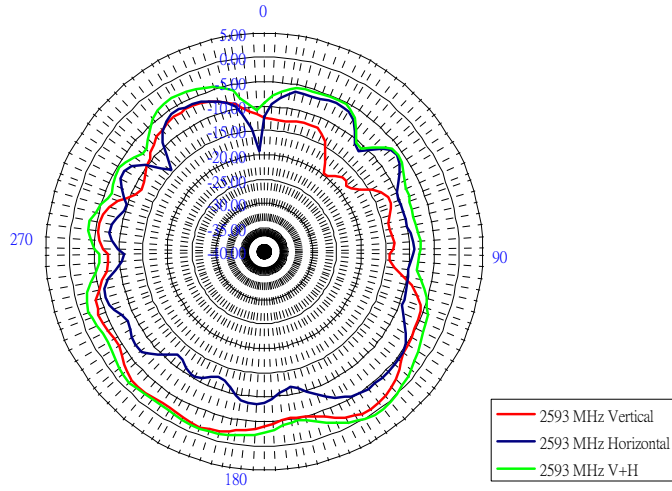
Center Frequency	2690 MHz
Vertical ( Peak )	-2.47 dB
Horizontal ( Peak )	-3.76 dB

**Auxiliary antenna: 2496 MHz**



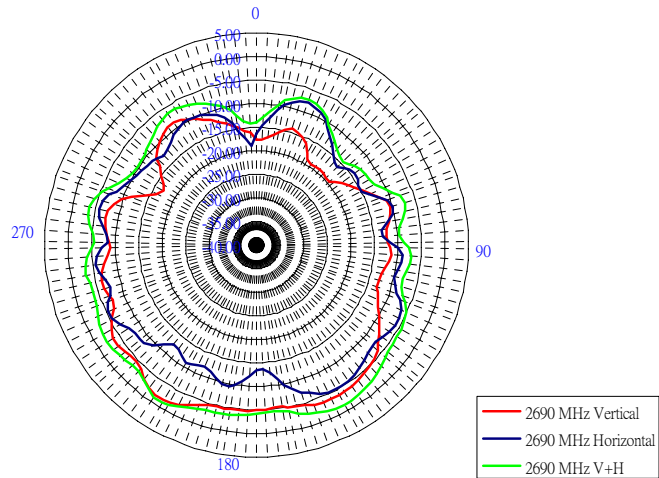
Center Frequency	2496 MHz
Vertical ( Peak )	-1.00 dB
Horizontal ( Peak )	-4.18 dB

**Auxiliary antenna: 2593 MHz**



Center Frequency	2593 MHz
Vertical ( Peak )	-1.01 dB
Horizontal ( Peak )	-4.71 dB

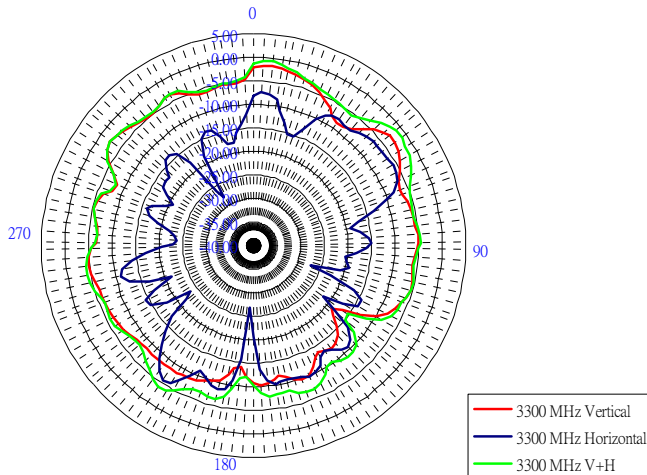
**Auxiliary antenna: 2690 MHz**



Center Frequency	2690 MHz
Vertical ( Peak )	-1.52 dB
Horizontal ( Peak )	-4.94 dB

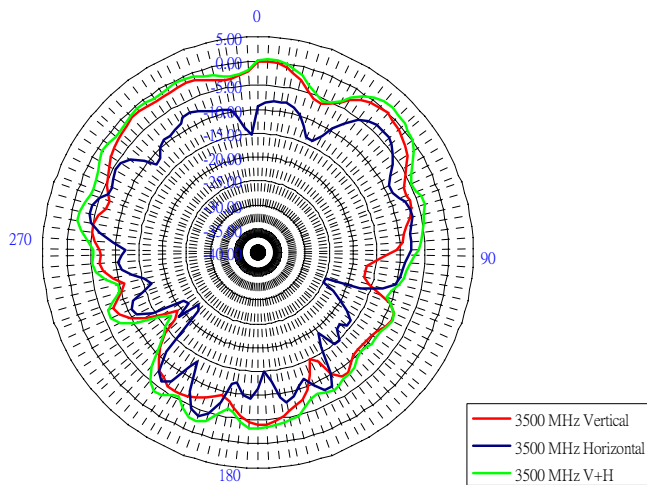
**3300-3700MHz radiation characteristic**

**Main antenna: 3300 MHz**



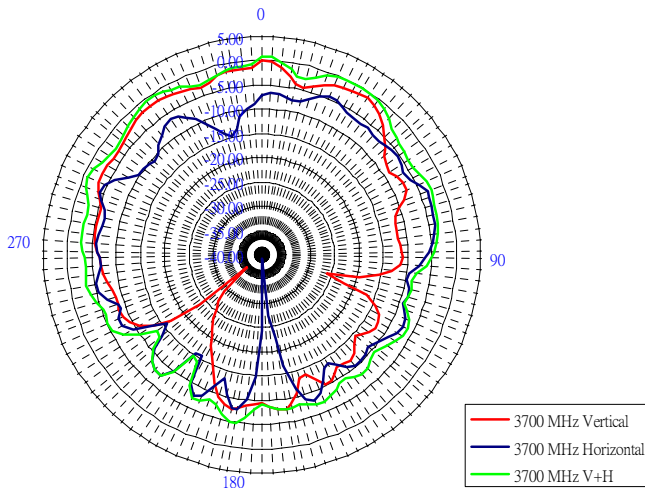
Center Frequency	3300 MHz
Vertical ( Peak )	-1.61 dB
Horizontal ( Peak )	-5.63 dB

**Main antenna: 3500 MHz**



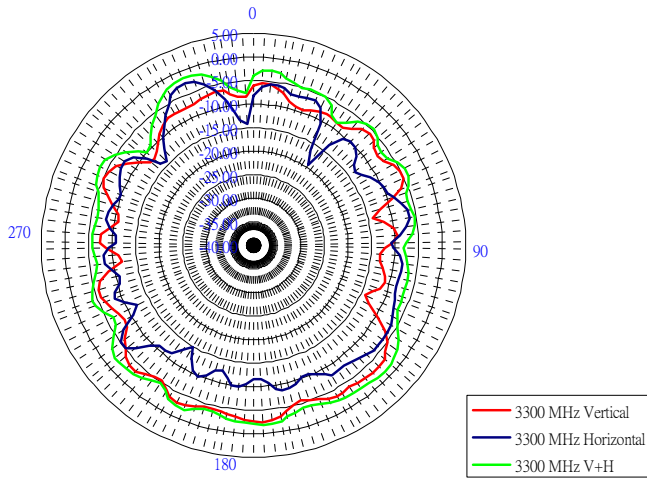
Center Frequency	3500 MHz
Vertical ( Peak )	-0.10 dB
Horizontal ( Peak )	-3.41 dB

**Main antenna: 3700 MHz**



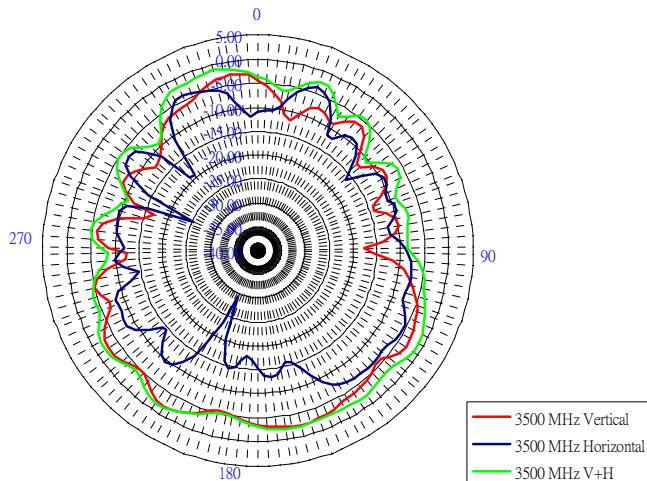
Center Frequency	3700 MHz
Vertical ( Peak )	-0.03 dB
Horizontal ( Peak )	-3.63 dB

**Auxiliary antenna: 3300 MHz**



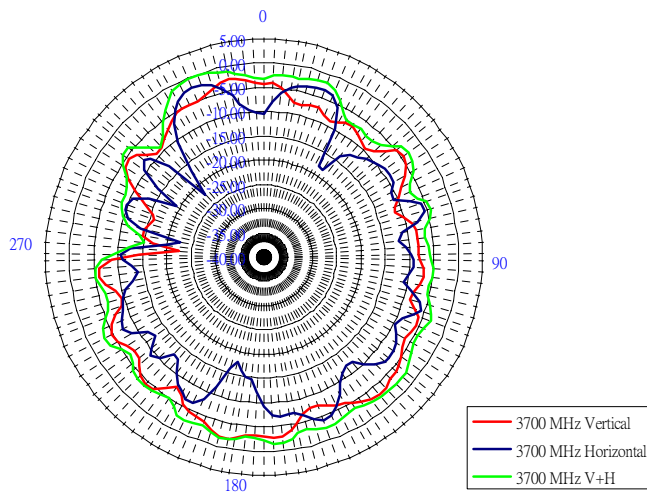
Center Frequency	3300 MHz
Vertical ( Peak )	-2.37 dB
Horizontal ( Peak )	-2.64 dB

**Auxiliary antenna: 3500 MHz**



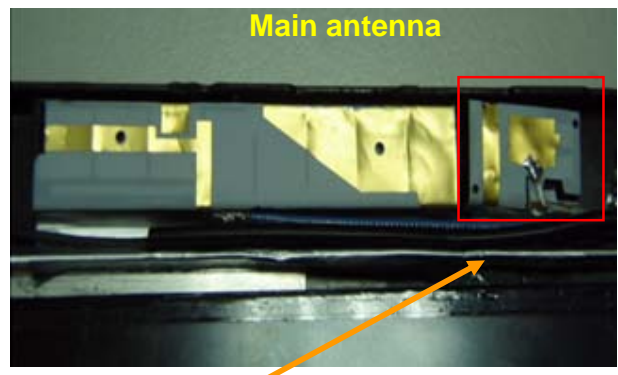
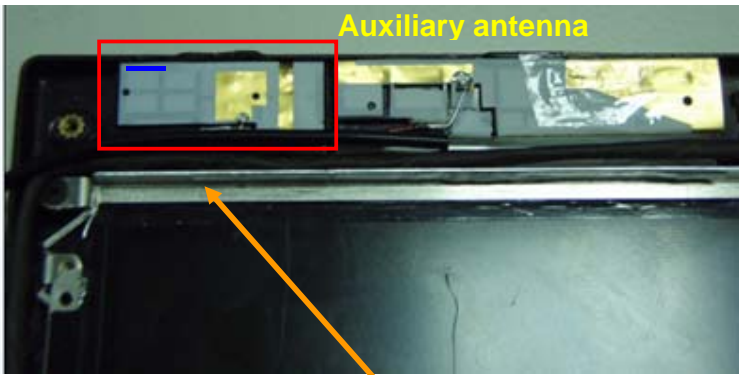
Center Frequency	3500 MHz
Vertical ( Peak )	-2.08 dB
Horizontal ( Peak )	-3.83 dB

**Auxiliary antenna: 3700 MHz**



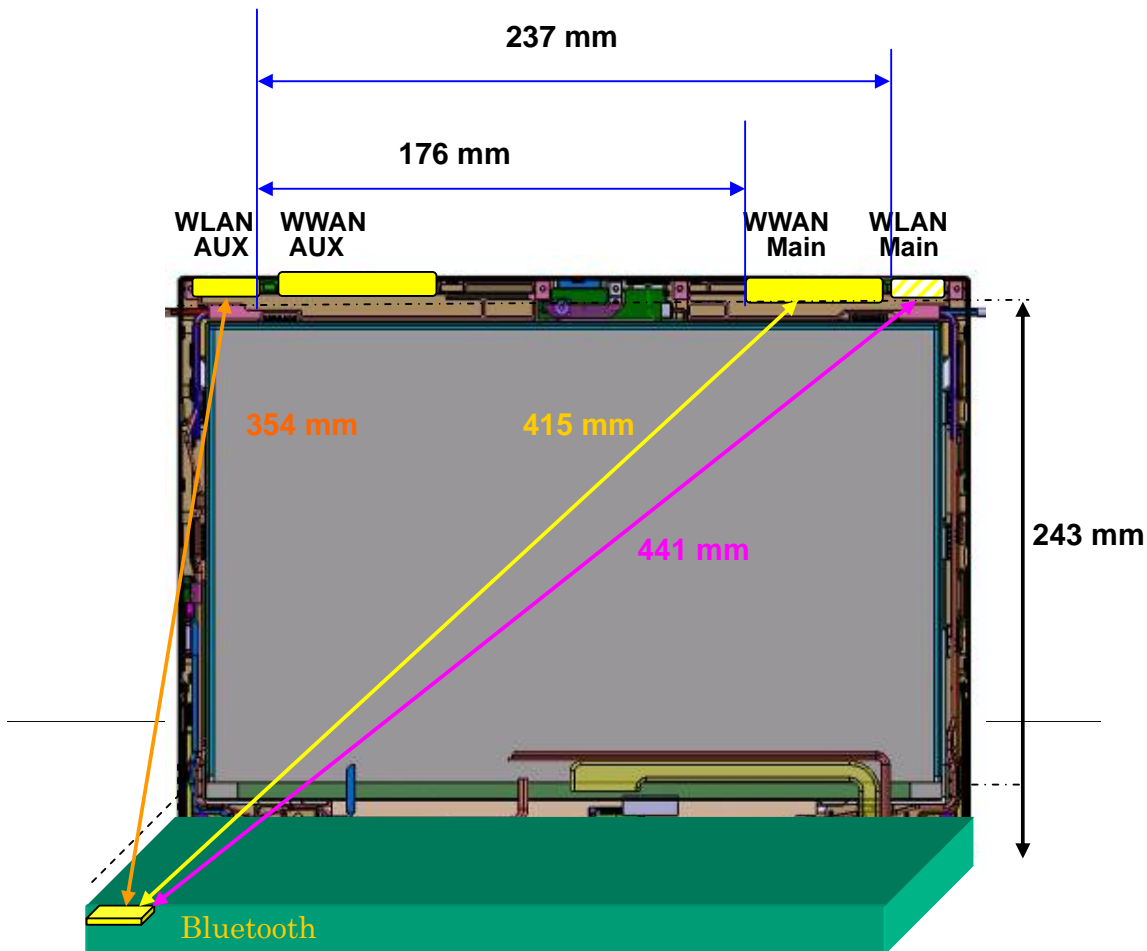
Center Frequency	3700 MHz
Vertical ( Peak )	-1.97 dB
Horizontal ( Peak )	-2.12 dB

## Section 4. Host Platform Information



## Section 5. Antenna Host Platform Location Information

### Antenna Host Platform Location Information



\*1: FCC grant date: Dec./14/2007 (4.1mW)

## Section 6. Antenna dimensional information for SAR evaluation

The host platform (ThinkPad SL300 Series) is **not** subjected to SAR along with the sufficient antenna separation distance from human's body with 243mm. See Section 5.

## Section 7. Co-Location Antenna Separation

1. The WWAN and WLAN (or WiMAX) devices are controlled by proprietary software "Access Connection" which manages handover of transmission between WWAN and WLAN (or WiMAX) devices within 11 seconds, so the both **do not transmit simultaneously**.
2. The SAR evaluation in co-locating with Bluetooth-A or Bluetooth-B is not required pursuant to the FCC document "616217 D01 SAR for Laptop v01" issued on December/07/2007, since the separation distance to the nearest WLAN Tx antenna is more than 5cm apart and its maximum power is 4.1mW.
3. Since UWB transmitter is not mentioned in the section 2.1091 and 2.1093, it does not subject to RF exposure evaluation. Therefore no co-located MPE or SAR testing is required.