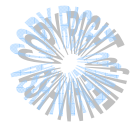


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# Bluetooth Antenna test report



2007/4/13  
Kevin Changchien

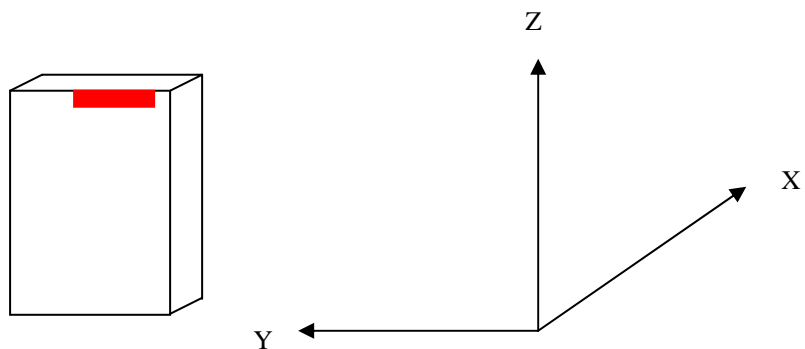
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1. Test purpose:  
Bluetooth antenna in housing pattern measurement.
2. Test setting:



BT antenna Location

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3. Test item:  
S11 return loss, SWR, Impedance, Antenna Gain, Radiation Pattern.

3.1 S11 return loss:

Frequency (GHz)	2.4 (Mark 2)	2.441(Mark 1)	2.5(Mark 3)
Return loss (dB)	-15.620	-29.263	-14.107

Table 1

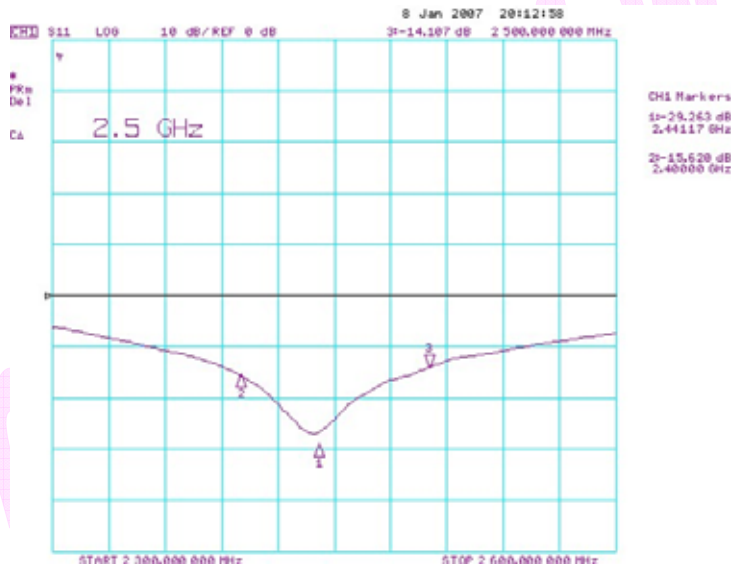


Fig. 2 return loss

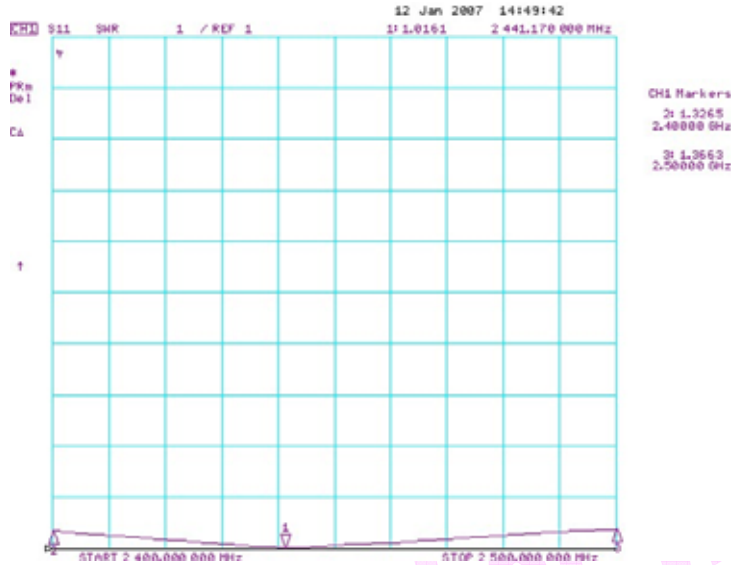
3.2 SWR (modify bandwidth in 2.4~2.5)

Frequency (GHz)	2.4 (Mark 2)	2.441(Mark 1)	2.5(Mark 3)
SWR	1.3265	1.0161	1.3663

Table 2

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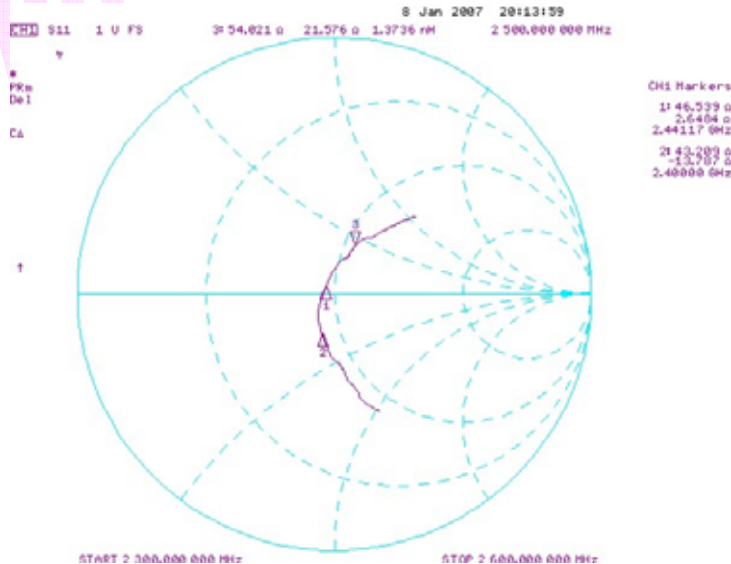


**Fig. 3 SWR**

**3.3 Impedance**

Frequency (GHz)	2.4 (Mark 2)	2.45(Mark 1)	2.5(Mark 3)
imprdnce	43.209-j13.787	46.539+j2.6484	54.021+j2.6484

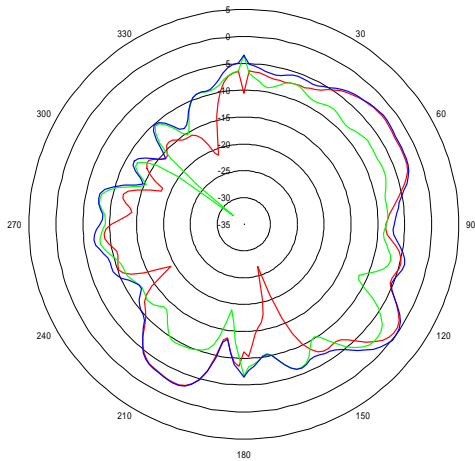
**Table 3**



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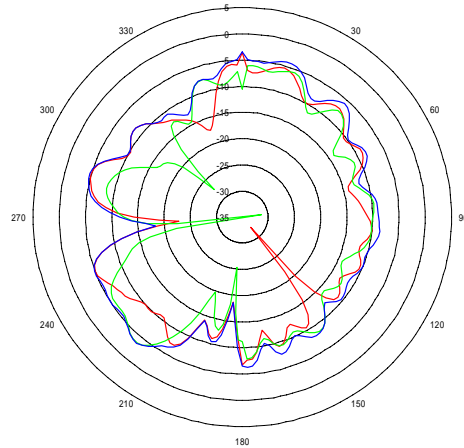
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4. Pattern:  
4.1 2.4G Hz:  
X-Z plane



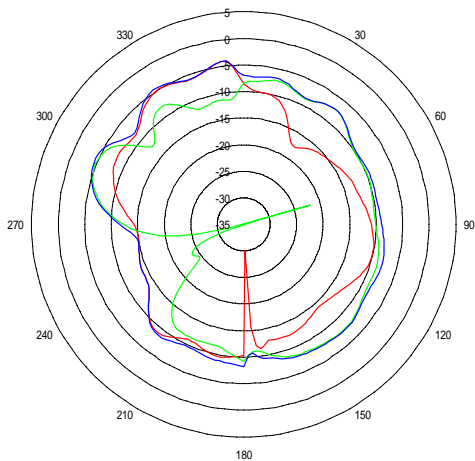
<b>Average gain</b>	<b>-5.63 dBi</b>
<b>Peak gain</b>	<b>0.08 dBi</b>
<b>Efficiency</b>	<b>29.77%</b>

Y-Z plane



<b>Average gain</b>	<b>-7.7 dBi</b>
<b>Peak gain</b>	<b>-3.49 dBi</b>
<b>Efficiency</b>	<b>29.77%</b>

X-Y plane

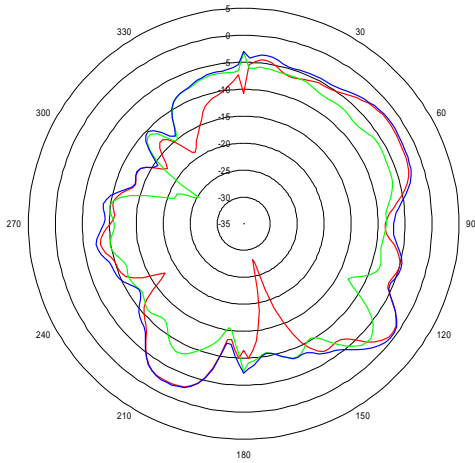


<b>Average gain</b>	<b>-7.9 dBi</b>
<b>Peak gain</b>	<b>-4.01 dBi</b>
<b>Efficiency</b>	<b>29.7662.51%</b>

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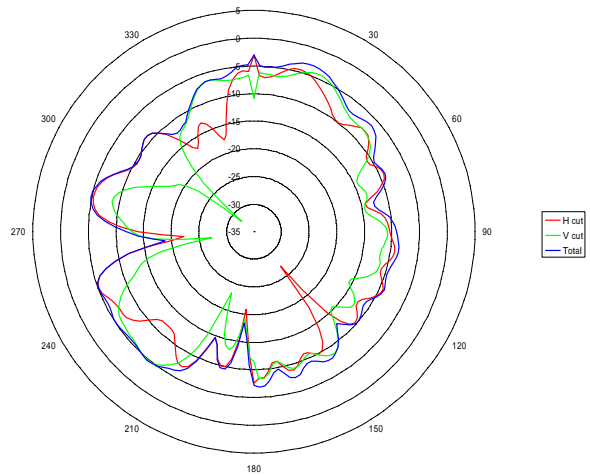
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**4.2 2.45G Hz  
X-Z plane**



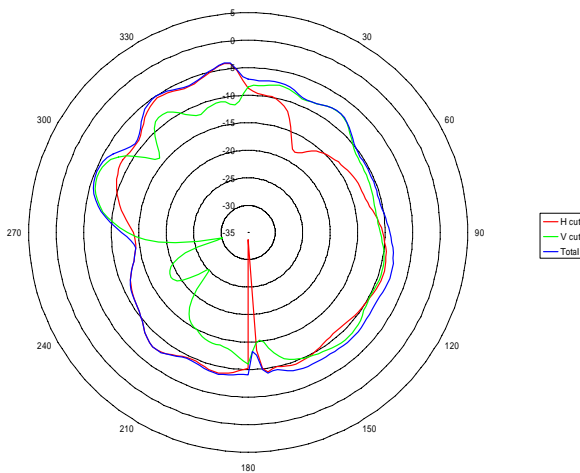
<b>Average gain</b>	<b>-5.5 dBi</b>
<b>Peak gain</b>	<b>-0.43 dBi</b>
<b>Efficiency</b>	<b>30.05%</b>

**Y-Z plane**



<b>Average gain</b>	<b>-7.48dBi</b>
<b>Peak gain</b>	<b>-3.08 dBi</b>
<b>Efficiency</b>	<b>30.05%</b>

**X-Y plane**



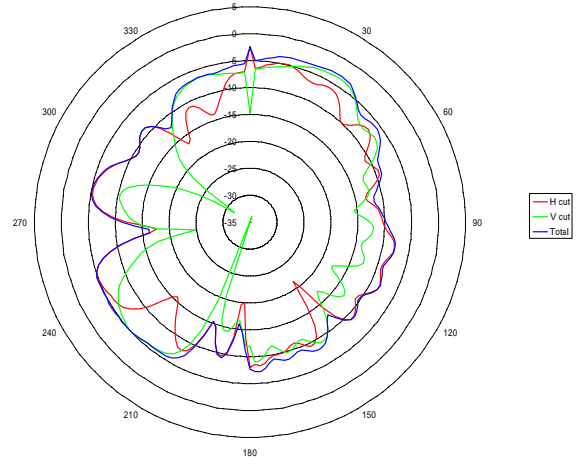
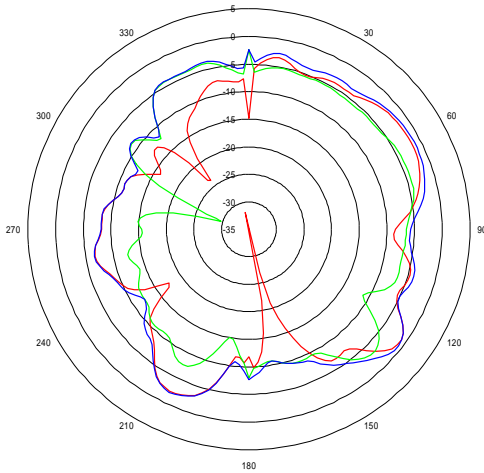
<b>Average gain</b>	<b>-8.1dBi</b>
<b>Peak gain</b>	<b>-3.88 dBi</b>
<b>Efficiency</b>	<b>30.05%</b>

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**4.3 2.5G Hz  
X-Z plane**

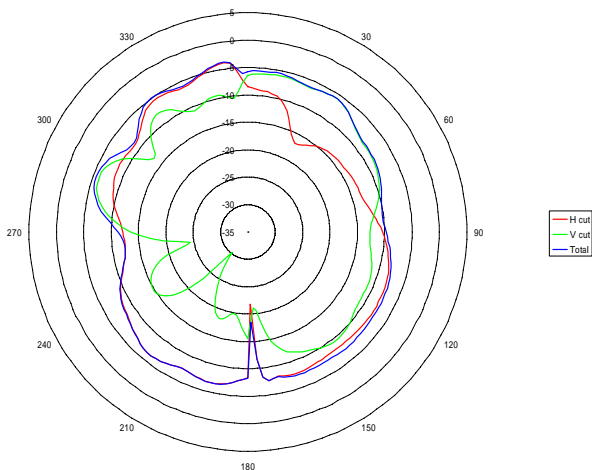
**Y-Z plane**



<b>Average gain</b>	<b>-4.79 dBi</b>
<b>Peak gain</b>	<b>-0.62 dBi</b>
<b>Efficiency</b>	<b>34.42%</b>

<b>Average gain</b>	<b>-6.97dBi</b>
<b>Peak gain</b>	<b>-2.4 dBi</b>
<b>Efficiency</b>	<b>34.42%</b>

**X-Y plane**



<b>Average gain</b>	<b>-7.19dBi</b>
<b>Peak gain</b>	<b>-3.67 dBi</b>
<b>Efficiency</b>	<b>34.42%</b>