

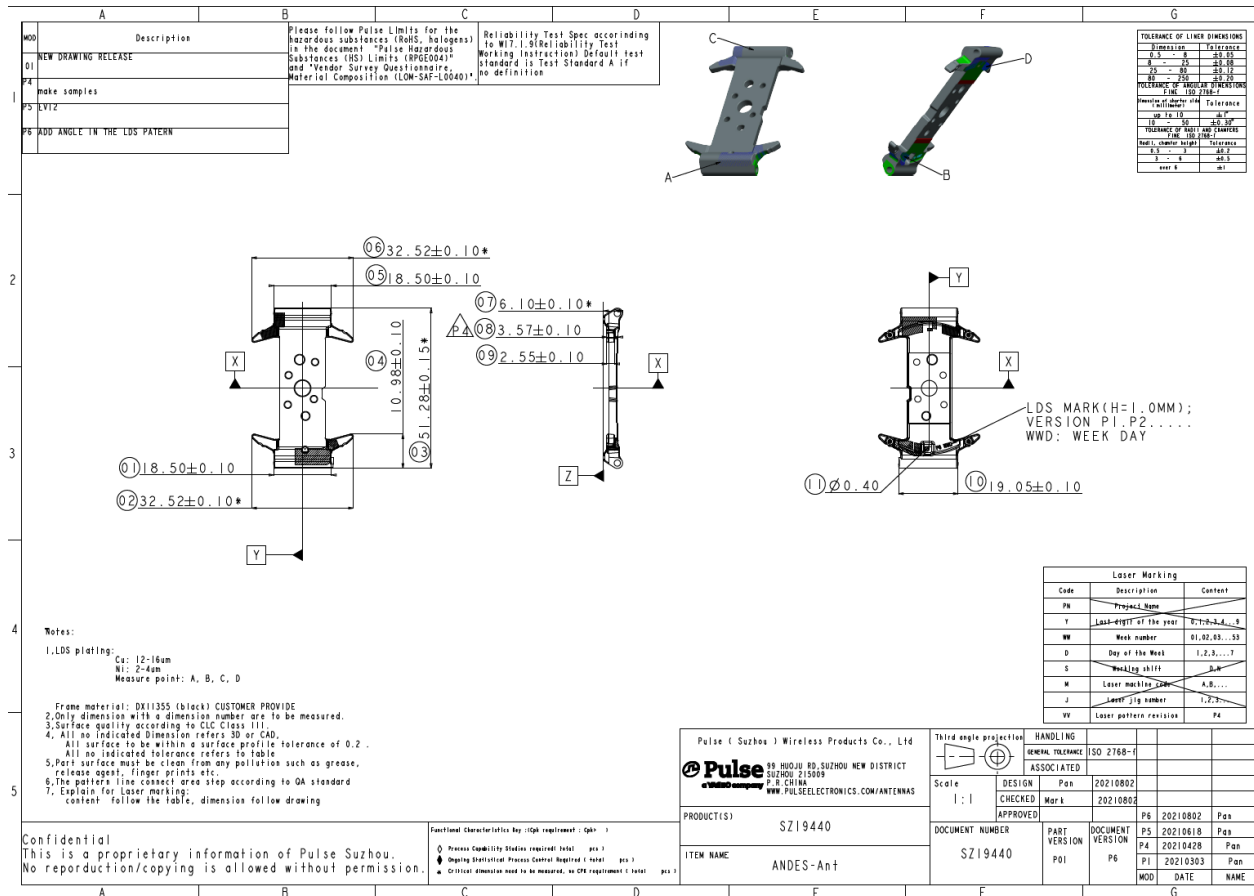
## Antenna specifications

### Electrical Characteristics Description

<b>Model:</b>	Andes-Antenna		
<b>Transmitter Frequency:</b>	2400MHz-2483.5MHz ;		
<b>Receiver Frequency:</b>	2400MHz-2483.5MHz ; 1176.5MHz; 1575.42MHz;		
<b>Antenna information:</b>	<b>Antenna Name</b>	<b>Model(s)/Type(s)</b>	
	RF Antenna Assembly	Model/Part Number:	Andes-Antenna
		Manufacturer:	Shenzhen Huami Information Technology Co., Ltd.
		Frequency Range:	2400MHz-2483.5 MHz 1176.5MHz;1575.42MHz;1602MHz
		Connector Type/ Maximum Gain	GNSS: -6dBi BT/WiFi: -4.66dBi
		Antenna Type	IFA
		Antenna Size	See below pic
		Measurement:	NA

# Dimensions

Dimensions See Fig.1.



Part Number: S219440  
 Supplier : Pulse

MCO:  
 Date : 7/21/2021

Part Name : ANDES-ANT

Page : 1 of 1  
 Report stage : EVT2

DRAWING SPECIFICATIONS						INSPECTION RESULTS					INSPECTION ANALYSIS							COMMENTS &					
ITEM	PAGE	LOCATION	NOMINAL	+TOL	-TOL	Inspection Method	Sample Number					Deviation from Nominal					Mean	% Tolerance		Alert/Reject			Supplier Comment
							1	2	3	4	5	1	2	3	4	5		UPPER	LOWER	HIGH	LOW	ADJUDGMENT	
FAI1	1	1	18.5	0.1	-0.1	OIM	18.5414	18.47	18.4554	18.4915	18.5389	0.0414	-0.03	-0.0446	-0.0085	0.0389	18.4994	41%	-45%				
FAI2	1	2	32.52	0.1	-0.1	OIM	32.5762	32.5694	32.5691	32.5722	32.5688	0.0562	0.0494	0.0491	0.0522	0.0488	32.5711	56%	0%				
FAI3	1	3	51.28	0.15	-0.15	OIM	51.3335	51.3223	51.3208	51.3272	51.2767	0.0535	0.0423	0.0408	0.0472	-0.0033	51.3161	36%	-2%				
FAI3	1	4	10.98	0.1	-0.1	OIM	10.9716	10.9663	10.9718	10.9733	10.9755	-0.0084	-0.0137	-0.0082	-0.0067	-0.0045	10.9717	0%	-14%				
FAI4	1	5	18.5	0.1	-0.1	OIM	18.5427	18.5161	18.5334	18.5235	18.5235	0.0427	0.0161	0.0334	0.0235	0.0235	18.5278	43%	0%				
FAI5	1	6	32.52	0.1	-0.1	OIM	32.5811	32.5802	32.5651	32.5483	32.5641	0.0611	0.0602	0.0451	0.0283	0.0441	32.5678	61%	0%				
FAI6	1	7	6.1	0.1	-0.1	OIM	6.07	6.08	6.07	6.06	6.08	-0.03	-0.02	-0.03	-0.04	-0.02	6.072	0%	-40%				
FAI7	1	8	3.57	0.1	-0.1	OIM	3.49	3.51	3.5	3.48	3.49	-0.08	-0.06	-0.07	-0.09	-0.08	3.494	0%	-90%				
FAI8	1	9	2.55	0.1	-0.1	OIM	2.61	2.62	2.61	2.63	2.61	0.06	0.07	0.06	0.08	0.06	2.616	80%	0%	Alert		Alert	
FAI9	1	10	19.05	0.1	-0.1	OIM	19.045	19.048	19.051	19.048	19.053	-0.005	-0.002	0.001	-0.002	0.003	19.049	3%	-5%				
FAI10	1	11	0.4	0.05	-0.05	OIM	0.3836	0.3858	0.3847	0.3935	0.3941	-0.0164	-0.0142	-0.0153	-0.0065	-0.0059	0.38834	0%	-33%				
FAI11	1	12				OIM																	
FAI12	1	13				OIM																	
FAI13	1	14				OIM																	

Fig. 1 GPS&BT Antenna Dimensions

## Electrical Performance

GNSS and BLE antenna S11 parameter as Fig.2

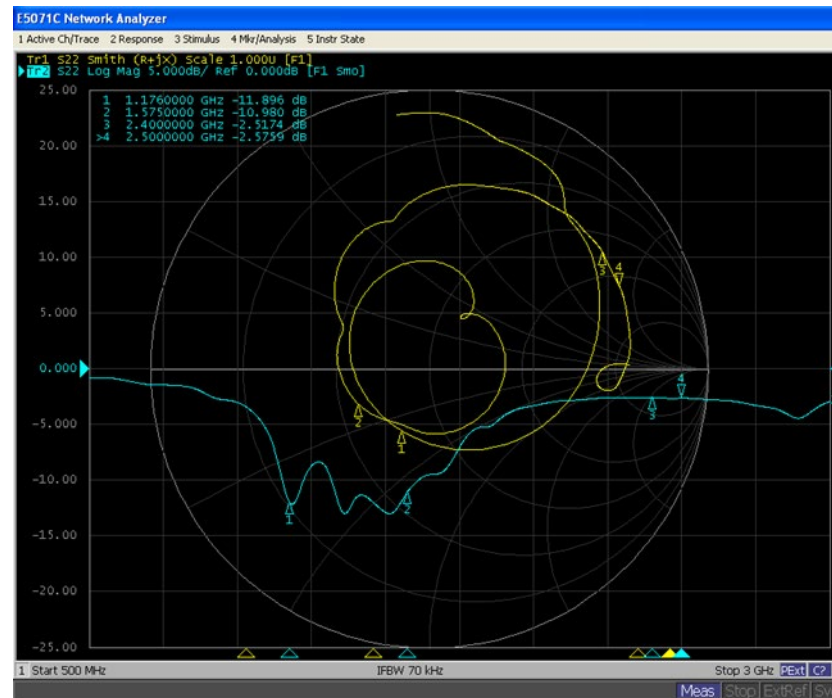


Fig. 2 GNSS Antenna S11 Parameter

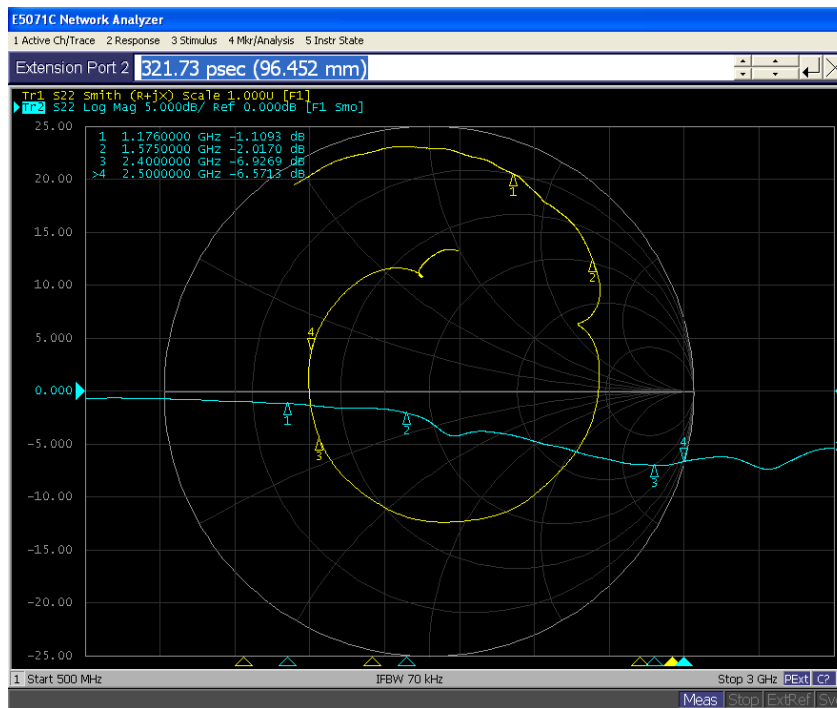


Fig. 3 BT Antenna S11 Parameter

Table 1 and Table 2 shows the emission efficiency and the maximum gain of GPS/BLE antenna at different frequencies changes.

Table 1 GNSS Antenna Max. Gain and Efficiency Vs. Frequency

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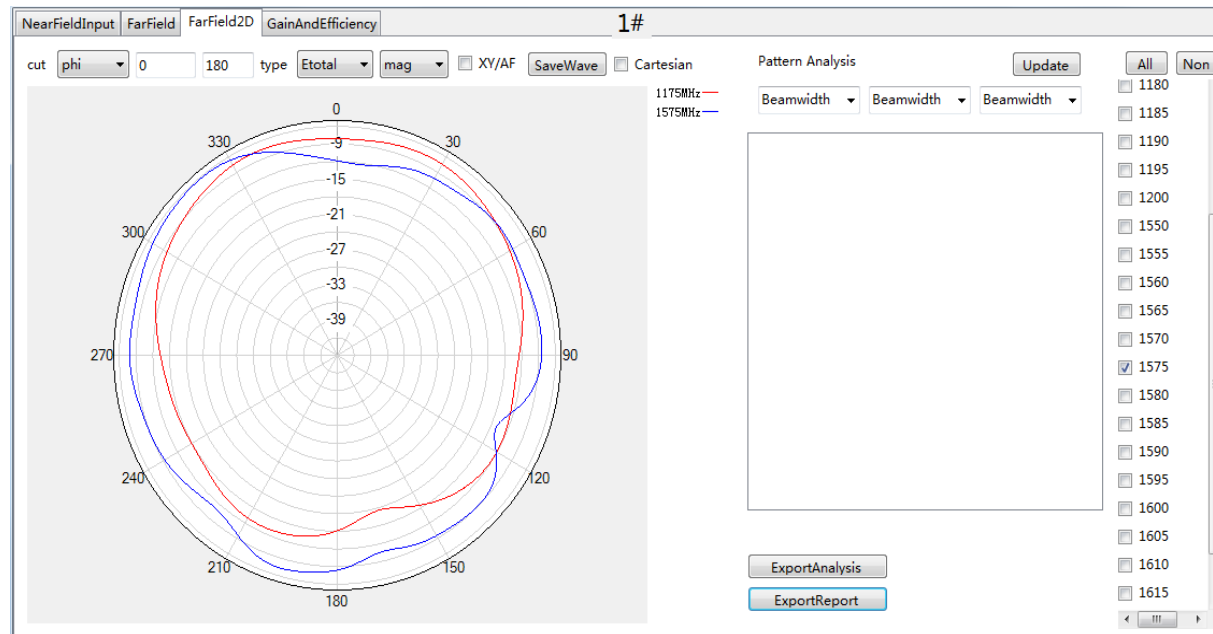
frequency 频率(MHz)	gain 增益(dBi)	efficiency 效率(dBi)	efficiency 效率(%)
1150	-7.38	-11.07	7.82
1155	-7.24	-10.86	8.21
1160	-7.15	-10.83	8.26
1165	-7.09	-10.72	8.48
1170	-6.97	-10.73	8.46
1175	-6.84	-10.62	8.67
1180	-6.97	-10.85	8.22
1185	-6.86	-10.72	8.47
1190	-7.03	-10.91	8.10
1195	-7.09	-10.86	8.21
1200	-7.1	-10.96	8.02
1560	-5.89	-9.27	11.84
1565	-5.85	-9.22	11.98
1570	-5.76	-9.16	12.13
1575	-5.64	-9.14	12.20
1580	-5.6	-9.14	12.20
1585	-5.81	-9.24	11.91
1590	-5.74	-9.11	12.29
1595	-5.79	-9.11	12.26
1600	-5.68	-9.09	12.33
1605	-5.89	-9.29	11.78
1610	-5.88	-9.3	11.76

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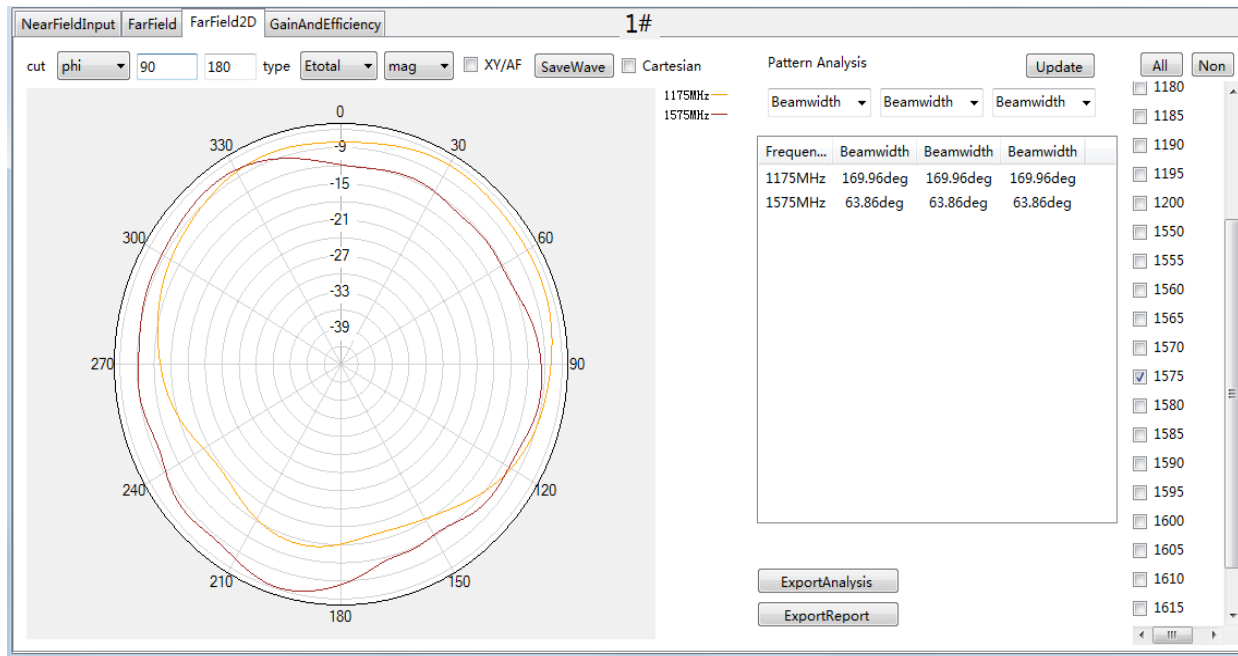
Table 2 BLE Antenna Max. Gain and Efficiency Vs. Frequency

Below are BLE antenna gain

frequency(MHz)	Gain(dB)	Efficiency (dB)	Efficiency (%)
2400	-4.66	-10.13	9.71%
2410	-4.77	-10.15	9.66%
2420	-4.73	-10.14	9.69%
2430	-4.81	-10.21	9.53%
2440	-4.93	-10.25	9.45%
2450	-4.98	-10.30	9.34%
2460	-5.05	-10.40	9.12%
2470	-5.19	-10.46	8.99%
2480	-5.07	-10.39	9.15%
2490	-5.08	-10.51	8.90%
2500	-5.07	-10.42	9.08%







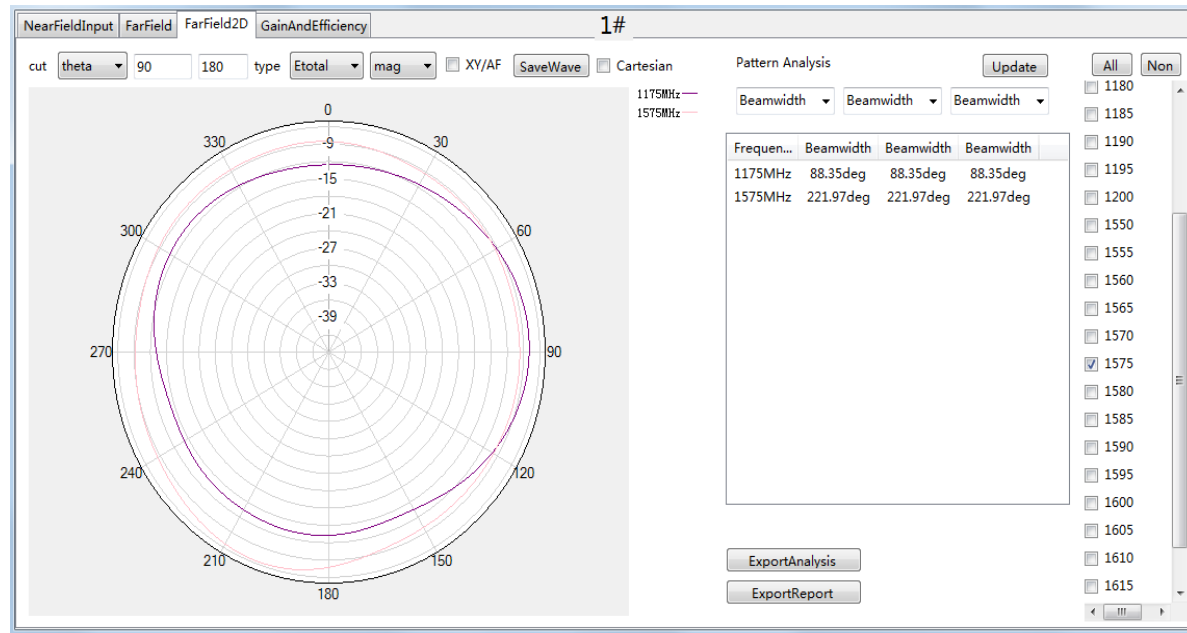
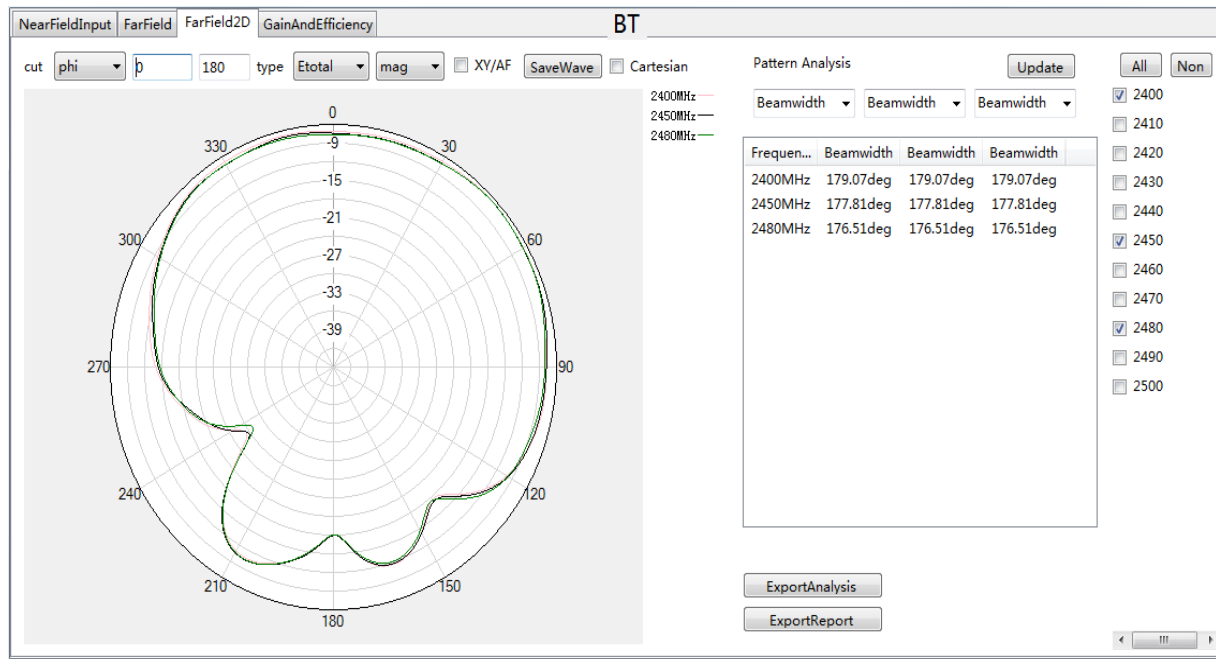
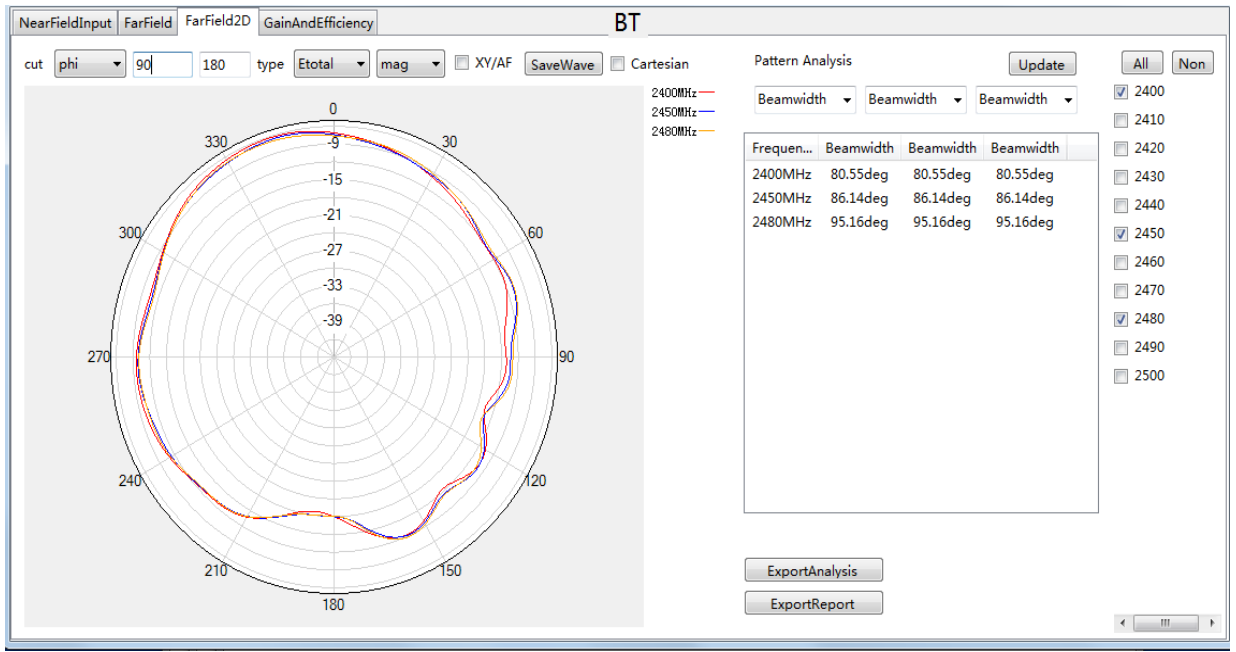


Fig. 4-1 to 4-3 GPS antenna L1&L5 radiation pattern diagram





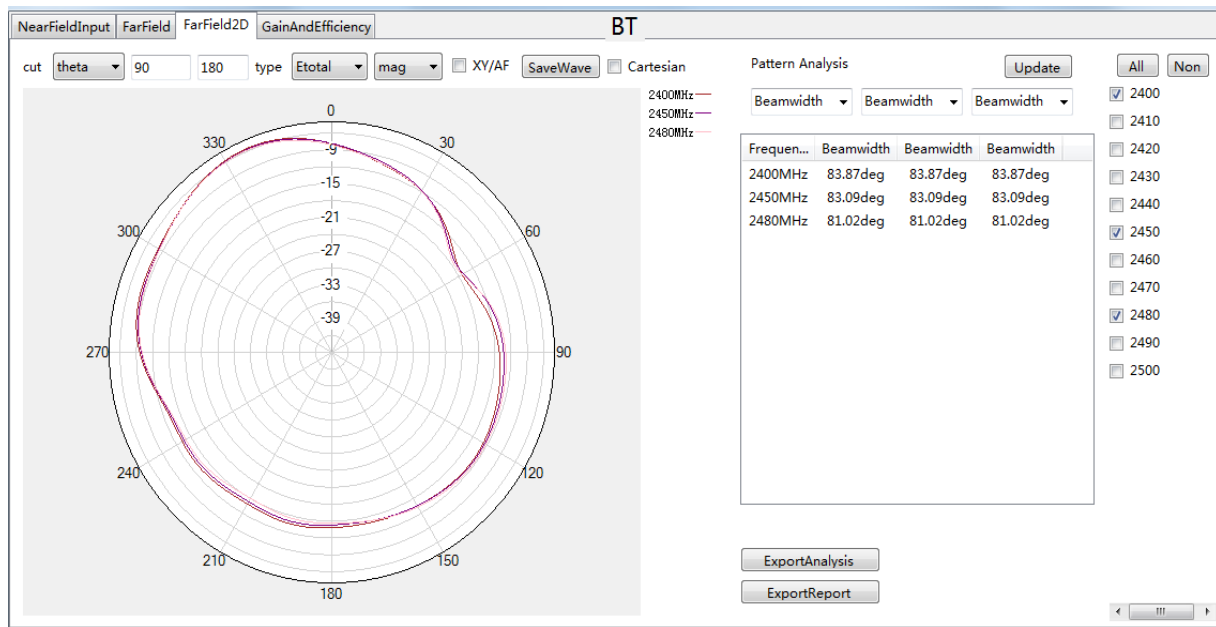


Fig. 5-1 to 5-3 BT antenna radiation pattern diagram