

F11

Antenna clearance and performance report

Date: 2025/01/11

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- 1 Antenna layout scheme
- 2 Antenna structure environment
- 3 Test environment
- 4 passiveEFF. S11)
- 5 active(vs classB ...)
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antenna

descriptio

ANT area

1.MAIN 47*15.3MM

2.DIV 28.35*23.47MM

3/BT 7.2*17.4MM

LTE



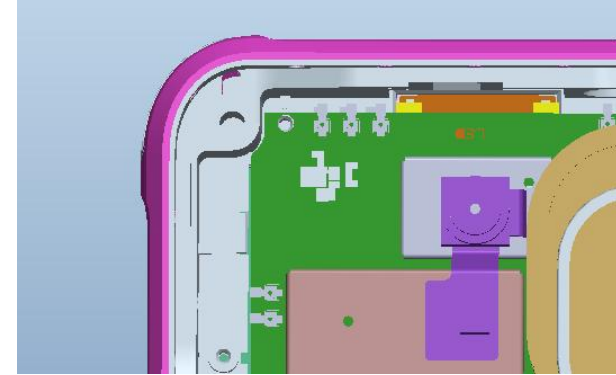
BT

DIV

antenna

Antenna clearance area

- Main antenna headroom size: $8*5\text{mm}+9.8*5\text{mm}+3*6\text{mm}$
- Dimensions of the diversity antenna clearance area: $7.8*4.1\text{mm}$
- Dimensions of BT antenna headroom: $5.6*5\text{mm}$



Main ANT



DIV ANT



BT ANT

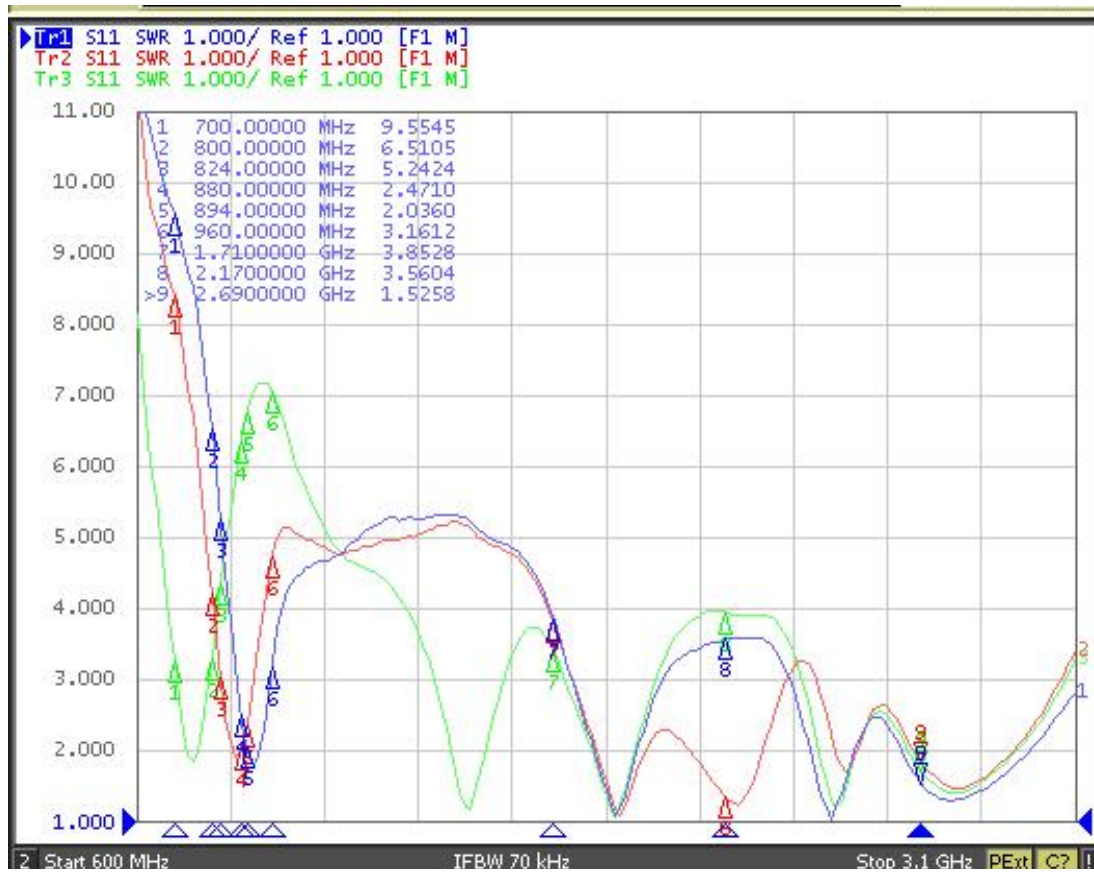
Do grounding environment treatment as shown in the figure



法国SATIMO stalab 暗室		
可测试项	无源	效率 (efficiency)，增益 (gain)，方向图 (radiation pattern)，轴比 (axial ratio)
	有源	发射功率 (TRP)，接收灵敏度 (TIS)
测试频率范围	0.6~6GHz	
广屏暗室		
可测试项	无源	效率 (efficiency)，增益 (gain)，方向图 (radiation pattern)，轴比 (axial ratio)
	有源	发射功率 (TRP)，接收灵敏度 (TIS)
测试频率范围	0.4~6GHz	



■ MAIN VSWR (主天线) :

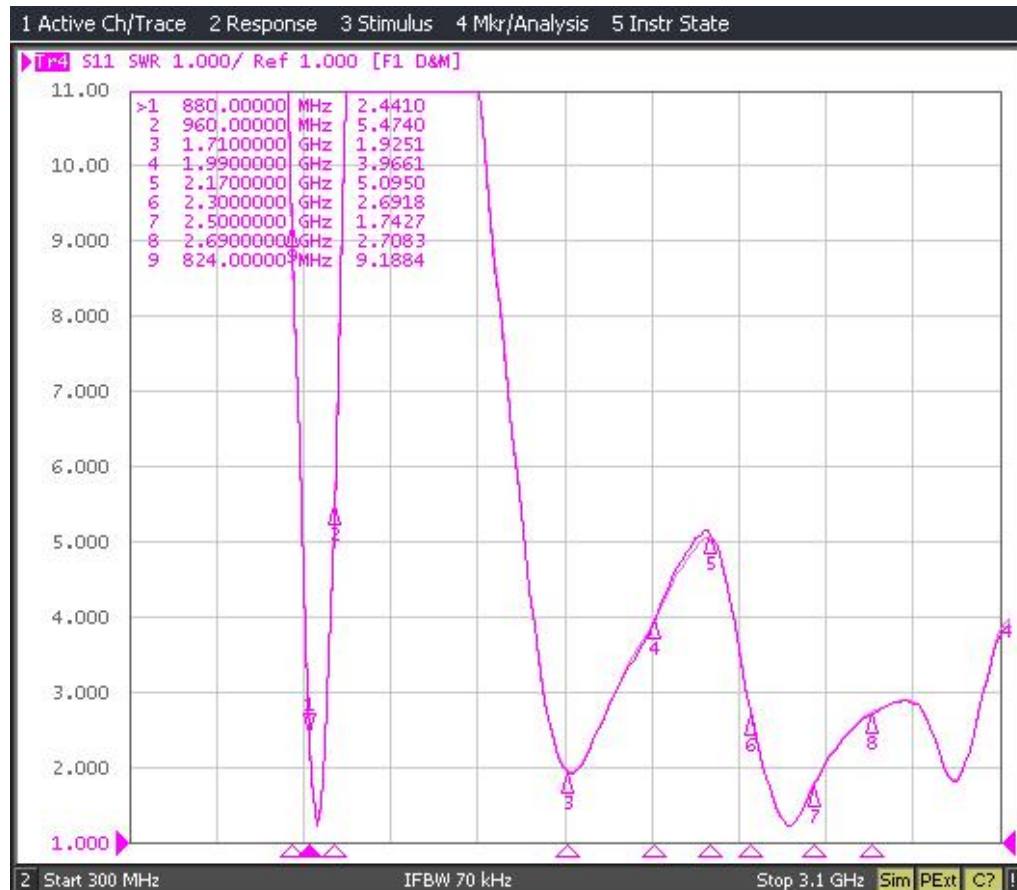


Tr1 900-2700MHz trx/trx

Tr2 800-900MHz trx

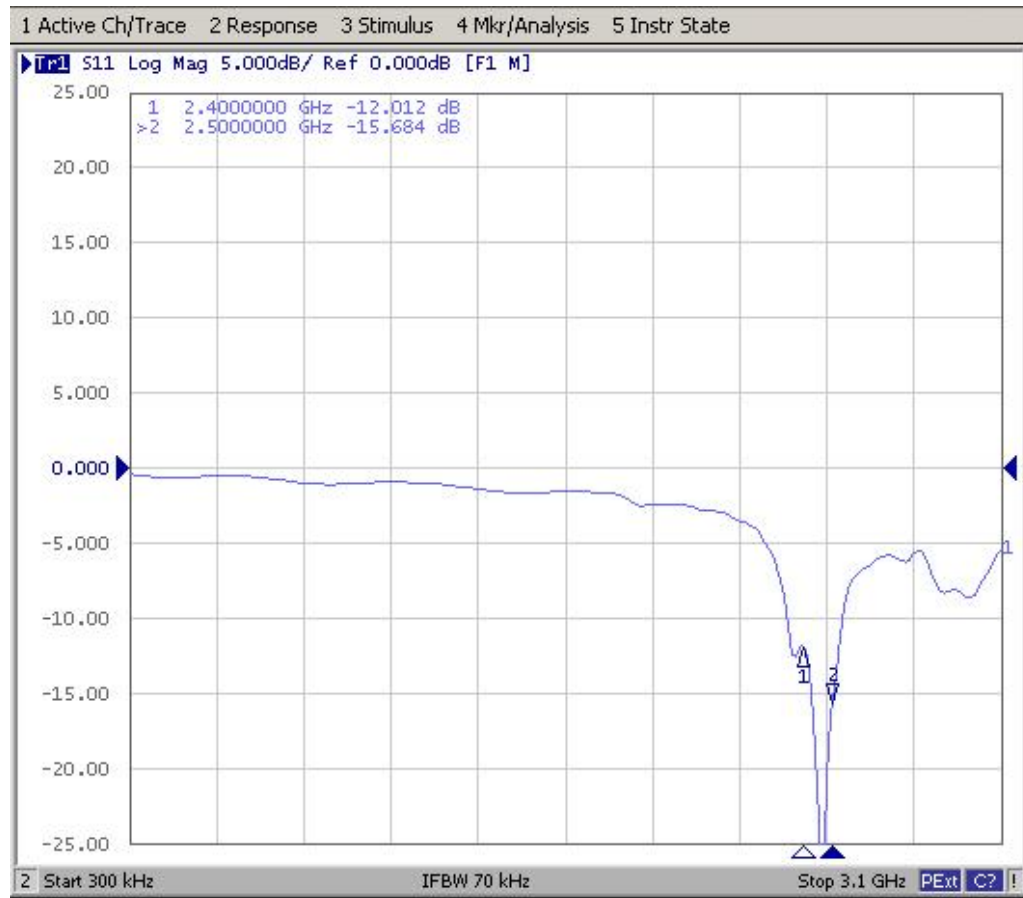
Tr3 700-800MHz trx

■ DIV VSWR (分集天线) :



700-960mhz 1700-2700mhz

■ MAIN VSWR (BT天线) :



2400-2500MHz

Main antenna			Div antenna		
	Effi	Gain		Effi	Gain
	(dB)	(dBi)		(dB)	(dBi)
B5	-3.63	-2.94	B5	-3.65	2.53
B8	-3.07	-0.17	B8	-3.93	0.66
B20	-2.98	1.09	B20	-4.56	2.53
B28	-4.88	0.20	B28	-4.73	1.60
B1	-4.96	2.55	B1	-4.64	2.37
B3	-4.29	1.43	B3	-6.32	-3.77
B7	-2.93	3.06	B7	-2.72	0.65
W1	-4.96	2.55			
W8	-3.07	-0.17			
EGSM900	-3.07	-0.17			
DCS1800	-4.29	1.43			
PCS1900	-4.37	1.38			

BT			
	Effi	Gain	Efficiency
	(dB)	(dBi)	(%)
BT	-3.61	1.5	43.57

1. There is no exact and precise formula for the loss power of efficiency conversion, but it is derived for reference only.
 2. There is no exact conversion formula for data exchange between passive test and active test, and the derived data is for reference only.
 3. passive and active test equipment is not the same, passive test equipment is a network divider, active test equipment is a comprehensive tester.
 4. each frequency band has a frequency range, the efficiency test is 10M interval to measure the mean, TRP and TIS take the middle channel value.
 5. passive testing can not detect the interference generated when the active device is working.
- To sum up, the passive efficiency is only for reference in the early debugging, and the actual active data shall prevail.

◆ 2/3G OTA(FS or BHHL/R)

		FS		BHHL		BHHR	
2G	CH	TRP	TIS	TRP	TIS	TRP	TIS
EGSM900	1	27.1		18.8		21.3	
	62	27.7		18.6		20.9	
	124	27.6	-102.7	18.5	-94.7	20.5	-96.3
DCS1800	512	27.8		21.7		22.2	
	698	27.6		21.9		23.4	
	885	26.4	-104.1	22.4	-101.5	23.6	-102.2
PCS1900	512	25.9		23.7		24.2	
	661	25.6		24.2		24.6	
	810	26.1	-103.1	24.2	-102.1	23.6	-99.7
3G	CH	TRP	TIS	TRP	TIS	TRP	TIS
WCDMA1	9612	19		14.19		15.02	
	9750	19.4		14.34		15.41	
	9888	19	-106.4	13.92	-100.5	14.44	-101.8
WCDMA8	2712	18.2		10.3		11.23	
	2787	19.2		11.07		12.31	
	2863	19.2	-104.6	10.85	-95.6	10.72	-96.4

Conclusion:

◆ LTE OTA(FS or BHHL/R)

		FS		BHHL		BHHR	
4G	CH	TRP	TIS	TRP	TIS	TRP	TIS
FDD-B1(10M)	18050	19.2		14.37		15.2	
	18300	19.6		14.53		15.6	
	18550	19.8	-93.6	14.65	-90.6	15.27	-91.1
FDD-B3(10M)	19250	19.7		13.79		14.86	
	19900	19.7		14.38		14.5	
	18550	19.3	-94.1	14.23	-90.5	14.59	-93.1
FDD-B5(10M)	20450	18.8		10.72		11.26	
	20525	18.9		10.86		11.21	
	20600	18.9	-91.7	11.45	-84.1	11.54	-83.6
FDD-B7(10M)	20800	19.3		17.57		17.4	
	21100	20.6		17.58		17.62	
	21400	21.4	-94.8	16.83	-91.2	17.07	-90.3
FDD-B8(10M)	21500	18.1		10.22		11.15	
	21625	19.3		11.19		12.43	
	21750	20.7	-92.8	11.94	-85.8	12.21	-85.2
FDD-B20(10M)	24200	18.0		10.15		10.51	
	24300	19.1		11.06		11.4	
	24400	19.7	-95.1	11.69	-85.6	12.02	-85.8
FDD-B28A(10M)	27300	18.0		10.54		12.05	
	27370	18.9		9.51		11.3	
	27430	18.3	-92.1	10.62	-84.2	11.76	-84.7
FDD-B28B(10M)	27440	18.2		10.14		12.05	
	27530	19.2		9.6		11.3	
	27610	18.2	-92.7	10.3	-83.9	11.76	-84.7

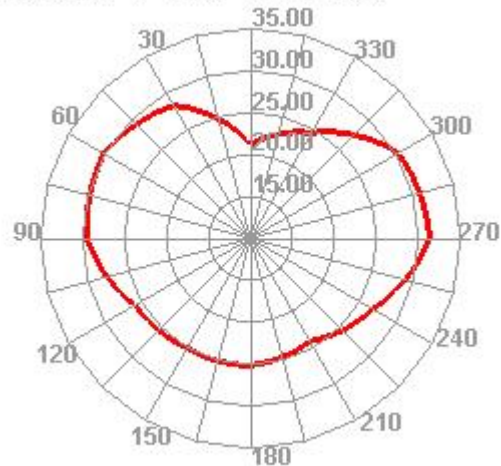
Conclusion:

◆ BT OTA

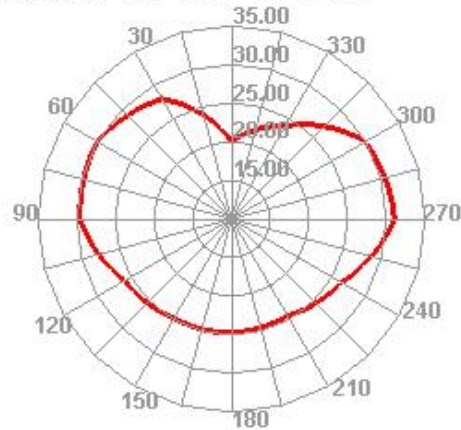
	channel	TRP	TIS
BT	0	4.1	-85.5
	39	5.5	-87.4
	78	6.7	-88.2

◆ Directional Diagram

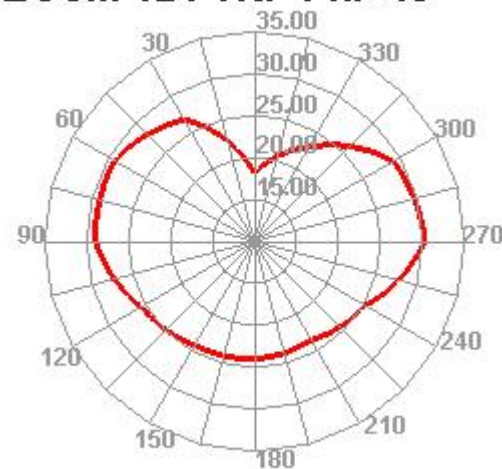
EGSM 1 TRP Phi=45



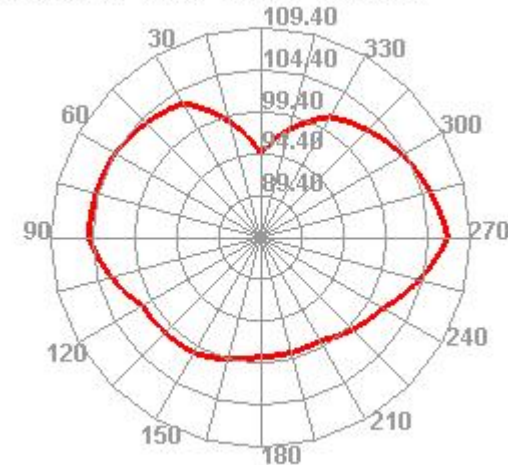
EGSM 62 TRP Phi=45



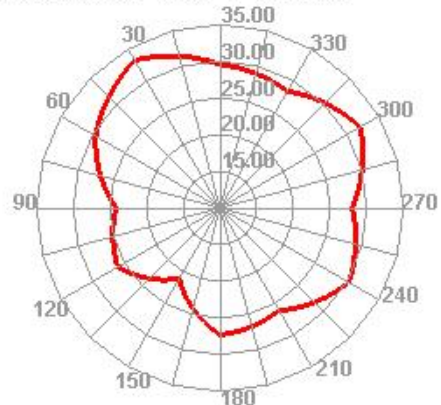
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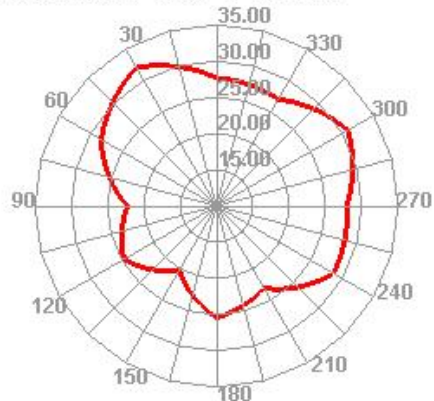
EGSM 124 TIS Phi=45



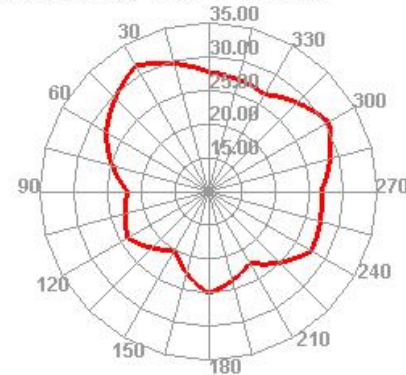
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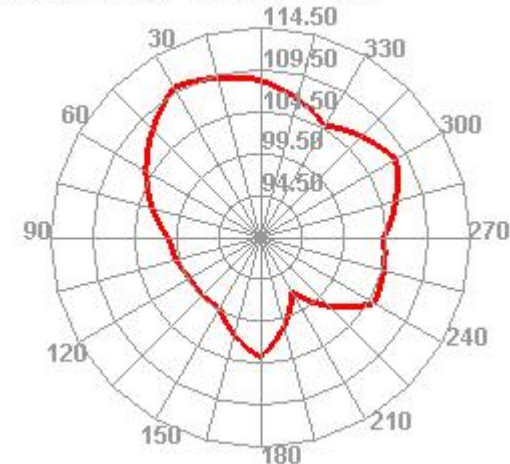
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DCS 885 TRP Phi=45

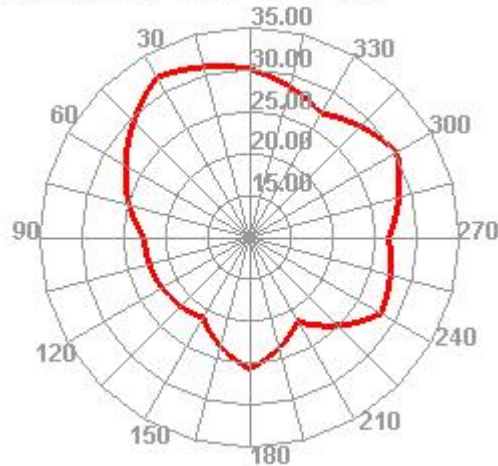


DCS 885 TIS Phi=45

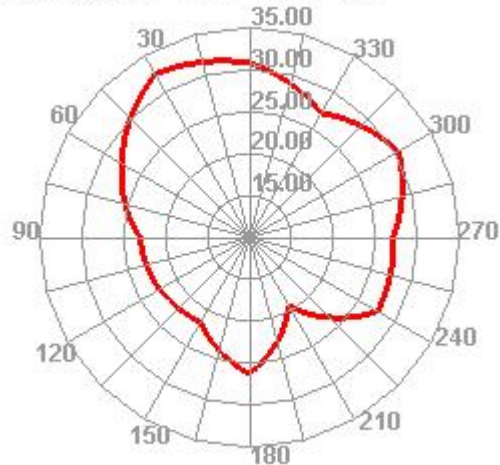


◆ Directional Diagram

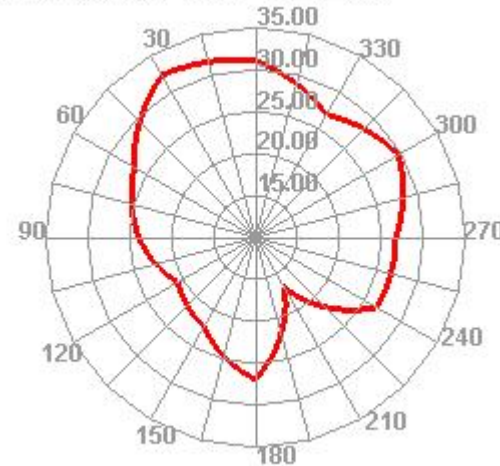
PCS 512 TRP Phi=45



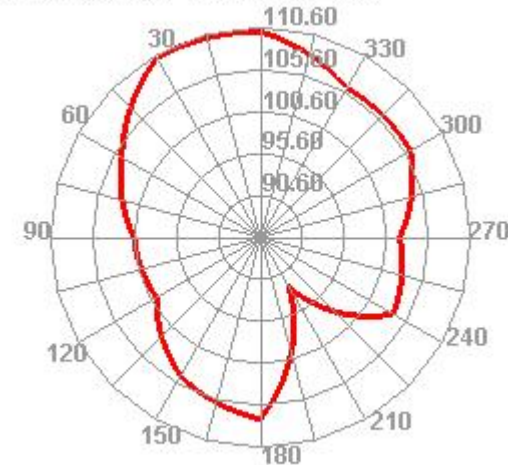
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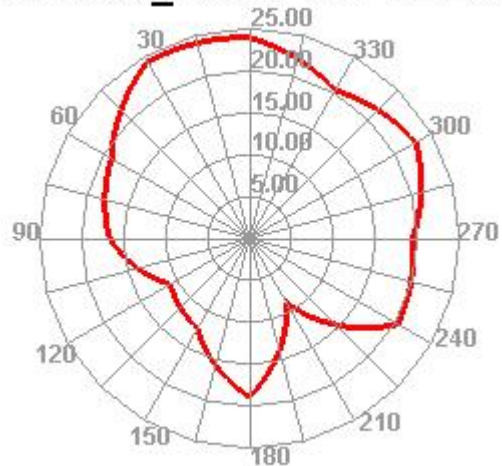
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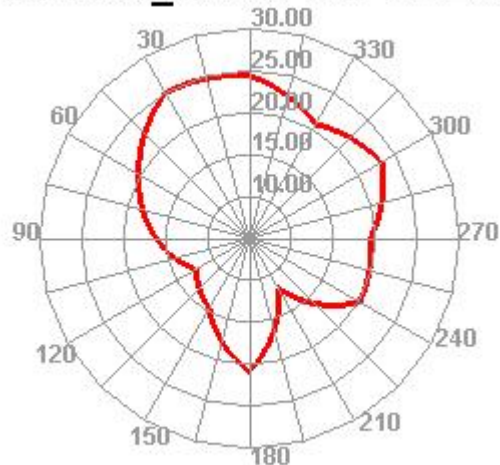
PCS 810 TIS Phi=45



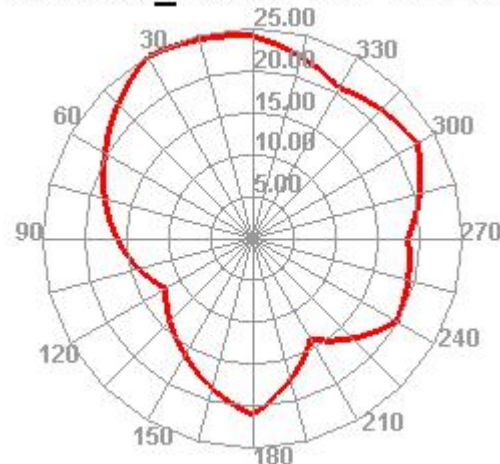
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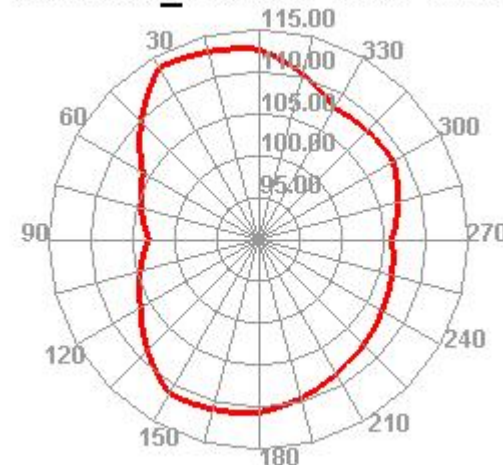
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WCDMA_I 9888 TRP Phi=45

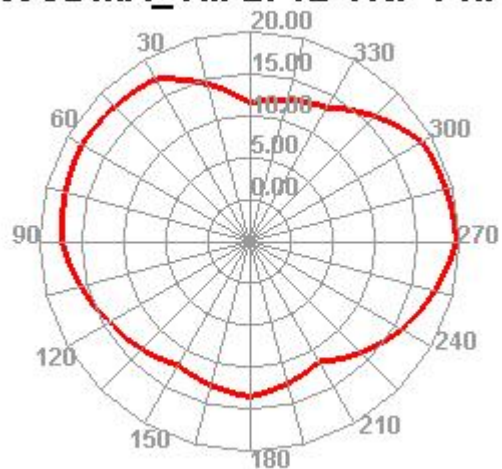


WCDMA_I 10838 TIS Phi=45

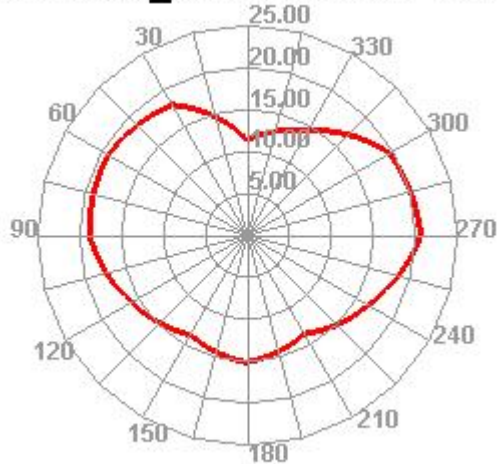


◆ Directional Diagram

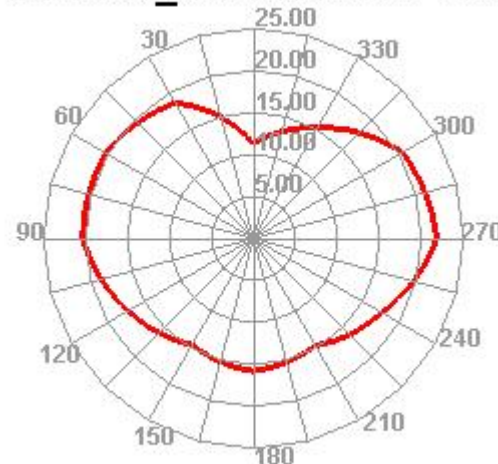
WCDMA_VIII 2712 TRP Phi=4



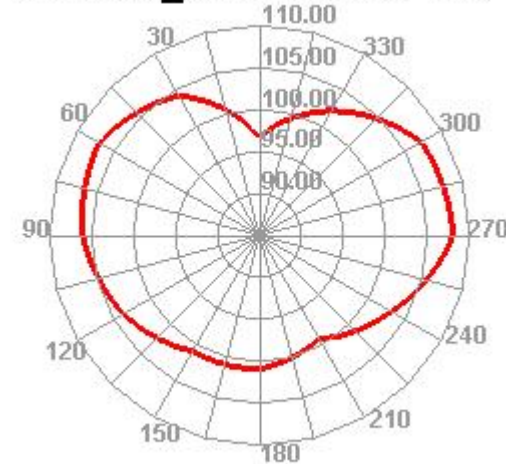
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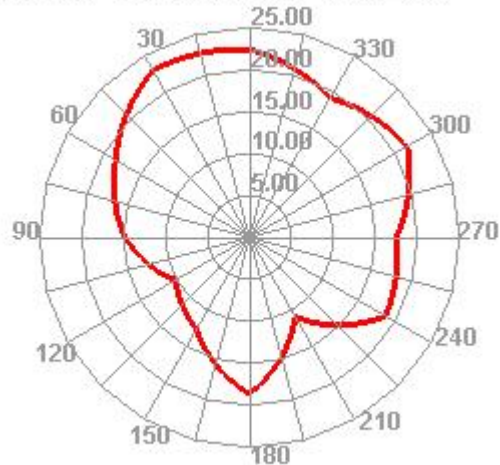
WCDMA_VIII 2863 TRP Phi=4



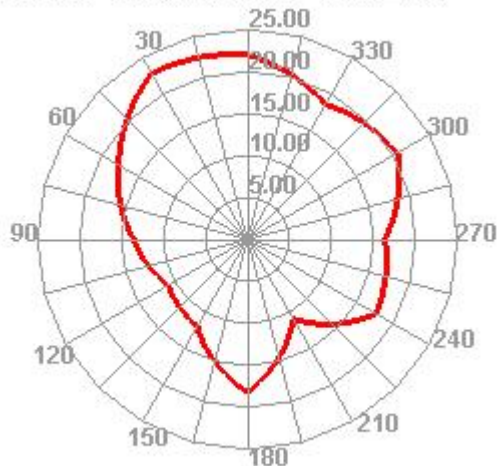
WCDMA_VIII 3088 TIS Phi=4



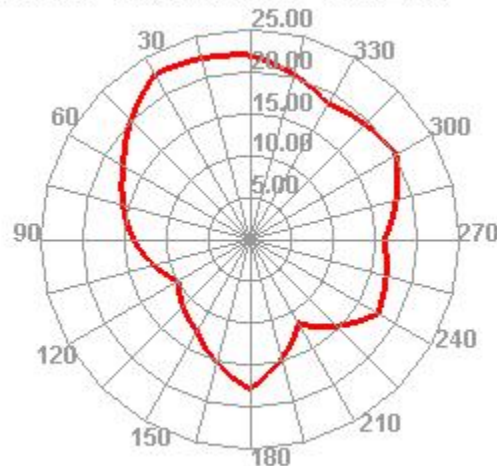
LTE1 18050 TRP Phi=45



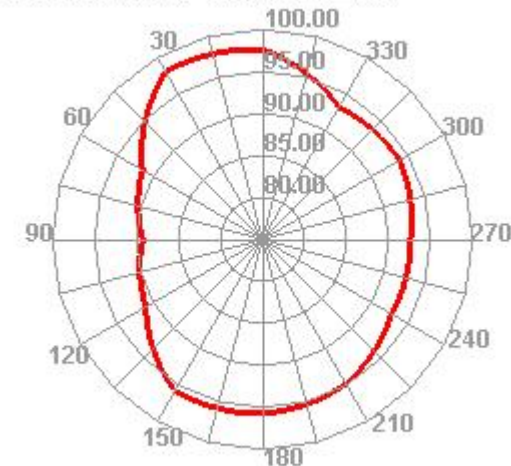
LTE1 18300 TRP Phi=45



LTE1 18550 TRP Phi=45

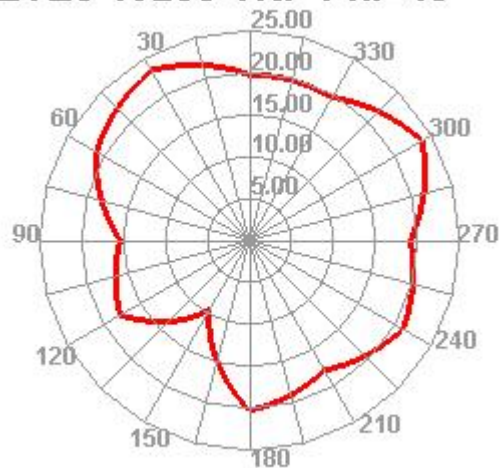


LTE1 550 TIS Phi=45

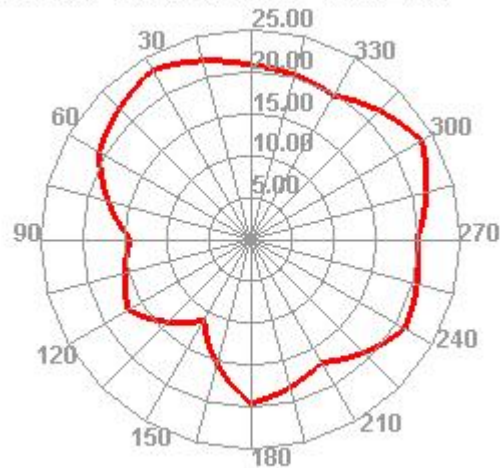


◆ Directional Diagram

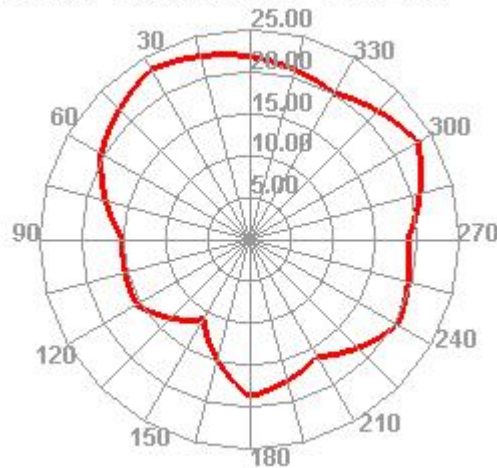
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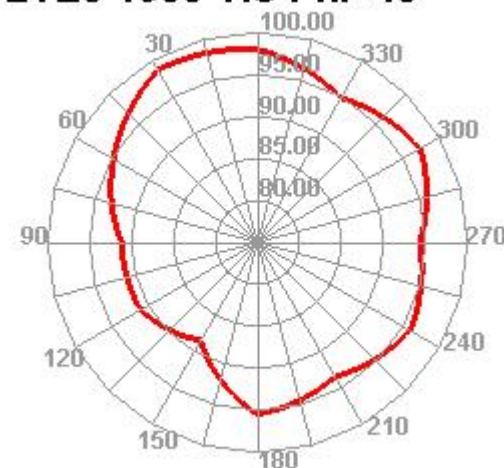
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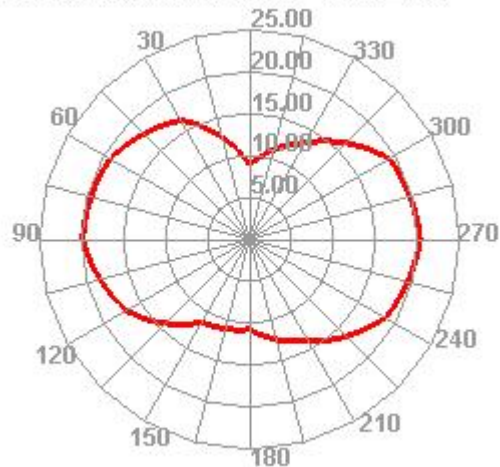
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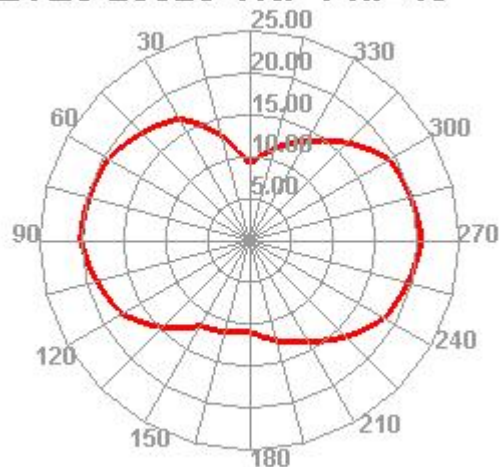
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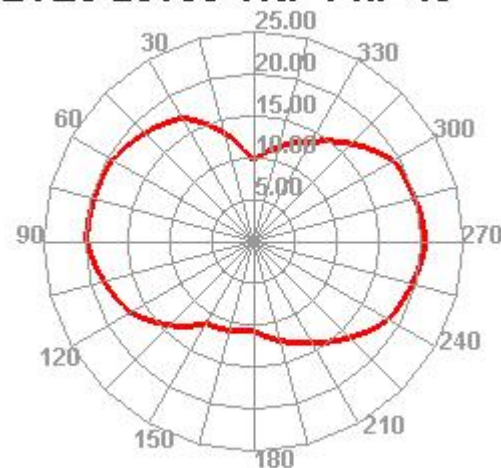
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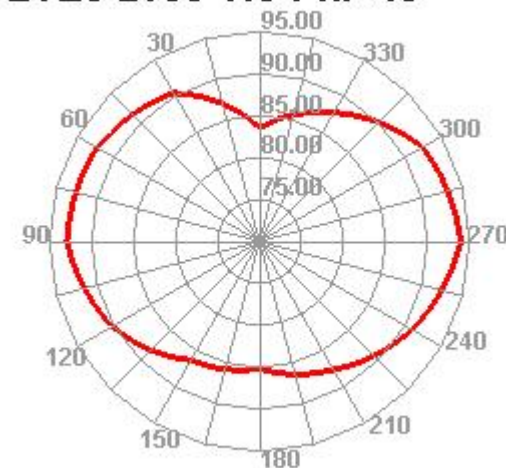
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LTE5 20600 TRP Phi=45

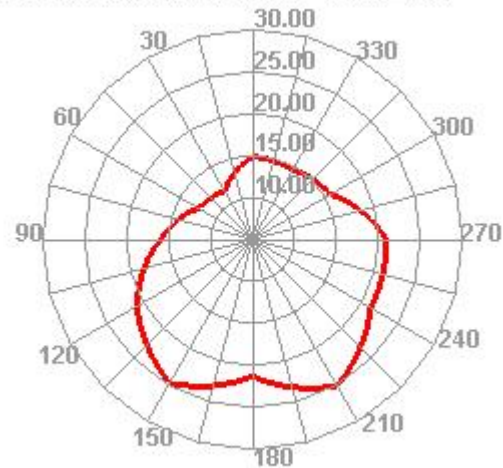


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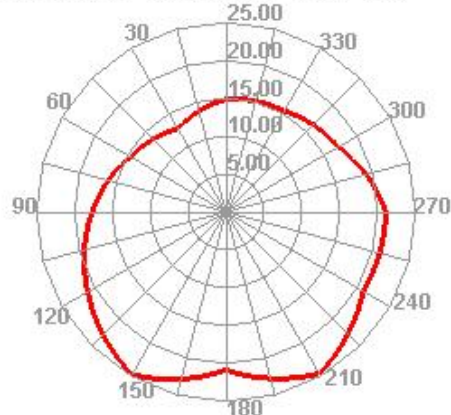


◆ Directional Diagram

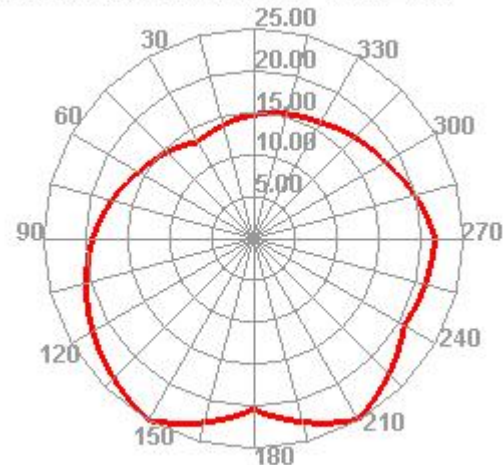
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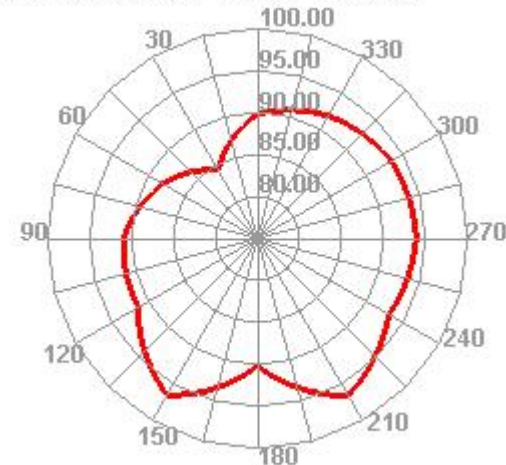
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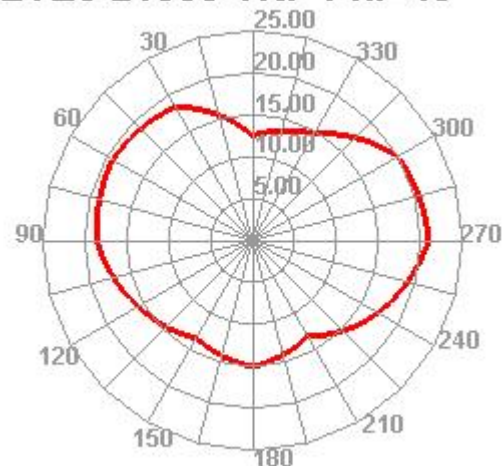
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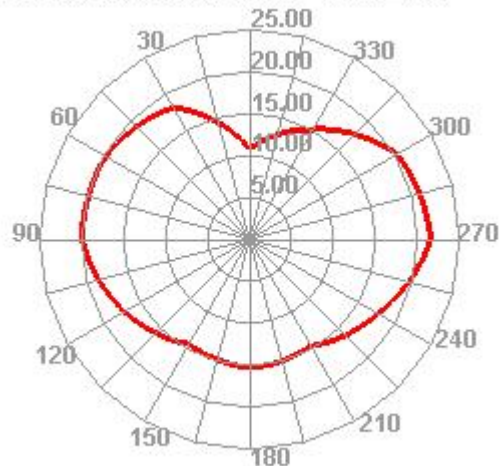
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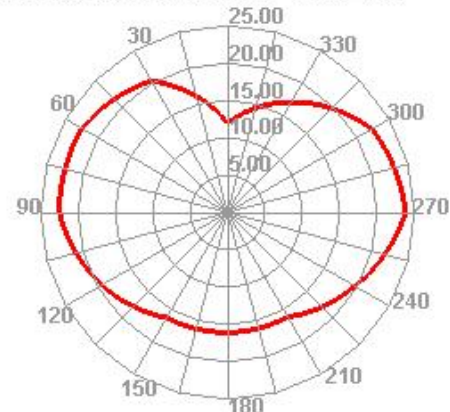
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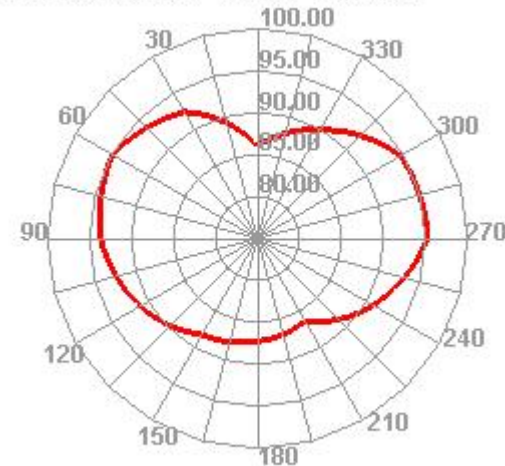
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LTE8 21750 TRP Phi=45

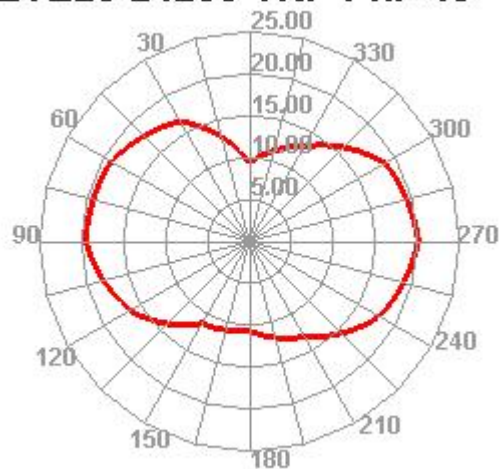


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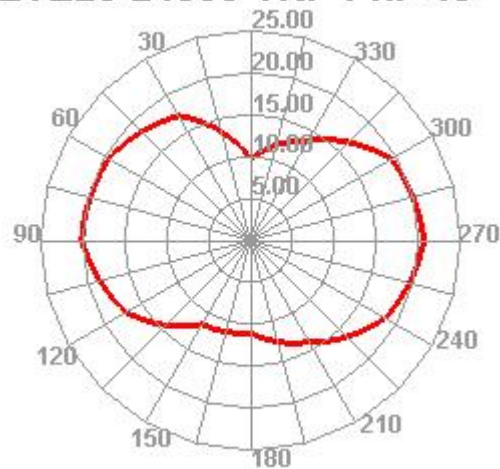


◆ Directional Diagram

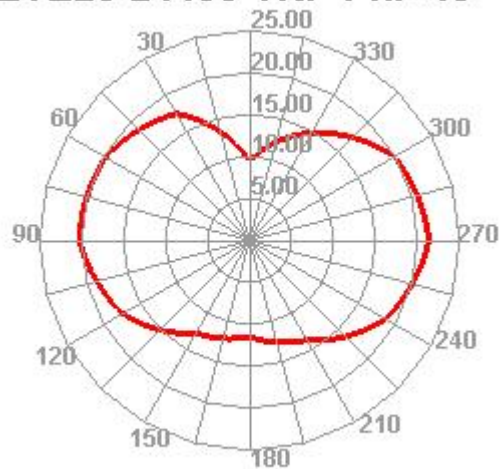
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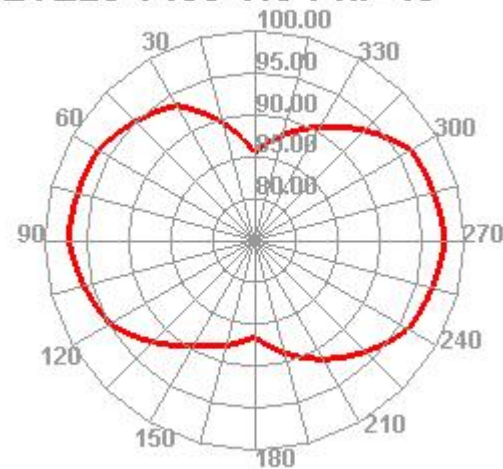
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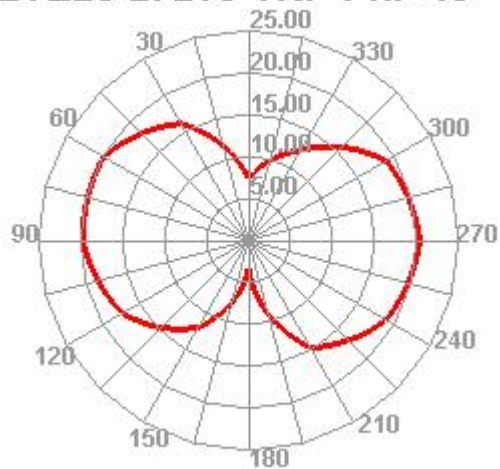
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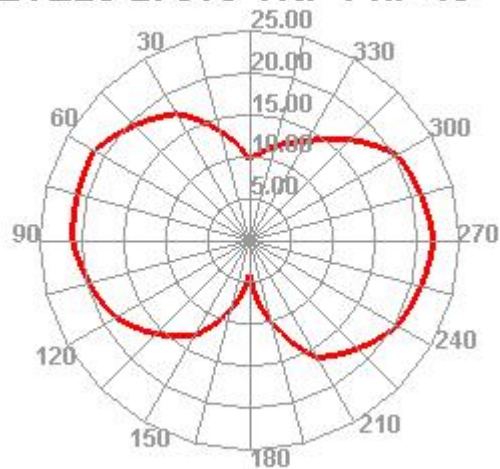
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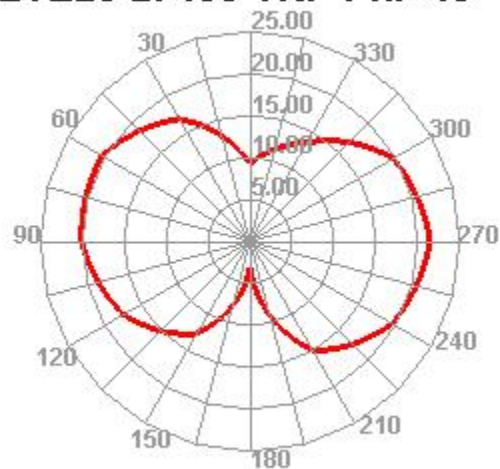
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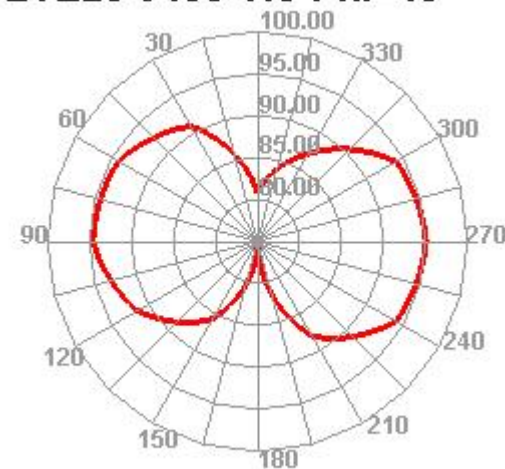
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LTE28 27435 TRP Phi=45

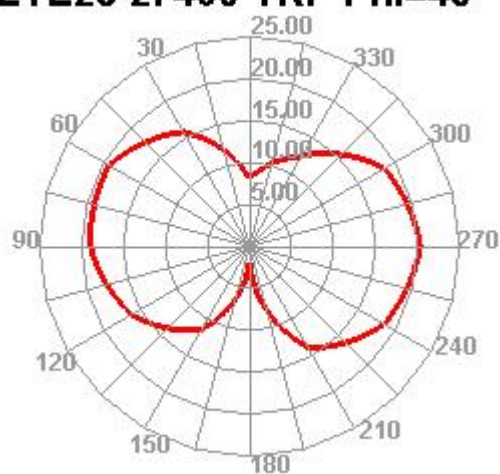


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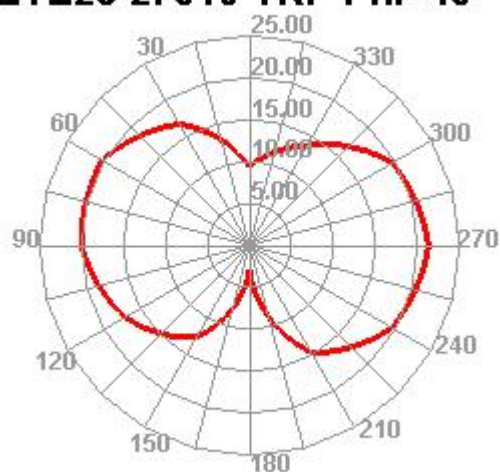


◆ Directional Diagram

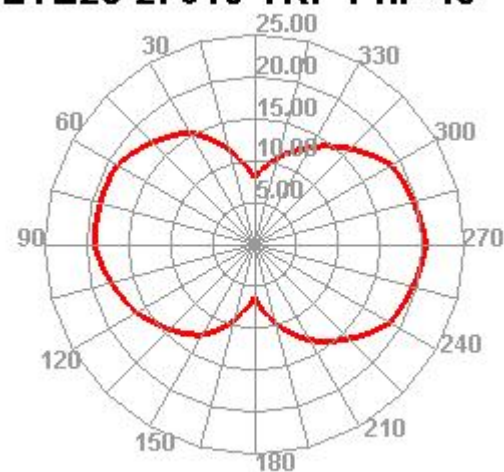
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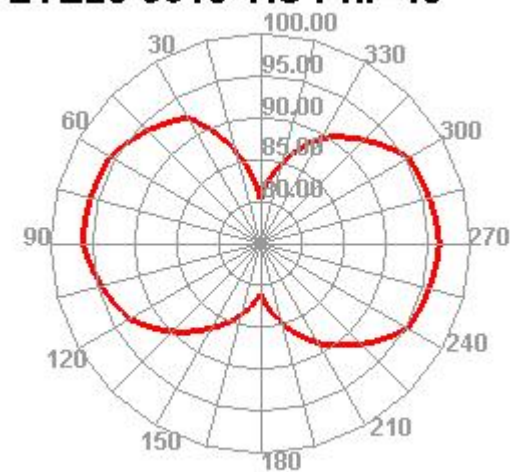
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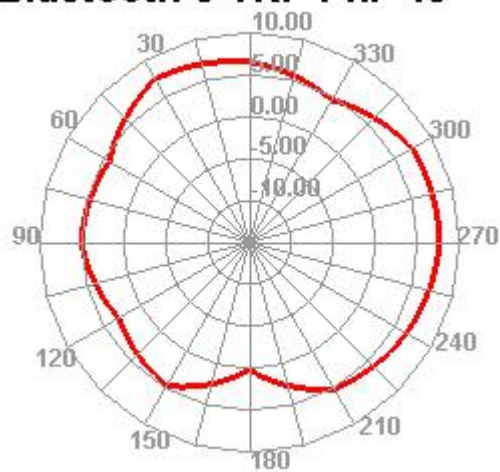
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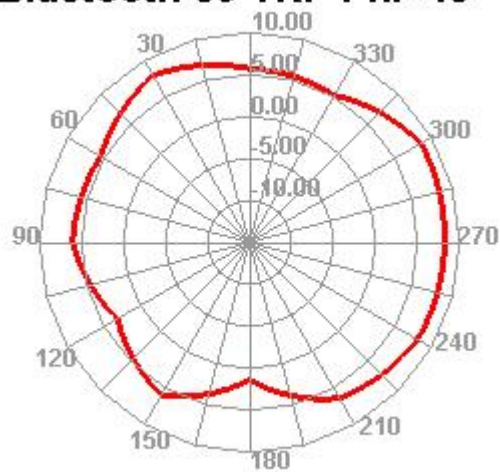
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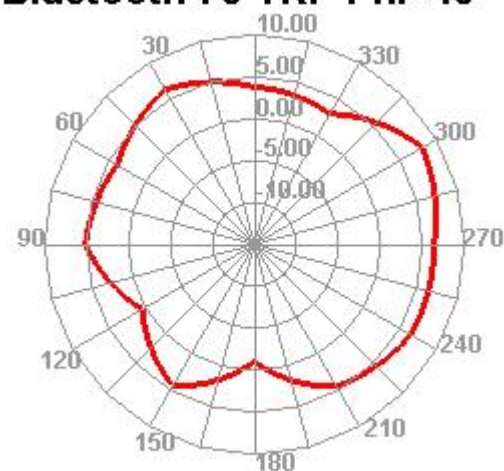
Bluetooth 0 TRP Phi=45



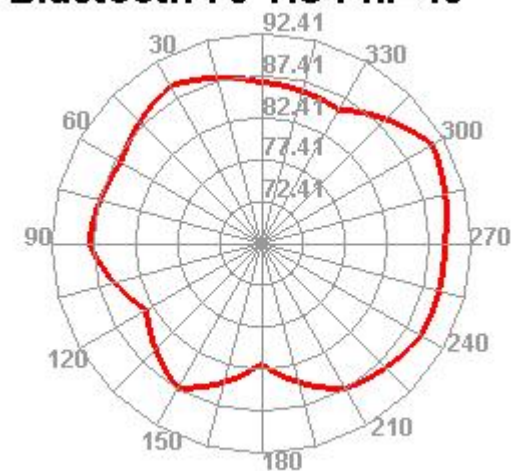
Bluetooth 39 TRP Phi=45



Bluetooth 78 TRP Phi=45



Bluetooth 78 TIS Phi=45



The End