

ATTACHMENT M – ANTENNA SPECIFICATIONS

Technical Description:

NeoPoint NP2500 is a Single Band Single Mode digital cdma2000 (1xRTT) handset. It is designed to comply with Part 15, Part 22 and Part 24 of the CFR as well parts of IS-2000.

PCS Band (cdma2000):

TX frequencies: 1851.25MHz – 1908.75MHz

RX frequencies: 1931.25MHz – 1988.75MHz

LO frequencies: 1720.87MHz – 1778.37MHz

TCXO frequency: 19.68MHz

cdma2000 Output power: +24.5dBm Max. Conducted Power

DC voltages and currents into final RF amp: 4.2V – 3.4V, 800mA – 100mA

Battery voltage: 4.2 V Li-Ion (Supplied with phone)

Limiting Power:

Each mobile is individually calibrated at the factory to ensure max power of not more than +24.5dBm by employing a proper frequency and temperature compensation schemes for both the TX and RX automatic gain control (AGC) amplifiers. There are also hardware circuitry to monitor TX power and software preset limits to limit maximum TX power.

Frequency Stabilization:

A voltage controlled temperature compensated crystal oscillator (VCTCXO) is utilized as a frequency reference for all of the transceiver local oscillators. This crystal oscillator is specified to a frequency stability of $\pm 2.5\text{ppm}$ over temperature and voltage variations. The synthesizer lock status is constantly monitored by the microprocessor and transmission is disabled whenever an out of lock condition is detected. The mobile is locked to the base station during operation. The mobile receiver constantly monitors the received signal from the base station and makes necessary frequency adjustment on the VCTCXO to correct any frequency errors between the mobile and the base station.

Suppression of Spurious Radiation:

Spurious and harmonic suppression is achieved by proper design with various filters and sufficient use of EMI shields. Rigorous testing at the factory ensures continuous compliance.

Limiting Modulation:

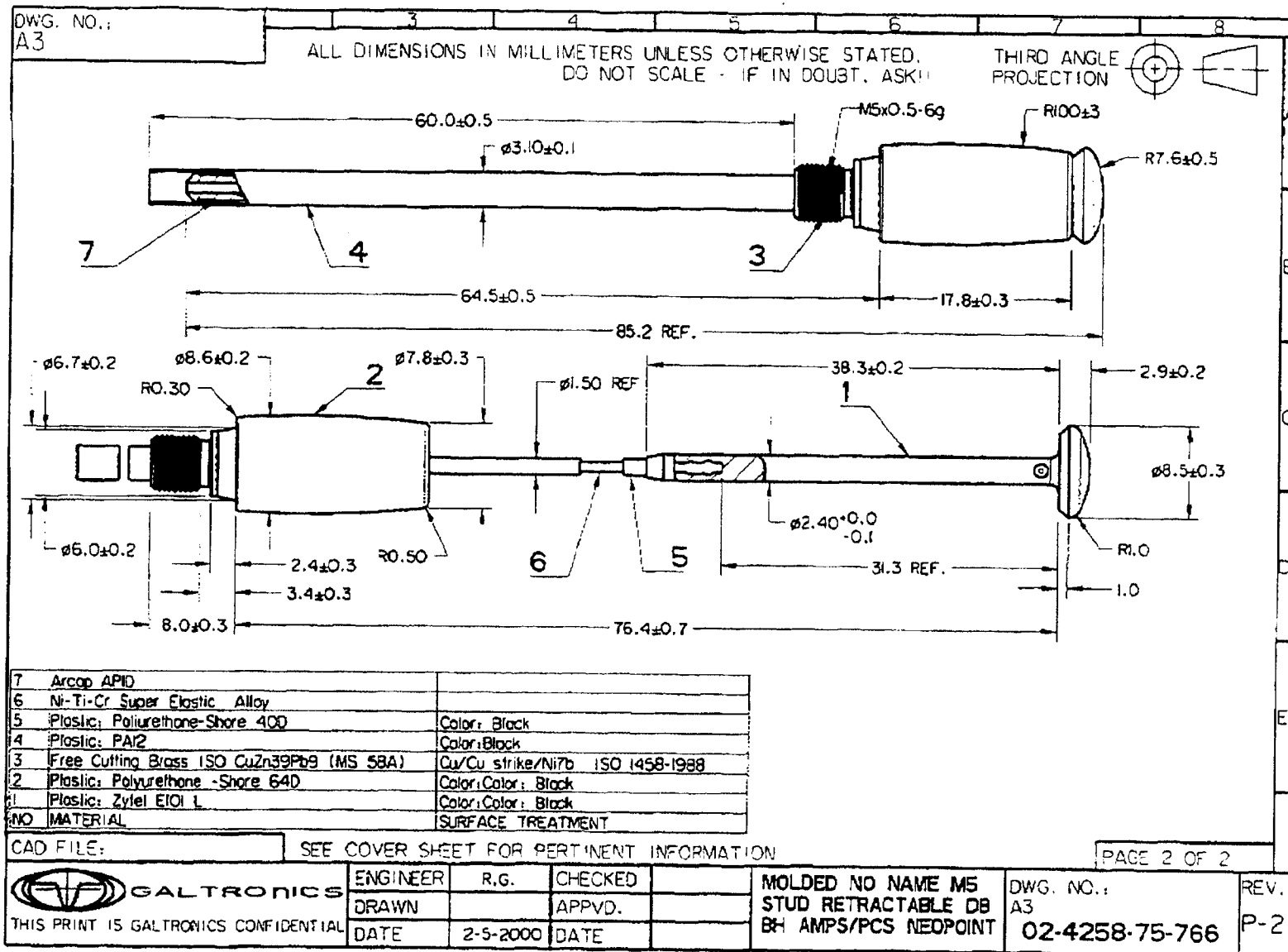
The audio input is sampled, digitally limited, and then filtered to amplitude and frequency limit the signal applied to the modulator. The device has an operating temperature range of -30 to $+60^{\circ}\text{C}$. The functions include Compandor, PLL lock detector for received SAT, filtering of received data, audio signal filtering for signals.

Oscillator frequencies:

19.68MHz TCXO reference frequency
27MHz resonator frequency for microprocessor
32.768KHz real time clock crystal

Antenna Specifications:

Peak gain @ PCS Band: **+1dBi** (retracted) and **+2dBi(extended)**
Omnidirectional; VSWR < 3 : 1





GALTRONICS

REPORT FORM

PART No. : 02-4258-75-766

PROJECT No.: 076600

TITLE: Gain Test Results of Retractable antenna tested on phone NEOPOINT (Log#304) NEW PCB

Sample #1			Test condition		GAIN TEST RESULTS (dBi)								File No.
					Peak (dBi)				AVG (dBi)				
Cut	Antenna	Position	Folder	Radio position	1850MHz	1910MHz	1930MHz	1990MHz	1850MHz	1910MHz	1930MHz	1990MHz	
E1 (Side-Side)		Ext			1.75	1.98	1.86	1.45	-2.25	-2.08	-2.11	-2.21	Neoe1ex1
E1 (Side-Side)		Ret			1.08	0.95	0.80	-0.53	-3.83	-3.87	-3.94	-5.22	Neoe1rt1

Sample #1			Test condition		GAIN TEST RESULTS (dBi)								File No.
					Peak (dBi)				AVG (dBi)				
Cut	Antenna	Position	Folder	Radio position	1850MHz	1910MHz	1930MHz	1990MHz	1850MHz	1910MHz	1930MHz	1990MHz	
E2 (front-back)		Ext			1.81	1.72	1.42	0.84	-3.73	-3.60	-3.68	-3.89	Neoe2ex1
E2 (front-back)		Ret			0.14	-0.04	-0.39	-2.03	-6.10	-6.26	-6.49	-7.51	Neoe2rt1

Sample #1			Test condition		GAIN TEST RESULTS (dBi)								File No.
Cut	Antenna	Position			Peak (dBi)				AVG (dBi)				
			Folder	Radio position	1850MHz	1910MHz	1930MHz	1990MHz	1850MHz	1910MHz	1930MHz	1990MHz	
Azimuth		Ext			0.14	0.55	0.06	-0.38	-1.42	-0.97	-1.13	-1.41	Neoazex1
Azimuth		Ret			-3.20	-2.31	-2.54	-3.33	-5.20	-4.30	-4.22	-4.61	Neoazrt1

The system was calibrated by Standart Gain Horn Antenna from Scientific Atlanta LTD.

Test date: 18 April 2000

Test performed by :Guerman Bazanov.

FORM No.:



GALTRONICS

REPORT FORM

PART No. : 02-4258-75-766

PROJECT No.: 076600

TITLE: Gain Test Results of Retractable antenna tested on phone NEOPOINT (Log#304) NEW PCB

Sample #1			Test condition		GAIN TEST RESULTS (dBi)								File No.
Cut	Antenna	Position			Peak (dBi)				AVG (dBi)				
			Folder	Radio position	824MHz	849MHz	869MHz	894MHz	824MHz	849MHz	869MHz	894MHz	
E1 side-side		Ext			-0.91	-0.13	-0.20	-0.84	-4.29	-3.70	-3.98	-4.73	Neoe1ext
E1 side-side		Ret			-3.14	-2.32	-2.00	-2.80	-6.29	-5.54	-5.40	-6.36	Neoe1ret

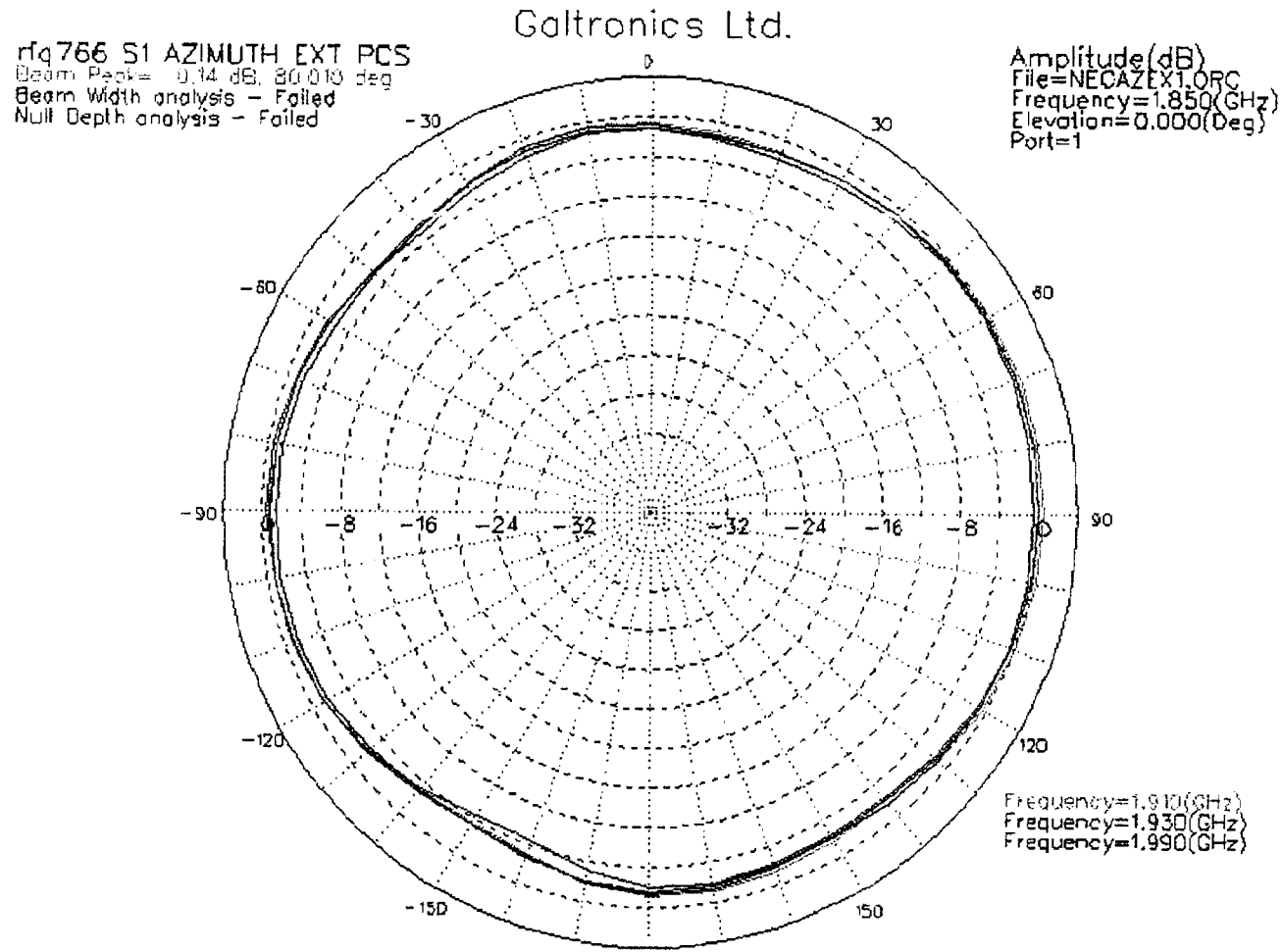
Sample #1			Test condition		GAIN TEST RESULTS (dBi)								File No.
Cut	Antenna	Position			Peak (dBi)				AVG (dBi)				
			Folder	Radio position	824MHz	849MHz	869MHz	894MHz	869MHz	849MHz	869MHz	894MHz	
E2 front-back		Ext			-0.89	0.16	-0.02	-0.79	-4.57	-3.89	-4.15	-4.97	Neoe2ext
E2 front-back		Ret			-2.70	-1.65	-1.49	-2.52	-6.44	-5.61	-5.25	-6.60	Neoe2ret

Sample #1			Test condition		GAIN TEST RESULTS (dBi)								File No.
					Peak (dBi)				AVG (dBi)				
Cut	Antenna	Position	Folder	Radio position	824MHz	849MHz	869MHz	894MHz	824MHz	849MHz	869MHz	894MHz	
Azimuth		Ext			-0.96	-1.05	-1.08	-1.30	-2.03	-2.25	-2.57	-3.23	Neoazext
Azimuth		Ret			-2.82	-2.63	-2.43	-2.85	-3.99	-3.95	-3.85	-4.70	Neoazret

The system was calibrated by Log Periodic antenna from A.H. Systems LTD.

Test date: 18 April 2000

Test performed by : Guerman Bazanov.



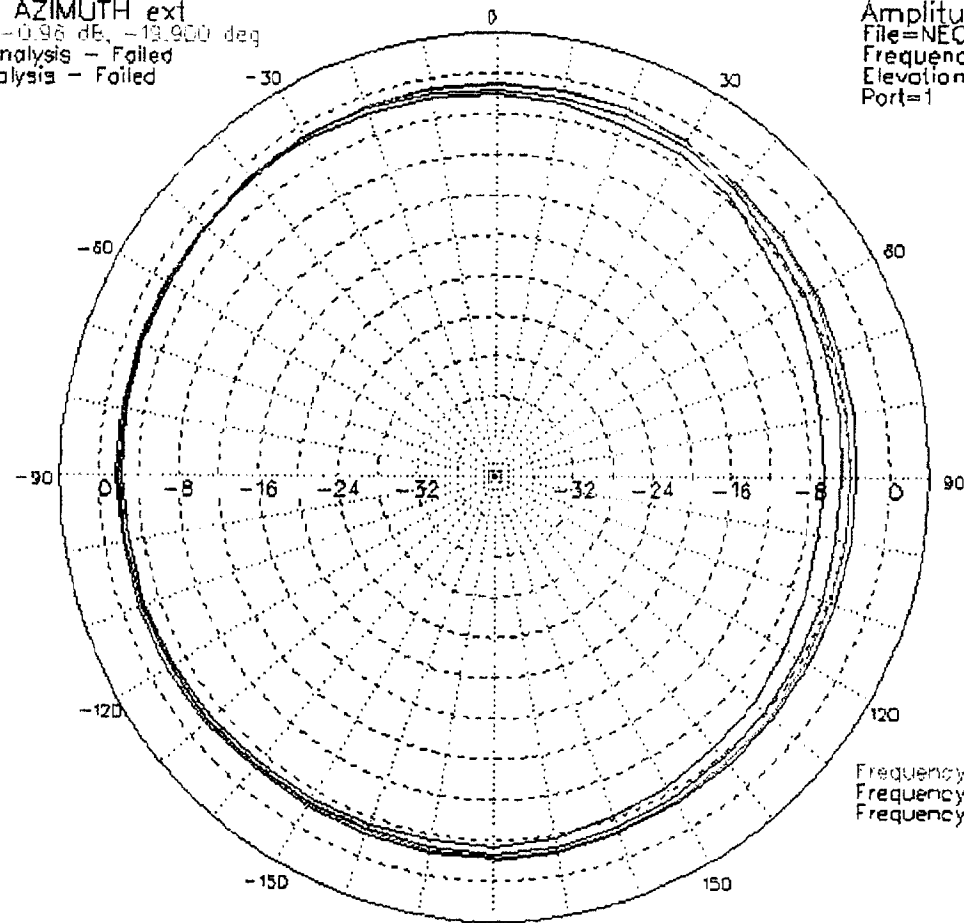
RFQ766 S1 AZIMUTH ext

Beam Peak = -0.96 dB, -13.000 deg

Beam Width analysis - Failed

Null Depth analysis - Failed

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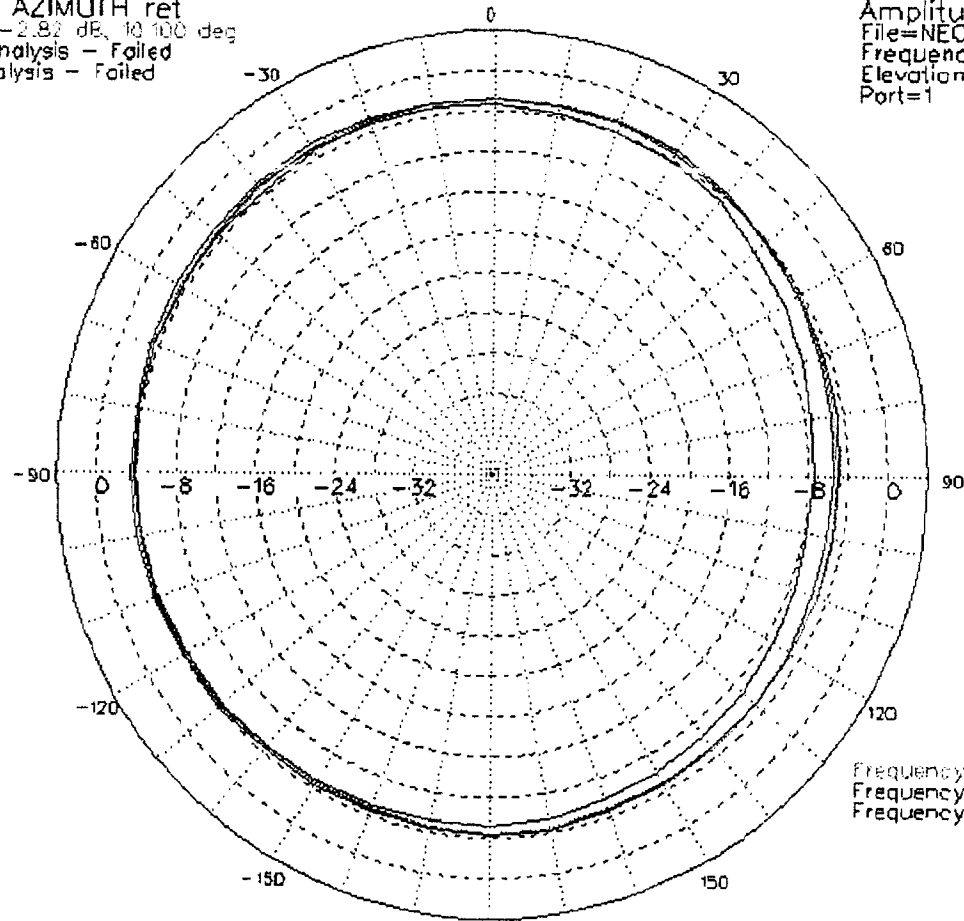
Amplitude(dB)
File=NEQAZEXT.ORG
Frequency=824.000(MHz)
Elevation=0.000(Deg)
Port=1

Frequency=849.000(MHz)
Frequency=869.000(MHz)
Frequency=894.000(MHz)

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RFQ766 S1 AZIMUTH ret
Beam Peak= -2.82 dB, 10 100 deg
Beam Width analysis - Failed
Null Depth analysis - Failed

Amplitude(dB)
File=NEOAZRET.ORG
Frequency=824.000(MHz)
Elevation=0.000(Deg)
Port=1

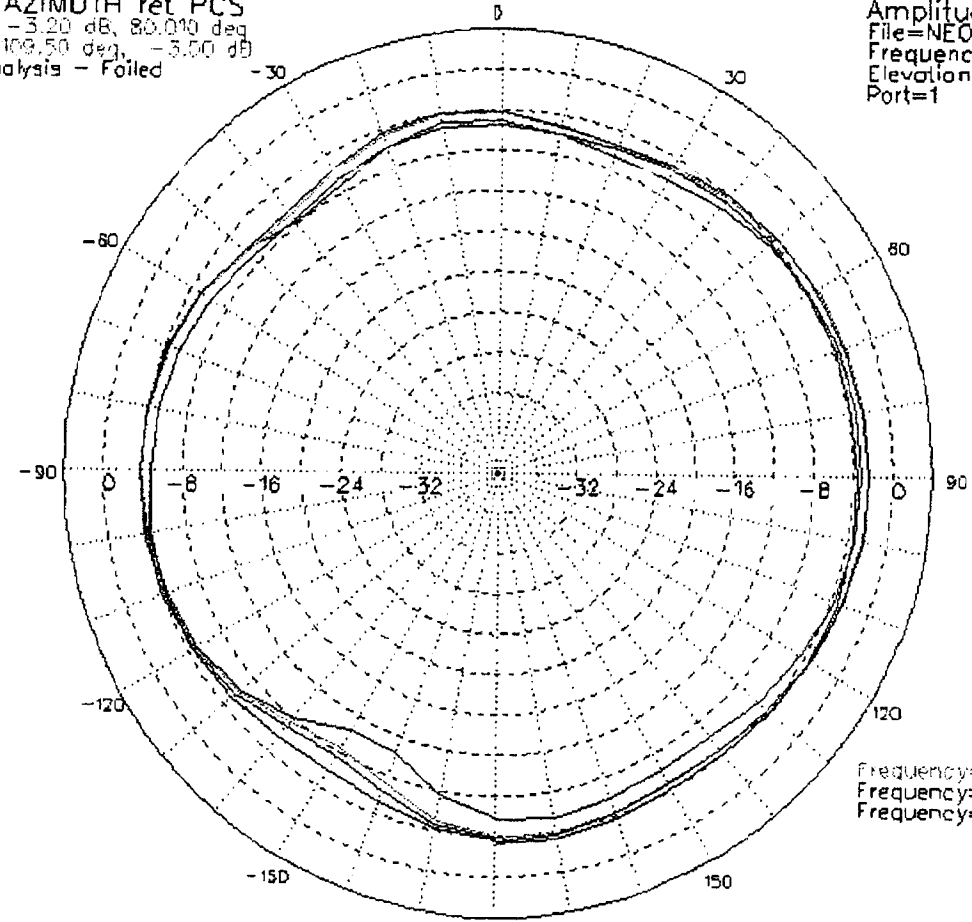


Frequency=849.000(MHz)
Frequency=869.000(MHz)
Frequency=894.000(MHz)

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rfq766 S1 AZIMUTH ret PCS
Beam Peak= -3.20 dB, 80.010 deg
Beam Width=109.50 deg, -3.00 dB
Null Depth analysis - Failed

Amplitude(dB)
File=NEOAZRT1.ORG
Frequency=1.850(GHz)
Elevation=0.000(Deg)
Port=1

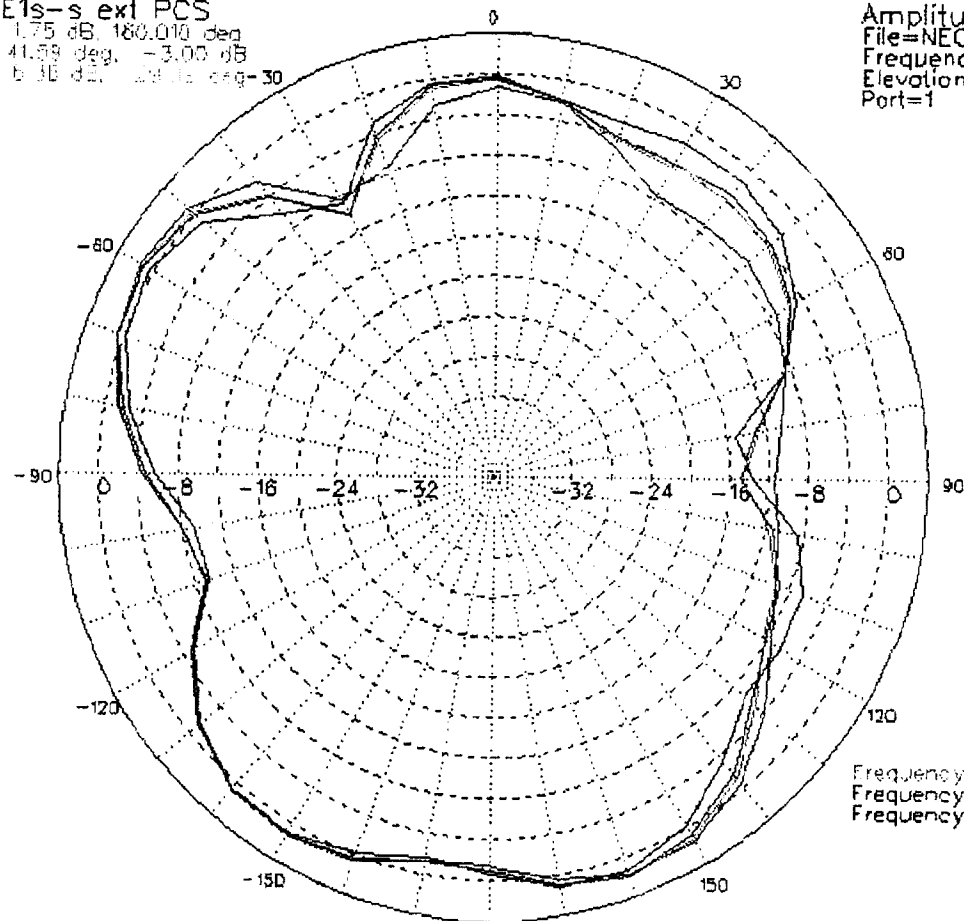


Frequency=1.810(GHz)
Frequency=1.930(GHz)
Frequency=1.990(GHz)

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rfq766 S1 E1s-s ext PCS
Beam Peak= 1.75 dB, 180.010 deg
Beam Width= 41.59 deg, -3.00 dB
1 dB Cap= 11.6 dB, 24.00 deg-30

Amplitude(dB)
File=NEOE1EX1.ORG
Frequency=1.850(GHz)
Elevation=0.000(Deg)
Port=1

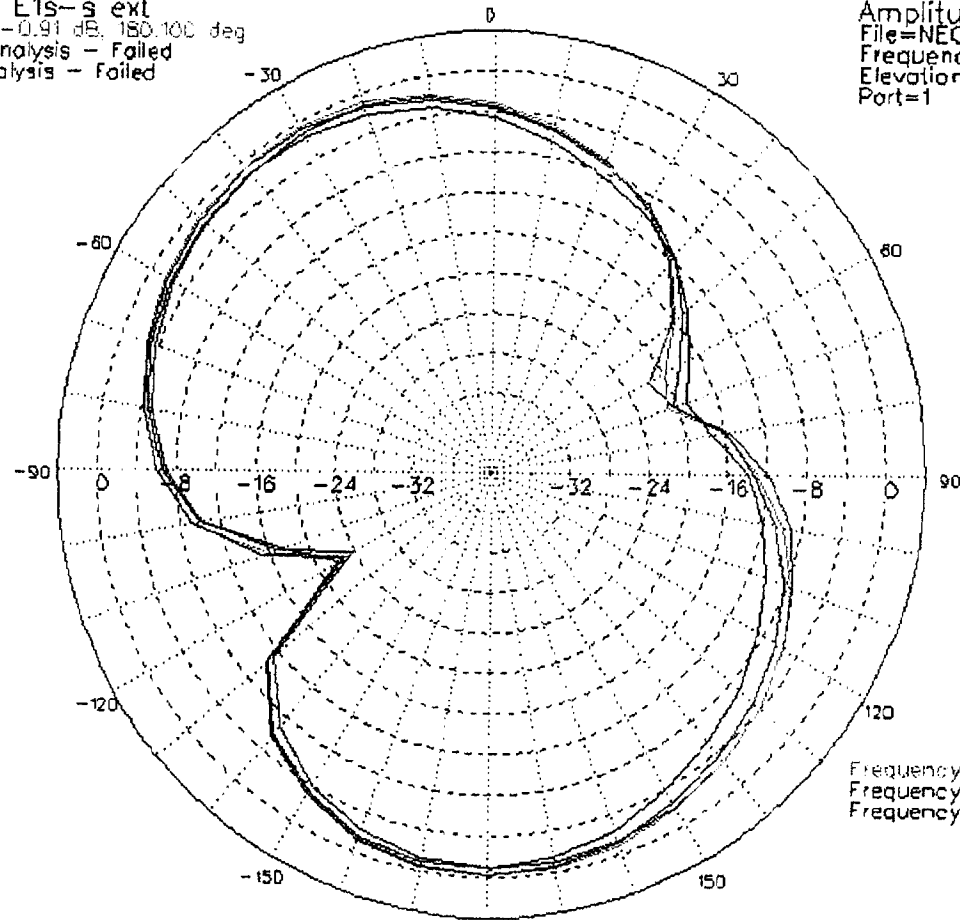


Frequency=1.810(GHz)
Frequency=1.930(GHz)
Frequency=1.990(GHz)

Galtronics Ltd.

RFQ766 S1 E1s-s ext
Beam Peak = -0.91 dB, 180.100 deg
Beam Width analysis - Failed
Null Depth analysis - Failed

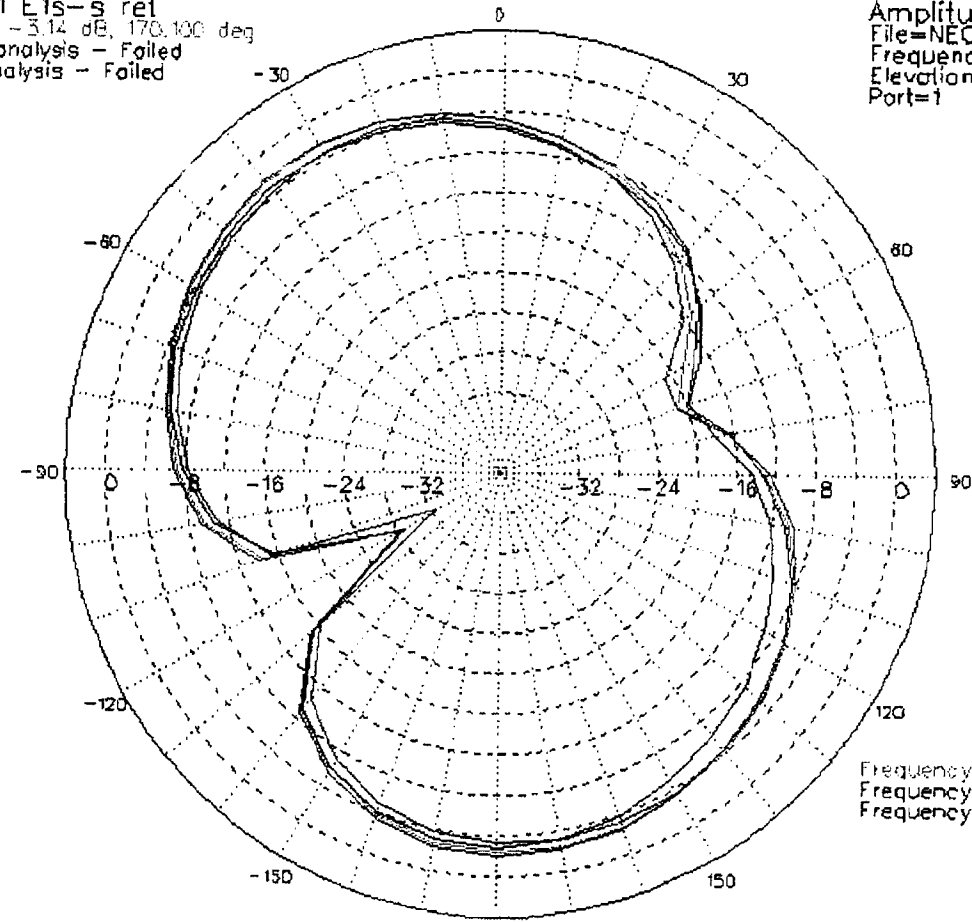
Amplitude(dB)
File=NEOE1EXT.ORG
Frequency=824.000(MHz)
Elevation=0.000(Deg)
Port=1



Galtronics Ltd.

RFQ766 S1 E1s-s rel
Beam Peak = -3.14 dB, 170.100 deg
Beam Width analysis - Failed
Null Depth analysis - Failed

Amplitude(dB)
File=NEOE1RET.ORG
Frequency=824.000(MHz)
Elevation=0.000(Deg)
Port=1

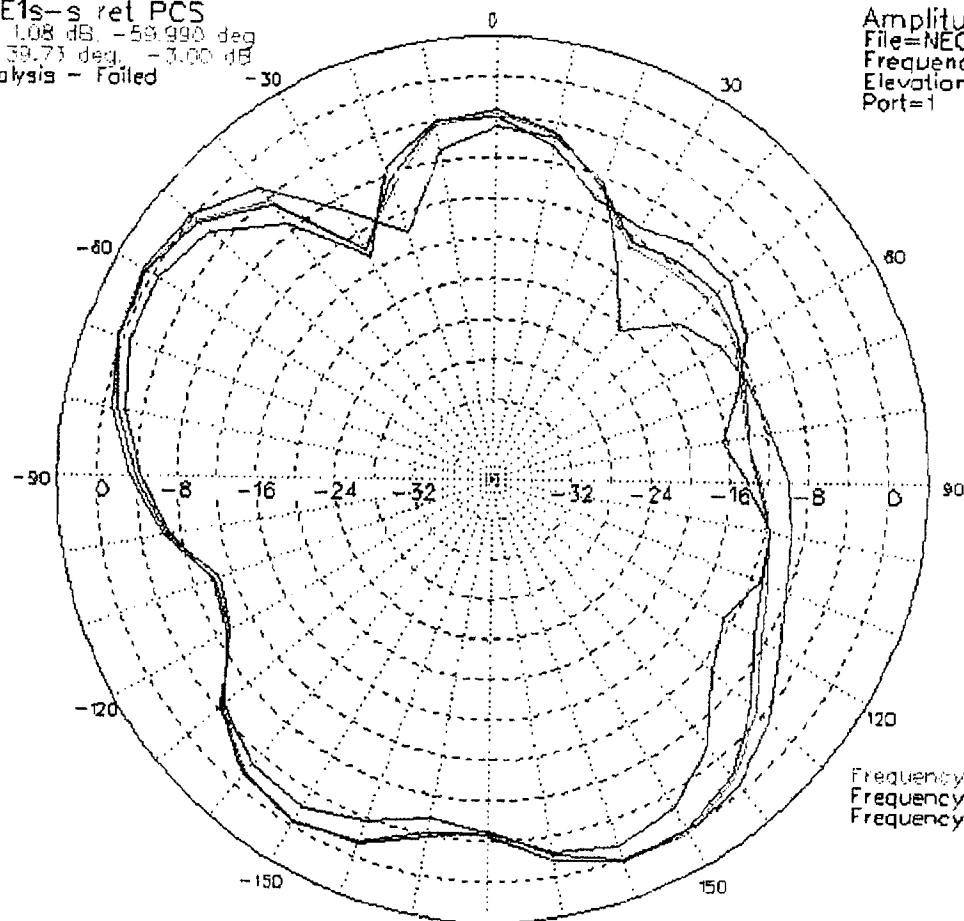


Frequency=849.000(MHz)
Frequency=869.000(MHz)
Frequency=894.000(MHz)

Galtronics Ltd.

rfq766 S1 E1s-s ret PCS
Beam Peak= 1.08 dB, -59.990 deg
Beam Width= 39.73 deg, -3.00 dB
Null Depth analysis - Failed

Amplitude(dB)
File=NEOE1RT1.ORG
Frequency=1.850(GHz)
Elevation=0.000(Deg)
Port=1



Frequency=1.910(GHz)
Frequency=1.930(GHz)
Frequency=1.990(GHz)

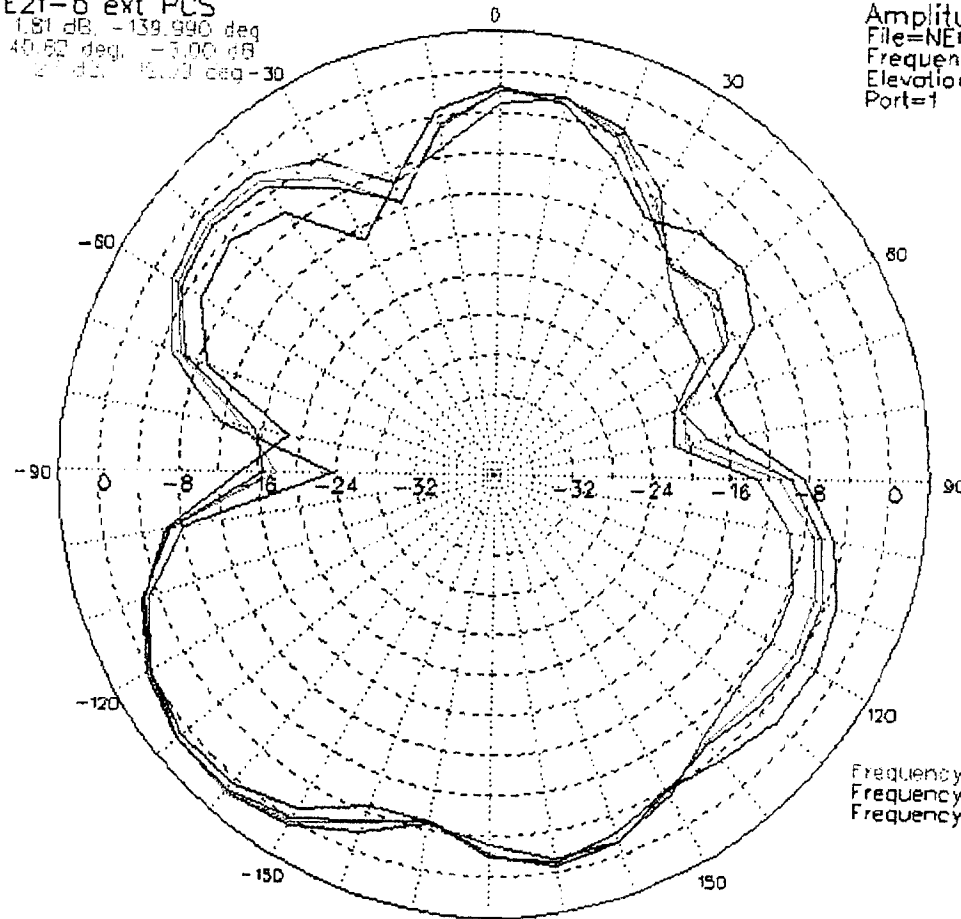
Galtronics Ltd.

rfq766 S1 E2f-b ext PCS

Beam Peak= 1.81 dB, -139.990 deg

Beam Width= 40.62 deg, -3.00 dB

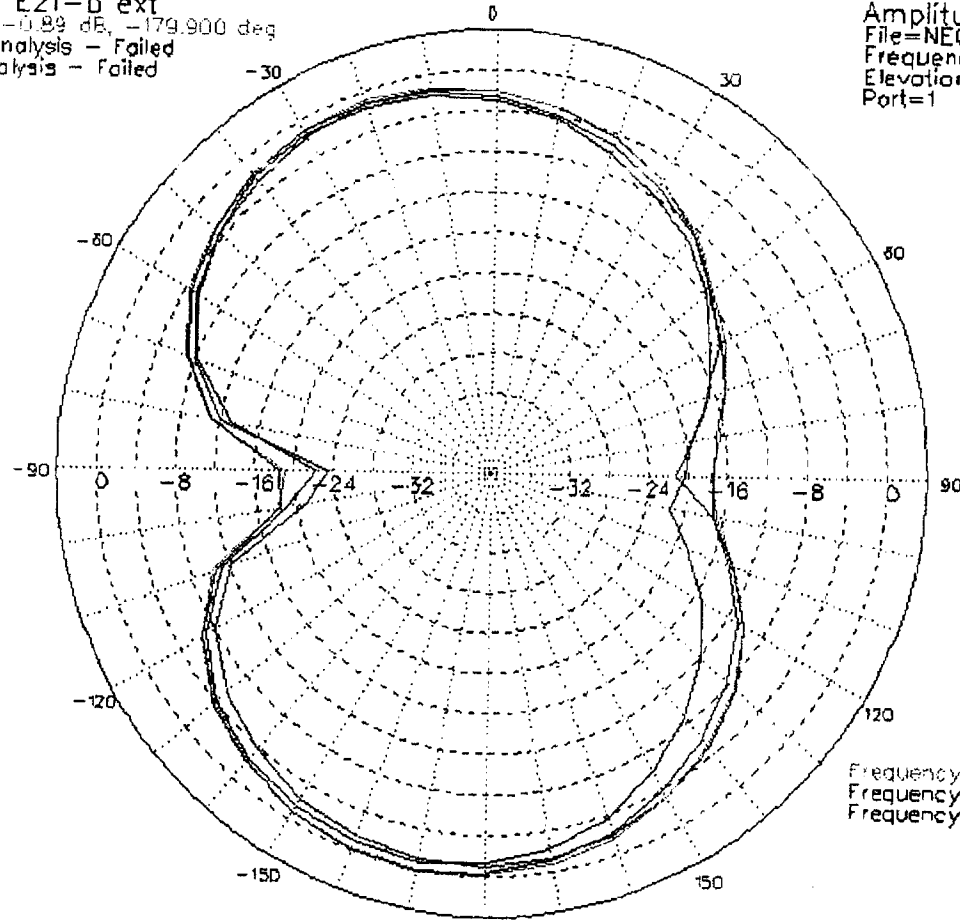
Null Depth= -27.02, -15.70 deg -30



Galtronics Ltd.

RFQ766 S1 E2f-b ext
Beam Peak = -0.89 dB, -179.900 deg
Beam Width analysis - Failed
Null Depth analysis - Failed

Amplitude(dB)
File=NEOE2EXT.DRC
Frequency=824.000(MHz)
Elevation=0.000(Deg)
Port=1

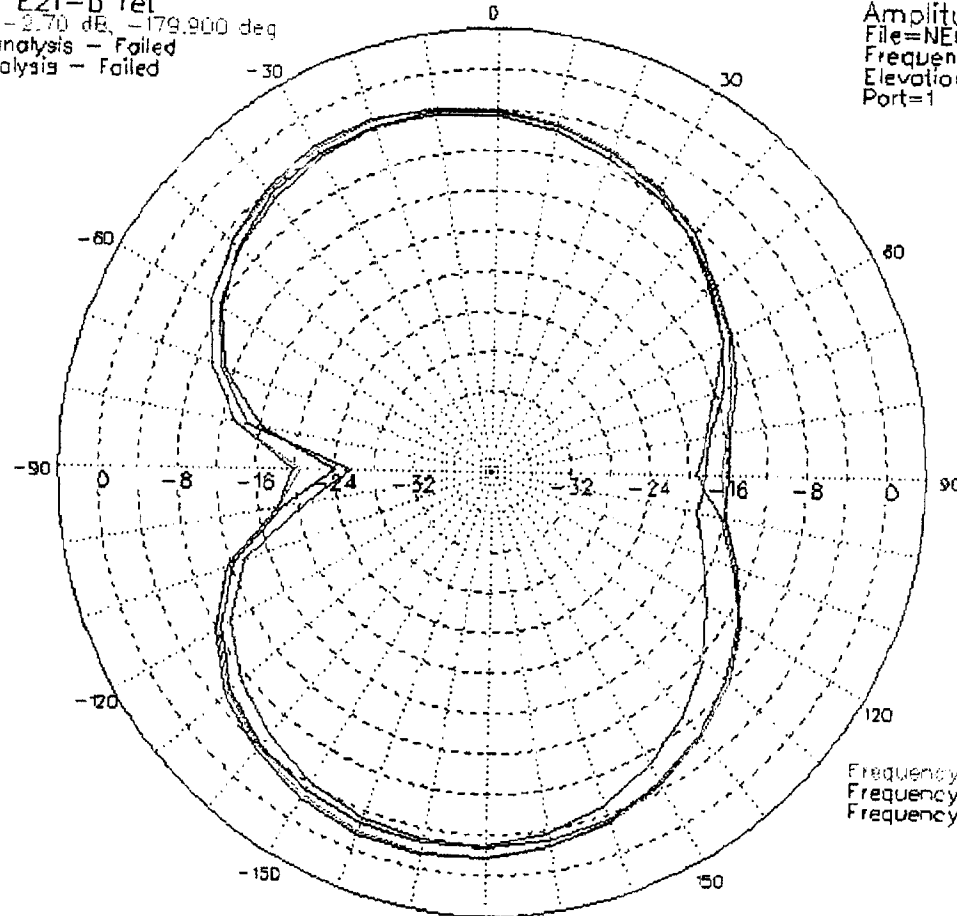


Frequency=849.000(MHz)
Frequency=869.000(MHz)
Frequency=894.000(MHz)

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RFQ786 S1 E2f-b ret
Beam Peak= -2.70 dB, -179.900 deg
Beam Width analysis - Failed
Null Depth analysis - Failed

Amplitude(dB)
File=NEOE2RET.ORG
Frequency=824.000(MHz)
Elevation=0.000(Deg)
Port=1

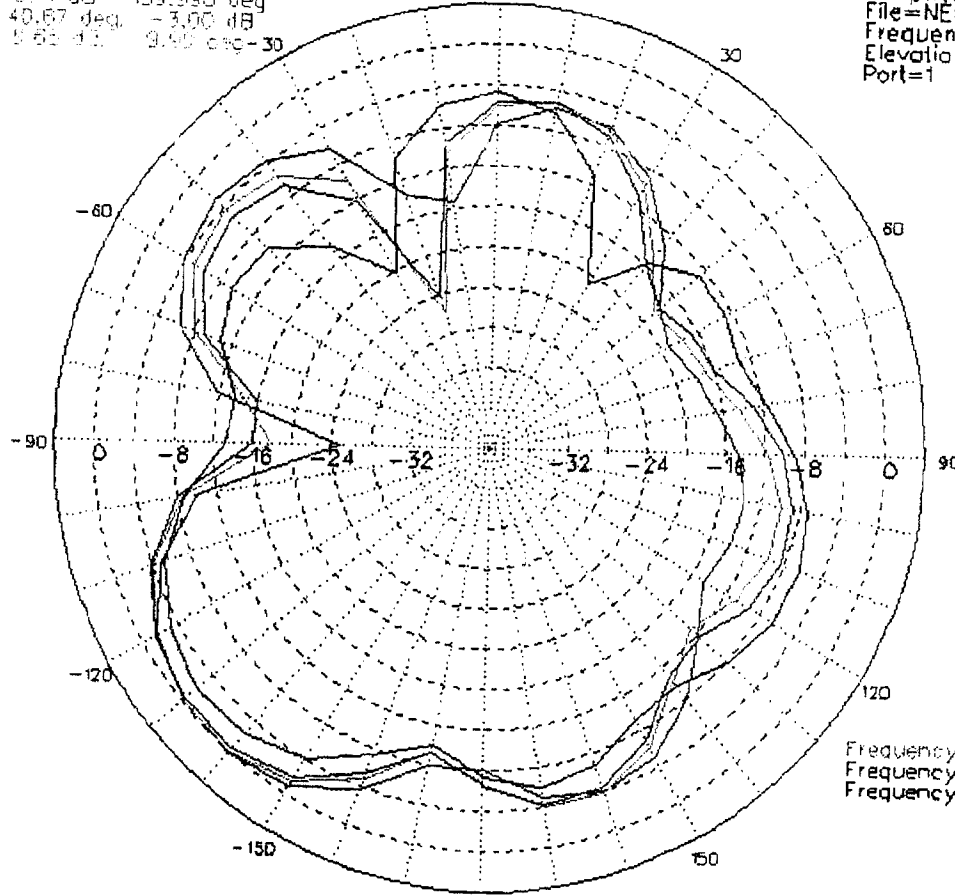


Frequency=849.000(MHz)
Frequency=869.000(MHz)
Frequency=894.000(MHz)

Galtronics Ltd.

rfq766 S1 E2f-b ret PCS
Beam Peak= 0.14 dB -139.890 deg
Beam Width= 40.67 deg -3.00 dB
Port Loss= 5.65 dB 9.40 deg-30

Amplitude(dB)
File=NEOE2RT1.0RC
Frequency=1.850(GHz)
Elevation=0.000(Deg)
Port=1



Frequency=1.910(GHz)
Frequency=1.930(GHz)
Frequency=1.990(GHz)