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 +/- 2.5ppm 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 +60C. 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

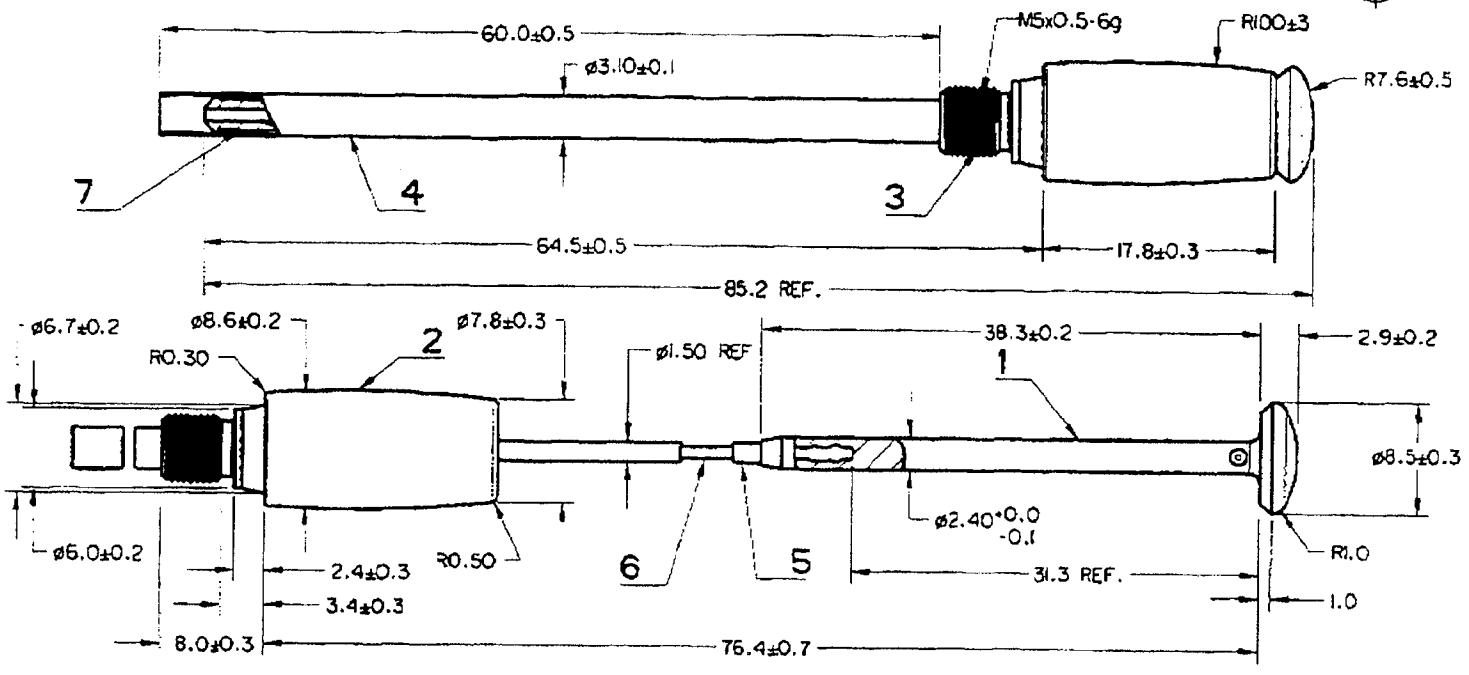
Antenna Specifications:

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

DWG. NO.: A3

ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE STATED.
DO NOT SCALE - IF IN DOUBT, ASK!!

THIRD ANGLE PROJECTION



NO	MATERIAL	SURFACE TREATMENT
7	Arcap API0	
6	Ni-Ti-Cr Super Elastic Alloy	
5	Plastic: Poliurethone-Shore 400	Color: Black
4	Plastic: PAI2	Color:Black
3	Free Cutting Brass ISO CuZn39Pb9 (MS 58A)	Cu/Cu strike/Ni7b ISO 1458-1988
2	Plastic: Polyurethone -Shore 640	Color:Color: Black
1	Plastic: Zytel E10I L	Color:Color: Black

CAD FILE:

SEE COVER SHEET FOR PERTINENT INFORMATION

PAGE 2 OF 2

GALTRONICS

THIS PRINT IS GALTRONICS CONFIDENTIAL

ENGINEER	R.G.	CHECKED		
DRAWN		APPVD.		
DATE	2-5-2000	DATE		

MOLDED NO NAME M5 STUD RETRACTABLE DB 8H AMPS/PCS NEOPOINT

DWG. NO.: A3
02-4258-75-766

REV. P-2

619-451-3571

Robert M. Booth

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)								
					Peak (dBi)				AVG (dBi)				File No.
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)								
					Peak (dBi)				AVG (dBi)				File No.
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)								
					Peak (dBi)				AVG (dBi)				File No.
Cut	Antenna	Position	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.

619-451-3571

Robert M. Booth

GALTRONICS

REPORT FORM

PART No. : 02-4258-75-766

PROJECT No.: 076600

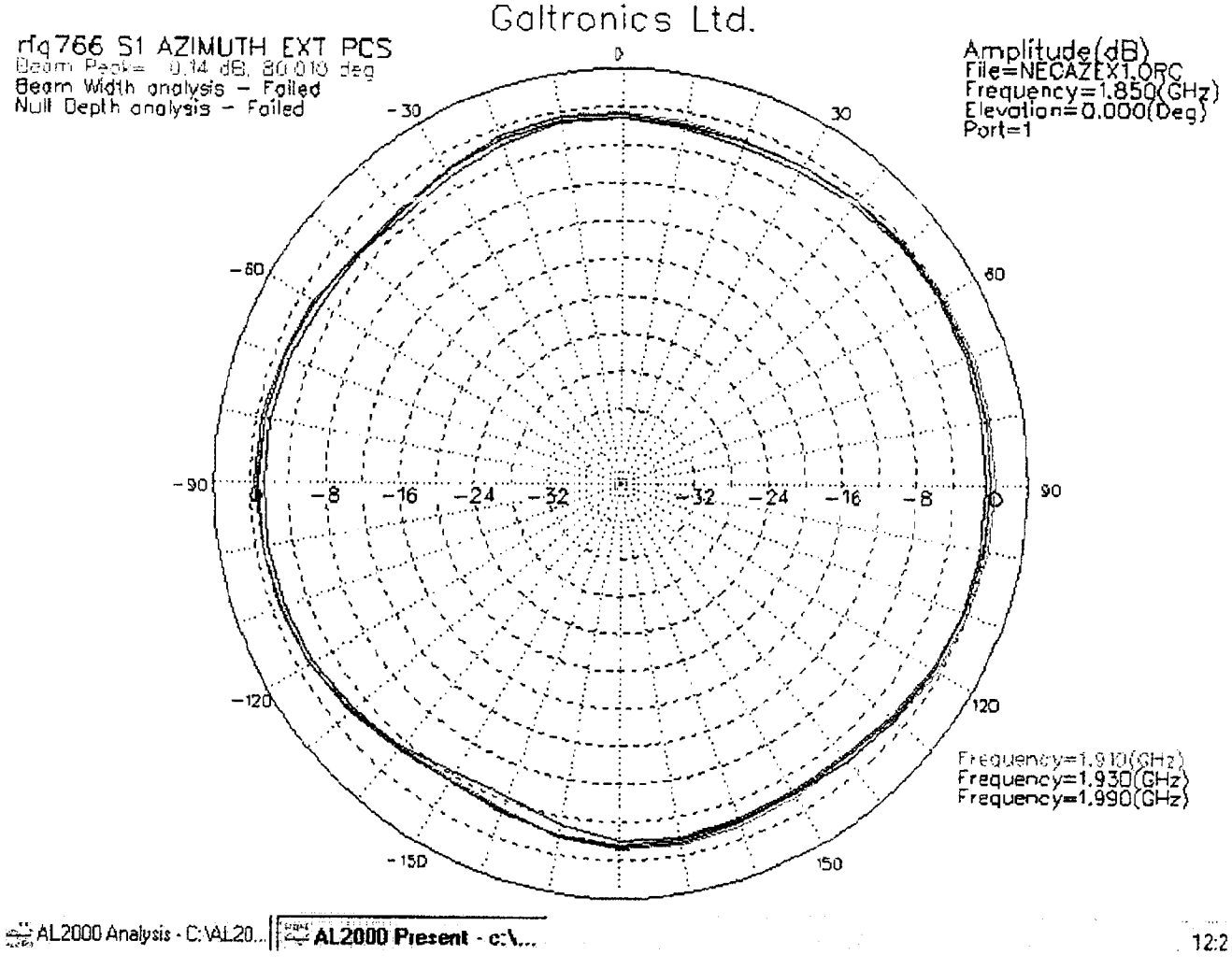
TITLE: Gain Test Results of Retractable antenna tested on phone NEOPOINT (Log#304) NEW PCB

Sample #1			Test condition		GAIN TEST RESULTS (dBi)								File No.
					Peak (dBi)				AVG (dBi)				
Cut	Antenna	Position	Folder	Radio position	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.
					Peak (dBi)				AVG (dBi)				
Cut	Antenna	Position	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

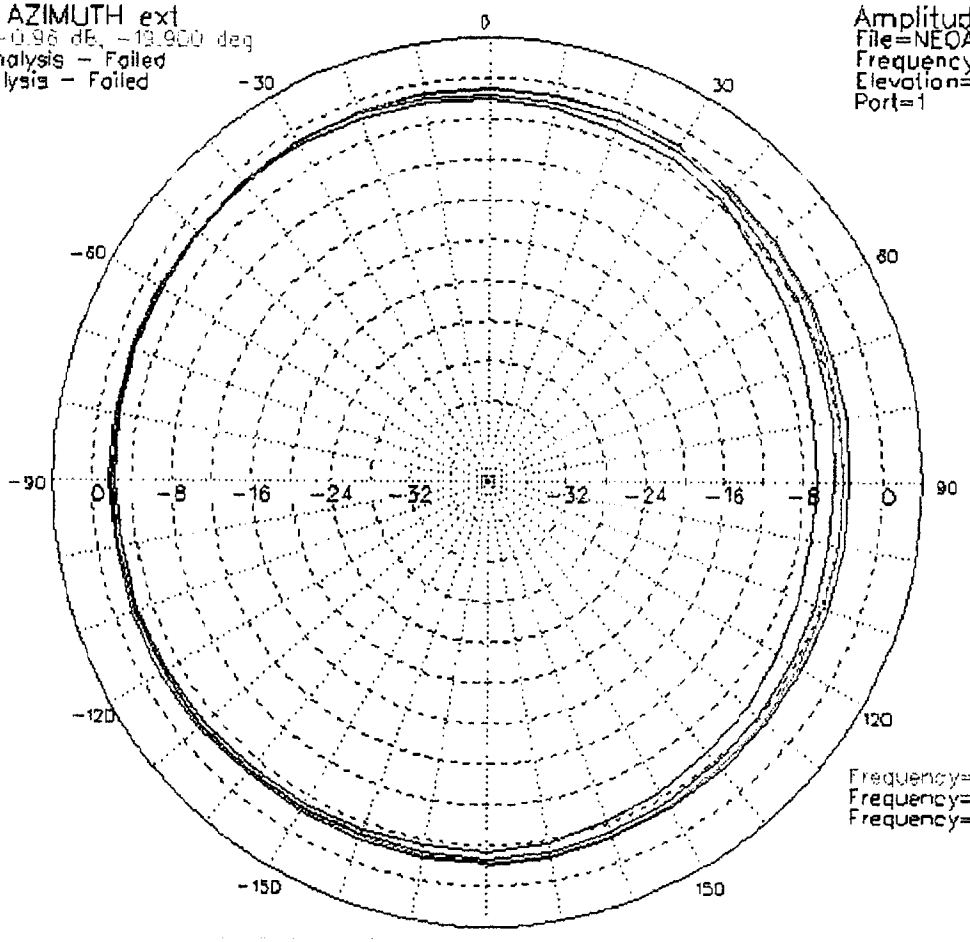
Sample #1			Test condition		GAIN TEST RESULTS (dBi)								File No.
					Peak (dBi)				AVG (dBi)				
Cut	Antenna	Position	Folder	Radio position	824MHz	849MHz	869MHz	894MHz	824MHz	849MHz	869MHz	894MHz	
Azimuth		Ext			-0.96	-1.05	-1.08	-1.30	-2.03	-2.25	-2.57	-3.23	Neoazext
Azimuth		Ret			-2.82	-2.63	-2.43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


Galtronics Ltd.
rfq766 S1 AZIMUTH EXT PCS
Beam Peak= 0.14 dB, 80.010 deg
Beam Width analysis – Failed
Null Depth analysis – Failed
Amplitude(dB)
File=NECAZEX1.ORC
Frequency=1.850(GHz)
Elevation=0.000(Deg)
Port=1
0
30
60
90
120
150
-30
-60
-90
-120
-150
-8
-16
-24
-32
-32
-24
-16
-8
Frequency=1.910(GHz)
Frequency=1.930(GHz)
Frequency=1.990(GHz)
AL2000 Analysis - C:\AL20...
AL2000 Present - c:\...
12:2

Galtronics Ltd.

RFQ766 S1 AZIMUTH ext
Beam Peak= -0.96 dB, -13.900 deg
Beam Width analysis – Failed
Null Depth analysis – Failed



Amplitude(dB)
File=NEOAZEXT.ORC
Frequency=824.000(MH:
Elevation=0.000(Deg)
Port=1

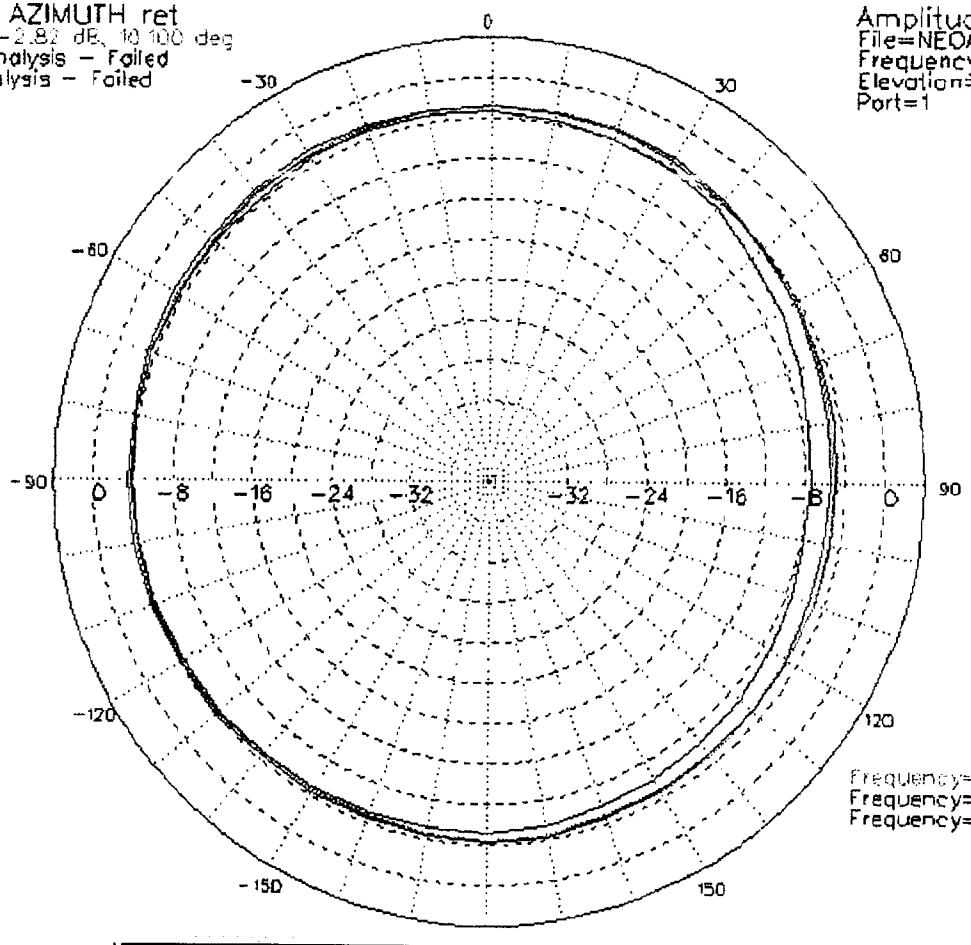
Frequency=849.000(MHz)
Frequency=869.000(MHz)
Frequency=894.000(MHz)

AL2000 Analysis - C:\AL20... | AL2000 Present - c:\...

12:1

Galtronics Ltd.

RFQ766 S1 AZIMUTH ret
Beam Peak= -2.82 dB, 10.100 deg
Beam Width analysis – Failed
Null Depth analysis – Failed



Amplitude(dB)
File=NEOAZRET.ORC
Frequency=824.000(MH
Elevation=0.000(Deg)
Port=1

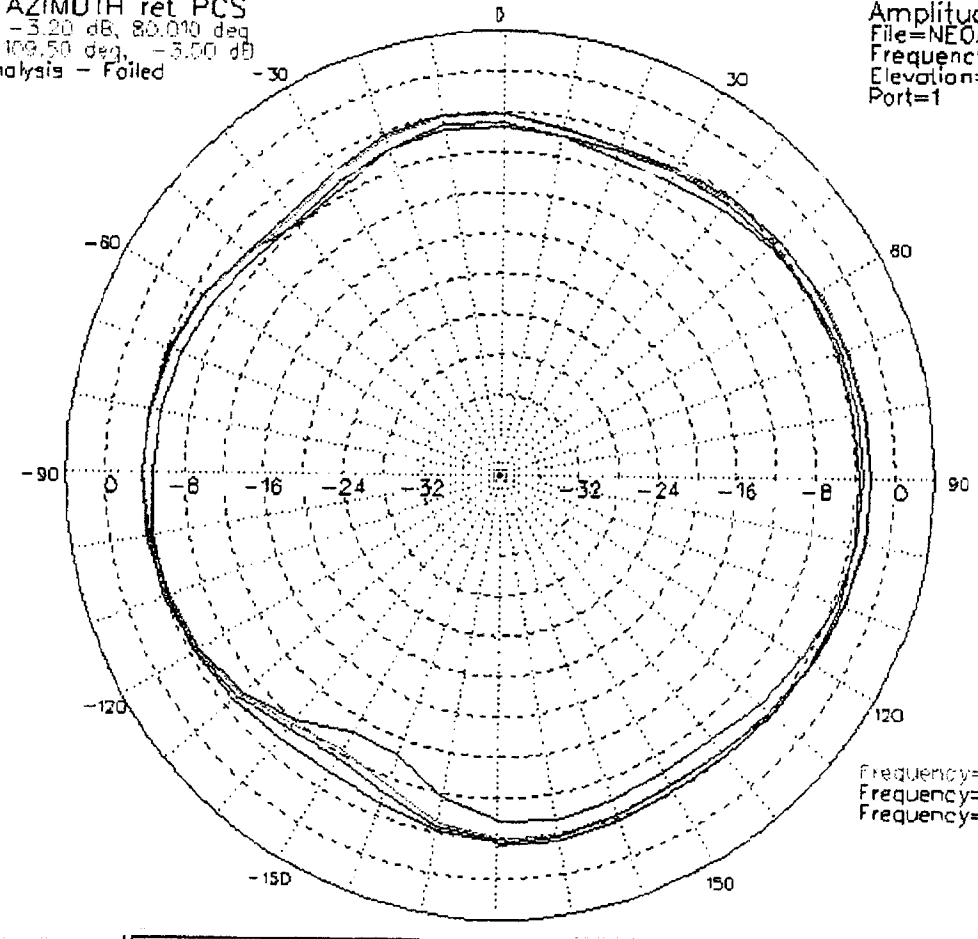
Frequency=8[illegible].000(MHz)
Frequency=869.000(MHz)
Frequency=894.000(MHz)

AL2000 Analysis - C:\AL20... | AL2000 Present - c:\...

12:2

Galtronics Ltd.

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

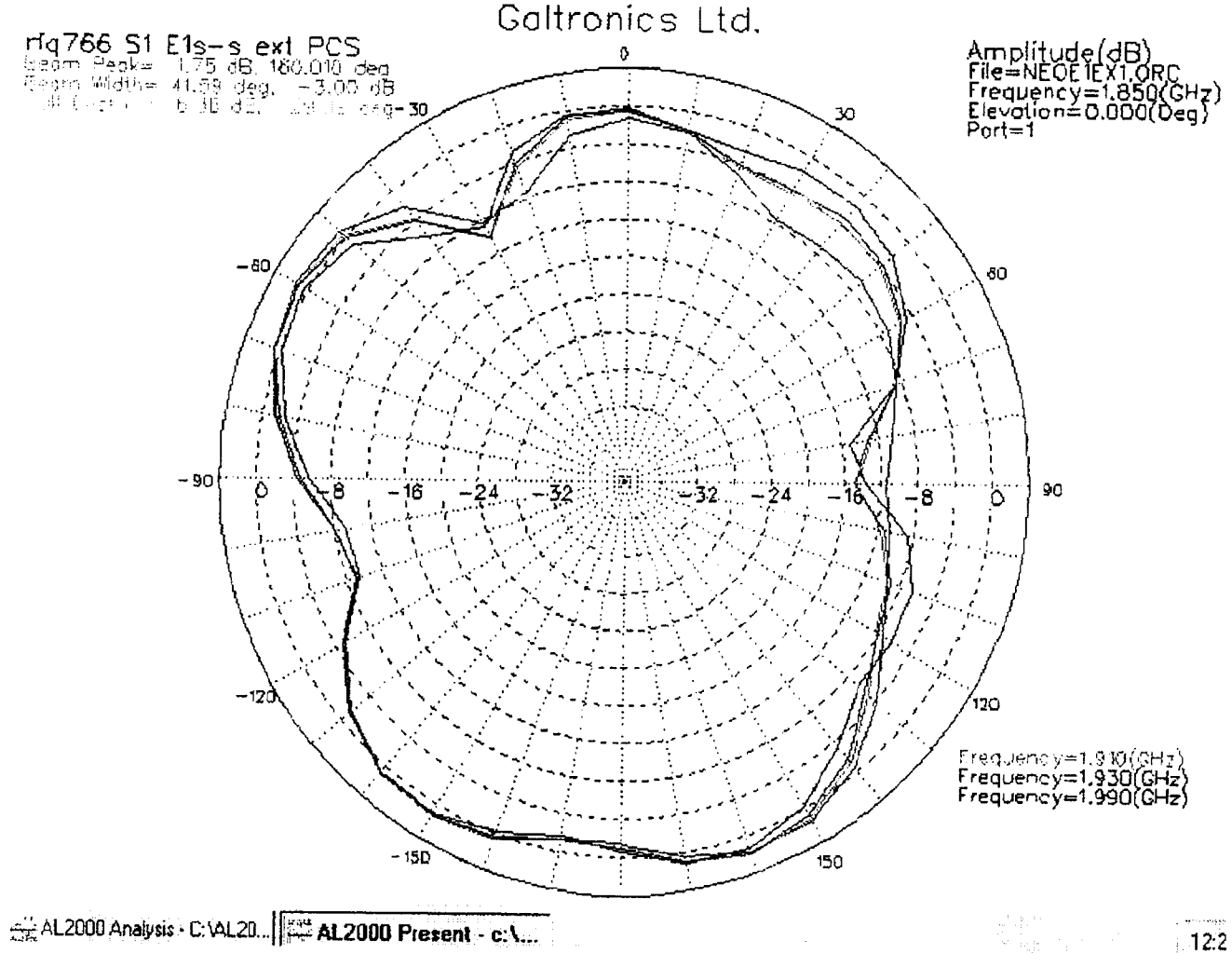


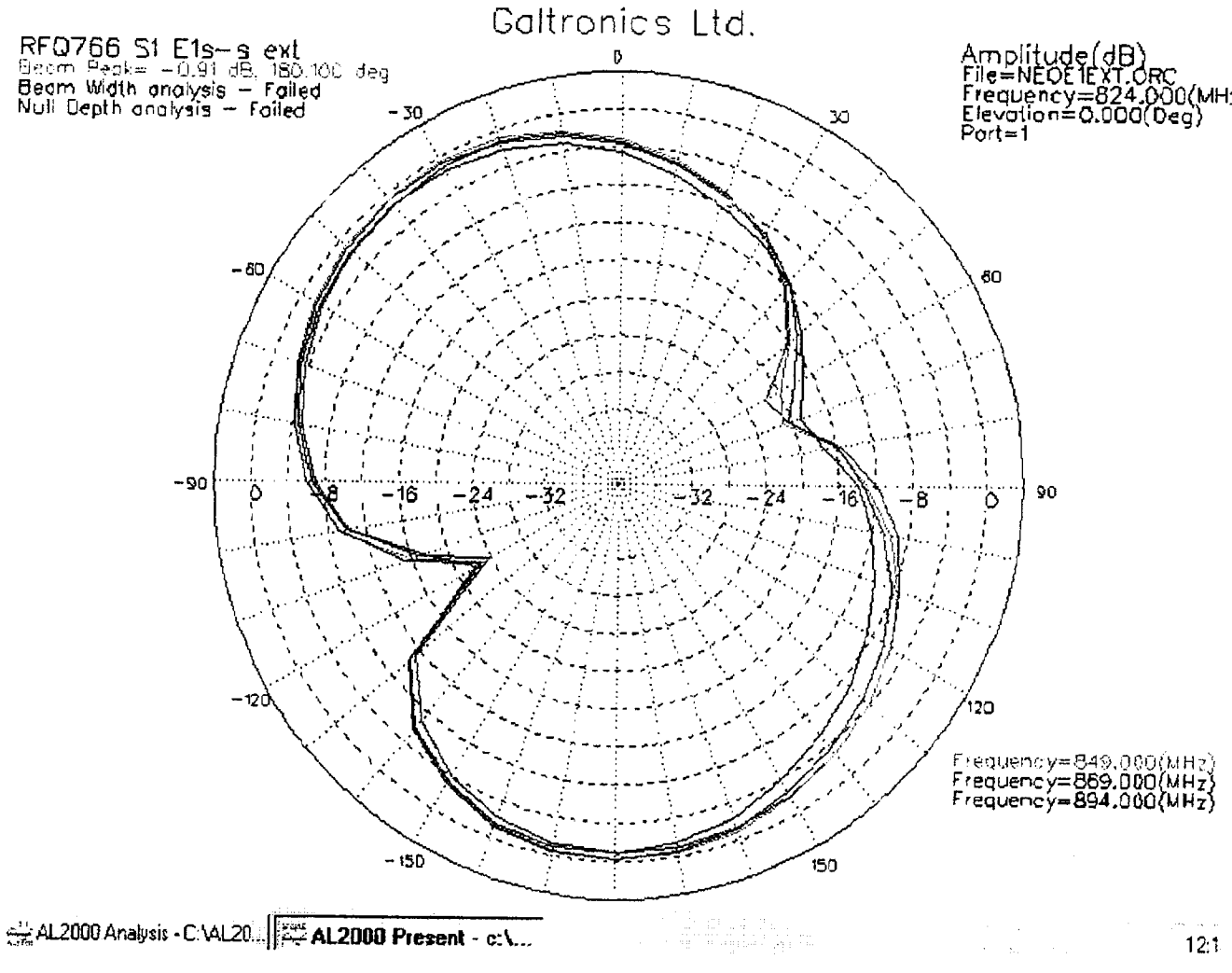
Amplitude(dB)
File=NEOAZRT1.ORC
Frequency=1.850(GHz)
Elevation=0.000(Deg)
Port=1

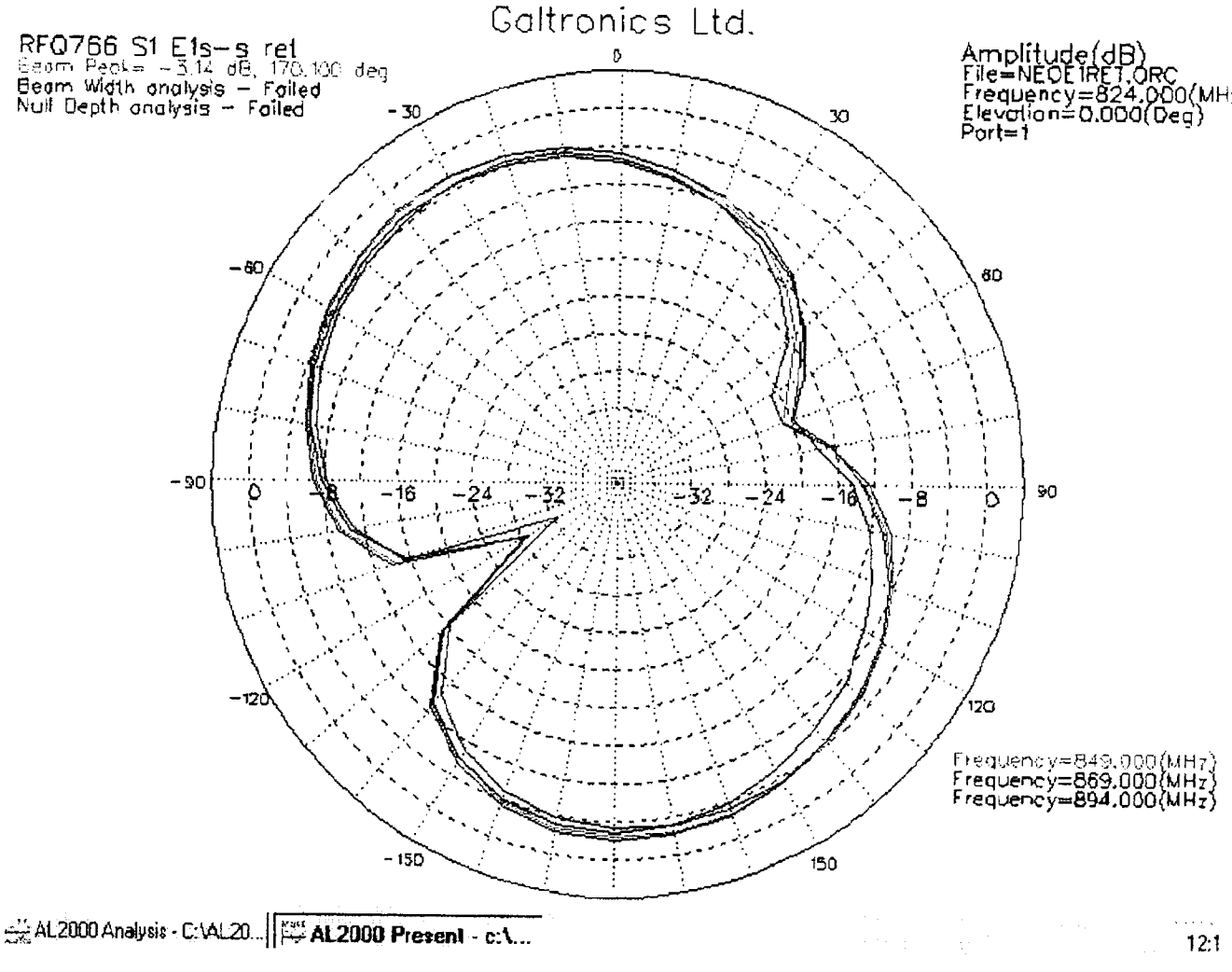
Frequency=1.910(GHz)
Frequency=1.930(GHz)
Frequency=1.990(GHz)

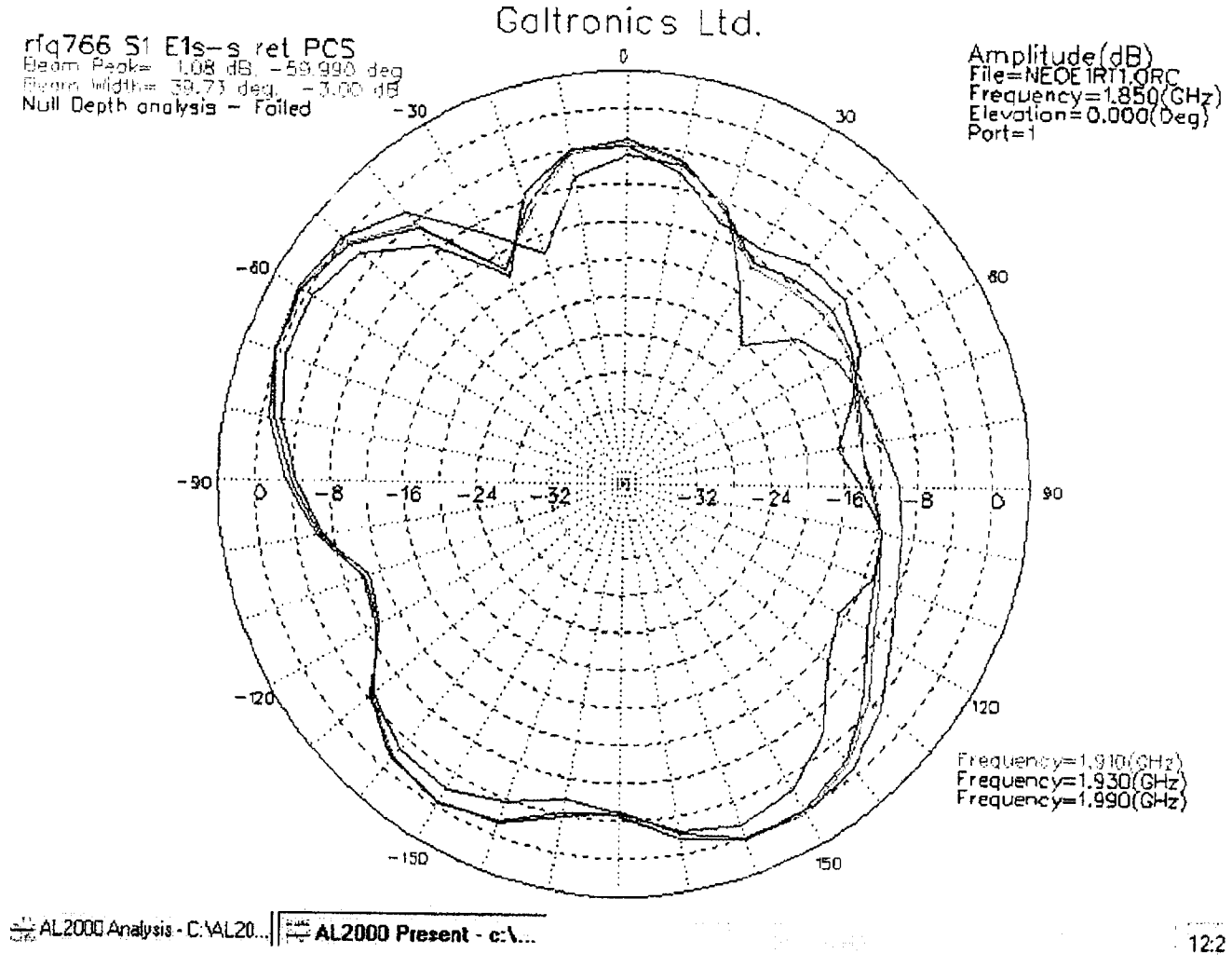
AL2000 Analysis - C:\AL20... | AL2000 Present - c:\...

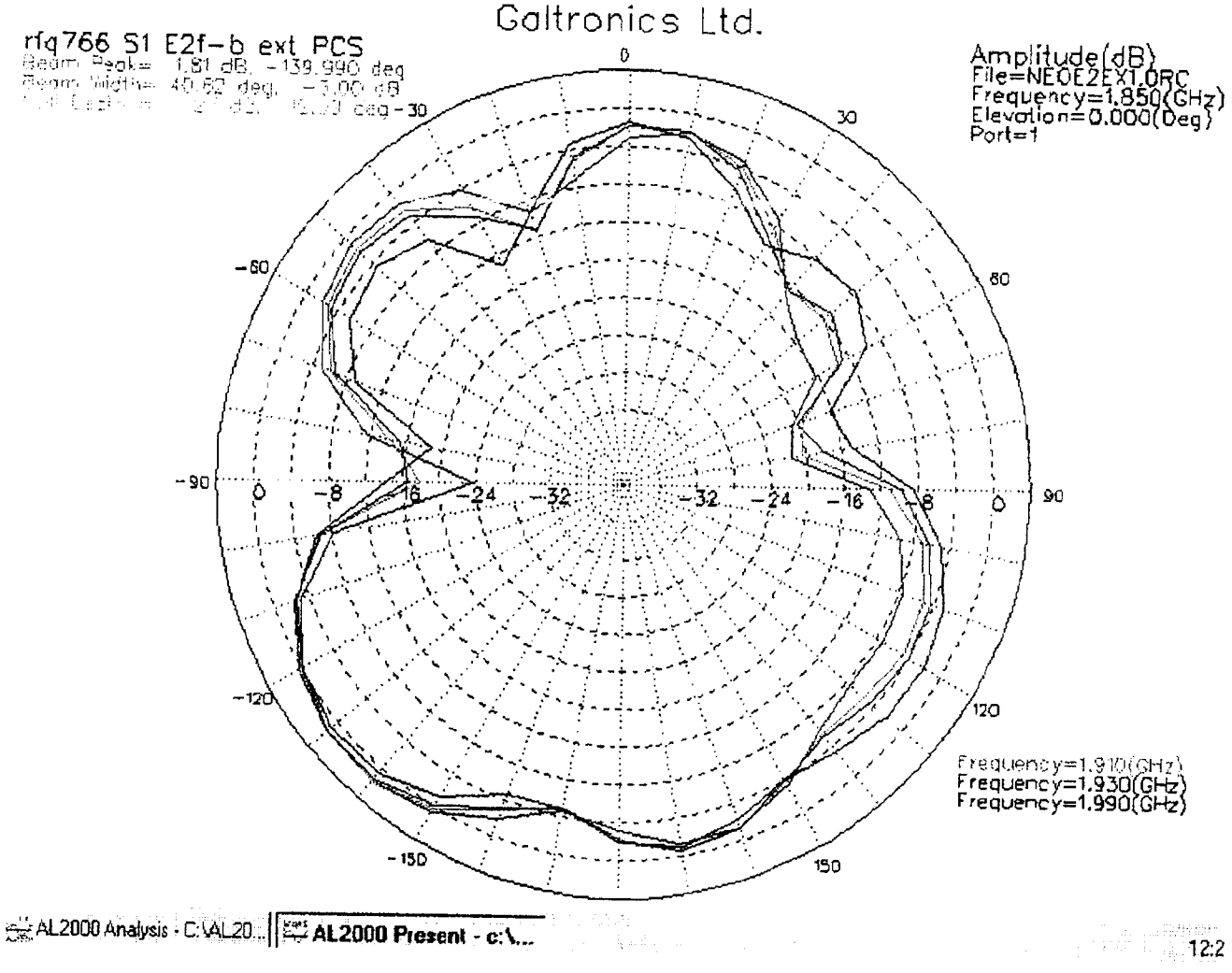
12:2


Galtronics Ltd.
rfq766 S1 E1s-s ext PCS
Beam Peak= 1.75 dB, 180.010 deg
Beam Width= 41.59 deg, -3.00 dB
Amplitude(dB)
File=NEOE1EX1.ORC
Frequency=1.850(GHz)
Elevation=0.000(Deg)
Port=1
0
30
60
90
120
150
-30
-60
-90
-120
-150
-8
-16
-24
-32
Frequency=1.910(GHz)
Frequency=1.930(GHz)
Frequency=1.990(GHz)
AL2000 Analysis - C:\AL20...
AL2000 Present - c:\...
12:2


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.ORC
Frequency=824.000(MH
Elevation=0.000(Deg)
Port=1
0
30
60
90
120
150
-30
-60
-90
-120
-150
-8
-16
-24
-32
Frequency=849.000(MHz)
Frequency=869.000(MHz)
Frequency=894.000(MHz)
AL2000 Analysis - C:\AL20...
AL2000 Present - c:\...
12:1

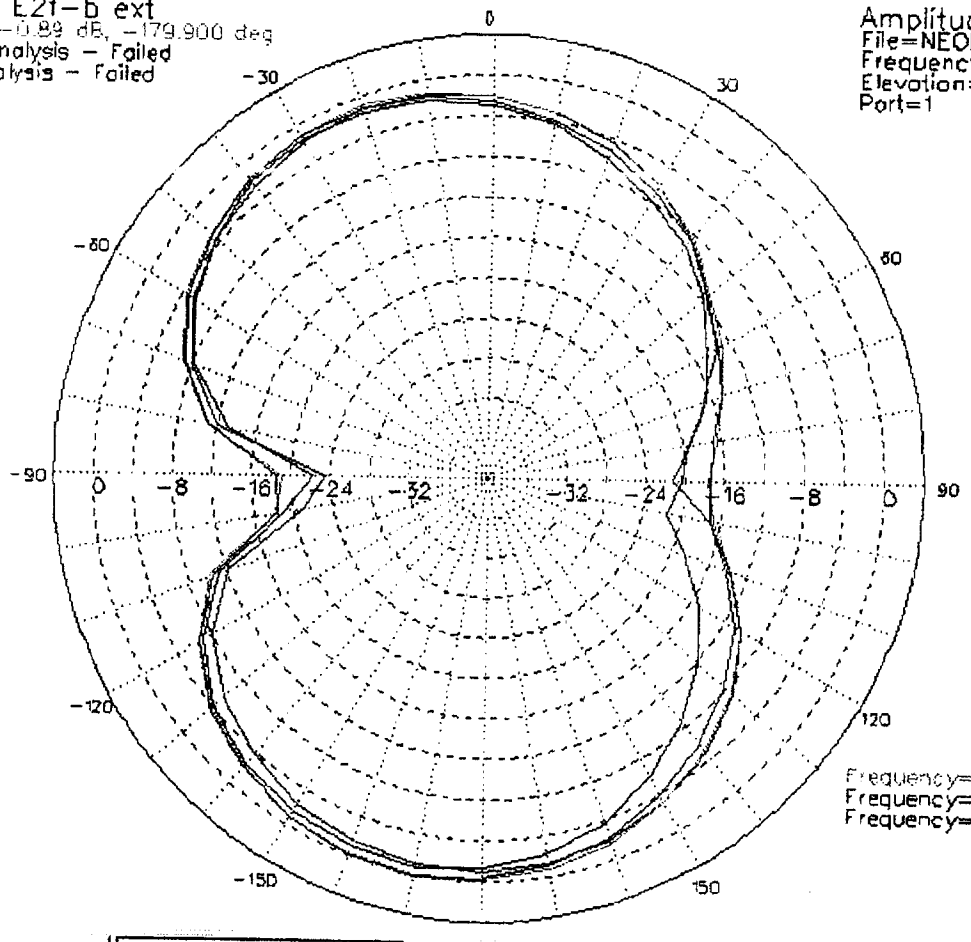

Galtronics Ltd.
RFQ766 S1 E1s-s ref
Beam Peak= -3.14 dB, 170.100 deg
Beam Width analysis - Failed
Null Depth analysis - Failed
Amplitude(dB)
File=NEOE1RET.ORC
Frequency=824.000(MH:
Elevation=0.000(Deg)
Port=1
0
30
60
90
120
150
-30
-60
-90
-120
-150
-8
-16
-24
-32
Frequency=849.000(MHz)
Frequency=869.000(MHz)
Frequency=894.000(MHz)
AL2000 Analysis - C:\AL20...
AL2000 Present - c:\...
12:1


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.ORC
Frequency=1.850(GHz)
Elevation=0.000(Deg)
Port=1
0
30
60
90
120
150
-30
-60
-90
-120
-150
0
-8
-16
-24
-32
-32
-24
-16
-8
0
Frequency=1.910(GHz)
Frequency=1.930(GHz)
Frequency=1.990(GHz)
AL2000 Analysis - C:\AL20...
AL2000 Present - c:\...
12:2


Galtronics Ltd.
rfq766 S1 E2f-b ext PCS
Beam Peak= 1.81 dB, -139.990 deg
Beam Width= 40.62 deg, -3.00 dB
Amplitude(dB)
File=NEOE2EX1.ORC
Frequency=1.850(GHz)
Elevation=0.000(Deg)
Port=1
0
30
60
90
120
150
-30
-60
-90
-120
-150
0
-8
-16
-24
-32
-32
-24
-16
-8
0
Frequency=1.910(GHz)
Frequency=1.930(GHz)
Frequency=1.990(GHz)
AL2000 Analysis - C:\AL20...
AL2000 Present - c:\...
12:2

Galtronics Ltd.

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



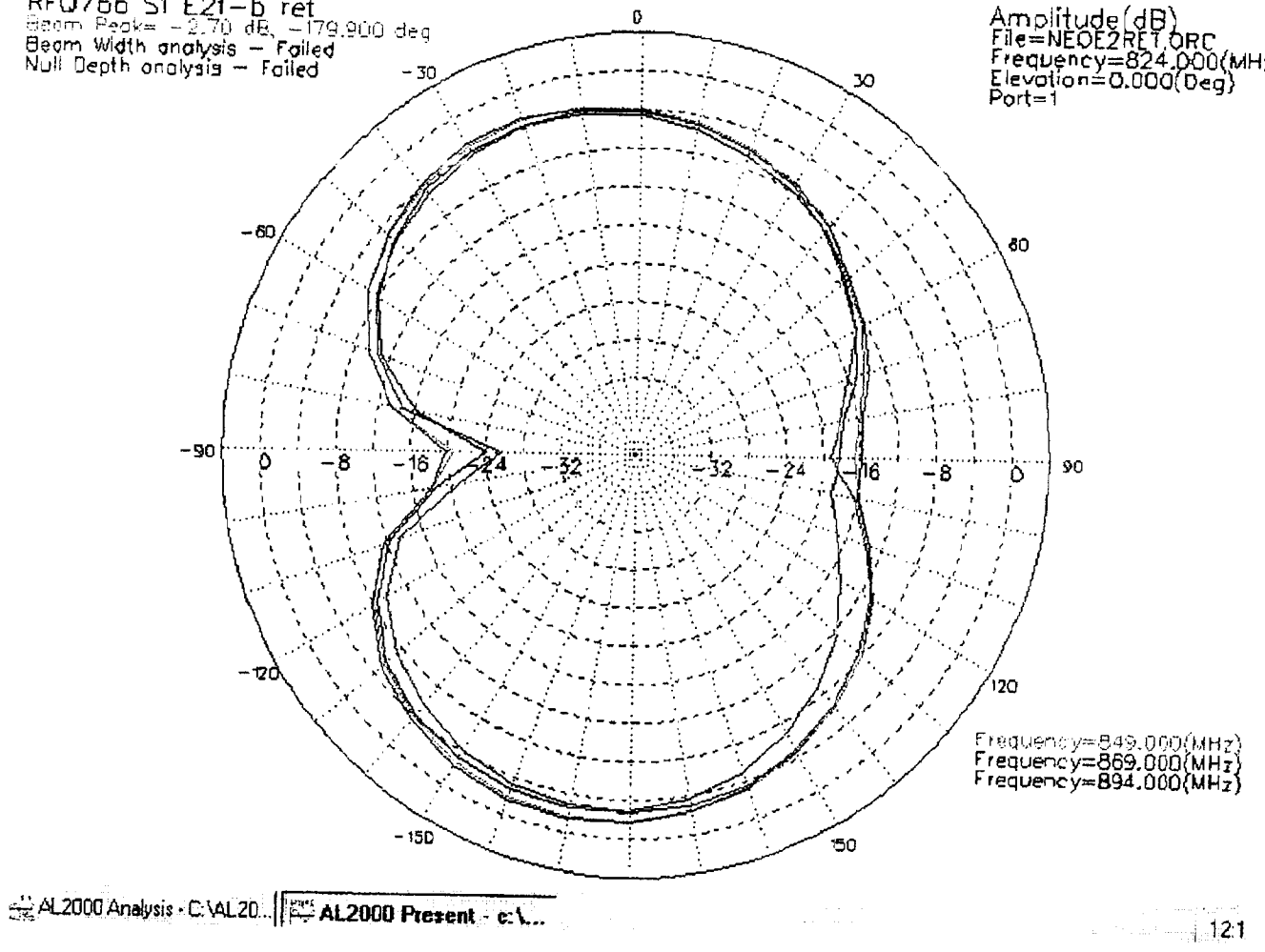
Amplitude(dB)
File=NEOE2EXT.DRC
Frequency=824.000(MH:
Elevation=0.000(Deg)
Port=1

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

AL2000 Analysis - C:\AL20... | AL2000 Present - c:\...

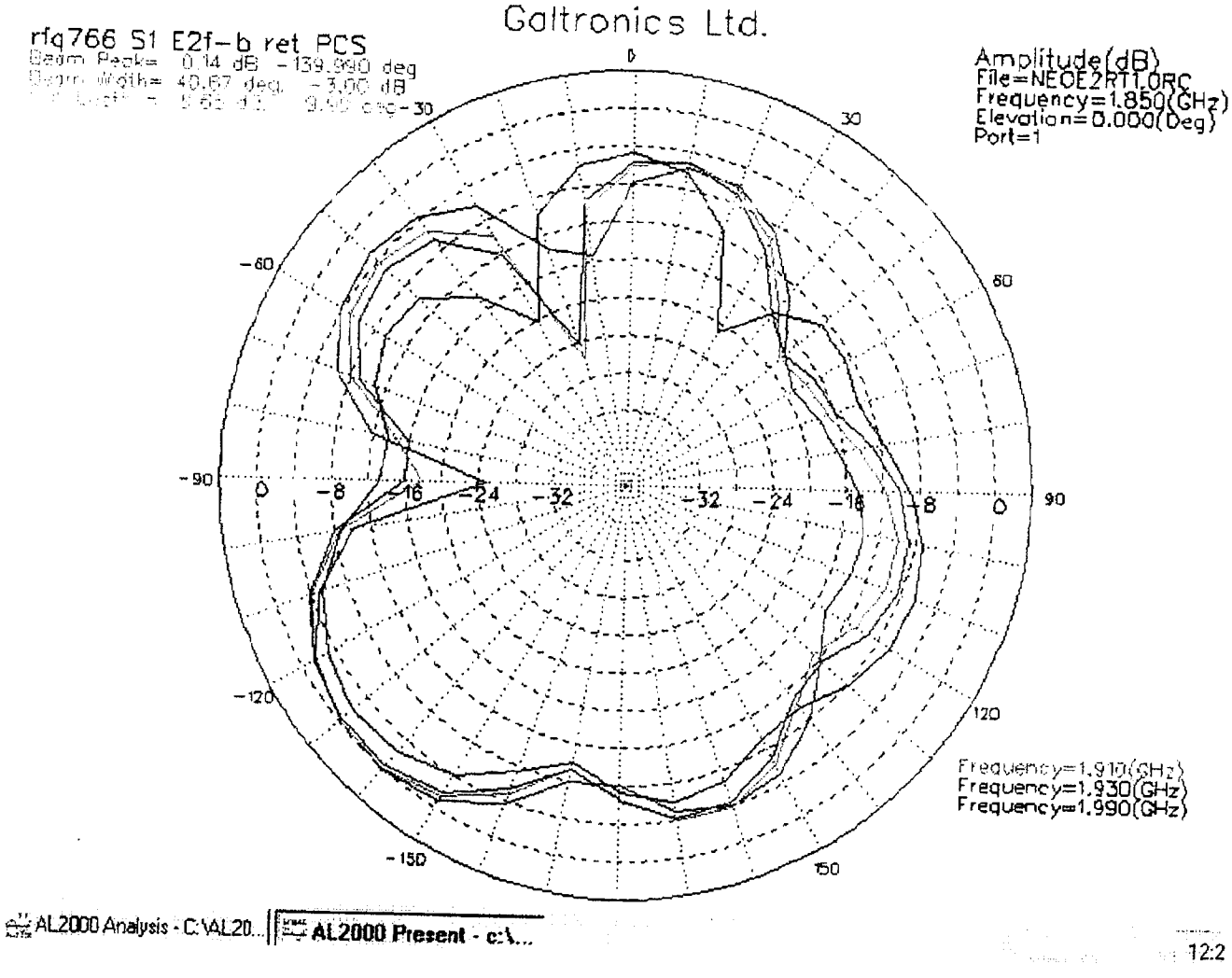
12:1

Galtronics Ltd.



AL2000 Analysis - C:\AL20... | AL2000 Present - c:\...

12:1


Galtronics Ltd.
rfq766 S1 E2f-b ret PCS
Beam Peak= 0.14 dB -139.990 deg
Beam Width= 40.67 deg. -3.00 dB
Amplitude(dB)
File=NEOE2RT1.0RC
Frequency=1.850(GHz)
Elevation=0.000(Deg)
Port=1
0
30
60
90
120
150
-30
-60
-90
-120
-150
0
-8
-16
-24
-32
Frequency=1.910(GHz)
Frequency=1.930(GHz)
Frequency=1.990(GHz)
AL2000 Analysis - C:\AL20...
AL2000 Present - c:\...
12:2