Thomas Liu

10/23/2006

AUTHOR **CONCUR**
DATE

Laird
Product Engineering

REPORT NUMBER: P5167-CN3-CDMA-004

TO: Requester: Intermec Manager: __
COPY:

EXECUTIVE SUMMARY:
Performance of Intermec CN3 CDMA Antennas were measured, provide for Intermec FCC filings.

SCOPE:
Performance of CN3 CDMA Diversity antennas

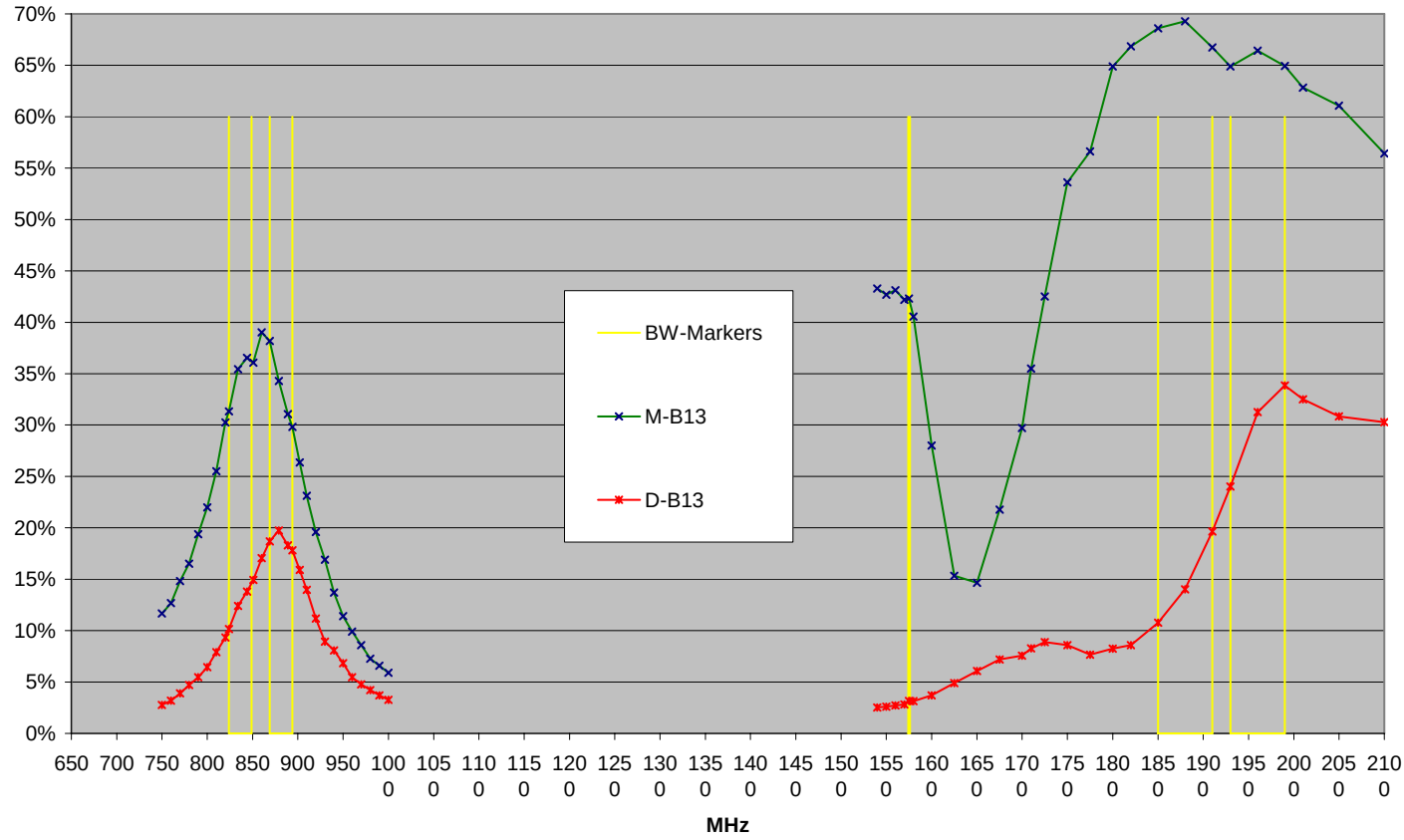
DESIGN OF EXPERIMENT:
Return Loss, Efficiency and Gain Patterns were measured on a CN3 CDMA PROTO-C fixture.

CONCLUSIONS:
The Return Loss, Efficiency, Peak Gain, Average Gain and Gain Patterns are provided.

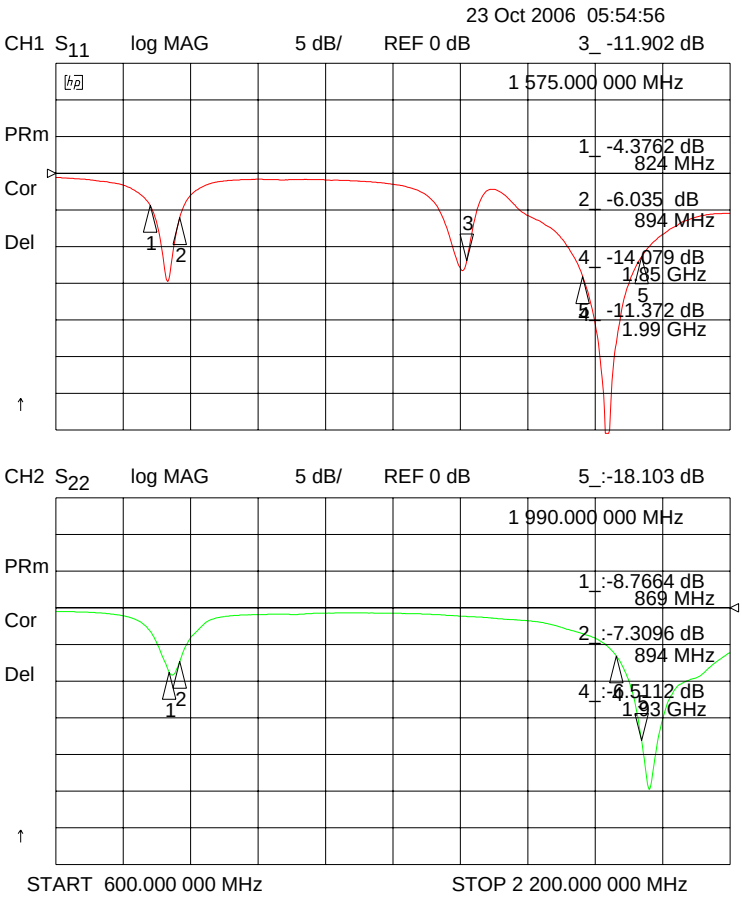
KEY WORDS: Intermec, CN3, CDMA, Diversity antennas, gain, radiation patterns, return loss, impedance.

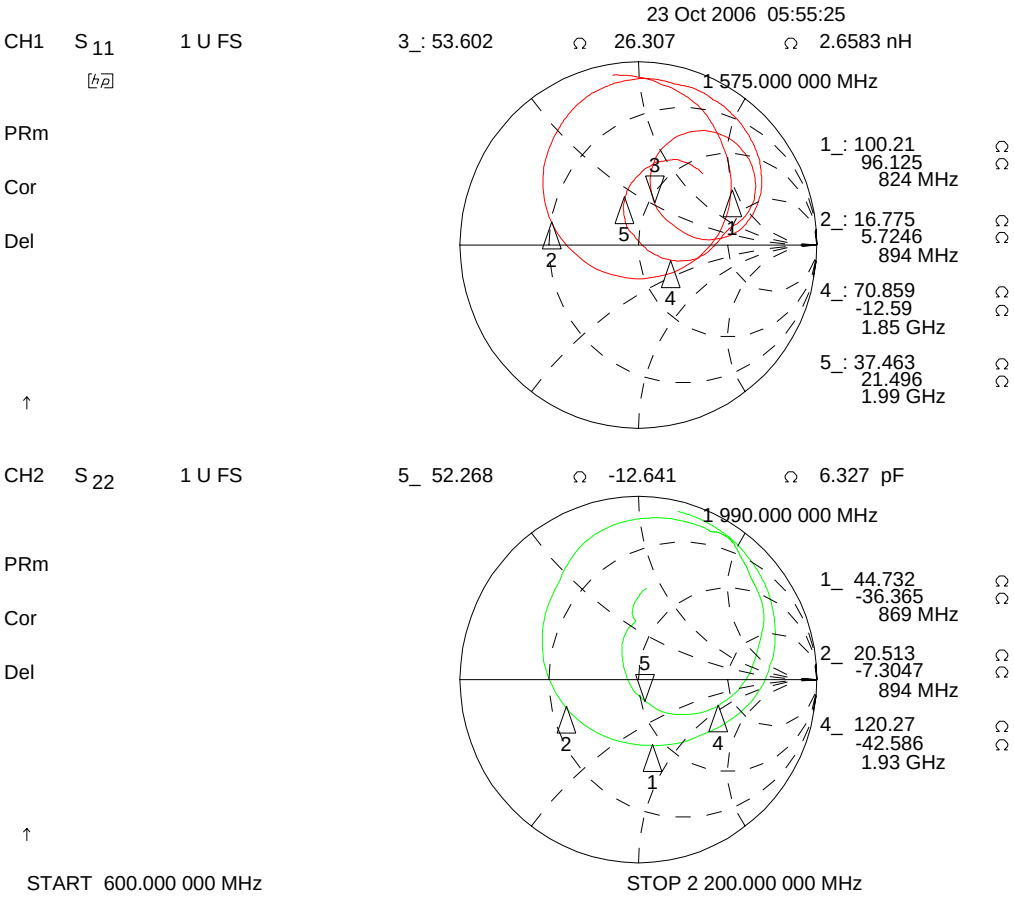
Efficiency in Free Space

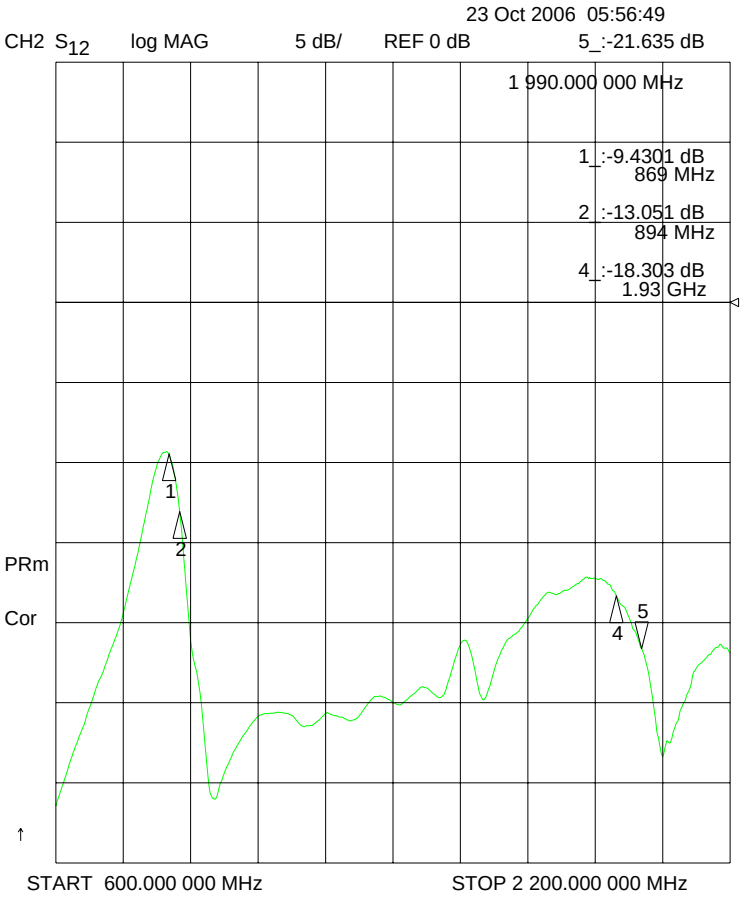
10-23-2006 CDMA Antennas



Return Loss, Free Space

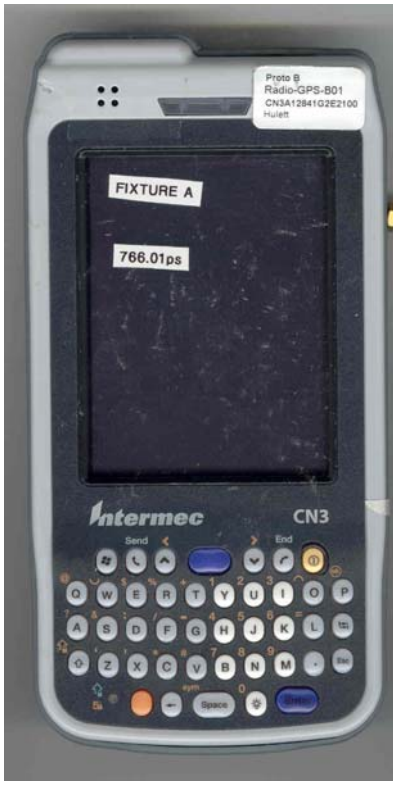


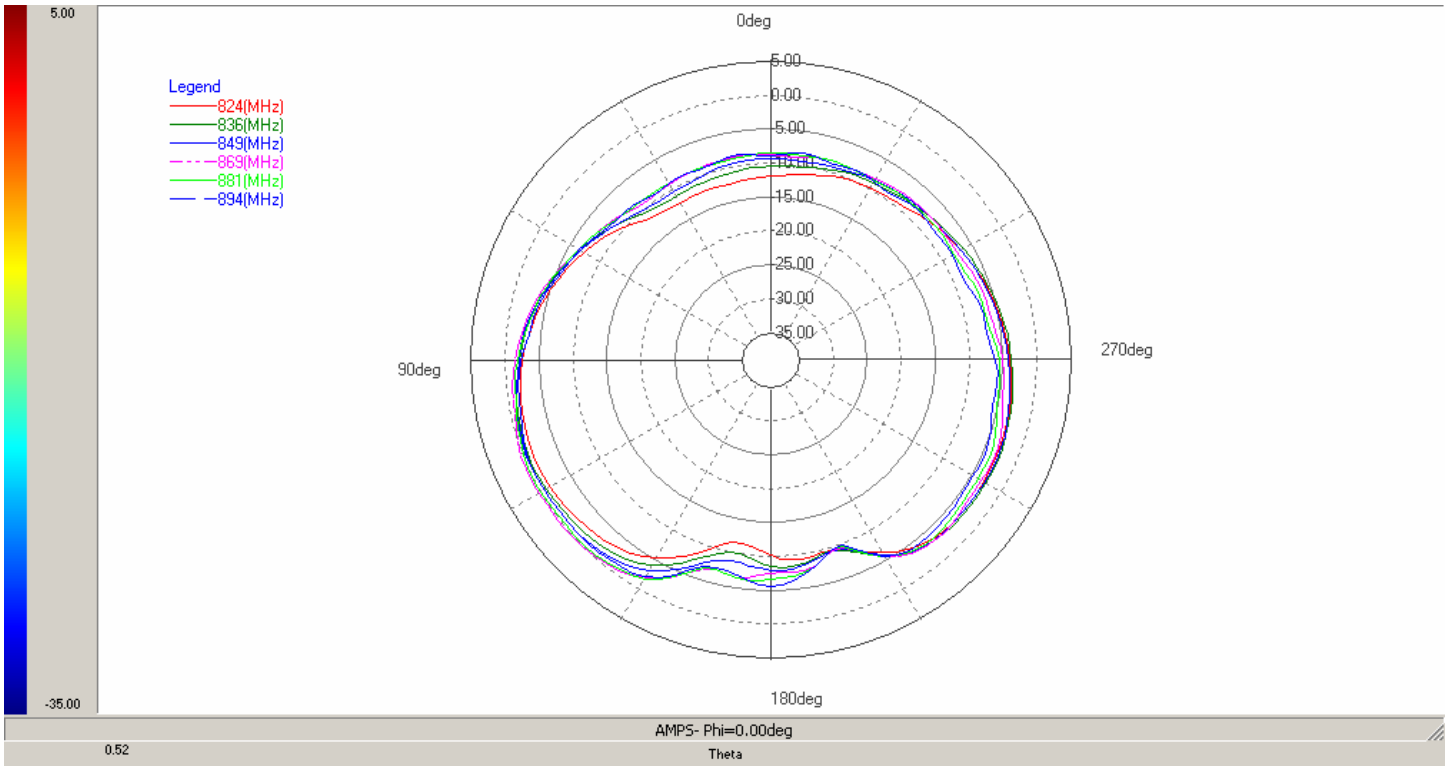

23 Oct 2006 05:55:25
CH1 S 11 1 U FS
3_: 53.602 Ω 26.307 Ω 2.6583 nH
1 575.000 000 MHz
PRm
Cor
Del
1_: 100.21 Ω
96.125 Ω
824 MHz
2_: 16.775 Ω
5.7246 Ω
894 MHz
4_: 70.859 Ω
-12.59 Ω
1.85 GHz
5_: 37.463 Ω
21.496 Ω
1.99 GHz
CH2 S 22 1 U FS
5_ 52.268 Ω -12.641 Ω 6.327 pF
1 990.000 000 MHz
PRm
Cor
Del
1_ 44.732 Ω
-36.365 Ω
869 MHz
2_ 20.513 Ω
-7.3047 Ω
894 MHz
4_ 120.27 Ω
-42.586 Ω
1.93 GHz
START 600.000 000 MHz
STOP 2 200.000 000 MHz

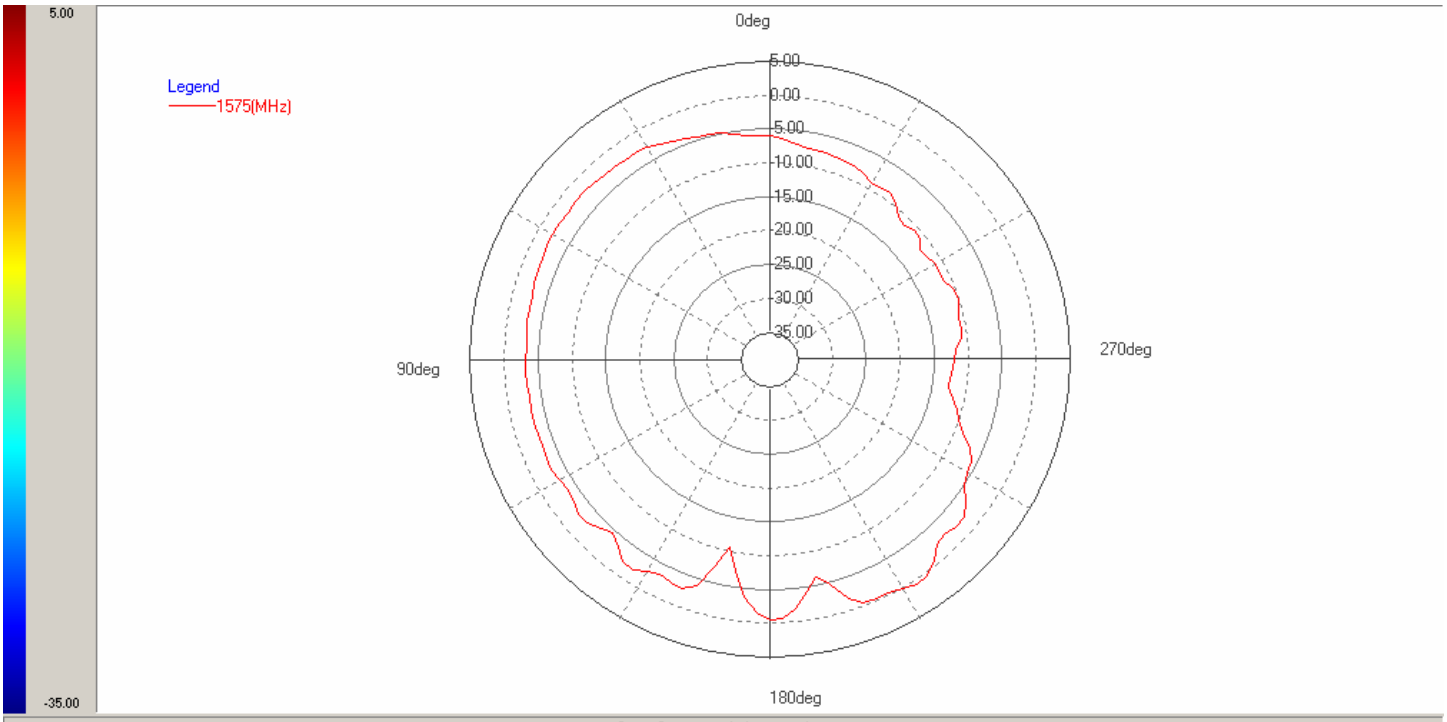

23 Oct 2006 05:56:49
CH2 S12 log MAG 5 dB/ REF 0 dB 5_:-21.635 dB
1 990.000 000 MHz
1_:-9.4301 dB
869 MHz
2_:-13.051 dB
894 MHz
4_:-18.303 dB
1.93 GHz
PRm
Cor
START 600.000 000 MHz
STOP 2 200.000 000 MHz

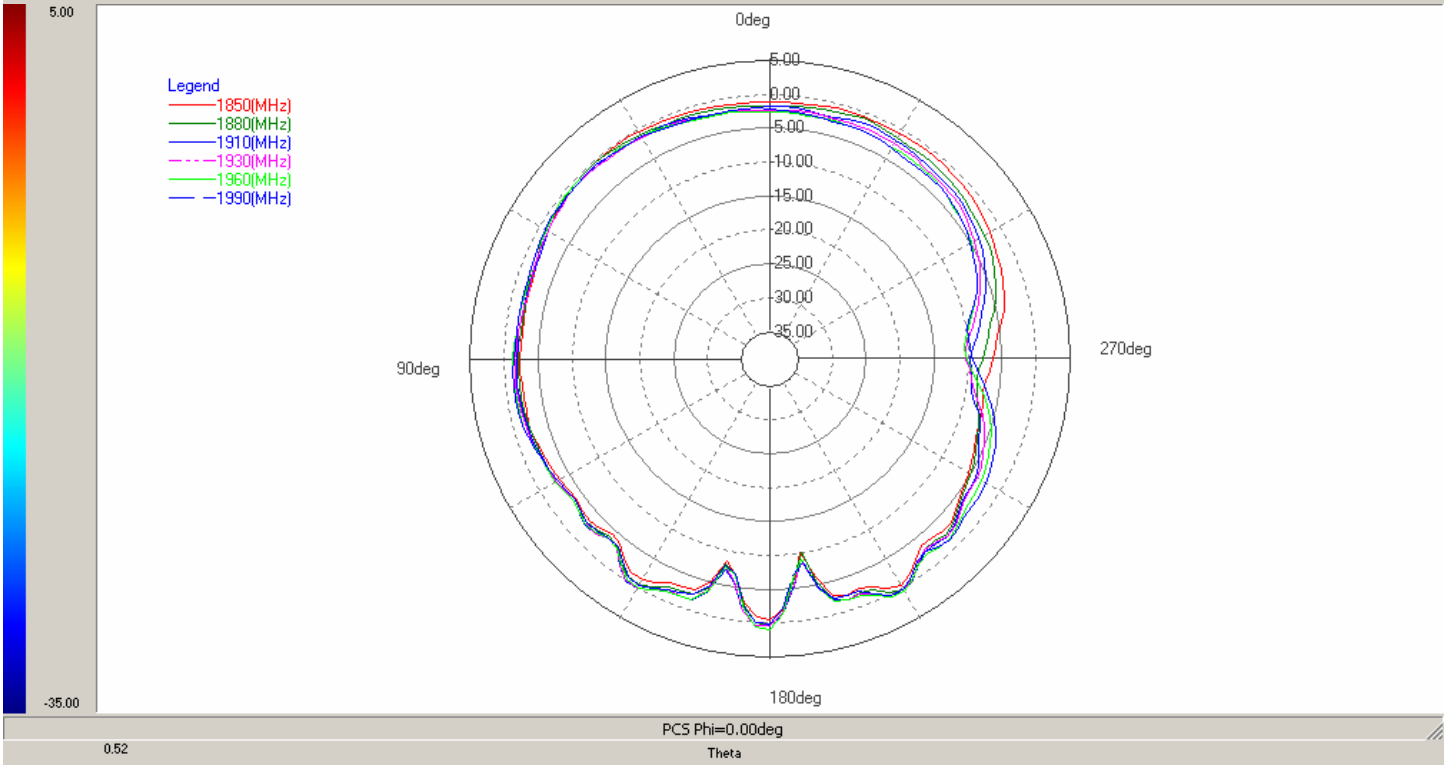
M-Antenna: Gain Patterns, Phi=0, Free Space

freq(MHz)	Peak Gain . dBi	Ave Gain. dBi
824	-1.4	-5.6
836	-0.7	-4.9
849	-0.4	-4.8
869	0.4	-4.4
881	0.1	-4.7
894	-0.5	-5.1
1575	0.5	-4.2
1850	-0.4	-2.4
1880	0.2	-2.4
1910	0.3	-2.5
1930	0.2	-2.6
1960	0.7	-2.5
1990	0.1	-2.6



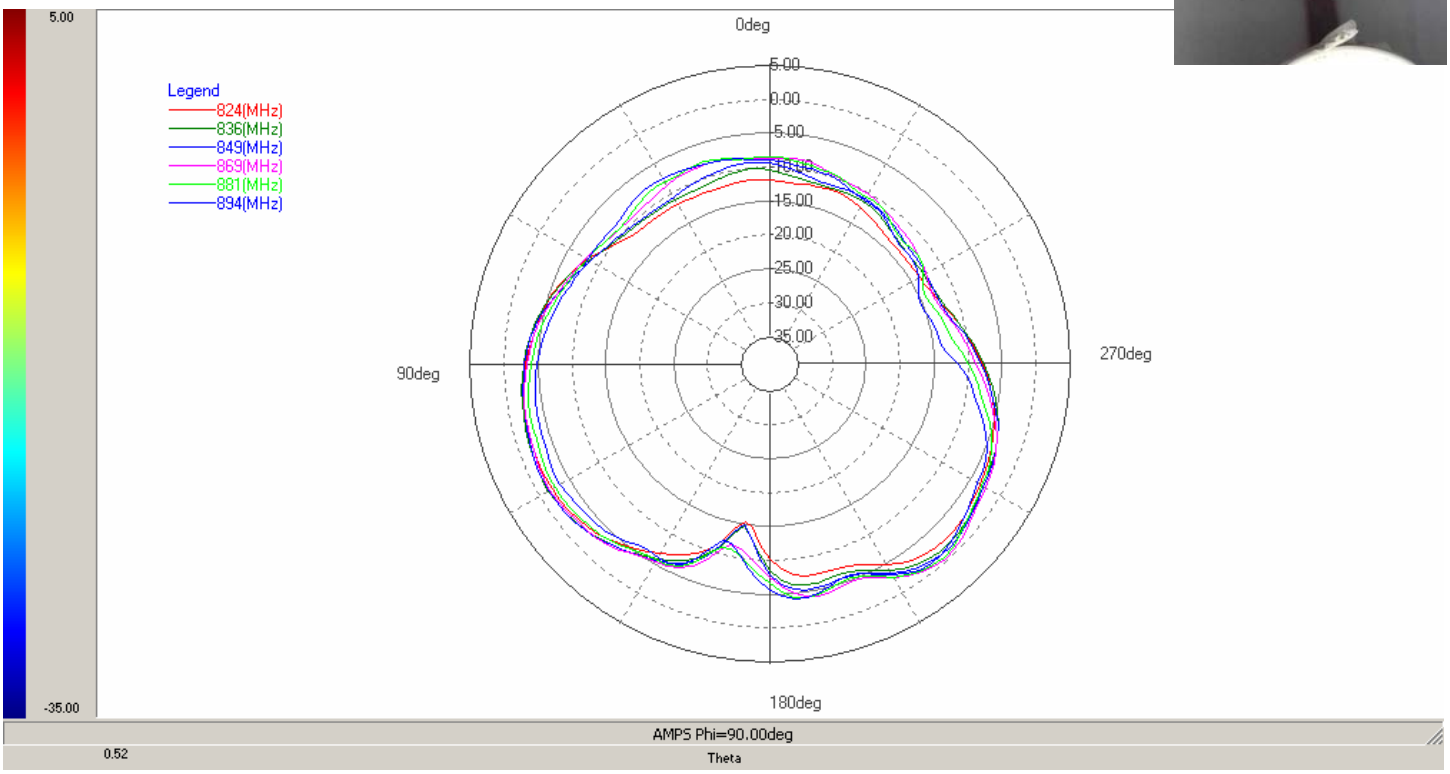


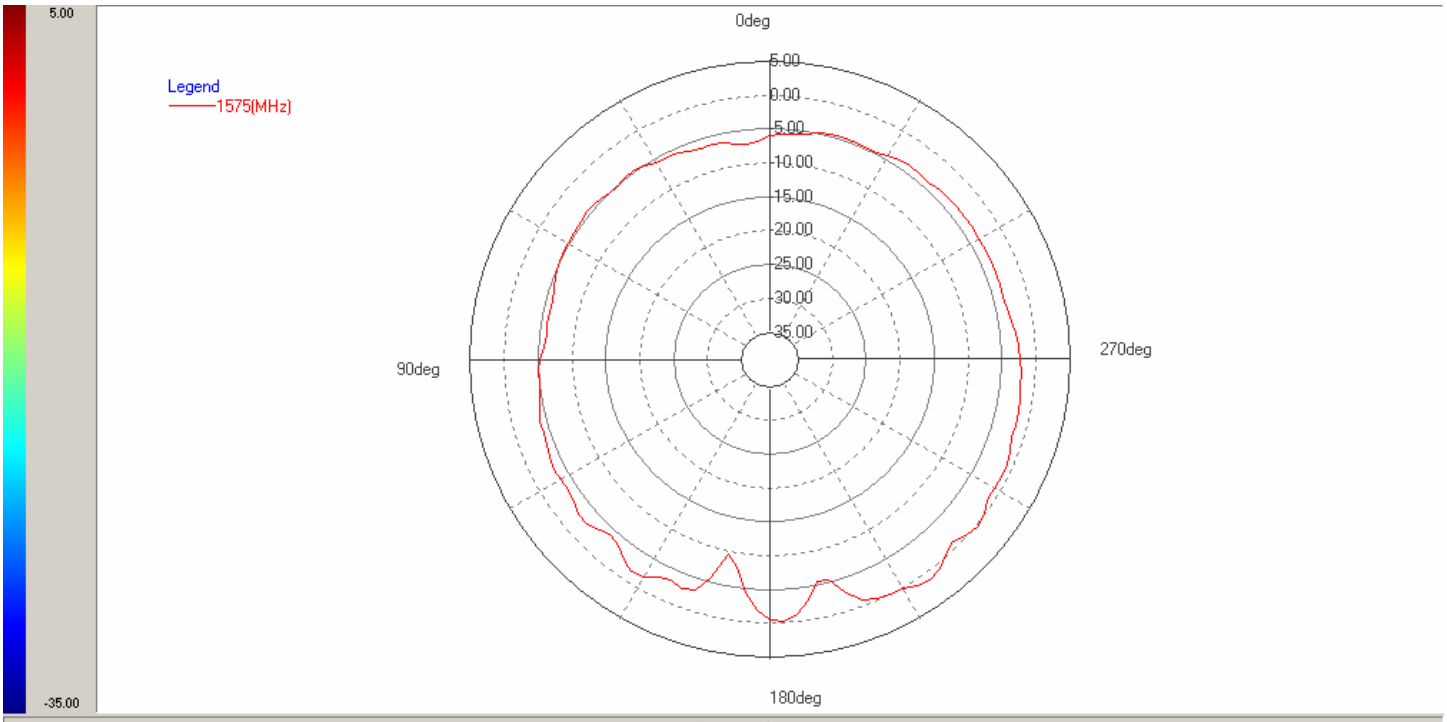

5.00
-35.00
Legend
1575(MHz)
0deg
90deg
270deg
180deg
5.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
[2741] 1D view / Phi=0.00deg
0.52
Theta

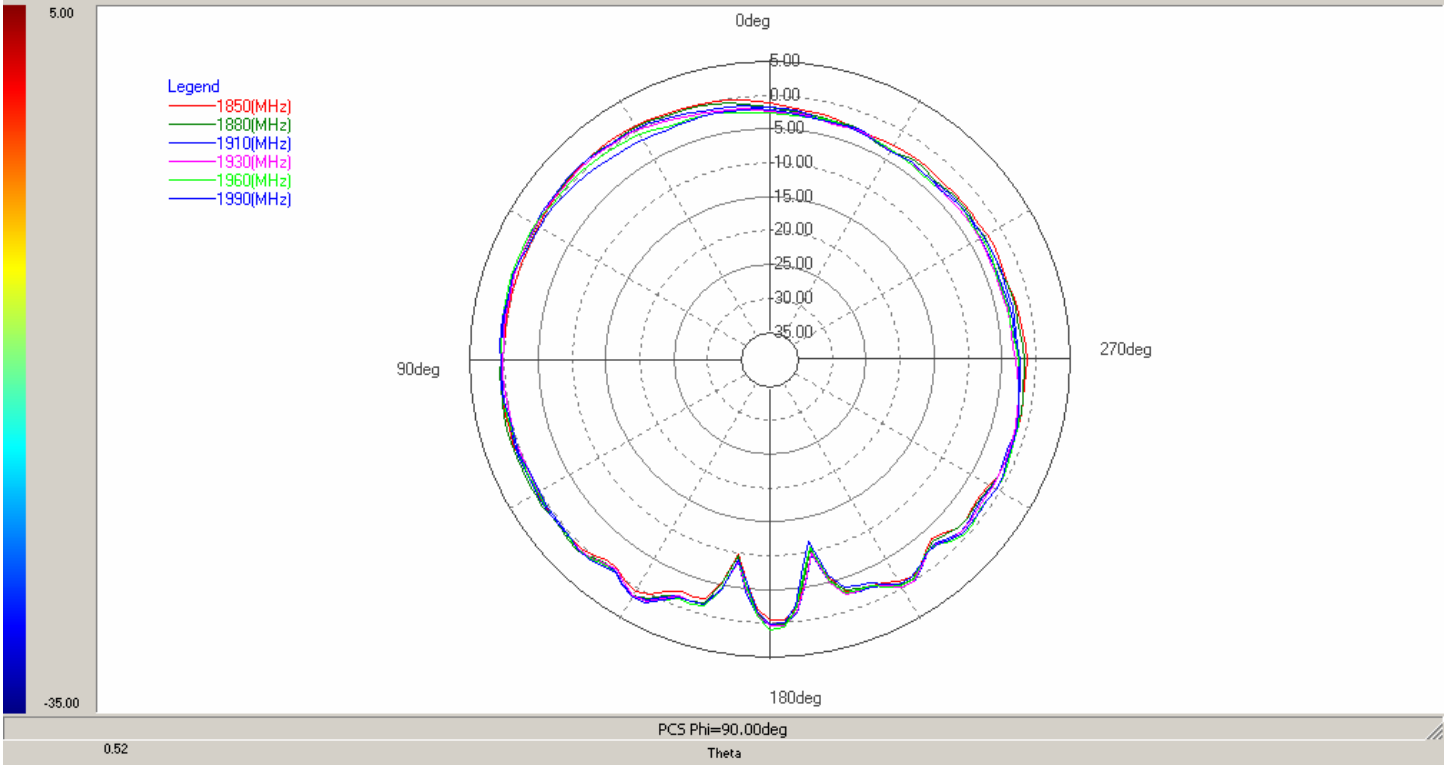

5.00
-35.00
Legend
1850(MHz)
1880(MHz)
1910(MHz)
1930(MHz)
1960(MHz)
1990(MHz)
0deg
90deg
270deg
180deg
5.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
PCS Phi=0.00deg
0.52
Theta

M-Antenna: Gain Patterns, EL at plane Phi=90, Free Space

	Phi=90deg.	
freq(MHz)	Peak Gain . dBi	Ave Gain. dBi
824	-2.1	-6.5
836	-1.5	-5.9
849	-1.3	-5.7
869	-0.5	-5.5
881	-0.8	-5.8
894	-1.4	-6.4
1575	1.1	-3.2
1850	0.8	-1.1
1880	1.1	-1.0
1910	1.1	-1.1
1930	1.1	-1.2
1960	1.4	-1.2
1990	1.4	-1.3

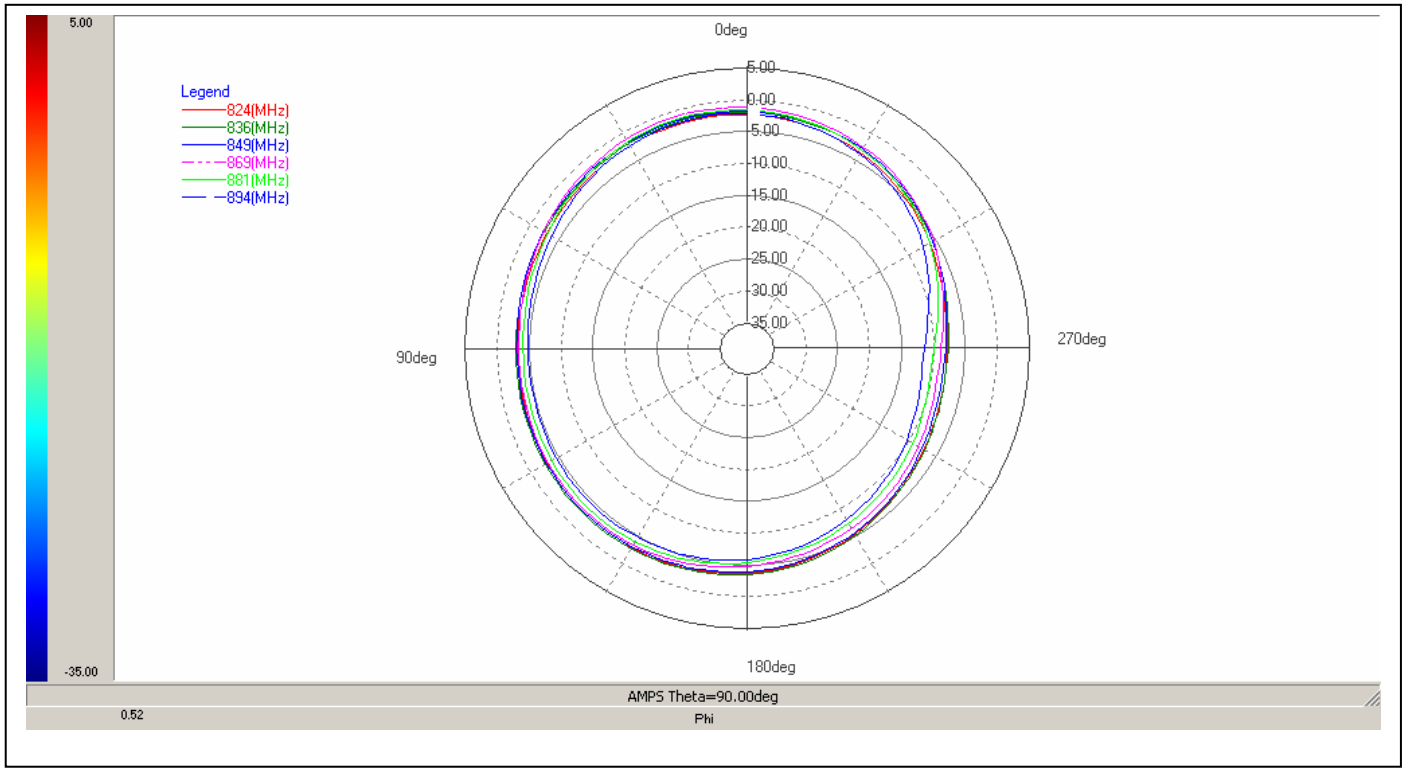


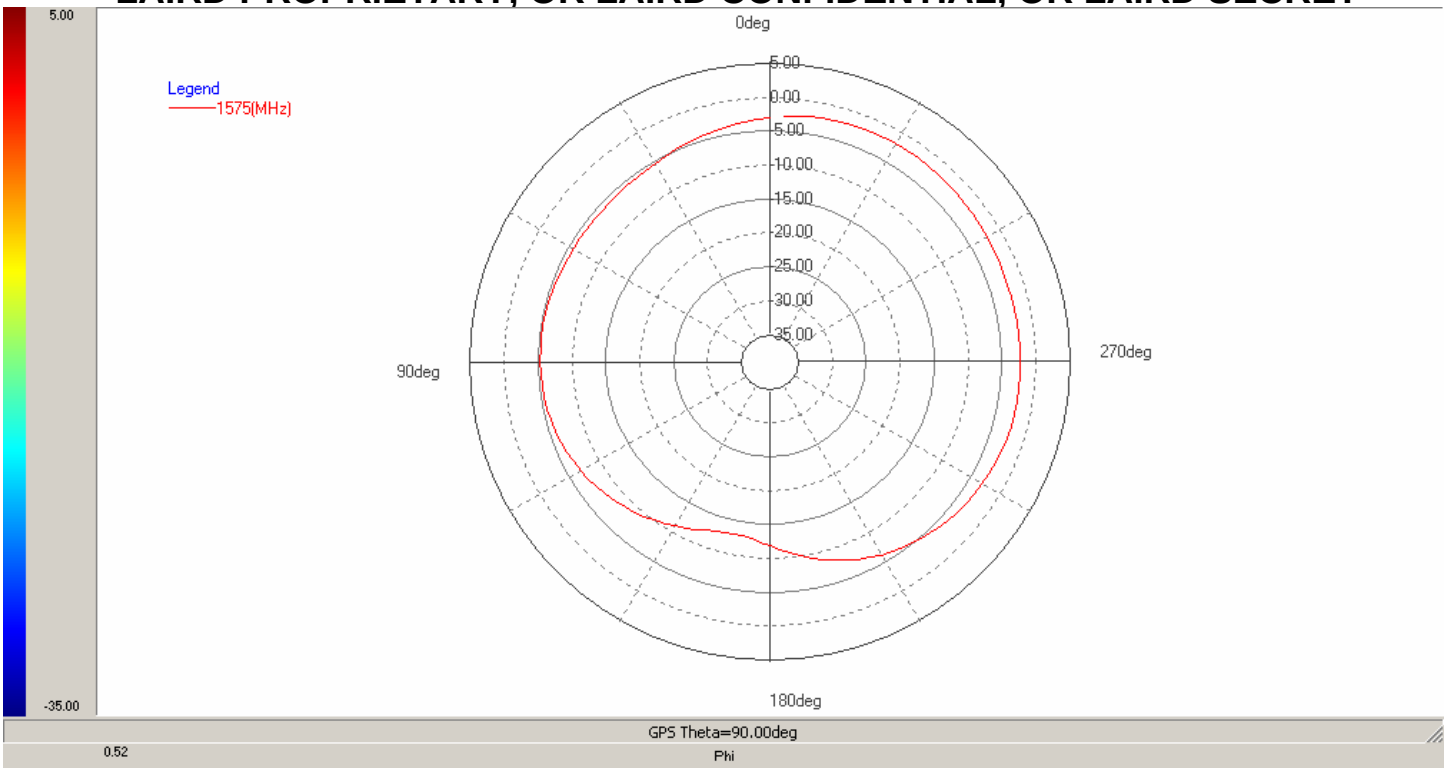

5.00
-35.00
Legend
1575(MHz)
0deg
90deg
270deg
180deg
5.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
GPS Phi=90.00deg
0.52
Theta

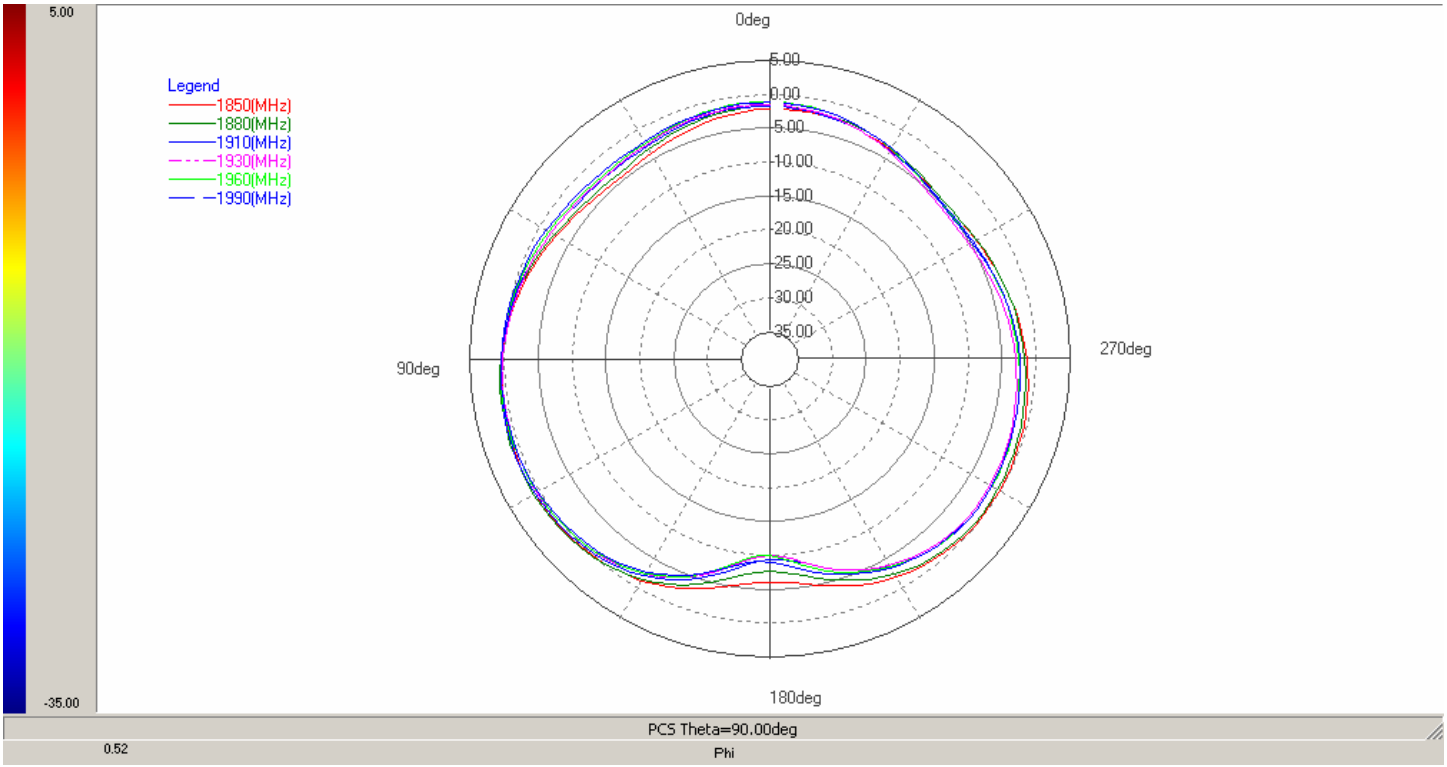

5.00
-35.00
Legend
1850(MHz)
1880(MHz)
1910(MHz)
1930(MHz)
1960(MHz)
1990(MHz)
0deg
90deg
270deg
180deg
5.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
PCS Phi=90.00deg
0.52
Theta

M-Antenna Gain Patterns, at Plane Theta=90deg, Free Space

	Theta=90deg.	
freq(MHz)	Peak Gain . dBi	Ave Gain. dBi
824	-2.4	-4.0
836	-2.1	-3.6
849	-1.8	-3.7
869	-1.2	-3.7
881	-1.6	-4.4
894	-2.2	-5.1
1575	-2.1	-4.6
1850	0.9	-1.9
1880	1.1	-1.8
1910	0.9	-2.2
1930	0.6	-2.4
1960	0.7	-2.2
1990	0.6	-2.1



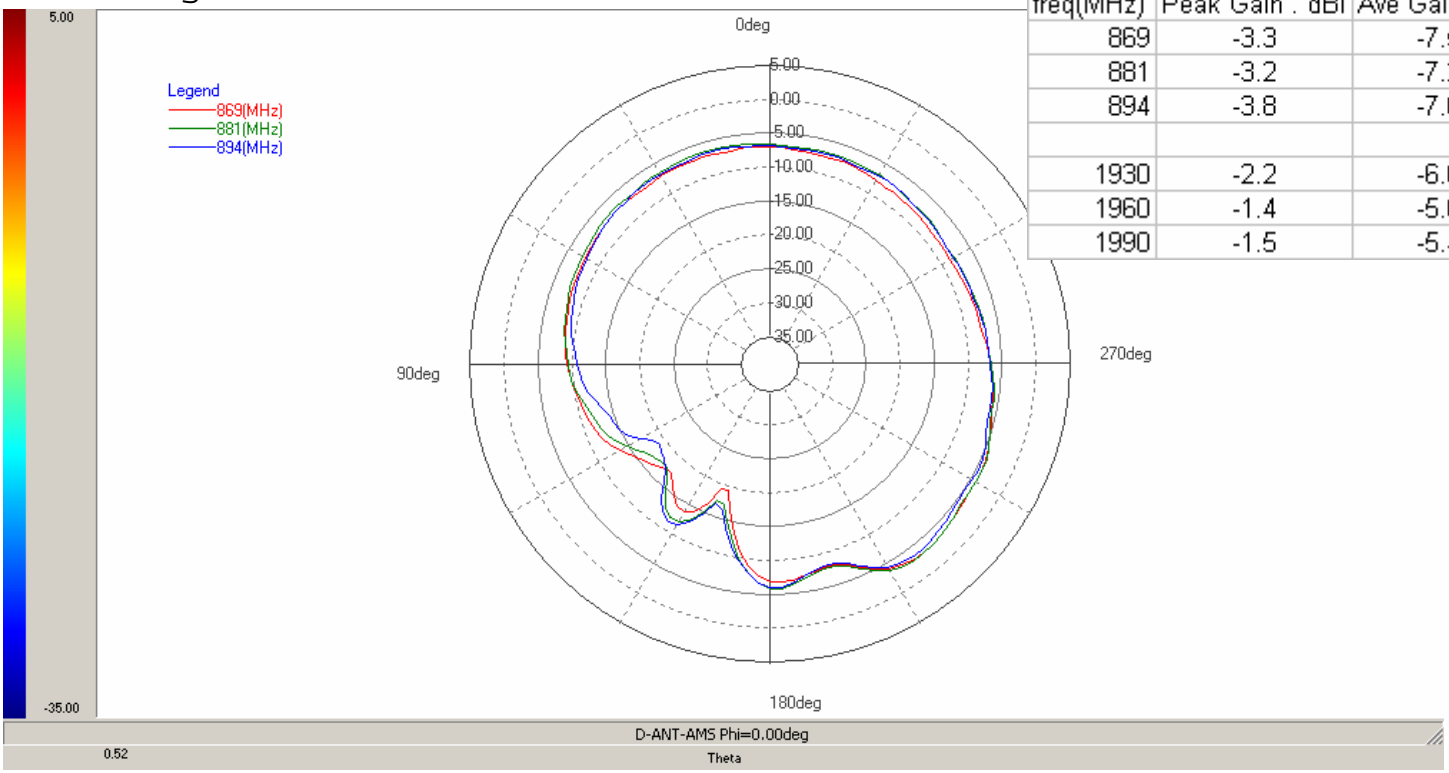

5.00
-35.00
Legend
1575(MHz)
0deg
90deg
270deg
180deg
5.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
GPS Theta=90.00deg
0.52
Phi

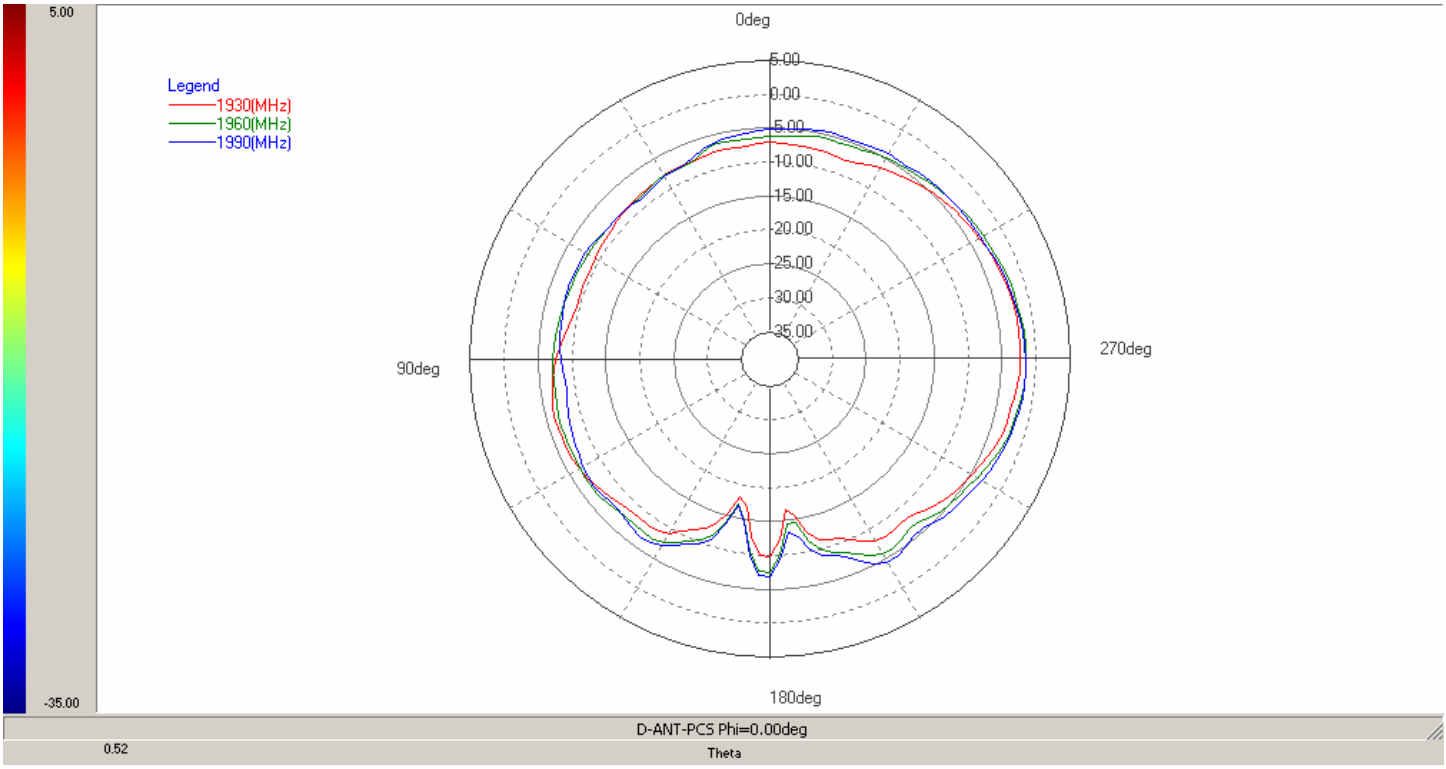

5.00
-35.00
Legend
1850(MHz)
1880(MHz)
1910(MHz)
1930(MHz)
1960(MHz)
1990(MHz)
0deg
90deg
270deg
180deg
5.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
PCS Theta=90.00deg
0.52
Phi

Diversity Antenna

Phi=0deg cut:

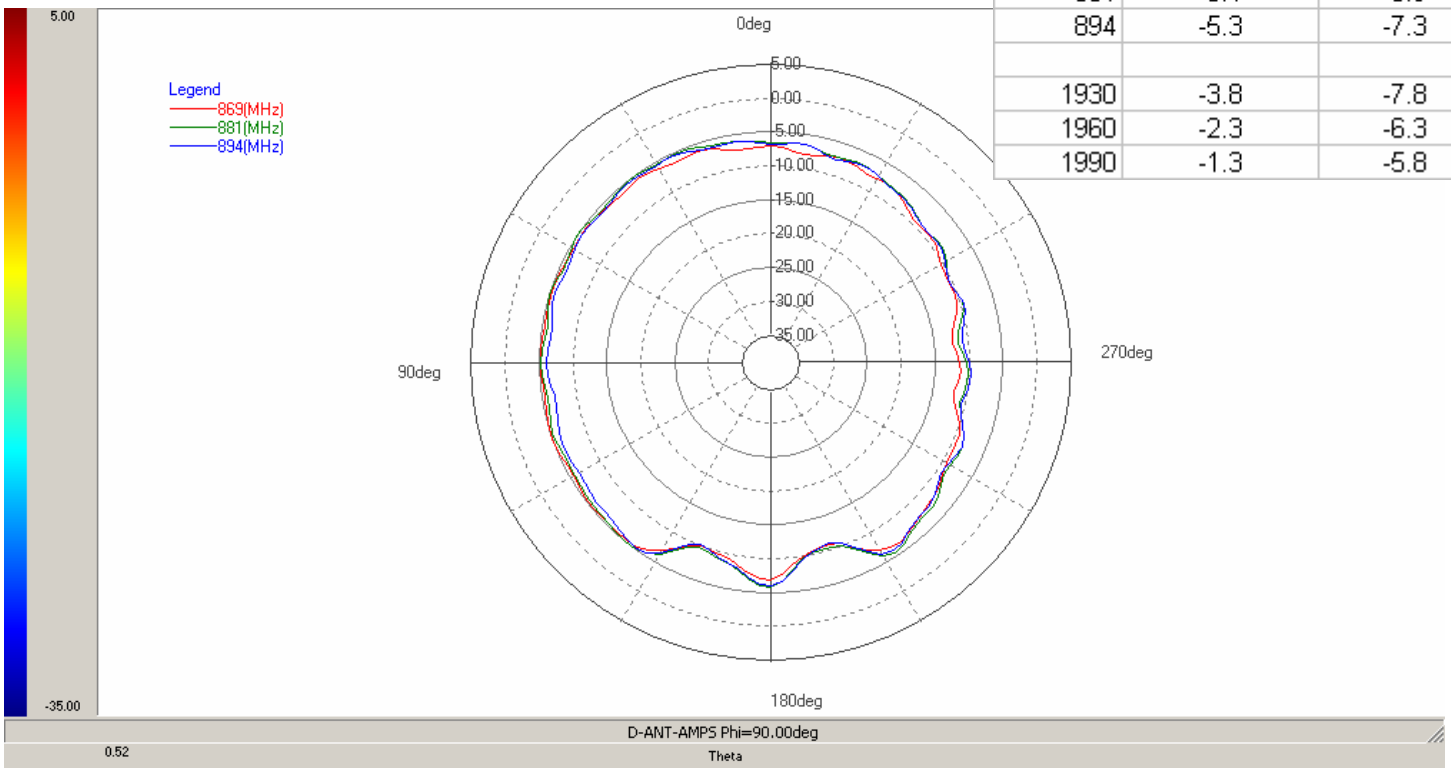
	Phi=0deg.	
freq(MHz)	Peak Gain . dBi	Ave Gain. dBi
869	-3.3	-7.5
881	-3.2	-7.2
894	-3.8	-7.6
1930	-2.2	-6.6
1960	-1.4	-5.6
1990	-1.5	-5.4

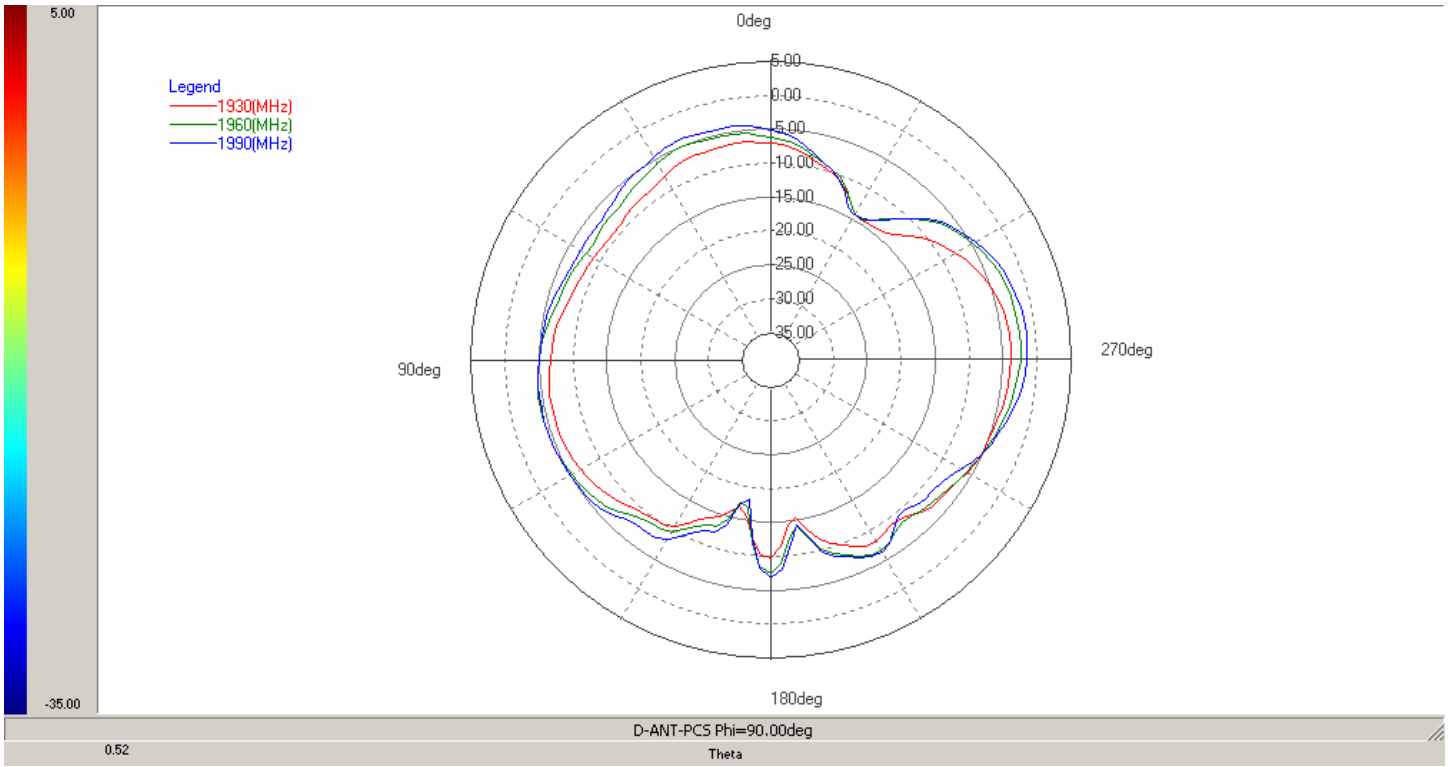




Phi=90deg cut:

	Phi=90deg.	
freq(MHz)	Peak Gain . dBi	Ave Gain. dBi
869	-5.0	-7.3
881	-5.1	-6.9
894	-5.3	-7.3
1930	-3.8	-7.8
1960	-2.3	-6.3
1990	-1.3	-5.8

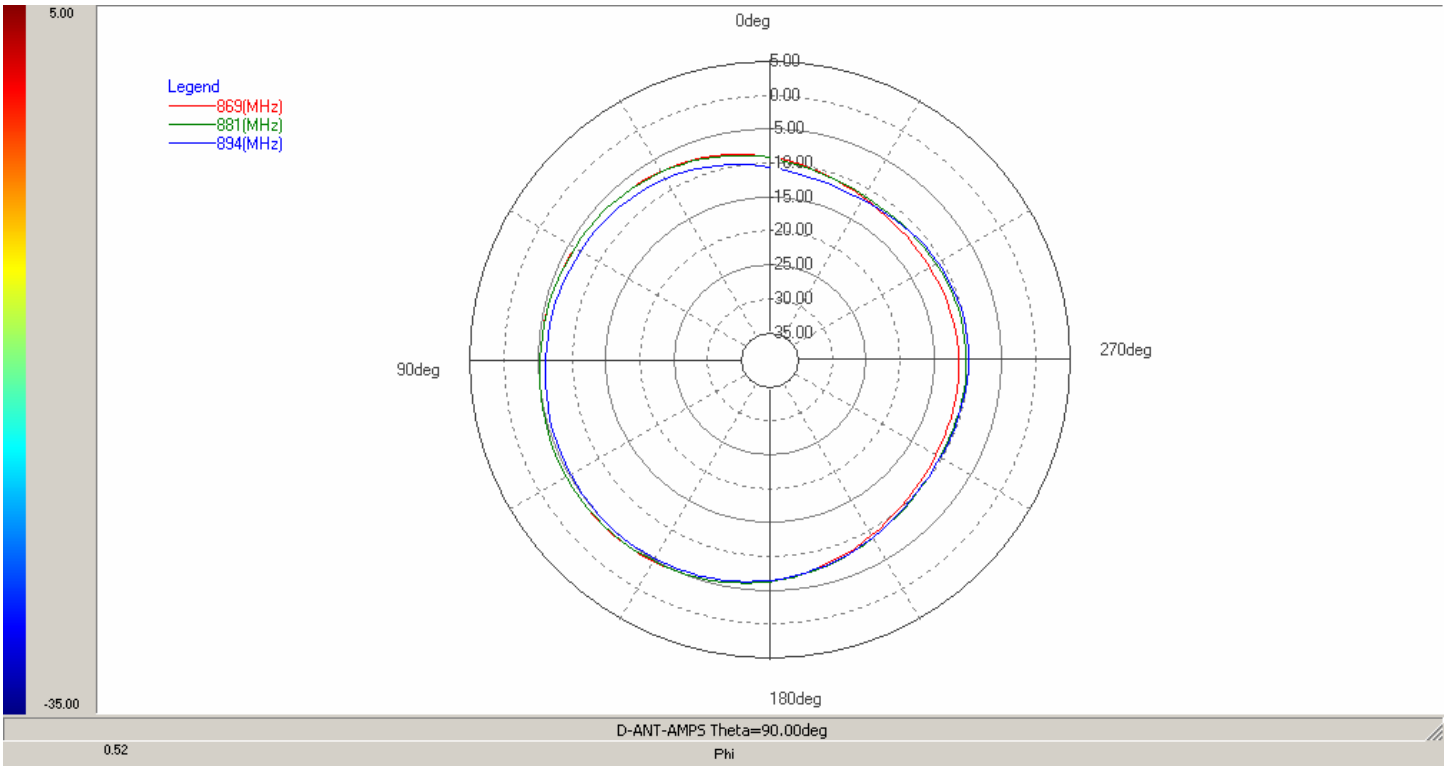


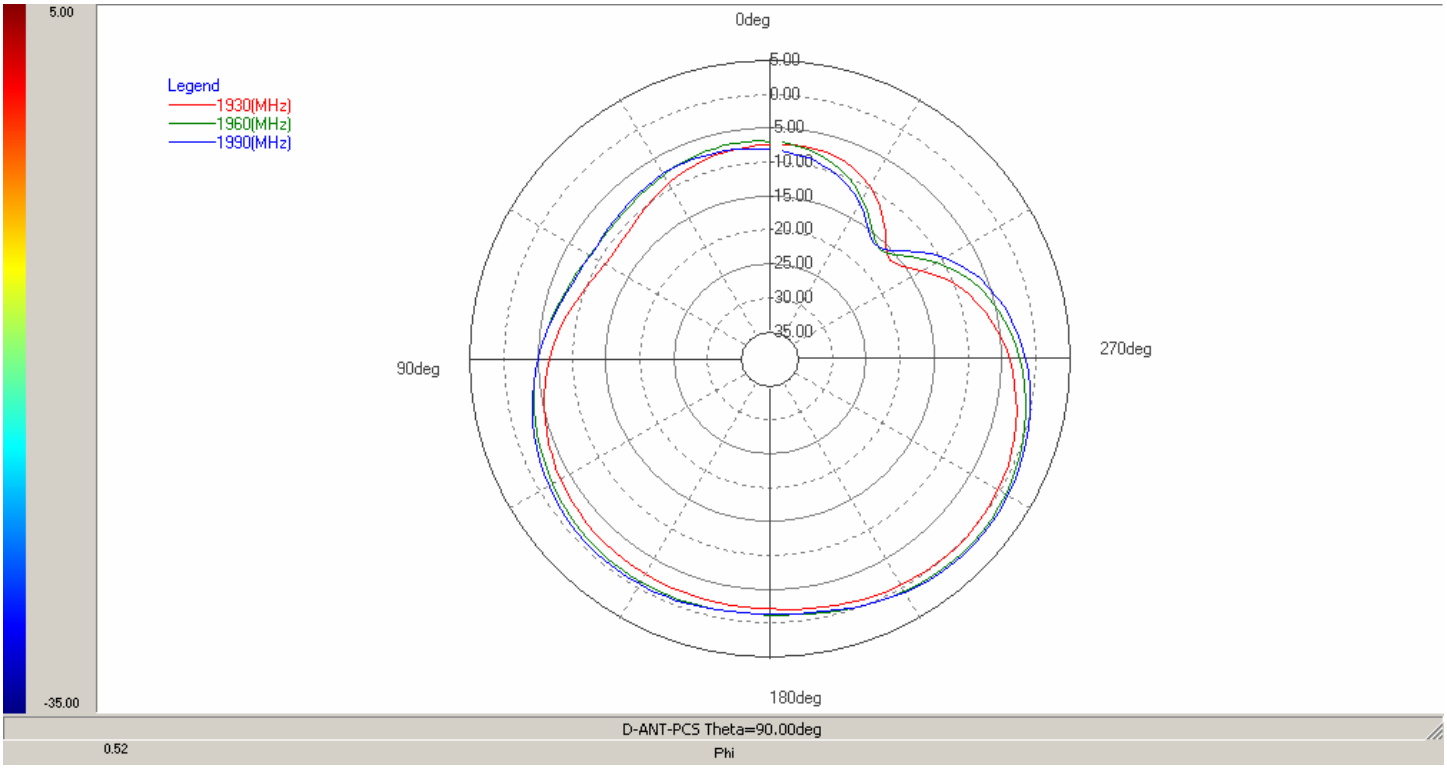


Report Number: xxxxxxxxxxxx

	Theta=90deg.	
freq(MHz)	Peak Gain . dBi	Ave Gain. dBi
869	-4.5	-7.4
881	-4.6	-7.3
894	-5.1	-7.9

Theta=90 cut


5.00
-35.00
Legend
869(MHz)
881(MHz)
894(MHz)
0deg
90deg
270deg
180deg
5.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
D-ANT-AMPS Theta=90.00deg
0.52
Phi


5.00
-35.00
Legend
1930(MHz)
1960(MHz)
1990(MHz)
0deg
90deg
270deg
180deg
5.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
D-ANT-PCS Theta=90.00deg
0.52
Phi