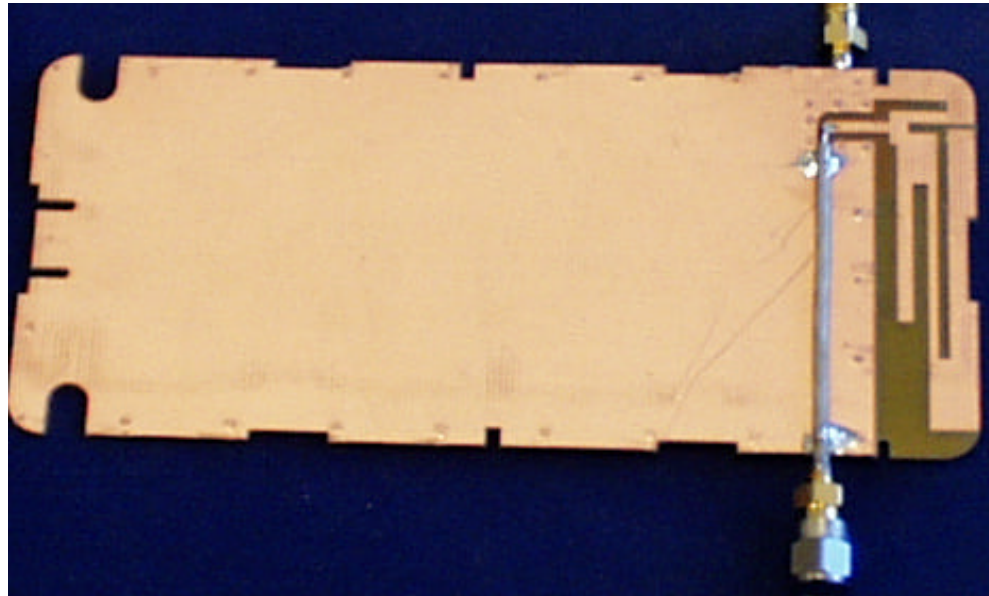


**CONFIDENTIAL**



## **TRIMBLE rev.2**

*May 7, 2003*



7 May 2003 16:07:17

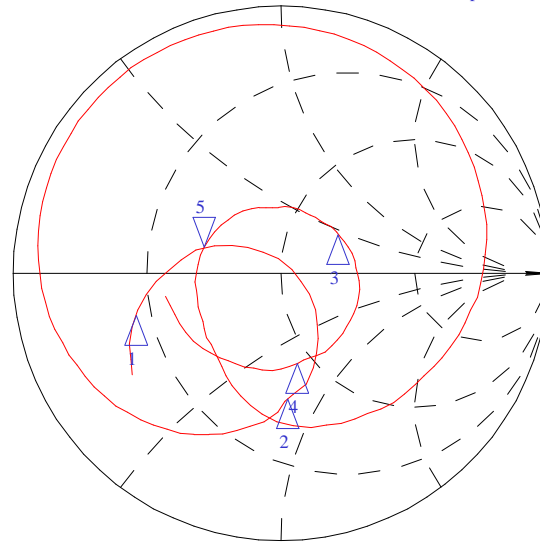


CHI RFL 1 UFS 5 : 27 . 314 Ω 5 . 9414 Ω 552 . 98 pH 1 710 . 000 000 MHz

TRIMBLE REV.2

**CONFIDENTIAL**

Cor

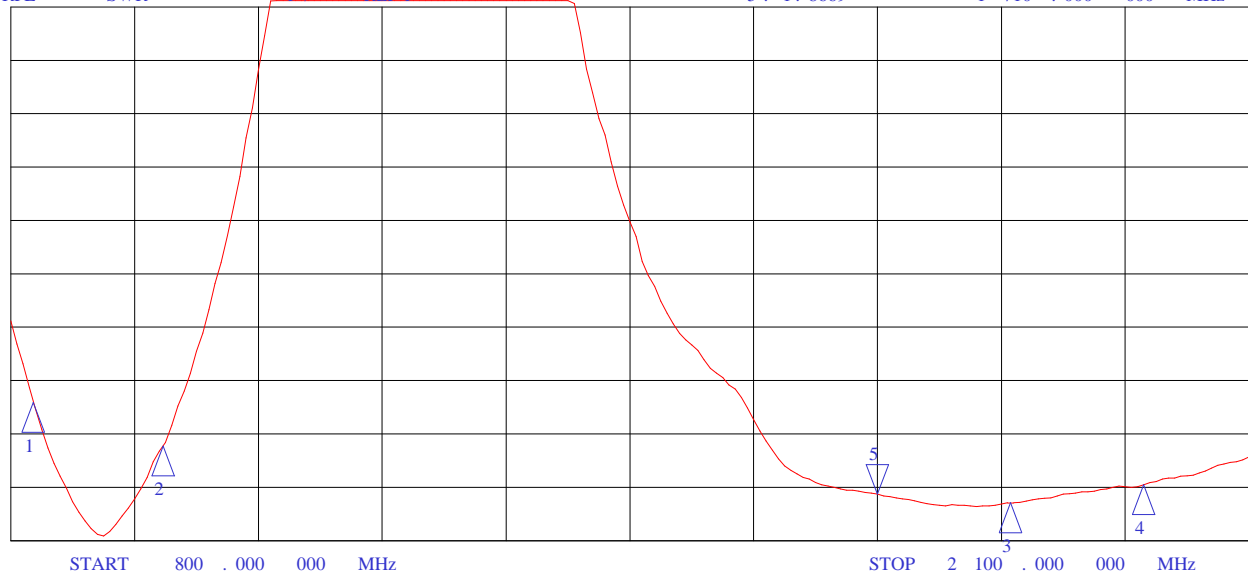


CH1 Markers

- 1 : 14 . 236 Ω  
-6 . 5317 Ω  
824 . 000 MHz
- 2 : 33 . 518 Ω  
-40 . 273 Ω  
960 . 000 MHz
- 3 : 73 . 473 Ω  
22 . 648 Ω  
1 . 85000 GHz
- 4 : 44 . 367 Ω  
-33 . 951 Ω  
1 . 99000 GHz

CH2 RFL SWR 1 / REF 1 5 : 1. 8669 1 710 . 000 000 MHz

Cor



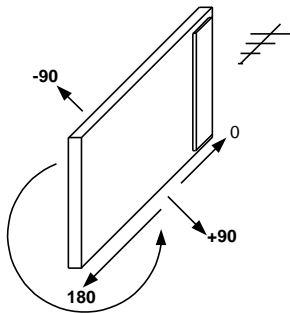
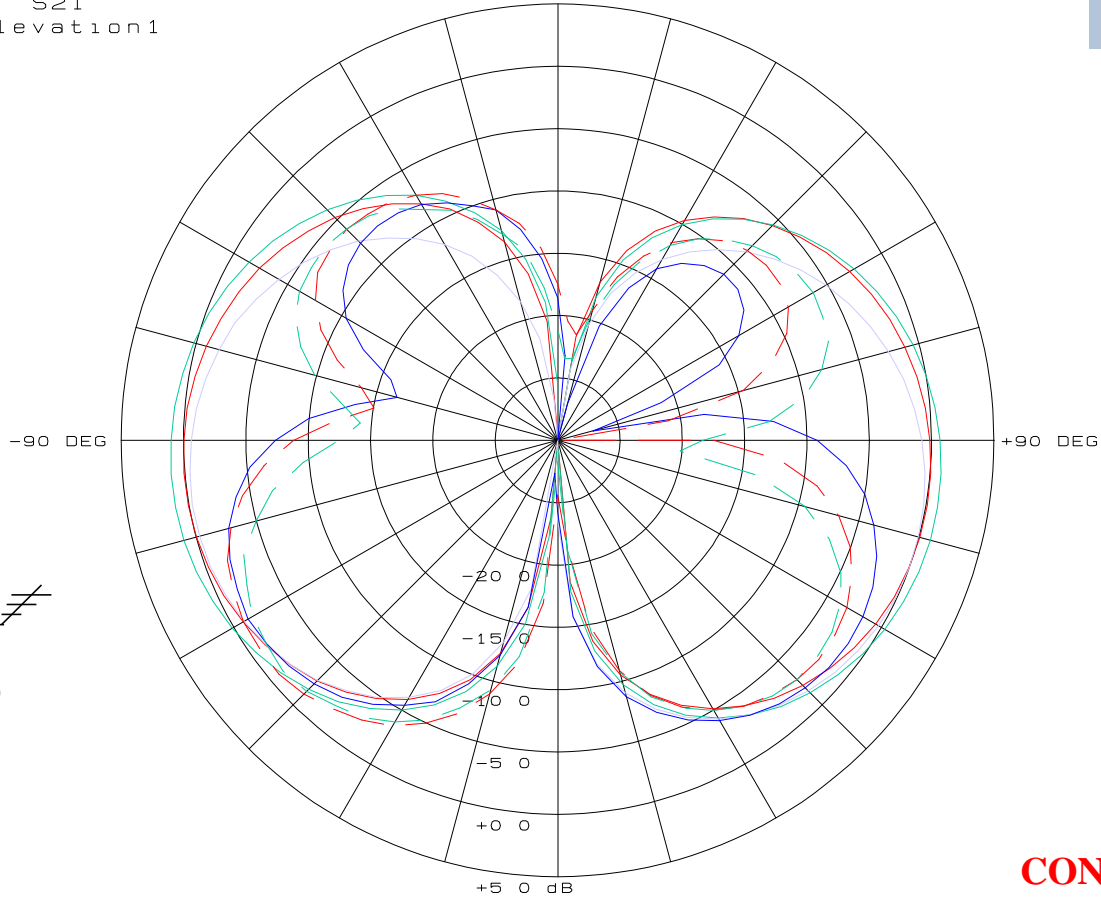
CH2 Markers

- 1 : 3 . 5895  
824 . 000 MHz
- 2 : 2 . 7721  
960 . 000 MHz
- 3 : 1 . 7030  
1 . 85000 GHz
- 4 : 2 . 0452  
1 . 99000 GHz

File NEW ASH27761 csv  
 Date 5/7/03  
 Time 3 24PM  
 Operator LUIS  
 S/N  
 Channel S21  
 Rotation Elevation1

DUT Description  
 TRIMBLE REV 2  
 Pol Vertical  
 0 DEG

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



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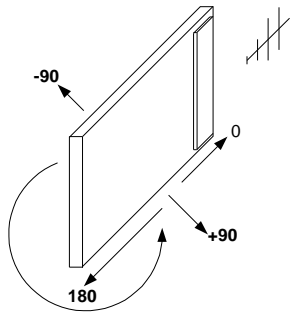
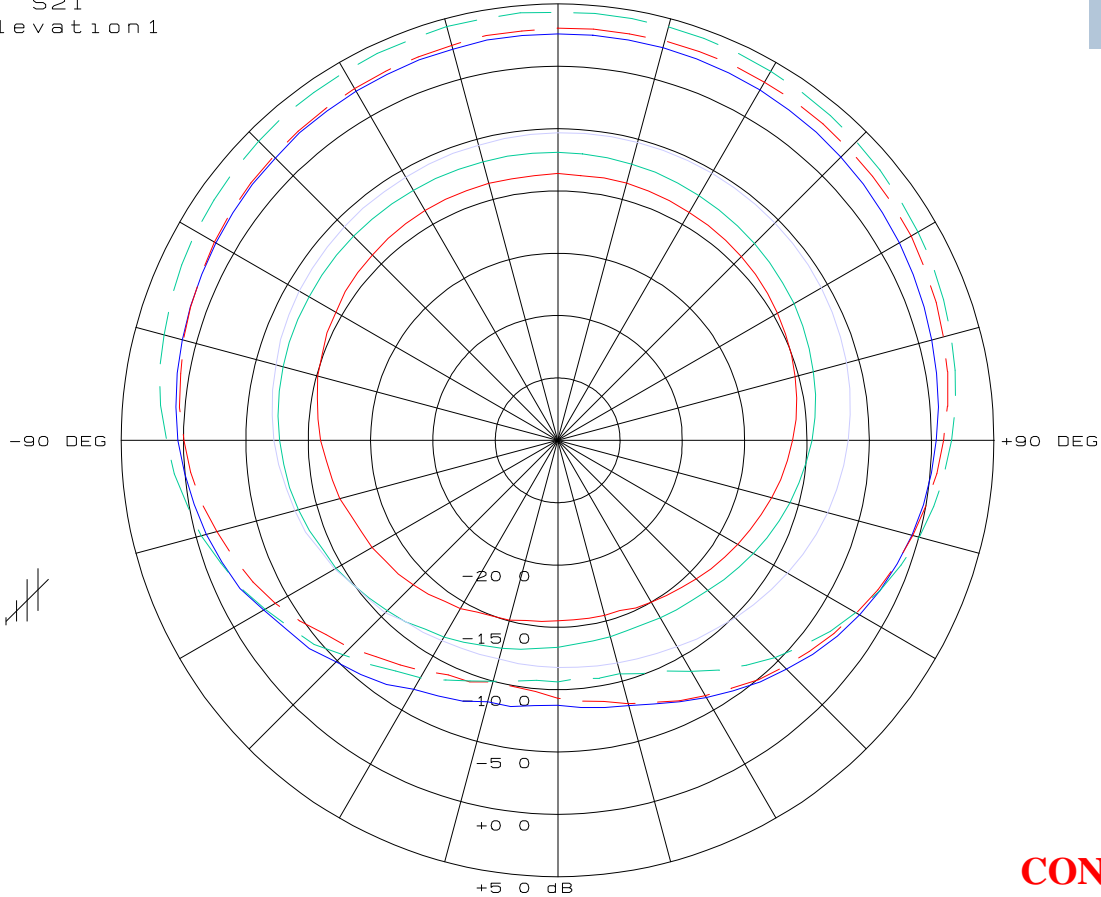
Freq (MHz)	Trace	Beam Deg	Peak dB
824 00	—	+100 00	+0 12
892 00	—	+265 00	+1 12
960 00	—	+110 00	+0 00
1710 00	—	+240 00	-1 33

Freq (MHz)	Trace	Beam Deg	Peak dB
1850 00	—	+230 00	-0 82
1990 00	—	+230 00	-1 23

File NEW ASH27762 csv  
 Date 5/7/03  
 Time 3 27PM  
 Operator LUIS  
 S/N  
 Channel S21  
 Rotation Elevation1

DUT Description  
 TRIMBLE REV 2  
 Pol Horizontal  
 0 DEG

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



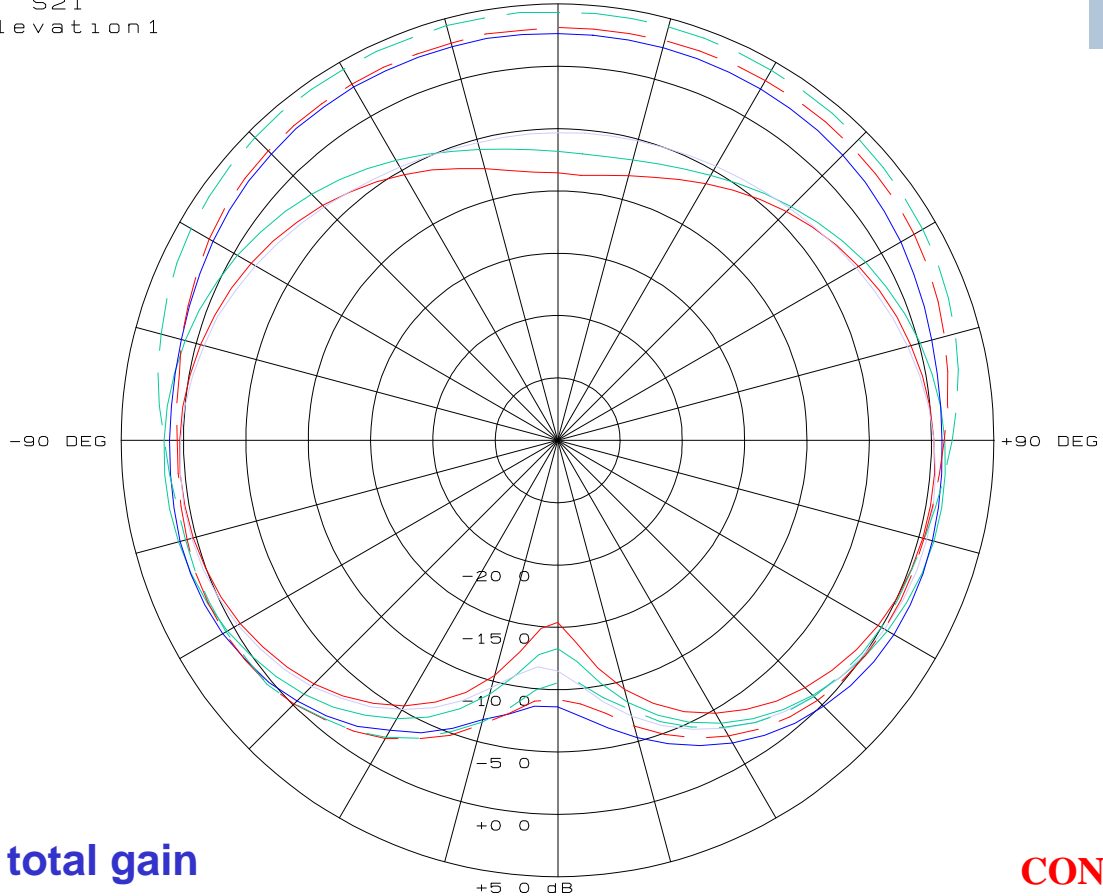
**CONFIDENTIAL**

Freq (MHz)	Trace	Beam Deg	Peak dB
824 00	—	+360 00	-8 58
892 00	—	+335 00	-6 82
960 00	—	+25 00	-5 25
1710 00	—	+10 00	+2 62

Freq (MHz)	Trace	Beam Deg	Peak dB
1850 00	—	+25 00	+3 23
1990 00	—	+355 00	+4 43

File NEW ASH27761NEW ASH27062 Description  
 Date 5/7/03 TRIMBLE REV 2  
 Time 3 27PM  
 Operator LUIS Pol TOTAL  
 S/N 0 DEG  
 Channel S21  
 Rotation Elevation1

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



**Elevation 1 total gain**

**CONFIDENTIAL**

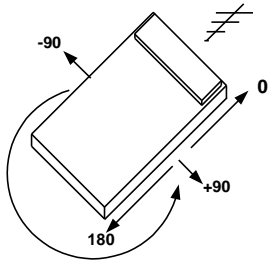
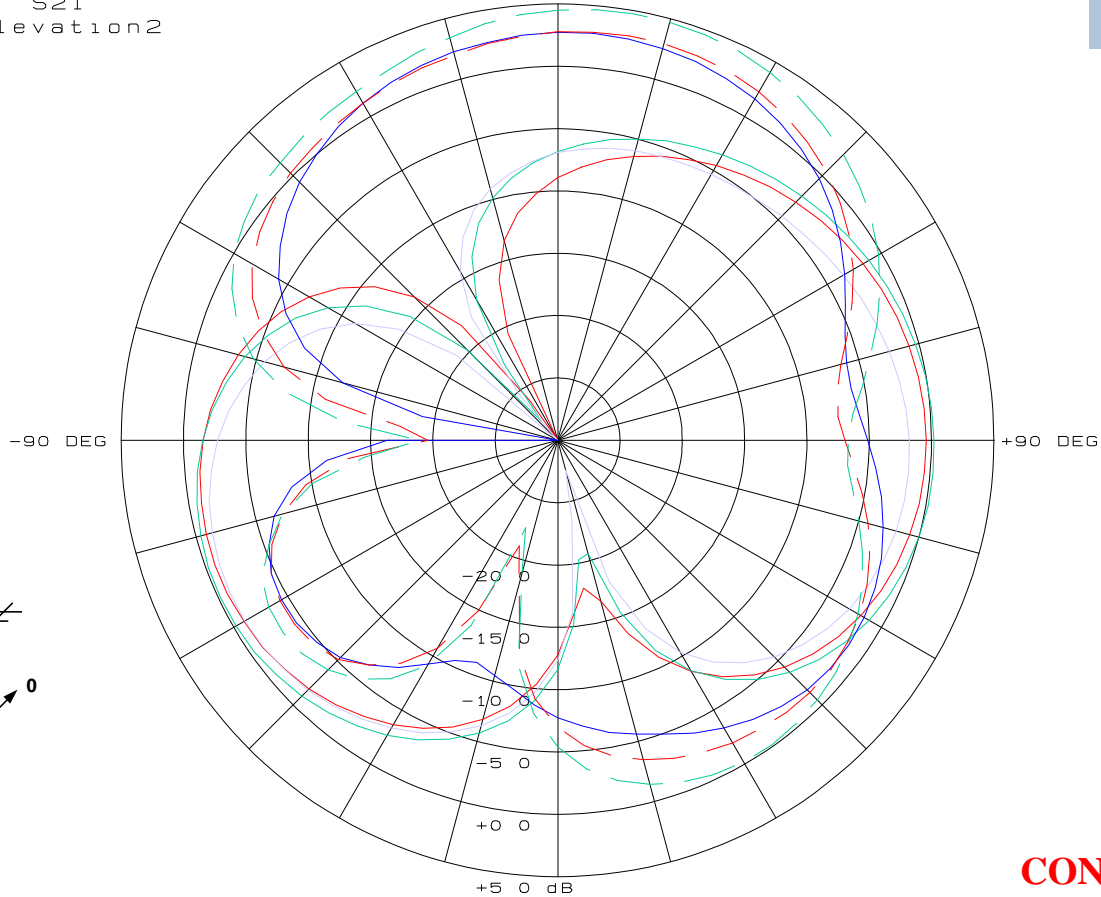
Freq (MHz)	Trace	Beam Deg	Peak dB
824 00	—	+100 00	+0 38
892 00	—	+265 00	+1 62
960 00	—	+105 00	+0 67
1710 00	—	+350 00	+2 73

Freq (MHz)	Trace	Beam Deg	Peak dB
1850 00	—	+40 00	+3 38
1990 00	—	+355 00	+4 46

File NEW ASH27760 csv  
 Date 5/7/03  
 Time 3 19PM  
 Operator LUIS  
 S/N  
 Channel S21  
 Rotation Elevation2

DUT Description  
 TRIMBLE REV 2  
 Pol Vertical  
 0 DEG

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



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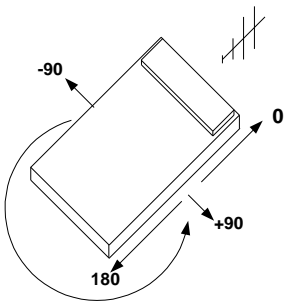
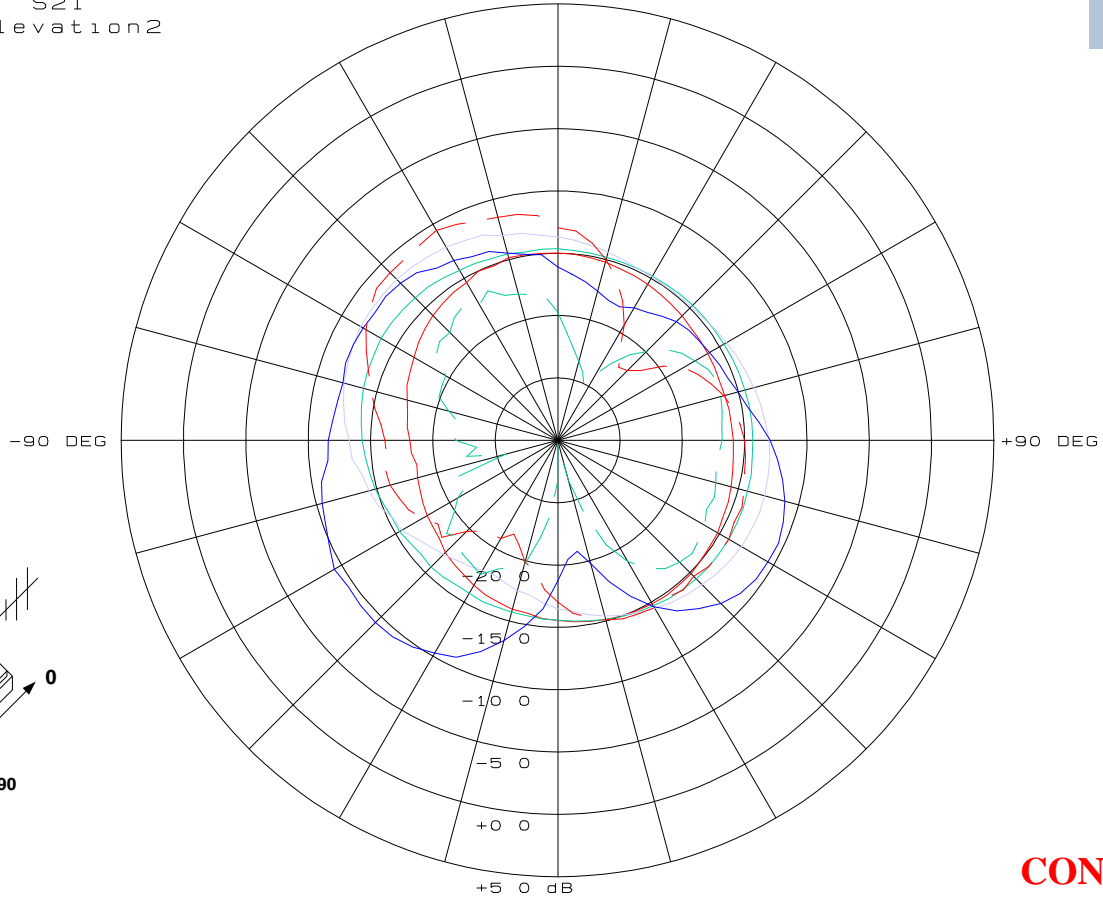
Freq (MHz)	Trace	Beam Deg	Peak dB
824 00	—	+90 00	-0 43
892 00	—	+95 00	+0 24
960 00	—	+245 00	-1 02
1710 00	—	+5 00	+2 76

Freq (MHz)	Trace	Beam Deg	Peak dB
1850 00	—	+15 00	+2 96
1990 00	—	+10 00	+4 76

File NEW ASH27759 csv  
 Date 5/7/03  
 Time 3 16PM  
 Operator LUIS  
 S/N  
 Channel S21  
 Rotation Elevation2

DUT Description  
 TRIMBLE REV 2  
 Pol Horizontal  
 0 DEG

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



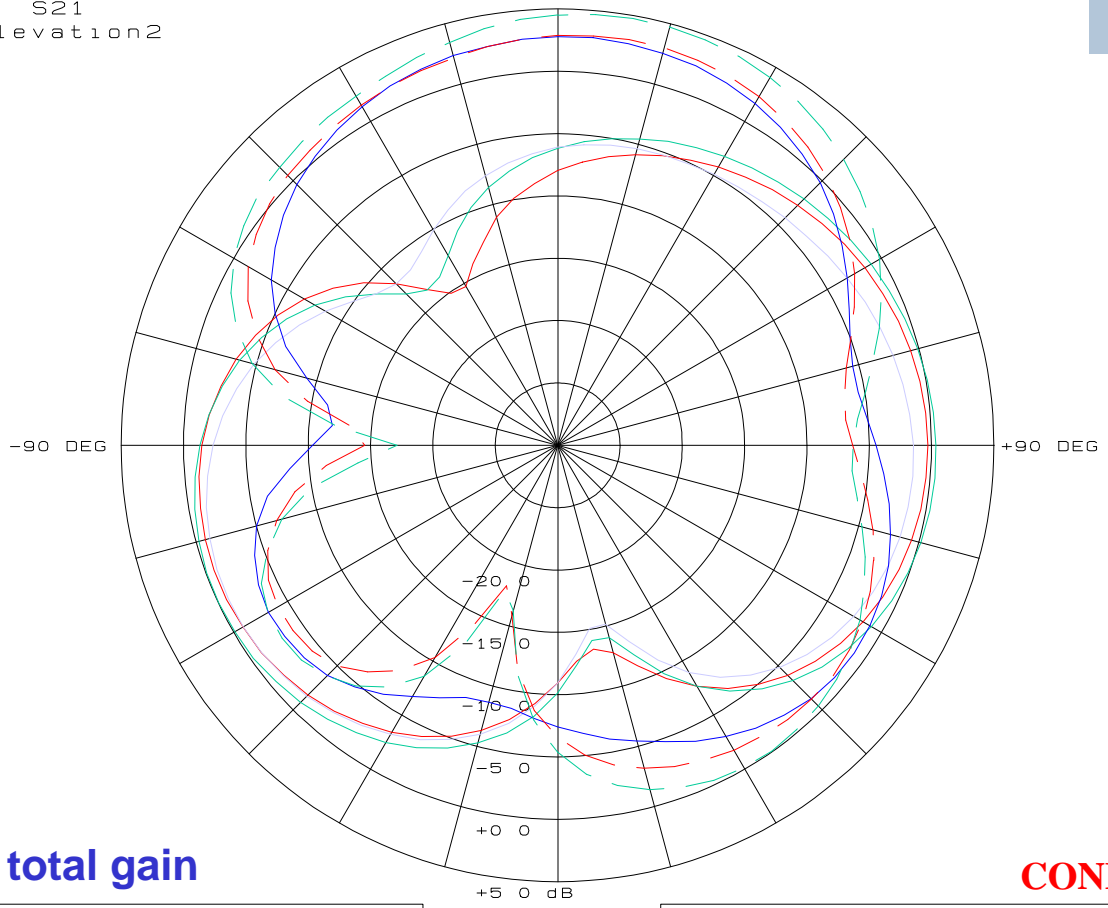
**CONFIDENTIAL**

Freq (MHz)	Trace	Beam Peak Deg	Peak dB
824 00	—	+145 00	-14 79
892 00	—	+300 00	-13 64
960 00	—	+315 00	-11 74
1710 00	—	+240 00	-9 31

Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1850 00	—	+330 00	-10 57
1990 00	—	+130 00	-15 90

File NEW ASH27759NEW ASH27080 Description  
 Date 5/7/03 TRIMBLE REV 2  
 Time 3 19PM  
 Operator LUIS Pol TOTAL  
 S/N 0 DEG  
 Channel S21  
 Rotation Elevation2

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



**Elevation 2 total gain**

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Freq (MHz)	Trace	Beam Peak Deg	Beam Peak dB
824 00	—	+90 00	-0 31
892 00	—	+95 00	+0 39
960 00	—	+245 00	-0 86
1710 00	—	+5 00	+2 81

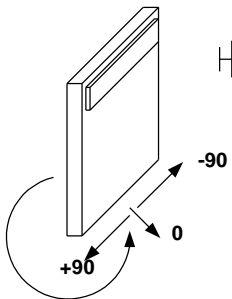
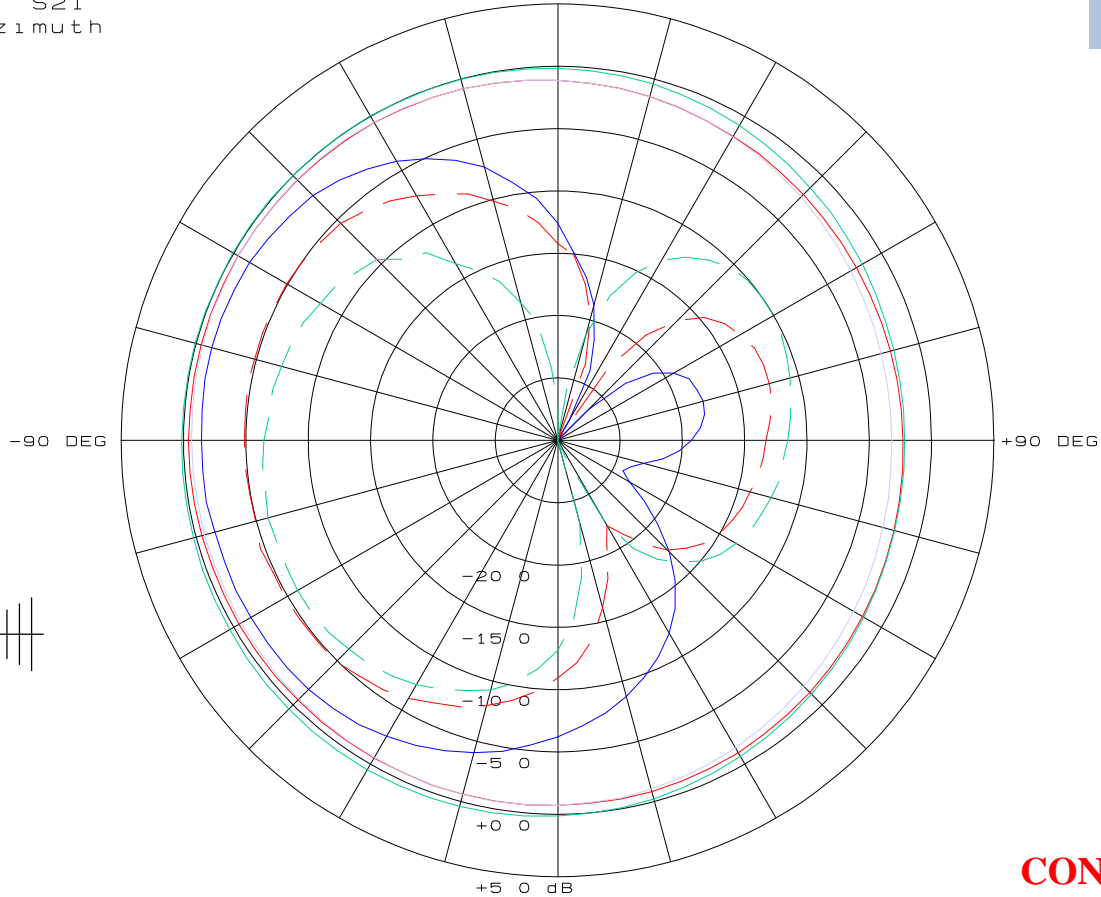
Freq (MHz)	Trace	Beam Peak Deg	Beam Peak dB
1850 00	—	+10 00	+3 04
1990 00	—	+10 00	+4 77



File NEW ASH27758 csv  
 Date 5/7/03  
 Time 3 13PM  
 Operator LUIS  
 S/N  
 Channel S21  
 Rotation Azimuth

DUT Description  
 TRIMBLE REV 2  
 Pol Vertical  
 0 DEG

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



**CONFIDENTIAL**

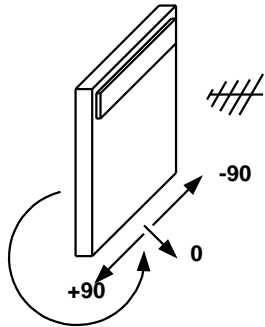
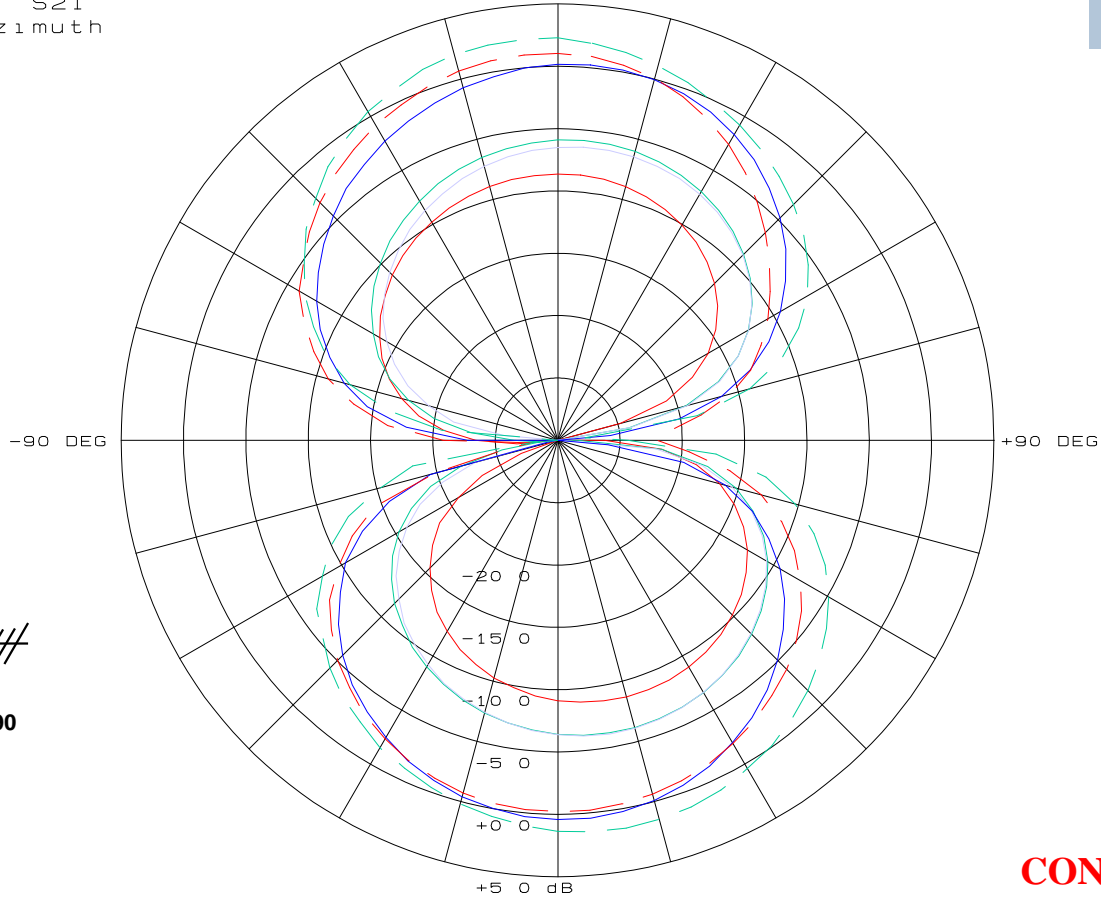
Freq (MHz)	Trace	Beam Deg	Peak dB
824 00	—	+290 00	-0 40
892 00	—	+220 00	+0 53
960 00	—	+305 00	-0 41
1710 00	—	+285 00	-1 28

Freq (MHz)	Trace	Beam Deg	Peak dB
1850 00	—	+250 00	-4 64
1990 00	—	+235 00	-5 90

File NEW ASH27757 csv  
 Date 5/7/03  
 Time 3 09PM  
 Operator LUIS  
 S/N  
 Channel S21  
 Rotation Azimuth

DUT Description  
 TRIMBLE REV 2  
 Pol Horizontal  
 0 DEG

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



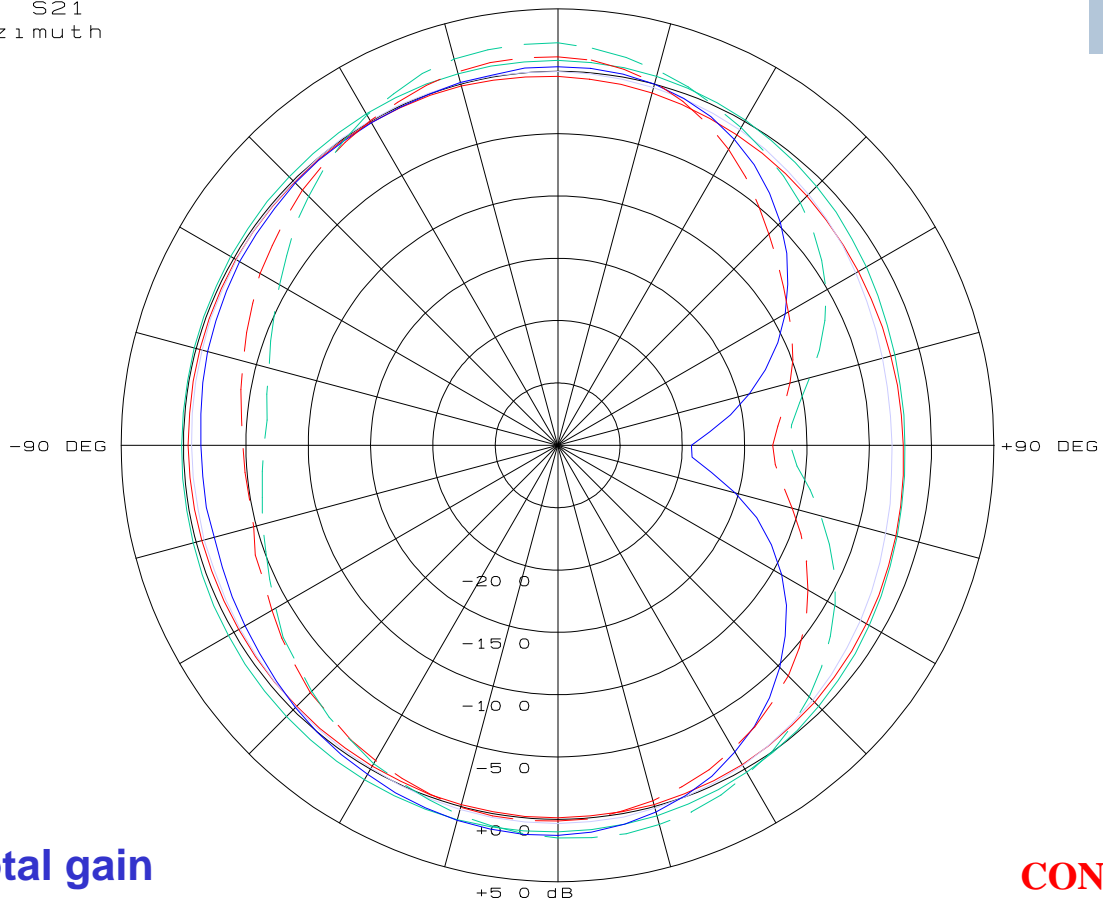
**CONFIDENTIAL**

Freq (MHz)	Trace	Beam Deg	Peak dB
824 00	—	+360 00	-8 64
892 00	—	+5 00	-5 86
960 00	—	+170 00	-6 08
1710 00	—	+180 00	+0 44

Freq (MHz)	Trace	Beam Deg	Peak dB
1850 00	—	+360 00	+1 04
1990 00	—	+360 00	+2 30

File NEW ASH27757NEW ASH27088 Description  
 Date 5/7/03 TRIMBLE REV 2  
 Time 3 13PM  
 Operator LUIS Po1 TOTAL  
 S/N 0 DEG  
 Channel S21  
 Rotation Azimuth

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



**Azimuth total gain**

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Freq (MHz)	Trace	Beam Deg	Peak dB
824 00	—	+325 00	-0 09
892 00	—	+195 00	+1 08
960 00	—	+180 00	+0 34
1710 00	—	+185 00	+1 32

Freq (MHz)	Trace	Beam Deg	Peak dB
1850 00	—	+355 00	+1 22
1990 00	—	+360 00	+2 30



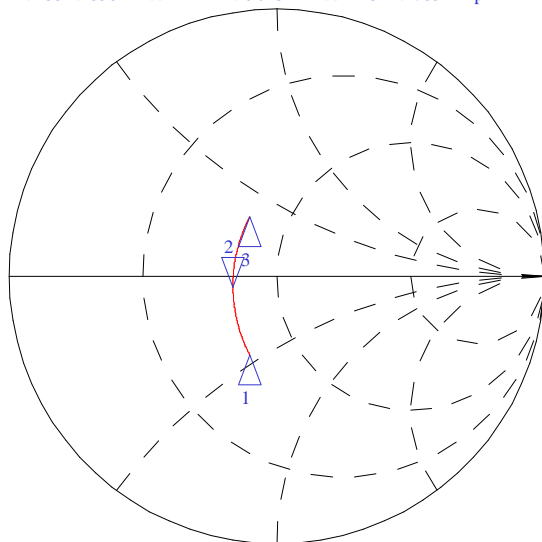
7 May 2003 16:09:54

CHI RFL 1 U FS 2 : 35 . 838 Ω -2 . 9043 Ω 34 . 785 pF 1 575 . 372 000 MHz

TRIMBLE REV.2

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C Δ

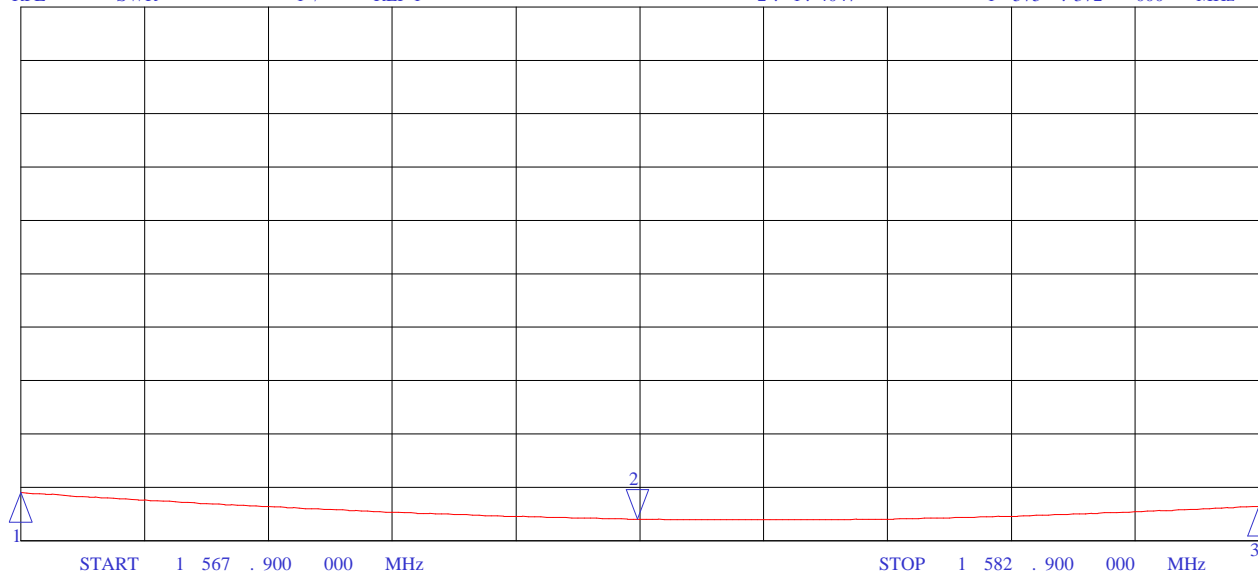


CH1 Markers

- 1 : 34 . 789 Ω  
-22 . 598 Ω  
1. 56790 GHz
- 3 : 37 . 246 Ω  
17 . 518 Ω  
1. 58290 GHz

CH2 RFL SWR 1 / REF 1 2 : 1. 4047 1 575 . 372 000 MHz

C Δ



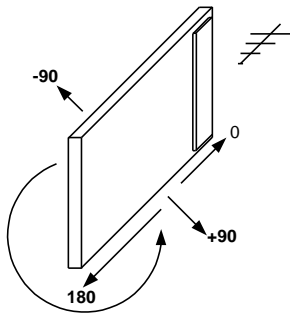
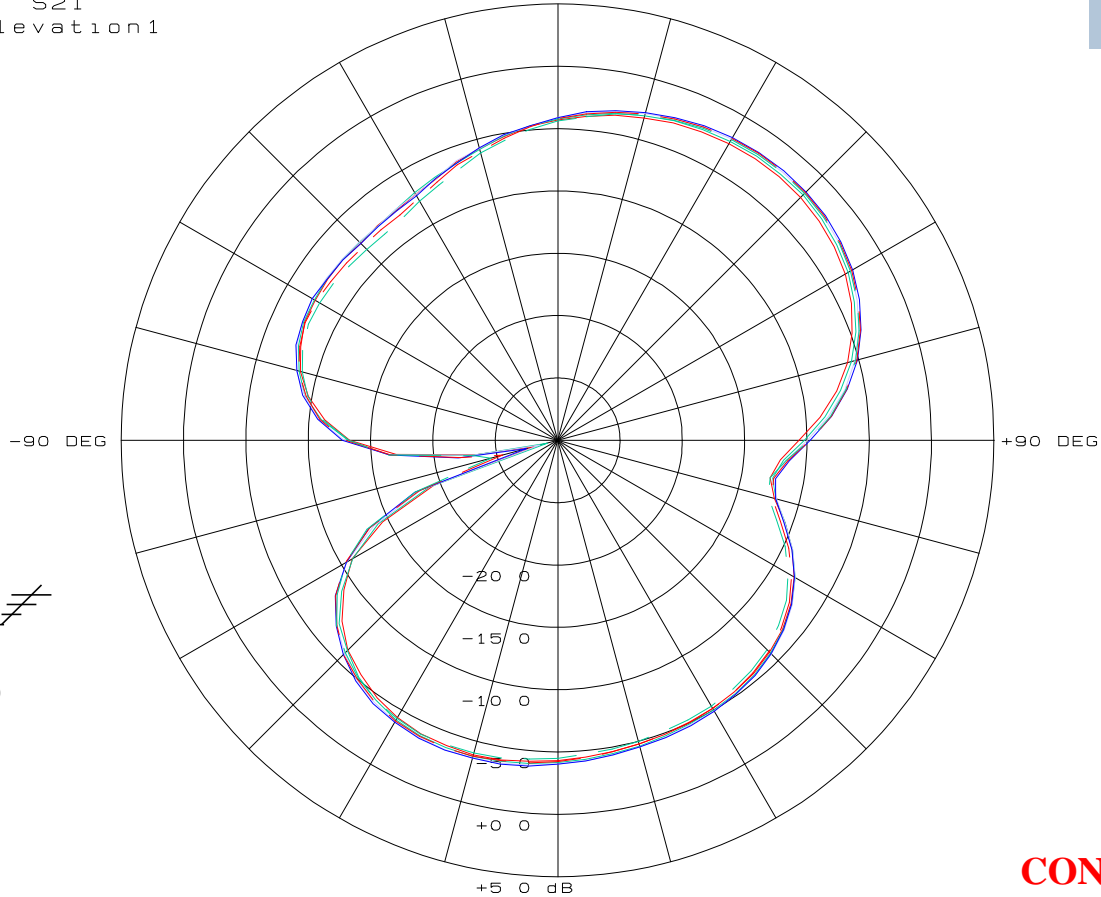
CH2 Markers

- 1 : 1. 9004  
1. 56790 GHz
- 3 : 1. 6437  
1. 58290 GHz

File NEW ASH27764 csv  
 Date 5/7/03  
 Time 3 35PM  
 Operator LUIS  
 S/N  
 Channel S21  
 Rotation Elevation1

DUT Description  
 TRIMBLE REV 2  
 Pol Vertical  
 0 DEG

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



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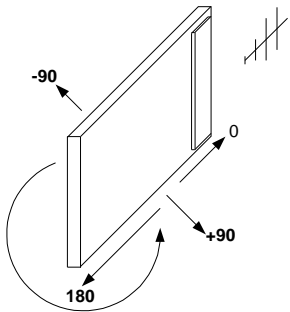
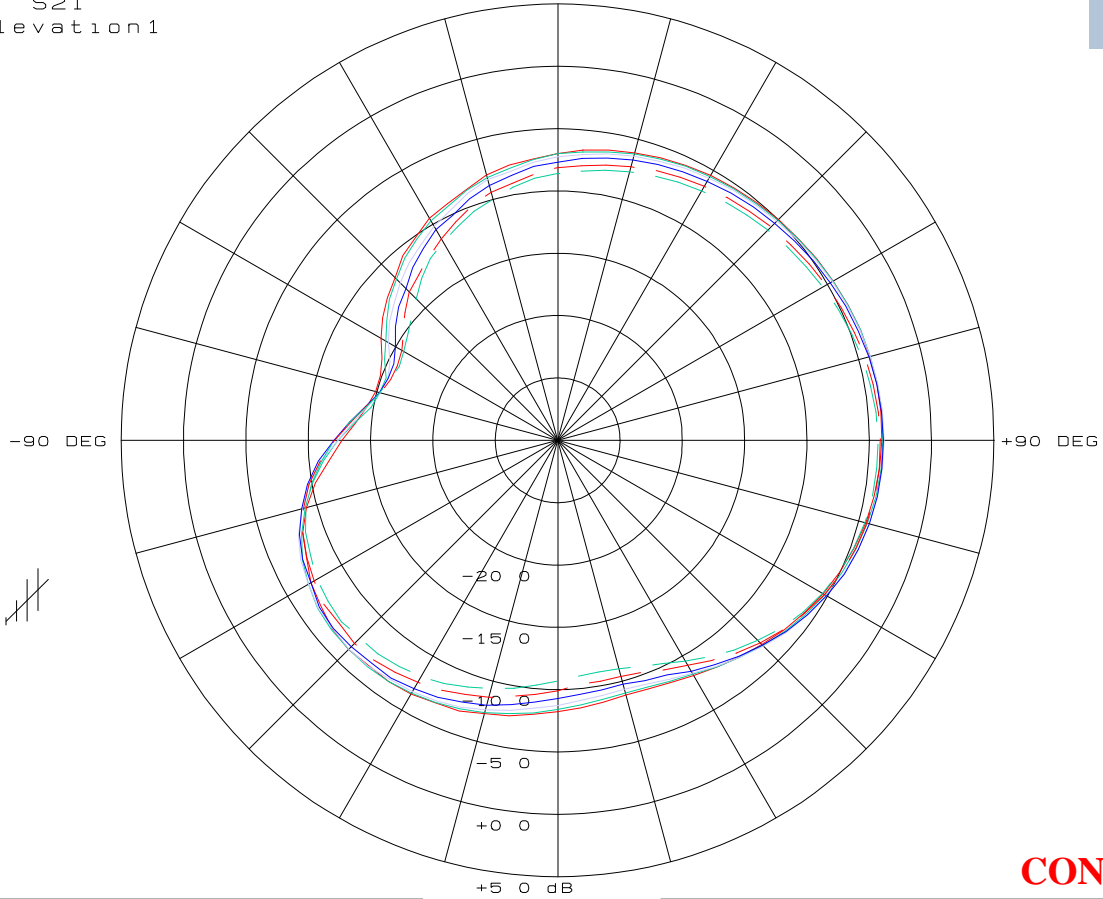
Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1560 00	<span style="color:red">—</span>	+40 00	-2 38
1565 00	<span style="color:green">—</span>	+40 00	-2 15
1570 00	<span style="color:blue">—</span>	+40 00	-1 92
1575 00	<span style="color:purple">—</span>	+40 00	-1 77

Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1580 00	<span style="color:red">—</span>	+40 00	-1 86
1585 00	<span style="color:green">—</span>	+40 00	-1 96

File NEW ASH27763 csv  
 Date 5/7/03  
 Time 3 32PM  
 Operator LUIS  
 S/N  
 Channel S21  
 Rotation Elevation1

DUT Description  
 TRIMBLE REV 2  
 Pol Horizontal  
 0 DEG

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



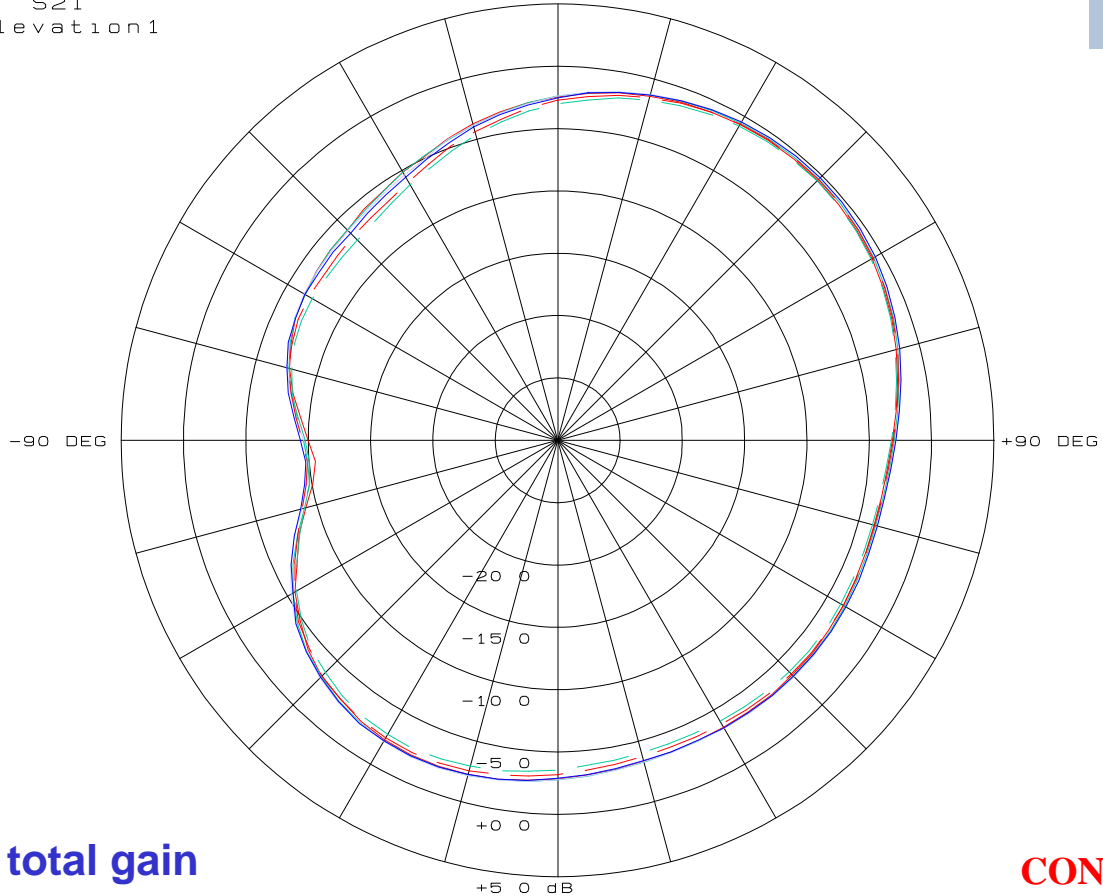
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Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1560 00	—	+85 00	-3 98
1565 00	—	+85 00	-3 89
1570 00	—	+90 00	-3 82
1575 00	—	+90 00	-3 87

Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1580 00	—	+95 00	-4 12
1585 00	—	+90 00	-4 30

File NEW ASH27763NEW ASH27084 Description  
 Date 5/7/03 TRIMBLE REV 2  
 Time 3 35PM  
 Operator LUIS Pol TOTAL  
 S/N 0 DEG  
 Channel S21  
 Rotation Elevation1

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



**Elevation 1 total gain**

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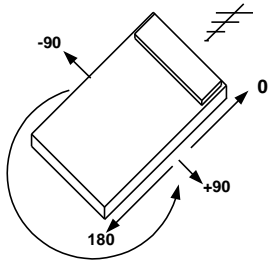
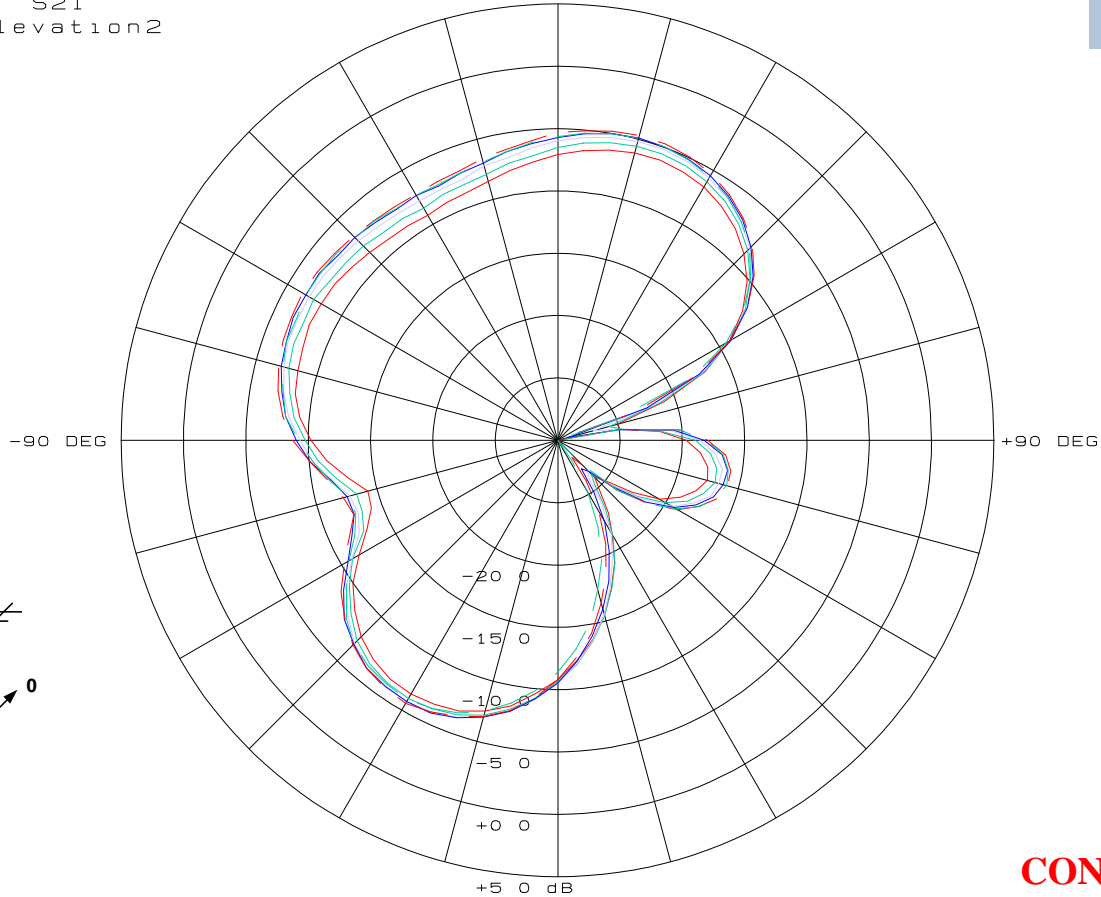
Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1560 00	<span style="color: red;">—</span>	+45 00	-0 52
1565 00	<span style="color: green;">—</span>	+45 00	-0 36
1570 00	<span style="color: blue;">—</span>	+45 00	-0 25
1575 00	<span style="color: cyan;">—</span>	+45 00	-0 22

Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1580 00	<span style="color: red;">—</span>	+45 00	-0 41
1585 00	<span style="color: green;">—</span>	+45 00	-0 58

File NEW ASH27765 csv  
 Date 5/7/03  
 Time 3 39PM  
 Operator LUIS  
 S/N  
 Channel S21  
 Rotation Elevation2

DUT Description  
 TRIMBLE REV 2  
 Pol Vertical  
 0 DEG

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



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Freq (MHz)	Trace	Beam Peak Deg	Beam Peak dB
1560 00	<span style="color: red;">—</span>	+20 00	-6 07
1565 00	<span style="color: green;">—</span>	+20 00	-5 56
1570 00	<span style="color: blue;">—</span>	+15 00	-5 17
1575 00	<span style="color: purple;">—</span>	+15 00	-4 89

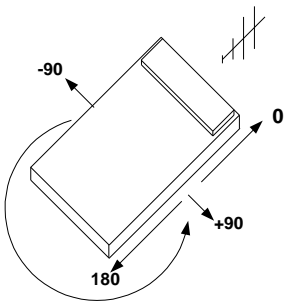
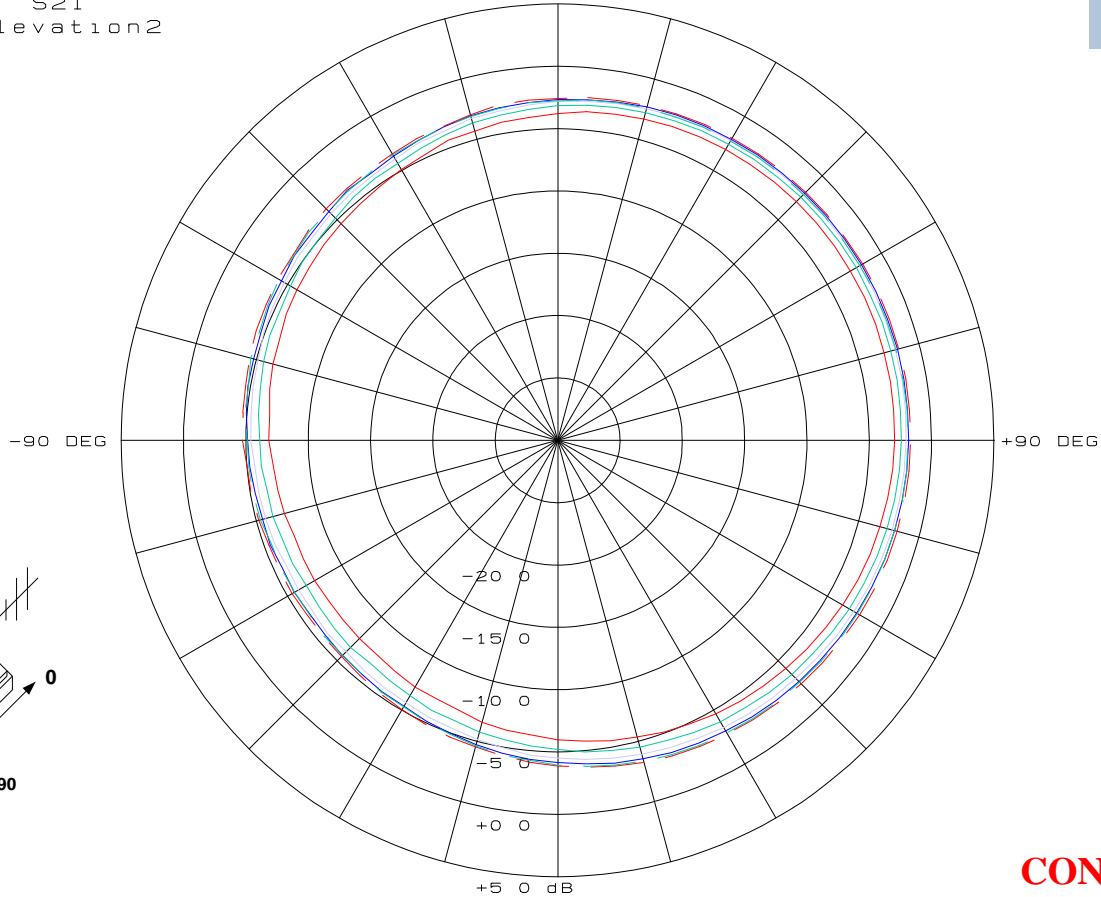
Freq (MHz)	Trace	Beam Peak Deg	Beam Peak dB
1580 00	<span style="color: red;">—</span>	+15 00	-4 70
1585 00	<span style="color: green;">—</span>	+15 00	-4 91



File NEW ASH27766 csv  
 Date 5/7/03  
 Time 3 42PM  
 Operator LUIS  
 S/N  
 Channel S21  
 Rotation Elevation2

DUT Description  
 TRIMBLE REV 2  
 Pol Horizontal  
 0 DEG

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



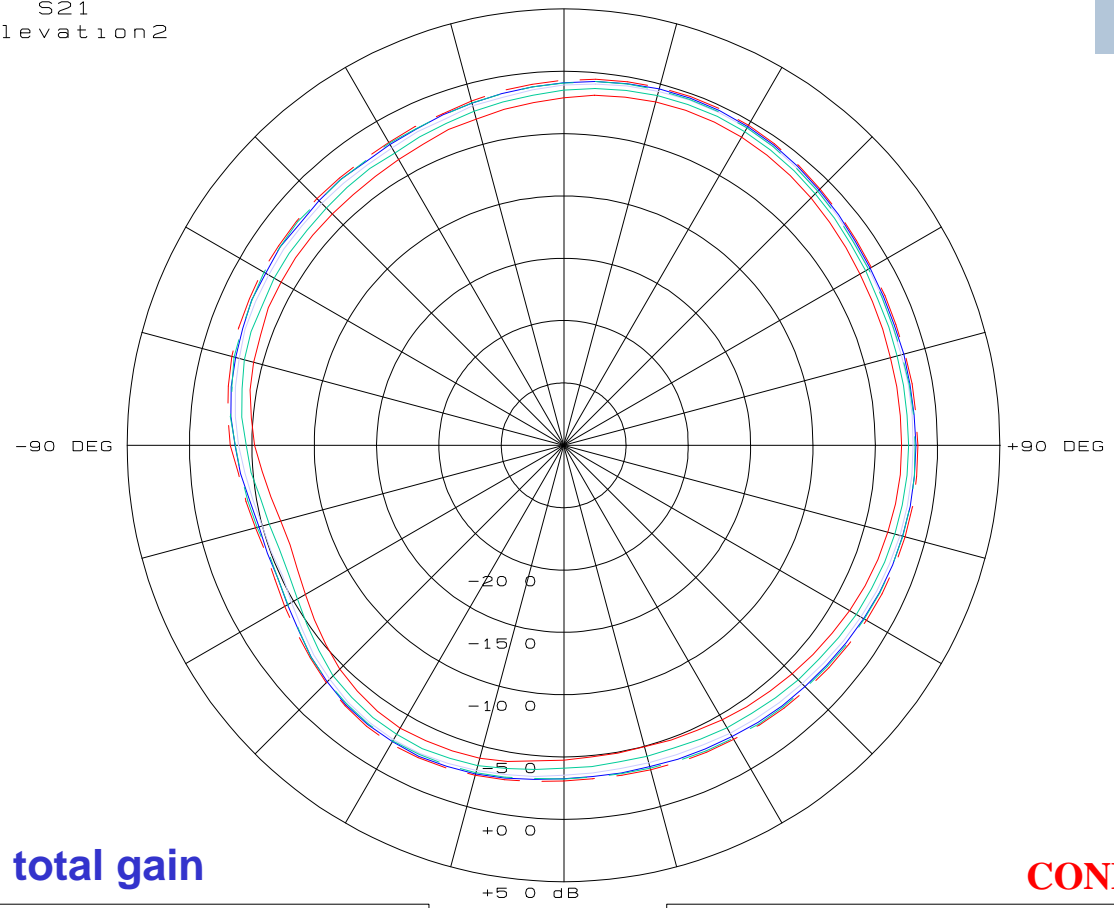
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Freq (MHz)	Trace	Beam Peak Deg	Beam Peak dB
1560 00	<span style="color: red;">—</span>	+70 00	-2 84
1565 00	<span style="color: green;">—</span>	+70 00	-2 31
1570 00	<span style="color: blue;">—</span>	+80 00	-1 96
1575 00	<span style="color: purple;">—</span>	+75 00	-1 78

Freq (MHz)	Trace	Beam Peak Deg	Beam Peak dB
1580 00	<span style="color: red;">—</span>	+80 00	-1 65
1585 00	<span style="color: green;">—</span>	+85 00	-1 88

File NEW ASH27765NEW ASH27086 Description  
 Date 5/7/03 TRIMBLE REV 2  
 Time 3 42PM  
 Operator LUIS Pol TOTAL  
 S/N 0 DEG  
 Channel S21  
 Rotation Elevation2

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



**Elevation 2 total gain**

**CONFIDENTIAL**

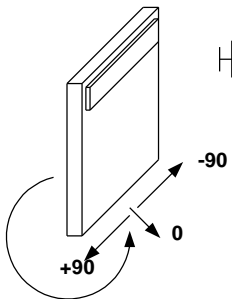
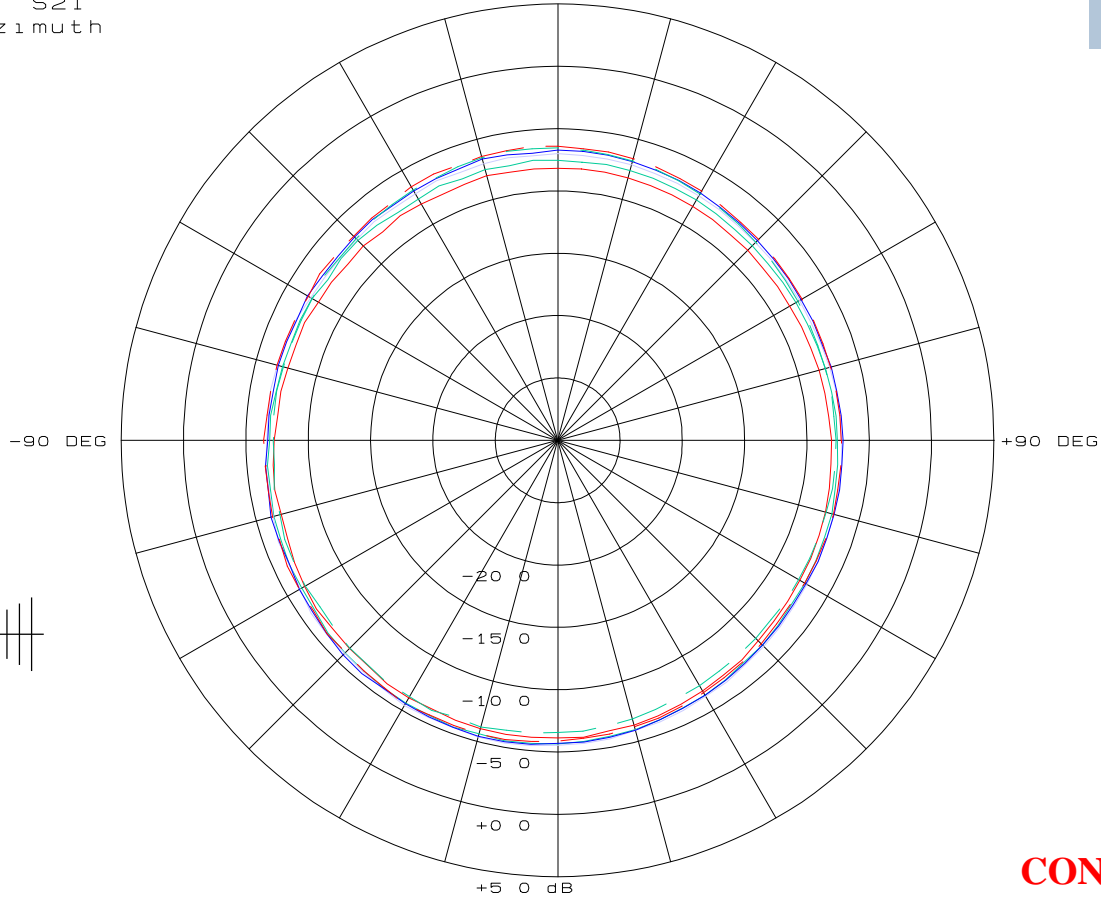
Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1560 00	<span style="color: red;">—</span>	+20 00	-1 39
1565 00	<span style="color: green;">—</span>	+25 00	-0 88
1570 00	<span style="color: blue;">—</span>	+20 00	-0 52
1575 00	<span style="color: cyan;">—</span>	+20 00	-0 37

Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1580 00	<span style="color: red;">—</span>	+20 00	-0 23
1585 00	<span style="color: green;">—</span>	+20 00	-0 48

File NEW ASH27767 csv  
 Date 5/7/03  
 Time 3 45PM  
 Operator LUIS  
 S/N  
 Channel S21  
 Rotation Azimuth

DUT Description  
 TRIMBLE REV 2  
 Pol Vertical  
 0 DEG

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



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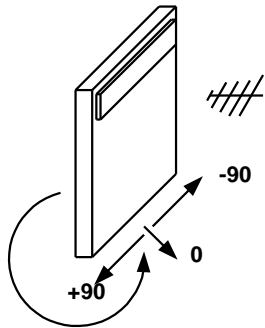
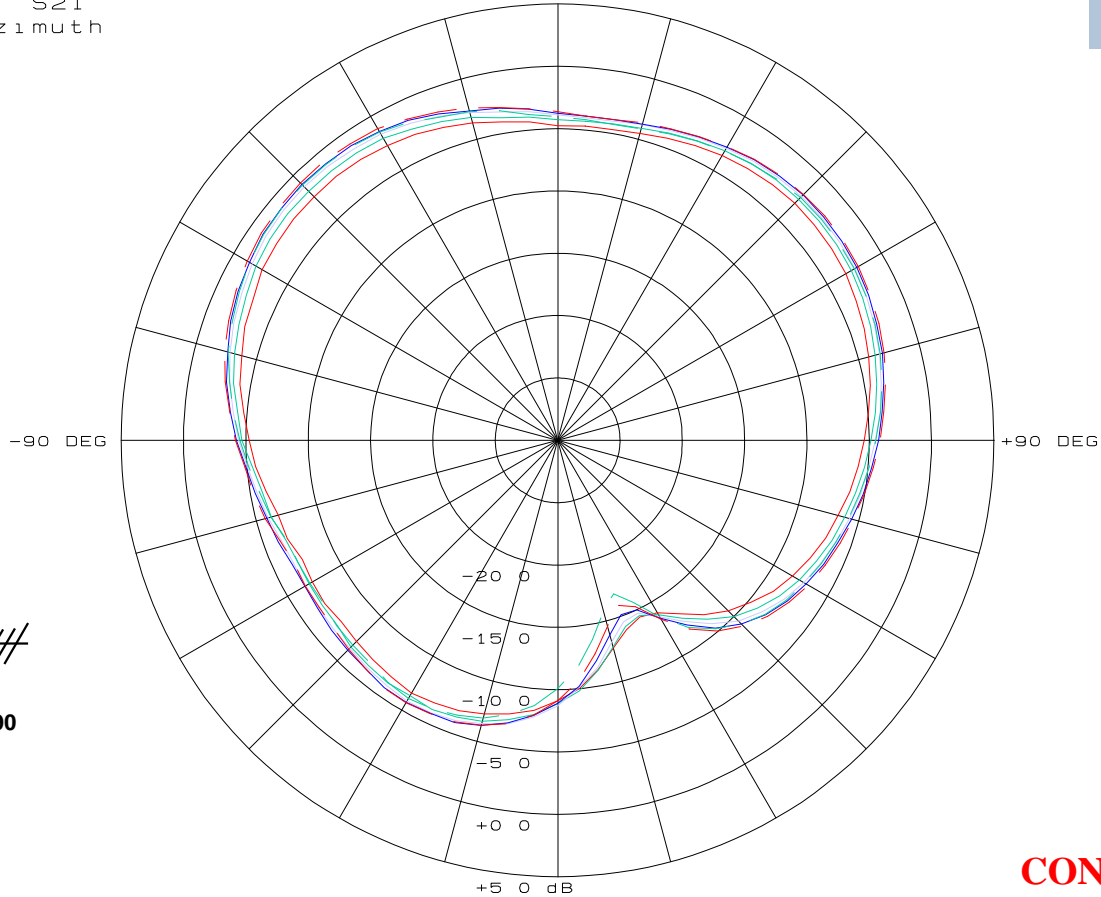
Freq (MHz)	Trace	Beam Deg	Peak dB
1560 00	<span style="color: red;">—</span>	+190 00	-6 04
1565 00	<span style="color: green;">—</span>	+190 00	-5 52
1570 00	<span style="color: blue;">—</span>	+190 00	-5 34
1575 00	<span style="color: purple;">—</span>	+195 00	-5 41

Freq (MHz)	Trace	Beam Deg	Peak dB
1580 00	<span style="color: red;">—</span>	+210 00	-5 55
1585 00	<span style="color: green;">—</span>	+205 00	-6 11

File NEW ASH27768 csv  
 Date 5/7/03  
 Time 3 48PM  
 Operator LUIS  
 S/N  
 Channel S21  
 Rotation Azimuth

DUT Description  
 TRIMBLE REV 2  
 Pol Horizontal  
 0 DEG

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



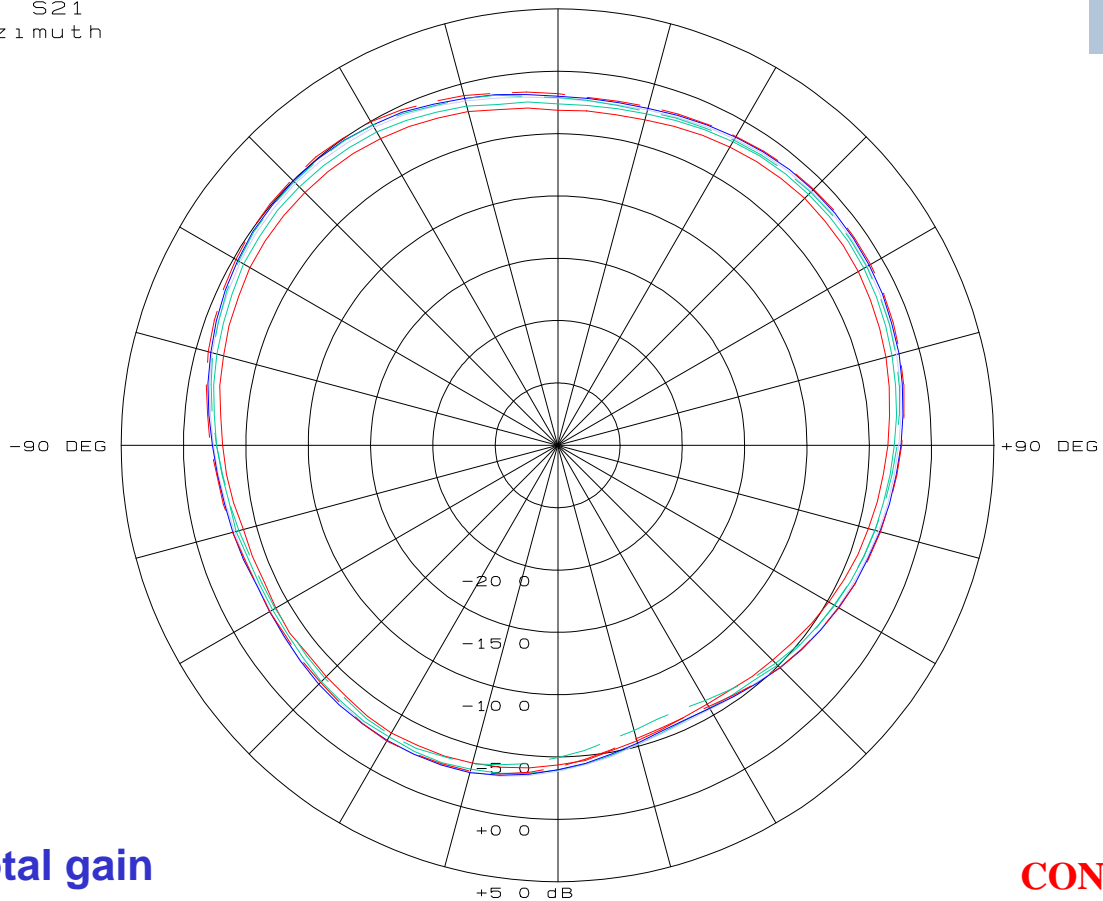
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Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1560 00	—	+320 00	-2 36
1565 00	—	+310 00	-1 72
1570 00	—	+315 00	-1 25
1575 00	—	+315 00	-0 98

Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1580 00	—	+320 00	-0 81
1585 00	—	+315 00	-1 06

File NEW ASH27767NEW ASH27088 Description  
 Date 5/7/03 TRIMBLE REV 2  
 Time 3 48PM  
 Operator LUIS Po1 TOTAL  
 S/N 0 DEG  
 Channel S21  
 Rotation Azimuth

RangeStar BC#2  
 Automated Antenna  
 and Cellphone  
 Measurement System



**Azimuth total gain**

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Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1560 00	—	+315 00	-1 32
1565 00	—	+310 00	-0 67
1570 00	—	+315 00	-0 27
1575 00	—	+315 00	-0 00

Freq (MHz)	Trace	Beam Peak Deg	Peak dB
1580 00	—	+320 00	+0 17
1585 00	—	+315 00	-0 10

