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**Engineering Statement
Digital Flash Cut Application for K29AZ
Channel 29 at Newport, OR
March 2010**

This Engineering Statement has been prepared on behalf of KING Broadcasting Company, licensee of TV translator station K29AZ at Newport, Oregon. This material has been prepared in connection with an application for digital flash cut.

I. Allocation Study

Study has been made of all cochannel and adjacent-channel facilities in the vicinity of the proposed operation, including a detailed Longley-Rice interference study to demonstrate that the proposed operation will not cause interference to any facilities with which contour overlap exists. This study was performed using the SunDTV program from V-Soft Communications and a 1 km grid spacing. The SunDTV program identically duplicates the FCC's OET-69 processing program.

The results of this study indicate that the proposed facility is predicted to cause zero additional interference to any of the listed stations. (It is noted that the attached study was run at higher power than is being requested in the application.)

Based on the foregoing allocation and interference study, it is believed that the proposed facility can operate without risk of interference to other stations.

Summary Study

Census data selected: 2000

Post DTV Transition Database Selected

TV INTERFERENCE and SPACING ANALYSIS PROGRAM

Record Selected for Analysis

K29AZ USERRECORD-02 NEWPORT OR US
 Channel 29 ERP 15. kW HAAT 316. m RCAMSL 00364 m STRINGENT MASK
 Latitude 044-45-23 Longitude 0124-02-55
 Status APP Zone 2 Border
 Dir Antenna Make usr Model USRPAT02 Beam tilt N Ref Azimuth 0.
 Last update Cutoff date Docket
 Comments
 Applicant

Cell Size for Service Analysis 1.0 km/side

Distance Increments for Longley-Rice Analysis 1.00 km

Not full service station

Facility meets maximum power limit

Azimuth (Deg)	ERP (kW)	HAAT (m)	51.0 dBu F(50,90) (km)
0.0	14.259	325.5	56.5
45.0	6.574	259.8	48.9
90.0	0.389	263.6	34.1
135.0	5.125	267.8	48.0
180.0	15.000	316.1	56.3
225.0	2.276	364.0	48.5
270.0	0.094	364.0	29.6
315.0	1.580	364.0	46.4

Contour Overlap to Proposed Station

Contour Overlap Evaluation to Proposed Station Complete

LANDMOBILE SPACING VIOLATIONS FOUND

NONE

Proposed facility OK to FCC Monitoring Stations

Proposed facility OK toward West Virginia quiet zone

Proposed facility OK toward Table Mountain

Proposed facility is within the Canadian coordination distance
Distance to border = 387.3km

Proposed facility is beyond the Mexican coordination distance

Proposed station is OK toward AM broadcast stations

Start of Interference Analysis

Channel	Proposed Station Call	City/State	ARN
29	K29AZ	NEWPORT OR	USERRECORD02

Stations Potentially Affected by Proposed Station

Chan	Call	City/State	Dist(km)	Status	Application	Ref. No.
28	NEW	: EUGENE OR	114.1	APP	BNPDTL	-20090825BHT
28	K28FP	ASTORIA OR	170.4	CP	BDFCDTL	-20090102ACL
28	K28FP	ASTORIA OR	170.4	LIC	BLTTL	-19990727JG
28	NEW	EUGENE OR	112.5	APP	BNPDTL	-20090825BFA
28	NEW	EUGENE OR	112.0	APP	BNPDTL	-20090825BEO
28	K28IH-D	RAINIER OR	182.1	LIC	BLDTT	-20091103AAJ
28	K25FG	ROSEBURG OR	178.8	CP	BDISDTL	-20090325AMA
28	KOXI-LD	CAMAS WA	133.0	CP	BDCCDTL	-20061025ADJ
29	KEPB-TV	EUGENE OR	112.0	LIC	BLEDT	-20050127AHY
29	K55CM	GOLD BEACH OR	259.1	APP	BDISDTT	-20090824AFE
29	K36HL	GRANTS PASS OR	267.8	CP	BDISDTT	-20060331AJV
29	KDKF	KLAMATH FALLS OR	354.1	LIC	BLCDT	-20080215APO
29	K29GX	MERLIN OR	236.8	LIC	BLTT	-20060927AAA
29	K29GX	MERLIN OR	236.8	CP	BDFCDTT	-20090824AAU
29	K29CI	PRINEVILLE, ETC. OR	251.4	LIC	BLTT	-19911031SK
29	K67AD	THE DALLES OR	252.9	CP	BDISTT	-20071121ACT
29	K29IA-D	CENTRALIA, ETC. WA	214.2	LIC	BLDTT	-20090618ABC
29	NEW	ELLENBURG WA	380.6	APP	BNPDTL	-20090825AKK
29	NEW	ELLENSBURG WA	370.0	APP	BNPDTL	-20090825AEN
29	K29ED	EVERETT WA	387.3	CP	BDFCDTT	-20060309AAN
29	K29ED	EVERETT WA	386.9	LIC	BLTT	-20071221AAA
29	K29ED	EVERETT WA	386.9	APP	BSTA	-20060602AAA
29	K63AW	GRAYS RIVER WA	193.4	CP	BDISTT	-20061212ABF
30	K30BN	COOS BAY OR	151.8	LIC	BLTT	-20030725ADE
30	K30BN	COOS BAY OR	151.7	CP	BDFCDTL	-20091102ACY
30	NEW	ROSEBURG OR	180.8	APP	BNPDTL	-20090825BHI
30	KPDX	VANCOUVER WA	132.8	CP MOD	BMPCDT	-20080619AGD
31	K31HK	RAINIER OR	182.1	LIC	BLTT	-20070502ABR
31	K31AE	SUTHERLIN OR	172.8	LIC	BLTT	-19970513JB
31	K59BX	GRAYS RIVER WA	193.4	CP	BDISTT	-20060328AGL
32	K32FI	YONCALLA OR	136.9	LIC	BLTTL	-20030124AGC
33	K33FE	ROSEBURG OR	180.9	LIC	BLTT	-20020503AAS
36	K36BX	COOS BAY OR	151.9	LIC	BLTT	-19890512IG
36	KXOR-LP	EUGENE OR	111.9	LIC	BLTTL	-20020806AAT
36	K36GU	ROCKAWAY & VICINITY OR	110.1	LIC	BLTT	-20030610AAE
36	KORS-CA	SALEM OR	75.6	LIC	BLTTA	-20020722ABK
36	KEVE-LP	LONGVIEW WA	181.3	LIC	BLTT	-19931202IF

Study of this proposal found the following interference problem(s):

NONE.

II. NIER Study

OET Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed translator operation will produce less than 5% of the applicable exposure limit for both controlled environments such as this one. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\text{mW} / \text{cm}^2) = \frac{33.40981 \times \text{AdjERP}(\text{Watts})}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

D is the distance in meters from the center of radiation to the calculation point.

Power density levels produced by the proposed Channel 29 translator were calculated for an elevation of 2 meters above ground (46 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 45 and 90 degrees below the horizontal. The calculations in this report assume a worst-case relative field value of 0.11 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Kathrein K723147 panel array (1 degree electrical beam tilt) proposed in this application. This relative field value yields a worst-case adjusted peak effective radiated power of 92 Watts at depression angles

between 45 and 90 degrees below the horizontal. Assuming this power level and the shortest distance between the antenna radiation center and 2 meters above ground level (i.e. straight down), the highest calculated power density from the proposed antenna alone occurs at the base of the antenna support structure. At this point the power density is calculated to be $1.5 \mu\text{W}/\text{cm}^2$, which is 0.4% of $375 \mu\text{W}/\text{cm}^2$ (the FCC maximum for uncontrolled environments at the Channel 29 frequency).

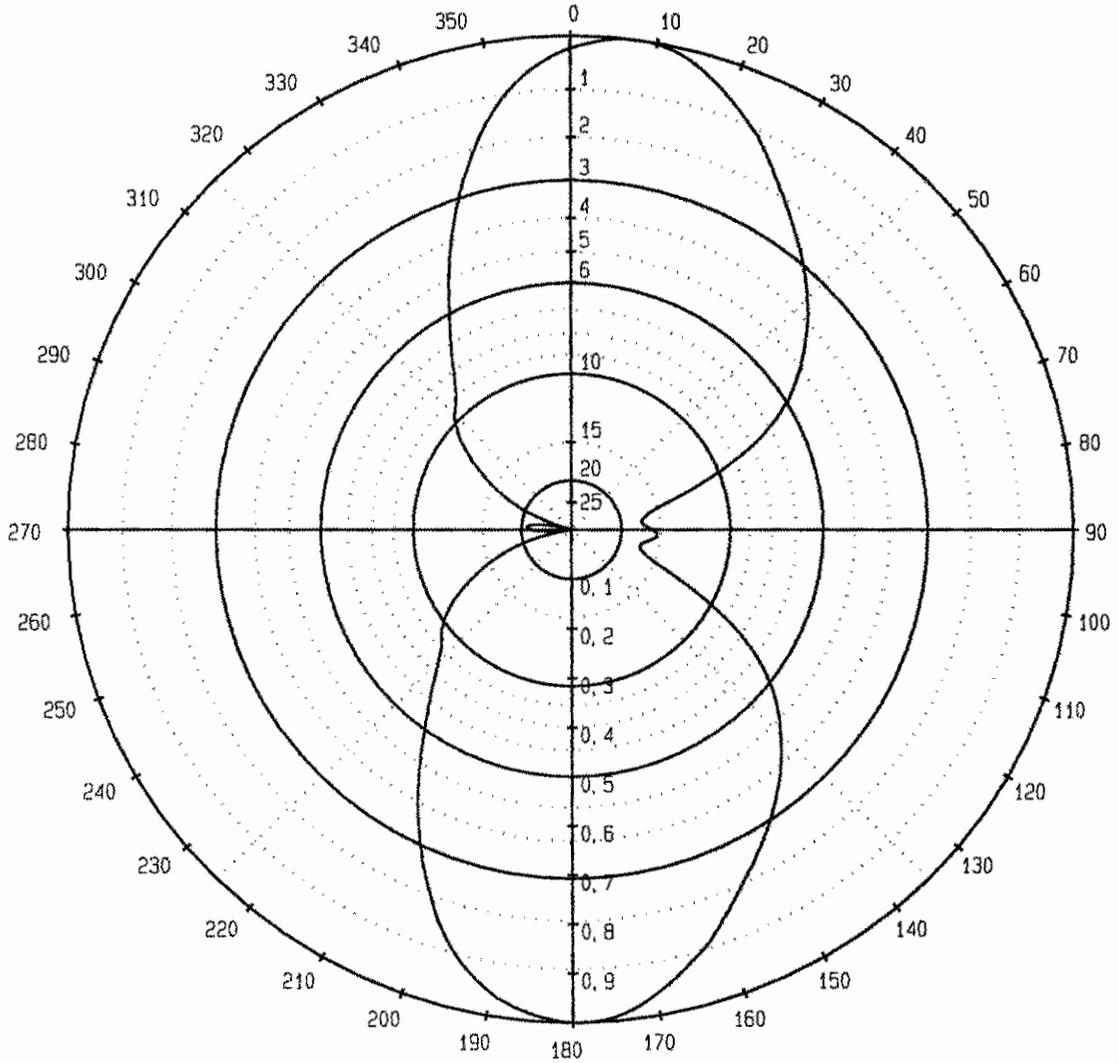
These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed translator operation alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 et seq and no further analysis of non-ionizing radiation at this site is required in this application.

Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken. The site and tower will be posted with warning signs.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.

March 22, 2010

Erik C. Swanson, P.E.



frequency in MHz 561.250
 down-tilt in ° 1.0
 max / mean in dB 4.48

KGW ch 29 Newport (Norcom)

SCALA Medford Oregon	4x2 K723147 BB Panel array	Typ Nr.
m; 20.1.** 9:33	1 deg EDT, 1st and 2nd Null Fill	B1.:

simulation with typical exactness of +/- 8% of max signal

Azimuth Radiation Pattern in % and dB at downtilt: .0

f = 561.250MHz

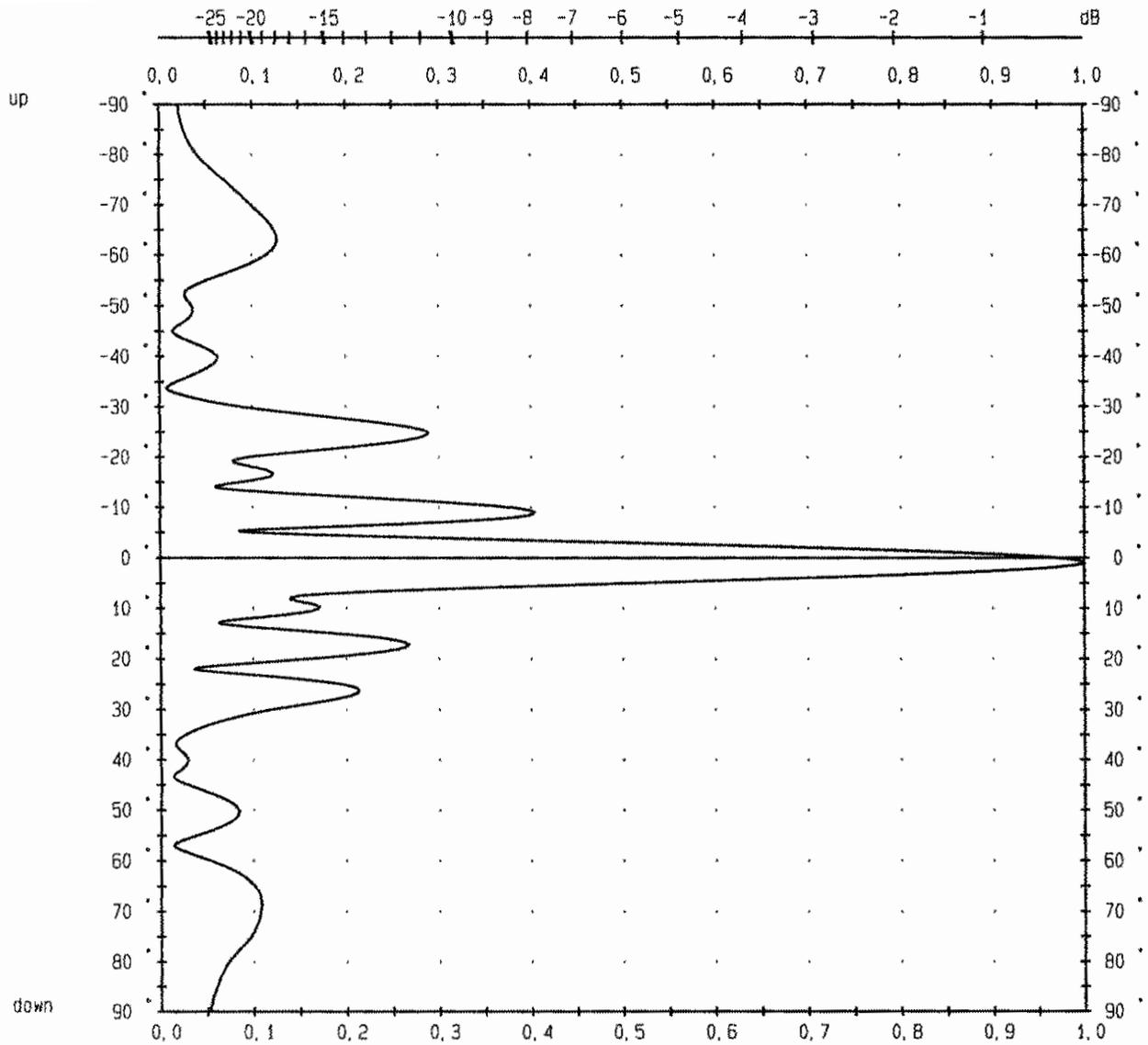
azimuth	%	dB	azimuth	%	dB
0	97.5	-.2	180	100.0	.0
5	99.6	.0	185	98.5	-.1
10	99.8	.0	190	95.2	-.4
15	97.3	-.2	195	89.6	-.9
20	92.9	-.6	200	81.3	-1.8
25	87.8	-1.1	205	71.6	-2.9
30	81.8	-1.7	210	61.6	-4.2
35	76.4	-2.3	215	51.8	-5.7
40	71.4	-2.9	220	43.9	-7.1
45	66.4	-3.6	225	37.7	-8.5
50	61.0	-4.3	230	34.0	-9.4
55	55.1	-5.2	235	30.9	-10.2
60	48.3	-6.3	240	26.2	-11.6
65	39.1	-8.2	245	20.5	-13.7
70	27.6	-11.2	250	15.2	-16.4
75	18.3	-14.8	255	9.1	-20.8
80	14.7	-16.6	260	1.7	-35.2
85	14.2	-17.0	265	4.1	-27.7
90	16.1	-15.8	270	7.9	-22.0
95	17.0	-15.4	275	8.8	-21.1
100	14.8	-16.6	280	5.8	-24.7
105	14.1	-17.0	285	.9	-40.8
110	16.3	-15.7	290	6.1	-24.3
115	23.4	-12.6	295	12.8	-17.8
120	34.6	-9.2	300	18.5	-14.7
125	45.0	-6.9	305	24.0	-12.4
130	52.6	-5.6	310	29.1	-10.7
135	58.6	-4.6	315	33.0	-9.6
140	64.3	-3.8	320	35.8	-8.9
145	69.4	-3.2	325	41.3	-7.7
150	74.4	-2.6	330	48.4	-6.3
155	79.5	-2.0	335	57.7	-4.8
160	85.4	-1.4	340	67.6	-3.4
165	90.8	-.8	345	77.4	-2.2
170	95.7	-.4	350	86.6	-1.3
175	99.1	-.1	355	93.3	-.6
180	100.0	.0	360	97.5	-.2

maximum fieldstrength was found at:

azimuth 179.
downtilt 0.

KGW ch 29 Newport (Norcom)

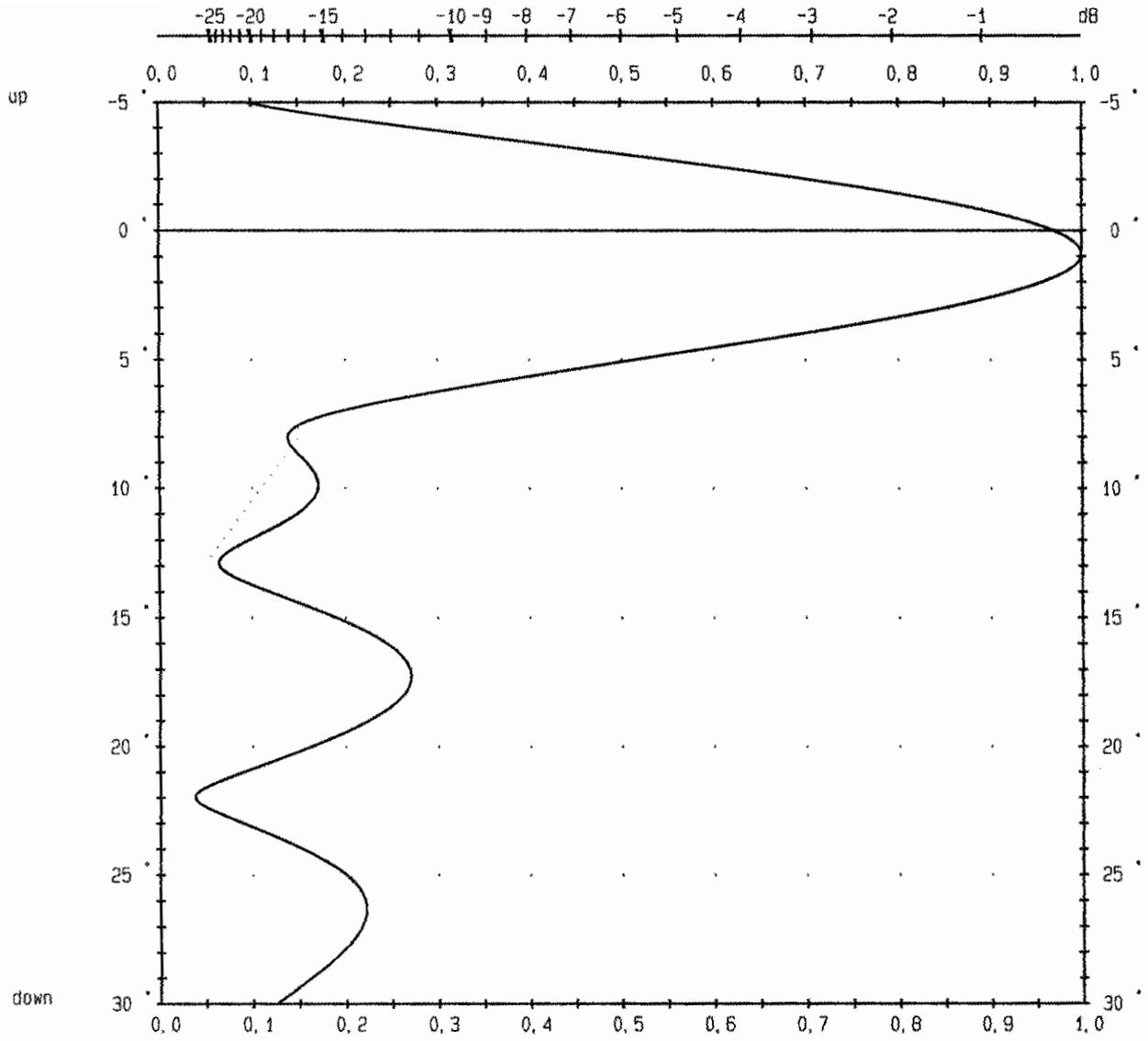
SCALE Medford Oregon m) 20.1.** 9:30	4x2 K723147 BB Panel array	Typ Nr.
	1 deg EDT, 1st and 2nd Null Fill	Bl.:



frequency in MHz 561.250
 azimuth in .0
 omni-dir in dBd 9.36

KGW ch 29 Newport (Norcom)

<p>SCALA Medford Oregon</p>	<p>4x2 K723147 BB Panel array</p>	<p>Typ Nr.</p>
<p>m) 20.1.** 9:32</p>	<p>1 deg EDT, 1st and 2nd Null Fill</p>	<p>Bl.:</p>



frequency in MHz 561.250
 azimuth in ° .0
 omni-dir in dBd

KGW ch 29 Newport (Norcom)

SCALA Medford Oregon	4x2 K723147 BB Panel array	Typ Nr.
mj 20.1.** 9:33	1 deg EDT, 1st and 2nd Null Fill	81.:

Dimensions and Feeding of Antenna System
antenna type: K72314. 4 dipole panel 470-860 MHZ

operating f in MHz : 561.250 .000 .000 .000 .000
operating channels : 29 0 0 0 0
database f in MHz : 550
max. azimuth angle 180 max. declination 90 cable design frequency: 561.250 MHz
compensation in % : 27.14 .00 .00 .00 .00

bay height	v-feed power	cab-ph	fix-ph panel	azipos	azidir	radius	tanoff	radoff	tilt	power	cab-ph	fix-ph	
4	3450	1.0	27.0	.0	1	12.0	12.0	165.0	.0	.0	.0	1.0	.0
					2	175.0	175.0	165.0	.0	.0	.0	1.0	.0
3	2300	1.0	57.6	.0	1	12.0	12.0	165.0	.0	.0	.0	1.0	.0
					2	175.0	175.0	165.0	.0	.0	.0	1.0	.0
2	1150	1.0	8.4	.0	1	12.0	12.0	165.0	.0	.0	.0	1.0	.0
					2	175.0	175.0	165.0	.0	.0	.0	1.0	.0
1	0	1.0	.0	.0	1	12.0	12.0	165.0	.0	.0	.0	1.0	.0
					2	175.0	175.0	165.0	.0	.0	.0	1.0	.0

Directivity from HRP and zoomed VRP

operating f in MHz : 561.250 .000 .000 .000 .000
operating channel : 29 0 0 0 0
HRP max/mean in dB : 4.48 .00 .00 .00 .00
VRP omnidir in dB : 9.36 .00 .00 .00 .00
directivity in dB : 13.84 .00 .00 .00 .00
harness losses : -.21 .00 .00 .00 .00
gain in dB : 13.63 .00 .00 .00 .00 ← peak gain in dB

allow +/-0.5 dB tolerance for pattern variations

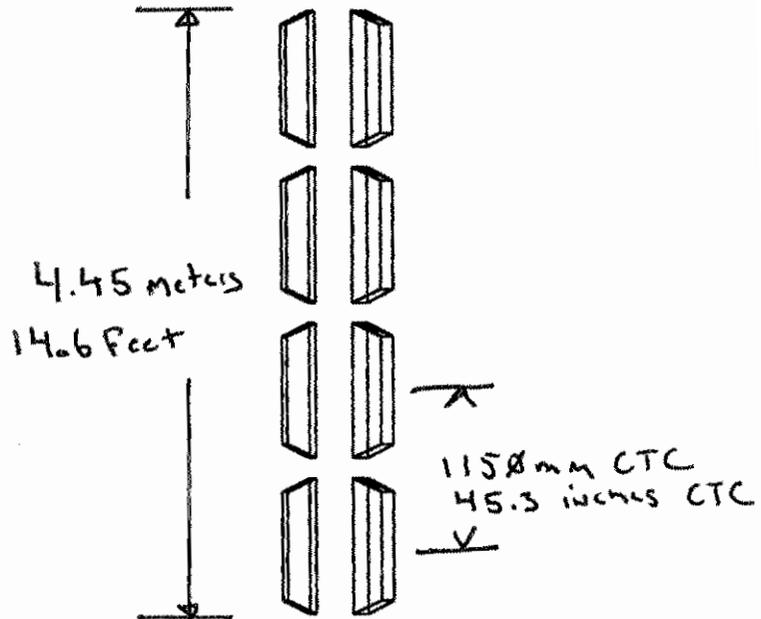
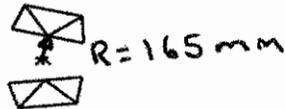
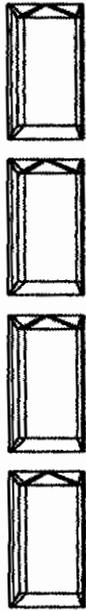
harness parameters at cable design frequency:

bay feeder : 4.0 m Cellflex 1/2" (a = -.21 dB)
antenna cable: .0 m Cellflex 1/2" (a = .00 dB)

KGW ch 29 Newport (Norcom)

SCALA Medford Oregon	4x2 K723147 BB Panel array	Typ No.
	1 deg EDT, 1st and 2nd Null Fill	Bl.:

m] 20.1 ** 9:33



Weight = 264 pounds
Wind load @ 100MPH wind speed
= 1358 pounds

1 meter

mast size in mm 30. direction 0.
offset north 0. east 0.

KGW ch 29 Newport (Norcom)

SCALA Medford Oregon mj 20.1.** 9:35	4x2 K723147 BB Panel array	Typ Nr.
	1 deg EDT, 1st and 2nd Null Fill	Bl.: