

**T Z SAWYER TECHNICAL CONSULTANTS**

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LIVING FAITH MINISTRIES, INC.

DIGITAL TELEVISION STATION LICENSE

WLFB, CHANNEL 25

BLUEFIELD, WEST VIRGINIA

FACILITY ID: 37806

SEPTEMBER 2020

LICENSE TO COVER CONSTRUCTION PERMIT

WITH PERMISSIBLE ANTENNA CHANGE

NARRATIVE STATEMENT

The engineering exhibit, of which this narrative is part, was prepared on behalf of LIVING FAITH MINISTRIES, INC., in support of its station license application concerning Digital Television Station WLFB, Channel 25, Bluefield, West Virginia.

Permissible Antenna Change (Identical Antenna RF Radiation Characteristics)

The station has made a minor permissive change in the directional antenna specified in the construction permit as authorized in section 73.1690(c)(3) of the Commission's rules. The electrical characteristics of the antenna remain unchanged. Only the manufacturer's name and the antenna model number have changed.

The construction permit antenna was specified as a Dielectric (DIE) "TFU-26DSC P230" a standard off-the-shelf directional (peanut pattern) antenna employing 0.75 degrees of electrical beam tilt.

The station has installed an Electronic Research, Inc. (ERI) antenna model "ATW26H3-HSP230-25H" an electrically identical standard off-the-shelf directional (peanut pattern) antenna, employing an identical 0.75 degrees of electrical beam tilt.

As both antennas are electrically identical in performance (horizontal radiation azimuth pattern and vertical relative field values), and similar in physical size, no change in the antenna center of radiation height has occurred, or power output (ERP), the change is a permissive change under 47 C.F.R. §73.1690(c)(3).

The electrical details, radiation pattern and tabulations of values (as required to be filed with this application) are included herein as Appendix A.

Waivers/Special Conditions:

*“The grant of this construction permit is subject to the condition that, with ample time before commencing operation, you make a good faith effort to identify and notify health care facilities (e.g., hospitals, nursing homes, see 47 CFR 15.242(a)(1)) within your service area potentially affected by your DTV operations.”*

The permittee has complied with the “medical notice” special condition as required. It has been operating for several months using an interim operation on Channel 25 with no known interference issues from its operation.

There are no other “Special Conditions” on the construction permit. The facility is ready for licensing and has met all construction obligations.

Environmental Considerations (restated as a result of the antenna change):

The applicant believes its proposal will not significantly affect the environment for the following reasons:

The proposal does not meet any of the criteria specified in Section 1.1307 of the FCC Rules. More specifically, the proposed facilities are not known to fall within any of the categories enumerated in Sections 1.1307(a)(1)-(7) and will not involve the use of high-intensity white lights.

Furthermore, operation of the proposed facility will not involve the exposure of workers or the general public to levels of radiofrequency electromagnetic fields exceeding guidelines adopted by the Federal Communications Commission. (The current FCC guidelines are based upon criteria contained in the National Council of Radiation Protection and Measurements (NCRP) Report No.86 (1986) and ANSI/IEEE C95.1-1992.)

Based upon the antenna manufacturer's data, and a downward relative field value from the antenna of 0.15 for all angles 10 degrees and greater below the horizon, the calculated power density level 2-meters above ground near the base of the tower is predicted to be 0.204 mW/cm<sup>2</sup> or less. The computed power density is 11.35% of the Commission's guidelines for a worker/controlled area and 56.77% for a public/uncontrolled area.

The general public will not be exposed to RF levels attributable to the proposal in excess of the FCC's guidelines. RF exposure warning signs are posted at the site.

The applicant will coordinate exposure procedures with any co-located facilities and will reduce power or cease operation as necessary to protect persons having access to the site, tower, or antenna from RF electromagnetic field exposure in excess of FCC guidelines.

The proposed operation is fully in compliance with all areas of the Commission's rules and applicable international agreements.

September 21, 2020

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Timothy Z. Sawyer, Consulting  
Engineer

## APPENDIX A

ANTENNA DETAILS

WLFB, CHANNEL 25

BLUEFIELD, WV

MANUFACTURER: ERI

MODEL: ATW26H3-HSP230-25H

**PRELIMINARY SPECIFICATION FOR  
ERI TRASAR<sup>®</sup> HORIZONTALLY POLARIZED  
COAXIAL SLOTTED ARRAY ANTENNA**

*Prepared For*  
**LIVING FREE MINISTRIES**  
*Channel 25*  
**BLUEFIELD VA**  
*March 3, 2019*

**ANTENNA TYPE:**  
**ATW26H3-HSP230-25H**

**SPECIFICATION NO:**



**PRELIMINARY SPECIFICATION FOR  
ERI TRASAR® HORIZONTALLY POLARIZED  
COAXIAL SLOTTED ARRAY ANTENNA**

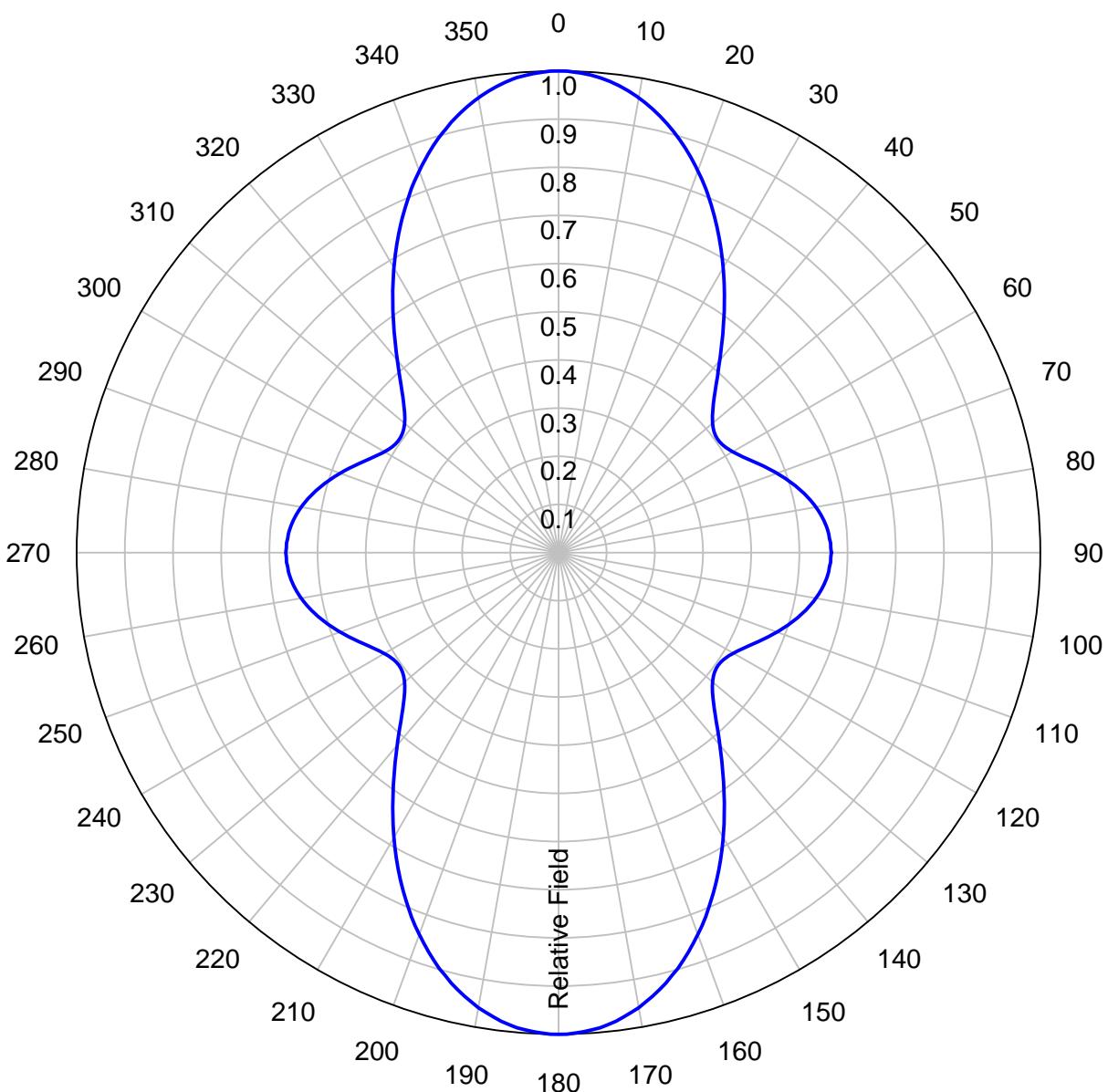
**ELECTRICAL CHARACTERISTICS:**

CHANNEL:	DTV:	25
FREQUENCY RANGE:	DTV:	536.00 - 542.00 MHz
AZIMUTH PATTERN NUMBER:	Hor Pol:	ATW-P230
ELEVATION PATTERN NUMBER:	Hor Pol:	ATW26H3H
AZIMUTH DIRECTIVITY:	Hor Pol:	2.30 (3.62 dB)
ELEVATION DIRECTIVITY:	Hor Pol:	26.00 (14.15 dBd)
PEAK POWER GAIN:	Hor Pol:	59.80 (17.77 dBd)
GAIN AT HORIZONTAL:	Hor Pol:	39.14 (15.93 dBd)
ELECTRICAL BEAM TILT:		-0.75 Degrees
INPUT POWER REQUIRED:		12.274 kW Average Power, 8VSB Digital
MAXIMUM INPUT POWER:		CONTACT ERI
INPUT TYPE:		CONTACT ERI
ANTENNA VSWR (MAXIMUM):	DTV:	1.10 Over 6 MHz of Channel

*Preliminary, subject to final design and review.*

**AZIMUTH PATTERN****Type:****ATW-P230****Directivity:  
Peak(s) at:****Numeric  
2.30****dBd  
3.62****Channel:****25****Location:****BLUEFIELD VA****Polarization:****Horizontal**

Note: Pattern shape and directivity may vary with channel and mounting configuration.



*Preliminary, subject to final design and review.*

**TABULATED DATA FOR AZIMUTH PATTERN**

Type ATW-P230

Polarization Horizontal

ANGLE	FIELD	dB									
0	1.000	0.00	92	0.565	-4.96	184	0.993	-0.06	276	0.557	-5.08
2	0.998	-0.02	94	0.562	-5.01	186	0.985	-0.13	278	0.551	-5.18
4	0.993	-0.06	96	0.557	-5.08	188	0.973	-0.24	280	0.542	-5.32
6	0.985	-0.13	98	0.551	-5.18	190	0.959	-0.36	282	0.533	-5.47
8	0.973	-0.24	100	0.542	-5.32	192	0.941	-0.53	284	0.522	-5.65
10	0.959	-0.36	102	0.533	-5.47	194	0.921	-0.71	286	0.509	-5.87
12	0.941	-0.53	104	0.522	-5.65	196	0.898	-0.93	288	0.496	-6.09
14	0.921	-0.71	106	0.509	-5.87	198	0.872	-1.19	290	0.482	-6.34
16	0.898	-0.93	108	0.496	-6.09	200	0.844	-1.47	292	0.468	-6.60
18	0.872	-1.19	110	0.482	-6.34	202	0.815	-1.78	294	0.454	-6.86
20	0.844	-1.47	112	0.468	-6.60	204	0.783	-2.12	296	0.440	-7.13
22	0.815	-1.78	114	0.454	-6.86	206	0.751	-2.49	298	0.428	-7.37
24	0.783	-2.12	116	0.440	-7.13	208	0.717	-2.89	300	0.418	-7.58
26	0.751	-2.49	118	0.428	-7.37	210	0.683	-3.31	302	0.411	-7.72
28	0.717	-2.89	120	0.418	-7.58	212	0.649	-3.76	304	0.406	-7.83
30	0.683	-3.31	122	0.411	-7.72	214	0.615	-4.22	306	0.406	-7.83
32	0.649	-3.76	124	0.406	-7.83	216	0.582	-4.70	308	0.409	-7.77
34	0.615	-4.22	126	0.406	-7.83	218	0.550	-5.19	310	0.417	-7.60
36	0.582	-4.70	128	0.409	-7.77	220	0.520	-5.68	312	0.430	-7.33
38	0.550	-5.19	130	0.417	-7.60	222	0.493	-6.14	314	0.447	-6.99
40	0.520	-5.68	132	0.430	-7.33	224	0.468	-6.60	316	0.468	-6.60
42	0.493	-6.14	134	0.447	-6.99	226	0.447	-6.99	318	0.493	-6.14
44	0.468	-6.60	136	0.468	-6.60	228	0.430	-7.33	320	0.520	-5.68
46	0.447	-6.99	138	0.493	-6.14	230	0.417	-7.60	322	0.550	-5.19
48	0.430	-7.33	140	0.520	-5.68	232	0.409	-7.77	324	0.582	-4.70
50	0.417	-7.60	142	0.550	-5.19	234	0.406	-7.83	326	0.615	-4.22
52	0.409	-7.77	144	0.582	-4.70	236	0.406	-7.83	328	0.649	-3.76
54	0.406	-7.83	146	0.615	-4.22	238	0.411	-7.72	330	0.683	-3.31
56	0.406	-7.83	148	0.649	-3.76	240	0.418	-7.58	332	0.717	-2.89
58	0.411	-7.72	150	0.683	-3.31	242	0.428	-7.37	334	0.751	-2.49
60	0.418	-7.58	152	0.717	-2.89	244	0.440	-7.13	336	0.783	-2.12
62	0.428	-7.37	154	0.751	-2.49	246	0.454	-6.86	338	0.815	-1.78
64	0.440	-7.13	156	0.783	-2.12	248	0.468	-6.60	340	0.844	-1.47
66	0.454	-6.86	158	0.815	-1.78	250	0.482	-6.34	342	0.872	-1.19
68	0.468	-6.60	160	0.844	-1.47	252	0.496	-6.09	344	0.898	-0.93
70	0.482	-6.34	162	0.872	-1.19	254	0.509	-5.87	346	0.921	-0.71
72	0.496	-6.09	164	0.898	-0.93	256	0.522	-5.65	348	0.941	-0.53
74	0.509	-5.87	166	0.921	-0.71	258	0.533	-5.47	350	0.959	-0.36
76	0.522	-5.65	168	0.941	-0.53	260	0.542	-5.32	352	0.973	-0.24
78	0.533	-5.47	170	0.959	-0.36	262	0.551	-5.18	354	0.985	-0.13
80	0.542	-5.32	172	0.973	-0.24	264	0.557	-5.08	356	0.993	-0.06
82	0.551	-5.18	174	0.985	-0.13	266	0.562	-5.01	358	0.998	-0.02
84	0.557	-5.08	176	0.993	-0.06	268	0.565	-4.96	360	1.000	0.00
86	0.562	-5.01	178	0.998	-0.02	270	0.566	-4.94			
88	0.565	-4.96	180	1.000	0.00	272	0.565	-4.96			
90	0.566	-4.94	182	0.998	-0.02	274	0.562	-5.01			

Preliminary, subject to final design and review.

**TABULATED DATA FOR AZIMUTH PATTERN  
FCC FILING FORMAT**

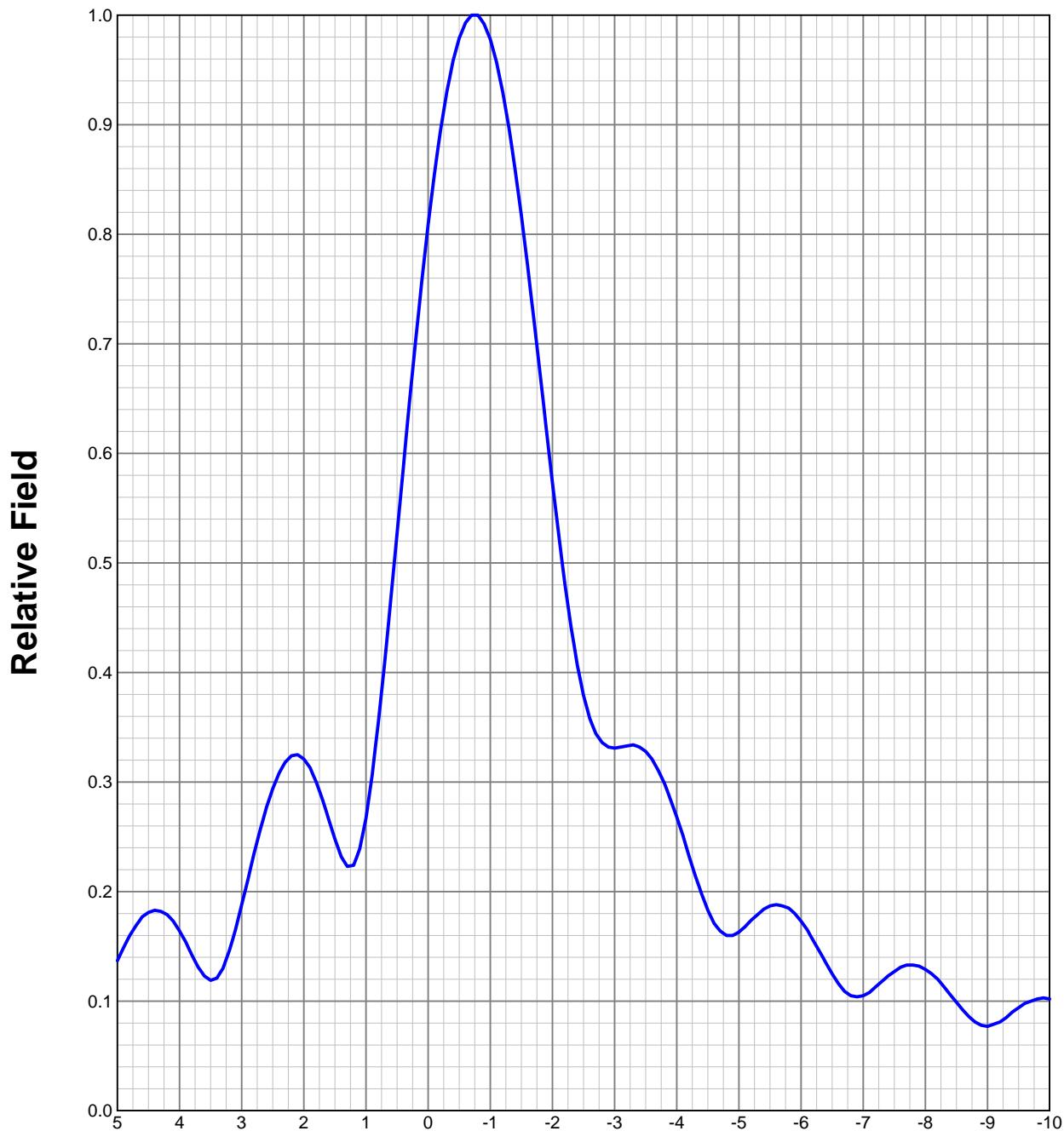
Type ATW-P230  
Polarization Horizontal

ANGLE	FIELD	ERP (kW)	ERP (dBk)
0	1.000	734.000	28.657
10	0.959	675.046	28.293
20	0.844	522.855	27.184
30	0.683	342.403	25.345
40	0.520	198.474	22.977
50	0.417	127.635	21.060
60	0.418	128.247	21.080
70	0.482	170.526	22.318
80	0.542	215.623	23.337
90	0.566	235.141	23.713
100	0.542	215.623	23.337
110	0.482	170.526	22.318
120	0.418	128.247	21.080
130	0.417	127.635	21.060
140	0.520	198.474	22.977
150	0.683	342.403	25.345
160	0.844	522.855	27.184
170	0.959	675.046	28.293
180	1.000	734.000	28.657
190	0.959	675.046	28.293
200	0.844	522.855	27.184
210	0.683	342.403	25.345
220	0.520	198.474	22.977
230	0.417	127.635	21.060
240	0.418	128.247	21.080
250	0.482	170.526	22.318
260	0.542	215.623	23.337
270	0.566	235.141	23.713
280	0.542	215.623	23.337
290	0.482	170.526	22.318
300	0.418	128.247	21.080
310	0.417	127.635	21.060
320	0.520	198.474	22.977
330	0.683	342.403	25.345
340	0.844	522.855	27.184
350	0.959	675.046	28.293

Preliminary, subject to final design and review.

**ELEVATION PATTERN**

Type:	<b>ATW26H3H</b>		Channel:	<b>25</b>
Directivity:	<b>Numeric</b>	<b>dBd</b>	Location:	<b>BLUEFIELD VA</b>
Main Lobe:	<b>26.00</b>	<b>14.15</b>	Beam Tilt:	<b>-0.75</b>
Horizontal:	<b>17.02</b>	<b>12.31</b>	Polarization:	<b>Horizontal</b>



*Preliminary, subject to final design and review.*

**TABULATED DATA FOR ELEVATION PATTERN**

Type: ATW26H3H  
 Polarization: Horizontal

ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB
5.00	0.137	-17.27	-6.75	0.107	-19.41	-27.00	0.039	-28.18	-50.50	0.021	-33.56
4.75	0.165	-15.68	-7.00	0.105	-19.58	-27.50	0.043	-27.33	-51.00	0.030	-30.46
4.50	0.181	-14.85	-7.25	0.115	-18.75	-28.00	0.036	-28.87	-51.50	0.039	-28.18
4.25	0.180	-14.87	-7.50	0.127	-17.92	-28.50	0.027	-31.37	-52.00	0.042	-27.54
4.00	0.164	-15.70	-7.75	0.133	-17.52	-29.00	0.030	-30.46	-52.50	0.039	-28.18
3.75	0.137	-17.30	-8.00	0.129	-17.79	-29.50	0.039	-28.18	-53.00	0.030	-30.46
3.50	0.119	-18.49	-8.25	0.116	-18.67	-30.00	0.041	-27.74	-53.50	0.021	-33.56
3.25	0.138	-17.20	-8.50	0.099	-20.09	-30.50	0.032	-29.90	-54.00	0.022	-33.15
3.00	0.188	-14.52	-8.75	0.083	-21.57	-31.00	0.025	-32.04	-54.50	0.032	-29.90
2.75	0.246	-12.18	-9.00	0.077	-22.27	-31.50	0.031	-30.17	-55.00	0.040	-27.96
2.50	0.294	-10.63	-9.25	0.083	-21.62	-32.00	0.039	-28.18	-55.50	0.044	-27.13
2.25	0.321	-9.87	-9.50	0.094	-20.54	-32.50	0.039	-28.18	-56.00	0.041	-27.74
2.00	0.321	-9.87	-9.75	0.101	-19.91	-33.00	0.030	-30.46	-56.50	0.034	-29.37
1.75	0.292	-10.69	-10.00	0.102	-19.83	-33.50	0.024	-32.40	-57.00	0.025	-32.04
1.50	0.248	-12.11	-10.50	0.084	-21.51	-34.00	0.031	-30.17	-57.50	0.021	-33.56
1.25	0.224	-13.01	-11.00	0.063	-24.01	-34.50	0.038	-28.40	-58.00	0.028	-31.06
1.00	0.267	-11.47	-11.50	0.072	-22.85	-35.00	0.038	-28.40	-58.50	0.037	-28.64
0.75	0.382	-8.36	-12.00	0.084	-21.51	-35.50	0.029	-30.75	-59.00	0.044	-27.13
0.50	0.527	-5.56	-12.50	0.074	-22.62	-36.00	0.023	-32.77	-59.50	0.046	-26.74
0.25	0.675	-3.41	-13.00	0.055	-25.19	-36.50	0.029	-30.75	-60.00	0.043	-27.33
0.00	0.809	-1.84	-13.50	0.058	-24.73	-37.00	0.038	-28.40	-60.50	0.036	-28.87
-0.25	0.913	-0.80	-14.00	0.071	-22.97	-37.50	0.038	-28.40	-61.00	0.027	-31.37
-0.50	0.979	-0.18	-14.50	0.067	-23.48	-38.00	0.031	-30.17	-61.50	0.021	-33.56
-0.75	1.000	0.00	-15.00	0.051	-25.85	-38.50	0.022	-33.15	-62.00	0.025	-32.04
-1.00	0.978	-0.19	-15.50	0.047	-26.56	-39.00	0.026	-31.70	-62.50	0.034	-29.37
-1.25	0.913	-0.79	-16.00	0.060	-24.44	-39.50	0.036	-28.87	-63.00	0.043	-27.33
-1.50	0.817	-1.76	-16.50	0.062	-24.15	-40.00	0.039	-28.18	-63.50	0.048	-26.38
-1.75	0.698	-3.12	-17.00	0.049	-26.20	-40.50	0.034	-29.37	-64.00	0.050	-26.02
-2.00	0.573	-4.84	-17.50	0.041	-27.74	-41.00	0.024	-32.40	-64.50	0.047	-26.56
-2.25	0.461	-6.73	-18.00	0.050	-26.02	-41.50	0.022	-33.15	-65.00	0.040	-27.96
-2.50	0.379	-8.43	-18.50	0.056	-25.04	-42.00	0.031	-30.17	-65.50	0.032	-29.90
-2.75	0.340	-9.37	-19.00	0.049	-26.20	-42.50	0.039	-28.18	-66.00	0.024	-32.40
-3.00	0.331	-9.60	-19.50	0.037	-28.64	-43.00	0.038	-28.40	-66.50	0.022	-33.15
-3.25	0.334	-9.54	-20.00	0.041	-27.74	-43.50	0.030	-30.46	-67.00	0.027	-31.37
-3.50	0.328	-9.68	-20.50	0.050	-26.02	-44.00	0.021	-33.56	-67.50	0.036	-28.87
-3.75	0.305	-10.31	-21.00	0.048	-26.38	-44.50	0.024	-32.40	-68.00	0.045	-26.94
-4.00	0.268	-11.44	-21.50	0.037	-28.64	-45.00	0.034	-29.37	-68.50	0.051	-25.85
-4.25	0.223	-13.03	-22.00	0.035	-29.12	-45.50	0.040	-27.96	-69.00	0.054	-25.35
-4.50	0.183	-14.75	-22.50	0.044	-27.13	-46.00	0.038	-28.40	-69.50	0.054	-25.35
-4.75	0.162	-15.81	-23.00	0.047	-26.56	-46.50	0.029	-30.75	-70.00	0.051	-25.85
-5.00	0.163	-15.76	-23.50	0.039	-28.18	-47.00	0.021	-33.56	-70.50	0.045	-26.94
-5.25	0.176	-15.07	-24.00	0.031	-30.17	-47.50	0.024	-32.40	-71.00	0.038	-28.40
-5.50	0.187	-14.56	-24.50	0.037	-28.64	-48.00	0.034	-29.37	-71.50	0.030	-30.46
-5.75	0.186	-14.61	-25.00	0.044	-27.13	-48.50	0.040	-27.96	-72.00	0.023	-32.77
-6.00	0.173	-15.24	-25.50	0.042	-27.54	-49.00	0.040	-27.96	-72.50	0.020	-33.98
-6.25	0.150	-16.48	-26.00	0.032	-29.90	-49.50	0.032	-29.90	-73.00	0.024	-32.40
-6.50	0.125	-18.06	-26.50	0.030	-30.46	-50.00	0.023	-32.77	-73.50	0.031	-30.17

Preliminary, subject to final design and review.