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# COMPREHENSIVE TECHNICAL EXHIBIT

## Introduction

The purpose of this application is to propose a new Low Power FM (LPFM) facility to provide noncommercial educational radio service to the Storrs-Mansfield, CT community, operating on FM channel 199 (87.7 MHz).

WHKA FM 87.7 Inc. has prepared this application, including this technical exhibit, in accordance with the rules and regulations of the Federal Communications Commission (FCC) and pursuant to LPFM Schedule 318.

## Expanded Technical Parameters

Class:	LP100
City and State:	Storrs-Mansfield, CT
Channel:	199 (87.7 MHz)
Site Location:	NAD 27 Coordinates: 41° 47' 04.04" N, 72° 08' 10.39" W NAD 83 Coordinates: 41° 47' 04.39" N, 72° 08' 08.66" W Street Address: 123 Palmer Rd, Chaplin, CT 06235
Structure Registration:	1240431
Overall Structure Height:	44.8 meters (148 feet)
Site Elevation:	153 meters
Site Average Terrain:	8 meters

### Height of Antenna Radiation Center:

Above Ground Level:	22 meters
Above Mean Sea Level:	175 meters
Above Average Terrain:	30 meters

### Effective Radiated Power (ERP):

Maximum LPFM ERP:	100 watts at 30 meters HAA T
Proposed ERP:	100 watts

### Proposed Antenna Information:

Make and Model:	Shively Labs 6812B <i>or equivalent</i>
Type:	Omnidirectional
Number of Elements:	Two (2) bays
Polarization Pattern:	Circular

### Proposed Filtering System Information:

Make and Model:	Nicom FBP 800 <i>or equivalent</i>
Type:	Bandpass cavity filter
Bandwidth:	800 kHz typical

## Interference Particulars

### ***Channel 6 TV Stations***

<i>Callsign</i>	<i>Facility No.</i>	<i>Class</i>	<i>Status</i>	<i>City and State</i>	<i>ERP kW</i>	<i>HAAT m</i>	<i>Distance km</i>
WVCC	186686	LPD	LIC	Westmoreland, NH	3 H	277	95.38

- See request for waiver

WNYZ	56043	FM6	LIC	New York, NY	3	200	190.29
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- The requested facility is sufficiently distant from WNYZ, satisfying both 73.825(b) and 74.1205.

### ***First-Adjacent Stations (87.9 MHz)***

<i>Callsign</i>	<i>Facility No.</i>	<i>Class</i>	<i>Status</i>	<i>City and State</i>	<i>ERP kW</i>	<i>HAAT m</i>	<i>Distance km</i>
K200AA	83363	200D	APP	Sun Valley, NV	0.25	144.4 H	3974.32

- The proposed site greatly exceeds the distance of 28 km for first-adjacent translators in 73.807(c).

### ***Second-Adjacent Stations (88.1 MHz)***

<i>Callsign</i>	<i>Facility No.</i>	<i>Class</i>	<i>Status</i>	<i>City and State</i>	<i>ERP kW</i>	<i>HAAT m</i>	<i>Distance km</i>
WKIV	84180	201A	LIC	Westerly, RI	1	64	50.06
WESU	71537	201A	LIC	Middletown, CT	6	11	50.47

- The proposed site exceeds the distance of 29 km for second-adjacent Class A stations in 73.807(a).

### ***Third-Adjacent Stations (88.3 MHz)***

No third-adjacent stations within 100 km of the proposed site operate radio reading services on a subcarrier according to the Massachusetts Talking Information Center and the Rhode Island Association for the Blind.

### ***Translator and Booster Input***

There are no FM boosters within 20 km of the proposed site.

<i>Callsign</i>	<i>Facility No.</i>	<i>Class</i>	<i>Status</i>	<i>City and State</i>	<i>ERP kW</i>	<i>HAAT m</i>	<i>Distance km</i>
W258AC	13611	258D	LIC	Storrs, CT~	0.01	117	10.8

- W258AC translates WNPR FM 90.5 Meriden (Facility No. 13627) directly off-the-air.
- WNPR is fourteen channels adjacent to the proposed station and 64 km distant.

W237EL	140714	237D	LIC	Willimantic, CT	0.005	0	13.04
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- W237EL translates WILI AM 1400 Willimantic (Facility No. 66180) using other methods.
- Interference to the translator input from the proposed station is not possible.

W269ED	155793	269D	LIC	Montville, CT	0.25	193.3 H	15.42
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- W269ED translates WBMW FM 106.5 Pawcatuck (Facility No. 55404) using an internet webcast.
- Interference to the translator input from the proposed station is not possible.

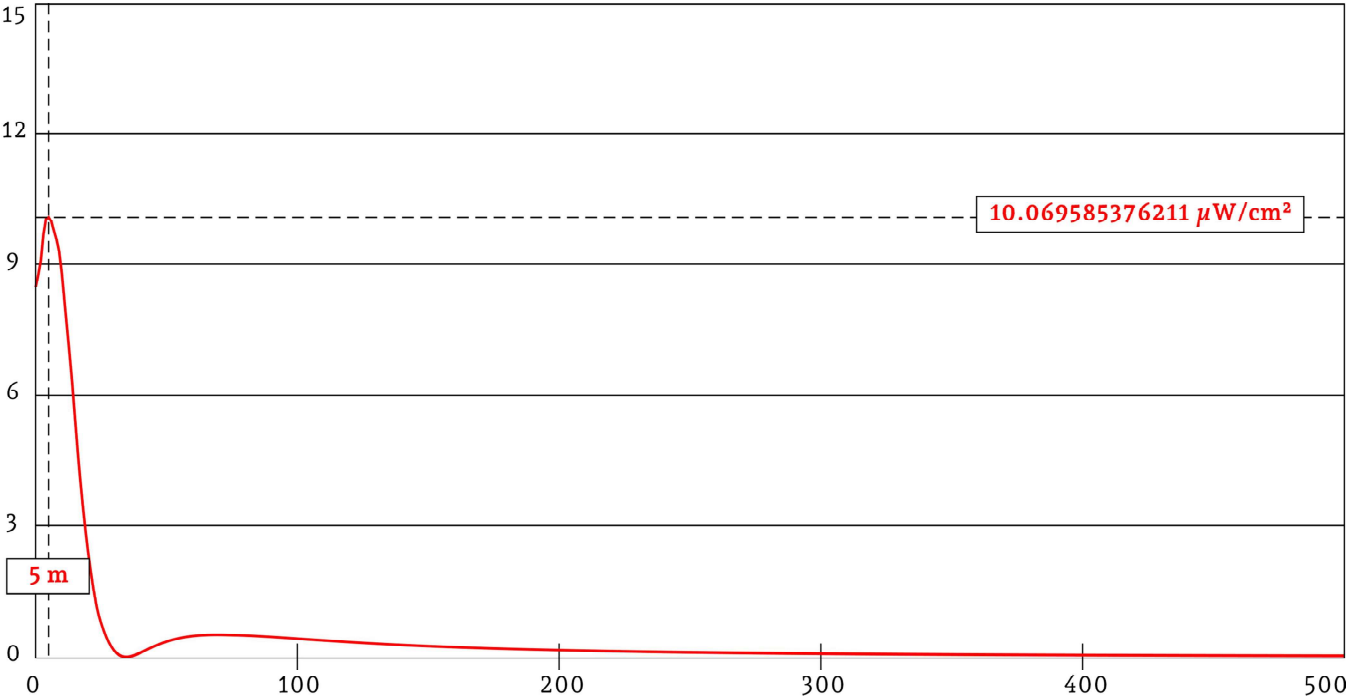
## Environmental Compliance

The requested facility will not have a significant environmental impact and complies with the provisions of 1.1307(a). The addition of the proposed antenna will not increase the tower height, the tower in question does not have intense lighting, nor does it affect wildlife preserves, historic places, indigenous sites, or otherwise.

An environmental assessment is not necessary.

## RF Exposure

The FM Model web software was used to estimate the potential level of RF exposure at the proposed site, utilizing the specifications of OET Bulletin 65 and 65 Supplement A (*Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields*) as well as the standards of ANSI-IEEE C95.1.



Model Antenna Type:	EPA Type 1
Number of Elements:	Two (2) bays
Element Spacing:	One (1) wavelength
Measuring Distance:	500 meters
Height Above Ground Level:	22 meters
Horizontal ERP:	100 watts
Vertical ERP:	100 watts

The result using the worst-case model antenna type determined that the highest value of power density occurs at 5 meters from the base of the tower and is 10.07  $\mu\text{W}/\text{cm}^2$ . This calculated figure is 5% of the 200  $\mu\text{W}/\text{cm}^2$  maximum permissible exposure limit for casual-uncontrolled exposure outlined in 1.1307(b) and 1.1310(e)(1).

Taking into account active emissions, the anticipated total site power density is compliant at 30% of the limit.

Additionally, the proposed antenna is located at least 22 meters above ground level, satisfying the simplified requirement of Schedule 318 Worksheet 3 for single LPFM stations on a tower that supports other RF sources.

## International Coordination

The proposed facility satisfies the provisions of 73.807(g) with respect to international considerations.

- The distance to the nearest point along the US-Canada border is 359 km.
- The distance to the nearest point along the US-Mexico border is 2642 km.

Additionally, the 34 dBu interference contour does not cross the US-Canada border, meeting the requirements for LPFM stations of Section 4.4 of the *February 1991 Working FM Arrangement with Canada*, as amended. Furthermore, the proposed station exceeds the required distances for low-band VHF co-channel protection outlined in Annex 4 Table 1 of the *November 1993 Working TV Arrangement with Canada*, as amended.

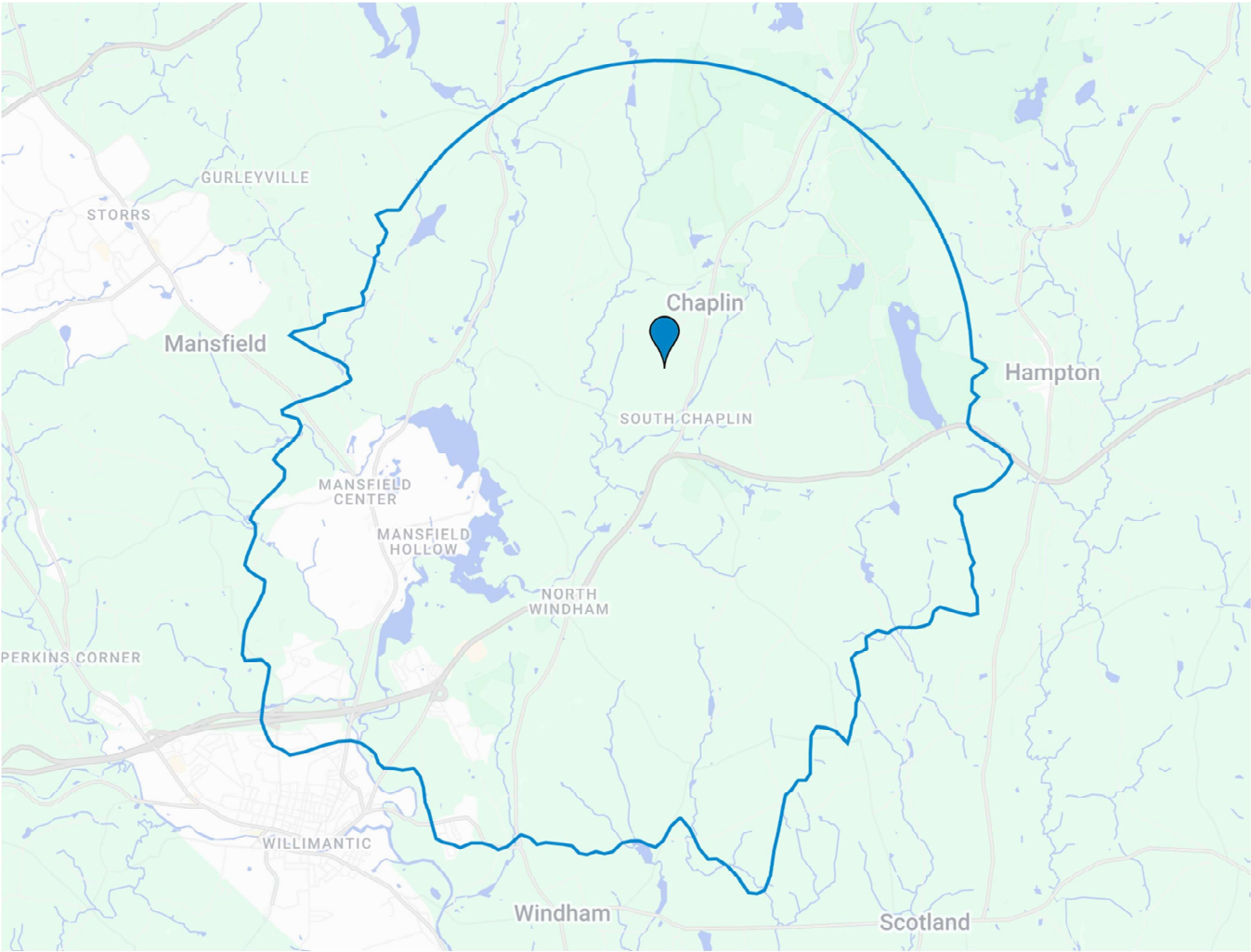
## Research and Receiving Coordination

The proposed site meets all requirements of 73.1030. It is far outside of the National Radio Astronomy Quiet Zone, Table Mountain Receiving Zone, and Arecibo Observatory Notification Zone. As well, the nearest protected monitoring station is 386 km distant in Belfast, Maine, well beyond any potential 80 dBu contour.

## Attachments

- Projected 60 dBu Service Contour
- Aerial Photo of Proposed Site
- American Tower Site Assurance Letter
- Shively Labs 6812B Antenna Information
- *Educational Purpose Statement*
- *Requests for Waiver of Rule*
- *Certificate of Incorporation*

***Projected 60 dBu Service Contour***





***Aerial Photo of Proposed Site***





November 28, 2023  
WHKA FM 87.7 Inc.  
Patrick Boots

Dear Mr. Boots,

American Tower Corporation hereby grants WHKA FM permission to represent in any applications filed with the Federal Communications Commission ("FCC") that the company has reasonable assurance from American Tower that it will enter into good faith lease negotiations for tower and transmission equipment space. Final consideration shall be contingent upon submitting a completed site application, receiving credit approval from American Tower and conducting a full structural analysis and shared interference study.

Once you receive a valid construction permit, please contact Benjamin Gleason, Inside Sales Representative at [benjamin.gleason@americantower.com](mailto:benjamin.gleason@americantower.com) or (781) 428-7346 to submit an application and receive a lease quote. We look forward to working with you on the build out of your station.

Thank you for your interest in American Tower.

Regards,

Benjamin Gleason  
Inside Sales Representative  
(781)-428-7346  
Woburn, MA

Antenna Mfg.: Shively Labs

Antenna Type: 6812-2R

Station: WHKA

Frequency: 87.7

Channel #: 199

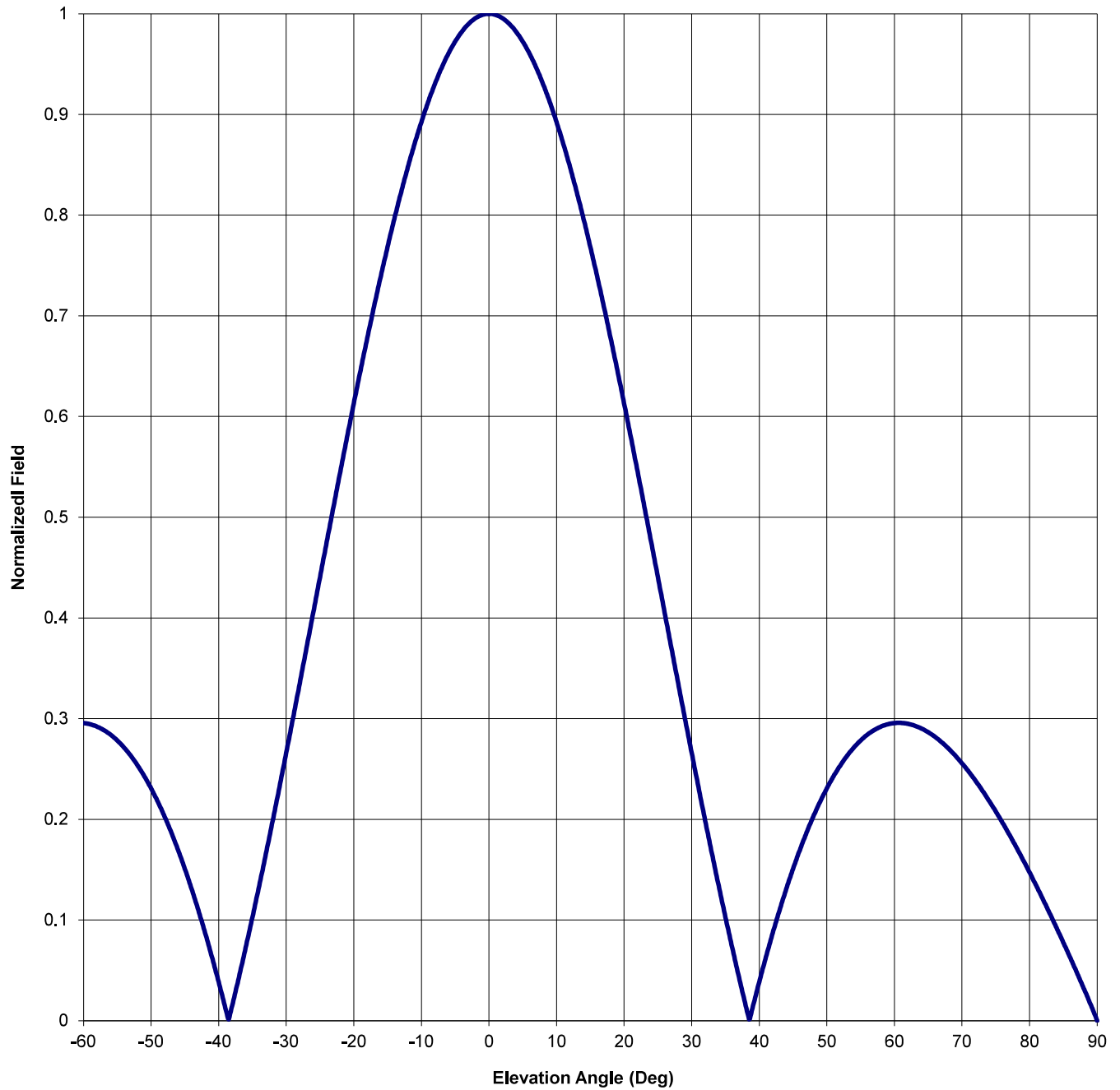
Figure: Figure 3

Date: 12/5/2023

Beam Tilt 0

Gain (Max) 0.989 -0.050 dB

Gain (Horizon) 0.989 -0.050 dB







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Figure: Figure 3

Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field
-90	0.000	-44	0.131	0	1.000	46	0.169
-89	0.017	-43	0.110	1	0.999	47	0.187
-88	0.032	-42	0.087	2	0.996	48	0.203
-87	0.048	-41	0.063	3	0.990	49	0.217
-86	0.063	-40	0.038	4	0.982	50	0.231
-85	0.078	-39	0.012	5	0.972	51	0.243
-84	0.092	-38	0.015	6	0.960	52	0.254
-83	0.106	-37	0.043	7	0.946	53	0.263
-82	0.120	-36	0.072	8	0.930	54	0.271
-81	0.134	-35	0.103	9	0.912	55	0.278
-80	0.147	-34	0.134	10	0.892	56	0.284
-79	0.160	-33	0.166	11	0.871	57	0.289
-78	0.173	-32	0.199	12	0.848	58	0.292
-77	0.185	-31	0.232	13	0.823	59	0.294
-76	0.197	-30	0.266	14	0.796	60	0.296
-75	0.208	-29	0.300	15	0.769	61	0.296
-74	0.219	-28	0.335	16	0.740	62	0.295
-73	0.229	-27	0.370	17	0.709	63	0.293
-72	0.238	-26	0.405	18	0.678	64	0.290
-71	0.247	-25	0.440	19	0.646	65	0.286
-70	0.256	-24	0.476	20	0.613	66	0.282
-69	0.263	-23	0.511	21	0.579	67	0.277
-68	0.270	-22	0.545	22	0.545	68	0.270
-67	0.277	-21	0.579	23	0.511	69	0.263
-66	0.282	-20	0.613	24	0.476	70	0.256
-65	0.286	-19	0.646	25	0.440	71	0.247
-64	0.290	-18	0.678	26	0.405	72	0.238
-63	0.293	-17	0.709	27	0.370	73	0.229
-62	0.295	-16	0.740	28	0.335	74	0.219
-61	0.296	-15	0.769	29	0.300	75	0.208
-60	0.296	-14	0.796	30	0.266	76	0.197
-59	0.294	-13	0.823	31	0.232	77	0.185
-58	0.292	-12	0.848	32	0.199	78	0.173
-57	0.289	-11	0.871	33	0.166	79	0.160
-56	0.284	-10	0.892	34	0.134	80	0.147
-55	0.278	-9	0.912	35	0.103	81	0.134
-54	0.271	-8	0.930	36	0.072	82	0.120
-53	0.263	-7	0.946	37	0.043	83	0.106
-52	0.254	-6	0.960	38	0.015	84	0.092
-51	0.243	-5	0.972	39	0.012	85	0.078
-50	0.231	-4	0.982	40	0.038	86	0.063
-49	0.217	-3	0.990	41	0.063	87	0.048
-48	0.203	-2	0.996	42	0.087	88	0.032
-47	0.187	-1	0.999	43	0.110	89	0.017
-46	0.169	0	1.000	44	0.131	90	0.000
-45	0.151			45	0.151		