

MODIFY BPH-20040308ADV
GLORY COMMUNICATIONS, INC
WLJI (FM) RADIO STATION
CH 252A - 98.3 MHZ - 2.95 KW
SUMMERTON, SOUTH CAROLINA
May 2005

EXHIBIT A

Compliance with §73.315(a)
Using Supplemental City Grade Analysis

The proposed tower site for WLJI is located 23.0 kilometers¹ north-northwest of the community of Summerton, South Carolina. From the proposed WLJI facility, the predicted 3.16 mV/m contour, using the Commission's standard method of predicting city grade coverage as outlined in §73.313, does not encompass the community of Summerton. However, in this particular case, we find a supplemental method of depicting city grade coverage, as noted in §73.313(e) of the Commission's rules, is appropriate. We have analyzed the terrain in 2.0° increments from 173° to 181° to determine the terrain variations on each of these radials. §73.313 of the rules notes that the Commission's propagation curves are based on a 50 meter terrain variation (ΔH). Using the 30 second terrain database, on the five pertinent radials toward the community of Summerton, starting at 10.0 kilometers out from the site to a distance of 23.0 kilometers, the individual radial ΔH values never exceed 19.0 meters. As such, the terrain along the pertinent radials varies from the 50 meter variation used in the Commission's field strength curves.

The proposed WLJI antenna system is to be located in Paxville, South Carolina, at geographic coordinates North Latitude 33° 47' 07" and West Longitude 80° 21' 54". The

1) Based on the distance to the most farthest part of the community of license.

community of Summerton, South Carolina, is located on bearings between 173° and 181° true from the proposed WLJI site. Running individual radials, in 2° increments, from the WLJI site through the community, we have determined the location of the city grade contour based on the standard utilization of the Commission's 50/50 curves (see Exhibit A1). We have alternatively determined the location of the 70 dBu coverage, using the Diffcomb program (Version 7B), which is a variation of the irregular terrain model, taking into consideration diffraction loss over knife edge and rounded obstacle obstructions. Further, reductions of calculation signal strength are also made to account for foliage and buildings (Clutter Loss).³ This model is a more representative prediction of field strength than the standard methodology under certain terrain conditions.

On the pertinent bearings toward the community of Summerton, we have tabulated the distance to the city grade contour using both the FCC method and supplemental method to demonstrate the differences to the contour and find that the supplemental depiction distances are in excess of 10% higher than the distances using the Commission's standard methodology (see Exhibit A2). Based on the Staff's policy, we find that the terrain on these pertinent radials varies widely from the 3.0 to 16.0 kilometer average (as detailed above) and the differences to the contour distances, as determined by the supplemental method, exceed the standard method by more than 10%. Therefore, pursuant to §73.313(e), a supplemental method of depicting the city grade coverage is acceptable. It is noted that at no point does the supplemental city grade distance extend beyond the predicted 60 dBu (50/50) protected contour.⁴

3) To insure coverage of the proposed community, the Diffcomb model was set at 28.0 kilometers as the point of interest (the distance to the present FCC F50/50 60 dBu contour).

4) If the Diffcomb contour extended beyond the predicted 60 dBu contour, it was truncated at that distance.

Using the supplemental method calculations, we find that the city grade contour in the direction of Summerton, South Carolina, in 2° increments between 173° and 181°, extends at least 24.0 kilometers out from the site, on the pertinent radials, extending beyond the community of Summerton. As visually demonstrated on Exhibit A3, the predicted 70 dBu signal, as calculated using the Diffcomb model, shows Summerton, South Carolina, within the predicted city grade contour. There are no terrain obstructions in the path between the proposed transmitter site and the community. Attached as Exhibit A4 through A8 are the terrain profiles of the 173°, 175°, 177°, 179° and the 181° radials.

A sample calculation was made, based on the 177° radial, between the site and the community, to verify the location of the city grade, using a free space signal formula: $106.9 + \text{power in dBk} - 20 \log (\text{distance in kilometers to point of interest})$. Based on the proposed WLJI facility, the distance to the 70 dBu contour was calculated using the Diffcomb program and found to extend 24.0 kilometers. Based on the proposed facility, the 70 dBu contour, corrected to allow for a 5.0 dB clutter loss (the 75 dBu contour), is being sought.

$$106.9 + 47.0 \text{ dBk} - 20 \log 24 = 84.0$$

Attenuation due to diffracted signal over terrain - 9.0 dB

Clutter Loss -5.0

Signal at point of interests 70.0 dBu

Therefore, based on the supplemental depiction, we find the community of Summerton to be within the city grade contour of the proposed WLJI facility in compliance with the Commission's rules.

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EXHIBIT A1

N. Lat. = 33 47 07 - Tabulated Service Contour Data
W. Lng. = 80 21 54 - WLJI Radio Station - Summerton, South Carolina

HAAT and Distance to Contour - FCC Method - 30 Arc Second Terrain Database

Azi.	AV EL	HAAT	ERP kW	dBk	Field	70-F5	60-F5
000	44.3	145.3	2.9500	4.70	1.000	16.34	28.36
045	40.3	149.3	2.9500	4.70	1.000	16.61	28.71
090	35.8	153.8	2.9500	4.70	1.000	16.91	29.11
135	40.9	148.7	2.9500	4.70	1.000	16.57	28.66
180	46.9	142.7	2.9500	4.70	1.000	16.16	28.14
225	48.2	141.4	2.9500	4.70	1.000	16.07	28.02
270	54.9	134.7	2.9500	4.70	1.000	15.61	27.44
315	50.5	139.0	2.9500	4.70	1.000	15.91	27.82

Additional Radials (Not Considered in Average):

173	47.9	141.7	2.9500	4.70	1.000	16.09	28.04
175	47.9	141.7	2.9500	4.70	1.000	16.09	28.04
177	47.8	141.8	2.9500	4.70	1.000	16.10	28.05
179	47.2	142.4	2.9500	4.70	1.000	16.14	28.10
181	46.6	142.9	2.9500	4.70	1.000	16.18	28.15

Ave El= 45.22 M HAAT= 144.36 M AMSL= 189.59 M

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EXHIBIT A2

Tabulation of City Grade Contours
in Arc Towards Summerton, South Carolina

<u>Radial</u> <u>(Bearing)</u>	<u>Delta H</u> <u>(23 km)</u>	<u>Location of 70 dBu</u>		<u>% of Chg</u>	<u>Method</u> <u>Used</u>
		<u>FCC Method (F)</u>	<u>Diffcomb(D)</u>		
173°	18.1 m	16.1 km	26.0 km	+ 61.5	D
175°	19.0 m	16.1 km	27.0 km	+ 67.7	D
177°	19.0 m	16.1 km	24.0 km	+ 49.1	D
179°	14.5 m	16.1 km	24.9 km	+ 54.7	D
181°	10.8 m	16.2 km	25.4 km	+ 56.8	D

WLJI SUMMERTON, SC

Latitude: 33-47-07 N
Longitude: 080-21-54 W
ERP: 2.95 kW
Channel: 252
Frequency: 98.3 MHz
AMSL Height: 189.6 m

GRAHAM BROCK, INC.

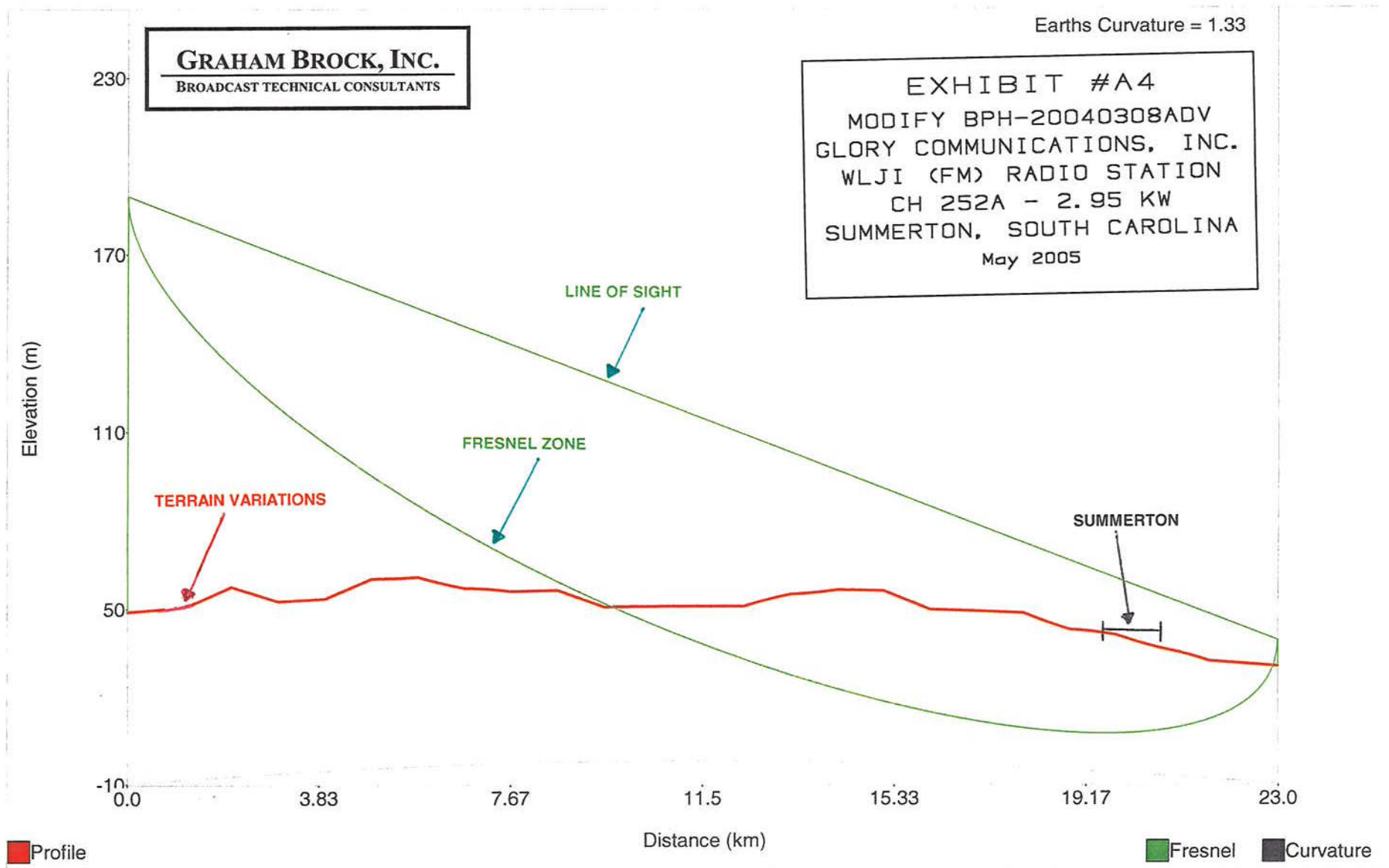
BROADCAST TECHNICAL CONSULTANTS



EXHIBIT A3

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Terrain Radial Profile - WLJI - 173°



Starting Latitude: 33-47-07 N
Starting Longitude: 080-21-54 W

End Latitude: 33-34-46.02 N
End Longitude: 080-20-05.31 W

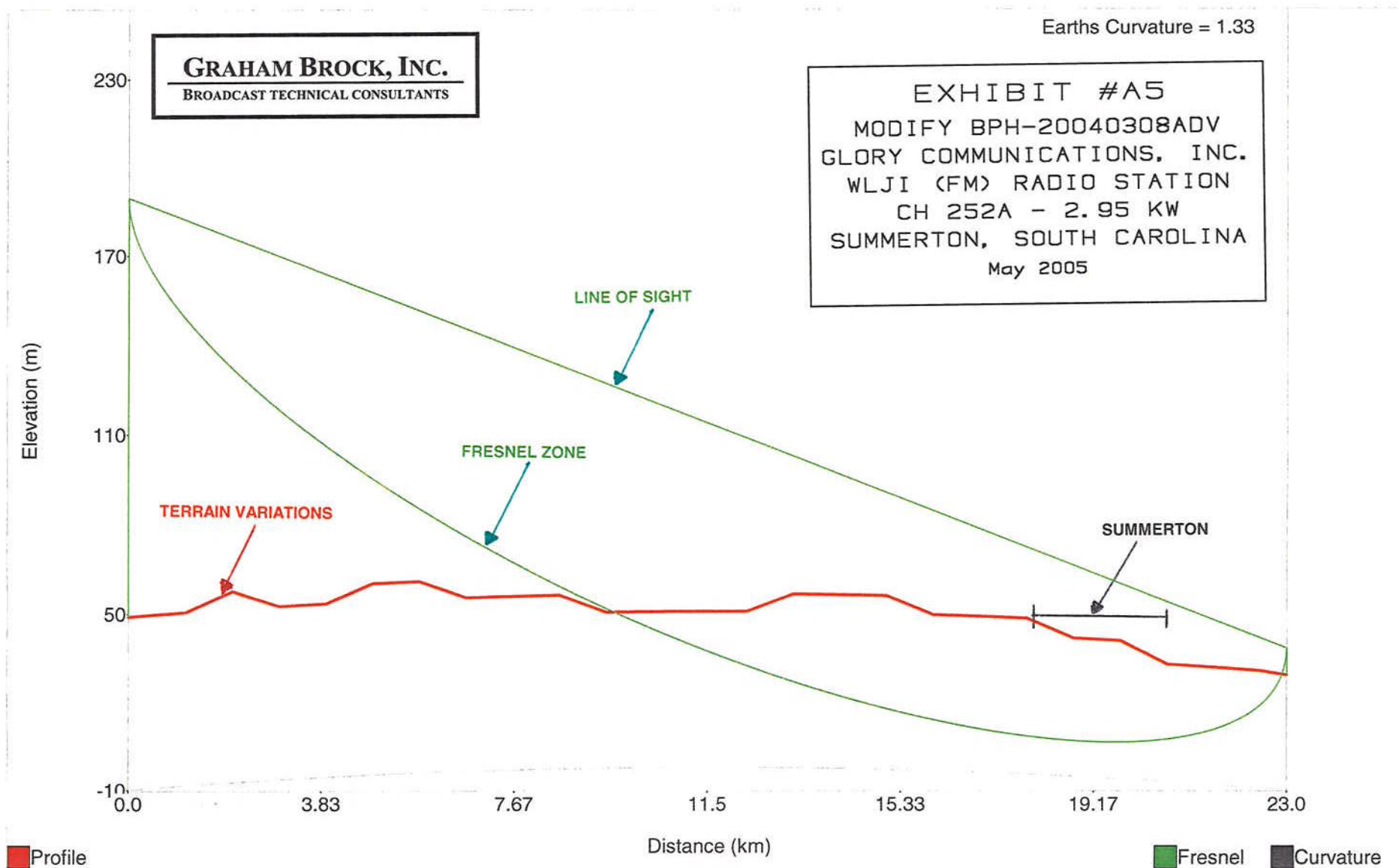
Distance: 23 km
Bearing: 173 deg

Transmitter Height (AG) = 140.6 m
Receiver Height (AG) = 9.1 m

Transmitter Elevation = 49.0 m
Receiver Elevation = 30.0 m

Frequency = 98.3 MHz
Fresnel Zone: 0.6

Terrain Radial Profile - WLJI - 175°



Starting Latitude: 33-47-07 N
Starting Longitude: 080-21-54 W

End Latitude: 33-34-43.31 N
End Longitude: 080-20-36.27 W

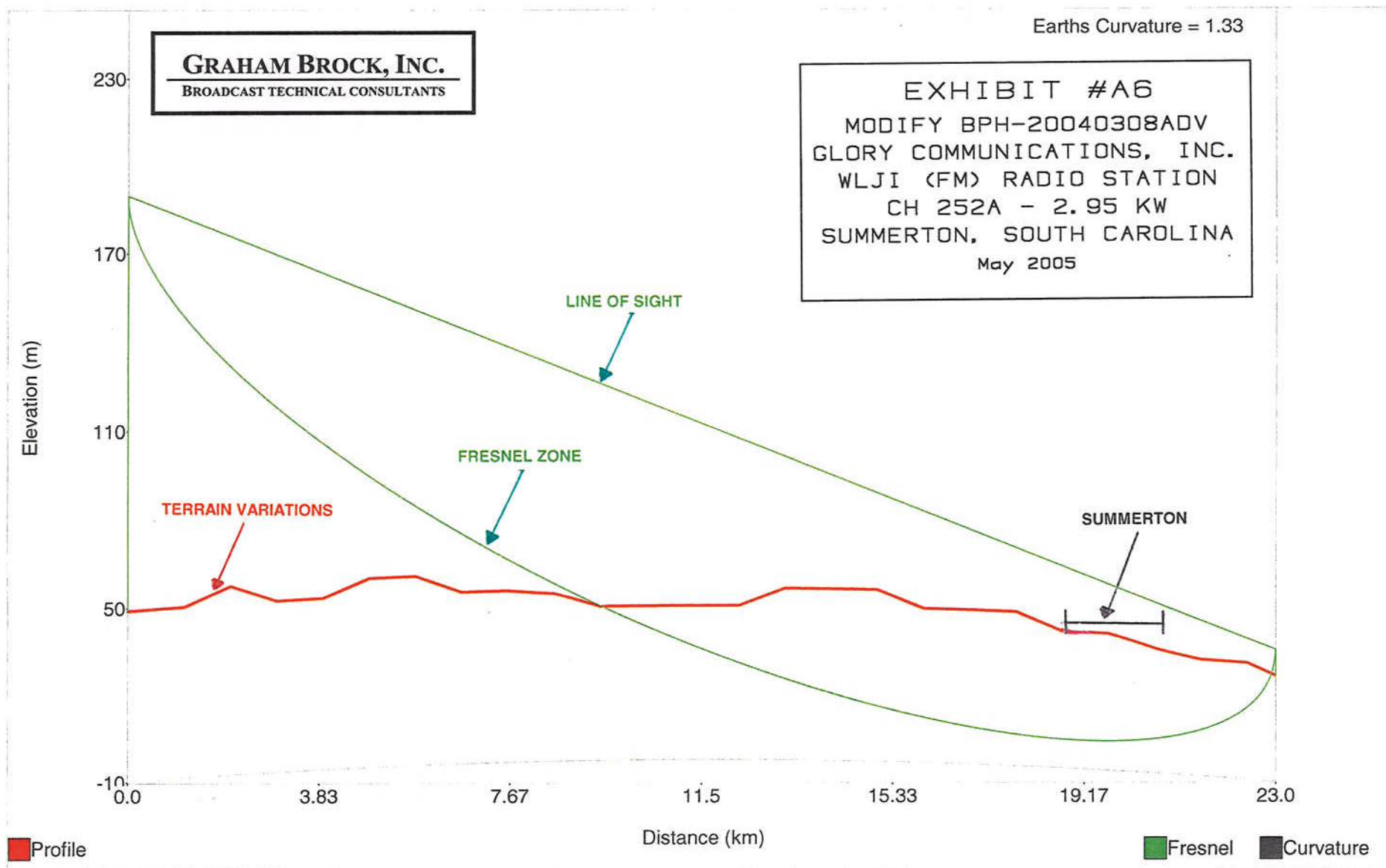
Distance: 23 km
Bearing: 175 deg

Transmitter Height (AG) = 140.6 m
Receiver Height (AG) = 9.1 m

Transmitter Elevation = 49.0 m
Receiver Elevation = 29.3 m

Frequency = 98.3 MHz
Fresnel Zone: 0.6

Terrain Radial Profile - WLJI - 177°



Starting Latitude: 33-47-07 N
Starting Longitude: 080-21-54 W

End Latitude: 33-34-41.49 N
End Longitude: 080-21-07.32 W

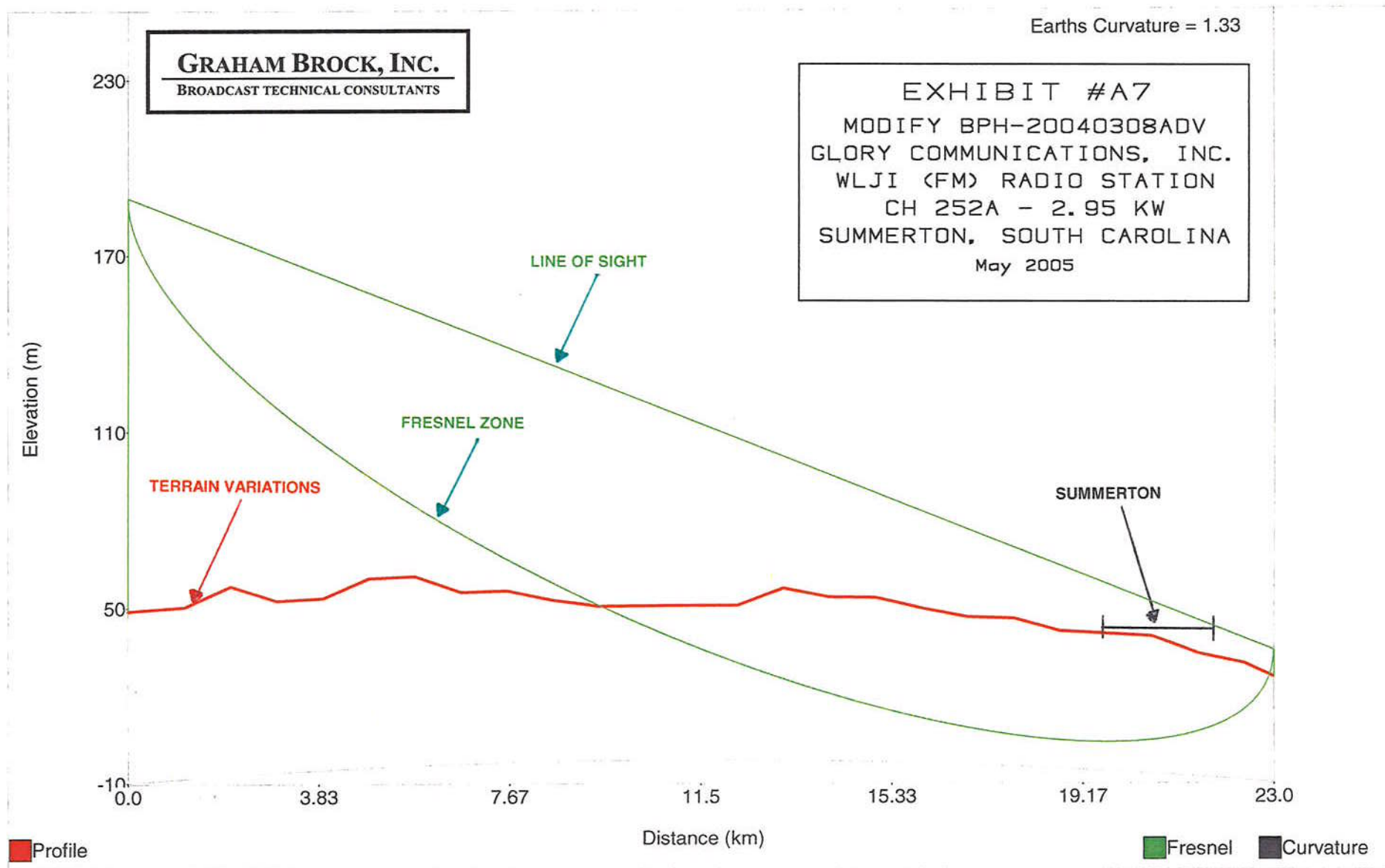
Distance: 23 km
Bearing: 177 deg

Transmitter Height (AG) = 140.6 m
Receiver Height (AG) = 9.1 m

Transmitter Elevation = 49.0 m
Receiver Elevation = 26.3 m

Frequency = 98.3 MHz
Fresnel Zone: 0.6

Terrain Radial Profile - WLJI - 179°



Starting Latitude: 33-47-07 N
Starting Longitude: 080-21-54 W

End Latitude: 33-34-40.58 N
End Longitude: 080-21-38.44 W

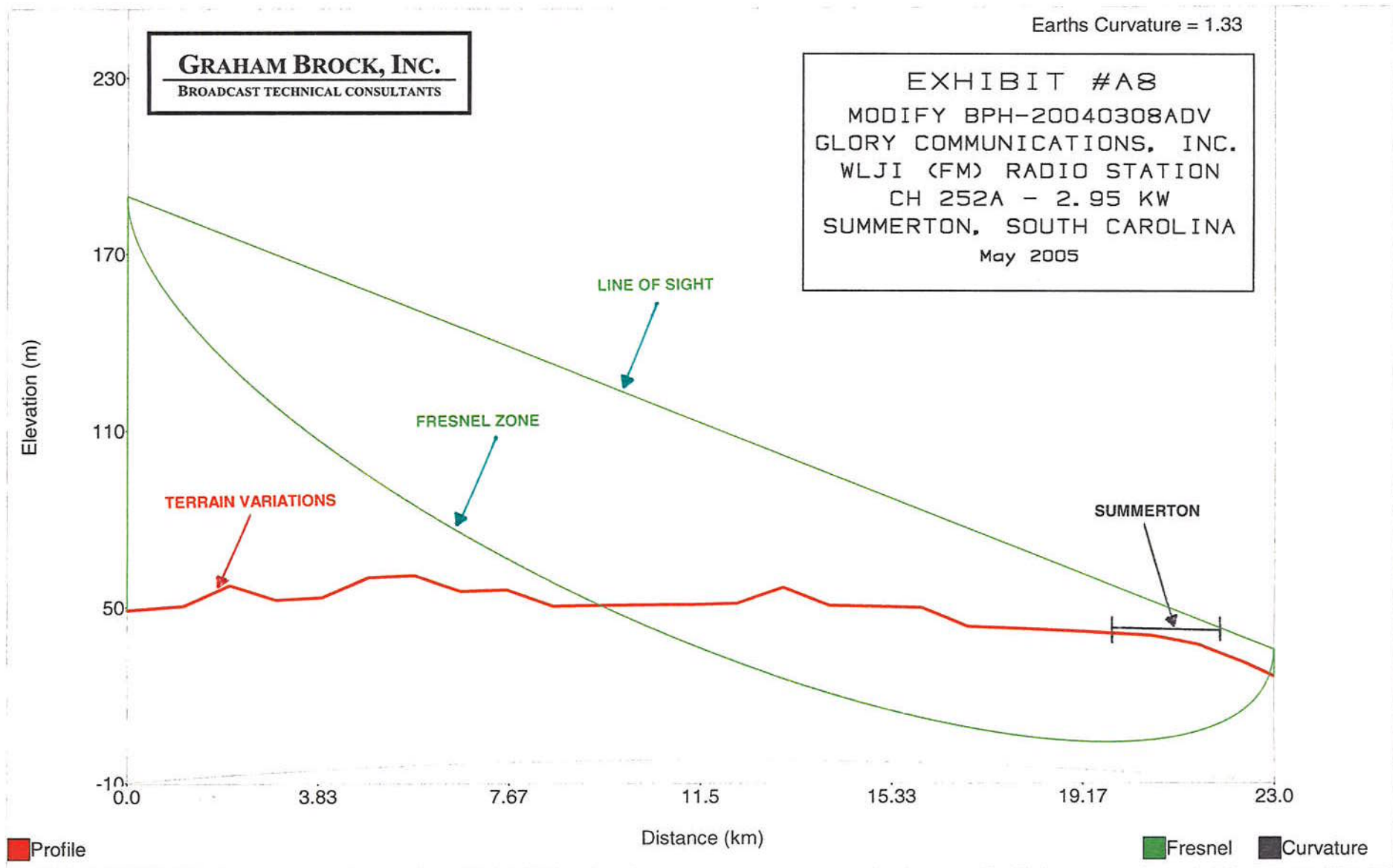
Distance: 23 km
Bearing: 179 deg

Transmitter Height (AG) = 140.6 m
Receiver Height (AG) = 9.1 m

Transmitter Elevation = 49.0 m
Receiver Elevation = 26.2 m

Frequency = 98.3 MHz
Fresnel Zone: 0.6

Terrain Radial Profile - WLJI - 181°



Starting Latitude: 33-47-07 N
Starting Longitude: 080-21-54 W

End Latitude: 33-34-40.58 N
End Longitude: 080-22-09.56 W

Distance: 23 km
Bearing: 181 deg

Transmitter Height (AG) = 140.6 m
Receiver Height (AG) = 9.1 m

Transmitter Elevation = 49.0 m
Receiver Elevation = 26.2 m

Frequency = 98.3 MHz
Fresnel Zone: 0.6