

**MINOR CHANGE APPLICATION**  
**DAVIS BROADCASTING, INC. OF COLUMBUS**  
**WFXE (FM) RADIO STATION**  
**CH 285C3 - 104.9 MHZ - 7.3 KW**  
**COLUMBUS, GEORGIA**  
**March 2018**

**EXHIBIT C**

**Radio Frequency Assessment**

A study has been made to determine whether this proposal is in compliance with 47 C.F.R. §1.1307 of the Commission's rules and with OET Bulletin #65, dated August 1997 ("Bulletin"), regarding human exposure to radio frequency radiation in the vicinity of broadcast towers.<sup>1</sup>

The proposed WFXE antenna system is to be mounted with its center of radiation 84.0 meters (275.6 feet) above ground at the tower location and will operate with an effective radiated power of 7.3 kilowatts in the horizontal and vertical planes (circularly polarized). The proposed WFXE will operate with a three bay antenna. At 2.0 meters above the ground at the base of the tower, the height of an average person, the WFXE antenna system will contribute 0.0428 mw/cm<sup>2</sup>.<sup>2</sup> Based on exposure limitations for a controlled environment, 4.3% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 21.4% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower

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- 1) The contributions of the FM facilities were calculated using the FMModel program. A single bay EPA dipole antenna was used for calculation purposes. In cases where the number of bays of the antenna was known, this data was used in the FMModel program.
  - 2) This level of field occurs at 17 meters out from the base of the tower and is considered worst case.

The W KCN antenna system is mounted with its center of radiation 86.9 meters (285.1 feet) above ground at the tower location and operates with an effective radiated power of 29.0 kilowatts in the horizontal and vertical planes (circularly polarized). WCGQ operates with an ERI MXP-6E-HW rototiller style six bay full wavelength antenna. At 2.0 meters above the ground at the base of the tower, the height of an average person, the W KCN antenna system contributes  $0.00303 \text{ mw/cm}^2$ .<sup>3</sup> Based on exposure limitations for a controlled environment, 0.3% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 1.5% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower.

The WCGQ antenna system is mounted on a nearby tower with its center of radiation 228 meters (748.0 feet) above ground at the tower location and operates with an effective radiated power of 100.0 kilowatts in the horizontal and vertical planes (circularly polarized). WCGQ operates with an ERI G5CPS-8AC-3 rototiller style eight bay full wavelength antenna. At 2.0 meters above the ground at the base of the tower, the height of an average person, the WCGQ antenna system contributes  $0.0076 \text{ mw/cm}^2$ .<sup>4</sup> Based on exposure limitations for a controlled environment, 0.8% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 3.8% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower.

The W259CA antenna system is mounted with its center of radiation 38.0 meters (124.7 feet) above ground at the tower location and operates with an effective radiated power of 0.25

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- 3) This level of field occurs at 500.0 meters out from the base of the tower and is considered worst case.
  - 4) This level of field occurs at 61.0 meters out from the base of the tower and is considered worst case.

kilowatt in the horizontal and vertical planes (circularly polarized). At 2.0 meters above the ground at the base of the tower, the height of an average person, the W259CA antenna system contributes  $0.0077 \text{ mw/cm}^2$ .<sup>5</sup> Based on exposure limitations for a controlled environment, 0.8% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 3.9% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower.

The W295AY antenna system is mounted with its center of radiation 41.0 meters (134.5 feet) above ground at the tower location and operates with an effective radiated power of 0.25 kilowatt in the horizontal and vertical planes (circularly polarized). At 2.0 meters above the ground at the base of the tower, the height of an average person, the W295AY antenna system contributes  $0.0066 \text{ mw/cm}^2$ .<sup>6</sup> Based on exposure limitations for a controlled environment, 0.7% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 3.3% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower.

The W221DP antenna system is mounted with its center of radiation 68.0 meters (223.1 feet) above ground at the tower location and operates with an effective radiated power of 0.25 kilowatt in the horizontal and vertical planes (circularly polarized). At 2.0 meters above the ground at the base of the tower, the height of an average person, the W221DP antenna system contributes  $0.0023 \text{ mw/cm}^2$ .<sup>7</sup> Based on exposure limitations for a controlled environment, 0.2%

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- 5) This level of field occurs at 10.0 meters out from the base of the tower and is considered worst case.
  - 6) This level of field occurs at 11.0 meters out from the base of the tower and is considered worst case.
  - 7) This level of field occurs at 18.0 meters out from the base of the tower and is considered worst case.

of the allowable limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 1.2% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower.

The W299AX antenna system is mounted with its center of radiation 67.0 meters (219.8 feet) above ground at the tower location and operates with an effective radiated power of 0.25 kilowatt in the horizontal and vertical planes (circularly polarized). At 2.0 meters above the ground at the base of the tower, the height of an average person, the W299AX antenna system contributes  $0.0024 \text{ mw/cm}^2$ .<sup>8</sup> Based on exposure limitations for a controlled environment, 0.2% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 1.2% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower.

The WYCU-CD Channel 16 antenna system is mounted with its center of radiation 105 meters (344.5 feet) above ground at the tower location and operates with an effective radiated power of 8.2 kilowatts in the horizontal plane. At 2.0 meters above the ground at the base of the tower, the height of an average person, the WYCU-CD antenna system contributes  $0.0103 \text{ mw/cm}^2$ . Based on exposure limitations for a controlled environment, 0.6% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower. For uncontrolled environments, 3.2% of the allowable limit is reached at 2.0 meters above the ground at the base of the tower.

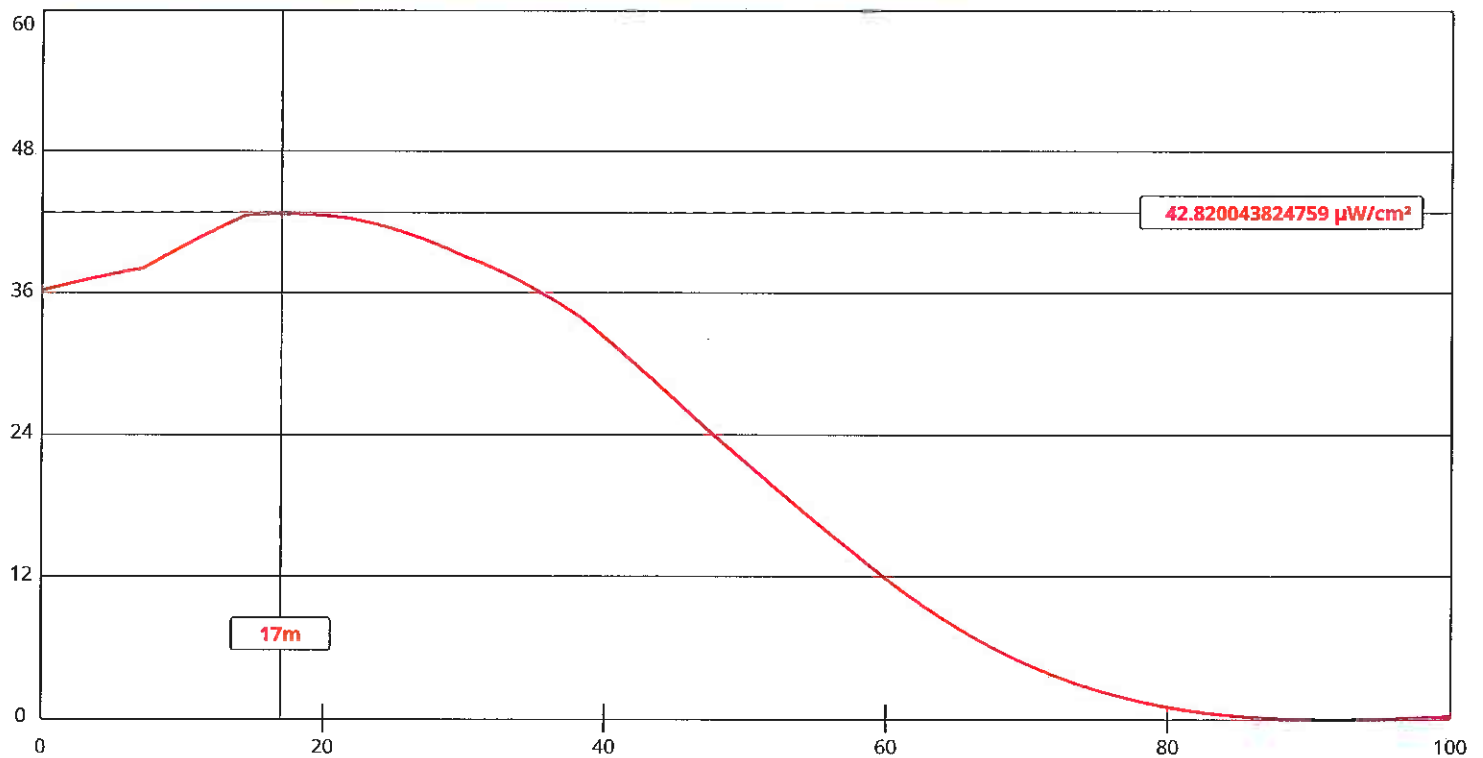
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8) This level of field occurs at 18.0 meters out from the base of the tower and is considered worst case.

Combining the contributions of WFXE, WKCN, WCGQ, W259CA, W295AY, W221DP, W299AX and WYBU-CD, a total of 39.5% of the contributions for uncontrolled areas are reached at two meters above the ground at the base of the tower. Since this contribution level is less than the ANSI limits, it is believed the proposed WFXE facility is in compliance with the radio frequency radiation exposure limits, as required by the Federal Communications Commission. Davis will also insure that warning signs have been posted in the vicinity of the tower warning of potential radio frequency radiation hazards at the site. In addition, Davis will reduce the power of the facility or cease operation in cooperation and coordination with other tower users, as necessary, to protect persons having access to the site, tower, or antenna from radio frequency radiation in excess of FCC guidelines.

# FM Model

The FM Model calculator determines the potential exposure from radiofrequency (RF) electromagnetic fields produced by FM broadcast station antennas at ground level. The FM Model software was originally developed by the FCC in 1997 as a standalone executable program and this improved version provides more precise predictions and runs via a JavaScript enabled web browser. The FM Model is originally based on measured data [published in 1985 by the EPA](#) (<http://nepis.epa.gov/Exe/ZyNET.exe/2000FD2W.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1981+Thru+1985&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&OField=&OFieldYear=&OFieldMonth=&OFieldDay=&IntOFieldOp=0&ExtOFieldOp=0&XmlQuery=&File=D%3A\zyfiles\Index%20Data\81thru85\Txt\00000003\2000FD2W.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h|-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/425&Display=p|f&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL>).



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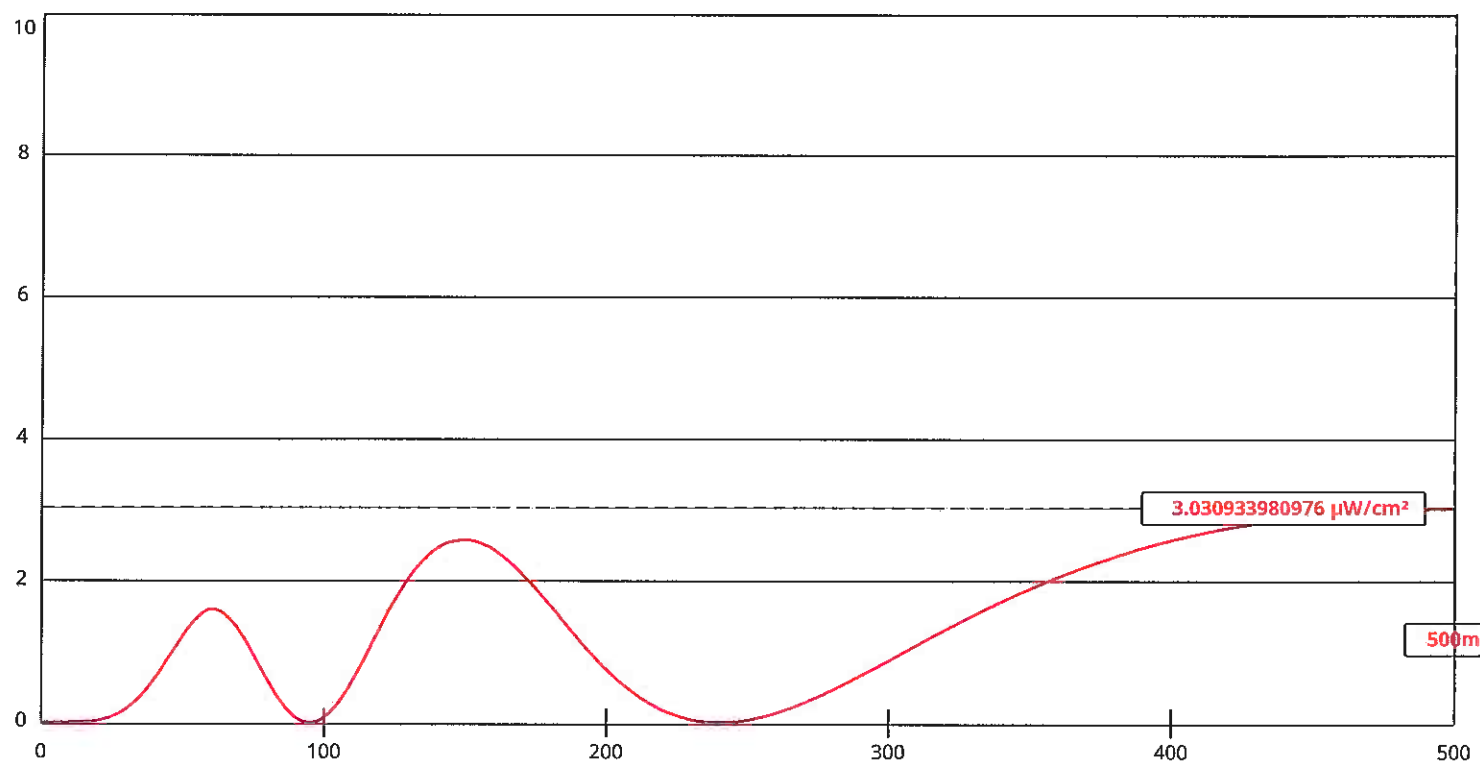
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Antenna Type +		EPA Type 1: Ring-and-Stub or "Other" ▼	
Height (m)	84	Distance (m)	100
ERP-H (W)	7300	ERP-V (W)	7300
Num of Elements	3	Element Spacing (λ)	1
Num of Points	500	Apply	



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Channel Selection	Channel 257 (99.3 MHz) ▼		
<a href="#">Antenna Type +</a>	EPA Type 3: Opposed U Dipole ▼		
Height (m)	86.9	Distance (m)	500
ERP-H (W)	29000	ERP-V (W)	29000
Num of Elements	6	Element Spacing (λ)	.5
Num of Points	500	Apply	

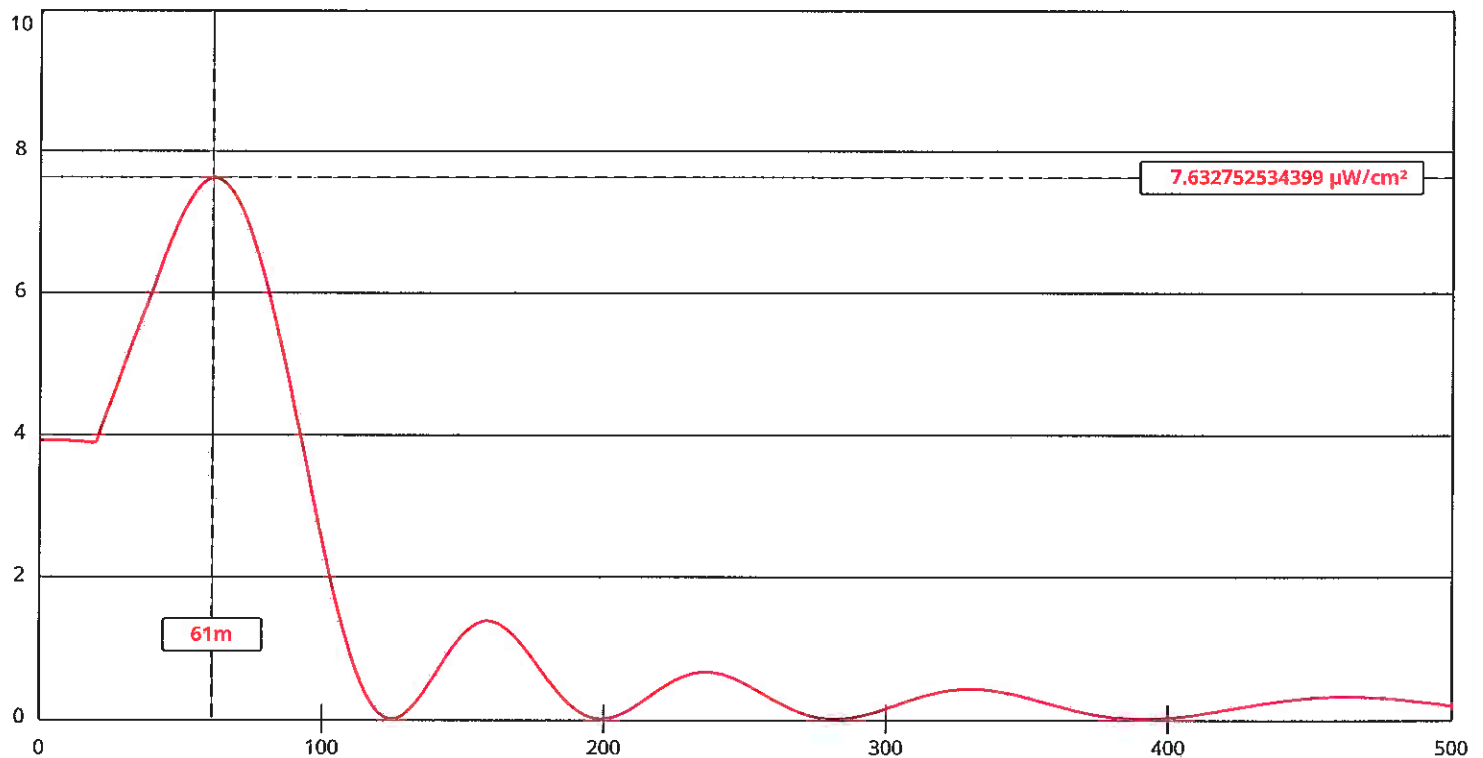


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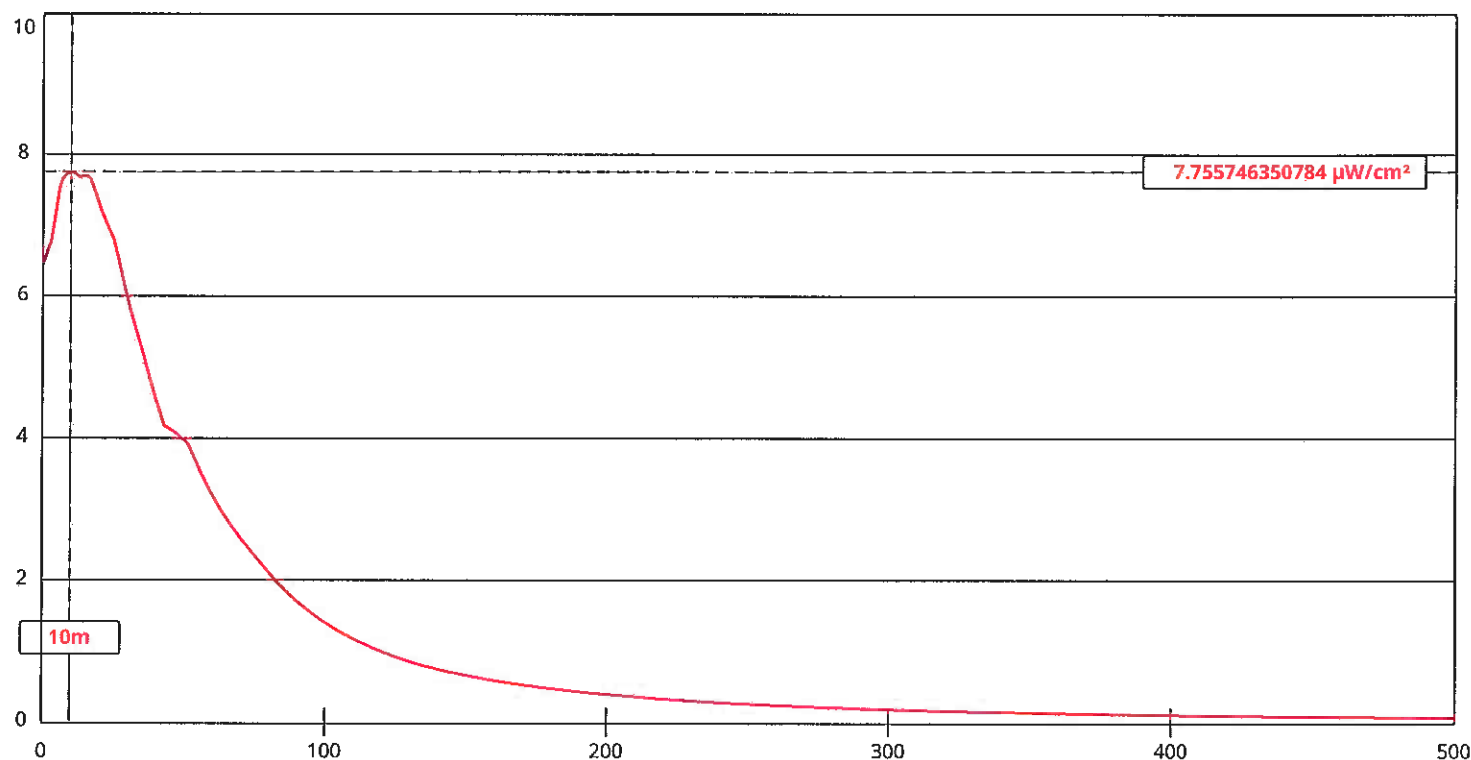
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Channel Selection	Channel 297 (107.3 MHz) ▼		
<a href="#">Antenna Type +</a>	EPA Type 3: Opposed U Dipole ▼		
Height (m)	<input type="text" value="228"/>	Distance (m)	<input type="text" value="500"/>
ERP-H (W)	<input type="text" value="100000"/>	ERP-V (W)	<input type="text" value="100000"/>
Num of Elements	<input type="text" value="8"/>	Element Spacing (λ)	<input type="text" value="1"/>
Num of Points	<input type="text" value="500"/>	<input type="button" value="Apply"/>	

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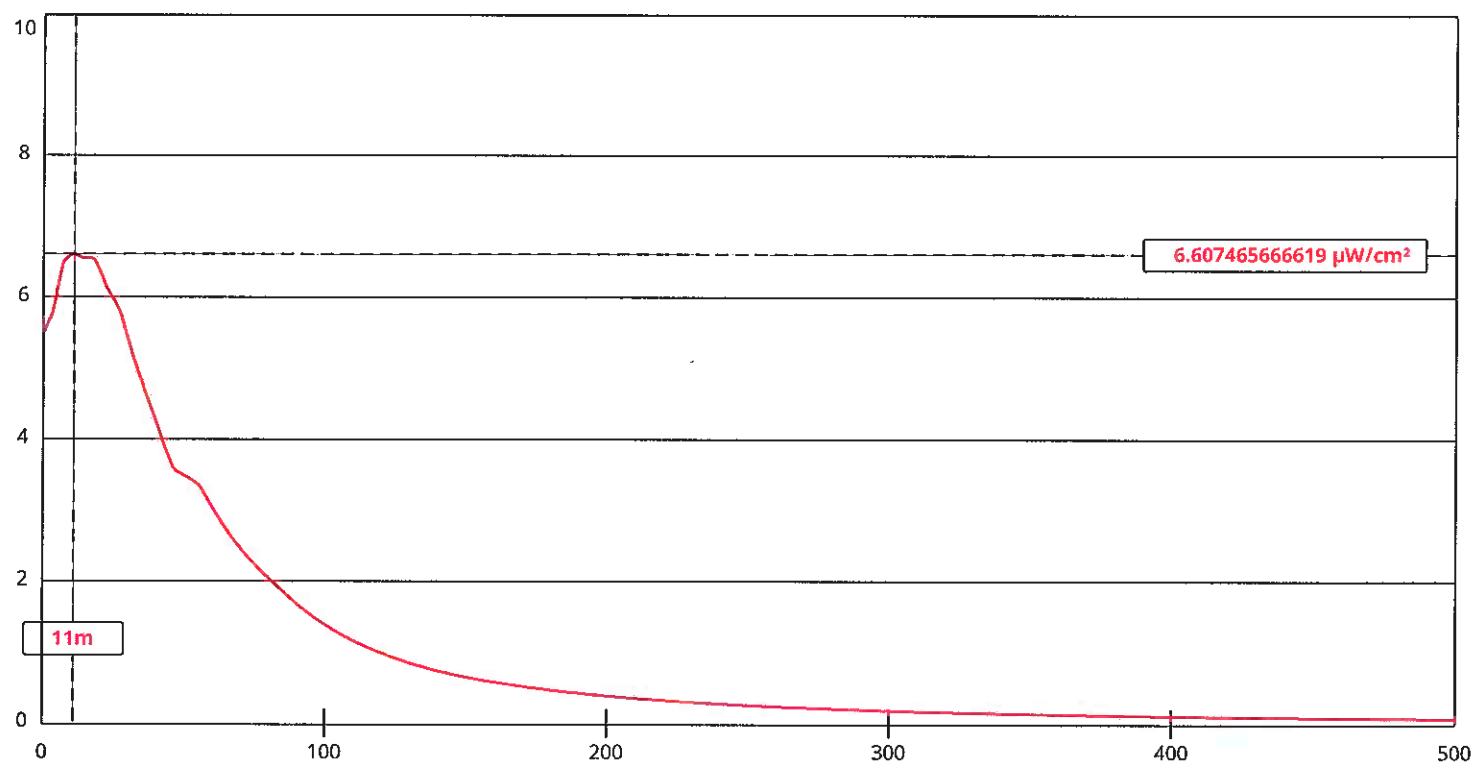
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Channel Selection	Channel 259 (99.7 MHz) ▼		
<a href="#">Antenna Type +</a>	EPA Type 1: Ring-and-Stub or "Other" ▼		
Height (m)	38	Distance (m)	500
ERP-H (W)	250	ERP-V (W)	250
Num of Elements	1	Element Spacing ( $\lambda$ )	1
Num of Points	500	Apply	

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Channel Selection	Channel 295 (106.9 MHz) ▼		
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other" ▼		
Height (m)	41	Distance (m)	500
ERP-H (W)	250	ERP-V (W)	250
Num of Elements	1	Element Spacing (λ)	1
Num of Points	500	Apply	

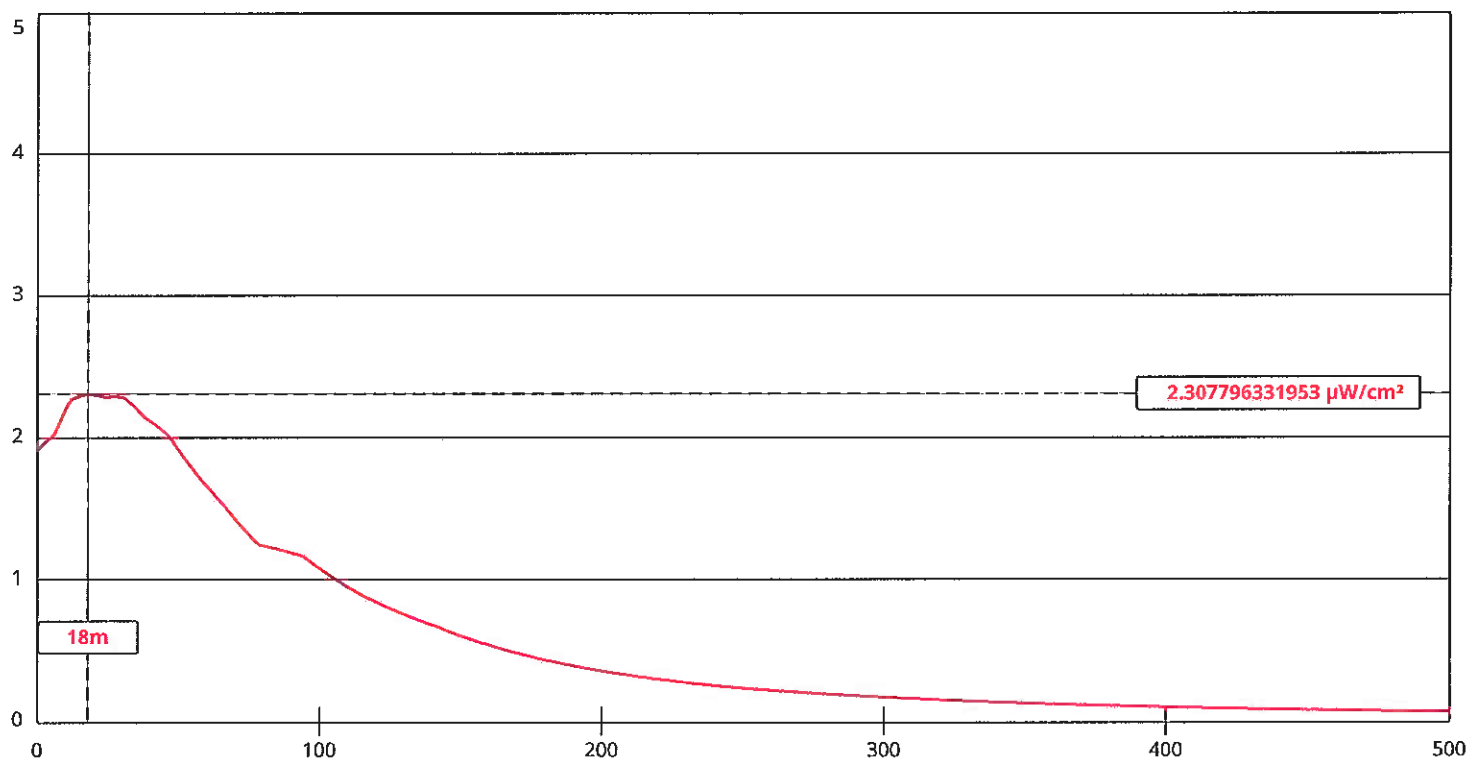


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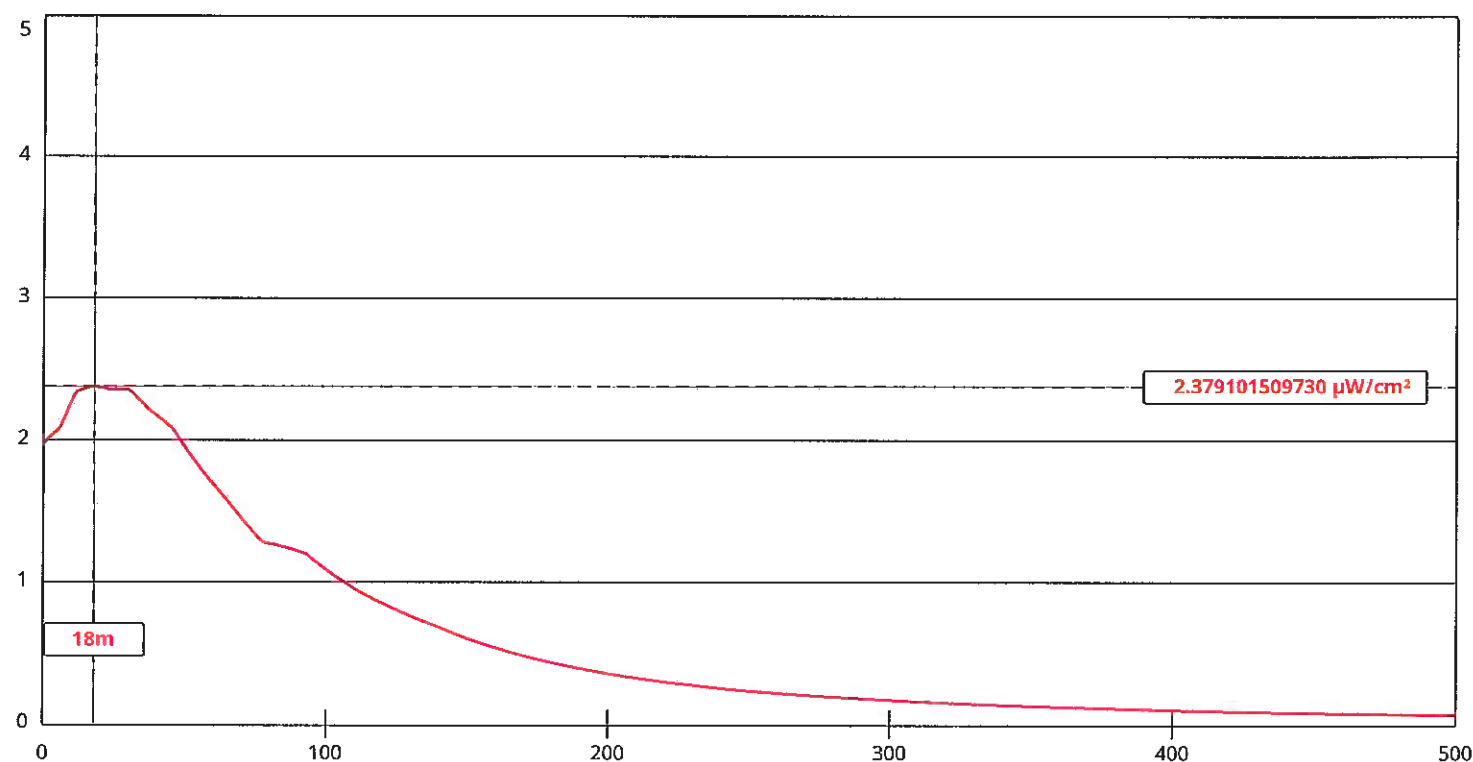
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Channel Selection	Channel 221 (92.1 MHz) ▼		
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other" ▼		
Height (m)	68	Distance (m)	500
ERP-H (W)	250	ERP-V (W)	250
Num of Elements	1	Element Spacing (λ)	1
Num of Points	500	Apply	

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Channel Selection	Channel 299 (107.7 MHz) ▼		
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other" ▼		
Height (m)	<input type="text" value="67"/>	Distance (m)	<input type="text" value="500"/>
ERP-H (W)	<input type="text" value="250"/>	ERP-V (W)	<input type="text" value="250"/>
Num of Elements	<input type="text" value="1"/>	Element Spacing (λ)	<input type="text" value="1"/>
Num of Points	<input type="text" value="500"/>		
<input type="button" value="Apply"/>			