

ENGINEERING REPORT RF Radiation

KFLT-FM (aux) – Tucson, AZ
Facility ID No. 20403

May 2021

CERTIFICATION OF ENGINEERS

The firm of Munn-Reese, Broadcast Engineering Consultants, with offices at 385 Airport Drive, Coldwater, Michigan, has been retained for the purpose of preparing the technical data forming this report.

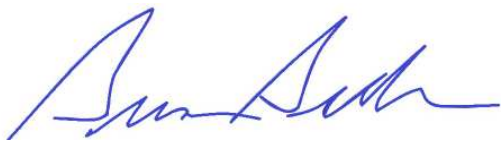
The data utilized in this report was taken from the FCC Secondary Database and data on file. While this information is believed accurate, errors or omissions in the database and file data are possible. This firm may not be held liable for damages as a result of such data errors or omissions.

The report has been prepared by properly trained electronics specialists under the direction of the undersigned whose qualifications are a matter of record before the Federal Communications Commission.

I declare under penalty of the laws of perjury that the contents of this report are true and accurate to the best of my knowledge and belief.

May 27, 2021

MUNN-REESE

By 
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Compliance with Radiofrequency Radiation Guidelines

The potential for human exposure to non-ionizing radiofrequency radiation at the transmitter site has been evaluated. In addition to the KFLT-FM(aux) – Tucson, AZ, operation, the transmitter site complex will be shared with two (5) other FM facilities. There are no other known broadcast facilities within 315 meters of the shared transmitter site.

The pending KFLT-FM(Aux) – Tucson, AZ, analog FM station (Facility ID: 20403) proposes operation on CH281A (104.1 MHz) with 1.6 kW ERP circular polarization (H&V). The FM facility broadcasts from an antenna COR mounted 143 meters above ground level (AGL). The FM facility operates with a one bay Bext TFC2K, "Opposed V Dipole" antenna employing EPA Type 2 approved elements as defined by FM Model - Appendix B issued March 31, 2016.

The KTGv-FM1 – Tucson, AZ, FM Booster Station (Facility ID: 178359), and the KTGv(FM) auxiliary facility (Facility ID: 57504) share a common antenna and do not operate simultaneously. The combined FM Facility broadcasts from an antenna COR mounted 211 meters above ground level (AGL). The FM facility operates with a six bay Jampro JMPC-6 RFR, "Opposed U Dipole" antenna employing EPA Type 3 approved elements as defined by FM Model - Appendix B issued March 31, 2016. The bays are spaced 0.5 wavelengths.

The KFMA(FM) – Oro Valley, AZ, analog FM station (Facility ID: 87841) operates on CH271C1 (102.1 MHz) with 100 kW ERP circular polarization (H&V). The FM facility broadcasts from an antenna COR mounted 198 meters above ground level (AGL). The FM facility operates with a six bay ERI MPF-6AC-DA-SP "Opposed U Dipole" antenna employing EPA Type 3 approved elements as defined by FM Model - Appendix B issued March 31, 2016.

The KFLT-FM – Tucson, AZ, analog FM station (Facility ID: 20403) operates on CH281A (104.1 MHz) with 3.0 kW ERP circular polarization (H&V). The FM facility broadcasts from an antenna COR mounted 216 meters above ground level (AGL). The FM facility operates with a three bay Jampro JMPC-3RFR "Opposed V Dipole" antenna employing EPA Type 2 approved elements as defined by FM Model - Appendix B issued March 31, 2016.

The KMxz-FM(aux) – Tucson, AZ, analog FM station (Facility ID: 2434) operates on CH235C (94.9 MHz) with 17.5 kW ERP circular polarization (H&V). The FM facility broadcasts from an antenna COR mounted 115.8 meters above ground level (AGL). The FM facility operates with a two bay ERI FMH-2 or Jampro JBCP "Rototiller" "Opposed U Dipole" antenna employing EPA Type 3 approved elements as defined by FM Model - Appendix B issued March 31, 2016.

The K285DL -FM – Tucson, AZ, analog FM station (Facility ID: 64688) operates on CH285D (104.9 MHz) with 0.25 kW ERP circular polarization (H&V). The FM facility broadcasts from an antenna COR mounted 125 meters above ground level (AGL). The FM facility operates with a one bay Scala CA5-FM antenna employing EPA Type 1 approved elements as defined by FM Model - Appendix B issued March 31, 2016.

All FM calculations utilize the current *FM Model* web-based software employing the standards as detailed in OET Bulletin No. 65 (Edition 97-01). FM radiofrequency radiation levels have been predicted using both the array pattern, the calculations of which are based on the number of bays in the antenna and wavelength spacing between the bays, and the element pattern. The element pattern has been determined by using measured element data prepared by the EPA and published in "*An Engineering Assessment of the Potential Impact of Federal Radiation Protection Guidance on the AM, FM and TV Services*," by Paul C. Gailey and Richard Tell - April 1985, U.S. Environmental Protection Agency. The results of the evaluation for the FM station have been shown at the end of this RF compliance discussion. To ensure complete protection, the maximum FM contribution has been assumed without regard to any restricted access fencing distance.

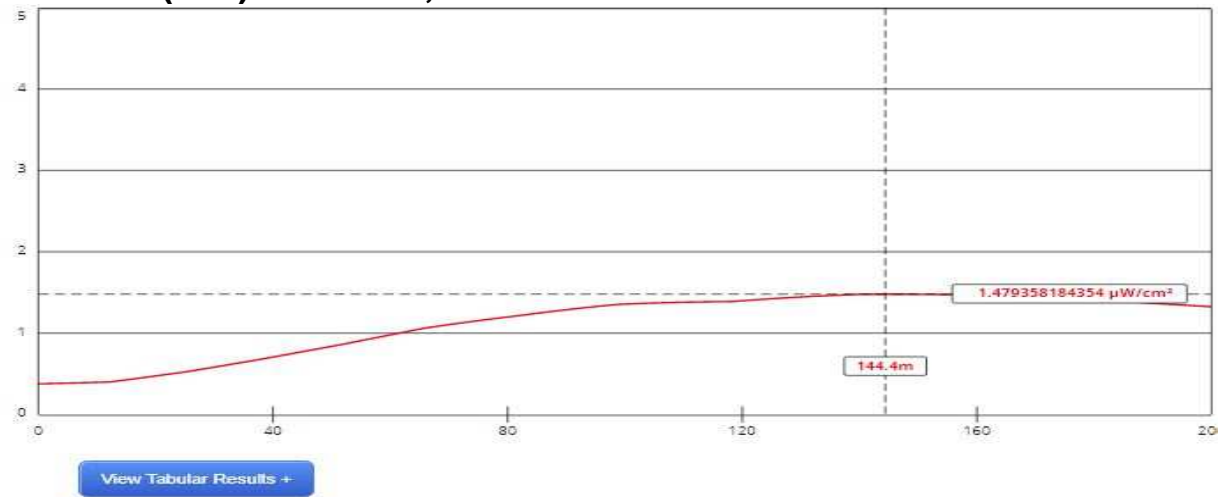
To evaluate the total exposure to non-ionizing radio-frequency radiation it is necessary to sum the individual contributions as a decimal fraction of the maximum permissible limit. If the resulting sum is less than or equal to 100%, the exposure is concluded to be within the guidelines as set forth in the Rules. To simplify the calculations and produce a "worst case" study, the maximum exposure level produced by each station has been selected without regard to the location of that exposure. The following table is based on the uncontrolled limits set forth in the Rules.

<u>Contributing Station</u>	<u>Maximum Contribution</u>	<u>Uncontrolled Limit</u>	<u>% of Limit</u>
KFLT-FM(aux)	1.479 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	0.74%
KTGV-FM1 & KTG(FM)(aux)	0.1776 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	0.09%
KFMA(FM)	2.855 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	1.42%
KFLT-FM	0.1971 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	0.09%
KMXZ-FM(aux)	12.969 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	6.48%
K285DL	0.6645 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	0.33%
Total % of Limit			9.15%

In the event work is required in proximity to the antenna(s) such that the person or persons working in the area will be potentially exposed to fields in excess of the current guidelines, an agreement signed by all broadcast parties at the site will be in effect for the offending transmitter(s) to reduce power, or cease operation during the critical period.

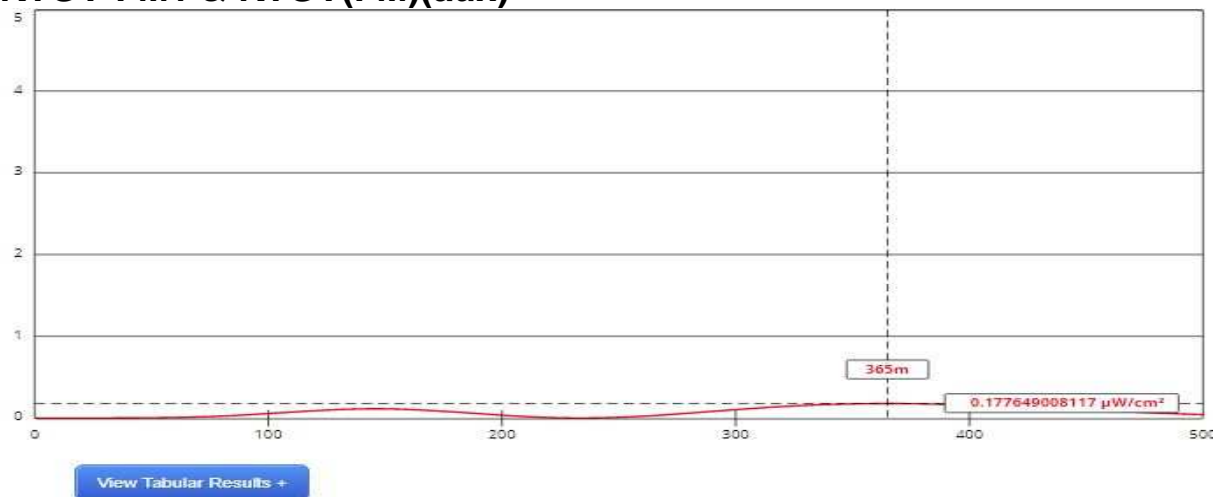
Compliance with Radiofrequency Radiation Guidelines

KFLT-FM(aux) – Tucson, AZ



Channel Selection:	Channel 281 (104.1 MHz)		
Antenna Type +	EPA Type 2: Opposed V Dipole		
Height (m):	143	Distance (m):	200
ERP-H (W):	1600	ERP-V (W):	1600
Num of Elements:	1	Element Spacing (λ):	0
Num of Points:	500	Apply	

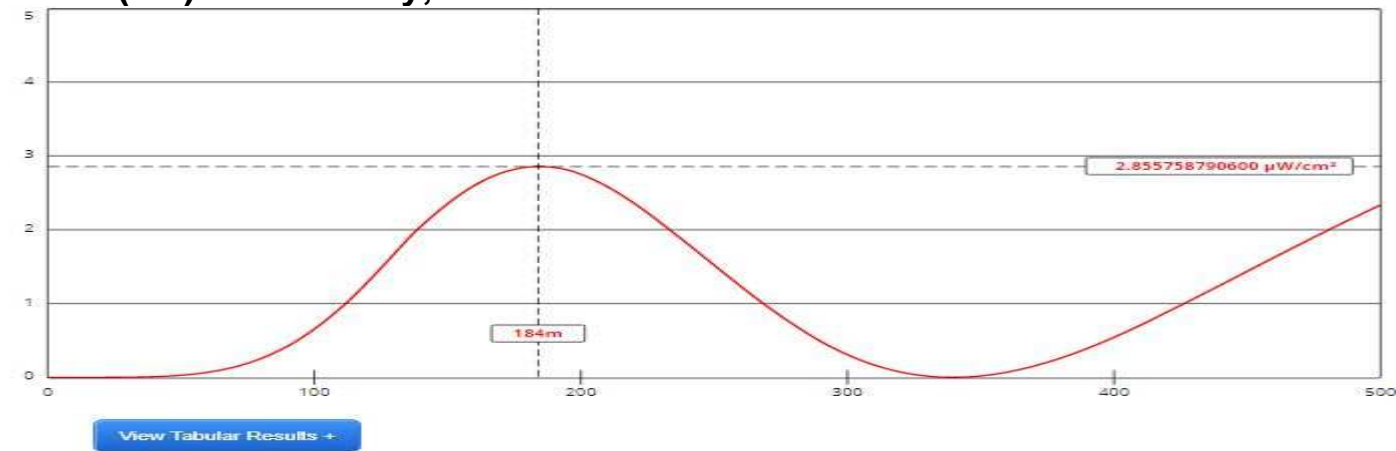
KTGV-FM1 & KTG(FM)(aux)



Channel Selection:	Channel 292 (106.3 MHz)		
Antenna Type +	EPA Type 2: Opposed V Dipole		
Height (m):	211	Distance (m):	500
ERP-H (W):	10000	ERP-V (W):	10000
Num of Elements:	6	Element Spacing (λ):	5
Num of Points:	500	Apply	

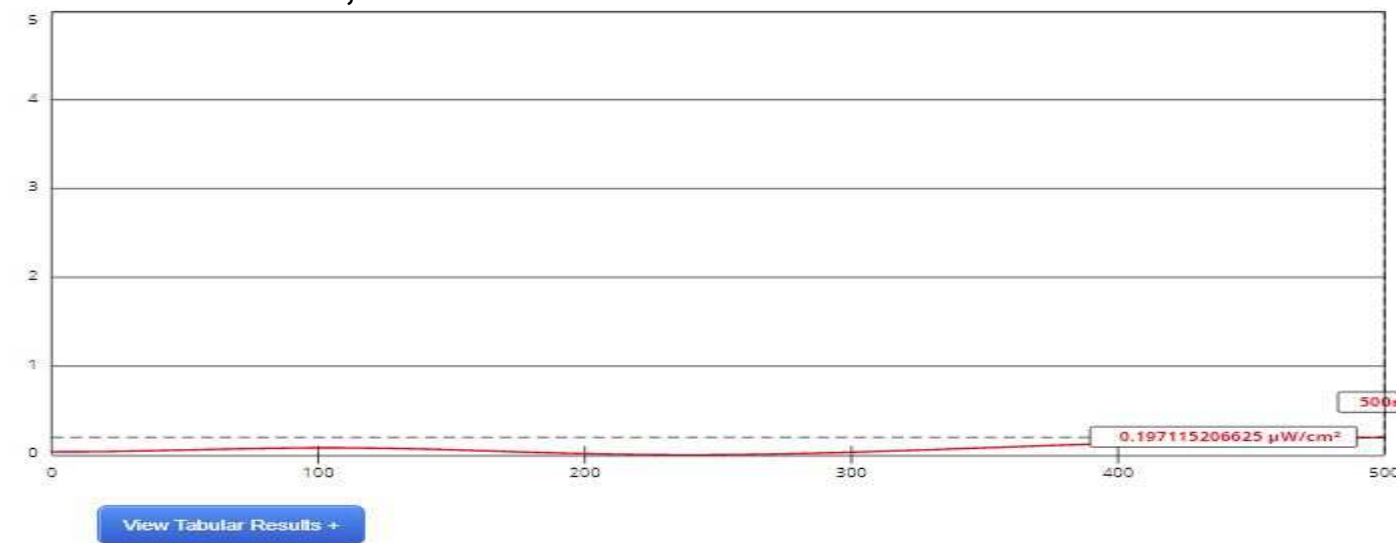
Compliance with Radiofrequency Radiation Guidelines

KFMA(FM) – Oro Valley, AZ



Channel Selection:	Channel 271 (102.1 MHz)		
Antenna Type +	EPA Type 3: Opposed U Dipole		
Height (m):	198	Distance (m):	500
ERP-H (W):	100000	ERP-V (W):	100000
Num of Elements:	4	Element Spacing (λ):	.5
Num of Points:	500	Apply	

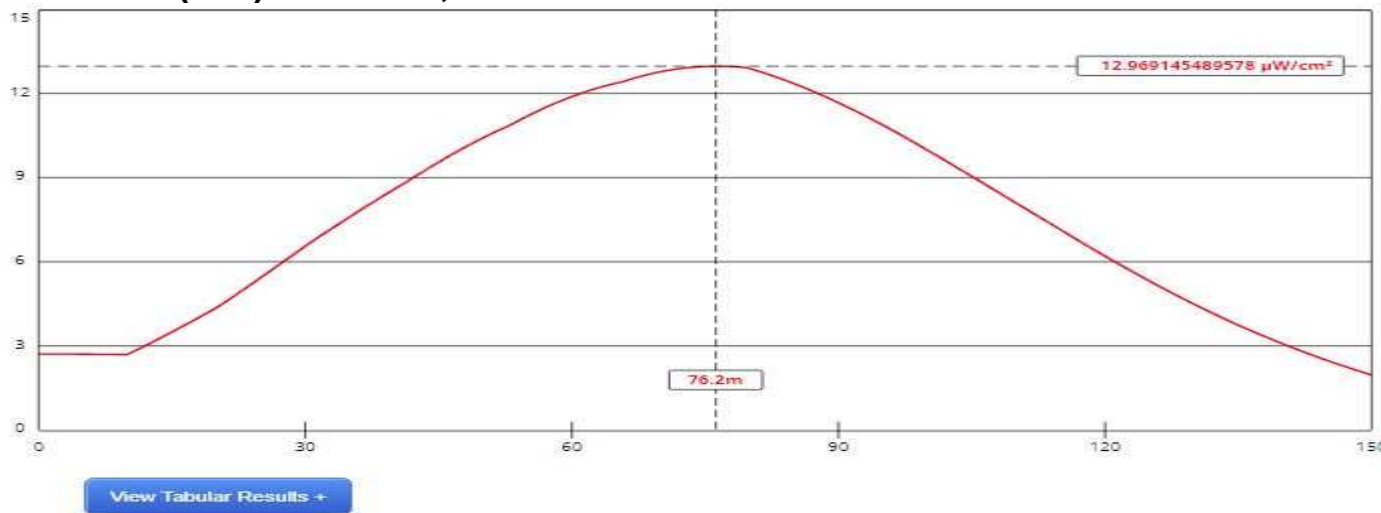
KFLT-FM – Tucson, AZ



Channel Selection:	Channel 281 (104.1 MHz)		
Antenna Type +	EPA Type 2: Opposed V Dipole		
Height (m):	216	Distance (m):	500
ERP-H (W):	3000	ERP-V (W):	3000
Num of Elements:	3	Element Spacing (λ):	.5
Num of Points:	500	Apply	

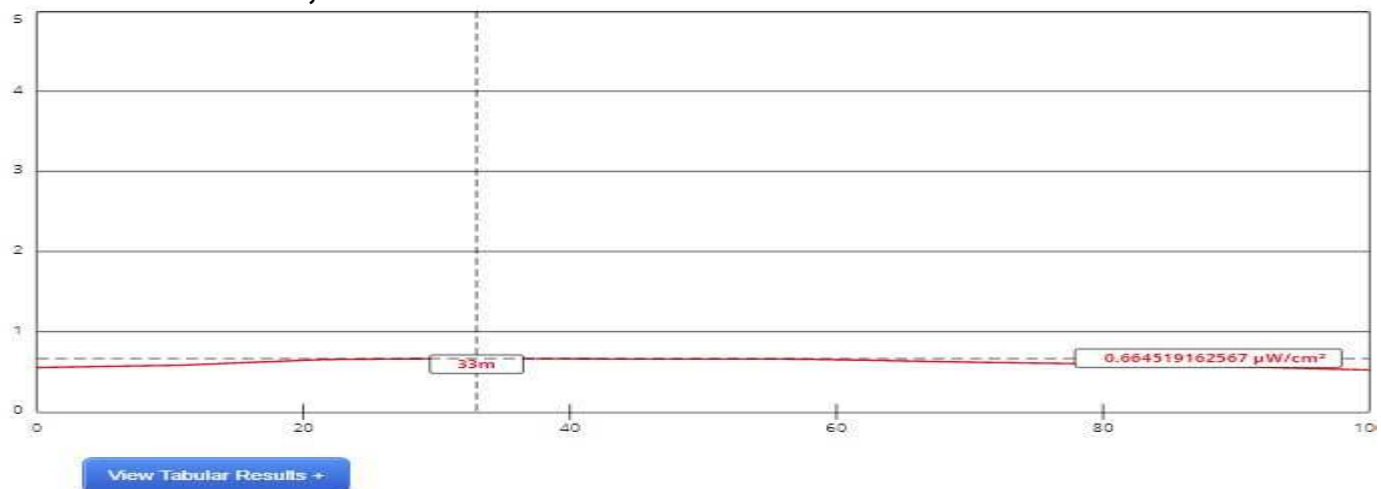
Compliance with Radiofrequency Radiation Guidelines

KMXZ-FM (aux) – Tucson, AZ



Channel Selection:	Channel 235 (94.9 MHz)	
Antenna Type +	EPA Type 3: Opposed U Dipole	
Height (m)	115.8	Distance (m)
ERP-H (W)	17500	ERP-V (W)
Num. of Elements	2	Element Spacing (λ)
Num. of Points	500	Apply

K285DL – Tucson, AZ



Channel Selection:	Channel 285 (104.9 MHz)	
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other"	
Height (m)	125	Distance (m)
ERP-H (W)	250	ERP-V (W)
Num. of Elements	1	Element Spacing (λ)
Num. of Points	500	Apply