

December 2023
FM Translator K205EB
Lanai City, Hawaii Channel 216D
Allocation Study

Background and Non-Adjacent Channel Change

This application is being filed as a minor modification of the licensed facility of FM translator K205EB, proposing operation on non-adjacent Channel 216D. K205EB presently operates on Channel 205D, and is cochannel to the authorization for KLNK 205C3 Lanai City (FCC File No. 0000166818), which will be sited just 5.5 kilometers away. K205EB would be inside the KLNK 60 dBu contour, once that facility is constructed, and there would be significant interference caused and received. This interference caused to and received from KLNK will be completely eliminated by modifying K205EB to non-adjacent Channel 216D.

Non-Fill-In Translator ERP

The proposed facility will operate as a non-fill-in translator. The highest 30-degree-increment radial HAAT value is 974 meters on the 120-degree radial, which by reference to §73.1235(b) allows for a maximum omnidirectional ERP of 10 watts. This calculation used the 3-second terrain database.

Allocation Study

The attached spacing study shows the spacing between the proposed translator site and the location of cochannel and adjacent channel stations and proposals. This study was made with the Commission's Class A spacing requirements, and individual situations were examined to determine the lack of prohibited contour overlap per the requirements of §74.1204 of the Rules. The attached allocation study maps demonstrate compliance with the Commission's Rules for protection of FM broadcast stations and FM translators as outlined in §74.1204.

The proposed facility will operate with an ERP of less than 100 watts. Therefore there are no spacing restrictions to stations which are 53 or 54 channels removed from the proposed operation.

KKUA 214C Wailuku

KMNO 219C1 Wailuku

The proposed translator transmitter site is located within the 60 dBu protected contours of second-adjacent channel station KKUA 214C Wailuku and third-adjacent channel station KMNO 219C1

Wailuku. The attached map of the proposed transmitter site depicts the 100 dBu contour from the proposed facility, which extends 220 meters from the antenna per a Free Space calculation. There is no population within this contour. Therefore, the proposed facility is believed to satisfy the requirements of §74.1204(d) with respect to KKUA and KMNO.

TV Channel 6

Section 74.1205 of the Commission's Rules specifies a threshold distance of 133 kilometers for FM translators operating on Channel 216. There is no TV Channel 6 station located within this threshold distance. Therefore, the proposed facility satisfies interference protection requirements of Section 74.1205.

SEARCH PARAMETERS

FM Database Date: 20231218

Channel: 216A 91.1 MHz
 Latitude: 20 48 11.6 (NAD83)
 Longitude: 156 51 50.9
 Safety Zone: 50 km
 Job Title: LANAI CITY 216

Page 1

Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
KKUA LIC	WAILUKU HI	BLED-20170817AAY	214C 90.7	14.500 1752.0	20 42 22.5 156 15 38.8	99.6	63.75 -31.25	95 SHORT
KKUA-FM2 LIC	HAIKU HI	BLFTB-20121107AA	214D 90.7	0.095 0.0	DA 20 46 19.4 156 14 38.8	93.0	64.65 0.00	0 BOOST
K215EH LIC	KAILUA HI	BLFT-20180502ACA	215D 90.9	0.075 0.0	21 25 32.0 157 45 35.0	306.8	115.78 0.00	0 TRANS
K216FI LIC	HONOLULU HI	BMLFT-20080404AA	216D 91.1	0.100 0.0	21 16 30.6 157 49 19.1	298.0	112.44 0.00	0 TRANS
KLHY LIC	KAILUA HI	0000211076	216C2 91.1	0.700 913.0	19 43 17.0 155 54 59.0	140.4	155.39 -10.61	166 SHORT
K216GH LIC	WAIALUA HI	BLFT-20121203AKM	216D 91.1	0.095 0.0	DA 21 30 37.6 158 8 44.0	300.8	154.42 0.00	0 TRANS
K217GE LIC	KIHEI HI	BLFT-20170323AAV	217D 91.3	0.010 0.0	20 42 21.5 156 15 38.8	99.7	63.75 0.00	0 TRANS
KLHT-FM LIC	HONOLULU HI	BLED-20160610AAG	218C 91.5	100.000 564.0	DA 21 23 45.0 158 5 58.0	297.4	144.15 49.15	95 CLEAR
KMNO LIC	WAILUKU HI	BLED-20140605AAB	219C1 91.7	1.200 935.0	20 46 19.4 156 14 38.8	93.0	64.65 -10.35	75 SHORT
KMNO-FM1 LIC	LAHAINA HI	BLFTB-20190205AA	219D 91.7	0.600 0.0	DA 20 55 25.4 156 41 36.8	52.9	22.21 0.00	0 BOOST
K269FL LIC	KAHULUI HI	BLFT-20060710ADO	269D 101.7	0.250 0.0	DA 20 48 0.6 156 51 40.9	139.6	0.45 0.00	0 TRANS

==== END OF FM SPACING STUDY FOR CHANNEL 216 =====



K205EB 216D Lanai City
40 dBu F(50,10)

KLHY 216C2 Kailua
60 dBu F(50,50)

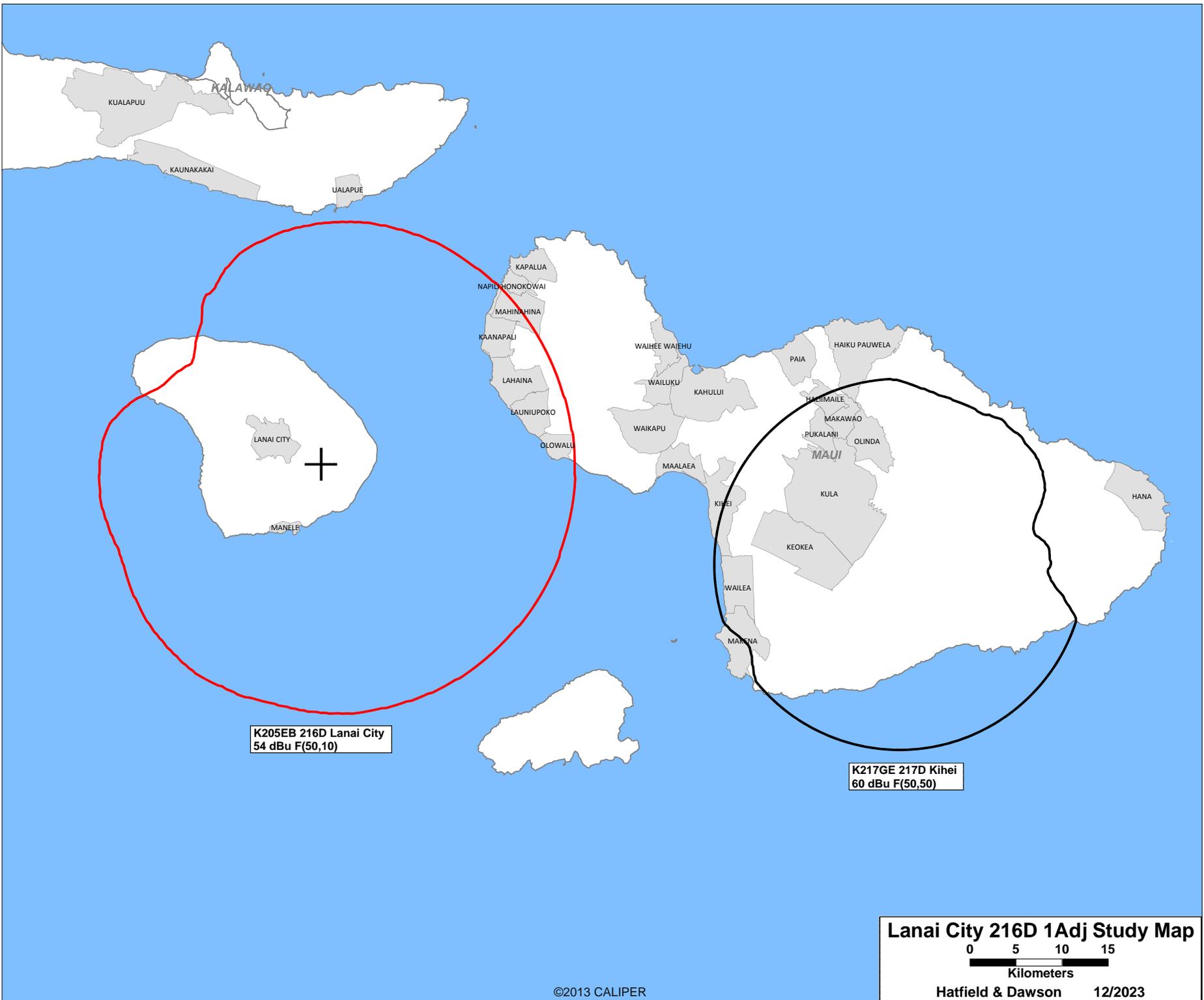
Lanai City 216D Cochannel Study Map

0 20 40 60

Kilometers

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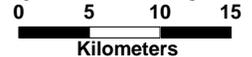
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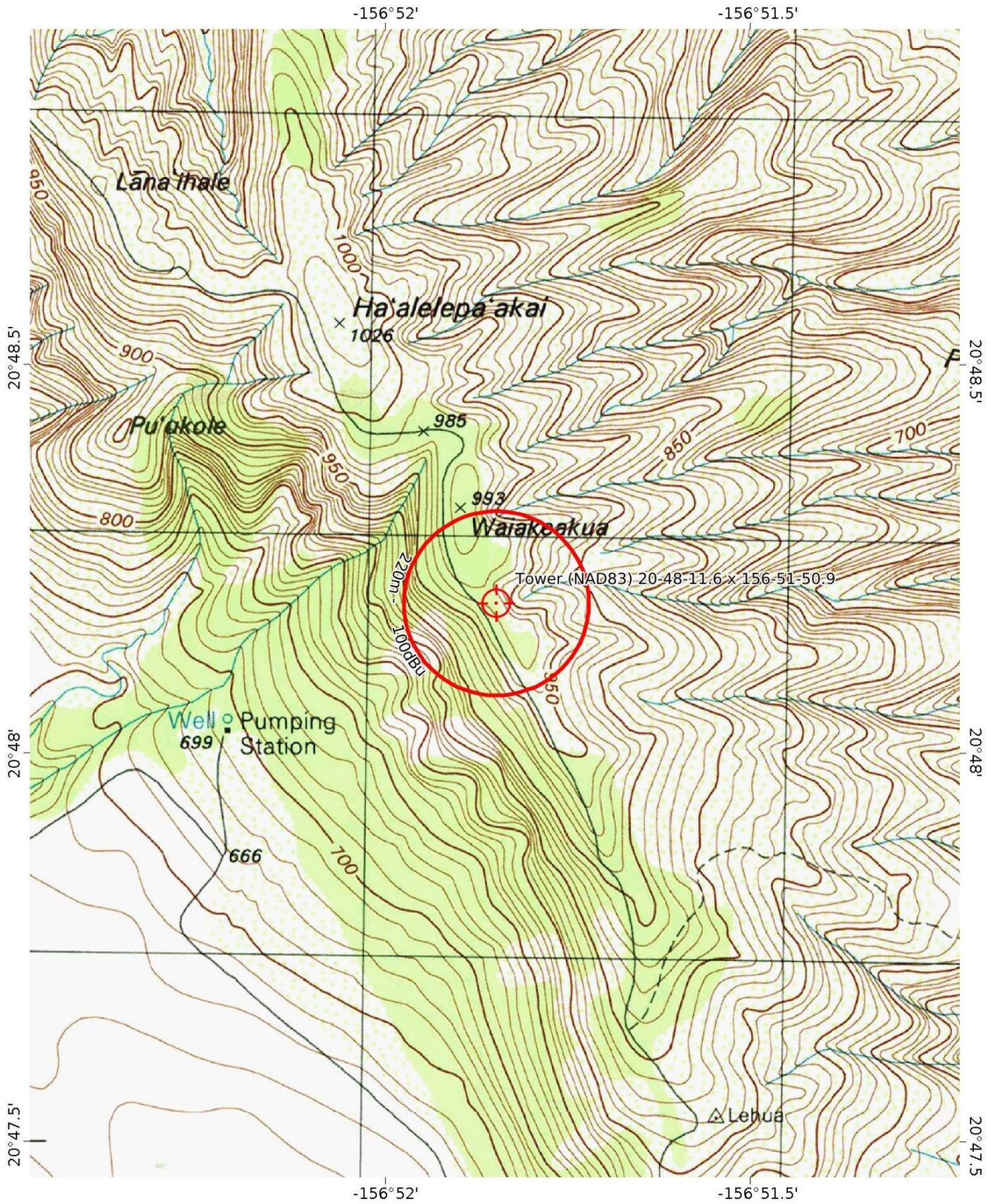
K205EB 216D Lanai City
54 dBu F(50,10)

K217GE 217D Kihei
60 dBu F(50,50)

Lanai City 216D 1Adj Study Map



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Mercator Projection
 WGS84
 UTM Zone 4Q
 CALTOPO



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Lanai City, Hawaii Channel 216D
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 216D (91.1 MHz) with an effective radiated power of 10 watts. Operation is proposed with an antenna mounted on an existing tower at the Waiakeakua transmitter site.

The proposed antenna support structure will not exceed 60.96 meters (200 feet) above ground and does not require notification to the Federal Aviation Administration. Therefore, this structure does not require an Antenna Structure Registration Number.

DETERMINATION Results	
Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.	
Your Specifications	
NAD83 Coordinates	
Latitude	20-48-11.6 north
Longitude	156-51-50.9 west
Measurements (Meters)	
Overall Structure Height (AGL)	27
Support Structure Height (AGL)	27
Site Elevation (AMSL)	979
Structure Type	
LTOWER - Lattice Tower	

RF Exposure Calculations

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\mu W / cm^2) = \frac{33.4 \times AdjERP(Watts)}{D^2}$$

Where: $AdjERP(Watts)$ is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

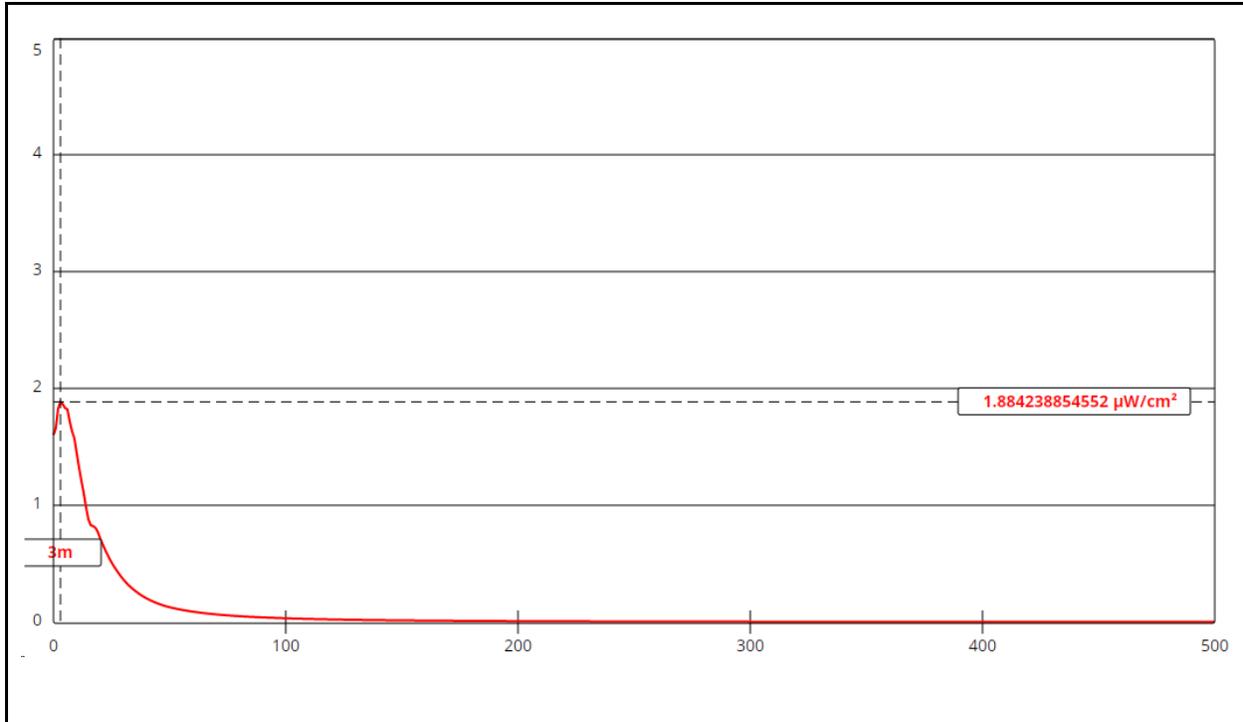
D is the distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 500 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed antenna system assume a Type 1 element pattern, which is the element pattern for the Scala FMV antenna proposed for use. The highest calculated ground level power density occurs at a distance of 3 meters from the base of the antenna support structure. At this point the power density is calculated to be $1.9 \mu W/cm^2$, which is <1% of $200 \mu W/cm^2$ (the FCC standard for uncontrolled environments).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 500 meters from the base of the antenna support structure. Section 1.1307 of the Commission's Rules exempts applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicants proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.



Ground-Level RF Exposure

OET FMModel

Lanai City 216D

Antenna Type: Scala FMV-1
 No. of Elements: 1
 Element Spacing: 1.0 wavelength

Distance: 500 meters
 Horizontal ERP: 10 W
 Vertical ERP: 10 W

Antenna Height: 15 meters AGL

Maximum Calculated Power Density is 1.9 $\mu\text{W}/\text{cm}^2$ at 3 meters from the antenna structure.



60 dBu

LANAI CITY

MAUI

MANELE

KAPALUA

NAPILI HONOKOW

MAHINAHINA

KAAPALI

LAHAINA

LAUNIUP

Lanai City 216D Contour Map

0 3.3 6.7 10

Kilometers

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