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ENGINEERING REPORT:

RADIO FREQUENCY EXPOSURE MEASUREMENTS
AT KUMU-FM, 94.7 MHz, HONOLULU, HI
TRANSMITTER SITE AT 150 PALEHUA ROAD
KAPOLEI, HI

Prepared for

PACIFIC MEDIA GROUP

FEBRUARY 2022

INTRODUCTION

Hatfield & Dawson has been retained to perform the radiofrequency power density measurements around the FM towers on 150 Palehua Road, Kapolei, HI, which is located 26 km west of Honolulu, Hawaii. These measurements were performed on behalf of Pacific Media Group, which is the licensee of station KUMU-FM at this site. This site is owned by Salem Media Hawaii.

SITE ACCESS AND LOCATION

Access to the tower site is controlled and the tower site is not accessible to the public as it is restricted by a locked gate. The terrain drops off steeply in all directions from the site. Vehicular access to the site is via a single driveway which is a steep private road suitable only for four-wheel drive vehicles with low gears. There are no hiking trails leading to the site. The transmitter site and gate are posted with RF Exposure caution signs. All station personnel and contractors are required to follow safety procedures before any work is commenced on the site. The tower base is fenced and no tower climbing is permitted unless the antennas are off or other coordinated safety plans are followed.

MEASUREMENT PROCEDURES

Measurement procedures outlined in OET BULLETIN 65, (EDITION 97-01), [OET 65] "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields", ANSI/IEEE Std C95.3-2002, IEEE Recommended Practice for the Measurement and Computation of Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300GHz, and NCRP Report No. 119, "A Practical Guide to the Determination of Human Exposure to Radiofrequency Fields" were used for the measurements taken at the 150 Palehua Road, Kapolei, HI transmitter site. Spatially averaged measurements were made at the points where the highest fields were found.

According to the ANSI C95.3 guidelines (reaffirmed in OET 65), measurements to determine exposure compliance are to be made at distances 20 cm or greater from any object. This is to ensure that the measurements are not contaminated by re-radiation from conductive objects.

The measurements are presented as a percent of the Occupational/Controlled Environments Maximum Permissible Exposure (MPE) limit. These Radio Frequency Exposure guidelines are found in CFR 47 §1.1310 *Radiofrequency Radiation Exposure Limits*.

The radiofrequency power density was measured with the KUMU-FM antenna operation and all other facilities operating using their licensed facilities. These measurements were made between the hours of 18:00 PM and 19:00 PM on 23 February 2022. Measurements were made by Stephen S. Lockwood, P.E. using the following equipment:

Make	Instrument	Model S/N	Calibration
Narda	Broadband Field Meter	NBM-550 E-0954	November 2021
Narda	FCC Occupational Probe 300 kHz – 50 GHz	EA-5091 01039	November 2021

Measurements were made around the tower which hosts the FM stations. Measurements were not made around the TV tower which is 100 meters north of this facility, although contributions from the TV facilities to the overall exposure environment in the study area were included in the measurements.

The following high-power (above 100 watts) FM & TV broadcast stations were reportedly operating at 100% of licensed power during these measurements:

Call	Frequency / Channel	Power (ERP)	Height Above Ground
KLHT-FM	91.5 MHz	100 kW	39 meters / 128 feet
KQMQ-FM	93.1 MHz	100 kW	39 meters / 128 feet
KUMU-FM	94.7 MHz	100 kW	39 meters / 128 feet
KAIM-FM	95.5 MHz	100 kW	39 meters / 128 feet
KORL-FM	101.1 MHz	100 kW	39 meters / 128 feet
KAAH-TV	Channel 27	262 kW	21 meters / 69 feet

The highest fields at this site were found near the tower, and were 57.0% of the Occupational/Controlled Environment MPE or 285% of the General Population/Uncontrolled Environment MPE.

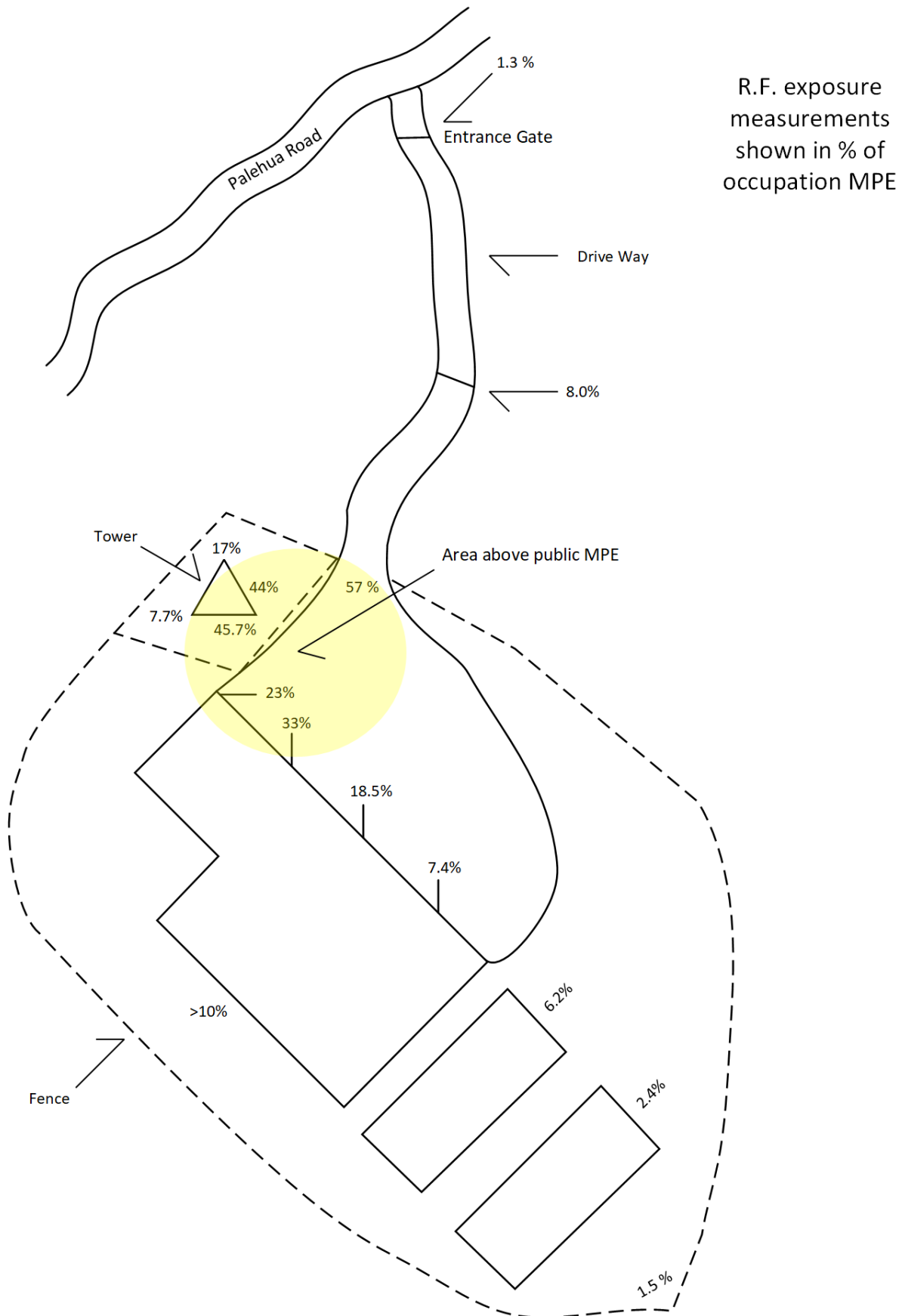
MEASURED FIELDS

The measured fields around the 150 Palehua Road, Kapolei, HI site outside of the fenced area were found to be below the Occupational/ Controlled MPE. Areas around the tower were above the General Population/Uncontrolled Environment MPE limits. The reported measured field at each location is the

spatially averaged field. The area that exceeds the General Population/Uncontrolled Environment MPE is shown on enclosed site sketch.

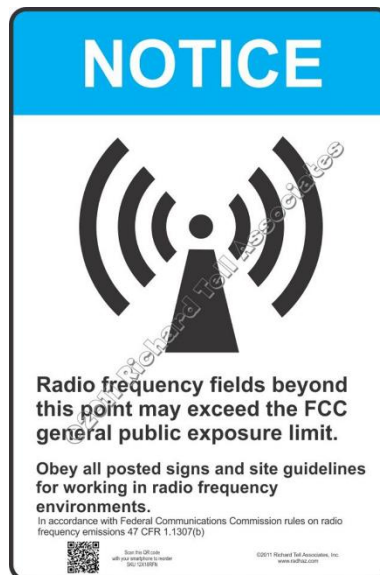
This site is a Controlled Site and there is a Draft Site-Specific Radio Frequency Safety Plan (RFSP). This site complies with the FCC requirements of CFR 47 §1.1310 Radiofrequency Radiation Exposure Limits.

The areas that exceed the General Population/Uncontrolled Environment shall not be accessed by personnel that have not had RF Safety training. To access and perform elevated tower work requires coordination with other users, with required reduction in the transmitter power. This shall be addressed in the work plan for each project requiring tower access.



RF HAZARD COMMUNICATION

The RF Hazard signage for this site must be updated. The FCC recently adopted Docket No. 19-226 *Human Exposure to Radiofrequency Electromagnetic Fields and Reassessment of FCC Radiofrequency Exposure Limits and Policies*, which became effective 3 May 2021. This rule change has specific signage requirements. A Green Information sign should be placed at the gate. This sign should provide a list of the stations operating from this site and contact information for the site owner and station operators. Also, a blue notice sign should be on the gate.



As there are no areas that exceed the Occupational MPE no yellow Caution signs are needed. All existing yellow Caution signs should be removed. The “CAUTION HIGH VOLTAGE AND R.F. EXPOSURE AREAS” signs should be replaced with blue Notice signs. Signs posted on the tower fence should state “Areas within 40 feet of the tower base exceed the FCC General Population/Uncontrolled Environment Maximum Permissible Radio Frequency Exposure. Only persons instructed in the site Radio Frequency Safety Plan are allowed in this area.”

CONCLUSION

This site is a Controlled Site and there is a Draft Site-Specific Radio Frequency Safety Plan. This site complies with the FCC requirements of CFR 47 §1.1310 Radiofrequency Radiation Exposure Limits.

STATEMENT OF ENGINEER

This Engineering Report and the Radio Frequency Exposure Measurements at the 150 Palehua Road, Kapolei, Hawaii site have been prepared by the undersigned or under my direct supervision. I am an experienced radio engineer whose qualifications are a matter of record with the Federal Communications Commission. I am an engineer in the firm of Hatfield and Dawson Consulting Engineers and am Registered as a Professional Engineer in the States of Washington, Alaska, and Wyoming.

Please feel free to contact me should you have any questions.



28 February 2022

Stephen S. Lockwood, P.E.