

APPLICATION FOR MODIFICATION OF LICENSE
MAIN ANTENNA
STATIONS KRTR-FM/KPHW(FM)
WILIWILINUI, HAWAII

Technical Exhibit

This Technical Report was prepared on behalf of two full-service radio stations located atop *Wiliwilinui Ridge* near Honolulu, Hawaii. These stations replaced their main transmitting antenna to a Dielectric DCR-M6BR75F10T (6 bay). This technical exhibit supports the applications seeking to license these modified main facilities (Form 302) by providing the results of the ground level radiofrequency exposure measurements and the intermodulation measurements from the combined KRTR-FM/KPHW(FM) facilities.



Picture 1. Wiliwilinui Ridge Transmitter Site.

Table 1 is a tabulation of the stations seeking operation at the new facility.

CallSign / Frequency	Effective Radiated Power	Transmitter Power Output
KPHW(FM) / 104.3 MHz	75 kW	34 kW
KRTR-FM / 96.3 MHz	75 kW	34 kW

Table 1. *Wiliwilinui Ridge Main Facilities.*

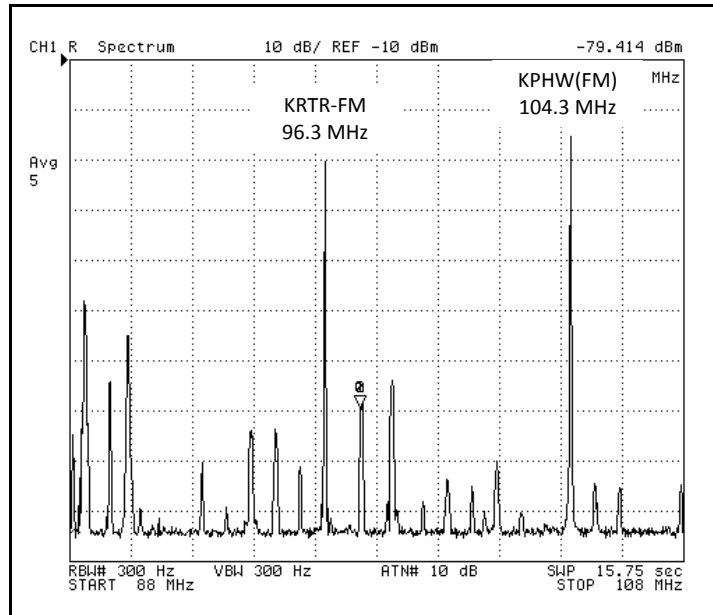
There is no change in the antenna radiation center, transmitter site location nor effective radiated power.

Intermodulation Measurement

The possible intermodulation products caused by the mixing of the subject FM stations into the combiner were measured by the undersigned. The equipment used for the measurements included a calibrated *HP 4395A Network/Spectrum/Impedance Analyzer* and *Trilithic Tuneable Bandpass Filter (5VFSS/110-5-50-CC)*.

Both the unmodulated fundamental emissions and the predicted resulting possible intermodulation products were measured to ensure compliance with Section 73.317 of the Commission's Rules. All the stations were operating into the combiner and main antenna system at the parameters (transmitter power output) with which they will eventually be licensed. Any possible intermodulation products occurring within the FM broadcast band were specifically analyzed.

Additionally, during the intermodulation tests, the spectrum analyzer was scanned for possible intermodulation products occurring outside the FM broadcast band, such as the 2nd harmonic of the fundamental emissions and the FAA aeronautical band.



Picture 2. Sample Spectrum Plot at Combiner Output.

The results of the measurements are tabulated below:

Frequency (MHz)	Level Referenced to Carrier (dB) ¹
88.3	-81.3
112.3	-82.4
192.6	-81.8

Based upon these measurements, the aforementioned FM main transmission system located at *Wiliwilinui Ridge* is in compliance with Section 73.317 of the Commission's Rules.

Radiofrequency Electromagnetic Exposure

A ground level radiofrequency electromagnetic field exposure (RFR) survey was performed at the *Wiliwilinui Ridge* transmitter site. The purpose of these measurements was to measure the exposure occurring from the new operation.² As discussed in further detail below, it appears that all the radiofrequency exposure measurements were below the Federal Communication Commission (FCC) uncontrolled environment standard around the transmitter site compound. The area was measured employing a Narda RFR test set.³

Measurements were completed at ground level at and near the transmitter site compound along the walking trail. There are two full-service FM stations and two full-service television station that operate from this site. The facilities were confirmed to be at their proper operational power levels during the exposure measurements. All the measurements are with respect to the uncontrolled environment standard.

¹ Most of the possible intermodulation measurements occurred at the noise floor of the spectrum analyzer.

² See OET Bulletin No. 65, Evaluating Compliance With FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, August, 1997.

³ The Narda 8718 test set, serial number 1575, was last calibrated in April, 2012. The associated Narda 8742 Isotropic Shaped Electric Field Probe, serial number 3013, was last calibrated in May, 2012. The instrumentation indicated the measured exposure value as a percent of the standard. The measurements were obtained by averaging the electric fields existing in a vertical line from ground level to a point 6 feet above ground level.

The greatest exposure value was 95 percent of the uncontrolled standard, located on the walking path near its terminus. Therefore, as this value is less than 100 percent of the permitted maximum value, it appears the area is in compliance with the Commission's uncontrolled environment exposure analysis.

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