ENGINEERING REPORT

Form 302-FM License Modification
Form 335-FM Digital Notification

Radio Frequency (RF) Protection Study

WKLH(FM) – Milwaukee, WI (Analog & HD/IBOC)

July, 2012

CERTIFICATION OF ENGINEERS

The firm of Munn-Reese, Inc., 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.

July 27, 2012

MUNN-REESE, INC.

By _____
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By _____
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License Renewal
Compliance with Radiofrequency Radiation Guidelines

The RF Compliance Study for the WKLH(FM) – Milwaukee, WI facility has been evaluated for human exposure to non-ionizing radiofrequency radiation at the transmitter site. The site will house multiple transmitters. The potential for human exposure to non-ionizing radiofrequency radiation at the proposed transmitter site has been evaluated with regards to the §1.1307(b)(3), five percent (5%) contribution rule, for multiple transmitter sites.

The WKLH(FM) – Milwaukee, WI analog FM facility (pending Form 302-FM License Modification) operates on CH243B (96.5 MHz) with 20.0 kW ERP circular polarization (H&V). The facility broadcasts with an antenna COR mounted 263 meters above ground level (AGL). The station operate with a 4-Bay, 0.75 λ (wavelength) spaced, ERI LYNX Series II DI-4A Dual Input (Analog and HD-IBOC) "rotor-tiller" antenna employing EPA Type 3 elements as defined by FM Model Version 2.10 Beta issued March 22, 1995[1].

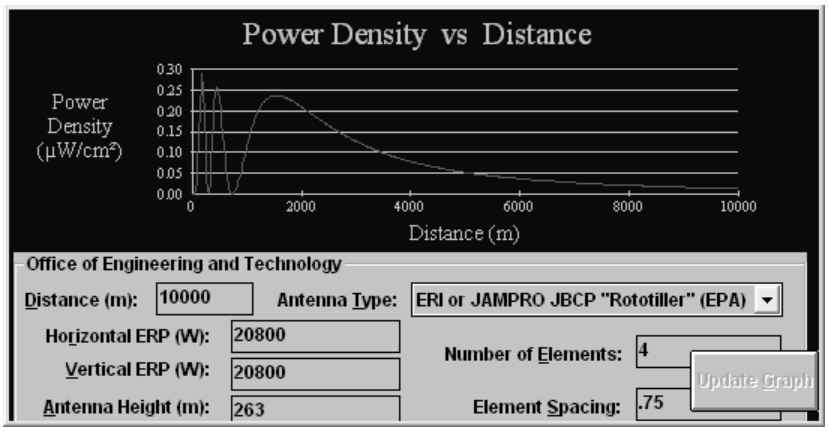
The WKLH(FM) – Milwaukee, WI HD/IBOC facility (pending Form 335-FM Digital Notification Modification) operates on CH243B (96.5 MHz) with -14 dBc power or 0.800 kW ERP circular polarization (H&V) (Log[0.04]*10 = -14 dBc). The HD/IBOC facility broadcasts a diplexed signal from the WKLH(FM) main antenna mounted 263 meters above ground level (AGL). The operational antenna is identified as the same 4-Bay, 0.75 λ (wavelength) spaced, ERI LYNX Series II DI-4A Dual Input "rotor-tiller" antenna employing EPA Type 3 elements as defined by FM Model Version 2.10 Beta issued March 22, 1995[1].

For purposes of this RF Compliance Study, the sum Analog and HD/IBOC powers of 20.8 kW ERP circular polarization has been assumed as one single contribution.

To evaluate the total exposure to non-ionizing radio-frequency radiation with regards to the five percent contribution exclusion rule, it is necessary to establish 5.0% of the maximum permissible limit. 5.0% of the 200 μW/cm² results in 10 μW/cm². Therefore if the resulting contribution is less than or equal to 10 μW/cm² or 5.0%, the exposure is concluded to be within the guidelines of OET Bulletin No. 65 (Edition 97-01) and §1.1307(b)(3). Protection of the more restrictive uncontrolled limit implies protection of the controlled limit.

Inspection of the graph below indicates the maximum contribution for the uncontrolled environment is less than the 10 μW/cm² (5.0%) limit as set forth by §1.1307(b)(3), therefore the facility is in compliance with FCC guidelines. §1.1307(b)(3) states that facilities contributing less than five percent of the exposure limit at locations with multiple transmitters are categorically excluded from responsibility for taking any corrective action in the areas where its contribution is less than five percent. Since this instant application meets the five percent exclusion test at all ground level areas, the impact of the proposed facility may be considered independently from other facilities operating at or nearby this site. It is believed the impact of the proposed operation should not be considered to be a factor at ground level as defined under §1.1307(b)(3).

In addition to the protection afforded by the proposed antenna height above ground, the facility is or will be properly marked with signs, and entry to the facility will be restricted by means of fencing with locked doors and/or gates if required. Any other means that may be required to protect employees and the general public will also be employed. 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.



The Max Power Density was found to be .288432803357893 μW/cm² at 180 meters.

Note: Graph resolution is 500 points.

[1] FM Model Version 2.1b employs 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.

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