

KXSS(AM) DIRECTIONAL PATTERN IMPACT

Starcom, LLC
St. Cloud-Sartell, MN

The existing tower on which the WCMN-LD antenna was mounted is located 125 meters (0.58 wavelengths on 1390 kHz) from the licensed center of array coordinates for the licensed directional antenna system of KXSS(AM) - Waite Park, Minnesota, which operates on 1390 kHz with a power of 2.5 kilowatts using a four tower directional array during daytime hours and a 1.0 kilowatt using a three tower directional array during nighttime hours. The WCMN-LD tower stands 112.8 meters above ground, which corresponds to an electrical height of 188.3 degrees on 1390 kHz. Because the WCMN-LD tower is taller than 36 degrees on 1390 kHz and is located within 10 wavelengths and 3.0 kilometers of the KXSS directional array and is base insulated and detuned, Section 1.30002(b) of the FCC Rules requires that an analysis be conducted to evaluate the impact of the installation of the WCMN-LD antenna and transmission line on the KXSS daytime and nighttime directional patterns.

Because KXSS directional patterns were licensed based on a full proof of performance based on field strength measurements, this was accomplished by conducting before and after field strength measurements on the monitor points for both KXSS directional patterns pursuant to Section 1.30002(f) of the FCC Rules. The before measurements were conducted on June 30, 2021 and the after measurements were conducted on September 22, 2021 by Mark Young, the chief engineer of KXSS. All antenna monitor parameters were within the permitted tolerances of the licensed values when these measurements were taken. The attached tables detail the results of these before and after monitor point measurements, which show that the field strengths at all of these monitor points were less than the maximum permitted values both before and after the installation of the WCMN-LD antenna and transmission line.

COMPARISON OF KXSS
"BEFORE" TO "AFTER"
DAYTIME DIRECTIONAL
MONITOR POINT READINGS

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<u>Azimuth</u> <u>(Degrees)</u>	"Before" Measured Field Strength <u>(mV/m)</u>	"After" Measured Field Strength <u>(mV/m)</u>	Limit <u>(mV/m)</u>
27.0	6.1	5.8	7.62
56.8	28.7	27.2	38.77
150.0	1.68	3.2	9.2
243.2	12.1	13.9	22.9
272.2	3.8	2.28	9.68

COMPARISON OF KXSS
"BEFORE" TO "AFTER"
NIGHTTIME DIRECTIONAL
MONITOR POINT READINGS

Starcom, LLC
St. Cloud-Sartell, MN

<u>Azimuth</u> <u>(Degrees)</u>	"Before" Measured Field Strength <u>(mV/m)</u>	"After" Measured Field Strength <u>(mV/m)</u>	Limit <u>(mV/m)</u>
8.5	2.8	2.5	3.80
115.7	3.08	2.59	5.6
184.3	3.88	3.62	5.8
291.5	4.68	4.42	4.78