

### Equipment Performance Measurements

June 18, 2019

#### **FM Broadcast Station KCJH**

89.1 MHz

Hughson, California

Following construction of FM Broadcast Station KCJH on 89.1 MHz in Hughson, Calif. spectral emissions of the station were measured as required by article 73.317 of the Federal Communications Commission's regulations. KCJH is co-located with 3 other FM broadcast stations or FM translators as identified in the included tabulation of measurements. These four stations have their transmitting antennas on the same tower. Potential intermodulation products between the four stations were especially scrutinized.

A spectrum analyzer was used to examine and plot the frequency spectrum from 1 MHz below to 1 MHz above the carrier frequency. A plot of this spectral analysis is included in this report.

At frequencies removed from the carrier by more than 1 MHz the spectrum analyzer was used to examine the spectrum from 10 MHz to 1000 MHz. After establishing the carrier reference level, a 20 dB. notch filter on the carrier frequency was inserted at the input to the spectrum analyzer to increase the dynamic range of measurements to 95 decibels below carrier level. Emissions were found to be below the limits specified in §73.317.

The location of measurements, equipment used, and the results of the measurements are shown with the attached measurement tabulation.

These measurements demonstrate that Radio Station KCJH is operating in compliance with the transmission system emission limitations of §73.317.

A handwritten signature in blue ink, reading "Dale L. Harry", is written over a horizontal line.

Dale L. Harry, CPBE®

Technical Director, Sierra Broadcast Service

FCC License No. PG-12-16225

# Equipment Performance Measurements

KCJH Radio, Hughson, California

Date: June 18, 2019

Frequency: 89.1 MHz

## SPURIOUS RADIATION MEASUREMENTS

Effective Radiated Power = 13 Kilowatts

Freq. MHz.	FCC Limit, dBc	Signal	Level, dBc	Remarks
89.1	0	Carrier	0	
178.2	80	2nd harmonic	96	
267.3	80	3rd harmonic	94	
356.4	80	4th harmonic	94	
445.5	80	5th harmonic	95	
187.4	80	F1+F2	93	Intermodulation Products between:  F1 KCJH 89.1 MHz F2 KWNN 98.3 MHz F3 K279AM 103.7 MHz F4 K290CN 105.9 MHz
192.8	80	F1+F3	90	
195.0	80	F1+F4	93	
276.5	80	2F1+F2	95	
79.9	80	2F1-F2	92	
281.9	80	2F1+F3	97	
74.5	80	2F1-F3	92	
284.1	80	2F1+F4	95	
72.3	80	2F1-F4	90	
285.7	80	2F2+F1	96	
107.5	80	2F2-F1	89	
296.5	80	2F3+F1	96	
118.3	80	2F3-F1	95	
300.9	80	2F4+F1	96	
122.7	80	2F4-F1	84	

dBc = decibels below carrier

Measurement Equipment: Tektronics model 2710 Spectrum Analyzer  
Microwave Filter Co. model 6397 Notch Filter  
Vertical whip antenna on roof of vehicle, 0.25 wavelength at 100 MHz

Program Material: Music and Talk

Measurement Location: 0.7 Km. east of the transmitting tower at the south edge of East Service Road

### SPECTRUM ANALYZER PLOT

A Tektronics model 2710 Spectrum Analyzer was used to plot the spectrum within 1 MHz of the carrier. The signal source used was a quarter wavelength vertical antenna vehicle roof mounted 2 meters above ground. The top horizontal graticule of the plot was set at a reference level of 10 decibels below carrier. This plot demonstrates that KCJH meets spectral emission requirements within the frequency range of the plot.

ENGINEER: \_\_\_\_\_

*Dale L. Harvey*

Tek  
2710

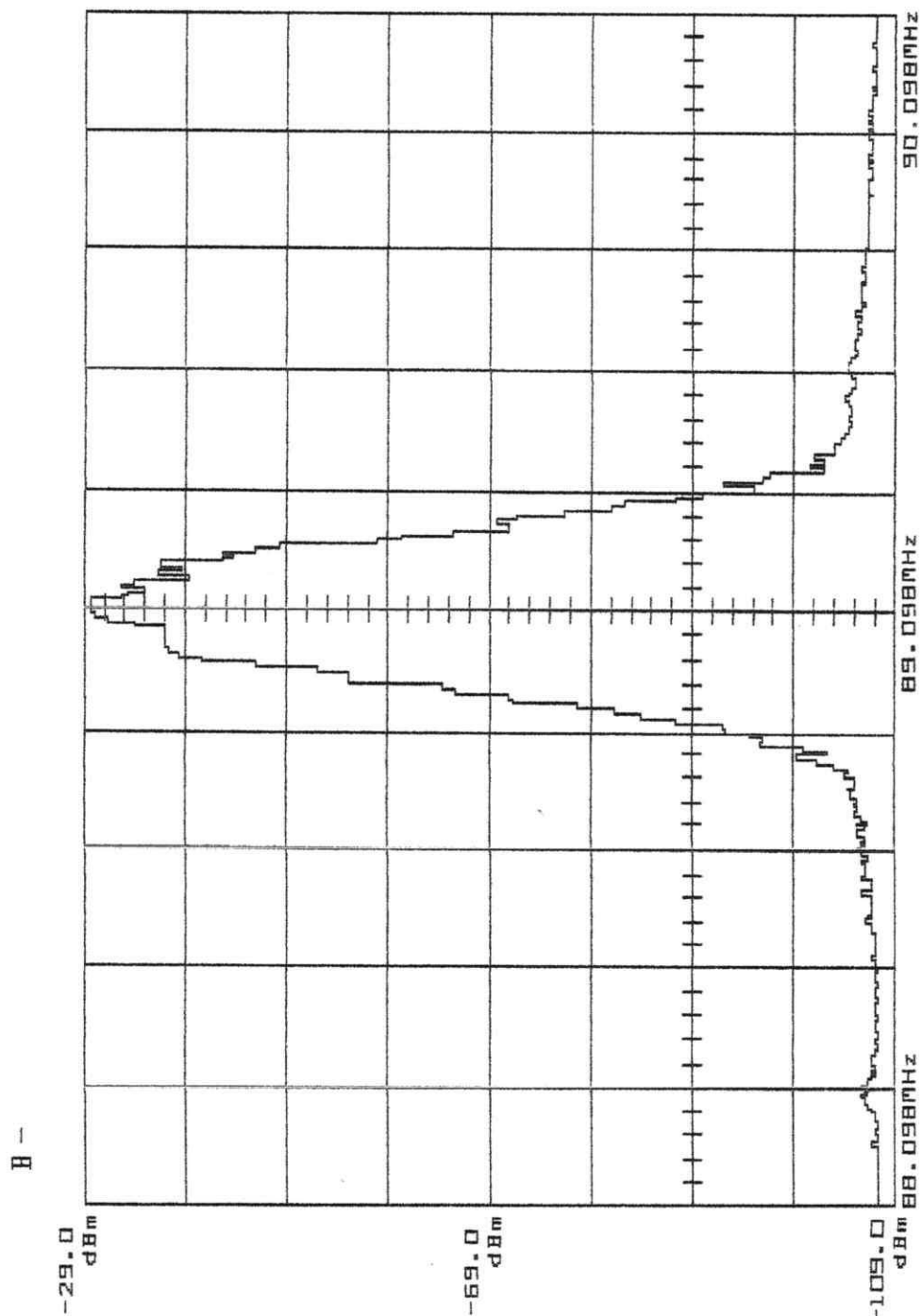
89.098MHz  
-29.0dBm  
200.0kHz  
3kHz RBW

ATTN 2dB  
VF 3kHz  
10 dB

TIME: 100 ms/DIV

MAX/MIN MODE

Note: Readouts correspond to waveform 'B'.



Spectral Analysis of KCJH Radio  
89.1 MHz, 13 Kilowatts ERP  
Hughson, California  
June 18, 2019