

## **K244EX Las Vegas, Nevada CP BPFT-20170718ACH**

### **SPECIAL OPERATING CONDITIONS**

1. The license to cover KYLI construction permit BPH-20170725ABT has been filed. See LMS File No. 0000085544.
  2. The license of FM booster KYLI-FM1 has been surrendered for cancellation. See LMS File No. 0000085544.
  3. The permittee/licensee in coordination with other users of the site agrees to reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic fields in excess of FCC guidelines.
- \* Although not included in the special operating conditions, because K244EX shares the PSI transmit antenna with FM Translator K255CT, Channel 255D, Facility ID No. 38447, Henderson, NV, a spurious emissions report has been completed and is included with this exhibit.

### **TRANSMITTER POWER OUTPUT CALCULATION**

The PSI Model FML two bay 0.625 wavelength circularly polarized antenna has a power gain of 0.8.

The Shively Labs Model 2930-2/3-MIX-4/6 Two Station Branched Combiner has a measured insertion loss of 0.629 db.

The 263 ft. of Andrew LDF4-50A 1/2" foam dielectric coax has a loss of 1.728 db.

The measured SWR was 1.3 to 1 (9 watts reflected) or .08 db loss.

The overall line loss is 2.437 db for an overall line efficiency of 57.05 percent.

250 watts divided by 0.8 divided by 0.5705 = 547.7 watts TPO.

Spurious Emissions Report  
Combined Translator Stations  
K244EX and K255CT  
Las Vegas, Nevada

Prepared by: Joseph Sands  
Desert Sands Broadcasting inc.

**Narrative:** Desert Sands Broadcasting Inc, was contracted by the Chavez Foundation Licensee of translator Station K244EX, Las Vegas Nevada. The attached measurements were necessitated because of the addition of K244EX, to the existing operation of K255CT.

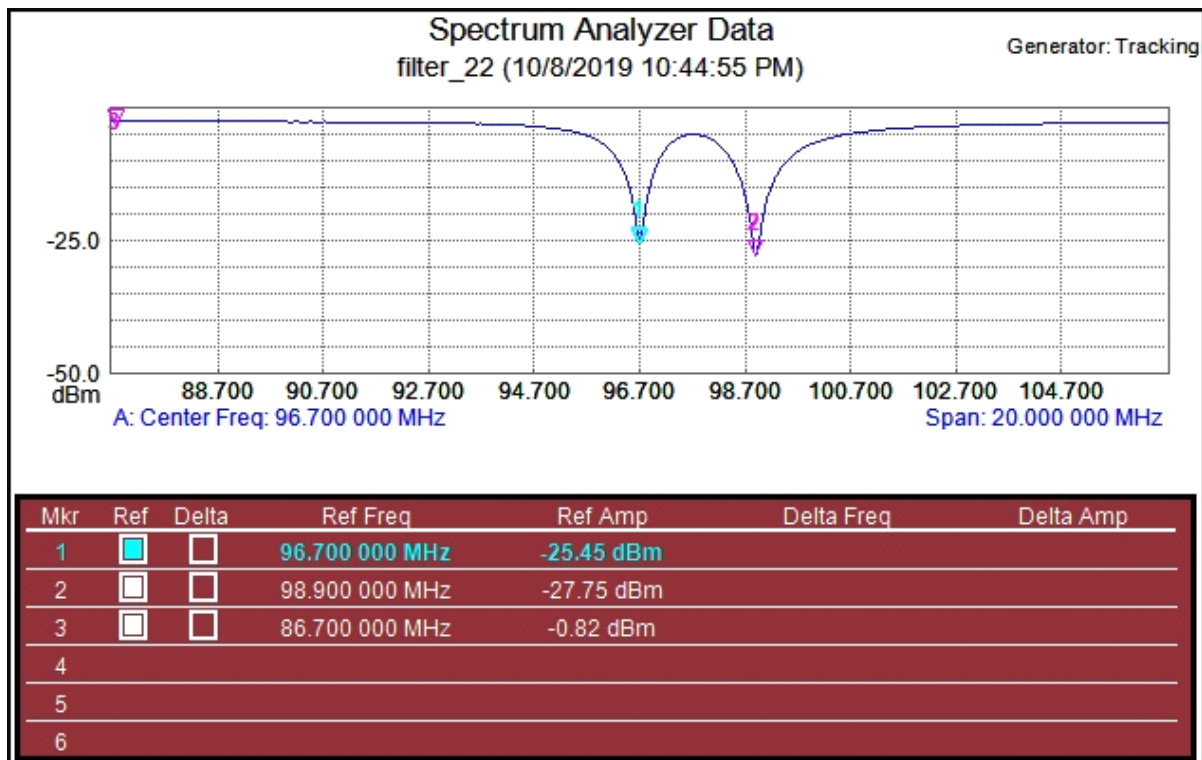
K255CT currently operates on 98.9 MHz with an ERP of 99 Watts. The transmitter location is the Stratosphere observation tower in Las Vegas. K255CT utilizes a 2 element PSI antenna with a spacing of .625 Lambda with a gain of 0.80.

Chavez provided a combining filter arrangement manufactured by Shively Labs. The filtering showed adequate isolation between the two carriers. The combiner is a "Branch combiner" Consisting of 3 Cavities each, to pass each frequency and then combine to a single antenna. The existing K255CT antenna was utilized for both stations as it provided an acceptable match at both frequencies.

Procedure: A bird Line section was connected to the common point of the two filters. A sample port was used to sample a portion of the combined signal to the Anritsu Spectrum analyzer.

A dual element notch filter was installed in line between the sample port and the analyzer. The purpose of the dual notch was to reduce the signal levels from the two translator transmitters by approximately 20 db to increase the Dynamic Range of the spectrum analyzer and thereby allow measurements below 80 dbc. With the notch filters the effective noise floor was increased to -95dbc.

This is the spectrum plot from the analyzer showing the effective attenuation on each frequency:



Measurement Parameters			
		Stop Frequency	106.700 000 MHz
Trace Mode	Normal	Frequency Span	20.000 000 MHz
Preamplifier	OFF	Reference Level	1.598 dBm
Min Sweep Time	0.001 S	Scale	5.0 dB/div
Reference Level Offset	1.598 dB	Serial Number	1007029
Input Attenuation	25.0 dB	Base Ver.	V5.71
RBW	100.0 kHz	App Ver.	V5.73
VBW	100.0 kHz	Model	MS2721B
Detection	RMS	Options	20
Center Frequency	96.700 000 MHz	Date	10/8/2019 10:44:55 PM
Start Frequency	86.700 000 MHz	Device Name	Entronics_MS2712B_SN-1007029

Measurements were then made with both carriers operating. The additional losses of the filters was added to the existing losses for K255CT and the power was increased slightly less than 1 db to compensate for filter loss.

The K244EX power was calculated at 548 Watts using the existing lines losses, plus an additional 18 meters of line plus the losses introduced by the combiner. Both transmitters were run at full power during the measurements.

Table 1. Shows the various outputs of the translators on frequencies of concern.

**Table 1.**

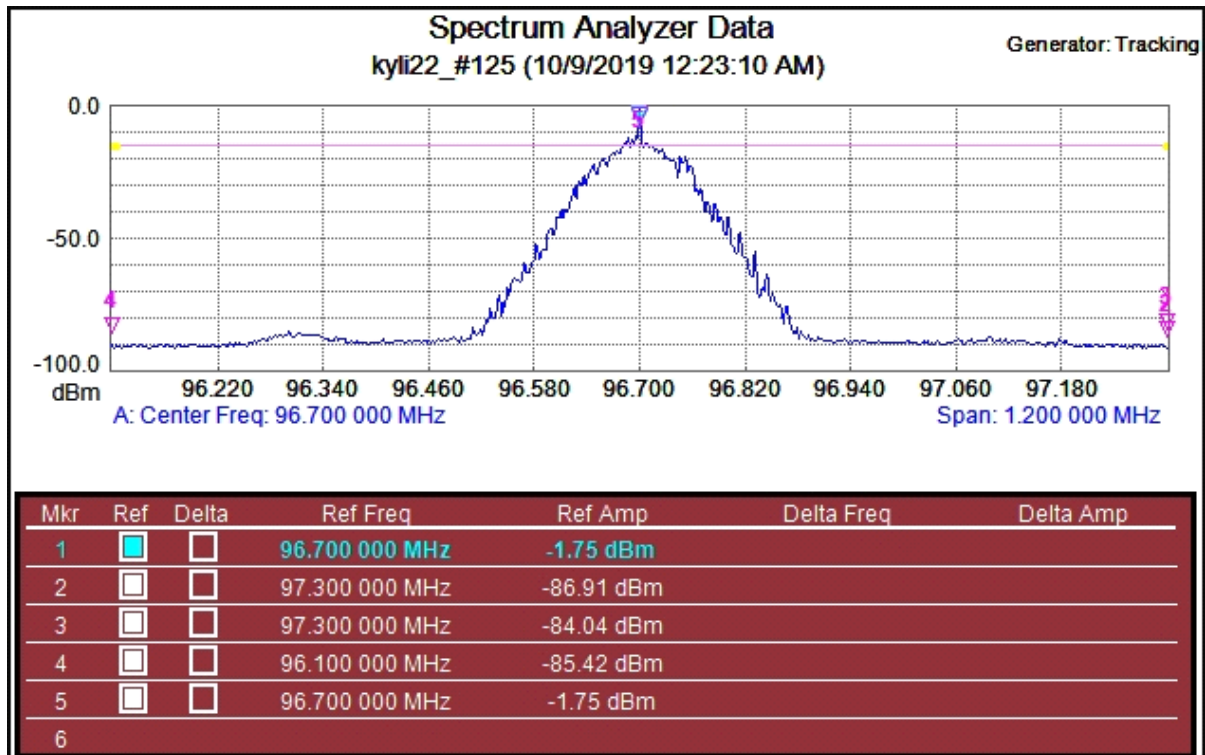
Product	Frequency	Filter Correction	Analyzer Reading	Attenuation
K244EX	96.7 MHz	-24.5 db	-29.0	0.0 db
K255CT	98.9 MHz	-26.2 db	-26.4	0.0 db
IM Product	94.5 MHz	-1.6 db	-73.2	-72.6 db ++
IM Product	101.1 MHz	-2.7 db	-84.3	-81.4
96.7 x 2	193.4 MHz	-1.3 db	Noise Limited	>95 db
96.7 x 3	290.1 MHz	-1.6 db	-78.5	-76.9 db
96.7 x 4	386.8 MHz	-1.9 db	Noise Limited	>95 db
96.7 x 5	483.5 MHz	-2.3 db	Noise Limited	>95 db
96.7 x 6	580.2 MHz	-2.3 db	Noise Limited	>95 db
96.7 x 7	676.9 MHz	-3.3 db	Noise Limited	>95 db
96.7 x 8	773.6 MHz	-3.4 db	Noise Limited	>95 db
96.7 x 9	870.3 MHz	-3.5 db	Noise Limited	>95 db
96.7 x 10	967.0 MHz	-4.9 db	Noise Limited	>95 db
98.9 x 2	197.8 MHz	-1.3 db	-93.9	-92.6 db
98.9 x 3	296.7 MHz	-1.5 db	-83.5	-82.0 db
98.9 x 4	395.6 MHz	-1.8 db	Noise Limited	>95 db
98.9 x 5	494.5 MHz	-2.2 db	Noise Limited	>95 db
98.9 x 6	593.4 MHz	-2.5 db	Noise Limited	>95 db
98.9 x 7	692.3 MHz	-2.9 db	Noise Limited	>95 db
98.9 x 8	791.2 MHz	-3.1 db	Noise Limited	>95 db
98.9 x 9	890.1 MHz	-3.7 db	Noise Limited	>95 db
98.9 x 10	989.0 MHz	-7.7 db	Noise Limited	>95 db

++Per 73.317, calculation of spurious signals beyond 600 KHz =  $43 + (10 * \text{Log}(10))$  Power or 70.4 db.

As can be seen by the above table, at no frequency measured did any measurement exceed the limits expressed in part 73.317. The closest being at 94.5 the lower 3<sup>rd</sup> order IM product. This product was -72 db below the K244EX carrier. Using  $43 + 10(\text{Log}(10))$  548 yields a maximum level of -70.38 db. The measured level exceeds this value by over 2 dB. All Harmonics with the exception of the 3<sup>rd</sup> on each station are limited by the noise floor of the analyzer at approximately -95 db below reference.

## Total Occupied Bandwidth Measurements

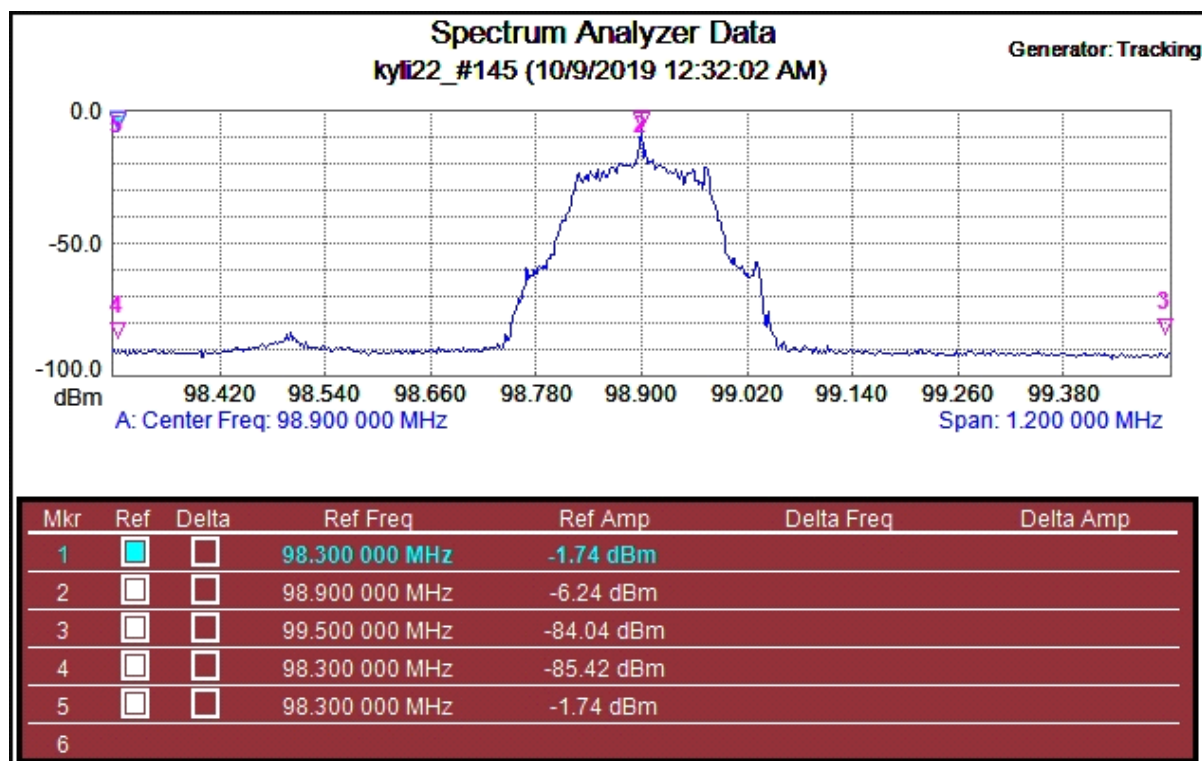
On each of the two transmitters, the analyzer was set to peak hold and the signal measured for 15 minutes using typical programming. The plots for each station are shown below:



Measurement Parameters			
		Stop Frequency	97.300 000 MHz
Trace Mode	Max Hold	Frequency Span	1.200 000 MHz
Preamplifier	OFF	Reference Level	0.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	0 dB	Serial Number	1007029
Input Attenuation	20.0 dB	Base Ver.	V5.71
RBW	1.0 kHz	App Ver.	V5.73
VBW	1.0 kHz	Model	MS2721B
Detection	RMS	Options	20
Center Frequency	96.700 000 MHz	Date	10/9/2019 12:23:10 AM
Start Frequency	96.100 000 MHz	Device Name	Entronics_MS2712B_SN-1007029

## K244EX Total Occupied Bandwidth Measurement

The small rise in the noise floor at 96.3 MHz is from induction from the antenna of FM Station KKLZ (96.3 MHz) and remains even with the carrier of K244EX off.



Measurement Parameters			
		Stop Frequency	99.500 000 MHz
Trace Mode	Max Hold	Frequency Span	1.200 000 MHz
Preamp	OFF	Reference Level	0.000 dBm
Min Sweep Time	0.001 S	Scale	10.0 dB/div
Reference Level Offset	0 dB	Serial Number	1007029
Input Attenuation	20.0 dB	Base Ver.	V5.71
RBW	1.0 kHz	App Ver.	V5.73
VBW	1.0 kHz	Model	MS2721B
Detection	RMS	Options	20
Center Frequency	98.900 000 MHz	Date	10/9/2019 12:32:02 AM
Start Frequency	98.300 000 MHz	Device Name	Entronics_MS2712B_SN-1007029

### K55CT Total Occupied Bandwidth Measurement

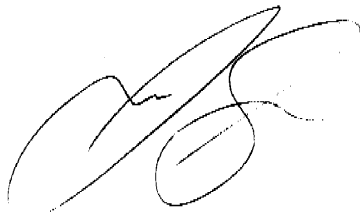
The above measurements illustrate compliance with Part 73.817 for each of the two translator operations.

**Conclusion:**

Joseph Sands is an experience Broadcast Technical Consultant. He has submitted a number of applications before the Commission, and those applications were granted. The work of Mr. Sands is Familiar to the Commission.

Under Penalty of Perjury, I certify that the measurements attached are Accurate and True to the best of my Knowledge.

Respectfully submitted this 10<sup>th</sup> Day of October, 2019.

A handwritten signature in black ink, appearing to be 'JS' with a large, stylized flourish at the end.

Joseph Sands, President  
Desert Sands Broadcasting Inc.  
6711 Costa Brava Rd.  
Las Vegas, NV 89146  
(702) 868-7222