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12/17/99

TO: Mr. Frank Coperich  
FEDERAL COMMUNICATION COMMISSION

Subject: YAESU MUSEN CO. LTD. FCCID: K66VX-800V

REFERENCE: EA 95595

After the training session last week I decided to review all of our pending applications based on what was learned last week. Attached you will find several pages with corrected data. The corrections are;

1. The power output is average conducted power.
2. Occupied bandwidth, I found several errors on that page.
3. The radiated emission were retested using the TIA/EIA-603 test procedure.
4. The audio frequency response was extended to cover the 100-5000Hz requirement.
5. Occupied bandwidth plots, the mask was added.

If you have any other questions please let me know.

BEST REGARDS,

Sid Sanders  
sid@timcoengr.com

GENERAL INFORMATION REQUIRED  
FOR TYPE ACCEPTANCE

2.983 (a,b,c) YAESU MUSEN CO., LTD. will sell the  
MODEL NO. K66VX-800V VHF transmitter in quantity,  
for use under FCC RULES PART 22 & 90.

2.983 (d) TECHNICAL DESCRIPTION

(1) Type of Emission: 16K0F3E For 25KHz  
11K0F3E For 12.5KHz

For 25KHz

$$B_n = 2M + 2DK$$

$$M = 3000$$

$$D = 4.0\text{kHz (Peak Deviation)}$$

$$K = 1$$

$$B_n = 2(3.0K) + 2(4.0k(1)) = 6.0k + 8.0k = 14.0k$$

ALLOWED AUTHORIZED BANDWIDTH = 20.00KHz.

For 12.5KHz

$$B_n = 2M + 2DK$$

$$M = 3000$$

$$D = 2.2\text{KHz (Peak Deviation)}$$

$$K = 1$$

$$B_n = 2(3.0k) + 2(2.5k(1)) = 6.0k + 5.0k = 11.0K$$

ALLOWED AUTHORIZED BANDWIDTH = 11.25KHz.

90.209(b) (5)

(2) Frequency Range: 148-174 MHz

(3) Power Range and Controls: There are NO user Power  
controls.

(4) Maximum Output Power Rating:  
5.0 & 1.0 Watts Average Conducted Power,  
into a 50 ohm resistive load.

(5) DC Voltages and Current into Final Amplifier:

POWER INPUT

FINAL AMPLIFIER ONLY

$$V_{ce} = 7.2 \text{ Volts}$$

$$I_{ce} = 2.10A.$$

$$P_{in} = 15.1 \text{ Watts}$$

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2.989(c) Occupied bandwidth:

90.210(b,)

Data in the plots shows that on any frequency removed from the assigned frequency by more than 50%, but not more than 100%: At least 25dB. On any frequency removed from the assigned frequency by more than 100%, but not more than 250%: At least 35dB. On any frequency removed from the assigned frequency by more than 250%, of the authorized bandwidth: At least  $43 + \log(P)$  dB.

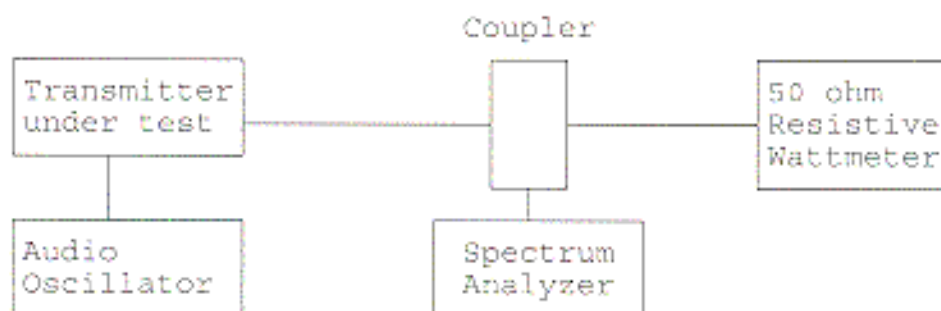
90.210(d) 12.5KHz channel bandwidth equipment. For transmitters designed to operate with a 12.5KHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:  
(1) On any frequency from the center of the authorized bandwidth  $f_0$  to 5.625kHz removed from  $f_{p0}$ : Zero dB.  
(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency  $7.27(f_d - 2.88\text{kHz})$  dB.  
(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 12.5kHz: At least  $50 + 10\log(P)$  or 70dB, whichever is the lesser attenuation.

Radiotelephone transmitter with modulation limiter.

Test procedure: TIA/EIA-603 para 2.2.11 , with the exception that various tones were used.

Test procedure diagram

OCCUPIED BANDWIDTH MEASUREMENT



2.991 Spurious emissions at antenna terminals(conducted):

Data on the following page shows the level of conducted spurious responses. The carrier was modulated 100% using a 2500Hz tone. The spectrum was scanned from 0.4 to at least the 10th harmonic of the fundamental. The measurements were made in accordance with standard TIA/EIA-603.

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2.993(a)(b) Field strength of spurious emissions:

NAME OF TEST: RADIATED SPURIOUS EMISSIONS

REQUIREMENTS: Emissions must be  $50 + 10\log(P_o)$  dB below the mean power output of the transmitter or 70dB, which ever is the lessor.

$$50 + 10\log(50) = 67.0 \text{ dB}$$

<u>EMISSION</u> <u>FREQUENCY</u> <u>MHz</u>	<u>FIELD</u> <u>STRENGTH</u> <u>dBc</u>	<u>FCC</u> <u>LIMIT.</u> <u>dBc</u>	<u>ANT.</u>
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HIGH POWER

148.00	0.00	0.00	H
296.00	73.26	67.0	H
444.00	89.69	67.0	V
592.00	96.96	67.0	H
740.00	96.88	67.0	V
888.00	96.94	67.0	V
1036.00	104.46	67.0	H
1184.00	103.06	67.0	V

LOW POWER

148.02	0.00	0.00	H
296.00	70.06	50.8	H
444.00	89.19	50.8	H
592.00	97.46	50.8	H
740.00	91.58	50.8	V
888.00	91.74	50.8	V
1036.00	102.04	50.8	V
1186.00	99.76	50.8	V

METHOD OF MEASUREMENT: The tabulated Data shows the results of the radiated spurious emissions test. The spectrum was scanned from 30 to at least the tenth harmonic of the fundamental. This test was conducted per TIA/EIA-603 STANDARD. Measurements were made at the open field test site of TIMCO ENGINEERING INC. located at 6051 N.W. 19th Lane Gainesville, FL 32605.

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