

**Transmitter Measured Data – Pursuant 47 CFR 2.1033(c), 2.1041**

	<u>MEASUREMENT</u>	<u>EXHIBIT</u>	<u>REFERENCE</u>
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	3. Modulation Limiting vs. Frequency	6B-3	2.1047(b)
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	2. 12.5 kHz Audio (Voice)	6C-2	2.1049(c)(1)
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**6A. RF Power Output Data – Pursuant 47 CFR 2.1033(c)8, 2.1046(a)**

The RF power output was measured with the indicated voltage applied to, current into, and RF power into the final RF power amplifier.

**Measured at 136.025MHz**

At the maximum power setting:

Measured RF Output Power:	5 Watts
Measured DC Voltage:	7.50 Volts
Measured DC Current:	1.85 Amps
Primary Supply Voltage	13.8 Volts

At the minimum power setting:

Measured RF Output Power:	0.275 Watts
Measured DC Voltage:	7.50 Volts
Measured DC Current:	0.50 Amps
Primary Supply Voltage	13.8 Volts

**Measured at 155.025MHz**

At the maximum power setting:

Measured RF Output Power:	5 Watts
Measured DC Voltage:	7.50 Volts
Measured DC Current:	1.85 Amps
Primary Supply Voltage:	13.8 Volts

At the minimum power setting:

Measured RF Output Power:	0.275 Watts
Measured DC Voltage:	7.50 Volts
Measured DC Current:	0.50 Amps
Primary Supply Voltage:	13.8 Volts

**Measured at 173.875MHz**

At the maximum power setting:

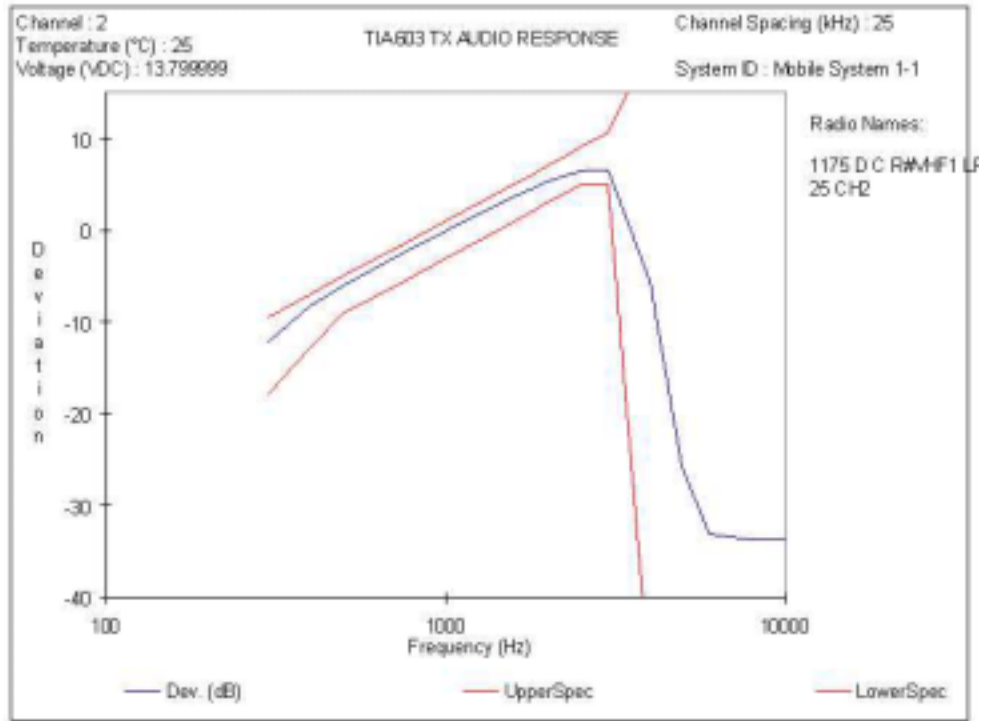
Measured RF Output Power:	5 Watts
Measured DC Voltage:	7.50 Volts
Measured DC Current:	1.85 Amps
Primary Supply Voltage:	13.8 Volts

At the minimum power setting:

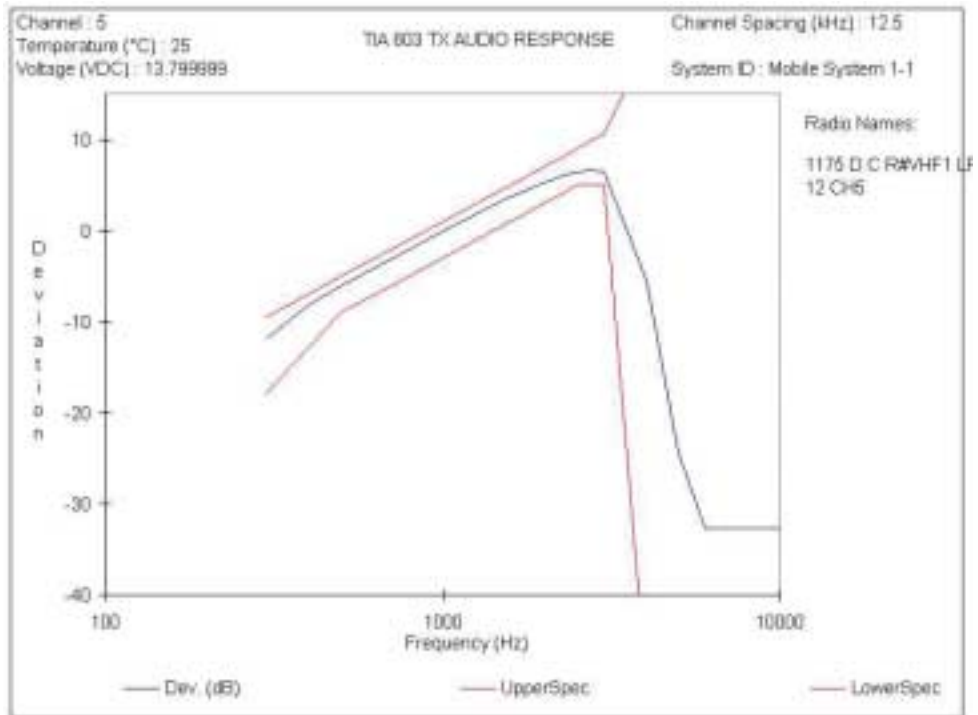
Measured RF Output Power:	0.275 Watts
Measured DC Voltage:	7.50 Volts
Measured DC Current:	0.50 Amps
Primary Supply Voltage:	13.8 Volts

**6B-1. Audio Response – Pursuant 47 CFR 2.1033(c)14, 2.1047(a)**

25 kHz channel spacing. Measured at 155.025 MHz.

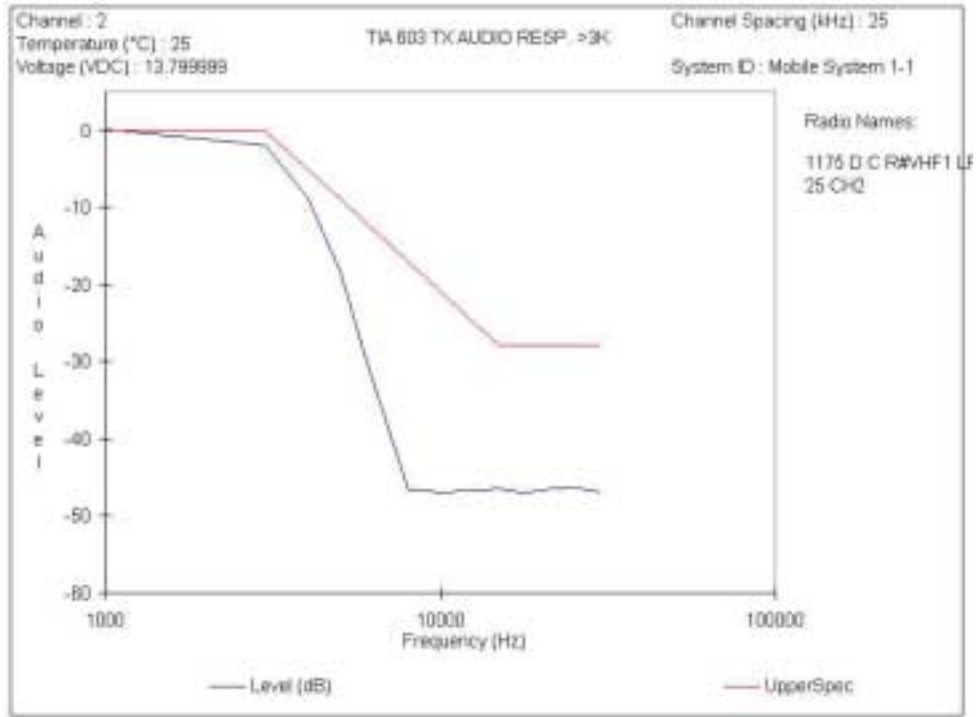


12.5 kHz channel spacing. Measured at 155.025 MHz.

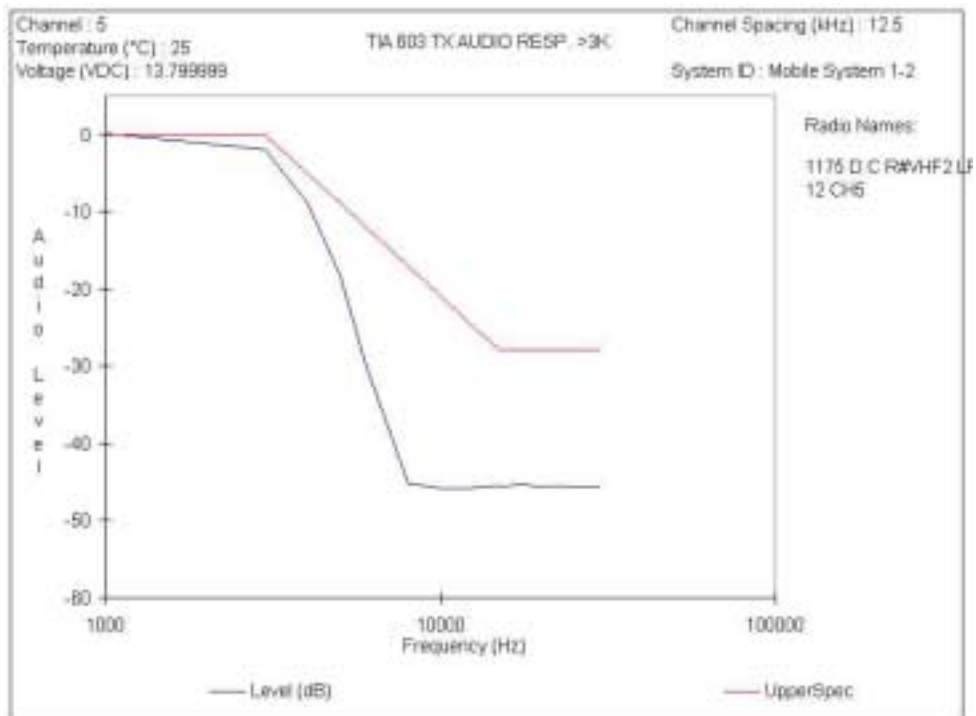


**6B-2. Low Pass Filter Response – Pursuant 47 CFR 2.1033(c)14, 2.1047(a)**

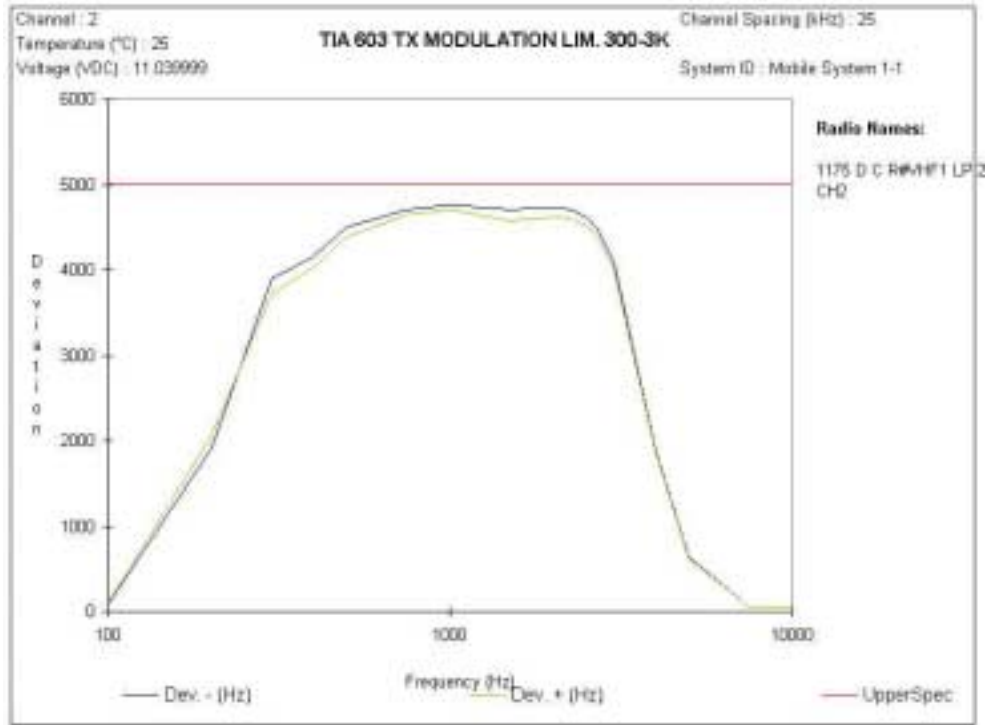
25KHz channel spacing. Measured Frequency: 155.025 MHz.



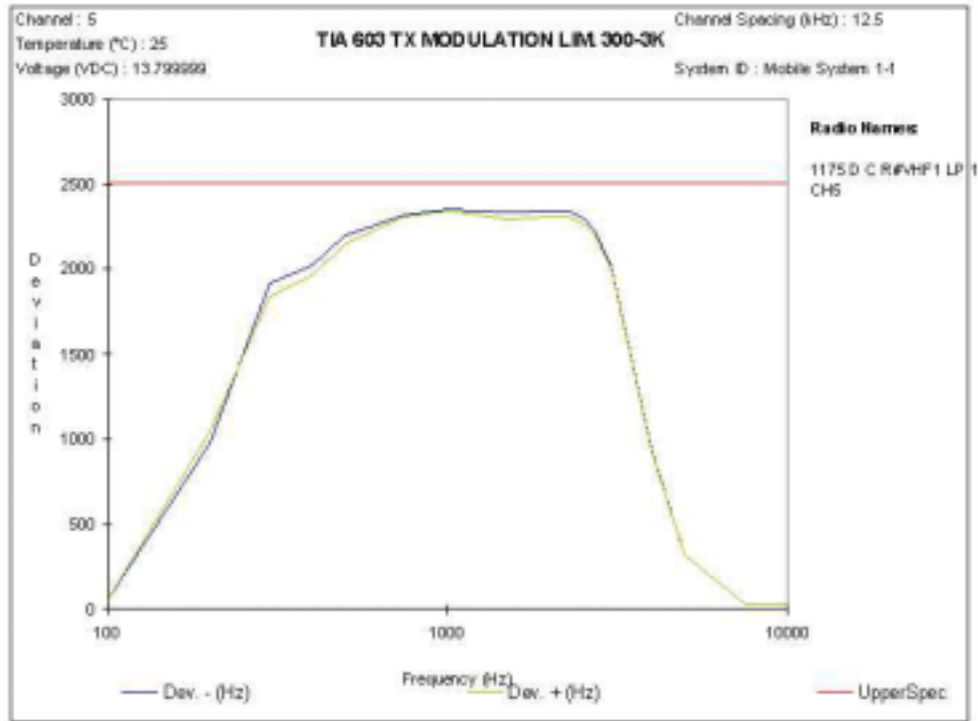
12.5KHz channel spacing. Measured Frequency: 155.025 MHz.



**6B-3. Modulation Limiting versus Frequency – Pursuant 47 CFR 2.1033(c)14, 2.1047(b)**  
25 kHz channel spacing. Measured at 155.025 MHz.

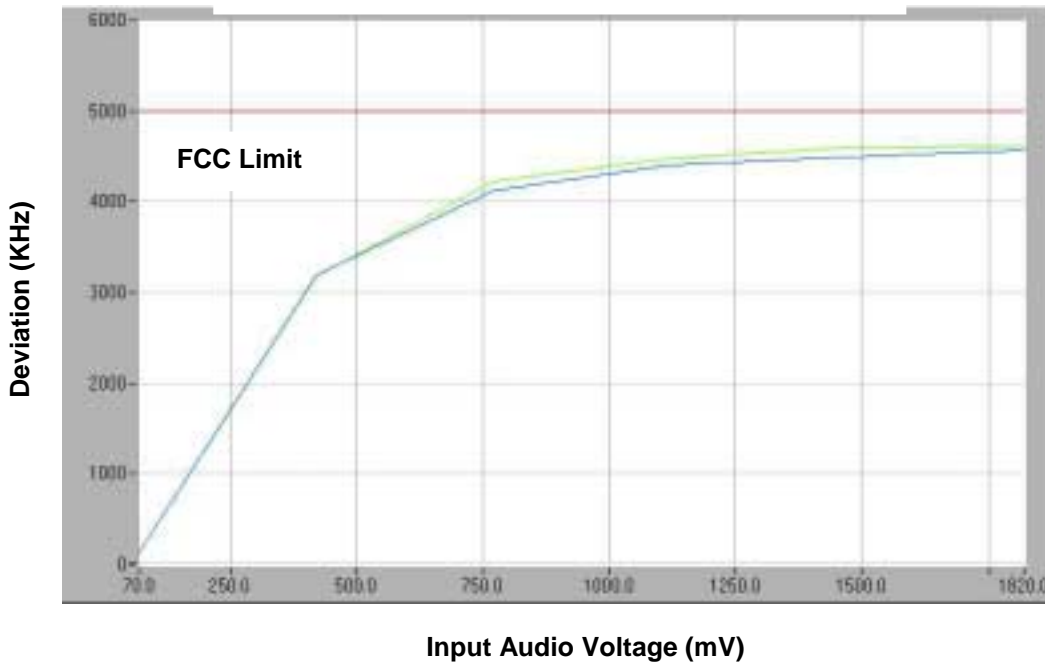


12.5 kHz channel spacing. Measured at 155.025 MHz.

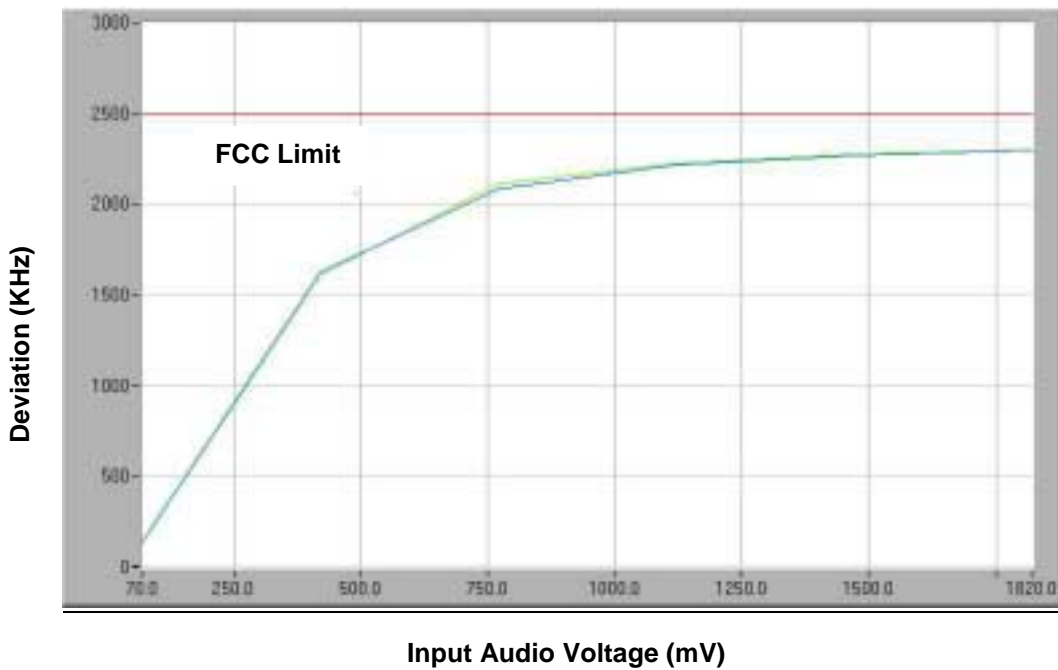


**6B-4. Modulation Limiting vs. Audio Level – Pursuant 47 CFR 2.1033(c)14, 2.1047(b)**

**Modulation Limiting, Deviation vs Input Audio  
VHF 155.025MHz, 25 KHz Channels**



**Modulation Limiting, Deviation vs Input Audio  
VHF 155.025MHz, 12.5 KHz Channels**



**6C. Occupied Bandwidth – Pursuant 47 CFR 2.1033(c),14, 2.1049****Necessary Bandwidth Calculations**

Carson's Rule for FM modulation is utilized to compute the bandwidth shown in the FCC emission designator for each type of modulation employed by the product. Carson's Rule is

$$BW = 2 * (M+D) \quad \text{where} \quad \begin{array}{l} BW = \text{Required bandwidth} \\ M = \text{Maximum modulating frequency} \\ D = \text{Deviation} \end{array}$$

Shown below are the calculations required for FCC ID: AZ492FT3802.

EXHIBIT 6C-1: 25 kHz Channel Spacing, Voice (2500 Hz Audio Tone)  
Emission Designator: 16K0F3E

This modulation represents voice and so is band-limited to below 3 kHz by a bandpass filter. Therefore the maximum modulating frequency is 3 kHz with a 5 kHz deviation.

$$BW = 2 * (M + D) = 2 * (3 \text{ kHz} + 5 \text{ kHz}) = 16 \text{ kHz} \rightarrow 16K0$$

The modulation is a single FM voice channel, so the rest of the designator is F3E.

Therefore, the entire designator for 25 kHz channelization analog voice is 16K0F3E.

EXHIBIT 6C-2: 12.5 kHz Channel Spacing, Voice (2500 Hz Audio Tone)  
Emission Designator: 11K0F3E

This modulation represents voice and so is band-limited to below 3 kHz by a bandpass filter. Therefore the maximum modulating frequency is 3 kHz with a 2.5 kHz deviation.

$$BW = 2 * (M + D) = 2 * (3 \text{ kHz} + 2.5 \text{ kHz}) = 11 \text{ kHz} \rightarrow 11K0$$

The modulation is a single FM voice channel, so the rest of the designator is F3E.

Therefore, the entire designator for 12.5 kHz channelization analog voice is 11K0F3E.

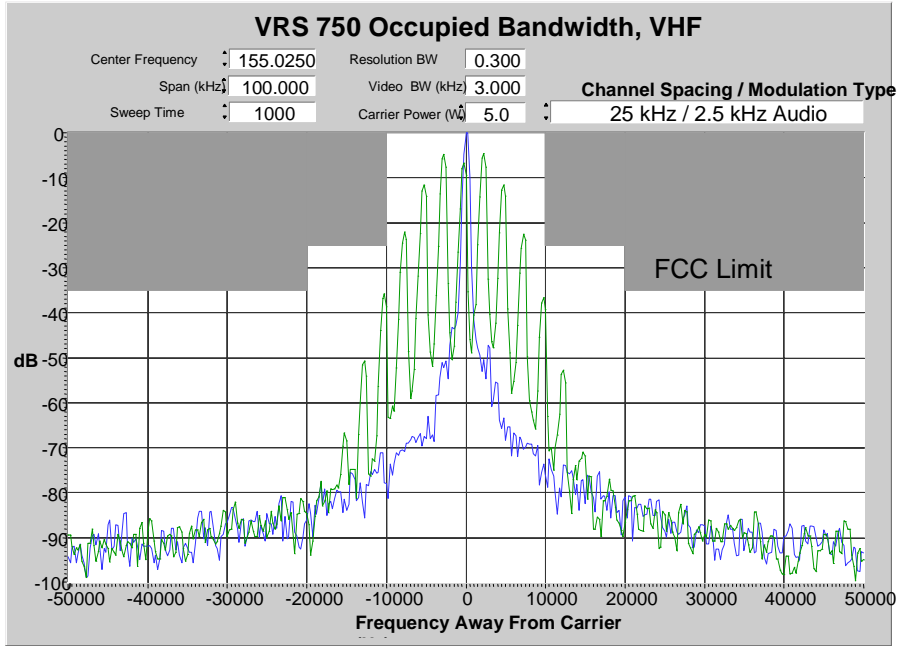
**6C-1. Occupied Bandwidth – 25 kHz Audio – Pursuant 2.1049(c)(1)**

High power. Measured at 155.025 MHz and 5 W.

Modulation: Voice (2500 Hz Audio Tone)

Modulation Designator: 16K0F3E

Channelization: 25 kHz (Mask B)

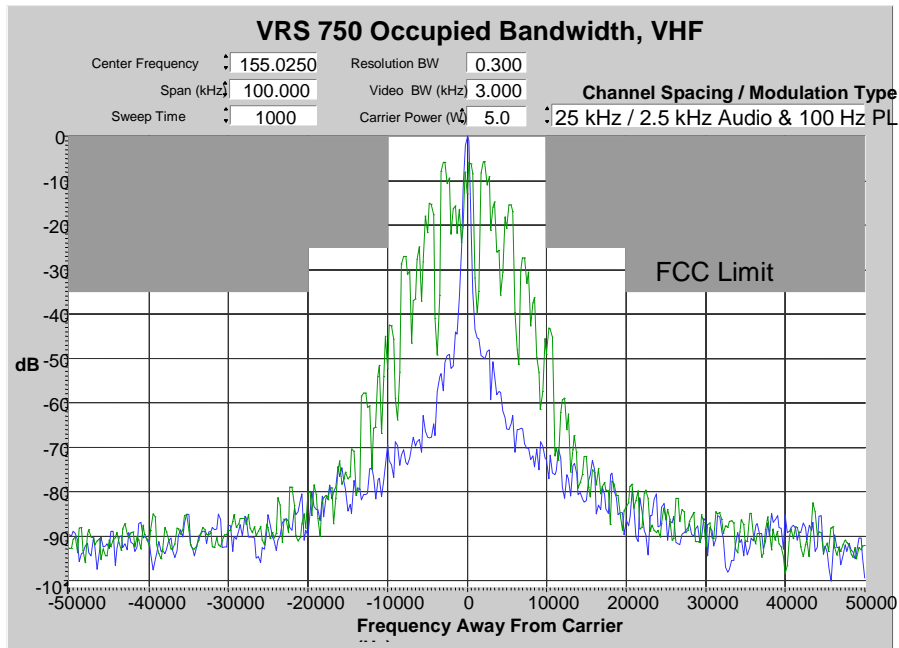


High power. Measured at 155.025 MHz and 5 W.

Modulation: Voice (2500 Hz Audio Tone with PL)

Modulation Designator: 16K0F3E

Channelization: 25 kHz (Mask B)





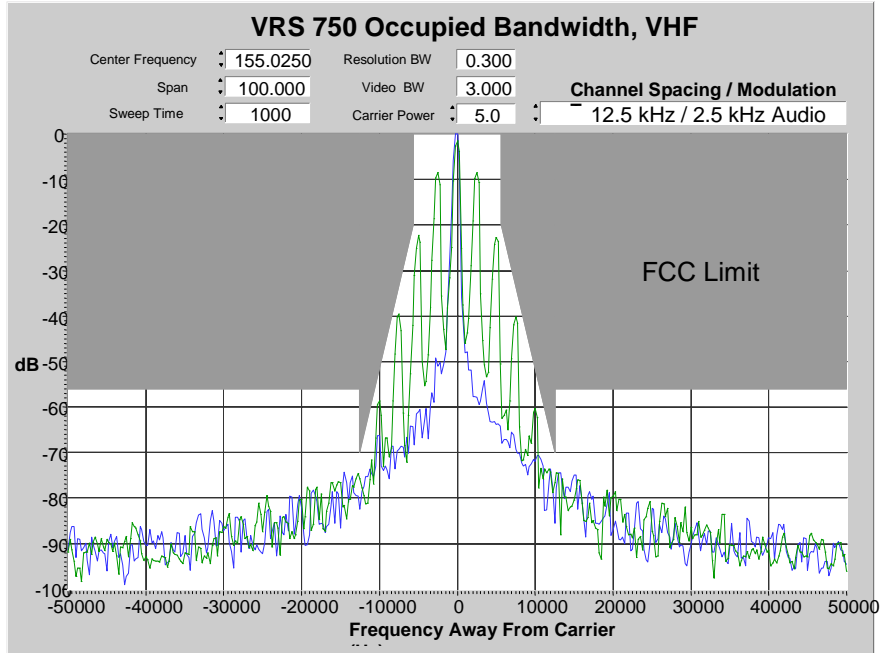
**6C- 2. Occupied Bandwidth – 12.5 kHz Audio – Pursuant 2.1049(c)(1)**

High power. Measured at 155.025 MHz and 5 W.

Modulation: Voice (2500 Hz Audio Tone)

Modulation Designator: 11K0F3E

Channelization: 12.5 kHz (Mask D)

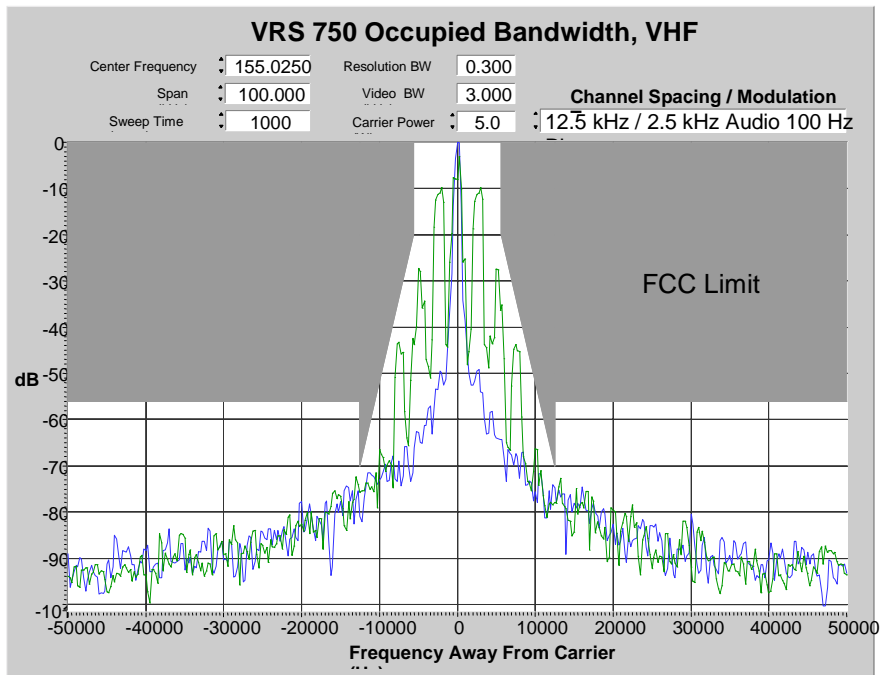


High power. Measured at 155.025 MHz and 5 W.

Modulation: Voice (2500 Hz Audio Tone with PL)

Modulation Designator: 11K0F3E

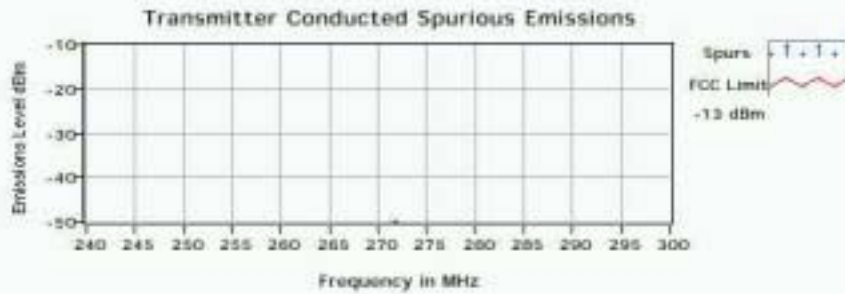
Channelization: 12.5 kHz (Mask D)



**6D. Conducted Spurious Emissions – Pursuant 2.1051**

Transmitter Conducted Spurious Emissions    FCC ID: AZ492FT3802  
136.02500 MHz    Power 275mW

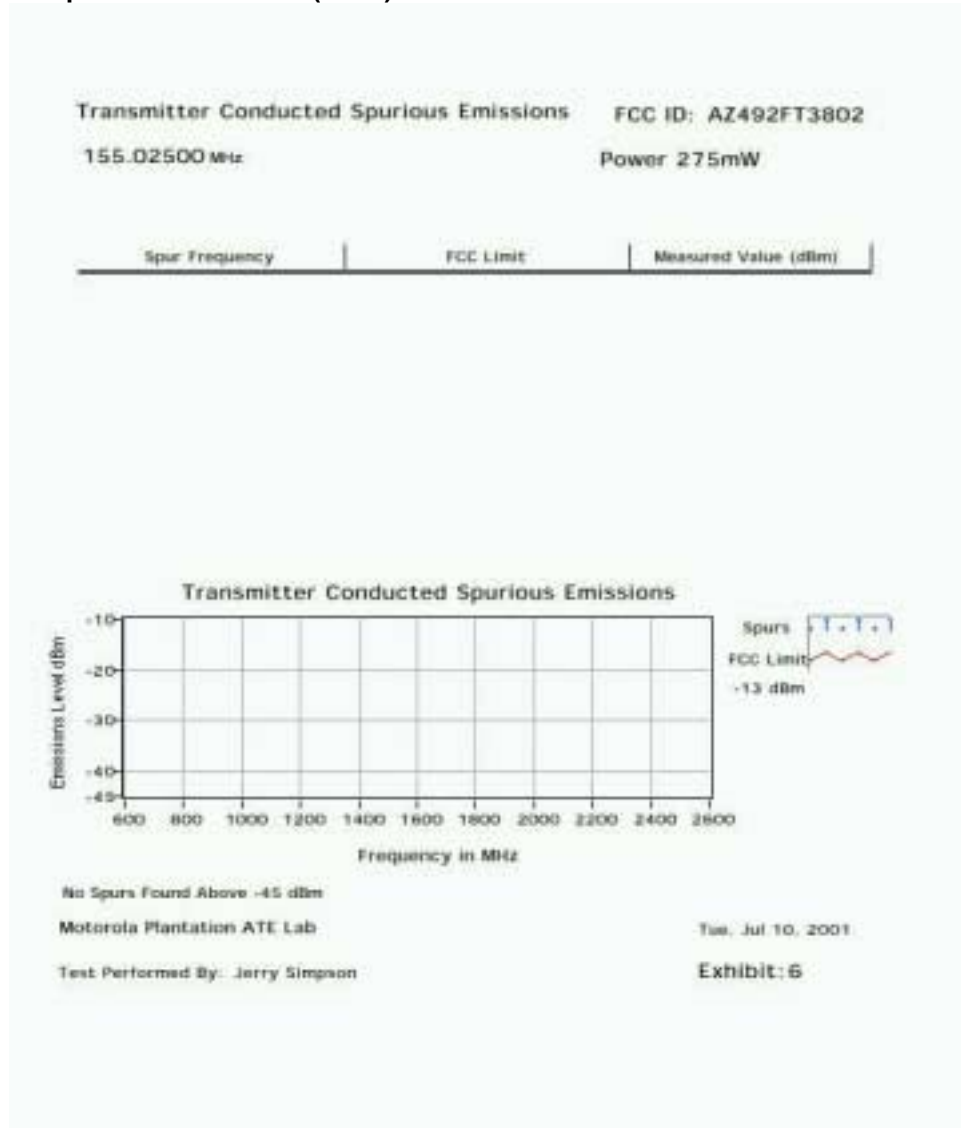
Spur Frequency	FCC Limit	Measured Value (dBm)
271.80000	-13.0	-49.9



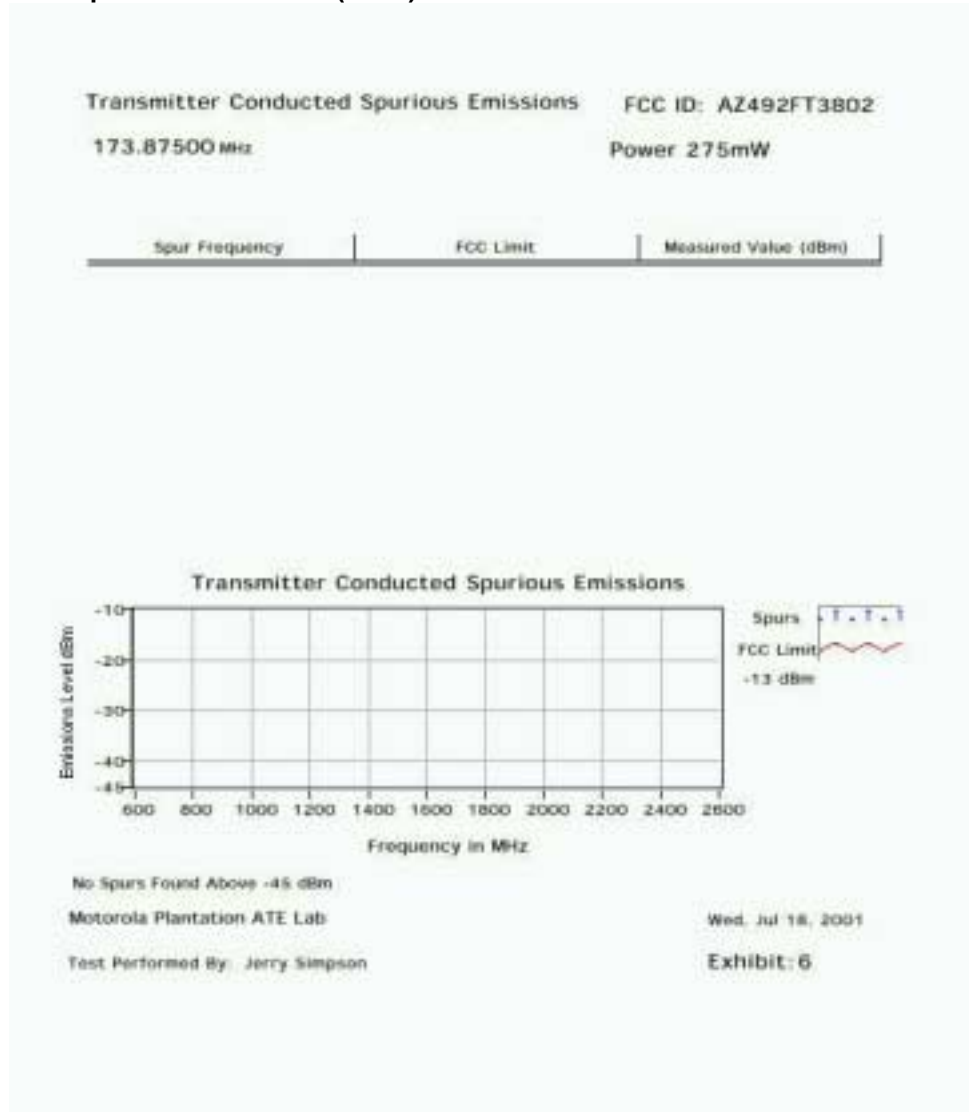
Motorola Plantation ATE Lab  
Test Performed By: Jerry Simpson

Mon, Jun 25, 2001  
Exhibit: 6

**6D. Conducted Spurious Emissions (cont.)**



6D. Conducted Spurious Emissions (cont.)



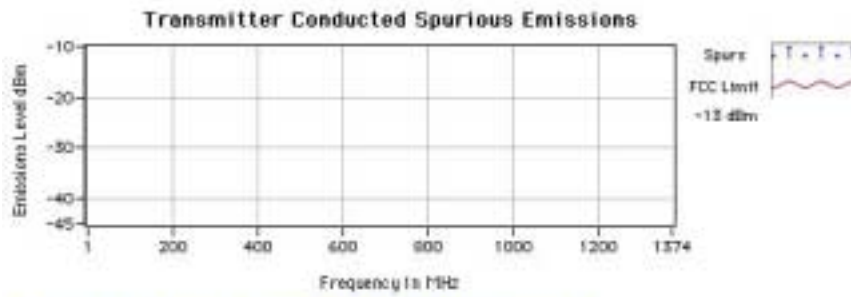
**6D. Conducted Spurious Emissions (cont.)**

**Transmitter Conducted Spurious Emissions**

FREQ: 136.02500 MHz

Power 5.0W

Spur Frequency	FCC Limit	Measured Value (dBm)
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**All Transmitter Spurious Emissions Tested to the 10th Harmonic**

**No Spurs Found Above -45 dBm**

**Motorola Plantation ATE Lab**

**Wed, Sep 5, 2001**

Test Performed By: **Jerry Simpson**

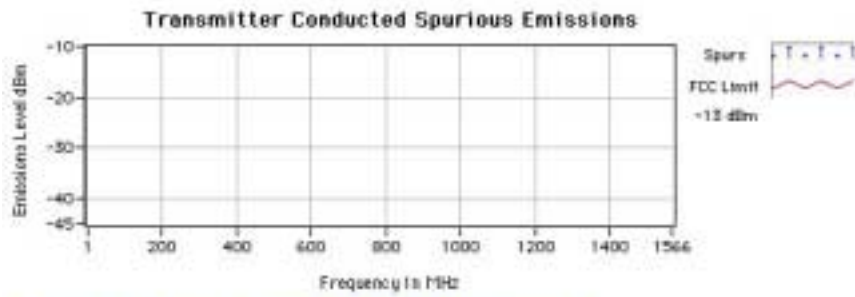
**6D. Conducted Spurious Emissions (cont.)**

**Transmitter Conducted Spurious Emissions**

FREQ: 155.02500 MHz

Power 5.0W

Spur Frequency	FCC Limit	Measured Value (dBm)
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**All Transmitter Spurious Emissions Tested to the 10th Harmonic**

**No Spurs Found Above -45 dBm**

**Motorola Plantation ATE Lab**

**Tue, Sep 4, 2001**

Test Performed By: **Jerry Simpson**

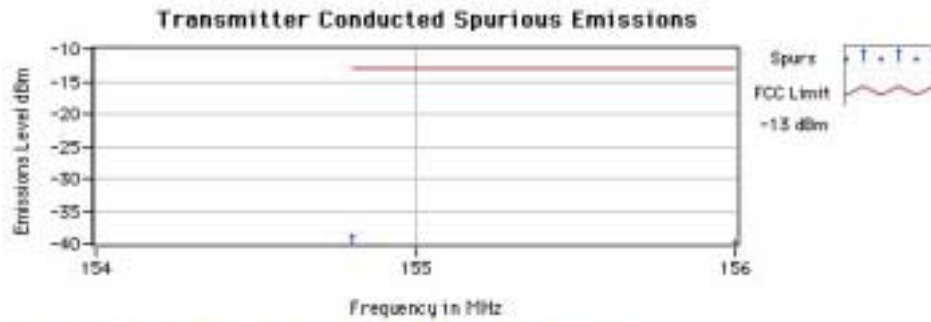
**6D. Conducted Spurious Emissions (cont.)**

**Transmitter Conducted Spurious Emissions**

**FREQ: 173.87500 MHz**

**Power 5.0W**

Spur Frequency	FCC Limit	Measured Value (dBm)
154.80000	-13.0	-38.9
156.00000	-13.0	-39.8



**All Transmitter Spurious Emissions Tested to the 10th Harmonic**

**Motorola Plantation ATE Lab**

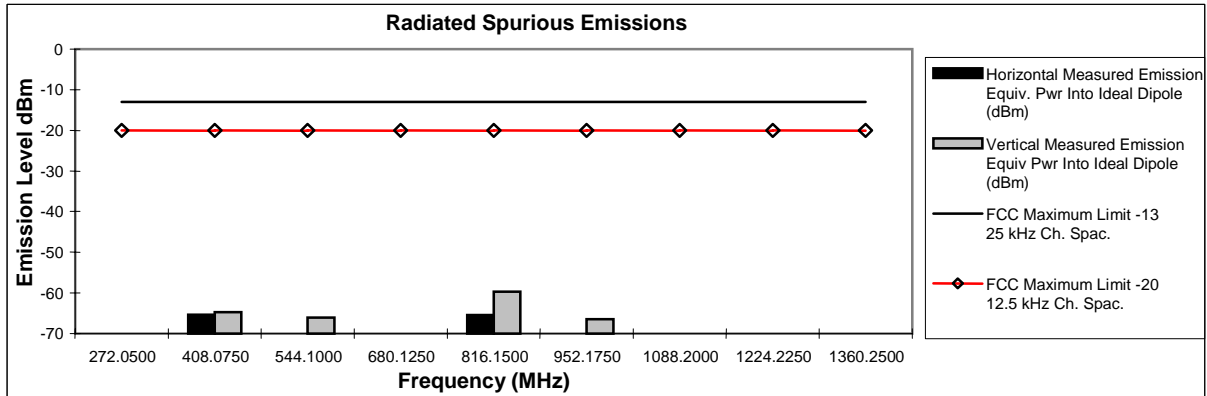
**Wed, Sep 5, 2001**

Test Performed By: **Jerry Simpson**

**6E. Radiated Spurious Emissions – Pursuant 2.1053**

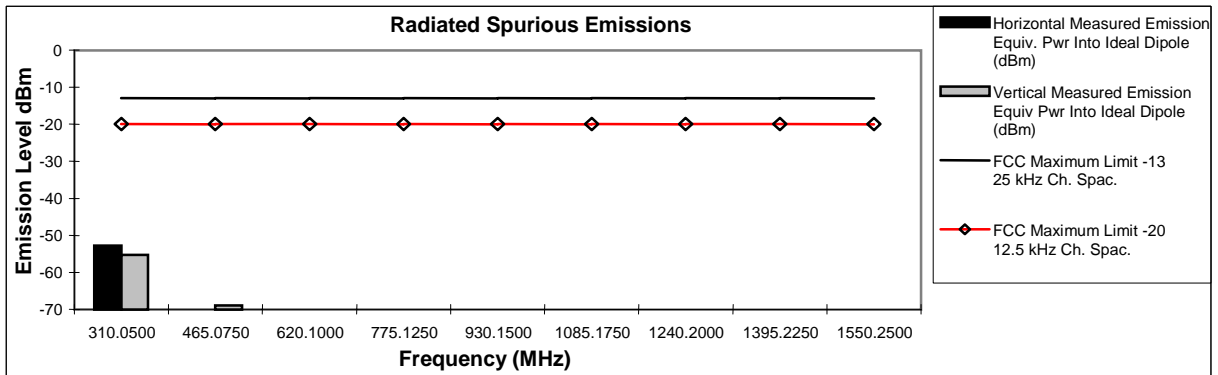
**136.025 MHz      5 Watts**

Frequency (MHz)	FCC Maximum Limit -13 (dBm) 25 kHz Ch. Spac.	FCC Maximum Limit -20 (dBm) 12.5 kHz Ch. Spac.	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
272.0500	-13	-20	-72.67	-73.22
408.0750	-13	-20	-65.37	-64.76
544.1000	-13	-20	-72.08	-66.07
680.1250	-13	-20	-76.28	-73.57
816.1500	-13	-20	-65.46	-59.72
952.1750	-13	-20	-70.83	-66.54
1088.2000	-13	-20	*	*
1224.2250	-13	-20	*	*
1360.2500	-13	-20	*	*



**155.025 MHz      5 Watts**

Frequency (MHz)	FCC Maximum Limit -13 (dBm) 25 kHz Ch. Spac.	FCC Maximum Limit -20 (dBm) 12.5 kHz Ch. Spac.	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
310.0500	-13	-20	-52.79	-55.22
465.0750	-13	-20	-71.01	-68.89
620.1000	-13	-20	*	*
775.1250	-13	-20	-71.79	-72.57
930.1500	-13	-20	-74.12	-73.37
1085.1750	-13	-20	*	*
1240.2000	-13	-20	*	*
1395.2250	-13	-20	*	*
1550.2500	-13	-20	*	*



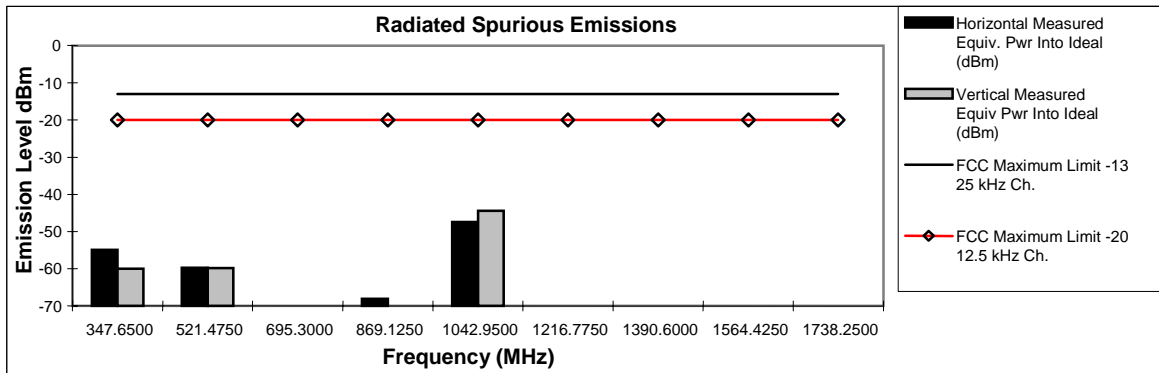
\* Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.



**6E. Radiated Spurious Emissions (cont.)**

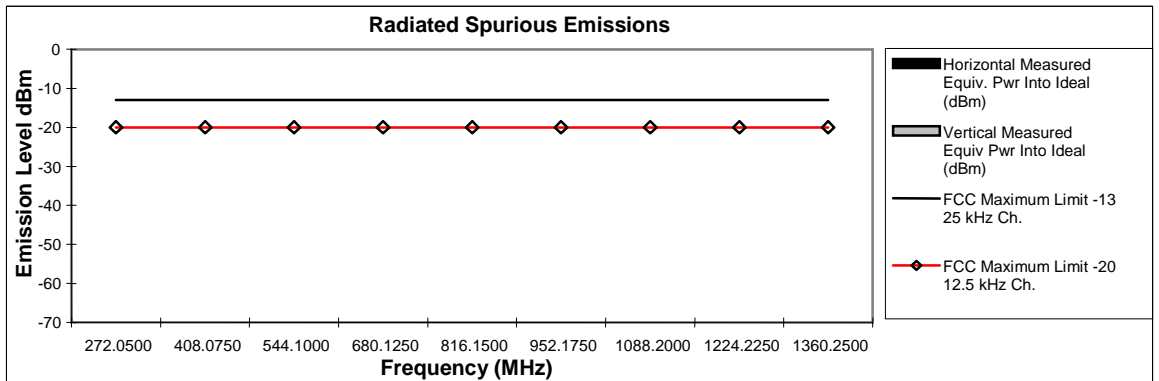
**173.825 MHz 5 Watts**

Frequency (MHz)	FCC Maximum Limit -13 (dBm) 25 kHz Ch. Spac.	FCC Maximum Limit -20 (dBm) 12.5 kHz Ch. Spac.	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
347.6500	-13	-20	-54.88	-59.98
521.4750	-13	-20	-59.69	-59.81
695.3000	-13	-20	*	*
869.1250	-13	-20	-68.02	*
1042.9500	-13	-20	-47.37	-44.40
1216.7750	-13	-20	*	*
1390.6000	-13	-20	*	*
1564.4250	-13	-20	*	*
1738.2500	-13	-20	*	*



**136.025 0.275 Watts**

Frequency (MHz)	FCC Maximum Limit -13 (dBm) 25 kHz Ch. Spac.	FCC Maximum Limit -20 (dBm) 12.5 kHz Ch. Spac.	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
272.0500	-13	-20	-74.36	-72.56
408.0750	-13	-20	-74.66	-74.30
544.1000	-13	-20	*	*
680.1250	-13	-20	*	*
816.1500	-13	-20	-73.51	-74.52
952.1750	-13	-20	*	*
1088.2000	-13	-20	*	*
1224.2250	-13	-20	*	*
1360.2500	-13	-20	*	*

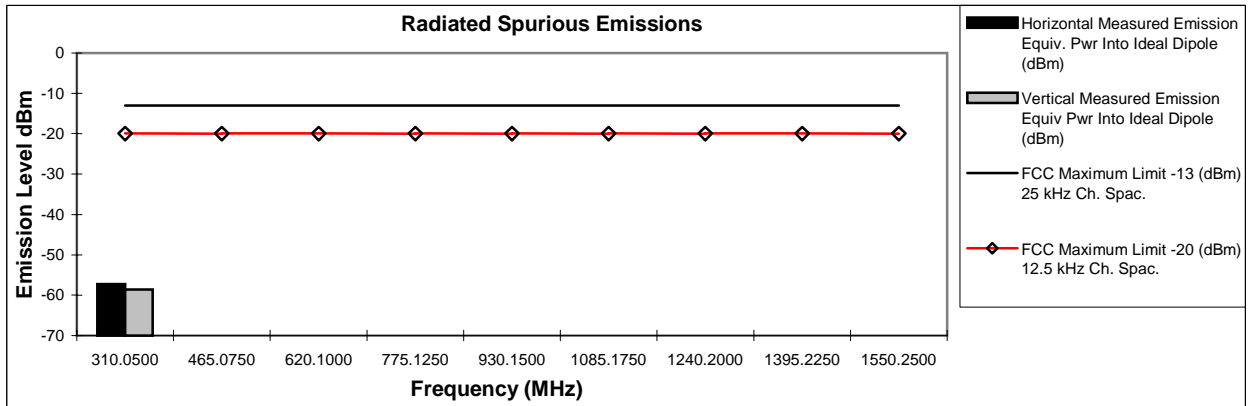


\* Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

**6E. Radiated Spurious Emissions (cont.)**

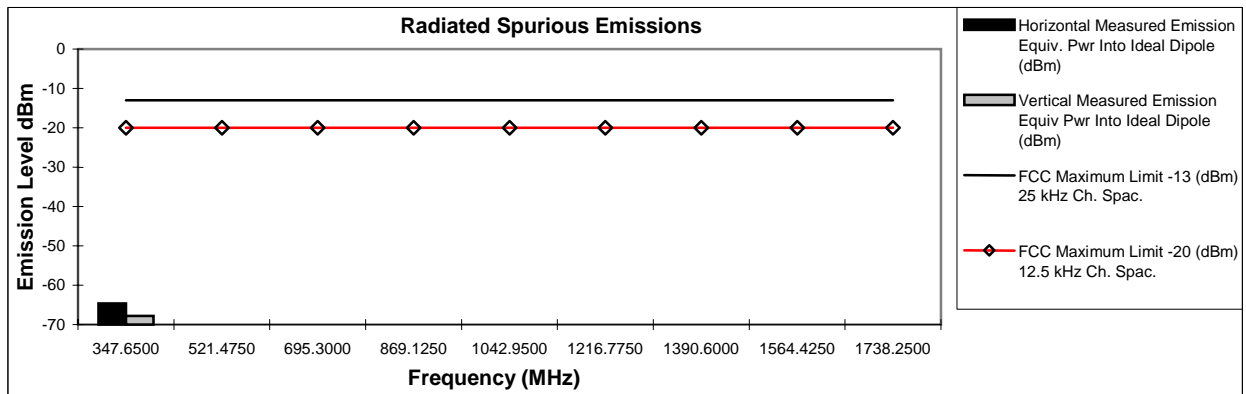
**155.025 MHz      0.275 Watts**

Frequency (MHz)	FCC Maximum Limit -13 (dBm) 25 kHz Ch. Spac.	FCC Maximum Limit -20 (dBm) 12.5 kHz Ch. Spac.	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)
310.0500	-13	-20	-57.21	-58.56
465.0750	-13	-20	-78.42	-75.69
620.1000	-13	-20	*	*
775.1250	-13	-20	-73.56	-73.81
930.1500	-13	-20	*	*
1085.1750	-13	-20	*	*
1240.2000	-13	-20	*	*
1395.2250	-13	-20	*	*
1550.2500	-13	-20	*	*



**173.825 MHz      0.275 Watts**

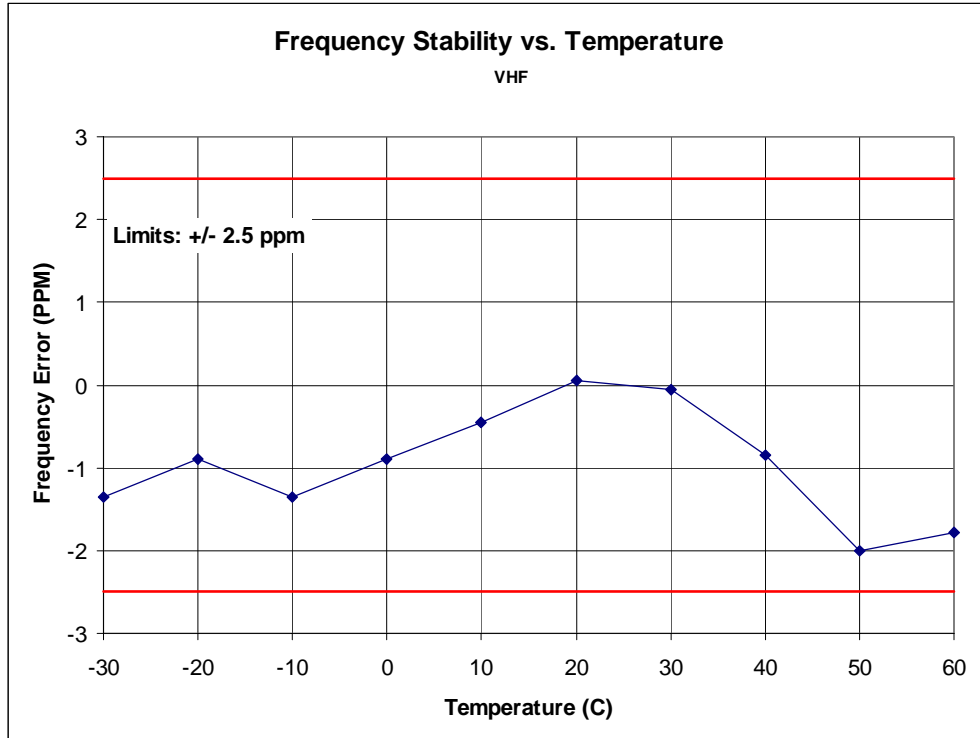
Frequency (MHz)	FCC Maximum Limit -13 (dBm) 25 kHz Ch. Spac.	FCC Maximum Limit -20 (dBm) 12.5 kHz Ch. Spac.	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)
347.6500	-13	-20	-64.64	-67.83
521.4750	-13	-20	-76.84	-75.30
695.3000	-13	-20	*	*
869.1250	-13	-20	*	*
1042.9500	-13	-20	*	*
1216.7750	-13	-20	*	*
1390.6000	-13	-20	*	*
1564.4250	-13	-20	*	*
1738.2500	-13	-20	*	*



\* Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

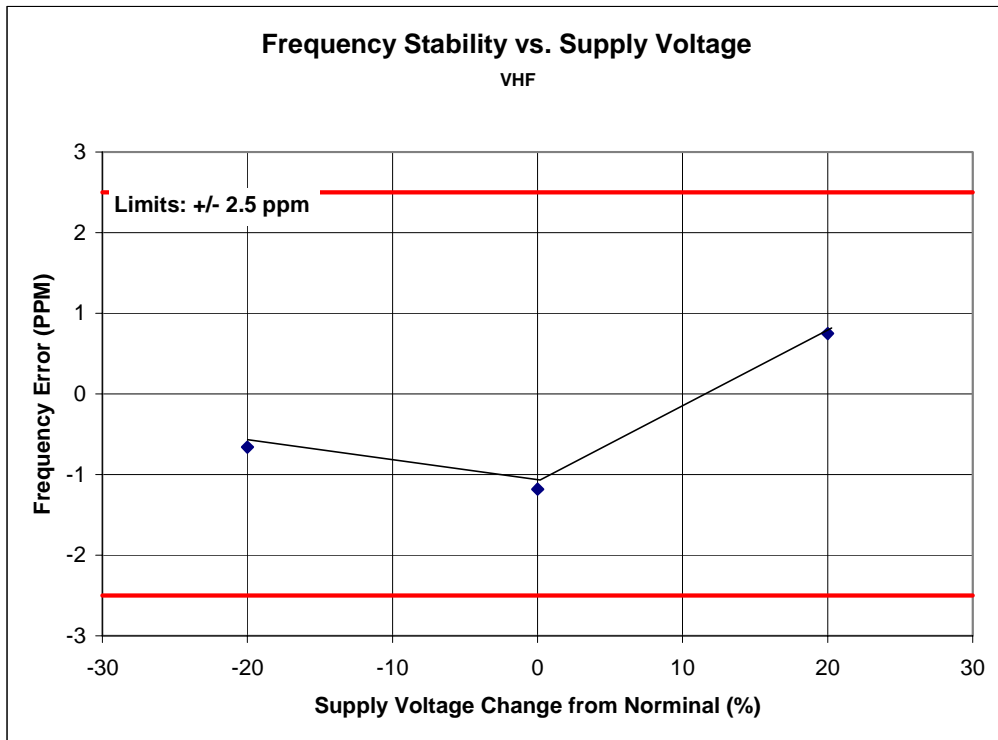
**6F-1. Frequency Stability vs. Temperature – Pursuant 2.1055(a)(1), 2.1055(b), 90.213**

Measured at 155.025 MHz.



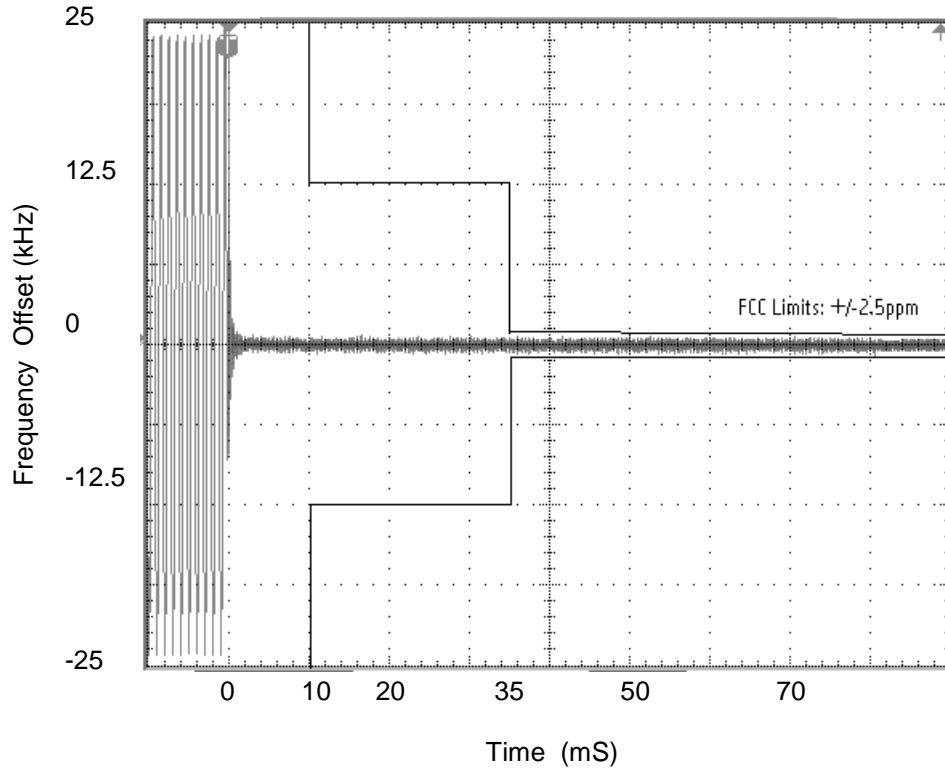
**6F-2. Frequency Stability vs. Supply Voltage – Pursuant 2.1055(d)(1), 90.213**

Measured at 155.025MHz.

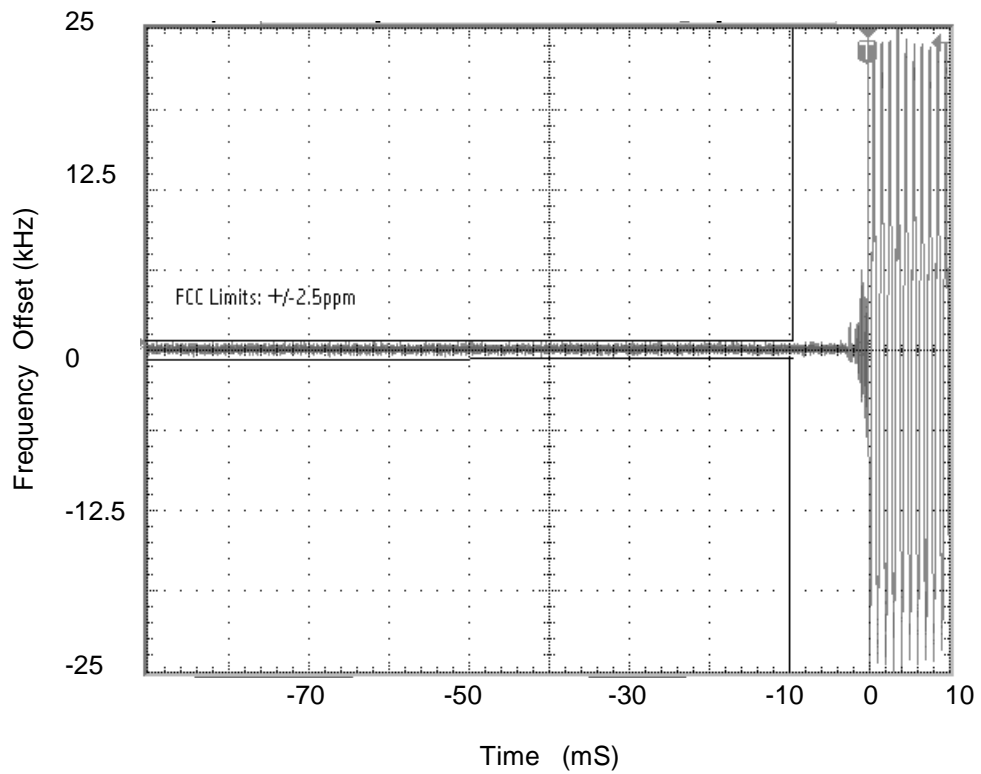


**6G. Transient Frequency Behavior – Pursuant 90.214**

Key 25 KHz channel spacing. Measured at 155.025MHz and 5W

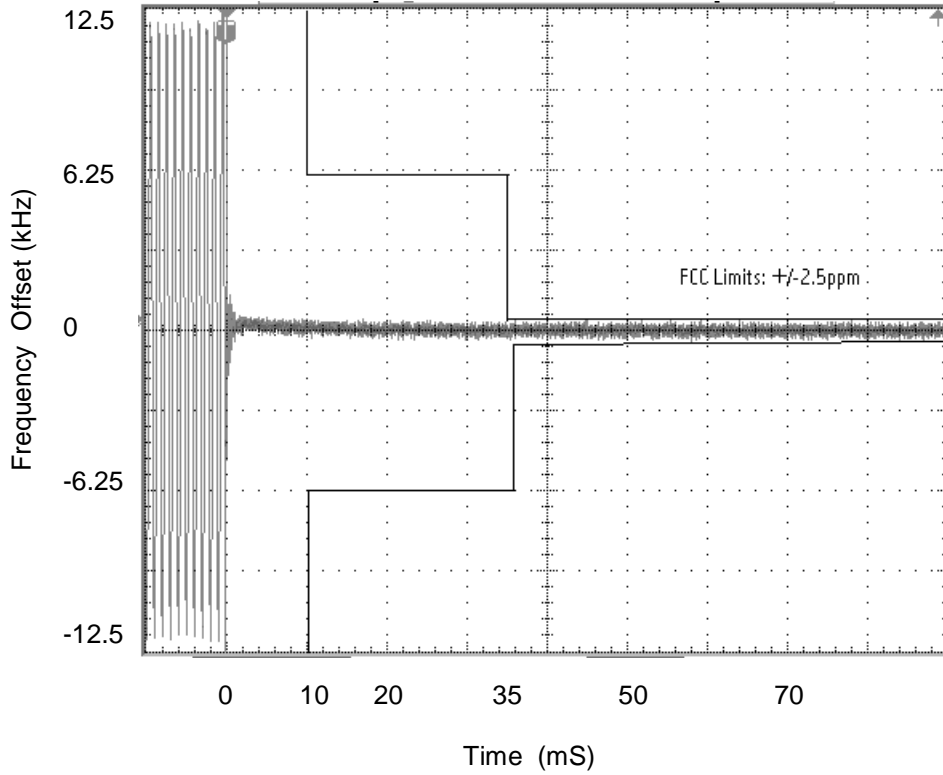


Dekey25kHz channel spacing. Measured at 155.025 and 5W

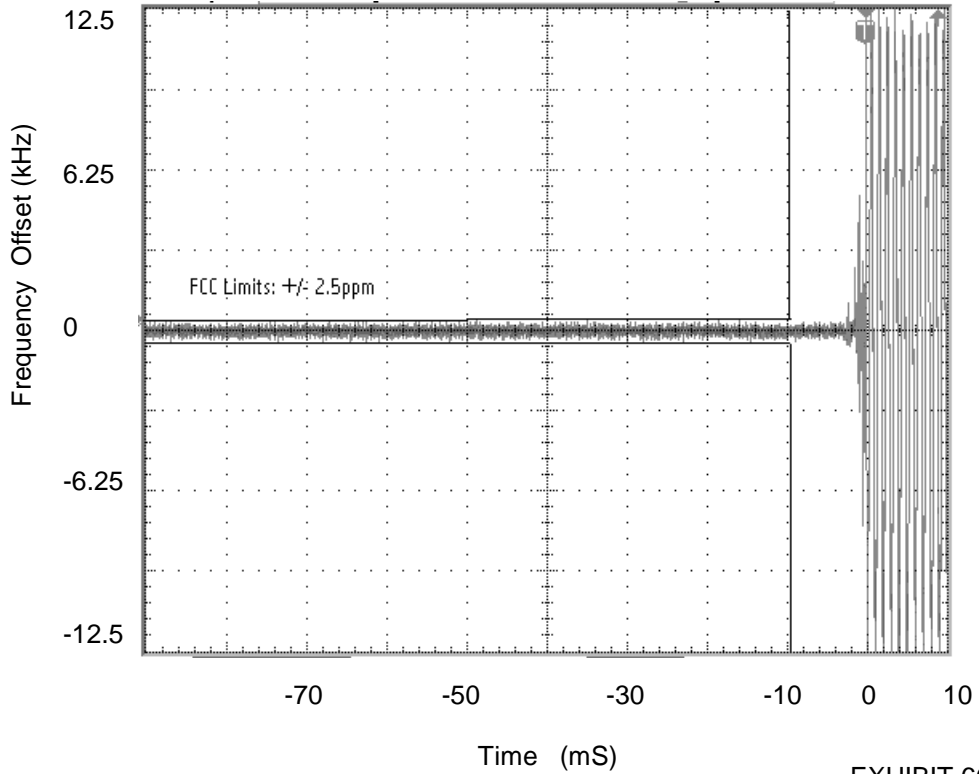


**6G. Transient Frequency Behavior (cont.)**

Keyup 12.5 kHz channel spacing. Measured at 155.025 MHz and 5 W.

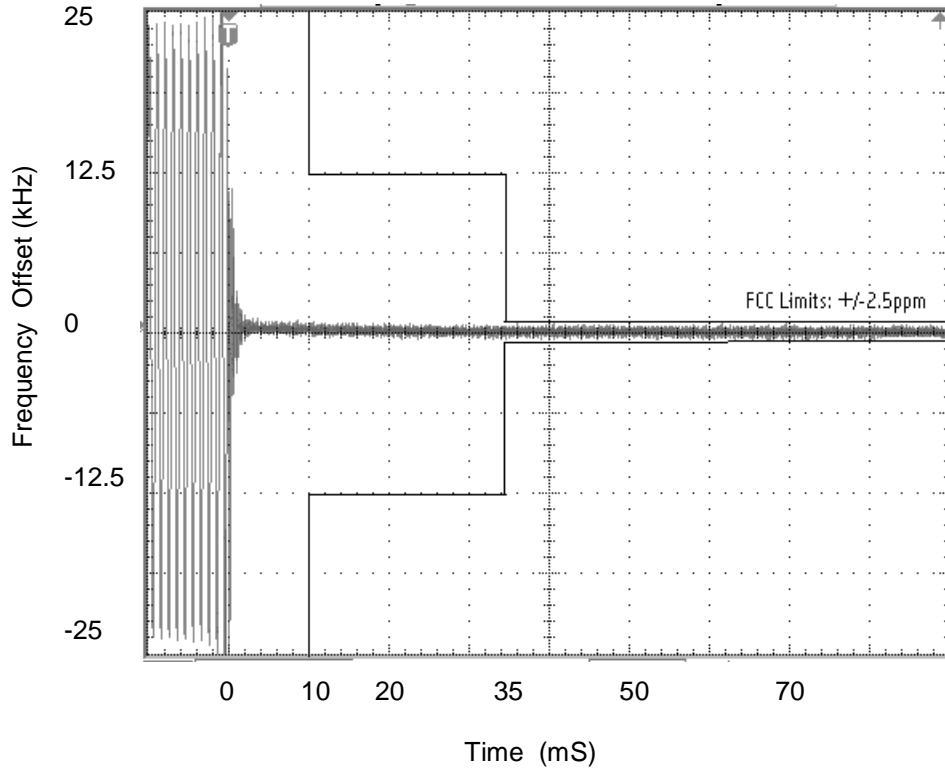


Dekey. 12.5 kHz channel spacing measured at 155.025 MHz and 5 W.

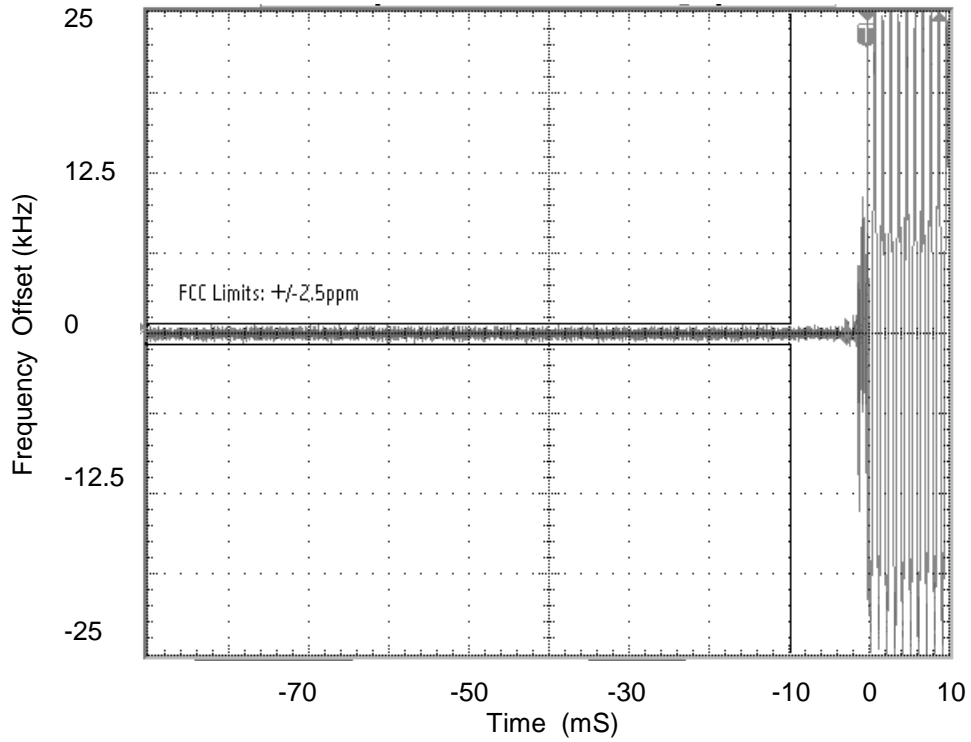


**6G. Transient Frequency Behavior (cont.)**

Keyup 25 kHz channel spacing. Measured at 155.025 MHz and 0.275 W.

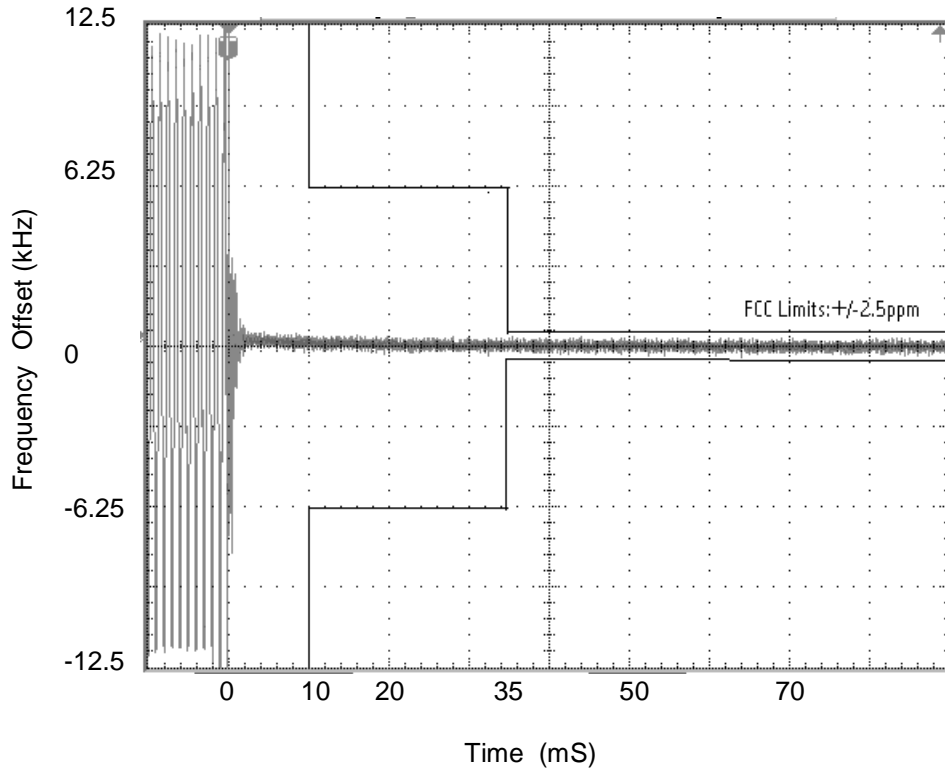


Dekey 25 kHz channel spacing. Measured at 155.025 MHz and 0.275 W.



**6G. Transient Frequency Behavior (cont.)**

Keyup 12.5 kHz channel spacing. Measured at 155.025 MHz and 0.275 W.



Dekey 12.5 kHz channel spacing. Measured at 155.025 MHz and 0.275 W.

