

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

	<u>MEASUREMENT</u>	<u>EXHIBIT</u>	<u>REFERENCE</u>
I.	RF Power Output	6A	2.1033(c)8, 2.1046(a)
II.	Modulation Characteristics		2.1047
	A. Audio Response	6B-1	2.1047(a)
	B. Low Pass Filter Response	6B-2	2.1047(a)
	C. Modulation Limiting vs. Frequency	6B-3	2.1047(b)
	D. Modulation Limiting vs. Audio Level	6B-4	2.1047(b)
III.	Occupied Bandwidth	6C	2.1049
	1. 25 kHz Audio (Voice)	6C-1	2.1049(c)(1)
	2. 12.5 kHz Audio (Voice)	6C-2	2.1049(c)(1)
	3. 25kHz Audio Voice with PL Tone	6C-3	2.1049(h)
	4. 12.5 kHz Audio Voice with PL Tone	6C-4	2.1049(h)
IV.	Conducted Spurious Emissions	6D	2.1051
V.	Radiated Spurious Emissions	6E	2.1053
VI.	Frequency Stability		2.1055, 90.213
	A. Temperature	6F-1	2.1055(a)(1), 2.1055(b)
	B. Supply Voltage	6F-2	2.1055(d)(1)
VII.	Transient Frequency Behavior	6G	90.214

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 403.025MHz

At the maximum power setting:

Measured RF Output Power:	4 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:	0.65 Amps
Primary Supply Voltage:	13.8 Volts

Measured at 435.025MHz

At the maximum power setting:

Measured RF Output Power:	4 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:	0.65 Amps
Primary Supply Voltage:	13.8 Volts

Measured at 469.875MHz

At the maximum power setting:

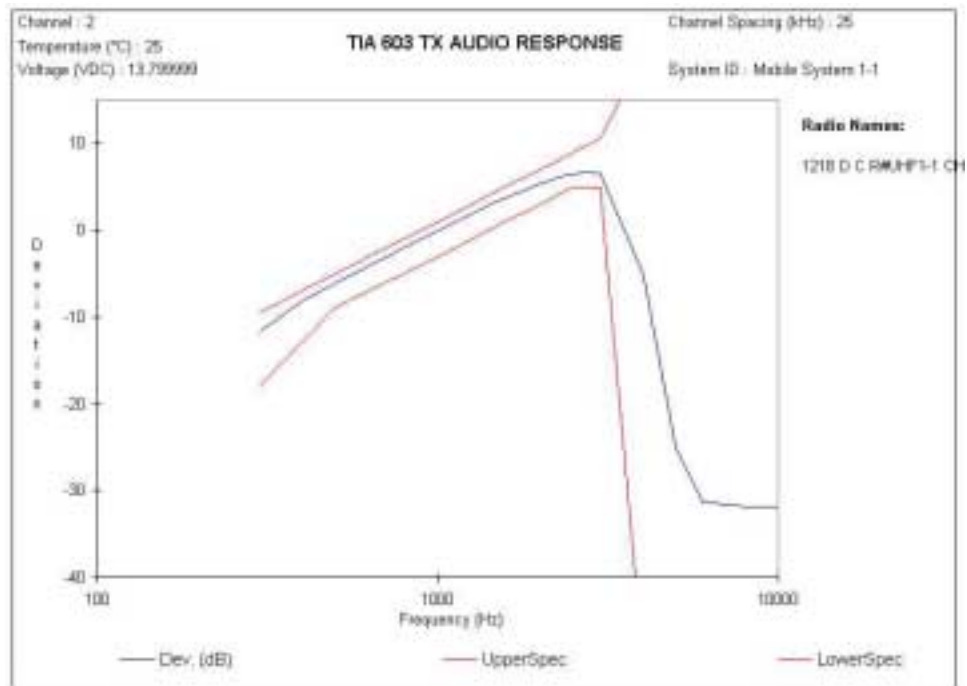
Measured RF Output Power:	4 Watts
Measured DC Voltage:	7.50 Volts
Measured DC Current:	1.85 Amps
Primary Supply Voltage:	13.8 Volts

At the minimum power setting:

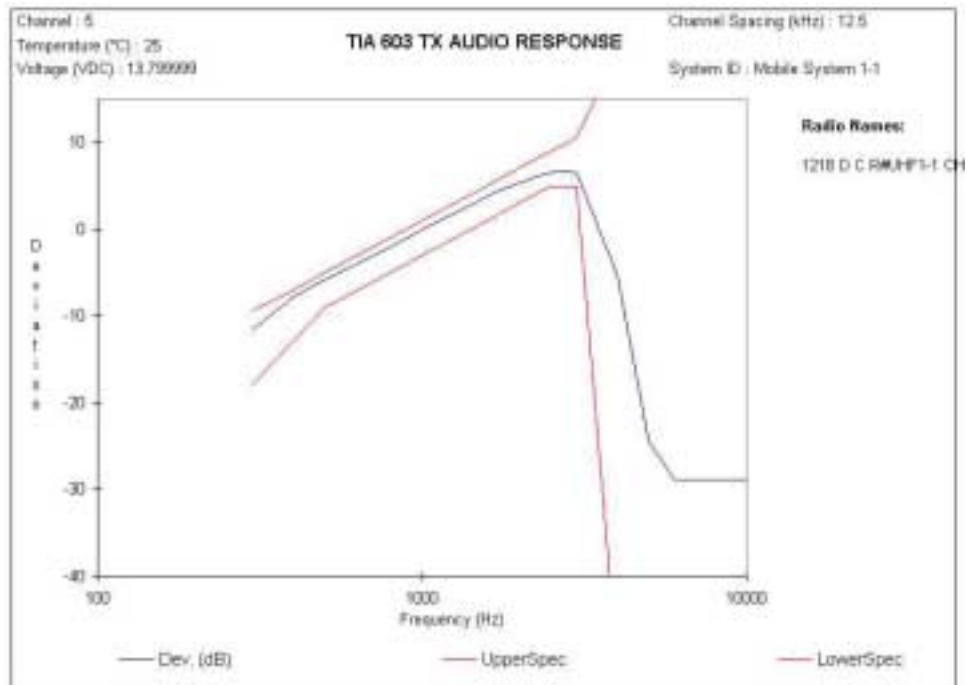
Measured RF Output Power:	0.275 Watts
Measured DC Voltage:	7.50 Volts
Measured DC Current:	0.65 Amps
Primary Supply Voltage:	13.8 Volts

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

25 kHz channel spacing. Measured at 435.025 MHz.

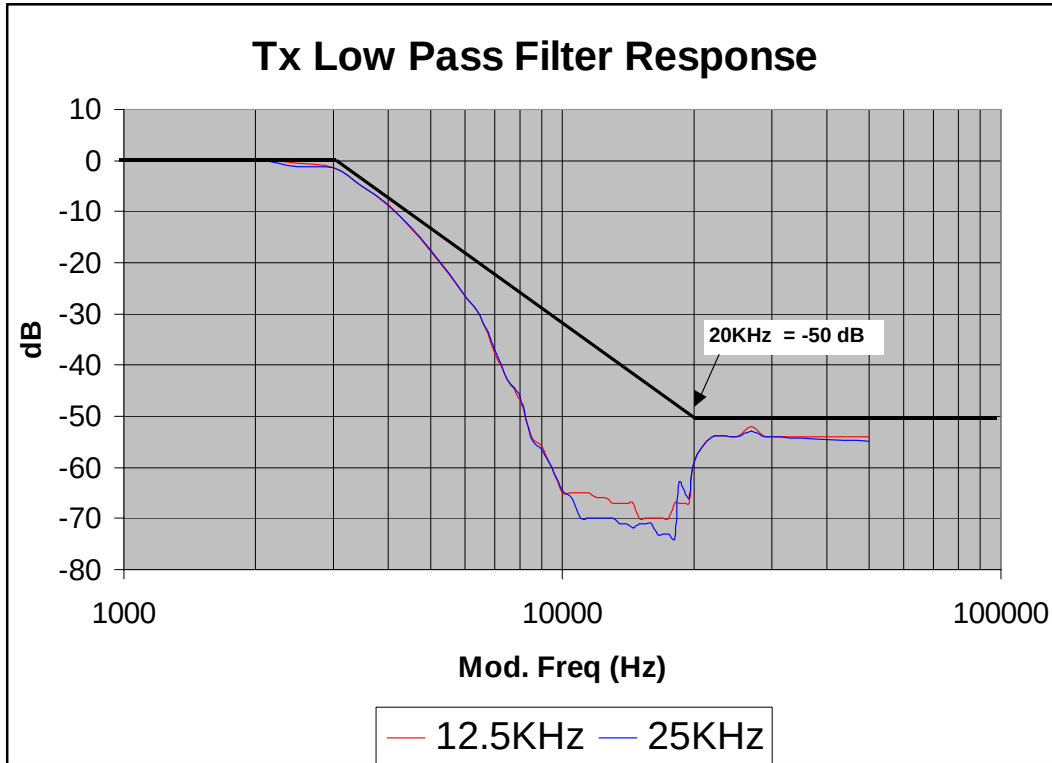


12.5 kHz channel spacing. Measured at 435.025 MHz.



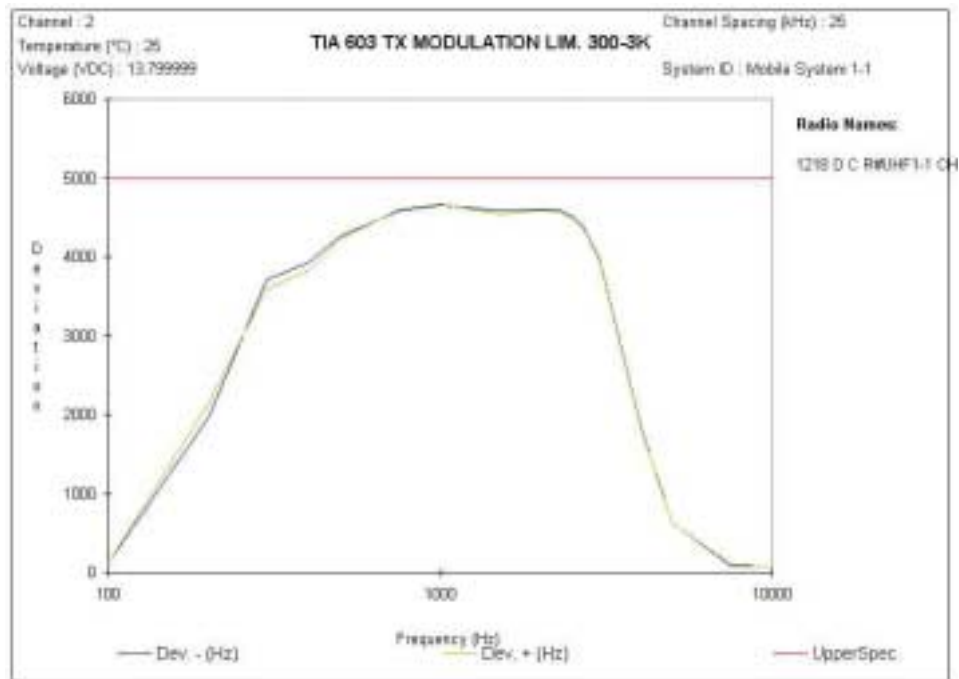
6B-2. Low Pass Filter Response – Pursuant 47 CFR 2.1033(c) 14, 2.1047(a)

25KHz and 12.5kHz channel spacing. Measured Frequency: 435.025 MHz.

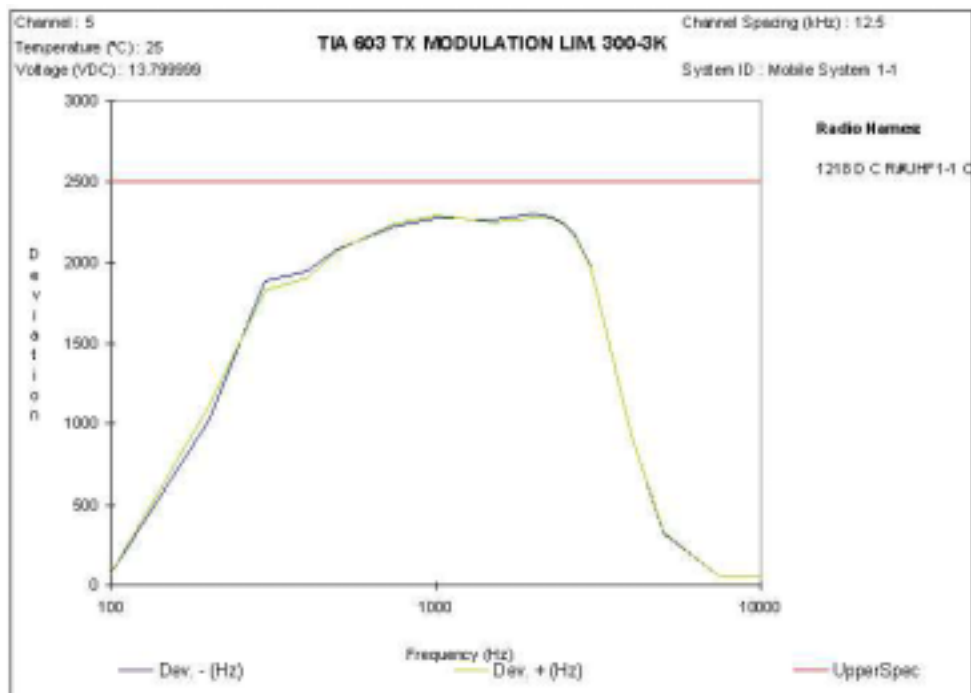


6B-3. Modulation Limiting versus Frequency – Pursuant 47 CFR 2.1033(c) 14, 2.1047(b)

25 kHz channel spacing. Measured at 435.025 MHz.

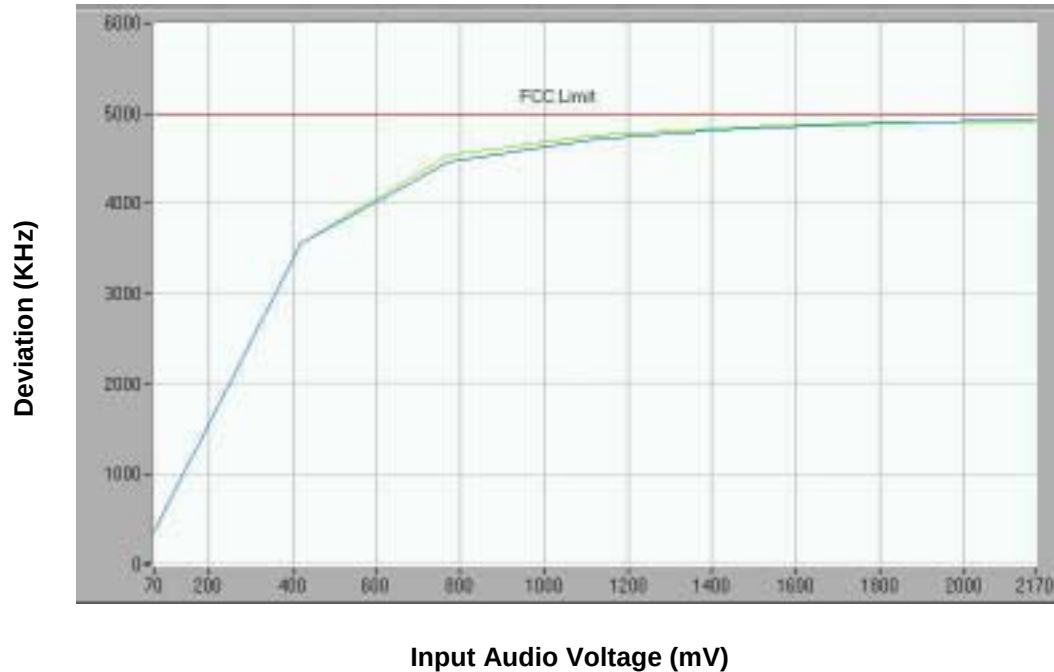


12.5 kHz channel spacing. Measured at 435.025 MHz.

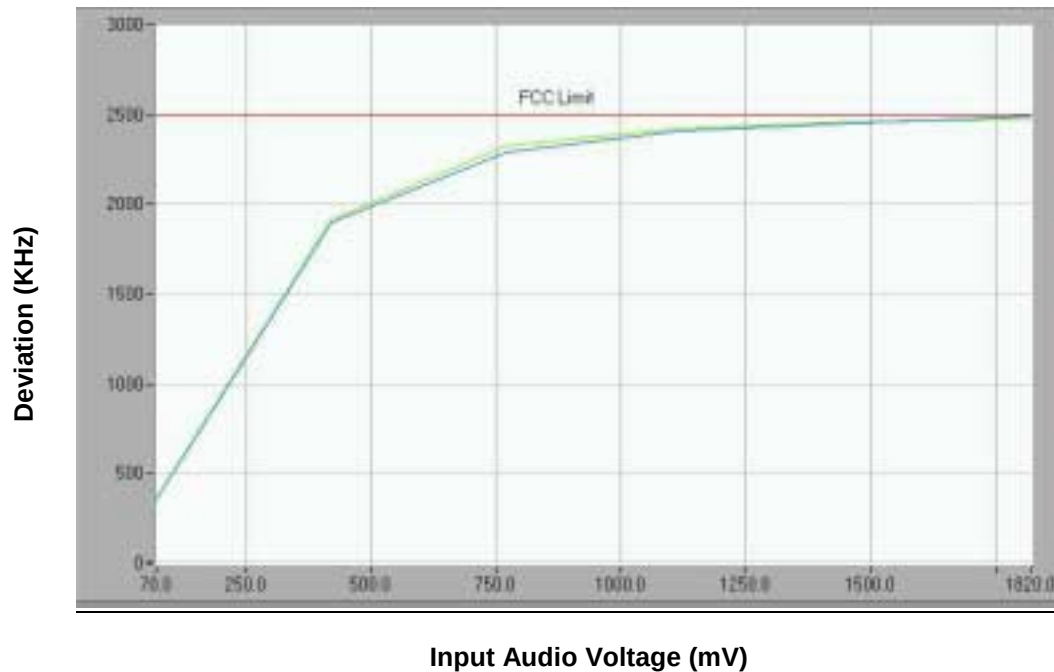


6B-4. Modulation Limiting vs. Audio Level – Pursuant 47 CFR 2.1033 (c) 14, 2.1047(b)

Modulation Limiting, Deviation vs Input Audio
UHF_R1 435.025MHz, 25 kHz Channels



Modulation Limiting, Deviation vs Input Audio
UHF_R1 435.025MHz, 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

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

Shown below are the calculations required for FCC ID: AZ492FT4848.

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.

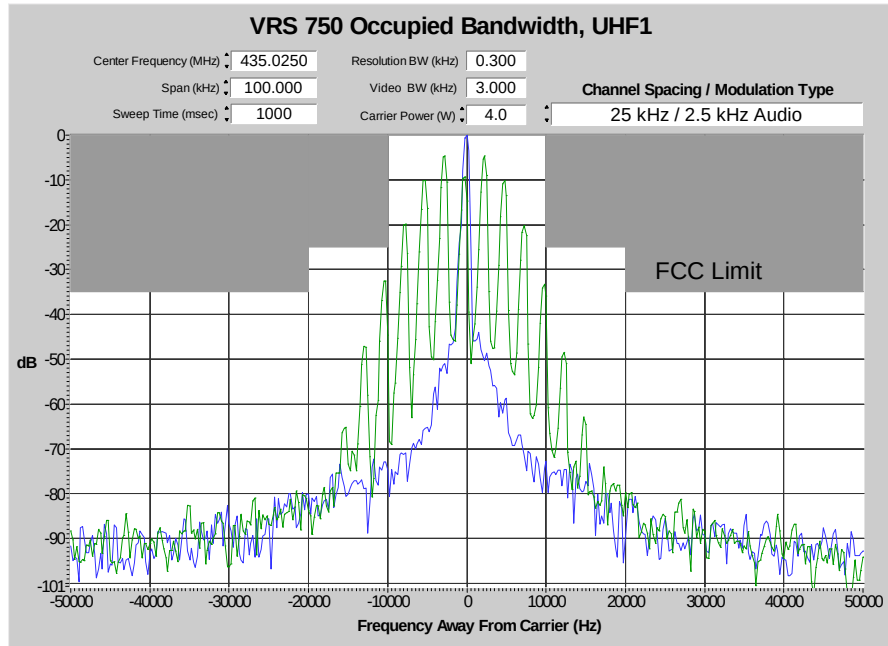
6C-1. Occupied Bandwidth – 25 kHz Audio – Pursuant 2.1049(c)(1)

High power. Measured at 435.025 MHz and 4 W.

Modulation: Voice (2500 Hz Audio Tone)

Modulation Designator: 16K0F3E

Channelization: 25 kHz (Mask B)

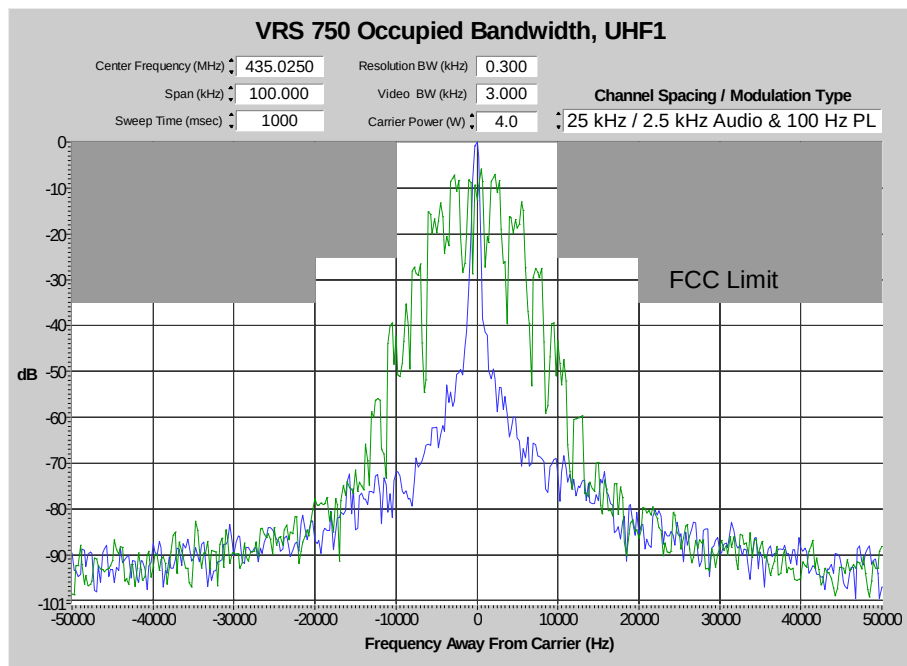


High power. Measured at 435.025 MHz and 4 W.

Modulation: Voice (2500 Hz Audio Tone with PL)

Modulation Designator: 16K0F3E

Channelization: 25 kHz (Mask B)



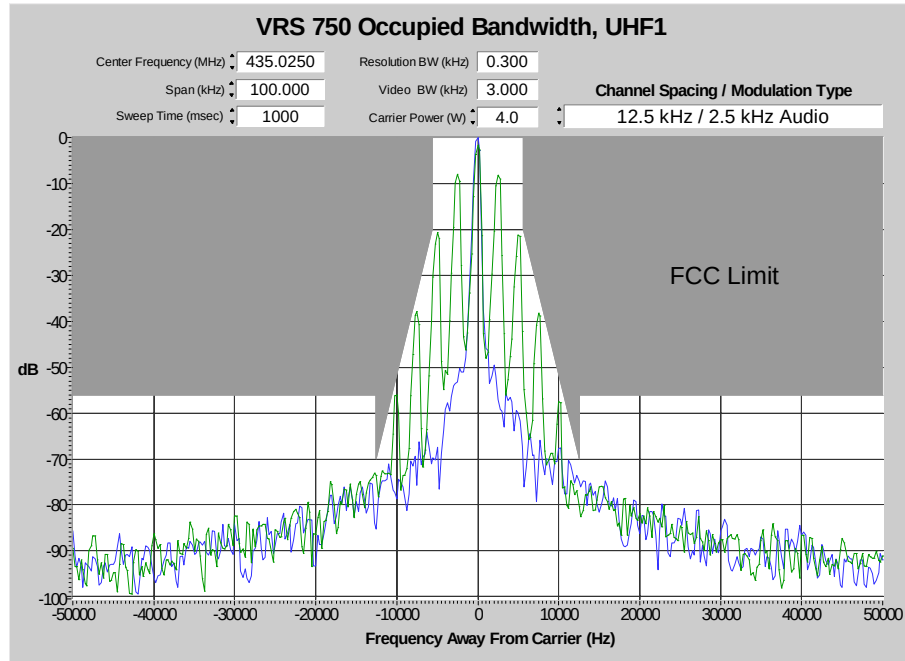
6C- 2. Occupied Bandwidth – 12.5 kHz Audio – Pursuant 2.1049(c)(1)

High power. Measured at 435.025 MHz and 4 W.

Modulation: Voice (2500 Hz Audio Tone)

Modulation Designator: 11K0F3E

Channelization: 12.5 kHz (Mask D)

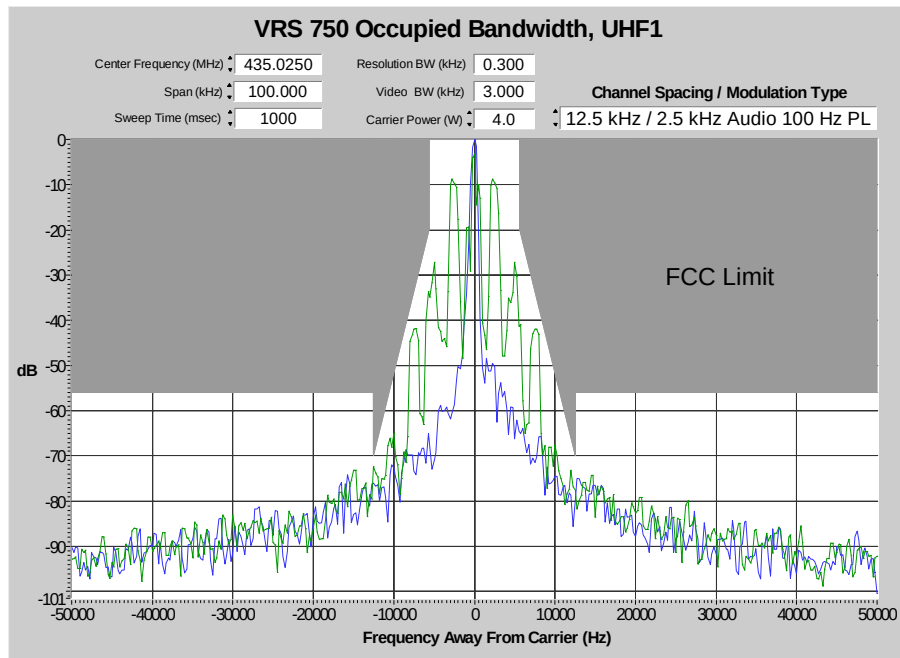


High power. Measured at 435.025 MHz and 4 W.

Modulation: Voice (2500 Hz Audio Tone with PL)

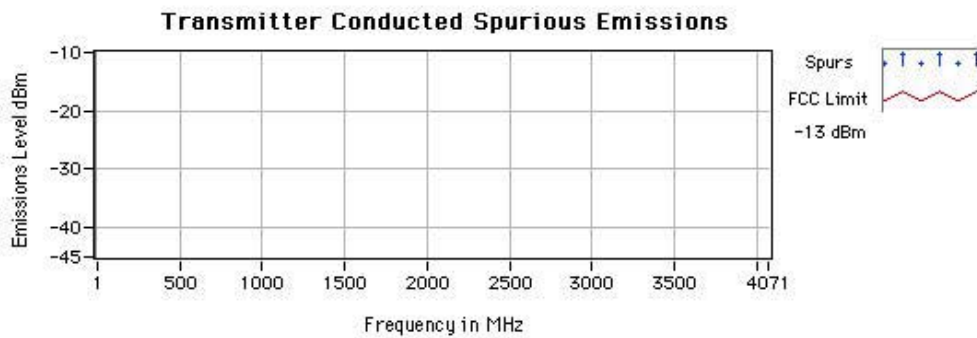
Modulation Designator: 11K0F3E

Channelization: 12.5 kHz (Mask D)



6D. Conducted Spurious Emissions – Pursuant 2.1051**Transmitter Conducted Spurious Emissions****FREQ: 403.02500 MHz****Power 275mW**

Spur Frequency	FCC Limit	Measured Value (dBm)
----------------	-----------	----------------------

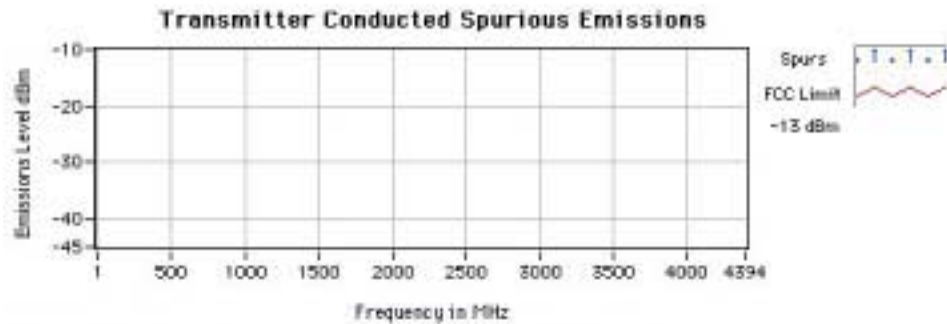
**All Transmitter Spurious Emissions Tested to the 10th Harmonic****No Spurs Found Above -45 dBm****Motorola Plantation ATE Lab****Thu, Oct 11, 2001**Test Performed By: **Jerry Simpson**

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

FREQ: 435.02500 MHz

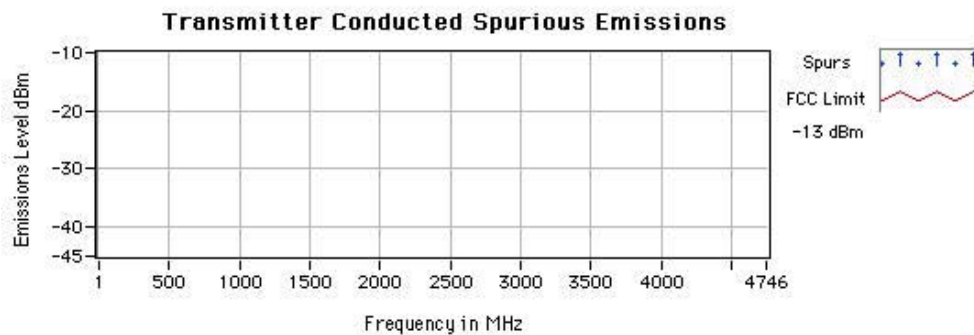
Power 275mW

Spur Frequency	FCC Limit	Measured Value (dBm)
----------------	-----------	----------------------

**All Transmitter Spurious Emissions Tested to the 10th Harmonic****No Spurs Found Above -45 dBm****Motorola Plantation ATE Lab****Thu, Oct 11, 2001**Test Performed By: **Jerry Simpson**

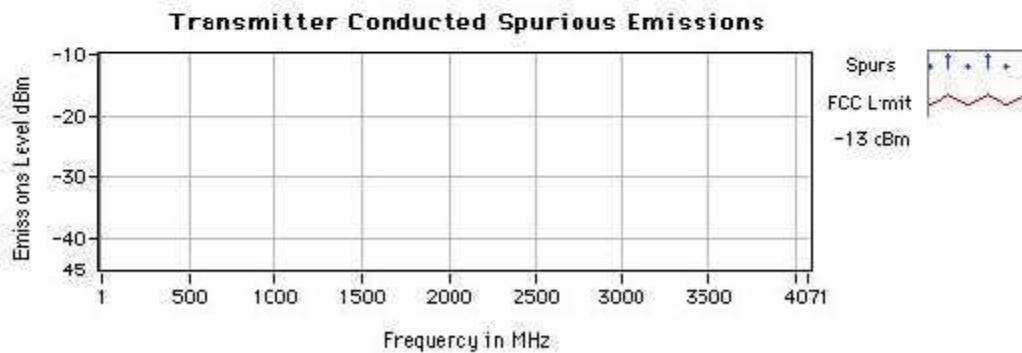
6D. Conducted Spurious Emissions (cont.)**Transmitter Conducted Spurious Emissions****FREQ: 469.87500 MHz****Power 275mW**

Spur Frequency	FCC Limit	Measured Value (dBm)
----------------	-----------	----------------------

**All Transmitter Spurious Emissions Tested to the 10th Harmonic****No Spurs Found Above -45 dBm****Motorola Plantation ATE Lab****Thu, Oct 11, 2001**Test Performed By: **Jerry Simpson**

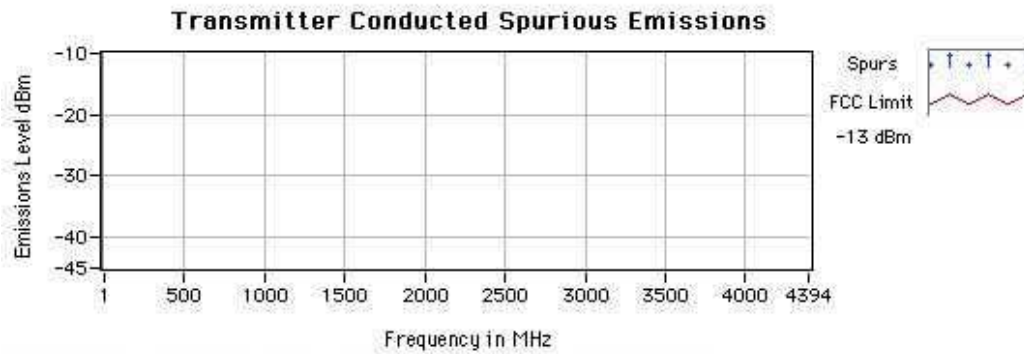
6D. Conducted Spurious Emissions (cont.)**Transmitter Conducted Spurious Emissions****FREQ: 403.02500 MHz****Power 4.0W**

Spur Frequency	FCC Limit	Measured Value (dBm)
----------------	-----------	----------------------

**All Transmitter Spurious Emissions Tested to the 10th Harmonic****No Spurs Found Above -45 dBm****Motorola Plantation ATE Lab****Tue, Oct 23, 2001****Test Performed By: Jerry Simpson**

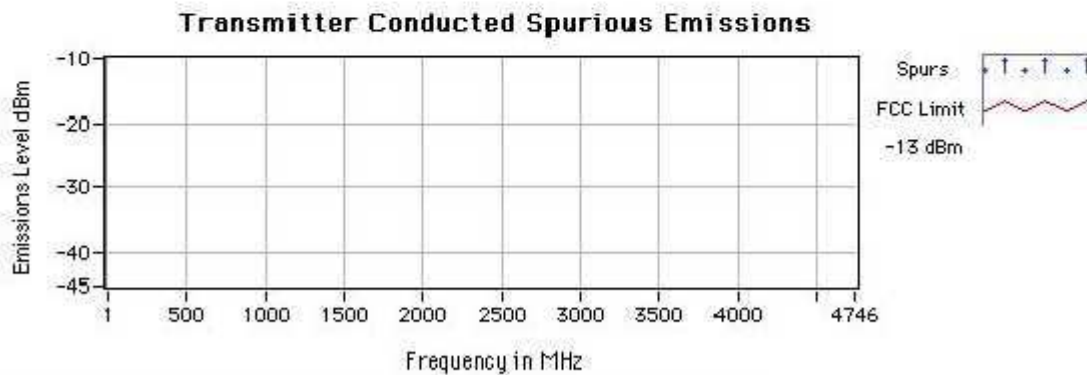
6D. Conducted Spurious Emissions (cont.)**Transmitter Conducted Spurious Emissions****FREQ: 435.02500 MHz****Power 4.0W**

Spur Frequency	FCC Limit	Measured Value (dBm)
----------------	-----------	----------------------

**All Transmitter Spurious Emissions Tested to the 10th Harmonic****No Spurs Found Above -45 dBm****Motorola Plantation ATE Lab****Tue, Oct 23, 2001**Test Performed By: **Jerry Simpson**

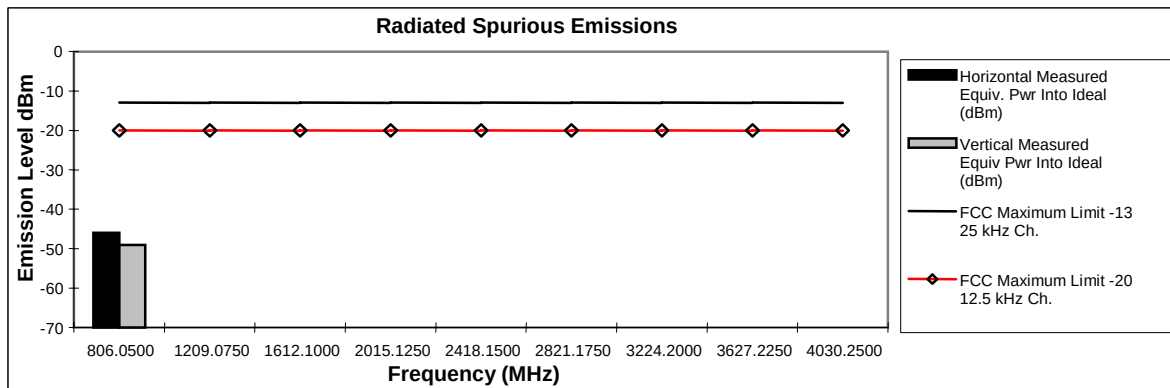
6D. Conducted Spurious Emissions (cont.)**Transmitter Conducted Spurious Emissions****FREQ: 469.87500 MHz****Power 4.0W**

Spur Frequency	FCC Limit	Measured Value (dBm)
----------------	-----------	----------------------

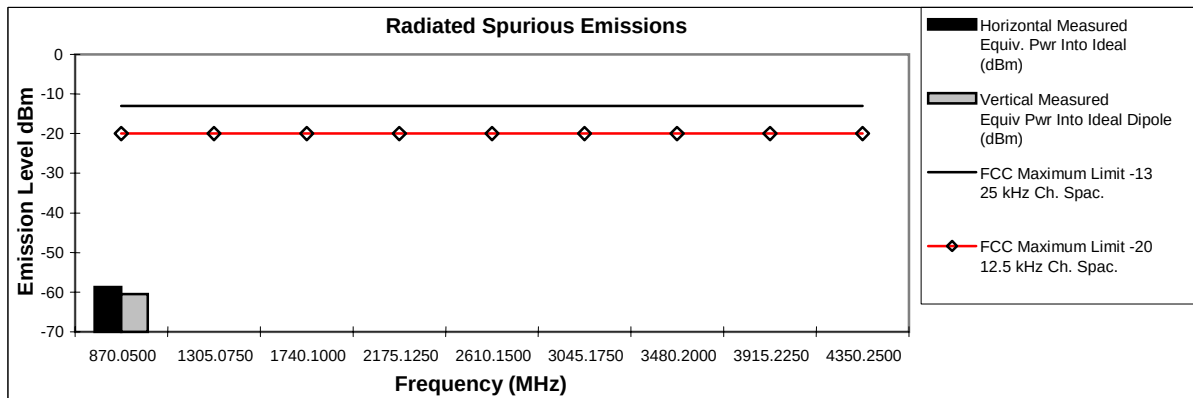
**All Transmitter Spurious Emissions Tested to the 10th Harmonic****No Spurs Found Above -45 dBm****Motorola Plantation ATE Lab****Tue, Oct 23, 2001**Test Performed By : **Jerry Simpson**

6E. Radiated Spurious Emissions – Pursuant 2.1053**403.025 MHz****4 Watts****Channel Spacing 25kHz**

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)
806.0500	-13	-20	-45.94	-49.08
1209.0750	-13	-20	*	*
1612.1000	-13	-20	*	*
2015.1250	-13	-20	*	*
2418.1500	-13	-20	*	*
2821.1750	-13	-20	*	*
3224.2000	-13	-20	*	*
3627.2250	-13	-20	*	*
4030.2500	-13	-20	*	*

**435.025 MHz****4 Watts****Channel Spacing 25kHz**

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)
870.0500	-13	-20	-58.72	-60.50
1305.0750	-13	-20	*	*
1740.1000	-13	-20	*	*
2175.1250	-13	-20	*	*
2610.1500	-13	-20	*	*
3045.1750	-13	-20	*	*
3480.2000	-13	-20	*	*
3915.2250	-13	-20	*	*
4350.2500	-13	-20	*	*



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

Motorola Plantation EMC Lab – Test Performed by: Curt McLennan

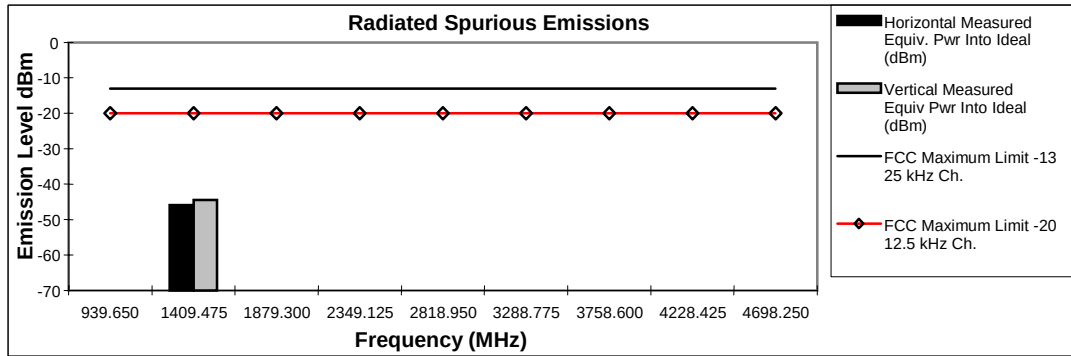
FCC Registration: 91932 / Industry Canada: IC3679

April 20, 2001

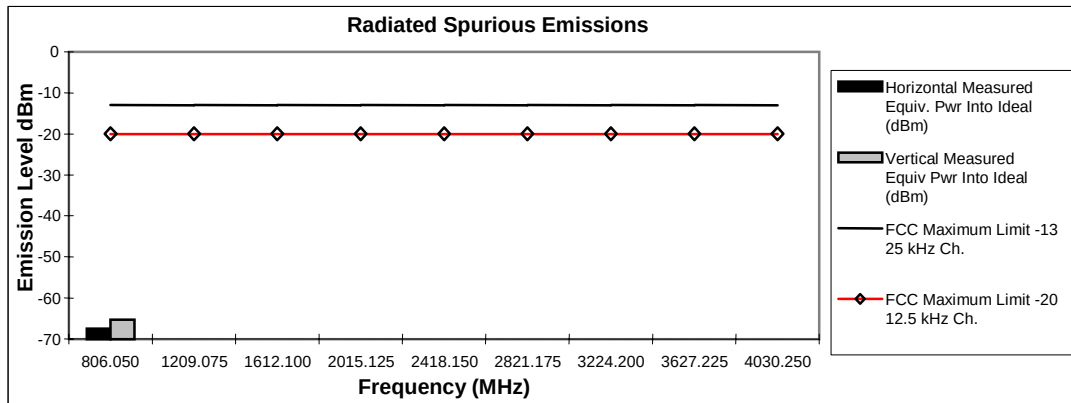
EXHIBIT 6E(1/3)

6E. Radiated Spurious Emissions (cont.)**469.825****4****Chan Spacing 25kHz**

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)
939.6500	-13	-20	*	*
1409.4750	-13	-20	-45.94	-44.44
1879.3000	-13	-20	*	*
2349.1250	-13	-20	*	*
2818.9500	-13	-20	*	*
3288.7750	-13	-20	*	*
3758.6000	-13	-20	*	*
4228.4250	-13	-20	*	*
4698.2500	-13	-20	*	*

**403.025****0.275****Chan Spacing 25kHz**

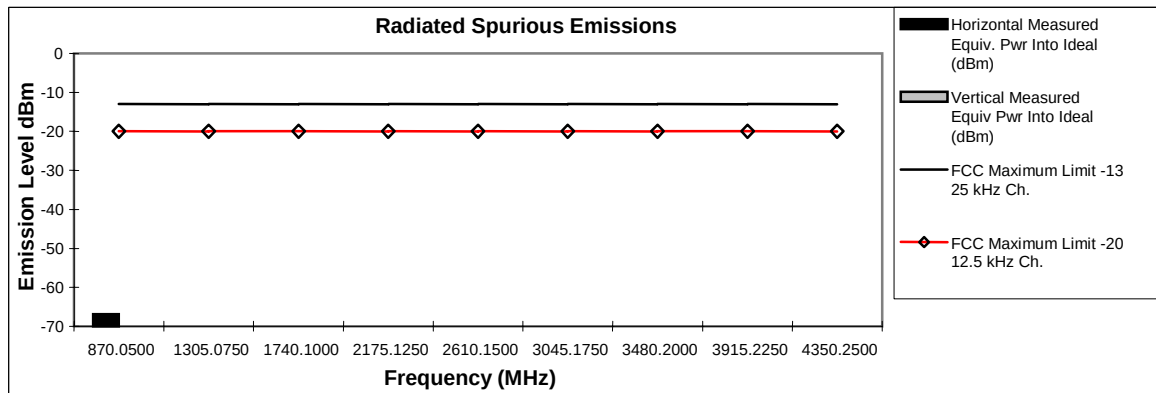
Frequency (MHz)	FCC Maximum Limit -13 (dBm) 25 kHz Ch. Spac.	FCC Maximum Limit -20 (dBm) 12.5 kHz Ch. Spac.	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
806.0500	-13	-20	-67.45	-65.25
1209.0750	-13	-20	*	*
1612.1000	-13	-20	*	*
2015.1250	-13	-20	*	*
2418.1500	-13	-20	*	*
2821.1750	-13	-20	*	*
3224.2000	-13	-20	*	*
3627.2250	-13	-20	*	*
4030.2500	-13	-20	*	*



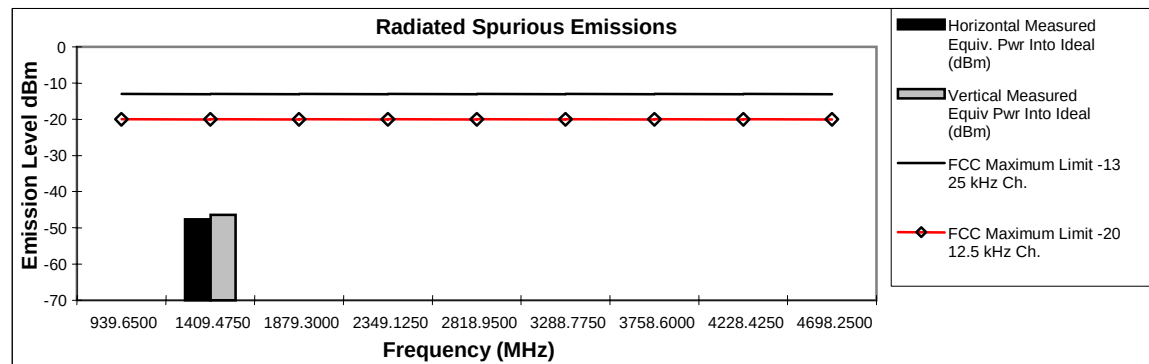
* Indicates the spurious emission was less than -70dBm or could not be detected due to noise limitations or ambients.

6E. Radiated Spurious Emissions (cont.)**435.025****0.275 Watts****Chan Spacing 25kHz**

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)
870.0500	-13	-20	-66.92	*
1305.0750	-13	-20	*	*
1740.1000	-13	-20	*	*
2175.1250	-13	-20	*	*
2610.1500	-13	-20	*	*
3045.1750	-13	-20	*	*
3480.2000	-13	-20	*	*
3915.2250	-13	-20	*	*
4350.2500	-13	-20	*	*

**469.825****0.275 Watts****Chan Spacing 25kHz**

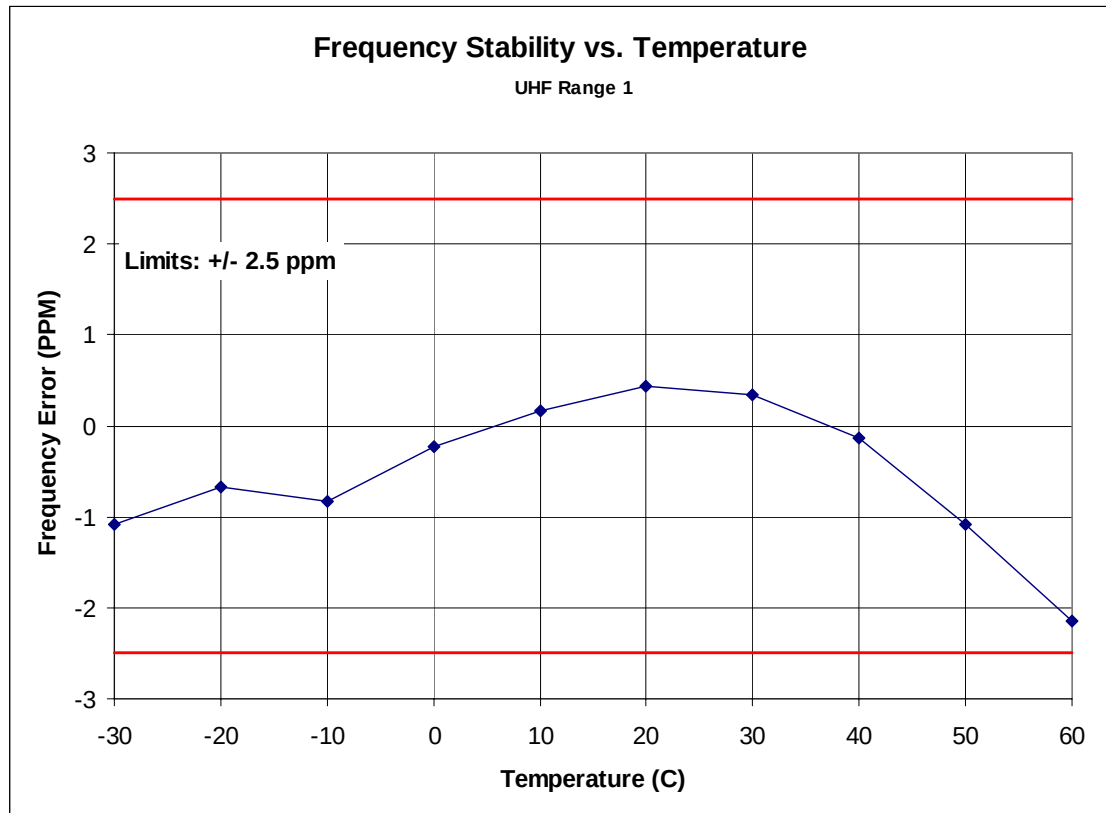
Frequency (MHz)	FCC Maximum Limit -13 (dBm) 25 kHz Ch. Spac.	FCC Maximum Limit -20 (dBm) 12.5 kHz Ch. Spac.	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
939.6500	-13	-20	*	*
1409.4750	-13	-20	-47.65	-46.43
1879.3000	-13	-20	*	*
2349.1250	-13	-20	*	*
2818.9500	-13	-20	*	*
3288.7750	-13	-20	*	*
3758.6000	-13	-20	*	*
4228.4250	-13	-20	*	*
4698.2500	-13	-20	*	*



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

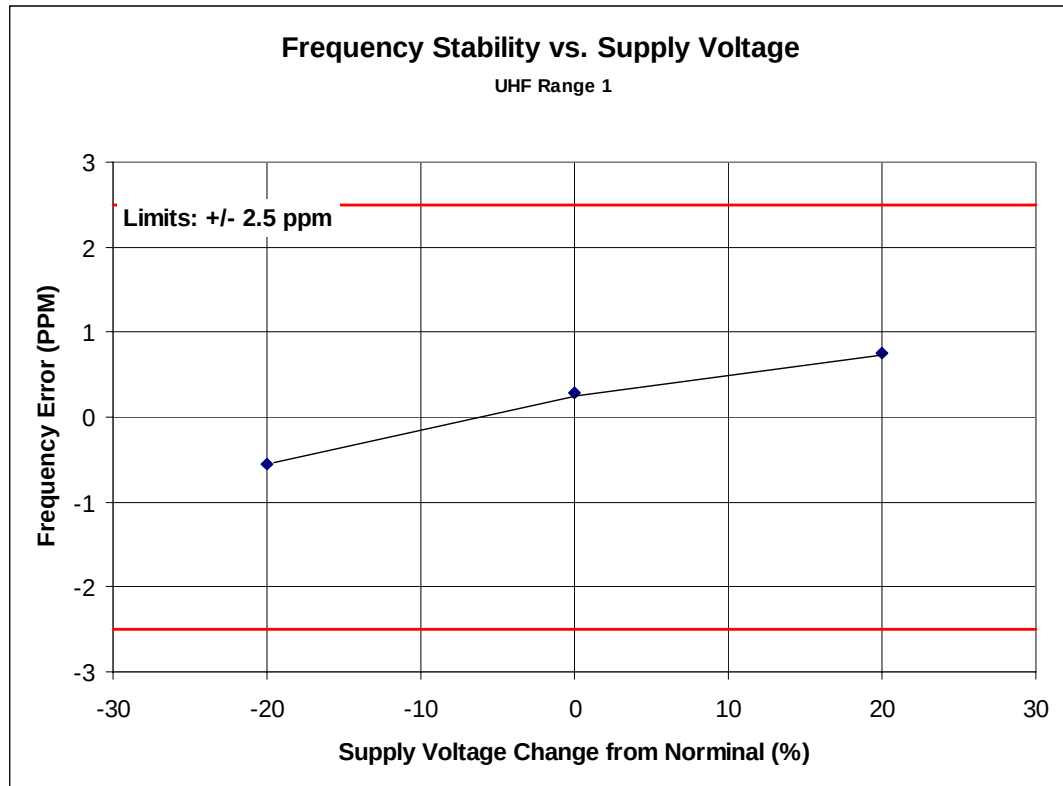
6F-1. Frequency Stability vs. Temperature – Pursuant 2.1055(a)(1), 2.1055(b), 90.213

Measured at 435.025 MHz.



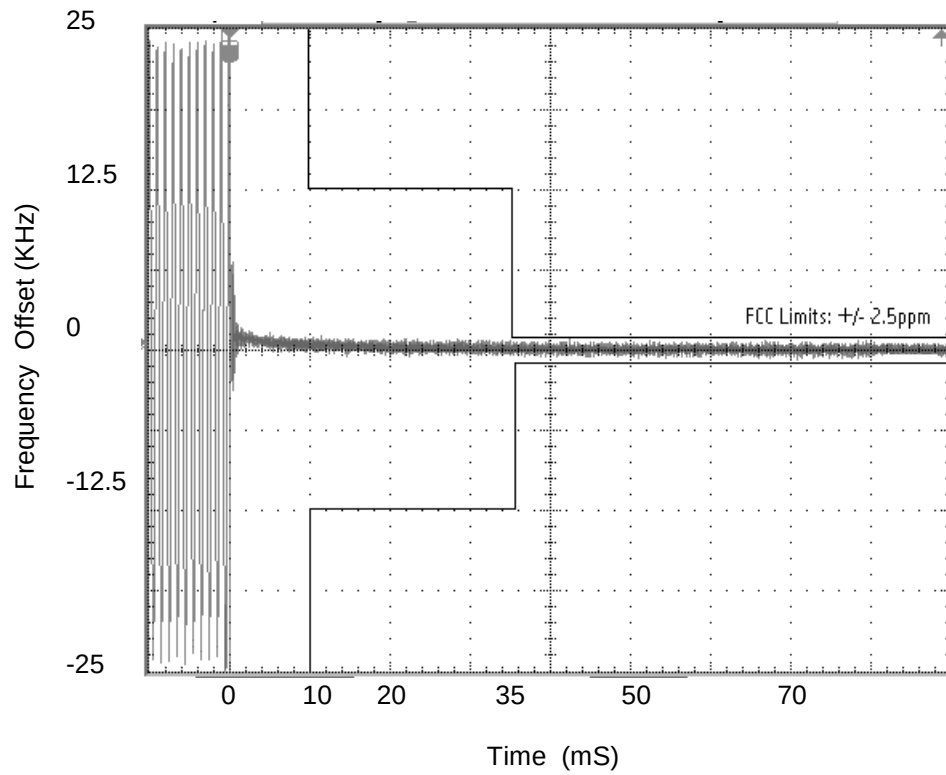
6F-2. Frequency Stability vs. Supply Voltage – Pursuant 2.1055(d)(1), 90.213

Measured at 435.025MHz.

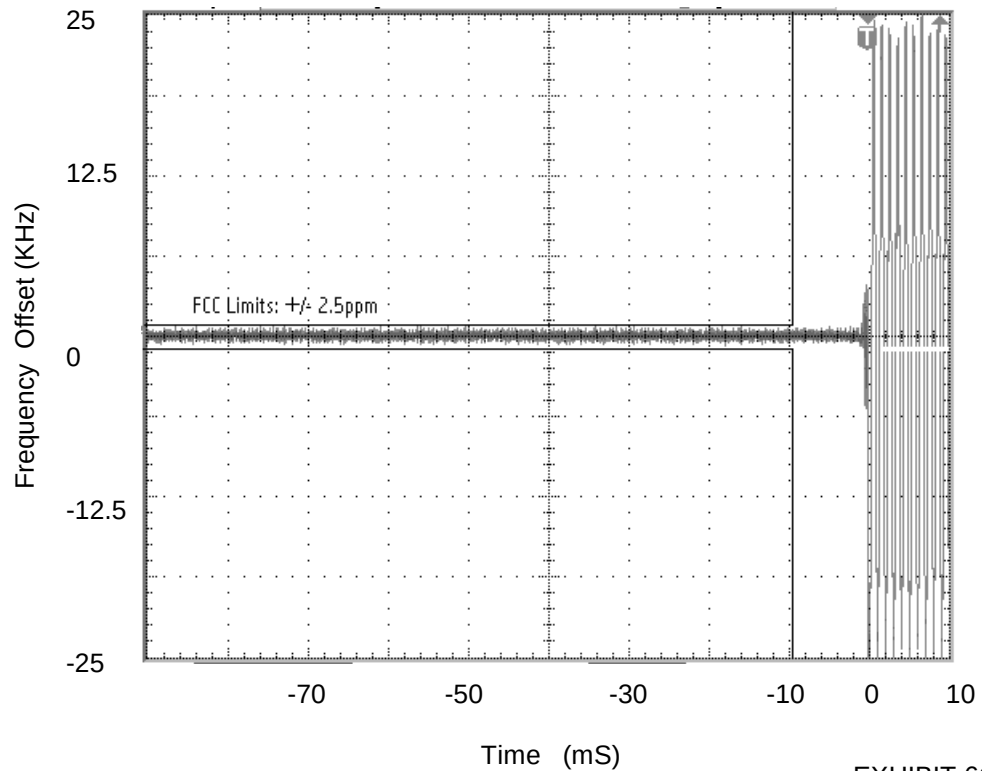


6G. Transient Frequency Behavior – Pursuant 90.214

Key 25 KHz channel spacing. Measured at 435.025MHz and 4W

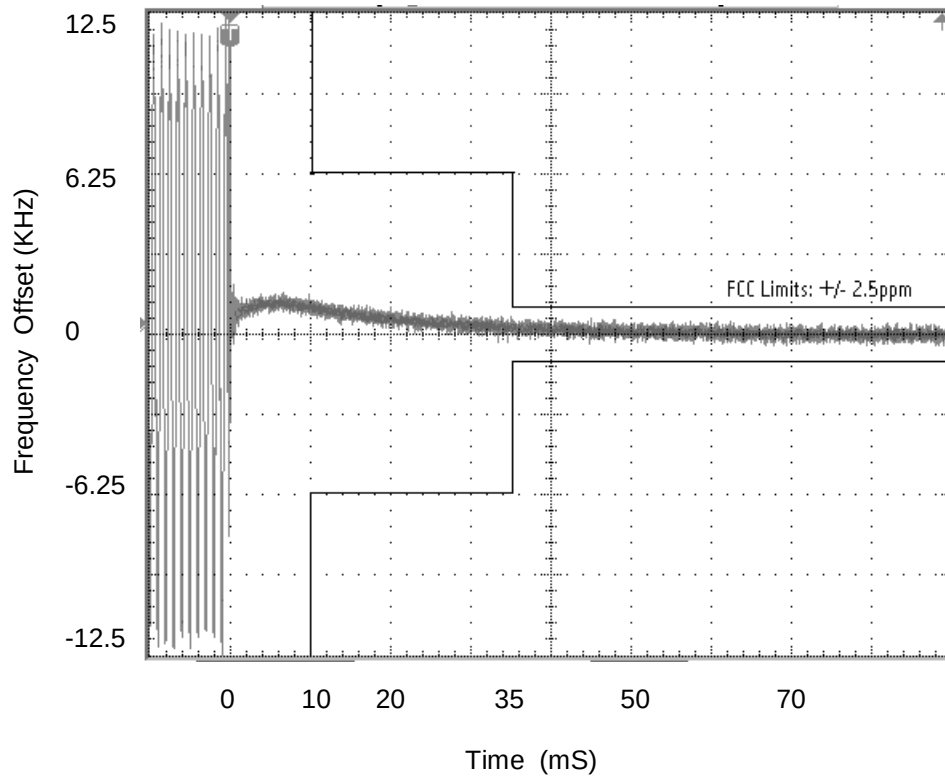


Dekey25kHz channel spacing. Measured at 435.025 and 4W.

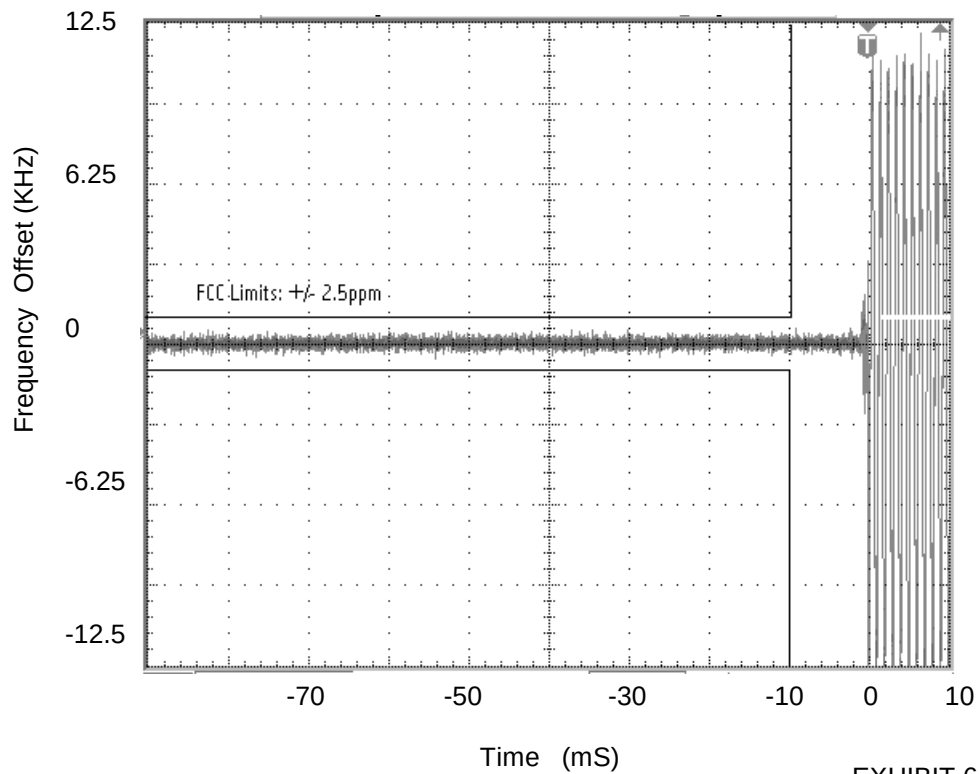


6G. Transient Frequency Behavior (cont.)

Keyup 12.5 kHz channel spacing. Measured at 435.025 MHz and 4 W.

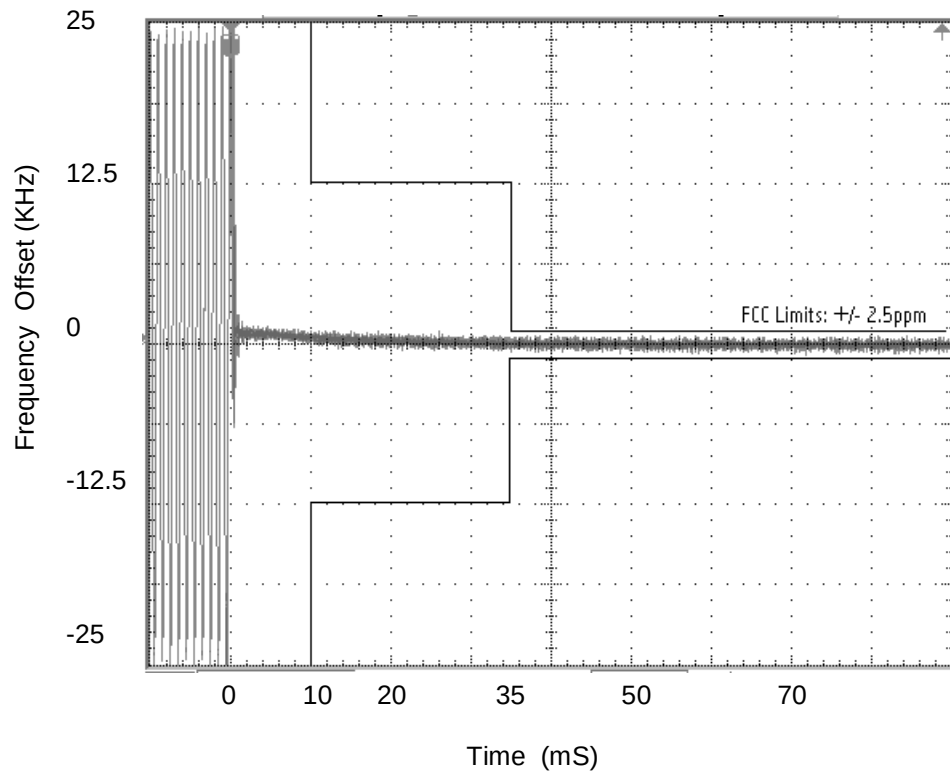


Dekey.12.5 kHz channel spacing.Measured at 435.025 MHz and 4 W.

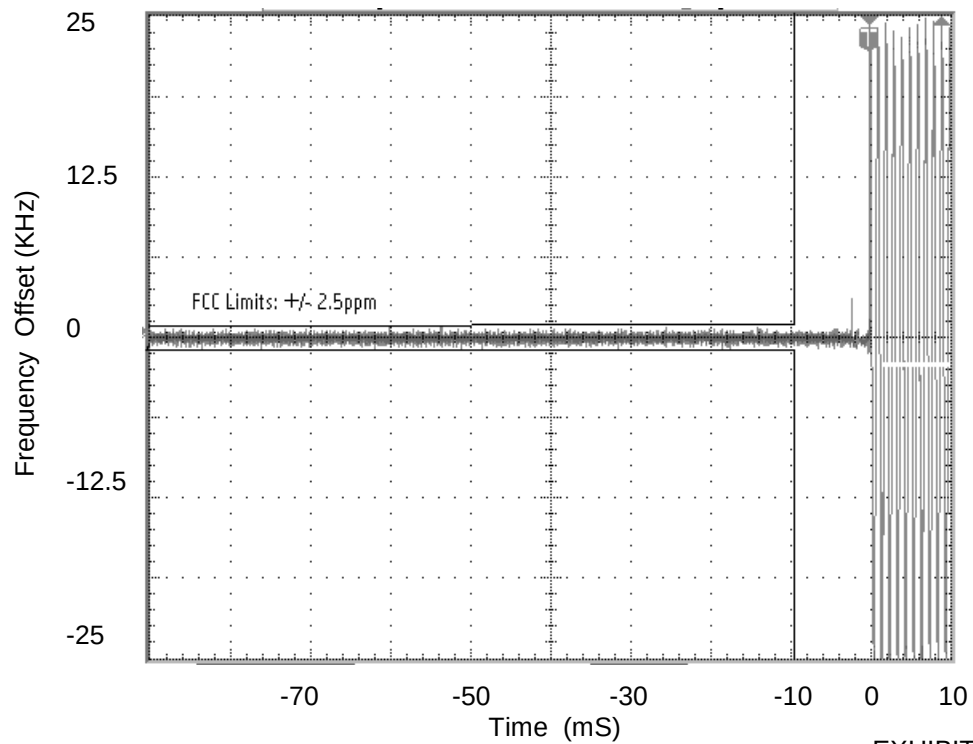


6G. Transient Frequency Behavior (cont.)

Keyup 25 kHz channel spacing. Measured at 435.025 MHz and 0.275 W.

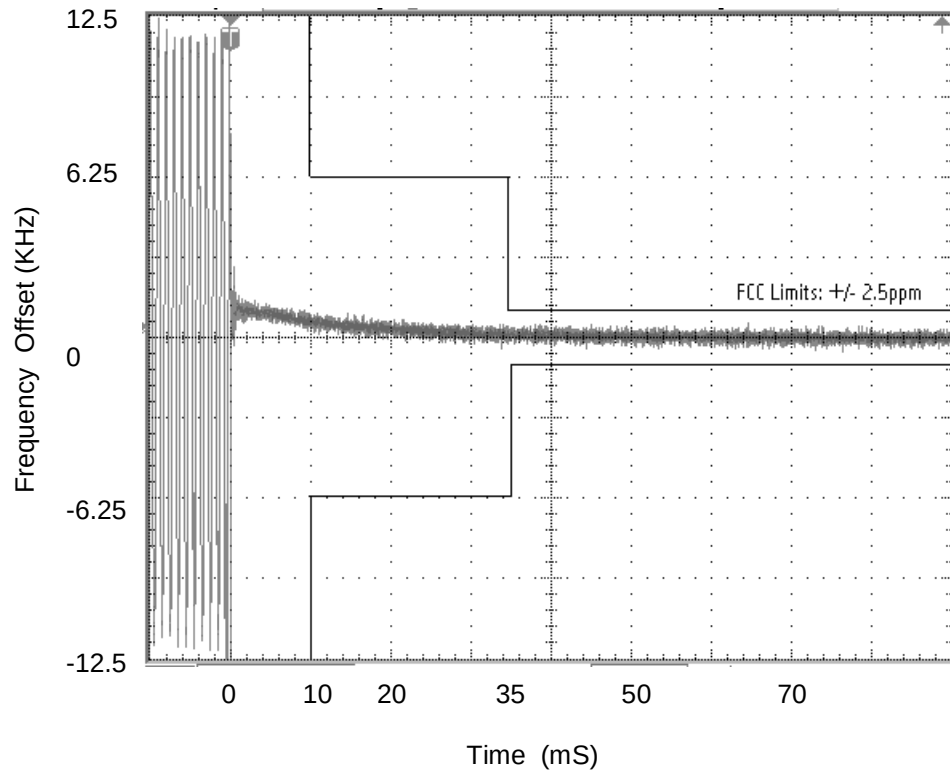


Dekey 25 kHz channel spacing. Measured at 435.025 MHz and 0.275 W.



6G. Transient Frequency Behavior (cont.)

Keyup 12.5 kHz channel spacing. Measured at 435.025 MHz and 0.275 W.



Dekey 12.5 kHz channel spacing. Measured at 435.025 MHz and 0.275 W.

