RMM 2050 Test Report

MEASUREMENT		EXHIBIT	NUMBER OF PAGES
I	RF Power Output	6A	1
II	Audio Response	6B	1
	A. 12.5 kHz		
	B. 25 kHz		
III	Modulation Limiting	6C	1
	A. 12.5 kHz		
	B. 25 kHz		
IV	Occupied Bandwidth	6D 1-4	5
V	Radiated Spurious Emission		
	A. TX Vertical / Horizontal	6E 1	1
VI	Frequency Stability		2
	A. Temperature	6F 1	
	B. Frequency vs. Voltage	6F 2	
VII	Transient Frequency Behavior	6G1-4	4

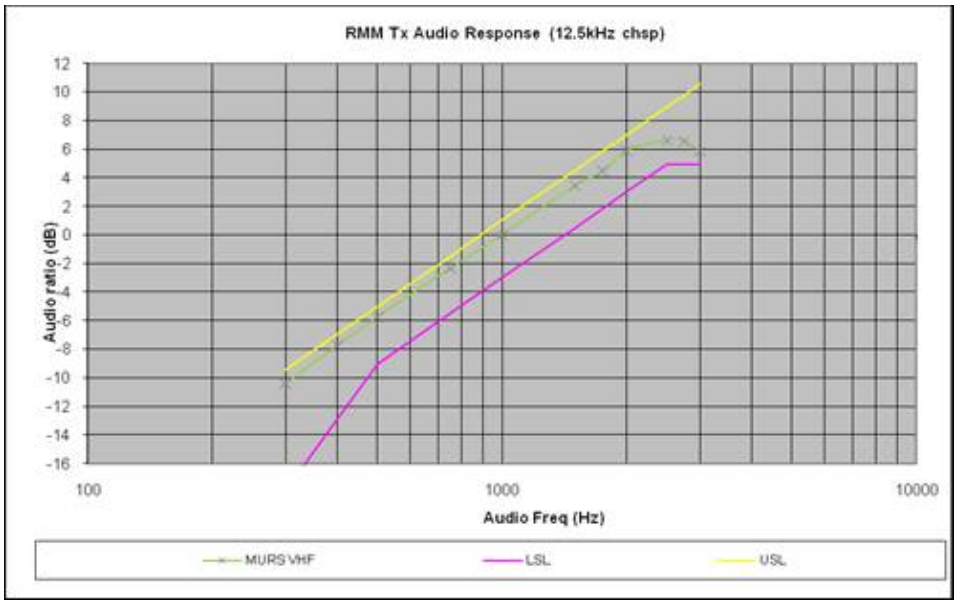
RF POWER OUTPUT DATA

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

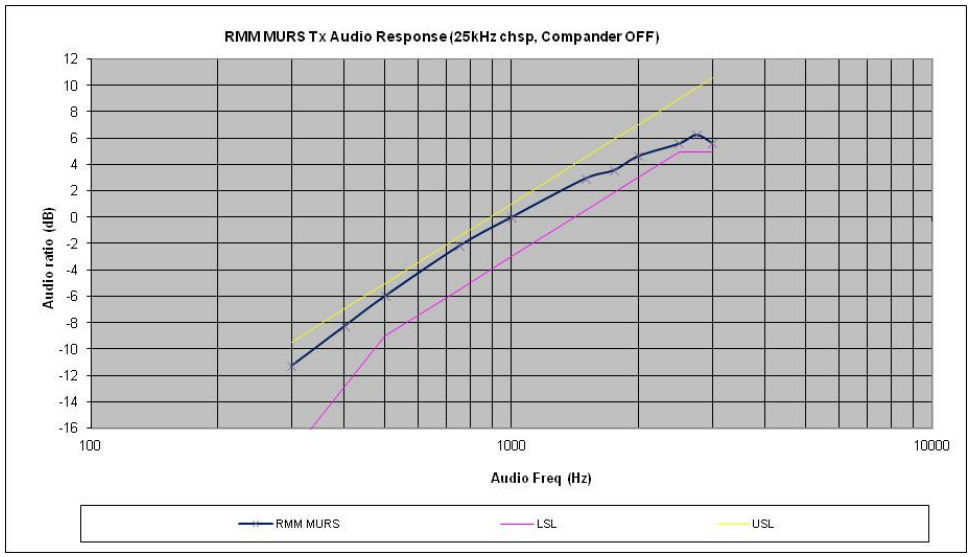
Frequency	151.82 MHz
Measured Conducted RF output*	1.939 Watts
Frequency	154.6000 MHz
Measured Conducted RF output*	2.00 Watts
Normal DC Voltage	3.70 Volts
Normal DC Current	1.608 A
Primary Supply Voltage	3.80 Volts
Frequency	151.82 MHz
Measured Conducted RF output*	1.047 Watts
Frequency	154.60 MHz
Measured Conducted RF output*	1.014 Watts
Normal DC Voltage	3.70 Volts
Normal DC Current	1.225 A
Primary Supply Voltage	3.80 Volts

*Note: RF Conducted output power measured at 3.80Volts

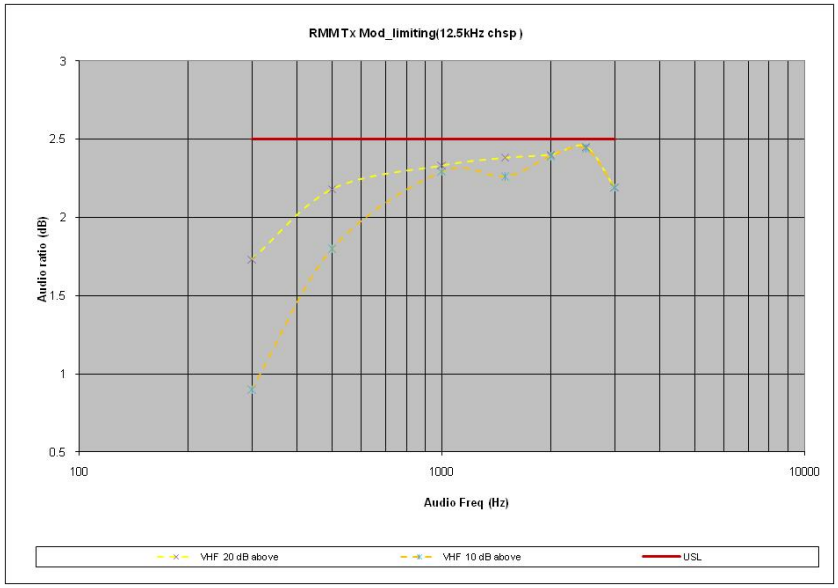
Audio Response 12.5 kHz (A)



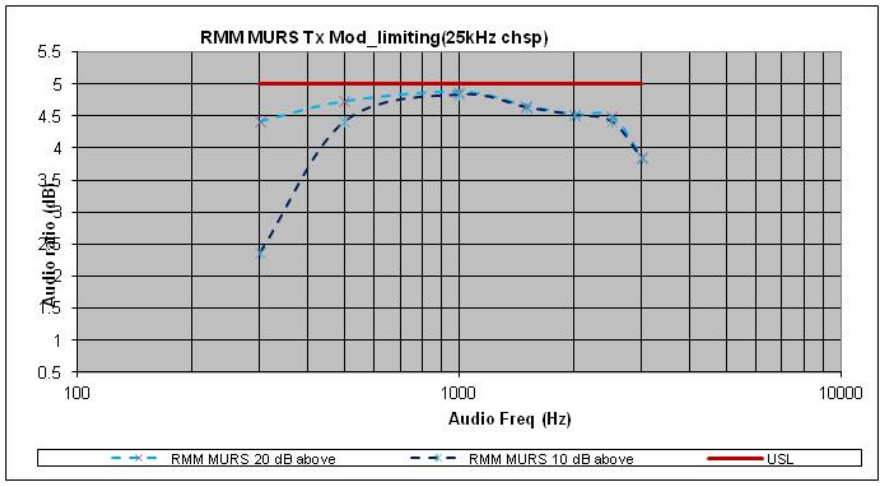
Audio Response 25 kHz (B)



MODULATION LIMITING 12.5 kHz (A)



MODULATION LIMITING 25 kHz (B)



OCCUPIED BANDWIDTH DATA

1 Watt / 2 Watts
12.5 / 25 kHz Channel Spacing

EXHIBIT 6D-1

2500 Hz Audio Modulation	2500 Hz Audio Modulation
Emission Type: 11K0F3E	Emission Type: 16K0F3E
Specification Mask D, 90.210–12.5 kHz	Specification Mask B, 90.21 –25 kHz

EXHIBIT 6D-2

2500 Hz & 77Hz Tone “PL”	2500 Hz & 77Hz Tone “PL”
Emission Type: 11K0F3E	Emission Type: 16K0F3E
Specification Mask D, 90.2 –12.5 kHz	Specification Mask B, 90.21 –25 kHz

EXHIBIT 6D-3 / 2 Watts

2500 Hz Audio Modulation	2500 Hz Audio Modulation
Emission Type: 11K0F3E	Emission Type: 16K0F3E
Specification Mask D, 90.210–12.5 kHz	Specification Mask B, 90.21 –25 kHz

EXHIBIT 6D-4 / 2Watts

2500 Hz & 77Hz Tone “PL”	2500 Hz & 77Hz Tone “PL”
Emission Type: 11K0F3E	Emission Type: 16K0F3E
Specification Mask D, 90.210-12.5 kHz	Specification Mask B, 90.21 –25 kHz

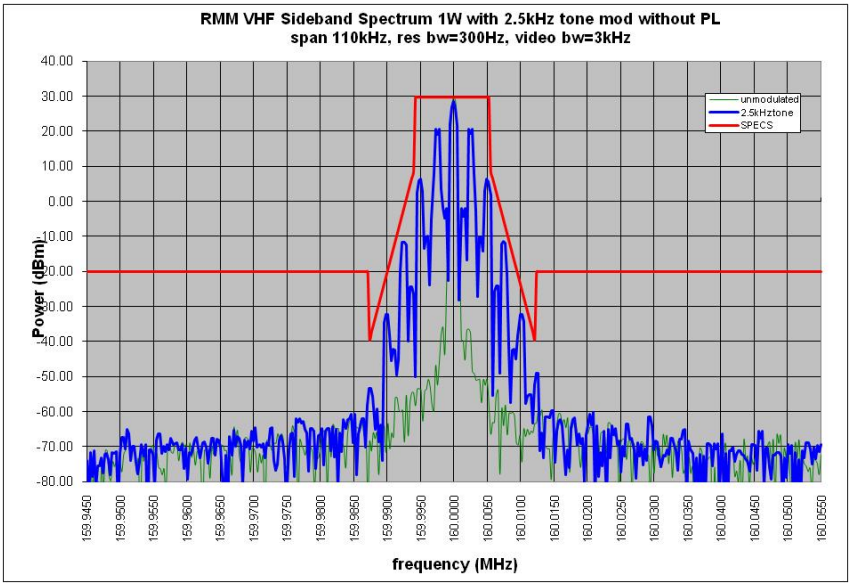
CARSON’S RULE: 11K0F3E

BW= 2(M+D)
BW=2 (3 kHz maximum modulation frequency + 2.5 kHz deviation)
BW=2 (5.5)
BW= 11K0

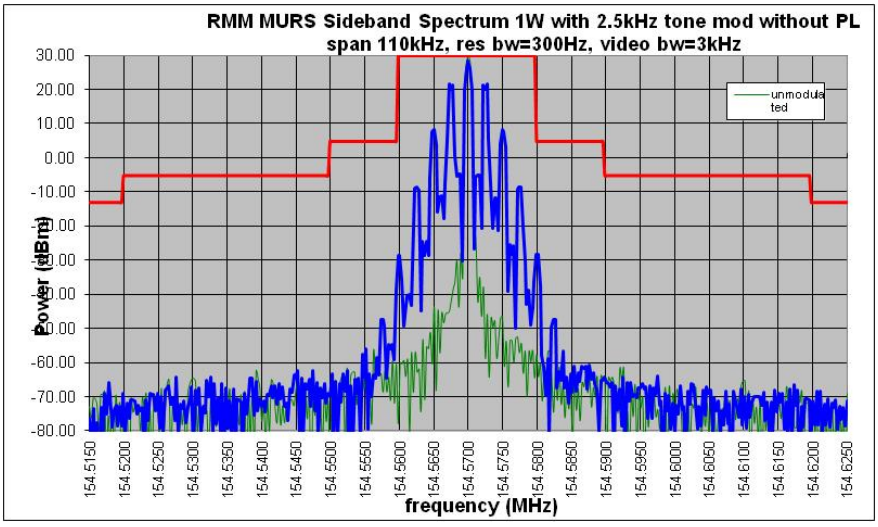
CARSON’S RULE: 16K0F3E

BW= 2(M+D)
BW=2 (3 KHz maximum modulation frequency +5 kHz deviation)
BW=2 (8)
BW= 16K0

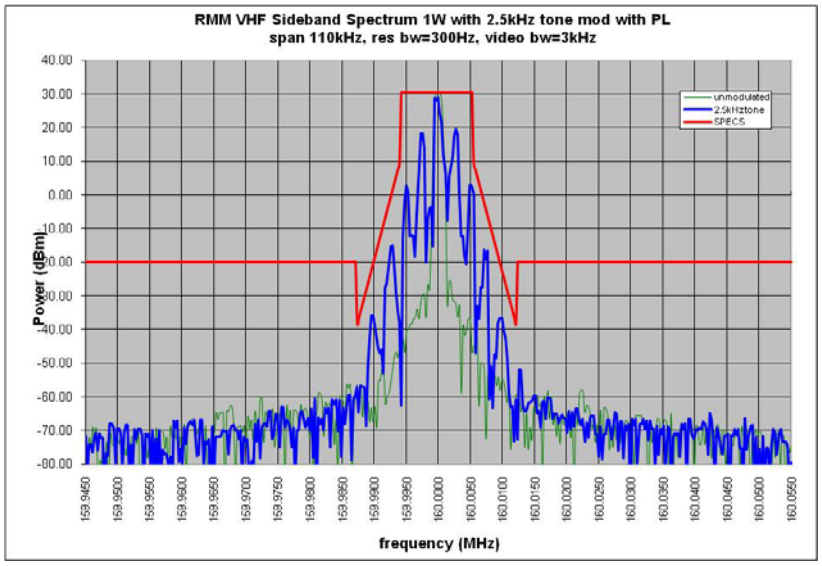
1 Watt 12.5 kHz
Mask D, Rule Part: 90.210 Emission Type: 11K0F3E



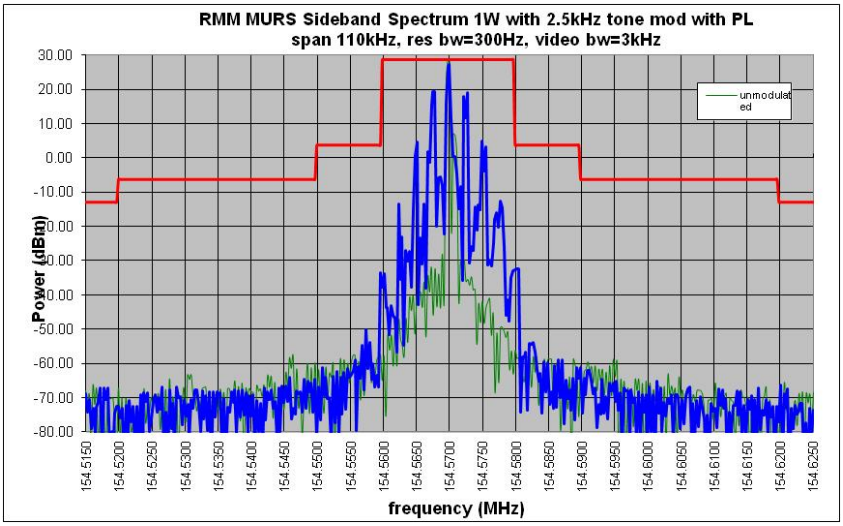
1 Watt 25 kHz
Mask B, Rule Part: 90.210 Emission Type: 16K0F3E



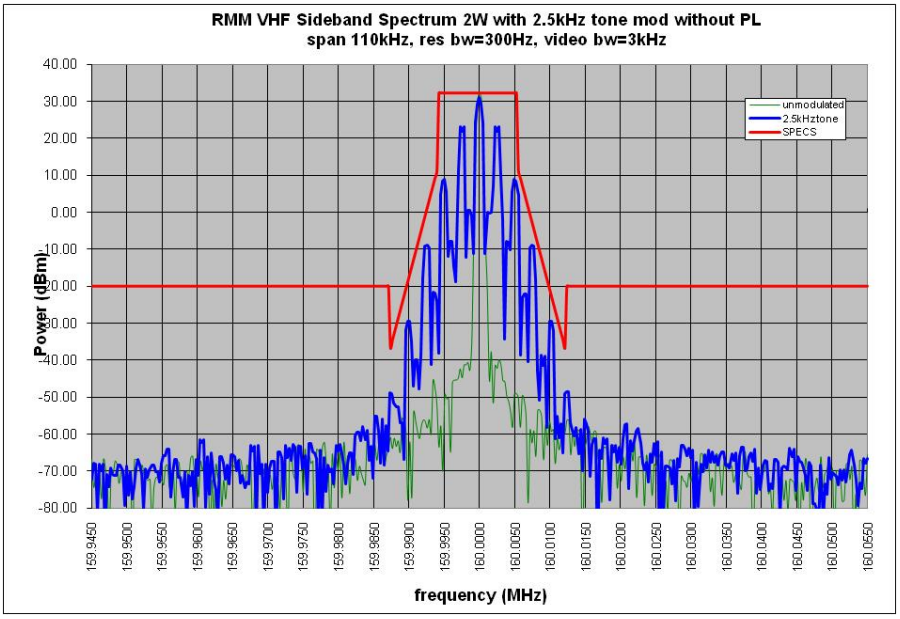
1 Watt 12.5 kHz
2500 Hz & 77Hz Tone “PL” Modulation
Mask D, Rule Part: 90.210 Emission Type: 11K0F3E



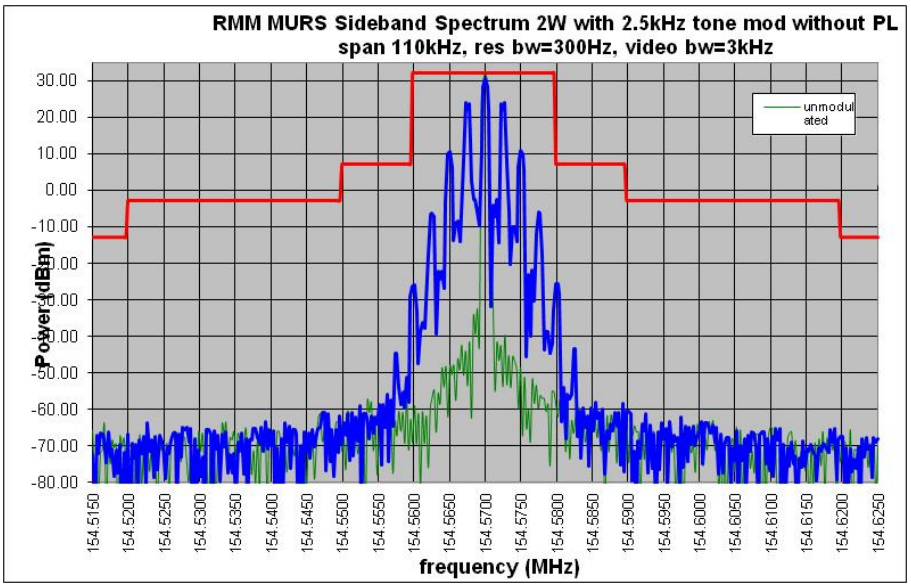
1 Watt 25 kHz
2500 Hz & 77Hz Tone “PL” Modulation
Mask B, Rule Part: 90.210 Emission Type: 16K0F3E



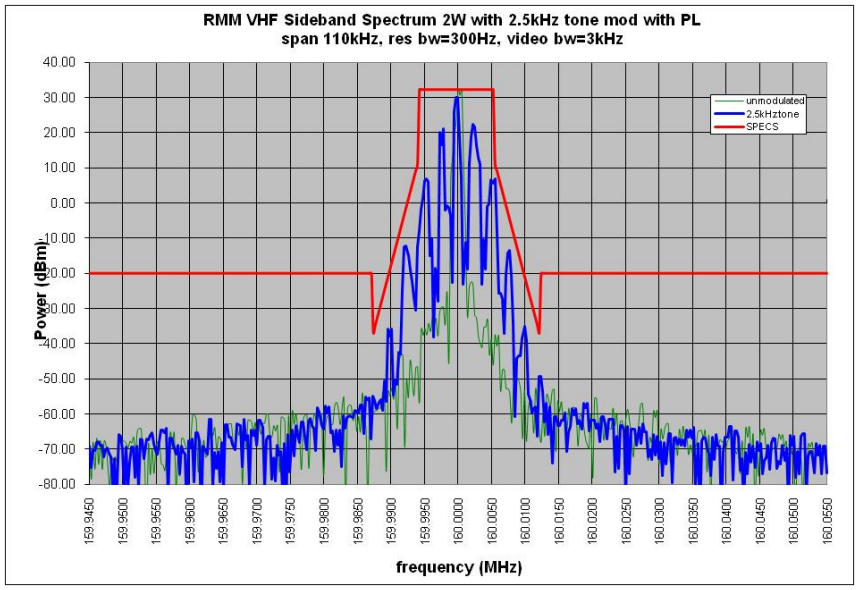
2 Watt 12.5 kHz
Mask D, Rule Part: 90.210 Emission Type: 11K0F3E



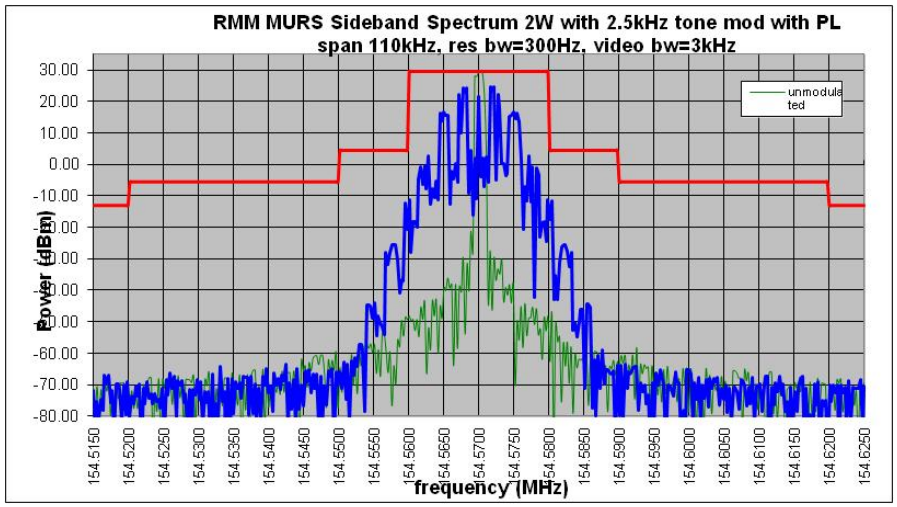
2 Watt 25 kHz
Mask B, Rule Part: 90.210 Emission Type: 16K0F3E



2 Watt 12.5 kHz
2500 Hz & 77Hz Tone “PL” Modulation
Mask D, Rule Part: 90.210 Emission Type: 11K0F3E



2Watt 25 kHz
2500 Hz & 77Hz Tone “PL” Modulation
Mask B, Rule Part: 90.210 Emission Type: 16K0F3E



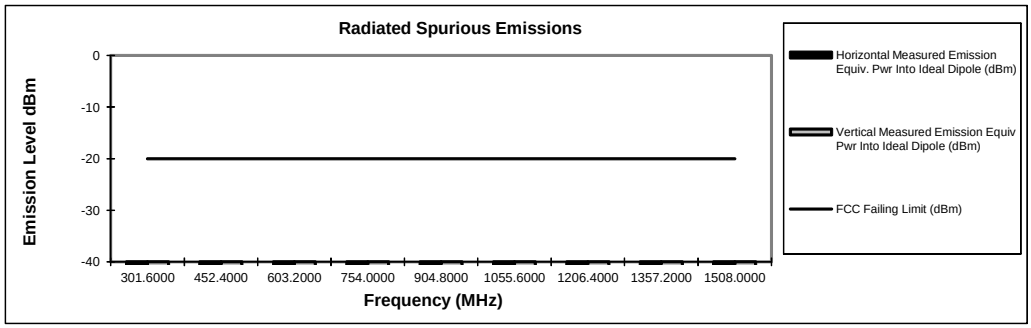
Motorola Solutions **FCC ID:AZ489FT3831**

Transmit Radiated Spurious Emissions: PMUD3256A

Tx Power: 2 Watts

150.8 MHz **Channel Spacing 12.5kHz | S/N 024TPD0091**

Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
301.6000	-20	*	*
452.4000	-20	*	*
603.2000	-20	*	*
754.0000	-20	*	*
904.8000	-20	*	*
1055.6000	-20	*	*
1206.4000	-20	*	*
1357.2000	-20	*	*
1508.0000	-20	*	*

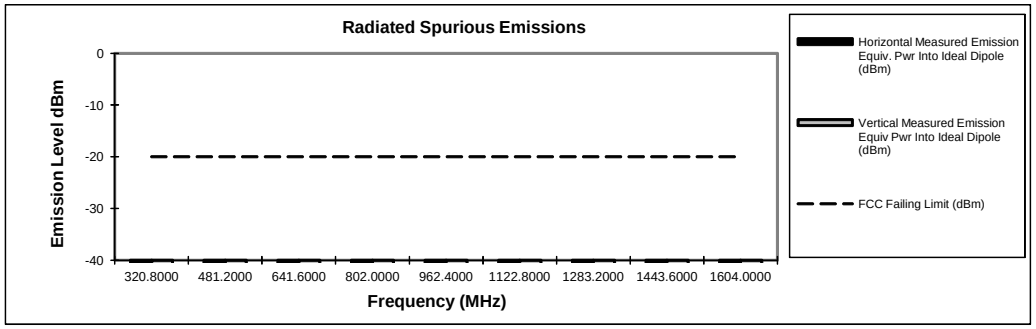


Transmit Radiated Spurious Emissions: PMUD3256A

Tx Power: 2 Watts

160.4 MHz **Channel Spacing 12.5kHz | S/N 024TPD0091**

Frequency (MHz)	FCC Failing Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
320.8000	-20	*	*
481.2000	-20	*	*
641.6000	-20	*	*
802.0000	-20	*	*
962.4000	-20	*	*
1122.8000	-20	*	*
1283.2000	-20	*	*
1443.6000	-20	*	*
1604.0000	-20	*	*



* Indicates the spurious emission could not be detected due to noise limitations or ambients.

Pursuant to CFR 47 Part 2.1057(c), emissions attenuated more than 20 dB below the permissible limit are not reported.

The data presented here was taken using the substitution method as found in the TIA/EIA-603 document.

Motorola Plantation EMC Lab – Test Performed by: Alberto Cordero **March 31, 2013**

FCC Registration: 91932 / Industry Canada: IC109U-1

Frequency Stability over Temperature

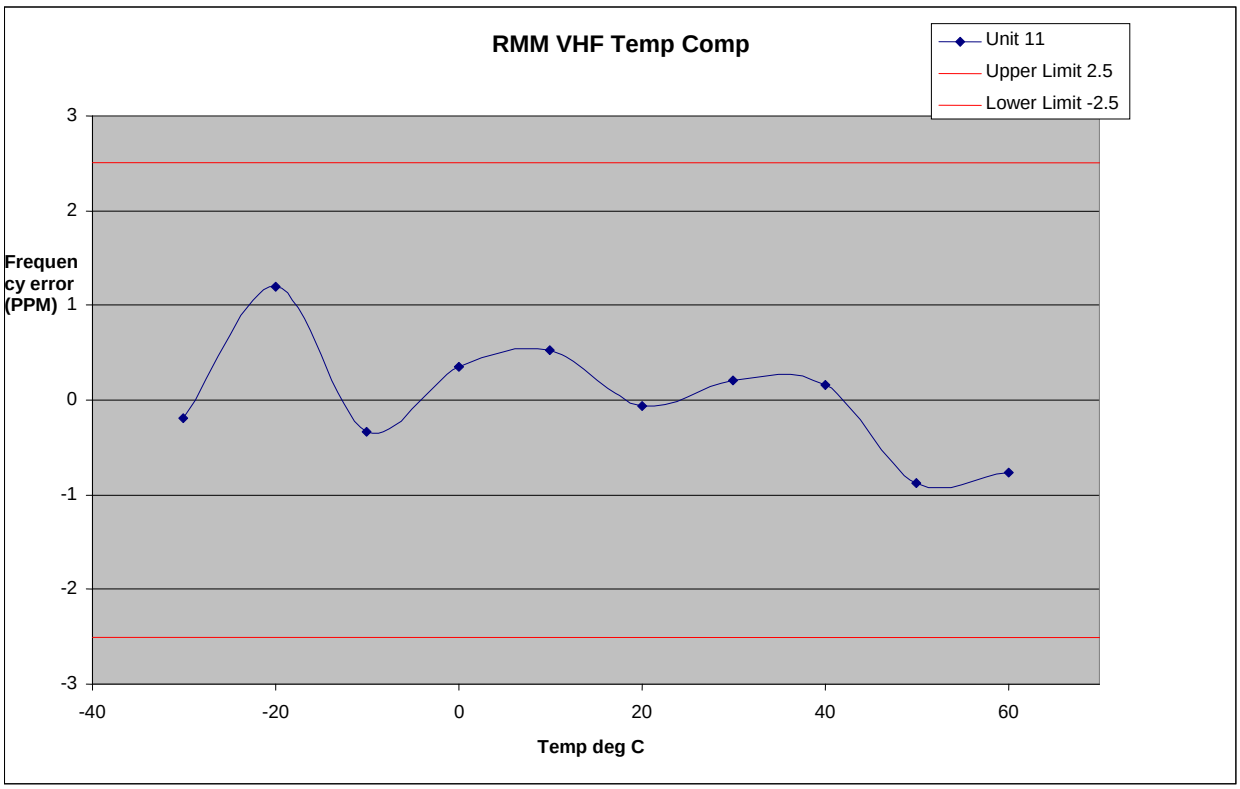
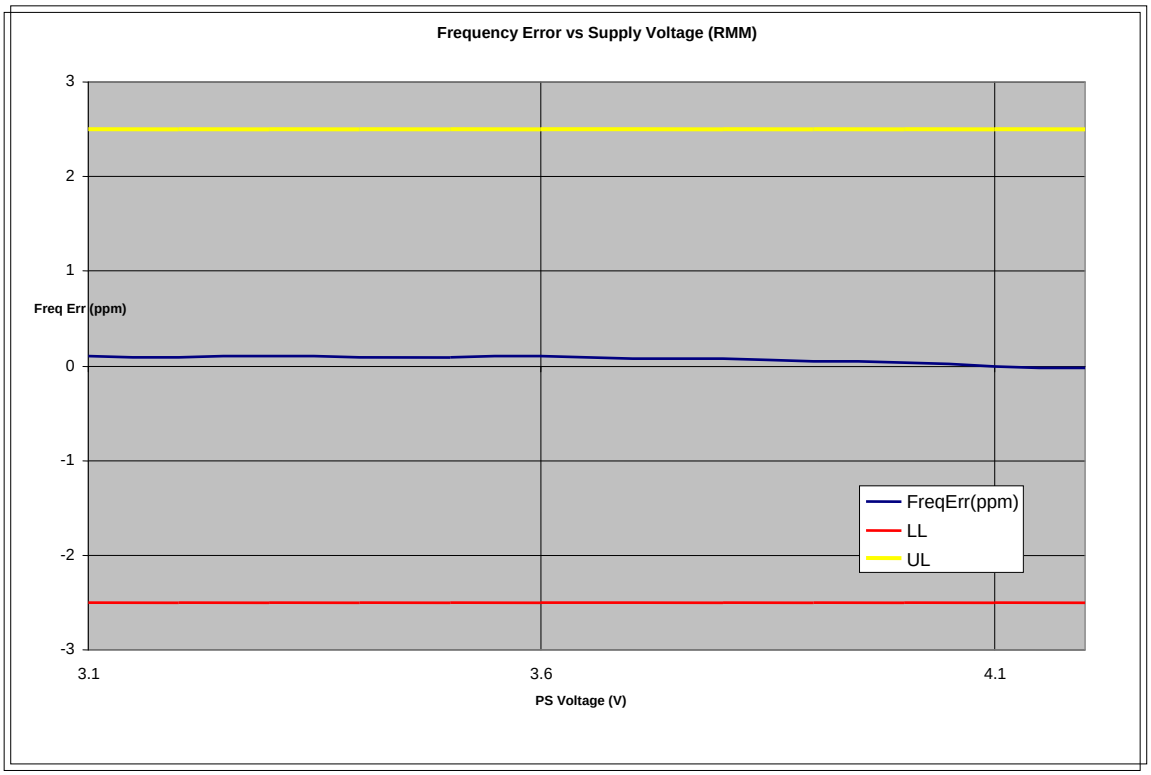


EXHIBIT 6F-1

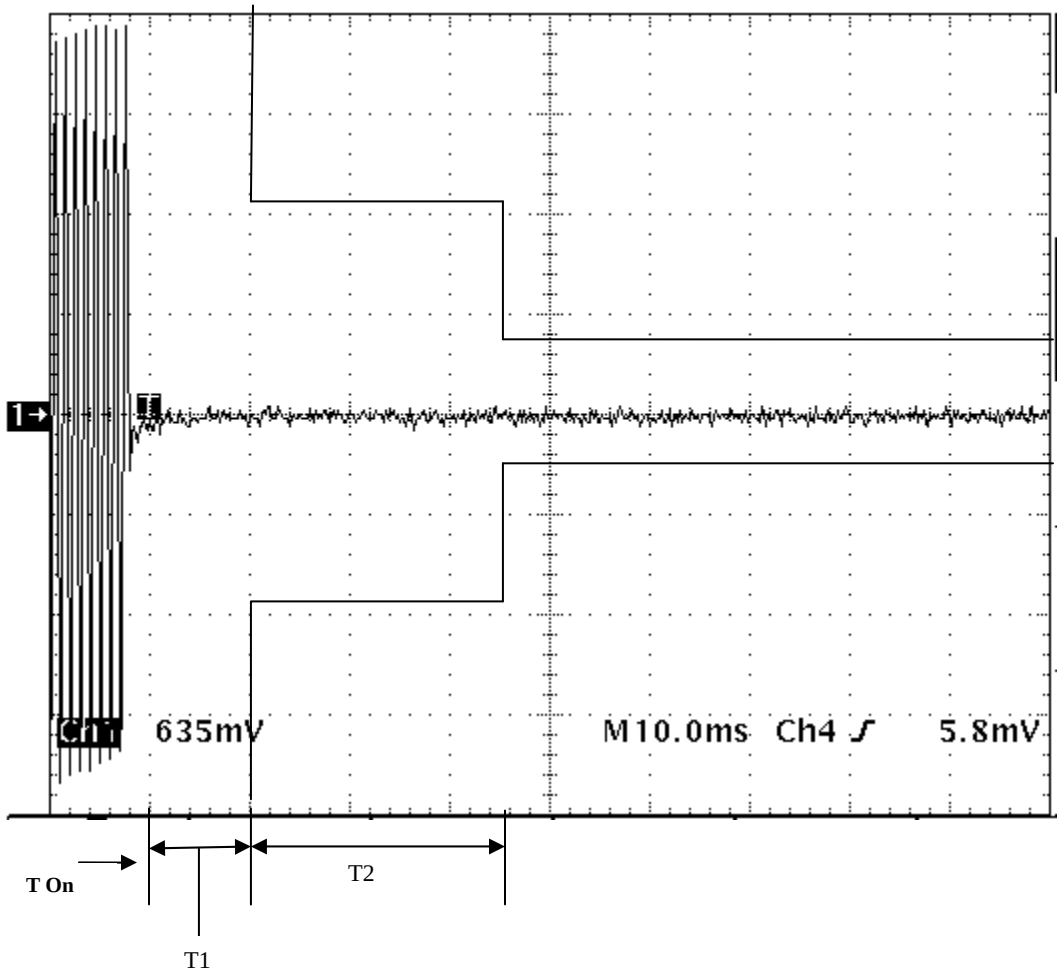
Frequency Error over Voltage



Reset Voltage 3.3Volts

Transient Frequency Response TX on 2 Watt 12.5 kHz

VHF 151.94 MHz

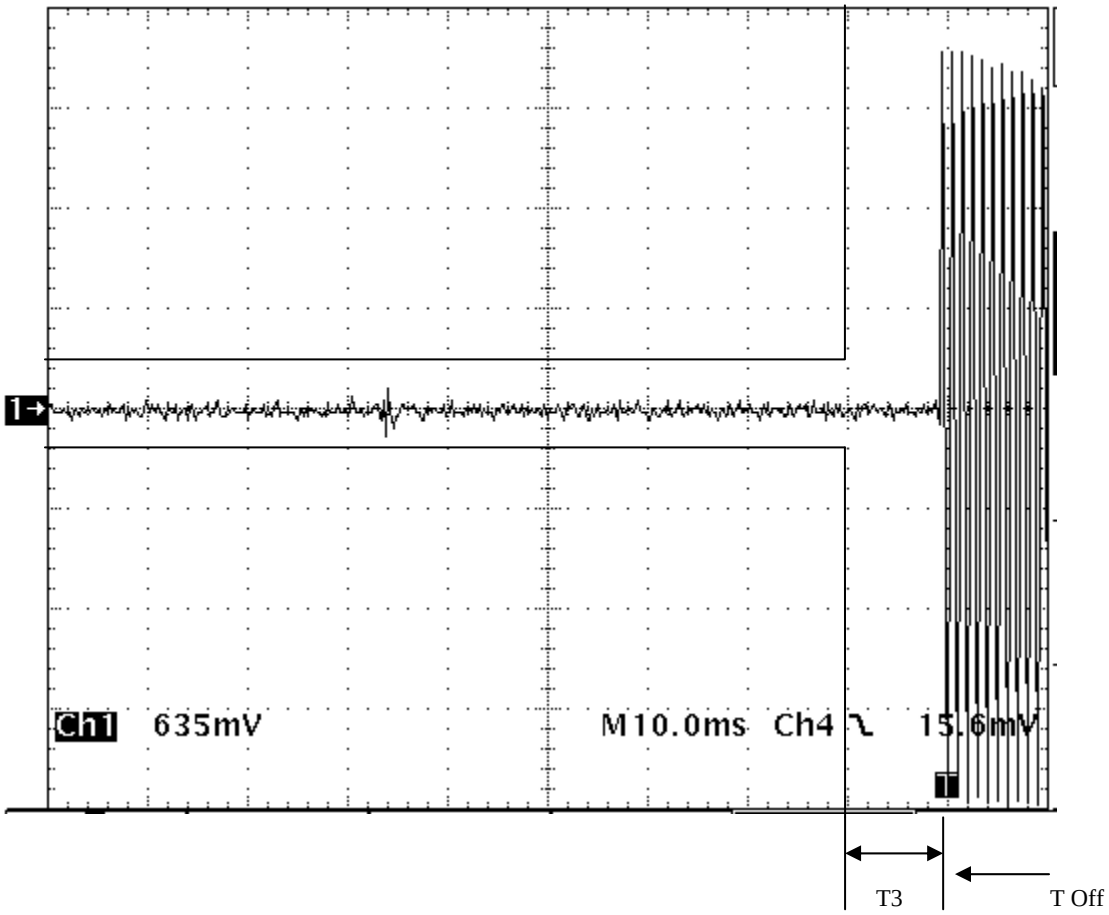


(Freq)*(PPM)*(±4)
BW

(151.94MHz)*(2.5PPM)*(±4)
12.5 kHz

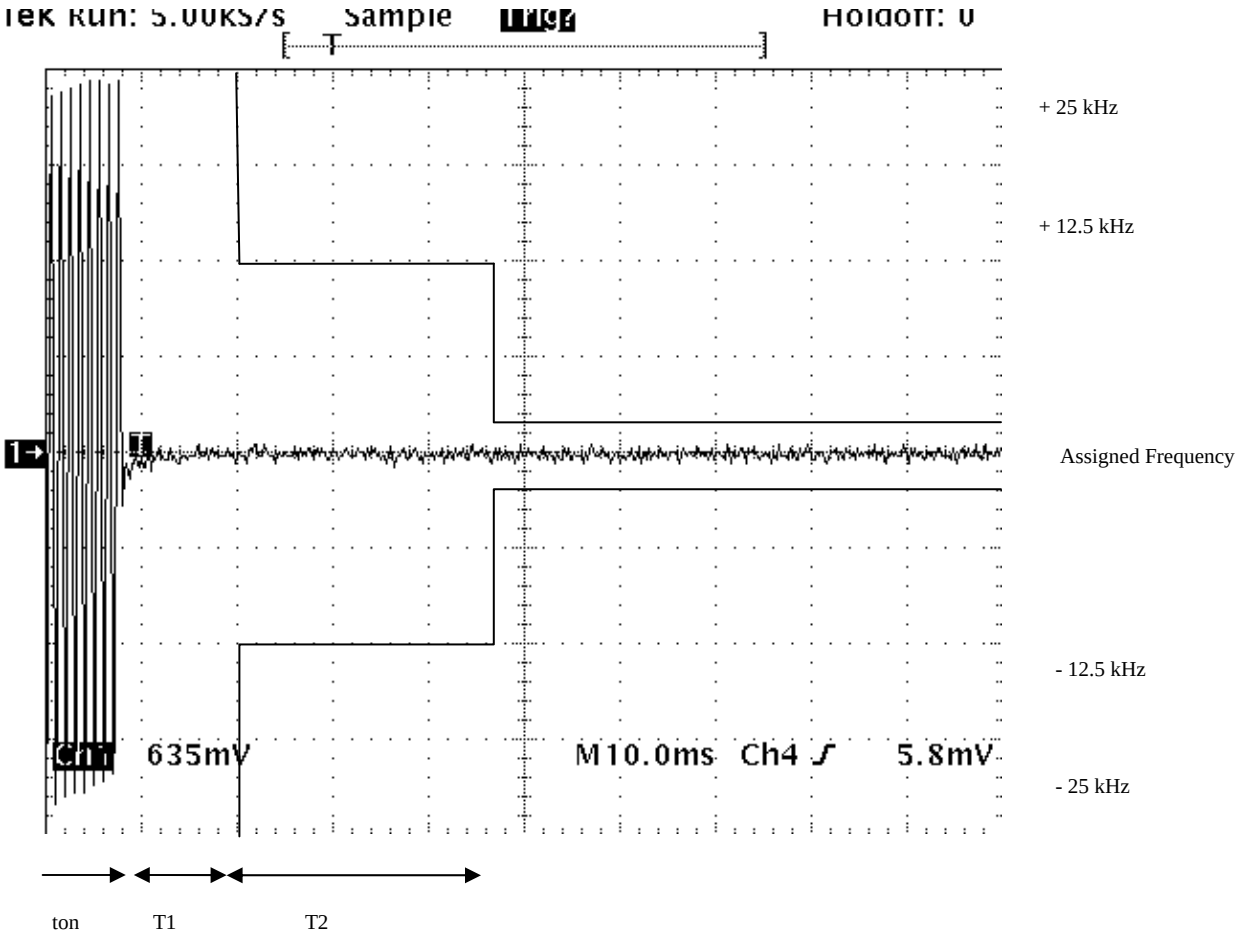
Transient Frequency Response TX off 2 Watt 12.5 kHz

VHF 151.94 MHz



Transient Frequency Response TX on 2 Watt 25 kHz

VHF 151.94 MHz



$$\frac{(Freq)*(PPM)*(\pm 4)}{BW}$$

$$\frac{(151.94MHz)*(2.5PPM)*(\pm 4)}{25\ kHz}$$

Transient Frequency Response TX off 2 Watt 25 kHz

VHF 151.94 MHz