

TEST REPORT

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RF POWER Output Data

The input supply to transmitter was set at the nominal supply voltage of 7.2 volts (the actual R.F. Power Amplifier is supplied by a voltage regulator, whose output is nominally 4.8 volts). The RF power output was measured at midband, with the indicated voltage and current applied into the final RF amplifying device.

Analog Mode:

Measured RF Output:	.420 Watts
Measured DC Voltage:	4.78 Volts
Measured DC Current:	410 mA
Measured RF Input:	5.01 mW

Digital Mode:

In the Digital mode, the values measured for RF Output, DC Current and RF Input Power are all average values which reflect a 100% transmit duty cycle in CDMA operation.

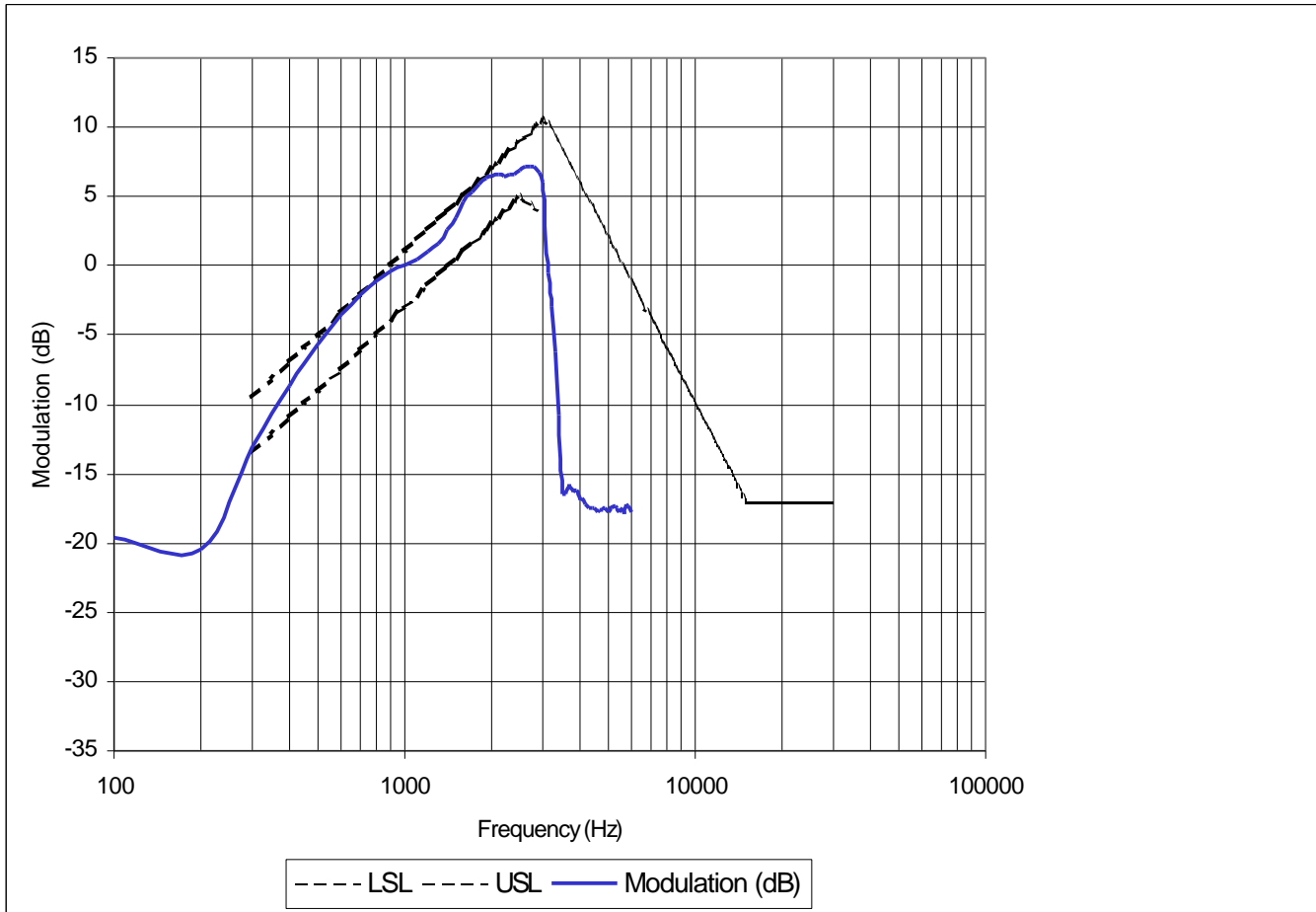
Measured RF Output:	.363 Watts
Measured DC Voltage:	4.78 Volts
Measured DC Current:	340 mA
Measured RF Input:	1.07 mW

Effective Radiated Power

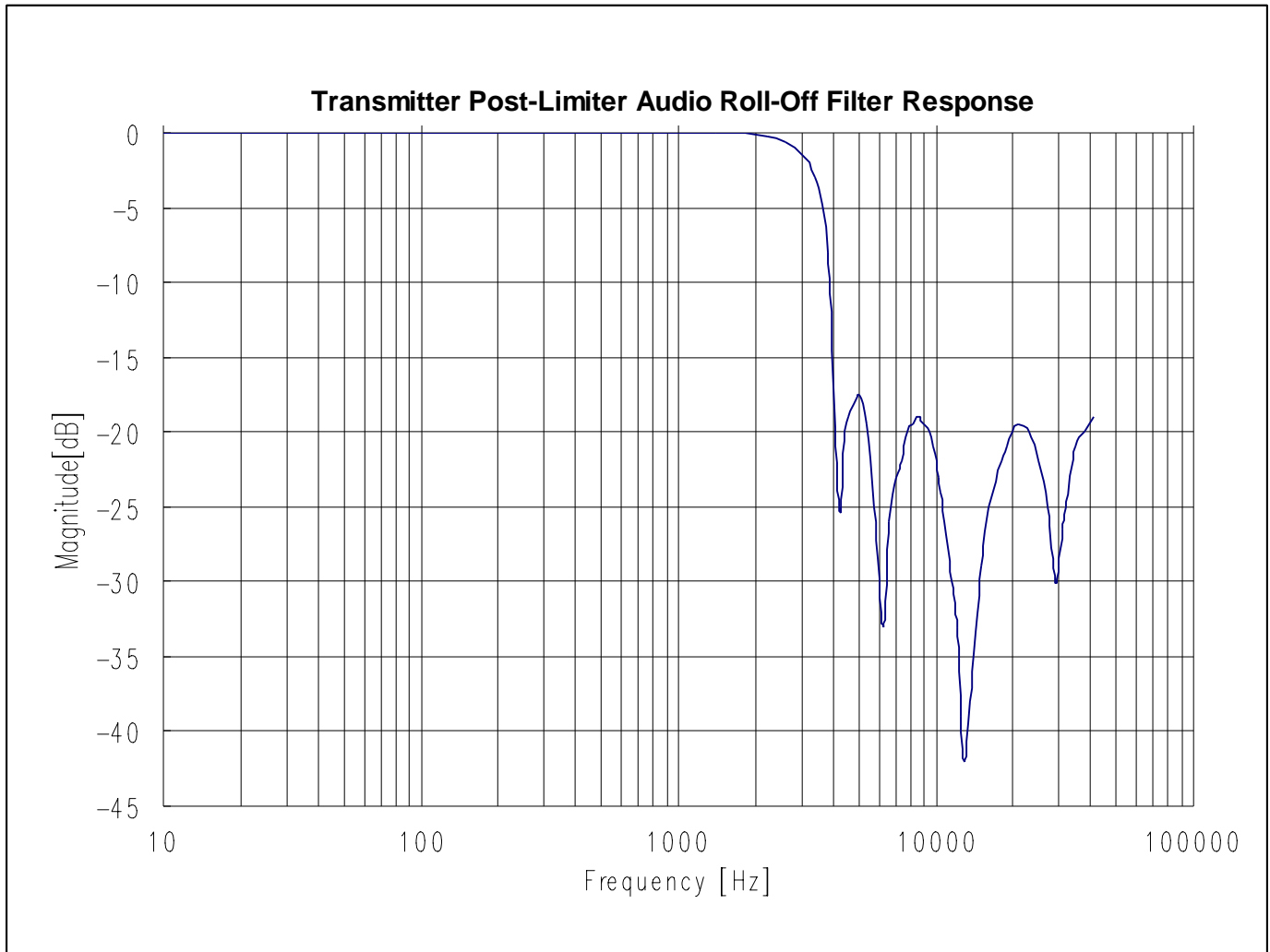
Since the unit is intended for use with a provided antenna (and “non-standard” RF connector), ERP is measured. The antenna substitution method was used. The result indicated is the maximum ERP found over the channels and radio orientations tested. The maxima were found at the low channel with the antenna in the extended position.

Maximum Effective Radiated Power (Analog):	26.3 dBm	(0.43 W)
Maximum Effective Radiated Power (Digital):	24.9 dBm	(0.31 W)

TX AUDIO RESPONSE (ANALOG MODE)

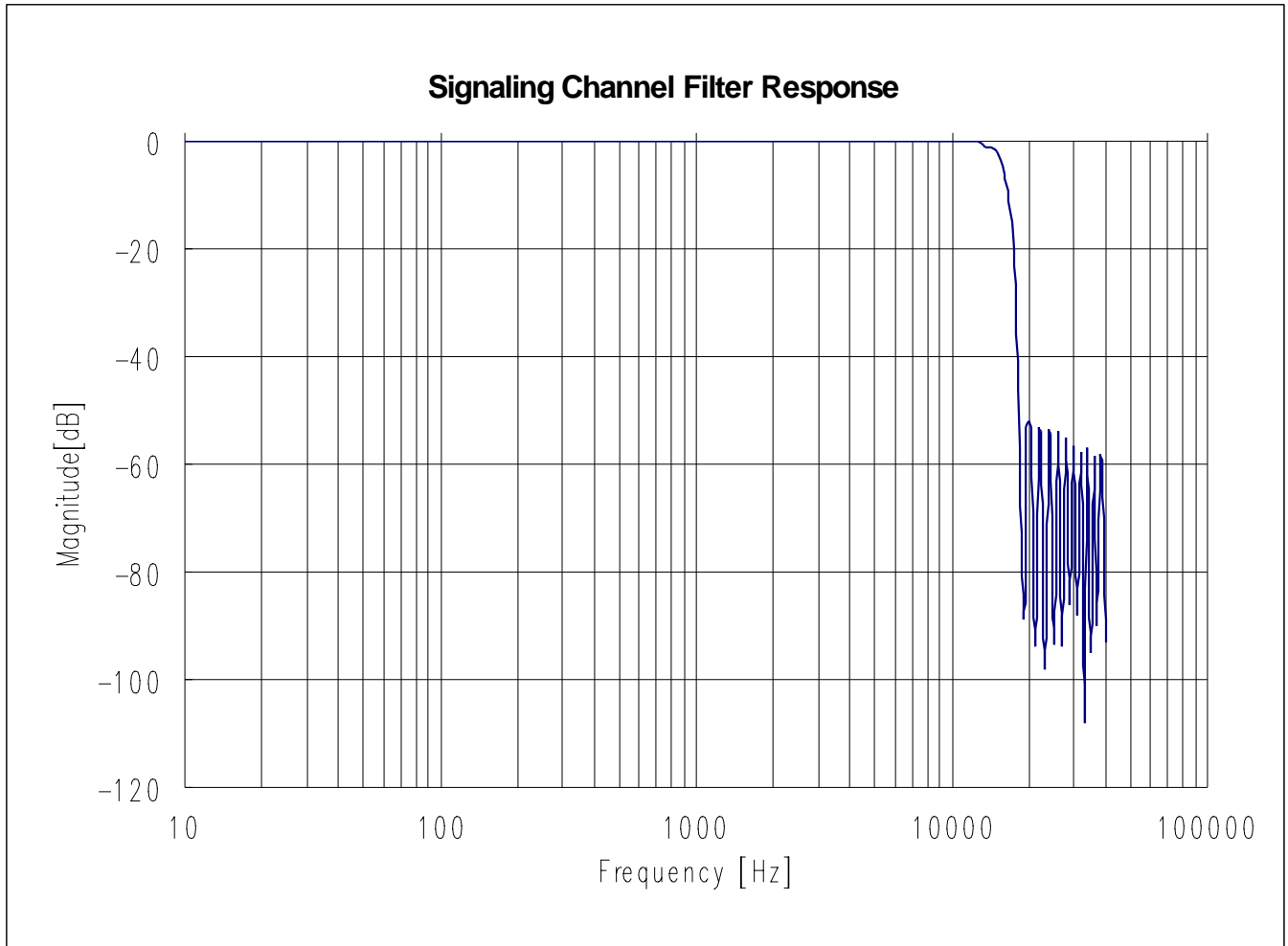


Post Limiter Low Pass Filter Response Graph



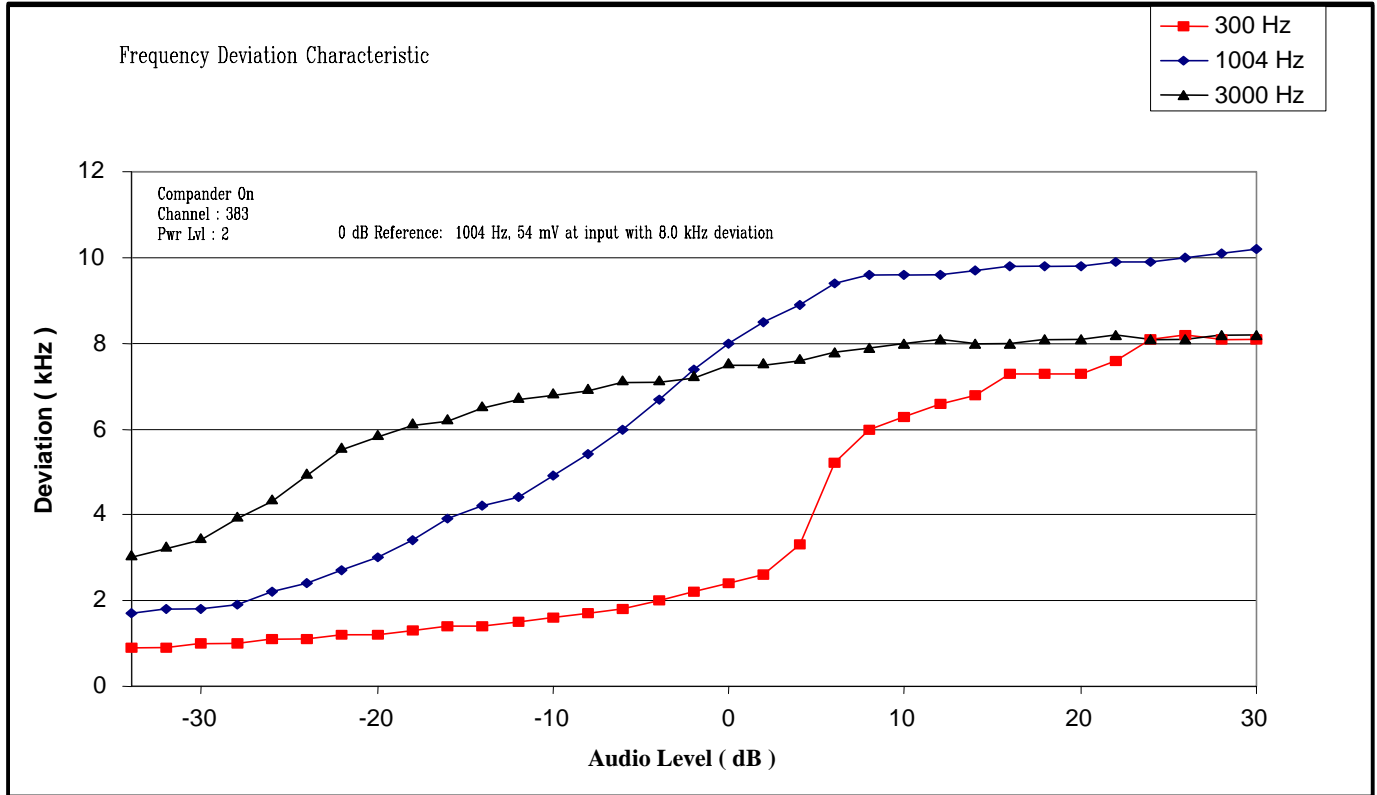
NOTE: This graph is based on a simulation of circuitry contained in the MSM ASIC (MSM: IC19 in Exhibit 5F)

Signaling Channel Audio Roll-Off Filter Response Graph

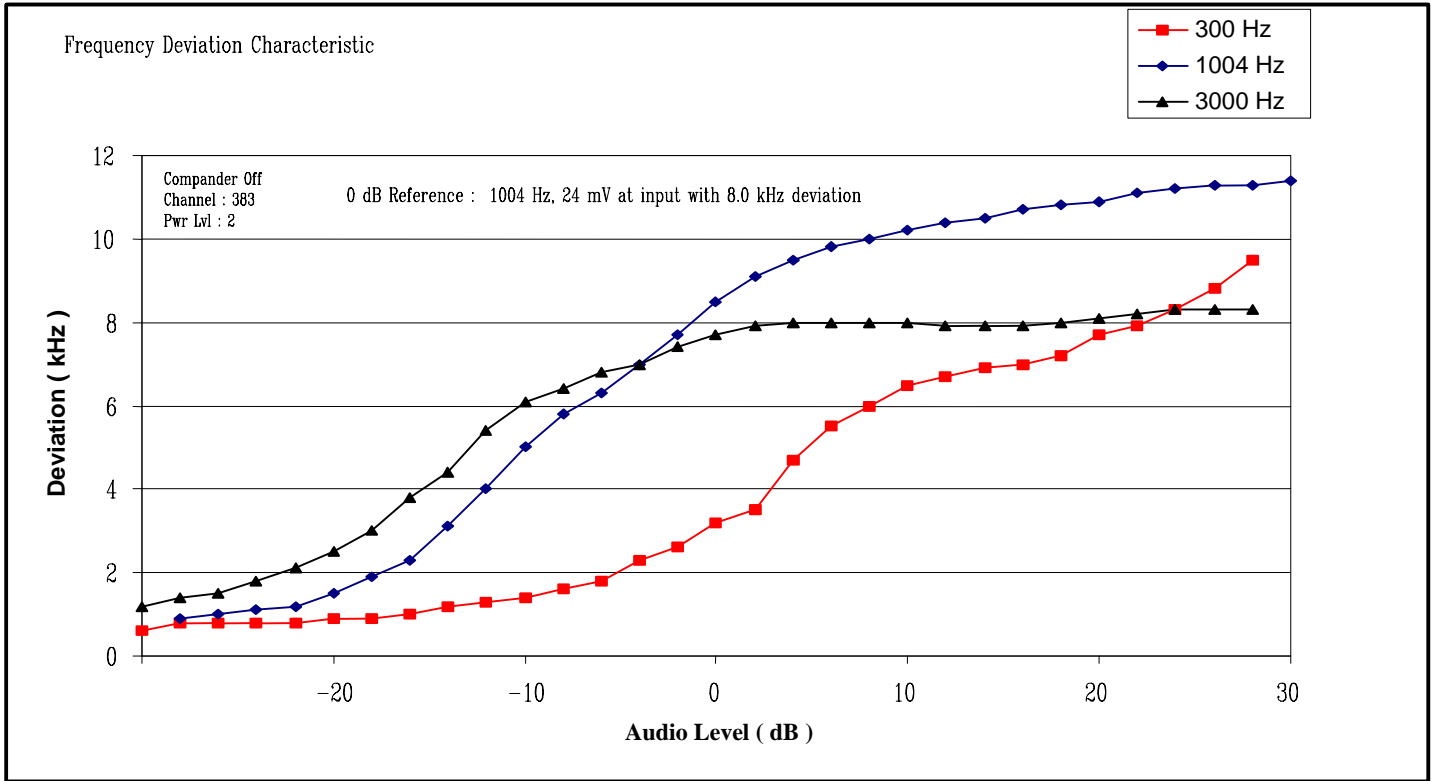


NOTE: This graph is based on a simulation of circuitry contained in the MSM ASIC (MSM: IC19 in Exhibit 5F)

Modulation Limiting (Compander In, Analog Mode)



Modulation Limiting (Compander Out, Analog Mode)



BANDWIDTH MEASUREMENT DATA FOR TRANSMITTER TYPES F8W

DEVIATION OF THE CARRIER WITH 2500 Hz AUDIO MODULATION

HORIZONTAL SCALE = 20 kHz / DIVISION

VERTICAL SCALE = 10 dB / DIVISION (REFERENCE LEVEL = 30 dBm)

RESOLUTION BANDWIDTH = 300 Hz

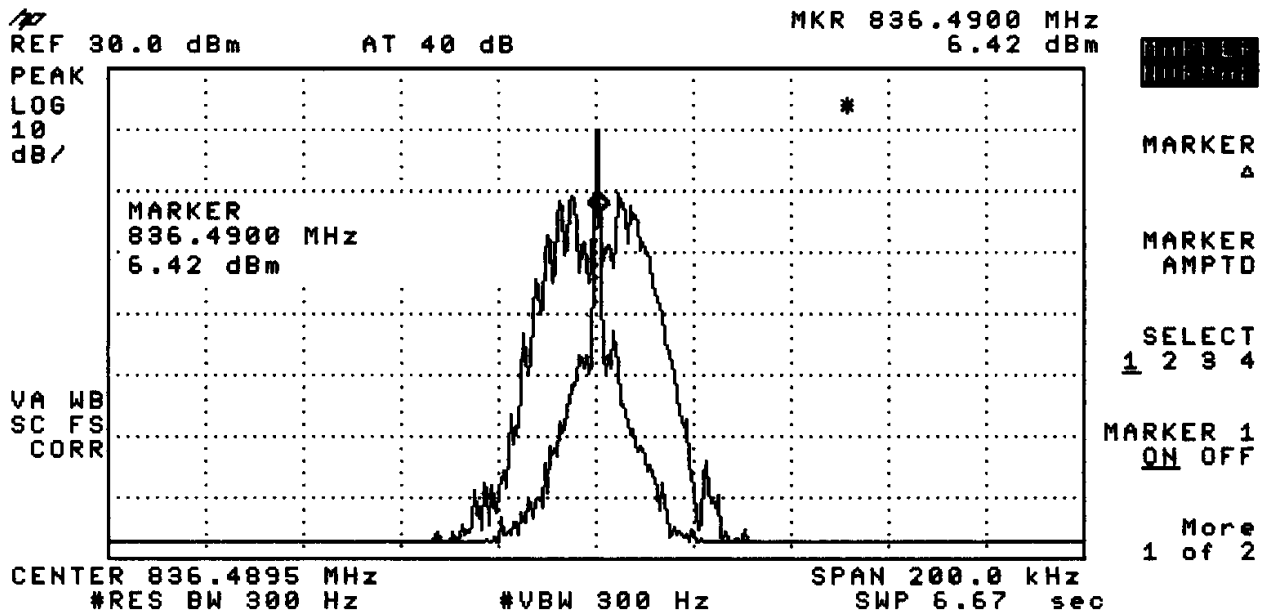
VIDEO BANDWIDTH = 300 Hz

AUDIO LEVEL = 16 dB GREATER THAN LEVEL REQUIRED TO PRODUCE +/- 6 kHz DEVIATION

POWER LEVEL = 0.40 W

MEASURED DATA :

1. Instantaneous Deviation Control set for a maximum of +/-12 kHz
2. Tune and adjust to obtain unmodulated carrier on the spectrum analyzer. Save trace of the unmodulated carrier.
3. Modulate the transmitter with the 2500 Hz tone, 16 dB greater than that required to produce +/-6 kHz modulation. Photograph the sideband display while it is superimposed upon the unmodulated carrier.



SPEC LIMITS :

- a. On any frequency removed from the assigned carrier frequency by more than 20 kHz, up to and including 45 kHz, the sideband is at least 26 dB below the carrier.
- b. On any frequency removed from the assigned carrier frequency by more than 45 kHz, up to the first multiple of the carrier frequency, the sideband is at least 60 dB below the carrier or $63 + 10 \log_{10}$ (mean output power in Watts) dB, whichever is the smaller attenuation.

BANDWIDTH MEASUREMENT DATA FOR TRANSMITTER TYPES F8W

DEVIATION OF THE CARRIER WITH 2500 Hz AUDIO MODULATION AND SUPERVISORY AUDIO TONE

HORIZONTAL SCALE = 20 kHz / DIVISION

VERTICAL SCALE = 10 dB / DIVISION (REFERENCE LEVEL = 30 dBm)

RESOLUTION BANDWIDTH = 300 Hz

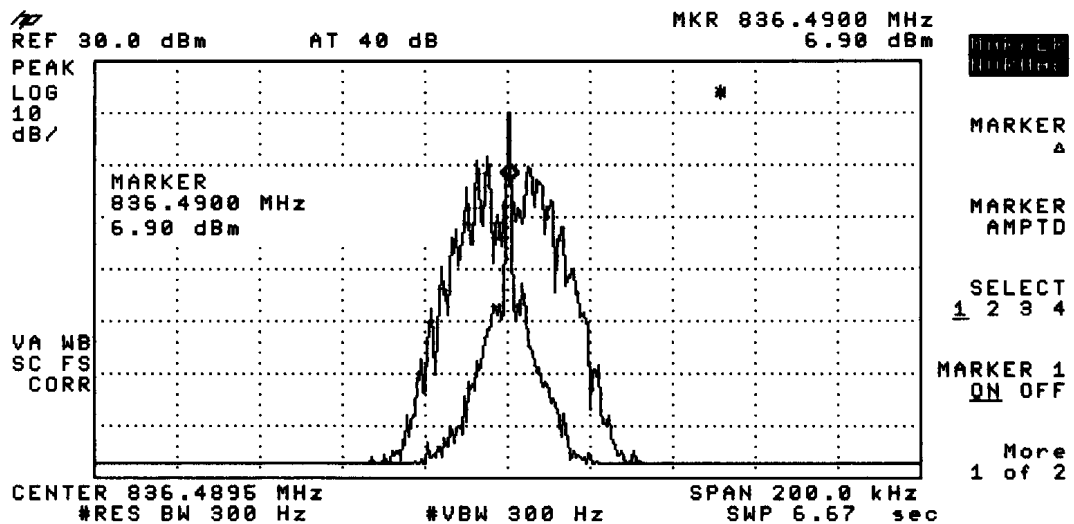
VIDEO BANDWIDTH = 300 Hz

AUDIO LEVEL = 16 dB GREATER THAN LEVEL REQUIRED TO PRODUCE +/- 6 kHz

POWER LEVEL = 0.40 W

MEASURED DATA :

1. Instantaneous Deviation Control set for a maximum of +/-12 kHz
2. Tune and adjust to obtain unmodulated carrier on the spectrum analyzer. Save trace of the unmodulated carrier.
3. Modulate the transmitter with signaling tone with the 2500 Hz tone, 16 dB greater than that required to produce +/-6 kHz modulation add SAT with +/-2 kHz of deviation. Photograph this sideband display while it is superimposed upon the unmodulated carrier.



SPEC LIMITS :

- a. On any frequency removed from the assigned carrier frequency by more than 20 kHz, up to and including 45 kHz, the sideband is at least 26 dB below the carrier.
- b. On any frequency removed from the assigned carrier frequency by more than 45 kHz, up to the first multiple of the carrier frequency, the sideband is at least 60 dB below the carrier or $63 + 10 \log_{10}$ (mean output power in Watts) dB, whichever is the smaller attenuation.

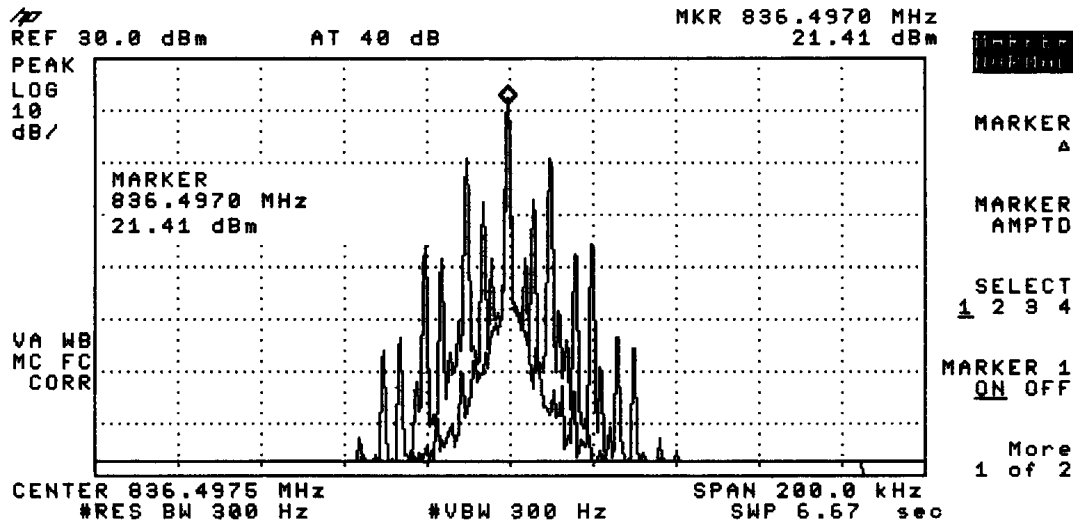
BANDWIDTH MEASUREMENT DATA FOR TRANSMITTER TYPES F1D

DEVIATION OF THE CARRIER WITH 10kHz SIGNALING TONE AND SUPERVISORY AUDIO TONE

HORIZONTAL SCALE = 20 kHz / DIVISION
 VERTICAL SCALE = 10 dB / DIVISION (REFERENCE LEVEL = 30 dBm)
 RESOLUTION BANDWIDTH = 300 Hz
 VIDEO BANDWIDTH = 300 Hz
 POWER LEVEL = 0.40 W

MEASURED DATA :

1. Instantaneous Deviation Control set for a maximum of +/-12 kHz
2. Tune and adjust to obtain unmodulated carrier on the spectrum analyzer. Save trace of the unmodulated carrier.
3. Modulate the transmitter with signaling tone with +/- 8kHz deviation and add SAT with +/- 2kHz of deviation. Photograph the sideband display while it is superimposed upon the unmodulated carrier.



SPEC LIMITS :

- a. On any frequency removed from the assigned carrier frequency by more than 20 kHz, up to and including 45 kHz, the sideband is at least 26 dB below the carrier.
- b. On any frequency removed from the assigned carrier frequency by more than 45 kHz, up to and including 90 kHz, the sideband is at least 45 dB below the carrier.
- c. On any frequency removed from the assigned carrier frequency by more than 90 kHz, up to the first multiple of the carrier frequency, the sideband is at least 60 dB below the carrier or $63 + 10 \log_{10}$ (mean output power in Watts) dB, whichever is the smaller attenuation.

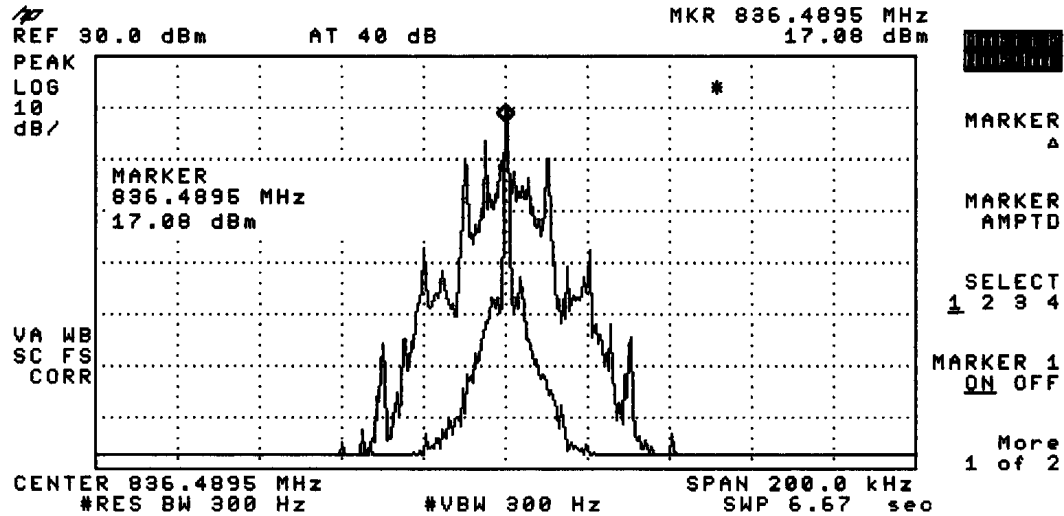
BANDWIDTH MEASUREMENT DATA FOR TRANSMITTER TYPES F1D

DEVIATION OF THE CARRIER WITH WIDE BAND DATA

HORIZONTAL SCALE = 20 kHz / DIVISION
 VERTICAL SCALE = 10 dB / DIVISION (REFERENCE LEVEL = 30 dBm)
 RESOLUTION BANDWIDTH = 300 Hz
 VIDEO BANDWIDTH = 300 Hz
 POWER LEVEL = 0.40 W

MEASURED DATA :

1. Instantaneous Deviation Control set for a maximum of +/-12 kHz
2. Tune and adjust to obtain unmodulated carrier on the spectrum analyzer. Save trace of the unmodulated carrier.
3. Modulate the transmitter with wide band data with +/- 8kHz. Photograph the sideband display while it is superimposed upon the unmodulated carrier.



SPEC LIMITS :

- a. On any frequency removed from the assigned carrier frequency by more than 20 kHz, up to and including 45 kHz, the sideband is at least 26 dB below the carrier.
- b. On any frequency removed from the assigned carrier frequency by more than 45 kHz, up to and including 90 kHz, the sideband is at least 45 dB below the carrier.
- c. On any frequency removed from the assigned carrier frequency by more than 90 kHz, up to the first multiple of the carrier frequency, the sideband is at least 60 dB below the carrier or $63 + 10 \log_{10}$ (mean output power in Watts) dB, whichever is the smaller attenuation.

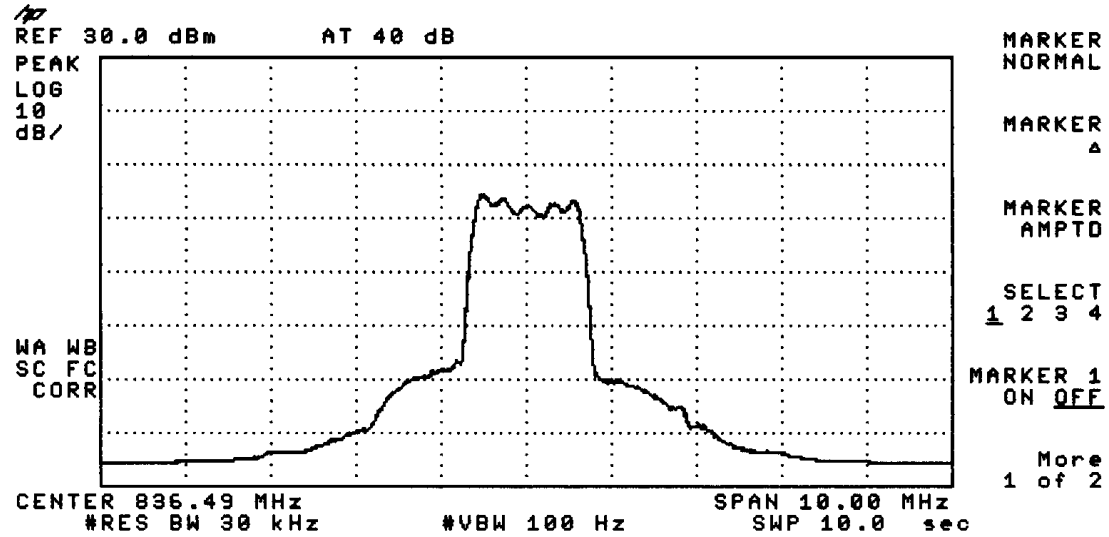
BANDWIDTH MEASUREMENT DATA FOR TRANSMITTER TYPES F9W

DEVIATION OF THE CARRIER WITH OQPSK MODULATION

HORIZONTAL SCALE = 1 MHz / DIVISION
VERTICAL SCALE = 10 dB / DIVISION (ATTENUATION)
RESOLUTION BANDWIDTH = 30 kHz
POWER LEVEL = 0.250 W (Average Power in transmitter)

MEASURED DATA :

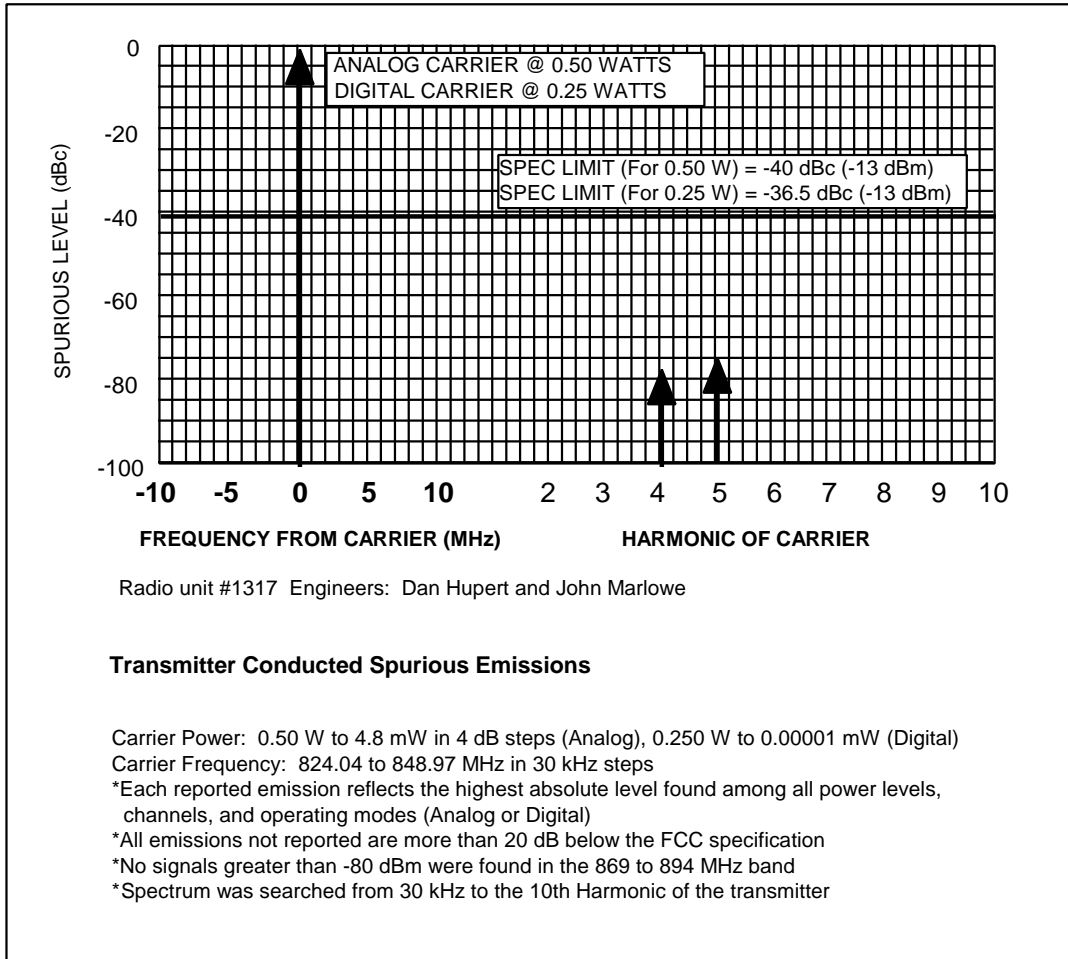
1. Modulate the transmitter with OQPSK modulation, using pseudo random data. Obtain image on spectrum analyzer.



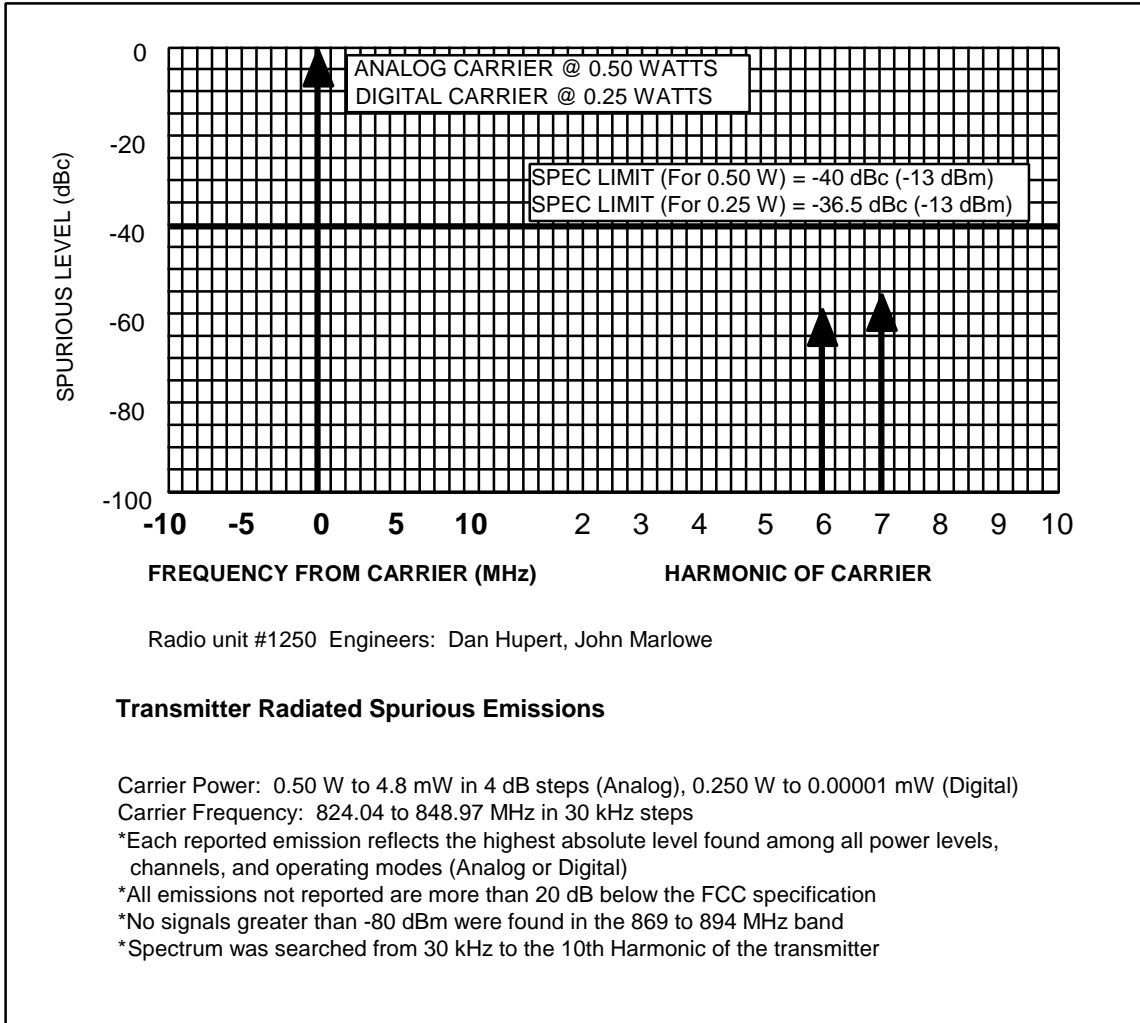
COMMENTS :

Modulation products in a bandwidth of 30 kHz centered +/-900 kHz from the channel center frequency should be at least 45 dB and shall be at least 42 dB below the mean output power level.

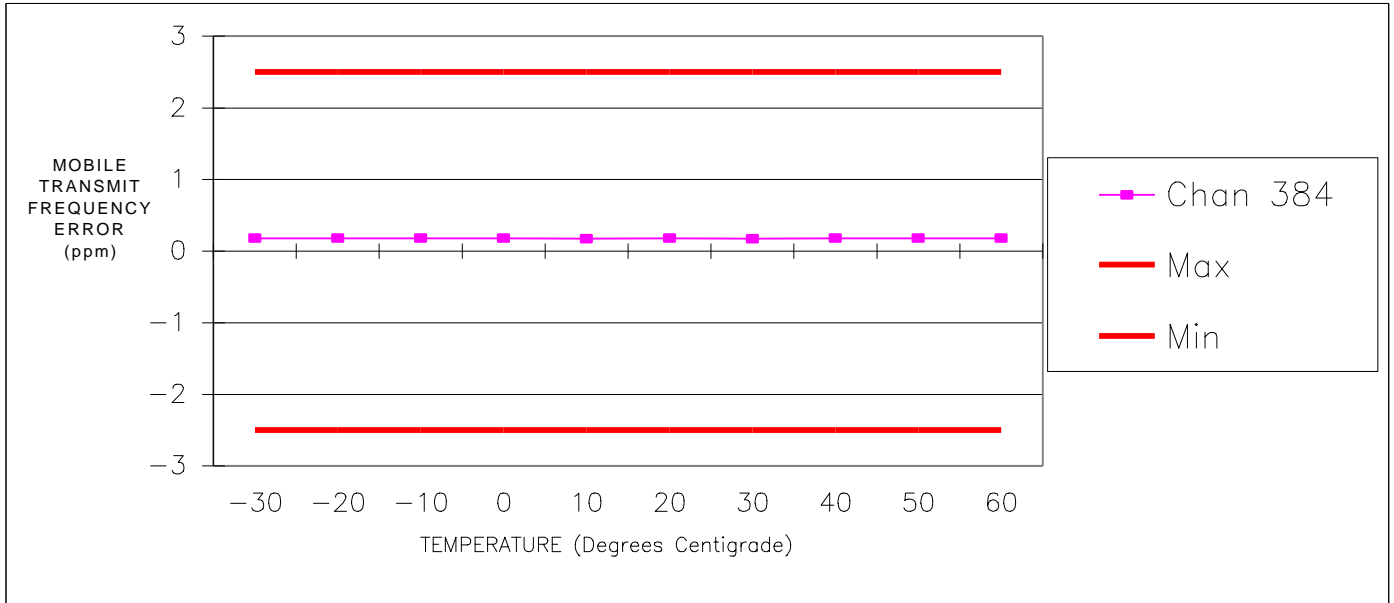
Conducted Spurious and Harmonic Emissions Graph



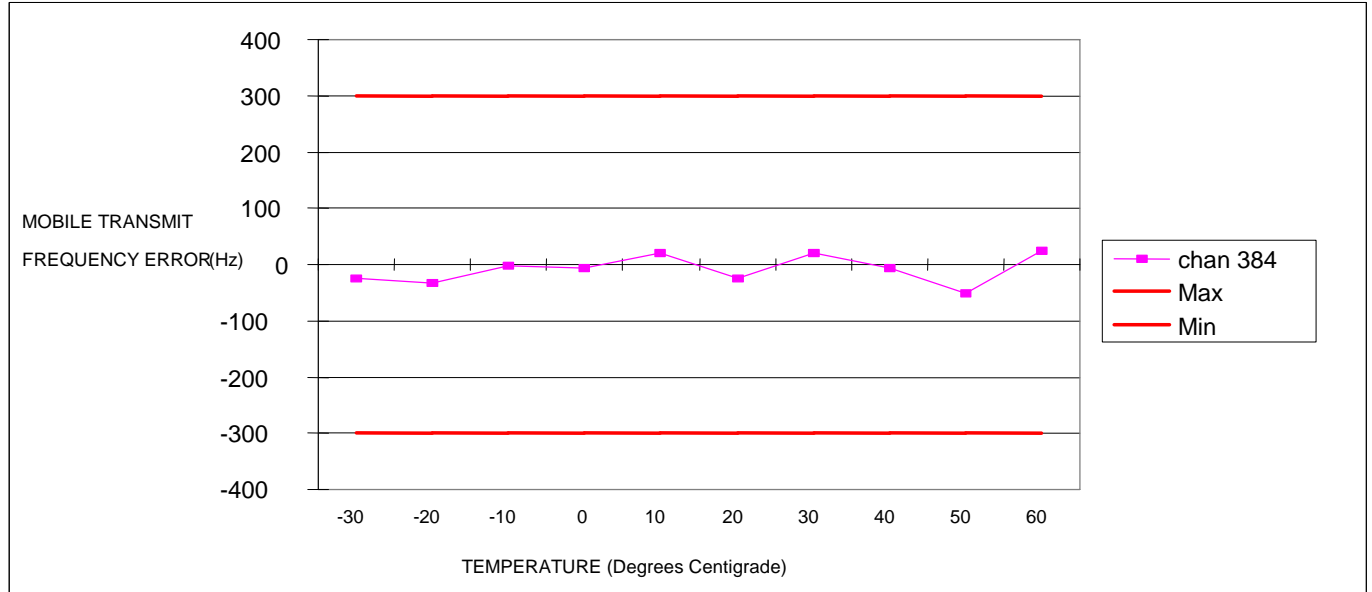
Radiated Spurious and Harmonic Emissions Graph



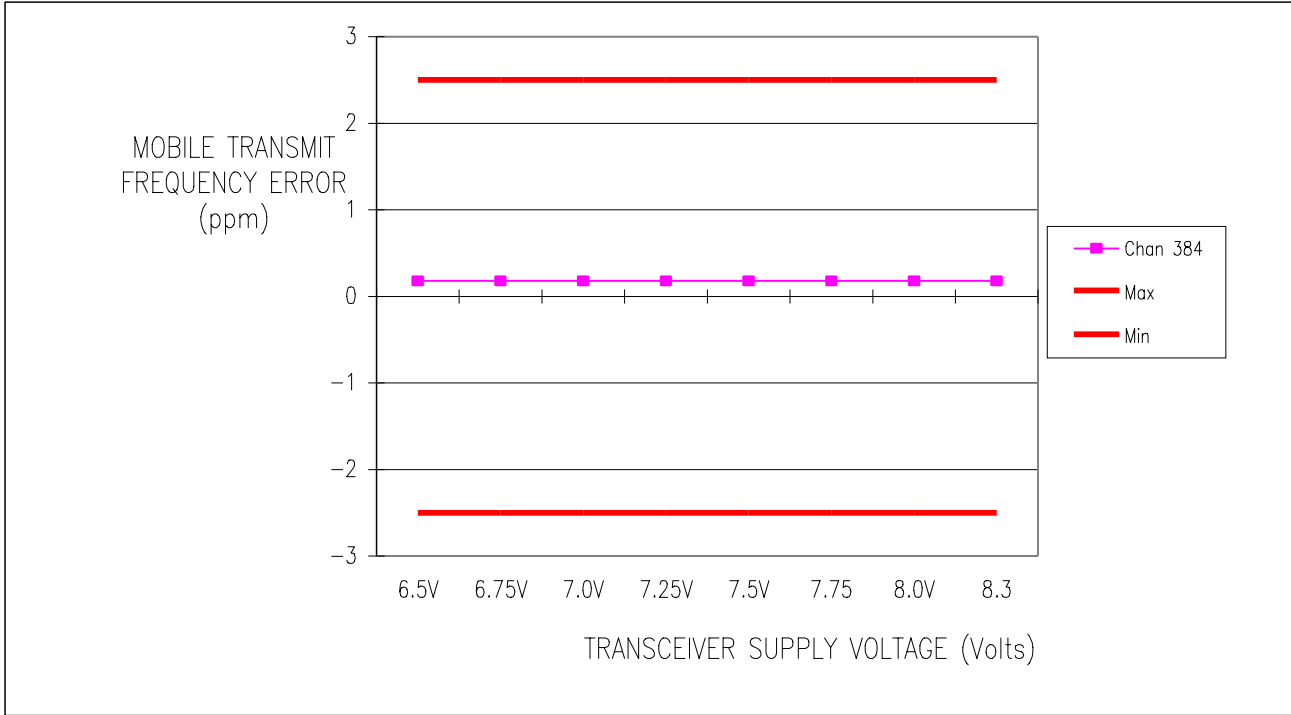
MOBILE FREQUENCY STABILITY VS. TEMPERATURE (ANALOG MODE)



MOBILE FREQUENCY STABILITY VS. TEMPERATURE (DIGITAL MODE)



MOBILE FREQUENCY STABILITY VS. SUPPLY VOLTAGE (ANALOG MODE)



MOBILE FREQUENCY STABILITY VS. SUPPLY VOLTAGE (DIGITAL MODE)

