

SUBMITTED MEASURED DATA AND METHOD OF MEASUREMENT

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RF Power Output - Measured Data

The supply voltage to the transmitter was set to 7.5 volts DC. The RF output power was measured with the indicated voltage and current applied into the final RF amplifying device.

HIGH - POWER SETTING, FREQUENCY 450.025 MHZ.

Measured RF Output Power : 4.46 WATTS
Measured DC Voltage : 7.21 VOLTS
Measured DC Current : 1.43 AMP
Measured DC Input Power : 10.36 WATTS

HIGH - POWER SETTING, FREQUENCY 481.050 MHZ.

Measured RF Output Power : 4.4 WATTS
Measured DC Voltage : 7.2 VOLTS
Measured DC Current : 1.19 AMP
Measured DC Input Power : 8.56 WATTS

HIGH - POWER SETTING, FREQUENCY 511.975 MHZ.

Measured RF Output Power : 4.4 WATTS
Measured DC Voltage : 7.2 VOLTS
Measured DC Current : 1.36 AMP
Measured DC Input Power : 9.79 WATTS

LOW - POWER SETTING, FREQUENCY 450.025 MHZ.

Measured RF Output Power : 1.15 WATTS
Measured DC Voltage : 7.3 VOLTS
Measured DC Current : 0.75 AMP
Measured DC Input Power : 5.45 WATTS

LOW - POWER SETTING, FREQUENCY 481.050 MHz.

Measured RF Output Power : 1.20 WATTS
Measured DC Voltage : 7.31 VOLTS
Measured DC Current : 0.598 AMP
Measured DC Input Power : 4.36 WATTS

LOW - POWER SETTING, FREQUENCY 511.975 MHz.

Measured RF Output Power: 1.15 WATTS
Measured DC Voltage: 7.33 VOLTS
Measured DC Current: 0.61 AMP
Measured DC Input Power: 4.47 WATTS

MOTOROLA INC.

**TRANSMITTER AUDIO RESPONSE CHARACTERISTIC
MODULATION LEVEL vs. AUDIO FREQUENCY**

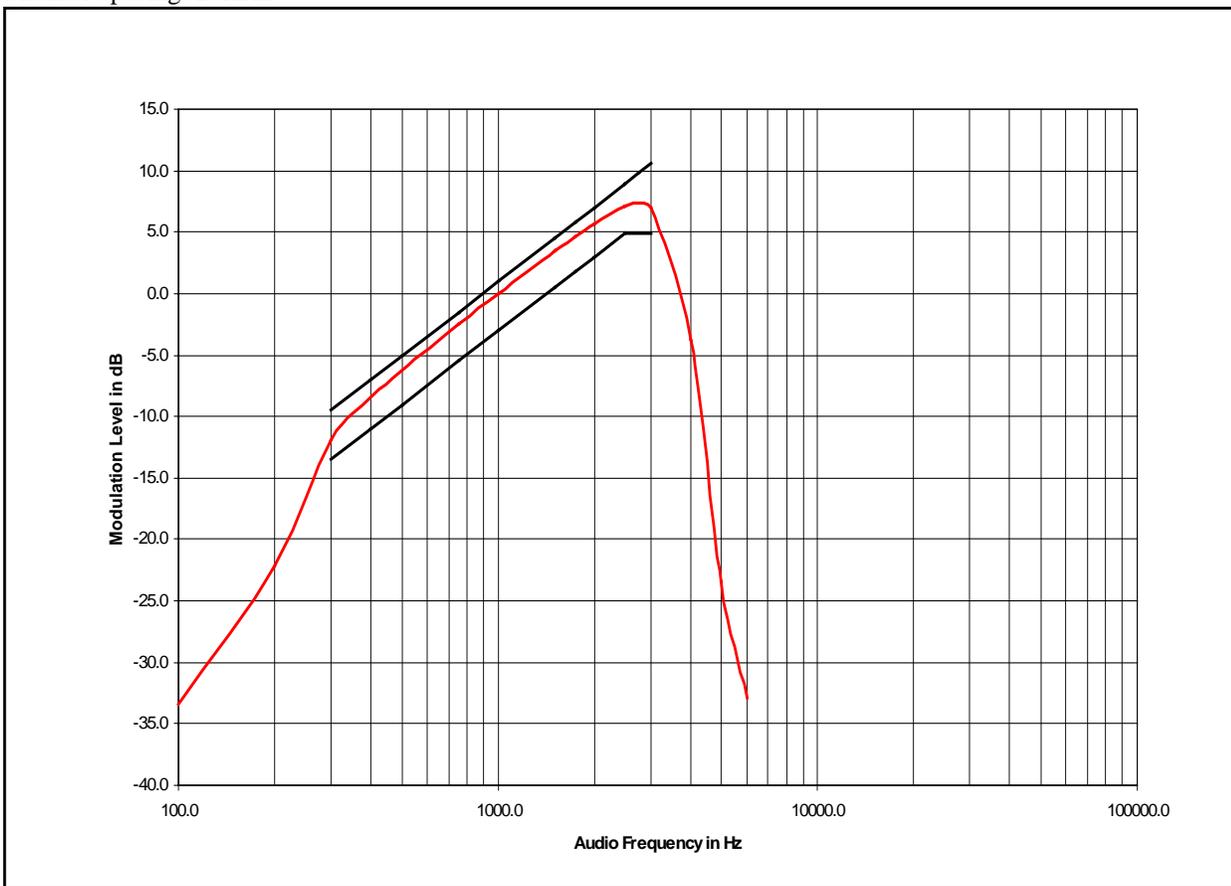
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Frequency: 481.050Mhz
Channel Spacing: 25KHz



MOTOROLA INC.

**TRANSMITTER AUDIO RESPONSE CHARACTERISTIC
MODULATION LEVEL vs. AUDIO FREQUENCY**

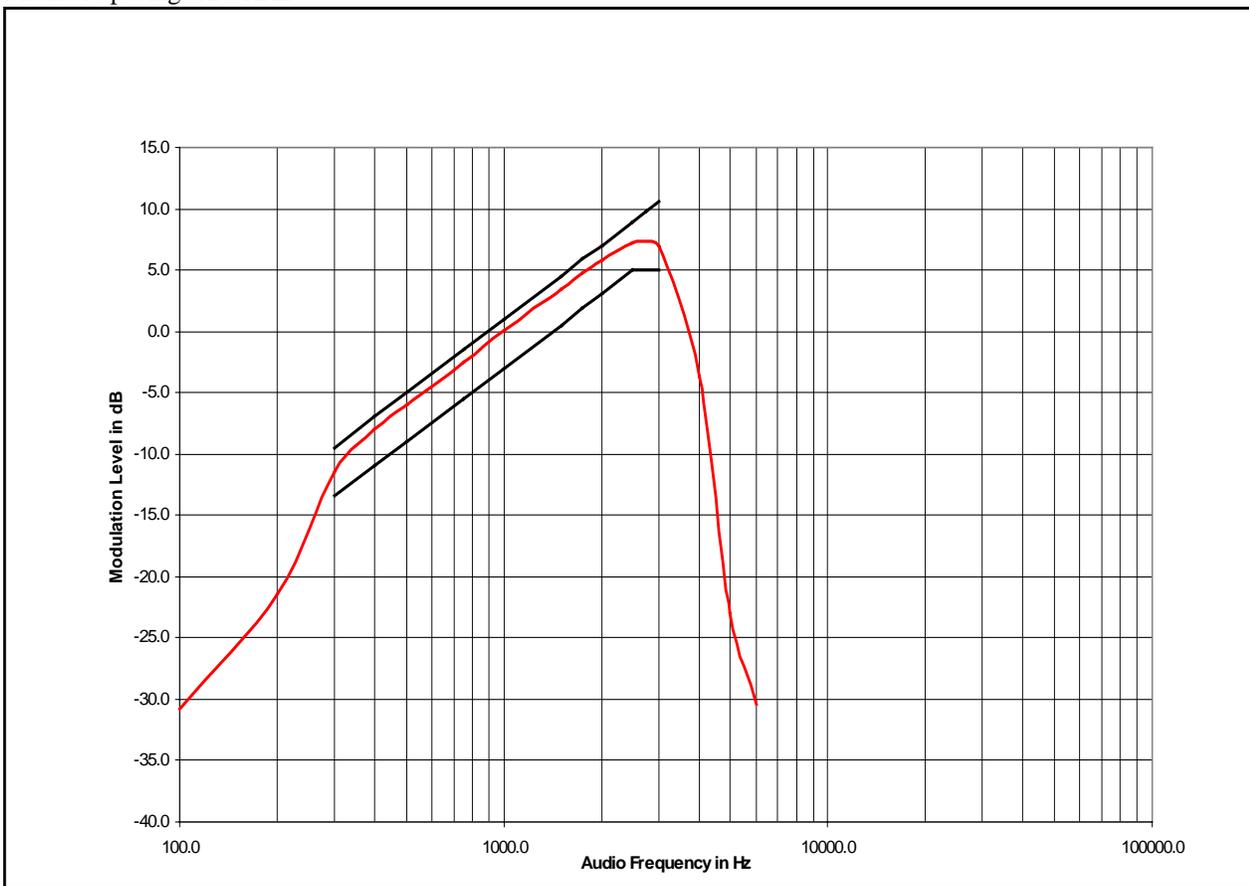
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Frequency: 481.050Mhz
Channel Spacing: 12.5KHz



MOTOROLA INC.
TRANSMITTER
POST - LIMITER ROLL OFF RESPONSE
FILTER OUTPUT vs. AUDIO FREQUENCY

Xmtr Type : AZ489FT4834

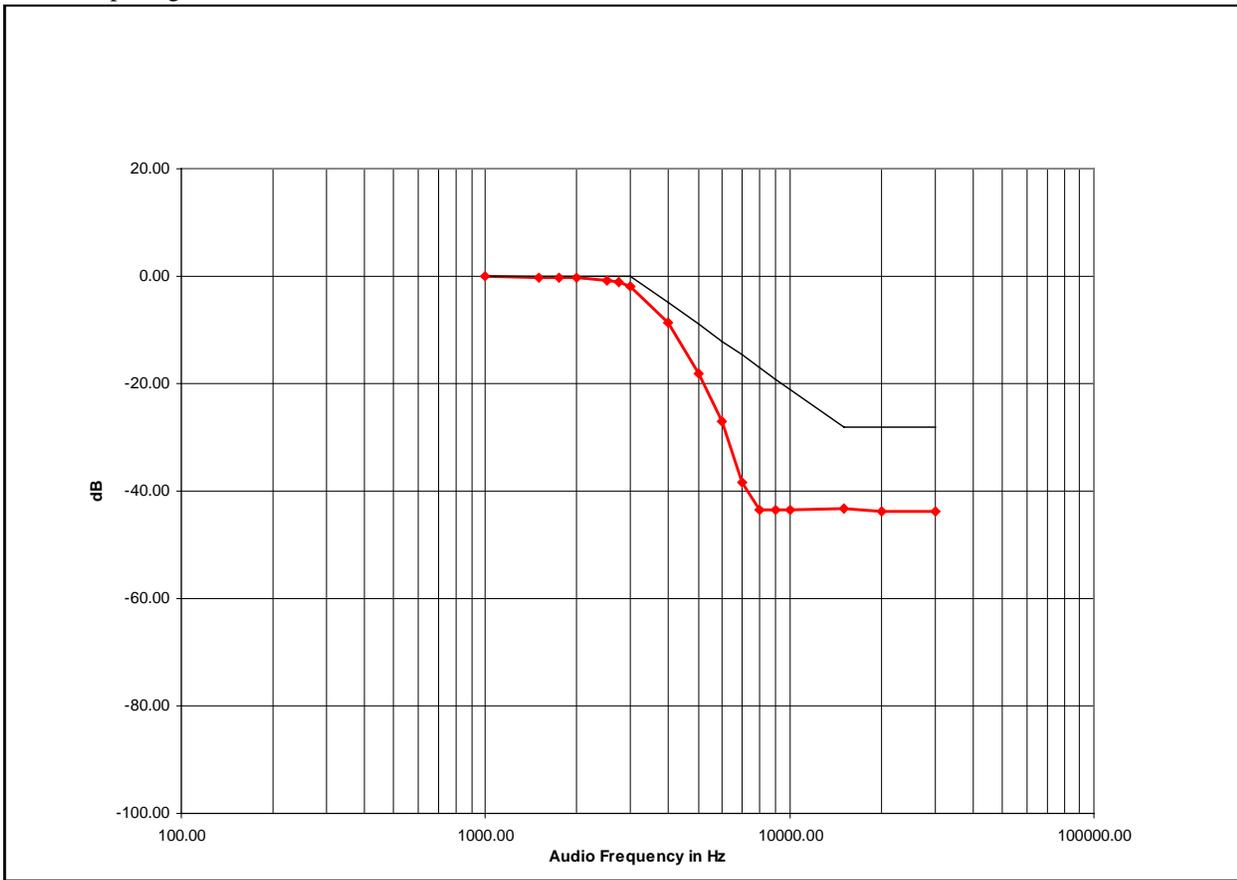
Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Frequency : 481.050Mhz

Channel Spacing : 25KHz



MOTOROLA INC.
TRANSMITTER
POST - LIMITER ROLL OFF RESPONSE
FILTER OUTPUT vs. AUDIO FREQUENCY

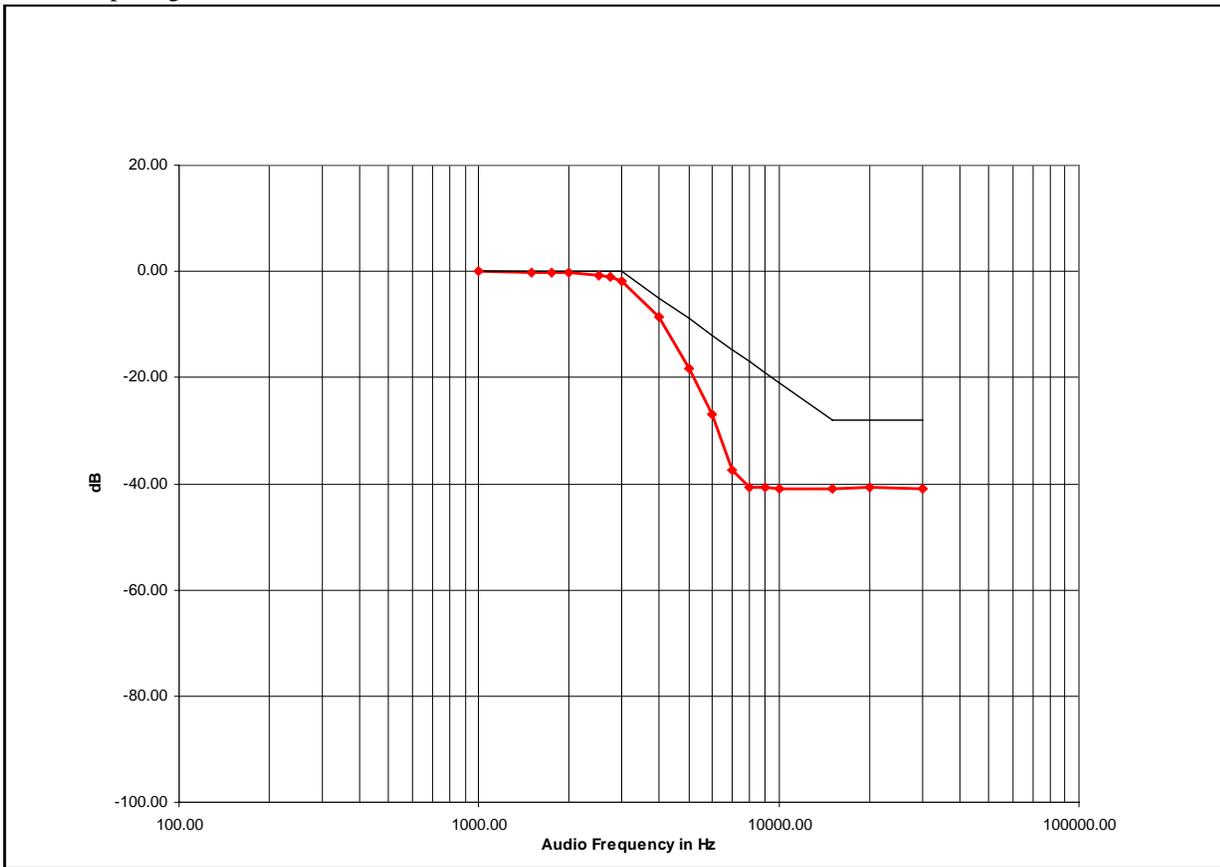
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Frequency : 481.050Mhz
Channel Spacing : 12.5KHz



MOTOROLA INC.
CARRIER SQUELCH
AUDIO INPUT LEVEL vs. DEVIATION

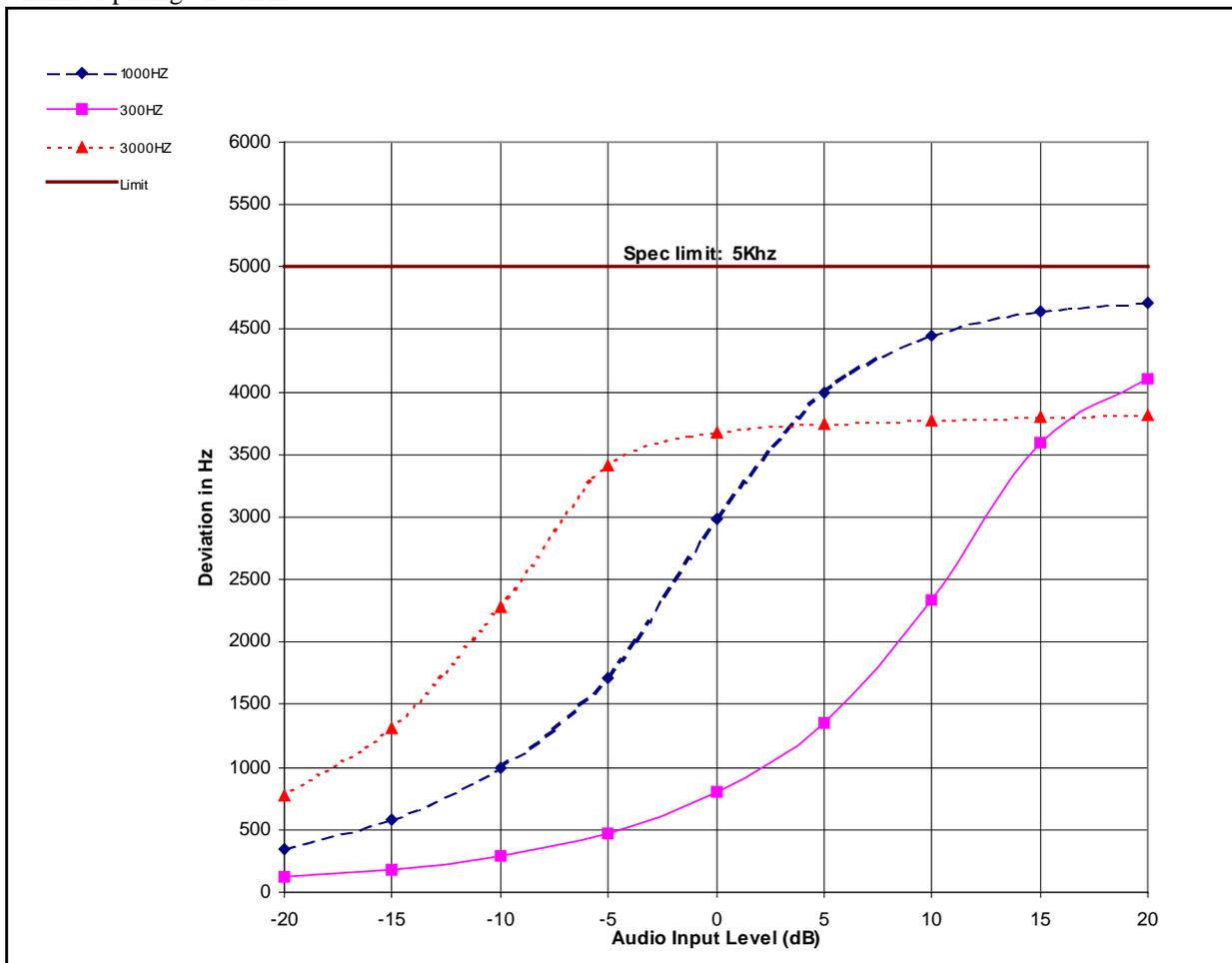
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Frequency : 481.050Mhz
Channel Spacing : 25 KHz



MOTOROLA INC.

**TONE WITH "PL"
AUDIO INPUT LEVEL vs. DEVIATION**

Xmtr Type : AZ489FT4834

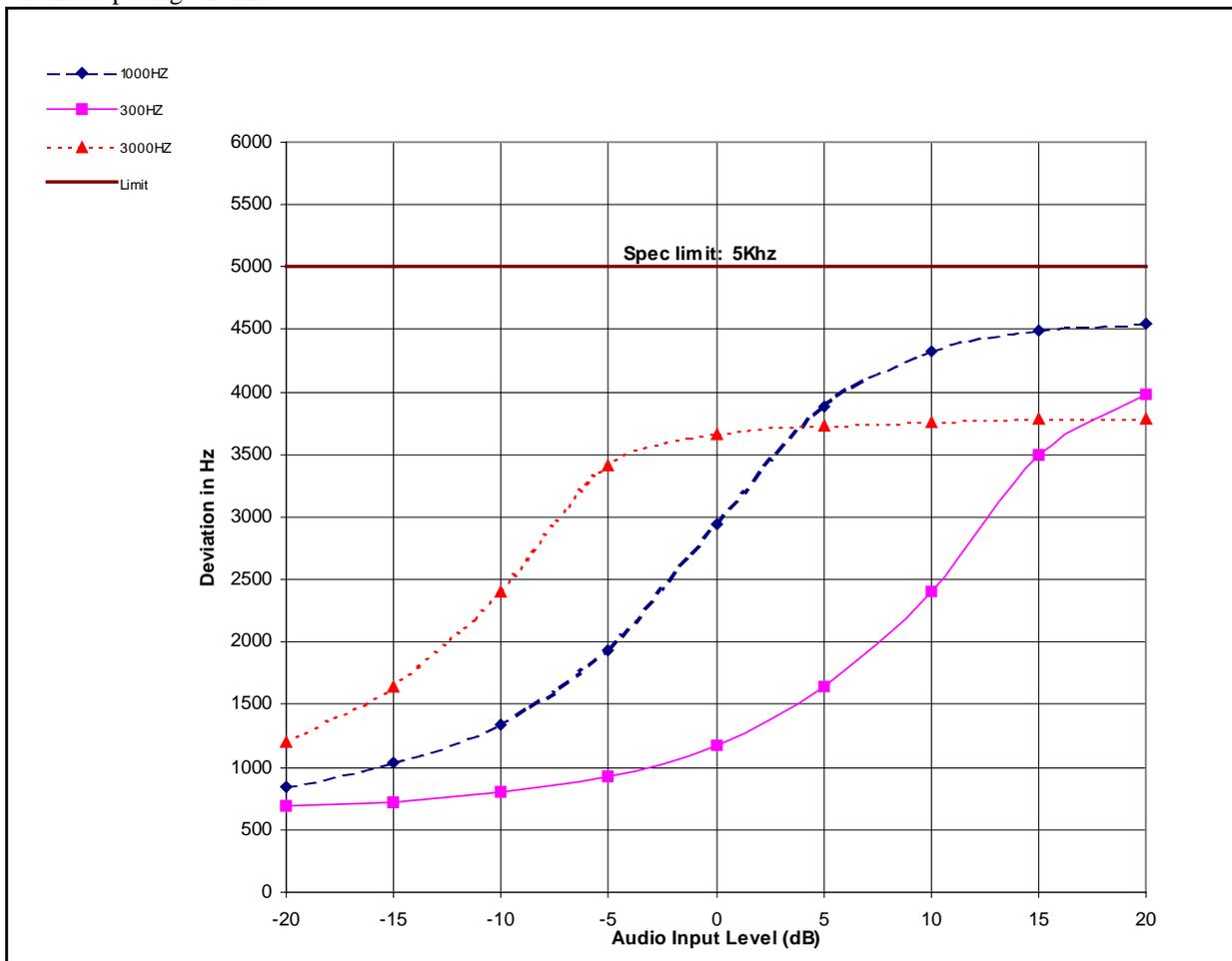
Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Frequency : 481.050Mhz

Channel Spacing : 25KH



MOTOROLA INC.
PHONE WITH "DPL"
AUDIO INPUT LEVEL vs. DEVIATION

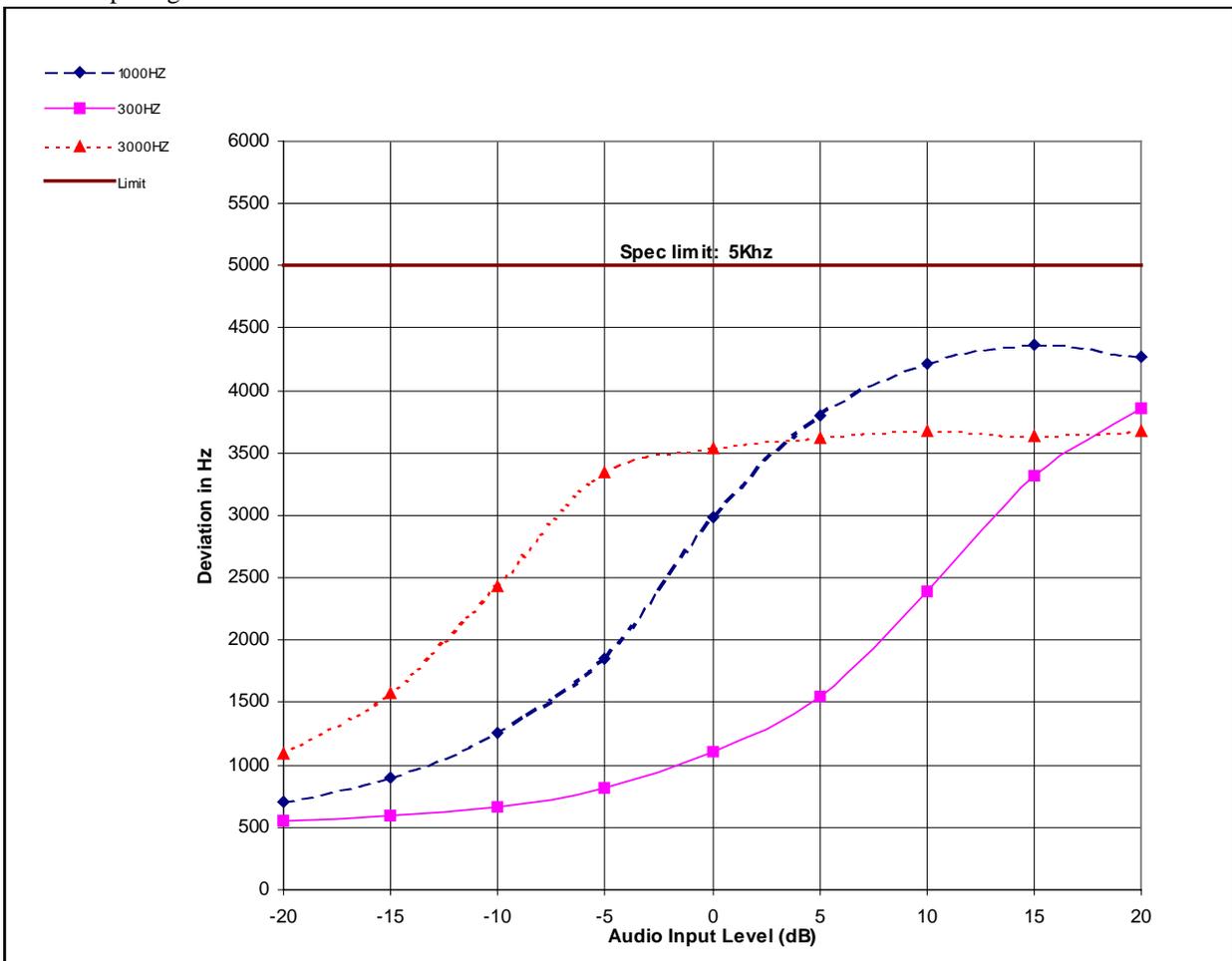
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Frequency : 481.050Mhz
Channel Spacing : 25KHz



MOTOROLA INC.
CARRIER SQUELCH
AUDIO INPUT LEVEL vs. DEVIATION

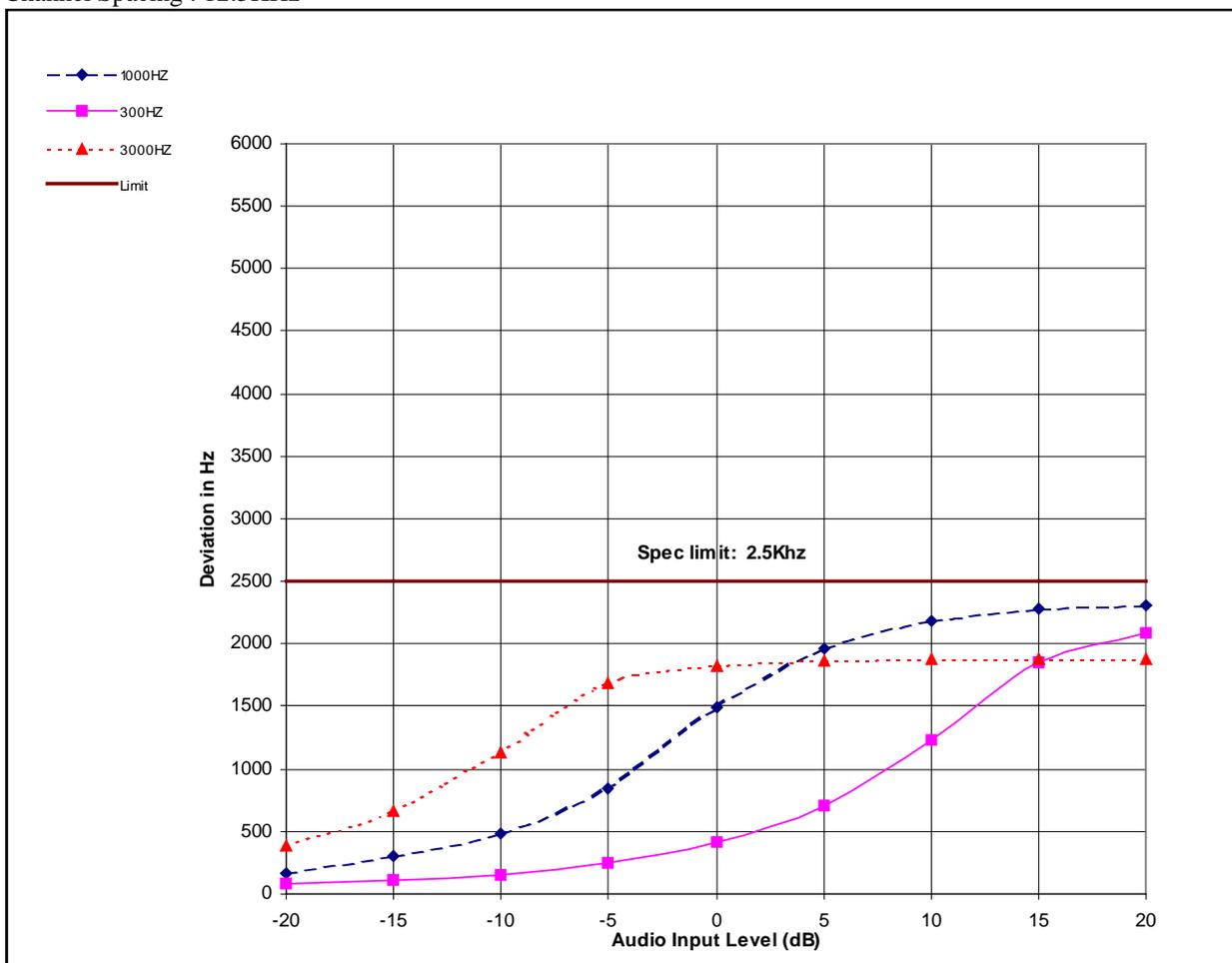
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Frequency : 481.050Mhz
Channel Spacing : 12.5KHz



MOTOROLA INC.

**STONE WITH "PL"
AUDIO INPUT LEVEL vs. DEVIATION**

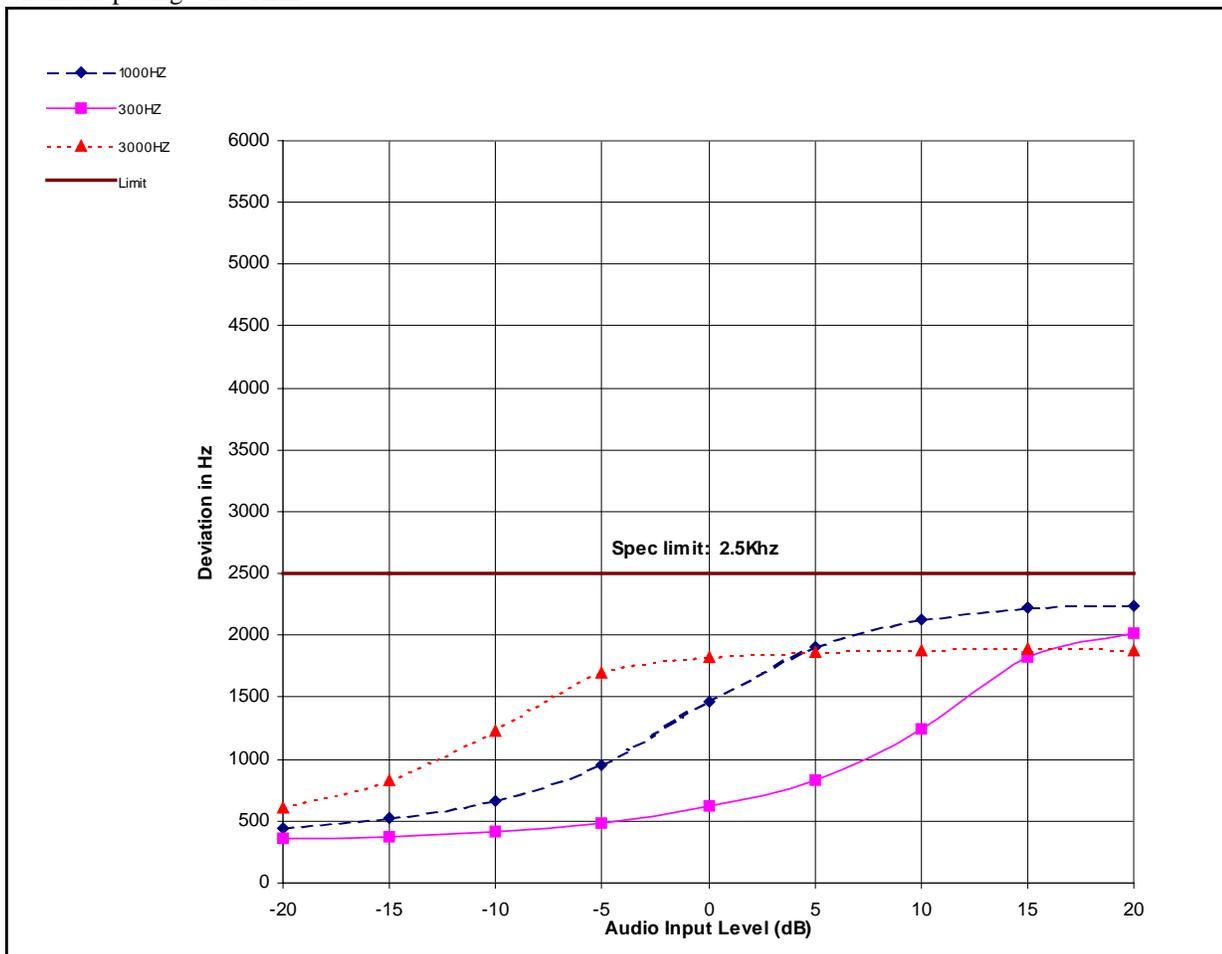
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Frequency : 481.050Mhz
Channel Spacing : 12.5KHz



MOTOROLA INC.
TONE WITH "DPL"
AUDIO INPUT LEVEL vs. DEVIATION

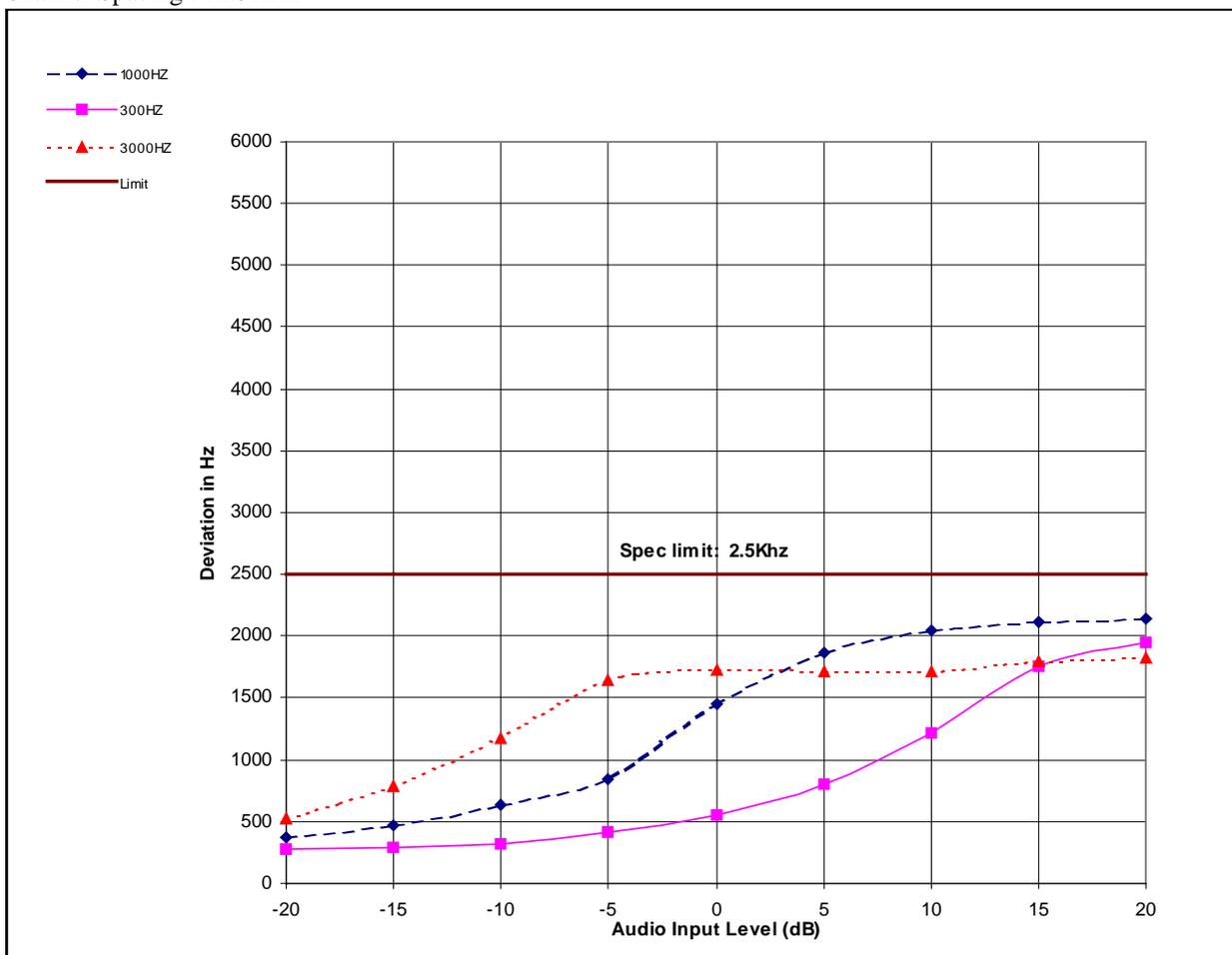
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Frequency : 481.050Mhz
Channel Spacing : 12.5KHz



MOTOROLA INC.
OCCUPIED BANDWIDTH
(2500 HZ AUDIO MODULATION ONLY)

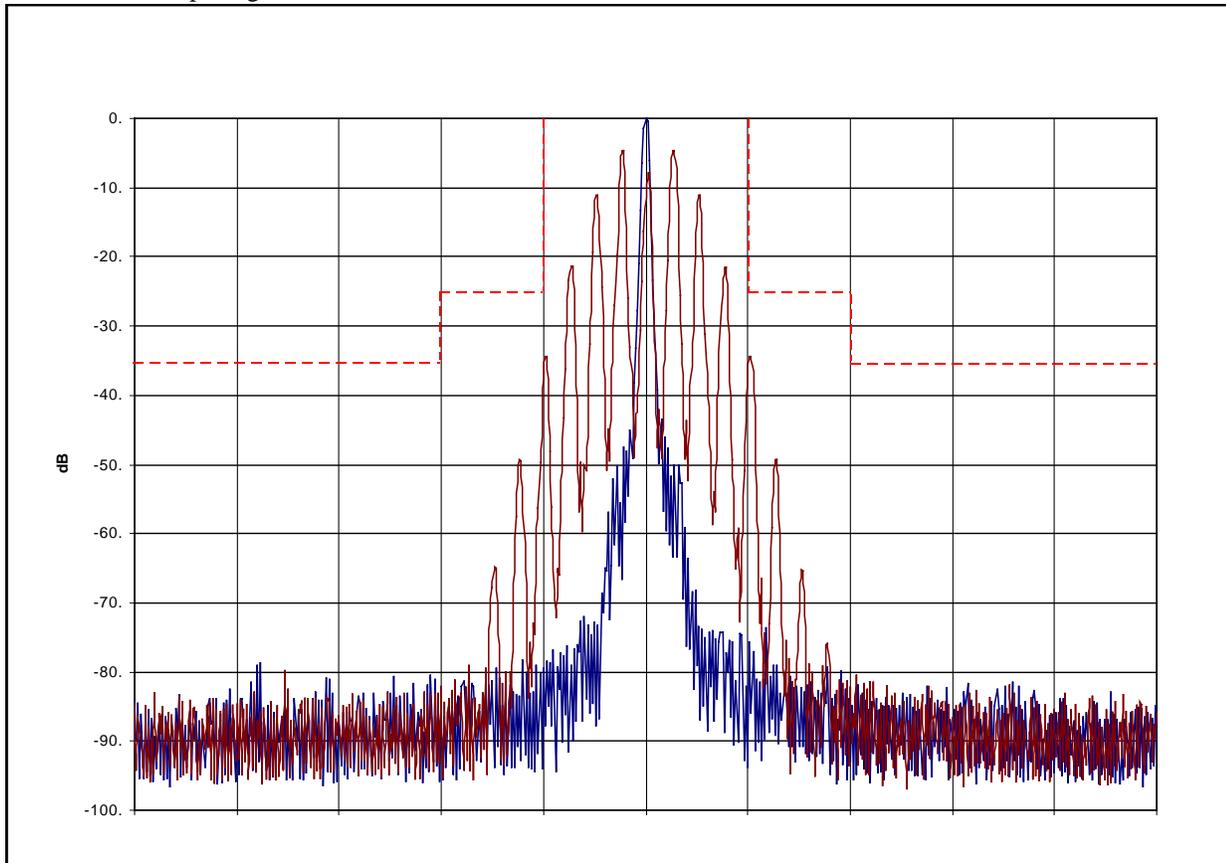
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

25Khz Channel Spacing.



CENTER FREQUENCY(MHZ):	481.050
RESOLUTION BANDWIDTH(HZ):	300
VIDEO BANDWIDTH(KHZ):	300
SPAN(KHZ):	100
SWEEP TIME(SEC):	3
SCALE(DB/):	10
REF LEVEL(dBm)	5.8
ATTEN (dB)	30

Note: Emission Mask B

MOTOROLA INC.
OCCUPIED BANDWIDTH
(2500 HZ AUDIO & PL TONE MODULATION)

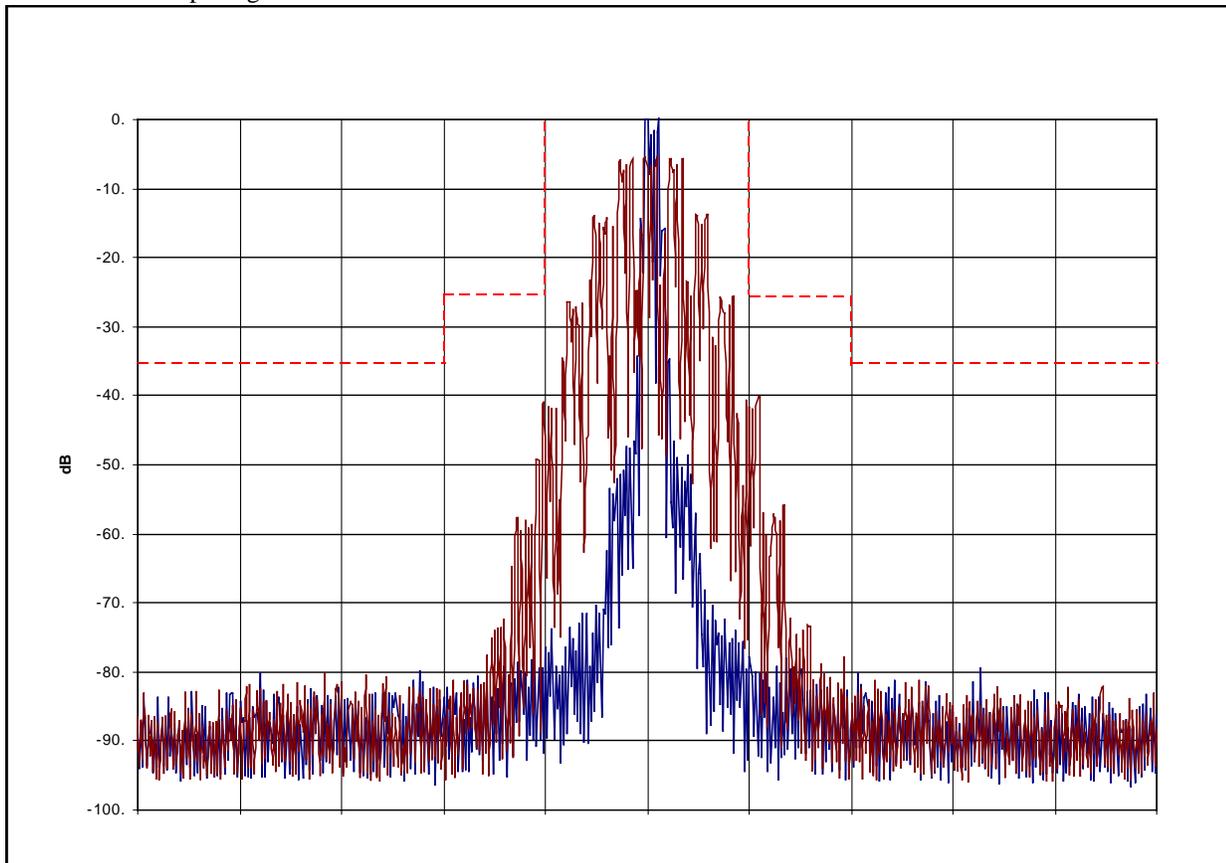
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi.

25Khz Channel Spacing



CENTER FREQUENCY(MHZ):	481.050
RESOLUTION BANDWIDTH(HZ):	300
VIDEO BANDWIDTH(KHZ):	300
SPAN(KHZ):	100
SWEEP TIME(SEC):	3
SCALE(DB/):	10
REF LEVEL(dBm)	5.8
ATTEN (dB)	30

Note: Emission Mask B

MOTOROLA INC.

**OCCUPIED BANDWIDTH
(2500 HZ AUDIO & DPL TONE MODULATION)**

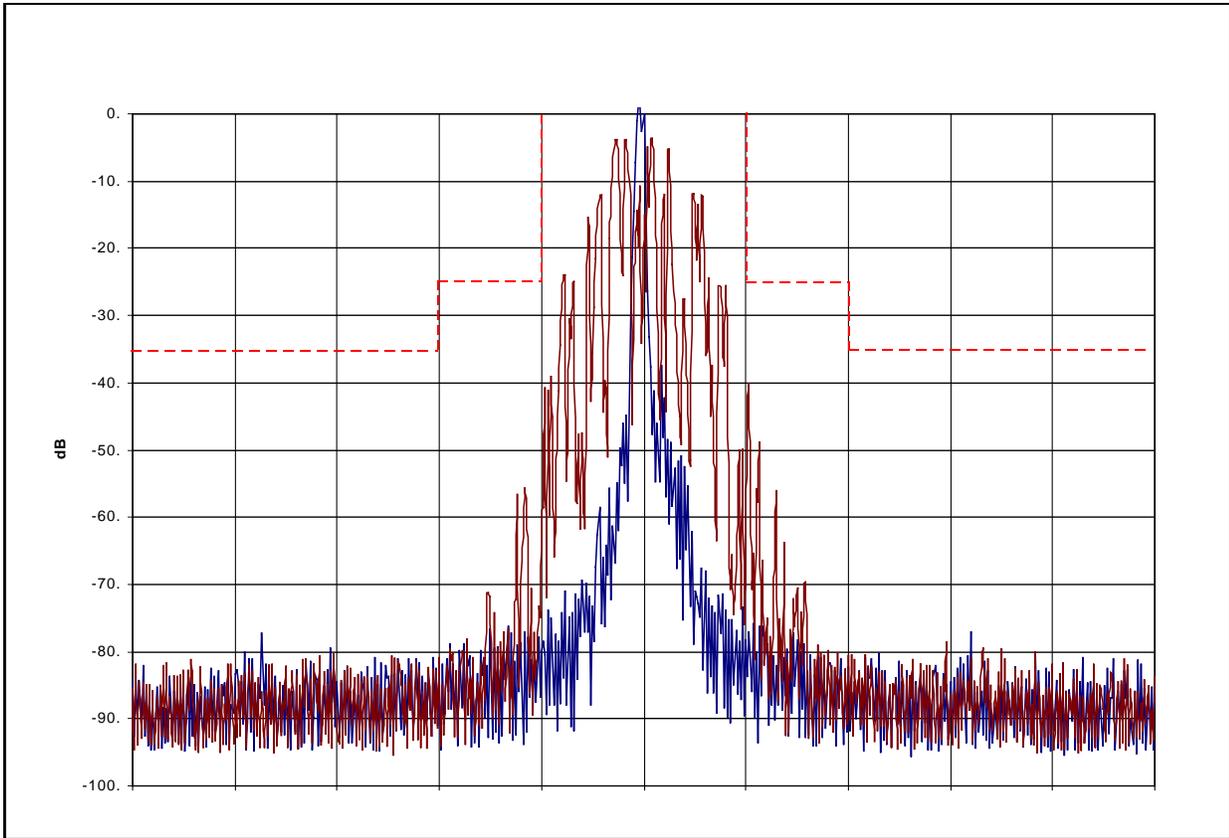
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Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

25Khz Channel Spacing



CENTER FREQUENCY(MHZ):	481.050
RESOLUTION BANDWIDTH(HZ):	300
VIDEO BANDWIDTH(KHZ):	300
SPAN(KHZ):	100
SWEEP TIME(SEC):	3
SCALE(DB/):	10
REF LEVEL(dBm)	5.8
ATTEN (dB)	30

Note: Emission Mask B

MOTOROLA INC.

**OCCUPIED BANDWIDTH
(DTMF MODULATION ONLY)**

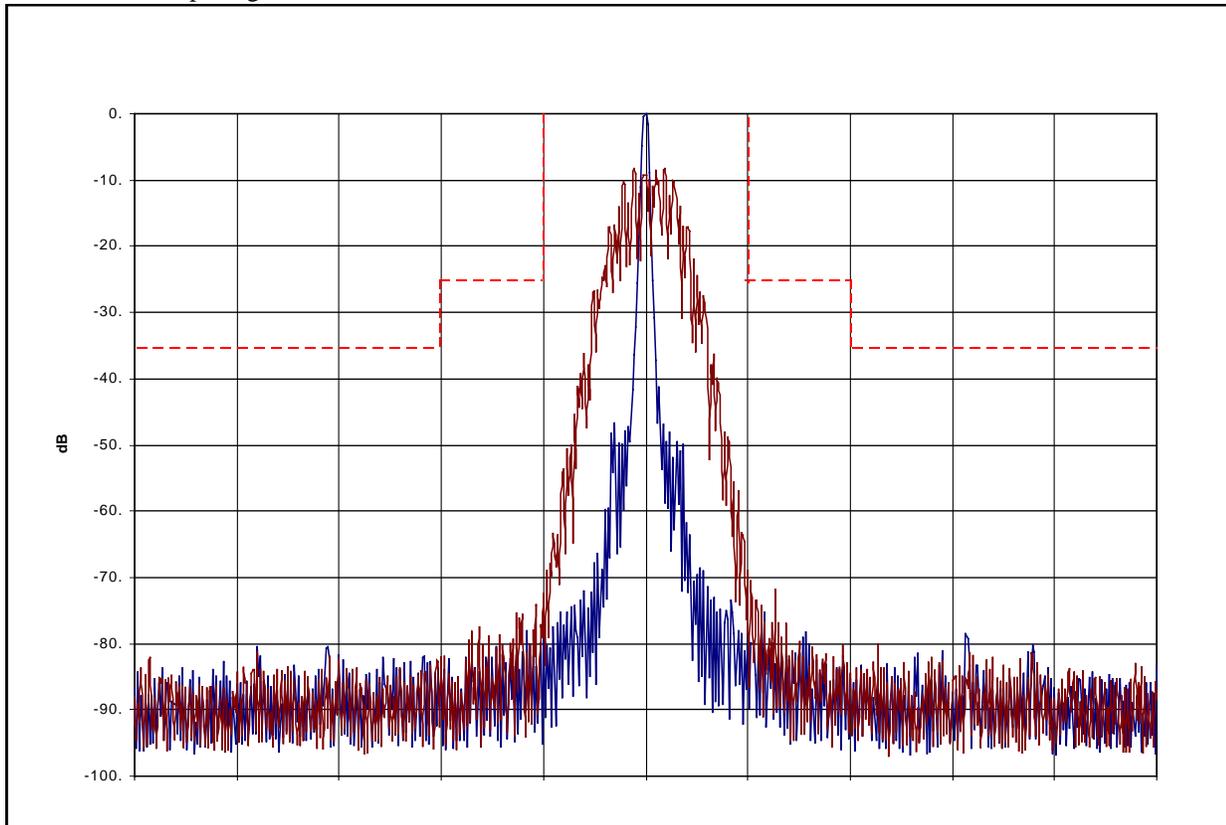
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

25Khz Channel Spacing



CENTER FREQUENCY(MHZ):	481.050
RESOLUTION BANDWIDTH(HZ):	300
VIDEO BANDWIDTH(KHZ):	300
SPAN(KHZ):	100
SWEEP TIME(SEC):	3
SCALE(DB/):	10
REF LEVEL(dBm)	5.8
ATTEN (dB)	30

Note: Emission Mask B

MOTOROLA INC.
OCCUPIED BANDWIDTH
(DTMF MODULATION & PL TONE MODULATION)

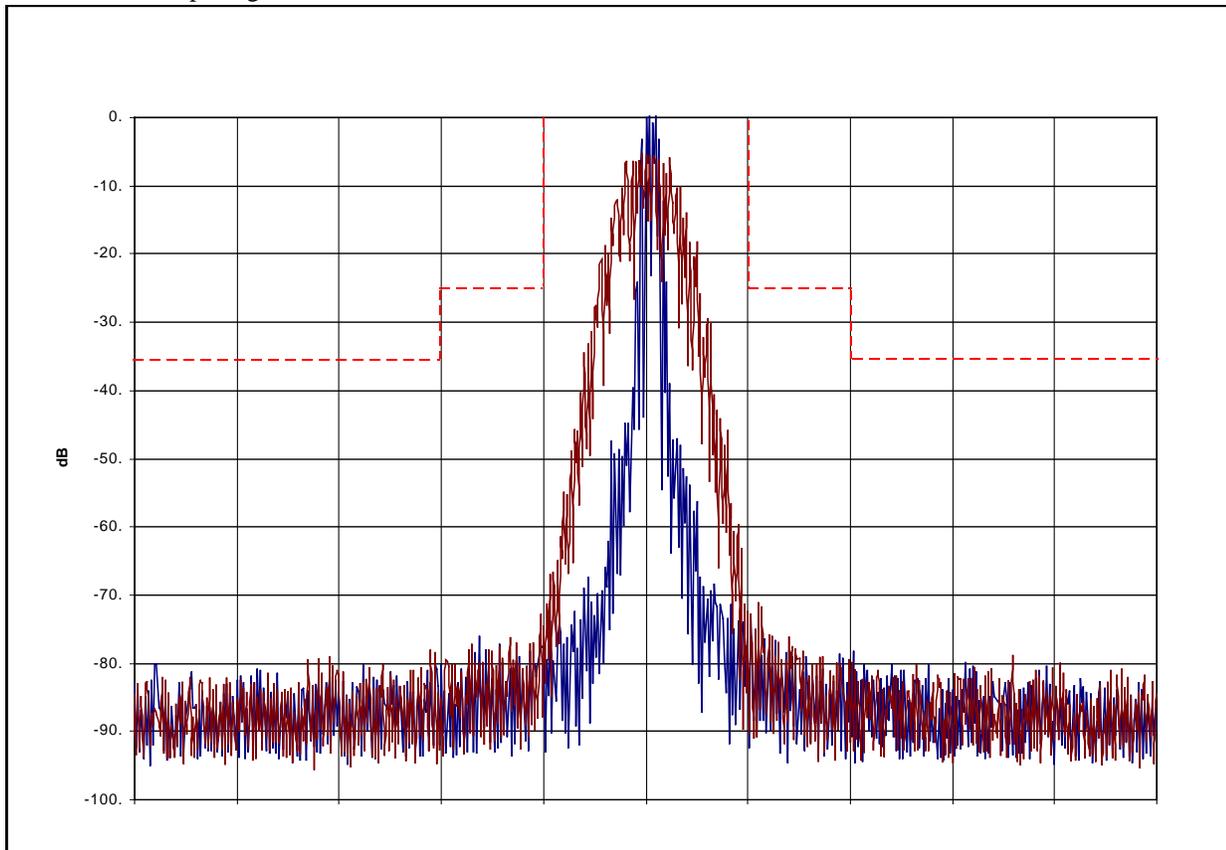
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Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

25Khz Channel Spacing



CENTER FREQUENCY(MHZ):	481.050
RESOLUTION BANDWIDTH(HZ):	300
VIDEO BANDWIDTH(KHZ):	300
SPAN(KHZ):	100
SWEEP TIME(SEC):	3
SCALE(DB/):	10
REF LEVEL(dBm)	5.8
ATTEN (dB)	30

Note: Emission Mask B

MOTOROLA INC.

**OCCUPIED BANDWIDTH
(DTMF MODULATION & DPL TONE MODULATION)**

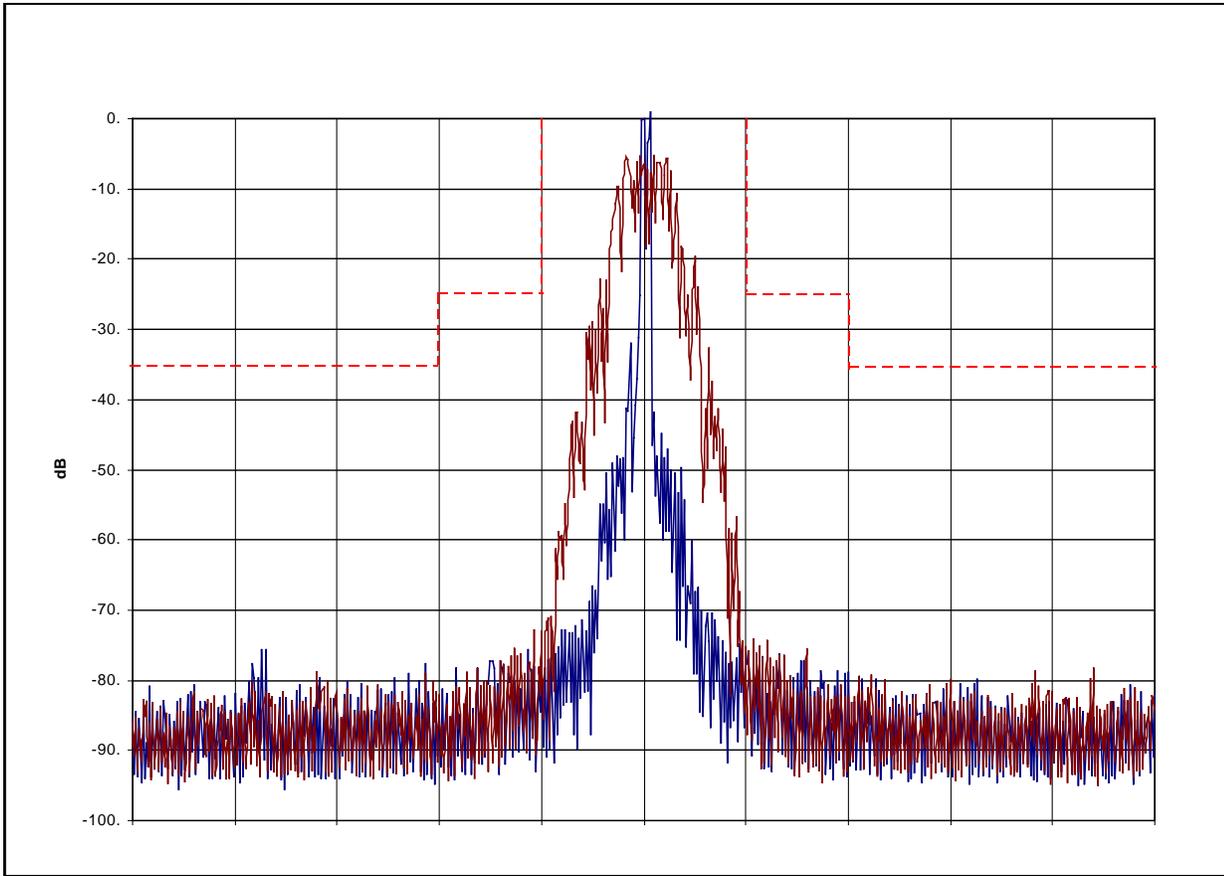
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Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

25Khz Channel Spacing



CENTER FREQUENCY(MHZ):	481.050
RESOLUTION BANDWIDTH(HZ):	300
VIDEO BANDWIDTH(KHZ):	300
SPAN(KHZ):	100
SWEEP TIME(SEC):	3
SCALE(DB/):	10
REF LEVEL(dBm)	5.8
ATTEN (dB)	30

Note: Emission Mask B

MOTOROLA INC.
OCCUPIED BANDWIDTH
(2500 HZ AUDIO MODULATION ONLY)

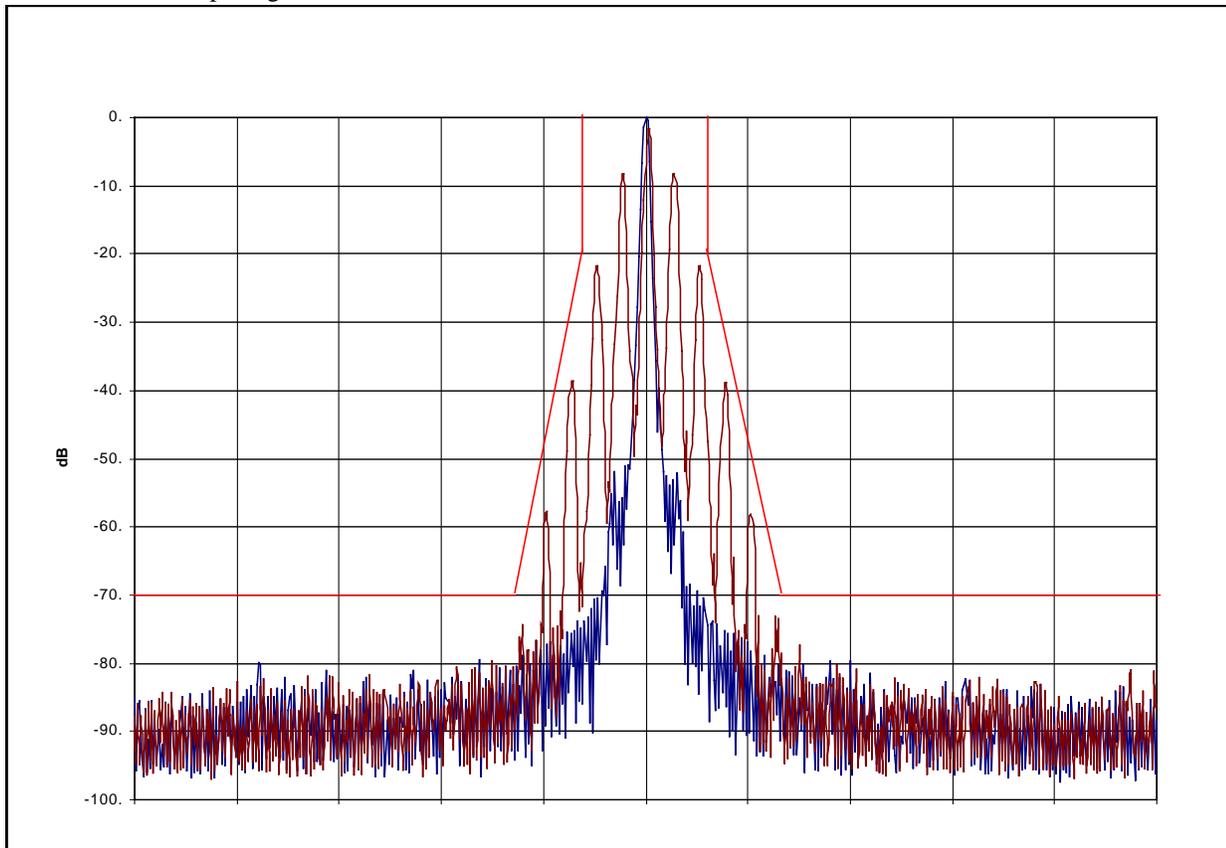
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Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

12.5Khz Channel Spacing



CENTER FREQUENCY(MHZ):	481.050
RESOLUTION BANDWIDTH(HZ):	300
VIDEO BANDWIDTH(KHZ):	300
SPAN(KHZ):	100
SWEEP TIME(SEC):	3
SCALE(DB/):	10
REF LEVEL(dBm)	5.8
ATTEN (dB)	30

Note: Emission Mask D

MOTOROLA INC.
OCCUPIED BANDWIDTH
(2500 HZ AUDIO & PL TONE MODULATION)

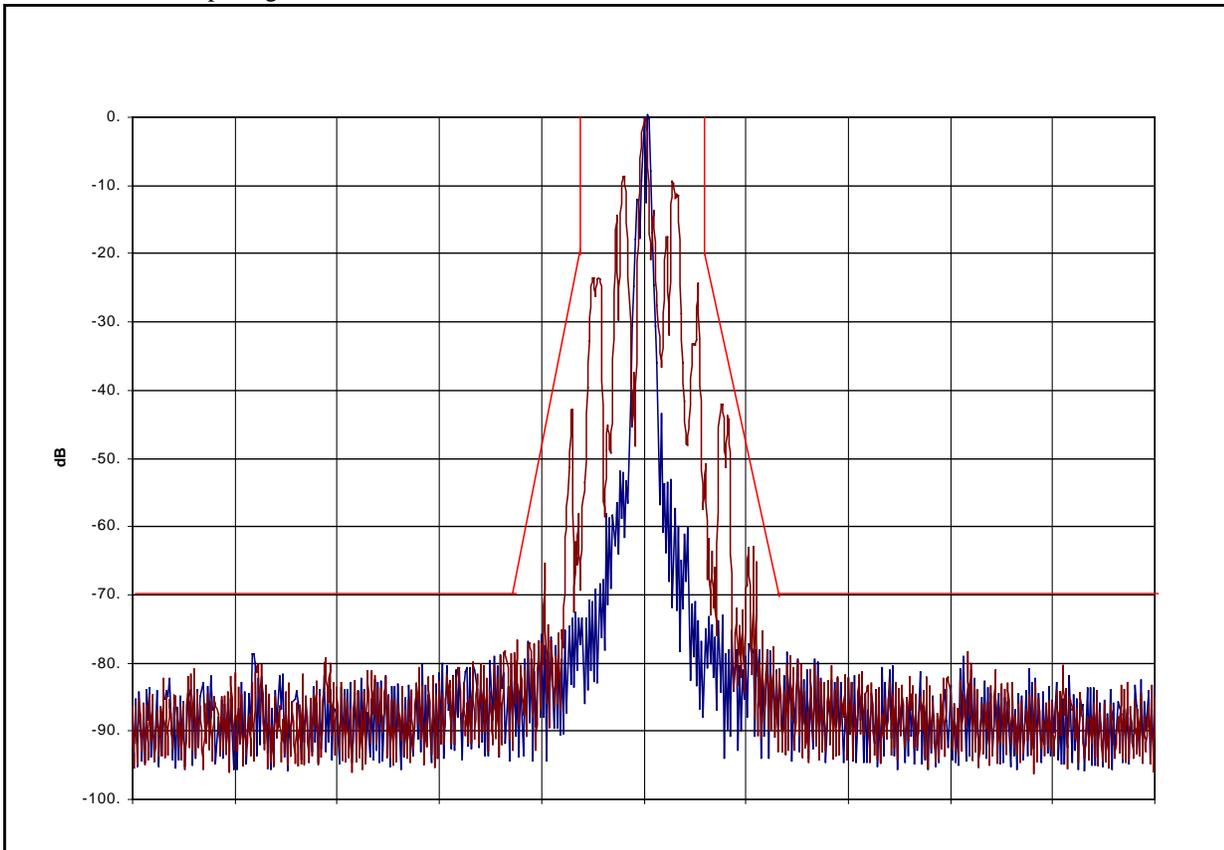
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

12.5Khz Channel Spacing



CENTER FREQUENCY(MHZ):	481.050
RESOLUTION BANDWIDTH(HZ):	300
VIDEO BANDWIDTH(KHZ):	300
SPAN(KHZ):	100
SWEEP TIME(SEC):	3
SCALE(DB/):	10
REF LEVEL(dBm)	5.8
ATTEN (dB)	30

Note: Emission Mask D

MOTOROLA INC.

**OCCUPIED BANDWIDTH
(2500 HZ AUDIO & DPL TONE MODULATION)**

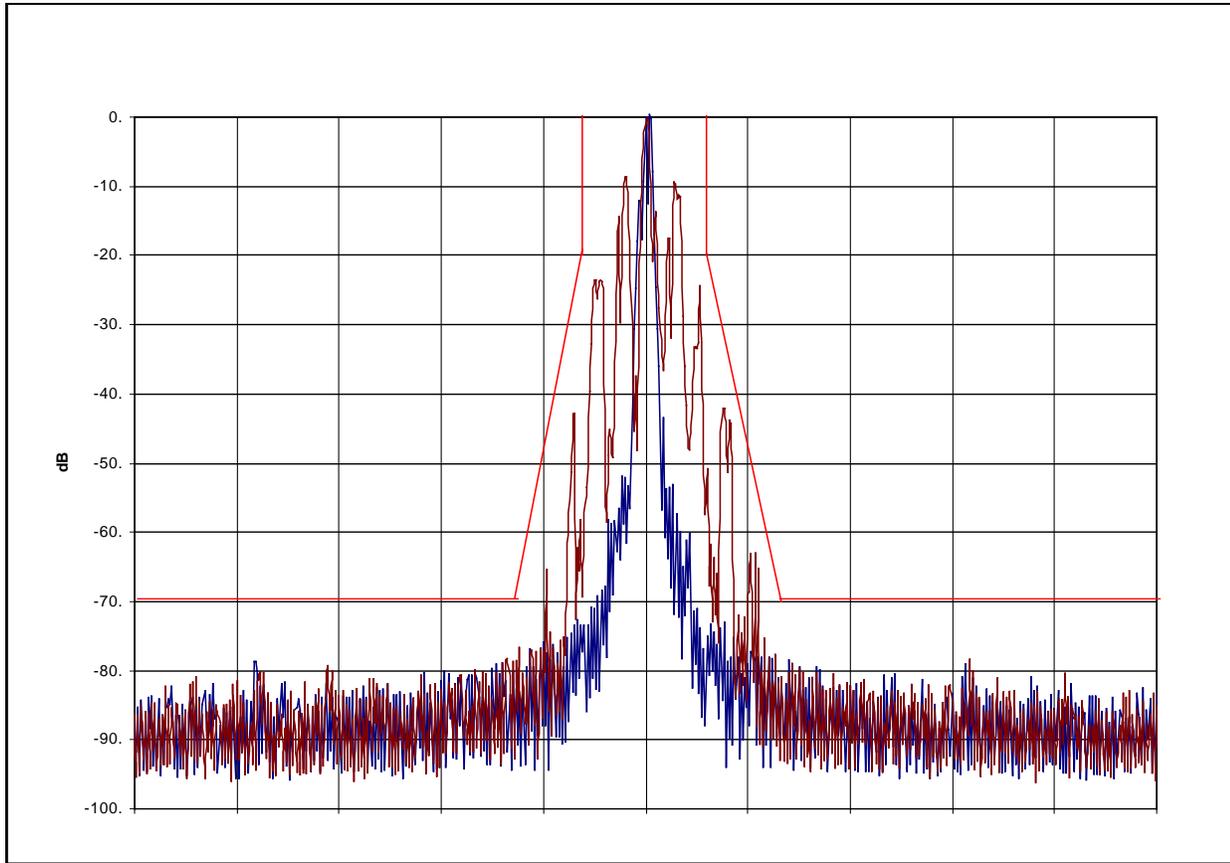
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

12.5Khz Channel Spacing



CENTER FREQUENCY(MHZ):	481.050
RESOLUTION BANDWIDTH(HZ):	300
VIDEO BANDWIDTH(KHZ):	300
SPAN(KHZ):	100
SWEEP TIME(SEC):	3
SCALE(DB/):	10
REF LEVEL(dBm)	5.8
ATTEN (dB)	30

Note: Emission Mask D

MOTOROLA INC.
OCCUPIED BANDWIDTH
(DTMF MODULATION ONLY)

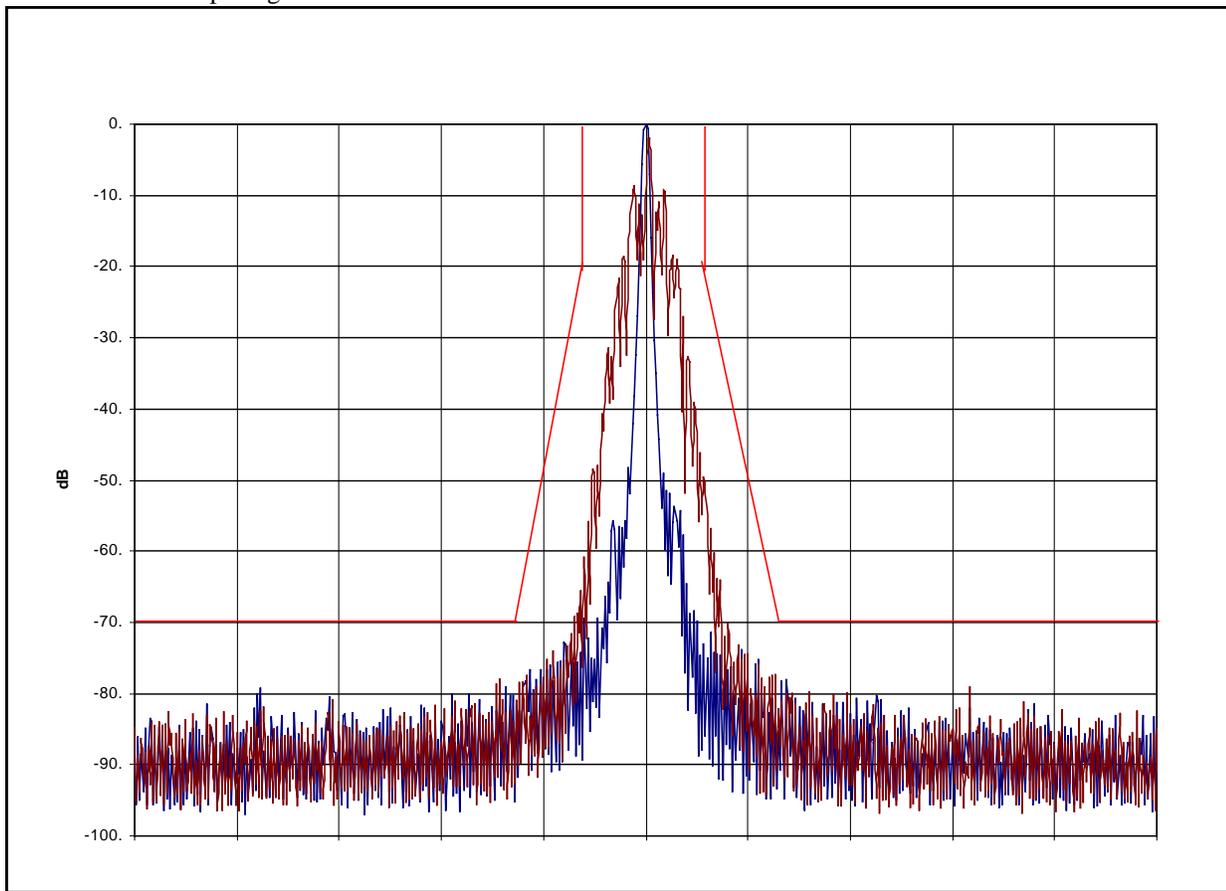
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

12.5Khz Channel Spacing



CENTER FREQUENCY(MHZ):	481.050
RESOLUTION BANDWIDTH(HZ):	300
VIDEO BANDWIDTH(KHZ):	300
SPAN(KHZ):	100
SWEEP TIME(SEC):	3
SCALE(DB/):	10
REF LEVEL(dBm)	5.8
ATTEN (dB)	30

Note: Emission Mask D

MOTOROLA INC.

**OCCUPIED BANDWIDTH
(DTMF MODULATION & PL TONE MODULATION)**

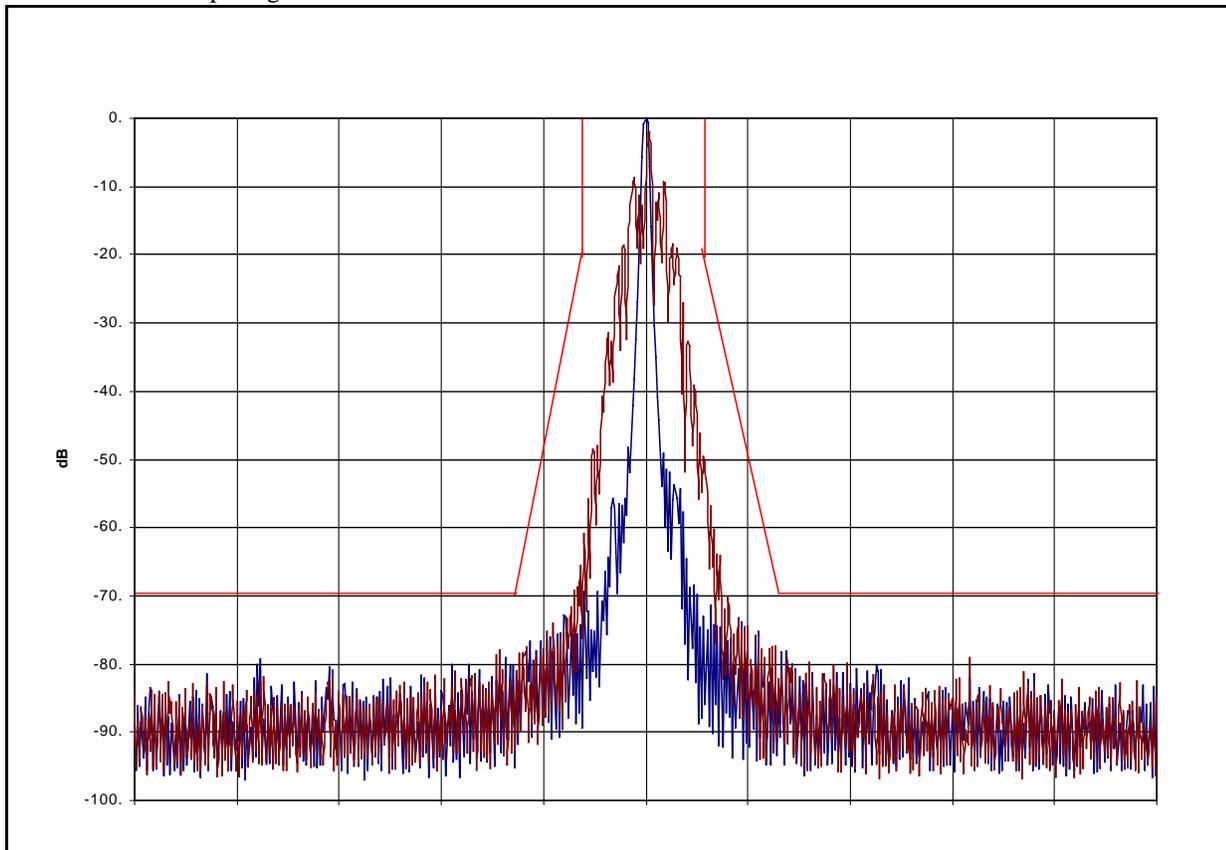
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Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

12.5Khz Channel Spacing



CENTER FREQUENCY(MHZ):	481.050
RESOLUTION BANDWIDTH(HZ):	300
VIDEO BANDWIDTH(KHZ):	300
SPAN(KHZ):	100
SWEEP TIME(SEC):	3
SCALE(DB/):	10
REF LEVEL(dBm)	5.8
ATTEN (dB)	30

Note: Emission Mask D

MOTOROLA INC.
OCCUPIED BANDWIDTH
(DTMF MODULATION & DPL TONE MODULATION)

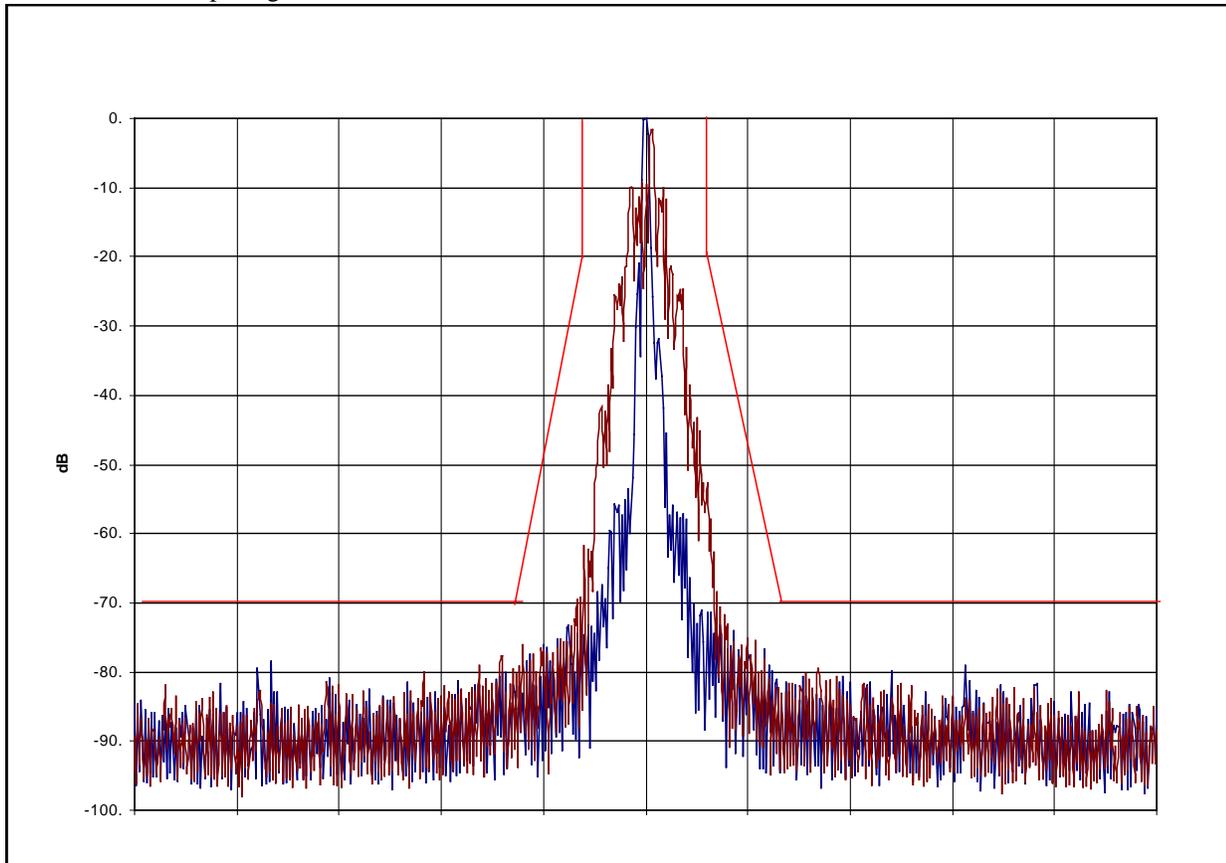
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

12.5Khz Channel Spacing



CENTER FREQUENCY(MHZ):	481.050
RESOLUTION BANDWIDTH(HZ):	300
VIDEO BANDWIDTH(KHZ):	300
SPAN(KHZ):	100
SWEEP TIME(SEC):	3
SCALE(DB/):	10
REF LEVEL(dBm)	5.8
ATTEN (dB)	30

Note: Emission Mask D

MOTOROLA INC.

**TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS AND HARMONIC EMISSIONS**

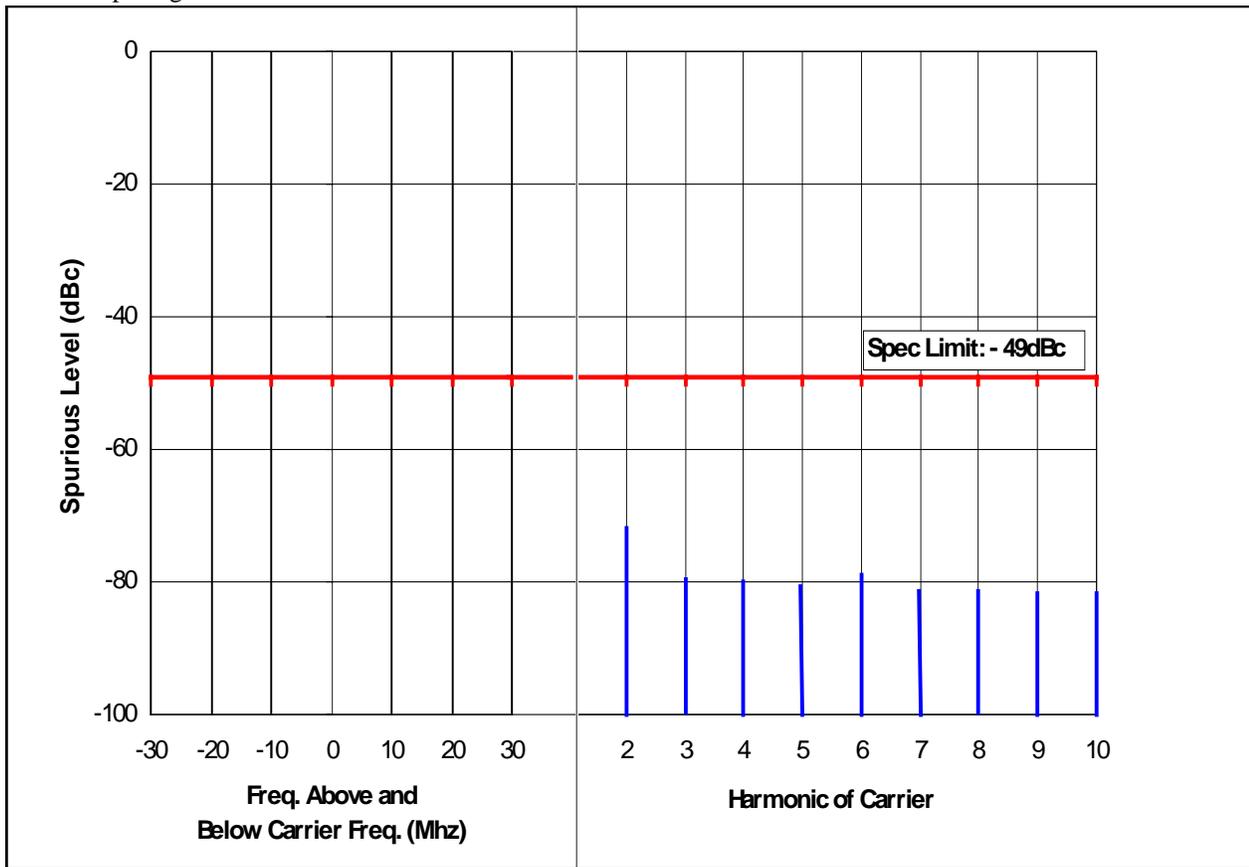
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power Output : 4W at 450.025Mhz.
Channel Spacing : 25KHz.



Note: Other emissions not reported were more than 30dB below the limit

MOTOROLA INC.

**TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS AND HARMONIC EMISSIONS**

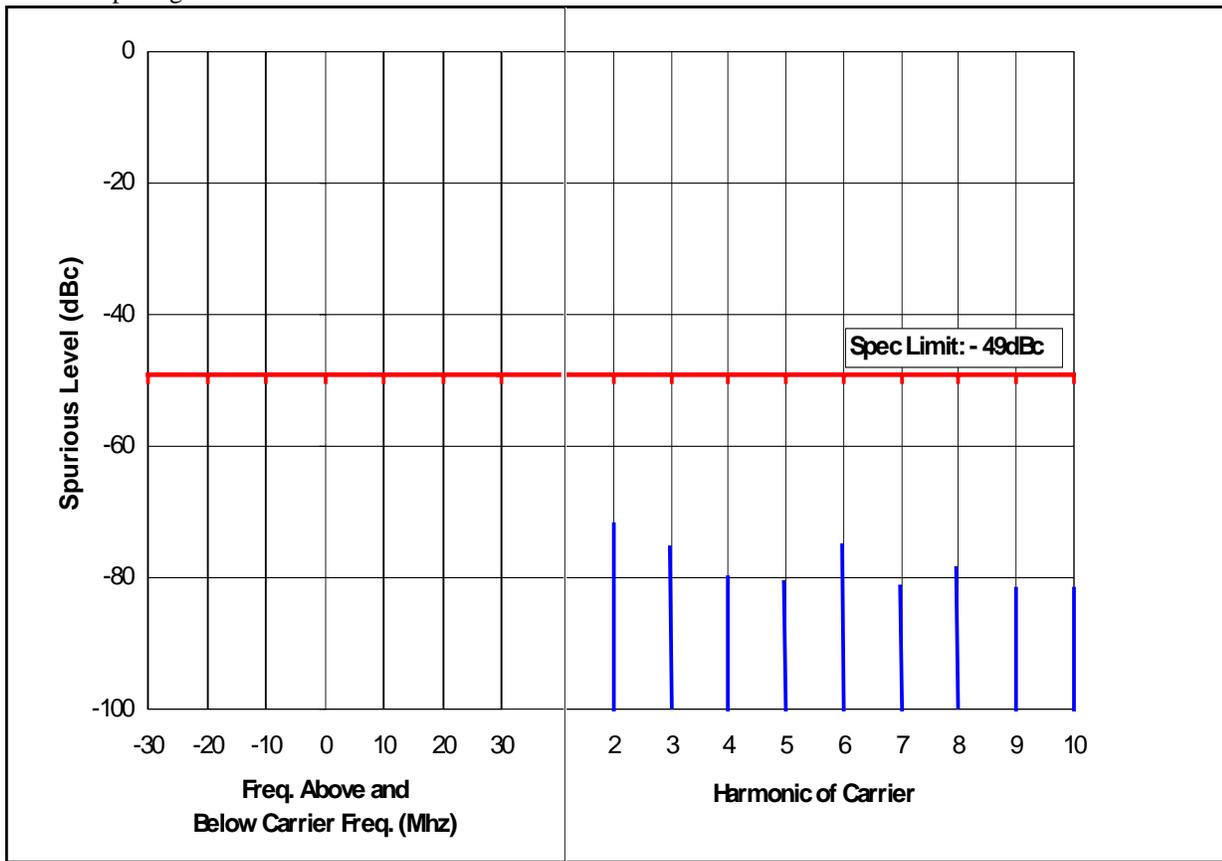
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power Output : 4W at 481.050Mhz.
Channel Spacing : 25KHz.



Note: Other emissions not reported were more than 30dB below the limit

MOTOROLA INC.

**TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS AND HARMONIC EMISSIONS**

Xmtr Type : AZ489FT4834

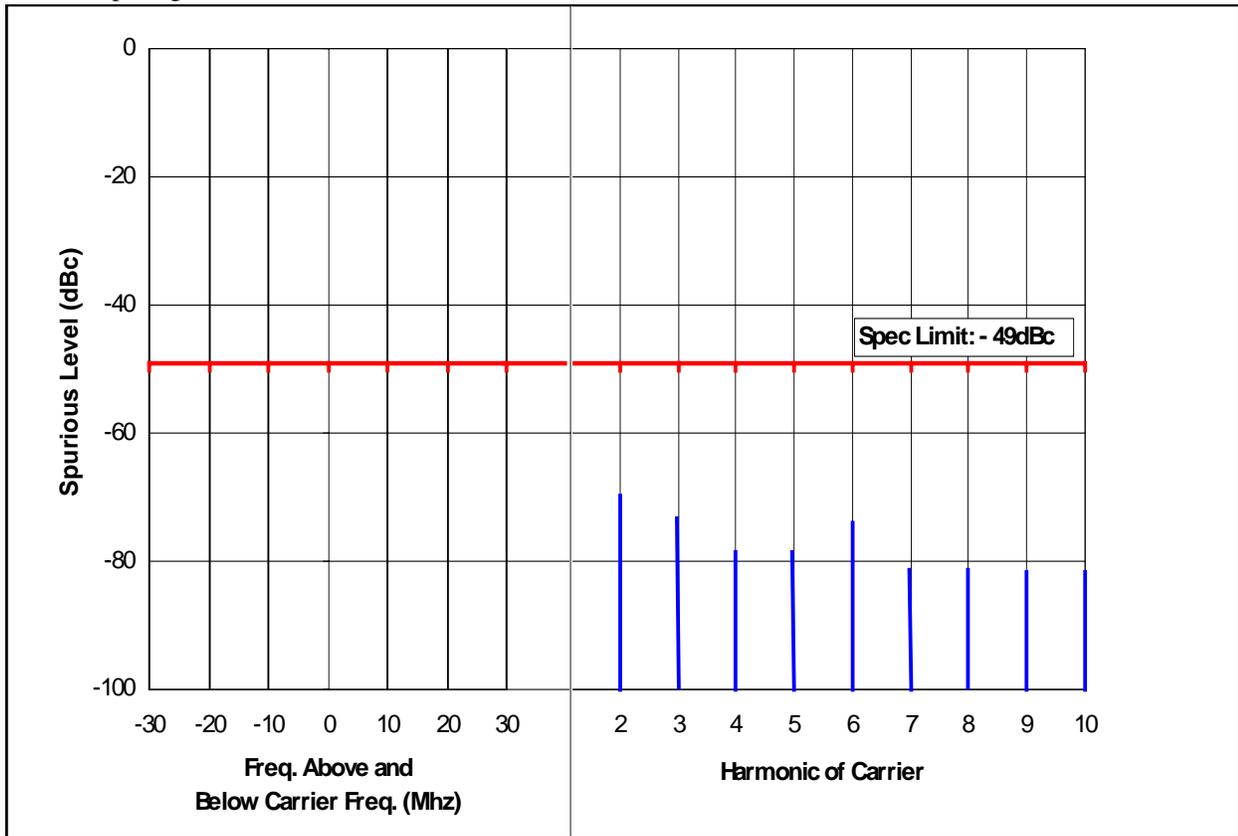
Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power Output : 4W at 511.975Mhz.

Channel Spacing : 25KHz.



Note: Other emissions not reported were more than 30dB below the limit

MOTOROLA INC.

**TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS AND HARMONIC EMISSIONS**

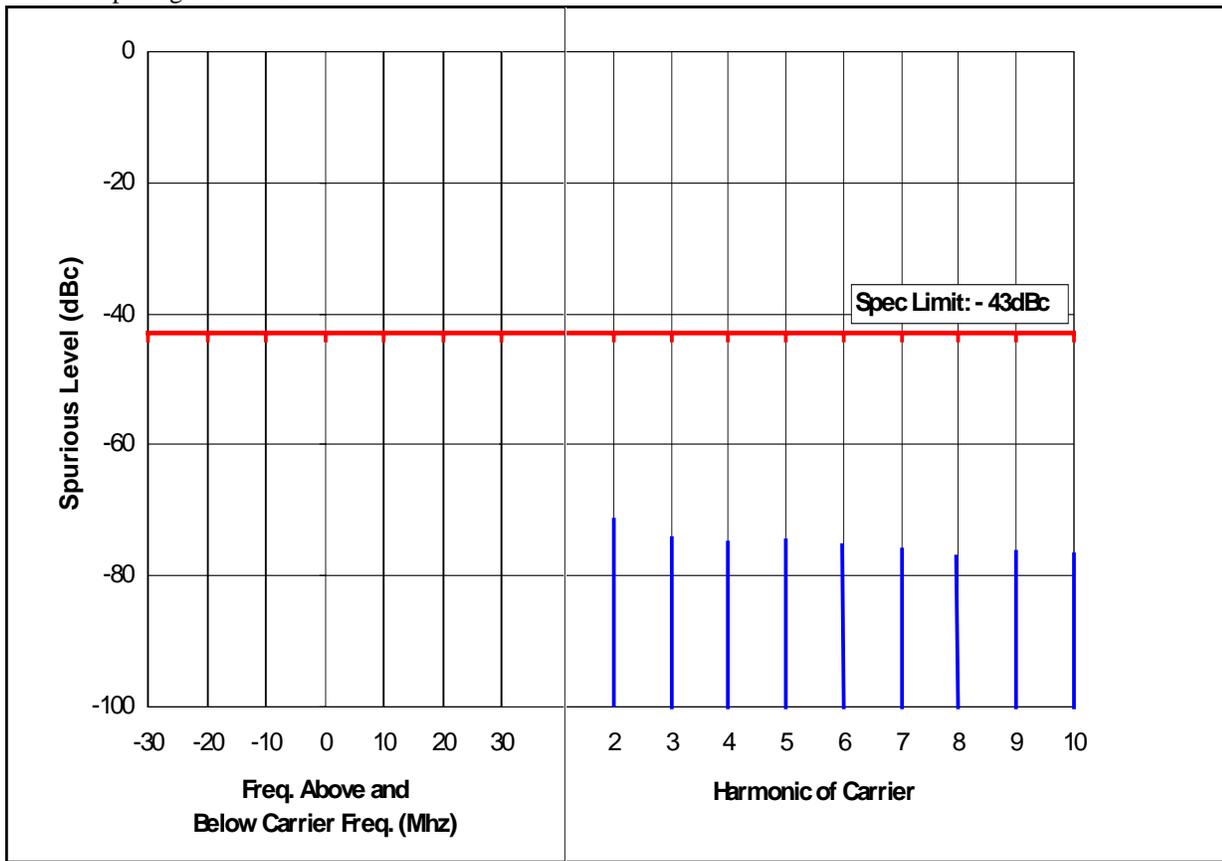
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power Output : 1W at 450.025Mhz.
Channel Spacing : 25KHz.



Note: Other emissions not reported were more than 25dB below the limit

MOTOROLA INC.

**TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS AND HARMONIC EMISSIONS**

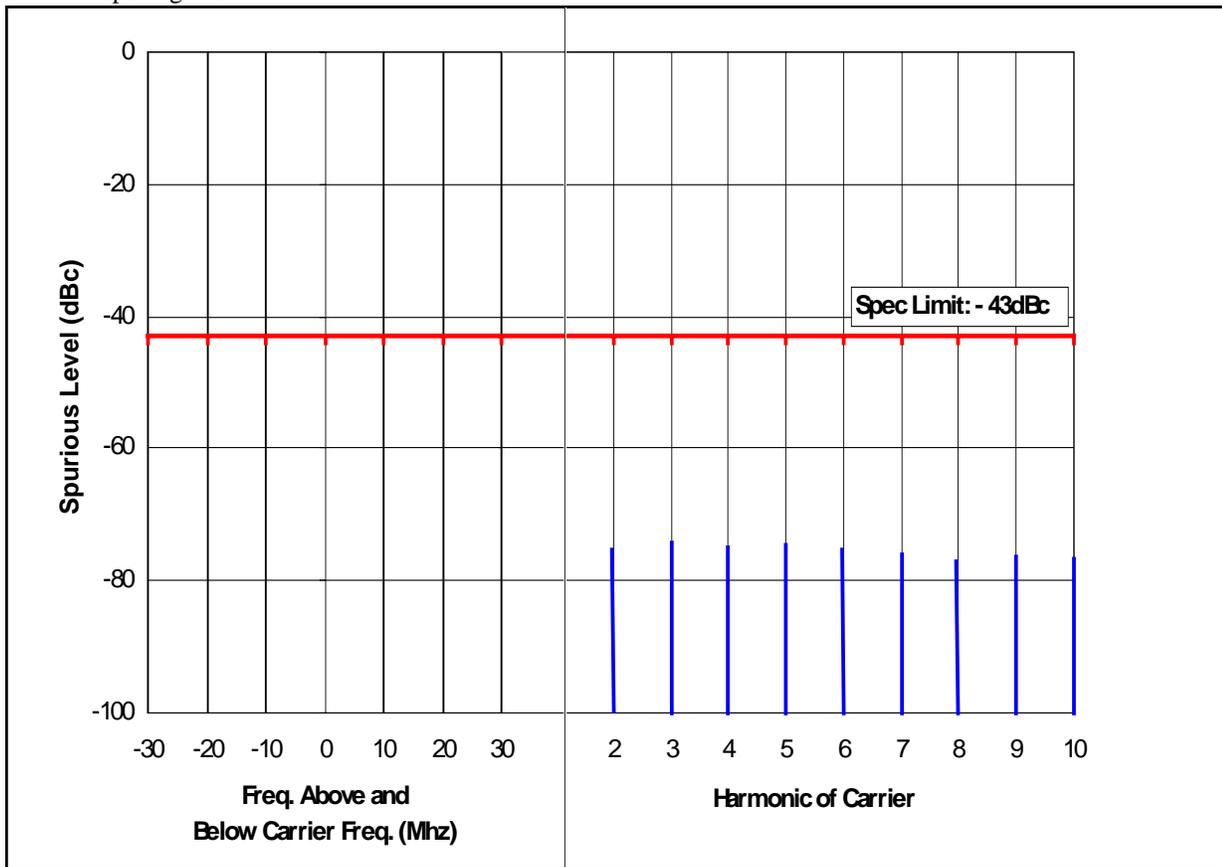
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power Output : 1W at 481.050Mhz.
Channel Spacing : 25KHz.



Note: Other emissions not reported were more than 30dB below the limit

MOTOROLA INC.

**TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS AND HARMONIC EMISSIONS**

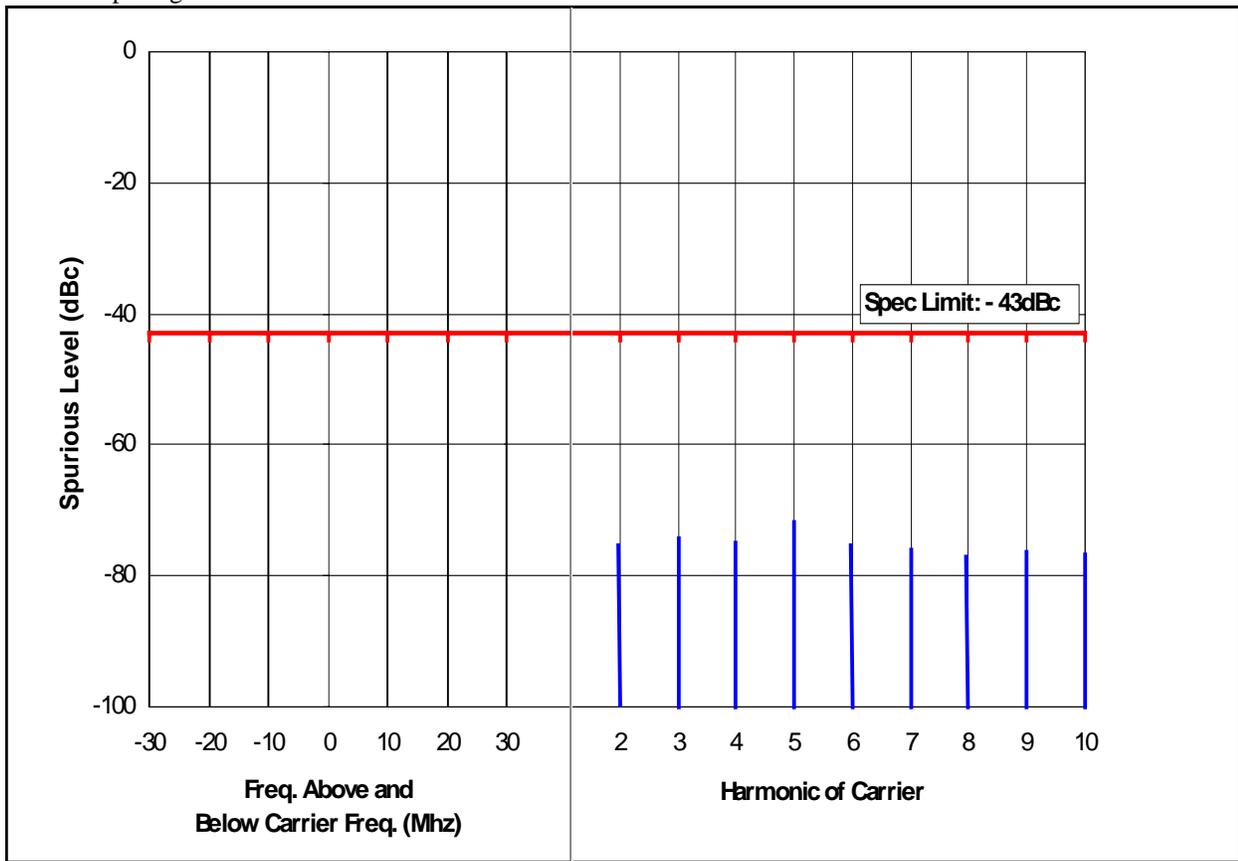
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power Output : 1W at 511.975Mhz.
Channel Spacing : 25KHz.



Note: Other emissions not reported were more than 30dB below the limit

MOTOROLA INC.

**TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS AND HARMONIC EMISSIONS**

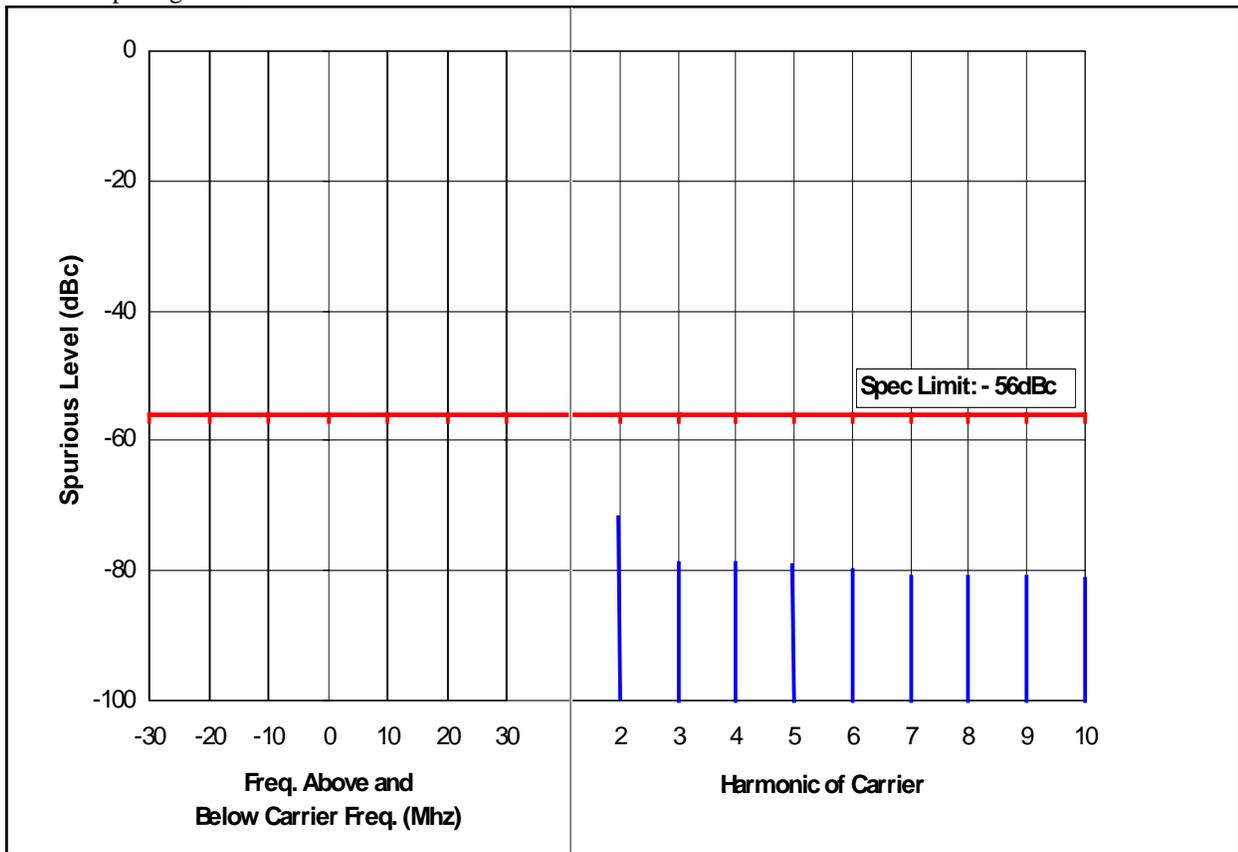
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power Output : 4W at 450.025Mhz.
Channel Spacing : 12.5KHz.



Note: Other emissions not reported were more than 30dB below the limit

MOTOROLA INC.

**TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS AND HARMONIC EMISSIONS**

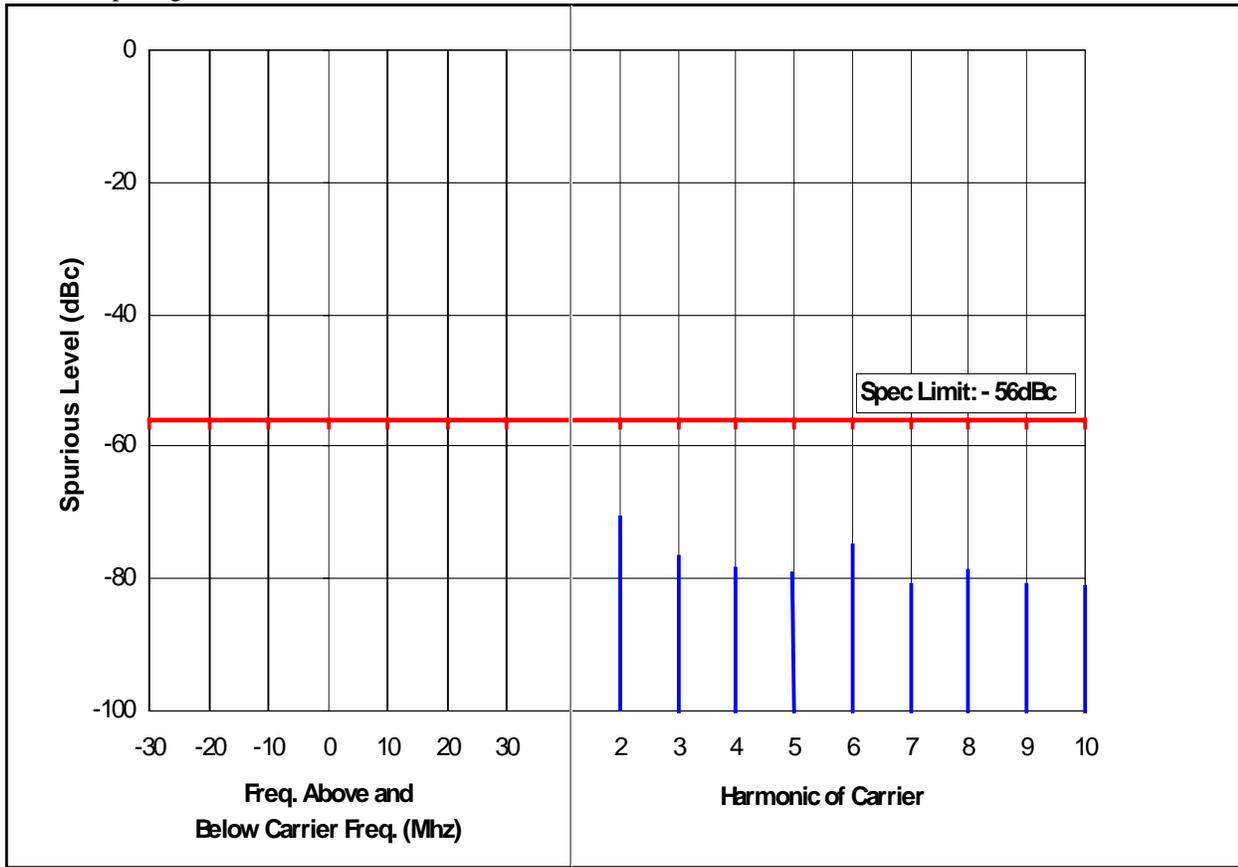
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power Output : 4W at 481.050Mhz.
Channel Spacing : 12.5KHz.



Note: Other emissions not reported were more than 30dB below the limit

MOTOROLA INC.

**TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS AND HARMONIC EMISSIONS**

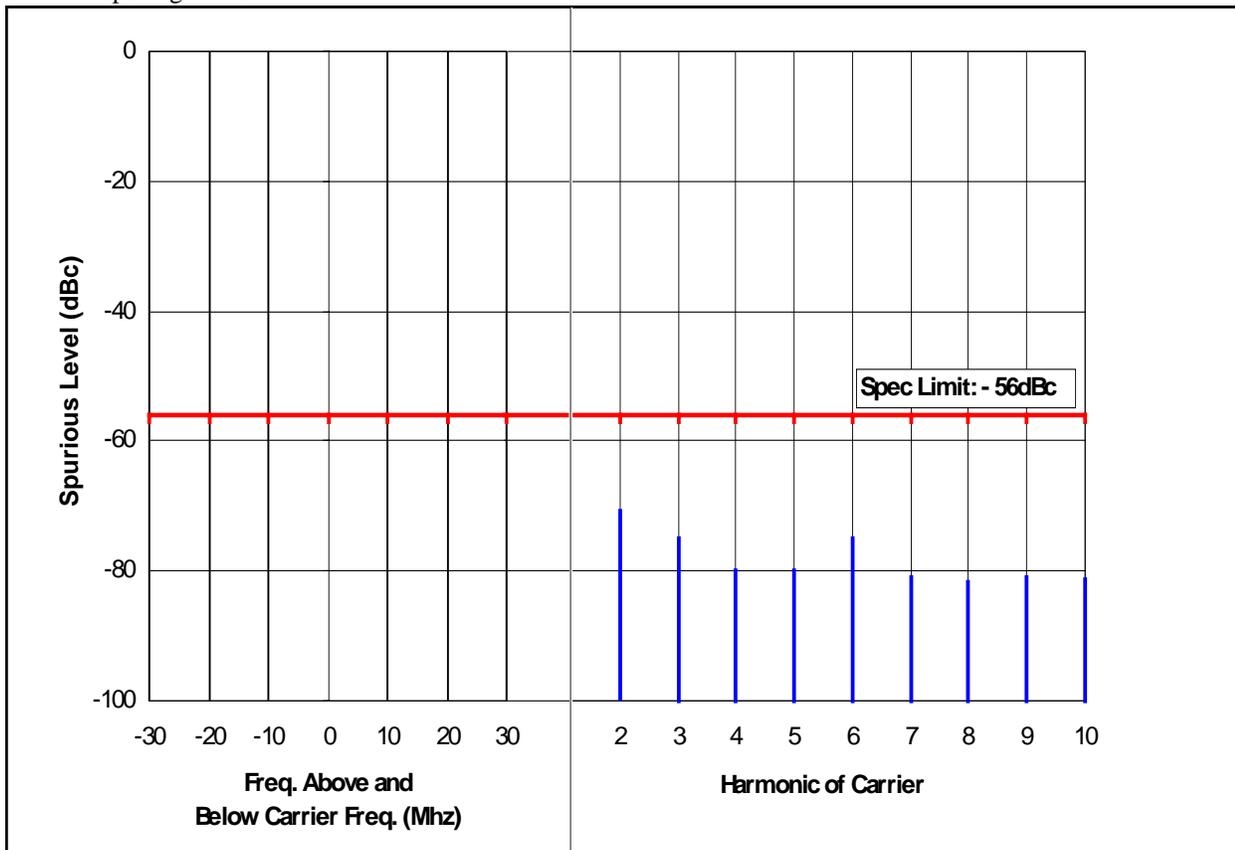
Xmtr Type : AZ489FT4834

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Date : 9th Feb. 1999

Signature : SF Ooi

Power Output : 4W at 511.975Mhz.
Channel Spacing : 12.5KHz.



Note: Other emissions not reported were more than 30dB below the limit

MOTOROLA INC.

**TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS AND HARMONIC EMISSIONS**

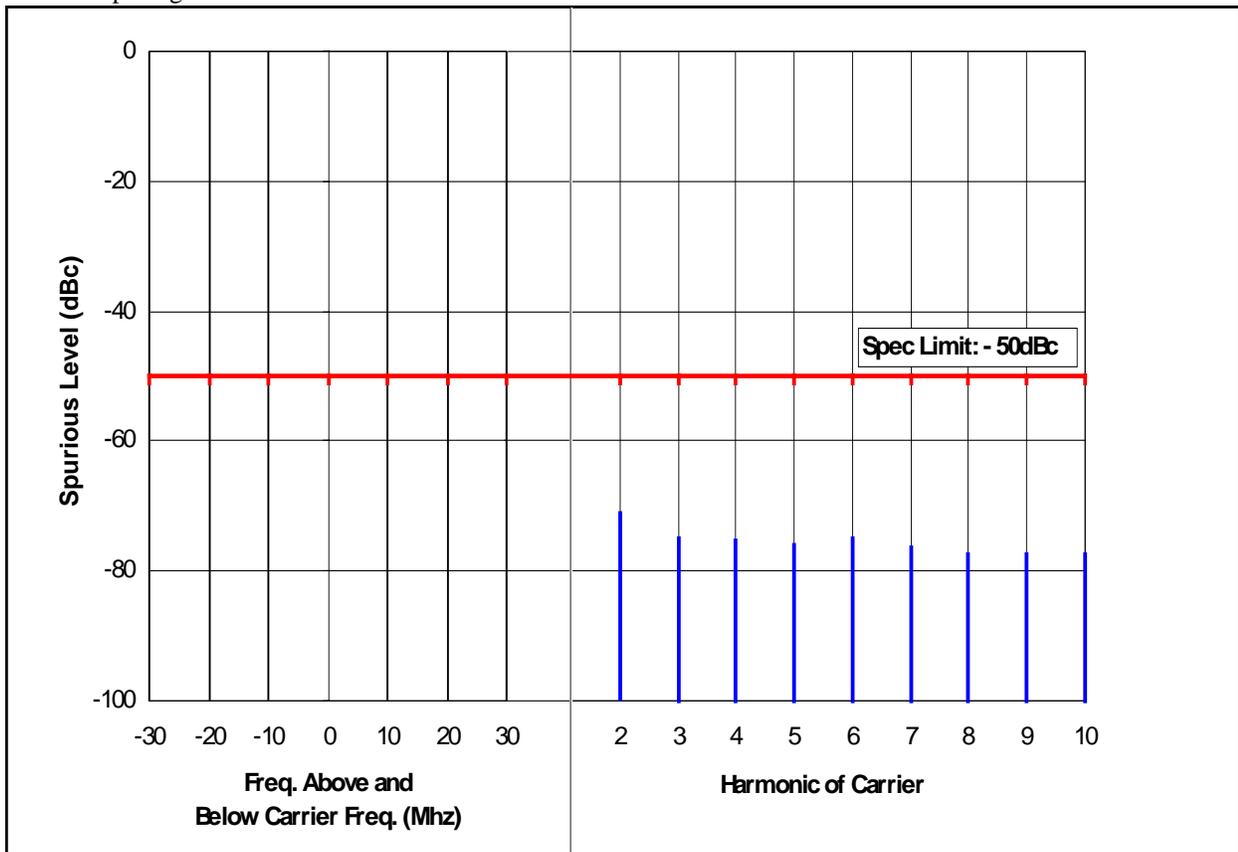
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power Output : 1W at 450.025Mhz.
Channel Spacing : 12.5KHz.



Note: Other emissions not reported were more than 30dB below the limit

MOTOROLA INC.

**TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS AND HARMONIC EMISSIONS**

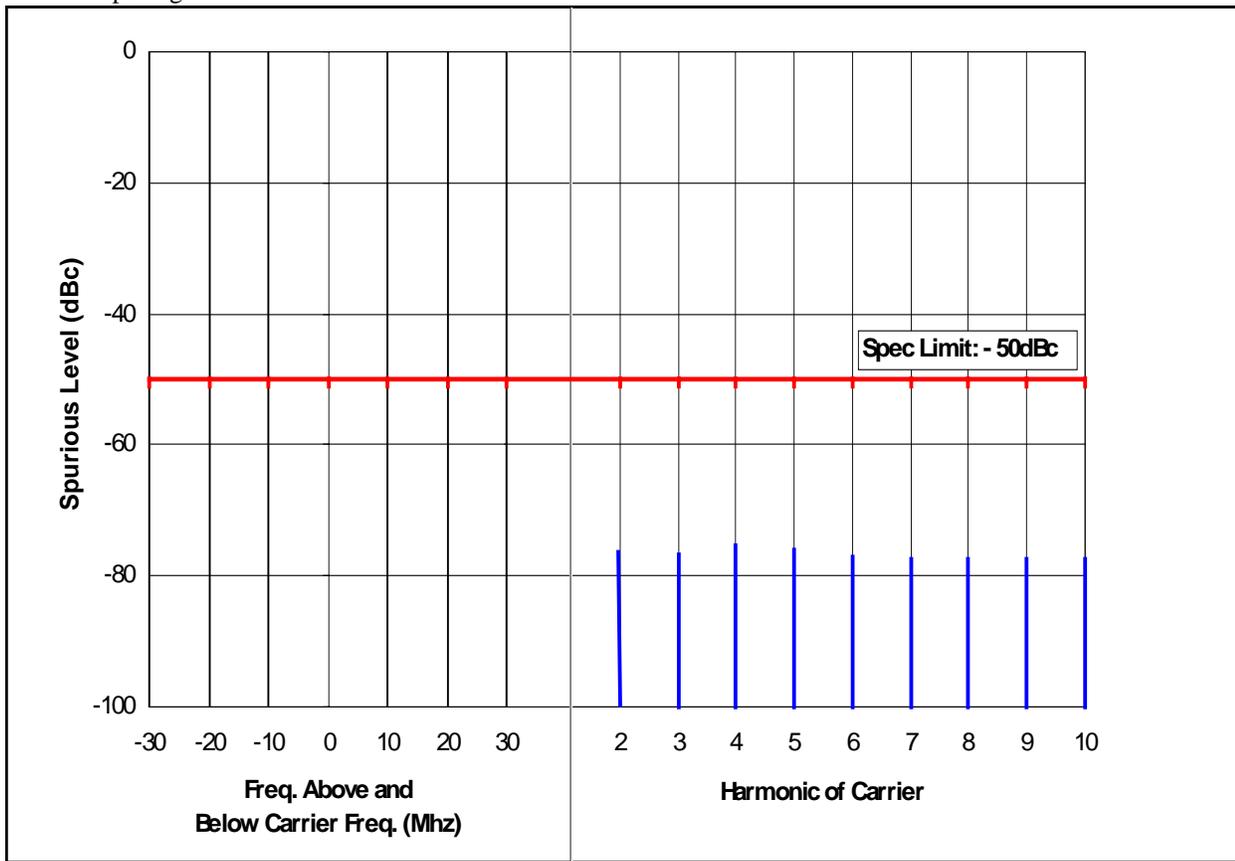
Xmtr Type : AZ489FT4834

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Date : 9th Feb. 1999

Signature : SF Ooi

Power Output : 1W at 481.050Mhz.
Channel Spacing : 12.5KHz.



Note: Other emissions not reported were more than 30dB below the limit

MOTOROLA INC.

**TRANSMITTER SPURIOUS EMISSION CHARACTERISTIC
CONDUCTED SPURIOUS AND HARMONIC EMISSIONS**

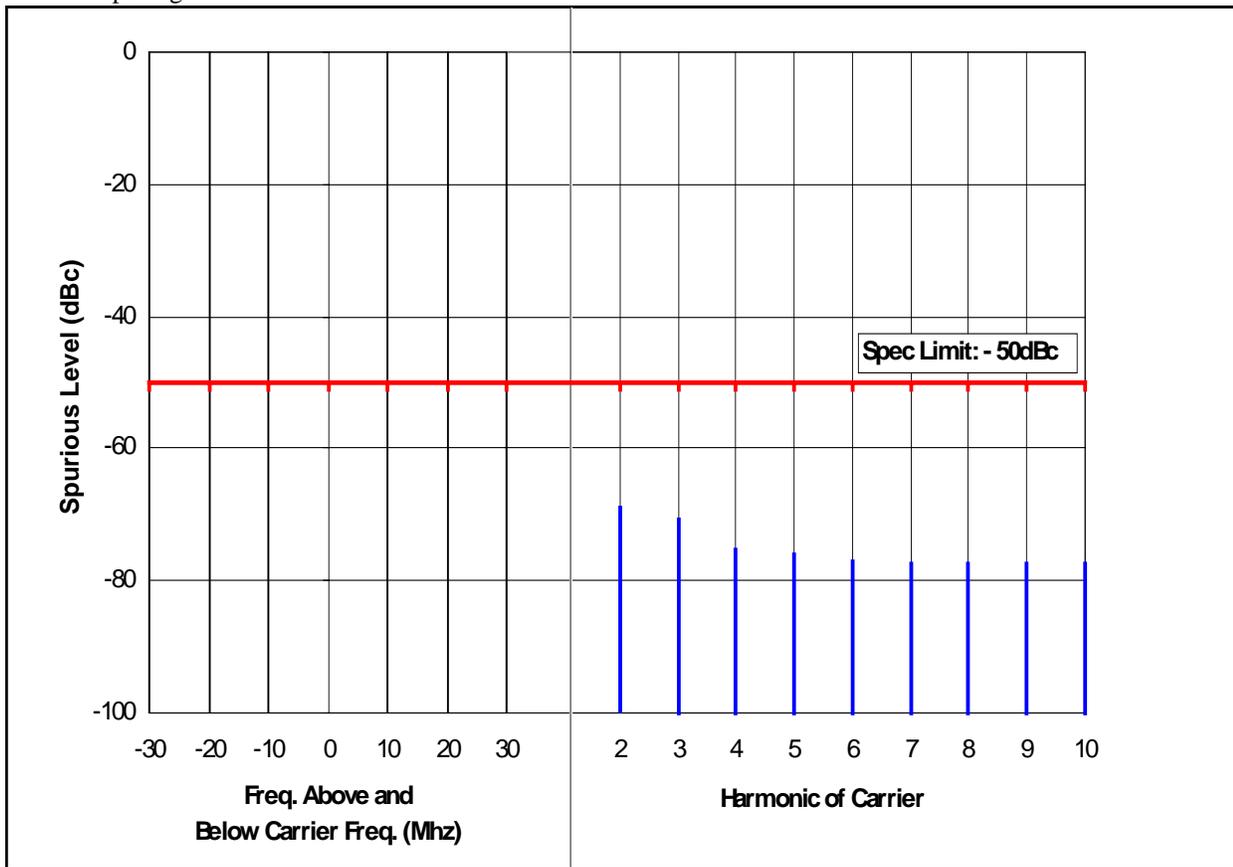
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power Output : 1W at 511.975Mhz.
Channel Spacing : 12.5KHz.

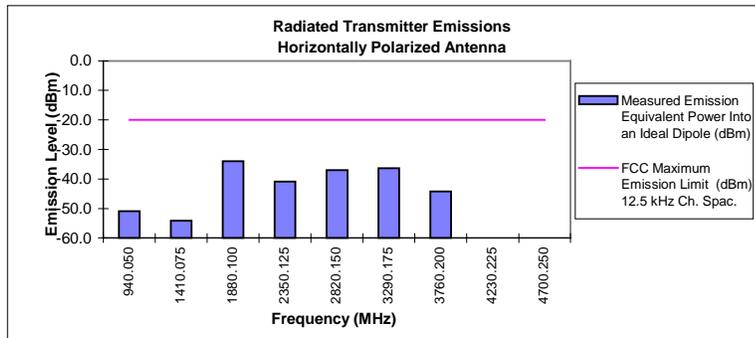


Note: Other emissions not reported were more than 30dB below the limit

Transmitter Radiated Spurious Emissions : UHF Radio 470.025 MHz - High Power (4W) - 12.5 kHz CH. Spacing

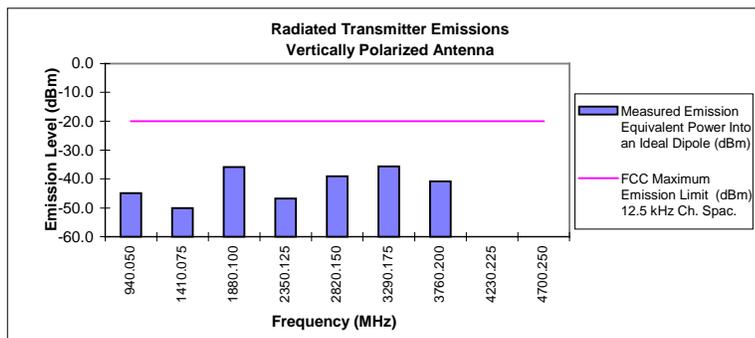
Horizontally Polarized

	Frequency (MHz)	FCC Maximum Emission Limit (dBm) 12.5 kHz Ch. Spac.	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)
2X FUND	940.050	-20	-50.9
3X FUND	1410.075	-20	-54.1
4X FUND	1880.100	-20	-34.0
5X FUND	2350.125	-20	-40.9
6X FUND	2820.150	-20	-37.0
7X FUND	3290.175	-20	-36.3
8X FUND	3760.200	-20	-44.2
9X FUND	4230.225	-20	*
10XFUND	4700.250	-20	*



Vertically polarized

	Frequency (MHz)	FCC Maximum Emission Limit (dBm) 12.5 kHz Ch. Spac.	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)
2X FUND	940.050	-20	-44.9
3X FUND	1410.075	-20	-50.1
4X FUND	1880.100	-20	-35.9
5X FUND	2350.125	-20	-46.7
6X FUND	2820.150	-20	-39.0
7X FUND	3290.175	-20	-35.6
8X FUND	3760.200	-20	-40.8
9X FUND	4230.225	-20	*
10XFUND	4700.250	-20	*

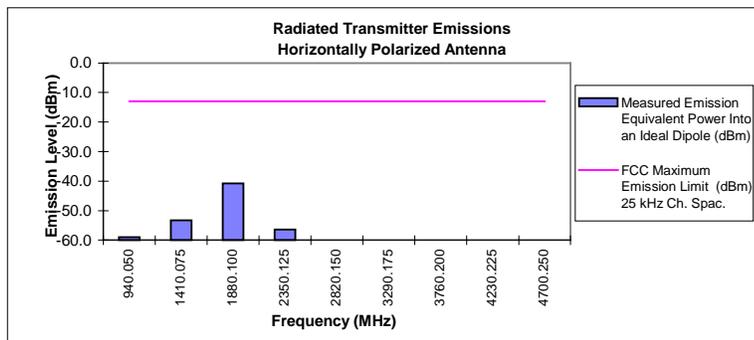


* Indicates the spurious emission was less than -60dBm or could not be detected due to noise limitations or ambients.

Transmitter Radiated Spurious Emissions : UHF Radio 470.025 MHz - Low Power (1W) - 25 kHz CH. Spacing

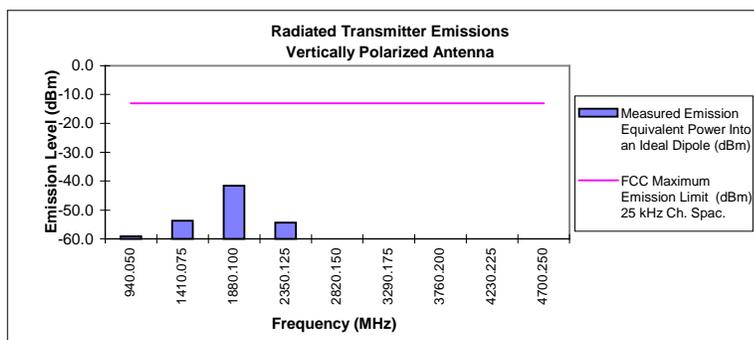
Horizontally Polarized

	Frequency (MHz)	FCC Maximum Emission Limit (dBm) 25 kHz Ch. Spac.	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)
2X FUND	940.050	-13	-59.0
3X FUND	1410.075	-13	-53.3
4X FUND	1880.100	-13	-40.8
5X FUND	2350.125	-13	-56.4
6X FUND	2820.150	-13	*
7X FUND	3290.175	-13	*
8X FUND	3760.200	-13	*
9X FUND	4230.225	-13	*
10XFUND	4700.250	-13	*



Vertically polarized

	Frequency (MHz)	FCC Maximum Emission Limit (dBm) 25 kHz Ch. Spac.	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)
2X FUND	940.050	-13	-59.1
3X FUND	1410.075	-13	-53.7
4X FUND	1880.100	-13	-41.6
5X FUND	2350.125	-13	-54.4
6X FUND	2820.150	-13	*
7X FUND	3290.175	-13	*
8X FUND	3760.200	-13	*
9X FUND	4230.225	-13	*
10XFUND	4700.250	-13	*

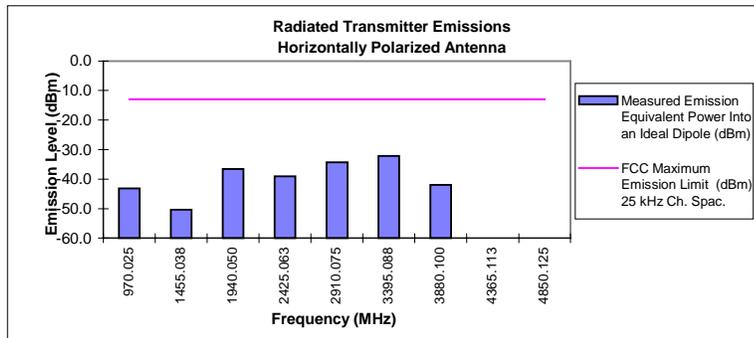


* Indicates the spurious emission was less than -60dBm or could not be detected due to noise limitations or ambients.

Transmitter Radiated Spurious Emissions : UHF Radio 485.0125 MHz - High Power (4W) - 25 kHz CH. Spacing

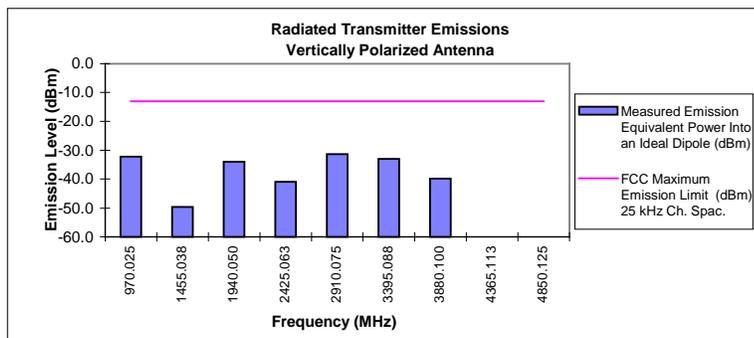
Horizontally Polarized

	Frequency (MHz)	FCC Maximum Emission Limit (dBm) 25 kHz Ch. Spac.	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)
2X FUND	970.025	-13	-43.2
3X FUND	1455.038	-13	-50.4
4X FUND	1940.050	-13	-36.6
5X FUND	2425.063	-13	-39.1
6X FUND	2910.075	-13	-34.3
7X FUND	3395.088	-13	-32.2
8X FUND	3880.100	-13	-41.9
9X FUND	4365.113	-13	*
10XFUND	4850.125	-13	*



Vertically polarized

	Frequency (MHz)	FCC Maximum Emission Limit (dBm) 25 kHz Ch. Spac.	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)
2X FUND	970.025	-13	-32.2
3X FUND	1455.038	-13	-49.6
4X FUND	1940.050	-13	-34.0
5X FUND	2425.063	-13	-40.9
6X FUND	2910.075	-13	-31.3
7X FUND	3395.088	-13	-33.0
8X FUND	3880.100	-13	-39.8
9X FUND	4365.113	-13	*
10XFUND	4850.125	-13	*

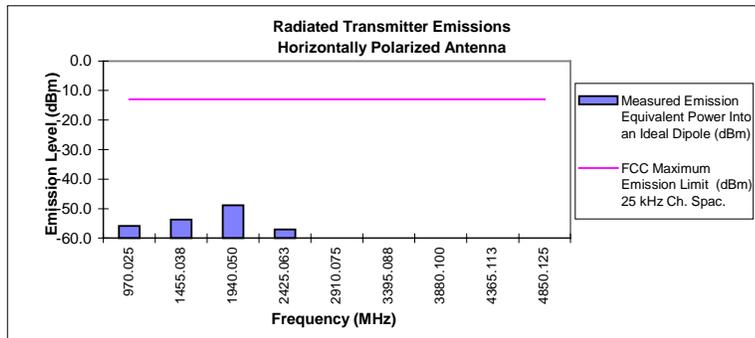


* Indicates the spurious emission was less than -60dBm or could not be detected due to noise limitations or ambients.

Transmitter Radiated Spurious Emissions : UHF Radio 485.0125 MHz - Low Power (1W) - 25 kHz CH. Spacing

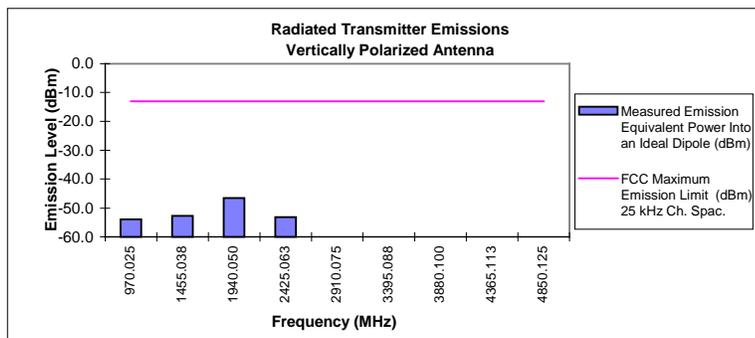
Horizontally Polarized

	Frequency (MHz)	FCC Maximum Emission Limit (dBm) 25 kHz Ch. Spac.	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)
2X FUND	970.025	-13	-55.8
3X FUND	1455.038	-13	-53.7
4X FUND	1940.050	-13	-48.8
5X FUND	2425.063	-13	-57.1
6X FUND	2910.075	-13	*
7X FUND	3395.088	-13	*
8X FUND	3880.100	-13	*
9X FUND	4365.113	-13	*
10XFUND	4850.125	-13	*



Vertically polarized

	Frequency (MHz)	FCC Maximum Emission Limit (dBm) 25 kHz Ch. Spac.	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)
2X FUND	970.025	-13	-54.0
3X FUND	1455.038	-13	-52.7
4X FUND	1940.050	-13	-46.6
5X FUND	2425.063	-13	-53.2
6X FUND	2910.075	-13	*
7X FUND	3395.088	-13	*
8X FUND	3880.100	-13	*
9X FUND	4365.113	-13	*
10XFUND	4850.125	-13	*

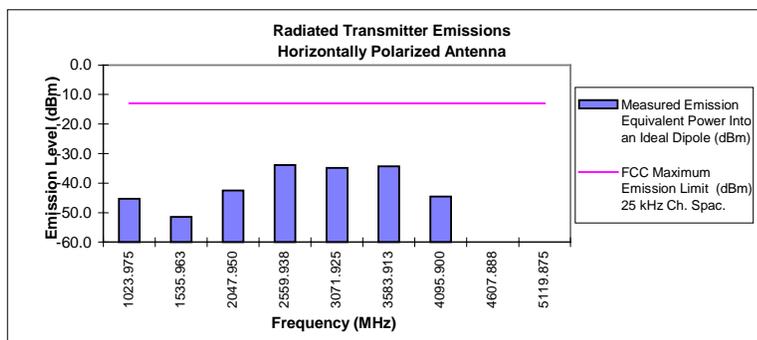


* Indicates the spurious emission was less than -60dBm or could not be detected due to noise limitations or ambients.

Transmitter Radiated Spurious Emissions : UHF Radio 511.9875 MHz - High Power (4W) - 25 kHz CH. Spacing

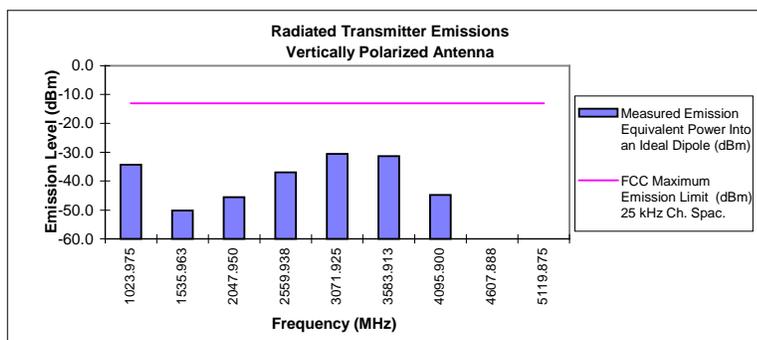
Horizontally Polarized

	Frequency (MHz)	FCC Maximum Emission Limit (dBm) 25 kHz Ch. Spac.	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)
2X FUND	1023.975	-13	-45.3
3X FUND	1535.963	-13	-51.4
4X FUND	2047.950	-13	-42.5
5X FUND	2559.938	-13	-33.9
6X FUND	3071.925	-13	-34.8
7X FUND	3583.913	-13	-34.3
8X FUND	4095.900	-13	-44.5
9X FUND	4607.888	-13	*
10XFUND	5119.875	-13	*



Vertically polarized

	Frequency (MHz)	FCC Maximum Emission Limit (dBm) 25 kHz Ch. Spac.	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)
2X FUND	1023.975	-13	-34.3
3X FUND	1535.963	-13	-50.2
4X FUND	2047.950	-13	-45.5
5X FUND	2559.938	-13	-37.0
6X FUND	3071.925	-13	-30.6
7X FUND	3583.913	-13	-31.4
8X FUND	4095.900	-13	-44.7
9X FUND	4607.888	-13	*
10XFUND	5119.875	-13	*

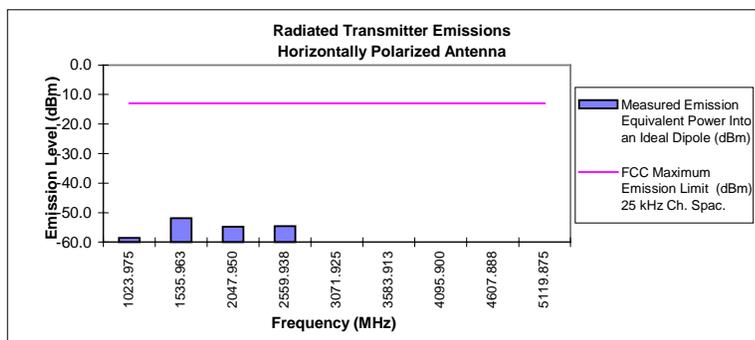


* Indicates the spurious emission was less than -60dBm or could not be detected due to noise limitations or ambients.

Transmitter Radiated Spurious Emissions : UHF Radio 511.9875 MHz - Low Power (1W) - 25 kHz CH. Spacing

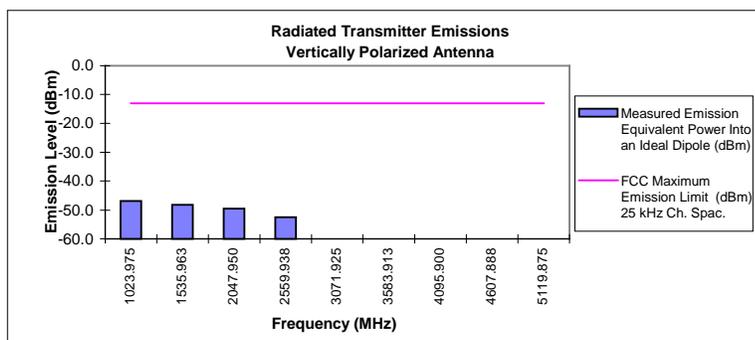
Horizontally Polarized

	Frequency (MHz)	FCC Maximum Emission Limit (dBm) 25 kHz Ch. Spac.	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)
2X FUND	1023.975	-13	-58.5
3X FUND	1535.963	-13	-51.9
4X FUND	2047.950	-13	-54.8
5X FUND	2559.938	-13	-54.6
6X FUND	3071.925	-13	*
7X FUND	3583.913	-13	*
8X FUND	4095.900	-13	*
9X FUND	4607.888	-13	*
10XFUND	5119.875	-13	*



Vertically polarized

	Frequency (MHz)	FCC Maximum Emission Limit (dBm) 25 kHz Ch. Spac.	Measured Emission Equivalent Power Into an Ideal Dipole (dBm)
2X FUND	1023.975	-13	-46.8
3X FUND	1535.963	-13	-48.2
4X FUND	2047.950	-13	-49.5
5X FUND	2559.938	-13	-52.5
6X FUND	3071.925	-13	*
7X FUND	3583.913	-13	*
8X FUND	4095.900	-13	*
9X FUND	4607.888	-13	*
10XFUND	5119.875	-13	*



* Indicates the spurious emission was less than -60dBm or could not be detected due to noise limitations or ambients.

MOTOROLA INC.

**CRYSTAL OSCILLATOR STABILITY CHARACTERISTIC
FREQUENCY vs. TEMPERATURE**

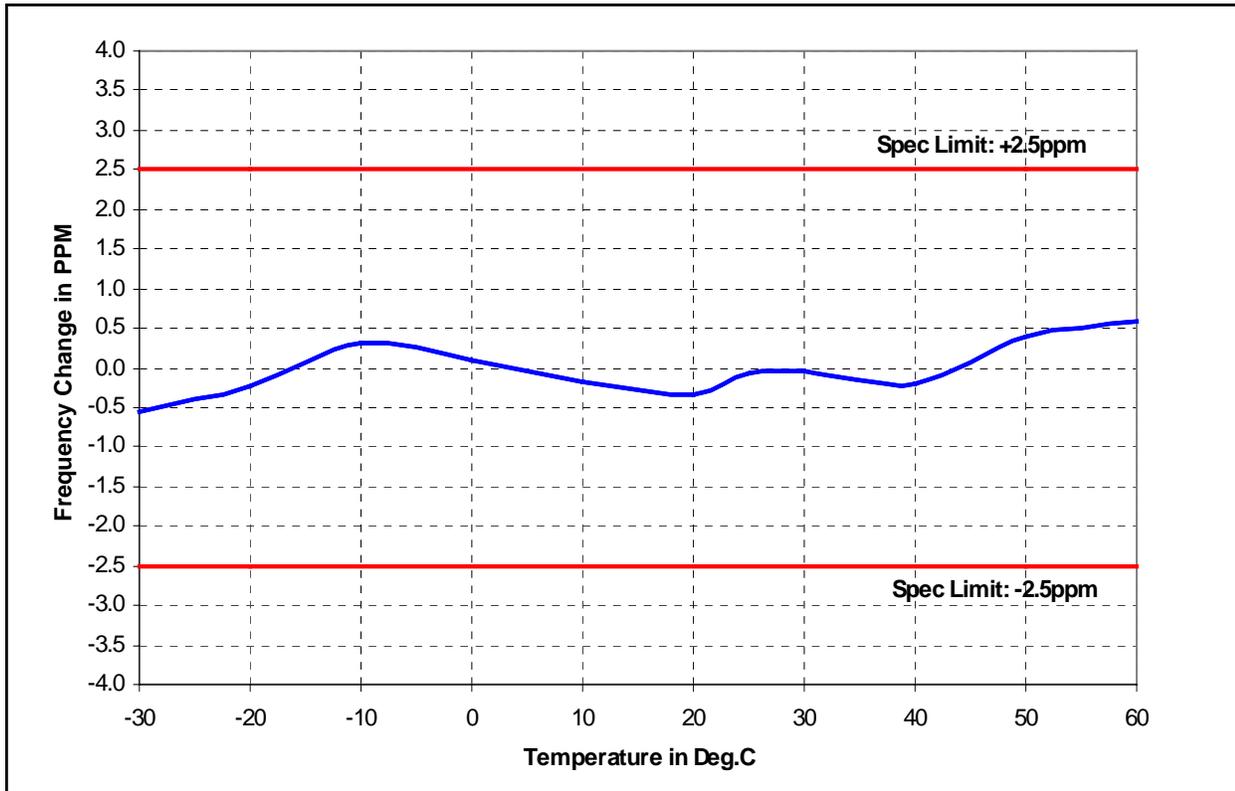
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

FREQ : 481.050MHZ.



MOTOROLA INC.

**STABILITY CHARACTERISTIC
FREQUENCY vs. VOLTAGE**

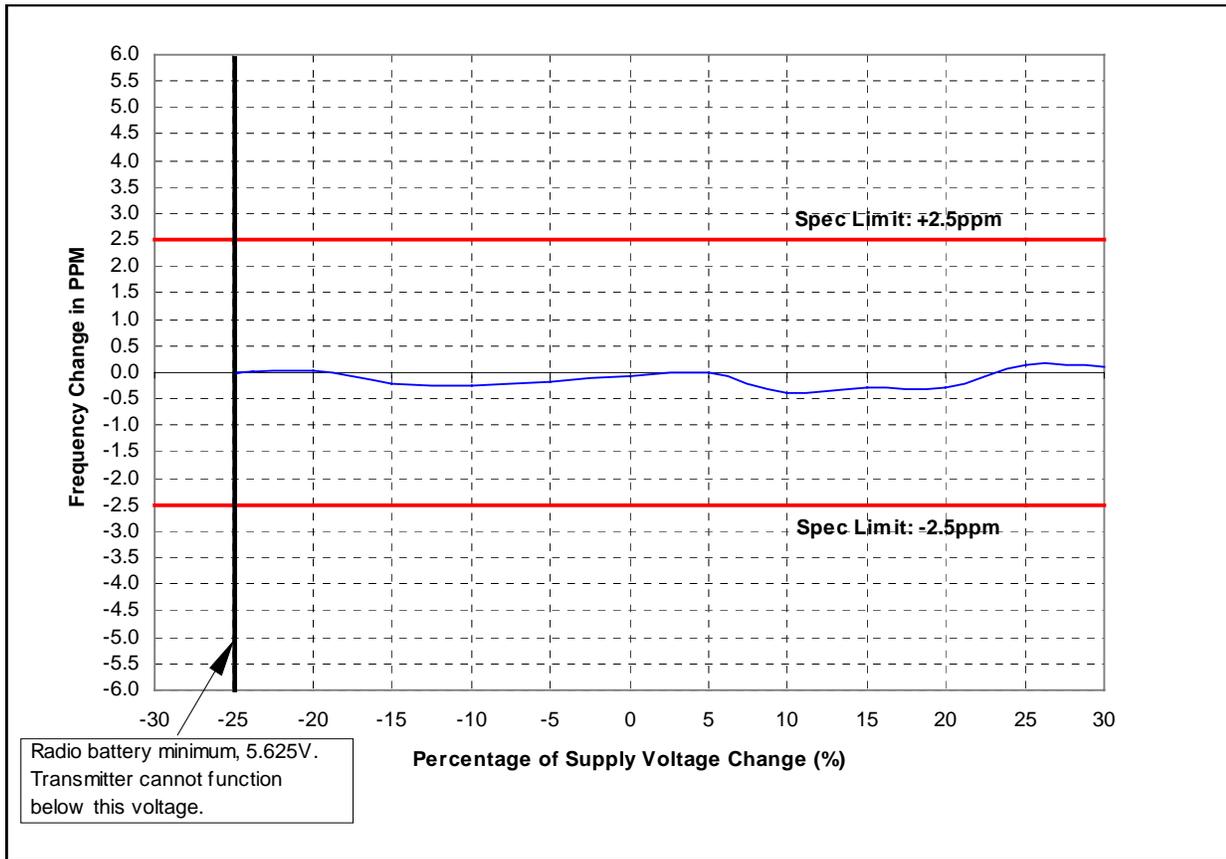
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

FREQ : 481.050MHZ



MOTOROLA INC.

TRANSIENT FREQUENCY BEHAVIOR

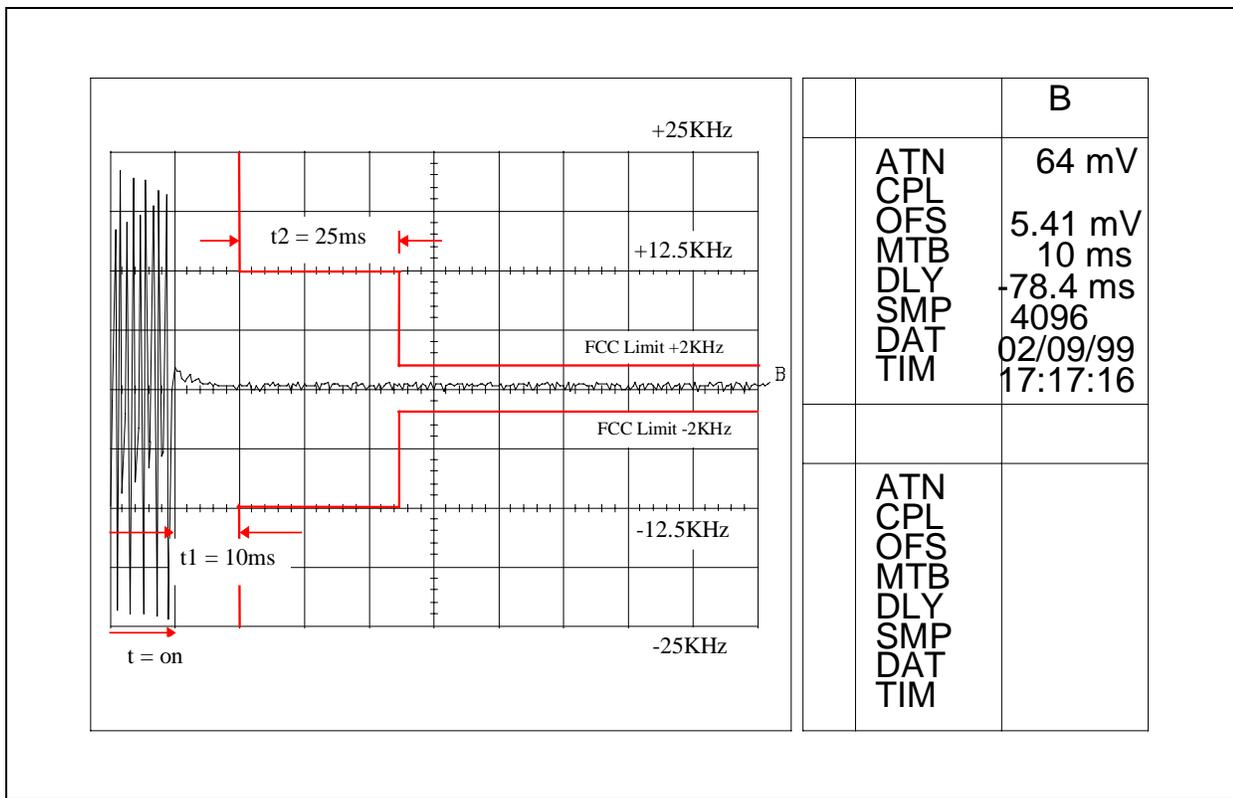
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power : 4W at 481.050Mhz.
 Channel Spacing : 25KHz.
 Switch - On Condition



MOTOROLA INC.

TRANSIENT FREQUENCY BEHAVIOR

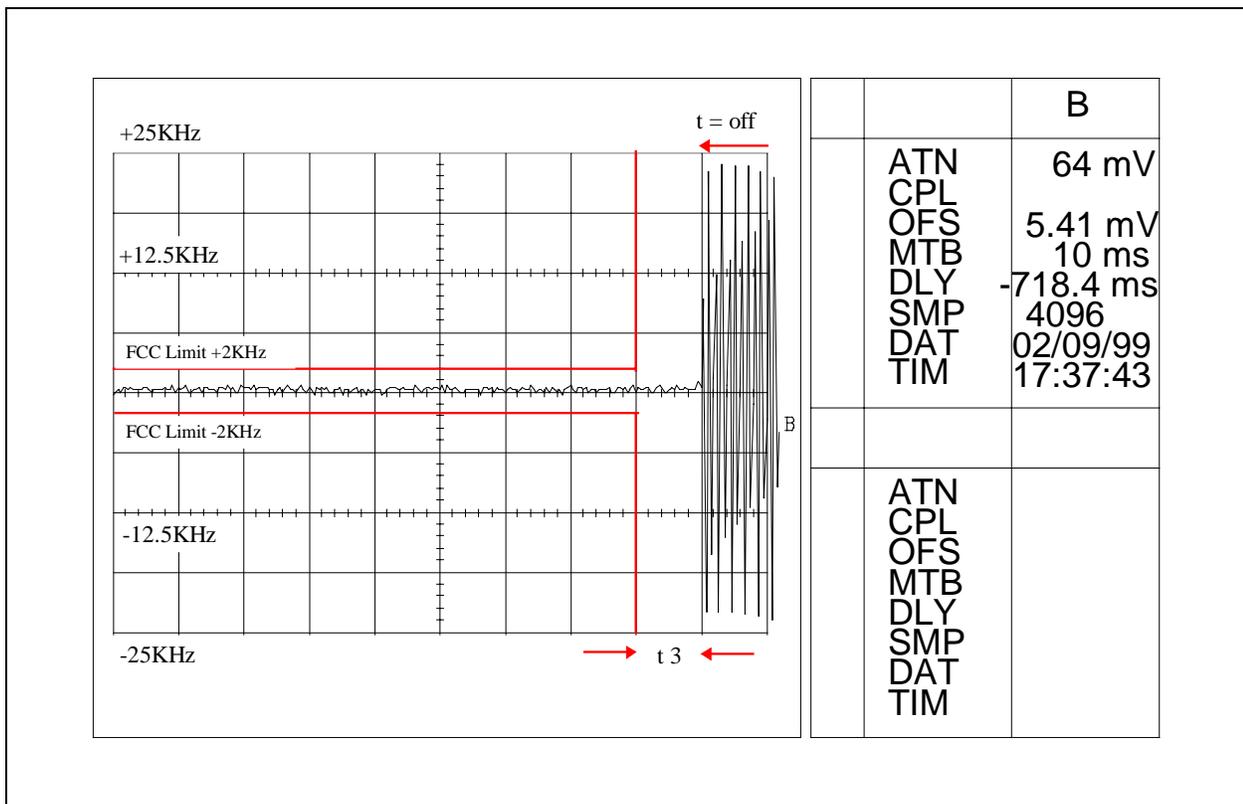
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power : 4W at 481.050Mhz.
 Channel Spacing : 25KHz.
 Switch - Off Condition



MOTOROLA INC.

TRANSIENT FREQUENCY BEHAVIOR

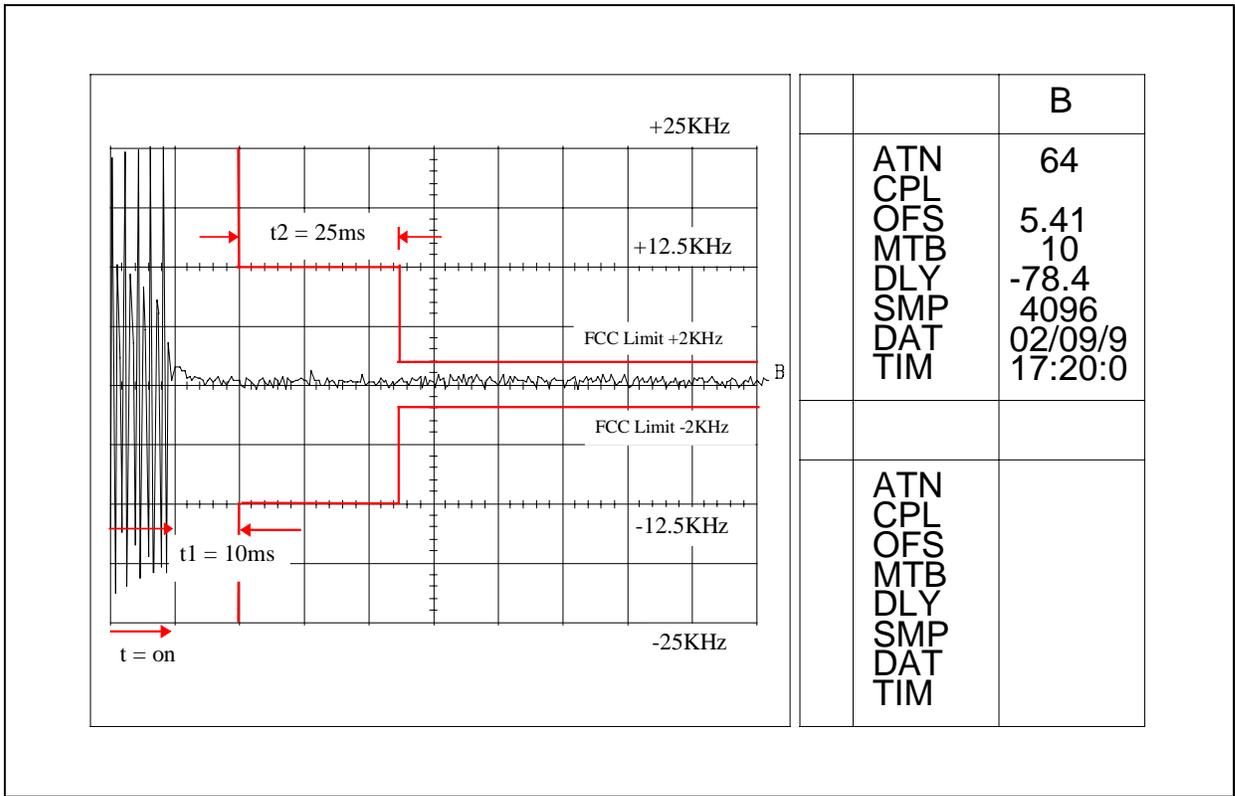
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power : 1W at 481.050Mhz.
 Channel Spacing : 25KHz
 Switch - On Condition



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TRANSIENT FREQUENCY BEHAVIOR

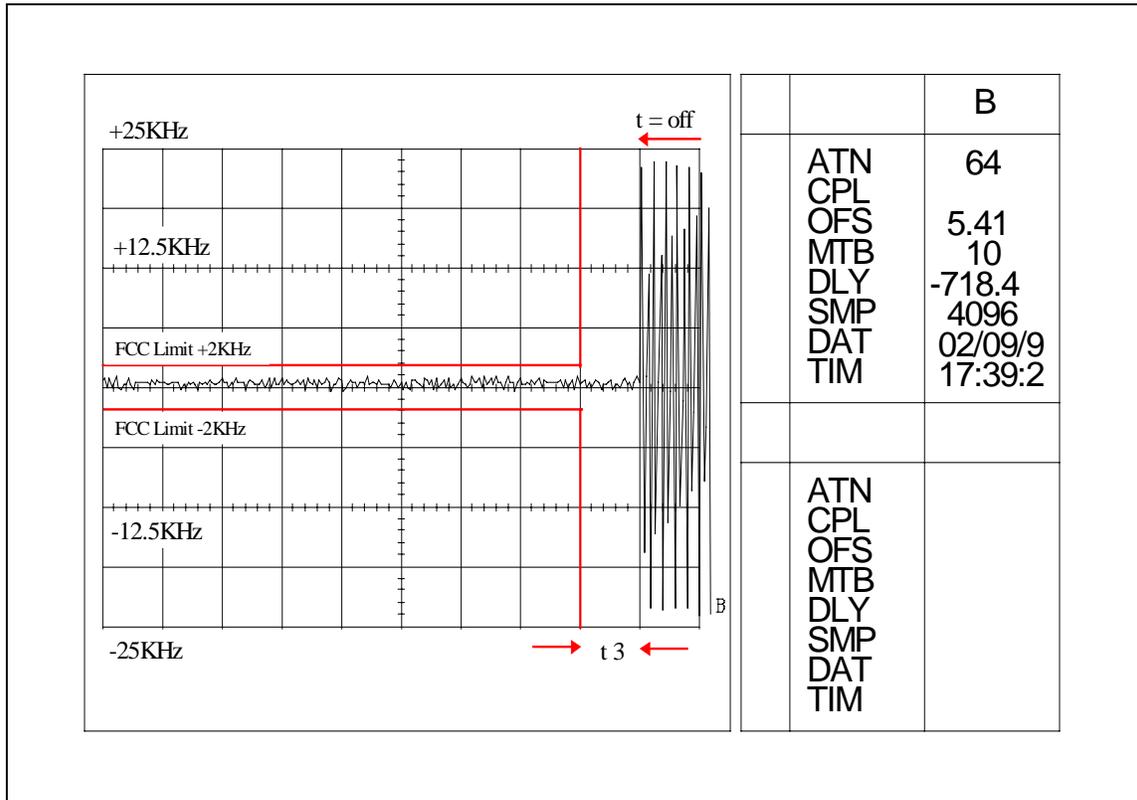
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power : 1W at 481.050Mhz.
 Channel Spacing : 25KHz
 Switch - Off Condition



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TRANSIENT FREQUENCY BEHAVIOR

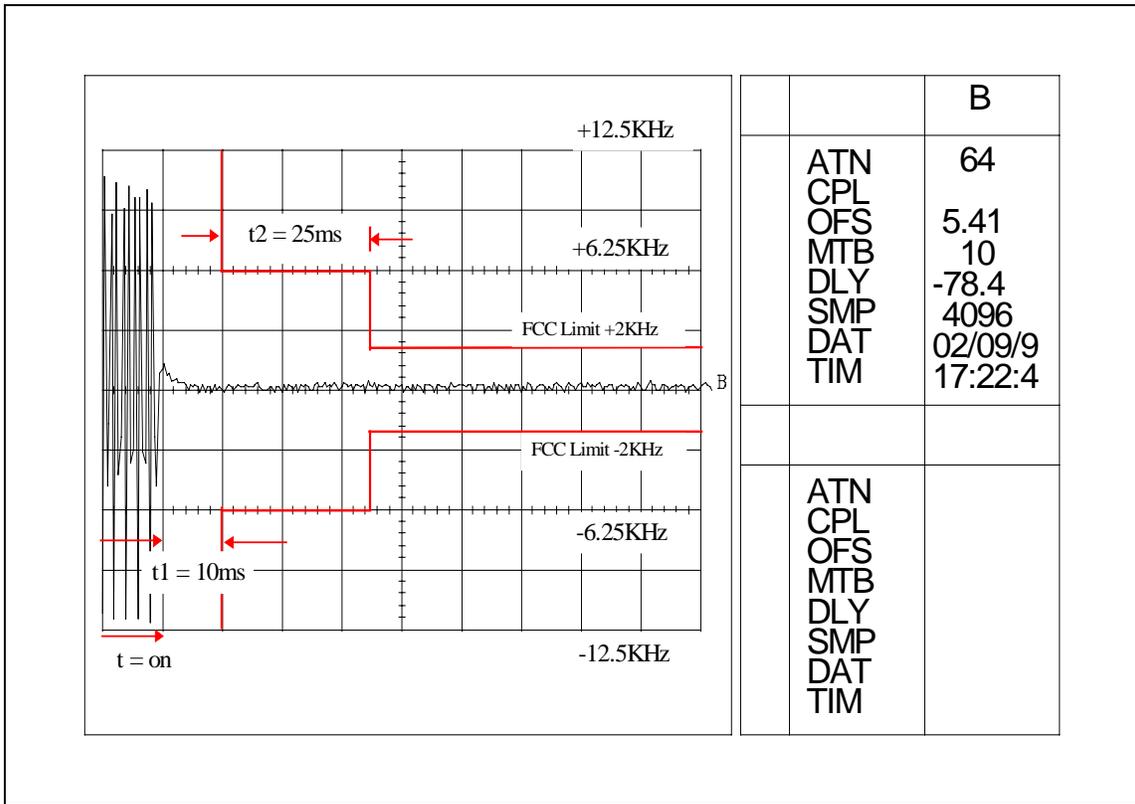
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power : 4W at 481.050Mhz.
 Channel Spacing : 12.5KHz
 Switch - On Condition



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TRANSIENT FREQUENCY BEHAVIOR

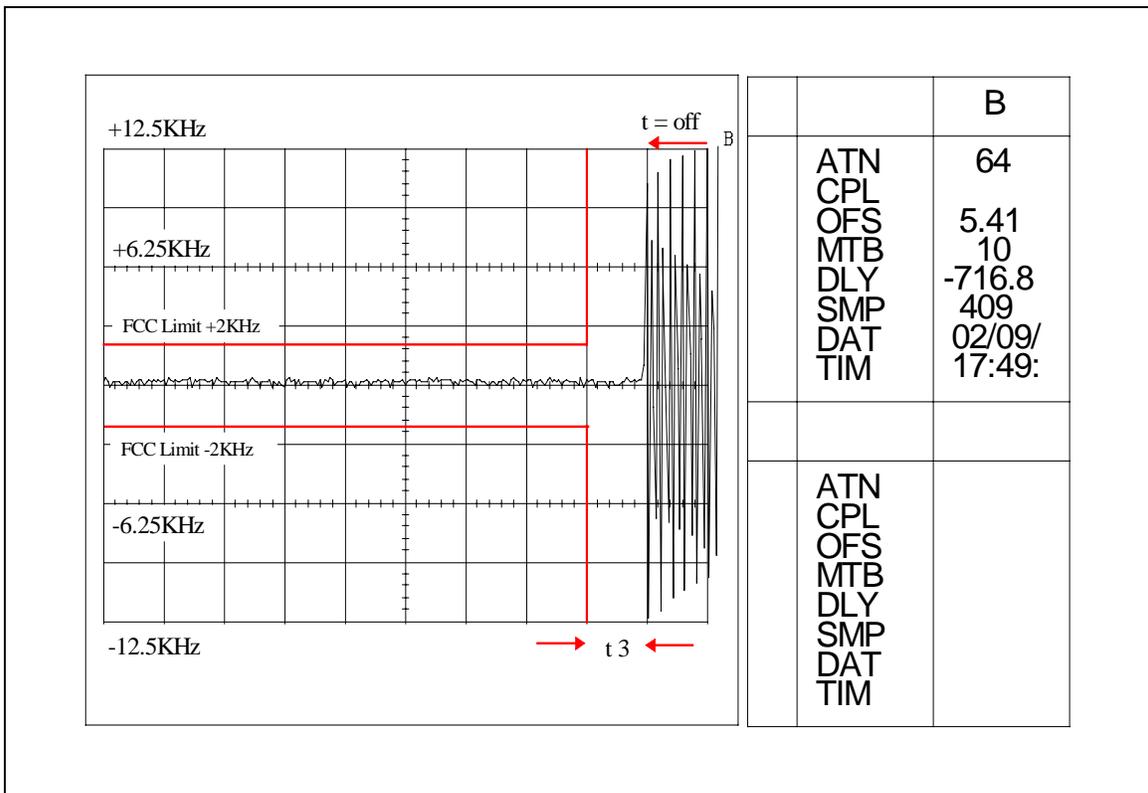
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power : 4W at 481.050Mhz.
 Channel Spacing : 12.5KHz
 Switch - Off Condition



MOTOROLA INC.

TRANSIENT FREQUENCY BEHAVIOR

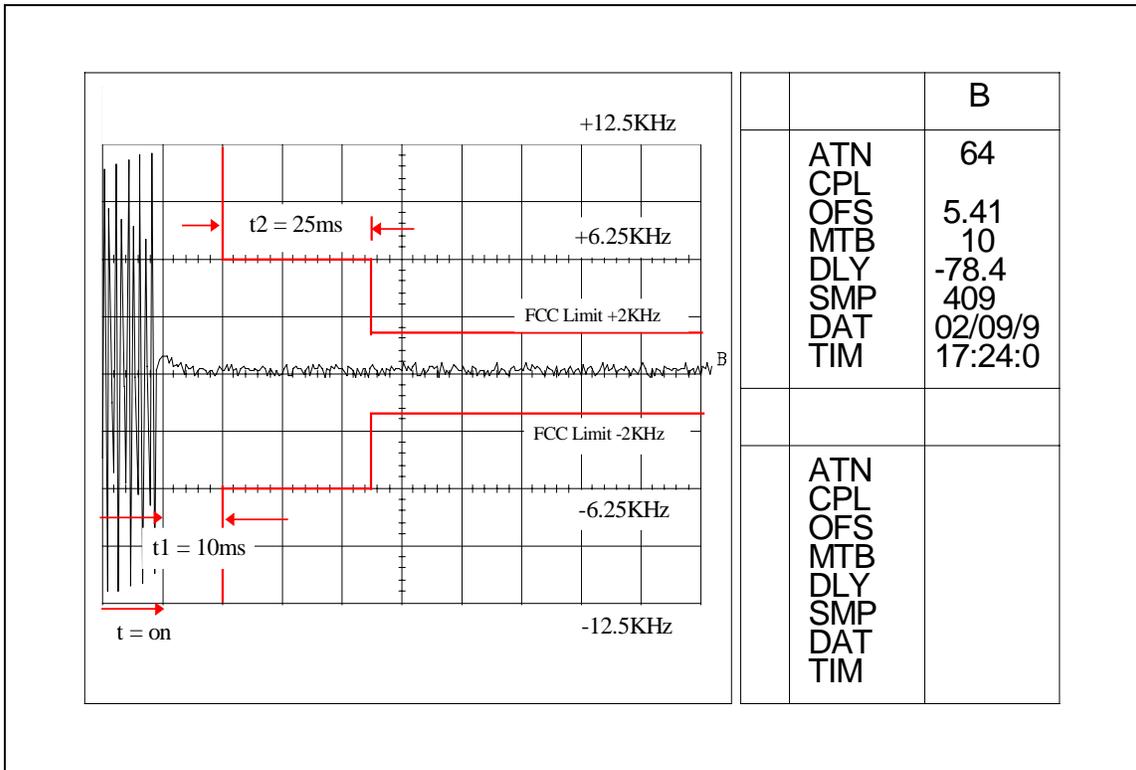
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power : 1W at 481.050Mhz.
 Channel Spacing : 12.5 kHz
 Switch - On Condition



MOTOROLA INC.

TRANSIENT FREQUENCY BEHAVIOR

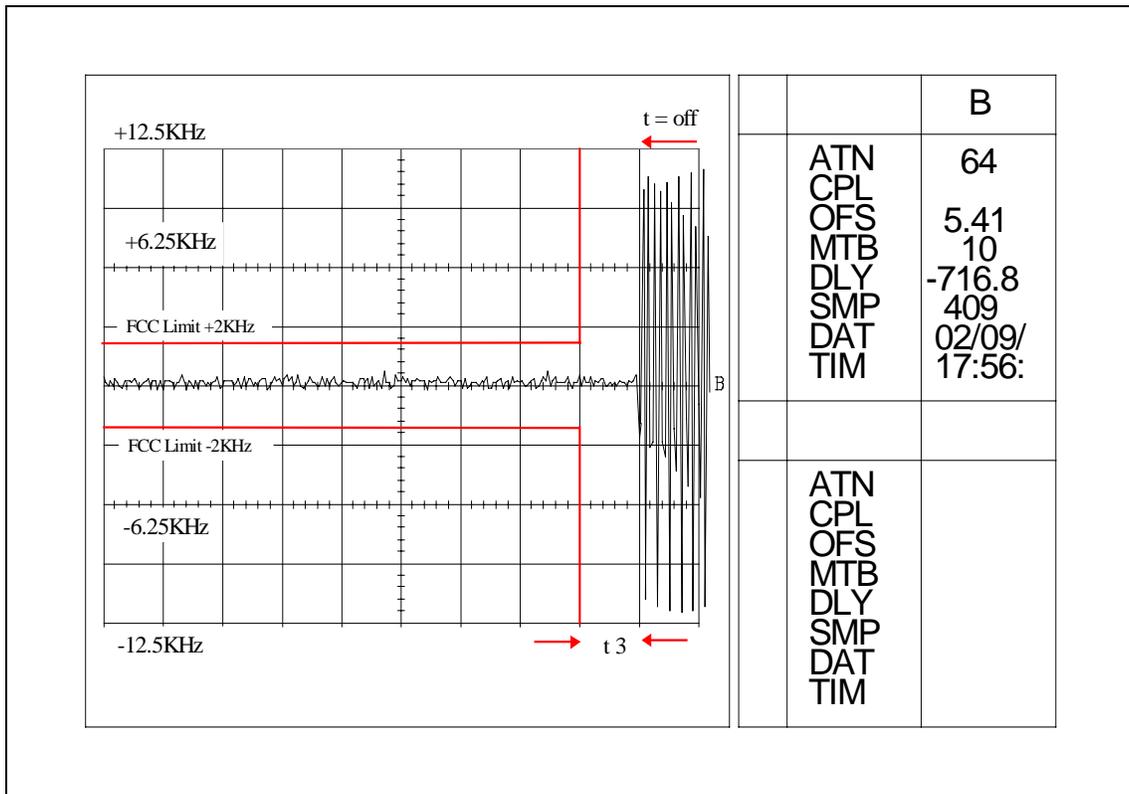
Xmtr Type : AZ489FT4834

Log Page : ---

Date : 9th Feb. 1999

Signature : SF Ooi

Power : 1W at 481.050Mhz.
 Channel Spacing : 12.5KHz
 Switch - Off Condition



List Of Test Equipment Used

Transmitter Frequency:

HP8901B Modulation Analyzer

Temperature Measurement:

HP8901B Modulation Analyzer

HP8482B Power Sensor and 30dB Attenuator

DC Voltage and Currents:

HP6623A Power Supply

HP34401A Digital Multimeter

Deviation:

HP8901B Modulation Analyzer

Transmitter Conducted Spurious and Harmonic Emissions:

HP8561B Spectrum Analyzer

MiniCircuit NHP-300 High Pass Filter

Transmitter Occupied Bandwidth:

HP8561A Spectrum Analyzer

Transient Frequency Behavior:

PHILIPS PM3382 Digital Storage Oscilloscope

NADAR Bi-Directional Coaxial Coupler

HP8657A Signal Generator

HP8901B Modulation Analyzer

WAVETEK Negative RF Detector

30dB Attenuator

MEASUREMENT DIV. Combiner

PANASONIC KX-P1124 Printer

Radiated Spurious and Harmonic Emissions:

HP 8566A Spectrum Analyzer

HP8665B Sweep Oscillator

EMCO 3121C-DB4 Tuned Dipole Antenna (400 - 1000 Mhz)

EMCO 3147 Log Periodic Antenna (200 - 5000 Mhz)

EMCO 3104C Biconical Antenna (20 - 200 Mhz)

Weinschel Engineering 50-ohms, 20 - watts load

The calibration of this equipment is performed at regular intervals.

Measurement Procedures Used for Submitted Data

1) RF Power Vs. DC Power Input (FCC Rules Part 2.985)

The transmitter is operated under normal conditions at the specified nominal DC input voltage. The antenna output is terminated in 50 ohms. The DC supply path to the final stage only is interrupted to allow insertion of the a DC ammeter in series with the DC supply. The DC voltage drop of the ammeter is negligible. A DC voltmeter is computed as the product of the DC current (in amps) times the DC voltage (in volts). This measurement is performed at the upper and lower limits of the frequency range. At each frequency, the measurement is performed at the upper and lower limits of the specified adjustable power range.

2) Transmitter Audio Frequency Response (FCC Rules Part 2.987(a))

An audio oscillator is connected to the microphone audio input of the transmitter. At a frequency of 1khz, the level is adjusted to obtain 20% of full system deviation, to ensure that limiting does not occur at any frequency in the 300 - 3000 Hz range. A constant input level is then maintained and the oscillator frequency is varied between the range of 100 Hz. to 100Kz. The transmitter output is monitored with an HP8901B modulation analyzer, whose FM demodulator output is monitored with an audio analyzer. De-emphasis or filtering within the test equipment is not used. The audio oscillator signal is derived from the HP8903B audio analyzer. This response measurements is linear at all frequencies, therefore the response above 3000 Hz is not attenuated as rapidly as would be the case with an in-limit response above 3000 Hz as used in EIA - 152C section 7.3. However, this method does not produce a response discontinuity at 3000 Hz.

FCC Limits:

Minimum Standard - The audio frequency response shall not vary more than +1 or -3 dB from 300 to 3000 Hz as referenced to 1000 Hz level (with the exception of a permissible 6 dB/octave roll off from 2500 to 3000 Hz).

3) Transmitter Audio Post - Limiter Low Pass Filter Response (FCC Rules Part 2.987(a))

The audio oscillator portion of an HP8903B audio analyzer is connected to the input of the post - limiter low - pass filter. The output of the filter, at the point where the signal is applied to the modulator's input, is monitored by the HP8903B audio analyzer. The response is swept between the limits of 100 Hz and 100 KHz. Oscillator level is chosen to be the highest possible which will not cause limiting at any frequency, and is maintained constant vs. frequency.

FCC Limits -- Per Applicable Rule Parts

Frequencies between 3KHz and 15KHz shall be attenuated greater than the attenuation at 1Kz by $40 \log_{10}(f/3)$ dB. Frequencies above 15KHz shall be attenuated 28 dB.

4) Modulation Limiting Characteristic (FCC Rules Part 2.987(a))

An audio oscillator is connected to the microphone audio input. The transmitter output is monitored with an HP8901B modulation analyzer, whose non-de-emphasized FM demodulator output is fed to an HP8903B audio analyzer. The modulation analyzer's 20 khz low pass filter is used to reduce the level of residual high frequency noise. The oscillator level is adjusted, at 1 Khz, to obtain 60% of full system deviation. The oscillator level is then varied over a range of +/- 25 dB increments and the resulting deviation is plotted. This measurements is repeated at 300 Hz and 3 Khz.

FCC Limits:

Minimum Standard - The transmitter modulation must not exceed rated system deviation at any frequency input or reasonable change in input level.

Measurement Procedures Used for Submitted Data

5) Occupied Bandwidth (FCC Rules Part 2.989)

An audio oscillator is connected to the microphone input. The frequency is set to 2500 Hz and the amplitude is adjusted to a level 16 dB above that required to produce 50% of full system deviation at the frequency of maximum response of the audio modulating circuit, in accordance with FCC rules Part 2.989(a)(1). The transmitter output is connected, via a suitable attenuator, to an HP8568A spectrum analyzer. Spectrum analysis of the transmitter output is performed to at least +/- 2.5 times the channel spacing, first of the unmodulated carrier to establish a 0 dB reference, then with the modulated signal applied.

FCC Limits -- Per 90.210 (a) (1), (2), (3)

Emission Mask B - 25Khz channel bandwidth. For Transmitters that are equipped with an audio low-pass filter.

Measured Data: (1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth : At least 25 dB.

(2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth : At least 35 dB.

(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth : At least $43+10 \log_{10}(P)$ dB.

Emission Mask D - 12.5Khz channel bandwidth. For Transmitters that designed to operate with 12.5Khz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows :

Measured Data: (1) On any frequency from the center of the authorized bandwidth f_0 to 5.625Khz removed from f_0 : Zero dB.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in Khz) of more than 5.625 Khz but no more than 12.5Khz. At least $7.27 (f_d - 2.88\text{Khz})$ 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 $50+10 \log_{10}(P)$ dB or 70 dB, whichever is the lesser attenuation .

6) Conducted Spurious Emissions (FCC rules Part 2.991)

The output of the transmitter is connected, via a suitable attenuator, to the input of an HP8561B spectrum analyzer. After a carrier reference level has been established, a tunable notch filter is inserted between the attenuator and the spectrum analyzer to allow suppression of the carrier level. The effect of the notch filter on other frequencies, if any, is plotted. This data is measured at the upper and lower frequency limits of the frequency range. If transmit power is adjusted, the measurement is repeated at various power levels including minimum and maximum.

FCC Limits -- Per Applicable Rule Parts

Conducted spurious emissions shall be attenuated below the maximum level of emission of the carrier frequency in accordance with the following formula:

For 25Khz. Channel Bandwidth:

Spurious attenuation in dB = $43+10 \log_{10}$ (Power output in watts)

For 12.5Khz. Channel Bandwidth:

Spurious attenuation in dB = $50+10 \log_{10}$ (Power output in watts)

Measurement Procedures Used for Submitted Data

7) Radiated Spurious Emissions (FCC Rules Part 2.993)

Transmitter radiated spurious emissions were measured using at an open field test site constructed in accordance with Appendix B, FCC/OST 55 (1982). The measurement performed is the equivalent of the FCC Code of Federal Regulations, Title 47, Part 2, Paragraph 2.993.

FCC Limits -- Per Applicable Rule Parts

Radiated Spurious emissions shall be attenuated below the maximum level of the emission of the carrier frequency in accordance with the following formula:

For 25Khz channel bandwidth:

Spurious attenuation in dB = $43 + 10 \log_{10}(\text{Power output in watts})$

For 12.5Khz channel bandwidth:

Spurious attenuation in dB = $50 + 10 \log_{10}(\text{Power output in watts})$

8) Frequency Stability Vs Temperature (FCC Rules Part 2.995)

This data was measured in accordance with FCC Rules Part 2.995 (a)(1). An HP8901B modulation analyzer is used as a reference for frequency measurements. The Tenney Jr. Chamber is used for temperature measurements of the environmental.

FCC Limits -- Per 90.213 and Applicable Rule Parts

Temperature - Frequency Stability of +/- .0005% from -30 to +60 degrees centigrade (-20 to +50 degrees centigrade Maritime parts 81 & 83).

9) Frequency Stability Vs. Voltage (FCC Rules Part 2.995)

This data measured in accordance with FCC Rules Part 2.995 (d). An HP8901B is used as a reference for frequency measurements.

FCC Limits -- Per 90.213 and Applicable Rule Parts

Power Supply Voltage - Frequency Stability of +/- .0005% from 85% to 115% of nominal voltage. (See CRF Rule Part 90.213)

10) Transient Frequency Behavior

This data measured in accordance with FCC Rules . Applicable method of measurement and definition in Section 2.2.19 of the TIA/EIA SP-2218.

FCC Limits -- Per Applicable Rule Parts

During the period t_1 and t_3 the frequency difference shall not exceed +/- 25KHz.

During the period t_2 the frequency difference shall not exceed +/- 12.5khz.

If the transmitter carrier output power rating is 6 Watts or less, the frequency deviation during t_1 and t_3 may be greater than +/- 25khz. The corresponding plot of frequency versus time during t_1 and t_3 shall be recorded in the test data.

Emission Designator Information

Emission Designator for equipment: **AZ489FT4834**

Employing Carsons rule for the FM modulation, the required bandwidth for 5 and 2.5 kHz deviation systems is as follows.

i) For a 5 KHz Devaition System

$$BW = 2(M+D) = 2(3 +5) = 2(8) = 16 \text{ kHz.}$$

Emission Designator 16K0F3E (Voice)

ii) For a 2.5 KHz Devaition System

$$BW = 2(M+D) = 2(3 +2.5) = 2(5.5) = 11 \text{ kHz.}$$

Emission Designator 11K0F3E (Voice)