

EXHIBIT 6. 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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III.	Occupied Bandwidth	6C	2.1049
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	2. 12.5 kHz Audio (Voice)	6C-2	2.1049(c)(1)
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	4. 25/12.5 kHz 9600 bps Digital Data	6C-4	2.1049(h)
	5. 25 kHz 12000 baud Digital Voice Encryption	6C-5	2.1049(h)
IV.	Conducted Spurious Emissions	6D	2.1051
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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 494.0125 MHz.

At the minimum power setting:

Measured RF Output	5.00	Watts
Normal DC Voltage	13.8	Volts
Normal DC Current	2.38	Amps
Measured RF Input	11.7	dBm

At the maximum power setting:

Measured RF output	25.0	Watts
Normal DC Voltage	13.8	Volts
Normal DC Current	4.82	Amps
Measured RF Input	11.7	dBm

Measured at 511.9875 MHz.

At the minimum power setting:

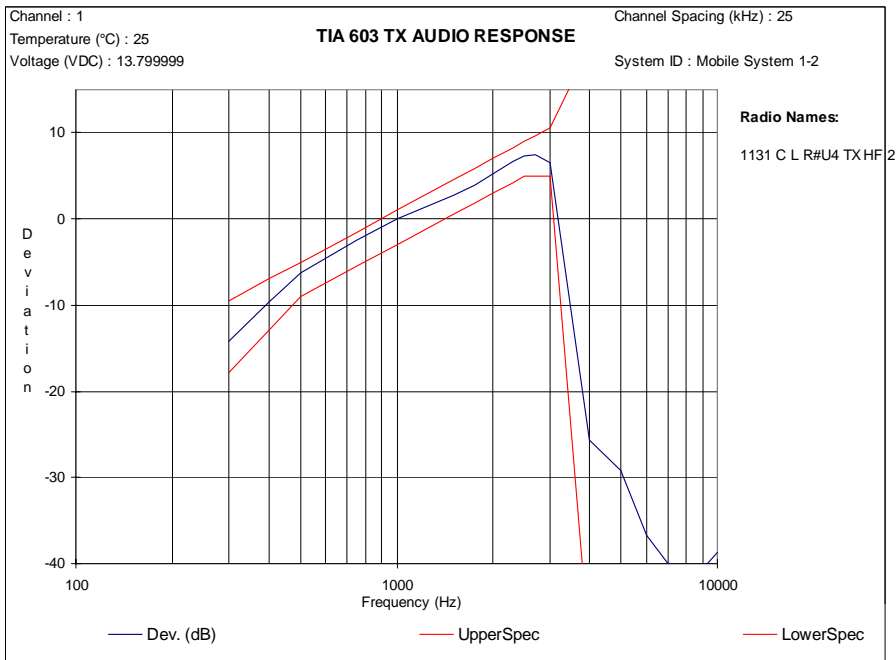
Measured RF Output	5.00	Watts
Normal DC Voltage	13.8	Volts
Normal DC Current	2.08	Amps
Measured RF Input	11.6	dBm

At the maximum power setting:

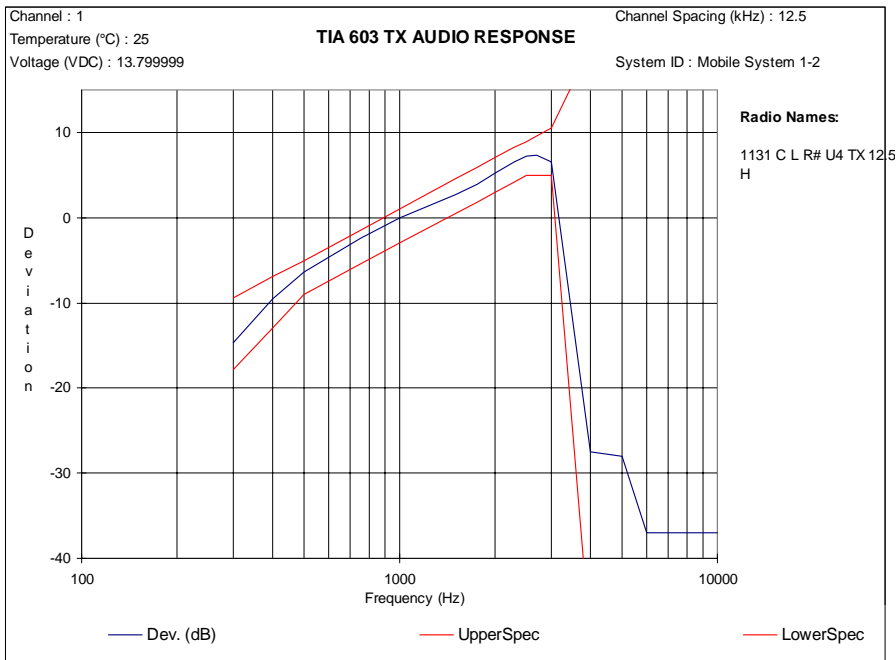
Measured RF output	25.0	Watts
Normal DC Voltage	13.8	Volts
Normal DC Current	4.36	Amps
Measured RF Input	11.6	dBm

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

25 kHz channel spacing. Measured at 511.9875 MHz.

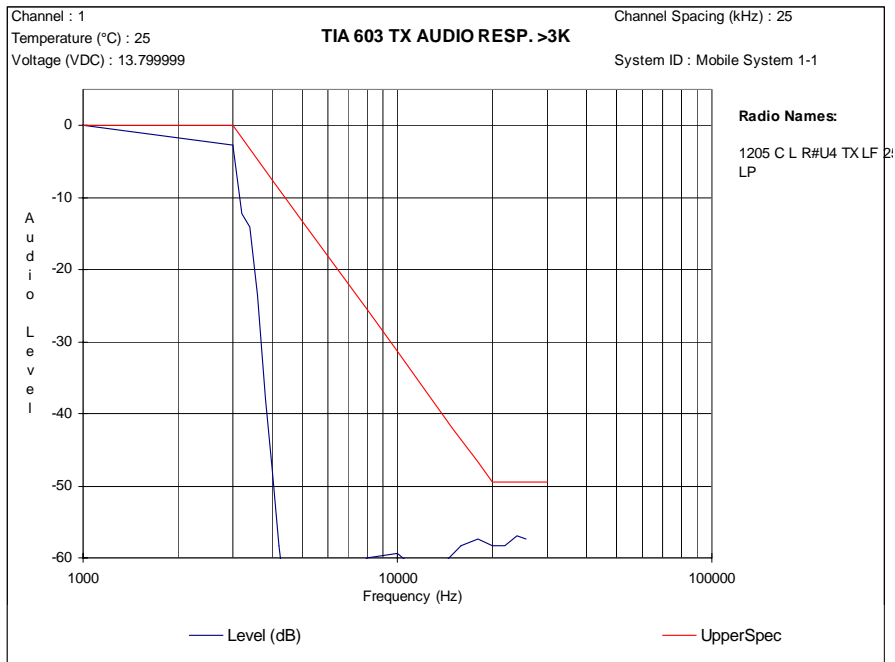


12.5 kHz channel spacing. Measured at 511.9875 MHz.



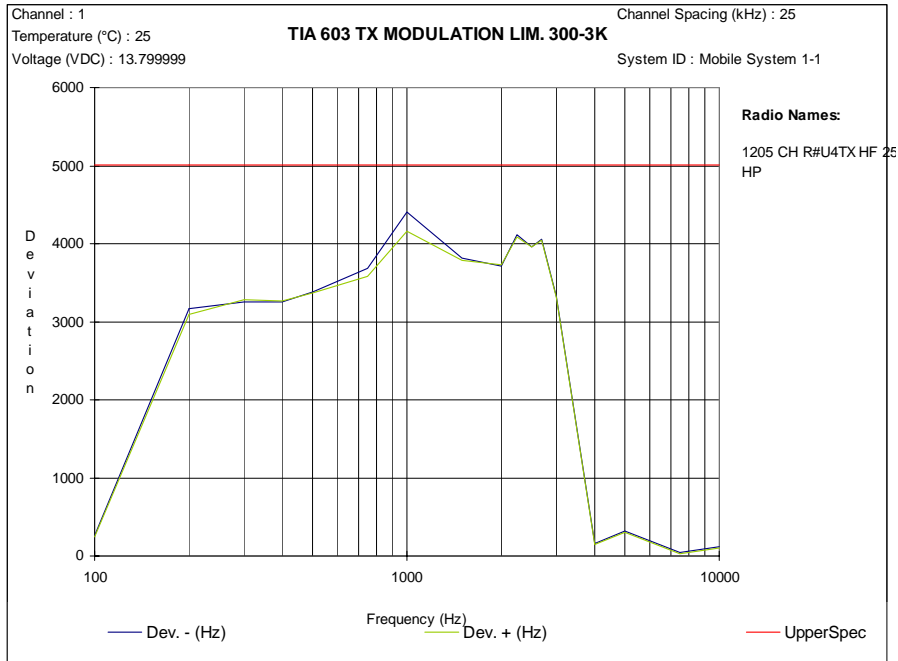
6B-2. Low Pass Filter Response – Pursuant 47 CFR 2.1033(c) 14, 2.1047(a)

Measured at 511.9875 MHz.

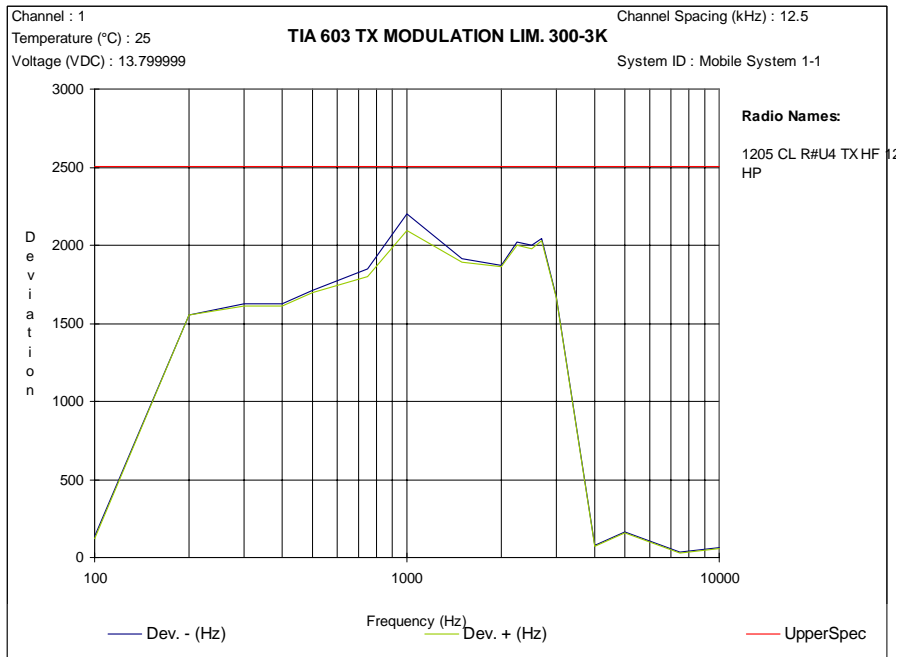


6B-3. Modulation Limiting versus Frequency – Pursuant 47 CFR 2.1033(c) 14, 2.1047(b)

25 kHz channel spacing. Measured at 511.9875 MHz.

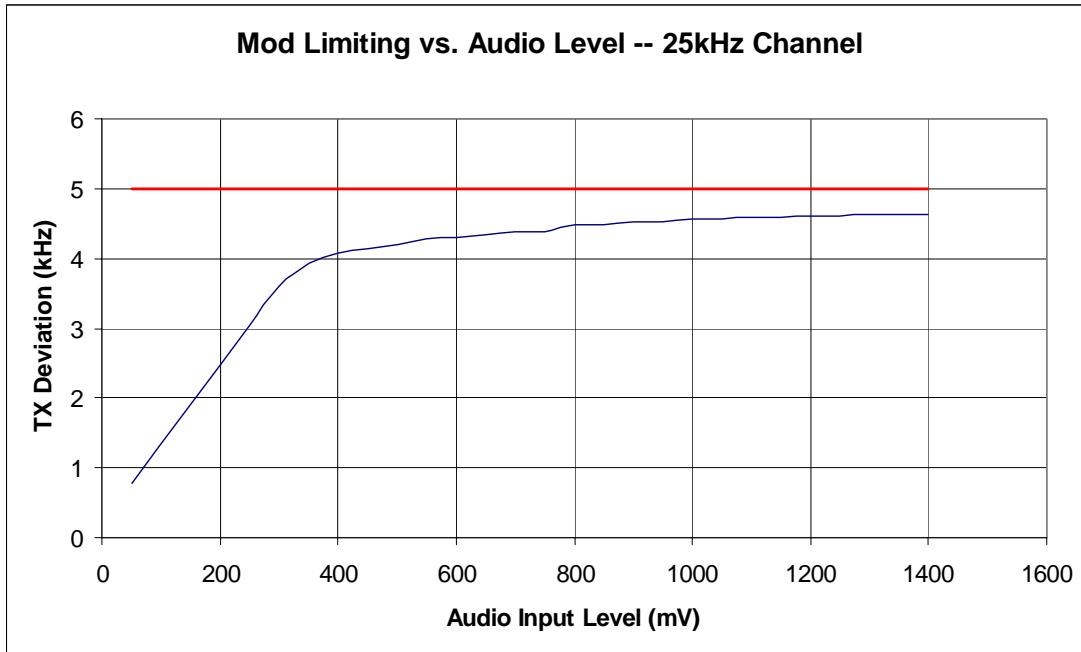


12.5 kHz channel spacing. Measured at 511.9875 MHz.

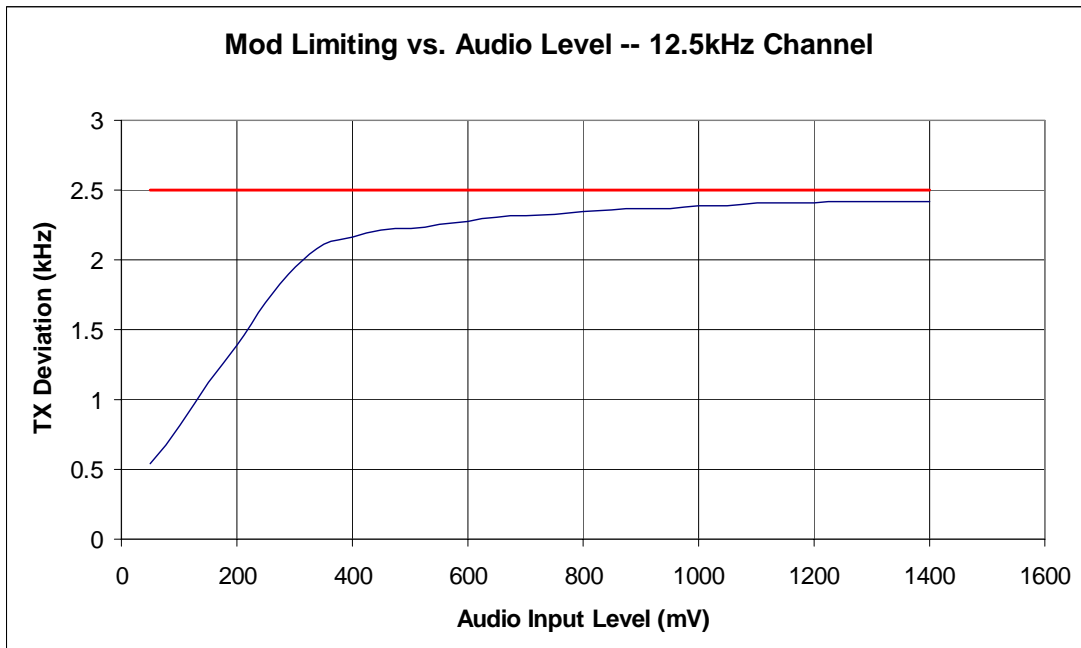


6B-4. Modulation Limiting vs. Audio Level – Pursuant 47 CFR 2.1033(c) 14, 2.1047(b)

25 kHz channel spacing. Measured at 501.0125 MHz.



12.5 kHz channel spacing. Measured at 501.0125 MHz.



6C. Occupied Bandwidth – Pursuant 47 CFR 2.1033(c), 14, 2.1049**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: AZ492FT4847.

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 25 kHz channelization analog voice is 11K0F3E.

EXHIBIT 6C-3: 25/12.5 kHz Channel Spacing, Digital Voice (Digitized 2500 Hz Audio Tone)
Emission Designator: 8K10F1E

Calculation of the necessary bandwidth with the formula in Part 2.202(g) Table III A, 1, using the suggested value of K=1.2, results in an excessive value. Therefore, the necessary bandwidth was measured empirically per Part 2.202(c)(4) using the 99% energy rule (ref Part 2.1049), which produces a more accurate result than Carson's Rule. The 99% rule states that the necessary bandwidth of a signal is the bandwidth within which 99% of the signal's energy is found. The test was performed in accordance with TIA/EIA IS-102.CAAA 2.2.5.2. The resulting necessary bandwidth is 8.10 kHz. This bandwidth is the same for 25 kHz and 12.5 kHz channel spacing, since the same digital modulation scheme, including deviation levels, is used for both. Emission mask D is used on the graph, as prescribed by TIA/EIA IS-102.CAAB 3.2.5.1.

The modulation is a single FM digital voice channel, so the rest of the designator is F1E.

Therefore, the entire designator for 25 kHz and 12.5 kHz channelization digital voice is 8K10F1E.

6C. Occupied Bandwidth (cont.)**EXHIBIT 6C-4: 25/12.5 kHz Channel Spacing, Digital Data (9600 bps Random Data)**
Emission Designator: 8K10F1D

Calculation of the necessary bandwidth with the formula in Part 2.202(g) Table III A, 1, using the suggested value of $K=1.2$, yields an excessive result. Therefore, the necessary bandwidth was measured empirically per Part 2.202(c)(4) using the 99% energy rule (ref Part 2.1049), which produces a more accurate result than Carson's Rule. The 99% rule states that the necessary bandwidth of a signal is the bandwidth within which 99% of the signal's energy is found. The test was performed in accordance with TIA/EIA IS-102.CAAA 2.2.5.2. The resulting necessary bandwidth is 8.10 kHz. This bandwidth is the same for 25 kHz and 12.5 kHz channel spacing, since the same digital modulation scheme, including deviation levels, is used for both. Emission mask D is used on the graph, as prescribed by TIA/EIA IS-102.CAAB 3.2.5.1.

The modulation is a single FM digital data channel, so the rest of the designator is F1D.

Therefore, the entire designator for 25 kHz and 12.5 kHz channelization digital data is 8K10F1D.

Note: The 90.203(j)(3) efficiency standard for F1D emissions is met by sending 2 bits/ baud at 4800 baud/second. This results in the transmission of 9600 bits/second. The modulation technique involves applying one of 4 deviation levels to the carrier at a rate of 4800 symbols/second, where each symbol represents two bits. The 4 symbols of the C4FM scheme are shown in the following table.

<u>Information Bits</u>	<u>Symbol</u>	<u>C4FM Deviation</u>
01	+3	+1.8 kHz
00	+1	+0.6 kHz
10	-1	-0.6 kHz
11	-3	-1.8 kHz

Since these symbols are sent via Frequency-Shift-Keying at a rate of 4800 symbols/second, 9600 bits/second of data are transmitted on a 12.5 kHz channel, which is equivalent to 4800 bits/second per 6.25 kHz of bandwidth.

EXHIBIT 6C-5: 25 kHz Channel Spacing, Digital Voice Encryption (Securenet)
Emission Designator: 20K0F1E

Voice encryption is transmitted at 12 kbps (one bit per baud) which results in a 6 kHz maximum modulation frequency. The standard voice deviation of this modulation scheme is 4 kHz.

$$BW = 2 * (M + D) = 2 * (6 \text{ kHz} + 4 \text{ kHz}) = 20 \text{ kHz} \rightarrow 20K0$$

The modulation is a single FM digital voice channel, so the rest of the designator is F1E.

Therefore, the entire designator for 25 kHz channelization digital analog voice is 20K0F1E.

Note: This modulation scheme is never used in 12.5 kHz channel spacing.

Note: The F1D and F1E signals are generated as follows: The modulation is 4-level FSK with +/-600 Hz and +/-1.8 kHz shifting (these discrete deviation levels are used as symbols). The digital voice test pattern is created by encoding a 2500 Hz sine wave injected at a level 16dB above that required to produce 50% deviation at the radio output, as measured in the analog mode. The digital data test signal is an internally-generated pseudo-random test pattern as described in TIA/EIA IS-102.CAAA 1.3.4.3.

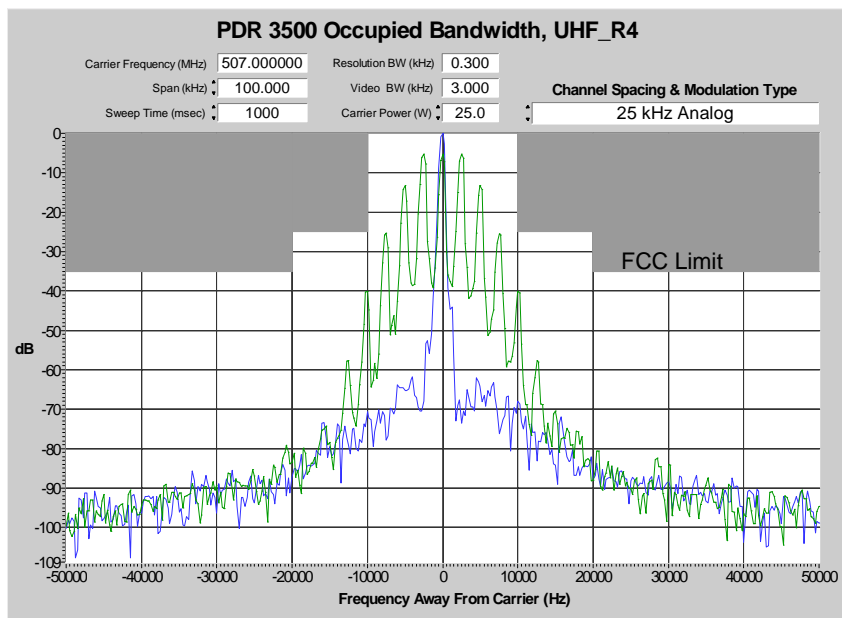
6C-1. Occupied Bandwidth – 25 kHz Audio – Pursuant 2.1049(c)(1)

High power. Measured at 507.000 MHz and 30 W.

Modulation: Voice (2500 Hz Audio Tone)

Modulation Designator: 16K0F3E

Channelization: 25 kHz (Mask B)

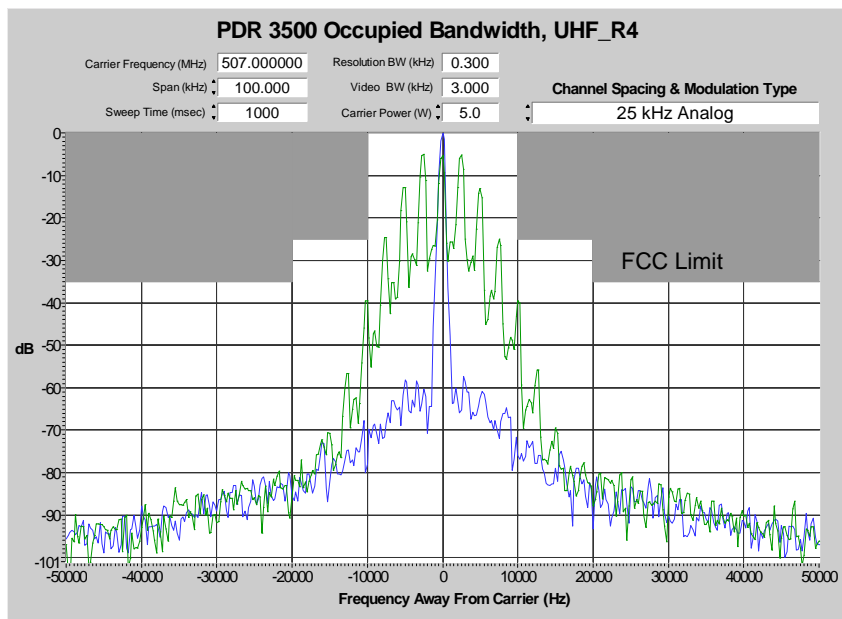


Low power. Measured at 507.000 MHz and 5 W.

Modulation: Voice (2500 Hz Audio Tone)

Modulation Designator: 16K0F3E

Channelization: 25 kHz (Mask B)



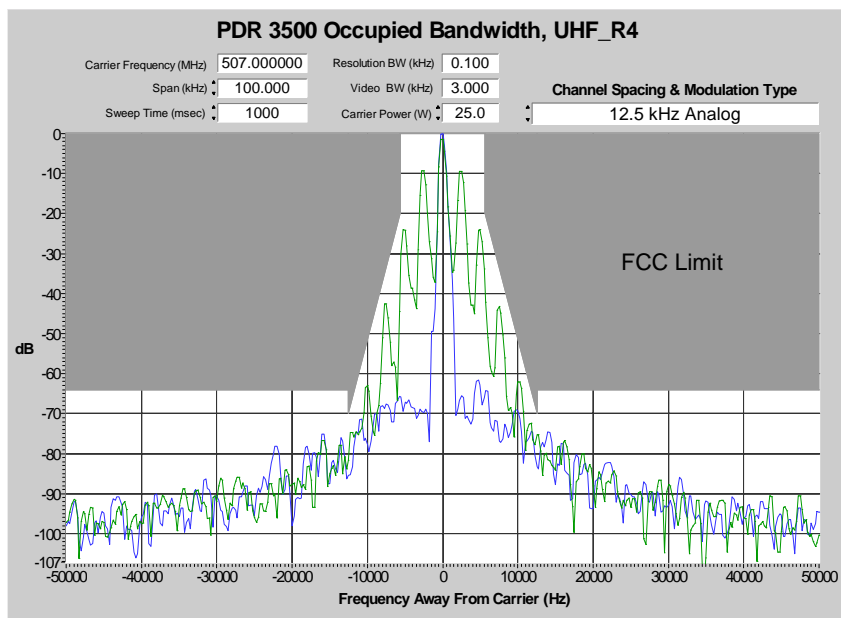
6C-2. Occupied Bandwidth – 12.5 kHz Audio – Pursuant 2.1049(c)(1)

High power. Measured at 507.000 MHz and 30 W.

Modulation: Voice (2500 Hz Audio Tone)

Modulation Designator: 11K0F3E

Channelization: 12.5 kHz (Mask D)

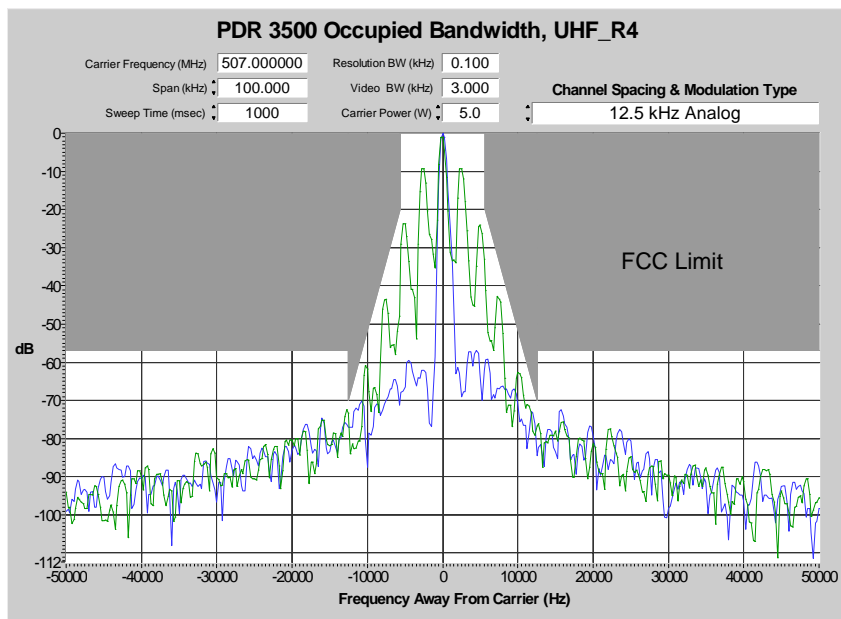


Low power. Measured at 507.000 MHz and 5 W.

Modulation: Voice (2500 Hz Audio Tone)

Modulation Designator: 11K0F3E

Channelization: 12.5 kHz (Mask D)



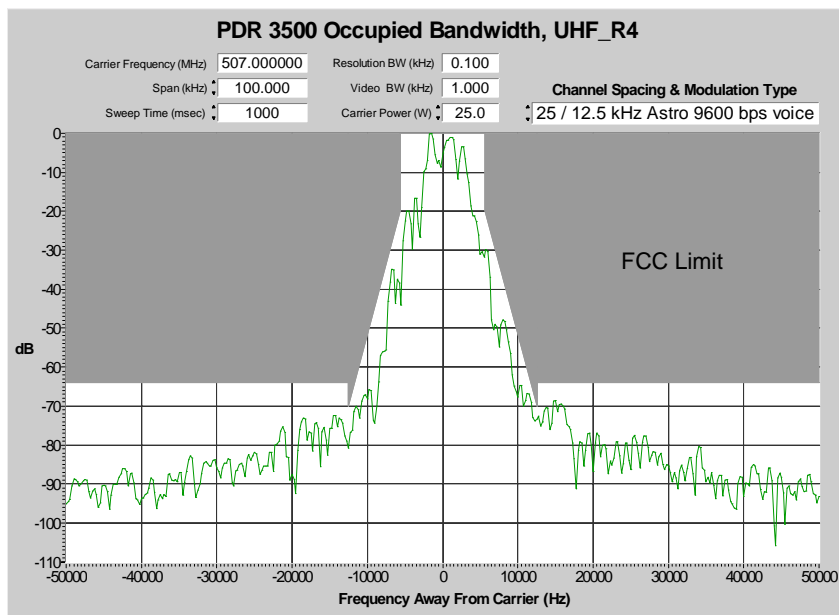
6C-3. Occupied Bandwidth – 25/12.5 kHz 9600 bps Digital Voice – Pursuant 2.1049(h)

High power. Measured at 507.000 MHz and 30 W.

Modulation: 9600 bps Digital Voice (Digitized 2500 Hz Audio Tone)

Modulation Designator: 8K10F1E

Channelization: 25 kHz / 12.5 kHz (Mask D)

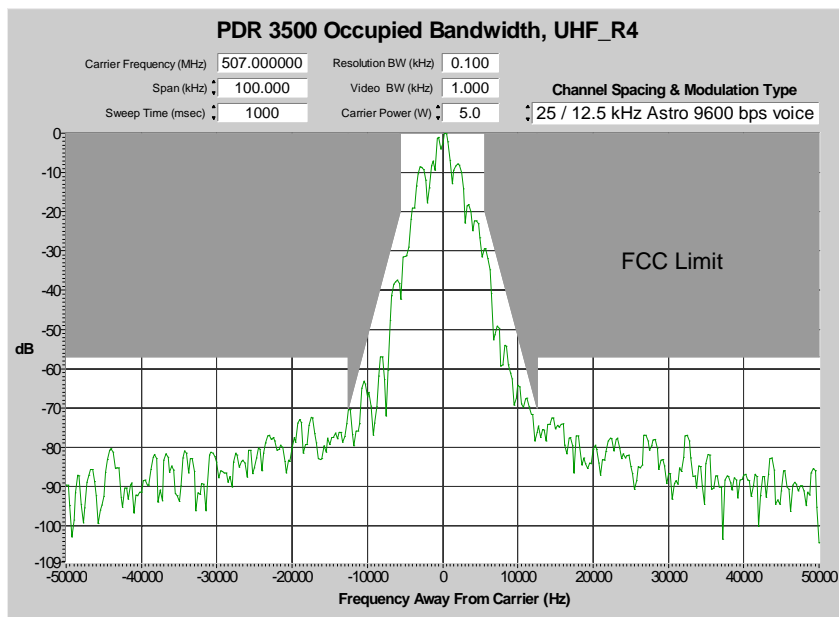


Low power. Measured at 507.000 MHz and 5 W.

Modulation: 9600 bps Digital Voice (Digitized 2500 Hz Audio Tone)

Modulation Designator: 8K10F1E

Channelization: 25 kHz / 12.5 kHz (Mask D)



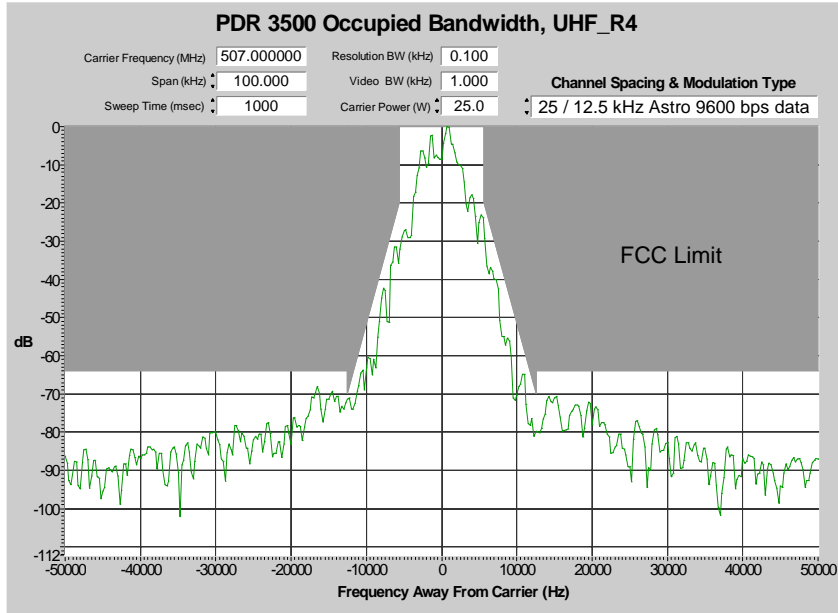
6C-4. Occupied Bandwidth – 25/12.5 kHz 9600 bps Digital Data – Pursuant 2.1049(h)

High power. Measured at 507.000 MHz and 30 W.

Modulation: 9600 bps Digital Data (Psuedo-Random Test Pattern)

Modulation Designator: 8K10F1D

Channelization: 25 kHz / 12.5 kHz (Mask D)

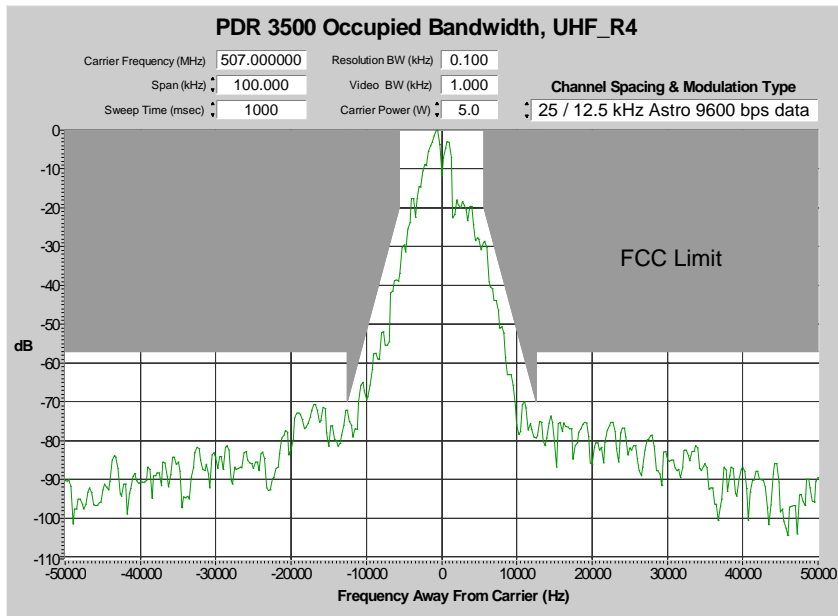


Low power. Measured at 507.000 MHz and 5 W.

Modulation: 9600 bps Digital Data (Psuedo-Random Test Pattern)

Modulation Designator: 8K10F1D

Channelization: 25 kHz / 12.5 kHz (Mask D)



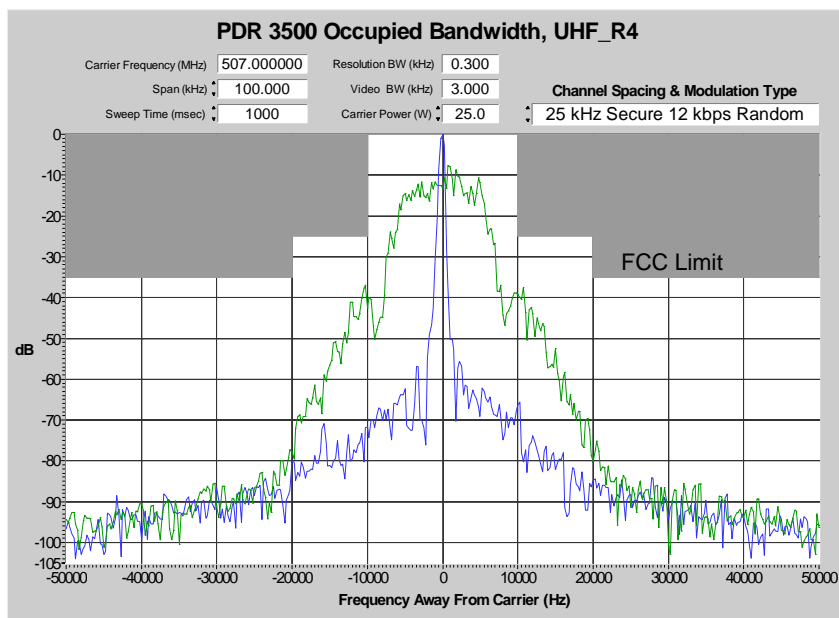
6C-5. Occupied Bandwidth – 25 kHz 12000 baud Digital Voice Encryption – Pursuant 2.1049(h)

High power. Measured at 507.000 MHz and 30 W.

Modulation: 12kbps Random Data (Securenet)

Modulation Designator: 20K0F1E

Channelization: 25 kHz (Mask B)

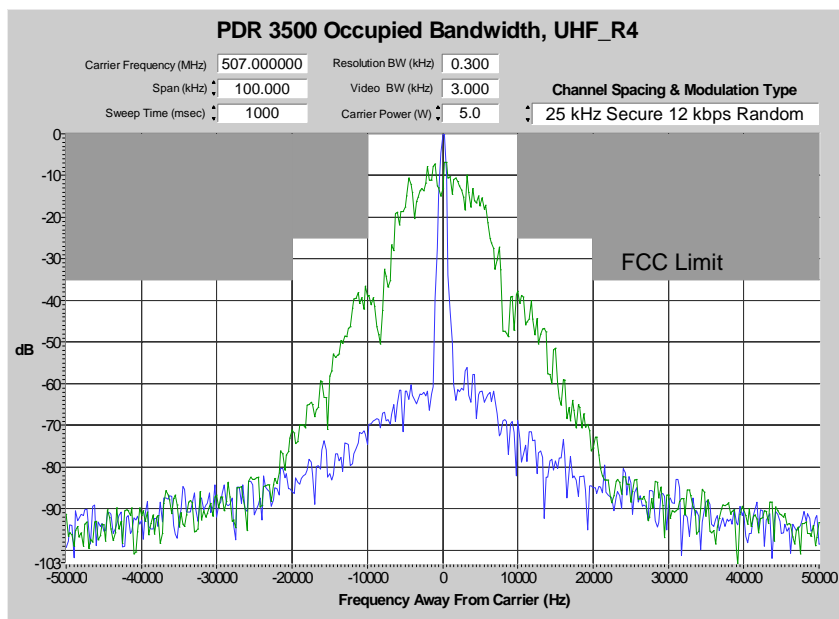


Low power. Measured at 507.000 MHz and 5 W.

Modulation: 12kbps Random Data (Securenet)

Modulation Designator: 20K0F1E

Channelization: 25 kHz (Mask B)



6D. Conducted Spurious Emissions – Pursuant 2.1051

Low Power.

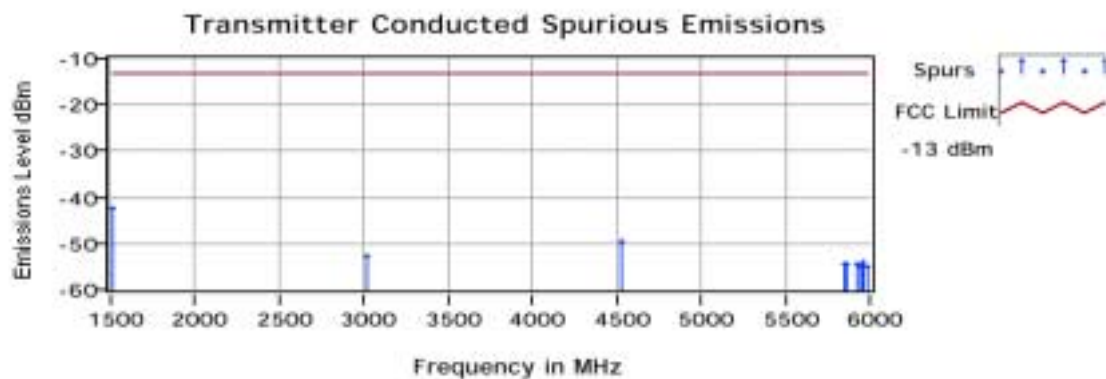
Transmitter Conducted Spurious Emissions

FCC ID: AZ492FT4847

503.00000 MHz

Power 5.0W

Spur Frequency	FCC Limit	Measured Value (dBm)
1508.00000	-13.0	-42.4
3017.00000	-13.0	-52.7
4525.00000	-13.0	-49.5
5846.00000	-13.0	-54.8
5858.00000	-13.0	-54.5
5868.00000	-13.0	-54.8
5920.00000	-13.0	-54.7
5948.00000	-13.0	-55.0
5958.00000	-13.0	-54.3
5990.00000	-13.0	-55.0



Motorola Plantation ATE Lab

Wed, Mar 21, 2001

Test Performed By: Jerry Simpson

6D. Conducted Spurious Emissions (cont.)

High Power.

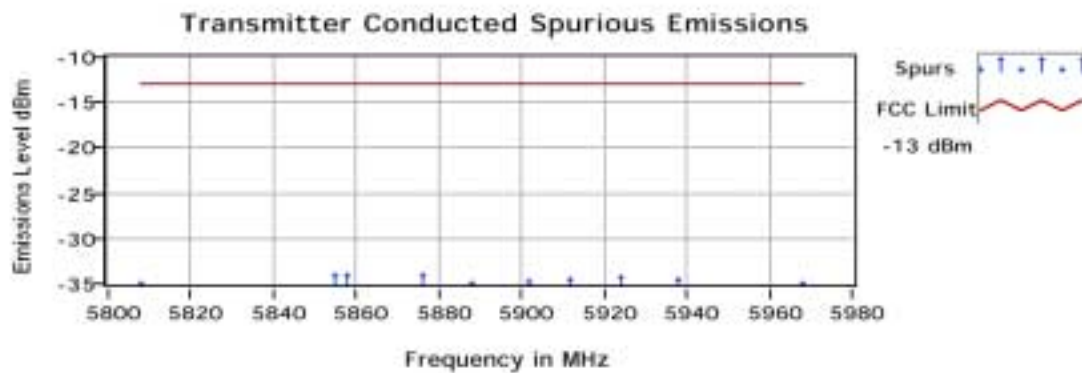
Transmitter Conducted Spurious Emissions

FCC ID: AZ492FT4847

511.98750 MHz

Power 25.0W

Spur Frequency	FCC Limit	Measured Value (dBm)
5808.00000	-13.0	-34.9
5855.00000	-13.0	-34.1
5858.00000	-13.0	-34.1
5876.00000	-13.0	-34.2
5888.00000	-13.0	-34.9
5902.00000	-13.0	-34.7
5912.00000	-13.0	-34.6
5924.00000	-13.0	-34.3
5938.00000	-13.0	-34.6
5968.00000	-13.0	-34.9



Motorola Plantation ATE Lab

Wed, Jun 27, 2001

Test Performed By: Jerry Simpson

Exhibit: 6

6E. Radiated Spurious Emissions – Pursuant 2.1053

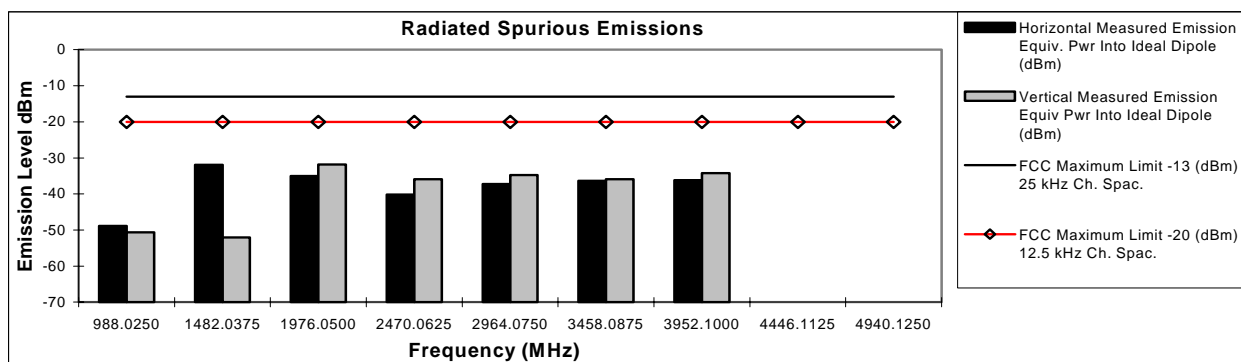
Transmitter Radiated Spurious Emissions: Repeater PDR3500

494.0125 MHz

25 Watts

Channel Spacing 25kHz | S/N 492AZ4847

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)
988.0250	-13	-20	-48.88	-50.69
1482.0375	-13	-20	-31.87	-52.01
1976.0500	-13	-20	-35.04	-31.79
2470.0625	-13	-20	-40.13	-35.90
2964.0750	-13	-20	-37.22	-34.70
3458.0875	-13	-20	-36.32	-35.89
3952.1000	-13	-20	-36.18	-34.24
4446.1125	-13	-20	*	*
4940.1250	-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.)

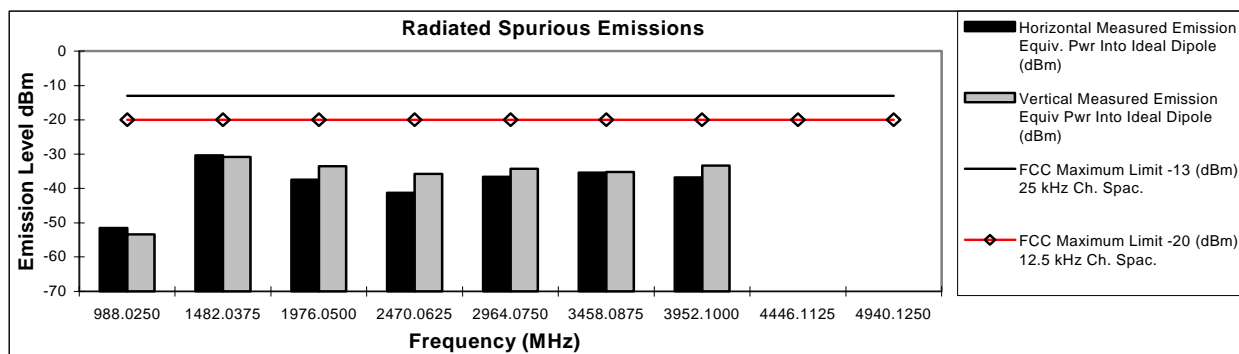
Transmitter Radiated Spurious Emissions: Repeater PDR3500

494.0125 MHz

25 Watts

Channel Spacing 12.5kHz | S/N 492AZ4847

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)
988.0250	-13	-20	-51.53	-53.47
1482.0375	-13	-20	-30.36	-30.85
1976.0500	-13	-20	-37.39	-33.51
2470.0625	-13	-20	-41.28	-35.72
2964.0750	-13	-20	-36.59	-34.34
3458.0875	-13	-20	-35.44	-35.23
3952.1000	-13	-20	-36.82	-33.37
4446.1125	-13	-20	*	*
4940.1250	-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.)

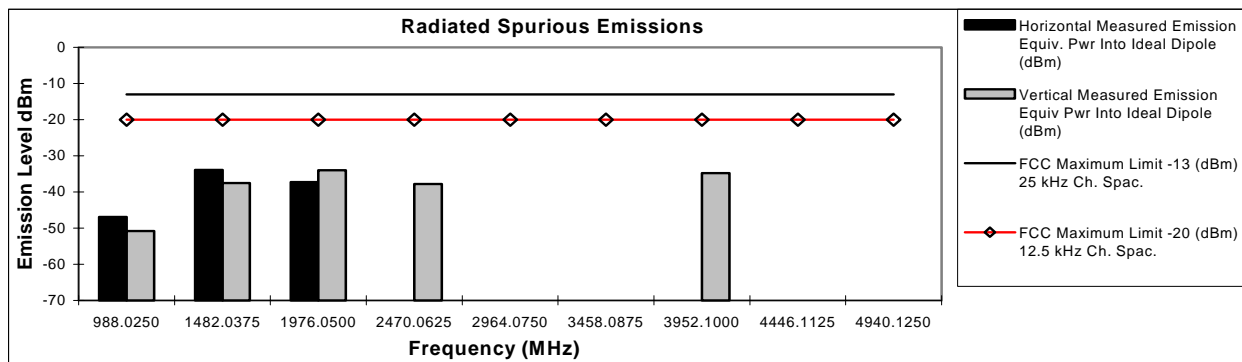
Transmitter Radiated Spurious Emissions: Repeater PDR3500

494.0125 MHz

5 Watts

Channel Spacing 25kHz | S/N 492AZ4847

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)
988.0250	-13	-20	-46.92	-50.85
1482.0375	-13	-20	-33.93	-37.55
1976.0500	-13	-20	-37.31	-34.01
2470.0625	-13	-20	*	-37.79
2964.0750	-13	-20	*	*
3458.0875	-13	-20	*	*
3952.1000	-13	-20	*	-34.80
4446.1125	-13	-20	*	*
4940.1250	-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.)

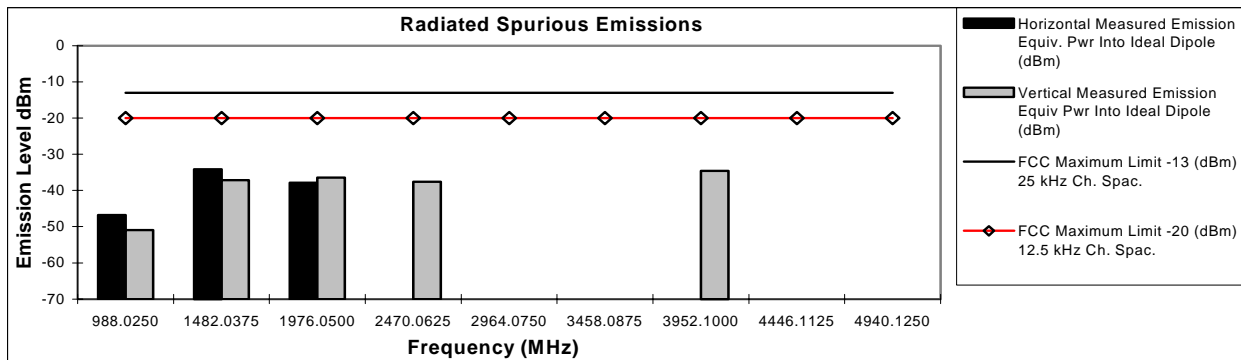
Transmitter Radiated Spurious Emissions: Repeater PDR3500

494.0125 MHz

5 Watts

Channel Spacing 12.5kHz | S/N 492AZ4847

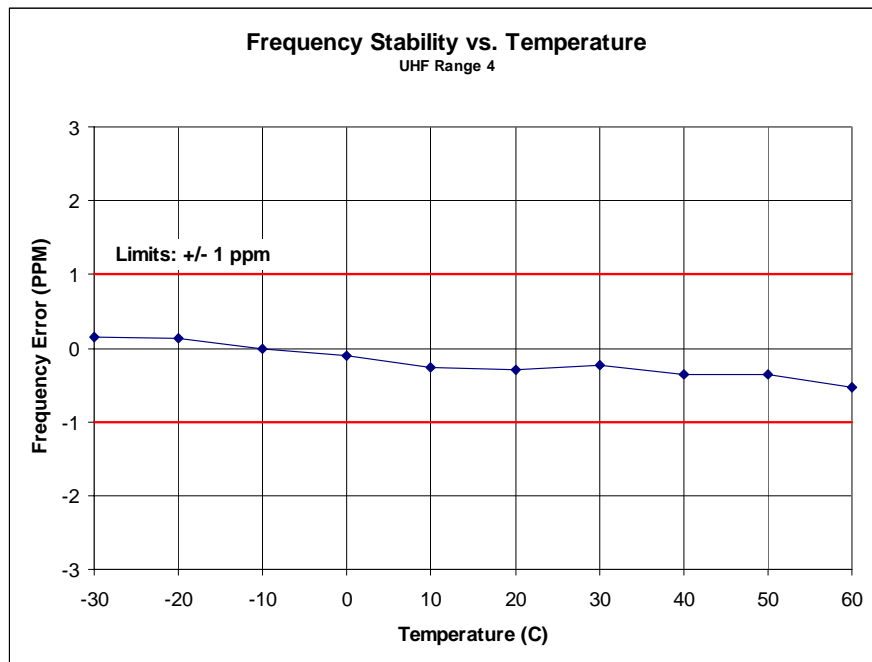
Frequency (MHz)	FCC Maximum Limit -13 (dBm) 25 kHz Ch. Spac.	FCC Maximum Limit -20 (dBm) 12.5 kHz Ch. Spac.	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
988.0250	-13	-20	-46.71	-50.93
1482.0375	-13	-20	-34.13	-37.16
1976.0500	-13	-20	-37.78	-36.41
2470.0625	-13	-20	*	-37.57
2964.0750	-13	-20	*	*
3458.0875	-13	-20	*	*
3952.1000	-13	-20	*	-34.59
4446.1125	-13	-20	*	*
4940.1250	-13	-20	*	*



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

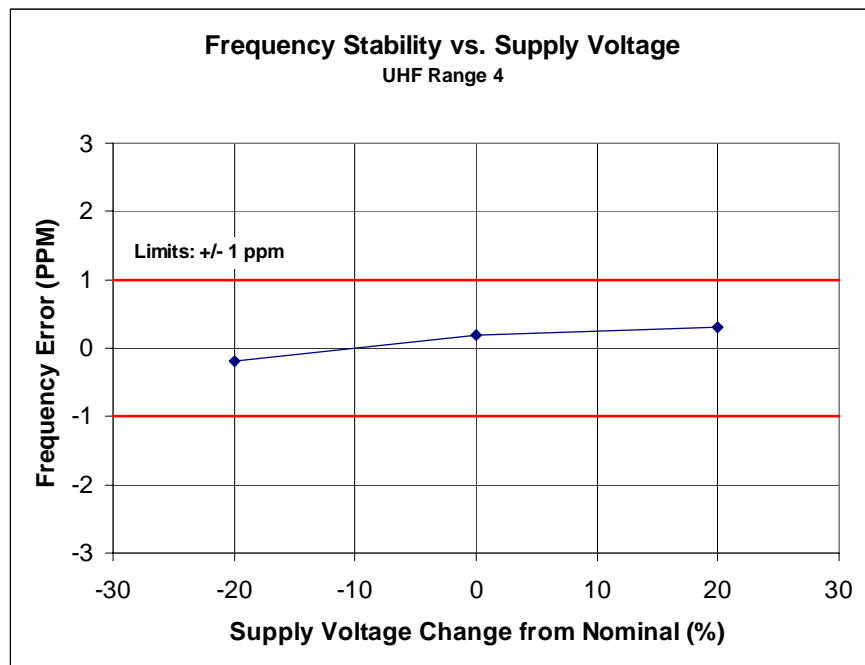
6F-1. Frequency Stability vs. Temperature – Pursuant 2.1055(a)(1), 2.1055(b), 90.213

Measured at 511.9875 MHz.



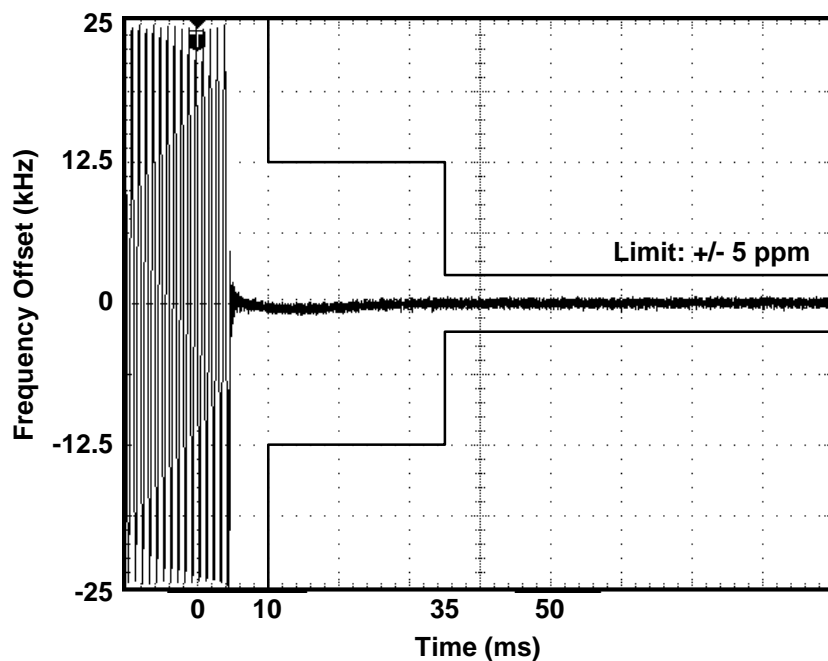
6F-2. Frequency Stability vs. Supply Voltage – Pursuant 2.1055(d)(1), 90.213

Measured at 494.0125 MHz.

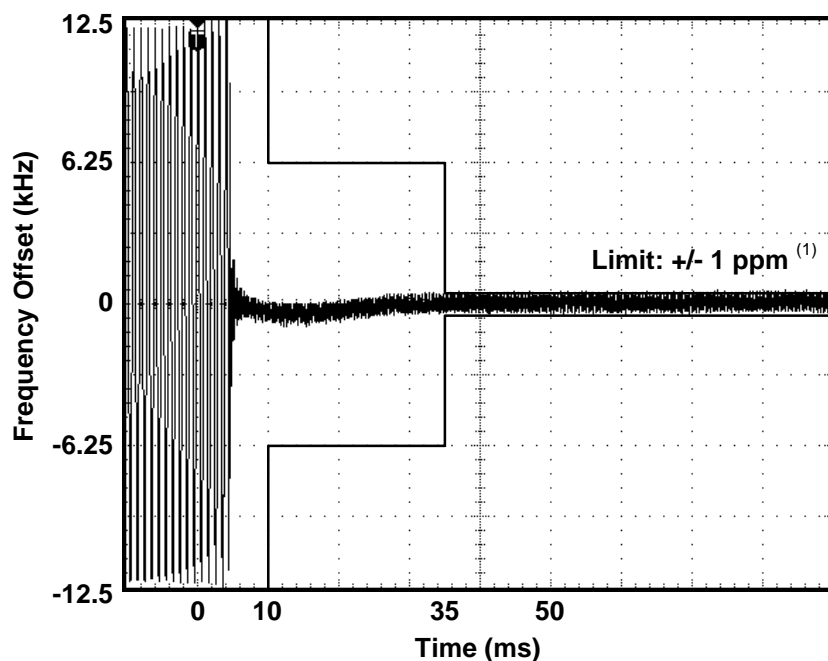


6G. Transient Frequency Behavior – Pursuant 90.214

Keyup. 25 kHz channel spacing. Measured at 503.0125 MHz and 25 W.



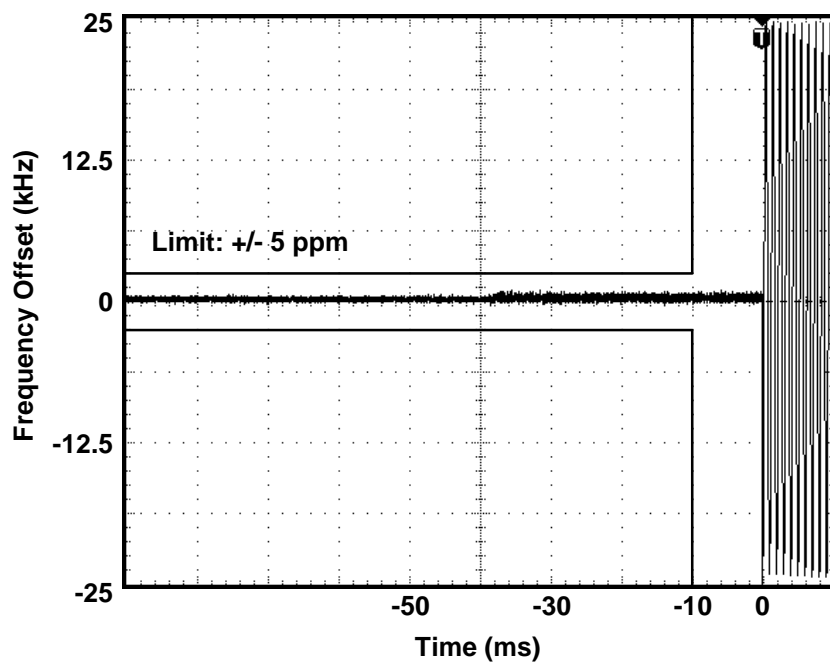
Keyup. 12.5 kHz channel spacing. Measured at 503.0125 MHz and 25 W.



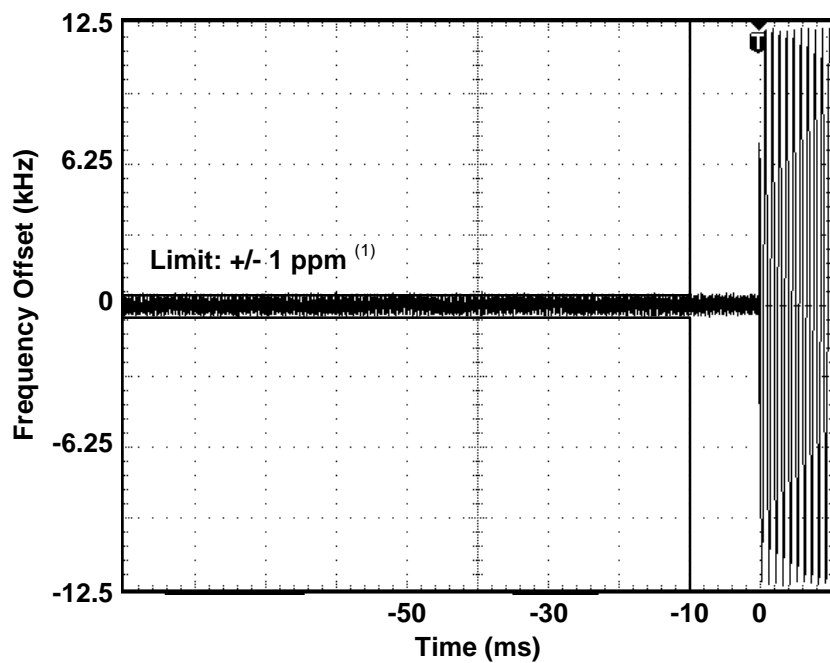
- (1) The oscillator used in the station has a stability of 1ppm as shown in Exhibit 6F. However, noise in the test equipment, as well as the modulated signal from the signal generator coupling into the test receiver (TIA/EIA-603 93, Item 2.2.19), cause the Frequency Offset trace to momentarily cross the 1ppm Limit trace in the Transient Frequency Behavior graph.

6G. Transient Frequency Behavior (cont.)

Dekey. 25 kHz channel spacing. Measured at 503.0125 MHz and 25 W.

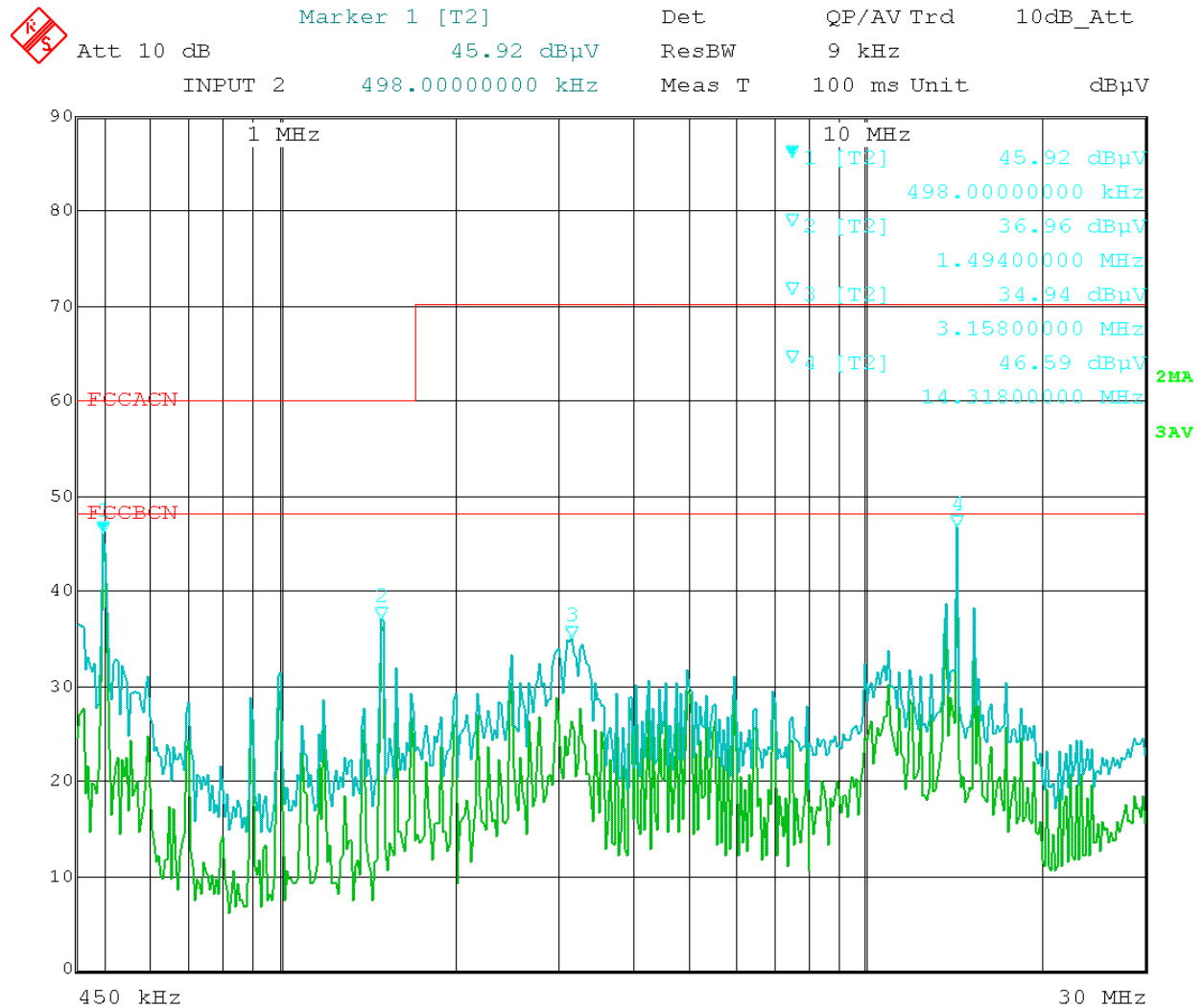


Dekey. 12.5 kHz channel spacing. Measured at 503.0125 MHz and 25 W.



6H. Power Line Conducted Emissions – Pursuant 15.107

Line. Measured with receiver active and 25 Watt transmit.

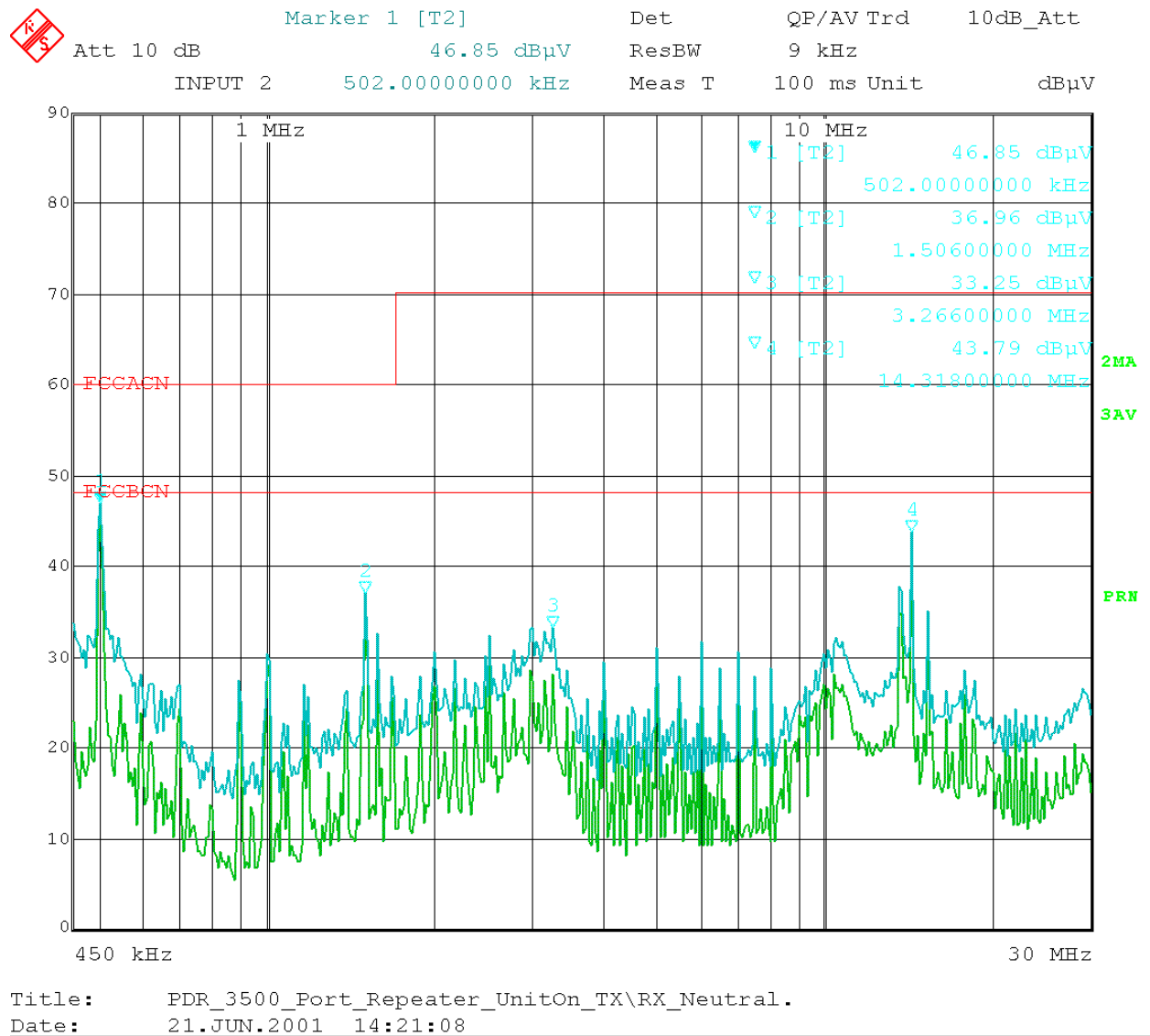


Title: PDR_3500_Port_Repeater_UnitOn_TX\RX_Line.
Date: 21.JUN.2001 14:03:19

Peak emission: 46.59 dBuV at 14.318 MHz.

6H. Power Line Conducted Emissions (cont.)

Neutral. Measured with receiver active and 25 Watt transmit.



Peak emission: 46.85 dBuV at 502.000 kHz.