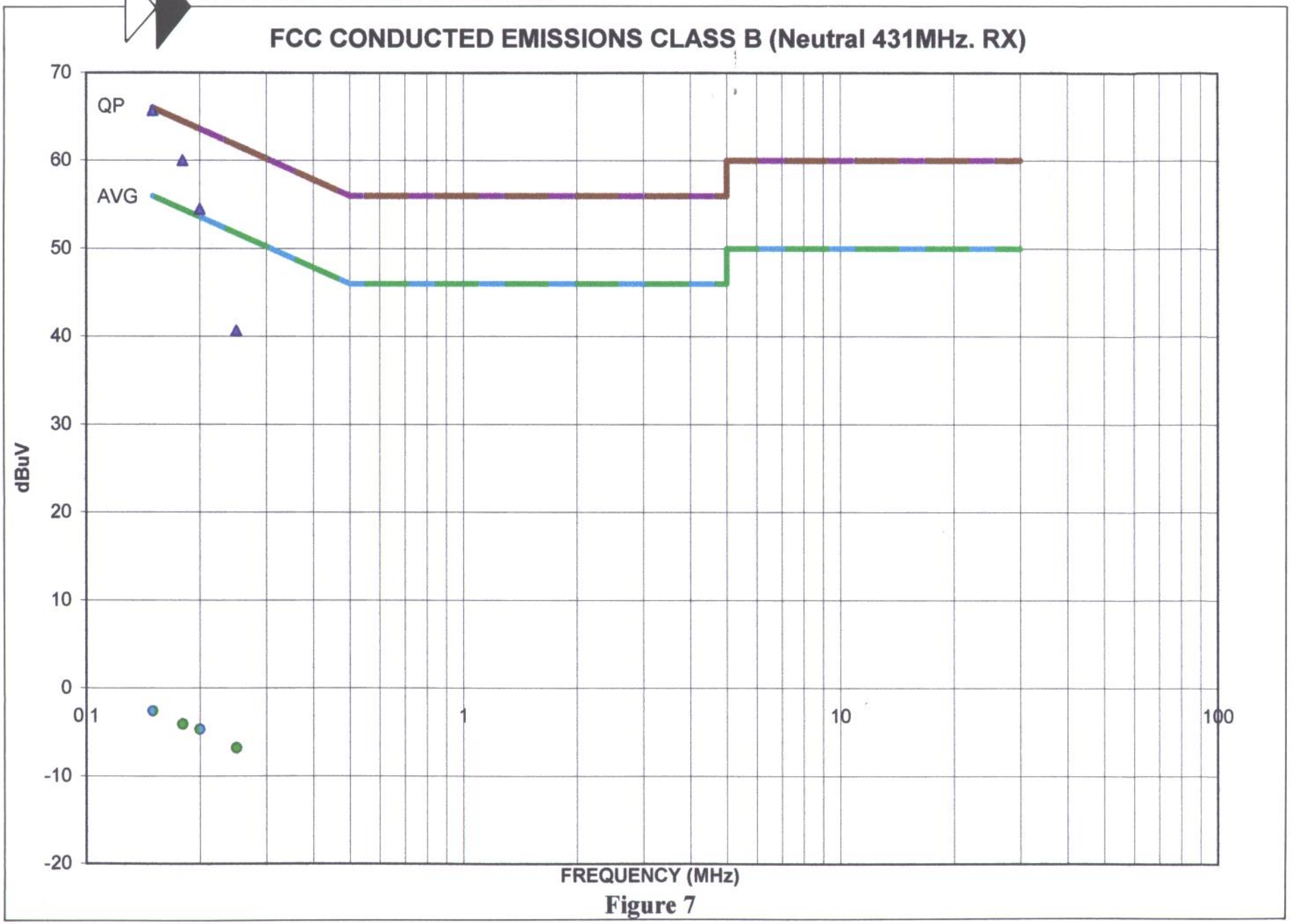
FCC CONDUCTED EMISSIONS CLASS B (Neutral 431MHz. RX)
QP
AVG
70
60
50
40
30
20
10
0
-10
-20
dBuV
0.1
1
10
100
FREQUENCY (MHz)

Figure 7

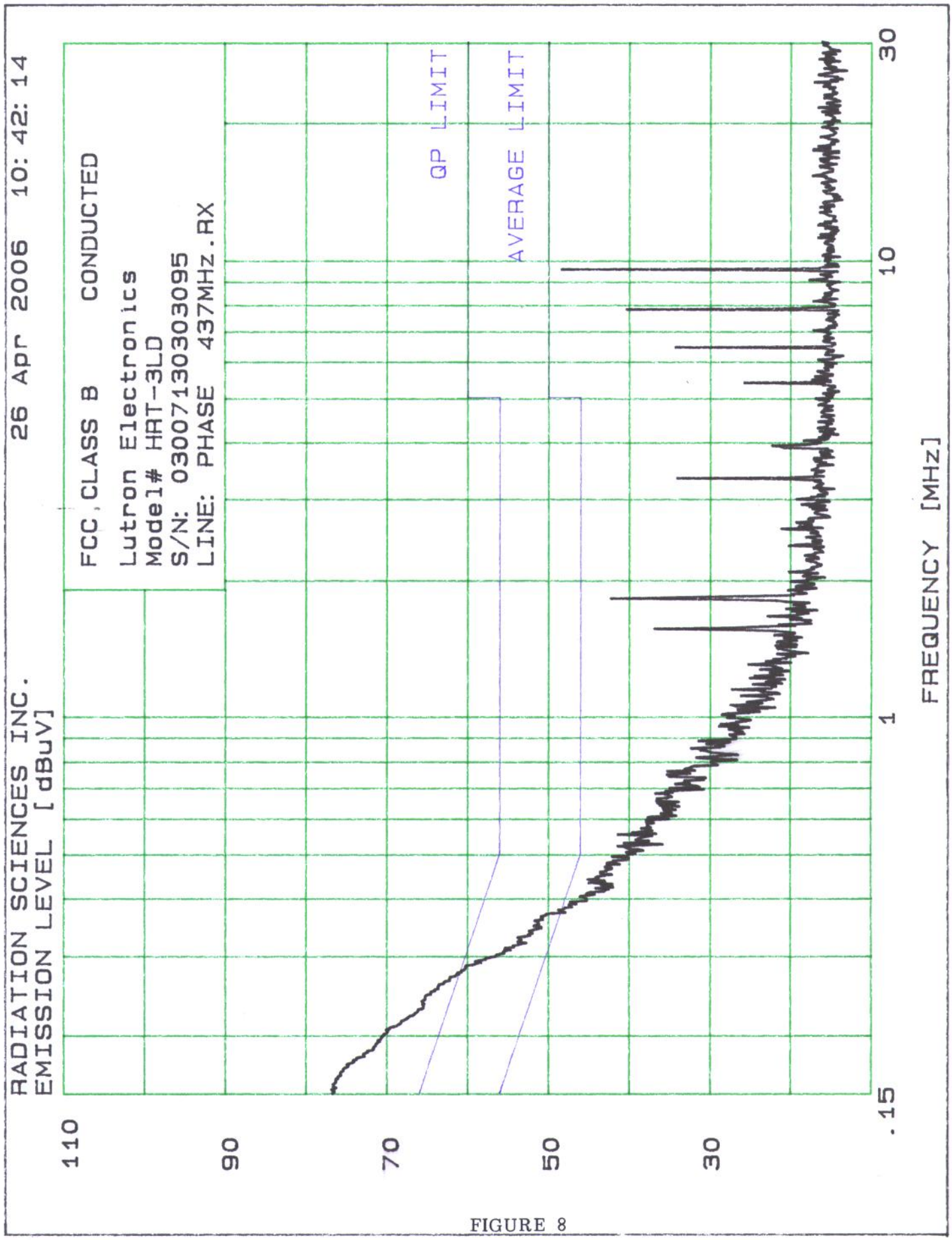
RADIATION SCIENCES INC.
EMISSION LEVEL [dBuV]
26 Apr 2006 10: 42: 14
FCC, CLASS B CONDUCTED
Lutron Electronics
Model# HRT-3LD
S/N: 0300713030309S
LINE: PHASE 437MHz.RX
QP LIMIT
AVERAGE LIMIT
110
90
70
50
30
.15
1
10
30
FREQUENCY [MHz]

FIGURE 8

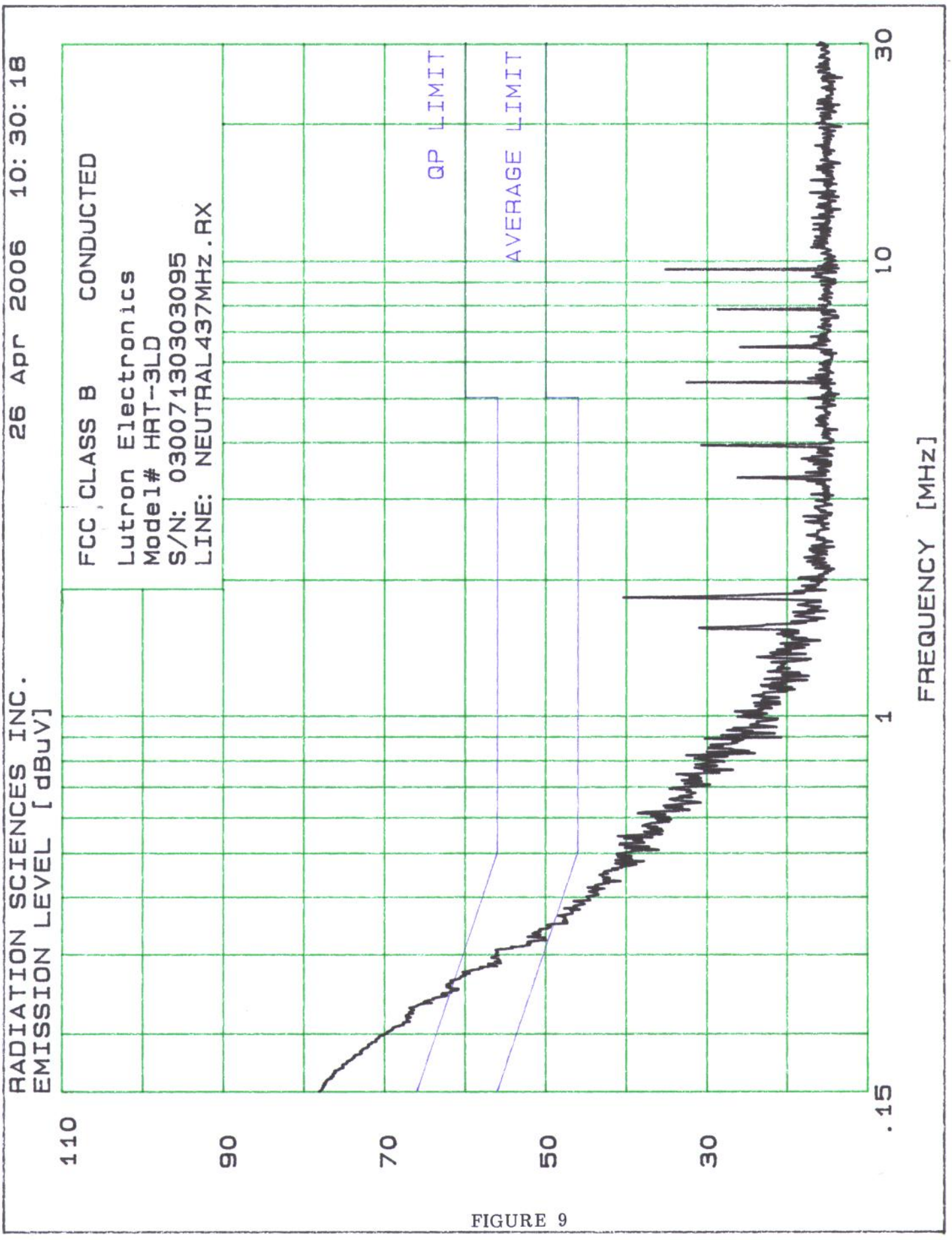
RADIATION SCIENCES INC.
EMISSION LEVEL [dBuV]
26 Apr 2006 10:30:18
FCC CLASS B CONDUCTED
Lutron Electronics
Model# HRT-3LD
S/N: 030071303095
LINE: NEUTRAL437MHz.RX
QP LIMIT
AVERAGE LIMIT
110
90
70
50
30
.15
1
10
30
FREQUENCY [MHz]

FIGURE 9

RADIATION SCIENCES INC.

Electromagnetic Emission Test

EUT			
	Manufacturer: Lutron Electronics **Model #:** HRT-3LD **Serial #:** 030071303095 **Mode:** RECEIVE 437MHz	**Date:** 4/26/06 **Test Instruments:** RSI # 32.1, 33.1, 177, 245, 246, 391, 712 **Frequency Range:** .150– 30MHz	Test Code **CE** Technician JK Engineer

Temperature: 72°F **Humidity:** 50%	**Additional Info:**	**Test Spec:** FCC Part 15, Class B Unintentional Radiators

Radiated Distance: Antenna:	☐ HORIZ. ☐ BB ☐ NB ☐ VERT. ☐ H ☐ E	**Conducted** Line: *Phase/Neutral* Function:	☐ BB ☐ NB

FREQ.	QP IND. Level	AVG IND. Level	Correction Factors			QP Final Level	AVG Final Level		Remarks
			ANT.	Cable loss					
MHz	dBµV	dBµV	dB	dB		dBµV	dBuV		
.150	65.5	-2.4		0		65.5	-2.4		Phase
.180	59.2	-4.4		0		59.2	-4.4		↓
.200	54.3	-4.4		0		54.3	-4.4		
.250	40.2	-7.0		0		40.2	-7.0		
.150	64.9	-2.3		0		64.9	-7.3		Neutral
.180	59.3	-4.3		0		59.3	-4.3		↓
.200	54.0	-4.5		0		54.0	-4.5		
.250	40.5	-7.0		0		40.5	-7.0		

Figure 10

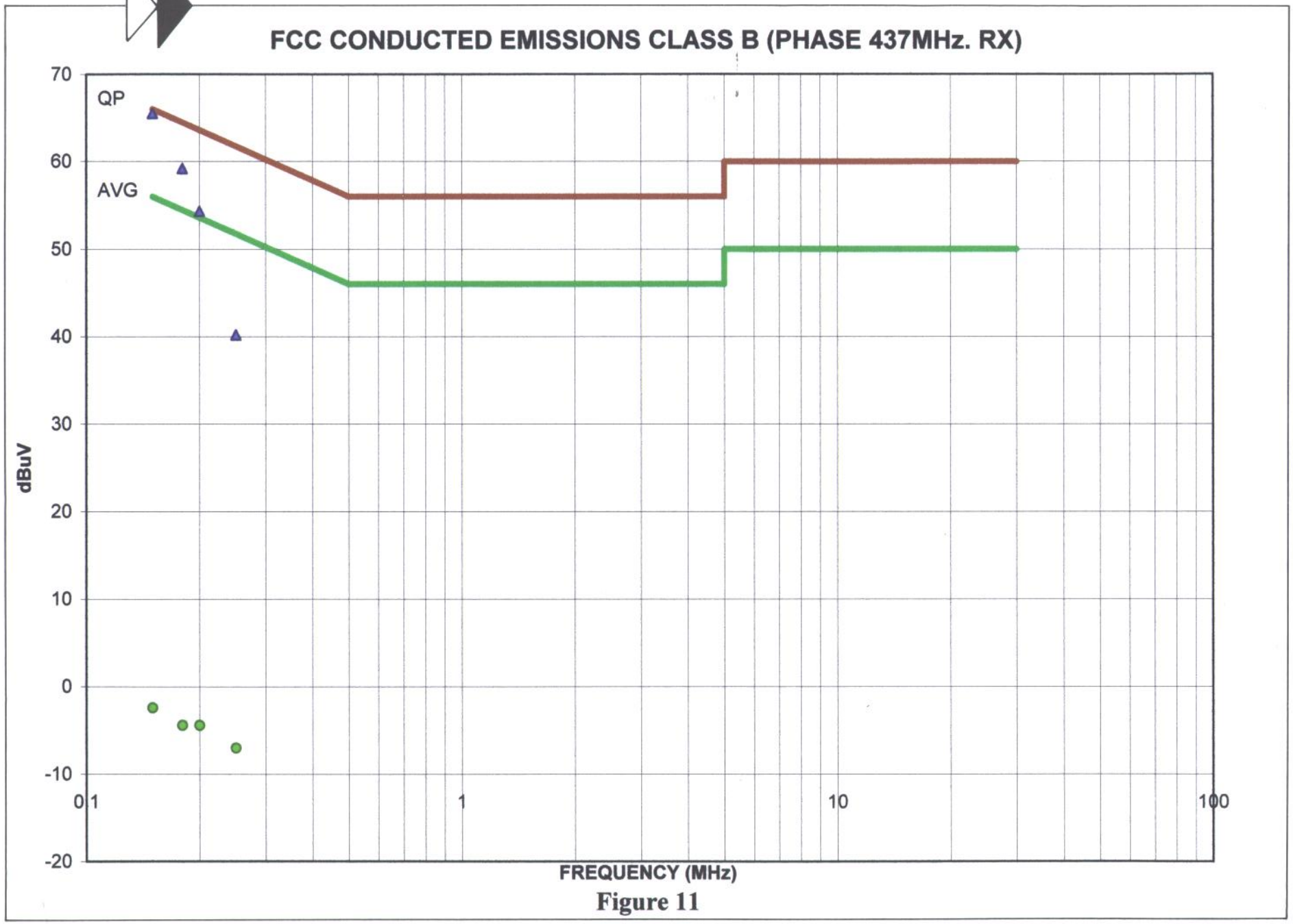
FCC CONDUCTED EMISSIONS CLASS B (PHASE 437MHz. RX)
QP
AVG
70
60
50
40
30
20
10
0
-10
-20
dBuV
0.1
1
10
100
FREQUENCY (MHz)

Figure 11

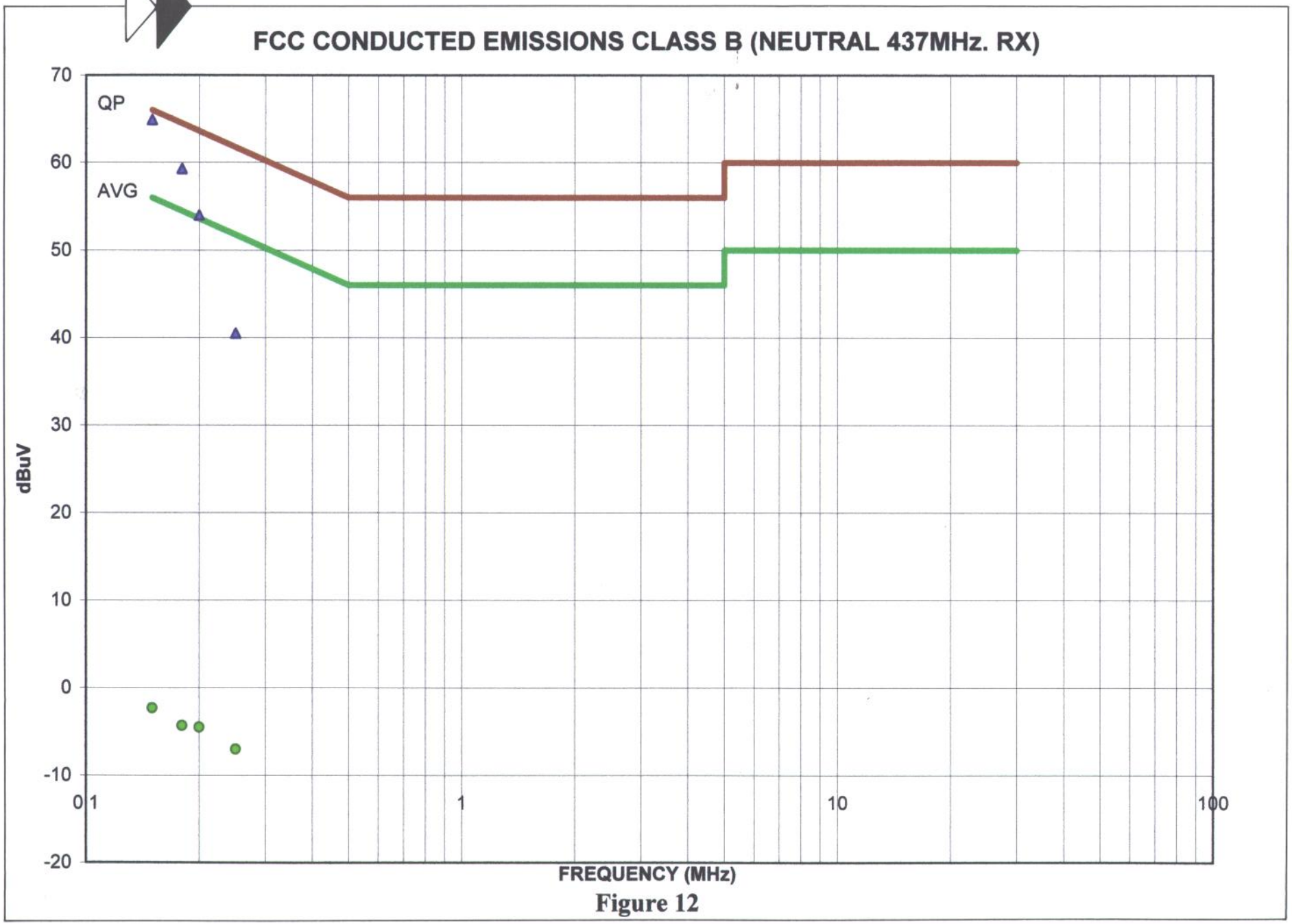
FCC CONDUCTED EMISSIONS CLASS B (NEUTRAL 437MHz. RX)
QP
AVG
70
60
50
40
30
20
10
0
-10
-20
dBuV
0.1
1
10
100
FREQUENCY (MHz)

Figure 12

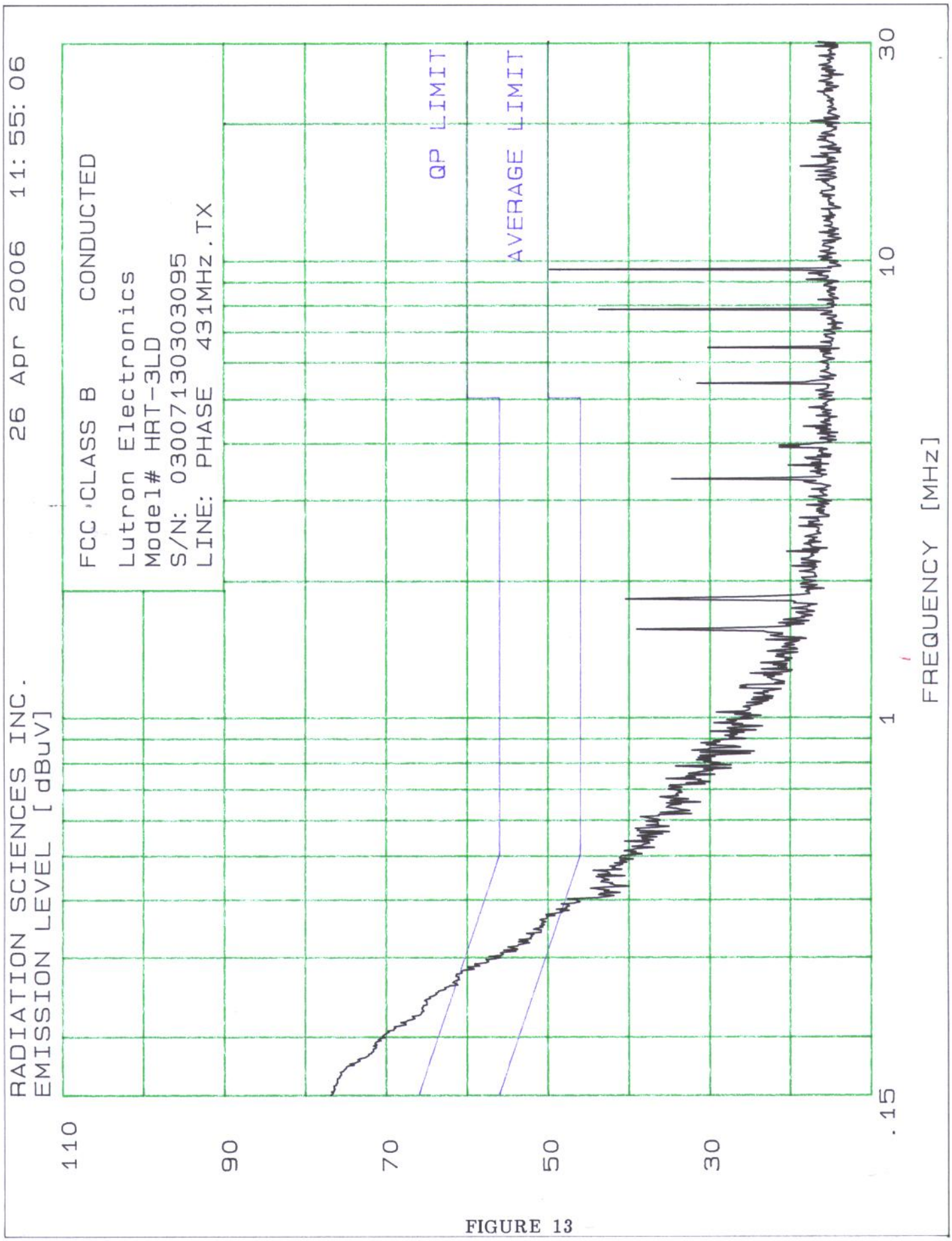
RADIATION SCIENCES INC.
EMISSION LEVEL [dBuV]
26 Apr 2006 11:55:06
FCC CLASS B CONDUCTED
Lutron Electronics
Model# HRT-3LD
S/N: 03007130303095
LINE: PHASE 431MHz.TX
QP LIMIT
AVERAGE LIMIT
110
90
70
50
30
.15
1
10
30
FREQUENCY [MHz]

FIGURE 13

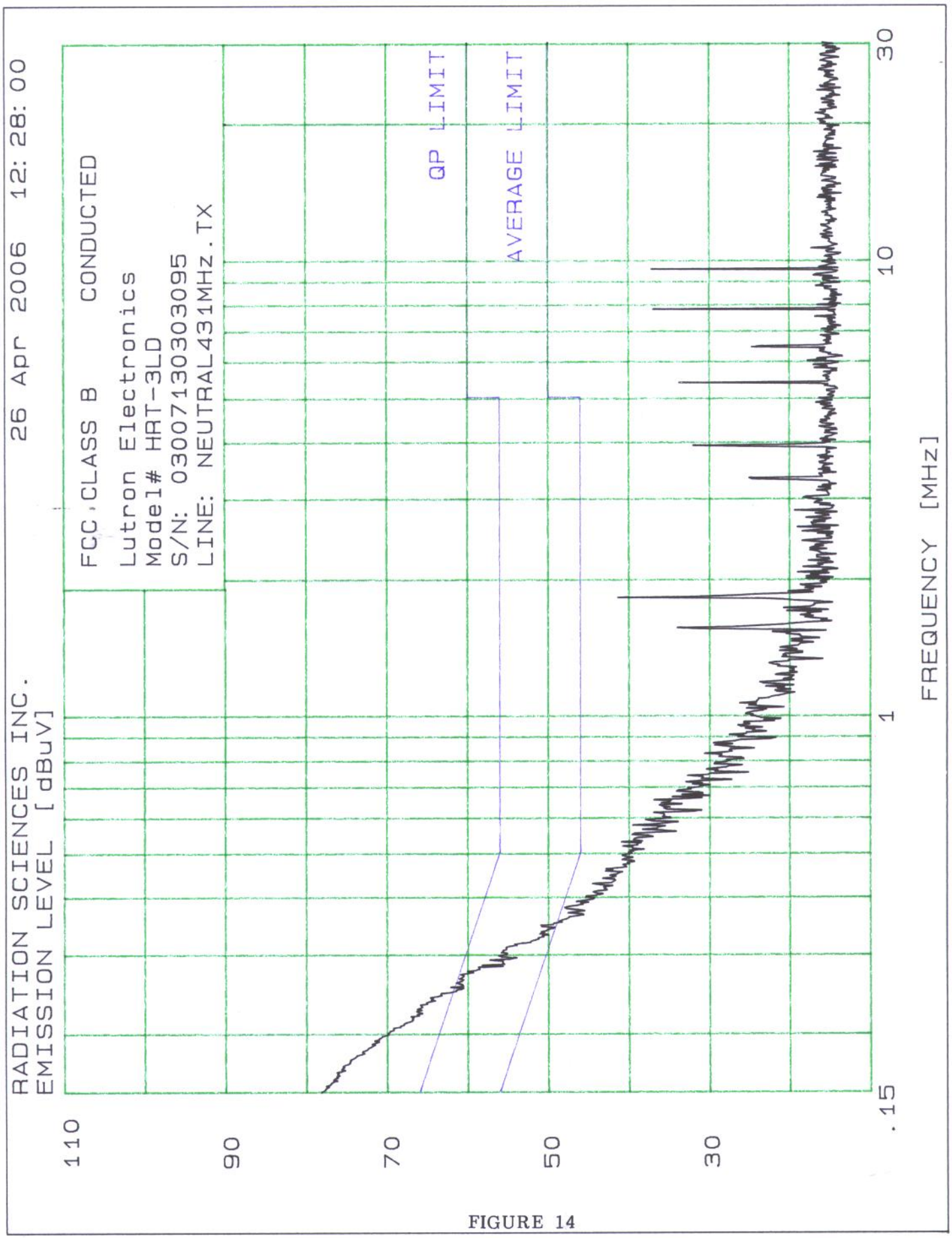
RADIATION SCIENCES INC.
EMISSION LEVEL [dBuV]
26 Apr 2006 12:28:00
FCC,CLASS B CONDUCTED
Lutron Electronics
Model# HRT-3LD
S/N: 03007130303095
LINE: NEUTRAL431MHz.TX
QP LIMIT
AVERAGE LIMIT
110
90
70
50
30
.15
1
10
30
FREQUENCY [MHz]

FIGURE 14

RADIATION SCIENCES INC.

Electromagnetic Emission Test

EUT			
Manufacturer: Lutron Electronics **Model #:** HRT-3LD **Serial #:** 030071303095 **Mode:** TRANSMIT 431MHz	**Date:** 4/26/06 **Test Instruments:** RSI # 32.1, 33.1, 177, 245, 246, 391, 712	Test Code **CE**	
		Technician JK	
	Frequency Range: .150– 30MHz	Engineer	

Temperature: 70°F **Humidity:** 32%	**Additional Info:**	**Test Spec:** FCC Part 15, Class B Unintentional Radiators

Radiated Distance: Antenna:	☐ HORIZ. ☐ BB ☐ NB ☐ VERT. ☐ H ☐ E	**Conducted** Line: *Phase/Neutral* Function: ☐ BB ☐ NB

FREQ.	QP IND. Level	AVG IND. Level	Correction Factors			QP Final Level	AVG Final Level		Remarks
			ANT.	Cable loss					
MHz	dBµV	dBµV	dB	dB		dBµV	dBµV		
.150	65.9	-2.9		0		65.9	-2.9		Phase
.180	59.2	-4.6		0		59.2	-4.6		↓
.200	53.7	-5.0		0		53.7	-5.0		↓
.250	41.9	-7.2		0		41.9	-7.2		↓
.150	65.8	-2.9		0		65.8	-2.9		Neutral
.180	59.3	-4.5		0		59.3	-4.5		↓
.200	59.3	-2.5		0		59.3	-2.5		↓
.250	41.8	-7.3		0		41.8	-7.3		↓

Figure 15

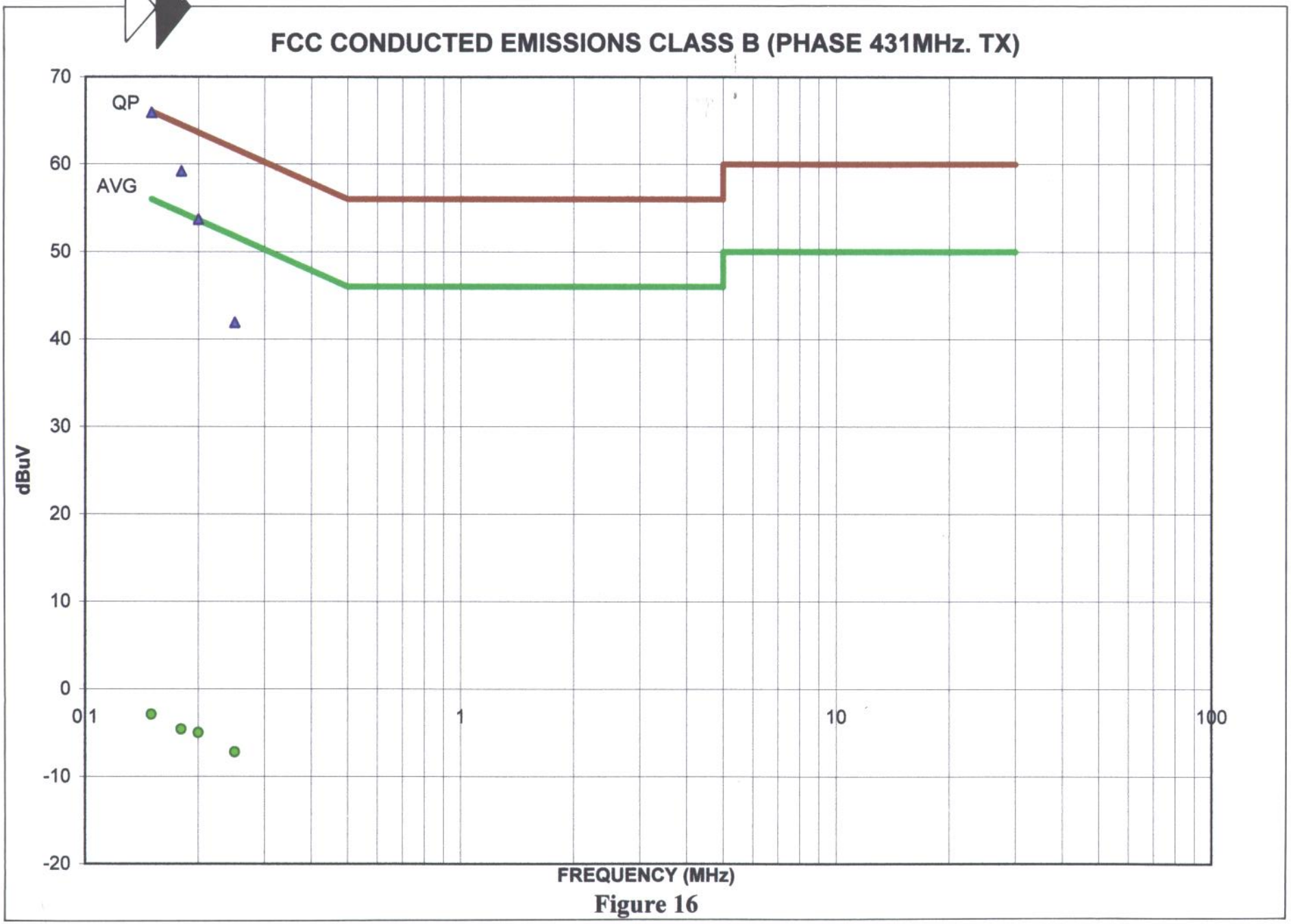
FCC CONDUCTED EMISSIONS CLASS B (PHASE 431MHz. TX)
QP
AVG
70
60
50
40
30
20
10
0
-10
-20
dBuV
0.1
1
10
100
FREQUENCY (MHz)

Figure 16

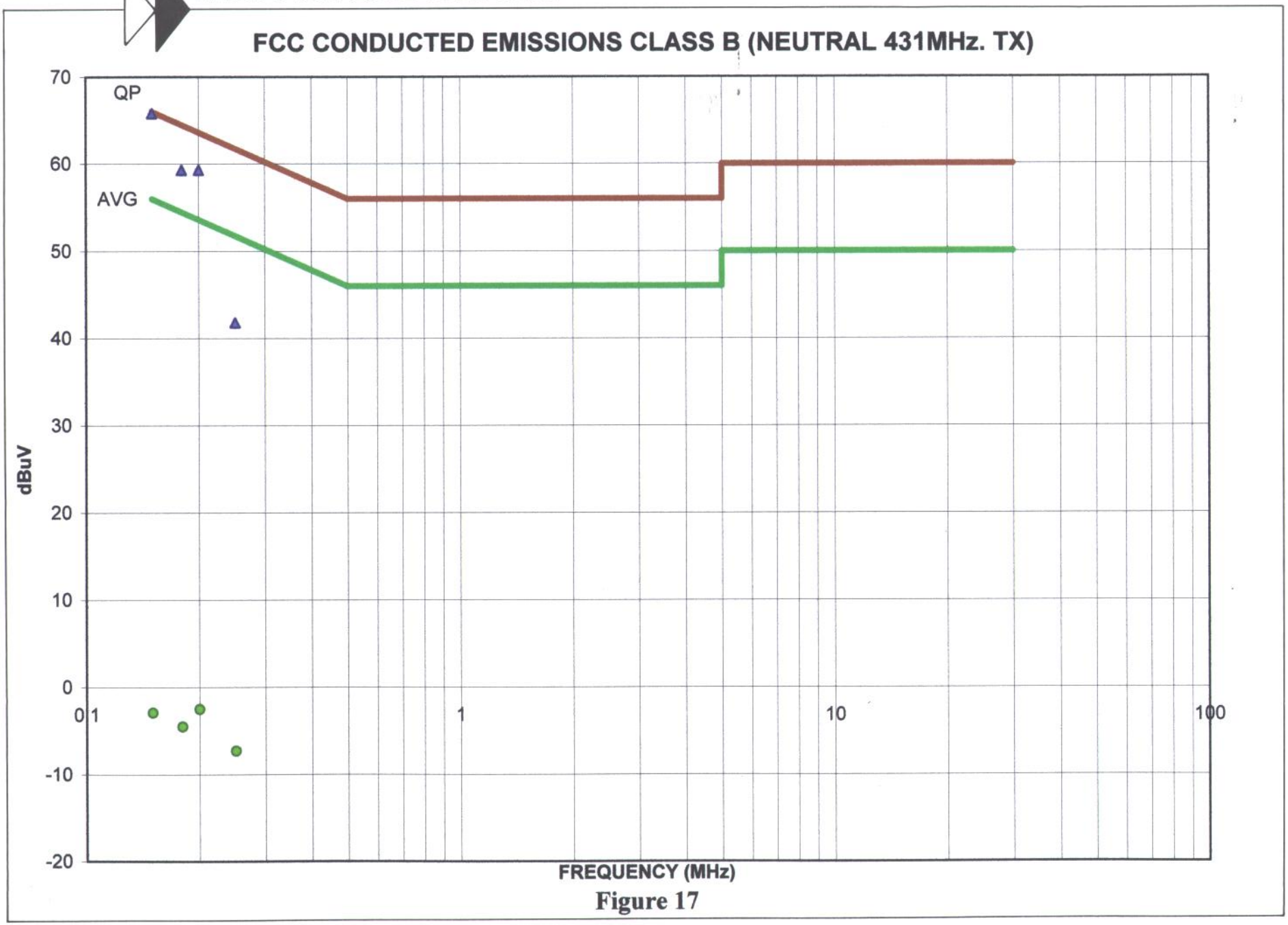
FCC CONDUCTED EMISSIONS CLASS B (NEUTRAL 431MHz. TX)
QP
AVG
70
60
50
40
30
20
10
0
-10
-20
dBuV
0.1
1
10
100
FREQUENCY (MHz)

Figure 17

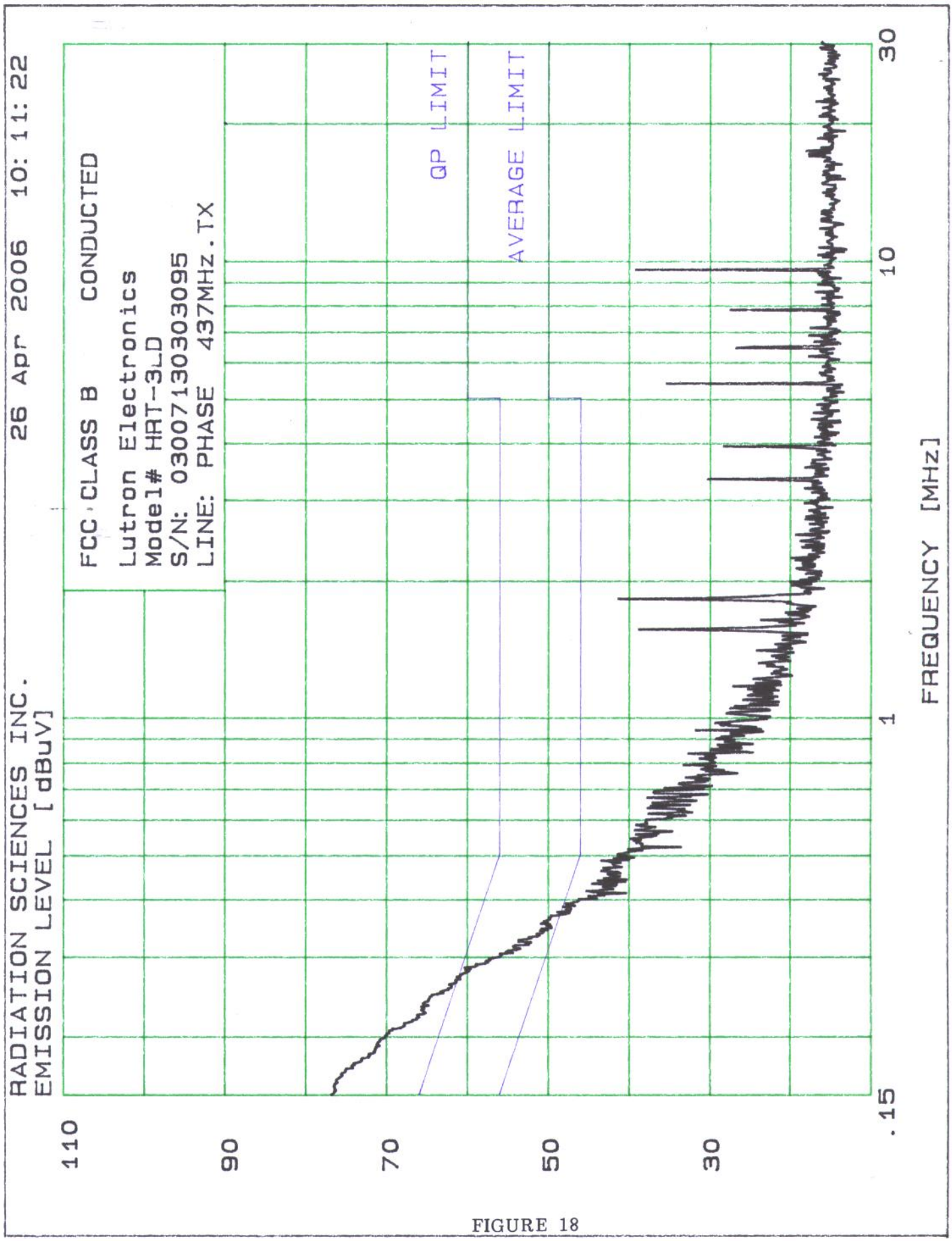
RADIATION SCIENCES INC.
EMISSION LEVEL [dBuV]
26 Apr 2006 10:11:22
FCC CLASS B CONDUCTED
Lutron Electronics
Model# HRT-3LD
S/N: 030071303095
LINE: PHASE 437MHz.TX
QP LIMIT
AVERAGE LIMIT
110
90
70
50
30
.15
1
10
30
FREQUENCY [MHz]

FIGURE 18

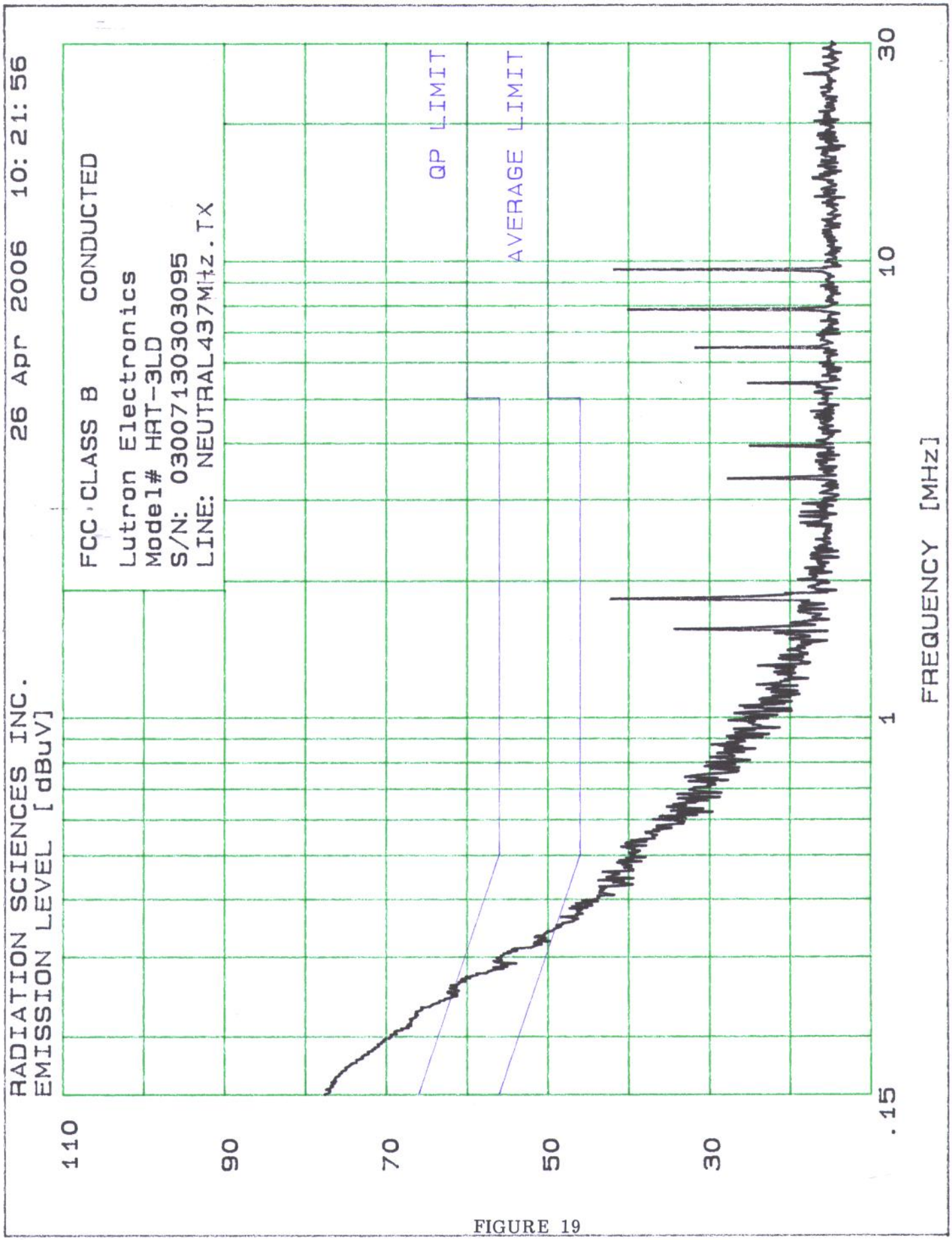
RADIATION SCIENCES INC.
EMISSION LEVEL [dBuV]
26 Apr 2006 10:21:56
FCC CLASS B CONDUCTED
Lutron Electronics
Model# HAT-3LD
S/N: 03007130303095
LINE: NEUTRAL437MHz.TX
QP LIMIT
AVERAGE LIMIT
110
90
70
50
30
.15
1
10
30
FREQUENCY [MHz]

FIGURE 19

Electromagnetic Emission Test

EUT			
	Manufacturer: Lutron Electronics **Model #:** HRT-3LD **Serial #:** 030071303095 **Mode:** TRANSMIT 437MHz	**Date:** 4/26/06 **Test Instruments:** RSI # 32.1, 33.1, 177, 245, 246, 391, 712 **Frequency Range:** .150– 30MHz	Test Code **CE** Technician JK Engineer

Temperature: 70°F **Humidity:** 32%	**Additional Info:**	**Test Spec:** FCC Part 15, Class B Unintentional Radiators

Radiated Distance: Antenna:	☐ HORIZ. ☐ BB ☐ NB ☐ VERT. ☐ H ☐ E	**Conducted** Line: *Phase/Neutral* Function:	☐ BB ☐ NB

FREQ.	QP IND. Level	AVG IND. Level	Correction Factors				QP Final Level	AVG Final Level	Remark
			ANT.	Cable loss					
MHz	dBµV	dBµV	dB	dB			dBµV	dBµV	
.150	65.5	-2.9		0			65.5	-2.9	Phase
.180	59.2	-4.6		0			59.2	-4.6	↓
.200	54.1	-4.8		0			54.1	-4.8	↓
.250	41.5	-7.3		0			41.5	-7.3	↓
.150	65.0	-2.6		0			65.0	-2.6	Neutral
.180	59.3	-4.4		0			65.0	-24.4	↓
.200	54.2	-5.0		0			54.2	-5.0	↓
.250	41.0	-7.1		0			41.0	-7.1	↓

Figure 20

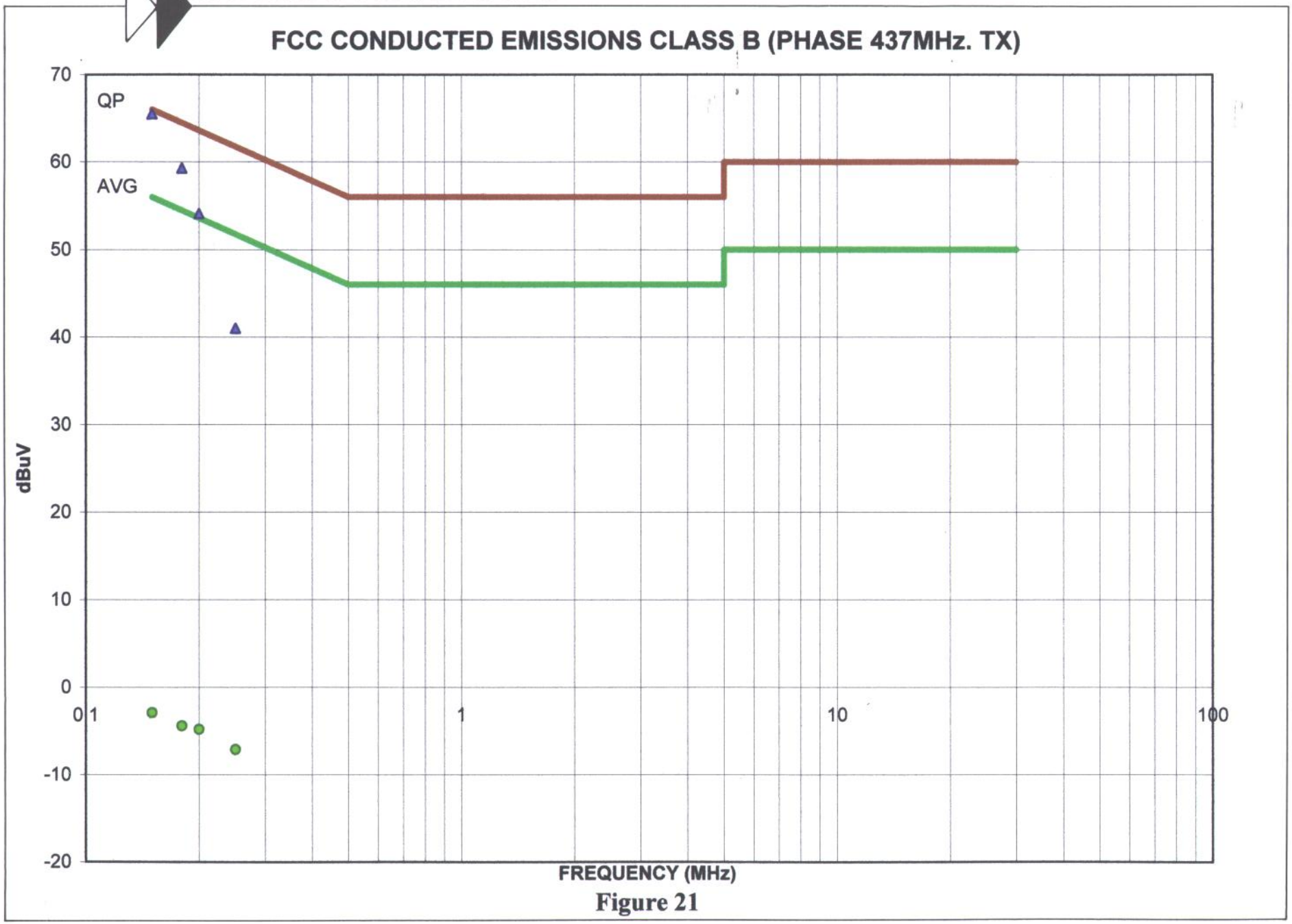
FCC CONDUCTED EMISSIONS CLASS B (PHASE 437MHz. TX)
QP
AVG
70
60
50
40
30
20
10
0
-10
-20
dBuV
0.1
1
10
100
FREQUENCY (MHz)

Figure 21

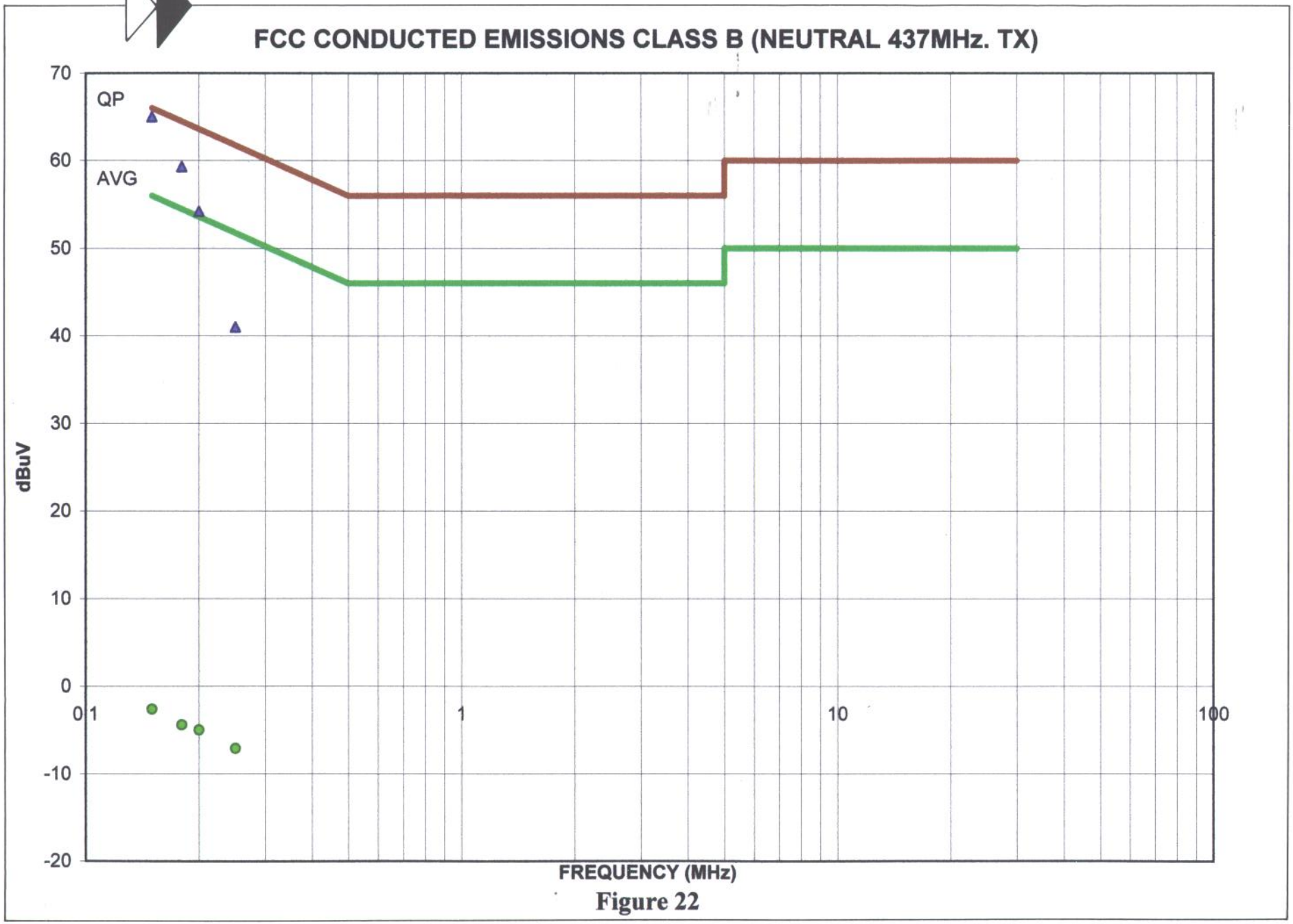
FCC CONDUCTED EMISSIONS CLASS B (NEUTRAL 437MHz. TX)
QP
AVG
70
60
50
40
30
20
10
0
-10
-20
dBuV
0.1
1
10
100
FREQUENCY (MHz)

Figure 22

4.2 Radiated Emissions Measurements, §15.33, §15.35, §15.109, §15.205, §15.209, §15.231

Radiated Emissions measurements were recorded for the test sample at a distance of 3 meters. Radiated Emissions were measured with the antenna in both the horizontal and vertical polarizations. The antenna was raised 1 to 4 meters in height and the Equipment Under Test **(EUT)** was rotated 360° to maximize the emission. No significant emission level changes occurred while positioning the **EUT** power cable.

For intentional radiators the field strength of emissions of the **EUT** was measured out to the tenth harmonic of the carrier frequency. The carrier frequency was set to 431 and 437MHz.

An average factor of 20dB was applied to the level of the fundamental emission when compared to the **FCC** limit. The EUT duty cycle information supporting the -20dB factor is shown in Figure 23.

Figure 24 is a test setup diagram for Radiated Emissions and Figure 25 are the photographs of the test setup.

The test results for Radiated Emissions testing are shown in the following figures:

Figure 26 Unintentional Radiated Emissions, data sheet, 431MHz Receive Mode
Figure 27 Unintentional Radiated Emissions, graph, 431MHz Receive Mode
Figure 28 Unintentional Radiated Emissions, data sheet, 437MHz Receive Mode
Figure 29 Unintentional Radiated Emissions, graph, 437MHz Receive Mode
Figure 30 Unintentional Radiated Emissions, data sheet, 431MHz CW Transmit Mode, Vert.
Figure 31 Unintentional Radiated Emissions, data sheet, 431MHz CW Transmit Mode, Horiz.
Figure 32 Unintentional Radiated Emissions, data sheet, 437MHz CW Transmit Mode, Vert.
Figure 33 Unintentional Radiated Emissions, data sheet, 437MHz CW Transmit Mode, Horiz.

Figure 34 Intentional Radiated Emissions, data sheet, 431MHz CW Transmit Mode
Figure 35 Intentional Radiated Emissions, data sheet, 437MHz CW Transmit Mode

ALL LEVELS COMPLY WITH THE APPLICABLE FCC LIMITS FOR RADIATED EMISSIONS PER THE APPLICABLE PARAGRAPHS.