



ADDENDUM TO FC02-091

FOR THE

DIGITAL VIDEO TRANSMITTER, EXPEDIO TX & RX

FCC PART 74 AND PART 15 SUBPART B SECTIONS 15.107 AND 15.109 CLASS A

COMPLIANCE

DATE OF ISSUE: NOVEMBER 20, 2002

PREPARED FOR:

Moseley Associates Incorporated
111 Castilian Drive
Santa Barbara, CA 93117-3093

P.O. No.: P499209-01
W.O. No.: 79622

PREPARED BY:

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CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

Date of test: October 4-21, 2002

Report No.: FC02-091A

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CKC Laboratories, Inc. has received Certificates of Accreditation from the following agencies:

A2LA (USA); BSMI (Taiwan); Nemko (Norway); and GOST (Russia).

CKC Laboratories, Inc has received test site Registration Acceptance from the following agencies:

FCC (USA); VCCI (Japan); and Industry Canada.

CKC Laboratories, Inc. has received Letters of Acceptance through an MRA for the following agencies:

ACA/NATA (Australia); SABS (South Africa); SWEDAC (Sweden); Radio Communications Agency (RA); HOKLAS (Hong Kong); Bakom (Swiss); BIPT (Belgium); Denmark Telestyrelsen; RvA (Netherlands); SEE (Luxembourg) SITTEL (Bolivia); and UKAS (UK).

ADMINISTRATIVE INFORMATION

DATE OF TEST: October 4-21, 2002

DATE OF RECEIPT: October 4, 2002

PURPOSE OF TEST: To demonstrate the compliance of the Digital Video Transmitter, Expedio TX & RX with the requirements for FCC Part 74 and Part 15 Subpart B Sections 15.107 and 15.109 Class A devices. **Addendum A** is to revise the test conditions on page 21.

TEST METHOD: ANSI C63.4 (1992) and FCC Part 74

FREQUENCY RANGE TESTED: 9 kHz – 22 GHz

MANUFACTURER: Moseley Associates Incorporated
111 Castilian Drive
Santa Barbara, CA 93117-3093

REPRESENTATIVE: Jamal Hamdani

TEST LOCATION: CKC Laboratories, Inc.
110 Olinda Place, Brea, CA 92621
5473A Clouds Rest, Mariposa, CA 95338

SUMMARY OF RESULTS

As received, the Moseley Associates Incorporated Digital Video Transmitter, Expedio TX & RX was found to be fully compliant with the following standards and specifications:

United States

➤ FCC Part 74 and Part 15 Subpart B Sections 15.107 and 15.109 Class A
ANSI C63.4 (1992) method

CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

QUALITY ASSURANCE:

A handwritten signature in black ink, appearing to read "Steve Behm".

Steve Behm, Director of Engineering Services

A handwritten signature in black ink, appearing to read "Joyce Walker".

Joyce Walker, Quality Assurance Administrative Manager

A handwritten signature in black ink, appearing to read "Septimiu Apahidean".

Septimiu Apahidean, EMC/Lab Manager

A handwritten signature in black ink, appearing to read "Chuck Kendall".

Chuck Kendall, EMC/Lab Manager

TEST PERSONNEL:

A handwritten signature in black ink, appearing to read "Eddie Wong".

Eddie Wong, EMC Engineer

A handwritten signature in black ink, appearing to read "Monika Brandle".

Monika Brandle, EMC Engineer/
Evaluation Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The Digital Video transmitter employing COFDM tested by CKC Laboratories was a production unit.

EQUIPMENT UNDER TEST

Digital Video Transmitter

Manuf: Moseley Associates
Incorporated
Model: Expedio TX
Serial: 92026-0240
FCC ID: pending

Digital Video Receiver

Manuf: Moseley Associates
Incorporated
Model: Expedio RX
Serial: 92127-0240
FCC ID: DoC

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

DVD Player

Manuf: Samsung
Model: DVD-5221
Serial: 6VDT144346P
FCC ID: DoC

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

2.1033(c)(3) USER'S MANUAL

The necessary information is contained in a separate document.

2.1033 (c)(4) TYPE OF EMISSIONS

08MUD1F

2.1033(c)(5) FREQUENCY RANGE

1990 - 2110 MHz.

2.1033(c)(6) OPERATING POWER

0.50 Watt for 1990 MHz, 0.50 Watts for 2050 MHz and 0.57 Watts for 2110 MHz.

2.1033(c)(7) MAXIMUM POWER RATING

20 Watts fixed, 12 Watts mobile.

2.1033(c)(8) DC VOLTAGES

AC to 12 Volts + 5 DC

2.1033(c)(9) TUNE-UP PROCEDURE

The necessary information is contained in a separate document.

2.1033(c)(10) SCHEMATICS AND CIRCUITRY DESCRIPTION

The necessary information is contained in a separate document.

2.1033(c)(11) LABEL AND PLACEMENT

The necessary information is contained in a separate document.

2.1033(c)(12) SUBMITTAL PHOTOS

The necessary information is contained in a separate document.

2.1033(c)(13) MODULATION INFORMATION

COFDM

2.1033(c)(14)/2.1046/ - RF POWER OUTPUT

Test Conditions: The EUT is placed on the test bench. The RF output port of the EUT is connected to a Power meter. The Video input and Audio (R/L) input ports are connected to a DVD player. DVD player sends analog video and audio signal to the EUT. 110Vac, 60 Hz, 21°C, 34% relative humidity.

RBW/VBW=3 MHz, Span = 40 MHz

Minimum Output Power Measurements = 0.5 Watts

1990MHz - 130.4 dBuV + 4.2 = 134.6 dBuV

2050MHz - 129.6 + 4.2 = 133.8 dBuV

2110MHz - 129.8 + 4.2 = 134 dBuV

Maximum Output Power Measurements = 5.9 Watts

1990MHz - 140.2 dBuV + 4.2 = 144.4 dBuV

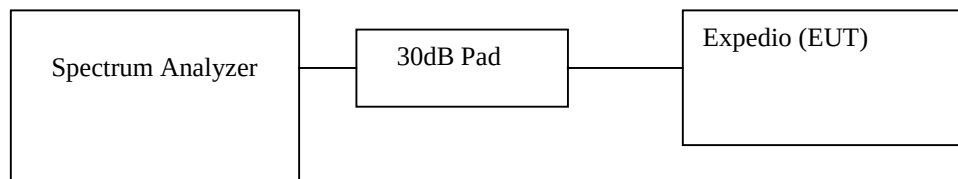
2050 MHz - 140.5 dBuV + 4.2 = 144.7 dBuV

2110MHz - 140 dBuV + 4.2 = 144.2 dBuV

Bandwidth correction Factor was calculated as follows:

$10\log 8 \text{ MHz} / 3 \text{ MHz} = 4.2$

Test Setup Diagram:



Test Equipment

Equipment	Manufacturer	Model #	Asset #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	H-P	E7405A	02467	US40240225	03/29/02	03/29/03

2.1033(c)(14)/2.1047(a) - MODULATION CHARACTERISTICS - AUDIO FREQUENCY RESPONSE

Not applicable to this unit.

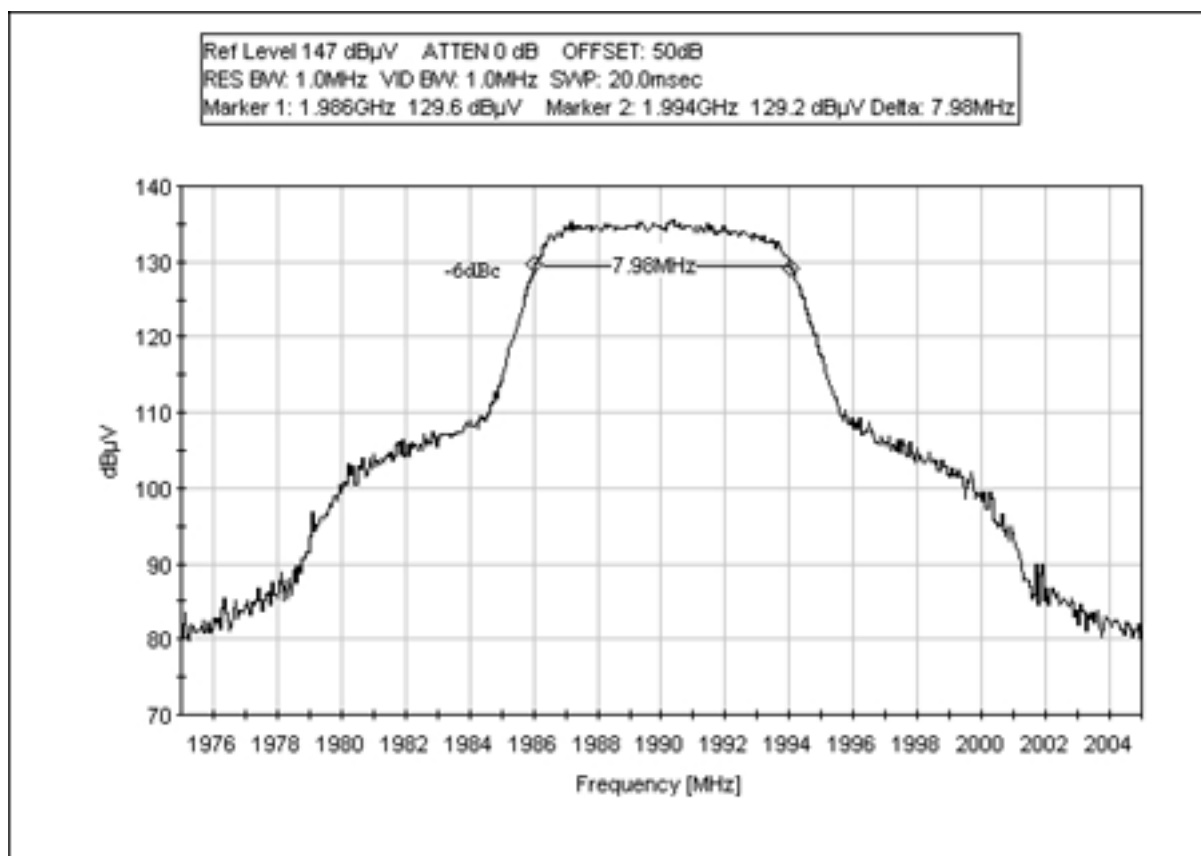
2.1033(c)(14)/2.1047(b) MODULATION CHARACTERISTICS – Modulation Limiting Response

Not applicable to this unit.

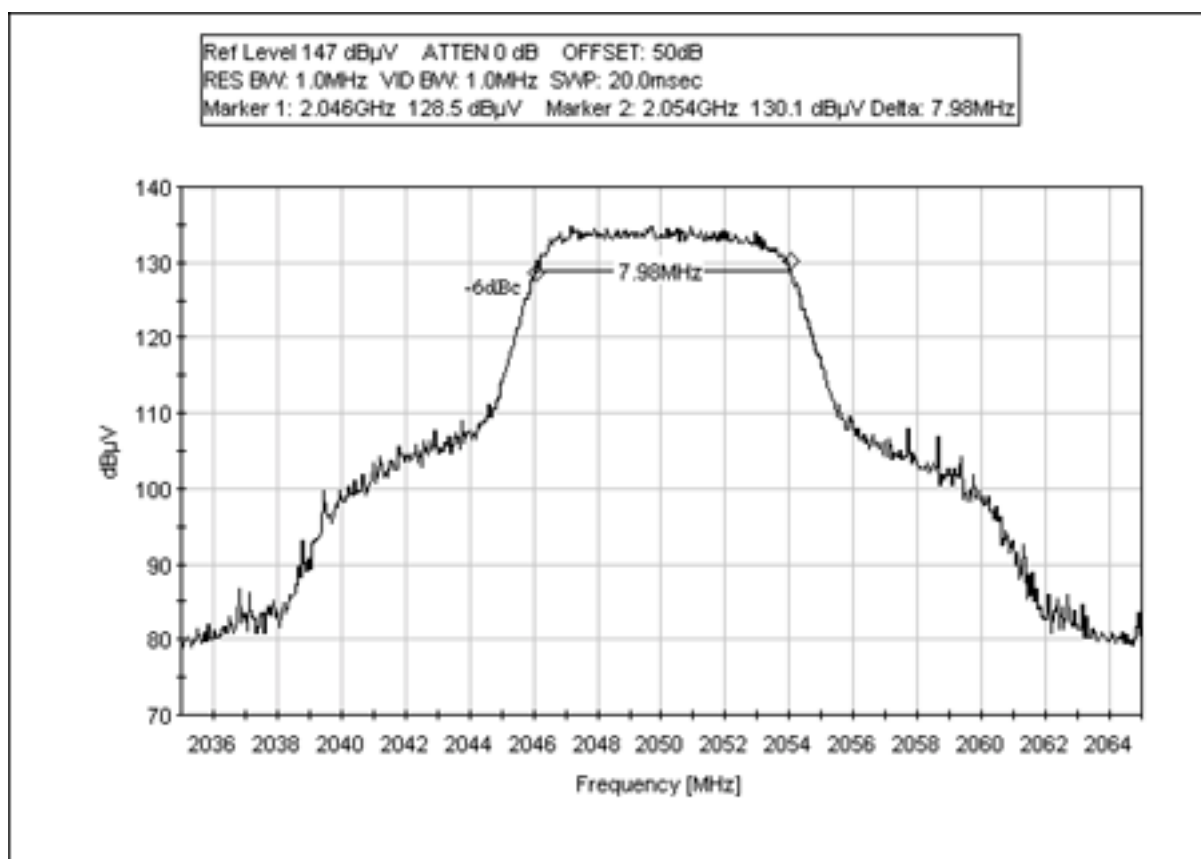
2.1033(c)(14)/2.1049(i)/74.636(h) – BANDWIDTH LIMITATIONS

Test Conditions: The EUT is placed on the test bench. The RF output port of the EUT is connected to a Spectrum Analyzer. The Video input and Audio (R/L) input ports are connected to a DVD player. DVD player sends analog video and audio signal to the EUT. The EUT converts the Analog signal to Digital video signal, modulates the signal in COFDM format and sends the signal out to the RF port. 110Vac, 60 Hz, 21:C, 34% relative humidity. External Attenuator = 50 dB.

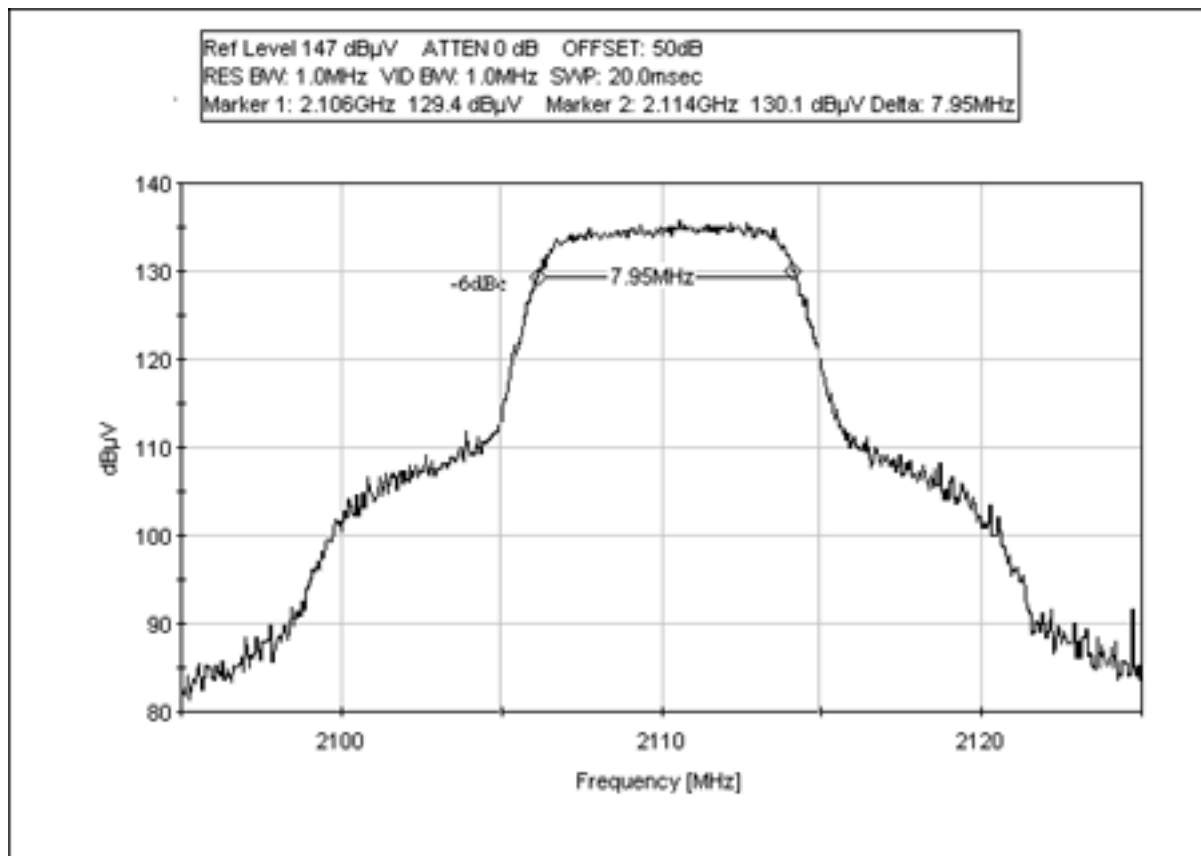
BANDWIDTH LIMITATIONS 1990 MHz



BANDWIDTH LIMITATIONS 2050 MHz



BANDWIDTH LIMITATIONS 2110 MHz





Bandwidth Limitations

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	092702	092703
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
¼" Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	071502	071503
3.5 GHz HPF	2117	HP	84300-80038	3643A00027	062502	062503

2.1033(c)(14)/2.1049(i)/74.637(a) - OCCUPIED BANDWIDTH

Test Conditions: The EUT is placed on the test bench. The RF output port of the EUT is connected to a Spectrum Analyzer. The Video input and Audio (R/L) input ports are connected to a DVD player. DVD player sends analog video and audio signal to the EUT. The EUT converts the Analog signal to Digital video signal, modulates the signal in COFDM format and sends the signal out to the RF port. 110Vac, 60 Hz, 21°C, 34% relative humidity. External Attenuator = 50 dB.

§74.637 Emissions and emission limitations.

(a) *For frequency modulation, the mean power of emissions shall be attenuated below the mean transmitter power (P) in accordance with the following schedule:*

(1) *On any frequency removed from the assigned frequency by more than 50% and up to 100% of the authorized bandwidth: at least 25 dB.*

(2) *On any frequency removed from the assigned frequency by more than 100% and up to 150% of the authorized bandwidth: at least 35 dB.*

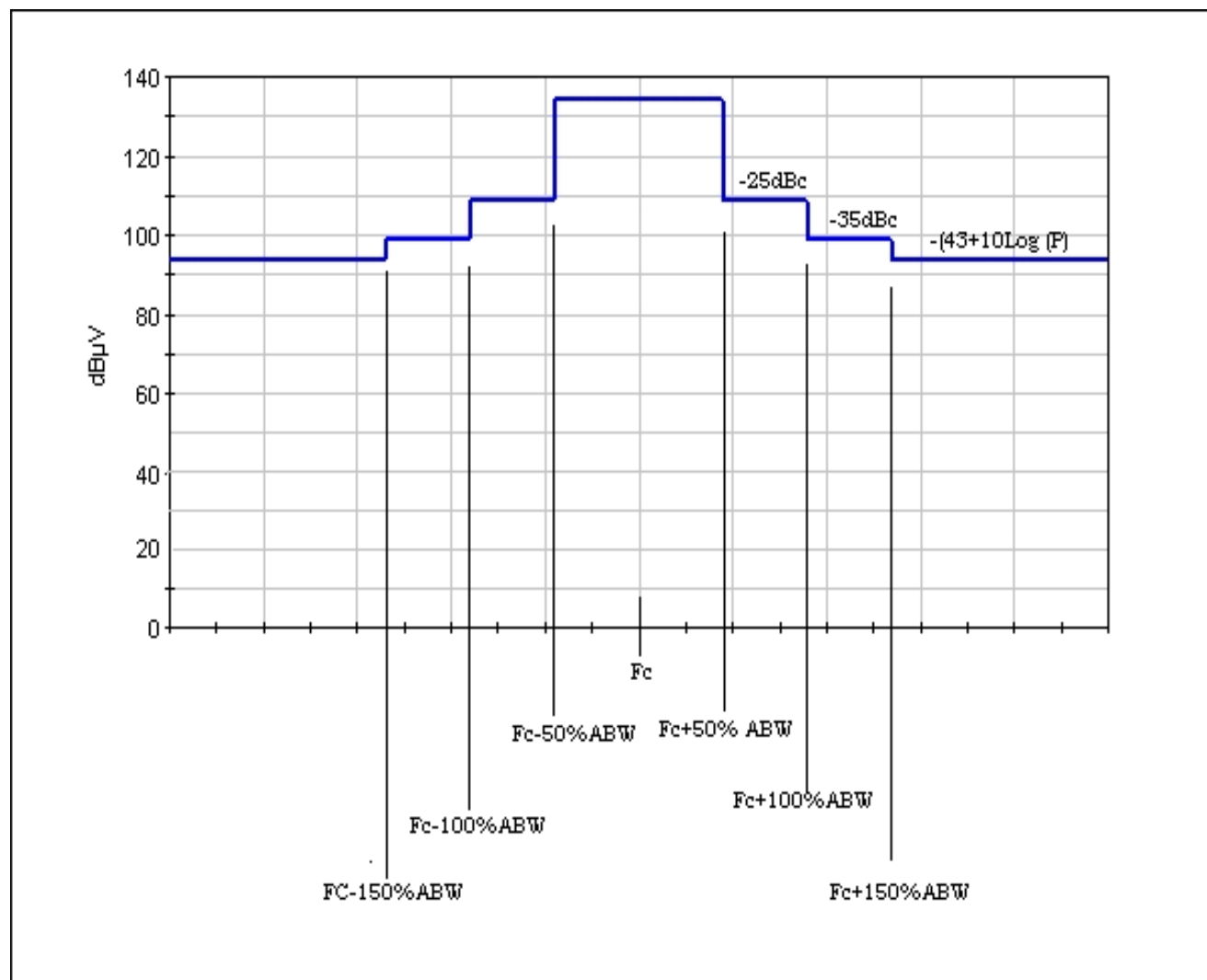
(3) *On any frequency removed from the assigned frequency by more than 150% of the authorized bandwidth: at least $43 + 10 \log(P)$ dB.*

Maximum Authorized Bandwidth per FCC 74.637 (g) = 18 MHz (1990-2110 MHz.)

Frequency Band	Required Attenuation
Fc – 50% (ABW) to Fc + 50% (ABW)	0 dB
Fc – 100%(ABW) to Fc – 50% (ABW) Fc + 50% (ABW) to Fc + 100% (ABW)	25 dB
Fc-150% (ABW) to Fc - 100%(ABW) Fc+ 100%(ABW) to Fc + 150% (ABW)	35dB
9 kHz to Fc- 150% (ABW) Fc + 150% (ABW) to 22,000 MHz	$43 + 10 \log(P)$ dB (94 dBuV at ant terminal at any power level)

ABW = 18 MHz,
Power = 0.5 Watts.

Frequency Band	Limit line (at Ant terminal)
Fc – 9MHz to Fc + 9 MHz	134 dBuV
Fc – 18 MHz to Fc – 9 MHz Fc + 9MHz to Fc + 18 MHz	109dBuV
Fc - 27MHz to Fc - 18MHz Fc + 18MHz to Fc + 27MHz	99dBuV
9 kHz to Fc – 27 MHz Fc + 27 MHz to 22,000 MHz	94dBuV



Calculation :

$$\text{dB}\mu\text{V} = 20 \times \text{Log} \frac{V}{10^{-6}}$$

P = 0.5 watts,

$$0.5 = \frac{V}{R}$$

$$0.5 = \frac{V^2}{50}$$

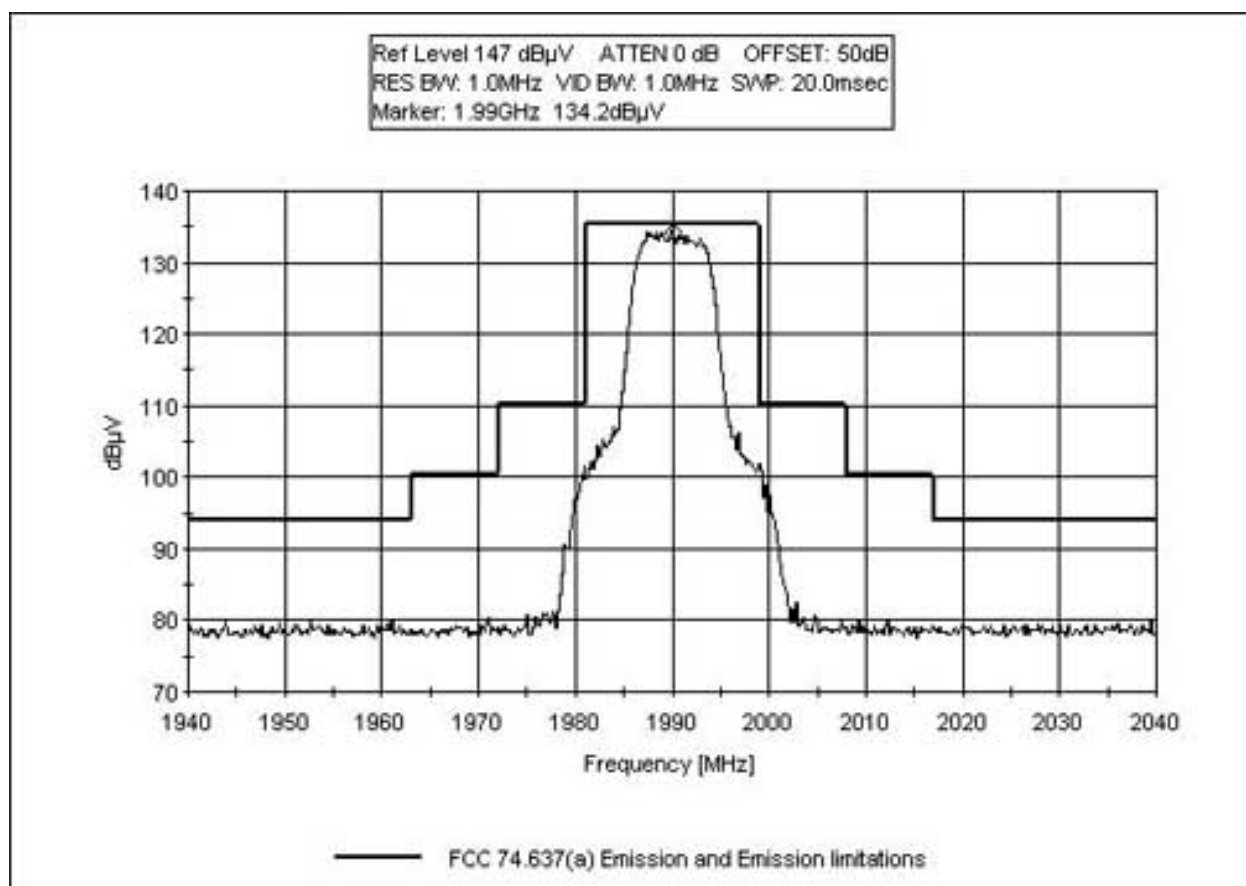
$$V = \sqrt{50 \times 0.5}$$

$$V = 5\text{v}$$

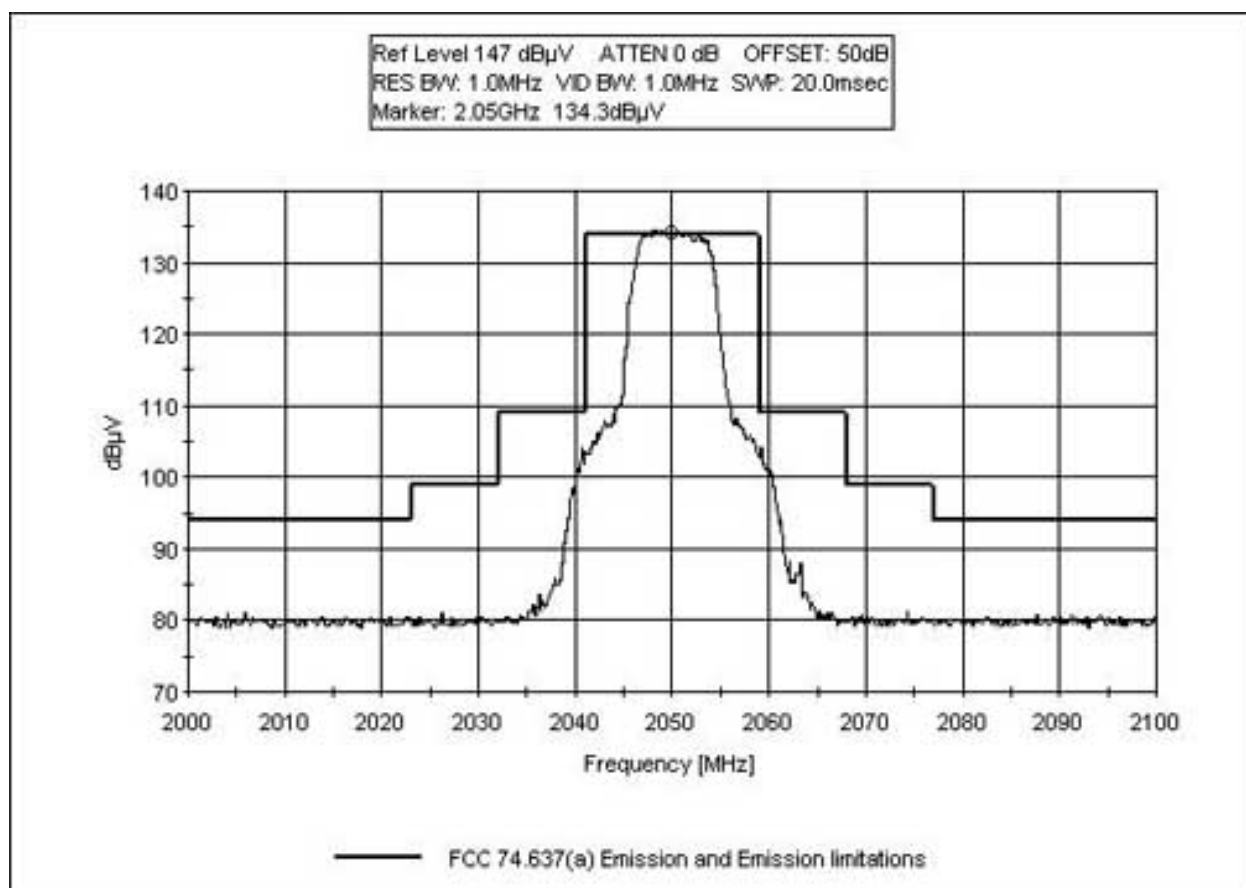
$$= 20 \text{ Log} \frac{5}{1 \times 10^{-6}}$$

$$= 134 \text{ dBuV}$$

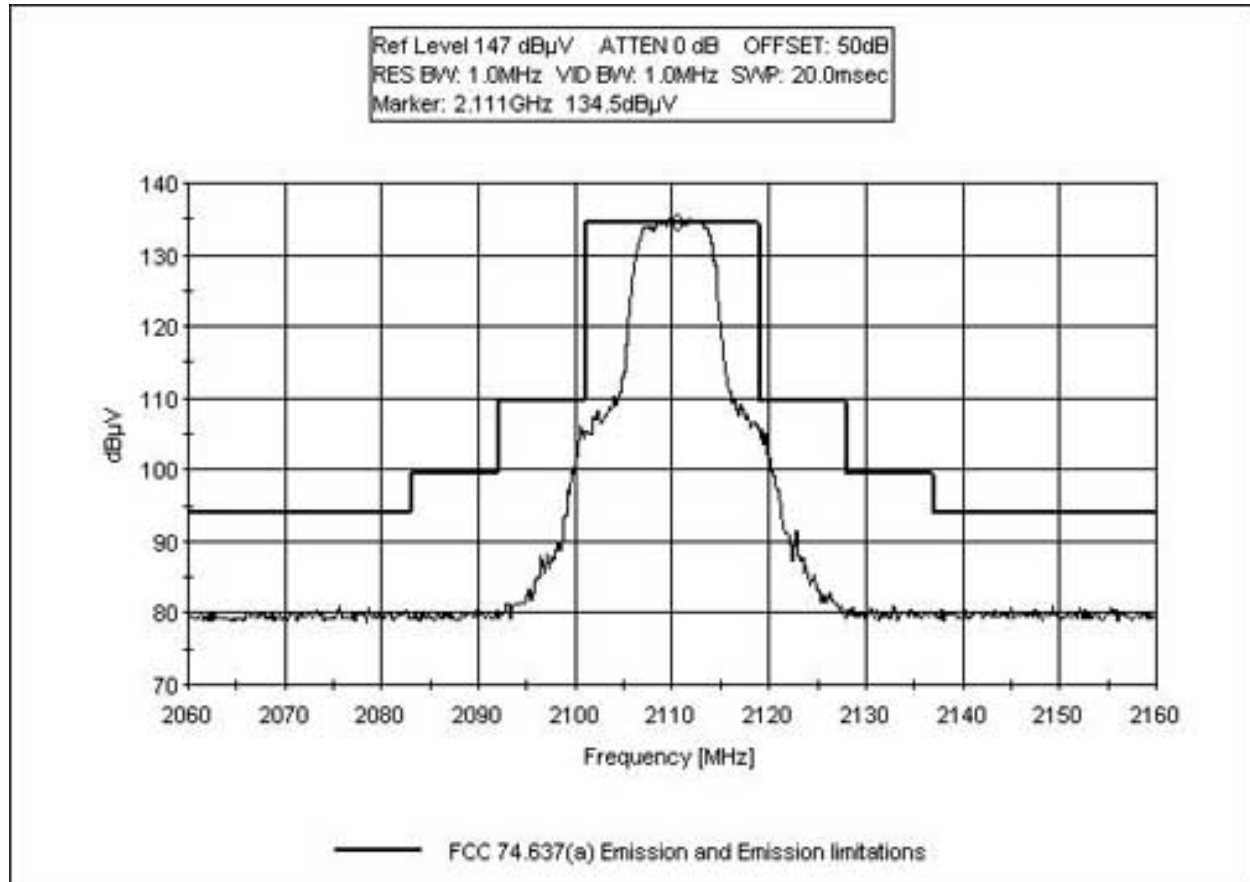
OCCUPIED BANDWIDTH 1990 MHz



OCCUPIED BANDWIDTH 2050 MHz



OCCUPIED BANDWIDTH 2110 MHz



Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	092702	092703
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
¼" Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	071502	071503
3.5 GHz HPF	2117	HP	84300-80038	3643A00027	062502	062503



Occupied Bandwidth

2.1033(c)(14)/2.105174.637(a)(3)/ - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

Test Conditions: The EUT is placed on the test bench. The RF output port of the EUT is connected to a Spectrum Analyzer. The Video input and Audio (R/L) input ports are connected to a DVD player. DVD player sends analog video and audio signal to the EUT. The EUT converts the Analog signal to Digital video signal, modulates the signal in COFDM format and sends the signal out to the RF port. Frequency range of measurement = 9 kHz – 22 GHz.

Freq	RBW	VBW
9 kHz- 150 kHz	200 Hz	200 Hz
150 kHz- 30 MHz	9 kHz	9 kHz
30 MHz- 1000 MHz	120 kHz	120 kHz
1000 MHz-22000 MHz	1 MHz	1 MHz

Required attenuation = $-43 + 10 \log(p)$ dB = 94 dBuV at the antenna terminal.

100VAC, 60 Hz, 21°C, 34% relative humidity.

External Attenuator = 50 dB.

Limit line for Spurious Conducted Emission

$$\text{Required Attenuation} = 43 + 10 \log P \text{ dB}$$

$$\text{Limit line (dBuV)} = V_{\text{dBuV}} - \text{Attenuation}$$

$$\begin{aligned} V_{\text{dBuV}} &= 20 \log \frac{V}{1 \times 10^{-6}} \\ &= 20 (\log V - \log 1 \times 10^{-6}) \\ &= 20 \log V - 20 \log 1 \times 10^{-6} \\ &= 20 \log V - 20 (-6) \\ &= 20 \log V + 120 \end{aligned}$$

$$\begin{aligned} \text{Attenuation} &= 43 + 10 \log P \\ &= 43 + 10 \log \frac{V^2}{R} \\ &= 43 + 10 (\log V^2 - \log R) \\ &= 43 + 10 (2 \log V - \log R) \\ &= 43 + 20 \log V - 10 \log R \end{aligned}$$

$$\begin{aligned} \text{Limit line} &= V_{\text{dBuV}} - \text{Attenuation} \\ &= 20 \log V + 120 - (43 + 20 \log V - 10 \log R) \\ &= 20 \log V + 120 - 43 - 20 \log V + 10 \log R \\ &= 20 \log V + 120 - 43 - 20 \log V + 10 \log R \\ &= 120 - 43 + 10 \log 50 \quad \text{Note : } R = 50 \Omega \\ &= 120 - 43 + 16.897 \\ &= 94 \text{ dBuV at any power level} \end{aligned}$$

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**
 Specification: **FCC 74.637(a) Emission and Emission limitations**
 Work Order #: **79622** Date: 10/07/2002
 Test Type: **Conducted Emissions** Time: 11:39:11
 Equipment: **Digital Video Transmitter** Sequence#: 1
 Manufacturer: Moseley Associates Incorporated Tested By: Eddie Wong
 Model: Expedio TX 120V 60Hz
 S/N: 92026-0240

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Transmitter*	Moseley Associates Incorporated	Expedio TX	92026-0240

Support Devices:

Function	Manufacturer	Model #	S/N
DVD Player	Samsung	DVD-5221	6VDT144346P

Test Conditions / Notes:

The EUT is placed on the test bench. The RF output port of the EUT is connected to a Spectrum Analyzer. The Video input and Audio (R/L) input ports are connected to a DVD player. DVD player sends analog video and audio signal to the EUT. The EUT converts the Analog signal to Digital video signal, modulates the signal in COFDM format and sends the signal out to the RF port. Tx Freq = 1990 MHz. Frequency range of measurement = 9 kHz - 22 GHz. Frequency 9 kHz – 150 kHz RBW 200 Hz, VBW 200 Hz; 150 kHz - 30 MHz RBW 9 kHz, VBW 9 kHz; 30 MHz- 1000MHz RBW 120 kHz, VBW 120 kHz; 1000 MHz – 22000 MHz RBW 1 MHz, VBW 1 MHz. Required attenuation = -43+10 Log (p) dB = 94 dBuV at the antenna terminal. 110Vac, 60 Hz, 21°C, 34% relative humidity. External Attenuator = 50 dB.

Transducer Legend:

T1=Brea Cable: 6' 1/4" Helix - Brea # 7.	T2=3.5 GHz High-Pass
--	----------------------

Measurement Data:		Reading listed by margin.				Test Lead: Antenna Terminal				
#	Freq MHz	Rdng dBμV	T1 dB	T2 dB		Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	2060.500M	73.9	+0.6			+0.0	74.5	94.0	-19.5	Anten
	Ave									
^	2060.500M	82.8	+0.6			+0.0	83.4	94.0	-10.6	Anten
3	179.200M	71.8	+0.0			+0.0	71.8	94.0	-22.2	Anten
4	3979.800M	68.3	+1.0			+0.0	69.3	94.0	-24.7	Anten
5	3981.300M	67.2	+1.0	+0.7		+0.0	68.9	94.0	-25.1	Anten
6	1919.600M	61.0	+0.7			+0.0	61.7	94.0	-32.3	Anten
7	766.900M	60.6	+0.0			+0.0	60.6	94.0	-33.4	Anten
8	715.600M	58.4	+0.0			+0.0	58.4	94.0	-35.6	Anten

9	7960.200M	54.3	+1.6	+0.5	+0.0	56.4	94.0	-37.6	Anten
10	5969.600M	51.6	+1.3	+0.3	+0.0	53.2	94.0	-40.8	Anten
11	13928.600 M	44.4	+2.8	+0.2	+0.0	47.4	94.0	-46.6	Anten
12	9954.050M	43.7	+2.2	+0.9	+0.0	46.8	94.0	-47.2	Anten
13	15924.500 M	42.4	+2.7	+0.3	+0.0	45.4	94.0	-48.6	Anten
14	11939.600 M	38.4	+2.0	+0.4	+0.0	40.8	94.0	-53.2	Anten

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112
 Customer: **Moseley Associates Incorporated**
 Specification: **FCC 74.637(a) Emission and Emission limitations**
 Work Order #: **79622** Date: 10/07/2002
 Test Type: **Conducted Emissions** Time: 11:59:18
 Equipment: **Digital Video Transmitter** Sequence#: 2
 Manufacturer: Moseley Associates Incorporated Tested By: Eddie Wong
 Model: Expedio TX 120V 60Hz
 S/N: 92026-0240

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Transmitter*	Moseley Associates Incorporated	Expedio TX	92026-0240

Support Devices:

Function	Manufacturer	Model #	S/N
DVD Player	Samsung	DVD-5221	6VDT144346P

Test Conditions / Notes:

The EUT is placed on the test bench. The RF output port of the EUT is connected to a Spectrum Analyzer. The Video input and Audio (R/L) input ports are connected to a DVD player. DVD player sends analog video and audio signal to the EUT. The EUT converts the Analog signal to Digital video signal, modulates the signal in COFDM format and sends the signal out to the RF port. Tx Freq = 2050 MHz. Frequency range of measurement = 9 kHz - 22 GHz. Frequency 9 kHz – 150 kHz RBW 200 Hz, VBW 200 Hz; 150 kHz - 30 MHz RBW 9 kHz, VBW 9 kHz; 30 MHz- 1000MHz RBW 120 kHz, VBW 120 kHz; 1000 MHz – 22000 MHz RBW 1 MHz, VBW 1 MHz. Required attenuation = $-43 + 10 \log(p) \text{ dB} = 94 \text{ dBuV}$ at the antenna terminal. 110Vac, 60 Hz, 21°C, 34% relative humidity. External Attenuator = 50 dB.

Transducer Legend:

T1=Brea Cable: 6' 1/4" Helix - Brea # 7.	T2=3.5 GHz High-Pass
--	----------------------

Measurement Data:		Reading listed by margin.				Test Lead: Antenna Terminal				
#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	239.080M	71.3	+0.0	+0.0		+0.0	71.3	94.0	-22.7	Anten
2	4100.800M	69.6	+1.0	+0.4		+0.0	71.0	94.0	-23.0	Anten
3	2179.700M	70.2	+0.6	+0.0		+0.0	70.8	94.0	-23.2	Anten
4	8201.399M	61.7	+1.5	+0.4		+0.0	63.6	94.0	-30.4	Anten
5	2291.900M	62.2	+0.7	+0.0		+0.0	62.9	94.0	-31.1	Anten
6	869.500M	56.7	+0.0	+0.0		+0.0	56.7	94.0	-37.3	Anten
7	6147.600M	50.4	+1.2	+0.4		+0.0	52.0	94.0	-42.0	Anten
8	14343.200M	41.9	+2.3	+0.9		+0.0	45.1	94.0	-48.9	Anten
9	10250.000M	39.2	+1.8	+0.8		+0.0	41.8	94.0	-52.2	Anten

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**
 Specification: **FCC 74.637(a) Emission and Emission limitations**
 Work Order #: **79622** Date: 10/07/2002
 Test Type: **Conducted Emissions** Time: 12:15:08
 Equipment: **Digital Video Transmitter** Sequence#: 3
 Manufacturer: Moseley Associates Incorporated Tested By: Eddie Wong
 Model: Expedio TX 120V 60Hz
 S/N: 92026-0240

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Transmitter*	Moseley Associates Incorporated	Expedio TX	92026-0240

Support Devices:

Function	Manufacturer	Model #	S/N
DVD Player	Samsung	DVD-5221	6VDT144346P

Test Conditions / Notes:

The EUT is placed on the test bench. The RF output port of the EUT is connected to a Spectrum Analyzer. The Video input and Audio (R/L) input ports are connected to a DVD player. DVD player sends analog video and audio signal to the EUT. The EUT converts the Analog signal to Digital video signal, modulates the signal in COFDM format and sends the signal out to the RF port. Tx Freq = 2110 MHz. Frequency range of measurement = 9 kHz - 22 GHz. Frequency 9 kHz – 150 kHz RBW 200 Hz, VBW 200 Hz; 150 kHz - 30 MHz RBW 9 kHz, VBW 9 kHz; 30 MHz- 1000MHz RBW 120 kHz, VBW 120 kHz; 1000 MHz – 22000 MHz RBW 1 MHz, VBW 1 MHz. Required attenuation = -43+10 Log (p) dB = 94 dBuV at the antenna terminal. 110Vac, 60 Hz, 21°C, 34% relative humidity. External Attenuator = 50 dB.

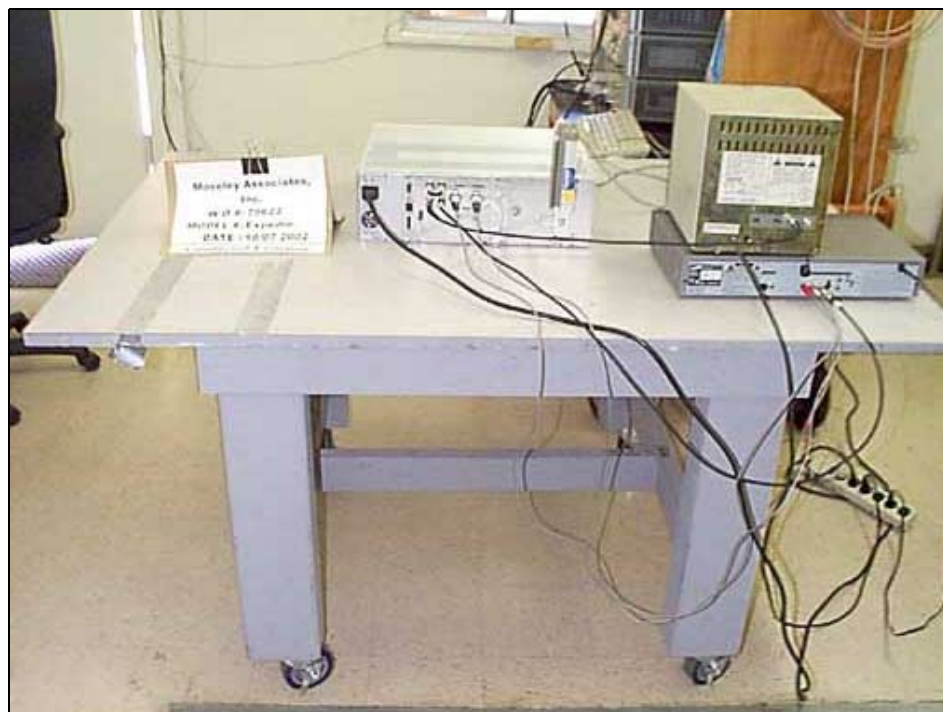
Transducer Legend:

T1=Brea Cable: 6' 1/4" Helix - Brea # 7.	T2=3.5 GHz High-Pass
--	----------------------

Measurement Data:		Reading listed by margin.				Test Lead: Antenna Terminal					
#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	1354.000M	69.4	+0.5	+0.0			+0.0	69.9	94.0	-24.1	Anten
2	299.600M	68.9	+0.0	+0.0			+0.0	68.9	94.0	-25.1	Anten
3	4219.600M	63.6	+1.1	+0.4			+0.0	65.1	94.0	-28.9	Anten
4	976.600M	60.0	+0.0	+0.0			+0.0	60.0	94.0	-34.0	Anten
5	398.300M	53.1	+0.0	+0.0			+0.0	53.1	94.0	-40.9	Anten
6	8441.399M	45.9	+1.8	+0.4			+0.0	48.1	94.0	-45.9	Anten
7	10549.000M	34.6	+1.6	+0.8			+0.0	37.0	94.0	-57.0	Anten



Direct Connect - Front View



Direct Connect - Back View



Direct Connect >1 GHz

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	092702	092703
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
¼" Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	071502	071503
3.5 GHz HPF	2117	HP	84300-80038	3643A00027	062502	062503

2.1033(c)(14)/2.1053/74.637(a)(3) - FIELD STRENGTH OF SPURIOUS RADIATION

Test Conditions: The EUT is placed on the wooden table. The RF output port of the EUT is left unterminated. The Video input and Audio (R/L) input ports are connected to a DVD player placed under the table. DVD player sends analog video and audio signal to the EUT. The EUT converts the Analog signal to Digital video signal, modulates the signal in COFDM format and sends the signal out to the RF port. NMS and Setup ports are connected to sections of serial cable, the Xfer port is connected to a section of UTP, External I/O port is left unpopulated. Monitor port is connected to a video monitor placed underneath the table. Freq = 1990 MHz, 2050 MHz and 2110 MHz. Frequency range of measurement = 9 kHz - 22 GHz.

Freq	RBW	VBW
9 kHz- 150 kHz	200 Hz	200H z
150 kHz- 30 MHz	9 kHz	9 kHz
30 MHz- 1000 MHz	120 kHz	120 kHz
1000 MHz-22000 MHz	1 MHz	1 MHz

Required attenuation = $43 + 10 \log(P)$.

Limit line for Spurious Radiated Emission

$$\text{Required Attenuation} = 43 + 10 \log P \text{ (dB)}$$

For radiated spurious emission measured at 3 meter test distance,

$$\begin{aligned} \text{Required attenuation} &= 43 + 10 \log P_{t \text{ at 3 meter}} \text{ dB} \\ \text{Limit line (dBuV)} &= E_{\text{dBuV}} - \text{Attenuation} \end{aligned}$$

$$E_{\text{dBuV}} = \text{Measured field strength at 3 meter in dBuV/m}$$

Power Density (Isotropic)

$$P_D = \frac{P_t}{4\pi r^2}$$

P_D = Power Density in Watts /m²

P_t = Average Transmit Power

r = Test distance

Field Intensity E (V/m)

$$E = \sqrt{P_D \times 377}$$

$$E = \frac{\sqrt{P_t \times 377}}{4\pi r^2}$$

$$E = \sqrt{\frac{P_t \times 30}{r^2}}$$

$$P_t = \left(\frac{E^2 \times r^2}{30} \right)$$

$$10 \log P_t = 10 \log E^2 \text{ (V/m)} + 10 \log r^2 - 10 \log 30$$

$$10 \log P_t = 20 \log E \text{ (V/m)} + 20 \log r - 10 \log 30$$

At 3 meter, $r = 3 \text{ m}$

$$10 \log P_t = 20 \log E \text{ (V/m)} + 20 \log 3 - 10 \log 30$$

$$10 \log P_t = 20 \log E \text{ (V/m)} + 9.54 - 14.77$$

$$10 \log P_t = 20 \log E \text{ (V/m)} - 5.23$$

$$\text{Since } 20 \log E \text{ (V/m)} = 20 \log E \text{ (uV/m)} - 120$$

$$10 \log P_t = 20 \log E \text{ (uV/m)} - 120 - 5.23$$

$$10 \log P_t = 20 \log E \text{ (uV/m)} - 125.23$$

$$\begin{aligned} \text{Limit line (dBuV) at 3 meter} &= E_{\text{dBuV}} - \text{Attenuation} \\ &= E_{\text{dBuV}} - (43 + 10 \log P_{t \text{ at 3 meter}}) \\ &= E_{\text{dBuV}} - 43 - 10 \log P_{t \text{ at 3 meter}} \\ &= E_{\text{dBuV}} - 43 - (20 \log E \text{ (uV/m)} - 125.23) \\ &= E_{\text{dBuV}} - 43 - 20 \log E \text{ (uV/m)} + 125.23 \\ &= E_{\text{dBuV}} - 20 \log E \text{ (uV/m)} + 82.23 \end{aligned}$$

$$\text{Since } 20 \log E \text{ (uV/m)} = E \text{ in dBuV/m}$$

$$= E_{\text{dBuV}} - E_{\text{dBuV}} + 82.23$$

$$\text{Radiated Emission limit 3 meter} = 82.23 \text{ dBuV at any power level measured in dBuV}$$

Operating Frequency: 1990 MHz
Channels: Low
Highest Measured Output Power: 37.71 ERP(dBm)= 5.9 ERP(Watts)
Distance: 3 meters
Limit: $43+10\log(P)$ 50.71 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
350.05	-41	Horiz	78.71
6,040.00	-42.30	Vert	80.01
250.10	-42.40	Horiz	80.11
250.07	-43.90	Vert	81.61
338.71	-47.50	Vert	85.21
1,331.30	-48.00	Horiz	85.71
1,316.80	-48.50	Horiz	86.21
1,443.00	-49.10	Vert	86.81
604.36	-50.20	Vert	87.91
559.86	-50.60	Horiz	88.31
1,887.20	-52.00	Horiz	89.71
375.10	-52.20	Vert	89.91
350.08	-52.40	Vert	90.11
1,316.70	-52.60	Vert	90.31
3,020.20	-52.70	Vert	90.41
987.51	-52.80	Horiz	90.51
425.07	-53.00	Horiz	90.71
1,443.10	-53.40	Horiz	91.11
1,243.50	-53.60	Horiz	91.31
1,776.30	-53.80	Vert	91.51
987.50	-53.80	Vert	91.51
424.17	-54.40	Horiz	92.11
1,759.80	-54.70	Horiz	92.41
969.18	-54.70	Horiz	92.41
125.05	-54.80	Horiz	92.51
375.08	-55.20	Horiz	92.91
425.08	-55.80	Vert	93.51
475.06	-55.90	Horiz	93.61
418.62	-56.00	Vert	93.71
300.10	-56.40	Vert	94.11
969.22	-56.50	Vert	94.21
725.07	-56.60	Horiz	94.31
950.98	-57.10	Vert	94.81
950.98	-57.20	Horiz	94.91
200.06	-57.30	Horiz	95.01
914.37	-57.60	Vert	95.31
540.09	-57.70	Vert	95.41
725.06	-57.80	Vert	95.51
225.07	-58.00	Horiz	95.71

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
391.56	-58.10	Vert	95.81
900.08	-58.50	Horiz	96.21
1,243.40	-58.90	Vert	96.61
550.16	-58.90	Vert	96.61
600.05	-59.00	Horiz	96.71
900.07	-59.10	Vert	96.81
550.06	-59.40	Horiz	97.11
715.12	-59.40	Vert	97.11
650.09	-59.70	Horiz	97.41
800.10	-60.50	Vert	98.21
661.59	-61.50	Vert	99.21
650.10	-61.60	Vert	99.31
401.12	-61.80	Horiz	99.51
675.09	-61.80	Vert	99.51
525.13	-62.20	Horiz	99.91
500.06	-62.40	Horiz	100.11
200.07	-62.50	Vert	100.21
825.09	-62.90	Vert	100.61
525.08	-63.00	Vert	100.71
450.12	-63.40	Horiz	101.11
225.45	-69.90	Vert	107.61
987.40	-81.20	Vert	118.91

Operating Frequency: 2050 MHz
Channels: Middle
Highest Measured Output Power: 37.71 ERP(dBm)= 5.9 ERP(Watts)
Distance: 3 meters
Limit: $43+10\log(P)$ 50.71 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
350.08	-40.3	Horiz	78.01
6,280.00	-42.20	Vert	79.91
6,280.00	-42.30	Horiz	80.01
250.06	-42.30	Horiz	80.01
250.07	-44.90	Vert	82.61
4,102.40	-45.20	Horiz	82.91
375.12	-45.60	Horiz	83.31
338.76	-46.20	Vert	83.91
4,710.40	-47.90	Horiz	85.61
4,099.10	-48.50	Vert	86.21
1,331.50	-49.20	Horiz	86.91
1,317.00	-51.00	Horiz	88.71
1,243.60	-51.10	Horiz	88.81
350.07	-51.30	Vert	89.01
1,316.60	-52.30	Vert	90.01
1,024.10	-52.40	Vert	90.11
3,140.40	-52.50	Vert	90.21
222.09	-52.60	Vert	90.31
1,331.60	-52.70	Vert	90.41
950.93	-52.70	Vert	90.41
425.10	-52.80	Horiz	90.51
375.15	-52.90	Vert	90.61
406.51	-53.10	Vert	90.81
304.92	-53.30	Vert	91.01
125.06	-53.70	Horiz	91.41
987.52	-54.00	Vert	91.71
375.12	-54.10	Horiz	91.81
300.08	-54.30	Horiz	92.01
582.50	-54.70	Horiz	92.41
325.05	-54.90	Horiz	92.61
1,390.30	-55.00	Vert	92.71
1,759.70	-55.20	Horiz	92.91
304.90	-55.30	Horiz	93.01
325.07	-56.10	Vert	93.81
418.58	-57.20	Vert	94.91
300.17	-57.20	Vert	94.91
400.07	-57.30	Horiz	95.01
420.11	-57.40	Horiz	95.11
969.27	-57.50	Vert	95.21

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
200.05	-57.50	Horiz	95.21
225.09	-57.70	Horiz	95.41
900.05	-57.80	Vert	95.51
600.07	-57.90	Horiz	95.61
475.07	-58.20	Horiz	95.91
999.11	-58.30	Vert	96.01
351.08	-58.50	Vert	96.21
825.39	-58.60	Horiz	96.31
550.12	-58.80	Vert	96.51
391.09	-59.20	Vert	96.91
387.23	-59.30	Vert	97.01
500.05	-59.60	Vert	97.31
850.07	-59.80	Vert	97.51
725.06	-60.00	Vert	97.71
424.07	-60.00	Vert	97.71
625.09	-60.20	Horiz	97.91
391.65	-60.20	Horiz	97.91
600.10	-60.20	Vert	97.91
475.06	-60.20	Vert	97.91
271.03	-60.80	Vert	98.51
715.31	-60.90	Vert	98.61
825.09	-61.20	Vert	98.91
525.08	-61.20	Vert	98.91
525.09	-61.60	Horiz	99.31
500.05	-61.70	Horiz	99.41
200.08	-62.90	Vert	100.61
550.06	-64.10	Horiz	101.81
800.03	-64.20	Vert	101.91
450.06	-64.30	Vert	102.01
625.05	-66.50	Vert	104.21

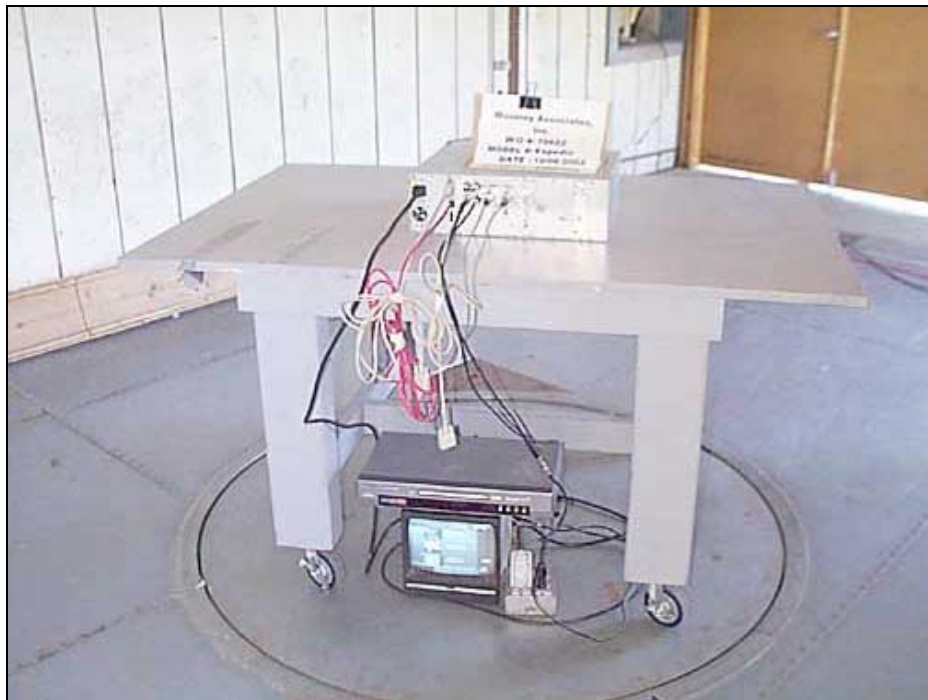
Operating Frequency: 2110 MHz
Channels: High
Highest Measured Output Power: 37.71 ERP(dBm)= 5.9 ERP(Watts)
Distance: 3 meters
Limit: $43+10\log(P)$ 50.71 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
4,222.60	-39.1	Horiz	76.81
9,779.70	-41.70	Vert	79.41
350.10	-43.00	Horiz	80.71
250.07	-43.70	Horiz	81.41
6,334.30	-43.80	Vert	81.51
250.05	-44.10	Vert	81.81
4,220.20	-44.90	Vert	82.61
350.06	-46.90	Vert	84.61
4,889.90	-48.60	Vert	86.31
425.11	-49.10	Horiz	86.81
1,316.90	-50.70	Horiz	88.41
1,442.90	-51.10	Vert	88.81
987.49	-51.50	Vert	89.21
321.81	-51.70	Vert	89.41
300.09	-52.20	Horiz	89.91
406.44	-52.50	Vert	90.21
304.88	-52.50	Vert	90.21
1,331.60	-52.60	Vert	90.31
3,260.40	-52.80	Vert	90.51
950.96	-52.80	Horiz	90.51
987.49	-52.90	Horiz	90.61
475.05	-52.90	Vert	90.61
1,024.00	-53.00	Vert	90.71
333.10	-53.00	Vert	90.71
375.05	-53.30	Vert	91.01
325.06	-53.90	Vert	91.61
375.08	-54.30	Horiz	92.01
900.06	-54.70	Horiz	92.41
418.59	-54.70	Vert	92.41
321.88	-55.00	Horiz	92.71
200.59	-55.30	Vert	93.01
914.39	-55.60	Vert	93.31
355.66	-55.70	Vert	93.41
1,332.00	-55.90	Horiz	93.61
900.05	-56.00	Vert	93.71
325.09	-56.10	Horiz	93.81
600.07	-56.20	Horiz	93.91
304.94	-56.30	Horiz	94.01

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
969.24	-56.50	Horiz	94.21
387.18	-56.50	Vert	94.21
400.09	-56.90	Horiz	94.61
725.05	-57.20	Vert	94.91
400.09	-57.20	Vert	94.91
406.52	-57.50	Horiz	95.21
391.10	-57.50	Horiz	95.21
950.93	-57.50	Vert	95.21
525.06	-57.50	Vert	95.21
1,443.40	-57.60	Horiz	95.31
850.08	-58.20	Vert	95.91
914.35	-58.50	Horiz	96.21
725.05	-58.50	Horiz	96.21
364.16	-58.70	Vert	96.41
700.06	-58.80	Horiz	96.51
475.07	-58.80	Horiz	96.51
450.06	-58.80	Vert	96.51
351.07	-58.80	Vert	96.51
582.49	-59.00	Horiz	96.71
914.39	-59.10	Vert	96.81
500.09	-59.10	Vert	96.81
688.66	-59.40	Horiz	97.11
200.06	-59.60	Horiz	97.31
650.07	-59.70	Vert	97.41
850.05	-59.80	Horiz	97.51
446.07	-59.80	Vert	97.51
625.08	-60.10	Horiz	97.81
650.05	-60.30	Horiz	98.01
500.07	-60.30	Horiz	98.01
825.06	-60.60	Vert	98.31
600.06	-60.60	Vert	98.31
675.07	-60.70	Horiz	98.41
525.04	-61.20	Horiz	98.91
925.05	-61.80	Horiz	99.51
450.09	-62.00	Horiz	99.71
800.12	-62.10	Vert	99.81
800.06	-62.20	Horiz	99.91
675.07	-62.40	Vert	100.11
425.10	-62.40	Vert	100.11
550.05	-63.20	Horiz	100.91
418.63	-63.20	Horiz	100.91
550.09	-63.50	Vert	101.21
625.06	-63.80	Vert	101.51
775.03	-65.40	Horiz	103.11



OATS - Front View



OATS - Back View



Radiated Emissions - Front View - With Loop Antenna

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	92702	92703
QP Adapter	01437	HP	85650A	3303A01884	92702	92703
9 kHz- 30 MHz						
Loop Antenna	00314	EMCO	6502	2014	72302	72303
Antenna cable	NA	NA	RG214	Cable#15	122001	122002
Pre-amp to SA cable	NA	Harbour	RG223/U	Cable#10	70802	70803
30 MHz – 1000MHz						
Bicon Antenna	306	AH	SAS200/540	220	92302	92303
Log Periodic Antenna	300	AH	SAS 00/516	331	92302	92303
Pre-amp	00309	HP	8447D	1937A02548	82302	82303
Antenna cable	NA	NA	RG214	Cable#15	122001	122002
Pre-amp to SA cable	NA	Harbour	RG223/U	Cable#10	70802	70803
1GHz-18GHz						
Antenna cable (from bulkhead to antenna, high frequency hardline) (25ft)	NA	Andrew	FSJ1-50A	Cable#13	71502	71503
¼” Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	071502	071503
Horn Antenna	0849	EMCO	3115	6246	91002	91003
Microwave Pre-amp	00786	HP	83017A	3123A00281	91102	91103
Cable	1337	Gore		244922	121201	121202
18-22 GHz						
Microwave Pre-amp	00786	HP	83017A	3123A00281	91102	91103
Cable	1337	Gore		244922	121201	121202
¼” Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	71502	71503
Horn Antenna	2112	HP	84125-80008	3643A00027	62802	62803

2.1033(c)(14)/2.1055/74.661(a)- FREQUENCY STABILITY

Test Conditions: The RF output port of the EUT is connected to a Spectrum Analyzer. The HP Signal Generator is used to input a 70 MHz signal. The EUT uses this input to produce a signal between 1990-2110 MHz. Due to the size of the EUT only the RF circuitry was subjected to temperature testing.

Customer: Moseley
WO#: 79622
Date: 21-Oct-02
Test Engineer:

Device Model #: Expedio
Operating Voltage: 120 VAC
Frequency Limit: 0.005 %

Temperature Variations

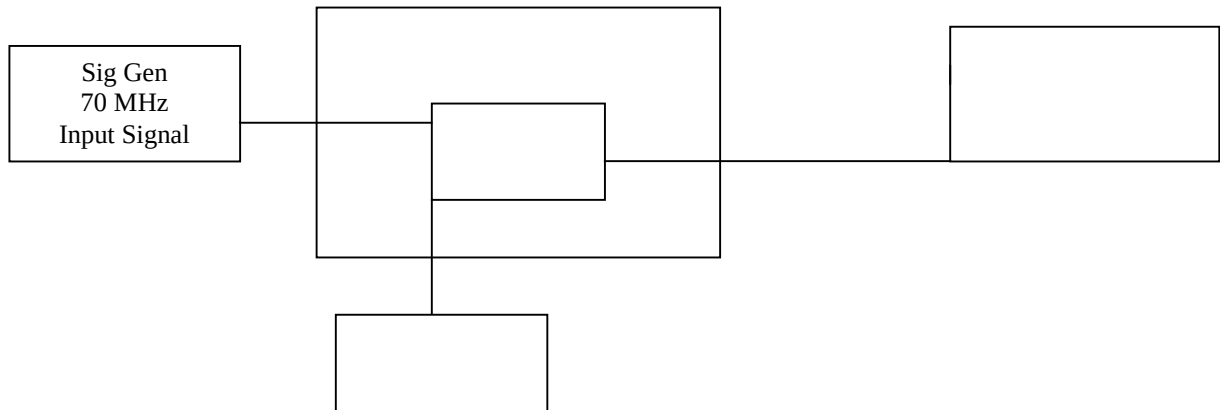
Channel Frequency:	Channel 1 (MHz)	Dev. (MHz)
	2049.99916	
Temp (C) Voltage		
-20 120	2050.00457	0.00541
-10 120	2050.00382	0.00466
0 120	2050.00327	0.00411
10 120	2050.00309	0.00392
20 120	2050.00248	0.00332
30 120	2050.00248	0.00332
40 120	2050.00180	0.00264
50 120	2050.00890	0.00974

Voltage Variations ($\pm 15\%$)

Channel Frequency:	Channel 1 (MHz)	Dev. (MHz)
	2049.99916	
20 102.0	2050.00921	0.01005
20 120	2050.00922	0.01006
20 138.0	2050.00924	0.01008

Max Deviation (MHz)	0.01008
Max Deviation (%)	0.00049
	PASS

Test Setup Diagram – Only RF Section & Power Supply were tested at extreme temperatures.



Test Equipment

<i>Equipment</i>	<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Asset #</i>	<i>Cal Date</i>	<i>Cal Due</i>
QP Adapter	HP	85650A	2811A01267	00478	1/30/02	1/30/03
S/A Display	HP	8566B	2403A08241	00489	1/30/02	1/30/03
Spectrum Analyzer	HP	8566B	2209A01404	00490	1/30/02	1/30/03
Power Stat	Superior Electric	126		02037	3/29/02	3/29/03
Thermometer	Omega	HH-26K	T-202884	02242	8/30/02	8/30/03
Temp Chamber	Thermotron	S-1.2 MiniMax	11899	01879	2/7/02	2/7/03

2.1091 – MPE CALCULATIONS

Calculations prepared for:
Moseley Associates, Incorporated.
111 Castilian Crive
Santa Barbara, CA 93117-3093

Calculations prepared by:
Eddie Wong
110 N. Olinda Place
Brea, CA 9283

Model Number: Expedio Tx
FCC Identification: NA

Fundamental Operating Frequency: 1990-2110 MHz

Maximum Rated Output Power: 5.9Watt
Measured Output Power: **5.9Watts**

MPE Limit in accordance with 1.1310(b): Limits for general population/uncontrolled exposure

$$\text{MPE Limit for 1500-100,000 MHz} = 1 \text{ mW/cm}^2 \text{ (10 W/M}^2\text{)}$$

Power Output (Watts)	Power Density Limit (mW/cm ²)	Minimum Distance (Meters)
5.9	1	0.21

$$\text{Power Density (W/m}^2\text{)} = \frac{30 \times P_t \times G}{d^2 \times Z_0}$$

P_t = Power Delivered to the Antenna
 d = Distance in meters

G = Antenna Gain
 Z_0 = Impedance of Free Space (377 ohm)

The typical antennas to be used with the EUT are Tower or vehicular mount antennas which under normal operation has an antenna height of at least 2 meters. As can be seen from the MPE result, this device passes the limit specified in 1.1310 at a distance of 0.22meter with an antenna gain of 0 dBi

Calculation:

$$d = \sqrt{\frac{30 \times 5.9 \times 1}{10 \times 377}}$$

15.107 – AC CONDUCTED EMISSIONS – RECEIVER

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**
 Specification: **FCC 15.107 Class A COND AVE**
 Work Order #: **79622**
 Test Type: **Conducted Emissions**
 Equipment: **Digital Video Transmitter**
 Manufacturer: Moseley Associates Incorporated
 Model: Expedio TX
 S/N: 92026-0240

Date: 10/08/2002
 Time: 16:19:20
 Sequence#: 8
 Tested By: Eddie Wong
 110Vac 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Transmitter*	Moseley Associates Incorporated	Expedio TX	92026-0240

Support Devices:

Function	Manufacturer	Model #	S/N
DVD Player	Samsung	DVD-5221	6VDT144346P

Test Conditions / Notes:

The EUT is placed on the wooden table. The RF output port of the EUT is left unterminated. The Video input and Audio (R/L) input ports are connected to a DVD player placed under the table. DVD player sends analog video and audio signal to the EUT. The EUT converts the Analog signal to Digital video signal, modulates the signal in COFDM format and sends the signal out to the RF port. NMS and Setup ports are connected to sections of serial cable, the Xfer port is connected to a section of UTP, External I/O port is left unpopulated. Monitor port is connected to a video monitor placed underneath the table. Status : Idle Frequency range of measurement = 150 kHz - 30 MHz. Frequency 150 kHz – 30 MHz RBW 120 kHz, VBW 120 kHz. 110Vac, 60 Hz, 21°C, 34% relative humidity.

Transducer Legend:

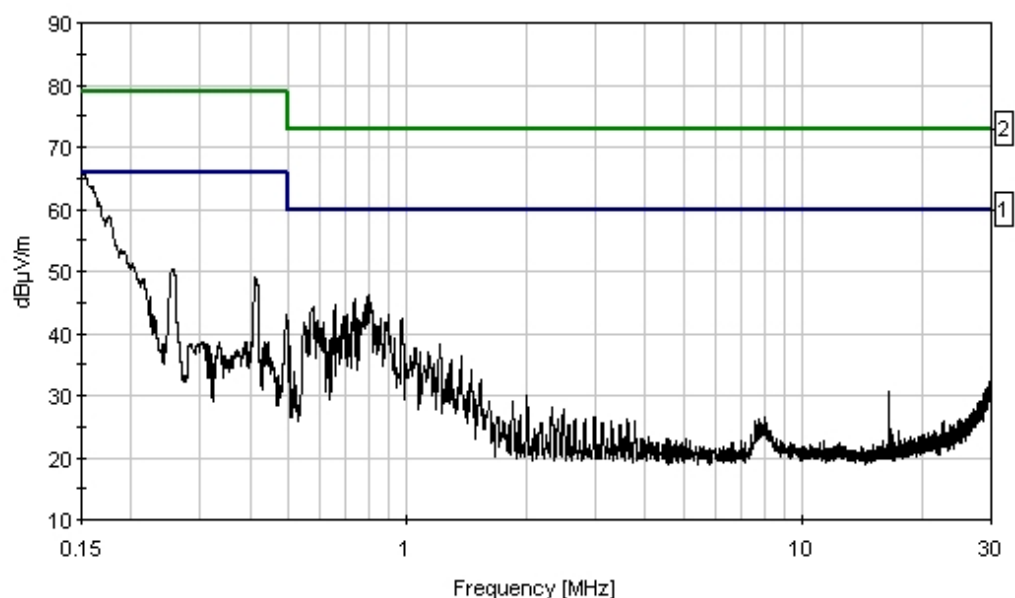
Measurement Data: Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dB μ V	dB	dB	dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	798.662k	46.2					+0.0	46.2	60.0	-13.8	Black
2	734.669k	45.4					+0.0	45.4	60.0	-14.6	Black
3	656.131k	44.6					+0.0	44.6	60.0	-15.4	Black
4	253.990k	50.3					+0.0	50.3	66.0	-15.7	Black
5	577.594k	44.2					+0.0	44.2	60.0	-15.8	Black
6	894.012k	43.1					+0.0	43.1	60.0	-16.9	Black
7	413.246k	49.0					+0.0	49.0	66.0	-17.0	Black

8	702.672k	42.9	+0.0	42.9	60.0	-17.1	Black
9	693.218k	42.7	+0.0	42.7	60.0	-17.3	Black
10	859.020k	42.5	+0.0	42.5	60.0	-17.5	Black
11	747.758k	42.4	+0.0	42.4	60.0	-17.6	Black
12	970.566k	42.3	+0.0	42.3	60.0	-17.7	Black
13	707.762k	42.0	+0.0	42.0	60.0	-18.0	Black
14	751.394k	42.0	+0.0	42.0	60.0	-18.0	Black
15	153.514k	47.0	+0.0	47.0	66.0	-19.0	Black
Ave							
^	152.182k	65.6	+0.0	65.6	66.0	-0.4	Black

CKC Laboratories, Inc. Date: 10/08/2002 Time: 16:19:20 Moseley Associates Incorporated WOV#: 79622
FCC 15.107 Class A COND AVE Test Lead: Black 110Vac 60Hz Sequence#: 8



— 1 - FCC 15.107 Class A COND AVE — 2 - FCC 15.107 Class A COND QP

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**
 Specification: **FCC 15.107 Class A COND AVE**
 Work Order #: **79622**
 Test Type: **Conducted Emissions**
 Equipment: **Digital Video Transmitter**
 Manufacturer: Moseley Associates Incorporated
 Model: Expedio TX
 S/N: 92026-0240

Date: 10/08/2002
 Time: 16:29:54
 Sequence#: 10
 Tested By: Eddie Wong
 110Vac 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Transmitter*	Moseley Associates Incorporated	Expedio TX	92026-0240

Support Devices:

Function	Manufacturer	Model #	S/N
DVD Player	Samsung	DVD-5221	6VDT144346P

Test Conditions / Notes:

The EUT is placed on the wooden table. The RF output port of the EUT is left unterminated. The Video input and Audio (R/L) input ports are connected to a DVD player placed under the table. DVD player sends analog video and audio signal to the EUT. The EUT converts the Analog signal to Digital video signal, modulates the signal in COFDM format and sends the signal out to the RF port. NMS and Setup ports are connected to sections of serial cable, the Xfer port is connected to a section of UTP, External I/O port is left unpopulated. Monitor port is connected to a video monitor placed underneath the table. Status : Idle Frequency range of measurement = 150 kHz -30 MHz. Frequency 150 kHz – 30 MHz RBW 120 kHz, VBW 120 kHz. 110Vac, 60 Hz, 21°C, 34% relative humidity.

Transducer Legend:

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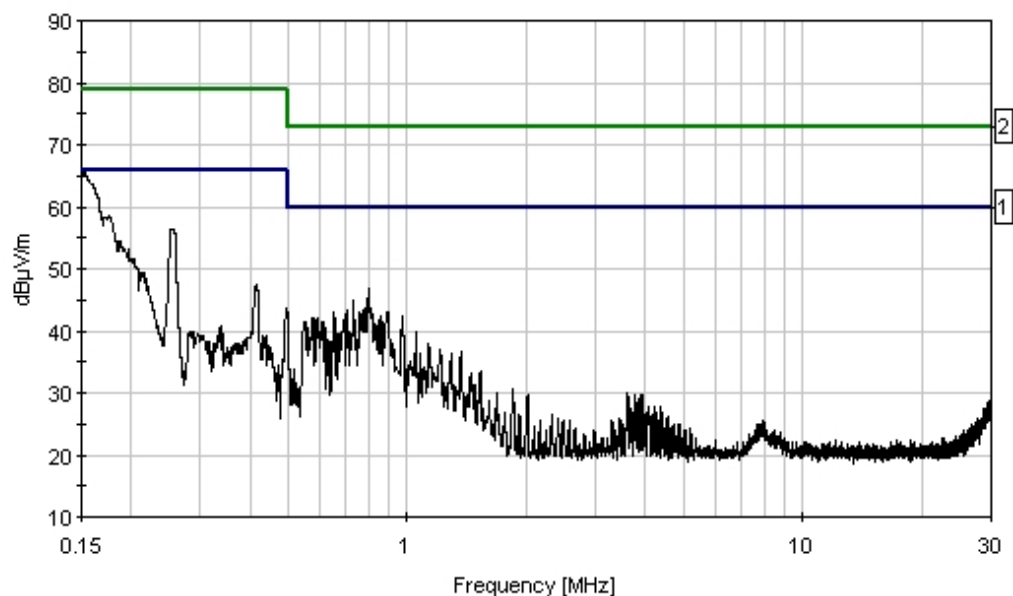
Measurement Data: Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dB μ V	dB	dB	dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	254.717k	56.5					+0.0	56.5	66.0	-9.5	White
2	797.935k	46.7					+0.0	46.7	60.0	-13.3	White
3	792.845k	45.2					+0.0	45.2	60.0	-14.8	White
4	730.306k	44.8					+0.0	44.8	60.0	-15.2	White
5	790.663k	44.8					+0.0	44.8	60.0	-15.2	White
6	707.762k	43.4					+0.0	43.4	60.0	-16.6	White
7	704.126k	43.3					+0.0	43.3	60.0	-16.7	White
8	889.759k	43.1					+0.0	43.1	60.0	-16.9	White

9	654.677k	43.0	+0.0	43.0	60.0	-17.0	White
10	856.838k	42.4	+0.0	42.4	60.0	-17.6	White
11	970.566k	42.4	+0.0	42.4	60.0	-17.6	White
12	573.230k	42.1	+0.0	42.1	60.0	-17.9	White
13	590.683k	42.1	+0.0	42.1	60.0	-17.9	White
14	691.037k	41.6	+0.0	41.6	60.0	-18.4	White
15	152.181k	47.4	+0.0	47.4	66.0	-18.6	White
Ave							
^	152.182k	65.8	+0.0	65.8	66.0	-0.2	White

CKC Laboratories, Inc. Date: 10/08/2002 Time: 16:29:54 Moseley Associates Incorporated WO#: 79622
FCC 15.107 Class A COND AVE Test Lead: White 110Vac 60Hz Sequence#: 10



— 1 - FCC 15.107 Class A COND AVE — 2 - FCC 15.107 Class A COND QP

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**
 Specification: **FCC 15.107 Class A COND AVE**
 Work Order #: **79622**
 Test Type: **Conducted Emissions**
 Equipment: **Digital Video Receiver**
 Manufacturer: Moseley Associates Incorporated
 Model: Expedio RX
 S/N: 92127-0240

Date: 10/09/2002
 Time: 1:53:30 PM
 Sequence#: 9
 Tested By: Eddie Wong
 110Vac 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Receiver*	Moseley Associates Incorporated	Expedio RX	92127-0240

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table. Audio Output L and R, Video Out put are connected to sections of cables, all other ports are left unterminated. The receiver is set to receive at 1990 MHz Frequency range of measurement = 150 kHz – 30 MHz. Frequency 150 kHz – 30 MHz RBW 9 kHz, VBW 9 kHz. 110Vac, 60 Hz, 21°C, 34% relative humidity.

Transducer Legend:

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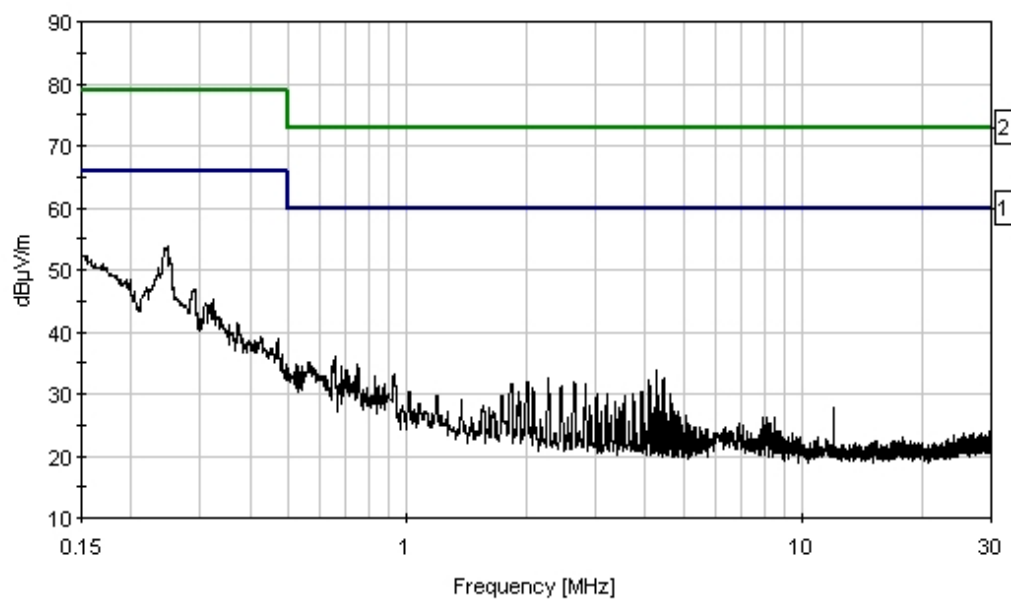
Measurement Data: Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dB μ V	dB	dB	dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	248.899k	53.7					+0.0	53.7	66.0	-12.3	Black
2	154.363k	52.3					+0.0	52.3	66.0	-13.7	Black
3	321.619k	45.1					+0.0	45.1	66.0	-20.9	Black
4	657.586k	36.1					+0.0	36.1	60.0	-23.9	Black
5	372.523k	41.4					+0.0	41.4	66.0	-24.6	Black
6	561.595k	35.0					+0.0	35.0	60.0	-25.0	Black
7	745.577k	34.9					+0.0	34.9	60.0	-25.1	Black
8	683.765k	34.5					+0.0	34.5	60.0	-25.5	Black
9	751.394k	34.0					+0.0	34.0	60.0	-26.0	Black
10	700.490k	33.9					+0.0	33.9	60.0	-26.1	Black
11	4.262M	33.8					+0.0	33.8	60.0	-26.2	Black

12	923.783k	33.1	+0.0	33.1	60.0	-26.9	Black
13	713.580k	32.7	+0.0	32.7	60.0	-27.3	Black
14	4.445M	32.6	+0.0	32.6	60.0	-27.4	Black
15	2.272M	32.4	+0.0	32.4	60.0	-27.6	Black

CKC Laboratories, Inc. Date: 10/09/2002 Time: 1:53:30 PM Moseley Associates Incorporated WVO#: 79622
FCC 15.107 Class A COND AVE Test Lead: Black 110Vac 60Hz Sequence#: 9



1 - FCC 15.107 Class A COND AVE 2 - FCC 15.107 Class A COND QP

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**
 Specification: **FCC 15.107 Class A COND AVE**
 Work Order #: **79622**
 Test Type: **Conducted Emissions**
 Equipment: **Digital Video Receiver**
 Manufacturer: Moseley Associates Incorporated
 Model: Expedio RX
 S/N: 92127-0240

Date: 10/09/2002
 Time: 1:58:07 PM
 Sequence#: 10
 Tested By: Eddie Wong
 110Vac 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Receiver*	Moseley Associates Incorporated	Expedio RX	92127-0240

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table. Audio Output L and R, Video Output are connected to sections of cables, all other ports are left unterminated. The receiver is set to receive at 1990 MHz Frequency range of measurement = 150 kHz – 30 MHz. Frequency 150 kHz – 30 MHz RBW 9 kHz, VBW 9 kHz. 110Vac, 60 Hz, 21°C, 34% relative humidity.

Transducer Legend:

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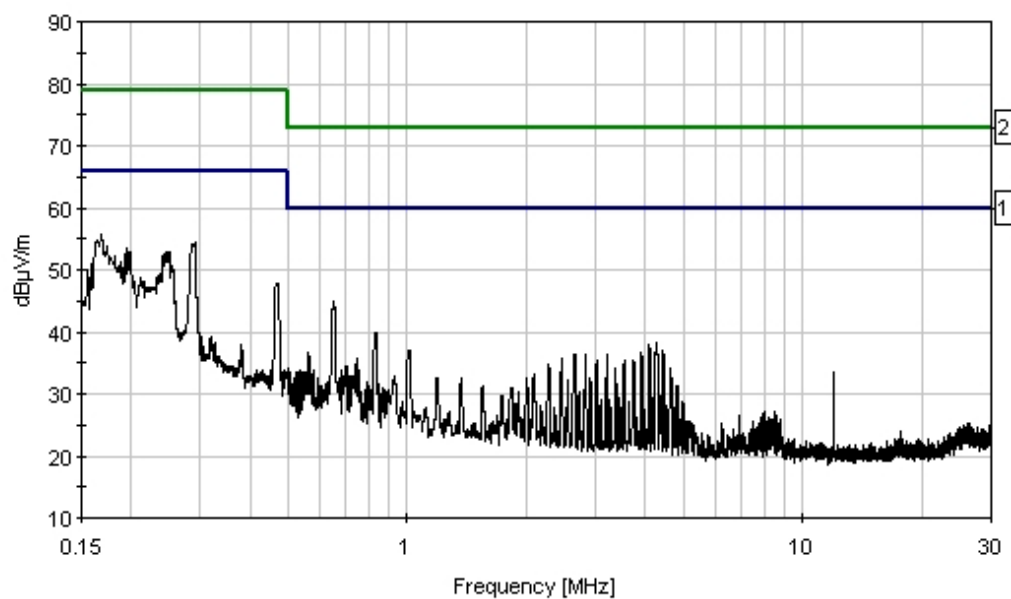
Measurement Data: Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dB μ V	dB	dB	dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	168.180k	55.6					+0.0	55.6	66.0	-10.4	White
2	290.350k	54.5					+0.0	54.5	66.0	-11.5	White
3	195.086k	53.4					+0.0	53.4	66.0	-12.6	White
4	244.536k	52.9					+0.0	52.9	66.0	-13.1	White
5	653.950k	44.9					+0.0	44.9	60.0	-15.1	White
6	155.818k	50.0					+0.0	50.0	66.0	-16.0	White
7	211.085k	48.7					+0.0	48.7	66.0	-17.3	White
8	467.786k	47.8					+0.0	47.8	66.0	-18.2	White
9	831.386k	39.8					+0.0	39.8	60.0	-20.2	White
10	4.284M	38.2					+0.0	38.2	60.0	-21.8	White
11	4.097M	38.0					+0.0	38.0	60.0	-22.0	White

12	1.009M	37.1	+0.0	37.1	60.0	-22.9	White
13	4.441M	37.0	+0.0	37.0	60.0	-23.0	White
14	3.909M	36.8	+0.0	36.8	60.0	-23.2	White
15	562.322k	36.7	+0.0	36.7	60.0	-23.3	White

CKC Laboratories, Inc. Date: 10/09/2002 Time: 1:58:07 PM Moseley Associates Incorporated WVO#: 79622
FCC 15.107 Class A COND AVE Test Lead: White 110Vac 60Hz Sequence#: 10



— 1 - FCC 15.107 Class A COND AVE — 2 - FCC 15.107 Class A COND QP

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**
 Specification: **FCC 15.107 Class A COND AVE**
 Work Order #: **79622**
 Test Type: **Conducted Emissions**
 Equipment: **Digital Video Receiver**
 Manufacturer: Moseley Associates Incorporated
 Model: Expedio RX
 S/N: 92127-0240

Date: 10/09/2002
 Time: 2:06:33 PM
 Sequence#: 12
 Tested By: Eddie Wong
 110Vac 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Receiver*	Moseley Associates Incorporated	Expedio RX	92127-0240

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table. Audio Output L and R, Video Output are connected to sections of cables, all other ports are left unterminated. The receiver is set to receive at 2050 MHz Frequency range of measurement = 150 kHz - 30 MHz. Frequency 150 kHz – 30 MHz RBW 9 kHz, VBW 9 kHz. 110Vac, 60 Hz, 21°C, 34% relative humidity.

Transducer Legend:

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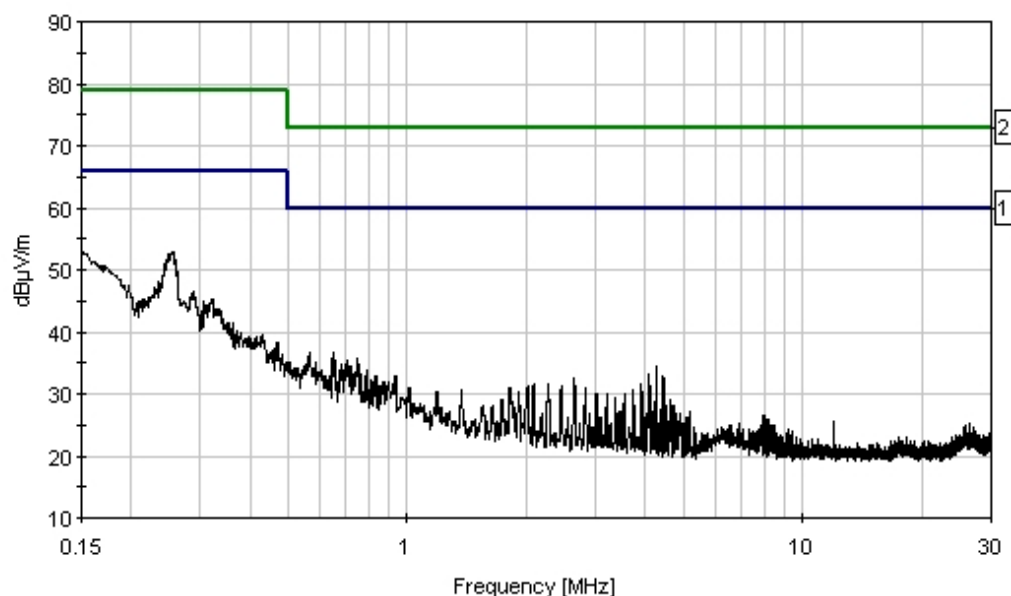
Measurement Data: Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dB μ V	dB	dB	dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	150.000k	52.9					+0.0	52.9	66.0	-13.1	Black
2	254.717k	52.8					+0.0	52.8	66.0	-13.2	Black
3	322.346k	45.2					+0.0	45.2	66.0	-20.8	Black
4	654.677k	36.8					+0.0	36.8	60.0	-23.2	Black
5	747.031k	35.8					+0.0	35.8	60.0	-24.2	Black
6	703.399k	35.4					+0.0	35.4	60.0	-24.6	Black
7	683.038k	34.9					+0.0	34.9	60.0	-25.1	Black
8	725.942k	34.6					+0.0	34.6	60.0	-25.4	Black
9	4.267M	34.3					+0.0	34.3	60.0	-25.7	Black
10	675.038k	33.8					+0.0	33.8	60.0	-26.2	Black
11	4.084M	33.2					+0.0	33.2	60.0	-26.8	Black

12	928.036k	33.0	+0.0	33.0	60.0	-27.0	Black
13	4.441M	32.8	+0.0	32.8	60.0	-27.2	Black
14	469.241k	38.4	+0.0	38.4	66.0	-27.6	Black
15	2.633M	32.4	+0.0	32.4	60.0	-27.6	Black

CKC Laboratories, Inc. Date: 10/09/2002 Time: 2:06:33 PM Moseley Associates Incorporated WVO#: 79622
FCC 15.107 Class A COND AVE Test Lead: Black 110Vac 60Hz Sequence#: 12



1 - FCC 15.107 Class A COND AVE 2 - FCC 15.107 Class A COND QP

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**
 Specification: **FCC 15.107 Class A COND AVE**
 Work Order #: **79622**
 Test Type: **Conducted Emissions**
 Equipment: **Digital Video Receiver**
 Manufacturer: Moseley Associates Incorporated
 Model: Expedio RX
 S/N: 92127-0240

Date: 10/09/2002
 Time: 2:03:15 PM
 Sequence#: 11
 Tested By: Eddie Wong
 110Vac 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Receiver*	Moseley Associates Incorporated	Expedio RX	92127-0240

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table. Audio Output L and R, Video Output are connected to sections of cables, all other ports are left unterminated. The receiver is set to receive at 2050 MHz Frequency range of measurement = 150 kHz – 30 MHz. Frequency 150 kHz – 30 MHz RBW 9 kHz, VBW 9 kHz. 110Vac, 60 Hz, 21°C, 34% relative humidity.

Transducer Legend:

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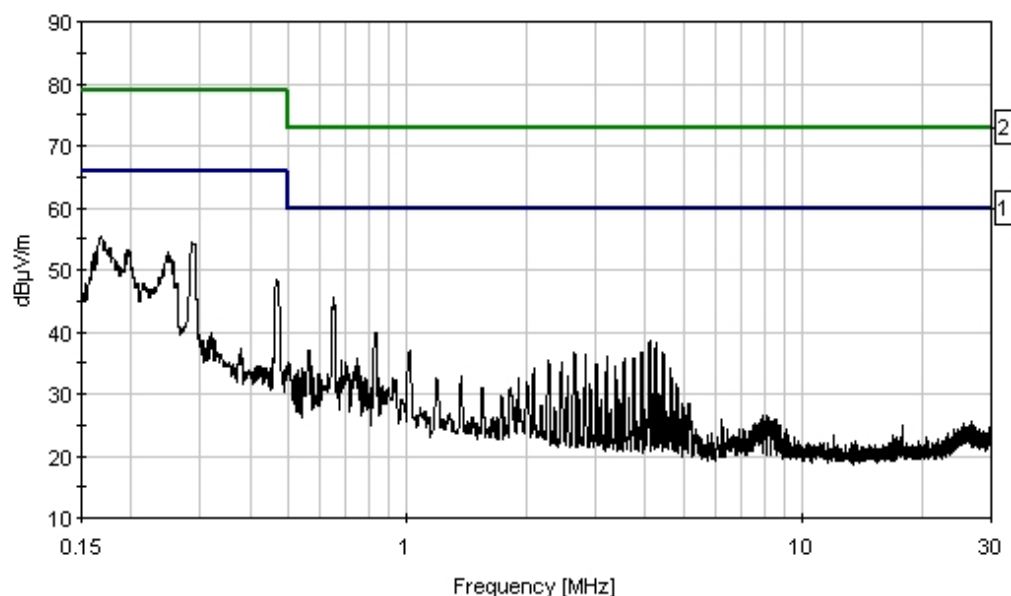
Measurement Data: Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dB μ V	dB	dB	dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	167.453k	55.3					+0.0	55.3	66.0	-10.7	White
2	285.259k	54.3					+0.0	54.3	66.0	-11.7	White
3	194.359k	53.3					+0.0	53.3	66.0	-12.7	White
4	247.445k	52.7					+0.0	52.7	66.0	-13.3	White
5	653.950k	45.5					+0.0	45.5	60.0	-14.5	White
6	469.241k	48.3					+0.0	48.3	66.0	-17.7	White
7	835.022k	39.9					+0.0	39.9	60.0	-20.1	White
8	4.105M	38.5					+0.0	38.5	60.0	-21.5	White
9	4.288M	38.4					+0.0	38.4	60.0	-21.6	White
10	563.777k	37.1					+0.0	37.1	60.0	-22.9	White
11	1.017M	37.0					+0.0	37.0	60.0	-23.0	White

12	4.441M	36.7	+0.0	36.7	60.0	-23.3	White
13	2.646M	36.6	+0.0	36.6	60.0	-23.4	White
14	3.914M	36.6	+0.0	36.6	60.0	-23.4	White
15	2.829M	36.4	+0.0	36.4	60.0	-23.6	White

CKC Laboratories, Inc. Date: 10/09/2002 Time: 2:03:15 PM Moseley Associates Incorporated WVO#: 79622
FCC 15.107 Class A COND AVE Test Lead: White 110Vac 60Hz Sequence#: 11



—— 1 - FCC 15.107 Class A COND AVE —— 2 - FCC 15.107 Class A COND QP

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**
 Specification: **FCC 15.107 Class A COND AVE**
 Work Order #: **79622**
 Test Type: **Conducted Emissions**
 Equipment: **Digital Video Receiver**
 Manufacturer: Moseley Associates Incorporated
 Model: Expedio RX
 S/N: 92127-0240

Date: 10/09/2002
 Time: 2:12:59 PM
 Sequence#: 13
 Tested By: Eddie Wong
 110Vac 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Receiver*	Moseley Associates Incorporated	Expedio RX	92127-0240

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table. Audio Output L and R, Video Output are connected to sections of cables, all other ports are left unterminated. The receiver is set to receive at 2110 MHz Frequency range of measurement = 150 kHz – 30 MHz. Frequency 150 kHz – 30 MHz RBW 9 kHz, VBW 9 kHz. 110Vac, 60 Hz, 21°C, 34% relative humidity.

Transducer Legend:

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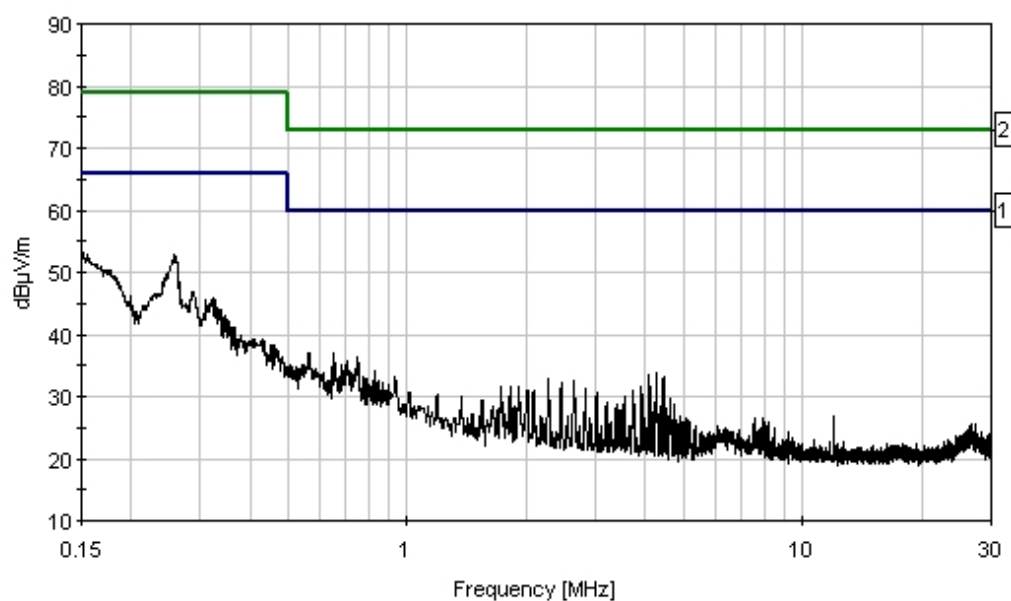
Measurement Data: Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dB μ V					Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	150.000k	53.2					+0.0	53.2	66.0	-12.8	Black
2	257.626k	52.8					+0.0	52.8	66.0	-13.2	Black
3	653.222k	37.0					+0.0	37.0	60.0	-23.0	Black
4	563.777k	36.9					+0.0	36.9	60.0	-23.1	Black
5	748.486k	36.2					+0.0	36.2	60.0	-23.8	Black
6	678.674k	35.1					+0.0	35.1	60.0	-24.9	Black
7	831.386k	34.1					+0.0	34.1	60.0	-25.9	Black
8	379.795k	40.0					+0.0	40.0	66.0	-26.0	Black
9	4.258M	33.9					+0.0	33.9	60.0	-26.1	Black
10	4.088M	33.4					+0.0	33.4	60.0	-26.6	Black
11	928.036k	33.1					+0.0	33.1	60.0	-26.9	Black

12	4.445M	33.1	+0.0	33.1	60.0	-26.9	Black
13	2.268M	32.8	+0.0	32.8	60.0	-27.2	Black
14	843.749k	32.6	+0.0	32.6	60.0	-27.4	Black
15	2.638M	32.6	+0.0	32.6	60.0	-27.4	Black

CKC Laboratories, Inc. Date: 10/09/2002 Time: 2:12:59 PM Moseley Associates Incorporated WVO#: 79622
FCC 15.107 Class A COND AVE Test Lead: Black 110Vac 60Hz Sequence#: 13



1 - FCC 15.107 Class A COND AVE 2 - FCC 15.107 Class A COND QP

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**
 Specification: **FCC 15.107 Class A COND AVE**
 Work Order #: **79622**
 Test Type: **Conducted Emissions**
 Equipment: **Digital Video Receiver**
 Manufacturer: Moseley Associates Incorporated
 Model: Expedio RX
 S/N: 92127-0240

Date: 10/09/2002
 Time: 2:16:05 PM
 Sequence#: 14
 Tested By: Eddie Wong
 110Vac 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Receiver*	Moseley Associates Incorporated	Expedio RX	92127-0240

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table. Audio Output L and R, Video Output are connected to sections of cables, all other ports are left unterminated. The receiver is set to receive at 2110 MHz Frequency range of measurement = 150 kHz – 30 MHz. Frequency 150 kHz – 30 MHz RBW 9 kHz, VBW 9 kHz. 110Vac, 60 Hz, 21°C, 34% relative humidity.

Transducer Legend:

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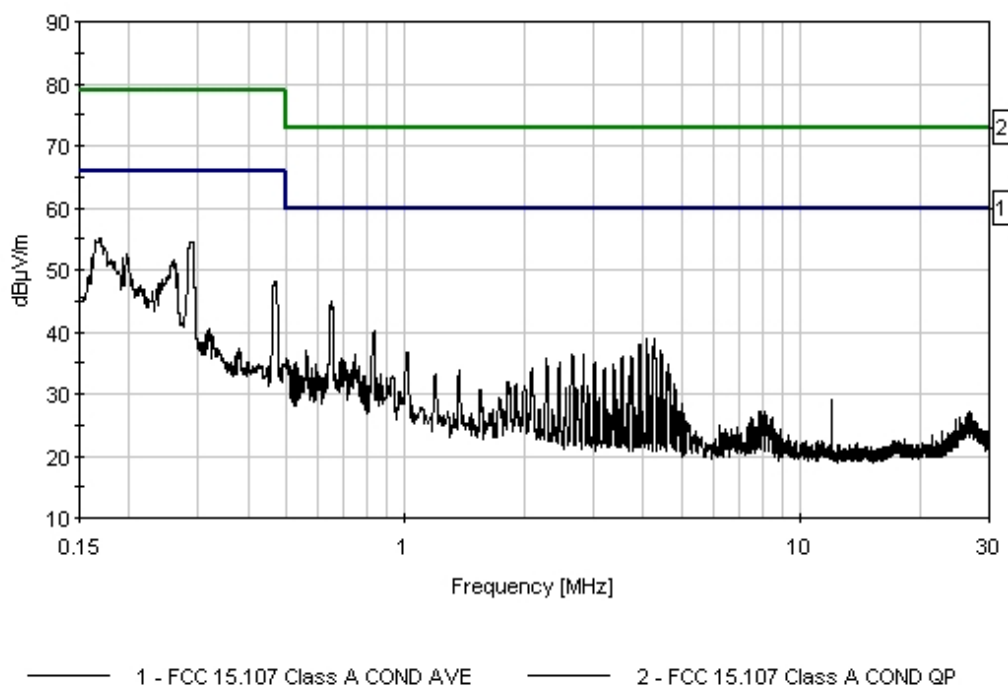
Measurement Data: Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dB μ V	dB	dB	dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	168.907k	55.2					+0.0	55.2	66.0	-10.8	White
2	285.986k	54.5					+0.0	54.5	66.0	-11.5	White
3	196.541k	52.6					+0.0	52.6	66.0	-13.4	White
4	259.080k	51.5					+0.0	51.5	66.0	-14.5	White
5	653.222k	44.8					+0.0	44.8	60.0	-15.2	White
6	467.786k	48.2					+0.0	48.2	66.0	-17.8	White
7	833.568k	40.3					+0.0	40.3	60.0	-19.7	White
8	4.092M	38.9					+0.0	38.9	60.0	-21.1	White
9	4.284M	38.8					+0.0	38.8	60.0	-21.2	White
10	3.918M	37.8					+0.0	37.8	60.0	-22.2	White
11	561.595k	36.9					+0.0	36.9	60.0	-23.1	White

12	4.441M	36.9	+0.0	36.9	60.0	-23.1	White
13	1.009M	36.6	+0.0	36.6	60.0	-23.4	White
14	2.829M	36.5	+0.0	36.5	60.0	-23.5	White
15	4.114M	36.5	+0.0	36.5	60.0	-23.5	White

CKC Laboratories, Inc. Date: 10/09/2002 Time: 2:16:05 PM Moseley Associates Incorporated WVO#: 79622
FCC 15.107 Class A COND AVE Test Lead: White 110Vac 60Hz Sequence#: 14



Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	092702	092703
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
LISN	02128	EMCO	3816/2NM	9809-1090	032002	032003
LISN	00847	EMCO	3816/2NM	1104	101501	101502



Mains Conducted Emissions - Front View



Mains Conducted Emissions - Side View



Mains Conducted Emissions - Front View - Receiver



Mains Conducted Emissions - Side View - Receiver

15.109 – RADIATED EMISSIONS – RECEIVER

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**

Specification: **FCC 15.109 Class A**

Work Order #: **79622**

Date: 10/09/2002

Test Type: **Maximized emission**

Time: 12:31:40

Equipment: **Digital Video Receiver**

Sequence#: 9

Manufacturer: Moseley Associates Incorporated

Tested By: Eddie Wong

Model: Expedio RX

S/N: 92127-0240

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Receiver*	Moseley Associates Incorporated	Expedio RX	92127-0240

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table. Audio Output L and R and Video Output are connected to sections of cables; all other ports are left unterminated. The receiver is set to receive at 1990, 2050, 2110 MHz. Frequency range of measurement = 9 kHz-3.4 GHz. Frequency 9 kHz – 150 kHz RBW 200 Hz, VBW 200 Hz, 150 kHz- 30 MHz RBW 9 kHz, VBW 9 kHz; 30 MHz- 1000 MHz RBW 120 kHz, VBW 120 kHz, 1000 MHz-3400 MHz RBW 1 MHz, VBW 1 MHz. 110Vac, 60 Hz, 20°C, 55% relative humidity.

Transducer Legend:

T1=Log antenna, SN331 092303	T2=Bicon SN220 092303
T3=Cable #10 070803	T4=Cable #15 120602
T5=Preamp 8447D 082302	T6=-----
T7=Horn 6246_091003	T8=12' SMA Gore cable #1337 121802
T9=HP83017A Preamp 091103	T10=Brea Cable: 25' 1/4" Heliac - Brea # 13.
T11=Brea Cable: 6' 1/4" Heliac - Brea # 7.	T12=3.5 GHz High-Pass

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7	T8					
	MHz	dBμV	T9	T10	T11	T12	Table	dBμV/m	dBμV/m	dB	Ant
1	87.844M	53.6	+0.0	+8.9	+0.1	+1.6	+0.0	35.7	39.1	-3.4	Vert
	QP		-28.5								
^	87.844M	56.6	+0.0	+8.9	+0.1	+1.6	+0.0	38.7	39.1	-0.4	Vert
			-28.5								
3	65.230M	53.4	+0.0	+7.9	+0.1	+1.4	+0.0	34.3	39.1	-4.8	Vert
	QP		-28.5								
^	65.230M	56.2	+0.0	+7.9	+0.1	+1.4	+0.0	37.1	39.1	-2.0	Vert
			-28.5								

5	1570.540M	62.4	+0.0 +0.0 -38.0	+0.0 +0.0 +2.0	+0.0 +25.6 +0.6	+0.0 +1.6 +0.0	-10.0	44.2	49.5 2050 MHz	-5.3	Vert
6	1570.400M	62.3	+0.0 +0.0 -38.0	+0.0 +0.0 +2.0	+0.0 +25.6 +0.6	+0.0 +1.6 +0.0	-10.0	44.1	49.5 1990 MHz	-5.4	Vert
7	44.040M	46.0	+0.0 -28.5	+13.5	+0.1	+1.1	+0.0	32.2	39.1	-6.9	Vert
8	1570.000M Ave	60.5	+0.0 +0.0 -38.0	+0.0 +0.0 +2.0	+0.0 +25.6 +0.6	+0.0 +1.6	-10.0	42.3	49.5 2110 MHz	-7.2	Vert
^	1570.000M	64.7	+0.0 +0.0 -38.0	+0.0 +0.0 +2.0	+0.0 +25.6 +0.6	+0.0 +1.6	-10.0	46.5	49.5 2110 MHz	-3.0	Vert
10	123.601M	43.5	+0.0 -28.3	+16.1	+0.2	+2.0	+0.0	33.5	43.5	-10.0	Vert
11	1570.525M	57.6	+0.0 +0.0 -38.0	+0.0 +0.0 +2.0	+0.0 +25.6 +0.6	+0.0 +1.6	-10.0	39.4	49.5 2110 MHz	-10.1	Horiz
12	1570.600M	57.4	+0.0 +0.0 -38.0	+0.0 +0.0 +2.0	+0.0 +25.6 +0.6	+0.0 +1.6 +0.0	-10.0	39.2	49.5 1990 MHz	-10.3	Horiz
13	1570.400M	57.0	+0.0 +0.0 -38.0	+0.0 +0.0 +2.0	+0.0 +25.6 +0.6	+0.0 +1.6 +0.0	-10.0	38.8	49.5 2050 MHz	-10.7	Horiz
14	350.080M	38.8	+19.6 -28.3	+0.0	+0.3	+3.5	+0.0	33.9	46.4	-12.5	Horiz
15	1274.900M	47.0	+0.0 +0.0 -39.3	+0.0 +0.0 +1.8	+0.0 +25.3 +0.5	+0.0 +1.6	+0.0	36.9	49.5 2110 MHz	-12.6	Vert
16	297.035M	35.7	+0.0 -28.3	+22.7	+0.3	+3.3	+0.0	33.7	46.4	-12.7	Vert
17	350.060M	38.5	+19.6 -28.3	+0.0	+0.3	+3.5	+0.0	33.6	46.4	-12.8	Horiz
18	297.120M	34.7	+0.0 -28.3	+22.7	+0.3	+3.3	+0.0	32.7	46.4	-13.7	Horiz
19	297.140M	34.5	+0.0 -28.3	+22.7	+0.3	+3.3	+0.0	32.5	46.4	-13.9	Vert
20	3141.200M	46.9	+0.0 +0.0 -39.7	+0.0 +0.0 +3.1	+0.0 +31.4 +1.1	+0.0 +2.6 +0.0	-10.0	35.4	49.5 1990 MHz	-14.1	Vert
21	3141.200M	46.5	+0.0 +0.0 -39.7	+0.0 +0.0 +3.1	+0.0 +31.4 +1.1	+0.0 +2.6 +0.0	-10.0	35.0	49.5 2050 MHz	-14.5	Vert

22	225.070M	38.2	+0.0 -28.3	+18.2	+0.2	+2.7	+0.0	31.0	46.4	-15.4	Horiz
23	375.070M	36.9	+18.2 -28.2	+0.0	+0.3	+3.7	+0.0	30.9	46.4	-15.5	Horiz
24	3141.200M	45.3	+0.0 +0.0 -39.7	+0.0 +0.0 +3.1	+0.0 +31.4 +1.1	+0.0 +2.6 +0.0	-10.0	33.8	49.5 2050 MHz	-15.7	Horiz
25	119.910M	38.0	+0.0 -28.3	+15.8	+0.2	+2.0	+0.0	27.7	43.5	-15.8	Vert
26	3141.100M	44.9	+0.0 +0.0 -39.7	+0.0 +0.0 +3.1	+0.0 +31.4 +1.1	+0.0 +2.6 +0.0	-10.0	33.4	49.5 1990 MHz	-16.1	Horiz
27	582.455M	32.0	+20.1 -27.8	+0.0	+0.4	+4.8	+0.0	29.5	46.4	-16.9	Horiz
28	600.080M	31.3	+20.2 -27.7	+0.0	+0.4	+4.9	+0.0	29.1	46.4	-17.3	Horiz
29	313.500M	31.9	+21.8 -28.3	+0.0	+0.3	+3.4	+0.0	29.1	46.4	-17.3	Horiz
30	420.100M	35.5	+17.5 -28.2	+0.0	+0.3	+3.9	+0.0	29.0	46.4	-17.4	Horiz
31	513.042M	31.9	+19.9 -28.0	+0.0	+0.4	+4.5	+0.0	28.7	46.4	-17.7	Horiz
32	400.110M	35.5	+16.9 -28.2	+0.0	+0.3	+3.8	+0.0	28.3	46.4	-18.1	Horiz
33	1600.300M	48.5	+0.0 +0.0 -37.9	+0.0 +0.0 +2.0	+0.0 +25.8 +0.6	+0.0 +1.6 +0.0	-10.0	30.6	49.5 1990 MHz	-18.9	Vert
34	375.090M	33.5	+18.2 -28.2	+0.0	+0.3	+3.7	+0.0	27.5	46.4	-18.9	Horiz
35	420.120M	33.9	+17.5 -28.2	+0.0	+0.3	+3.9	+0.0	27.4	46.4	-19.0	Horiz
36	313.480M	30.0	+21.8 -28.3	+0.0	+0.3	+3.4	+0.0	27.2	46.4	-19.2	Vert
37	1759.500M	47.1	+0.0 +0.0 -38.2	+0.0 +0.0 +2.1	+0.0 +26.7 +0.6	+0.0 +1.6 +0.0	-10.0	29.9	49.5 1990 MHz	-19.6	Horiz
38	362.040M	32.0	+18.9 -28.3	+0.0	+0.3	+3.6	+0.0	26.5	46.4	-19.9	Horiz

39	1759.800M	46.4	+0.0 +0.0 -38.2	+0.0 +0.0 +2.1	+0.0 +26.7 +0.6	+0.0 +1.6 +0.0	-10.0	29.2	49.5 2050 MHz	-20.3	Horiz
40	1759.600M	45.7	+0.0 +0.0 -38.2	+0.0 +0.0 +2.1	+0.0 +26.7 +0.6	+0.0 +1.6 +0.0	-10.0	28.5	49.5 2050 MHz	-21.0	Vert
41	249.000M	31.4	+0.0 -28.3	+18.7	+0.3	+2.9	+0.0	25.0	46.4	-21.4	Vert
42	1600.400M	45.0	+0.0 +0.0 -37.9	+0.0 +0.0 +2.0	+0.0 +25.8 +0.6	+0.0 +1.6 +0.0	-10.0	27.1	49.5 1990 MHz	-22.4	Vert
43	416.100M	30.5	+17.4 -28.2	+0.0	+0.3	+3.9	+0.0	23.9	46.4	-22.5	Horiz
44	299.500M	21.7	+0.0 -28.3	+22.9	+0.3	+3.3	+0.0	19.9	46.4	-26.5	Horiz
45	30.070M	13.4	+0.0 -28.4	+16.9	+0.1	+1.0	+0.0	3.0	39.1	-36.1	Horiz
46	998.800M	48.3	+0.0 +0.0 -40.9	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	7.4	49.5	-42.1	Vert

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**

Specification: **FCC 15.109 Class A**

Work Order #: **79622**

Date: 10/08/2002

Test Type: **Maximized emission**

Time: 15:46:15

Equipment: **Digital Video Transmitter**

Sequence#: 7

Manufacturer: Moseley Associates Incorporated

Tested By: Eddie Wong

Model: Expedio TX

S/N: 92026-0240

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Transmitter*	Moseley Associates Incorporated	Expedio TX	92026-0240

Support Devices:

Function	Manufacturer	Model #	S/N
DVD Player	Samsung	DVD-5221	6VDT144346P

Test Conditions / Notes:

The EUT is placed on the wooden table bench. The RF output port of the EUT is left unterminated. The Video input and Audio (R/L) input ports are connected to a DVD player placed under the table. DVD player sends analog video and audio signal to the EUT. The EUT converts the Analog signal to Digital video signal, modulates the signal in COFDM format and sends the signal out to the RF port. NMS and Setup ports are connected to sections of serial cable, the Xfer port and External I/O ports are left unpopulated. Monitor port is connected to a video monitor placed underneath the table. Status : Idle Frequency range of measurement = 30-1000 MHz. Frequency 30 MHz- 1000 MHz RBW 120 kHz, VBW 120 kHz. 110Vac, 60 Hz, 21°C, 34% relative humidity.

Transducer Legend:

T1=Log antenna, SN331 092303	T2=Bicon SN220 092303
T3=Cable #10 070803	T4=Cable #15 120602
T5=Preamp 8447D 082302	T6=Dipole#4 110902

Measurement Data:

Reading listed by margin.

Test Distance: 10 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	350.058M	47.0	+19.6	+0.0	+0.3	+3.5	+0.0	42.1	46.4	-4.3	Horiz
	QP		-28.3	+0.0							
^	350.081M	48.1	+19.6	+0.0	+0.3	+3.5	+0.0	43.2	46.4	-3.2	Horiz
			-28.3	+0.0							
3	64.044M	50.9	+0.0	+8.1	+0.1	+1.4	+0.0	32.1	39.1	-7.0	Vert
	QP		-28.4								
^	64.044M	52.1	+0.0	+8.1	+0.1	+1.4	+0.0	33.3	39.1	-5.8	Vert
			-28.4								
5	50.064M	47.4	+0.0	+11.2	+0.1	+1.2	+0.0	31.5	39.1	-7.6	Vert
			-28.4								
6	40.500M	43.4	+0.0	+15.2	+0.1	+1.1	+0.0	31.3	39.1	-7.8	Vert
	QP		-28.5								
^	40.500M	47.5	+0.0	+15.2	+0.1	+1.1	+0.0	35.4	39.1	-3.7	Vert
			-28.5								

8	375.071M	44.4	+18.2 -28.2	+0.0 +0.0	+0.3	+3.7	+0.0	38.4	46.4	-8.0	Horiz
9	200.046M	43.4	+0.0 -28.4	+17.7 +0.0	+0.2	+2.6	+0.0	35.5	43.5	-8.0	Horiz
10	350.081M	42.6	+19.6 -28.3	+0.0 +0.0	+0.3	+3.5	+0.0	37.7	46.4	-8.7	Vert
11	445.120M	42.1	+18.3 -28.3	+0.0 +0.0	+0.4	+4.0	+0.0	36.5	46.4	-9.9	Horiz
12	250.082M	41.9	+0.0 -28.3	+18.7 +0.0	+0.3	+2.9	+0.0	35.5	46.4	-10.9	Horiz
13	324.064M	38.4	+21.1 -28.3	+0.0 +0.0	+0.3	+3.4	+0.0	34.9	46.4	-11.5	Horiz
14	85.342M	45.5	+0.0 -28.5	+8.5	+0.1	+1.6	+0.0	27.2	39.1	-11.9	Vert
15	418.150M	40.0	+17.5 -28.2	+0.0 +0.0	+0.3	+3.9	+0.0	33.5	46.4	-12.9	Horiz
16	375.071M	39.5	+18.2 -28.2	+0.0 +0.0	+0.3	+3.7	+0.0	33.5	46.4	-12.9	Vert
17	125.080M	40.0	+0.0 -28.3	+16.2	+0.2	+2.0	+0.0	30.1	43.5	-13.4	Vert
18	400.090M	40.1	+16.9 -28.2	+0.0 +0.0	+0.3	+3.8	+0.0	32.9	46.4	-13.5	Vert
19	364.120M	38.0	+18.8 -28.3	+0.0 +0.0	+0.3	+3.6	+0.0	32.4	46.4	-14.0	Horiz
20	416.140M	38.9	+17.4 -28.2	+0.0 +0.0	+0.3	+3.9	+0.0	32.3	46.4	-14.1	Horiz
21	400.084M	39.4	+16.9 -28.2	+0.0 +0.0	+0.3	+3.8	+0.0	32.2	46.4	-14.2	Horiz
22	150.081M	37.2	+0.0 -28.4	+17.8	+0.2	+2.2	+0.0	29.0	43.5	-14.5	Vert
23	42.080M	37.2	+0.0 -28.5	+14.4 +0.0	+0.1	+1.1	+0.0	24.3	39.1	-14.8	Horiz
24	300.103M	33.5	+22.7 -28.3	+0.0 +0.0	+0.3	+3.3	+0.0	31.5	46.4	-14.9	Horiz
25	914.376M	28.1	+24.1 -27.4	+0.0 +0.0	+0.5	+6.1	+0.0	31.4	46.4	-15.0	Vert
26	250.082M	37.6	+0.0 -28.3	+18.7 +0.0	+0.3	+2.9	+0.0	31.2	46.4	-15.2	Vert
27	896.160M	28.2	+23.9 -27.4	+0.0 +0.0	+0.5	+6.0	+0.0	31.2	46.4	-15.2	Horiz
28	275.085M	34.7	+0.0 -28.2	+20.9 +0.0	+0.3	+3.1	+0.0	30.8	46.4	-15.6	Vert
29	987.500M	29.3	+24.6 -27.5	+0.0 +0.0	+0.5	+6.9	+0.0	33.8	49.5	-15.7	Horiz
30	392.050M	37.4	+17.3 -28.2	+0.0 +0.0	+0.3	+3.8	+0.0	30.6	46.4	-15.8	Horiz
31	150.056M	35.9	+0.0 -28.4	+17.8 +0.0	+0.2	+2.2	+0.0	27.7	43.5	-15.8	Horiz
32	811.160M	28.6	+22.4 -27.5	+0.0 +0.0	+0.5	+5.7	+0.0	29.7	46.4	-16.7	Horiz

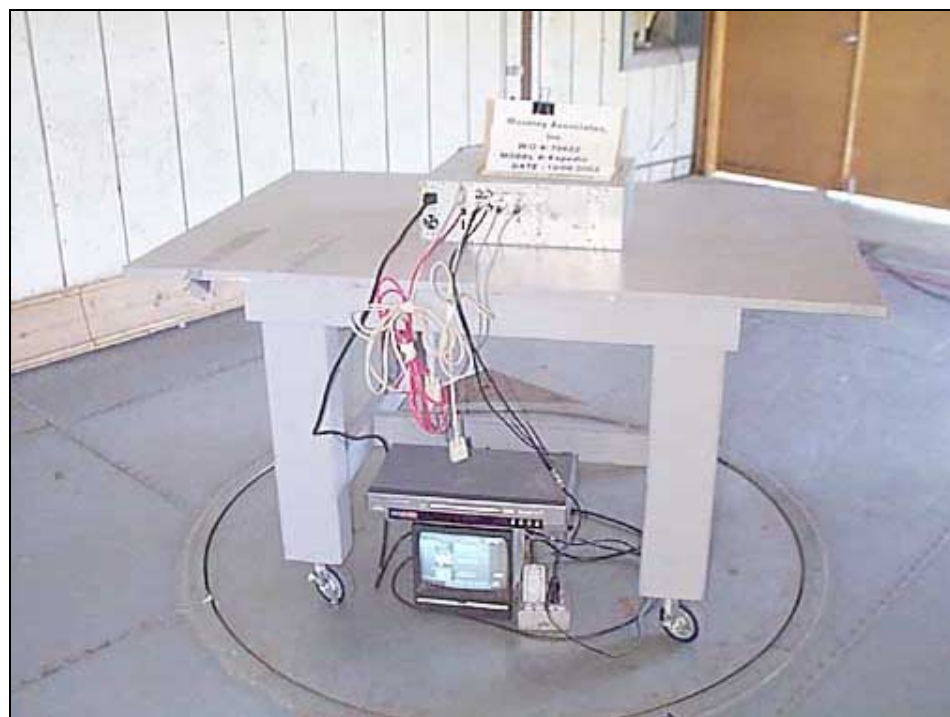
33	387.187M	36.3	+17.6 -28.2	+0.0 +0.0	+0.3	+3.7	+0.0	29.7	46.4	-16.7	Horiz
34	600.069M	31.7	+20.2 -27.7	+0.0 +0.0	+0.4	+4.9	+0.0	29.5	46.4	-16.9	Horiz
35	387.218M	36.1	+17.6 -28.2	+0.0 +0.0	+0.3	+3.7	+0.0	29.5	46.4	-16.9	Vert
36	325.066M	32.7	+21.1 -28.3	+0.0 +0.0	+0.3	+3.4	+0.0	29.2	46.4	-17.2	Vert
37	50.080M	37.8	+0.0 -28.4	+11.2 +0.0	+0.1	+1.2	+0.0	21.9	39.1	-17.2	Horiz
38	825.312M	27.6	+22.7 -27.6	+0.0 +0.0	+0.5	+5.8	+0.0	29.0	46.4	-17.4	Horiz
39	550.100M	31.5	+20.0 -27.9	+0.0 +0.0	+0.4	+4.6	+0.0	28.6	46.4	-17.8	Horiz
40	525.160M	31.7	+19.9 -28.0	+0.0 +0.0	+0.4	+4.5	+0.0	28.5	46.4	-17.9	Vert
41	391.104M	35.2	+17.4 -28.2	+0.0 +0.0	+0.3	+3.7	+0.0	28.4	46.4	-18.0	Vert
42	225.079M	34.9	+0.0 -28.3	+18.2 +0.0	+0.2	+2.7	+0.0	27.7	46.4	-18.7	Vert
43	125.095M	34.5	+0.0 -28.3	+16.2 +0.0	+0.2	+2.0	+0.0	24.6	43.5	-18.9	Horiz
44	418.130M	33.6	+17.5 -28.2	+0.0 +0.0	+0.3	+3.9	+0.0	27.1	46.4	-19.3	Vert
45	725.020M	26.6	+21.8 -27.5	+0.0 +0.0	+0.4	+5.4	+0.0	26.7	46.4	-19.7	Horiz
46	500.090M	30.0	+19.8 -28.1	+0.0 +0.0	+0.4	+4.4	+0.0	26.5	46.4	-19.9	Vert
47	480.120M	30.3	+19.3 -28.2	+0.0 +0.0	+0.4	+4.2	+0.0	26.0	46.4	-20.4	Horiz

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	92702	92703
QP Adapter	01437	HP	85650A	3303A01884	92702	92703
9 kHz- 30 MHz						
Loop Antenna	00314	EMCO	6502	2014	72302	72303
Antenna cable	NA	NA	RG214	Cable#15	122001	122002
Pre-amp to SA cable	NA	Harbour	RG223/U	Cable#10	70802	70803
30 MHz – 1000MHz						
Bicon Antenna	306	AH	SAS200/540	220	92302	92303
Log Periodic Antenna	300	AH	SAS 00/516	331	92302	92303
Pre-amp	00309	HP	8447D	1937A02548	82302	82303
Antenna cable	NA	NA	RG214	Cable#15	122001	122002
Pre-amp to SA cable	NA	Harbour	RG223/U	Cable#10	70802	70803
1GHz-18GHz						
Antenna cable (from bulkhead to antenna, high frequency hardline) (25ft)	NA	Andrew	FSJ1-50A	Cable#13	71502	71503
¼” Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	71502	71503
Horn Antenna	0849	EMCO	3115	6246	91002	91003
Microwave Pre-amp	00786	HP	83017A	3123A00281	91102	91103
Cable	1337	Gore		244922	121201	121202
18-22 GHz						
Microwave Pre-amp	00786	HP	83017A	3123A00281	91102	91103
Cable	1337	Gore		244922	121201	121202
¼” Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	71502	71503
Horn Antenna	2112	HP	84125-80008	3643A00027	62802	62803



OATS - Front View



OATS - Back View



Radiated Emissions - Front View - Receiver



Radiated Emissions - Back View - Receiver



Radiated Emissions - Front View - With UTP Removed



Radiated Emissions - Back View - With UTP Removed



Radiated Emissions - Front View - With Loop Antenna

15.111 – ANTENNA CONDUCTED – RECEIVER

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Moseley Associates Incorporated**

Specification: **FCC 15.111**

Work Order #: **79622**

Date: 10/08/2002

Test Type: **Conducted Emissions**

Time: 14:42:48

Equipment: **Digital Video Receiver**

Sequence#: 8

Manufacturer: Moseley Associates Incorporated

Tested By: Eddie Wong

Model: Expedio RX

120V 60Hz

S/N: 92127-0240

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Digital Video Receiver*	Moseley Associates Incorporated	Expedio RX	92127-0240

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The EUT is placed on the wooden table. The RF output port of the EUT is connected to a spectrum analyzer, all other ports are left unterminated. The receiver is set to receive at 990 MHz, 2050 MHz, 2110 MHz. Frequency: 9 kHz – 150 kHz RBW 200 Hz, VBW 200 Hz; 150 kHz – 30 MHz RBW 9 kHz, VBW 9 kHz; 30 MHz – 1000 MHz RBW 120 kHz, VBW 120 kHz; 1000 MHz – 22000 MHz RBW 1 MHz; VBW 1 MHz. 110Vac, 60 Hz, 21°C, 34% relative humidity.

Transducer Legend:

T1=Brea Cable: 6' 1/4" Helix - Brea # 7.

Measurement Data:

Reading listed by margin.

Test Lead: Antenna Terminal

#	Freq MHz	Rdng dBμV	T1 dB				Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1629.800M	27.9	+0.6				+0.0	28.5	50.0	-21.5	Anten
2	6029.800M	22.5	+1.3				+0.0	23.8	50.0	-26.2	Anten
3	1569.800M	22.3	+0.6				+0.0	22.9	50.0	-27.1	Anten
4	1509.800M	21.5	+0.5				+0.0	22.0	50.0	-28.0	Anten
5	637.200M	19.3	+0.0				+0.0	19.3	50.0	-30.7	Anten
6	263.600M	18.0	+0.0				+0.0	18.0	50.0	-32.0	Anten

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	092702	092703
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
¼" Helix Coaxial Cable	NA	Andrew	FSJ-50A-4	Cable#7 (6 ft)	071502	071503
3.5 GHz HPF	2117	HP	84300-80038	3643A00027	062502	062503



15.111 - Front View



15.111 - Back View