ADDENDUM TO FC02-036

FOR THE

VIDEO/AUDIO TRANSMITTER, LEA-3-WATT

FCC PART 90 AND PART 15 SUBPART B SECTIONS 15.109 CLASS B

COMPLIANCE

DATE OF ISSUE: MAY 2, 2002

PREPARED FOR:

Gamut Electronics LLC
10601 Tierrasanta Blvd., Suite 126
San Diego, CA 92124

W.O. No.: 78490

PREPARED BY:

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

Date of test: April 11-15, 2002

Report No.: FC02-036A

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ADMINISTRATIVE INFORMATION

DATE OF TEST:	April 11-15, 2002
DATE OF RECEIPT:	April 11, 2002
PURPOSE OF TEST:	To demonstrate the compliance of the Video/Audio Transmitter, LEA-3-Watt with the requirements for FCC Part 90 and Part 15 Subpart B Sections 15.109 Class B devices. The purpose of this addendum is to revise the RF Power Output data.
TEST METHOD:	ANSI C63.4 (1992) and FCC Part 90
FREQUENCY RANGE TESTED:	9 kHz - 25 GHz
MANUFACTURER:	Gamut Electronics LLC 10601 Tierrasanta Blvd., Suite 126 San Diego, CA 92124
REPRESENTATIVE:	John Hibbs
TEST LOCATION:	CKC Laboratories, Inc. 110 Olinda Place Brea, CA 92621

SUMMARY OF RESULTS

As received, the Gamut Electronics LLC Video/Audio Transmitter, LEA-3-Watt was found to be fully compliant with the following standards and specifications:

United States

- FCC Part 90 and Part 15 Subpart B Section 15.109 Class B
- ANSI C63.4 (1992) method and FCC Part 90

CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply. Conducted emissions not required for this device.

APPROVALS

QUALITY ASSURANCE:

Steve Behm, Manager of Engineering Services

Joyce Walker, Quality Assurance Administrative Manager

Septimiu Apahidean, EMC/Lab Manager

TEST PERSONNEL:

Eddie Wong, EMC Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was representative of a production unit. Mobile Vehicle Mounted Device for Audio/Video Transmission.

EQUIPMENT UNDER TEST

Video/Audio Transmitter
Manuf: Gamut Electronics LLC
Model: LEA-3-Watt
Serial: 001
FCC ID: pending

PERIPHERAL DEVICES

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

Power Supply
Manuf: CUI
Model: PSA-31U-120
Serial: M04304049A1
FCC ID: DoC

2.4 GHz A/V Receiver
Manuf: Generic
Model: RW1-RX
Serial: 2402018820
FCC ID: DoC

Camcorder
Manuf: Sony
Model: CD-TR416
Serial: 1005737
FCC ID: DoC

TV
Manuf: Panasonics
Model: PV-C1331W
Serial: CIAC32016
FCC ID: DoC

Waveform Generator
Manuf: BK Precission
Model: 3011B
Serial: 147-32235
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

15M8F3W

2.1033(c)(5) FREQUENCY RANGE

2470 MHz

2.1033(c)(6) OPERATING POWER

2.8 Watts

2.1033(c)(7) MAXIMUM POWER RATING

5 Watts

2.1033(c)(8) DC VOLTAGES

12 VDC (1.5 Amps)

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

The necessary information is contained in a separate document.

2.1033(c)(14)/2.1046/90.205(l)- RF POWER OUTPUT

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

Customer:	**Gamut Electronics**		
Specification:	**FCC 90.205(l) Power Limit**		
Work Order #:	**78490**	Date:	04/12/2002
Test Type:	**Conducted Emissions**	Time:	10:39:54
Equipment:	**Audio/Visual Transmitter**	Sequence#:	1
Manufacturer:	Gamut Electronics	Tested By:	Eddie Wong
Model:	LEA-3-WATT		12VDC
S/N:	001		

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Audio/Visual Transmitter*	Gamut Electronics	LEA-3-WATT	001

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	CUI	PSA-31U-120	M04304049A1
2.4 GHz A/V receiver	Generic	RW1-RX	2402018820
Camcorder	Sony	CD-TR416	1005737
TV	Panasonics	PV-C1331W	CIAC32016

Test Conditions / Notes:

Vehicle mount EUT placed on the test bench. DC In obtains 12Vdc from a support power supply. Audio In connected to a waveform generator (150 mV, 400 Hz Audio signal), Video In connected to a camcorder. EUT transmits Audio /Video signal at 2.470 GHz. Spec limit: 5 watts maximum = 143.979 dBuV. Frequency range: fundamental, unmodulated. Measurement BW RBW=VBW=1 MHz. 18°C, 66% relative humidity. Note: 1) 10 - 60 dBof external attenuation used. Attenuation compensated via Spectrum Analyzer's offset. 2) Output Low Pass Filter of the EUT tuned to attenuated spurious emission. 3) Removed paint on cover to enhance grounding. 4) AL shielding material installed over R13.

Transducer Legend:

Measurement Data: Reading listed by margin. Test Lead: Antenna terminal

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	2470.080M	141.5					+0.0	141.5	143.9 2.8 watts	-2.4	Anten

Power and antenna heights limit

(l) 2450-2483.5 MHz. The maximum transmitter power is 5 watts

The following measurements demonstrate the EUT satisfy the above requirement.

Conducted Measurement.

Test method: Direct measurement. The power level was measure at the antenna terminal

Frequency	Power Level	Power Level
(MHz)	(Watt)	(dBm)
2470	2.8	34.47

Radiated Field Measurement

Test Method: Calculated. The EIRP was calculated using the above measured Output Power (dBm) and the Antenna Gain (dBi).

EIRP (dBm) = Power Output (dBm) + Antenna Gain (dBi)

Power Output = 34.47 dBm
Antenna Gain = 0.0 dBi

EIRP = 34.47 dBm + 0.0dBi
= 34.47 dBm
= 2.8 Watts

(ERP) 0 dBd = 2.15 dBi (EIRP)

Or

(ERP) –2.15 dBd = 0.0 dBi (EIRP)

ERP = 34.47 dBm –2.15dBd
= 32.23 dBm
= 1.71 Watts

The antenna Manufacturer is Mobile Mark
The Model Number is PSTG0-2400HS
The antenna specification is contained in a separate document (file: PSTN-2400(1).pdf)
The antenna is a 1/4 wave monopole with a 0.0 dBi gain max.

Test Equipment 90.205(l) - Fundamental Antenna Terminal

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	092801	092802

Test Equipment 90.205(l) - Fundamental, ERP

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	092801	092802
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	032902	032903
RF Amplifier	2160	AR	10S1G4A	24375	092701	092702
Horn Antenna	0849	EMCO	3115	6246	091201	091202
Horn Antenna	01646	Emco	3115	9603-4683	031902	031903
¼" Heliax Coaxial Cable	NA	Andrew	LDF1-50	Cable#18 (70 ft)	091101	091102
Antenna cable (from bulkhead to antenna, high frequency hardline) (25ft)	NA	Andrew	FSJ1-50A	Cable#13	07/17/01	07/17/02

RF Power Test Setup

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

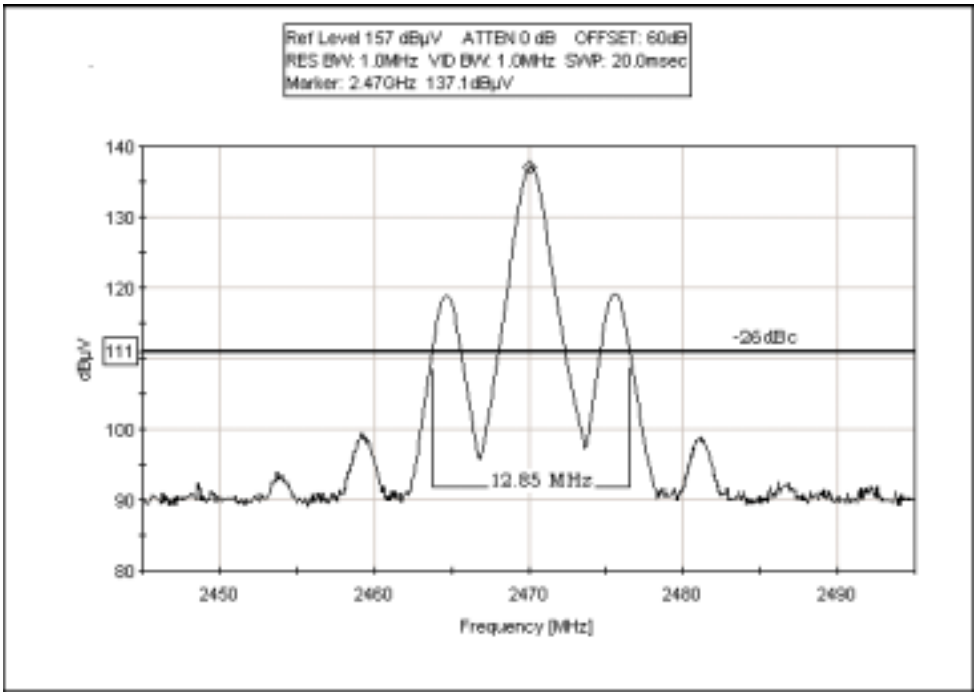
Not applicable to this unit.

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

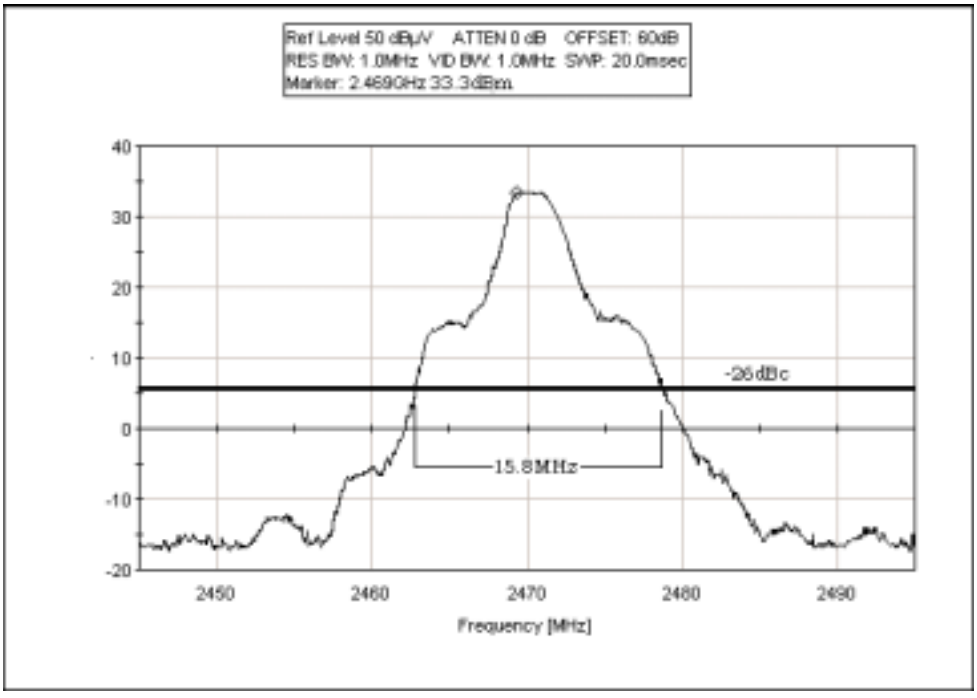
Not applicable to this unit.

2.1033(c)(14)/2.1049(i)/90.210- OCCUPIED BANDWIDTH

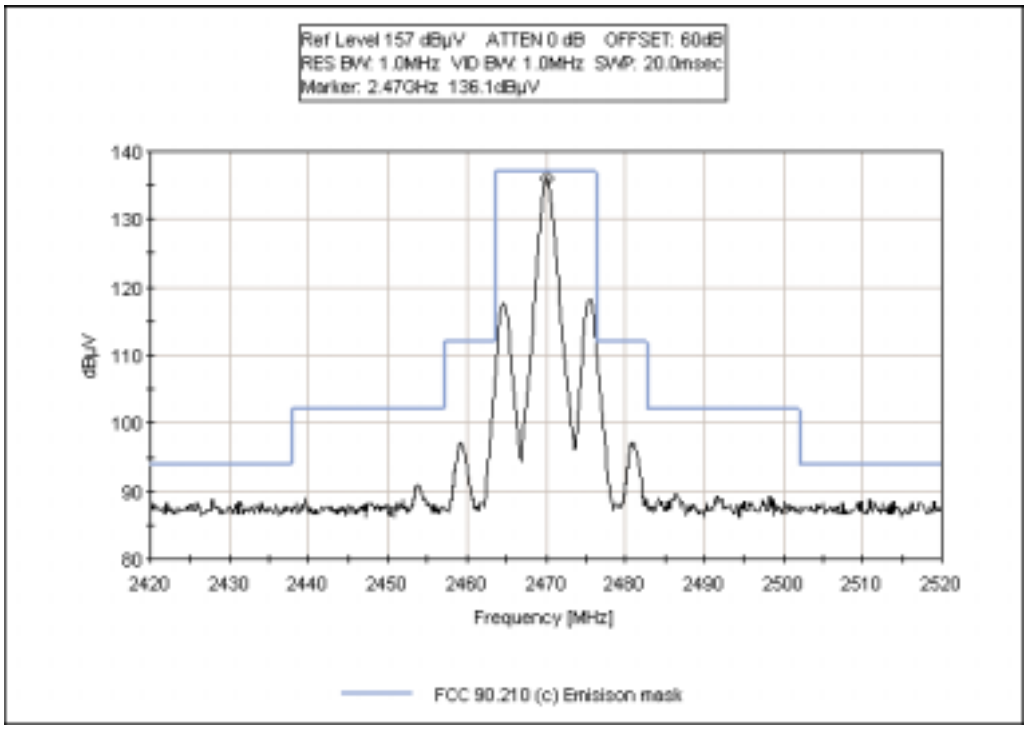
OCCUPIED BANDWIDTH - -CW 26dBc



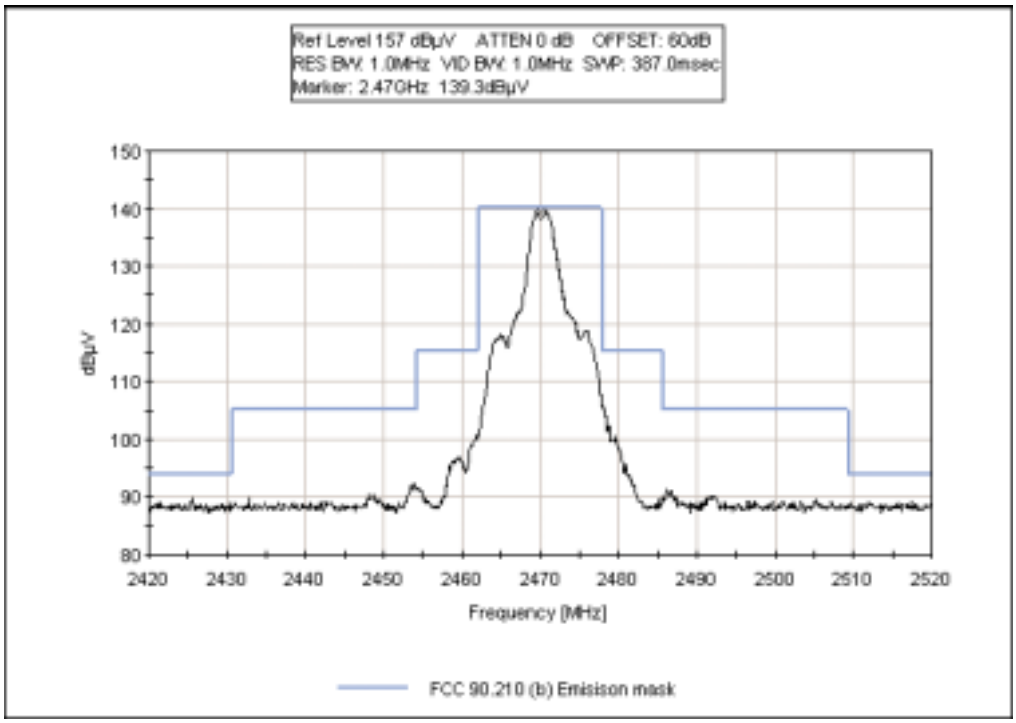
OCCUPIED BANDWIDTH - -26dBc MODULATED



EMISSIONS MASK B



EMISSIONS MASK B - MODULATED



Emission Mask B Calculation
Rated power output: 2.95 watt.
Authorized band width: 12.85 MHz (measured at –26 dBc , un-modulated)

FCC Part 90.210 (b) 1
On any frequency removed from the assigned frequency by more than 50%, but not more than 100% or the authorized bandwidth: At least 25dB

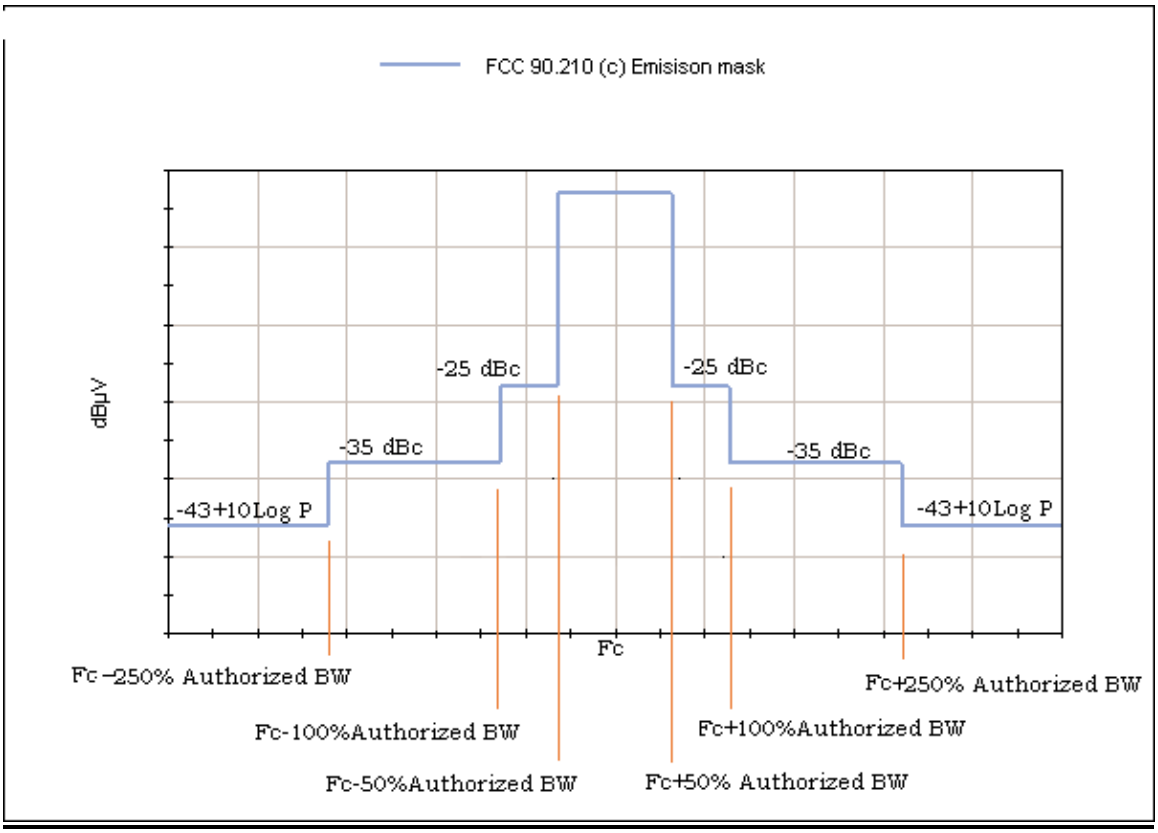
FCC Part 90.210 (b) 2
On any frequency removed from the assigned frequency by more than 100%, but not more than 250% or the authorized bandwidth: At least 35dB

FCC Part 90.210 (c) 3
On any frequency removed from the assigned frequency by more than 250% of the authorized bandwidth: At least 43+10 Log (p) dB

50% of the Authorized BW	=	0.5 x 12.85 MHz	=	6.425 MHz
100% of the authorized BW	=	1 x 12.85 MHz	=	12.85 MHz
250% of the authorized BW	=	2.5 x 12.85 MHz	=	32.125MHz

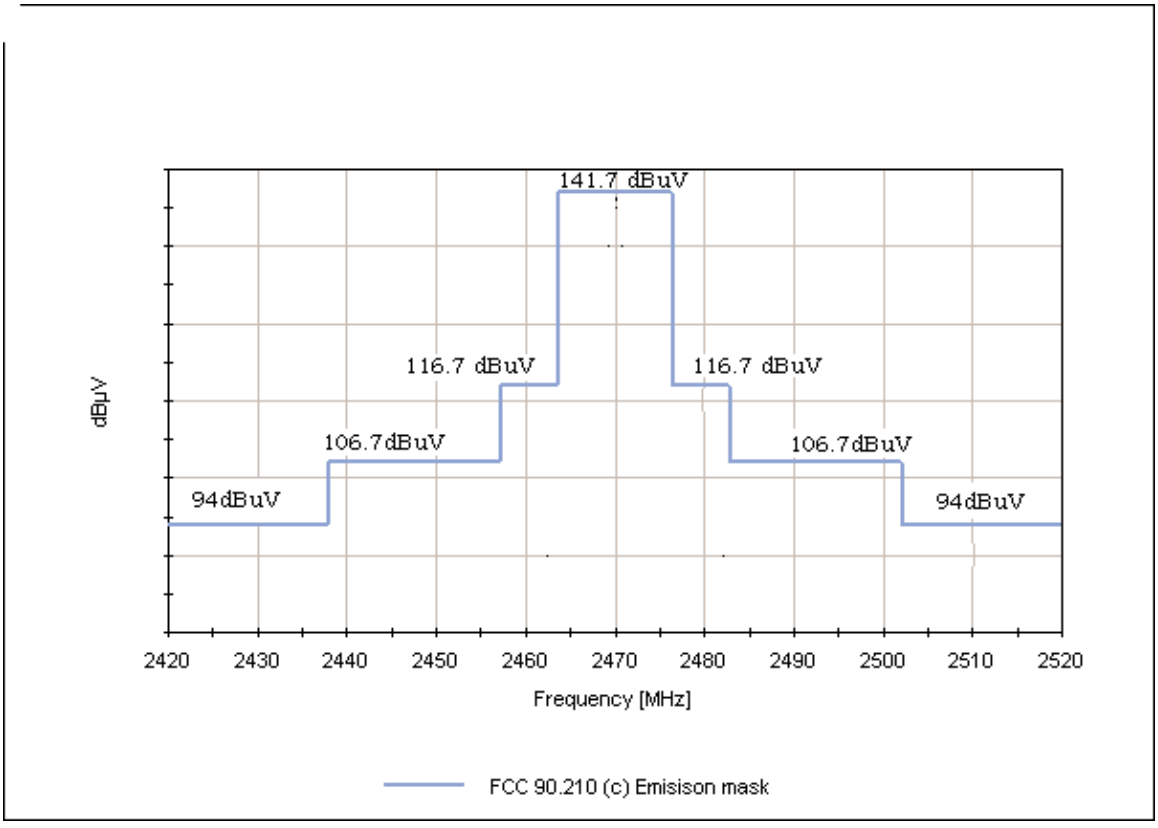
Frequency band	Required attenuation
Fc-6.425 to Fc + 6.425 KHz	0 dB
Fc – 12.85 KHz to Fc +12.85 MHz	25 dB
Fc- 32.125MHz to Fc+ 32.125 MHz	35 dB

4 MHz to Fc –32.123 MHz, 43+10 Log (P) dB
Fc+32.125 MHz to 25,000 MHz


FCC 90.210 (c) Emisison mask
dBµV
-25 dBc
-25 dBc
-35 dBc
-35 dBc
-43+10Log P
-43+10Log P
Fc
Fc –250% Authorized BW
Fc+250% Authorized BW
Fc-100%Authorized BW
Fc+100%Authorized BW
Fc-50%Authorized BW
Fc+50% Authorized BW

Emission Mask B Calculation
Frequency: 2470 MHz
Rated power output: 2.95 watt.
Authorized band width: 12.85 MHz (measured at –26 dBc , un-modulated)

Frequency band	Required attenuation	EMITest LImit
2463 - 2437 MHz	0 dB	141.7 dBuV
2457 - 2463 MHz, 2476 - 2482 MHz	25 dB	116.68 dBuV
2437 - 2457 MHz 2482 - 2502 MHz	35 dB	106.68 dBuV
4 MHz - 2437 MHz, 2502 MHz - 25,000 MHz	43+10 Log (P) dB	94dBuV



Power to voltage level (dBuV) conversion

Rate power = 2.95 watts
R = 50 Ohm

$$\text{Power} = \frac{V^2}{R}$$

$$V = \sqrt{\text{Power x R}}$$

$$V = \sqrt{2.95 \text{ x } 50}$$

$$V = \sqrt{147.500}$$

$$V = 12.144 \text{ V}$$

$$V\,(\text{dB}\mu\text{V}) = 20 \text{ Log}\left(\frac{12.144}{1 \text{ x } 10^{-6}}\right)$$

$$= 141.7 \text{ dB}\mu\text{V}$$

Limit line for Spurious Emission

Required Attenuation = 43+10 Log P

Limit line (dBuV) = V_{dBuv} - Attenuation

V_{dBuV} = $20 \text{ Log } \frac{V}{1 \text{ x } 10^{-6}}$

= $20 \left(\text{Log } V - \text{Log } 1 \text{ x } 10^{-6} \right)$

= $20 \text{ Log } V - 20 \text{ Log} 1 \text{ x } 10^{-6}$

= $20 \text{ Log } V - 20 (-6)$

= $20 \text{ Log } V + 120$

Attenuation = $43 + 10 \text{ Log } P$

= $43 + 10 \text{ Log } \frac{V^2}{R}$

= $43 + 10 \left(\text{Log } V^2 - \text{Log } R \right)$

= $43 + 10 \left(2 \text{ Log } V - \text{Log } R \right)$

= $43 + 20 \text{ Log } V - 10 \text{ Log } R$

Limit line = V_{dBuv} - Attenuation

= 20 Log V + 120 – (43 + 20 Log V – 10Log R)

= 20 Log V + 120 – 43 – 20 Log V + 10Log R

= 20 Log V + 120 – 43 – 20 Log V + 10Log R

= 120 – 43 + 10 Log 50 Note : R = 50 Ω

= 120 –43 + 16.897

= 94 dBuV at any power level

Test Equipment FCC 90.210(b) Antenna terminal

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
9 kHz-18 GHz						
Spectrum Analyzer	01865	HP	8566B	2532A02509	092801	092802
2.4 GHz LPF	1439	K & L	10L121-2200	001	101901	101902
2.4 GHz HPF	01440	K & L	1440	NA	100301	100302
18 GHz- 25 GHz						
2.4 GHz HPF	01440	K & L	1440	NA	100301	100302
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	032902	032903

Direct Connect Test Setup - Front View

Direct Connect Test Setup - Front View Close-up

2.1033(c)(14)/2.1051/90.210 - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

Test Location:	CKC Laboratories, Inc. •110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112		
Customer:	**Gamut Electronics**		
Specification:	**FCC 90.210 (b) Emisison mask**		
Work Order #:	**78490**	Date:	04/12/2002
Test Type:	**Conducted Emissions**	Time:	11:30:53
Equipment:	**Audio/Visual Transmitter**	Sequence#:	2
Manufacturer:	Gamut Electronics	Tested By:	Eddie Wong
Model:	LEA-3-WATT		12VDC
S/N:	001		

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Audio/Visual Transmitter*	Gamut Electronics	LEA-3-WATT	001

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	CUI	PSA-31U-120	M04304049A1
2.4 GHz A/V receiver	Generic	RW1-RX	2402018820
Camcorder	Sony	CD-TR416	1005737
TV	Panasonics	PV-C1331W	CIAC32016

Test Conditions / Notes:

Vehicle mount EUT placed on the test bench. DC In obtains 12Vdc from a support power supply. Audio In connected to a waveform generator (150 mV, 400 Hz Audio signal), Video In connected to a camcorder. EUT transmits Audio /Video signal at 2.470 GHz. Conducted spurious emission measured at Antenna port with Modulation ON. Required out of band emisison (± 250 MHz) = 43+10Log(P) = 94 dBuV. Frequency range: 9 kHz- 25 GHz. Measurement BW 4 MHz-30 MHz: RBW=VBW=9 kHz. 30 MHz-1000MHz RBW=VBW=120KHz. 1000MHz-25,000 MHz RBW=VBW=1 MHz. 18°C, 66% relative humidity. Note: 1) 10 - 60 dBof external attenuation used. Attenuation compensated via Spectrum Analyzer's offset. 2) Output Low Pass Filter of the EUT tuned to attenuated spurious emission. 3) Removed paint on cover to enhance grounding. 4) AL shielding material installed over R13.

Transducer Legend:

T1=HPF 2.4GHz High Pass

Measurement Data: Reading listed by margin. Test Lead: Antenna terminal

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	7409.600M	83.6	+4.7				+0.0	88.3	94.0	-5.7	Anten
2	4940.560M	84.8	+0.8				+0.0	85.6	94.0	-8.4	Anten
3	9879.000M	79.8	+3.5				+0.0	83.3	94.0	-10.7	Anten
4	17293.400M	56.4	+17.7				+0.0	74.1	94.0	-19.9	Anten
5	14810.600M	63.9	+6.0				+0.0	69.9	94.0	-24.1	Anten
6	12349.000M	54.8	+1.9				+0.0	56.7	94.0	-37.3	Anten
7	5.430M	45.0	+0.0				+0.0	45.0	94.0	-49.0	Anten

Test Equipment FCC 90.210(b) Antenna terminal

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
9 kHz-18 GHz						
Spectrum Analyzer	01865	HP	8566B	2532A02509	092801	092802
2.4 GHz LPF	1439	K & L	10L121-2200	001	101901	101902
2.4 GHz HPF	01440	K & L	1440	NA	100301	100302
18 GHz- 25 GHz						
2.4 GHz HPF	01440	K & L	1440	NA	100301	100302
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	032902	032903

Direct Connect Test Setup - Front View

Direct Connect Test Setup - Front View Close-up

2.1033(c)(14)/2.1053/90.210 - FIELD STRENGTH OF SPURIOUS RADIATION

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

Customer: **Gamut Electronics**
Specification: **FCC 90.210 (b) Emisison mask (RF)**
Work Order #: **78490** Date: 04/15/2002
Test Type: **Radiated Scan** Time: 10:19:57
Equipment: **Audio/Visual Transmitter** Sequence#: 3
Manufacturer: Gamut Electronics Tested By: Eddie Wong
Model: LEA-3-WATT
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Audio/Visual Transmitter*	Gamut Electronics	LEA-3-WATT	001

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	CUI	PSA-31U-120	M04304049A1
2.4 GHz A/V receiver	Generic	RW1-RX	2402018820
Camcorder	Sony	CD-TR416	1005737
TV	Panasonics	PV-C1331W	CIAC32016
Waveform generator	BK Precission	3011B	147-32235

Test Conditions / Notes:

Vehicle mount EUT placed on the test bench. DC In obtains 12Vdc from a support power supply. Audio In connected to a waveform generator (150 mV, 400 Hz Audio signal), Video In connected to a camcorder. EUT transmits Audio /Video signal at 2.470 GHz. Spec limit: Requires attenuation for Out of band emisison (± 250%) = - 43x 10Log P = 94 dBuV. Frequency range: 4 MHz - 25 GHz. Measurement BW 4 MHz-30 MHz: RBW=VBW=9 kHz. 30 MHz-1000MHz RBW=VBW=120kHz. 1000MHz-25,000 MHz RBW=VBW=1 MHz. 18°C, 66% relative humidity. Note: 1) Output Low Pass Filter of the EUT tuned to attenuated spurious emission. 2) Removed paint on cover to enhance grounding. 3) AL shielding material installed over R13.

Transducer Legend:

T1=Active Loop Antenna	T2=Bicon 092401
T3=Log 331 092401	T4=Cable #10 071601
T5=Cable #15 120602	T6=Preamp 8447D 090501
T7=Horn Antenna sn6246	T8=Heliax #18 70' 11Sept2001
T9=HP3017A sn3123A00281 11-Sept-01	T10=18-26 HP Horn Antenna #1413
T11=HOL_HF_010_purple 65474	T12=HPF 2.4GHz High Pass
T13=LPF 2.4 GHz Low Pass	T14=45MHz- 27GHz,Preampl,HP-83051A

Measurement Data: Reading listed by margin. Test Distance: 3 Meter

#	Freq	Rdng	T1 T5 T9 T13	T2 T6 T10 T14	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	4940.722M Ave	84.6	+0.0 +0.0 -37.2 +0.0	+0.0 +0.0 +0.0	+0.0 +33.0 +0.0	+0.0 +6.3 +0.8	+0.0	87.5	94.0	-6.5	Vert
^	4940.722M	88.1	+0.0 +0.0 -37.2 +0.0	+0.0 +0.0 +0.0	+0.0 +33.0 +0.0	+0.0 +6.3 +0.8	+0.0	91.0	94.0	-3.0	Vert
3	7408.900M	75.3	+0.0 +0.0 -37.9 +0.0	+0.0 +0.0 +0.0	+0.0 +36.1 +0.0	+0.0 +8.1 +4.7	+0.0	86.3	94.0	-7.7	Horiz
4	4940.800M Ave	83.0	+0.0 +0.0 -37.2 +0.0	+0.0 +0.0 +0.0	+0.0 +33.0 +0.0	+0.0 +6.3 +0.8	+0.0	85.9	94.0	-8.1	Horiz
^	4940.800M	88.5	+0.0 +0.0 -37.2 +0.0	+0.0 +0.0 +0.0	+0.0 +33.0 +0.0	+0.0 +6.3 +0.8	+0.0	91.4	94.0	-2.6	Horiz
6	7411.641M	71.7	+0.0 +0.0 -37.9 +0.0	+0.0 +0.0 +0.0	+0.0 +36.1 +0.0	+0.0 +8.1 +4.8	+0.0	82.8	94.0	-11.2	Vert
7	2469.900M	81.1	+0.0 +0.0 -38.7 +50.5	+0.0 +0.0 +0.0	+0.0 +27.7 +0.0	+0.0 +4.2 +0.0	+0.0	124.8	137.1	-12.3	Vert
8	12351.200 M	61.4	+0.0 +0.0 -35.6 +0.0	+0.0 +0.0 +0.0	+0.0 +38.9 +0.0	+0.0 +11.7 +1.9	+0.0	78.3	94.0	-15.7	Horiz
9	12352.520 M	57.6	+0.0 +0.0 -35.6 +0.0	+0.0 +0.0 +0.0	+0.0 +38.9 +0.0	+0.0 +11.7 +1.9	+0.0	74.5	94.0	-19.5	Vert
10	9880.450M	64.6	+0.0 +0.0 -41.6 +0.0	+0.0 +0.0 +0.0	+0.0 +37.5 +0.0	+0.0 +9.7 +3.5	+0.0	73.7	94.0	-20.3	Horiz
11	14817.020 M	49.1	+0.0 +0.0 -37.3 +0.0	+0.0 +0.0 +0.0	+0.0 +38.9 +0.0	+0.0 +14.3 +6.0	+0.0	71.0	94.0	-23.0	Vert

12	2459.300M	46.2	+0.0 +0.0 -38.7 +49.5	+0.0 +0.0 +0.0	+0.0 +27.7 +0.0	+0.0 +4.2 +0.0	+0.0	88.9	112.1	-23.2	Vert
13	14822.100 M	47.8	+0.0 +0.0 -37.3 +0.0	+0.0 +0.0 +0.0	+0.0 +38.9 +0.0	+0.0 +14.3 +5.9	+0.0	69.6	94.0	-24.4	Horiz
14	9881.521M	59.0	+0.0 +0.0 -41.6 +0.0	+0.0 +0.0 +0.0	+0.0 +37.5 +0.0	+0.0 +9.7 +3.5	+0.0	68.1	94.0	-25.9	Vert
15	24917.000 M	35.1	+0.0 +0.0 +0.0 +0.0	+0.0 +0.0 +40.6 -27.6	+0.0 +0.0 +8.8	+0.0 +0.0 +0.0	+0.0	56.9	94.0	-37.1	Horiz
16	2464.709M	55.3	+0.0 +0.0 -38.7 +50.0	+0.0 +0.0 +0.0	+0.0 +27.7 +0.0	+0.0 +4.2 +0.0	+0.0	98.5	137.1	-38.6	Horiz
17	2464.709M	55.0	+0.0 +0.0 -38.7 +50.0	+0.0 +0.0 +0.0	+0.0 +27.7 +0.0	+0.0 +4.2 +0.0	+0.0	98.2	137.1	-38.9	Horiz
18	2464.402M	52.6	+0.0 +0.0 -38.7 +50.0	+0.0 +0.0 +0.0	+0.0 +27.7 +0.0	+0.0 +4.2 +0.0	+0.0	95.8	137.1	-41.3	Horiz
19	3981.022M	43.4	+0.0 +0.0 -37.6 +0.0	+0.0 +0.0 +0.0	+0.0 +31.9 +0.0	+0.0 +6.1 +2.6	+0.0	46.4	94.0	-47.6	Vert
20	360.021M	43.5	+0.0 +3.6 +0.0 +0.0	+0.0 -28.2 +0.0	+18.1 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	37.3	94.0	-56.7	Vert
21	1990.536M	44.5	+0.0 +0.0 -38.4 +0.4	+0.0 +0.0 +0.0	+0.0 +26.4 +0.0	+0.0 +3.9 +0.0	+0.0	36.8	94.0	-57.2	Vert
22	519.695M	41.9	+0.0 +4.5 +0.0 +0.0	+0.0 -28.5 +0.0	+17.3 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	35.6	94.0	-58.4	Vert
23	131.559M	44.6	+0.0 +2.1 +0.0 +0.0	+16.4 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	34.9	94.0	-59.1	Vert

24	119.044M	45.7	+0.0 +2.0 +0.0 +0.0	+15.1 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	34.6	94.0	-59.4	Vert
25	399.979M	43.1	+0.0 +3.8 +0.0 +0.0	+0.0 -28.3 +0.0	+15.5 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	34.5	94.0	-59.5	Vert
26	199.992M	43.2	+0.0 +2.6 +0.0 +0.0	+16.8 -28.4 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	34.5	94.0	-59.5	Horiz
27	334.063M	38.5	+0.0 +3.4 +0.0 +0.0	+0.0 -28.2 +0.0	+19.9 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	33.9	94.0	-60.1	Horiz
28	31.496M	45.0	+0.0 +1.0 +0.0 +0.0	+16.2 -28.5 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+0.0	33.8	94.0	-60.2	Vert
29	115.796M	45.4	+0.0 +1.9 +0.0 +0.0	+14.6 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	33.7	94.0	-60.3	Horiz
30	117.356M	45.0	+0.0 +1.9 +0.0 +0.0	+14.8 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	33.5	94.0	-60.5	Horiz
31	118.500M QP	44.6	+0.0 +2.0 +0.0 +0.0	+15.0 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	33.4	94.0	-60.6	Horiz
^	118.500M	49.7	+0.0 +2.0 +0.0 +0.0	+15.1 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	38.6	94.0	-55.4	Horiz
33	733.360M	33.1	+0.0 +5.4 +0.0 +0.0	+0.0 -27.9 +0.0	+22.3 +0.0 +0.0	+0.5 +0.0 +0.0	+0.0	33.4	94.0	-60.6	Horiz
34	266.671M	38.9	+0.0 +3.0 +0.0 +0.0	+19.4 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	33.3	94.0	-60.7	Horiz
35	319.979M	36.9	+0.0 +3.4 +0.0 +0.0	+0.0 -28.3 +0.0	+20.9 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	33.2	94.0	-60.8	Vert

36	122.532M	43.7	+0.0 +2.0 +0.0 +0.0	+15.5 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	33.0	94.0	-61.0	Vert
37	120.344M	43.8	+0.0 +2.0 +0.0 +0.0	+15.3 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	32.9	94.0	-61.1	Vert
38	35.795M	44.1	+0.0 +1.1 +0.0 +0.0	+15.9 -28.4 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+0.0	32.8	94.0	-61.2	Horiz
39	1537.078M	43.1	+0.0 +0.0 -38.8 +0.2	+0.0 +0.0 +0.0	+0.0 +24.7 +0.0	+0.0 +3.4 +0.0	+0.0	32.6	94.0	-61.4	Vert
40	122.481M	43.1	+0.0 +2.0 +0.0 +0.0	+15.5 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	32.4	94.0	-61.6	Horiz
41	333.293M	36.8	+0.0 +3.4 +0.0 +0.0	+0.0 -28.2 +0.0	+19.9 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	32.2	94.0	-61.8	Vert
42	240.010M	39.6	+0.0 +2.8 +0.0 +0.0	+17.6 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	32.1	94.0	-61.9	Horiz
43	155.983M	40.2	+0.0 +2.3 +0.0 +0.0	+17.5 -28.3 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	31.9	94.0	-62.1	Horiz
44	37.128M	43.6	+0.0 +1.1 +0.0 +0.0	+15.5 -28.4 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+0.0	31.9	94.0	-62.1	Horiz
45	91.897M	48.6	+0.0 +1.6 +0.0 +0.0	+9.6 -28.2 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	31.8	94.0	-62.2	Vert
46	410.434M	40.1	+0.0 +3.8 +0.0 +0.0	+0.0 -28.4 +0.0	+15.7 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	31.6	94.0	-62.4	Horiz
47	200.451M	40.3	+0.0 +2.6 +0.0 +0.0	+16.8 -28.4 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	31.6	94.0	-62.4	Horiz

48	349.973M	36.8	+0.0 +3.5 +0.0 +0.0	+0.0 -28.2 +0.0	+18.8 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	31.2	94.0	-62.8	Horiz
49	133.266M	40.7	+0.0 +2.1 +0.0 +0.0	+16.5 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	31.1	94.0	-62.9	Vert
50	80.022M	50.8	+0.0 +1.6 +0.0 +0.0	+6.8 -28.2 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+0.0	31.1	94.0	-62.9	Vert
51	270.332M	36.2	+0.0 +3.1 +0.0 +0.0	+19.7 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	31.0	94.0	-63.0	Horiz
52	199.984M	39.6	+0.0 +2.6 +0.0 +0.0	+16.8 -28.4 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	30.9	94.0	-63.1	Horiz
53	63.453M	50.3	+0.0 +1.4 +0.0 +0.0	+7.7 -28.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+0.0	30.9	94.0	-63.1	Vert
54	110.366M	43.4	+0.0 +1.9 +0.0 +0.0	+13.6 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	30.7	94.0	-63.3	Horiz
55	343.624M	35.6	+0.0 +3.5 +0.0 +0.0	+0.0 -28.2 +0.0	+19.2 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	30.4	94.0	-63.6	Horiz
56	314.984M	33.7	+0.0 +3.4 +0.0 +0.0	+0.0 -28.3 +0.0	+21.3 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	30.4	94.0	-63.6	Horiz
57	111.730M	42.9	+0.0 +1.9 +0.0 +0.0	+13.8 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	30.4	94.0	-63.6	Horiz
58	592.741M	34.3	+0.0 +4.9 +0.0 +0.0	+0.0 -28.2 +0.0	+18.8 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	30.2	94.0	-63.8	Vert
59	219.992M	38.1	+0.0 +2.7 +0.0 +0.0	+17.2 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	30.0	94.0	-64.0	Horiz

60	113.556M	42.2	+0.0 +1.9 +0.0 +0.0	+14.1 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	30.0	94.0	-64.0	Horiz
61	131.106M	39.8	+0.0 +2.1 +0.0 +0.0	+16.3 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	30.0	94.0	-64.0	Vert
62	315.037M	33.0	+0.0 +3.4 +0.0 +0.0	+0.0 -28.3 +0.0	+21.3 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	29.7	94.0	-64.3	Vert
63	264.018M	35.6	+0.0 +3.0 +0.0 +0.0	+19.1 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	29.7	94.0	-64.3	Vert
64	83.042M	48.7	+0.0 +1.6 +0.0 +0.0	+7.5 -28.2 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+0.0	29.7	94.0	-64.3	Vert
65	644.423M	31.1	+0.0 +5.1 +0.0 +0.0	+0.0 -27.8 +0.0	+20.7 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	29.5	94.0	-64.5	Horiz
66	679.741M	29.6	+0.0 +5.2 +0.0 +0.0	+0.0 -27.9 +0.0	+22.0 +0.0 +0.0	+0.5 +0.0 +0.0	+0.0	29.4	94.0	-64.6	Vert
67	190.933M	37.8	+0.0 +2.5 +0.0 +0.0	+17.0 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	29.3	94.0	-64.7	Vert
68	127.484M	39.5	+0.0 +2.0 +0.0 +0.0	+16.0 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	29.3	94.0	-64.7	Vert
69	133.635M	38.7	+0.0 +2.1 +0.0 +0.0	+16.6 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	29.2	94.0	-64.8	Horiz
70	334.064M	33.6	+0.0 +3.4 +0.0 +0.0	+0.0 -28.2 +0.0	+19.9 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	29.0	94.0	-65.0	Vert
71	324.993M	32.8	+0.0 +3.4 +0.0 +0.0	+0.0 -28.2 +0.0	+20.6 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	28.9	94.0	-65.1	Vert

72	459.112M	36.6	+0.0 +4.1 +0.0 +0.0	+0.0 -28.7 +0.0	+16.4 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	28.8	94.0	-65.2	Vert
73	350.022M	34.5	+0.0 +3.5 +0.0 +0.0	+0.0 -28.2 +0.0	+18.7 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	28.8	94.0	-65.2	Vert
74	400.898M	37.3	+0.0 +3.8 +0.0 +0.0	+0.0 -28.3 +0.0	+15.5 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	28.7	94.0	-65.3	Horiz
75	272.957M	33.7	+0.0 +3.1 +0.0 +0.0	+19.9 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	28.7	94.0	-65.3	Horiz
76	279.979M	33.0	+0.0 +3.1 +0.0 +0.0	+20.5 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	28.6	94.0	-65.4	Vert
77	147.294M	37.3	+0.0 +2.2 +0.0 +0.0	+17.3 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	28.6	94.0	-65.4	Vert
78	410.439M	37.0	+0.0 +3.8 +0.0 +0.0	+0.0 -28.4 +0.0	+15.7 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	28.5	94.0	-65.5	Vert
79	375.015M	35.5	+0.0 +3.7 +0.0 +0.0	+0.0 -28.3 +0.0	+17.1 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	28.4	94.0	-65.6	Horiz
80	130.602M	38.3	+0.0 +2.0 +0.0 +0.0	+16.3 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	28.4	94.0	-65.6	Horiz
81	391.351M	36.4	+0.0 +3.8 +0.0 +0.0	+0.0 -28.3 +0.0	+16.0 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	28.3	94.0	-65.7	Horiz
82	238.672M	35.8	+0.0 +2.8 +0.0 +0.0	+17.6 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	28.3	94.0	-65.7	Vert
83	630.023M	30.3	+0.0 +5.0 +0.0 +0.0	+0.0 -27.9 +0.0	+20.1 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	27.9	94.0	-66.1	Horiz

84	128.728M	38.0	+0.0 +2.0 +0.0 +0.0	+16.1 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	27.9	94.0	-66.1	Vert
85	147.678M	36.4	+0.0 +2.2 +0.0 +0.0	+17.3 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	27.7	94.0	-66.3	Horiz
86	362.704M	34.0	+0.0 +3.6 +0.0 +0.0	+0.0 -28.2 +0.0	+17.9 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	27.6	94.0	-66.4	Horiz
87	360.027M	33.8	+0.0 +3.6 +0.0 +0.0	+0.0 -28.2 +0.0	+18.1 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	27.6	94.0	-66.4	Horiz
88	400.924M	36.1	+0.0 +3.8 +0.0 +0.0	+0.0 -28.3 +0.0	+15.5 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	27.5	94.0	-66.5	Vert
89	71.091M	47.6	+0.0 +1.5 +0.0 +0.0	+6.9 -28.6 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+0.0	27.5	94.0	-66.5	Vert
90	343.617M	32.5	+0.0 +3.5 +0.0 +0.0	+0.0 -28.2 +0.0	+19.2 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	27.3	94.0	-66.7	Vert
91	257.459M	33.7	+0.0 +3.0 +0.0 +0.0	+18.5 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	27.3	94.0	-66.7	Horiz
92	429.530M	35.5	+0.0 +3.9 +0.0 +0.0	+0.0 -28.5 +0.0	+15.9 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	27.2	94.0	-66.8	Horiz
93	420.035M	35.6	+0.0 +3.9 +0.0 +0.0	+0.0 -28.5 +0.0	+15.8 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	27.2	94.0	-66.8	Vert
94	440.003M	35.0	+0.0 +4.0 +0.0 +0.0	+0.0 -28.6 +0.0	+16.1 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	26.9	94.0	-67.1	Vert
95	225.029M	34.9	+0.0 +2.7 +0.0 +0.0	+17.3 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	26.9	94.0	-67.1	Vert

96	153.322M	35.4	+0.0 +2.2 +0.0 +0.0	+17.4 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	26.8	94.0	-67.2	Vert
97	448.628M	34.8	+0.0 +4.0 +0.0 +0.0	+0.0 -28.7 +0.0	+16.2 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	26.7	94.0	-67.3	Horiz
98	601.370M	30.5	+0.0 +4.9 +0.0 +0.0	+0.0 -28.1 +0.0	+19.0 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	26.7	94.0	-67.3	Vert
99	126.150M	37.0	+0.0 +2.0 +0.0 +0.0	+15.9 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	26.7	94.0	-67.3	Horiz
100	559.980M	31.8	+0.0 +4.7 +0.0 +0.0	+0.0 -28.5 +0.0	+18.1 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	26.5	94.0	-67.5	Vert
101	553.660M	32.0	+0.0 +4.6 +0.0 +0.0	+0.0 -28.6 +0.0	+18.0 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	26.4	94.0	-67.6	Horiz
102	229.114M	34.3	+0.0 +2.7 +0.0 +0.0	+17.4 -28.3 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	26.4	94.0	-67.6	Vert
103	362.755M	32.5	+0.0 +3.6 +0.0 +0.0	+0.0 -28.2 +0.0	+17.9 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	26.1	94.0	-67.9	Vert
104	20.300M	15.1	+10.1 +0.8 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0	26.0	94.0	-68.0	None
105	420.031M	34.2	+0.0 +3.9 +0.0 +0.0	+0.0 -28.5 +0.0	+15.8 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	25.8	94.0	-68.2	Horiz
106	413.119M	34.2	+0.0 +3.9 +0.0 +0.0	+0.0 -28.4 +0.0	+15.7 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	25.8	94.0	-68.2	Vert
107	136.461M	35.1	+0.0 +2.1 +0.0 +0.0	+16.8 -28.4 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	25.8	94.0	-68.2	Vert

108	372.263M	32.8	+0.0 +3.6 +0.0 +0.0	+0.0 -28.2 +0.0	+17.2 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	25.7	94.0	-68.3	Vert
109	458.207M	33.4	+0.0 +4.1 +0.0 +0.0	+0.0 -28.7 +0.0	+16.4 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	25.6	94.0	-68.4	Vert
110	579.624M	30.2	+0.0 +4.8 +0.0 +0.0	+0.0 -28.3 +0.0	+18.5 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	25.6	94.0	-68.4	Vert
111	389.181M	33.5	+0.0 +3.7 +0.0 +0.0	+0.0 -28.3 +0.0	+16.2 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	25.5	94.0	-68.5	Vert
112	180.002M	33.7	+0.0 +2.4 +0.0 +0.0	+17.3 -28.2 +0.0	+0.0 +0.0 +0.0	+0.3 +0.0 +0.0	+0.0	25.5	94.0	-68.5	Vert
113	532.891M	31.5	+0.0 +4.5 +0.0 +0.0	+0.0 -28.6 +0.0	+17.6 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	25.4	94.0	-68.6	Vert
114	524.969M	31.7	+0.0 +4.5 +0.0 +0.0	+0.0 -28.6 +0.0	+17.4 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	25.4	94.0	-68.6	Vert
115	406.404M	33.8	+0.0 +3.8 +0.0 +0.0	+0.0 -28.4 +0.0	+15.6 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	25.2	94.0	-68.8	Vert
116	86.441M	43.2	+0.0 +1.6 +0.0 +0.0	+8.3 -28.1 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	25.2	94.0	-68.8	Horiz
117	459.134M	32.8	+0.0 +4.1 +0.0 +0.0	+0.0 -28.7 +0.0	+16.4 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	25.0	94.0	-69.0	Horiz
118	533.765M	30.6	+0.0 +4.5 +0.0 +0.0	+0.0 -28.6 +0.0	+17.6 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	24.5	94.0	-69.5	Vert
119	475.031M	31.9	+0.0 +4.2 +0.0 +0.0	+0.0 -28.6 +0.0	+16.6 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	24.5	94.0	-69.5	Vert

120	424.263M	32.8	+0.0 +3.9 +0.0 +0.0	+0.0 -28.5 +0.0	+15.9 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	24.5	94.0	-69.5	Vert
121	380.015M	31.6	+0.0 +3.7 +0.0 +0.0	+0.0 -28.3 +0.0	+16.7 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	24.1	94.0	-69.9	Horiz
122	484.981M	31.3	+0.0 +4.3 +0.0 +0.0	+0.0 -28.6 +0.0	+16.7 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	24.1	94.0	-69.9	Vert
123	91.967M	40.6	+0.0 +1.6 +0.0 +0.0	+9.6 -28.2 +0.0	+0.0 +0.0 +0.0	+0.2 +0.0 +0.0	+0.0	23.8	94.0	-70.2	Horiz
124	422.234M	32.0	+0.0 +3.9 +0.0 +0.0	+0.0 -28.5 +0.0	+15.8 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	23.6	94.0	-70.4	Horiz
125	442.977M	30.1	+0.0 +4.0 +0.0 +0.0	+0.0 -28.6 +0.0	+16.1 +0.0 +0.0	+0.4 +0.0 +0.0	+0.0	22.0	94.0	-72.0	Vert
126	81.531M	41.1	+0.0 +1.6 +0.0 +0.0	+7.2 -28.2 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+0.0	21.8	94.0	-72.2	Horiz
127	47.920M	36.8	+0.0 +1.2 +0.0 +0.0	+11.6 -28.3 +0.0	+0.0 +0.0 +0.0	+0.1 +0.0 +0.0	+0.0	21.4	94.0	-72.6	Horiz

Test Equipment FCC 90.210(b) Radiated Field

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
9 kHz-30 MHz						
Active loop antena	2014	Emco	6502	2014	073101	073102
Spectrum Analyzer	01865	HP	8566B	2532A02509	092801	092802
30 MHz- 1000MHz						
Spectrum Analyzer	01865	HP	8566B	2532A02509	092801	092802
QP Adapter	01437	HP	85650A	3303A01884	092801	092802
Bicon Antenna	306	AH	SAS200/540	220	092401	092402
Log Periodic Antenna	331	AH	SAS 00/516	330	092401	092402
Pre-amp	00309	HP	8447D	1937A02548	090501	090502
Antenna cable	NA	NA	RG214	Cable#15	122001	122002
Pre-amp to SA cable	NA	Harbour	RG223/U	Cable#10	071601	071602
1GHz-18 GHz						
Horn Antenna	0849	EMCO	3115	6246	091201	091202
Microwave Pre-amp	00786	HP	83017A	3123A00281	091201	091202
¼" Heliax Coaxial Cable	NA	Andrew	LDF1-50	Cable#18 (70 ft)	091101	091102
Spectrum Analyzer	01865	HP	8566B	2532A02509	092801	092802
2.4 GHz LPF	1439	K & L	10L121-2200	001	101901	101902
2.4 GHz HPF	01440	K & L	1440	NA	100301	100302
18 GHz- 25 GHz						
2.4 GHz HPF	01440	K & L	1440	NA	100301	100302
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	032902	032903
18-26 GHz Horn antenna	1413	BP	RA42-K-F-4B-C	942126-003	070901	070902
Pre amp	NA	HP	83051A	3331A00238	030502	030503
High Freq cable	NA	WL Gore	purple 65474	purple 65474	011402	011403

OATS Test Setup - Front View

OATS Test Setup - Back View

OATS Test Setup - Horn Antenna

2.1033(c)(14)/2.1055/90.213- FREQUENCY STABILITY

The temperature part of the frequency stability testing will be provided by the customer in a separate document.

FCC 2.1055 (d) the frequency stability shall be measured with variation of primary supply voltage as follows.

(1) *Vary primary voltage from 85 t 115 % of the nominal value for other than hand carried battery equipment.*

Nominal supply voltage: 12 V
Temperature: 19 °C
Relative Humidity: 67%

Result

Frequency	Voltage variation	Measured Power Watts	Measured Frequency GHz	Deviation %
10.20	85%	2.1540	2.47013435	-0.00423036
12.00	0.00%	2.2000	2.47023885	0.00000000
13.80	115%	2.2010	2.47013810	-0.00407855

Test Equipment FCC 90.210(b) Antenna terminal

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
9 kHz-18 GHz						
Spectrum Analyzer	01865	HP	8566B	2532A02509	092801	092802
2.4 GHz LPF	1439	K & L	10L121-2200	001	101901	101902
2.4 GHz HPF	01440	K & L	1440	NA	100301	100302
18 GHz- 25 GHz						
2.4 GHz HPF	01440	K & L	1440	NA	100301	100302
Spectrum Analyzer	02467	Agilent	E7405A	US40240225	032902	032903

Voltage Variations Test Setup

2.1093 - MAXIMUM PERMISSIBLE EXPOSURE CALCULATIONS

Calculations prepared for:
John Hibbs
Gamut Electronics LLC
10601 Tierrasanta Blvd, Suite 126
San Diego, CA 92124

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

Model Number: LEA-3-WATT
FCC Identification: pending

Fundamental Operating Frequency: 2470 MHz

Maximum Rated Output Power: 2.950 Watts
Measured Maximum Output Power: 2.800 Watts

MPE limit in accordance with FCC part 1.1311, table 1

Limit for Maximum permissible exposure: (B) Limit for General population/uncontrolled Exposure.

For frequency range of 1500-100,000 MHz , the MPE is 1 (mW/cm^2)

Power Output (Watts)	Distance (meter)	Powr Density (W/M2)	Power Density (mW/cm2)	Limit (mW/Cm2)	Result
2.80	0.2	9.1353	0.9135	1.0000	PASS
2.95	0.2	9.6247	0.9625	1.0000	PASS

Power Density (W/M^2) = $(30 * P_t * G) / (d^2 * Zo)$

P_t = Power Delivered to the Antenna
G = Antenna Gain
d = Distance in meters
Zo = Impedance of Free Space

Under normal operating conditions, the antenna is designed to maintain a separation distance of 20 cm from all persons. As can be seen from the MPE results, this device passes the limits specified in 1.1311 at a distance of 20 cm and at the rated output power of 2.95 Watts and measured output of 2.80 Watts.

15.109 – RADIATED EMISSIONS – RECEIVER/DIGITAL

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

Customer: **Gamut Electronics**
Specification: **FCC 15.109 Class B**
Work Order #: **78490** Date: 04/12/2002
Test Type: **Radiated Scan** Time: 15:44:20
Equipment: **Audio/Visual Transmitter** Sequence#: 3
Manufacturer: Gamut Electronics Tested By: Eddie Wong
Model: LEA-3-WATT
S/N: 001

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
Audio/Visual Transmitter*	Gamut Electronics	LEA-3-WATT	001

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	CUI	PSA-31U-120	M04304049A1
2.4 GHz A/V receiver	Generic	RW1-RX	2402018820
Camcorder	Sony	CD-TR416	1005737
TV	Panasonics	PV-C1331W	CIAC32016
Waveform generator	BK Precission	3011B	147-32235

Test Conditions / Notes:

Vehicle mount EUT placed on the test bench. DC In obtains 12Vdc from a support power supply. Audio In connected to a waveform generator (150 mV, 400 Hz Audio signal), Video In connected to a camcorder. EUT transmits Audio /Video signal at 2.470 GHz. Frequency range: 30 MHz -1 GHz. Measurement BW RBW=VBW=120 kHz. 18°C, 66% relative humidity. Note: 1) Output Low Pass Filter of the EUT tuned to attenuated spurious emission. 2) Removed paint on cover to enhance grounding. 3) AL shielding material installed over R13.

Transducer Legend:

T1=Bicon 092401	T2=Log 331 092401
T3=Cable #10 071601	T4=Cable #15 120602
T5=Preamp 8447D 090501	

Measurement Data: Reading listed by margin. Test Distance: 3 Meter

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	31.496M	45.0	+16.2 -28.5	+0.0	+0.1	+1.0	+0.0	33.8	40.0	-6.2	Vert
2	35.795M	44.1	+15.9 -28.4	+0.0	+0.1	+1.1	+0.0	32.8	40.0	-7.2	Horiz
3	37.128M	43.6	+15.5 -28.4	+0.0	+0.1	+1.1	+0.0	31.9	40.0	-8.1	Horiz
4	131.559M	44.6	+16.4 -28.4	+0.0	+0.2	+2.1	+0.0	34.9	43.5	-8.6	Vert
5	360.021M	43.5	+0.0 -28.2	+18.1	+0.3	+3.6	+0.0	37.3	46.0	-8.7	Vert

6	119.044M	45.7	+15.1 -28.4	+0.0	+0.2	+2.0	+0.0	34.6	43.5	-8.9	Vert
7	80.022M	50.8	+6.8 -28.2	+0.0	+0.1	+1.6	+0.0	31.1	40.0	-8.9	Vert
8	199.992M	43.2	+16.8 -28.4	+0.0	+0.3	+2.6	+0.0	34.5	43.5	-9.0	Horiz
9	63.453M	50.3	+7.7 -28.6	+0.0	+0.1	+1.4	+0.0	30.9	40.0	-9.1	Vert
10	115.796M	45.4	+14.6 -28.4	+0.0	+0.2	+1.9	+0.0	33.7	43.5	-9.8	Horiz
11	117.356M	45.0	+14.8 -28.4	+0.0	+0.2	+1.9	+0.0	33.5	43.5	-10.0	Horiz
12	118.500M QP	44.6	+15.0 -28.4	+0.0	+0.2	+2.0	+0.0	33.4	43.5	-10.1	Horiz
^	118.500M	49.7	+15.1 -28.4	+0.0	+0.2	+2.0	+0.0	38.6	43.5	-4.9	Horiz
14	83.042M	48.7	+7.5 -28.2	+0.0	+0.1	+1.6	+0.0	29.7	40.0	-10.3	Vert
15	519.695M	41.9	+0.0 -28.5	+17.3	+0.4	+4.5	+0.0	35.6	46.0	-10.4	Vert
16	122.532M	43.7	+15.5 -28.4	+0.0	+0.2	+2.0	+0.0	33.0	43.5	-10.5	Vert
17	120.344M	43.8	+15.3 -28.4	+0.0	+0.2	+2.0	+0.0	32.9	43.5	-10.6	Vert
18	122.481M	43.1	+15.5 -28.4	+0.0	+0.2	+2.0	+0.0	32.4	43.5	-11.1	Horiz
19	399.979M	43.1	+0.0 -28.3	+15.5	+0.4	+3.8	+0.0	34.5	46.0	-11.5	Vert
20	155.983M	40.2	+17.5 -28.3	+0.0	+0.2	+2.3	+0.0	31.9	43.5	-11.6	Horiz
21	91.897M	48.6	+9.6 -28.2	+0.0	+0.2	+1.6	+0.0	31.8	43.5	-11.7	Vert
22	200.451M	40.3	+16.8 -28.4	+0.0	+0.3	+2.6	+0.0	31.6	43.5	-11.9	Horiz
23	334.063M	38.5	+0.0 -28.2	+19.9	+0.3	+3.4	+0.0	33.9	46.0	-12.1	Horiz
24	133.266M	40.7	+16.5 -28.4	+0.0	+0.2	+2.1	+0.0	31.1	43.5	-12.4	Vert
25	71.091M	47.6	+6.9 -28.6	+0.0	+0.1	+1.5	+0.0	27.5	40.0	-12.5	Vert
26	733.360M	33.1	+0.0 -27.9	+22.3	+0.5	+5.4	+0.0	33.4	46.0	-12.6	Horiz
27	199.984M	39.6	+16.8 -28.4	+0.0	+0.3	+2.6	+0.0	30.9	43.5	-12.6	Horiz
28	266.671M	38.9	+19.4 -28.3	+0.0	+0.3	+3.0	+0.0	33.3	46.0	-12.7	Horiz
29	319.979M	36.9	+0.0 -28.3	+20.9	+0.3	+3.4	+0.0	33.2	46.0	-12.8	Vert
30	110.366M	43.4	+13.6 -28.4	+0.0	+0.2	+1.9	+0.0	30.7	43.5	-12.8	Horiz

31	111.730M	42.9	+13.8 -28.4	+0.0	+0.2	+1.9	+0.0	30.4	43.5	-13.1	Horiz
32	113.556M	42.2	+14.1 -28.4	+0.0	+0.2	+1.9	+0.0	30.0	43.5	-13.5	Horiz
33	131.106M	39.8	+16.3 -28.4	+0.0	+0.2	+2.1	+0.0	30.0	43.5	-13.5	Vert
34	333.293M	36.8	+0.0 -28.2	+19.9	+0.3	+3.4	+0.0	32.2	46.0	-13.8	Vert
35	240.010M	39.6	+17.6 -28.2	+0.0	+0.3	+2.8	+0.0	32.1	46.0	-13.9	Horiz
36	190.933M	37.8	+17.0 -28.3	+0.0	+0.3	+2.5	+0.0	29.3	43.5	-14.2	Vert
37	127.484M	39.5	+16.0 -28.4	+0.0	+0.2	+2.0	+0.0	29.3	43.5	-14.2	Vert
38	133.635M	38.7	+16.6 -28.4	+0.0	+0.2	+2.1	+0.0	29.2	43.5	-14.3	Horiz
39	410.434M	40.1	+0.0 -28.4	+15.7	+0.4	+3.8	+0.0	31.6	46.0	-14.4	Horiz
40	349.973M	36.8	+0.0 -28.2	+18.8	+0.3	+3.5	+0.0	31.2	46.0	-14.8	Horiz
41	86.441M	43.2	+8.3 -28.1	+0.0	+0.2	+1.6	+0.0	25.2	40.0	-14.8	Horiz
42	147.294M	37.3	+17.3 -28.4	+0.0	+0.2	+2.2	+0.0	28.6	43.5	-14.9	Vert
43	270.332M	36.2	+19.7 -28.3	+0.0	+0.3	+3.1	+0.0	31.0	46.0	-15.0	Horiz
44	130.602M	38.3	+16.3 -28.4	+0.0	+0.2	+2.0	+0.0	28.4	43.5	-15.1	Horiz
45	343.624M	35.6	+0.0 -28.2	+19.2	+0.3	+3.5	+0.0	30.4	46.0	-15.6	Horiz
46	314.984M	33.7	+0.0 -28.3	+21.3	+0.3	+3.4	+0.0	30.4	46.0	-15.6	Horiz
47	128.728M	38.0	+16.1 -28.4	+0.0	+0.2	+2.0	+0.0	27.9	43.5	-15.6	Vert
48	592.741M	34.3	+0.0 -28.2	+18.8	+0.4	+4.9	+0.0	30.2	46.0	-15.8	Vert
49	147.678M	36.4	+17.3 -28.4	+0.0	+0.2	+2.2	+0.0	27.7	43.5	-15.8	Horiz
50	219.992M	38.1	+17.2 -28.3	+0.0	+0.3	+2.7	+0.0	30.0	46.0	-16.0	Horiz
51	315.037M	33.0	+0.0 -28.3	+21.3	+0.3	+3.4	+0.0	29.7	46.0	-16.3	Vert
52	264.018M	35.6	+19.1 -28.3	+0.0	+0.3	+3.0	+0.0	29.7	46.0	-16.3	Vert
53	644.423M	31.1	+0.0 -27.8	+20.7	+0.4	+5.1	+0.0	29.5	46.0	-16.5	Horiz
54	679.741M	29.6	+0.0 -27.9	+22.0	+0.5	+5.2	+0.0	29.4	46.0	-16.6	Vert
55	153.322M	35.4	+17.4 -28.4	+0.0	+0.2	+2.2	+0.0	26.8	43.5	-16.7	Vert

56	126.150M	37.0	+15.9 -28.4	+0.0	+0.2	+2.0	+0.0	26.7	43.5	-16.8	Horiz
57	334.064M	33.6	+0.0 -28.2	+19.9	+0.3	+3.4	+0.0	29.0	46.0	-17.0	Vert
58	324.993M	32.8	+0.0 -28.2	+20.6	+0.3	+3.4	+0.0	28.9	46.0	-17.1	Vert
59	459.112M	36.6	+0.0 -28.7	+16.4	+0.4	+4.1	+0.0	28.8	46.0	-17.2	Vert
60	350.022M	34.5	+0.0 -28.2	+18.7	+0.3	+3.5	+0.0	28.8	46.0	-17.2	Vert
61	400.898M	37.3	+0.0 -28.3	+15.5	+0.4	+3.8	+0.0	28.7	46.0	-17.3	Horiz
62	272.957M	33.7	+19.9 -28.3	+0.0	+0.3	+3.1	+0.0	28.7	46.0	-17.3	Horiz
63	279.979M	33.0	+20.5 -28.3	+0.0	+0.3	+3.1	+0.0	28.6	46.0	-17.4	Vert
64	410.439M	37.0	+0.0 -28.4	+15.7	+0.4	+3.8	+0.0	28.5	46.0	-17.5	Vert
65	375.015M	35.5	+0.0 -28.3	+17.1	+0.4	+3.7	+0.0	28.4	46.0	-17.6	Horiz
66	391.351M	36.4	+0.0 -28.3	+16.0	+0.4	+3.8	+0.0	28.3	46.0	-17.7	Horiz
67	238.672M	35.8	+17.6 -28.2	+0.0	+0.3	+2.8	+0.0	28.3	46.0	-17.7	Vert
68	136.461M	35.1	+16.8 -28.4	+0.0	+0.2	+2.1	+0.0	25.8	43.5	-17.7	Vert
69	180.002M	33.7	+17.3 -28.2	+0.0	+0.3	+2.4	+0.0	25.5	43.5	-18.0	Vert
70	630.023M	30.3	+0.0 -27.9	+20.1	+0.4	+5.0	+0.0	27.9	46.0	-18.1	Horiz
71	81.531M	41.1	+7.2 -28.2	+0.0	+0.1	+1.6	+0.0	21.8	40.0	-18.2	Horiz
72	362.704M	34.0	+0.0 -28.2	+17.9	+0.3	+3.6	+0.0	27.6	46.0	-18.4	Horiz
73	360.027M	33.8	+0.0 -28.2	+18.1	+0.3	+3.6	+0.0	27.6	46.0	-18.4	Horiz
74	400.924M	36.1	+0.0 -28.3	+15.5	+0.4	+3.8	+0.0	27.5	46.0	-18.5	Vert
75	47.920M	36.8	+11.6 -28.3	+0.0	+0.1	+1.2	+0.0	21.4	40.0	-18.6	Horiz
76	343.617M	32.5	+0.0 -28.2	+19.2	+0.3	+3.5	+0.0	27.3	46.0	-18.7	Vert
77	257.459M	33.7	+18.5 -28.2	+0.0	+0.3	+3.0	+0.0	27.3	46.0	-18.7	Horiz
78	429.530M	35.5	+0.0 -28.5	+15.9	+0.4	+3.9	+0.0	27.2	46.0	-18.8	Horiz
79	420.035M	35.6	+0.0 -28.5	+15.8	+0.4	+3.9	+0.0	27.2	46.0	-18.8	Vert
80	440.003M	35.0	+0.0 -28.6	+16.1	+0.4	+4.0	+0.0	26.9	46.0	-19.1	Vert

81	225.029M	34.9	+17.3 -28.3	+0.0	+0.3	+2.7	+0.0	26.9	46.0	-19.1	Vert
82	448.628M	34.8	+0.0 -28.7	+16.2	+0.4	+4.0	+0.0	26.7	46.0	-19.3	Horiz
83	601.370M	30.5	+0.0 -28.1	+19.0	+0.4	+4.9	+0.0	26.7	46.0	-19.3	Vert
84	559.980M	31.8	+0.0 -28.5	+18.1	+0.4	+4.7	+0.0	26.5	46.0	-19.5	Vert
85	553.660M	32.0	+0.0 -28.6	+18.0	+0.4	+4.6	+0.0	26.4	46.0	-19.6	Horiz
86	229.114M	34.3	+17.4 -28.3	+0.0	+0.3	+2.7	+0.0	26.4	46.0	-19.6	Vert
87	91.967M	40.6	+9.6 -28.2	+0.0	+0.2	+1.6	+0.0	23.8	43.5	-19.7	Horiz
88	362.755M	32.5	+0.0 -28.2	+17.9	+0.3	+3.6	+0.0	26.1	46.0	-19.9	Vert
89	420.031M	34.2	+0.0 -28.5	+15.8	+0.4	+3.9	+0.0	25.8	46.0	-20.2	Horiz
90	413.119M	34.2	+0.0 -28.4	+15.7	+0.4	+3.9	+0.0	25.8	46.0	-20.2	Vert
91	372.263M	32.8	+0.0 -28.2	+17.2	+0.3	+3.6	+0.0	25.7	46.0	-20.3	Vert
92	579.624M	30.2	+0.0 -28.3	+18.5	+0.4	+4.8	+0.0	25.6	46.0	-20.4	Vert
93	458.207M	33.4	+0.0 -28.7	+16.4	+0.4	+4.1	+0.0	25.6	46.0	-20.4	Vert
94	389.181M	33.5	+0.0 -28.3	+16.2	+0.4	+3.7	+0.0	25.5	46.0	-20.5	Vert
95	532.891M	31.5	+0.0 -28.6	+17.6	+0.4	+4.5	+0.0	25.4	46.0	-20.6	Vert
96	524.969M	31.7	+0.0 -28.6	+17.4	+0.4	+4.5	+0.0	25.4	46.0	-20.6	Vert
97	406.404M	33.8	+0.0 -28.4	+15.6	+0.4	+3.8	+0.0	25.2	46.0	-20.8	Vert
98	459.134M	32.8	+0.0 -28.7	+16.4	+0.4	+4.1	+0.0	25.0	46.0	-21.0	Horiz
99	533.765M	30.6	+0.0 -28.6	+17.6	+0.4	+4.5	+0.0	24.5	46.0	-21.5	Vert
100	475.031M	31.9	+0.0 -28.6	+16.6	+0.4	+4.2	+0.0	24.5	46.0	-21.5	Vert
101	424.263M	32.8	+0.0 -28.5	+15.9	+0.4	+3.9	+0.0	24.5	46.0	-21.5	Vert
102	380.015M	31.6	+0.0 -28.3	+16.7	+0.4	+3.7	+0.0	24.1	46.0	-21.9	Horiz
103	484.981M	31.3	+0.0 -28.6	+16.7	+0.4	+4.3	+0.0	24.1	46.0	-21.9	Vert
104	422.234M	32.0	+0.0 -28.5	+15.8	+0.4	+3.9	+0.0	23.6	46.0	-22.4	Horiz
105	442.977M	30.1	+0.0 -28.6	+16.1	+0.4	+4.0	+0.0	22.0	46.0	-24.0	Vert

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	092801	092802
QP Adapter	01437	HP	85650A	3303A01884	092801	092802
Bicon Antenna	306	AH	SAS200/540	220	092401	092402
Log Periodic Antenna	331	AH	SAS 00/516	330	092401	092402
Pre-amp	00309	HP	8447D	1937A02548	090501	090502
Antenna cable	NA	NA	RG214	Cable#15	122001	122002
Pre-amp to SA cable	NA	Harbour	RG223/U	Cable#10	071601	071602

OATS Test Setup - Front View

OATS Test Setup - Back View