DATE: SEPTEMBER 27, 2002 FCC ID: ONC-ES3011b

HARMONIC AND SPURIOUS RADIATED EMISSIONS

MIDDLE CHANNEL

09/16/02 FCC Measurement

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: NEELESH RAJ
Project #: 02U1521

Company: CLARIENT SYSTEM, INC.

EUT Descrip.: INFRARED ACCESS POINT WITH IEE 802.116 UPLINK

EUT M/N: ES3011b Test Target: FCC 15.247

Equipment for 1-22 GHz: Equipment for 22 - 58 GHz:

 HP8566B Analyzer
 HP8566B Analyzer

 Miteq NSP2600-44 Preamp
 HP 11975A Amplifier (LO)

 EMCO 3115 Antenna
 HP 11970K External mixer/antenna

 Cable:
 15.0
 feet
 Cable: IF Only (321 MHz)

Peak Measurements:

Average Measurements:

1 MHz Resolution Bandwidth 1MHz Resolution Bandwidth 1MHz Video Bandwidth 10Hz Video Bandwidth

f	Dist	Read Pk	Read Avg.	AF	CL	Amp	D Corr	HPF	Peak	Avg	Pk Lim	Avg Lim	Pk Mar	Avg Mar	Notes
GHz	feet	dBuV	dBuV	dB/m	dΒ	dΒ	dΒ		dBuV/m	dBuV/m	dBuV/m	dBuV/m	dΒ	dΒ	
(m) m) m) m) m) m)		FUN	IDAMENTAL (MIDDLE CHANNEL)									
2.438	3.3	71.6		29.0	3.1		-9.5	0.0	94.2						V (RBW=VBW=100KHz)
2.438	3.3	70.9		29.0	3.1		-9.5	0.0	93.5						H (RBW=VBW=100KHz)
			HA	RMONICS				•							
4.874	3.3	44.1	33.2	33.9	5.8	-36.1	-9.5	1.0	39.2	28.3	74.0	54.0	-34.8	-25.7	V
4.874	3.3	43.1	33.0	33.9	5.8	-36.1	-9.5	1.0	38.2	28.1	74.0	54.0	-35.8	-25.9	Н
7.312	3.3	49.3	39.3	37.2	7.3	-36.3	-9.5	1.0	49.0	39.0	74.0	54.0	-25.0	-15.0	V
7.312	3.3	44.8	32.3	37.2	7.3	-36.3	-9.5	1.0	44.5	32.0	74.0	54.0	-29.5	-22.0	Н
9.750	3.3	40.2		39.9	8.6	-35.5	-9.5	1.0	44.7		74.2		-29.5		V
9.750	3.3	39.8		39.9	8.6	-35.5	-9.5	1.0	44.3		74.2		-29.9		Н
		NO OTHER HARMONIC EMISISONS WERE SEEN													
			SPURIO	<u> </u> 											
4.125	3.3	54.0	52.9	33.2	5.2	-36.1	-9.5	1.0	47.8	46.7	74.0	54.0	-26.2	-7.3	V
4.125	3.3	53.2	51.6	33.2	5.2	-36.1	-9.5	1.0	47.0	45.4	74.0	54.0	-27.0	-8.6	Н
4.491	3.3	49.0		32.9	5.5	-36.1	-9.5	1.0	42.8		74.2		-31.4		V
4.491	3.3	51.0		32.9	5.5	-36.1	-9.5	1.0	44.8		74.2		-29.4	•	Н
6.188	3.3	46.8		35.4	6.7	-36.3	-9.5	1.0	44.1		74.2		-30.1		¥
6.188	3.3	46.8		35.4	6.7	-36.3	-9.5	1.0	44.1		74.2		-30.1		Н

Measurement Frequency Amp Preamp Gain Avg Lim Average Field Strength Limit Pk Lim Peak Field Strength Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Read Analyzer Reading Average Field Strength @ 3 m Avg Mar Margin vs. Average Limit Avg Antenna Factor Peak Calculated Peak Field Strength Pk Mar Margin vs. Peak Limit AF High Pass Filter CL Cable Loss

Page 31 of 31

DOCUMENT NO: CCSUP4031A TEL: (408) 463-0885 FAX: (408) 463-0888

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DATE: SEPTEMBER 27, 2002 FCC ID: ONC-ES3011b

HARMONIC AND SPURIOUS RADIATED EMISSIONS

HIGH CHANNEL

09/16/02 FCC Measurement

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EMCO 3115 Antenna

Miteq NSP2600-44 Preamp

150

Equipment for 22 - 58 GHz:

HP8566B Analyzer
HP 11975A Amplifier (LO)
HP 11970K External mixer/antenna
feet Cable: IF Only (321 MHz)

Peak Measurements:

Cable:

Average Measurements:

1 MHz Resolution Bandwidth 1MHz Resolution Bandwidth 1MHz Video Bandwidth 10Hz Video Bandwidth

Dist	Read Pk	Read Avg.	AF	CL	Amp	D Corr	HPF	Peak	Avg	Pk Lim	Avg Lim	Pk Mar	Avg Mar	Notes	
feet	dBuV	dBuV		dВ	dB	dΒ		dBuV/m	dBuV/m	dBuV/m	8 7 8		ďB		
	FU	JNDAMENTAI	L (HIG	H CHA	ANNEL)			NO. CONTRACTOR CONTRAC	datatatatatatata	dadaladadadadadada		-tatatatatatatata		Randada adalah ada ada da ada ada ada ada ada ada ad	
3.3	71.2		29.0	3.2		-9.5	0.0	93.9						V (RBW=VBW=100KHz)	
3.3	70.6		29.0	3.2		-9.5	0.0	93.3						H (RBW=VBW=100KHz)	
	HARMONICS												X		
3.3	45.1	32.7	34.1	5.8	-36.1	-9.5	1.0	40.4	28.0	74.0	54.0	-33.6	-26.0	V .	
3.3	43.1	32.9	34.1	5.8	-36.1	-9.5	1.0	38.4	28.2	74.0	54.0	-35.6	-25.8	Н	
3.3	50.0	40.0	37.3	7.3	-36.2	-9.5	1.0	50.0	40.0	74.0	54.0	-24.0	-14.0	V	
3.3	45.2	40.8	37.3	7.3	-36.2	-9.5	1.0	45.2	40.8	74.0	54.0	-28.8	-13.2	Н	
3.3	43.4		40.0	8.6	-35.5	-9.5	1.0	48.0		73.9		-25.9		Ą	
3.3	42.0		40.0	8.6	-35.5	-9.5	1.0	46.6		73.9		-27.3		Н	
	NO OTHER HARMONIC EMISISONS WERE :					SEEN									
	SPIIRIOUS EMISSIONS														
3.3	52.3	50.6	33.2	5.2	-36.1	-9.5	1.0	46.1	44.4	74.0	54.0	-27.9	-9.6	Ψ	
3.3	50.1	49.0	33.2	5.2	-36.1	-9.5	1.0	43.9	42.8	74.0	54.0	-30.1	-11.2	Н	
3.3	51.2	•	32.9	5.5	-36.1	-9.5	1.0	45.0		73.9		-28.9		Ϋ	
3.3	50.0		32.9	5.5	-36.1	-9.5	1.0	43.8		73.9	•	-30.1		Н	
3.3	45.6	•	35.4	6.7	-36.3	-9.5	1.0	42.9		73.9		-31.0		Ϋ	
3.3	46.9		35.4	6.7	-36.3	-9.5	1.0	44.2		73.9		-29.7		Н	
	33 33 33 33 33 33 33 33 33 33 33 33 33	feet dBuV 33 71.2 3.3 70.6 3.3 45.1 3.3 43.1 3.3 50.0 3.3 45.2 3.3 42.0 NO OTI 3.3 52.3 3.3 50.1 3.3 51.2 3.3 50.0 3.3 45.6	feet dBuV dBuV 33 71.2	feet dBuV dBuV dB/m 33 71.2 29.0 33 70.6 29.0 33 45.1 32.7 34.1 33 45.1 32.9 34.1 33 50.0 40.0 37.3 33 45.2 40.8 37.3 33 42.0 40.0 NO OTHER HARMONIC EM SPURIOUS EM 33 52.3 50.6 33.2 33 50.1 49.0 33.2 33 50.1 49.0 32.2 33 50.0 32.9 33.2 33 50.0 32.9 33 50.0 32.9 33 50.0 35.4	feet dBuV dBuV dBw dB FUNDAMENT U HIGH CHA 33 71.2 29.0 32 33 70.6 29.0 32 HARMONUS 33 45.1 32.7 34.1 5.8 33 45.1 32.9 34.1 5.8 33 50.0 40.0 37.3 7.3 33 45.2 40.8 37.3 7.3 33 42.0 40.0 8.6 NO OTHER HARMONIC EMISSIONS 36.6 35.0 33 52.3 50.6 33.2 52 33 50.1 49.0 33.2 52 33 50.1 49.0 33.2 52 33 50.0 32.9 5.5 33 50.0 32.9 5.5 33 50.0 32.9 5.5 33 50.0 32.9 5.5 33 45.6 35.4	feet dBuV dBuV dBw dB dB 33 712 29.0 32.0 29.0 32 29.0 32 29.0 32.0 29.0 32 29.0 32.0 36.1 32.0 36.1 32.0 32.0 36.1 32.0 32.0 36.1 32.0 32.0 36.1 32.0 36.1 <td< td=""><td>feet dBuV dBuV dB/m dB dB dB FUNDAMENT HIGH CHANNEL 33 71.2 29.0 32 -9.5 33 70.6 29.0 32 -9.5 33 45.1 32.7 34.1 5.8 -36.1 -9.5 33 43.1 32.9 34.1 5.8 -36.1 -9.5 33 50.0 40.0 37.3 7.3 -36.2 -9.5 33 45.2 40.8 37.3 7.3 -36.2 -9.5 33 43.4 40.0 8.6 -35.5 -9.5 33 42.0 40.0 8.6 -35.5 -9.5 34 42.0 40.0 8.6 -35.5 -9.5 34 42.0 8.6 35.5 -9.5 35 50.0 33.2 5.2 -36.1 -9.5 33 52.3 50.6 33.2 5.2</td><td>feet dBuV dBuV dB/m dB dB dB 33 71.2 290 32 -9.5 00 33 70.6 290 32 -9.5 00 33 45.1 32.7 34.1 5.8 -9.5 10 33 45.1 32.7 34.1 5.8 -9.6 -9.5 10 33 50.0 40.0 37.3 7.3 -9.6 -9.5 10 33 45.2 40.8 37.3 7.3 -9.6 -9.5 10 33 45.2 40.8 37.3 7.3 -9.6 -9.5 10 33 42.0 40.0 36.6 -35.5 -9.5 10 33 42.0 40.0 8.6 -35.5 -9.5 10 33 52.3 50.6 33.2 52 -36.1 -9.5 10 33 52.3 50.6 33.2</td><td>feet dBuV dBuV dB/m dB dB</td><td>feet dBuV dBuV dB /m dB dB dB dB dBuV/m dBuV/m dBuV/m 33 71.2 290 32 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.2 -9.5 1.0 40.4 28.0 -9.5 1.0 40.4 28.0 -9.5 1.0 40.4 28.0 -9.5 1.0 40.0 40.0 3.6 -9.5 1.0 45.2 40.8 -9.5 1.0 45.2 40.8 -9.5 1.0 45.0 -9.5 1.0 45.0 -9.5 1.0</td><td>feet dBuV dBuV dB /m dB dB dB dB /m dB uV/m dB uV/m</td><td>feet dBuV dBuV dB dB dB dB dB uV/m dBuV/m dBuV/m</td><td>feet dBuV dBuV dB dB dB dB dB dB uV/m dBuV/m dBuV/m<</td><td>feet dBuV dBuV dB dB dB dBuV/m dBuV/m</td></td<>	feet dBuV dBuV dB/m dB dB dB FUNDAMENT HIGH CHANNEL 33 71.2 29.0 32 -9.5 33 70.6 29.0 32 -9.5 33 45.1 32.7 34.1 5.8 -36.1 -9.5 33 43.1 32.9 34.1 5.8 -36.1 -9.5 33 50.0 40.0 37.3 7.3 -36.2 -9.5 33 45.2 40.8 37.3 7.3 -36.2 -9.5 33 43.4 40.0 8.6 -35.5 -9.5 33 42.0 40.0 8.6 -35.5 -9.5 34 42.0 40.0 8.6 -35.5 -9.5 34 42.0 8.6 35.5 -9.5 35 50.0 33.2 5.2 -36.1 -9.5 33 52.3 50.6 33.2 5.2	feet dBuV dBuV dB/m dB dB dB 33 71.2 290 32 -9.5 00 33 70.6 290 32 -9.5 00 33 45.1 32.7 34.1 5.8 -9.5 10 33 45.1 32.7 34.1 5.8 -9.6 -9.5 10 33 50.0 40.0 37.3 7.3 -9.6 -9.5 10 33 45.2 40.8 37.3 7.3 -9.6 -9.5 10 33 45.2 40.8 37.3 7.3 -9.6 -9.5 10 33 42.0 40.0 36.6 -35.5 -9.5 10 33 42.0 40.0 8.6 -35.5 -9.5 10 33 52.3 50.6 33.2 52 -36.1 -9.5 10 33 52.3 50.6 33.2	feet dBuV dBuV dB/m dB dB	feet dBuV dBuV dB /m dB dB dB dB dBuV/m dBuV/m dBuV/m 33 71.2 290 32 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.9 -9.5 0.0 93.2 -9.5 1.0 40.4 28.0 -9.5 1.0 40.4 28.0 -9.5 1.0 40.4 28.0 -9.5 1.0 40.0 40.0 3.6 -9.5 1.0 45.2 40.8 -9.5 1.0 45.2 40.8 -9.5 1.0 45.0 -9.5 1.0 45.0 -9.5 1.0	feet dBuV dBuV dB /m dB dB dB dB /m dB uV/m dB uV/m	feet dBuV dBuV dB dB dB dB dB uV/m dBuV/m dBuV/m	feet dBuV dBuV dB dB dB dB dB dB uV/m dBuV/m dBuV/m<	feet dBuV dBuV dB dB dB dBuV/m dBuV/m	

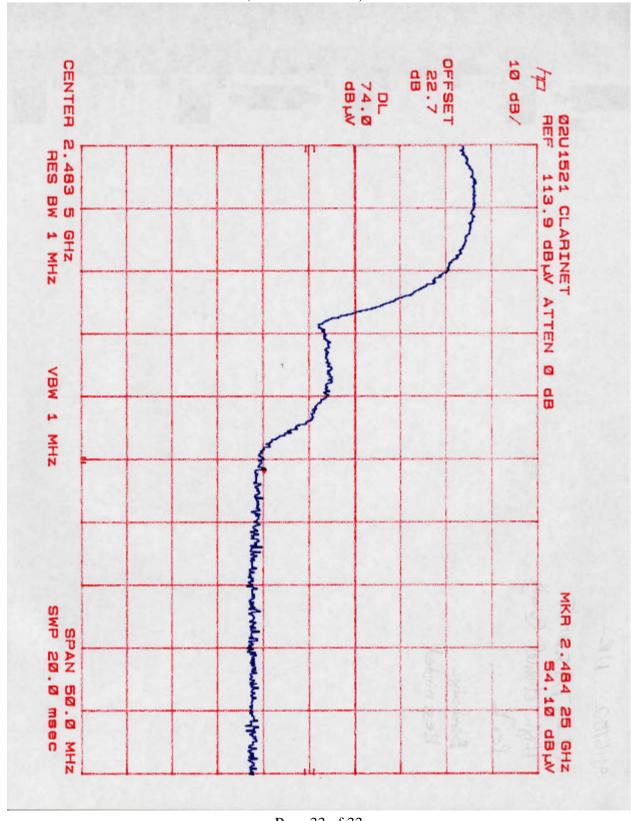
f Measurement Frequency Amp Preamp Gain Avg Lim Average Field Strength Limit D Corr Distance Correct to 3 meters Pk Lim Peak Field Strength Limit Dist Distance to Antenna Read Analyzer Reading Average Field Strength @ 3 m Avg Mar Margin vs. Average Limit Antenna Factor Calculated Peak Field Strength Pk Mar Margin vs. Peak Limit AF Peak CL Cable Loss High Pass Filter HPF

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DOCUMENT NO: CCSUP4031A TEL: (408) 463-0885 FAX: (408) 463-0888

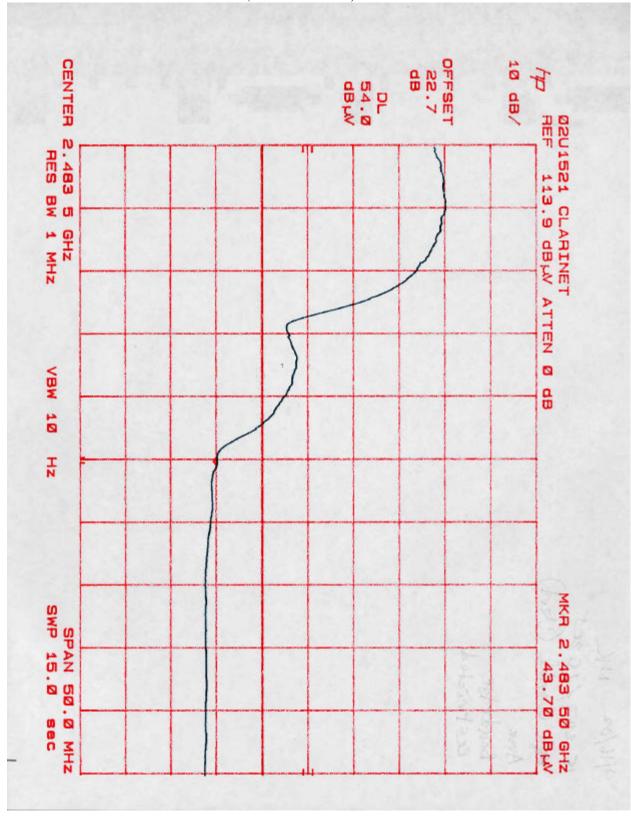
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HIGH CHANNEL RESTRICTED BAND (VERTICAL PEAK)



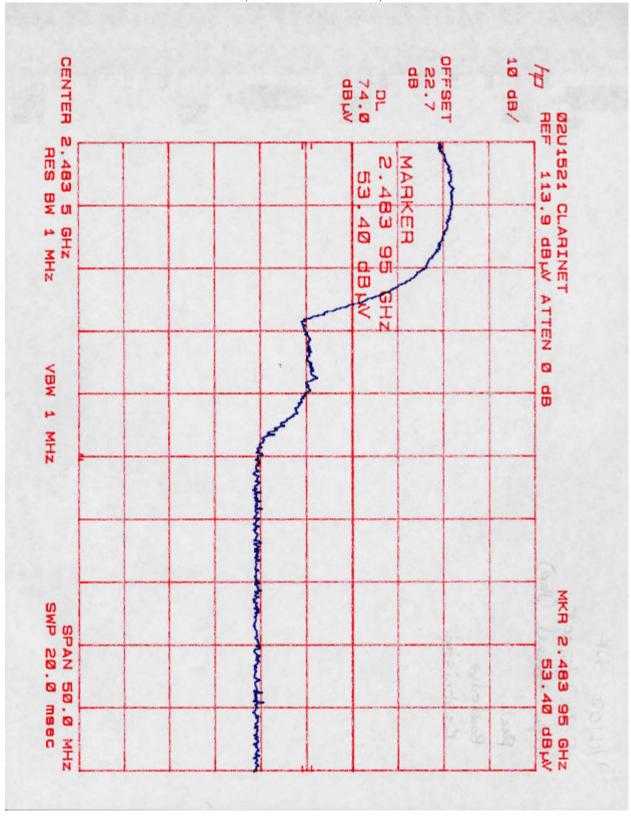
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HIGH CHANNEL RESTRICTED BAND (VERTICAL AVG)



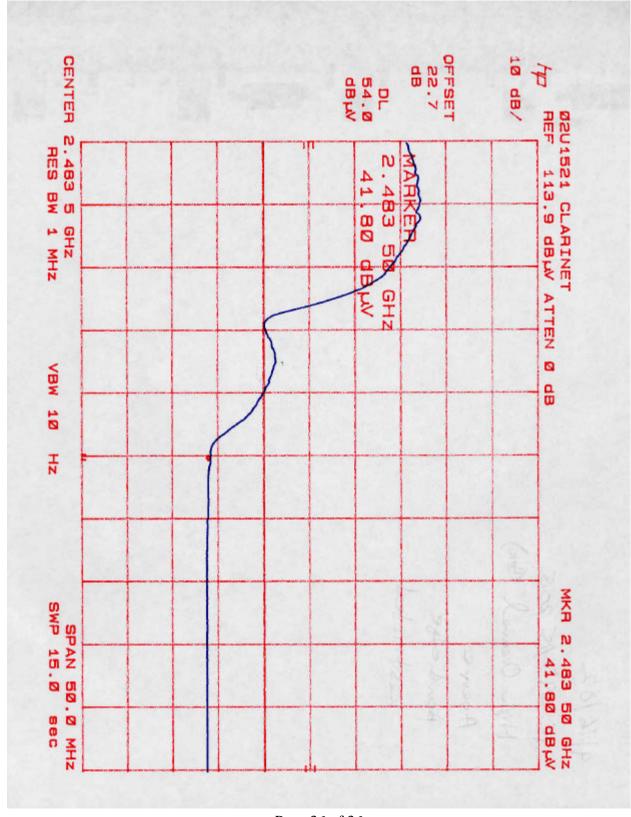
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HIGH CHANNEL RESTRICTED BAND (HORIZONTAL PEAK)



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HIGH CHANNEL RESTRICTED BAND (HORIZONTAL AVG)



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DIGITAL DEVICE RADIATED EMISSIONS



FCC, VCCI, CISPR, CE, AUSTEL, NZ UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001 PHONE: (408) 463-0885 FAX: (408) 463-0888

Company: CLARINET SYSTEMS, INC. EUT Description: 802.11b Radio Unit w/Infrared Connection

Test Configuration: EUT only at TX Mode

Type of Test: FCC part 15.247 Mode of Operation: Standard Transmit

<< Main Sheet

Project #:

Report #:

Date& Time:

Test Engr:

02U1521-1

020910A1

09/10/02 9:55 AM

Thanh Nguyen

Freq.	Reading			Pre-amp		Limit	Margin		Az	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	FCC_B	(dB)	(H/V)	(Deg)	(Meter)	(P/Q/A)
258.08	48.70	12.30	2.57	26.52	37.05	46.00	-8.95	3mV	180.00	1.00	Р
196.30	40.70	16.24	2.21	26.68	32.47	43.50	-11.03	3mV	180.00	1.00	Р
523.75	40.40	18.22	3.77	27.77	34.62	46.00	-11.38	3mV	180.00	1.00	Р
261.78	45.70	12.51	2.59	26.52	34.28	46.00	-11.72	3mV	180.00	1.00	Р
416.00	41.50	16.00	3.32	27.34	33.47	46.00	-12.53	3mH	180.00	1.00	Р
456.00	39.00	16.94	3.49	27.52	31.91	46.00	-14.09	3mV	180.00	1.00	Р
6 Worst	Data										

8.7. POWER LINE CONDUCTED EMISSIONS

TEST SETUP

The EUT is placed on a wooden table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane on the floor.

The EUT is set to transmit in a continuous mode.

TEST PROCEDURE

The resolution bandwidth is set to 10 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

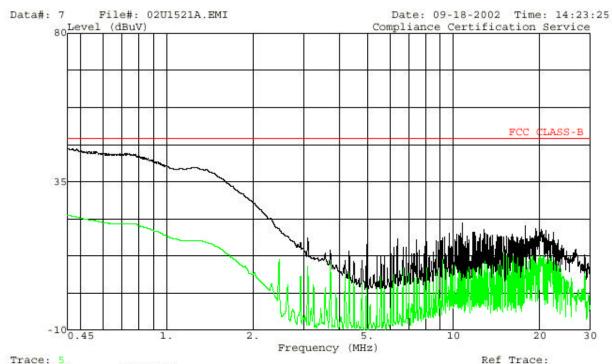
RESULTS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)												
Freq.		Reading		Closs	Limit	FCC_B	Mar	Remark				
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV(dB)	L1/L2			
0.45	45.20	24.84		0.00	48.00		-23.16		L1			
0.60	43.10	22.59		0.00	48.00		-25.41		L1			
0.78	43.10	22.22		0.00	48.00		-25.78		L1			
0.45	42.86	23.24		0.00	48.00		-24.76		L2			
0.81	41.32	20.92		0.00	48.00		-27.08		L2			
1.34	39.12	18.14		0.00	48.00		-29.86		L2			
6 Worst I	Data											

No non-compliance noted:



561F Monterey Road, San Jose, CA 95037 USF Tel: (408) 463-0885 Fax: (408) 463-0888



: 02U1521-1 Project # Test Engineer : NEELESH RAJ

: CLARINET SYSTEMS INC. Company

EUT : 802.11b RADIO UNIT WITH INFRARED

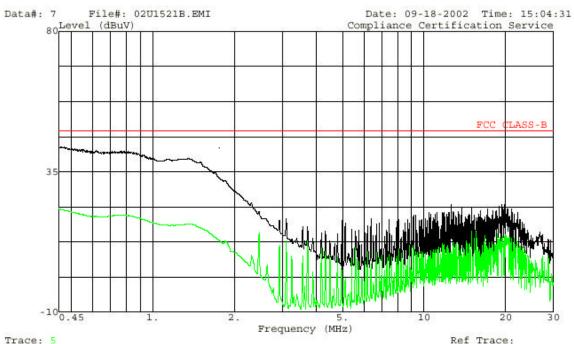
: CONNECTION Test Config. : EUT Test of Target: FCC Class B Mode of Op. : Continous Transmit

: 115VAC, 60 Hz

: Line 1 hot (peak:black) (quasi:green)



561F Monterey Road, San Jose, CA 95037 Tel: (408) 463-0885 USA Fax: (408) 463-0888



: 02U1521-1 Project # Test Engineer : NEELESH RAJ

Company : CLARINET SYSTEMS INC.

: 802.11b RADIO UNIT WITH INFRARED

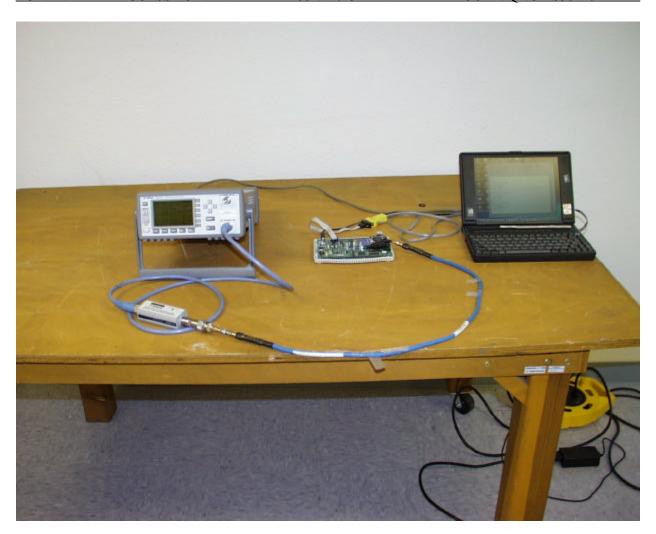
: CONNECTION Test Config. : EUT Test of Target: FCC Class B Mode of Op. : Continous Transmit

: 115VAC, 60 Hz : Line 2 neutral (peak:black) (quasi:green)

8.8. **SETUP PHOTOS**

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP





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TRANSMITTER RADIATED RF MEASUREMENT SETUP



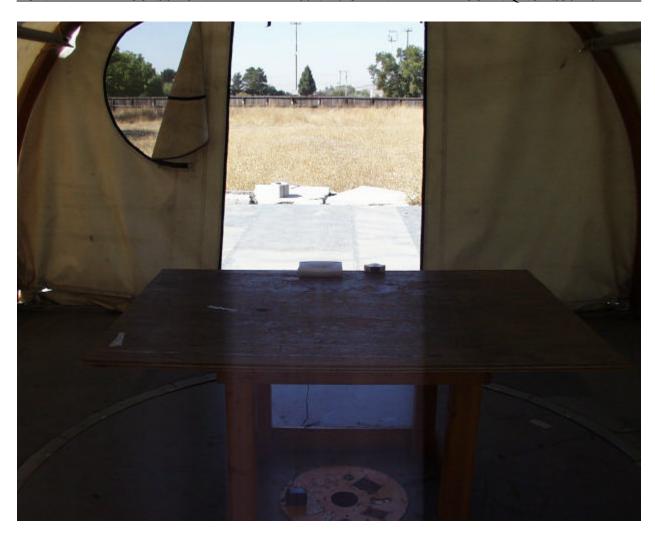
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DIGITAL DEVICE RADIATED EMISSIONS MEASUREMENT SETUP





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POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP





END OF REPORT

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