



ADDENDUM TO POWERWAVE TECHNOLOGIES TEST REPORT FC05-007

FOR THE

REMOTE RADIO HEAD, RH340000/100

FCC PART 24, PART 15 SUBPART B SECTIONS 15.107
AND 15.109 CLASS B & RSS-131

COMPLIANCE

DATE OF ISSUE: APRIL 5, 2005

PREPARED FOR:

Powerwave Technologies
1801 E. St. Andrew Place
Santa Ana, CA 92705

P.O. No.: 102216
W.O. No.: 83357

PREPARED BY:

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Mariposa, CA 95338

Date of test: March 7-10, 2005

Report No.: FC05-007A

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ADMINISTRATIVE INFORMATION

DATE OF TEST: March 7-10, 2005

DATE OF RECEIPT: March 7, 2005

FREQUENCY RANGE TESTED: 150 kHz-20 GHz

MANUFACTURER: Powerwave Technologies
1801 E. St. Andrew Place
Santa Ana, CA 92705

REPRESENTATIVE: Jeffrey Dale

TEST LOCATION: CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

TEST METHOD: ANSI C63.4 (2001), FCC Part 24, TIA/EIA 603,
RSS-212 and RSS-131

PURPOSE OF TEST: To demonstrate the compliance of the Remote
Radio Head, RH340000/100 with the requirements
for FCC Part 22, Part 24, Part 15 Subpart B
Sections 15.107 and 15.109 Class B and RSS-131
devices.
Addendum A is to add plots to the spurious
conducted emissions data.

FCC TO CANADA STANDARD CORRELATION MATRIX

Canadian Standard	Canadian Section	FCC Standard	FCC Section	Test Description
RSS-131	5.4	N/A	N/A	External Controls
RSS-131	5.5	47 CFR	1.1307	RF Exposure
RSS-131	6.1	N/A	N/A	Passband Gain and Bandwidth
RSS-131	6.2	47 CFR	24.232	RF Power Output
RSS-131	6.3	TIA/EIA	603	Non-Linearity (Intermodulation Attenuation)
RSS-131	6.4	47 CFR	24.238	Spurious Emissions Limitations
RSS-131	6.5	N/A	N/A	Frequency Stability (Band Translators)

CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:

TEST PERSONNEL:




Joyce Walker, Quality Assurance Administrative Manager

Randy Clark, EMC Engineer



EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit. The EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender.

EQUIPMENT UNDER TEST

Remote Radio Head

Manuf: Powerwave Technologies
Model: RH340000/100
Serial: 42129
FCC ID: pending

PERIPHERAL DEVICES

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

RF to Fiber Module

Manuf: Powerwave Technologies
Model: Optical Converter
Serial: 42101

Pre-Amplifier

Manuf: Mini-Circuits
Model: ZHL-1042J
Serial: H0327965-021

Power Sensor

Manuf: HP
Model: 8481A
Serial: US37297854

Power Meter

Manuf: Agilent
Model: E4419B
Serial: GB40202125

Signal Generator (2 each)

Manuf: Agilent
Model: E4433B
Serial: US40052296 & US40051692

Directional Coupler

Manuf: HP
Model: 778D
Serial: 18807

Preamp

Manuf: HP
Model: 83017A
Serial: 000009002

Combiner

Manuf: Narda
Model: 4322-2
Serial: NA

TEMPERATURE AND HUMIDITY DURING TESTING

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

FCC 2.1033(c)(3) USER'S MANUAL

The necessary information is contained in a separate document.

FCC 2.1033 (c)(4) TYPE OF EMISSIONS

GXW, G7W, DXW & F9W

FCC 2.1033 (c)(5) FREQUENCY RANGE

1930-1990 MHz (Part 24) and 869-894 MHz (See test report FC05-013 for data at this frequency range.)

FCC 2.1033 (c)(6) OPERATING POWER

2 Watts

FCC 2.1033 (c)(7) MAXIMUM POWER RATING

1640 Watts

FCC 2.1033 (c)(8) DC VOLTAGES

The necessary information is contained in a separate document.

FCC 2.1033 (c)(9) TUNE-UP PROCEDURE

The necessary information is contained in a separate document.

FCC 2.1033(c)(10) SCHEMATICS AND CIRCUITRY DESCRIPTION

The necessary information is contained in a separate document.

FCC 2.1033(c)(11) LABEL AND PLACEMENT

The necessary information is contained in a separate document.

FCC 2.1033(c)(12) SUBMITTAL PHOTOS

The necessary information is contained in a separate document.

FCC 2.1033 (c)(13) MODULATION INFORMATION

GSM, EDGE, TDMA/NADC, CDMA & WCDMA



FCC 15.107 – AC CONDUCTED EMISSIONS

ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 15.107(a) Class B - AVE**
 Work Order #: **83357** Date: 03/10/2005
 Test Type: **Conducted Emissions** Time: 15:45:37
 Equipment: **Remote Radio Head** Sequence#: 47
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
150kHz HP Filter TTE	G7754	04/20/2004	04/20/2006	02608
LISN, 8028-50-TS-24-BNC	8379276, 280	06/05/2003	06/05/2005	1248 & 1249

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Signal Generator	Agilent	E4433B	US40051692

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. The RF output port of the EUT is terminated in a shielded 50 ohm load. Frequency Range Investigated: 150kHz to 30 MHz. Temperature: 28°C, Relative Humidity: 53%.

Transducer Legend:

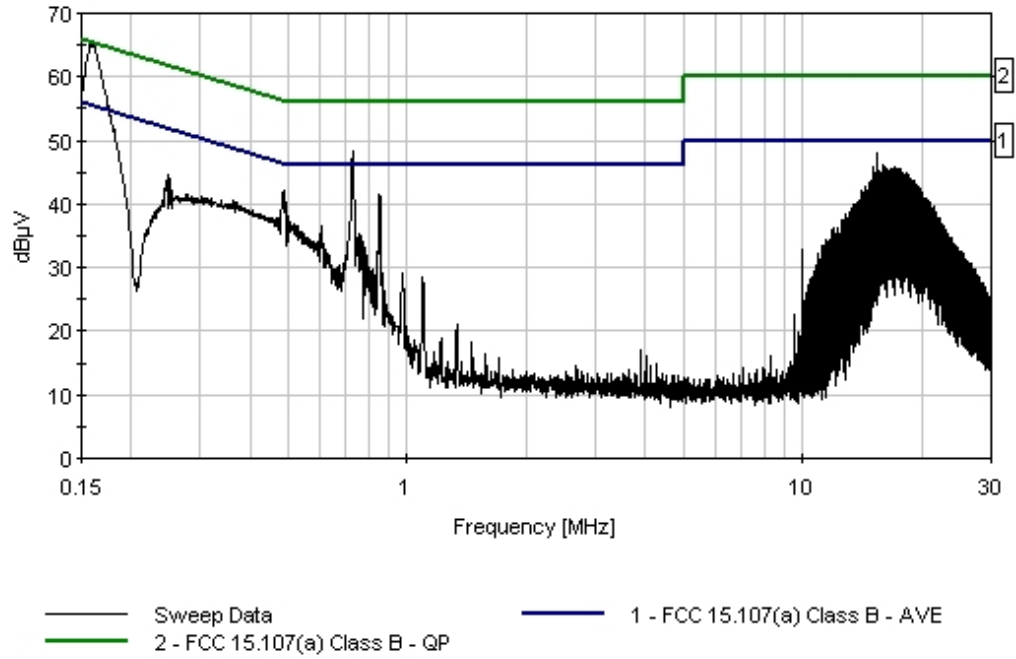
T1=Cable - Internal + cab	T2=LISN Insertion Loss s/n280
T3=HP Filter AN02608	

Measurement Data: Reading listed by margin. Test Lead: Black

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	729.180k	45.2	+0.1	+0.2	+0.3		+0.0	45.8	46.0	-0.2	Black
Ave											
^	728.856k	47.6	+0.1	+0.2	+0.3		+0.0	48.2	46.0	+2.2	Black

3	16.051M	45.2	+0.4	+0.4	+0.1	+0.0	46.1	50.0	-3.9	Black
4	487.424k	41.5	+0.1	+0.3	+0.2	+0.0	42.1	46.2	-4.1	Black
5	15.931M	44.9	+0.4	+0.4	+0.1	+0.0	45.8	50.0	-4.2	Black
6	15.130M	44.8	+0.4	+0.4	+0.1	+0.0	45.7	50.0	-4.3	Black
7	16.171M	44.8	+0.4	+0.4	+0.1	+0.0	45.7	50.0	-4.3	Black
8	17.022M	44.8	+0.4	+0.4	+0.1	+0.0	45.7	50.0	-4.3	Black
9	16.421M	44.7	+0.4	+0.4	+0.1	+0.0	45.6	50.0	-4.4	Black
10	17.512M	44.5	+0.5	+0.4	+0.2	+0.0	45.6	50.0	-4.4	Black
11	16.291M	44.6	+0.4	+0.4	+0.1	+0.0	45.5	50.0	-4.5	Black
12	16.782M	44.6	+0.4	+0.4	+0.1	+0.0	45.5	50.0	-4.5	Black
13	16.902M	44.6	+0.4	+0.4	+0.1	+0.0	45.5	50.0	-4.5	Black
14	17.272M	44.6	+0.4	+0.4	+0.1	+0.0	45.5	50.0	-4.5	Black
15	15.440M	43.0	+0.4	+0.4	+0.1	+0.0	43.9	50.0	-6.1	Black
	Ave									
^	15.440M	47.1	+0.4	+0.4	+0.1	+0.0	48.0	50.0	-2.0	Black
17	152.696k	23.6	+0.1	+0.3	+2.4	+0.0	26.4	55.9	-29.5	Black
	Ave									
^	152.700k	63.1	+0.1	+0.3	+2.4	+0.0	65.9	55.9	+10.0	Black

CKC Laboratories Date: 03/10/2005 Time: 15:45:37 Powerwave WO#: 83357
 FCC 15.107(a) Class B - AVE Test Lead: Black 120V 60Hz Sequence#: 47
 Powerwave Technologies M/N RH340000/100





Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 15.107(a) Class B - AVE**
 Work Order #: **83357** Date: 03/10/2005
 Test Type: **Conducted Emissions** Time: 15:55:16
 Equipment: **Remote Radio Head** Sequence#: 48
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
150kHz HP Filter TTE	G7754	04/20/2004	04/20/2006	02608
LISN, 8028-50-TS-24-BNC	8379276, 280	06/05/2003	06/05/2005	1248 & 1249

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Signal Generator	Agilent	E4433B	US40051692

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. The RF output port of the EUT is terminated in a shielded 50 ohm load. Frequency Range Investigated: 150kHz to 30 MHz. Temperature: 28°C, Relative Humidity: 53%.

Transducer Legend:

T1=Cable - Internal + cab	T2=LISN Insertion Loss s/n276
T3=HP Filter AN02608	

Measurement Data: Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	728.129k	40.0	+0.1	+0.3	+0.3		+0.0	40.7	46.0	-5.3	White
2	16.051M	43.2	+0.4	+0.4	+0.1		+0.0	44.1	50.0	-5.9	White
3	243.090k	44.9	+0.1	+0.4	+0.3		+0.0	45.7	52.0	-6.3	White
	Ave										
^	243.090k	47.8	+0.1	+0.4	+0.3		+0.0	48.6	51.8	-3.2	White
5	15.811M	42.8	+0.4	+0.4	+0.1		+0.0	43.7	50.0	-6.3	White
6	15.931M	42.6	+0.4	+0.4	+0.1		+0.0	43.5	50.0	-6.5	White

7	16.171M	42.5	+0.4	+0.4	+0.1	+0.0	43.4	50.0	-6.6	White
8	17.022M	42.1	+0.4	+0.4	+0.1	+0.0	43.0	50.0	-7.0	White
9	16.902M	42.0	+0.4	+0.4	+0.1	+0.0	42.9	50.0	-7.1	White
10	487.424k	38.5	+0.1	+0.3	+0.2	+0.0	39.1	46.2	-7.1	White
11	15.690M	41.9	+0.4	+0.4	+0.1	+0.0	42.8	50.0	-7.2	White
12	16.291M	41.8	+0.4	+0.4	+0.1	+0.0	42.7	50.0	-7.3	White
13	17.272M	41.8	+0.4	+0.4	+0.1	+0.0	42.7	50.0	-7.3	White
14	15.443M	40.5	+0.4	+0.4	+0.1	+0.0	41.4	50.0	-8.6	White
	Ave									
^	15.443M	47.5	+0.4	+0.4	+0.1	+0.0	48.4	50.0	-1.6	White
16	17.602M	36.0	+0.5	+0.4	+0.2	+0.0	37.1	50.0	-12.9	White
	Ave									
^	17.602M	46.3	+0.5	+0.4	+0.2	+0.0	47.4	50.0	-2.6	White
18	152.090k	32.6	+0.1	+0.4	+2.5	+0.0	35.6	55.9	-20.3	White
	Ave									
^	152.090k	64.7	+0.1	+0.4	+2.5	+0.0	67.7	55.9	+11.8	White

FCC 15.109 – RADIATED EMISSIONS

ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz

Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **15.109 CLASS B**
 Work Order #: **83357** Date: 03/10/2005
 Test Type: **Maximized Emissions** Time: 14:40:56
 Equipment: **Remote Radio Head** Sequence#: 45
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Chase CBL6111C Bilog	2456	06/26/2003	06/26/2005	01991
EMCO 3115 Horn Antenna	9006-3413	04/15/2003	04/25/2005	327
ARA MWH-1826/B Horn Antenna	1005	11/05/2004	11/05/2006	02046
HP 8449B Preamp	3008A00301	12/14/2004	12/14/2006	2010
HP 8447D Preamp	2727A05444	07/18/2004	07/18/2006	00062
Cable, Andrews Hardline HF-005-20	NA	06/03/2003	06/03/2005	P04275
Cable, WL Gore 2'	149047	04/10/2003	04/10/2005	P01527

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Signal Generator	Agilent	E4433B	US40051692

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. The RF output port of the EUT is terminated in a shielded 50 ohm load. EUT does not demodulate the input signal. Frequency Range Investigated: 30 - 1000 MHz. Temperature: 28°C, Relative Humidity: 53%.

Transducer Legend:

T1=Amp - S/N 604	T2=Bilog Site D
T3=Cable - 10 Meter	T4=Cable HF P01527

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

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	879.853M	35.7	-27.5	+22.5	+7.9		+0.0 332	38.6	46.0	-7.4	Verti 100
2	879.889M	34.0	-27.5	+22.5	+7.9	+0.0	+0.0 274	36.9	46.0	-9.1	Verti 100
3	232.014M	48.2	-26.5	+10.8	+3.5		+0.0 116	36.0	46.0	-10.0	Verti 100
4	240.014M	46.6	-26.5	+11.3	+3.5		+0.0 240	34.9	46.0	-11.1	Verti 100
5	240.085M	45.7	-26.5	+11.3	+3.5	+0.0	+0.0 194	34.0	46.0	-12.0	Verti 100
6	232.070M	45.9	-26.5	+10.8	+3.5		+0.0 200	33.7	46.0	-12.3	Horiz 146
7	232.070M	45.9	-26.5	+10.8	+3.5	+0.0	+0.0 200	33.7	46.0	-12.3	Horiz 146
8	264.085M	43.8	-26.5	+12.2	+3.7		+0.0	33.2	46.0	-12.8	Verti 100
9	256.066M	42.1	-26.5	+12.1	+3.7		+0.0	31.4	46.0	-14.6	Verti 100
10	240.070M	42.4	-26.5	+11.3	+3.5		+0.0 260	30.7	46.0	-15.3	Horiz 146
11	200.076M	43.0	-26.7	+8.3	+3.3		+0.0 208	27.9	43.5	-15.6	Verti 100
12	192.014M	42.9	-26.7	+8.3	+3.2		+0.0 357	27.7	43.5	-15.8	Verti 100
13	216.014M	43.8	-26.6	+9.6	+3.4		+0.0 174	30.2	46.0	-15.8	Verti 100
14	184.053M	42.6	-26.8	+8.2	+3.1	+0.0	+0.0 215	27.1	43.5	-16.4	Verti 100
15	208.100M	41.3	-26.6	+9.0	+3.3		+0.0	27.0	43.5	-16.5	Verti 100
16	256.068M	40.2	-26.5	+12.1	+3.7		+0.0	29.5	46.0	-16.5	Horiz 153
17	224.014M	42.1	-26.5	+10.2	+3.4		+0.0 299	29.2	46.0	-16.8	Verti 100
18	224.076M	42.1	-26.5	+10.2	+3.4	+0.0	+0.0 200	29.2	46.0	-16.8	Verti 100
19	224.060M	42.0	-26.5	+10.2	+3.4		+0.0 188	29.1	46.0	-16.9	Horiz 146
20	248.085M	40.0	-26.5	+11.9	+3.6	+0.0	+0.0 360	29.0	46.0	-17.0	Verti 100
21	187.200M	41.5	-26.7	+8.2	+3.2		+0.0	26.2	43.5	-17.3	Verti 100

22	248.022M	39.5	-26.5	+11.9	+3.6	+0.0	28.5	46.0	-17.5	Verti
						157				100
23	248.070M	38.9	-26.5	+11.9	+3.6	+0.0	27.9	46.0	-18.1	Horiz
						161				146
24	236.800M	39.3	-26.5	+11.1	+3.5	+0.0	27.4	46.0	-18.6	Verti
										100
25	160.058M	38.6	-26.9	+10.1	+2.9	+0.0	24.7	43.5	-18.8	Verti
						142				100
26	160.058M	38.6	-26.9	+10.1	+2.9	+0.0	+0.0	24.7	43.5	Verti
						142				100
27	625.000M	29.4	-27.9	+19.4	+6.2	+0.0	27.1	46.0	-18.9	Verti
										100
28	254.500M	37.9	-26.5	+12.1	+3.6	+0.0	27.1	46.0	-18.9	Verti
										100
29	250.070M	37.8	-26.5	+12.0	+3.6	+0.0	26.9	46.0	-19.1	Verti
										100
30	272.085M	37.0	-26.5	+12.4	+3.8	+0.0	26.7	46.0	-19.3	Verti
						194				100
31	168.000M	38.2	-26.9	+9.2	+2.9	+0.0	23.4	43.5	-20.1	Verti
										100
32	238.650M	37.7	-26.5	+11.2	+3.5	+0.0	+0.0	25.9	46.0	Verti
						360				100
33	328.110M	34.5	-26.7	+13.6	+4.3	+0.0	25.7	46.0	-20.3	Verti
						360				100
34	176.053M	38.5	-26.8	+8.4	+3.0	+0.0	23.1	43.5	-20.4	Verti
						200				100
35	234.410M	37.6	-26.5	+10.9	+3.5	+0.0	25.5	46.0	-20.5	Verti
						360				100
36	246.070M	36.7	-26.5	+11.7	+3.6	+0.0	25.5	46.0	-20.5	Verti
						360				100
37	216.060M	39.1	-26.6	+9.6	+3.4	+0.0	25.5	46.0	-20.5	Horiz
						294				153
38	257.530M	35.6	-26.5	+12.1	+3.7	+0.0	24.9	46.0	-21.1	Verti
										100
39	120.000M	35.9	-27.2	+10.9	+2.5	+0.0	22.1	43.5	-21.4	Verti
										100
40	264.072M	35.0	-26.5	+12.2	+3.7	+0.0	24.4	46.0	-21.6	Horiz
						156				146
41	144.000M	35.4	-27.0	+10.7	+2.7	+0.0	21.8	43.5	-21.7	Verti
						336				100
42	262.410M	34.8	-26.5	+12.2	+3.7	+0.0	24.2	46.0	-21.8	Verti
										100
43	296.087M	33.7	-26.5	+12.7	+4.1	+0.0	24.0	46.0	-22.0	Verti
										100
44	160.008M	35.0	-26.9	+10.1	+2.9	+0.0	21.1	43.5	-22.4	Horiz
						2				153
45	80.000M	35.4	-27.2	+6.7	+2.0	+0.0	16.9	40.0	-23.1	Verti
						350				100

46	160.058M	34.2	-26.9	+10.1	+2.9	+0.0	20.3	43.5	-23.2	Verti 100
47	320.084M	30.7	-26.6	+13.4	+4.3	+0.0 360	21.8	46.0	-24.2	Verti 100
48	296.084M	29.8	-26.5	+12.7	+4.1	+0.0 186	20.1	46.0	-25.9	Horiz 146
49	384.104M	27.2	-27.1	+15.0	+4.9	+0.0 247	20.0	46.0	-26.0	Verti 100
50	360.110M	27.2	-26.9	+14.5	+4.6	+0.0	19.4	46.0	-26.6	Verti 100
51	280.084M	28.7	-26.5	+12.5	+3.9	+0.0 100	18.6	46.0	-27.4	Horiz 146
52	272.072M	27.6	-26.5	+12.4	+3.8	+0.0 241	17.3	46.0	-28.7	Horiz 146
53	217.712M	30.3	-26.6	+9.7	+3.4	+0.0 360	16.8	46.0	-29.2	Horiz 153
54	288.084M	26.5	-26.5	+12.6	+4.0	+0.0 340	16.6	46.0	-29.4	Horiz 146

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View



Radiated Emissions - Back View

FCC 2.1033(c)(14)/2.1046/24.232 RF POWER OUTPUT

§24.232 Power and antenna height limits.

- (a) Base stations are limited to 1640 watts peak equivalent isotropically radiated power (e.i.r.p.) with an antenna height up to 300 meters HAAT.

The power output of the equipment is measured at the RF output terminals using a power meter. The input signal to the EUT is tuned such that the output power remains constant across the entire 1930-1990 MHz frequency range.

Radio Service	Emissions Designator	Single Channel Output Power (Watts)	Aggregate Multi-channel Output Power (Watts)
GSM	GXW	2.00	1.00
EDGE	G7W	1.90	1.00
TDMA/NADC	DXW	2.00	1.00
CDMA	F9W	0.85	0.75
WCDMA	F9W	1.00	1.00

This equipment is sold as fixed base station amplifier / extender equipment.

Test equipment

Description	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Attenuator	P01623	JFW	50FHC-014-20		5/9/03	5/8/05
Power Meter	2189	HP	437B	2912U01300	1/17/05	1/17/07
Power Sensor	02392	HP	8482A	2652A16108	1/17/05	1/17/07

PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



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

Not applicable to this unit.

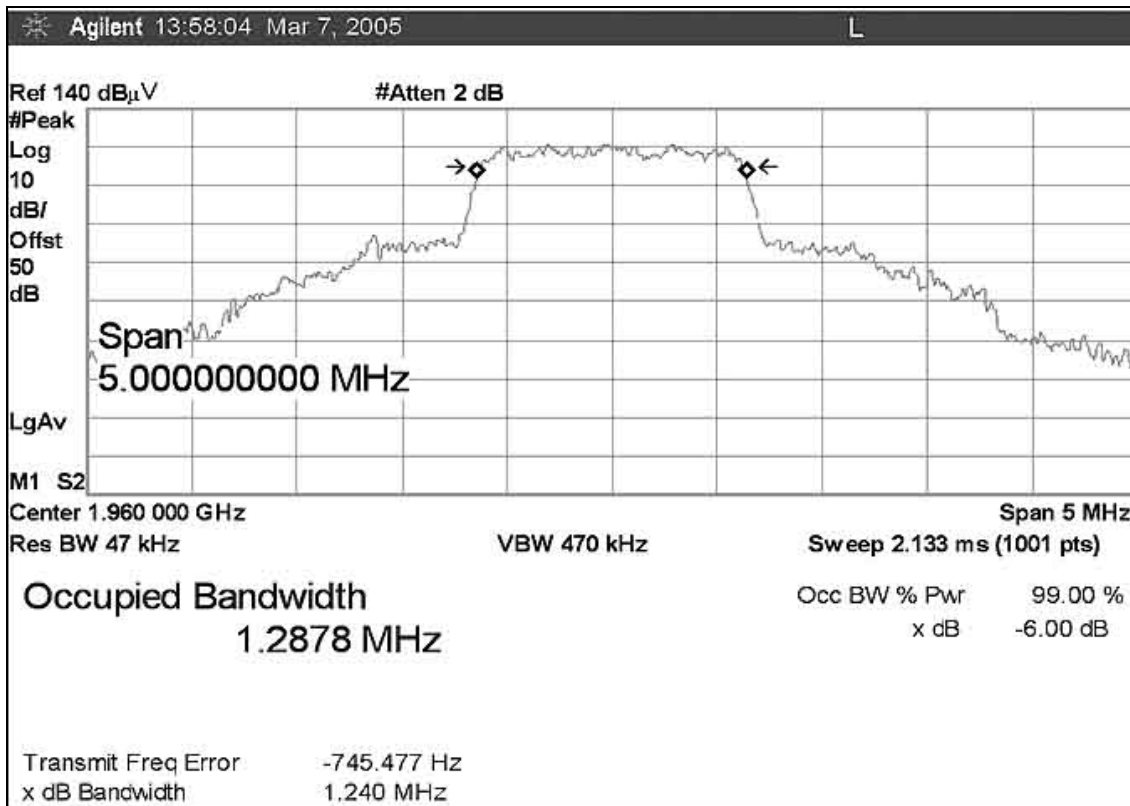
FCC 2.1033(c)(14)/2.1047(b) MODULATION CHARACTERISTICS- Modulation Limiting Response

Not applicable to this unit.

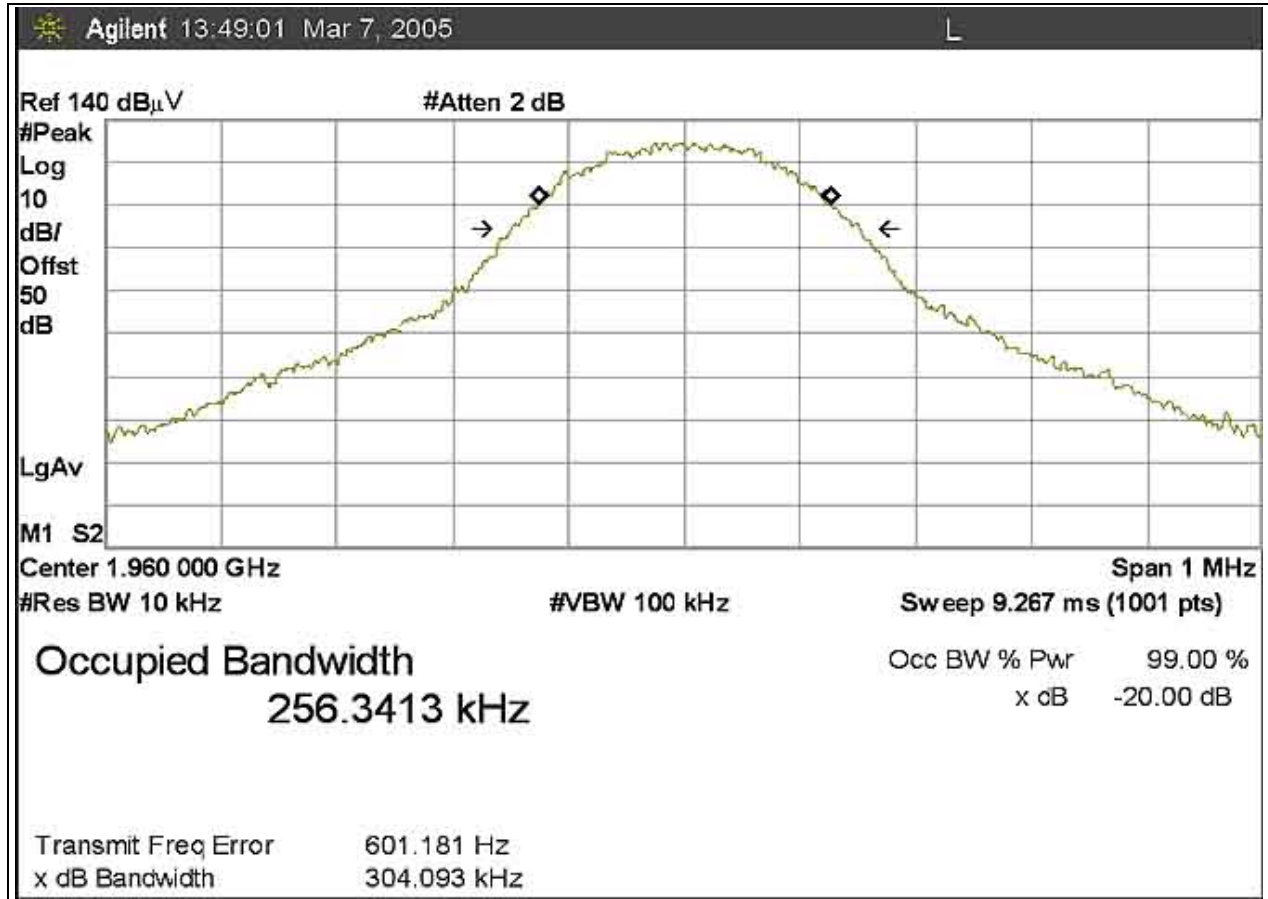
FCC 2.1033(c)(14)/2.1049(i)/PART 24/RSS-131- OCCUPIED BANDWIDTH

Test Conditions: EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Temperature: 28°C, Relative Humidity: 53%.

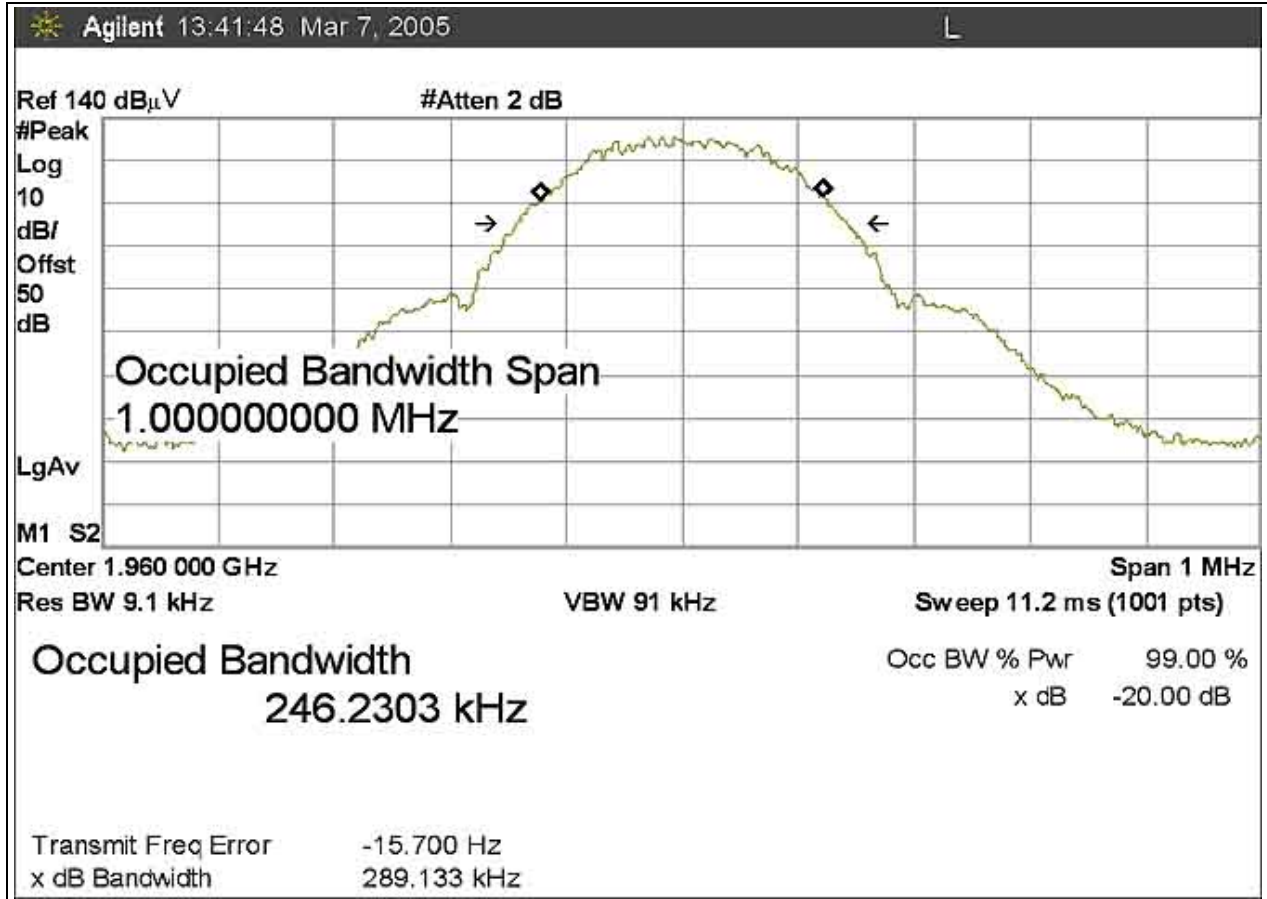
FCC PART 24/RSS-131 OCCUPIED BANDWIDTH - CDMA MID CHANNEL



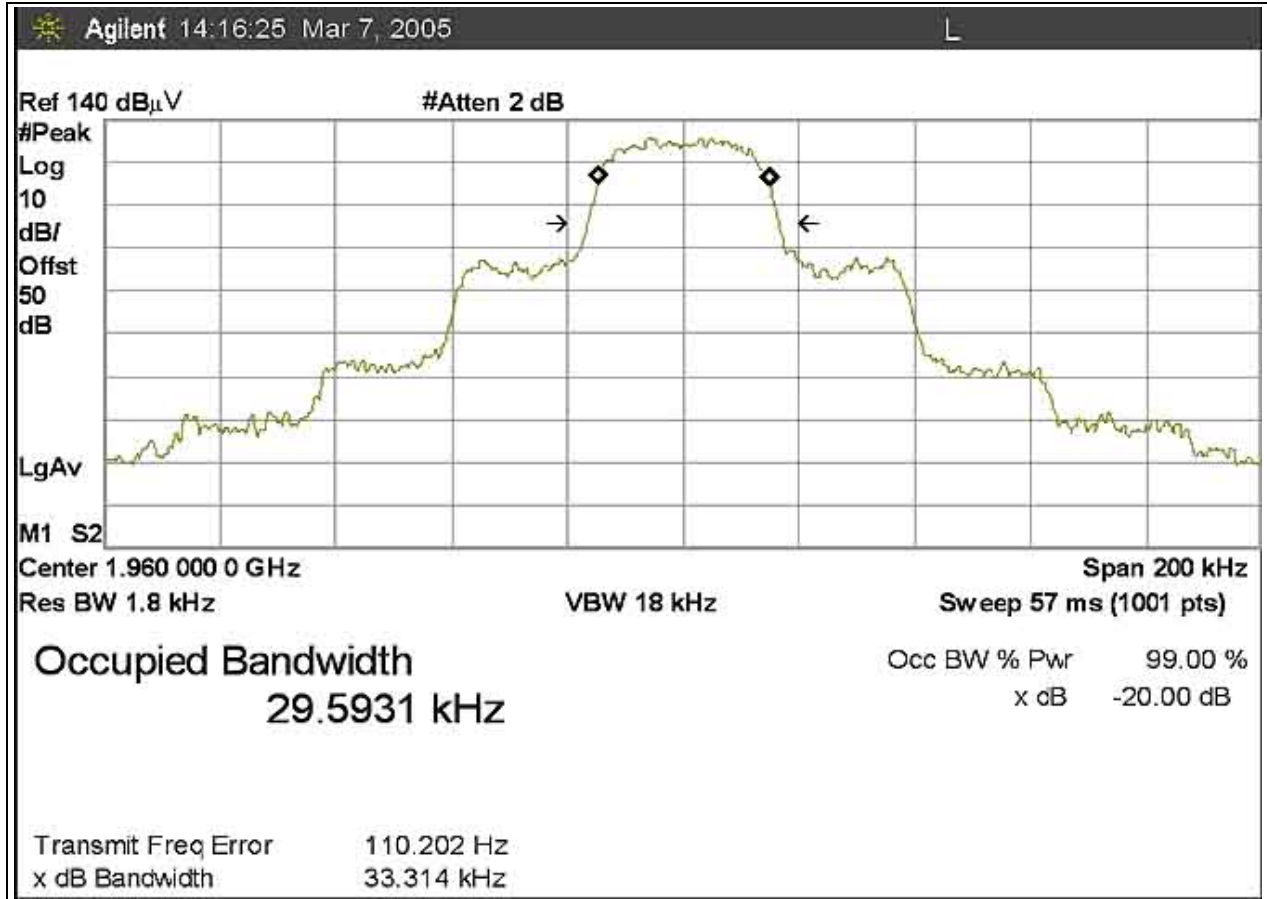
FCC PART 24/RSS-131 OCCUPIED BANDWIDTH - EDGE MID CHANNEL



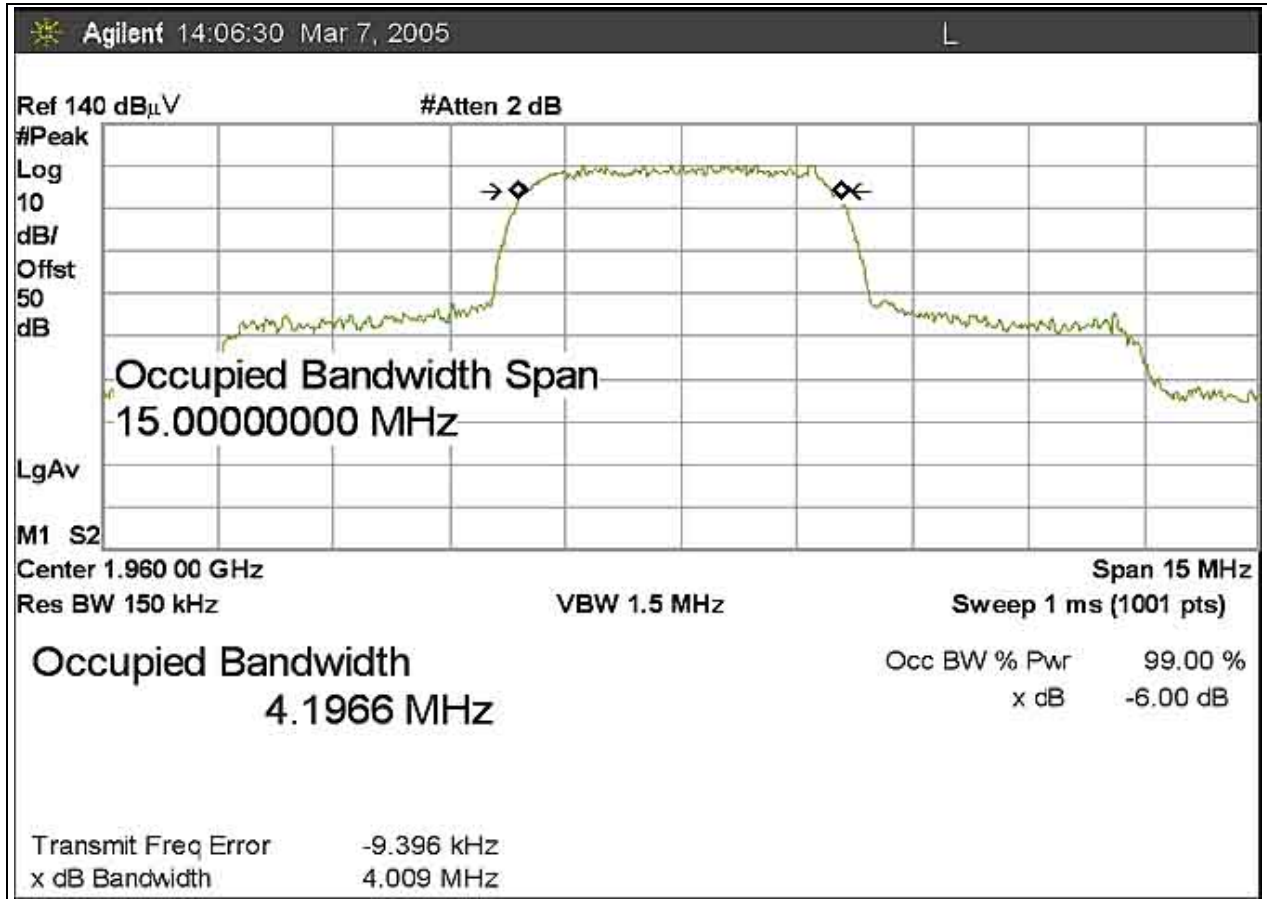
FCC PART 24/RSS-131 OCCUPIED BANDWIDTH - GSM MID CHANNEL



FCC PART 24/RSS-131 OCCUPIED BANDWIDTH - NADC MID CHANNEL



FCC PART 24/RSS-131 OCCUPIED BANDWIDTH - WCDMA MID CHANNEL



Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP



FCC 2.1033(c)(14)/2.1051/24.238 - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	30 MHz	1000 MHz	100 kHz
RADIATED EMISSIONS	1000 MHz	20 GHz	1 MHz

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 14:47:13
 Equipment: **Remote Radio Head** Sequence#: 28
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: CDMA 1900MHz PCS. Test Frequency: Low Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

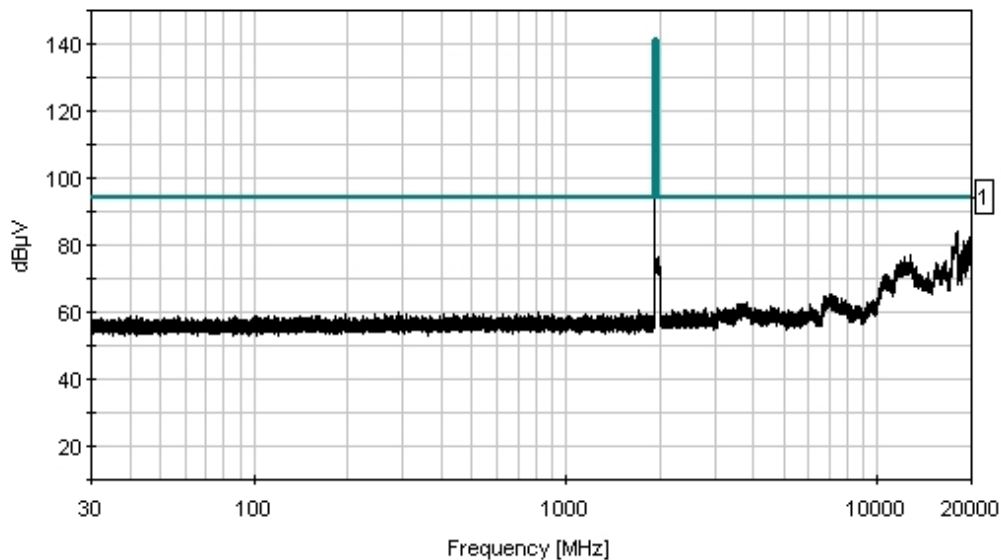
Transducer Legend:

T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data: Reading listed by margin. Test Lead: RF Output

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	1930.000M Ave	70.7	+14.2	+6.0	+0.0	90.9	94.0	-3.1	RF Ou
2	1931.250M	109.7	+14.2	+6.0	+0.0	129.9	141.0 Carrier	-11.1	RF Ou
3	11584.390 M	39.7	+25.4	+6.2	+0.0	71.3	94.0	-22.7	RF Ou
4	7723.010M	41.9	+13.3	+6.3	+0.0	61.5	94.0	-32.5	RF Ou
5	9653.700M	40.2	+14.9	+6.3	+0.0	61.4	94.0	-32.6	RF Ou
6	3861.630M	39.1	+14.1	+6.1	+0.0	59.3	94.0	-34.7	RF Ou
7	5792.320M	36.8	+13.5	+6.3	+0.0	56.6	94.0	-37.4	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 14:47:13 Powerwave WO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 28
 Powerwave Technologies M/N RH340000/100



— Sweep Data — 1 - FCC 24.238



Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 14:37:59
 Equipment: **Remote Radio Head** Sequence#: 27
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: CDMA 1900MHz PCS. Test Frequency: Mid Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data:

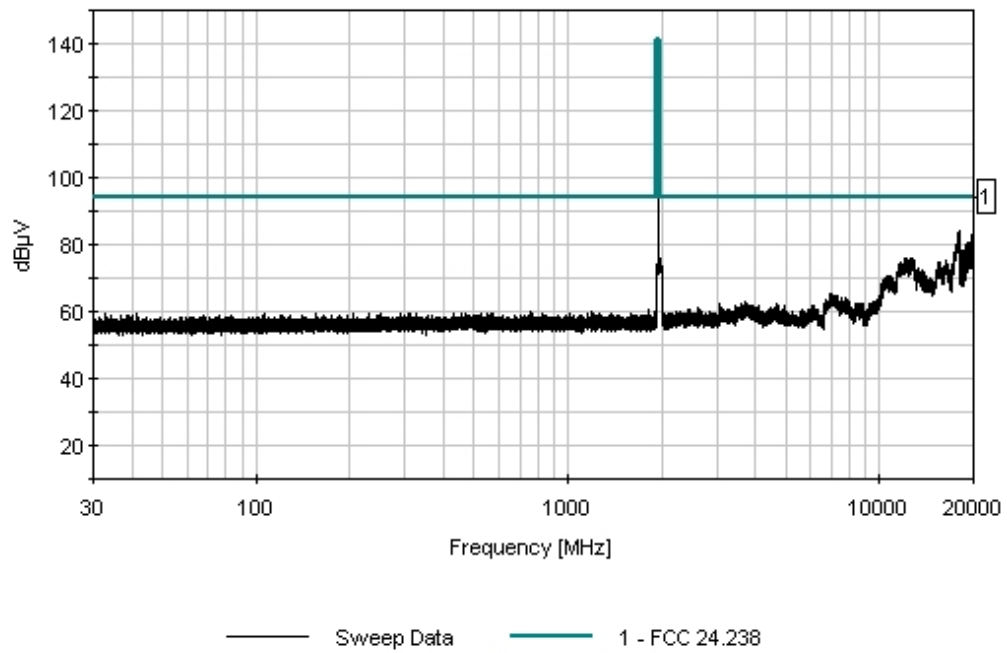
Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBµV	Margin dB	Polar Ant
1	1960.000M	111.1	+14.2	+6.0	+0.0	131.3	141.0 Carrier	-9.7	RF Ou
2	11760.000M	38.6	+26.2	+6.1	+0.0	70.9	94.0	-23.1	RF Ou
3	13720.000M	44.7	+17.4	+6.2	+0.0	68.3	94.0	-25.7	RF Ou

4	7840.000M	41.2	+12.9	+6.3	+0.0	60.4	94.0	-33.6	RF Ou
5	9800.000M	38.6	+15.3	+6.3	+0.0	60.2	94.0	-33.8	RF Ou
6	3920.000M	38.5	+14.0	+6.1	+0.0	58.6	94.0	-35.4	RF Ou
7	5880.000M	37.4	+13.4	+6.4	+0.0	57.2	94.0	-36.8	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 14:37:59 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 27
 Powerwave Technologies M/N RH340000/100





Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 14:29:15
 Equipment: **Remote Radio Head** Sequence#: 26
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: CDMA 1900MHz PCS. Test Frequency: High Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data:

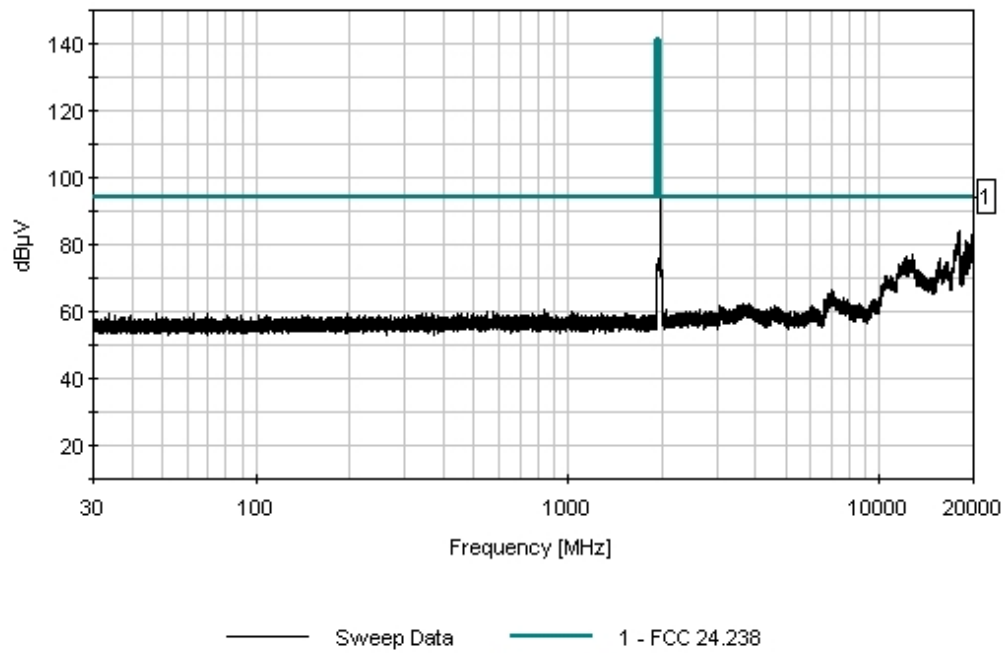
Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBµV	Margin dB	Polar Ant
1	1990.000M Ave	71.2	+14.2	+6.0	+0.0	91.4	94.0	-2.6	RF Ou
2	1988.750M	110.0	+14.2	+6.0	+0.0	130.2	141.0 Carrier	-10.8	RF Ou
3	11932.200M	41.4	+26.3	+6.1	+0.0	73.8	94.0	-20.2	RF Ou

4	9943.511M	39.2	+16.4	+6.3	+0.0	61.9	94.0	-32.1	RF Ou
5	3977.440M	39.1	+14.2	+6.1	+0.0	59.4	94.0	-34.6	RF Ou
6	5966.131M	38.8	+13.3	+6.4	+0.0	58.5	94.0	-35.5	RF Ou
7	7954.821M	39.5	+12.6	+6.2	+0.0	58.3	94.0	-35.7	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 14:29:15 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 26
 Powerwave Technologies M/N RH340000/100





Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 16:43:19
 Equipment: **Remote Radio Head** Sequence#: 37
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: EDGE 1900MHz PCS. Test Frequency: Low Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

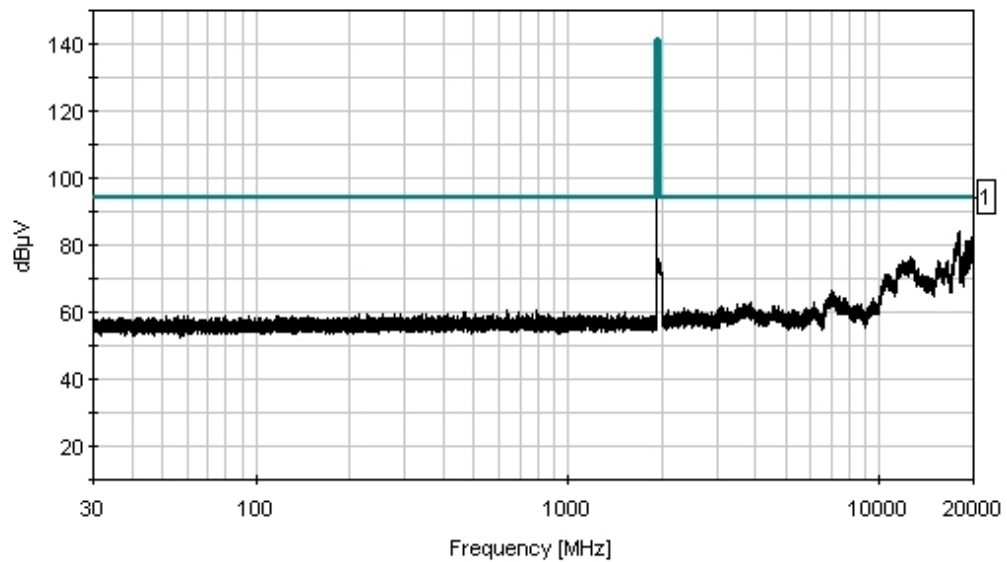
T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data: Reading listed by margin. Test Lead: RF Output

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBµV	Margin dB	Polar Ant
1	1930.500M	120.0	+14.2	+6.0	+0.0	140.2	141.0 Carrier	-0.8	RF Ou
2	1930.000M	59.9	+14.2	+6.0	+0.0	80.1	94.0	-13.9	RF Ou
3	15444.110M	44.0	+21.5	+5.9	+0.0	71.4	94.0	-22.6	RF Ou

4	11583.080M	39.1	+25.4	+6.2	+0.0	70.7	94.0	-23.3	RF Ou
5	13513.600M	44.1	+18.2	+6.1	+0.0	68.4	94.0	-25.6	RF Ou
6	9652.571M	41.8	+14.9	+6.3	+0.0	63.0	94.0	-31.0	RF Ou
7	7722.057M	40.6	+13.3	+6.3	+0.0	60.2	94.0	-33.8	RF Ou
8	5791.543M	38.1	+13.5	+6.3	+0.0	57.9	94.0	-36.1	RF Ou
9	3861.028M	36.1	+14.1	+6.1	+0.0	56.3	94.0	-37.7	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 16:43:19 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 37
 Powerwave Technologies M/N RH340000/100



— Sweep Data — 1 - FCC 24.238



Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 16:35:38
 Equipment: **Remote Radio Head** Sequence#: 36
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: EDGE 1900MHz PCS. Test Frequency: Mid Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data:

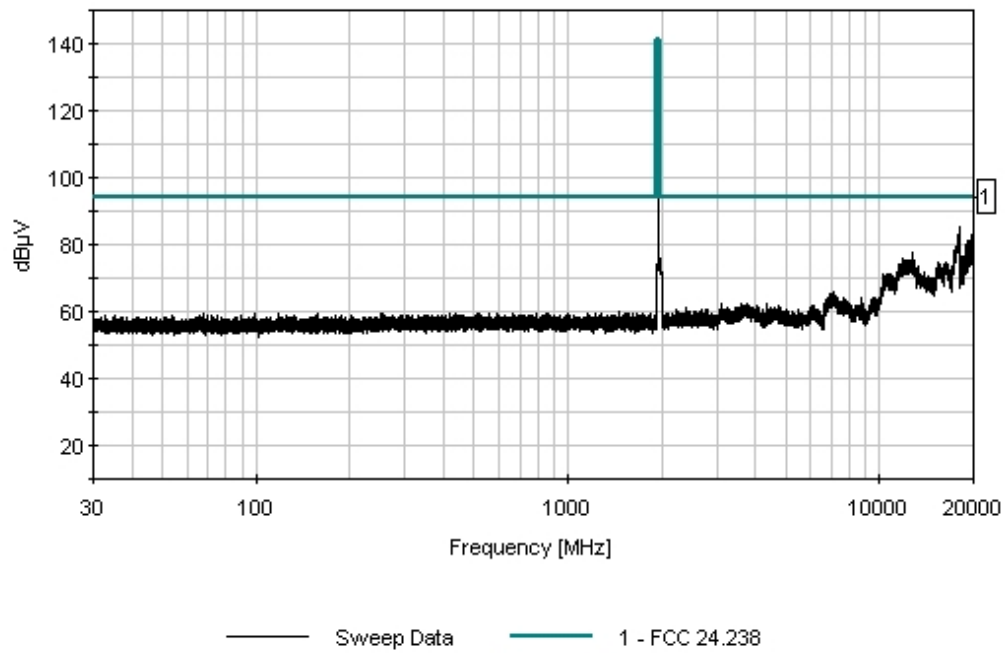
Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBµV	Margin dB	Polar Ant
1	1960.000M	119.8	+14.2	+6.0	+0.0	140.0	141.0 Carrier	-1.0	RF Ou
2	11760.060M	40.4	+26.2	+6.1	+0.0	72.7	94.0	-21.3	RF Ou
3	13720.070M	42.8	+17.4	+6.2	+0.0	66.4	94.0	-27.6	RF Ou

4	9800.051M	40.4	+15.3	+6.3	+0.0	62.0	94.0	-32.0	RF Ou
5	3920.020M	40.0	+14.0	+6.1	+0.0	60.1	94.0	-33.9	RF Ou
6	7840.040M	40.8	+12.9	+6.3	+0.0	60.0	94.0	-34.0	RF Ou
7	5880.030M	37.4	+13.4	+6.4	+0.0	57.2	94.0	-36.8	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 16:35:38 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 36
 Powerwave Technologies M/N RH340000/100





Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 16:31:36
 Equipment: **Remote Radio Head** Sequence#: 35
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: EDGE 1900MHz PCS. Test Frequency: High Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data:

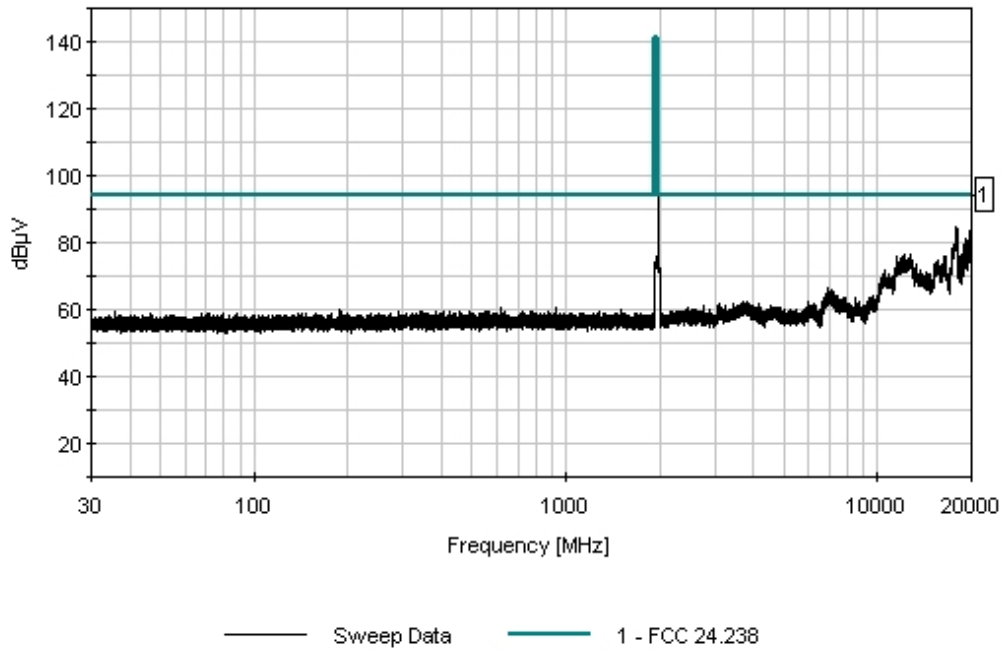
Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBµV	Margin dB	Polar Ant
1	1989.500M	119.3	+14.2	+6.0	+0.0	139.5	141.0	-1.5	RF Ou
							Carrier		
2	1990.000M	60.5	+14.2	+6.0	+0.0	80.7	94.0	-13.3	RF Ou
3	11937.050M	39.6	+26.3	+6.1	+0.0	72.0	94.0	-22.0	RF Ou

4	9947.546M	39.2	+16.4	+6.3	+0.0	61.9	94.0	-32.1	RF Ou
5	7958.036M	41.3	+12.6	+6.2	+0.0	60.1	94.0	-33.9	RF Ou
6	3979.018M	38.4	+14.2	+6.1	+0.0	58.7	94.0	-35.3	RF Ou
7	5968.527M	37.3	+13.3	+6.4	+0.0	57.0	94.0	-37.0	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 16:31:36 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 35
 Powerwave Technologies M/N RH340000/100





Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 16:11:08
 Equipment: **Remote Radio Head** Sequence#: 32
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: GSM 1900MHz PCS. Test Frequency: Low Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data:

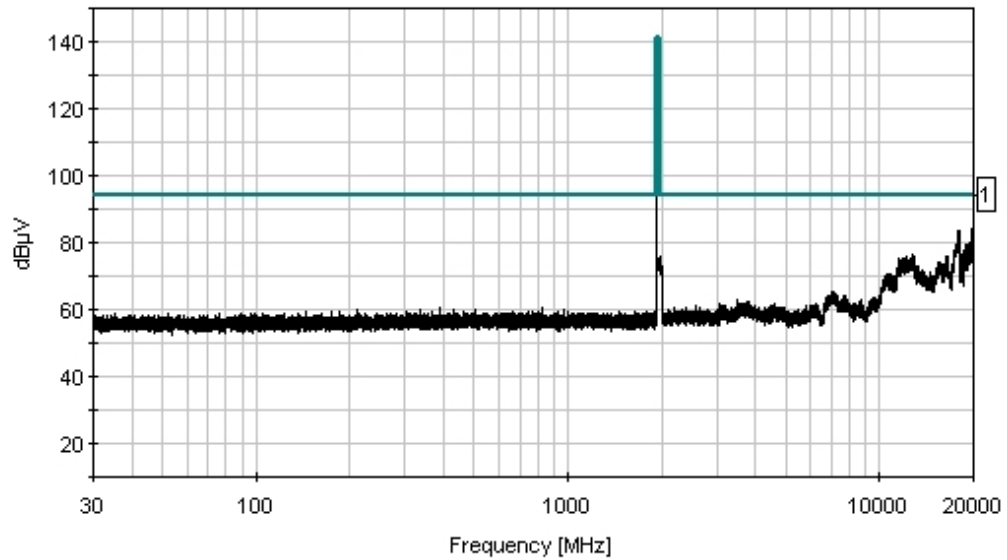
Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBμV	Margin dB	Polar Ant
1	1930.500M	119.0	+14.2	+6.0	+0.0	139.2	141.0 Carrier	-1.8	RF Ou
2	11582.170M	40.8	+25.4	+6.2	+0.0	72.4	94.0	-21.6	RF Ou
3	13512.600M	45.5	+18.2	+6.1	+0.0	69.8	94.0	-24.2	RF Ou

4	1930.000M	45.9	+14.2	+6.0	+0.0	66.1	94.0	-27.9	RF Ou
5	9651.731M	41.6	+14.9	+6.3	+0.0	62.8	94.0	-31.2	RF Ou
6	7721.299M	40.5	+13.3	+6.3	+0.0	60.1	94.0	-33.9	RF Ou
7	3860.433M	39.8	+14.1	+6.1	+0.0	60.0	94.0	-34.0	RF Ou
8	5790.866M	39.3	+13.5	+6.3	+0.0	59.1	94.0	-34.9	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 16:11:08 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 32
 Powerwave Technologies M/N RH340000/100



— Sweep Data — 1 - FCC 24.238



Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 16:15:51
 Equipment: **Remote Radio Head** Sequence#: 33
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: GSM 1900MHz PCS. Test Frequency: Mid Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data:

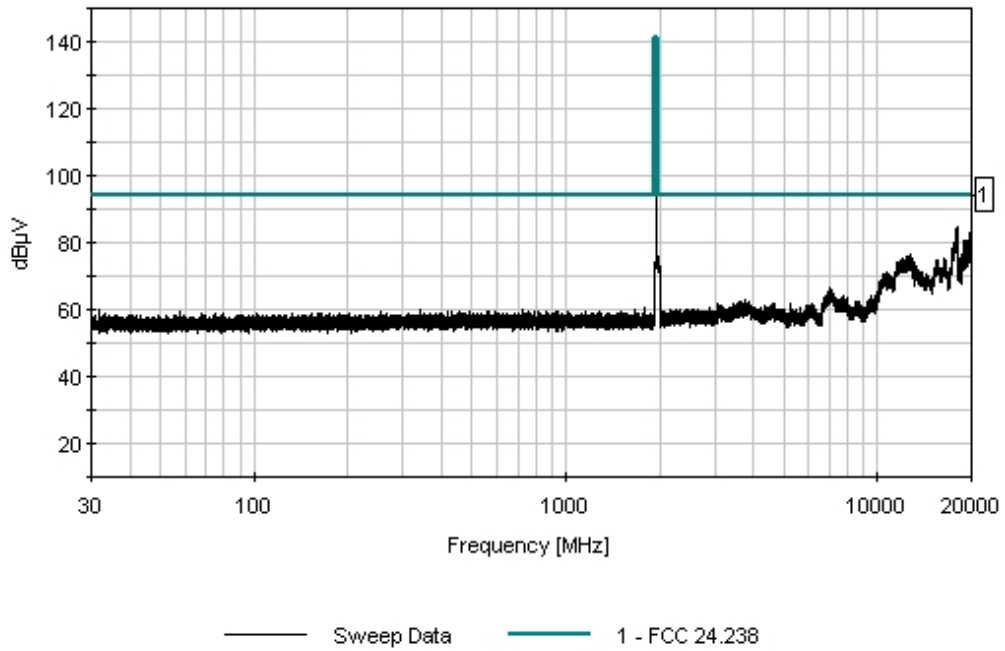
Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBµV	Margin dB	Polar Ant
1	1960.000M	119.1	+14.2	+6.0	+0.0	139.3	141.0 Carrier	-1.7	RF Ou
2	11759.040M	40.8	+26.2	+6.1	+0.0	73.1	94.0	-20.9	RF Ou
3	13718.970M	44.7	+17.4	+6.2	+0.0	68.3	94.0	-25.7	RF Ou

4	3919.434M	40.2	+14.0	+6.1	+0.0	60.3	94.0	-33.7	RF Ou
5	9799.236M	37.9	+15.3	+6.3	+0.0	59.5	94.0	-34.5	RF Ou
6	5879.368M	38.1	+13.4	+6.4	+0.0	57.9	94.0	-36.1	RF Ou
7	7839.302M	38.6	+12.9	+6.3	+0.0	57.8	94.0	-36.2	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 16:15:51 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 33
 Powerwave Technologies M/N RH340000/100





Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 16:23:29
 Equipment: **Remote Radio Head** Sequence#: 34
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: GSM 1900MHz PCS. Test Frequency: High Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data:

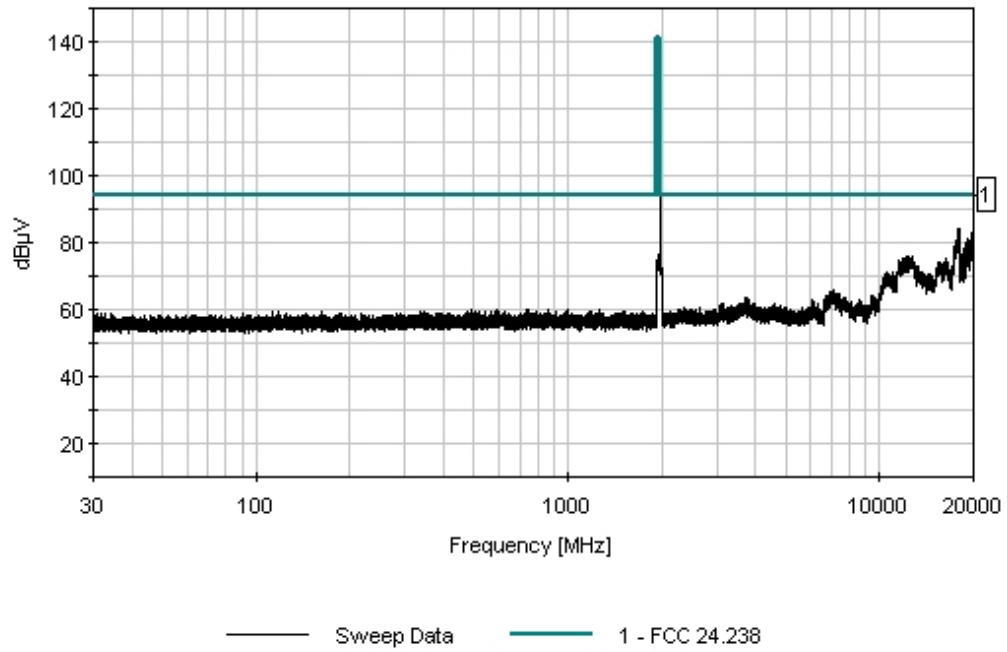
Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBµV	Margin dB	Polar Ant
1	1989.500M	118.6	+14.2	+6.0	+0.0	138.8	141.0 Carrier	-2.2	RF Ou
2	11936.960M	39.9	+26.3	+6.1	+0.0	72.3	94.0	-21.7	RF Ou
3	1990.000M	48.8	+14.2	+6.0	+0.0	69.0	94.0	-25.0	RF Ou

4	13926.450M	44.7	+16.5	+6.2	+0.0	67.4	94.0	-26.6	RF Ou
5	9947.465M	39.0	+16.4	+6.3	+0.0	61.7	94.0	-32.3	RF Ou
6	3978.986M	40.1	+14.2	+6.1	+0.0	60.4	94.0	-33.6	RF Ou
7	7957.972M	39.5	+12.6	+6.2	+0.0	58.3	94.0	-35.7	RF Ou
8	5968.479M	38.6	+13.3	+6.4	+0.0	58.3	94.0	-35.7	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 16:23:29 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 34
 Powerwave Technologies M/N RH340000/100





Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 16:49:58
 Equipment: **Remote Radio Head** Sequence#: 38
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: NADC 1900MHz PCS. Test Frequency: Low Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data:

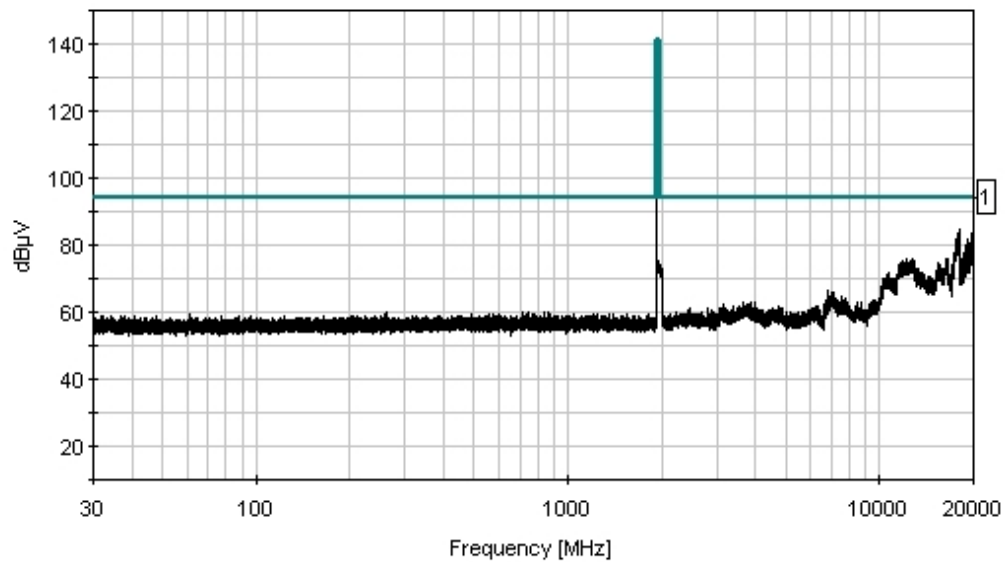
Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	1930.100M	120.5	+14.2	+6.0	+0.0	140.7	141.0 Carrier	-0.4	RF Ou
2	1930.000M	67.2	+14.2	+6.0	+0.0	87.4	94.0	-6.6	RF Ou
3	11580.620M	40.9	+25.4	+6.2	+0.0	72.5	94.0	-21.5	RF Ou

4	15440.820M	44.1	+21.5	+5.9	+0.0	71.5	94.0	-22.5	RF Ou
5	13510.720M	43.9	+18.3	+6.1	+0.0	68.3	94.0	-25.7	RF Ou
6	7720.412M	42.6	+13.3	+6.3	+0.0	62.2	94.0	-31.8	RF Ou
7	9650.515M	39.5	+14.9	+6.3	+0.0	60.7	94.0	-33.3	RF Ou
8	3860.206M	40.0	+14.1	+6.1	+0.0	60.2	94.0	-33.8	RF Ou
9	5790.309M	38.1	+13.5	+6.3	+0.0	57.9	94.0	-36.1	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 16:49:58 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 38
 Powerwave Technologies M/N RH340000/100



— Sweep Data — 1 - FCC 24.238



Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 16:53:33
 Equipment: **Remote Radio Head** Sequence#: 39
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: NADC 1900MHz PCS. Test Frequency: Mid Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

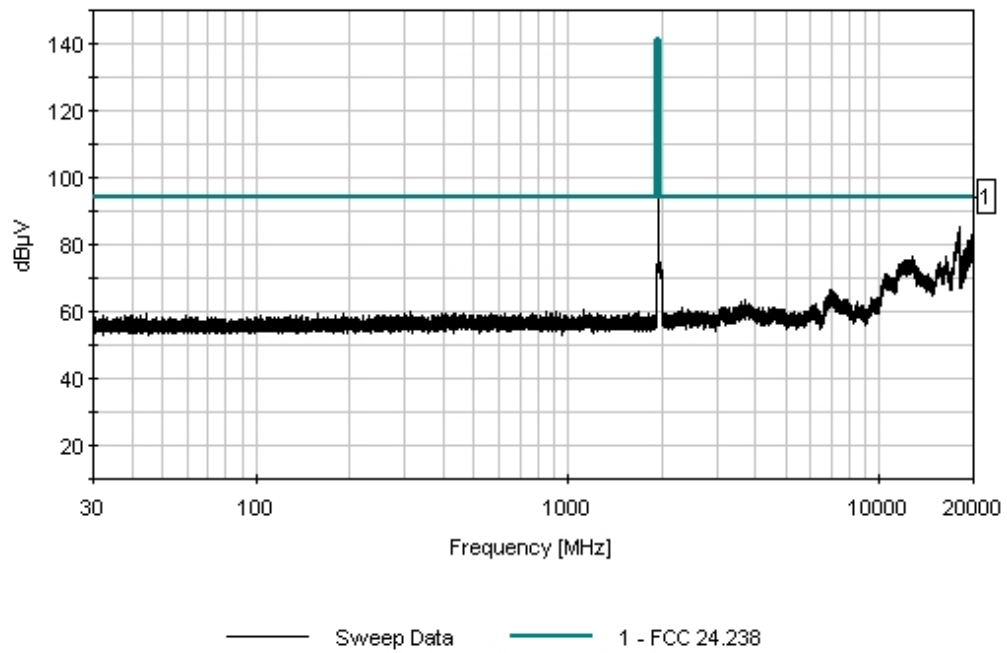
T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data: Reading listed by margin. Test Lead: RF Output

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBμV	Margin dB	Polar Ant
1	1960.000M	120.0	+14.2	+6.0	+0.0	140.2	141.0 Carrier	-0.8	RF Ou
2	11760.000M	40.1	+26.2	+6.1	+0.0	72.4	94.0	-21.6	RF Ou
3	13720.000M	45.0	+17.4	+6.2	+0.0	68.6	94.0	-25.4	RF Ou

4	9800.000M	39.5	+15.3	+6.3	+0.0	61.1	94.0	-32.9	RF Ou
5	3920.000M	38.0	+14.0	+6.1	+0.0	58.1	94.0	-35.9	RF Ou
6	5880.000M	38.1	+13.4	+6.4	+0.0	57.9	94.0	-36.1	RF Ou
7	7840.000M	37.7	+12.9	+6.3	+0.0	56.9	94.0	-37.1	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 16:53:33 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 39
 Powerwave Technologies M/N RH340000/100





Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 16:59:10
 Equipment: **Remote Radio Head** Sequence#: 40
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: NADC 1900MHz PCS. Test Frequency: High Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data:

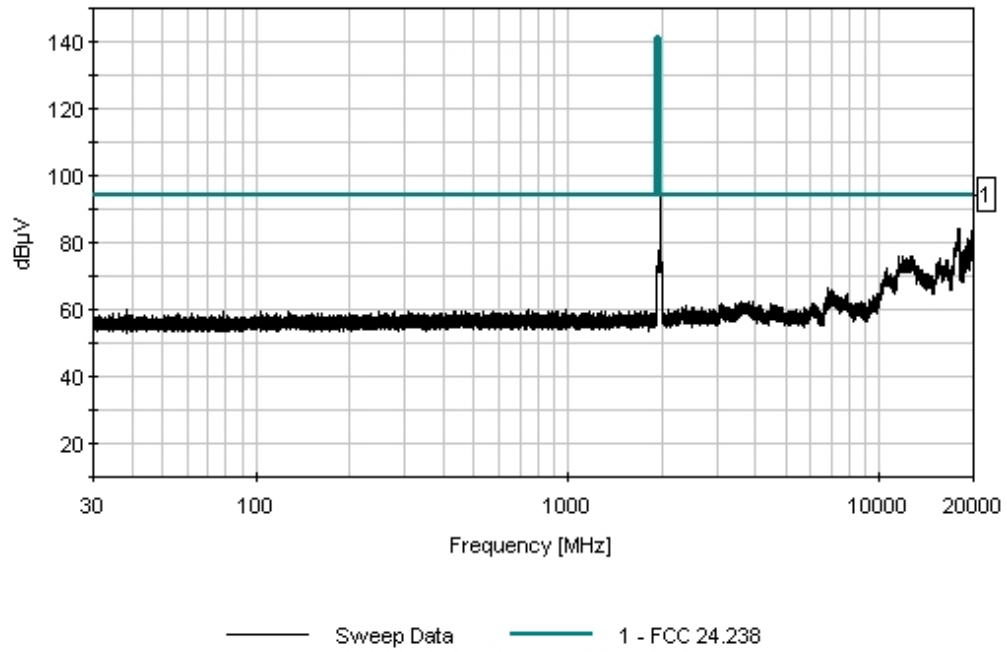
Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBµV	Margin dB	Polar Ant
1	1989.900M	120.5	+14.2	+6.0	+0.0	140.7	141.0 Carrier	-0.3	RF Ou
2	1990.000M	67.0	+14.2	+6.0	+0.0	87.2	94.0	-6.8	RF Ou
3	11939.420M	33.9	+26.3	+6.1	+0.0	66.3	94.0	-27.7	RF Ou

4	13929.330M	37.3	+16.5	+6.2	+0.0	60.0	94.0	-34.0	RF Ou
5	9949.520M	30.8	+16.4	+6.3	+0.0	53.5	94.0	-40.5	RF Ou
6	7959.616M	34.2	+12.6	+6.2	+0.0	53.0	94.0	-41.0	RF Ou
7	3979.808M	30.8	+14.2	+6.1	+0.0	51.1	94.0	-42.9	RF Ou
8	5969.712M	27.3	+13.3	+6.4	+0.0	47.0	94.0	-47.0	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 16:59:10 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 40
 Powerwave Technologies M/N RH340000/100





Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 15:05:16
 Equipment: **Remote Radio Head** Sequence#: 29
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: WCDMA 1900MHz PCS. Test Frequency: Low Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

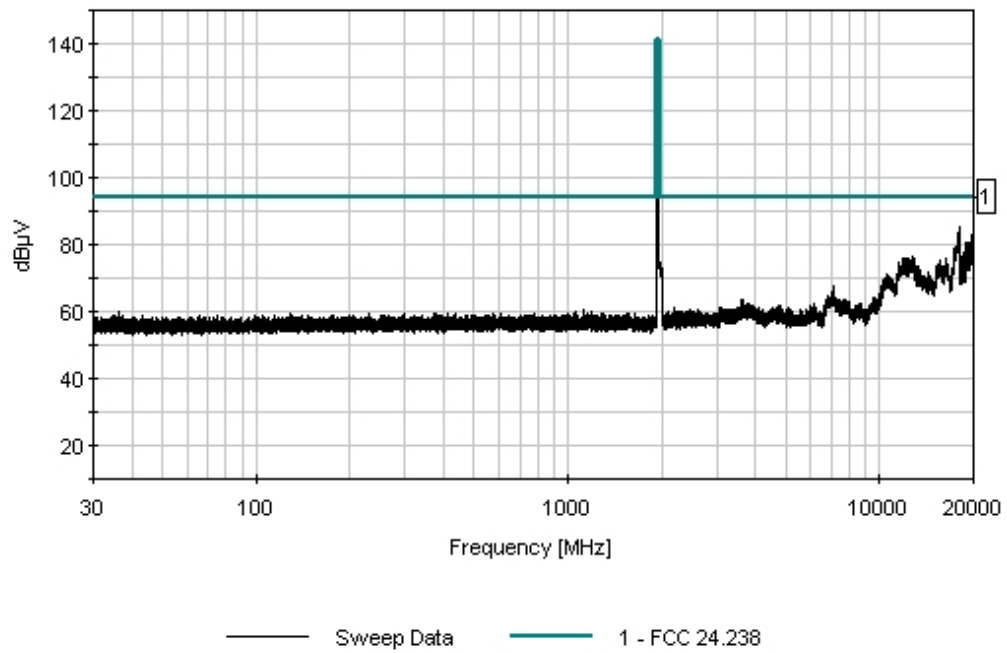
T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data: Reading listed by margin. Test Lead: RF Output

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBµV	Margin dB	Polar Ant
1	1930.000M Ave	70.0	+14.2	+6.0	+0.0	90.2	94.0	-3.8	RF Ou
2	1934.000M	105.0	+14.2	+6.0	+0.0	125.2	141.0 Carrier	-15.8	RF Ou
3	11608.800M	39.2	+25.5	+6.2	+0.0	70.9	94.0	-23.1	RF Ou

4	7739.200M	42.5	+13.2	+6.3	+0.0	62.0	94.0	-32.0	RF Ou
5	3869.600M	40.9	+14.1	+6.1	+0.0	61.1	94.0	-32.9	RF Ou
6	5804.400M	40.3	+13.5	+6.3	+0.0	60.1	94.0	-33.9	RF Ou
7	9674.000M	38.0	+15.0	+6.3	+0.0	59.3	94.0	-34.7	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 15:05:16 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 29
 Powerwave Technologies M/N RH340000/100





Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 15:11:49
 Equipment: **Remote Radio Head** Sequence#: 30
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: WCDMA 1900MHz PCS. Test Frequency: Mid Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data:

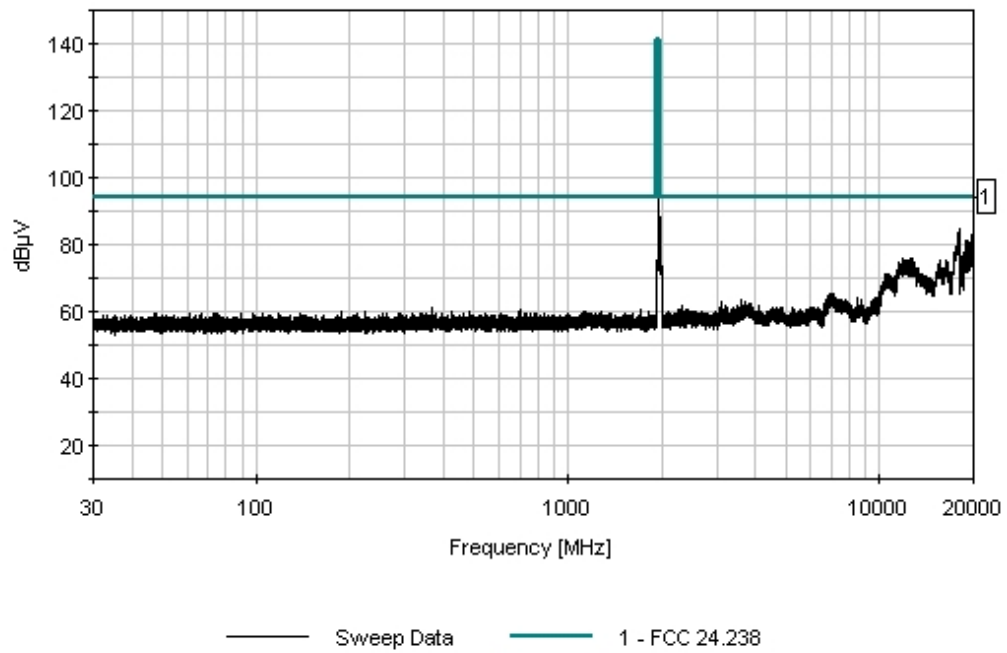
Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBµV	Margin dB	Polar Ant
1	1960.000M	108.9	+14.2	+6.0	+0.0	129.1	141.0	-11.9	RF Ou
							Carrier		
2	11756.940M	40.9	+26.2	+6.1	+0.0	73.2	94.0	-20.8	RF Ou
3	13716.430M	44.3	+17.4	+6.2	+0.0	67.9	94.0	-26.1	RF Ou

4	9797.452M	40.5	+15.3	+6.3	+0.0	62.1	94.0	-31.9	RF Ou
5	7837.964M	42.0	+12.9	+6.3	+0.0	61.2	94.0	-32.8	RF Ou
6	5878.476M	39.3	+13.4	+6.4	+0.0	59.1	94.0	-34.9	RF Ou
7	3918.988M	38.6	+14.0	+6.1	+0.0	58.7	94.0	-35.3	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 15:11:49 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 30
 Powerwave Technologies M/N RH340000/100





Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/08/2005
 Test Type: **Antenna Terminals Conducted Emissions** Time: 15:36:51
 Equipment: **Remote Radio Head** Sequence#: 31
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100 120V 60Hz
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Cable, Andrews	NA	06/04/2003	06/04/2005	P00740
Hardline				
Attenuator 14dB, JFW 50FHC-014-20		05/09/2003	05/09/2005	P01623
Attenuator PE7004-6		09/29/2004	09/29/2006	P02226

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Power Sensor	HP	8481A	US37297854
Power Meter	Agilent	E4419B	GB40202125
Signal Generator	Agilent	E4433B	US40052296

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. Power output is monitored using customer support equipment. EUT does not demodulate the input signal. Frequency Range Investigated: 30MHz - 20GHz. Temperature: 28°C, Relative Humidity: 53%. Radio Standard: WCDMA 1900MHz PCS. Test Frequency: High Channel. **No EUT emissions detected within 20dB of the limit above 2GHz.**

Transducer Legend:

T1=Pad 14dB AN P01623	T2=6dB P02226 Attenuator
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Measurement Data:

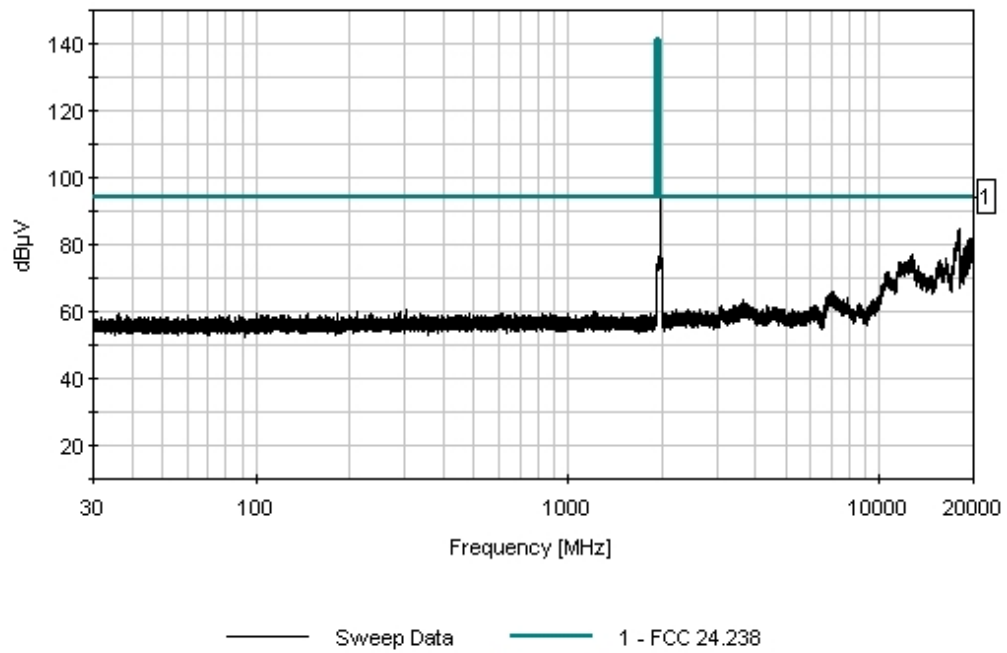
Reading listed by margin.

Test Lead: RF Output

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	Dist dB	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	1990.000M	70.0	+14.2	+6.0	+0.0	90.2	94.0	-3.8	RF Ou
2	1986.000M	108.3	+14.2	+6.0	+0.0	128.5	141.0 Carrier	-12.5	RF Ou
3	11916.240M	41.7	+26.3	+6.1	+0.0	74.1	94.0	-19.9	RF Ou

4	7944.160M	43.4	+12.6	+6.2	+0.0	62.2	94.0	-31.8	RF Ou
5	9930.200M	36.6	+16.3	+6.4	+0.0	59.3	94.0	-34.7	RF Ou
6	5958.120M	37.8	+13.3	+6.4	+0.0	57.5	94.0	-36.5	RF Ou
7	3972.080M	35.0	+14.1	+6.1	+0.0	55.2	94.0	-38.8	RF Ou

CKC Laboratories Date: 03/08/2005 Time: 15:36:51 Powerwave WVO#: 83357
 FCC 24.238 Test Lead: RF Output 120V 60Hz Sequence#: 31
 Powerwave Technologies M/N RH340000/100



PHOTOGRAPH SHOWING DIRECT CONNECT TEST SETUP





FCC 2.1033(c)(14)/2.1053/24.238 - FIELD STRENGTH OF SPURIOUS RADIATION

ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	30 MHz	1000 MHz	100 kHz
RADIATED EMISSIONS	1000 MHz	20 GHz	1 MHz

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)
 Customer: **Powerwave**
 Specification: **FCC 24.238**
 Work Order #: **83357** Date: 03/10/2005
 Test Type: **Maximized Emissions** Time: 14:40:56
 Equipment: **Remote Radio Head** Sequence#: 44
 Manufacturer: Powerwave Technologies Tested By: Randal Clark
 Model: RH340000/100
 S/N: 42129

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/12/2005	01/12/2007	02660
Chase CBL6111C Bilog	2456	06/26/2003	06/26/2005	01991
EMCO 3115 Horn Antenna	9006-3413	04/15/2003	04/25/2005	327
ARA MWH-1826/B Horn Antenna	1005	11/05/2004	11/05/2006	02046
HP 8449B Preamp	3008A00301	12/14/2004	12/14/2006	2010
HP 8447D Preamp	2727A05444	07/18/2004	07/18/2006	00062
Cable, Andrews Hardline HF-005-20	NA	06/03/2003	06/03/2005	P04275
Cable, WL Gore 2'	149047	04/10/2003	04/10/2005	P01527

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Remote Radio Head*	Powerwave Technologies	RH340000/100	42129

Support Devices:

Function	Manufacturer	Model #	S/N
RF to Fiber Module	Powerwave Technologies	Optical Converter	42101
Pre-amplifier	Mini-Circuits	ZHL-1042J	H0327965-021
Signal Generator	Agilent	E4433B	US40051692

Test Conditions / Notes:

EUT is a dual band remote radio head with multichannel capability and may otherwise be classified as a repeater/extender. EUT operates on 869-894 MHz and 1930-1990 MHz. Support equipment is used to convert RF from signal generator to fiber for input to the EUT. The RF output port of the EUT is terminated in a shielded 50 ohm load. EUT does not demodulate the input signal. Frequency Range Investigated: 30 MHz - 20 GHz. Temperature: 28°C, Relative Humidity: 53%. Test data represents the worst case of all modulation types. Test data includes emissions from low, middle and high channels. **No EUT signals detected within 20 dB of the limit.**

Transducer Legend:

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

#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View



Radiated Emissions - Back View