ADDENDUM TO FC02-048

FOR THE

POWER AMPLIFIER, G3S-1900-80

FCC PART 24 AND PART 15 SUBPART B SECTION 15.109

COMPLIANCE

DATE OF ISSUE: JUNE 19, 2002

PREPARED FOR:

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

P.O. No.: 57439
W.O. No.: 78784

PREPARED BY:

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CKC Laboratories, Inc.
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Mariposa, CA 95338

Date of test: April 17-19, 2002

Report No.: FC02-048A

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CKC Laboratories, Inc. has received Certificates of Accreditation from the following agencies:
A2LA (USA); BSMI (Taiwan); Nemko (Norway); and GOST (Russia).
CKC Laboratories, Inc has received test site Registration Acceptance from the following agencies:
FCC (USA); VCCI (Japan); and Industry Canada.
CKC Laboratories, Inc. has received Letters of Acceptance through an MRA for the following agencies:
ACA/NATA (Australia); SABS (South Africa); SWEDAC (Sweden); Radio Communications Agency (RA); HOKLAS (Hong Kong); Bakom (Swiss); BIPT (Belgium); Denmark Telestyrelsen; RvA (Netherlands); SEE (Luxembourg) SITTEL (Bolivia); and UKAS (UK).

ADMINISTRATIVE INFORMATION

DATE OF TEST:	April 17-19, 2002
DATE OF RECEIPT:	April 17, 2002
PURPOSE OF TEST:	To demonstrate the compliance of the Power Amplifier, G3S-1900-80 with the requirements for FCC Part 24 and Part 15 Subpart B Section 15.109 devices. The purpose of this addendum is to revise the RF Power Output table.
TEST METHOD:	ANSI C63.4 (1992) and Part 24
FREQUENCY RANGE TESTED:	10 MHz – 20 GHz
MANUFACTURER:	Powerwave Technologies Inc. 1801 E. St. Andrew Place Santa Ana, CA 92705
REPRESENTATIVE:	Jeffrey Dale
TEST LOCATION:	CKC Laboratories, Inc. 110 Olinda Place Brea, CA 92621

SUMMARY OF RESULTS

As received, the Powerwave Technologies Inc. Power Amplifier, G3S-1900-80 was found to be fully compliant with the following standards and specifications:

United States

- FCC Part 24 and Part 15 Subpart B Section 15.109 using:
- Part 24 and ANSI C63.4 (1992) methods

CONDITIONS FOR COMPLIANCE

Ferrites were installed at the power supply. 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:

Randy Clark, EMC Engineer

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit. 1900 MHz RF Power Amplifier.

EQUIPMENT UNDER TEST

Power Amplifier

Manuf:	Powerwave Technologies Inc.
Model:	G3S-1900-80
Serial:	C00000P252
FCC ID:	E675JS0045

PERIPHERAL DEVICES

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

Input Signal Generator (3)

Manuf:	Agilent
Model:	E4433B
Serial:	US40051593, US40051146 & US40052095
FCC ID:	DoC

High Power Attenuator

Manuf:	Weinschel Corp
Model:	53-20-34
Serial:	LF243
FCC ID:	DoC

Combiner/Splitter

Manuf:	Anaren
Model:	4-4000
Serial:	9641
FCC ID:	DoC

Power Supply

Manuf:	Sorensen
Model:	DCS40-75
Serial:	9741098
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
AMPS-F1D – 27K0F1D
AMPS-F8W – 37K5F8W
CDMA – 1M35F9W
GSM – 280KGXW
TDMA – 35K0DXW
EDGE – 282KG7W

2.1033(c)(5) FREQUENCY RANGE
1930-1990 MHz.

2.1033(c)(6) OPERATING POWER
125 Watts. EUT input frequencies are chosen such that the lowest, middle and highest blocks are used. Three input signals are combined and fed to the EUT such that the output of the amplifier is set to 125 watts.

2.1033(c)(7) MAXIMUM POWER RATING
125 Watts.

2.1033(c)(8) DC VOLTAGES
The necessary information is contained in a separate document.

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(a)/24.232(a)- RF POWER OUTPUT

Test Conditions: The antenna port of the EUT is connected to a power meter through suitable attenuation. Attenuators' insertion losses have been included in the final calculation.

Channel Block	Power (Watts)
A	125
B	125
C	125

Power output reported as measured with a power meter.
Input signal is tuned such that the power output of the EUT is set to 125W.
The input frequencies chosen are as follows:
(Low) Block A: 1931.875, 1934.375 and 1943.125
(Mid) Block B: 1951.875, 1954.375 and 1963.125
(High) Block C: 1976.875, 1979.375 and 1988.125

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Directional Coupler		HP	86205A	3140A03083	041702	041703
Power Meter		HP	E4418B	US39251104	041702	041703

Direct Connect 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

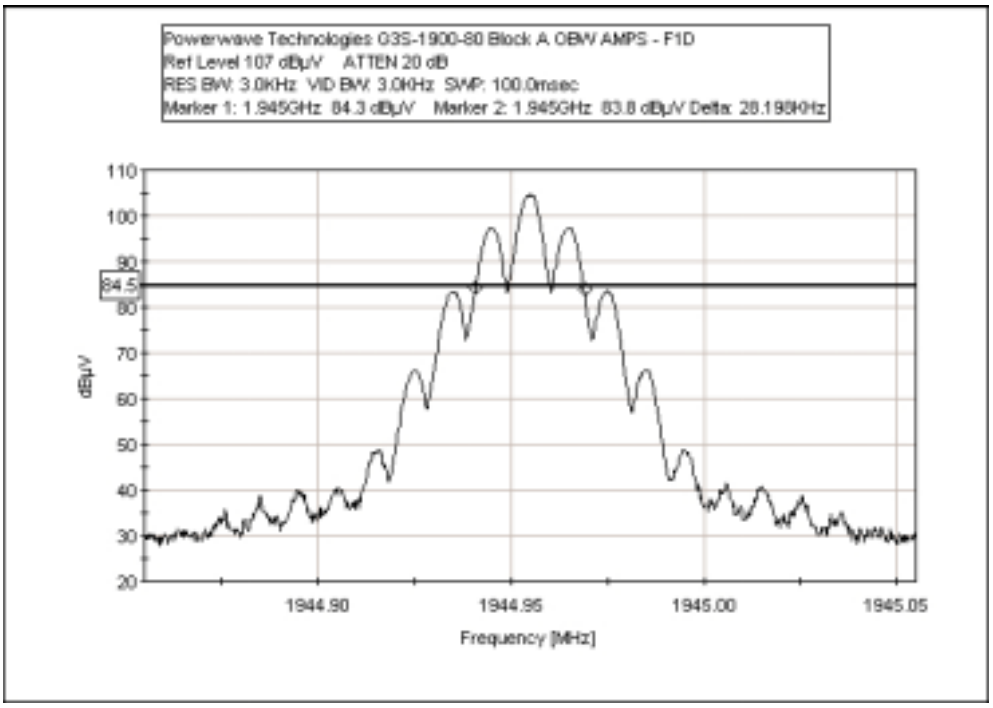
Not applicable to this unit.

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

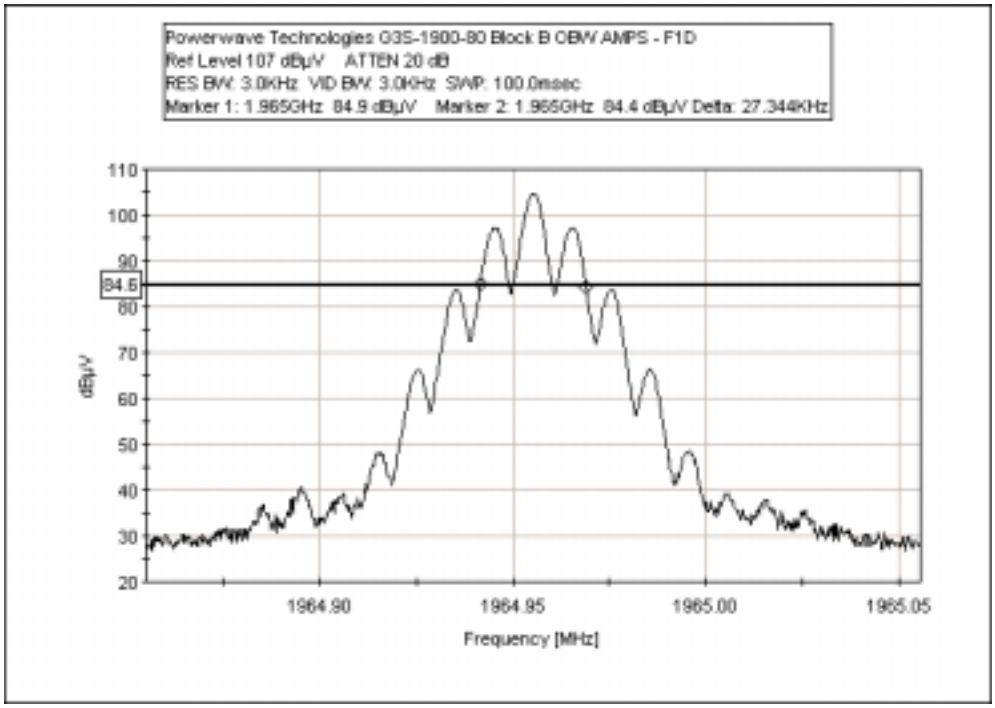
Test Conditions: EUT is connected directly to the spectrum analyzer through a high power attenuator and directional coupler. The emissions bandwidth is measured as the 20dB points. Data is taken in a 3kHz bandwidth.

Summary of Occupied Bandwidth Plots

Mode	Block	Occupied Bandwidth
AMPS-F1D	A (Low)	26.198 kHz
AMPS-F1D	B (Mid)	27.344 kHz
AMPS-F1D	C (High)	27.71 kHz
AMPS-F8W	A (Low)	36.967 kHz
AMPS-F8W	B (Mid)	37.476 kHz
AMPS-F8W	C (High)	37.476 kHz
CDMA	A (Low)	1.36 MHz
CDMA	B (Mid)	1.355 MHz
CDMA	C (High)	1.35 MHz
GSM	A (Low)	267.964 kHz
GSM	B (Mid)	273.926 kHz
GSM	C (High)	281.006 kHz
TDMA	A (Low)	35.034 kHz
TDMA	B (Mid)	35.156 kHz
TDMA	C (High)	34.424 kHz
EDGE	A (Low)	281.982 kHz
EDGE	B (Mid)	281.982 kHz
EDGE	C (High)	276.001 kHz



Block A AMPS-F1D Occupied Bandwidth



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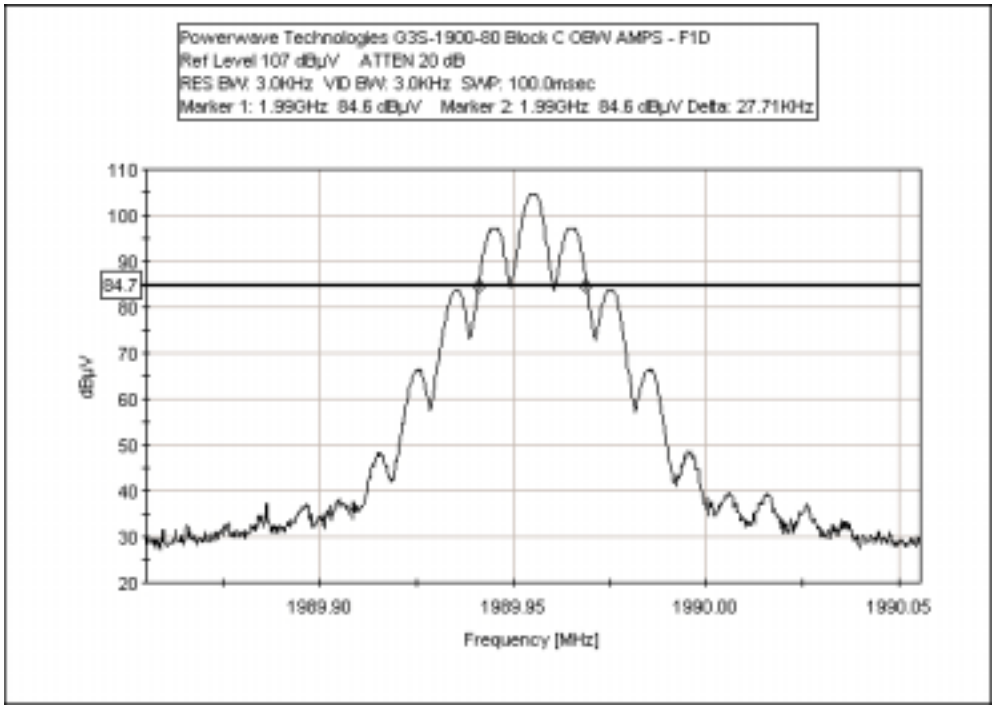

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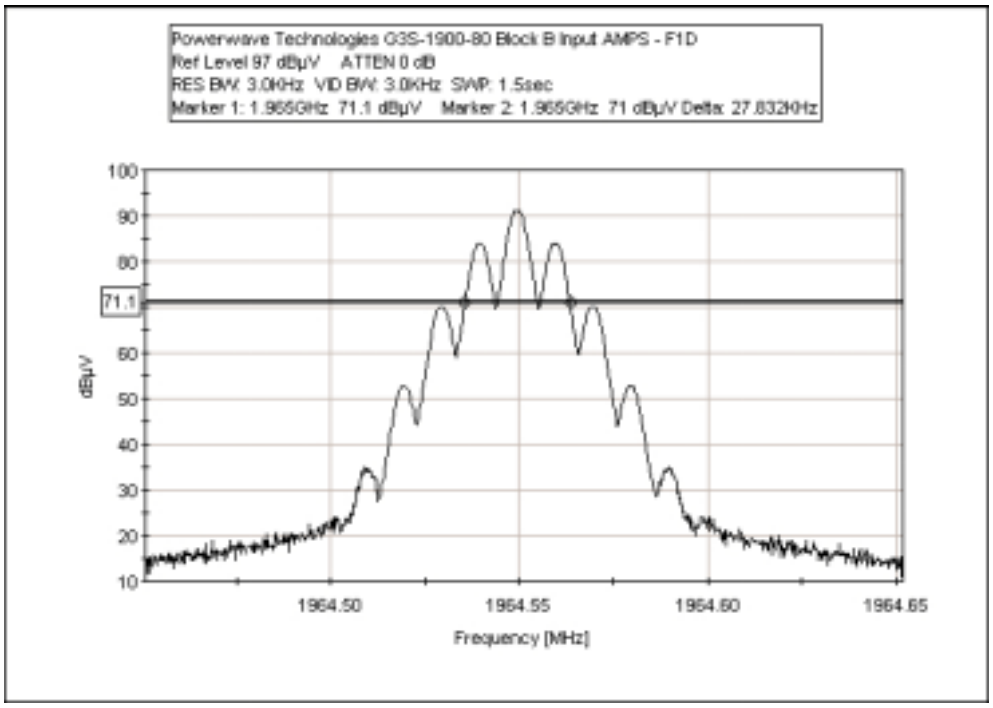

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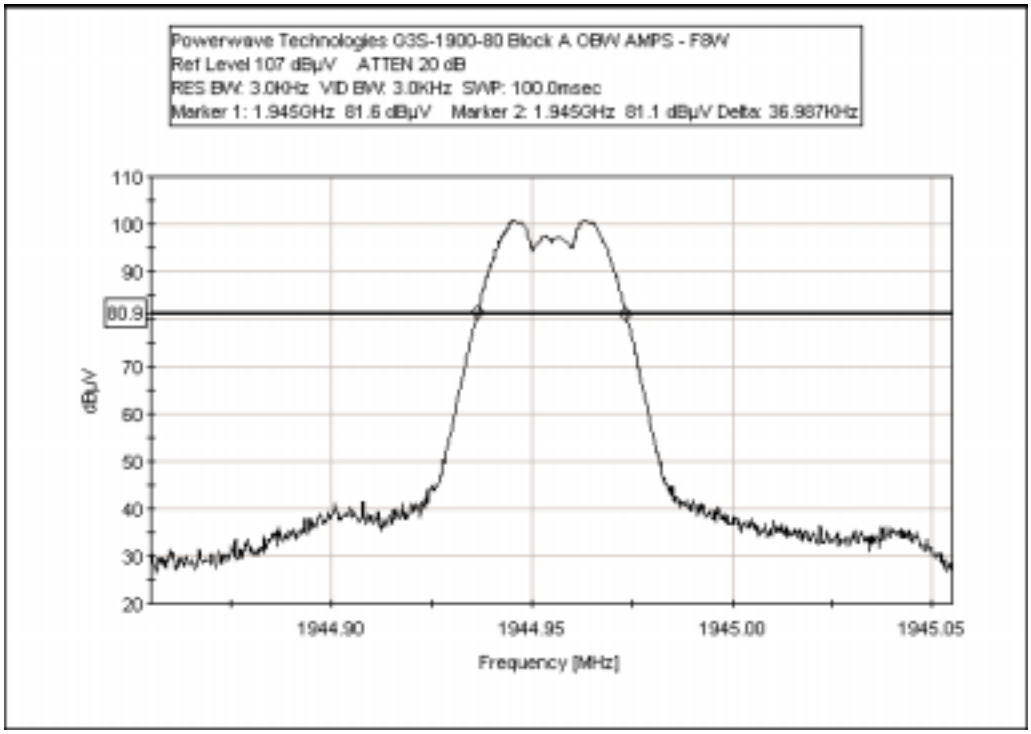

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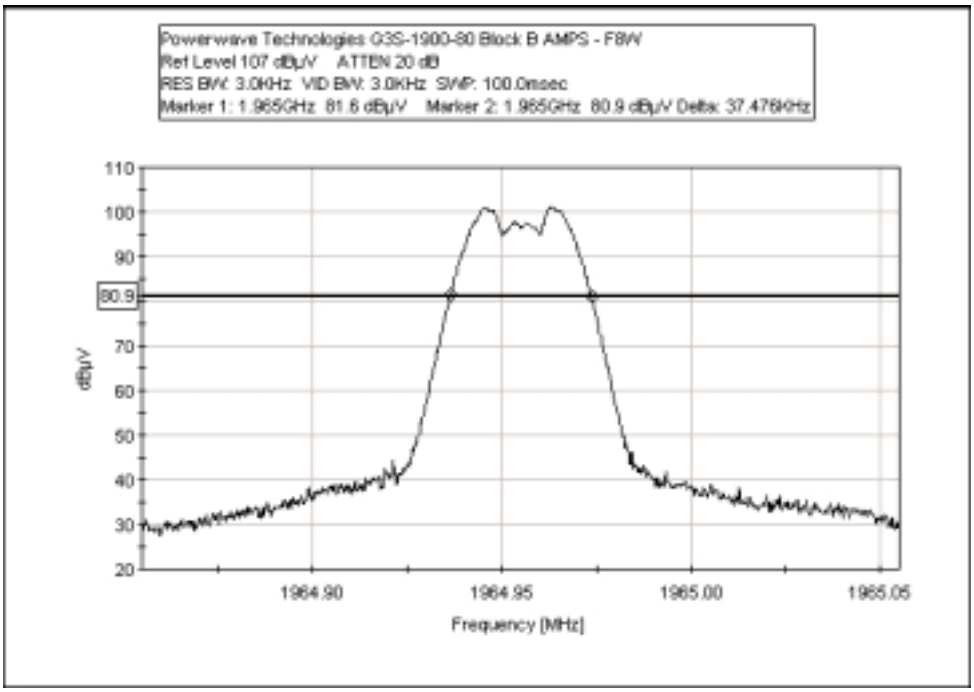

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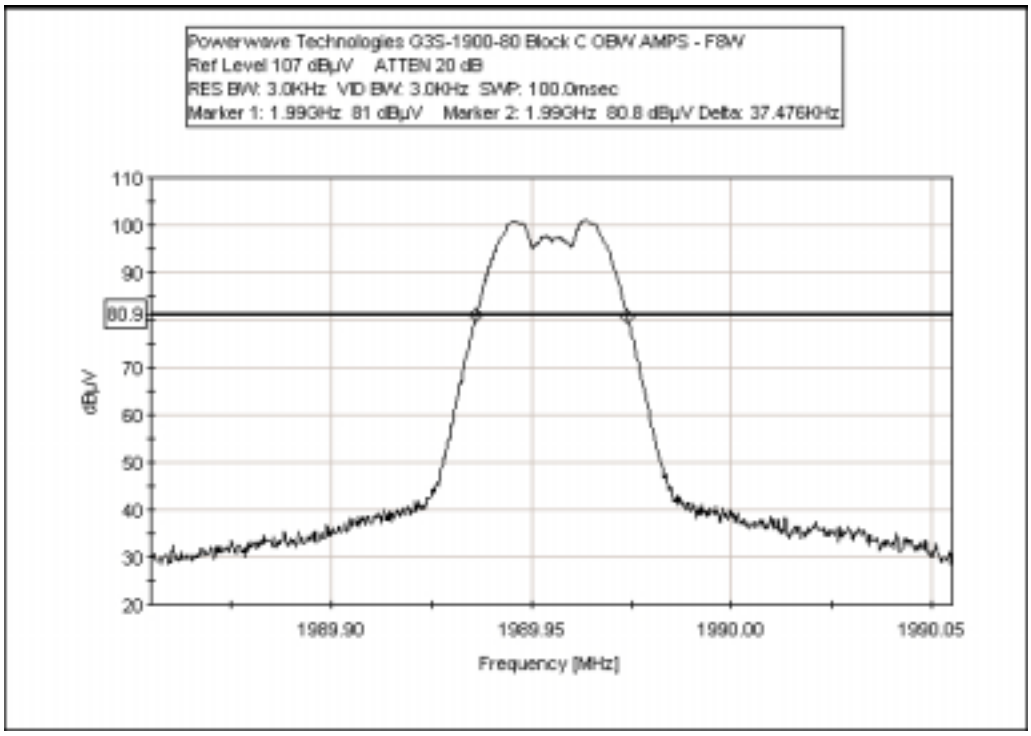

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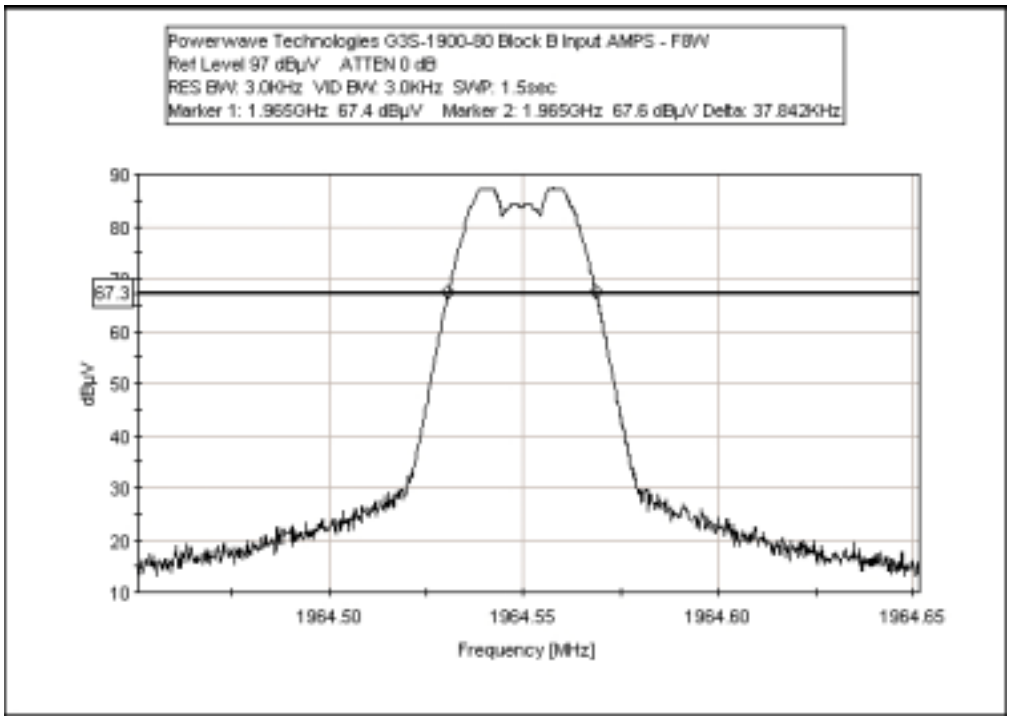

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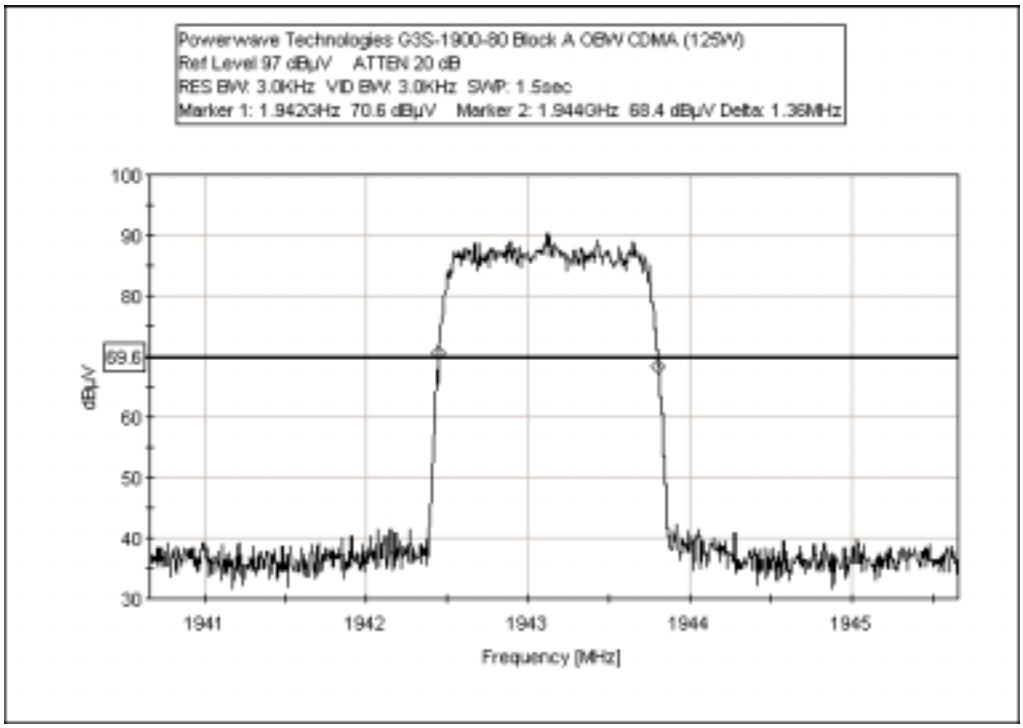

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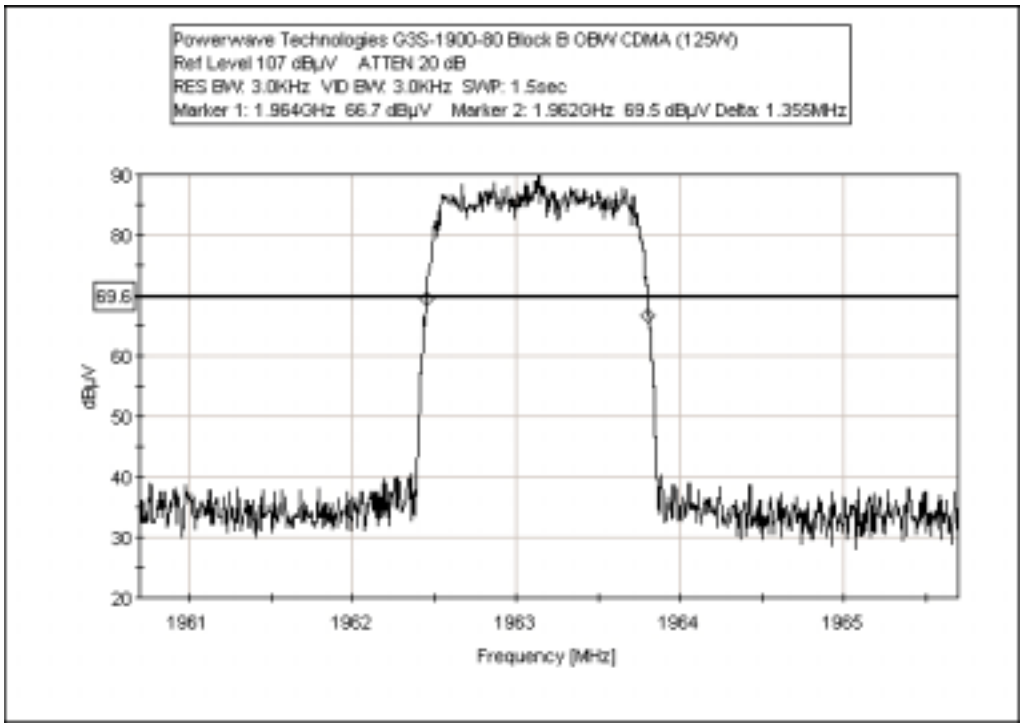

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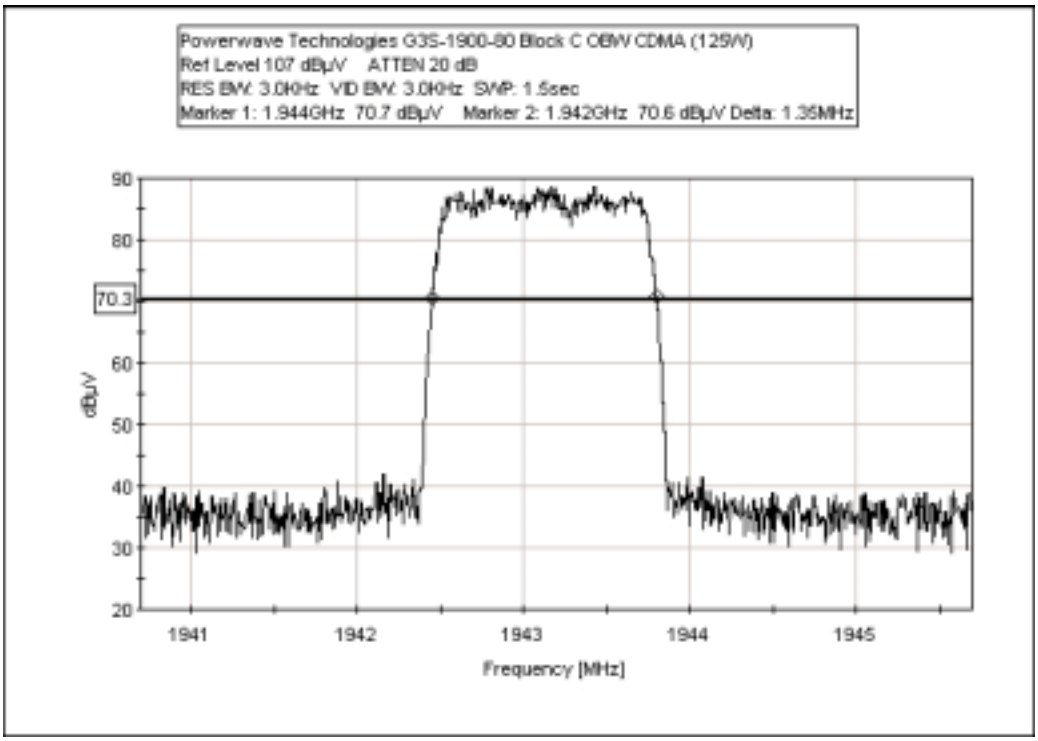

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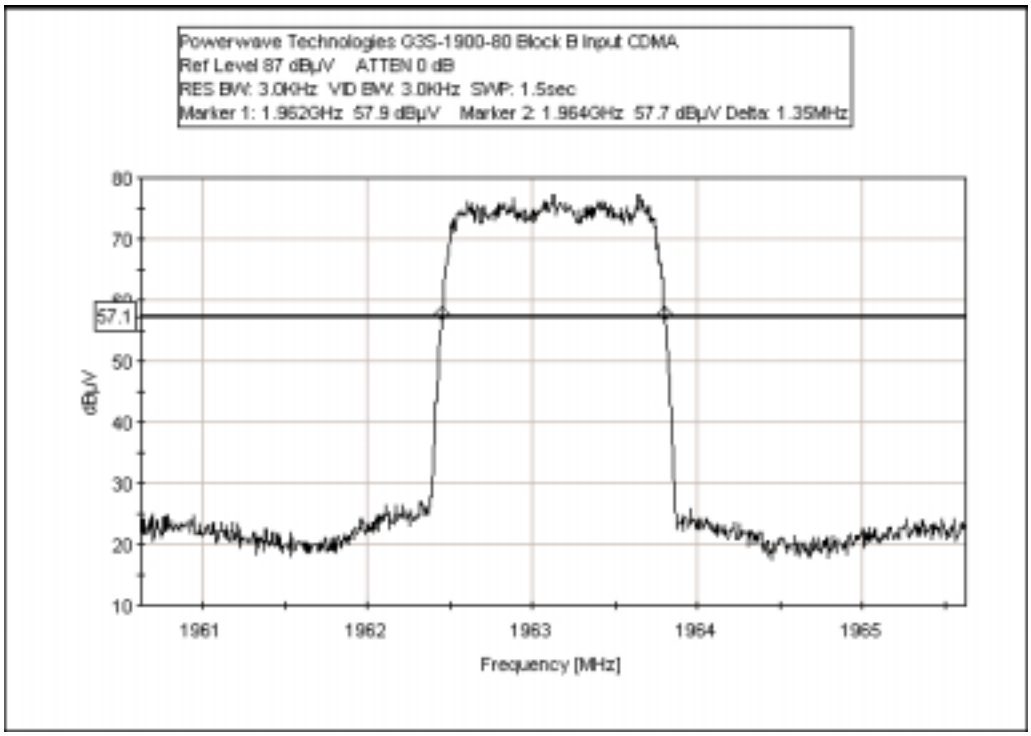

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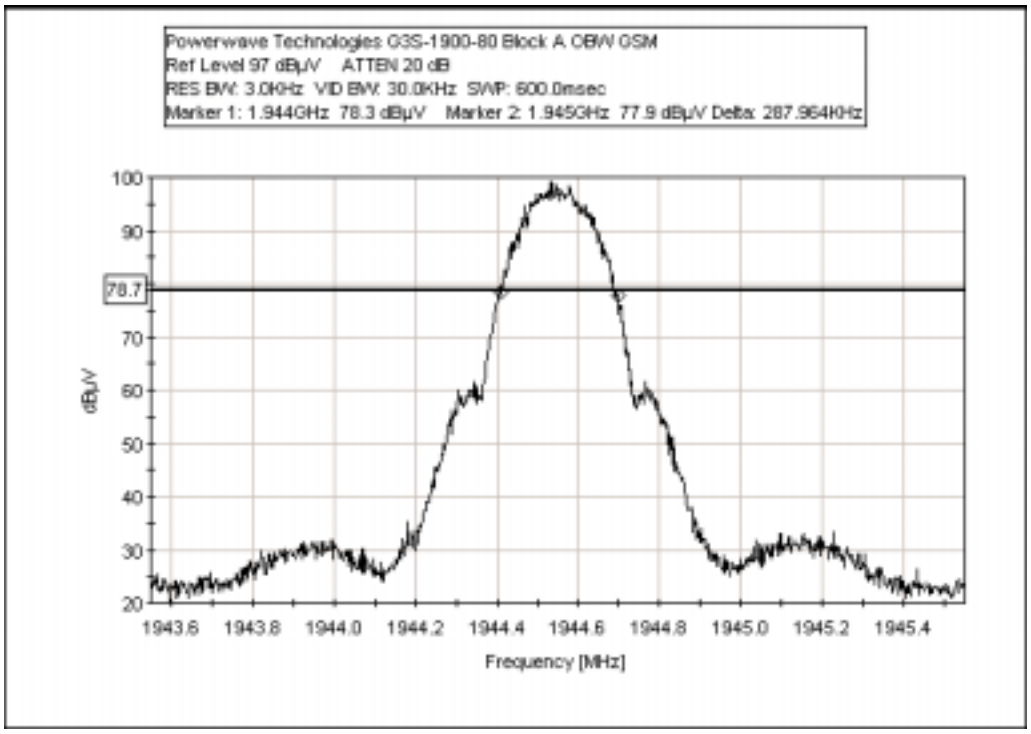

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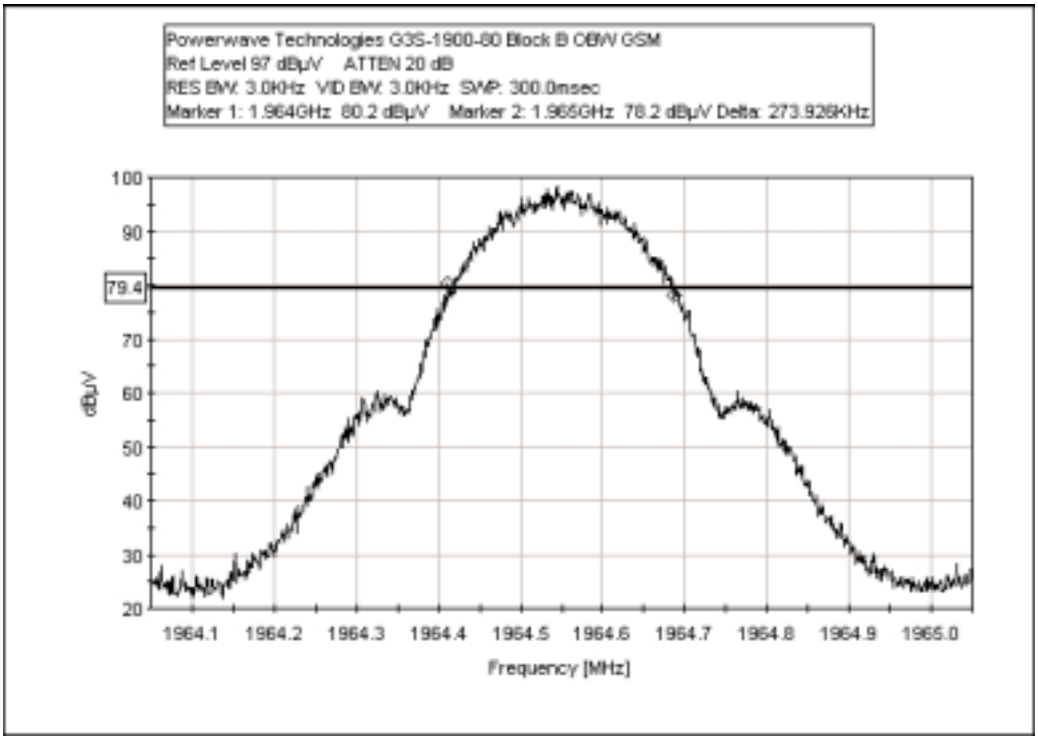

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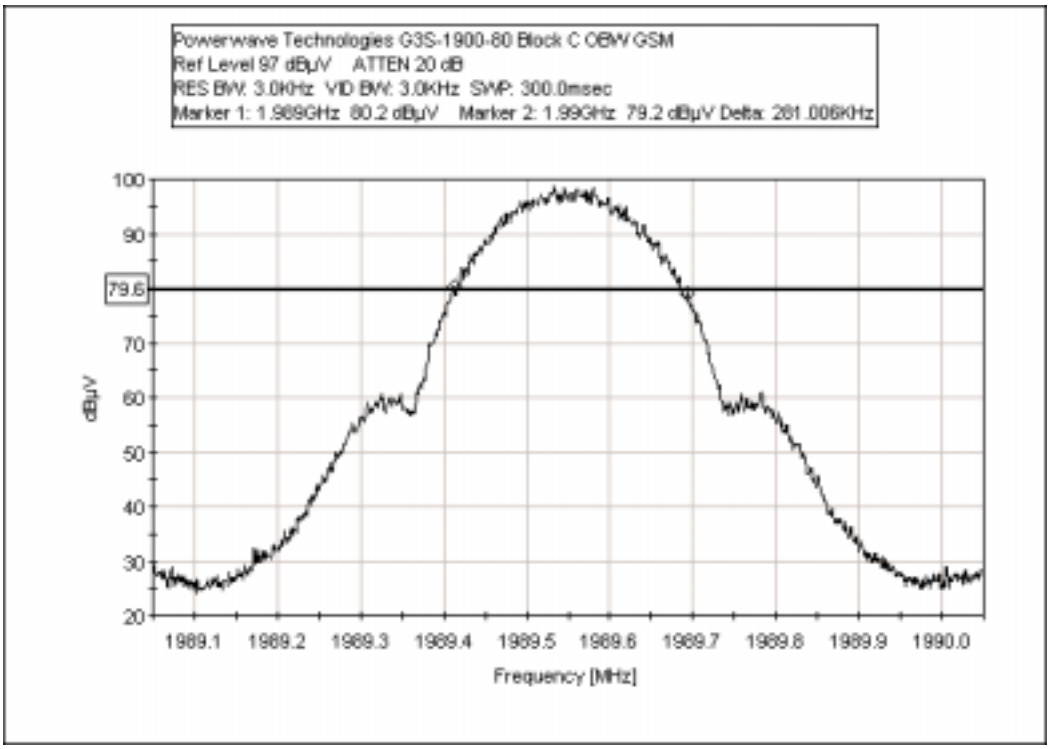

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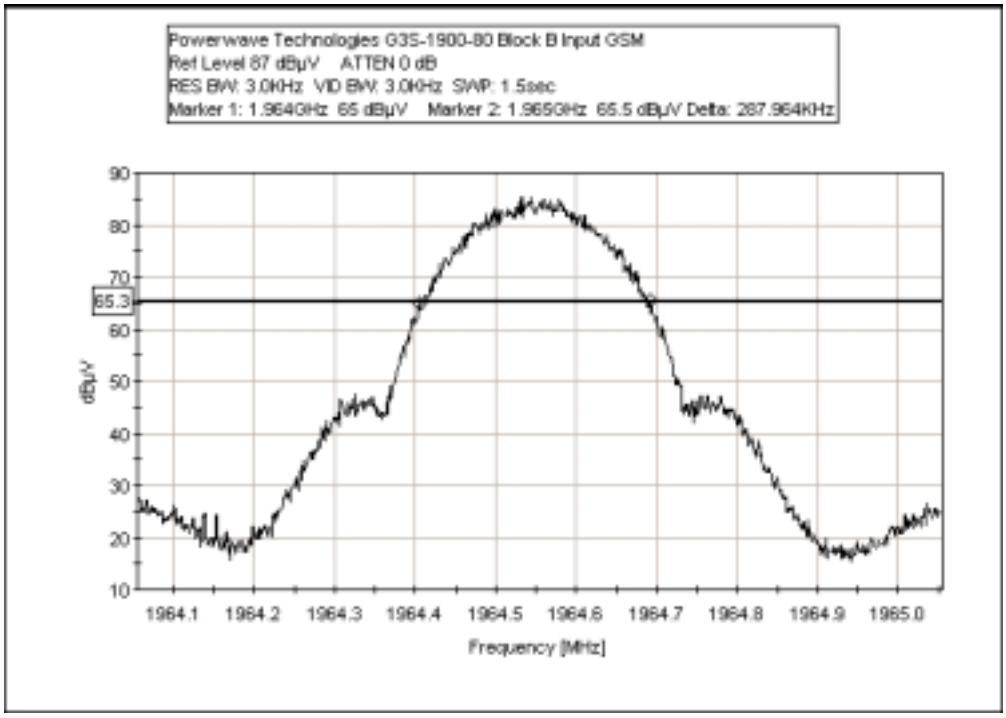

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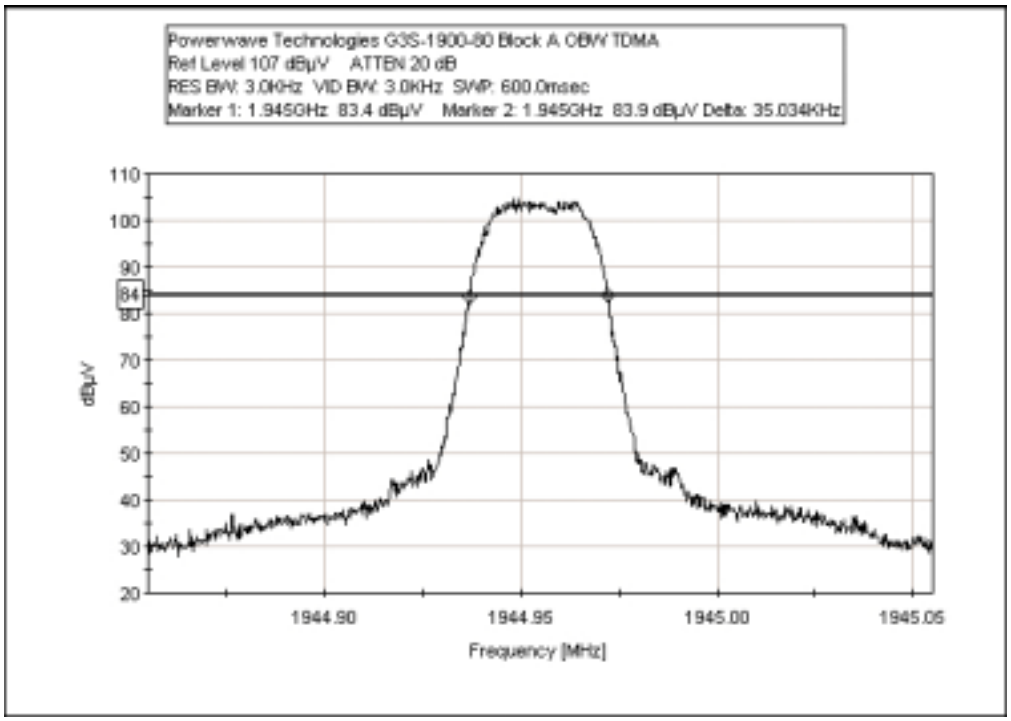

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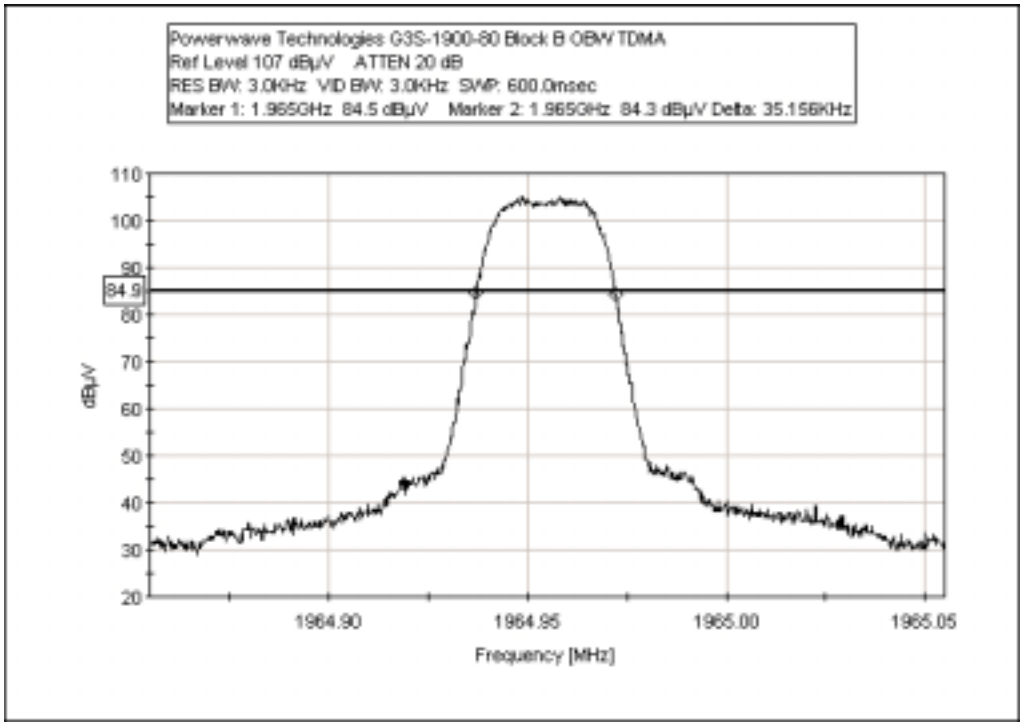

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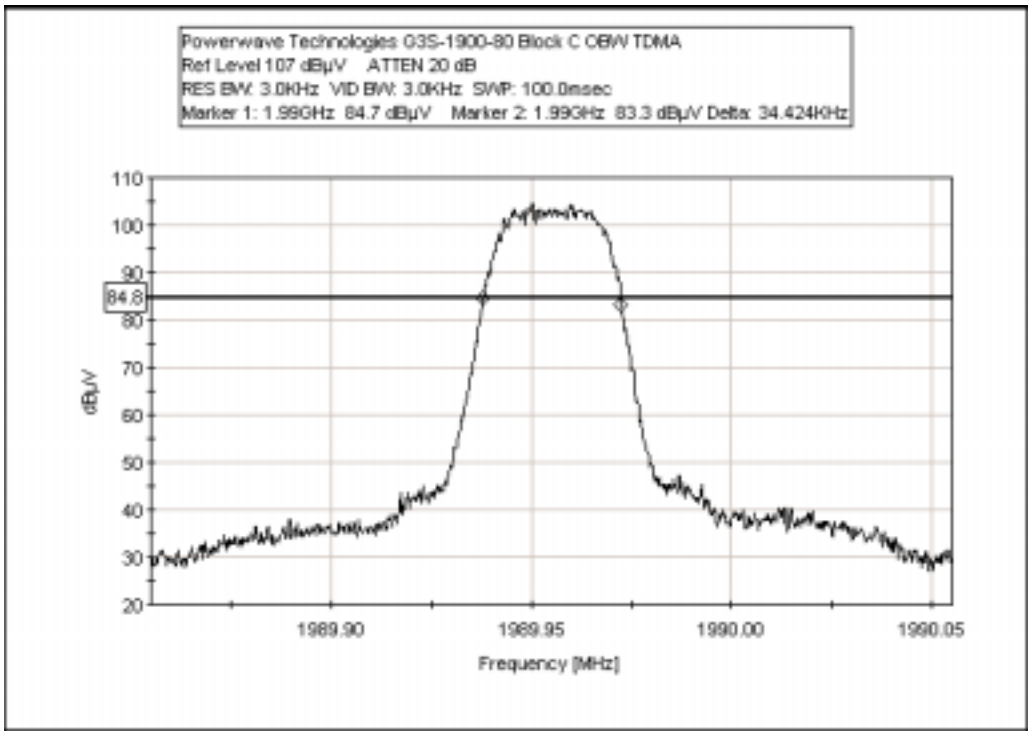

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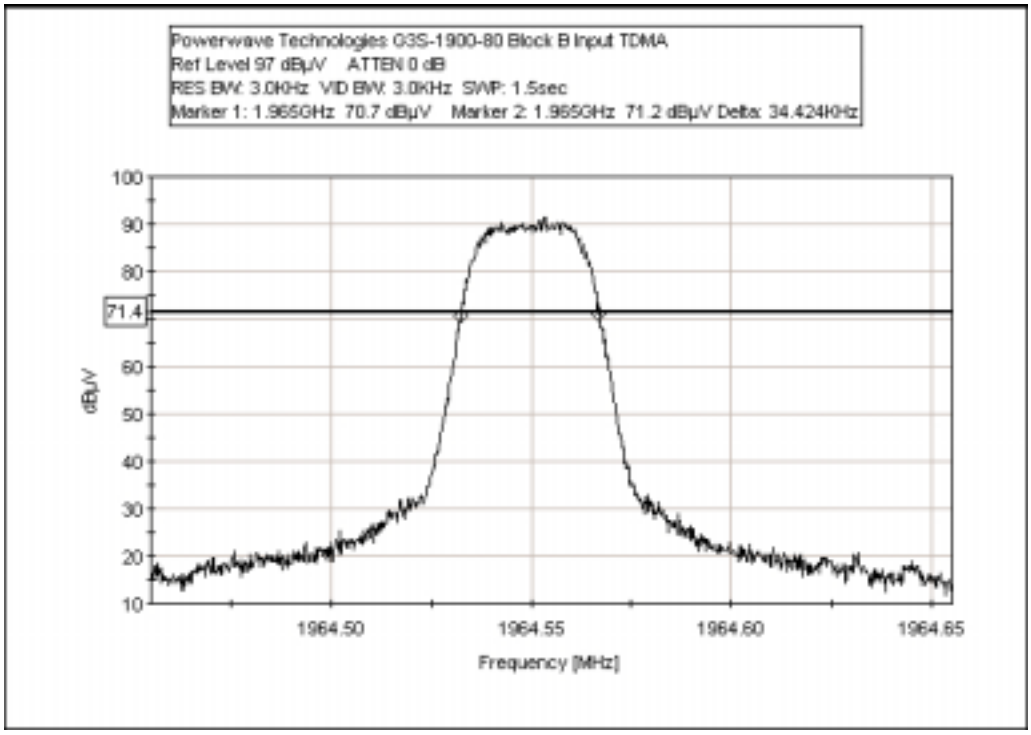

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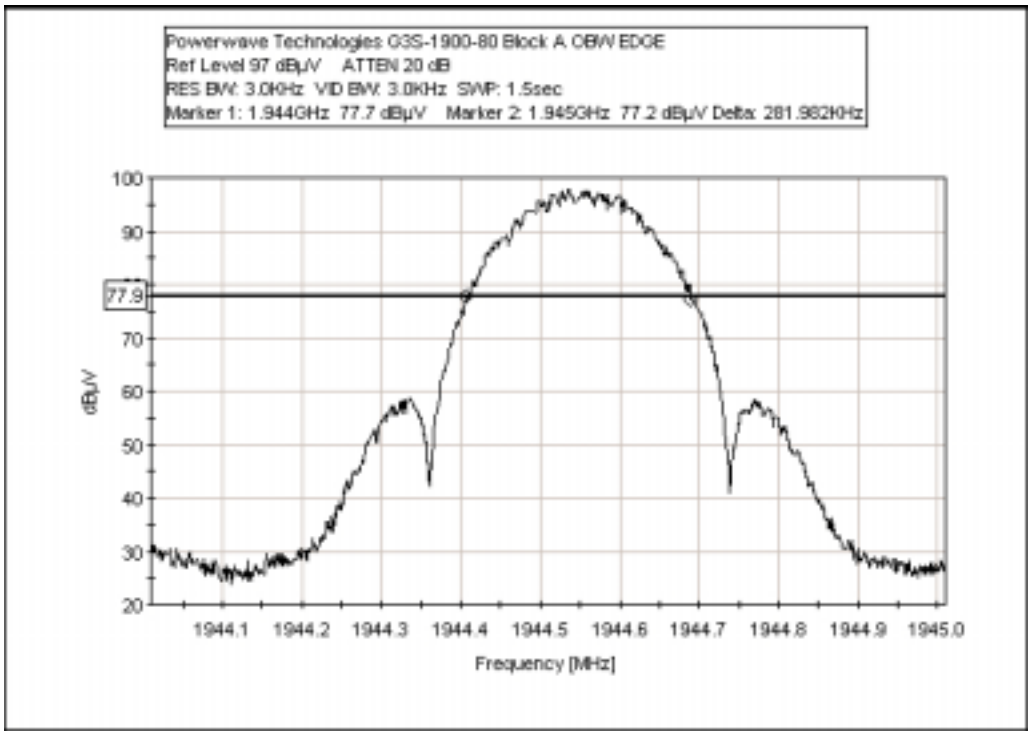

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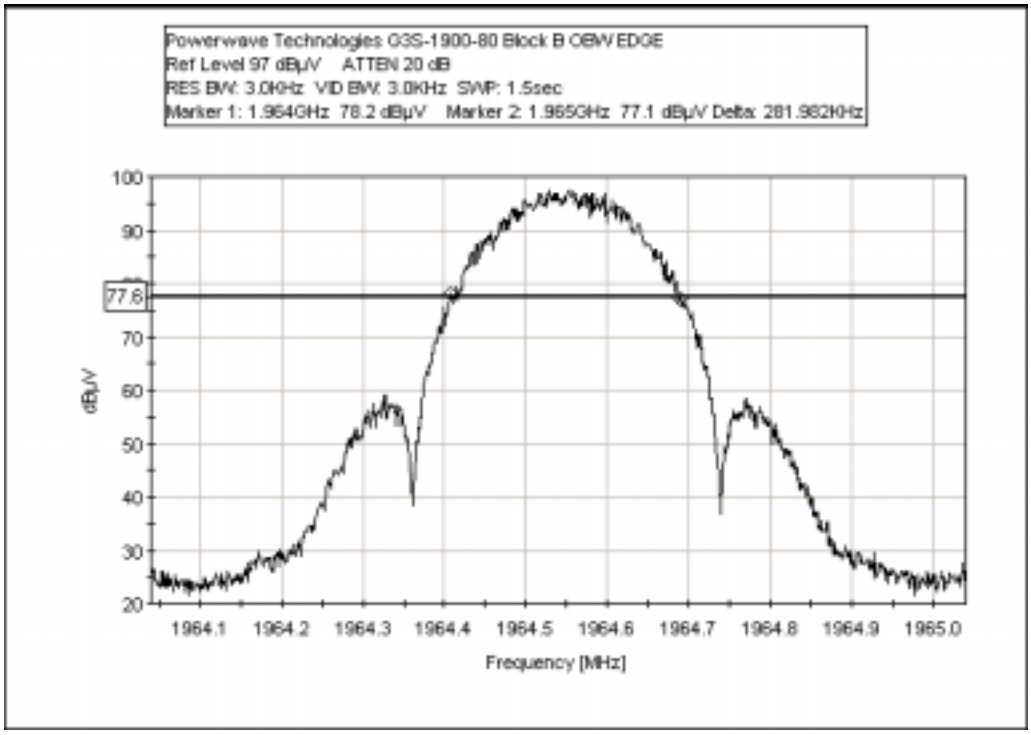

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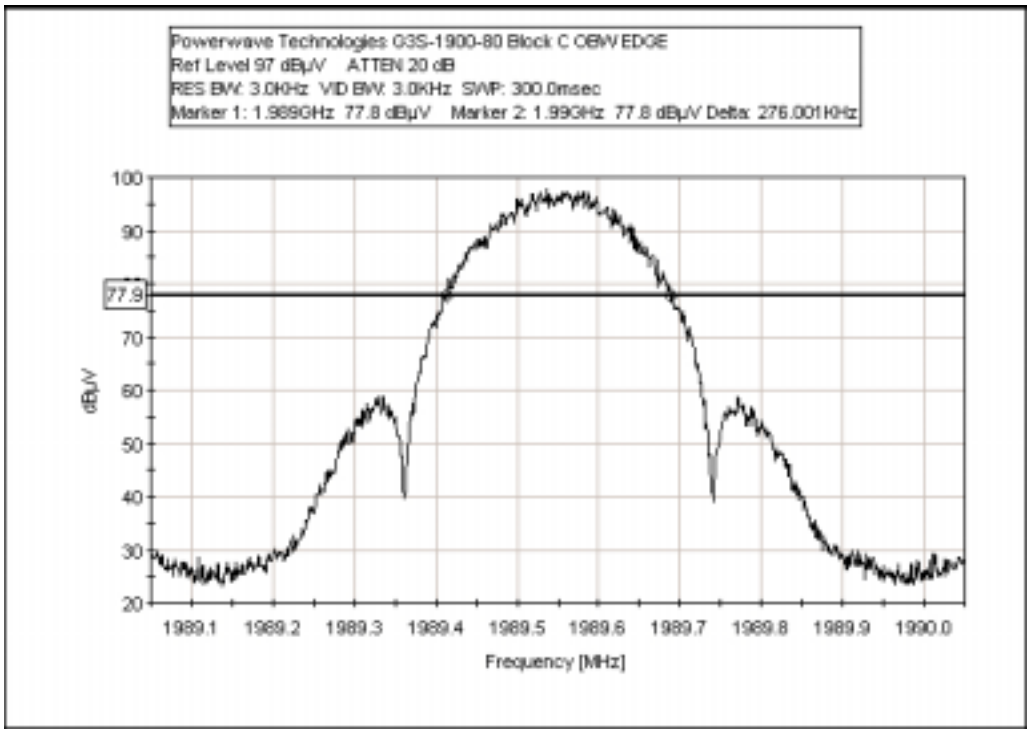

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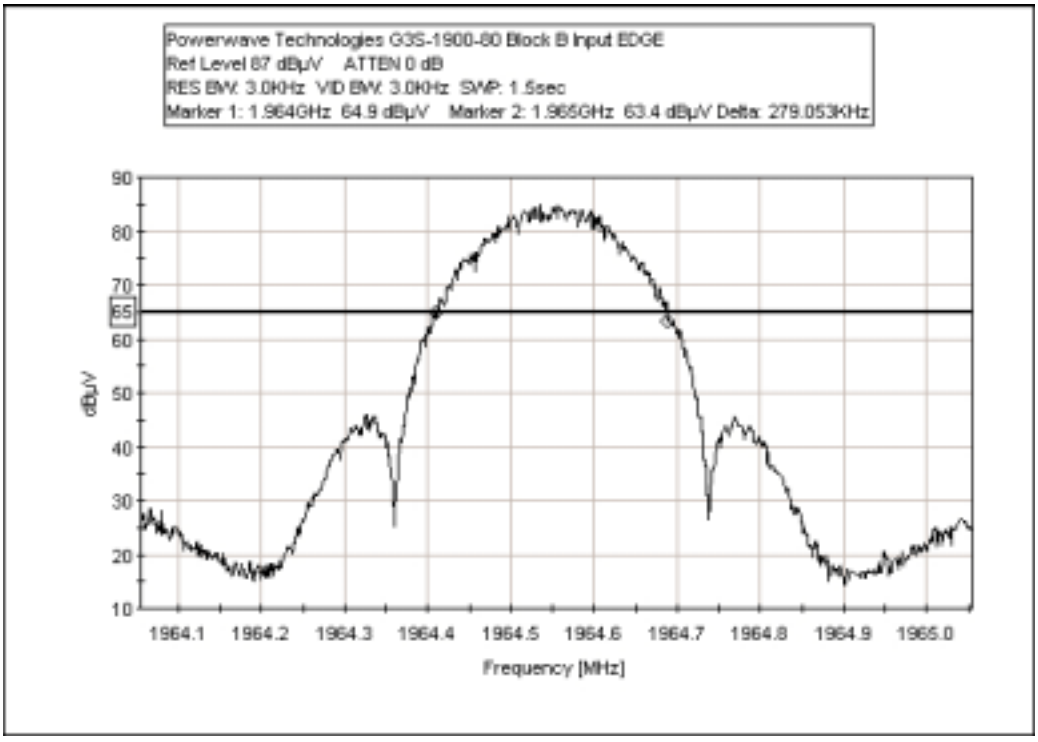

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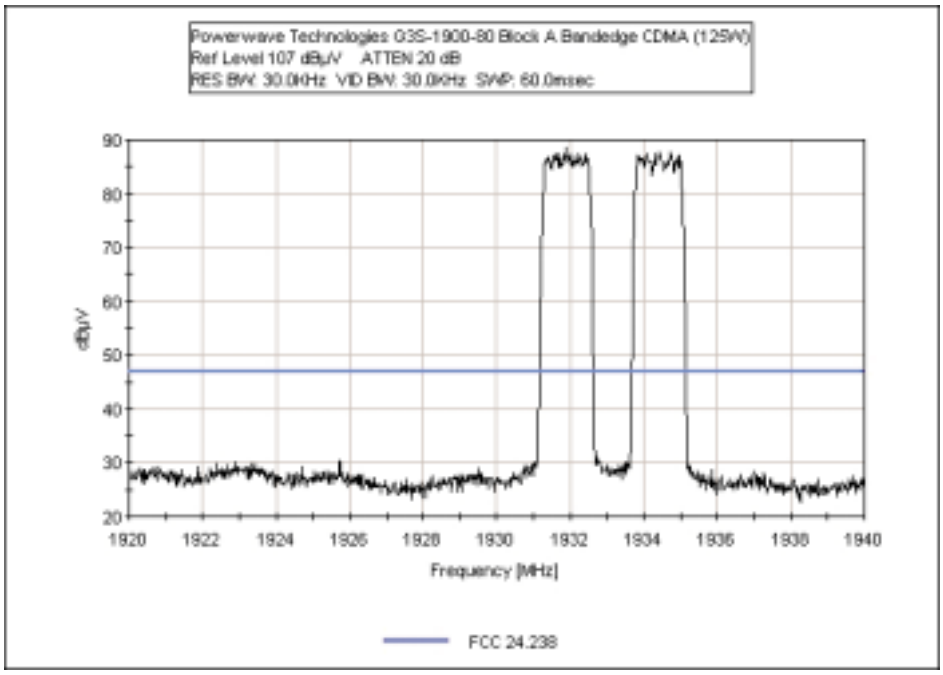
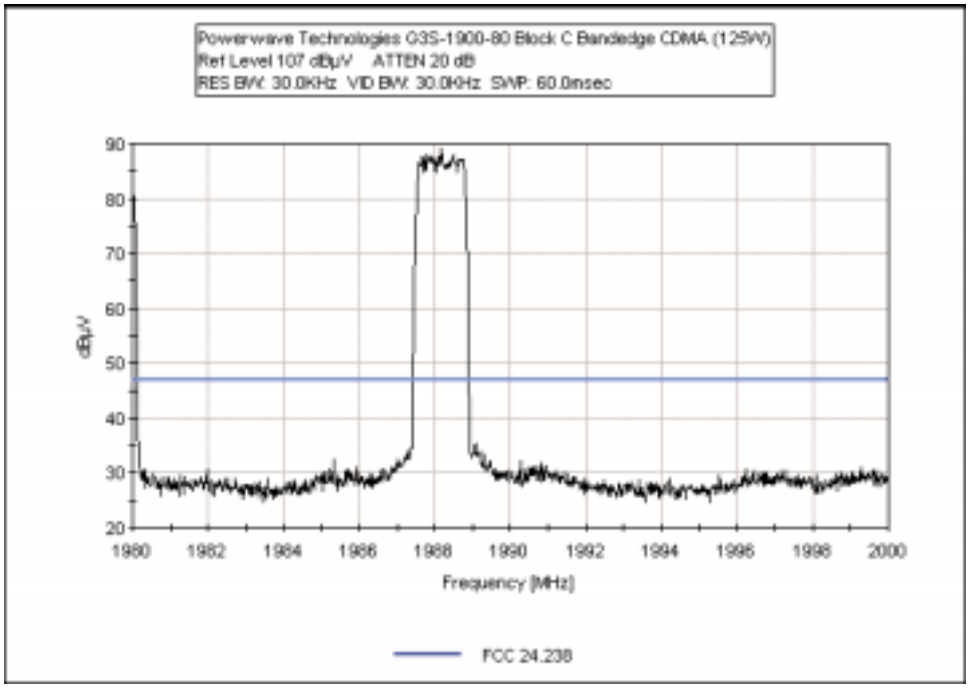


Block A CDMA Bandedge

Note: It was determined during testing that CDMA was worst case; therefore all spurious emissions testing was done using this mode.

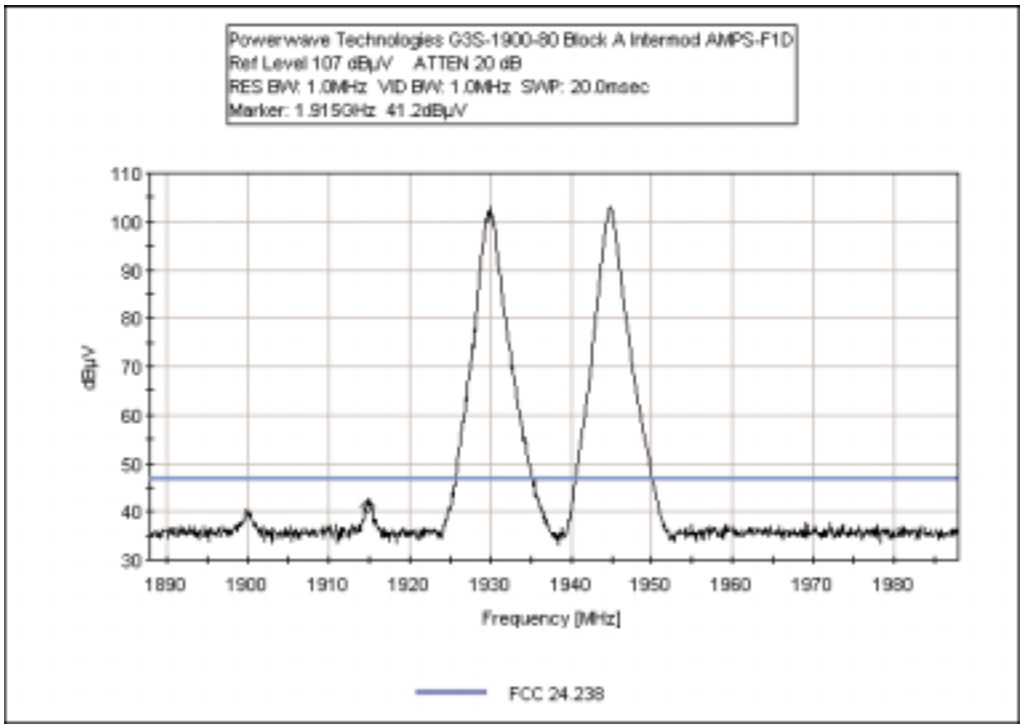


Block C CDMA Bandedge

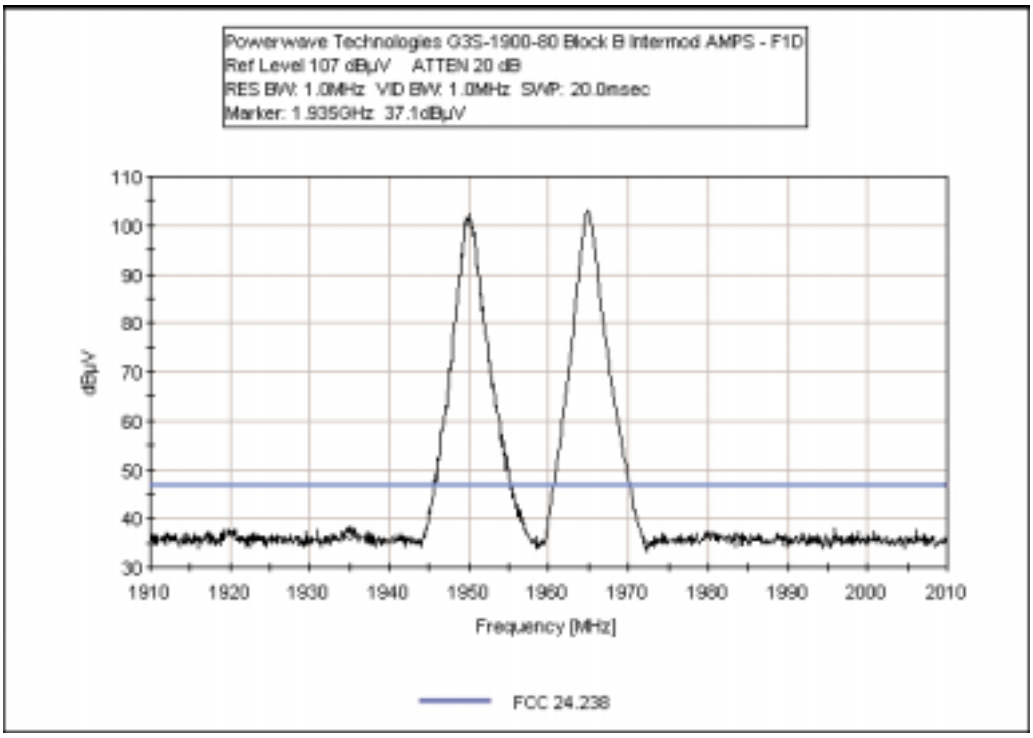
Direct Connect Test Setup

INTERMODULATION

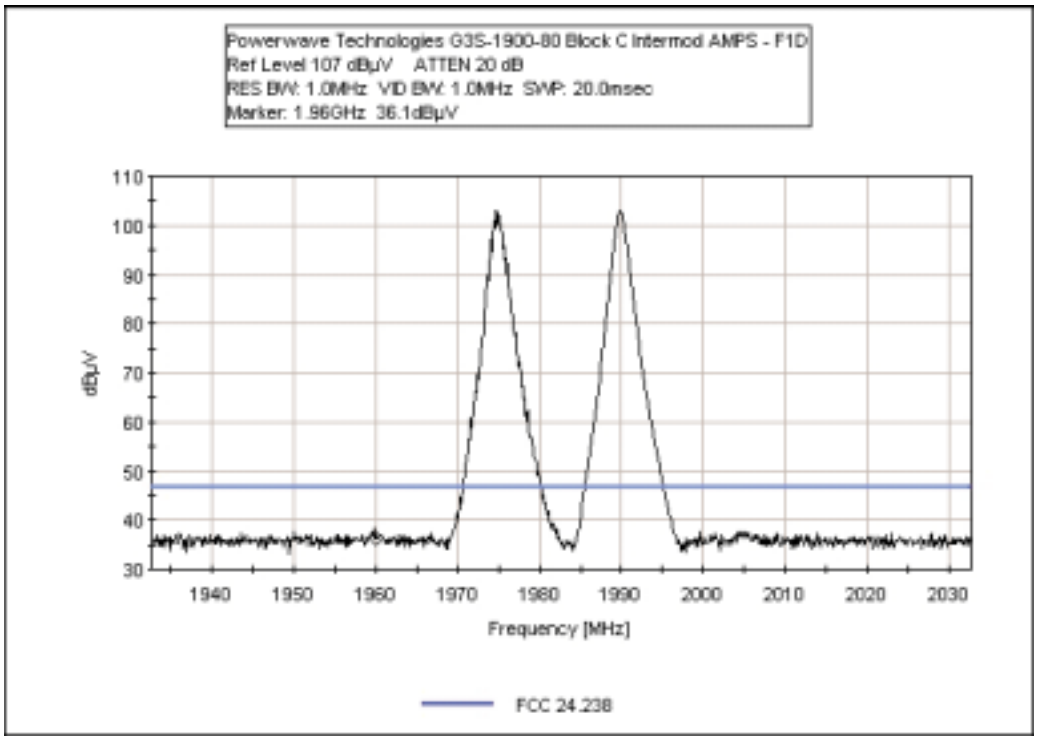
Test Conditions: Test performed using the three signal generator method. Data is taken in a 1MHz RBW using sample averaging with 100 samples. The display line is reverse mapped incorporating the correction factors of the high power attenuator and the directional coupler. All plots are taken in a 100MHz span. There are no intermodulation products outside of this range.



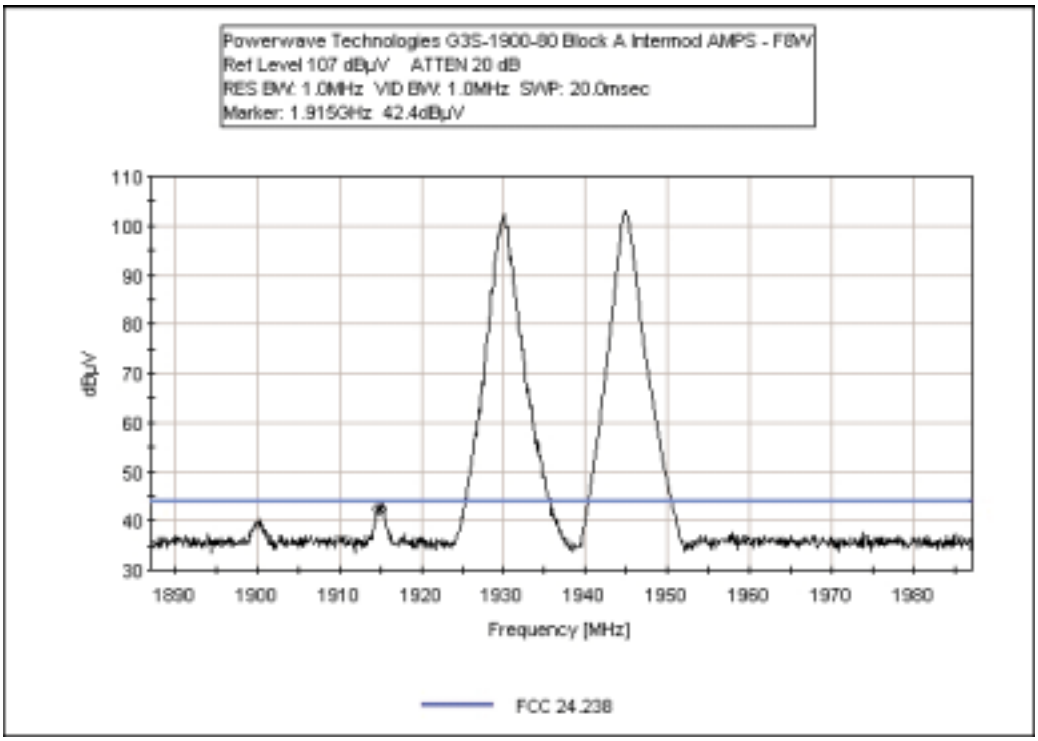
Block A AMPS-F1D Intermodulation



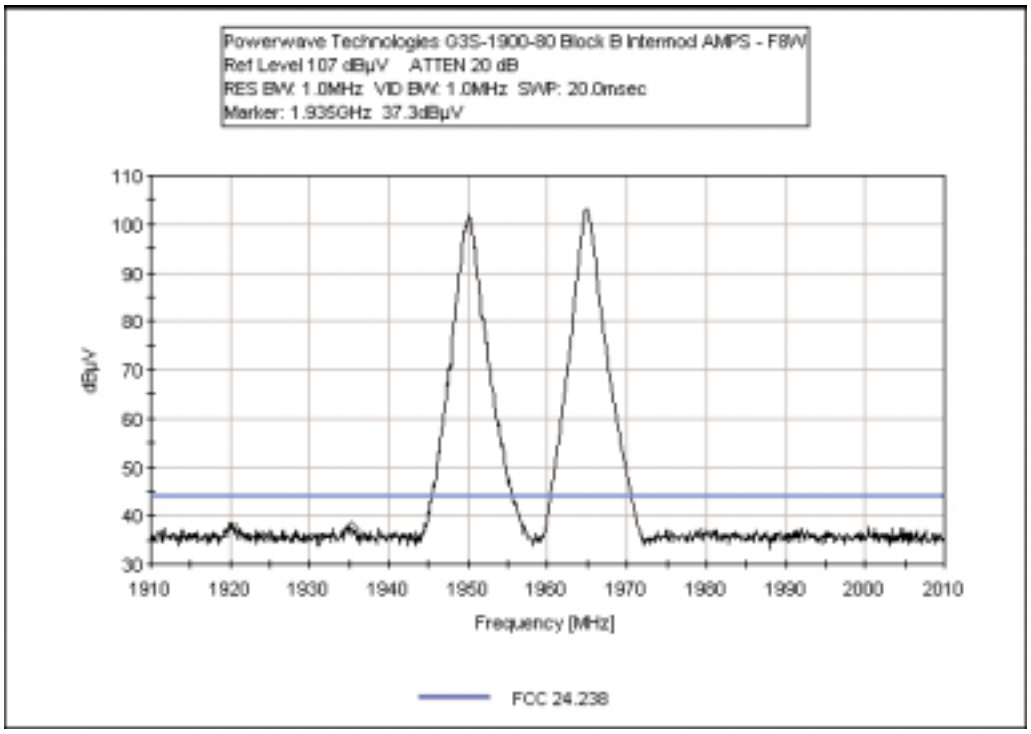
Block B AMPS-F1D Intermodulation



Block C AMPS-F1D Intermodulation



Block A AMPS-F8W Intermodulation



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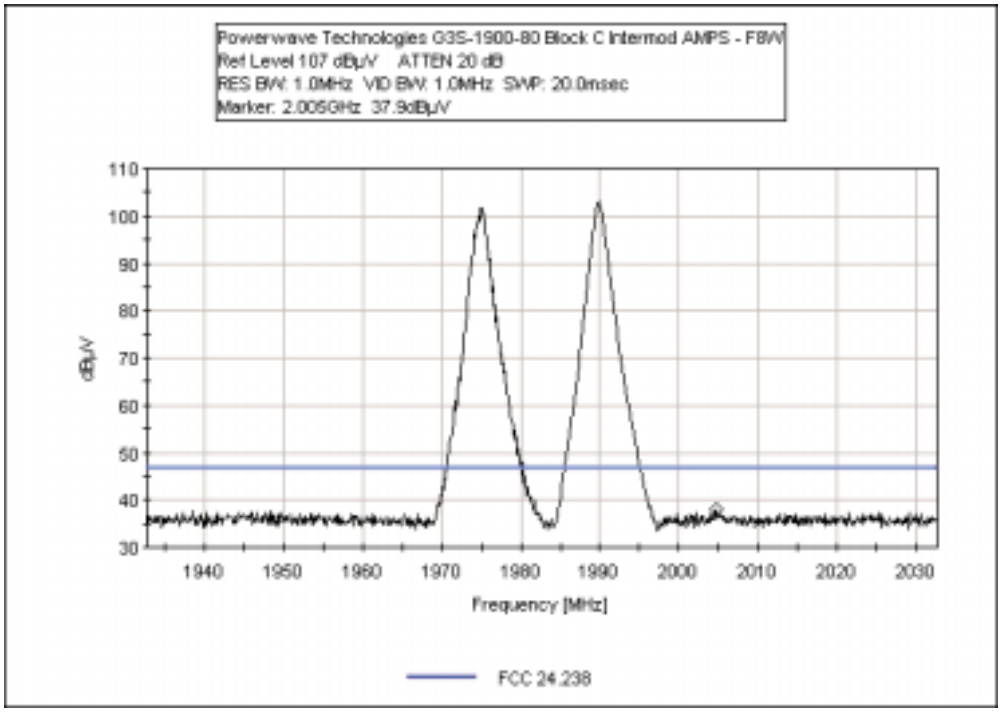

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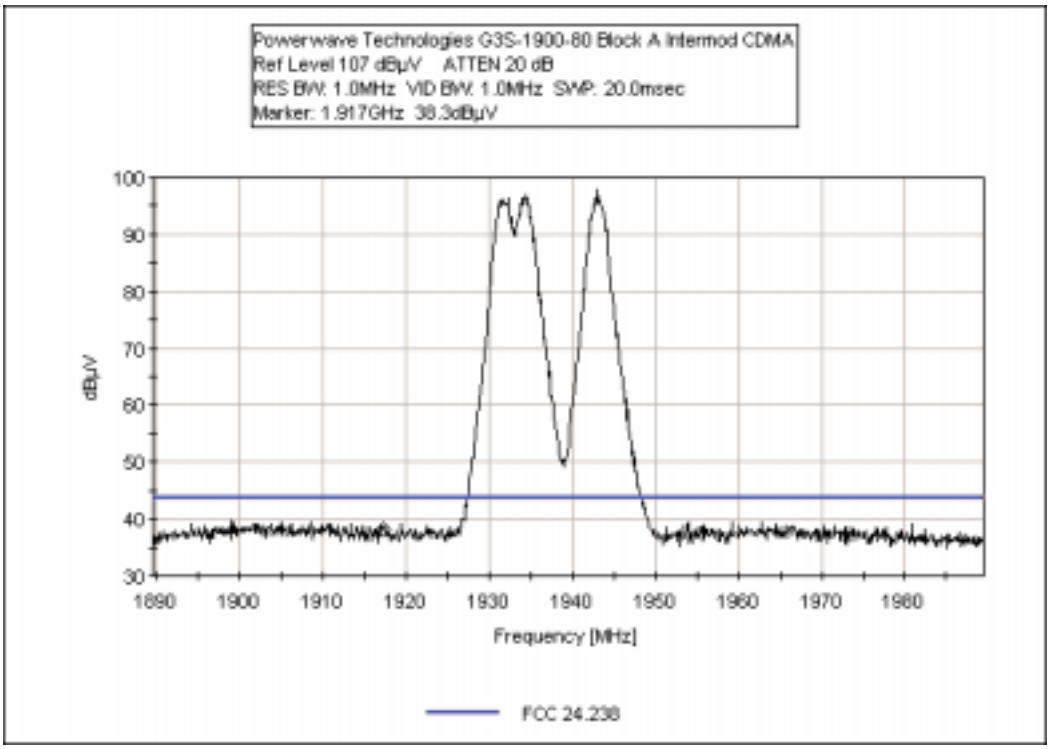
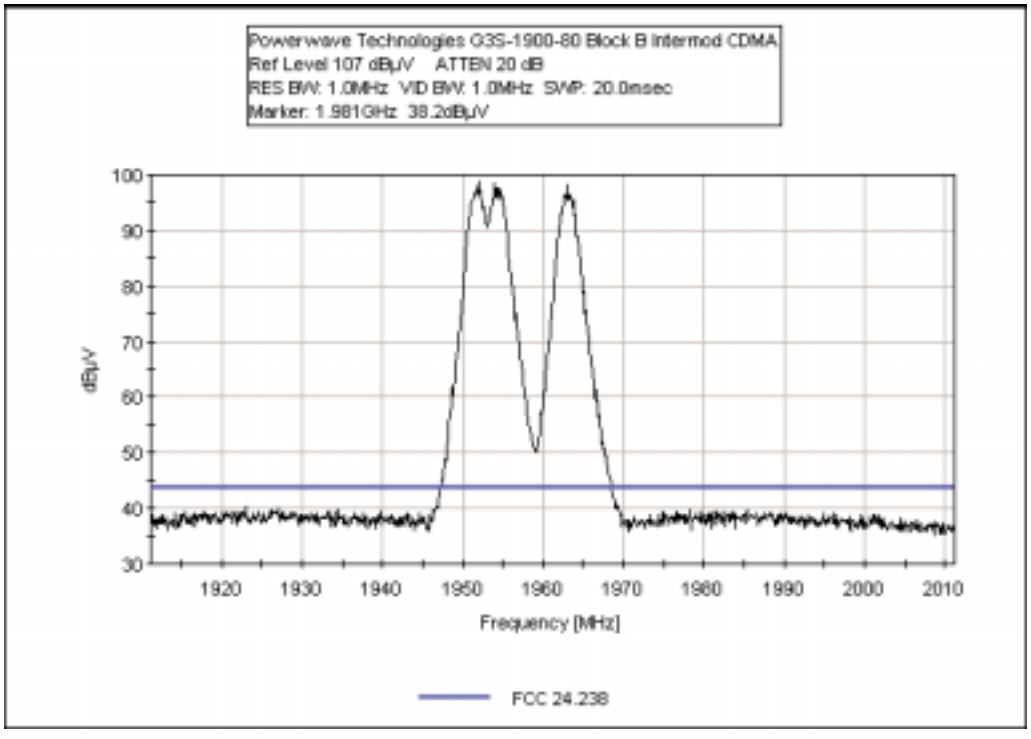


Block A CDMA Intermodulation



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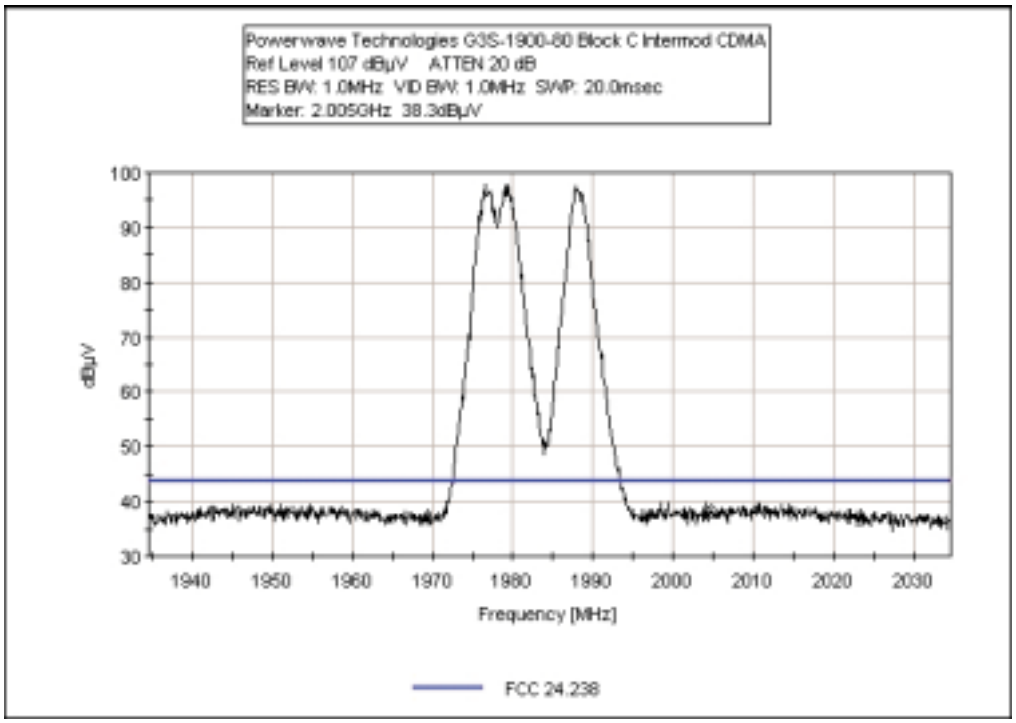
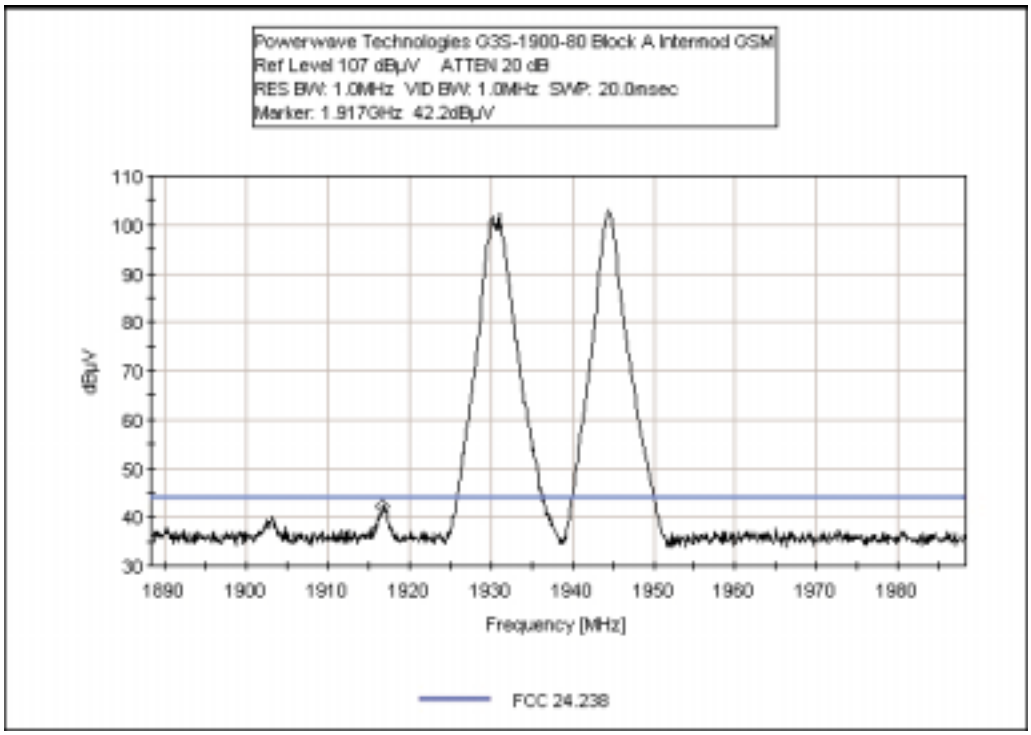
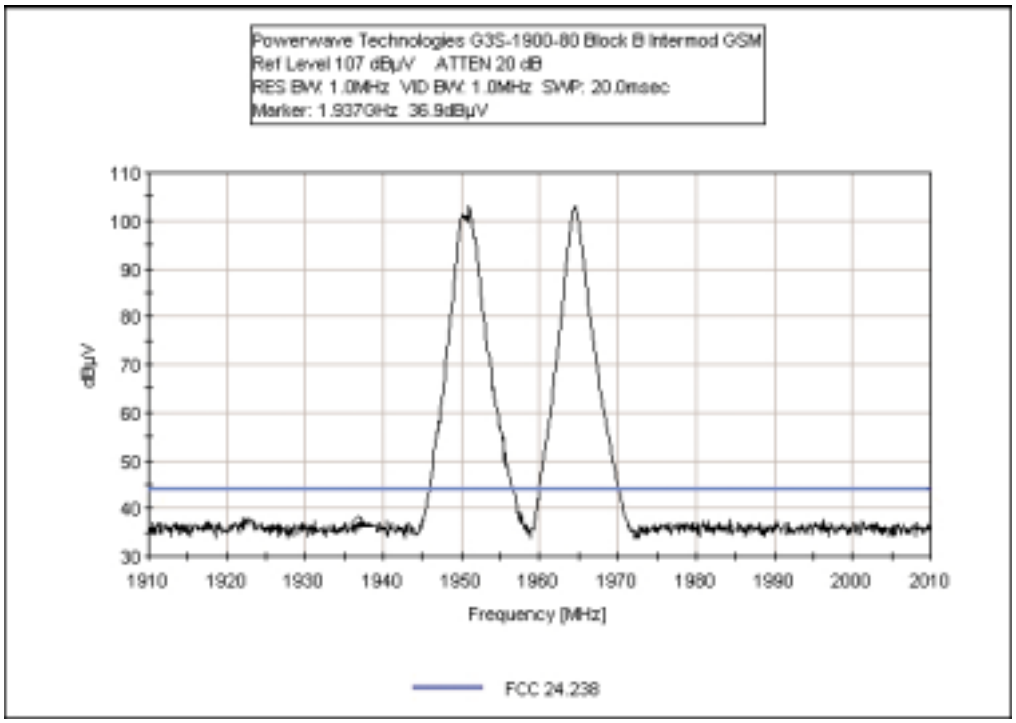


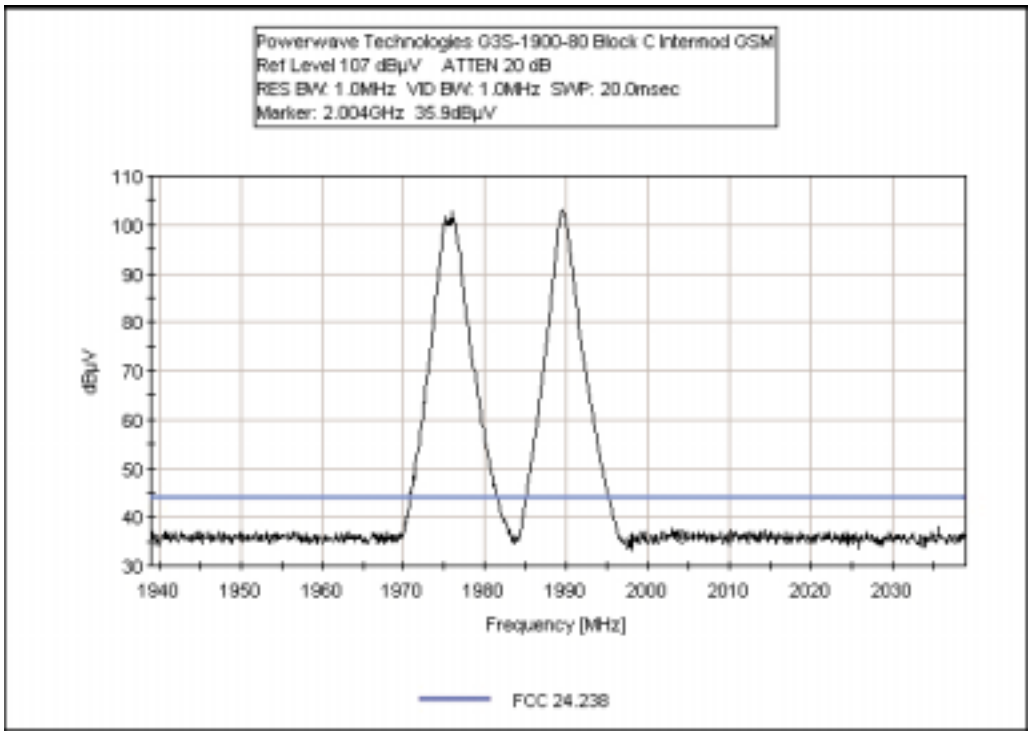
Block C CDMA Intermodulation



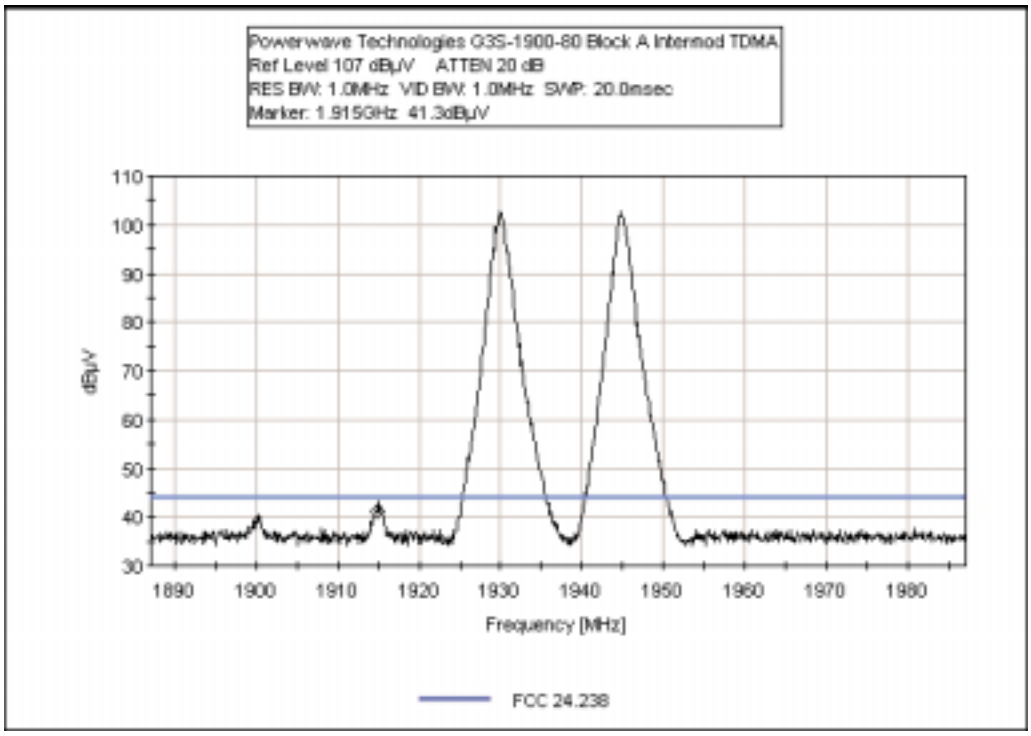
Block A GSM Intermodulation



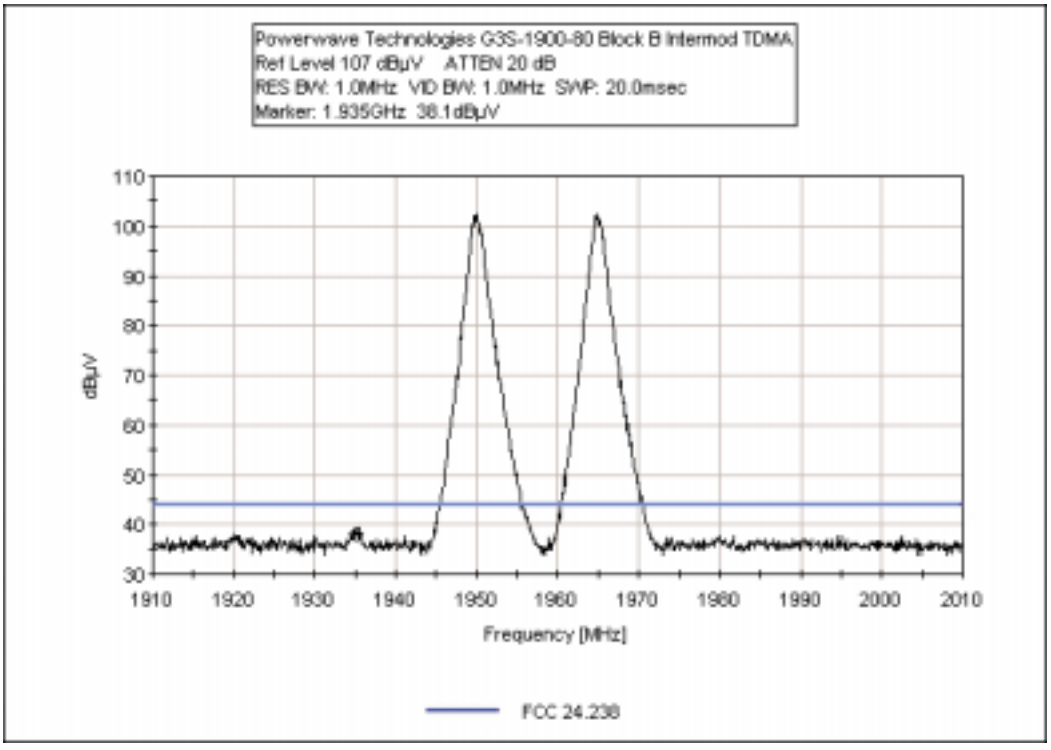
Block B GSM Intermodulation



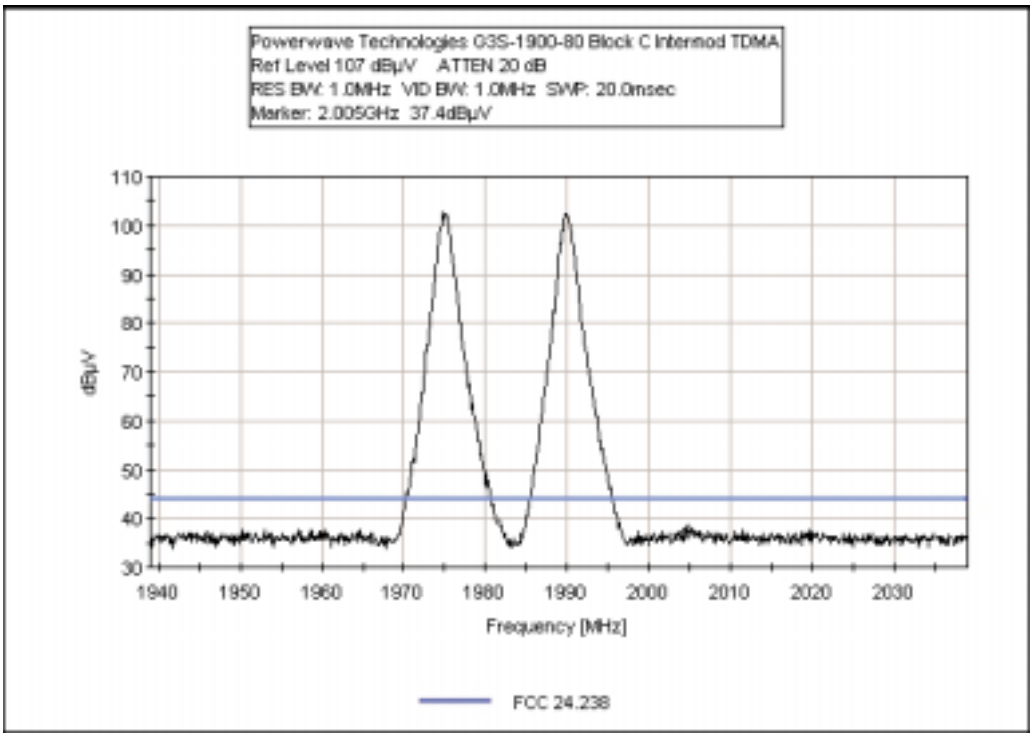
Block C GSM Intermodulation



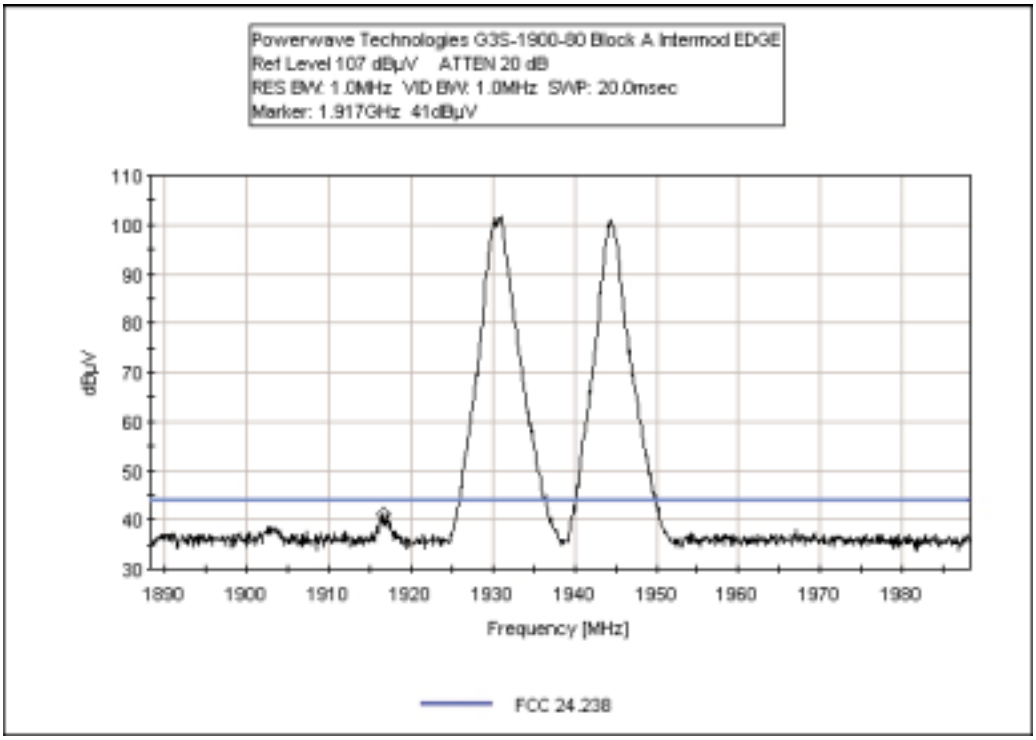
Block A TDMA Intermodulation



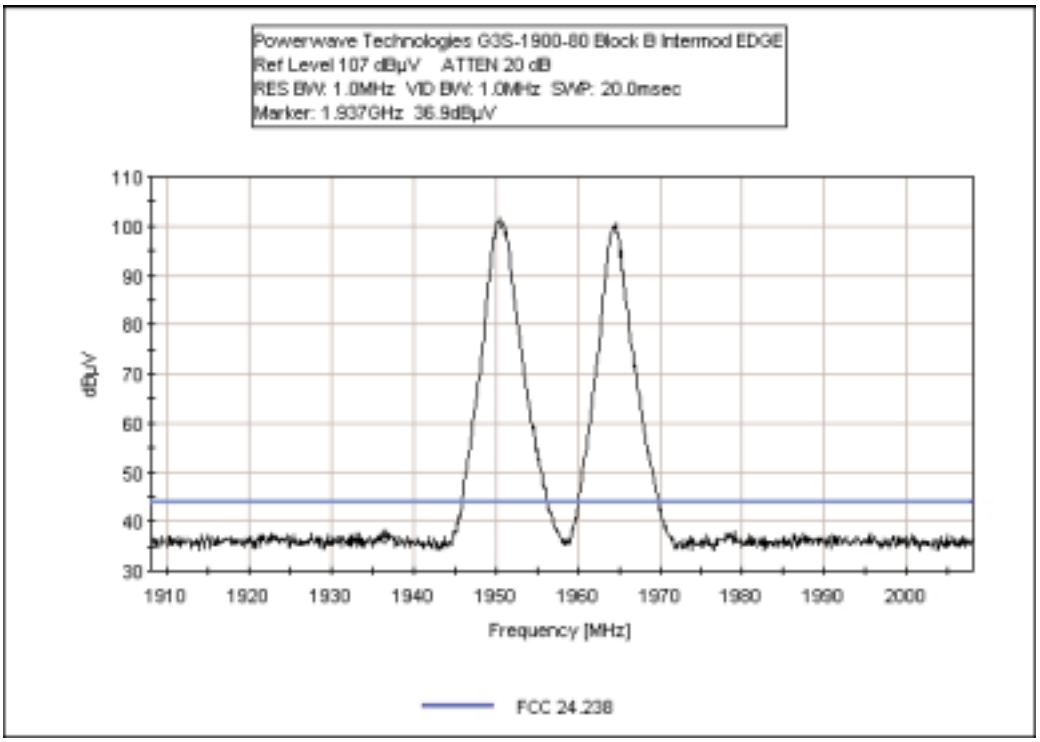
Block B TDMA Intermodulation



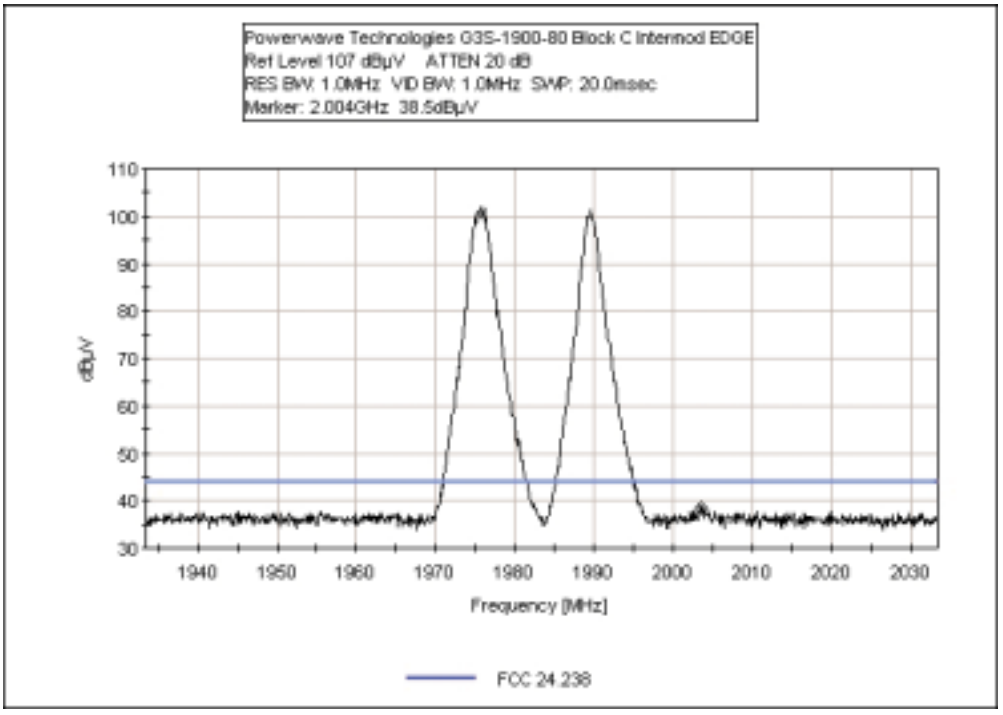
Block C TDMA Intermodulation



Block A EDGE Intermodulation



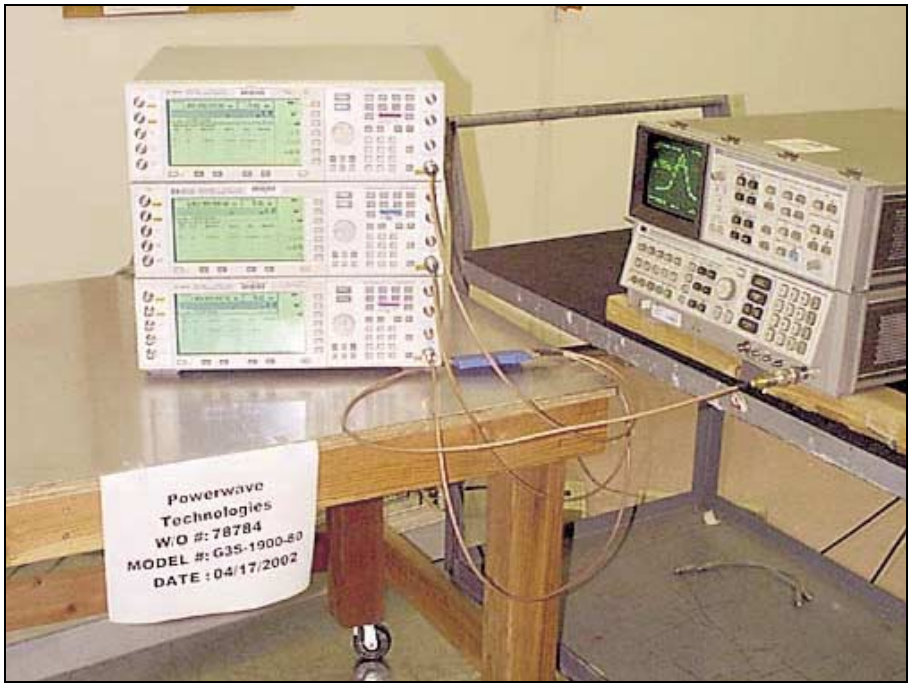
Block B EDGE Intermodulation



Block C EDGE Intermodulation

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
Directional Coupler		HP	86205A	3140A03083	NA	NA
Power Sensor		HP	8481A	US37298441	81501	81502
Power Meter		HP	E4418B	US39251104	41702	51702
Power Meter	00613	HP	435B	2702A16632	81001	81002
Power Sensor	00774	HP	8481A	2349A41124	81001	81002



Signal Generator Input Test Setup

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

Frequency	Channel Block	Power (dBm)	Limit (dBm)
2016.8	C	-15.6	-13
18648.4	C	-15.8	-13
104.5	B	-15.9	-13
18638.4	A	-16.1	-13
949.3	C	-16.1	-13
1000	C	-16.1	-13
1138.2	B	-16.1	-13
18775.5	B	-16.1	-13
70.8	A	-16.1	-13

The input frequencies chosen are as follows:
(Low) Block A: 1931.875, 1934.375 and 1943.125
(Mid) Block B: 1951.875, 1954.375 and 1963.125
(High) Block C: 1976.875, 1979.375 and 1988.125

Test Location:	CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112		
Customer:	**Powerwave Technologies**		
Specification:	**FCC 24.238**		
Work Order #:	**78784**	Date:	04/19/2002
Test Type:	**Radiated Scan**	Time:	11:29:36 AM
Equipment:	**Power amplifier**	Sequence#:	16
Manufacturer:	Powerwave Technologies	Tested By:	Randal Clark
Model:	G3S-1900-80		
S/N:	C00000P252		

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

Function	Manufacturer	Model #	S/N
Power amplifier*	Powerwave Technologies	G3S-1900-80	C00000P252

Support Devices:

Function	Manufacturer	Model #	S/N
Input Signal Generator	Agilent	E4433B	US40051593
Input Signal Generator	Agilent	E4433B	US40051146
Input Signal Generator	Agilent	E4433B	US40052095
High Power Attenuator	Weinschel Corp	53-20-34	LF243
Combiner/Splitter	Anaren	4-4000	9641
Power Supply	Sorensen	DCS40-75	9741098

Test Conditions / Notes:

EUT is a power amplifier located on an 80cm table. The support equipment is located adjacent to the EUT. EUT input frequencies are chosen such that the lowest, middle and highest blocks are used. Three input signals are combined and fed to the EUT such that the output of the amplifier is set to 125W. EUT output is terminated through a high power attenuator to a power meter. The input signals are CDMA, which represents the worst case for spurious emissions. The input frequencies chosen are as follows: (Low) Block A: 1931.875, 1934.375 and 1943.125. (Mid) Block B: 1951.875, 1954.375 and 1963.125. (High) Block C: 1976.875, 1979.375 and 1988.125. Frequency Range investigated: 10MHz - 1GHz. Input frequencies are in Block A (Low Channel). For measurements within 1MHz of the block edge a 30kHz RBW was used. For all other measurements, 1MHz RBW was used. An extra 10dB of internal attenuation used between 10MHz and 1.5GHz to avoid compression and overload conditions.

Transducer Legend:

T1=DC&ATT Assembly

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	70.802M	43.7	+47.2				+0.0	90.9	94.0	-3.1	None
2	1000.000M	43.7	+47.2				+0.0	90.9	94.0	-3.1	None
3	11.340M	43.6	+47.2				+0.0	90.8	94.0	-3.2	None
4	378.417M	43.3	+47.2				+0.0	90.5	94.0	-3.5	None
5	277.068M	43.2	+47.2				+0.0	90.4	94.0	-3.6	None

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC 24.238**
Work Order #: **78784** Date: 04/19/2002
Test Type: **Radiated Scan** Time: 11:08:16 AM
Equipment: **Power amplifier** Sequence#: 17
Manufacturer: Powerwave Technologies Tested By: Randal Clark
Model: G3S-1900-80
S/N: C00000P252

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

Function	Manufacturer	Model #	S/N
Power amplifier*	Powerwave Technologies	G3S-1900-80	C00000P252

Support Devices:

Function	Manufacturer	Model #	S/N
Input Signal Generator	Agilent	E4433B	US40051593
Input Signal Generator	Agilent	E4433B	US40051146
Input Signal Generator	Agilent	E4433B	US40052095
High Power Attenuator	Weinschel Corp	53-20-34	LF243
Combiner/Splitter	Anaren	4-4000	9641
Power Supply	Sorensen	DCS40-75	9741098

Test Conditions / Notes:

EUT is a power amplifier located on an 80cm table. The support equipment is located adjacent to the EUT. EUT input frequencies are chosen such that the lowest, middle and highest blocks are used. Three input signals are combined and fed to the EUT such that the output of the amplifier is set to 125W. EUT output is terminated through a high power attenuator to a power meter. The input signals are CDMA, which represents the worst case for spurious emissions. The input frequencies chosen are as follows: (Low) Block A: 1931.875, 1934.375 and 1943.125. (Mid) Block B: 1951.875, 1954.375 and 1963.125. (High) Block C: 1976.875, 1979.375 and 1988.125. Frequency Range investigated: 1 - 20GHz. Input frequencies are in Block A (Low Channel). For measurements within 1MHz of the block edge a 30kHz RBW was used. For all other measurements, 1MHz RBW was used. An extra 10dB of internal attenuation used between 10MHz and 1.5GHz to avoid compression and overload conditions.

Transducer Legend:

T1=DC&ATT Assembly

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	1932.732M	103.5	+47.2				+0.0	150.7	94.0	+56.7	None
									In Band Emissions		
2	1943.743M	103.4	+47.2				+0.0	150.6	94.0	+56.6	None
									In Band Emissions		
3	1934.734M	103.0	+47.2				+0.0	150.2	94.0	+56.2	None
									In Band Emissions		
4	1954.754M	62.2	+47.2				+0.0	109.4	94.0	+15.4	None
									In Band Emissions		
5	1961.761M	49.5	+47.2				+0.0	96.7	94.0	+2.7	None
									In Band Emissions		

6	18638.420M	43.7	+47.2		+0.0	90.9	94.0	-3.1	None
7	1060.200M	43.3	+47.2		+0.0	90.5	94.0	-3.5	None
8	19386.130M	42.8	+47.2		+0.0	90.0	94.0	-4.0	None
9	15196.980M	40.6	+47.2		+0.0	87.8	94.0	-6.2	None
10	17703.490M	40.2	+47.2		+0.0	87.4	94.0	-6.6	None
11	14197.990M	40.0	+47.2		+0.0	87.2	94.0	-6.8	None
12	13187.980M	39.9	+47.2		+0.0	87.1	94.0	-6.9	None
13	15470.260M	39.9	+47.2		+0.0	87.1	94.0	-6.9	None
14	16820.610M	39.9	+47.2		+0.0	87.1	94.0	-6.9	None
15	6519.314M	37.3	+47.2		+0.0	84.5	94.0	-9.5	None
16	7703.497M	37.2	+47.2		+0.0	84.4	94.0	-9.6	None
17	10959.750M	37.1	+47.2		+0.0	84.3	94.0	-9.7	None
18	8735.528M	37.0	+47.2		+0.0	84.2	94.0	-9.8	None
19	12142.930M	37.0	+47.2		+0.0	84.2	94.0	-9.8	None
20	6023.819M	36.9	+47.2		+0.0	84.1	94.0	-9.9	None
21	9518.311M	36.8	+47.2		+0.0	84.0	94.0	-10.0	None
22	3876.674M	36.6	+47.2		+0.0	83.8	94.0	-10.2	None
23	3868.666M	36.3	+47.2		+0.0	83.5	94.0	-10.5	None
24	3887.685M	36.0	+47.2		+0.0	83.2	94.0	-10.8	None
25	2367.166M	35.0	+47.2		+0.0	82.2	94.0	-11.8	None
26	4657.454M	34.0	+47.2		+0.0	81.2	94.0	-12.8	None

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC 24.238**
Work Order #: **78784** Date: 04/19/2002
Test Type: **Radiated Scan** Time: 11:20:33 AM
Equipment: **Power amplifier** Sequence#: 18
Manufacturer: Powerwave Technologies Tested By: Randal Clark
Model: G3S-1900-80
S/N: C00000P252

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

Function	Manufacturer	Model #	S/N
Power amplifier*	Powerwave Technologies	G3S-1900-80	C00000P252

Support Devices:

Function	Manufacturer	Model #	S/N
Input Signal Generator	Agilent	E4433B	US40051593
Input Signal Generator	Agilent	E4433B	US40051146
Input Signal Generator	Agilent	E4433B	US40052095
High Power Attenuator	Weinschel Corp	53-20-34	LF243
Combiner/Splitter	Anaren	4-4000	9641
Power Supply	Sorensen	DCS40-75	9741098

Test Conditions / Notes:

EUT is a power amplifier located on an 80cm table. The support equipment is located adjacent to the EUT. EUT input frequencies are chosen such that the lowest, middle and highest blocks are used. Three input signals are combined and fed to the EUT such that the output of the amplifier is set to 125W. EUT output is terminated through a high power attenuator to a power meter. The input signals are CDMA, which represents the worst case for spurious emissions. The input frequencies chosen are as follows: (Low) Block A: 1931.875, 1934.375 and 1943.125. (Mid) Block B: 1951.875, 1954.375 and 1963.125. (High) Block C: 1976.875, 1979.375 and 1988.125. Frequency Range investigated: 10 - 1000 MHz. Input frequencies are in Block B (Mid Channel). For measurements within 1MHz of the block edge a 30kHz RBW was used. For all other measurements, 1MHz RBW was used. An extra 10dB of internal attenuation used between 10MHz and 1.5GHz to avoid compression and overload conditions.

Transducer Legend:

T1=DC&ATT Assembly

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	104.540M	43.9	+47.2				+0.0	91.1	94.0	-2.9	None
2	333.293M	43.2	+47.2				+0.0	90.4	94.0	-3.6	None
3	18.540M	43.0	+47.2				+0.0	90.2	94.0	-3.8	None
4	83.520M	43.0	+47.2				+0.0	90.2	94.0	-3.8	None
5	1000.000M	42.8	+47.2				+0.0	90.0	94.0	-4.0	None

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC 24.238**
Work Order #: **78784** Date: 04/19/2002
Test Type: **Radiated Scan** Time: 11:34:45 AM
Equipment: **Power amplifier** Sequence#: 19
Manufacturer: Powerwave Technologies Tested By: Randal Clark
Model: G3S-1900-80
S/N: C00000P252

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

Function	Manufacturer	Model #	S/N
Power amplifier*	Powerwave Technologies	G3S-1900-80	C00000P252

Support Devices:

Function	Manufacturer	Model #	S/N
Input Signal Generator	Agilent	E4433B	US40051593
Input Signal Generator	Agilent	E4433B	US40051146
Input Signal Generator	Agilent	E4433B	US40052095
High Power Attenuator	Weinschel Corp	53-20-34	LF243
Combiner/Splitter	Anaren	4-4000	9641
Power Supply	Sorensen	DCS40-75	9741098

Test Conditions / Notes:

EUT is a power amplifier located on an 80cm table. The support equipment is located adjacent to the EUT. EUT input frequencies are chosen such that the lowest, middle and highest blocks are used. Three input signals are combined and fed to the EUT such that the output of the amplifier is set to 125W. EUT output is terminated through a high power attenuator to a power meter. The input signals are CDMA, which represents the worst case for spurious emissions. The input frequencies chosen are as follows: (Low) Block A: 1931.875, 1934.375 and 1943.125. (Mid) Block B: 1951.875, 1954.375 and 1963.125. (High) Block C: 1976.875, 1979.375 and 1988.125. Frequency Range investigated: 1 - 20 GHz. Input frequencies are in Block B (Mid Channel). For measurements within 1MHz of the block edge a 30kHz RBW was used. For all other measurements, 1MHz RBW was used. An extra 10dB of internal attenuation used between 10MHz and 1.5GHz to avoid compression and overload conditions.

Transducer Legend:

T1=DC&ATT Assembly

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	1954.754M	103.2	+47.2				+0.0	150.4	94.0	+56.4	None
									Inband Emissions		
2	1963.763M	103.0	+47.2				+0.0	150.2	94.0	+56.2	None
									Inband Emissions		
3	1943.743M	69.4	+47.2				+0.0	116.6	94.0	+22.6	None
									Inband Emissions		
4	1974.774M	66.1	+47.2				+0.0	113.3	94.0	+19.3	None
									Inband Emissions		
5	1971.771M	65.1	+47.2				+0.0	112.3	94.0	+18.3	None
									Inband Emissions		

6	1932.732M	52.0	+47.2	+0.0	99.2	94.0 Inband Emissions	+5.2	None
7	1982.782M	51.7	+47.2	+0.0	98.9	94.0 Inband Emissions	+4.9	None
8	1183.200M	43.7	+47.2	+0.0	90.9	94.0	-3.1	None
9	18775.560M	43.7	+47.2	+0.0	90.9	94.0	-3.1	None
10	19452.600M	43.0	+47.2	+0.0	90.2	94.0	-3.8	None
11	17532.320M	40.6	+47.2	+0.0	87.8	94.0	-6.2	None
12	16703.490M	40.4	+47.2	+0.0	87.6	94.0	-6.4	None
13	15451.240M	40.2	+47.2	+0.0	87.4	94.0	-6.6	None
14	14174.960M	40.0	+47.2	+0.0	87.2	94.0	-6.8	None
15	14933.720M	40.0	+47.2	+0.0	87.2	94.0	-6.8	None
16	13111.900M	39.8	+47.2	+0.0	87.0	94.0	-7.0	None
17	7266.060M	37.6	+47.2	+0.0	84.8	94.0	-9.2	None
18	3915.713M	37.5	+47.2	+0.0	84.7	94.0	-9.3	None
19	3904.702M	37.3	+47.2	+0.0	84.5	94.0	-9.5	None
20	6047.843M	37.2	+47.2	+0.0	84.4	94.0	-9.6	None
21	6336.131M	37.2	+47.2	+0.0	84.4	94.0	-9.6	None
22	10648.440M	37.2	+47.2	+0.0	84.4	94.0	-9.6	None
23	11725.510M	37.1	+47.2	+0.0	84.3	94.0	-9.7	None
24	9868.660M	37.0	+47.2	+0.0	84.2	94.0	-9.8	None
25	8559.353M	36.9	+47.2	+0.0	84.1	94.0	-9.9	None
26	2391.190M	34.7	+47.2	+0.0	81.9	94.0	-12.1	None
27	4277.074M	34.5	+47.2	+0.0	81.7	94.0	-12.3	None

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC 24.238**
Work Order #: **78784** Date: 04/19/2002
Test Type: **Radiated Scan** Time: 11:45:35 AM
Equipment: **Power amplifier** Sequence#: 20
Manufacturer: Powerwave Technologies Tested By: Randal Clark
Model: G3S-1900-80
S/N: C00000P252

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

Function	Manufacturer	Model #	S/N
Power amplifier*	Powerwave Technologies	G3S-1900-80	C00000P252

Support Devices:

Function	Manufacturer	Model #	S/N
Input Signal Generator	Agilent	E4433B	US40051593
Input Signal Generator	Agilent	E4433B	US40051146
Input Signal Generator	Agilent	E4433B	US40052095
High Power Attenuator	Weinschel Corp	53-20-34	LF243
Combiner/Splitter	Anaren	4-4000	9641
Power Supply	Sorensen	DCS40-75	9741098

Test Conditions / Notes:

EUT is a power amplifier located on an 80cm table. The support equipment is located adjacent to the EUT. EUT input frequencies are chosen such that the lowest, middle and highest blocks are used. Three input signals are combined and fed to the EUT such that the output of the amplifier is set to 125W. EUT output is terminated through a high power attenuator to a power meter. The input signals are CDMA, which represents the worst case for spurious emissions. The input frequencies chosen are as follows: (Low) Block A: 1931.875, 1934.375 and 1943.125. (Mid) Block B: 1951.875, 1954.375 and 1963.125. (High) Block C: 1976.875, 1979.375 and 1988.125. Frequency Range investigated: 10 - 1000 MHz. Input frequencies are in Block C (High Channel). For measurements within 1MHz of the block edge a 30kHz RBW was used. For all other measurements, 1MHz RBW was used. An extra 10dB of internal attenuation used between 10MHz and 1.5GHz to avoid compression and overload conditions.

Transducer Legend:

T1=DC&ATT Assembly

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	949.306M	43.7	+47.2				+0.0	90.9	94.0	-3.1	None
2	1000.000M	43.7	+47.2				+0.0	90.9	94.0	-3.1	None
3	112.972M	43.5	+47.2				+0.0	90.7	94.0	-3.3	None
4	30.020M	43.4	+47.2				+0.0	90.6	94.0	-3.4	None
5	80.375M	43.4	+47.2				+0.0	90.6	94.0	-3.4	None

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC 24.238**
Work Order #: **78784** Date: 04/19/2002
Test Type: **Radiated Scan** Time: 11:49:25 AM
Equipment: **Power amplifier** Sequence#: 21
Manufacturer: Powerwave Technologies Tested By: Randal Clark
Model: G3S-1900-80
S/N: C00000P252

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

Function	Manufacturer	Model #	S/N
Power amplifier*	Powerwave Technologies	G3S-1900-80	C00000P252

Support Devices:

Function	Manufacturer	Model #	S/N
Input Signal Generator	Agilent	E4433B	US40051593
Input Signal Generator	Agilent	E4433B	US40051146
Input Signal Generator	Agilent	E4433B	US40052095
High Power Attenuator	Weinschel Corp	53-20-34	LF243
Combiner/Splitter	Anaren	4-4000	9641
Power Supply	Sorensen	DCS40-75	9741098

Test Conditions / Notes:

EUT is a power amplifier located on an 80cm table. The support equipment is located adjacent to the EUT. EUT input frequencies are chosen such that the lowest, middle and highest blocks are used. Three input signals are combined and fed to the EUT such that the output of the amplifier is set to 125W. EUT output is terminated through a high power attenuator to a power meter. The input signals are CDMA, which represents the worst case for spurious emissions. The input frequencies chosen are as follows: (Low) Block A: 1931.875, 1934.375 and 1943.125. (Mid) Block B: 1951.875, 1954.375 and 1963.12.5 (High) Block C: 1976.875, 1979.375 and 1988.125. Frequency Range investigated: 1 - 20 GHz. Input frequencies are in Block C (High Channel). For measurements within 1MHz of the block edge a 30kHz RBW was used. For all other measurements, 1MHz RBW was used. An extra 10dB of internal attenuation used between 10MHz and 1.5GHz to avoid compression and overload conditions.

Transducer Legend:

T1=DC&ATT Assembly

Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	1977.777M	104.1	+47.2				+0.0	151.3	94.0 Inband Emissions	+57.3	None
2	1987.787M	103.5	+47.2				+0.0	150.7	94.0 Inband Emissions	+56.7	None
3	1968.768M	66.7	+47.2				+0.0	113.9	94.0 Inband Emissions	+19.9	None
4	1946.746M	45.7	+47.2				+0.0	92.9	94.0 Inband Emissions	-1.1	None
5	2016.816M	44.2	+47.2				+0.0	91.4	94.0	-2.6	None

6	18648.430M	44.0	+47.2		+0.0	91.2	94.0	-2.8	None
7	1029.600M	43.5	+47.2		+0.0	90.7	94.0	-3.3	None
8	19910.850M	43.5	+47.2		+0.0	90.7	94.0	-3.3	None
9	17720.500M	40.6	+47.2		+0.0	87.8	94.0	-6.2	None
10	12921.710M	40.3	+47.2		+0.0	87.5	94.0	-6.5	None
11	14213.000M	40.1	+47.2		+0.0	87.3	94.0	-6.7	None
12	14522.310M	40.1	+47.2		+0.0	87.3	94.0	-6.7	None
13	14975.760M	40.1	+47.2		+0.0	87.3	94.0	-6.7	None
14	16242.030M	40.1	+47.2		+0.0	87.3	94.0	-6.7	None
15	15707.490M	40.0	+47.2		+0.0	87.2	94.0	-6.8	None
16	13890.680M	39.9	+47.2		+0.0	87.1	94.0	-6.9	None
17	5980.776M	37.8	+47.2		+0.0	85.0	94.0	-9.0	None
18	1742.542M	37.6	+47.2		+0.0	84.8	94.0	-9.2	None
19	3956.754M	37.4	+47.2		+0.0	84.6	94.0	-9.4	None
20	6440.235M	37.4	+47.2		+0.0	84.6	94.0	-9.4	None
21	11350.140M	37.2	+47.2		+0.0	84.4	94.0	-9.6	None
22	8997.791M	37.1	+47.2		+0.0	84.3	94.0	-9.7	None
23	9964.756M	37.0	+47.2		+0.0	84.2	94.0	-9.8	None
24	11051.840M	37.0	+47.2		+0.0	84.2	94.0	-9.8	None
25	7210.004M	36.8	+47.2		+0.0	84.0	94.0	-10.0	None
26	4889.686M	34.3	+47.2		+0.0	81.5	94.0	-12.5	None
27	2695.494M	34.1	+47.2		+0.0	81.3	94.0	-12.7	None

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
Directional Coupler		HP	86205A	3140A03083	NA	NA
Power Sensor		HP	8481A	US37298441	81501	81502
Power Meter		HP	E4418B	US39251104	41702	51702
Power Meter	00613	HP	435B	2702A16632	81001	81002
Power Sensor	00774	HP	8481A	2349A41124	81001	81002

Direct Connect Test Setup

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

Frequency	Channel Block	Power (dBm)	Limit (dBm)
3914.7	B	-27.1	-13
3964.9	C	-27.1	-13
3967.7	C	-28.0	-13
3956.4	C	-28.6	-13
3967.2	C	-29.0	-13
3965	C	-29.2	-13
3906.2	B	-29.6	-13
3903.6	B	-31.8	-13
3886.1	A	-32.0	-13

The input frequencies chosen are as follows:
(Low) Block A: 1931.875, 1934.375 and 1943.125
(Mid) Block B: 1951.875, 1954.375 and 1963.125
(High) Block C: 1976.875, 1979.375 and 1988.125

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC 24.238**
Work Order #: **78784** Date: 04/18/2002
Test Type: **Radiated Scan** Time: 10:51:00
Equipment: **Power amplifier** Sequence#: 10
Manufacturer: Powerwave Technologies Tested By: Randal Clark
Model: G3S-1900-80
S/N: C00000P252

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

Function	Manufacturer	Model #	S/N
Power amplifier*	Powerwave Technologies	G3S-1900-80	C00000P252

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Sorensen	DCS40-75	9741098
Input Signal Generator	Agilent	E4433B	US40051593
Input Signal Generator	Agilent	E4433B	US40051146
Input Signal Generator	Agilent	E4433B	US40052095
Combiner/Splitter	Anaren	4-4000	9641
High Power Attenuator	Weinschel Corp	53-20-34	LF243

Test Conditions / Notes:

EUT is a power amplifier located on an 80cm table. The support equipment is located on top of the turntable. EUT input frequencies are chosen such that the lowest, middle and highest blocks are used. Three input signals are combined and fed to the EUT such that the output of the amplifier is set to 125W. EUT output is terminated through a high power attenuator to a power meter. The input signals are CDMA, which represents the worst case for spurious emissions. The input frequencies chosen are as follows: (Low) Block A: 1931.875, 1934.375 and 1943.125. (Mid) Block B: 1951.875, 1954.375 and 1963.125. (High) Block C: 1976.875, 1979.375 and 1988.125. Frequency Range investigated: 15MHz - 20GHz. Input frequencies are in Block A (Low Channel). For measurements within 1MHz of the block edge a 30kHz RBW was used. For all other measurements, 1MHz RBW was used. In the frequency range of 18-20GHz a test distance of 1 meter was used. No spurious emissions were found in this frequency range.

Transducer Legend:

T1=HP3017A sn3123A00281 11-Sept-01 T2=Horn Antenna sn6246
T3=Heliax #18 70' 11Sept2001

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	3886.100M	64.8	-37.6	+31.7	+6.1		+0.0	65.0	84.4	-19.4	Horiz
2	3886.300M	64.7	-37.6	+31.7	+6.1		+0.0	64.9	84.4	-19.5	Vert
3	3868.900M	63.4	-37.6	+31.7	+6.1		+0.0	63.6	84.4	-20.8	Vert
4	3877.600M	63.3	-37.6	+31.7	+6.1		+0.0	63.5	84.4	-20.9	Horiz
5	10267.460M	55.8	-40.1	+37.4	+9.8		+0.0	62.9	84.4	-21.5	Horiz

6	3877.850M	62.6	-37.6	+31.7	+6.1	+0.0	62.8	84.4	-21.6	Vert
7	3863.400M	62.3	-37.5	+31.7	+6.1	+0.0	62.6	84.4	-21.8	Vert
8	3868.850M	61.8	-37.6	+31.7	+6.1	+0.0	62.0	84.4	-22.4	Horiz
9	3875.300M	61.7	-37.6	+31.7	+6.1	+0.0	61.9	84.4	-22.5	Horiz
10	10267.590M	54.4	-40.1	+37.4	+9.8	+0.0	61.5	84.4	-22.9	Vert
11	3866.150M	61.1	-37.5	+31.7	+6.1	+0.0	61.4	84.4	-23.0	Vert
12	3875.200M	60.8	-37.6	+31.7	+6.1	+0.0	61.0	84.4	-23.4	Vert
13	3866.200M	60.4	-37.5	+31.7	+6.1	+0.0	60.7	84.4	-23.7	Horiz
14	5809.250M	56.8	-37.0	+33.6	+7.3	+0.0	60.7	84.4	-23.7	Vert
15	3863.500M	59.5	-37.5	+31.7	+6.1	+0.0	59.8	84.4	-24.6	Horiz
16	5800.700M	55.3	-37.0	+33.6	+7.3	+0.0	59.2	84.4	-25.2	Vert
17	5798.150M	55.0	-37.0	+33.6	+7.3	+0.0	58.9	84.4	-25.5	Vert
18	1928.900M	65.3	-38.3	+26.2	+3.7	+0.0	56.9	84.4	-27.5	Vert
19	5818.200M	51.7	-37.0	+33.6	+7.3	+0.0	55.6	84.4	-28.8	Vert
20	1925.540M	61.6	-38.3	+26.1	+3.7	+0.0	53.1	84.4	-31.3	Vert
21	1923.180M	59.7	-38.3	+26.1	+3.7	+0.0	51.2	84.4	-33.2	Vert
22	1920.580M	57.4	-38.3	+26.1	+3.7	+0.0	48.9	84.4	-35.5	Vert
23	1929.251M	39.7	-38.3	+26.2	+3.7	+0.0	31.3	84.4	-53.1	Vert

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC 24.238**
Work Order #: **78784** Date: 04/18/2002
Test Type: **Radiated Scan** Time: 11:16:15
Equipment: **Power amplifier** Sequence#: 11
Manufacturer: Powerwave Technologies Tested By: Randal Clark
Model: G3S-1900-80
S/N: C00000P252

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

Function	Manufacturer	Model #	S/N
Power amplifier*	Powerwave Technologies	G3S-1900-80	C00000P252

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Sorensen	DCS40-75	9741098
Input Signal Generator	Agilent	E4433B	US40051593
Input Signal Generator	Agilent	E4433B	US40051146
Input Signal Generator	Agilent	E4433B	US40052095
High Power Attenuator	Weinschel Corp	53-20-34	LF243
Combiner/Splitter	Anaren	4-4000	9641

Test Conditions / Notes:

EUT is a power amplifier located on an 80cm table. The support equipment is located on top of the turntable. EUT input frequencies are chosen such that the lowest, middle and highest blocks are used. Three input signals are combined and fed to the EUT such that the output of the amplifier is set to 125W. EUT output is terminated through a high power attenuator to a power meter. The input signals are CDMA, which represents the worst case for spurious emissions. The input frequencies chosen are as follows: (Low) Block A: 1931.875, 1934.375 and 1943.125. (Mid) Block B: 1951.875, 1954.375 and 1963.125. (High) Block C: 1976.875, 1979.375 and 1988.125. Frequency Range investigated: 15MHz - 20GHz. Input frequencies are in Block B (Mid Channel). In the frequency range of 18-20GHz a test distance of 1 meter was used. No spurious emissions were found in this frequency range.

Transducer Legend:

T1=HP3017A sn3123A00281 11-Sept-01 T2=Horn Antenna sn6246
T3=Heliax #18 70' 11Sept2001

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	3914.700M	69.6	-37.6	+31.8	+6.1		+0.0	69.9	84.4	-14.5	Horiz
2	3906.200M	67.1	-37.6	+31.8	+6.1		+0.0	67.4	84.4	-17.0	Horiz
3	3903.600M	64.9	-37.6	+31.8	+6.1		+0.0	65.2	84.4	-19.2	Horiz
4	5869.200M	59.5	-37.0	+33.6	+7.4		+0.0	63.5	84.4	-20.9	Vert
5	5871.800M	59.1	-37.1	+33.6	+7.4		+0.0	63.0	84.4	-21.4	Horiz
6	3917.300M	62.5	-37.6	+31.8	+6.1		+0.0	62.8	84.4	-21.6	Vert

7	5881.100M	58.4	-37.1	+33.6	+7.4	+0.0	62.3	84.4	-22.1	Vert
8	3914.500M	62.0	-37.6	+31.8	+6.1	+0.0	62.3	84.4	-22.1	Vert
9	3925.900M	61.4	-37.6	+31.8	+6.1	+0.0	61.7	84.4	-22.7	Vert
10	3906.400M	61.1	-37.6	+31.8	+6.1	+0.0	61.4	84.4	-23.0	Vert
11	5871.700M	57.4	-37.1	+33.6	+7.4	+0.0	61.3	84.4	-23.1	Vert
12	3903.800M	60.9	-37.6	+31.8	+6.1	+0.0	61.2	84.4	-23.2	Vert
13	5860.500M	57.1	-37.0	+33.6	+7.4	+0.0	61.1	84.4	-23.3	Vert
14	5858.100M	56.7	-37.0	+33.6	+7.4	+0.0	60.7	84.4	-23.7	Vert
15	5858.600M	56.7	-37.0	+33.6	+7.4	+0.0	60.7	84.4	-23.7	Horiz
16	5877.600M	56.7	-37.1	+33.6	+7.4	+0.0	60.6	84.4	-23.8	Vert
17	3926.200M	60.3	-37.6	+31.8	+6.1	+0.0	60.6	84.4	-23.8	Horiz
18	10268.000M	53.3	-40.1	+37.4	+9.8	+0.0	60.4	84.4	-24.0	Vert
19	5866.900M	55.9	-37.0	+33.6	+7.4	+0.0	59.9	84.4	-24.5	Vert
20	3908.400M	59.6	-37.6	+31.8	+6.1	+0.0	59.9	84.4	-24.5	Vert
21	10267.620M	52.4	-40.1	+37.4	+9.8	+0.0	59.5	84.4	-24.9	Horiz
22	5878.000M	53.1	-37.1	+33.6	+7.4	+0.0	57.0	84.4	-27.4	Horiz
23	5889.700M	51.1	-37.1	+33.6	+7.4	+0.0	55.0	84.4	-29.4	Vert

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC 24.238**
Work Order #: **78784** Date: 04/18/2002
Test Type: **Radiated Scan** Time: 11:46:43
Equipment: **Power amplifier** Sequence#: 12
Manufacturer: Powerwave Technologies Tested By: Randal Clark
Model: G3S-1900-80
S/N: C00000P252

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

Function	Manufacturer	Model #	S/N
Power amplifier*	Powerwave Technologies	G3S-1900-80	C00000P252

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Sorensen	DCS40-75	9741098
Input Signal Generator	Agilent	E4433B	US40051593
Input Signal Generator	Agilent	E4433B	US40051146
Input Signal Generator	Agilent	E4433B	US40052095
High Power Attenuator	Weinschel Corp	53-20-34	LF243
Combiner/Splitter	Anaren	4-4000	9641

Test Conditions / Notes:

EUT is a power amplifier located on an 80cm table. The support equipment is located on top of the turntable. EUT input frequencies are chosen such that the lowest, middle and highest blocks are used. Three input signals are combined and fed to the EUT such that the output of the amplifier is set to 125W. EUT output is terminated through a high power attenuator to a power meter. The input signals are CDMA, which represents the worst case for spurious emissions. The input frequencies chosen are as follows: (Low) Block A: 1931.875, 1934.375 and 1943.125. (Mid) Block B: 1951.875, 1954.375 and 1963.125. (High) Block C: 1976.875, 1979.375 and 1988.125. Frequency Range investigated: 15MHz - 20GHz. Input frequencies are in Block C (High Channel). For measurements within 1MHz of the block edge a 30kHz RBW was used. For all other measurements, 1MHz RBW was used. In the frequency range of 18-20GHz a test distance of 1 meter was used. No spurious emissions were found in this frequency range.

Transducer Legend:

T1=HP3017A sn3123A00281 11-Sept-01 T2=Horn Antenna sn6246
T3=Heliax #18 70' 11Sept2001

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

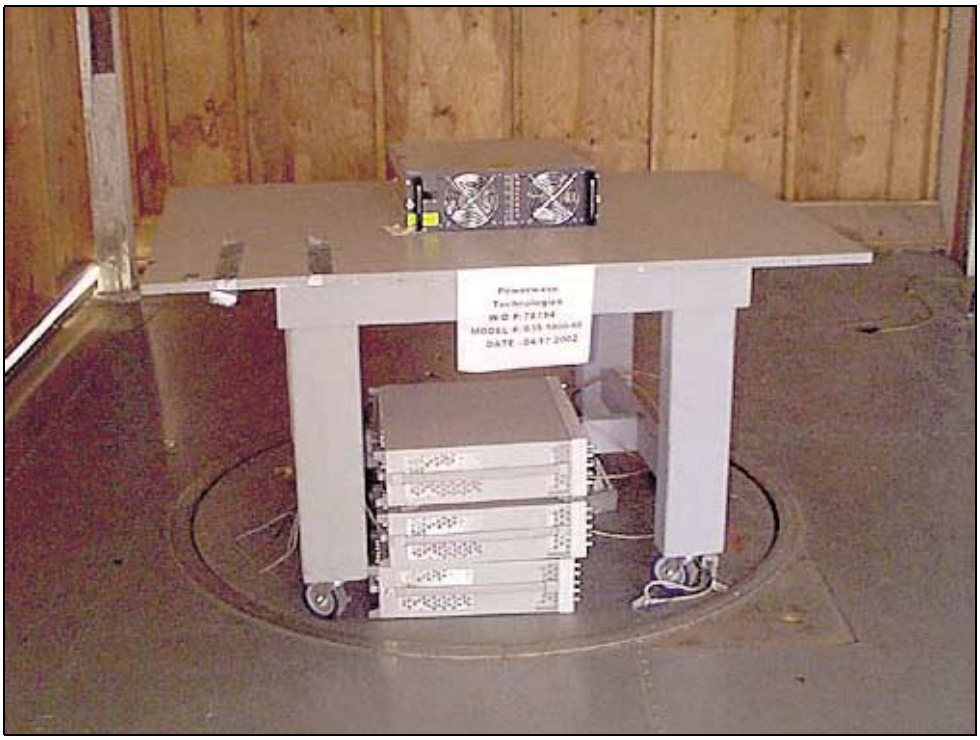
#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	3964.900M	69.6	-37.6	+31.8	+6.1		+0.0	69.9	84.4	-14.5	Vert
2	3967.750M	68.6	-37.6	+31.9	+6.1		+0.0	69.0	84.4	-15.4	Vert
3	3956.400M	68.1	-37.6	+31.8	+6.1		+0.0	68.4	84.4	-16.0	Horiz
4	3976.250M	67.6	-37.6	+31.9	+6.1		+0.0	68.0	84.4	-16.4	Vert
5	3965.050M	67.5	-37.6	+31.8	+6.1		+0.0	67.8	84.4	-16.6	Horiz

6	3956.250M	67.1	-37.6	+31.8	+6.1	+0.0	67.4	84.4	-17.0	Vert
7	3967.250M	66.8	-37.6	+31.9	+6.1	+0.0	67.2	84.4	-17.2	Horiz
8	3953.550M	66.7	-37.6	+31.8	+6.1	+0.0	67.0	84.4	-17.4	Horiz
9	3958.800M	65.6	-37.6	+31.8	+6.1	+0.0	65.9	84.4	-18.5	Horiz
10	3958.800M	64.1	-37.6	+31.8	+6.1	+0.0	64.4	84.4	-20.0	Vert
11	5944.880M	60.2	-37.1	+33.6	+7.4	+0.0	64.1	84.4	-20.3	Vert
12	3953.650M	63.8	-37.6	+31.8	+6.1	+0.0	64.1	84.4	-20.3	Vert
13	3976.300M	63.5	-37.6	+31.9	+6.1	+0.0	63.9	84.4	-20.5	Horiz
14	10268.090M	56.0	-40.1	+37.4	+9.8	+0.0	63.1	84.4	-21.3	Vert
15	10268.110M	55.3	-40.1	+37.4	+9.8	+0.0	62.4	84.4	-22.0	Horiz
16	5933.500M	57.3	-37.1	+33.6	+7.4	+0.0	61.2	84.4	-23.2	Horiz
17	5935.450M	56.8	-37.1	+33.6	+7.4	+0.0	60.7	84.4	-23.7	Horiz
18	5941.980M	56.8	-37.1	+33.6	+7.4	+0.0	60.7	84.4	-23.7	Vert
19	5956.250M	56.3	-37.1	+33.6	+7.5	+0.0	60.3	84.4	-24.1	Horiz
20	5946.700M	56.4	-37.1	+33.6	+7.4	+0.0	60.3	84.4	-24.1	Horiz
21	5933.530M	56.1	-37.1	+33.6	+7.4	+0.0	60.0	84.4	-24.4	Vert
22	5944.250M	55.7	-37.1	+33.6	+7.4	+0.0	59.6	84.4	-24.8	Horiz
23	5955.630M	54.6	-37.1	+33.6	+7.5	+0.0	58.6	84.4	-25.8	Vert
24	5941.200M	54.5	-37.1	+33.6	+7.4	+0.0	58.4	84.4	-26.0	Horiz
25	3949.800M	58.1	-37.6	+31.8	+6.1	+0.0	58.4	84.4	-26.0	Vert
26	5952.680M	53.6	-37.1	+33.6	+7.5	+0.0	57.6	84.4	-26.8	Vert
27	1990.341M	65.0	-38.4	+26.4	+3.9	+0.0	56.9	84.4	-27.5	Vert
28	3944.700M	54.7	-37.6	+31.8	+6.1	+0.0	55.0	84.4	-29.4	Horiz
29	1999.200M	61.8	-38.4	+26.4	+3.9	+0.0	53.7	84.4	-30.7	Vert

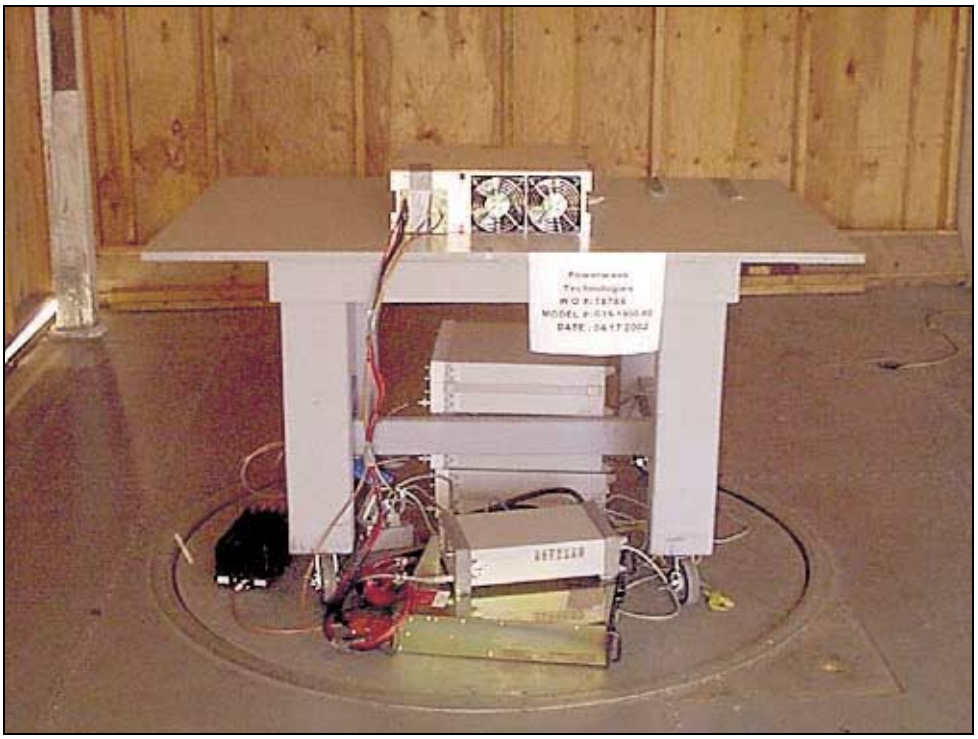
30	1990.659M	61.8	-38.4	+26.4	+3.9	+0.0	53.7	84.4	-30.7	Vert
31	5964.200M	49.7	-37.2	+33.6	+7.5	+0.0	53.6	84.4	-30.8	Horiz
32	1991.392M	61.1	-38.4	+26.4	+3.9	+0.0	53.0	84.4	-31.4	Vert
33	1990.160M	45.4	-38.4	+26.4	+3.9	+0.0	37.3	84.4	-47.1	Vert

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
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
Antenna cable (from bulkhead to antenna, high frequency hardline) (25ft)	NA	Andrew	FSJ1-50A	Cable#13	071701	071702
SMA Cable	2212	Beldon	9273	NA	101701	101702
Antenna, Horn 18-26GHz	01413	HP	84125-80008	942126-003	070901	070902
Loop Antenna	00314	EMCO	6502	2014	073101	073102
Directional Coupler		HP	86205A	3140A03083	NA	NA
Power Sensor		HP	8481A	US37298441	81501	81502
Power Meter		HP	E4418B	US39251104	41702	51702



Oats Test Setup - Front View



Oats Test Setup - Back View

15.109 - RADIATED EMISSIONS - RECEIVER/DIGITAL

ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	10 GHz	1 MHz

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC 15.109 Class B**
Work Order #: **78784** Date: 04/18/2002
Test Type: **Radiated Scan** Time: 15:18:00
Equipment: **Power amplifier** Sequence#: 14
Manufacturer: Powerwave Technologies Tested By: Randal Clark
Model: G3S-1900-80
S/N: C00000P252

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

Function	Manufacturer	Model #	S/N
Power amplifier*	Powerwave Technologies	G3S-1900-80	C00000P252

Support Devices:

Function	Manufacturer	Model #	S/N
Input Signal Generator	Agilent	E4433B	US40051593
Input Signal Generator	Agilent	E4433B	US40051146
Input Signal Generator	Agilent	E4433B	US40052095
High Power Attenuator	Weinschel Corp	53-20-34	LF243
Combiner/Splitter	Anaren	4-4000	9641

Test Conditions / Notes:

EUT is a power amplifier located on an 80cm table. The support equipment is located on top of the turntable. EUT input is terminated in a 50 ohm dummy load (representative of recieve mode). Frequency Range investigated is 30-1000 MHz. EUT is powered by 24VDC via batteries.

Transducer Legend:

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

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	134.973M	45.4	-28.4 +0.2	+16.7	+0.0	+2.1	+0.0	36.0	43.5	-7.5	Horiz
2	30.100M	42.7	-28.5 +0.1	+16.2	+0.0	+1.0	+0.0	31.5	40.0	-8.5	Vert
3	157.503M	42.5	-28.3 +0.2	+17.5	+0.0	+2.3	+0.0	34.2	43.5	-9.3	Horiz

4	299.987M	38.7	-28.3 +0.3	+22.2	+0.0	+3.3	+0.0	36.2	46.0	-9.8	Horiz
5	135.027M	42.2	-28.4 +0.2	+16.7	+0.0	+2.1	+0.0	32.8	43.5	-10.7	Vert
6	187.515M	41.1	-28.3 +0.3	+17.1	+0.0	+2.5	+0.0	32.7	43.5	-10.8	Horiz
7	142.505M	41.6	-28.4 +0.2	+17.2	+0.0	+2.1	+0.0	32.7	43.5	-10.8	Horiz
8	149.998M	40.7	-28.4 +0.2	+17.4	+0.0	+2.2	+0.0	32.1	43.5	-11.4	Horiz
9	127.507M	42.0	-28.4 +0.2	+16.0	+0.0	+2.0	+0.0	31.8	43.5	-11.7	Horiz
10	232.508M	40.9	-28.3 +0.3	+17.5	+0.0	+2.8	+0.0	33.2	46.0	-12.8	Horiz
11	45.012M	41.4	-28.3 +0.1	+12.6	+0.0	+1.2	+0.0	27.0	40.0	-13.0	Vert
12	120.038M	41.1	-28.4 +0.2	+15.3	+0.0	+2.0	+0.0	30.2	43.5	-13.3	Horiz
13	299.999M	35.1	-28.3 +0.3	+22.2	+0.0	+3.3	+0.0	32.6	46.0	-13.4	Vert
14	164.992M	37.4	-28.3 +0.3	+17.5	+0.0	+2.3	+0.0	29.2	43.5	-14.3	Vert
15	315.048M	34.8	-28.3 +0.3	+0.0	+21.3	+3.4	+0.0	31.5	46.0	-14.5	Vert
16	120.028M	39.7	-28.4 +0.2	+15.3	+0.0	+2.0	+0.0	28.8	43.5	-14.7	Vert
17	329.958M	35.5	-28.2 +0.3	+0.0	+20.2	+3.4	+0.0	31.2	46.0	-14.8	Vert
18	269.992M	36.4	-28.3 +0.3	+19.7	+0.0	+3.1	+0.0	31.2	46.0	-14.8	Horiz
19	450.009M	39.2	-28.7 +0.4	+0.0	+16.2	+4.0	+0.0	31.1	46.0	-14.9	Horiz
20	150.001M	37.2	-28.4 +0.2	+17.4	+0.0	+2.2	+0.0	28.6	43.5	-14.9	Vert
21	239.978M	38.4	-28.2 +0.3	+17.6	+0.0	+2.8	+0.0	30.9	46.0	-15.1	Horiz
22	210.008M	36.9	-28.4 +0.3	+17.0	+0.0	+2.6	+0.0	28.4	43.5	-15.1	Horiz
23	525.008M	37.1	-28.6 +0.4	+0.0	+17.4	+4.5	+0.0	30.8	46.0	-15.2	Horiz
24	127.507M	38.4	-28.4 +0.2	+16.0	+0.0	+2.0	+0.0	28.2	43.5	-15.3	Vert
25	570.031M	35.3	-28.4 +0.4	+0.0	+18.3	+4.7	+0.0	30.3	46.0	-15.7	Horiz
26	78.742M	44.0	-28.2 +0.1	+6.8	+0.0	+1.6	+0.0	24.3	40.0	-15.7	Vert
27	558.799M	35.3	-28.5 +0.4	+0.0	+18.1	+4.7	+0.0	30.0	46.0	-16.0	Horiz
28	180.003M	35.6	-28.2 +0.3	+17.3	+0.0	+2.4	+0.0	27.4	43.5	-16.1	Vert

29	390.021M	37.9	-28.3 +0.4	+0.0	+16.1	+3.7	+0.0	29.8	46.0	-16.2	Horiz
30	224.994M	37.8	-28.3 +0.3	+17.3	+0.0	+2.7	+0.0	29.8	46.0	-16.2	Horiz
31	359.984M	35.7	-28.2 +0.3	+0.0	+18.1	+3.6	+0.0	29.5	46.0	-16.5	Vert
32	420.032M	37.0	-28.5 +0.4	+0.0	+15.8	+3.9	+0.0	28.6	46.0	-17.4	Horiz
33	480.008M	35.7	-28.6 +0.4	+0.0	+16.6	+4.2	+0.0	28.3	46.0	-17.7	Horiz

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Powerwave Technologies**
Specification: **FCC 15.109 Class B**
Work Order #: **78784** Date: 04/18/2002
Test Type: **Radiated Scan** Time: 14:08:15
Equipment: **Power amplifier** Sequence#: 13
Manufacturer: Powerwave Technologies Tested By: Randal Clark
Model: G3S-1900-80
S/N: C00000P252

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

Function	Manufacturer	Model #	S/N
Power amplifier*	Powerwave Technologies	G3S-1900-80	C00000P252

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Sorensen	DCS40-75	9741098
Input Signal Generator	Agilent	E4433B	US40051593
Input Signal Generator	Agilent	E4433B	US40051146
Input Signal Generator	Agilent	E4433B	US40052095
High Power Attenuator	Weinschel Corp	53-20-34	LF243
Combiner/Splitter	Anaren	4-4000	9641

Test Conditions / Notes:

EUT is a power amplifier located on an 80cm table. The support equipment is located on top of the turntable. EUT input is terminated in a 50 ohm dummy load (representative of recieve mode). Frequency Range investigated is 1-10GHz.

Transducer Legend:

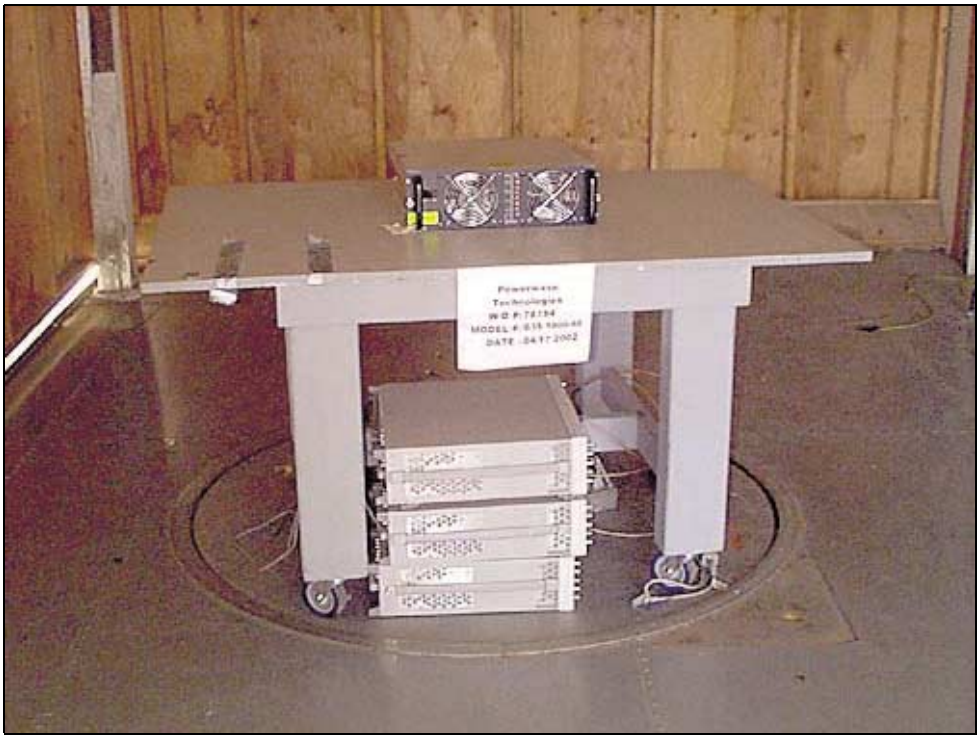
T1=HP3017A sn3123A00281 11-Sept-01 T2=Horn Antenna sn6246
T3=Heliax #18 70' 11Sept2001

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

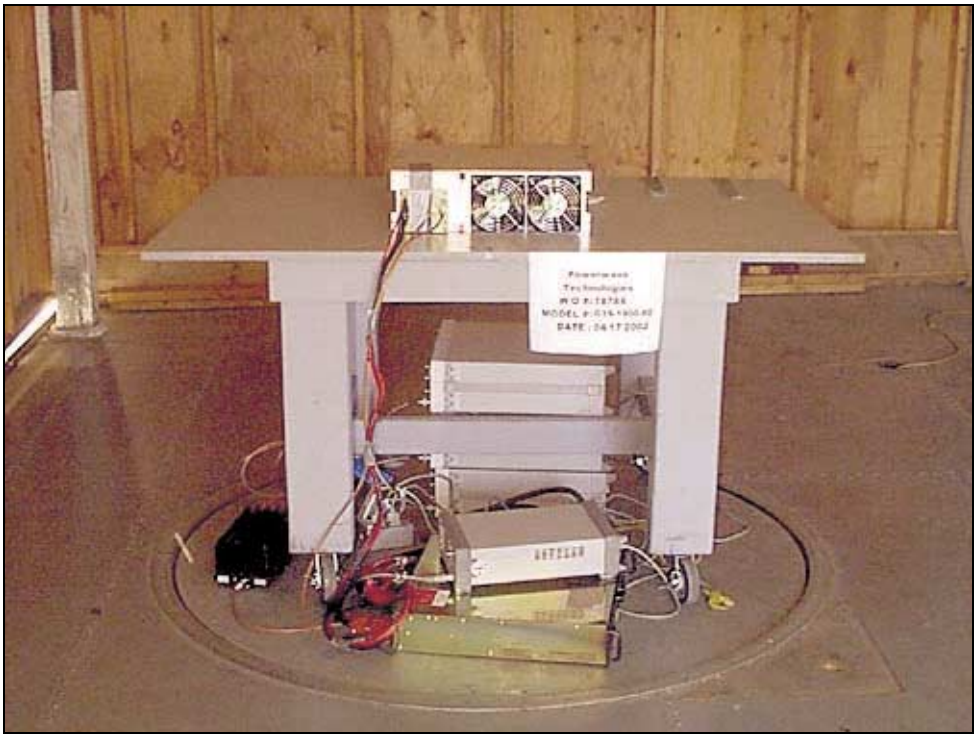
#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	1527.100M	48.0	-38.8	+24.6	+3.4		+0.0	37.2	54.0	-16.8	Horiz
2	1538.460M	46.7	-38.8	+24.7	+3.4		+0.0	36.0	54.0	-18.0	Vert

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
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
Antenna cable (from bulkhead to antenna, high frequency hardline) (25ft)	NA	Andrew	FSJ1-50A	Cable#13	071701	071702
SMA Cable	2212	Beldon	9273	NA	101701	101702
Antenna, Horn 18-26GHz	01413	HP	84125-80008	942126-003	070901	070902
Loop Antenna	00314	EMCO	6502	2014	073101	073102
Directional Coupler		HP	86205A	3140A03083	NA	NA
Power Sensor		HP	8481A	US37298441	81501	81502
Power Meter		HP	E4418B	US39251104	41702	51702



Oats Test Setup - Front View



Oats Test Setup - Back View