FCC CFR47 PART 24 E CLASS II PERMISSIVE CHANGE

TEST REPORT

FOR

PCS MULTI CARRIER POWER AMPLIFIER

MODEL: MCPA4080

FCC ID: I2OMCPA4080

REPORT NUMBER: 02U1195-1

ISSUE DATE: MARCH 14, 2002

Prepared for
SPECTRIAN
350 WEST JAVA DRIVE
SUNNYVALE, CA 94089
USA

Prepared by
COMPLIANCE ENGINEERING SERVICES, INC.
561F MONTEREY ROAD, ROUTE 2
MORGAN HILL, CA 95037, USA
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561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888

1. TEST RESULT CERTIFICATION

COMPANY NAME: **SPECTRIAN**
350 WEST JAVA DRIVE
SUNNYVALE, CA 94089, USA

CONTACT PERSON: **CHARLES S ROBERTSON III / EXECUTIVE DIRECTOR OF ENGINEERING**

TELPHONE NO: **(408) 745-5507**

EUT DESCRIPTION: **PCS MULTI CARRIER POWER AMPLIFIER**

MODEL NAME: **MCPA4080**

DATE TESTED: **MARCH 8 - 13, 2002**

EQUIPMENT TYPE	1930-1990 MHz POWER AMPLIFIER
MEASUREMENT PROCEDURE	ANSI 63.4 / 1992, TIA/EIA 603
PROCEDURE	CERTIFICATION / PERMISSIVE CHANGE
FCC RULE	CFR 47 PART 24 Subpart E

Compliance Certification Services, Inc. tested the above equipment for compliance with the requirement set forth in CFR 47, PART 24 Subpart E-Broadband PCS. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

Warning : This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Released For CCS By:

MIKE HECKROTTE
CHIEF ENGINEER
COMPLIANCE CERTIFICATION SERVICES

Tested By:

KERWIN CORPUZ
ASSOCIATE EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

This product is designed to provide power gain over the PCS cellular band transmit frequency range of 1930 MHz to 1990 MHz, with a minimum channel frequency separation of 60 kHz and a maximum channel frequency separation of 20 MHz.

3. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

Add WCDMA (3GPP and CDMA2K) Waveform to the existing Amplifier System. No hardware or software changes were made to the EUT.

4. TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures documented on chapter 13 of ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

5. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

6. ACCREDITATION AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200065-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (reference no: 31040/SIT (1300B3) and 31040/SIT (1300F2))

7. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

8. APPLICABLE RULES AND BRIEF TEST RESULT

§24.232- POWER LIMIT

24.232(a); Maximum Peak output power for base station transmitters should not exceed 100 Watts EIRP (equivalent isotropically radiated power).

24.232(b); Mobile/Portable stations are limited to 2 Watts EIRP peak power.

Spec limit: As specified above, 100W maximum.
Test result: Measured with power meter. All outputs were adjusted to 50.0dBm (100Watts), during testing.

TYPE OF EMISSIONS

F9W (3GPP and CDMA2K)

§24.235- FREQUENCY STABILITY

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Spec limit: As stated above.
Test result: Not Applicable, EUT is a power amplifier.

§24.238- EMISSION LIMITS

24.238(a); The magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under conditions specified in the instruction manual and/or alignment procedure, shall not be less than 43+10 log (mean output power in watts) dBc below the mean power output outside a licensee's frequency block.

Power Amplifier Mean Power = 100 Watts (50dBm)
43 + 10 log (100 Watts) = 63 dB

Out-of-Band and Band-Edges emissions must be attenuated by the following amount:
50 dBm – 63 dB = -13dBm
24.238(b) & (c);

(1) Compliance with the out-of-band emissions requirement is based on test being performed with 1MHz analyzer RES BW.

(2) At block edges, RES BW may be adjusted to a level at least as large as 1% of emission bandwidth. The emissions bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. For the EUT this is at least:

WCDMA (3GPP):
0.01 * 4.75 MHz = 47.5 kHz. A RES BW of 100 kHz was used for measuring at the block edges.

WCDMA (CDMA2K):
0.01 * 4.18 MHz = 41.8 kHz. A RES BW of 100 kHz was used for measuring at the block edges.

Spec limit: As specified as above.
Test result: no non-compliance noted.

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§2.1057- SPECTRUM RANGE TO BE INVESTIGATED

Lowest radio frequency signal generated in the equipment, without going below 9 kHz, up to at least the frequency shown below:

(1) If the equipment operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

(2) If the equipment operates at or above 10 GHz and below 30 GHz:
to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.

(3) If the equipment operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower.

(b) Particular attention should be paid to harmonics and sub-harmonics of the carrier frequency as well as to those frequencies removed from the carrier by multiples of the oscillator frequency.
Radiation at the frequencies of multiplier stages should also be checked.

(c) The amplitude of spurious emissions, which are attenuated more than 20 dB below the permissible value, need not be reported.

(d) Unless otherwise specified, measurements above 40 GHz shall be performed using a minimum resolution bandwidth of 1 MHz.

Spec limit: Frequency investigation range from 15MHz to tenth harmonic (i.e. 20 GHz.).

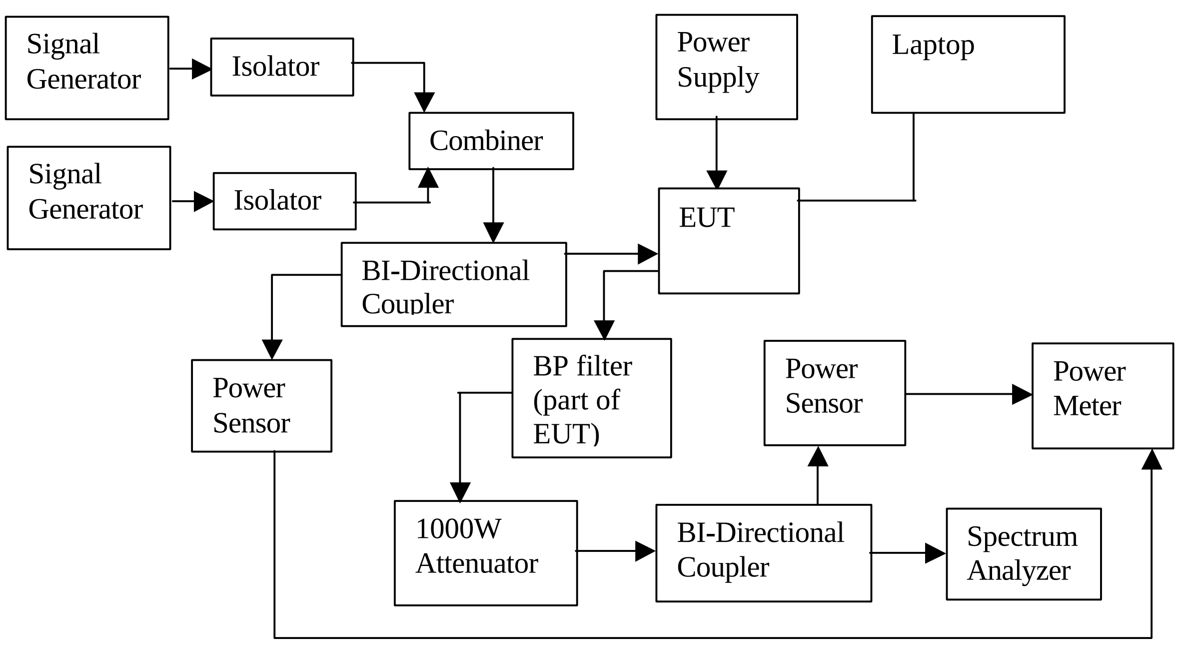
9. TEST SETUP, PROCEDURE AND RESULT

9.1. SECTION 2.1046: RF POWER OUTPUT

INSTRUMENTS LIST

EQUIPMENT	MANUFACTURE	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Generator	AGILENT	E4436B	US39260336	9/21/02
Signal Generator	AGILENT	E4432B	US37231536	5/23/02
Isolator	Device Tech.	L224N	008	N/A
Isolator	Western Micro.	3JA-2046	106/9524	N/A
Combiner	NARDA	4321B-2	05060	N/A
1000W Attenuator	WEINSCHEL	82-30-34	MK969	N/A
BI-Direct. Coupler	NARDA	3022-10	71296	N/A
BI-Direct. Coupler	NARDA	3022-20	51658	N/A
Power Sensor	HP	8482A	2607A10991	1/7/03
Power Sensor	HP	8482A	3318A27664	7/15/02
Power Meter	HP	438A	3513U04847	7/3/02
Power Supply	SORENSEN	DHP40-250	9942C0014	10/5/02
Laptop	TOSHIBA	PA1246U XCD	87146481-3	N/A
Spectrum Analyzer	HP	8593EM	3710A00205	6/20/02
BP filter (part of EUT)	ClearComm Tech.	CCTF-80	AA643-02	N/A

TEST SETUP



TEST PROCEDURE

The EUT was set to maximum output power (maximum gain). RF output power was measured with a Power Meter.

RESULT

Measured with power meter. All outputs were adjusted to 100 watts (50 dBm) during testing.

9.2. SECTION 2.1047: MODULATION CHARACTERISTICS

(NOT APPLICABLE, EUT IS A POWER AMPLIFIER)

9.3. SECTION 2.1049: OCCUPIED BANDWIDTH

SECTION 2.1049(i)

Transmitters designed for other types of modulation – when modulated by an appropriate signal of sufficient amplitude to be representative of the type of service in which used. A description of the input signal should be supplied.

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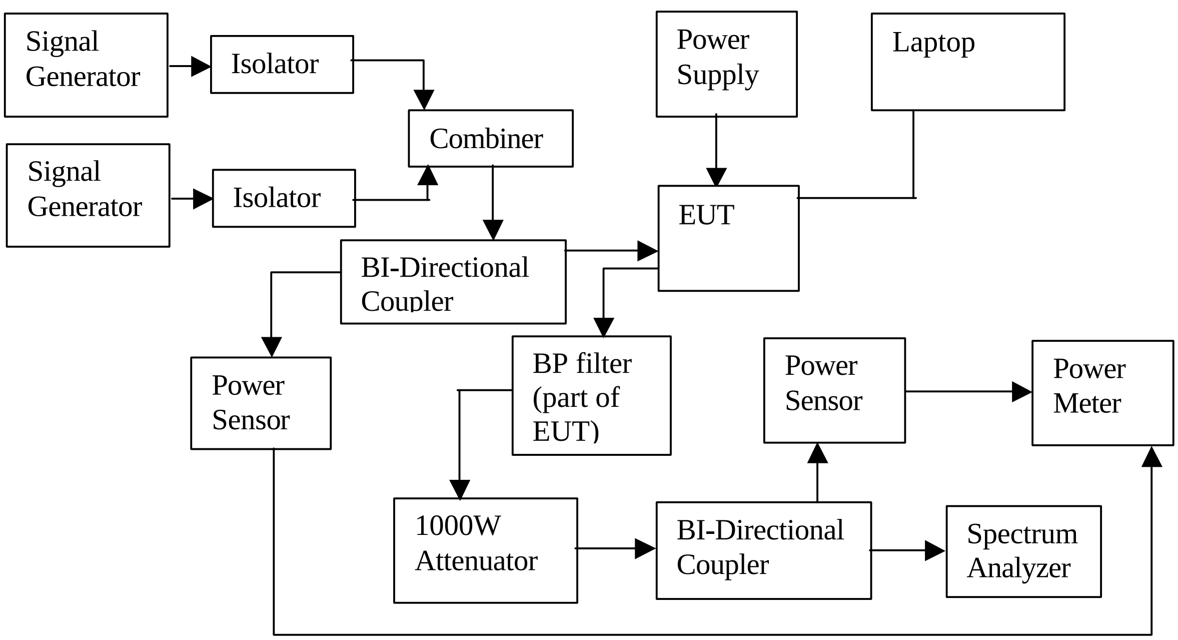
INSTRUMENTS LIST

EQUIPMENT	MANUFACTURE	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Generator	AGILENT	E4436B	US39260336	9/21/02
Signal Generator	AGILENT	E4432B	US37231536	5/23/02
Isolator	Device Tech.	L224N	008	N/A
Isolator	Western Micro.	3JA-2046	106/9524	N/A
Combiner	NARDA	4321B-2	05060	N/A
1000W Attenuator	WEINSCHEL	82-30-34	MK969	N/A
BI-Direct. Coupler	NARDA	3022-10	71296	N/A
BI-Direct. Coupler	NARDA	3022-20	51658	N/A
Power Sensor	HP	8482A	2607A10991	1/7/03
Power Sensor	HP	8482A	3318A27664	7/15/02
Power Meter	HP	438A	3513U04847	7/3/02
Power Supply	SORENSEN	DHP40-250	9942C0014	10/5/02
Laptop	TOSHIBA	PA1246U XCD	87146481-3	N/A
Spectrum Analyzer	HP	8593EM	3710A00205	6/20/02
BP filter (part of EUT)	ClearComm Tech.	CCTF-80	AA643-02	N/A

TEST SETUP

OUTPUT SETUP



NOTE: cables used are SMA and N TYPE with 0.6 to 2 meter long.

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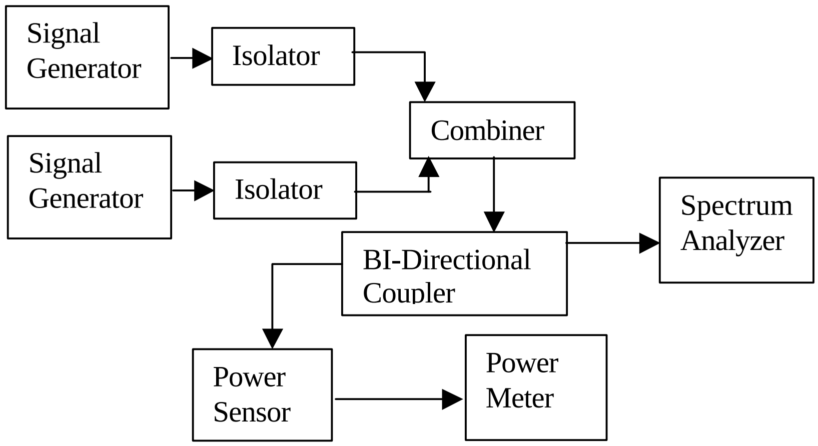
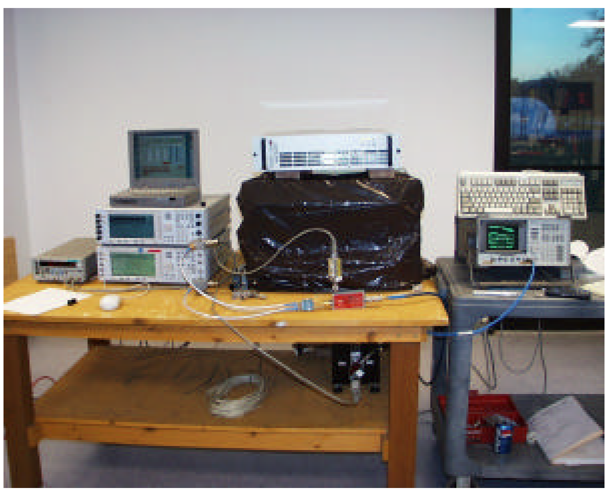
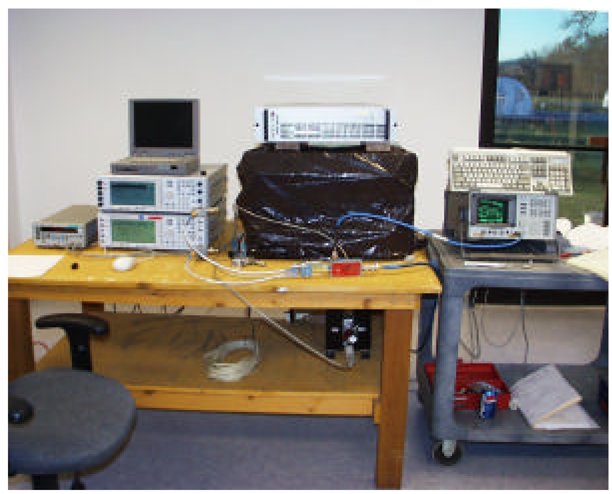
INPUT SETUP




OUTPUT SETUP


INPUT SETUP

TEST PROCEDURE

The EUT's occupied bandwidth output plot is compared with the input source plot to check that no distortion is created when the input signal is amplified by the EUT. Identical bandwidths, spans and center frequencies are used for both plots. Reference levels and attenuation are adjusted.

RESULT

Plots of the input and output are included. Please refer to spectrum plots below.

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*** WCDMA (3GPP) OCCUPIED BANDWIDTH ***		
Plot#	**Description**	**Bandwidth (MHz)**
1	Low Channel Output @ 1933 MHz	4.7
2	Mid Channel Output @ 1960 MHz	4.75
3	High Channel Output @ 1987 MHz	4.73
4	Low Channel Input @ 1933 MHz	4.7
5	Mid Channel Input @ 1960 MHz	4.75
6	High Channel Input @ 1987 MHz	4.75

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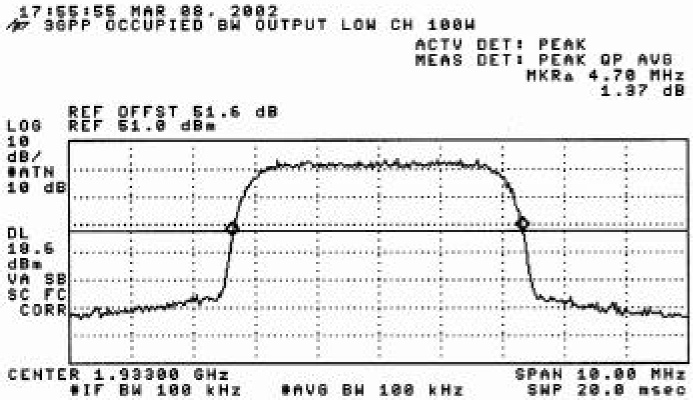
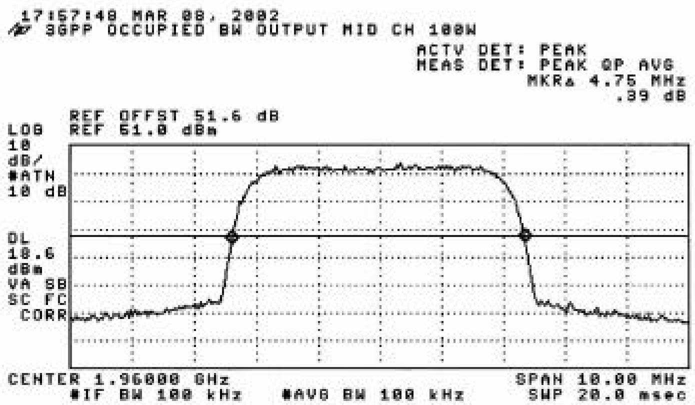


1



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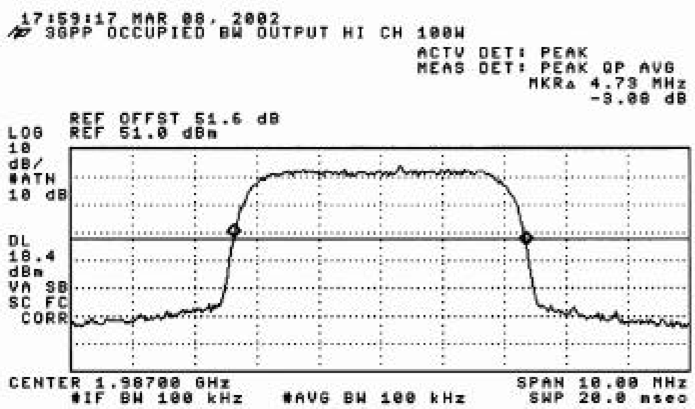

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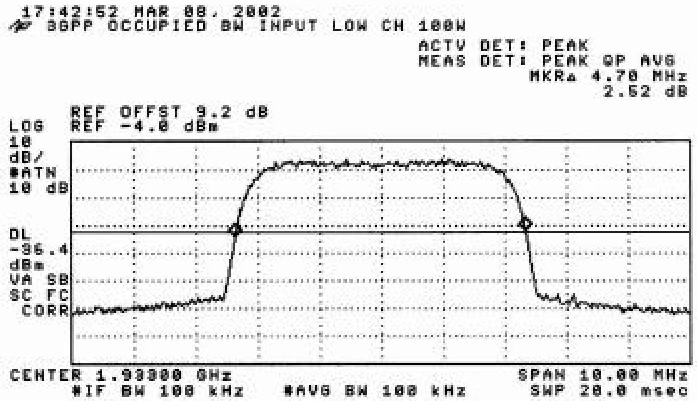
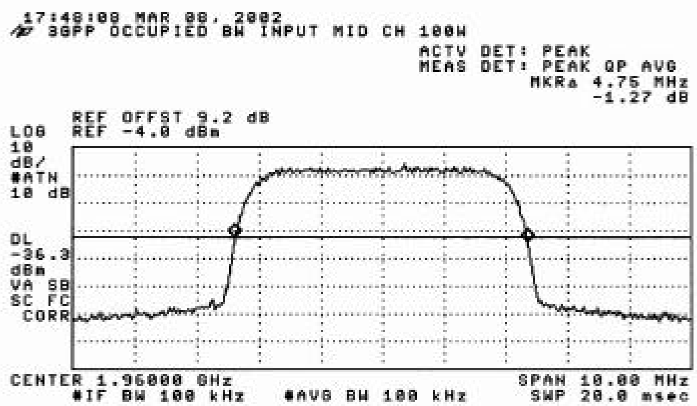
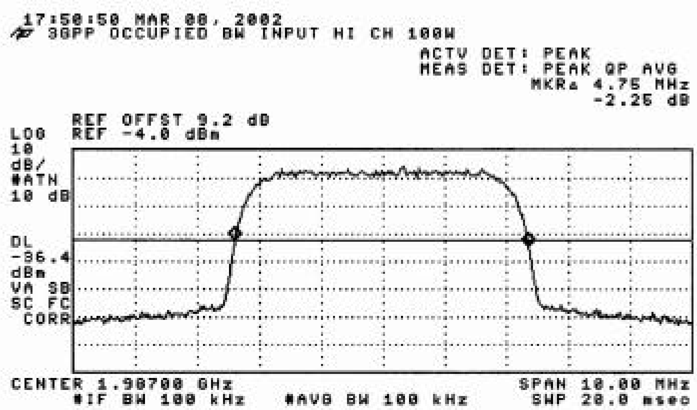

17:42:52 MAR 08, 2002
3GPP OCCUPIED BW INPUT LOW CH 100W
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR∆ 4.70 MHz
2.52 dB
REF OFFST 9.2 dB
LOG REF -4.0 dBm
10 dB/
#ATN 10 dB
DL -36.4 dBm
VA SB
SC FC
CORR
CENTER 1.93300 GHz
#IF BW 100 kHz
#AVG BW 100 kHz
SPAN 10.00 MHz
SWP 20.0 msec

4


17:48:08 MAR 08, 2002
3GPP OCCUPIED BW INPUT MID CH 100W
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR∆ 4.75 MHz
-1.27 dB
REF OFFST 9.2 dB
LOG REF -4.0 dBm
10 dB/
#ATN 10 dB
DL -36.3 dBm
VA SB
SC FC
CORR
CENTER 1.96000 GHz
#IF BW 100 kHz
#AVG BW 100 kHz
SPAN 10.00 MHz
SWP 20.0 msec

5


17:50:50 MAR 08, 2002
3GPP OCCUPIED BW INPUT HI CH 100W
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR∆ 4.75 MHz
-2.25 dB
REF OFFST 9.2 dB
LOG REF -4.0 dBm
10 dB/
#ATN 10 dB
DL -36.4 dBm
VA SB
SC FC
CORR
CENTER 1.98700 GHz
#IF BW 100 kHz
#AVG BW 100 kHz
SPAN 10.00 MHz
SWP 20.0 msec

6

*** WCDMA (CDMA2K) OCCUPIED BANDWIDTH ***		
Plot#	**Description**	**Bandwidth (MHz)**
7	Low Channel Output @ 1933 MHz	4.18
8	Mid Channel Output @ 1960 MHz	4.18
9	High Channel Output @ 1987 MHz	4.18
10	Low Channel Input @ 1933 MHz	4.18
11	Mid Channel Input @ 1960 MHz	4.18
12	High Channel Input @ 1987 MHz	4.18

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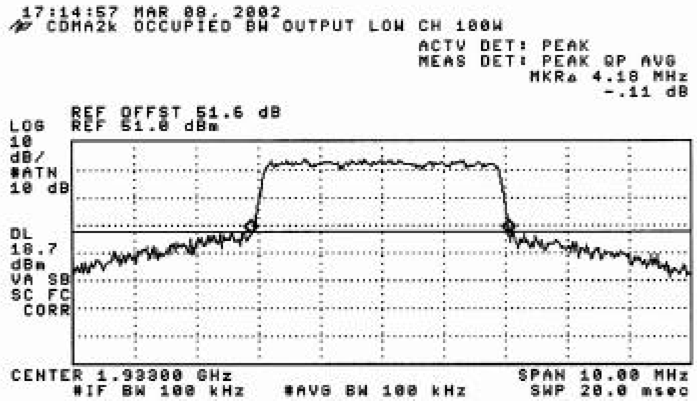
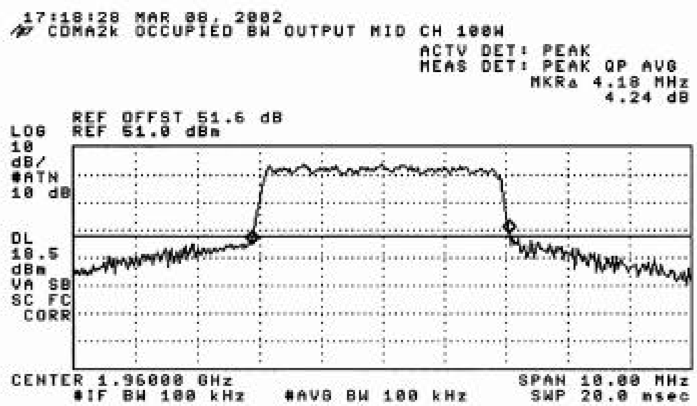
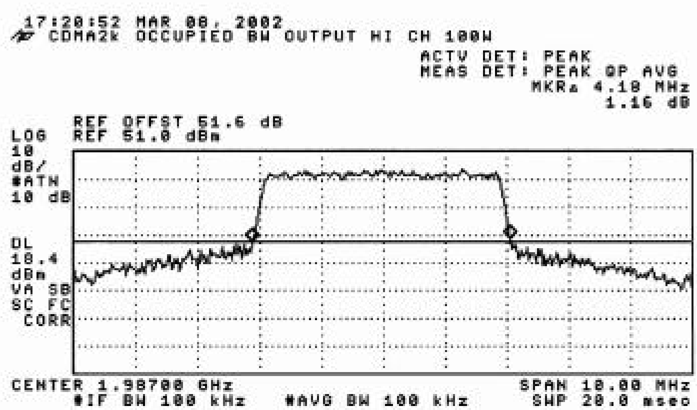

17:14:57 MAR 08, 2002
CDMA2k OCCUPIED BW OUTPUT LOW CH 100W
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR∆ 4.18 MHz
-.11 dB
REF OFFST 51.6 dB
LOG
REF 51.0 dBm
10
dB/
#ATN
10 dB
DL
18.7
dBm
VA SB
SC FC
CORR
CENTER 1.93300 GHz
SPAN 10.00 MHz
#IF BW 100 kHz
#AVG BW 100 kHz
SWP 20.0 msec

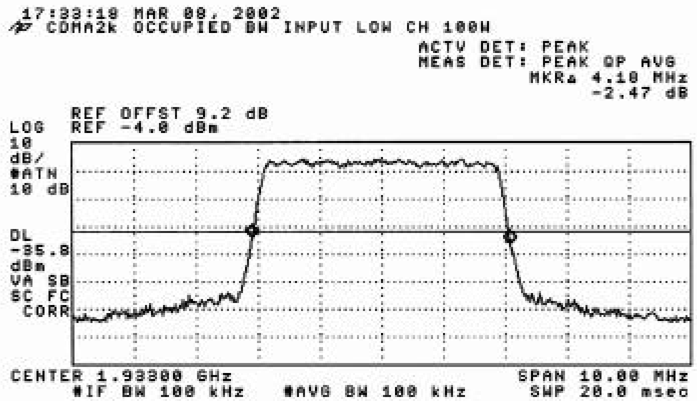
7


17:18:28 MAR 08, 2002
CDMA2k OCCUPIED BW OUTPUT MID CH 100W
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR∆ 4.18 MHz
4.24 dB
REF OFFST 51.6 dB
LOG
REF 51.0 dBm
10
dB/
#ATN
10 dB
DL
18.5
dBm
VA SB
SC FC
CORR
CENTER 1.96000 GHz
SPAN 10.00 MHz
#IF BW 100 kHz
#AVG BW 100 kHz
SWP 20.0 msec

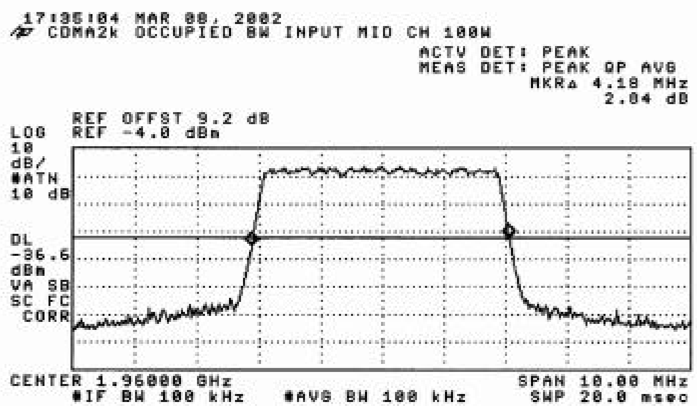
8


17:20:52 MAR 08, 2002
CDMA2k OCCUPIED BW OUTPUT HI CH 100W
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR∆ 4.18 MHz
1.16 dB
REF OFFST 51.6 dB
LOG
REF 51.0 dBm
10
dB/
#ATN
10 dB
DL
18.4
dBm
VA SB
SC FC
CORR
CENTER 1.98700 GHz
SPAN 10.00 MHz
#IF BW 100 kHz
#AVG BW 100 kHz
SWP 20.0 msec

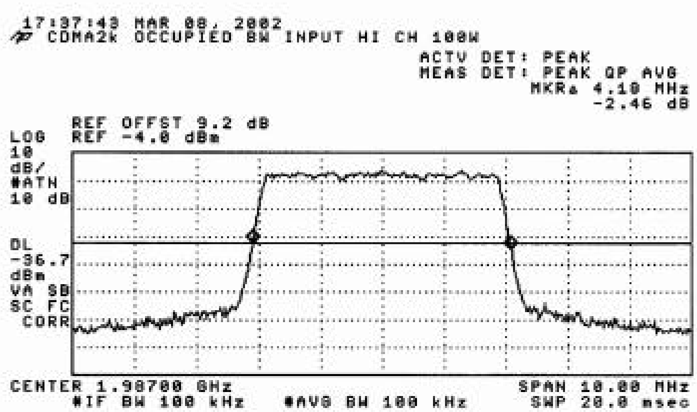
9



10



11



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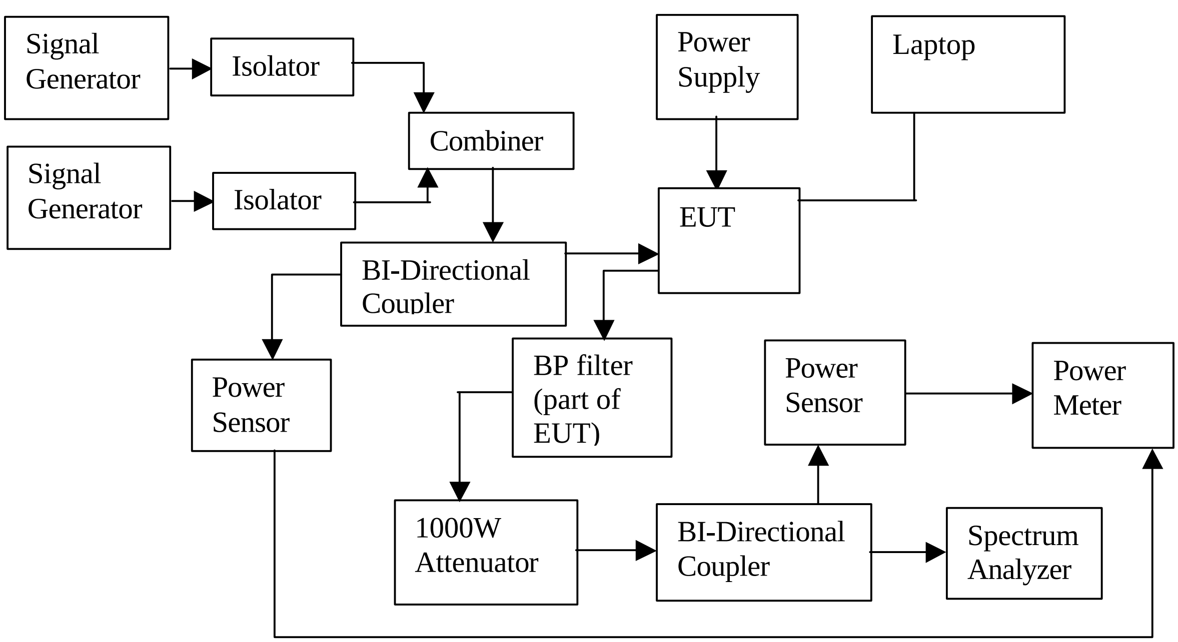
9.4. SECTION 2.1051: SPURIOUS EMISSION AT ANTENNA TERMINAL

INSTRUMENTS LIST

EQUIPMENT	MANUFACTURE	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Generator	AGILENT	E4436B	US39260336	9/21/02
Signal Generator	AGILENT	E4432B	US37231536	5/23/02
Isolator	Device Tech.	L224N	008	N/A
Isolator	Western Micro.	3JA-2046	106/9524	N/A
Combiner	NARDA	4321B-2	05060	N/A
1000W Attenuator	WEINSCHEL	82-30-34	MK969	N/A
BI-Direct. Coupler	NARDA	3022-10	71296	N/A
BI-Direct. Coupler	NARDA	3022-20	51658	N/A
Power Sensor	HP	8482A	2607A10991	1/7/03
Power Sensor	HP	8482A	3318A27664	7/15/02
Power Meter	HP	438A	3513U04847	7/3/02
Power Supply	SORENSEN	DHP40-250	9942C0014	10/5/02
Laptop	TOSHIBA	PA1246U XCD	87146481-3	N/A
Spectrum Analyzer	HP	8593EM	3710A00205	6/20/02
BP filter (part of EUT)	ClearComm Tech.	CCTF-80	AA643-02	N/A

TEST SETUP



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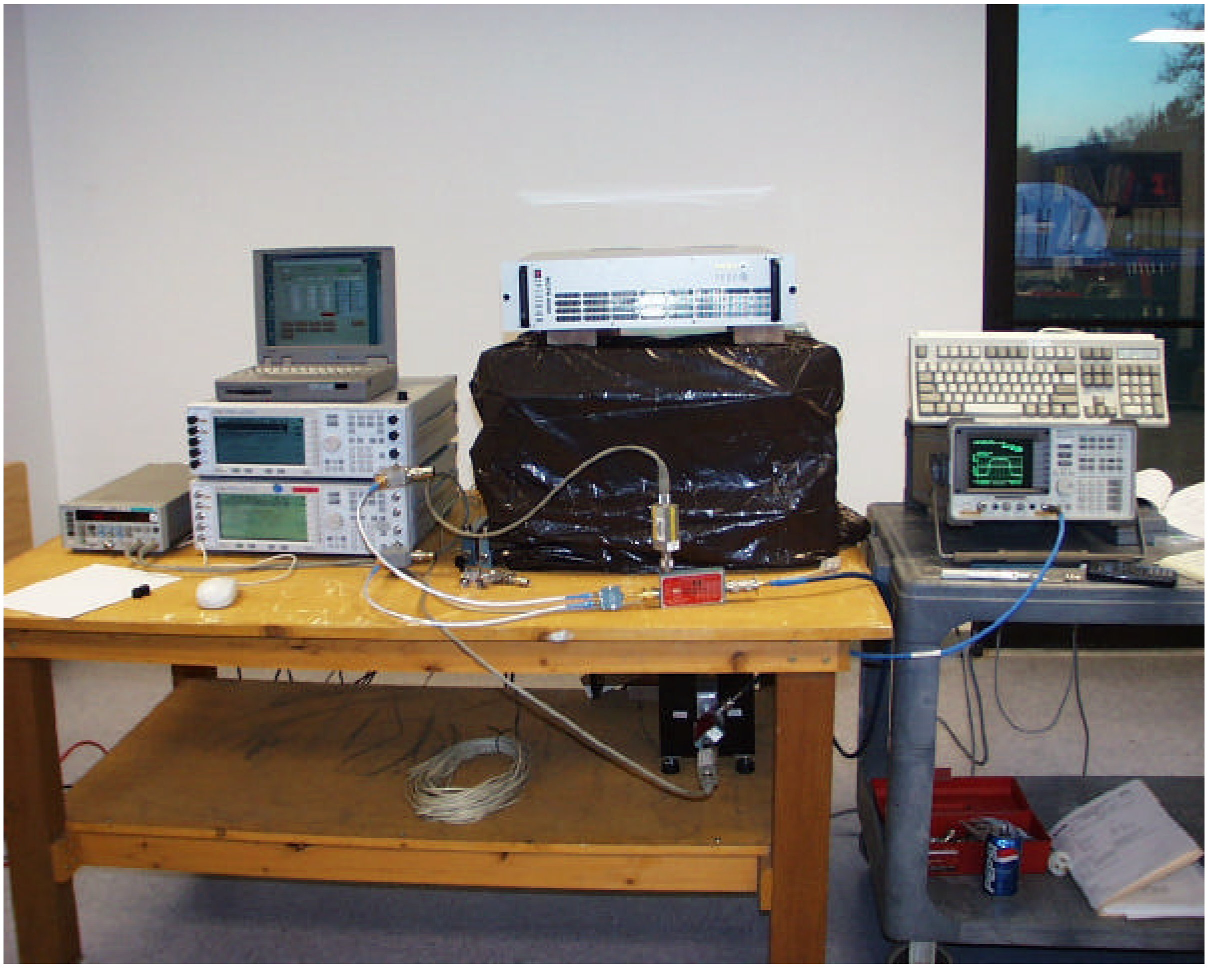


TEST PROCEDURE

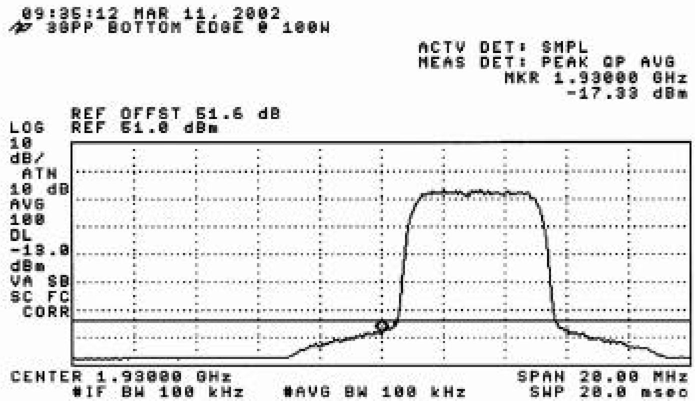
1) Two balanced signals were applied to the RF input. One set as close as possible to the bottom of the block edge and one set as close as possible to the top of the block edge and one set of each ends of the block edges. Set the RES BW to 1% of the emission bandwidth to show compliance with the –13dBm limit, in the 1 MHz bands immediately outside and adjacent to the top and bottom edges of the frequency block.

2) For the Out-of-Band measurements a 1 MHz RES BW was used to scan from 15 MHz to 10*fo* of the fundamental carrier for all frequency block. A display line was placed at –13dBm to show compliance.

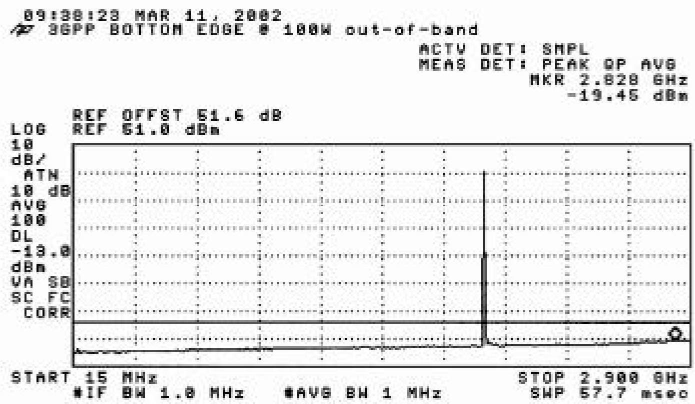
RESULT

The following table indicates the plot number associated with the Block Edges, Intermodulation and Out-of-Band emission plots. All measurements are either peak or average detector mode as specified from plot.

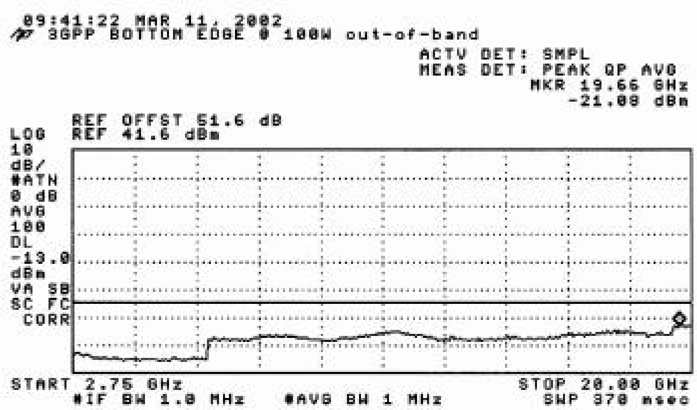
*** WCDMA (3GPP) ***		
Plot#	**Description**	**Frequency Range (MHz)**
13	Bottom Block Edge	Channel @ 1933 & marker @ 1930
14	Bottom Block Edge out-of-band	15 to 2900
15	Bottom Block Edge out-of-band	2750 to 20000
16	Top Block Edge	Channel @ 1987 & marker @ 1990
17	Top Block Edge out-of-band	15 to 2900
18	Top Block Edge out-of-band	2750 to 20000
19	Block **A** Intermod bottom end	1933 & 1938 (25 MHz span)
20	Block **A** Intermod bottom end	1933 & 1938 (100 MHz span)
21	Block **A** Intermod out-of-band	15 to 2900
22	Block **A** Intermod out-of-band	2750 to 20000
23	Block **A** Intermod top end	1937 & 1942 (25 MHz span)
24	Block **A** Intermod top end	1937 & 1942 (100 MHz span)
25	Block **A** Intermod out-of-band	15 to 2900
26	Block **A** Intermod out-of-band	2750 to 20000
27	Block **A** Intermod both end	1933 & 1942 (25 MHz span)
28	Block **A** Intermod both end	1933 & 1942 (100 MHz span)
29	Block **A** Intermod out-of-band	15 to 2900
30	Block **A** Intermod out-of-band	2750 to 20000
31	Block **B** Intermod bottom end	1953 & 1958 (25 MHz span)
32	Block **B** Intermod bottom end	1953 & 1958 (100 MHz span)
33	Block **B** Intermod out-of-band	15 to 2900
34	Block **B** Intermod out-of-band	2750 to 20000
35	Block **B** Intermod top end	1957 & 1962 (25 MHz span)
36	Block **B** Intermod top end	1957 & 1962 (100 MHz span)
37	Block **B** Intermod out-of-band	15 to 2900
38	Block **B** Intermod out-of-band	2750 to 20000
39	Block **B** Intermod both end	1953 & 1962 (25 MHz span)
40	Block **B** Intermod both end	1953 & 1962 (100 MHz span)
41	Block **B** Intermod out-of-band	15 to 2900
42	Block **B** Intermod out-of-band	2750 to 20000
43	Block **C** Intermod bottom end	1978 & 1983 (25 MHz span)
44	Block **C** Intermodbottom end	1978 & 1983 (100 MHz span)
45	Block **C** Intermod out-of-band	15 to 2900
46	Block **C** Intermod out-of-band	2750 to 20000
47	Block **C** Intermod top end	1982 & 1987 (25 MHz span)
48	Block **C** Intermod top end	1982 & 1987 (100 MHz span)
49	Block **C** Intermod out-of-band	15 to 2900
50	Block **C** Intermod out-of-band	2750 to 20000
51	Block **C** Intermod both end	1978 & 1987 (25 MHz span)
52	Block **C** Intermod both end	1978 & 1987 (100 MHz span)
53	Block **C** Intermod out-of-band	15 to 2900
54	Block **C** Intermod out-of-band	2750 to 20000



13



14



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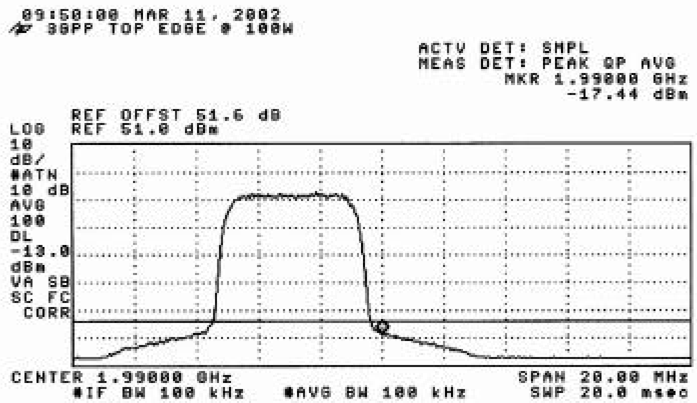
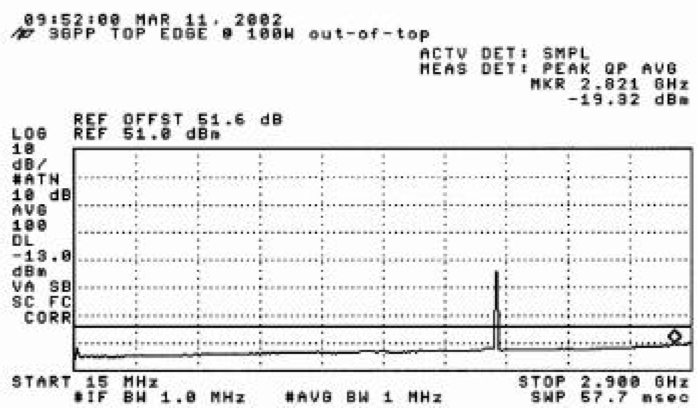
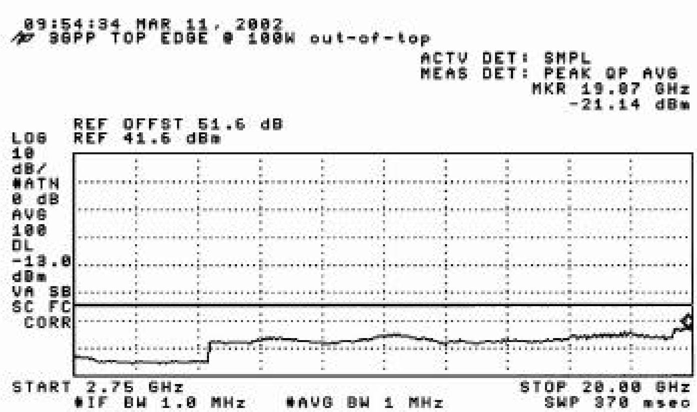
561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888


09:50:00 MAR 11, 2002
3GPP TOP EDGE @ 100W
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.99000 GHz
-17.44 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG 10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
CENTER 1.99000 GHz
SPAN 20.00 MHz
#IF BW 100 kHz
#AVG BW 100 kHz
SWP 20.0 msec

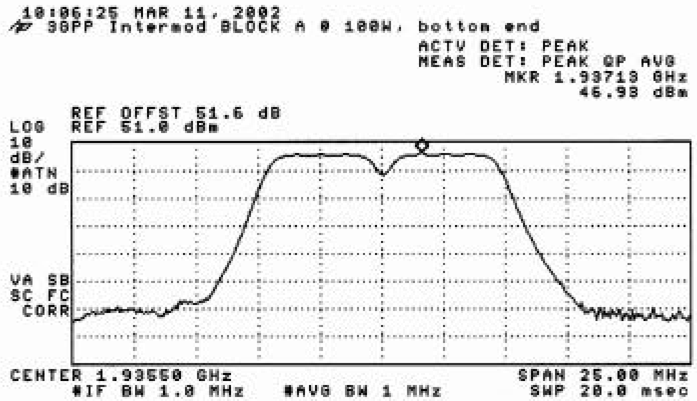
16


09:52:00 MAR 11, 2002
3GPP TOP EDGE @ 100W out-of-top
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.821 GHz
-19.32 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG 10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 15 MHz
STOP 2.900 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 57.7 msec

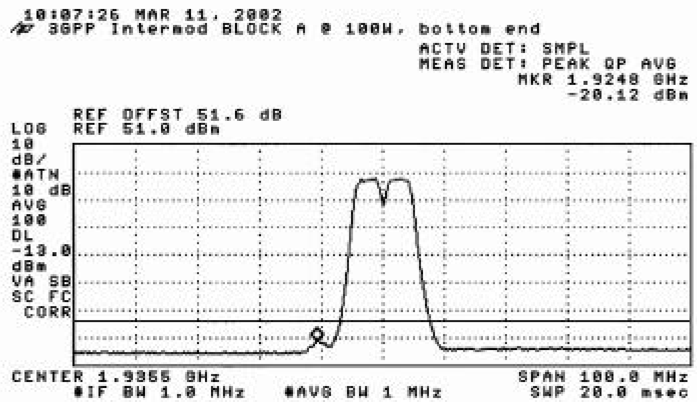
17


09:54:34 MAR 11, 2002
3GPP TOP EDGE @ 100W out-of-top
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 19.87 GHz
-21.14 dBm
REF OFFST 51.6 dB
REF 41.6 dBm
LOG 10 dB/
#ATN 0 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 2.75 GHz
STOP 20.00 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 370 msec

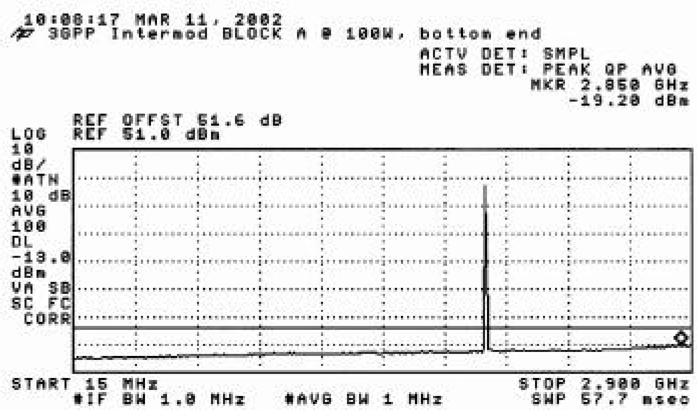
18


10:06:25 MAR 11, 2002
3GPP Intermod BLOCK A @ 100W, bottom end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.93713 GHz
46.93 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10
dB/
#ATN
10 dB
VA SB
SC FC
CORR
CENTER 1.93550 GHz
SPAN 25.00 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 20.0 msec

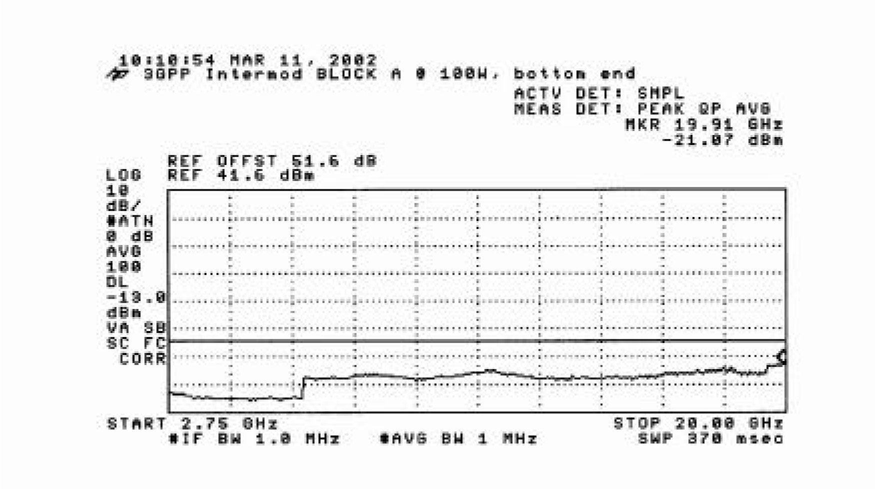
19


10:07:26 MAR 11, 2002
3GPP Intermod BLOCK A @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9248 GHz
-20.12 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
CENTER 1.9355 GHz
SPAN 100.0 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 20.0 msec

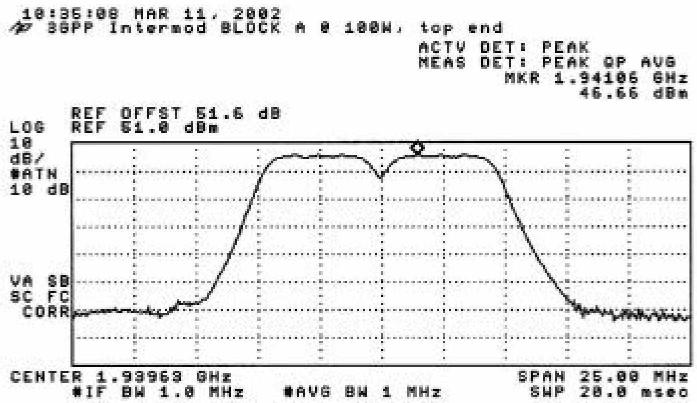
20


10:08:17 MAR 11, 2002
3GPP Intermod BLOCK A @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.850 GHz
-19.20 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 15 MHz
STOP 2.900 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 57.7 msec

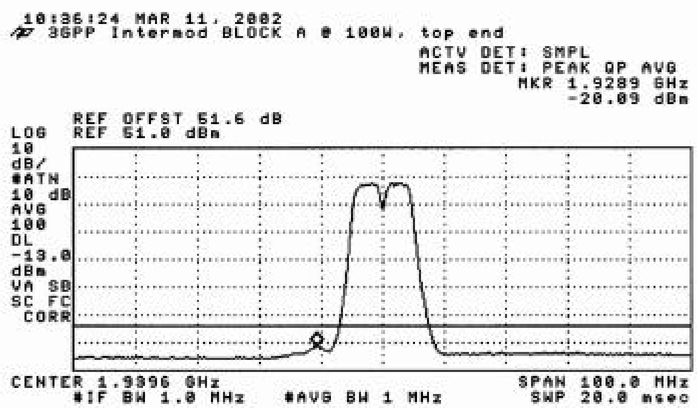
21


10:10:54 MAR 11, 2002
3GPP Intermod BLOCK A @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 19.91 GHz
-21.07 dBm
REF OFFST 51.6 dB
LOG REF 41.6 dBm
10
dB/
#ATN
0 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

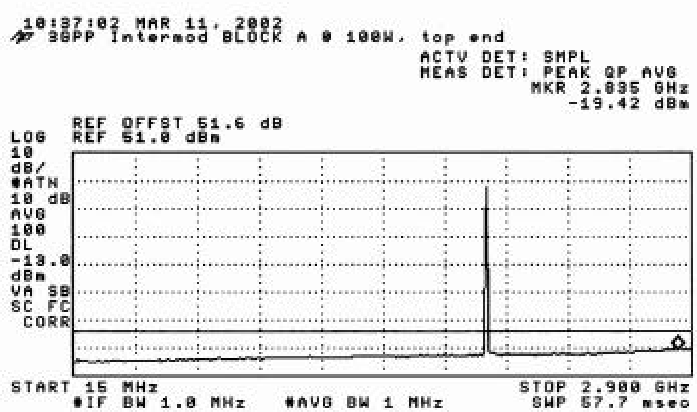
22



23



24



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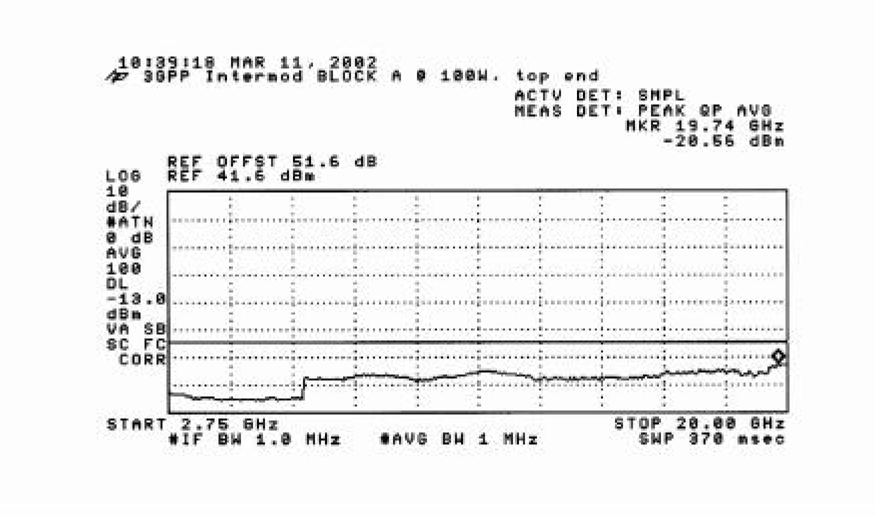
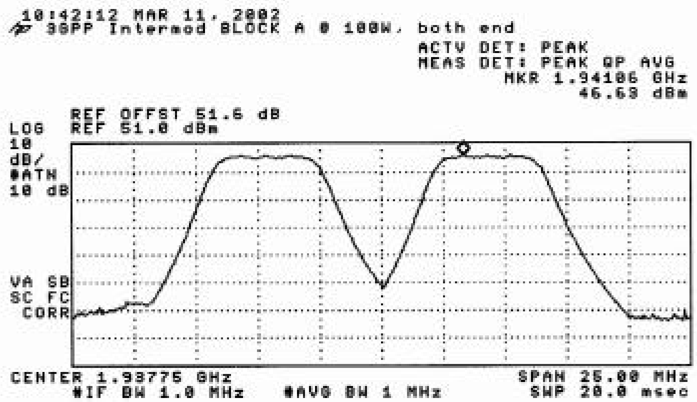
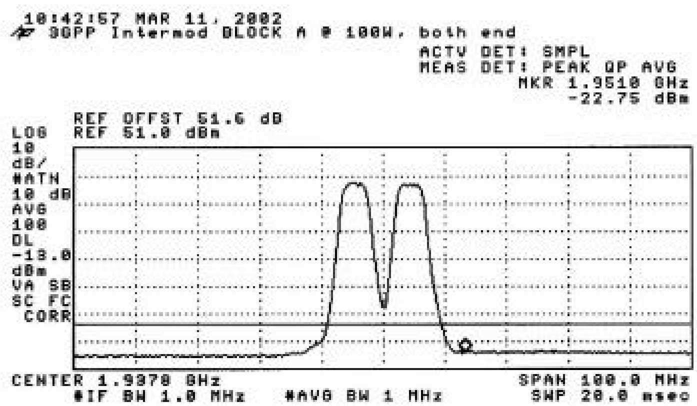
561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888


10:39:18 MAR 11, 2002
3GPP Intermod BLOCK A @ 100W. top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 19.74 GHz
-20.56 dBm
REF OFFST 51.6 dB
LOG REF 41.6 dBm
10
dB/
#ATN
0 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

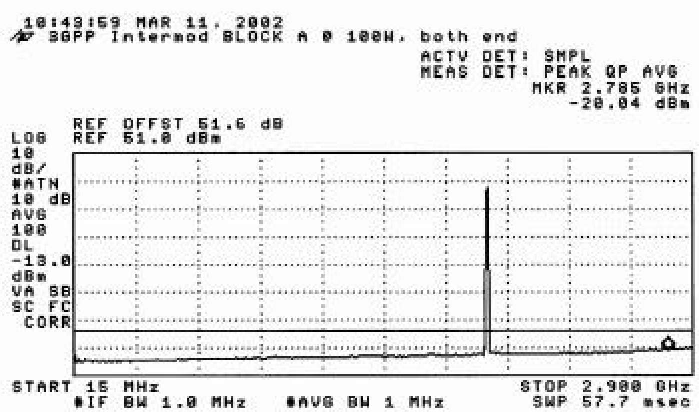
26


10:42:12 MAR 11, 2002
3GPP Intermod BLOCK A @ 100W, both end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.94186 GHz
46.63 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
VA SB
SC FC
CORR
CENTER 1.93775 GHz
SPAN 25.00 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 20.0 msec

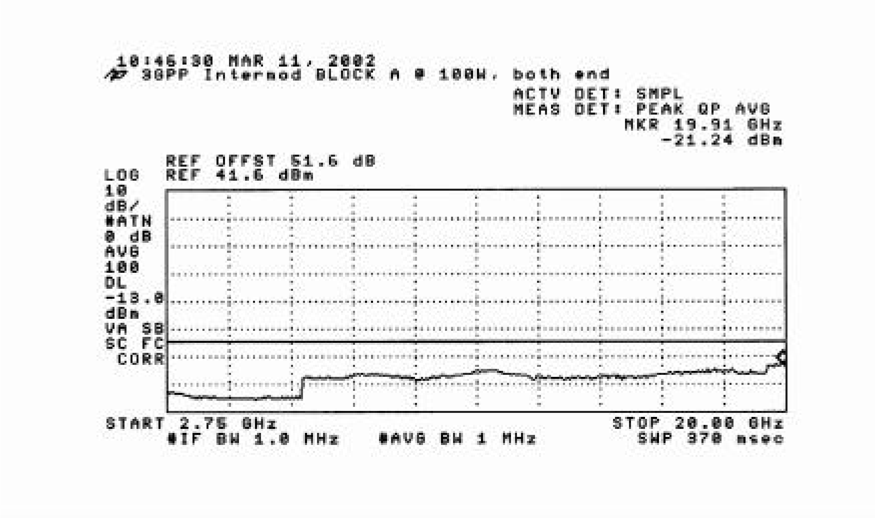
27


10:42:57 MAR 11, 2002
3GPP Intermod BLOCK A @ 100W, both end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9510 GHz
-22.75 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
CENTER 1.9370 GHz
SPAN 100.0 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 20.0 msec

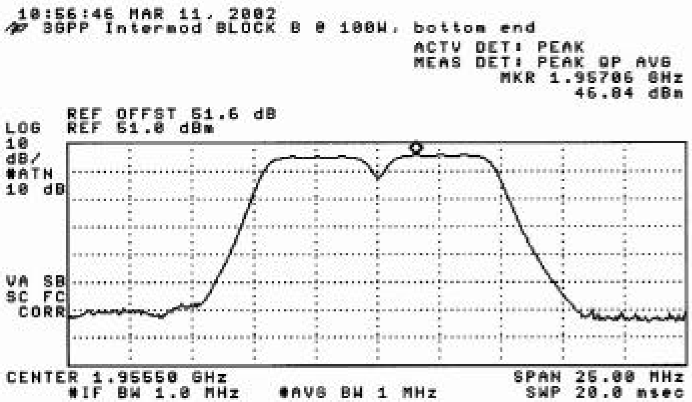
28


10:43:59 MAR 11, 2002
3GPP Intermod BLOCK A @ 100W, both end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.785 GHz
-20.04 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 15 MHz
STOP 2.900 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 57.7 msec

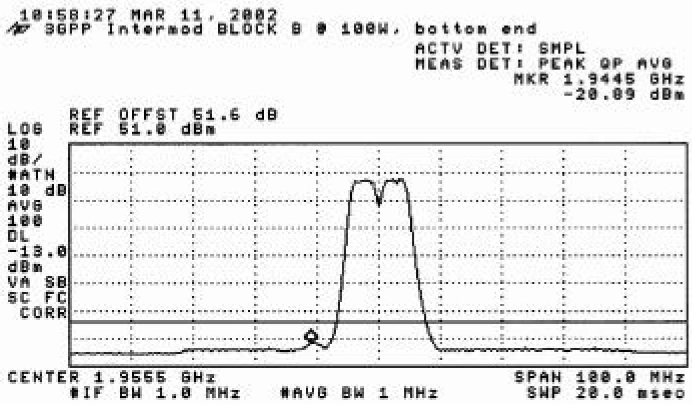
29


10:46:30 MAR 11, 2002
3GPP Intermod BLOCK A @ 100W, both end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 19.91 GHz
-21.24 dBm
REF OFFST 51.6 dB
LOG REF 41.6 dBm
10
dB/
#ATN
0 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

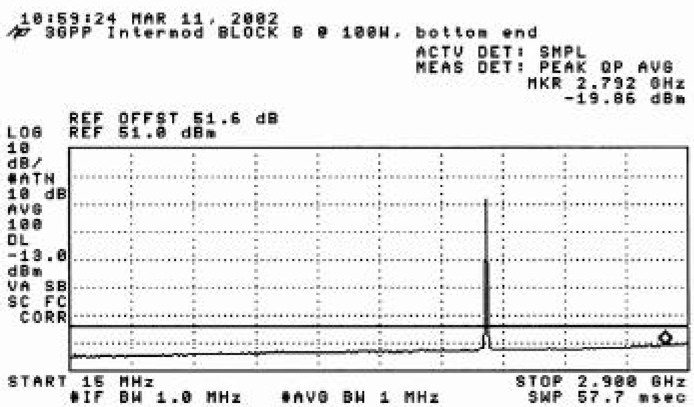
30


10:56:46 MAR 11, 2002
3GPP Intermod BLOCK B @ 100W, bottom end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.95706 GHz
46.84 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
VA SB
SC FC
CORR
CENTER 1.95550 GHz
SPAN 25.00 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 20.0 msec

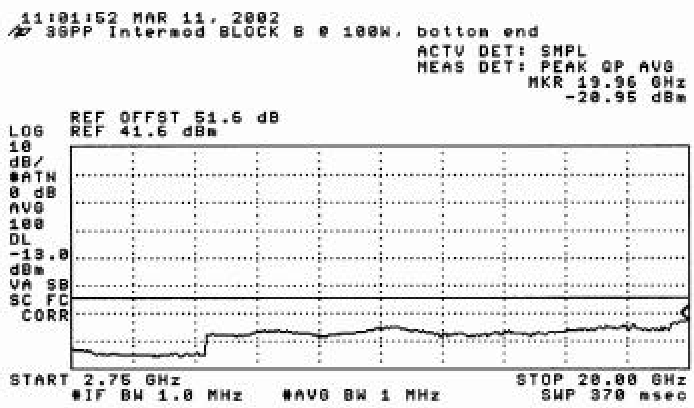
31


10:58:27 MAR 11, 2002
3GPP Intermod BLOCK B @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9445 GHz
-20.89 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
CENTER 1.9555 GHz
SPAN 100.0 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 20.0 msec

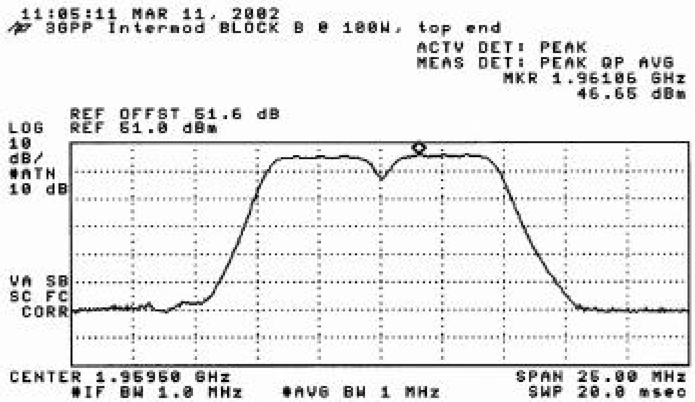
32


10:59:24 MAR 11, 2002
3GPP Intermod BLOCK B @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.792 GHz
-19.86 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 15 MHz
STOP 2.900 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 57.7 msec

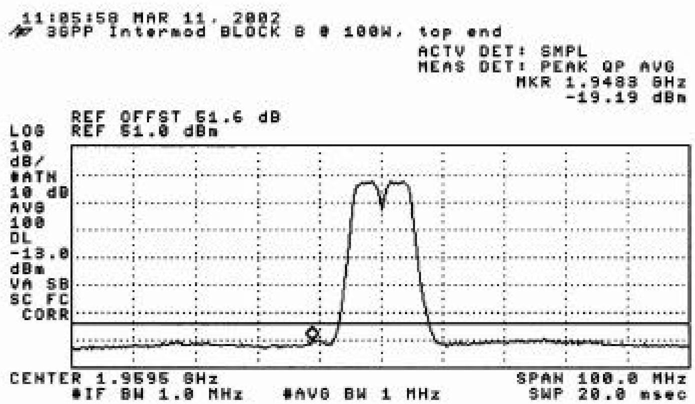
33


11:01:52 MAR 11, 2002
3GPP Intermod BLOCK B @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 19.96 GHz
-20.95 dBm
REF OFFST 51.6 dB
LOG REF 41.6 dBm
10
dB/
#ATN
0 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz #AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

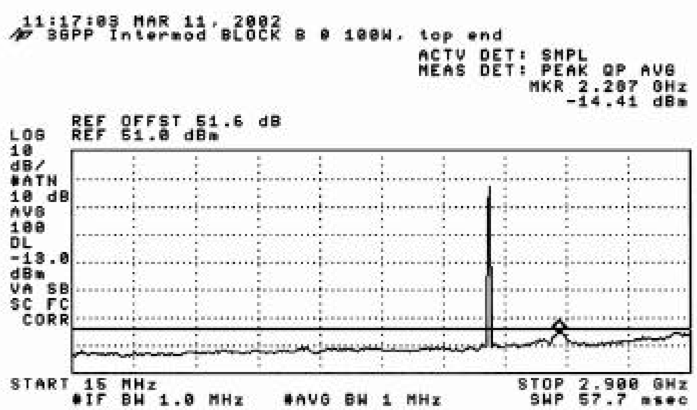
34



35



36



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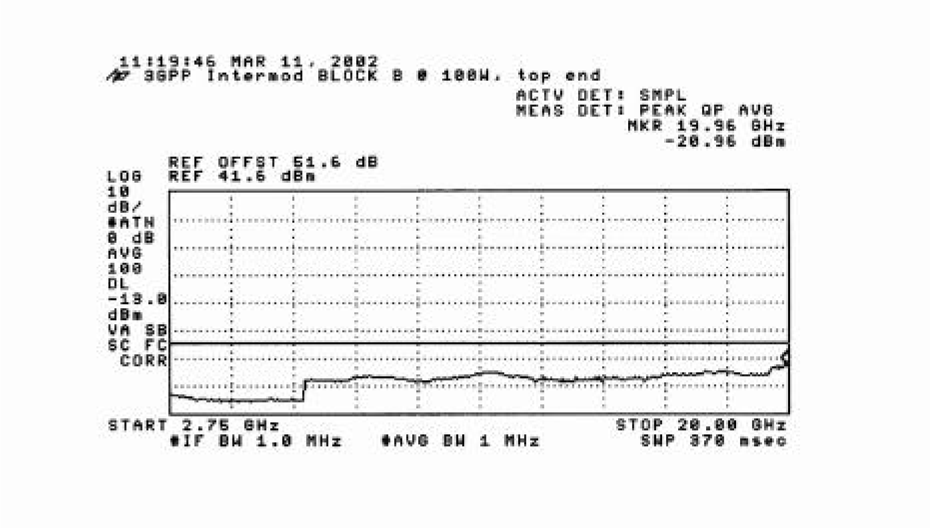
561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888



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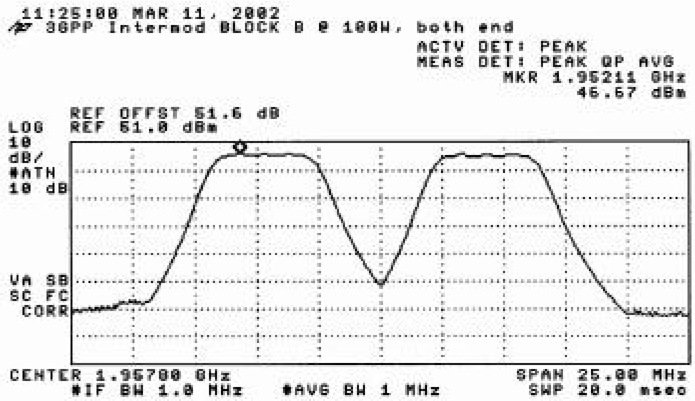
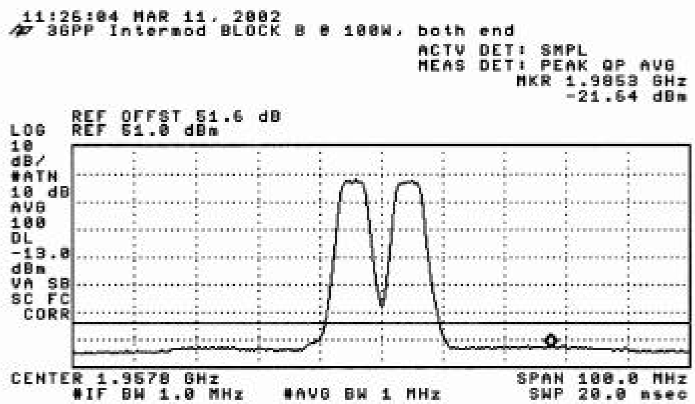
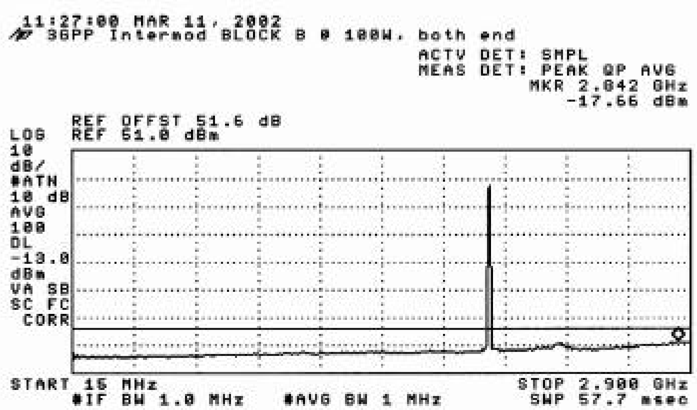
COMPLIANCE CERTIFICATION SERVICES DOCUMENT NO: CCSUP4031A
561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888


11:25:00 MAR 11, 2002
3GPP Intermod BLOCK B @ 100W, both end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.95211 GHz
46.67 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10
dB/
#ATN
10 dB
VA SB
SC FC
CORR
CENTER 1.95700 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 25.00 MHz
SWP 20.0 msec

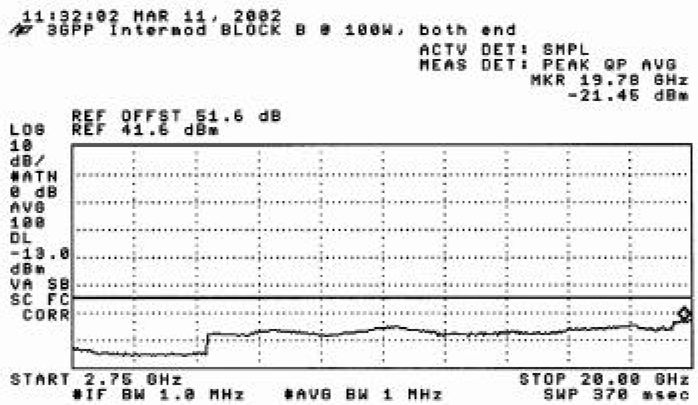
39


11:26:04 MAR 11, 2002
3GPP Intermod BLOCK B @ 100W, both end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9853 GHz
-21.64 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
CENTER 1.9570 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 100.0 MHz
SWP 20.0 msec

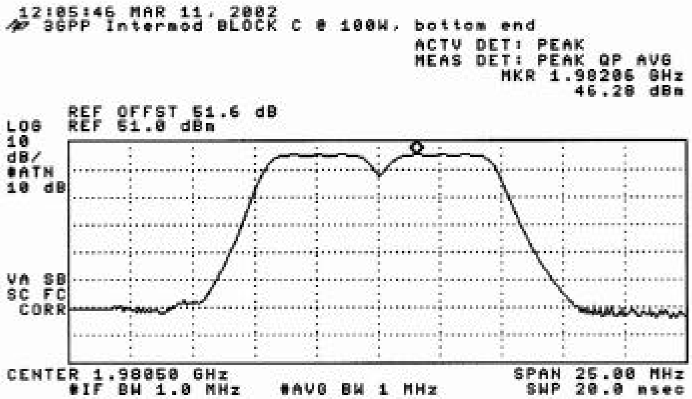
40


11:27:00 MAR 11, 2002
3GPP Intermod BLOCK B @ 100W, both end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.842 GHz
-17.66 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 15 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 2.900 GHz
SWP 57.7 msec

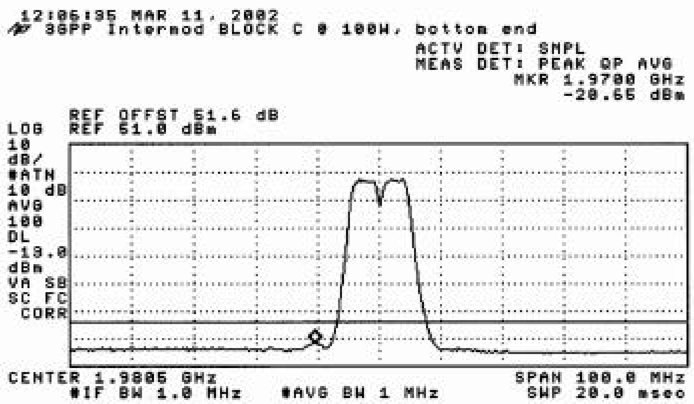
41


11:32:02 MAR 11, 2002
3GPP Intermod BLOCK B @ 100W, both end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 19.78 GHz
-21.45 dBm
REF OFFST 51.6 dB
LOG REF 41.6 dBm
10
dB/
#ATN
0 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz #AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

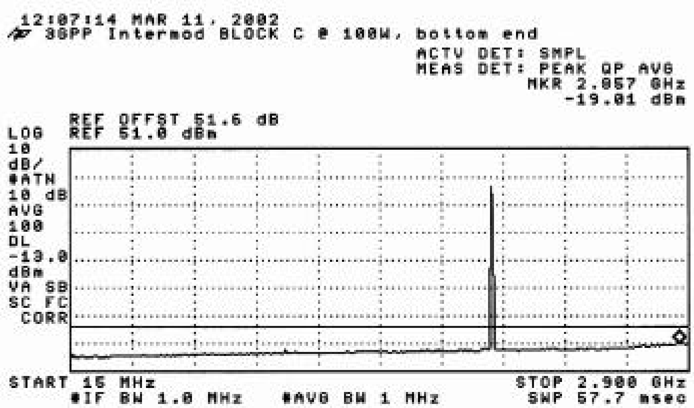
42


12:05:46 MAR 11, 2002
3GPP Intermod BLOCK C @ 100W, bottom end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.98206 GHz
46.28 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10
dB/
#ATN
10 dB
VA SB
SC FC
CORR
CENTER 1.98050 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 25.00 MHz
SWP 20.0 msec

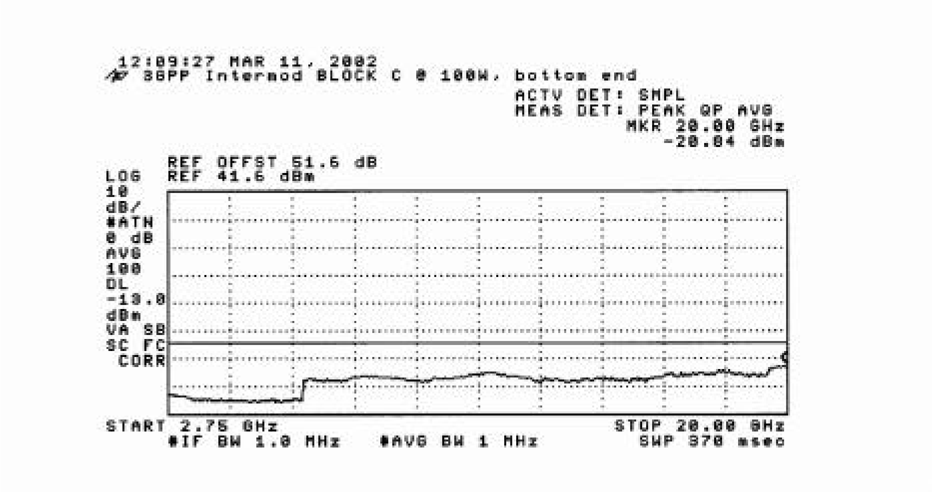
43


12:06:35 MAR 11, 2002
3GPP Intermod BLOCK C @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9700 GHz
-20.65 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
CENTER 1.9805 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 100.0 MHz
SWP 20.0 msec

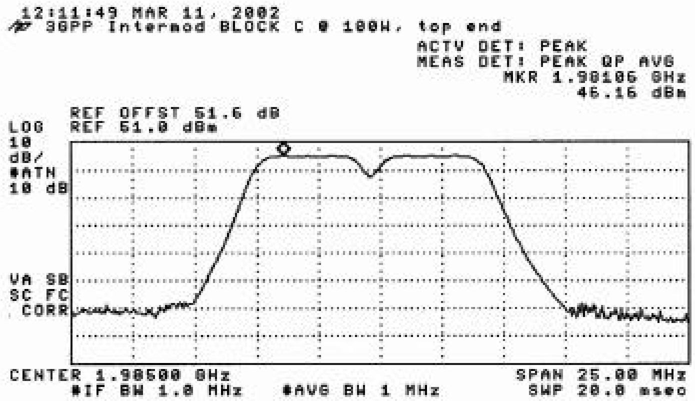
44


12:07:14 MAR 11, 2002
3GPP Intermod BLOCK C @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.857 GHz
-19.01 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 15 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 2.900 GHz
SWP 57.7 msec

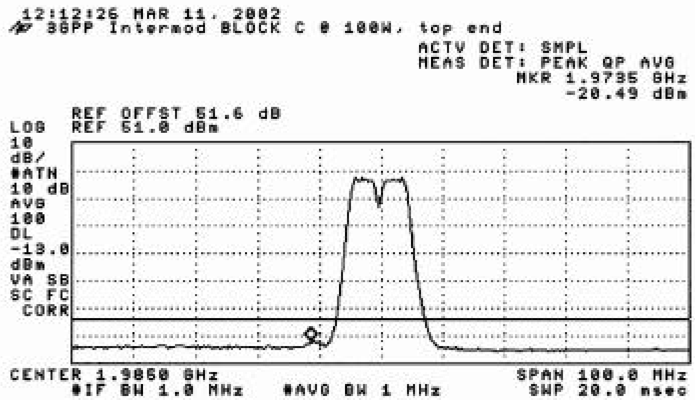
45


12:09:27 MAR 11, 2002
3GPP Intermod BLOCK C @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 20.00 GHz
-20.04 dBm
REF OFFST 51.6 dB
LOG REF 41.6 dBm
10 dB/
#ATN 0 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

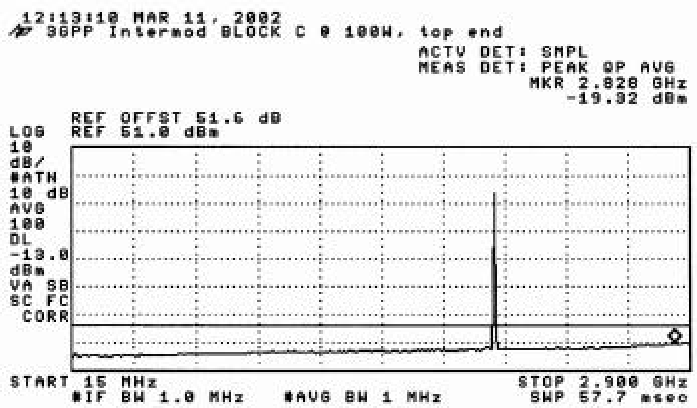
46


12:11:49 MAR 11, 2002
3GPP Intermod BLOCK C @ 100W, top end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.98106 GHz
46.16 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG
10
dB/
#ATN
10 dB
VA SB
SC FC
CORR
CENTER 1.98500 GHz
SPAN 25.00 MHz
#IF BW 1.0 MHz #AVG BW 1 MHz
SWP 20.0 msec

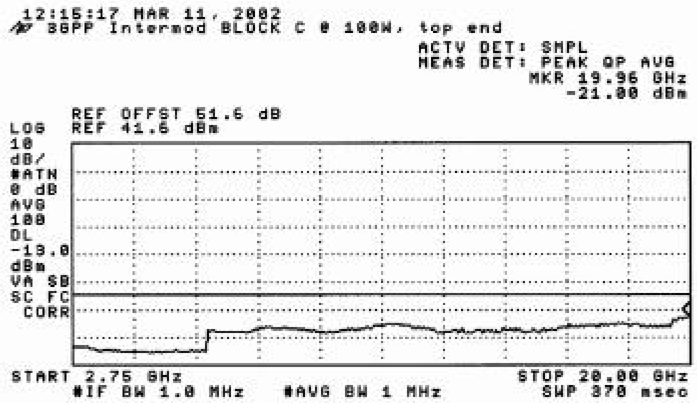
47


12:12:26 MAR 11, 2002
3GPP Intermod BLOCK C @ 100W, top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9735 GHz
-20.49 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
CENTER 1.9850 GHz
SPAN 100.0 MHz
#IF BW 1.0 MHz #AVG BW 1 MHz
SWP 20.0 msec

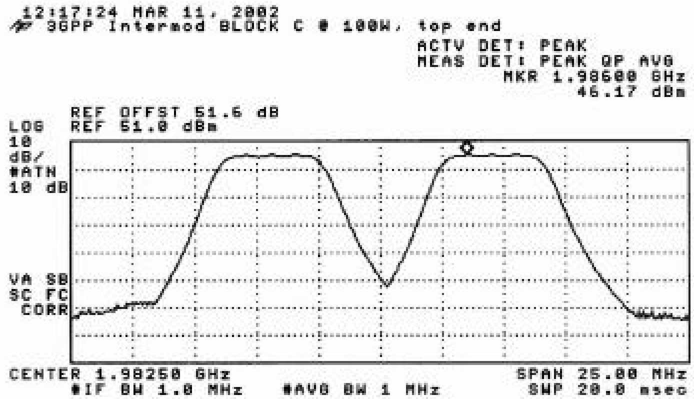
48


12:13:10 MAR 11, 2002
3GPP Intermod BLOCK C @ 100W, top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.828 GHz
-19.32 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 15 MHz
STOP 2.900 GHz
#IF BW 1.0 MHz #AVG BW 1 MHz
SWP 57.7 msec

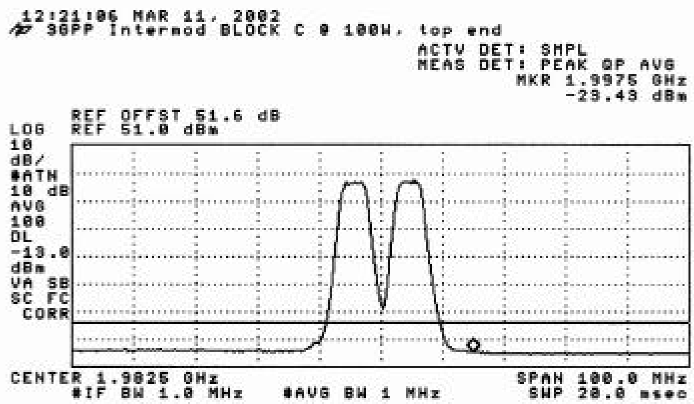
49


12:15:17 MAR 11, 2002
3GPP Intermod BLOCK C @ 100W, top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 19.96 GHz
-21.00 dBm
REF OFFST 51.6 dB
REF 41.6 dBm
LOG
10
dB/
#ATN
0 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

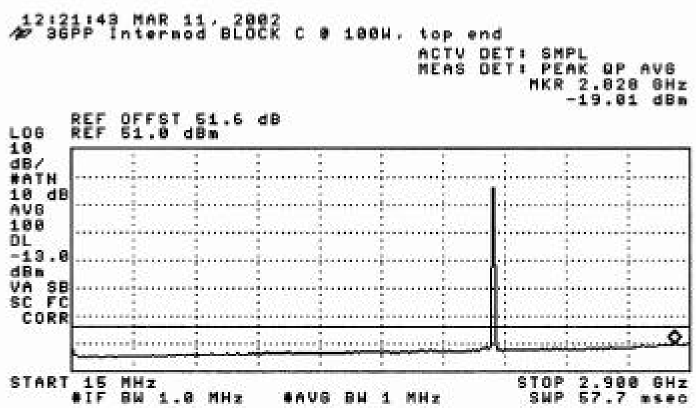
50


12:17:24 MAR 11, 2002
3GPP Intermod BLOCK C @ 100W, top end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.98600 GHz
46.17 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
VA SB
SC FC
CORR
CENTER 1.98250 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 25.00 MHz
SWP 20.0 msec

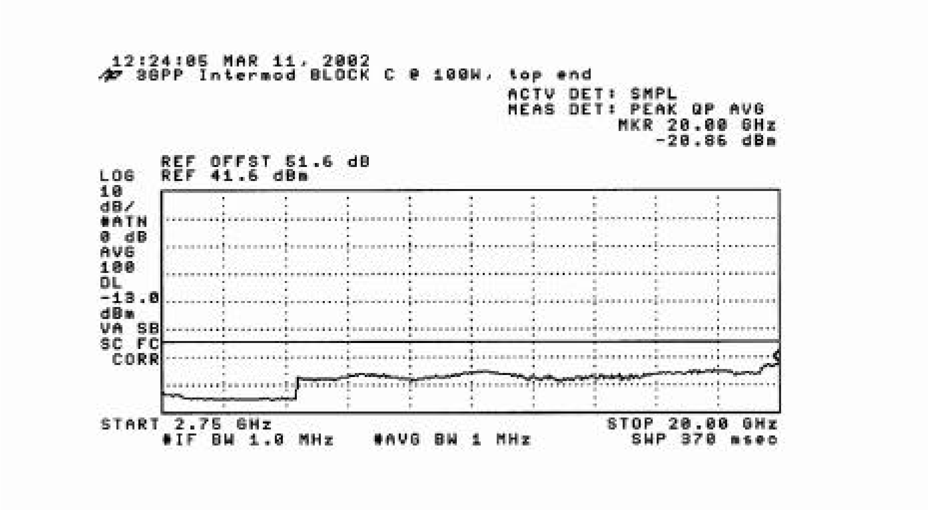
51


12:21:06 MAR 11, 2002
3GPP Intermod BLOCK C @ 100W, top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9975 GHz
-23.43 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
CENTER 1.9825 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 100.0 MHz
SWP 20.0 msec

52


12:21:43 MAR 11, 2002
3GPP Intermod BLOCK C @ 100W, top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.828 GHz
-19.01 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 15 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 2.900 GHz
SWP 57.7 msec

53



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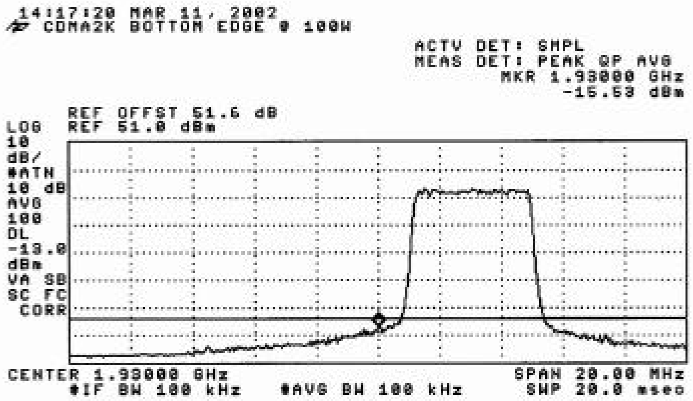
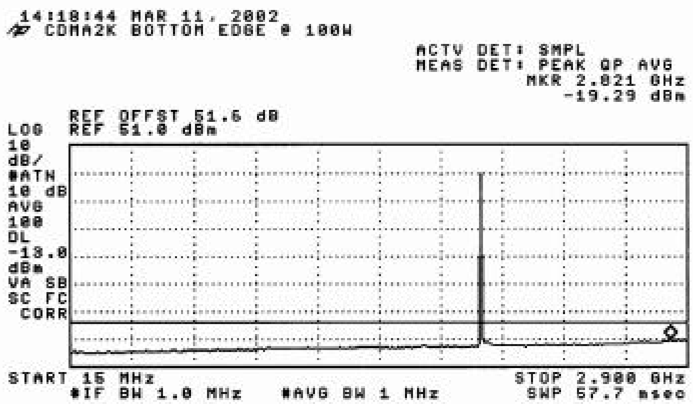
COMPLIANCE CERTIFICATION SERVICES DOCUMENT NO: CCSUP4031A
561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888

*** WCDMA (CDMA2K) ***		
Plot#	**Description**	**Frequency Range (MHz)**
55	Bottom Block Edge	Channel @ 1933 & marker @ 1930
56	Bottom Block Edge out-of-band	15 to 2900
57	Bottom Block Edge out-of-band	2750 to 20000
58	Top Block Edge	Channel @ 1987 & marker @ 1990
59	Top Block Edge out-of-band	15 to 2900
60	Top Block Edge out-of-band	2750 to 20000
61	Block **A** Intermod bottom end	1933 & 1938 (25 MHz span)
62	Block **A** Intermod bottom end	1933 & 1938 (100 MHz span)
63	Block **A** Intermod out-of-band	15 to 2900
64	Block **A** Intermod out-of-band	2750 to 20000
65	Block **A** Intermod top end	1937 & 1942 (25 MHz span)
66	Block **A** Intermod top end	1937 & 1942 (100 MHz span)
67	Block **A** Intermod out-of-band	15 to 2900
68	Block **A** Intermod out-of-band	2750 to 20000
69	Block **A** Intermod both end	1933 & 1942 (25 MHz span)
70	Block **A** Intermod both end	1933 & 1942 (100 MHz span)
71	Block **A** Intermod out-of-band	15 to 2900
72	Block **A** Intermod out-of-band	2750 to 20000
73	Block **B** Intermod bottom end	1953 & 1958 (25 MHz span)
74	Block **B** Intermod bottom end	1953 & 1958 (100 MHz span)
75	Block **B** Intermod out-of-band	15 to 2900
76	Block **B** Intermod out-of-band	2750 to 20000
77	Block **B** Intermod top end	1957 & 1962 (25 MHz span)
78	Block **B** Intermod top end	1957 & 1962 (100 MHz span)
79	Block **B** Intermod out-of-band	15 to 2900
80	Block **B** Intermod out-of-band	2750 to 20000
81	Block **B** Intermod both end	1953 & 1962 (25 MHz span)
82	Block **B** Intermod both end	1953 & 1962 (100 MHz span)
83	Block **B** Intermod out-of-band	15 to 2900
84	Block **B** Intermod out-of-band	2750 to 20000
85	Block **C** Intermod bottom end	1978 & 1983 (25 MHz span)
86	Block **C** Intermodbottom end	1978 & 1983 (100 MHz span)
87	Block **C** Intermod out-of-band	15 to 2900
88	Block **C** Intermod out-of-band	2750 to 20000
89	Block **C** Intermod top end	1982 & 1987 (25 MHz span)
90	Block **C** Intermod top end	1982 & 1987 (100 MHz span)
91	Block **C** Intermod out-of-band	15 to 2900
92	Block **C** Intermod out-of-band	2750 to 20000
93	Block **C** Intermod both end	1978 & 1987 (25 MHz span)
94	Block **C** Intermod both end	1978 & 1987 (100 MHz span)
95	Block **C** Intermod out-of-band	15 to 2900
96	Block **C** Intermod out-of-band	2750 to 20000

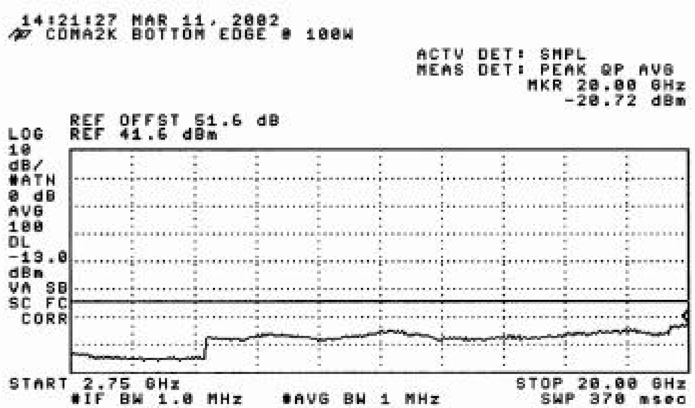
COMPLIANCE CERTIFICATION SERVICES DOCUMENT NO: CCSUP4031A
561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888



55

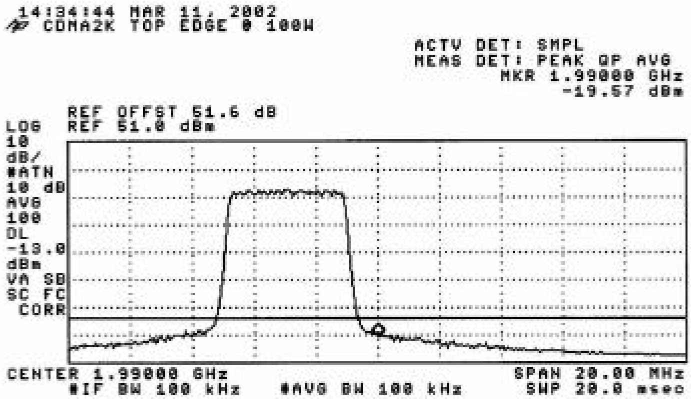


56

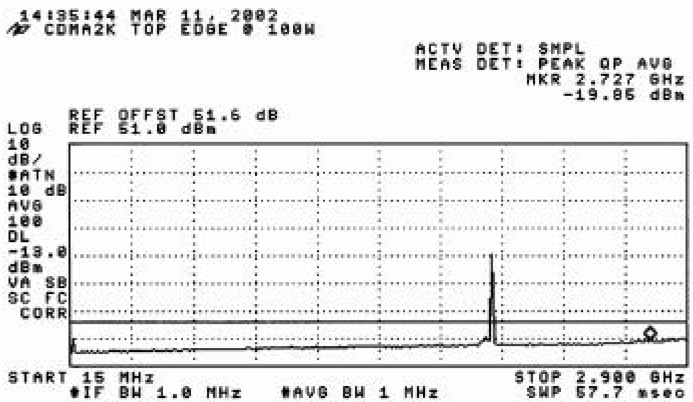


57

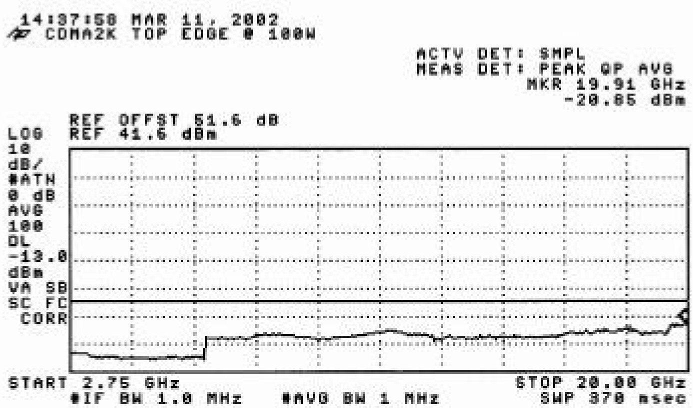
COMPLIANCE CERTIFICATION SERVICES DOCUMENT NO: CCSUP4031A
561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888


14:34:44 MAR 11, 2002
CDMA2K TOP EDGE @ 100W
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.99000 GHz
-19.57 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG 10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
CENTER 1.99000 GHz
#IF BW 100 kHz
#AVG BW 100 kHz
SPAN 20.00 MHz
SWP 20.0 msec

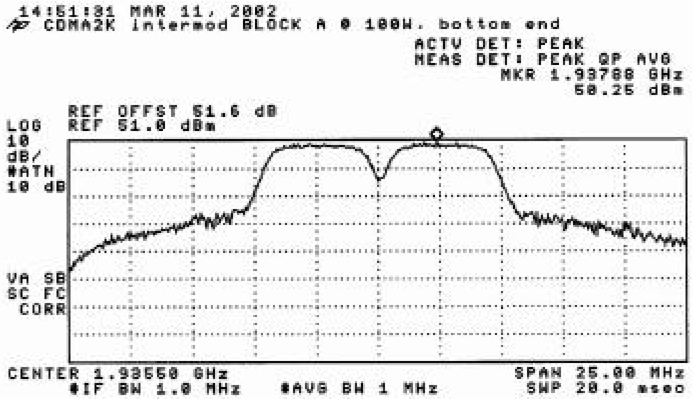
58


14:35:44 MAR 11, 2002
CDMA2K TOP EDGE @ 100W
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.727 GHz
-19.85 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG 10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 15 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 2.900 GHz
SWP 57.7 msec

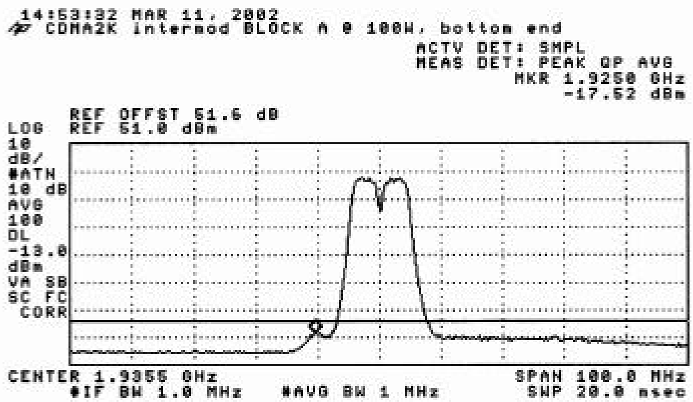
59


14:37:58 MAR 11, 2002
CDMA2K TOP EDGE @ 100W
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 19.91 GHz
-20.85 dBm
REF OFFST 51.6 dB
REF 41.6 dBm
LOG 10 dB/
#ATN 0 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

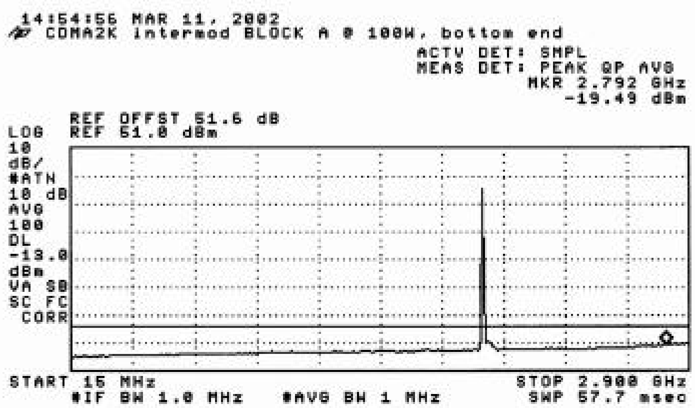
60


14:51:31 MAR 11, 2002
CDMA2K intermod BLOCK A @ 100W, bottom end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.93788 GHz
50.25 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG
10
dB/
#ATN
10 dB
VA SB
SC FC
CORR
CENTER 1.93550 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 25.00 MHz
SWP 20.0 msec

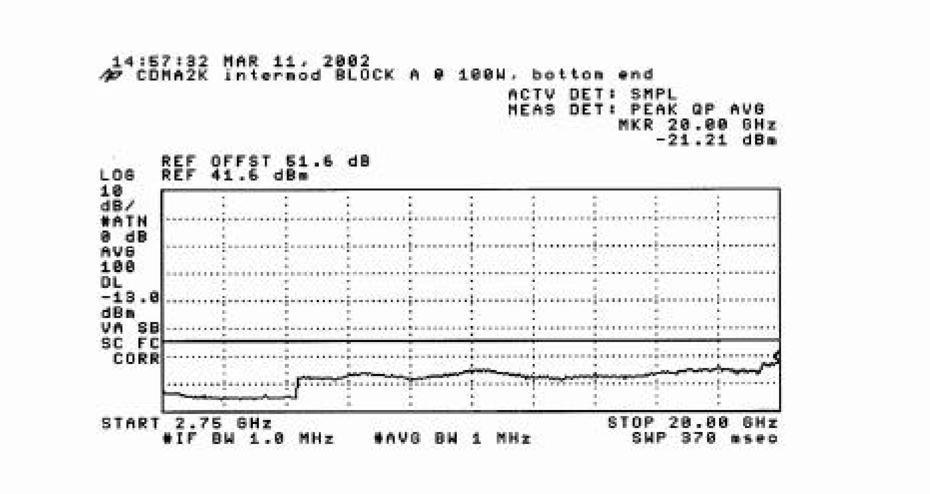
61


14:53:32 MAR 11, 2002
CDMA2K intermod BLOCK A @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9250 GHz
-17.52 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
CENTER 1.9355 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 100.0 MHz
SWP 20.0 msec

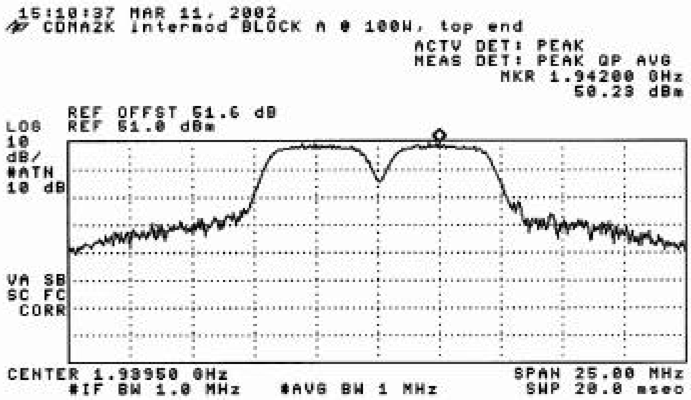
62


14:54:56 MAR 11, 2002
CDMA2K intermod BLOCK A @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.792 GHz
-19.49 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 15 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 2.900 GHz
SWP 57.7 msec

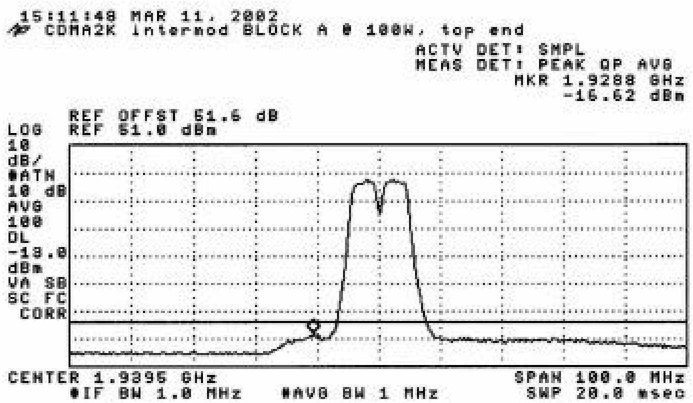
63


14:57:32 MAR 11, 2002
CDMA2K intermod BLOCK A @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 20.00 GHz
-21.21 dBm
REF OFFST 51.6 dB
LOG REF 41.6 dBm
10 dB/
#ATN 0 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

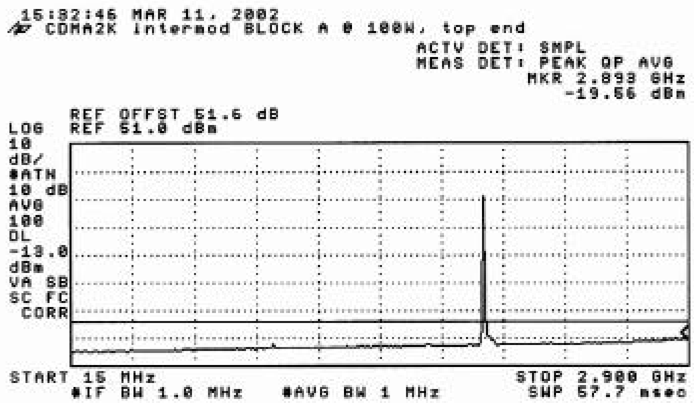
64


15:10:37 MAR 11, 2002
CDMA2K intermod BLOCK A @ 100W, top end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.94200 GHz
50.29 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG
10
dB/
#ATN
10 dB
VA SB
SC FC
CORR
CENTER 1.93950 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 25.00 MHz
SWP 20.0 msec

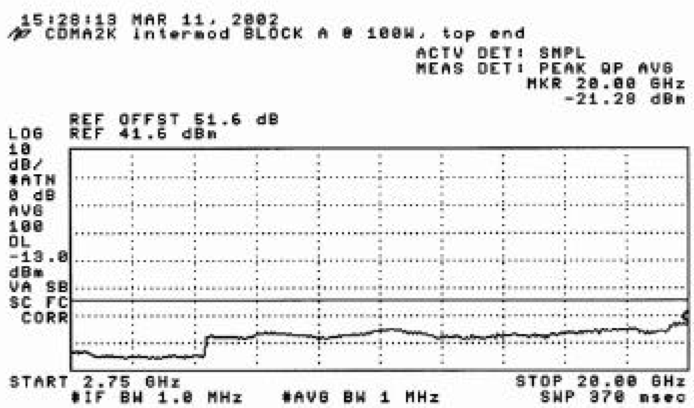
65


15:11:48 MAR 11, 2002
CDMA2K intermod BLOCK A @ 100W, top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9288 GHz
-16.62 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
CENTER 1.9395 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 100.0 MHz
SWP 20.0 msec

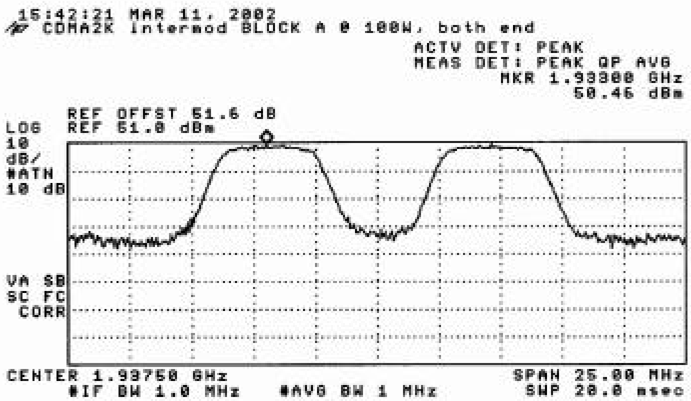
66


15:32:46 MAR 11, 2002
CDMA2K intermod BLOCK A @ 100W, top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.893 GHz
-19.56 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 15 MHz
#IF BW 1.0 MHz #AVG BW 1 MHz
STOP 2.900 GHz
SWP 57.7 msec

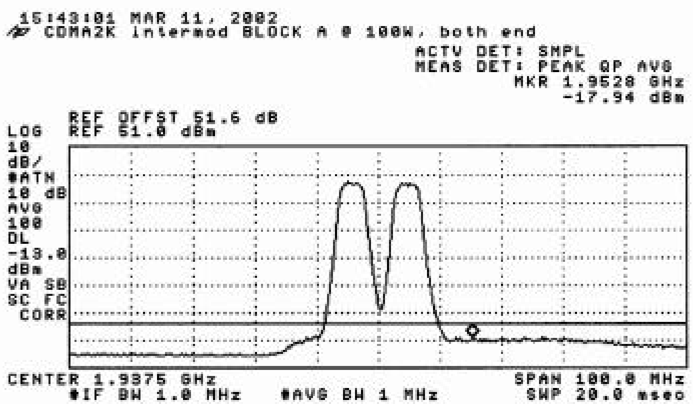
67


15:28:13 MAR 11, 2002
CDMA2K intermod BLOCK A @ 100W, top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 20.00 GHz
-21.28 dBm
REF OFFST 51.6 dB
LOG REF 41.6 dBm
10 dB/
#ATN 0 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz #AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

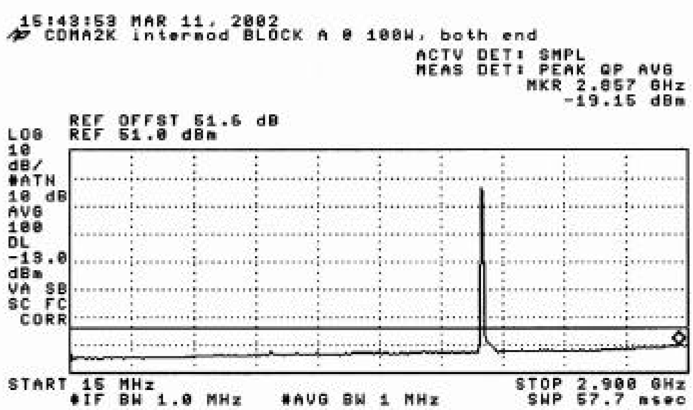
68


15:42:21 MAR 11, 2002
CDMA2K intermod BLOCK A @ 100W, both end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.93300 GHz
50.46 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10
dB/
#ATN
10 dB
VA SB
SC FC
CORR
CENTER 1.93750 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 25.00 MHz
SWP 20.0 msec

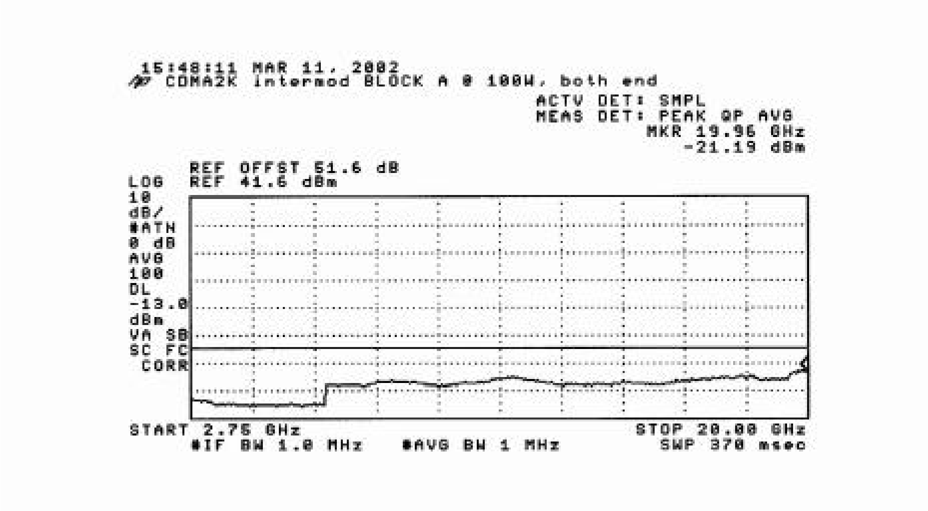
69


15:43:01 MAR 11, 2002
CDMA2K intermod BLOCK A @ 100W, both end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9528 GHz
-17.94 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
CENTER 1.9375 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 100.0 MHz
SWP 20.0 msec

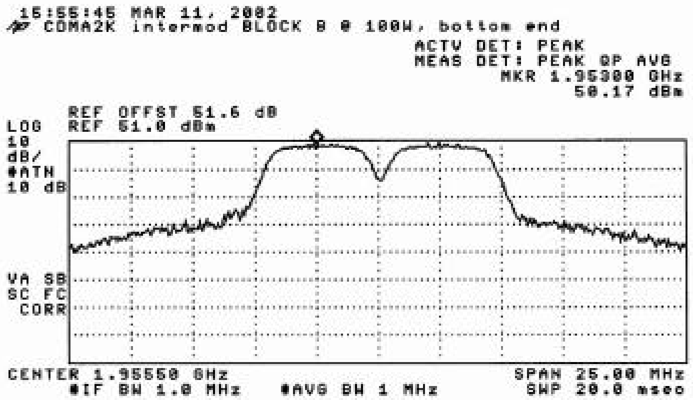
70


15:43:53 MAR 11, 2002
CDMA2K intermod BLOCK A @ 100W, both end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.857 GHz
-19.15 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 15 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 2.900 GHz
SWP 57.7 msec

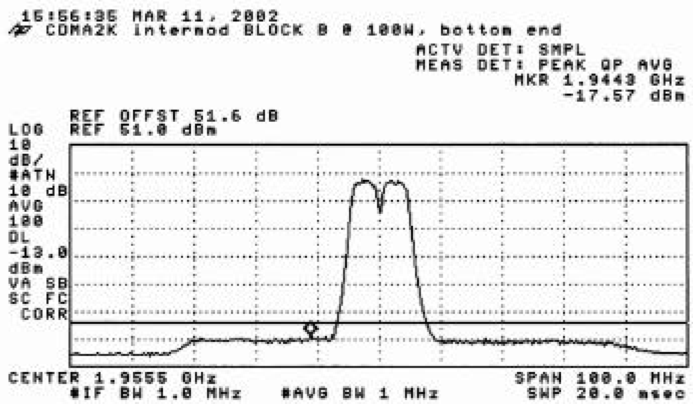
71


15:48:11 MAR 11, 2002
CDMA2K intermod BLOCK A @ 100W, both end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 19.96 GHz
-21.19 dBm
REF OFFST 51.6 dB
LOG REF 41.6 dBm
10
dB/
#ATN
0 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz #AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

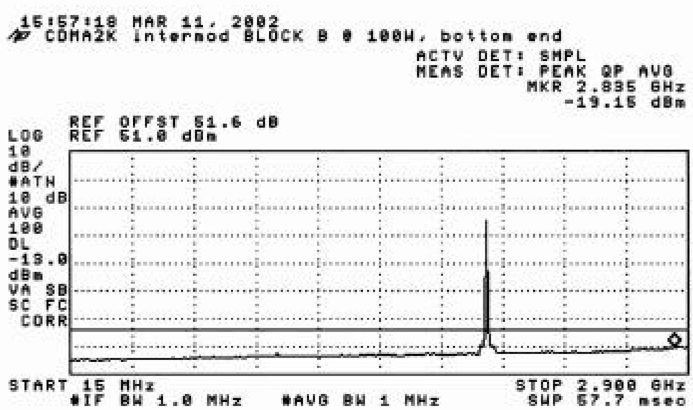
72


15:55:45 MAR 11, 2002
CDMA2K intermod BLOCK B @ 100W, bottom end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.95300 GHz
50.17 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
VA SB
SC FC
CORR
CENTER 1.95550 GHz
SPAN 25.00 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 20.0 msec

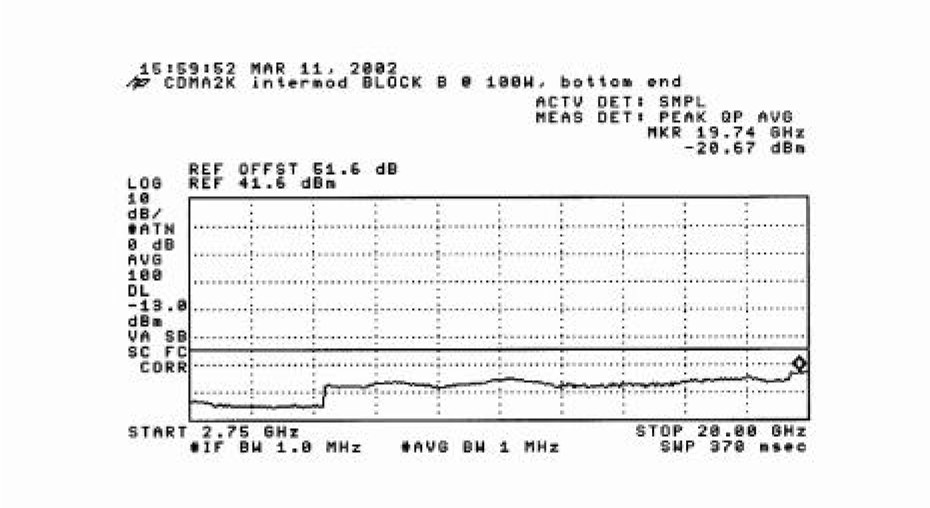
73


15:56:35 MAR 11, 2002
CDMA2K intermod BLOCK B @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9443 GHz
-17.57 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
CENTER 1.9555 GHz
SPAN 100.0 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 20.0 msec

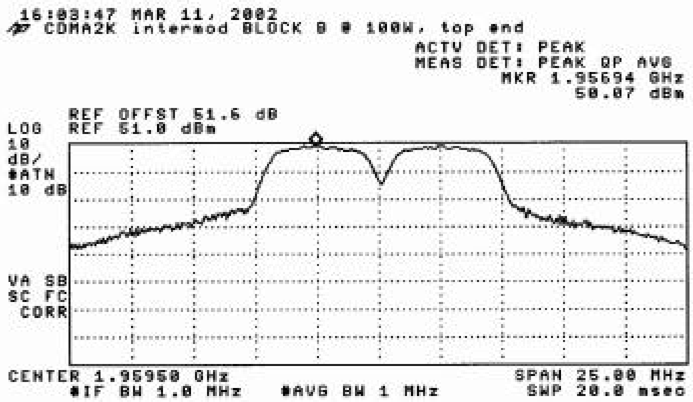
74


15:57:18 MAR 11, 2002
CDMA2K intermod BLOCK B @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.835 GHz
-19.15 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 15 MHz
STOP 2.900 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SWP 57.7 msec

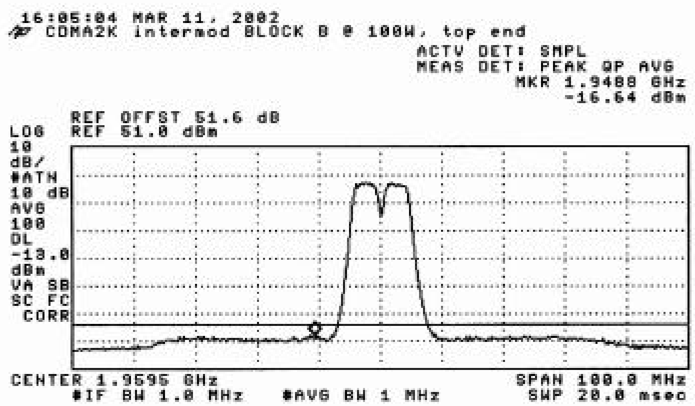
75


15:59:52 MAR 11, 2002
CDMA2K intermod BLOCK B @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 19.74 GHz
-20.67 dBm
REF OFFST 51.6 dB
LOG REF 41.6 dBm
10
dB/
#ATN
0 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

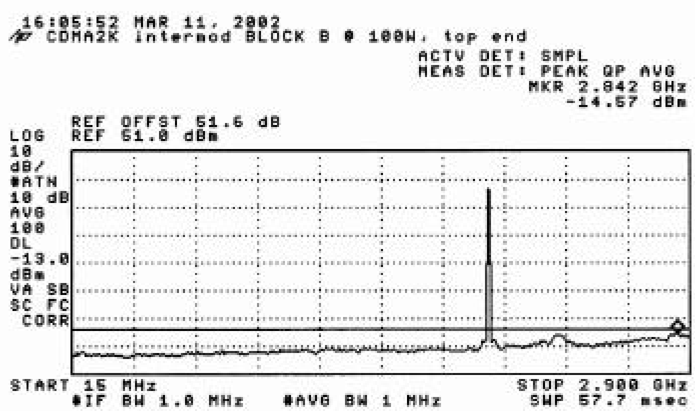
76


16:03:47 MAR 11, 2002
CDMA2K intermod BLOCK B @ 100W, top end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.95694 GHz
50.07 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
VA SB
SC FC
CORR
CENTER 1.95950 GHz
SPAN 25.00 MHz
#IF BW 1.0 MHz #AVG BW 1 MHz
SWP 20.0 msec

77


16:05:04 MAR 11, 2002
CDMA2K intermod BLOCK B @ 100W, top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9488 GHz
-16.64 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
CENTER 1.9595 GHz
SPAN 100.0 MHz
#IF BW 1.0 MHz #AVG BW 1 MHz
SWP 20.0 msec

78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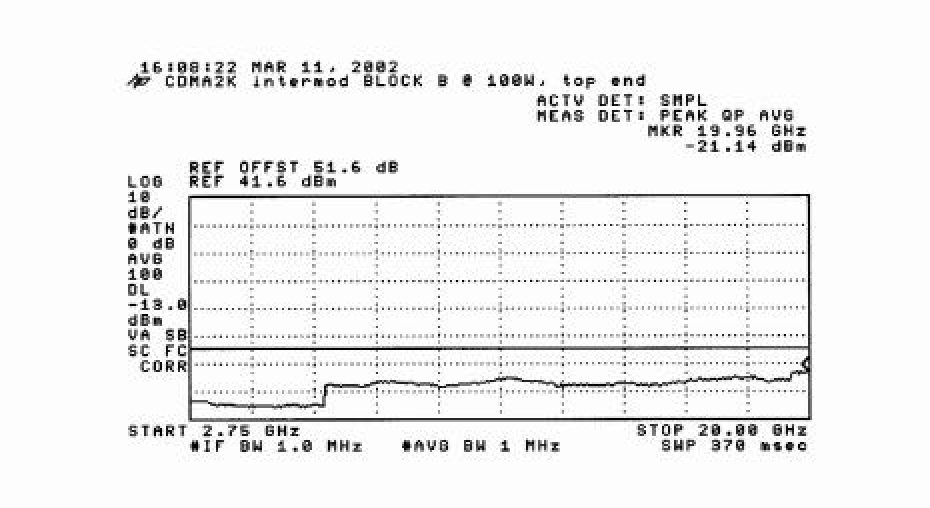
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.842 GHz
-14.57 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 15 MHz
STOP 2.900 GHz
#IF BW 1.0 MHz #AVG BW 1 MHz
SWP 57.7 msec

79



80

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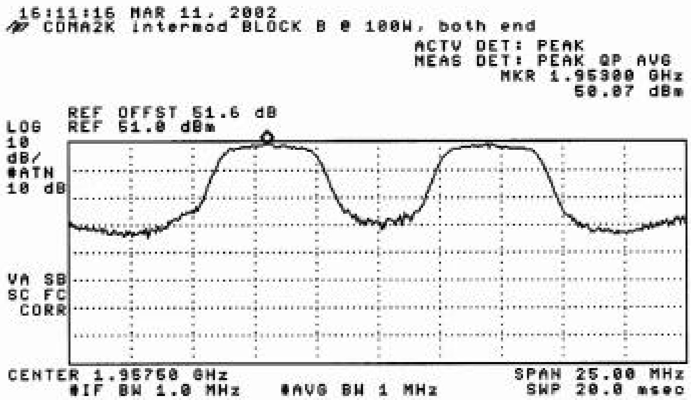

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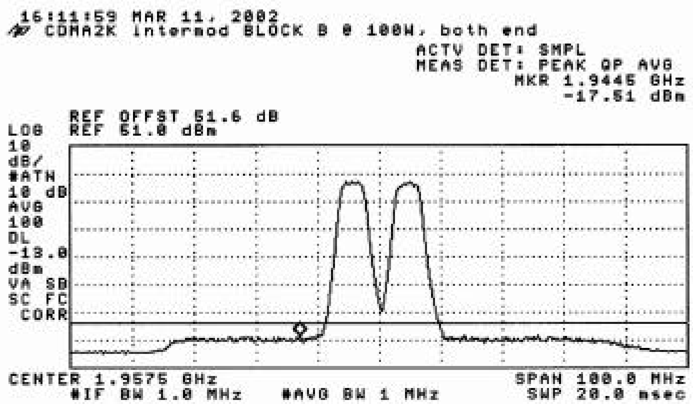

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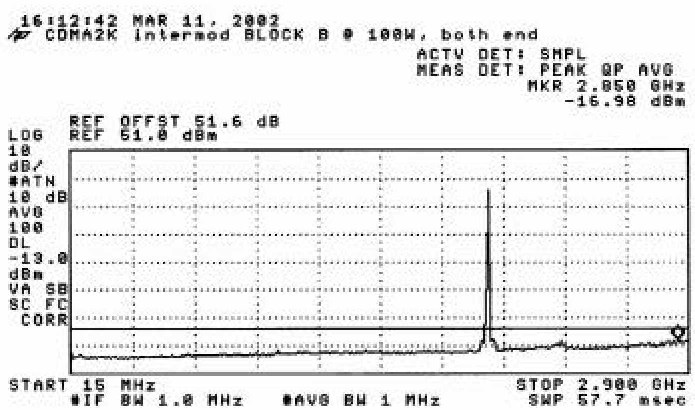

83

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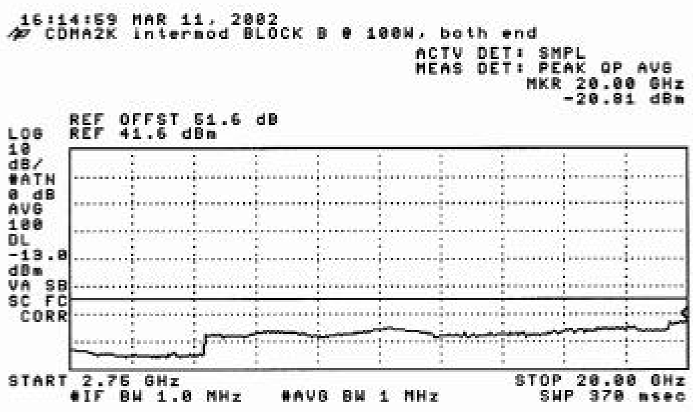
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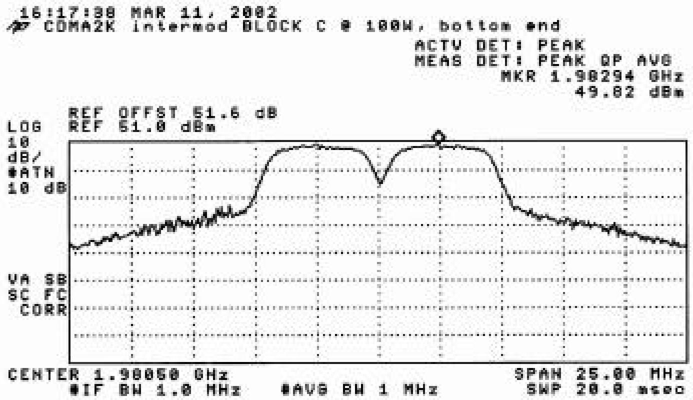
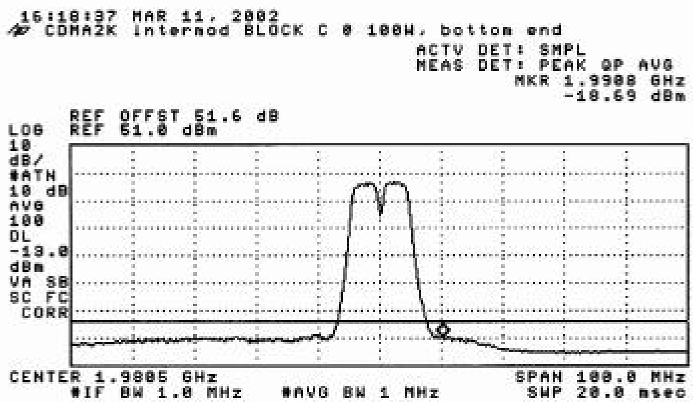
CDMA2K intermod BLOCK B @ 100W, both end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 20.00 GHz
-20.81 dBm
REF OFFST 51.6 dB
LOG REF 41.6 dBm
10
dB/
#ATN
0 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz #AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

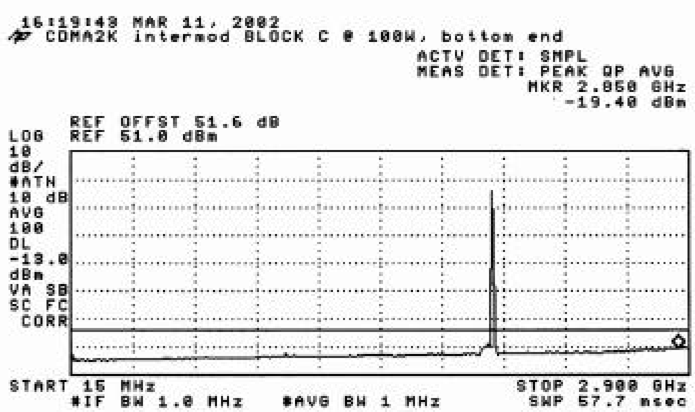
84


16:17:38 MAR 11, 2002
CDMA2K intermod BLOCK C @ 100W, bottom end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.98294 GHz
49.82 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
VA SB
SC FC
CORR
CENTER 1.98050 GHz
#IF BW 1.0 MHz #AVG BW 1 MHz
SPAN 25.00 MHz
SWP 20.0 msec

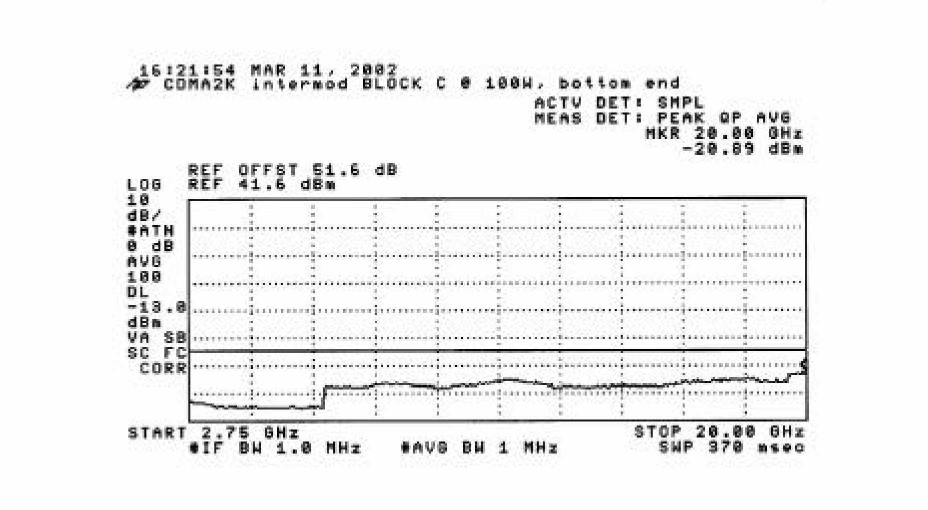
85


16:18:37 MAR 11, 2002
CDMA2K intermod BLOCK C @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9908 GHz
-18.69 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
CENTER 1.9805 GHz
#IF BW 1.0 MHz #AVG BW 1 MHz
SPAN 100.0 MHz
SWP 20.0 msec

86


16:19:49 MAR 11, 2002
CDMA2K intermod BLOCK C @ 100W, bottom end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.850 GHz
-19.40 dBm
REF OFFST 51.6 dB
LOG REF 51.0 dBm
10 dB/
#ATN 10 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 15 MHz
#IF BW 1.0 MHz #AVG BW 1 MHz
STOP 2.900 GHz
SWP 57.7 msec

87



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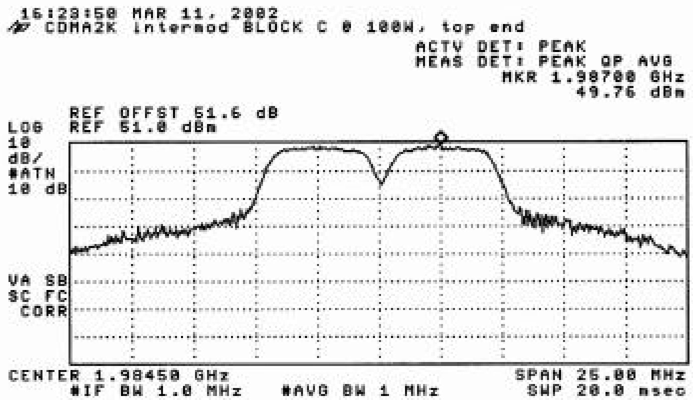
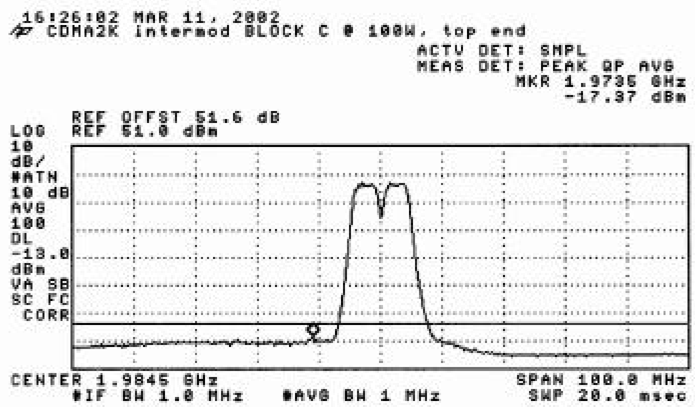
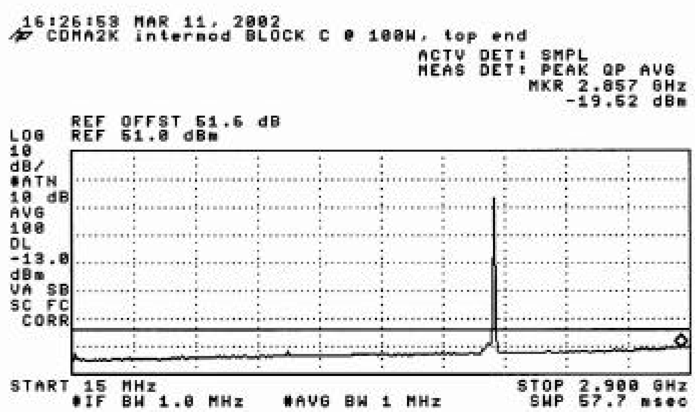

16:23:50 MAR 11, 2002
CDMA2K intermod BLOCK C @ 100W, top end
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.98700 GHz
49.76 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG
10
dB/
#ATN
10 dB
VA SB
SC FC
CORR
CENTER 1.98450 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 25.00 MHz
SWP 20.0 msec

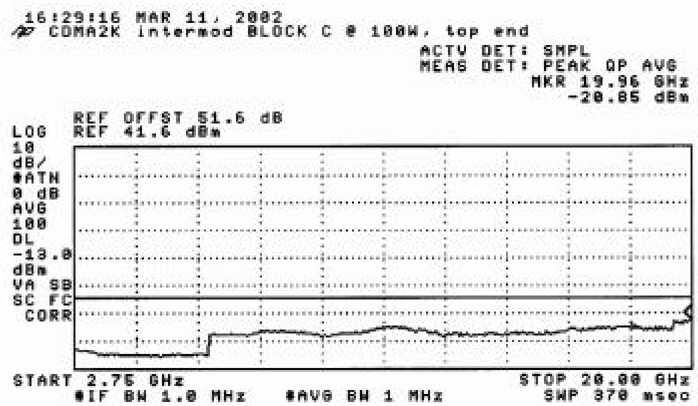
89


16:26:02 MAR 11, 2002
CDMA2K intermod BLOCK C @ 100W, top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 1.9735 GHz
-17.37 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
CENTER 1.9845 GHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
SPAN 100.0 MHz
SWP 20.0 msec

90


16:26:53 MAR 11, 2002
CDMA2K intermod BLOCK C @ 100W, top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 2.857 GHz
-19.52 dBm
REF OFFST 51.6 dB
REF 51.0 dBm
LOG
10
dB/
#ATN
10 dB
AVG
100
DL
-13.0
dBm
VA SB
SC FC
CORR
START 15 MHz
#IF BW 1.0 MHz
#AVG BW 1 MHz
STOP 2.900 GHz
SWP 57.7 msec

91



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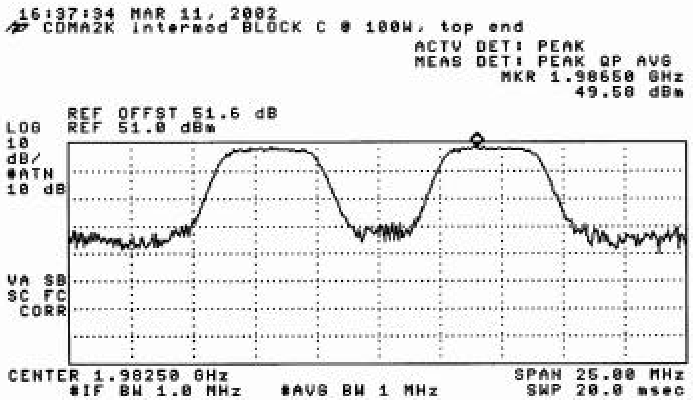
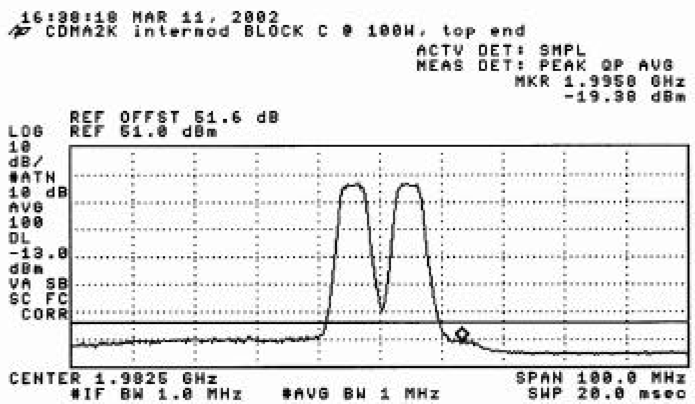
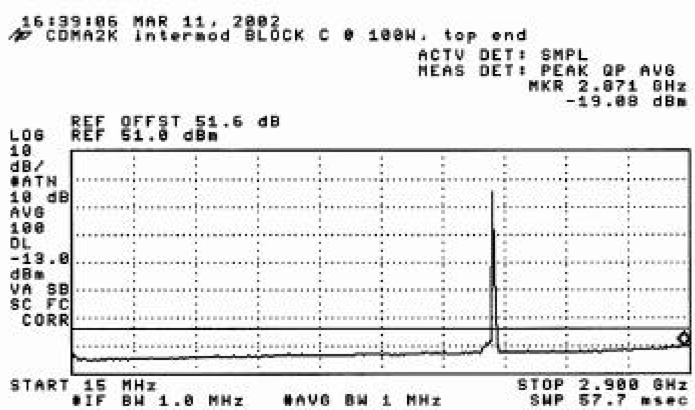


93



94



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COMPLIANCE CERTIFICATION SERVICES DOCUMENT NO: CCSUP4031A
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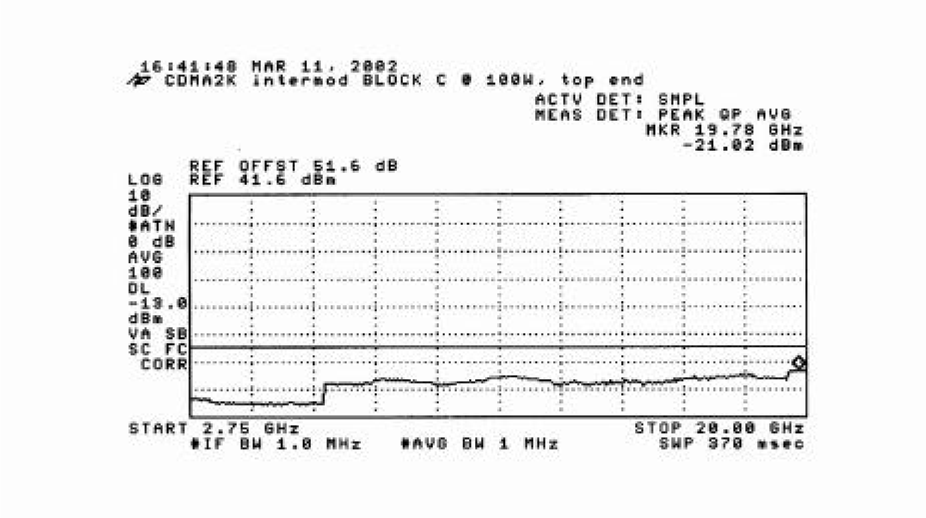
16:41:48 MAR 11, 2002
CDMA2K intermod BLOCK C @ 100W, top end
ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 19.78 GHz
-21.02 dBm
REF OFFST 51.6 dB
LOG REF 41.6 dBm
10 dB/
#ATN 0 dB
AVG 100
DL -13.0 dBm
VA SB
SC FC
CORR
START 2.75 GHz
#IF BW 1.0 MHz #AVG BW 1 MHz
STOP 20.00 GHz
SWP 370 msec

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9.5. SECTION 2.1053: FIELD STRENGTH OF SPURIOUS RADIATION

INSTRUMENTS LIST

EQUIPMENT	MANUFACTURE	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Spectrum Analyzer	HP	8593EM	3710A00205	6/20/02
Amplifier	MITEQ	NSP2600-44	646456	4/12/02
Signal Generator	HP	83732B	US34490599	3/21/02
Rx Horn Antenna	EMCO	3115	2238	6/20/02
Rx Horn Antenna	ARA	MWH1826/B	1013	7/26/02
Tx Horn Antenna	EMCO	3115	9001-3245	6/20/02
HPF	MICROLAB	FH-2400H	N/A	N/A
50 ohm terminator	NARDA	370BNM	N/A	N/A

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 1 MHz ☐ 1 MHz	☒ 1 MHz ☐ 10 Hz

TEST SETUP

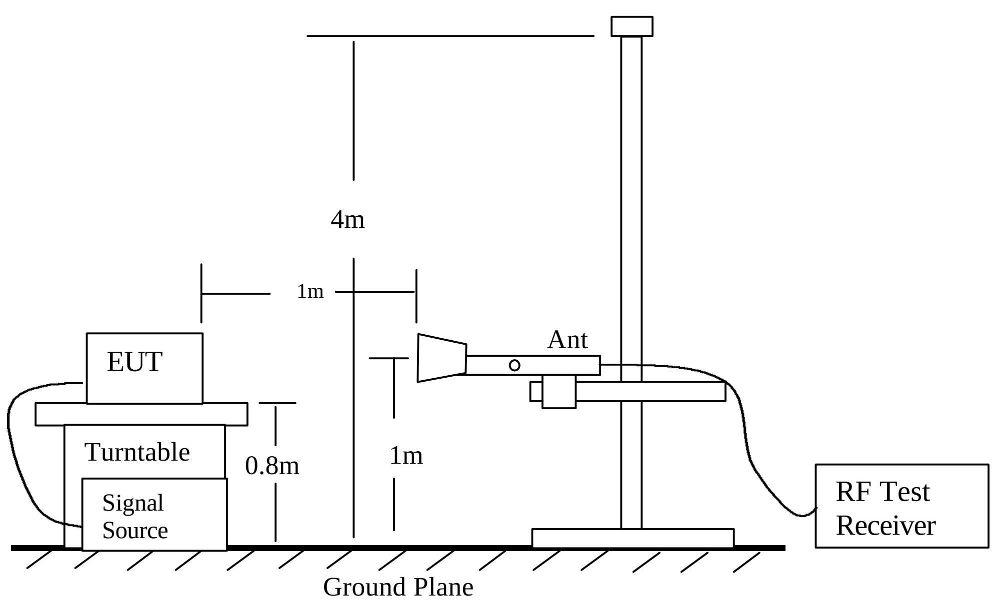

Fig 1: Radiated Emission Measurement

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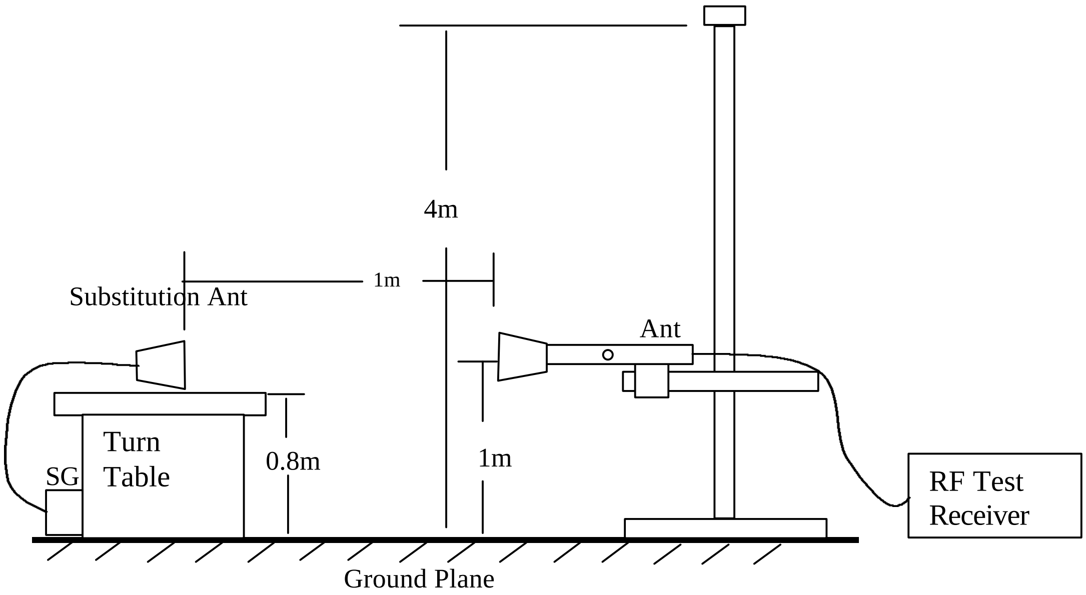
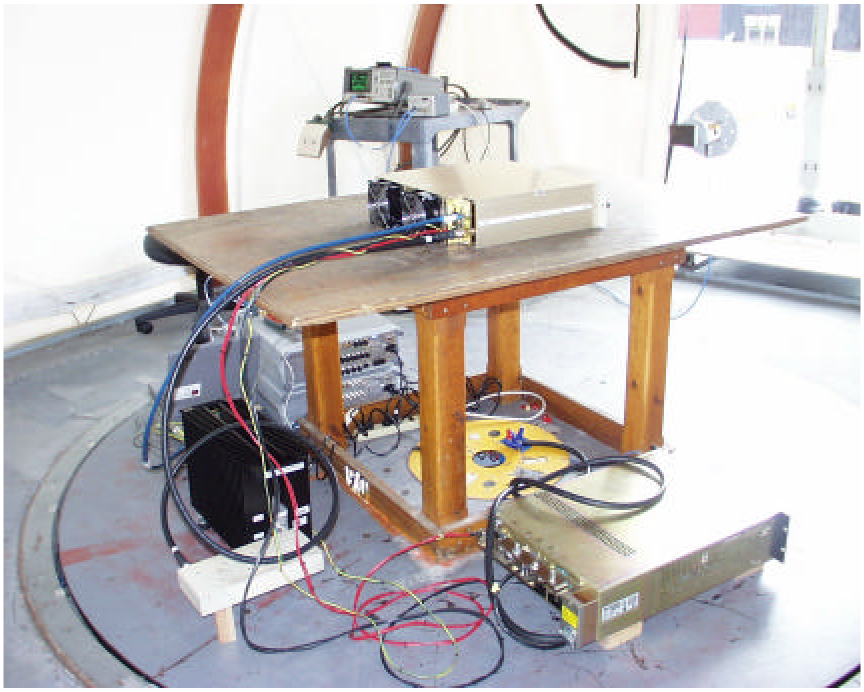


Fig 2: Radiated Emission – Substitution Method set-up

1 – 18 GHz Radiated Emission Setup



18 – 20 GHz Radiated Emission Setup

1 – 18 GHz Substitution Method Setup

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18 – 20 GHz Substitution Method Setup

TEST PROCEDURE

1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
2). The test antenna shall be oriented initially for vertical polarization located 1m from the EUT to correspond to the frequency of the transmitter.
3). The output of the test antenna shall be connected to the measuring receiver and either a peak or average detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
4). The transmitter shall be switched on, if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
5). The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
6). The transmitter shall than be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7). The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
8). The maximum signal level detected by the measuring receiver shall be noted.
9). The transmitter shall be replaced by a substitution antenna.
10). The substitution antenna shall be oriented for vertical polarization.
11). The substitution antenna shall be connected to a calibrated signal generator.
12). If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
13). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.

14). The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
15). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
16). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.
17). The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.

RESULT

Complies, as shown below

Compliance Certification Services

Radiated Emissions 3/13/02
24.238(a) A-Site (1meter)
Kerwin Corpuz

SPECTRIAN
1930-1990 MHz PCS MULTI-CARRIER POWER AMPLIFIER (M/N: MCPA4080)

fo = 1933 MHz (LOW)

frequency (MHz)	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
3866V	68.3	-40	1.35	9	6.85	-34.5	-13	-21.5
3866H	62.7	-45.6	1.35	9	6.85	-40.1	-13	-27.1
5799V	52.3	-47.8	1.65	10.2	8.05	-41.4	-13	-28.4
5799H	54.4	-45.7	1.65	10.2	8.05	-39.3	-13	-26.3
7732*	47	-73	1.9	10.3	8.15	-66.75	-13	-53.75
9665*	46.9	-73	2.2	10.2	8.05	-67.15	-13	-54.15
11598*	48	-67	2.4	11.7	9.55	-59.85	-13	-46.85
13531*	49.9	-67	2.7	11.9	9.75	-59.95	-13	-46.95
15464*	50	-67	3	15.1	12.95	-57.05	-13	-44.05
17397*	50.3	-60	3.3	10	7.85	-55.45	-13	-42.45
19330*	50.4	-60	3.55	23.9	21.75	-41.8	-13	-28.8

fo = 1960 MHz (MID)

frequency (MHz)	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
3920V	66.1	-42.2	1.35	9	6.85	-36.7	-13	-23.7
3920H	61.3	-47	1.35	9	6.85	-41.5	-13	-28.5
5880V	50.2	-50	1.65	10.2	8.05	-43.6	-13	-30.6
5880H	50.9	-49.3	1.65	10.2	8.05	-42.9	-13	-29.9
7840*	47	-73	1.9	10.3	8.15	-66.75	-13	-53.75
9800*	46.9	-73	2.2	10.2	8.05	-67.15	-13	-54.15
11760*	48	-67	2.4	11.7	9.55	-59.85	-13	-46.85
13720*	49.9	-67	2.7	11.9	9.75	-59.95	-13	-46.95
15680*	50	-67	3	15.1	12.95	-57.05	-13	-44.05
17640*	50.3	-60	3.3	10	7.85	-55.45	-13	-42.45
19600*	50.4	-60	3.55	23.9	21.75	-41.8	-13	-28.8

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fo = 1987 MHz (HIGH)

frequency (MHz)	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)
3974V	61.7	-46.5	1.35	9	6.85	-41	-13	-28
3974H	58.9	-49.4	1.35	9	6.85	-43.9	-13	-30.9
5961V	60	-40.1	1.65	10.2	8.05	-33.7	-13	-20.7
5961H	61	-39.1	1.65	10.2	8.05	-32.7	-13	-19.7
7948*	47	-73	1.9	10.3	8.15	-66.75	-13	-53.75
9935*	46.9	-73	2.2	10.2	8.05	-67.15	-13	-54.15
11922*	48	-67	2.4	11.7	9.55	-59.85	-13	-46.85
13909*	49.9	-67	2.7	11.9	9.75	-59.95	-13	-46.95
15896*	50	-67	3	15.1	12.95	-57.05	-13	-44.05
17883*	50.3	-60	3.3	10	7.85	-55.45	-13	-42.45
19870*	50.4	-60	3.55	23.9	21.75	-41.8	-13	-28.8

Spot check 3GPP and CDMA2K radiated emission, worst modulation is CDMA2K.

NOTE: * Measured noise floor (worse case vertical); H=horizontal and V=vertical
SA: Spectrum Analyzer
SG: Signal Generator
CL: Cable Loss (5ft) SMA type

SPECTRUM ANALYZER SETTING
1 MHz = RESBW = VBW

Gain (dBd) = Gain (dBi) - 2.15
ERP = SG reading - CL + Gain (dBd)
Margin = ERP - Limit

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9.6. SECTION 2.1055: FREQUENCY STABILITY

INSTRUMENTS LIST

EQUIPMENT	MANUFACTURE	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Spectrum Analyzer	HP	8593EM	3710A00205	6/20/02
Environmental Chamber	THERMOTRON	SE-600-10-10	29800	3/23/02

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	Peak	300 Hz	300 Hz

TEST SETUP

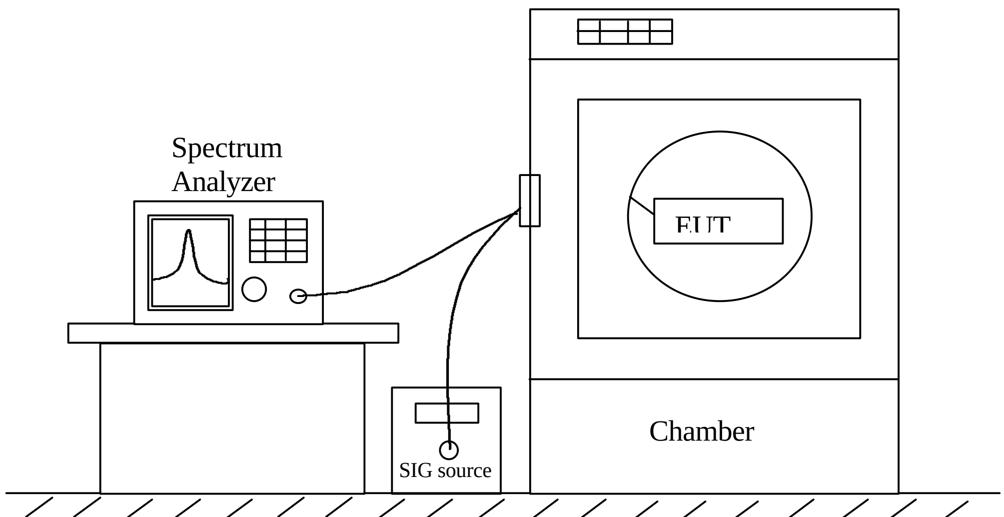

Fig. 3: Frequency Stability Setup

TEST PROCEDURE

- **Frequency stability versus environmental temperature**

1). Setup the configuration per figure 6 for frequencies measurement inside the environmental chamber. Set the temperature of the chamber to 20°C. Set SA Resolution Bandwidth low enough to obtain the desired frequency resolution and measure the EUT 20°C operating frequency as reference frequency.
2). Turn EUT off and set Chamber temperature to -30°C.
3). Allow sufficient time (approximately 20 to 30 minus after chamber reach the assigned temperature) for EUT to stabilize. Turn on EUT and measure the EUT operating frequency. Turn off EUT after the measurement.
4). Repeat step 3 with a 10°C increased per stage until the highest temperature of +50°C reached, record all measured frequencies on each temperature step.

- **Frequency stability versus AC input voltage**

1). Setup the configuration per figure 6 and set chamber temperature to 25°C. Use a variable AC power supply to power the EUT and set AC output voltage to EUT nominal input AC voltage. Set SA Resolution Bandwidth low enough to obtain the desired frequency resolution and measure the EUT 25°C operating frequency as reference frequency.
2). Slowly reduce the EUT input voltage to specified extreme voltage variation and record the maximum frequency change.

RESULT

(NOT APPLICABLE, EUT IS A POWER AMPLIFIER)

END OF REPORT

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