Exhibit 12

Occupied Bandwidth and Spurious Emission Measured Data --
for CDMA mode when operating in P_REV 6 or above

KWC module 200 (M2) supports additional reverse channels, as per IS-98D, additional measurements have taken to show compliance. Below is the applicable section from IS-98D

4.5 Limitations on Emissions

4.5.1 Conducted Spurious Emissions

4.5.1.1 Definition
Conducted spurious emissions are emissions at frequencies that are outside the assigned CDMA Channel, measured at the mobile station antenna connector. This test measures the spurious emissions during continuous transmission.

4.5.1.2 Method of Measurement
1. Connect the base station to the mobile station antenna connector as shown in Figure 6.5.1-4. The AWGN generator and the interference generator are not applicable in this test. Connect a spectrum analyzer (or other suitable test equipment) to the mobile station antenna connector.
2. For each band class and radio configuration that the mobile station supports, configure the base station and mobile station to operate in that band class and perform steps 3 through 17.
   - Thus Band Class 0 and Band Class 1 for the M2
3. Set the following parameters of the *Access Parameters Message* as specified below:

Parameter	**Value (Decimal)**
NOM_PWR	7 (7 dB)
INIT_PWR	15 (15 dB)
PWR_STEP	7 (7 dB/step)
NUM_STEP	15 (16 probes/sequence)
MAX_RSP_SEQ	15 (15 sequences)

If the Enhanced Access Channel is used, set the following parameters of the *Enhanced Access Parameters Message* as specified below (N/A so Table not included below)

4. If the mobile station supports Reverse Traffic Channel Radio Configuration 1 and Forward Traffic Channel Radio Configuration 1, set up a call using Fundamental Channel Test Mode 1 (see 1.3) with 9600 bps data rate only and perform steps 15 through 17.
   - Test Mode 1 implies an S02 call(Rate Set 1) on RC1/RC2….this is equivalent to what was performed already h-1 through h-4 of Exhibit 8 and a, b, c, and d of Exhibit 9
5. If the mobile station supports the Radio Configuration 3 Reverse Fundamental Channel and demodulation of Radio Configuration 3, 4, or 5, set up a call using Fundamental Channel Test Mode 3 (see 1.3) with 9600 bps data rate only and perform steps 15 through 17.

   - Test Mode 3 implies using a Rate Set 1 loopback service option.

6. If the mobile station supports the Radio Configuration 3 Reverse Dedicated Control Channel and demodulation of Radio Configuration 3, 4, or 5, set up a call using Dedicated Control Channel Test Mode 3 (see 1.3) with 9600 bps data rate only and 100% frame activity and perform steps 15 through 17.
   - N/A, the M2 will not support F/R-DCCH

7. If the mobile station supports the Radio Configuration 3 Reverse Fundamental Channel, Radio Configuration 3 Reverse Dedicated Control Channel and demodulation of Radio Configuration 3, 4, or 5, set up a call using Fundamental Channel Test Mode 3 (see 1.3) with 1500 bps Fundamental Channel data rate only and 9600 bps Dedicated Control Channel with 100 % frame activity, and perform steps 15 through 17.
   - N/A, the M2 will not support F/R-DCCH
8. If the mobile station supports the Radio Configuration 3 Reverse Fundamental Channel, Radio Configuration 3 Reverse Supplemental Channel 0 and demodulation of Radio Configuration 3, 4, or 5, set up a call using Supplemental Channel Test Mode 3 (see 1.3) with 9600 bps Fundamental Channel and 9600 bps Supplemental Channel 0 data rate, and perform steps 15 through 17.

   - Test Mode 3 implies using a Rate Set 1 loopback service option.

9. If the mobile station supports the Radio Configuration 3 Reverse Dedicated Control Channel, Radio Configuration 3 Reverse Supplemental Channel 0 and demodulation of Radio Configuration 3, 4, or 5, set up a call using Supplemental Channel Test Mode 3 (see 1.3) with 9600 bps Dedicated Control Channel with 100% frame activity and 9600 bps Supplemental Channel 0 data rate, and perform steps 15 through 17.
   - N/A, the M2 will not support F/R-DCCH
10. If the mobile station supports the Radio Configuration 5 Reverse Fundamental Channel and demodulation of Radio Configuration 6, 7, 8, or 9, set up a call using Fundamental Channel Test Mode 7 (see 1.3) with 9600 bps data rate only and perform steps 15 through 17.
    - N/A, the M2 will not support RC5 on the reverse link, nor RC6, 7, 8, or 9 on the forward link.
11. If the mobile station supports the Radio Configuration 5 Reverse Dedicated Control Channel and demodulation of Radio Configuration 6, 7, 8, or 9, set up a call using Dedicated Control Channel Test Mode 7 (see 1.3) with 9600 bps data rate only and 100% frame activity and perform steps 15 through 17.
    - N/A, the M2 will not support RC5 on the reverse link, nor RC6, 7, 8, or 9 on the forward link.
12. If the mobile station supports the Radio Configuration 5 Reverse Fundamental Channel, Radio Configuration 5 Reverse Dedicated Control Channel and demodulation of Radio Configuration 6, 7, 8, or 9, set up a call using Fundamental Channel Test Mode 7 (see 1.3) with 1500 bps Fundamental Channel data rate only and 9600 bps Dedicated Control Channel with 100 % frame activity, and perform steps 15 through 17.
    - N/A, the M2 will not support RC5 on the reverse link, nor RC6, 7, 8, or 9 on the forward link.
13. If the mobile station supports the Radio Configuration 5 Reverse Fundamental Channel, Radio Configuration 5 Reverse Supplemental Channel 0 and demodulation of Radio Configuration 6, 7, 8, or 9, set up a call using Supplemental Channel Test Mode 7 (see 1.3) with 9600 bps Fundamental Channel and 9600 bps Supplemental Channel 0 data rate, and perform steps 15 through 17.
    - N/A, the M2 will not support RC5 on the reverse link, nor RC6, 7, 8, or 9 on the forward link.
14. If the mobile station supports the Radio Configuration 5 Reverse Dedicated Control Channel, Radio Configuration 5 Reverse Supplemental Channel 0 and demodulation of Radio Configuration 6, 7, 8, or 9, set up a call using Supplemental Channel Test Mode 7 (see 1.3) with 9600 bps Dedicated Control Channel with 100% frame activity and 9600 bps Supplemental Channel 0 data rate, and perform steps 10 through 17.
    - N/A, the M2 will not support RC5 on the reverse link, nor RC6, 7, 8, or 9 on the forward link.
15. Set the test parameters as specified in Table 4.5.1.2-1.
16. Send continuously ,'0' power control bits to the mobile station.
17. Measure the spurious emission levels.

Table 4.5.1.2-1. Test Parameters for Testing Spurious Emissions at Maximum RF Output Power

Parameter	Units	Value
Ior^	dBm/1.23 MHz	-104
Pilot Ec / Ior	dB	-7.0
Traffic Ec / Ior	dB	-7.4

4.5.1.3 Minimum Standard

Depending on local radio regulations, the mobile station shall meet ITU Category A or B emissions rules as appropriate. For Band Class 5, 6, 8, and 9, a mobile station shall meet ITU Category B emission rules.

4.5.1.3.1 Spreading Rate 1

When transmitting in Band Class 0, 2, 3, 5, 7 or 9 with Spreading Rate 1, the spurious emissions shall be less than all limits specified in Table 4.5.1.3.1-1.

Table 4.5.1.3.1-1. Band Class 0, 2, 3, 5, 7 and 9 Transmitter Spurious Emission Limits for Spreading Rate 1

For |Δf| Within the Range	Emission Limit
885 kHz to 1.98 MHz	Less stringent of -42 dBc/30 kHz or -54 dBm/1.23 MHz
1.98 MHz to 4.00 MHz	Less stringent of -54 dBc/30 kHz or -54 dBm/1.23 MHz
> 1.98 MHz (Band Class 3 only)	-54 dBc/30 kHz
2.25 MHz to 4.00 MHz (Band Class 7 only)	-35 dBm/6.25 kHz
> 4.00 MHz (ITU Category A only)	-13 dBm / 1 kHz; 9 kHz < f < 150 kHz -13 dBm / 10 kHz; 150 kHz < f < 30 MHz -13 dBm/100 kHz; 30 MHz < f < 1 GHz -13 dBm / 1 MHz; 1 GHz < f < 5 GHz
> 4.00 MHz (ITU Category B only) (required for Band Class 5 and 9)	-36 dBm / 1 kHz; 9 kHz < f < 150 kHz -36 dBm / 10 kHz; 150 kHz < f < 30 MHz -36 dBm/100 kHz; 30 MHz < f < 1 GHz -36 dBm / 1 MHz; 1 GHz < f < 12.75 GHz

Note: All frequencies in the measurement bandwidth shall satisfy the restrictions on |Δf| where Δf = center frequency - closer measurement edge frequency (f). Compliance with the -35 dBm / 6.25 kHz limit is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral power in a 6.25 kHz segment. For Band Class 3, the lower and upper limits of the frequency measurement are currently 10 MHz and 3 GHz in Japan radio measurement documents.

When transmitting in Band Class 1, 4, 6 or 8 with Spreading Rate 1, the spurious emissions shall be less than all limits specified in Table 4.5.1.3.1-2.

Table 4.5.1.3.1-2. Band Class 1, 4, 6 and 8 Transmitter Spurious Emission Limit for Spreading Rate 1

For |Δf| Within the Range	Emission Limit
1.25 MHz to 1.98 MHz	less stringent of -42 dBc/30 kHz or -54 dBm/1.23 MHz
1.98 MHz to 4.00 MHz	less stringent of -50 dBc/30 kHz or -54 dBm/1.23 MHz
~~2.25 MHz to 4.00 MHz (Band Class 6 only)~~	~~-[13 + 1 × (Δf – 2.25 MHz)] dBm / 1 MHz~~
~~> 2.25 MHz (Band Class 6 in Japan only)~~	~~-13 dBm/ 1 MHz~~
> 4.00 MHz (ITU Category A)	-13 dBm / 1 kHz; 9 kHz < f < 150 kHz -13 dBm / 10 kHz; 150 kHz < f < 30 MHz -13 dBm/100 kHz; 30 MHz < f < 1 GHz -13 dBm / 1 MHz; 1 GHz < f < 10 GHz
~~> 4.00 MHz (ITU Category B) (required for Band Class 6 and 8)~~	~~-36 dBm / 1 kHz; 9 kHz < f < 150 kHz -36 dBm / 10 kHz; 150 kHz < f < 30 MHz -36 dBm/100 kHz; 30 MHz < f < 1 GHz -30 dBm / 1 MHz; 1 GHz < f < 12.75 GHz~~

Note: All frequencies in the measurement bandwidth shall satisfy the restrictions on |Δf| where Δf = center frequency - closer measurement edge frequency (f). The lower and upper limits of the frequency measurement for Band Class 6 greater than 2.25 MHz offset are currently unspecified in Japan radio measurement documents.

All other sub-sections of the Emissions section have been omitted since the MS does not support.

After all this, the bottom line for M2 is to perform Tests as per #5 and #8. Four additional fundamental set-ups are,

1. Cellular CDMA F/R-FCH at RC3 using a rate set 1 loopback service option
2. Cellular CDMA F-FCH and R-FCH + F/R-SCH at RC3 using a rate set 1 loopback service option @ 9600bps for both Reverse channels
3. PCS CDMA F/R-FCH at RC3 using a rate set 1 loopback service option
4. PCS CDMA F-FCH and R-FCH + F/R-SCH at RC3 using a rate set 1 loopback service option @ 9600bps for both Reverse channels

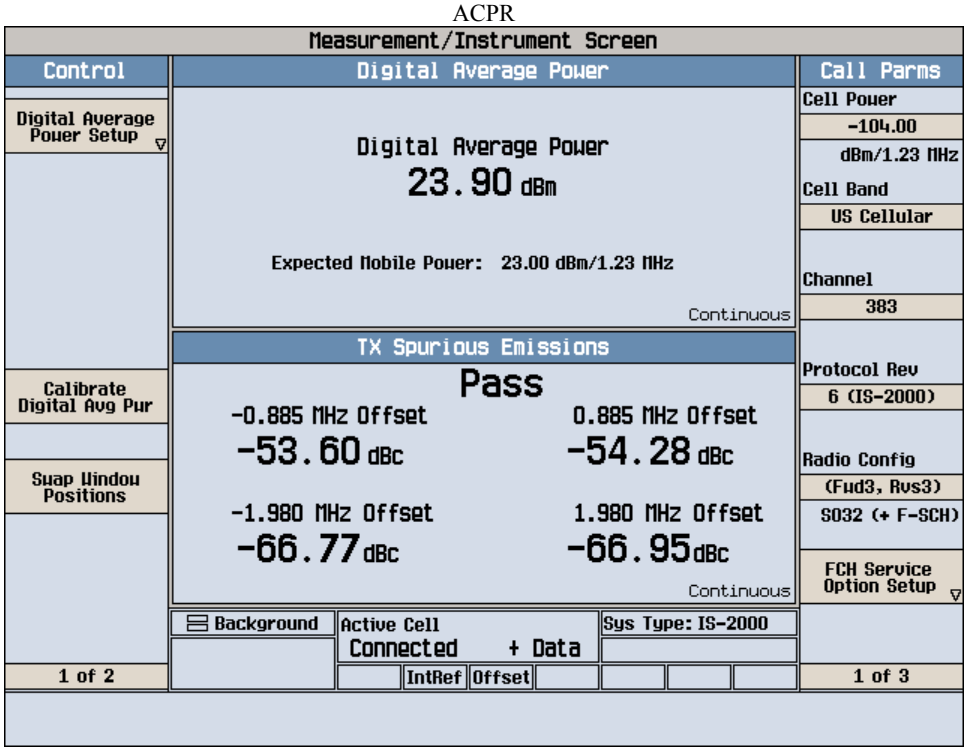
The test results show M2 is in compliance with IS-98D and FCC requirements. Test data as follows.

Occupied Bandwidth & Spurious Emission

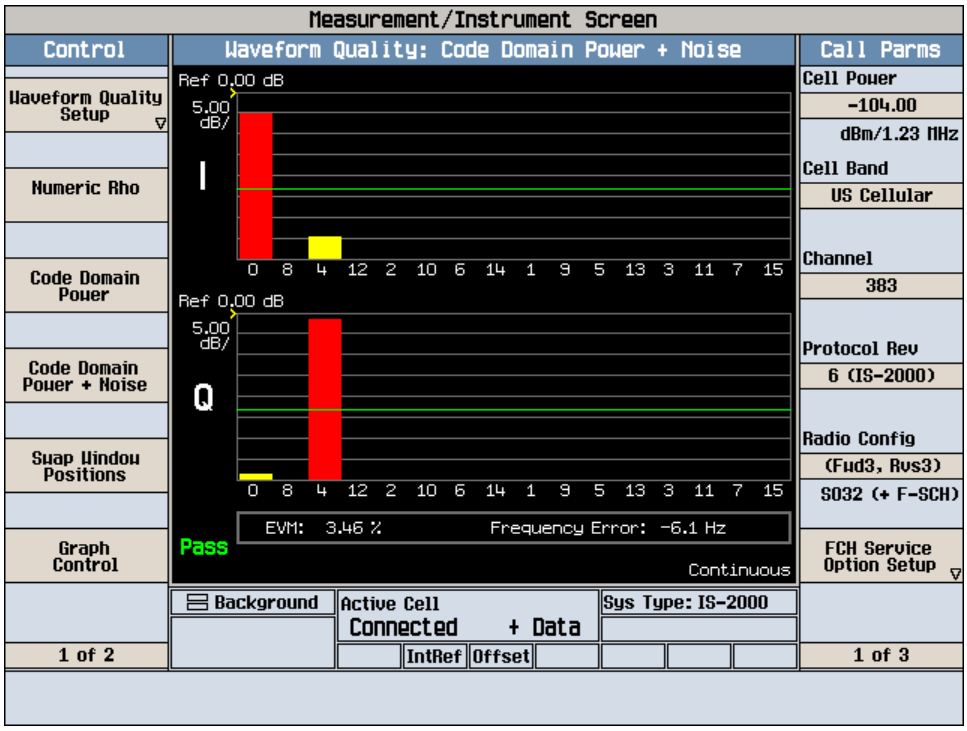
Cellular Band
Ch383

1. CDMA F/R-FCH at RC3

ACPR



Code Domain



Occupied Bandwidth
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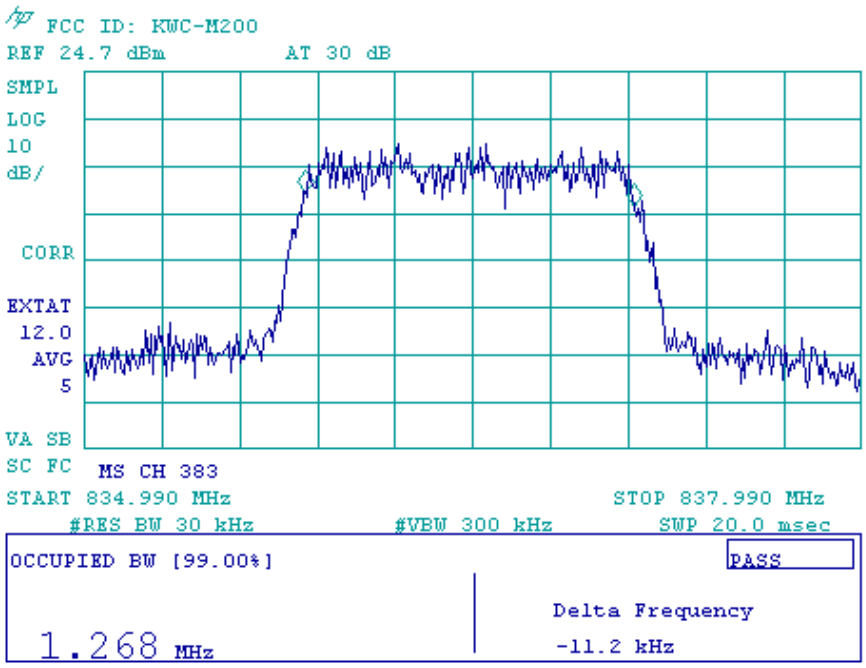
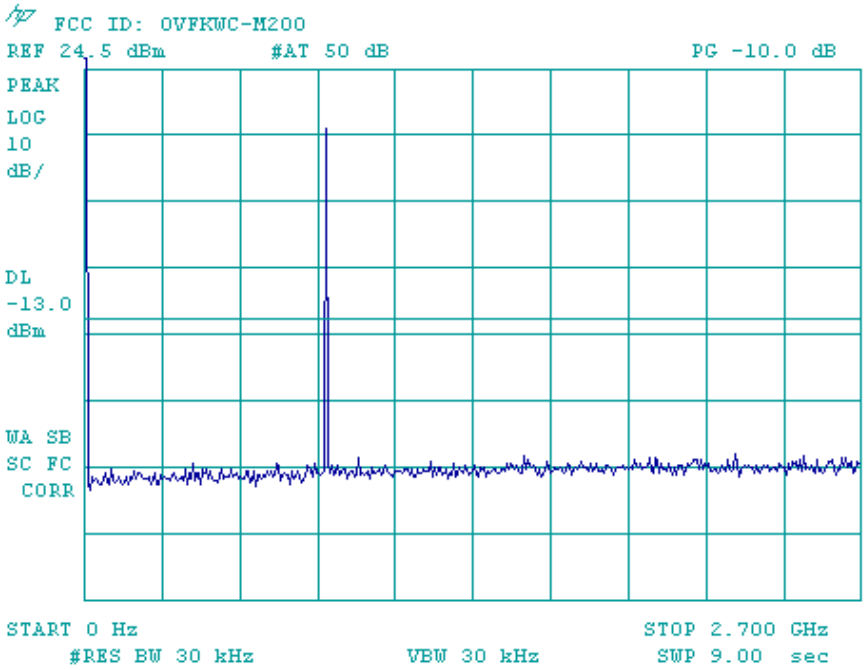
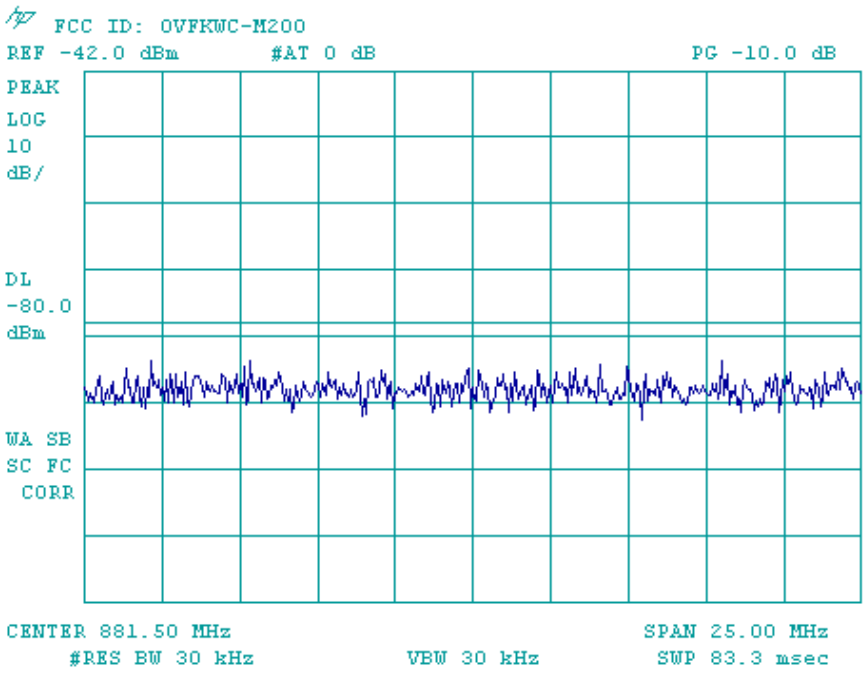


(b)



(c)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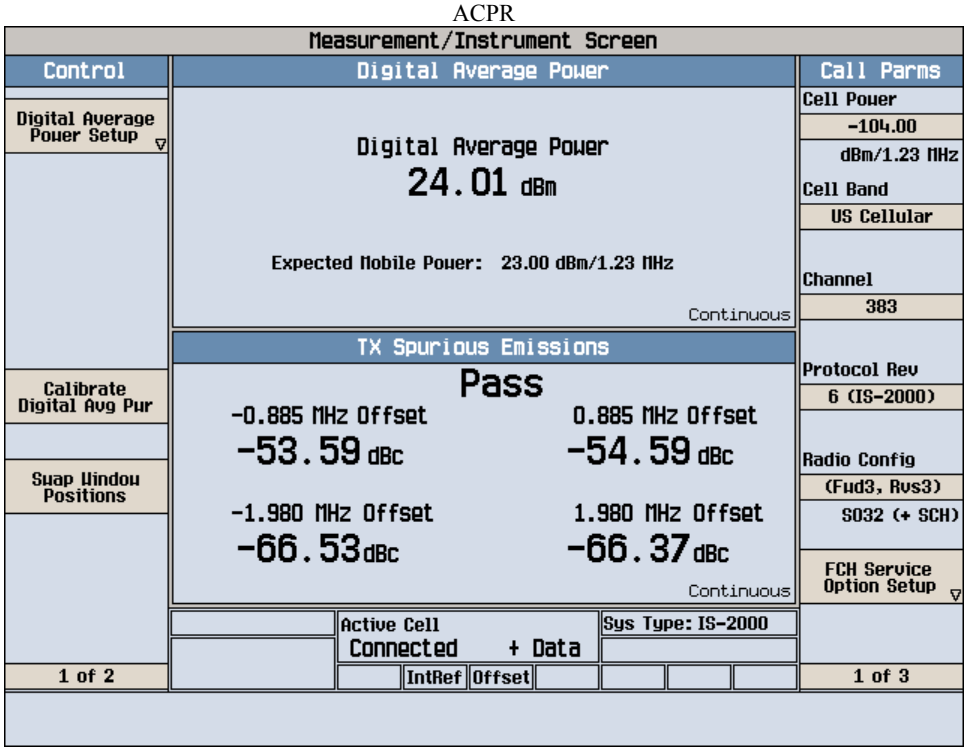
REF -42.0 dBm
#AT 0 dB
PG -10.0 dB
PEAK
LOG
10
dB/
DL
-80.0
dBm
WA SB
SC FC
CORR
CENTER 881.50 MHz
SPAN 25.00 MHz
#RES BW 30 kHz
VBW 30 kHz
SWP 83.3 msec

2. CDMA F/R-FCH + F/R-SCH at RC3

ACPR



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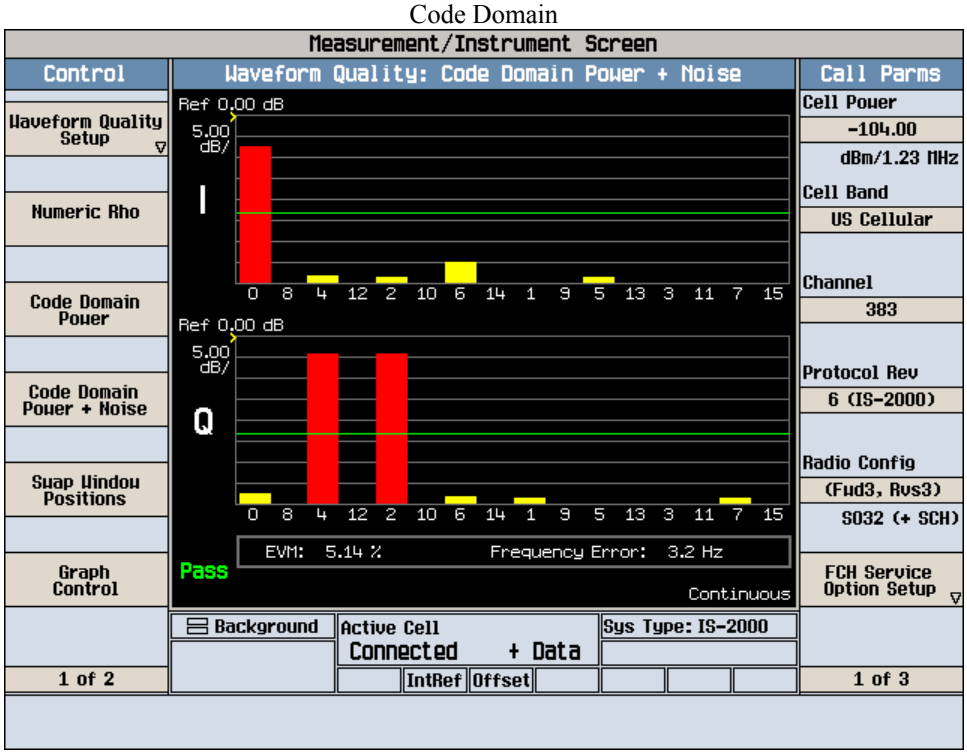
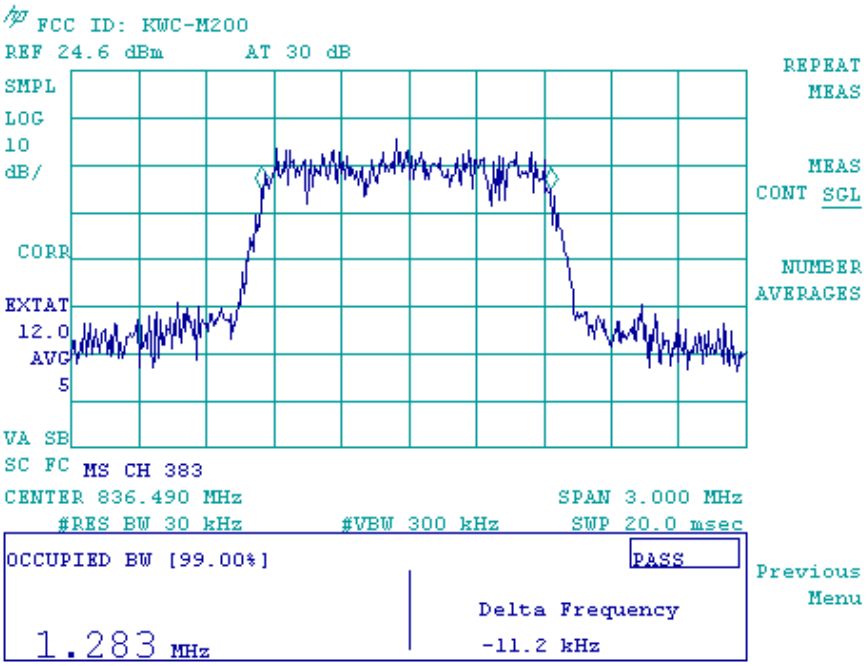
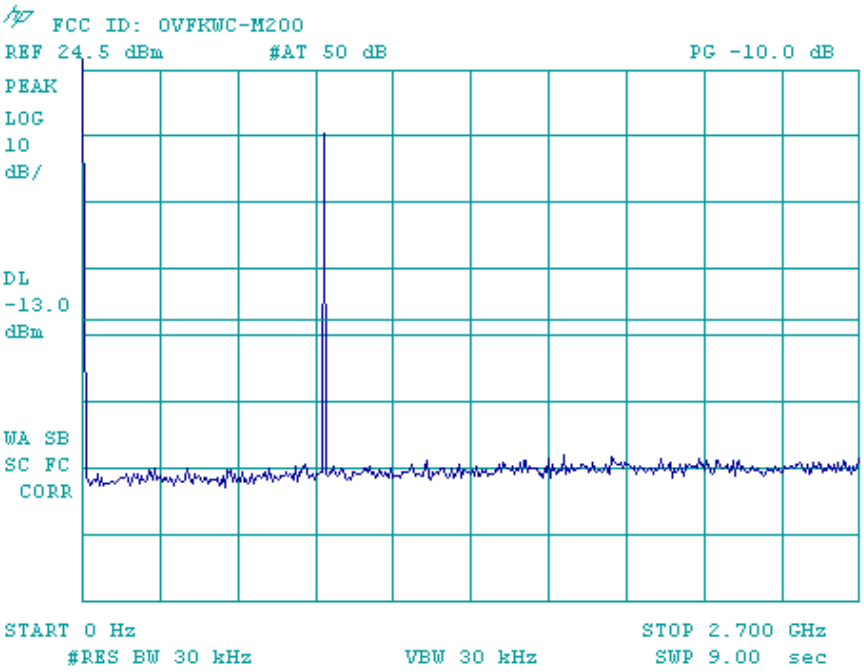


Occupied Bandwidth

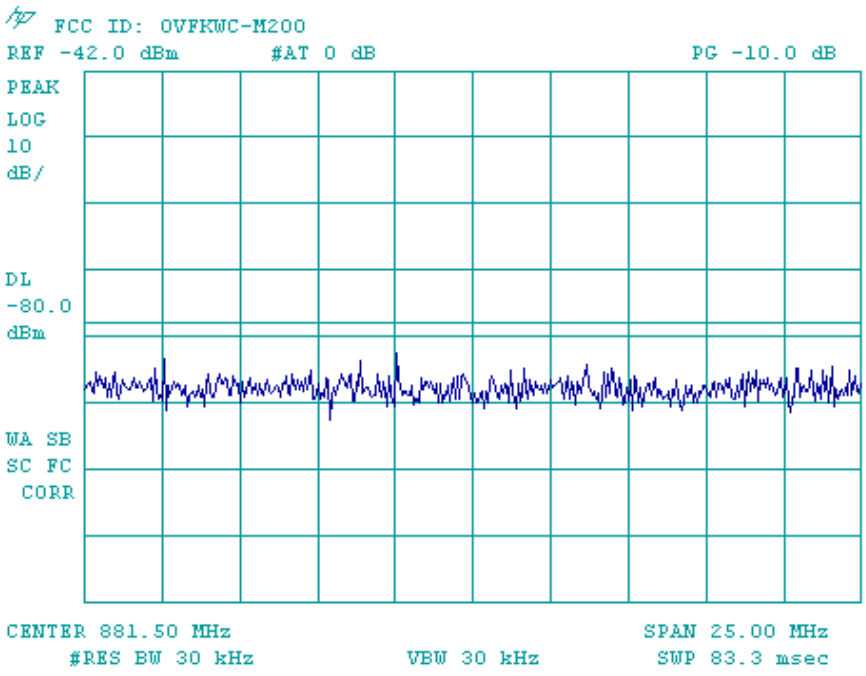
(a)



(b)



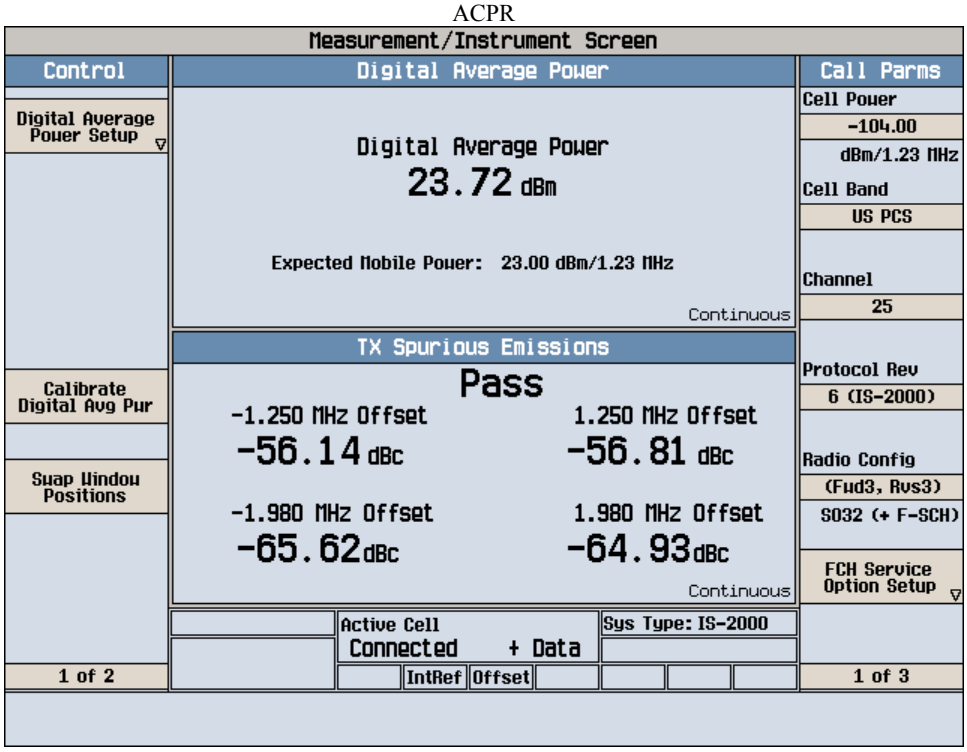
(c)


FCC ID: OVFKWC-M200
REF -42.0 dBm
#AT 0 dB
PG -10.0 dB
PEAK
LOG
10
dB/
DL
-80.0
dBm
WA SB
SC FC
CORR
CENTER 881.50 MHz
SPAN 25.00 MHz
#RES BW 30 kHz
VBW 30 kHz
SWP 83.3 msec

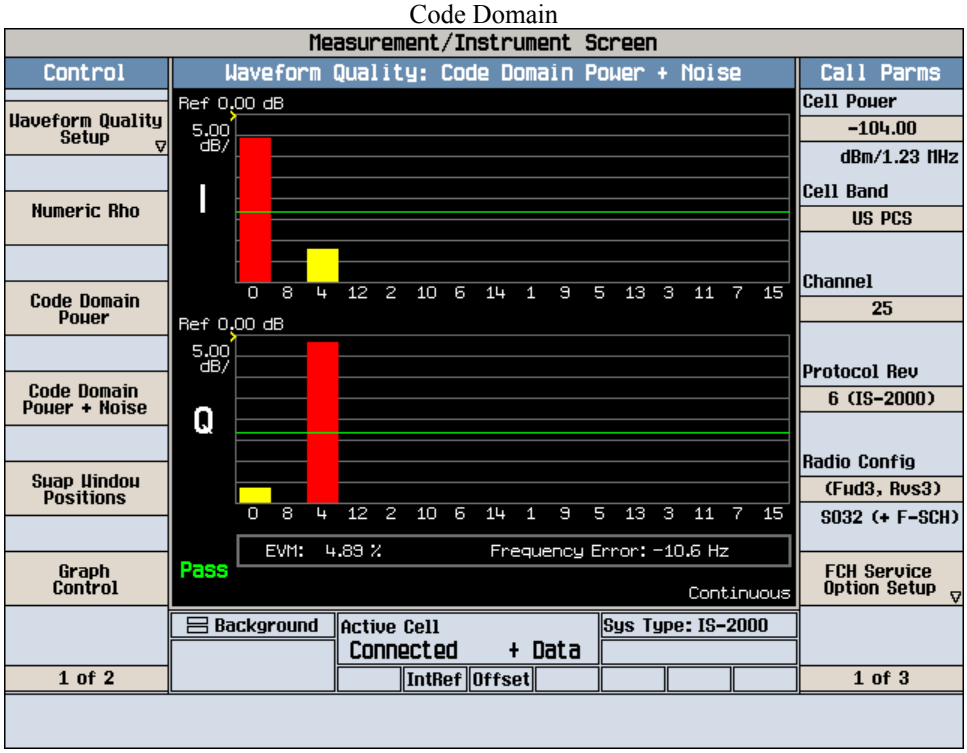
PCS Band

3. PCS CDMA F/R-FCH at RC3

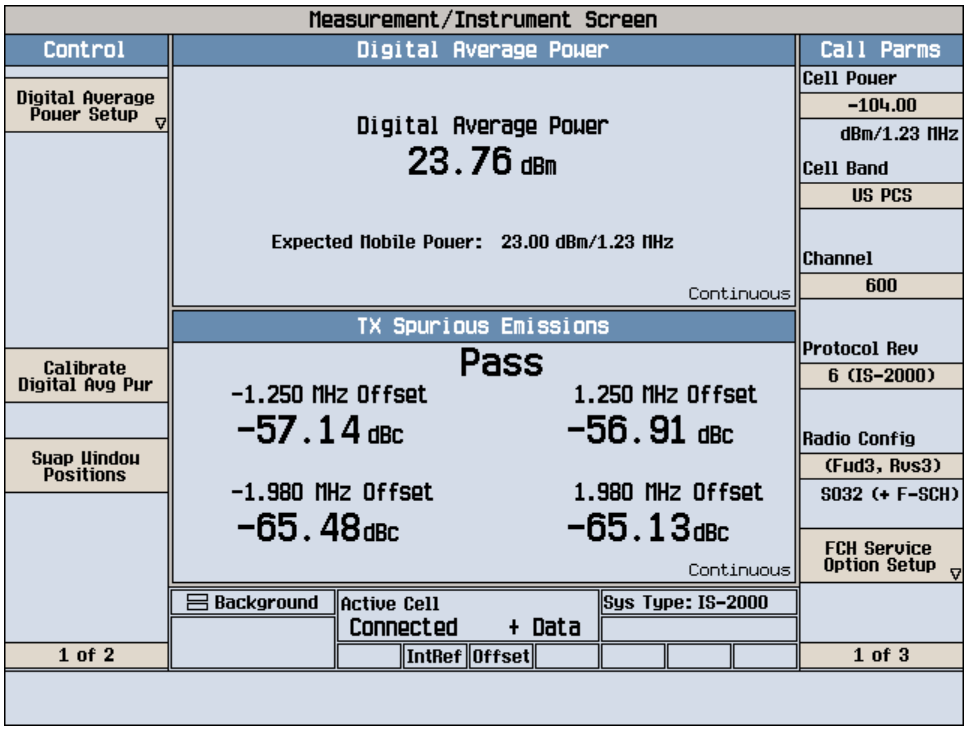
Ch25
ACPR



Code Domain



Ch600
ACPR



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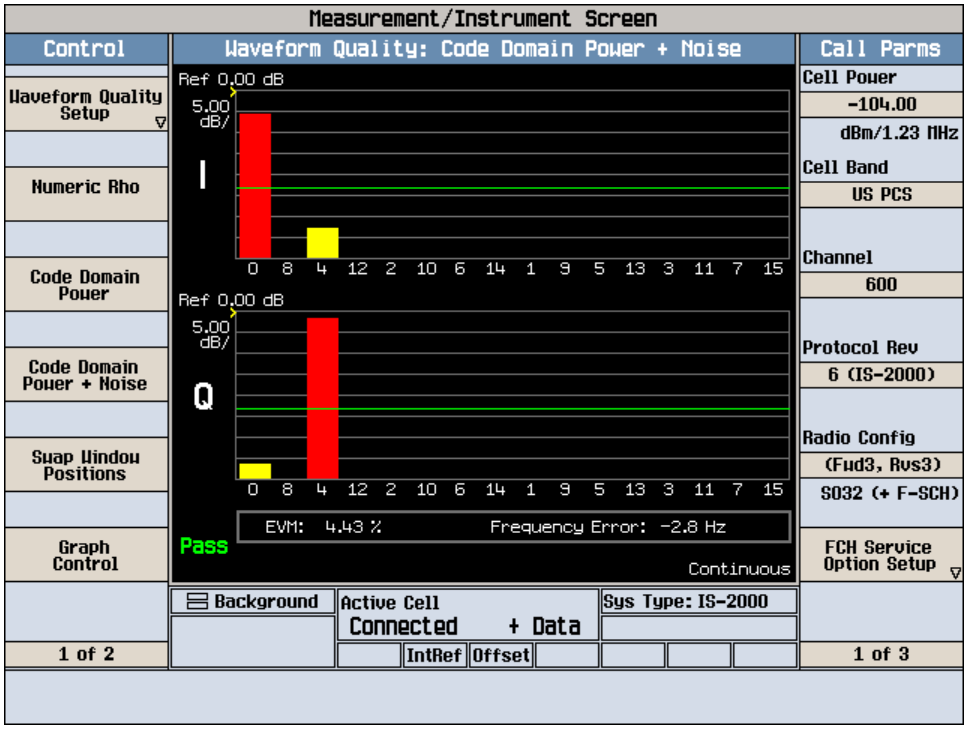
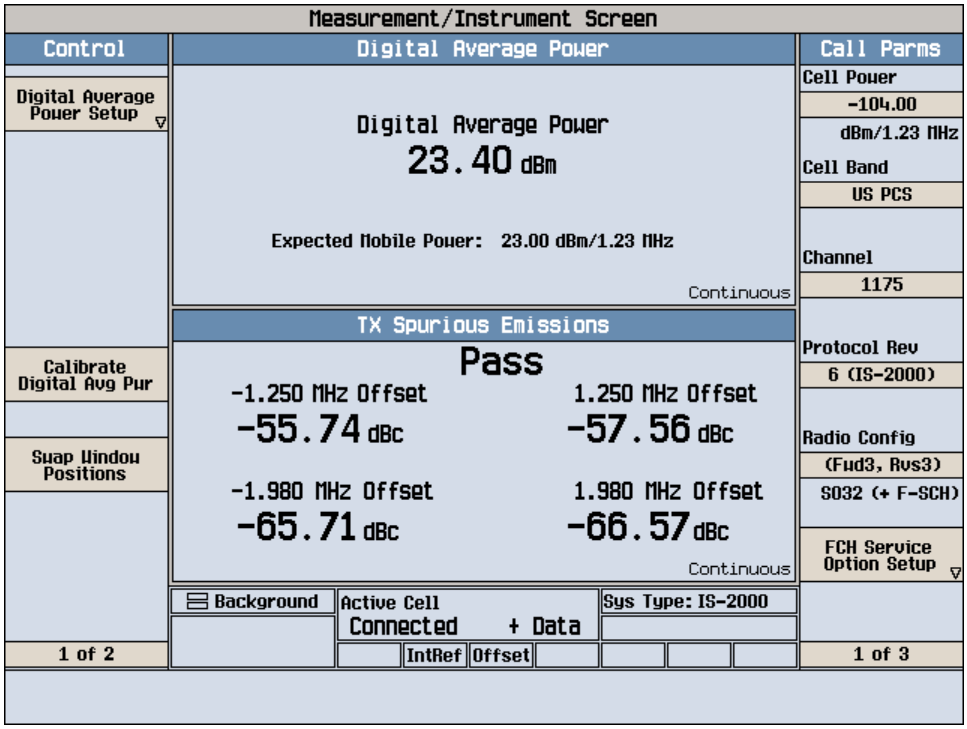
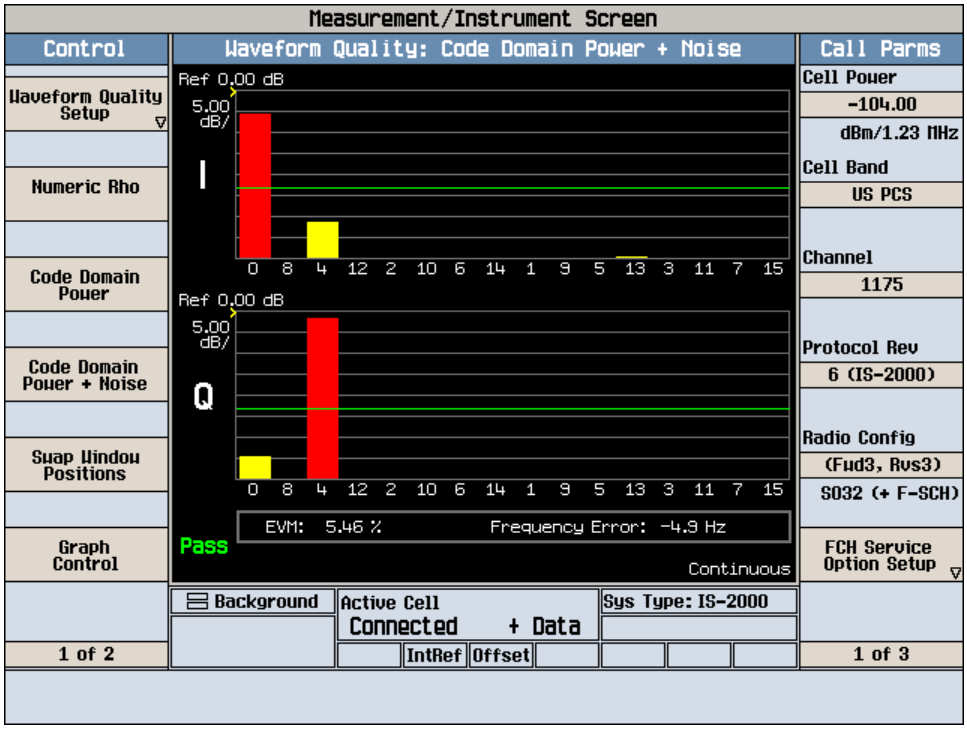


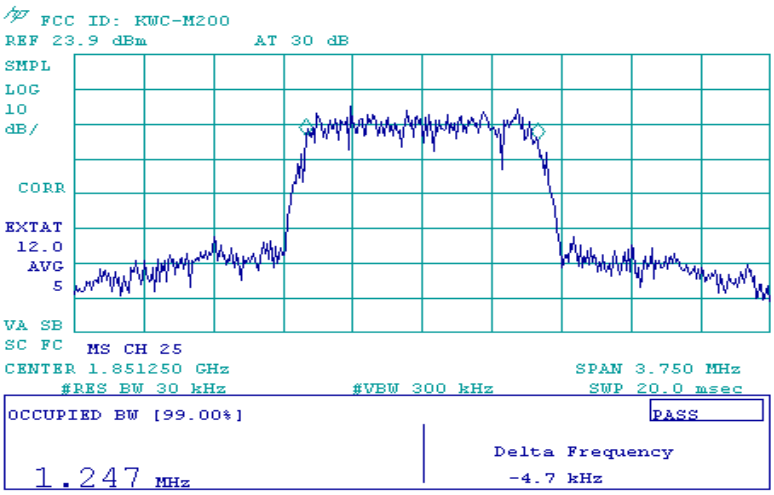
Ch1175
ACPR

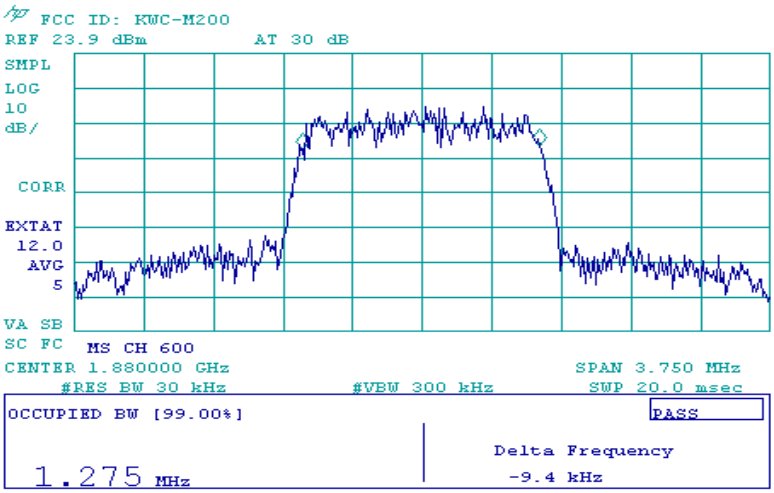


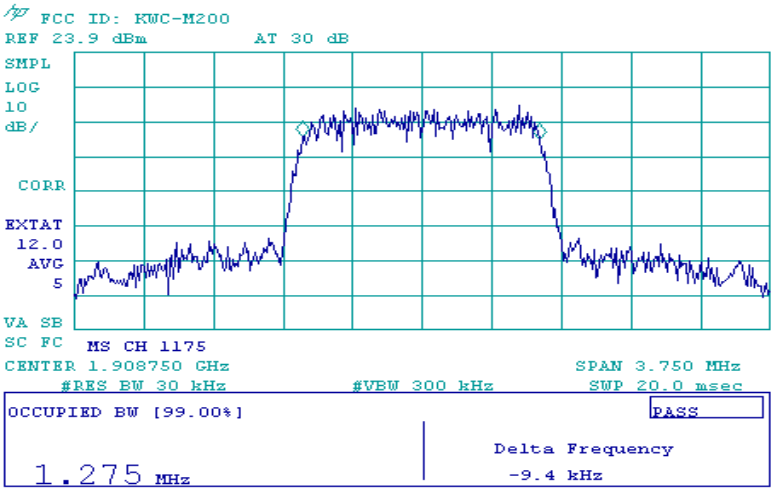
Code Domain



Occupied Bandwidth

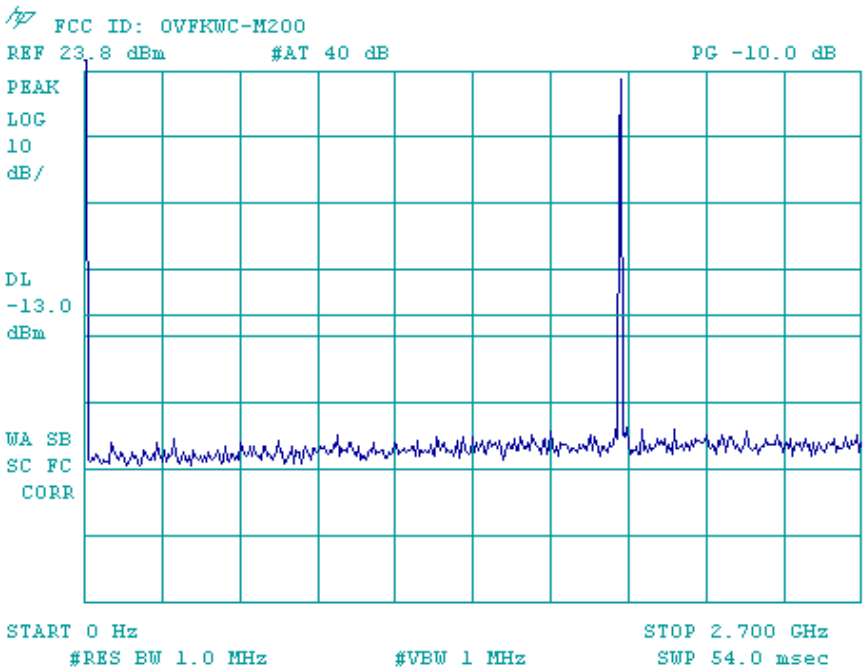


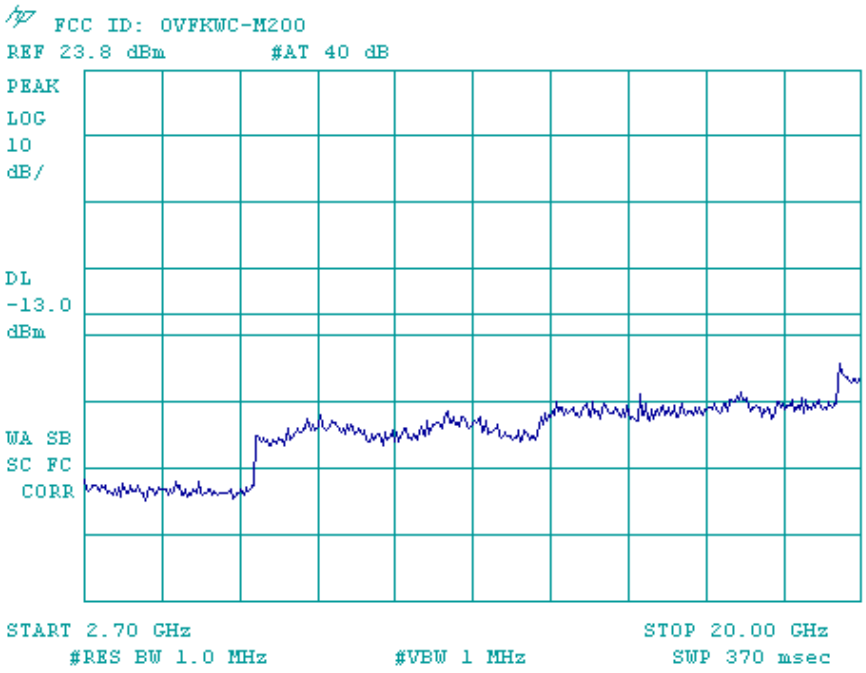




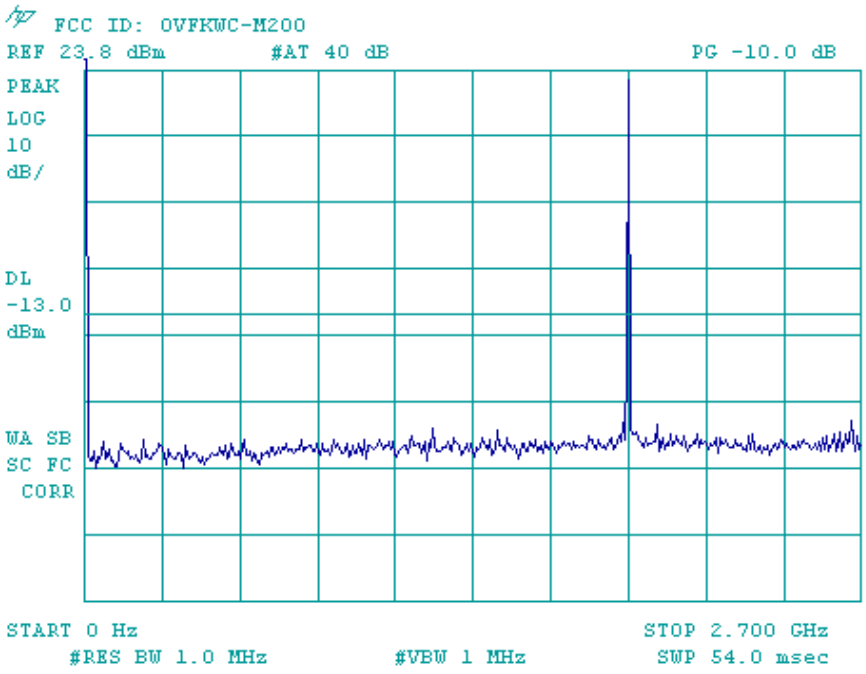
Spurious Emission up to 10th Harmonics

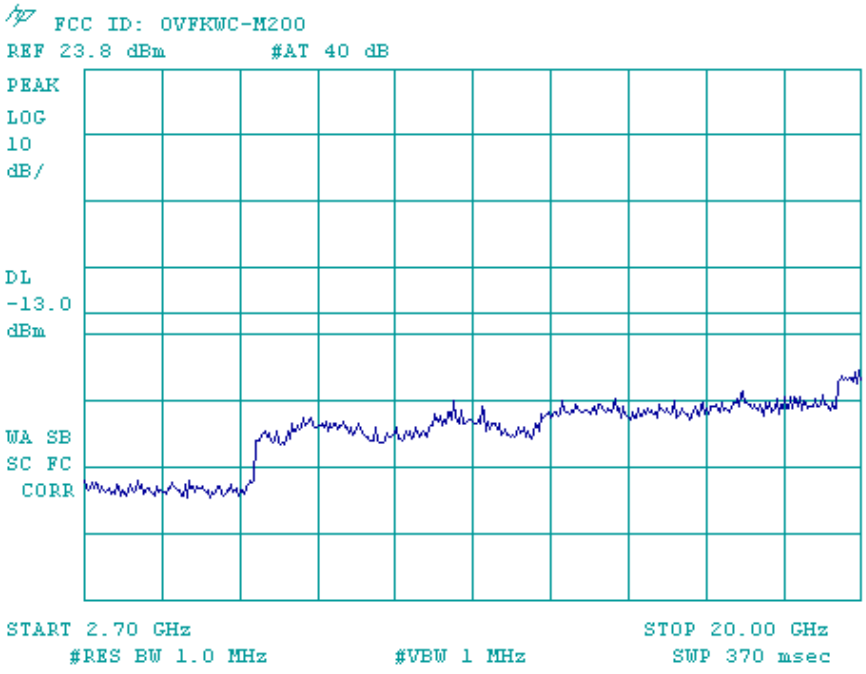
Ch25



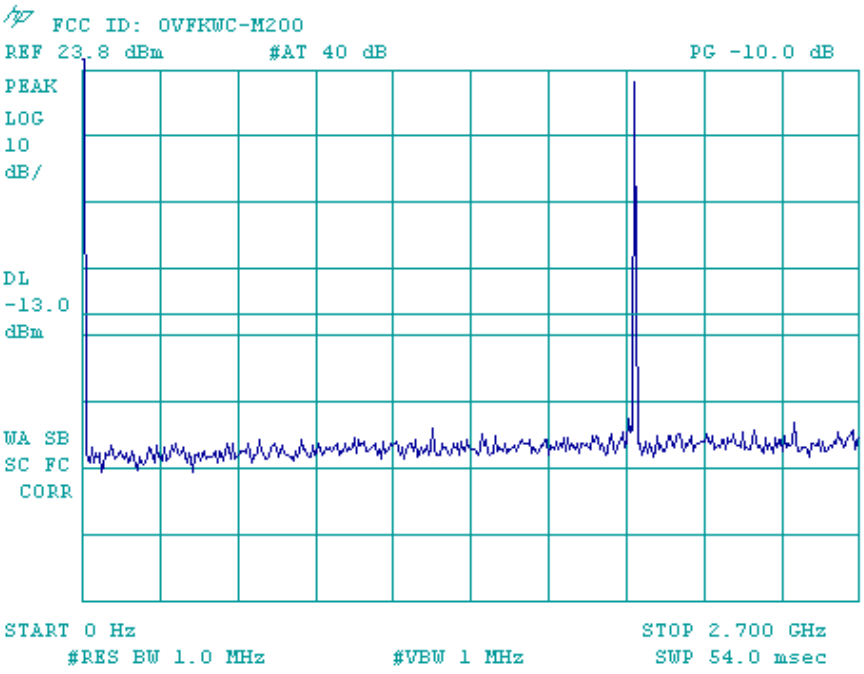


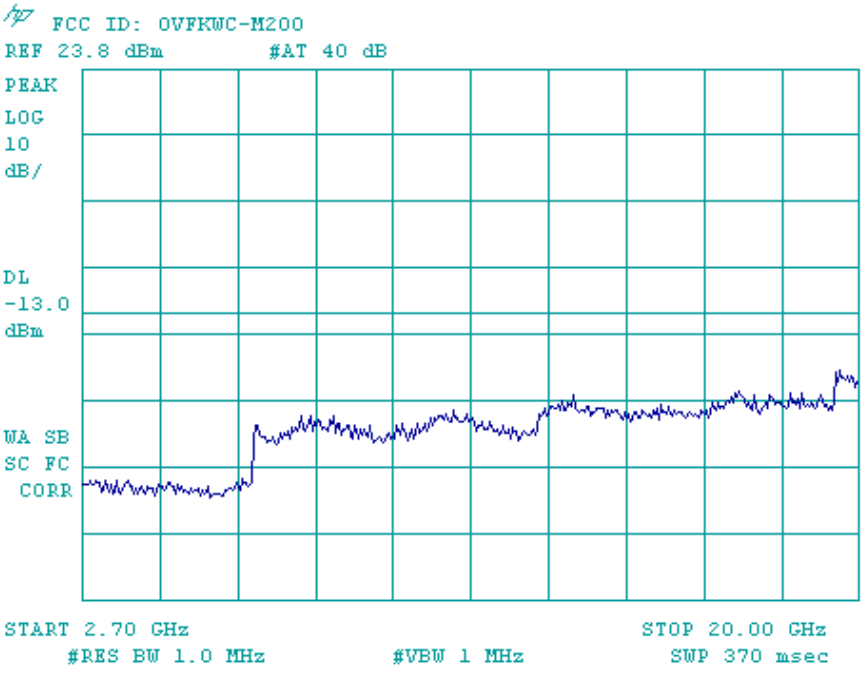
Ch600


FCC ID: OVFKWC-M200
REF 23.8 dBm
#AT 40 dB
PG -10.0 dB
PEAK
LOG
10
dB/
DL
-13.0
dBm
WA SB
SC FC
CORR
START 0 Hz
STOP 2.700 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SWP 54.0 msec


FCC ID: OVFKWC-M200
REF 23.8 dBm
#AT 40 dB
PEAK
LOG
10
dB/
DL
-13.0
dBm
WA SB
SC FC
CORR
START 2.70 GHz
STOP 20.00 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SWP 370 msec

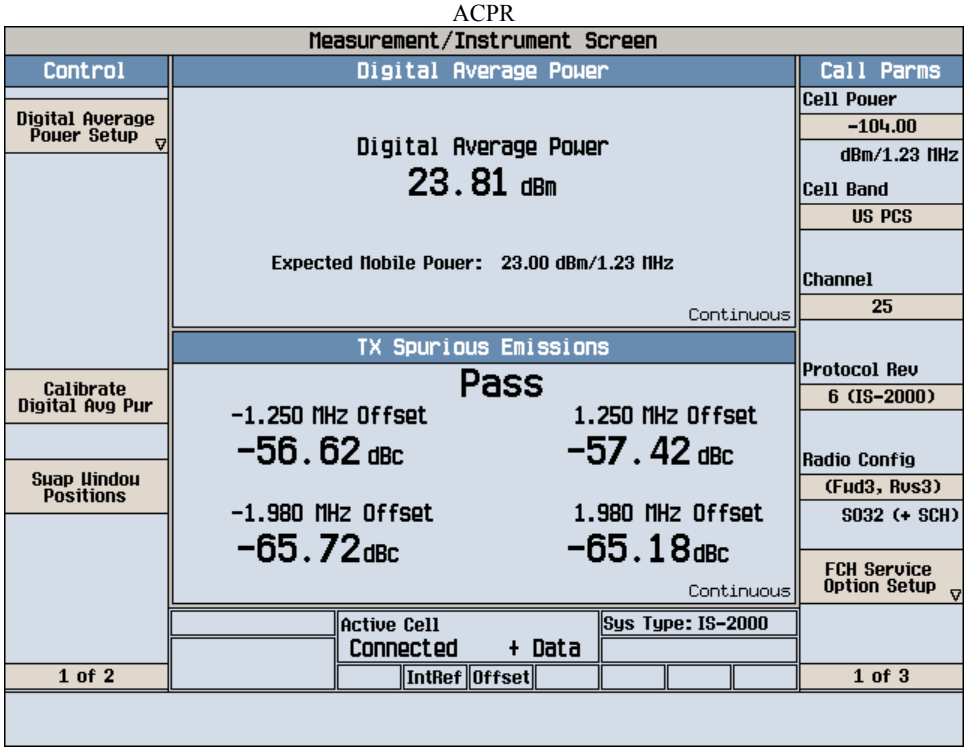
Ch1175


FCC ID: OVFKWC-M200
REF 23.8 dBm
#AT 40 dB
PG -10.0 dB
PEAK
LOG
10
dB/
DL
-13.0
dBm
WA SB
SC FC
CORR
START 0 Hz
STOP 2.700 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SWP 54.0 msec


FCC ID: OVFKWC-M200
REF 23.8 dBm
#AT 40 dB
PEAK
LOG
10
dB/
DL
-13.0
dBm
WA SB
SC FC
CORR
START 2.70 GHz
STOP 20.00 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SWP 370 msec

4. PCS CDMA F/R-FCH + F/R-SCH at RC3

Ch25
ACPR



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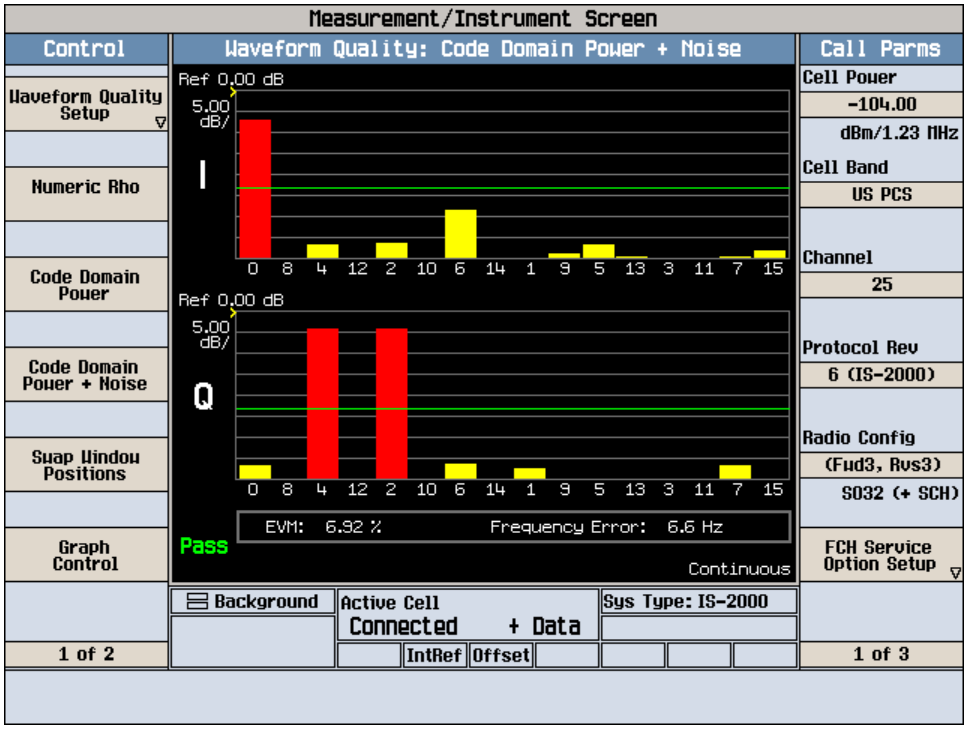
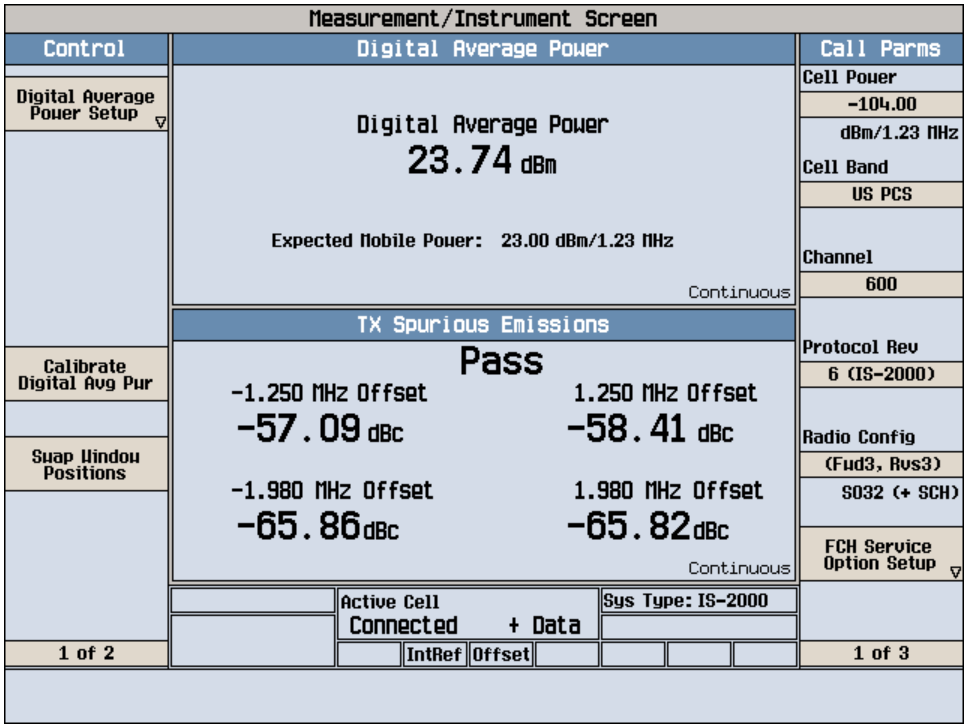
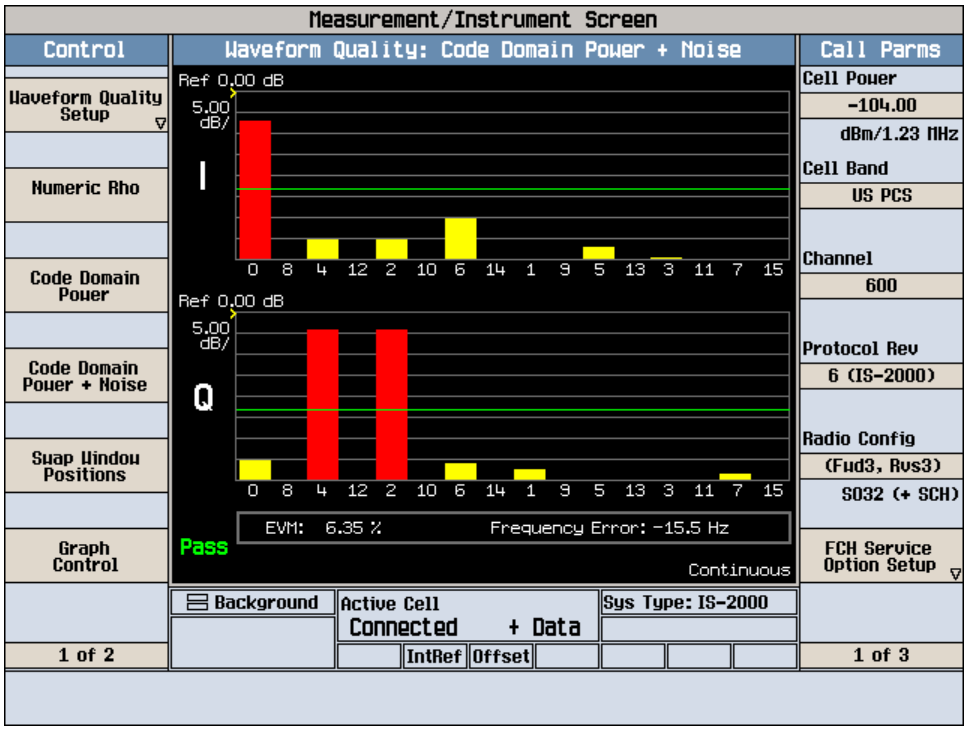


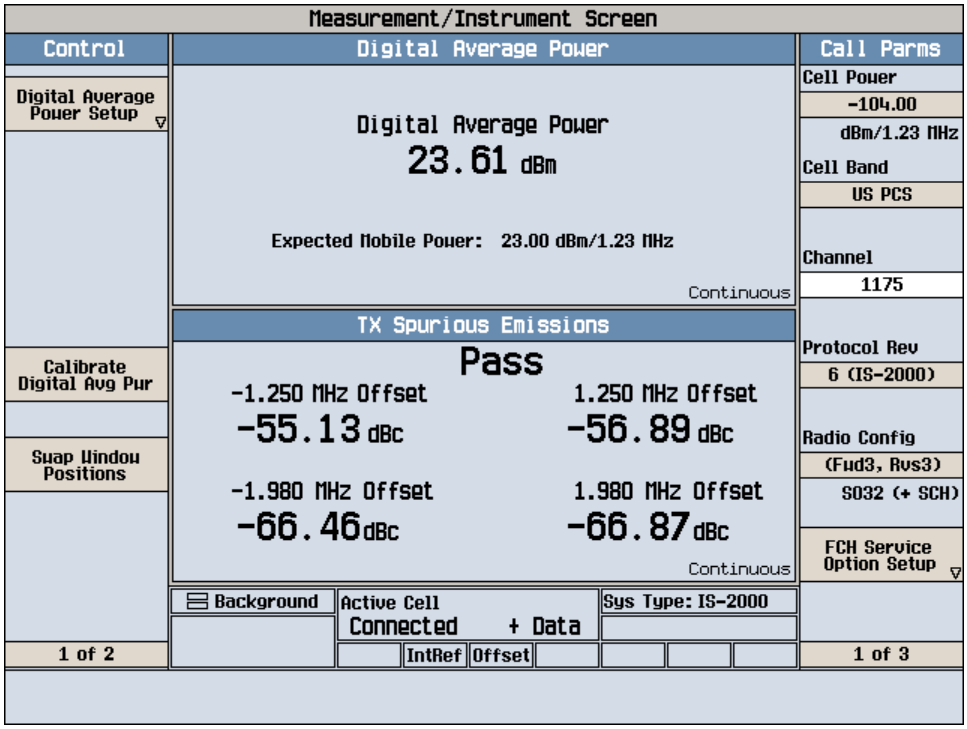
Ch600
ACPR



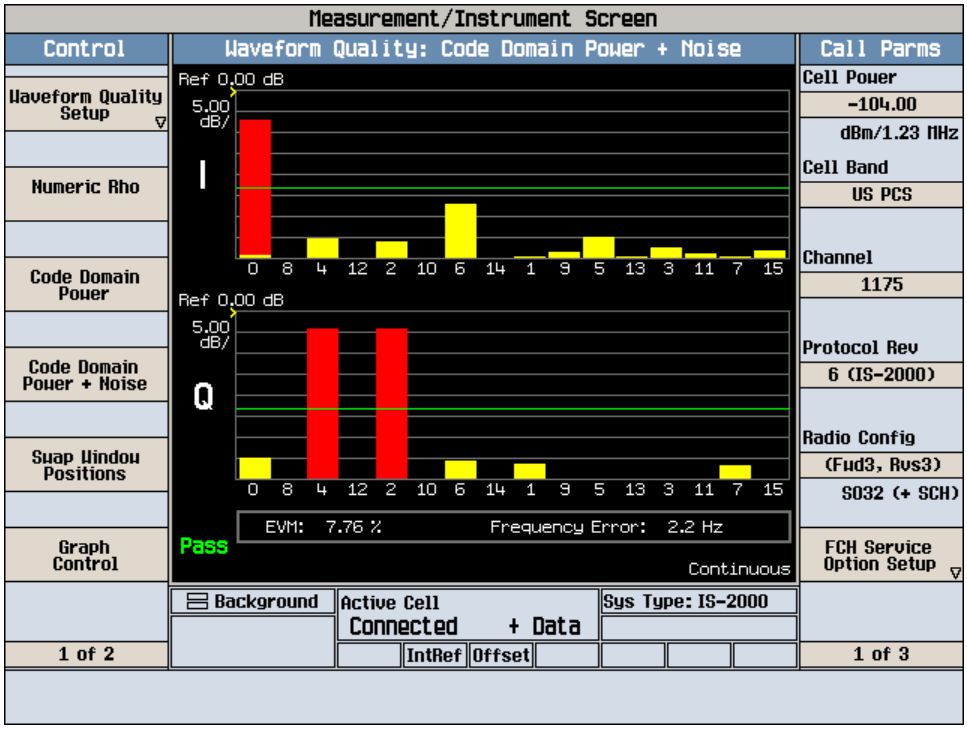
Code Domain



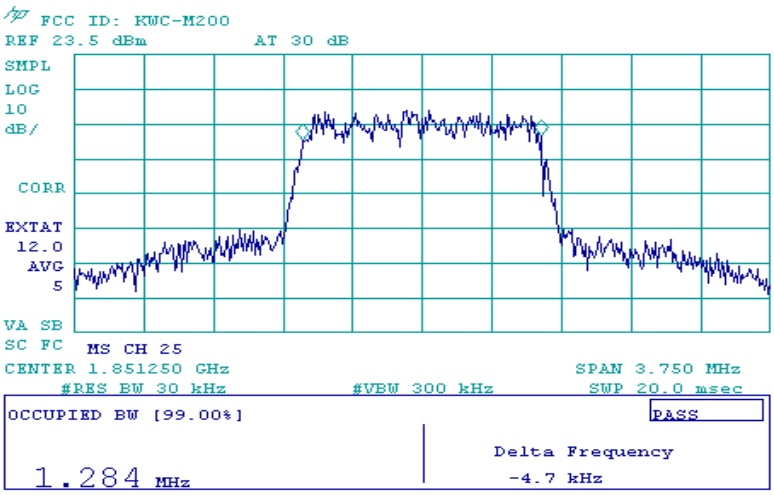
Ch1175
ACPR

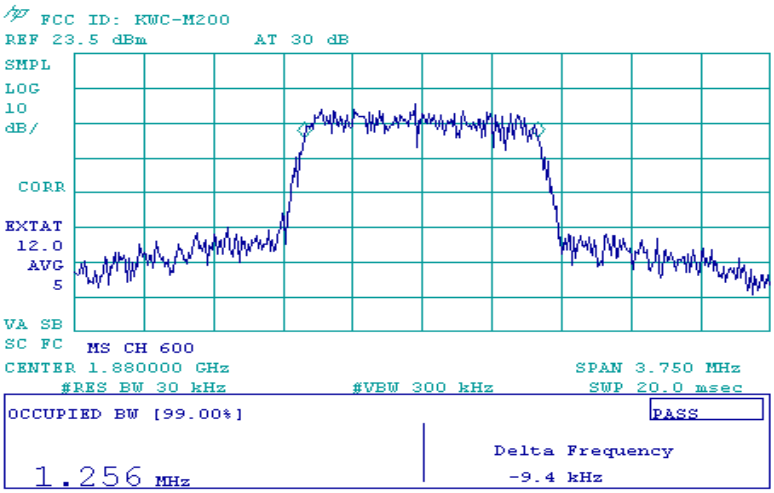


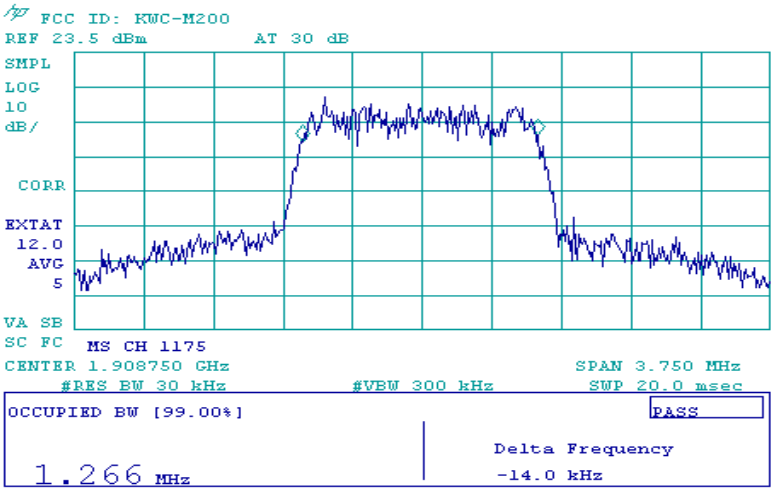
Code Domain



Occupied Bandwidth

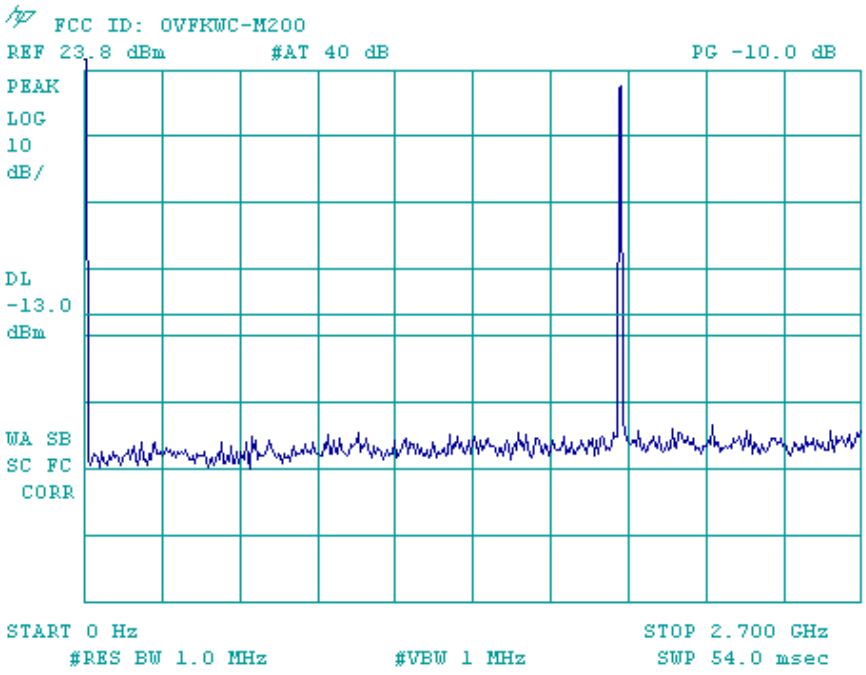


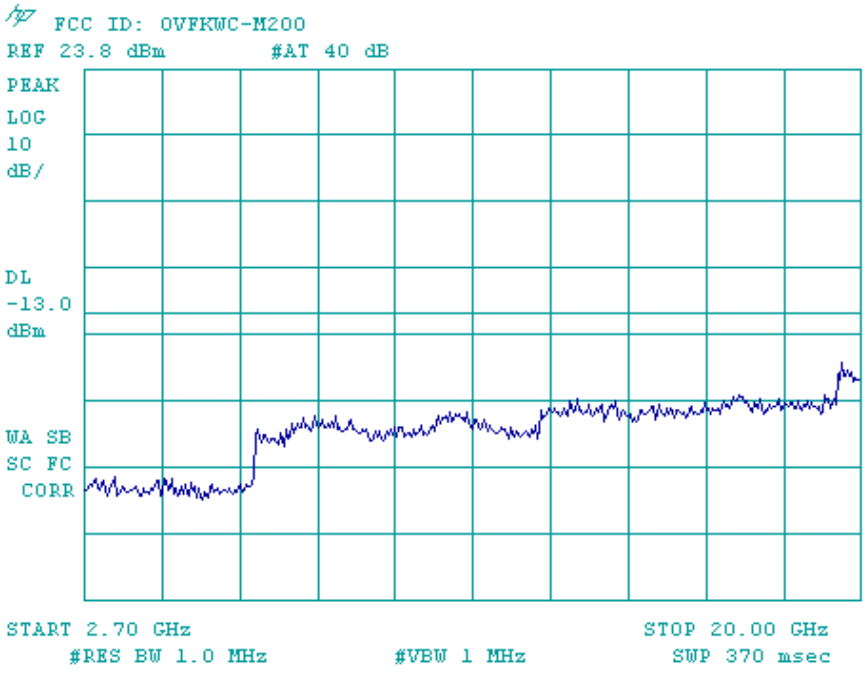




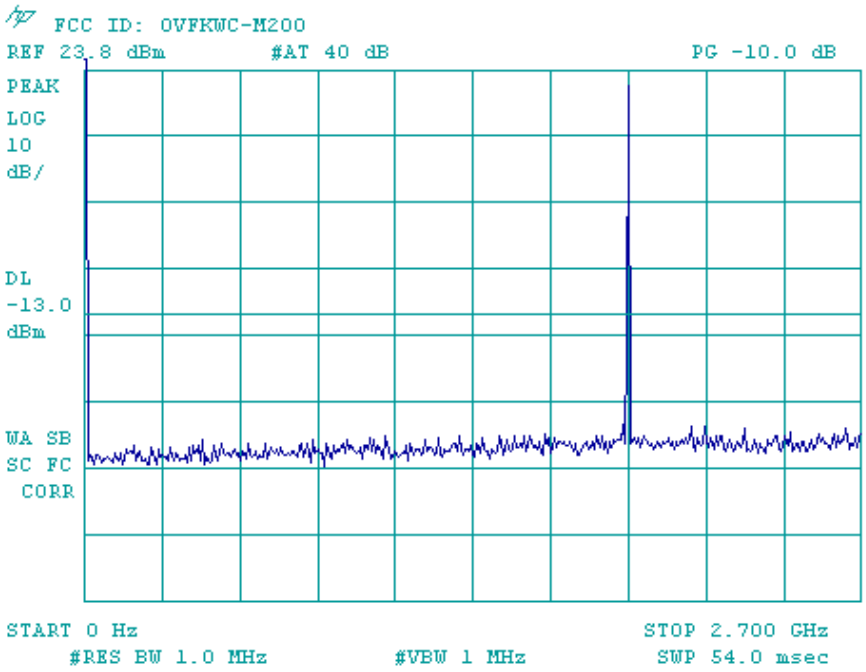
Spurious Emission up to 10th Harmonics

Ch25





Ch600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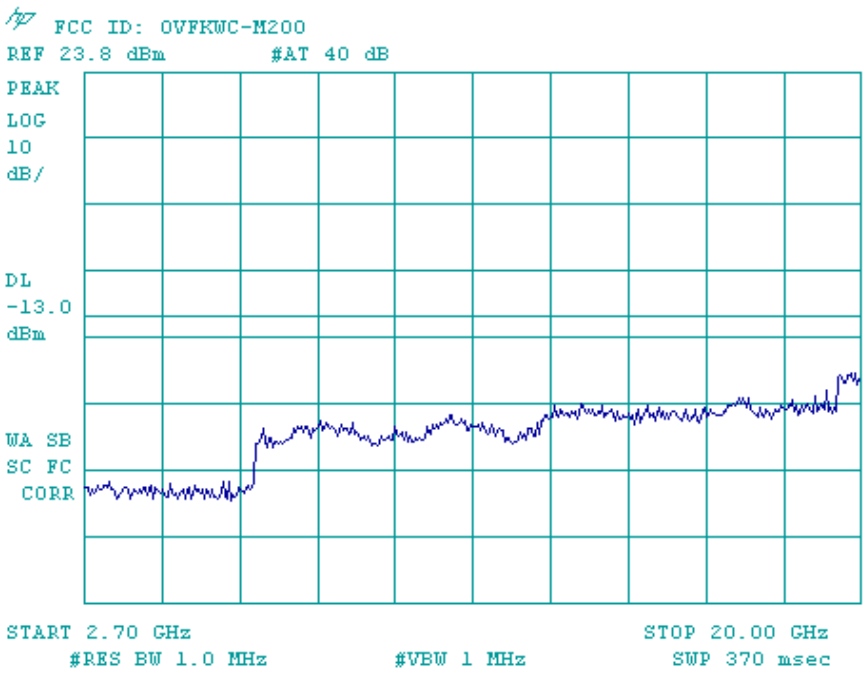
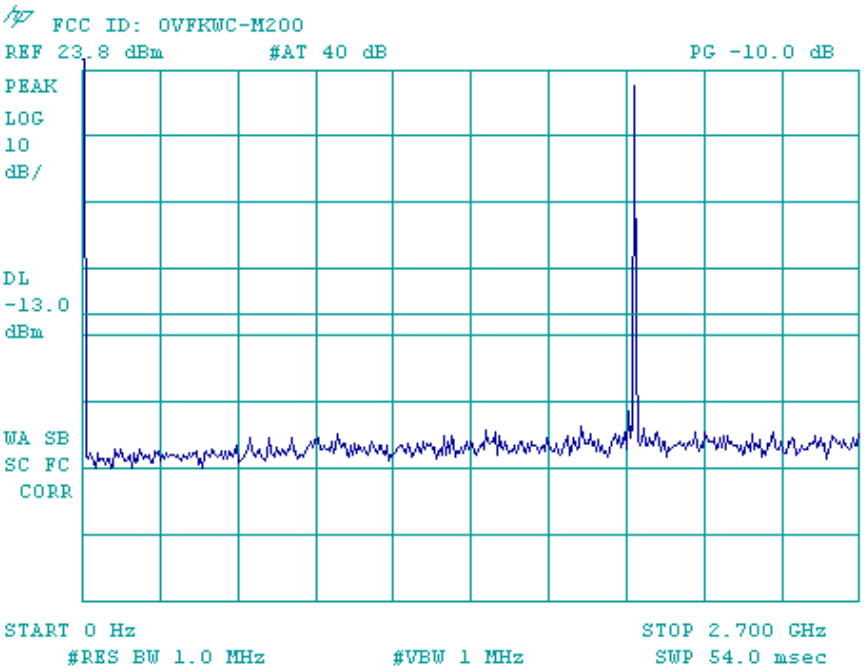
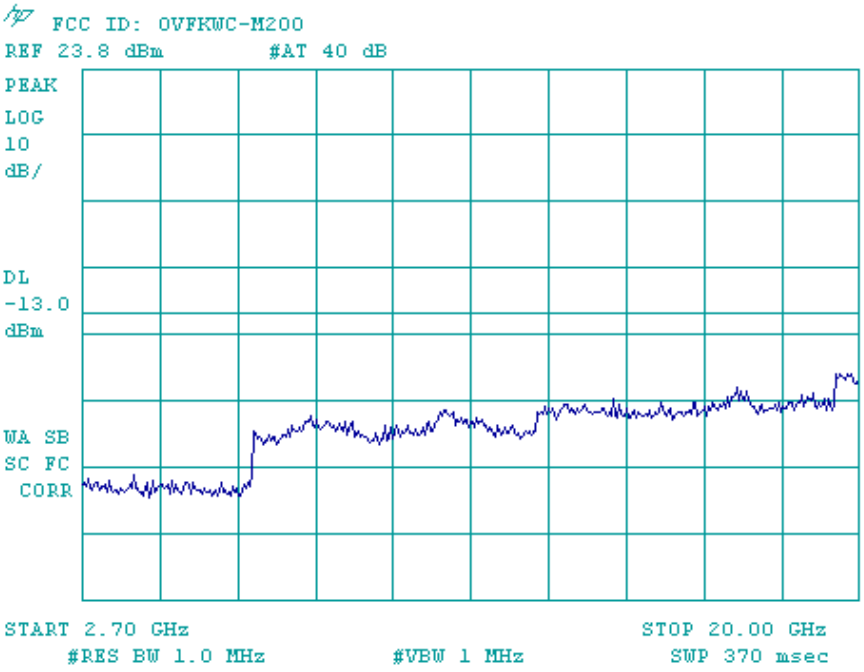
REF 23.8 dBm
#AT 40 dB
PG -10.0 dB
PEAK
LOG
10
dB/
DL
-13.0
dBm
WA SB
SC FC
CORR
START 0 Hz
STOP 2.700 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SWP 54.0 msec


FCC ID: OVFKWC-M200
REF 23.8 dBm
#AT 40 dB
PEAK
LOG
10
dB/
DL
-13.0
dBm
WA SB
SC FC
CORR
START 2.70 GHz
STOP 20.00 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SWP 370 msec

Ch1175


FCC ID: OVFKWC-M200
REF 23.8 dBm
#AT 40 dB
PG -10.0 dB
PEAK
LOG
10
dB/
DL
-13.0
dBm
WA SB
SC FC
CORR
START 0 Hz
STOP 2.700 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SWP 54.0 msec


FCC ID: OVFKWC-M200
REF 23.8 dBm
#AT 40 dB
PEAK
LOG
10
dB/
DL
-13.0
dBm
WA SB
SC FC
CORR
START 2.70 GHz
STOP 20.00 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SWP 370 msec

Cover Letter

Federal Communications Commission
Authorization and Evaluation Division

Re: Application for Cellular and PCS Transceiver Type Acceptance

Kyocera Wireless Corporation (KWC) herein submits the Application for Equipment Authorization (FCC Form 731) and Exhibits for Type Acceptance of a Cellular & PCS Transceiver, FCC ID: OVFKWC-M200.

Applicant: Kyocera Wireless Corporation
10300 Campus Point Drive
San Diego, CA 92121-1522

Manufacture: Kyocera Wireless Corporation
10300 Campus Point Drive
San Diego, California 92121

The equipment, KWC series 200 module, is for mobile station cellular and PCS system use. The series 200 module is in full compliance with all parts of EIA/TIA/IS-98-B&D Mobile Station-Land Station Compatibility Specification, issue July 2000 and March 2001, and also in full compliance with all parts of ANSI J-STD-018, Recommended Minimum Performance Requirements for 1.8 to 2 GHz Code Division Multiple Access (CDMA) Personal Stations, issue July 1996.

Information concerning how the ESN protection requirements are met is provided in Exhibit 3.

Kyocera Wireless Corporation

Lin Lu
EMC Engineer, Principal

Request of Confidentiality

Federal Communications Commission
Authorization and Evaluation Division

Re: Request of Confidentiality

Pursuant to Sections 0.457 and 0.459 of the Commission's Rules, the Applicant hereby requests confidential treatment of information accompanying this Application as outlined below:

All schematics/block diagrams
All parts lists

The above materials contain trade secrets and proprietary information not customarily released to the public. The public disclosure of these matters might be harmful to the Applicant and provide unjustified benefits to its competitors.

The Applicant understands that pursuant to Rule 0.457, disclosure of this Application and all accompanying documentation will not be made before the date of the Grant for this Application.

Kyocera Wireless Corporation

Lin Lu
EMC Engineer, principal

List of Exhibits

Exhibit	Description	FCC Reference
1	Operation Description	2.1033(c), 2.1061,
2	ESN Protection	22.919
3	RF Output Power Measured Data - Cellular	2.1046
4	RF Output Power Measured Data - PCS	2.1046, 24.232
5	Modulation Audio Response Measured Data	2.1047(a)
6	Modulation Limiting Measured Data	2.1047(b), 22.917
7	Occupied Bandwidth and Spurious Emission Measured Data - Cellular	2.1049, 22.917
8	Occupied Bandwidth and Spurious Emission Measured Data - PCS	2.1049, 24.238
9	Conducted Harmonics Emissions Measured Data - Cellular	2.1051, 22.917, 22.901(d)
10	Frequency Stability vs. Temperature and Voltage Measured Data - Cellular	2.1055
11	Frequency Stability vs. Temperature and Voltage Measured Data - PCS	2.1055, 24.235
12	Occupied Bandwidth and Spurious Emission Measured Data - CDMA mode when operating in a P-REV 6 or above (additional testing)	2.1049, 22.917, 24.238, IS98D
13	Measurement Procedures and Techniques	
14	List of Semiconductor Devices	2.1033(c)
15	Circuit Diagram	2.1033(c)
16	FCC Identification Label	2.1033(c)
17	Photographs	2.1033(c)
18	User's Manual	2.1033(c)

Exhibit 1

General Information – operation description

See a separate attachment.

Exhibit 2

ELECTRONIC SERIAL NUMBERS (ESN) Protection

The KWC series 200 module, FCC ID: OVFKWC-M200 uses ESN. The ESN is a unique identification number to each module that is contained in the Numeric Assignment Module and is automatically transmitted to the base station whenever a call is placed. The ESN is stored in an EPROM and is isolated from fraudulent contact and tampering. Any attempt to change the ESN will render the portable phone inoperative.

The phone complies with all requirements for ESN under Part 22.919.

Exhibit 3

Transmitter RF Power Output - FCC part 2, Paragraph 2.1046

May 2003

Conducted Power --
The RF output power was measured using a Giga-tronics 8541C Universal Power Meter and HP 8594E Spectrum Analyzer that has the CDMA personality option. Terminated to a resistive coaxial load of 50 ohms.

		RF output power (dBm) - Cellular	
		Measured	
carrier frequency (MHz)	channel	FM	CDMA
824.04	991	27.00dBm	
824.7	1013		24.53dBm
836.49	383	27.06dBm	24.57dBm
848.31	777		24.49dBm
848.97	799	27.02dBm	

Exhibit 4

Transmitter RF Power Output - FCC part 24, Paragraph 2.1046, 24.232 (b)

May 2003

Conducted power --
The RF output power was measured using a HP 8594 Spectrum Analyzer that has the CDMA personality option. Terminated to a resistive coaxial load of 50 ohms.

		RF output power (dBm) - PCS
carrier frequency (MHz)	channel	CDMA
		measured
1851.25	25	23.80dBm
1880	600	23.85dBm
1908.75	1175	23.81dBm

Exhibit 5

Transmitter Modulation Requirement - FCC part 2, Paragraph 2.1047 (a), FCC part 22, Paragraph 22.917

Measured with HP8920 RF communication test set & HP 3588A spectrum analyzer. The test procedures and technique are stated in Exhibit 13.

Audio Frequency Response (<3 kHz)

Note: All FM TX tests on HP8920 done at channel 384				
FM Data				
		MEASURED VALUES		
AUDIO FREQ RES	**Units**		**Lower limit**	**Upper limit**
TX audio resp @ .30 kHz	**dB**	0.70	**-3**	**1**
TX audio resp @ .80 kHz	**dB**	0.30	**-3**	**1**
TX audio resp @ 1.30 kHz	**dB**	0.30	**-3**	**1**
TX audio resp @ 1.80 kHz	**dB**	0.40	**-3**	**1**
TX audio resp @ 2.30 kHz	**dB**	0.70	**-3**	**1**
TX audio resp @ 2.80 kHz	**dB**	-0.60	**-4**	**1**
TX audio resp @ 3.00 kHz	**dB**	-2.50	**-4.6**	**1**

Audio Frequency Response (> 3 kHz)

freq	dev (dB)	dB from 3 kHz	upper limit
3000	-1.64	0.00	0.00
3500	-34.08	-32.44	-2.68
4000	-55.37	-53.73	-5.00
4500	-64.9	-63.26	-7.04
5000	-66.1	-64.46	-8.87
5900	-68.02	-66.38	-11.75
5900	-68.02	-66.38	-11.75
6000	-66.89	-65.25	-35.00
6100	-69.33	-67.69	-35.00
6100	-69.33	-67.69	-35.00
7000	-70.39	-68.75	-35.00
8500	-68.93	-67.29	-14.72
10000	-67.1	-65.46	-18.09
12000	-65.34	-63.70	-20.92
15000	-72.9	-71.26	-24.08
20000	-68.32	-66.68	-27.96
25000	-75.5	-73.86	-28.00
30000	-68.4	-66.76	-28.00

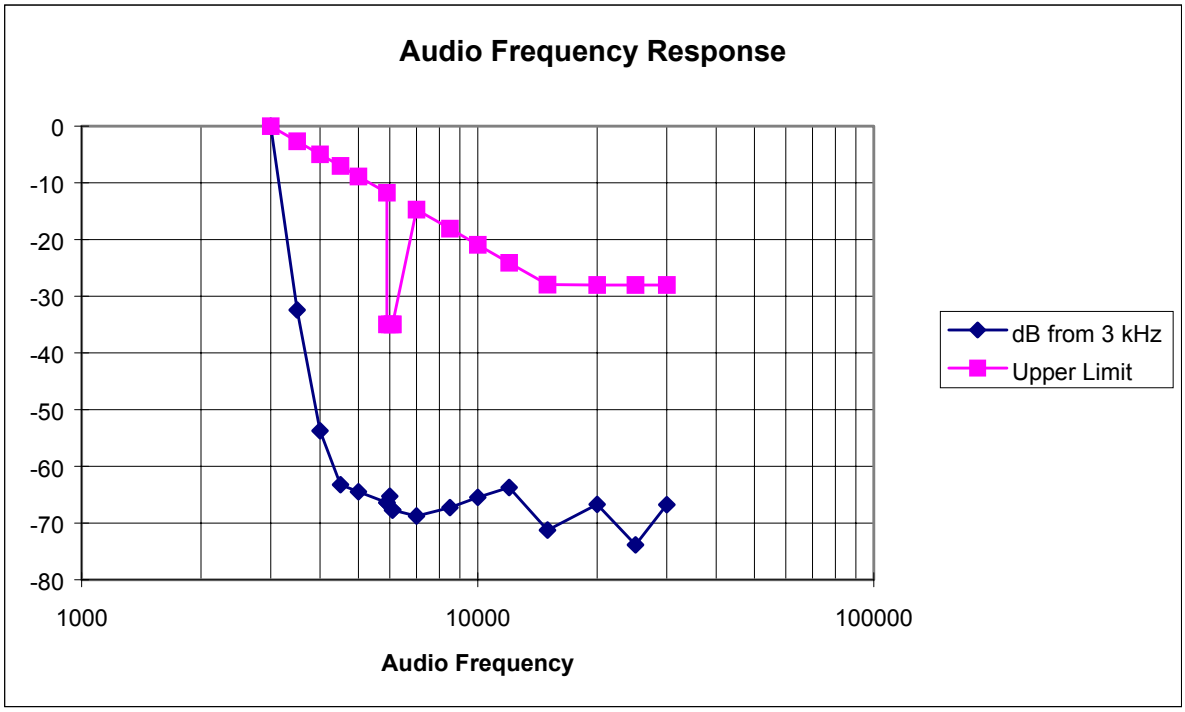


Exhibit 6

Transmitter Modulation Requirement - FCC Part 2, Paragraph 2.1047 (b)

Measured with HP8920 RF communication test set. The test procedures and technique are stated in Exhibit 13.

Audio Input Level (dB)	FM deviation (kHz peak)		
	Modulation frequency		
(0dB=8kHz dev)	400 Hz	1 kHz	2.7 kHz
-20	3.56	3.77	4.42
-15	4.14	4.28	5.31
-10	4.92	5.31	6.78
-5	5.61	6.35	8.25
0	6.86	8	8.96
5	8.70	9.26	9.92
10	8.87	9.88	10.18
15	8.92	10.37	10.14
20	8.85	9.92	10.20

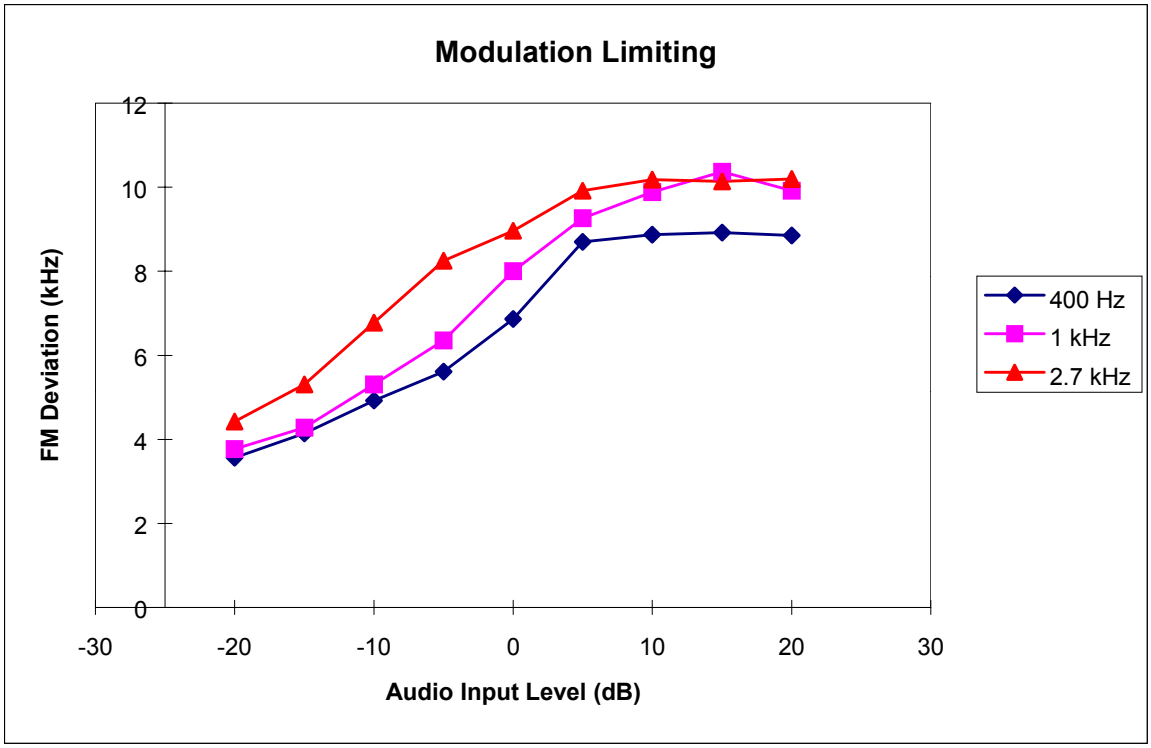


Exhibit 7

Occupied Bandwidth and Spurious Emission Measured Data

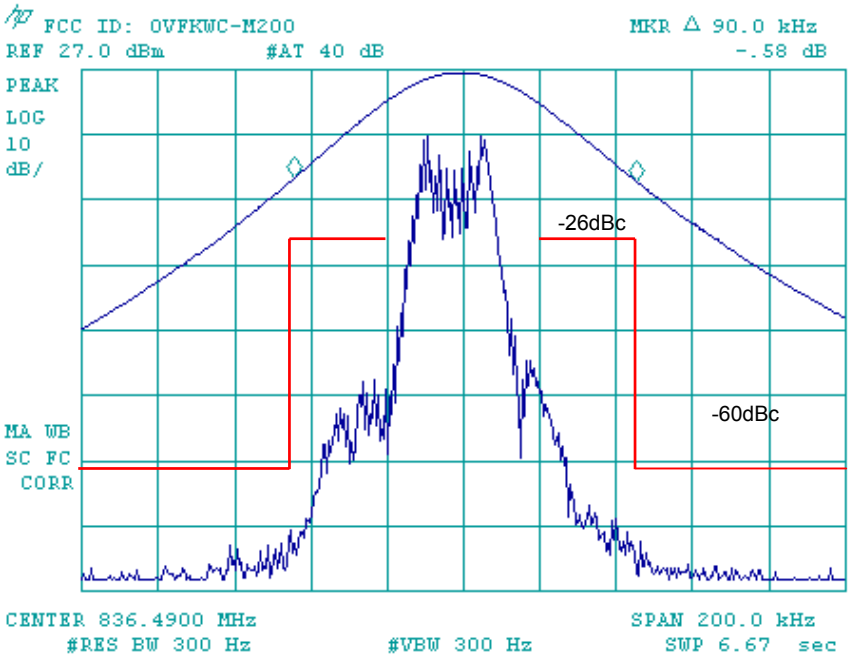
The test procedures and technique are stated in Exhibit 13.

List of Exhibits

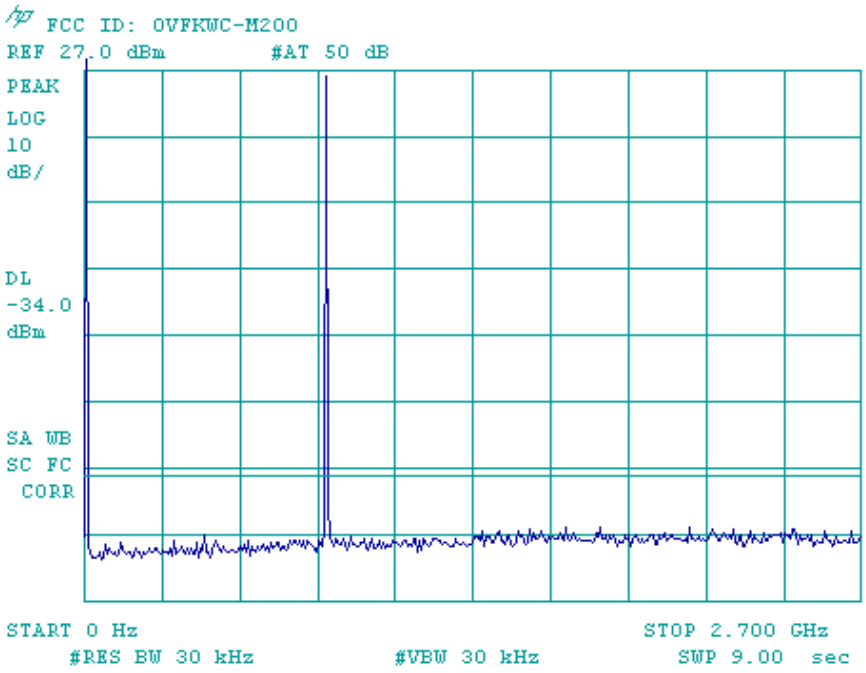
Exhibit	Description	FCC Reference
a-1	AMPS voice, ± 100 kHz from carrier frequency	2.1049, 22.917
a-2	AMPS voice, 0 Hz to 3rd harmonic	2.1049, 22.917
a-3	AMPS voice, 869 - 894 MHz	2.1049, 22.917
b-1	AMPS voice + SAT, ± 100 kHz from carrier frequency	2.1049, 22.917
b-2	AMPS voice + SAT, 0 Hz to 3rd harmonic	2.1049, 22.917
b-3	AMPS voice + SAT, 869 - 894 MHz	2.1049, 22.917
c-1	AMPS SAT, ± 100 kHz from carrier frequency	2.1049, 22.917
c-2	AMPS SAT, 0 Hz to 3rd harmonic	2.1049, 22.917
c-3	AMPS SAT, 869 - 894 MHz	2.1049, 22.917
d-1	AMPS ST, ± 100 kHz from carrier frequency	2.1049, 22.917
d-2	AMPS ST, 0 Hz to 3rd harmonic	2.1049, 22.917
d-3	AMPS ST, 869 - 894 MHz	2.1049, 22.917
e-1	AMPS ST + SAT, ± 100 kHz from carrier frequency	2.1049, 22.917
e-2	AMPS ST + SAT, 0 Hz to 3rd harmonic	2.1049, 22.917
e-3	AMPS ST + SAT, 869 - 894 MHz	2.1049, 22.917
f-1	SAT & DTMF, ± 100 kHz from carrier frequency	2.1049, 22.917
f-2	SAT & DTMF, 0 Hz to 3rd harmonic	2.1049, 22.917
f-4	SAR & DTMF, 869 - 894 MHz	2.1049, 22.917
g-1	AMPS WIDEBAND, ± 100 kHz from carrier frequency	2.1049, 22.917
g-2	AMPS WIDEBAND, 0 Hz to 3rd harmonic	2.1049, 22.917
g-3	AMPS WIDEBAND, 869 - 894 MHz	2.1049, 22.917
h-1	Cellular CDMA at RC1, 99% occupy bandwidth	2.1049, 22.917
h-2	Cellular CDMA at RC1, 0 Hz to 3rd harmonic	2.1049, 22.917
h-3	Cellular CDMA at RC1, 869 - 894 MHz	2.1049, 22.917
i	Cellular CDMA at RC3 *note: KWC-M200 supports additional reverse channels, as per IS-98D (CDMA 1x), therefore, additional measurements were taken to show compliance. Please see a separate attachment (Exhibit 19)*	2.1049, 22.917 IS-98D

AMPS Voice

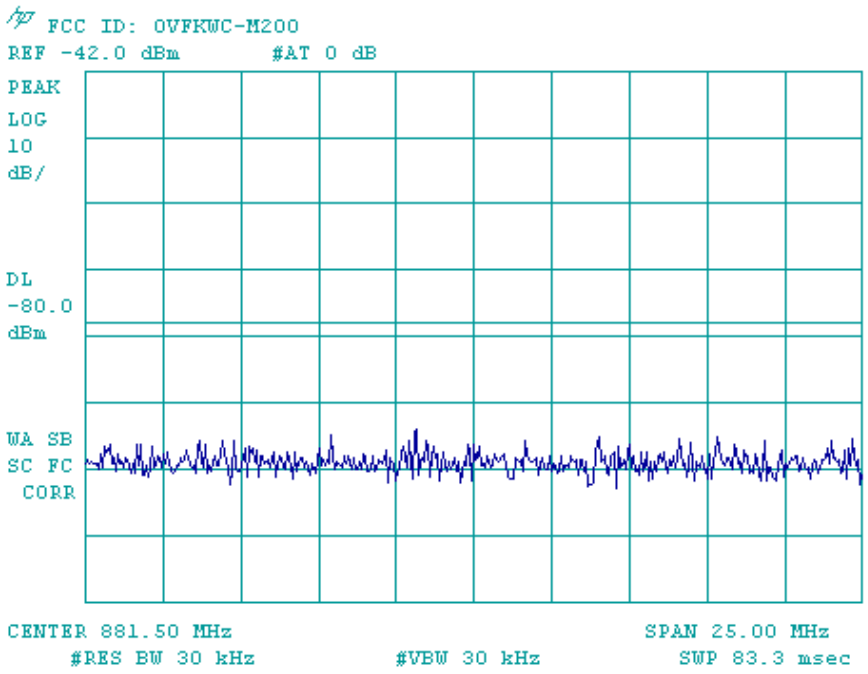
a-1



a-2



a-3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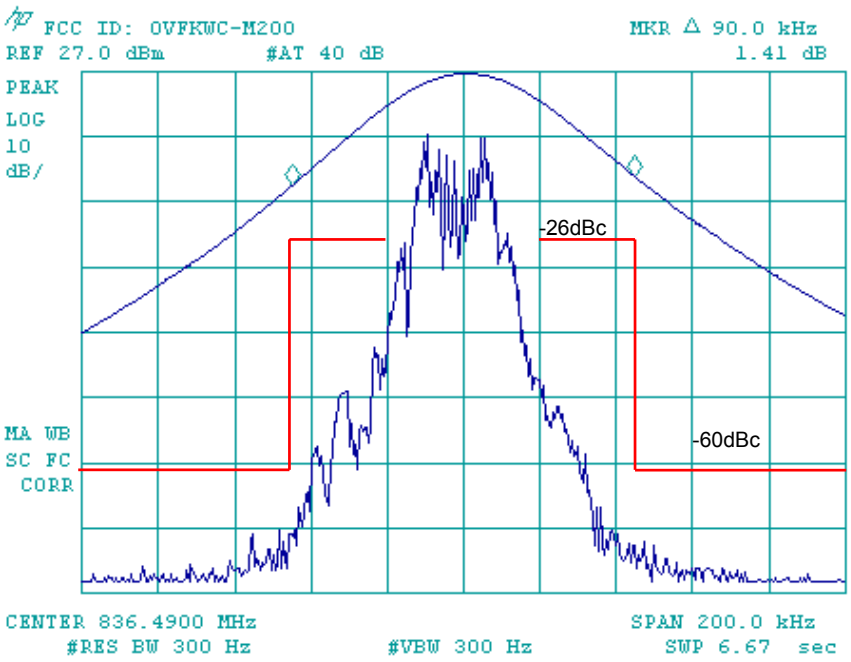
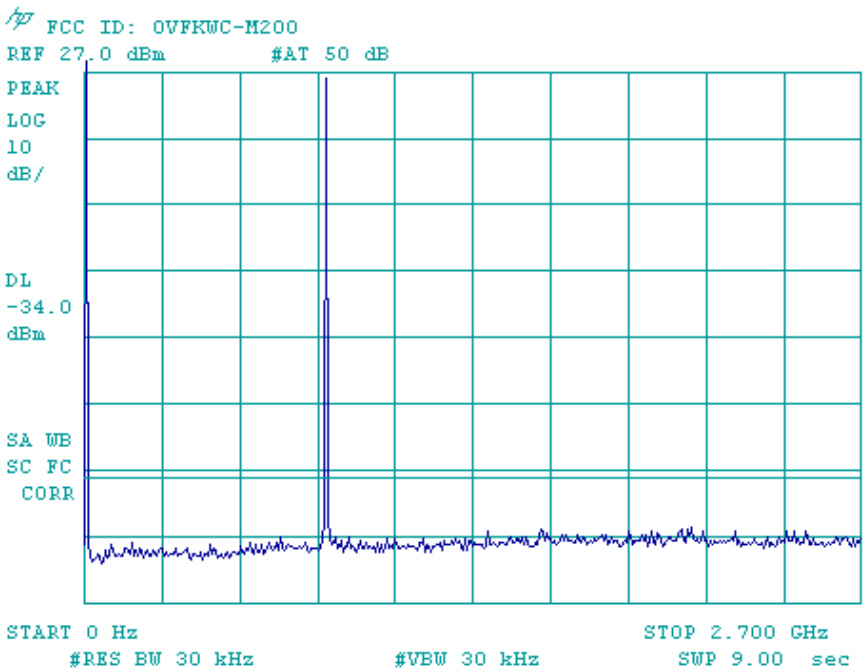
REF -42.0 dBm
#AT 0 dB
PEAK
LOG
10
dB/
DL
-80.0
dBm
WA SB
SC FC
CORR
CENTER 881.50 MHz
SPAN 25.00 MHz
#RES BW 30 kHz
#VBW 30 kHz
SWP 83.3 msec

AMPS Voice + SAT

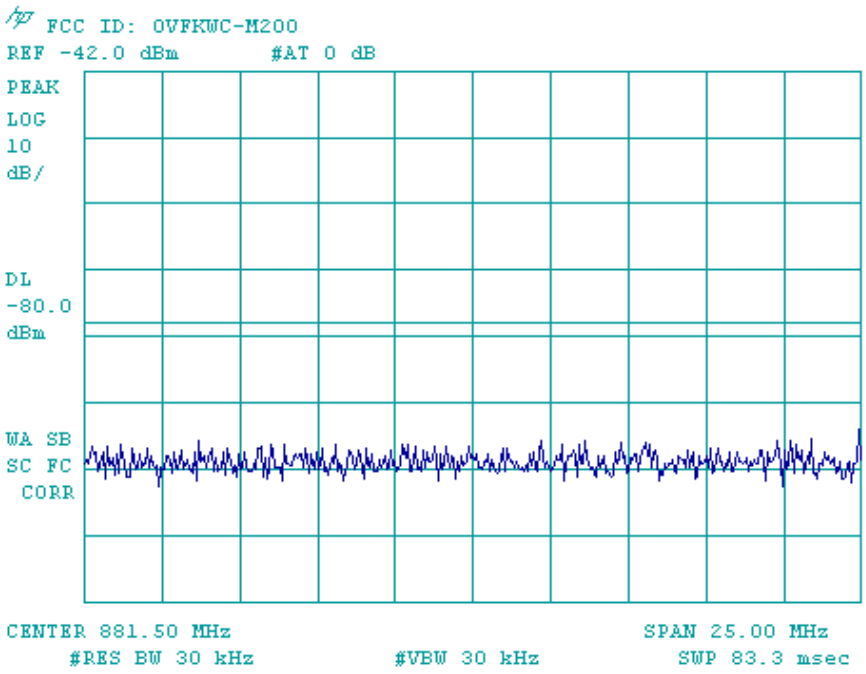
b-1



b-2

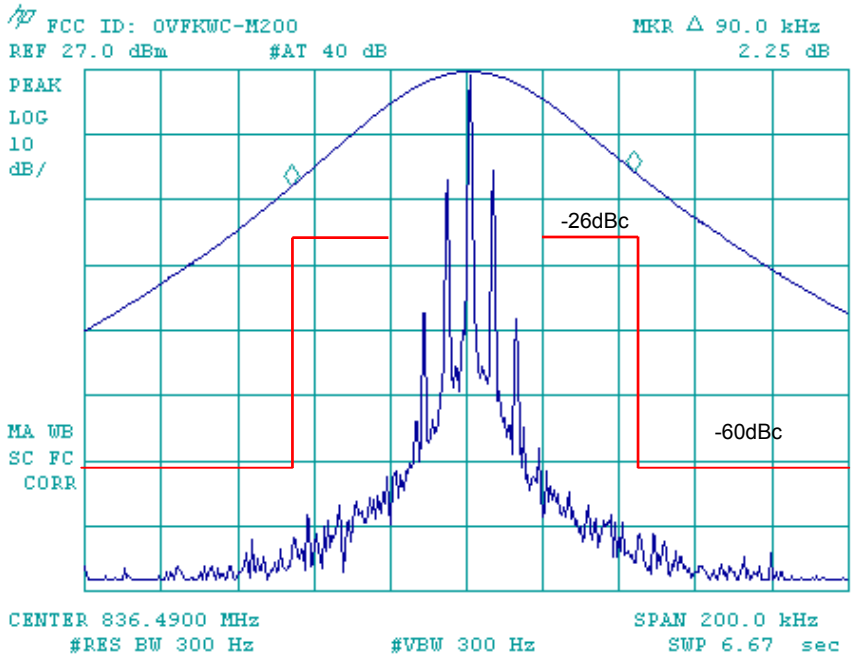


b-3

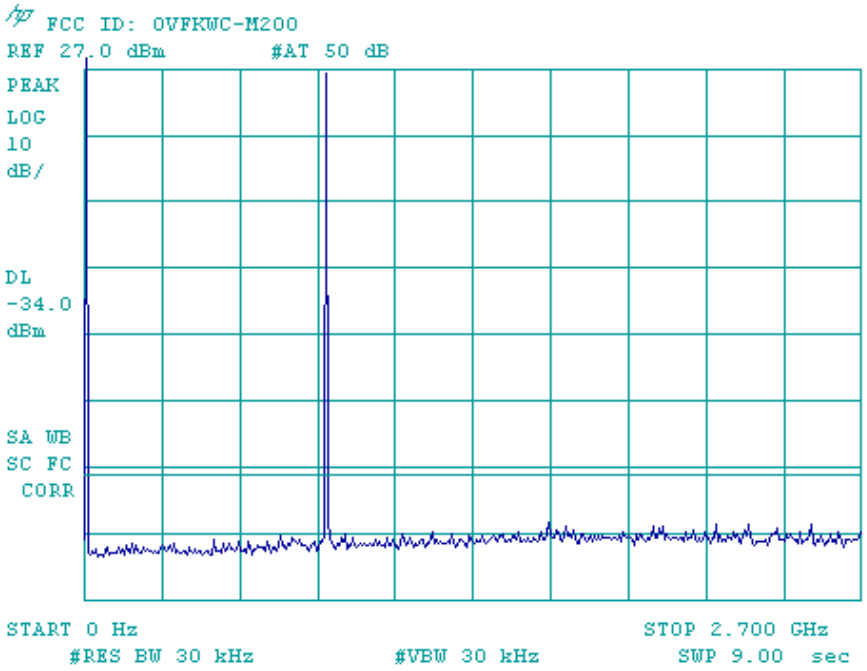

FCC ID: OVFKWC-M200
REF -42.0 dBm
#AT 0 dB
PEAK
LOG
10
dB/
DL
-80.0
dBm
WA SB
SC FC
CORR
CENTER 881.50 MHz
SPAN 25.00 MHz
#RES BW 30 kHz
#VBW 30 kHz
SWP 83.3 msec

AMPS SAT

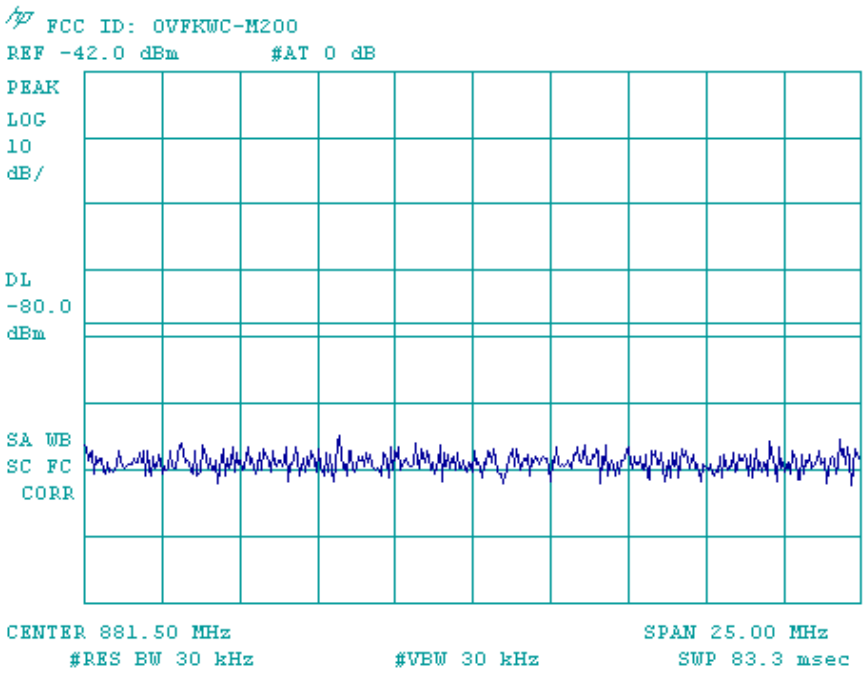
c-1



c-2

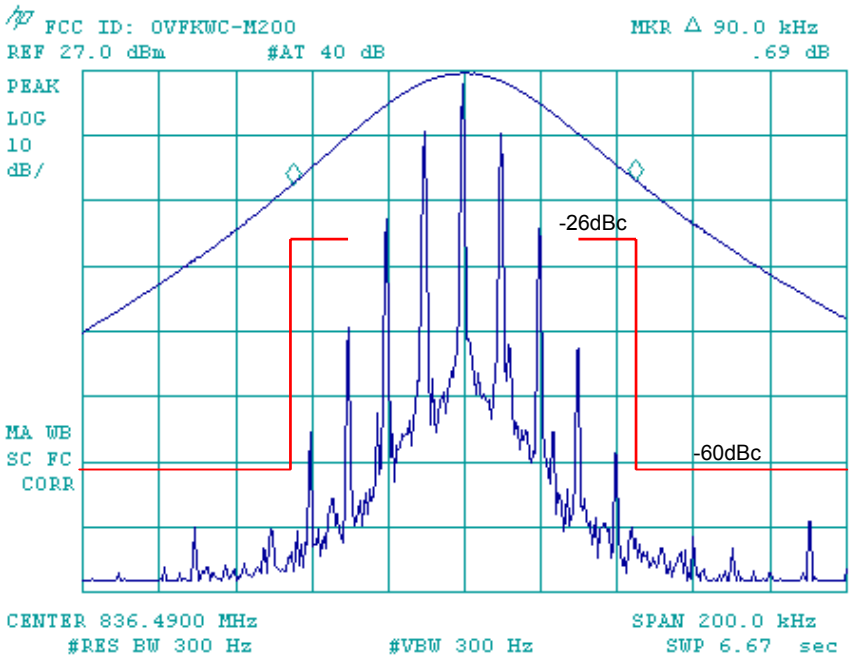


c-3

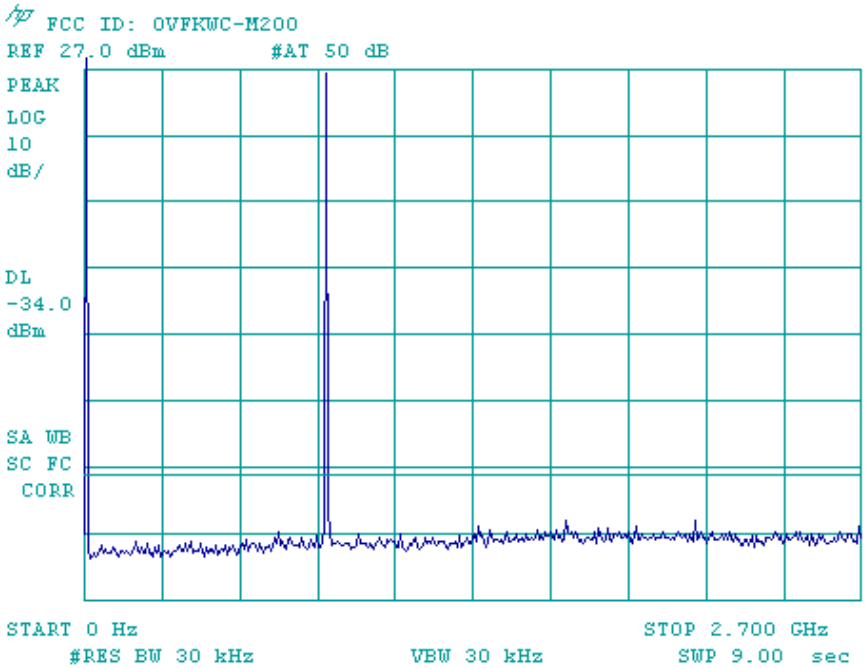

FCC ID: OVFKWC-M200
REF -42.0 dBm
#AT 0 dB
PEAK
LOG
10
dB/
DL
-80.0
dBm
SA WB
SC FC
CORR
CENTER 881.50 MHz
SPAN 25.00 MHz
#RES BW 30 kHz
#VBW 30 kHz
SWP 83.3 msec

AMPS ST

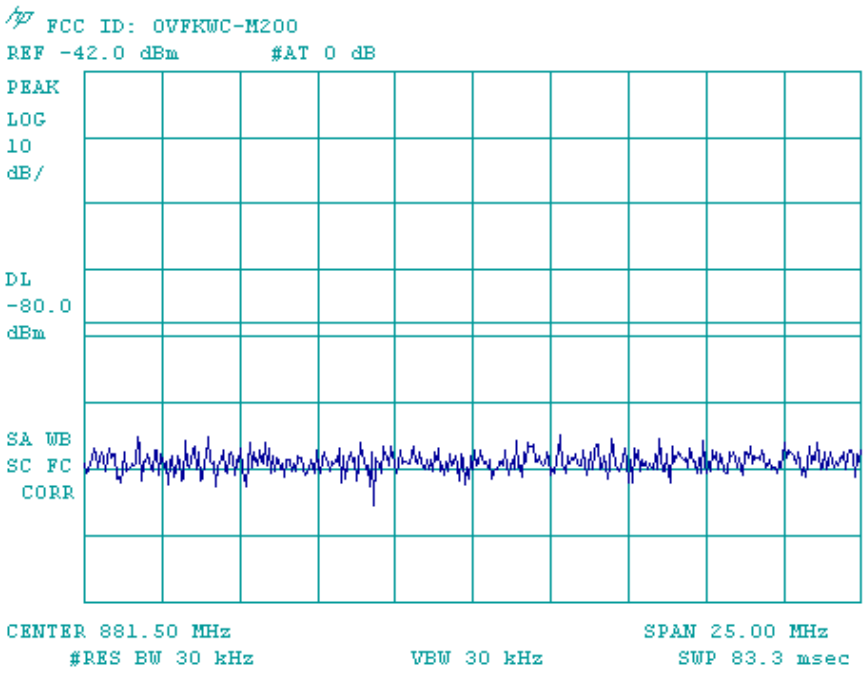
d-1


FCC ID: OVFKWC-M200
MKR Δ 90.0 kHz
REF 27.0 dBm
#AT 40 dB
.69 dB
PEAK
LOG
10
dB/
-26dBc
-60dBc
MA WB
SC FC
CORR
CENTER 836.4900 MHz
SPAN 200.0 kHz
#RES BW 300 Hz
#VBW 300 Hz
SWP 6.67 sec

d-2


FCC ID: OVFKWC-M200
REF 27.0 dBm
#AT 50 dB
PEAK
LOG
10
dB/
DL
-34.0
dBm
SA WB
SC FC
CORR
START 0 Hz
STOP 2.700 GHz
#RES BW 30 kHz
VBW 30 kHz
SWP 9.00 sec

d-3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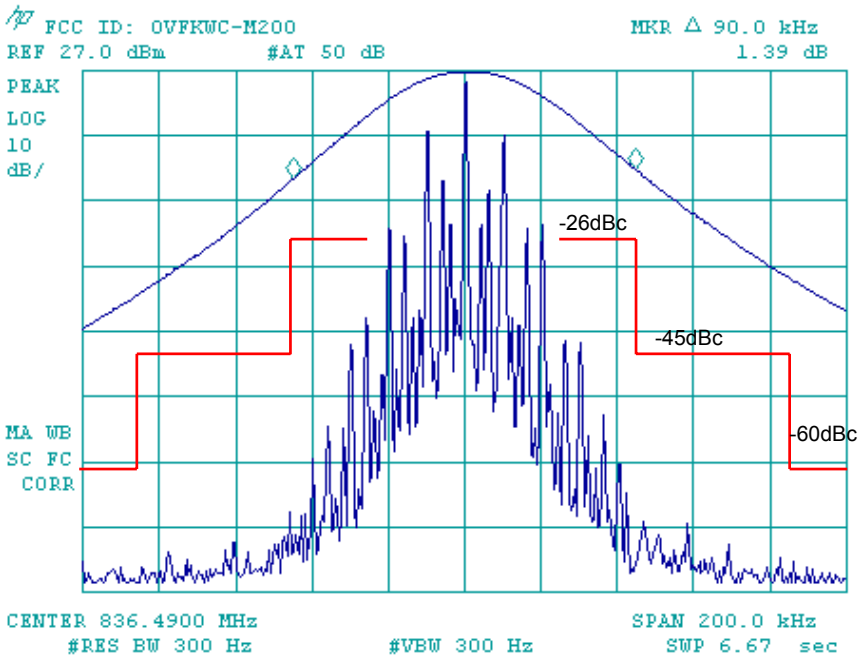
REF -42.0 dBm
#AT 0 dB
PEAK
LOG
10
dB/
DL
-80.0
dBm
SA WB
SC FC
CORR
CENTER 881.50 MHz
SPAN 25.00 MHz
#RES BW 30 kHz
VBW 30 kHz
SWP 83.3 msec

AMPS ST + SAT

e-1



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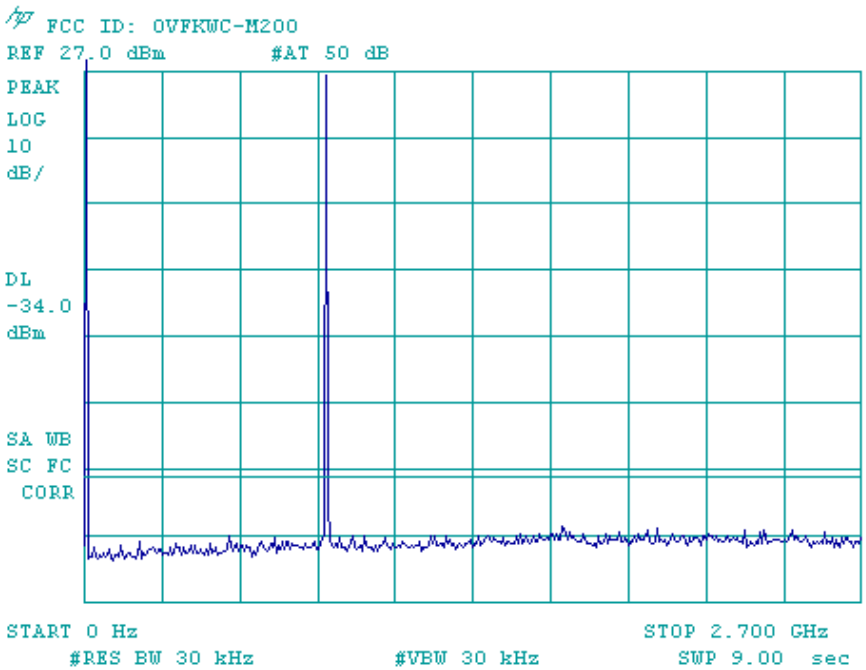
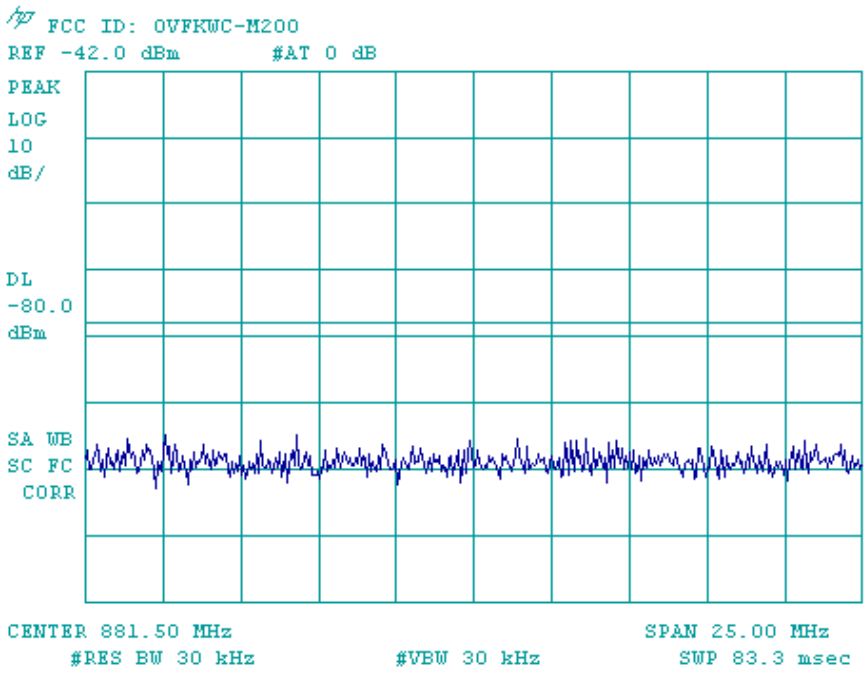
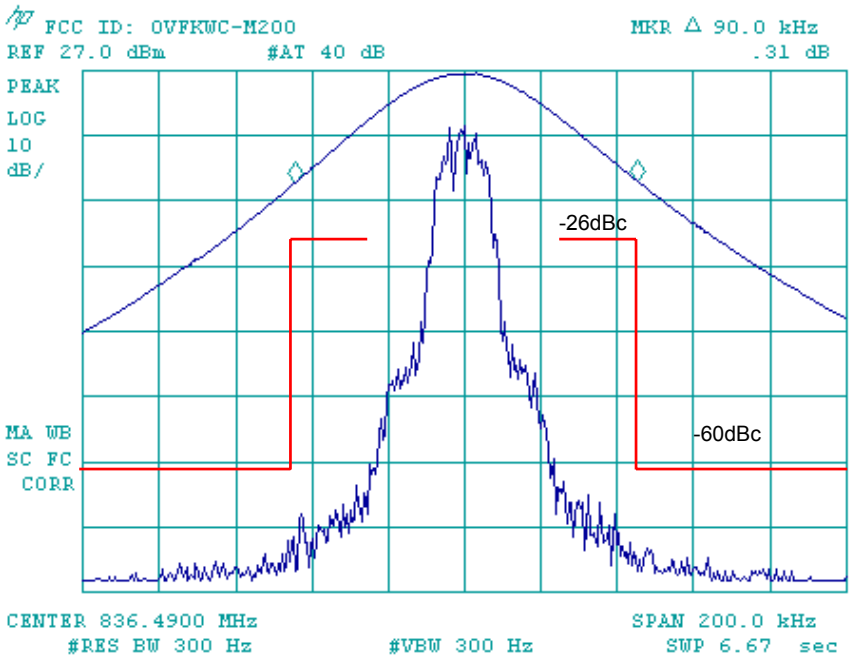


e-3


FCC ID: OVFKWC-M200
REF -42.0 dBm
#AT 0 dB
PEAK
LOG
10
dB/
DL
-80.0
dBm
SA WB
SC FC
CORR
CENTER 881.50 MHz
SPAN 25.00 MHz
#RES BW 30 kHz
#VBW 30 kHz
SWP 83.3 msec

SAT + DTMF

f-1



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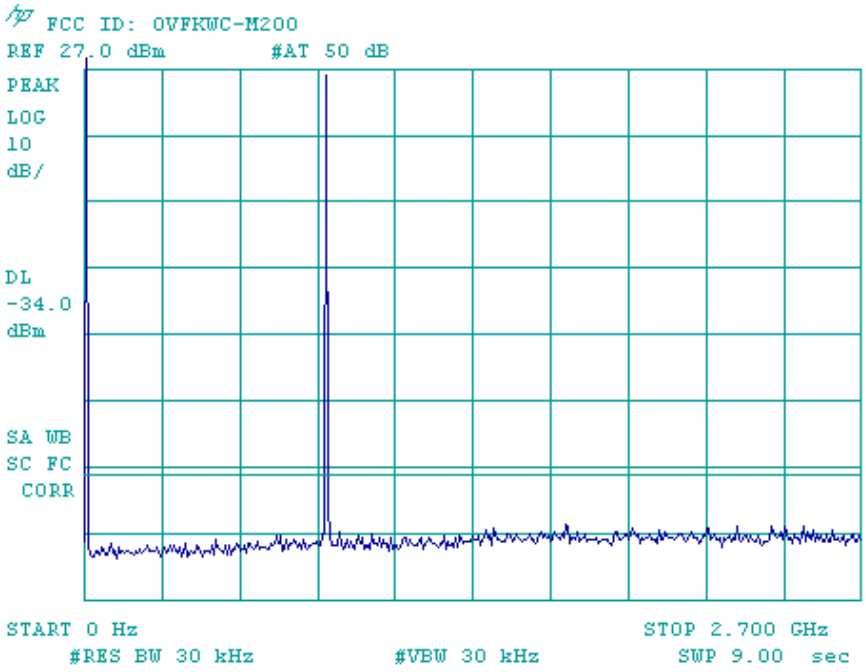

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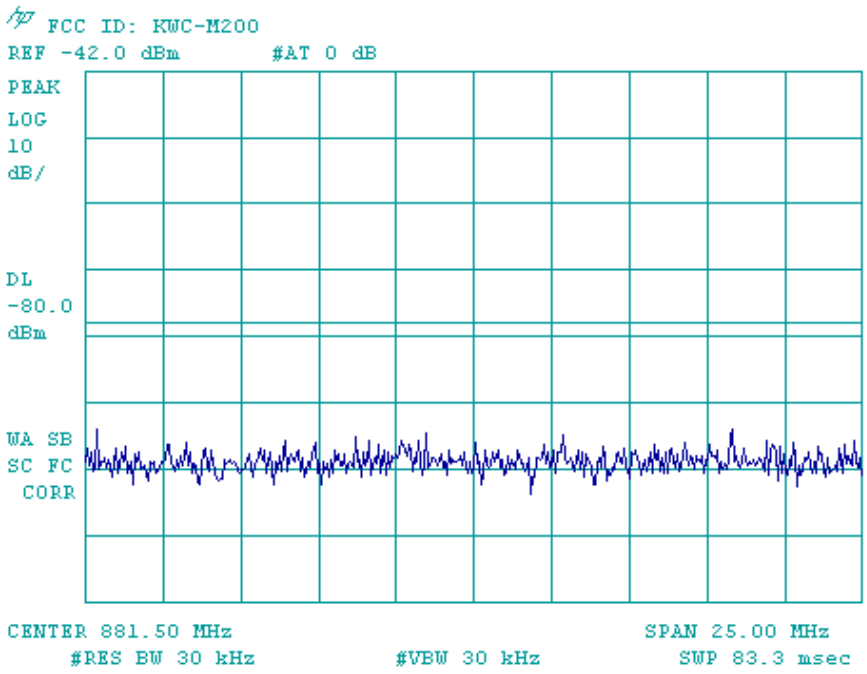
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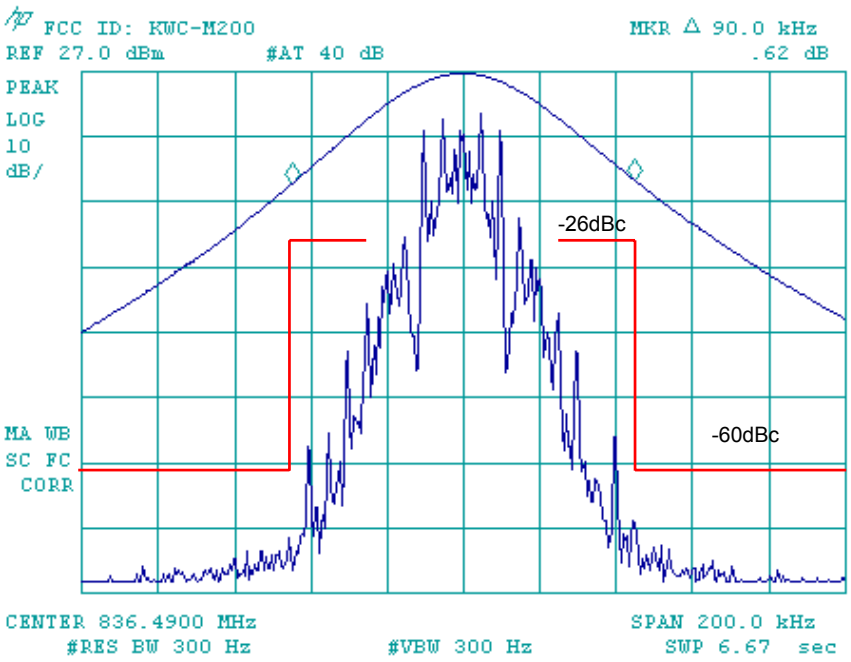
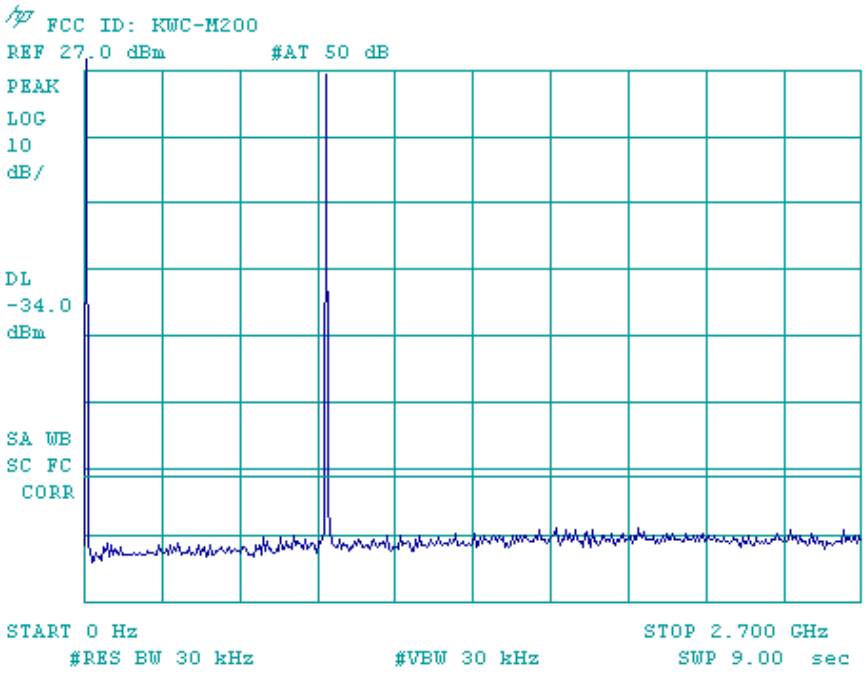
PEAK
LOG
10
dB/
DL
-80.0
dBm
WA SB
SC FC
CORR
CENTER 881.50 MHz
SPAN 25.00 MHz
#RES BW 30 kHz
#VBW 30 kHz
SWP 83.3 msec

AMPS WIDEBAND

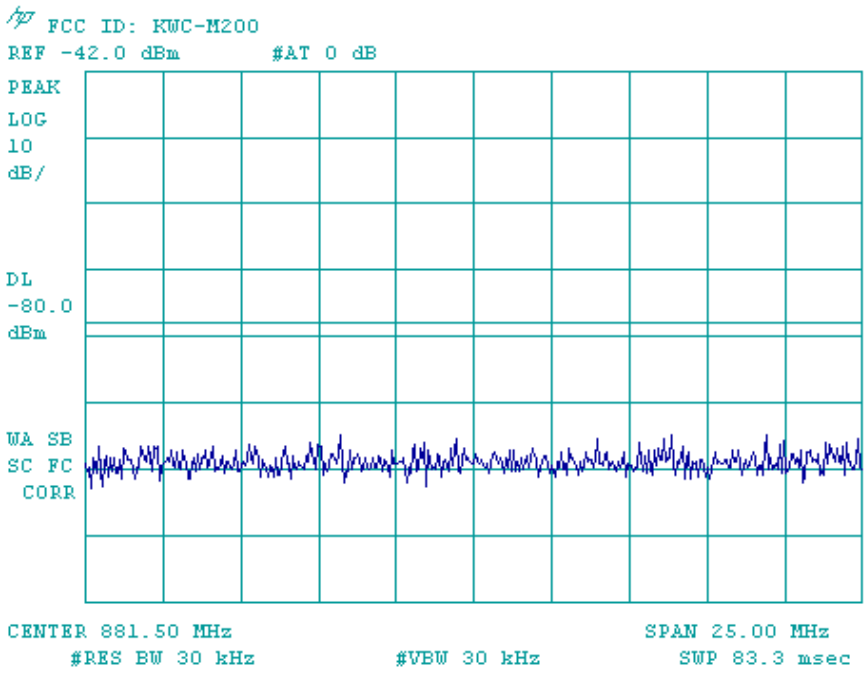
g-1



g-2

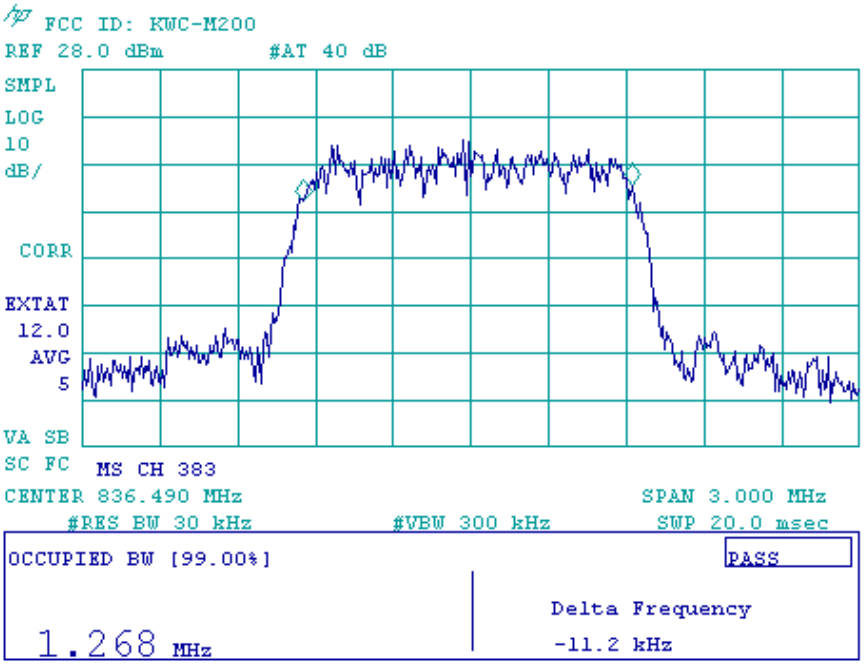


g-3

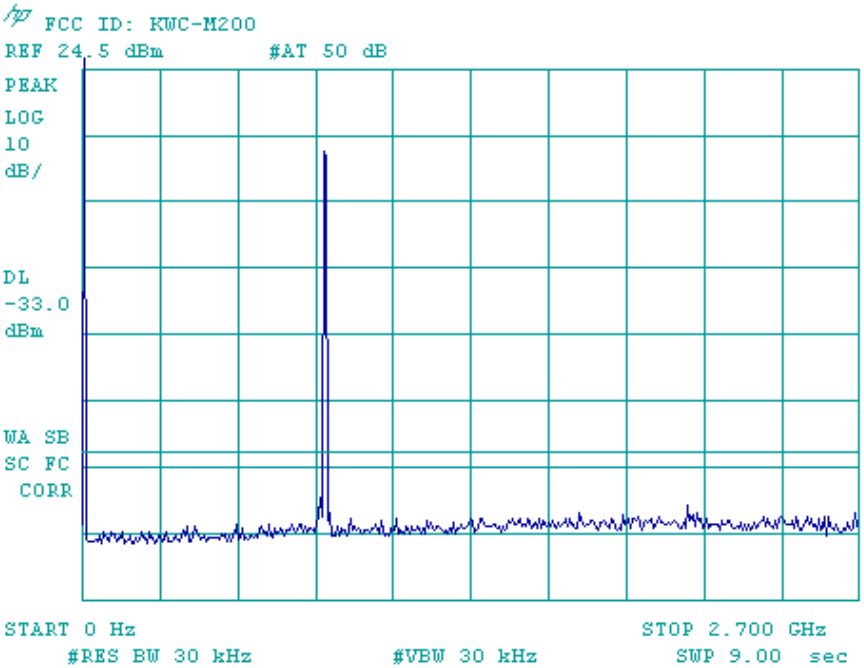

FCC ID: KWC-M200
REF -42.0 dBm
#AT 0 dB
PEAK
LOG
10
dB/
DL
-80.0
dBm
WA SB
SC FC
CORR
CENTER 881.50 MHz
SPAN 25.00 MHz
#RES BW 30 kHz
#VBW 30 kHz
SWP 83.3 msec

Cellular CDMA at RC1

h-1



h-2



h-3

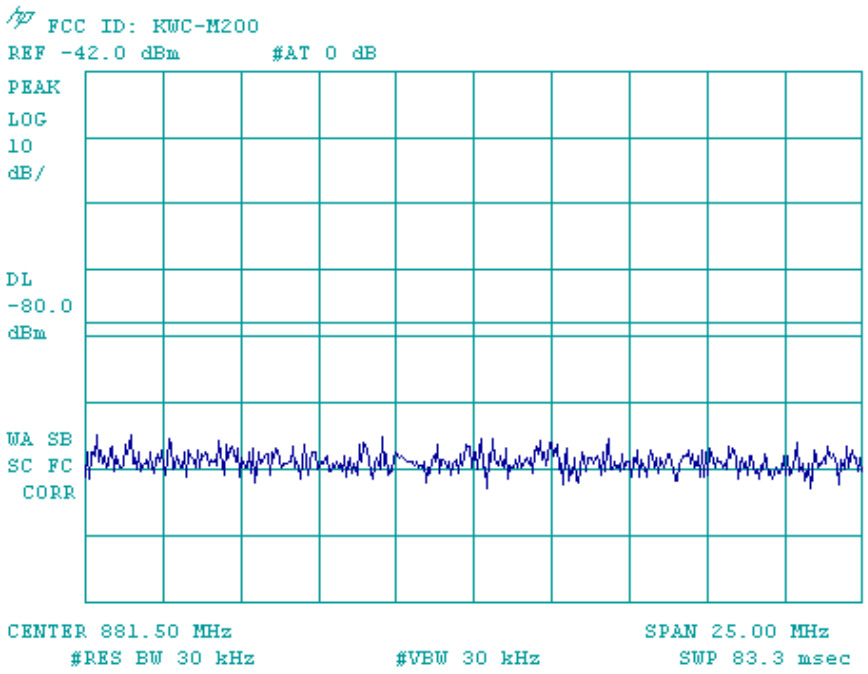
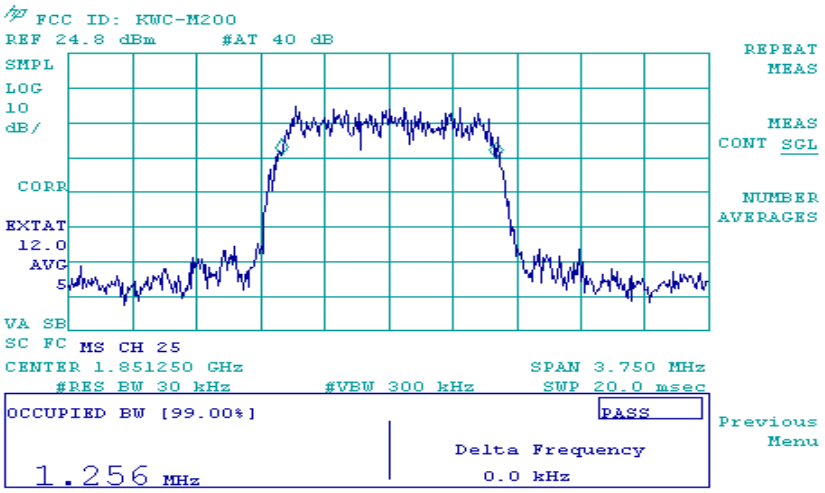

FCC ID: KWC-M200
REF -42.0 dBm
#AT 0 dB
PEAK
LOG
10
dB/
DL
-80.0
dBm
WA SB
SC FC
CORR
CENTER 881.50 MHz
SPAN 25.00 MHz
#RES BW 30 kHz
#VBW 30 kHz
SWP 83.3 msec

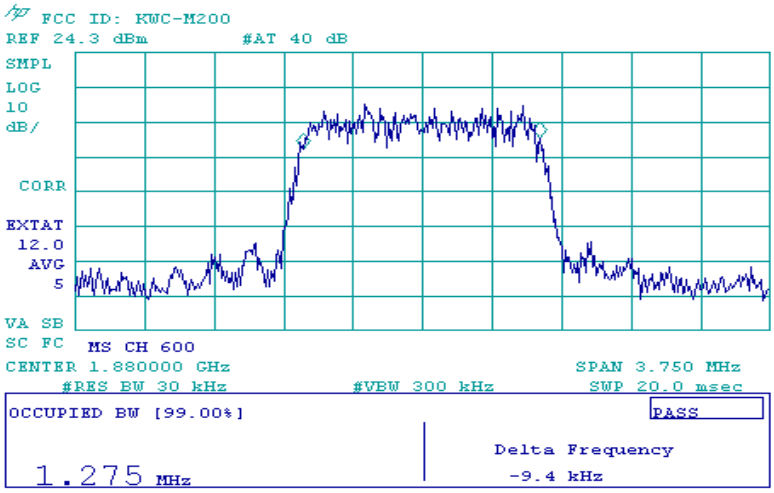
Exhibit 8

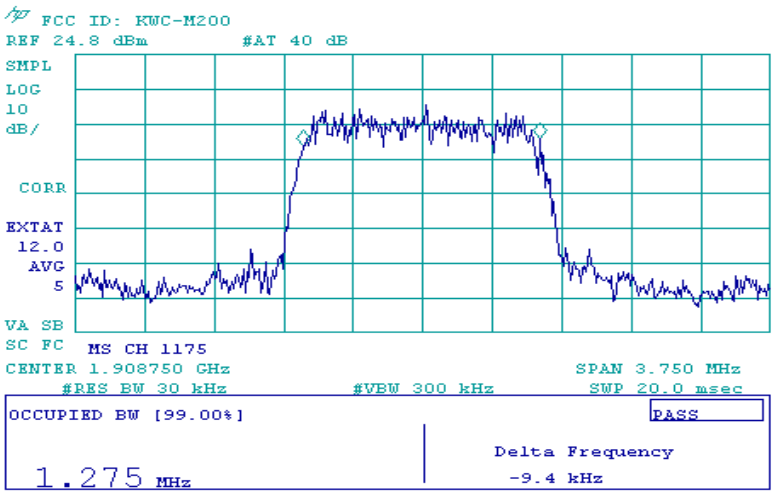
Occupied Bandwidth and Spurious Emission Measured Data – FCC Part 2.1049, 24.238

The following data shows compliance for CDMA mode when operating in a P_REV 5 or less network. For CDMA mode when operating in a P_REV 6 or above, see a separate attachment (exhibit 24).

1. Occupied Bandwidth


FCC ID: KWC-M200
REF 24.8 dBm
#AT 40 dB
SMPL
LOG
10
dB/
CORR
EXTAT
12.0
AVG
5
VA SB
SC FC
MS CH 25
CENTER 1.851250 GHz
SPAN 3.750 MHz
#RES BW 30 kHz
#VBW 300 kHz
SWP 20.0 msec
OCCUPIED BW [99.00%]
PASS
1.256 MHz
Delta Frequency
0.0 kHz
REPEAT
MEAS
MEAS
CONT SGL
NUMBER
AVERAGES
Previous
Menu


FCC ID: KWC-M200
REF 24.3 dBm
#AT 40 dB
SMPL
LOG
10
dB/
CORR
EXTAT
12.0
AVG
5
VA SB
SC FC
MS CH 600
CENTER 1.880000 GHz
SPAN 3.750 MHz
#RES BW 30 kHz
#VBW 300 kHz
SWP 20.0 msec
OCCUPIED BW [99.00%]
PASS
1.275 MHz
Delta Frequency
-9.4 kHz


FCC ID: KWC-M200
REF 24.8 dBm
#AT 40 dB
SMPL
LOG
10
dB/
CORR
EXTAT
12.0
AVG
5
VA SB
SC FC
MS CH 1175
CENTER 1.908750 GHz
SPAN 3.750 MHz
#RES BW 30 kHz
#VBW 300 kHz
SWP 20.0 msec
OCCUPIED BW [99.00%]
PASS
1.275 MHz
Delta Frequency
-9.4 kHz

2. Spurious Emission at Antenna Terminals

Out of Band Spurious Emission Measurement Procedures

(a) 1 MHz band immediately adjacent to the PCS band

We performed a numerical integration of the power as performed by the spectrum analyzer (HP8594E) in the 1 MHz band immediately outside of the PCS block. As specified in Part 24.238 of the rules, we used a Resolution Bandwidth of 1% of the fundamental emission bandwidth, which in this instance equates to the measurement bandwidth of 12.5 kHz.

The ACPR (Adjacent Channel Power Ratio) function of the HP CDMA measurement personality was used on spectrum analyzer, which provides the power integration. The ACPR function and the spectrum analyzer settings used to complete the measurement will be addressed in section (c).

(b) 2nd 1 MHz band adjacent to PCS Block

As specified in Part 24.238 of the rules, the 2nd 1 MHz band outside of the PCS block was measured using a resolution bandwidth of 1 MHz.

The ACPR function of the HP CDMA measurement personality was used to complete the measurement. See section (c) for the ACPR function and the spectrum analyzer settings.

(c) ACPR measurement and spectrum analyzer settings

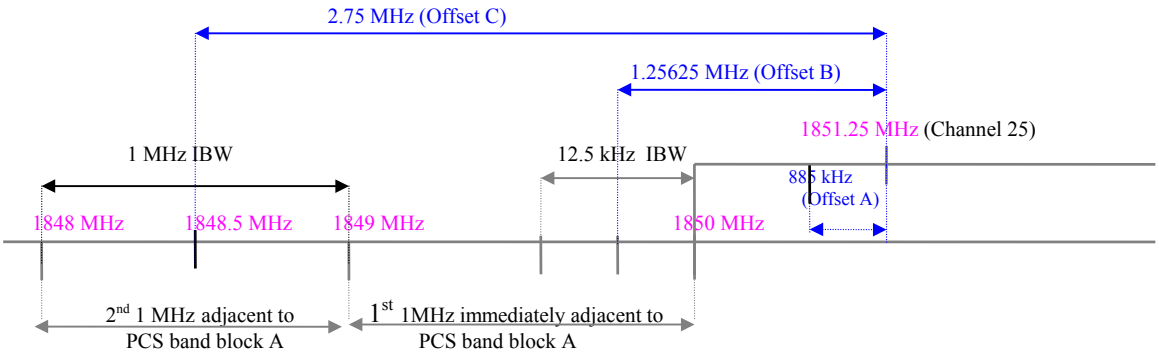
The ACPR (Adjacent Channel Power Ratio) is the power contained in a specified frequency-channel bandwidth relative to the total carrier power. It can measure up to three pairs of offset channels and relates them to the carrier power. ACPR measurement uses an integration bandwidth method (IBW) to measure the carrier power and the offset powers. IBW method performs a frequency sweep through the bandwidth of integration (set up by the user) using a resolution bandwidth (automatically set) much narrower than the channel bandwidth (e.g. 30 kHz RBW for a channel bandwidth of 1.25 MHz). The measurement computes an average power of the channel over a specified number of sweeps, automatically compensating for noise and scaling.

The following settings were used in the ACPR integration bandwidth method to complete the above measurements (a) and (b). An example to explain the settings is given.

Settings used in ACPR measurement

	Frequency (Hz)	Offset Limit	IBW (Hz)	Offset Span (Hz)	Comments
Offset A	± 885k	n/a	n/a	n/a	not required on a mobile station
Offset B	±1.25625M	-36.0dB (43+10logP)	12.5k	25k	setup for 1 MHz band immediately adjacent to PCS band
Offset C	± 2.75M	-36.0dB (43+10logP)	1M	2M	setup for 2nd 1 MHz band adjacent to PCS band

As an example of channel 25, the center frequency is 1851.25 MHz. The interpretation of the settings in the above table is shown in following drawing.



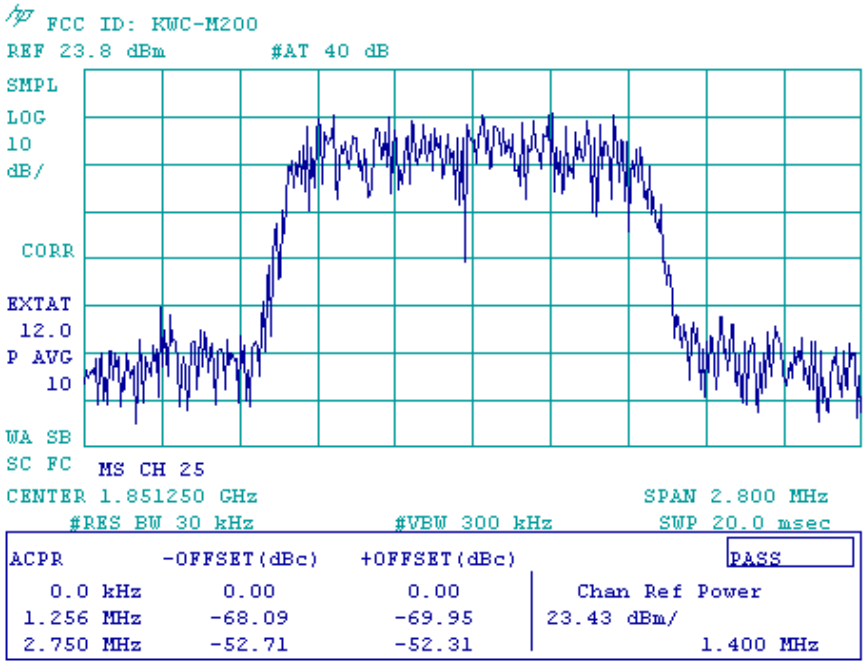
Note: The above drawing is not in scale.

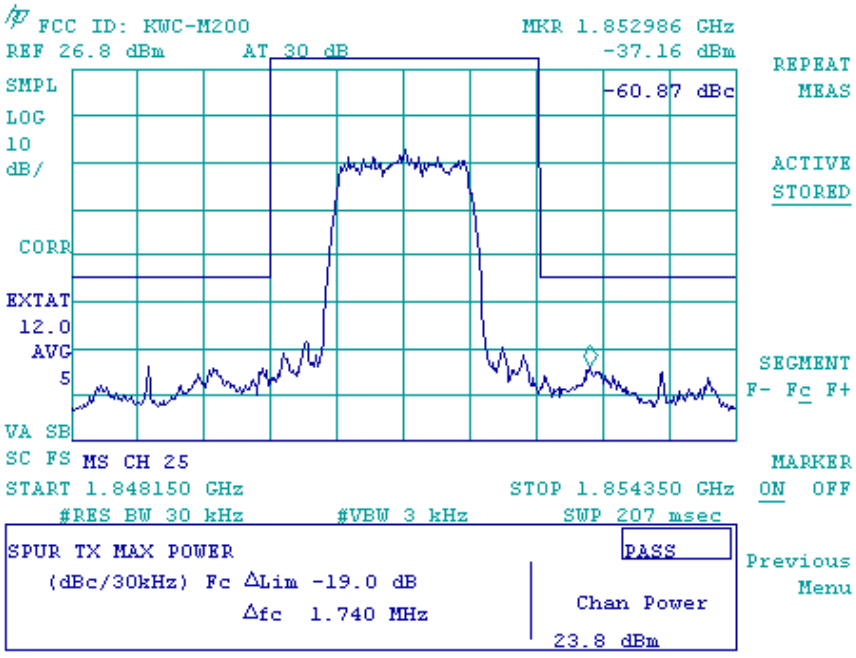
(d) Spurious emission up to 10th harmonic of the transmitting frequency

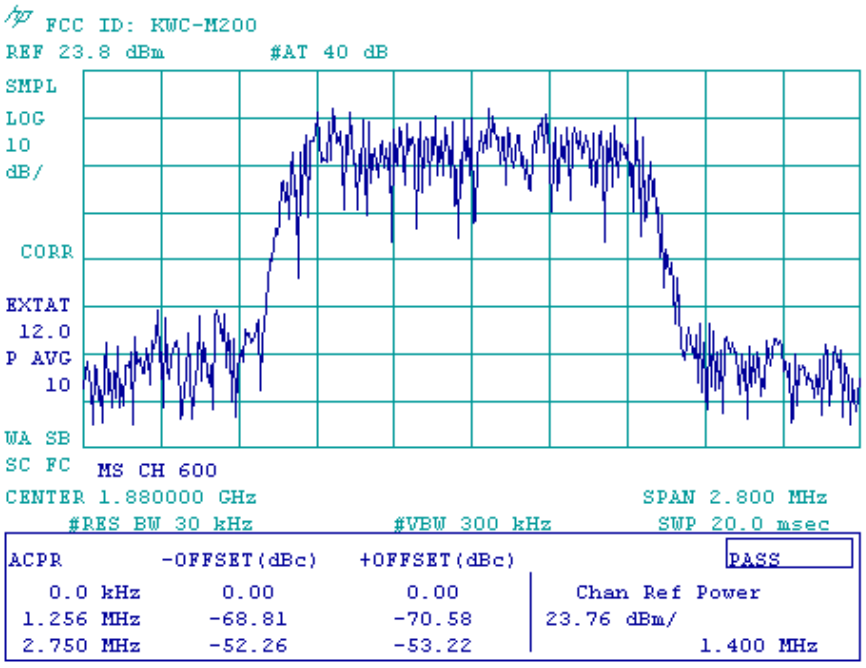
The harmonic and spurious emissions from 0 Hz to 22 GHz were measured using a RBW of 1 MHz and a VBW of 1 MHz on the spectral analyzer.

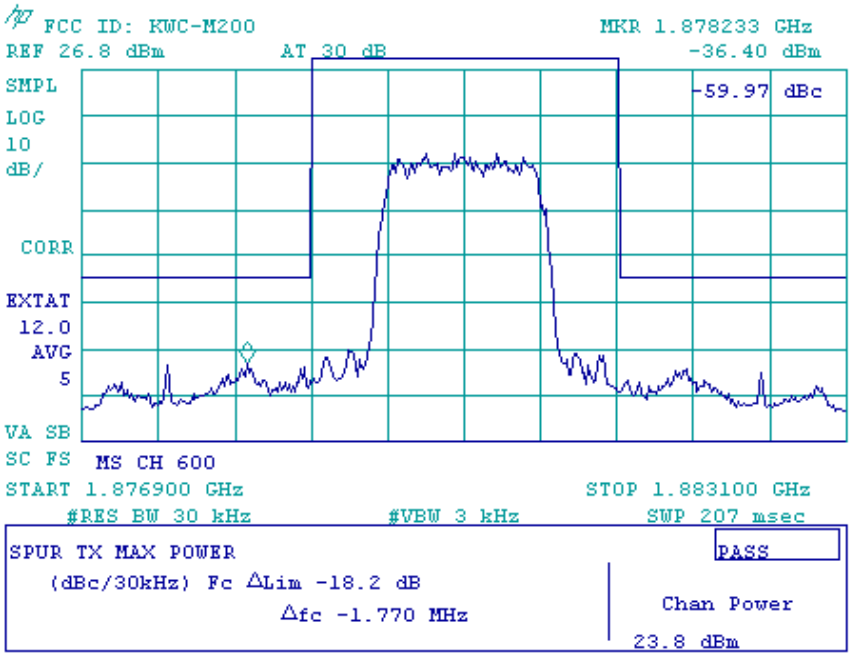
Test Results

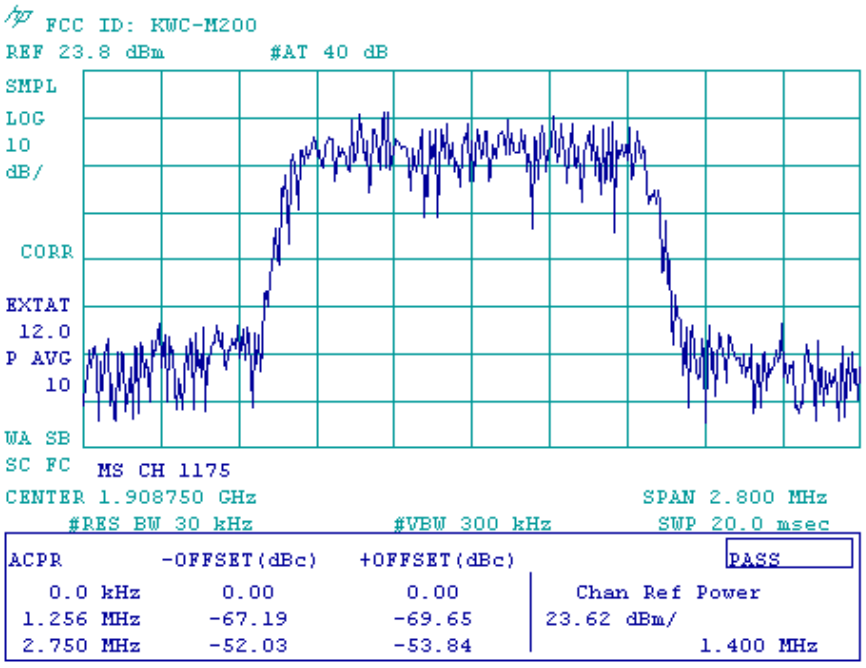
ACPR measurement (1st and 2nd 1MHz adjacent to PCS)

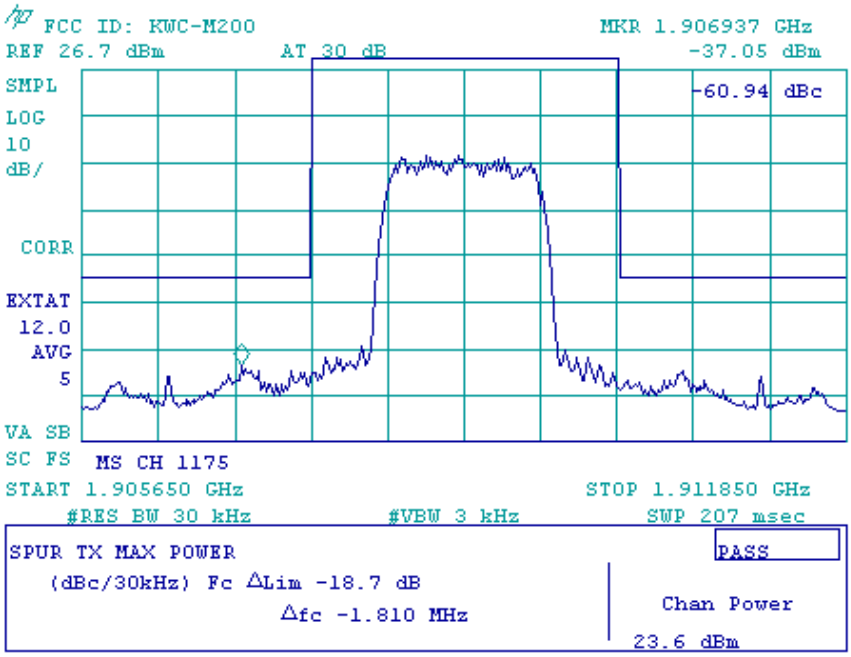





FCC ID: KWC-M200
REF 23.8 dBm
#AT 40 dB
SMPL
LOG
10
dB/
CORR
EXTAT
12.0
P AVG
10
WA SB
SC FC
MS CH 600
CENTER 1.880000 GHz
SPAN 2.800 MHz
#RES BW 30 kHz
#VBW 300 kHz
SWP 20.0 msec
ACPR
-OFFSET(dBc)
+OFFSET(dBc)
PASS
0.0 kHz 0.00 0.00
1.256 MHz -68.81 -70.58
2.750 MHz -52.26 -53.22
Chan Ref Power
23.76 dBm/
1.400 MHz

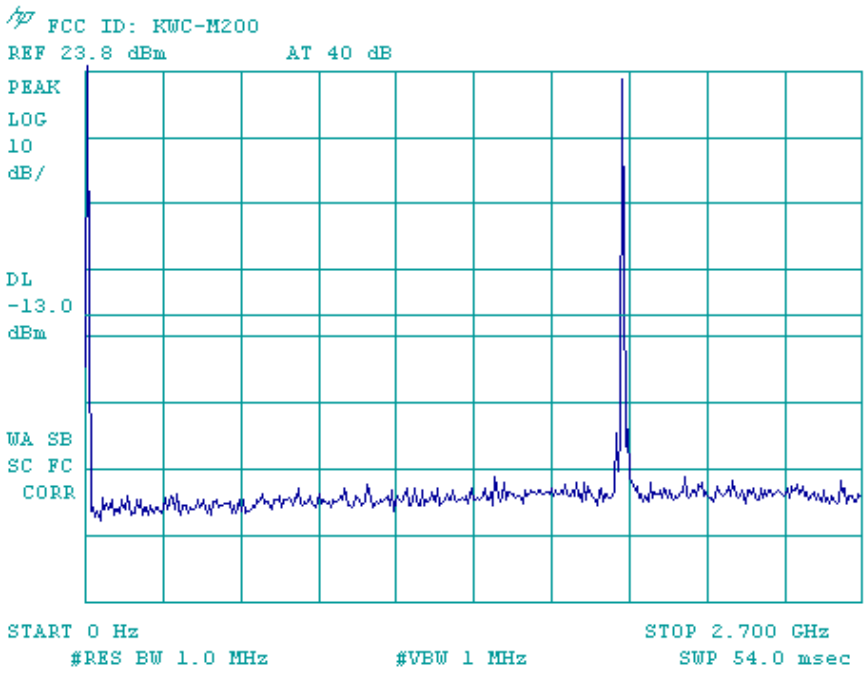

FCC ID: KWC-M200
MKR 1.878233 GHz
REF 26.8 dBm
AT 30 dB
-36.40 dBm
-59.97 dBc
SMPL
LOG
10
dB/
CORR
EXTAT
12.0
AVG
5
VA SB
SC FS
MS CH 600
START 1.876900 GHz
STOP 1.883100 GHz
#RES BW 30 kHz
#VBW 3 kHz
SWP 207 msec
SPUR TX MAX POWER
PASS
(dBc/30kHz) Fc ΔLim -18.2 dB
Δfc -1.770 MHz
Chan Power
23.8 dBm

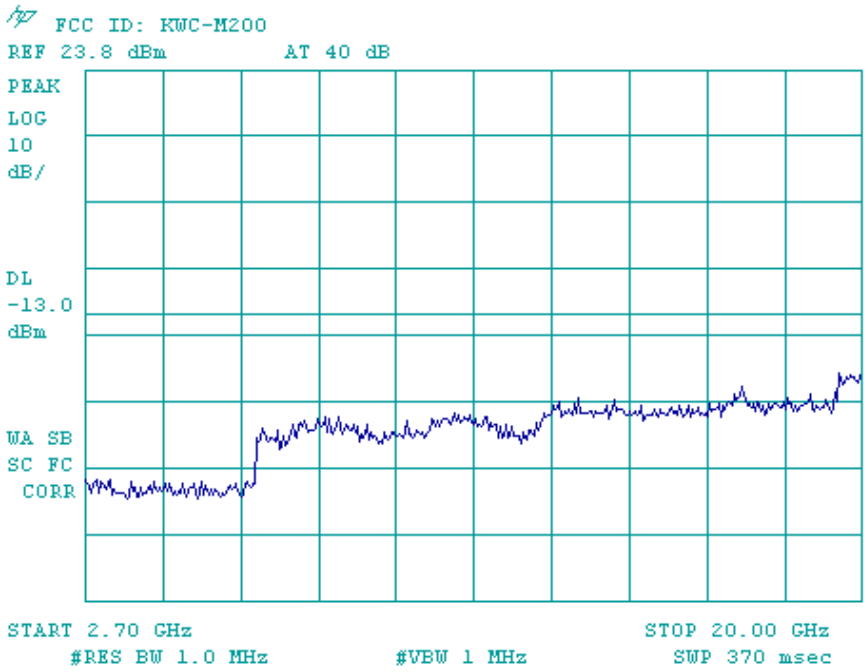

FCC ID: KWC-M200
REF 23.8 dBm
#AT 40 dB
SMPL
LOG
10
dB/
CORR
EXTAT
12.0
P AVG
10
WA SB
SC FC
MS CH 1175
CENTER 1.908750 GHz
SPAN 2.800 MHz
#RES BW 30 kHz
#VBW 300 kHz
SWP 20.0 msec
ACPR -OFFSET(dBc) +OFFSET(dBc)
PASS
0.0 kHz 0.00 0.00
1.256 MHz -67.19 -69.65
2.750 MHz -52.03 -53.84
Chan Ref Power
23.62 dBm/
1.400 MHz


FCC ID: KWC-M200
MKR 1.906937 GHz
REF 26.7 dBm
AT 30 dB
-37.05 dBm
-60.94 dBc
SMPL
LOG
10
dB/
CORR
EXTAT
12.0
AVG
5
VA SB
SC FS
MS CH 1175
START 1.905650 GHz
STOP 1.911850 GHz
#RES BW 30 kHz
#VBW 3 kHz
SWP 207 msec
SPUR TX MAX POWER
PASS
(dBc/30kHz) Fc ΔLim -18.7 dB
Δfc -1.810 MHz
Chan Power
23.6 dBm

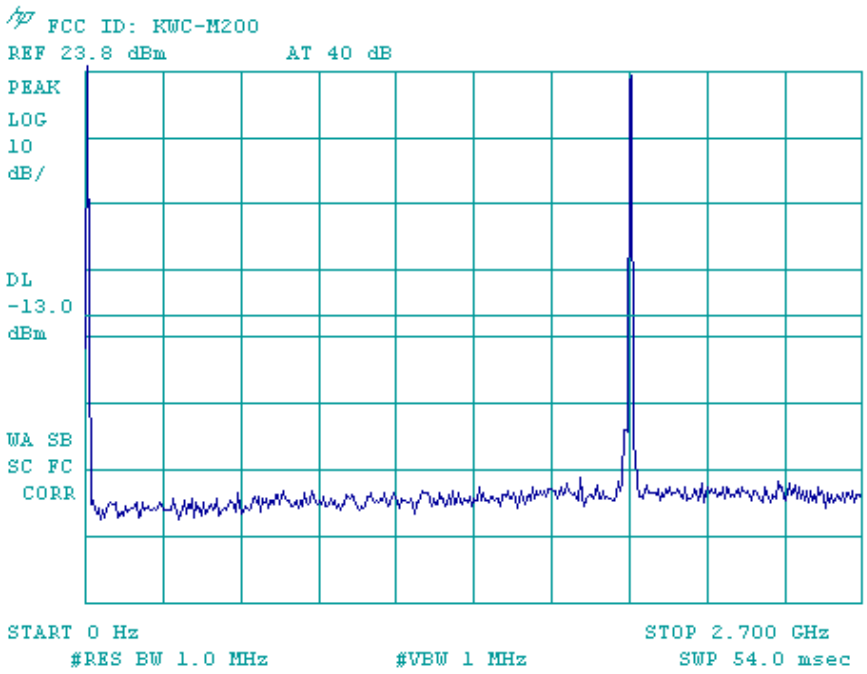
Spurious Emission Up to 10th harmonics

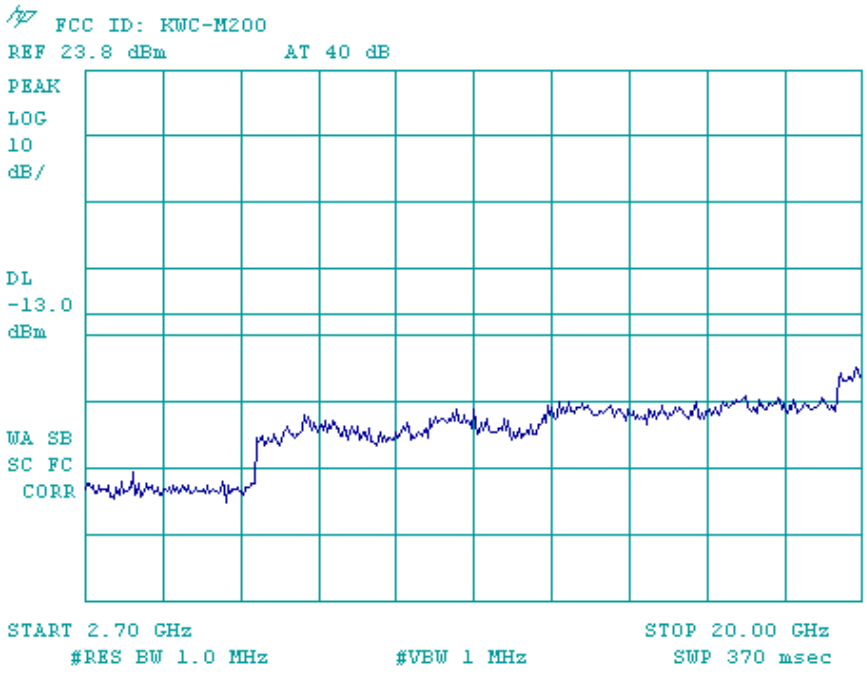
Ch25



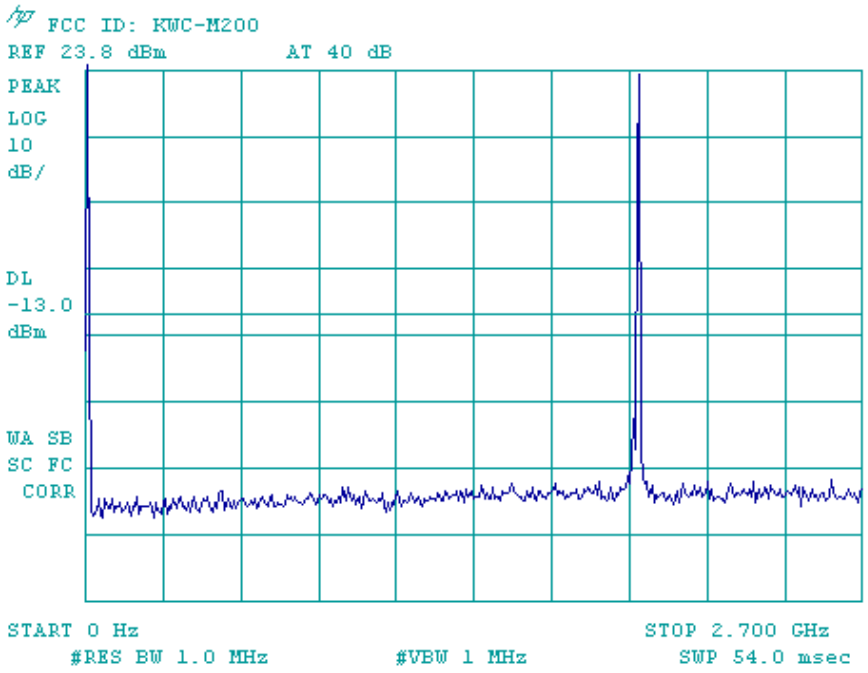


Ch600


FCC ID: KWC-M200
REF 23.8 dBm
AT 40 dB
PEAK
LOG
10
dB/
DL
-13.0
dBm
WA SB
SC FC
CORR
START 0 Hz
STOP 2.700 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SWP 54.0 msec


FCC ID: KWC-M200
REF 23.8 dBm
AT 40 dB
PEAK
LOG
10
dB/
DL
-13.0
dBm
WA SB
SC FC
CORR
START 2.70 GHz
STOP 20.00 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SWP 370 msec

Ch1175


FCC ID: KWC-M200
REF 23.8 dBm
AT 40 dB
PEAK
LOG
10
dB/
DL
-13.0
dBm
WA SB
SC FC
CORR
START 0 Hz
STOP 2.700 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SWP 54.0 msec

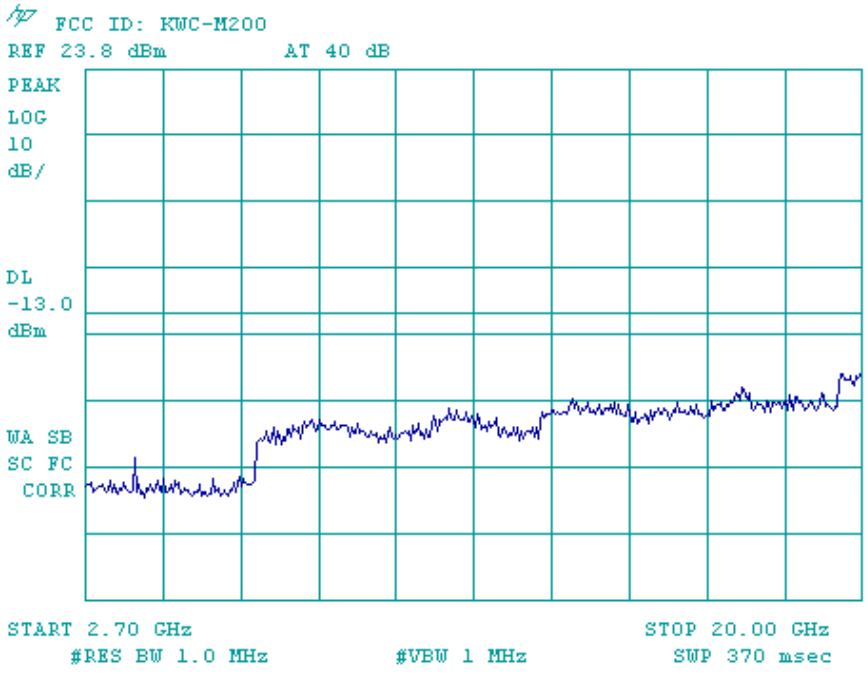

FCC ID: KWC-M200
REF 23.8 dBm
AT 40 dB
PEAK
LOG
10
dB/
DL
-13.0
dBm
WA SB
SC FC
CORR
START 2.70 GHz
STOP 20.00 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SWP 370 msec

Exhibit 9

Conducted Emissions Test Results (harmonics) - FCC Part 2 and 22, Paragraph 2.1051, 22.917

05/17/2003

FM High Power

low band – channel 991

	Frequency (MHz)	Measured Level (dBm)	specification limit (dBm)
Fundamental	824.04	27.01	-
2nd harmonic	1648.08	-32.66	-13
3rd harmonic	2472.12	-48.70	-13
4th harmonic	3296.16	-65.72	-13
5th harmonic	4120.2	-67.30	-13
6th harmonic	4944.24	-77.69	-13
7th harmonic	5768.28	-76.43	-13
8th harmonic	6592.32	-57.11	-13
9th harmonic	7416.36	-59.35	-13
10th harmonic	8240.4	< -85	-13

mid band – channel 383

	Frequency (MHz)	Measured Level (dBm)	specification limit (dBm)
Fundamental	836.49	27.07	-
2nd harmonic	1672.98	-31.86	-13
3rd harmonic	2509.47	-47.25	-13
4th harmonic	3345.96	-68.69	-13
5th harmonic	4182.45	-67.28	-13
6th harmonic	5018.94	-75.39	-13
7th harmonic	5855.43	-76.93	-13
8th harmonic	6691.92	-50.64	-13
9th harmonic	7528.41	-58.30	-13
10th harmonic	8364.9	< -85	-13

high band – channel 799

	Frequency (MHz)	Measured Level (dBm)	specification limit (dBm)
Fundamental	848.97	27.1	-
2nd harmonic	1697.94	-38.46	-13
3rd harmonic	2546.91	-48.81	-13
4th harmonic	3395.88	-70.18	-13
5th harmonic	4244.85	-68.70	-13
6th harmonic	5093.82	-74.19	-13
7th harmonic	5942.79	-77.22	-13
8th harmonic	6791.76	-51.33	-13
9th harmonic	7640.73	-65.07	-13
10th harmonic	8489.7	< -85	-13

CDMA High Power

low band – channel 1013

	Frequency (MHz)	Measured Level (dBm)	specification limit (dBm)
Fundamental	824.04	24.48	-
2nd harmonic	1648.08	-27.50	-13
3rd harmonic	2472.12	-42.78	-13
4th harmonic	3296.16	-70.00	-13
5th harmonic	4120.2	-68.96	-13
6th harmonic	4944.24	-77.98	-13
7th harmonic	5768.28	-78.53	-13
8th harmonic	6592.32	-62.86	-13
9th harmonic	7416.36	-69.31	-13
10th harmonic	8240.4	< -85	-13

mid band – channel 383

	Frequency (MHz)	Measured Level (dBm)	specification limit (dBm)
Fundamental	836.49	24.5	-
2nd harmonic	1672.98	-34.33	-13
3rd harmonic	2509.47	-43.75	-13
4th harmonic	3345.96	-72.33	-13
5th harmonic	4182.45	-66.48	-13
6th harmonic	5018.94	-74.23	-13
7th harmonic	5855.43	-79.33	-13
8th harmonic	6691.92	-60.41	-13
9th harmonic	7528.41	-68.79	-13
10th harmonic	8364.9	< -85	-13

high band – channel 777

	Frequency (MHz)	Measured Level (dBm)	specification limit (dBm)
Fundamental	848.31	24.53	-
2nd harmonic	1676.62	-37.22	-13
3rd harmonic	2514.93	-42.98	-13
4th harmonic	3353.24	-77.00	-13
5th harmonic	4191.55	-79.75	-13
6th harmonic	5029.86	-68.53	-13
7th harmonic	5868.17	< -85	-13
8th harmonic	6706.48	-69.41	-13
9th harmonic	7544.79	< -85	-13
10th harmonic	8383.1	< -85	-13

Exhibit 10

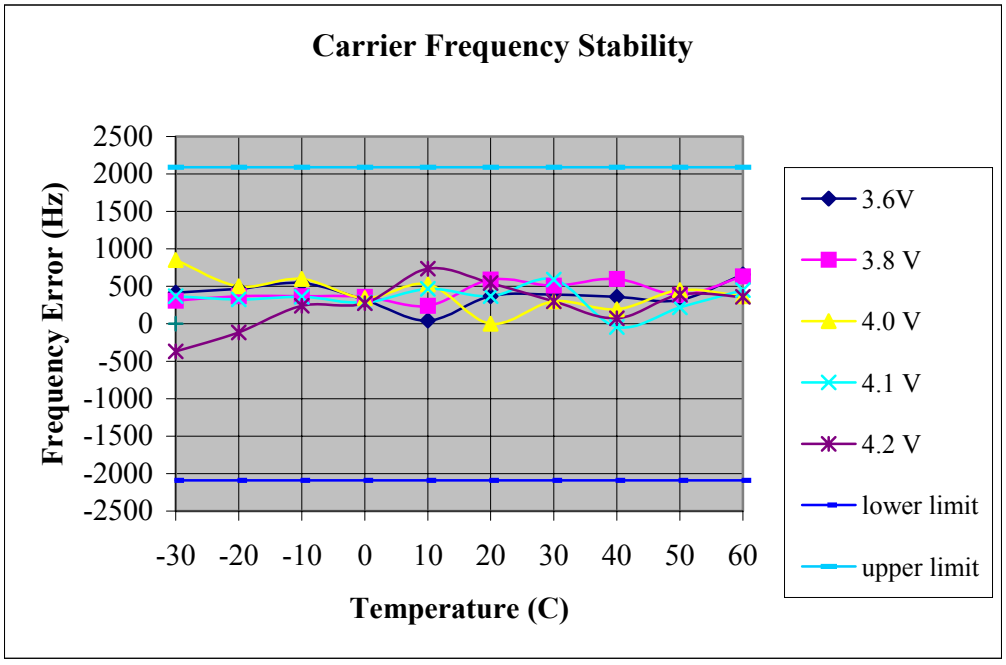
Transmitter RF Carrier Frequency Stability - FCC part 2.1055

Transmitter RF Carrier Frequency Stability - FCC part 2.1055
Phone transmitting in FM mode in cellular band, but with no modulation on the carrier

Measured with HP 8560A Spectrum Analyzer, The test procedures and technique are stated in Exhibit 15.

Carrier Frequency : 836.49 MHz FM

	Transmitter Carrier Frequency Deviation (Hz)					Specification	
Temperature (C)	3.6V	3.8 V	4.0 V	4.1 V	4.2 V	lower limit	upper limit
-30	416	308	849	366	-367	-2091	2091
-20	466	366	499	324	-117	-2091	2091
-10	541	366	599	358	241	-2091	2091
0	316	358	341	283	274	-2091	2091
10	41	241	524	466	733	-2091	2091
20	366	591	0	366	541	-2091	2091
30	390	508	299	591	299	-2091	2091
40	358	599	191	-42	74	-2091	2091
50	316	383	449	216	391	-2091	2091
60	658	633	366	449	358	-2091	2091



Transmitter RF Carrier Frequency Stability - FCC part 2.1055
Phone transmitting in CDMA mode in cellular band, but with no modulation on the carrier

Measured with HP 8560A Spectrum Analyzer, The test procedures and technique are stated in Exhibit 15.

Carrier Frequency : 836.49 MHz CDMA

	Transmitter Carrier Frequency Deviation (Hz)					Specification	
Temperature (C)	3.6 V	3.8 V	4.0 V	4.1 V	4.2 V	lower limit	upper limit
-30	-217	-242	-242	-242	-217	-2091	2091
-20	-84	-101	-101	-84	-101	-2091	2091
-10	-401	-401	-401	-401	-384	-2091	2091
0	-326	-334	-334	-351	-351	-2091	2091
10	-109	-101	-92	-76	-59	-2091	2091
20	-42	-42	0	-25	-17	-2091	2091
30	-67	-59	-67	-59	-17	-2091	2091
40	-184	-167	-167	-176	-176	-2091	2091
50	-334	-342	-334	-342	-326	-2091	2091
60	-342	-359	-376	-376	-359	-2091	2091

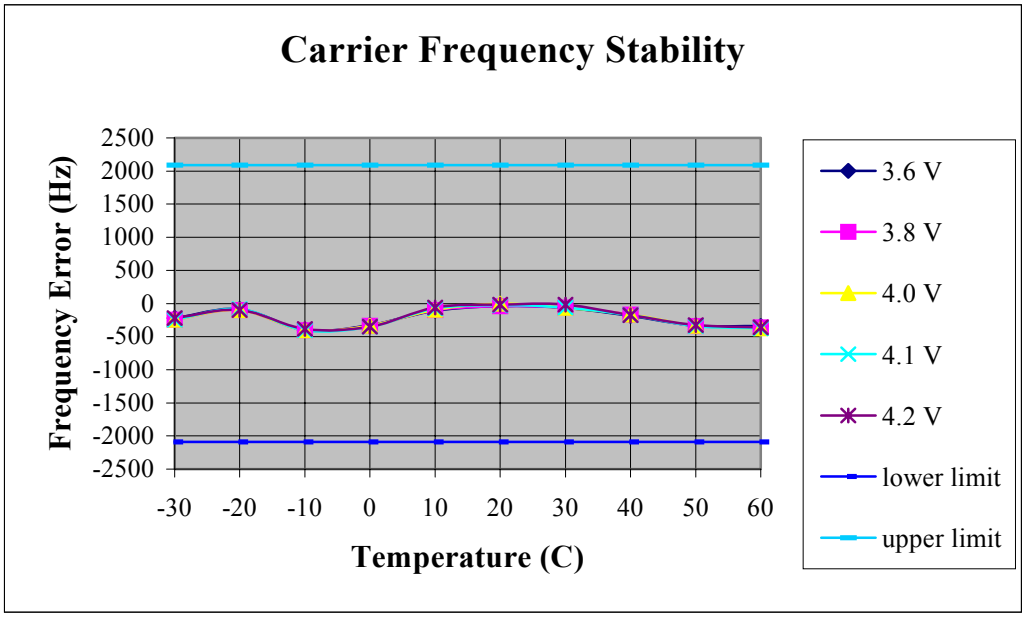


Exhibit 11

Transmitter RF Carrier Frequency Stability - FCC part 2.1055, 24.235

Transmitter RF Carrier Frequency Stability - FCC part 2.1055, 24.235
Phone transmitting in CDMA mode in PCS band, but with no modulation on the carrier

Measured with HP 8560A Spectrum Analyzer, The test procedures and technique are stated in Exhibit 15.

Carrier Frequency : 1880.00 MHz CDMA

	Transmitter Carrier Frequency Deviation (Hz)					Specification	
Temperature (C)	3.6 V	3.8 V	4.0 V	4.1 V	4.2 V	lower limit	upper limit
-30	-550	-492	-492	-500	-517	-4700	4700
-20	-275	-333	-275	-300	-400	-4700	4700
-10	-725	-775	-733	-742	-800	-4700	4700
0	-933	-850	-892	-917	-933	-4700	4700
10	-342	-350	-300	-350	-458	-4700	4700
20	-33	17	0	25	0	-4700	4700
30	-8	-8	0	0	0	-4700	4700
40	-108	-117	-117	-125	-133	-4700	4700
50	-558	-550	-532	-533	-517	-4700	4700
60	-850	-850	-858	-850	-850	-4700	4700

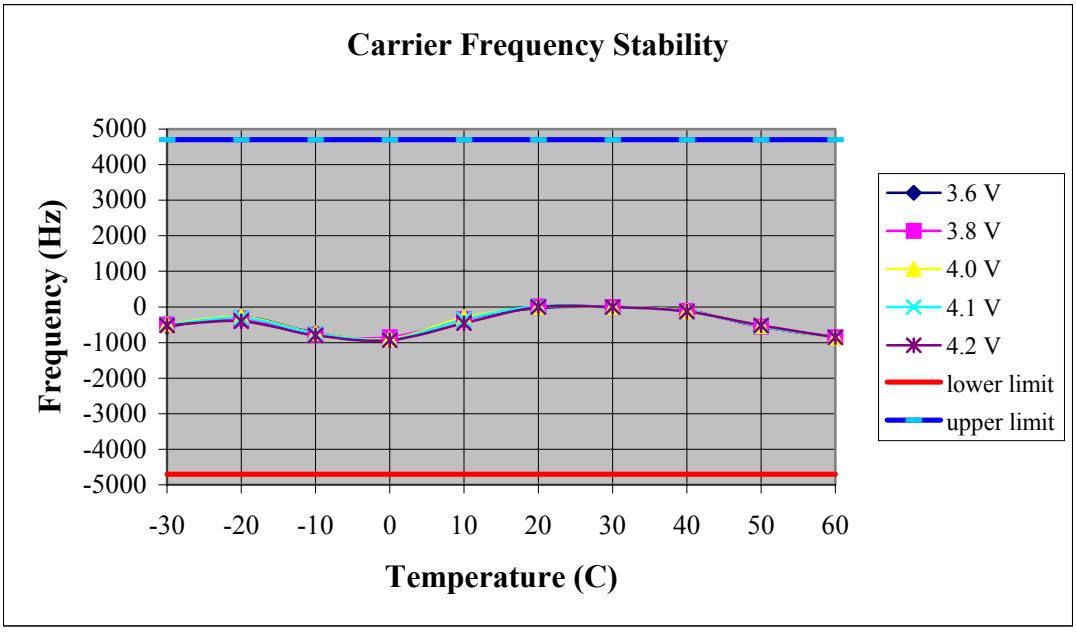


Exhibit 12

Occupied Bandwidth and Spurious Emission Measured Data --
for CDMA mode when operating in P_REV 6 or above

KWC Module 200 supports additional reverse channels, as per IS-98D, additional measurements have taken to show compliance. Please see the separate attachment for the test results

Exhibit 13

Measurement Procedures, Techniques and Minimum Requirements

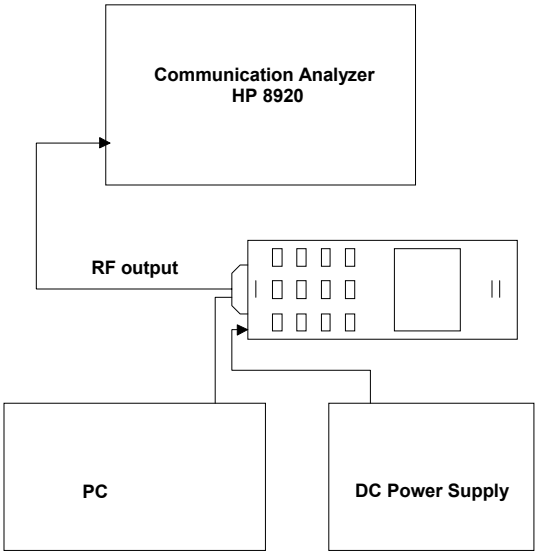
List of Equipment

Computer with Phone_T software

Spectrum Analyzers
HP 8593EM, CAL DUE 4/15/2004
HP8594E, CAL DUE 03/03/2004
HP 8593EM, Cal due 08-November-2004
Agilent 8960, Cal due 27-June-2003
Audio Spectrum Analyzer
HP3588A, CAL DUE 02/08/2004
Communication Test Set
HP8920B, CAL DUE 12/12/2003
Power Meter
Giga-tronics 8541C, CAL DUE 2/19/2004
DC Power Supply

Measurement Procedures

RF Output Power

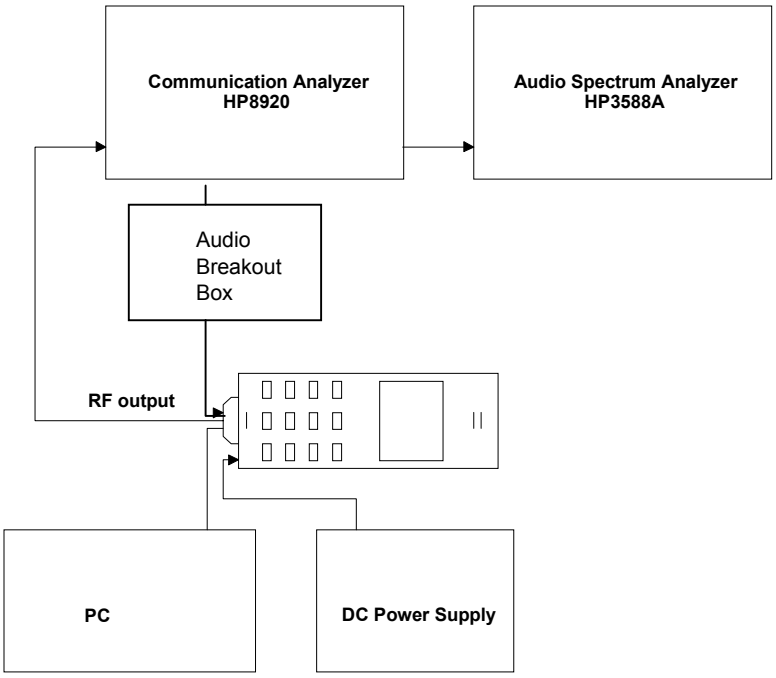


Definition - The output power rating of the transmitter is the power available at the output terminal of the transmitter when the terminal is connected to the normal load.

Method of Measurement - Measure the transmitter output carrier power without modulation using a communication test set for FM which has a RF wattmeter. A HP 8594E spectrum analyzer with the CDMA personality was used to measure CDMA mode.

Minimum Standard - The transmitter output power shall be maintained within +2 / -4 dB.

Modulation Audio Response



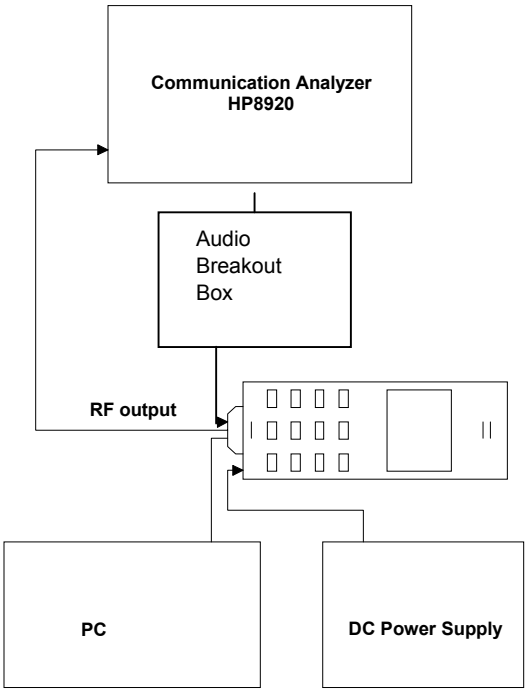
Definition - The transmitter audio frequency response is defined in terms of the degree of closeness with which the frequency deviation of the transmitter follows the prescribed 6 dB/octave pre-emphasis characteristic over a specified continuous audio frequency range while conforming to the required band-limiting conditions outside of that range.

Method of Measurement - Operate the transmitter with the compressor disabled, and monitor the output with HP8920 test receiver without de-emphasis. Apply a sine wave audio input to the transmitter external audio input port, vary the modulating frequency from 300 to 3000 Hz, and observe the input levels necessary to maintain a constant ± 2.9 kHz system deviation. Record the results. Adjust the audio input level to 20 dB greater than that required to produce ± 8 kHz deviation with 1 kHz tone. Vary the modulation frequency from 3 kHz to 30 kHz and observe the deviation while maintaining a constant audio input level. Use the audio spectrum analyzer to measure the output deviation at the same frequency as the input signal.

Minimum Standard - From 300 to 3000 Hz, the audio frequency response shall not vary more than +1 to -3 dB from a true 6 dB/octave pre-emphasis characteristic as referred to the 1000 Hz level (with the exception of a permissible 6 dB/octave roll-off from 2500 to 3000 Hz). Between 3 kHz to 30 kHz, the response shall not exceed that defined by the following table:

Frequency Range (f in kHz)	Attenuation Relative to 3 kHz (dB)
3 kHz ≤ f ≤ 5.9 kHz	40 log (f/3)
5.9 kHz ≤ f ≤ 6.1 kHz	35
6.1 kHz ≤ f ≤ 15 kHz	40 log (f/3)
15 kHz ≤ f ≤ 30 kHz	28

Modulation Limiting

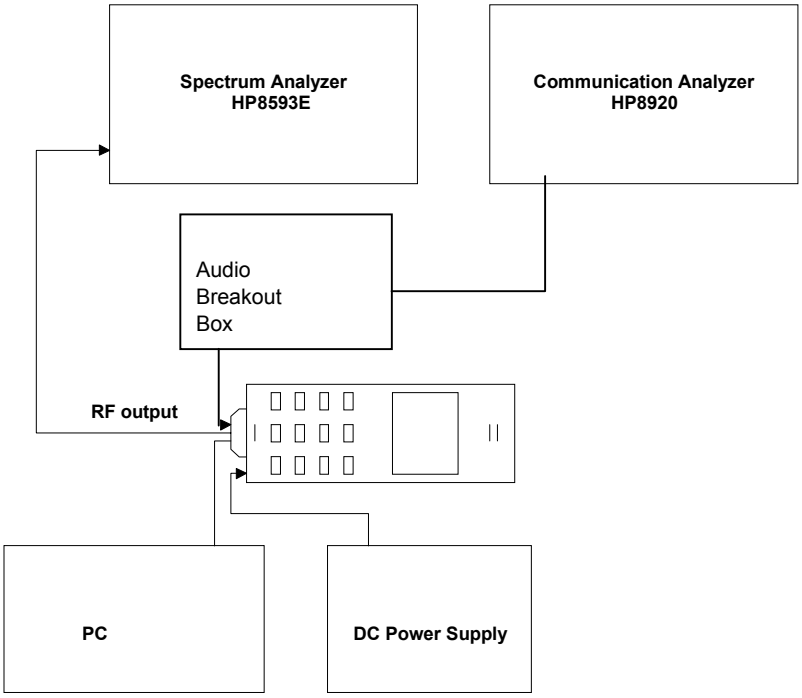


Definition - Modulation limiting refers to the ability of the transmitter circuits to prevent the transmitter from producing deviation in excess of rated system deviation.

Method of Measurement - With the compressor enabled and the SAT disabled, adjust the audio input for ± 8 kHz peak deviation at 1000 Hz. Increase the audio input level by 20 dB. With the input level held constant at the 20 dB, and observe the deviation for 400 Hz, 1000 Hz, and 2.7 kHz.

Minimum Standard - The peak deviation shall not exceed the rated system peak frequency deviation of ± 12 kHz at any time.

Occupied Bandwidth – (In Cellular Band)



Definition - The occupied bandwidth is defined as the spectrum noise produced at discrete frequency separations from the carrier due to all sources of unwanted noise within the transmitter in a modulated condition.

Method of Measurement - Use the spectrum analyzer and measure the following 8 modulating conditions: (1) For combined voice and SAT, disable the compressor, modulate with a 2500 Hz sine wave 13.5 dB greater than that required to produce ± 8 kHz peak deviation at 1000 Hz and a 6000 Hz SAT with ± 2.0 kHz peak deviation. (2) For combined Signaling Tone and SAT, modulate with a 10 kHz ST with ± 8 kHz peak deviation and a 6000 Hz SAT with ± 2.0 kHz peak deviation. (3) For wideband data, modulate with a quasi-random 10 kbps data pattern with ± 8 kHz peak deviation. (4) For CDMA, modulate with full rate. (4) For voice only, disable the compressor, modulate with a 2500 Hz sine wave 13.5 dB greater than that required to produce ± 8 kHz peak deviation at 1000 Hz. (5) For SAT only, modulate with a 6000 Hz SAT with ± 2.0 kHz peak deviation. (6) For ST only, modulate with a 10 kHz ST with ± 8 kHz peak deviation. (7) For combined SAT and DTMF, modulate with a 6000 Hz SAT with ± 2.0 kHz peak deviation and one of the DTMF tones.

Minimum Standard - The mean power of emissions from the transmitter with modulated carrier shall be attenuated below the mean power of the unmodulated carrier in accordance with the following.

(1) For all modulation: In a 300 Hz bandwidth centered on any frequency removed from the carrier by greater than 20 kHz up to and including 45 kHz, at least 26 dB.

(2) For modulation by combined voice and SAT: In a 300 Hz bandwidth centered on any frequency removed from the carrier frequency by greater than 45 kHz, at least 63 + 10 log (mean output power in Watts) dBc. Since the equipment is rated 27.0dBm, the limit is 60dBc.

(3) For modulation by wideband data and combined ST and SAT: In a 300 Hz bandwidth centered on any frequency:

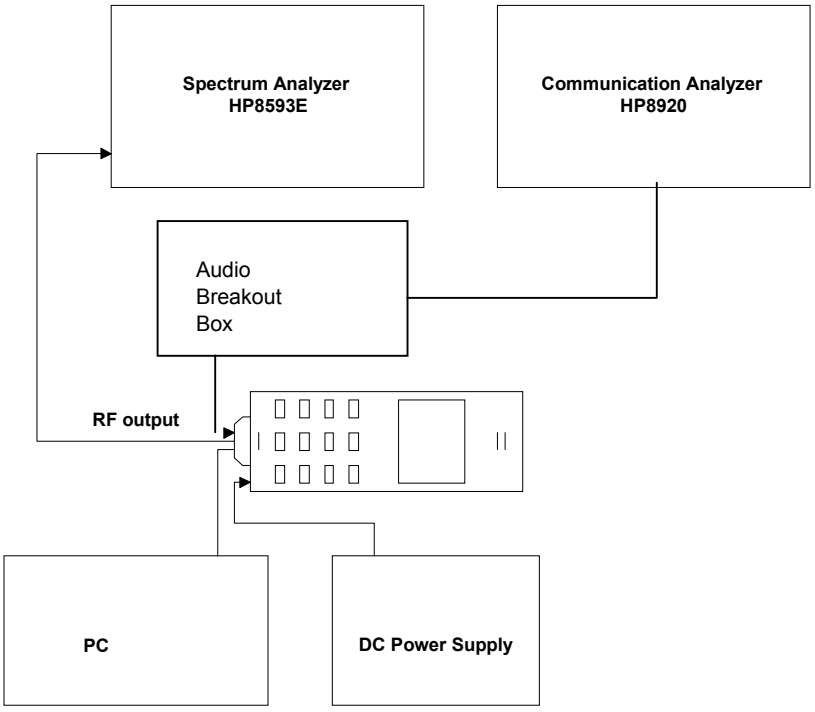
(a) More than 45 kHz up to and including 90 kHz, at least 45 dBc.
(b) More than 90 kHz up to the first multiple of the carrier frequency, at least 63 + 10 log (mean power in Watts) dBc.

In addition, in a 30 kHz bandwidth centered anywhere between 869 and 894 MHz, the mean power of emissions from the transmitter with modulated carrier shall not exceed -80 dBm.

Occupied Bandwidth – (In PCS Band)

The procedure has been stated in Exhibit 8

Conducted Spurious and Harmonic Emissions at Antenna Terminal

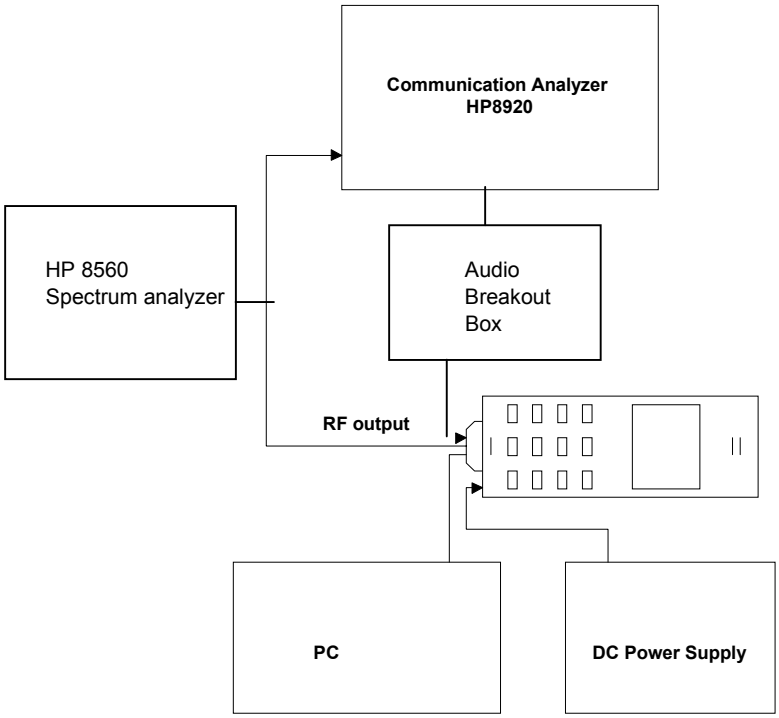


Definition - The conducted harmonic and spurious emissions are emissions at the antenna terminals on a frequency or frequencies that are outside the authorized bandwidth of the transmitter.

Method of Measurement - The transmitter shall be alternately modulated with combined voice and SAT and with wideband data. For combined voice and SAT measurements, disable the compressor, modulate with a 2500 Hz sine wave 13.5 dB greater than that required to produce ± 8 kHz peak deviation at 1000 Hz and a 6000 SAT with ± 2.0 kHz peak deviation. For wideband data measurements, the transmitter shall be modulated with a quasi-random 10 kbps data pattern with ± 8 kHz peak deviation. The measurement shall be made with a spectrum analyzer from the lowest radio frequency generated in the equipment to the 10th harmonic of the carrier except for that region within 75 kHz of the carrier frequency.

Minimum Standard - Conducted harmonic and spurious emissions shall be attenuated below the level of emissions of the carrier frequency by at least 43 + 10 log (mean output power in Watts) dB.

Frequency Stability



Definition - The frequency stability is the ability of the transmitter to maintain an assigned carrier frequency.

Method of Measurement - Use the communication tester to sample the transmitter RF output signal and measure its frequency. Very the ambient temperature from -30 to +60 °C, and also vary the DC supply voltage to the equipment from 3.4 to 4.2 V at each temperature.

Minimum Standard - The transmitter carrier frequency shall be maintained within ± 2.5 ppm.

Exhibit 14

List of Semiconductor Devices

Included in the part list in separate attachments

Exhibit 15

Circuit Diagrams

Block and circuit diagrams are included in separate attachments.

Exhibit 16

FCC Identification Label Information

Included in the separate attachment.

Exhibit 17

Photographs

The photographs are in a separate attachment.

Exhibit 18

Users Manuel

The user's guide is in a separate attachment.