849 NW STATE ROAD 45
NEWBERRY, FL 32669 USA
PH: 888.472.2424 OR 352.472.5500
FAX: 352.472.2030
EMAIL: TEI@TIMCOENGR.COM
HTTP://WWW.TIMCOENGR.COM

FCC AND IC TEST REPORT
PER PART 22H, PART 24E, RSS-131
SIGNAL BOOSTER

Applicant	Wilson Electronics, Inc.
Address	3301 E. Deseret Drive St. George, Utah 84790 USA
FCC ID	PWO271230SA
IC Label	IC: 4726A-271230SA
Model Number	271230
Product Description	800MHz AMPS & 1900 PCS Booster Amplifier
Date Sample Received	November 14, 2007
Date Tested	November 30, 2007
Tested By	Nam Nguyen
Approved By	Mario de Aranzeta
Report No.	3591AUT7TestReport.pdf
Test Results	☒ PASS ☐ FAIL

ACCREDITED
Test Certificate # 0955-01

TABLE OF CONTENTS

ATTESTATION

Test Certificate # 0955-01

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made, under my supervision, at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45, Newberry, Florida 32669.

Authorized Signatory Name: Mario de Aranzeta

Signature: Mario de Aranzeta

Function: Lab Supervisor / Engineer

Date: December 16, 2007

REPORT SUMMARY

Disclaimer	The test results relate only to the items tested.
Report Purpose	To demonstrate the modified unit continues to comply with FCC Part 22H and Pt 24 and Industry Canada RS-131 requirements for a PCS amplifier.
Applicable Rule Part(s)	Pt 22, Pt 24, Pt 15.109, RSS-131, ICES-003, ANSI C63.4: 2003, ANSI/TIA-603-C: 2004
Related Test Report	No Related Test Report

TEST ENVIRONMENT

Test Facilities	All tests were performed by Timco Engineering Inc. that is located at 849 NW State Road 45 Newberry, FL 32669.
Test Conditions	Temperature: 26°C Relative Humidity: 50%

TEST SETUP

Deviation to the rules	There was no deviation from the test standards.
Modification to the DUT	No modification was made to the DUT.
Test Exercise (e.g. software description, test signal, etc.)	The DUT was placed in continuous transmit mode of operation.
Supporting Test Equipment	Manufacturer: Agilent Description: Dual-mode baseband generator (arbitrary waveform and real time I/Q) 250 kHz to 6 GHz Model Number: E4438C Cal Date: 01/31/06 Cal Due Date: 01/31/08

DEVICE UNDER TEST INFORMATION

Manufactured by	Wilson Electronics
DUT Description	Dual Band Cell Phone Amplifier
FCC ID	PWO271230SA
IC Label	IC: 4726A-271230SA
Model Name	271230
Operating Frequency	Uplink 824 – 849 MHz Downlink 869 – 894 MHz Uplink 1850 – 1910 MHz Downlink 1930 – 1990 MHz
Maximum Output and Input Power Rating per manufacturer spec	Uplink: 1.54 Watt Downlink: 0.07 Watt
Emission Designators	F9W (CDMA), GXW (GSM), F1D, G7W (EDGE)
Modulation(s)	CDMA, GSM, EDGE, FM
User Power Range & Control	There are NO user power controls
Test Item	Pre-Production
DC Voltage and Current into final amplifier	Power Into Final Amplifier (uplink) Vcc = 6 VDC, 1.2 A Power Input (downlink) Vcc= 6Vdc, 0.15A
Type of Equipment	Fixed and Mobile
Antenna Connector	Input: SMA Output type: SMA

EQUIPMENT LIST

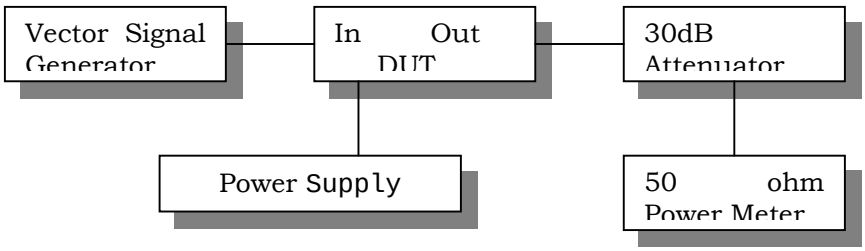
Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/27/07	3/26/10
3-Meter OATS	TEI	N/A	N/A	Listed 1/11/06	1/10/09
Biconnical Antenna	Eaton	94455-1	1057	CAL 12/12/07	12/12/09
Biconnical Antenna	Eaton	94455-1	1096	CAL 8/17/06	8/17/08
Biconnical Antenna	Electro-Metrics	BIA-25	1171	CAL 4/29/07	4/29/09
Blue Tower Quasi-Peak Adapter	HP	85650A	2811A01279	CAL 4/13/07	4/13/09
Blue Tower RF Preselector	HP	85685A	2926A00983	CAL 9/5/07	9/5/09
Blue Tower Spectrum Analyzer	HP	8568B	2928A04729 2848A18049	CAL 4/13/07	4/13/09
LISN	Electro-Metrics	ANS-25/2	2604	CAL 8/27/06	8/27/08
LISN	Electro-Metrics	EM-7820	2682	CAL 4/28/07	4/28/09
Log-Periodic Antenna	Eaton	96005	1243	CAL 12/14/07	12/14/09
Passive Loop Antenna	EMC Test Systems	EMCO 6512	9706-1211	CHAR 7/10/06	7/10/08

TEST PROCEDURE

RF Power Output

RF power is measured by connecting a 50-ohm, resistive wattmeter to the RF output connector. With a nominal voltage and the amplifier properly adjusted the RF output measures.

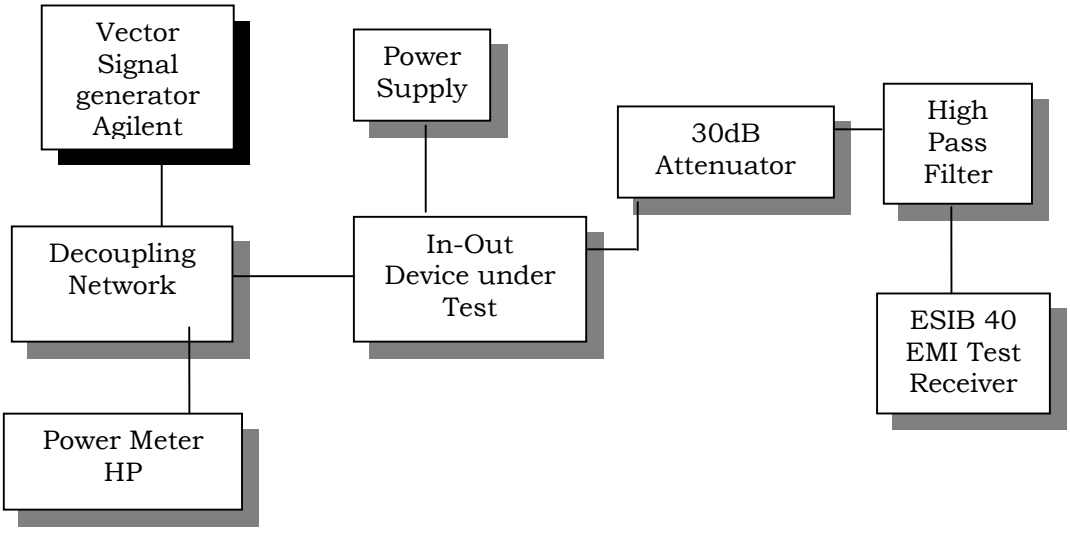
RF Output Power Test Setup Diagram



Input/Output Modulated Amplitude Comparison And Band-Edges Compliance

On the following plot, the reference level was calibrated using a resolution bandwidth wider than the emission bandwidth. First the gain was measured for the maximum output power. Then for each frequency and type of modulation, an attenuation equals to the gain of the amplifier was added on the measurement side of the amplifier, as to overlay the input versus output modulated envelope.

Test Setup Diagram

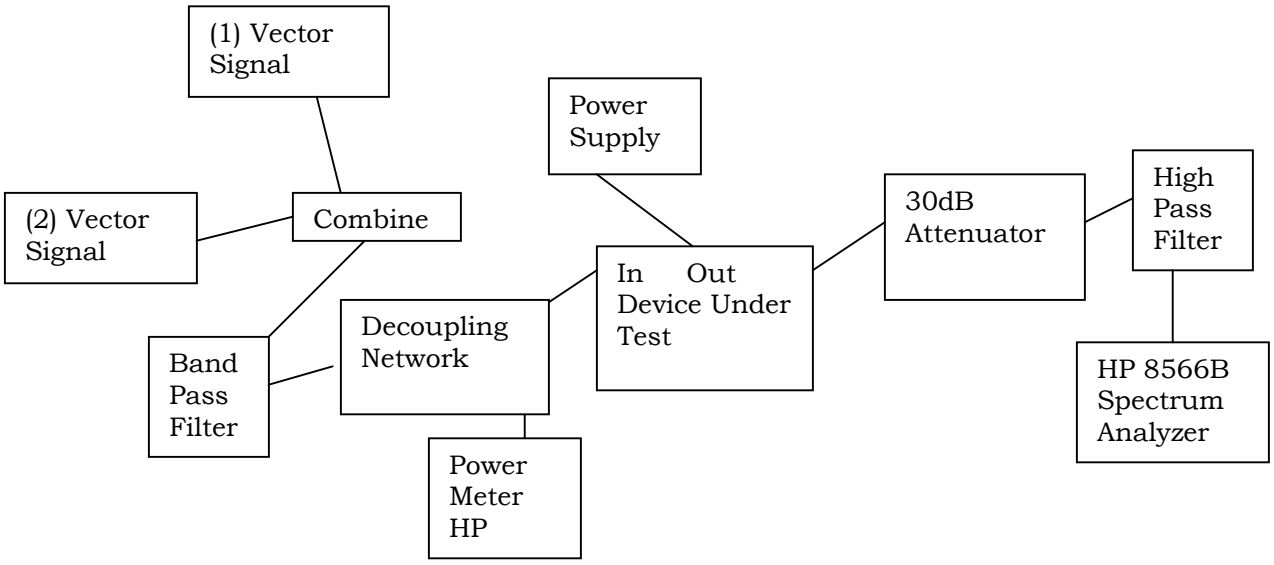


[Continued]

Intermodulation Product Spurious Emissions
The procedure used was ANSI/TIA-603-C: 2004. The spectrum was scanned from 9kHz to at least the tenth harmonic of the fundamental using a HP model 8566B spectrum analyzer.

The modulation type was tested using the two-tone / three tone test method. The input power to the amplifier was set at maximum drive level by combining the two tones. The two tones were chosen in such a way (1) the third order intermodulation product frequencies are located within the pass band of the DUT and (2) they produce the worst-case emissions out of band.

Setup Diagram

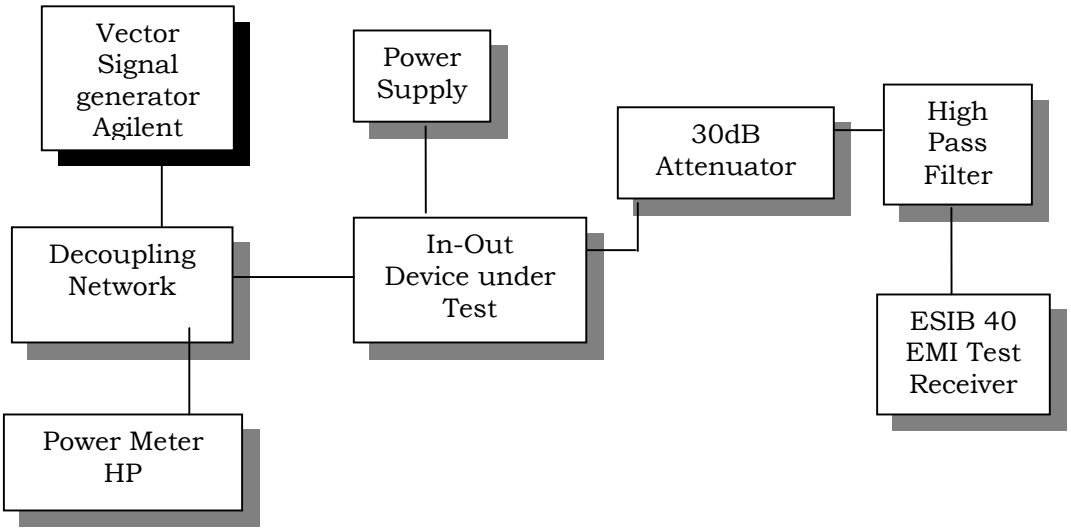


Spurious Emissions at Antenna Terminals
The procedure used was ANSI/TIA-603-C: 2004. The spectrum was scanned from 9kHz to at least the tenth harmonic of the fundamental using a HP model 8566B spectrum analyzer.

Data on the following page shows the level of conducted spurious responses. For analog modulation, the carrier was modulated 100% using a 2500 Hz tone. For digital modulation, the carrier is modulated to its maximum extent. The spectrum was scanned from 9kHz to at least the 10th harmonic of the fundamental. The measurements were made in accordance with standard ANSI/TIA-603-C: 2004. The maximum input power was set for each test.

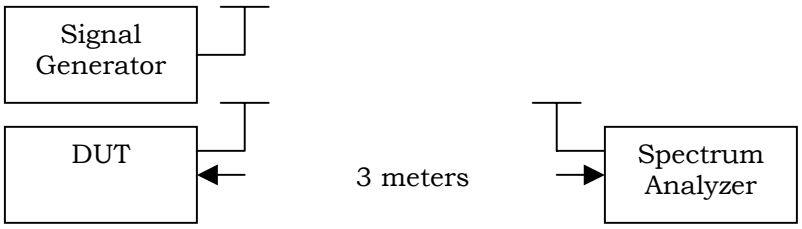
[Continued]

Conducted Spurious Emissions Test Setup Diagram



Radiated Spurious Emissions
The spectrum was scanned from 30 MHz to at least the tenth harmonic of the fundamental. The CW signal was used to perform this test. This test was conducted per ANSI/TIA-603-C: 2004 using the substitution method.

Radiated Spurious Emissions Test Setup Diagram



Equipment placed 80 cm above ground on a rotating table platform.

RF POWER OUTPUT

Rule Part(s) No.: Pt 2.1046(a)

Requirements: Pt 2.1046(a)

Test Result: As the following table indicates. Notes: the maximum power output value was obtained with CDMA modulation at 1880MHz and EDGE modulation at 869.20 MHz.

Test Data Table 1 – Output Power – CDMA 1900 – Uplink/Downlink

Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)	Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)
1851.25	-24.3	30.94	1242	1931.25	-31.2	13.83	24
1880.00	-21.9	31.89	1545	1960.00	-30.4	13.04	20
1908.75	-21.7	30.48	1117	1988.75	-29.5	10.80	12

Test Data Table 2 – Output Power – EDGE 1900 – Uplink/Downlink

Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)	Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)
1850.20	-20.9	30.94	1242	1930.20	-38.32	12	16
1880.00	-20.7	30.63	1156	1960.00	-41.6	10.21	10
1909.80	-16.5	28.61	726	1989.80	-36.9	9.55	9

Test Data Table 3 – Output Power – GSM 1900 – Uplink/Downlink

Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)	Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)
1850.20	-21.7	28.76	752	1930.20	-29.6	14.06	25
1880.00	-17.8	30.3	1072	1960.00	-30.2	13.27	21
1909.80	-16.5	28.07	641	1989.80	-30.1	11.38	14

[Continued]

Test Data Table 4 – Output Power – CDMA 800 – Uplink/Downlink

Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)
825.25	-16.5	31.07	1279
836.50	-18.9	31.87	1538
847.75	-18.5	31.2	1318

Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)
870.25	-29.8	18.3	68
881.50	-29.8	18.06	64
892.75	-31.1	16.98	50

Test Data Table 5 – Output Power – EDGE 800 – Uplink/Downlink

Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)
824.20	-15.8	30.1	1023
836.50	-18.4	30.25	1059
848.80	-17.7	29.9	977

Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)
869.20	-31.8	18.44	70
881.50	-30.8	17.87	61
893.80	-30	15.85	38

Test Data Table 6 – Output Power – GSM 800 – Uplink/Downlink

Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)
824.20	-16.5	29.60	912
836.50	-17.9	29.03	800
848.80	-17.7	27.45	556

Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)
869.20	-32.9	18.10	65
881.50	-30	17.41	55
893.80	-30.6	17.08	51

Test Data Table 7 – Output Power – AMPS 800 – Uplink/Downlink

Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)
824.20	-9.4	27.19	524
836.50	-10.9	29.29	849
848.80	-10.4	27.11	514

Tuned Frequency (MHz)	Power Input (dBm)	Power Output (dBm)	Power Output (mW)
869.20	-32.9	11.72	15
881.50	-30.6	12.02	16
893.80	-32.2	9.12	8

INPUT/OUTPUT MODULATED AMPLITUDE COMPARISON AND BAND-EDGES COMPLIANCE

Rule Parts No.: Pt 2.1049, Pt 2.1051, 22H, 24E

Requirements: The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

Test Data: The DUT meets the requirements.

Bandedge compliance: Measurements were performed in accordance with Part 24.238

The Reference level on the following plots was calibrated using a 3MHz RBW=VBW.

Compensating for RBW (1%) using 10 log (12.5/3)= 6.2 dB we get the following amplitudes at the bandedge:

Test Data Table 8 – CDMA 1900 – Uplink/Downlink

Channel (MHz)	Bandedge Frequency (MHz)	Amplitude bandedge (dBm)	Limit (dBm)	Margin (dB)
1851.25	1849.95	-14.65	-13	1.65
1908.75	1910.10	-17.96	-13	4.96
1931.25	1929.46	-14.49	-13	1.49
1988.75	1990.14	-16.3	-13	3.3

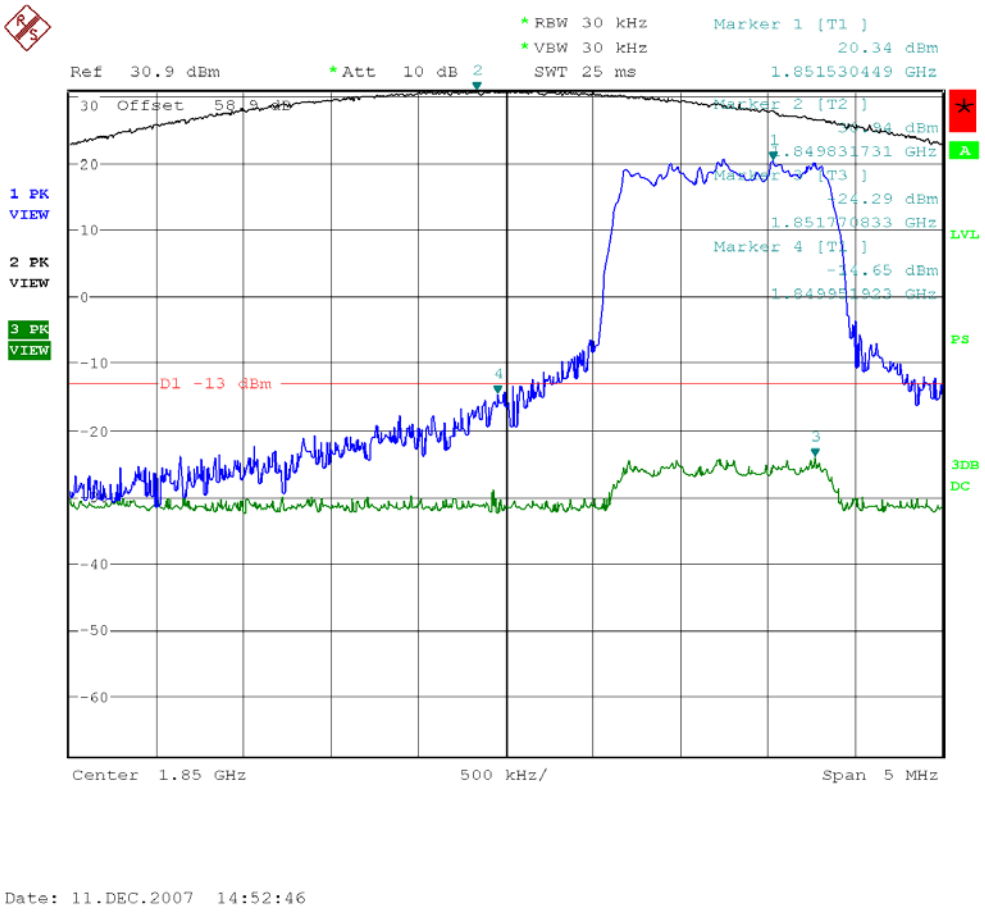


Figure 1: CDMA – In vs. Out 1851.25MHz

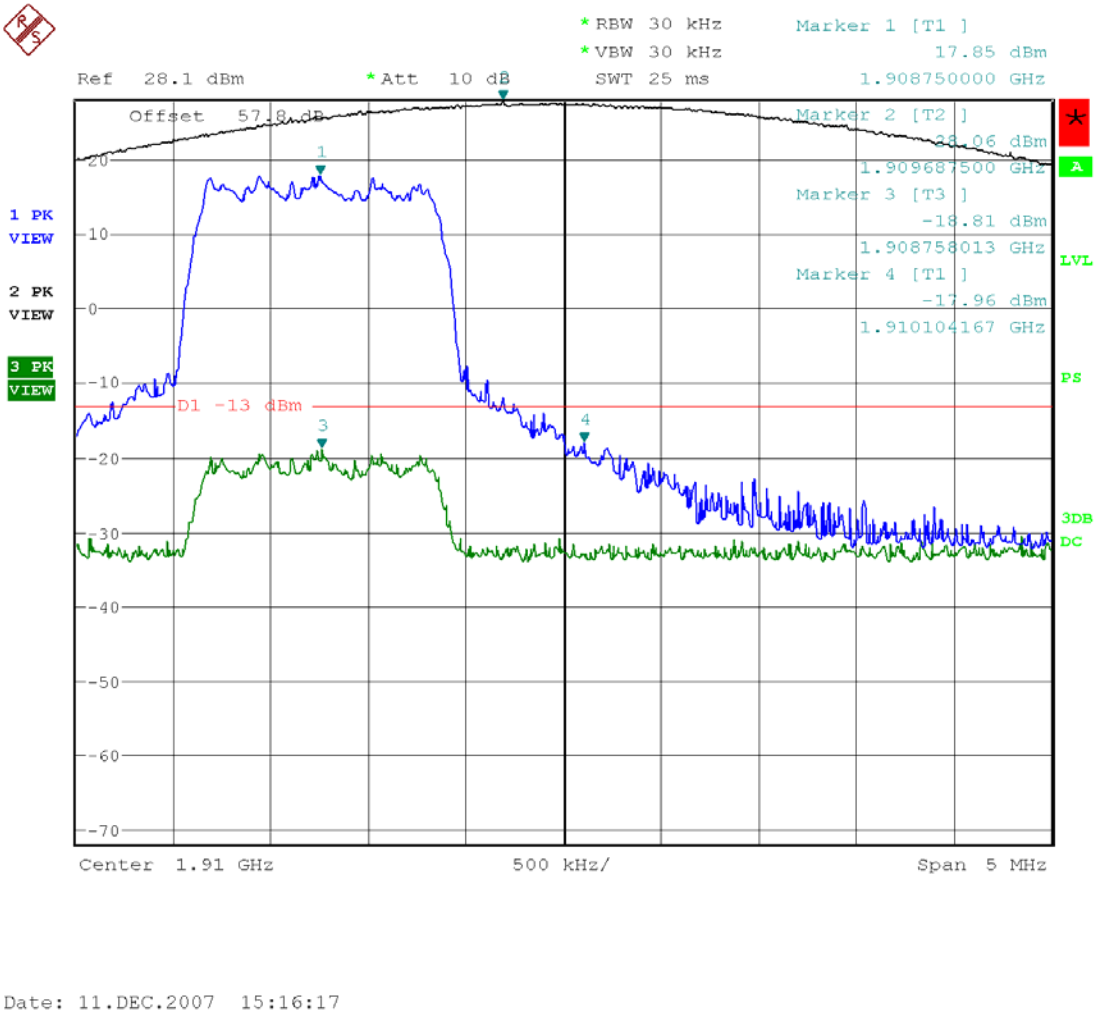


Figure 2: CDMA – In vs. Out 1908.75MHz

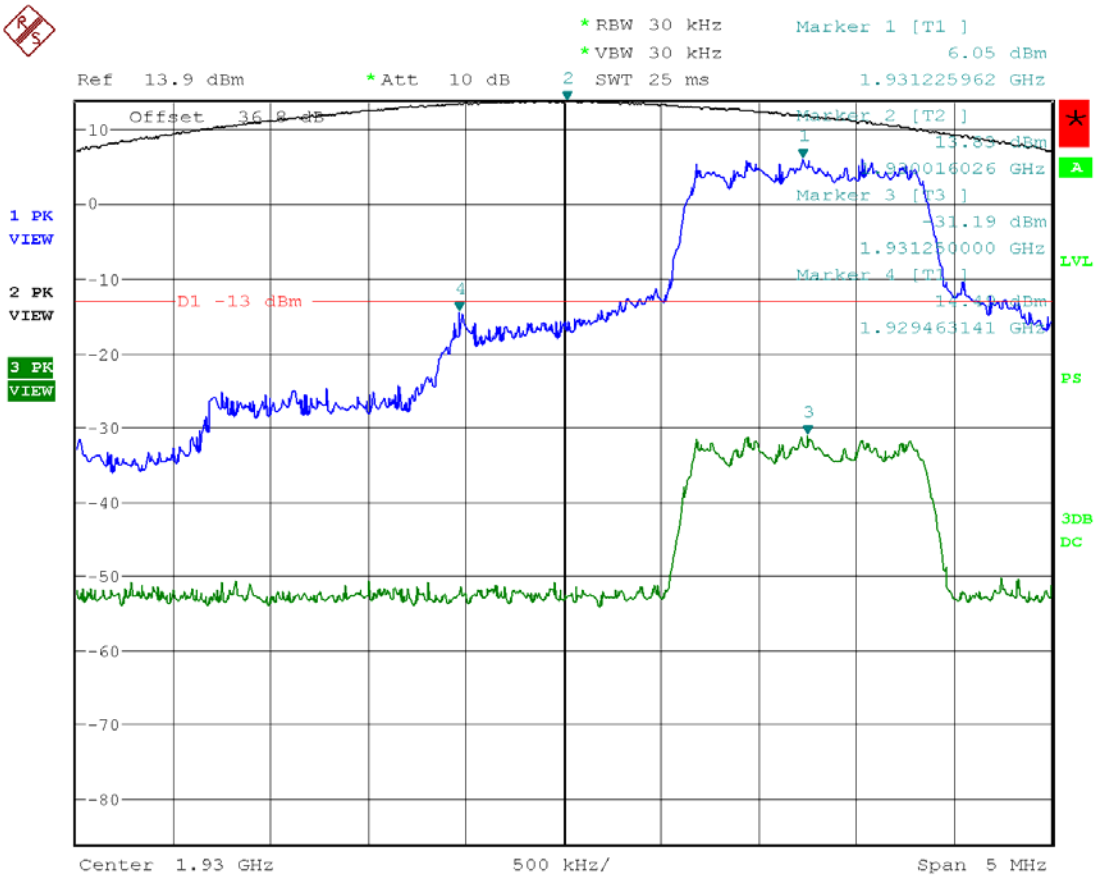


Figure 3: CDMA – In vs. Out 1931.25MHz

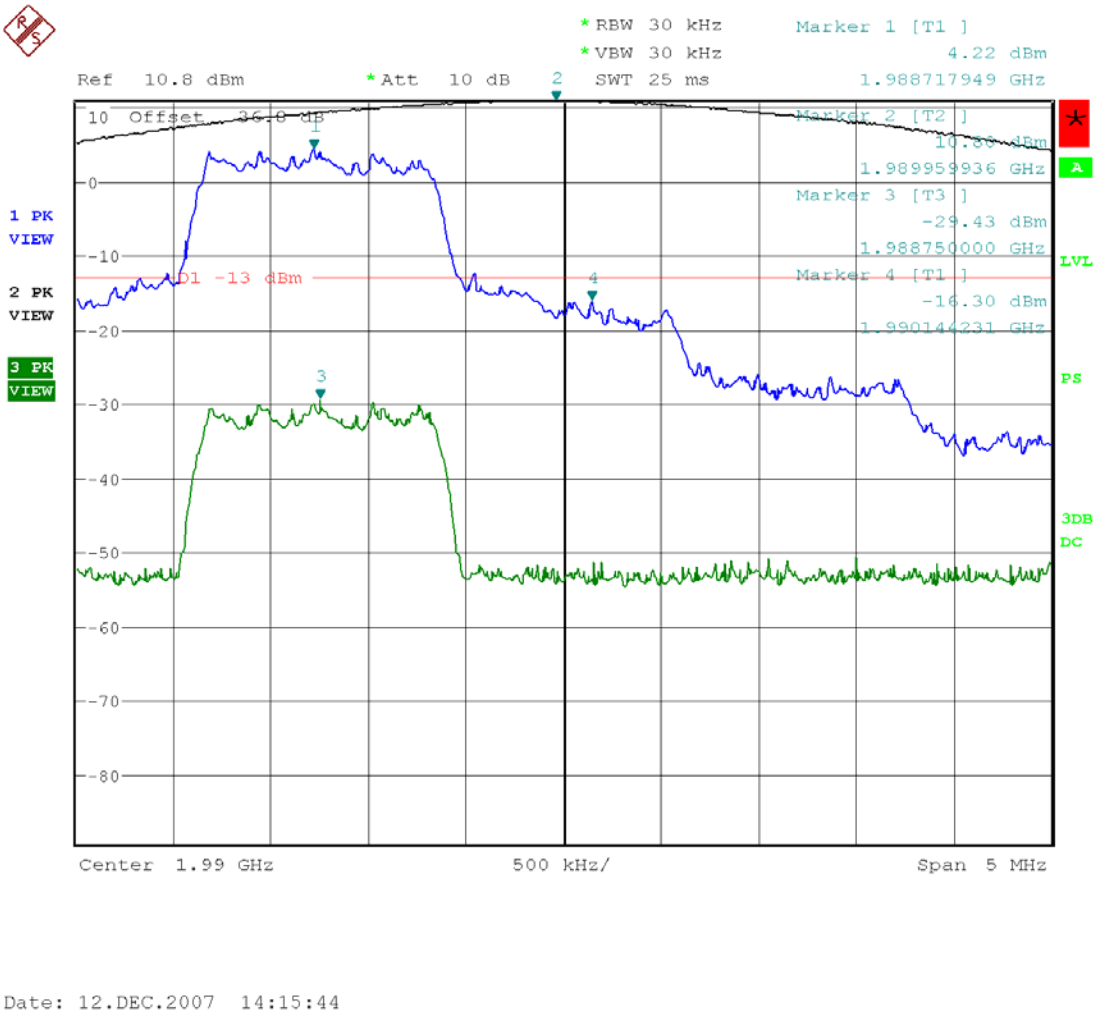


Figure 4: CDMA – In vs. Out 1988.75MHz

Test Data Table 9 – EDGE 1900 – Uplink/Downlink

Channel (MHz)	Band-edge Frequency (MHz)	Amplitude level at the band-edge (dBm)	Limit (dBm)	Margin (dB)
1850.2	1849.97	-15.71	-13	2.71
1909.8	1910.04	-15.67	-13	2.67
1930.2	1929.98	-15.82	-13	2.82
1989.8	1990.01	-21.8	-13	8.8

The Reference level on the following plots was calibrated using a 3MHz RBW=VBW.

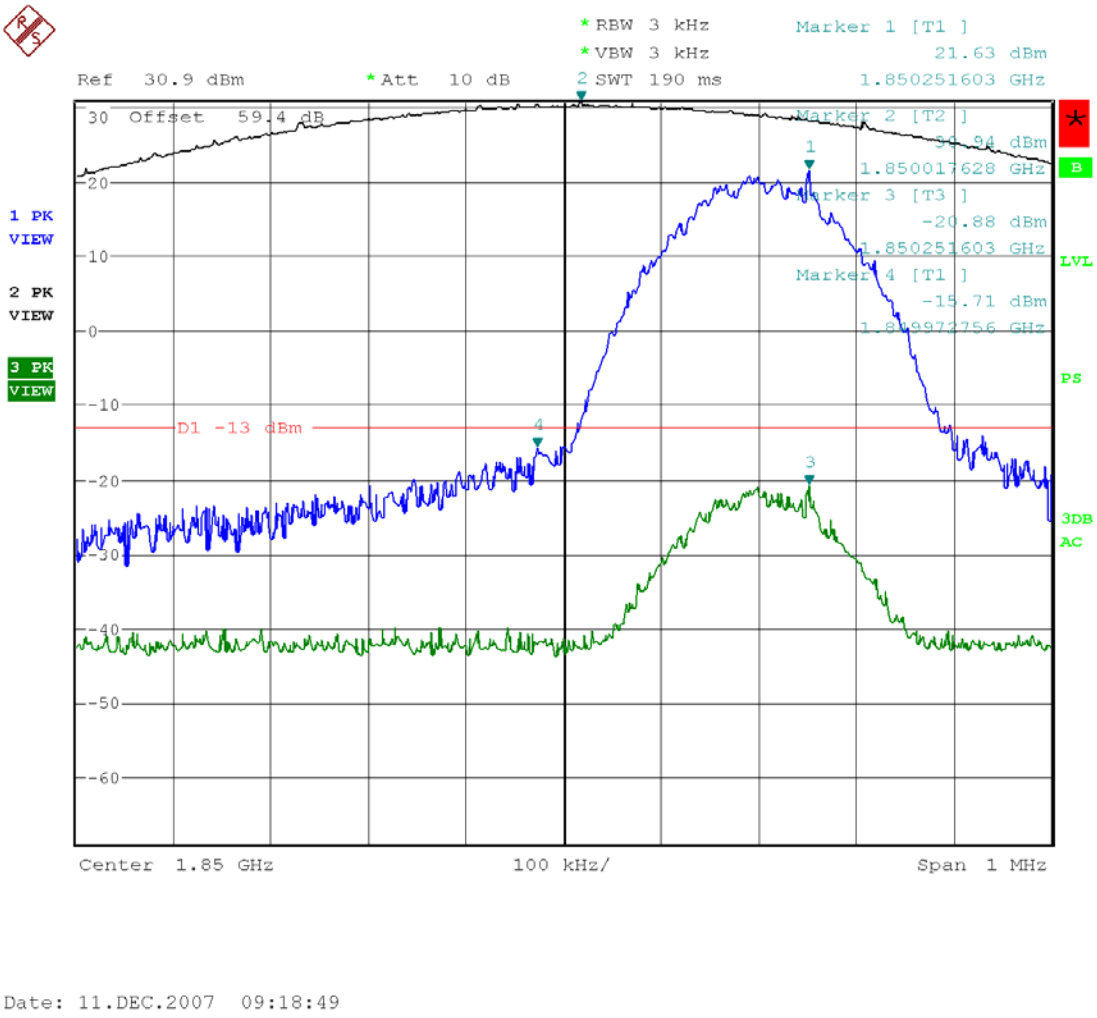


Figure 5: EDGE – In vs. Out 1850.20MHz

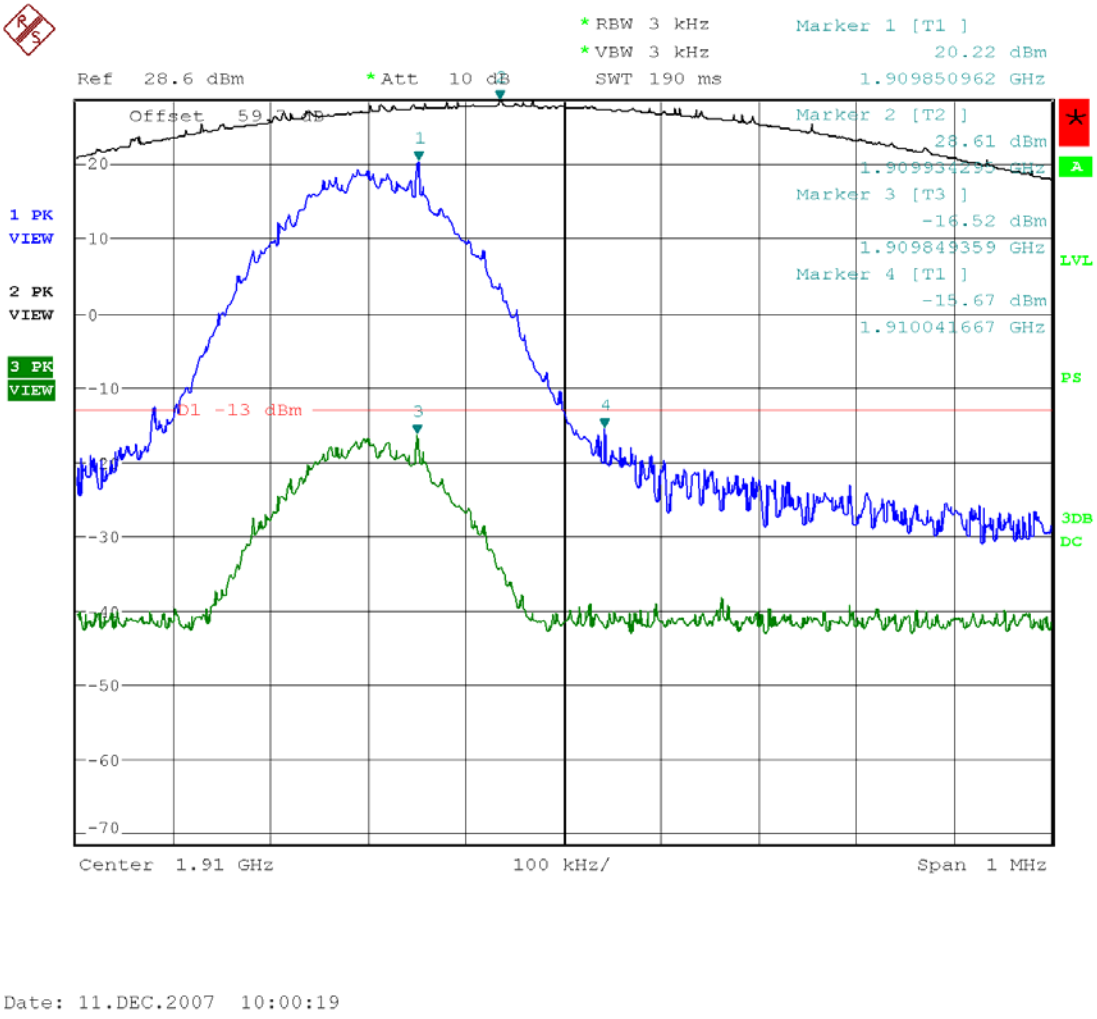


Figure 6: EDGE – In vs. Out 1909.80MHz

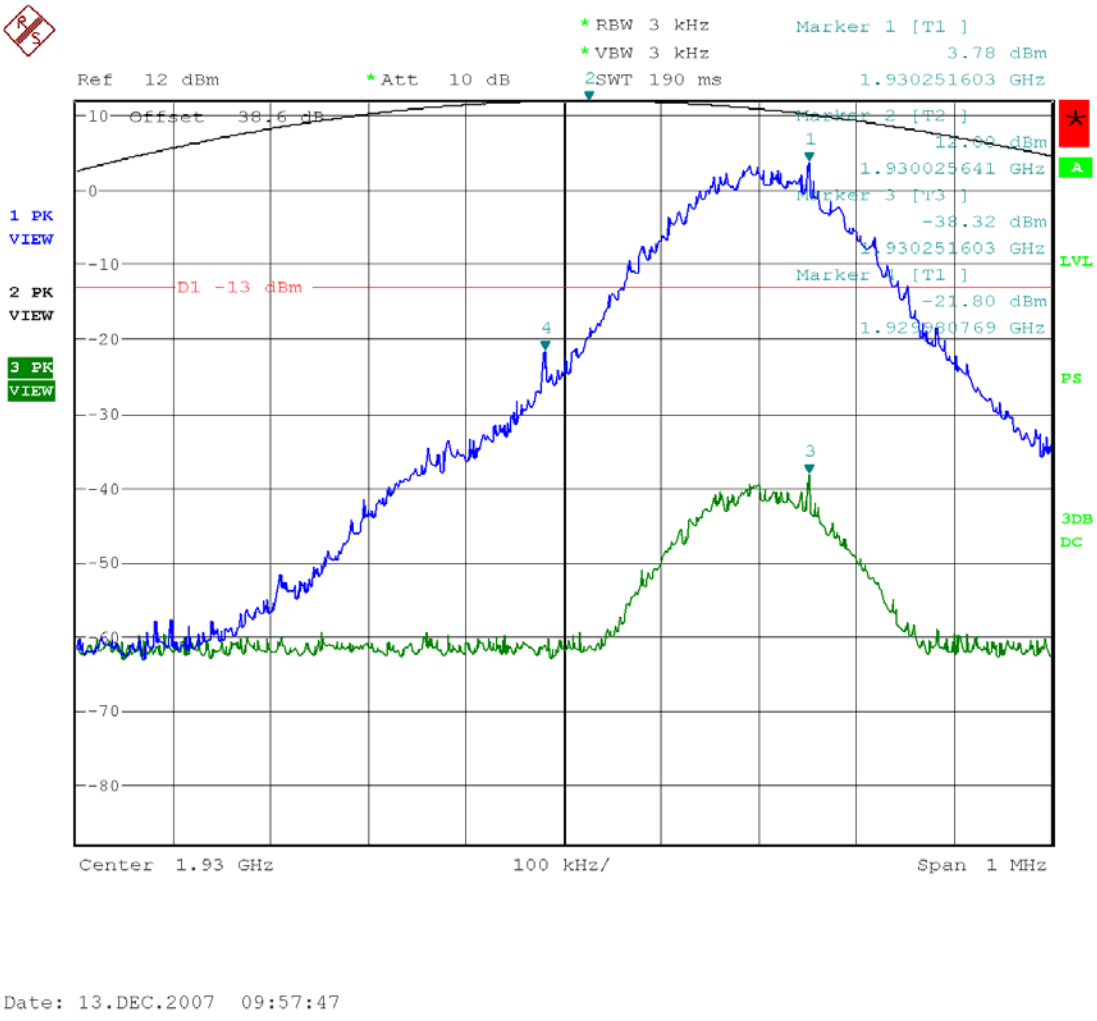


Figure 7: EDGE – In vs. Out 1930.20MHz

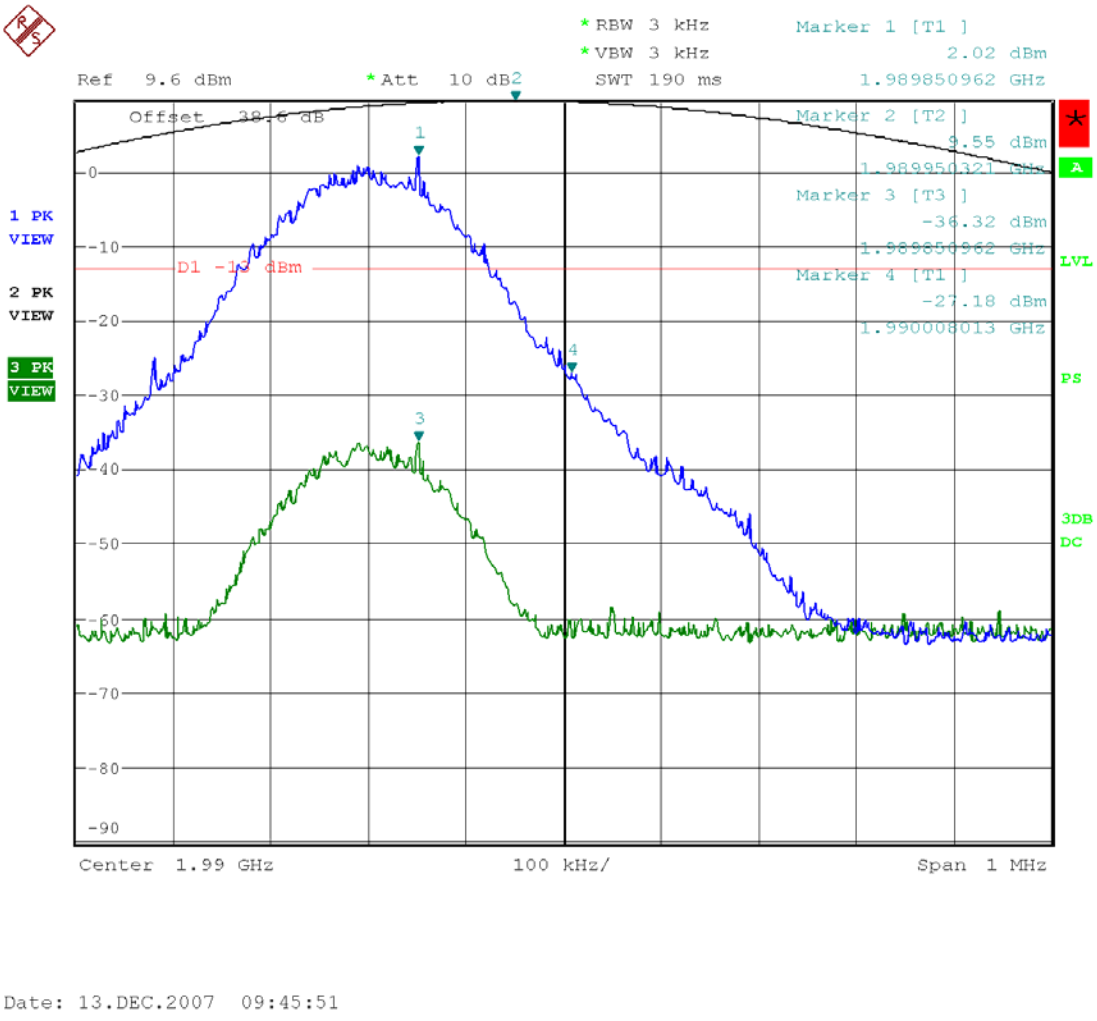


Figure 8: EDGE – In vs. Out 1989.80MHz

Test Data Table 10 –GSM 1900 – Uplink/Downlink

Channel (MHz)	Band-edge Frequency (MHz)	Amplitude level at the band-edge (dBm)	Limit (dBm)	Margin (dB)
1850.2	1849.98	-13.47	-13	0.47
1909.8	1910.02	-16.08	-13	3.08
1930.2	1929.90	-29.88	-13	16.88
1989.8	1990.01	-33.21	-13	20.21

The Reference level on the following plots was calibrated using a 3MHz RBW=VBW.

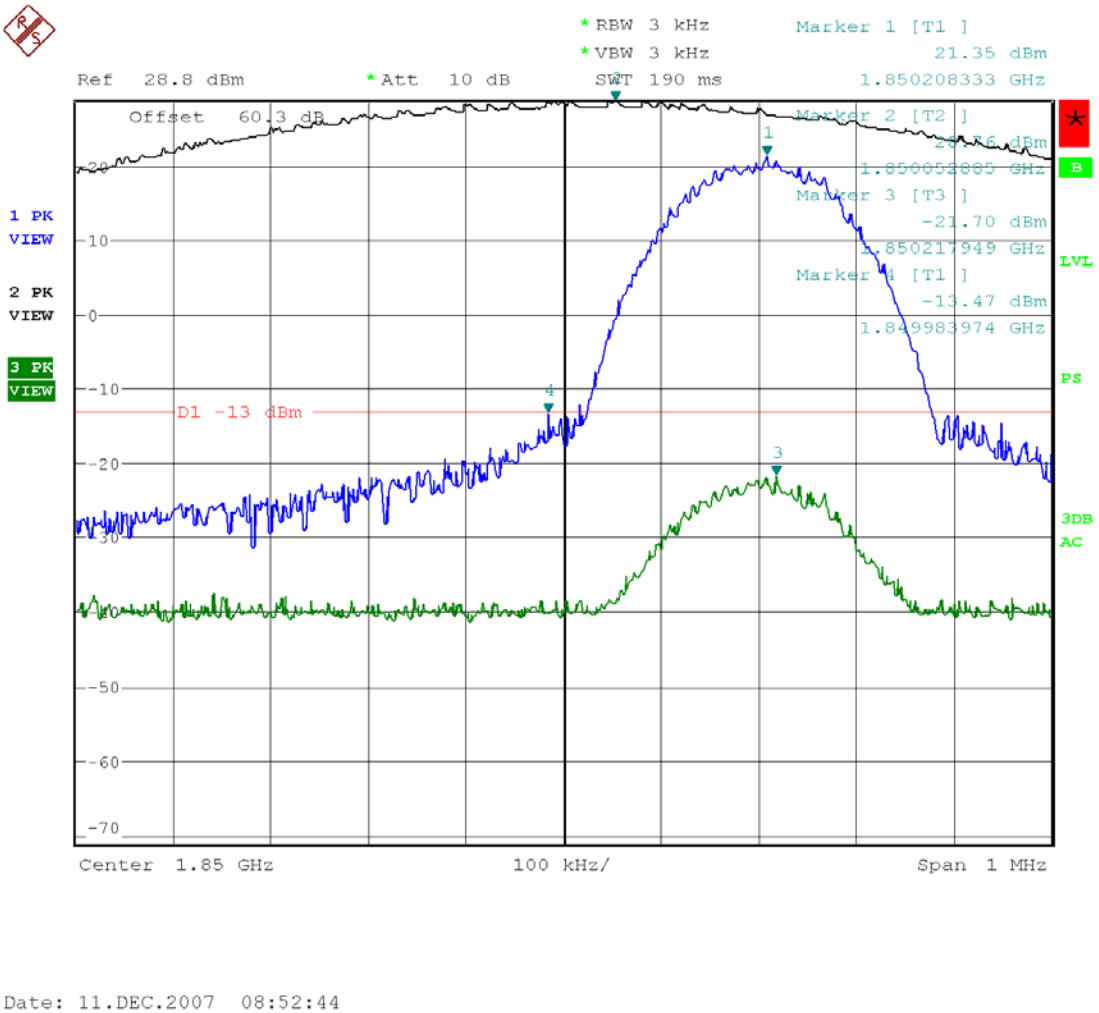


Figure 9: GSM – In vs. Out 1850.20MHz

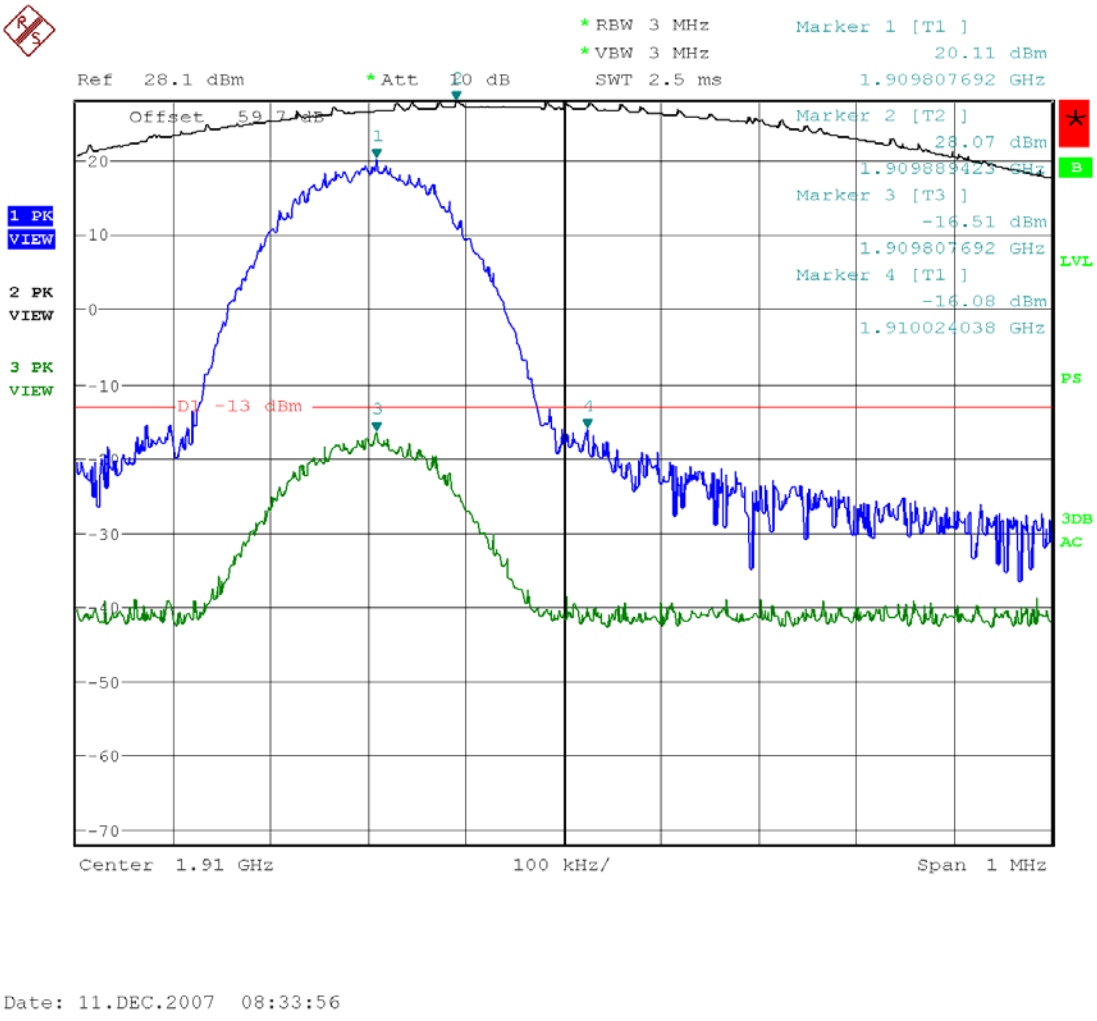


Figure 10: GSM – In vs. Out 1909.80MHz

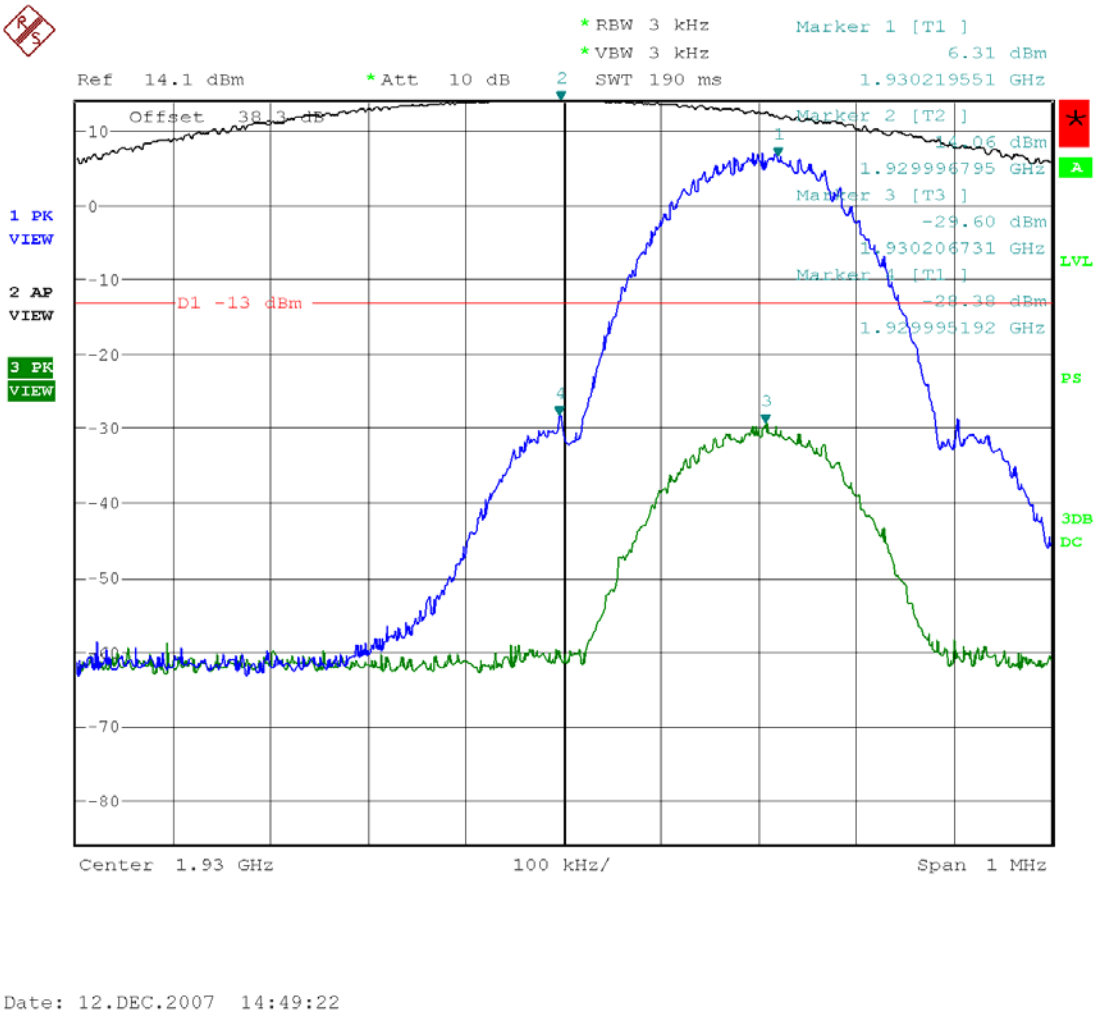


Figure 11: GSM – In vs. Out 1930.20MHz

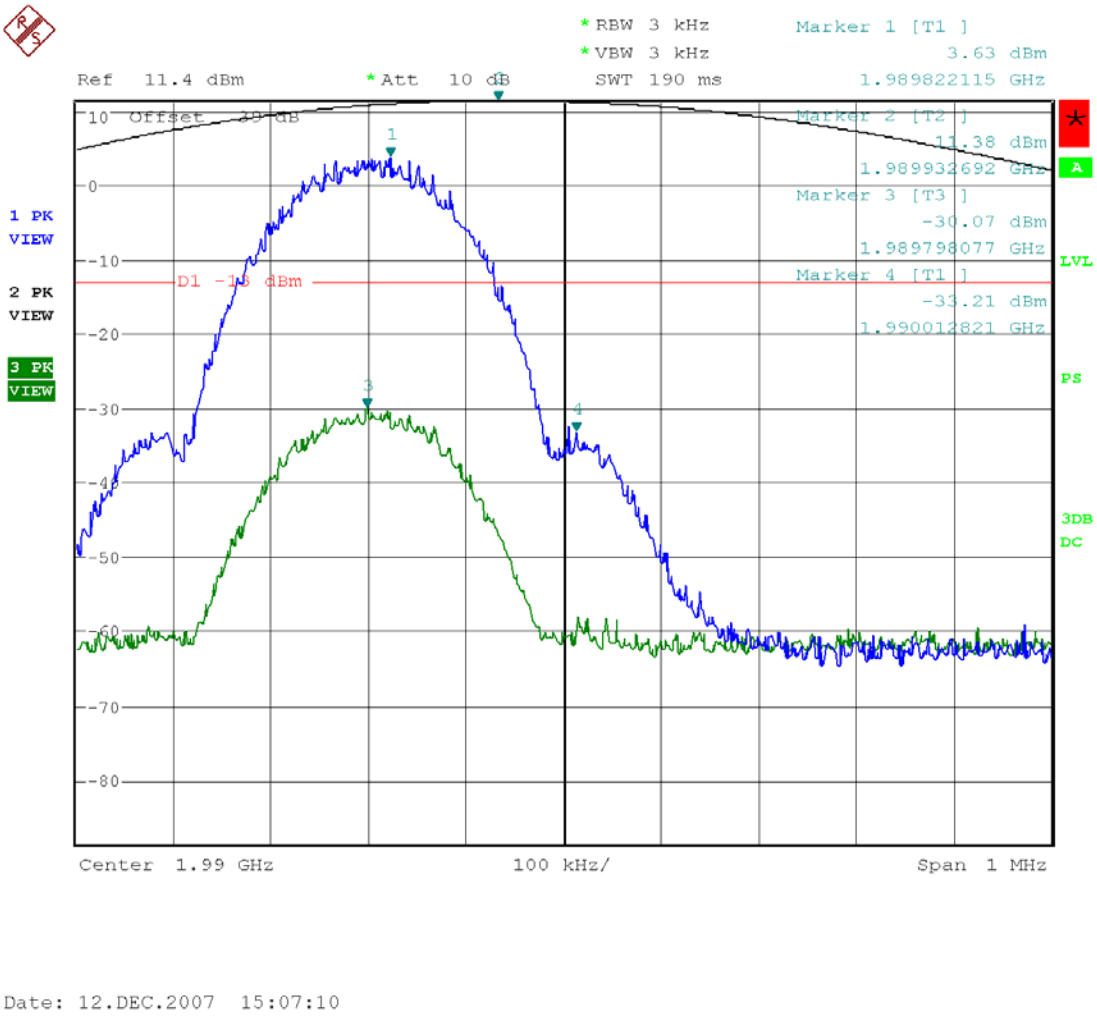


Figure 12: GSM – In vs. Out 1989.80MHz

Compensating for RBW (1%) using 10 log (12.5/3)= 6.2 dB we get the following amplitudes at the bandedge:

Test Data Table 11 – CDMA 800 – Uplink/Downlink

Channel (MHz)	Bandedge Frequency (MHz)	Amplitude level at the band-edge (dBm)	Limit (dBm)	Margin (dB)
825.25	823.94	-15.33	-13	2.33
847.75	849.13	-14.78	-13	1.78
870.25	868.93	-13.23	-13	0.23
892.75	894.05	-18.28	-13	5.28

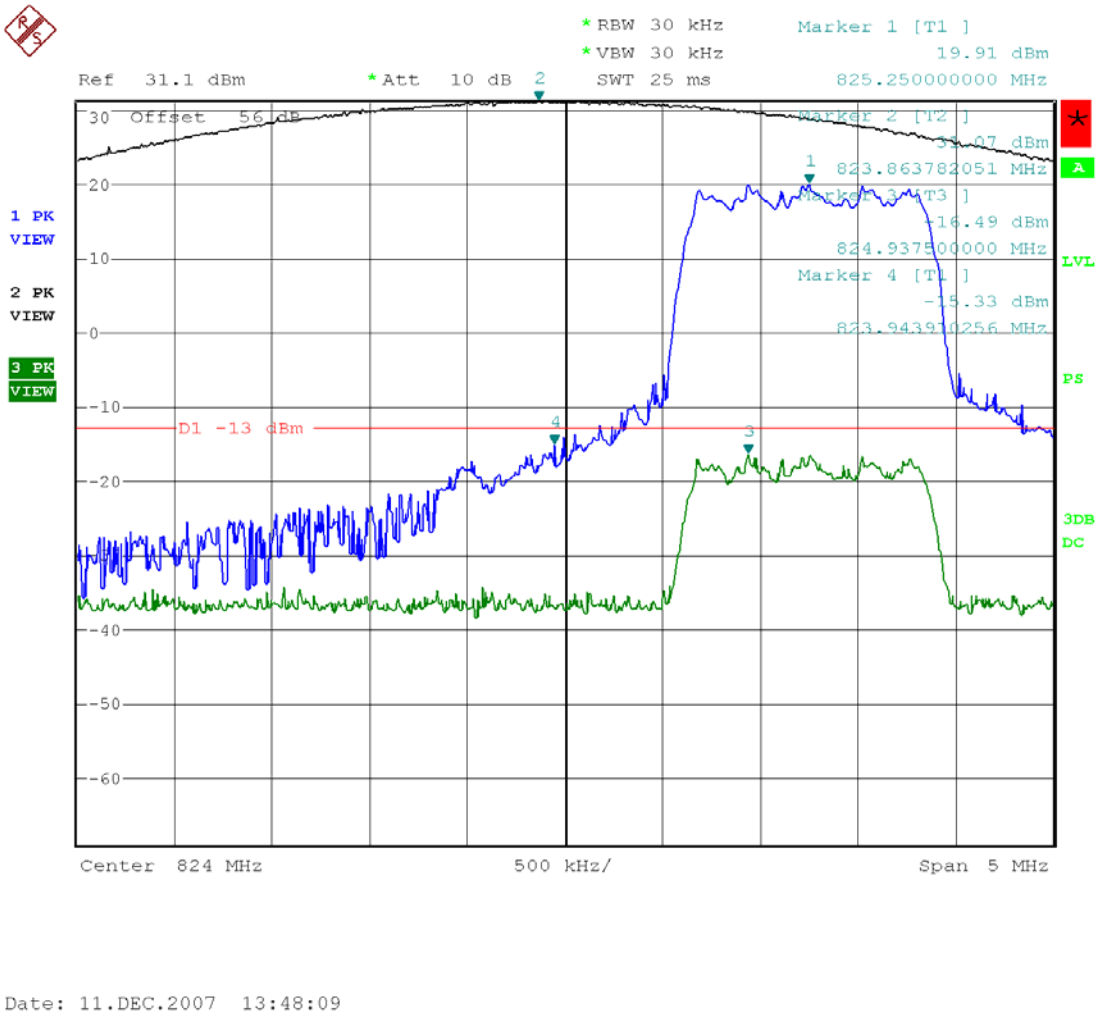


Figure 13: CDMA – In vs. Out 825.25MHz

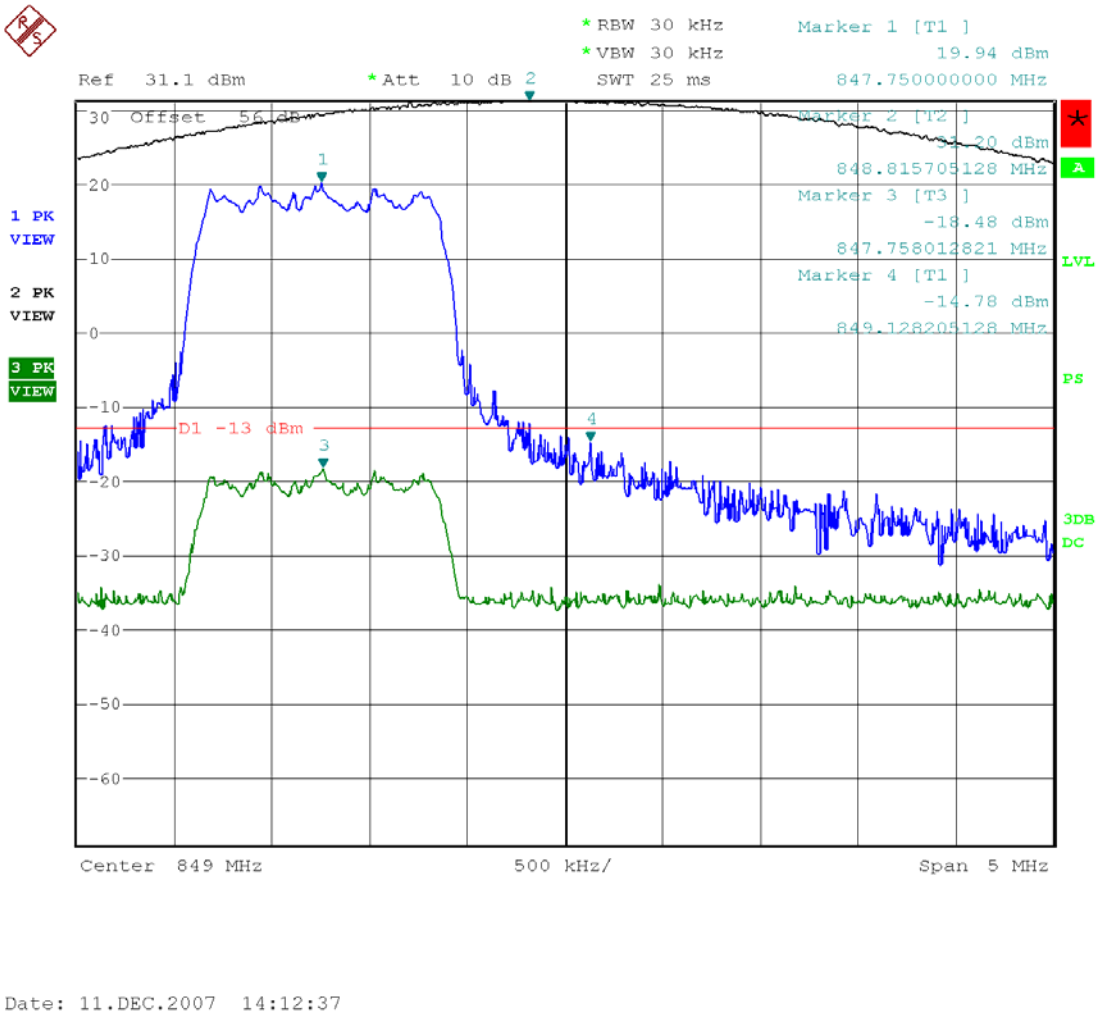


Figure 14: CDMA – In vs. Out 847.75 MHz

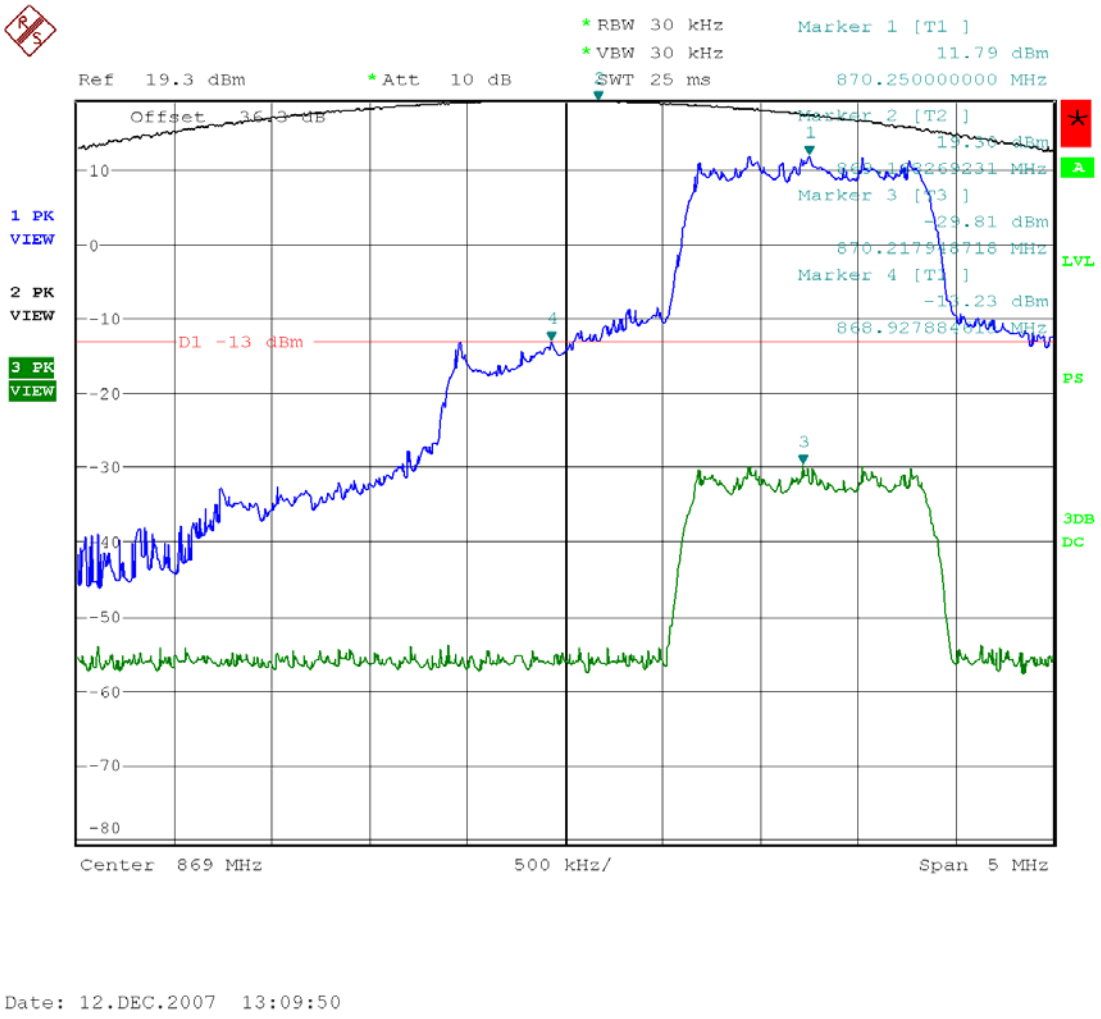


Figure 15: CDMA – In vs. Out 870.25 MHz

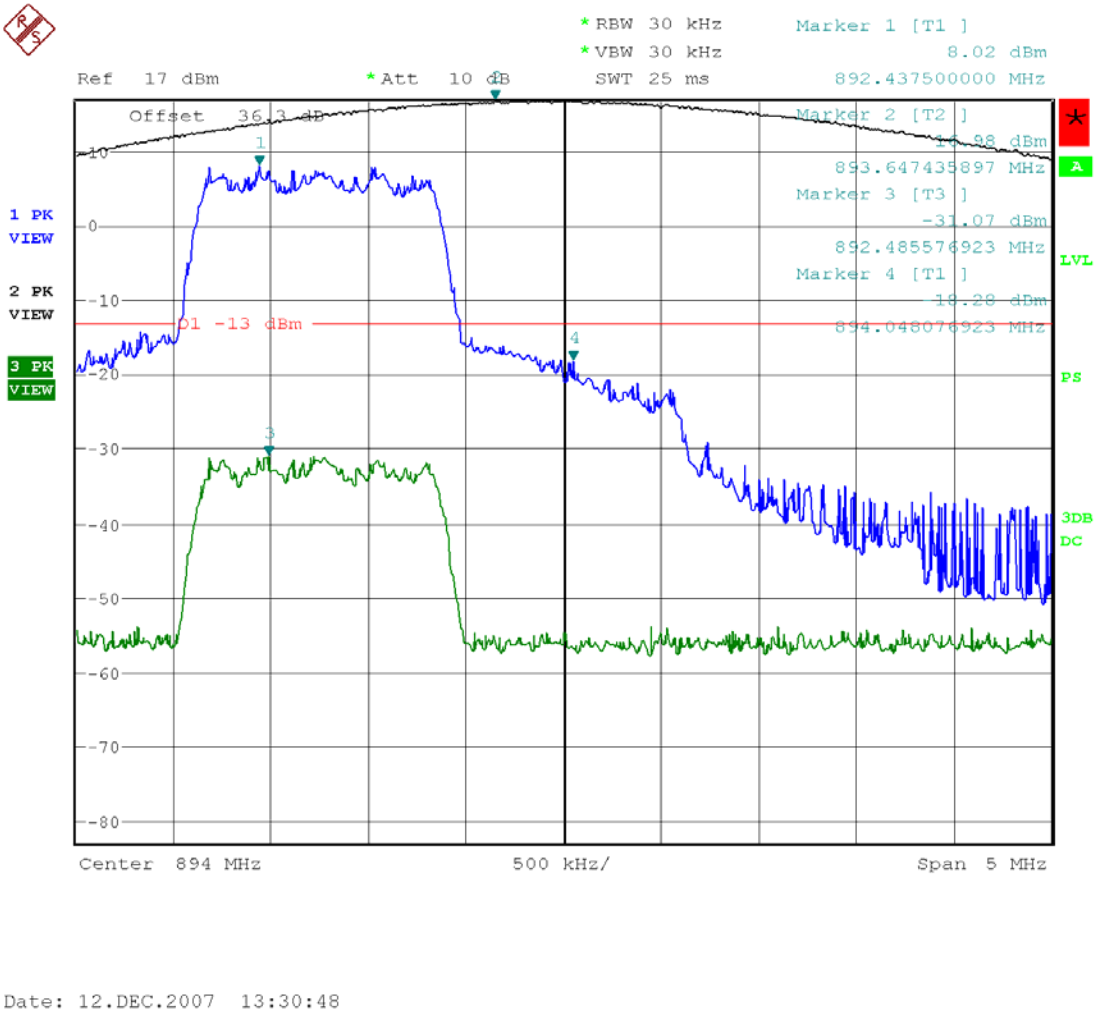


Figure 16: CDMA – In vs. Out 892.75 MHz

Test Data Table 12 – EDGE 800 – Uplink/Downlink

Channel (MHz)	Band-edge Frequency (MHz)	Amplitude level at the band-edge (dBm)	Limit (dBm)	Margin (dB)
824.2	823.99	-15.62	-13	2.62
848.8	849.01	-15.13	-13	2.13
869.2	868.98	-22.28	-13	9.28
893.8	894.01	-27.09	-13	14.09

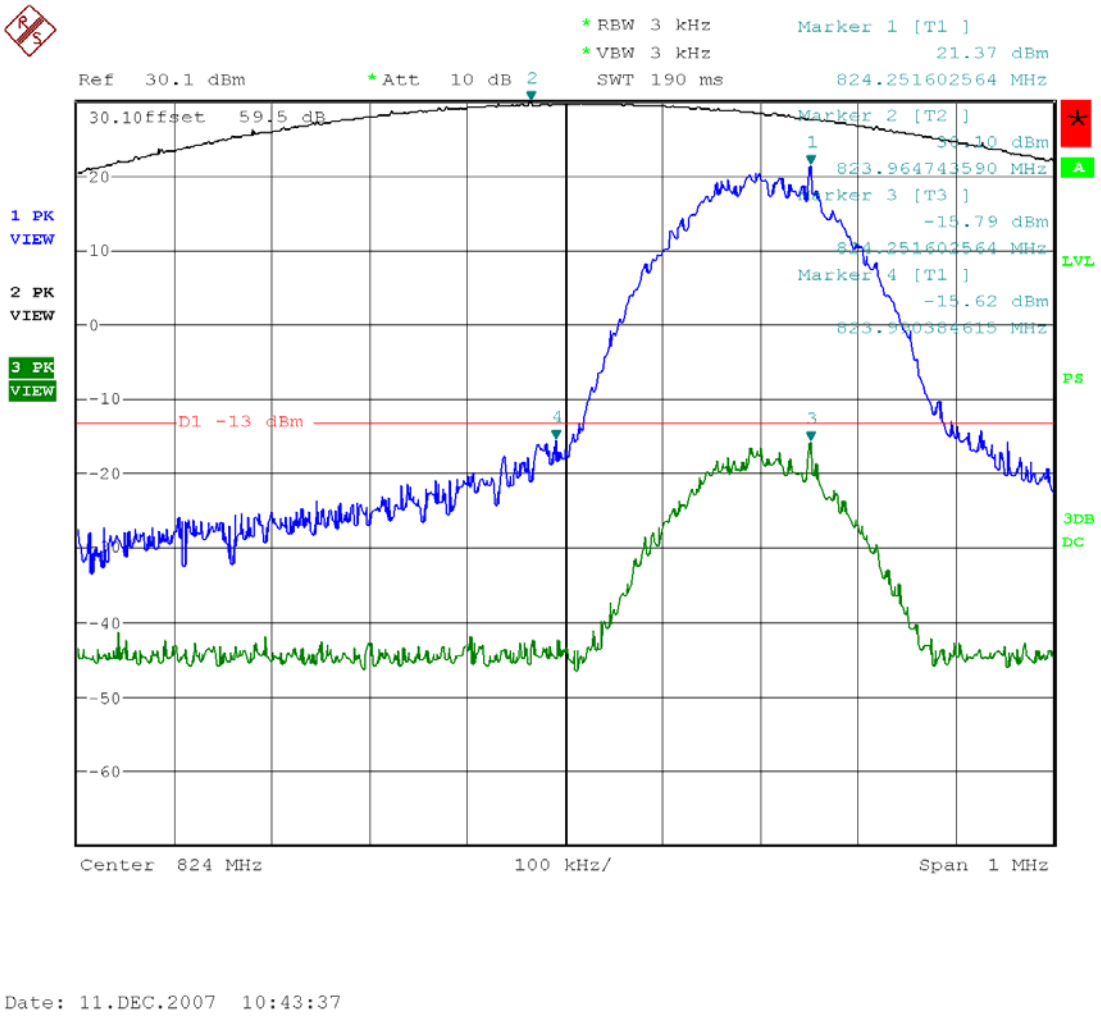


Figure 17: EDGE – In vs. Out 824.20 MHz

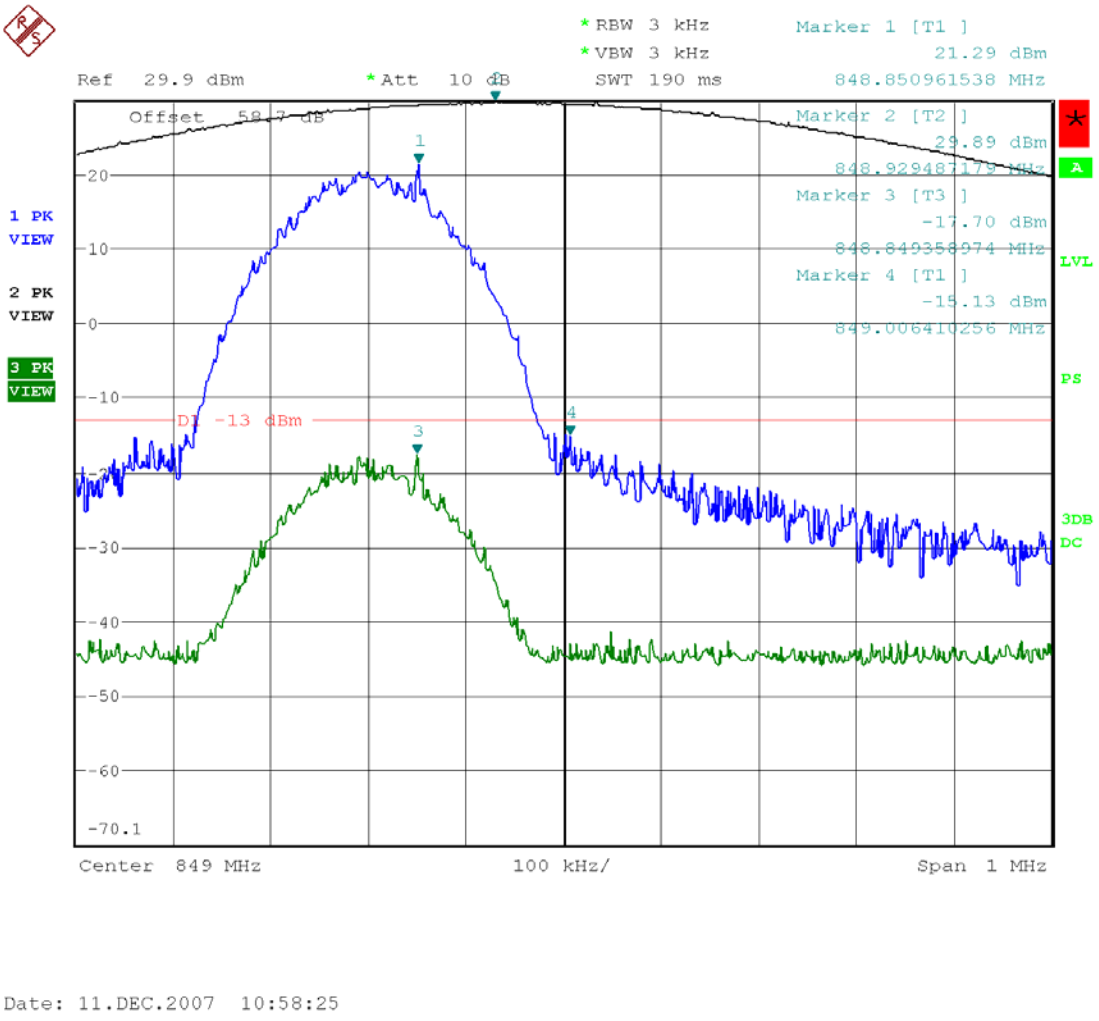


Figure 18: EDGE – In vs. Out 848.80 MHz

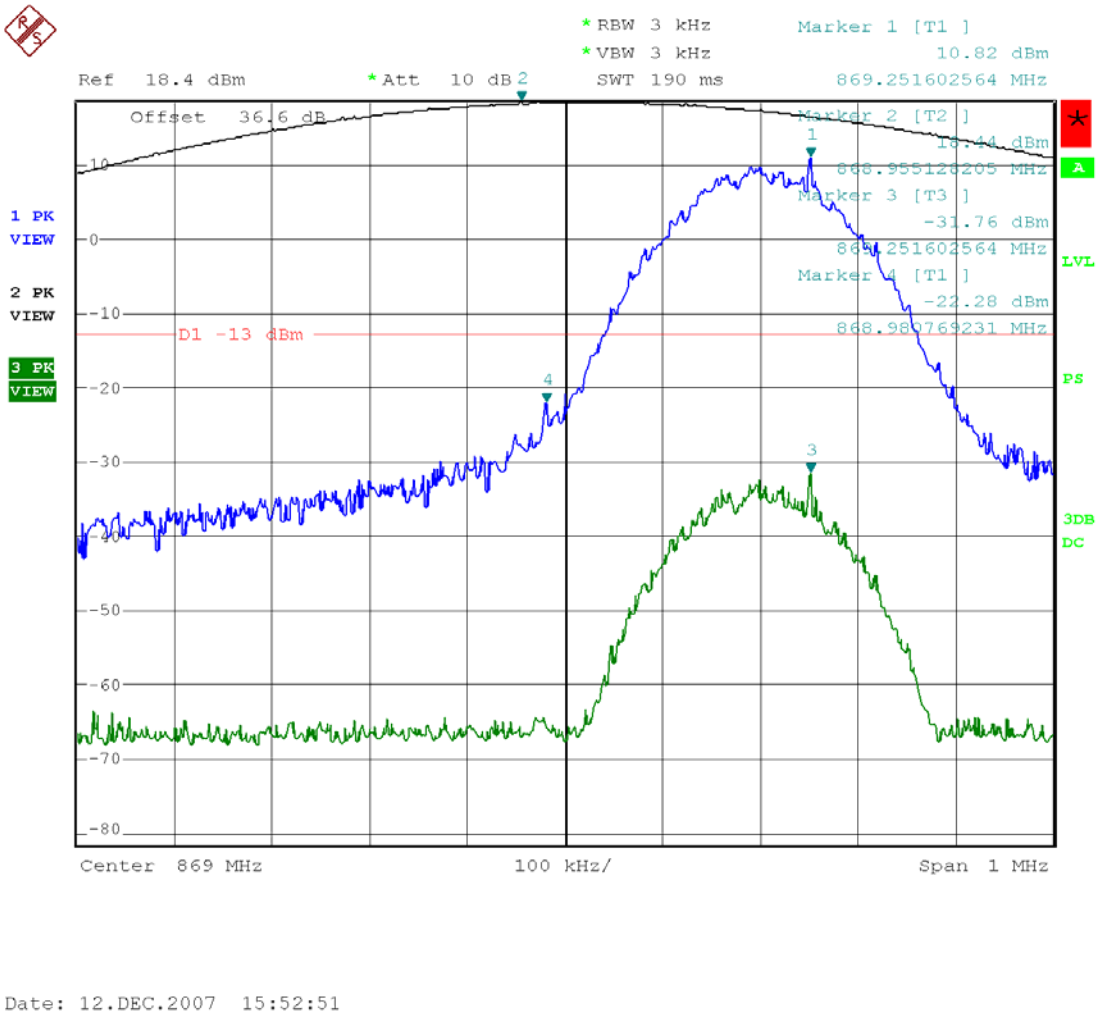


Figure 19: EDGE – In vs. Out 869.20 MHz

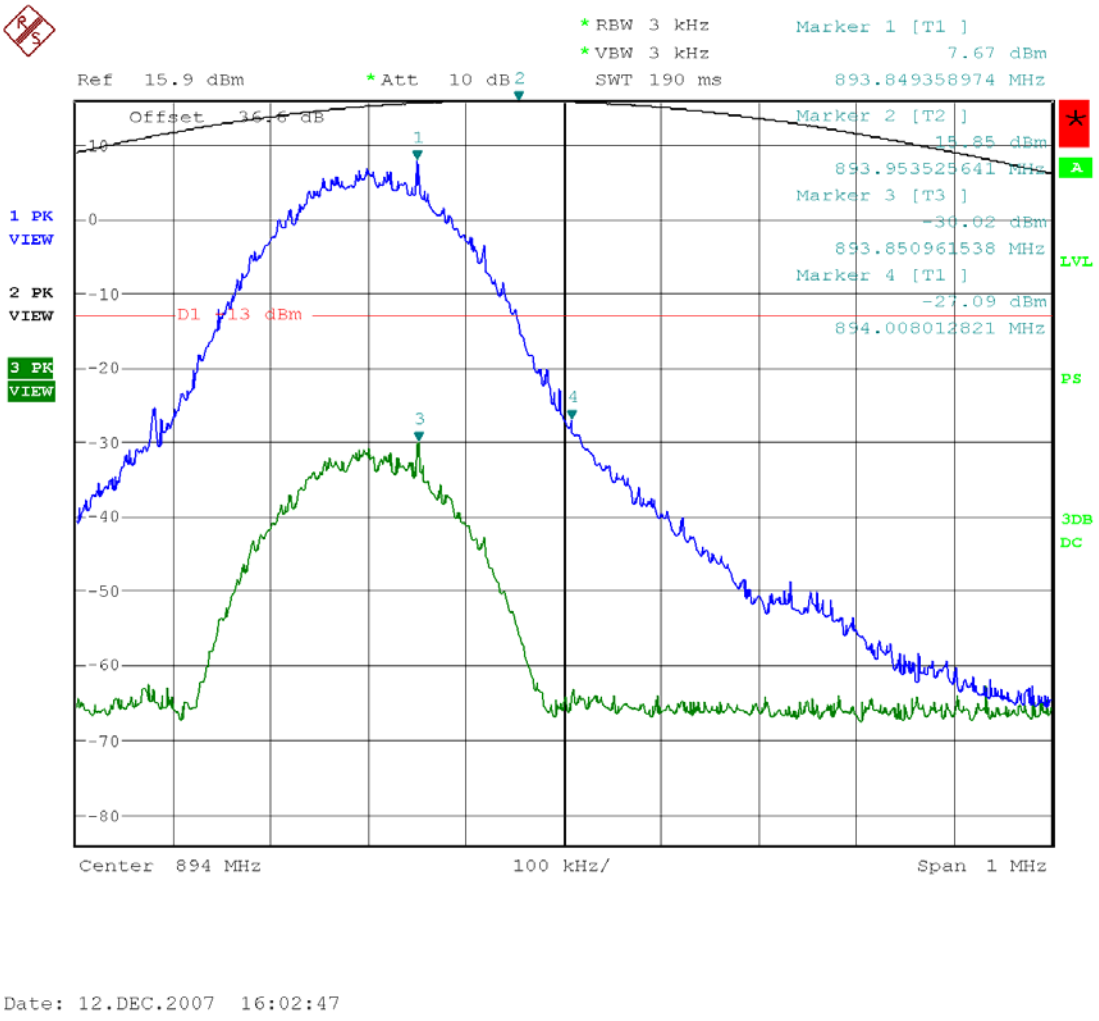


Figure 20: EDGE – In vs. Out 893.80 MHz

Test Data Table 13 – GSM 800 – Uplink/Downlink

Channel (MHz)	Band-edge Frequency (MHz)	Amplitude level at the band-edge (dBm)	Limit (dBm)	Margin (dB)
824.2	823.99	-14.96	-13	1.96
848.8	849.01	-14.55	-13	1.55
869.2	868.97	-24.55	-13	11.55
893.8	894.01	-27.37	-13	14.37

The Reference level on the following plots was calibrated using a 3MHz RBW=VBW.

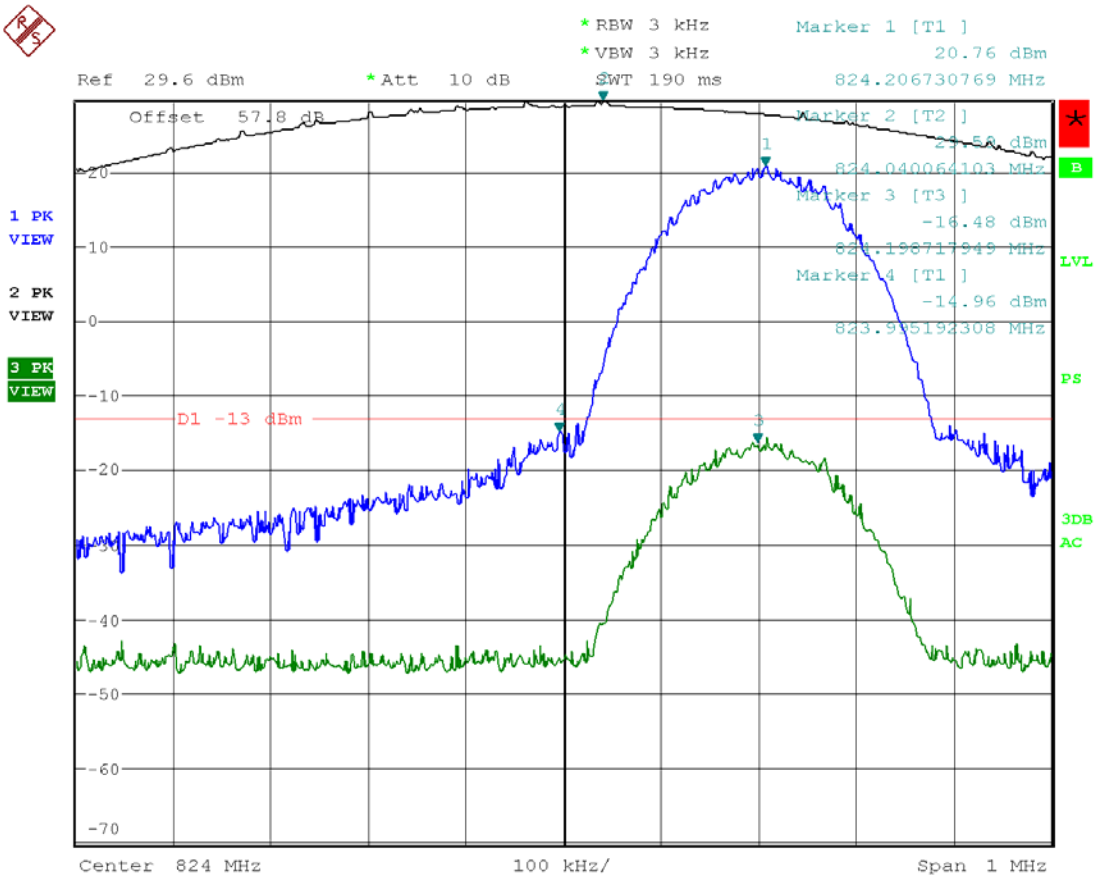


Figure 21: GSM – In vs. Out 824.2 MHz

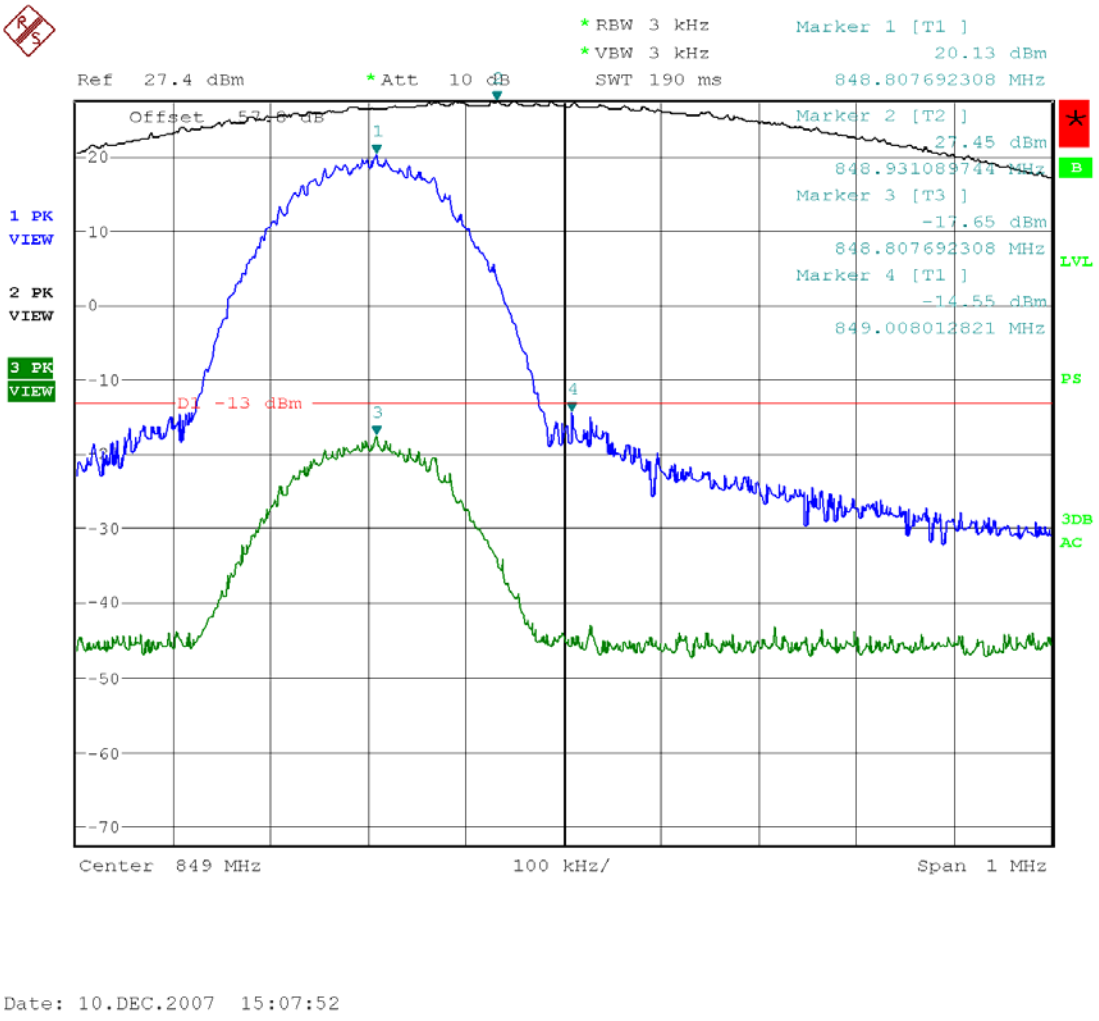


Figure 22: GSM – In vs. Out 848.8 MHz

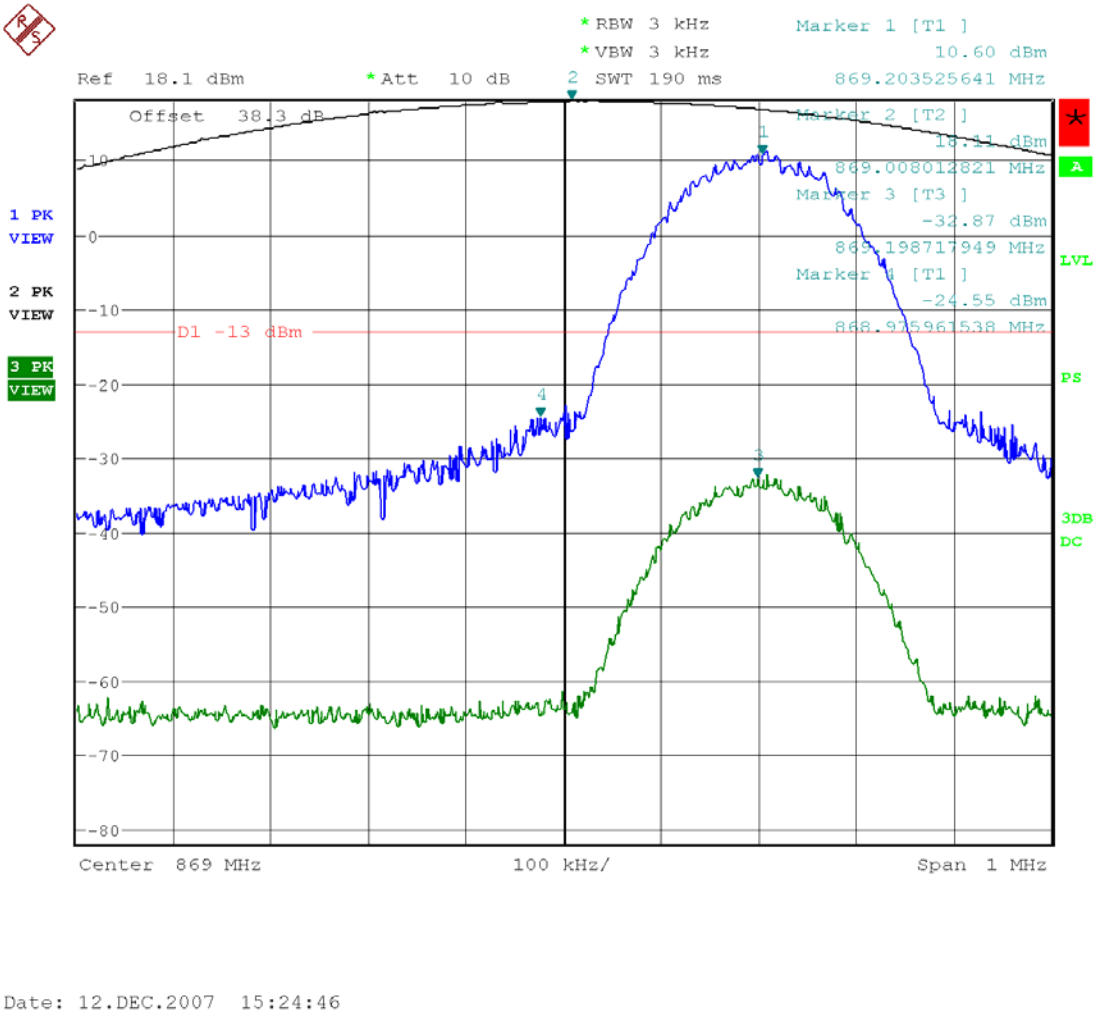


Figure 23: GSM – In vs. Out 869.2MHz

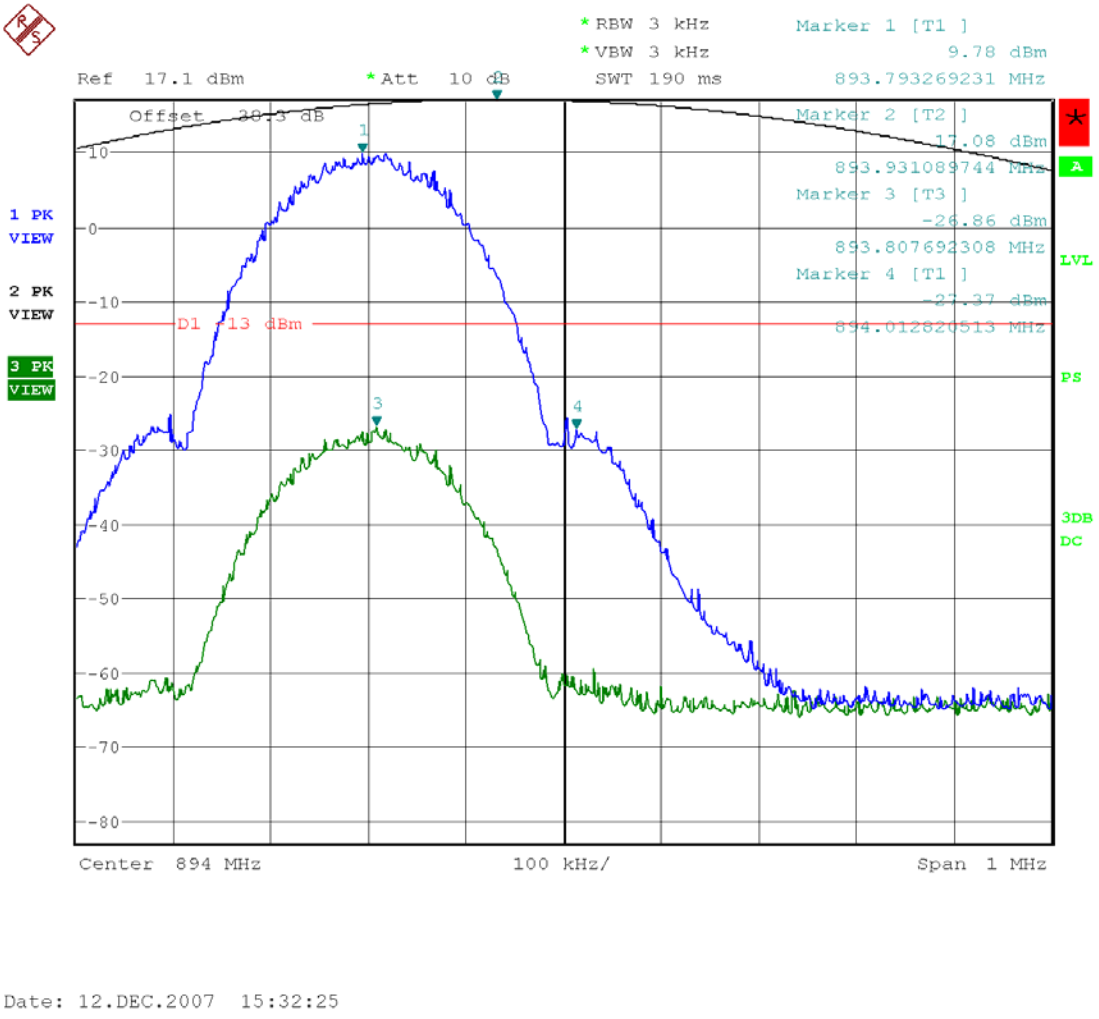


Figure 24: GSM – In vs. Out 893.8MHz

Test Data Table 14 – AMPS 800 – Uplink/Downlink

Channel (MHz)	Band-edge Frequency (MHz)	Amplitude level at the band-edge (dBm)	Limit (dBm)	Margin (dB)
824.1	823.99	-20.55	-13	7.55
848.9	849.02	-18.71	-13	5.71
869.1	868.99	-33.24	-13	20.24
893.9	894.01	-36.81	-13	23.81

The Reference level on the following plots was calibrated using a 3MHz RBW=VBW.

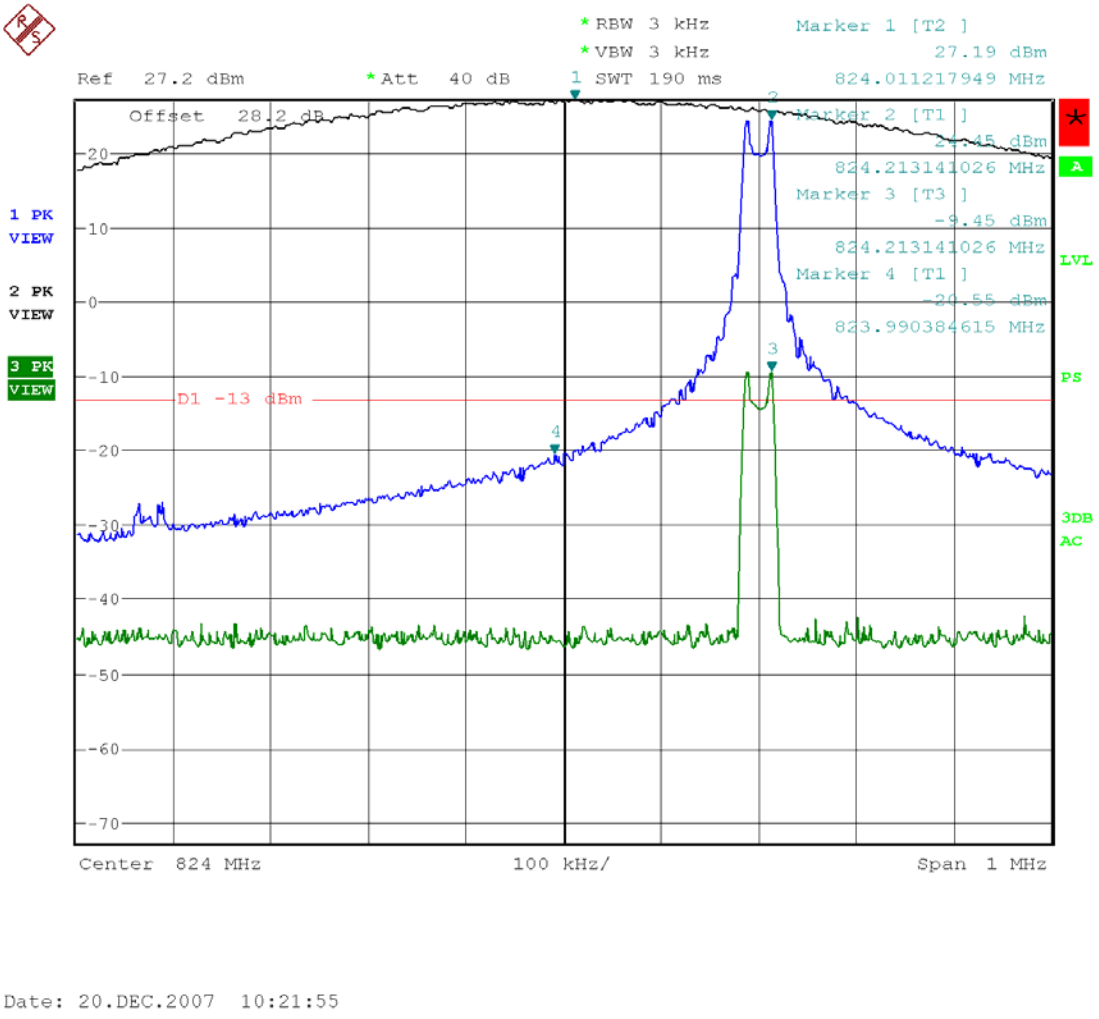


Figure 25: AMPS – In vs. Out 824.20 MHz

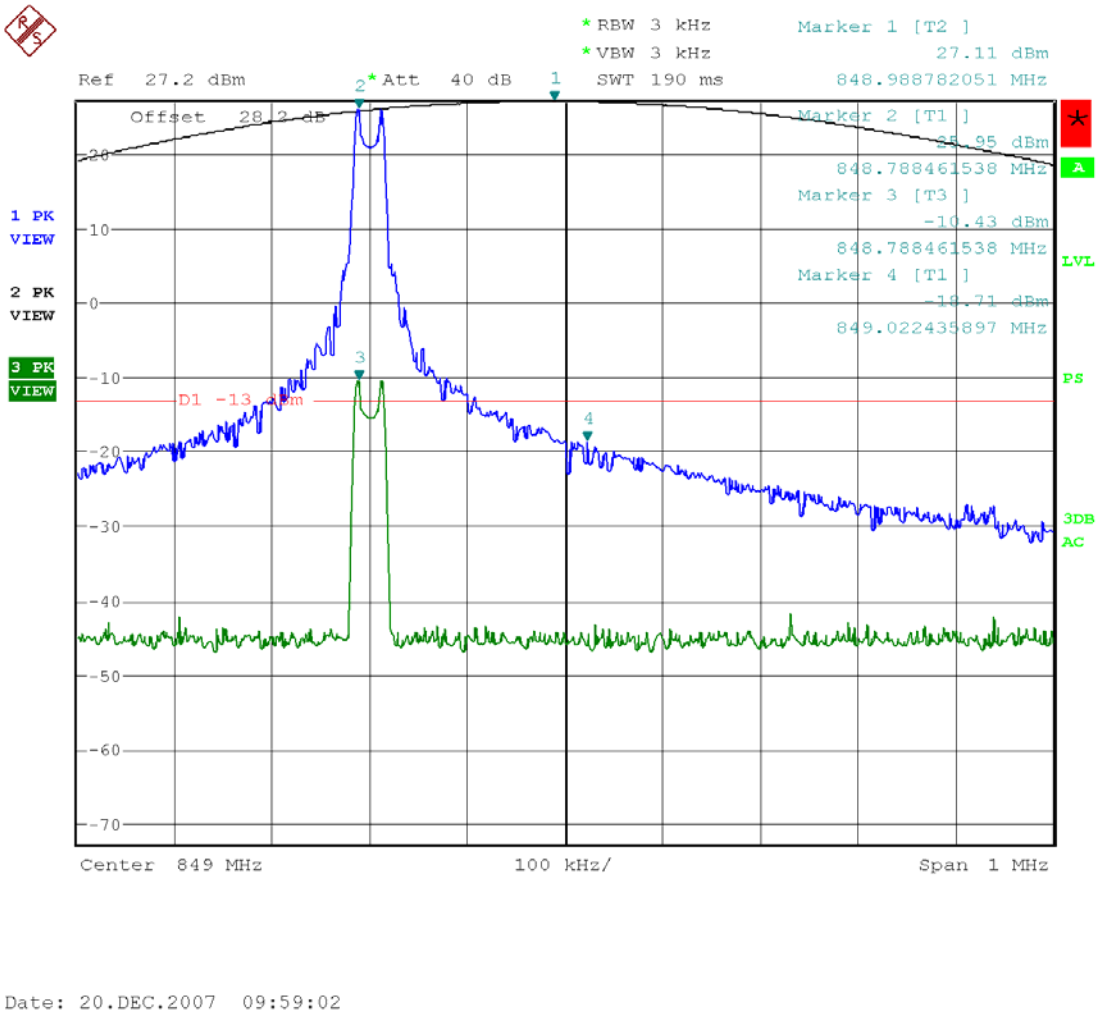


Figure 26: AMPS – In vs. Out 848.80 MHz

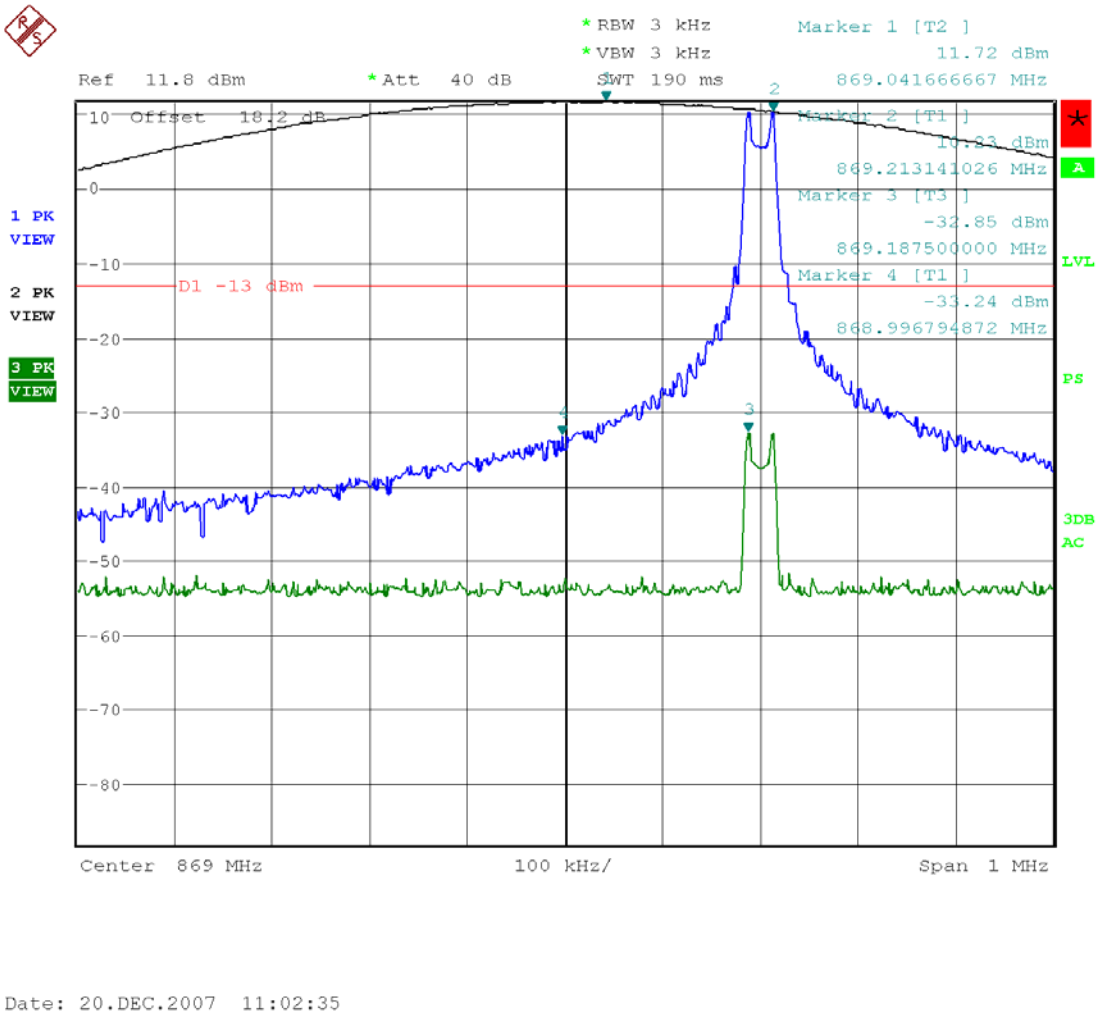


Figure 27: AMPS – In vs. Out 869.20 MHz

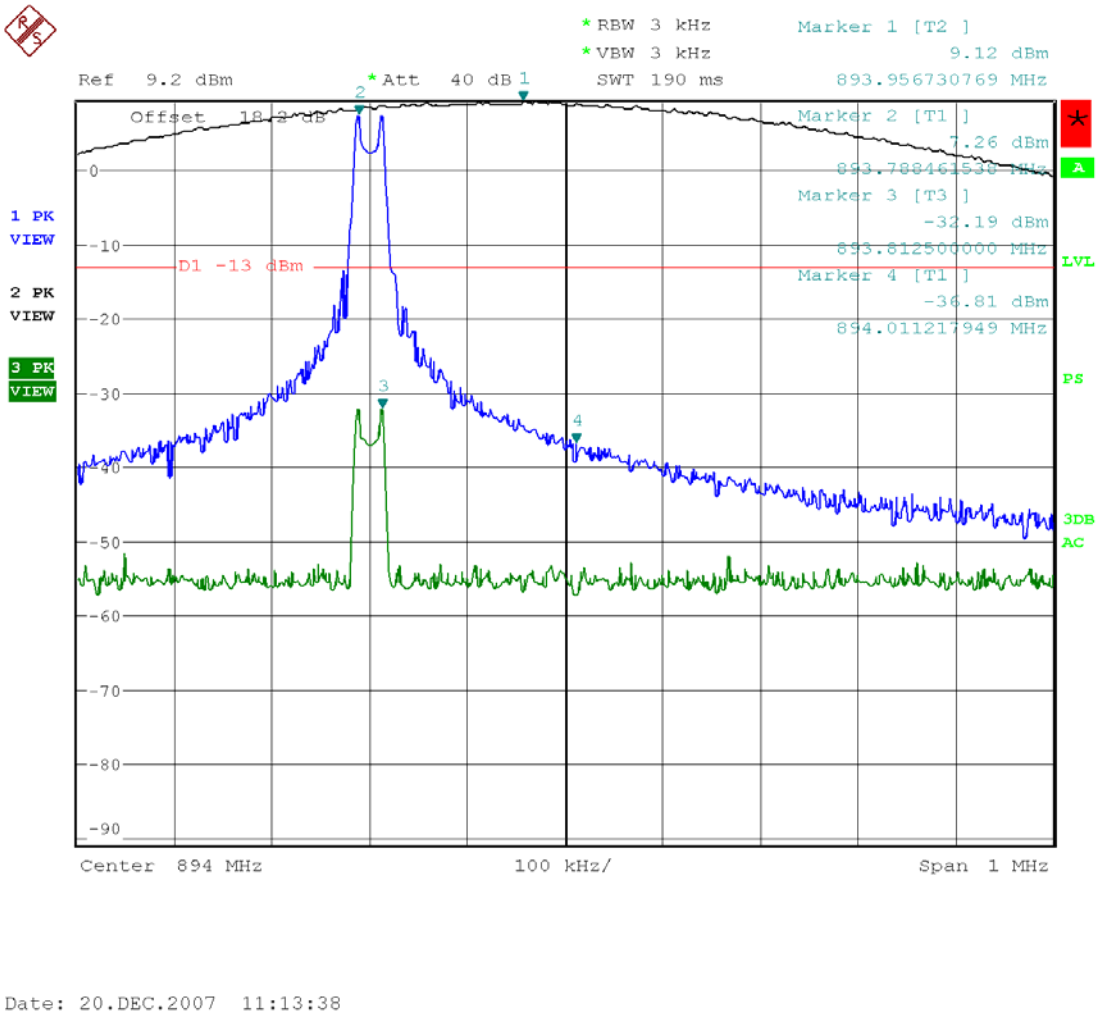


Figure 28: AMPS – In vs. Out 893.80 MHz

INTERMODULATION PRODUCT SPURIOUS EMISSIONS

Rule Parts No.: Pt 2.1051

Requirements: Emissions must be 43 + 10 log (Po) dB below the mean power output of the transmitter or below –13dBm.

All the modulation types were tested using the three-tone test method. EDGE and GSM provided the same test results and only GSM data are presented in this report. The input power to the amplifier was set at maximum drive level by combining the three tones. The three tones were chosen in such a way (1)the third order intermodulation product frequencies are located within the pass band of the DUT and (2) they produce the worst-case emissions out of band.

Test Data: The DUT meets the requirements.

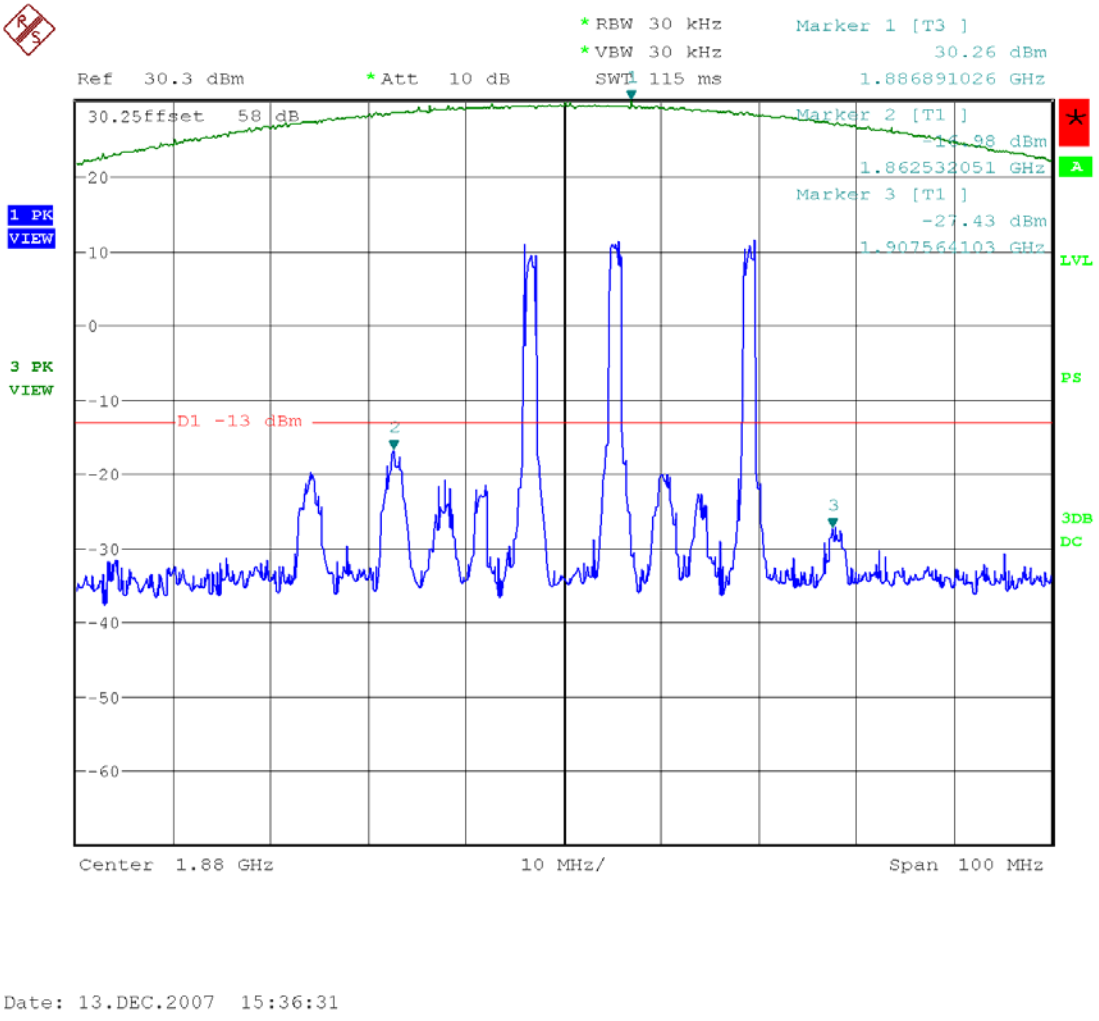


Figure 29: CDMA 3 tones intermodulation - (1850 – 1910) MHz.

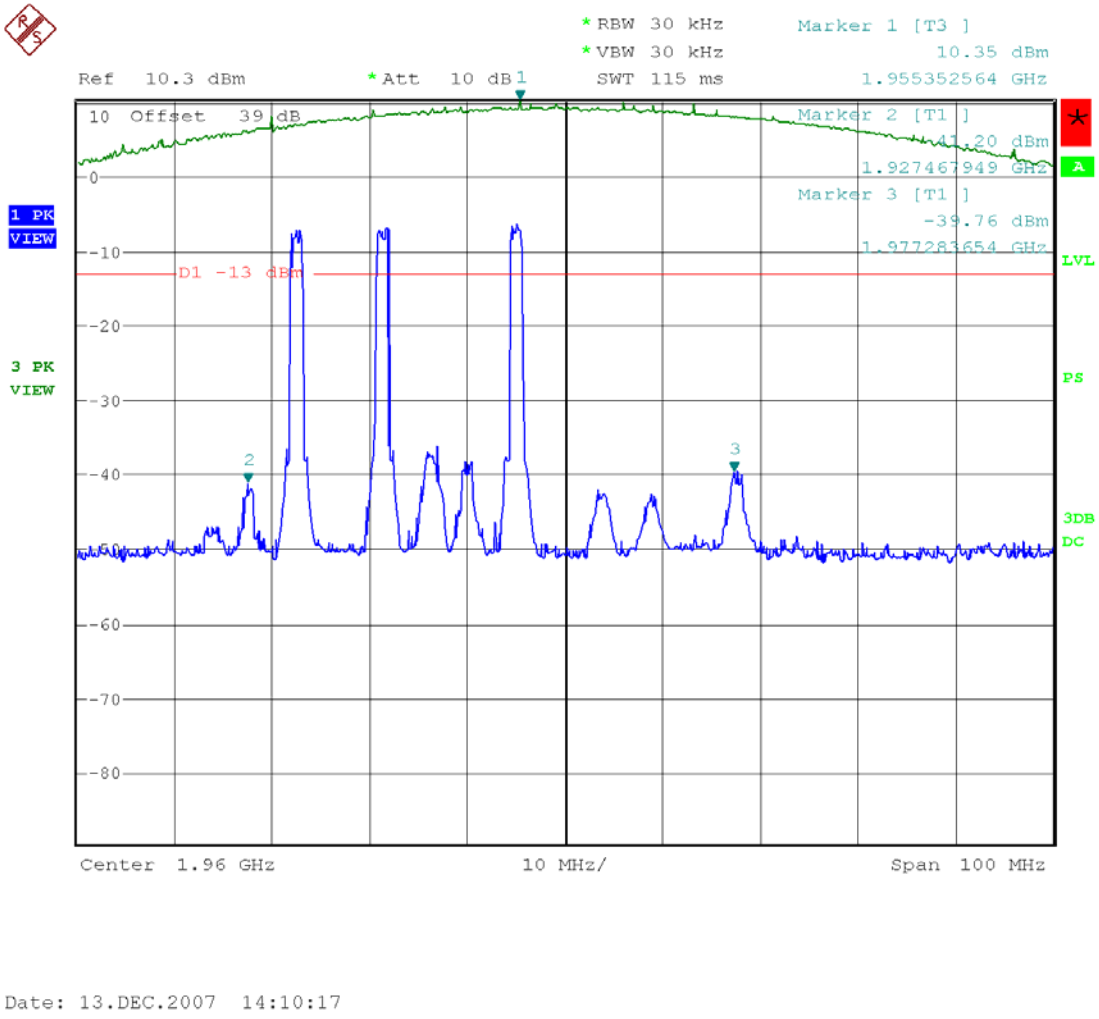


Figure 30: CDMA 3 tones intermodulation - (1930 – 1990) MHz.

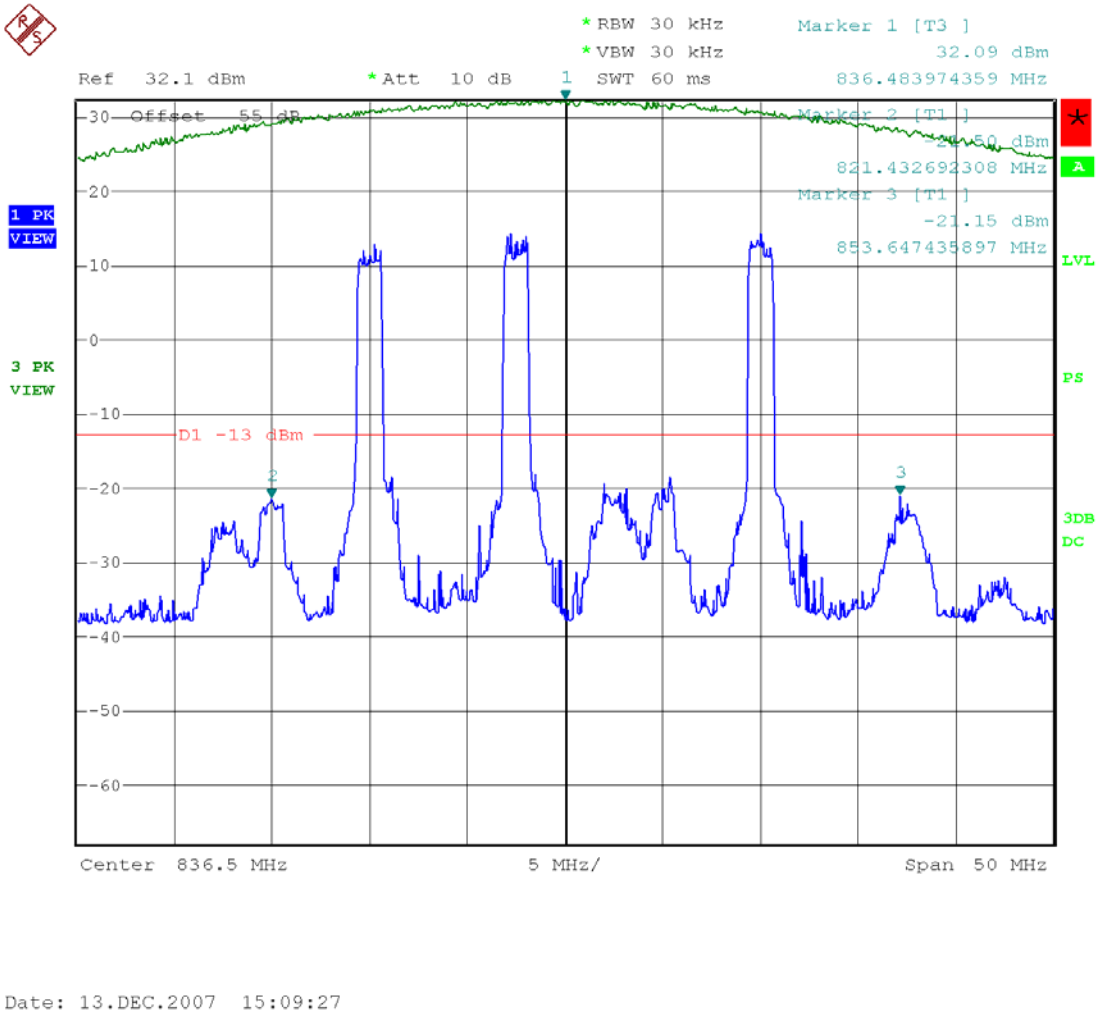


Figure 31: CDMA 3 tones intermodulation – (824 – 849) MHz.

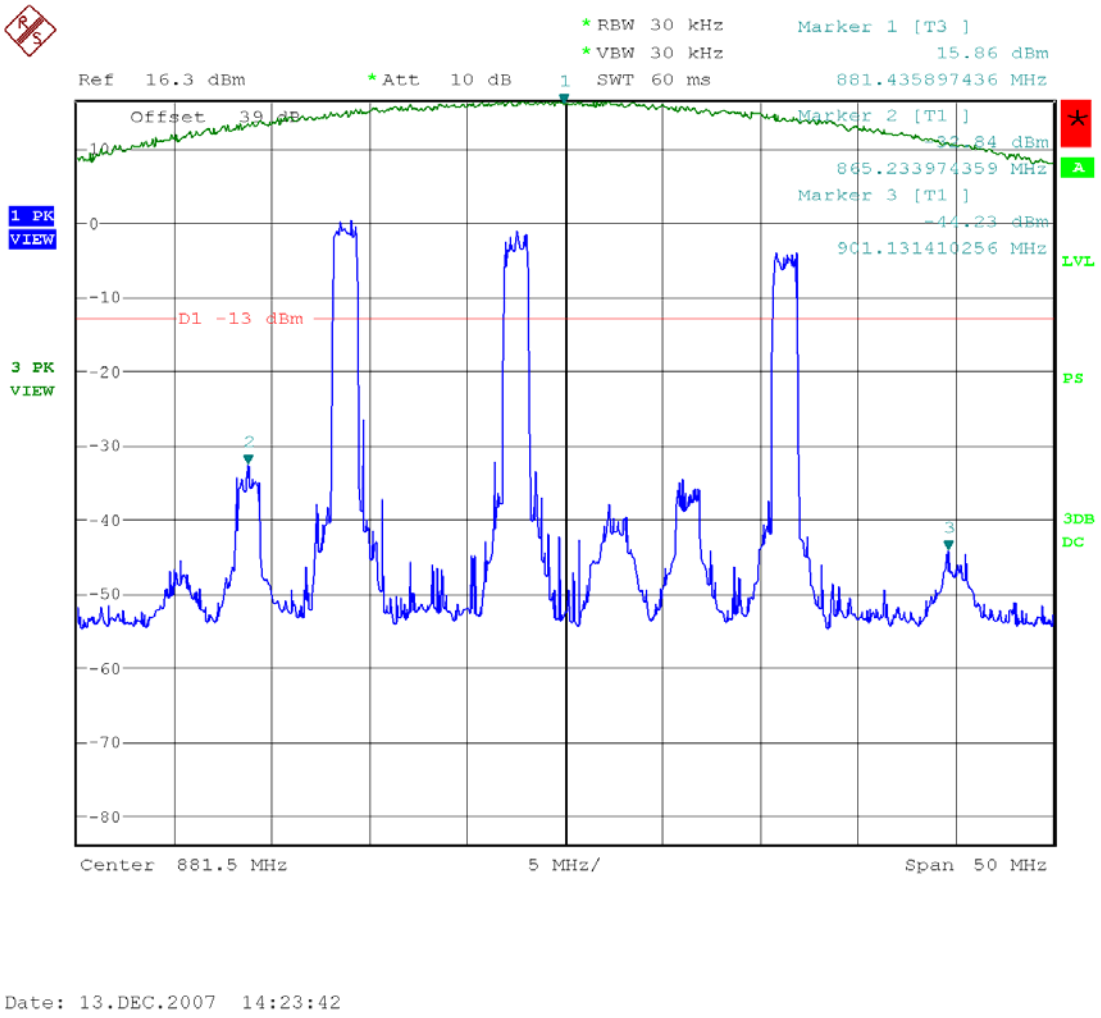


Figure 32: CDMA 3 tones intermodulation - (869 – 894) MHz.

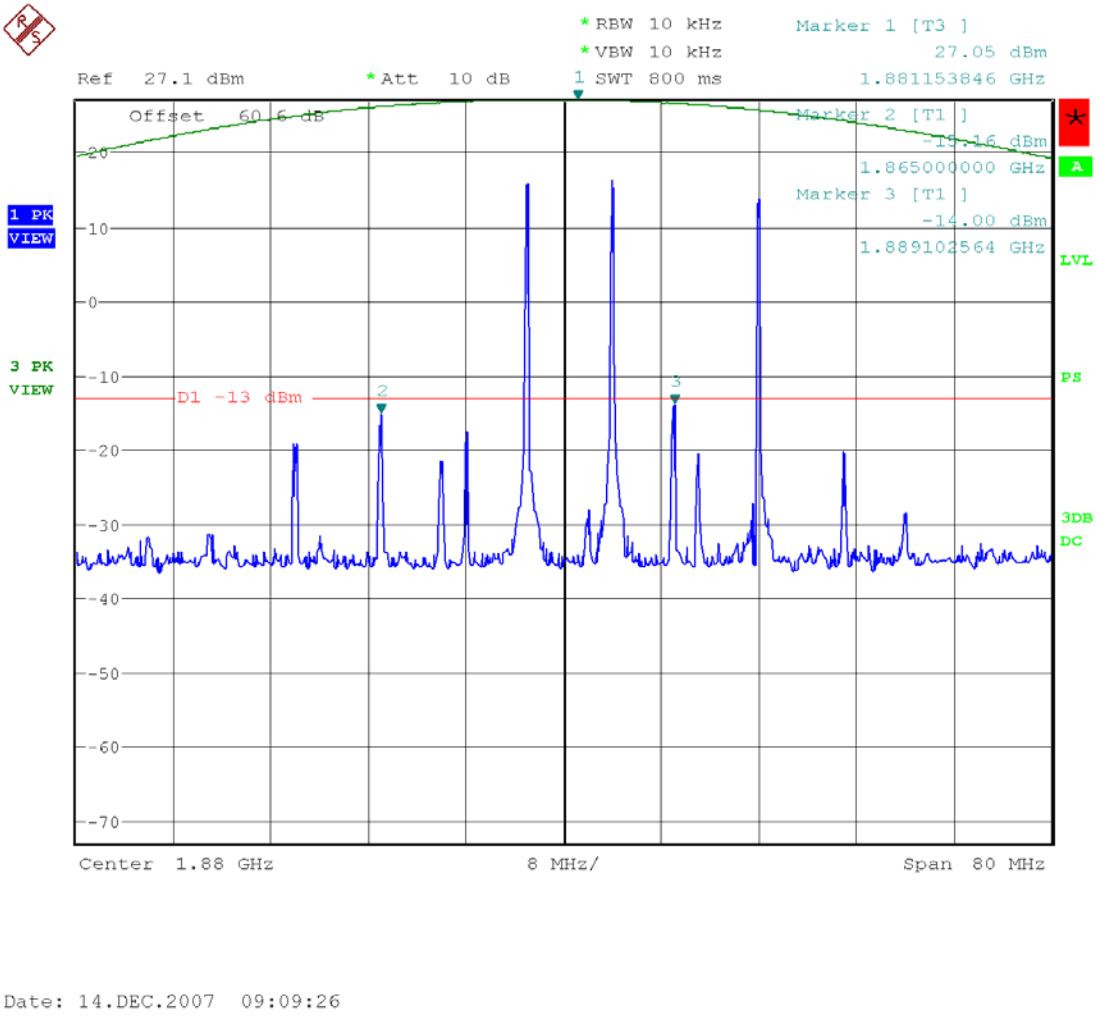


Figure 33: GSM 3 tones intermodulation - (1850 – 1910) MHz

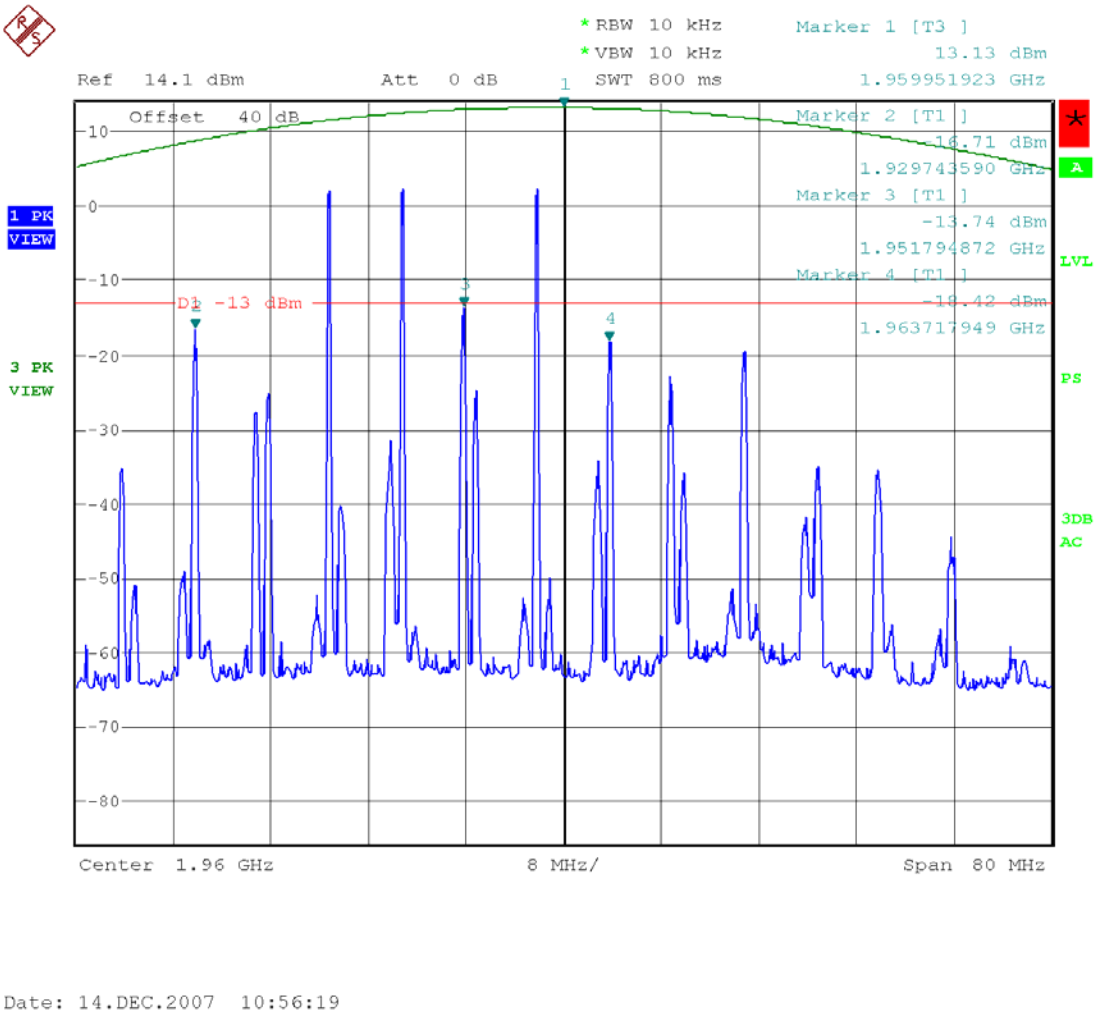


Figure 34: GSM 3 tones intermodulation - (1930 – 1990) MHz

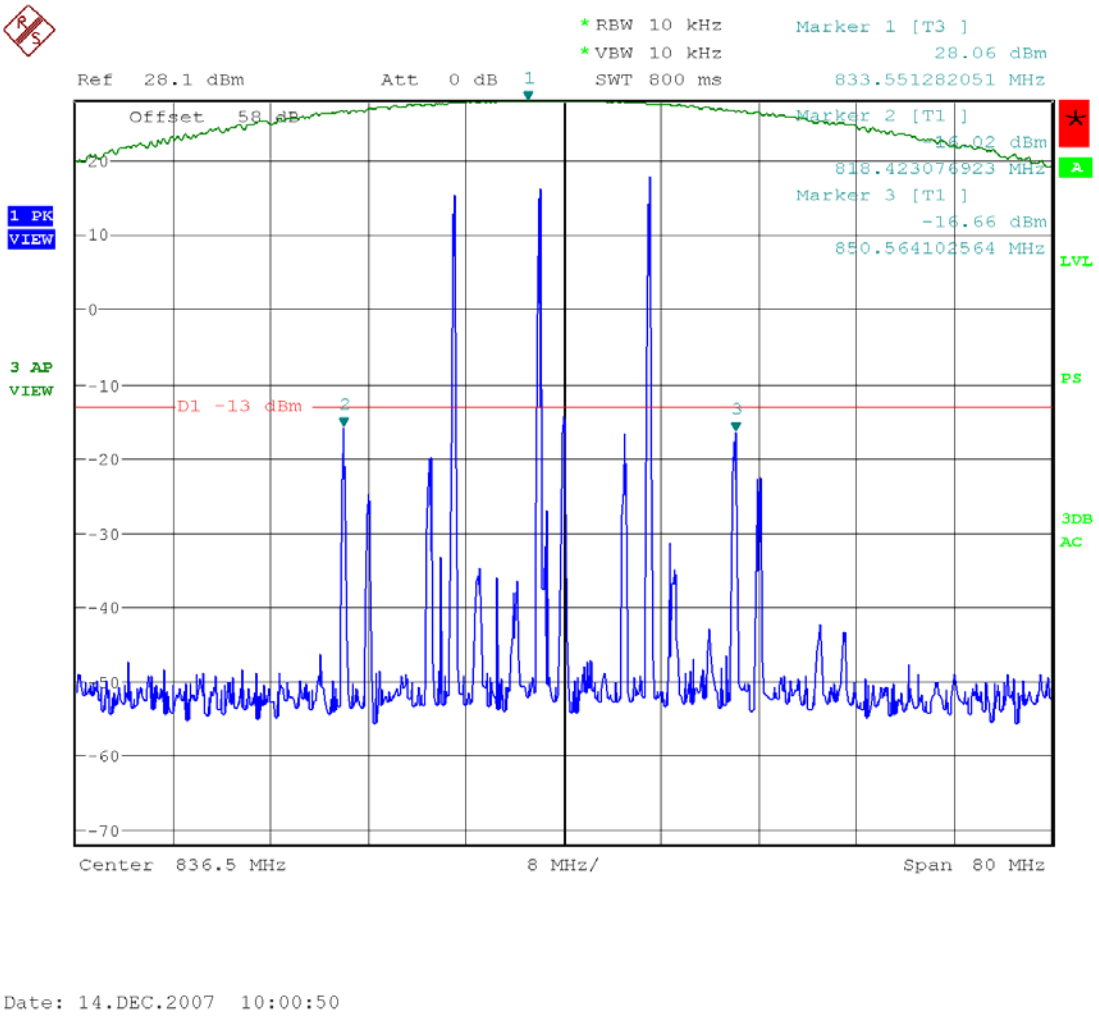


Figure 35: GSM 3 tones intermodulation - (824 – 849) MHz

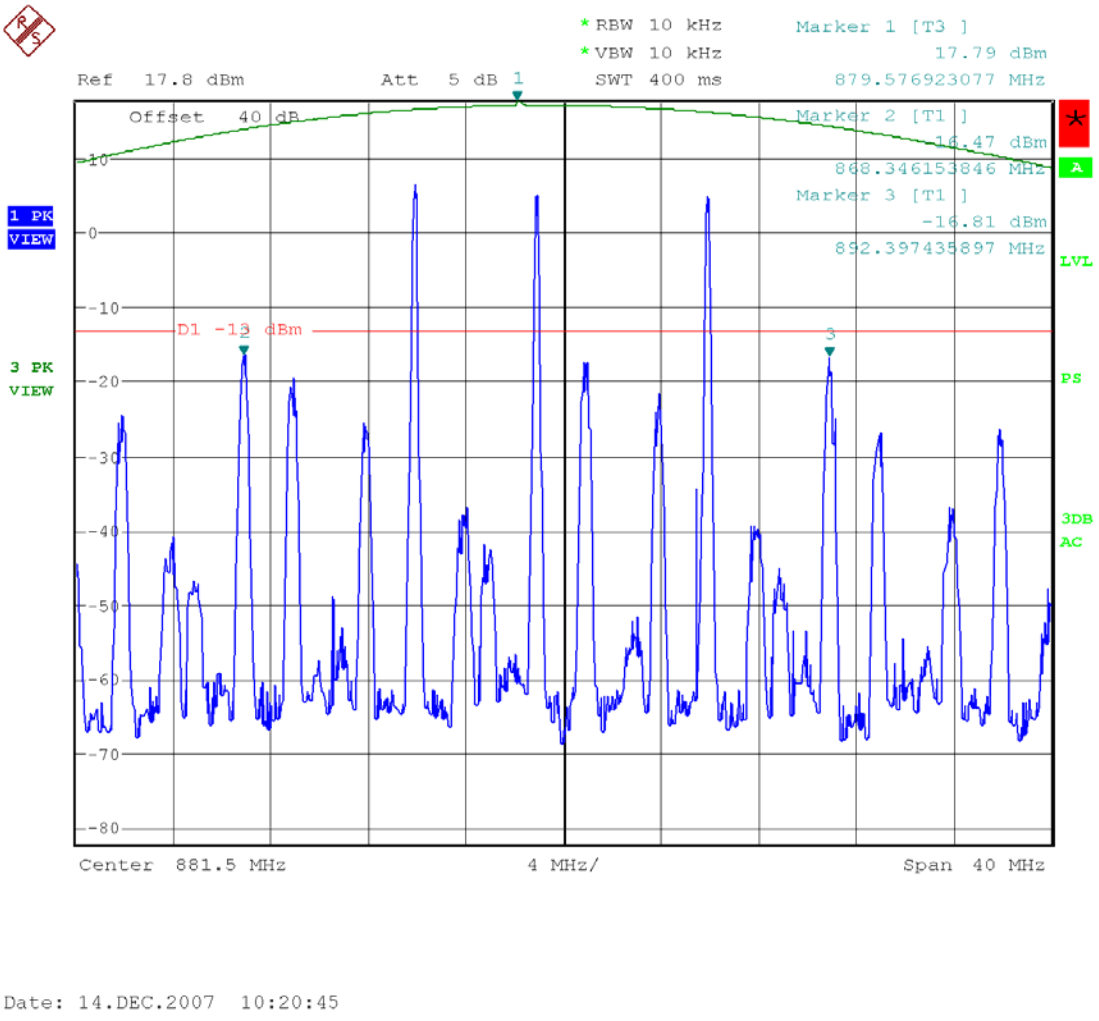


Figure 36: GSM 3 tones intermodulation - (869 – 894) MHz

SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Rule Parts No.: Pt 2.1051

Requirements: Emissions must be 43 +10log (Po) dB below the mean power output of the transmitter:

1850 – 1910 MHz: 43 + 10log(1.55) = 43.2 dBc
1930 – 1990 MHz: 43 + 10log(0.07) = 41.8 dBc

Test Result: The DUT appears to meet the requirements.

Test Data Table 15 – Conducted Emissions – CDMA 1900 – Uplink

Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)
1851.25	0	1880.00	0	1908.75	0
3702.50	46.86	3760.00	45.76	3817.50	45.2
5553.75	77.29	5640.00	86.20	5726.25	75.38
7405.00	>62.0	7520.00	>62.0	7635.00	>62.0
9256.25	>62.0	9400.00	>62.0	9543.75	>62.0
11107.50	>62.0	11280.00	>62.0	11452.50	>62.0
12958.75	>62.0	13160.00	>62.0	13361.25	>62.0
14810.00	>62.0	15040.00	>62.0	15270.00	>62.0
16661.25	>62.0	16920.00	>62.0	17178.75	>62.0
18512.50	>62.0	18800.00	>62.0	19087.50	>62.0

Test Data Table 16 – Conducted Emissions – CDMA 1900 – Downlink

Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	DB Below Carrier (dBc)
1931.25	0	1960.00	0	1988.75	0
3862.50	53.56	3920.00	50.11	3977.50	51.52
5793.75	>60.0	5880.00	>60.0	5966.25	>60.0
7725.00	>60.0	7840.00	>60.0	7955.00	>60.0
9656.25	>60.0	9800.00	>60.0	9943.75	>60.0
11587.50	>60.0	11760.00	>60.0	11932.50	>60.0
13518.75	>60.0	13720.00	>60.0	13921.25	>60.0
15450.00	>60.0	15680.00	>60.0	15910.00	>60.0
17381.25	>60.0	17640.00	>60.0	17898.75	>60.0
19312.50	>60.0	19600.00	>60.0	19887.50	>60.0

Test Data Table 17 – Conducted Emissions – GSM 1900 - Uplink

Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)
1850.20	0	1880.00	0	1909.80	0
3700.40	43.43	3760.00	45.44	3819.60	44.19
5550.60	62.35	5640.00	61.6	5729.40	61.86
7400.80	>58.0	7520.00	>58.0	7639.20	>58.0
9251.00	>58.0	9400.00	>58.0	9549.00	>58.0
11101.20	>58.0	11280.00	>58.0	11458.80	>58.0
12951.40	>58.0	13160.00	>58.0	13368.60	>58.0
14801.60	>58.0	15040.00	>58.0	15278.40	>58.0
16651.80	>58.0	16920.00	>58.0	17188.20	>58.0
18502.00	>58.0	18800.00	>58.0	19098.00	>58.0

Test Data Table 18 – Conducted Emissions – GSM 1900 - Downlink

Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)
1930.20	0	1960.00	0	1989.80	0
3860.40	58.31	3920.00	59.13	3979.60	56.77
5790.60	59.9	5880.00	59.24	5969.40	56.67
7720.80	>56.0	7840.00	>56.0	7959.20	>56.0
9651.00	>56.0	9800.00	>56.0	9949.00	>56.0
11581.20	>56.0	11760.00	>56.0	11938.80	>56.0
13511.40	>56.0	13720.00	>56.0	13928.60	>56.0
15441.60	>56.0	15680.00	>56.0	15918.40	>56.0
17371.80	>56.0	17640.00	>56.0	17908.20	>56.0
19302.00	>56.0	19600.00	>56.0	19898.00	>56.0

Test Data Table 19 – Conducted Emissions – CDMA 800 - Uplink

Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)
825.25	0	836.50	0	847.75	0
1650.50	72.69	1673.00	67.81	1695.50	67.86
2475.75	74.1	2509.50	73.77	2543.25	73.63
3301.00	>62.0	3346.00	>62.0	3391.00	>62.0
4126.25	>62.0	4182.50	>62.0	4238.75	>62.0
4951.50	>62.0	5019.00	>62.0	5086.50	>62.0
5776.75	>62.0	5855.50	>62.0	5934.25	>62.0
6602.00	>62.0	6692.00	>62.0	6782.00	>62.0
7427.25	>62.0	7528.50	>62.0	7629.75	>62.0
8252.50	>62.0	8365.00	>62.0	8477.50	>62.0

Test Data Table 20 – Conducted Emissions – CDMA 800 - Downlink

Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)
870.25	0	881.50	0	892.75	0
1740.50	59.98	1763.00	56.75	1785.50	56.46
2610.75	58.36	2644.50	56.06	2678.25	54.65
3481.00	>60.0	3526.00	>60.0	3571.00	>60.0
4351.25	>60.0	4407.50	>60.0	4463.75	>60.0
5221.50	>60.0	5289.00	>60.0	5356.50	>60.0
6091.75	>60.0	6170.50	73.62	6249.25	>60.0
6962.00	>60.0	7052.00	>60.0	7142.00	>60.0
7832.25	>60.0	7933.50	>60.0	8034.75	>60.0
8702.50	>60.0	8815.00	>60.0	8927.50	>60.0

Test Data Table 21 – Conducted Emissions – GSM 800 – Uplink

Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)
824.20	0	836.50	0	848.80	0
1648.40	74.7	1673.00	68.27	1697.60	73.53
2472.60	75.22	2509.50	75.73	2546.40	73.9
3296.80	>58.0	3346.00	>58.0	3395.20	>58.0
4121.00	>58.0	4182.50	>58.0	4244.00	>58.0
4945.20	>58.0	5019.00	>58.0	5092.80	>58.0
5769.40	>58.0	5855.50	>58.0	5941.60	>58.0
6593.60	>58.0	6692.00	>58.0	6790.40	>58.0
7417.80	>58.0	7528.50	>58.0	7639.20	>58.0
8242.00	>58.0	8365.00	>58.0	8488.00	>58.0

Test Data Table 22 – Conducted Emissions – GSM 800 - Downlink

Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)
869.20	0	881.50	0	893.80	0
1738.40	56.21	1763.00	52.06	1787.60	52.78
2607.60	>56.0	2644.50	>56.0	2681.40	>56.0
3476.80	>56.0	3526.00	>56.0	3575.20	>56.0
4346.00	>56.0	4407.50	>56.0	4469.00	>56.0
5215.20	>56.0	5289.00	>56.0	5362.80	>56.0
6084.40	>56.0	6170.50	>56.0	6256.60	>56.0
6953.60	>56.0	7052.00	>56.0	7150.40	>56.0
7822.80	>56.0	7933.50	>56.0	8044.20	>56.0
8692.00	>56.0	8815.00	>56.0	8938.00	>56.0

Test Data Table 23 – Conducted Emissions – AMPS 800 - Uplink

Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)
824.20	0	836.50	0	848.80	0
1648.40	71.3	1673.00	72.28	1697.60	71.21
2472.60	68.49	2509.50	68.99	2546.40	66.9
3296.80	>58.0	3346.00	>58.0	3395.20	>58.0
4121.00	>58.0	4182.50	>58.0	4244.00	>58.0
4945.20	>58.0	5019.00	>58.0	5092.80	>58.0
5769.40	>58.0	5855.50	>58.0	5941.60	>58.0
6593.60	>58.0	6692.00	>58.0	6790.40	>58.0
7417.80	>58.0	7528.50	>58.0	7639.20	>58.0
8242.00	>58.0	8365.00	>58.0	8488.00	>58.0

Test Data Table 24 – Conducted Emissions – AMPS 800 – Downlink

Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)	Emission Frequency MHz	dB Below Carrier (dBc)
869.20	0	881.50	0	893.80	0
1738.40	64.98	1763.00	64.79	1787.60	60.97
2607.60	61.73	2644.50	62.34	2681.40	60.04
3476.80	>56.0	3526.00	>56.0	3575.20	>56.0
4346.00	>56.0	4407.50	>56.0	4469.00	>56.0
5215.20	>56.0	5289.00	>56.0	5362.80	>56.0
6084.40	>56.0	6170.50	>56.0	6256.60	>56.0
6953.60	>56.0	7052.00	>56.0	7150.40	>56.0
7822.80	>56.0	7933.50	>56.0	8044.20	>56.0
8692.00	>56.0	8815.00	>56.0	8938.00	>56.0

OUT OF BAND REJECTION: FREQUENCY RESPONSE

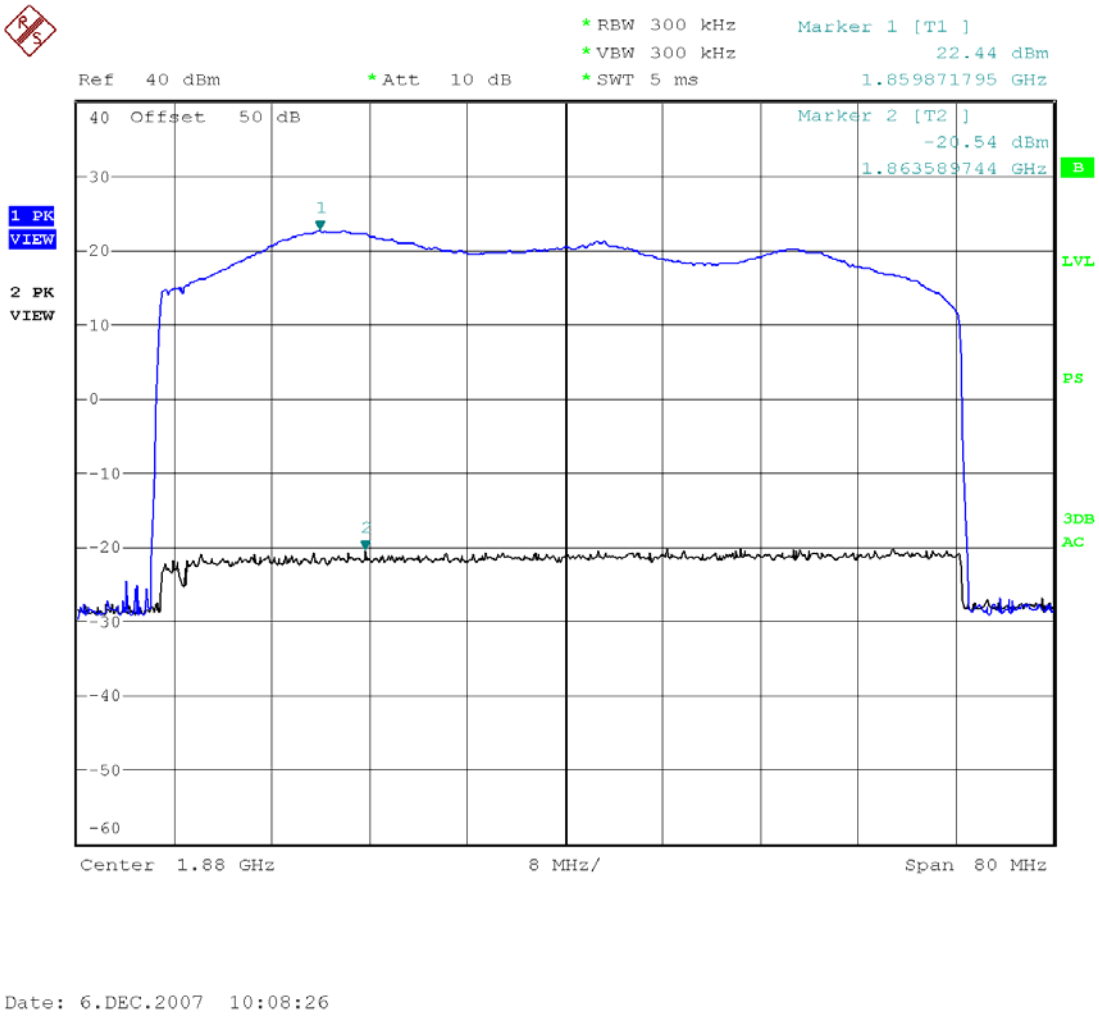


Figure 37. Amplifier Frequency response (1850 – 1910) MHz band

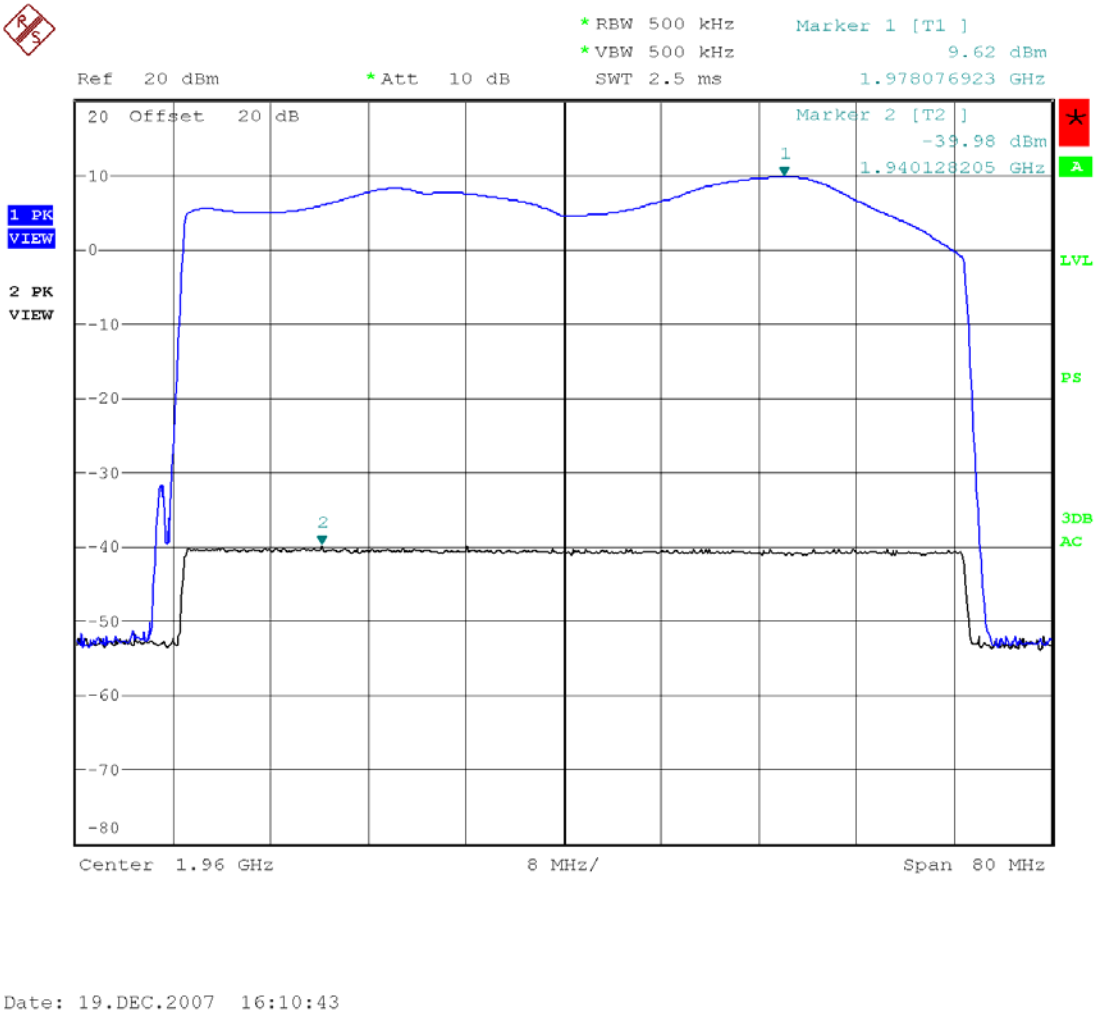


Figure 38. Amplifier frequency response (1930 – 1990) MHz band

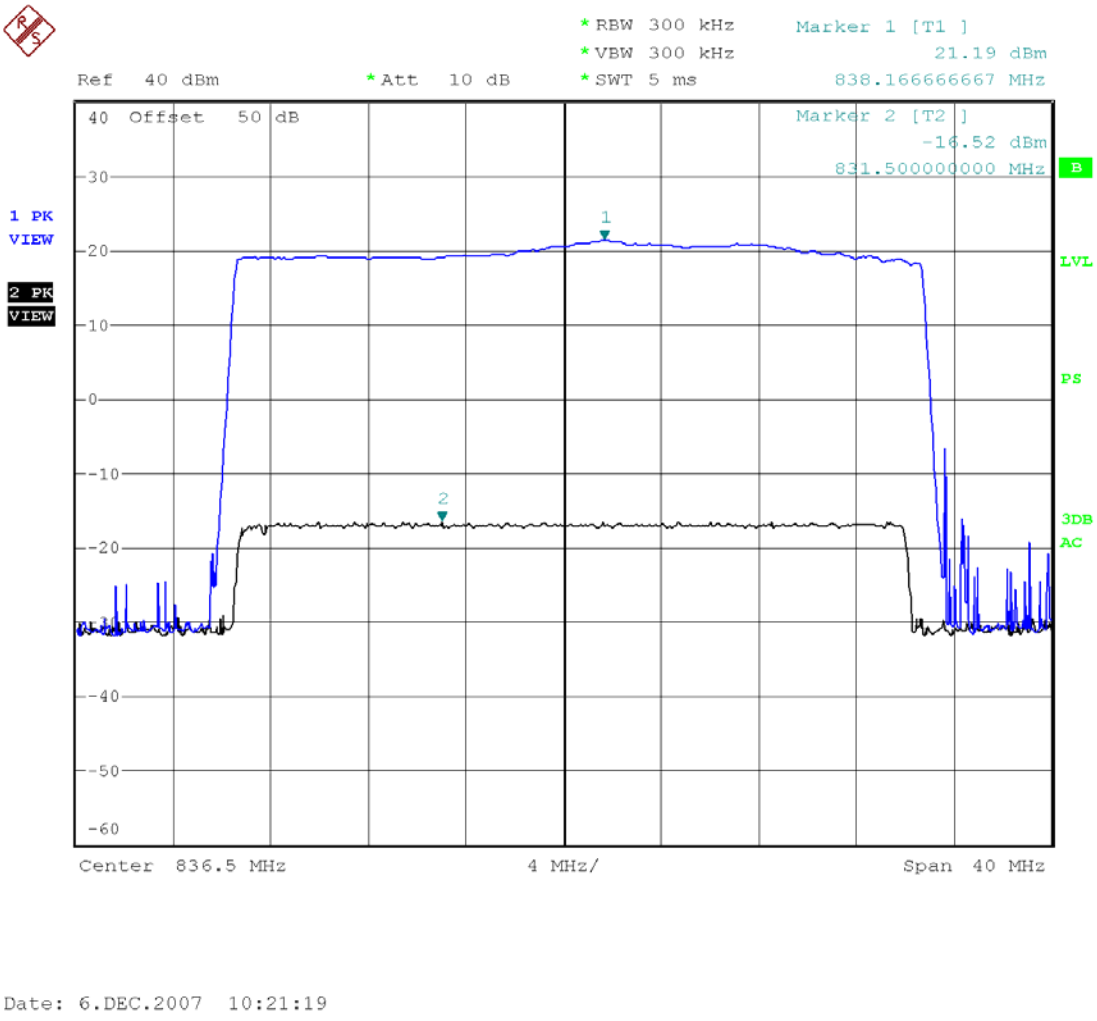


Figure 39. Amplifier frequency response (824 – 849) MHz band

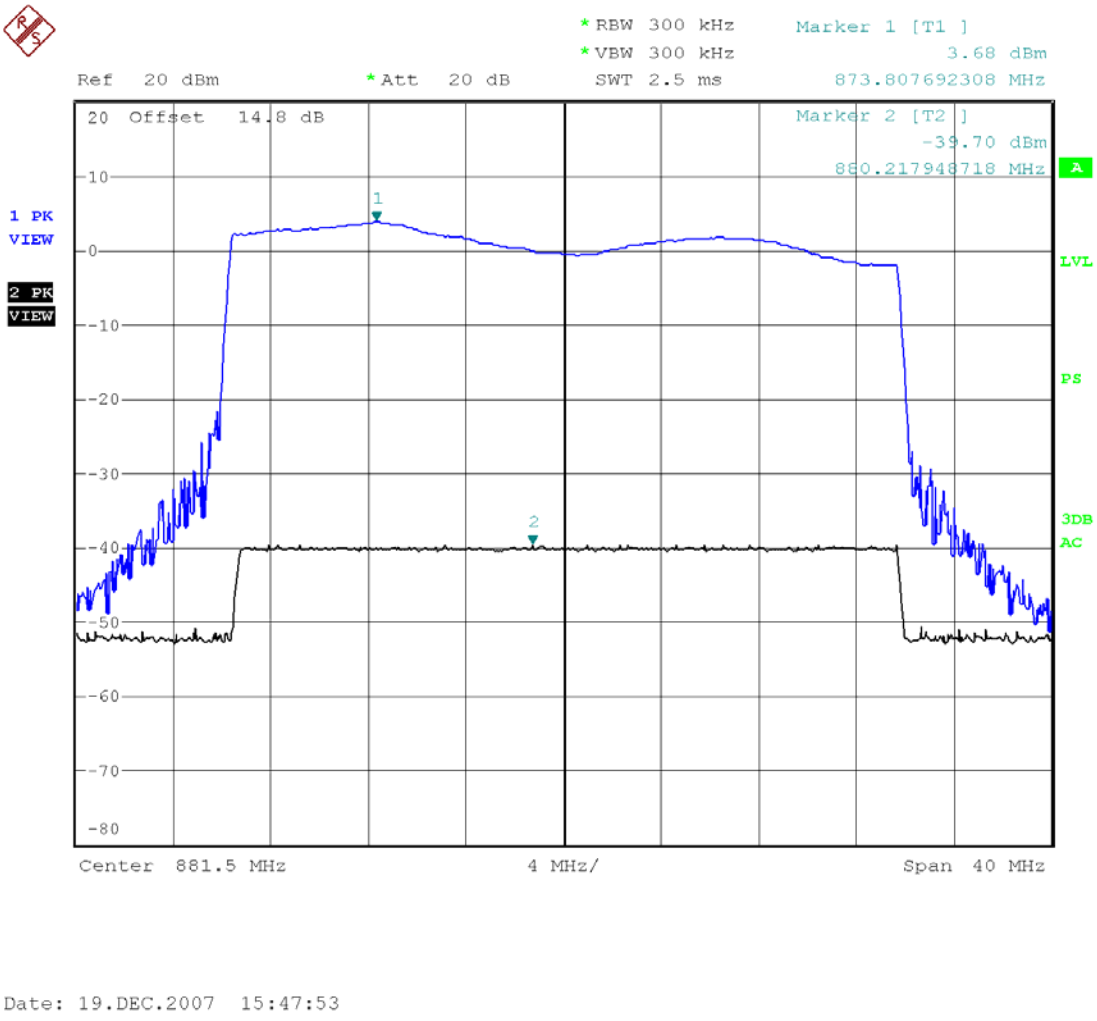


Figure 40. Amplifier frequency response (969 – 894) MHz band

FIELD STRENGTH OF SPURIOUS EMISSIONS

Rule Parts No.: Pt 2.1053

Requirements: Emissions must be 43+10log(Po) dB below the mean power output of the amplifier:

1850 – 1910 MHz: 43 + 10log(1.55) = 43.2 dBc
1930 – 1990 MHz: 43 + 10log(0.07) = 41.8 dBc

Test Result: The test data indicates the DUT meets the requirements

Test Data Table 25 – Radiated Emissions - CW

Emission Frequency (MHz)	Ant. Polarity (V/H)	Corrected DUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
1880.00	V		0	0	0
3760.00	H	-28.3	1.43	7.55	52.18
5640.00	V	-38.1	1.75	8.55	61.30
7520.00	V/H	*	*	*	*
9400.00	V/H	-53.50	2.38	9.53	76.35
11280.00	V/H	-52.00	2.70	8.35	76.34
13160.00	V/H	*	*	*	*
15040.00	V/H	*	*	*	*
16920.00	V/H	*	*	*	*
18800.00	V/H	*	*	*	*

[Continued]

Test Data Table 26 – Radiated Emissions - CW

Emission Frequency (MHz)	Ant. Polarity (V/H)	Corrected DUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
836.50	V		0	0	0
1673.00	H	-36.60	1.10	5.13	64.27
2509.50	H	-37.40	1.25	7.00	63.35
3346.00	H	-35.30	1.40	7.55	60.85
4182.50	H	-44.10	1.55	8.32	69.03
5019.00	V	-46.70	1.70	8.20	71.90
5855.50	V	-49.00	1.85	8.89	73.67
6692.00	V	-50.70	2.00	7.82	76.58
7528.50	V	-44.30	2.16	7.52	70.64
8365.00	V	-54.30	2.31	8.65	79.66

Notes: *No other emissions were found up to the 10th harmonics.

Test Data Table 27 – Radiated Emissions - CW

Emission Frequency (MHz)	Ant. Polarity (V/H)	Corrected DUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
1960.00	V		0	0	0
3920.00	H	-34.4	1.46	7.55	43.31
5880.00	V	-44.3	1.79	8.88	52.21
7840.00	V/H	*	*	*	*
9800.00	V/H	*	*	*	*
11760.00	V/H	*	*	*	*
13720.00	V/H	*	*	*	*
15680.00	V/H	*	*	*	*
17640.00	V/H	*	*	*	*
19600.00	V/H	*	*	*	*

[Continued]

Test Data Table 28 – Radiated Emissions – CW

Emission Frequency (MHz)	Ant. Polarity (V/H)	Corrected DUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
881.50	V		0	0	0
1763.00	V	-45.50	1.10	5.13	59.97
2644.50	V	-56.00	1.25	7.00	68.75
3526.00	V	-54.30	1.40	7.55	66.65
4407.50	V	-51.60	1.55	8.32	63.33
5289.00	V	-40.10	1.70	8.20	52.10
6170.50	V	-49.50	1.85	8.89	60.97
7052.00	V	-57.70	2.00	7.82	70.38
7933.50	V	-54.50	2.16	7.52	67.64
8815.00	V	-53.20	2.31	8.65	65.36

Notes: *No other emissions were found up to the 10th harmonics.

Test Data Table 29 – Radiated Emissions – 30 ~ 1000 MHz						
Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity H/V	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
48.11	18.1	H	0.49	10.86	29.45	10.55
48.11	27.3	V	0.49	10.61	38.40	1.60
50.15	25.6	V	0.50	10.81	36.91	3.09
59.43	15.5	H	0.53	10.91	26.94	13.06
62.25	24.6	V	0.54	9.91	35.05	4.95
64.47	17.2	H	0.55	10.01	27.76	12.24
79.98	16.0	V	0.60	7.50	24.10	15.90
201.80	5.3	H	0.90	12.06	18.26	25.24
256.10	4.3	H	1.01	12.74	18.05	27.95
261.80	5.4	V	1.02	12.97	19.39	26.61
381.60	4.8	V	1.18	15.35	21.33	24.67
383.80	4.1	H	1.18	15.55	20.83	25.17
487.10	4.6	V	1.29	17.58	23.47	22.53