

TEST REPORT

Report Number: 3093217ATL-002

December 5, 2006

Product Designation: HMC191901C (FCCID: HDLUSA-60751-KE-E)

Standard: FCC Part 24

Tested by:
Intertek Testing Services NA Inc.
1950 Evergreen Blvd., Suite 100
Duluth, GA 30096

Client:
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3617 Parkway Lane, Suite 100
Norcross, GA 30092
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Tests performed by:



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EMC Project Engineer

Report reviewed by:



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EMC Department Manager

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1.0 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complies with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

2.0 Test Summary

Section	Test Full Name	Test Date	Result
4.0	System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)		
5.0	Description of test facility (Test Site Location)		
6.0	RF Output Power (FCC Part 2.1046)	03/16/2006	PASS
7.0	Occupied Bandwidth (FCC Part 2.1049)	03/16/2006	PASS
8.0	Spurious emissions at antenna terminals (FCC Part 2.1051)	03/15/2006	PASS
NA	FCC Part 22 Radiated Power (ERP) and FCC Part 24 Radiated Power (EIRP) (Radiated Power) was waived due to test not applicable to amplifiers		
9.0	Spurious emissions at antenna terminals - Bandedge (FCC Part 2.1051)	11/17/2006	PASS
10.0	Field strength of spurious radiation (FCC Part 2.1053)	03/16/2006	PASS
NA	Frequency Stability (FCC Part 2.1055) was waived due to test not applicable to amplifiers		
11.0	Revision History (Revision History)		
NA	Conducted emissions on AC power lines (Conducted Emissions) was waived due to EUT is DC-Powered		

3.0 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
1900MHz MCPA	Hitachi	HMC191901C	P0003
DUP/Comb Tray	Hitachi	EJ19-DO	0551002

EUT receive date:	March 14, 2006
EUT receive condition:	Good

Description of EUT provided by Client:

The EUT is a 1.9GHz 190W MCPA (Multi-Carrier Power Amplifier) for GSM, EDGE & W-CDMA used for base-station applications. The amplifier is installed in a 19 inch rack which receives power from a +27 Vdc power source.

Description of EUT exercising:

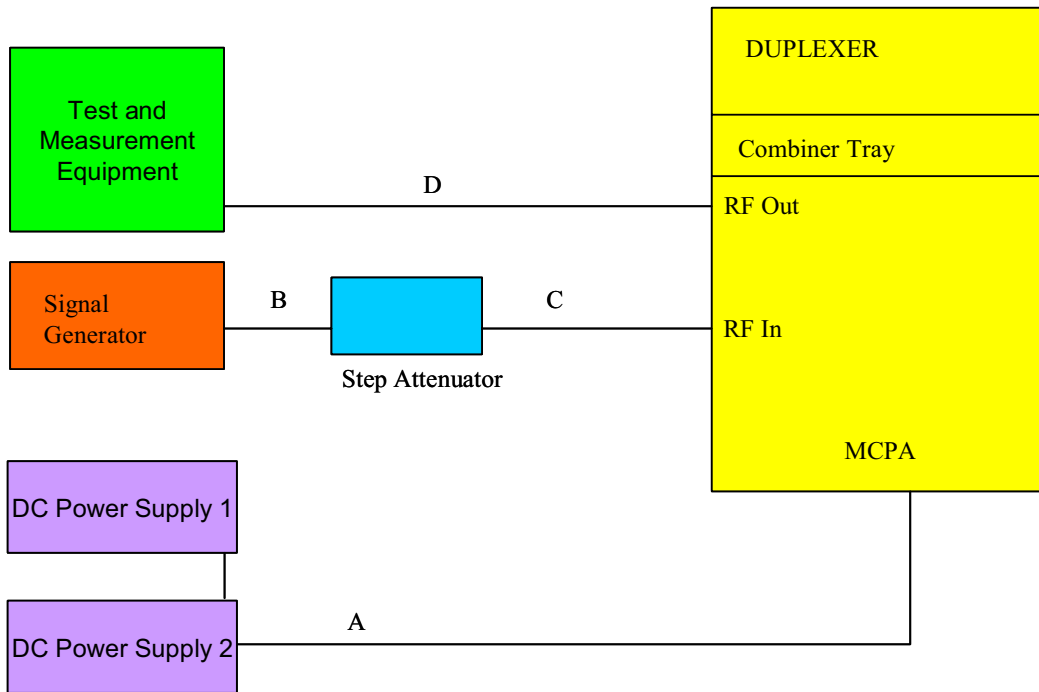
During testing where a single carrier was used, the input level was adjusted to obtain 190 Watts out on a single channel. During testing where more than one channel is used, the power of each carrier must be reduced so the total power output is no greater than 190 Watts. CW, GSM and W-CDMA signal were used during the testing and are indicated in each section of this report as appropriate.

4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)

Method:

Record the details of EUTcabling, document the support equipment, and show the interconnections in a block diagram.

Photo:



Block Diagram

4.0 System setup including cable interconnection details, support equipment and simplified block diagram. (System Setup)

Data:

EUT Cabling						
ID	Description	Length	Shielding	Ferrites	Connection	
					From	To
A	DC Power Line In	15m	no	no	DC PS Pair	EUT Chassis
B	Coax 1	1.0m	yes	no	Signal Generator	Step Attenuator
C	Coax 2	1.4m	yes	no	Step Attenuator	EUT Amp RF IN
D	Coax 3	2.0m	yes	no	EUT Amp RF Out	Test/Meas. Equipment

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
Signal Generator	Agilent	E4438C	MY4020908
Step Attenuator	Agilent	11716A	14003296
DC Power Supply 1	H/P	6012B	2732A-02525
DC Power Supply 2	H/P	6012B	2614A-01234

5.0 Description of test facility (Test Site Location)

Method:

The Intertek-Duluth site is located at 1950 Evergreen Blvd., Suite 100, Duluth, Georgia. The radiated emission test site is a 10-meter semi-anechoic chamber. The chamber meets the characteristics of ANSI C63.4: 2003. For measurements, a remotely controlled flush-mount metal-top turntable is used to rotate the EUT a full 360 degrees. A remote controlled non-conductive antenna mast is used to scan the antenna height from one to four meters.

This site is on file with the FCC.

6.0 RF Output Power (FCC Part 2.1046)

Method:

Connect the transmitter output to a calibrated coaxial attenuator. Connect the other end of the attenuator to a power meter. Transmitter output was read off the power meter in dBm.

Performed the test at three frequencies (low, middle, and high channels) and on the highest power levels, which can be setup on the transmitter.

Canada typically requires this test to be repeated at +60° C and at -30° C.

Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Attenuator, 06 dB	Weinschel Corp	2	200002	07/06/2005	07/06/2006
Attenuator, 06 dB	Weinschel Corp	2	200006	08/08/2005	08/08/2006
Attenuator, 10 dB, 150 Watt, <18GHz	Weinschel Corp	66-10-33	211683	03/06/2006	03/06/2007
Attenuator, 10 dB, 50 Watt, DC-18GHz	Weinschel	47-10-34	200061	05/12/2005	05/12/2006
Attenuator, 20 dB	Weinschel Corp	2	200001	08/08/2005	08/08/2006
Cable, 40 GHz, 2.9, 80 inches	Megaphase	TM40 K1K1 80	E405	05/13/2005	05/13/2006
Cable, 40 GHz, 2.9, 80 inches	Megaphase	TM40 K1K1 80	E404	05/13/2005	05/13/2006
Power Meter	Boonton	4232A	200063	10/25/2005	10/25/2006
Power Sensor, Dual Diode, 10kHz to 8GHz, 20 dBm	Boonton	51011-EMC	200064	10/25/2005	10/25/2006

Results: The sample tested was found to Comply.

6.0 RF Output Power (FCC Part 2.1046)**Data:**

EUT Mode	Frequency MHz	Channel	RBW/VBW MHz	Measured Power dBm	Measured Power Watts
GSM	1930.0	Low	APM (1)	52.79	190.1
	1960.0	Mid	APM (1)	52.80	190.5
	1990.0	High	APM (1)	52.81	191.0
GSM Edge	1930.0	Low	APM (1)	52.79	190.1
	1960.0	Mid	APM (1)	52.81	191.0
	1990.0	High	APM (1)	52.80	190.5
WCDMA	1932.5	Low	APM (1)	52.75	188.4
	1960.0	Mid	APM (1)	52.81	191.0
	1987.5	High	APM (1)	52.79	190.1

Note (1): Used average power meter

Note (2): Power for base stations are set at time of licensing.

7.0 Occupied Bandwidth (FCC Part 2.1049)

Method:

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Connect the antenna port of the EUT to a spectrum analyzer using a calibrated coaxial cable and attenuator. Set the EUT to transmit at its highest power setting. The 99% bandwidth function of the analyzer was used to automatically generate the occupied bandwidth plots. Repeat for low, mid, and high channels of each band of the EUT.

For Amplifiers, the spectral shape of the output should look similar to input for all modulations.

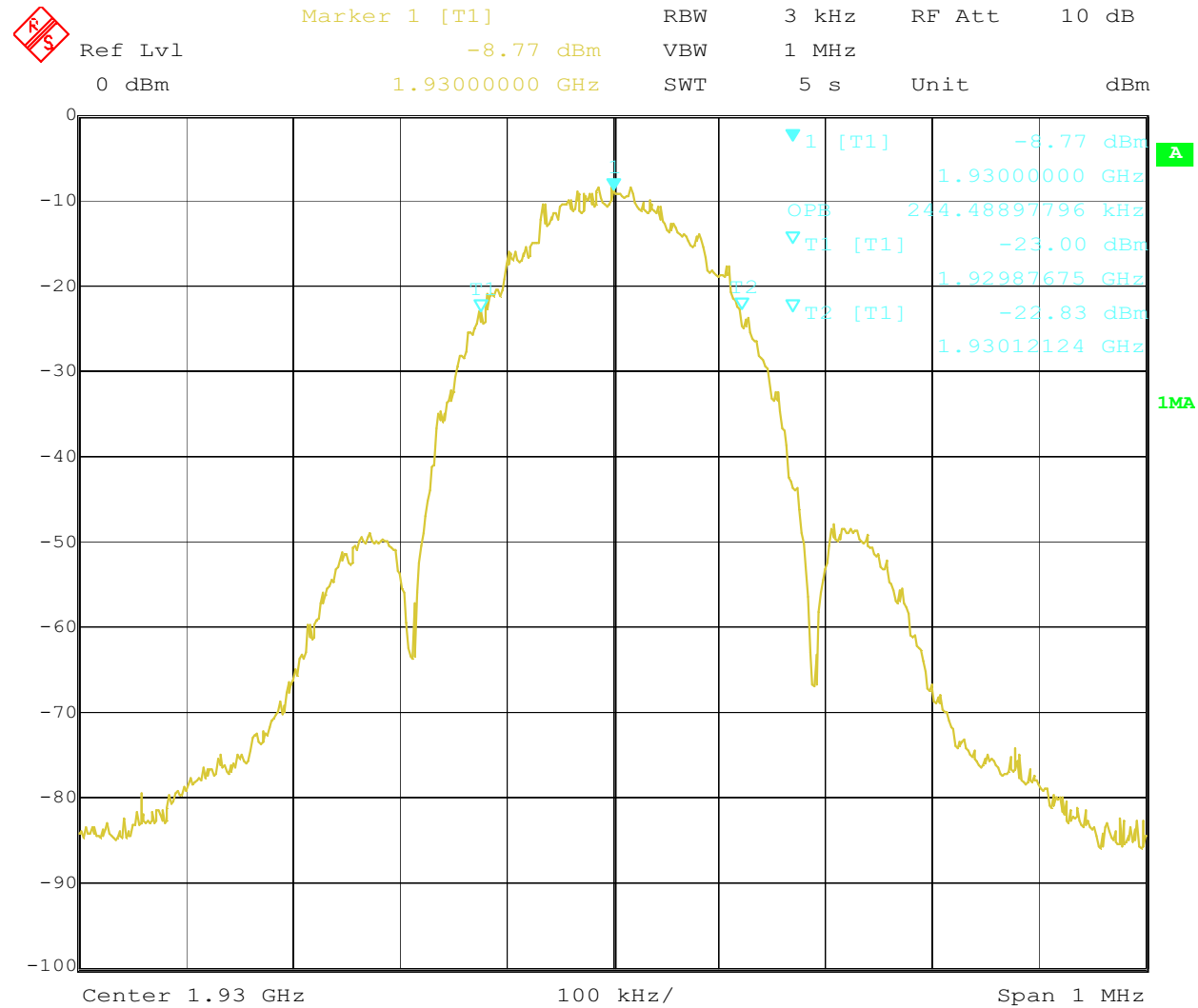
Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Attenuator, 06 dB	Weinschel Corp	2	200002	07/06/2005	07/06/2006
Attenuator, 06 dB	Weinschel Corp	2	200006	08/08/2005	08/08/2006
Attenuator, 10 dB, 150 Watt, <18GHz	Weinschel Corp	66-10-33	211683	03/06/2006	03/06/2007
Attenuator, 10 dB, 50 Watt, DC-18GHz	Weinschel	47-10-34	200061	05/12/2005	05/12/2006
Cable, 40 GHz, 2.9, 80 inches	Megaphase	TM40 K1K1 80	E405	05/13/2005	05/13/2006
Cable, 40 GHz, 2.9, 80 inches	Megaphase	TM40 K1K1 80	E404	05/13/2005	05/13/2006
ESG Vector Signal Generator	Agilent	E4438C	MY42081816	01/18/06	01/18/08
Spectrum Analyzer, 20 Hz to 40 GHz	Rohde & Schwarz	FSEK30	200062	01/12/2006	01/12/2007

Results: The sample tested was found to Comply.

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

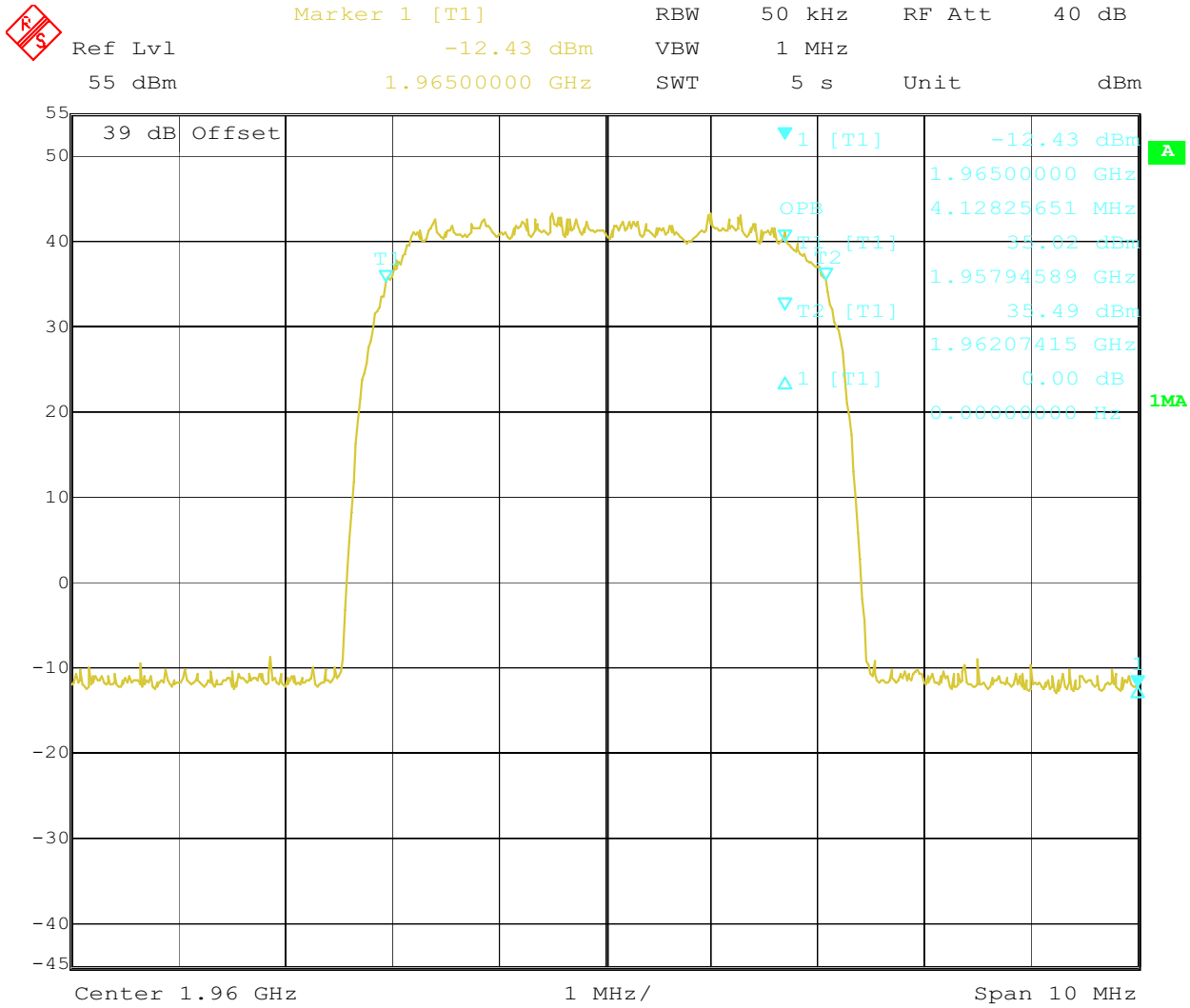


Date: 21.JUN.2006 08:00:21

GSM Edge 1930 MHz (Input)

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

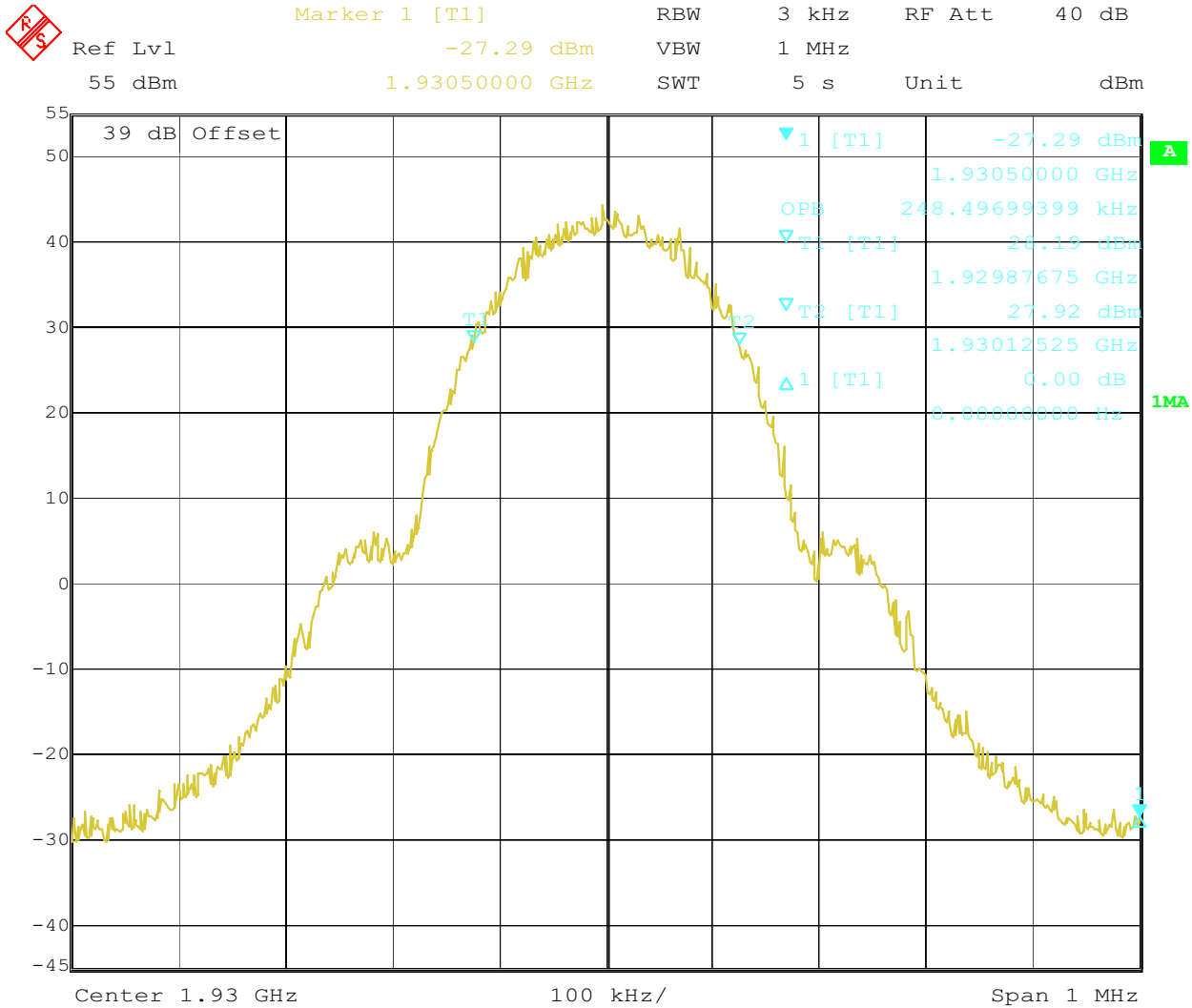


Date: 16.MAR.2006 09:10:16

WCDMA 1960 MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

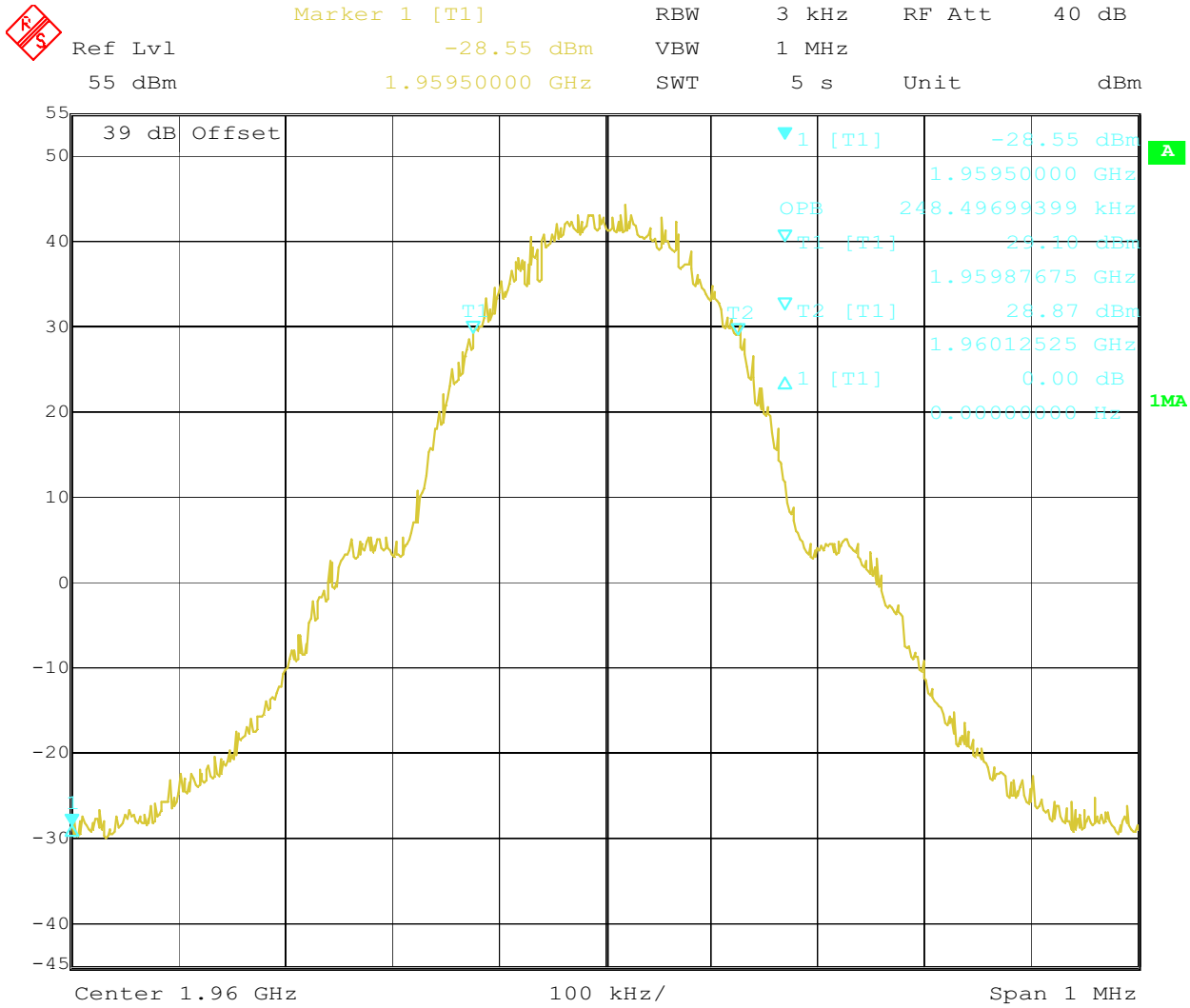


Date: 16.MAR.2006 09:13:04

GSM 1930 MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

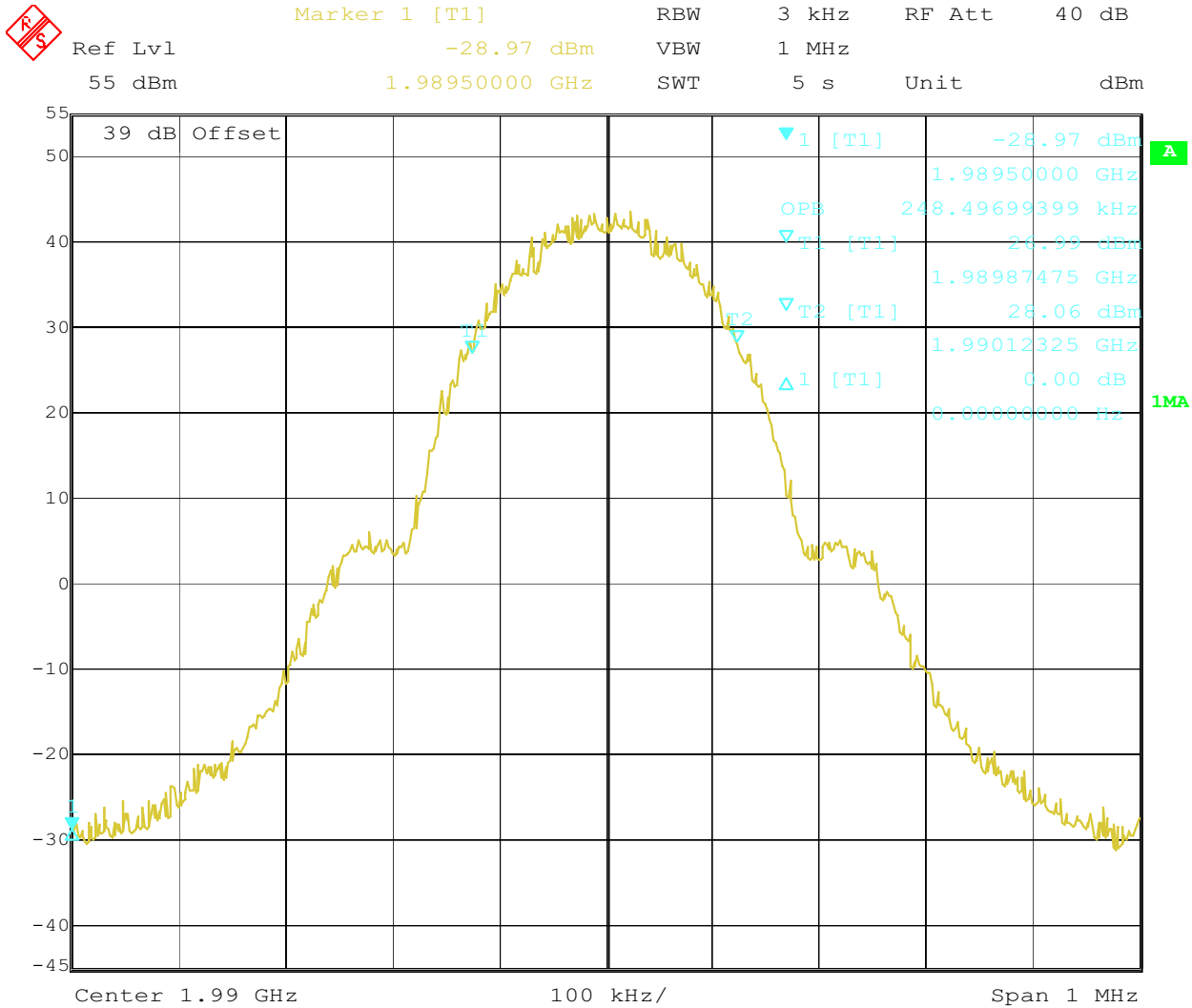


Date: 16.MAR.2006 09:13:58

GSM 1960 MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

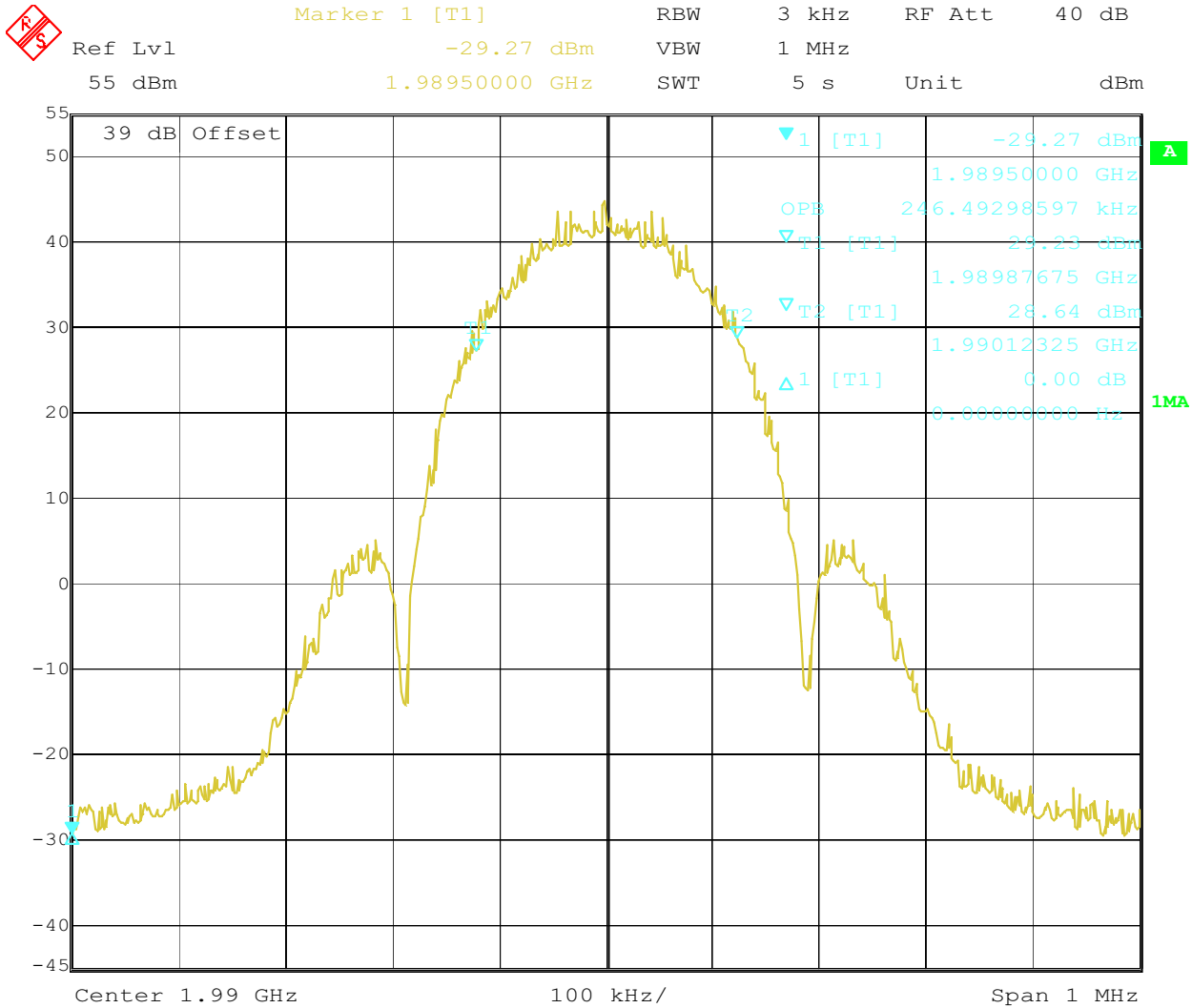


Date: 16.MAR.2006 09:15:06

GSM 1990 MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

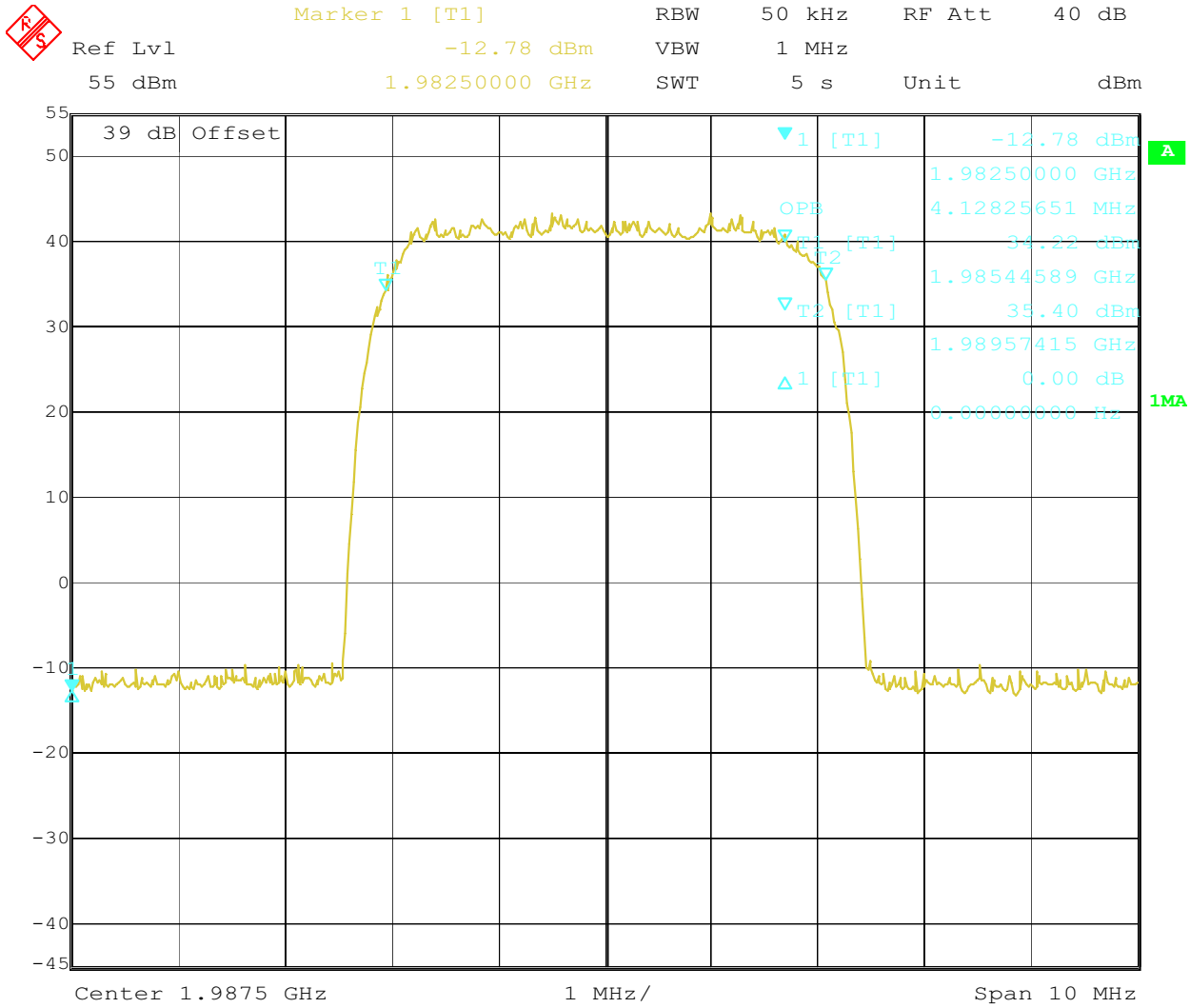


Date: 16.MAR.2006 09:15:53

GSM Edge 1990 MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

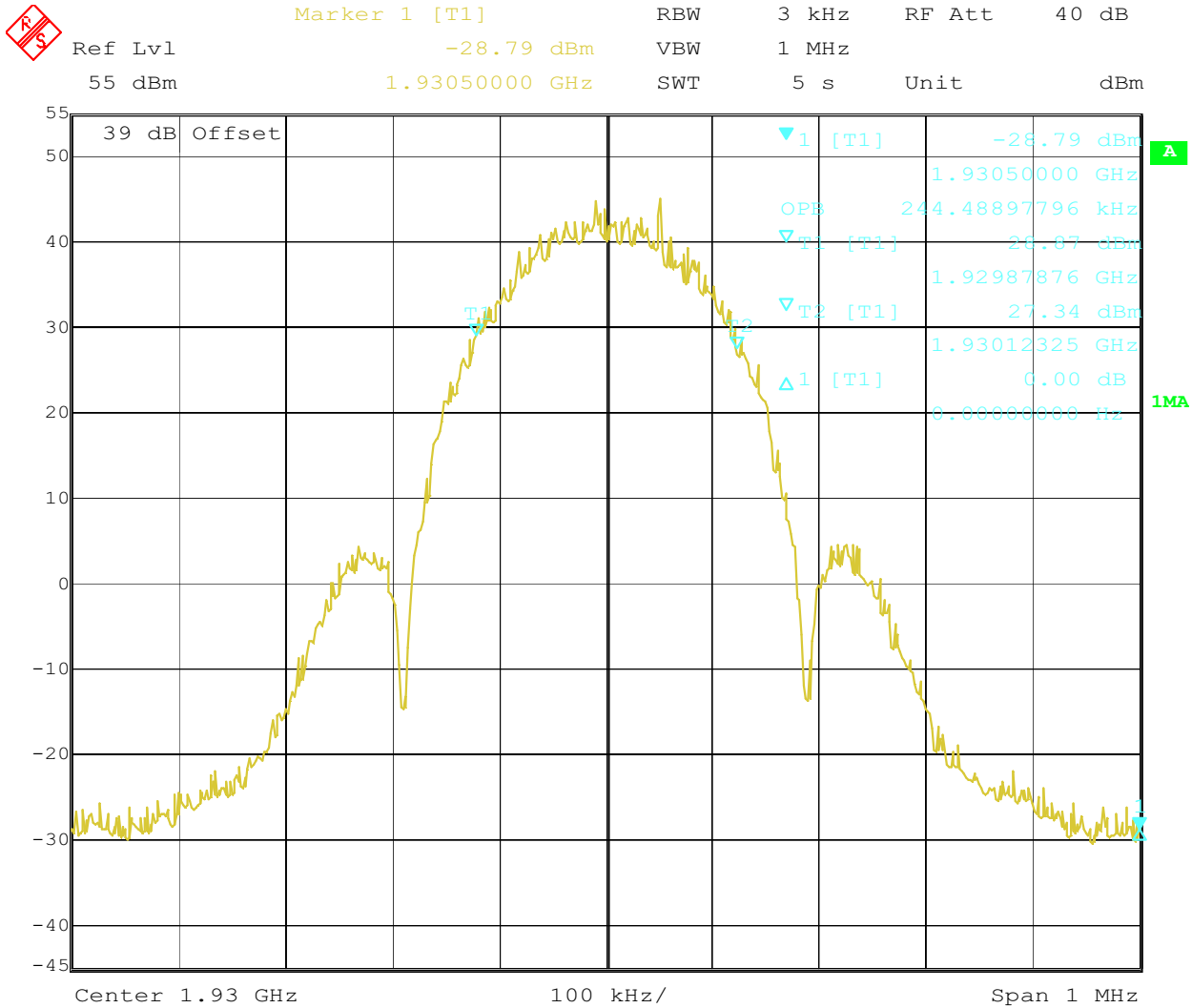


Date: 16.MAR.2006 09:08:56

WCDMA 1987.5 MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

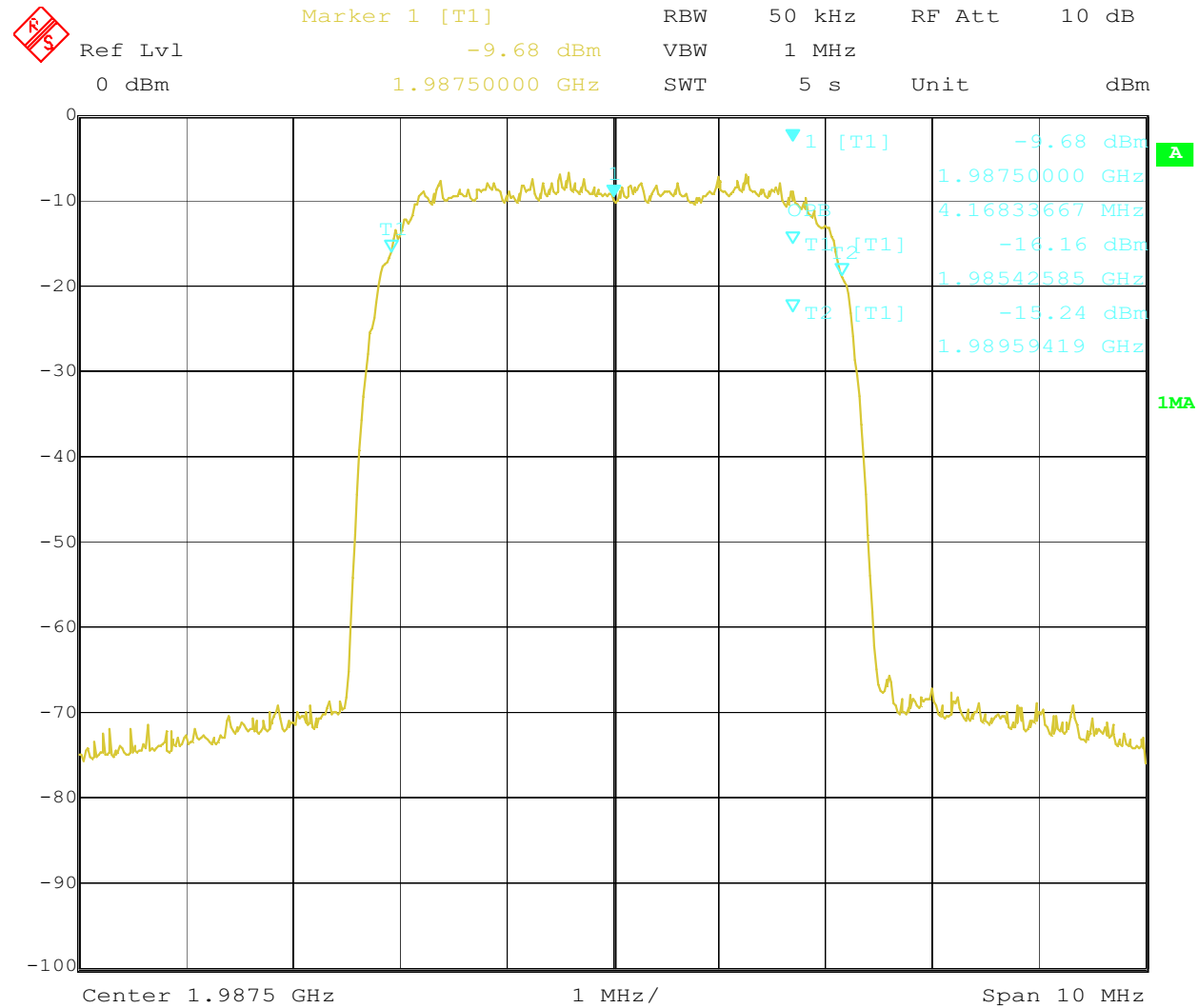


Date: 16.MAR.2006 09:17:36

GSM Edge 1930 MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

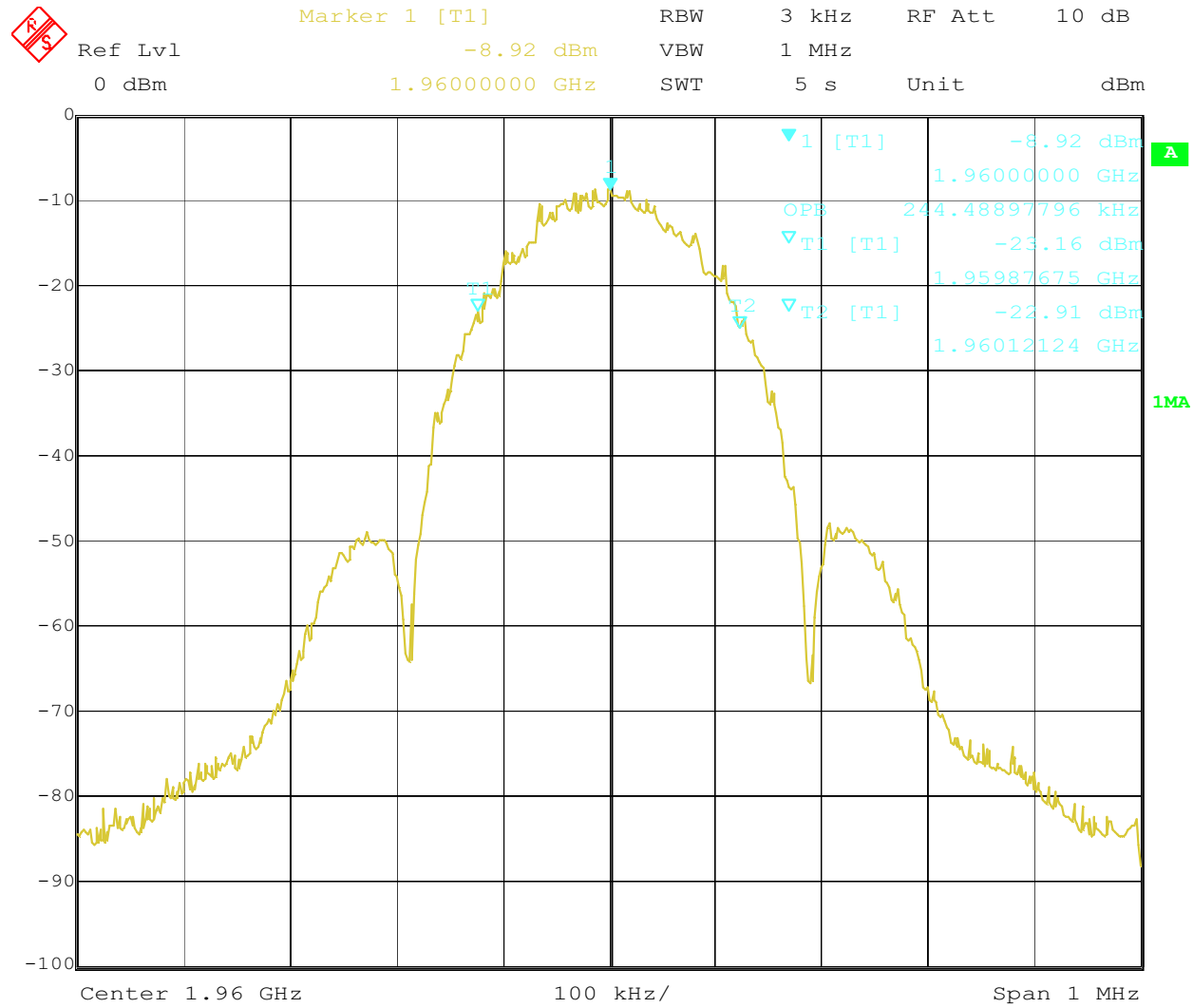


Date: 21.JUN.2006 08:06:27

WCDMA 1987.5 MHz (Input)

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

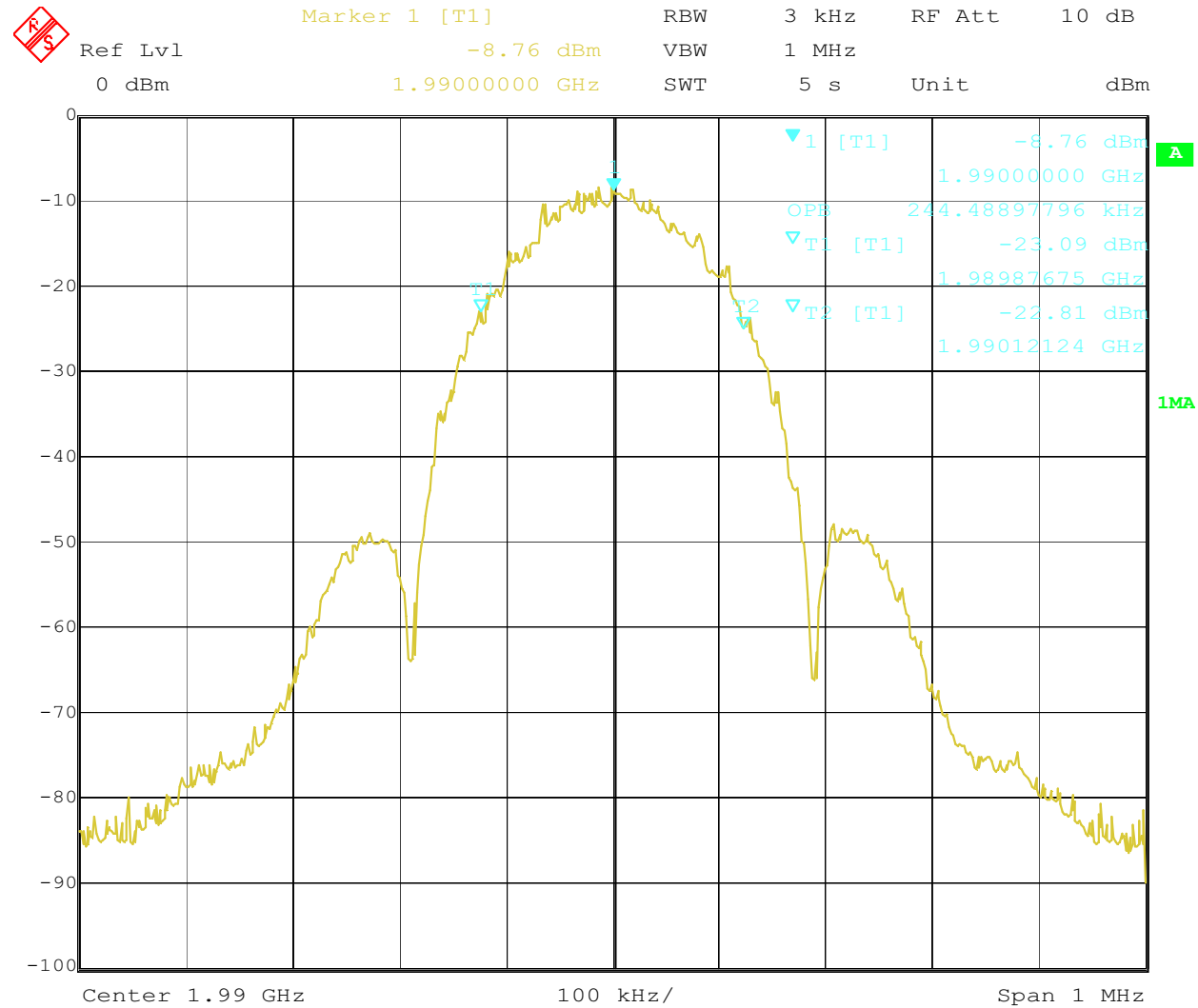


Date: 21.JUN.2006 07:59:41

GSM Edge 1960 MHz (Input)

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

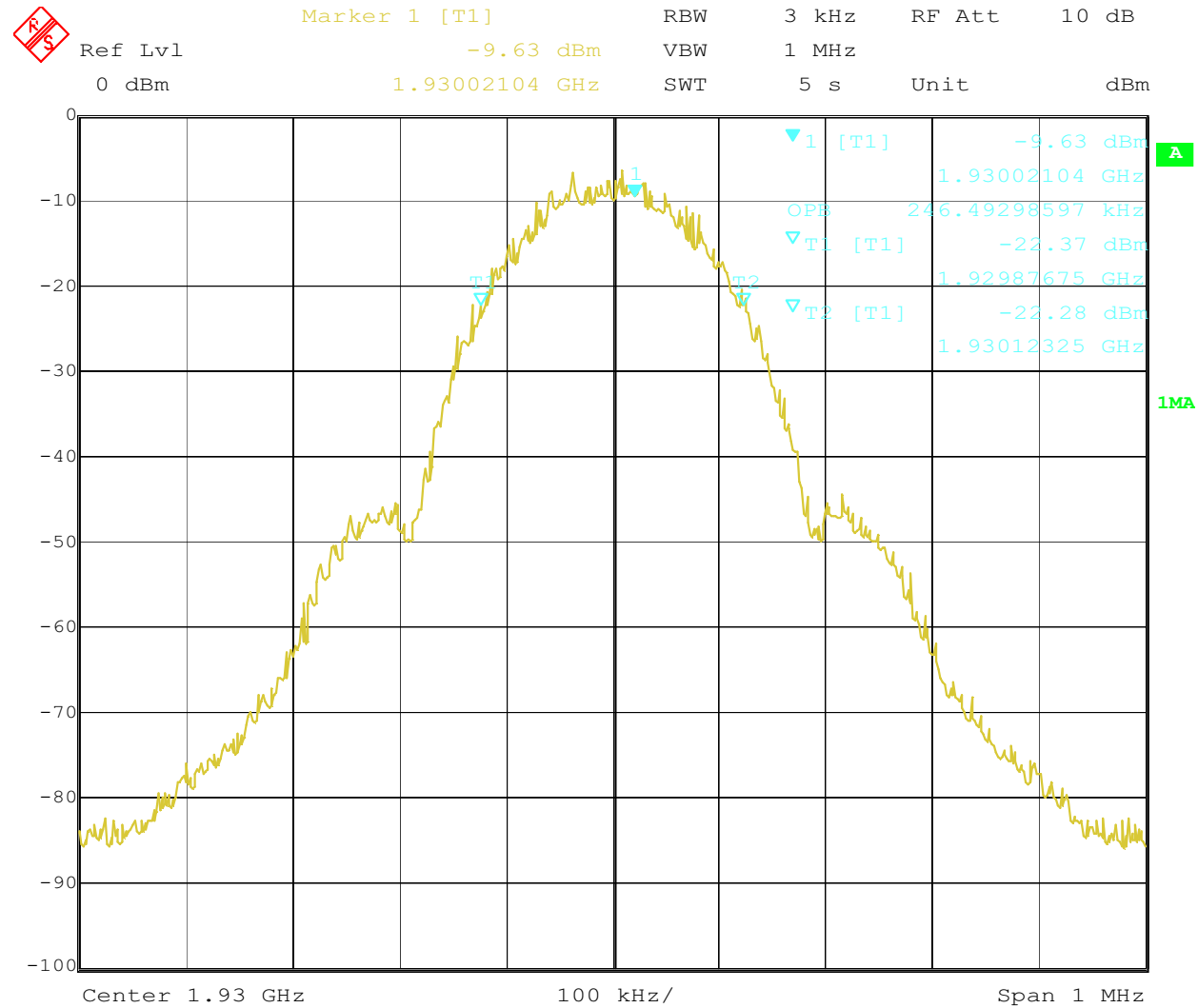


Date: 21.JUN.2006 07:58:48

GSM Edge 1990 MHz (Input)

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

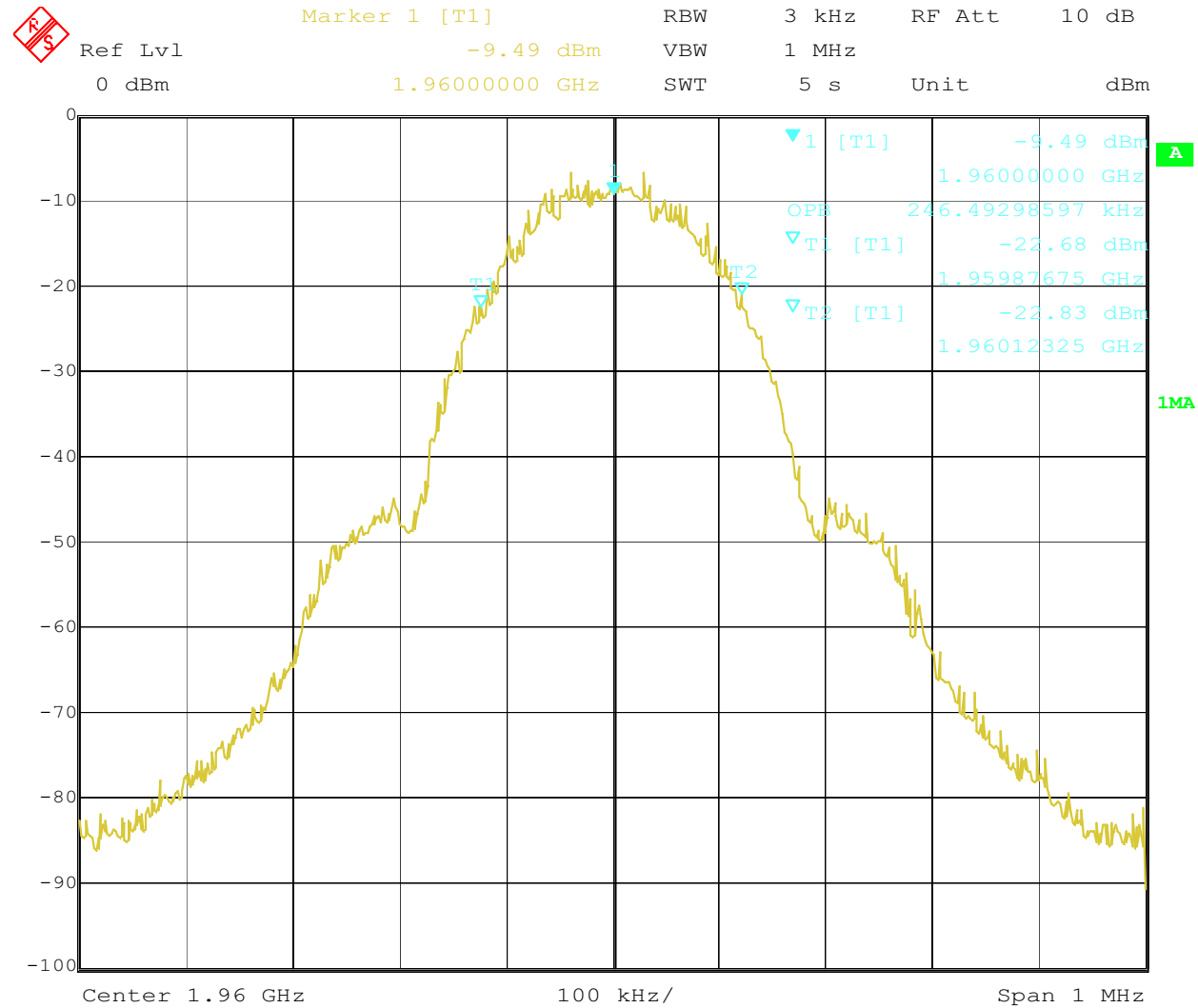


Date: 21.JUN.2006 07:55:10

GSM 1930MHz (Input)

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

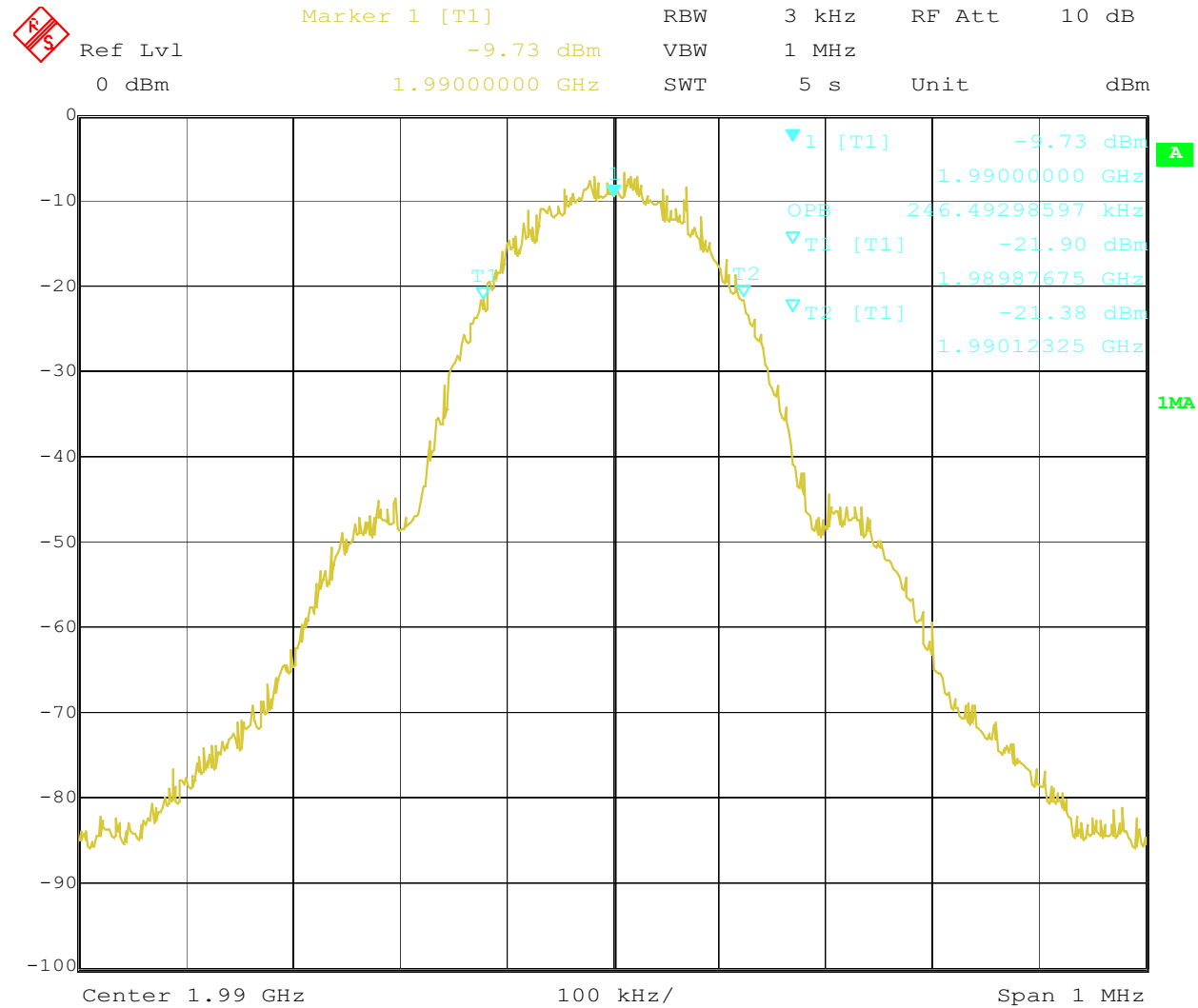


Date: 21.JUN.2006 07:56:51

GSM 1960MHz (Input)

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

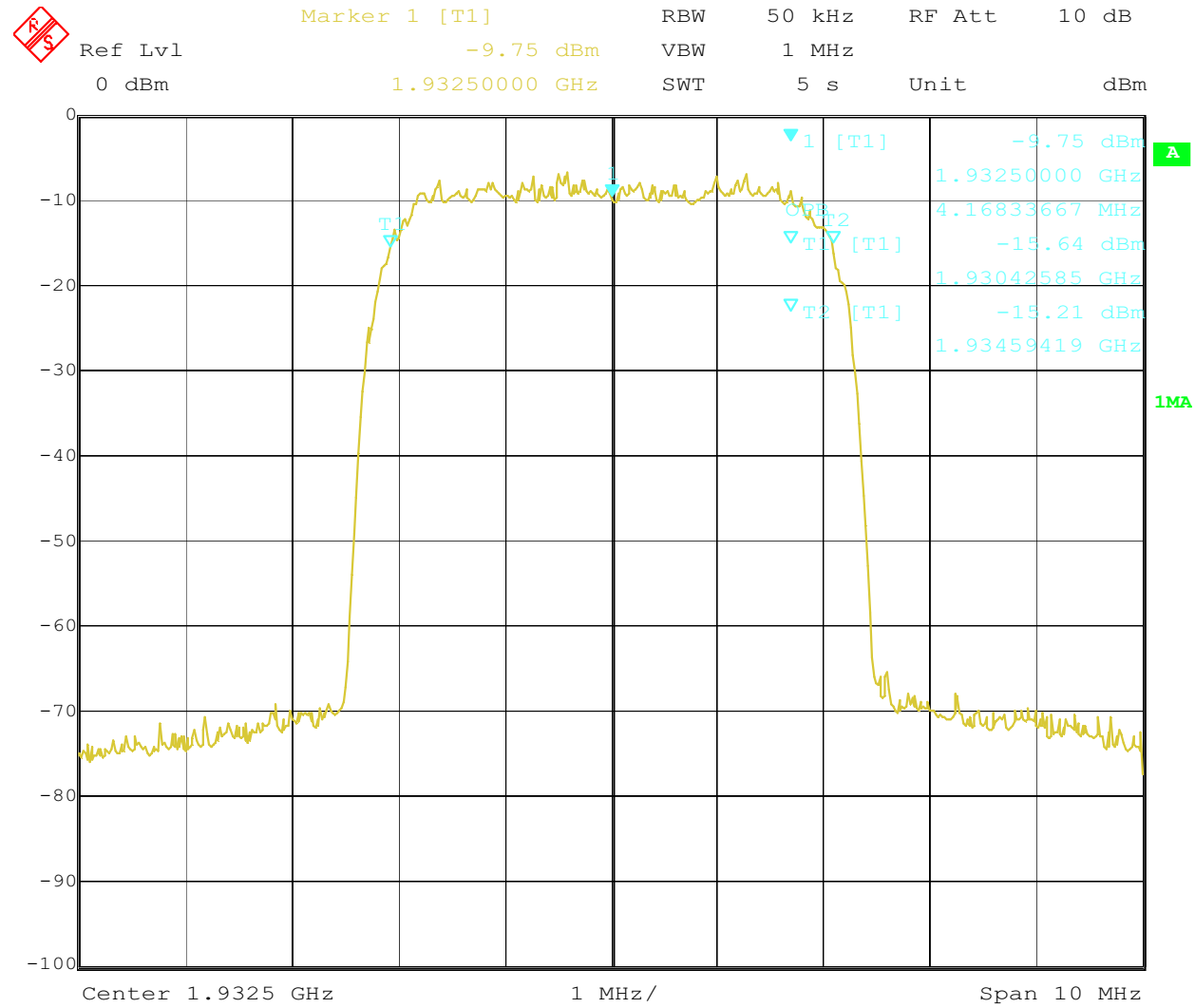


Date: 21.JUN.2006 07:57:37

GSM 1990MHz (Input)

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

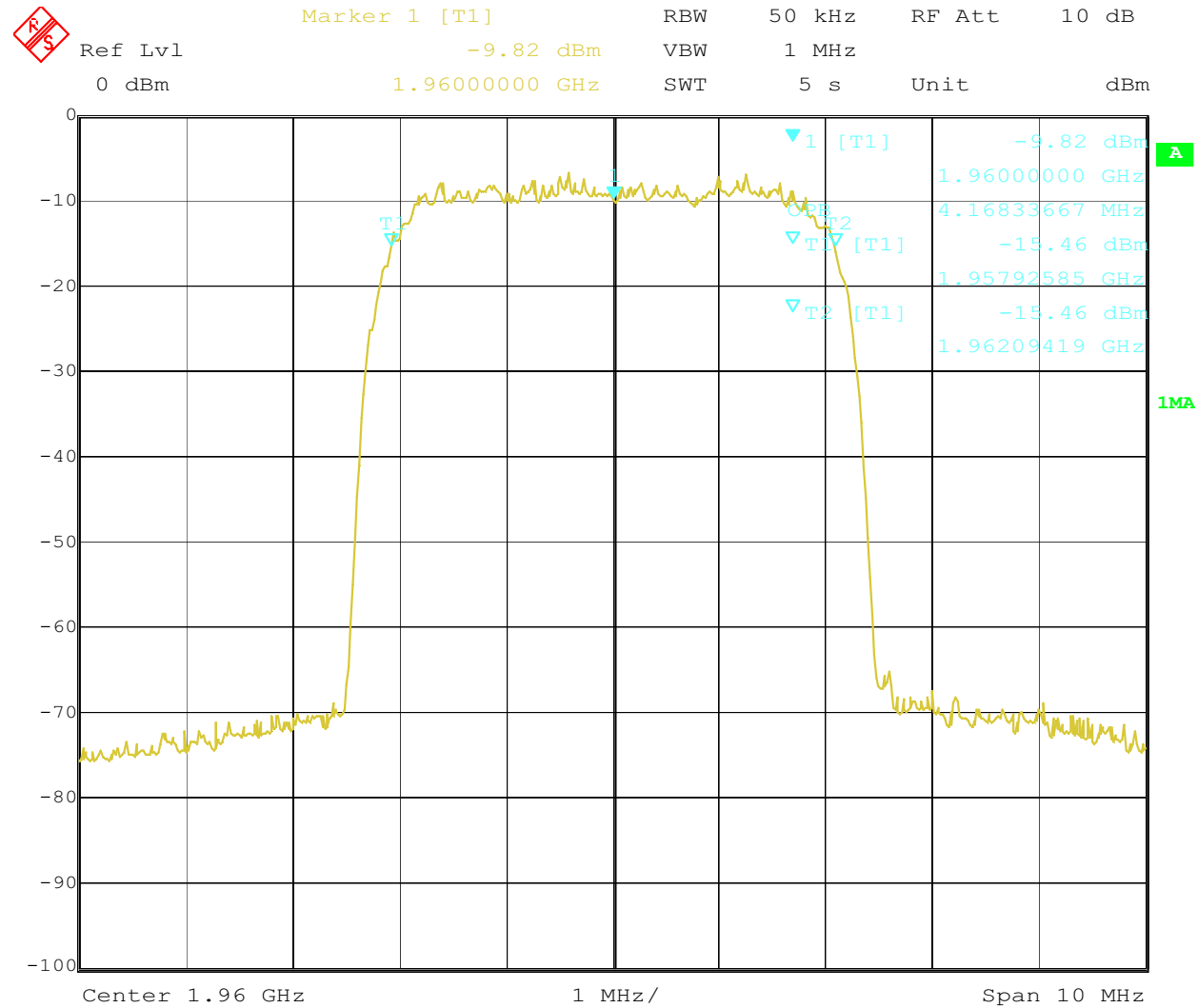


Date: 21.JUN.2006 08:03:27

WCDMA 1932.5 MHz (Input)

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:

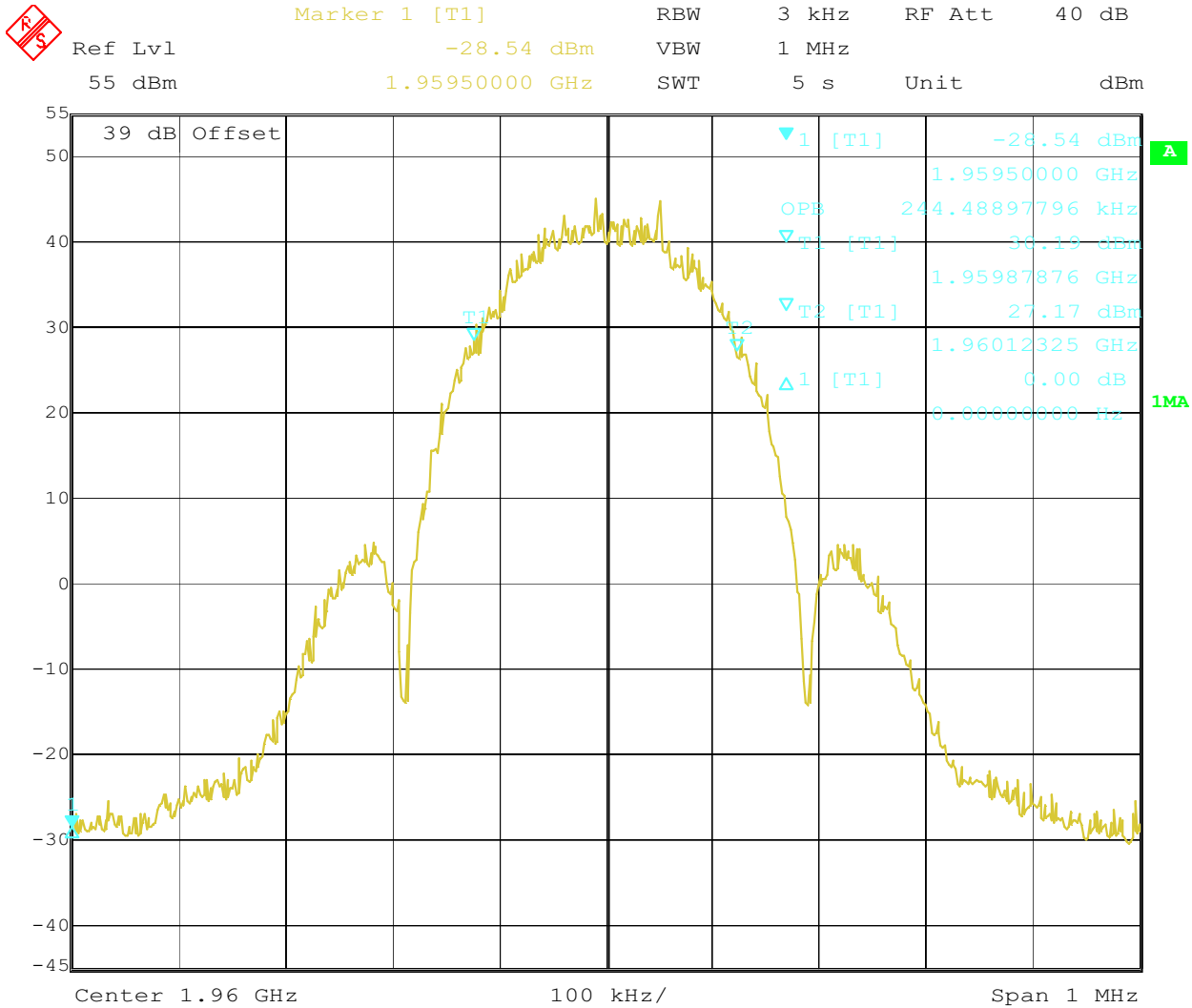


Date: 21.JUN.2006 08:05:55

WCDMA 1960 MHz (Input)

7.0 Occupied Bandwidth (FCC Part 2.1049)

Photo:



Date: 16.MAR.2006 09:16:56

GSM Edge 1960 MHz

7.0 Occupied Bandwidth (FCC Part 2.1049)

Data:

Mode	Frequency MHz	Resolution Bandwidth (1)	Video Bandwidth	Sweep time Seconds	Input Bandwidth MHz	Output (EUT) Bandwidth MHz
GSM	1930.0	3 kHz	1 MHz	5	0.246	0.248
GSM	1960.0	3 kHz	1 MHz	5	0.246	0.248
GSM	1990.0	3 kHz	1 MHz	5	0.246	0.248
GSM Edge	1930.0	3 kHz	1 MHz	5	0.244	0.244
GSM Edge	1960.0	3 kHz	1 MHz	5	0.244	0.244
GSM Edge	1990.0	3 kHz	1 MHz	5	0.244	0.246
WCDMA	1937.5	50 kHz	1 MHz	5	4.168	4.150
WCDMA	1965.0	50 kHz	1 MHz	5	4.168	4.130
WCDMA	1982.5	50 kHz	1 MHz	5	4.168	4.130

Note (1): Greater or equal to 1% of emission bandwidth.

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

Method:

FCC §2.1049, FCC §2.1051, §22.917(a), FCC §24.238(a)

Out of Band Emissions: 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.

Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for the Cellular band and 1 MHz or greater in the PCS band. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Connect the RF output of the EUT to a spectrum analyzer through appropriate attenuation. Set the EUT to transmit at its maximum power level. Sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

For Amplifiers, an intermodulation test is also performed. Test all modulation types [TDMA, CDMA, and FM (covers GSM and F1D)].

- CW signal rather than typical signal is acceptable (for FM).
- At maximum drive level, for each modulation: one test with three tones, or two tests (high-, low-band edge) with two tones
- Limit usually is -13dBm conducted.
- Not needed for Single Channel systems.
- Combination of modulation types not needed.

Test Equipment Used:

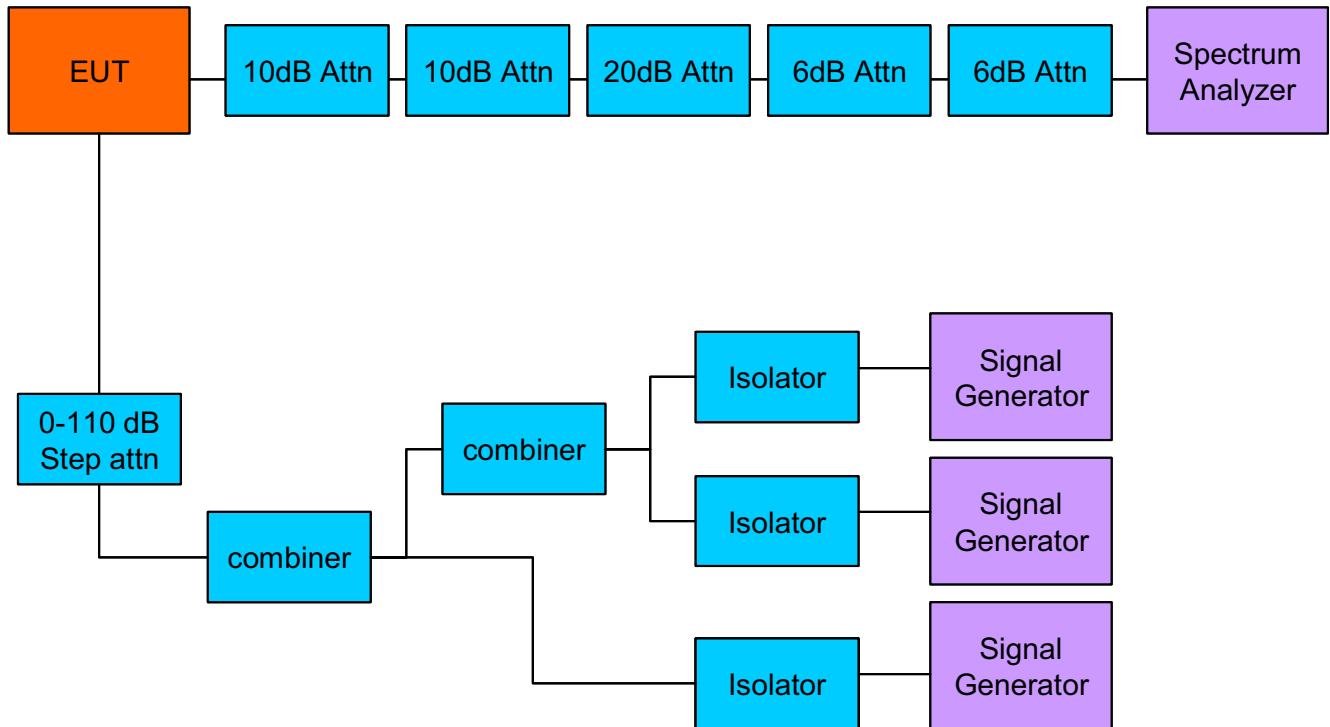
Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Attenuator, 06 dB	Weinschel Corp	2	200002	07/06/2005	07/06/2006
Attenuator, 06 dB	Weinschel Corp	2	200006	08/08/2005	08/08/2006
Attenuator, 10 dB, 150 Watt, <18GHz	Weinschel Corp	66-10-33	211683	03/06/2006	03/06/2007
Attenuator, 10 dB, 50 Watt, DC-18GHz	Weinschel	47-10-34	200061	05/12/2005	05/12/2006
Attenuator, 20 dB	Weinschel Corp	2	200001	08/08/2005	08/08/2006
Cable, 40 GHz, 2.9, 80 inches	Megaphase	TM40 K1K1 80	E405	05/13/2005	05/13/2006
Cable, 40 GHz, 2.9, 80 inches	Megaphase	TM40 K1K1 80	E404	05/13/2005	05/13/2006
Filter, Band Reject, Cavity Design, 50 dB	Wainwright Inst.	WRCG 1930/1990	200079	12/08/2005	12/08/2006
High Pass Filter, 4 GHz	Reactel, Inc.	7HS-4G/18G-S11	213153a	03/06/2006	03/06/2007
Spectrum Analyzer, 20 Hz to 40 GHz	Rohde & Schwarz	FSEK30	200062	01/12/2006	01/12/2007

Results: The sample tested was found to Comply.

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

Photo:

Test Setup for Inter-modulation measurement

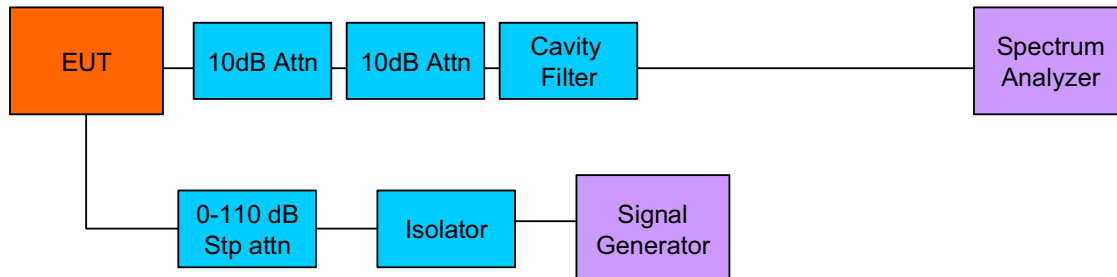


3 Carrier Inter-Modulation Setup

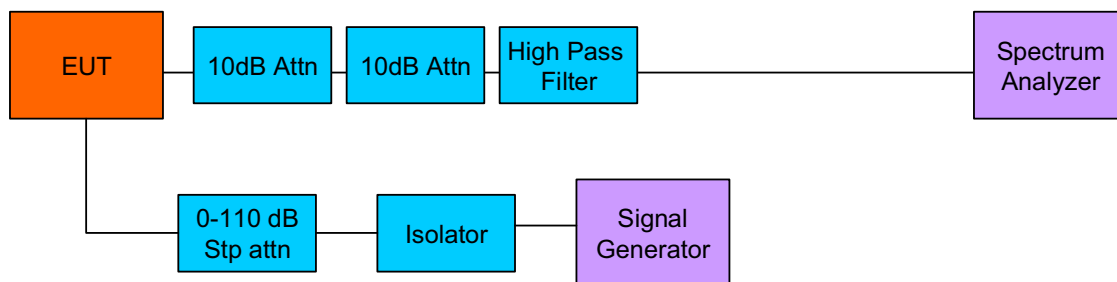
8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

Photo:

Test Setup for Spurious Emissions, 30-4000 MHz



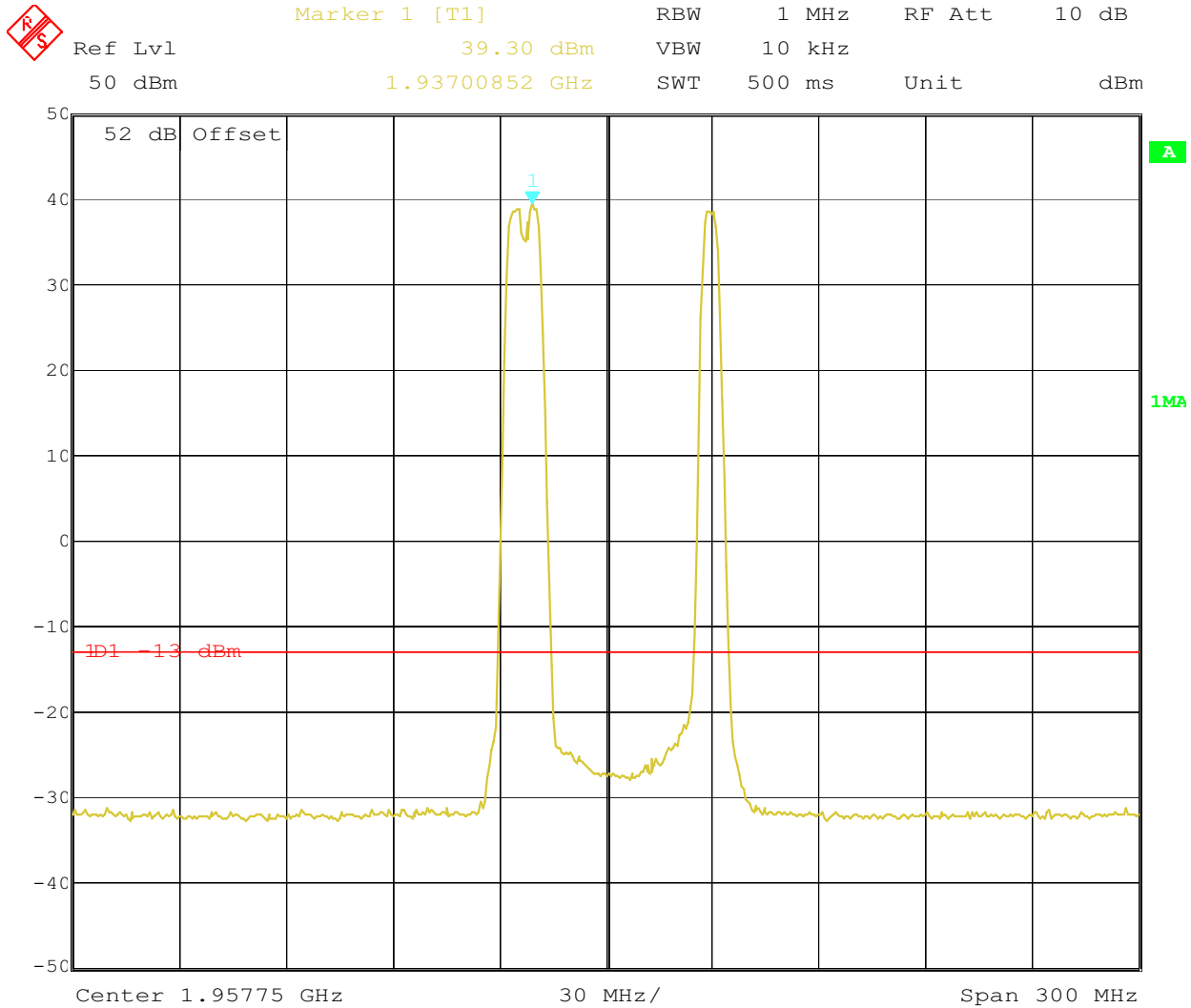
Test Setup for Spurious Emissions, 4000-20000 MHz



Test configuration diagram

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

Photo:



Date: 15.MAR.2006 10:17:41

3 tone Inter-Mod WCDMA (3 shown)

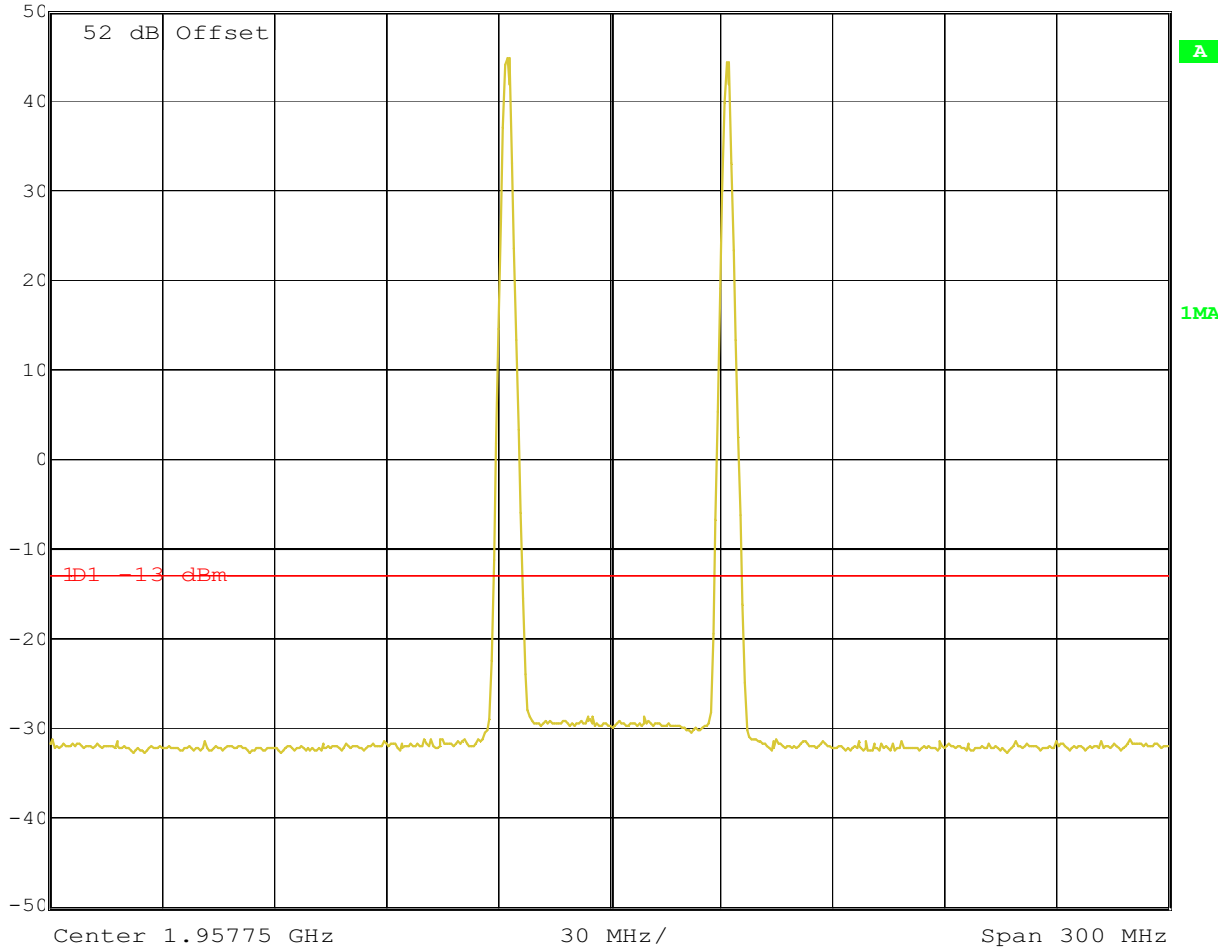
8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

Photo:



Ref Lvl
50 dBm

RBW 1 MHz RF Att 10 dB
VBW 10 kHz
SWT 500 ms Unit dBm



Date: 15.MAR.2006 10:10:56

3 tone Inter-Mod GSM Edge (3 shown)

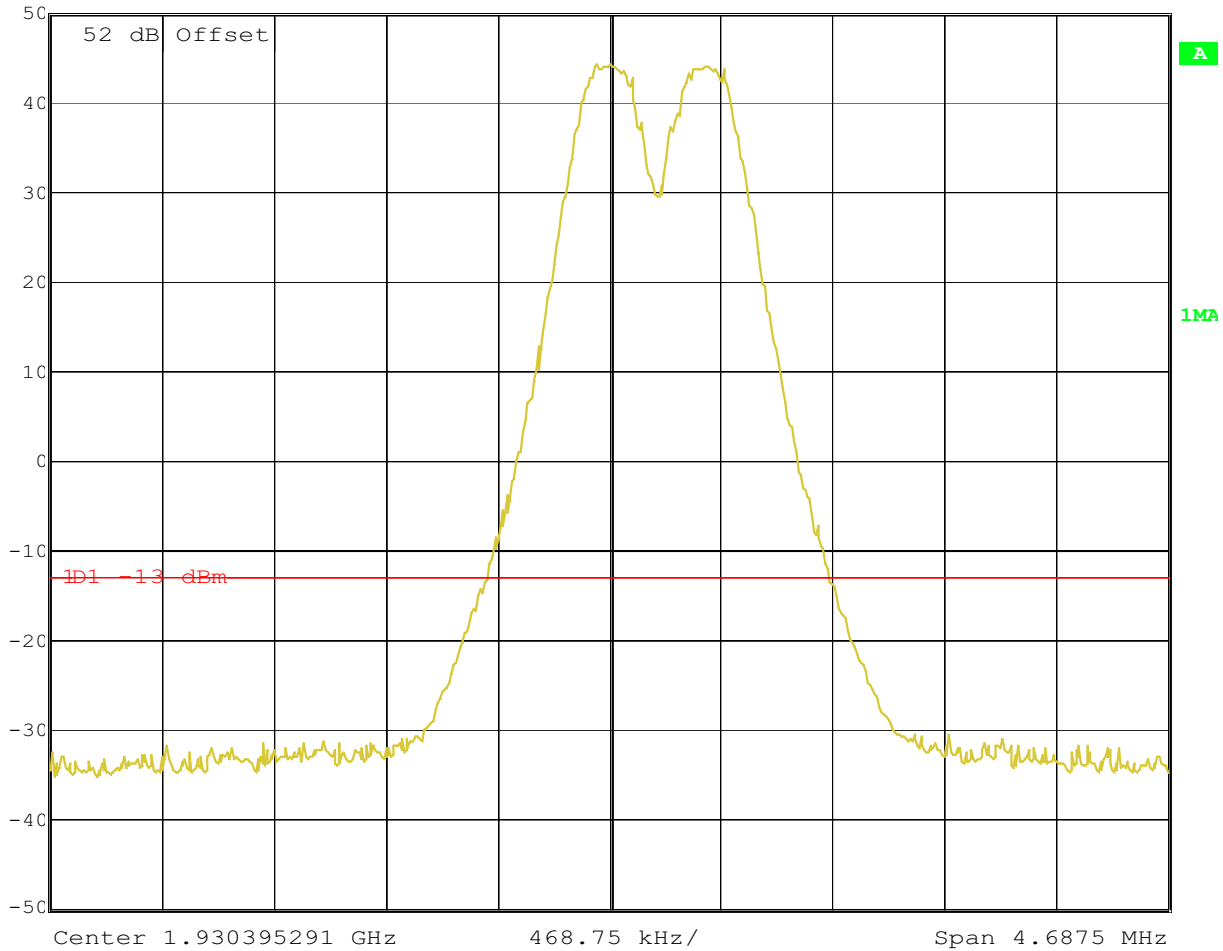
8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

Photo:



Ref Lvl
50 dBm

RBW 100 kHz RF Att 10 dB
VBW 10 kHz
SWT 500 ms Unit dBm



Date: 15.MAR.2006 10:12:01

3 tone Inter-Mod GSM Edge Lower (2 of 3 shown)

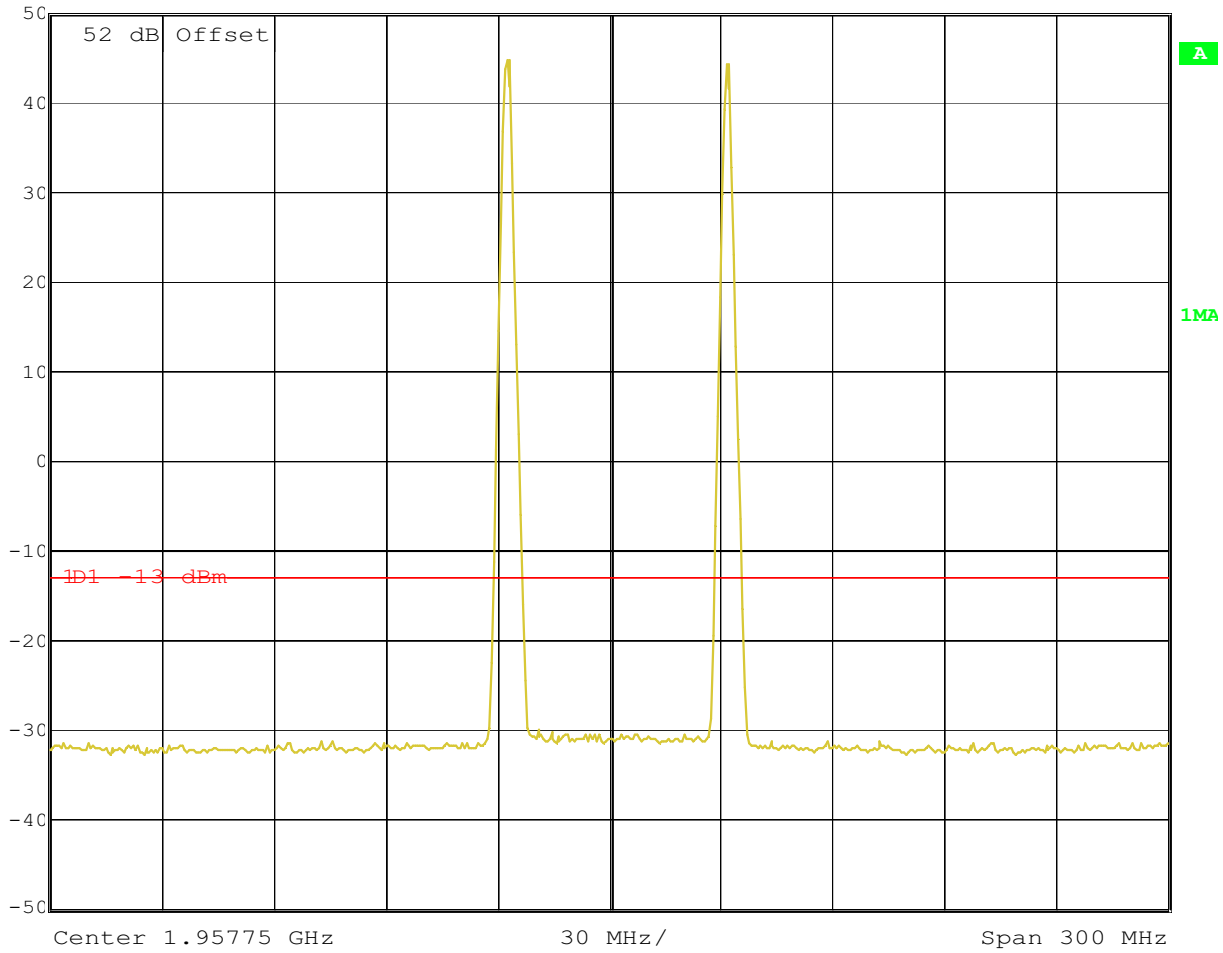
8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

Photo:



Ref Lvl
50 dBm

RBW	1 MHz	RF Att	10 dB
VBW	10 kHz		
SWT	500 ms	Unit	dBm

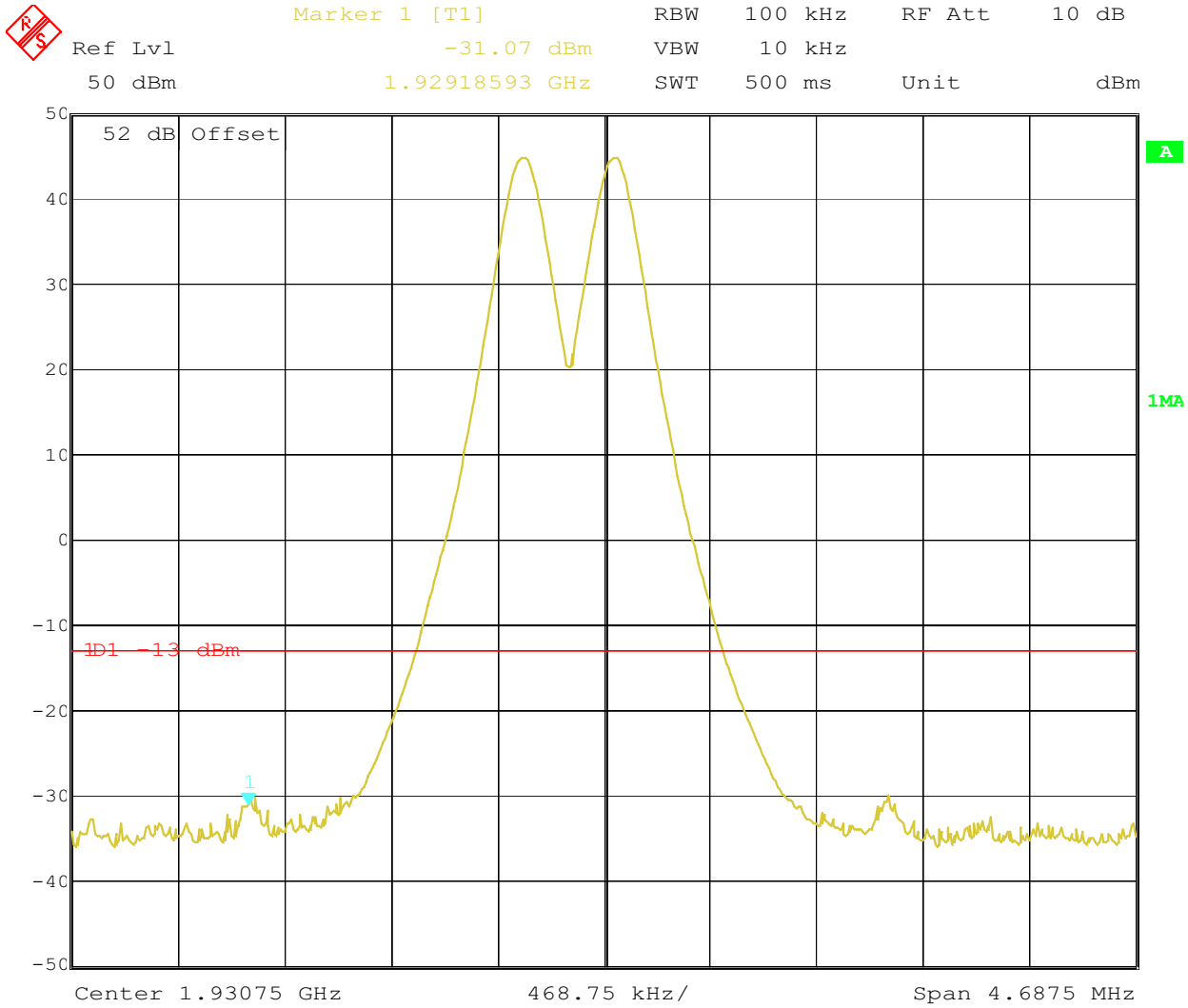


Date: 15.MAR.2006 10:07:51

3 tone Inter-Mod CW (3 shown)

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

Photo:

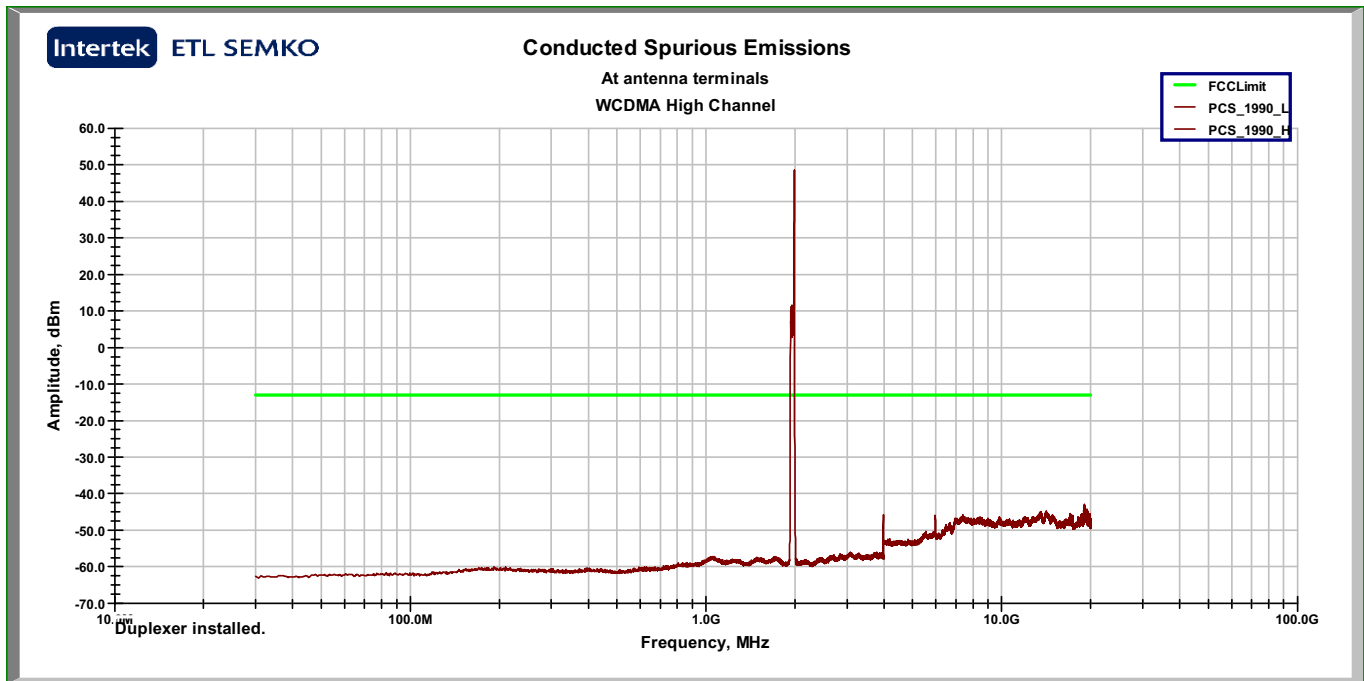


Date: 15.MAR.2006 10:06:28

3 tone Inter-Mod CW Lower (2 of 3 shown)

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

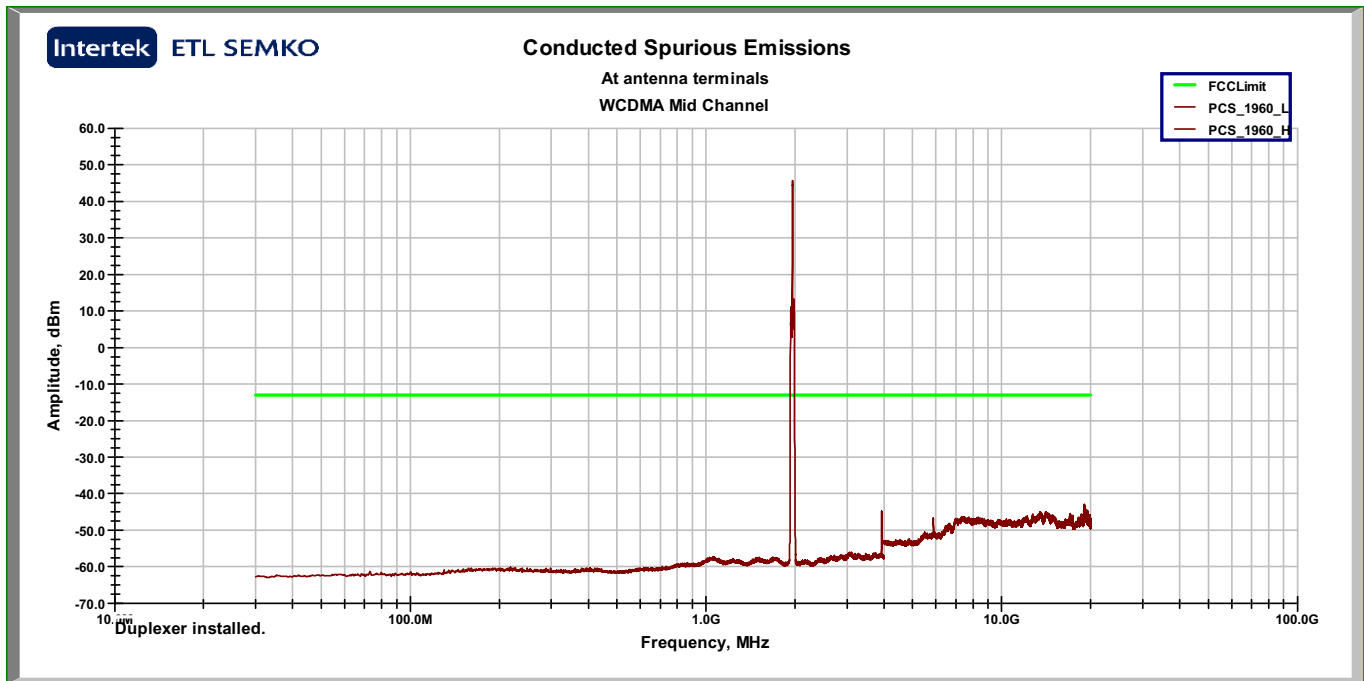
Plot:



WCDMA High channel

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

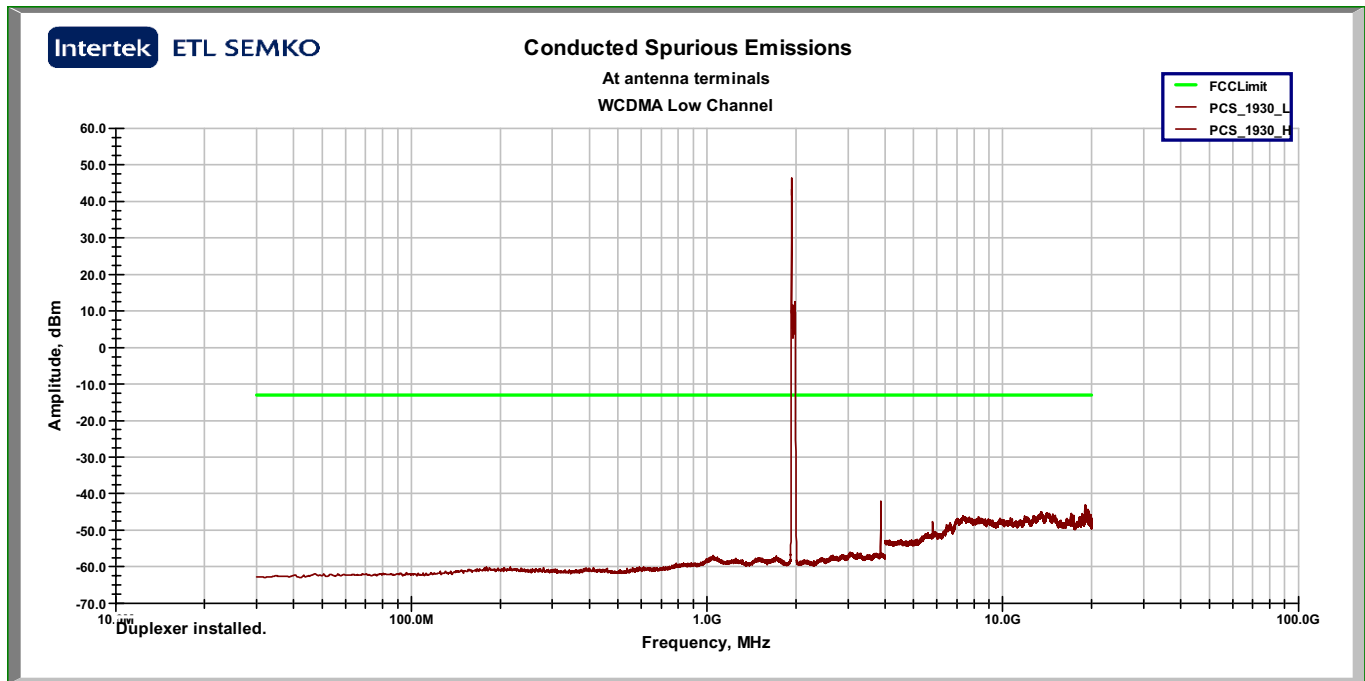
Plot:



WCDMA Mid channel

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

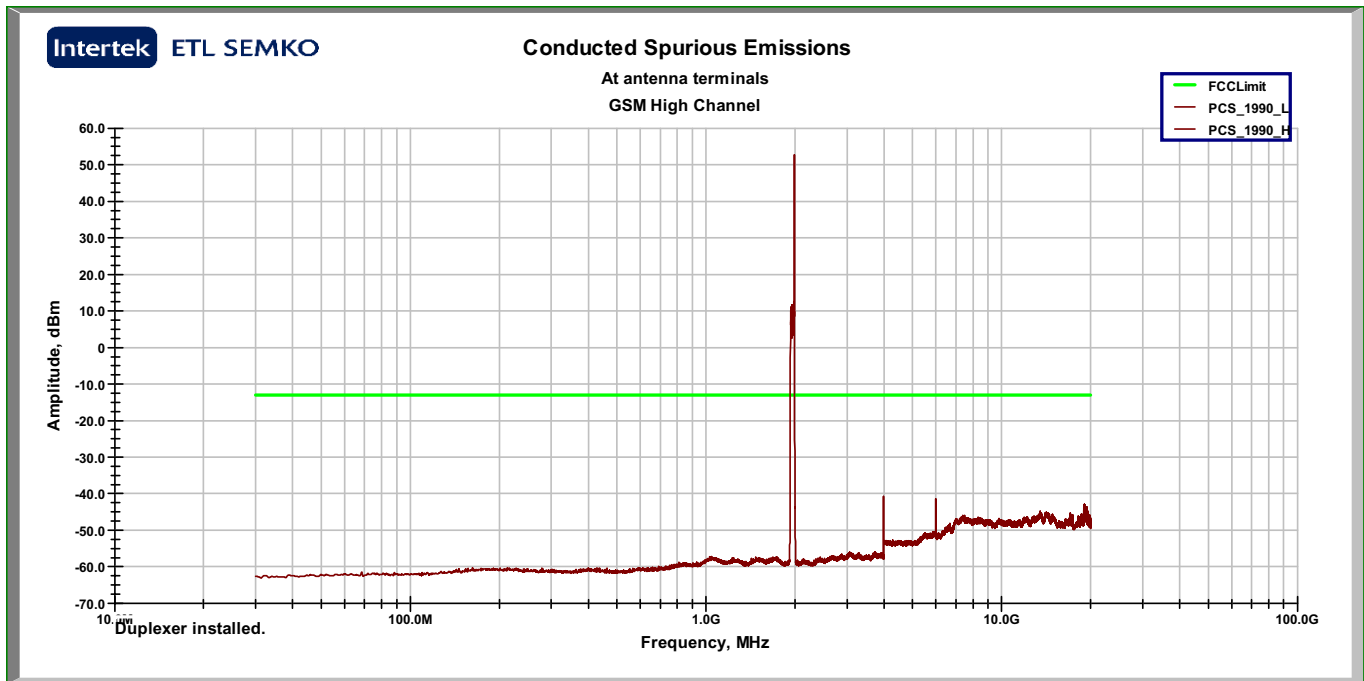
Plot:



WCDMA Low channel

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

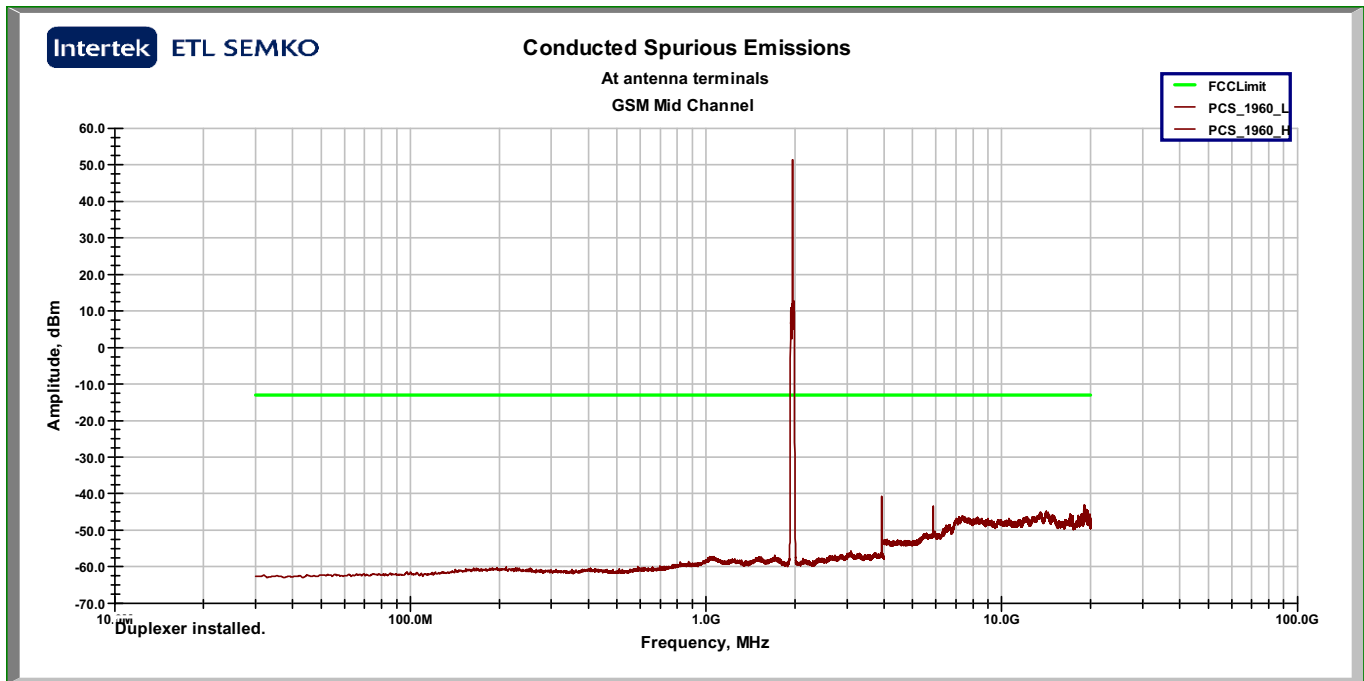
Plot:



GSM High channel

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

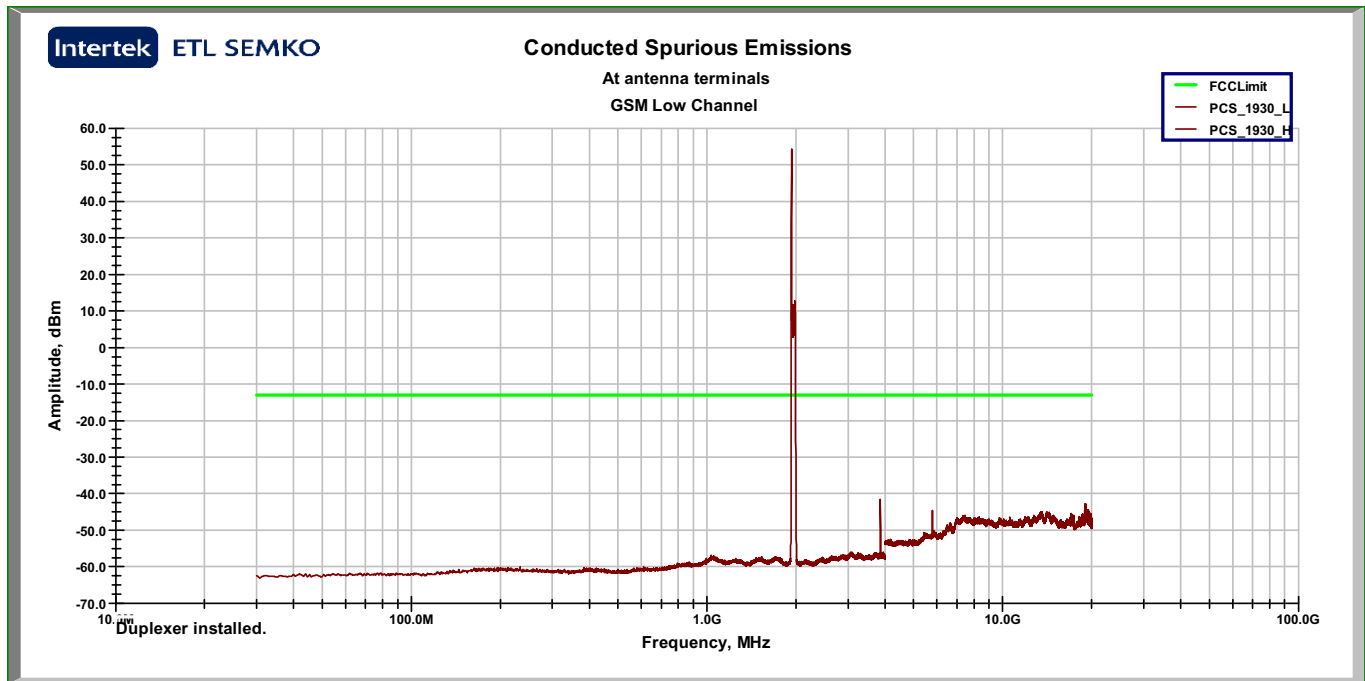
Plot:



GSM Mid channel

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)

Plot:



GSM Low channel

8.0 Spurious emissions at antenna terminals (FCC Part 2.1051)**Data:**

Mode	Frequency MHz	RBW/VBW	Peak EUT Emission dBm	Limit dBm	Margin dB
GSM-1930	3859	1 MHz	-41.9	-13	-28.9
GSM-1960	3919	1 MHz	-40.9	-13	-27.9
GSM-1990	3980	1 MHz	-40.7	-13	-27.7
WCDMA-1932.5	3865	1 MHz	-42.3	-13	-29.3
WCDMA-1960	3920	1 MHz	-44.9	-13	-31.9
WCDMA-1987.5	3975	1 MHz	-46.1	-13	-33.1

9.0 Spurious emissions at antenna terminals - Bandedge (FCC Part 2.1051)

Method:

FCC §2.1049, FCC §2.1051, §22.917(a), FCC §24.238(a)

Out of Band Emissions: 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.

Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for the Cellular band and 1 MHz or greater in the PCS band. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Connect the RF output of the EUT to a spectrum analyzer through appropriate attenuation. Set the EUT to transmit at its maximum power level. Sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

For Amplifiers, an intermodulation test is also performed. Test all modulations types [TDMA, CDMA, and FM (covers GSM and F1D)].

- CW signal rather than typical signal is acceptable (for FM).
- At maximum drive level, for each modulation: one test with three tones, or two tests (high-, low-band edge) with two tones
- Limit usually is -13dBm conducted.
- Not needed for Single Channel systems.
- Combination of modulation types not needed.

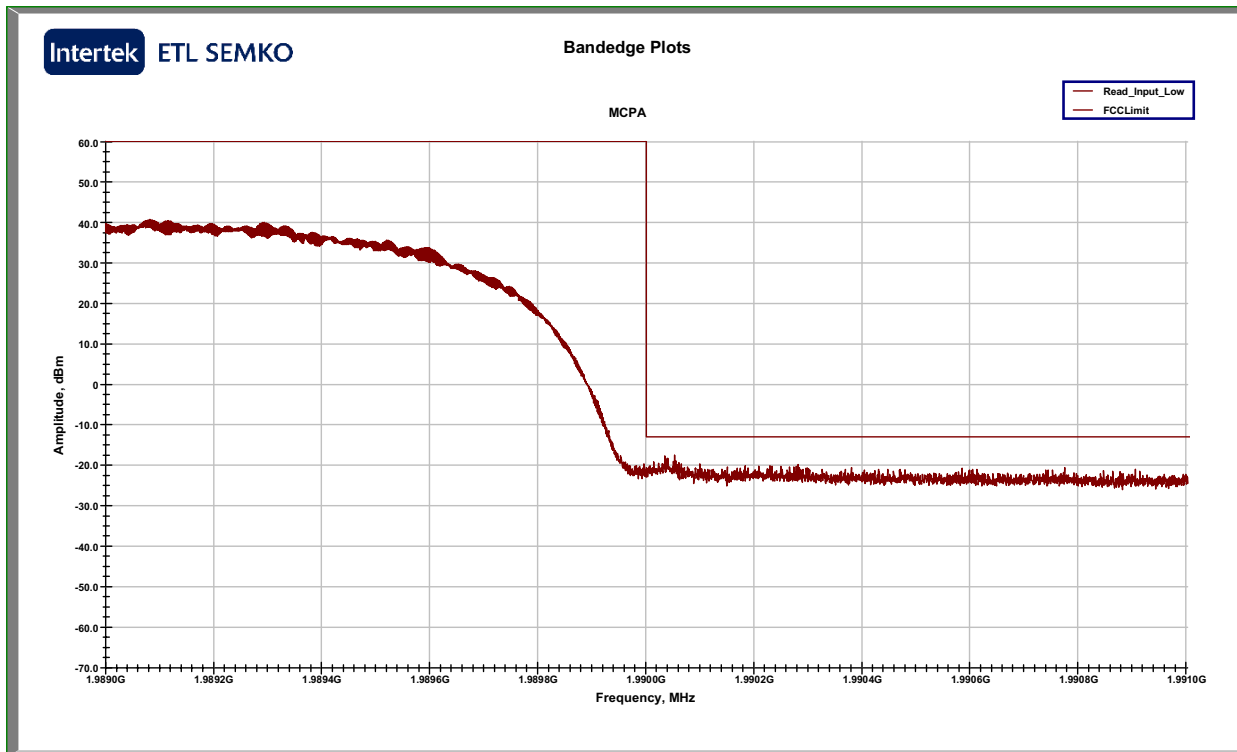
Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Attenuator, 10 dB	Weinschel Corp	2	200007	07/27/2006	07/27/2007
Attenuator, 10 dB, 1000 Watt	JFW Industries, Inc	40FHAM-010-1000	200073	VBU	VBU
Attenuator, 10 dB, 150 Watt, <18GHz	Weinschel Corp	66-10-33	211683	03/06/2006	03/06/2007
Attenuator, 10 dB, 50 Watt, DC-18GHz	Weinschel	47-10-34	200061	07/18/2006	07/18/2007
EMI Receiver	Hewlett Packard	8546A	211505	10/26/2006	10/26/2007

Results: The sample tested was found to Comply.

9.0 Spurious emissions at antenna terminals - Bandedge (FCC Part 2.1051)

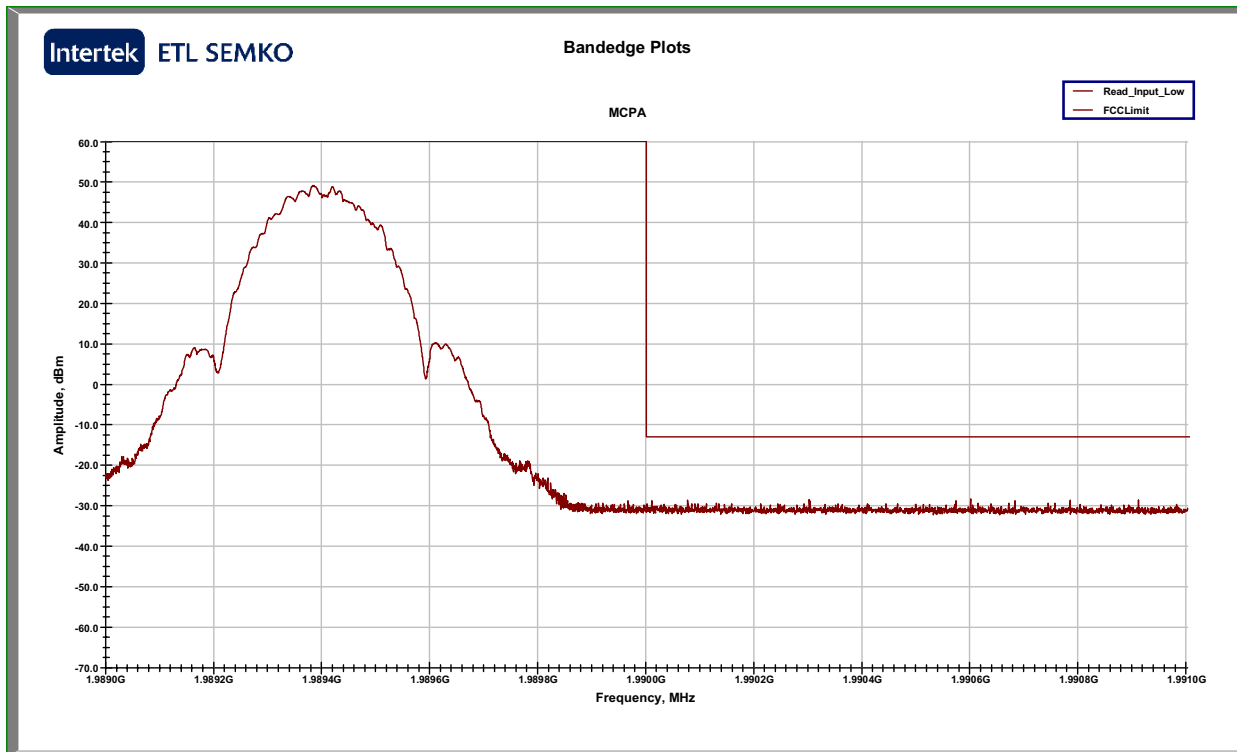
Plot:



WCDMA High channel

9.0 Spurious emissions at antenna terminals - Bandedge (FCC Part 2.1051)

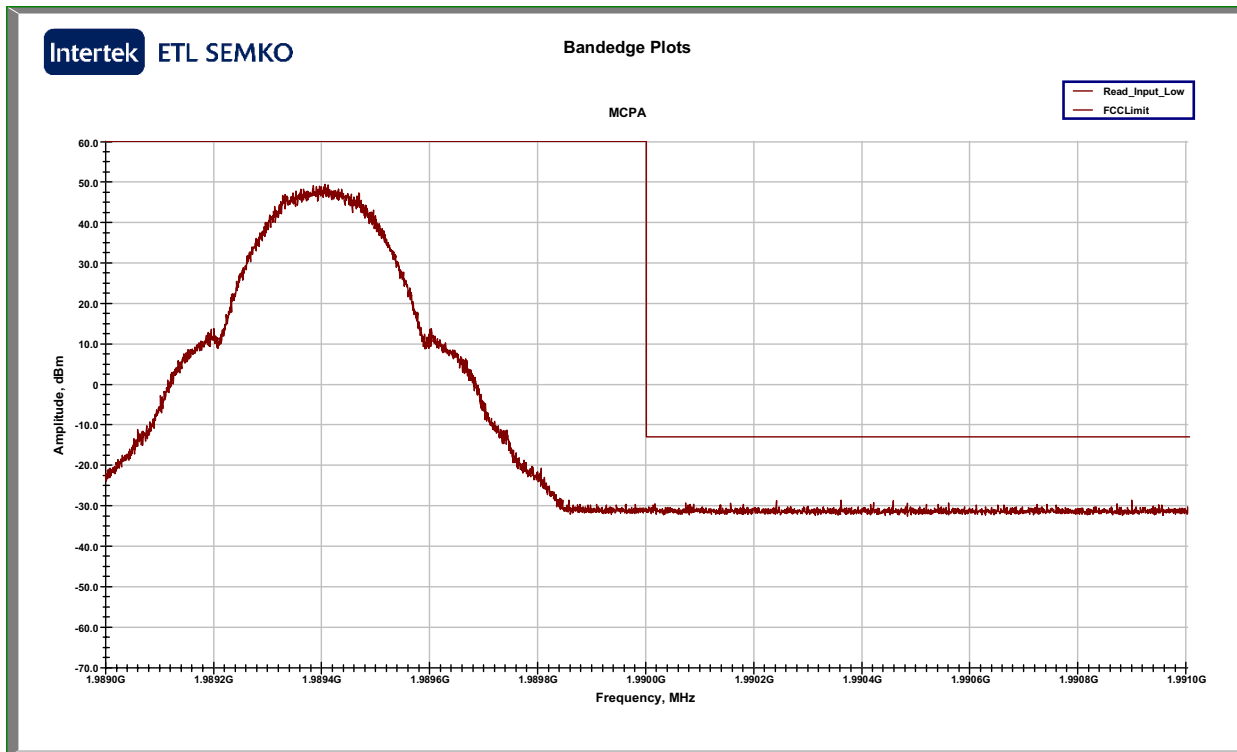
Plot:



GSM Edge High channel

9.0 Spurious emissions at antenna terminals - Bandedge (FCC Part 2.1051)

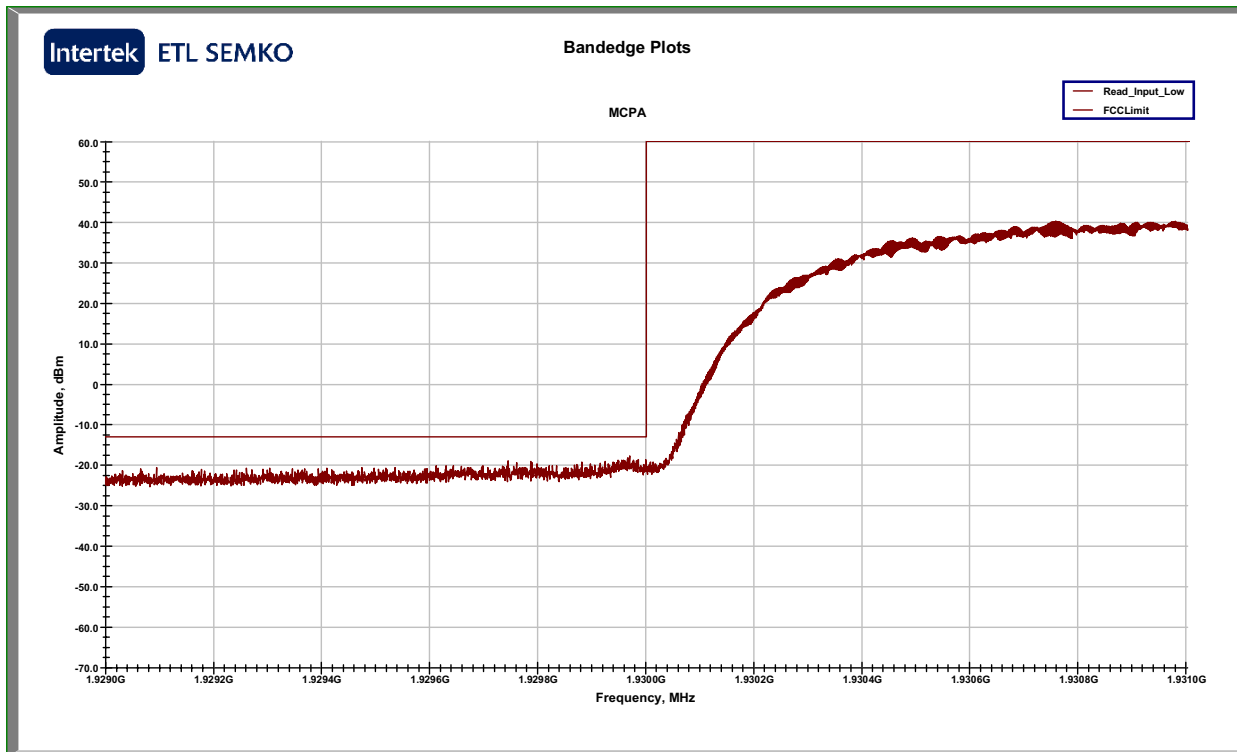
Plot:



GSM High channel

9.0 Spurious emissions at antenna terminals - Bandedge (FCC Part 2.1051)

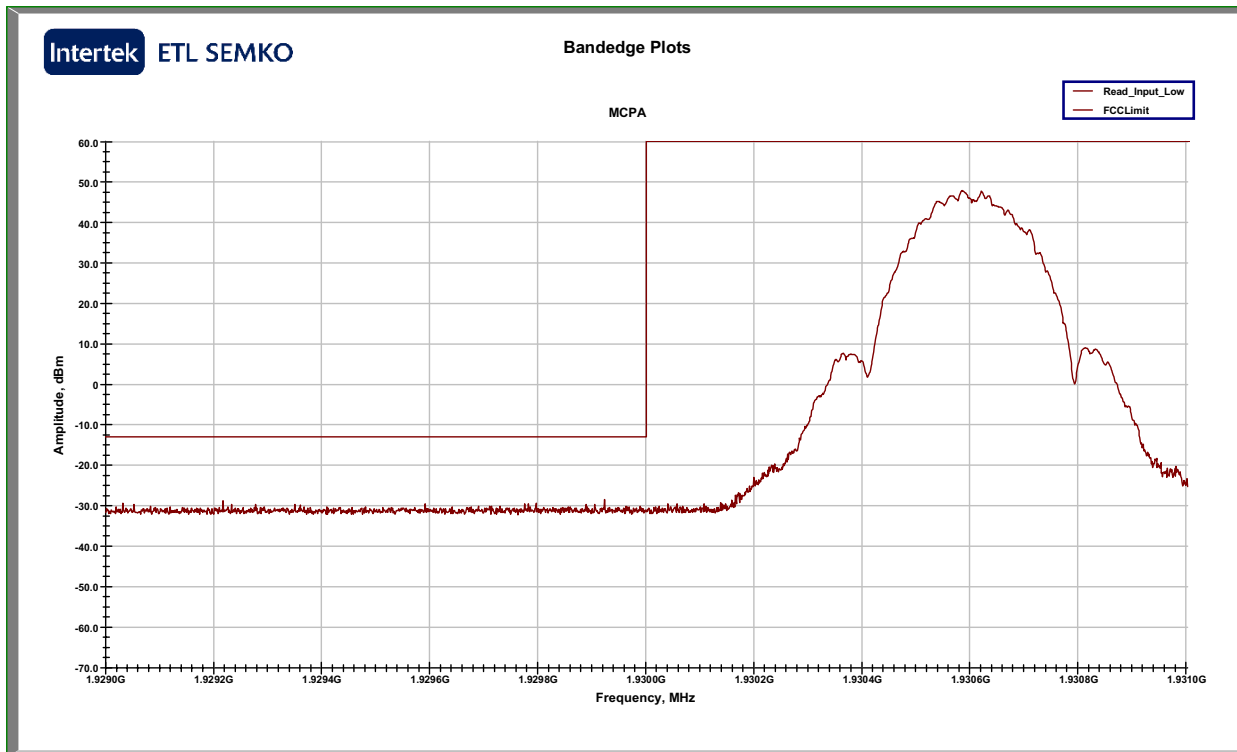
Plot:



WCDMA Low channel

9.0 Spurious emissions at antenna terminals - Bandedge (FCC Part 2.1051)

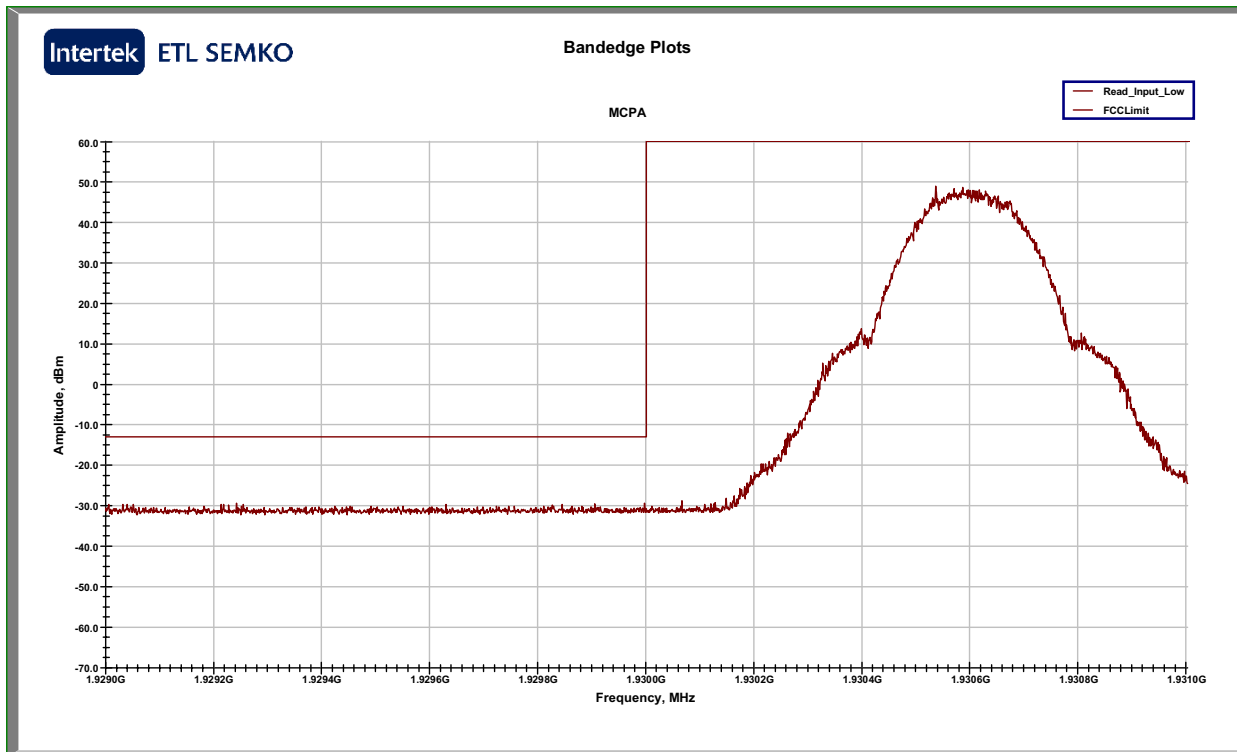
Plot:



GSM-Edge Low channel

9.0 Spurious emissions at antenna terminals - Bandedge (FCC Part 2.1051)

Plot:



GSM Low channel

9.0 Spurious emissions at antenna terminals - Bandedge (FCC Part 2.1051)**Data:**

Mode	Frequency MHz	RBW/VBW	Peak EUT Emission at bandedge dBm	Limit dBm	Margin dB
GSM	1910.6	10 kHz / 30 kHz	-30	-13	-17
GSM	1989.4	10 kHz / 30 kHz	-30	-13	-17
GSM-Edge	1910.6	10 kHz / 30 kHz	-30	-13	-17
GSM-Edge	1989.4	10 kHz / 30 kHz	-30	-13	-17
WCDMA	1912.5	100 kHz / 300 kHz	-15	-13	-2
WCDMA	1987.5	100 kHz / 300 kHz	-20	-13	-7

10.0 Field strength of spurious radiation (FCC Part 2.1053)

Method:

Place the EUT on a non-conductive table 0.8 meters above a ground plane. Place the measurement antenna a distance of 3 meters from the EUT in the horizontal polarization. During the tests, vary the antenna height and EUT azimuth in order to identify the maximum level of emissions from the EUT. If the EUT is a handheld device, this maximization process is to be repeated with the EUT positioned in each of its three orthogonal orientations. If the EUT is not a handheld device, then the maximization process is to be repeated with the measurement antenna in the vertical polarization.

Investigate the frequency spectrum up to tenth harmonic of the EUT for each of three fundamental frequencies (low, middle, and high channels). Once spurious emissions were identified, the power of the emission was determined using the substitution method. Repeat for each band that the EUT operates.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and at the spurious emissions frequency.

Test Equipment Used:

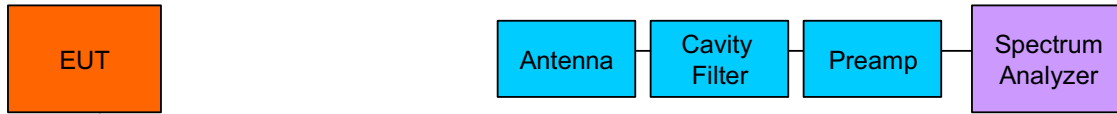
Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Cable E05 (Formerly HS 1500 N-N)	Huber-Suhner	Sucoflex 104PEA	E05	05/12/2005	05/12/2006
Cable E11 (Formerly HS 7000 N-SMA)	Huber-Suhner	Sucoflex 104PEA	E11 211266	05/11/2005	05/11/2006
Cable, 18 GHz, N, 118 inches	Megaphase	TM18 NKNK 118	E202	05/13/2005	05/13/2006
Cable, 18 GHz, N, 394 inches	Megaphase	G919-NKNK-394	MP3	05/11/2005	05/11/2006
Filter, Band Reject, Cavity Design, 50 dB	Wainwright Inst.	WRCG 1930/1990	200079	12/08/2005	12/08/2006
High Pass Filter, 3 GHz	Filtek	HP12/3000-5AB	213154a	03/06/2006	03/06/2007
Preamplifier, 32 dB gain, 30MHz to 26GHz Preamplifier	Miteq	JS4-00102600-29-	015533	01/09/2006	01/09/2007
Spectrum Analyzer, 20 Hz to 40 GHz	Rohde & Schwarz	FSEK30	200062	01/12/2006	01/12/2007

Results: The sample tested was found to Comply.

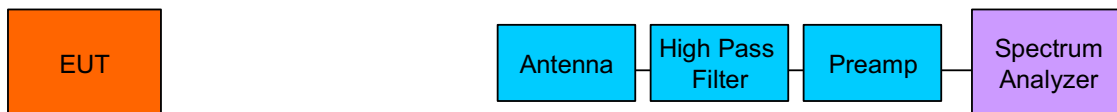
10.0 Field strength of spurious radiation (FCC Part 2.1053)

Photo:

Test Setup for Radiated Spurious Emissions, 30-2000 MHz

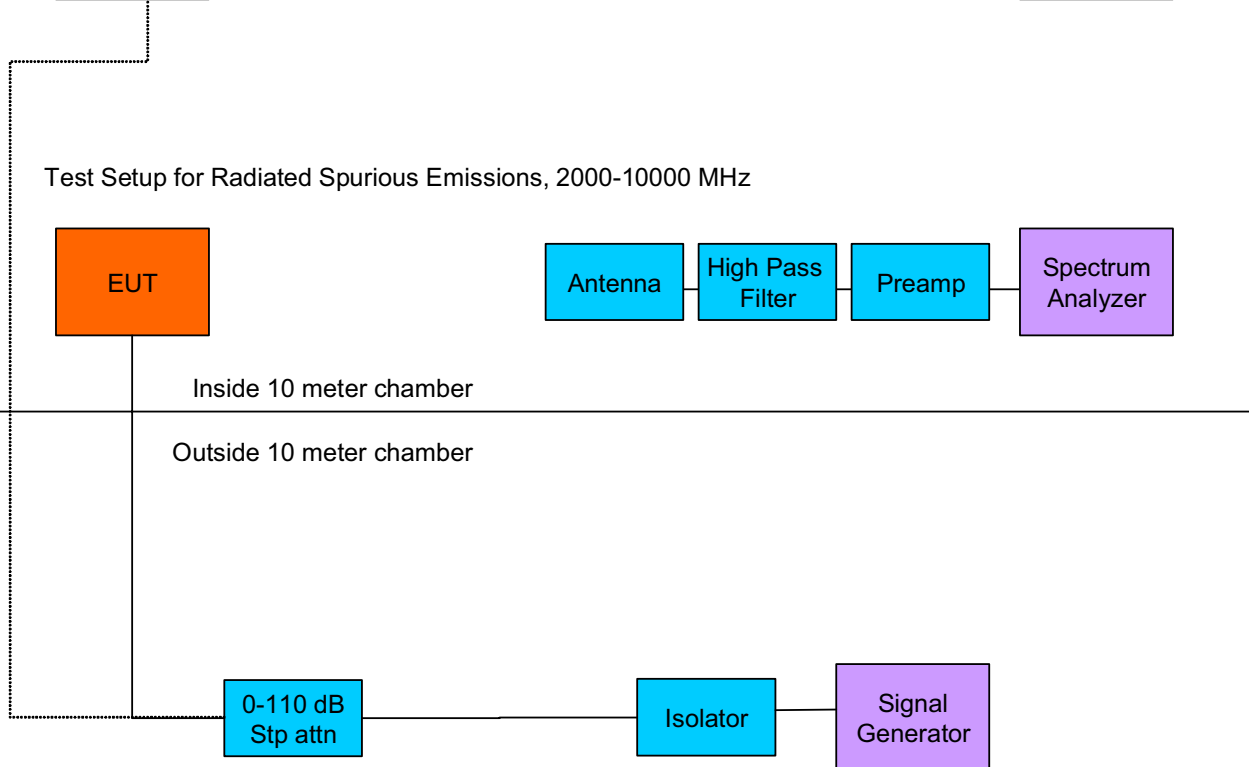


Test Setup for Radiated Spurious Emissions, 2000-10000 MHz

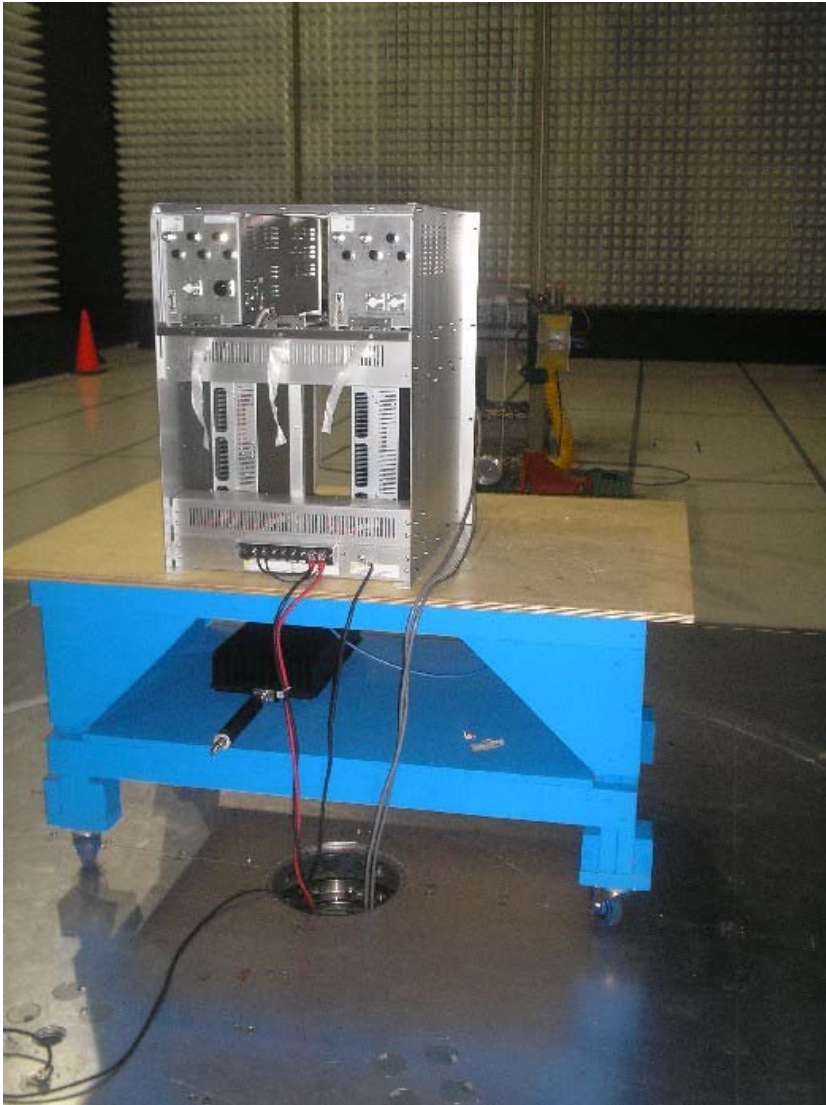


Inside 10 meter chamber

Outside 10 meter chamber



Test configuration diagram

10.0 Field strength of spurious radiation (FCC Part 2.1053)**Photo:**

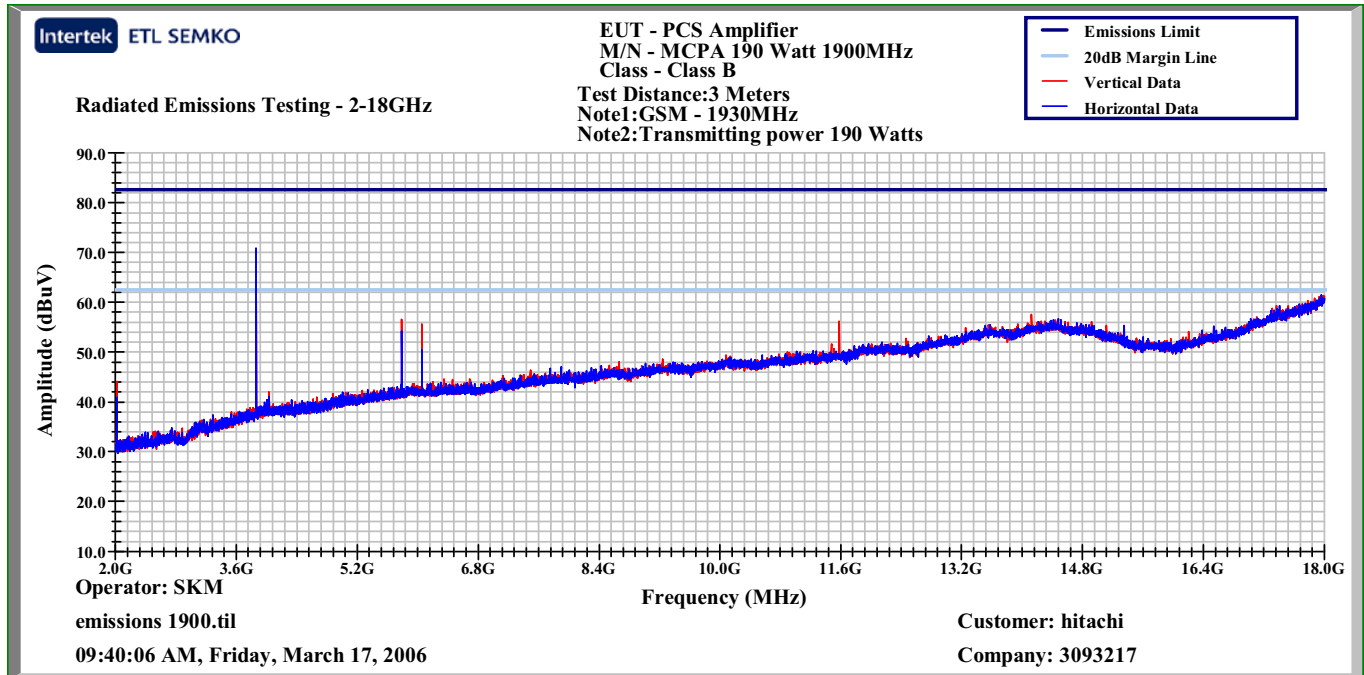
Test set up rear

10.0 Field strength of spurious radiation (FCC Part 2.1053)**Photo:**

Test set up front

10.0 Field strength of spurious radiation (FCC Part 2.1053)

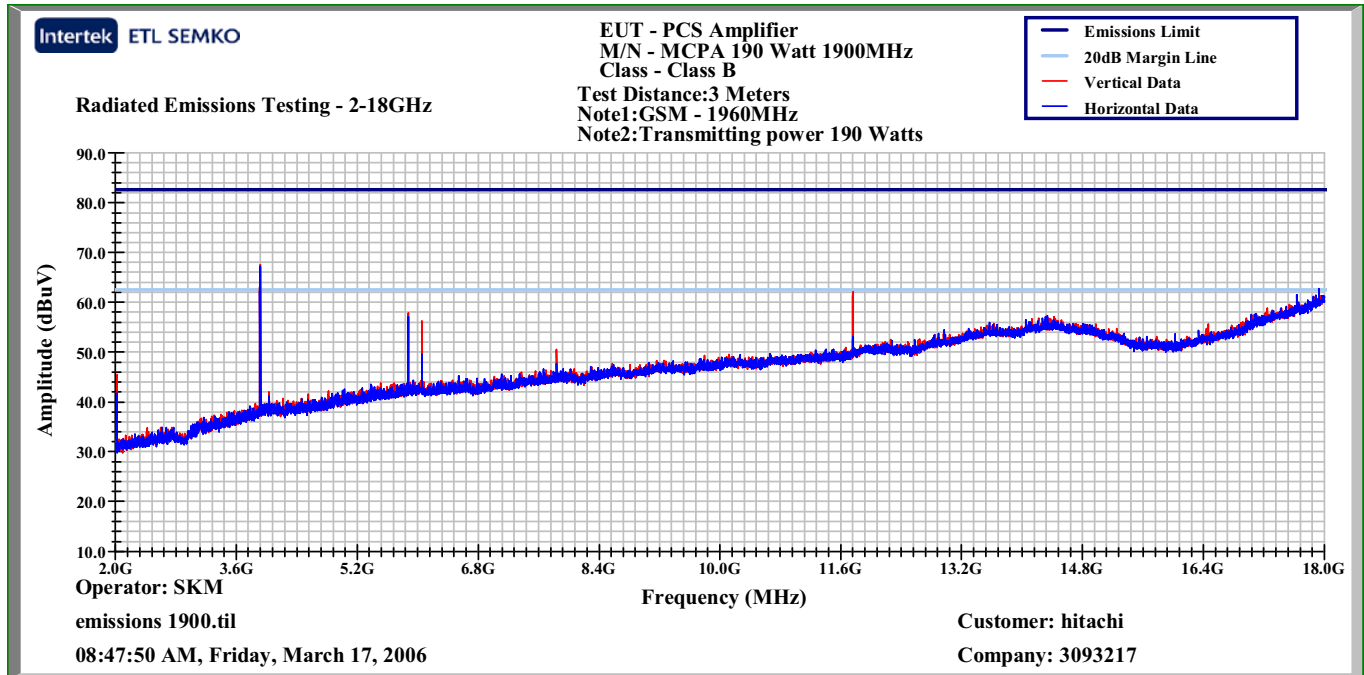
Plot:



2 to 18GHz GSM scan plot 1930MHz

10.0 Field strength of spurious radiation (FCC Part 2.1053)

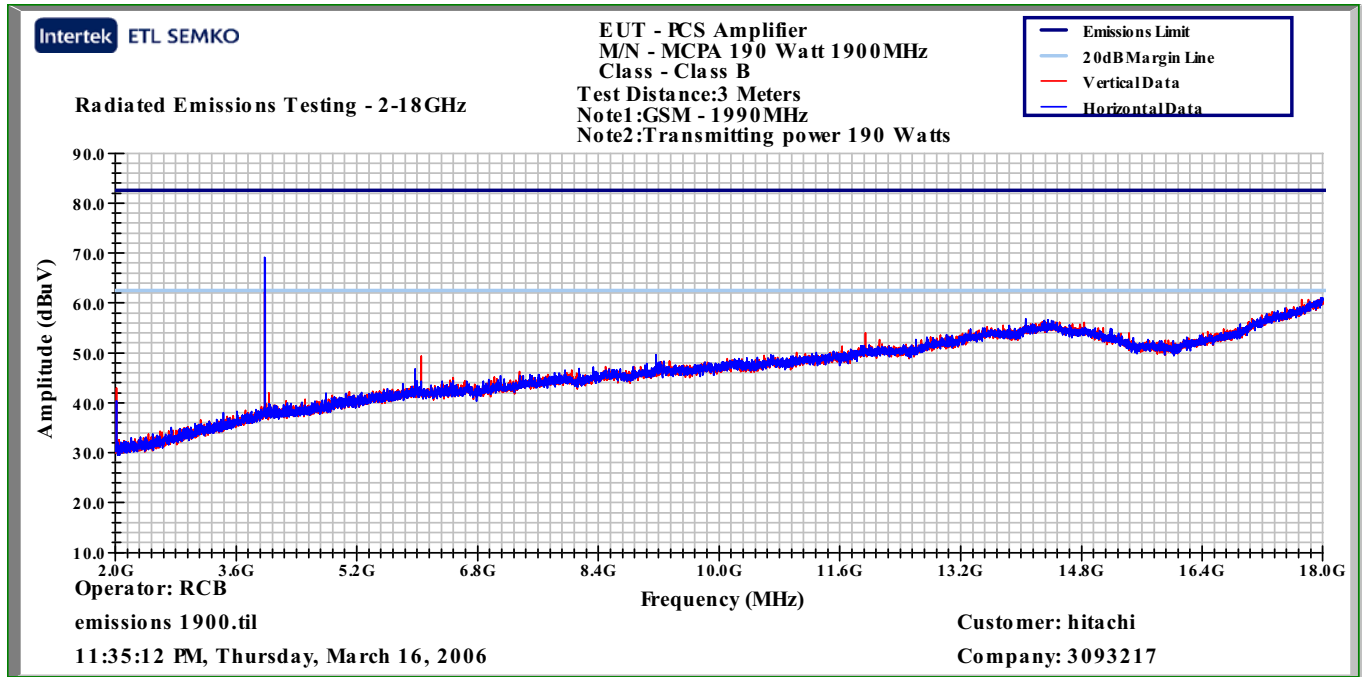
Plot:



2 to 18GHz GSM scan plot 1960MHz

10.0 Field strength of spurious radiation (FCC Part 2.1053)

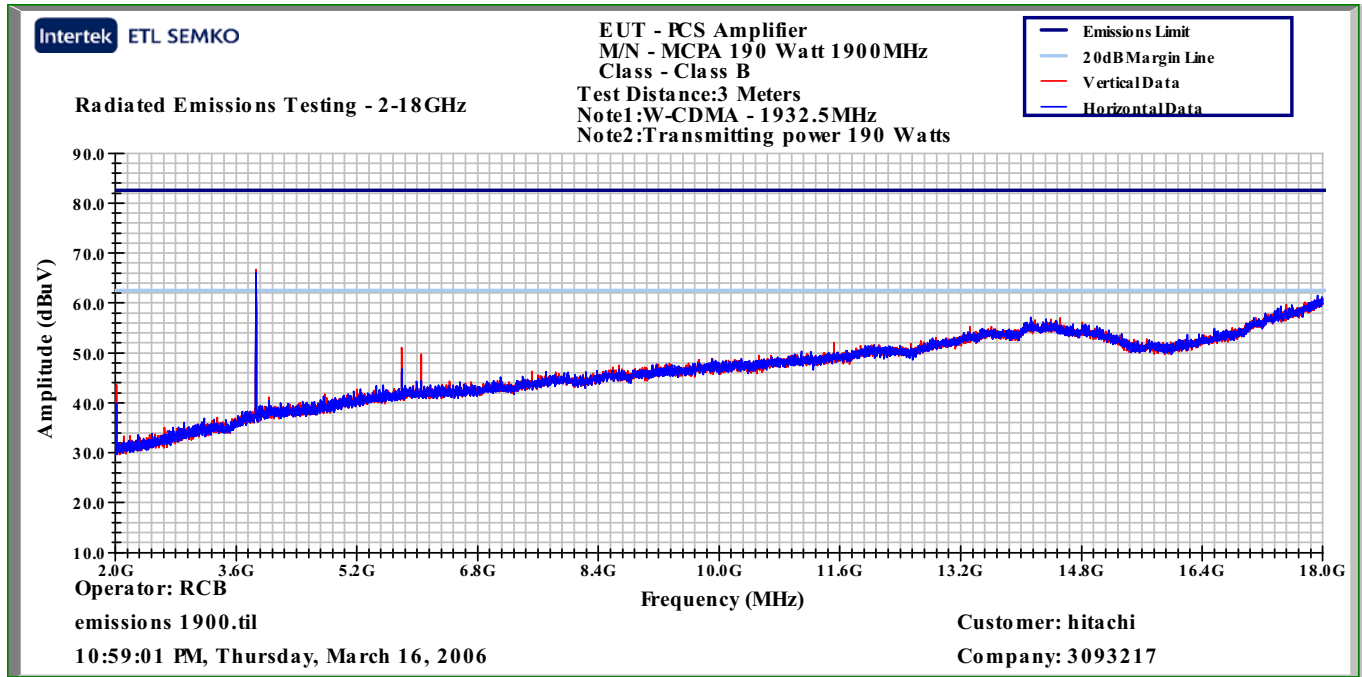
Plot:



2 to 18GHz GSM scan plot 1990MHz

10.0 Field strength of spurious radiation (FCC Part 2.1053)

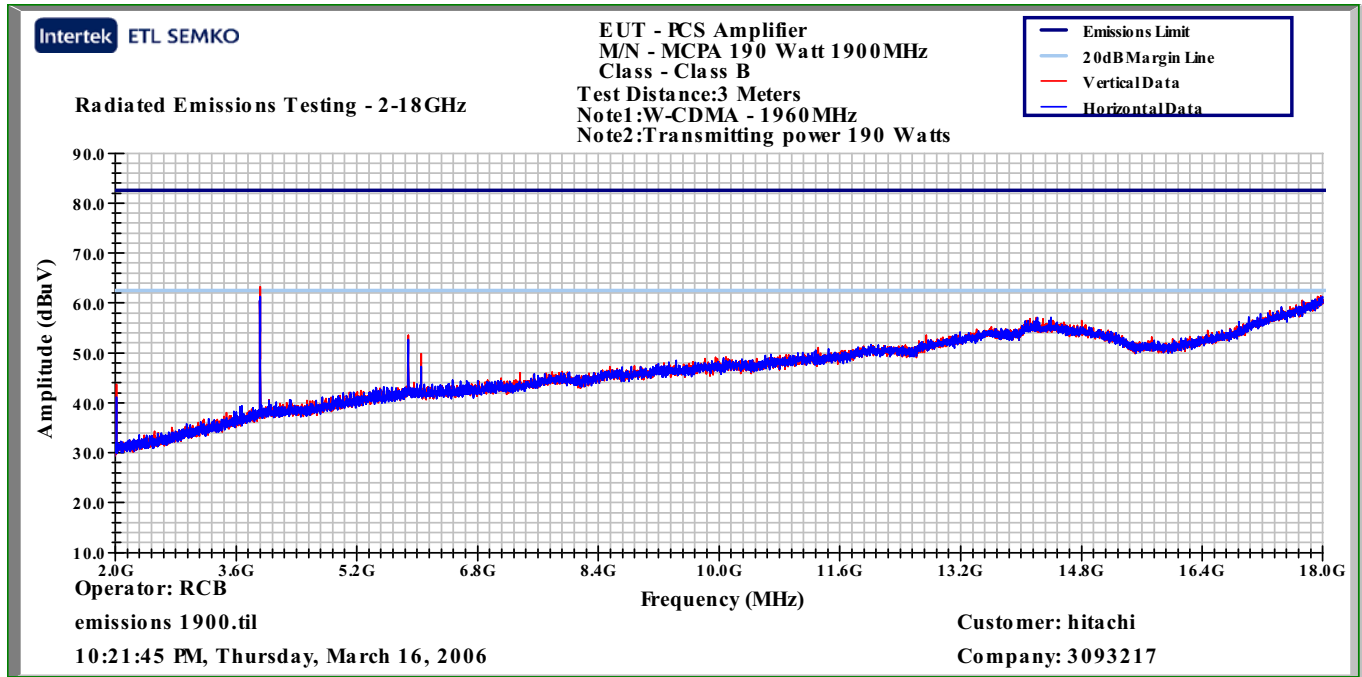
Plot:



2 to 18GHz WCDMA scan plot 1932.5MHz

10.0 Field strength of spurious radiation (FCC Part 2.1053)

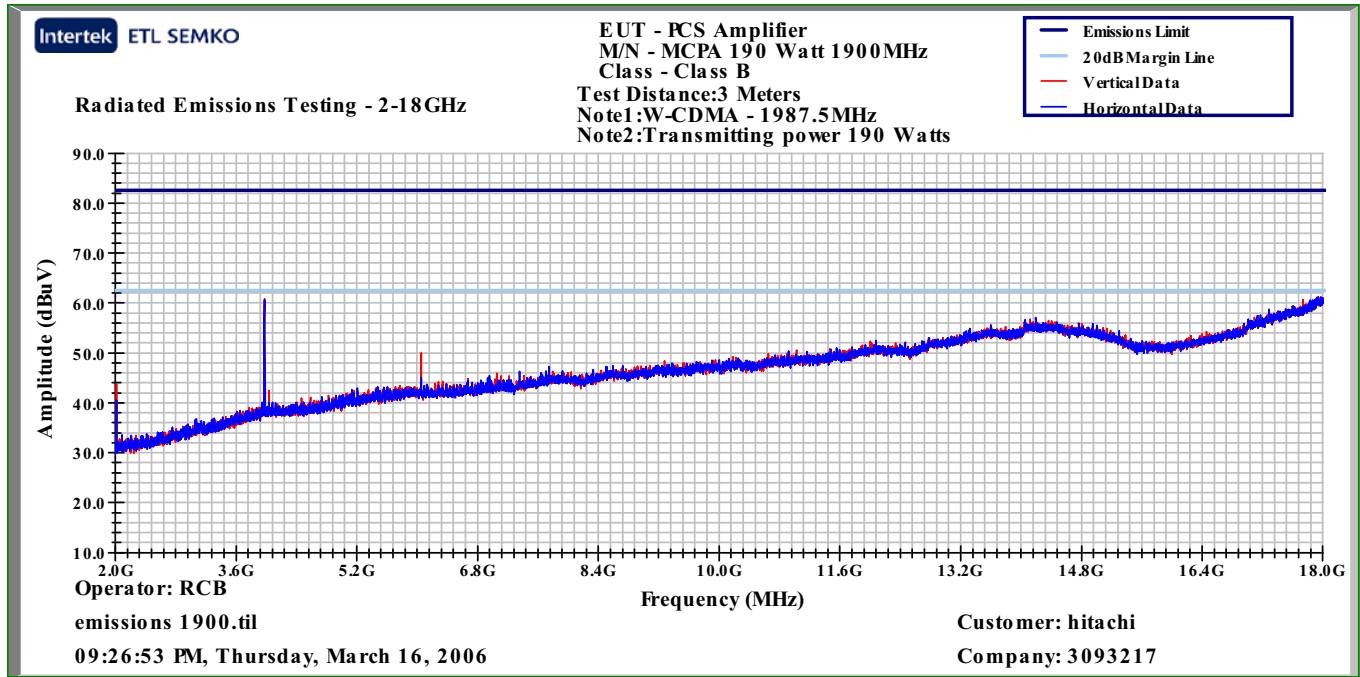
Plot:



2 to 18GHz WCDMA scan plot 1960MHz

10.0 Field strength of spurious radiation (FCC Part 2.1053)

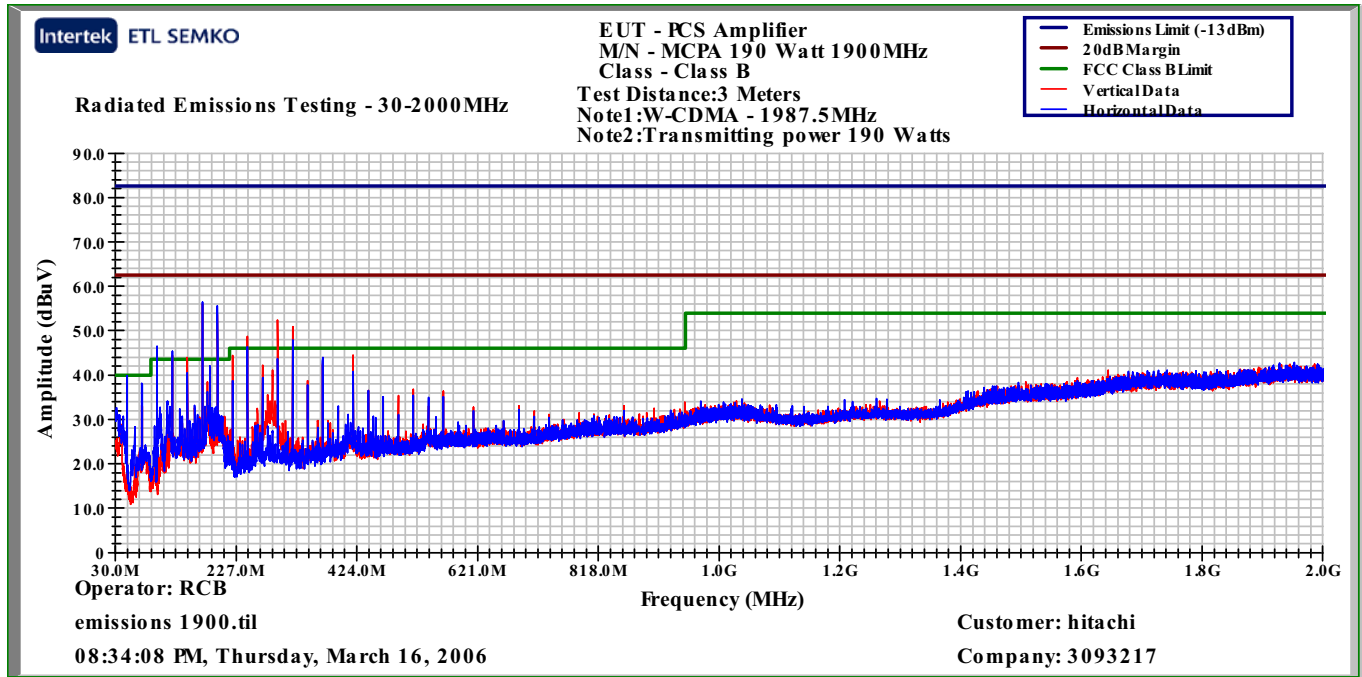
Plot:



2 to 18GHz WCDMA scan plot 1987.5MHz

10.0 Field strength of spurious radiation (FCC Part 2.1053)

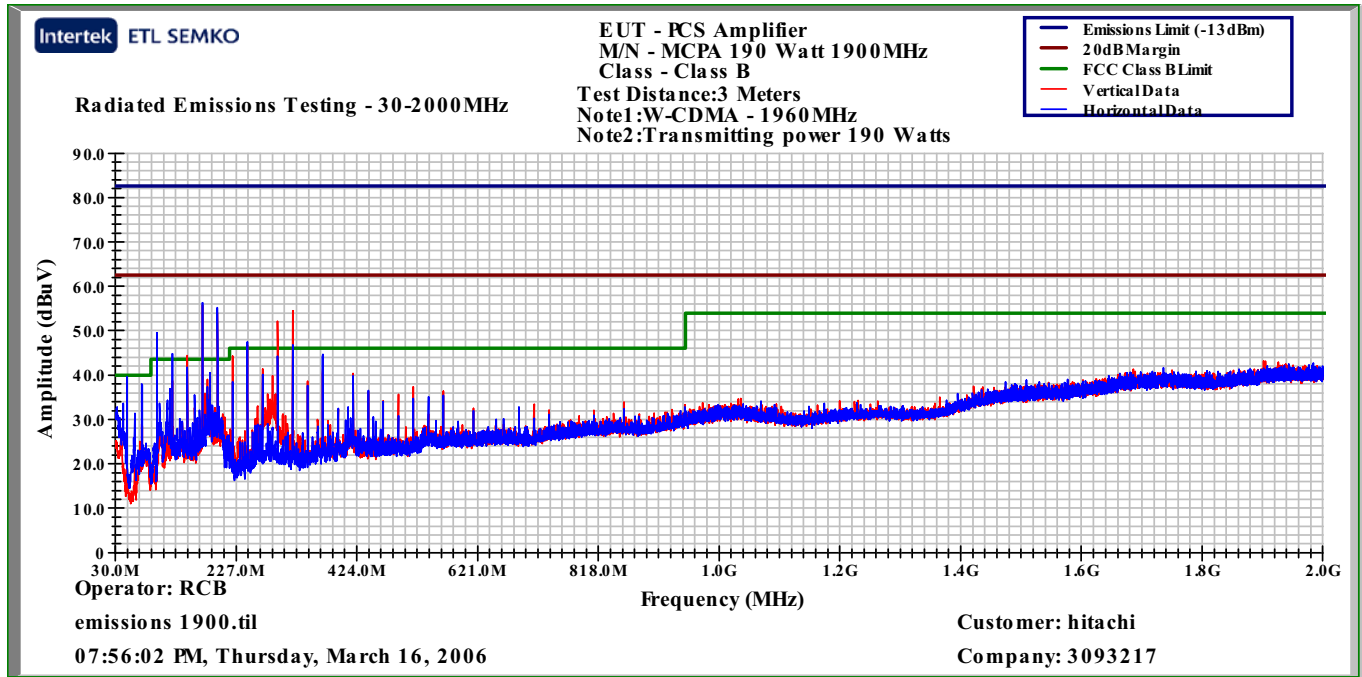
Plot:



30 to 2000MHz scan plot WCDMA 1987.5MHz

10.0 Field strength of spurious radiation (FCC Part 2.1053)

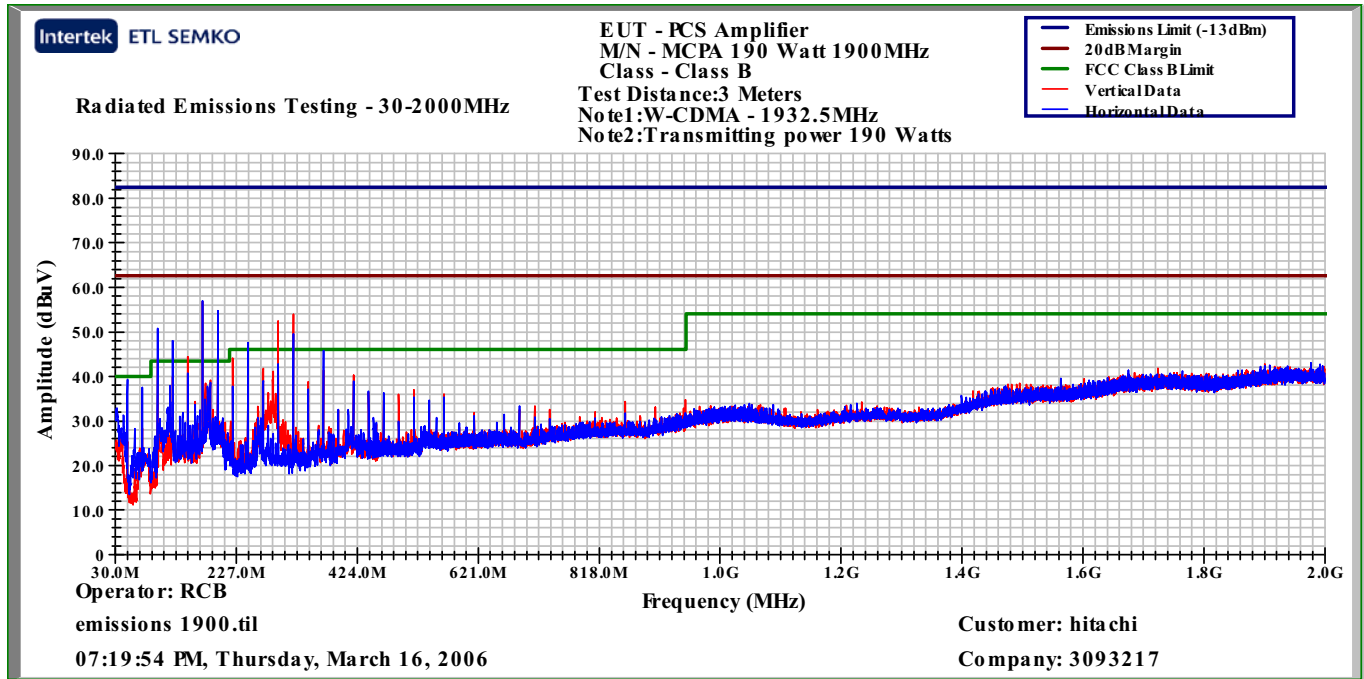
Plot:



30 to 2000MHz scan plot WCDMA 1960MHz

10.0 Field strength of spurious radiation (FCC Part 2.1053)

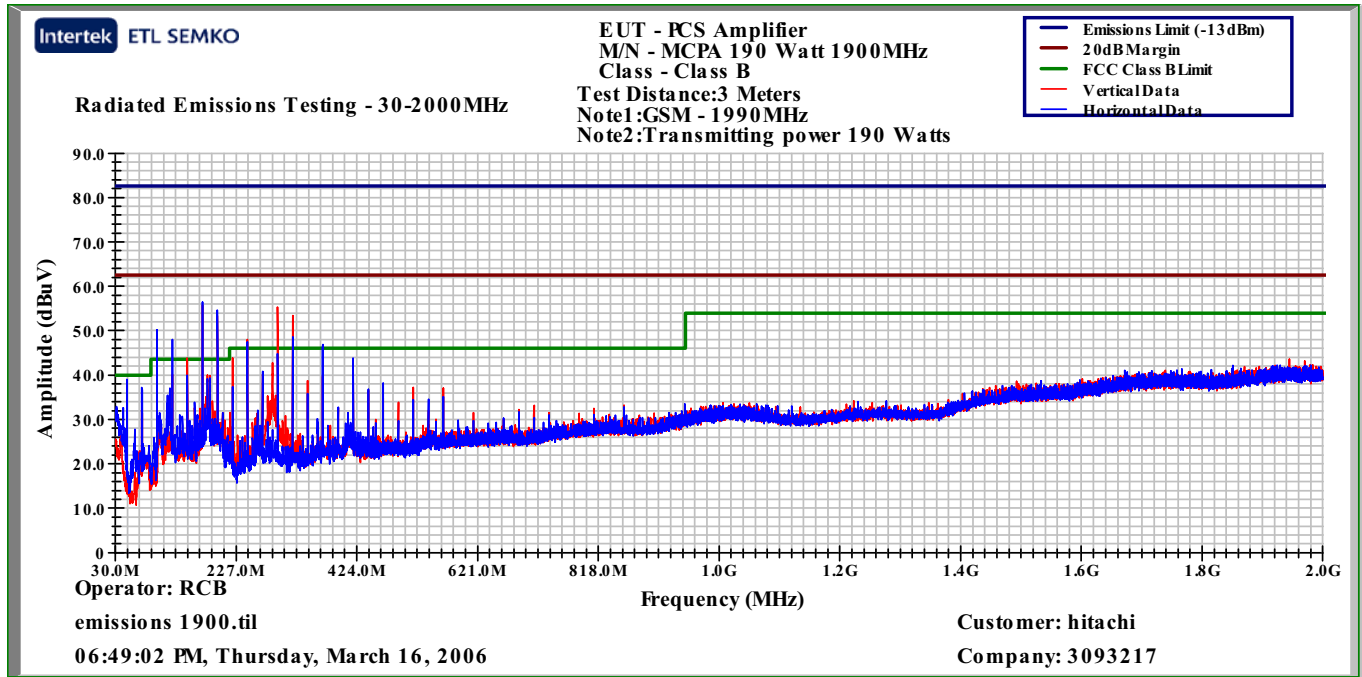
Plot:



30 to 2000MHz scan plot WCDMA 1932.5MHz

10.0 Field strength of spurious radiation (FCC Part 2.1053)

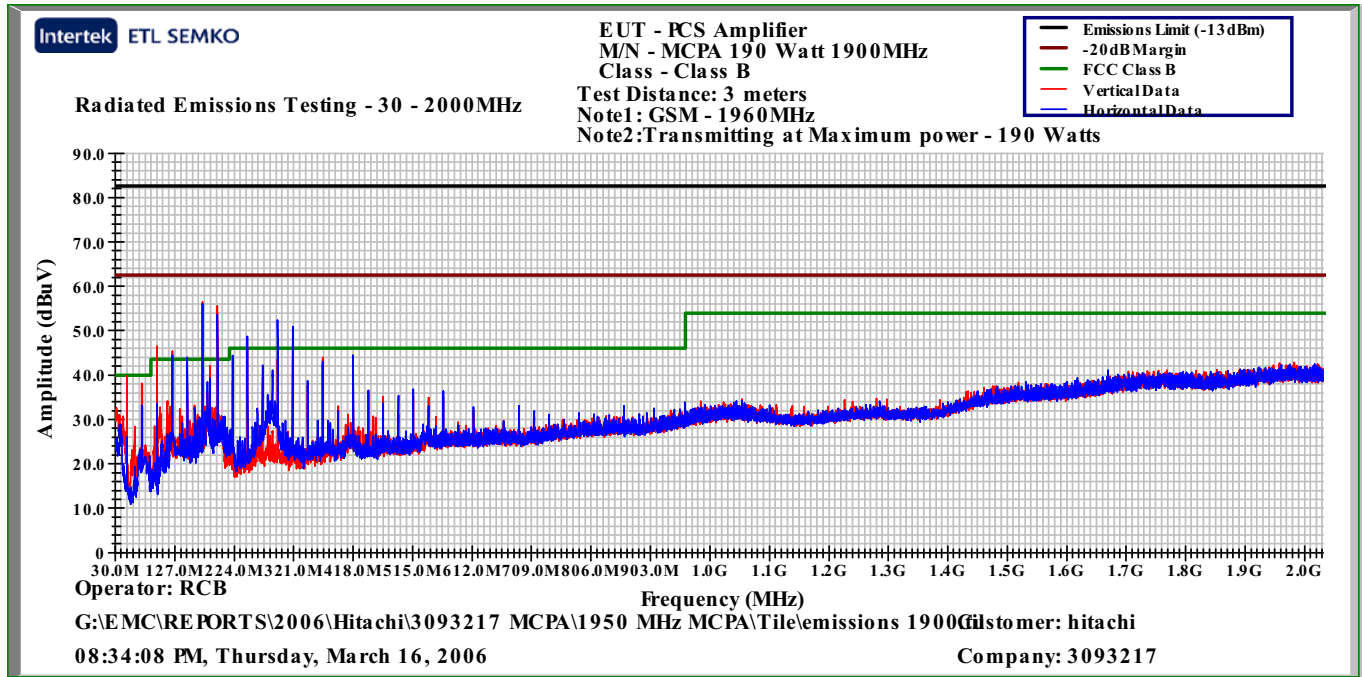
Plot:



30 to 2000MHz scan plot GSM 1990MHz

10.0 Field strength of spurious radiation (FCC Part 2.1053)

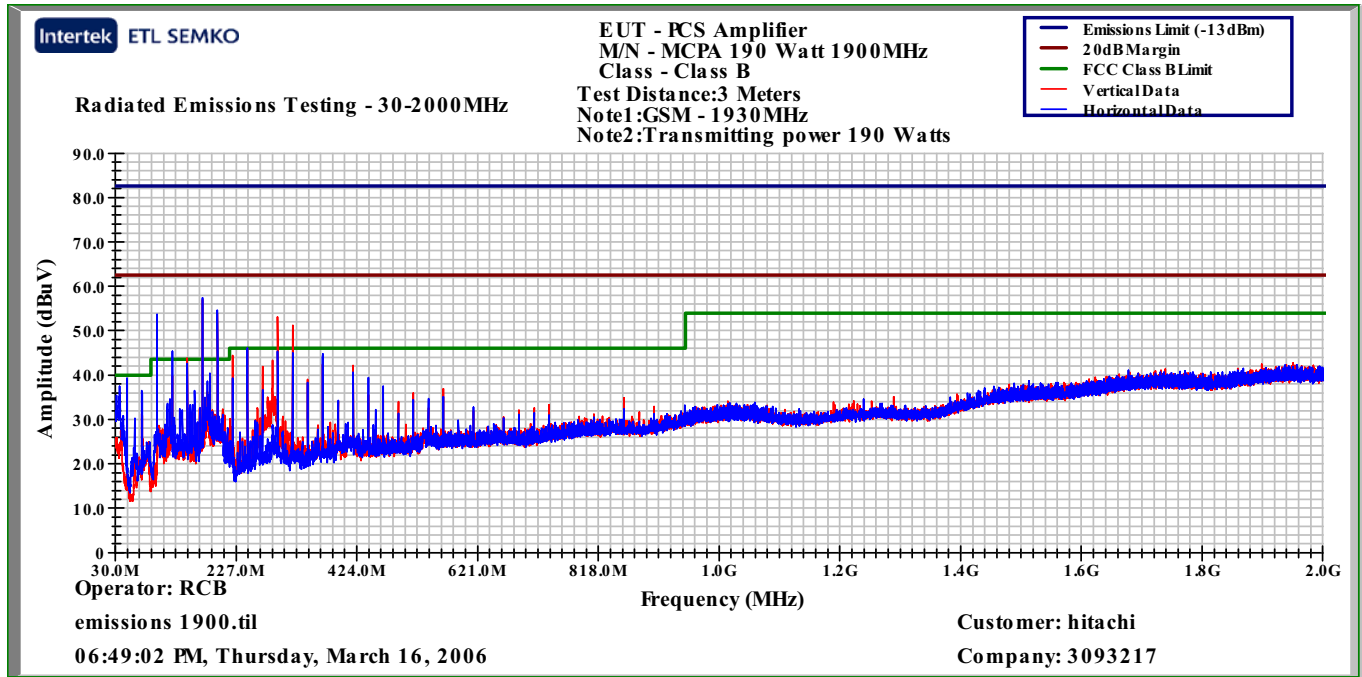
Plot:



30 to 2000MHz scan plot GSM 1960Mhz

10.0 Field strength of spurious radiation (FCC Part 2.1053)

Plot:



30 to 2000MHz scan plot GSM 1930MHz

10.0 Field strength of spurious radiation (FCC Part 2.1053)

Data:

Frequency Range (MHz): 30-20000

Test Distance (m): 3

Input power: 27Vdc

Modifications for compliance (v/n): No

A	B	C	D	E	F	G	H	I
Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Net dB(uV/m)	26G_limit Limit dB(uV/m)	Margin dB
Operating at 190 Watts - GSM 1930 MHz								
H	3860.000	50.2	31.2	13.2	33.0	61.6	82.2	-20.6
V	3860.000	48.9	31.0	13.2	33.0	60.1	82.2	-22.1
V	5790.000	27.5	33.9	20.1	33.2	48.3	82.2	-33.9
H	5790.000	28.5	34.1	20.1	33.2	49.5	82.2	-32.7
Operating at 190 Watts - GSM 1960 MHz								
H	3920.000	49.2	31.2	13.2	33.0	60.6	82.2	-21.6
V	3920.000	48.8	31.0	13.2	33.0	60.0	82.2	-22.2
V	5879.000	26.2	33.9	20.1	33.2	47.0	82.2	-35.2
H	5879.000	27.1	34.1	20.1	33.2	48.1	82.2	-34.1
Operating at 190 Watts - GSM 1990 MHz								
H	3980.000	42.9	31.2	13.2	33.0	54.3	82.2	-27.9
V	3980.000	41.1	31.0	13.2	33.0	52.3	82.2	-29.9
V	6054.000	24.2	34.3	22.5	33.3	47.7	82.2	-34.5
H	6054.000	25.0	34.4	22.5	33.3	48.7	82.2	-33.5
Operating at 190 Watts - W-CDMA 1932.5 MHz								
H	3865.000	27.1	31.2	13.2	33.0	38.5	82.2	-43.7
V	3865.000	27.7	31.0	13.2	33.0	38.9	82.2	-43.3
V	5797.000	12.7	33.9	20.1	33.2	33.5	82.2	-48.7
H	5797.000	13.1	34.1	20.1	33.2	34.1	82.2	-48.1
Operating at 190 Watts - W-CDMA 1960 MHz								
H	3920.000	26.4	31.2	13.2	33.0	37.8	82.2	-44.4
V	3920.000	27.0	31.0	13.2	33.0	38.2	82.2	-44.0
V	5881.000	18.0	33.9	20.1	33.2	38.8	82.2	-43.4
H	5881.000	18.1	34.1	20.1	33.2	39.1	82.2	-43.1
Operating at 190 Watts - W-CDMA 1987.5 MHz								
H	3976.000	23.3	31.2	13.2	33.0	34.7	82.2	-47.5
V	3976.000	23.5	31.0	13.2	33.0	34.7	82.2	-47.5
V	6054.000	18.7	34.3	22.5	33.3	42.2	82.2	-40.0
H	6054.000	16.6	34.4	22.5	33.3	40.3	82.2	-41.9
Calculations		G=C+D+E-F		I=G-H				

11.0 Revision History (Revision History)

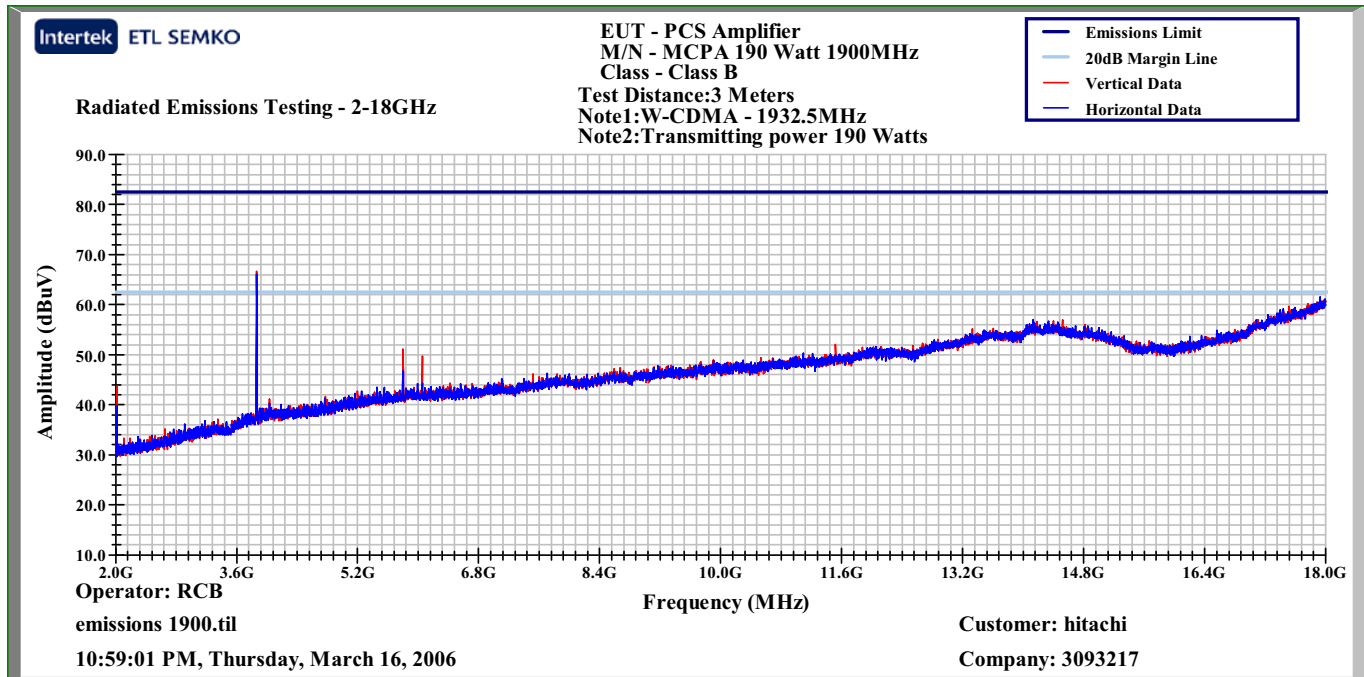
Method:

Document the history of the report.

Test Equipment Used:

Description:	Manufacturer:	Model:	Asset Number:	Cal Date:	Cal Due:
Antenna, Bilog (20MHz to 2GHz)	Chase	CBL6112B	211386	08/31/2005	08/31/2006
Antenna, Horn, 0.7 - 18 GHz	A.H. Systems	SAS-200/571	213058a	02/27/2006	02/27/2007
Cable E01 (Formerly PE7000N-N2 or N2)	Pasternack	RG214/U	E01	05/11/2005	05/11/2006
Cable E05 (Formerly HS 1500 N-N)	Huber-Suhner	Sucoflex 104PEA	E05	05/12/2005	05/12/2006
Cable E11 (Formerly HS 7000 N-SMA)	Huber-Suhner	Sucoflex 104PEA	E11 211266	05/11/2005	05/11/2006
Cable TW2	Andrews	Cable TW2	211411	05/11/2005	05/11/2006
Cable, 18 GHz, N, 118 inches	Megaphase	TM18 NKNK 118	E202	05/13/2005	05/13/2006
Cable, 18 GHz, N, 394 inches	Megaphase	G919-NKNK-394	MP3	05/11/2005	05/11/2006
Cable, 40 GHz, 2.9, 9 inch	Megaphase	TM40 K1K1 9	E402	05/13/2005	05/13/2006
EMI Receiver	Hewlett Packard	8546A	211388	07/08/2005	07/08/2006
EMI Receiver, Preselector section	Hewlett Packard	85460A	211389	07/08/2005	07/08/2006
Preamplifier, 10 MHz to 2000 MHz, 30 dB gain	Mini-Circuits	ZKL-2	200069	10/25/2005	10/25/2006
Preamplifier, 32 dB gain, 30MHz to 26GHz Preamplifier	Miteq	JS4-00102600-29-	015533	01/09/2006	01/09/2007
Spectrum Analyzer, 20 Hz to 40 GHz	Rohde & Schwarz	FSEK30	200062	01/12/2006	01/12/2007

Plot:



Radiated Emissions 2-18GHz - W-CDMA - 1932.5MHz

11.0 Revision History (Revision History)**Data:**

Revision Level	Date	Report Number	Notes
Original issue	March 23, 2006	3093217ATL-002	--
1	June 21, 2006	3093217ATL-002	Added test data and plots for OBW input to EUT. Added block diagrams for clarification.
2	October 13, 2006	3093217ATL-002	Corrected data table in Section 8. A 1 MHz bandwidth was used during testing instead of the 100 kHz originally reported.
3	December 5, 2006	3093217ATL-002	Incorporated Bandedge measurements from 11/17/06