FCC CFR47 PART 22H and 24E
CERTIFICATION
TEST REPORT

FOR

POCKET PC PHONE

MODEL NUMBER: HSTNH-H06C

FCC ID: NM8HHH06C

REPORT NUMBER: 04T3106-1

ISSUE DATE: JANUARY 19, 2005

Prepared for
HIGH TECH COMPUTER CORP.
1F, 6-3, BAU-CHIAN RD., HSINTIEN
TAIPEI, 231 TAIWAN

Prepared by
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d.b.a.
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Revision History

Rev.	Revisions	Revised By

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: HIGH TECH COMPUTER, CORP.
1F, 6-3, BAU-CHIAN RD., HSINTIEN
TAIPEI, 231 TAIWAN

EUT DESCRIPTION: POCKET PC PHONE

MODEL: HSTNH-H06C

SERIAL NUMBER: 03

DATE TESTED: DECEMBER 21 - 27, 2004

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 22 H and 24 E	NO NON-COMPLIANCE NOTED
DIGITAL DEVICE CONFIGURATION: FCC PART 15 SUBPART B	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

CHIN PANG
EMC TECHNICAIN
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA/EIA 603A (2001), ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15 and FCC CFR 47 Part 22 and Part 24.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Pocket PC Phone with all auxiliary equipment as described below.

Auxiliary Equipment	Brand	Model No.
Li-Ion Rechargeable Battery	HP	HSTNH-D06B
AC Adaptor	Hi Pro	HP-AC010L63
AC adaptor	Delta	EADP-10BB
USB Cradle	HP	HSTNH-F02X
Earphone	Merry	EMC147-008
Y cable	HP	N/A
DC Connector	HP	N/A

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output powers ERP & EIRP as follows:

824 to 849 MHz Authorized Band

Frequency Range (MHz)	Modulation	Output Conducted (dBm)	Output Conducted (mW)	Output ERP (dBm)	Output ERP (mW)
824.2 - 848.8	GSM	33.6	2290.87	30.80	1202.26
824.2 - 848.8	EDGE	30.26	1061.70	28.30	676.08

1850 - 1910 MHz Authorized Band

Frequency Range (MHz)	Modulation	Output Power (dBm)	Output Power (mW)	Output ERP (dBm)	Output ERP (mW)
1850.2 - 1909.8	GSM	30.46	1111.73	29.00	794.33
1850.2 - 1909.8	EDGE	29.53	897.43	27.50	562.34

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of -1 dBi.

5.4. SOFTWARE AND FIRMWARE

The EUT is linked with CMU200 tester support equipment during testing.

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 848.8 MHz ERP Part 22 and 1909.8 MHz EIRP Part 24.

5.6. DESCRIPTION OF TEST SETUP

SETUP FOR RF DEVICE TESTS

SUPPORT EQUIPMENT

The EUT is installed as a stand-alone device during the tests.

I/O CABLES

The EUT is installed as a stand-alone device during the tests.

TEST SETUP

The EUT is installed as a stand-alone device during the tests.

SETUP DIAGRAM FOR TESTS

The EUT is installed as a stand-alone device during the tests.

SETUP FOR DIGITAL DEVICE TESTS

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Mouse	HP	M-S34	LZA81054997	DZL211029
Keyboard	HP	SK-2502	HR805273662	GYUR41SK
Modem	ACEEX	1414	9013540	IFAXDM1415
Printer	HP	2225C	2930S52614	DSI6XU2225
PC	HP	Vectra VL400 MT	US03763261	DoC
Monitor	LTX	1451C	Z80-54704540	DBC1451C

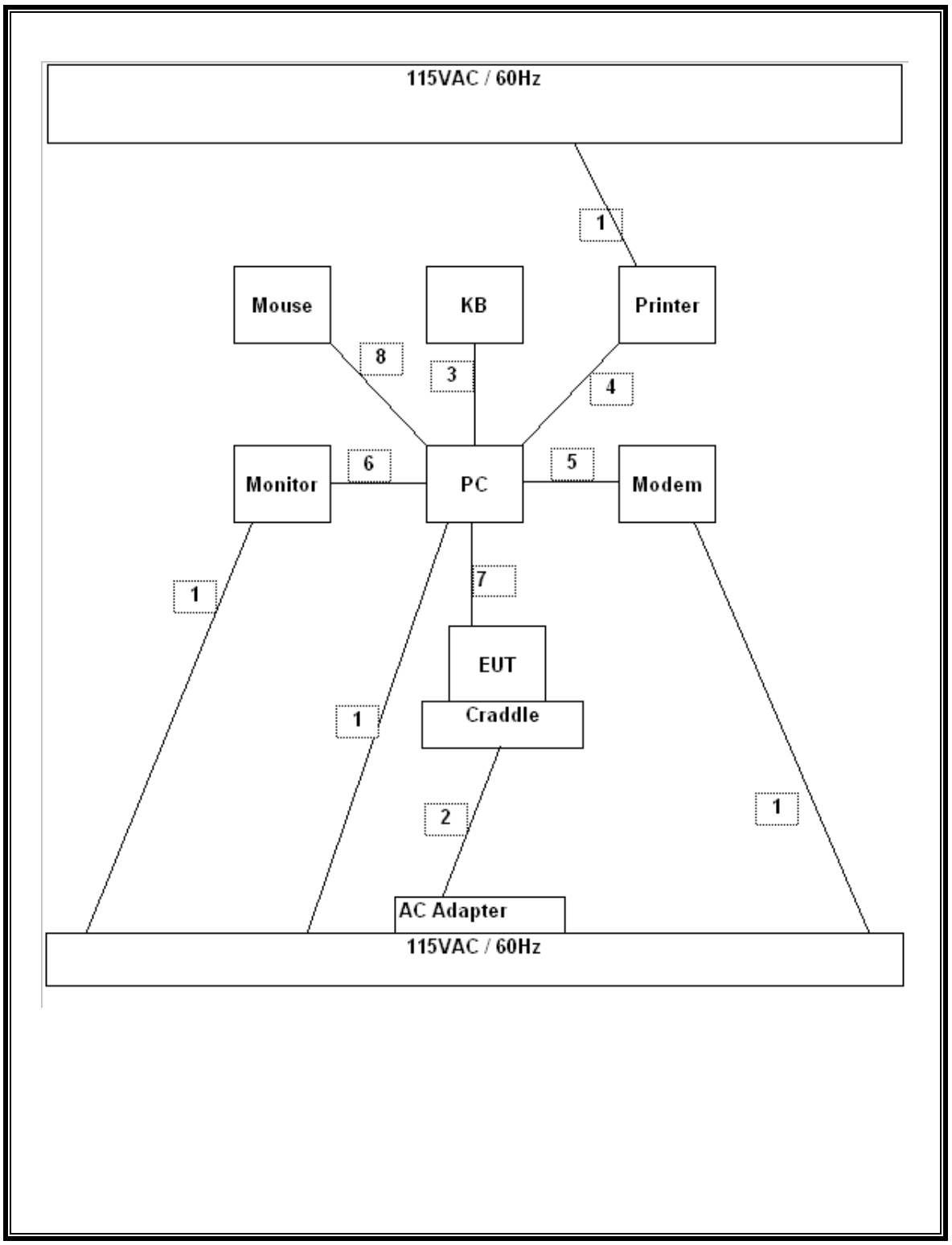
I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC	4	US 115V	Un-shielded	2m	No
2	Mouse	1	PS/2	Un-shielded	2m	Yes
3	KB	1	PS/2	Shielded	2m	Yes
4	Parallel	1	DB25	Shielded	2m	Yes
5	Serial	1	DB9	Shielded	1m	Yes
6	Video	1	DB15	Shielded	2m	Yes
7	USB	1	USB	Un-shielded	2m	Yes

TEST SETUP

The EUT is installed in the cradle. The cradle is connected to a laptop computer system with minimum configuration during the tests. Test software exercised and linked with the EUT.

SETUP DIAGRAM FOR DIGITAL DEVICE TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Peak / Average Power Sensor	Agilent	E9327A	US40440755	11/7/2005
Peak Power Meter	Agilent	E4416A	GB41291160	11/7/05
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/20/05
RF Filter Section	HP	85420E	3705A00256	11/20/05
Spectrum Analyzer 20 Hz ~ 44 GHz	Agilent	E4446A	US42070220	1/13/05
Signal Generator, 2 ~ 40 GHz	R & S	SMP04	DE 34210	5/25/05
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	2238	2/4/05
Antenna, Tuned Dipoe	CDI	ROBERTS	117	5/15/05
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	2/4/05
Communication Tester	R & S	CMU 200	838114/032	12/1/05
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	29800	5/13/05
Power Splitter, DC ~ 4.2 GHz	MCL	ZFRSC-42	N/A	CNR

7. LIMITS AND RESULTS

7.1. OCCUPIED BANDWIDTH

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the –26 dB (99%) bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal –26 dB (99%) bandwidth function is utilized.

RESULTS

No non-compliance noted:

EDGE850 Modulation

Channel	Frequency (MHz)	-26 dB Bandwidth (kHz)	99% Bandwidth (kHz)
Low	824.2	293.826	284.496
Middle	836.4	305.945	271.640
High	848.8	291.844	257.307

GSM850 Modulation

Channel	Frequency (MHz)	-26 dB Bandwidth (kHz)	99% Bandwidth (kHz)
Low	824.2	306.712	243.12
Middle	836.4	308.076	236.81
High	848.8	308.589	245.91

GSM1900

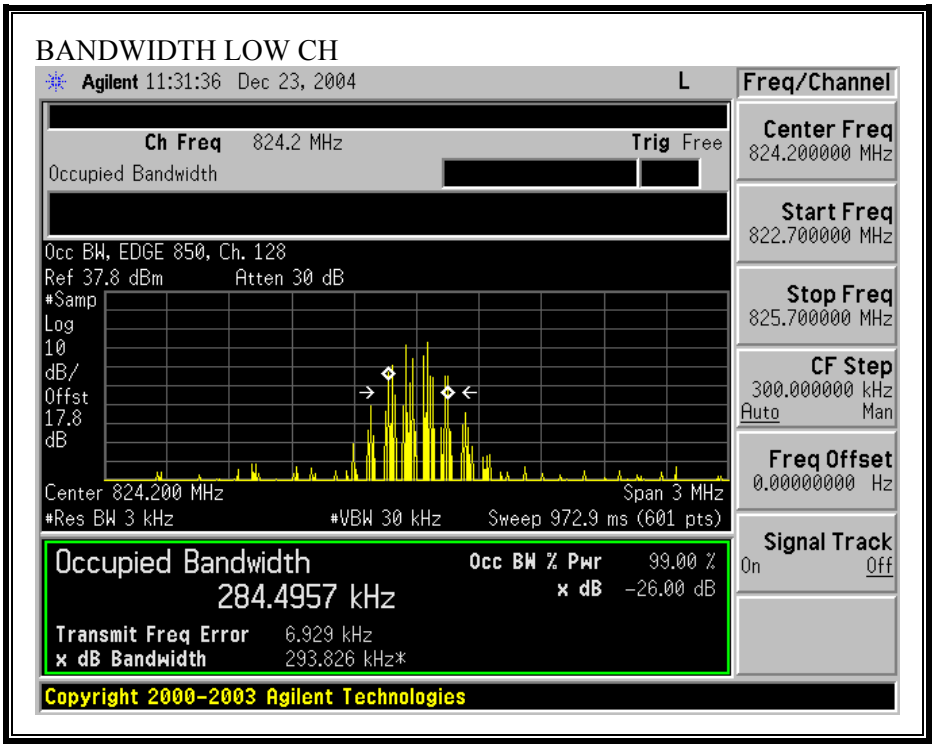
Channel	Frequency (MHz)	-26 dB Bandwidth (kHz)	99% Bandwidth (kHz)
Low	1850.2	302.357	248.590
Middle	1880	309.067	237.959
High	1909.8	318.978	246.200

EDGE1900

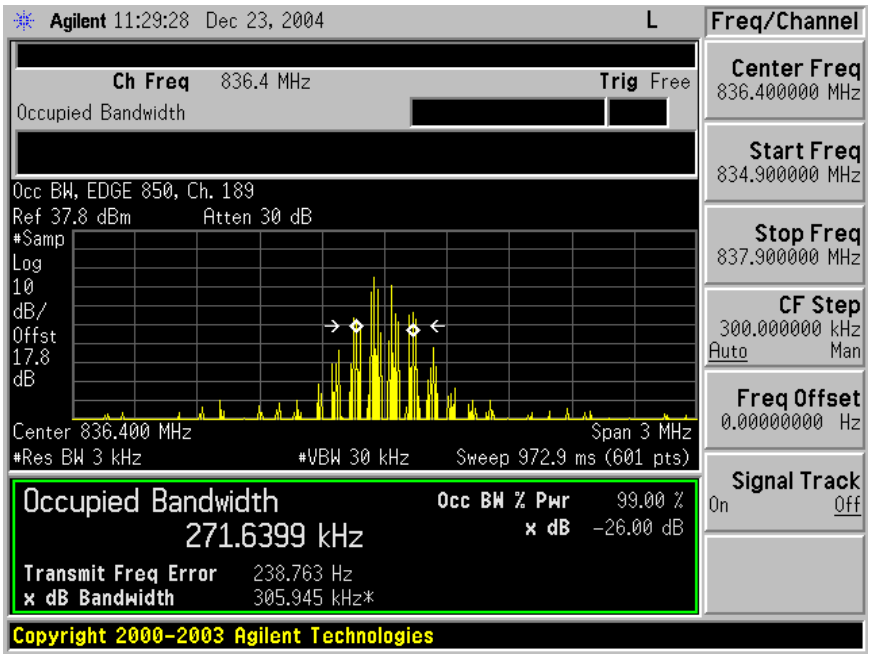
Channel	Frequency (MHz)	-26 dB Bandwidth (kHz)	99% Bandwidth (kHz)
Low	1850.2	290.374	269.870
Middle	1880	294.027	284.536
High	1909.8	290.534	269.419

EDGE850 OCCUPIED BANDWIDTH

BANDWIDTH LOW CH



BANDWIDTH MID CH



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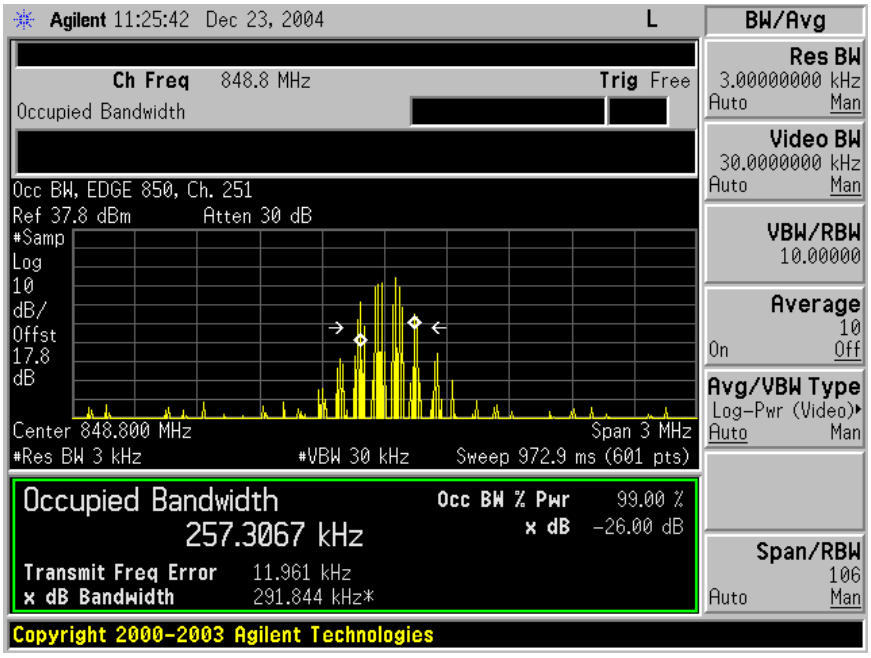
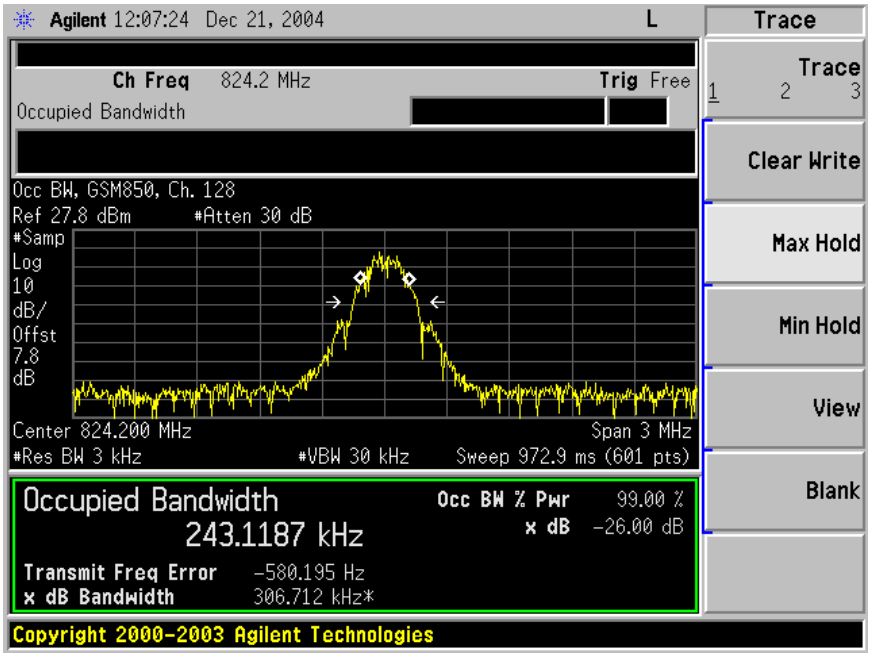


GSM850 OCCUPIED BANDWIDTH

BANDWIDTH LOW CH



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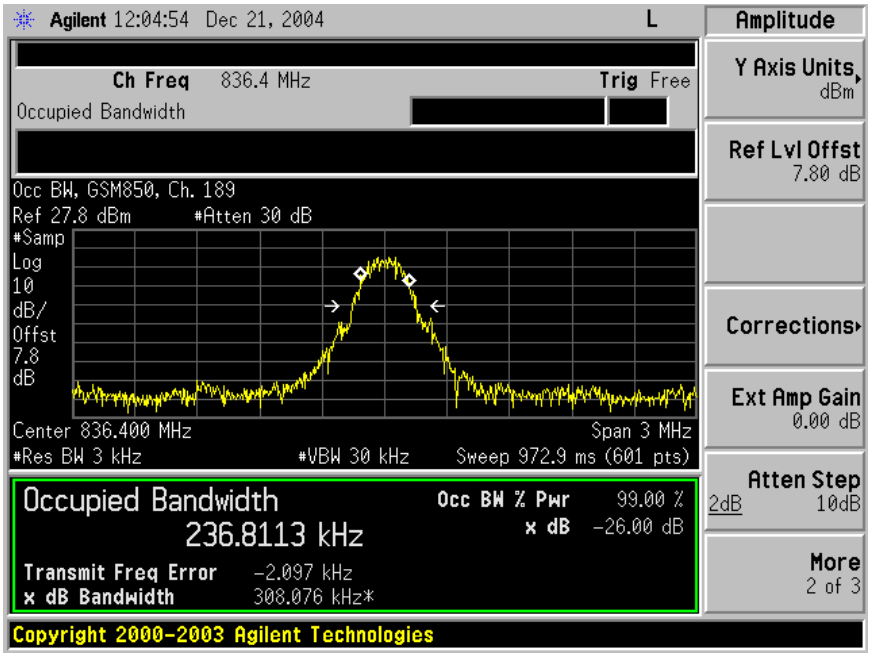

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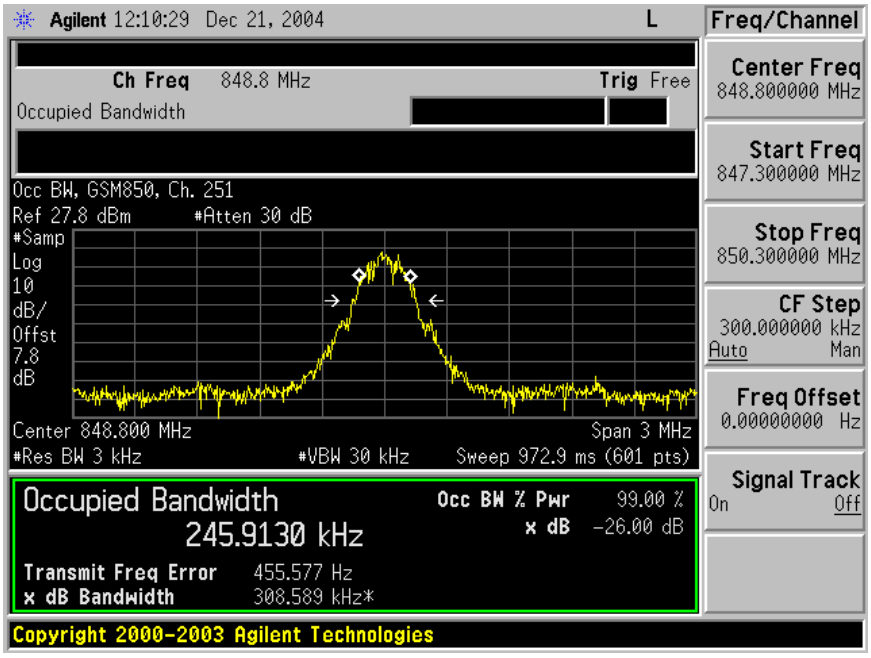
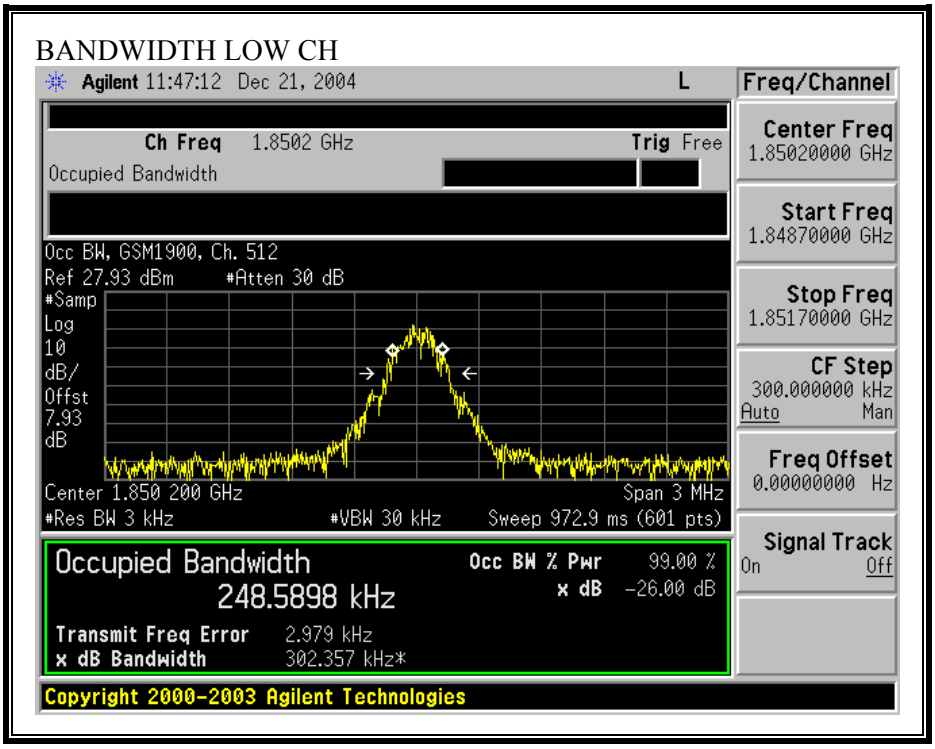


GSM1900 OCCUPIED BANDWIDTH

BANDWIDTH LOW CH



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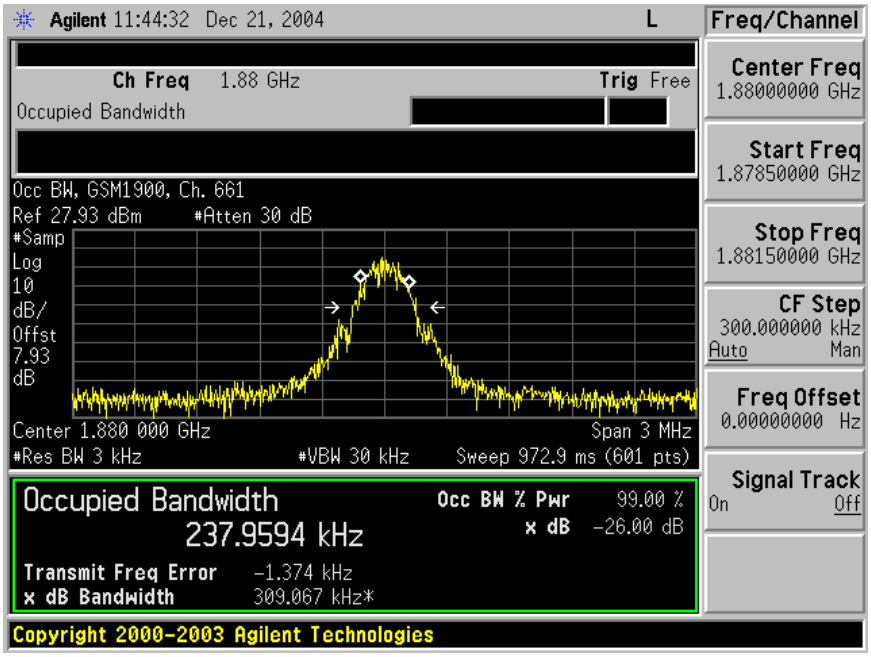
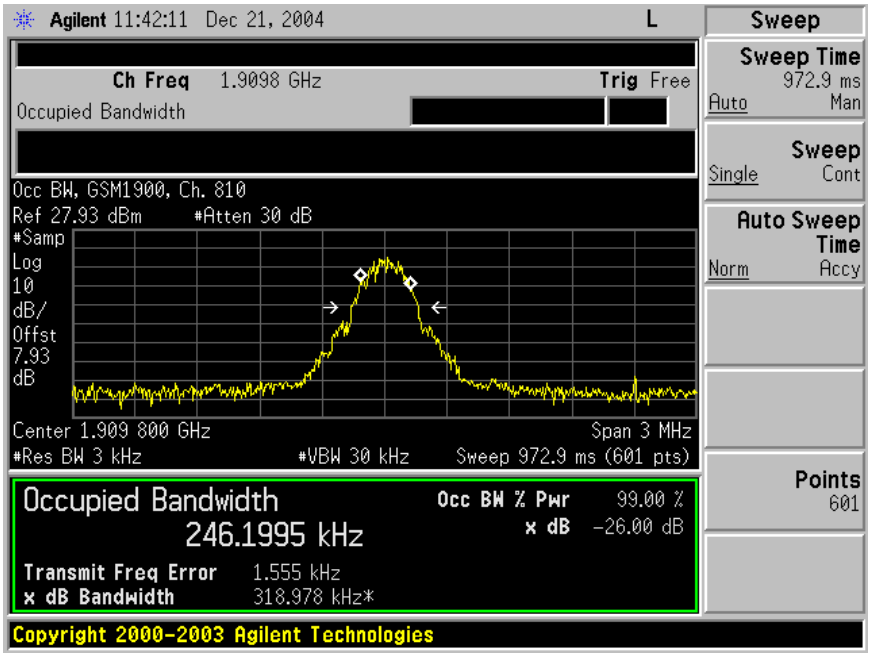
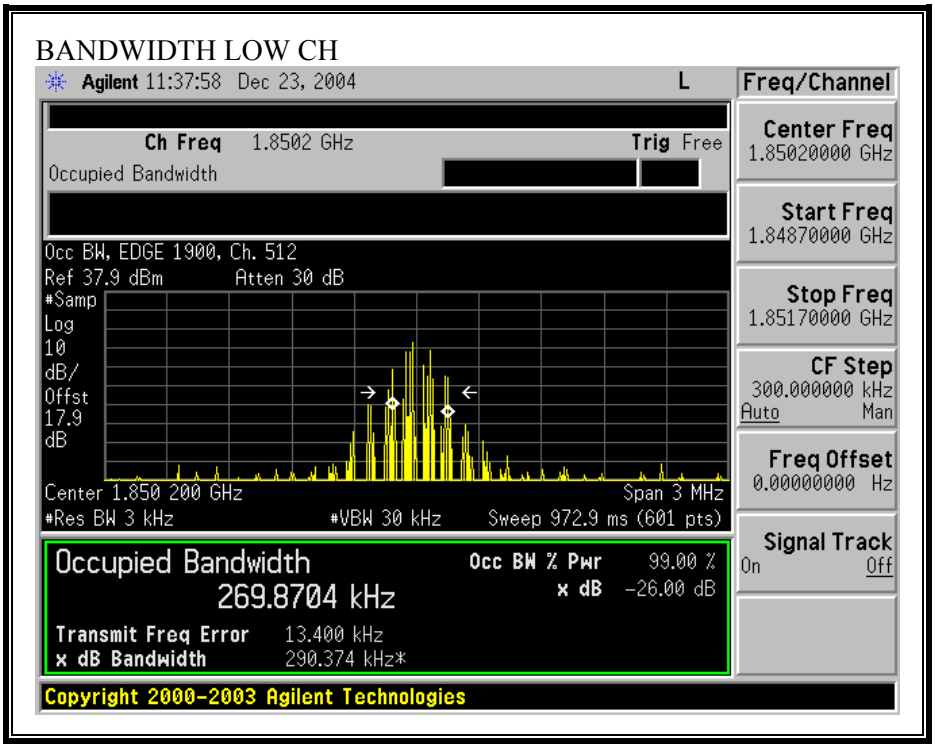


BANDWIDTH HIGH CH

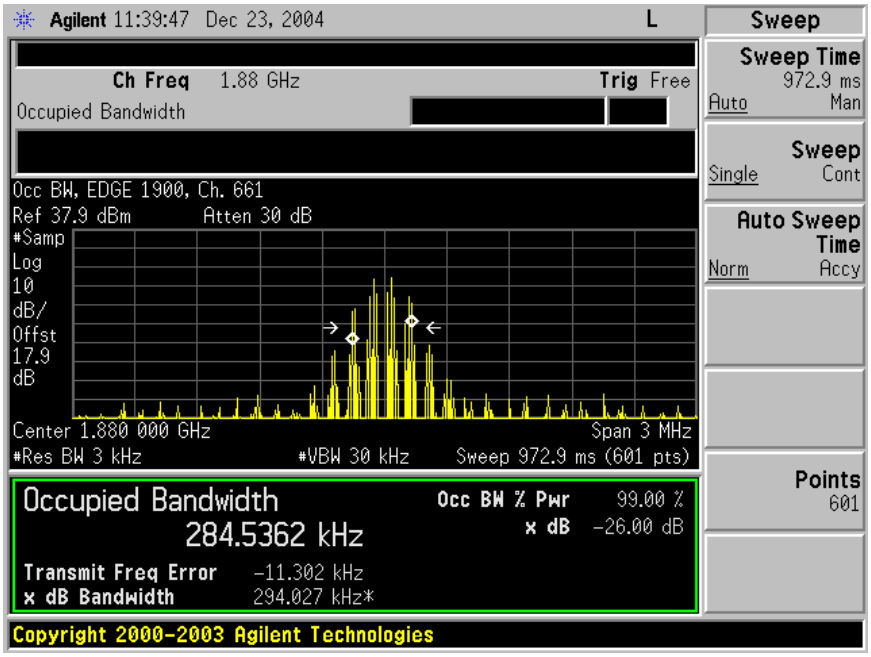


EDGE 1900 OCCUPIED BANDWIDTH

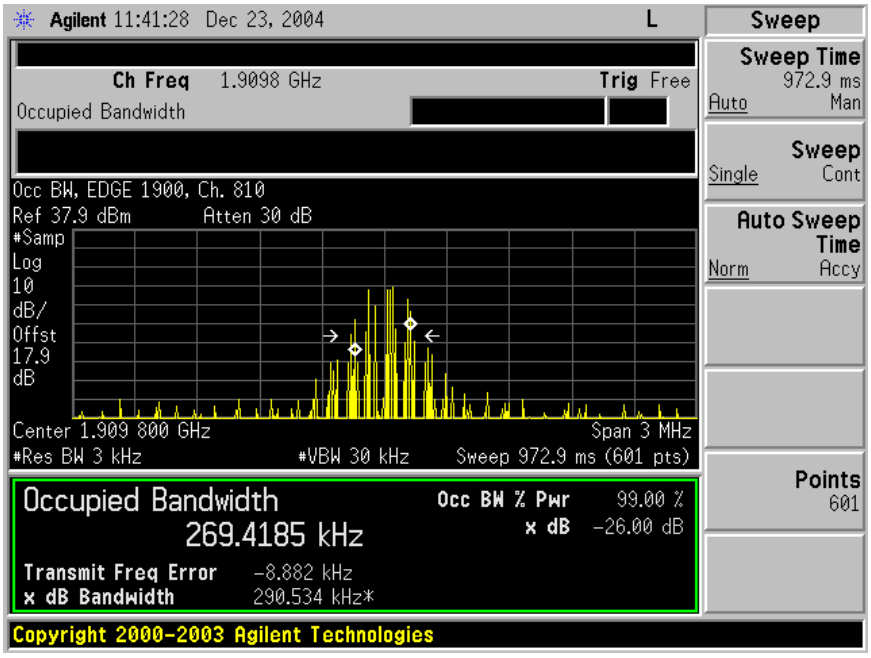
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



7.2. RF POWER OUTPUT

LIMIT

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(b) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.2.17

RESULTS

No non-compliance noted.

824 to 849 MHz Authorized Band

Frequency (MHz)	Modulation	Conducted PK Output Power (dBm)	Conducted PK Output Power (mW)	Radiated ERP (dBm)	Radiated ERP (mW)
824.2	GSM	33.6	2290.87	30.30	1071.52
832.4	GSM	33.46	2218.20	30.40	1096.48
848.8	GSM	33.5	2238.72	30.80	1202.26
824.2	EDGE	30.02	1004.62	27.80	602.56
832.4	EDGE	30.09	1020.94	27.90	616.60
848.8	EDGE	30.26	1061.70	28.30	676.08

1850 - 1910 MHz Authorized Band

Frequency (MHz)	Modulation	Conducted PK Output Power (dBm)	Conducted PK Output Power (mW)	Radiated EIRP (dBm)	Radiated EIRP (mW)
1850.2	GSM	30.15	1035.14	28.60	724.44
1880	GSM	30.46	1111.73	28.80	758.58
1909.8	GSM	30.38	1091.44	29.00	794.33
1850.2	EDGE	29.1	812.83	26.90	489.78
1880	EDGE	29.53	897.43	27.00	501.19
1909.8	EDGE	28.53	712.85	27.50	562.34

GPRS Output Power readings are same as GSM Output Power readings.

RF RADIATED OUPUT POWER:

f MHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Y position (EUT standup) is the worst case										
GSM Modulation										
Low Ch										
824.20	98.7	H	27.9	3.4	6.7	4.6	29.0	38.0	-9.0	
824.20	99.5	V	29.2	3.4	6.7	4.6	30.3	38.0	-7.7	
Mid Ch										
832.40	98.0	H	27.3	3.5	6.7	4.6	28.4	38.0	-9.6	
832.40	99.5	V	29.3	3.5	6.7	4.6	30.4	38.0	-7.6	
High Ch										
848.80	98.2	H	27.7	3.5	6.7	4.6	28.8	38.0	-9.2	
848.80	99.8	V	29.8	3.5	6.7	4.6	30.8	38.0	-7.2	
EDGE Modulation										
Low Ch										
824.20	96.2	H	25.4	3.4	6.7	4.6	26.5	38.0	-11.5	
824.20	97.0	V	26.7	3.4	6.7	4.6	27.8	38.0	-10.2	
Mid Ch										
832.40	95.5	H	24.8	3.5	6.7	4.6	25.9	38.0	-12.1	
832.40	97.0	V	26.8	3.5	6.7	4.6	27.9	38.0	-10.1	
High Ch										
848.80	95.7	H	25.2	3.5	6.7	4.6	26.3	38.0	-11.7	
848.80	97.3	V	27.3	3.5	6.7	4.6	28.3	38.0	-9.7	

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Y pos is the worst case										
GSM Modulation										
low ch										
1.850	87.4	H	20.5	1.4	4.4	2.3	23.6	33.0	-9.4	
1.850	94.3	V	25.5	1.4	4.4	2.3	28.6	33.0	-4.4	
mid ch										
1.880	87.3	H	19.7	1.4	4.4	2.2	22.7	33.0	-10.3	
1.880	94.8	V	25.8	1.4	4.4	2.2	28.8	33.0	-4.2	
High ch										
1.910	88.8	H	20.5	1.4	4.3	2.2	23.4	33.0	-9.6	
1.910	95.0	V	26.1	1.4	4.3	2.2	29.0	33.0	-4.0	
EDGE Modulation										
low ch , Y pos										
1.850	86.4	H	19.5	1.4	4.4	2.3	22.6	33.0	-10.4	
1.850	92.8	V	23.8	1.4	4.4	2.3	26.9	33.0	-6.1	
mid ch										
1.880	86.3	H	18.7	1.4	4.4	2.2	21.7	33.0	-11.3	
1.880	93.0	V	24.0	1.4	4.4	2.2	27.0	33.0	-6.0	
High ch										
1.910	87.8	H	19.5	1.4	4.3	2.2	22.4	33.0	-10.6	
1.910	93.0	V	24.6	1.4	4.3	2.2	27.5	33.0	-5.5	

7.3. FREQUENCY STABILITY

LIMIT

§22.355 Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C–1 of this section.

For Mobile devices operating in the 824 to 849 MHz band at a power level less than or equal to 3 Watts, the limit specified in Table C-1 is +/- 2.5 ppm.

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

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.3.1 and 2.3.2

RESULTS

No non-compliance noted.

GSM 850

Reference Frequency: GSM850 Mid Channel 189, 836.400000MHz @ 25°C Limit: to stay ± 2.5 ppm = 2091.000 Hz				
Power Supply	Environment	Frequency Deviation Measureed with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
4.00	50	836.40002	0.005	± 2.5
4.00	40	836.40003	-0.006	± 2.5
4.00	30	836.40003	-0.006	± 2.5
4.00	***25***	***836.40002***	***0***	***± 2.5***
4.00	20	836.40005	-0.036	± 2.5
4.00	10	836.40005	-0.033	± 2.5
4.00	0	836.40004	-0.024	± 2.5
4.00	-10	836.40005	-0.035	± 2.5
4.00	-20	836.40003	-0.012	± 2.5
4.00	-30	836.40002	-0.004	± 2.5
1.9 (end point)	25	836.40005	-0.038	± 2.5
3.40	25	836.40006	-0.044	± 2.5
4.60	25	836.40003	-0.014	± 2.5

EDGE 850

Reference Frequency: EDGE850 Mid Channel 189, 836.400000MHz @ 25°C Limit: to stay ± 2.5 ppm = 2091.000 Hz				
Power Supply	Environment	Frequency Deviation Measureed with Time Elapse		
(Vdc)	Temperature (°C)	(MHz)	Delta (ppm)	Limit (ppm)
4.00	50	836.40003	0.007	± 2.5
4.00	40	836.40004	-0.004	± 2.5
4.00	30	836.40004	-0.004	± 2.5
4.00	***25***	***836.40003***	***0***	***± 2.5***
4.00	20	836.40005	-0.022	± 2.5
4.00	10	836.40005	-0.019	± 2.5
4.00	0	836.40004	-0.010	± 2.5
4.00	-10	836.40005	-0.020	± 2.5
4.00	-20	836.40003	0.001	± 2.5
4.00	-30	836.40003	-0.001	± 2.5
1.9 (end point)	25	836.40005	-0.024	± 2.5
3.40	25	836.40006	-0.030	± 2.5
4.60	25	836.40003	0.000	± 2.5

GSM 1900

Reference Frequency: GSM1900 Mid Channel 661, 1880.000000MHz @ 25°C Limit: to stay ± 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
4.00	50	1879.99995	0.083	± 2.5
4.00	40	1879.99995	0.085	± 2.5
4.00	30	1879.99993	0.095	± 2.5
4.00	***25***	***1880.00011***	***0***	***± 2.5***
4.00	20	1880.00010	0.003	± 2.5
4.00	10	1880.00012	-0.004	± 2.5
4.00	0	1880.00009	0.007	± 2.5
4.00	-10	1880.00011	-0.001	± 2.5
4.00	-20	1880.00005	0.031	± 2.5
4.00	-30	1879.99996	0.078	± 2.5
1.8 (end point)	25	1880.00006	0.026	± 2.5
3.40	25	1880.00011	0.001	± 2.5
4.60	25	1880.00010	0.002	± 2.5

EDGE 1900

Reference Frequency: EDGE1900 Mid Channel 661, 1880.000000MHz @ 25°C Limit: to stay ± 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
4.00	50	1879.99996	0.072	± 2.5
4.00	40	1879.99996	0.074	± 2.5
4.00	30	1879.99994	0.084	± 2.5
4.00	***25***	***1880.00010***	***0***	***± 2.5***
4.00	20	1880.00009	0.003	± 2.5
4.00	10	1880.00012	-0.010	± 2.5
4.00	0	1880.00009	0.002	± 2.5
4.00	-10	1880.00011	-0.006	± 2.5
4.00	-20	1880.00005	0.026	± 2.5
4.00	-30	1879.99996	0.073	± 2.5
1.8 (end point)	25	1880.00006	0.020	± 2.5
3.40	25	1880.00011	-0.005	± 2.5
4.60	25	1880.00010	-0.004	± 2.5

7.4. SPURIOUS EMISSION AT ANTENNA TERMINAL

LIMIT

§22.917 (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.

§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.

TEST PROCEDURE

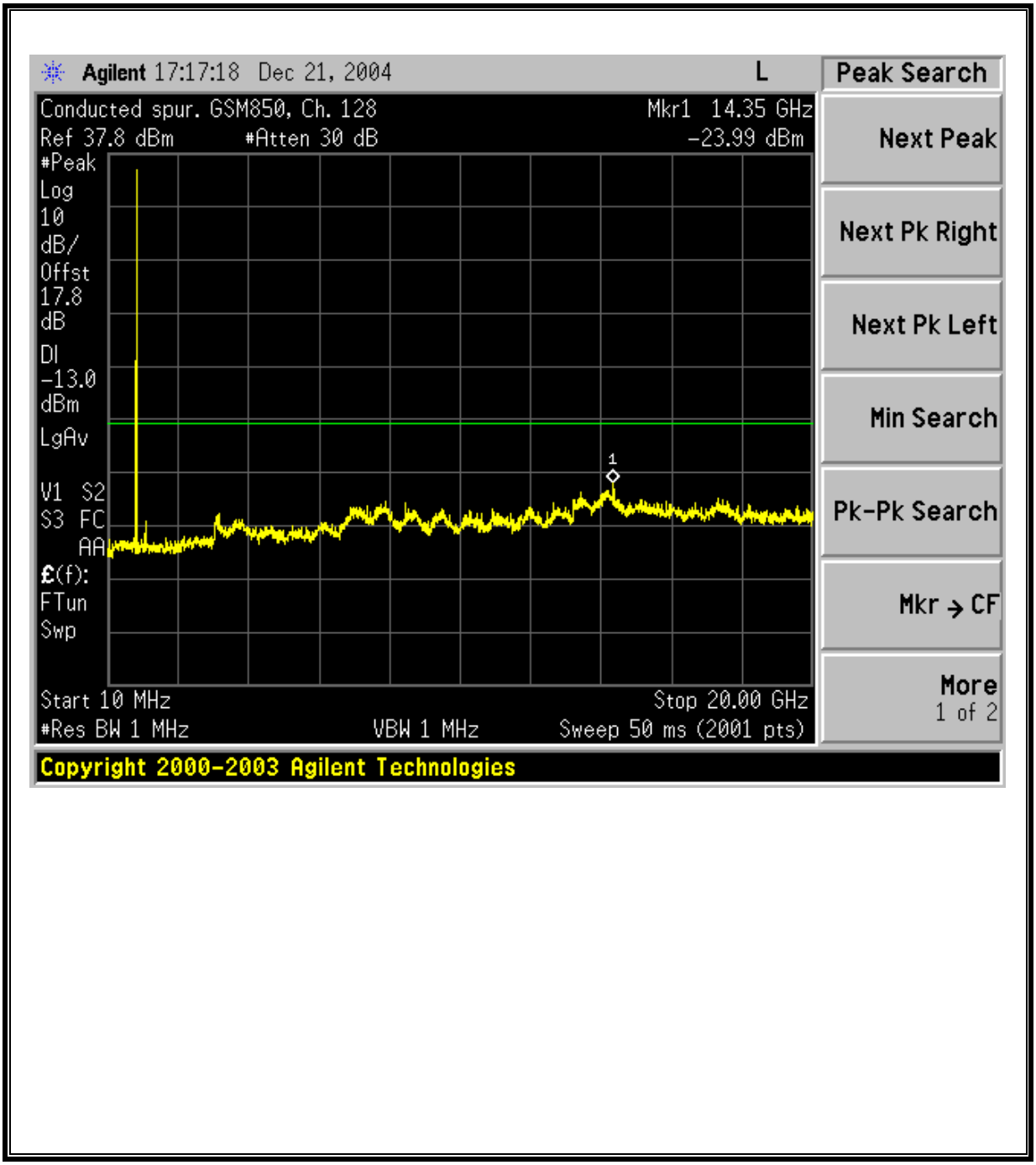
ANSI / TIA / EIA 603 Clause 3.2.13 & FCC 22.917 (b)
ANSI / TIA / EIA 603 Clause 3.2.12 & FCC 24.238 (b)

RESULTS

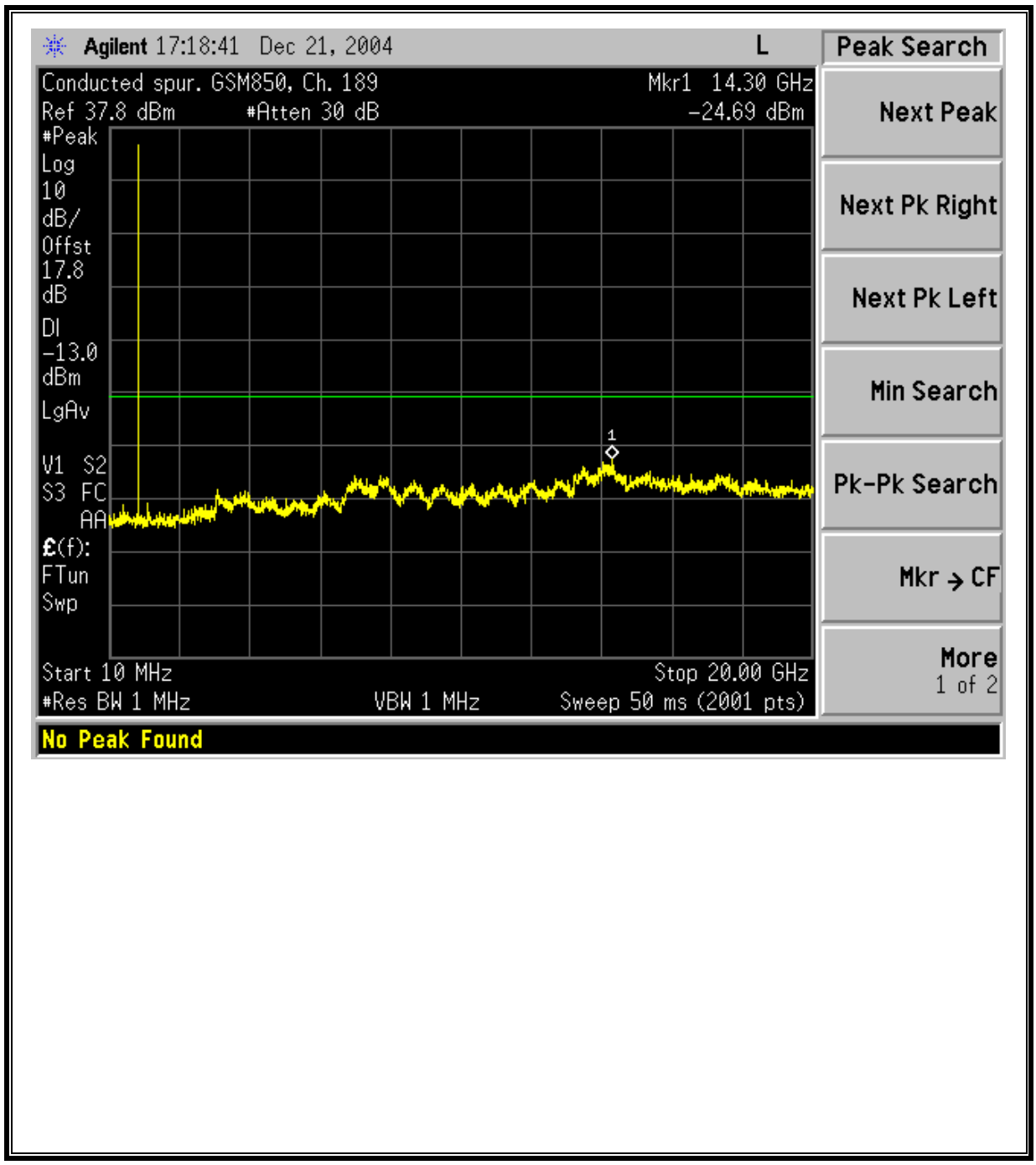
No non-compliance noted.

GSM850 MODULATION RESULTS

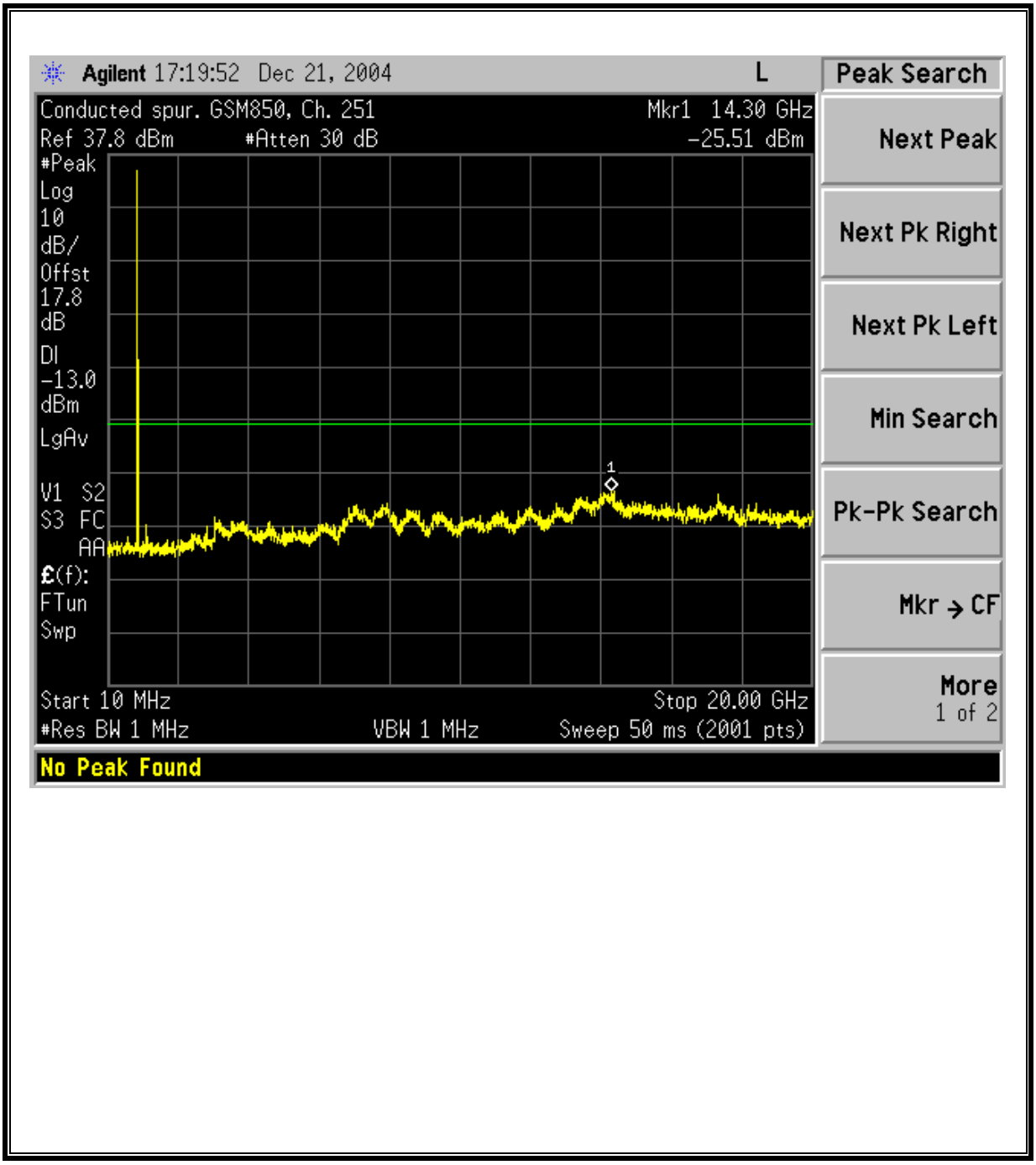
GSM Modulation: Low Channel, Out-Of-Band Emissions



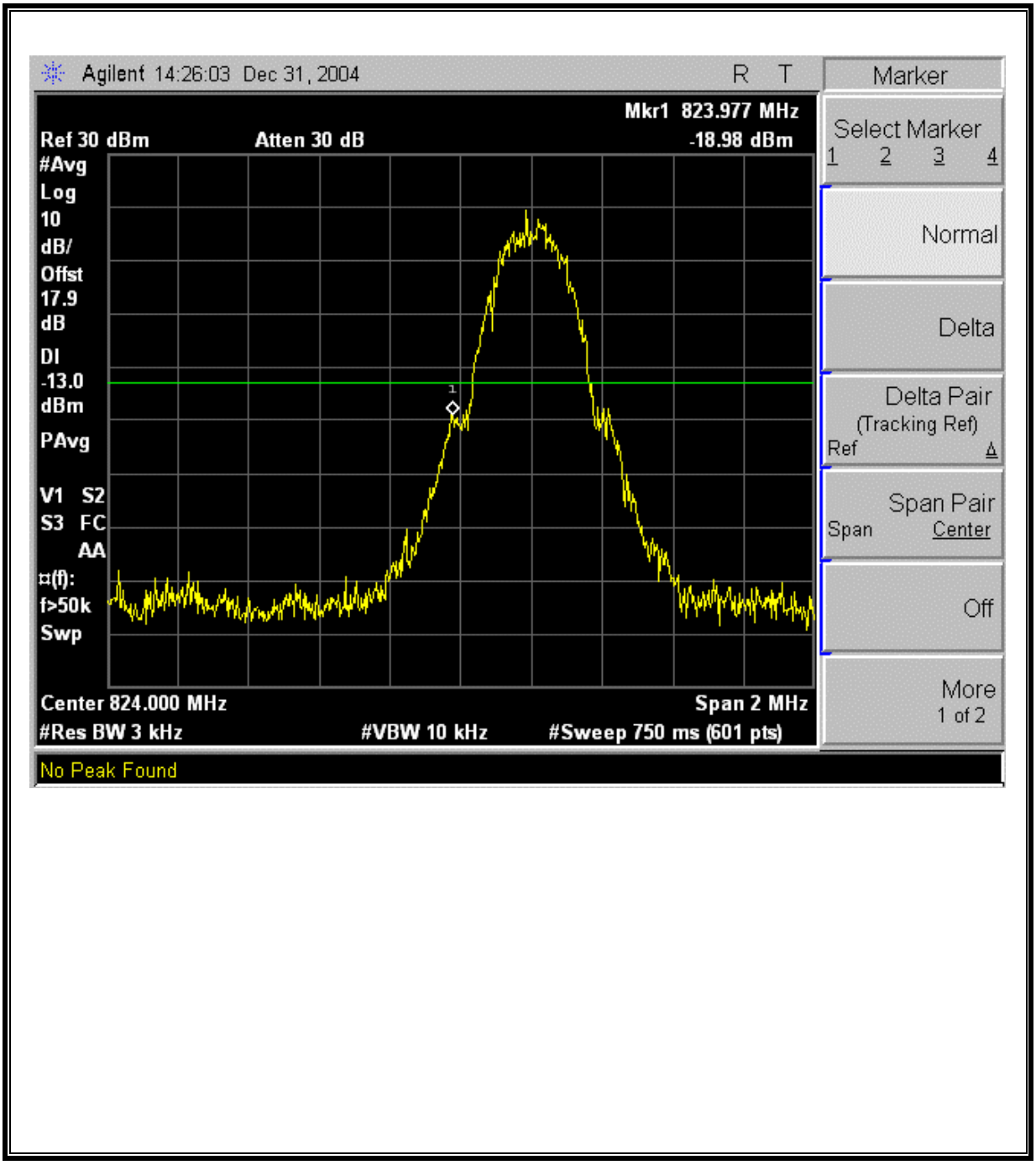
GSM Modulation: Mid Channel, Out-Of-Band Emissions



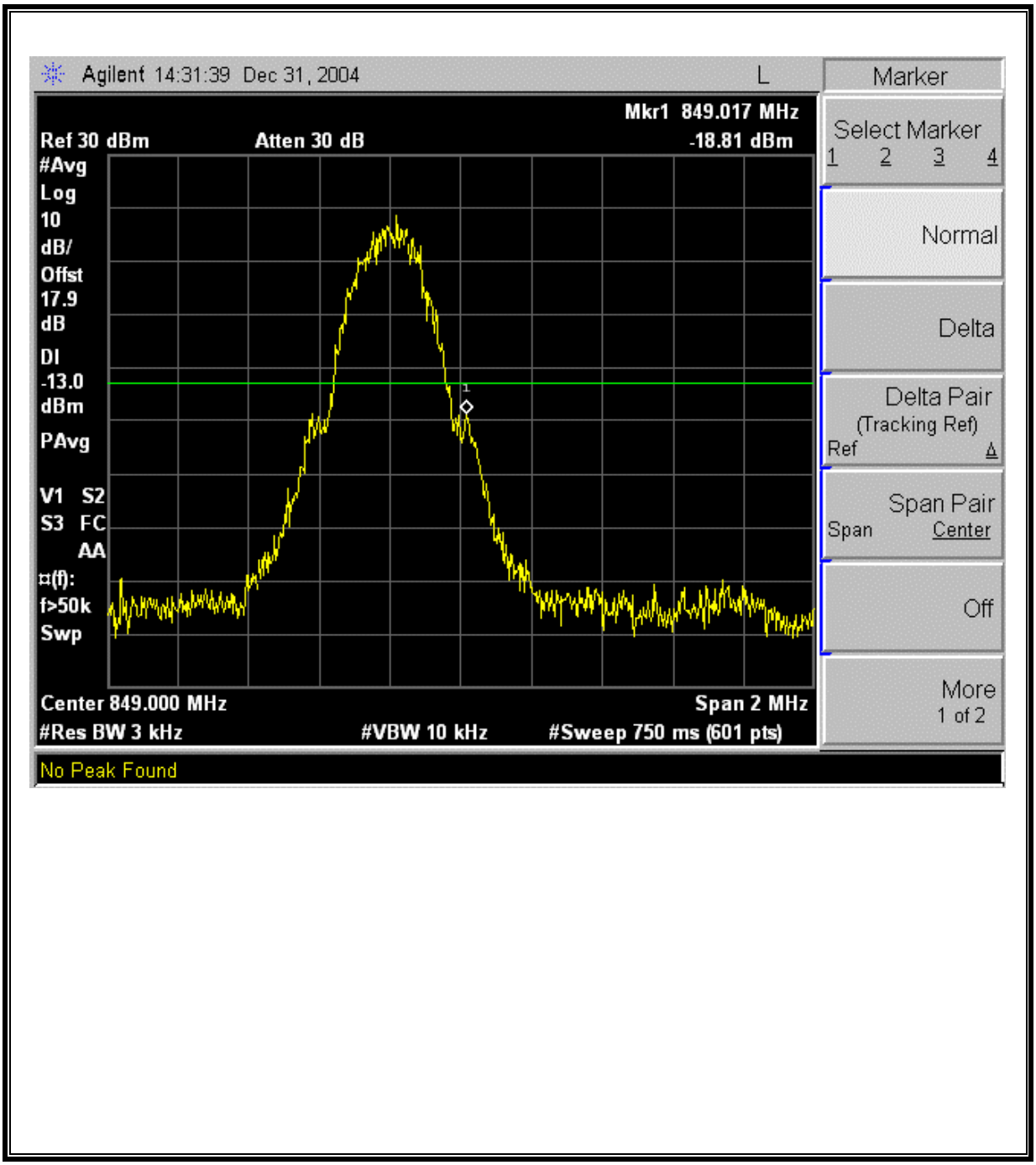
GSM Modulation: High Channel, Out-Of-Band Emissions



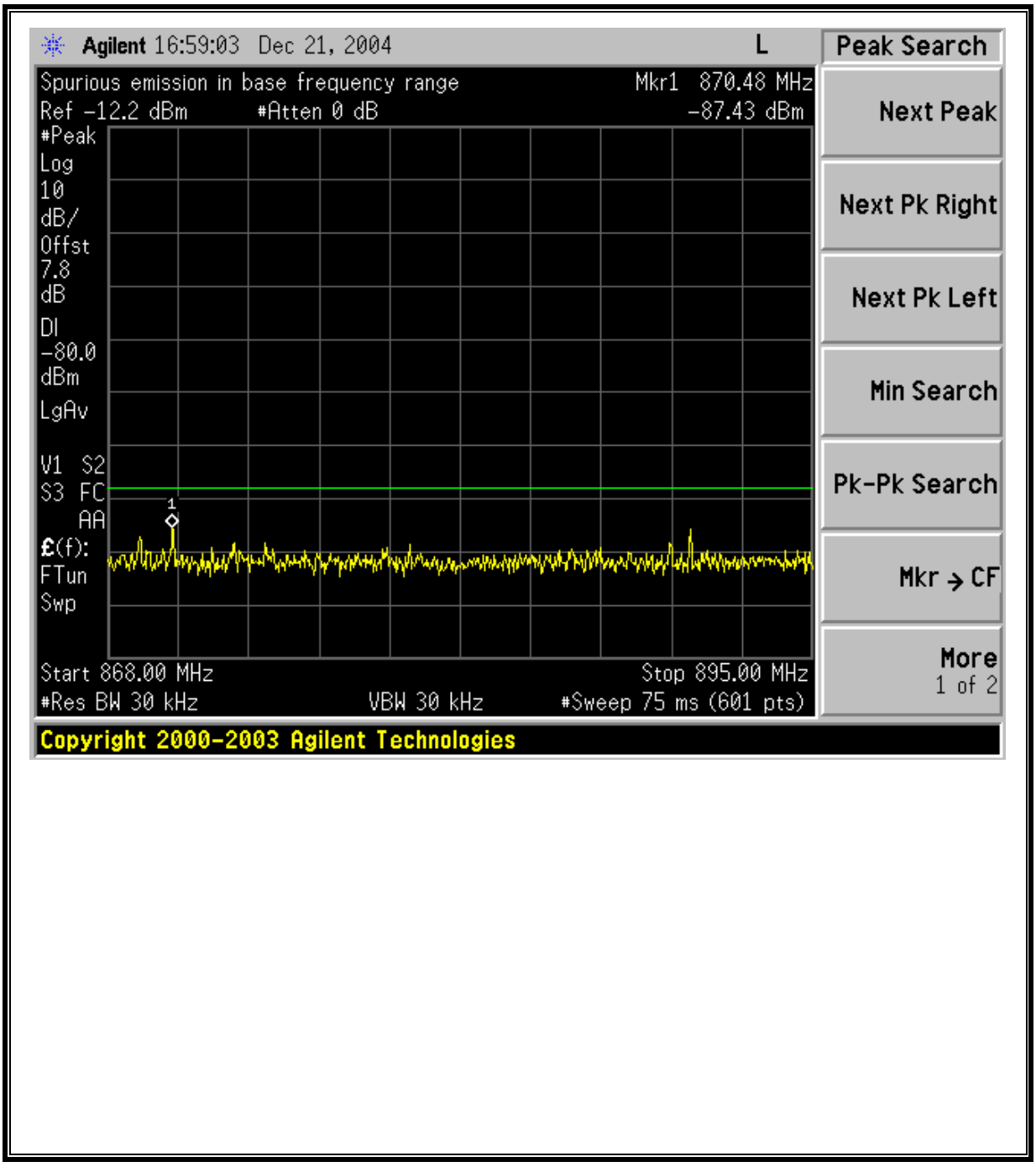
GSM850 Modulation: Low Channel Band Edge



GSM850 Modulation: High Channel Band Edge

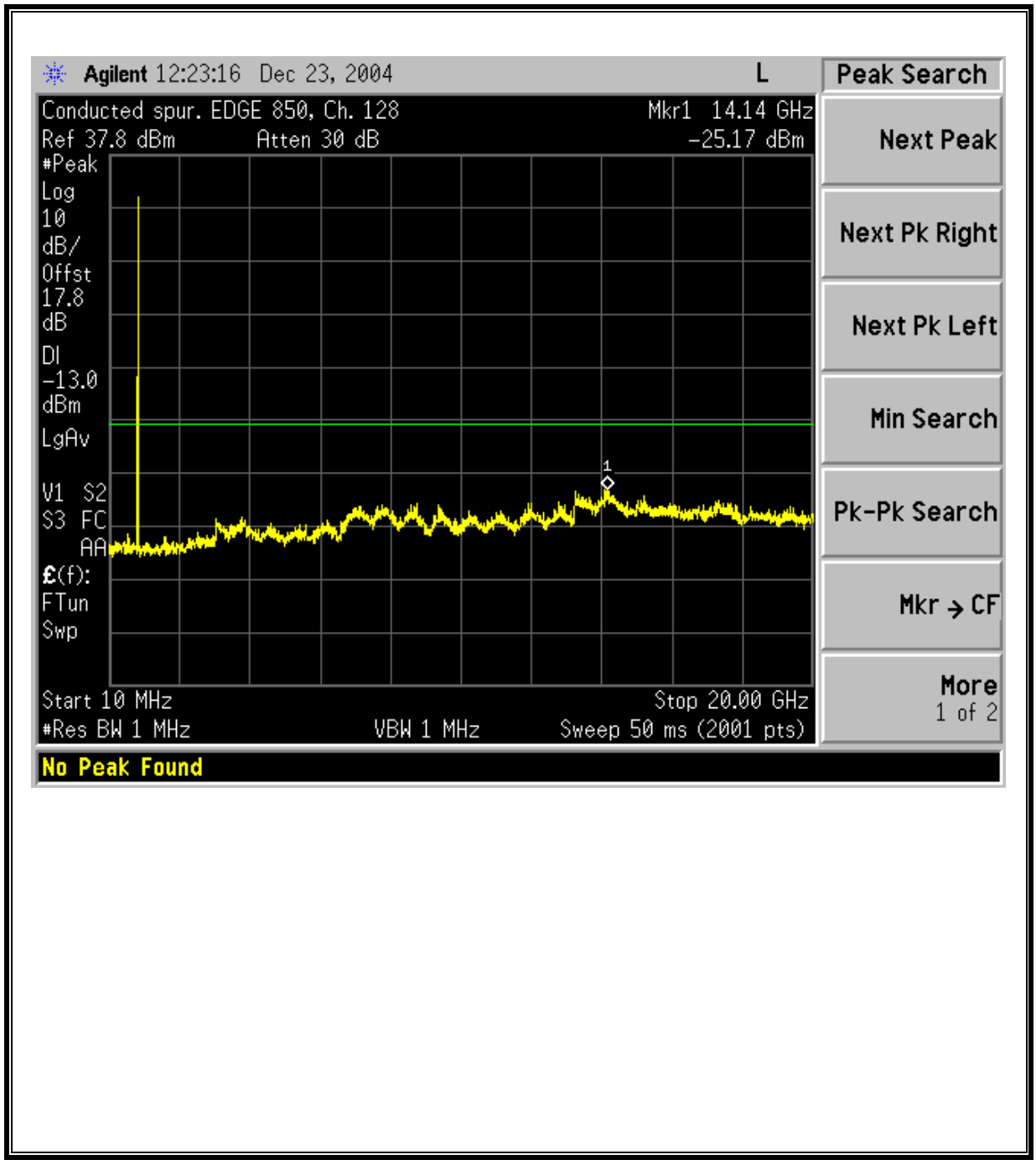


GSM Mobile Emissions in Base Frequency Range

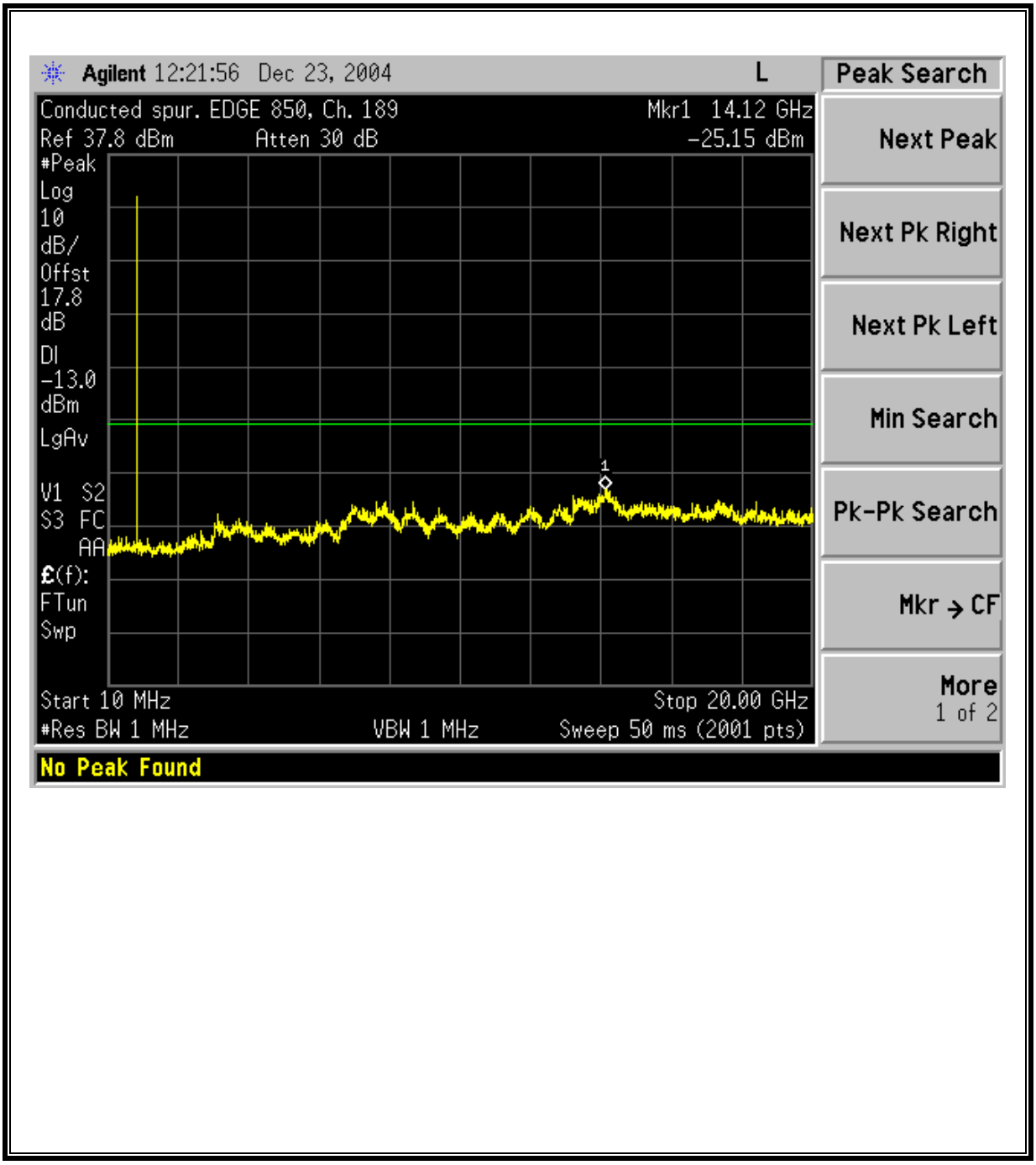


EDGE850 MODULATION RESULTS

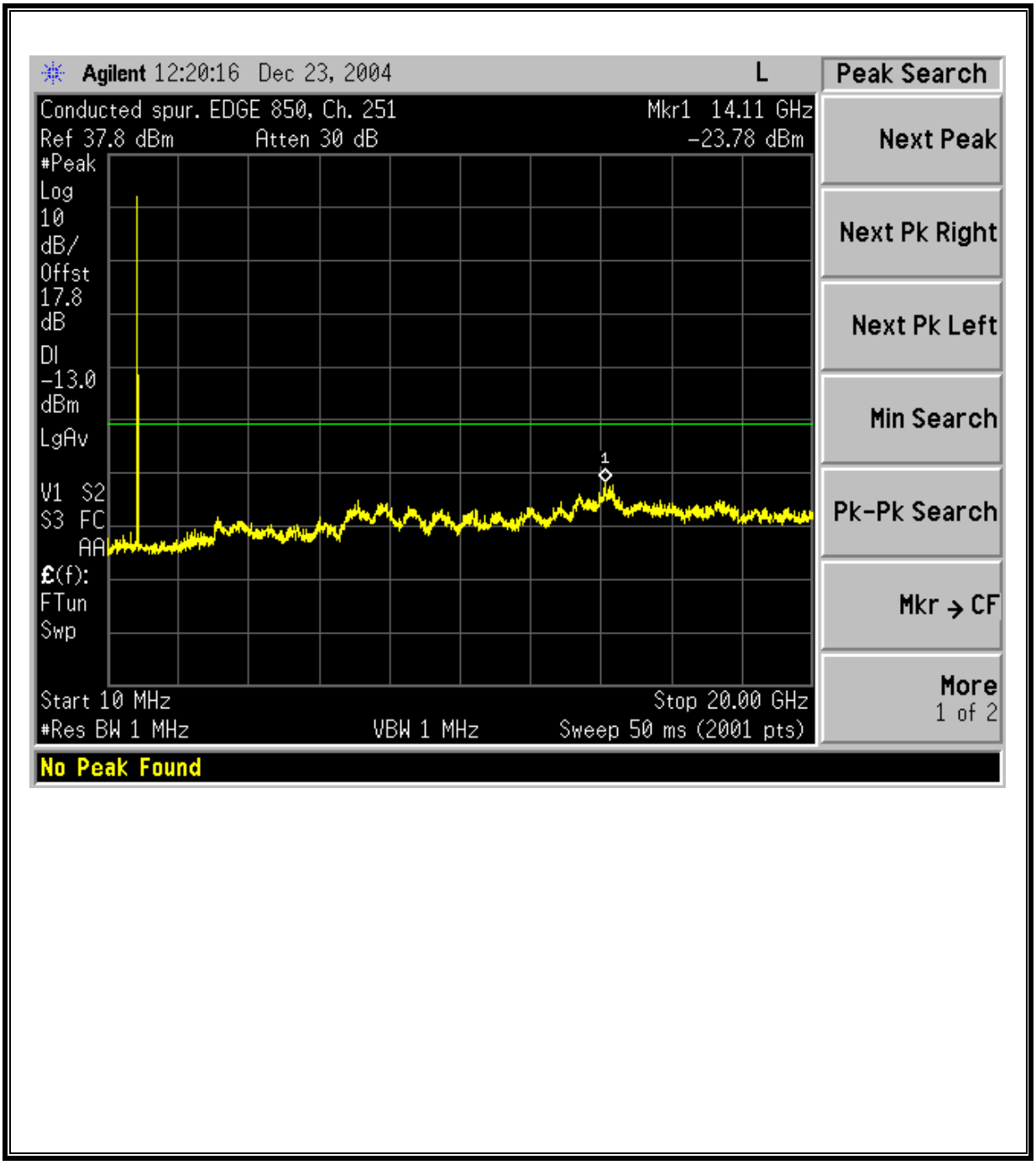
EDGE850 Modulation: Low Channel Out-Of-Band Emissions



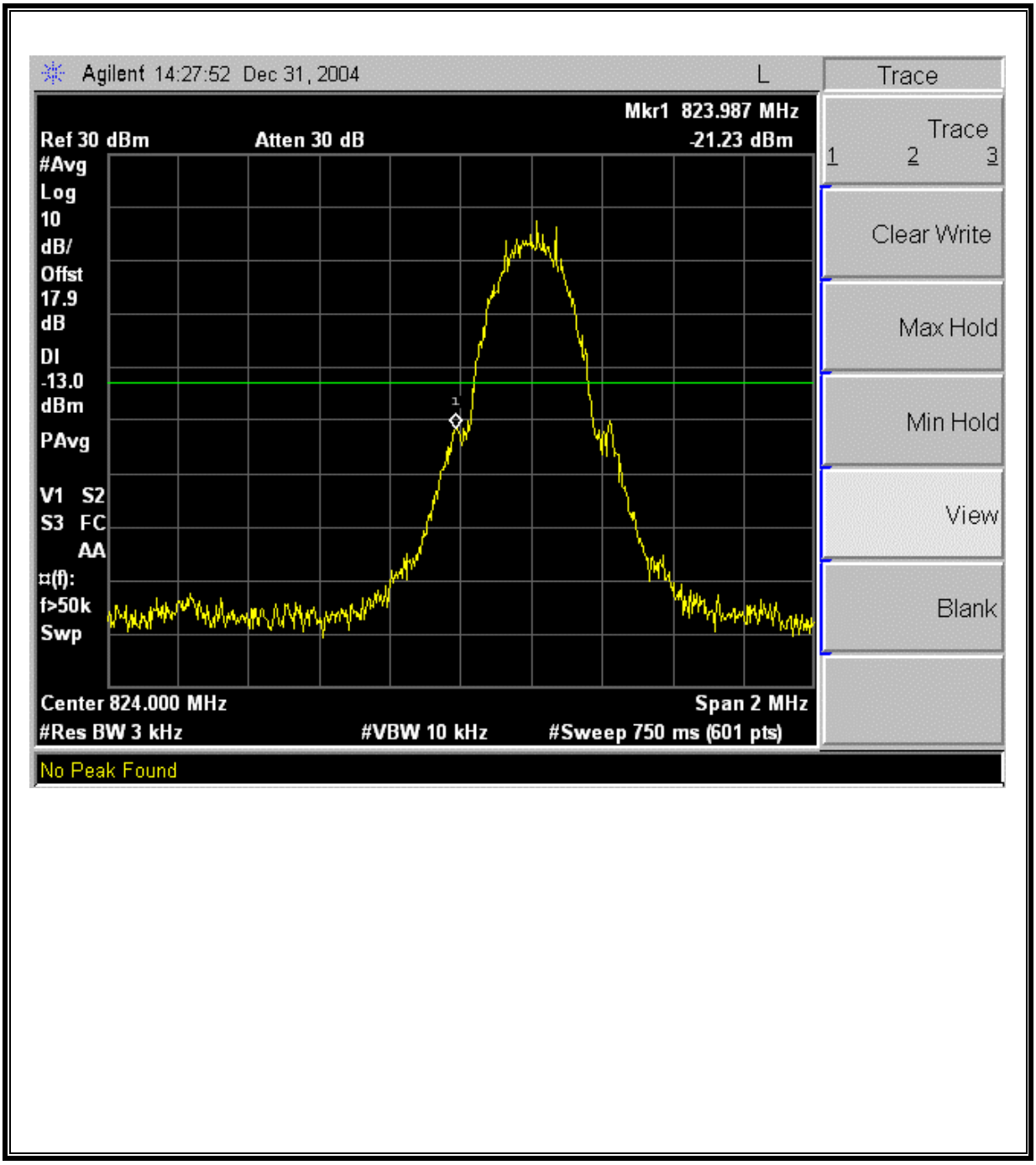
EDGE850 Modulation: Mid Channel Out-Of-Band Emissions



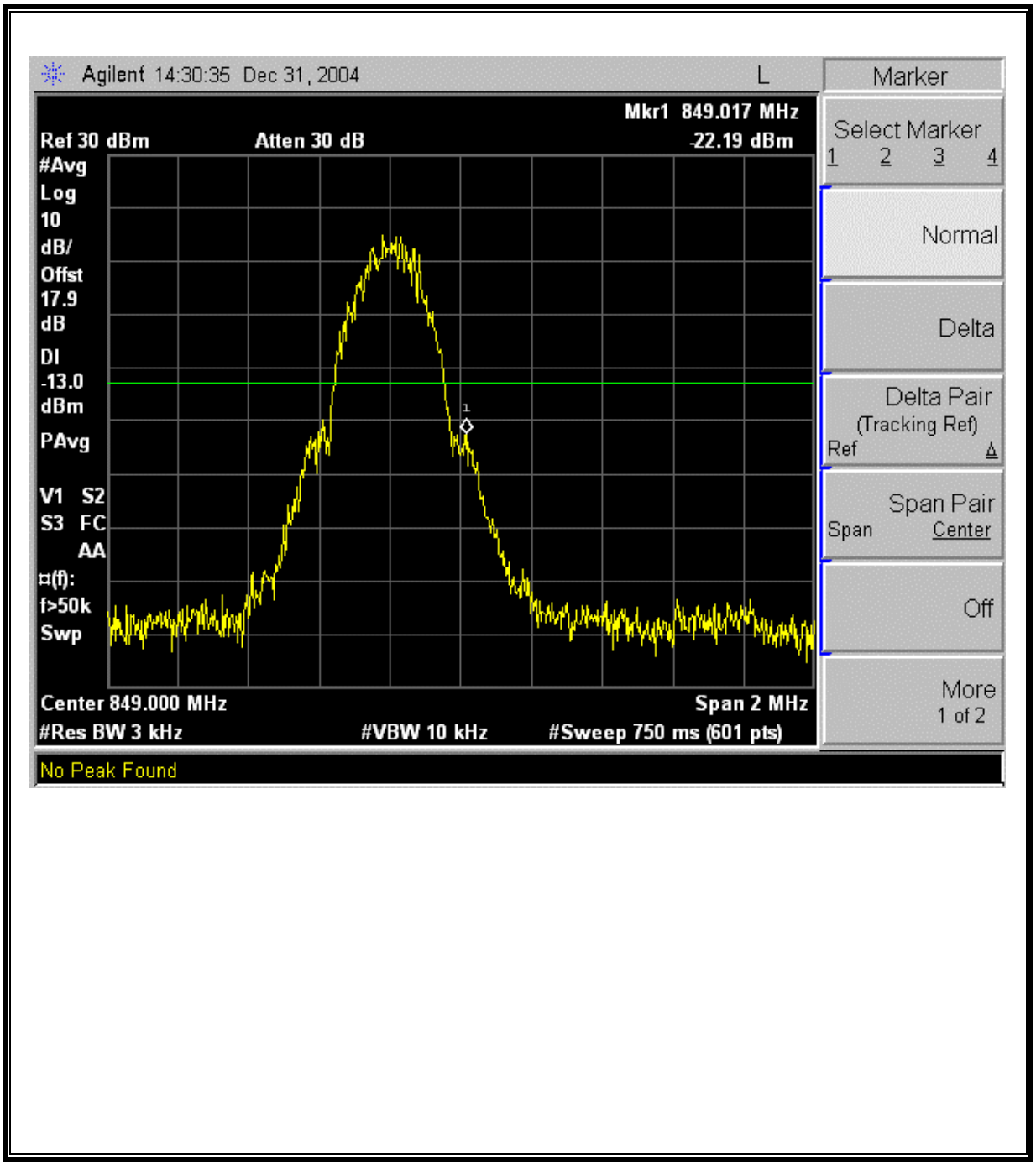
EDGE850 Modulation: High Channel Out-Of-Band Emissions



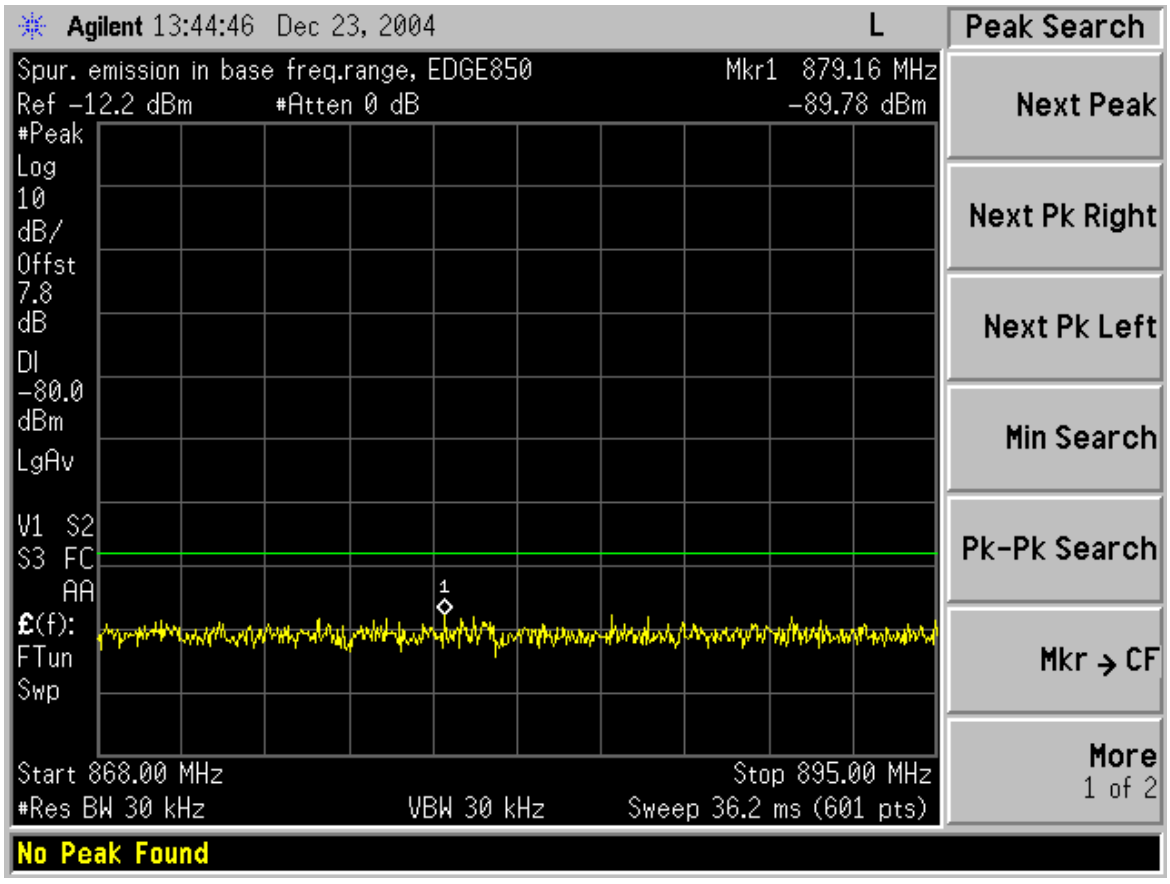
EDGE850 Modulation: Low Channel Band Edge



EDGE850 Modulation: High Channel Band Edge

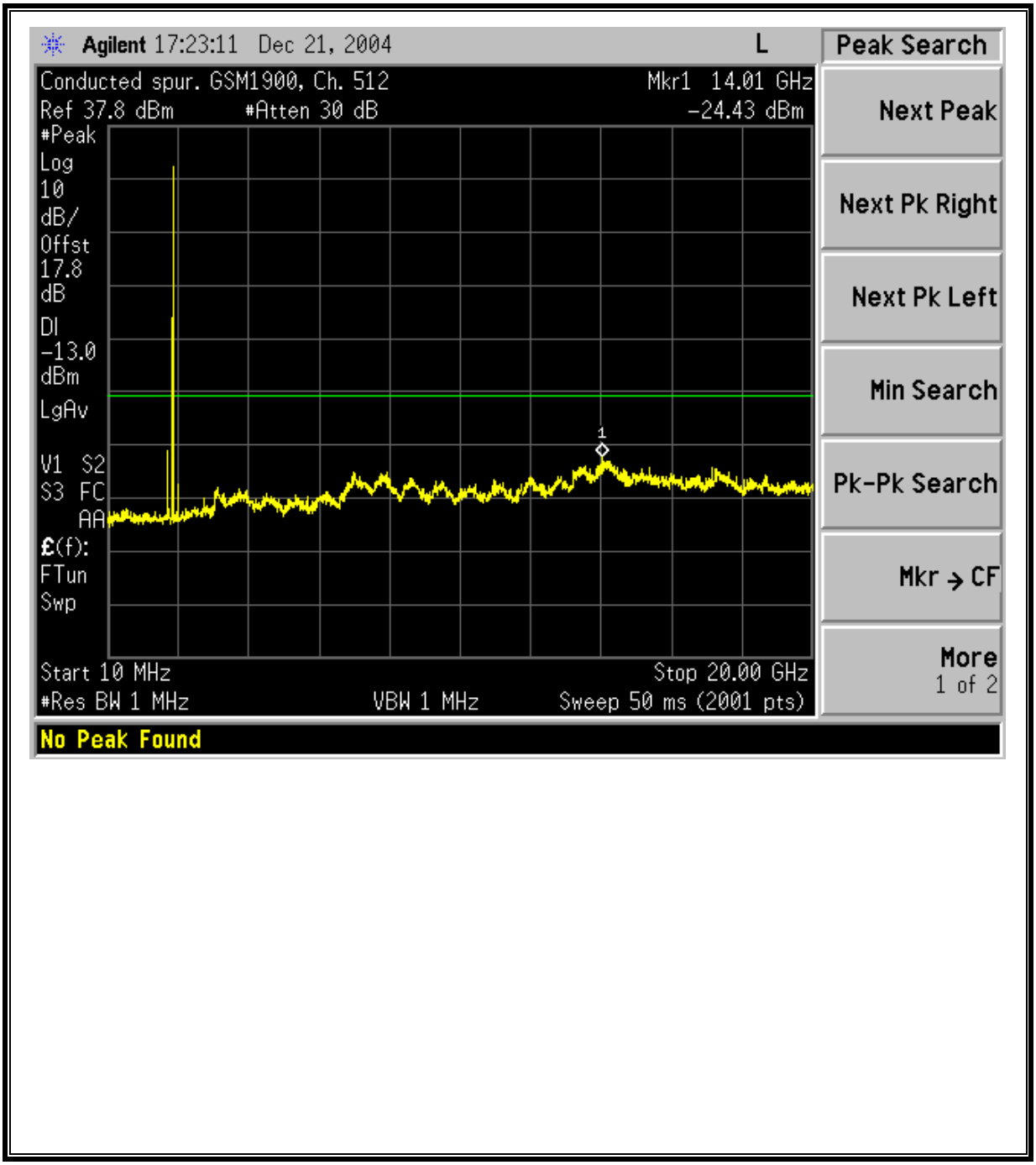


EDGE Mobile Emissions in Base Frequency Range

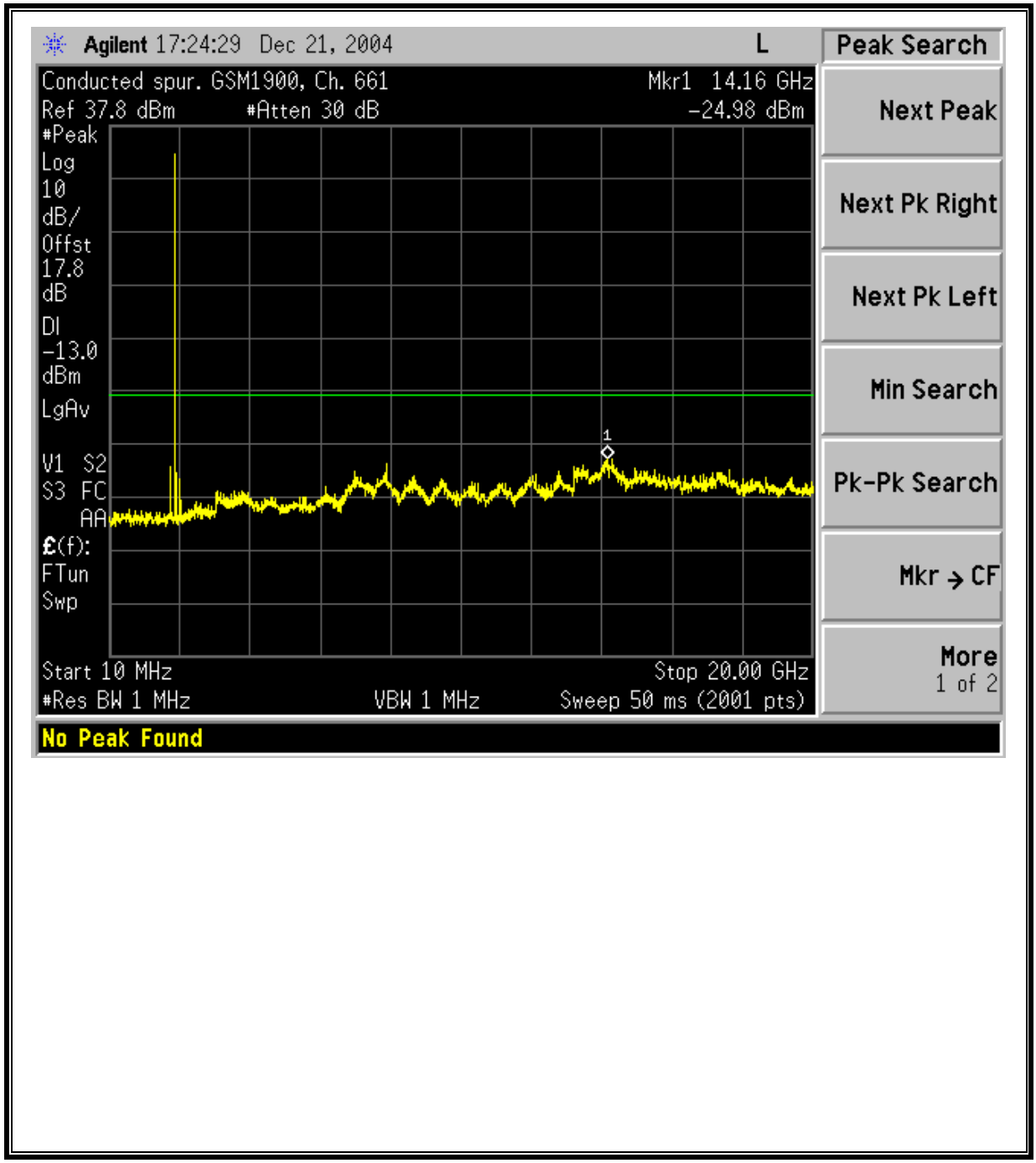


GSM1900 MODULATION RESULTS

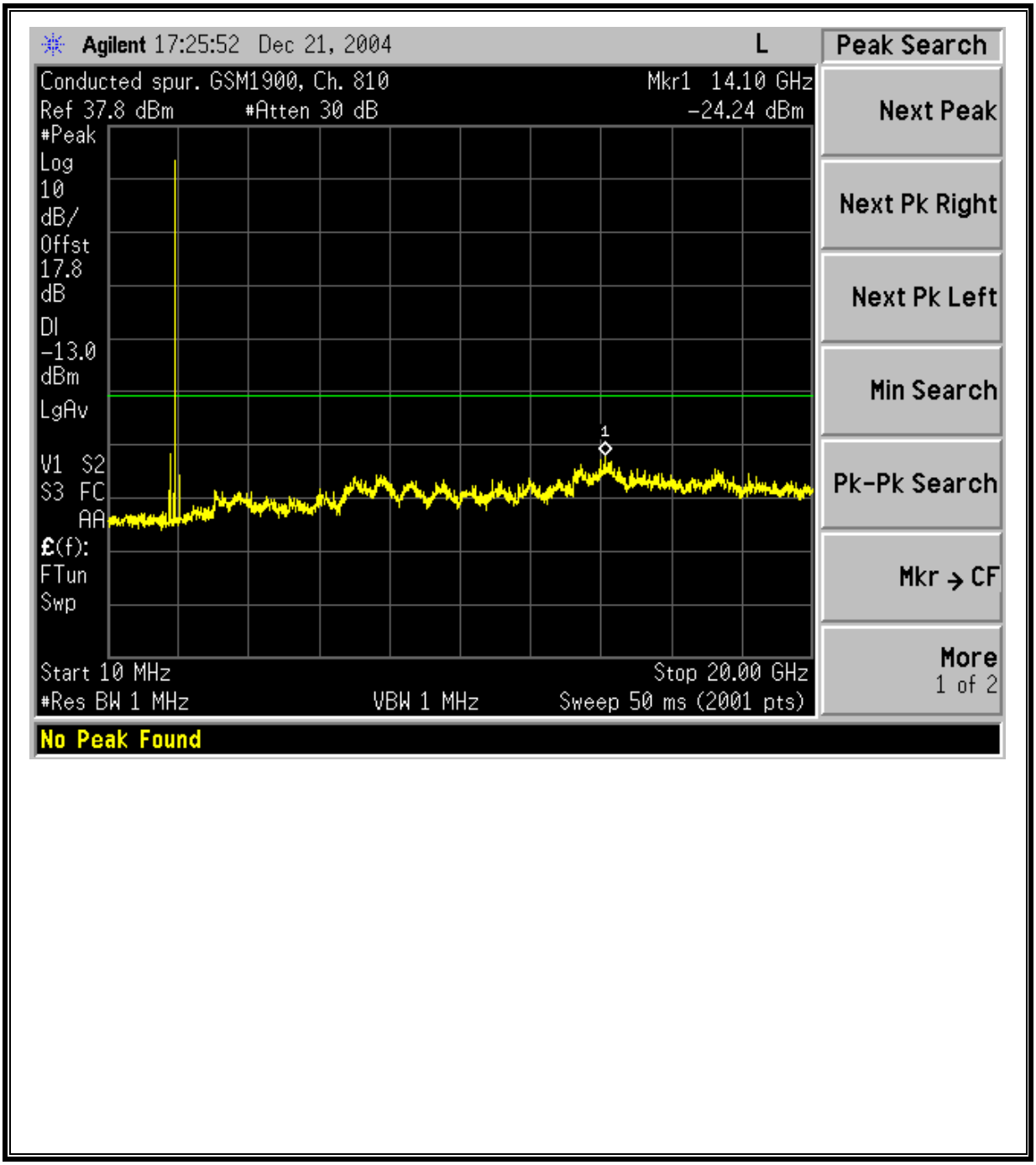
Low Channel, Out-Of-Band Emissions



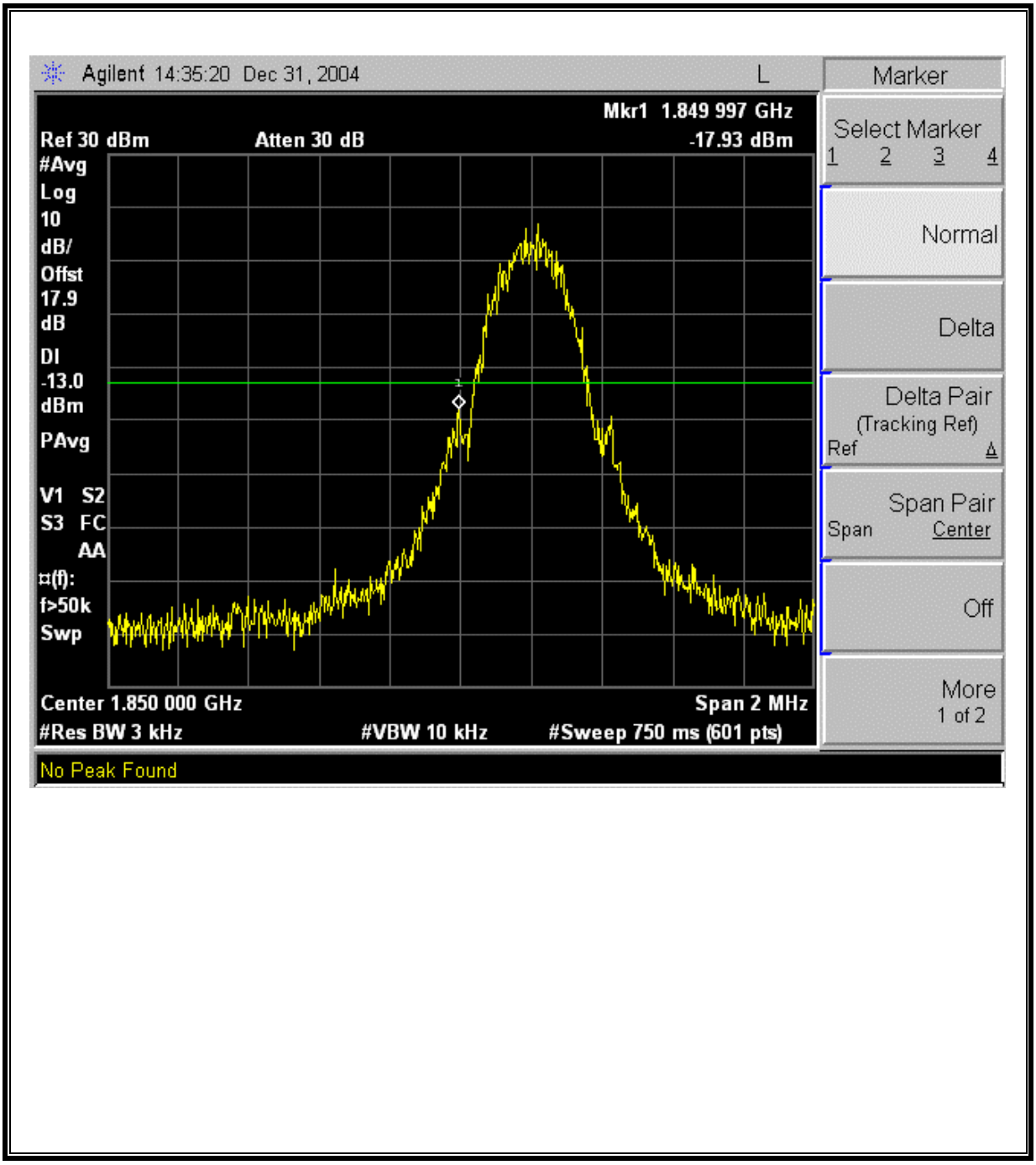
Mid Channel, Out-Of-Band Emissions



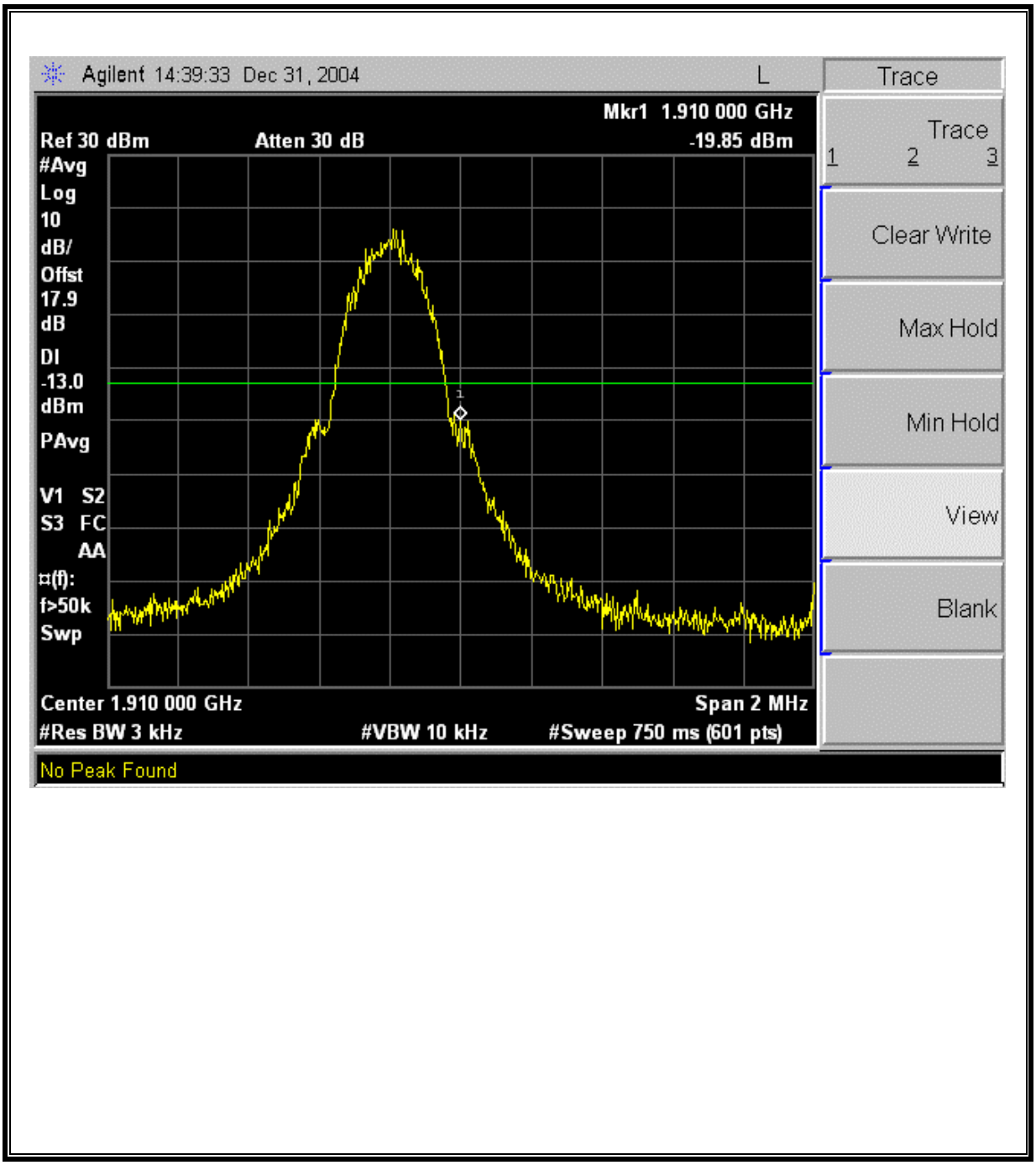
High Channel, Out-Of-Band Emissions



GSM1900 Modulation: Low Channel Band Edge

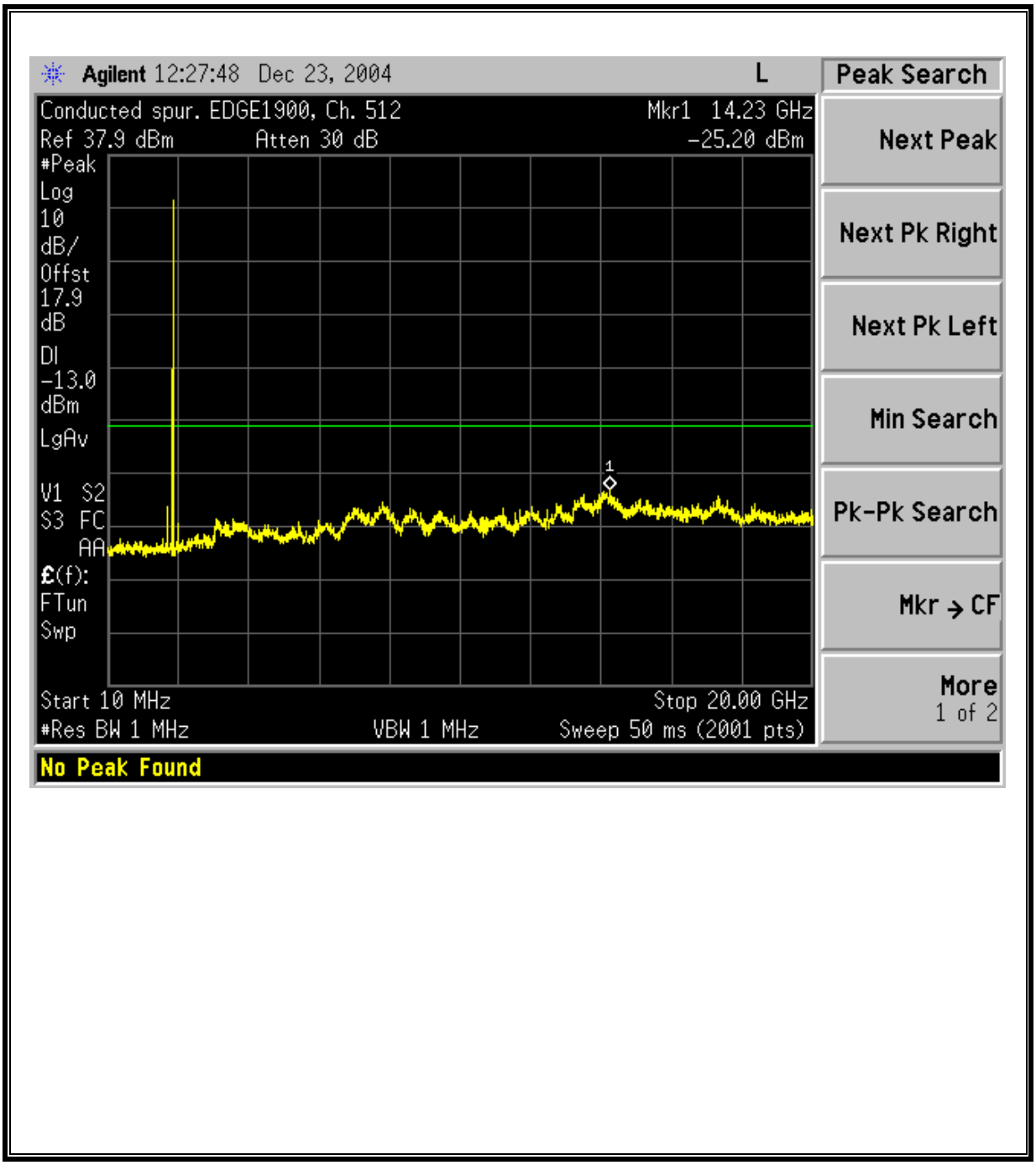


GSM1900 Modulation: High Channel Band Edge

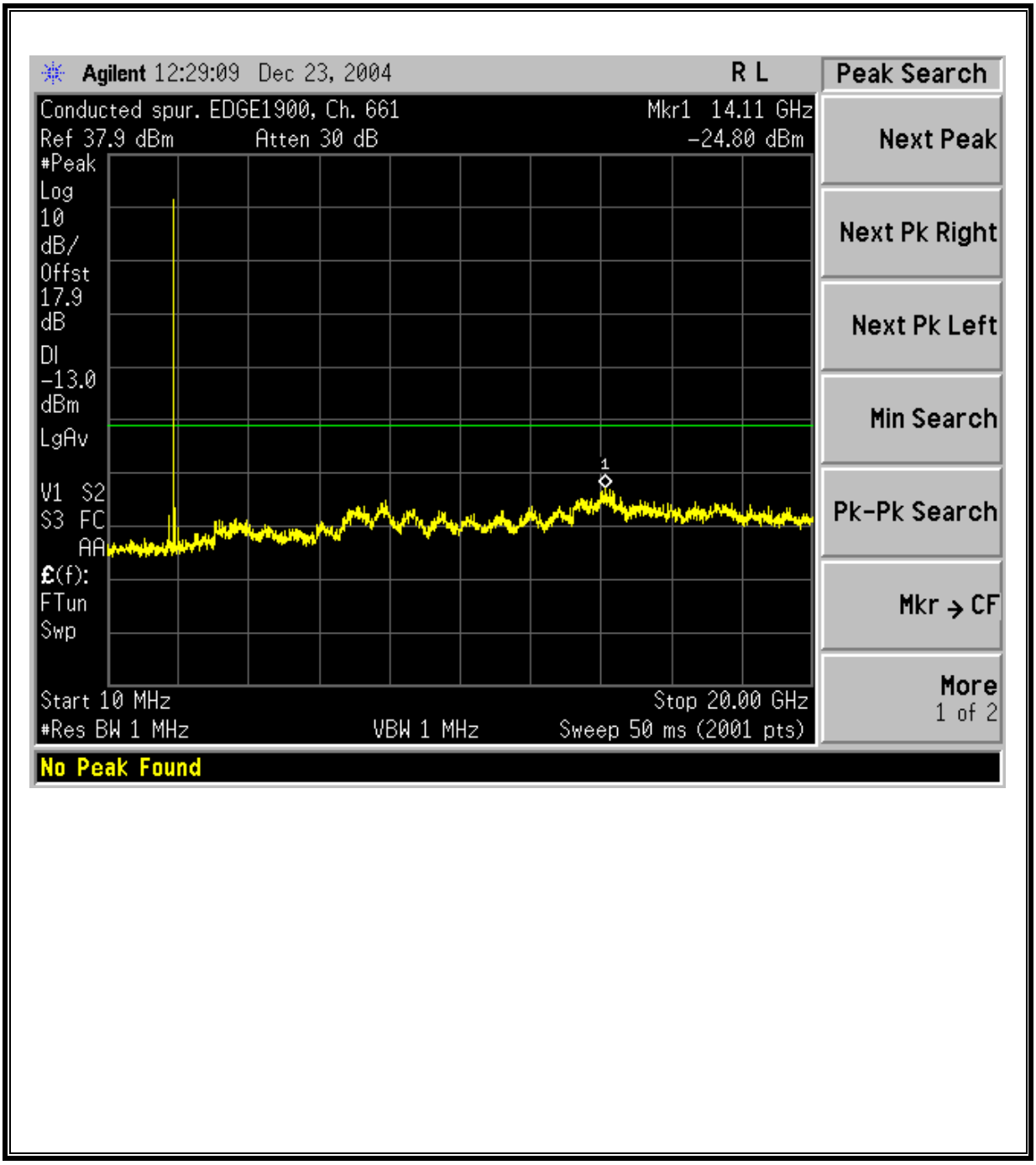


EDGE1900 MODULATION RESULTS

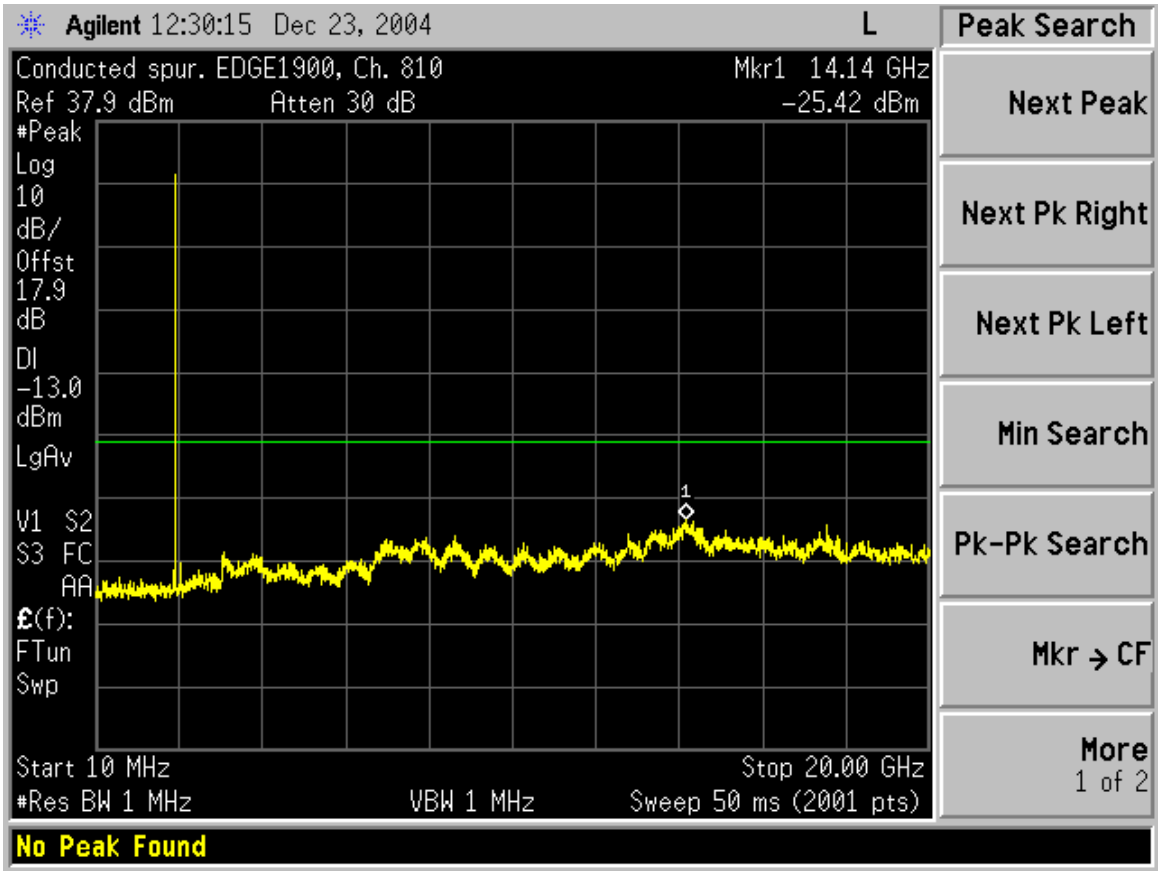
Low Channel, Out-Of-Band Emissions



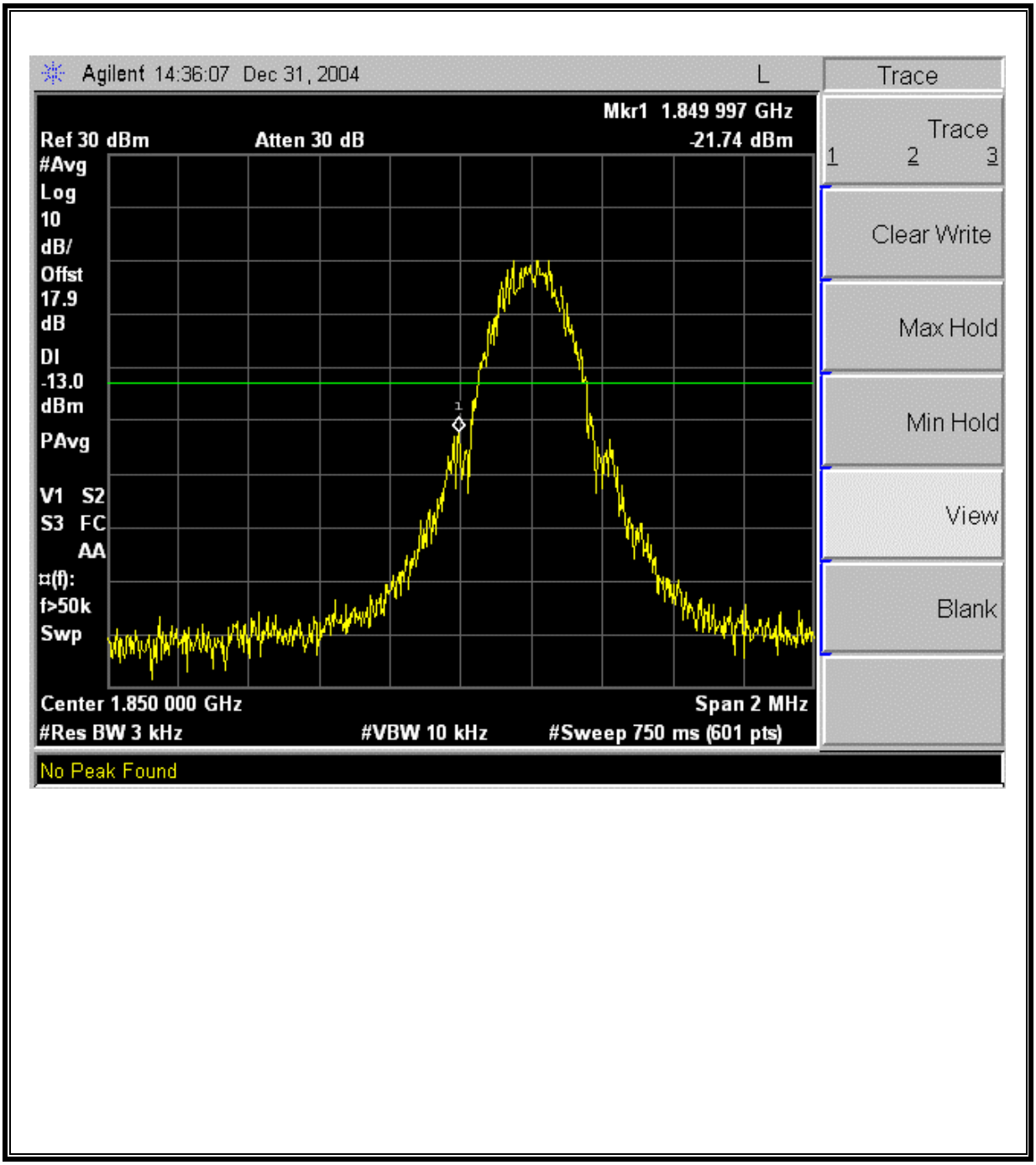
Mid Channel, Out-Of-Band Emissions



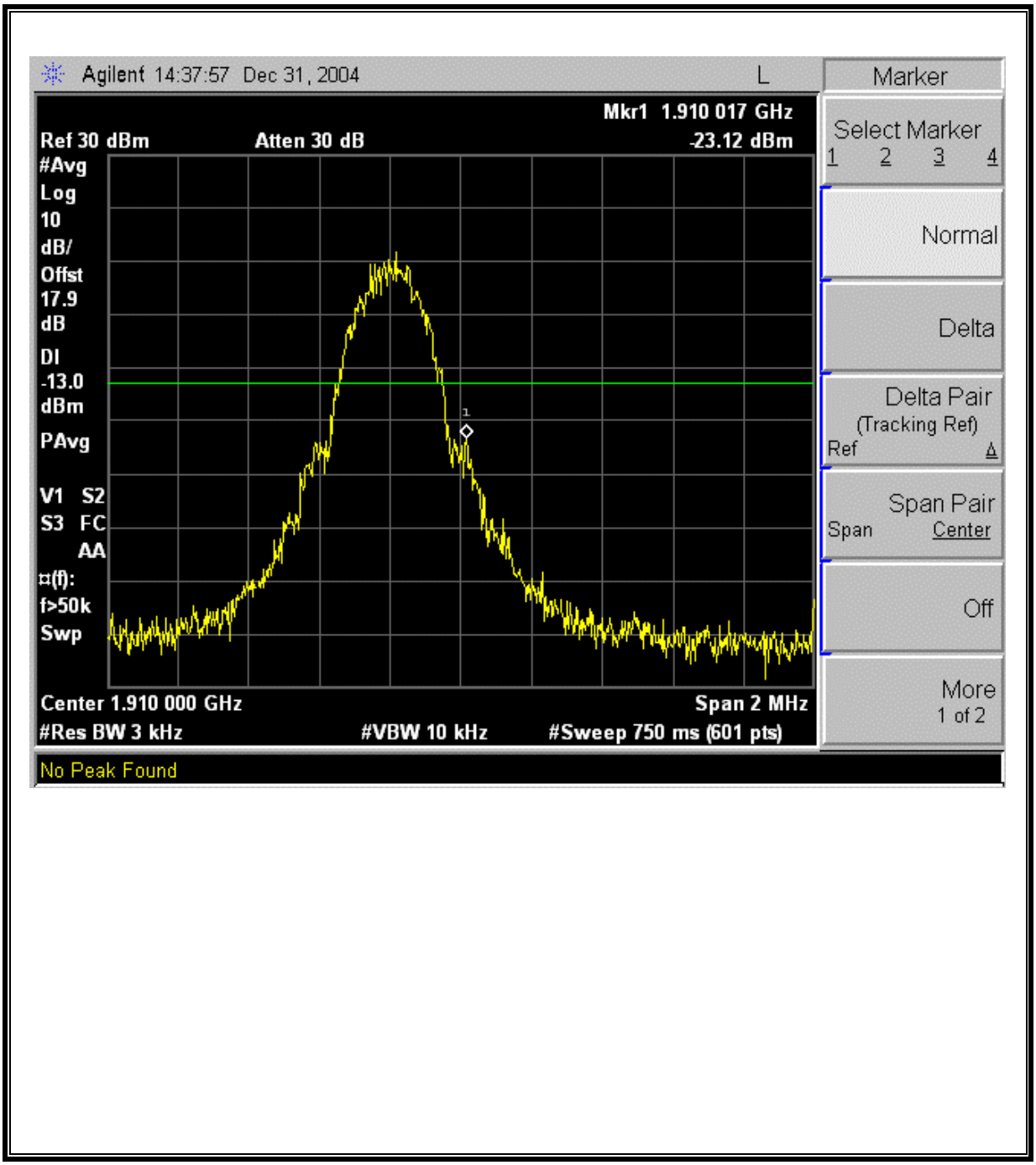
High Channel, Out-Of-Band Emissions



EDGE1900 Modulation: Low Channel Band Edge



EDGE1900 Modulation: High Channel Band Edge



7.5. FIELD STRENGTH OF SPURIOUS RADIATION

LIMIT

§22.917 (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.

§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.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 3.2.12 & FCC 22.917 (b)
ANSI / TIA / EIA 603 Clause 3.2.12 & FCC 24.238 (b)

RESULTS

No non-compliance noted.

EDGE and GSM850Spurious & Harmonic (ERP)

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
GSM Modulation										
Tx LOW Channel										
1.648	51.5	V	-59.0	1.6	6.7	4.5	-56.1	-13.0	-43.1	
1.648	52.2	H	-57.6	1.6	6.7	4.5	-54.7	-13.0	-41.7	
2.473	52.0	H	-57.2	1.9	7.7	5.6	-53.5	-13.0	-40.5	
2.473	49.8	V	-58.0	1.9	7.7	5.6	-54.4	-13.0	-41.4	
3.297	49.2	H	-56.1	2.3	8.6	6.5	-51.9	-13.0	-38.9	
3.297	50.5	V	-54.9	2.3	8.6	6.5	-50.7	-13.0	-37.7	
Tx MID Channel.										
1.674	51.2	V	-59.2	1.6	6.7	4.5	-56.3	-13.0	-43.3	
1.674	53.7	H	-56.0	1.6	6.7	4.5	-53.1	-13.0	-40.1	
2.511	49.5	H	-57.4	1.9	7.8	5.6	-53.7	-13.0	-40.7	
2.511	50.0	V	-57.1	1.9	7.8	5.6	-53.4	-13.0	-40.4	
2.511	50.2	H	-56.7	1.9	7.8	5.6	-53.1	-13.0	-40.1	
3.348	49.7	H	-55.5	2.3	8.7	6.5	-51.3	-13.0	-38.3	
3.348	48.8	V	-56.5	2.3	8.7	6.5	-52.3	-13.0	-39.3	
Tx HIGH Channel.										
1.698	50.8	V	-59.4	1.6	6.7	4.6	-56.5	-13.0	-43.5	
1.698	52.2	H	-57.4	1.6	6.7	4.6	-54.4	-13.0	-41.4	
2.546	52.7	H	-54.1	2.0	7.8	5.7	-50.4	-13.0	-37.4	
2.546	49.7	V	-57.3	2.0	7.8	5.7	-53.6	-13.0	-40.6	
3.395	50.3	V	-54.9	2.3	8.7	6.5	-50.7	-13.0	-37.7	
3.395	51.2	H	-54.0	2.3	8.7	6.5	-49.8	-13.0	-36.8	
EDGE Modulation										
Tx LOW Channel										
1.648	50.0	V	-60.5	1.6	6.7	4.5	-57.6	-13.0	-44.6	
1.648	49.7	H	-60.1	1.6	6.7	4.5	-57.2	-13.0	-44.2	
2.473	49.5	H	-58.5	1.9	7.7	5.6	-54.9	-13.0	-41.9	
2.473	48.5	V	-59.7	1.9	7.7	5.6	-56.1	-13.0	-43.1	
3.297	47.5	H	-57.8	2.3	8.6	6.5	-53.6	-13.0	-40.6	
3.297	48.0	V	-57.4	2.3	8.6	6.5	-53.2	-13.0	-40.2	
Tx MID C	3.5									
1.674	50.5	V	-59.9	1.6	6.7	4.5	-56.9	-13.0	-43.9	
1.674	51.2	H	-58.5	1.6	6.7	4.5	-55.6	-13.0	-42.6	
2.511	48.5	H	-58.4	1.9	7.8	5.6	-54.7	-13.0	-41.7	
2.511	47.5	V	-59.6	1.9	7.8	5.6	-55.9	-13.0	-42.9	
2.511	48.5	H	-58.4	1.9	7.8	5.6	-54.7	-13.0	-41.7	
3.348	47.5	H	-57.7	2.3	8.7	6.5	-53.5	-13.0	-40.5	
3.348	47.5	V	-57.8	2.3	8.7	6.5	-53.6	-13.0	-40.6	
Tx HIGH	3.5									
1.698	50.5	V	-59.7	1.6	6.7	4.6	-56.8	-13.0	-43.8	
1.698	50.5	H	-59.0	1.6	6.7	4.6	-56.1	-13.0	-43.1	
2.546	50.0	H	-56.8	2.0	7.8	5.7	-53.1	-13.0	-40.1	
2.546	48.5	V	-58.5	2.0	7.8	5.7	-54.8	-13.0	-41.8	
3.395	47.8	V	-57.4	2.3	8.7	6.5	-53.2	-13.0	-40.2	
3.395	48.7	H	-56.5	2.3	8.7	6.5	-52.3	-13.0	-39.3	
No more harmonic above 4th harmonic for all channels										

EDGE and GSM1900 Spurious & Harmonic (EIRP)

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
GSM Modulation Tx Low Channel Channel.										
3.700	55.5	V	-49.3	2.4	8.9	6.7	-45.0	-13.0	-32.0	
3.700	52.5	H	-52.2	2.4	8.9	6.7	-47.9	-13.0	-34.9	
5.551	49.2	H	-51.7	3.2	10.5	8.4	-46.5	-13.0	-33.5	
5.551	53.3	V	-48.5	3.2	10.5	8.4	-43.4	-13.0	-30.4	
7.401	48.7	H	-48.6	3.7	10.2	8.1	-44.2	-13.0	-31.2	
7.401	50.0	V	-48.0	3.7	10.2	8.1	-43.7	-13.0	-30.7	
Tx MID Channel										
3.760	56.4	V	-48.3	2.5	8.9	6.7	-44.0	-13.0	-31.0	
3.760	52.5	H	-52.1	2.5	8.9	6.7	-47.8	-13.0	-34.8	
5.640	48.5	H	-48.3	3.3	10.5	8.4	-43.2	-13.0	-30.2	
5.640	52.4	V	-52.4	3.3	10.5	8.4	-47.3	-13.0	-34.3	
7.520	49.3	H	-47.7	3.7	10.2	8.1	-43.3	-13.0	-30.3	
7.520	50.0	V	-47.8	3.7	10.2	8.1	-43.4	-13.0	-30.4	
Tx HIGH Channel.										
3.820	54.9	V	-49.7	2.5	8.9	6.8	-45.4	-13.0	-32.4	
3.820	52.4	H	-52.1	2.5	8.9	6.8	-47.8	-13.0	-34.8	
5.729	49.5	H	-51.0	3.3	10.6	8.4	-45.9	-13.0	-32.9	
5.729	53.8	V	-47.7	3.3	10.6	8.4	-42.6	-13.0	-29.6	
7.639	51.2	V	-46.4	3.8	10.3	8.1	-42.0	-13.0	-29.0	
7.639	48.8	H	-48.0	3.8	10.3	8.1	-43.6	-13.0	-30.6	
EDGE Modulation Tx Low Channel Channel.										
3.700	56.0	V	-48.8	2.4	8.9	6.7	-44.5	-13.0	-31.5	
3.700	53.0	H	-51.7	2.4	8.9	6.7	-47.4	-13.0	-34.4	
5.551	49.0	H	-51.8	3.2	10.5	8.4	-46.7	-13.0	-33.7	
5.551	52.3	V	-49.5	3.2	10.5	8.4	-44.4	-13.0	-31.4	
7.401	47.7	H	-49.6	3.7	10.2	8.1	-45.2	-13.0	-32.2	
7.401	49.0	V	-49.0	3.7	10.2	8.1	-44.7	-13.0	-31.7	
Tx MID C	3.0									
3.760	56.5	V	-48.2	2.5	8.9	6.7	-43.9	-13.0	-30.9	
3.760	53.0	H	-51.6	2.5	8.9	6.7	-47.3	-13.0	-34.3	
5.640	48.5	H	-49.3	3.3	10.5	8.4	-44.2	-13.0	-31.2	
5.640	51.4	V	-53.4	3.3	10.5	8.4	-48.3	-13.0	-35.3	
7.520	48.3	H	-48.7	3.7	10.2	8.1	-44.3	-13.0	-31.3	
7.520	49.0	V	-48.8	3.7	10.2	8.1	-44.4	-13.0	-31.4	
Tx HIGH	3.0									
3.820	56.0	V	-48.6	2.5	8.9	6.8	-44.3	-13.0	-31.3	
3.820	53.3	H	-51.2	2.5	8.9	6.8	-46.9	-13.0	-33.9	
5.729	49.0	H	-51.5	3.3	10.6	8.4	-46.4	-13.0	-33.4	
5.729	52.8	V	-48.7	3.3	10.6	8.4	-43.6	-13.0	-30.6	
7.639	50.2	V	-47.4	3.8	10.3	8.1	-43.0	-13.0	-30.0	
7.639	47.8	H	-49.0	3.8	10.3	8.1	-44.6	-13.0	-31.6	
No more harmonic above 4th harmonic for all channels										

7.5.1. CO-LOCATED TRANSMITTER RADIATED EMISSIONS

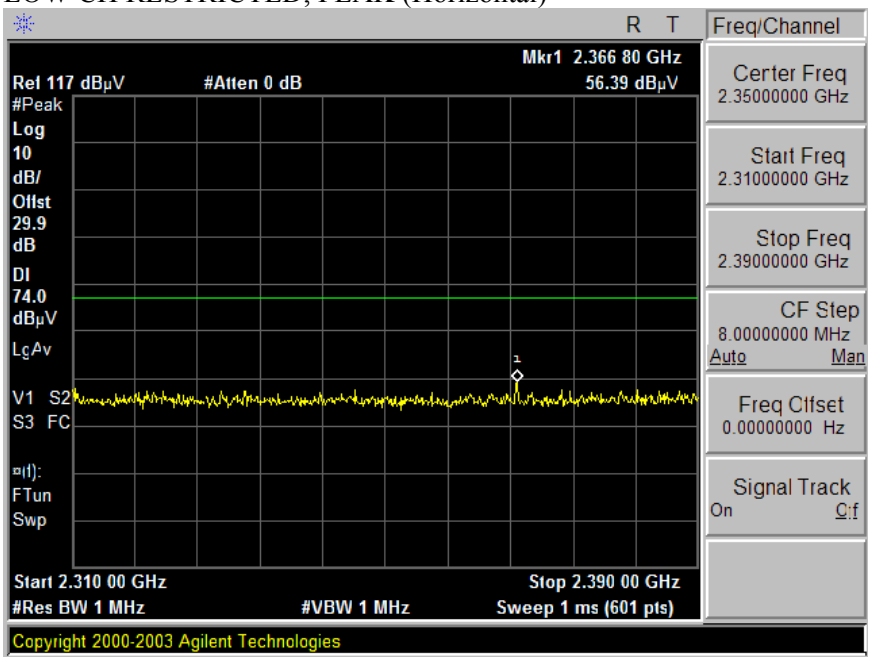
RESULTS

No non-compliance noted:

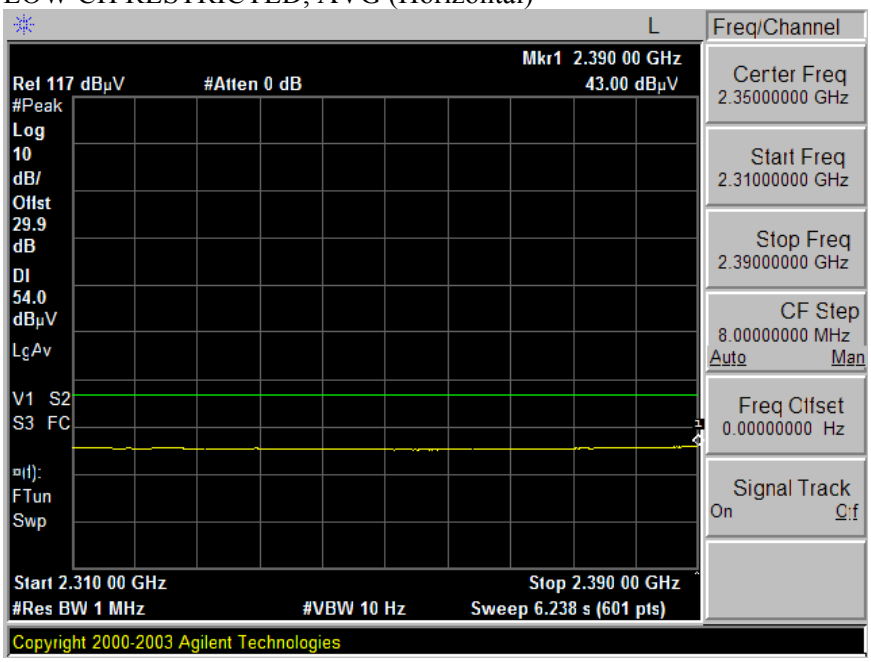
The dominant transmitter is the Bluetooth, and the non-dominant transmitter is GSM1900.

WORST-CASE RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (Horizontal)

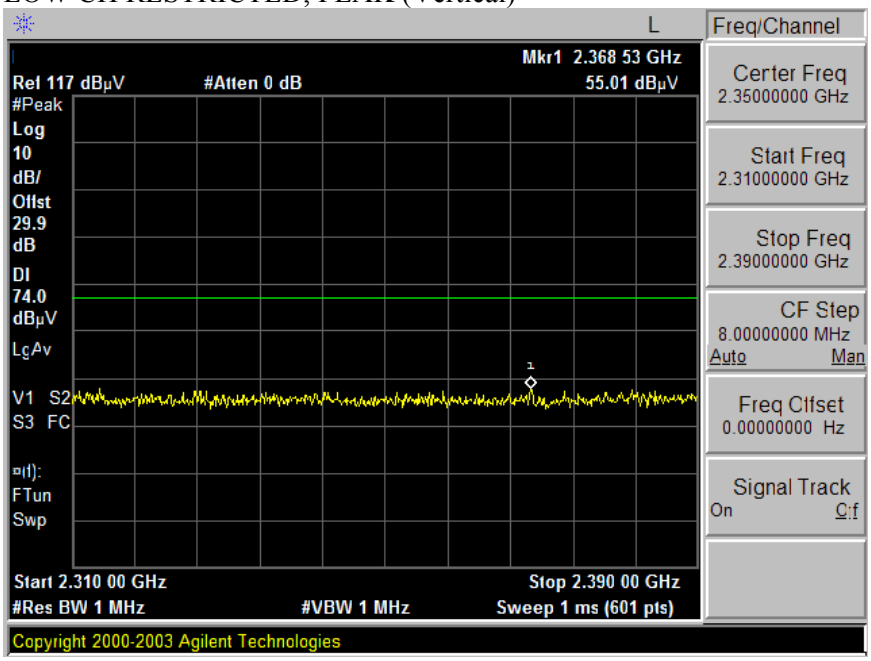


LOW CH RESTRICTED, AVG (Horizontal)

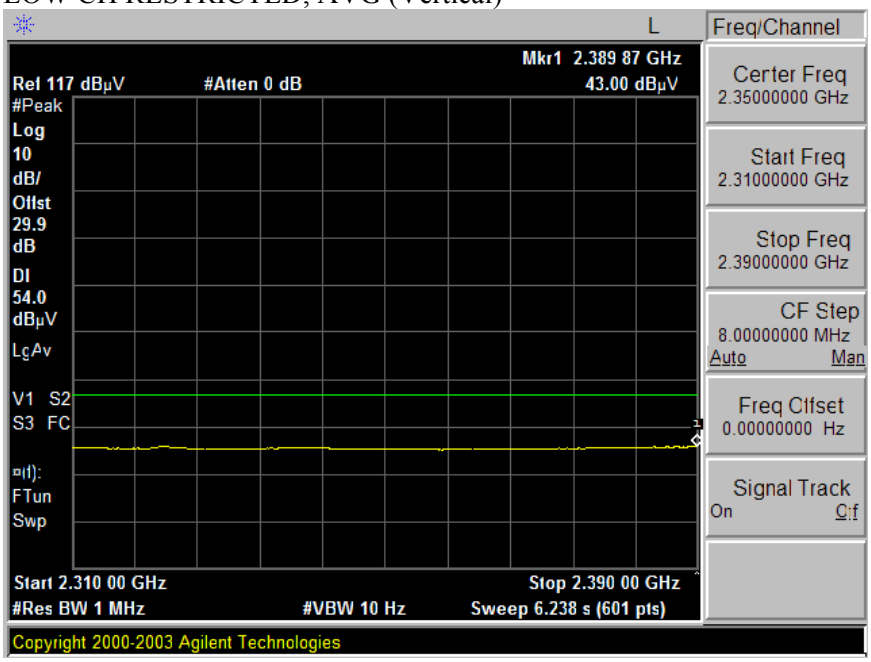


WORST-CASE RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (Vertical)

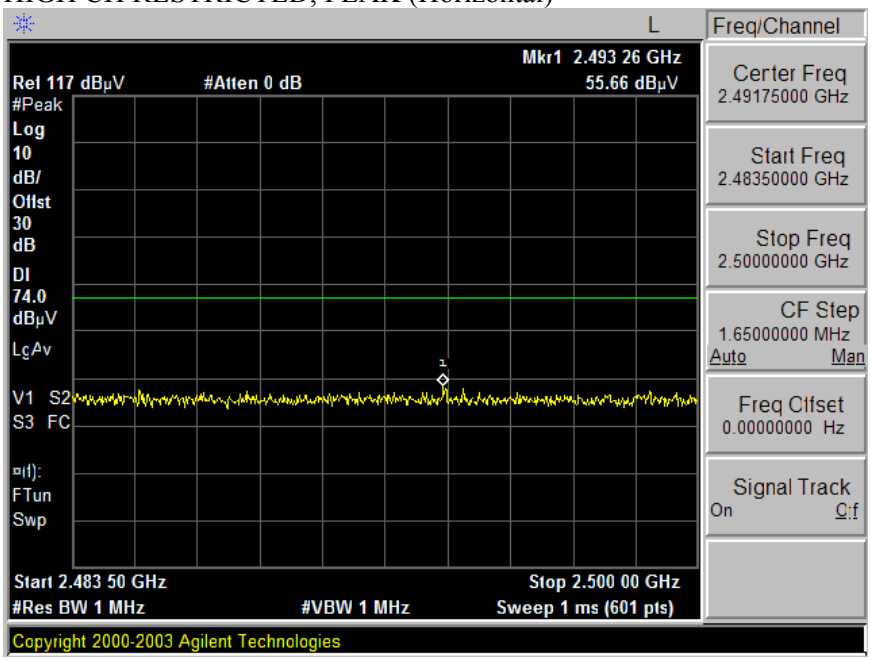


LOW CH RESTRICTED, AVG (Vertical)

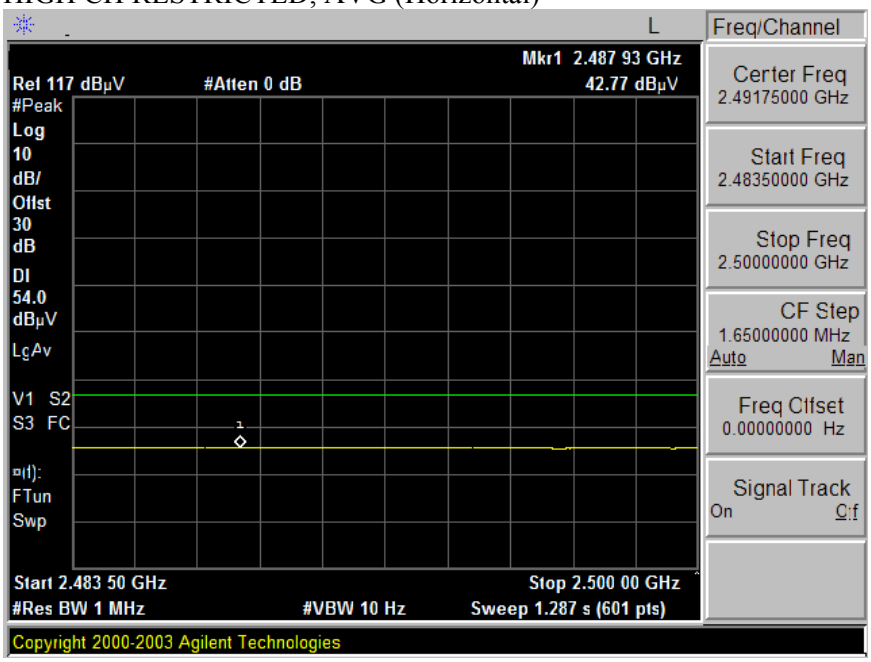


WORST-CASE RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (Horizontal)

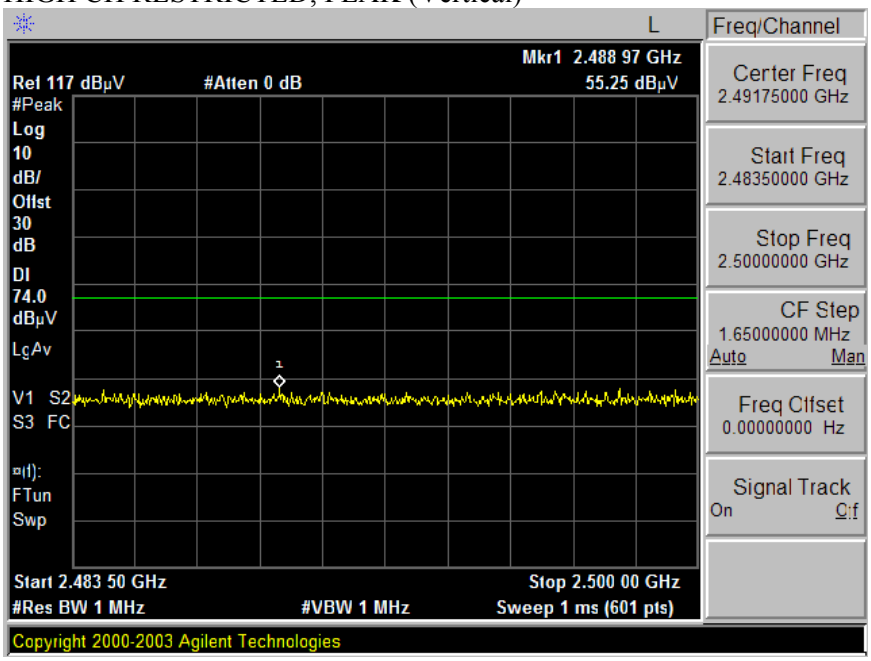


HIGH CH RESTRICTED, AVG (Horizontal)

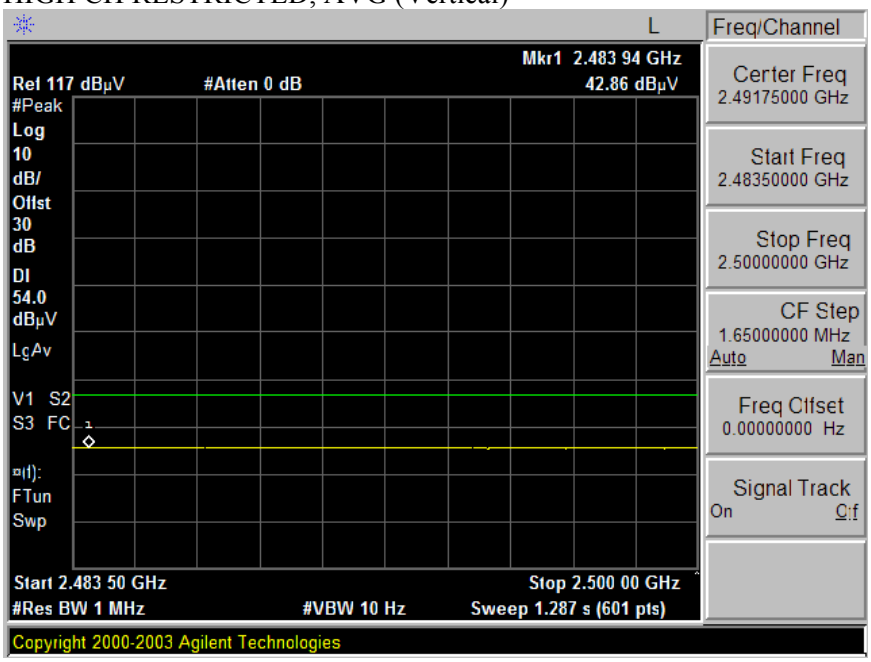


WORST-CASE RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (Vertical)



HIGH CH RESTRICTED, AVG (Vertical)



WORST-CASE HARMONICS AND SPURIOUS EMISSIONS

12/21/04 High Frequency Measurement
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Vien Tran
Project #: 04T3106-3
Company: HIGH TECH COMPUTER
EUT Descrip.: PDA WITH BLUETOOTH
EUT M/N: HSTNH-H06C
Test Target: FCC 15.247
Mode Oper: Dominant Bluetooth_ Tx at worst channel & GSM TX for Non-dominant channel

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T60; S/N: 2238 @3m	T63 Miteq 646456			FCC 15.247

Hi Frequency Cables

2 foot cable	3 foot cable	4 foot cable	12 foot cable	HPF	Reject Filter
	3_Chin		12_Hitesh	HPF_4.0GHz	

Peak Measurements
RBW=VBW=1MHz

Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
MID CH 2442MHz															
4.882	3.0	60.8	42.4	33.0	4.1	-35.5	0.0	0.6	63.1	44.7	74	54	-10.9	-9.3	V
7.323	3.0	47.2	33.1	35.9	5.9	-34.8	0.0	0.6	54.9	40.8	74	54	-19.1	-13.2	V
4.882	3.0	58.5	40.3	33.0	4.1	-35.5	0.0	0.6	60.8	42.6	74	54	-13.2	-11.4	H
7.323	3.0	45.7	32.7	35.9	5.9	-34.8	0.0	0.6	53.4	40.4	74	54	-20.6	-13.6	H

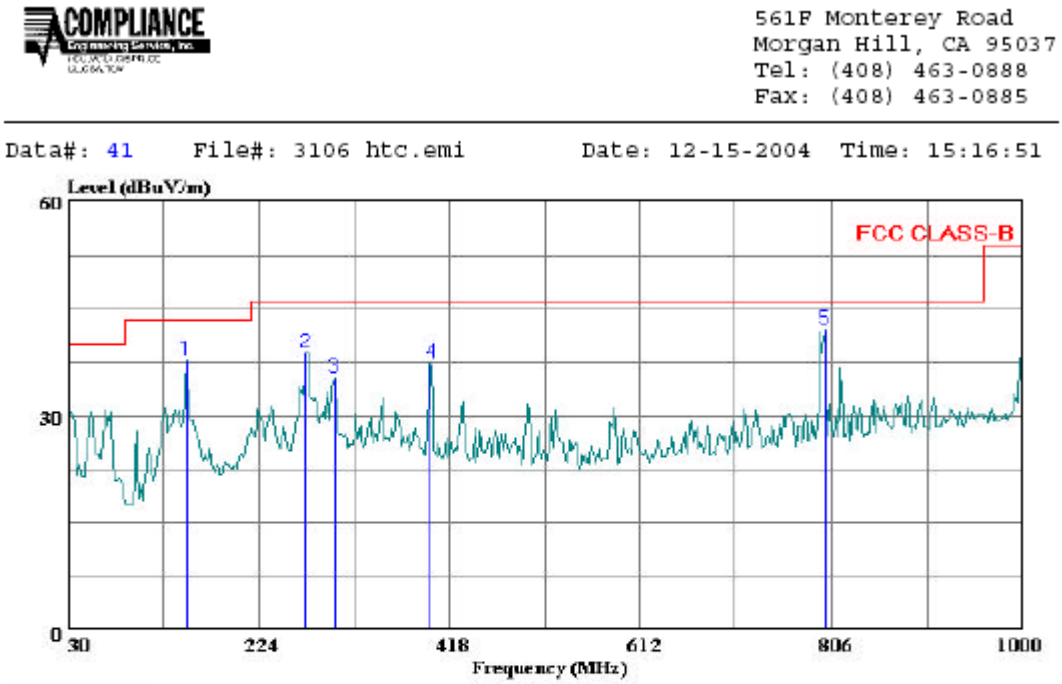
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

8. DIGITAL DEVICE CONFIGURATION - LIMITS AND RESULTS

8.1. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



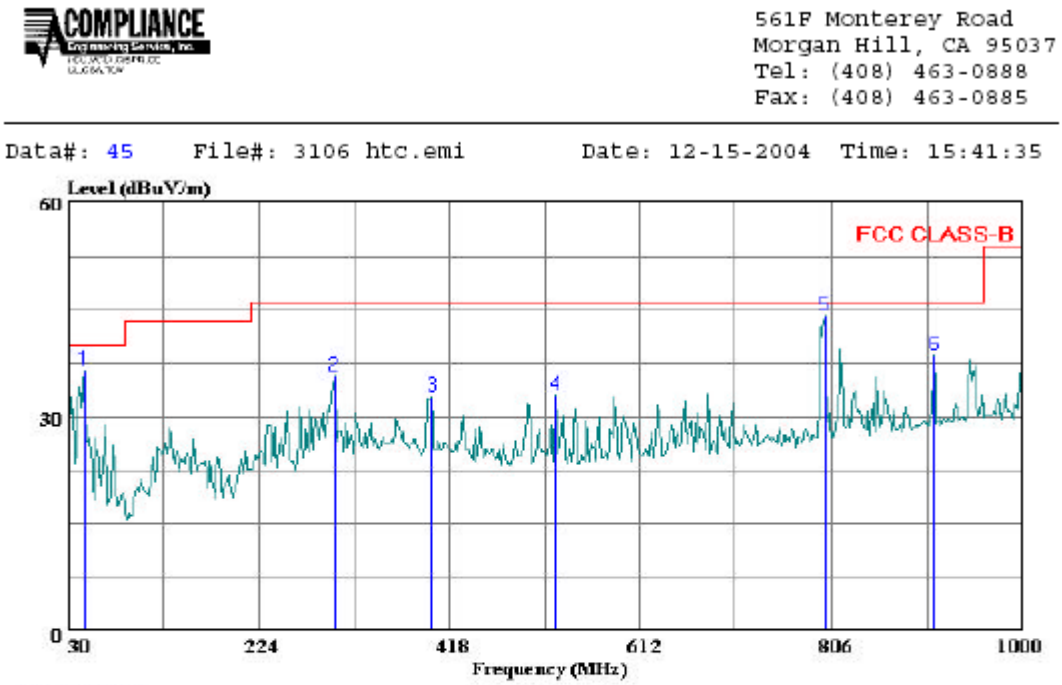
HORIZONTAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	150.280	50.20	-12.45	37.75	43.50	-5.75	Peak
2	271.530	49.90	-11.00	38.90	46.00	-7.10	Peak
3	300.630	45.56	-10.30	35.26	46.00	-10.74	Peak
4	398.600	46.07	-8.71	37.36	46.00	-8.64	Peak
5	798.240	44.47	-2.38	42.09	46.00	-3.91	Peak

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



VERTICAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	46.490	51.37	-14.80	36.57	40.00	-3.43	Peak
2	300.630	46.07	-10.30	35.77	46.00	-10.23	Peak
3	400.540	41.39	-8.67	32.72	46.00	-13.28	Peak
4	526.640	39.53	-6.57	32.96	46.00	-13.04	Peak
5	798.240	46.70	-2.38	44.32	46.00	-1.68	Peak
6	909.790	39.17	-0.60	38.57	46.00	-7.43	Peak

8.2. POWERLINE CONDUCTED EMISSIONS

LIMIT

§15.107 (a) (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

ANSI C63.4

RESULTS

No non-compliance noted:

6 WORST EMISSIONS

Hi Pro Power Supply:

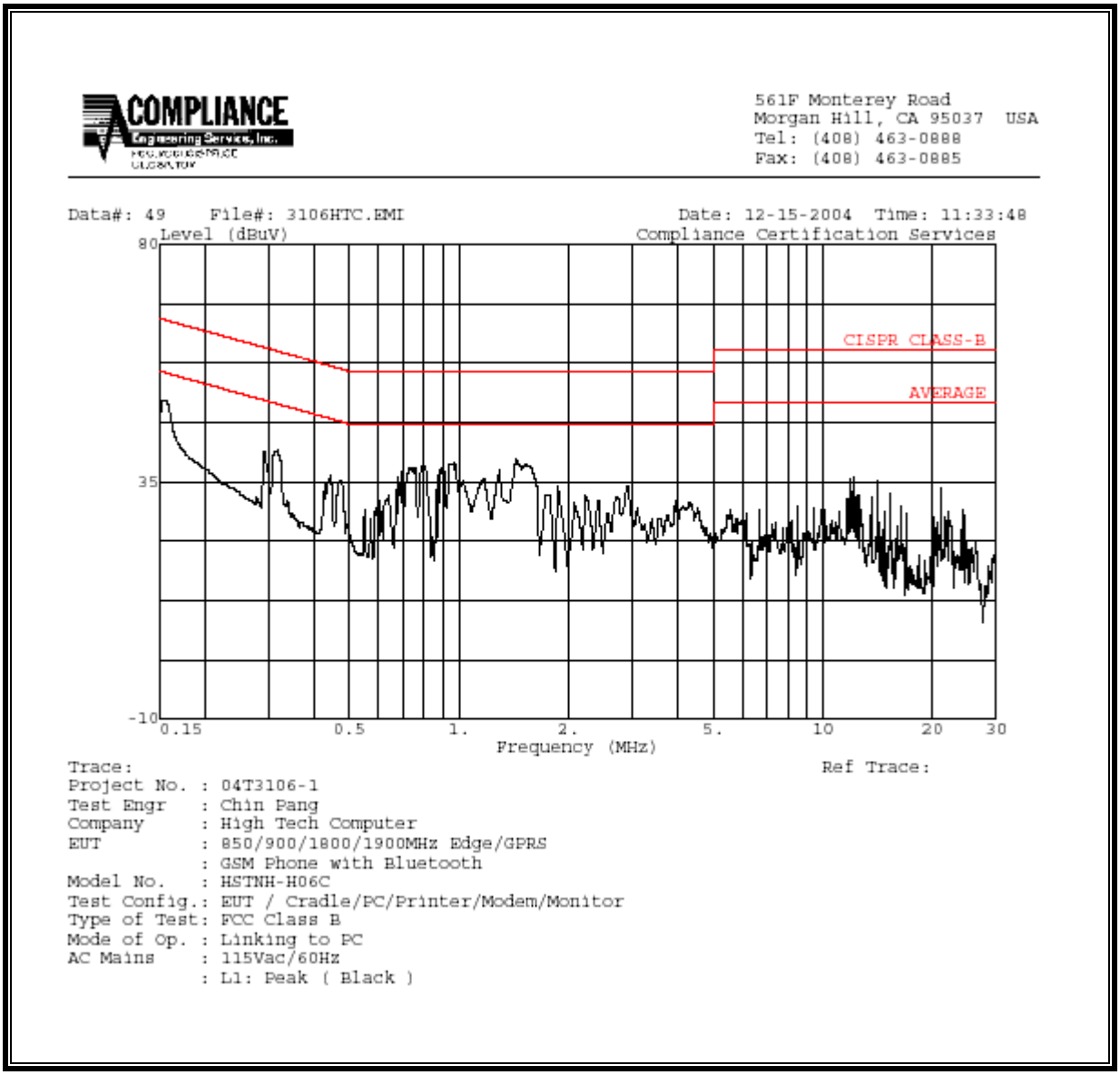
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.16	50.32	--	--	0.00	65.62	55.62	-15.30	-5.30	L1
0.80	38.10	--	--	0.00	56.00	46.00	-17.90	-7.90	L1
1.43	39.26	--	--	0.00	56.00	46.00	-16.74	-6.74	L1
0.17	47.20	--	--	0.00	65.21	55.21	-18.01	-8.01	L2
0.34	43.48	--	--	0.00	59.28	49.28	-15.80	-5.80	L2
1.03	41.30	--	--	0.00	56.00	46.00	-14.70	-4.70	L2
6 Worst Data									

Delta Power Supply:

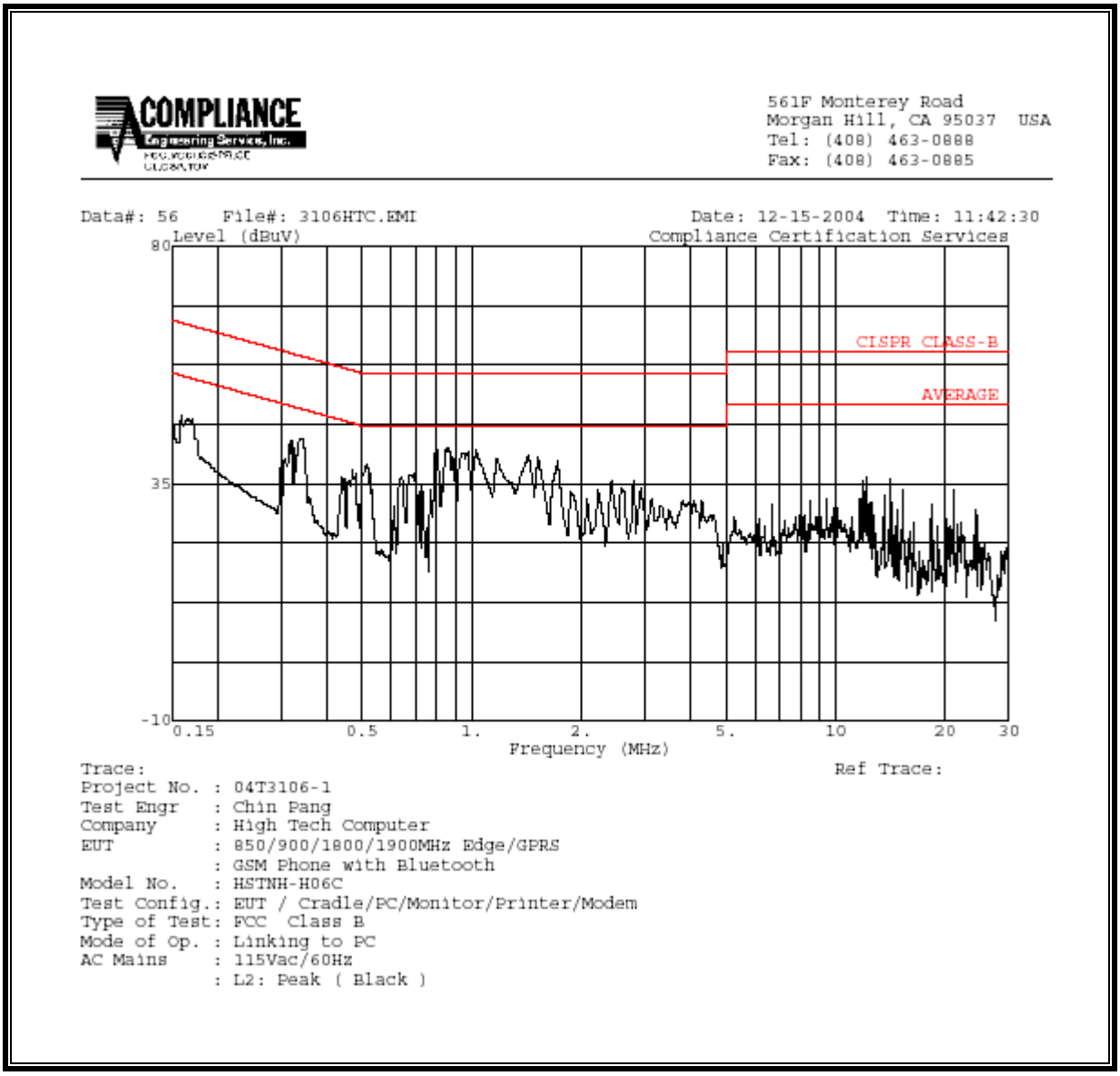
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.44	41.90	--	--	0.00	57.06	47.06	-15.16	-5.16	L1
0.19	42.90	--	--	0.00	63.91	53.91	-21.01	-11.01	L1
1.56	39.64	--	--	0.00	56.00	46.00	-16.36	-6.36	L1
0.47	44.88	--	--	0.00	56.44	46.44	-11.56	-1.56	L2
1.56	42.16	--	--	0.00	56.00	46.00	-13.84	-3.84	L2
0.23	41.78	--	--	0.00	62.31	52.31	-20.53	-10.53	L2
6 Worst Data									

Hi Pro Power Supply:

LINE 1 RESULTS

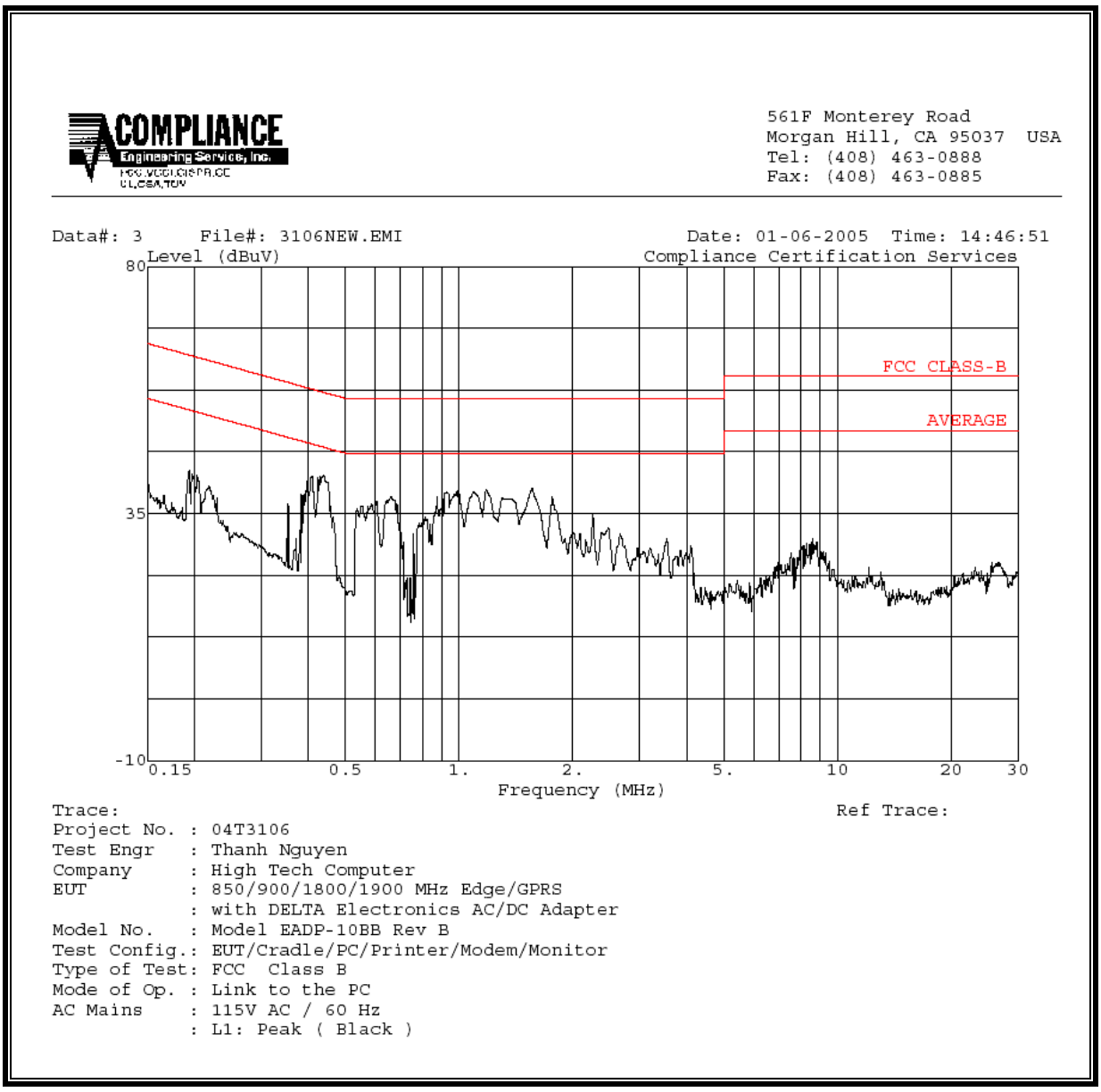


LINE 2 RESULTS



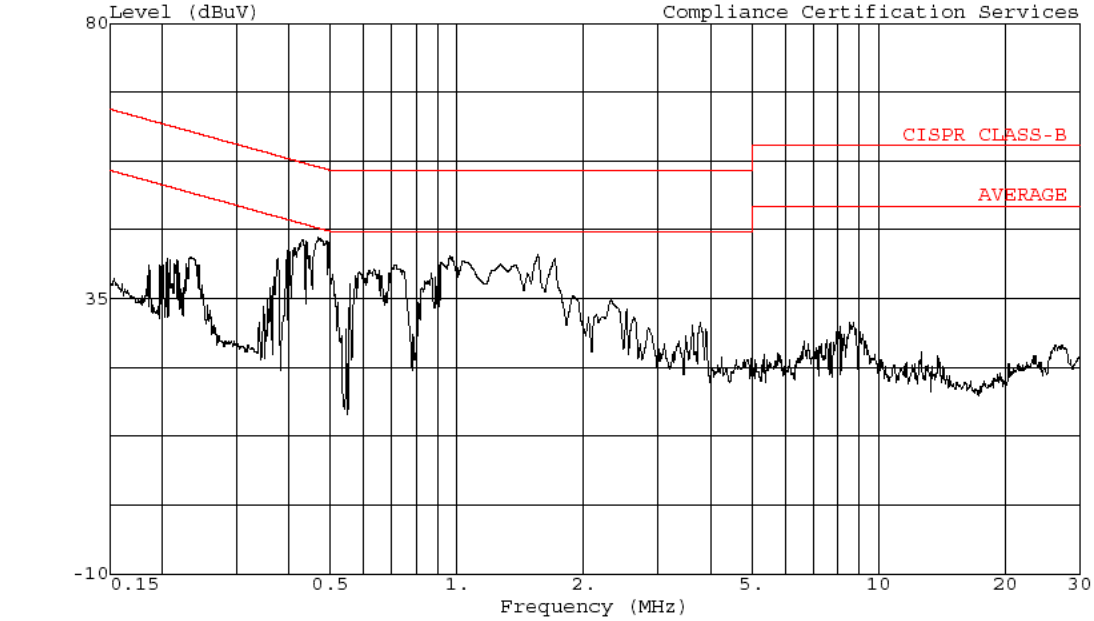
Delta Power Supply:

LINE 1 RESULTS



LINE 2 RESULTS

561F Monterey Road
Morgan Hill, CA 95037 USA
Tel: (408) 463-0888
Fax: (408) 463-0885



Project No. : 04T3106
Test Engr : Thanh Nguyen
Company : High Tech Computer
EUT : 850/900/1800/1900 MHz Edge/GPRS
: with DELTA Electronics AC/DC Adapter
Model No. : Model EADP-10BB Rev B
Test Config.: EUT/Cradle/PC/Printer/Modem/Monitor
Type of Test: FCC Class B
Mode of Op. : Link to the PC
AC Mains : 115V AC / 60 Hz
: L2: Peak (Black)