

FCC TEST REPORT

Equipment Under Test : Wireless Headset
Model No. : BTEAR

Applicant : Euro Communication Equipments SAS
Address of Applicant : Route de Foix 11500 NEBIAS Quillan, France

Standards:

FCC Part 15 subpart C

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan E&E Services or testing done by SGS Taiwan E&E Services in connection with distribution or use of the product described in this report must be approved by SGS Taiwan E&E Services in writing.

Tested by : Robert Chang **Date** : March 17,2003

Approved by : Jason Lin **Date** : March 17,2003

Contents

1. General Information	
1.1 Testing Laboratory.....	3
1.2 Details of Applicant.....	3
1.3 Description of EUT(s).....	3
1.4 Operation Procedure.....	4
2. Summary of Results.....	5
3. Instruments List.....	6
4. Measurements.....	7
4.1 Radiated emission Limits, general requirement.....	7
4.2 Channel Spacing.....	12
4.3 20db bandwidth / No. of channels.....	13
4.4 Average time of Occupancy.....	18
4.5 Peak output power.....	20
4.6 Band-edge emission.....	22
4.7 Spurious Emission under 25Ghz.....	24
APPENDIX	
Photographs of Test Setup.....	31
Photographs of EUT.....	32-33

1. General Information

1.1 Testing Laboratory

SGS Taiwan Ltd. (FCC Registration number: 573967)
1F, No. 134, Wukung Road, Wuku industrial zone
Taipei county , Taiwan , R.O.C.
Telephone : +886-2-2299-3279
Fax : +886-2-2298-2698
Internet : <http://www.sgs.com.tw>

1.2 Details of Applicant

Name : Euro Communication Equipments SAS
Address : Route de Foix 11500 NEBIAS Quillan, France

Contact : Mr. Michel Marchant
Telephone : +33-4-68208730

1.3 Description of EUT(s)

1	Product name	Wireless Headset
2	Product ID	BTEAR
3	Power supply	Internal rechargeable battery, 3V
4	Carrier Frequency	2402MHz to 2480MHz
5	Modulation Method	GFSK,1Mbps,0.5BT Gaussian
6	Hopping	1600hops/sec, 1MHz channel space

1.4 Operation Procedure

Since the EUT is a FHSS system, it is difficult to measure the parameters under hopping mode. The output power and operating frequency are NOT End-user adjustable. Applicant offer a engineering software "BlueSuite" and RS232 interface to control the EUT. Setting of the software parameters are set as default. Operating frequency are set as testing required. The output power is set as Ext=255, Int=50 (at max. power)

The lowest operating frequency within Bluetooth specification is 2402Mhz, and highest operating frequency is 2480Mhz. So the frequency above are used as the lowest and highest frequency in the testing, and the middle frequency is set as 2441Mhz.

Due to cable loss, the real value will equal to measured value(show on the instrument) add cable loss.

2.Summary of Results

subclause	Parameter to be measures	Verdict	Page
15.209	Radiated emission Limits, general requirement	<i>PASS</i>	9
15.247(a)(1)	Channel Spacing	<i>PASS</i>	12
15.247(a)(1)(ii)	20db bandwidth / No. of channels	<i>PASS</i>	13
15.247(a)(1)(ii)	Average Time of Occupancy	<i>PASS</i>	18
15.247(b)(1)	Peak Output power	<i>PASS</i>	20
15.247(c)	Band-Edge Emission	<i>PASS</i>	22
15.247(c)	Spurious Emission under 25Ghz	<i>PASS</i>	24

3. Instruments List

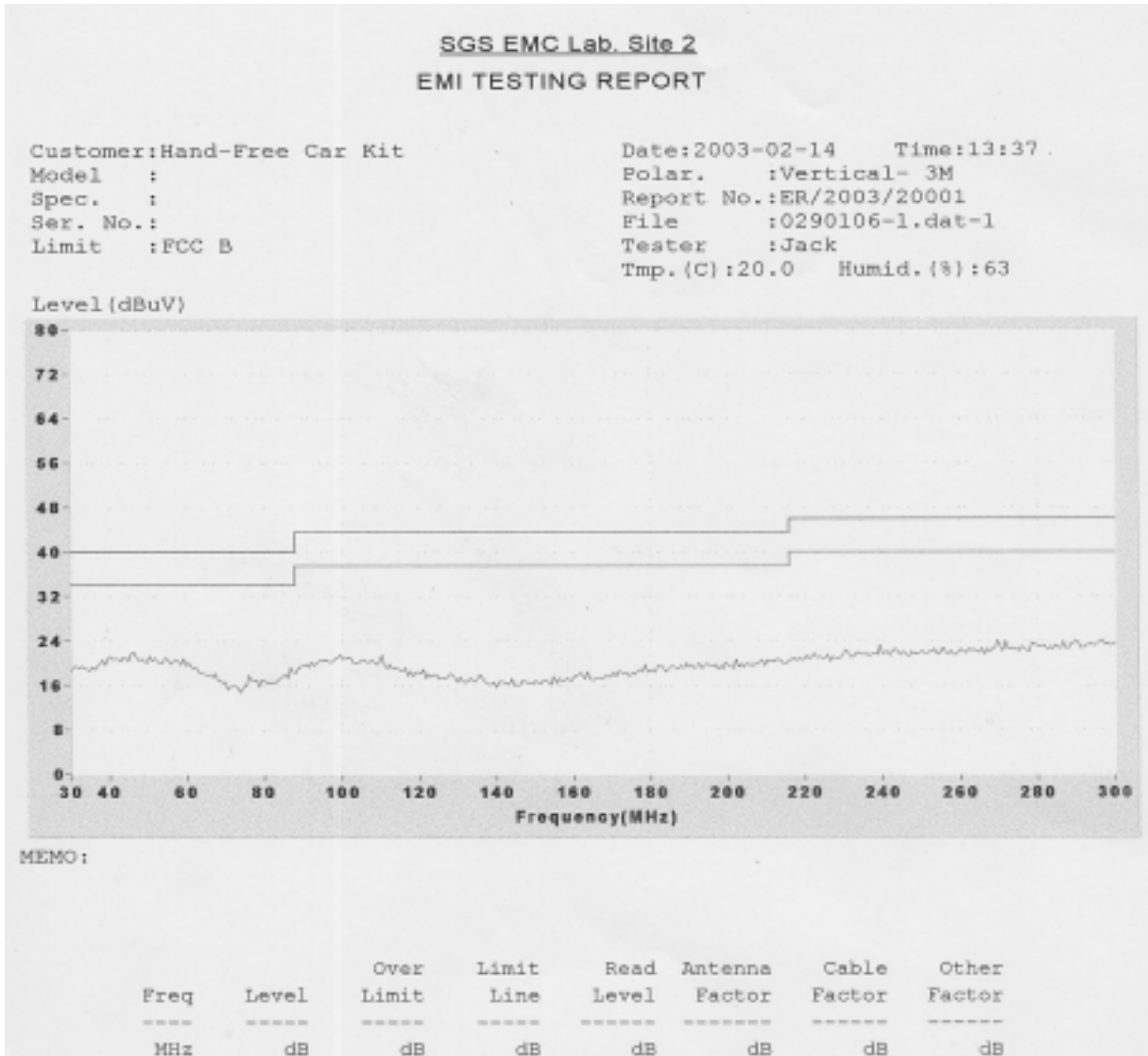
Instrument	Model	Serial number	Calibration date
Desktop PC	Acer Veriton 7200	N/A	N/A
Spectrum Analyzer	Agilent 7405A	US40240202	May 22, 2002
Climatic chamber	Terchy MHG-120L	911009	Oct. 15, 2002
Antenna	Schwarzbeck BBHA9120A	309/320	July 01, 2002
Antenna	Schwarzbeck VULB9163	152	July 01, 2002
RF Signal generator	Agilent 83752A	3601A02720	Sep. 04, 2002
EMC Analyzer	HP 8594EM	3624A00203	Dec. 13, 2002
EMI Test Receiver	R&S ESCS 30	828985/004	Oct. 11, 2002

4. Measurements

4.1 Radiated emission Limits, general requirement SUBCLAUSE 15.209

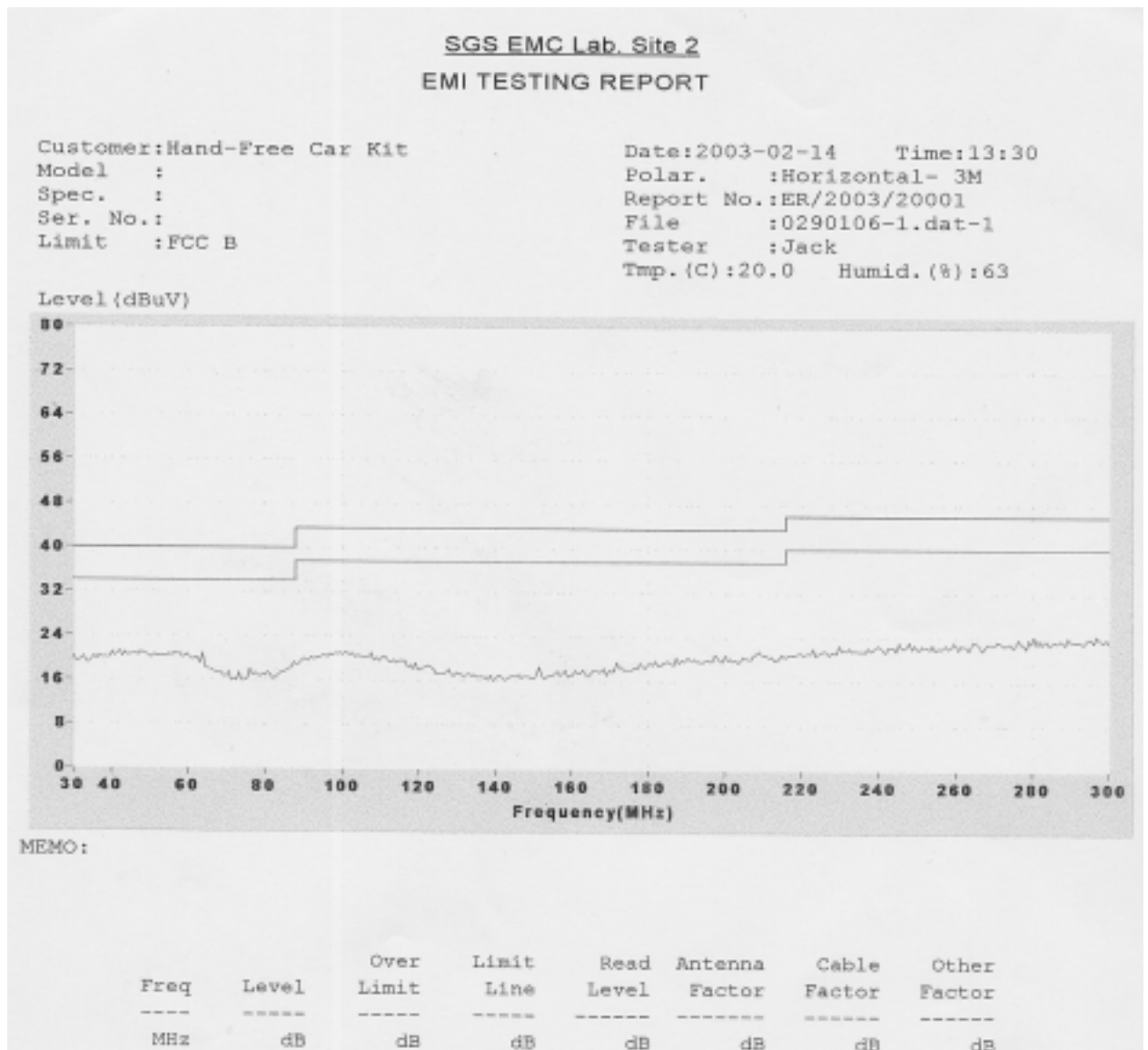
30Mhz-300 Mhz

Vertical



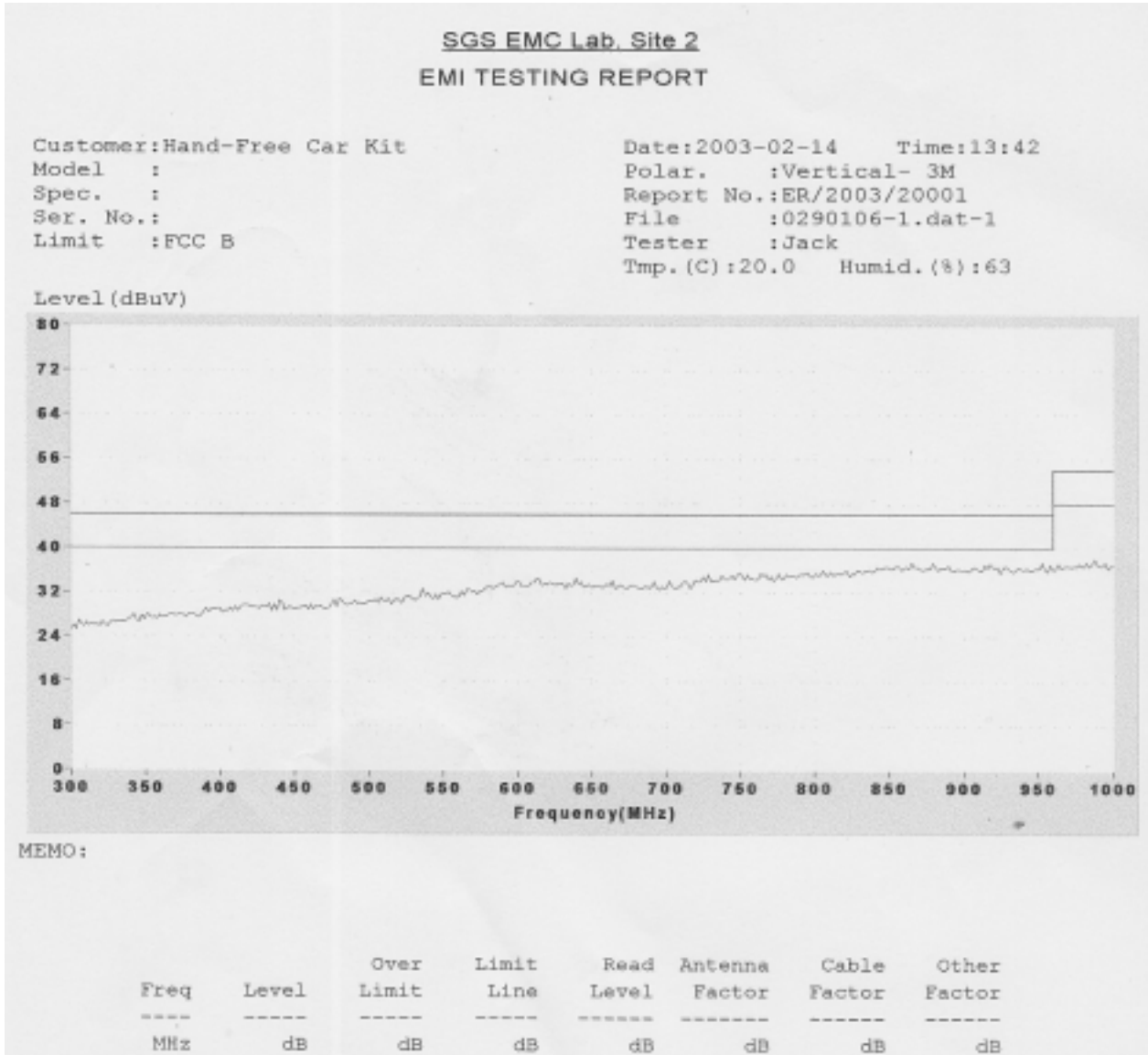
30Mhz-300 Mhz

Horizontal



300Mhz-1000 Mhz

Vertical

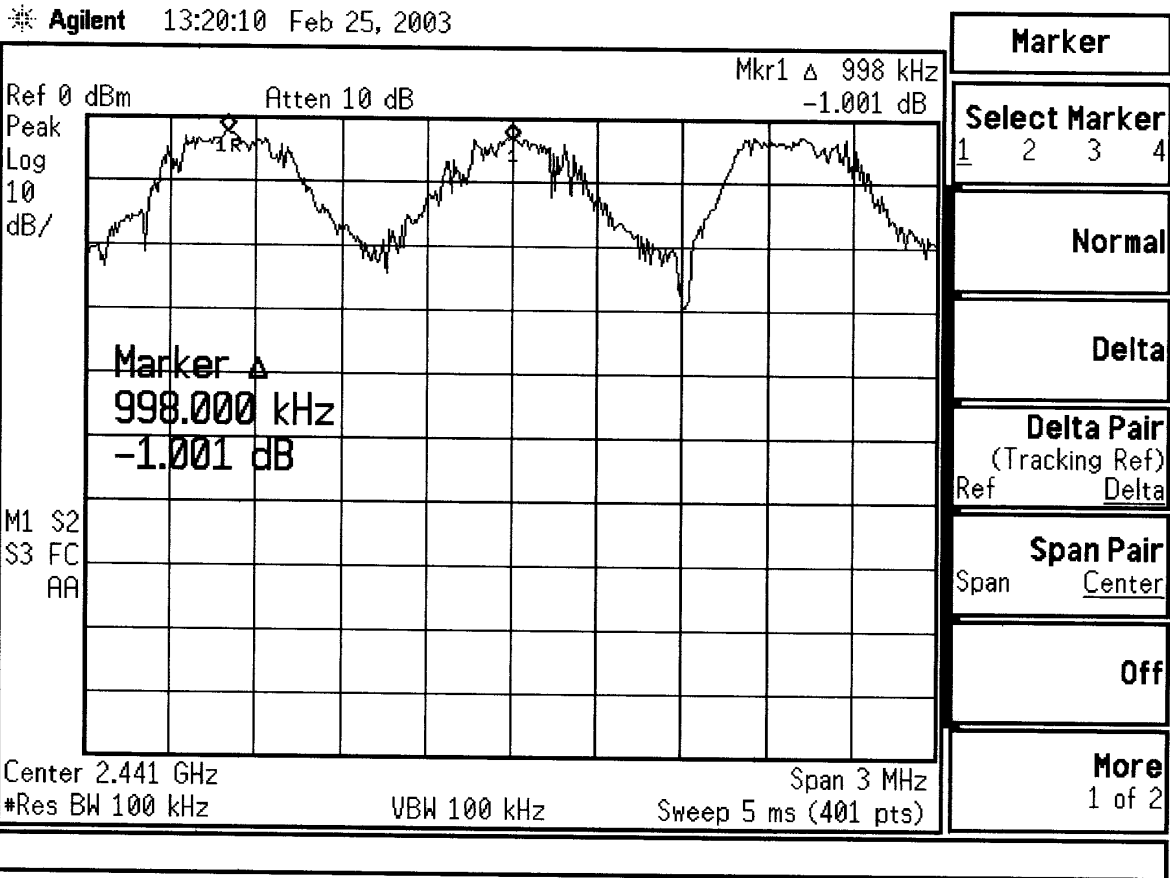


4.2.1 Limits

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

4.2 Channel Spacing

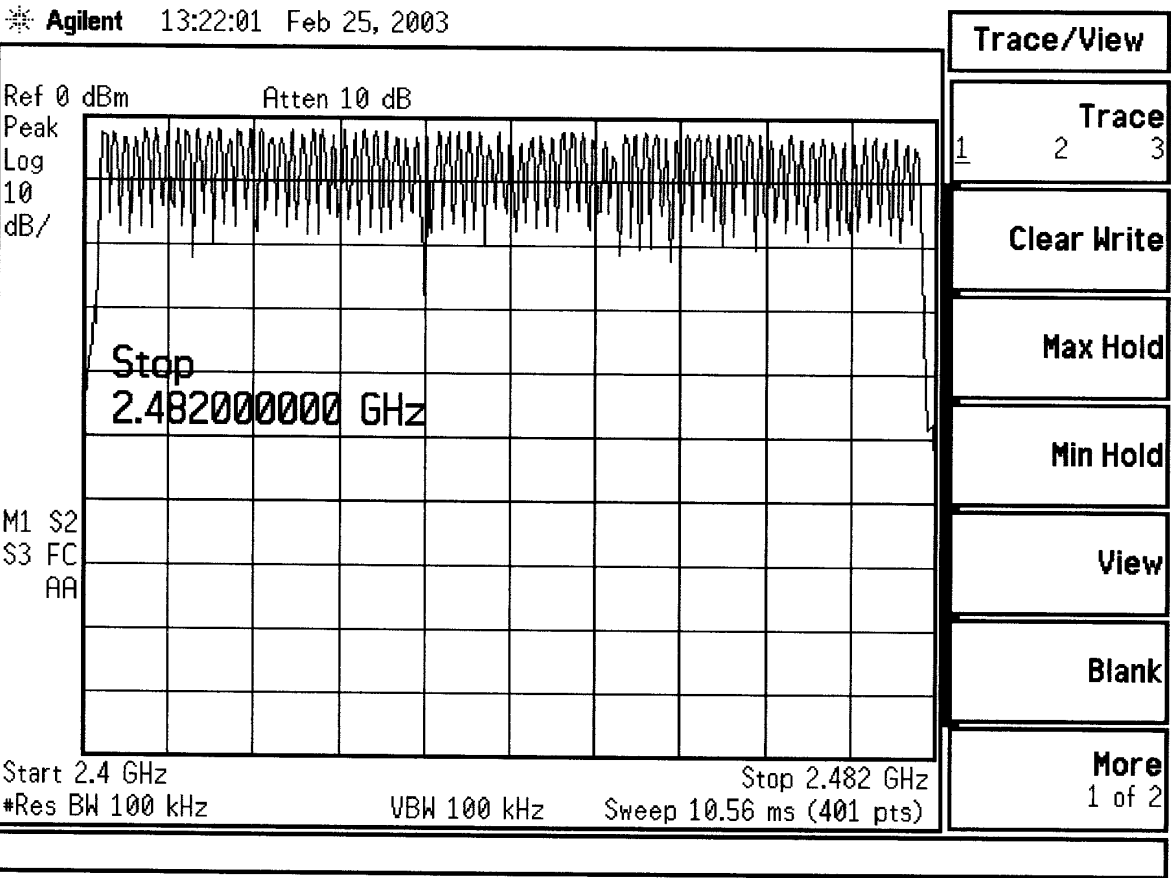
SUBCLAUSE15.247(a)(1)



Channel Spacing = 998 Khz

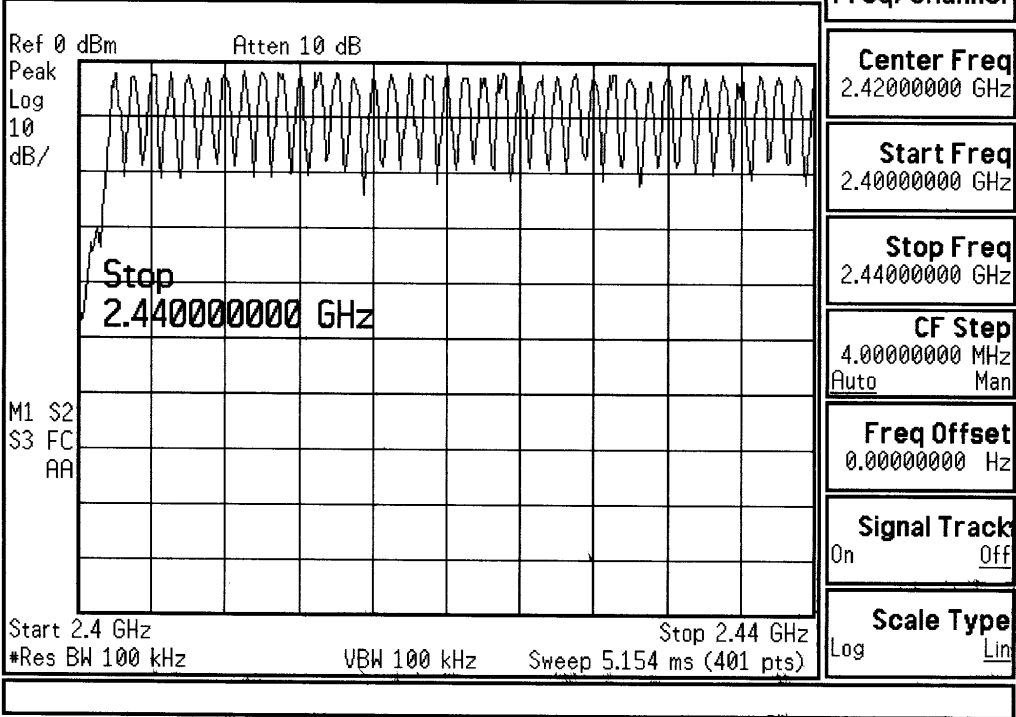
4.3 No. of carrier frequency / 20db Bandwidth

SUBCLAUSE15.247(a)(1)(ii)

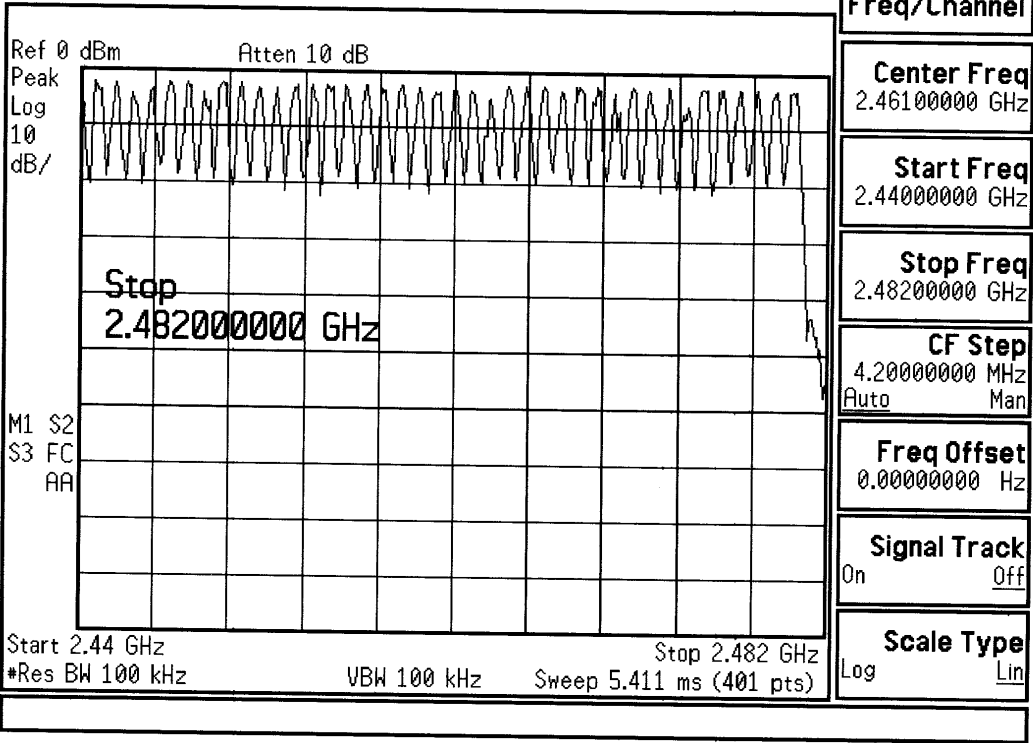


Number of channels = 79

* Agilent 13:23:10 Feb 25, 2003

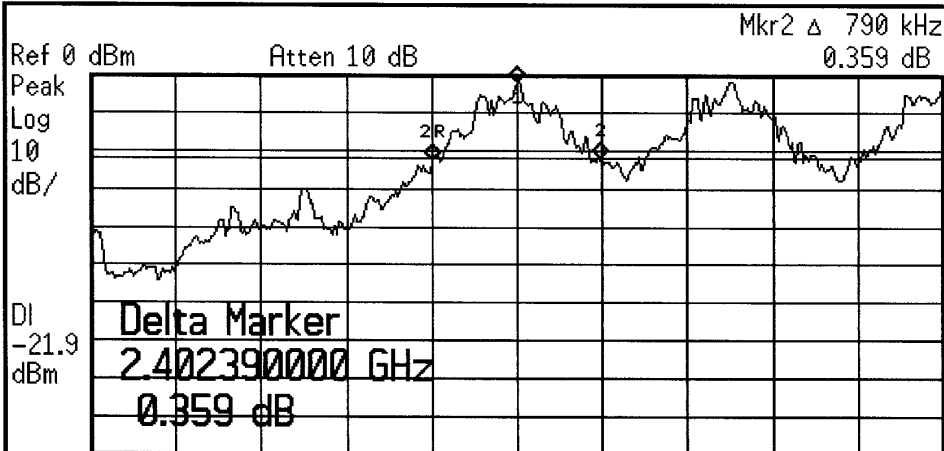


* Agilent 13:24:14 Feb 25, 2003



20dB bandwidth at lowest (2402Mhz), middle(2441Mhz), highest channel(2480Mhz)

Agilent 13:29:44 Feb 25, 2003



Center 2.402 GHz Span 4 MHz
 *Res BW 30 kHz VBW 30 kHz Sweep 5.726 ms (401 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.402000 GHz	-1.837 dBm
2R	(1)	Freq	2.401600 GHz	-22.57 dBm
2Δ	(1)	Freq	790 kHz	0.359 dB

Marker

Select Marker
 1 2 3 4

Normal

Delta

Delta Pair
 (Tracking Ref)
 Ref Delta

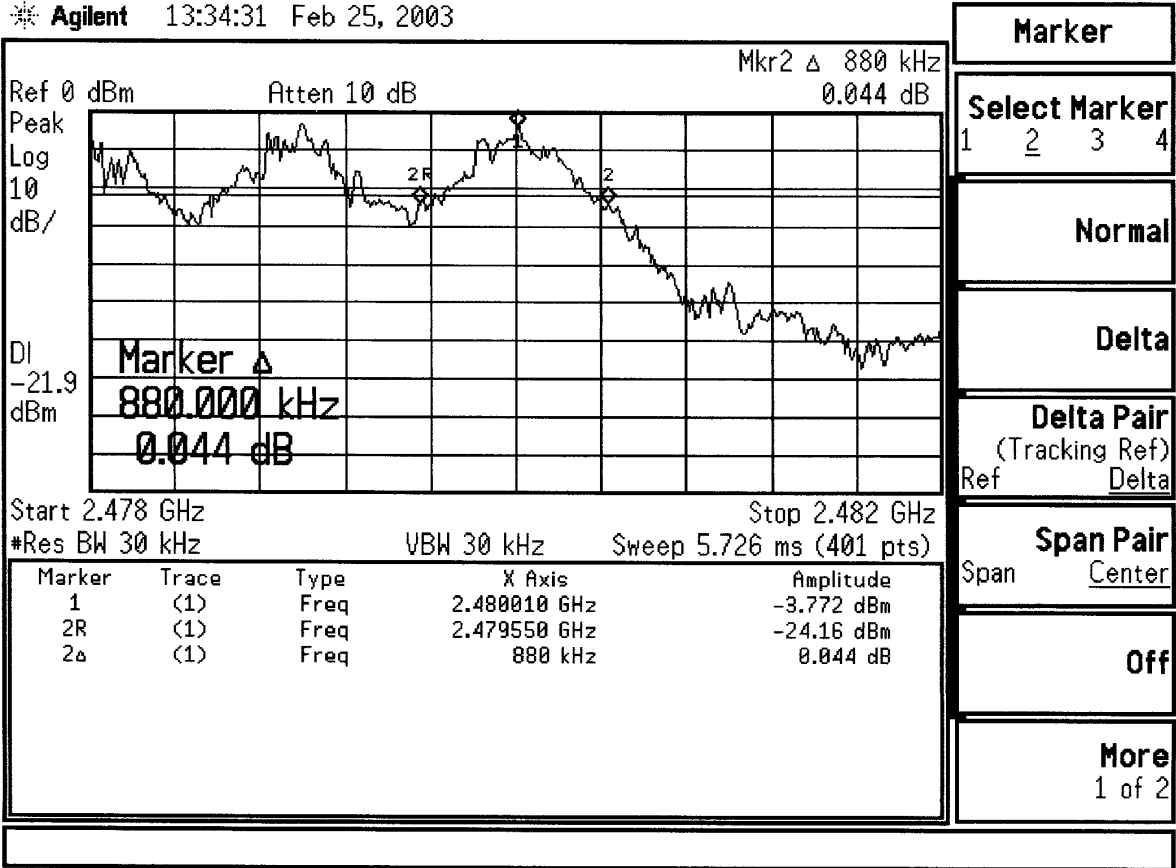
Span Pair
 Span Center

Off

More
 1 of 2

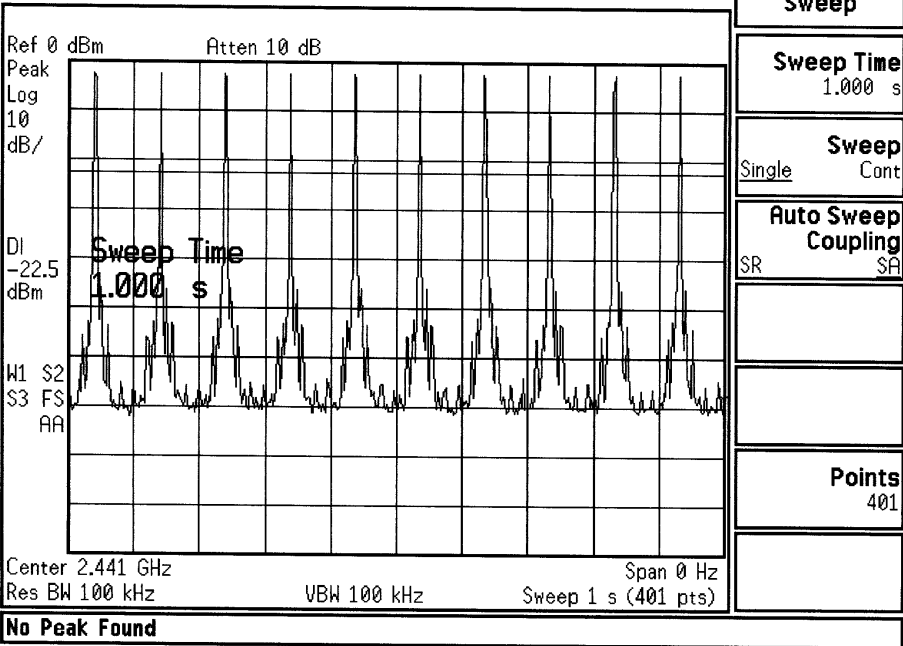
Channel bandwidth = 790 KHZ

* Agilent 13:34:31 Feb 25, 2003

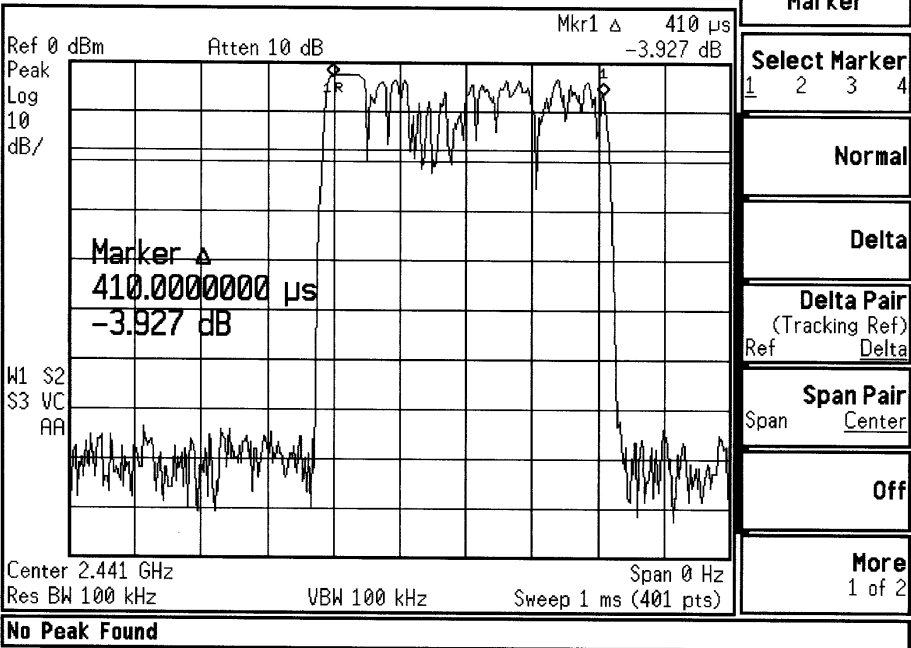


Channel bandwidth = 880 KHZ

Agilent 13:41:40 Feb 25, 2003



Agilent 13:44:36 Feb 25, 2003



4.5.1 calculation

At channel 2441Mhz, there are 10 bursts in 1 sec. Time period of each burst is 410 μ Sec. So the occupancy time within 30 second is $410 \times 10 \times 30 = 123000 \mu$ Sec = 123 mSec = 0.123 Sec.

4.5.2 Limits

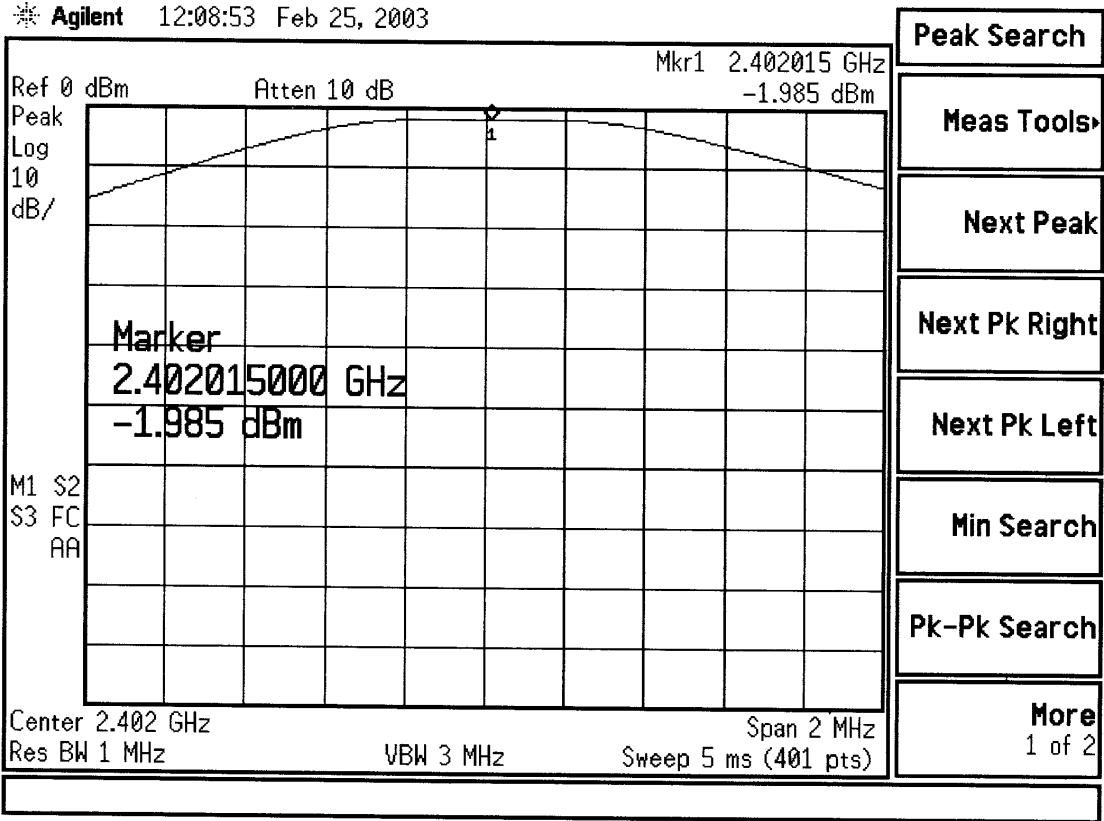
The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

The EUT comply with the requirement in Sec 15.247(a)(1) that use at least 75 hopping frequencies. The maximum 20dB bandwidth of the hopping channel is 1 MHz. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

4.5 Peak output Power

SUBCLAUSE 15.247(b)(1)

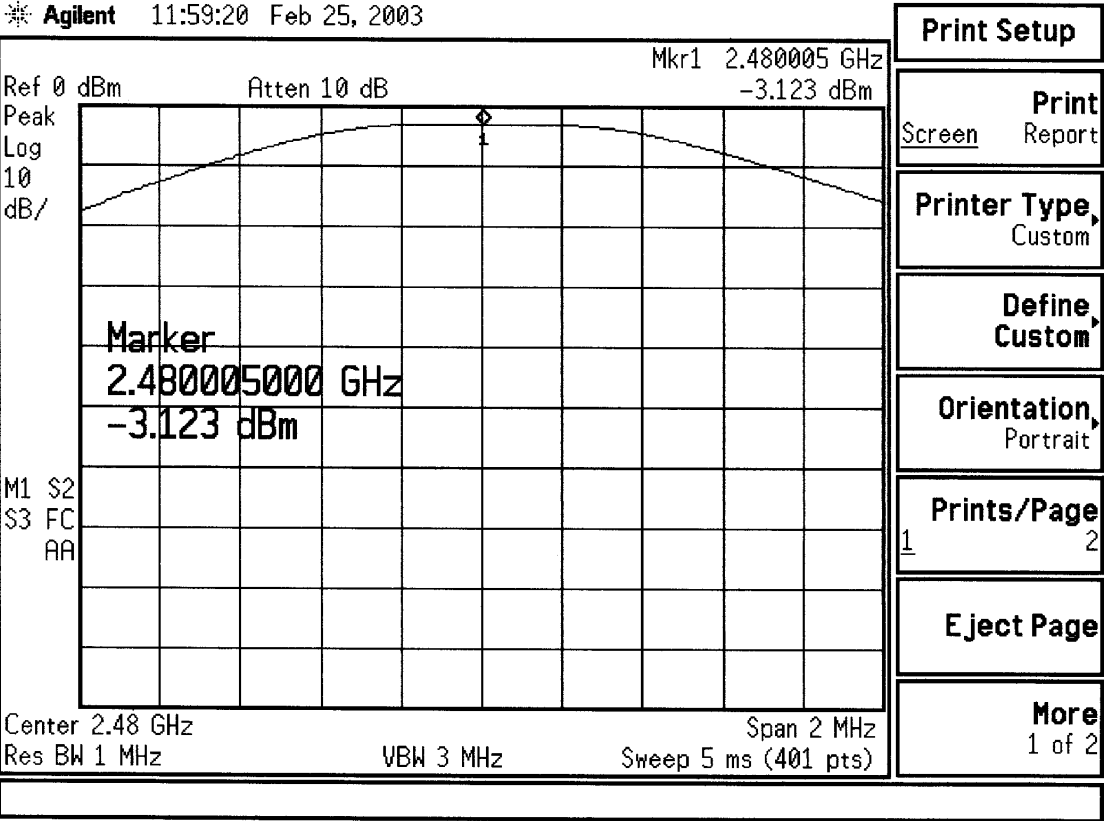
Transmitter transmit at lowest channel (2402Mhz)



At the 2402Mhz , The measured output power is -1.985 dbm.

$$-1.985 \text{ dbm} + 1.4\text{db (cable loss)} = -0.585 \text{ dbm}$$

Transmitter transmit at highest channel (2480Mhz)



At the 2480 Mhz , The measured output power is -3.123 dbm.

-3.123 dbm + 1.4db (cable loss)= -1.723 dbm

The ERP worst case was in 2402MHz and its value is -0.585 dbm = 0.874mw

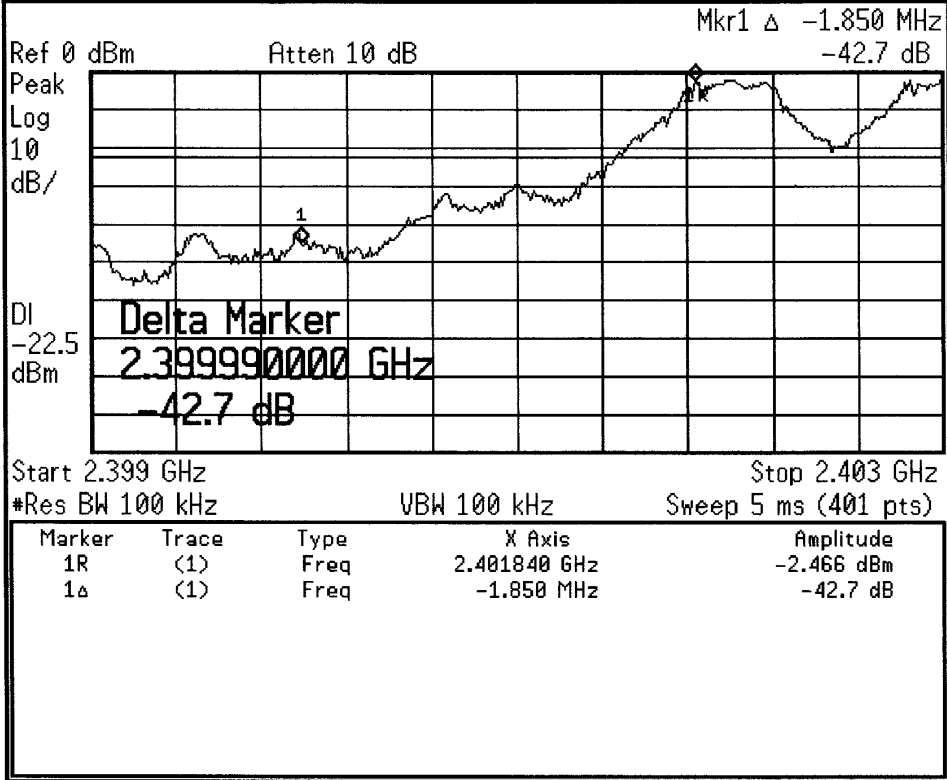
Limits:

For frequency hopping systems operating in the 2400-2483.5 MHz band employing At least 75 hopping channels, all frequency hopping systems in the 5725-5850MHZ Band, and all direct sequence systems: 1 Watt.

4.6 Band Edge emission

SUBCLAUSE 15.247(c)

Agilent 13:40:46 Feb 25, 2003



Marker

Select Marker
1 2 3 4

Normal

Delta

Delta Pair
(Tracking Ref)
Ref Delta

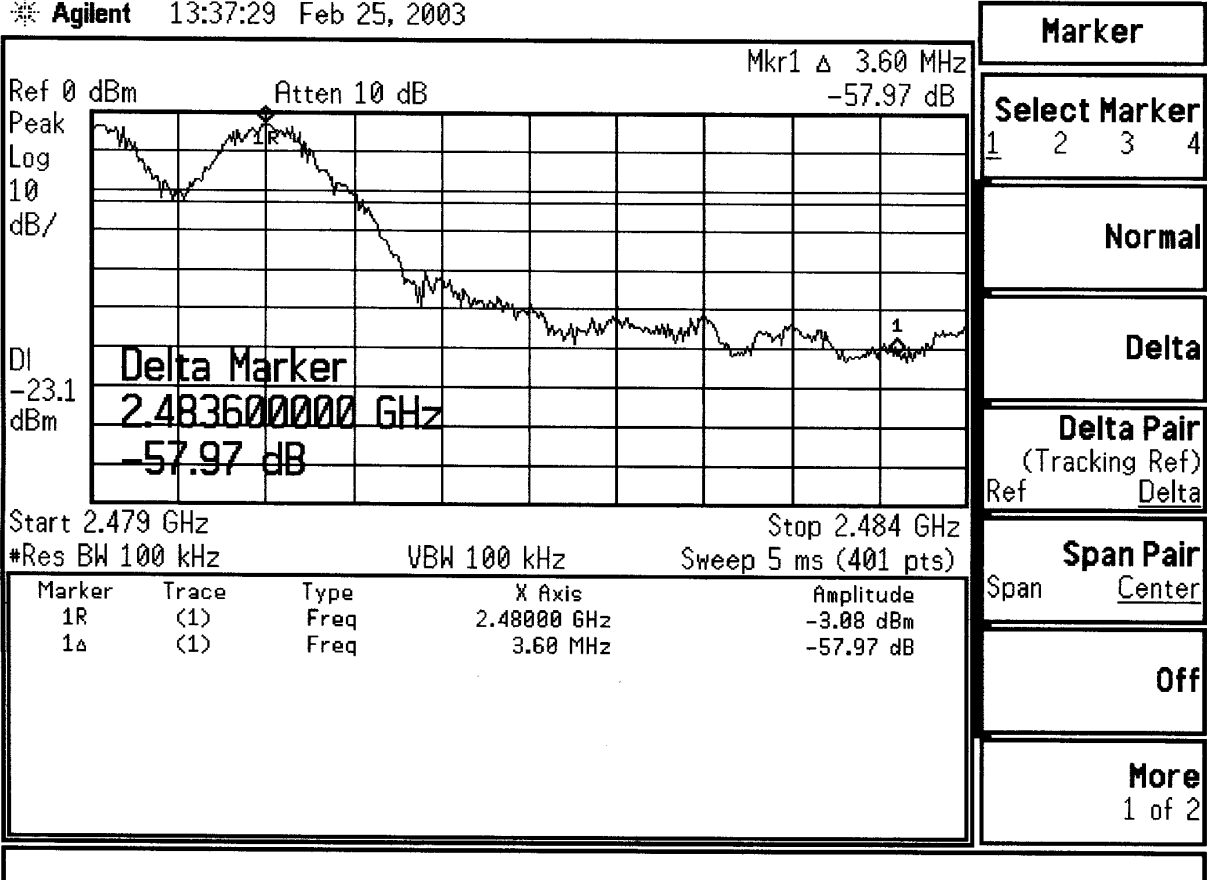
Span Pair
Span Center

Off

More
1 of 2

No Peak Found

* Agilent 13:37:29 Feb 25, 2003



4.7.1 Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power,

EUT operating at lowest frequency , 2402Mhz

Frequency(MHz)	Read value(dBuV/m)	Antenna factor	Cable loss(db)	Real Value(dbuV/m)	Limit(dbuV/m)
4804	N/A	31.26	7.02	N/A	54
7206	N/A	36.53	9.09	N/A	54

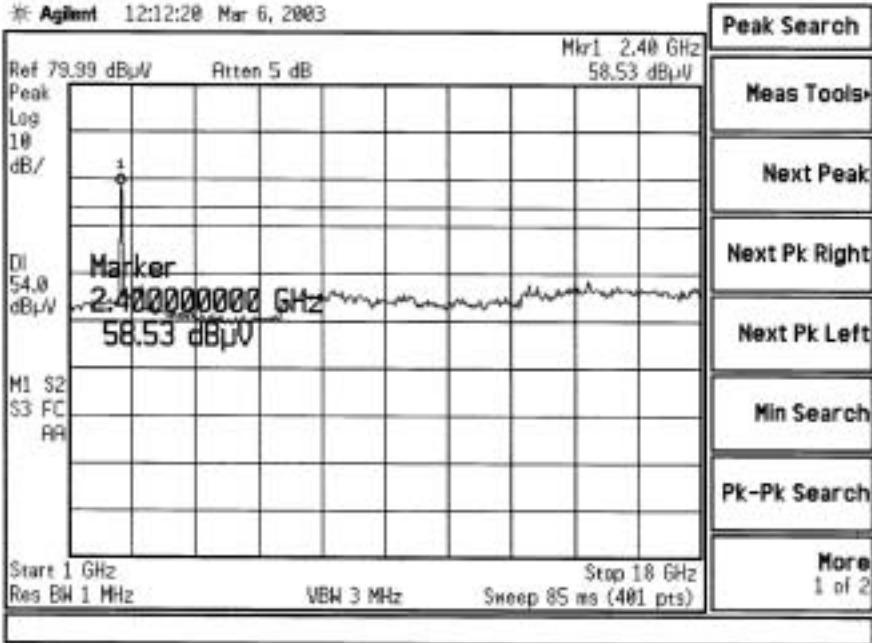
N/A means the emission value the same as background noise.

EUT operating at highest frequency , 2480Mhz

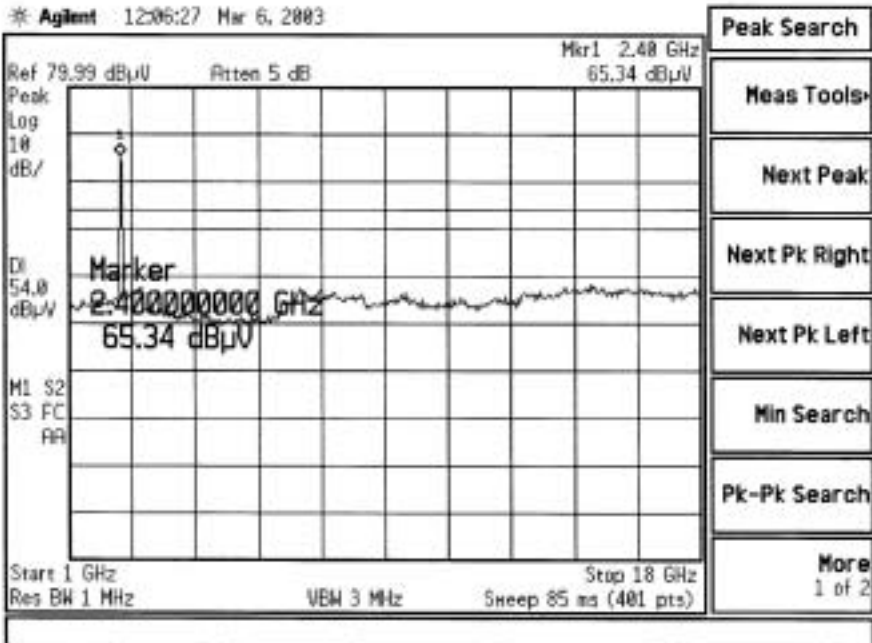
Frequency(MHz)	Read value(dBuV/m)	Antenna factor	Cable loss(db)	Real Value(dbuV/m)	Limit(dbuV/m)
4960	N/A	31.55	7.31	N/A	54
7440	N/A	36.59	9.24	N/A	54

N/A means the emission value the same as background noise.

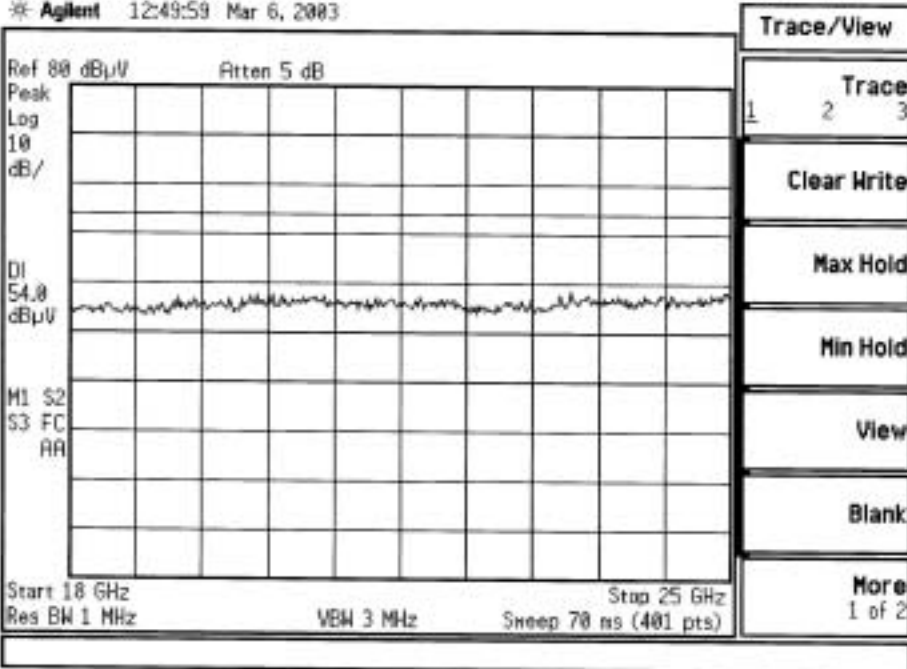
EUT operating at lowest frequency , 2402Mhz
vertical



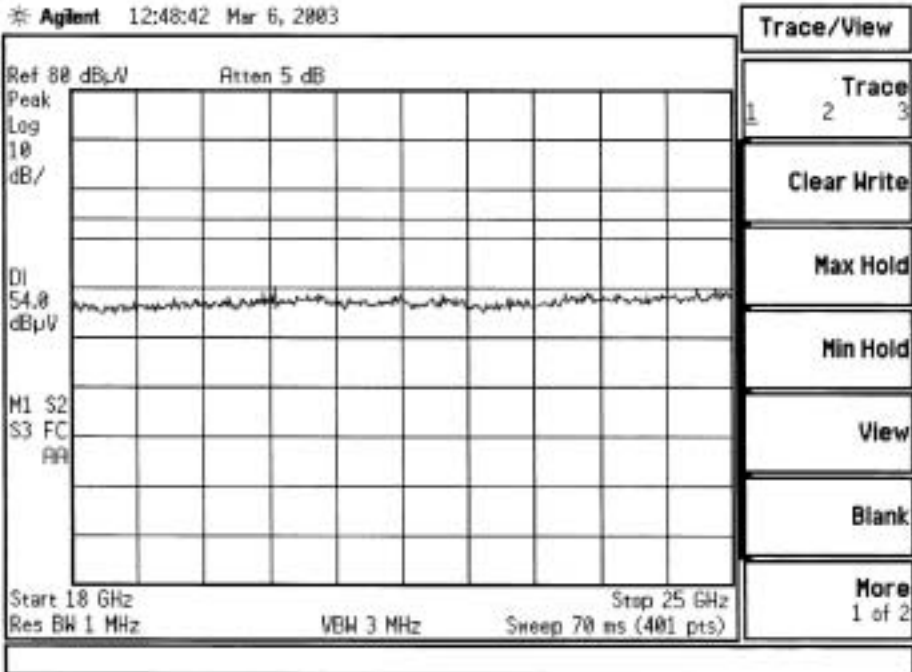
horizontal



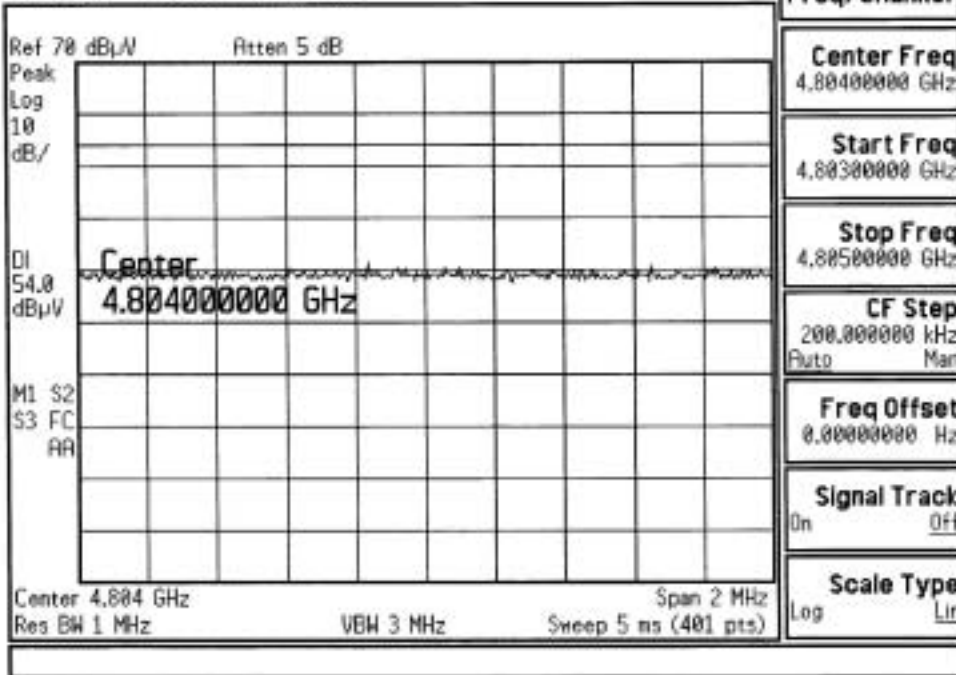
vertical



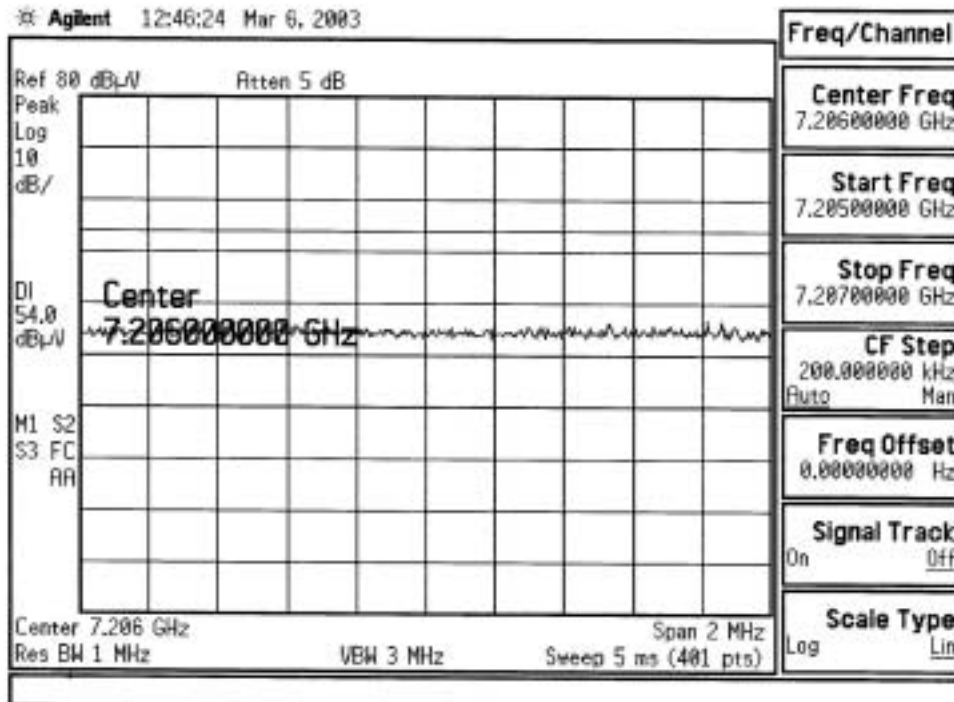
horizontal



* Agilent 12:33:43 Mar 6, 2003

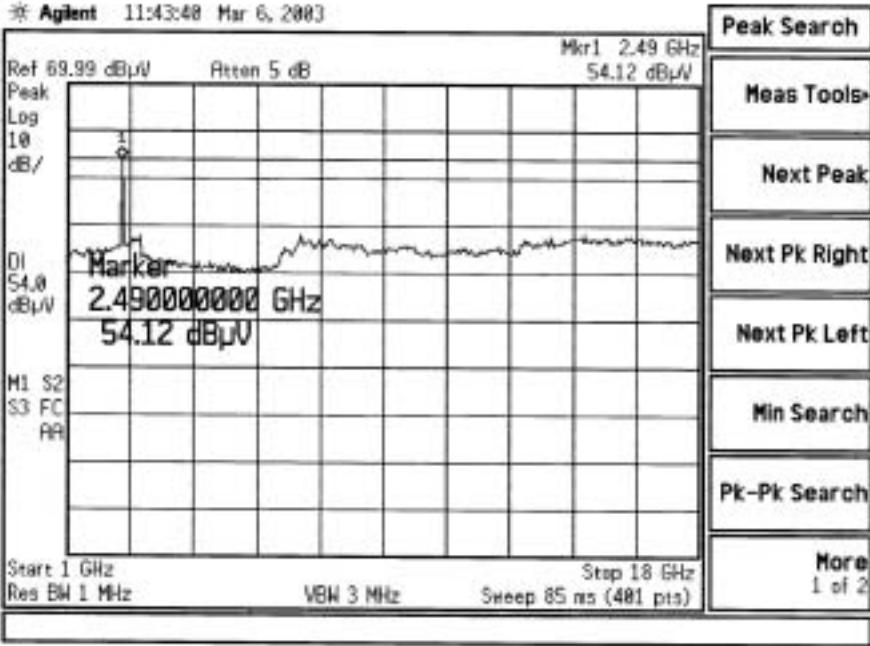


* Agilent 12:46:24 Mar 6, 2003

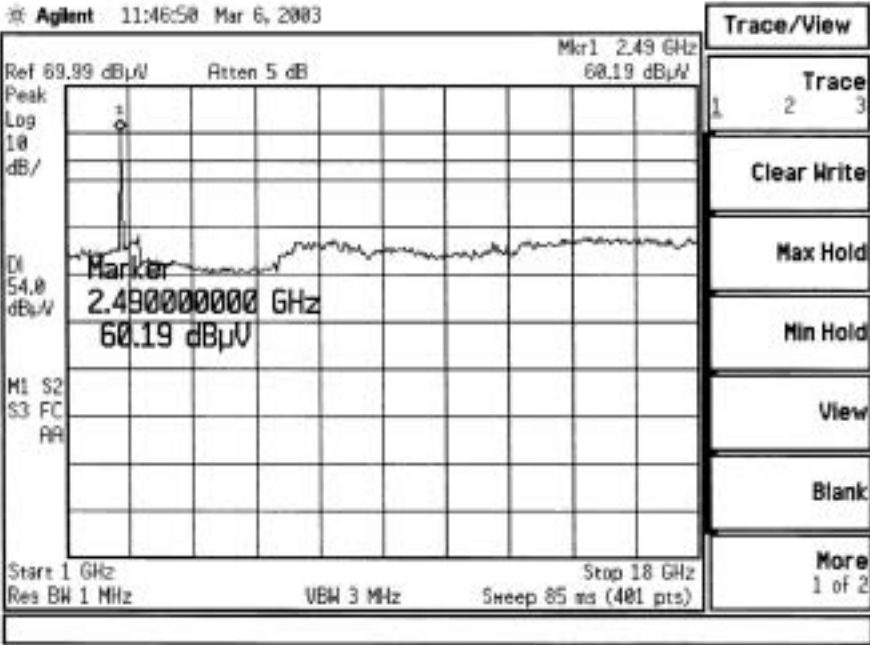


EUT operating at highest frequency , 2480Mhz

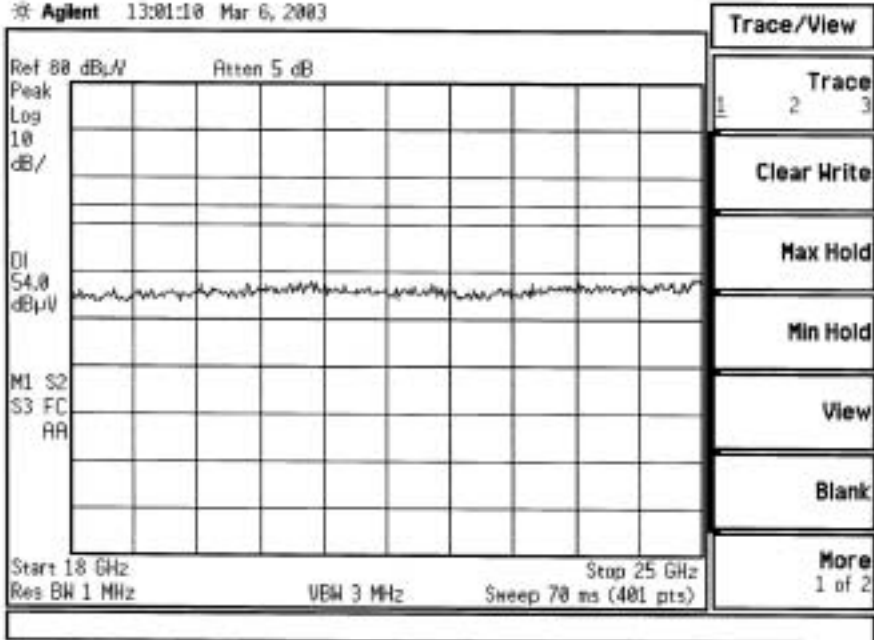
Vertical



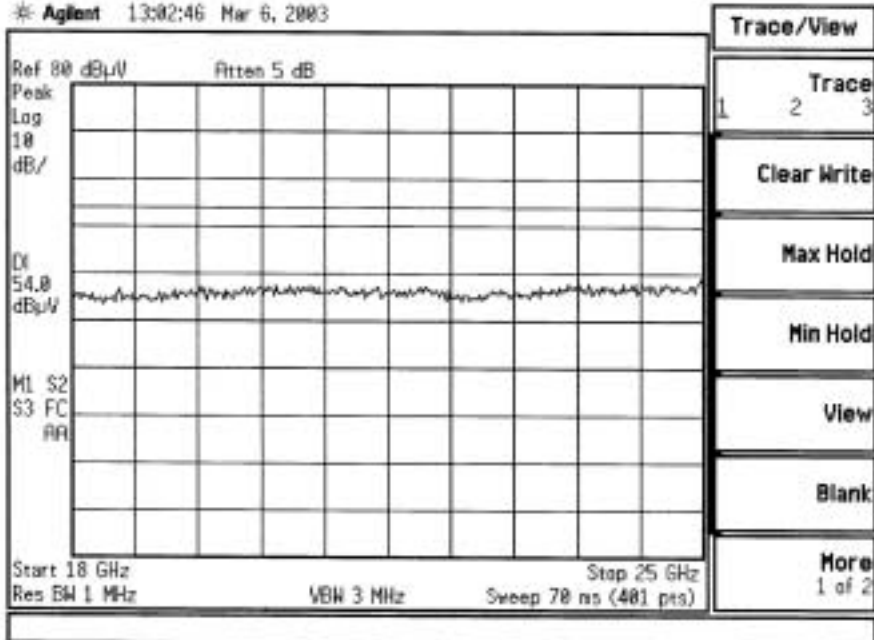
horizontal

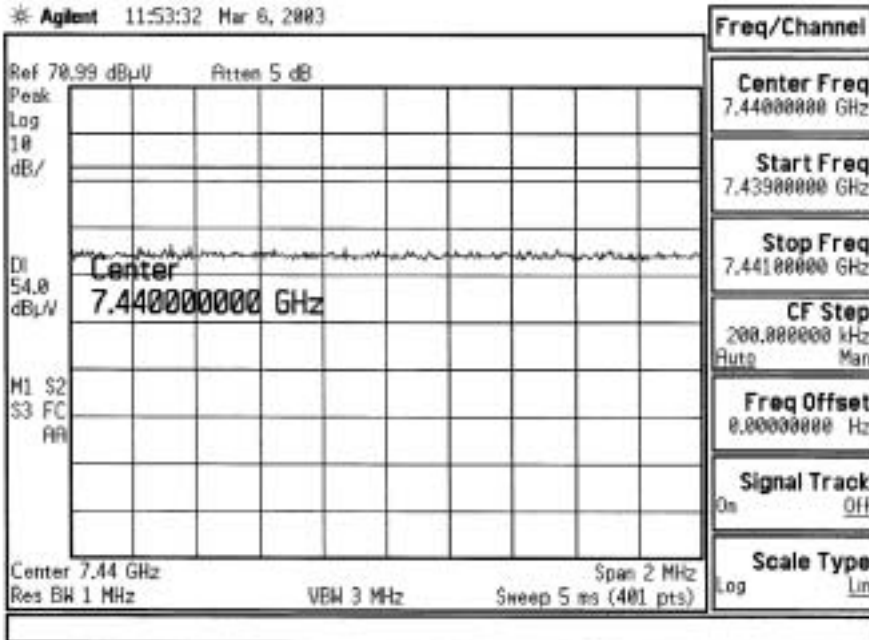
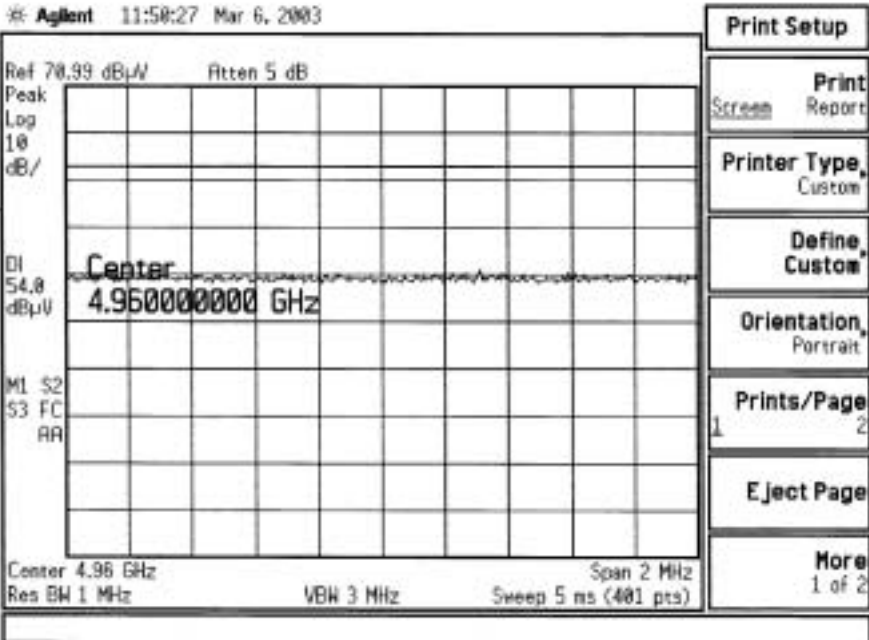


vertical



horizontal





APPENDIX: Photographs of Test Setup

(The Photos are saved separately)

APPENDIX : Photographs of EUT

External Photos

(The Photos are saved separately)

Internal Photos

(The Photos are saved separately)