FCC TEST REPORT

quipment 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

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	*PASS*	9
15.247(a)(1)	Channel Spacing	*PASS*	12
15.247(a)(1)(ii)	20db bandwidth / No. of channels	*PASS*	13
15.247(a)(1)(ii)	Average Time of Occupacy	*PASS*	18
15.247(b)(1)	Peak Output power	*PASS*	20
15.247(c)	Band-Edge Emission	*PASS*	22
15.247(c)	Spurious Emission under 25Ghz	*PASS*	24

3. Instruments List

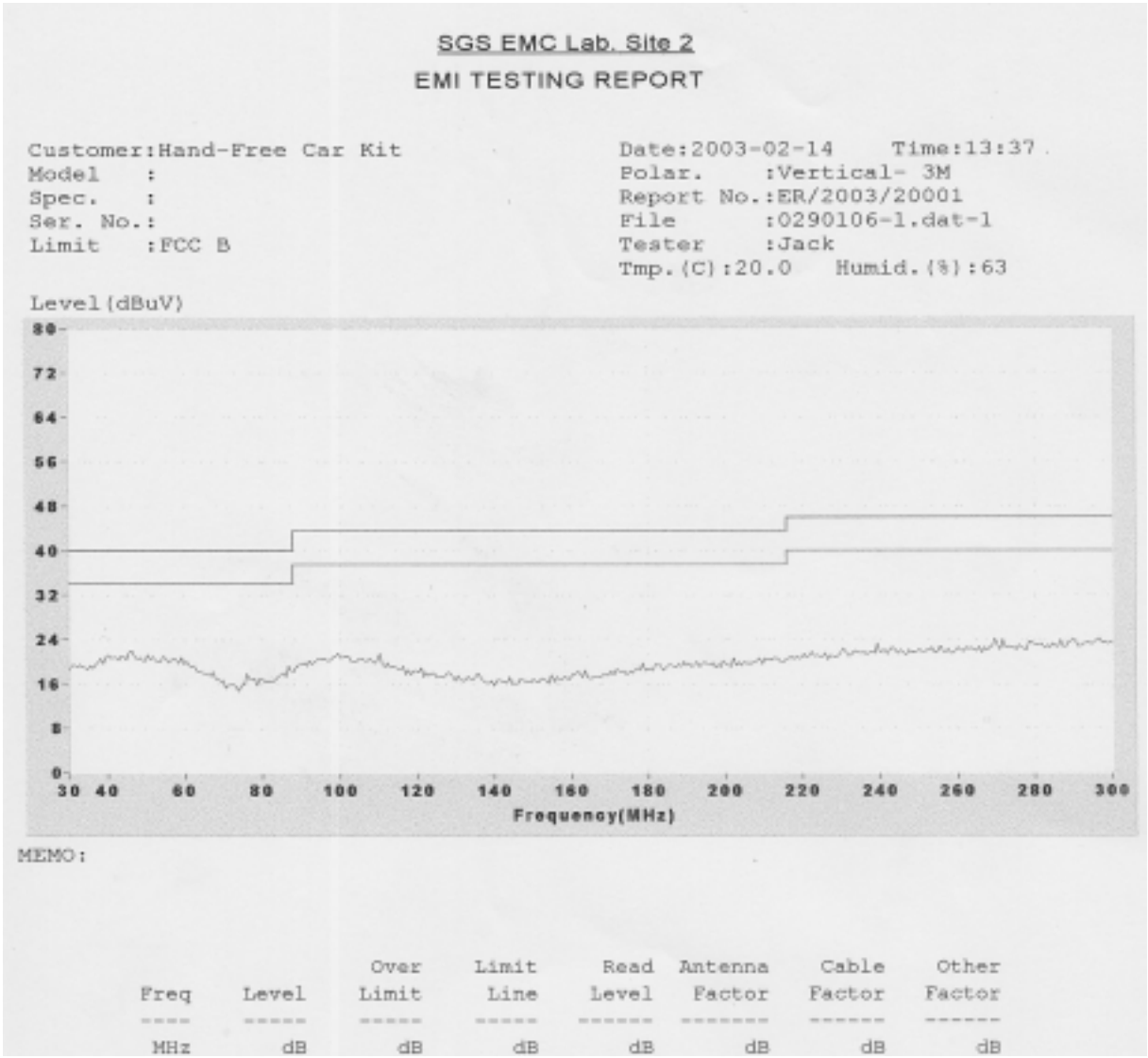
Instrument	Model	Serial number	Calibration date
Desktop PC	Acer Veriton 7200	N/A	N/A
Spectrum Analyzer	Agilent 7405A	US40240202	May 22, 2002
Climatic chamber	Terchy MHG-120L	911009	Oct. 15, 2002
Antenna	Schwarzbeck BBHA9120A	309/320	July 01, 2002
Antenna	Schwarzbeck VULB9163	152	July 01, 2002
RF Signal 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

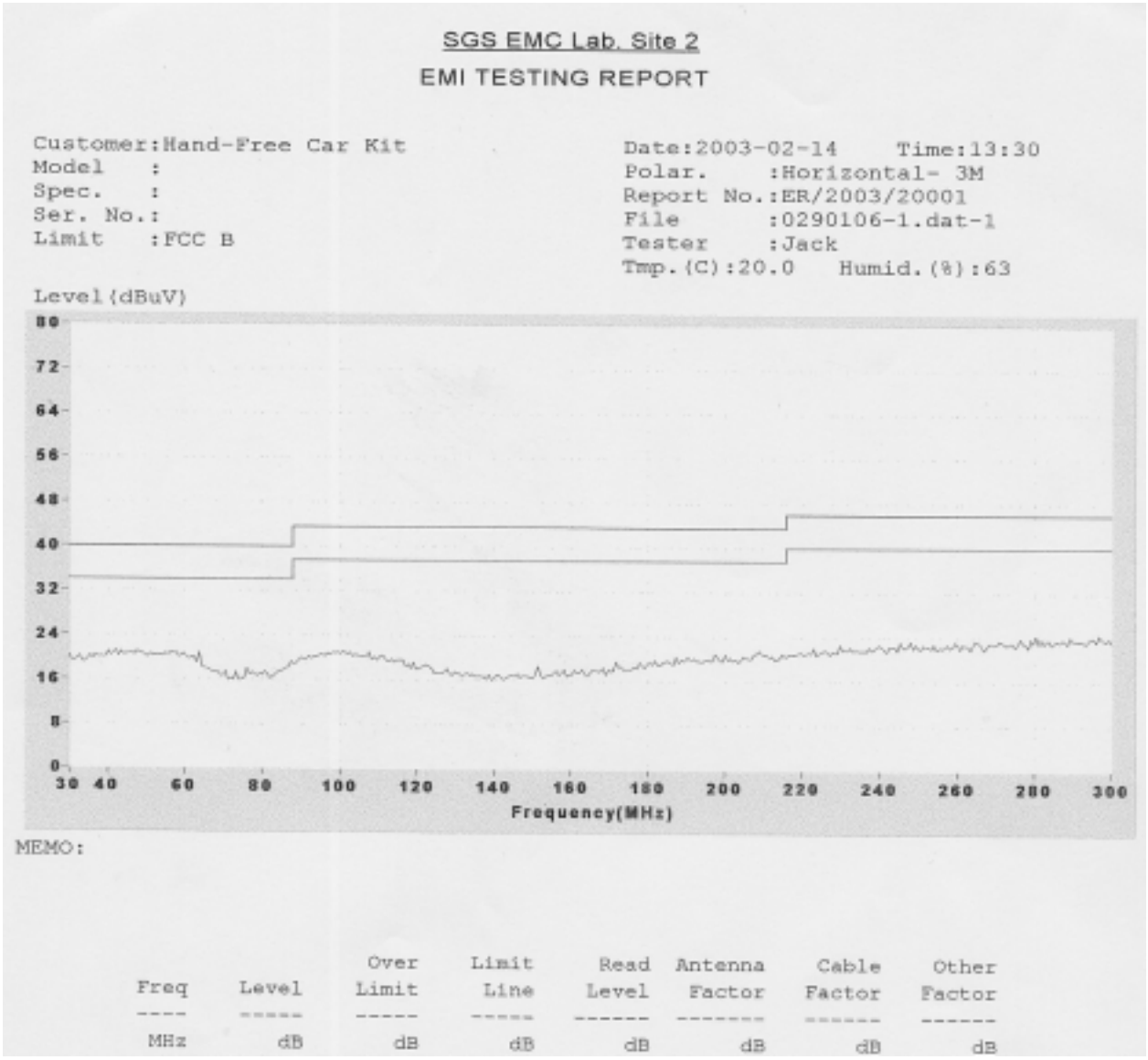
30Mhz-300 Mhz

Vertical



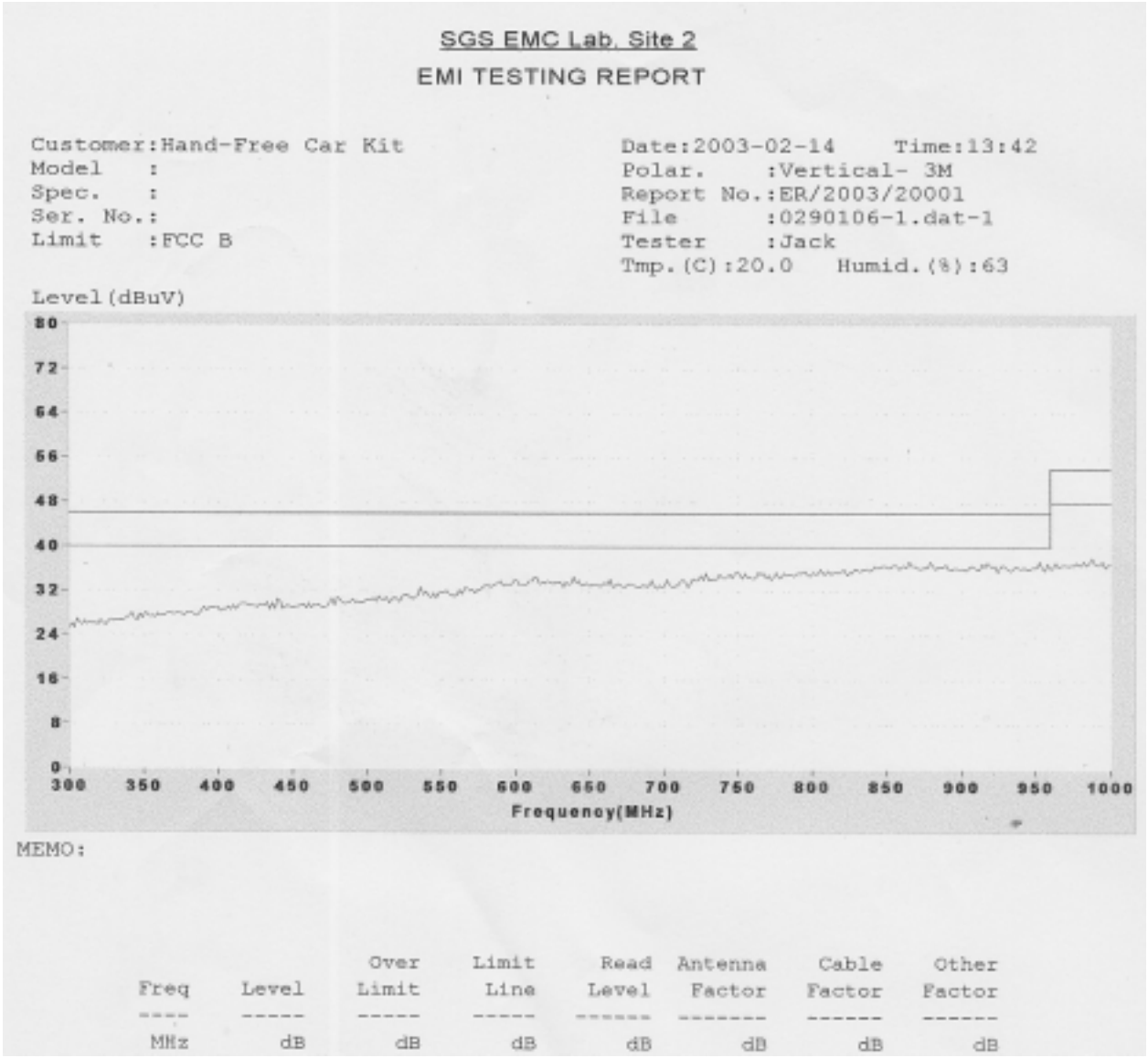
30Mhz-300 Mhz

Horizontal



300Mhz-1000 Mhz

Vertical



MEMO:

Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Factor	Other Factor
MHz	dB	dB	dB	dB	dB	dB	dB

300Mhz-1000 Mhz

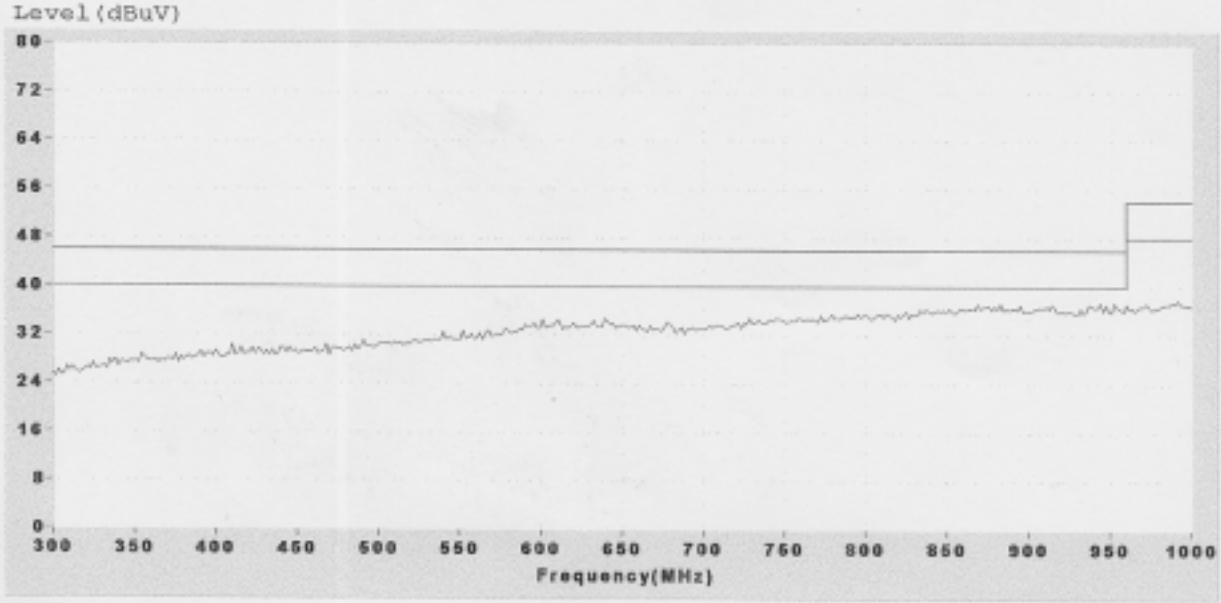
Horizontal

SGS EMC Lab. Site 2

EMI TESTING REPORT

Customer:Hand-Free Car Kit
Model :
Spec. :
Ser. No.:
Limit :FCC B

Date:2003-02-14 Time:13:34
Polar. :Horizontal- 3M
Report No.:ER/2003/20001
File :0290106-1.dat-1
Tester :Jack
Tmp.(C):20.0 Humid.(%):63



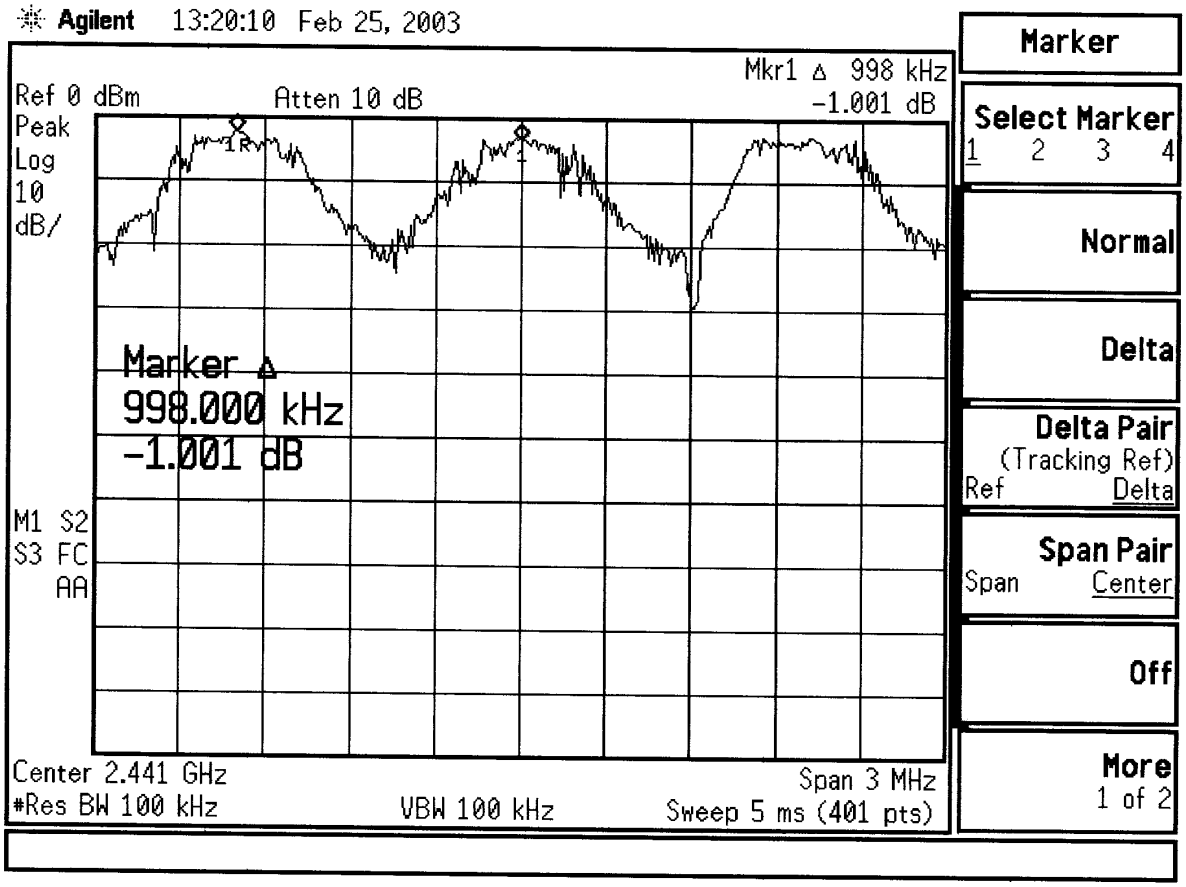
MEMO:

Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Factor	Other Factor
MHz	dB	dB	dB	dB	dB	dB	dB

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

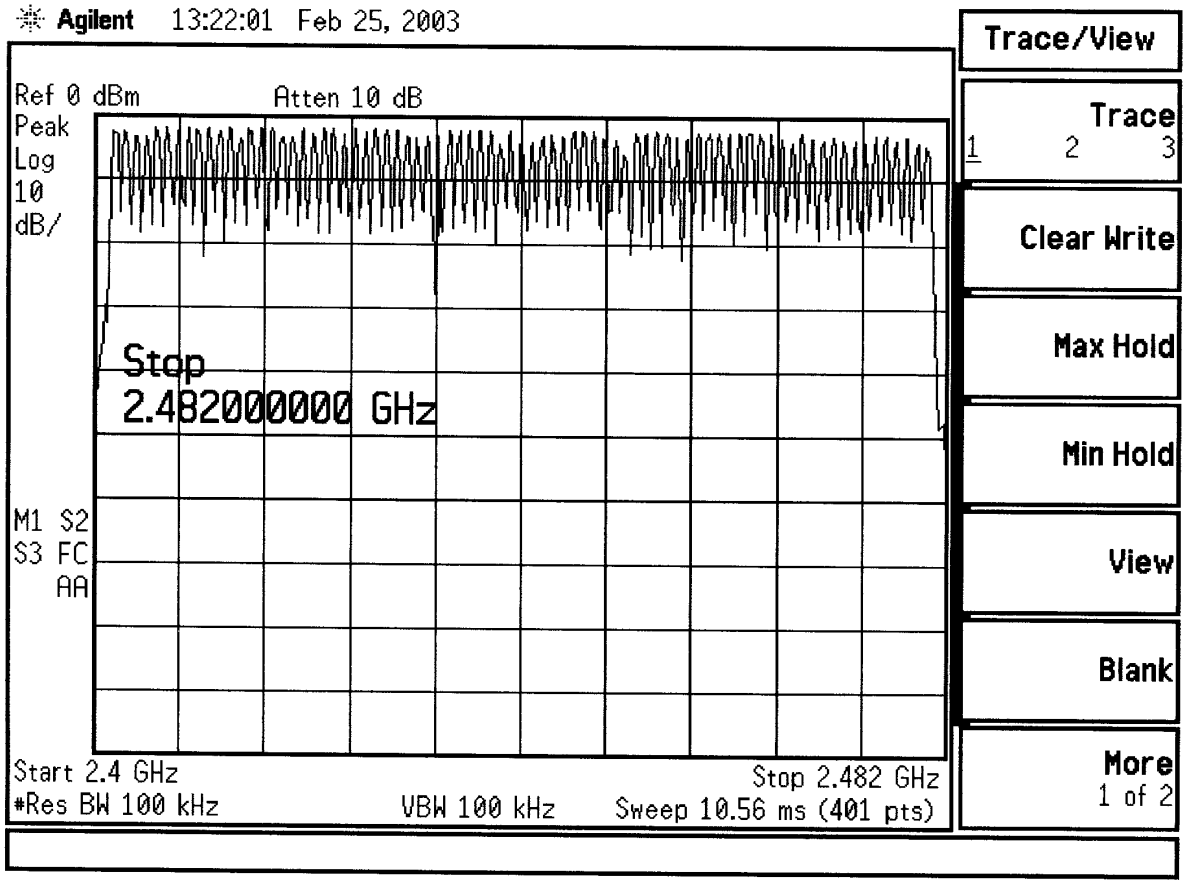
4.2 Channel Spacing SUBCLAUSE15.247(a)(1)



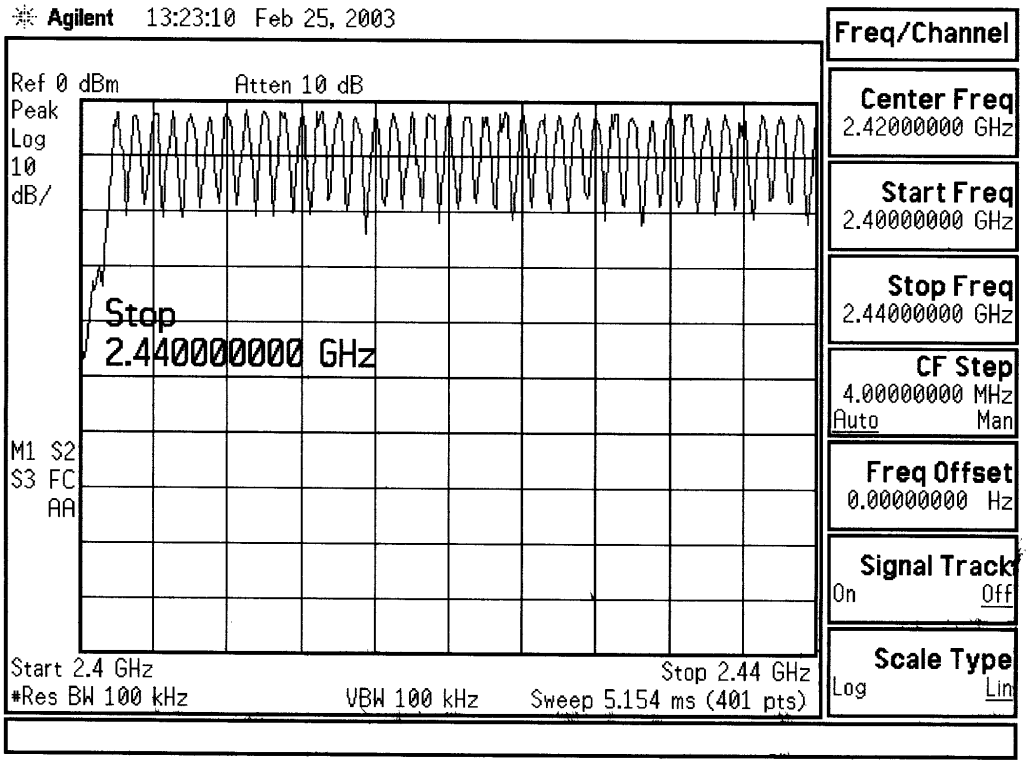
Channel Spacing = 998 Khz

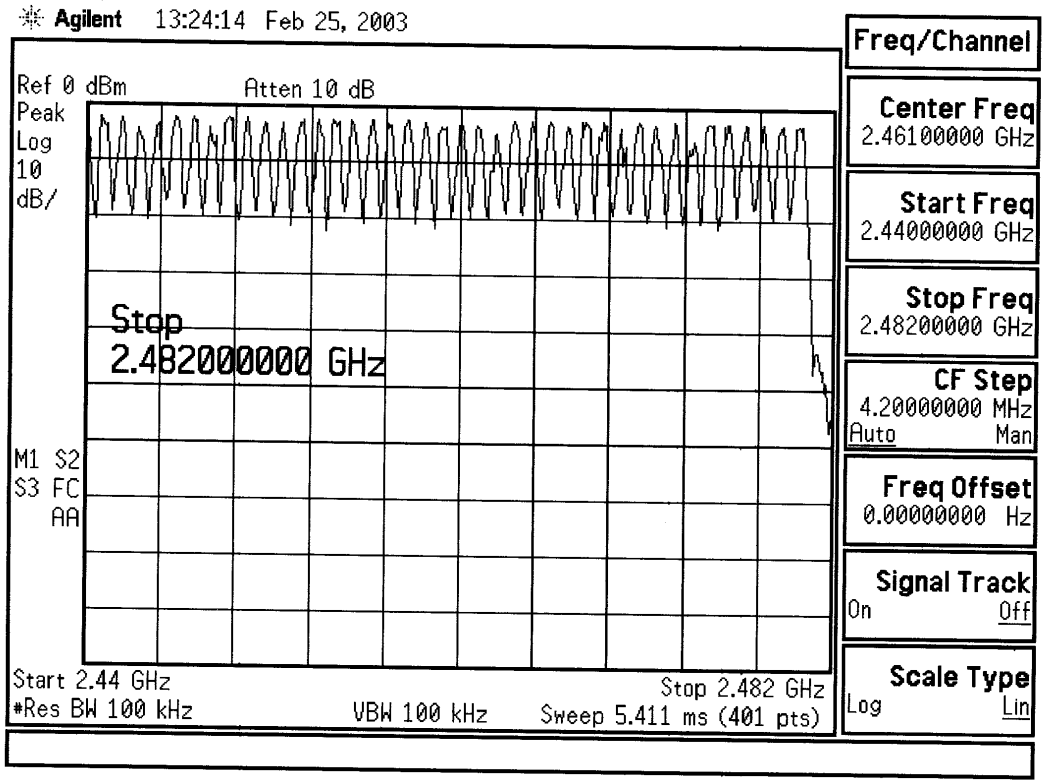
4.3 No. of carrier frequency / 20db Bandwidth

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

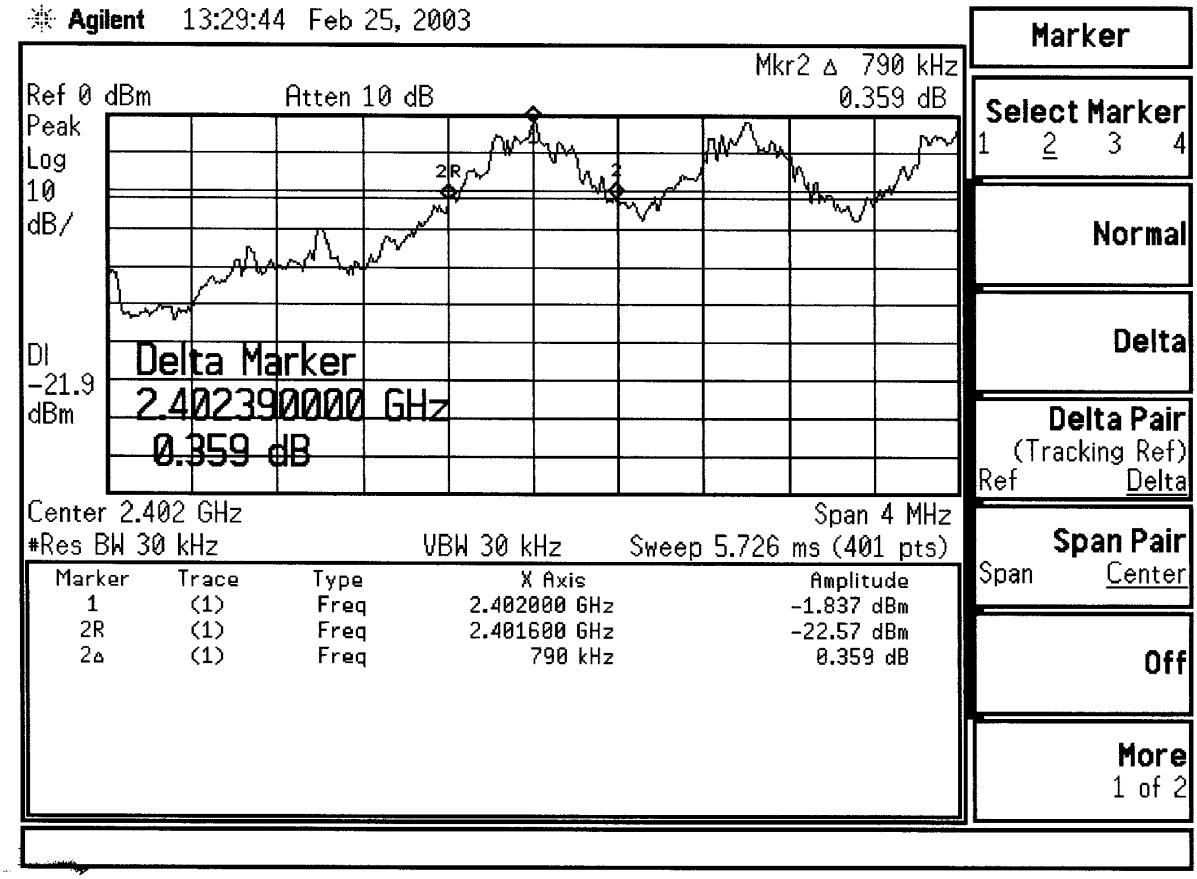


Number of channels = 79

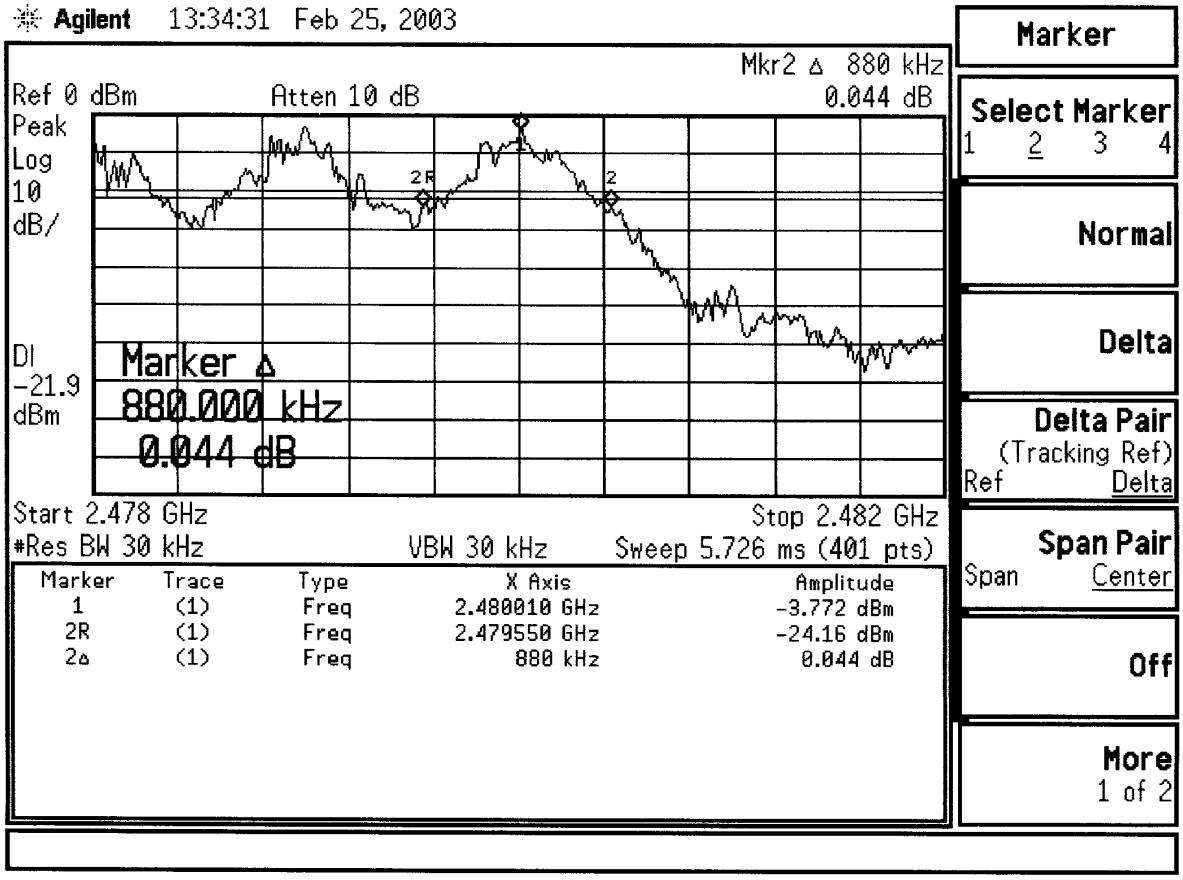

Agilent 13:23:10 Feb 25, 2003
Ref 0 dBm
Atten 10 dB
Peak
Log
10
dB/
Stop
2.440000000 GHz
M1 S2
S3 FC
AA
Start 2.4 GHz
#Res BW 100 kHz
VBW 100 kHz
Stop 2.44 GHz
Sweep 5.154 ms (401 pts)
Freq/Channel
Center Freq
2.42000000 GHz
Start Freq
2.40000000 GHz
Stop Freq
2.44000000 GHz
CF Step
4.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin



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

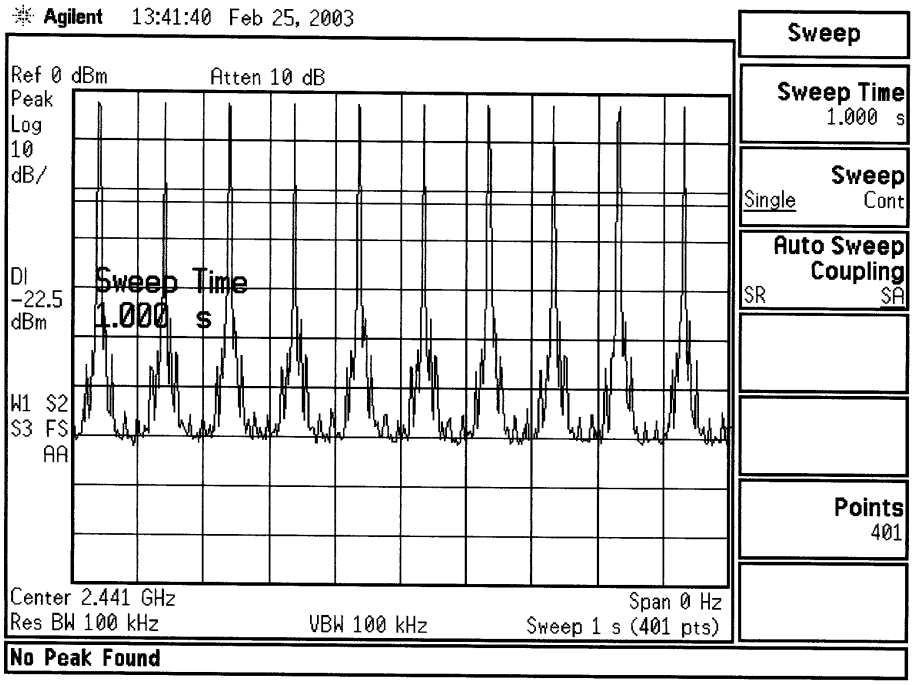


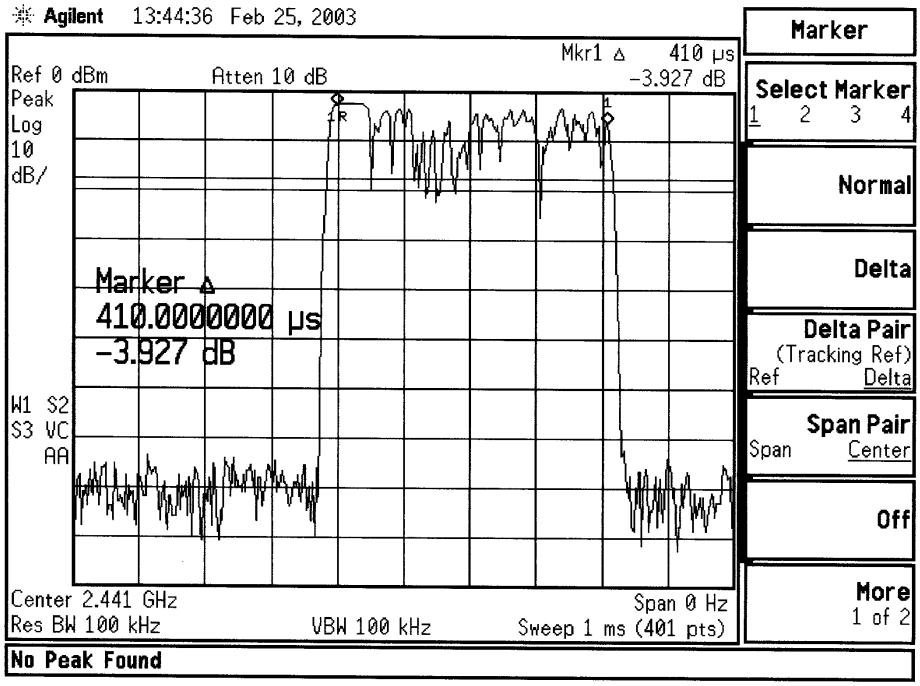
Channel bandwidth = 790 KHZ



Channel bandwidth = 880 KHZ

4.4 Average Time of Occupancy SUBCLAUSE15.247(a)(1)(ii)


Agilent 13:41:40 Feb 25, 2003
Ref 0 dBm
Atten 10 dB
Peak
Log
10
dB/
Sweep Time
1.000 s
Center 2.441 GHz
Res BW 100 kHz
VBW 100 kHz
Span 0 Hz
Sweep 1 s (401 pts)
No Peak Found
Sweep
Sweep Time
1.000 s
Sweep
Single Cont
Auto Sweep Coupling
SR SA
Points
401


Agilent 13:44:36 Feb 25, 2003
Mkr1 Δ 410 µs
-3.927 dB
Ref 0 dBm
Atten 10 dB
Peak
Log
10
dB/
Marker Δ
410.0000000 µs
-3.927 dB
Center 2.441 GHz
Res BW 100 kHz
VBW 100 kHz
Span 0 Hz
Sweep 1 ms (401 pts)
No Peak Found
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

4.5.1 calculation

At channel 2441Mhz, there are 10 bursts in 1 sec. Time period of each burst is 410 μSec. So the occupacy time within 30 second is 410 x 10 x 30 = 123000 μSec = 123 mSec = 0.123 Sec.

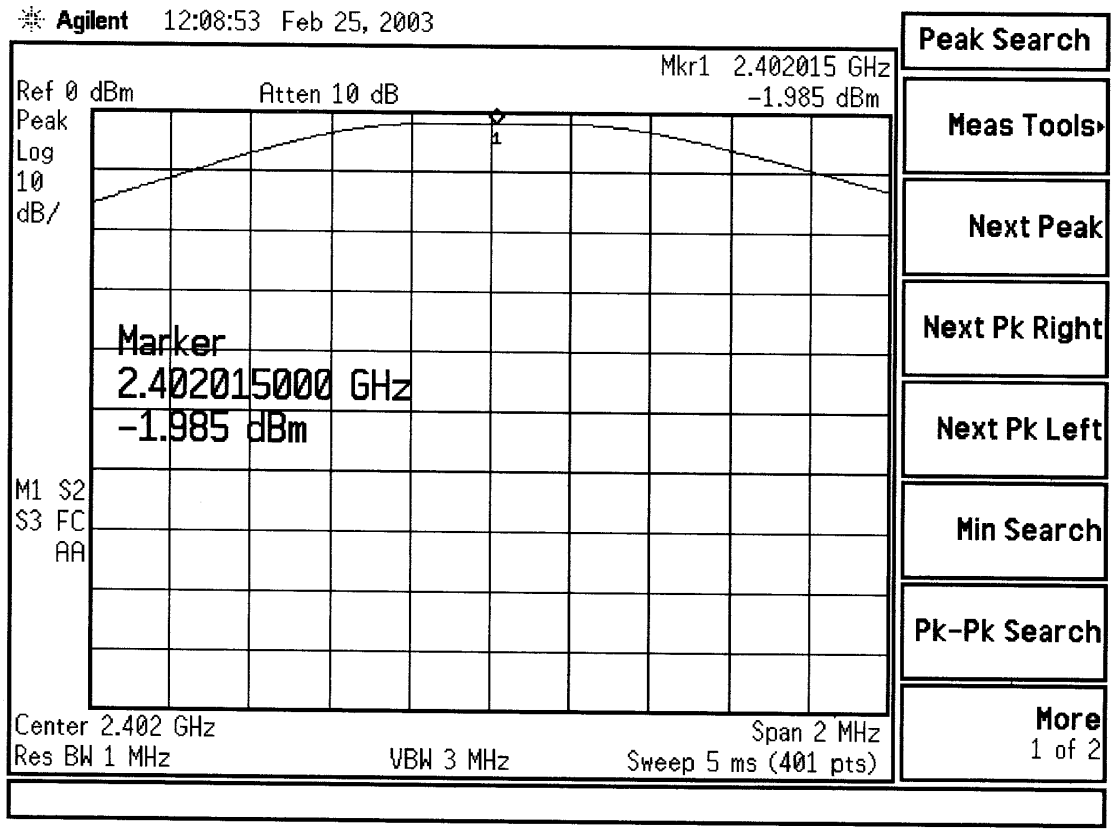
4.5.2 Limits

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 SUBCLAUSE15.247(b)(1)

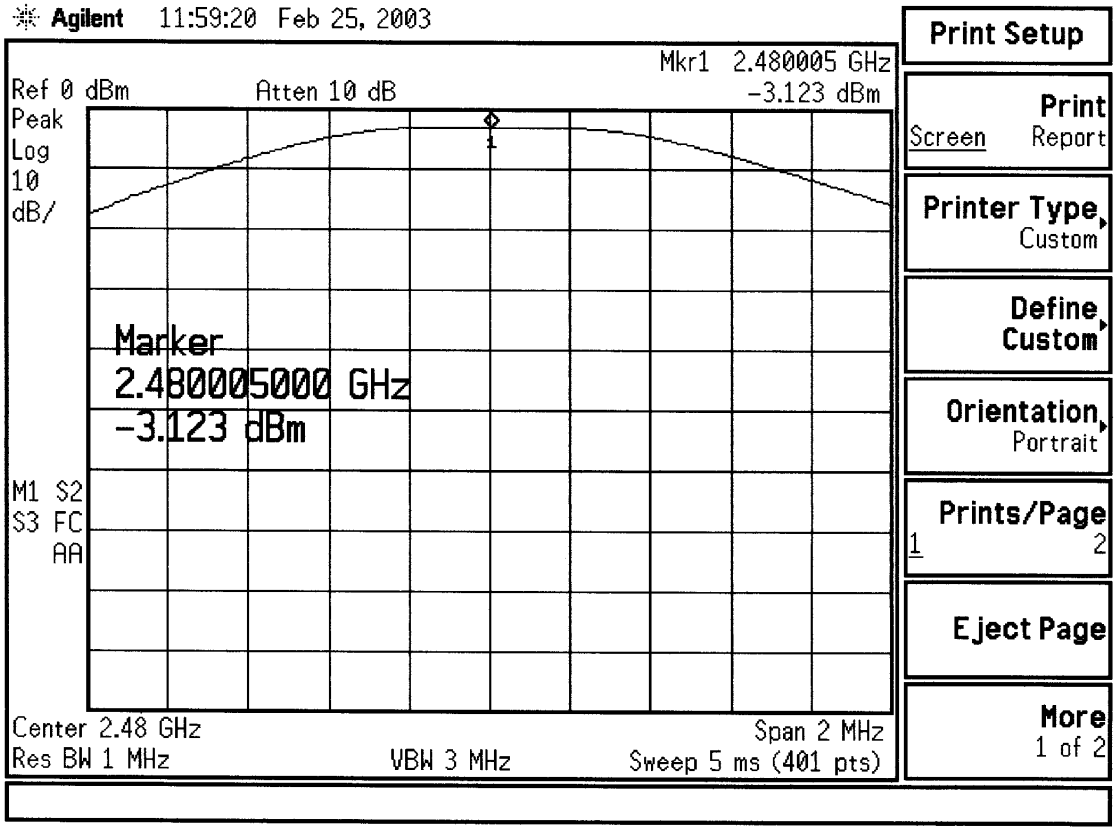
Transmitter transmit at lowest channel (2402Mhz)



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

-1.985 dbm + 1.4db (cable loss)= -0.585 dbm

Transmitter transmit at highest channel (2480Mhz)



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

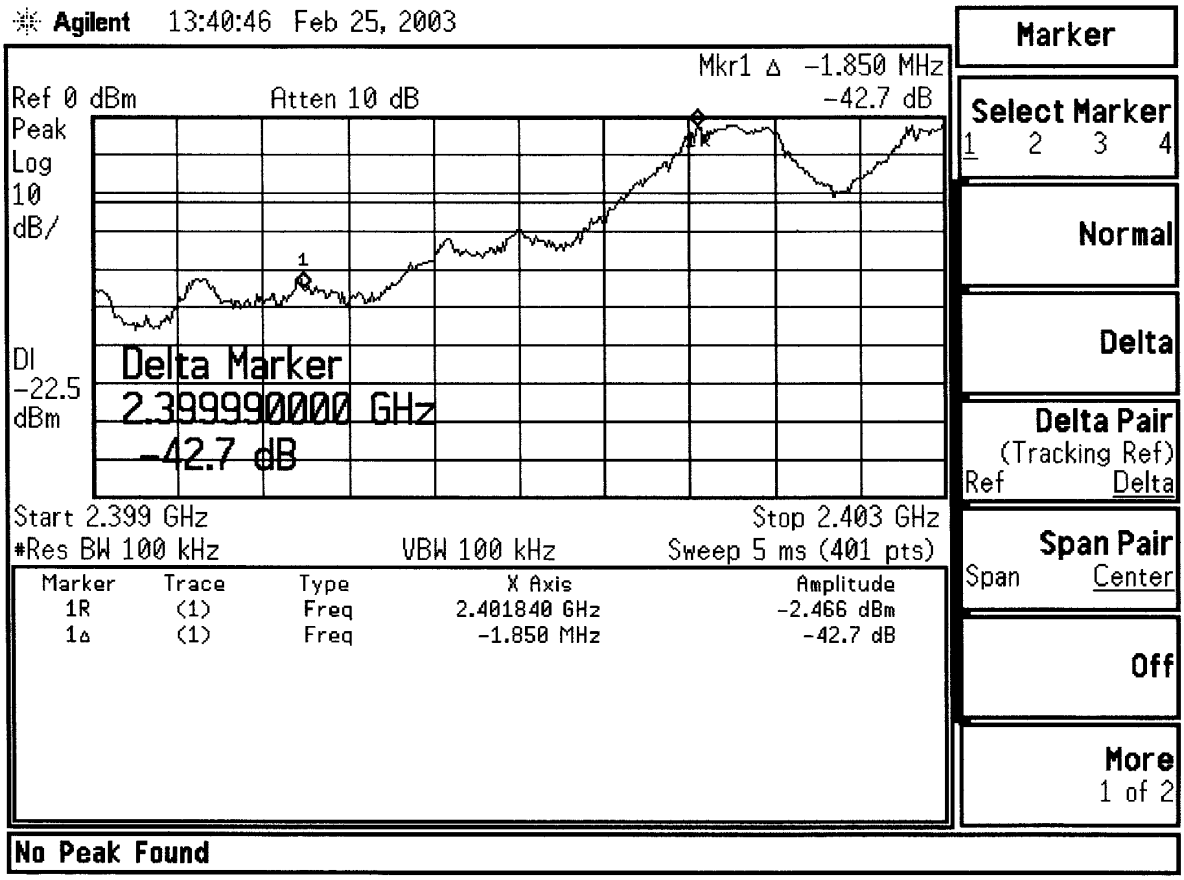
-3.123 dbm + 1.4db (cable loss)= -1.723 dbm

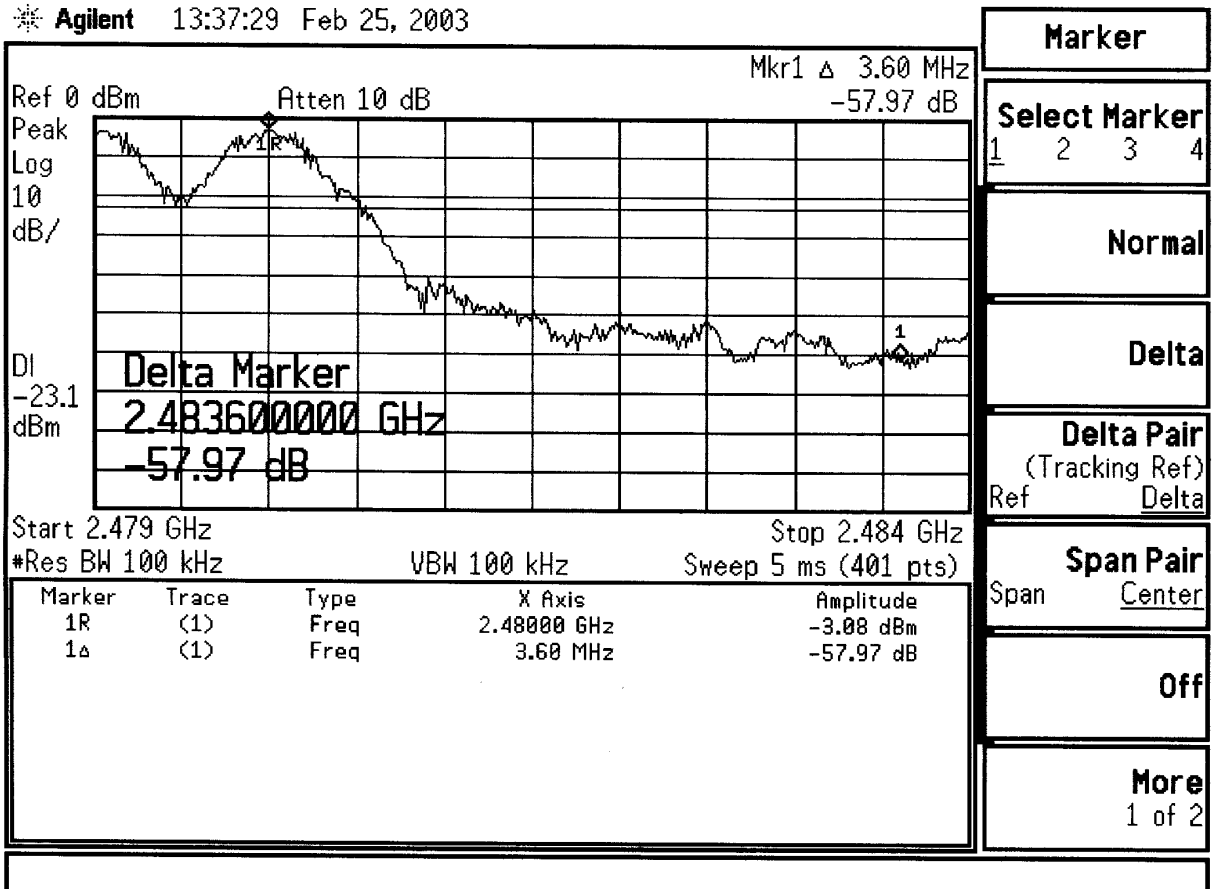
The ERP worst case was in 2402MHz and its value is –0.585 dbm = 0.874mw

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 SUBCLAUSE15.247(c)





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.

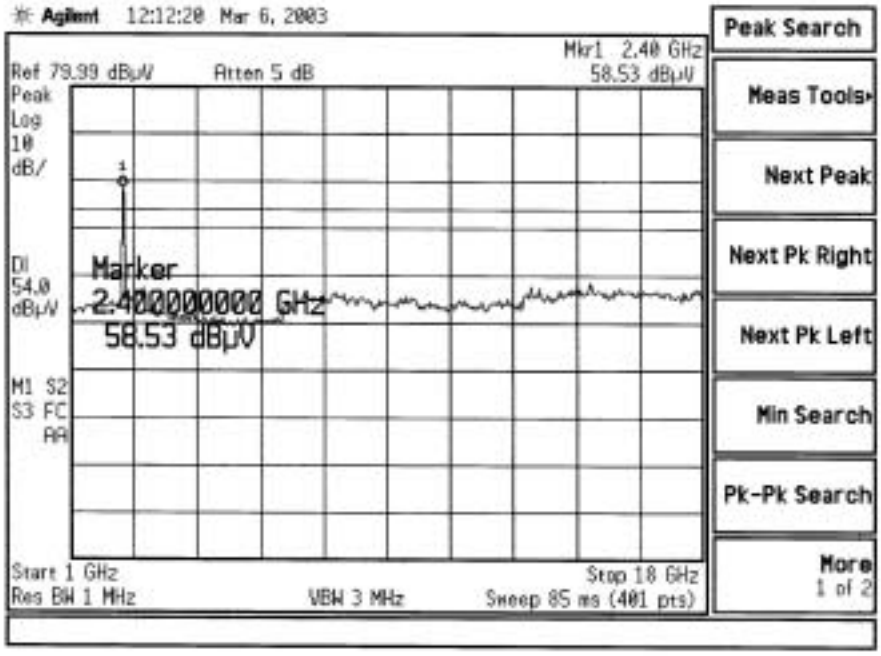
EUT operating at highest frequency , 2480Mhz

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

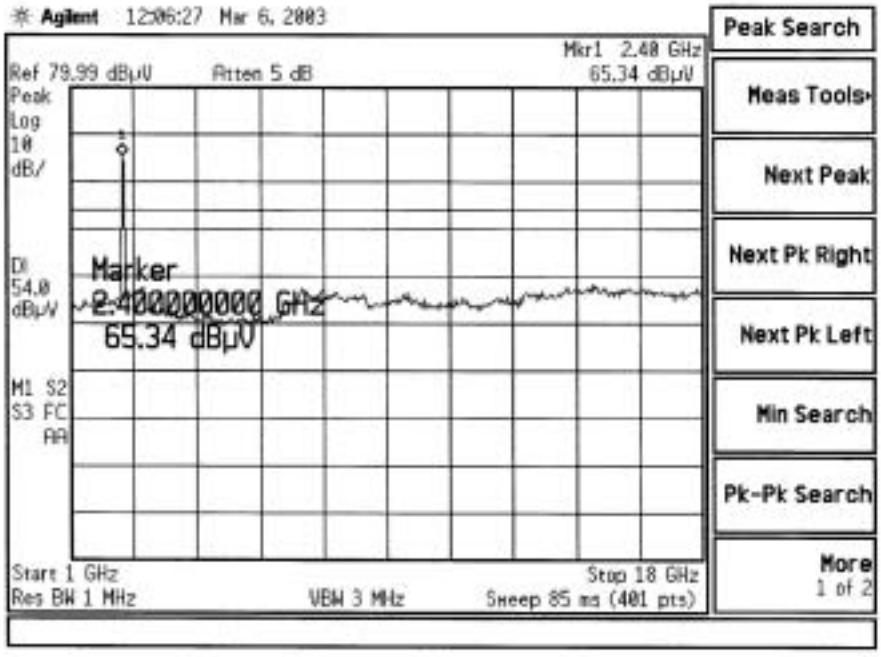
N/A means the emission value the same as background noise.

EUT operating at lowest frequency , 2402Mhz

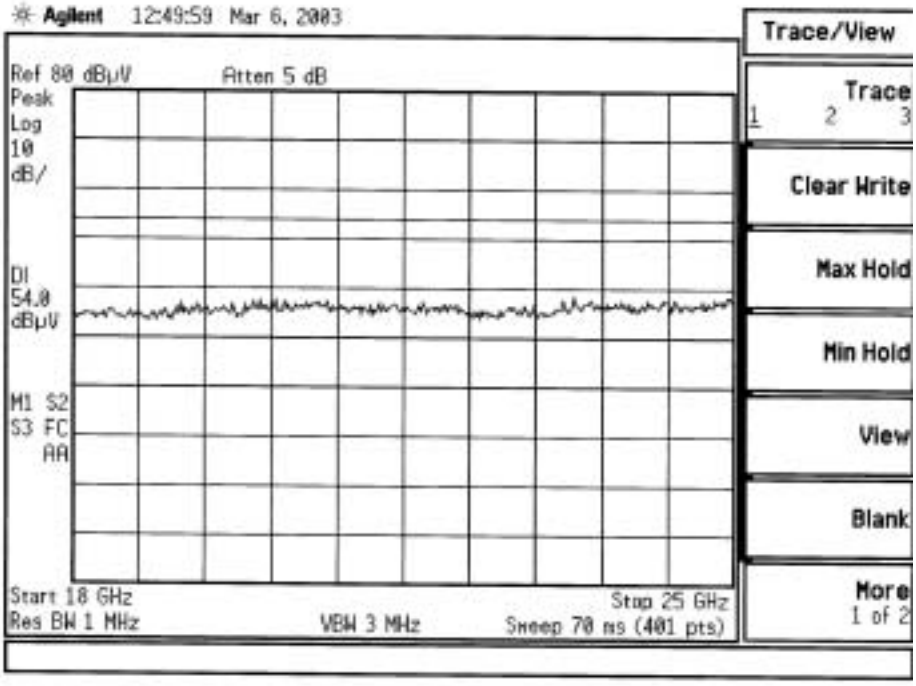
vertical



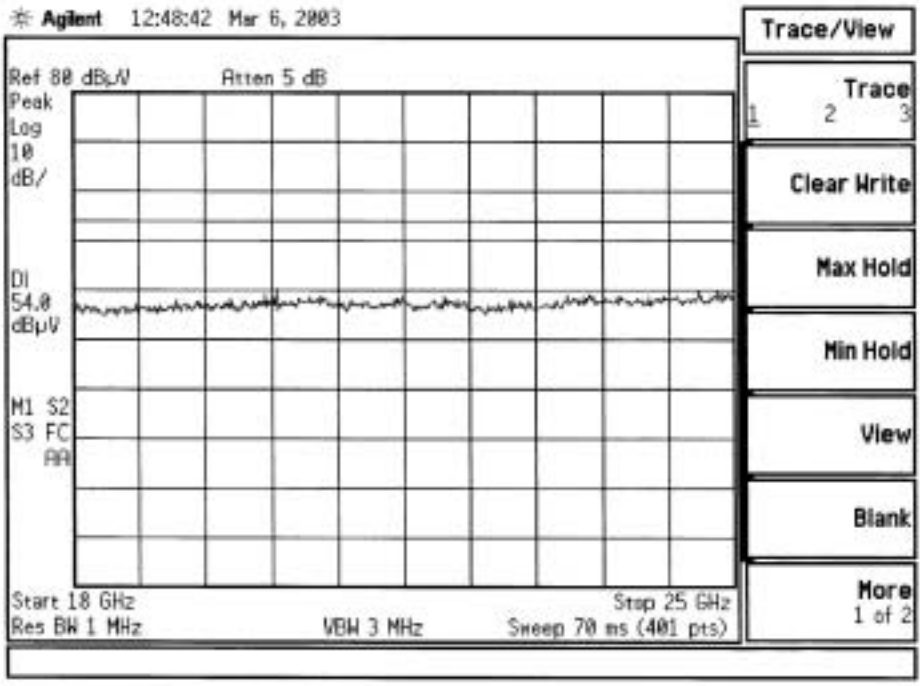
horizontal

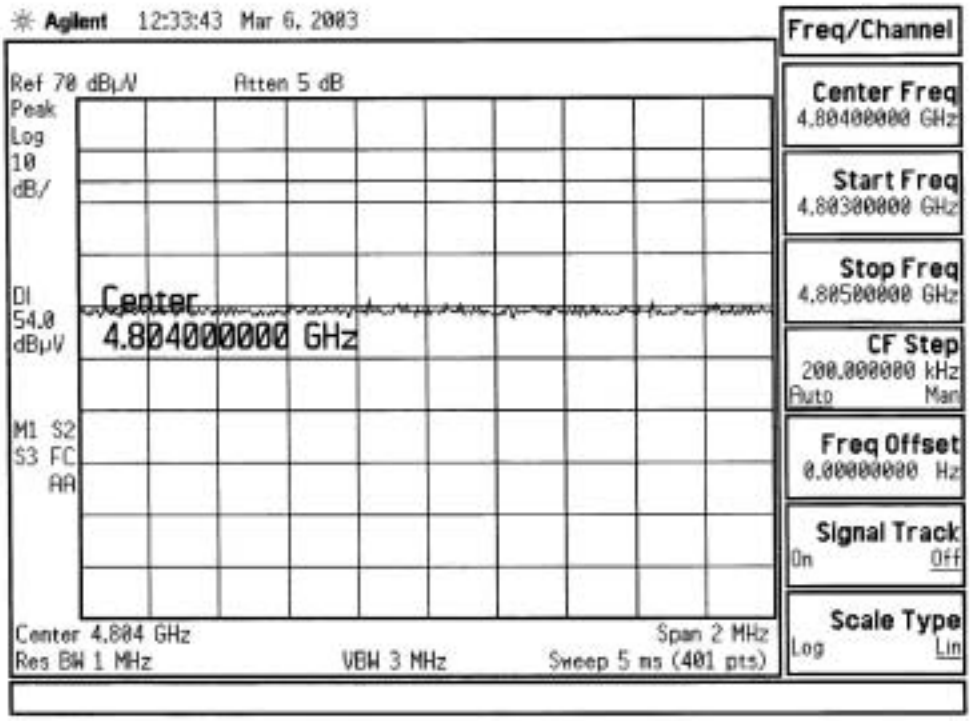


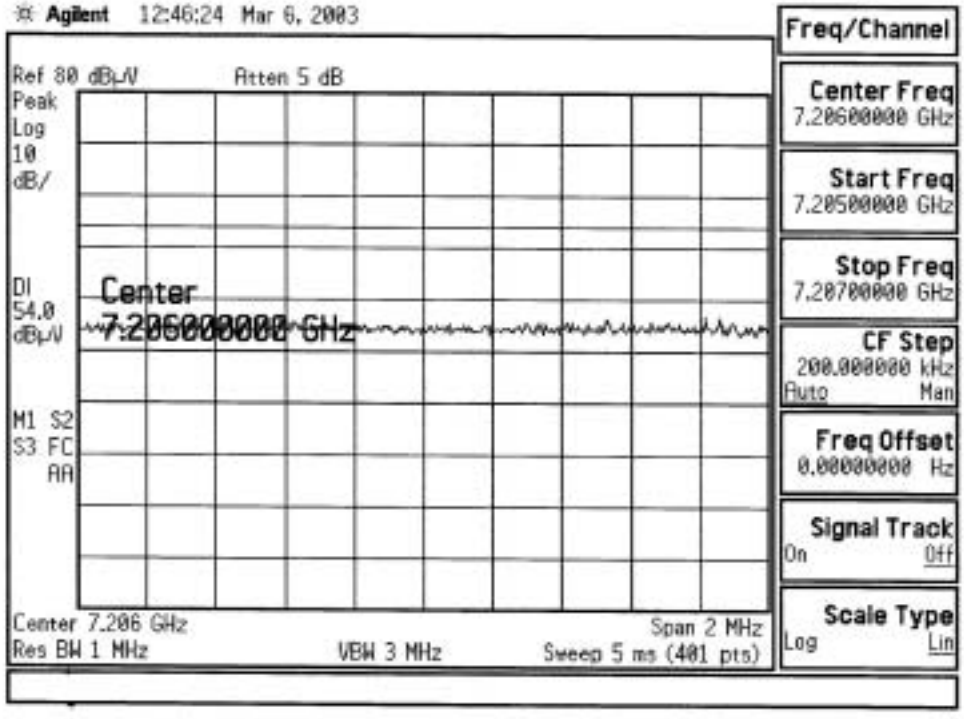
vertical



horizontal

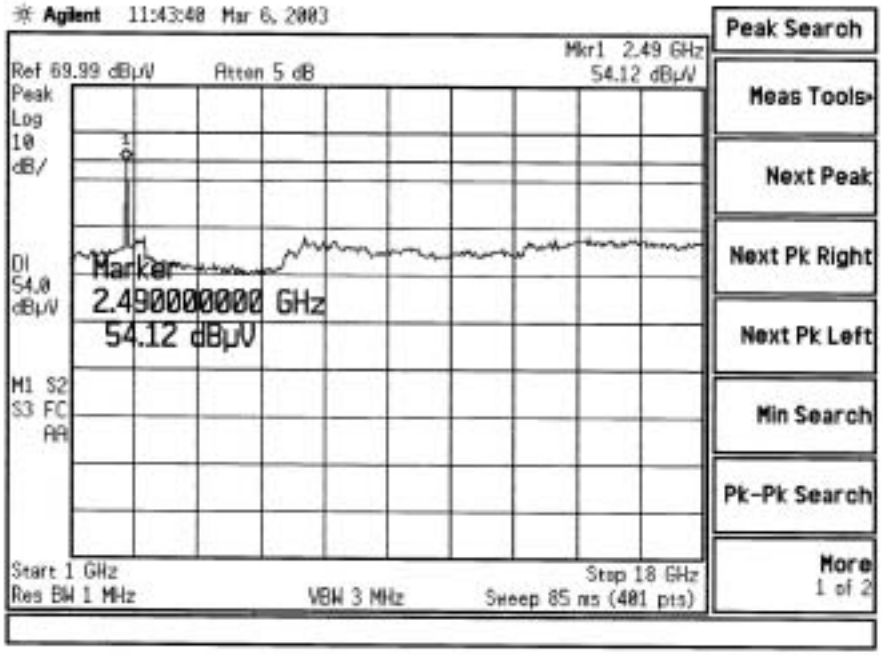



Agilent 12:33:43 Mar 6, 2003
Ref 70 dBµV
Atten 5 dB
Peak
Log
10
dB/
Center
4.804000000 GHz
Center 4.804 GHz
Res BW 1 MHz
VBW 3 MHz
Span 2 MHz
Sweep 5 ms (401 pts)
Freq/Channel
Center Freq
4.80400000 GHz
Start Freq
4.80300000 GHz
Stop Freq
4.80500000 GHz
CF Step
200.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin


Agilent 12:46:24 Mar 6, 2003
Ref 80 dBµV
Atten 5 dB
Peak
Log
10
dB/
Center
Center 7.206 GHz
Res BW 1 MHz
VBW 3 MHz
Span 2 MHz
Sweep 5 ms (401 pts)
Freq/Channel
Center Freq
7.20600000 GHz
Start Freq
7.20500000 GHz
Stop Freq
7.20700000 GHz
CF Step
200.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

EUT operating at highest frequency , 2480Mhz

Vertical



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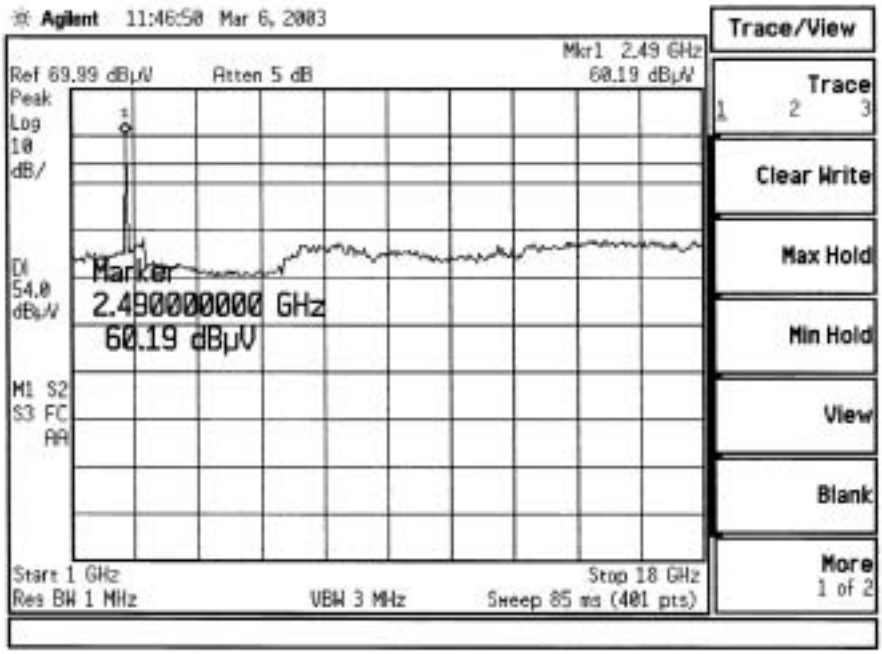

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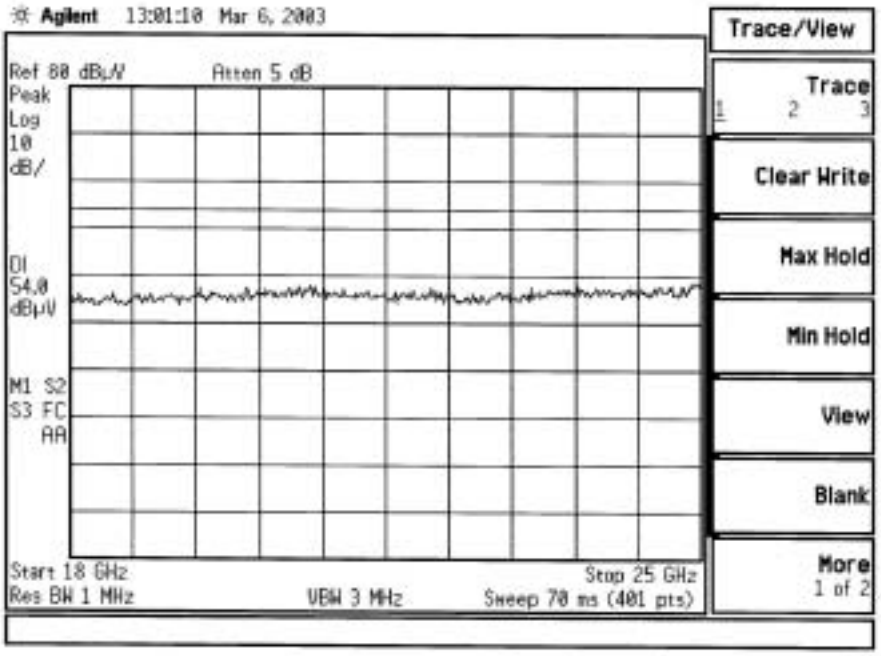

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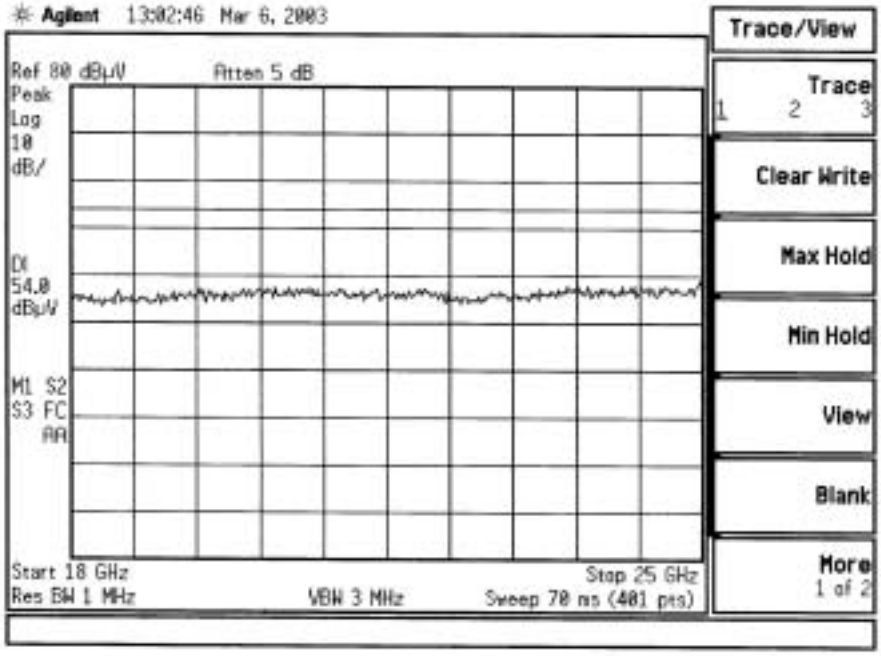
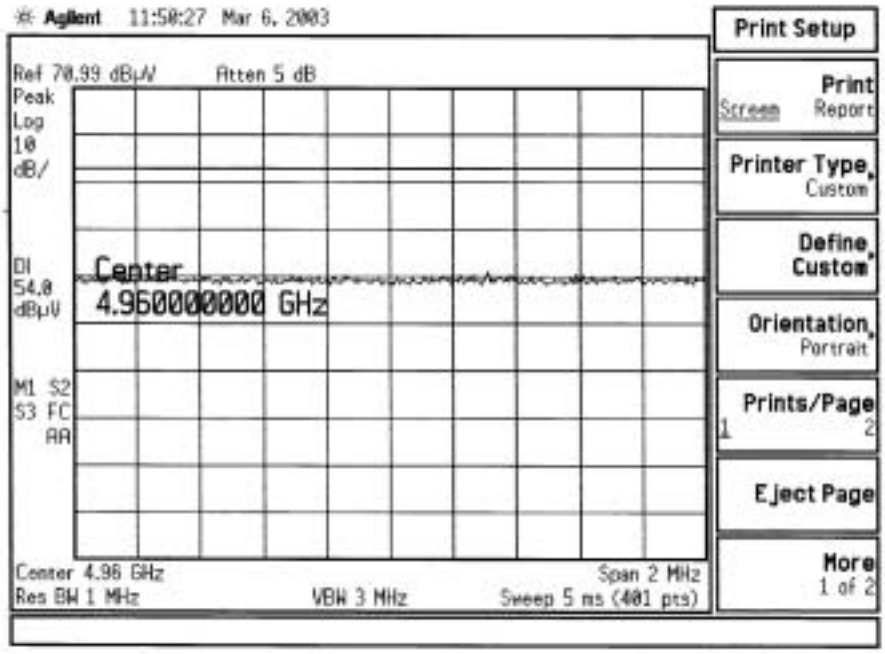
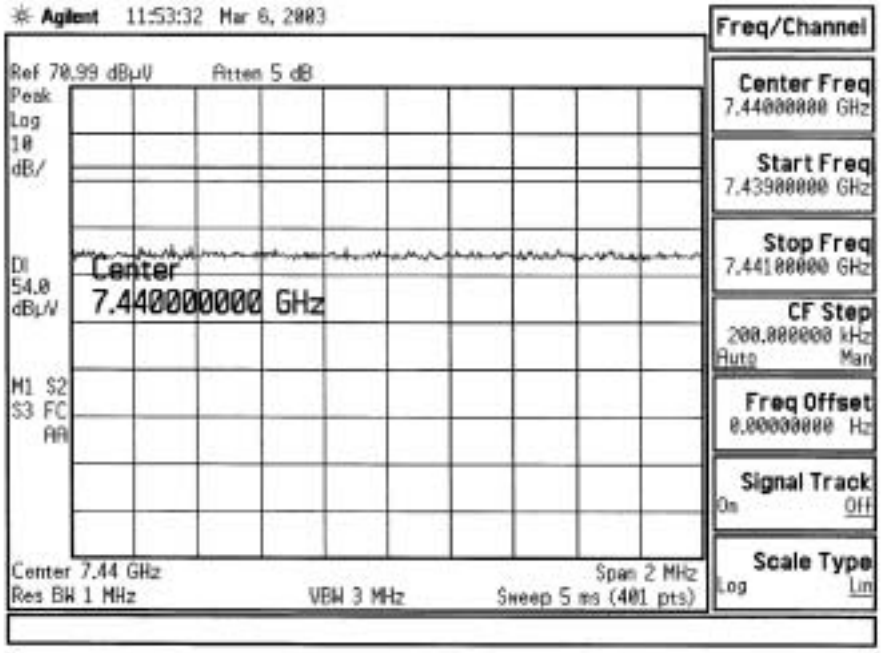



Agilent 11:50:27 Mar 6, 2003
Ref 70.99 dBµV
Atten 5 dB
Peak
Log
10
dB/
Center
4.960000000 GHz
DI
54.0
dBµV
M1 S2
S3 FC
AA
Center 4.96 GHz
Res BW 1 MHz
VBW 3 MHz
Span 2 MHz
Sweep 5 ms (401 pts)
Print Setup
Print
Screen Report
Printer Type
Custom
Define Custom
Orientation
Portrait
Prints/Page
1 2
Eject Page
More
1 of 2


Agilent 11:53:32 Mar 6, 2003
Ref 70.99 dBµV
Atten 5 dB
Peak
Log
10
dB/
Center
7.440000000 GHz
DI
54.0
dBµV
M1 S2
S3 FC
AA
Center 7.44 GHz
Res BW 1 MHz
VBW 3 MHz
Span 2 MHz
Sweep 5 ms (401 pts)
Freq/Channel
Center Freq
7.44000000 GHz
Start Freq
7.43900000 GHz
Stop Freq
7.44100000 GHz
CF Step
200.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Scale Type
Log Lin

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)