

---

# FCC Test Report

---

Report No.: AGC06426161101FE04

**FCC ID** : 2AKD8MURAH  
**APPLICATION PURPOSE** : Original Equipment  
**PRODUCT DESIGNATION** : Smart Phone  
**BRAND NAME** : KIOTO  
**MODEL NAME** : Murah  
**CLIENT** : Distribuidora De Industrias Nacionales S.A.  
**DATE OF ISSUE** : Nov.19, 2016  
**STANDARD(S)** : FCC Part 15.247  
**TEST PROCEDURE(S)** : KDB 558074 v03r02  
**REPORT VERSION** : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



**CAUTION:**

This report shall not be reproduced except in full without the written permission of the test laboratory and shall not be quoted out of context.



Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov.19, 2016	Valid	Original Report

## TABLE OF CONTENTS

<b>1. VERIFICATION OF CONFORMITY .....</b>	<b>5</b>
<b>2. GENERAL INFORMATION .....</b>	<b>6</b>
2.1. PRODUCT DESCRIPTION .....	6
2.2. TABLE OF CARRIER FREQUENCIES .....	6
2.3. IEEE 802.11N MODULATION SCHEME.....	7
2.4. RELATED SUBMITTAL(S) / GRANT (S).....	7
2.5. TEST METHODOLOGY .....	7
2.6. SPECIAL ACCESSORIES.....	7
2.7. EQUIPMENT MODIFICATIONS.....	8
<b>3. MEASUREMENT UNCERTAINTY .....</b>	<b>9</b>
<b>4. DESCRIPTION OF TEST MODES .....</b>	<b>9</b>
<b>5. SYSTEM TEST CONFIGURATION .....</b>	<b>10</b>
5.1. CONFIGURATION OF EUT SYSTEM .....	10
5.2. EQUIPMENT USED IN EUT SYSTEM .....	10
5.3. SUMMARY OF TEST RESULTS.....	10
<b>6. TEST FACILITY .....</b>	<b>11</b>
<b>7. OUTPUT POWER .....</b>	<b>13</b>
7.1. MEASUREMENT PROCEDURE .....	13
7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) .....	14
7.3. LIMITS AND MEASUREMENT RESULT .....	15
<b>8. 6DB BANDWIDTH.....</b>	<b>16</b>
8.1. MEASUREMENT PROCEDURE .....	16
8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) .....	16
8.3. LIMITS AND MEASUREMENT RESULTS.....	16
<b>9. CONDUCTED SPURIOUS EMISSION .....</b>	<b>22</b>
9.1. MEASUREMENT PROCEDURE .....	22
9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) .....	22
9.3. MEASUREMENT EQUIPMENT USED .....	22
9.4. LIMITS AND MEASUREMENT RESULT .....	22
<b>10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY .....</b>	<b>56</b>
10.1 MEASUREMENT PROCEDURE .....	56
10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION) .....	56
10.3 MEASUREMENT EQUIPMENT USED .....	56
10.4 LIMITS AND MEASUREMENT RESULT .....	56

**11. RADIATED EMISSION.....62**  
11.1. MEASUREMENT PROCEDURE..... 62  
11.2. TEST SETUP ..... 63  
11.3. LIMITS AND MEASUREMENT RESULT ..... 64  
11.4. TEST RESULT ..... 64

**12. BAND EDGE EMISSION.....72**  
12.1. MEASUREMENT PROCEDURE ..... 72  
12.2. TEST SET-UP..... 72  
12.3. Radiated Test Result..... 73  
12.4. Conducted Test Result ..... 74

**13. FCC LINE CONDUCTED EMISSION TEST .....78**  
13.1. LIMITS OF LINE CONDUCTED EMISSION TEST ..... 78  
13.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST ..... 78  
13.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST ..... 79  
13.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST..... 79  
13.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST ..... 80

**APPENDIX A: PHOTOGRAPHS OF TEST SETUP .....82**  
**APPENDIX B: PHOTOGRAPHS OF EUT .....84**

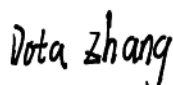
## 1. VERIFICATION OF CONFORMITY

<b>Applicant</b>	Distribuidora De Industrias Nacionales S.A.
<b>Address</b>	Avenida Nueva De Lyon 72 Piso 5 Y 6 Providencia, Santiago, Chile
<b>Manufacturer</b>	UTCOT TECHNOLOGY CO., LIMITED
<b>Address</b>	4C, Block A, Central Avenue Building, BaoYuan Road, Xixiang Town, Baoan District, Shenzhen
<b>Product Designation</b>	Smart Phone
<b>Brand Name</b>	KIOTO
<b>Test Model</b>	Murah
<b>Date of test</b>	Nov 14, 2016 to Nov 19, 2016
<b>Deviation</b>	None
<b>Condition of Test Sample</b>	Normal
<b>Report Template</b>	AGCRT-US-BGN/RF

We hereby certify that:

The above equipment was tested by Dongguan Precise Testing Service Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with requirement of FCC Part 15 Rules requirement.

Tested By



Dota Zhang(Zhang Jianfeng)

Nov.19, 2016

Reviewed By



Bart Xie(Xie Xiaobin)

Nov.19, 2016

Approved By



Solger Zhang(Zhang Hongyi)  
Authorized Officer

Nov.19, 2016

## 2. GENERAL INFORMATION

### 2.1. PRODUCT DESCRIPTION

The EUT is designed as “Smart Phone”. It is designed by way of utilizing the DSSS and OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

<b>Operation Frequency</b>	2.412 GHz~2.462GHz
<b>Output Power</b>	IEEE 802.11b:12.13dBm; IEEE 802.11g:11.05dBm; IEEE 802.11n(20):10.61dBm;
<b>Modulation</b>	DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)
<b>Number of channels</b>	11
<b>Hardware Version</b>	C22H_3BD3_V1.0B
<b>Software Version</b>	N/A
<b>Antenna Designation</b>	Integrated Antenna
<b>Antenna Gain</b>	0.6dBi
<b>Power Supply</b>	DC3.7V by Built-in Li-ion Battery

### 2.2. TABLE OF CARRIER FREQUENCIES

Frequency Band	Channel Number	Frequency
2400~2483.5MHZ	1	2412 MHZ
	2	2417 MHZ
	3	2422 MHZ
	4	2427 MHZ
	5	2432 MHZ
	6	2437 MHZ
	7	2442 MHZ
	8	2447 MHZ
	9	2452 MHZ
	10	2457 MHZ
	11	2462 MHZ

Note: For 20MHZ bandwidth system use Channel 1 to Channel 11.

### 2.3. IEEE 802.11N MODULATION SCHEME

MCS Index	Nss	Modulation	R	NBPSC	NCBPS	NDBPS	Data rate(Mbps)
							800nsGI
					20MHz	20MHz	20MHz
0	1	BPSK	1/2	1	52	26	6.5
1	1	QPSK	1/2	2	104	52	13.0
2	1	QPSK	3/4	2	104	78	19.5
3	1	16-QAM	1/2	4	208	104	26.0
4	1	16-QAM	3/4	4	208	156	39.0
5	1	64-QAM	2/3	6	312	208	52.0
6	1	64-QAM	3/4	6	312	234	58.5
7	1	64-QAM	5/6	6	312	260	65.0

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	Guard interval

### 2.4. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2AKD8MURAH** filing to comply with the FCC Part 15 requirements.

### 2.5. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013).

Radiated testing was performed at an antenna to EUT distance 3 meters.

Others testing (listed at item 5.3) was performed according to the procedures in FCC Part 15.247 rules KDB 558074 D01 DTS Meas Guidance v03r02.

### 2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

## **2.7. EQUIPMENT MODIFICATIONS**

Not available for this EUT intended for grant.



### 3. MEASUREMENT UNCERTAINTY

Conducted measurement: +/- 2.75dB

Radiated measurement: +/- 3.2dB

### 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel TX
2	Middle channel TX
3	High channel TX
4	Normal operating

Note:

Transmit by 802.11b with Data rate (1/2/5.5/11)

Transmit by 802.11g with Data rate (6/9/12/18/24/36/48/54)

Transmit by 802.11n (20MHz) with Data rate (6.5/13/19.5/26/39/52/58.5/65)

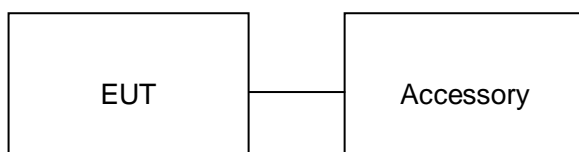
**Note:**

1. The EUT has been set to operate continuously on the lowest, middle and highest operation frequency Individually, and the eut is operating at its maximum duty cycle>or equal 98%
2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.
3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

## 5. SYSTEM TEST CONFIGURATION

### 5.1. CONFIGURATION OF EUT SYSTEM

Configure:



### 5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Note
1	Mobile Phone	Murah	FCC ID: 2AKD8MURAH	EUT
2	Adapter	Murah	DC5V /700mA	Accessory
3	Battery	Murah	DC3.7V/ 1500 mAh	Accessory
4	Earphone	Murah	N/A	Accessory
5	USB Cable	Murah	N/A	Accessory

Note: All the accessories have been used during the test in conduction emission test.

### 5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.247	Output Power	Compliant
§15.247	6 dB Bandwidth	Compliant
§15.247	Conducted Spurious Emission	Compliant
§15.247	Maximum Conducted Output Power SPECTRAL Density	Compliant
§15.209	Radiated Emission	Compliant
§15.247	Band Edges	Compliant
§15.207	Line Conduction Emission	Compliant

**Note:** The EUT received power from DC3.7V lithium battery.

## 6. TEST FACILITY

<b>Site</b>	Dongguan Precise Testing Service Co., Ltd.
<b>Location</b>	Building D,Baoding Technology Park,Guangming Road2,Dongcheng District, Dongguan, Guangdong, China,
<b>FCC Registration No.</b>	371540
<b>Description</b>	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.10:2013.

## ALL TEST EQUIPMENT LIST

FOR RADIATED EMISSION TEST (BELOW 1GHZ)

Radiated Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 3, 2016	July 2, 2017
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 3, 2016	July 2, 2017
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 3, 2016	July 2, 2017
RF Cable	SCHWARZBECK	AK9515E	96221	July 3, 2016	July 2, 2017
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 5, 2016	June 4, 2017
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	June 5, 2016	June 4, 2017
Spectrum analyzer	Agilent	E4407B	MY46185649	June 5, 2016	June 4, 2017
Power Probe	R&S	NRP-Z23	100323	July 24,2016	July 23,2017
RF attenuator	N/A	RFA20db	68	N/A	N/A

FOR RADIATED EMISSION TEST (1GHZ ABOVE)

Radiated Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 3, 2016	July 2, 2017
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	July 10, 2016	July 9, 2017
Spectrum Analyzer	Agilent	E4411B	MY4511453	July 3, 2016	July 2, 2017
Signal Amplifier	SCHWARZBECK	BBV 9718	9718-269	July 6, 2016	July 5, 2017
RF Cable	SCHWARZBECK	AK9515H	96220	July 7, 2016	July 6, 2017
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 5, 2016	June 4, 2017
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A

Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 5, 2016	June 4, 2017
Power Probe	R&S	NRP-Z23	100323	July 24,2016	July 23,2017
RF attenuator	N/A	RFA20db	68	N/A	N/A
Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 3, 2016	July 2, 2017
Artificial Mains Network	Narda	L2-16B	000WX31025	July 7, 2016	July 6, 2017
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	July 7, 2016	July 6, 2017
RF Cable	SCHWARZBECK	AK9515E	96222	July 3, 2016	July 2, 2017
Shielded Room	CHENGYU	843	PTS-002	June 5,2016	June 4,2017

## **7. OUTPUT POWER**

### **7.1. MEASUREMENT PROCEDURE**

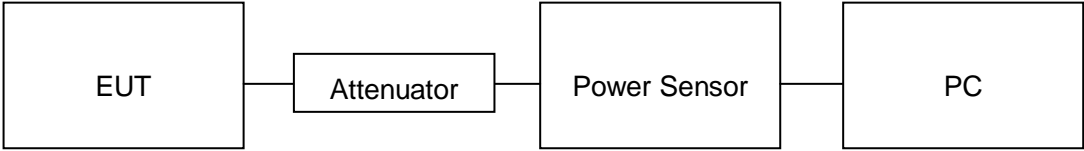
For max average conducted output power test:

1. Connect EUT RF output port to power probe through an RF attenuator.
2. Connect the power probe to the PC.
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Record the maximum power from the software.

**Note :** The EUT was tested according to KDB 558074v03r02 for compliance to FCC 47CFR 15.247 requirements.

7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

AVERAGE POWER SETUP



### 7.3. LIMITS AND MEASUREMENT RESULT

<b>TEST ITEM</b>	OUTPUT POWER
<b>TEST MODE</b>	802.11b with data rate 1

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	12.13	30	Pass
2.437	11.88	30	Pass
2.462	12.06	30	Pass

<b>TEST ITEM</b>	OUTPUT POWER
<b>TEST MODE</b>	802.11g with data rate 6

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	10.97	30	Pass
2.437	10.83	30	Pass
2.462	11.05	30	Pass

<b>TEST ITEM</b>	OUTPUT POWER
<b>TEST MODE</b>	802.11n 20 with data rate 6.5

Frequency (GHz)	Average Power (dBm)	Applicable Limits (dBm)	Pass or Fail
2.412	10.61	30	Pass
2.437	10.55	30	Pass
2.462	10.57	30	Pass

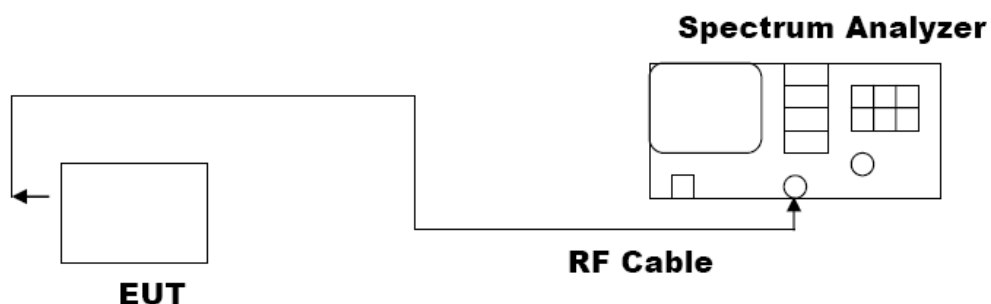
## 8. 6DB BANDWIDTH

### 8.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW $\geq$ 3 $\times$ RBW.
4. Set SPA Trace 1 Max hold, then View.

**Note:** The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

### 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



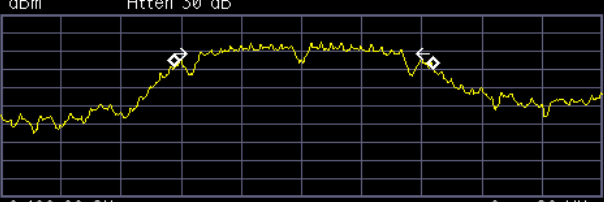
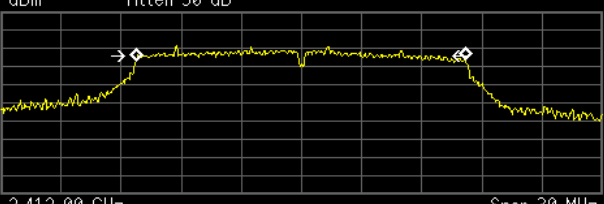
### 8.3. LIMITS AND MEASUREMENT RESULTS

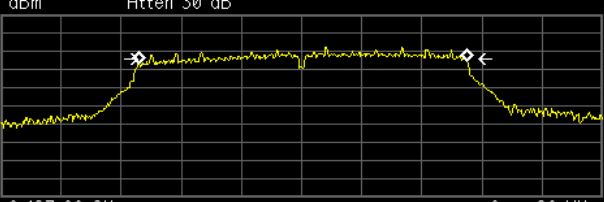
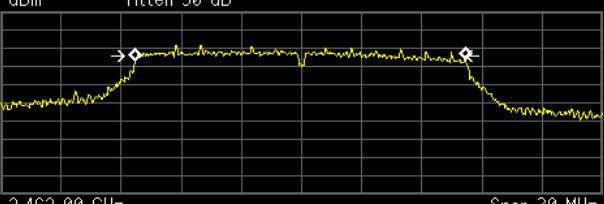
Mode	Channel	6dB Bandwidth [MHz]	OBW [MHz]	Verdict
11B	LCH	9.585	12.692	PASS
11B	MCH	9.129	12.470	PASS
11B	HCH	10.118	12.842	PASS
11G	LCH	15.087	16.410	PASS
11G	MCH	15.745	16.351	PASS
11G	HCH	15.730	16.446	PASS
11N20SISO	LCH	16.402	17.574	PASS
11N20SISO	MCH	16.358	17.512	PASS
11N20SISO	HCH	16.356	17.594	PASS

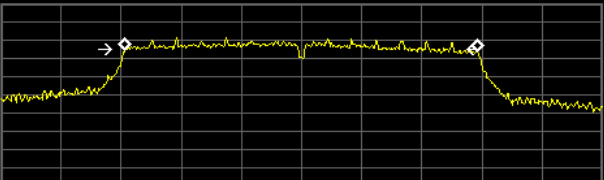
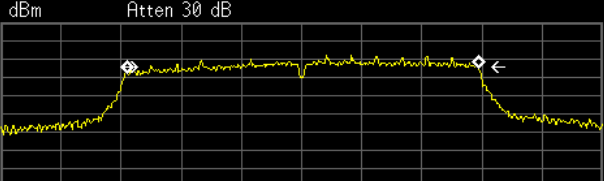


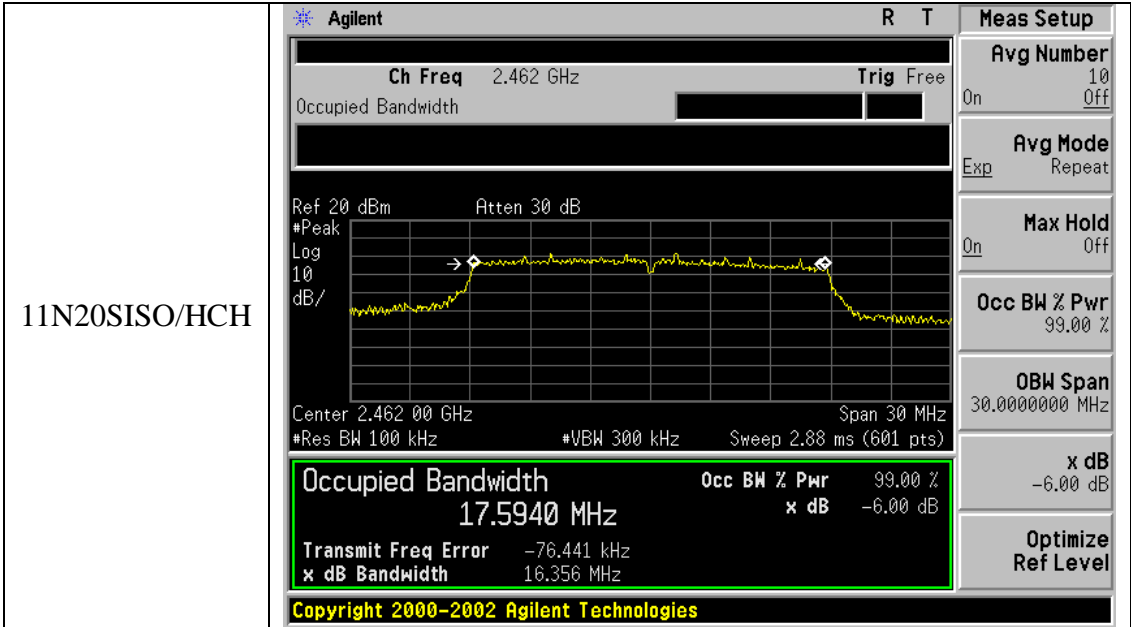
Test Graph



11B/HCH	<div><div>Agilent</div><div>R T</div><div>Meas Setup</div><div>Ch Freq 2.462 GHz</div><div>Trig Free</div><div>Occupied Bandwidth</div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div></div><div>Center 2.462 00 GHz</div><div>Span 30 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 2.88 ms (601 pts)</div></div><div><div>Occupied Bandwidth</div><div>12.8424 MHz</div><div>Occ BW % Pwr</div><div>99.00 %</div><div>x dB</div><div>-6.00 dB</div><div>Transmit Freq Error</div><div>111.894 kHz</div><div>x dB Bandwidth</div><div>10.118 MHz</div></div><div>Copyright 2000-2002 Agilent Technologies</div></div>
11G/LCH	<div><div>Agilent</div><div>R T</div><div>Meas Setup</div><div>Ch Freq 2.412 GHz</div><div>Trig Free</div><div>Occupied Bandwidth</div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div></div><div>Center 2.412 00 GHz</div><div>Span 30 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 2.88 ms (601 pts)</div></div><div><div>Occupied Bandwidth</div><div>16.4097 MHz</div><div>Occ BW % Pwr</div><div>99.00 %</div><div>x dB</div><div>-6.00 dB</div><div>Transmit Freq Error</div><div>-52.744 kHz</div><div>x dB Bandwidth</div><div>15.087 MHz</div></div><div>Copyright 2000-2002 Agilent Technologies</div></div>

11G/MCH	<div><div>Agilent</div><div><div>Ch Freq2.437 GHz</div><div>TrigFree</div><div>Occupied Bandwidth</div></div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div></div><div></div><div><div>Center 2.437 00 GHz</div><div>Span 30 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 2.88 ms (601 pts)</div></div><div><div>Occupied Bandwidth</div><div>16.3506 MHz</div><div>Occ BW % Pwr99.00 %</div><div>x dB-6.00 dB</div><div>Transmit Freq Error77.320 kHz</div><div>x dB Bandwidth15.745 MHz</div></div><div>Copyright 2000-2002 Agilent Technologies</div></div><div><div>Meas Setup</div><div><div>Avg Number</div><div>10</div><div>OnOff</div></div><div><div>Avg Mode</div><div>Repeat</div></div><div><div>Max Hold</div><div>Off</div></div><div><div>Occ BW % Pwr</div><div>99.00 %</div></div><div><div>OBW Span</div><div>30.0000000 MHz</div></div><div><div>x dB</div><div>-6.00 dB</div></div><div><div>Optimize</div><div>Ref Level</div></div></div></div>
11G/HCH	<div><div>Agilent</div><div><div>Ch Freq2.462 GHz</div><div>TrigFree</div><div>Occupied Bandwidth</div></div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div></div><div></div><div><div>Center 2.462 00 GHz</div><div>Span 30 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 2.88 ms (601 pts)</div></div><div><div>Occupied Bandwidth</div><div>16.4456 MHz</div><div>Occ BW % Pwr99.00 %</div><div>x dB-6.00 dB</div><div>Transmit Freq Error-82.075 kHz</div><div>x dB Bandwidth15.730 MHz</div></div><div>Copyright 2000-2002 Agilent Technologies</div></div><div><div>Freq/Channel</div><div><div>Center Freq</div><div>2.46200000 GHz</div></div><div><div>Start Freq</div><div>2.44700000 GHz</div></div><div><div>Stop Freq</div><div>2.47700000 GHz</div></div><div><div>CF Step</div><div>3.00000000 MHz</div><div>AutoMan</div></div><div><div>Freq Offset</div><div>0.00000000 Hz</div></div><div><div>Signal Track</div><div>OnOff</div></div></div></div>

11N20SISO/LCH	<div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 2.412 GHz</div><div>Trig Free</div></div><div>Occupied Bandwidth</div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div></div><div>Center 2.412 00 GHz</div><div>Span 30 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 2.88 ms (601 pts)</div><div><div>Occupied Bandwidth</div><div>17.5743 MHz</div><div>Occ BW % Pwr</div><div>99.00 %</div><div>x dB</div><div>-6.00 dB</div><div>Transmit Freq Error</div><div>-54.002 kHz</div><div>x dB Bandwidth</div><div>16.402 MHz</div></div><div>Copyright 2000-2002 Agilent Technologies</div></div></div> <div><div>Freq/Channel</div><div>Center Freq</div><div>2.41200000 GHz</div><div>Start Freq</div><div>2.39700000 GHz</div><div>Stop Freq</div><div>2.42700000 GHz</div><div>CF Step</div><div>3.00000000 MHz</div><div>Auto</div><div>Man</div><div>Freq Offset</div><div>0.00000000 Hz</div><div>Signal Track</div><div>On</div><div>Off</div></div>
11N20SISO/MCH	<div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 2.437 GHz</div><div>Trig Free</div></div><div>Occupied Bandwidth</div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div></div><div>Center 2.437 00 GHz</div><div>Span 30 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 2.88 ms (601 pts)</div><div><div>Occupied Bandwidth</div><div>17.5122 MHz</div><div>Occ BW % Pwr</div><div>99.00 %</div><div>x dB</div><div>-6.00 dB</div><div>Transmit Freq Error</div><div>72.092 kHz</div><div>x dB Bandwidth</div><div>16.358 MHz</div></div><div>Copyright 2000-2002 Agilent Technologies</div></div></div> <div><div>Meas Setup</div><div>Avg Number</div><div>10</div><div>On</div><div>Off</div><div>Avg Mode</div><div>Exp</div><div>Repeat</div><div>Max Hold</div><div>On</div><div>Off</div><div>Occ BW % Pwr</div><div>99.00 %</div><div>OBW Span</div><div>30.0000000 MHz</div><div>x dB</div><div>-6.00 dB</div><div>Optimize</div><div>Ref Level</div></div>



## 9. CONDUCTED SPURIOUS EMISSION

### 9.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Trace 1 Max hold, then View.

**Note:** The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

Owing to satisfy the requirements of the number of measurement points, we set the RBW=1MHz, VBW > RBW, scan up through 10th harmonic, and consider the tested results as the worst case, if the tested results conform to the requirement, we can deem that the real tested results(set the RBW=100KHz, VBW > RBW) are conform to the requirement.

### 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 8.2.

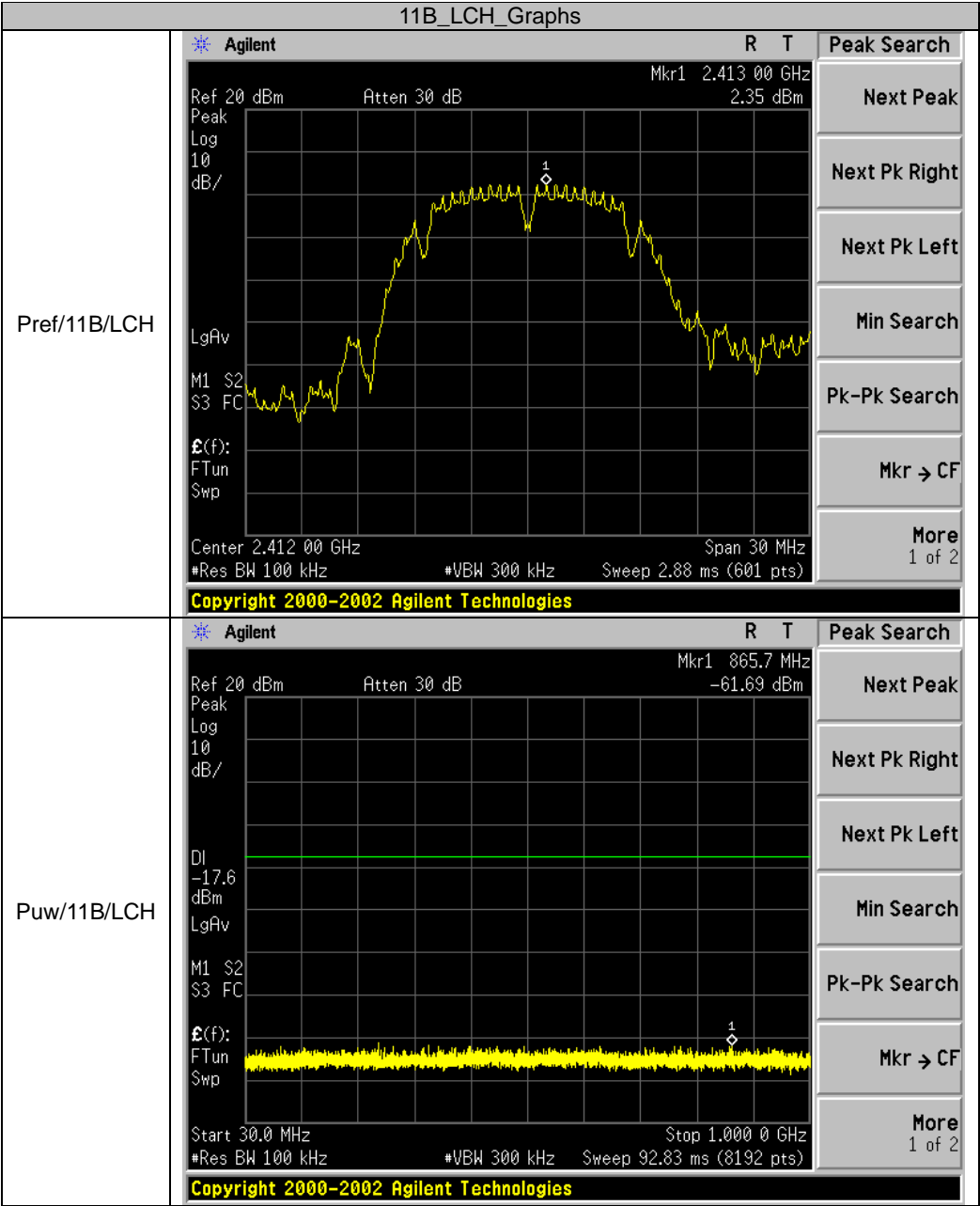
### 9.3. MEASUREMENT EQUIPMENT USED

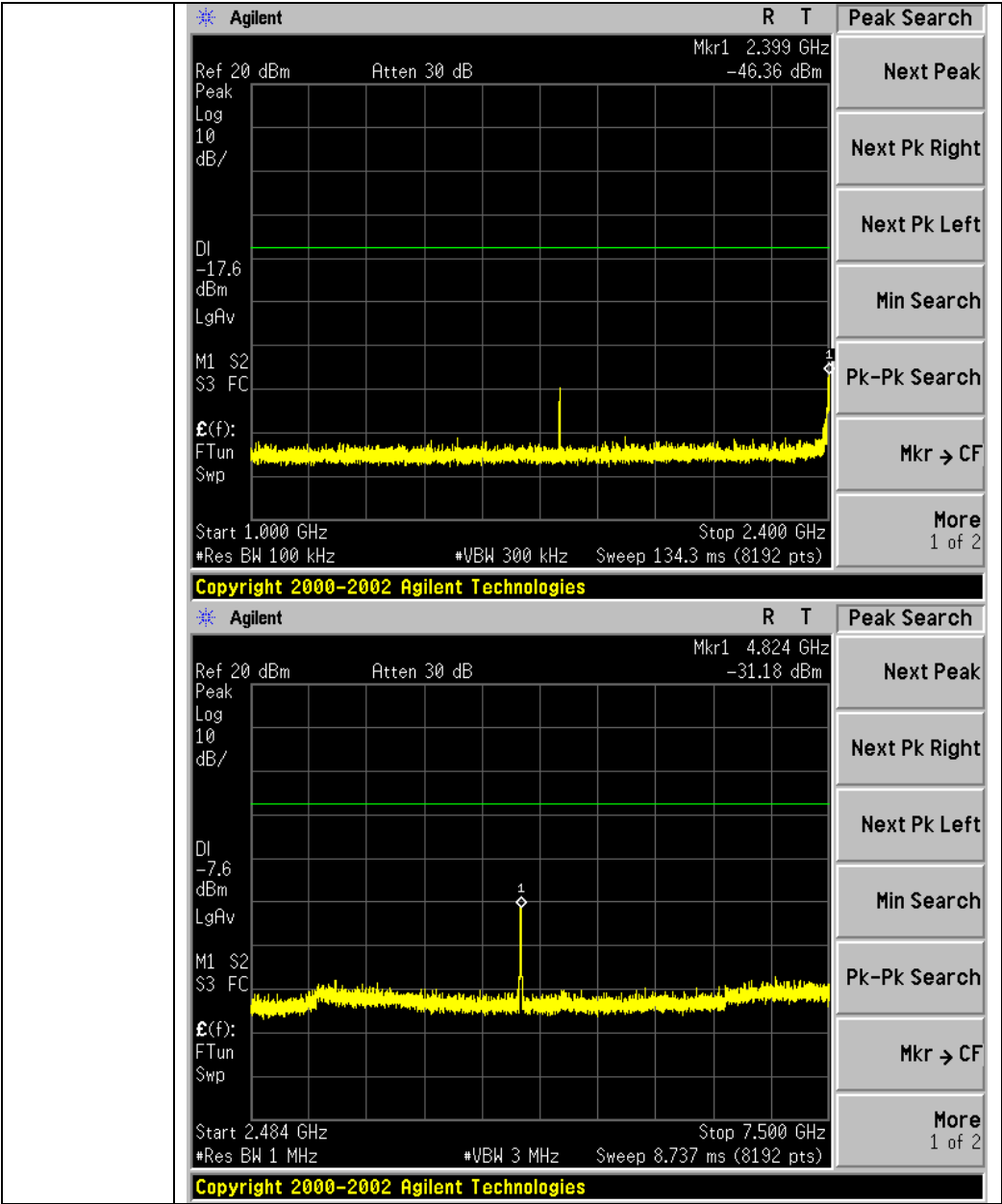
The same as described in section 6.

### 9.4. LIMITS AND MEASUREMENT RESULT

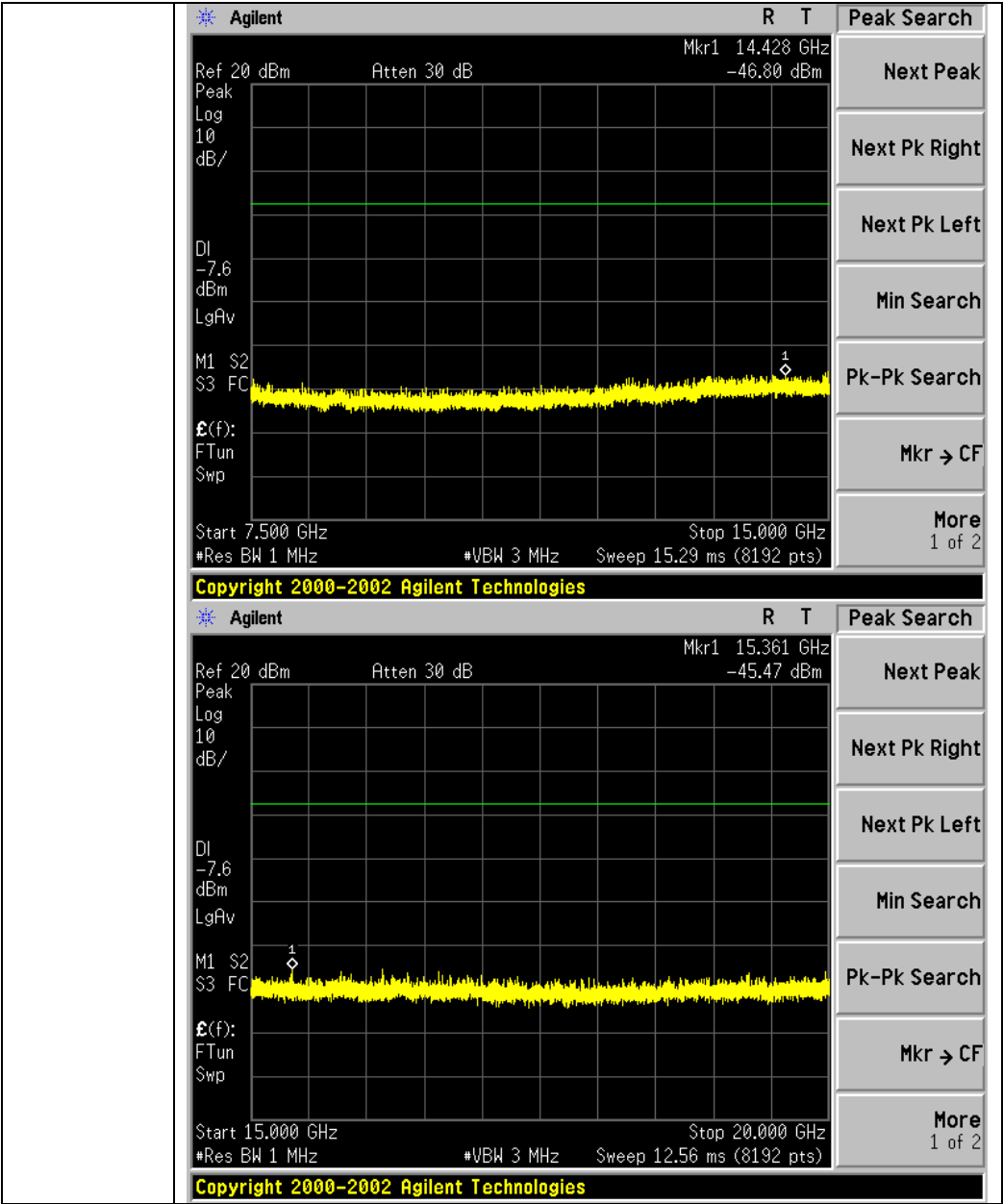
LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test Data	Criteria
In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power. In addition, radiation emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in§15.209(a))	At least -20dBc than the limit Specified on the BOTTOM Channel	PASS
	At least -20dBc than the limit Specified on the TOP Channel	PASS

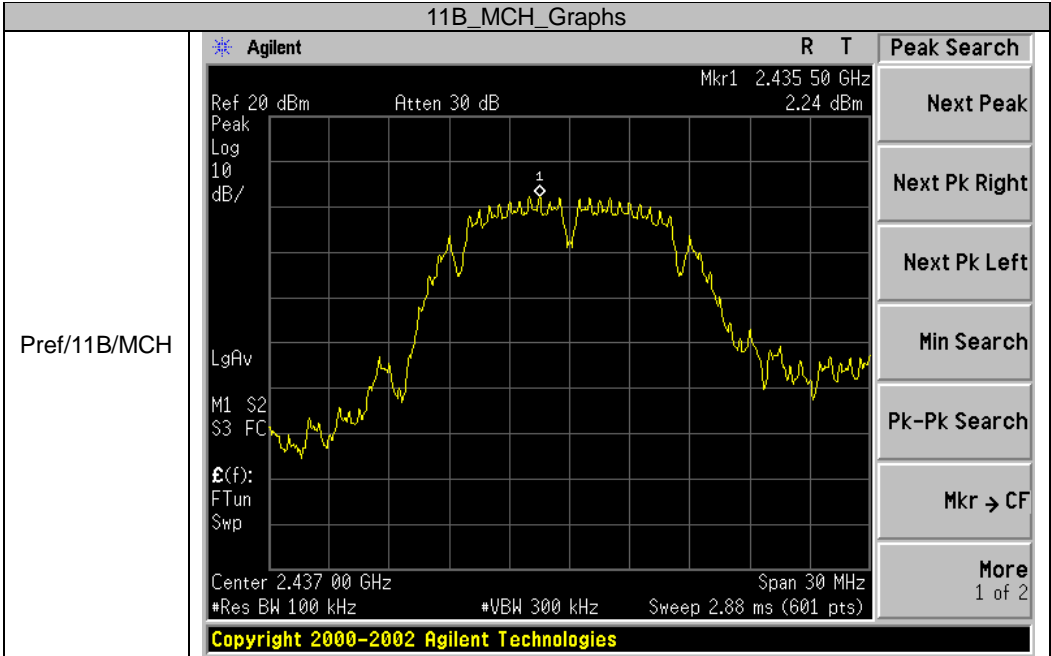
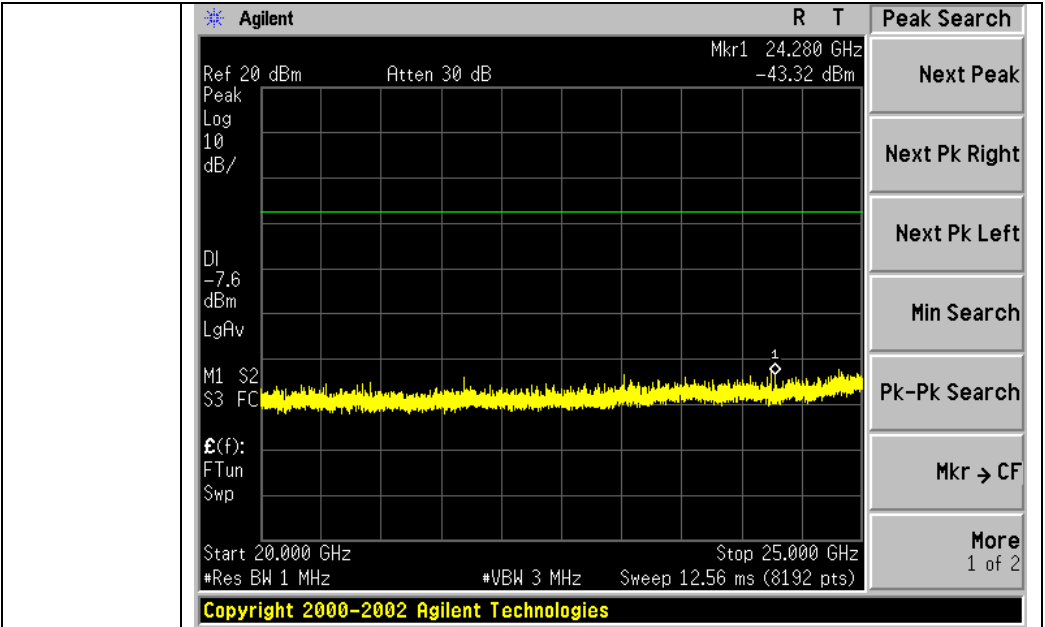
Test Graph

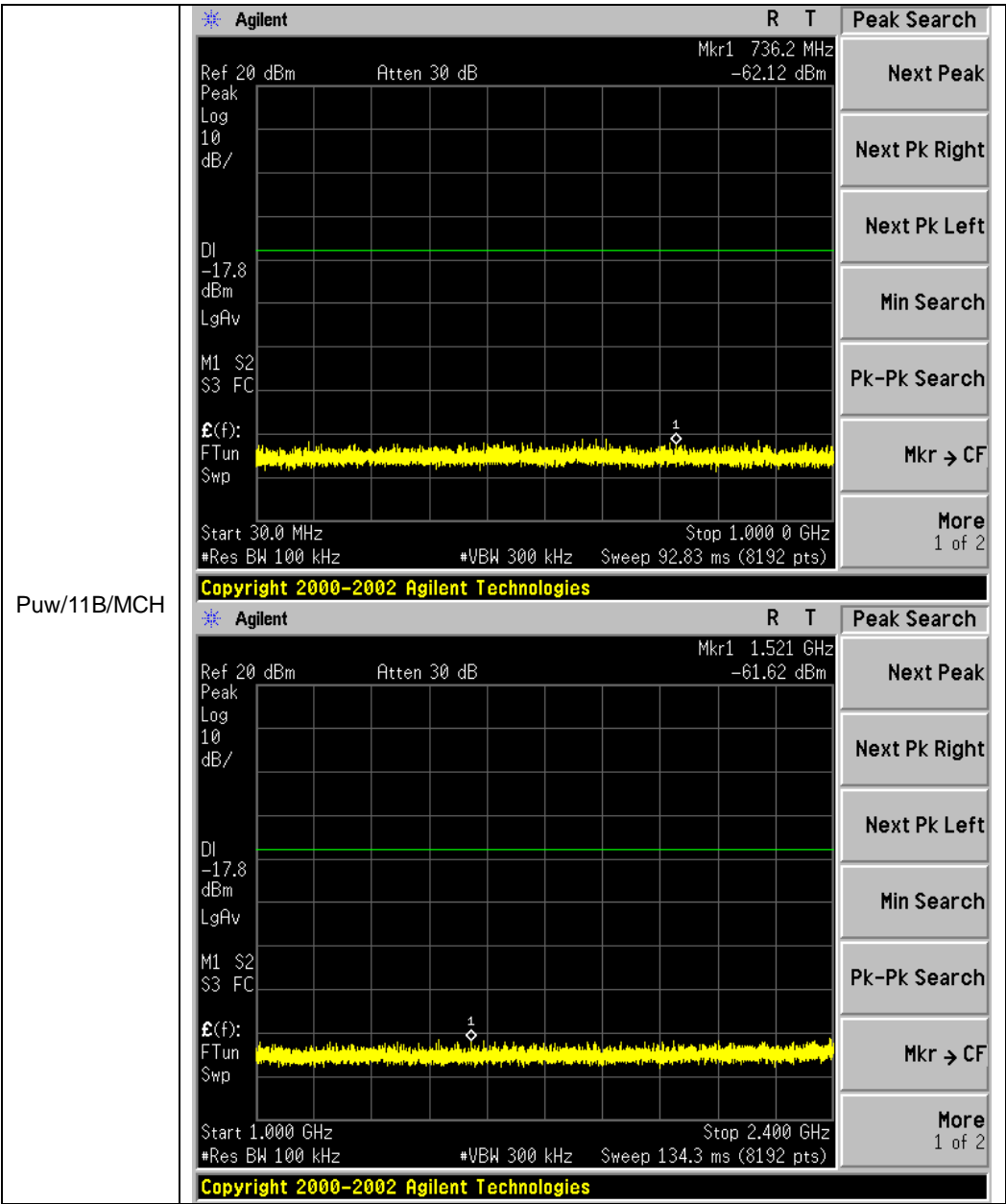


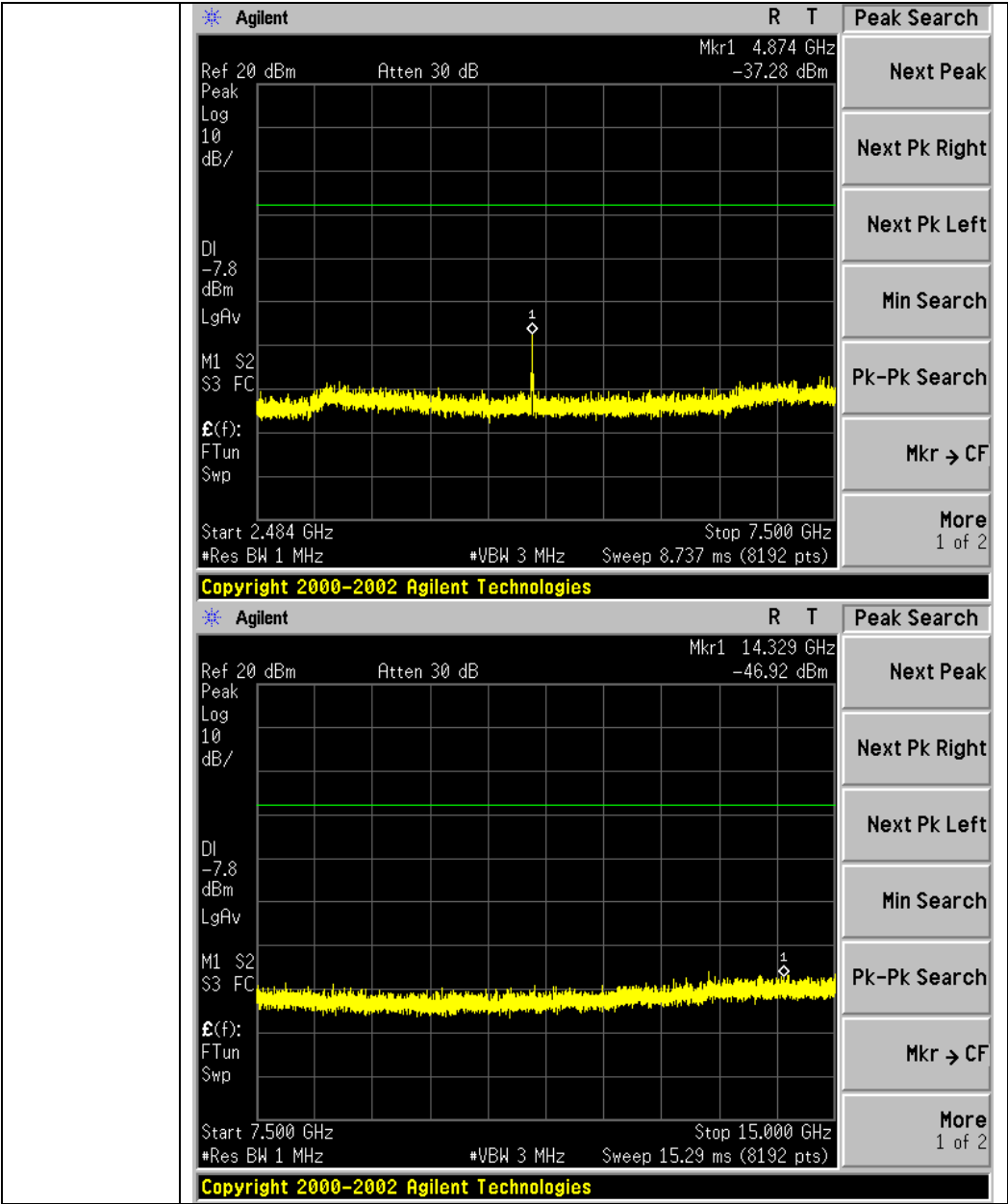


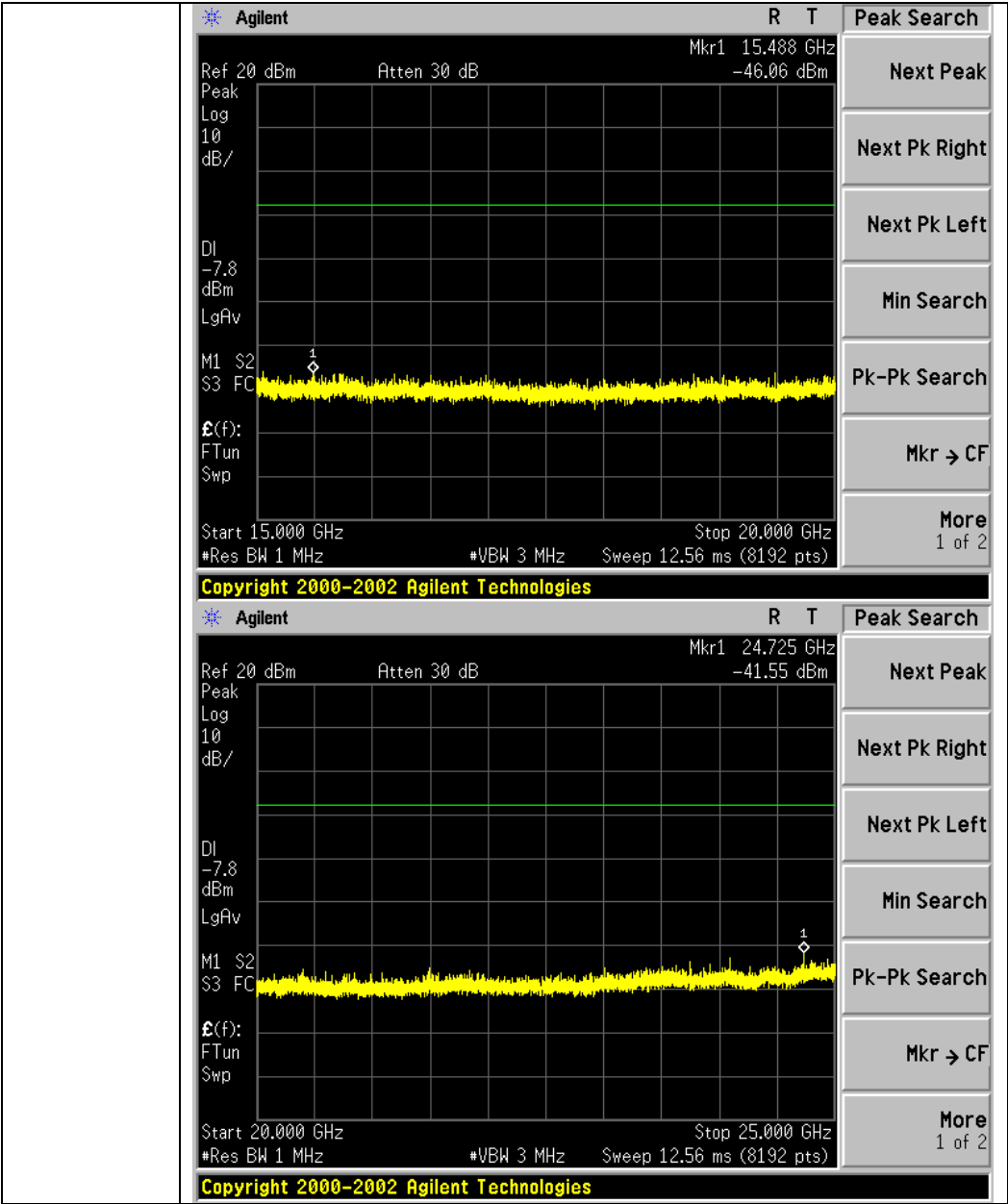


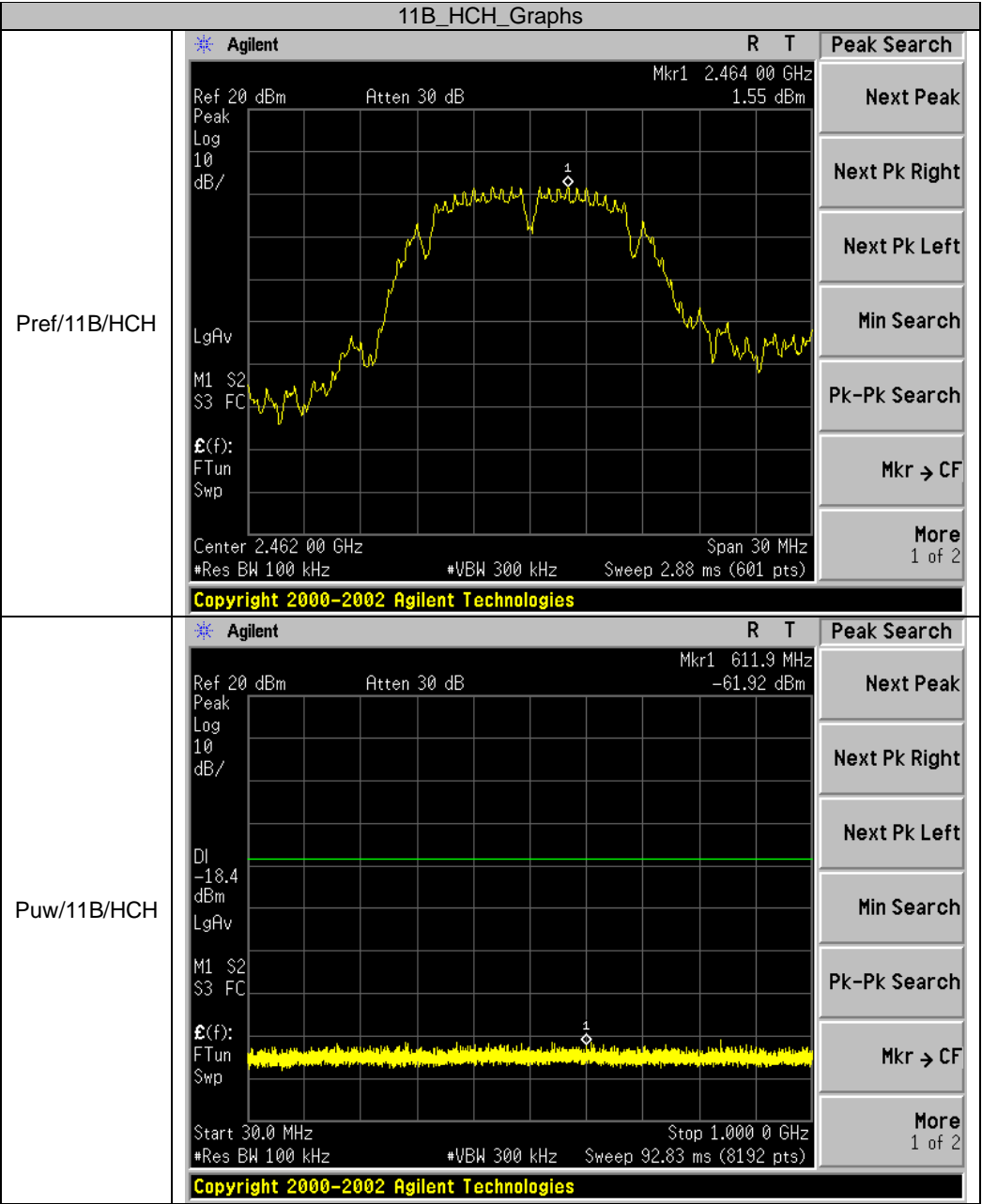


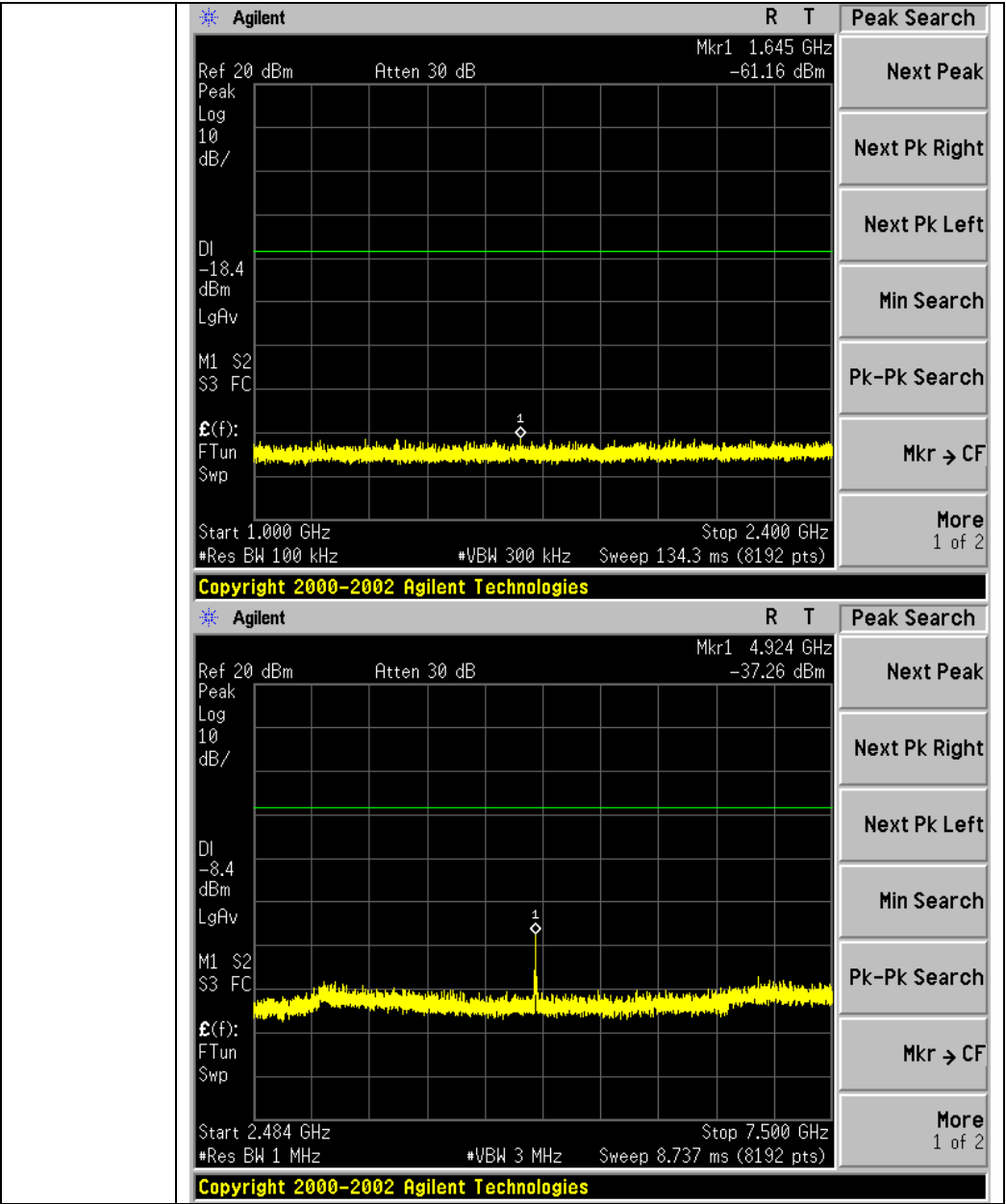


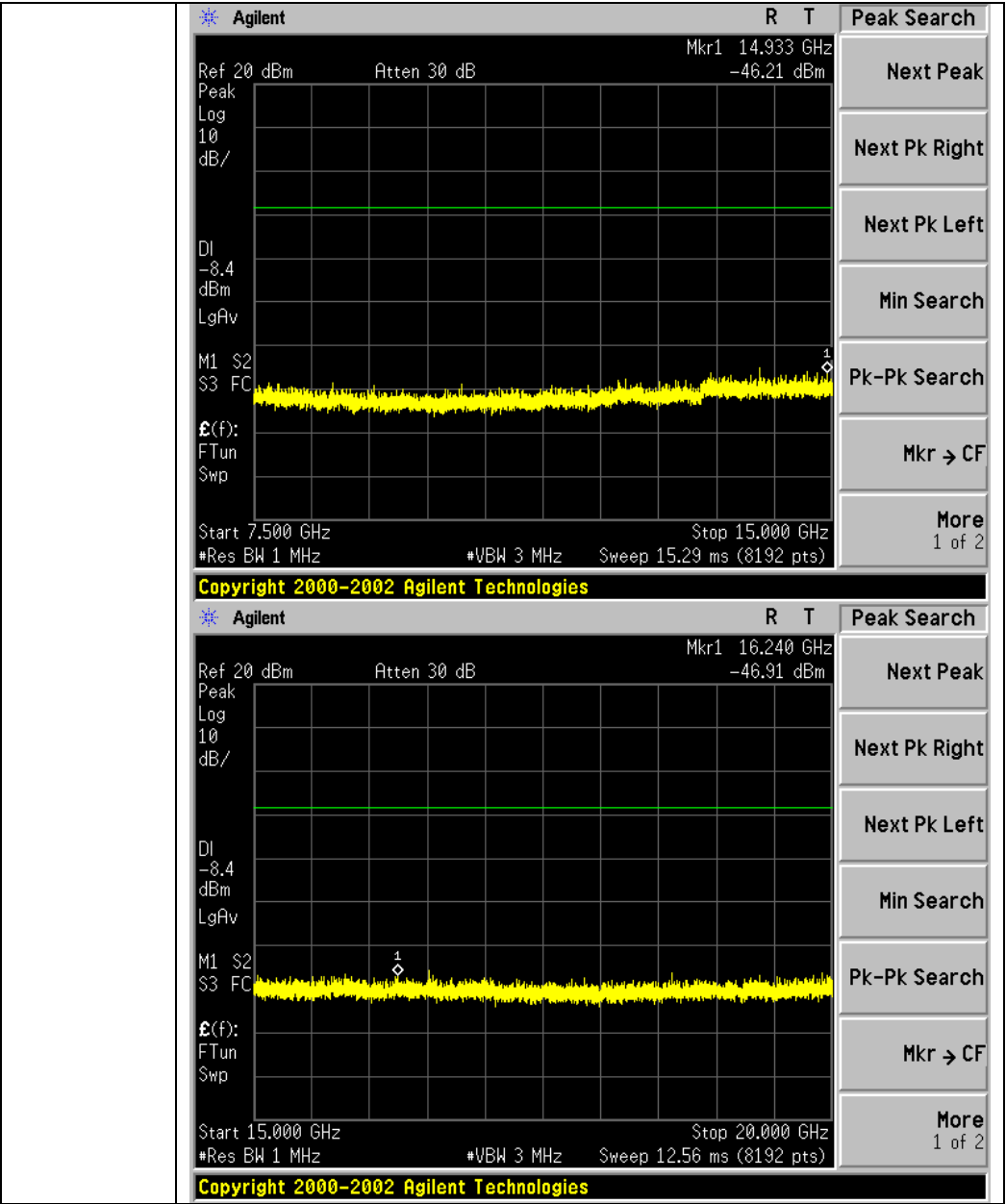




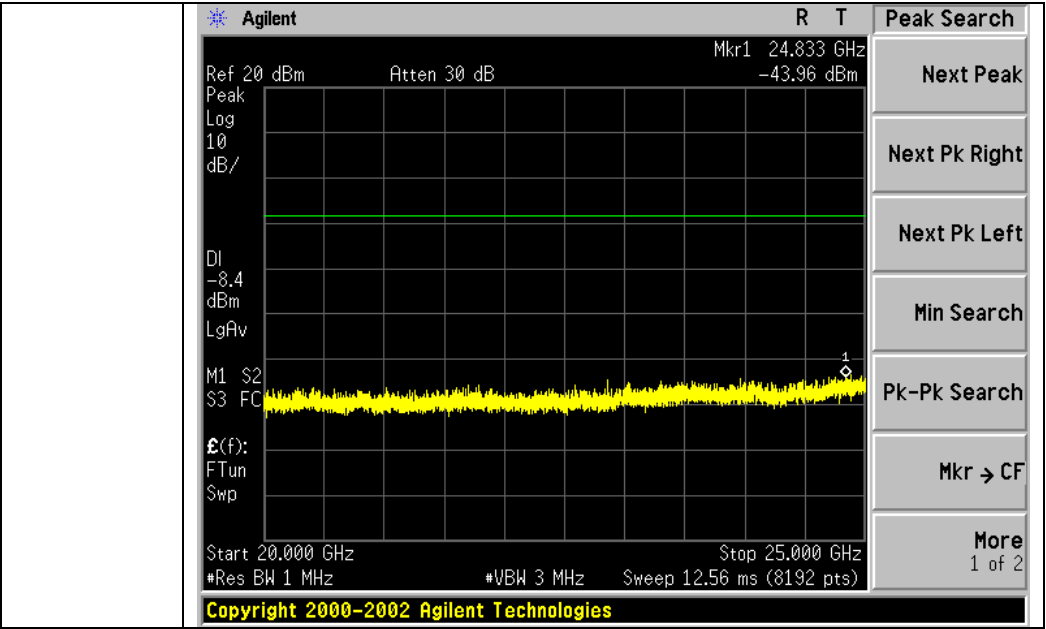


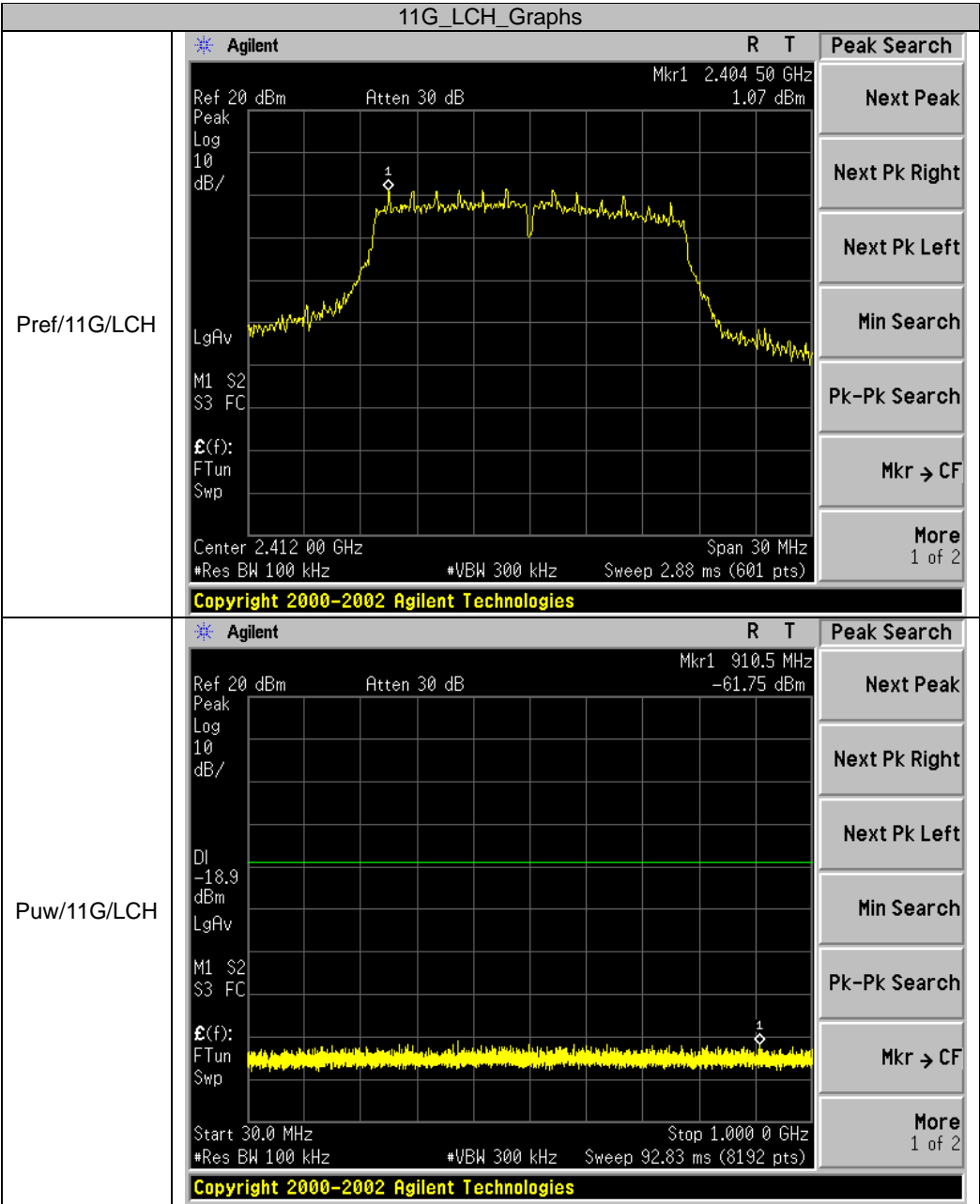


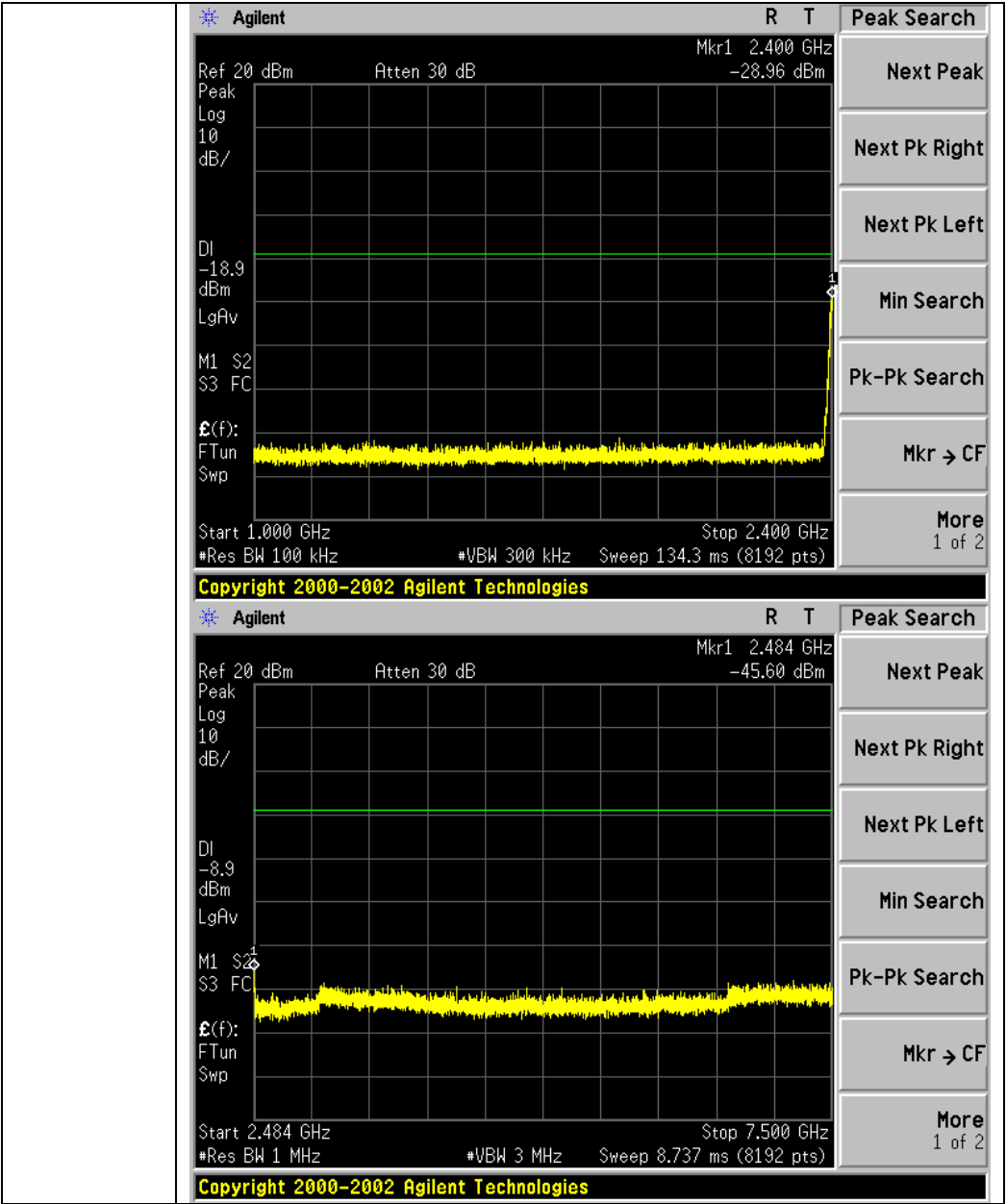


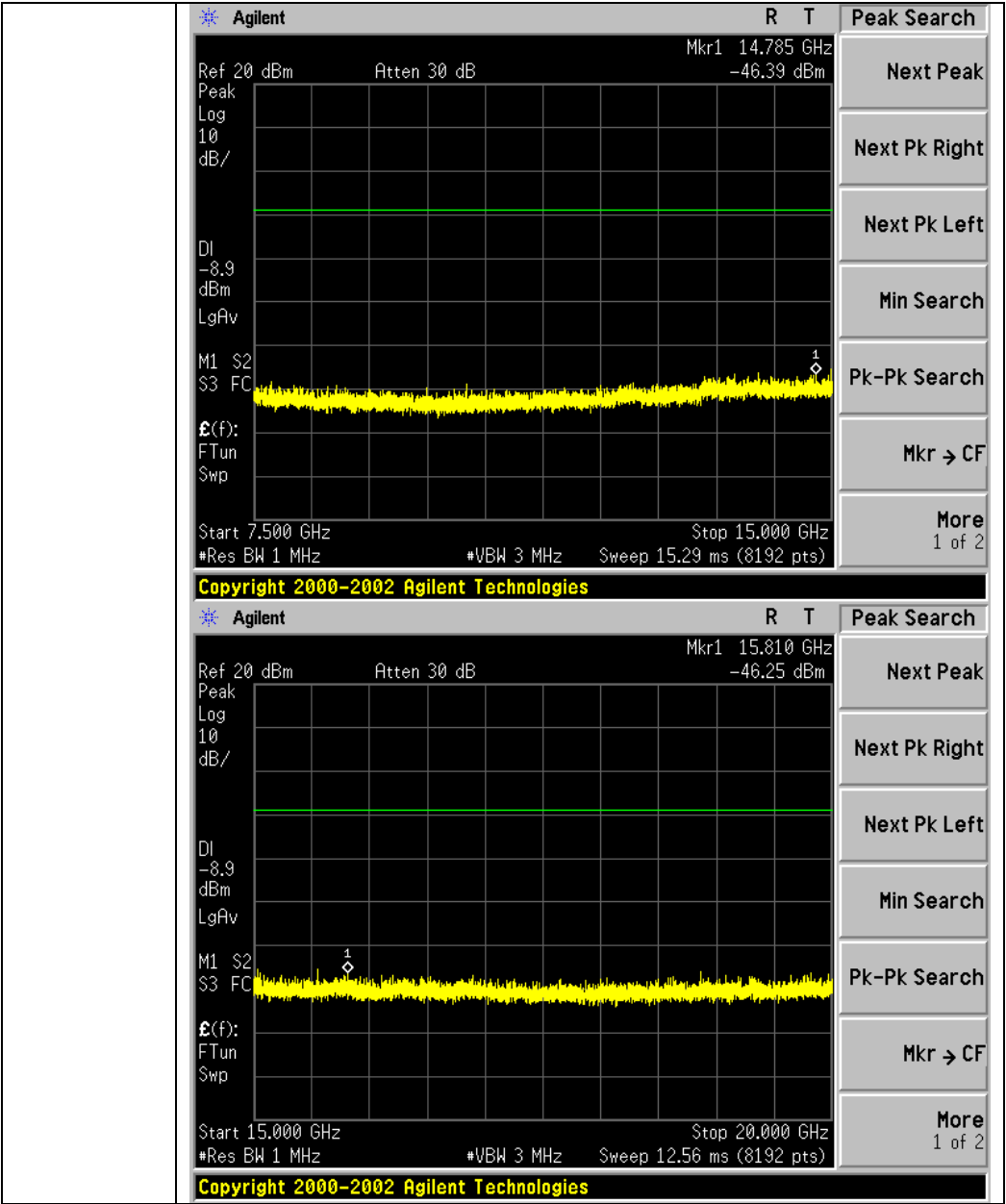


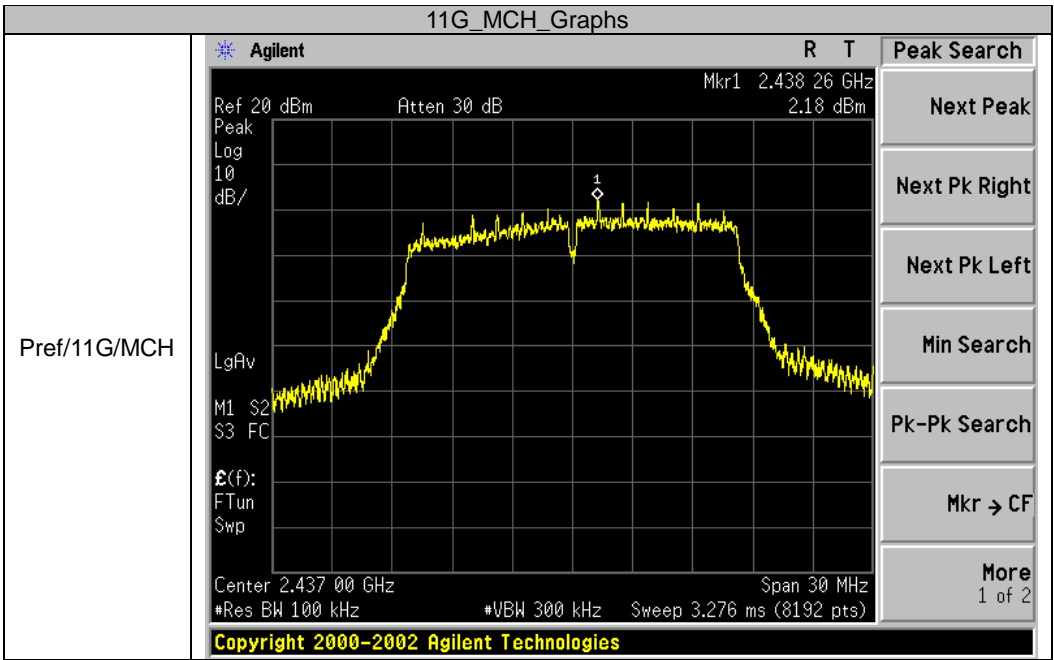
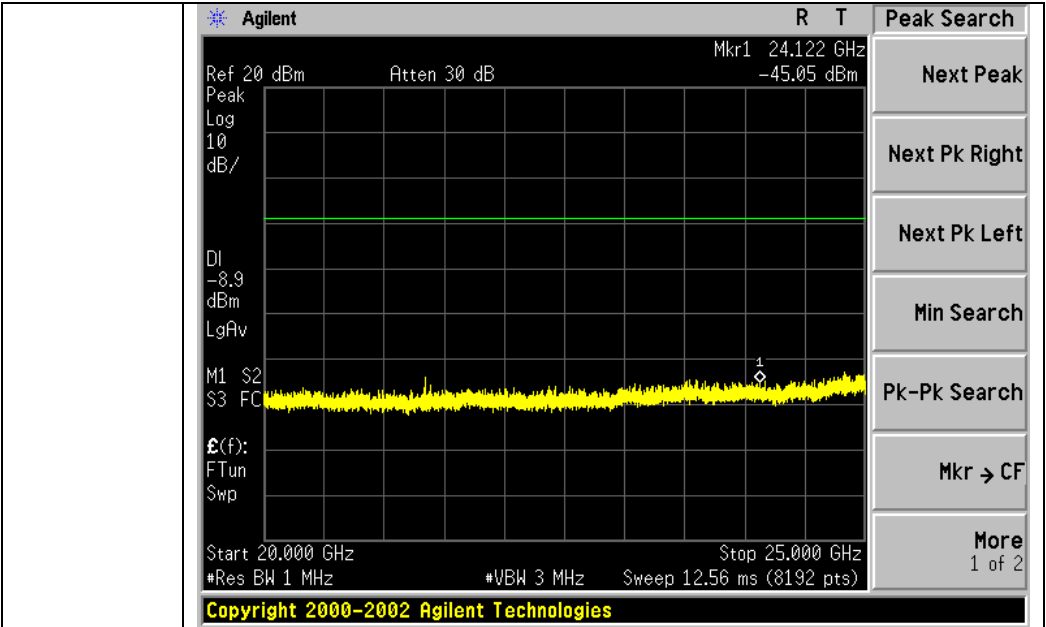


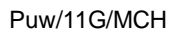


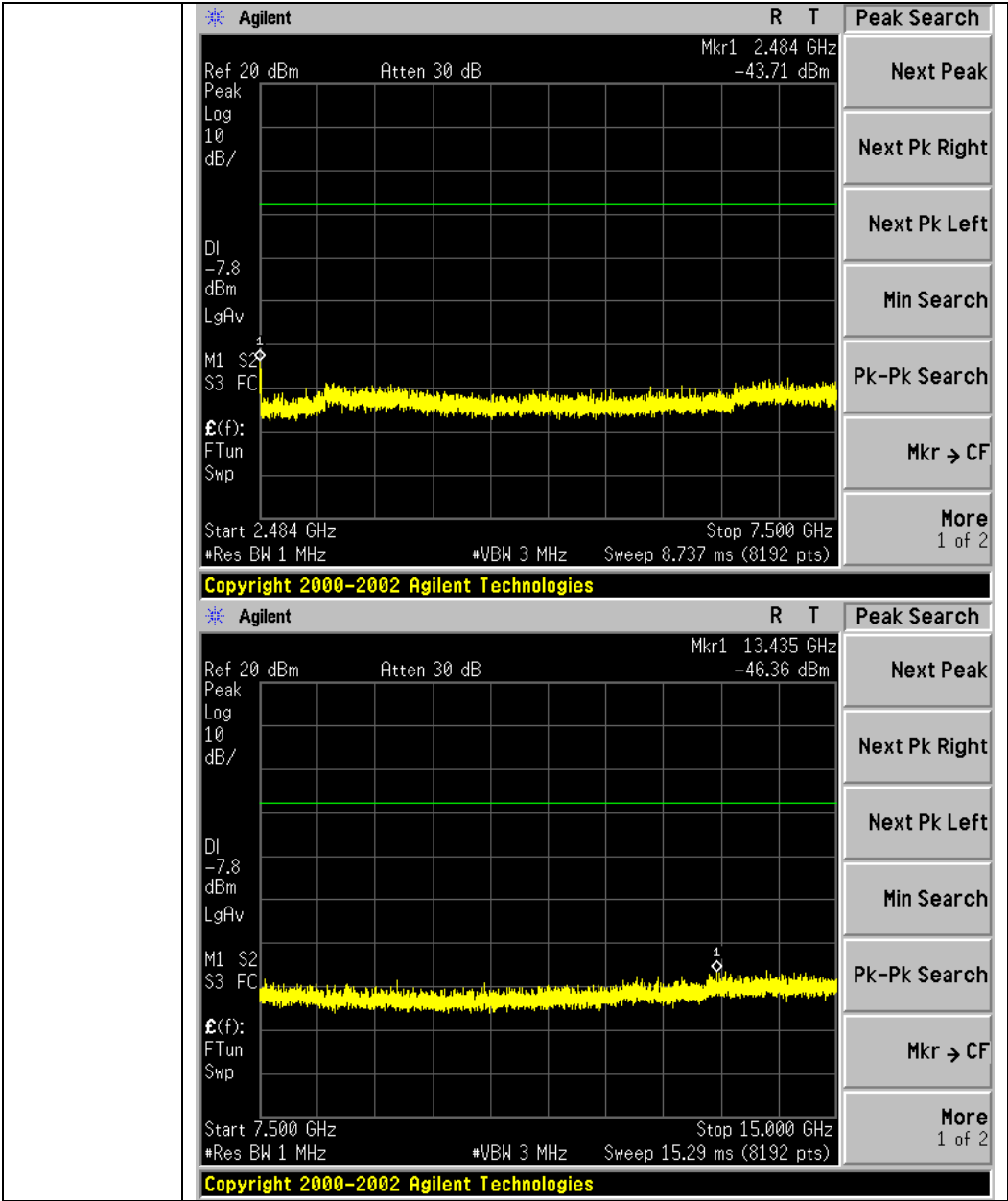


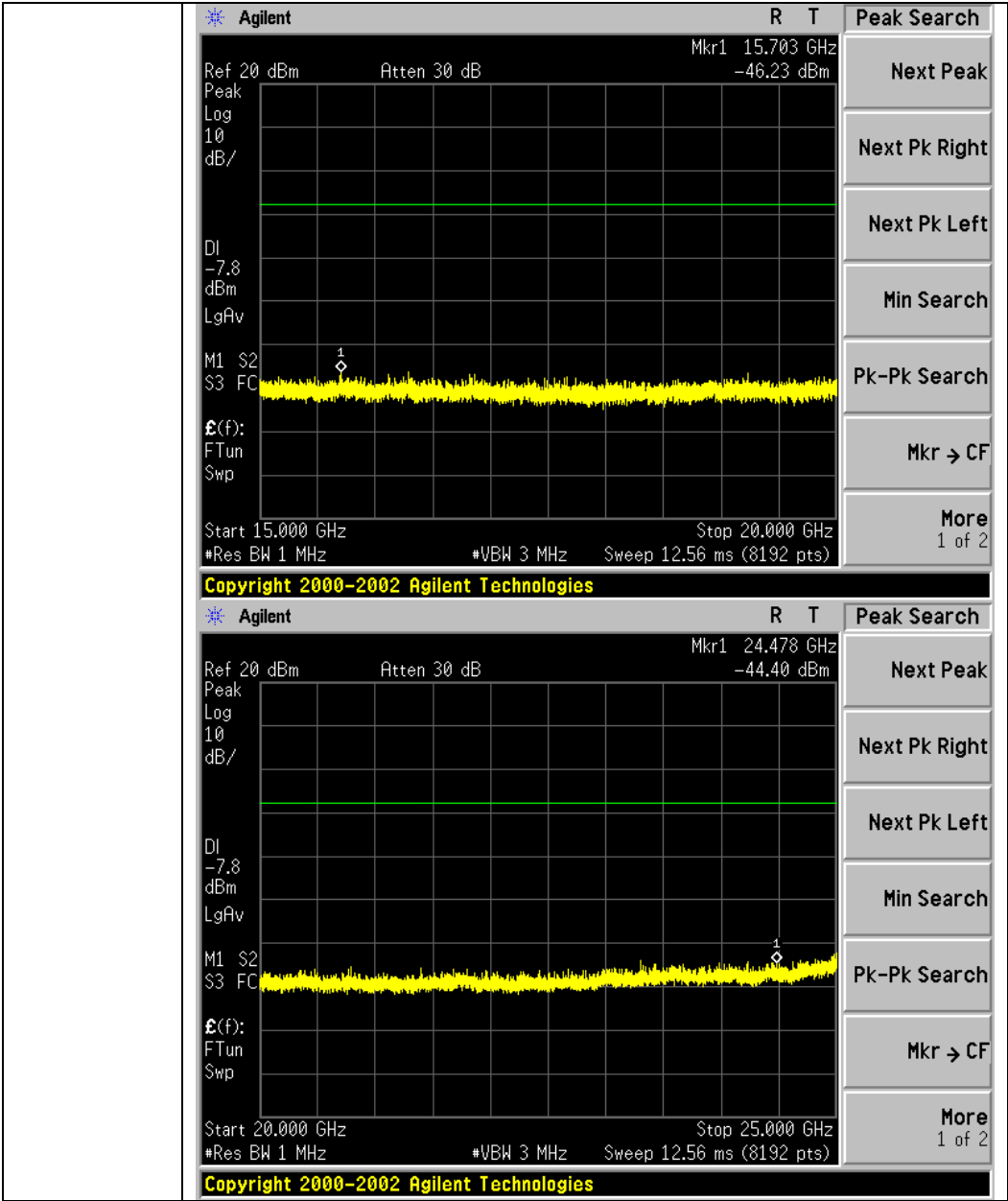




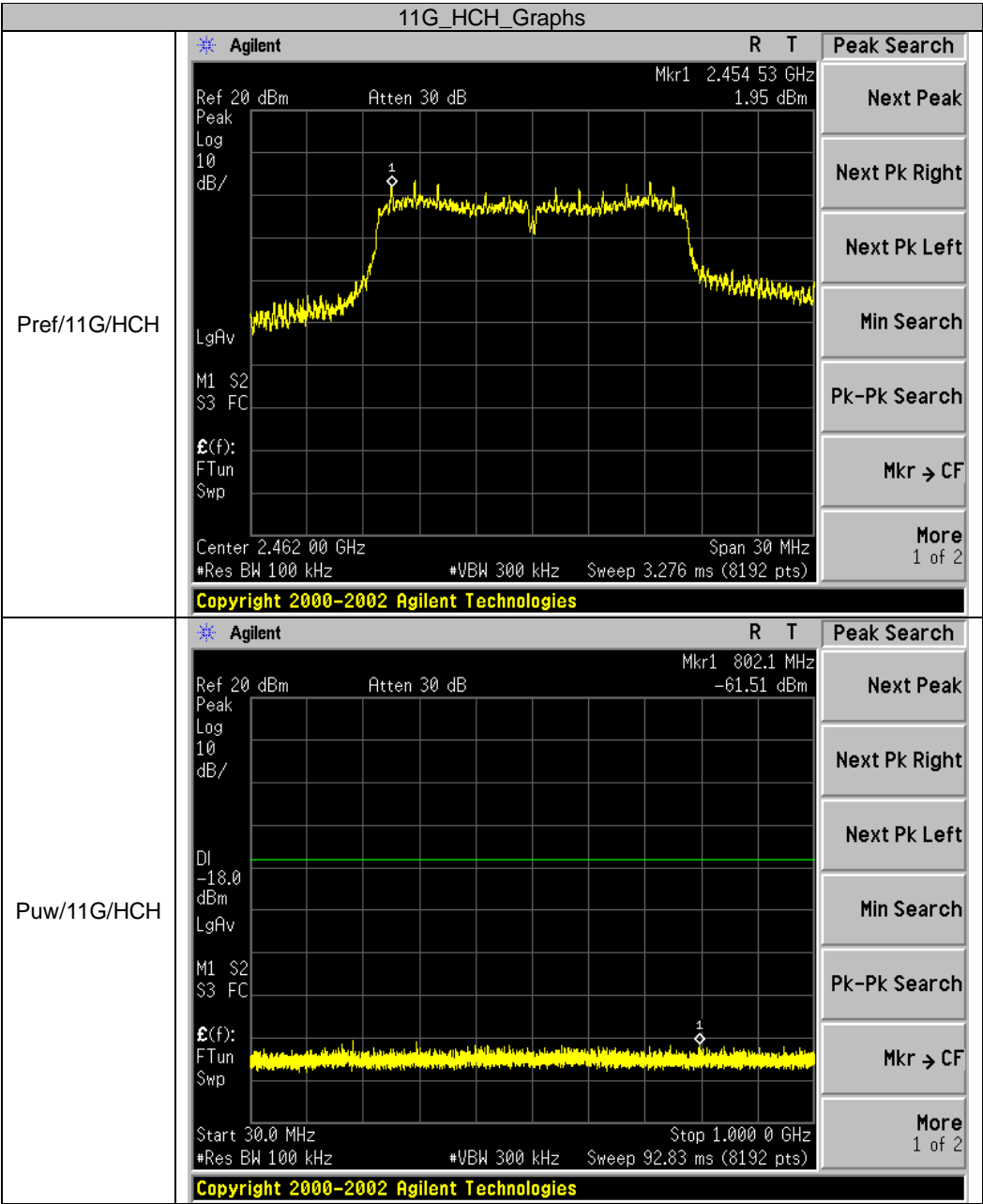


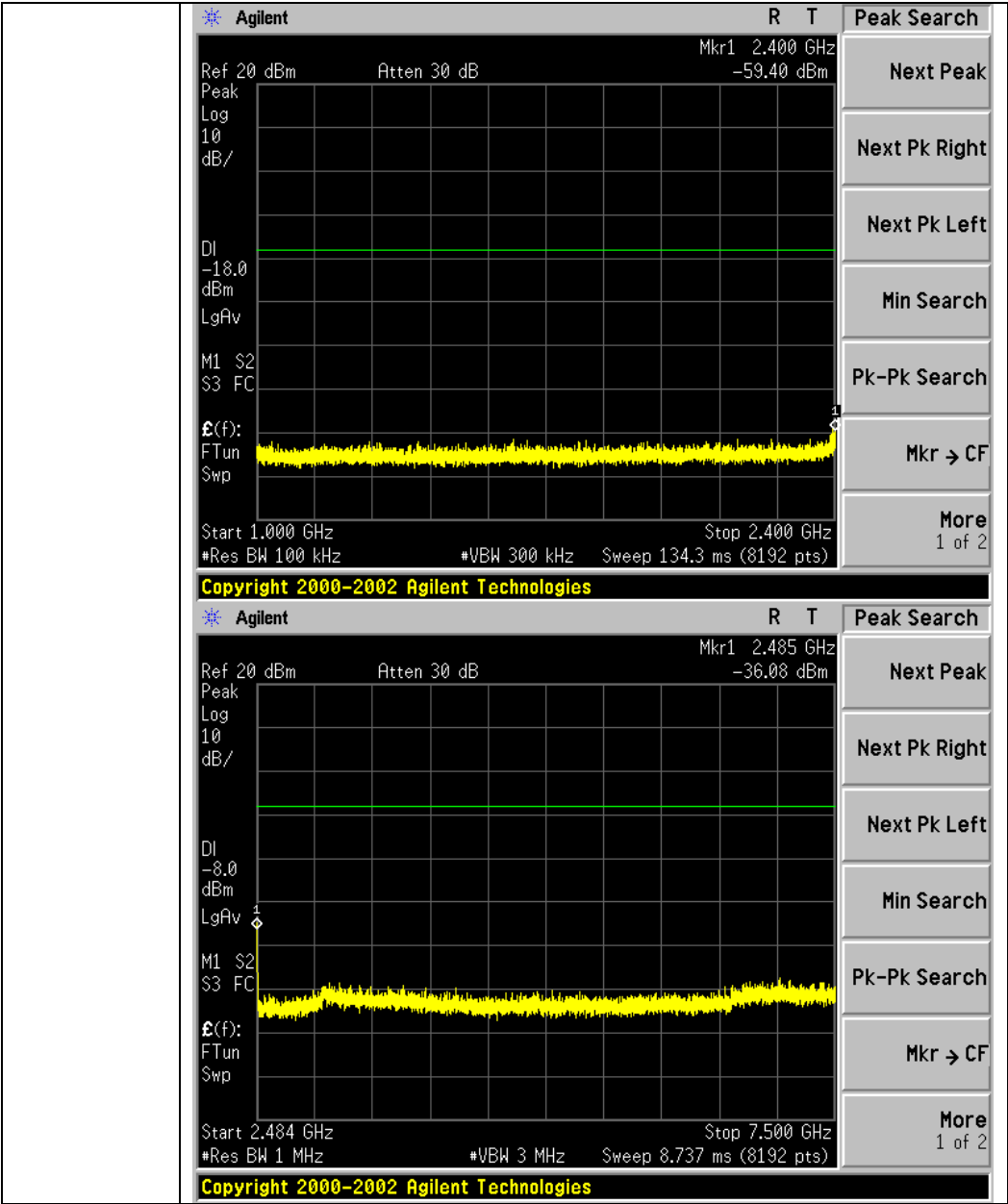


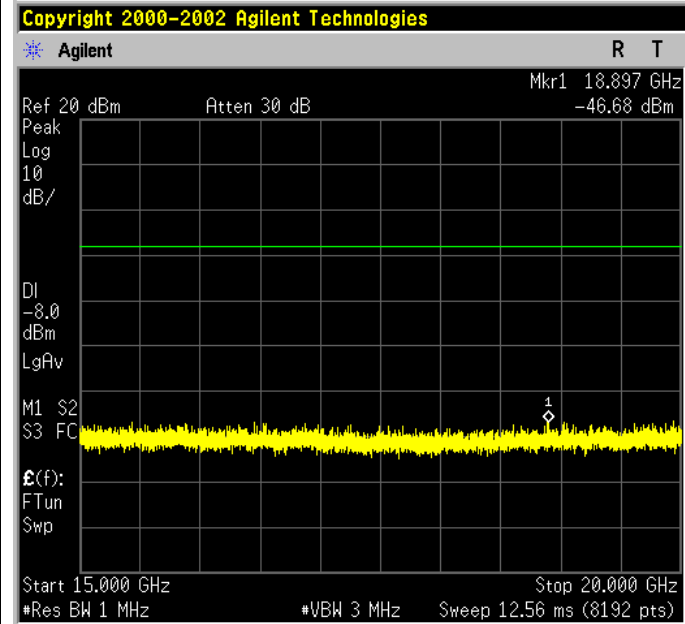
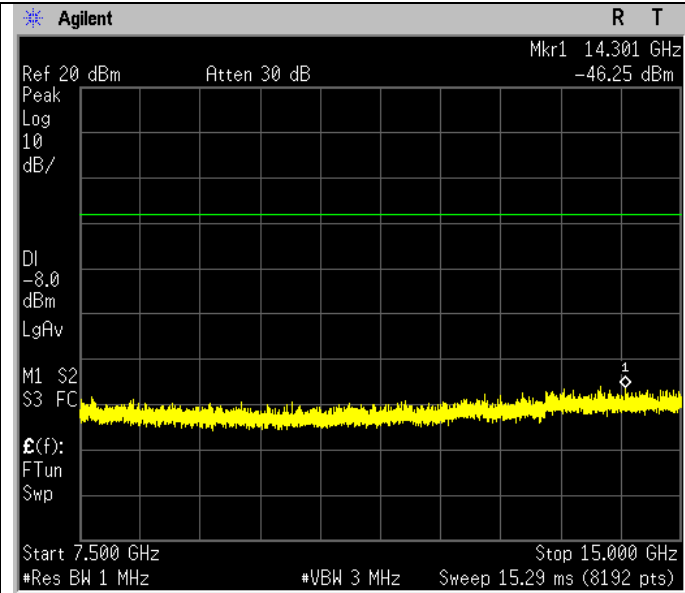
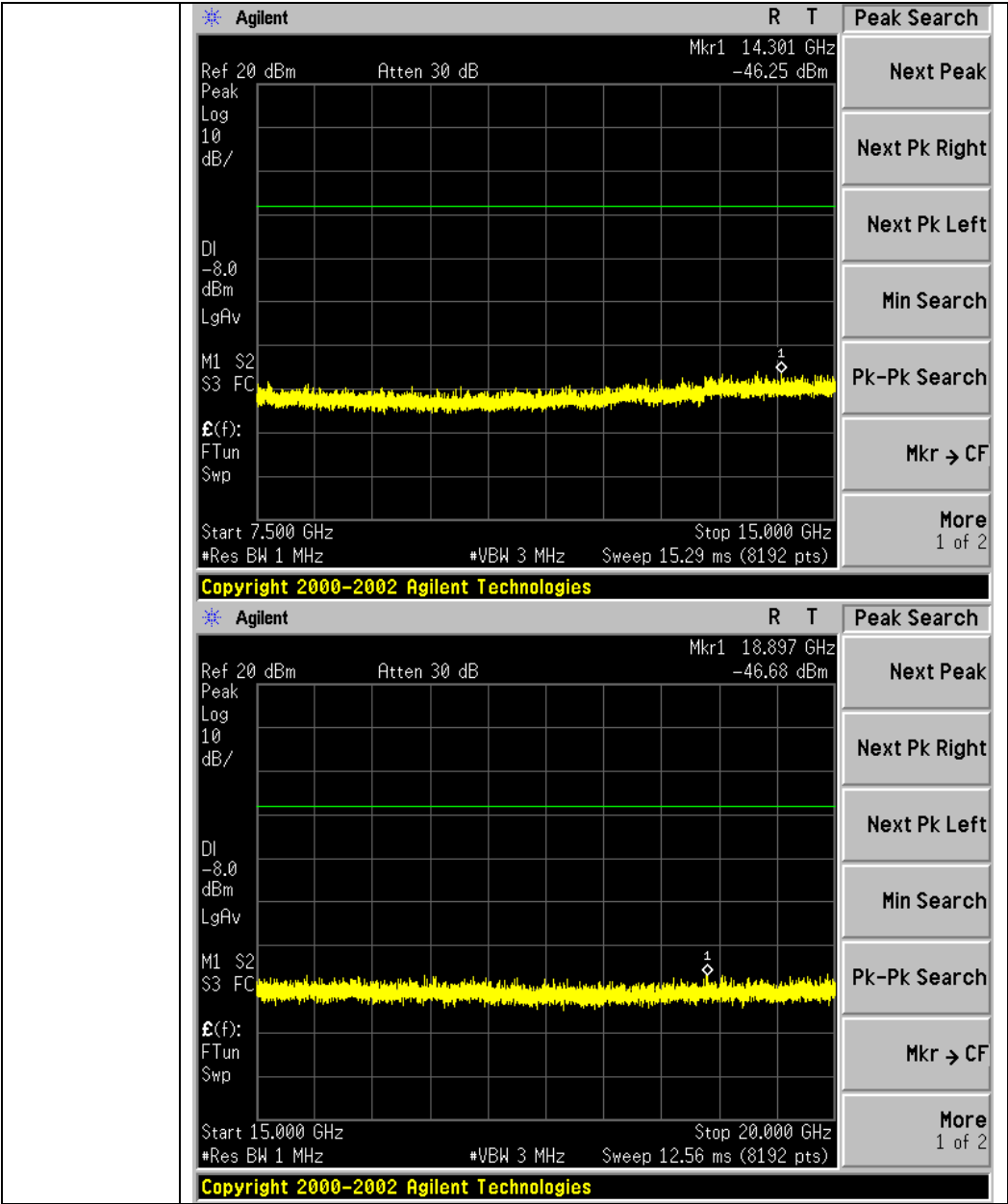












Next Peak

Next Pk Right

Next Pk Left

Min Search

Pk-Pk Search

Mkr → CF

More  
1 of 2

Next Peak

Next Pk Right

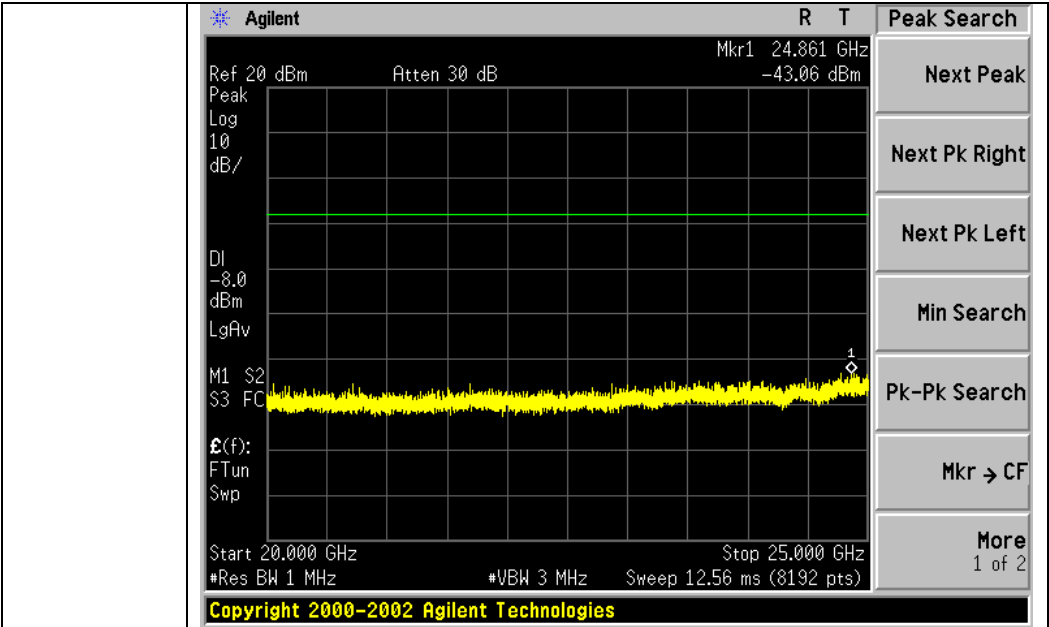
Next Pk Left

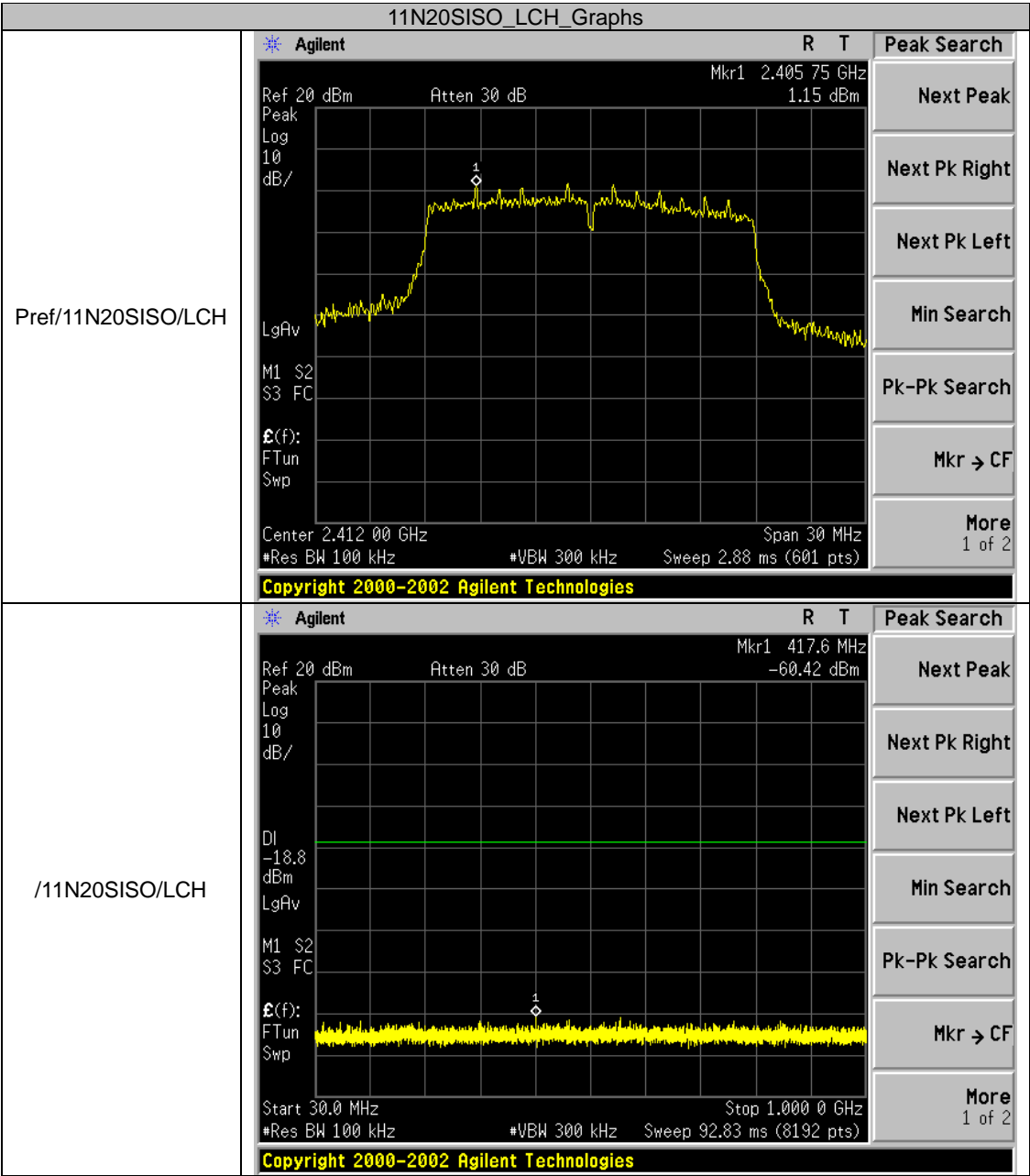
Min Search

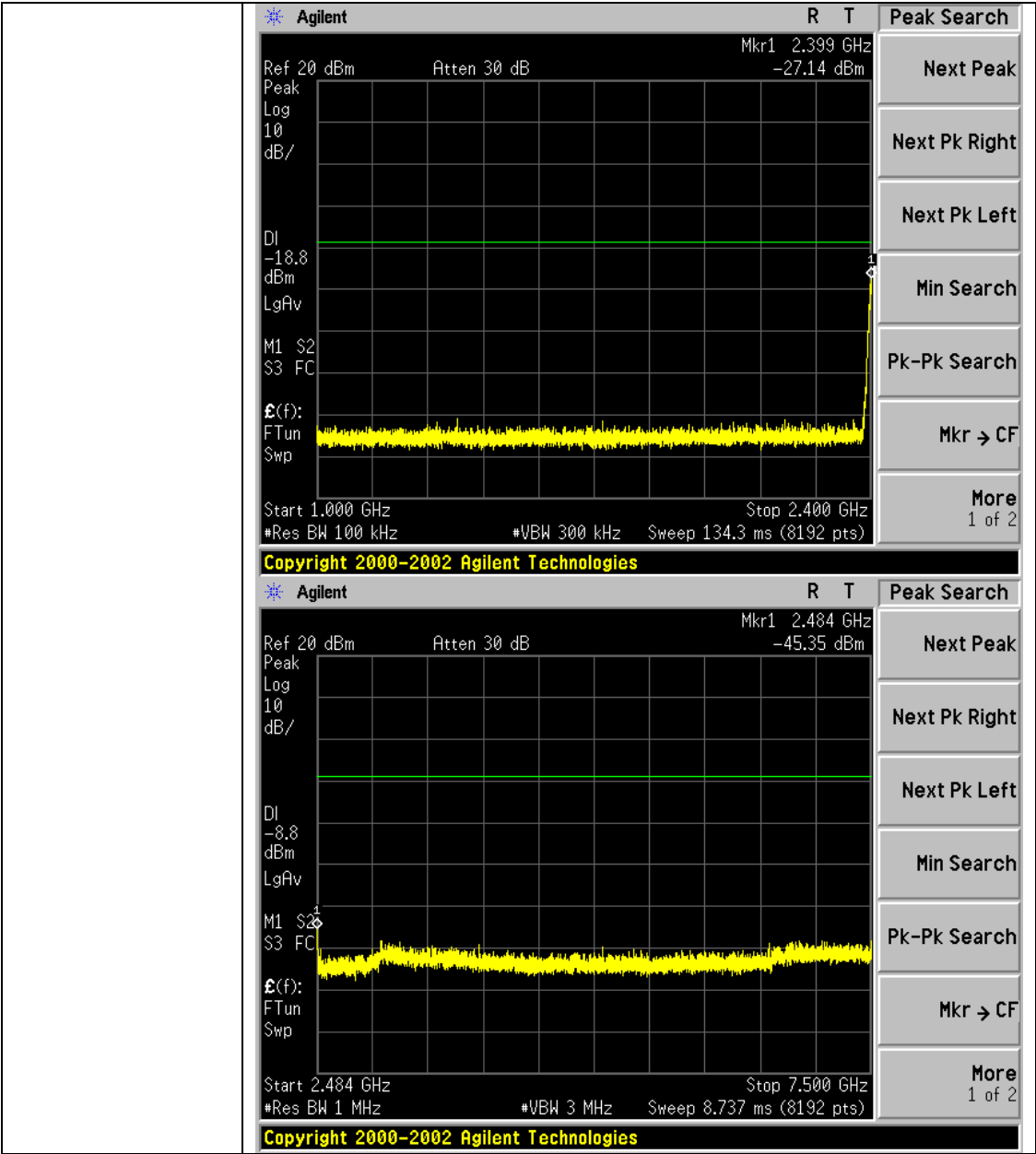
Pk-Pk Search

Mkr → CF

More  
1 of 2







Agilent

R T

Peak Search

Ref 20 dBm

Atten 30 dB

Mkr1 2.484 GHz

-45.35 dBm

Peak

Log

10

dB/

DI

-8.8

dBm

LgAv

M1 S2

S3 FC

$E(f)$ :

FTun

Swp

Start 2.484 GHz

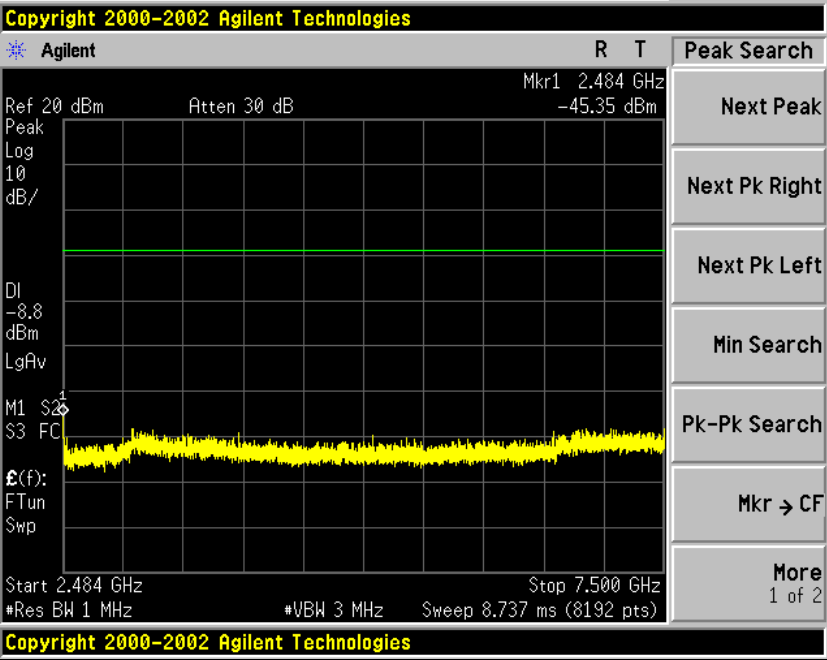
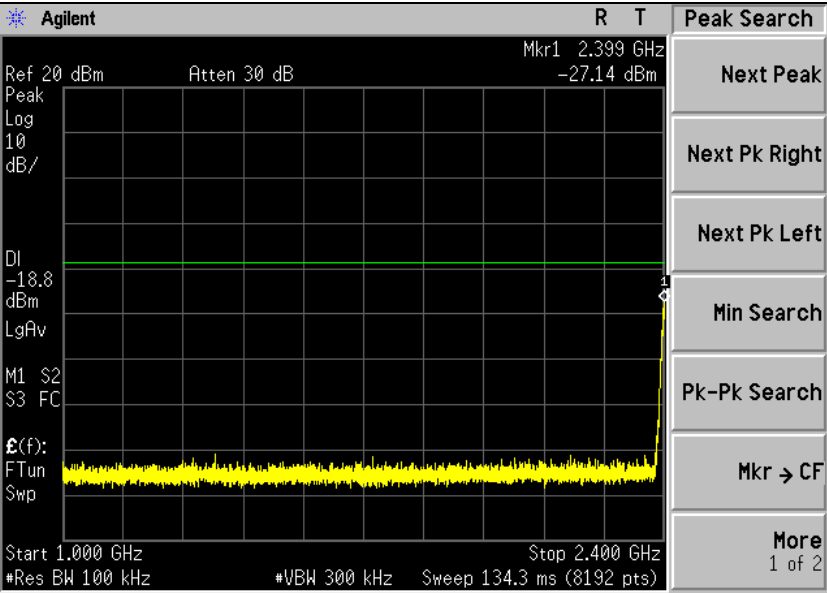
Stop 7.500 GHz

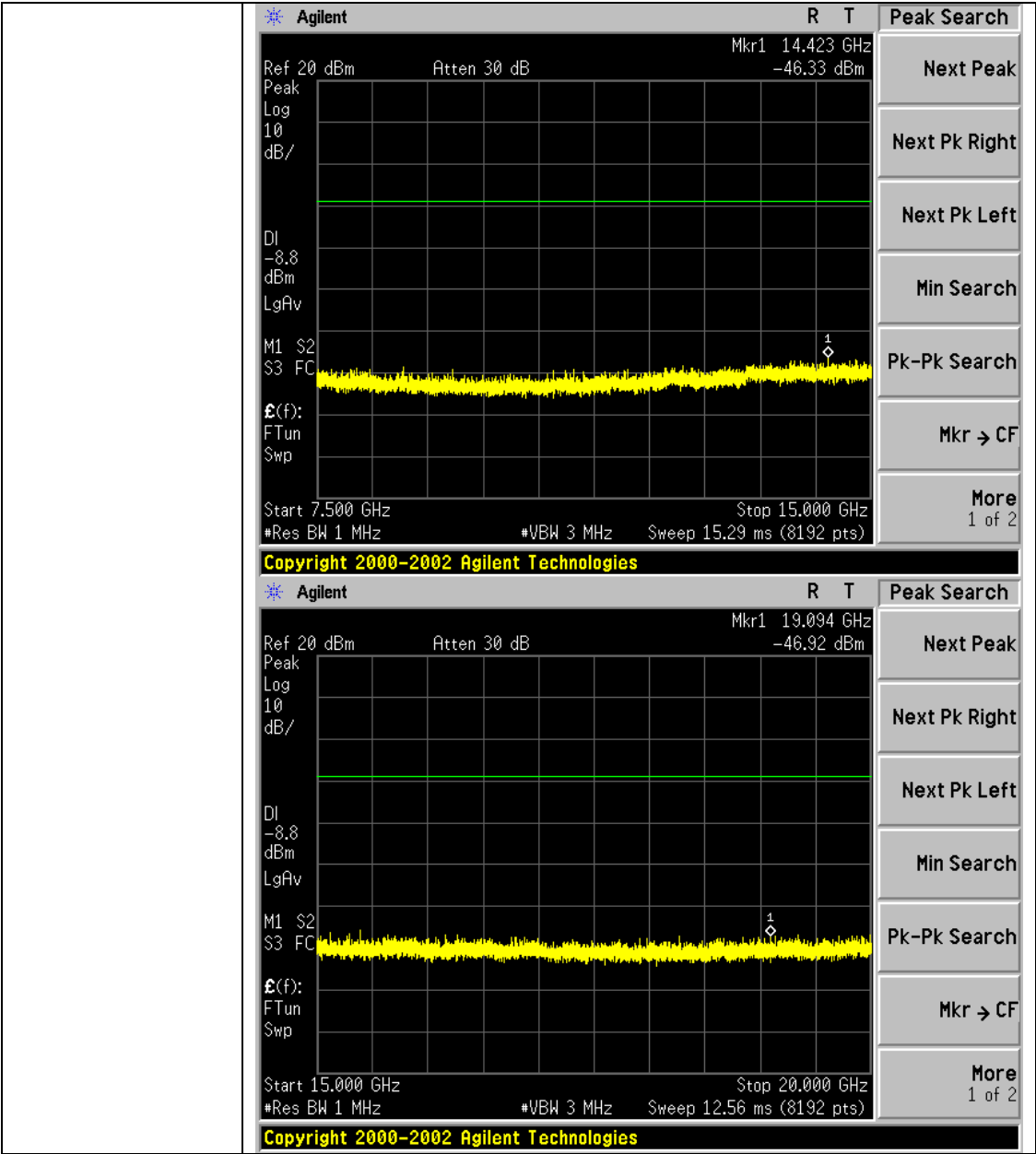
\*Res BW 1 MHz

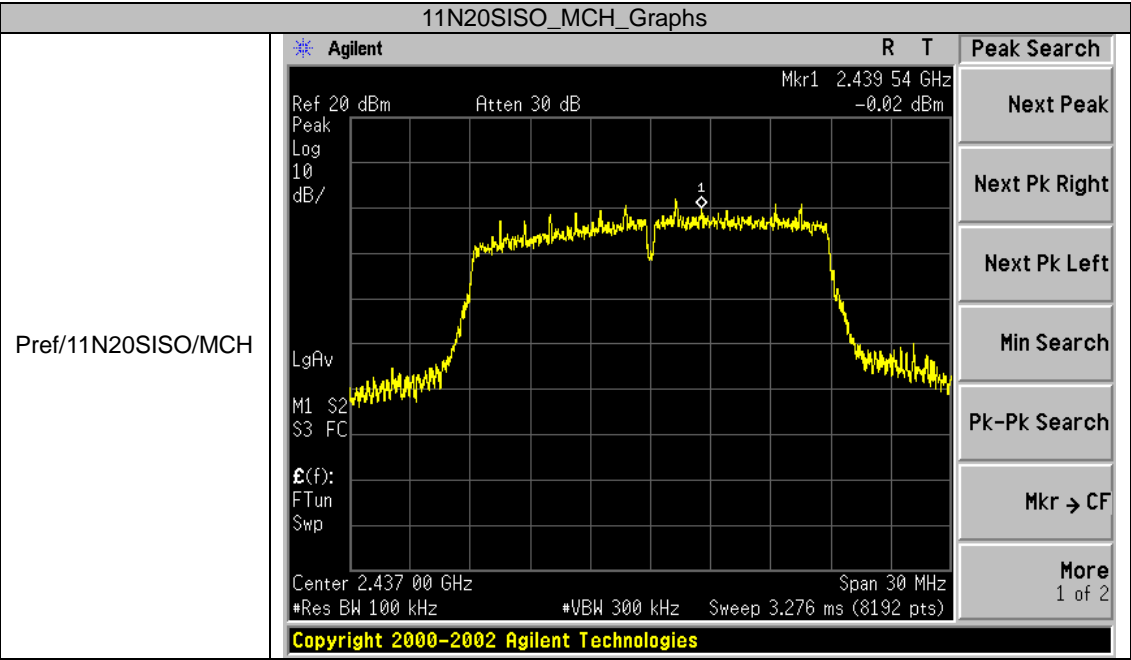
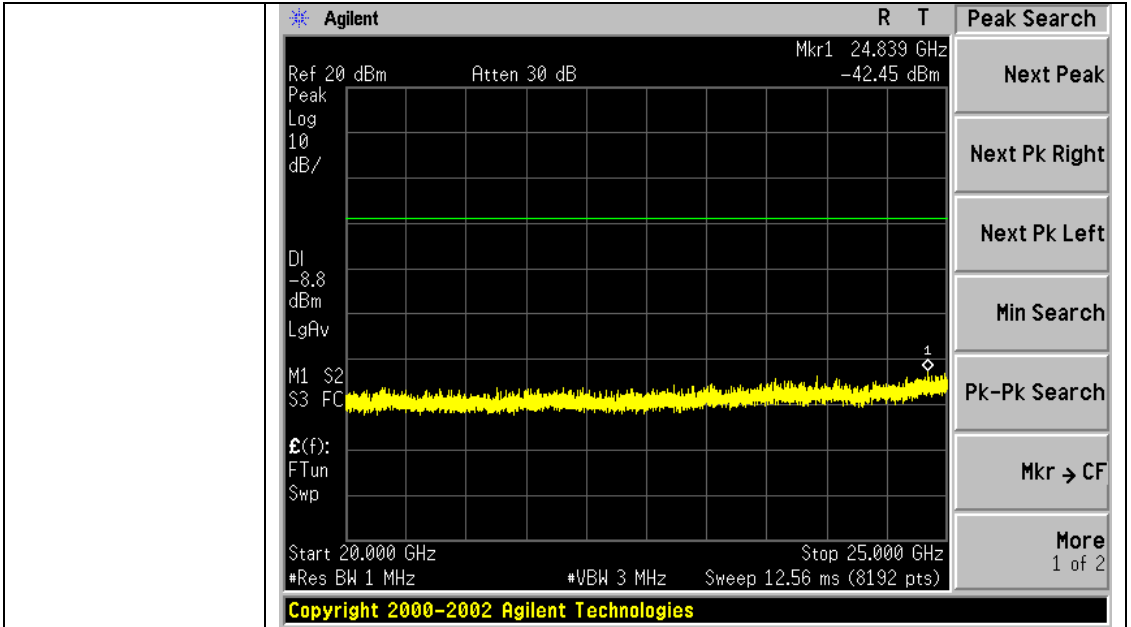
\*VBW 3 MHz

Sweep 8.737 ms (8192 pts)

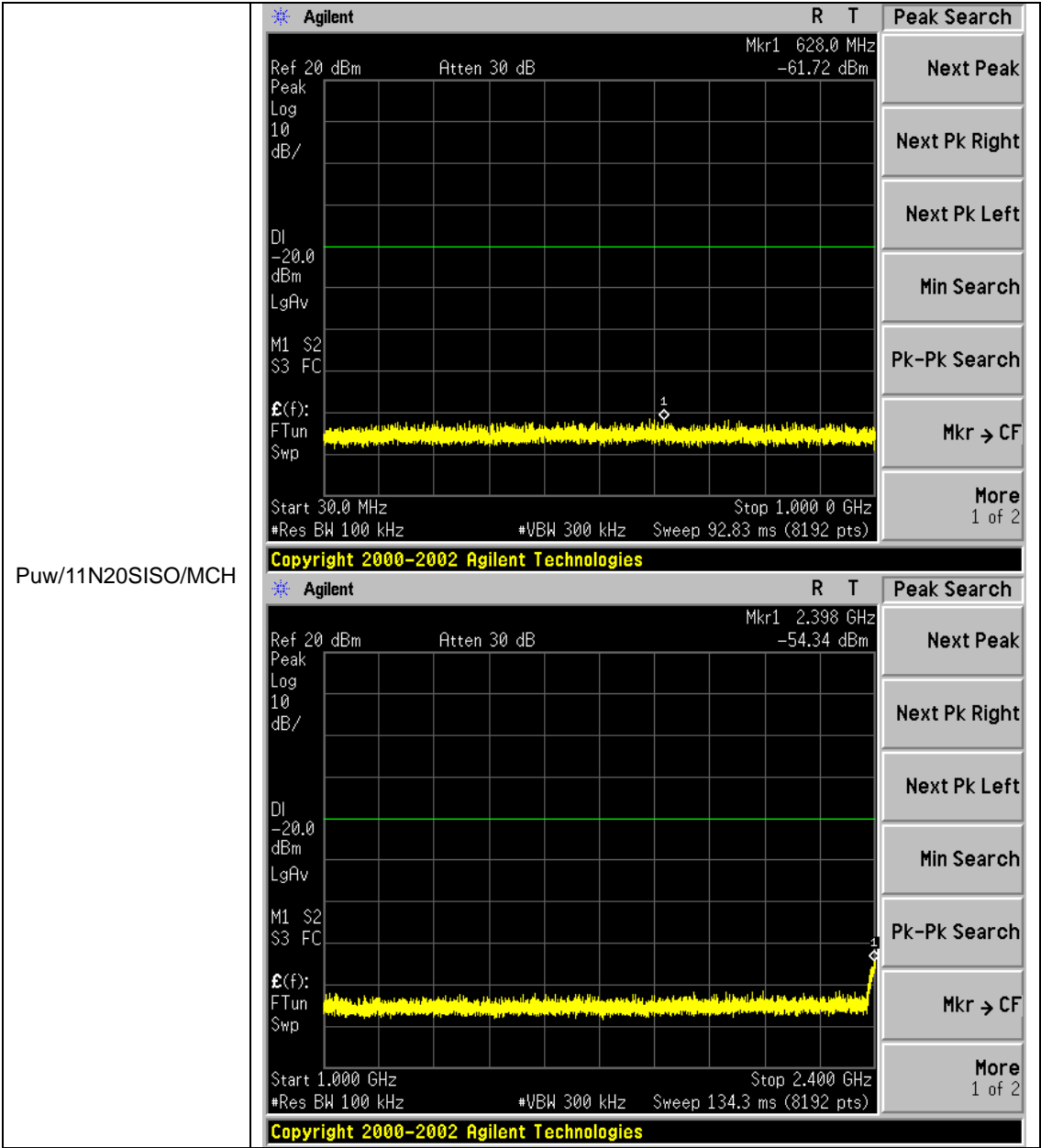
Copyright 2000-2002 Agilent Technologies

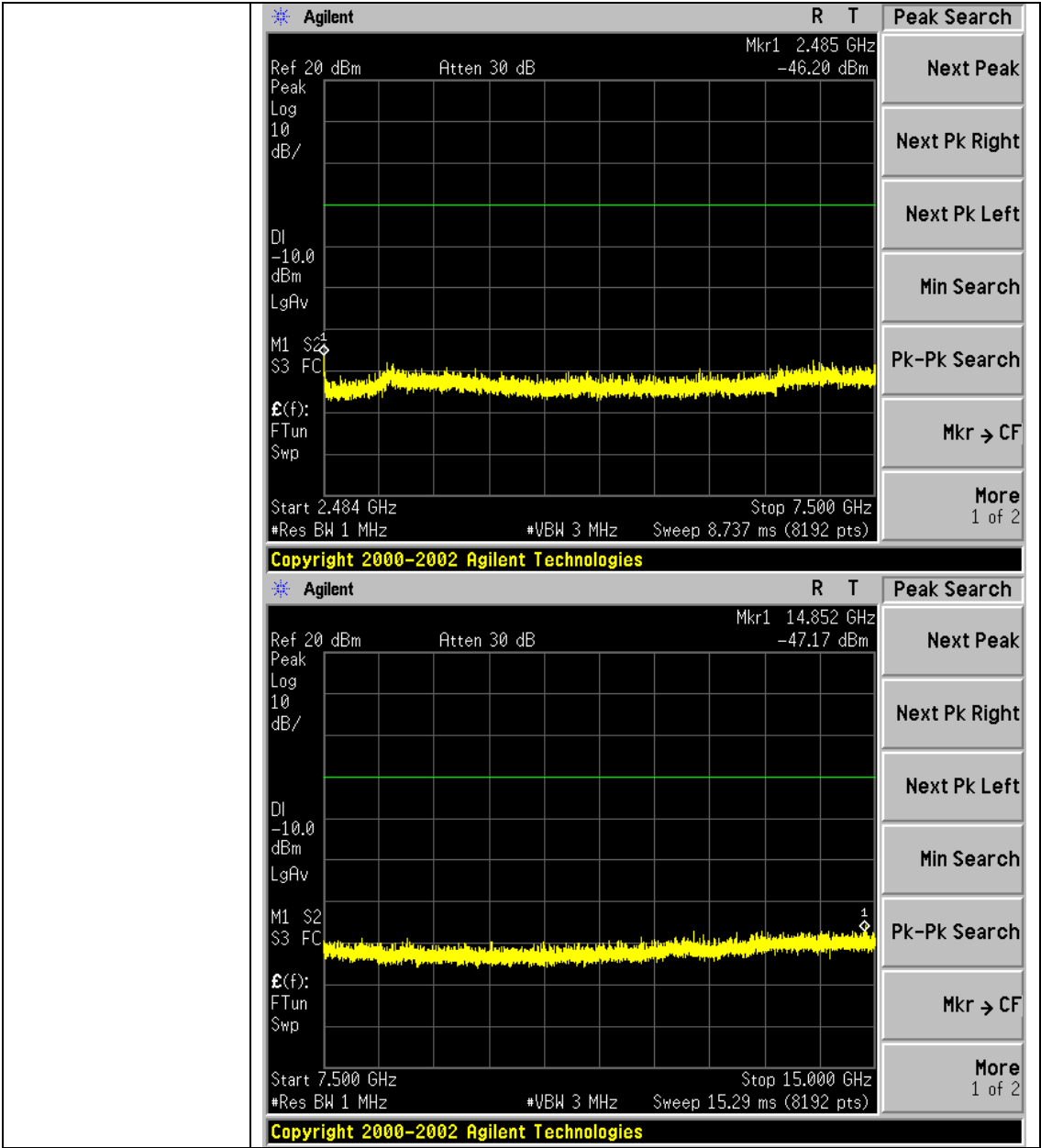












Agilent

R T

Peak Search

Ref 20 dBm

Atten 30 dB

Mkr1 14.852 GHz

-47.17 dBm

Peak

Log

10

dB/

DI

-10.0

dBm

LgAv

M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp

Start 7.500 GHz

Stop 15.000 GHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 15.29 ms (8192 pts)

Copyright 2000-2002 Agilent Technologies

Next Peak

Next Pk Right

Next Pk Left

Min Search

Pk-Pk Search

Mkr → CF

More  
1 of 2

Next Peak

Next Pk Right

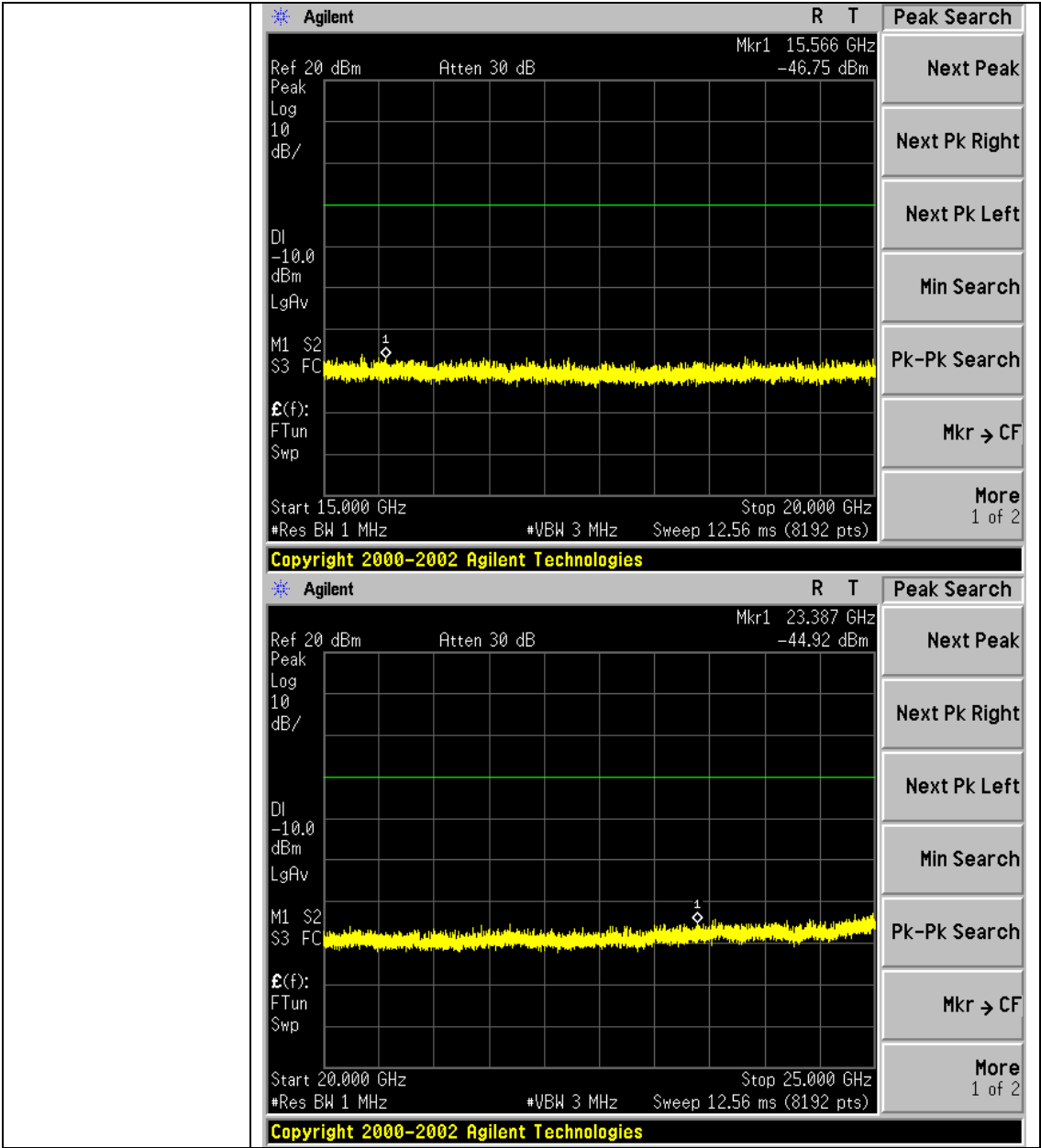
Next Pk Left

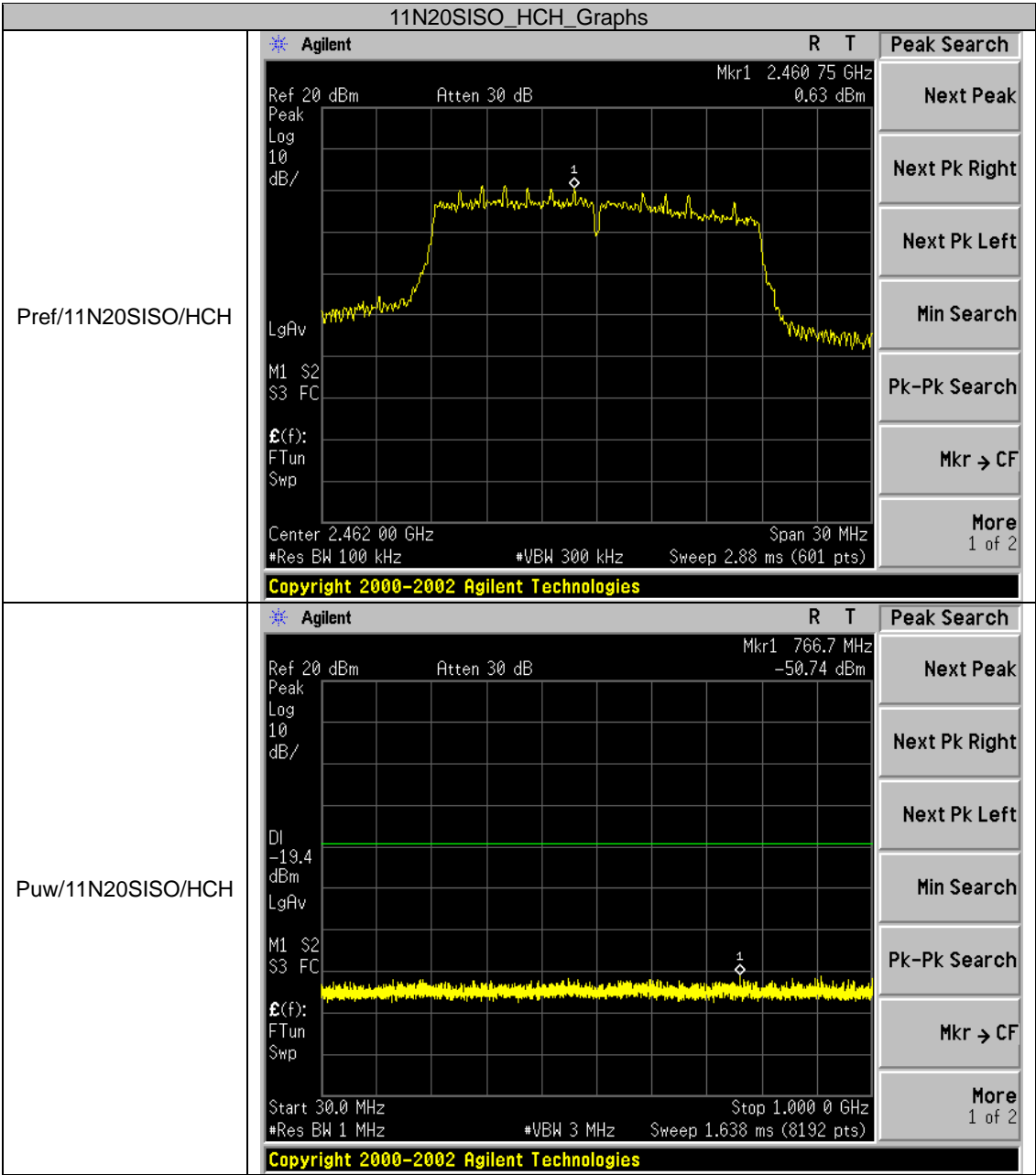
Min Search

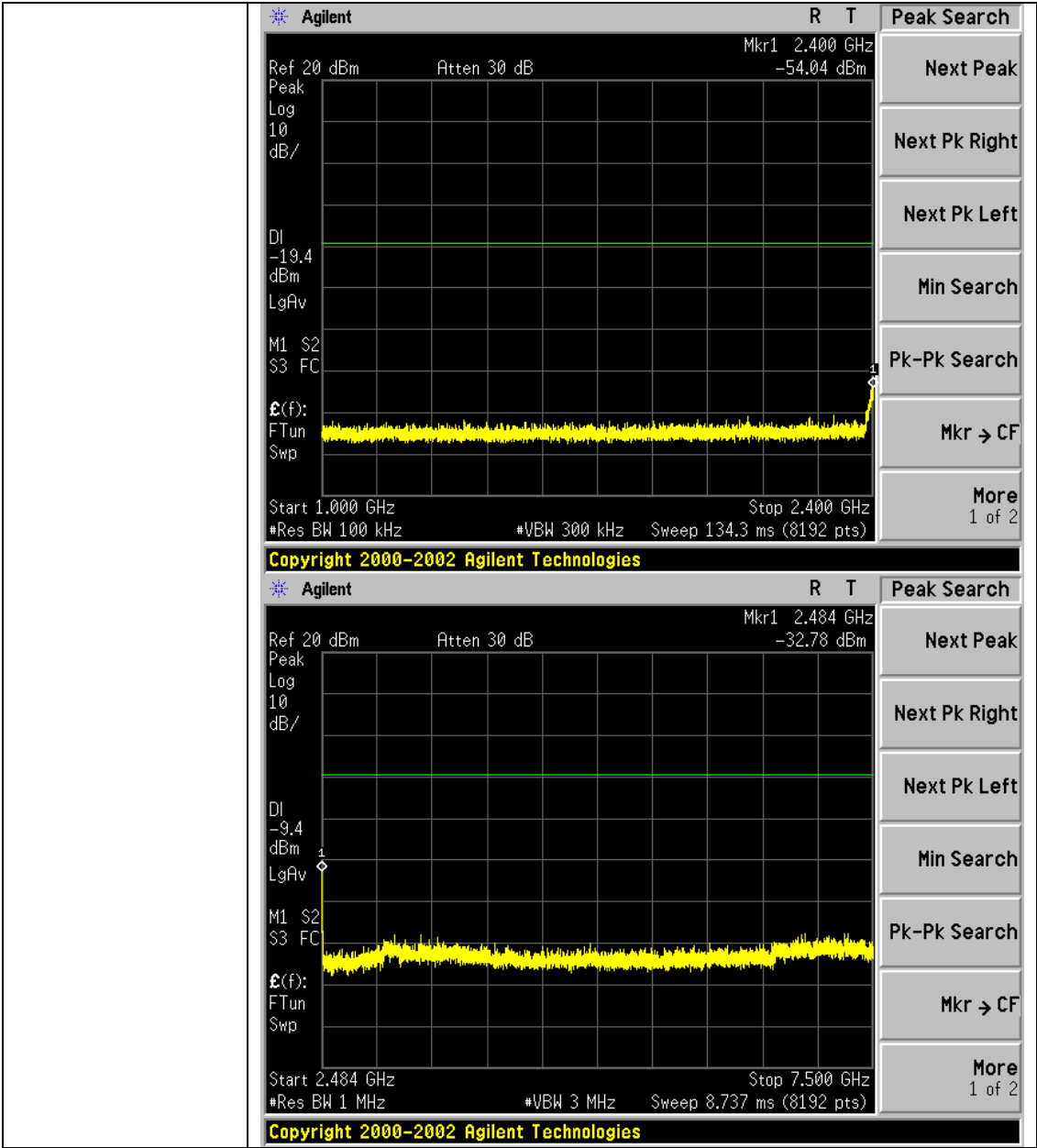
Pk-Pk Search

Mkr → CF

More  
1 of 2







Agilent

R T

Peak Search

Ref 20 dBm

Atten 30 dB

Mkr1 2.484 GHz

-32.78 dBm

Peak

Log

10

dB/

DI

-9.4

dBm

LgAv

M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp

Start 2.484 GHz

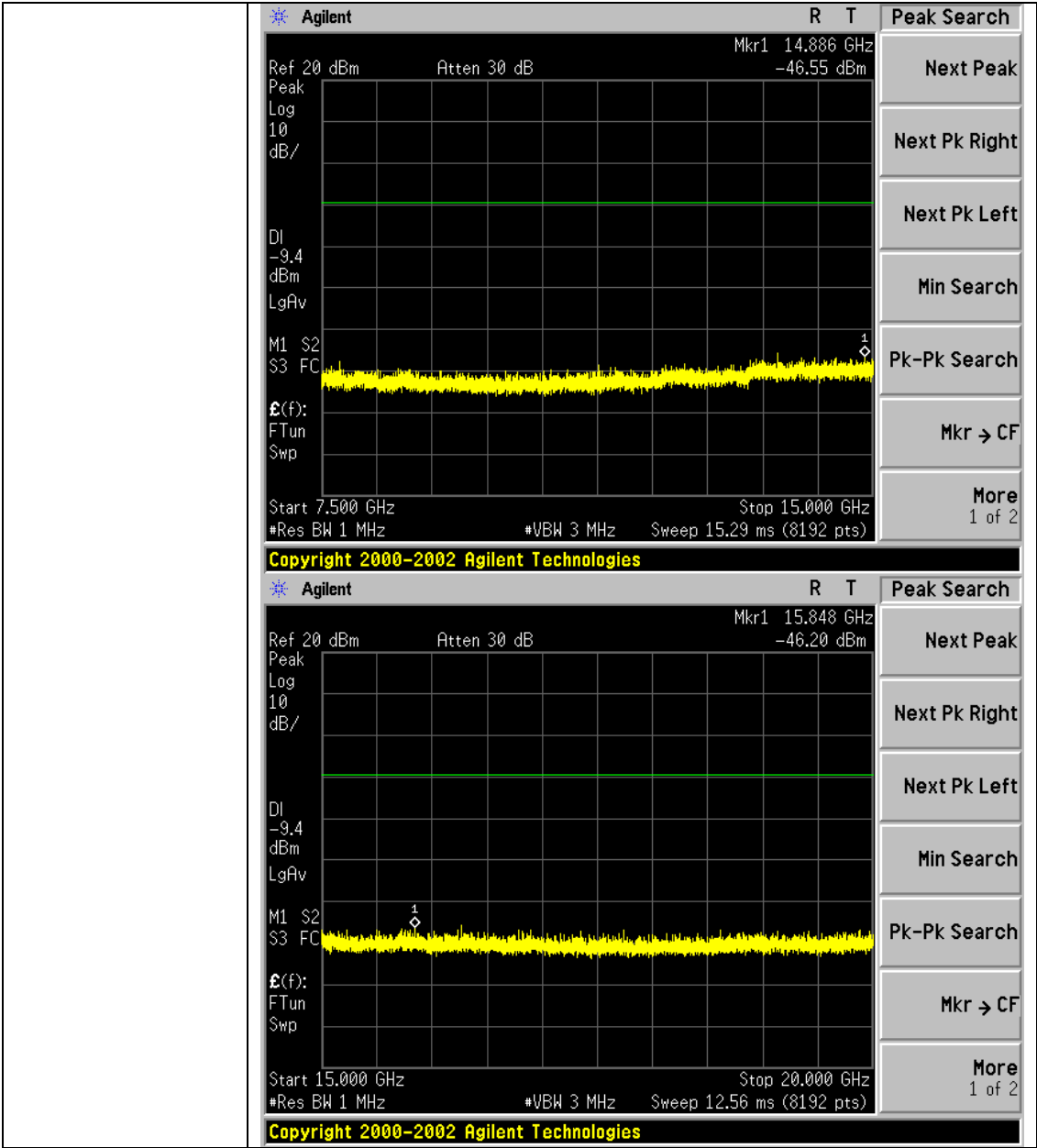
Stop 7.500 GHz

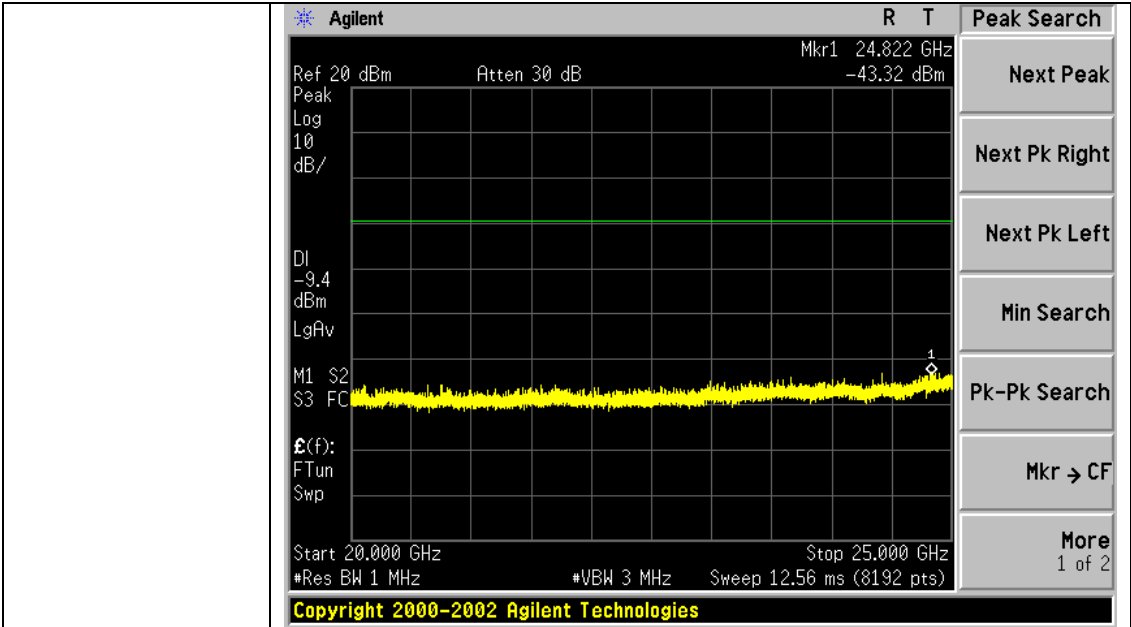
\*Res BW 1 MHz

\*VBW 3 MHz

Sweep 8.737 ms (8192 pts)

Copyright 2000-2002 Agilent Technologies





## 10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

### 10.1 MEASUREMENT PROCEDURE

- (1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- (2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- (3). Set SPA Trace 1 Max hold, then View.

Note: The method of AVGPSD in the KDB 558074 item 10.3 was used in this testing.

### 10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 8.2.

### 10.3 MEASUREMENT EQUIPMENT USED

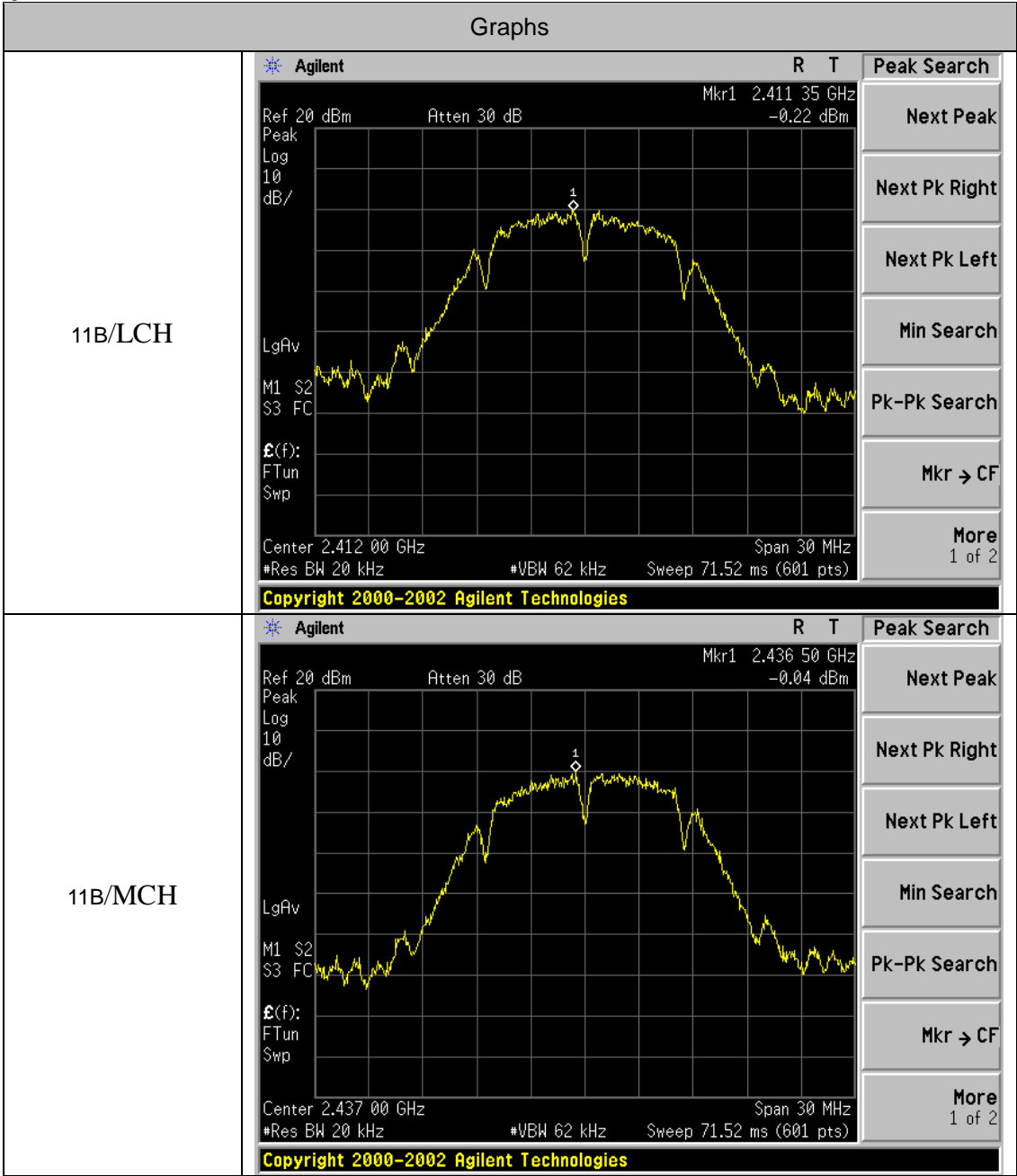
Refer To Section 6.

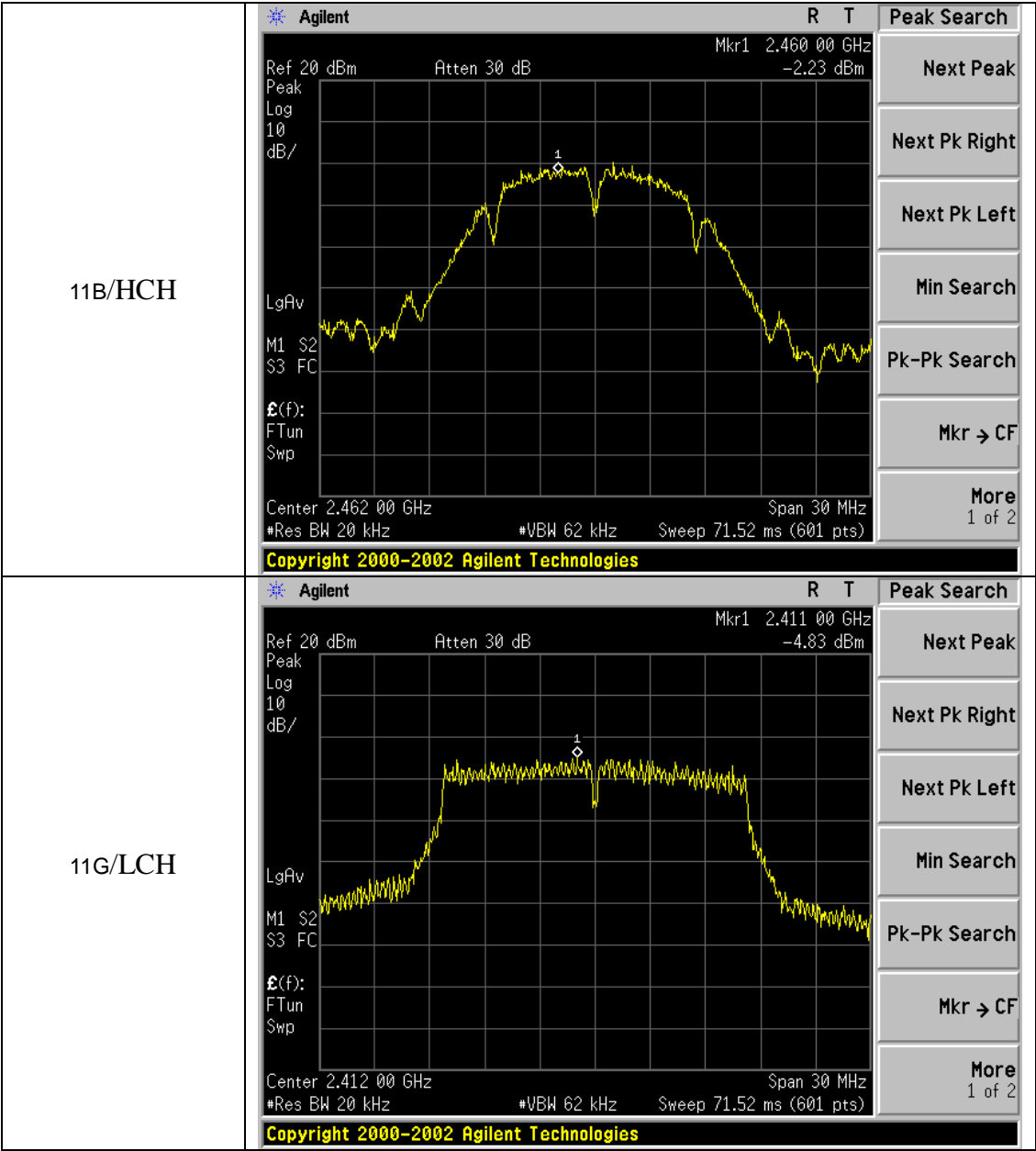
### 10.4 LIMITS AND MEASUREMENT RESULT

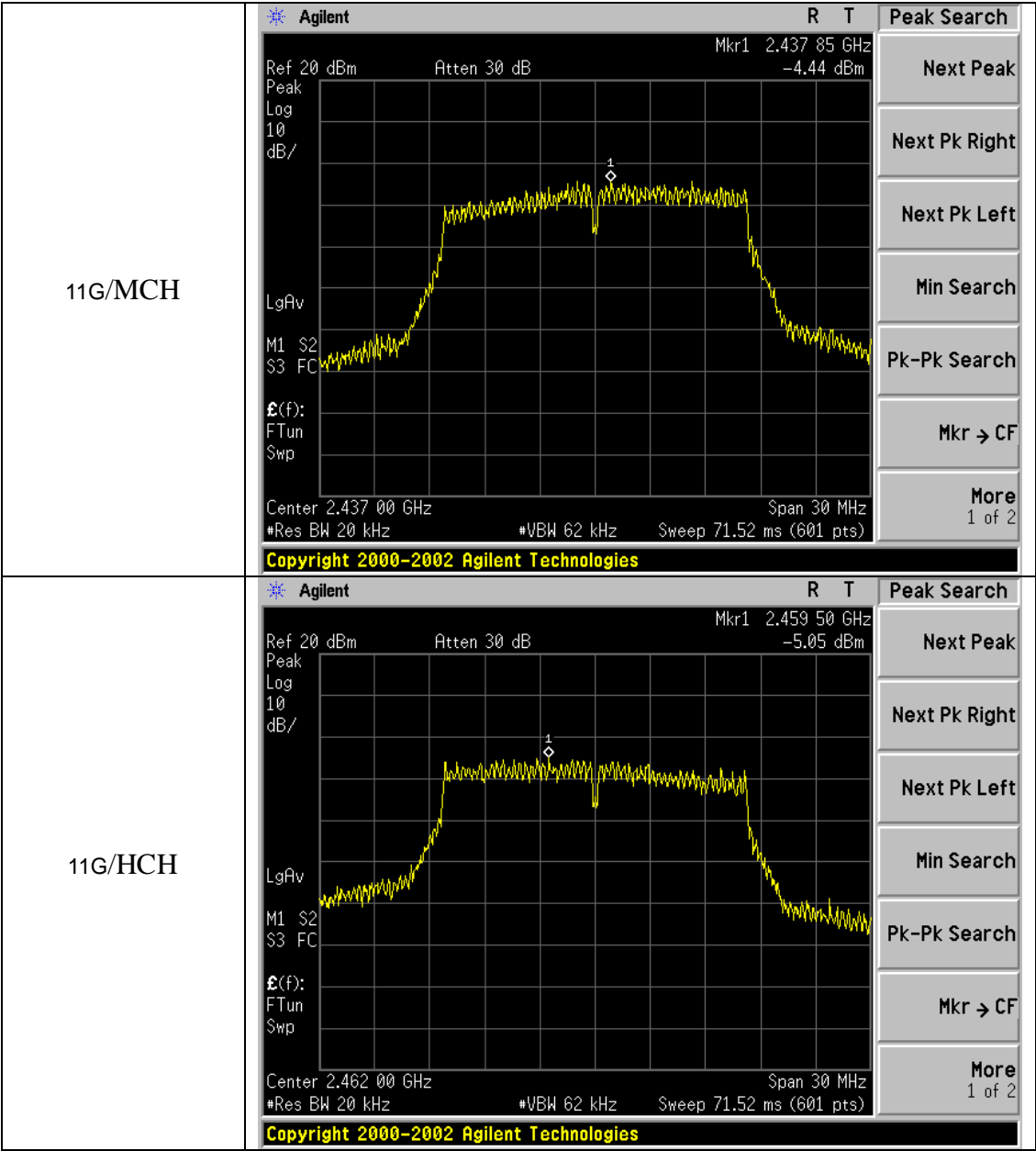
Mode	Channel	Av.PSD [dBm/20kHz]	Limit[dBm/3kHz]	Verdict
11B	LCH	-0.22	8	PASS
11B	MCH	-0.04	8	PASS
11B	HCH	-2.23	8	PASS
11G	LCH	-4.83	8	PASS
11G	MCH	-4.44	8	PASS
11G	HCH	-5.05	8	PASS
11N20SISO	LCH	-4.26	8	PASS
11N20SISO	MCH	-4.55	8	PASS
11N20SISO	HCH	-4.06	8	PASS



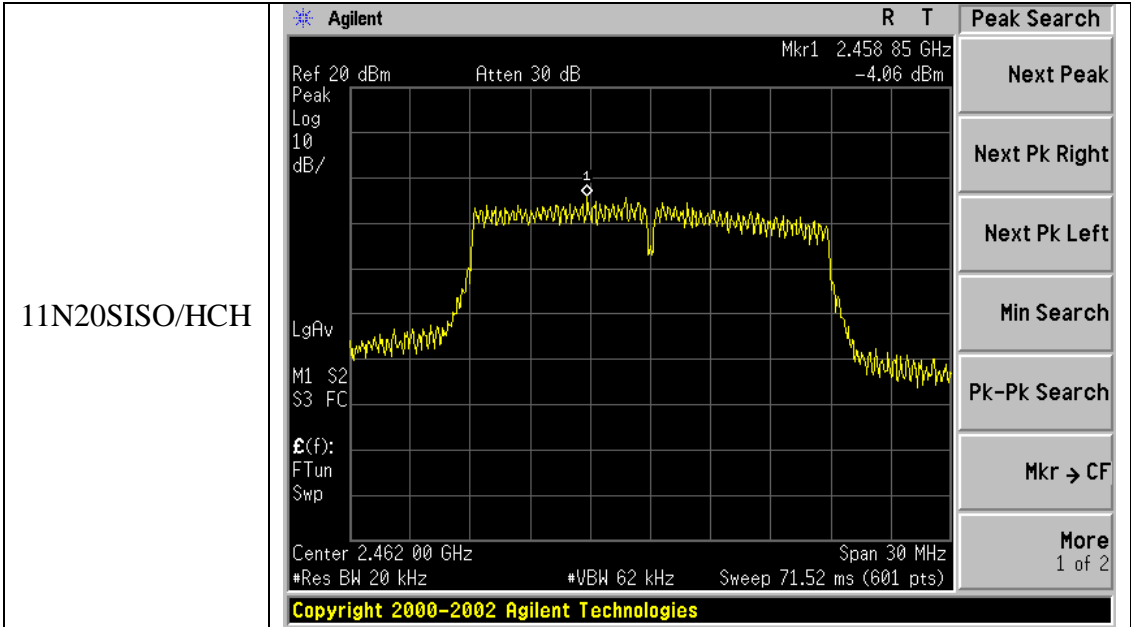
Test Graph







11N20SISO/LCH	<div><div><div>Agilent</div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div>Mkr1 2.413 85 GHz</div><div>-4.26 dBm</div></div><div><div>Peak</div><div>Log</div><div>10</div><div>dB/</div></div><div><div>LgAv</div><div>M1 S2</div><div>S3 FC</div><div><math>\mathcal{E}(f)</math>:</div><div>FTun</div><div>Swp</div></div><div><div>Center 2.412 00 GHz</div><div>Span 30 MHz</div><div>*Res BW 20 kHz</div><div>*VBW 62 kHz</div><div>Sweep 71.52 ms (601 pts)</div></div><div>Copyright 2000-2002 Agilent Technologies</div></div><div><div>Peak Search</div><div>Next Peak</div><div>Next Pk Right</div><div>Next Pk Left</div><div>Min Search</div><div>Pk-Pk Search</div><div>Mkr → CF</div><div>More</div><div>1 of 2</div></div></div>
11N20SISO/MCH	<div><div><div>Agilent</div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div>Mkr1 2.435 75 GHz</div><div>-4.55 dBm</div></div><div><div>Peak</div><div>Log</div><div>10</div><div>dB/</div></div><div><div>LgAv</div><div>M1 S2</div><div>S3 FC</div><div><math>\mathcal{E}(f)</math>:</div><div>FTun</div><div>Swp</div></div><div><div>Center 2.437 00 GHz</div><div>Span 30 MHz</div><div>*Res BW 20 kHz</div><div>*VBW 62 kHz</div><div>Sweep 71.52 ms (601 pts)</div></div><div>Copyright 2000-2002 Agilent Technologies</div></div><div><div>Peak Search</div><div>Next Peak</div><div>Next Pk Right</div><div>Next Pk Left</div><div>Min Search</div><div>Pk-Pk Search</div><div>Mkr → CF</div><div>More</div><div>1 of 2</div></div></div>



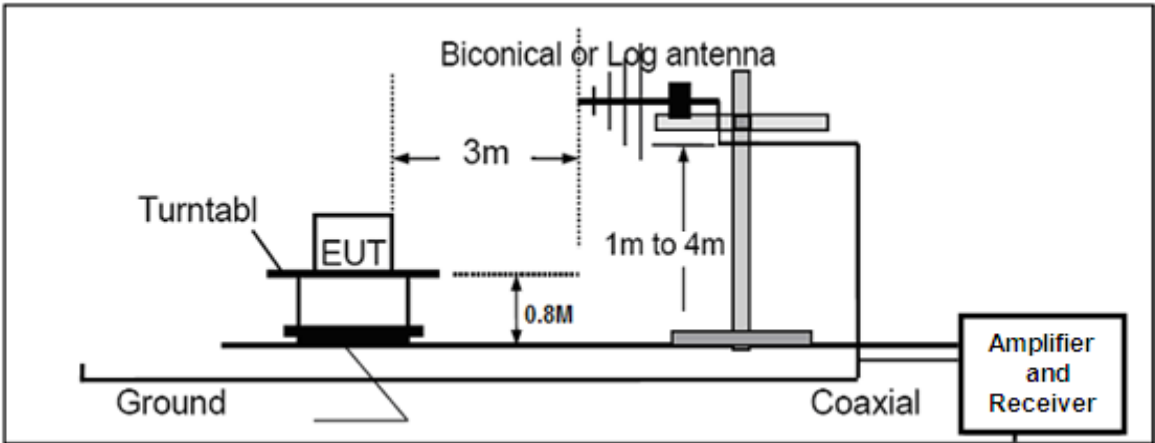
## 11. RADIATED EMISSION

### 11.1. MEASUREMENT PROCEDURE

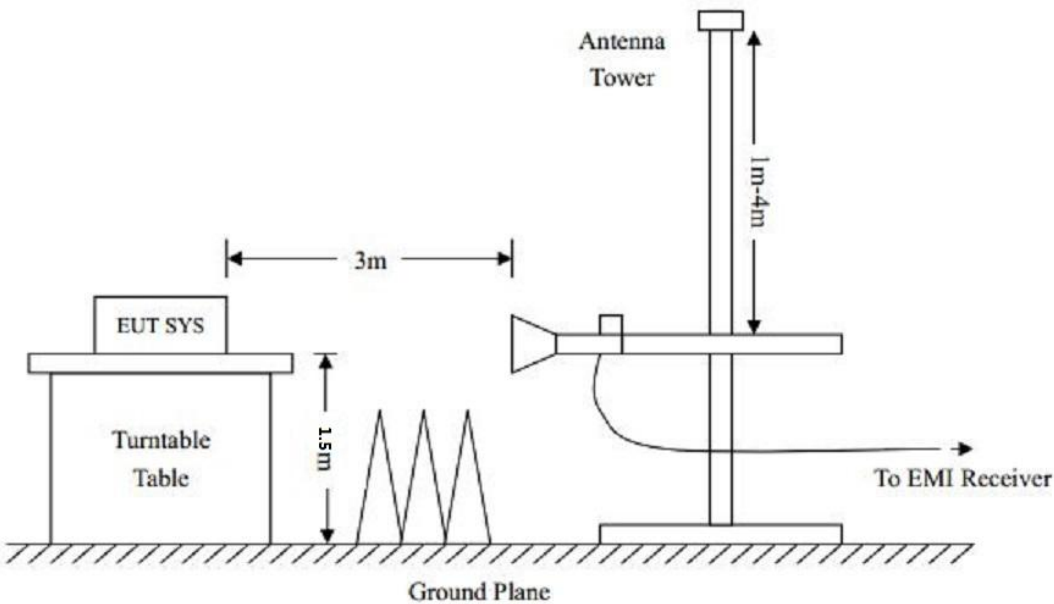
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

11.2. TEST SETUP

RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



### 11.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (micorvolts/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

Note: All modes were tested For restricted band radiated emission,  
the test records reported below are the worst result compared to other modes.

### 11.4. TEST RESULT

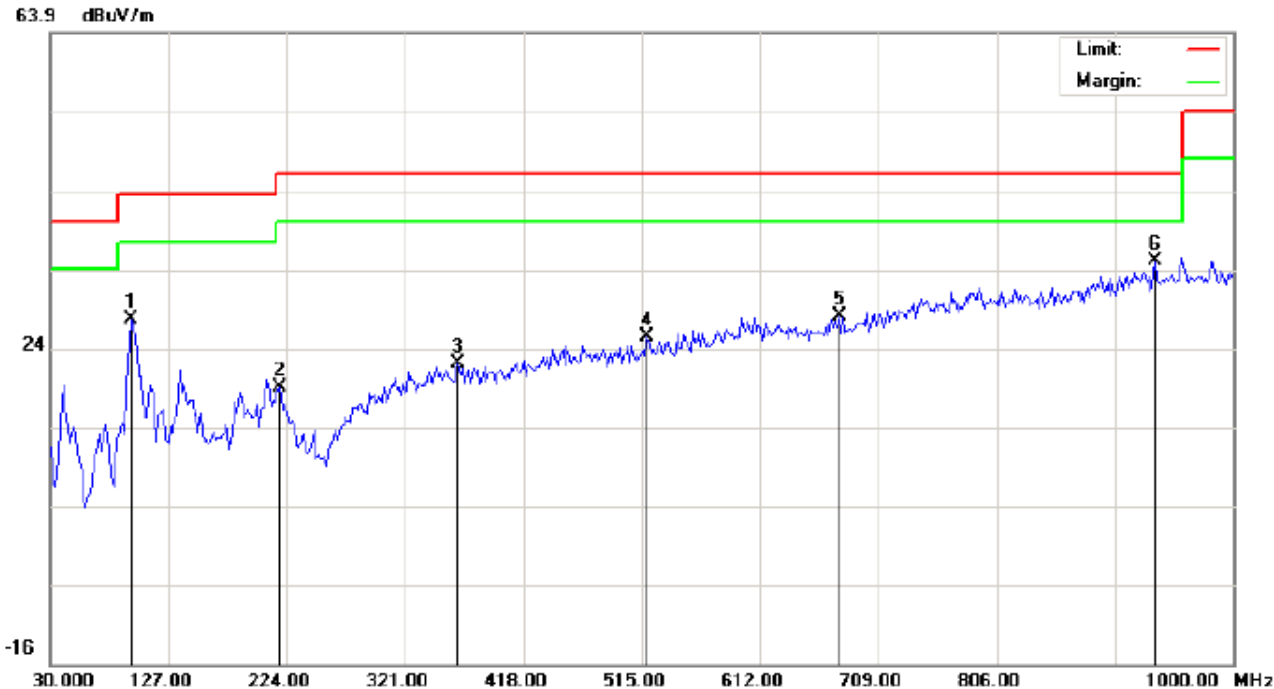
#### RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.



RADIATED EMISSION BELOW 1GHZ

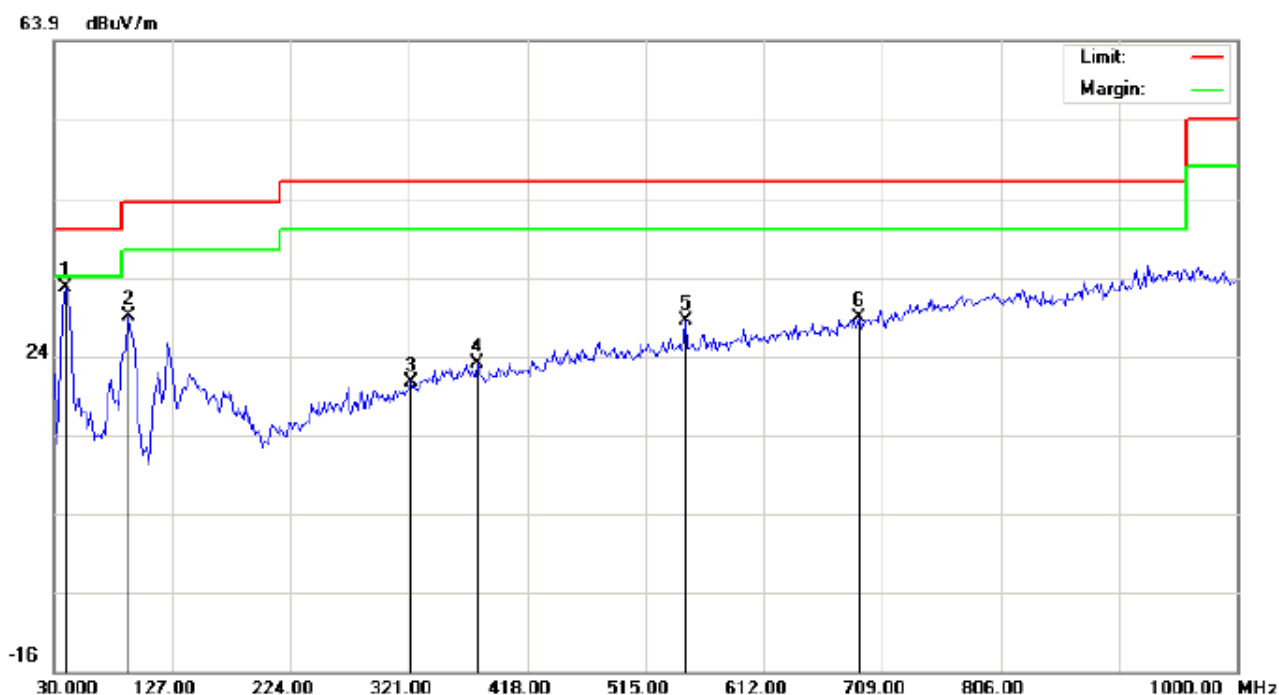
EUT	Smart Phone	Model Name	Murah
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Horizontal



Site: site #1	Polarization: <b>Horizontal</b>	Temperature: 25.3
Limit: FCC Class B 3M Radiation	Power: AC 120V/60Hz	Humidity: 55.2 %
EUT: Smart Phone	Distance: 3m	
M/N: Murah		
Mode: Low channel TX		
Note:		

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		96.2833	20.77	6.77	27.54	43.50	-15.96	peak			
2		217.5333	8.84	10.21	19.05	46.00	-26.95	peak			
3		364.6500	3.15	18.84	21.99	46.00	-24.01	peak			
4		519.8500	3.66	21.67	25.33	46.00	-20.67	peak			
5		676.6667	3.41	24.56	27.97	46.00	-18.03	peak			
6	*	935.3333	5.35	29.59	34.94	46.00	-11.06	peak			

EUT	Smart Phone	Model Name	Murah
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2412MHZ	Antenna	Vertical

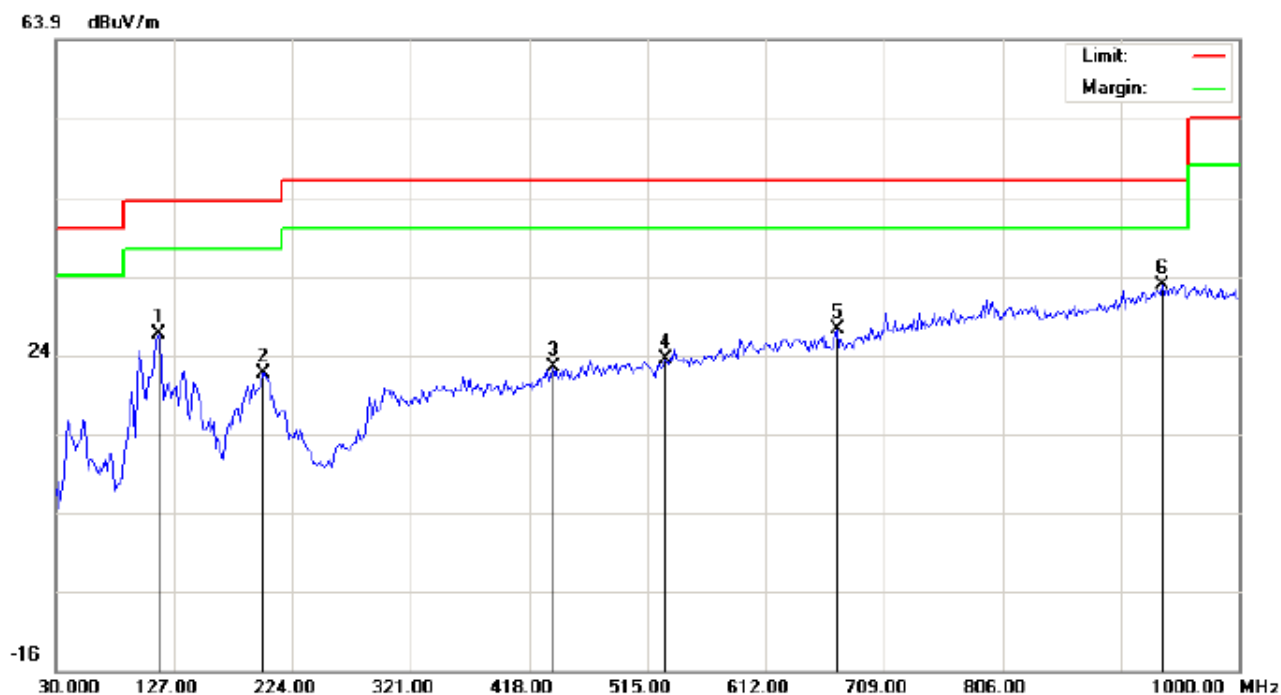


Site: site #1 Polarization: **Vertical** Temperature: 25.3  
Limit: FCC Class B 3M Radiation Power: AC 120V/60Hz Humidity: 55.2 %  
EUT: Smart Phone Distance: 3m  
M/N: Murah  
Mode: Low channel TX  
Note:

No.	Mk	Freq. MHz	Reading dBuV	Factor dB/m	Measurement dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1	*	39.7000	24.13	8.51	32.64	40.00	-7.36	peak			
2		91.4333	24.75	4.16	28.91	43.50	-14.59	peak			
3		322.6167	3.70	16.92	20.62	46.00	-25.38	peak			
4		377.5833	4.03	18.92	22.95	46.00	-23.05	peak			
5		547.3333	6.02	22.41	28.43	46.00	-17.57	peak			
6		689.6000	3.82	24.91	28.73	46.00	-17.27	peak			

**RESULT: PASS**

EUT	Smart Phone	Model Name	Murah
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with data rate 1 2437MHZ	Antenna	Horizontal



Site: site #1  
Limit: FCC Class B 3M Radiation  
EUT: Smart Phone  
M/N: Murah  
Mode: Middle channel TX  
Note:

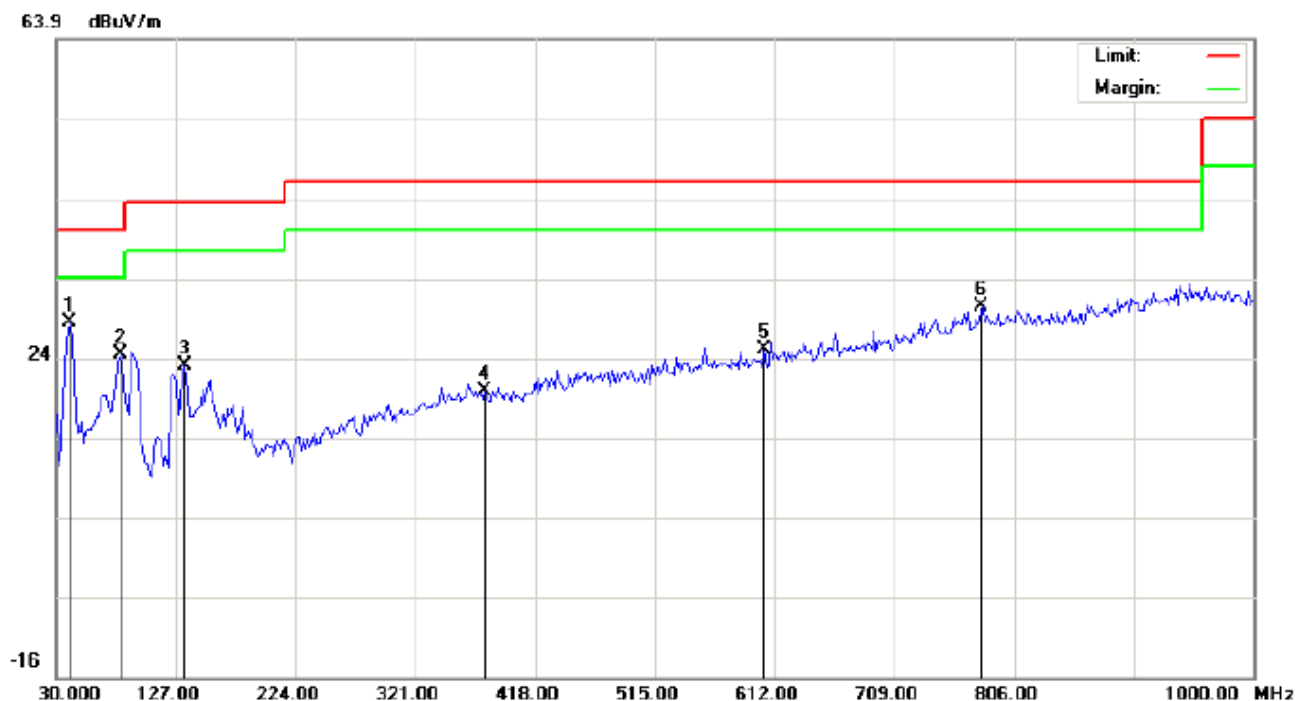
Polarization: **Horizontal**  
Power: AC 120V/60Hz  
Distance: 3m

Temperature: 25.3  
Humidity: 55.2 %

No.	Mk	Freq. MHz	Reading dBuV	Factor dB/m	Measurement dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		114.0667	19.33	7.23	26.56	43.50	-16.94	peak			
2		199.7500	9.70	11.99	21.69	43.50	-21.81	peak			
3		437.4000	2.17	20.21	22.38	46.00	-23.62	peak			
4		529.5500	1.53	21.93	23.46	46.00	-22.54	peak			
5		670.2000	2.74	24.39	27.13	46.00	-18.87	peak			
6	*	936.9500	3.23	29.64	32.87	46.00	-13.13	peak			

**RESULT: PASS**

EUT	Smart Phone	Model Name	Murah
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Vertical



Site: site #1  
Limit: FCC Class B 3M Radiation  
EUT: Smart Phone  
M/N: Murah  
Mode: Middle channel TX  
Note:

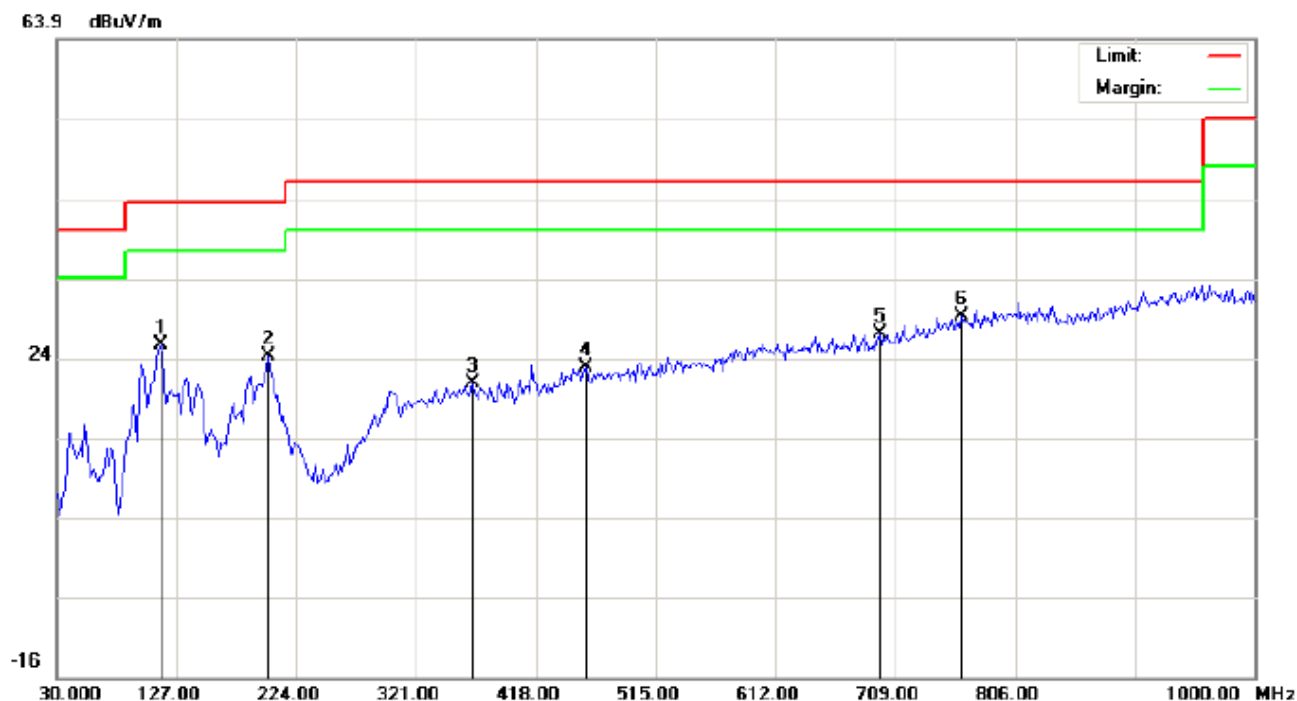
Polarization: **Vertical**  
Power: AC 120V/60Hz  
Distance: 3m

Temperature: 25.3  
Humidity: 55.2 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	41.3167	19.49	8.81	28.30	40.00	-11.70	peak			
2		81.7333	21.90	2.42	24.32	40.00	-15.68	peak			
3		133.4667	10.49	12.48	22.97	43.50	-20.53	peak			
4		377.5833	0.98	18.92	19.90	46.00	-26.10	peak			
5		603.9167	2.16	22.82	24.98	46.00	-21.02	peak			
6		780.1332	3.27	27.05	30.32	46.00	-15.68	peak			

**RESULT: PASS**

EUT	Smart Phone	Model Name	Murah
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Horizontal



Site: site #1  
Limit: FCC Class B 3M Radiation  
EUT: Smart Phone  
M/N: Murah  
Mode: High channel TX  
Note:

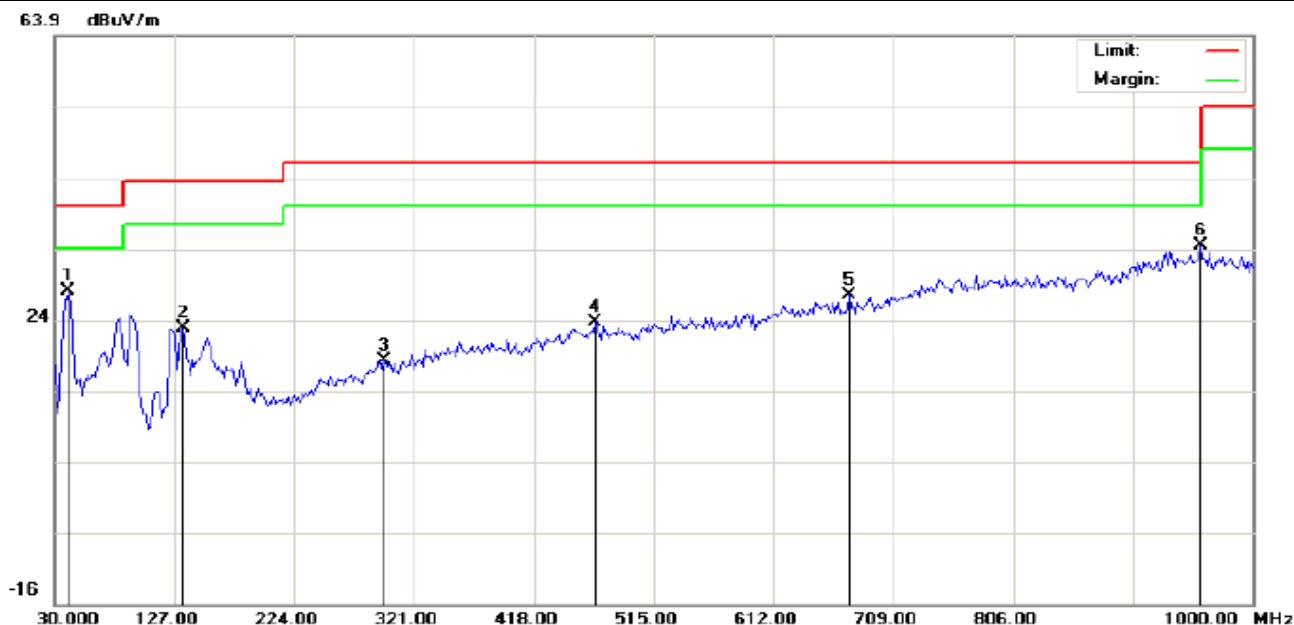
Polarization: **Horizontal**  
Power: AC 120V/60Hz  
Distance: 3m

Temperature: 25.3  
Humidity: 55.2 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		114.0667	18.37	7.23	25.60	43.50	-17.90	peak			
2		201.3667	12.26	11.86	24.12	43.50	-19.38	peak			
3		366.2667	1.86	18.85	20.71	46.00	-25.29	peak			
4		458.4167	2.08	20.68	22.76	46.00	-23.24	peak			
5		696.0667	1.87	25.08	26.95	46.00	-19.05	peak			
6	*	762.3500	2.31	26.80	29.11	46.00	-16.89	peak			

**RESULT: PASS**

EUT	Smart Phone	Model Name	Murah
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Vertical



Site: site #1  
Limit: FCC Class B 3M Radiation  
EUT: Smart Phone  
M/N: Murah  
Mode: High channel TX  
Note:

Polarization: **Vertical**  
Power: AC 120V/60Hz  
Distance: 3m

Temperature: 25.3  
Humidity: 55.2 %

No.	Mk	Freq. MHz	Reading dBuV	Factor dB/m	Measurement dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		41.3167	19.23	8.81	28.04	40.00	-11.96	peak			
2		133.4667	10.33	12.48	22.81	43.50	-20.69	peak			
3		296.7500	2.83	15.31	18.14	46.00	-27.86	peak			
4		468.1167	2.82	20.79	23.61	46.00	-22.39	peak			
5		673.4333	3.02	24.48	27.50	46.00	-18.50	peak			
6	*	957.9667	4.53	29.92	34.45	46.00	-11.55	peak			

## RESULT: PASS

**Note:** 1. Factor=Antenna Factor + Cable loss, Margin= Result -Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

3. 30MHz~1GHz:(Scan with 11b,11g,11n, the worst case is 11b Mode)

### RADIATED EMISSION ABOVE 1GHZ

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
TX 11b 2412MHz							
4824.092	41.36	10.44	51.8	74	-22.2	Pk	Horizontal
4824.092	32.57	10.44	43.01	54	-10.99	AV	Horizontal
7236.127	43.41	10.39	53.8	74	-20.2	pk	Horizontal
7236.127	36.22	10.39	46.61	54	-7.39	AV	Horizontal
4824.098	41.55	10.39	51.94	74	-22.06	Pk	Vertical
4824.082	33.68	10.39	44.07	54	-9.93	AV	Vertical
7236.110	41.34	10.68	52.02	74	-21.98	Pk	Vertical
7236.054	32.59	10.68	43.27	54	-10.73	AV	Vertical
TX 11b 2437MHz							
4874.072	43.04	10.39	53.43	74	-20.57	Pk	Horizontal
4874.108	32.05	10.39	42.44	54	-11.56	AV	Horizontal
7311.092	42.34	12.68	55.02	74	-18.98	Pk	Horizontal
7311.131	30.16	12.68	42.84	54	-11.16	AV	Horizontal
4874.098	46.9	10.39	57.29	74	-16.71	Pk	Vertical
4874.044	33.18	10.39	43.57	54	-10.43	AV	Vertical
7311.145	44.62	12.68	57.3	74	-16.7	Pk	Vertical
7311.104	30.27	12.68	42.95	54	-11.05	AV	Vertical
TX 11b 2462MHz							
4924.128	45.37	10.39	55.76	74	-18.24	pk	Horizontal
4924.083	34.19	10.39	44.58	54	-9.42	AV	Horizontal
7386.071	48.34	12.68	61.02	74	-12.98	pk	Horizontal
7386.134	30.28	12.68	42.96	54	-11.04	AV	Horizontal
4924.042	45.21	10.39	55.6	74	-18.4	pk	Vertical
4924.060	33.92	10.39	44.31	54	-9.69	AV	Vertical
7386.051	41.56	12.68	54.24	74	-19.76	pk	Vertical
7386.054	30.47	12.68	43.15	54	-10.85	AV	Vertical

### RESULT: PASS

**Note:** 1~25GHz scan with 11b. No recording in the test report at least have 20dB margin.

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Emission Level = Meter Reading + Factor

Margin = Emission Level - Limit

## 12. BAND EDGE EMISSION

### 12.1. MEASUREMENT PROCEDURE

1) Radiated restricted band edge measurements

The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting

2) Conducted Emissions at the bang edge

a) The transmitter output was connected to the spectrum analyzer

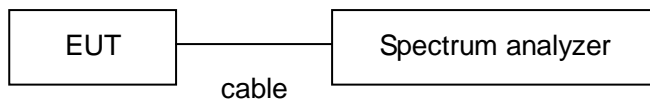
b) Set RBW=100kHz, VBW=300kHz

c) Suitable frequency span including 100kHz bandwidth from band edge

### 12.2. TEST SET-UP

Radiated same as 11.2

Conducted set up





### 12.3. Radiated Test Result

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
TX 11b 2412MHz							
2399.9	77.33	-13	64.33	74	-9.67	peak	Horizontal
2399.9	59.42	-13	46.42	54	-7.58	AVG	Horizontal
2400	75.29	-12.99	62.3	74	-11.7	peak	Horizontal
2400	50.02	-12.99	37.03	54	-16.97	AVG	Horizontal
2399.9	74.19	-12.97	61.22	74	-12.78	peak	Vertical
2399.9	53.27	-12.97	40.3	54	-13.7	AVG	Vertical
2400	76.14	-12.94	63.2	74	-10.8	peak	Vertical
2400	59.76	-12.94	46.82	54	-7.18	AVG	Vertical
TX 11b 2462MHz							
2483.5	71.37	-12.78	58.59	74	-15.41	peak	Horizontal
2483.5	54.35	-12.78	41.57	54	-12.43	AVG	Horizontal
2483.6	78.41	-12.77	65.64	74	-8.36	peak	Horizontal
2483.6	52.56	-12.77	39.79	54	-14.21	AVG	Horizontal
2483.5	72.11	-12.76	59.35	74	-14.65	peak	Vertical
2483.5	53.48	-12.76	40.72	54	-13.28	AVG	Vertical
2483.6	73.21	-12.72	60.49	74	-13.51	peak	Vertical
2483.6	53.49	-12.72	40.77	54	-13.23	AVG	Vertical

### RESULT: PASS

**Note:** Scan with 11b,11g,11n, the worst case is 11b Mode

Factor=Antenna Factor + Cable loss - Amplifier gain,

Emission Level = Meter Reading + Factor

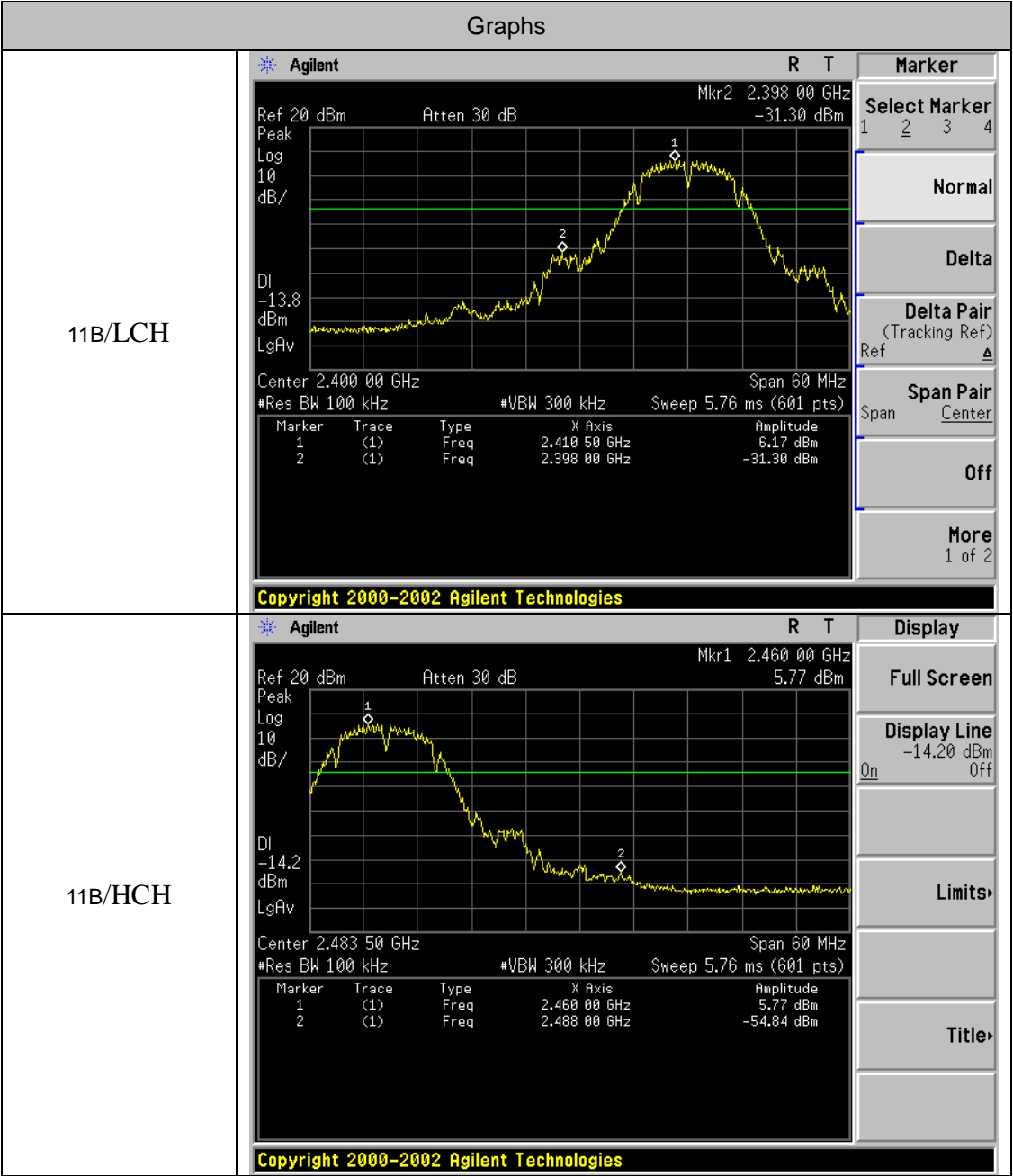
Margin= Emission Level -Limit.

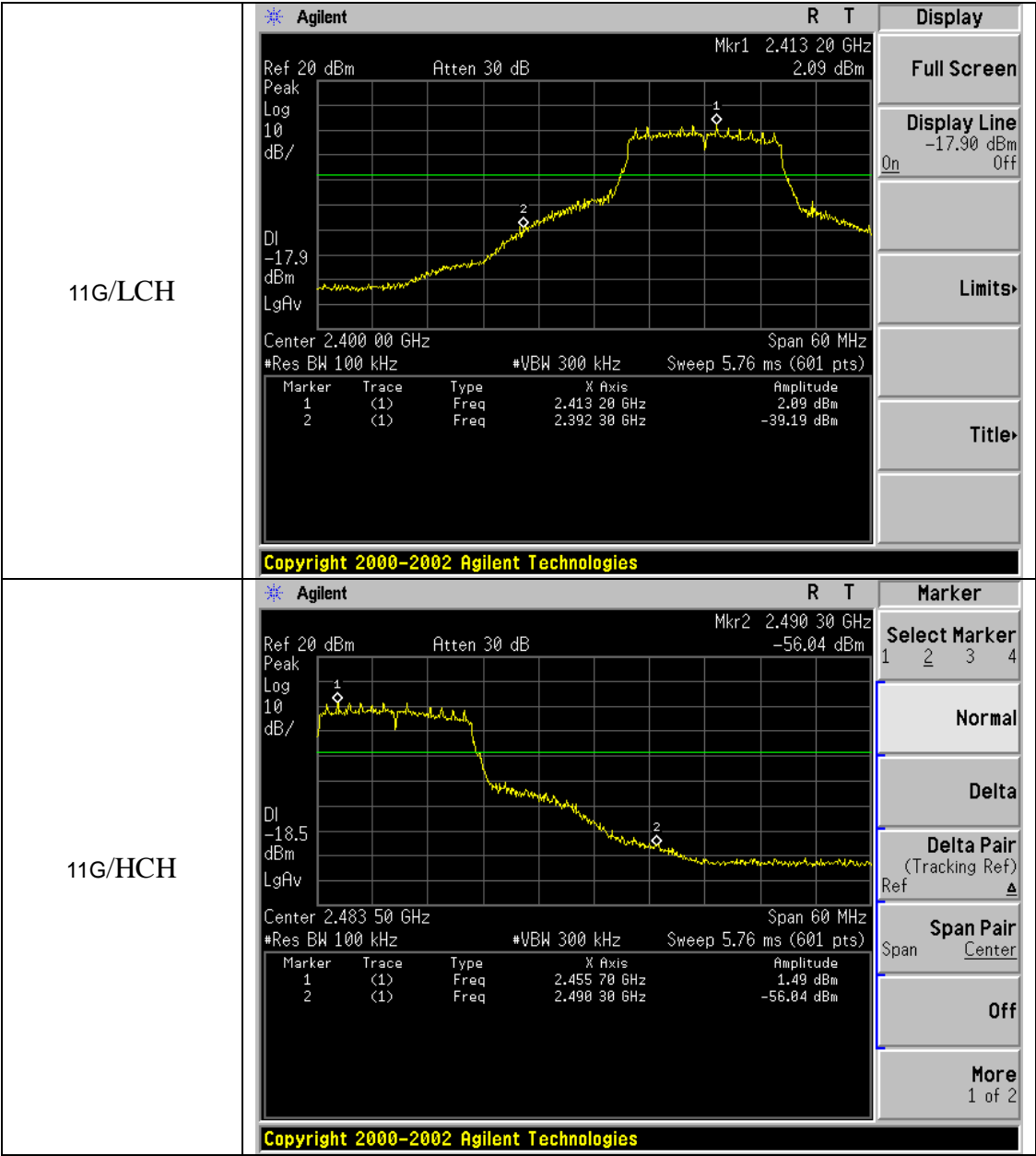
The "Factor" value can be calculated automatically by software of measurement system.

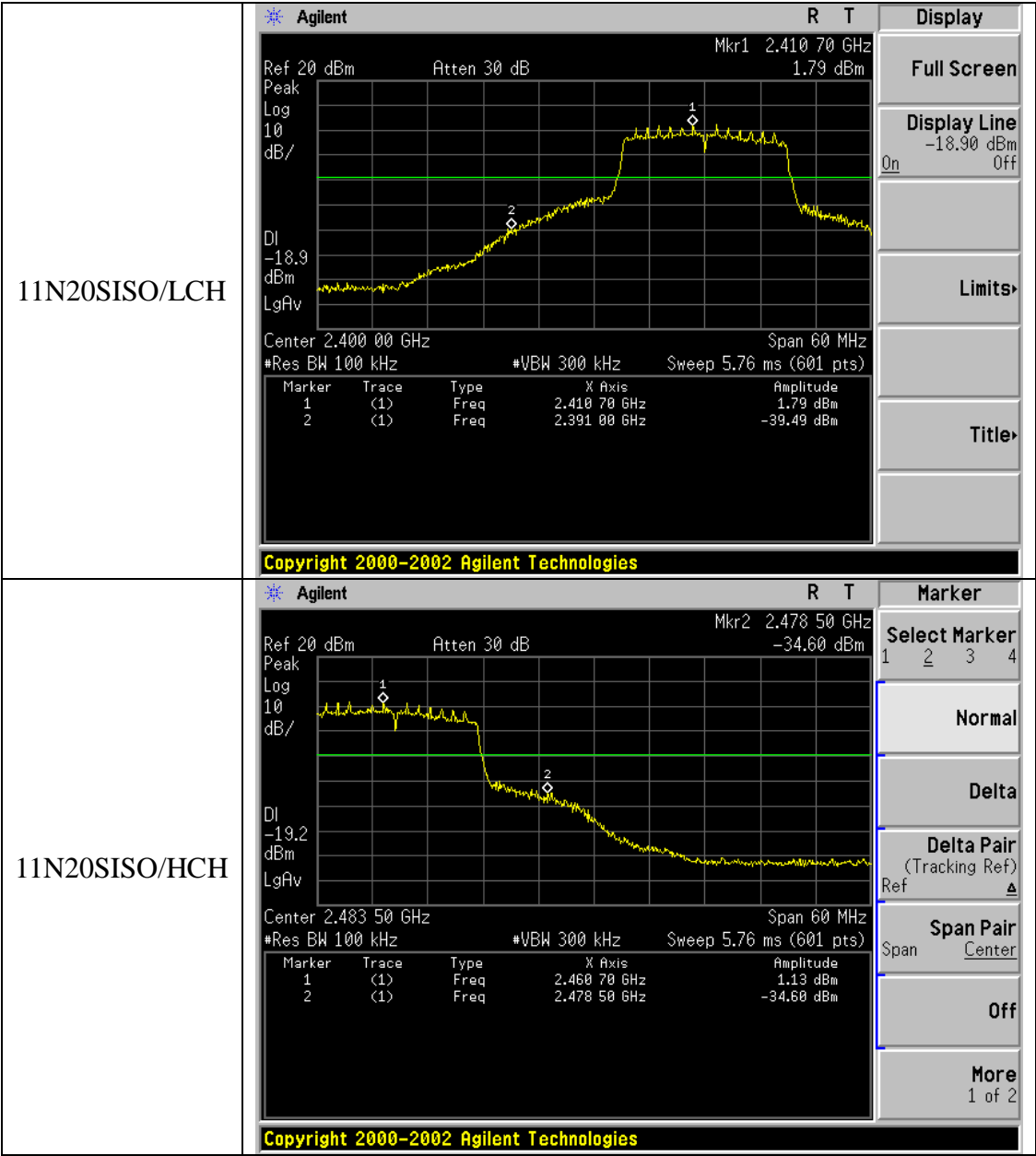
#### 12.4. Conducted Test Result

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	6.17	-31.30	-13.8	PASS
11B	HCH	5.77	-54.84	-14.2	PASS
11G	LCH	2.09	-39.19	-17.9	PASS
11G	HCH	1.49	-56.04	-18.5	PASS
11N20SISO	LCH	1.79	-39.49	-18.9	PASS
11N20SISO	HCH	1.13	-34.60	-19.2	PASS

Test Graph







### 13. FCC LINE CONDUCTED EMISSION TEST

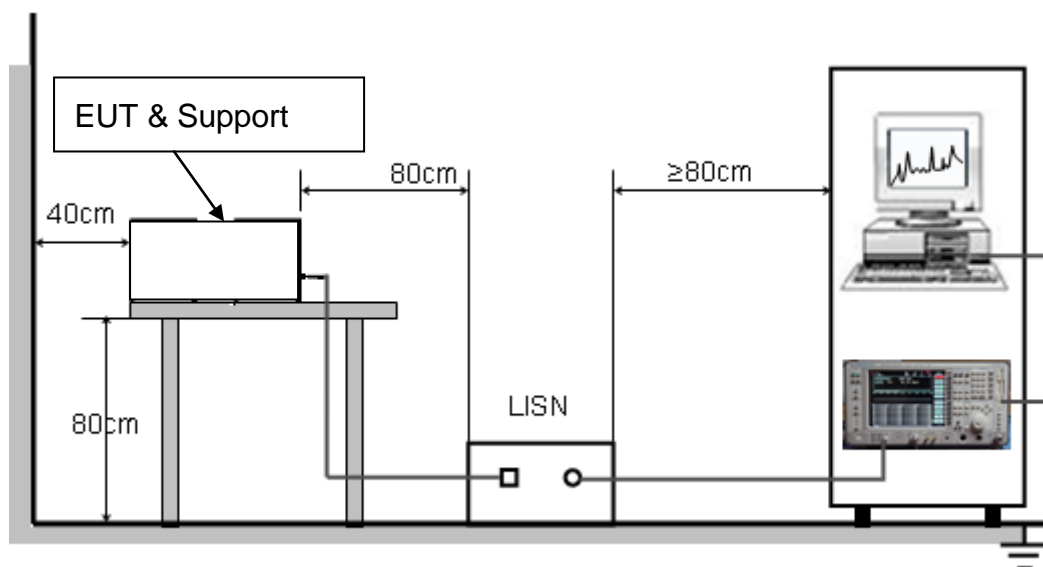
#### 13.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.( dBuV)	Average( dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

#### 13.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



### **13.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST**

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received charging voltage by adapter which received 120V/60Hz power by a LISN..
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

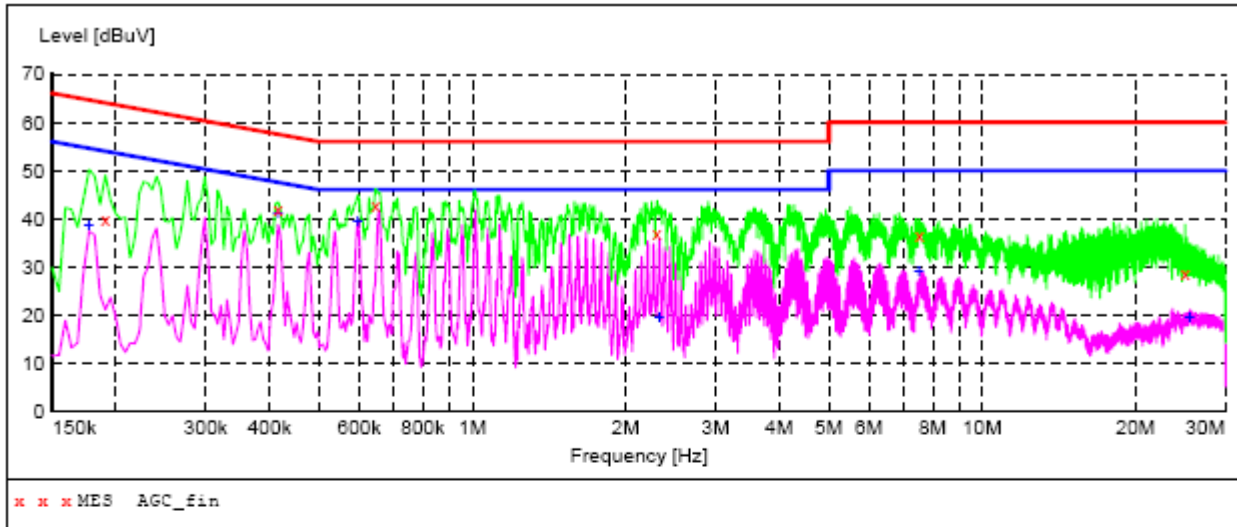
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

### **13.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST**

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

### 13.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

#### LINE CONDUCTED EMISSION TEST LINE 1-L



#### MEASUREMENT RESULT: "AGC\_fin"

2016/11/16 18:25

Frequency	Level	Transd	Limit	Margin	Detector	Line	PE	AUX STATE
MHz	dBuV	dB	dBuV	dB				
0.190500	40.00	10.3	64	24.0	QP	L1	FLO	ON
0.415500	42.00	10.3	58	15.5	QP	L1	FLO	ON
0.645000	42.80	10.3	56	13.2	QP	L1	FLO	ON
2.301000	36.90	10.5	56	19.1	QP	L1	FLO	ON
7.530000	36.50	10.7	60	23.5	QP	L1	FLO	ON
25.003500	28.50	11.9	60	31.5	QP	L1	FLO	ON

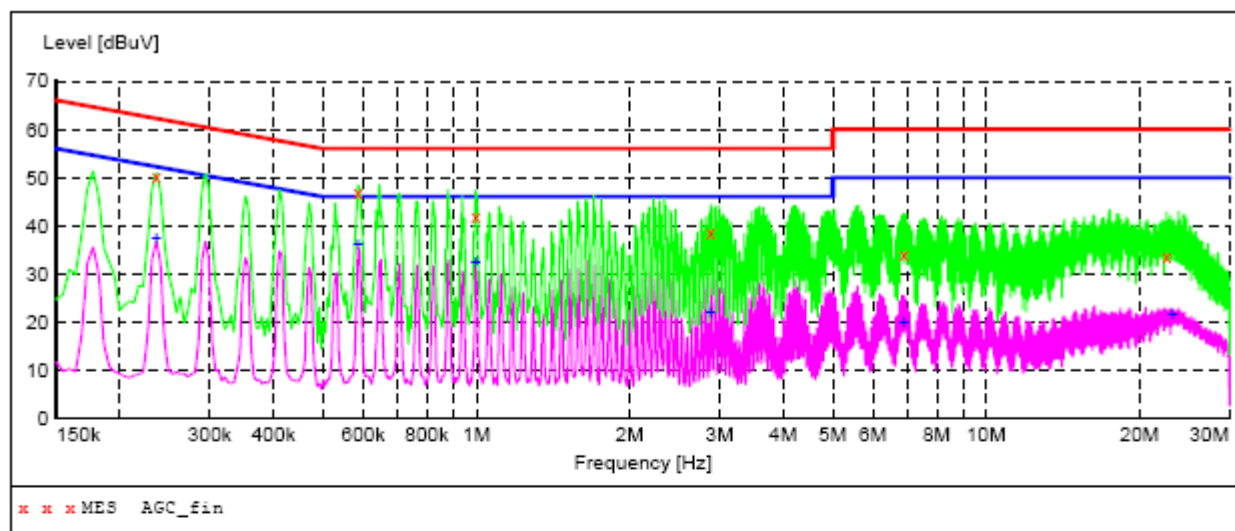
#### MEASUREMENT RESULT: "AGC\_fin2"

2016/11/16 18:25

Frequency	Level	Transd	Limit	Margin	Detector	Line	PE	AUX STATE
MHz	dBuV	dB	dBuV	dB				
0.177000	38.50	10.3	55	16.1	AV	L1	FLO	ON
0.415500	41.00	10.3	48	6.5	AV	L1	FLO	ON
0.595500	39.60	10.3	46	6.4	AV	L1	FLO	ON
2.328000	19.40	10.5	46	26.6	AV	L1	FLO	ON
7.530000	29.00	10.7	50	21.0	AV	L1	FLO	ON
25.566000	19.70	11.9	50	30.3	AV	L1	FLO	ON



Line Conducted Emission Test Line 2-N



MEASUREMENT RESULT: "AGC\_fin"

2016/11/16 18:36

Frequency	Level	Transd	Limit	Margin	Detector	Line	PE	AUX STATE
MHz	dBuV	dB	dBuV	dB				
0.235500	50.30	10.3	62	12.0	QP	N	FLO	ON
0.586500	46.90	10.3	56	9.1	QP	N	FLO	ON
0.996000	41.90	10.4	56	14.1	QP	N	FLO	ON
2.886000	38.80	10.5	56	17.2	QP	N	FLO	ON
6.895500	34.10	10.7	60	25.9	QP	N	FLO	ON
22.609500	33.70	12.0	60	26.3	QP	N	FLO	ON

MEASUREMENT RESULT: "AGC\_fin2"

2016/11/16 18:36

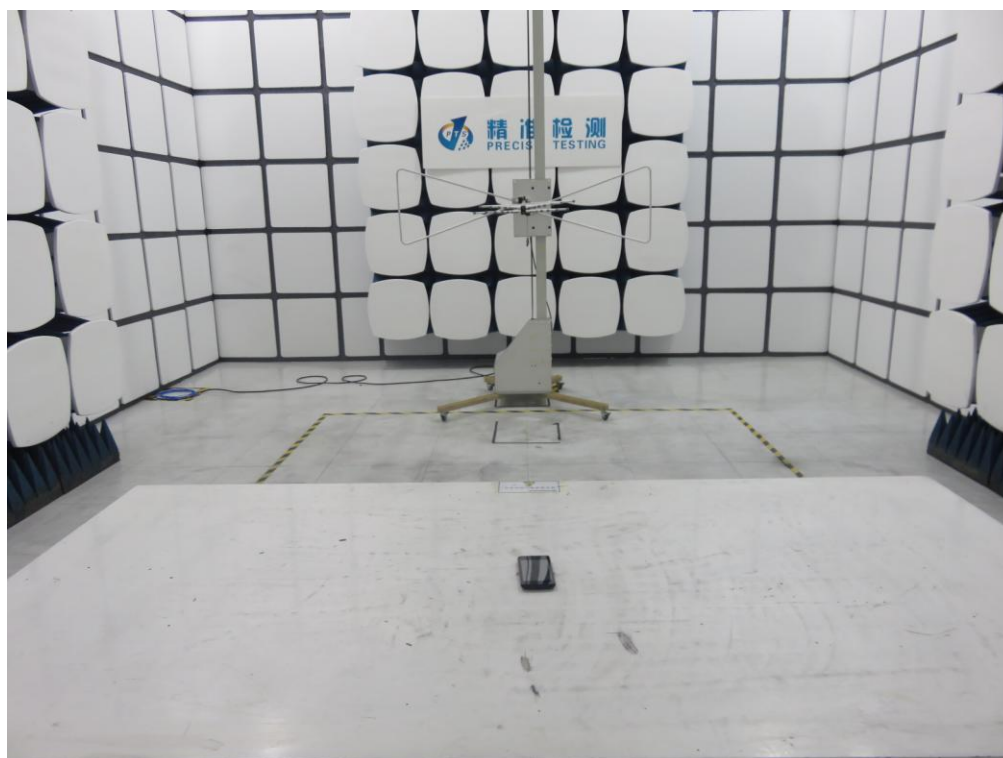
Frequency	Level	Transd	Limit	Margin	Detector	Line	PE	AUX STATE
MHz	dBuV	dB	dBuV	dB				
0.235500	37.30	10.3	52	15.0	AV	N	FLO	ON
0.586500	36.30	10.3	46	9.7	AV	N	FLO	ON
0.996000	32.20	10.4	46	13.8	AV	N	FLO	ON
2.886000	22.20	10.5	46	23.8	AV	N	FLO	ON
6.895500	19.80	10.7	50	30.2	AV	N	FLO	ON
23.208000	21.40	12.0	50	28.6	AV	N	FLO	ON

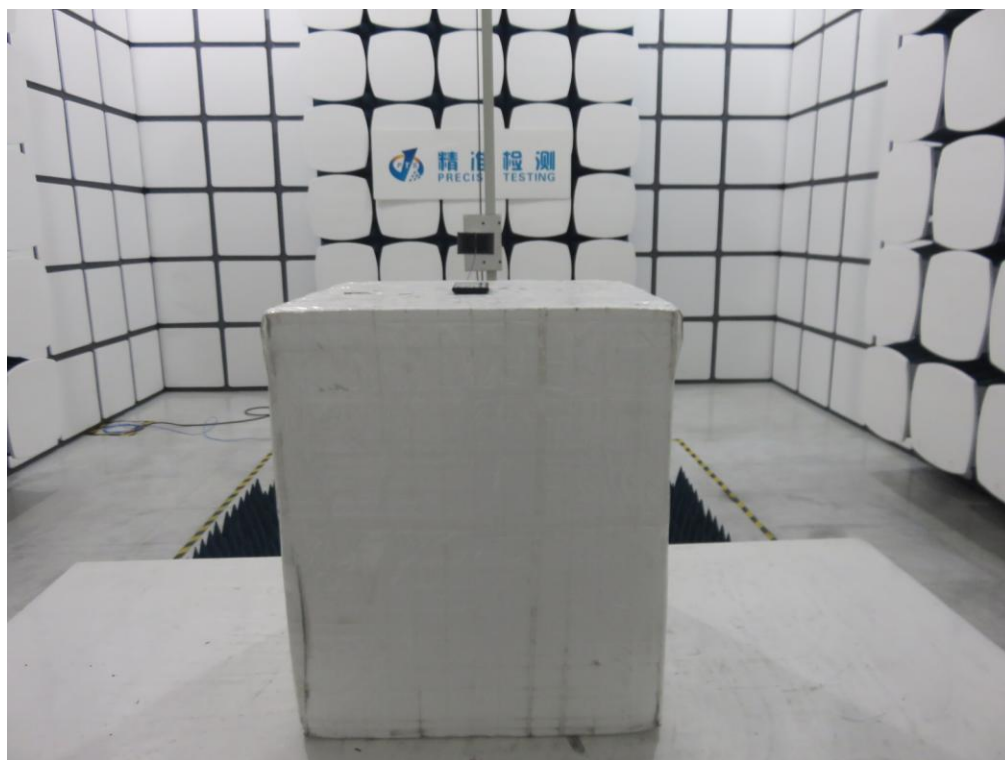
## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

### FCC LINE CONDUCTED EMISSION TEST SETUP



### FCC RADIATED EMISSION TEST SETUP





## APPENDIX B: PHOTOGRAPHS OF EUT

### TOTAL VIEW OF EUT



### THE LABEL OF ADAPTER





THE LABEL OF BATTERY



TOP VIEW OF EUT



BOTTOM VIEW OF EUT



FRONT VIEW OF EUT





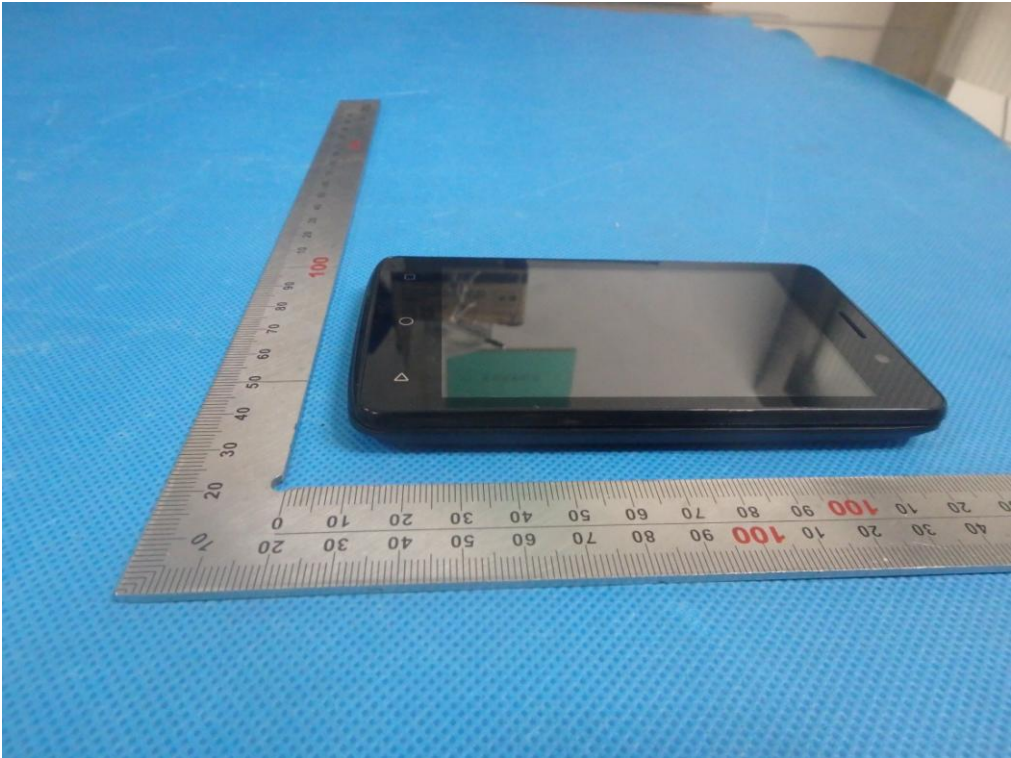
BACK VIEW OF EUT



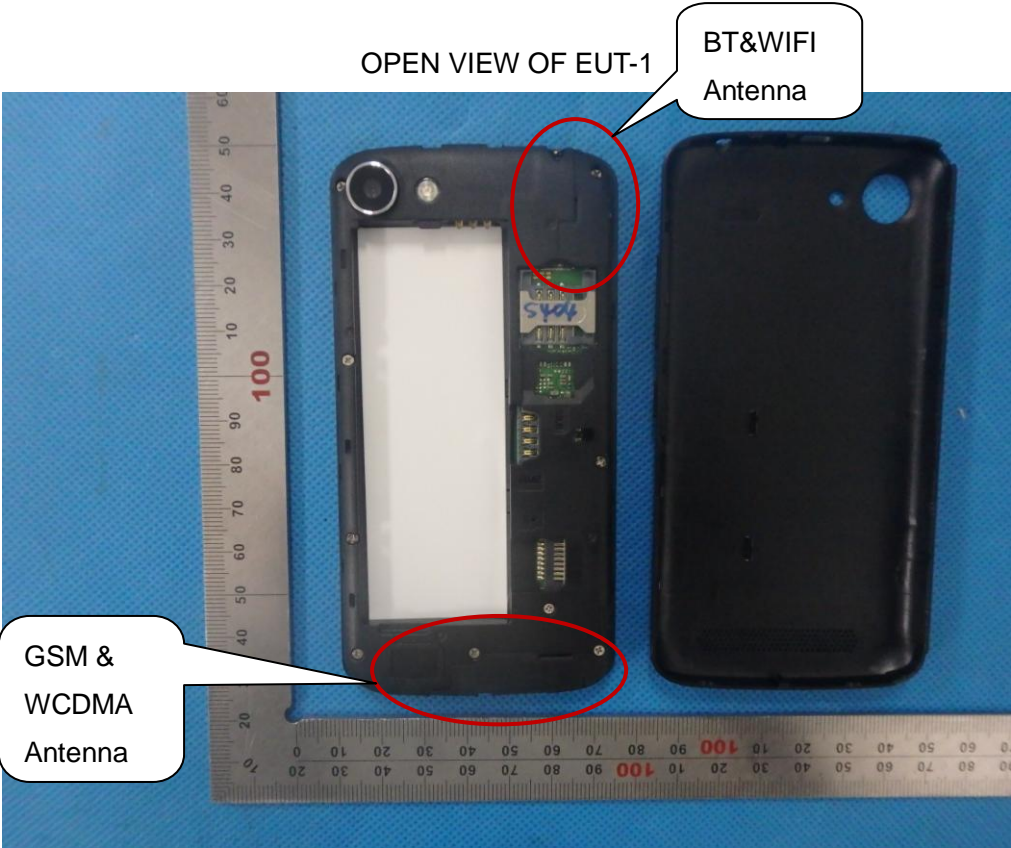
LEFT VIEW OF EUT



RIGHT VIEW OF EUT



OPEN VIEW OF EUT-1

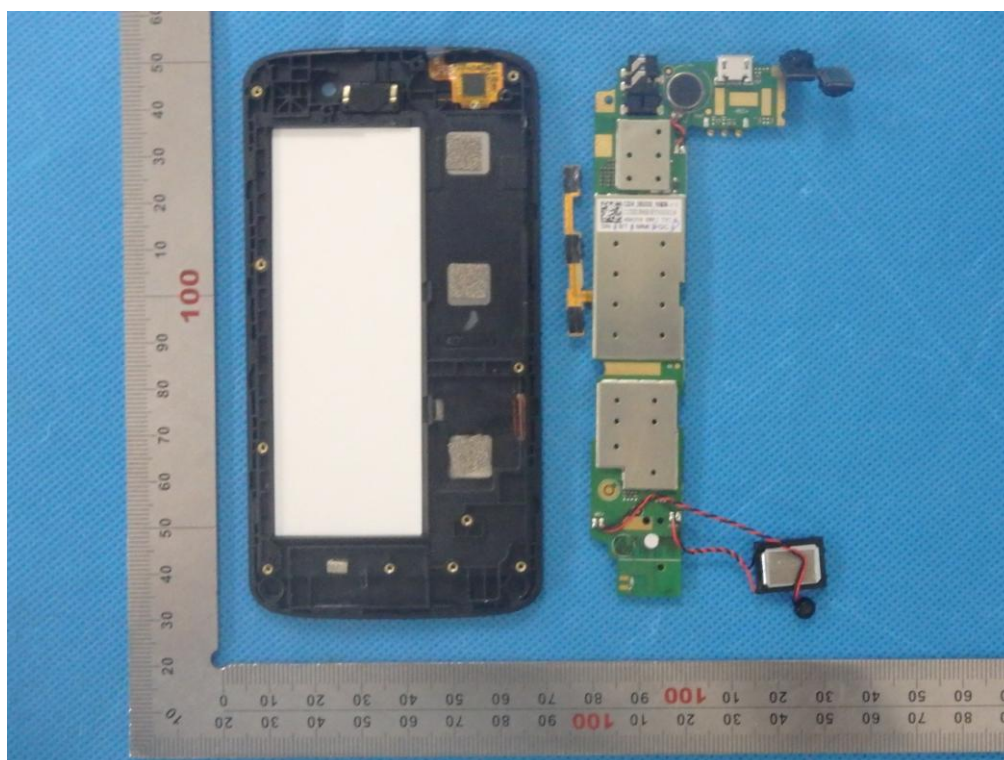




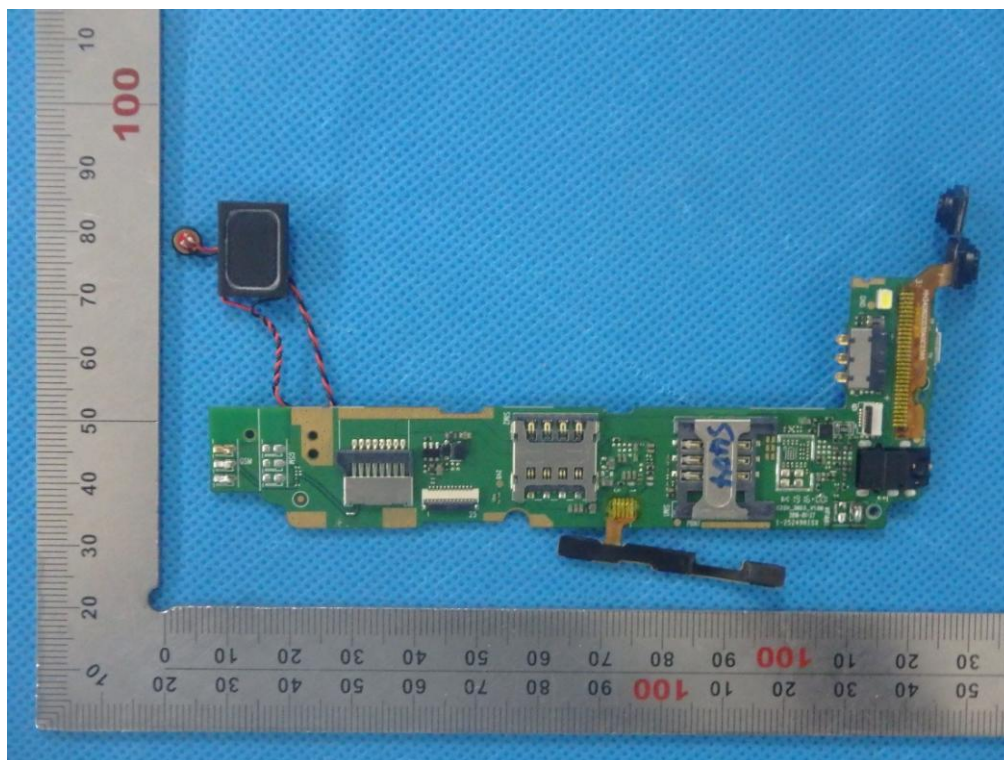
OPEN VIEW OF EUT-2



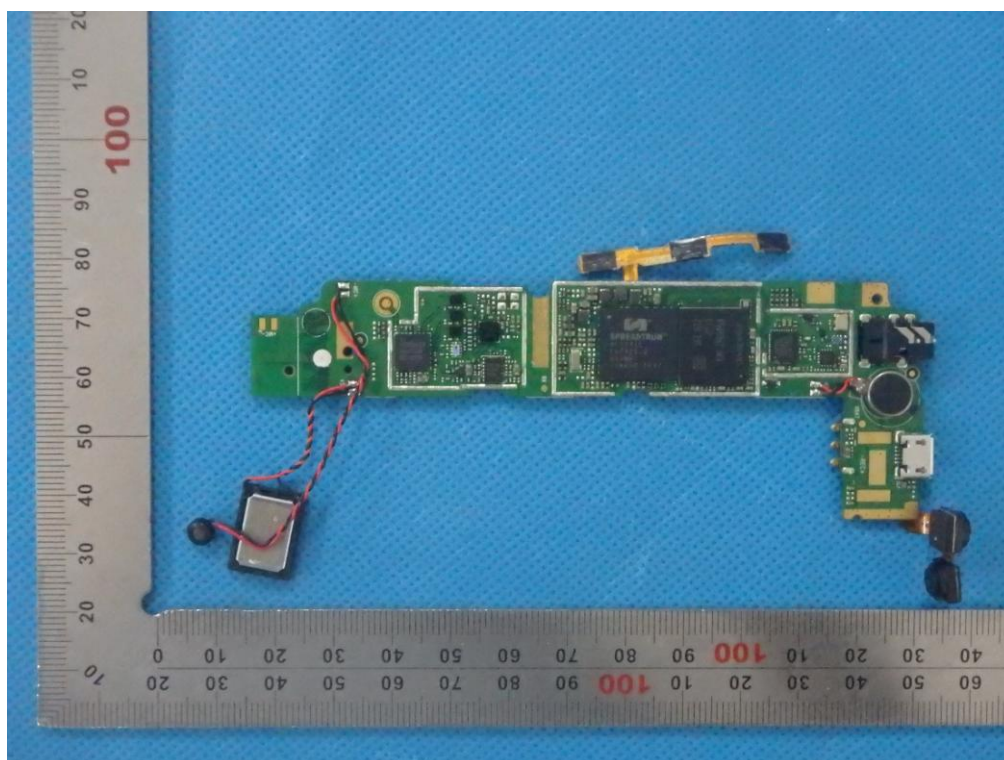
OPEN VIEW OF EUT-3



INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2



-----END OF REPORT-----