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# FCC Test Report

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Report No.: AGC01826160301FE04

**FCC ID** : 2AI62T71L  
**APPLICATION PURPOSE** : Original Equipment  
**PRODUCT DESIGNATION** : Rugged Tablet  
**BRAND NAME** : HUGEROCK  
**MODEL NAME** : T71L, T71PLUS  
**CLIENT** : SOTEN TECHNOLOGY (HONGKONG) CO., LIMITED  
**DATE OF ISSUE** : Aug. 09, 2016  
**STANDARD(S)** : FCC Part 15.247  
**TEST PROCEDURE(S)** : KDB 558074 v03r02  
**REPORT VERSION** : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Aug. 09, 2016	Valid	Original Report

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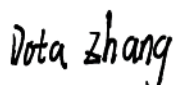
## 1. VERIFICATION OF CONFORMITY

<b>Applicant</b>	SOTEN TECHNOLOGY (HONGKONG) CO., LIMITED
<b>Address</b>	FLAT/RM A10 9/F SILVERCORP INTERNATIONAL TOWER 707-713 NATHAN ROAD MONGKOK KL
<b>Manufacturer</b>	EARNING SPRING GROUP
<b>Address</b>	Chitat Industrial Park, Longping West Road, Central City, Longgang District, Shenzhen, Guangdong, China
<b>Product Designation</b>	Rugged Tablet
<b>Brand Name</b>	HUGEROCK
<b>Test Model</b>	T71L
<b>Series Model</b>	T71PLUS
<b>Difference description</b>	All the same except for the model name.
<b>Date of test</b>	July 21, 2016~Aug.07, 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)

Aug. 09, 2016

Reviewed By



Bart Xie(Xie Xiaobin)

Aug. 09, 2016

Approved By



Solger Zhang(Zhang Hongyi)  
Authorized Officer

Aug. 09, 2016

## 2. GENERAL INFORMATION

### 2.1. PRODUCT DESCRIPTION

The EUT is designed as “Rugged Tablet”. 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: <b>10.64</b> dBm; IEEE 802.11g: <b>9.78</b> dBm; IEEE 802.11n(20): <b>9.31</b> dBm; IEEE 802.11n(40): <b>8.17</b> dBm
<b>Modulation</b>	DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)
<b>Number of channels</b>	11
<b>Hardware Version</b>	M4082_V3.0
<b>Software Version</b>	T71L_20160517_EN
<b>Antenna Designation</b>	Integrated Antenna
<b>Antenna Gain</b>	0.8dBi
<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  
For 40MHZ bandwidth system use Channel 3 to Channel 9

### 2.3. IEEE 802.11N MODULATION SCHEME

MCS Index	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		Data rate(Mbps)	
									800nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0
6	1	64-QAM	3/4	6	312	648	234	489	58.5	121.5
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0

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: 2A162T71L** 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)

Transmit by 802.11n (40MHz) with Data rate

(13.5/27/40.5/54/81/108/121.5/135)

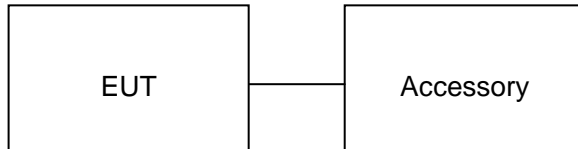
**Note:**

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	Remark
1	Rugged Tablet	T71L	2AI62T71L	EUT
2	Adapter	8395-UW01-1070	DC5.3V/2.0A	Accessory
3	Battery	8567127	DC3.7V/10000mAh	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 20,2016	July19,2017
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**

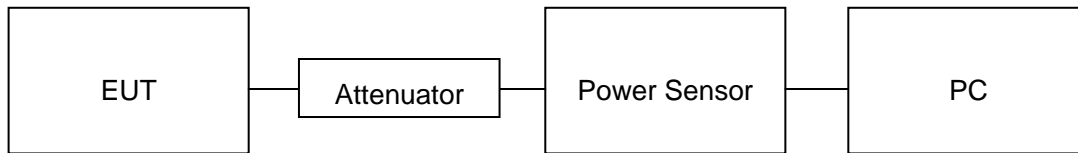
For max average conducted output power test:

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	10.64	30	Pass
2.437	10.52	30	Pass
2.462	10.57	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	9.72	30	Pass
2.437	9.66	30	Pass
2.462	9.78	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	9.31	30	Pass
2.437	9.24	30	Pass
2.462	9.22	30	Pass

<b>TEST ITEM</b>	OUTPUT POWER
<b>TEST MODE</b>	802.11n 40 with data rate 13.5

<b>Frequency (GHz)</b>	<b>Average Power (dBm)</b>	<b>Applicable Limits (dBm)</b>	<b>Pass or Fail</b>
2.422	8.11	30	Pass
2.437	8.17	30	Pass
2.452	8.16	30	Pass



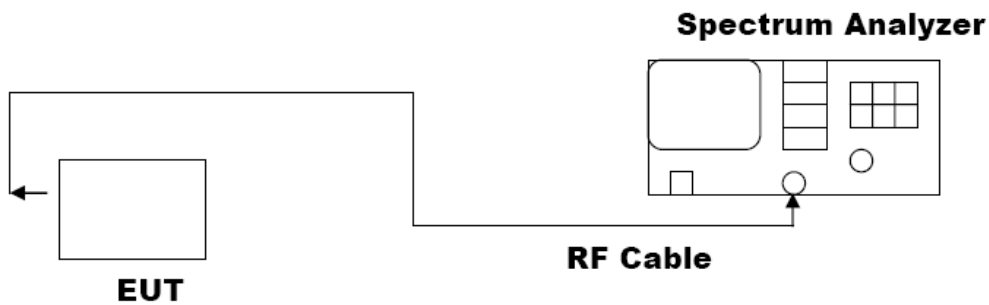
## 8. 6DB BANDWIDTH

### 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.

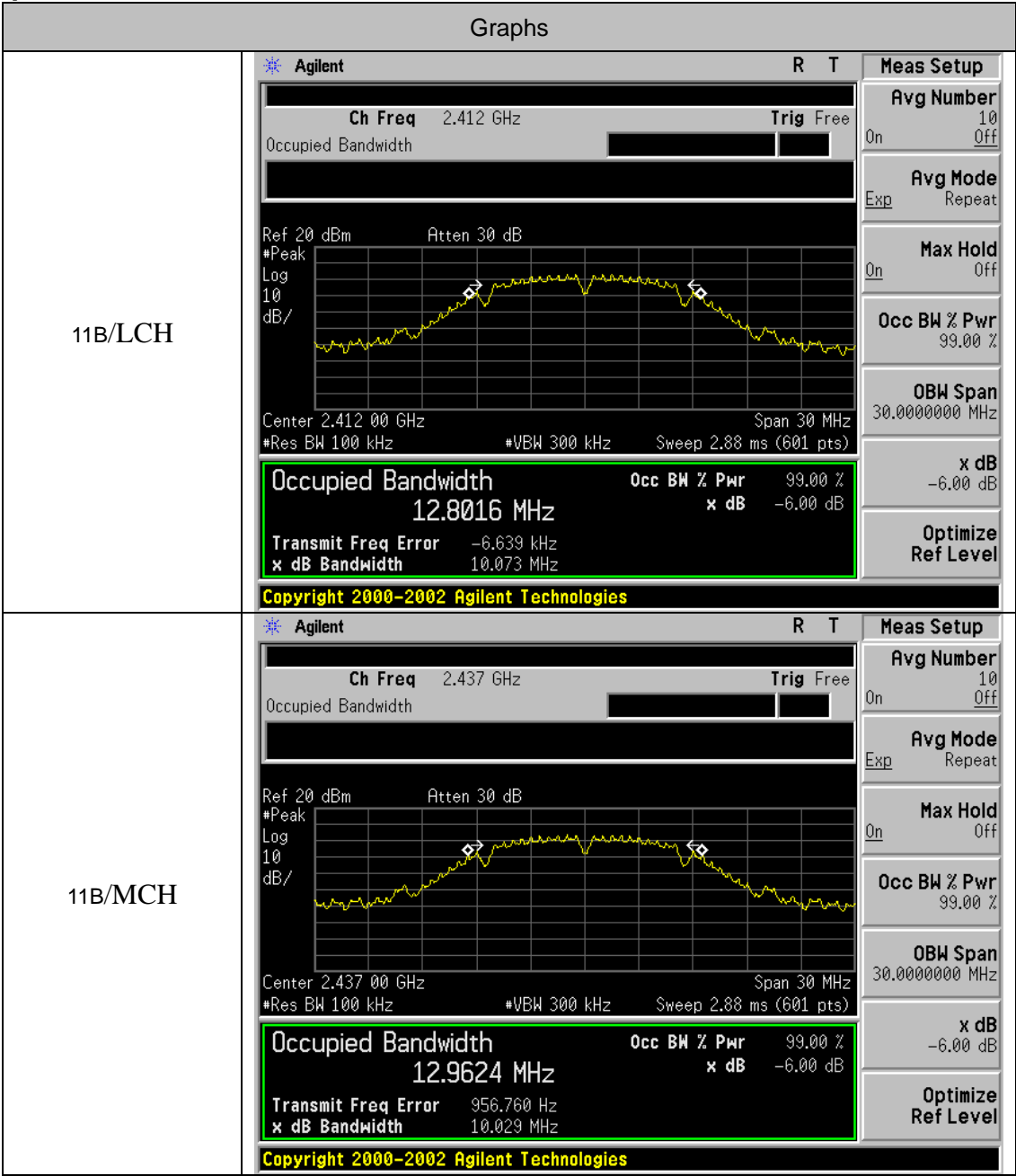
### 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

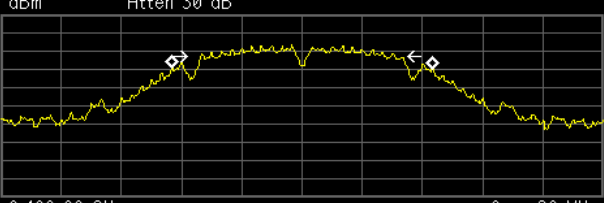


### 8.3. LIMITS AND MEASUREMENT RESULTS

Mode	Channel	6dB Bandwidth [MHz]	OBW [MHz]	Verdict
11B	LCH	10.073	12.8016	PASS
11B	MCH	10.029	12.9624	PASS
11B	HCH	9.650	12.9782	PASS
11G	LCH	14.742	16.3597	PASS
11G	MCH	14.060	16.4212	PASS
11G	HCH	14.691	16.3661	PASS
11N20SISO	LCH	15.084	17.5416	PASS
11N20SISO	MCH	15.663	17.5583	PASS
11N20SISO	HCH	15.170	17.5271	PASS
11N40SISO	LCH	35.269	35.7826	PASS
11N40SISO	MCH	35.320	35.8166	PASS
11N40SISO	HCH	35.486	35.7698	PASS

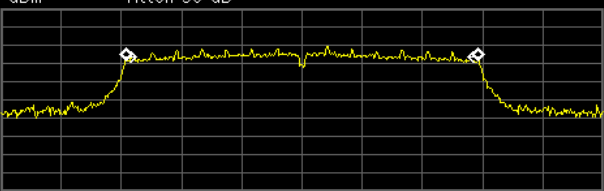
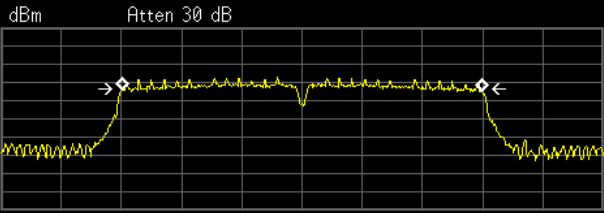
Test Graph

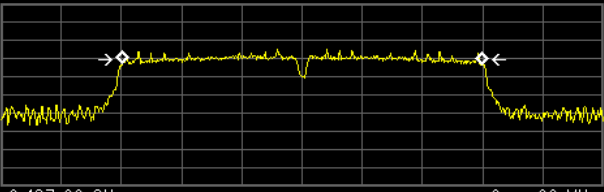



11B/HCH	<div><div><div>Agilent</div><div>R T</div></div><div><div>Ch Freq 2.462 GHz</div><div>Trig Free</div></div><div>Occupied Bandwidth</div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div></div><div>Center 2.462 00 GHz</div><div>Span 30 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>12.9782 MHz</div><div>Occ BW % Pwr 99.00 %</div><div>x dB -6.00 dB</div><div>Transmit Freq Error -9.661 kHz</div><div>x dB Bandwidth 9.650 MHz</div></div><div>Copyright 2000-2002 Agilent Technologies</div></div> <div><div>Meas Setup</div><div>Avg Number 10</div><div>On Off</div><div>Avg Mode Repeat</div><div>Exp</div><div>Max Hold Off</div><div>On</div><div>Occ BW % Pwr 99.00 %</div><div>OBW Span 30.0000000 MHz</div><div>x dB -6.00 dB</div><div>Optimize Ref Level</div></div>
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11G/MCH	<div><div>Agilent</div><div>R T</div><div>Meas Setup</div><div>Ch Freq 2.437 GHz</div><div>Trig Free</div><div>Occupied Bandwidth</div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</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>Occupied Bandwidth</div><div>16.4212 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>15.883 kHz</div><div>x dB Bandwidth</div><div>14.060 MHz</div><div>Copyright 2000-2002 Agilent Technologies</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>
11G/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>Ref 20 dBm</div><div>Atten 30 dB</div><div>#Peak</div><div>Log</div><div>10</div><div>dB/</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>Occupied Bandwidth</div><div>16.3661 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>-2.070 kHz</div><div>x dB Bandwidth</div><div>14.691 MHz</div><div>Copyright 2000-2002 Agilent Technologies</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>

11N20SISO/LCH	<div><div>Agilent</div><div><div>Ch Freq2.412 GHz</div><div>TrigFree</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><div>Occupied Bandwidth</div><div>17.5416 MHz</div><div>Occ BW % Pwr99.00 %</div><div>x dB-6.00 dB</div><div>Transmit Freq Error-9.010 kHz</div><div>x dB Bandwidth15.084 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>On</div><div>Off</div></div><div><div>Avg Mode</div><div>Exp</div><div>Repeat</div></div><div><div>Max Hold</div><div>On</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>
11N20SISO/MCH	<div><div>Agilent</div><div><div>Ch Freq2.437 GHz</div><div>TrigFree</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><div>Occupied Bandwidth</div><div>17.5583 MHz</div><div>Occ BW % Pwr99.00 %</div><div>x dB-6.00 dB</div><div>Transmit Freq Error1.440 kHz</div><div>x dB Bandwidth15.663 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>On</div><div>Off</div></div><div><div>Avg Mode</div><div>Exp</div><div>Repeat</div></div><div><div>Max Hold</div><div>On</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>

11N20SISO/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>17.5271 MHz</div><div>Occ BW % Pwr99.00 %</div><div>x dB-6.00 dB</div><div>Transmit Freq Error-1.583 kHz</div><div>x dB Bandwidth15.170 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>ExpRepeat</div></div><div><div>Max Hold</div><div>OnOff</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>
11N40SISO/LCH	<div><div>Agilent</div><div><div>Ch Freq2.422 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 2.422 00 GHz</div><div>Span 60 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 5.76 ms (601 pts)</div></div><div><div>Occupied Bandwidth</div><div>35.7826 MHz</div><div>Occ BW % Pwr99.00 %</div><div>x dB-6.00 dB</div><div>Transmit Freq Error-26.344 kHz</div><div>x dB Bandwidth35.269 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>ExpRepeat</div></div><div><div>Max Hold</div><div>OnOff</div></div><div><div>Occ BW % Pwr</div><div>99.00 %</div></div><div><div>OBW Span</div><div>60.0000000 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>

11N40SISO/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>#Peak</div><div>Log</div><div>10</div><div>dB/</div><div></div><div>Center 2.437 00 GHz</div><div>Span 60 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 5.76 ms (601 pts)</div></div><div><div>Occupied Bandwidth</div><div>35.8166 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>9.492 kHz</div><div>x dB Bandwidth</div><div>35.320 MHz</div></div><div>Copyright 2000-2002 Agilent Technologies</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>60.0000000 MHz</div><div>x dB</div><div>-6.00 dB</div><div>Optimize</div><div>Ref Level</div></div>
11N40SISO/HCH	<div><div>Agilent</div><div><div>Ch Freq2.452 GHz</div><div>TrigFree</div><div>Occupied Bandwidth</div></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 2.452 00 GHz</div><div>Span 60 MHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Sweep 5.76 ms (601 pts)</div></div><div><div>Occupied Bandwidth</div><div>35.7698 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>-14.971 kHz</div><div>x dB Bandwidth</div><div>35.486 MHz</div></div><div>Copyright 2000-2002 Agilent Technologies</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>60.0000000 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

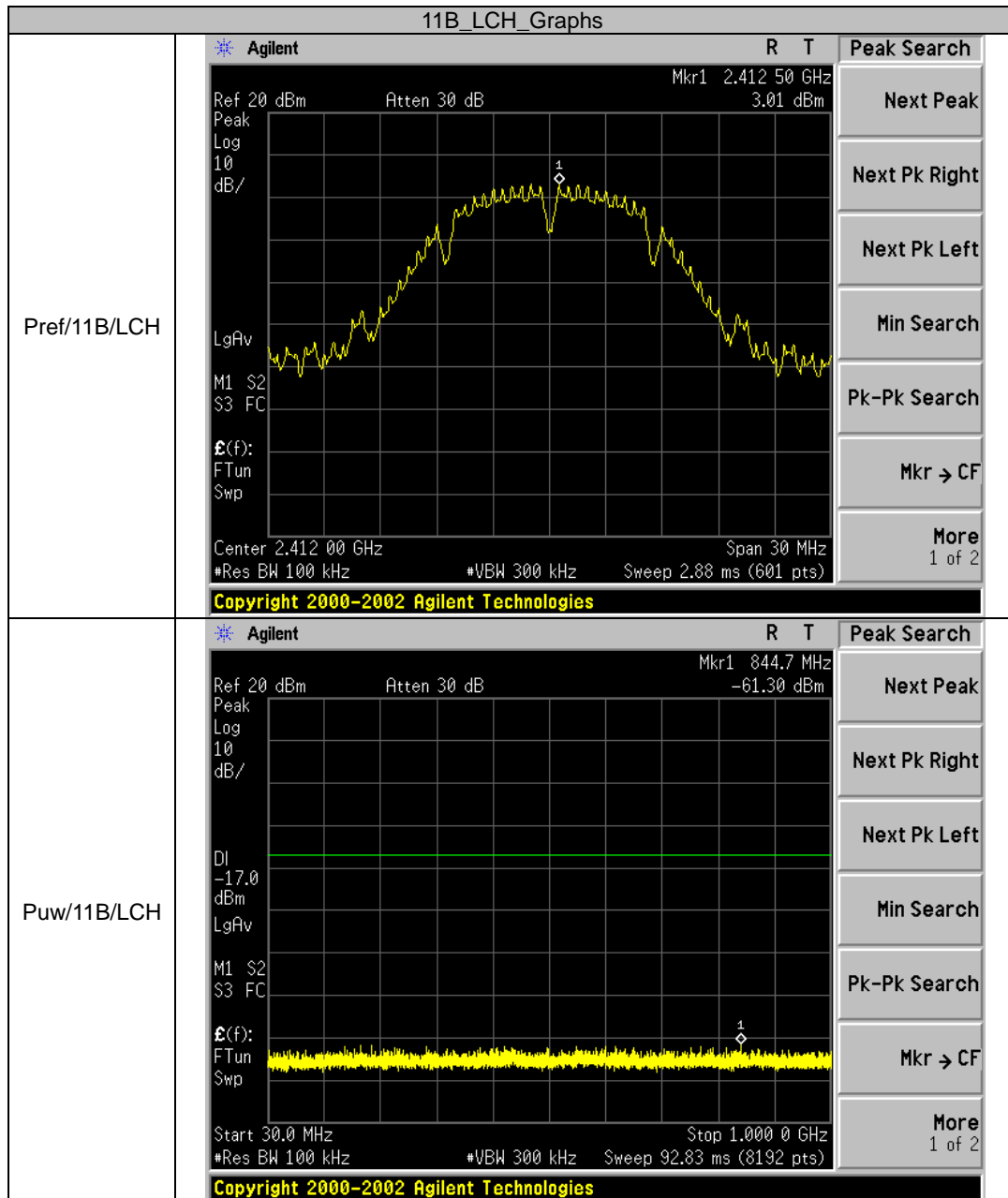
The same as described in section 6.

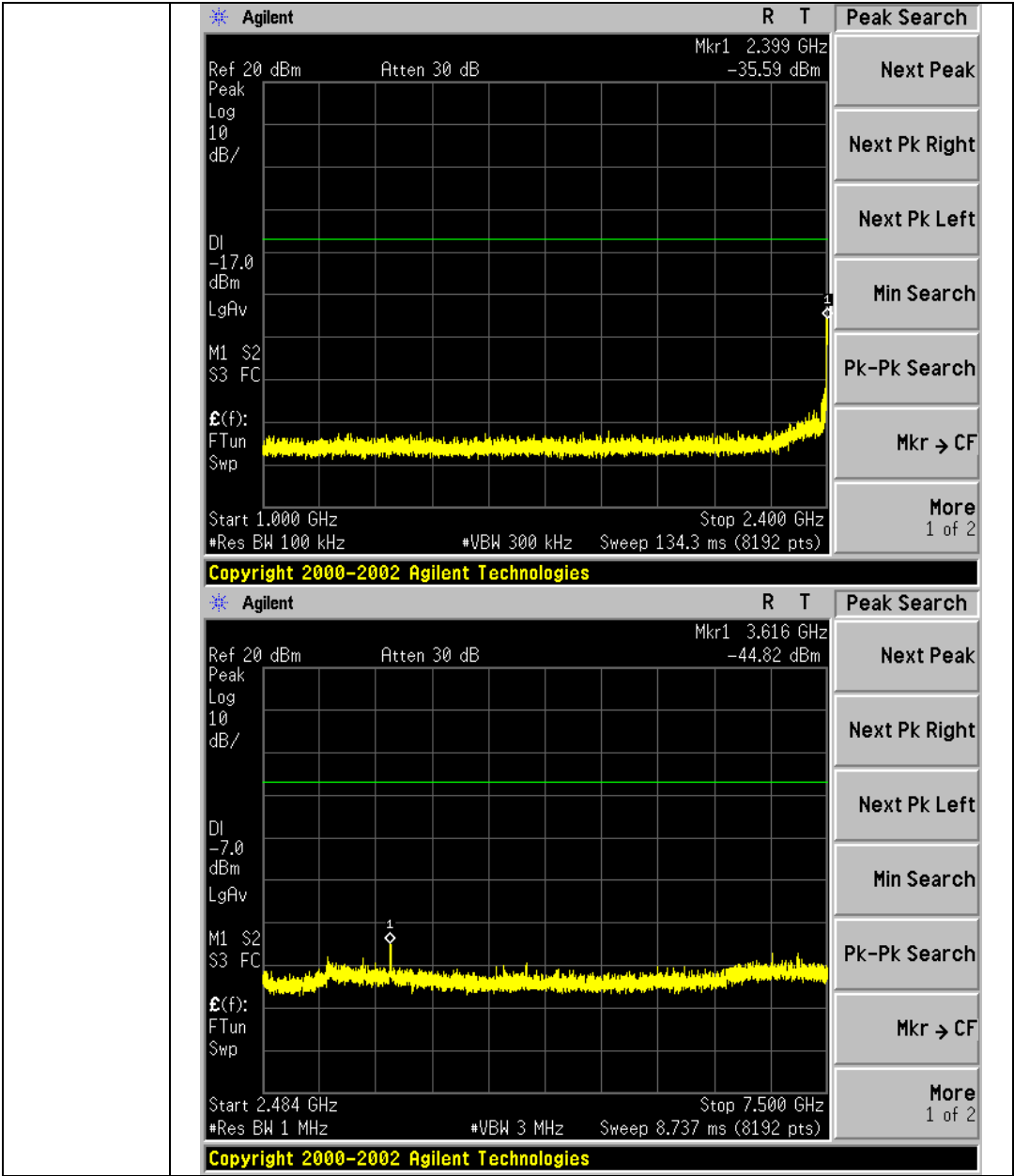
### 9.4. LIMITS AND MEASUREMENT RESULT

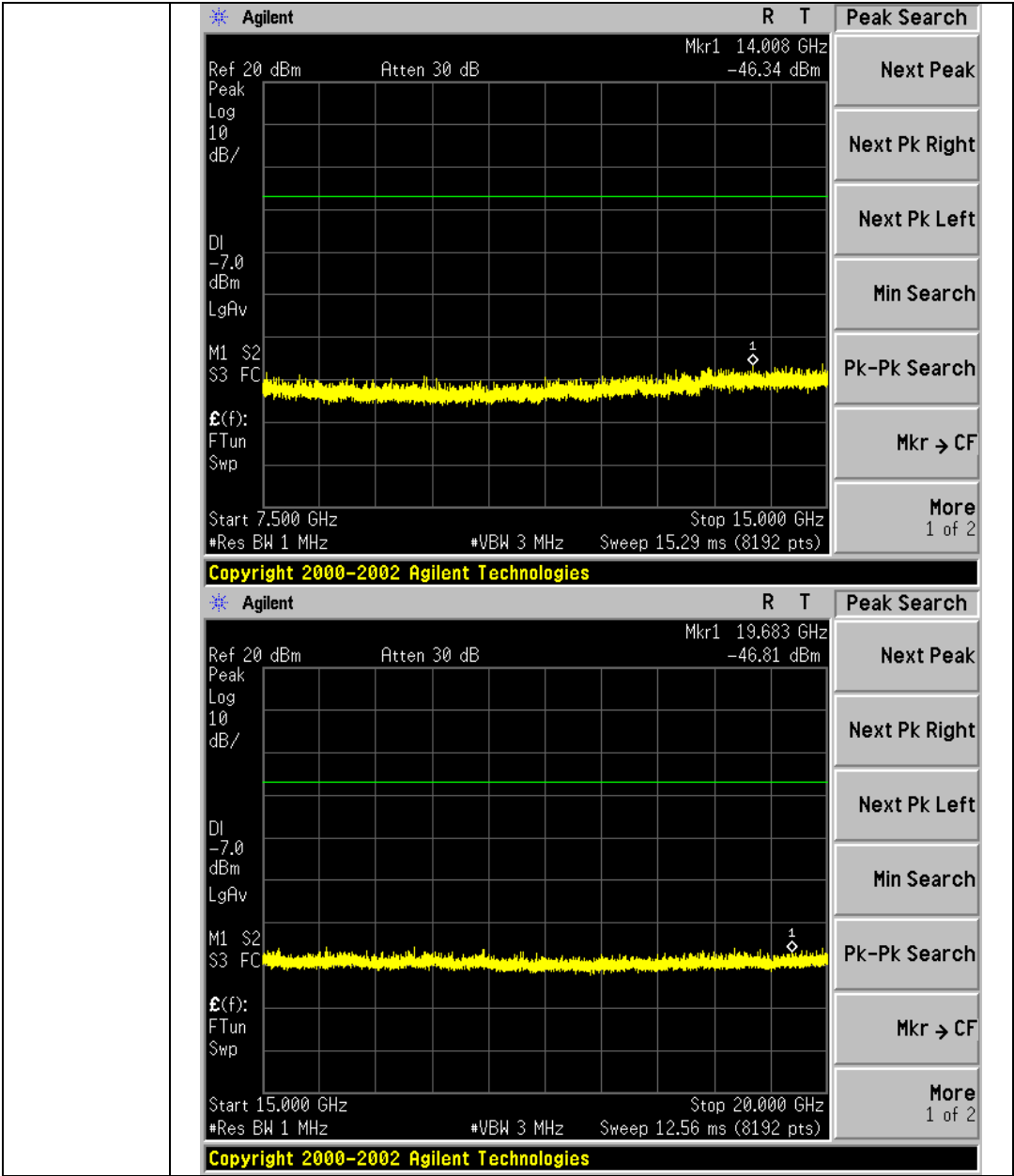
LIMITS AND MEASUREMENT RESULT		
Applicable Limits	Measurement Result	
	Test Data	Criteria
In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below 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







Peak Search

Next Peak

Next Pk Right

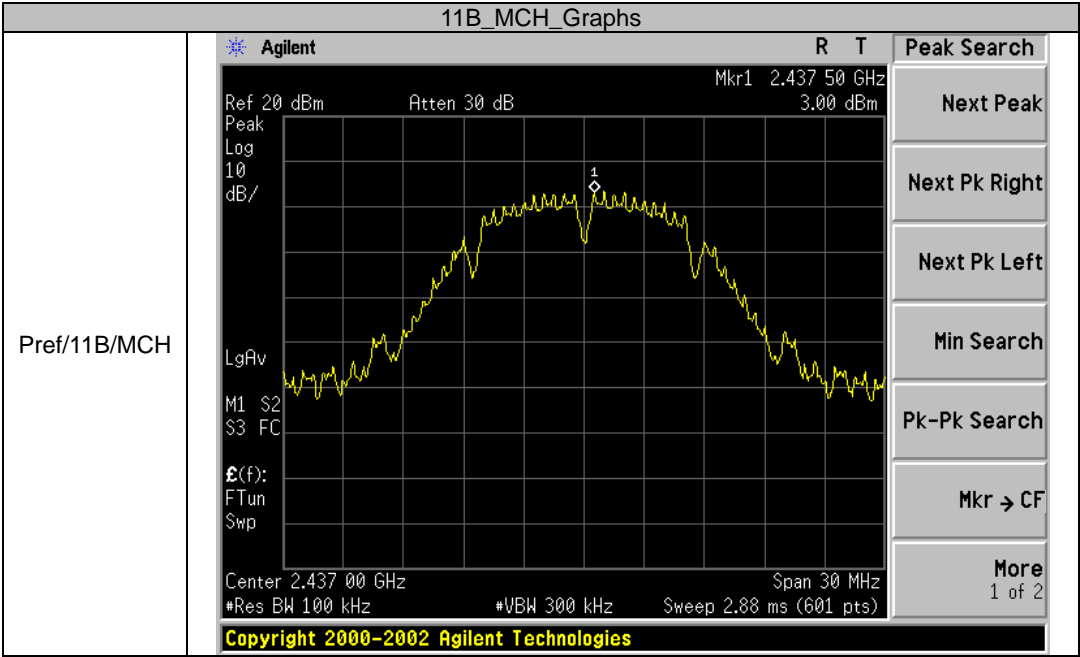
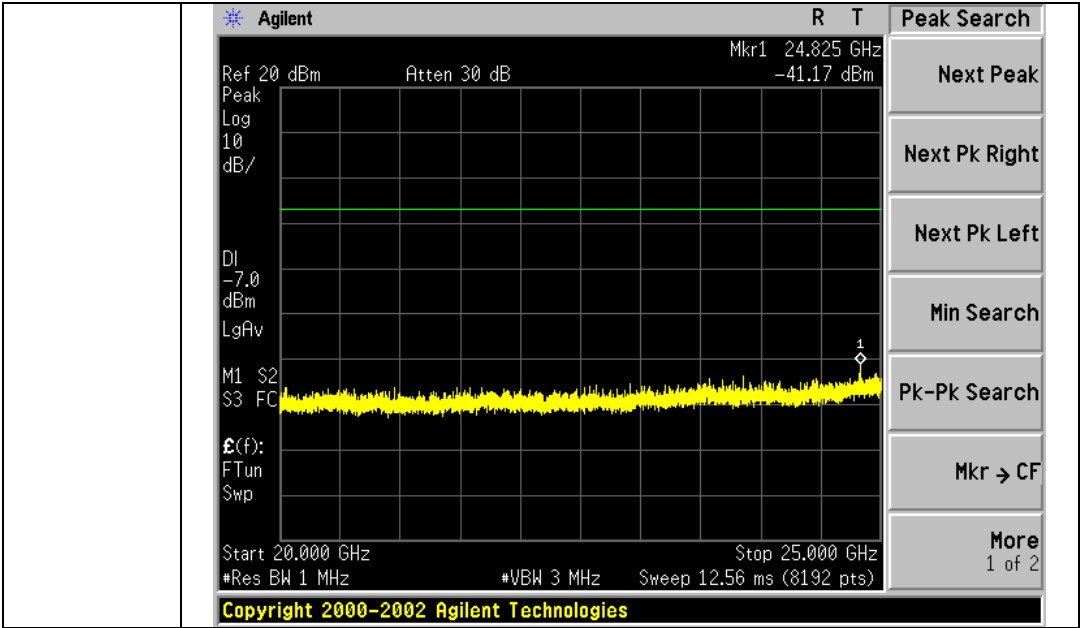
Next Pk Left

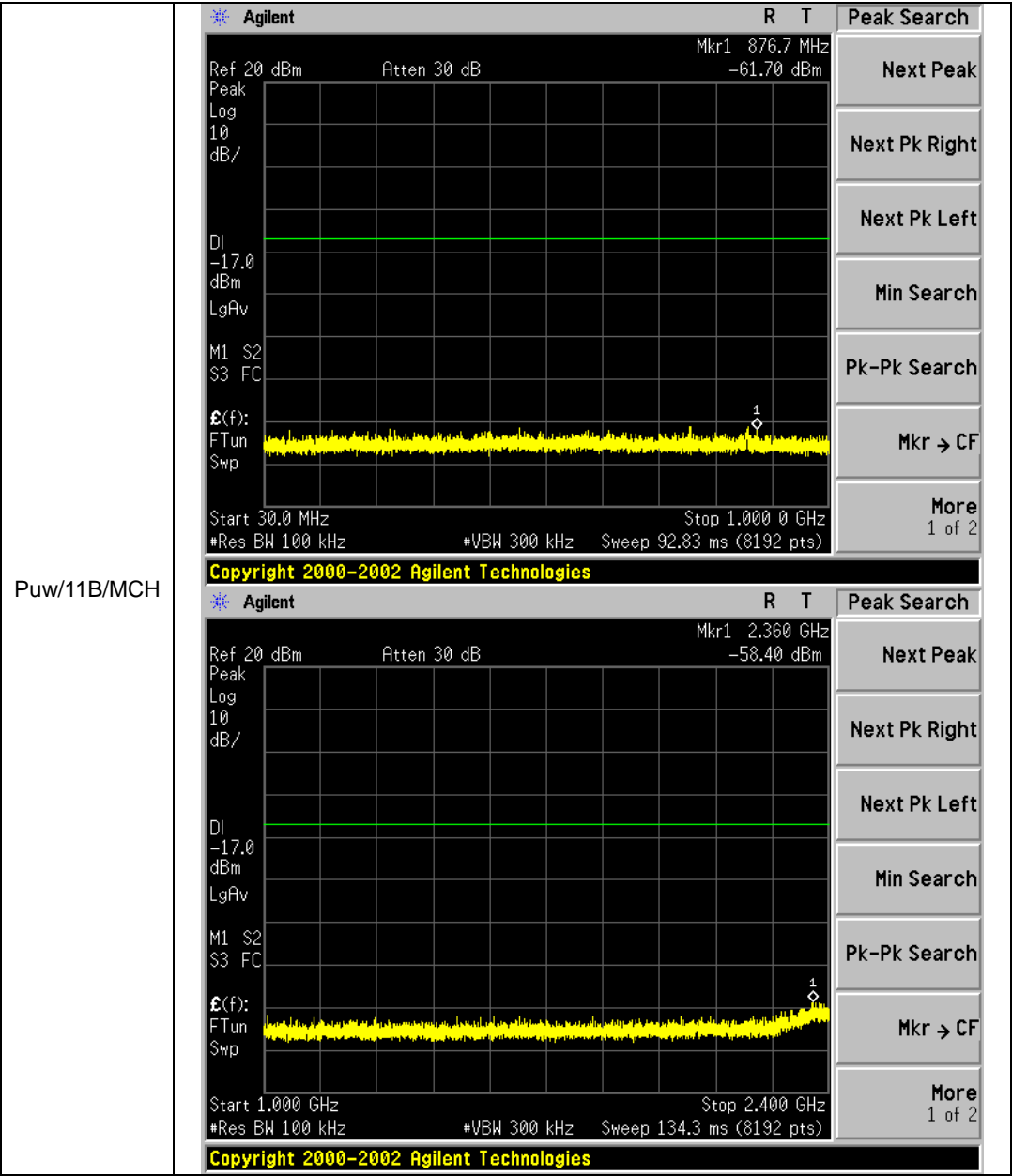
Min Search

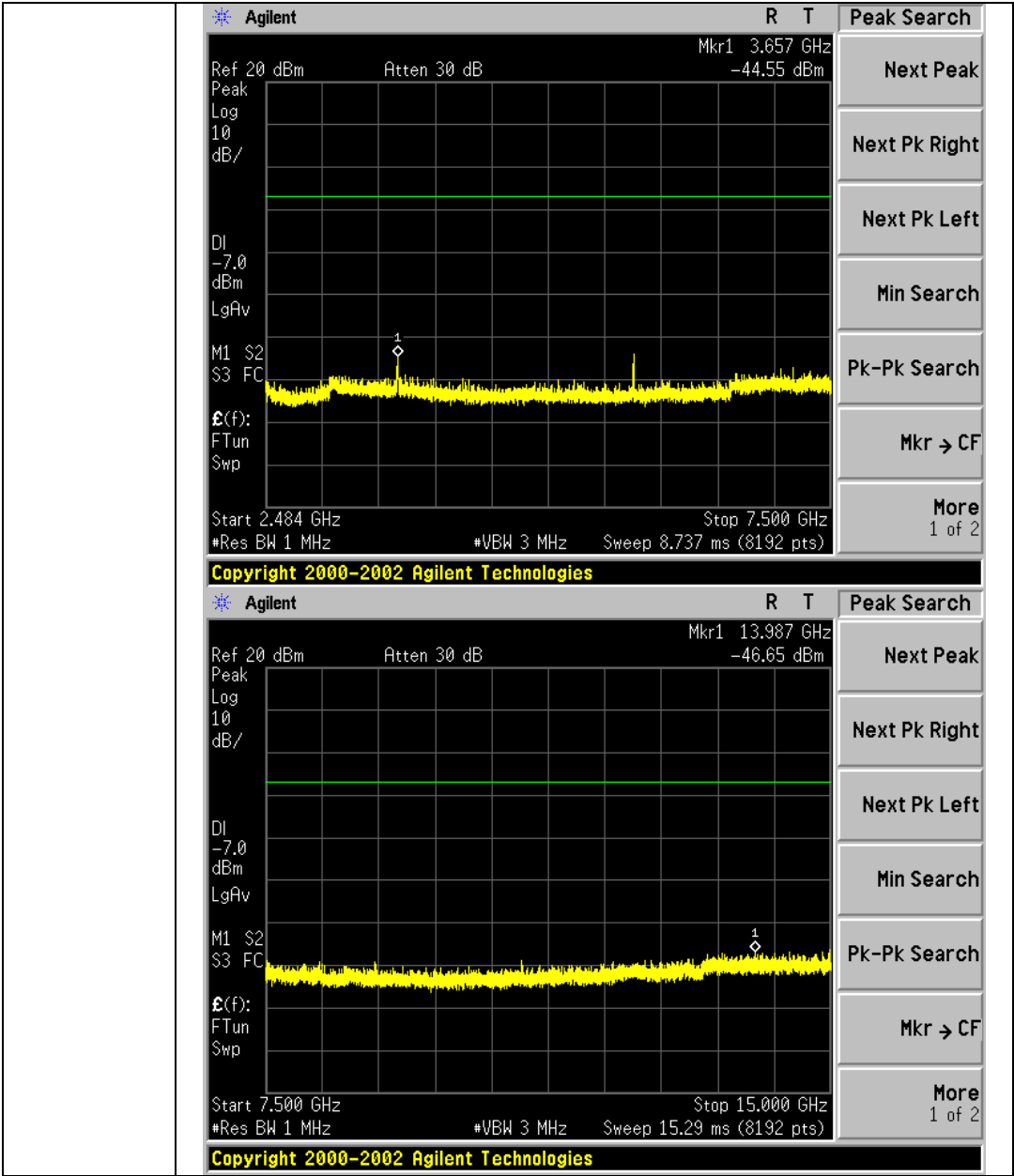
Pk-Pk Search

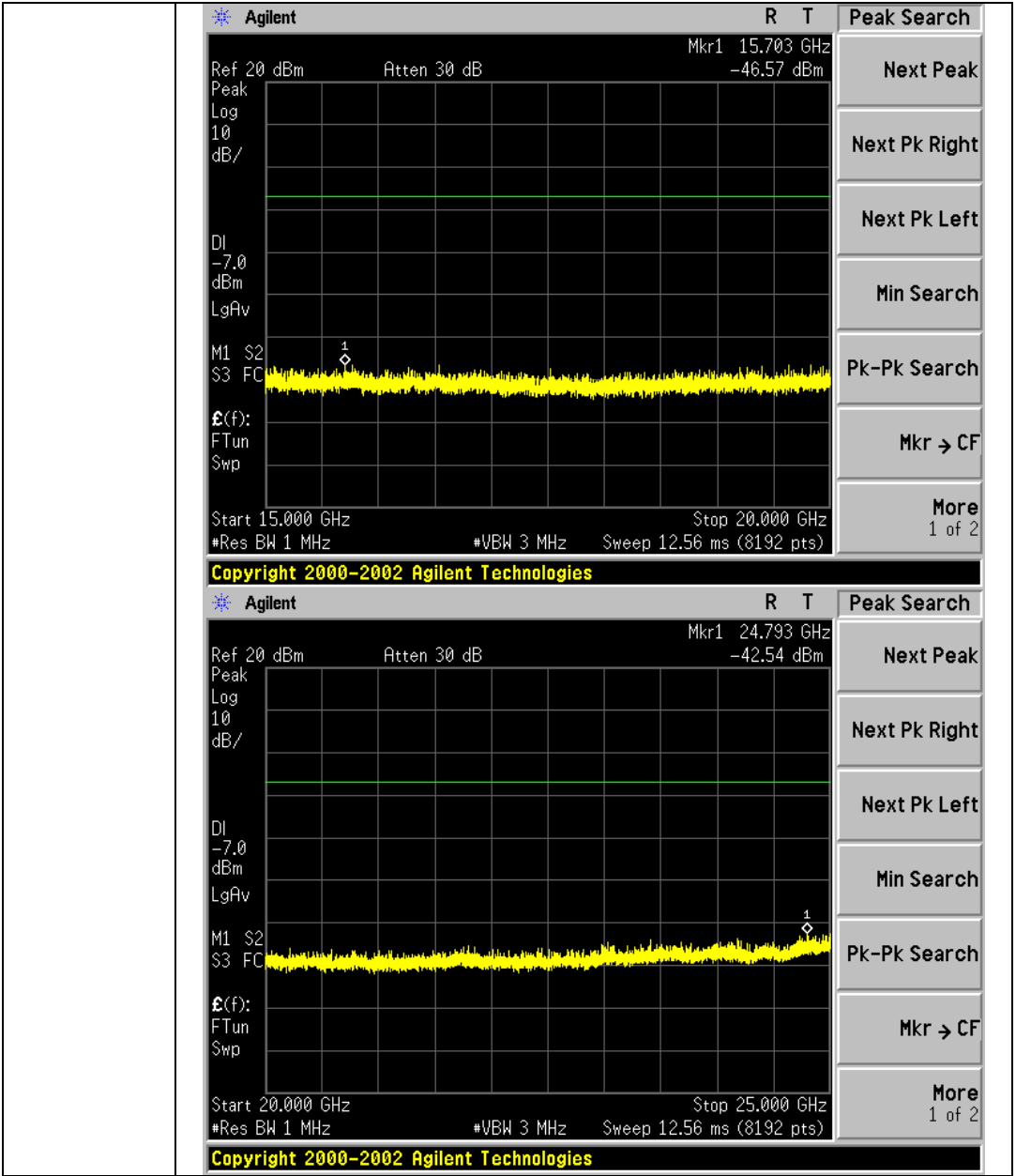
Mkr → CF

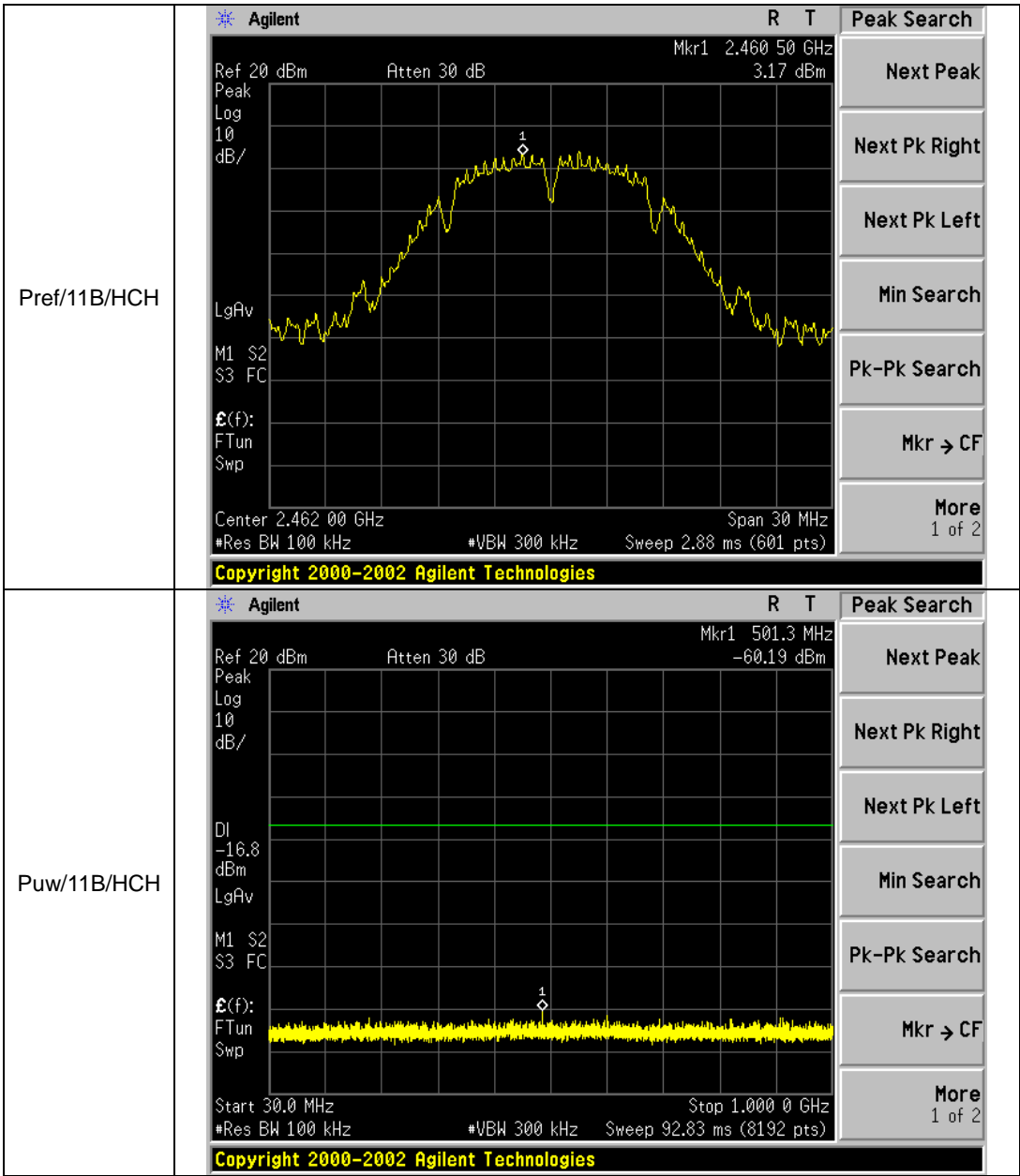
More 1 of 2



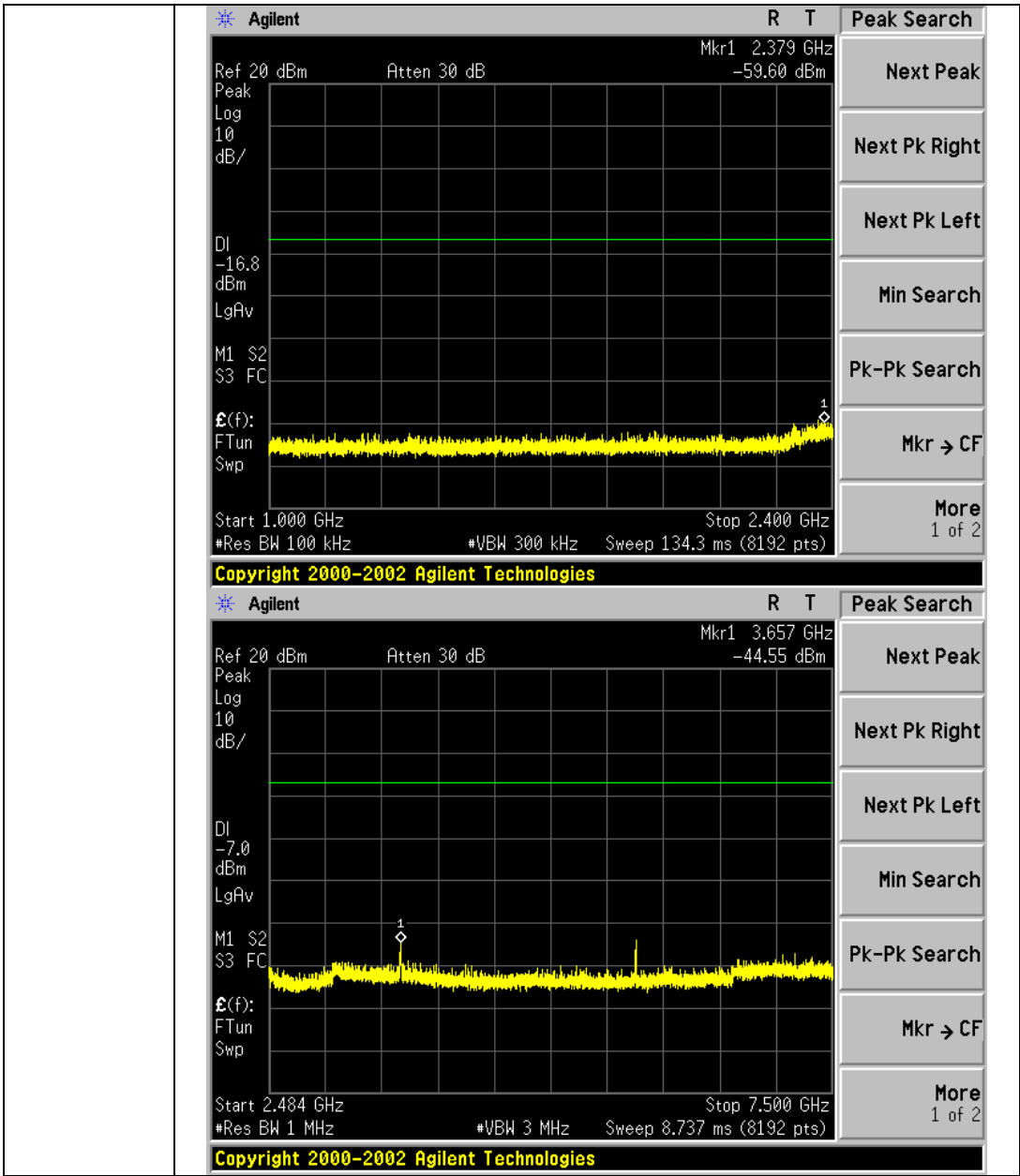


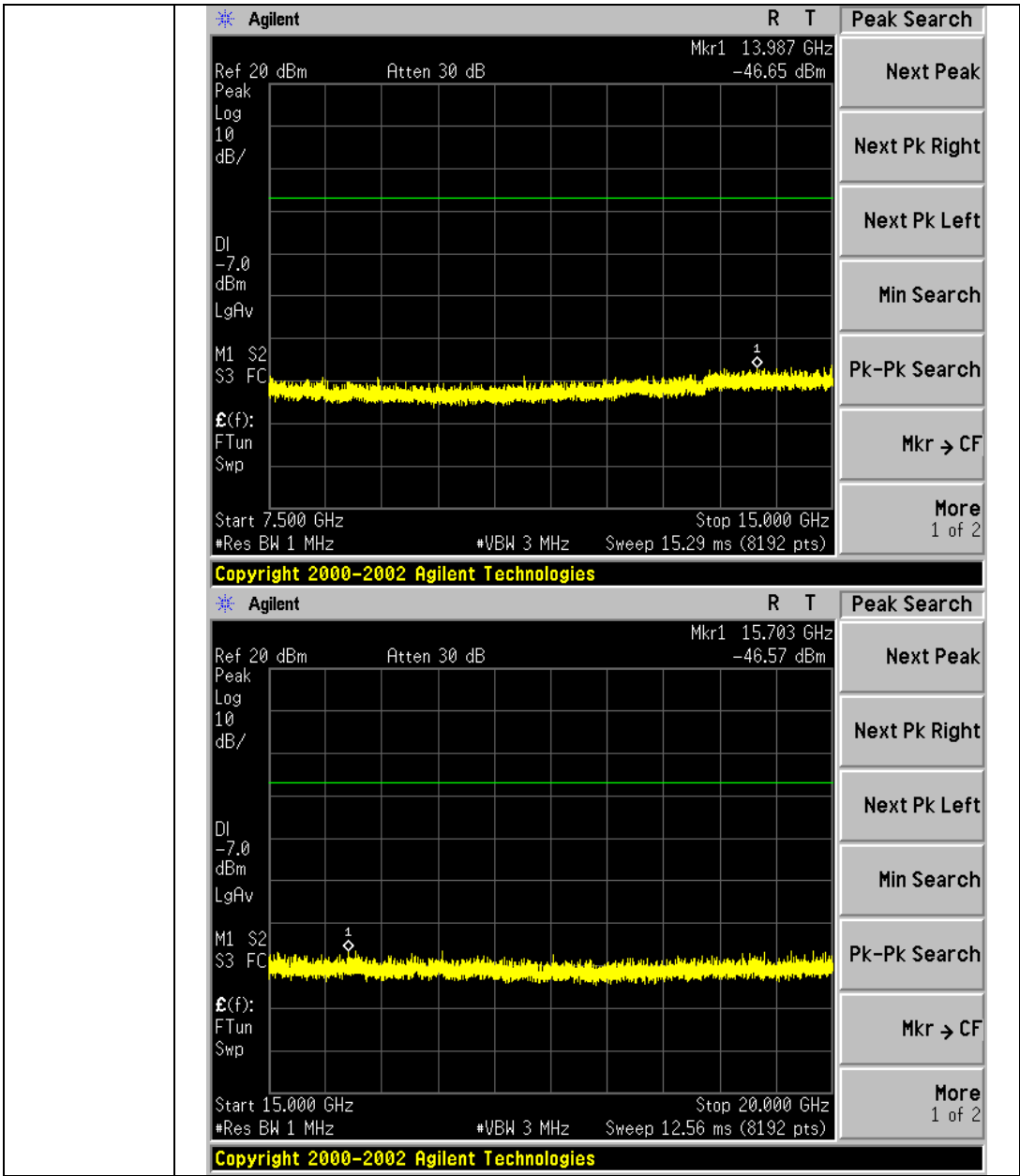


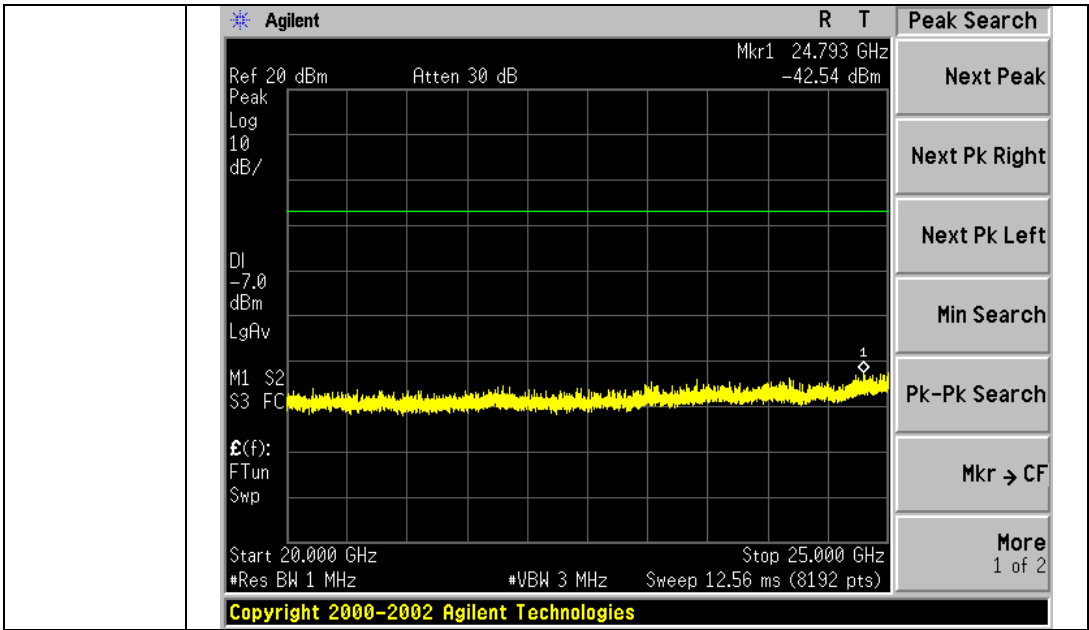


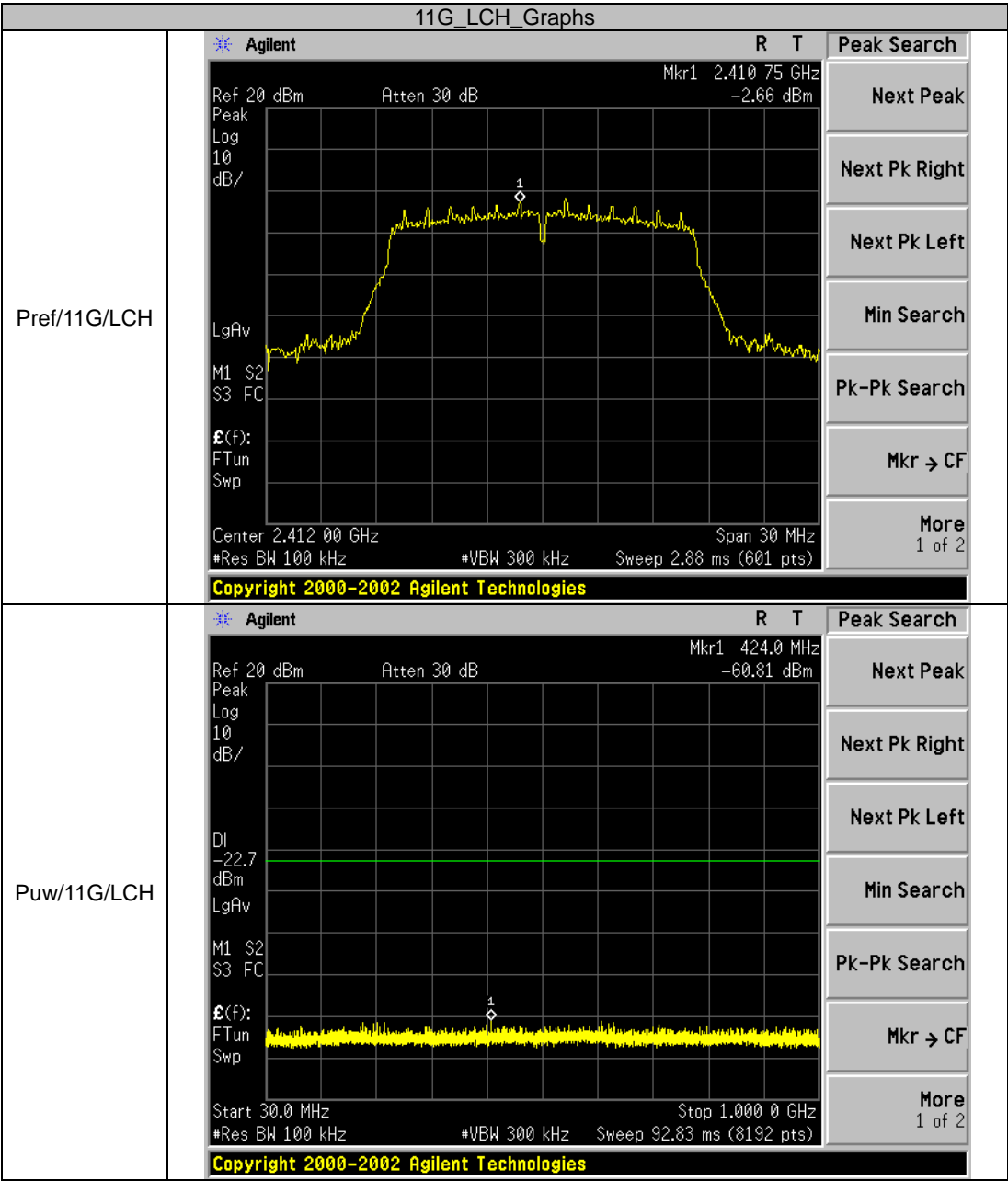


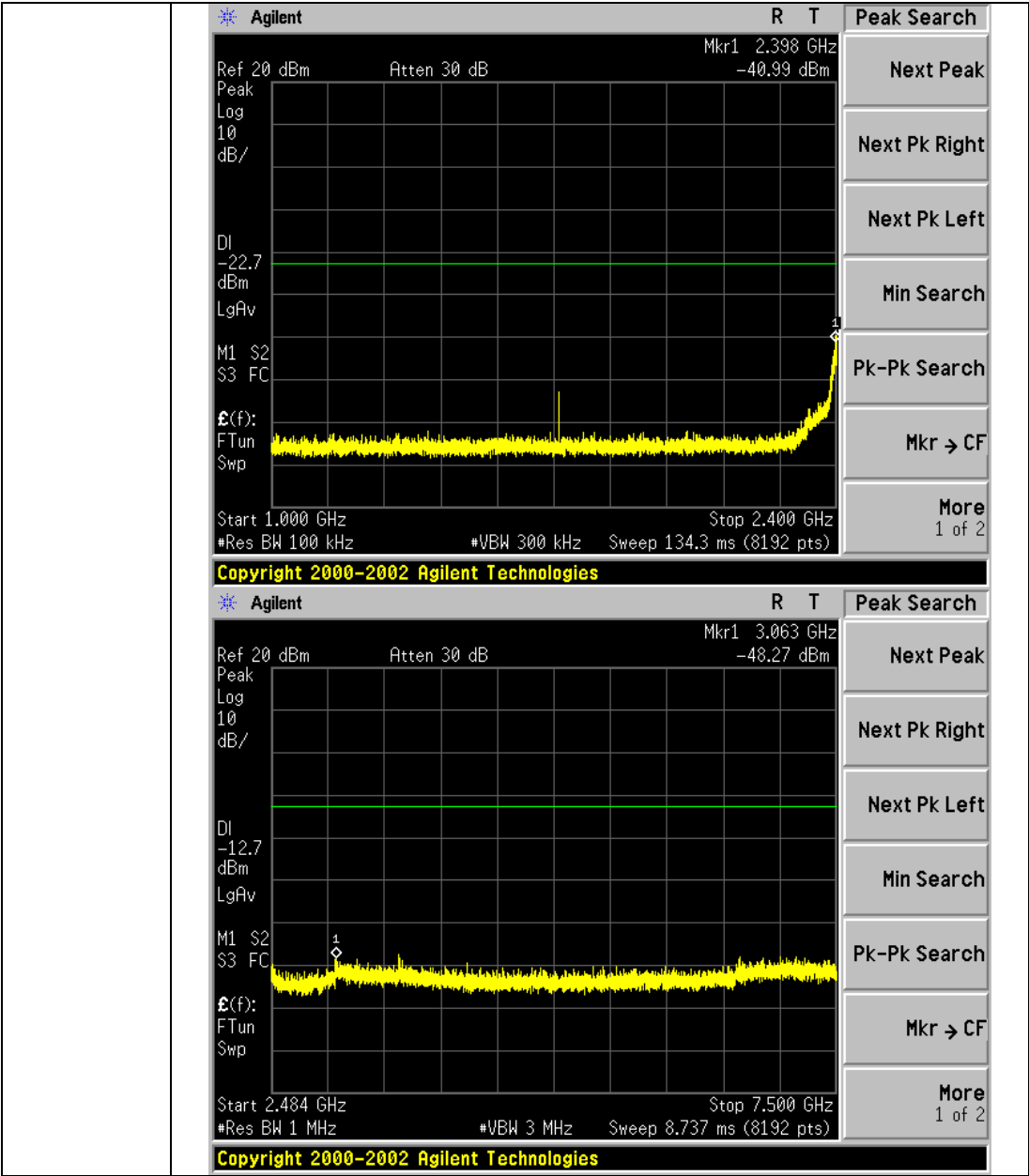


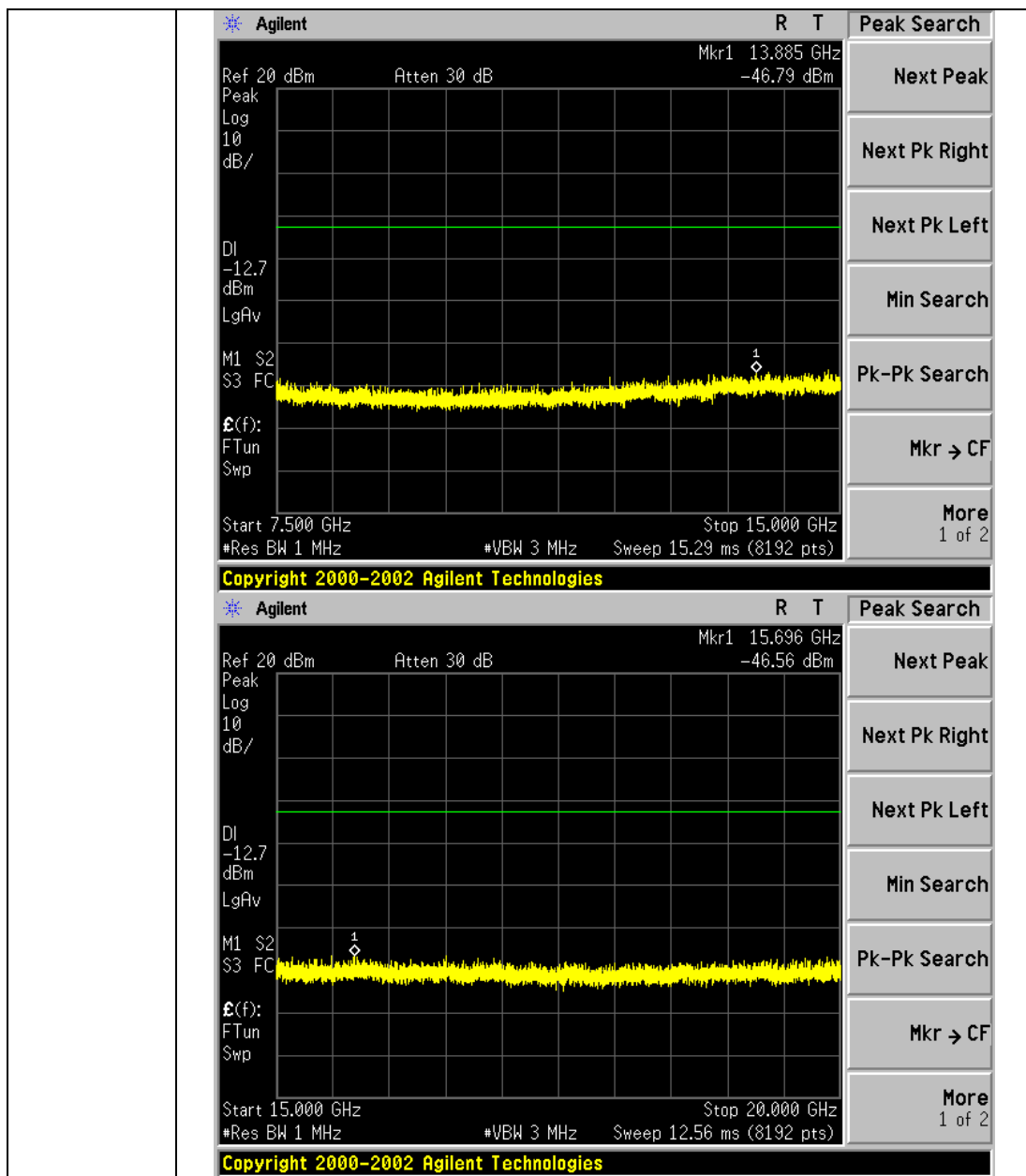


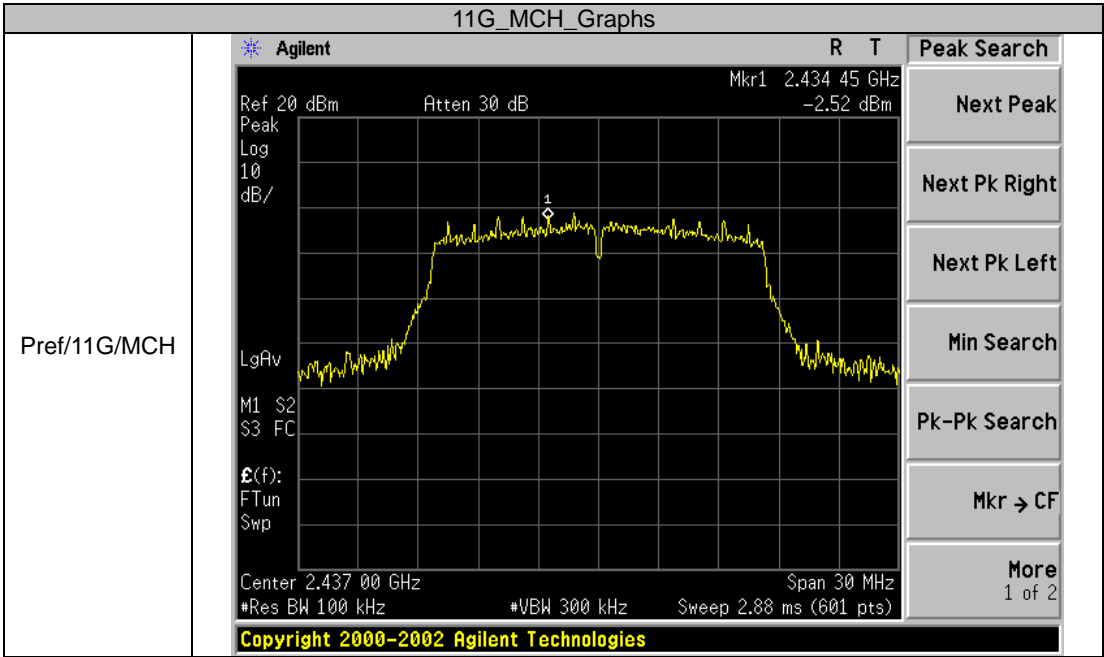
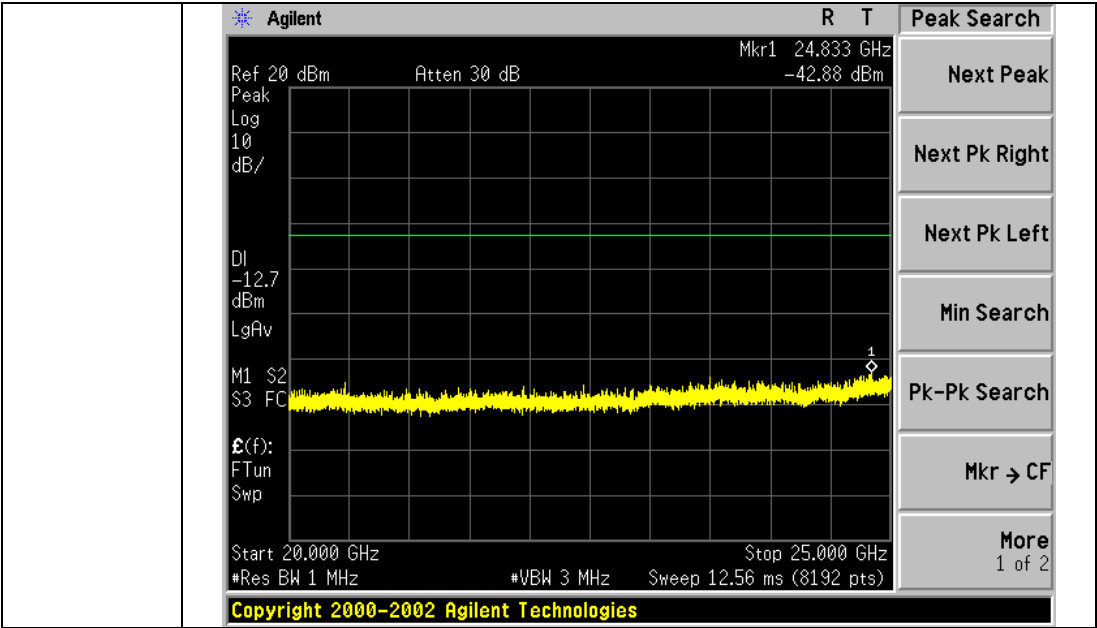


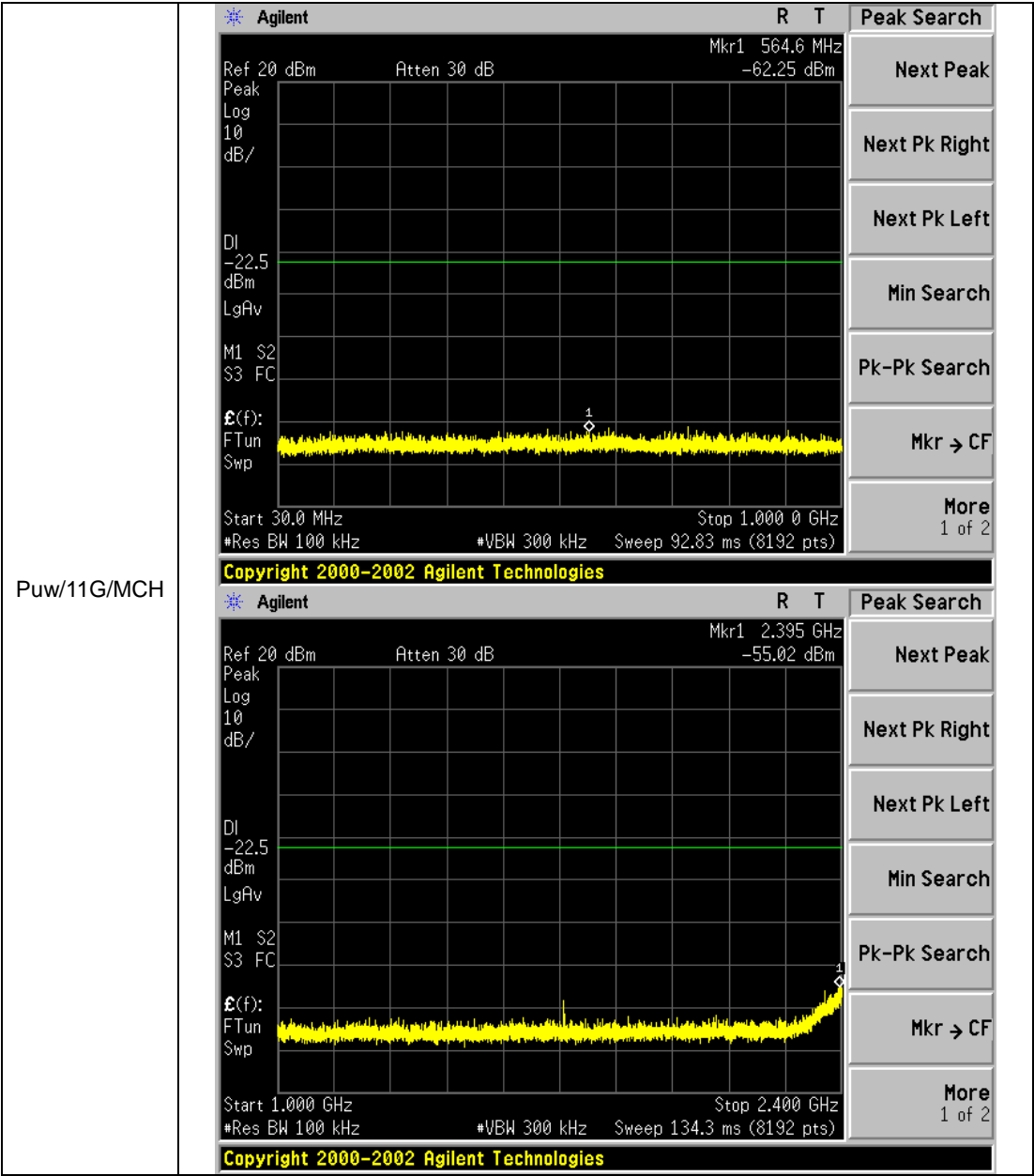






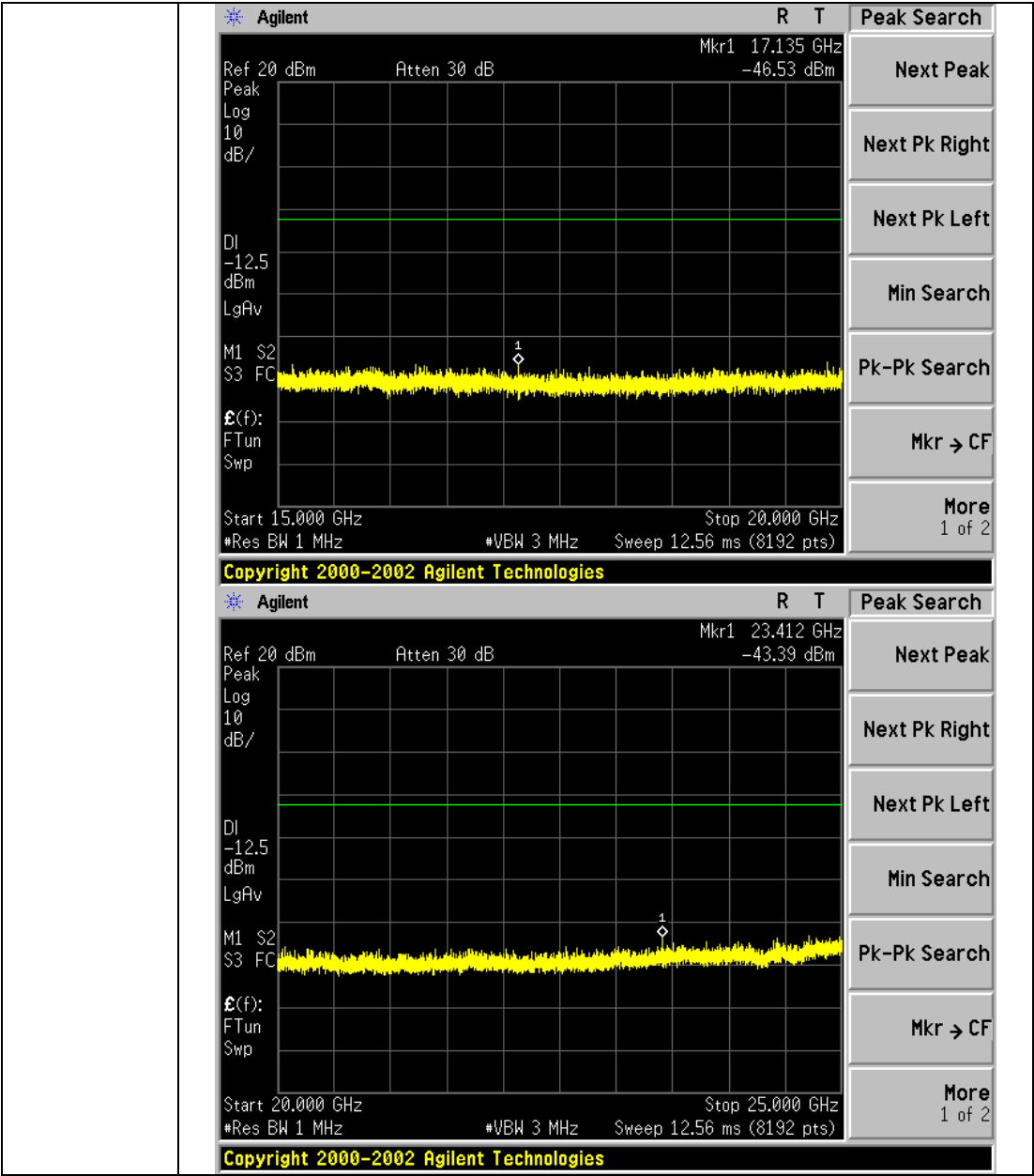


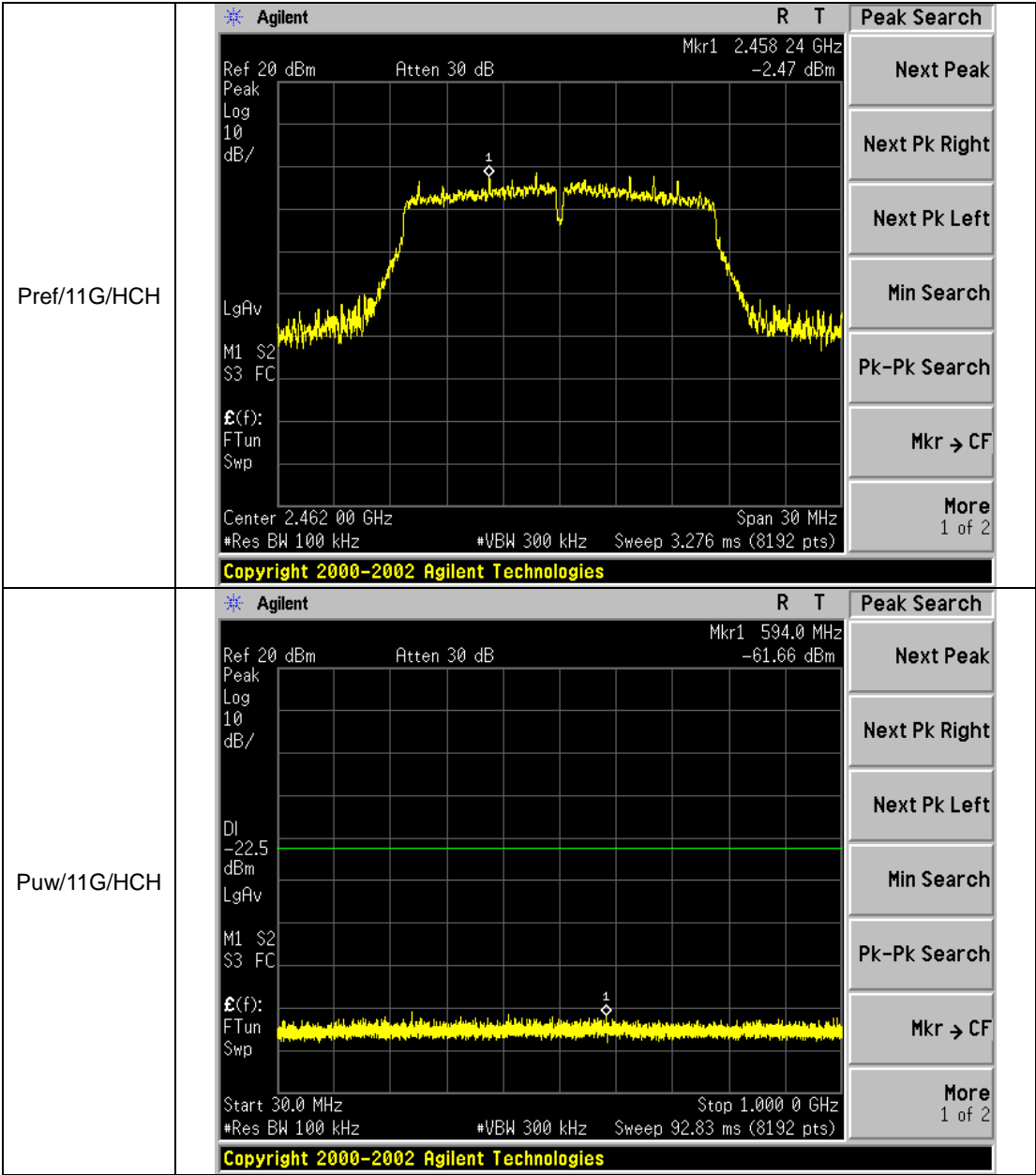


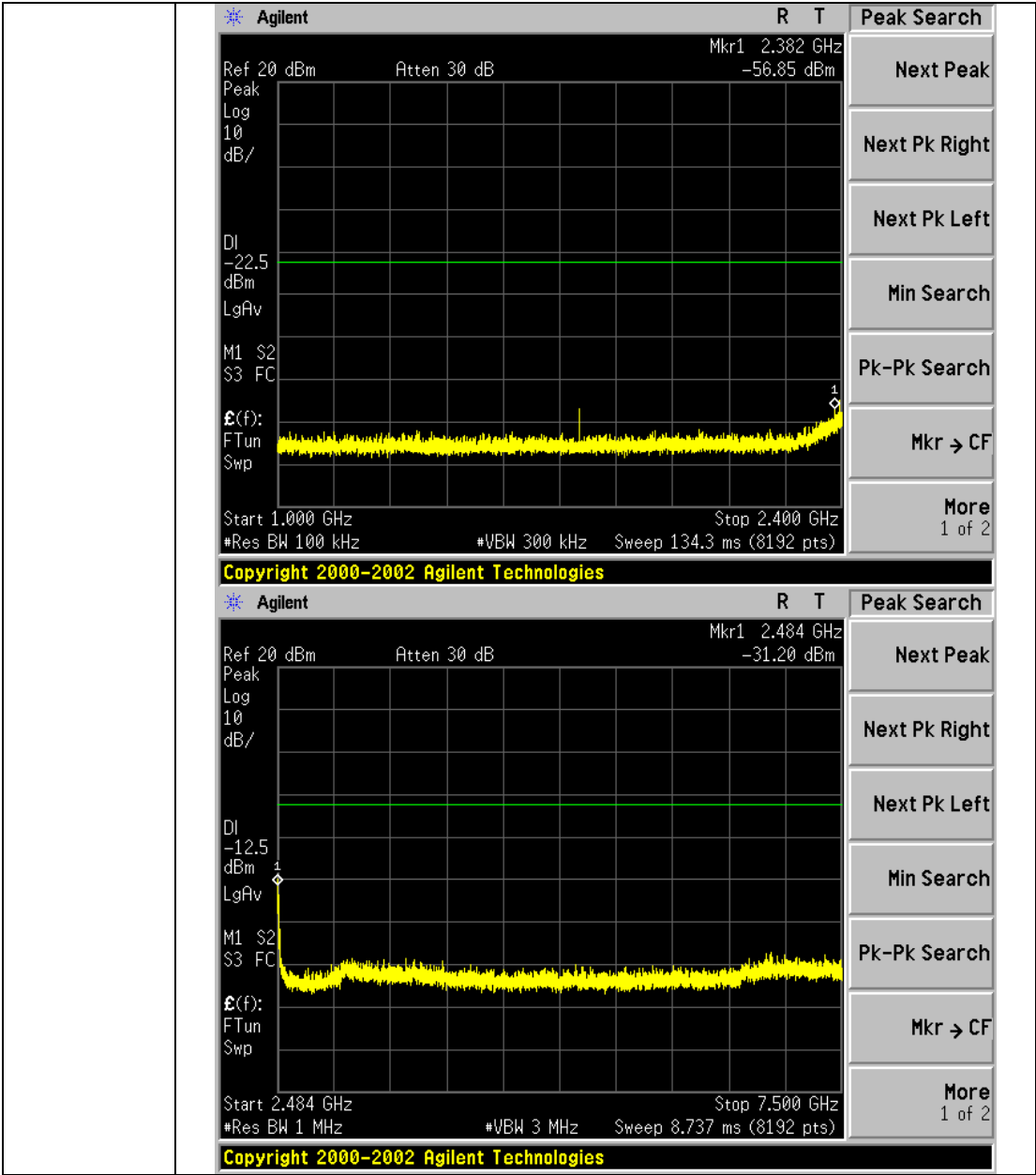


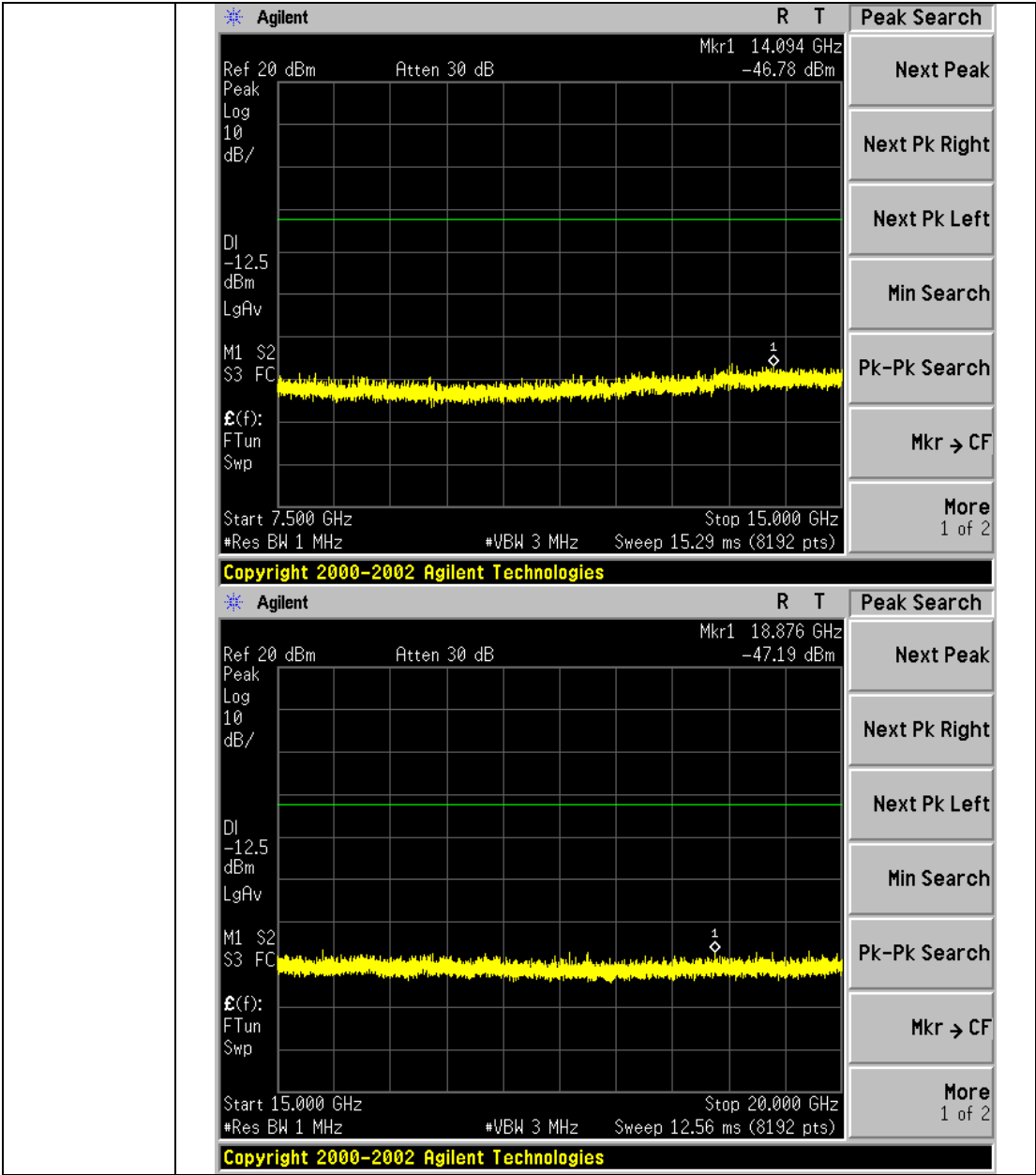


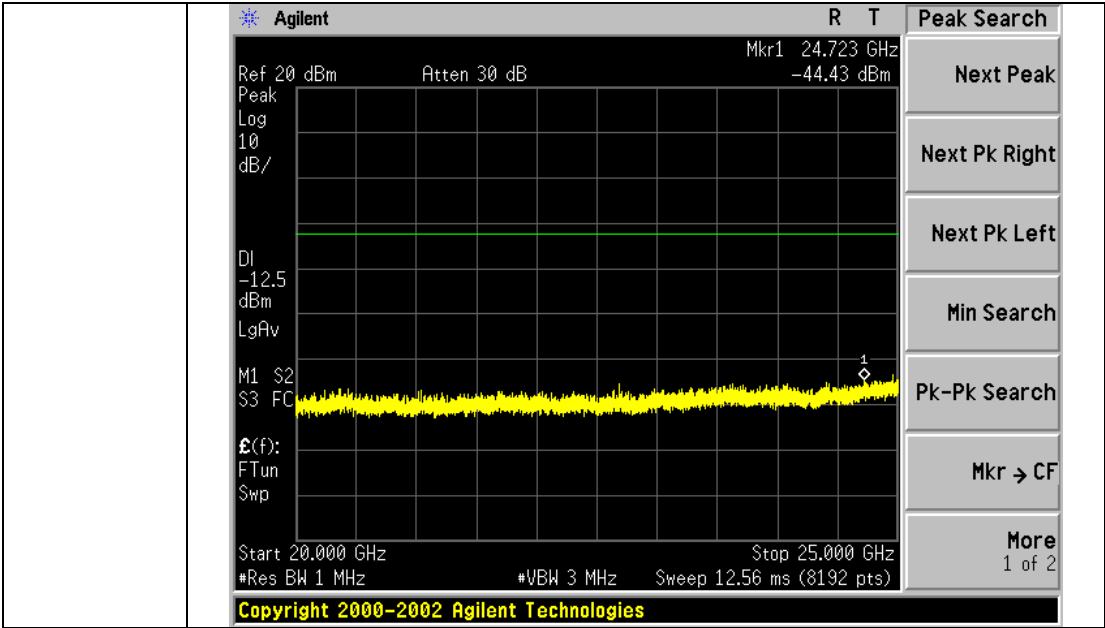


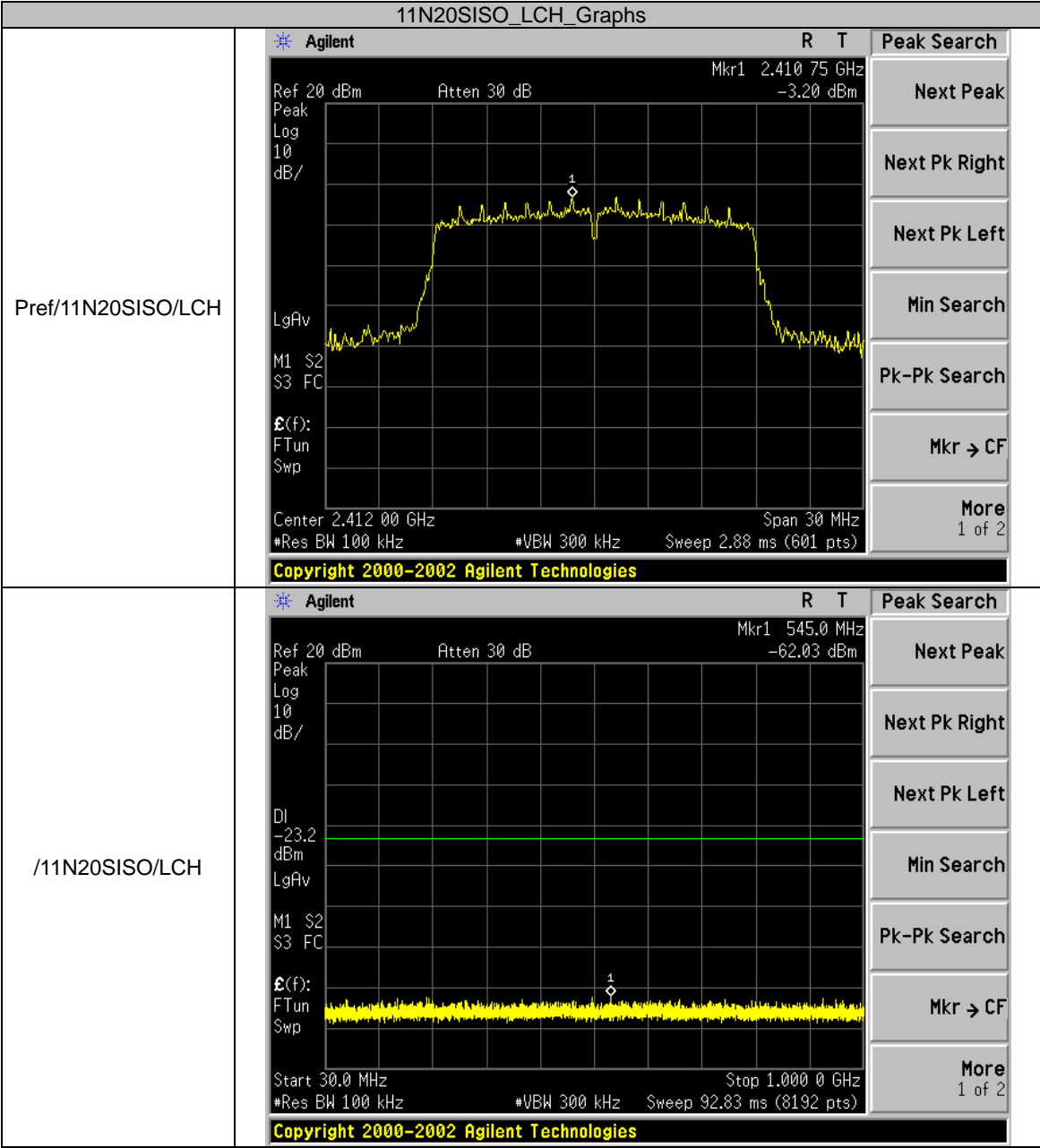


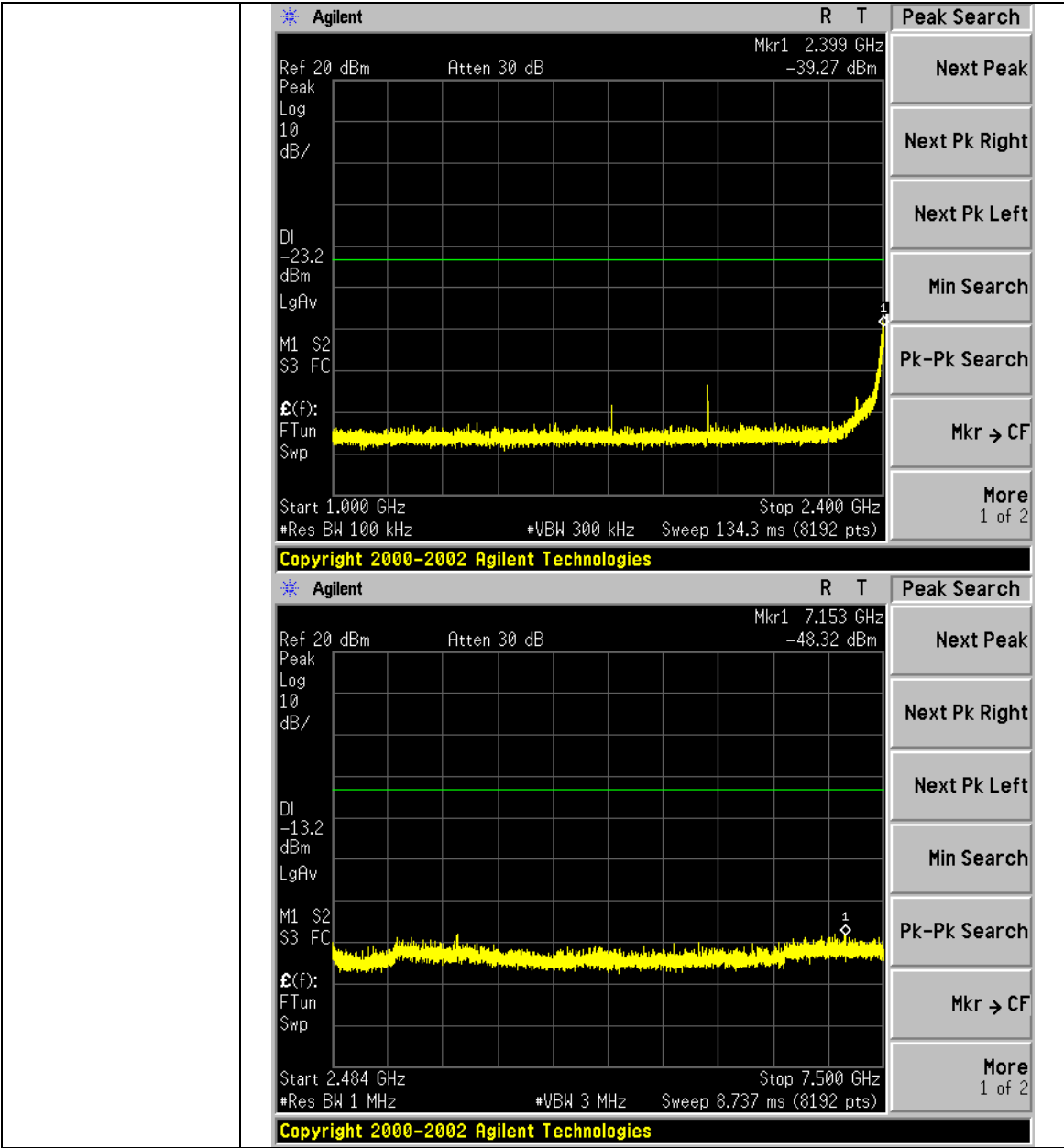




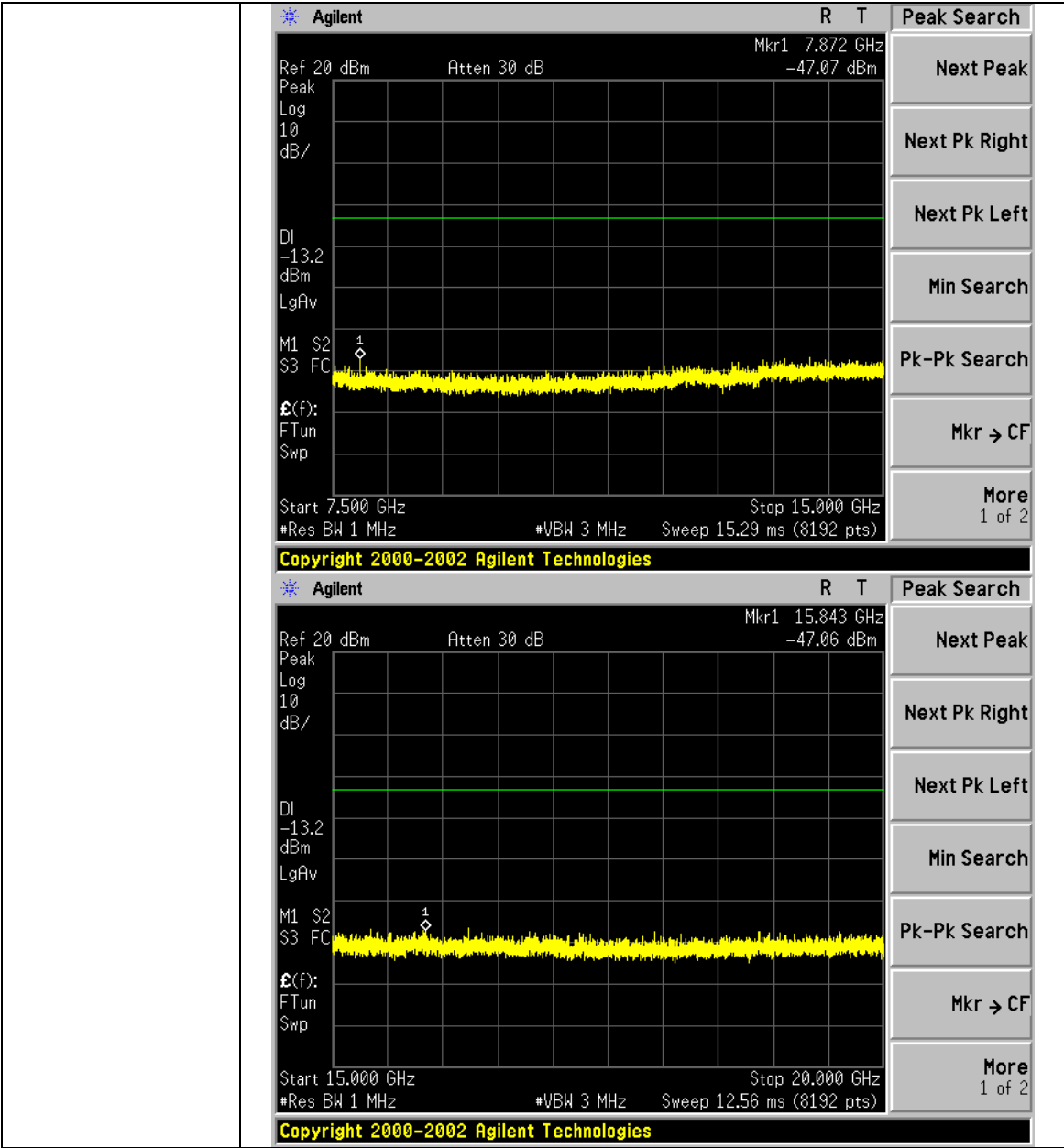


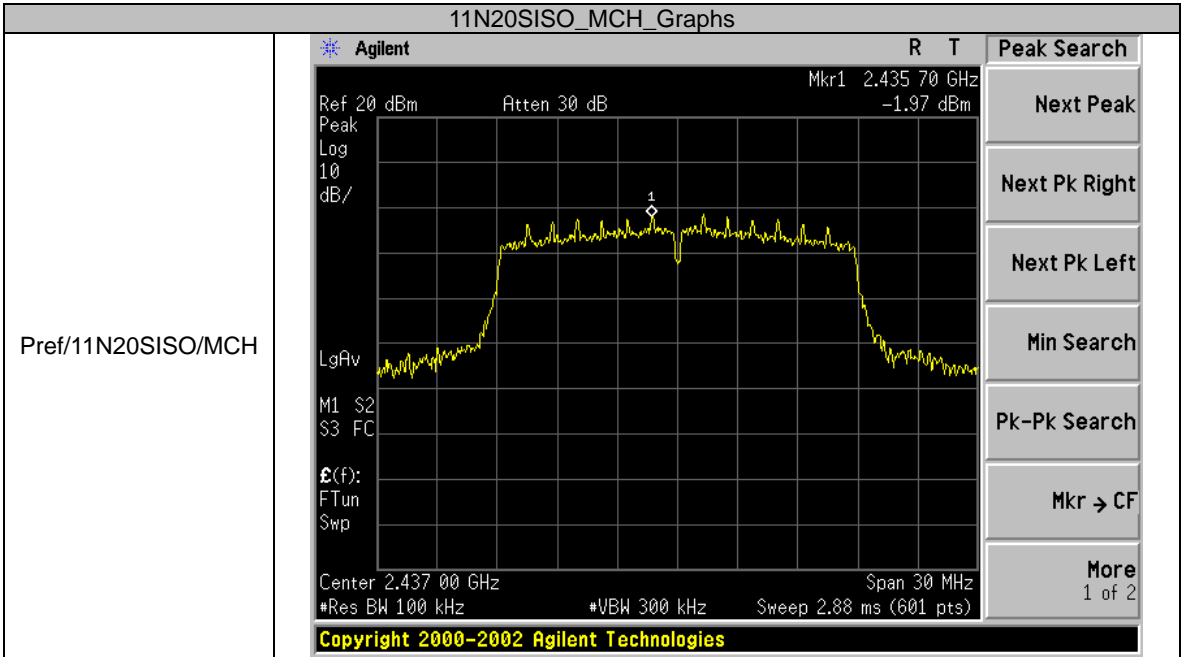
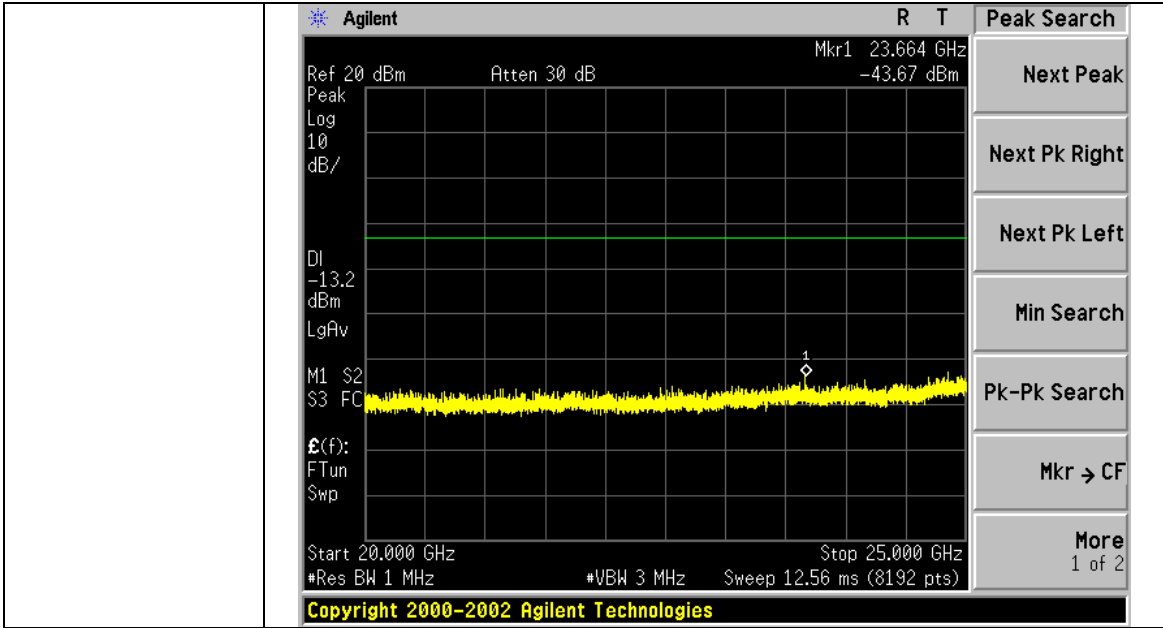




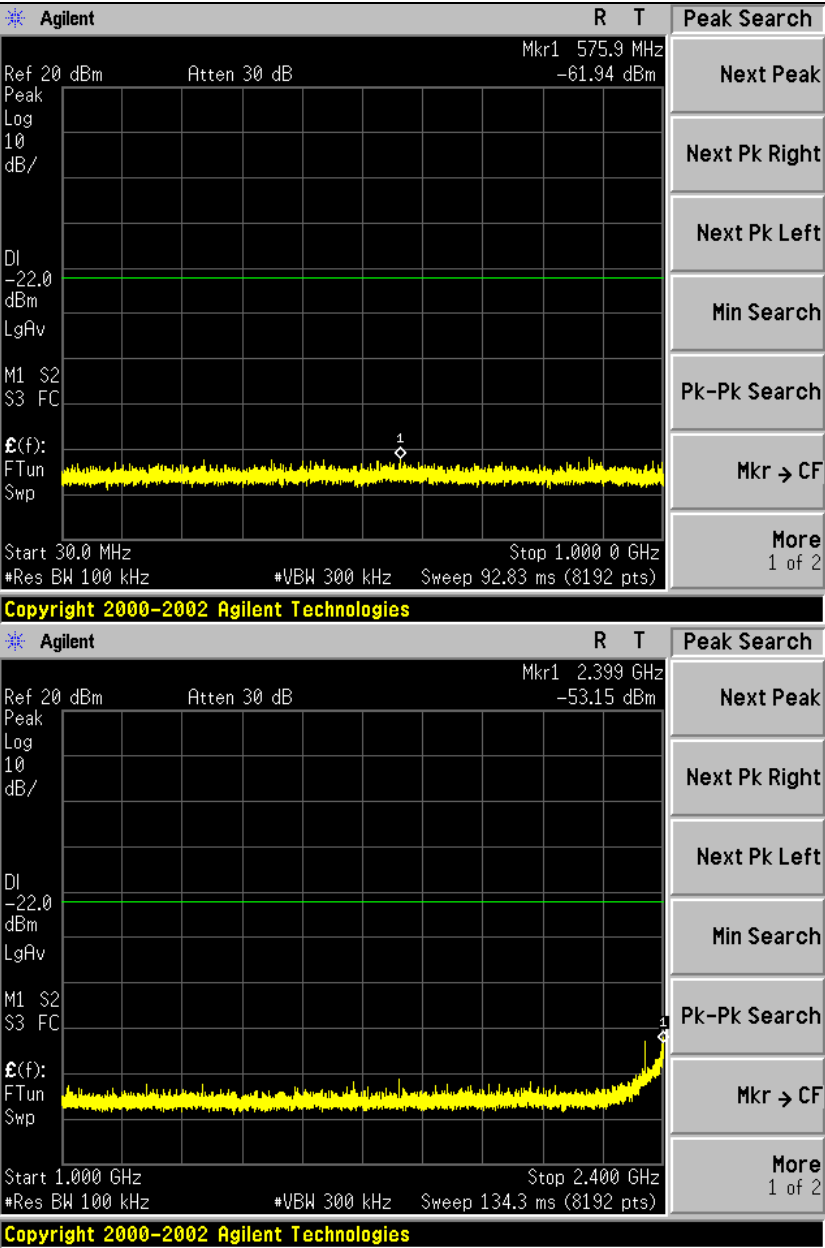


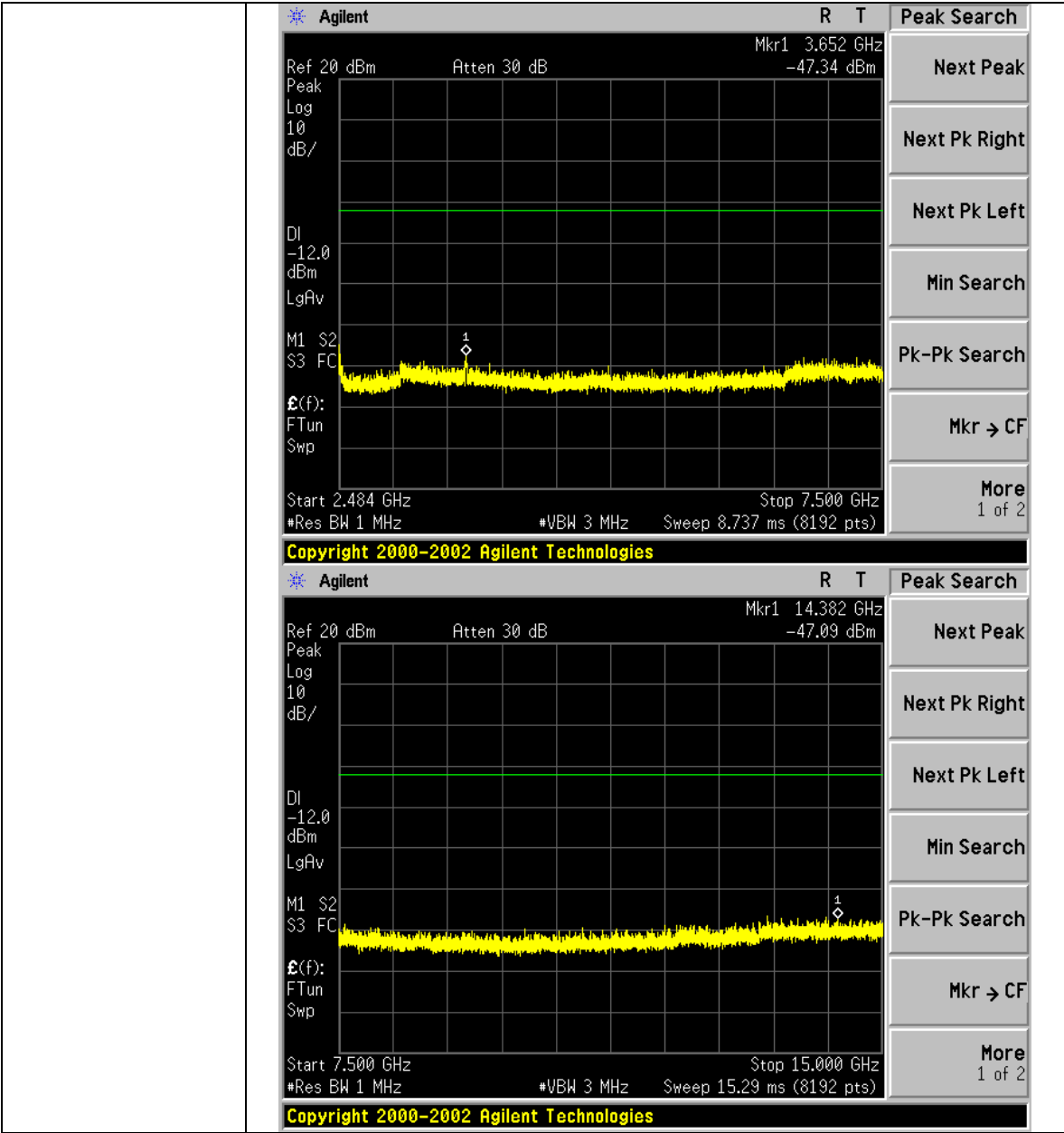


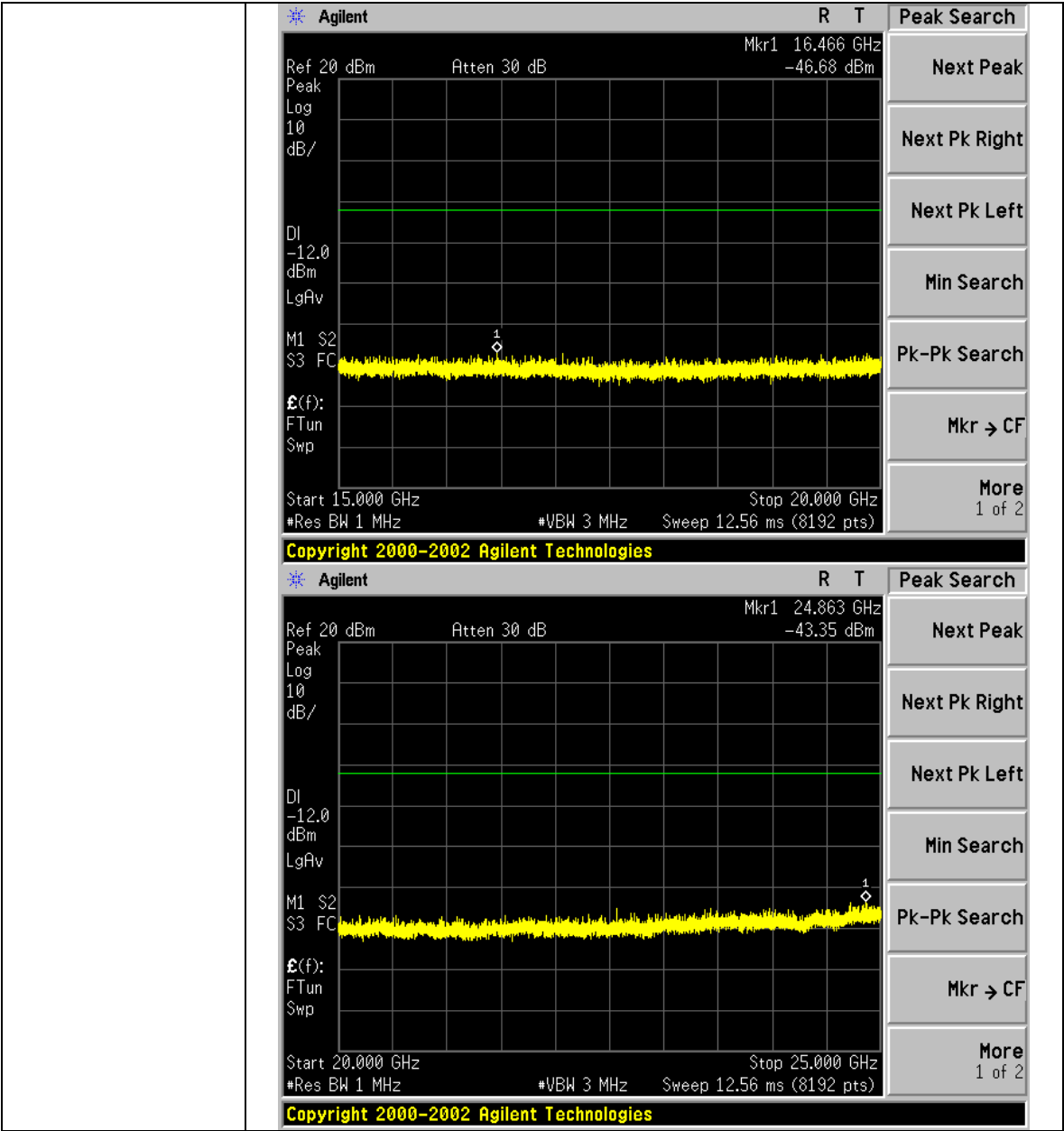


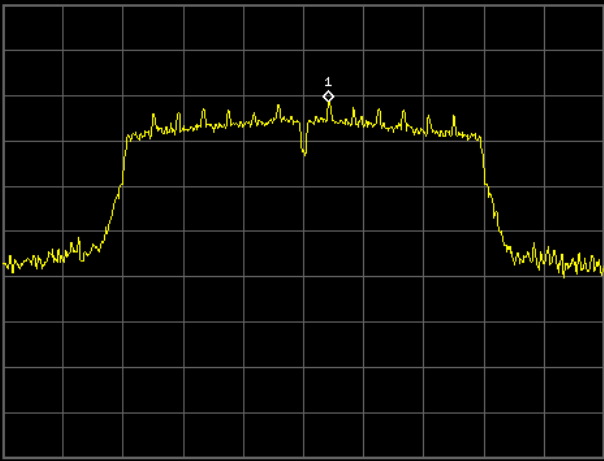
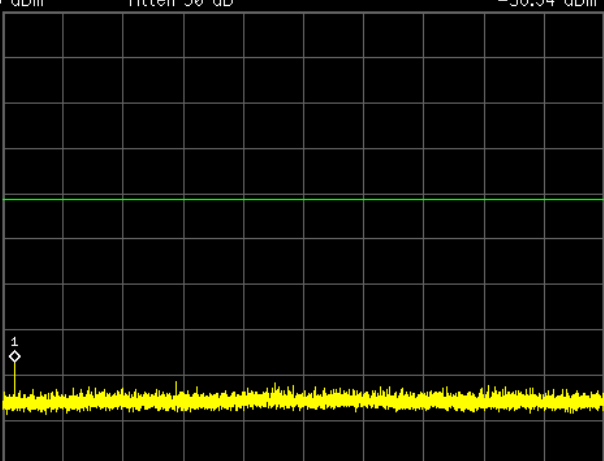


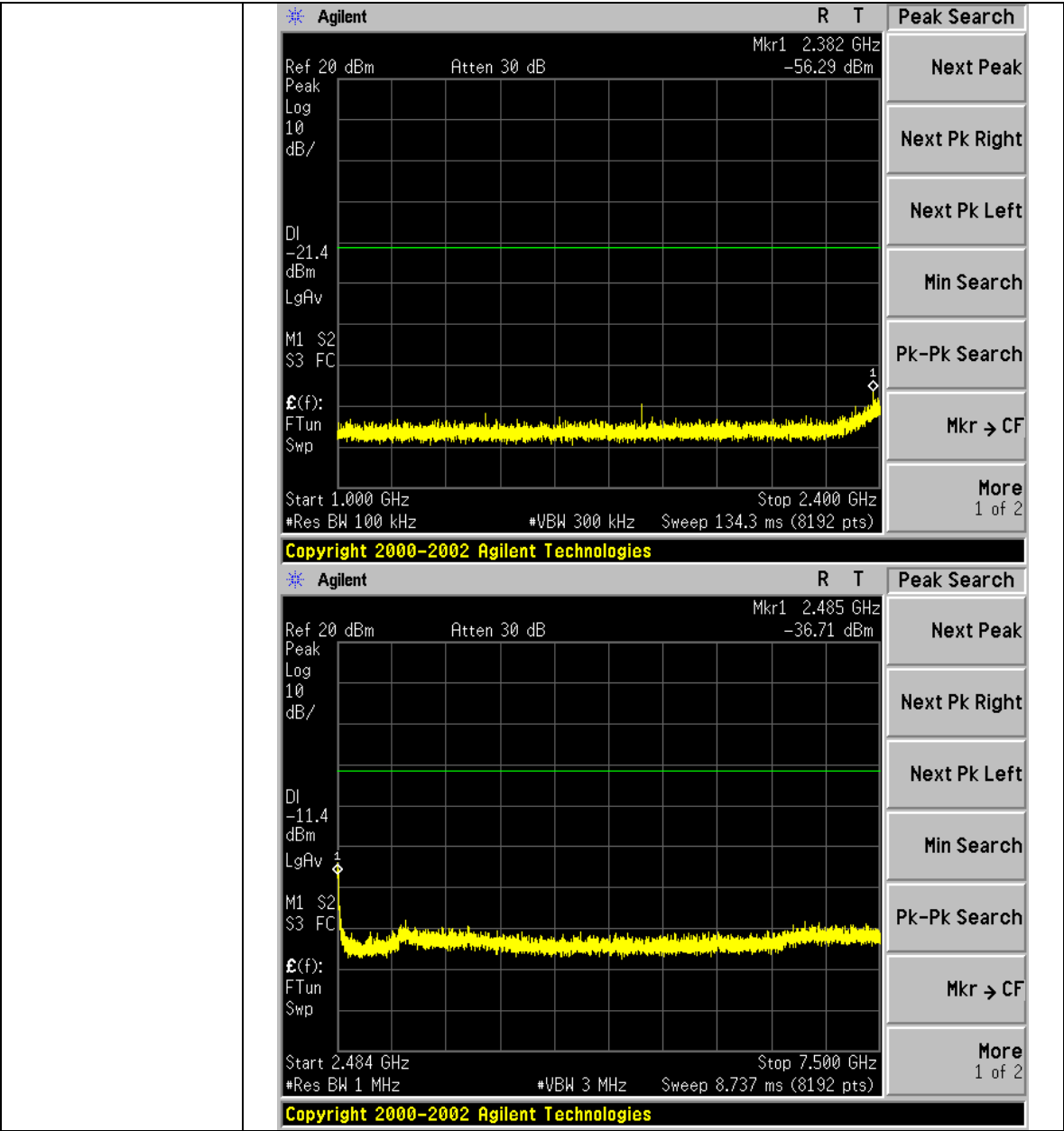
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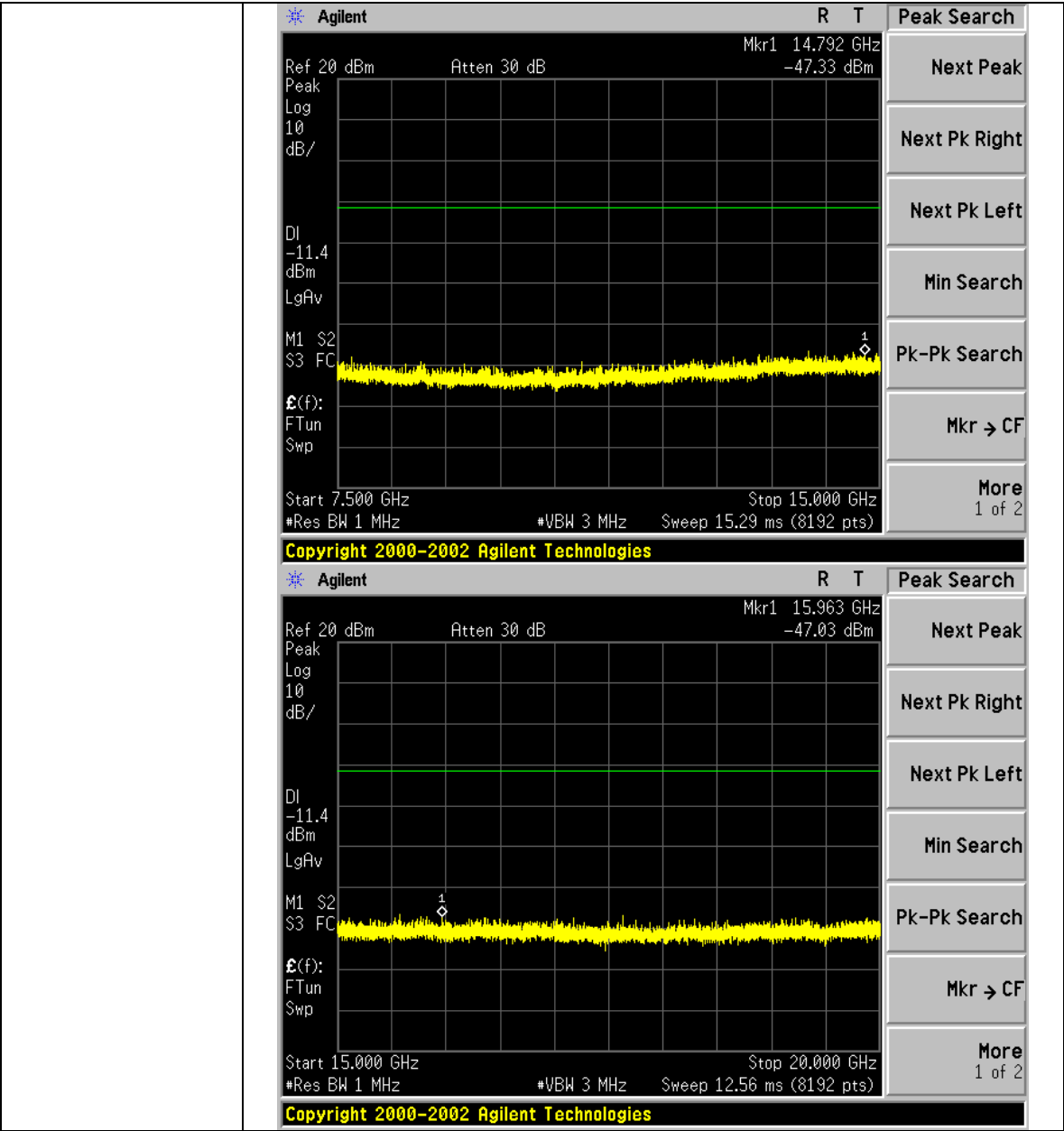




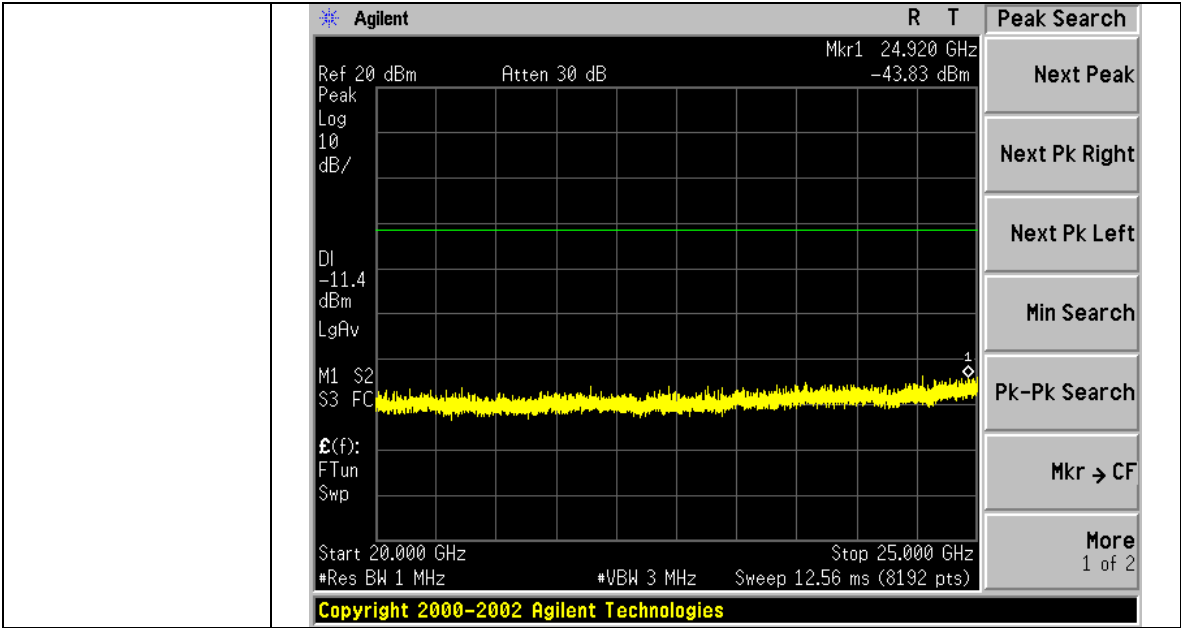


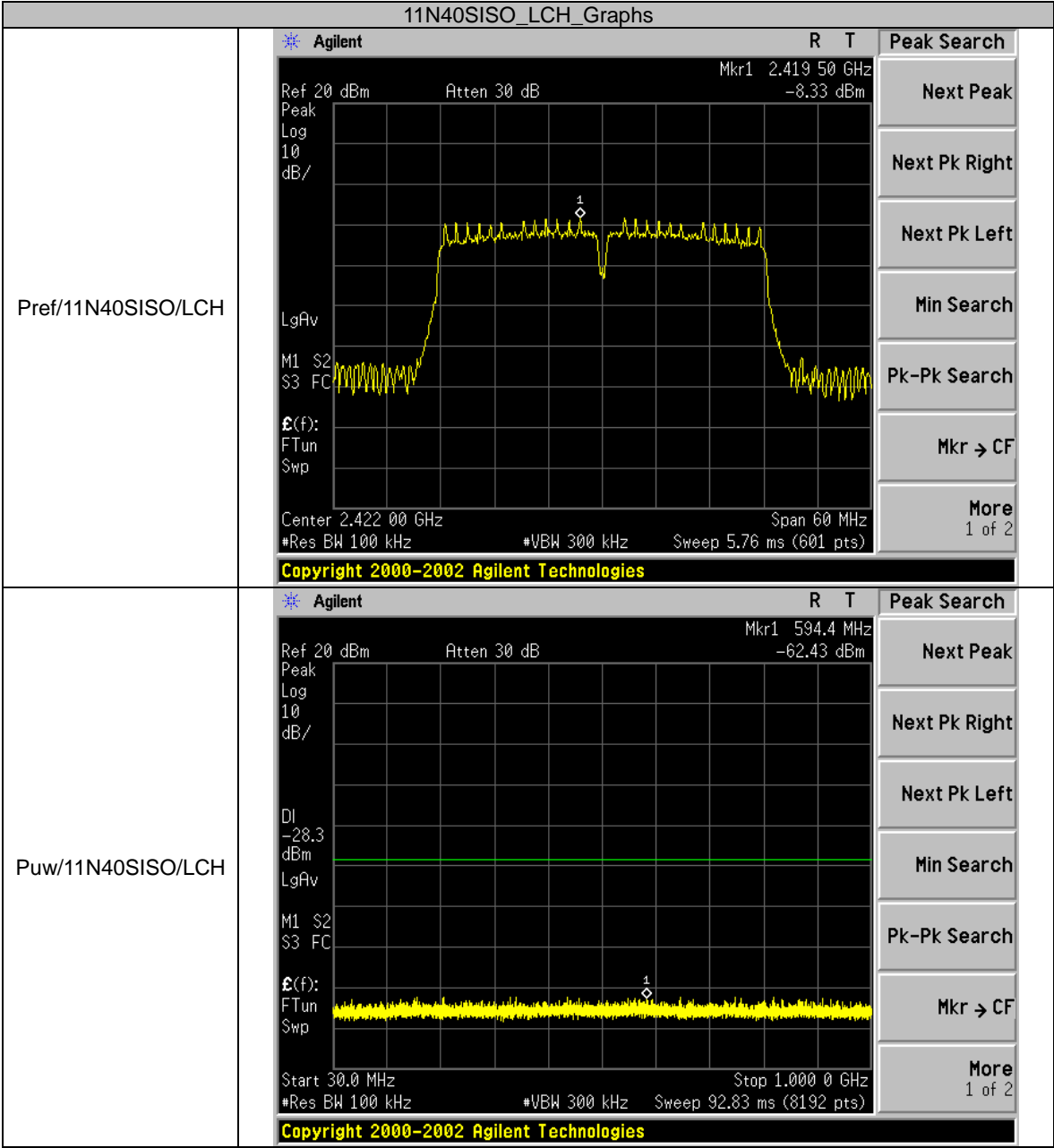
Pref/11N20SISO/HCH	<div><div><div>Agilent</div><div><div>R</div><div>T</div></div><div>Ref 20 dBm    Atten 30 dB    Mkr1 2.463 25 GHz -1.44 dBm</div><div>Peak Log 10 dB/</div><div></div><div>LgAv M1 S2 S3 FC E(f): FTun Swp</div><div>Center 2.462 00 GHz    Span 30 MHz #Res BW 100 kHz    #VBW 300 kHz    Sweep 2.88 ms (601 pts)</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 1 of 2</div></div></div>
Puw/11N20SISO/HCH	<div><div><div>Agilent</div><div><div>R</div><div>T</div></div><div>Ref 20 dBm    Atten 30 dB    Mkr1 48.0 MHz -56.94 dBm</div><div>Peak Log 10 dB/</div><div></div><div>DI -21.4 dBm LgAv M1 S2 S3 FC E(f): FTun Swp</div><div>Start 30.0 MHz    Stop 1.000 0 GHz #Res BW 100 kHz    #VBW 300 kHz    Sweep 92.83 ms (8192 pts)</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 1 of 2</div></div></div>

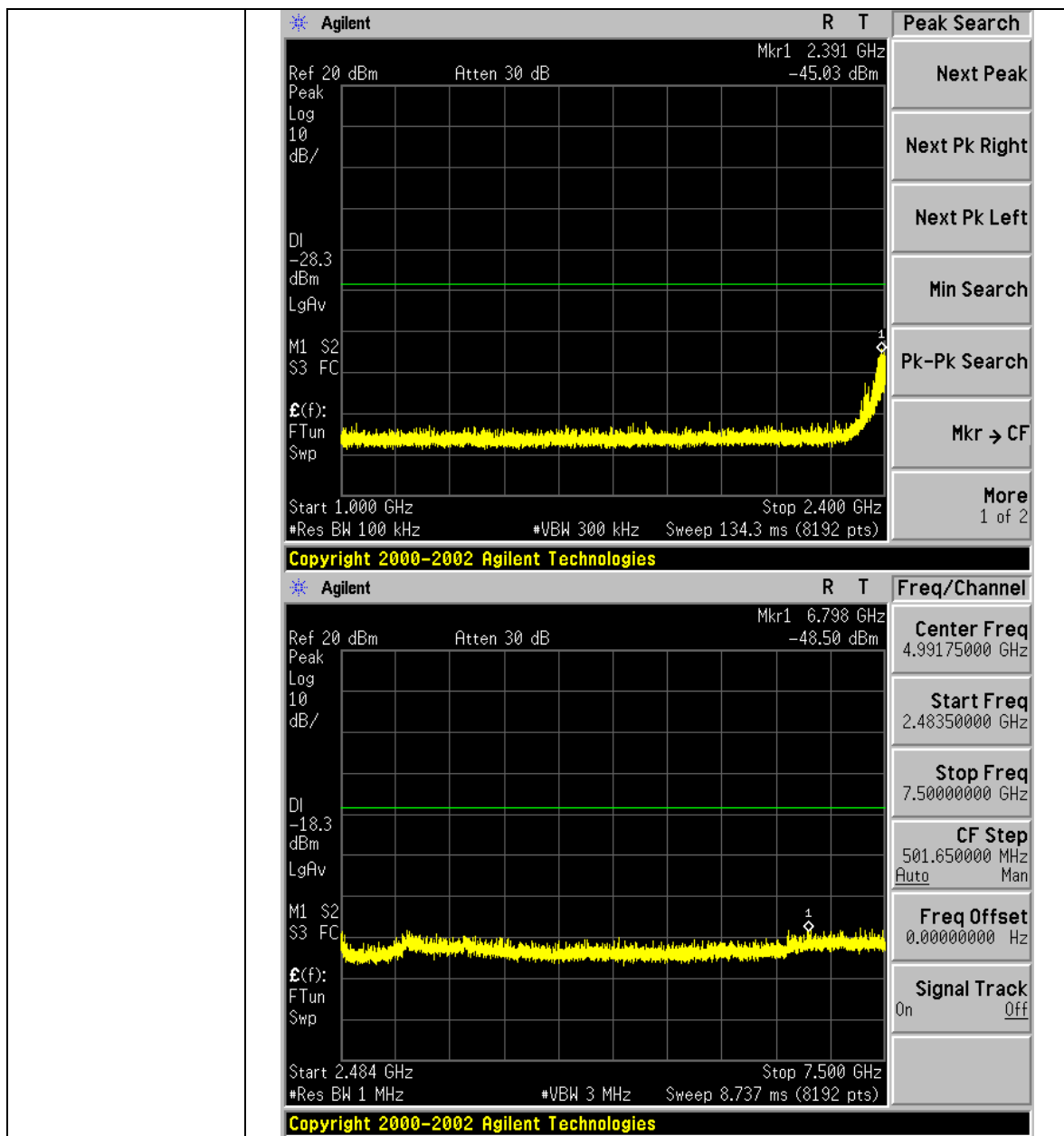


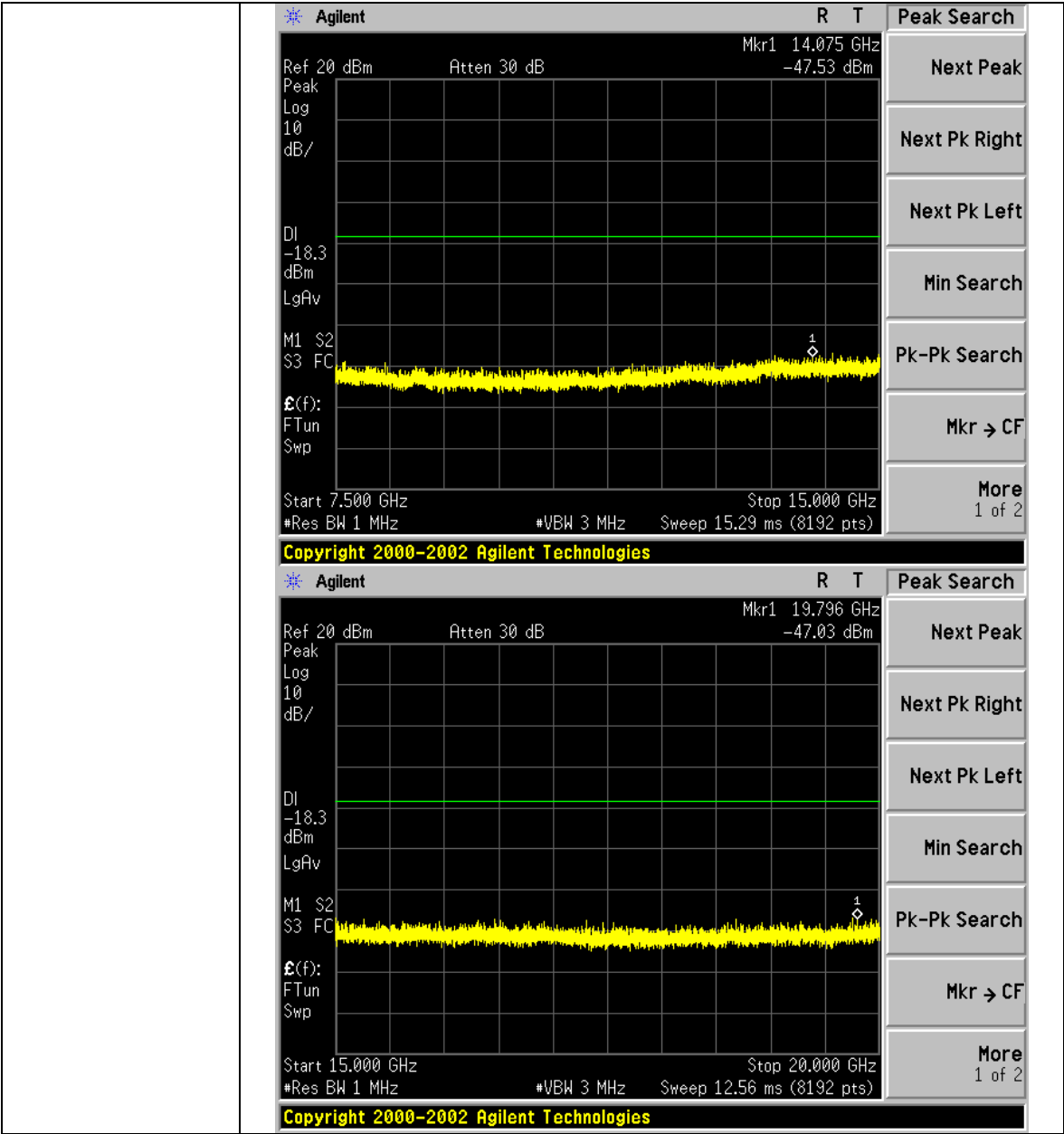


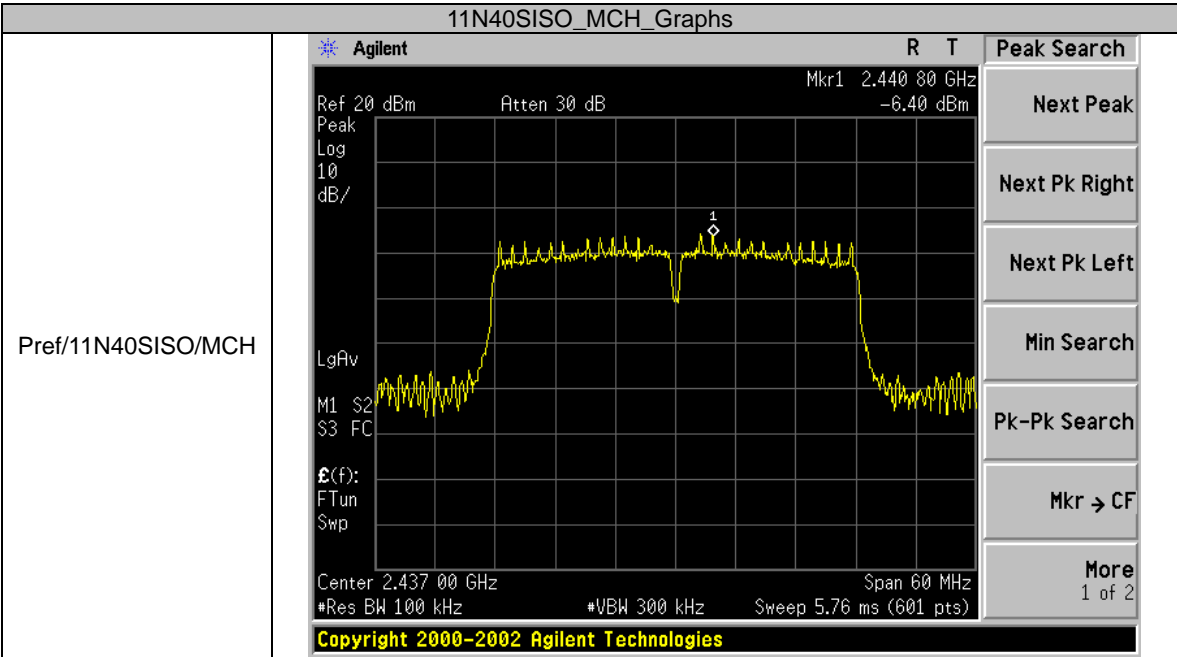
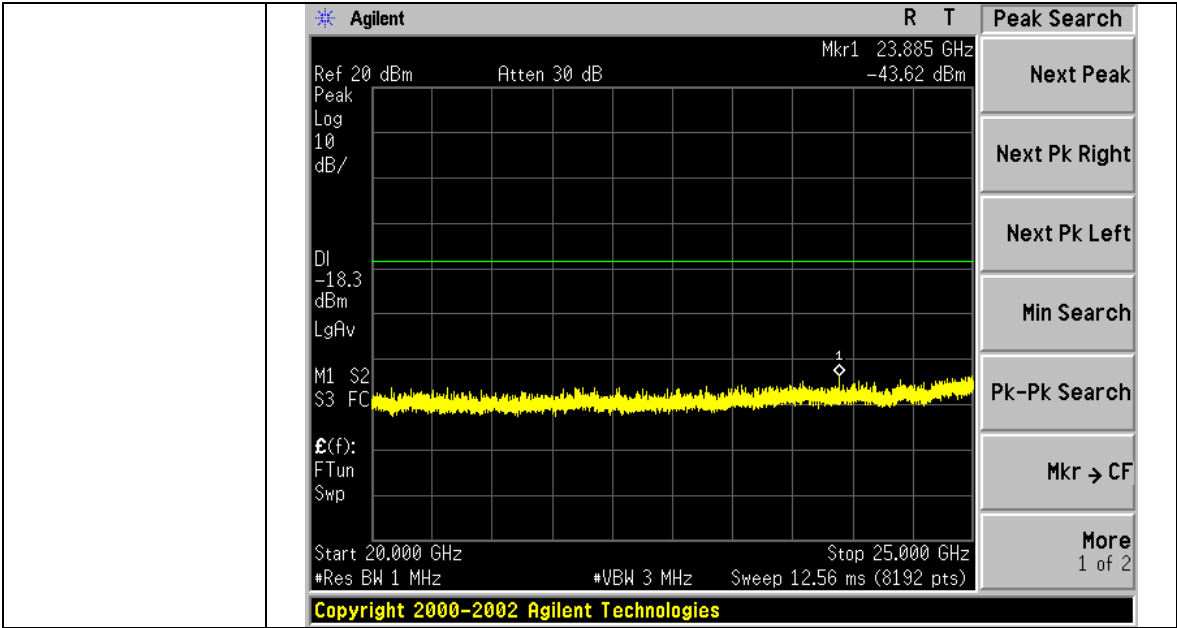




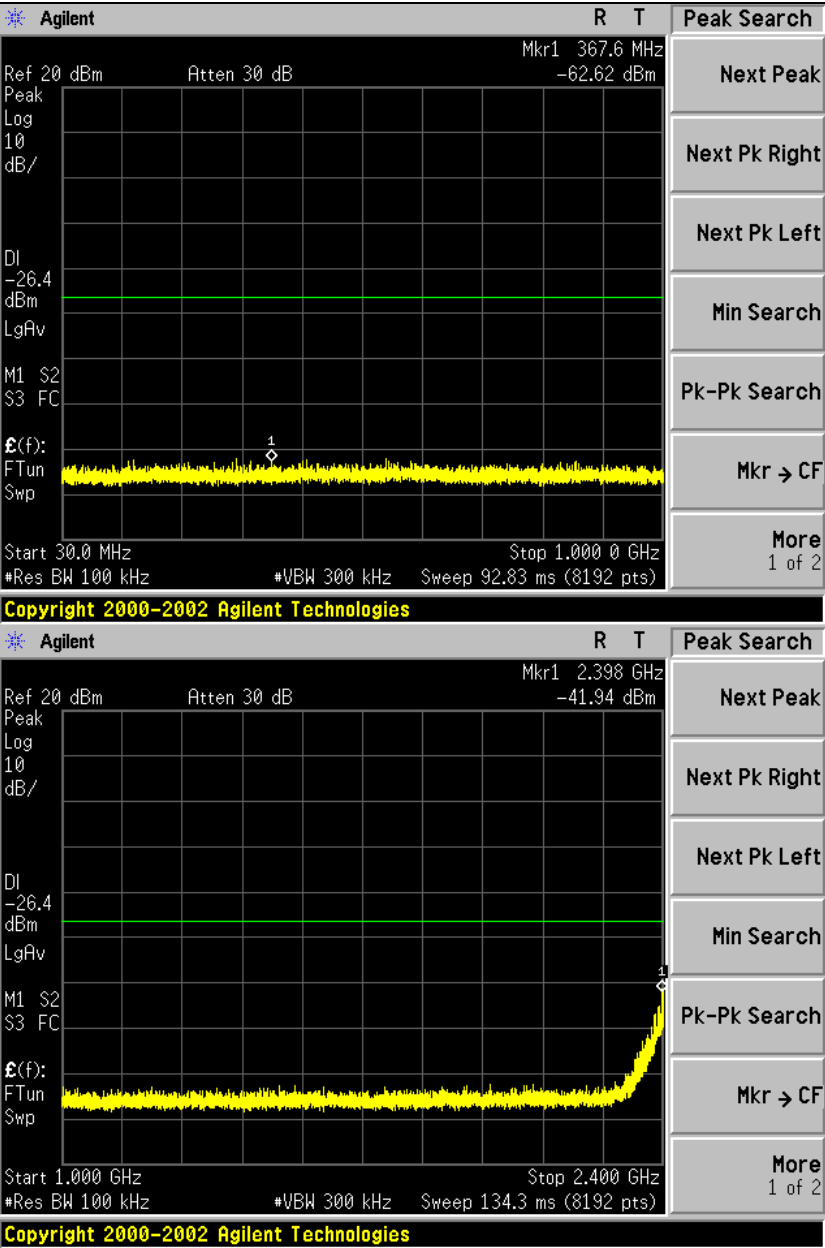


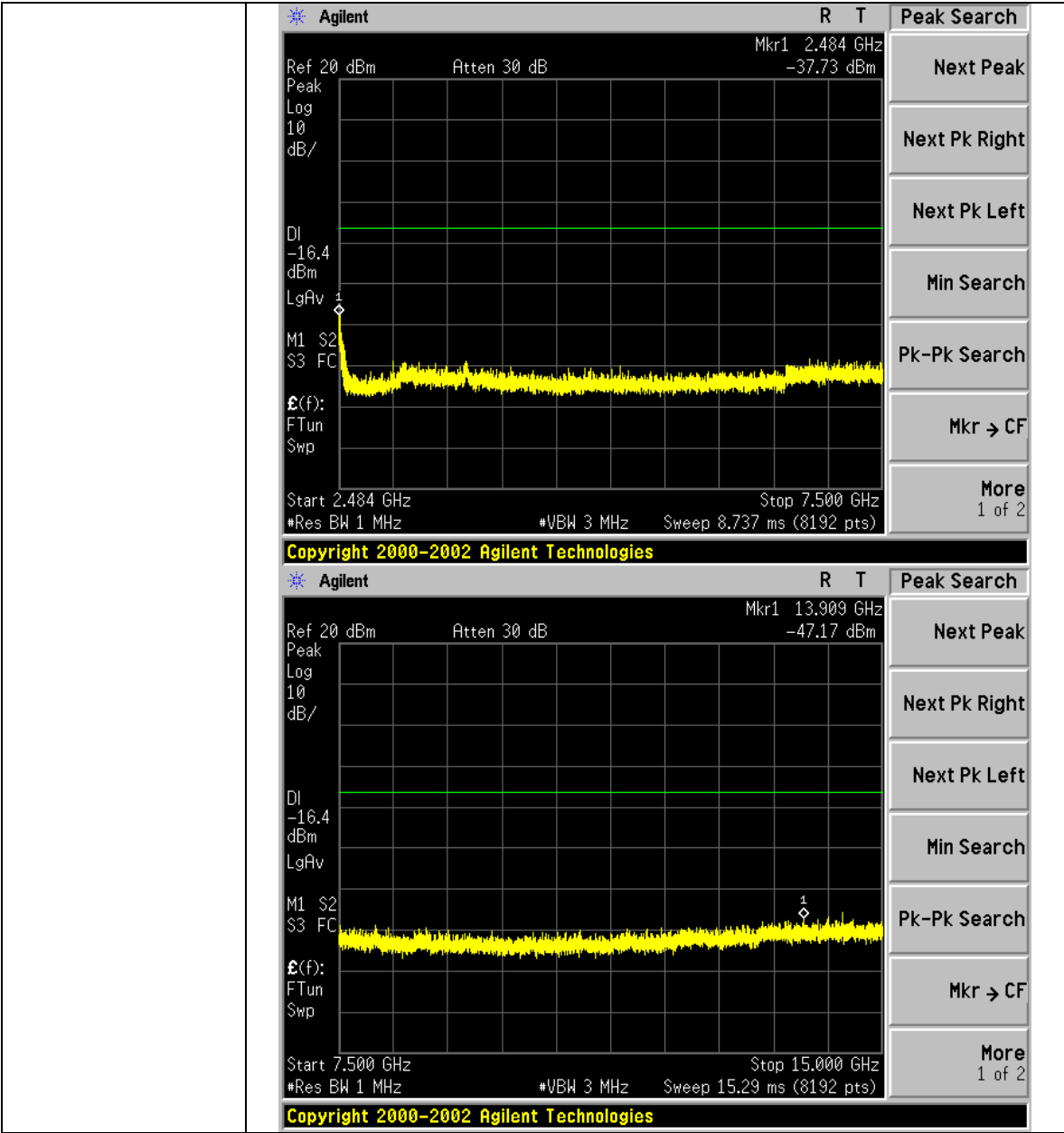


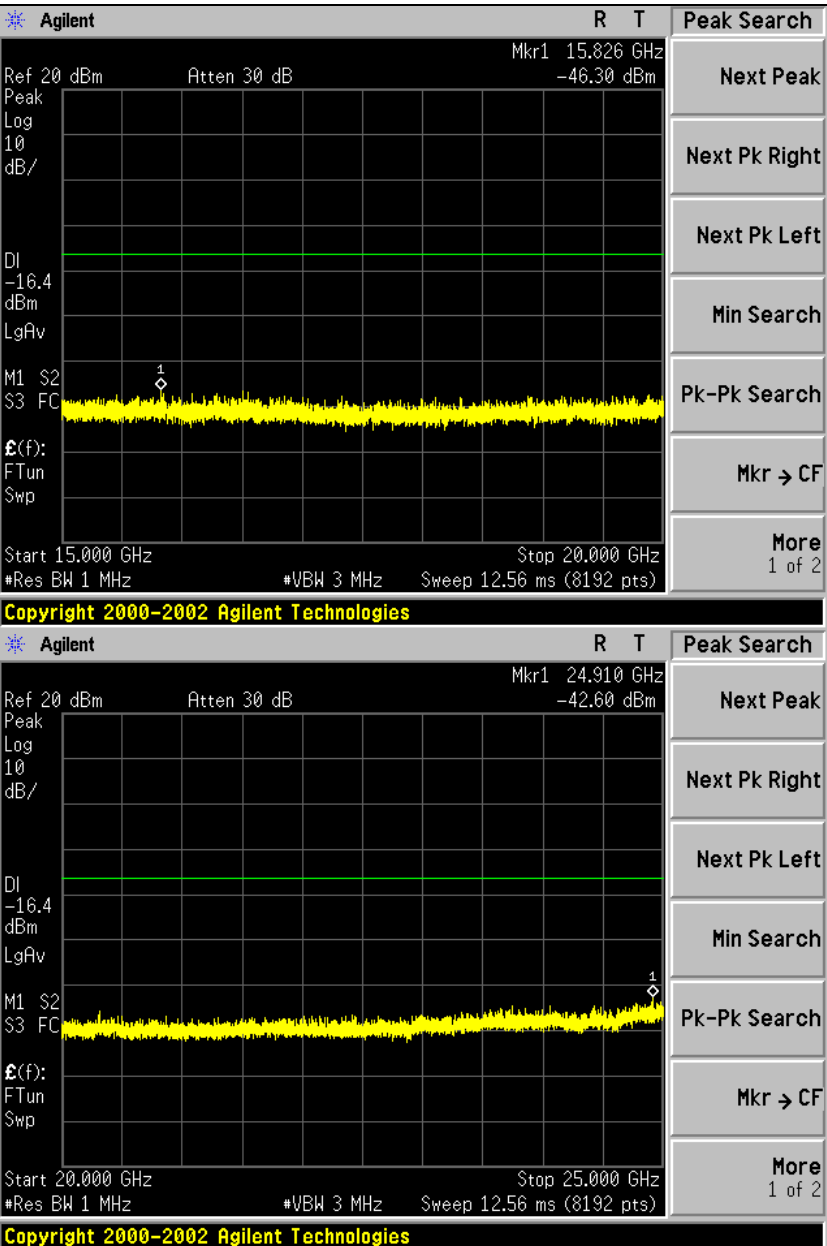




Puw/11N40SISO/MCH

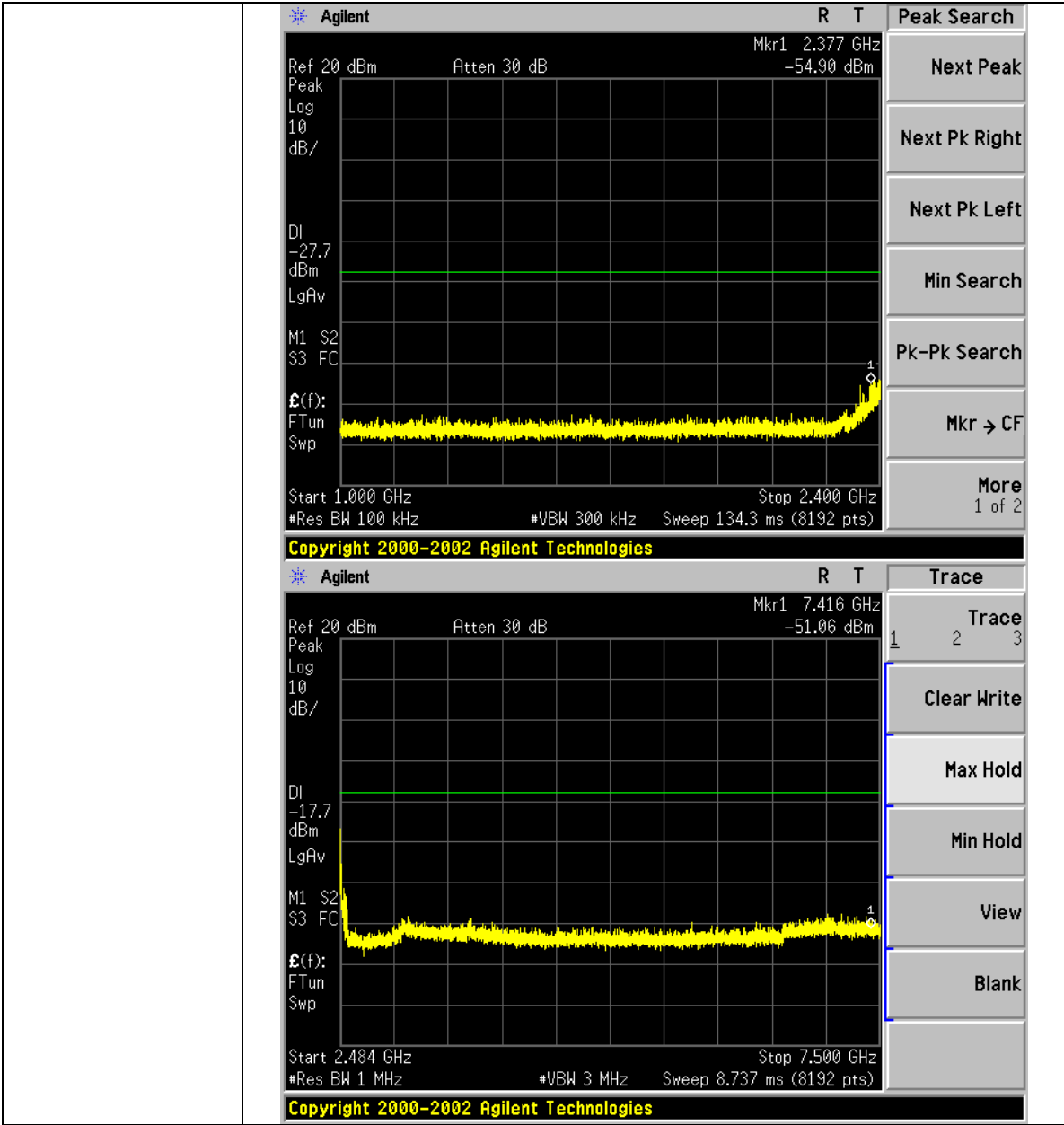


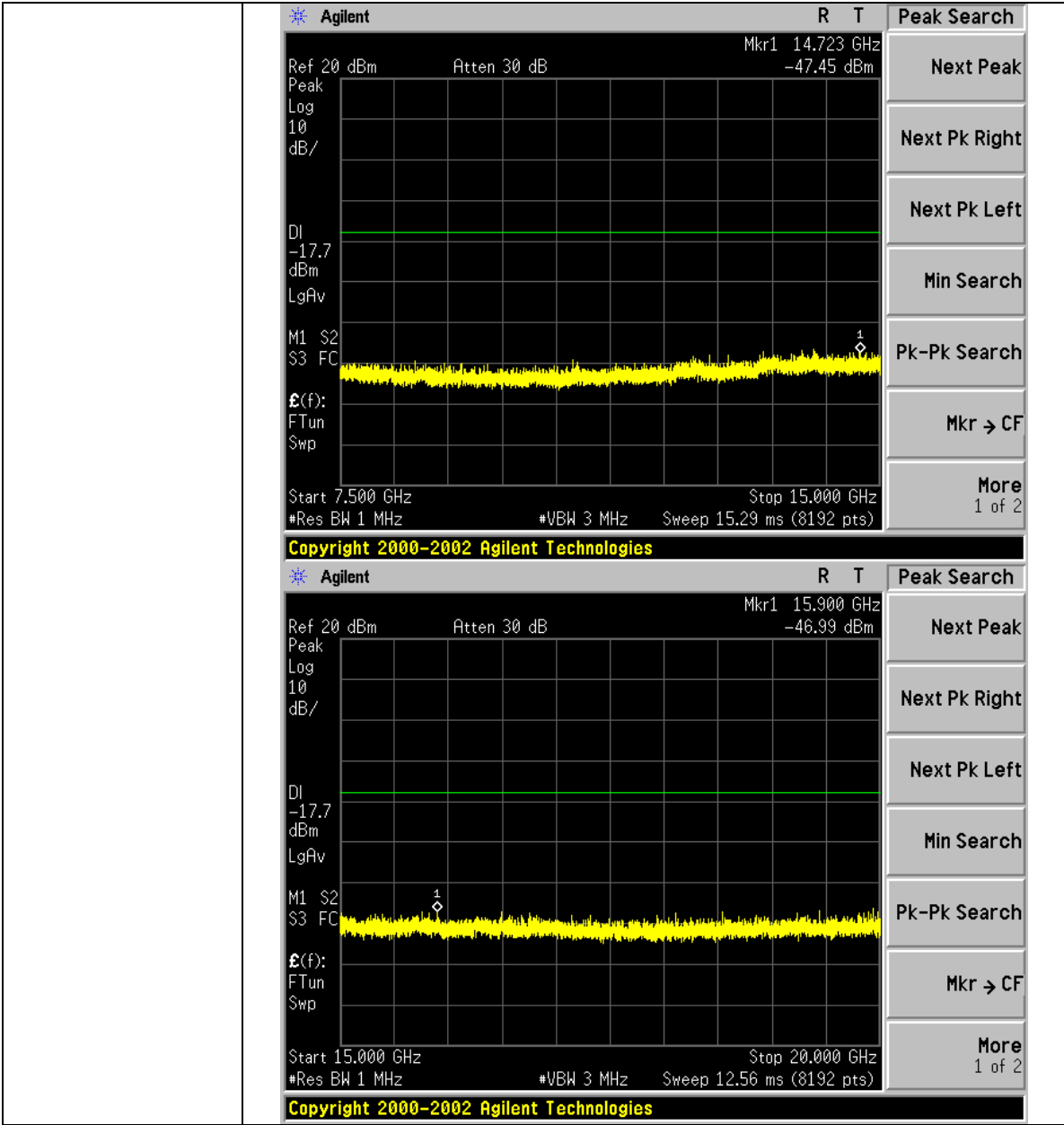


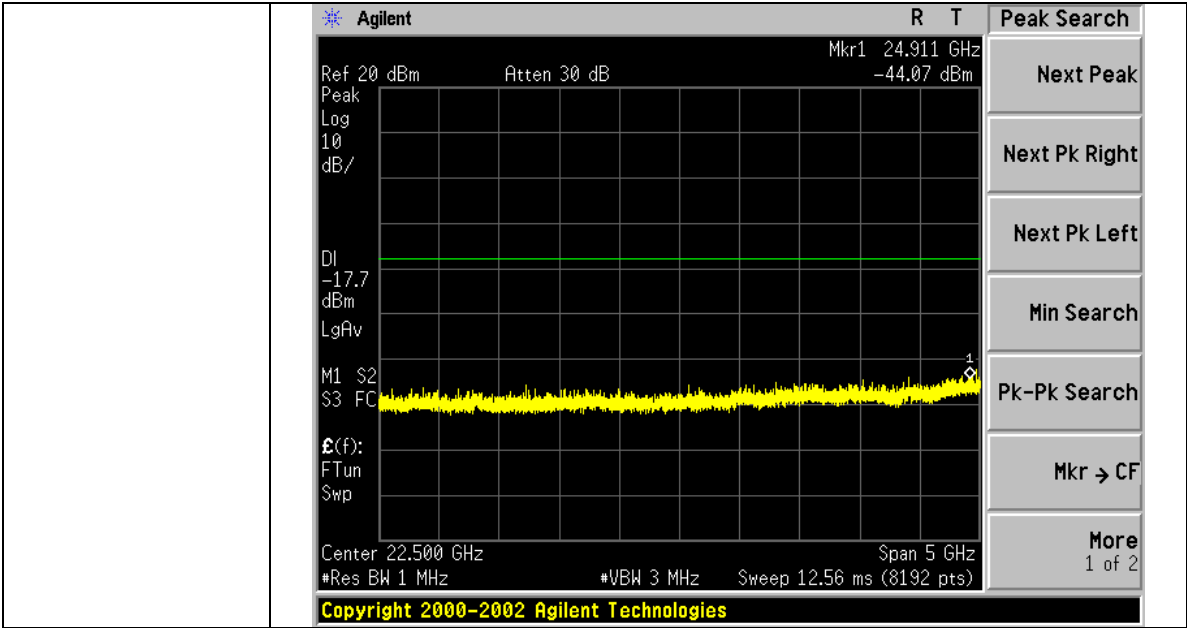




<div>Pref/11N40SISO/HCH</div>	<div><div><div>Agilent</div><div><div>R</div><div>T</div></div><div>Ref 20 dBm    Atten 30 dB    Mkr1 2.455 80 GHz -7.74 dBm</div><div>Peak Log 10 dB/</div><div>LgAv</div><div>M1 S2 S3 FC</div><div>Ⓔ(f): FTun Swp</div><div>Center 2.452 00 GHz    Span 60 MHz #Res BW 100 kHz    #VBW 300 kHz    Sweep 5.76 ms (601 pts)</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 1 of 2</div></div></div>
<div>Puw/11N40SISO/HCH</div>	<div><div><div>Agilent</div><div><div>R</div><div>T</div></div><div>Ref 20 dBm    Atten 30 dB    Mkr1 586.9 MHz -62.58 dBm</div><div>Peak Log 10 dB/</div><div>DI -27.7 dBm LgAv</div><div>M1 S2 S3 FC</div><div>Ⓔ(f): FTun Swp</div><div>Start 30.0 MHz    Stop 1.000 0 GHz #Res BW 100 kHz    #VBW 300 kHz    Sweep 92.83 ms (8192 pts)</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 1 of 2</div></div></div>







## 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.

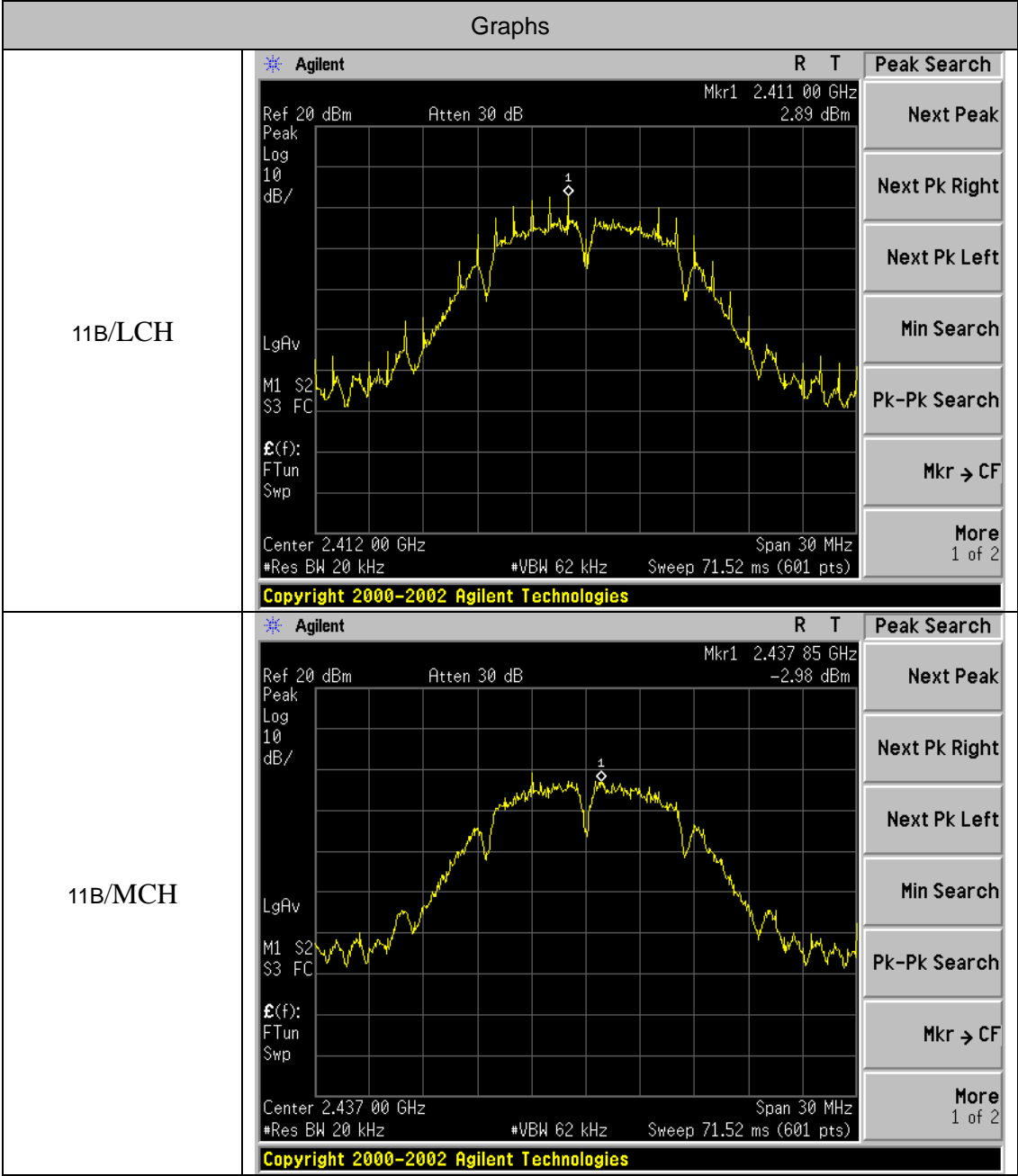
### 10.3 MEASUREMENT EQUIPMENT USED

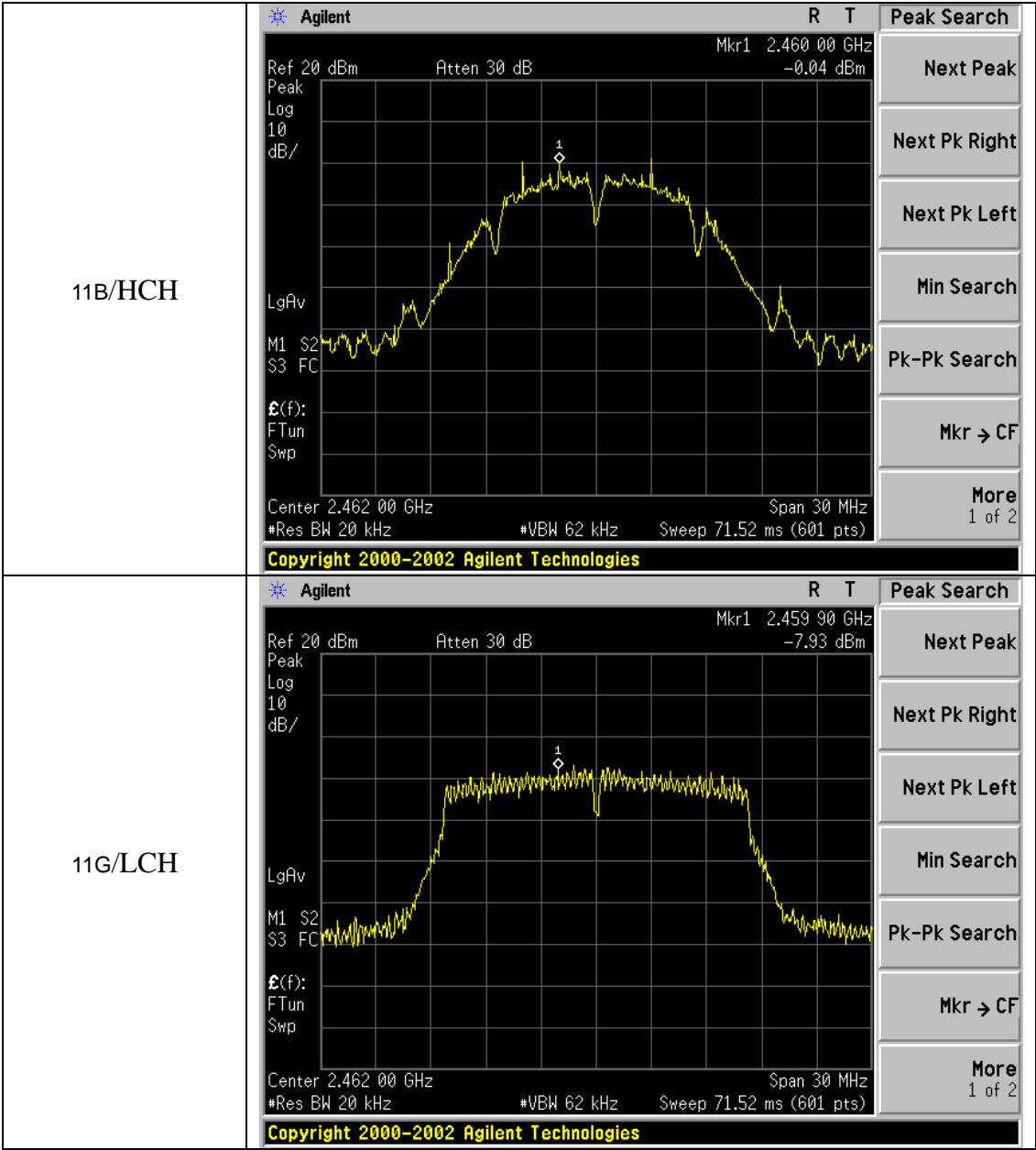
Refer To Section 6.

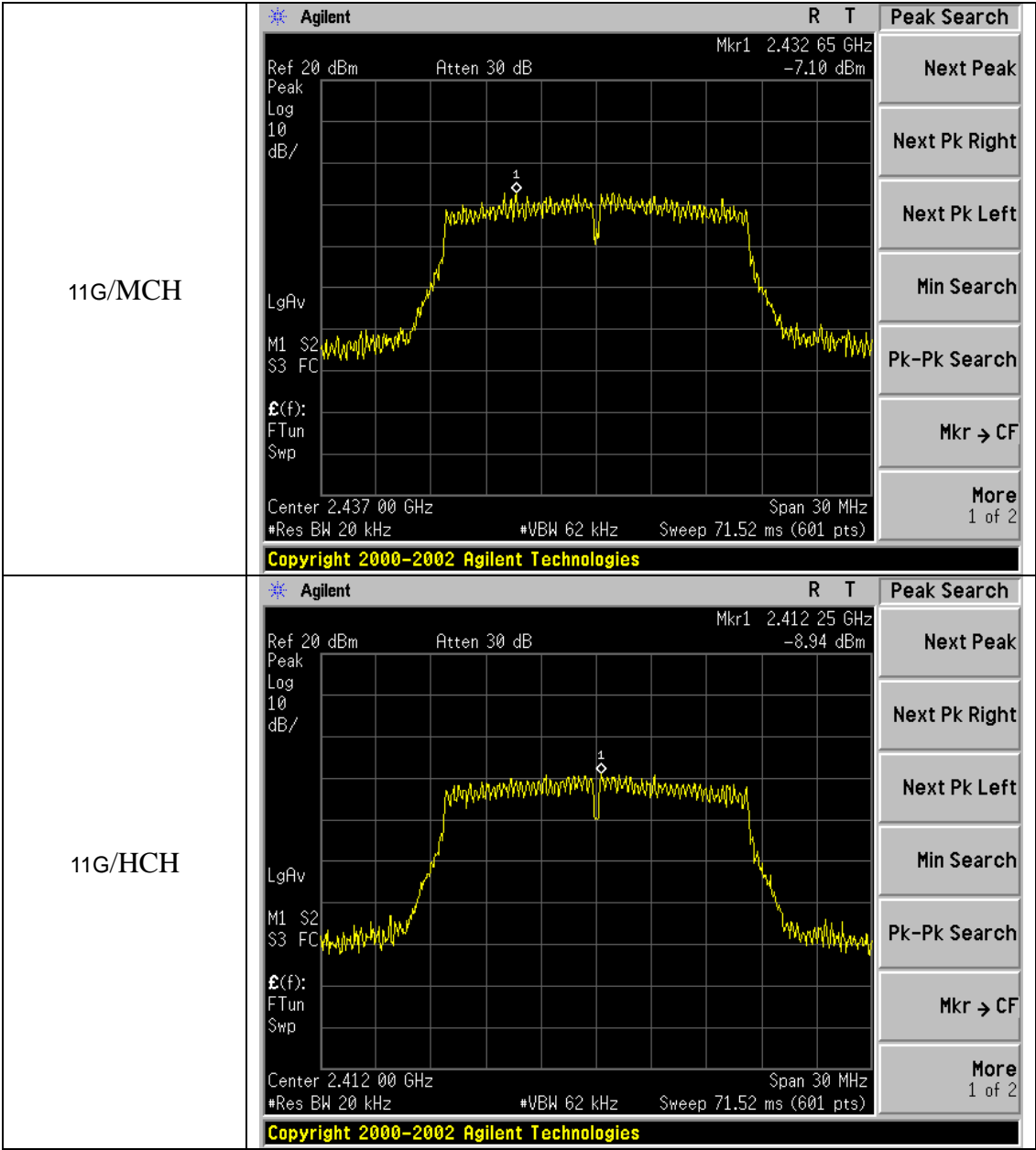
### 10.4 LIMITS AND MEASUREMENT RESULT

Mode	Channel	Av.PSD [dBm/20kHz]	Limit[dBm/3kHz]	Verdict
11B	LCH	2.89	8	PASS
11B	MCH	-2.98	8	PASS
11B	HCH	-0.04	8	PASS
11G	LCH	-7.93	8	PASS
11G	MCH	-7.10	8	PASS
11G	HCH	-8.94	8	PASS
11N20SISO	LCH	-8.07	8	PASS
11N20SISO	MCH	-8.03	8	PASS
11N20SISO	HCH	-6.68	8	PASS
11N40SISO	LCH	-13.73	8	PASS
11N40SISO	MCH	-11.99	8	PASS
11N40SISO	HCH	-13.66	8	PASS

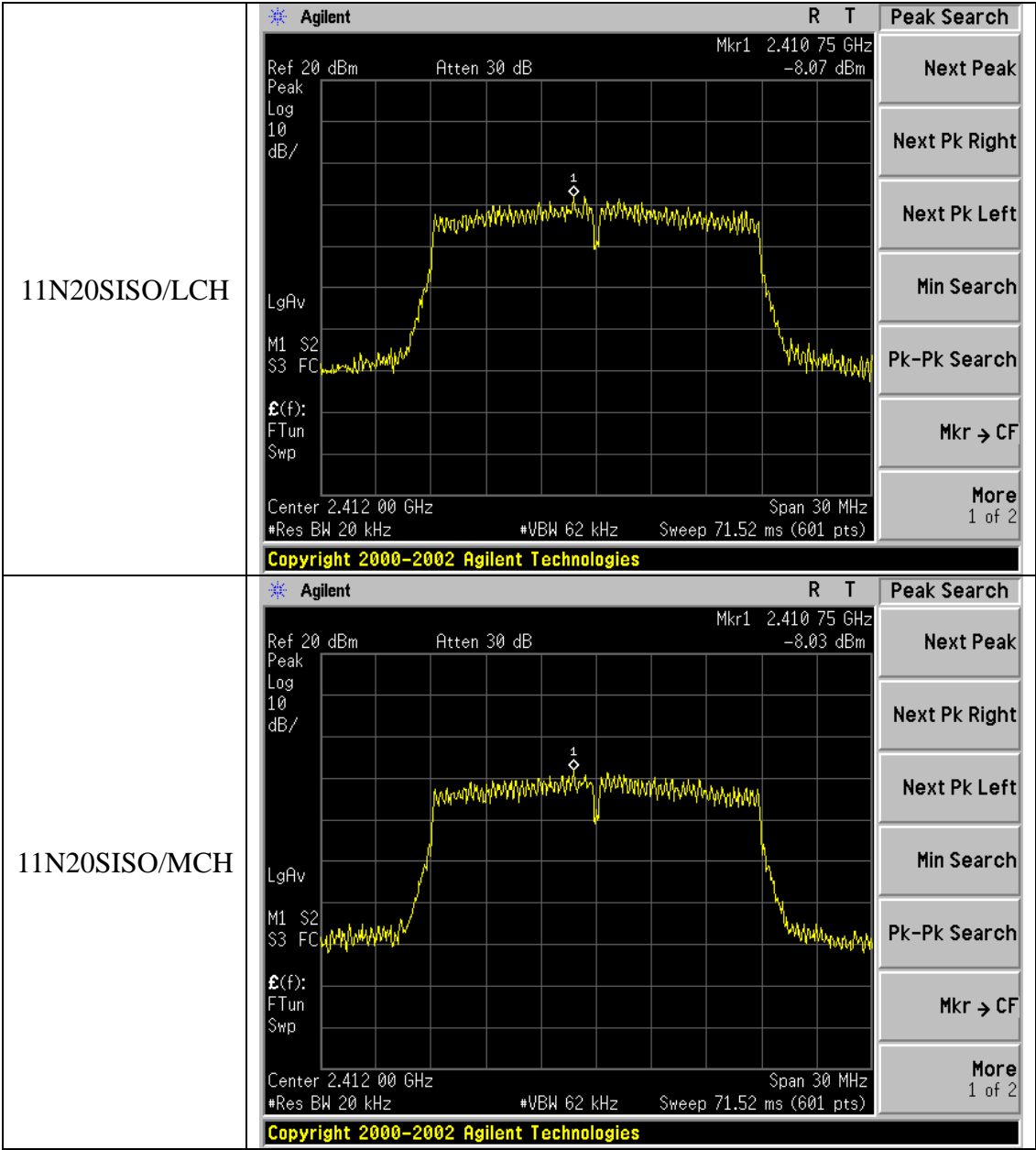
Test Graph











11N20SISO/HCH	<div><div><div>Agilent</div><div><div>R</div><div>T</div></div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div>Mkr1 2.463 25 GHz</div><div>-6.68 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 2.462 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 1 of 2</div></div></div>
11N40SISO/LCH	<div><div><div>Agilent</div><div><div>R</div><div>T</div></div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div>Mkr1 2.423 90 GHz</div><div>-13.73 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 2.422 00 GHz</div><div>Span 60 MHz</div><div>*Res BW 20 kHz</div><div>*VBW 62 kHz</div><div>Sweep 143 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 1 of 2</div></div></div>

11N40SISO/MCH	<div><div><div>Agilent</div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div>Mkr1 2.445 50 GHz</div><div>-11.99 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 60 MHz</div><div>*Res BW 20 kHz</div><div>*VBW 62 kHz</div><div>Sweep 143 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 1 of 2</div></div></div>
11N40SISO/HCH	<div><div><div>Agilent</div><div><div>Ref 20 dBm</div><div>Atten 30 dB</div><div>Mkr1 2.444 10 GHz</div><div>-13.66 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 2.452 00 GHz</div><div>Span 60 MHz</div><div>*Res BW 20 kHz</div><div>*VBW 62 kHz</div><div>Sweep 143 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 1 of 2</div></div></div>

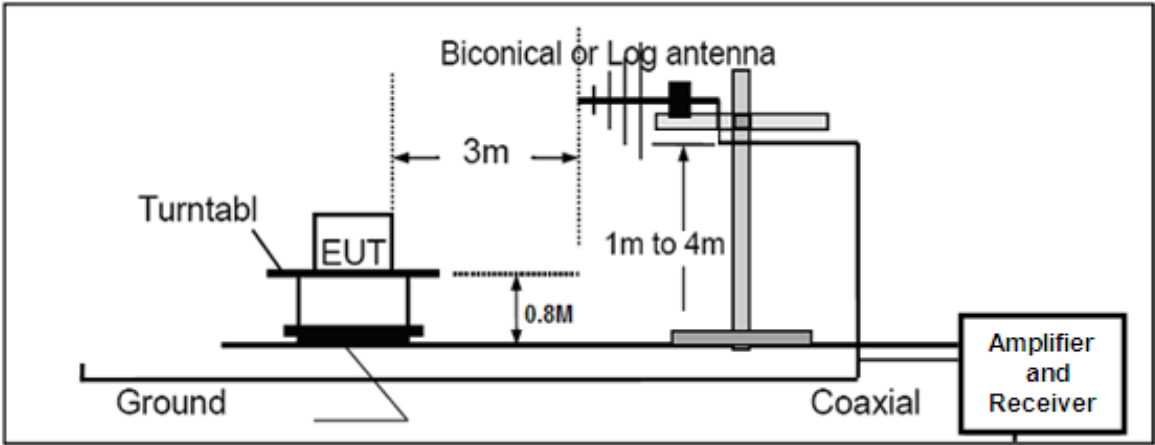
## 11. RADIATED EMISSION

### 11.1. MEASUREMENT PROCEDURE

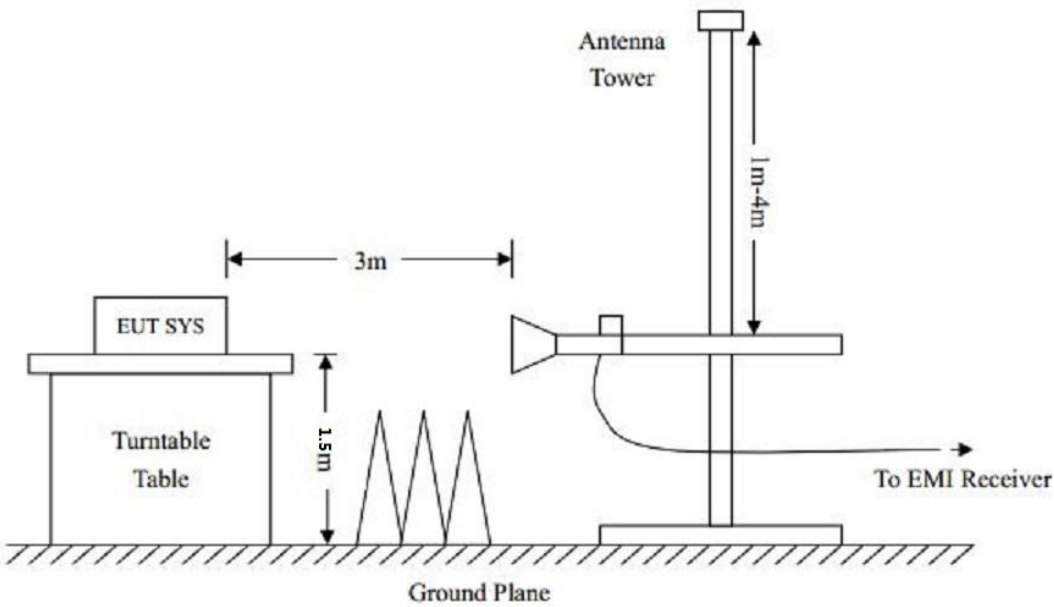
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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.

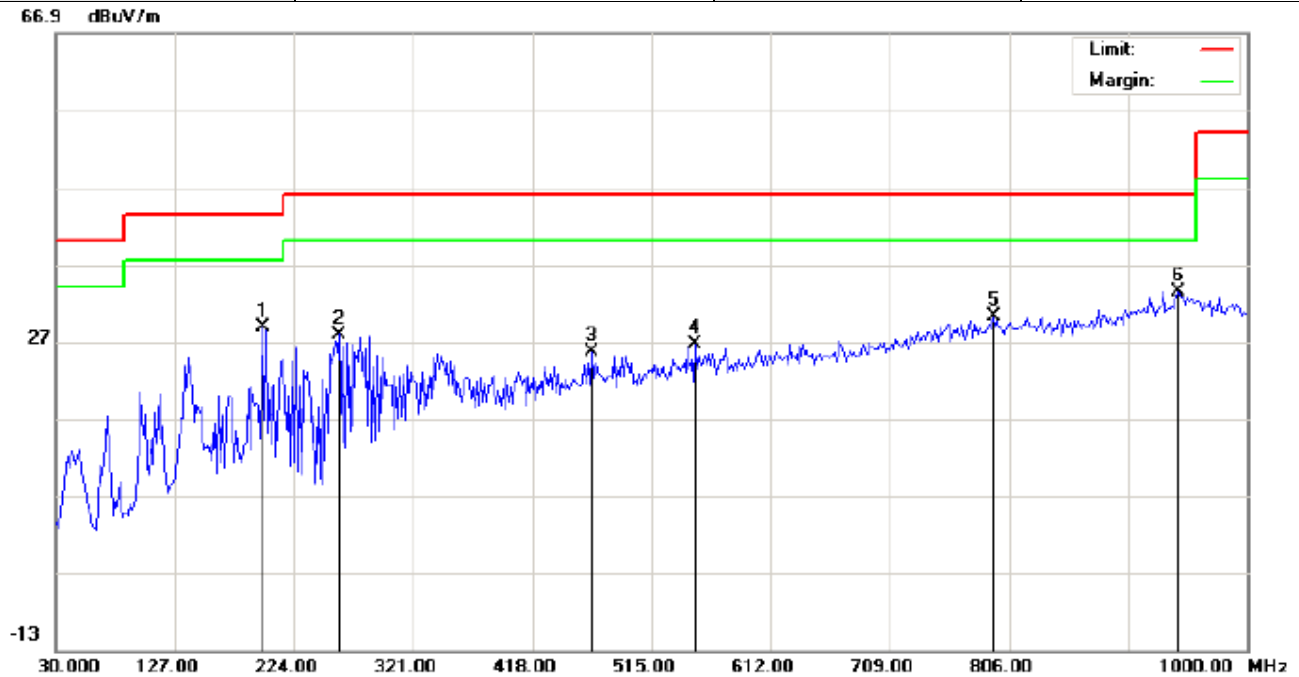
### 11.4. TEST RESULT

#### RADIATED EMISSION BELOW 30MHZ

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

## RADIATED EMISSION BELOW 1GHZ

EUT	Rugged Tablet	Model Name	T71L, T71PLUS
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: **Horizontal**

Temperature: 23.5

Limit: FCC Class B 3M Radiation

Power: AC 120V/60Hz

Humidity: 55.7 %

EUT: Rugged Tablet

Distance: 3m

M/N: T71L

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		198.1333	16.92	11.91	28.83	43.50	-14.67	peak			
2		261.1833	19.10	8.80	27.90	46.00	-18.10	peak			
3		466.5000	4.88	20.77	25.65	46.00	-20.35	peak			
4		550.5667	4.18	22.49	26.67	46.00	-19.33	peak			
5		793.0667	2.96	27.22	30.18	46.00	-15.82	peak			
6	*	943.4167	3.52	29.82	33.34	46.00	-12.66	peak			

RESULT: PASS

EUT	Rugged Tablet	Model Name	T71L, T71PLUS
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  
Limit: FCC Class B 3M Radiation  
EUT: Rugged Tablet  
M/N: T71L  
Mode: Low channel TX  
Note:

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

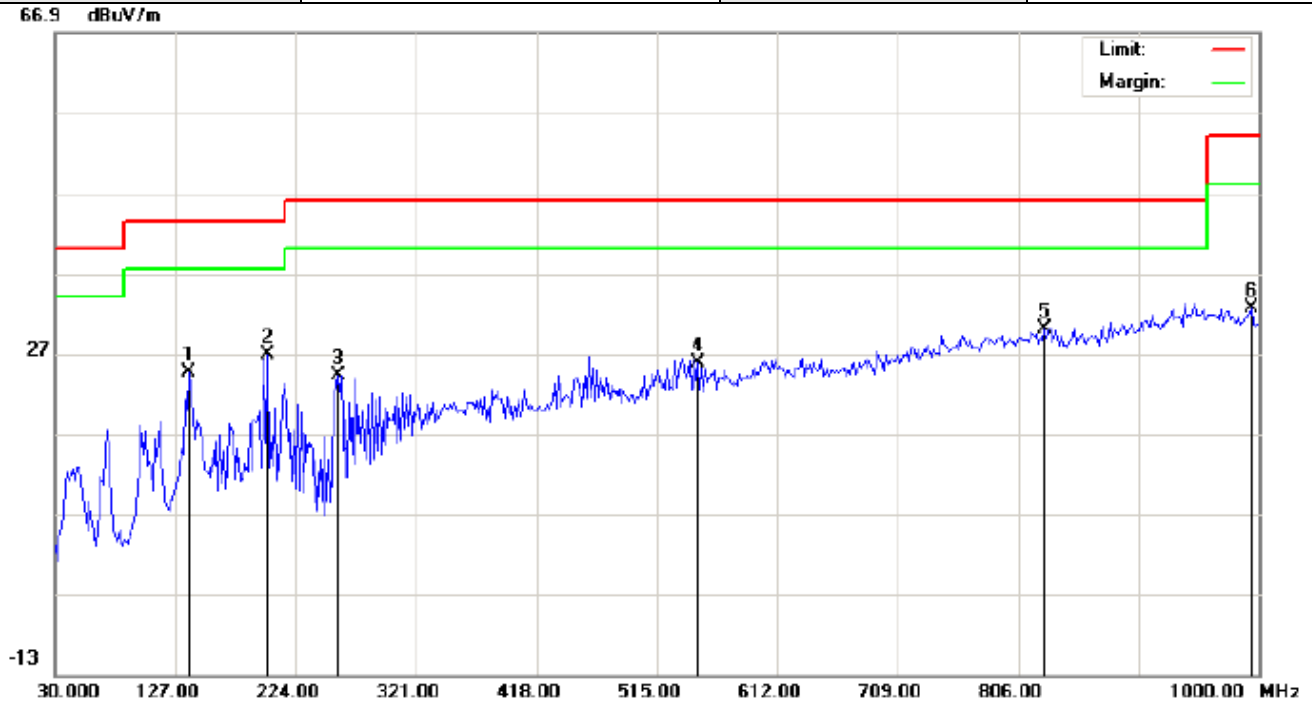
Temperature: 23.5  
Humidity: 55.7 %

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	13.28	8.81	22.09	40.00	-17.91	peak			
2		131.8500	12.62	11.80	24.42	43.50	-19.08	peak			
3		222.3833	12.84	11.19	24.03	46.00	-21.97	peak			
4	*	261.1833	17.87	14.24	32.11	46.00	-13.89	peak			
5		592.6000	2.10	22.69	24.79	46.00	-21.21	peak			
6		709.0000	2.60	25.45	28.05	46.00	-17.95	peak			

**RESULT: PASS**



<b>EUT</b>	Rugged Tablet	<b>Model Name</b>	T71L, T71PLUS
<b>Temperature</b>	25°C	<b>Relative Humidity</b>	55.4%
<b>Pressure</b>	960hPa	<b>Test Voltage</b>	Normal Voltage
<b>Test Mode</b>	802.11b with date rate 1 2437MHZ	<b>Antenna</b>	Horizontal



Site: site #1

Limit: FCC Class B 3M Radiation

EUT: Rugged Tablet

M/N: T71L

Mode: Middle channel TX

Note:

Polarization: *Horizontal*

Power: AC 120V/60Hz

Distance: 3m

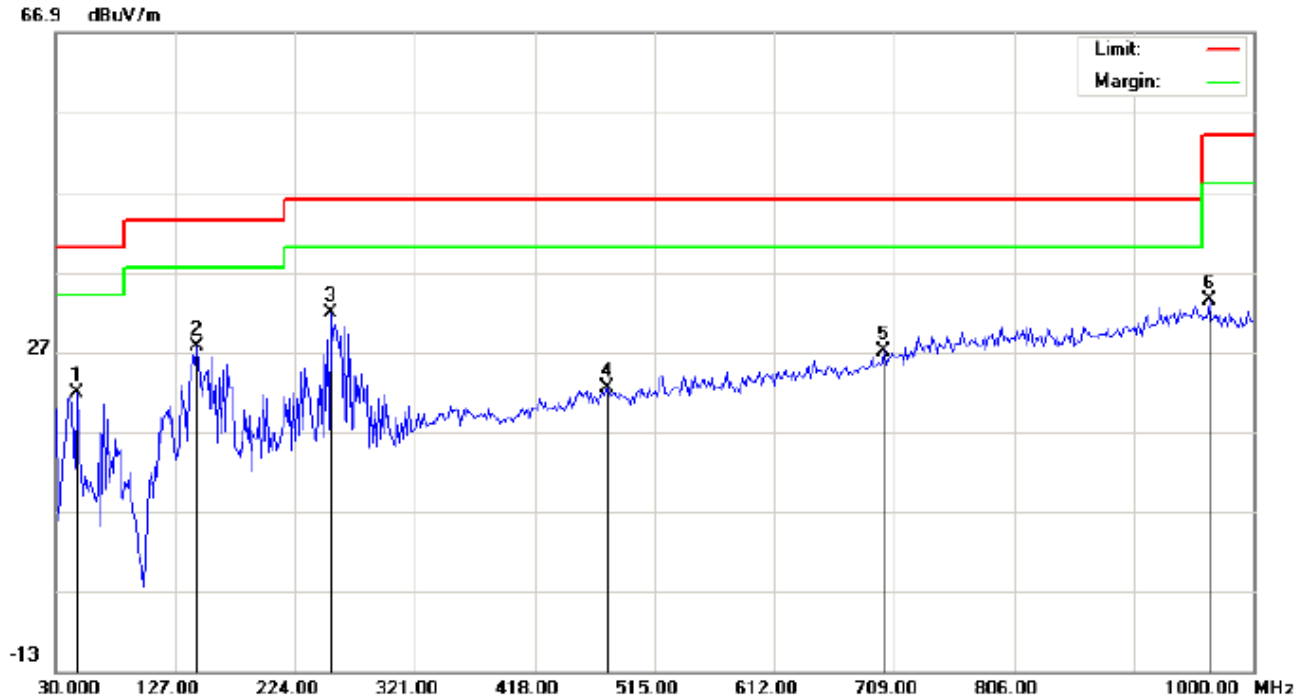
Temperature: 23.5

Humidity: 55.7 %

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		138.3167	10.15	14.41	24.56	43.50	-18.94	peak			
2		201.3667	14.98	11.86	26.84	43.50	-16.66	peak			
3		257.9500	16.05	8.25	24.30	46.00	-21.70	peak			
4		547.3333	3.34	22.41	25.75	46.00	-20.25	peak			
5	*	827.0167	2.77	27.31	30.08	46.00	-15.92	peak			
6		993.5333	3.08	29.58	32.66	54.00	-21.34	peak			

**RESULT: PASS**

EUT	Rugged Tablet	Model Name	T71L, T71PLUS
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2437MHZ	Antenna	Vertical

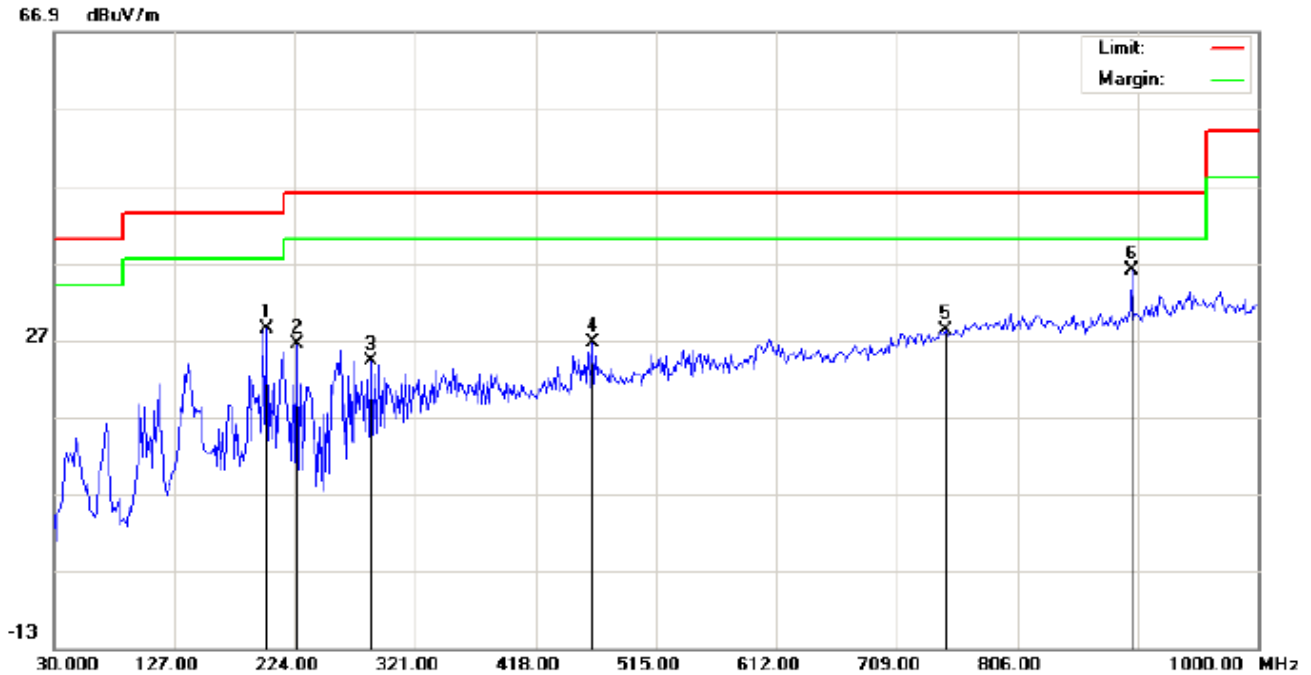


Site: site #1 Polarization: **Vertical** Temperature: 23.5  
Limit: FCC Class B 3M Radiation Power: AC 120V/60Hz Humidity: 55.7 %  
EUT: Rugged Tablet Distance: 3m  
M/N: T71L  
Mode: Middle channel TX  
Note:

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		47.7833	13.43	8.39	21.82	40.00	-18.18	peak			
2		144.7833	12.47	15.23	27.70	43.50	-15.80	peak			
3	*	253.1000	17.85	13.99	31.84	46.00	-14.16	peak			
4		476.2000	1.58	20.87	22.45	46.00	-23.55	peak			
5		700.9167	1.88	25.22	27.10	46.00	-18.90	peak			
6		964.4333	3.45	29.86	33.31	54.00	-20.69	peak			

**RESULT: PASS**

EUT	Rugged Tablet	Model Name	T71L, T71PLUS
Temperature	25°C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11b with date rate 1 2462MHZ	Antenna	Horizontal

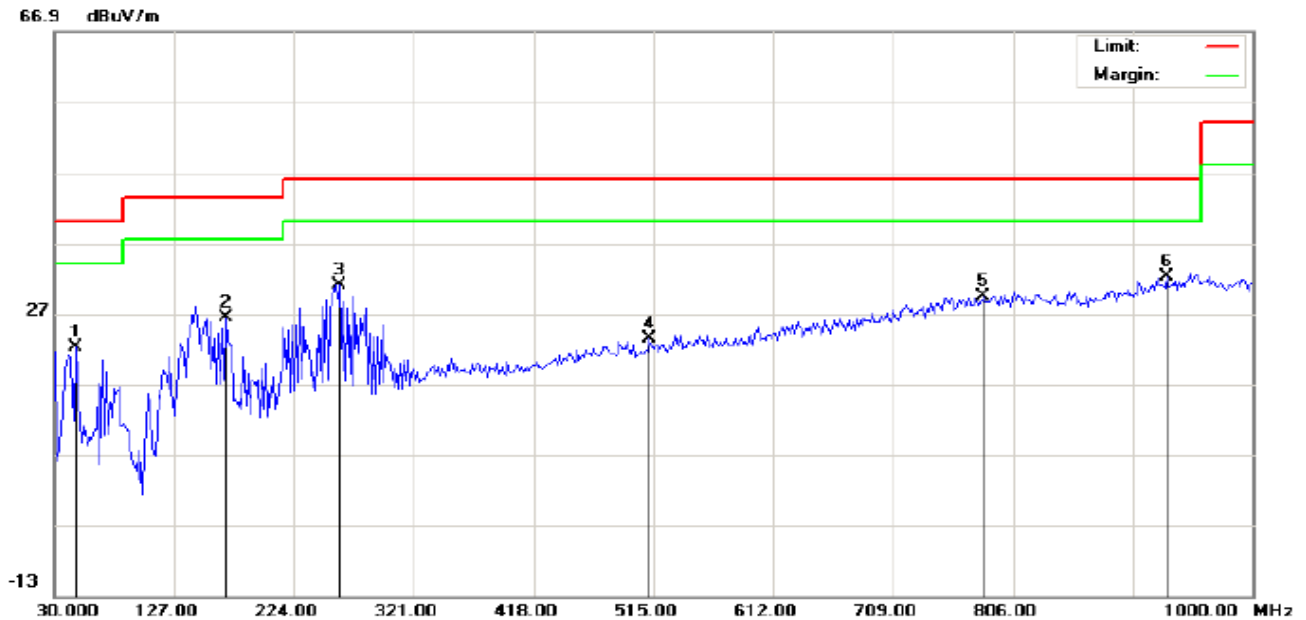


Site: site #1 Polarization: **Horizontal** Temperature: 23.5  
Limit: FCC Class B 3M Radiation Power: AC 120V/60Hz Humidity: 55.7 %  
EUT: Rugged Tablet Distance: 3m  
M/N: T71L  
Mode: High channel TX  
Note:

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		201.3667	16.46	11.86	28.32	43.50	-15.18	peak			
2		225.6167	16.93	9.39	26.32	46.00	-19.68	peak			
3		285.4333	11.33	12.93	24.26	46.00	-21.74	peak			
4		463.2667	5.90	20.73	26.63	46.00	-19.37	peak			
5		747.8000	1.64	26.57	28.21	46.00	-17.79	peak			
6	*	898.1500	7.36	28.56	35.92	46.00	-10.08	peak			

**RESULT: PASS**

EUT	Rugged Tablet	Model Name	T71L, T71PLUS
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: Rugged Tablet  
M/N: T71L  
Mode: High channel TX  
Note:

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

Temperature: 23.5  
Humidity: 55.7 %

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		47.7833	13.87	8.39	22.26	40.00	-17.74	peak			
2		169.0333	11.73	14.76	26.49	43.50	-17.01	peak			
3		261.1833	16.83	14.24	31.07	46.00	-14.93	peak			
4		511.7667	2.03	21.45	23.48	46.00	-22.52	peak			
5		781.7500	2.38	27.07	29.45	46.00	-16.55	peak			
6	*	930.4833	2.82	29.46	32.28	46.00	-13.72	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	41.24	10.44	51.68	74	-22.32	Pk	Horizontal
4824.092	32.04	10.44	42.48	54	-11.52	AV	Horizontal
7236.127	42.11	10.39	52.5	74	-21.5	pk	Horizontal
7236.127	30.43	10.39	40.82	54	-13.18	AV	Horizontal
4824.098	46.27	10.39	56.66	74	-17.34	Pk	Vertical
4824.082	32.17	10.39	42.56	54	-11.44	AV	Vertical
7236.110	41.22	10.68	51.9	74	-22.1	Pk	Vertical
7236.054	35.39	10.68	46.07	54	-7.93	AV	Vertical
TX 11b 2437MHz							
4874.072	45.28	10.39	55.67	74	-18.33	Pk	Horizontal
4874.108	34.66	10.39	45.05	54	-8.95	AV	Horizontal
7311.092	41.23	12.68	53.91	74	-20.09	Pk	Horizontal
7311.131	32.58	12.68	45.26	54	-8.74	AV	Horizontal
4874.098	44.51	10.39	54.9	74	-19.1	Pk	Vertical
4874.044	32.01	10.39	42.4	54	-11.6	AV	Vertical
7311.145	40.33	12.68	53.01	74	-20.99	Pk	Vertical
7311.104	32.61	12.68	45.29	54	-8.71	AV	Vertical
TX 11b 2462MHz							
4924.128	40.54	10.39	50.93	74	-23.07	pk	Horizontal
4924.083	32.56	10.39	42.95	54	-11.05	AV	Horizontal
7386.071	41.21	12.68	53.89	74	-20.11	pk	Horizontal
7386.134	32.89	12.68	45.57	54	-8.43	AV	Horizontal
4924.042	43.14	10.39	53.53	74	-20.47	pk	Vertical
4924.060	30.86	10.39	41.25	54	-12.75	AV	Vertical
7386.051	40.18	12.68	52.86	74	-21.14	pk	Vertical
7386.054	31.15	12.68	43.83	54	-10.17	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

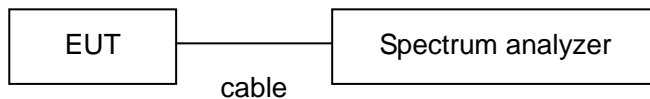
b) Set RBW=100kHz, VBW=300kHz

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	70.14	-13	57.14	74	-16.86	peak	Horizontal
2399.9	50.22	-13	37.22	54	-16.78	AVG	Horizontal
2400	71.45	-12.99	58.46	74	-15.54	peak	Horizontal
2400	56.37	-12.99	43.38	54	-10.62	AVG	Horizontal
2399.9	71.47	-12.97	58.5	74	-15.5	peak	Vertical
2399.9	52.21	-12.97	39.24	54	-14.76	AVG	Vertical
2400	75.39	-12.94	62.45	74	-11.55	peak	Vertical
2400	57.77	-12.94	44.83	54	-9.17	AVG	Vertical
TX 11b 2462MHz							
2483.5	71.42	-12.78	58.64	74	-15.36	peak	Horizontal
2483.5	52.05	-12.78	39.27	54	-14.73	AVG	Horizontal
2483.6	73.41	-12.77	60.64	74	-13.36	peak	Horizontal
2483.6	52.19	-12.77	39.42	54	-14.58	AVG	Horizontal
2483.5	71.03	-12.76	58.27	74	-15.73	peak	Vertical
2483.5	52.11	-12.76	39.35	54	-14.65	AVG	Vertical
2483.6	75.02	-12.72	62.3	74	-11.7	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.

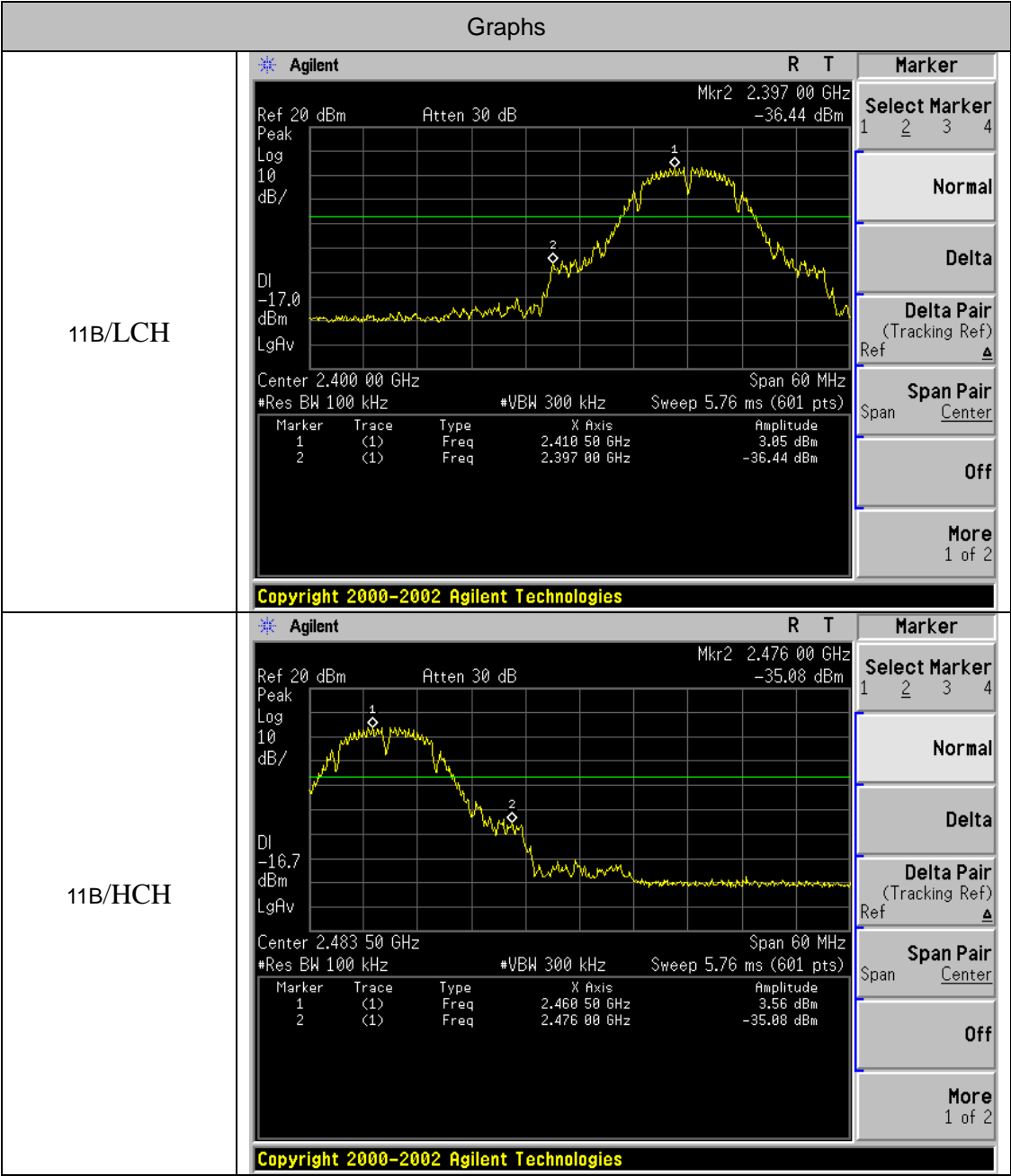
The "Factor" value can be calculated automatically by software of measurement system.

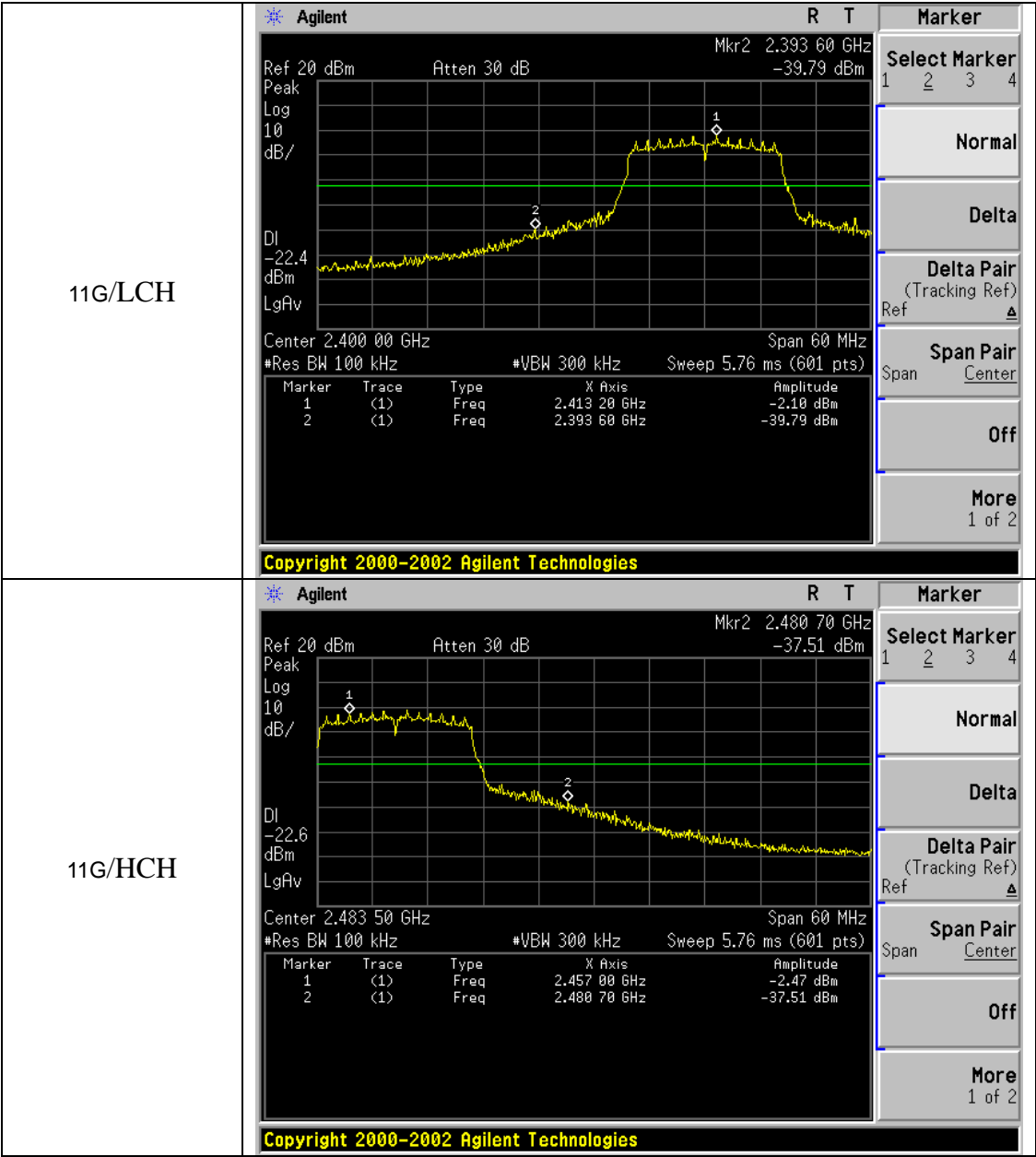
#### 12.4. Conducted Test Result

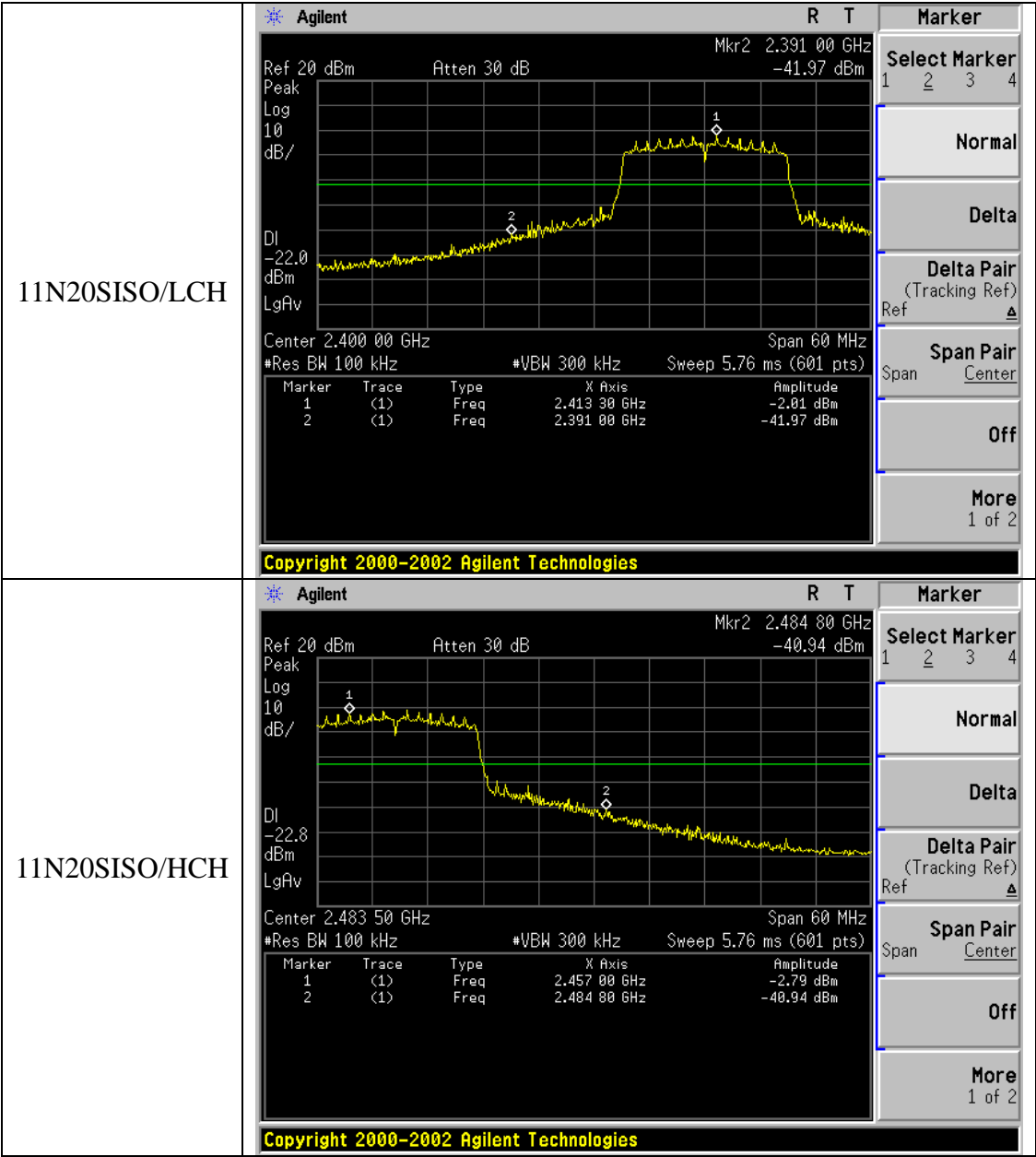
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	3.05	-36.44	-17.0	PASS
11B	HCH	3.56	-35.08	-16.4	PASS
11G	LCH	-2.10	-39.79	-22.1	PASS
11G	HCH	-2.47	-37.51	-22.5	PASS
11N20SISO	LCH	-2.01	-41.97	-22.0	PASS
11N20SISO	HCH	-2.79	-40.94	-22.8	PASS
11N40SISO	LCH	-7.49	-42.65	-27.5	PASS
11N40SISO	HCH	-7.12	-42.45	-27.1	PASS

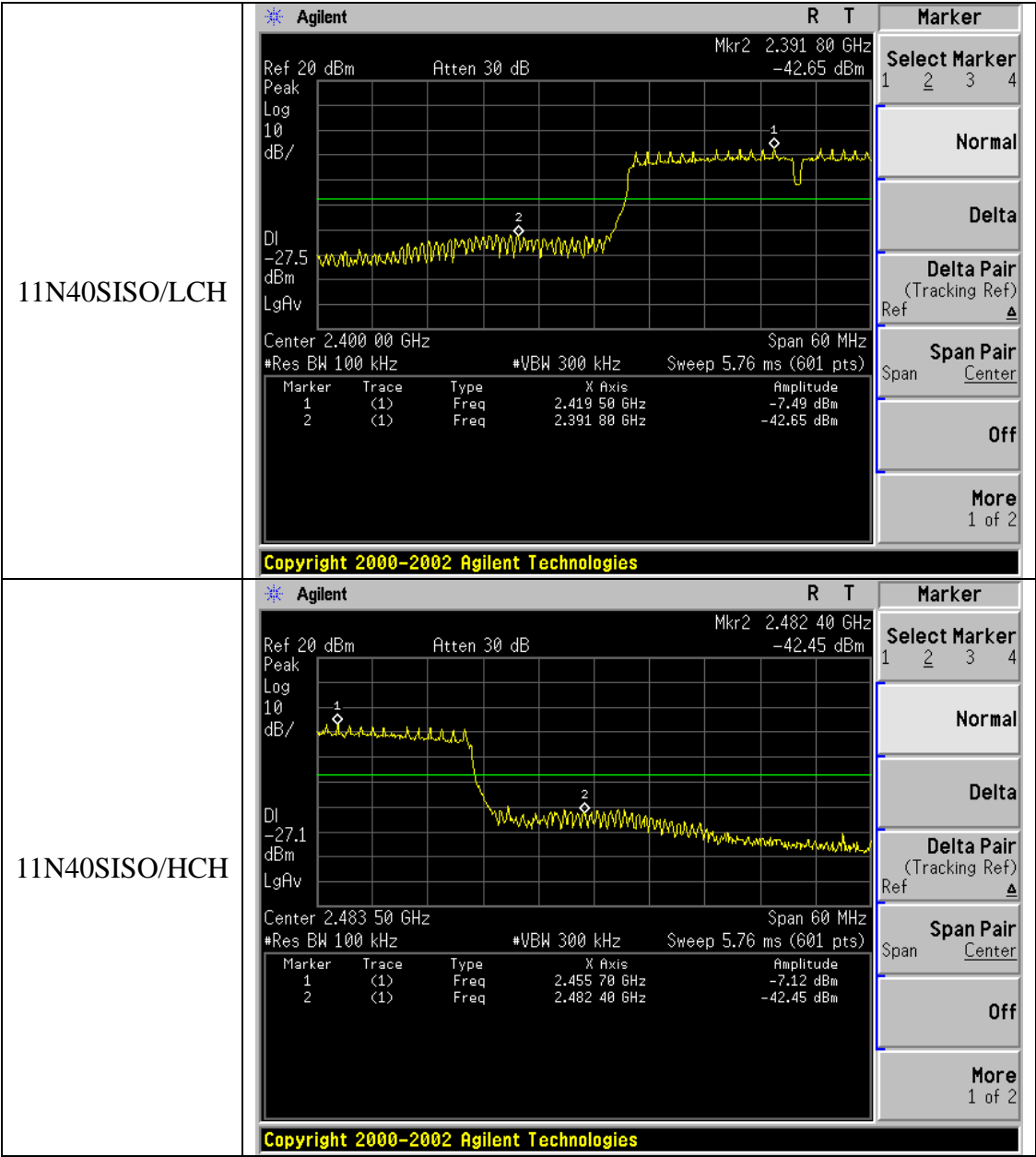


Test Graph









### 13. FCC LINE CONDUCTED EMISSION TEST

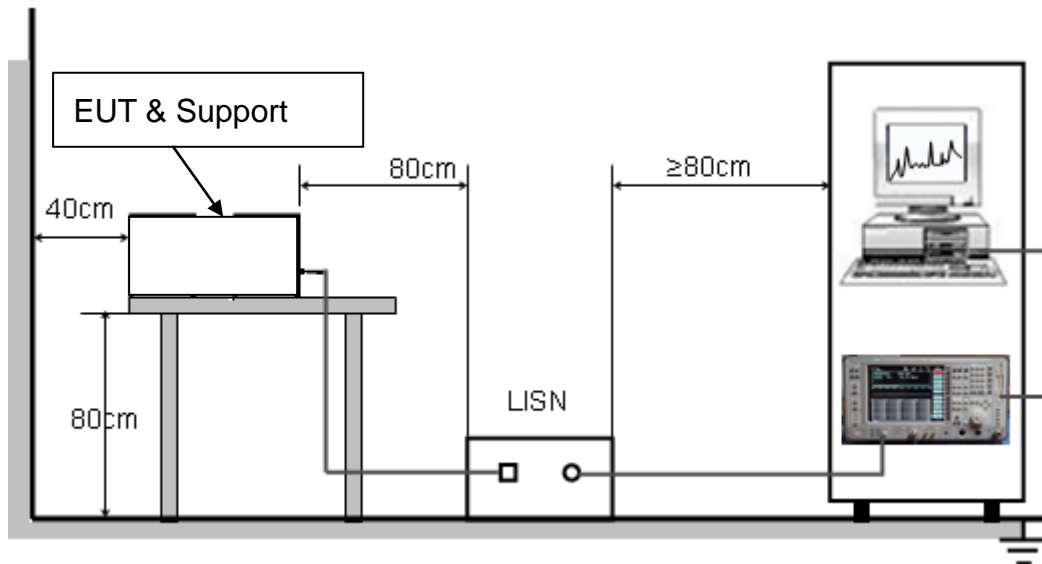
#### 13.1. LIMITS OF LINE CONDUCTED EMISSION TEST

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.

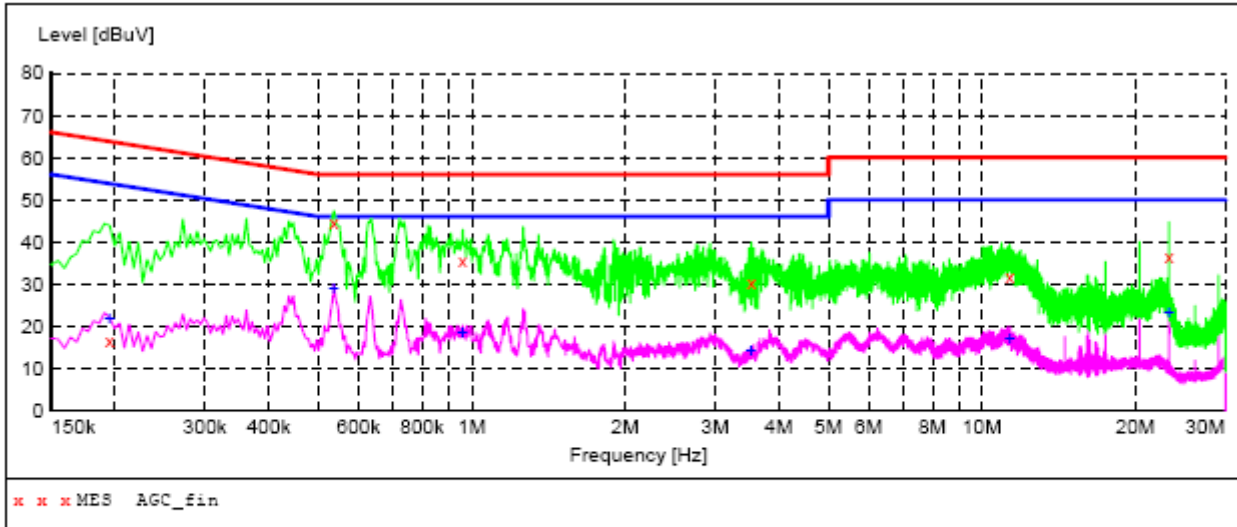
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

### **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"

2016/7/21 9:55

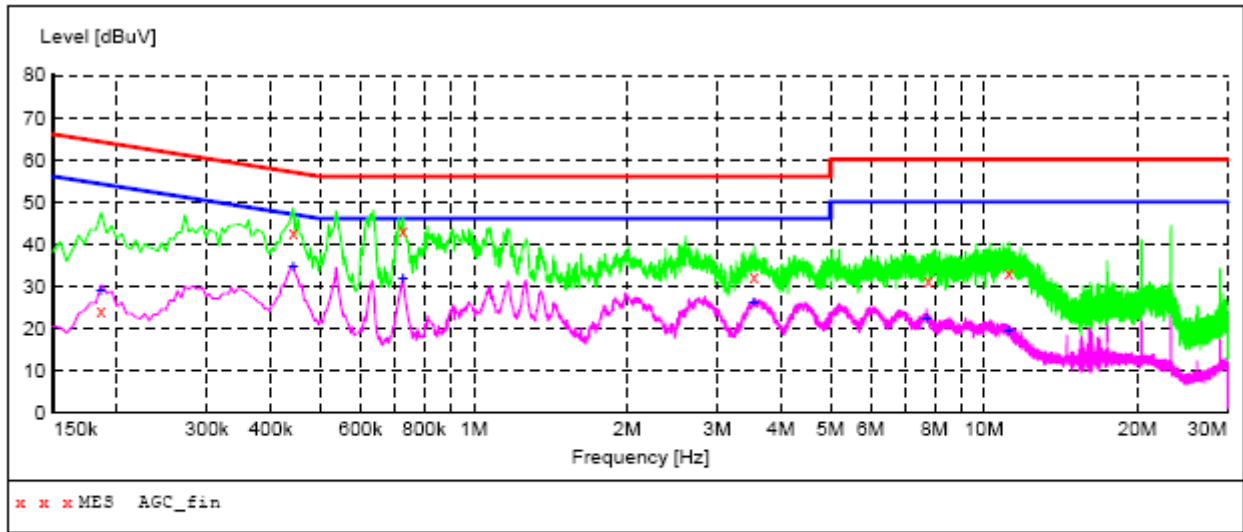
Frequency	Level	Transd	Limit	Margin	Detector	Line	PE	AUX STATE
MHz	dBuV	dB	dBuV	dB				
0.195000	16.40	10.3	64	47.4	QP	L1	GND	ON
0.537000	44.70	10.3	56	11.3	QP	L1	GND	ON
0.960000	35.70	10.4	56	20.3	QP	L1	GND	ON
3.529500	30.20	10.5	56	25.8	QP	L1	GND	ON
11.323500	31.60	10.9	60	28.4	QP	L1	GND	ON
23.257500	36.50	12.0	60	23.5	QP	L1	GND	ON

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

2016/7/21 9:55

Frequency	Level	Transd	Limit	Margin	Detector	Line	PE	AUX STATE
MHz	dBuV	dB	dBuV	dB				
0.195000	21.60	10.3	54	32.2	AV	L1	GND	ON
0.537000	28.80	10.3	46	17.2	AV	L1	GND	ON
0.960000	18.30	10.4	46	27.7	AV	L1	GND	ON
3.529500	14.00	10.5	46	32.0	AV	L1	GND	ON
11.346000	17.20	10.9	50	32.8	AV	L1	GND	ON
23.257500	23.20	12.0	50	26.8	AV	L1	GND	ON

Line Conducted Emission Test Line 2-N



MEASUREMENT RESULT: "AGC\_fin"

2016/7/21 10:16

Frequency	Level	Transd	Limit	Margin	Detector	Line	PE	AUX STATE
MHz	dBuV	dB	dBuV	dB				
0.186000	24.30	10.3	64	39.9	QP	N	GND	ON
0.442500	42.80	10.3	57	14.2	QP	N	GND	ON
0.726000	43.20	10.3	56	12.8	QP	N	GND	ON
3.543000	32.10	10.5	56	23.9	QP	N	GND	ON
7.773000	31.50	10.7	60	28.5	QP	N	GND	ON
11.175000	33.00	10.9	60	27.0	QP	N	GND	ON

MEASUREMENT RESULT: "AGC\_fin2"

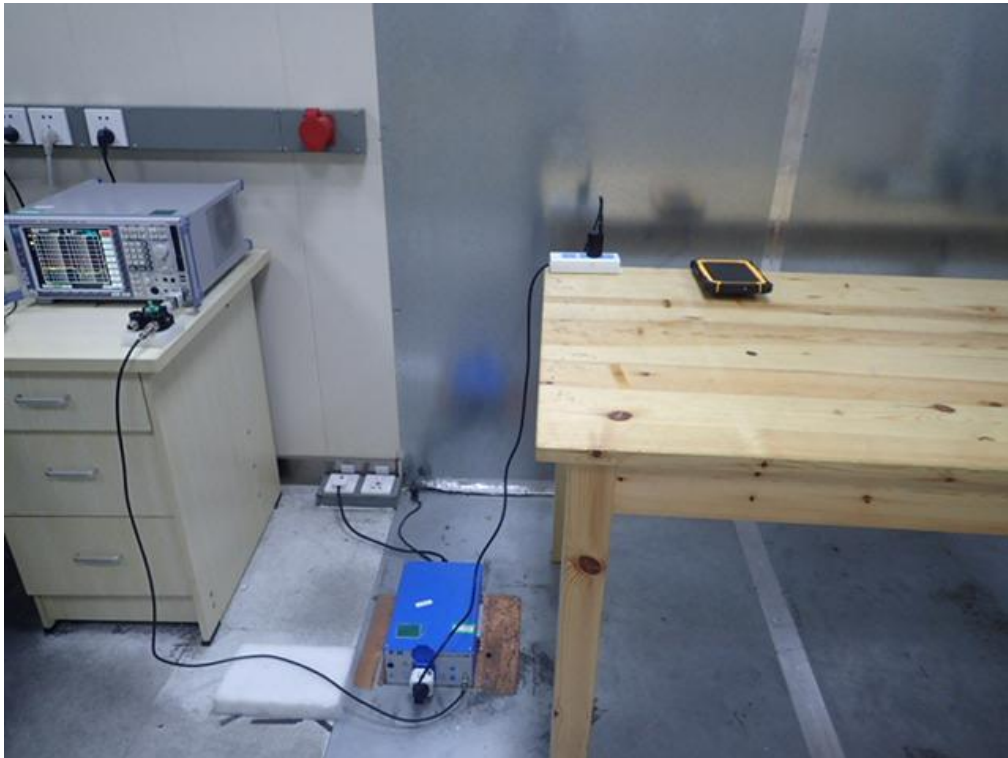
2016/7/21 10:16

Frequency	Level	Transd	Limit	Margin	Detector	Line	PE	AUX STATE
MHz	dBuV	dB	dBuV	dB				
0.186000	29.00	10.3	54	25.2	AV	N	GND	ON
0.442500	34.50	10.3	47	12.5	AV	N	GND	ON
0.726000	32.00	10.3	46	14.0	AV	N	GND	ON
3.543000	26.10	10.5	46	19.9	AV	N	GND	ON
7.719000	22.40	10.7	50	27.6	AV	N	GND	ON
11.175000	19.50	10.9	50	30.5	AV	N	GND	ON

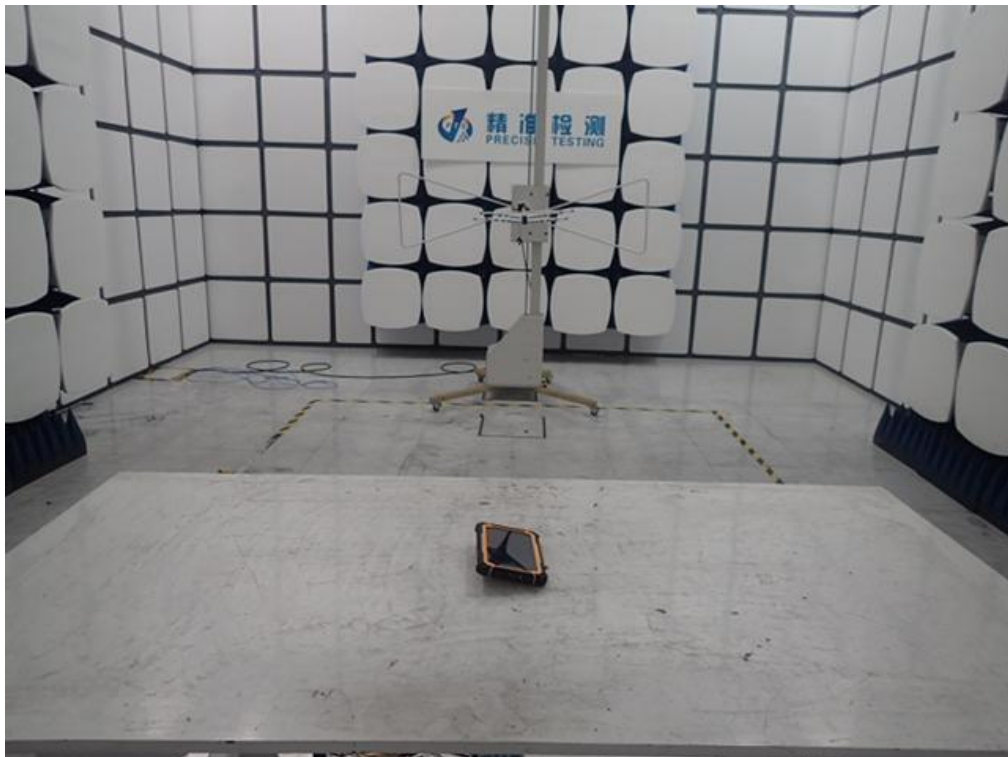


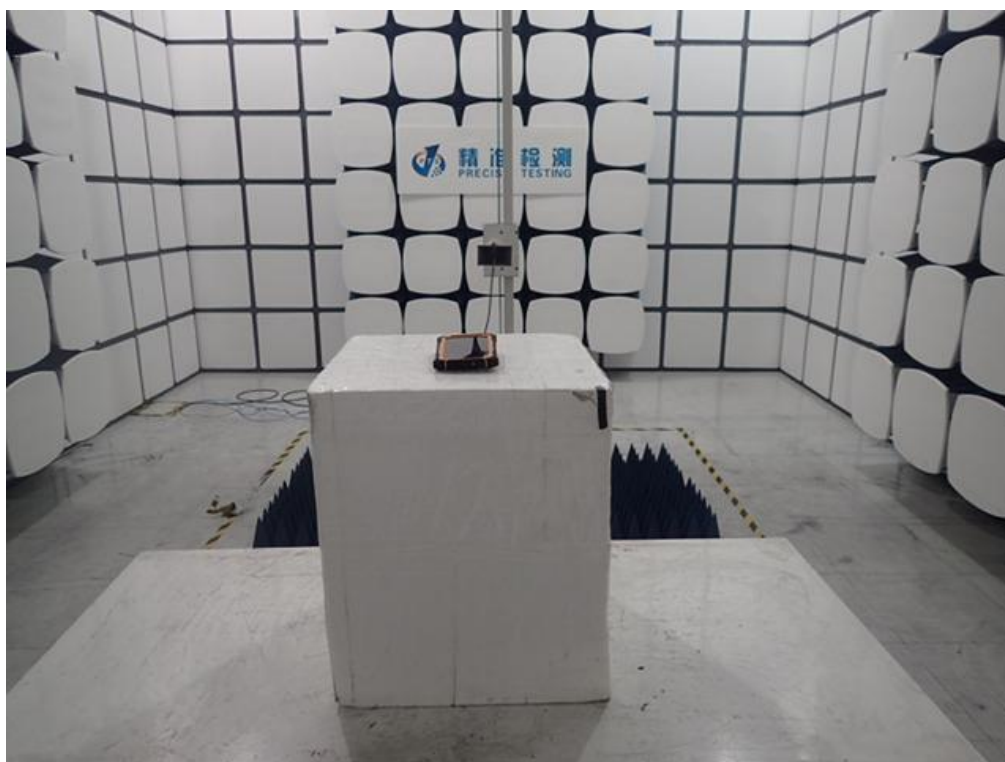
## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

### FCC LINE CONDUCTED EMISSION TEST SETUP



### FCC RADIATED EMISSION TEST SETUP





## APPENDIX B: PHOTOGRAPHS OF EUT

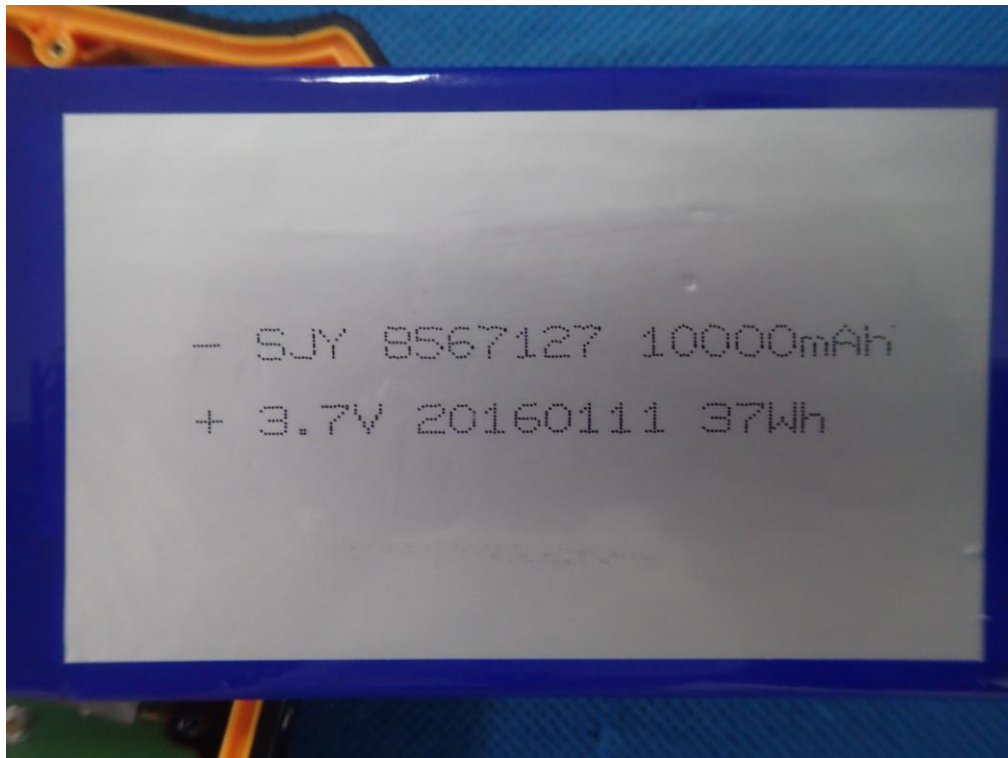
### TOTAL VIEW OF EUT



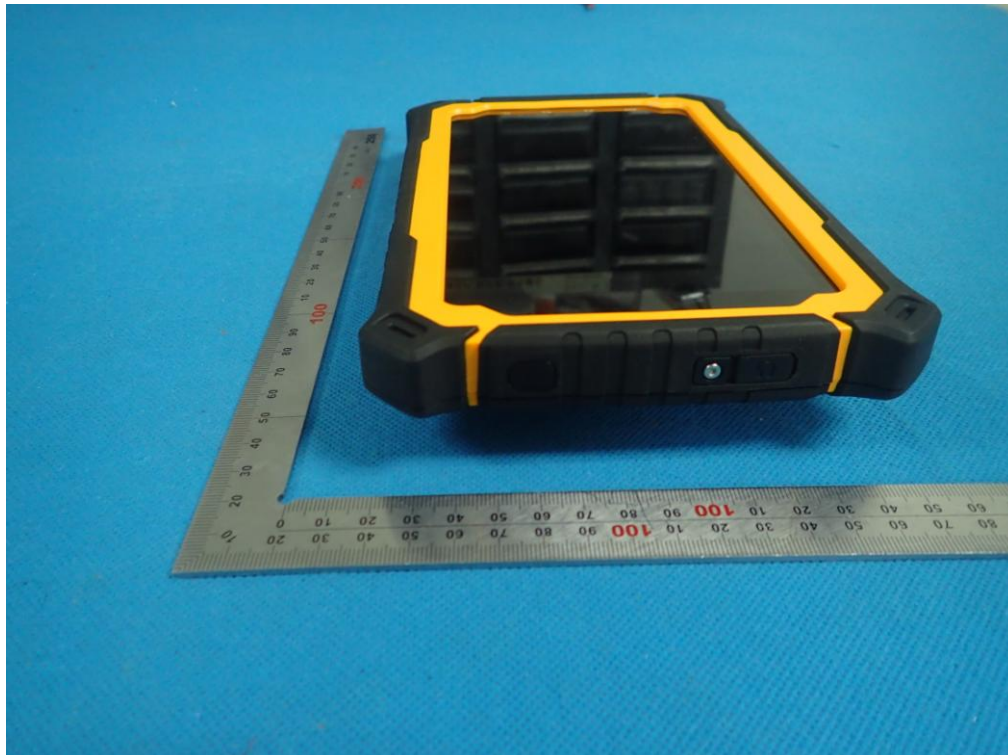
### THE LABEL OF ADAPTER



## THE LABEL OF BATTERY

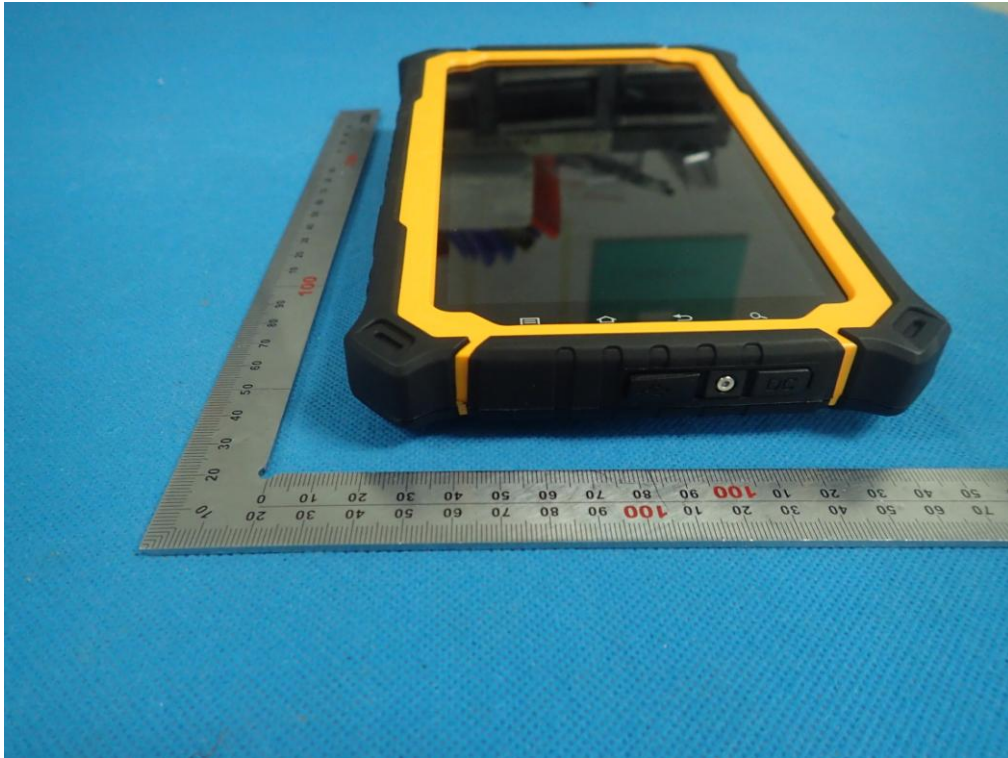


## TOP VIEW OF EUT





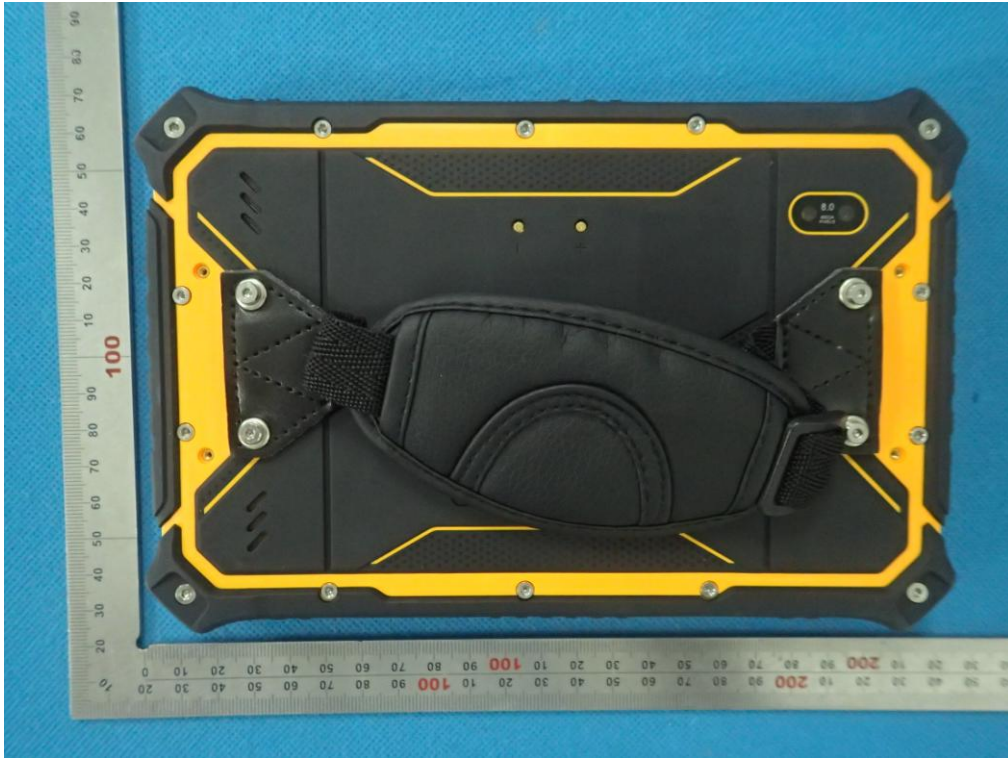
BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



BACK VIEW OF EUT



LEFT VIEW OF EUT

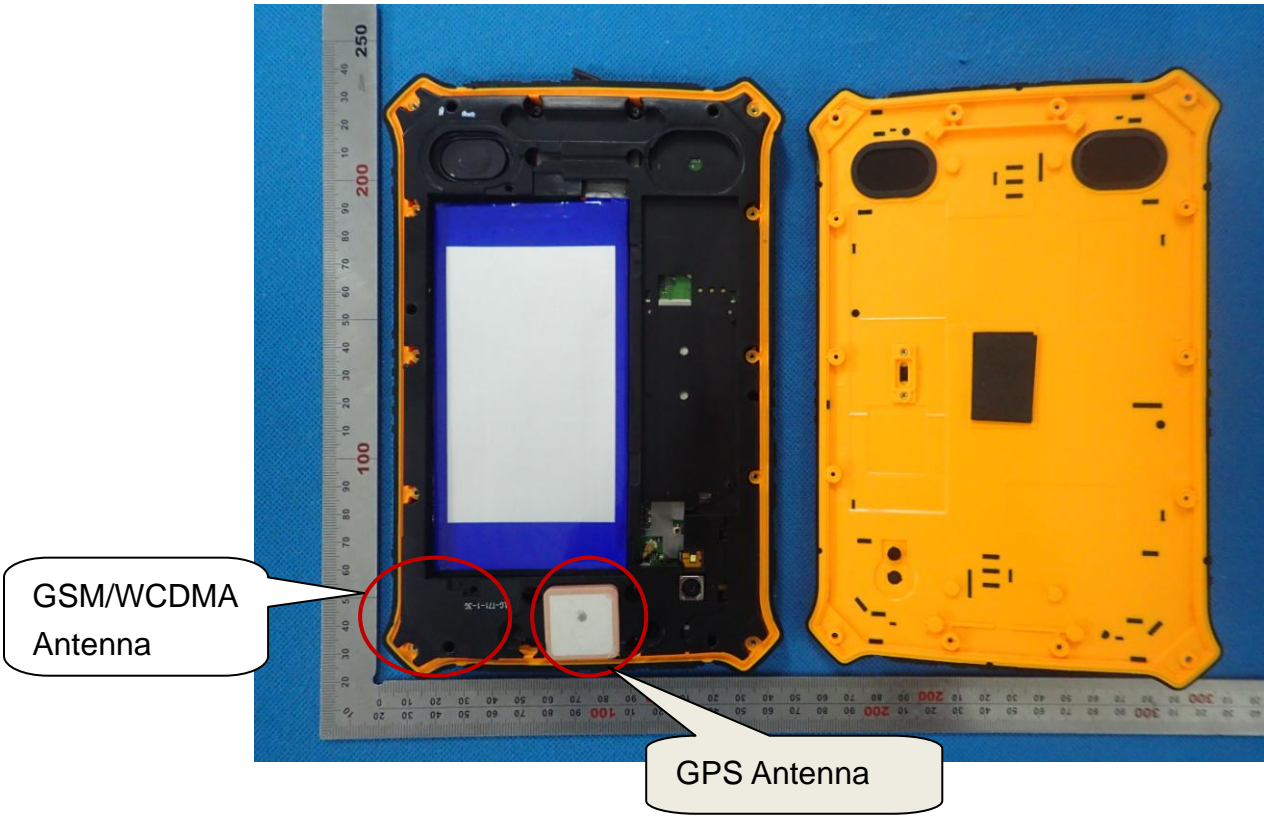




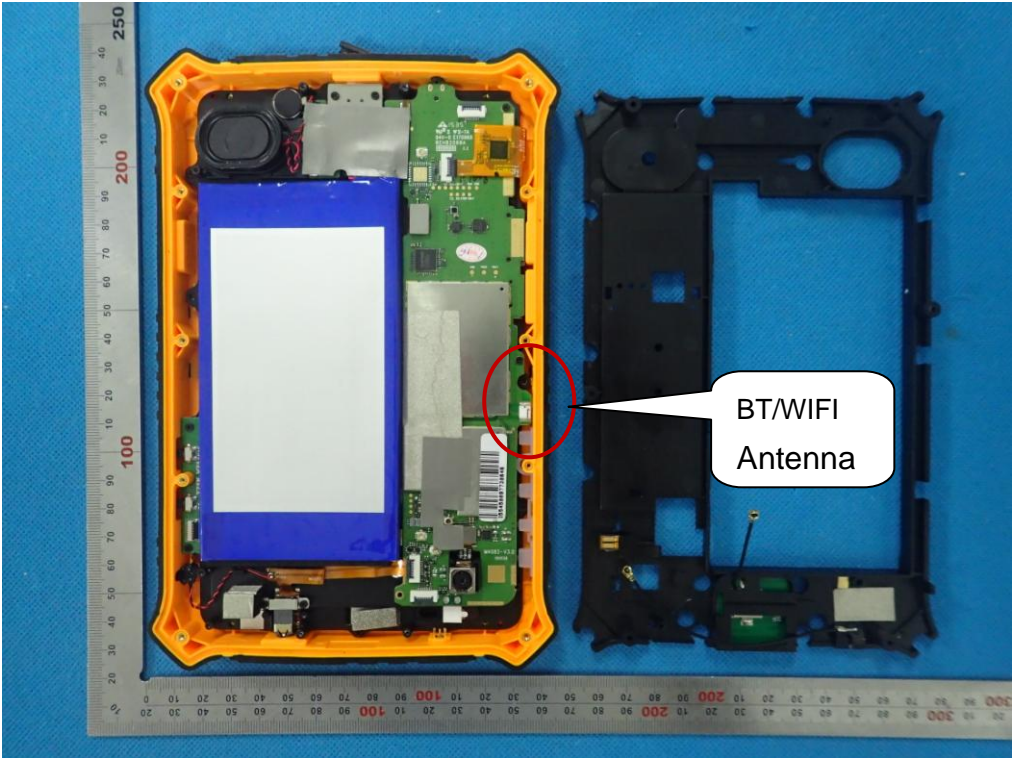
RIGHT VIEW OF EUT



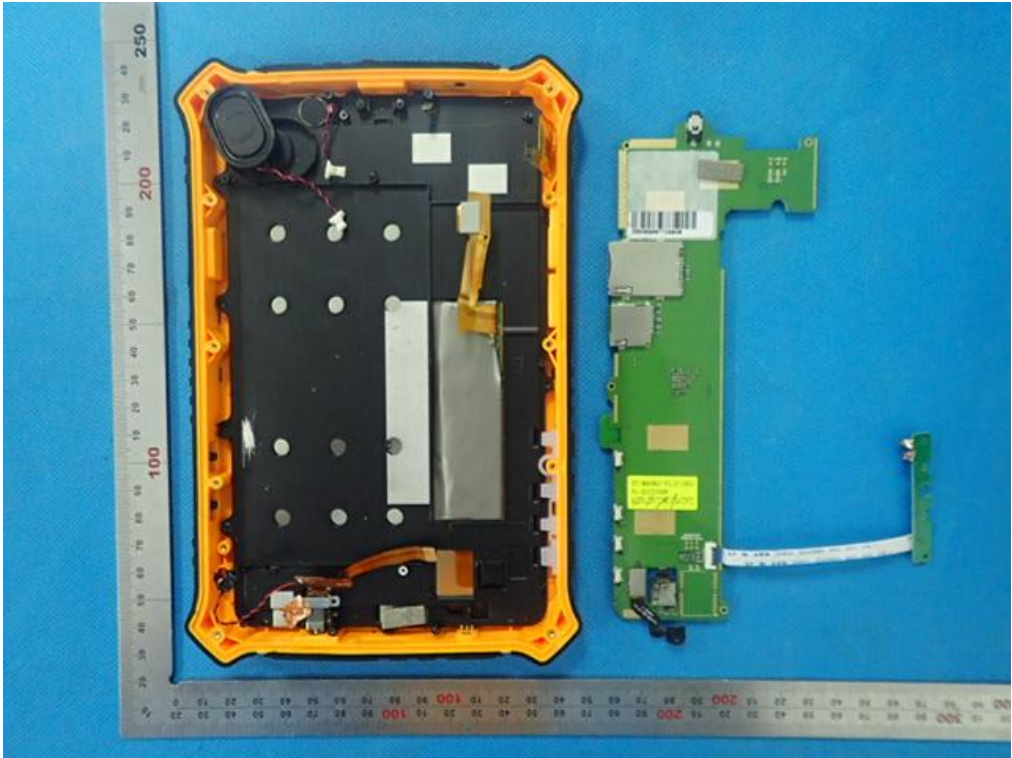
OPEN VIEW OF EUT-1



OPEN VIEW OF EUT-2

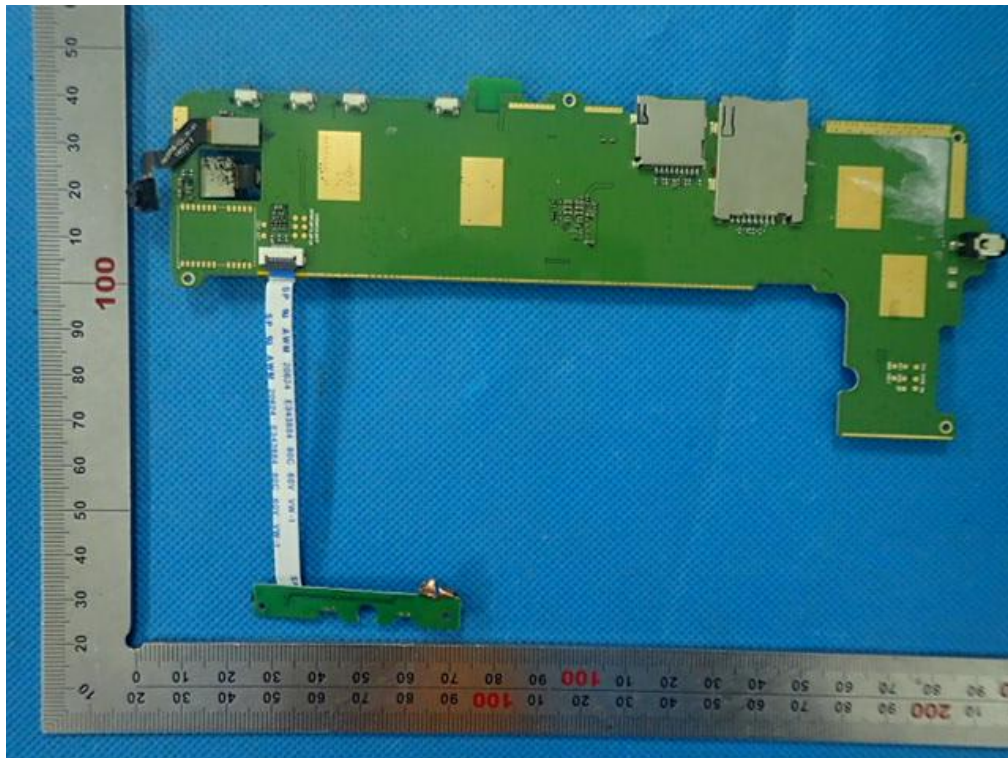


OPEN VIEW OF EUT-3

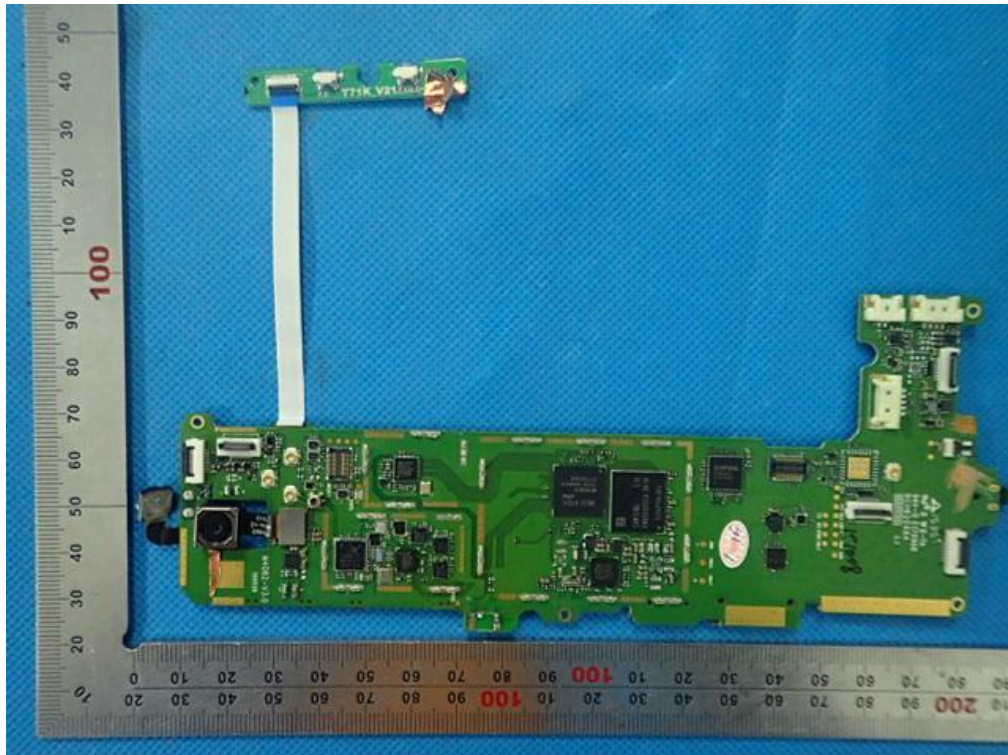




### INTERNAL VIEW OF EUT-1



### INTERNAL VIEW OF EUT-2



----END OF REPORT----