

IEEE 802.11n_40M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	-2.637	≤ 2.23	Pass
46	5230	-2.713	≤ 2.23	Pass

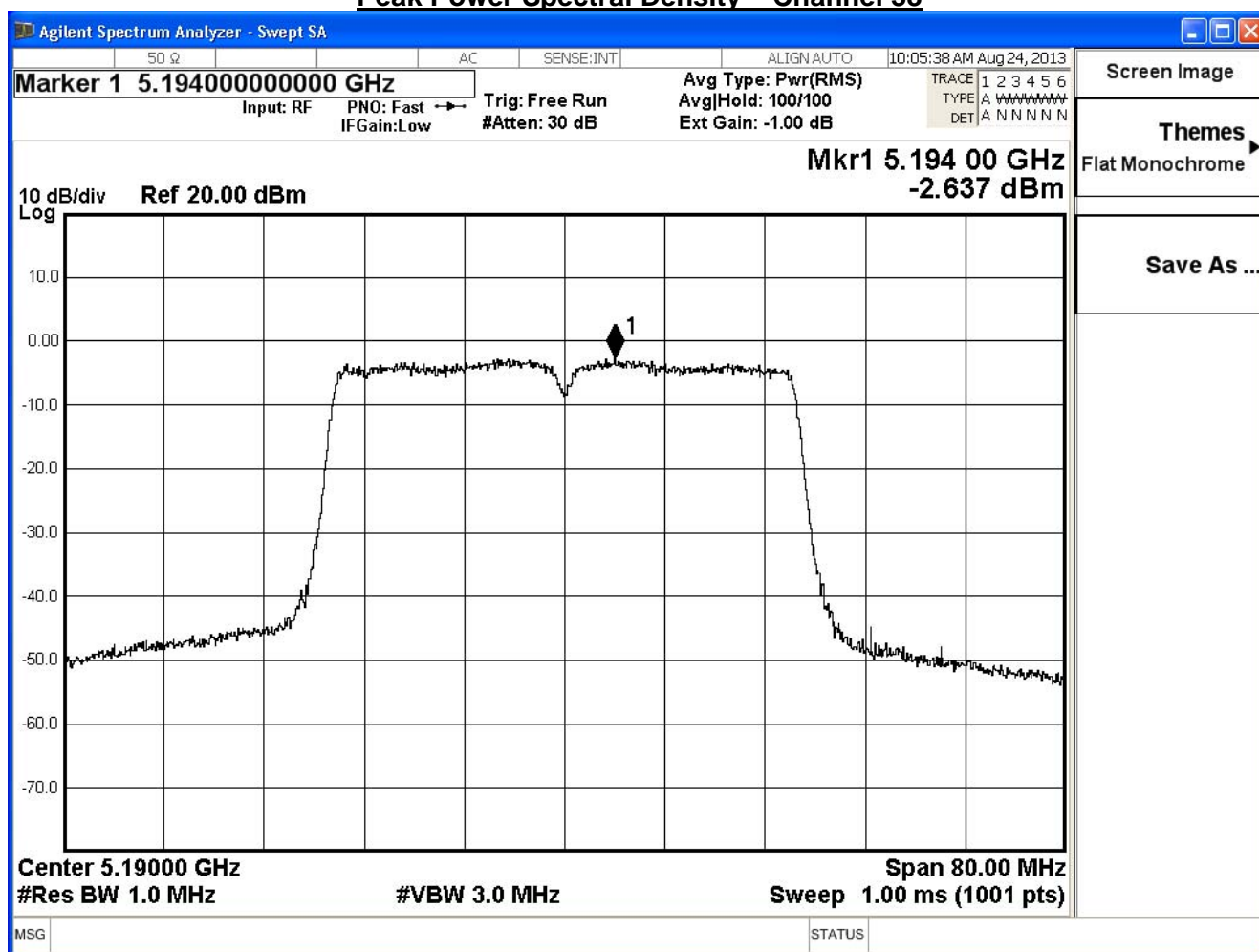
Note:

Measure Level =Reading value + cable loss

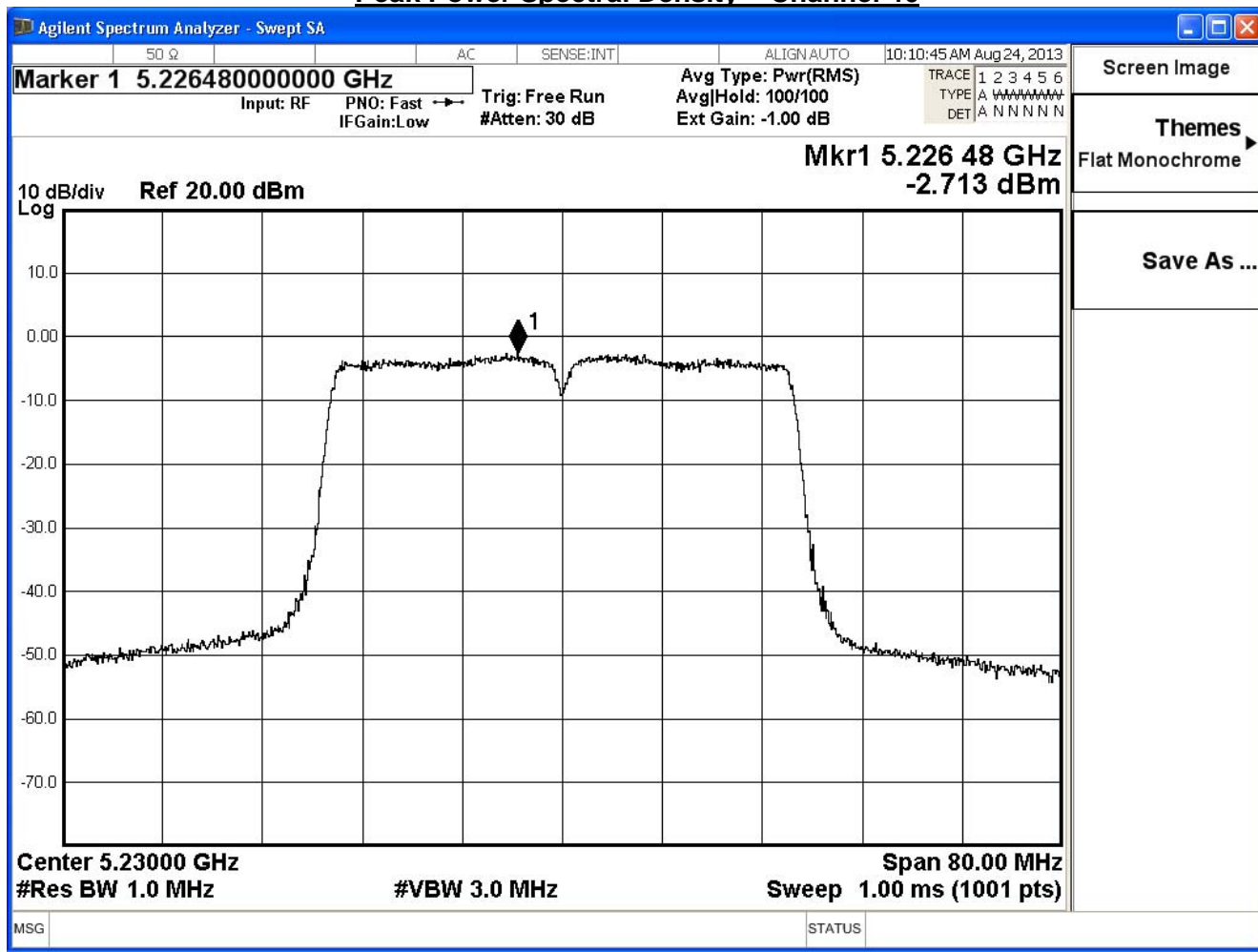
Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23\text{ dBm}$

Peak Power Spectral Density – Channel 38



Peak Power Spectral Density – Channel 46



IEEE 802.11n_40M(ANT 1)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	-2.981	≤ 2.23	Pass
46	5230	-2.617	≤ 2.23	Pass

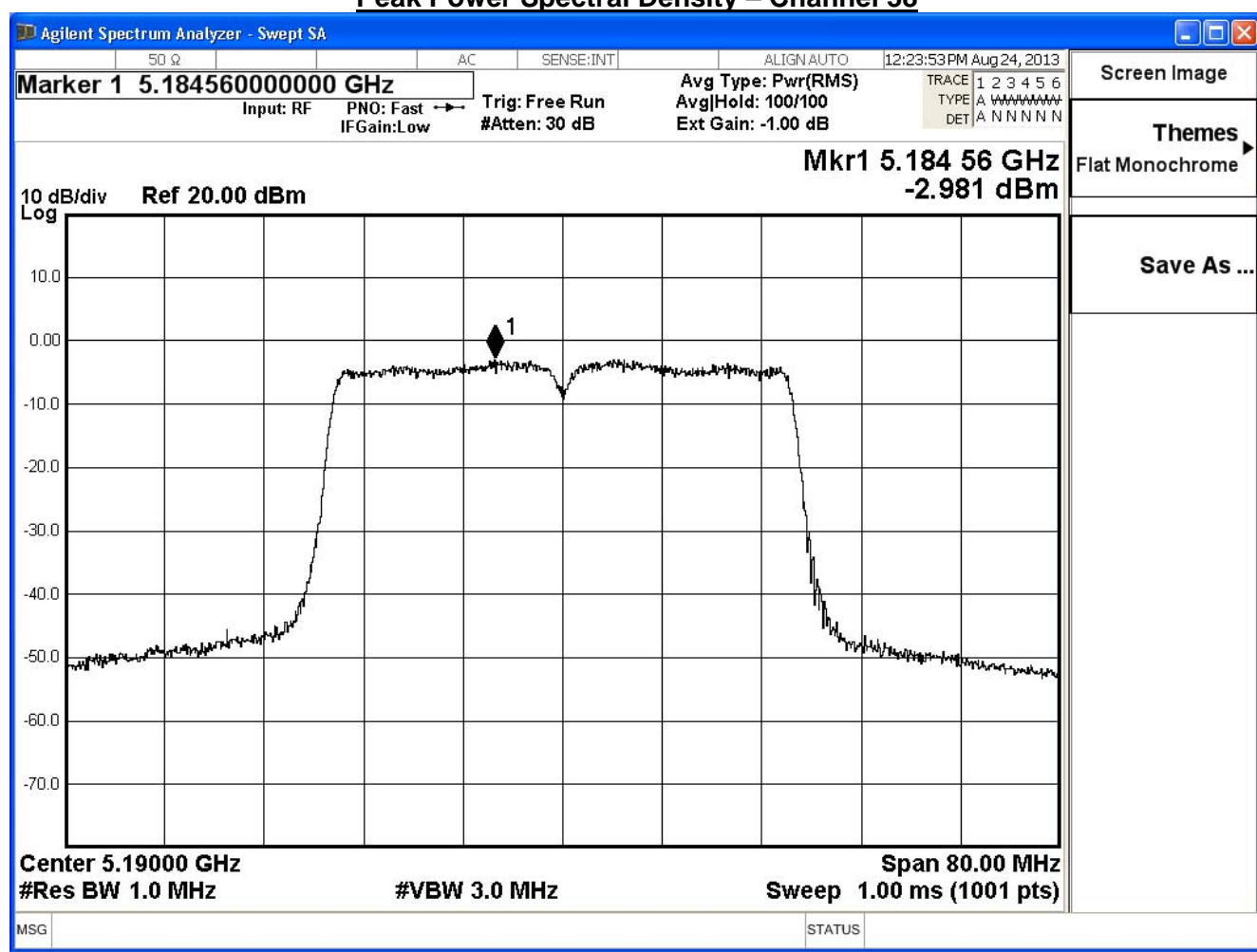
Note:

Measure Level =Reading value + cable loss

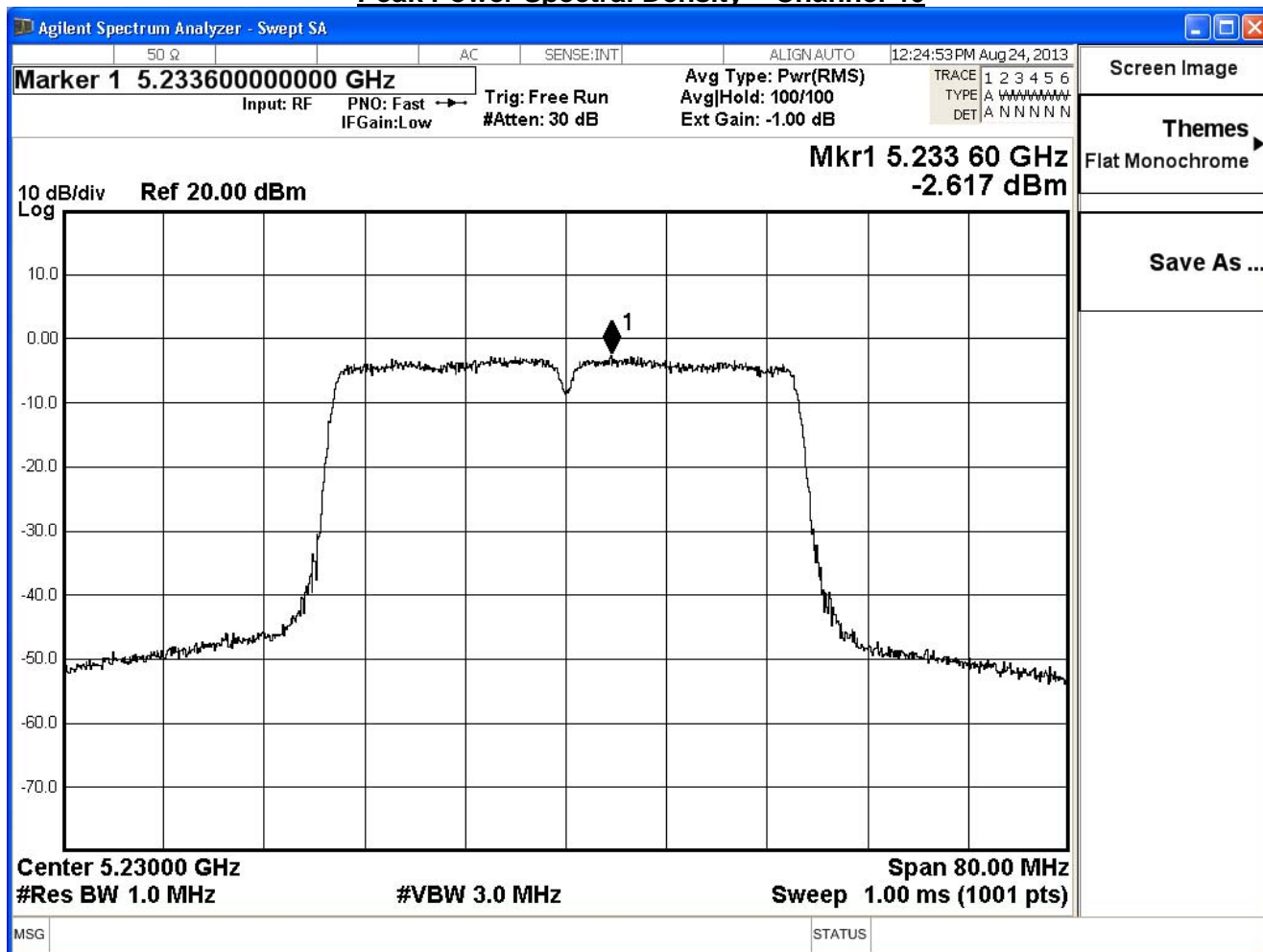
Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23\text{ dBm}$

Peak Power Spectral Density – Channel 38



Peak Power Spectral Density – Channel 46



IEEE 802.11n_40M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	-2.683	≤ 2.23	Pass
46	5230	-2.656	≤ 2.23	Pass

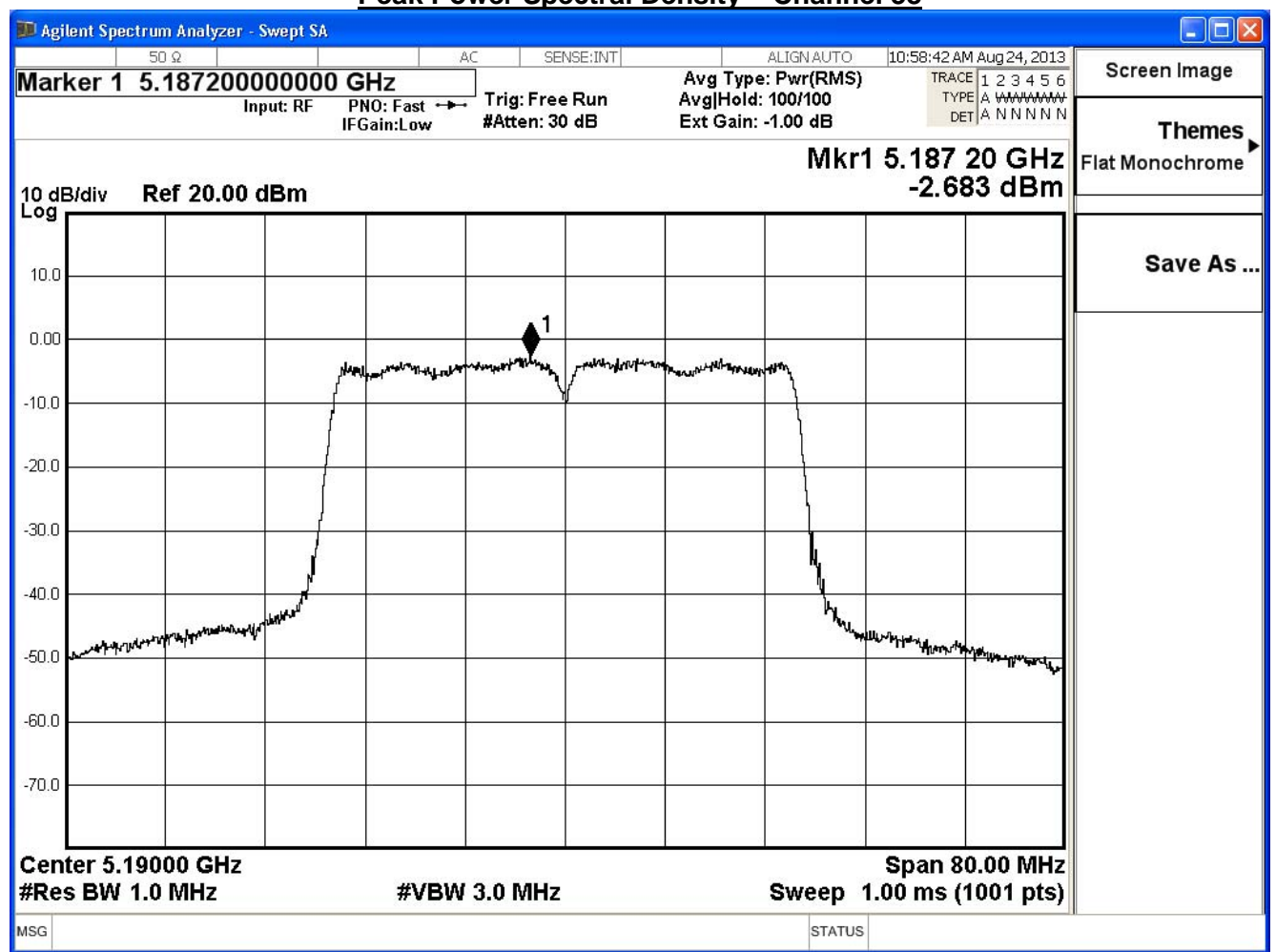
Note:

Measure Level =Reading value + cable loss

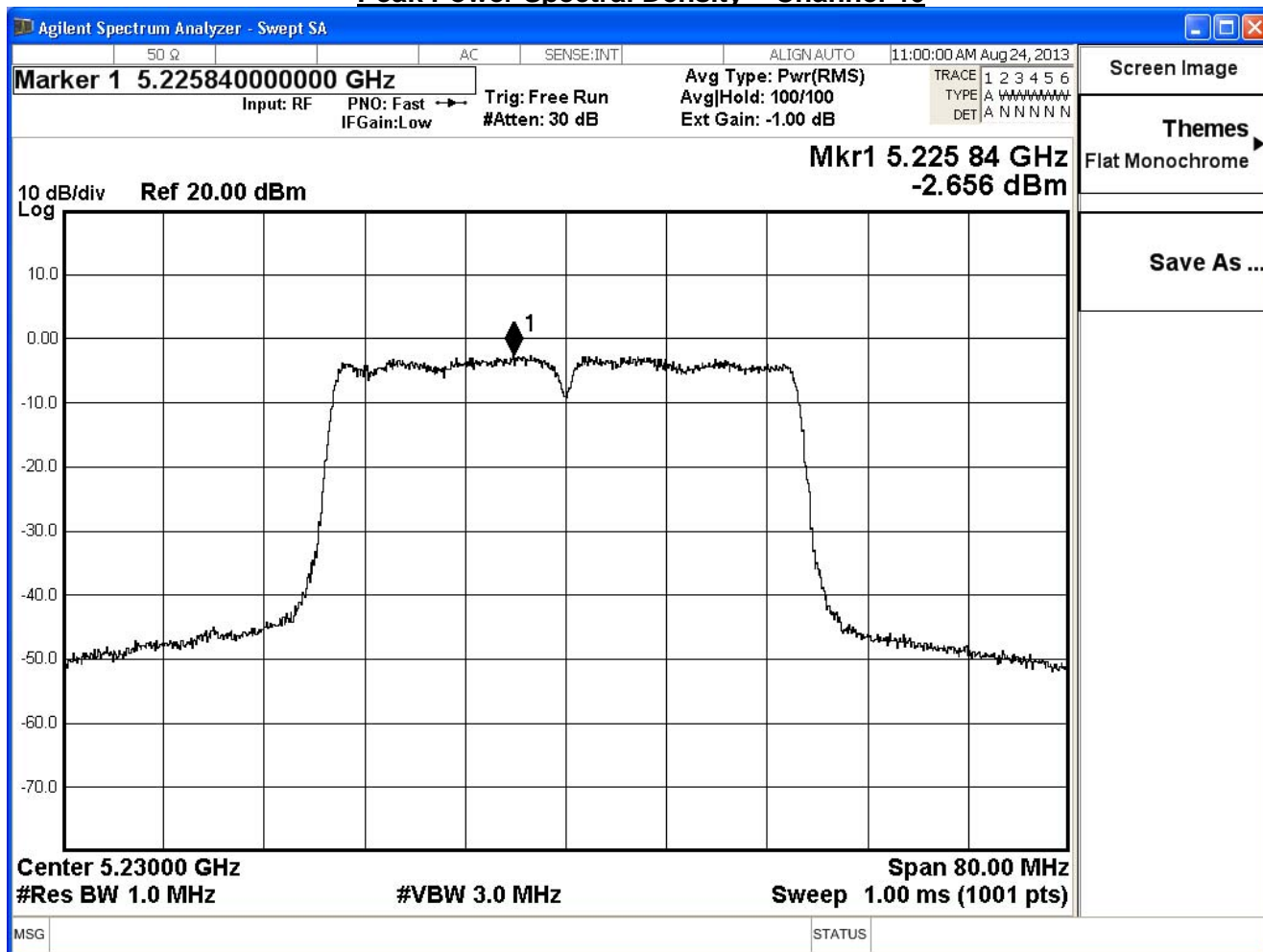
Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23\text{ dBm}$

Peak Power Spectral Density – Channel 38



Peak Power Spectral Density – Channel 46



IEEE 802.11n_40M(ANT 0+1+2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	2.01	≤ 2.23	Pass
46	5230	2.11	≤ 2.23	Pass

Note:

Measure Level =Reading value + cable loss

Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23 \text{ dBm}$

IEEE 802.11ac_80M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
42	5210	-2.698	≤ 2.23	Pass

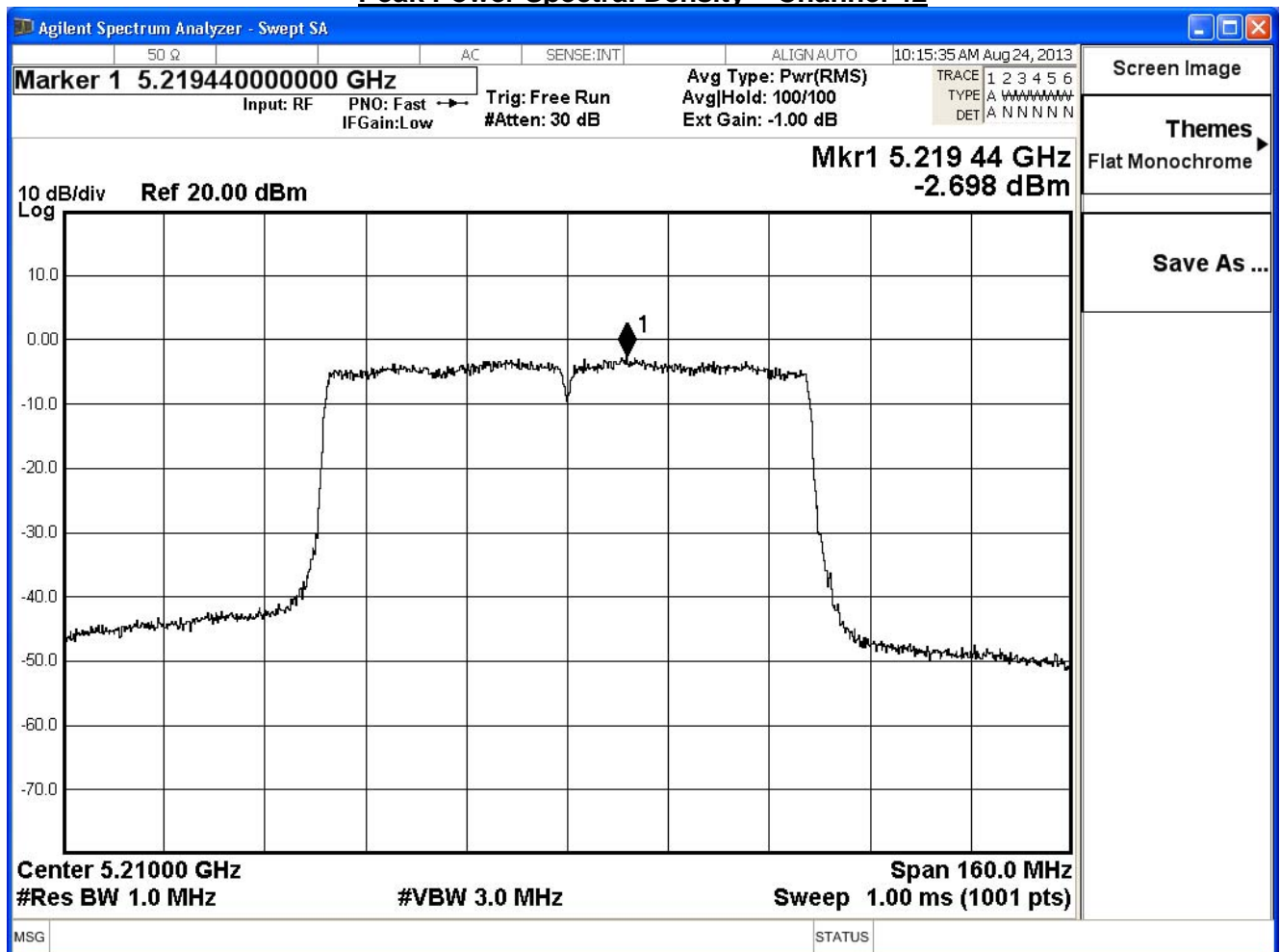
Note:

Measure Level =Reading value + cable loss

Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23\text{ dBm}$

Peak Power Spectral Density – Channel 42



IEEE 802.11ac_80M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
42	5210	-2.954	≤ 2.23	Pass

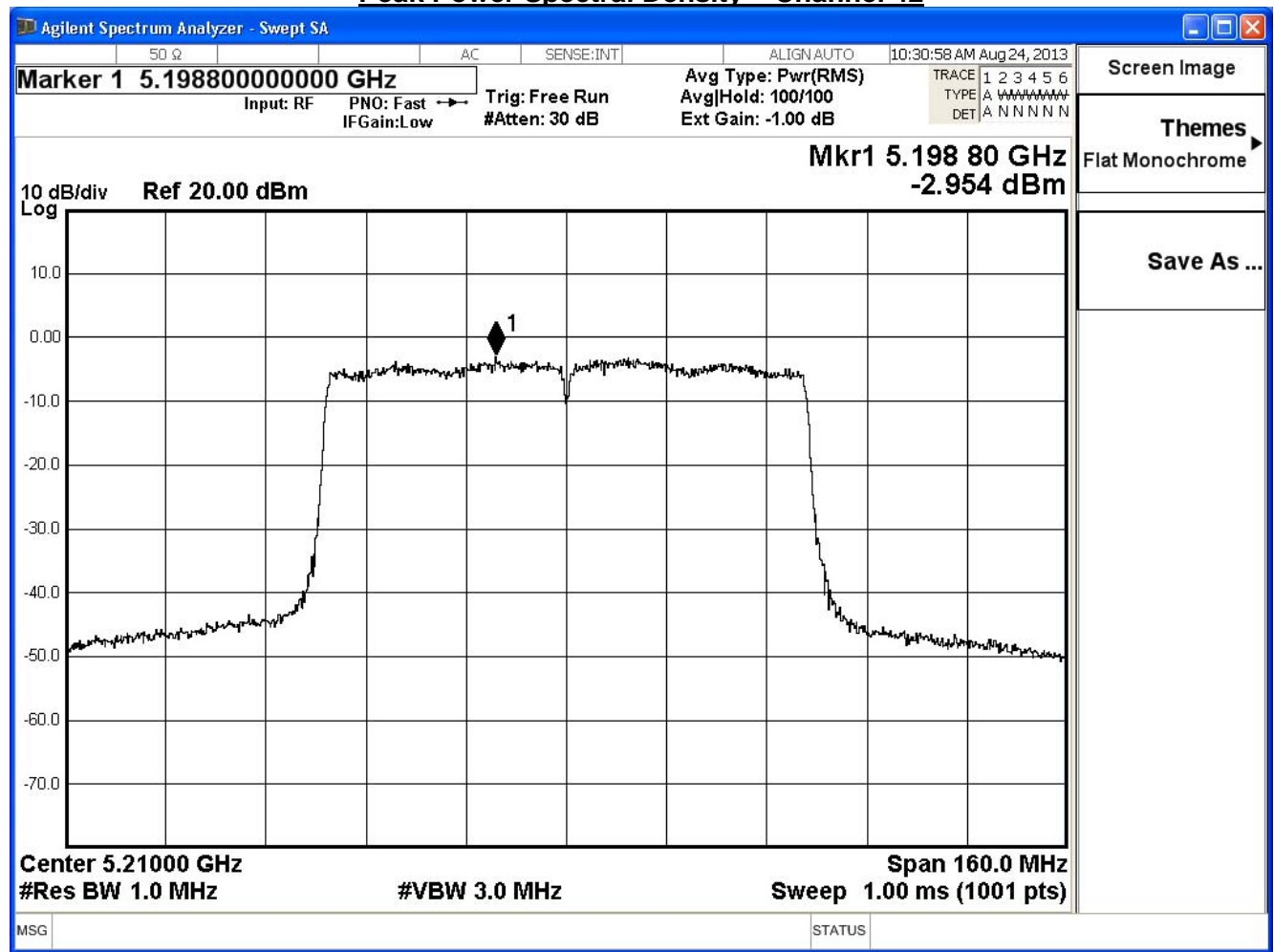
Note:

Measure Level =Reading value + cable loss

Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23\text{ dBm}$

Peak Power Spectral Density – Channel 42



IEEE 802.11ac_80M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
42	5210	-2.855	≤ 2.23	Pass

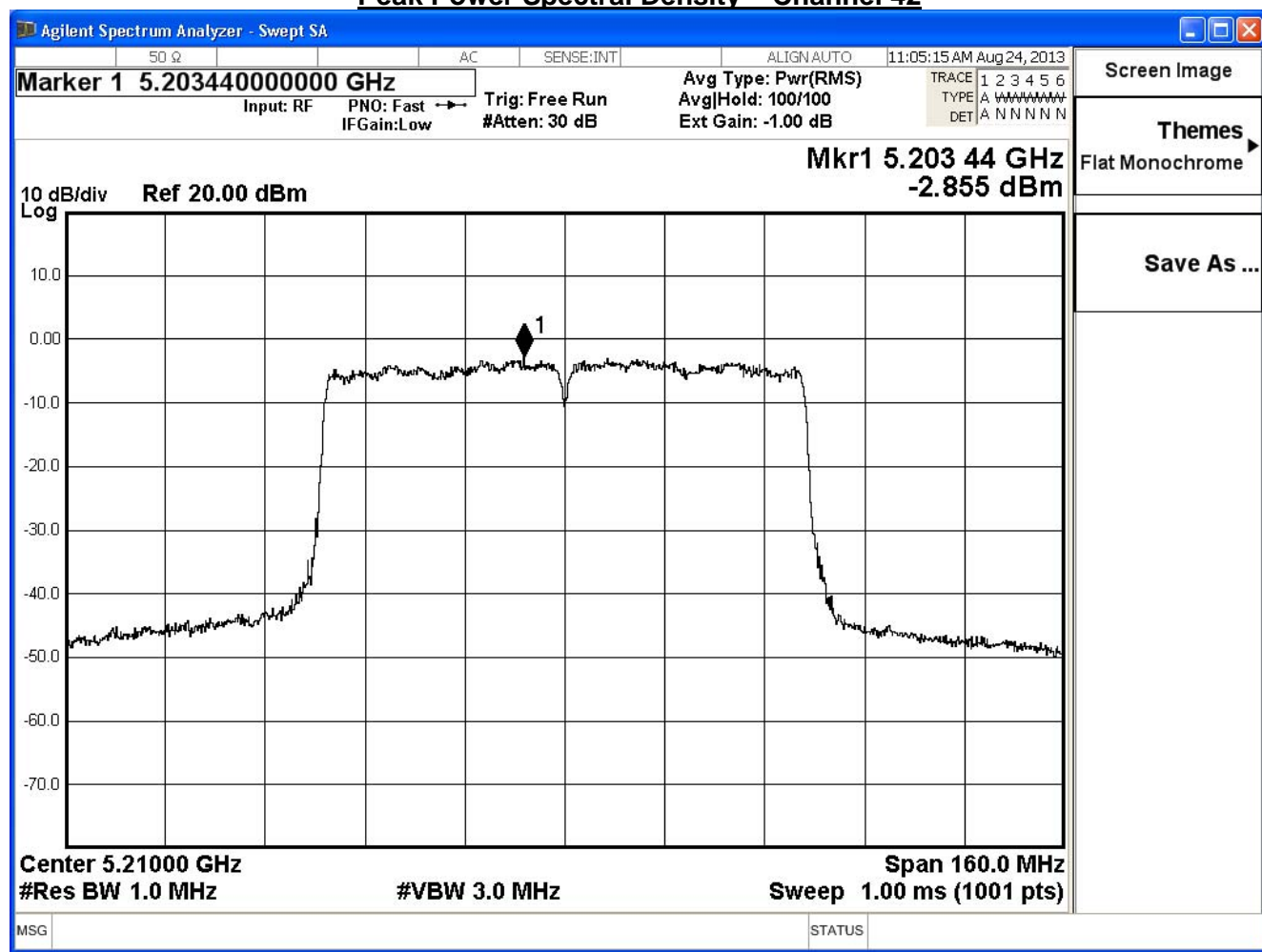
Note:

Measure Level =Reading value + cable loss

Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23\text{ dBm}$

Peak Power Spectral Density – Channel 42



IEEE 802.11ac_80M(ANT 0+1+2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
42	5210	1.940	≤ 2.23	Pass

Note:

Measure Level =Reading value + cable loss

Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23 \text{ dBm}$

Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Power Spectral Density		
Test Mode	Mode 2: Transmit (Beamforming mode)		
Date of Test	2013/08/26	Test Site	SR7

IEEE 802.11a				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	2.042	≤ 2.23	Pass
44	5220	2.050	≤ 2.23	Pass
48	5240	2.101	≤ 2.23	Pass

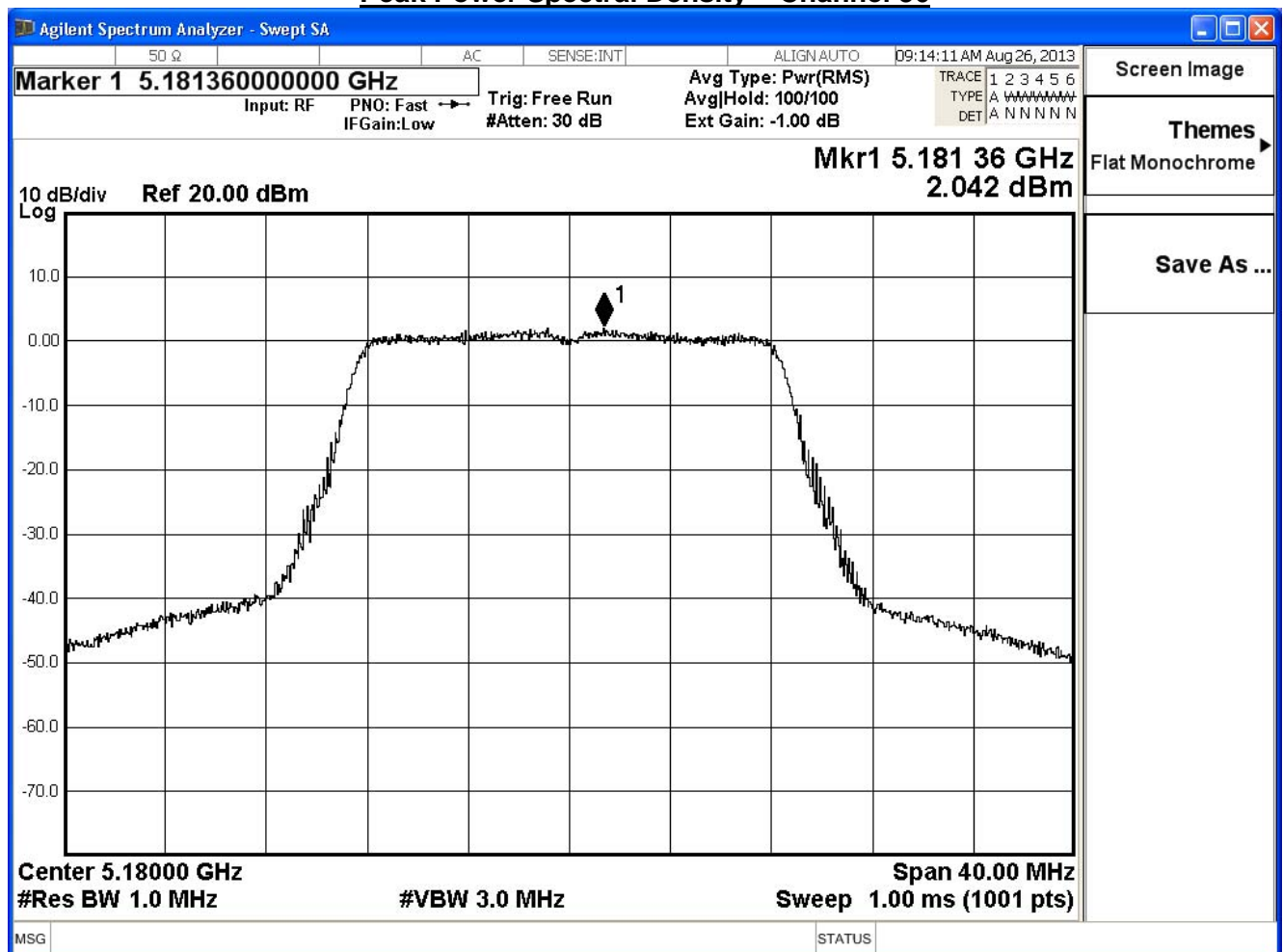
Note:

Measure Level =Reading value + cable loss

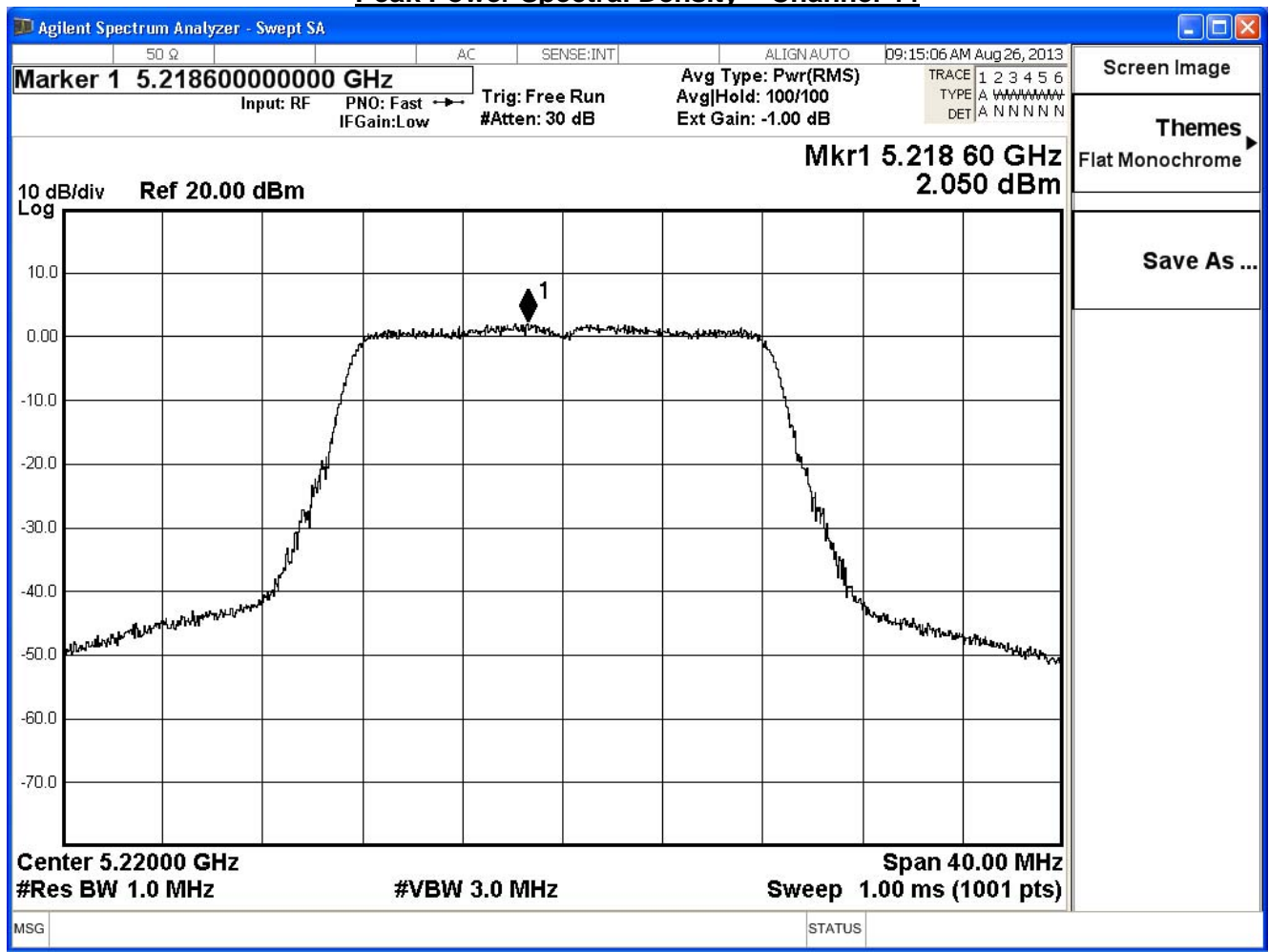
Total Gain: Beamforming Gain + max Gain = 7.77dBi

Limit = 4dBm - (7.77dBi - 6dBi) = 4 – 1.77 = 2.23 dBm

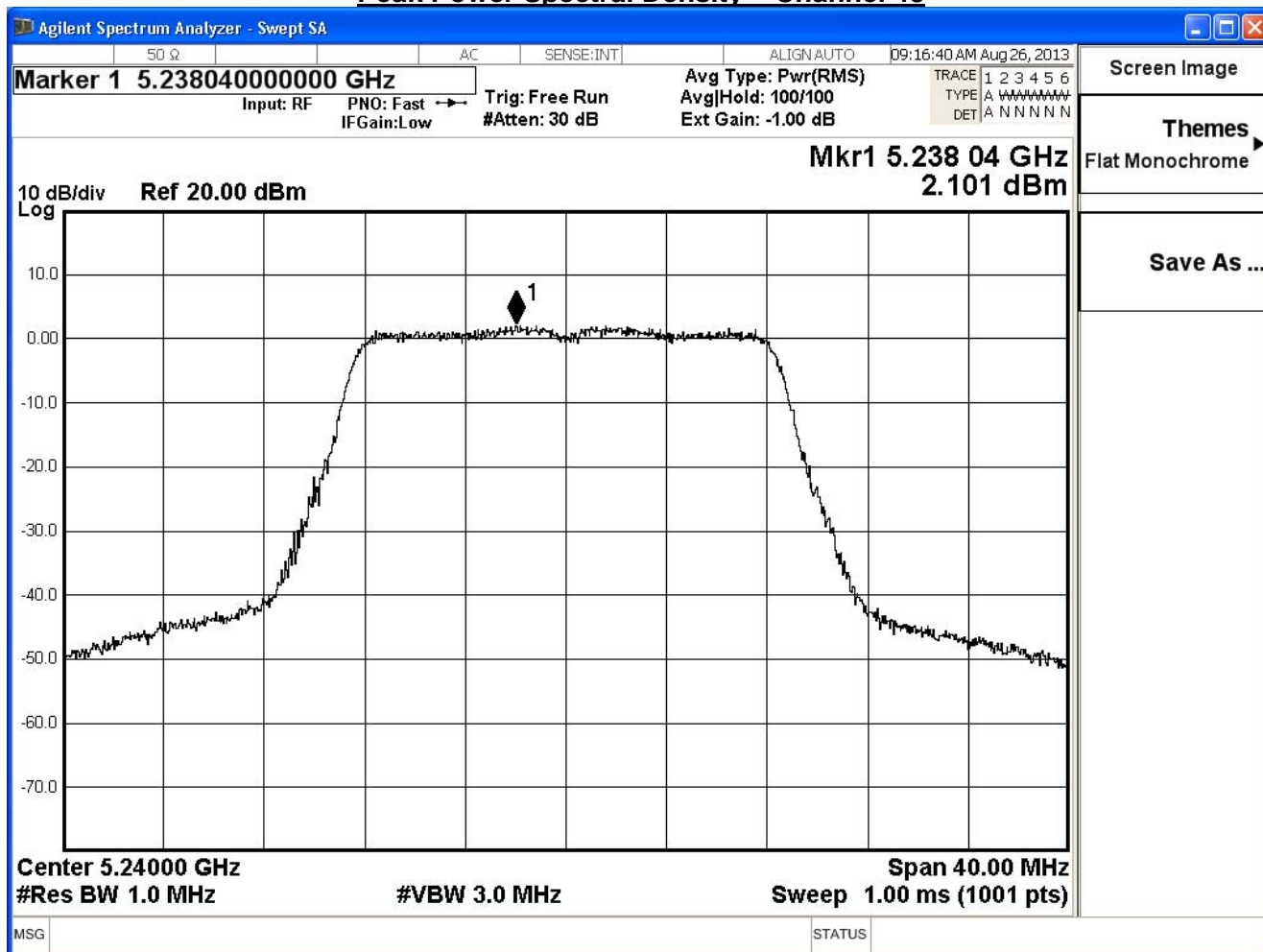
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



Peak Power Spectral Density – Channel 48



IEEE 802.11n_20M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	-2.561	≤ 2.23	Pass
44	5220	-2.714	≤ 2.23	Pass
48	5240	-2.580	≤ 2.23	Pass

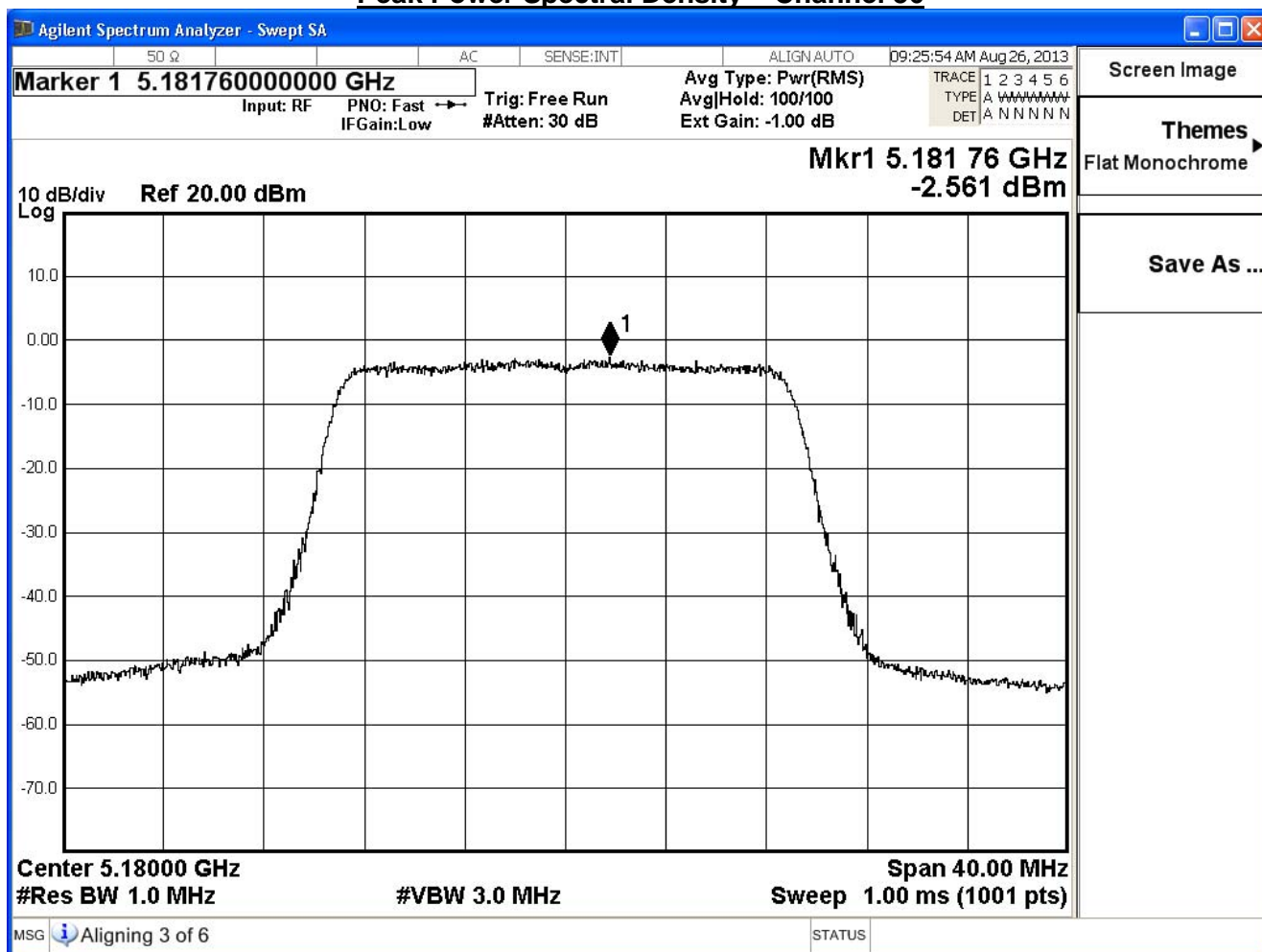
Note:

Measure Level =Reading value + cable loss

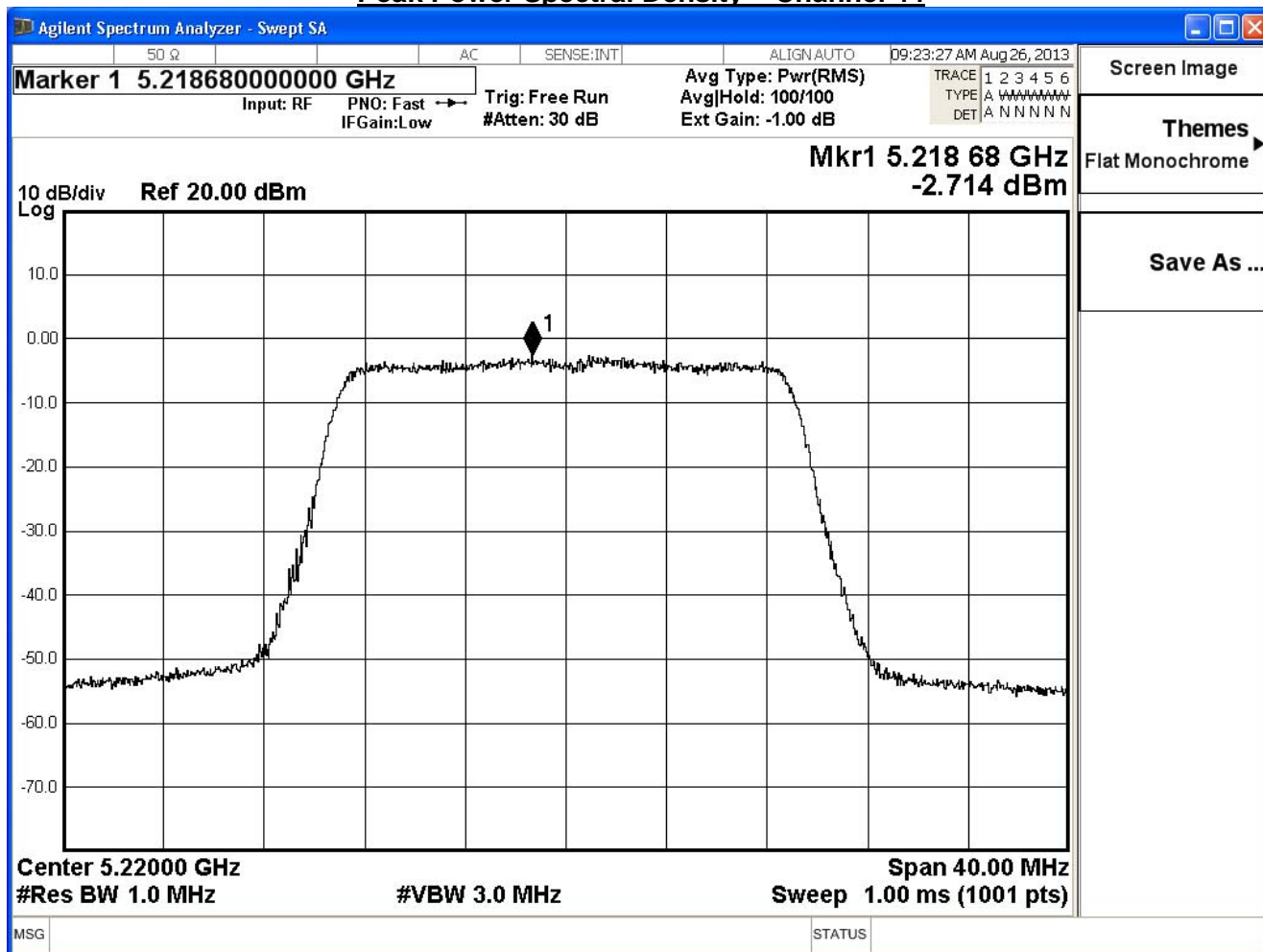
Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23 \text{ dBm}$

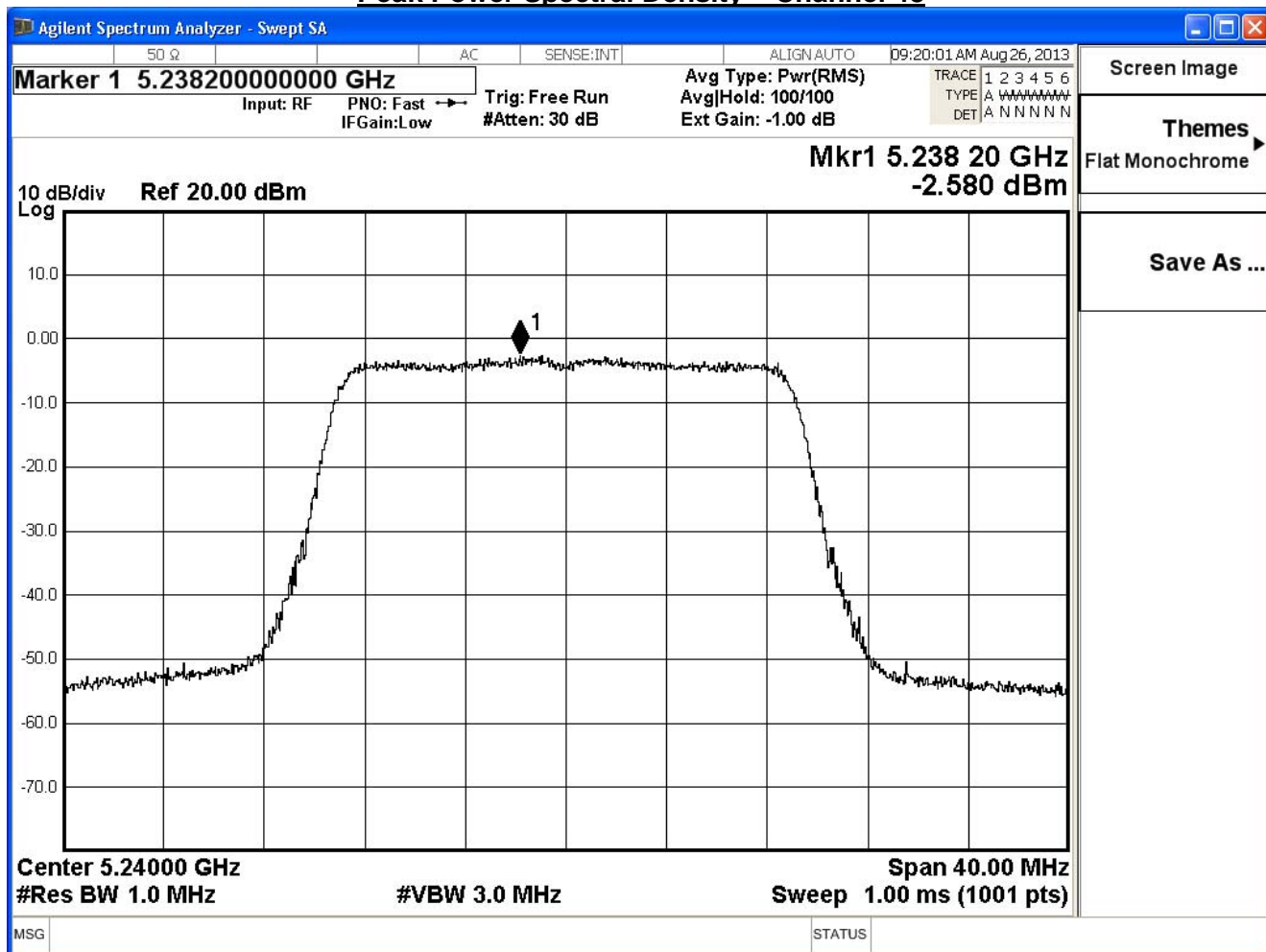
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



Peak Power Spectral Density – Channel 48



IEEE 802.11n_20M(ANT 1)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	-2.767	≤ 2.23	Pass
44	5220	-2.669	≤ 2.23	Pass
48	5240	-2.671	≤ 2.23	Pass

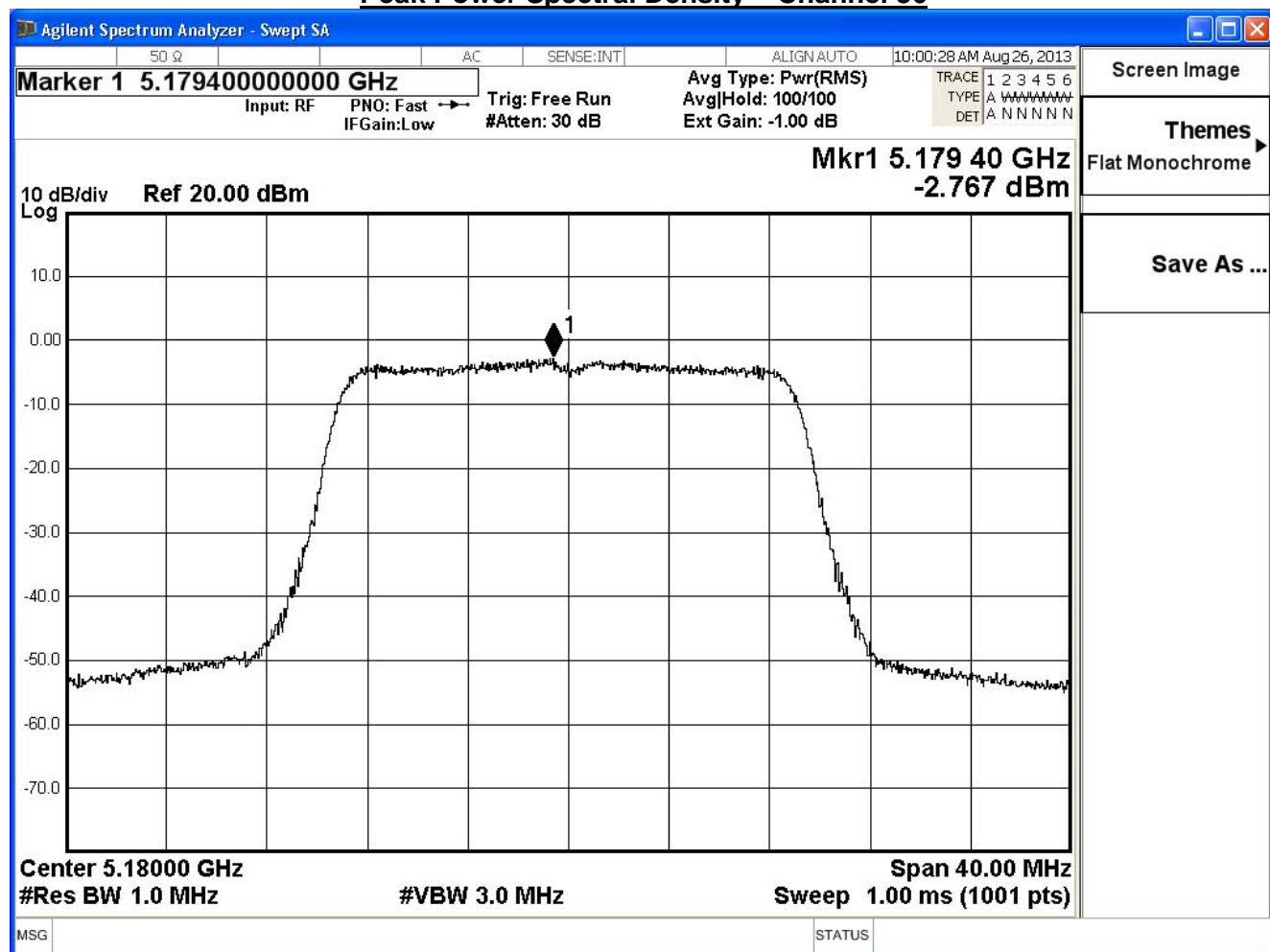
Note:

Measure Level =Reading value + cable loss

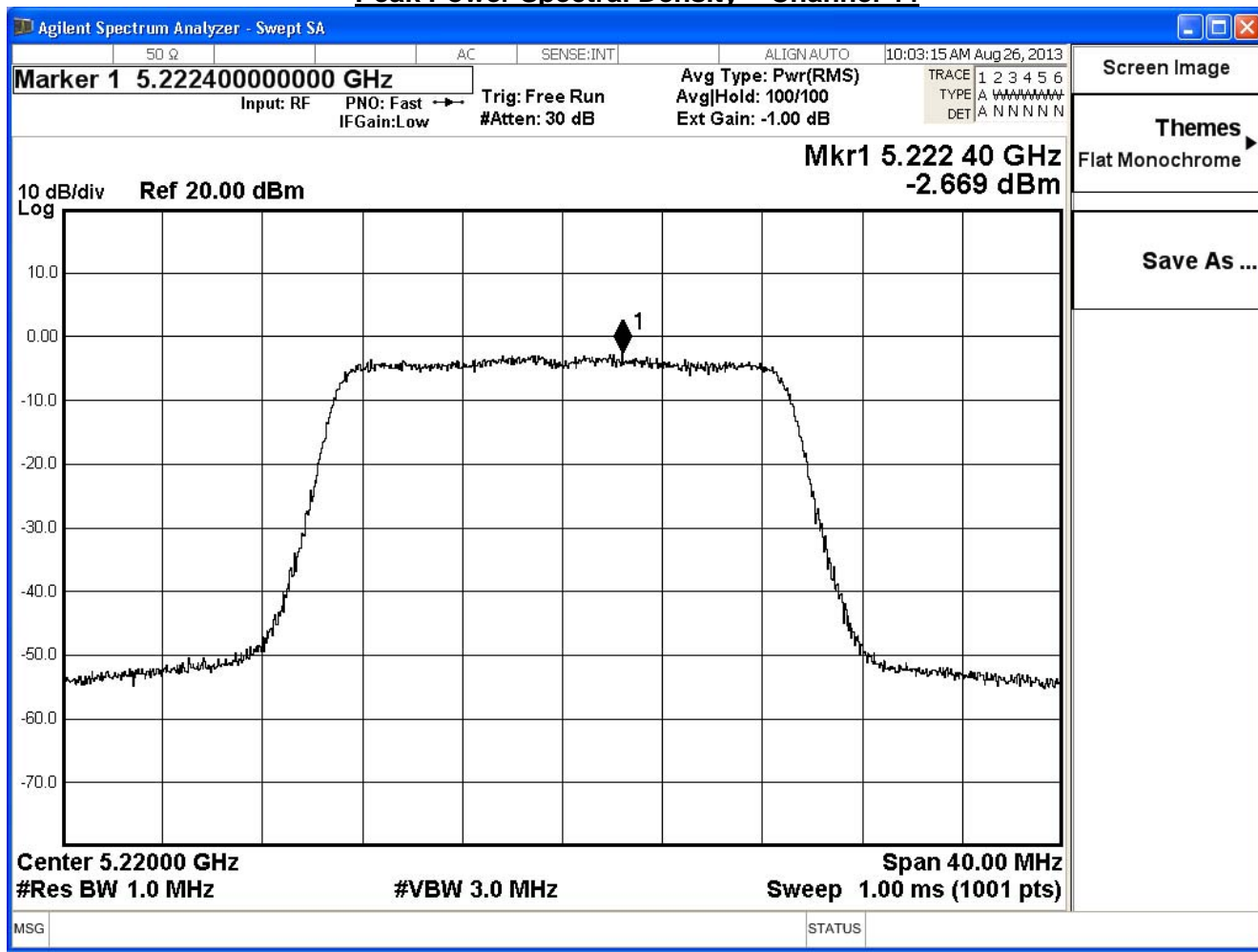
Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23 \text{ dBm}$

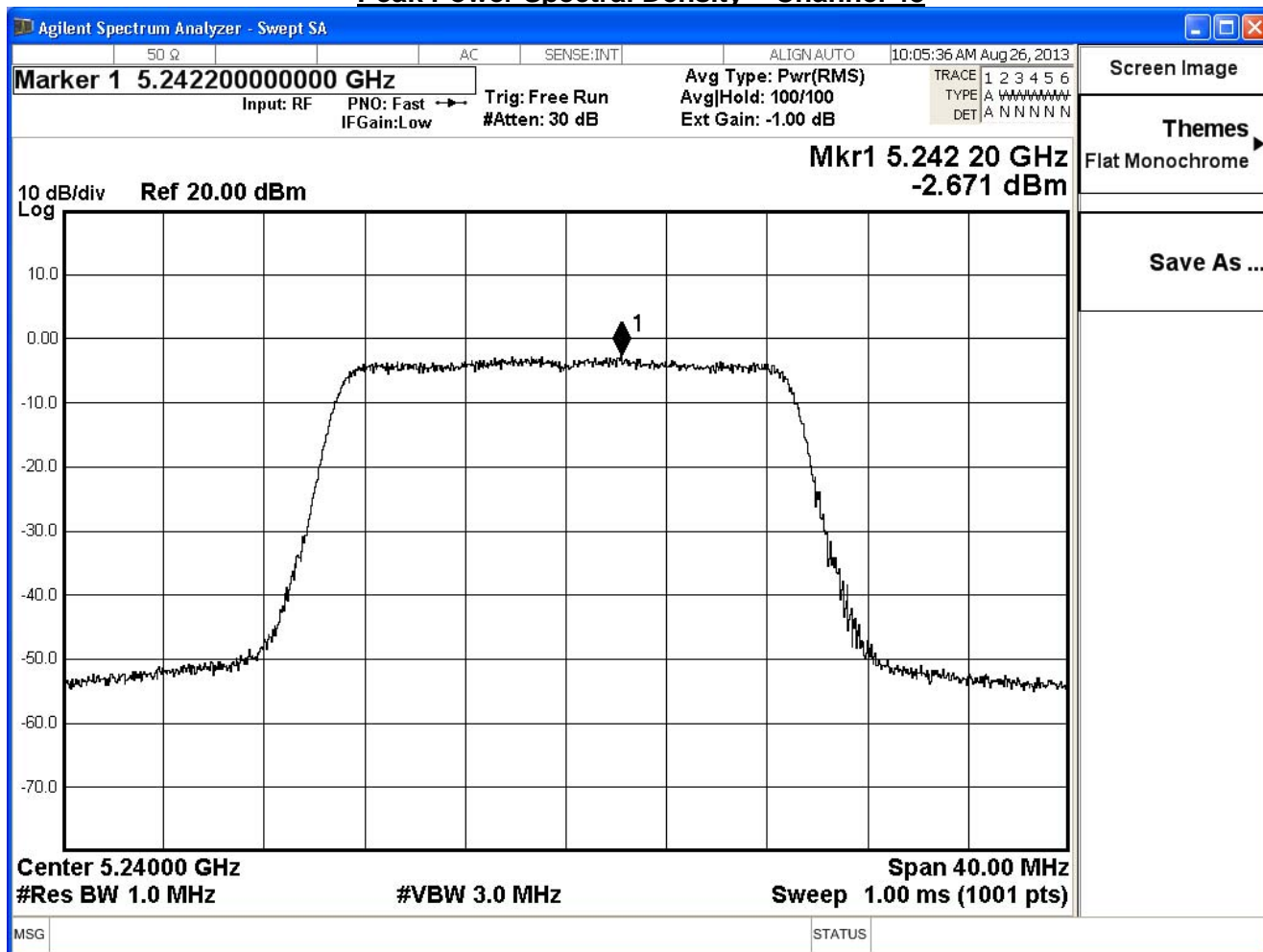
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



Peak Power Spectral Density – Channel 48



IEEE 802.11n_20M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	-2.732	≤ 2.23	Pass
44	5220	-2.867	≤ 2.23	Pass
48	5240	-2.821	≤ 2.23	Pass

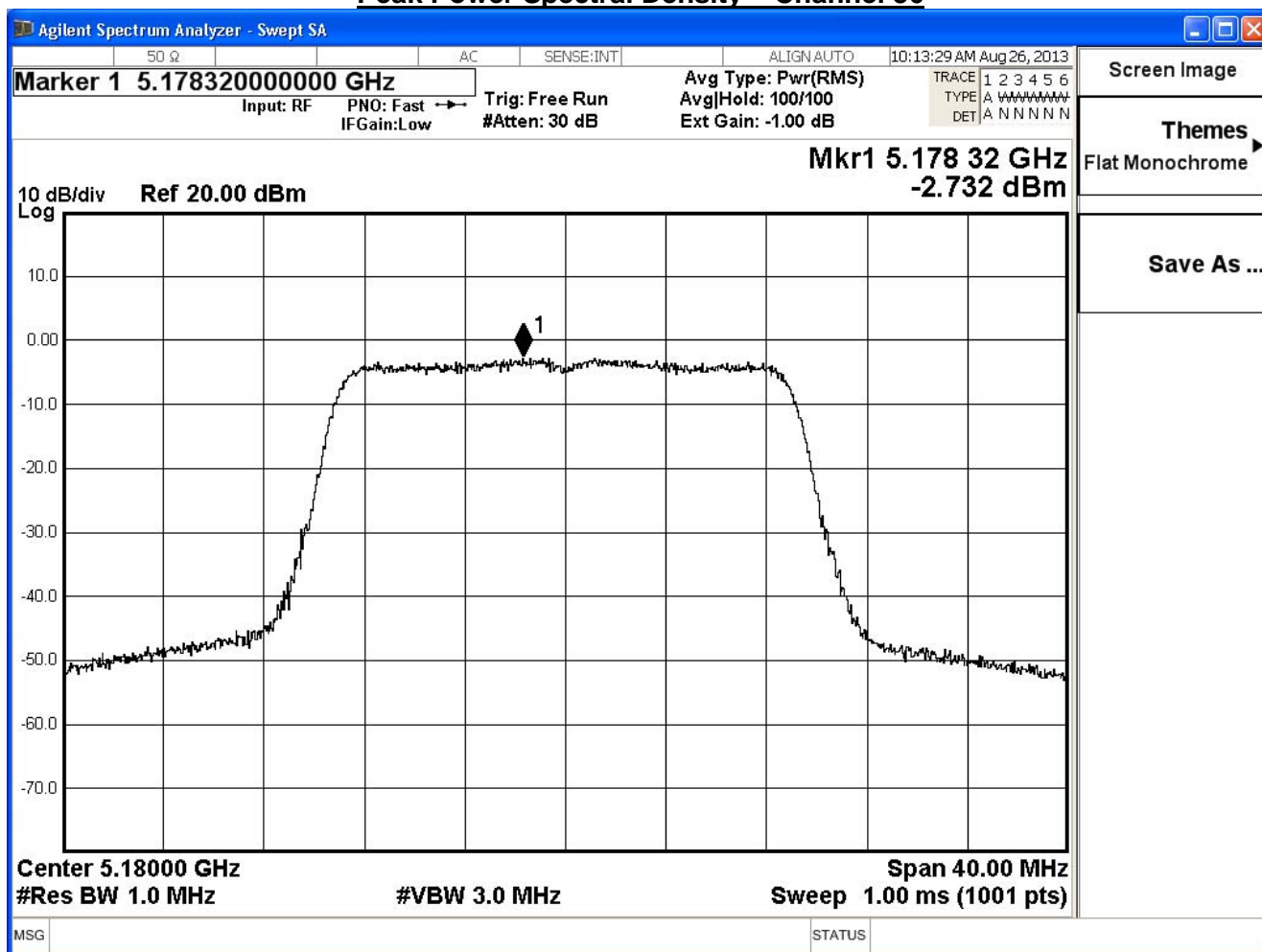
Note:

Measure Level =Reading value + cable loss

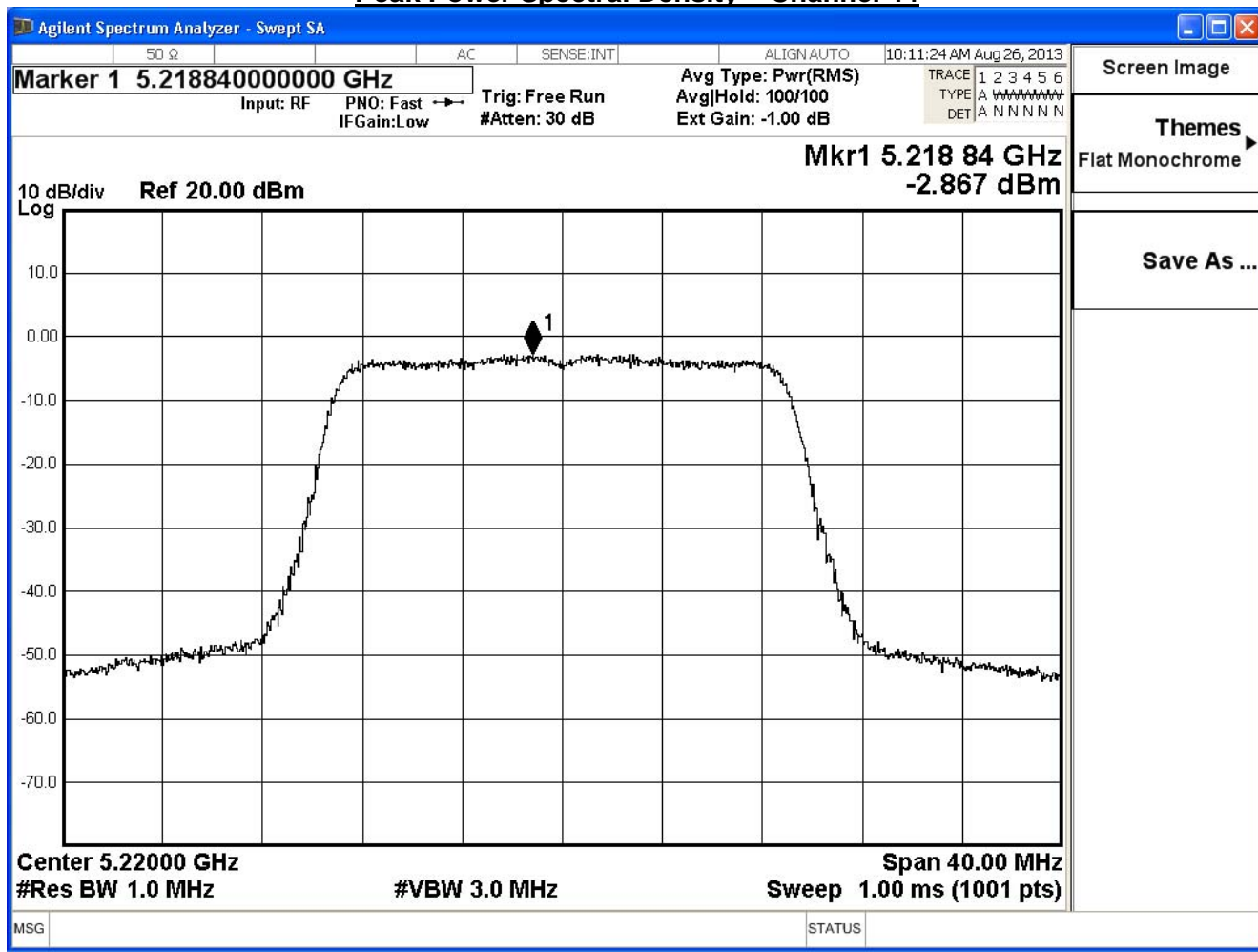
Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23 \text{ dBm}$

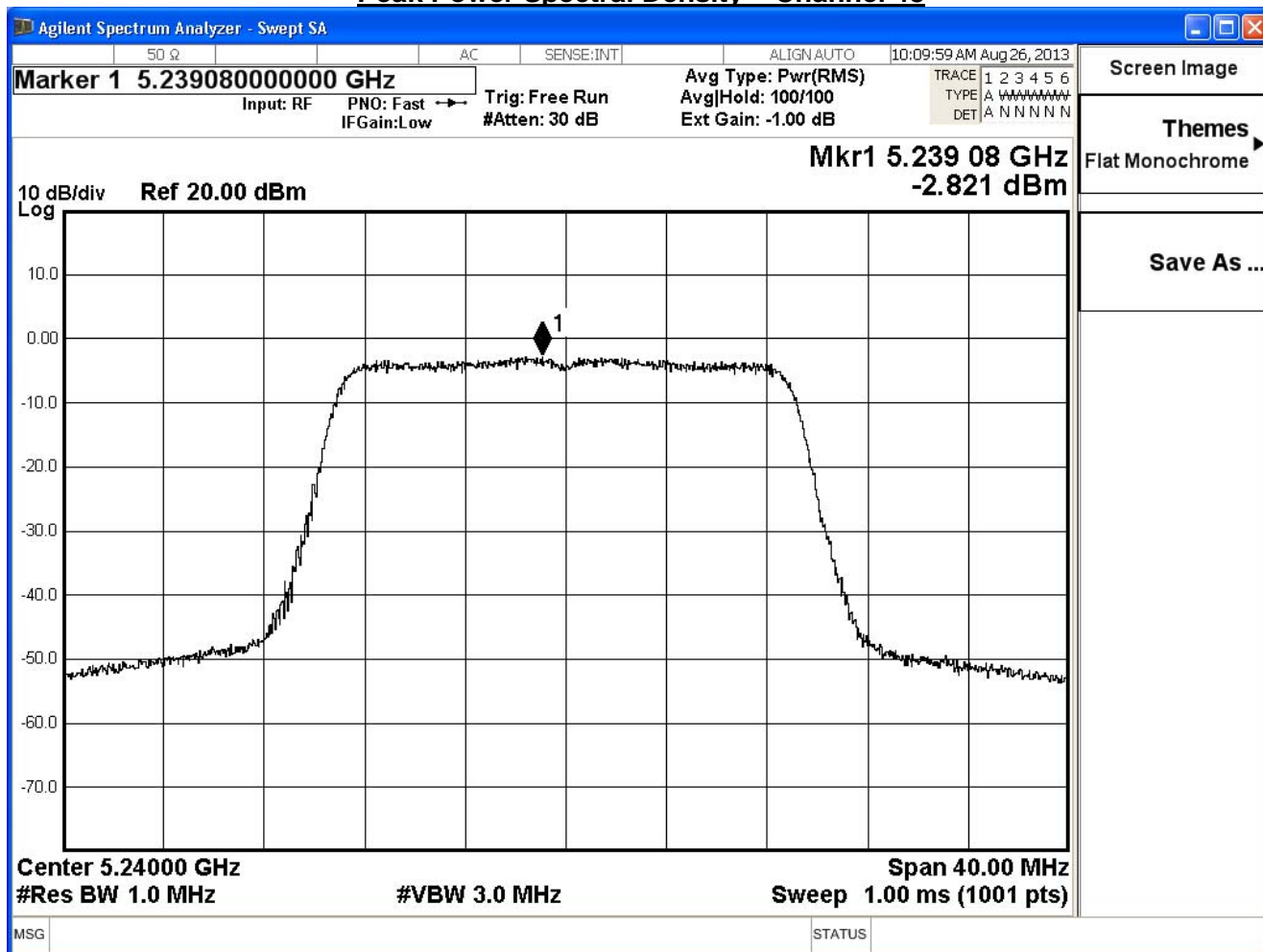
Peak Power Spectral Density – Channel 36



Peak Power Spectral Density – Channel 44



Peak Power Spectral Density – Channel 48



IEEE 802.11n_20M(ANT 0+1+2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
36	5180	2.085	≤ 2.23	Pass
44	5220	2.022	≤ 2.23	Pass
48	5240	2.082	≤ 2.23	Pass

Note:

Measure Level =Reading value + cable loss

Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23 \text{ dBm}$

IEEE 802.11n_40M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	-3.387	≤ 2.23	Pass
46	5230	-3.630	≤ 2.23	Pass

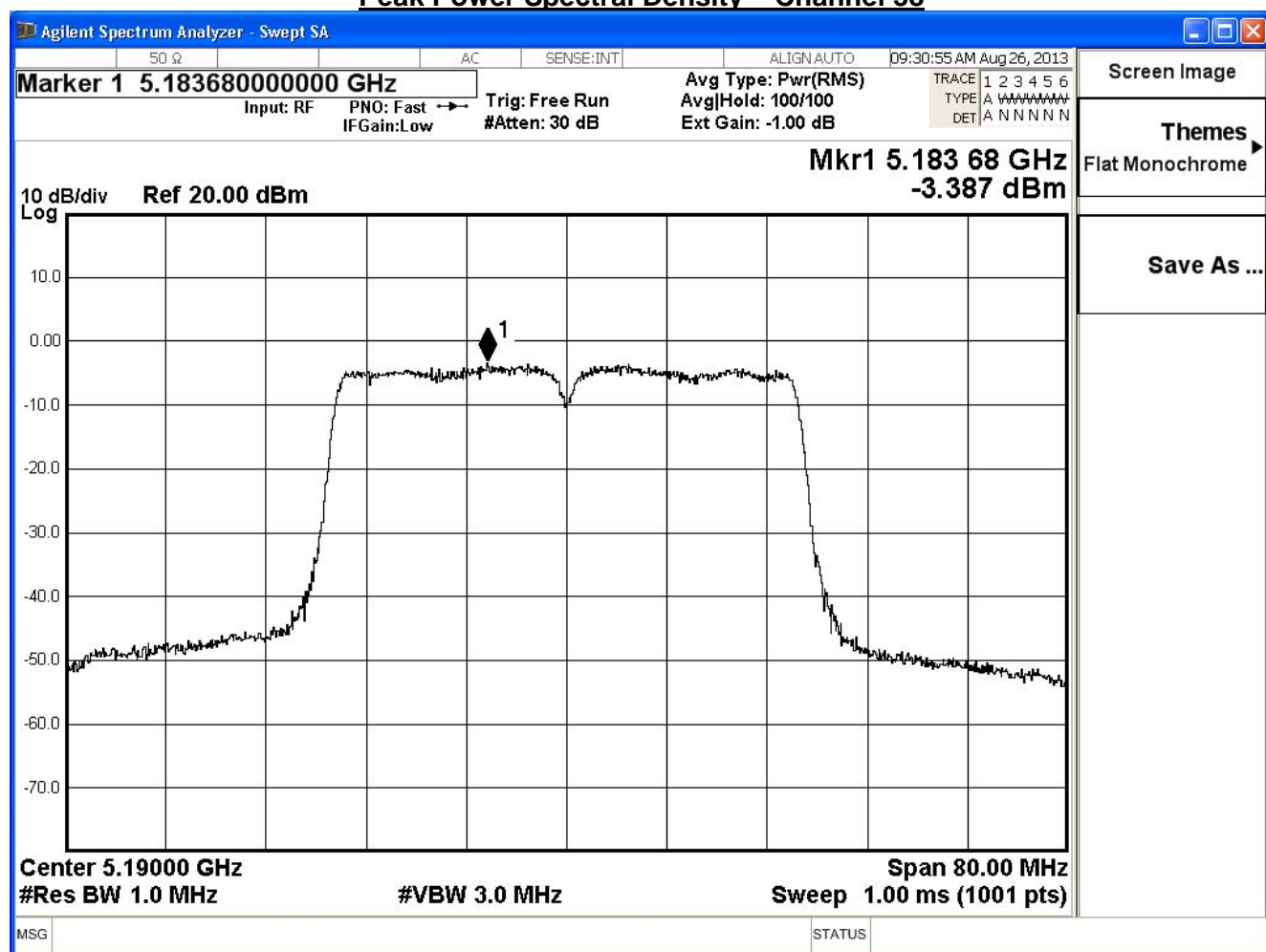
Note:

Measure Level =Reading value + cable loss

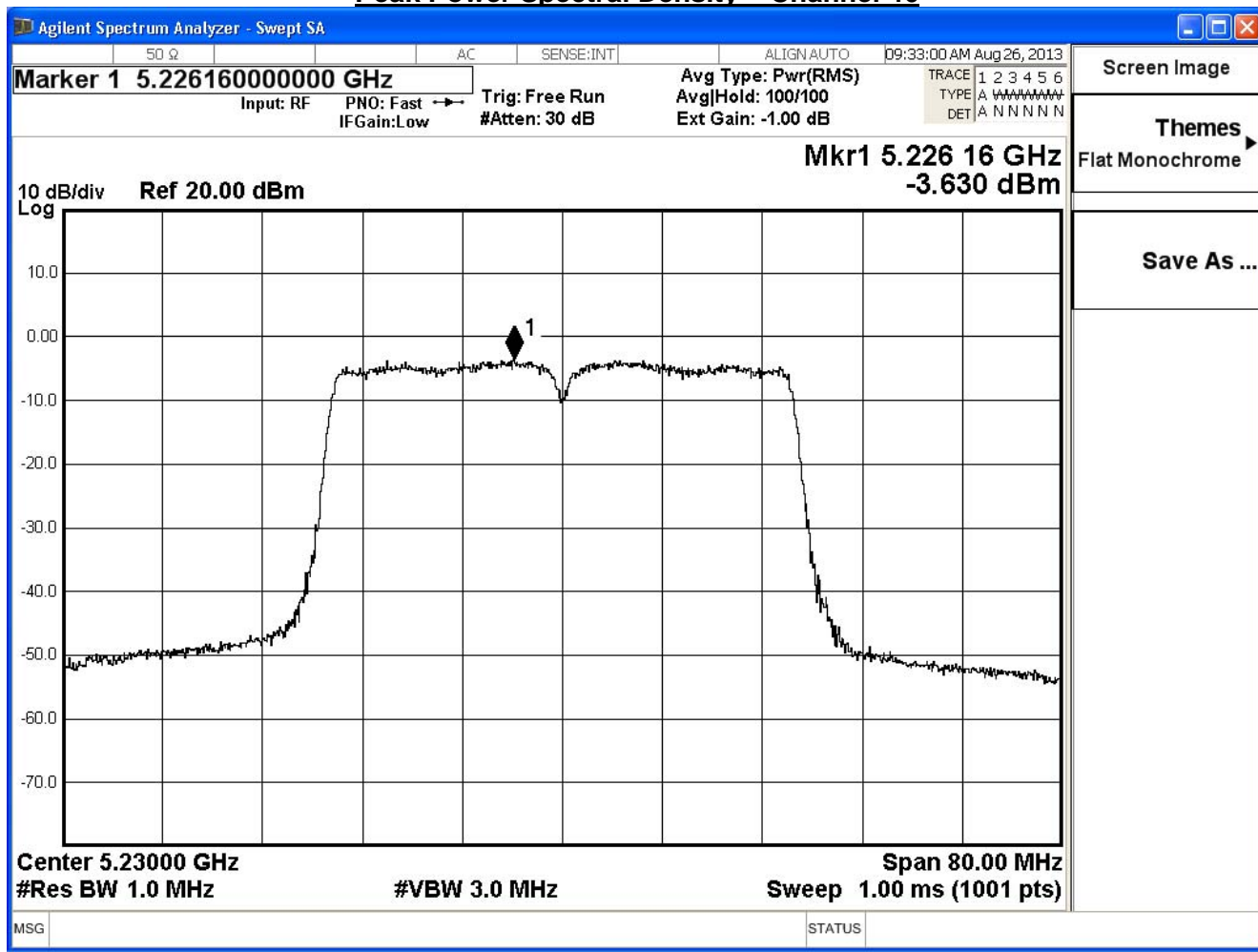
Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23 \text{ dBm}$

Peak Power Spectral Density – Channel 38



Peak Power Spectral Density – Channel 46



IEEE 802.11n_40M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	-3.561	≤ 2.23	Pass
46	5230	-3.583	≤ 2.23	Pass

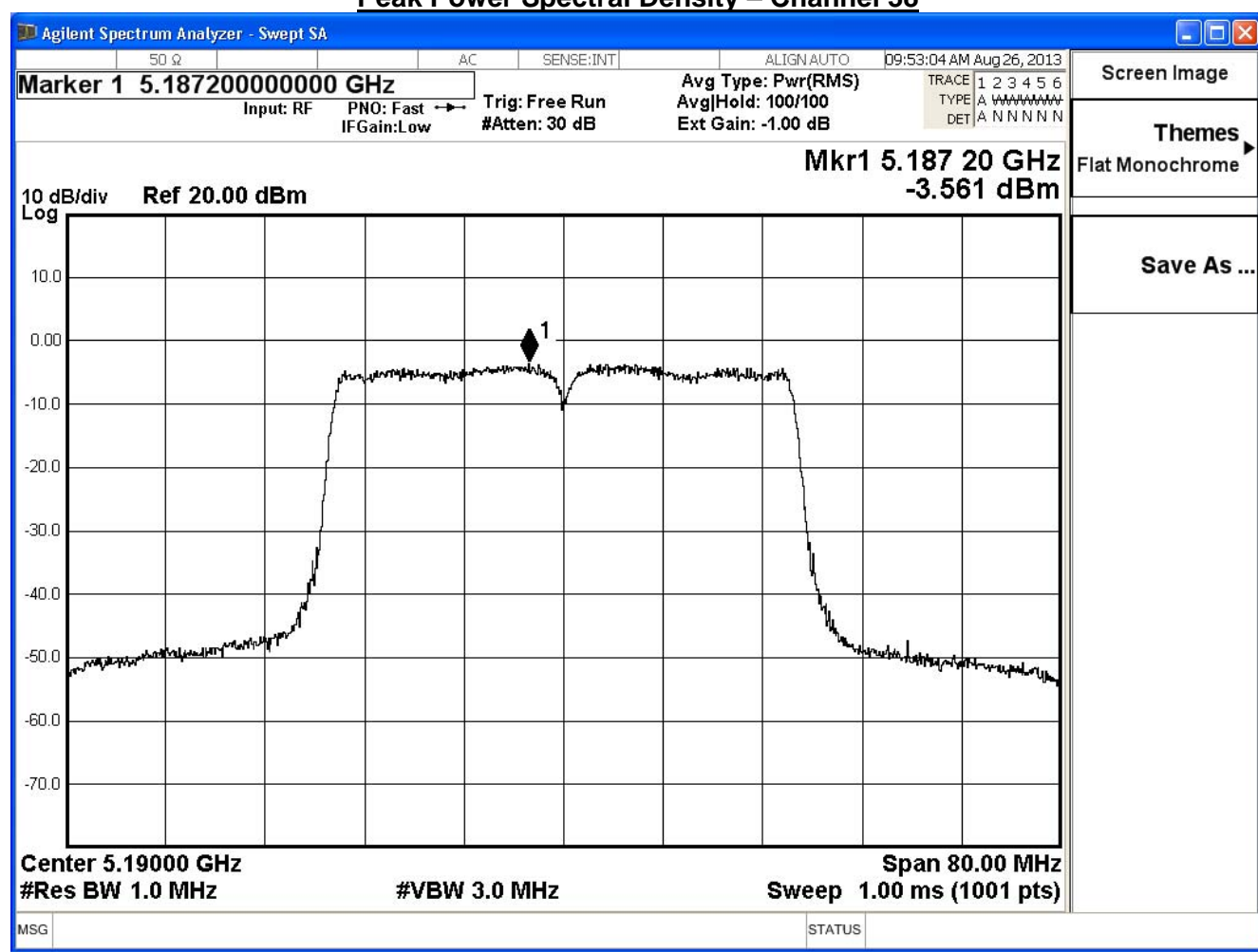
Note:

Measure Level =Reading value + cable loss

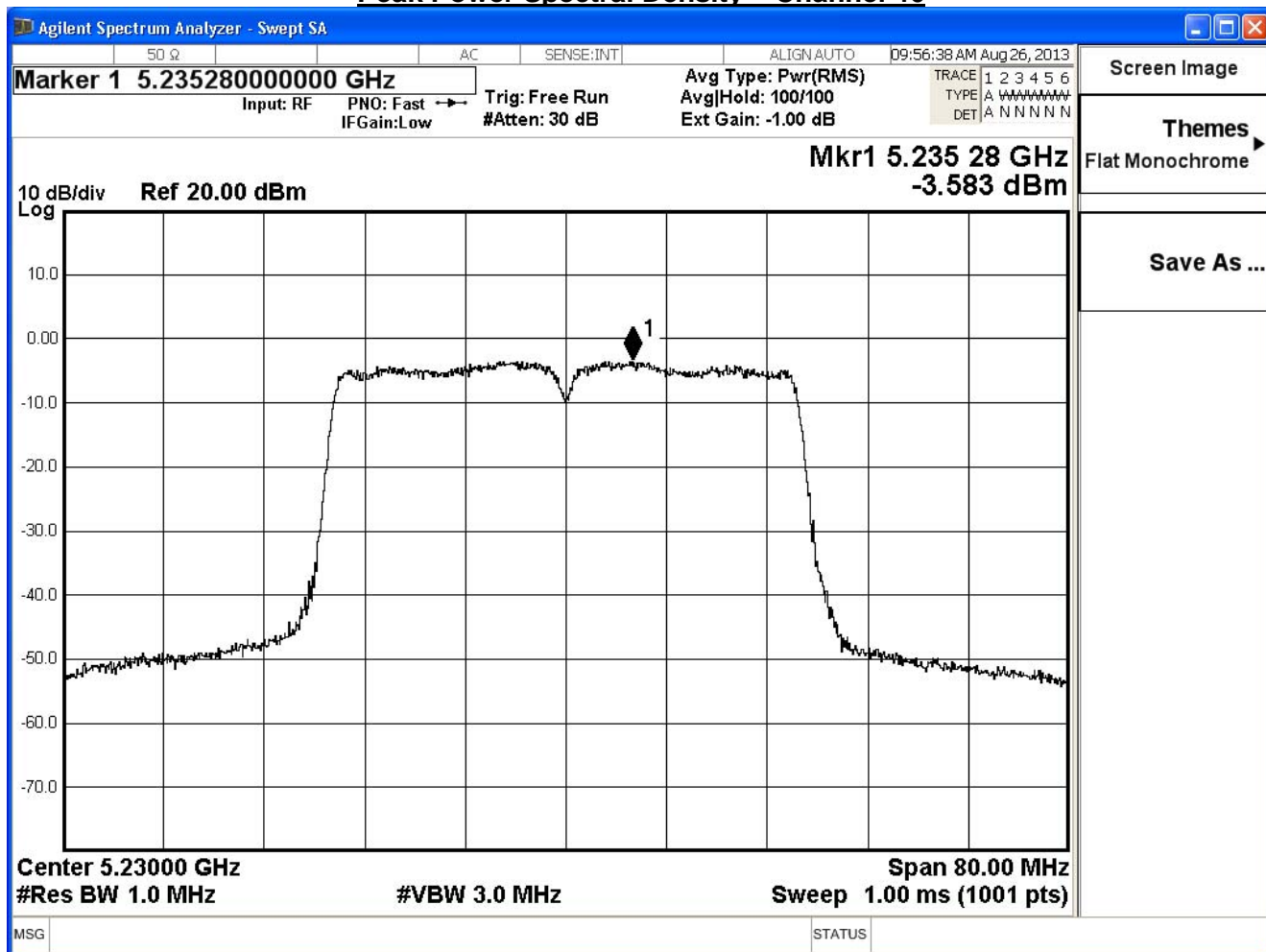
Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23\text{ dBm}$

Peak Power Spectral Density – Channel 38



Peak Power Spectral Density – Channel 46



IEEE 802.11n_40M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	-3.598	≤ 2.23	Pass
46	5230	-3.576	≤ 2.23	Pass

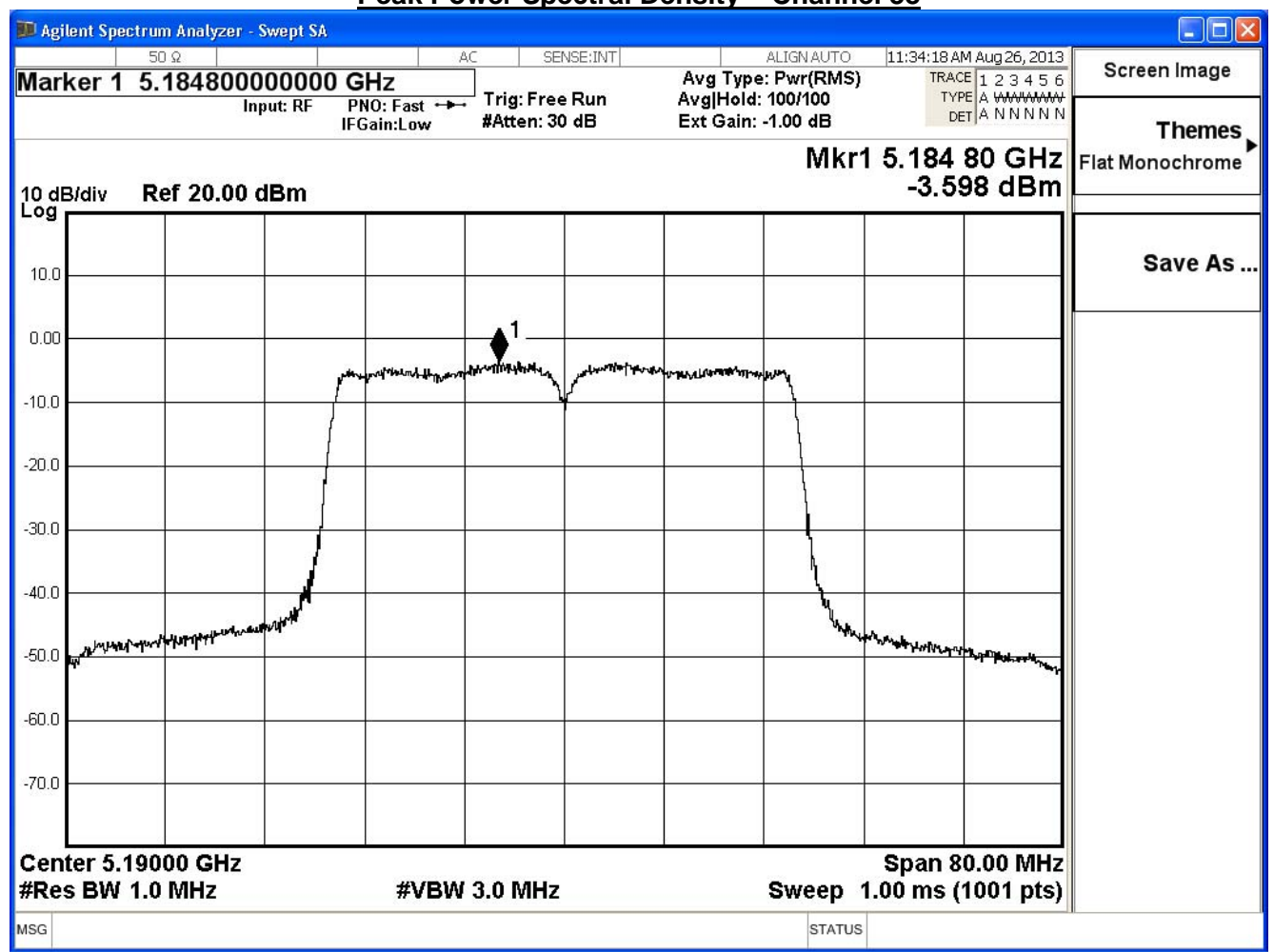
Note:

Measure Level =Reading value + cable loss

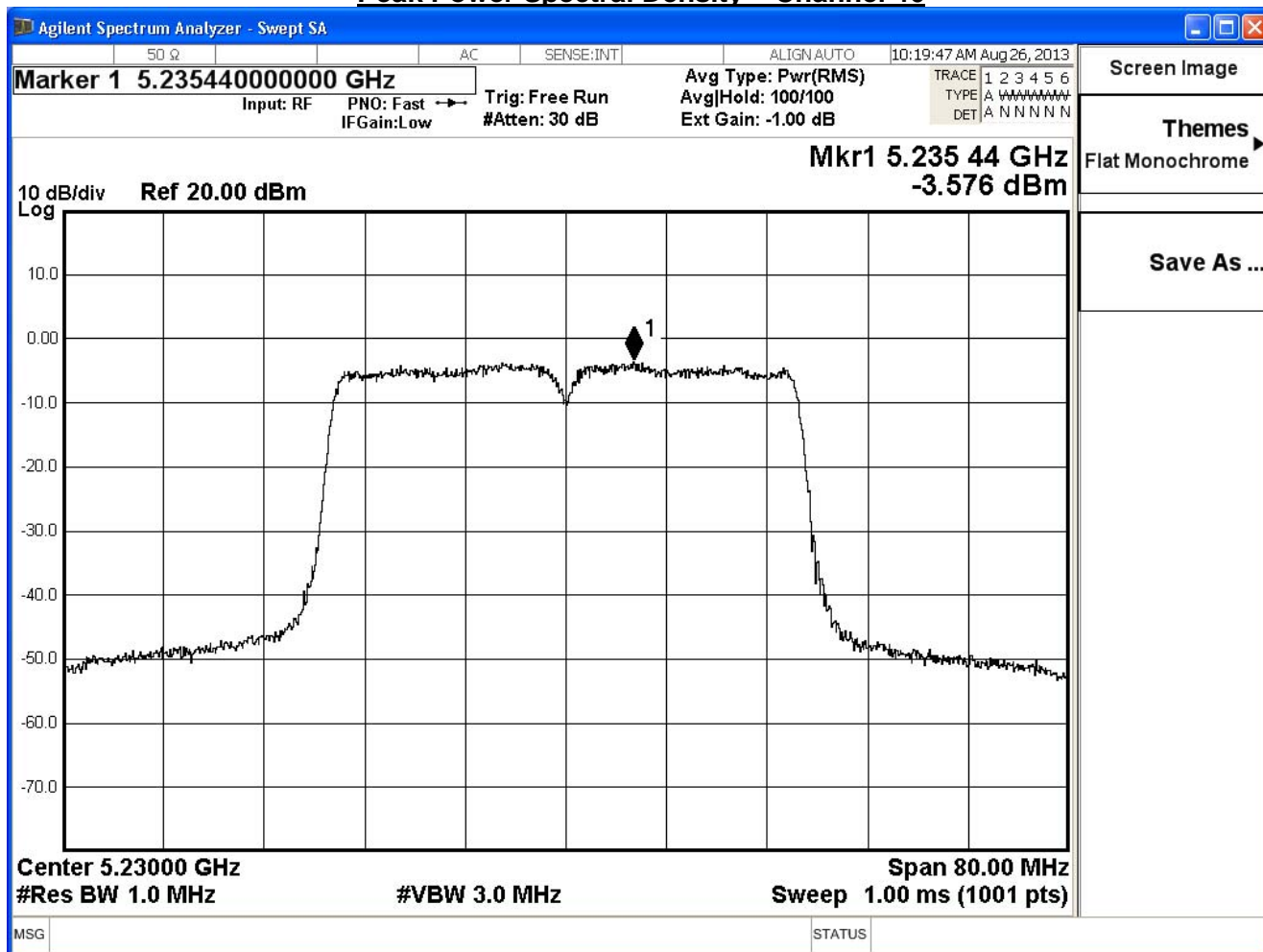
Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23\text{ dBm}$

Peak Power Spectral Density – Channel 38



Peak Power Spectral Density – Channel 46



IEEE 802.11n_40M(ANT 0+1+2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
38	5190	1.257	≤ 2.23	Pass
46	5230	1.175	≤ 2.23	Pass

Note:

Measure Level =Reading value + cable loss

Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23 \text{ dBm}$

IEEE 802.11ac_80M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
42	5210	-6.546	≤ 2.23	Pass

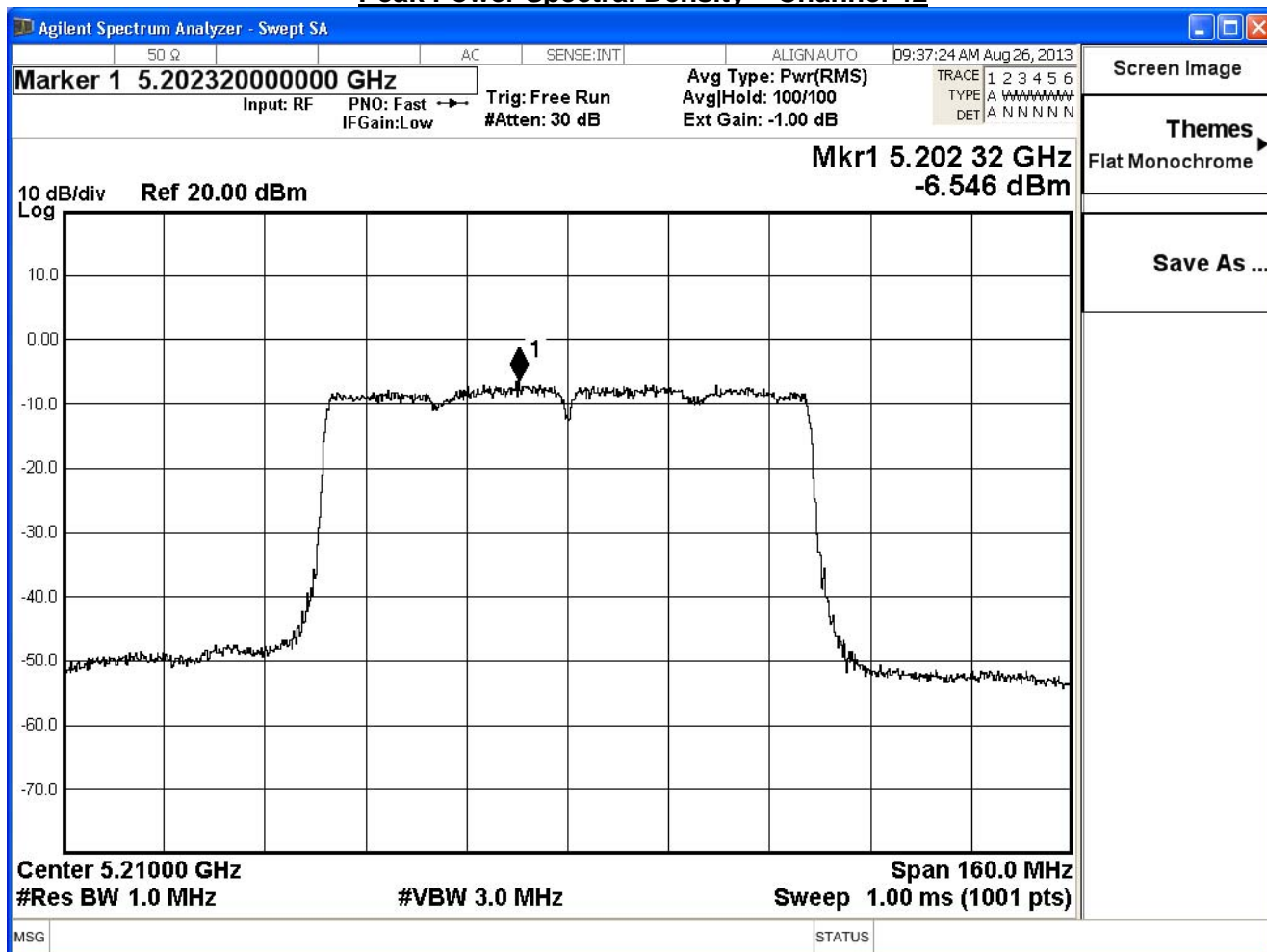
Note:

Measure Level =Reading value + cable loss

Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23\text{ dBm}$

Peak Power Spectral Density – Channel 42



IEEE 802.11ac_80M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
42	5210	-6.428	≤ 2.23	Pass

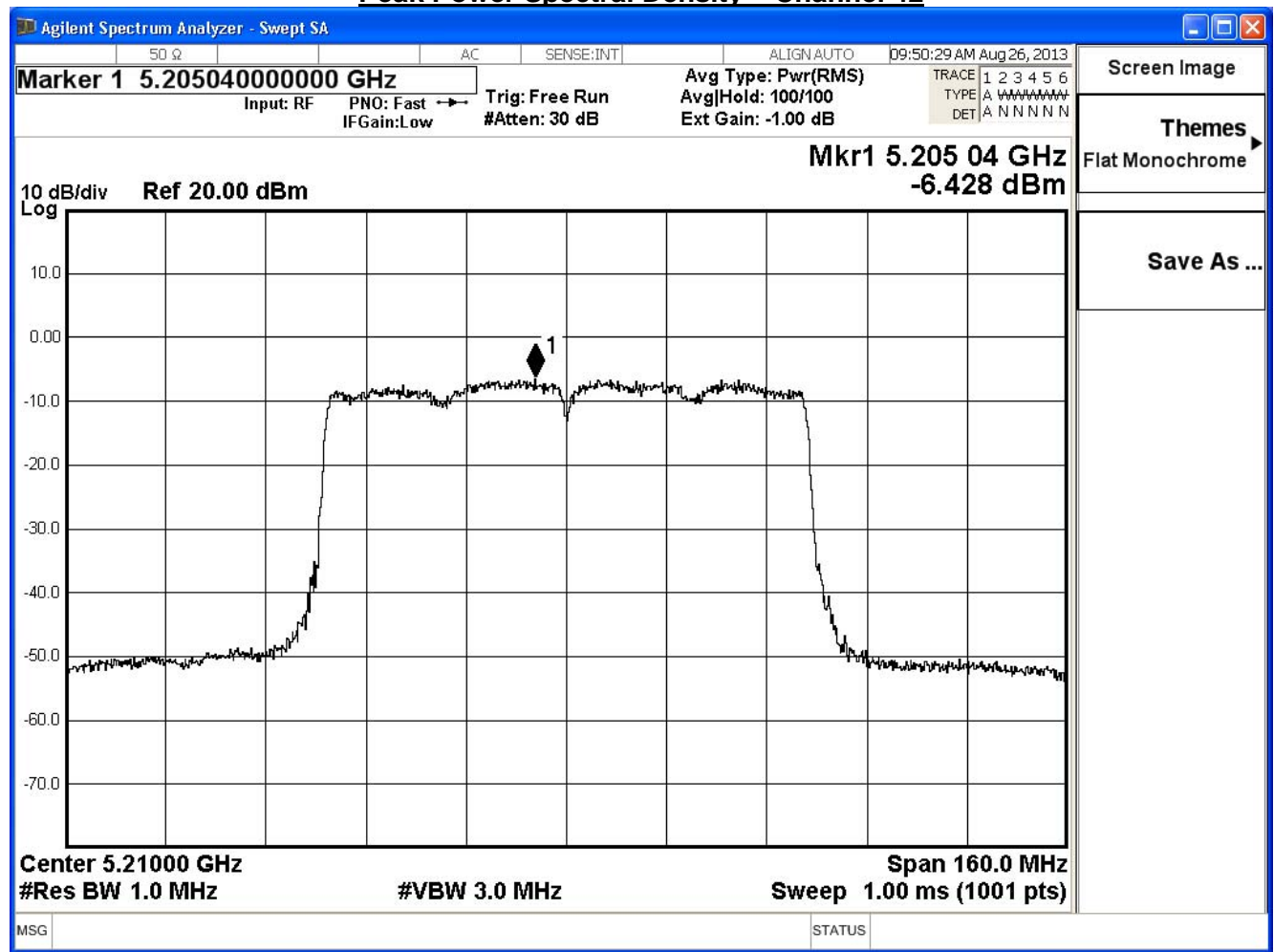
Note:

Measure Level =Reading value + cable loss

Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23\text{ dBm}$

Peak Power Spectral Density – Channel 42



IEEE 802.11ac_80M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
42	5210	-6.729	≤ 2.23	Pass

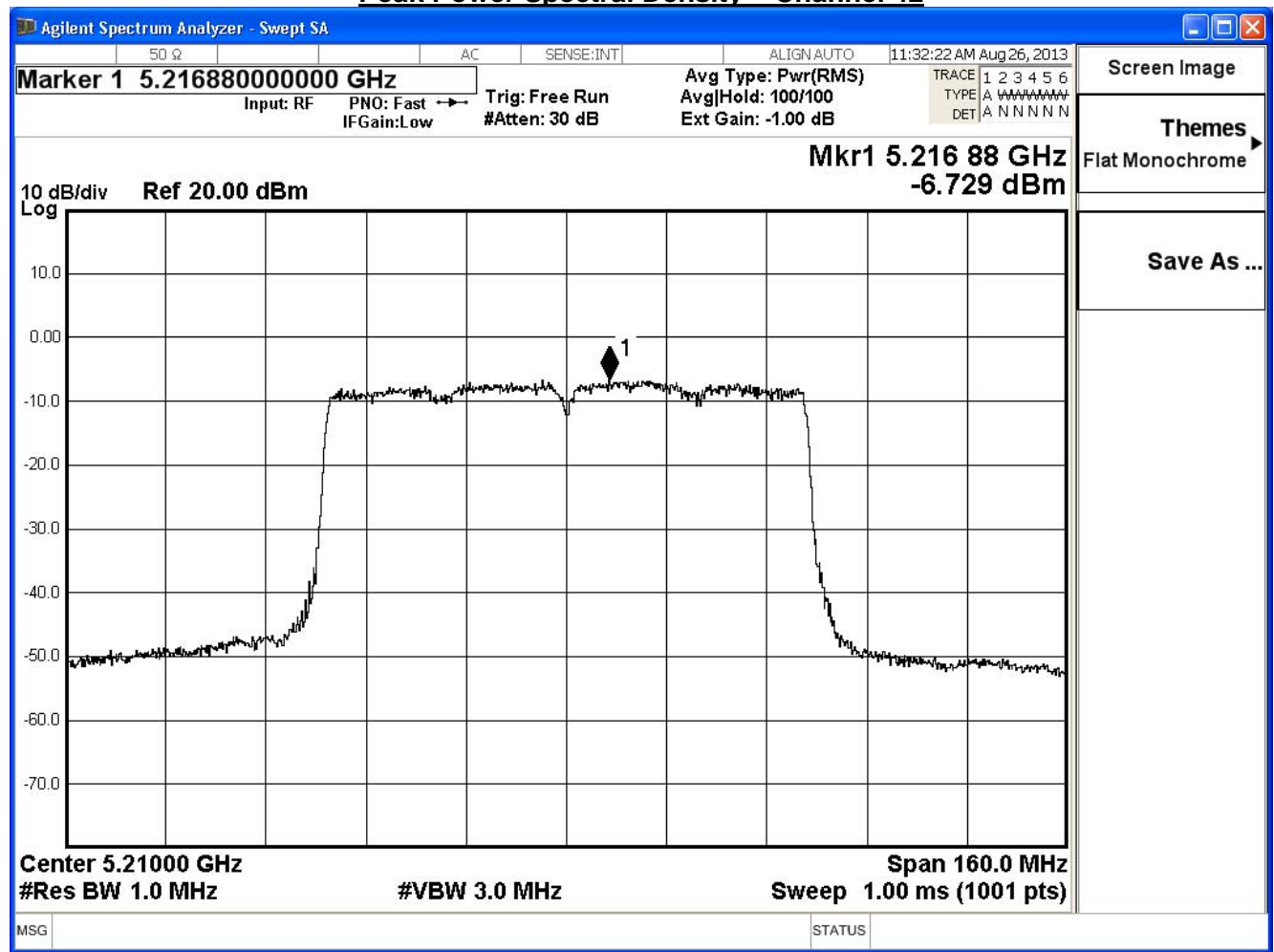
Note:

Measure Level =Reading value + cable loss

Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23\text{ dBm}$

Peak Power Spectral Density – Channel 42



IEEE 802.11ac_80M(ANT 0+1+2)				
Channel No.	Frequency (MHz)	Measure Level (dBm)	Required Limit (dBm)	Result
42	5210	-1.795	≤ 2.23	Pass

Note:

Measure Level =Reading value + cable loss

Total Gain: $10\log(\text{Ant N}) + \text{max Gain} = 7.77\text{dBi}$

Limit = $4\text{dBm} - (7.77\text{dBi} - 6\text{dBi}) = 4 - 1.77 = 2.23 \text{ dBm}$

6. Peak Excursion

6.1. Test Equipment

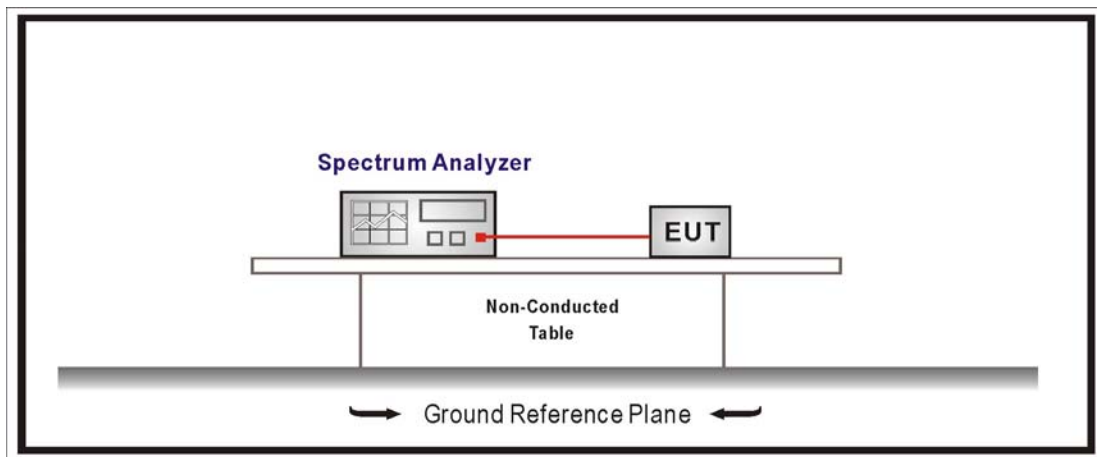
The following test equipments are used during the radiated emission tests:

Peak Excursion / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A-EXA	US47140172	2013/07/31

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

6.2. Test Setup



6.3. Limits

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

6.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to U-NII test procedure of March 2012 KDB 789033 for compliance to FCC 47CFR Subpart E requirements.

1st Trace:

Set RBW = 1MHz, VBW = 3MHz with peak detector and max-hold settings.

2nd Trace:

Set RBW = 1MHz, VBW = 3MHz with RMS detector and trace average 100 traces in power averaging mode.

6.5. Uncertainty

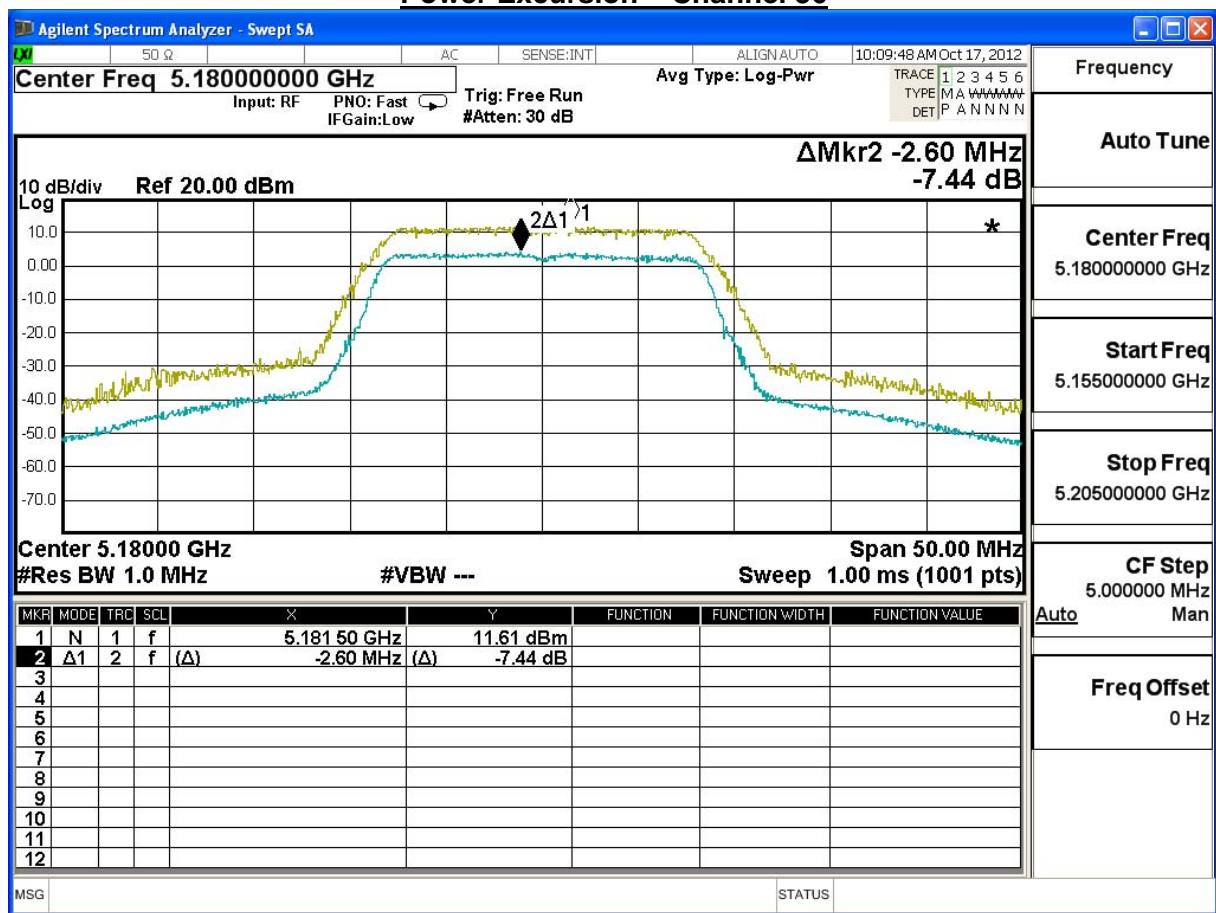
The measurement uncertainty is defined as ± 1.27 dB

6.6. Test Result

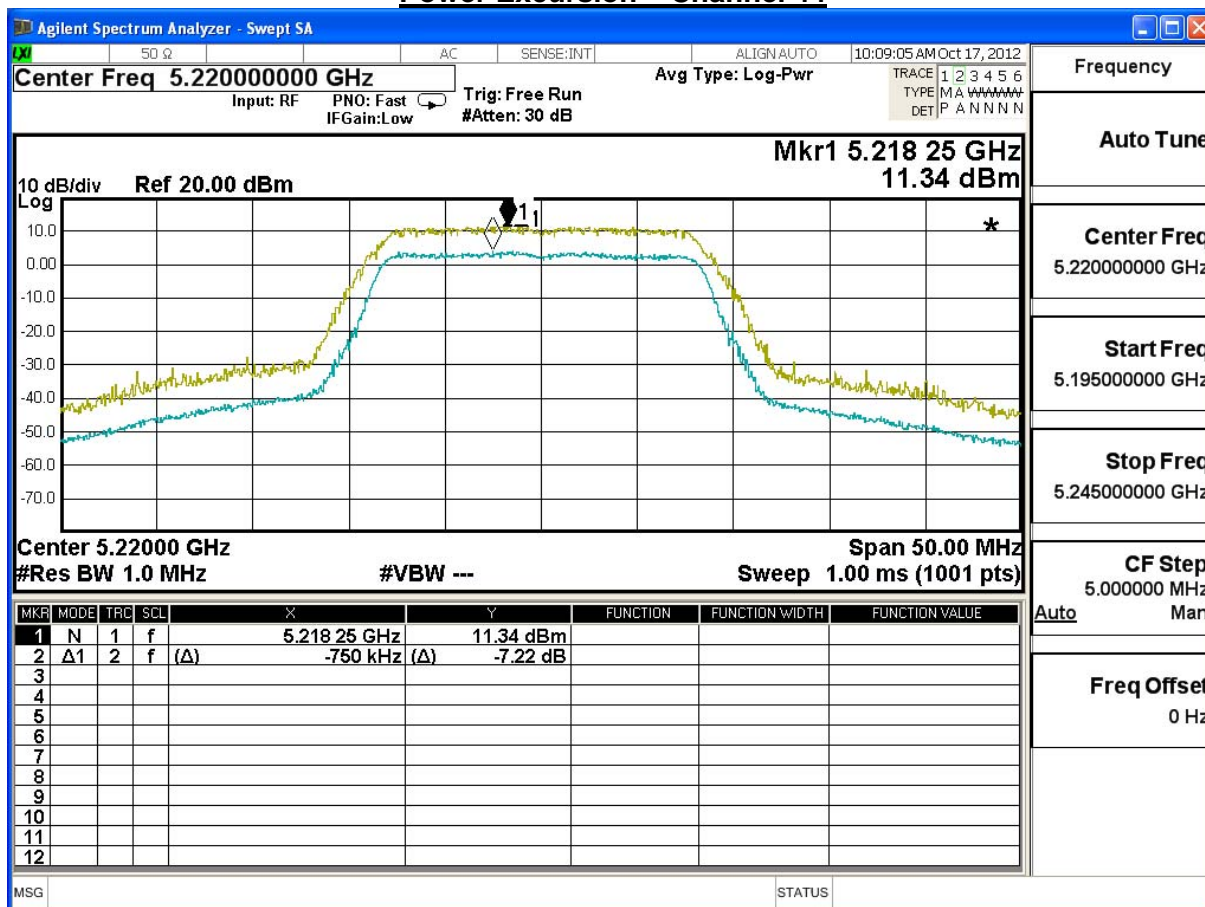
Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit (CDD mode)		
Date of Test	2012/10/17	Test Site	SR7

IEEE 802.11a				
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
36	5180	7.44	≤ 13	Pass
44	5220	7.22	≤ 13	Pass
48	5240	7.43	≤ 13	Pass

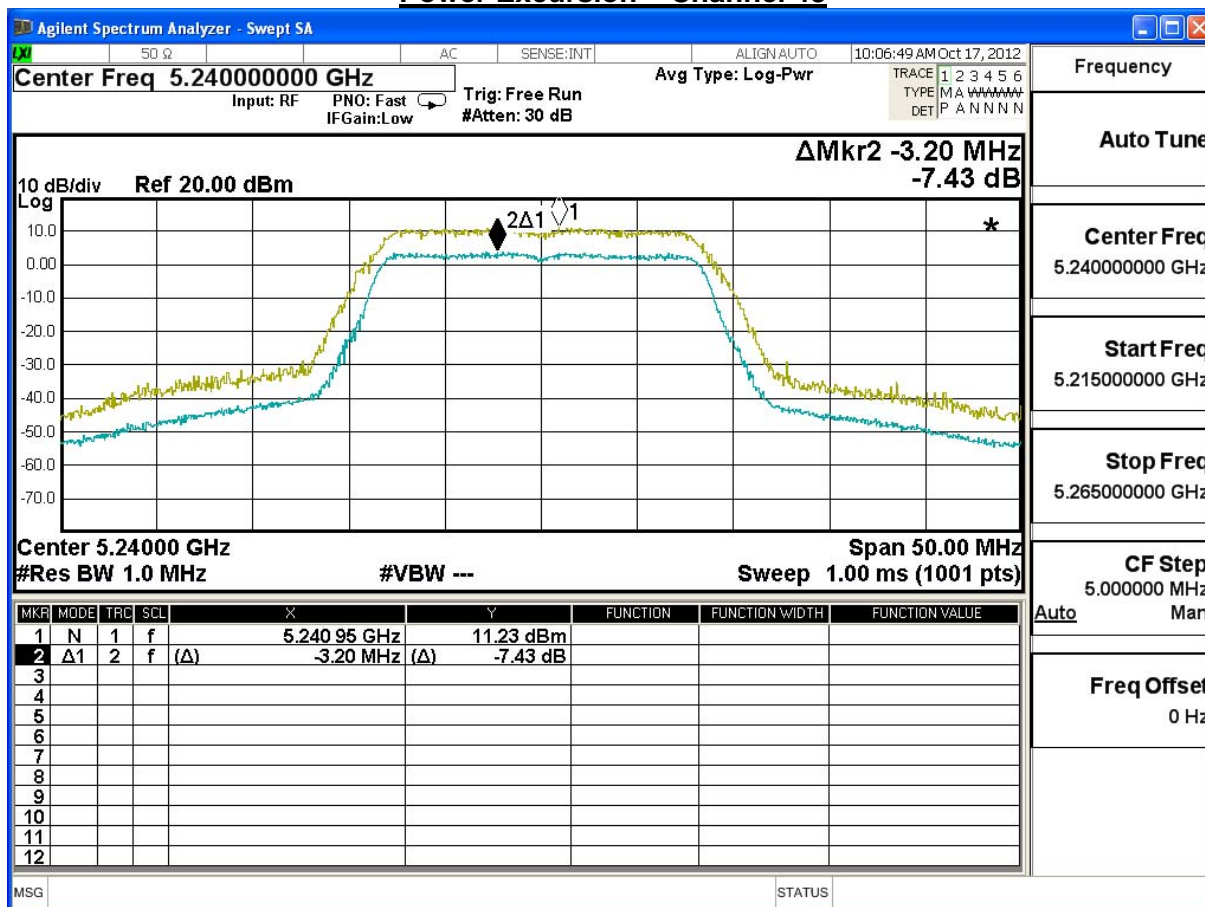
Power Excursion – Channel 36



Power Excursion – Channel 44



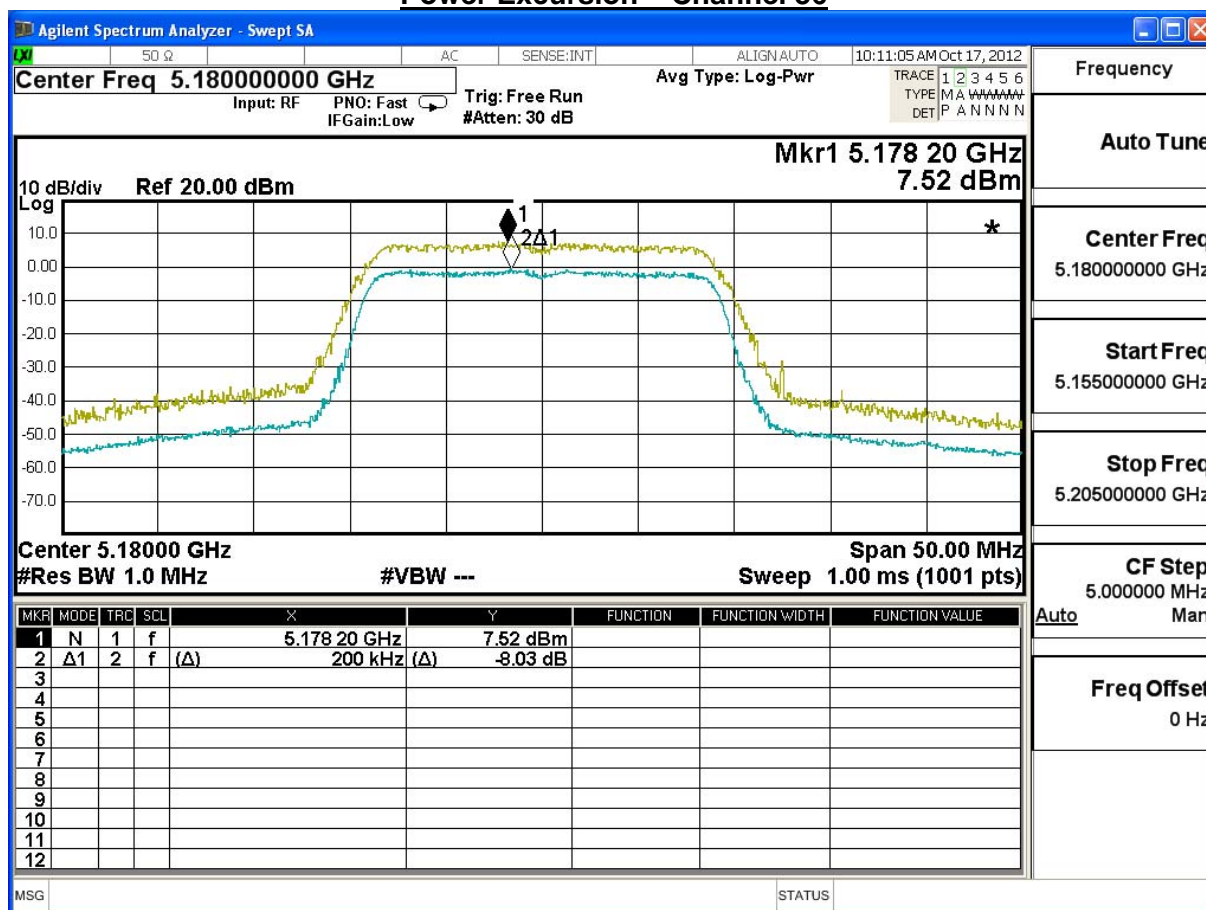
Power Excursion – Channel 48



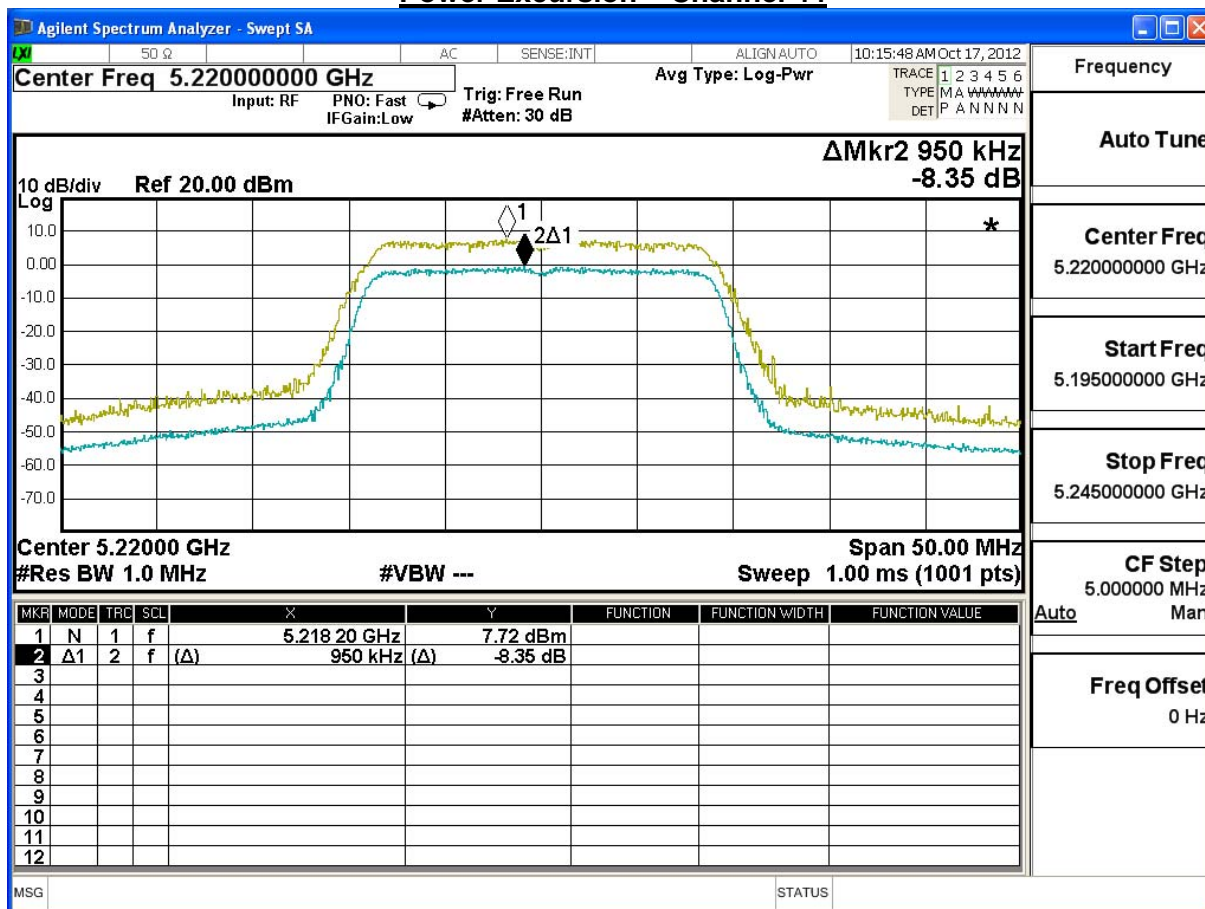
Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit (CDD mode)		
Date of Test	2012/10/17	Test Site	SR7

IEEE 802.11n_20M(ANT 0)				
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
36	5180	8.03	≤ 13	Pass
44	5220	8.35	≤ 13	Pass
48	5240	8.29	≤ 13	Pass

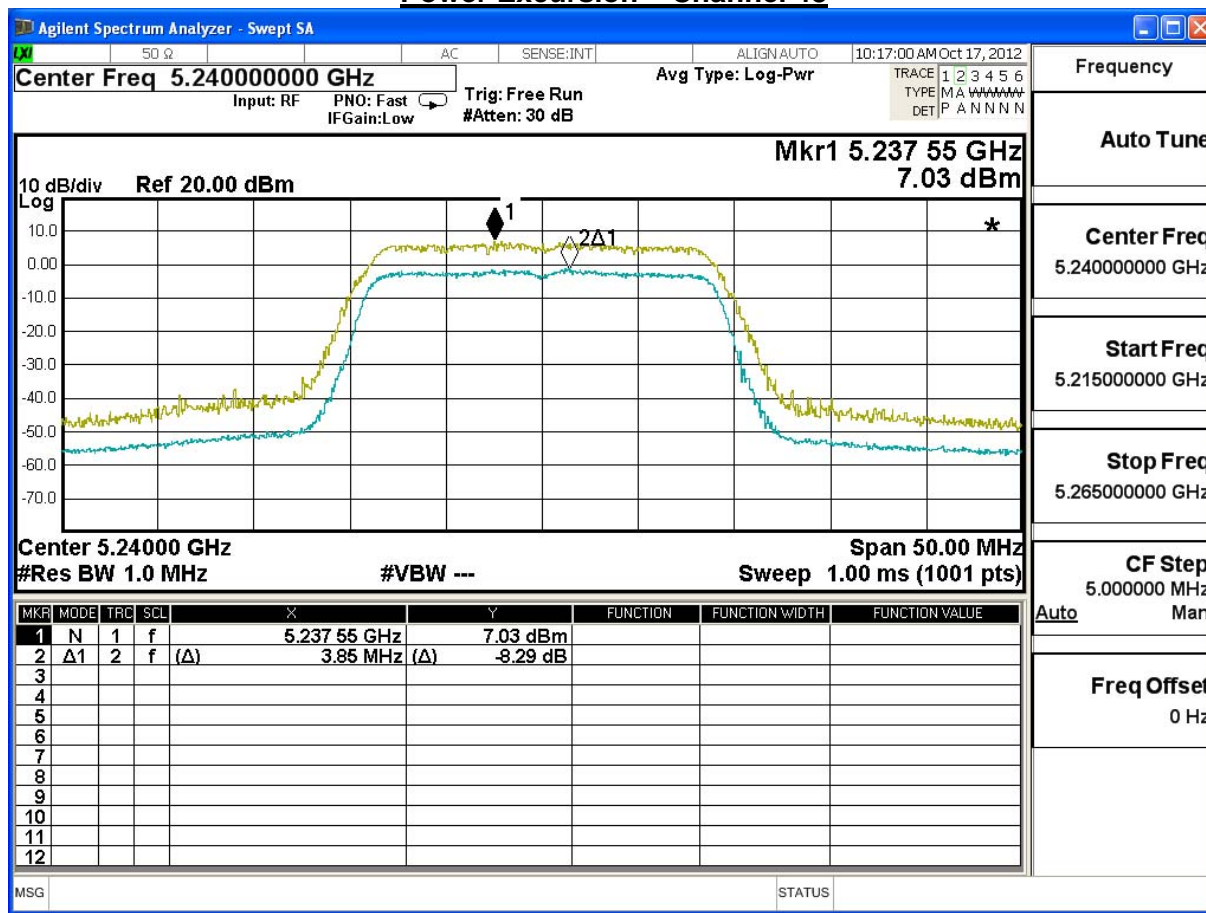
Power Excursion – Channel 36



Power Excursion – Channel 44



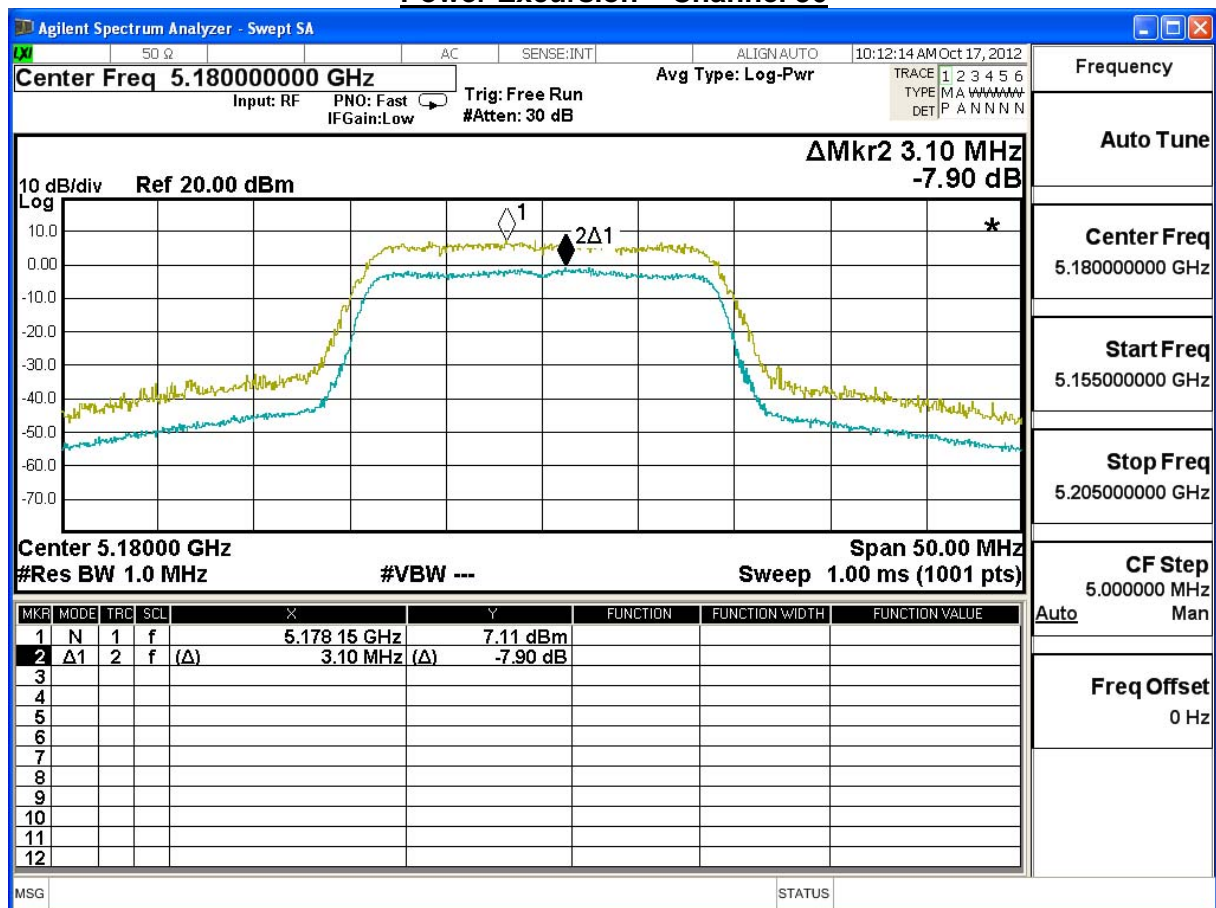
Power Excursion – Channel 48



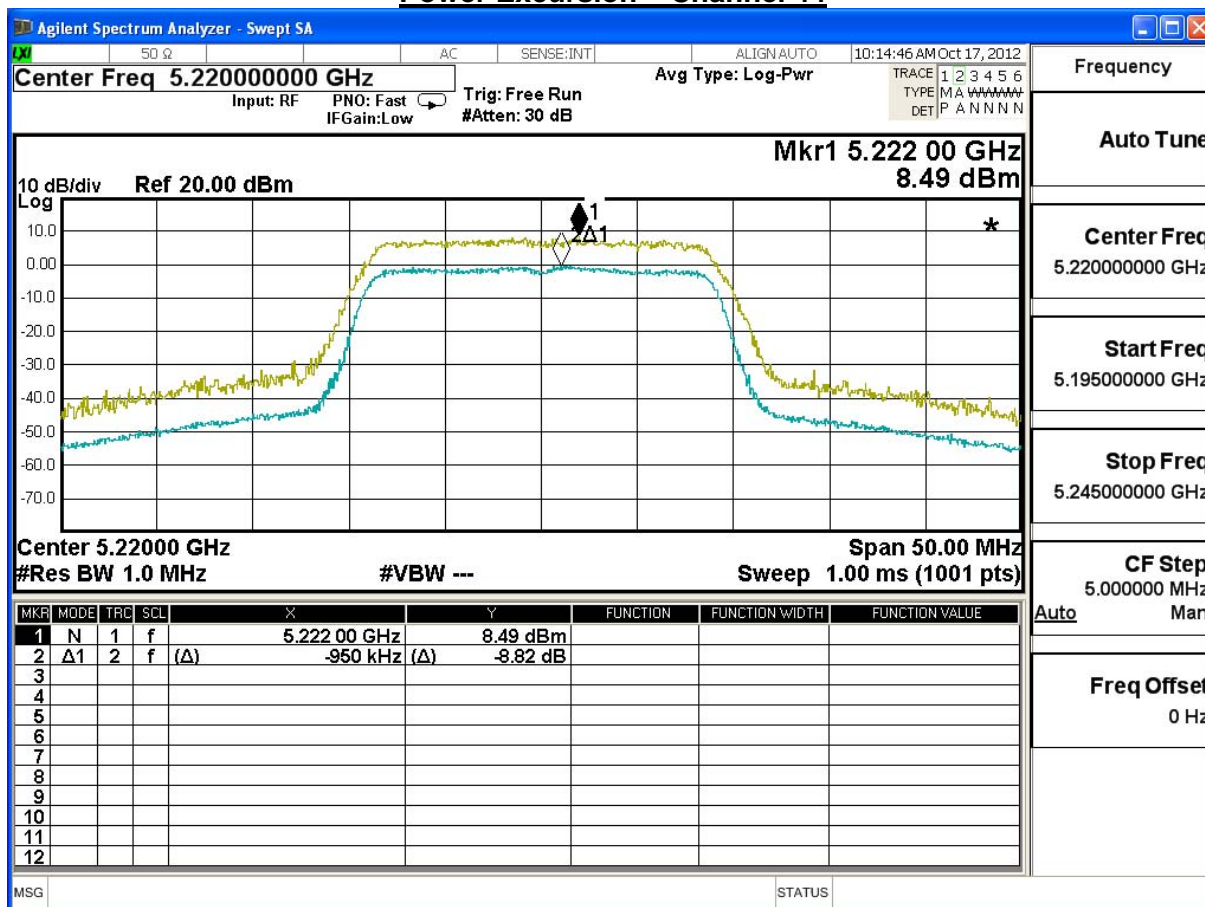
Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit (CDD mode)		
Date of Test	2012/10/17	Test Site	SR7

IEEE 802.11n_20M(ANT 1)				
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
36	5180	7.90	≤ 13	Pass
44	5220	8.82	≤ 13	Pass
48	5240	8.54	≤ 13	Pass

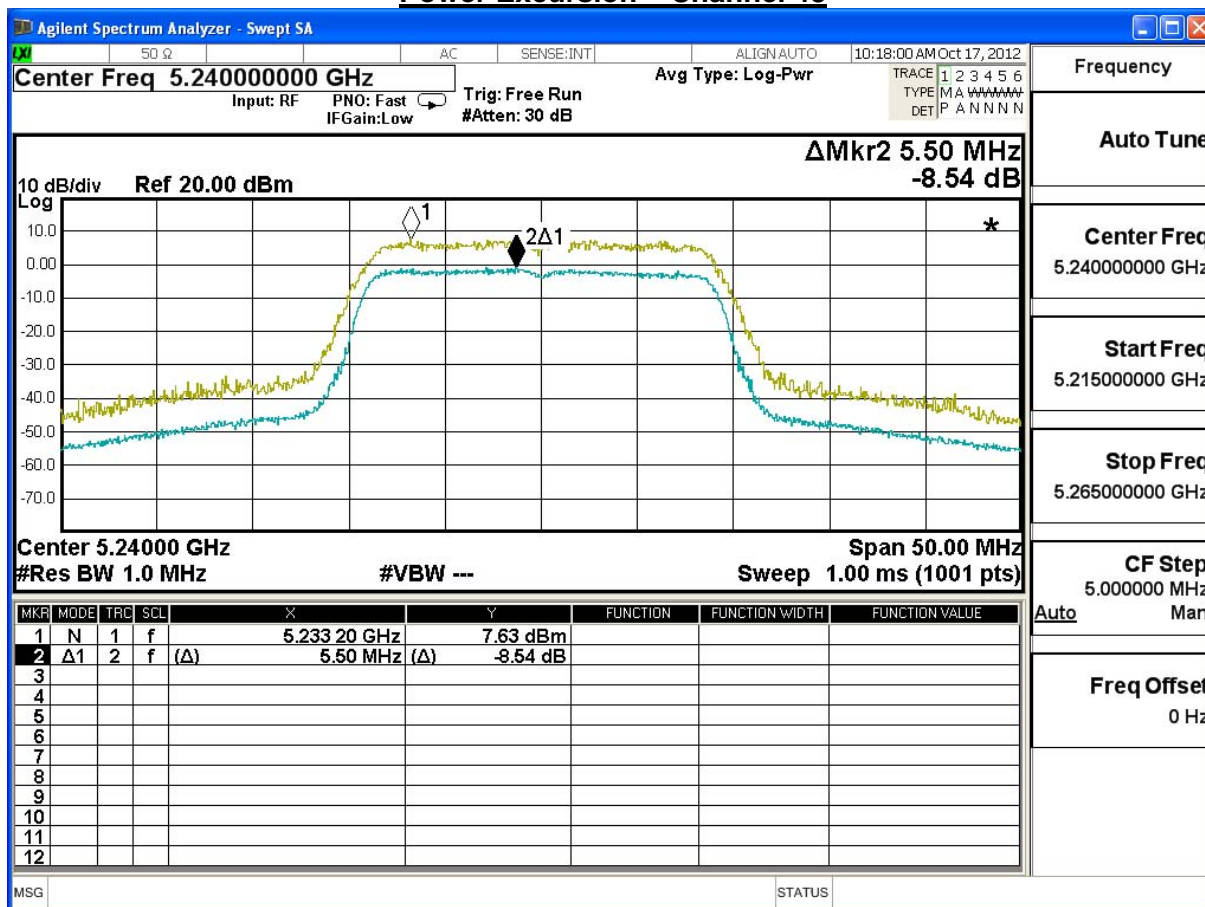
Power Excursion – Channel 36



Power Excursion – Channel 44



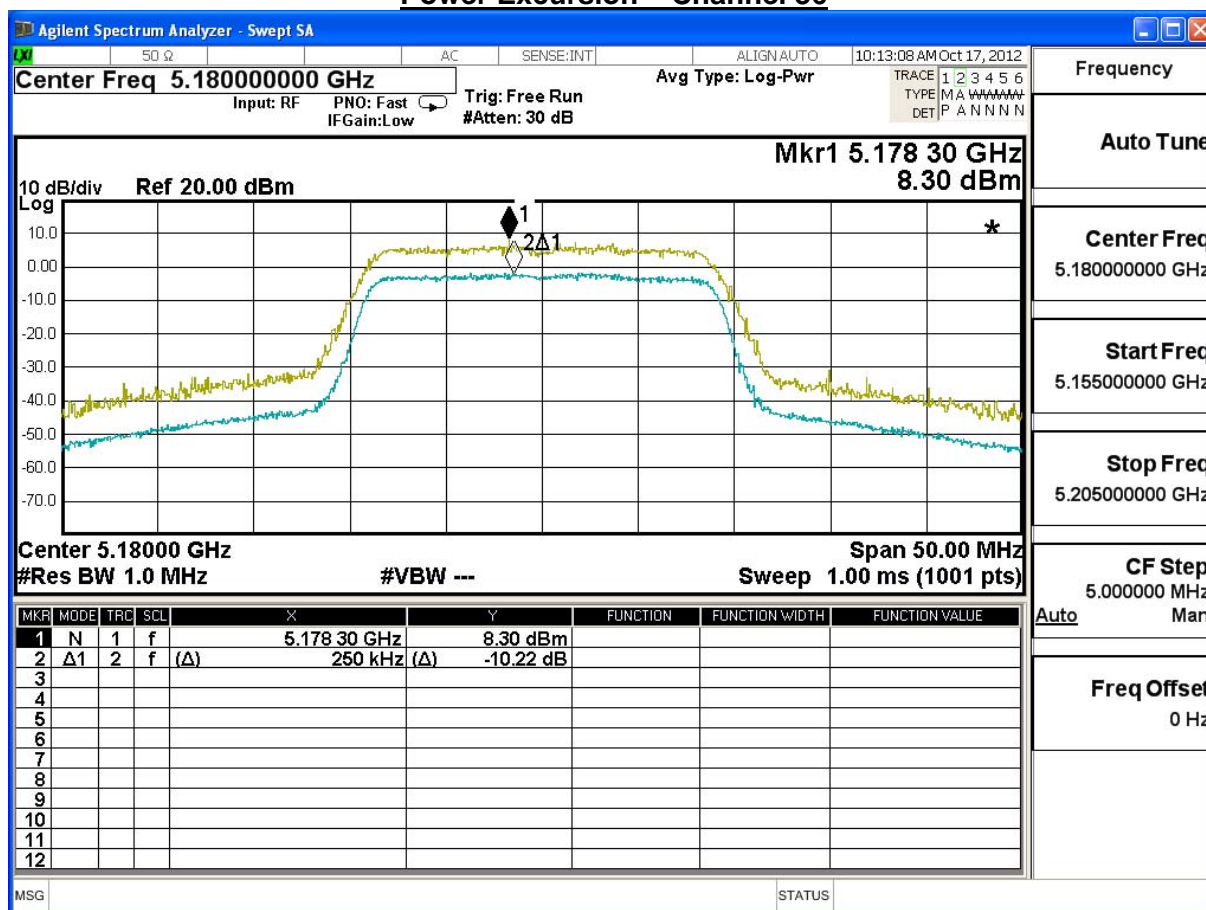
Power Excursion – Channel 48



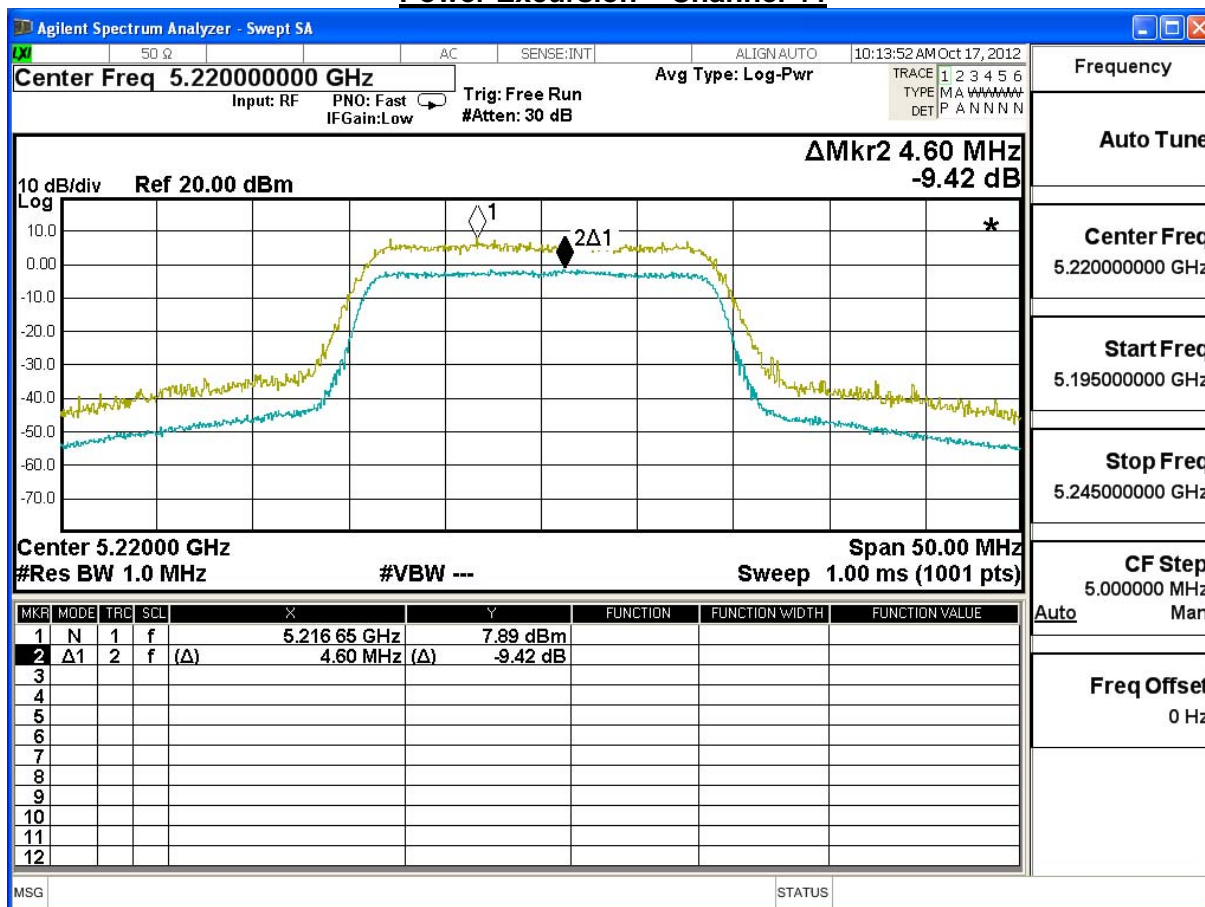
Product	Dual Band 3x3 802.11ac PCI-E Adapter		
Test Item	Peak Excursion		
Test Mode	Mode 1: Transmit (CDD mode)		
Date of Test	2012/10/17	Test Site	SR7

IEEE 802.11n_20M(ANT 2)				
Channel No.	Frequency (MHz)	Measure Level (dB)	Required Limit (dB)	Result
36	5180	10.22	≤ 13	Pass
44	5220	9.42	≤ 13	Pass
48	5240	10.17	≤ 13	Pass

Power Excursion – Channel 36



Power Excursion – Channel 44



Power Excursion – Channel 48

