1GHz~ 25 GHz (Horizontal) , Channel 6 : 2437 MHz

Operator: Mailes Hsieh

RBW: 1 MHz
Humidity (%): 39
Temperature (C): 22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission(pk)	Limit(av)	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
3297.70	40.63	31.34	2.37	46.62	27.72	54.00	-26.28	100	238
3337.66	40.71	31.37	2.31	46.63	27.77	54.00	-26.23	100	324
4870.63	52.97	35.11	1.25	46.93	42.40	54.00	-11.60	102	88
6716.78	37.29	37.57	2.47	46.45	30.88	54.00	-23.12	100	124
7311.69	45.57	39.60	3.20	46.17	42.20	54.00	-11.80	102	301
8528.47	38.51	41.65	3.37	42.49	41.04	54.00	-12.96	101	147

1GHz~ 25 GHz (Vertical), Channel 6 : 2437 MHz

Operator: Mailes Hsieh

RBW: 1 MHz
Humidity (%): 39
Temperature (C): 22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission(pk)	Limit(av)	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
3252.75	40.29	31.30	2.44	46.62	27.42	54.00	-26.58	99	158
3400.10	41.21	31.42	2.22	46.64	28.21	54.00	-25.79	99	92
4500.00	40.76	33.70	1.43	46.60	29.29	54.00	-24.71	100	353
4874.13	51.70	35.12	1.25	46.93	41.14	54.00	-12.86	99	112
7311.69	51.23	39.60	3.20	46.17	47.86	54.00	-6.14	102	238
9739.26	36.93	40.37	3.13	41.82	38.61	54.00	-15.39	100	224

Note:
" pk": peak reading
"av": average reading
"---": No meter reading data due to the emission level is smaller than spectrum noise level.
The Spectrum noise level+Correction Factor < Limit - 6 dB
Margin=Corrected Amplitude – Limit
Corrected Amplitude=Radiated Amplitude+Antenna Correction Factor+Cable Loss-Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit.
All frequencies from 1GHz to 25 GHz have been tested.

1GHz~ 25 GHz (Horizontal), Channel 11: 2462 MHz

Operator: Mailes Hsieh

RBW: 1 MHz
Humidity (%): 39
Temperature (C): 22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission(pk)	Limit(av)	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
3230.27	40.20	31.28	2.47	46.61	27.35	54.00	-26.65	100	353
3472.53	41.03	31.48	2.11	46.65	27.97	54.00	-26.03	100	124
4923.08	55.85	35.31	1.23	46.97	45.41	54.00	-8.59	103	148
6716.78	35.82	37.57	2.47	46.45	29.41	54.00	-24.59	101	94
7371.63	44.92	39.69	3.24	46.15	41.71	54.00	-12.29	103	72
8660.34	39.08	41.44	3.31	42.59	41.24	54.00	-12.76	100	214

1GHz~ 25 GHz (Vertical), Channel 11 : 2462 MHz

Operator: Mailes Hsieh

RBW: 1 MHz
Humidity (%): 39
Temperature (C): 22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission(pk)	Limit(av)	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
3250.25	40.63	31.30	2.44	46.62	27.76	54.00	-26.24	100	324
3455.04	40.48	31.46	2.14	46.64	27.44	54.00	-26.56	100	29
4181.82	41.58	32.75	1.90	46.29	29.94	54.00	-24.06	103	110
4923.08	52.07	35.31	1.23	46.97	41.63	54.00	-12.37	103	341
7371.63	48.95	39.69	3.24	46.15	45.74	54.00	-8.26	102	356
8816.18	39.46	41.19	3.25	42.71	41.19	54.00	-12.81	102	112

Note:
" pk": peak reading
"av": average reading
"---": No meter reading data due to the emission level is smaller than spectrum noise level.
The Spectrum noise level+Correction Factor < Limit - 6 dB
Margin=Corrected Amplitude – Limit
Corrected Amplitude=Radiated Amplitude+Antenna Correction Factor+Cable Loss-Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit.
All frequencies from 1GHz to 25 GHz have been tested.

5.5 Band Edge Measurement

5.5.1 Test Procedure (Conducted)

1. The transmitter output of EUT was connected to the spectrum analyzer.
   Equipment mode: Spectrum analyzer
   Detector function: Peak mode
   SPAN: 100MHz
   RBW: 100KHz
   VBW: 100KHz
   Center frequency: 2.4GHz, 2.4835GHz.
2. Using Peak Search to read the peak power of Carrier frequencies after Maximum Hold function is completed
3. Find the next peak frequency outside the operation frequency band

5.5.2 Test Setup (Conducted)

5.5.3 Test Data:

Table: Band Edge measurement (Conducted)

Temp. (deg. C): 25

Test Engr: Mailes Hsieh Humidity (%): 50

Channel	Frequency (MHz)	Spectrum Reading (dBuV)	Carrier - Outsideband Limit: >20dB (dB)	Pass/Fail
1	2416	105.16	---	---
Outside band	2399.8	78.21	26.95	Pass
11	2456.7	104.84	---	---
Outside band	2472.4	82.29	22.55	Pass

Note: Two RF output(MAIN & AUX) have been test,the worse data shown above.

Band Edge Conducted measurement

Band Edge Conducted Measurement

5.5.4 Test Procedure (Radiated)

1. Antenna and Turntable test procedure same as Radiated Emission Measurement.
   Equipment mode: Spectrum analyzer
   Detector function: Peak mode
   SPAN: 100MHz
   RBW: 1MHz
   VBW: 1MHz
   Center frequency: 2.395GHz, 2.48GHz.
2. Using Peak Search to read the peak power of Carrier frequencies after Maximum Hold function is completed.
3. Find the next peak frequency outside the operation frequency band
4. For peak frequency emission level measurement in Restricted Band ,
   Change RBW: 1MHz
   VBW: 10Hz
   Span: 100MHz.
5. Get the spectrum reading after Maximum Hold function is completed.

5.5.5 Test Setup (Radiated)

Same as *Radiated Emission Measurement*

5.5.6 Test Data

Table Band Edge measurement (Radiated)

Temp. (deg. C): 25

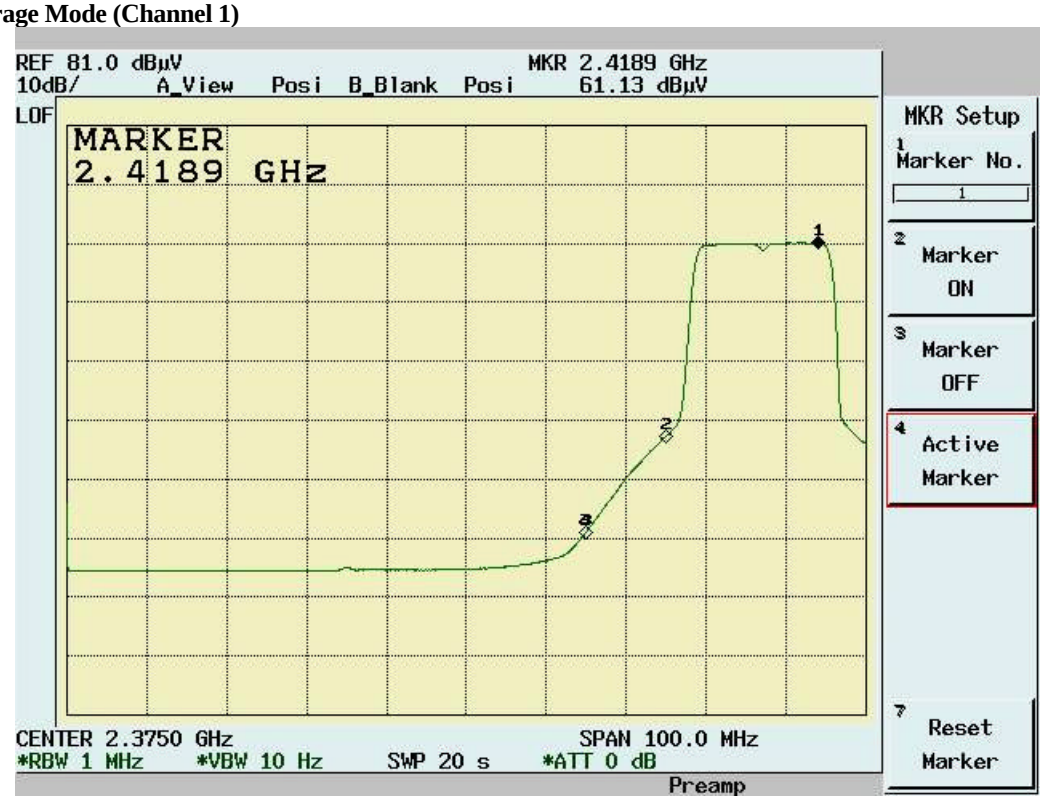
Test Engr: Mailes Hsieh Humidity (%): 50

Channel	Frequency (MHz)	Spectrum Reading (dBuV)	Correction Factor (dB/m)	Emission Level (dBuV/m)	dBc (Limit: > 20dBc)	Limit (dBuV/m)	Equip. Setup VBW	Pass or Fail
1(peak mode)	2415.5	71.84	28.67	100.48	---	---	1MHz	---
Outside band	2400	50.56	28.67	79.23	21.28	---	1MHz	Pass
1(average mode)	2418.9	61.13	28.67	89.8	---	---	10Hz	---
Restricted band	2390	12.09	28.67	40.76	---	54	10Hz	Pass
11(peak mode)	2465.5	75.25	28.64	103.89	---	---	1MHz	---
Outside band	2476.9	43.23	28.64	71.87	32.02	---	1MHz	Pass
11(average mode)	2457	64.77	28.64	93.41	---	---	10Hz	---
Restricted band	2483.5	16.38	28.64	45.02	---	54	10Hz	Pass

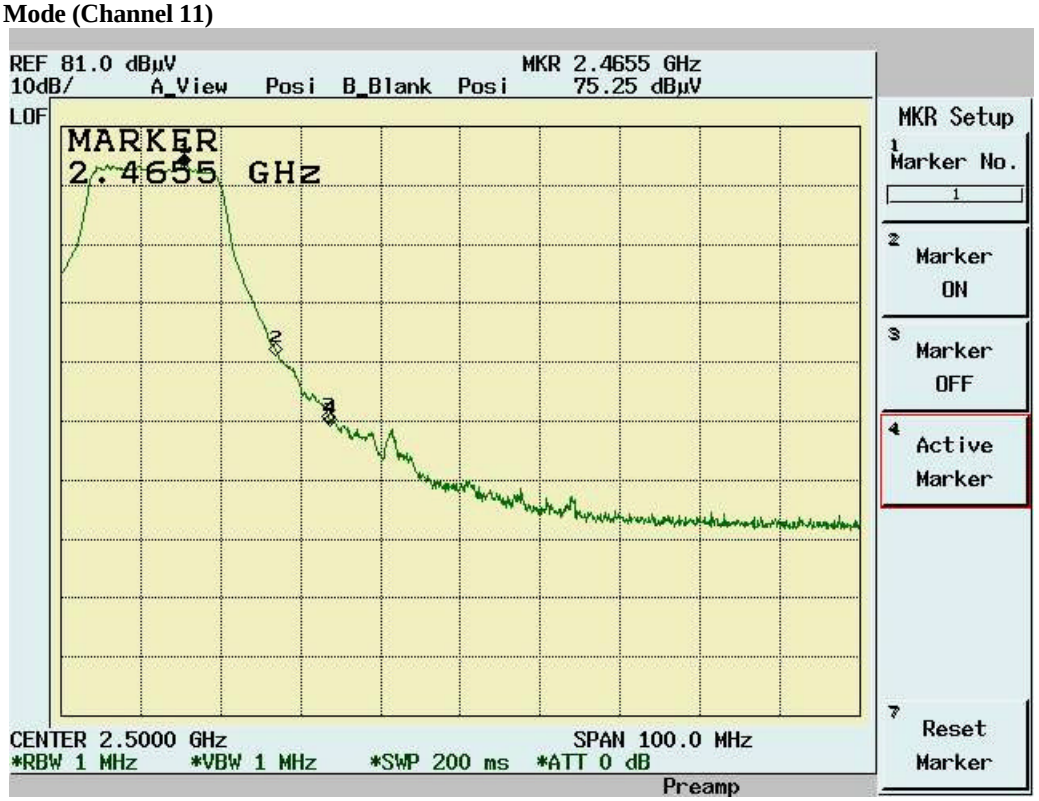
Note:
The Spectrum plot of emission level measurement in Restricted band is attached.
Emission Level=Spectrum Reading+Correction Factor
Correction Factor=Antenna Factor+cable loss–amplifier gain
Both Horizontal and Vertical polarizaion have been tested and the worst data is listed above.

Band Edge measurement for radiated emission in Restricted Band(Radiated)
Peak Mode (Channel 1)

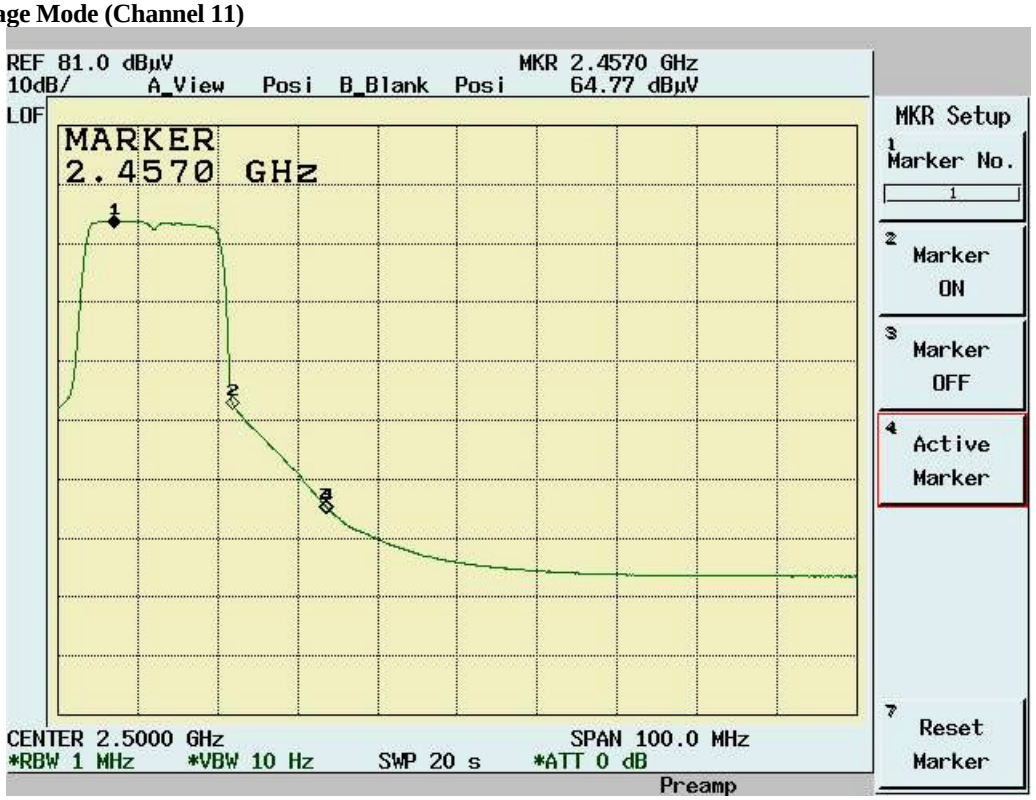
Band Edge measurement for radiated emission in Restricted Band(Radiated)
Average Mode (Channel 1)



Band Edge measurement for radiated emission in Restricted Band(Radiated)
Peak Mode (Channel 11)



Band Edge measurement for radiated emission in Ristricted Band(Radiated)
Average Mode (Channel 11)



5.6 RF Exposure Measurement [Section 15.247(b)(4) & 1.1307(b)]

See MPE report

5.7 DSSS Peak Power Spectral Density [Section 15.247(d)]

5.7.1 Test Procedure

1. The Transmitter output of EUT was connected to the spectrum analyzer.
   Equipment mode: Spectrum analyzer
   Detector function: Peak mode
   SPAN:1.5MHz
   RBW: 3KHz
   VBW: 30KHz
   Center frequency: fundamental frequency tested.
   Sweep time= 500 sec.
2. Using Peak Search to read the peak power after Maximum Hold function is completed.

5.7.2 Test Setup

5.7.3 Test Data

Maximum Peak Output Power Density

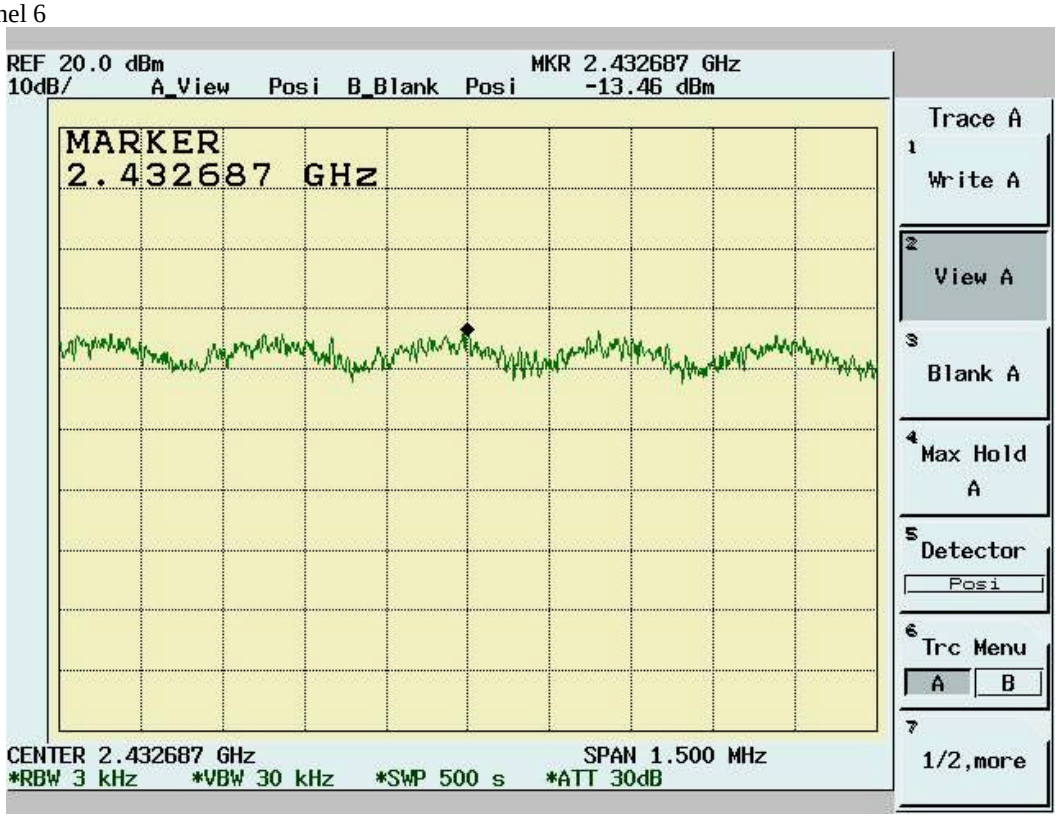
Temp. (deg. C): 25

Test Engr: Mailes Hsieh Humidity (%): 50

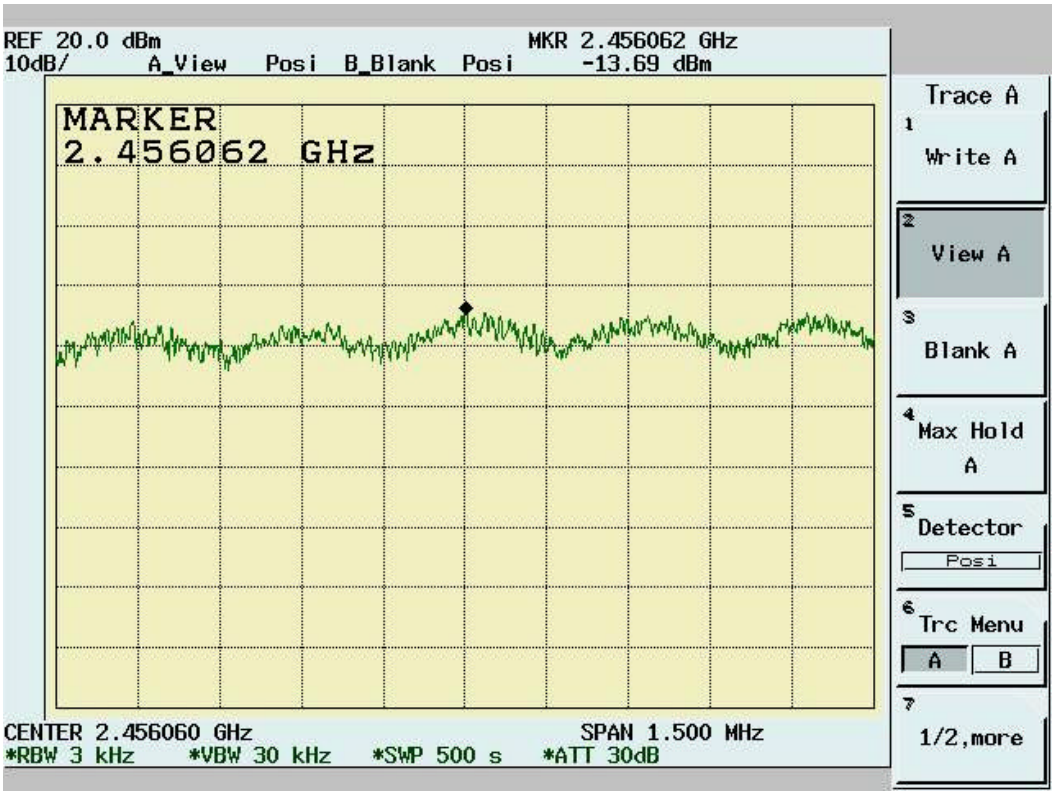
Chennel	Frequency (MHz)	Spectrum Reading (dBm/3KHz)	Cable Loss (dB)	Peak Power Output (dBm/3KHz)	Limit (dBm/3KHz)	Pass/Fail
1	2412	-13.99	1.1	-12.89	8	Pass
6	2437	-13.46	1.1	-12.36	8	Pass
11	2462	-13.69	1.1	-12.59	8	Pass

Channel 1

Channel 6



Channel 11


REF 20.0 dBm
10dB/
A_View Posi B_Blank Posi
MKR 2.456062 GHz
-13.69 dBm
MARKER
2.456062 GHz
CENTER 2.456060 GHz
SPAN 1.500 MHz
*RBW 3 kHz *VBW 30 kHz *SWP 500 s *ATT 30dB
Trace A
1 Write A
2 View A
3 Blank A
4 Max Hold A
5 Detector
Posi
6 Trc Menu
A B
7 1/2,more

6. TEST RESULTS (802.11a)

6.1 Maximum Peak Output Power [Section 15.407 (a)(1)(2)(3)]

6.1.1 Test Procedure

The transmitter output of EUT was connected to the peak power analyzer.

6.1.2 Test Setup

Frequency Band	Limit
5.15 – 5.25 GHz	The lesser of 50mW (17dBm) or 4dBm+10logB
5.25 – 5.35GHz	The lesser of 250mW (24dBm) or 11dBm+10logB
5.725-5.825GHz	The lesser of 1W (30dBm) or 17dBm+10logB

Note: B is the 26dB emission bandwith in MHz

6.1.3 Test Data: (Normal Mode)

Maximum Peak Output Power

Temperature (deg. C): 25

Test Engr: Mailes Hsieh Humidity (%): 50

Chennel	Frequency (Mhz)	Peak Power Output (dBm)	26 dBc BW/Limit Mhz/dBm	The lesser Limit (dBm)	Pass/Fail
1	5180	14.575	25.65/ 18.09	17.00	Pass
4	5240	15.106	25.65/ 18.09	17.00	Pass
5	5260	22.262	26.28/ 25.20	24.00	Pass
8	5320	22.106	26.19/ 25.18	24.00	Pass
9	5745	20.262	30.06/ 31.78	30.00	Pass
12	5805	21.387	31.32/ 31.96	30.00	Pass

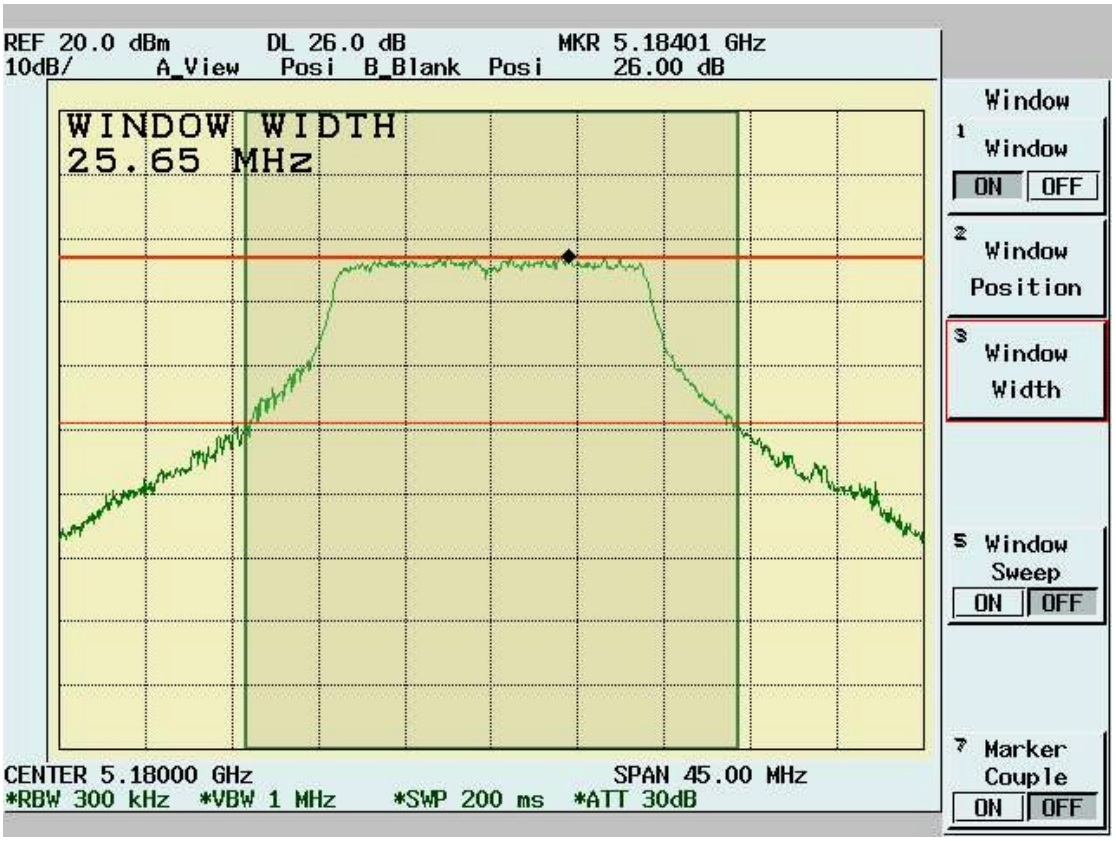
6.1.4 Test Data: (Turbo Mode)

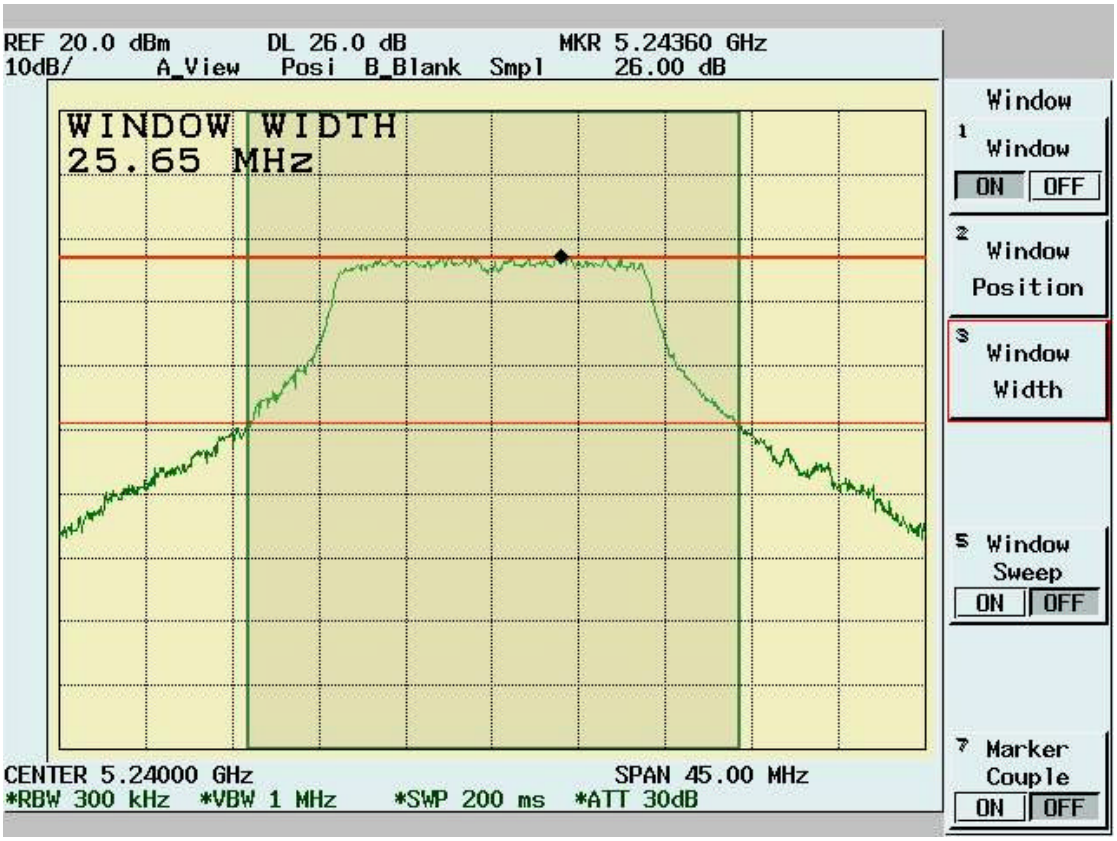
Maximum Peak Output Power

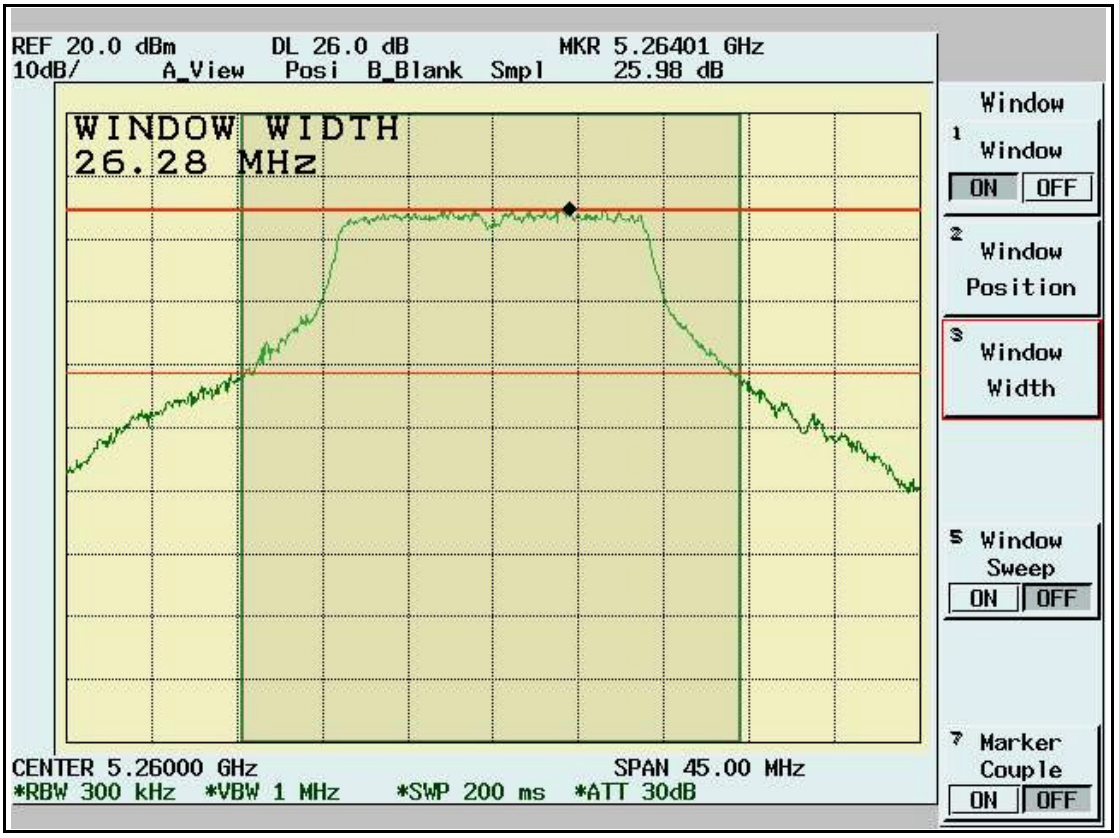
Temperature (deg. C): 25

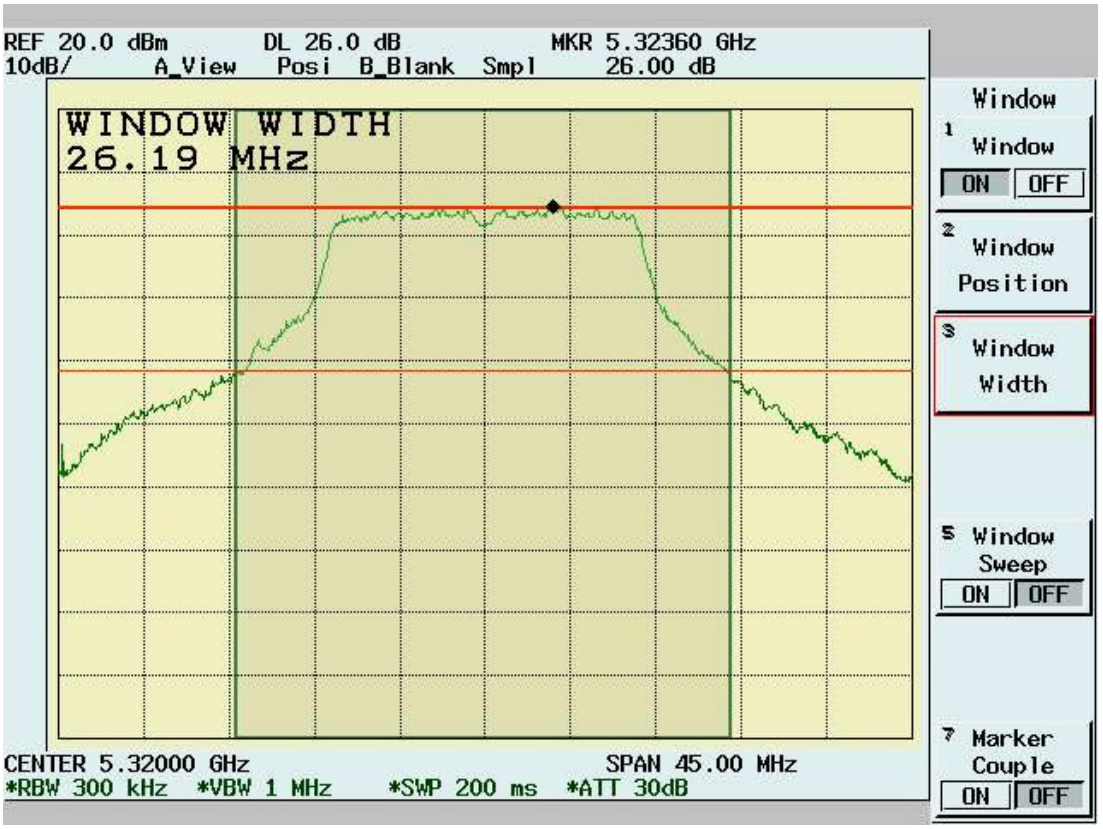
Test Engr: Mailes Hsieh Humidity (%): 50

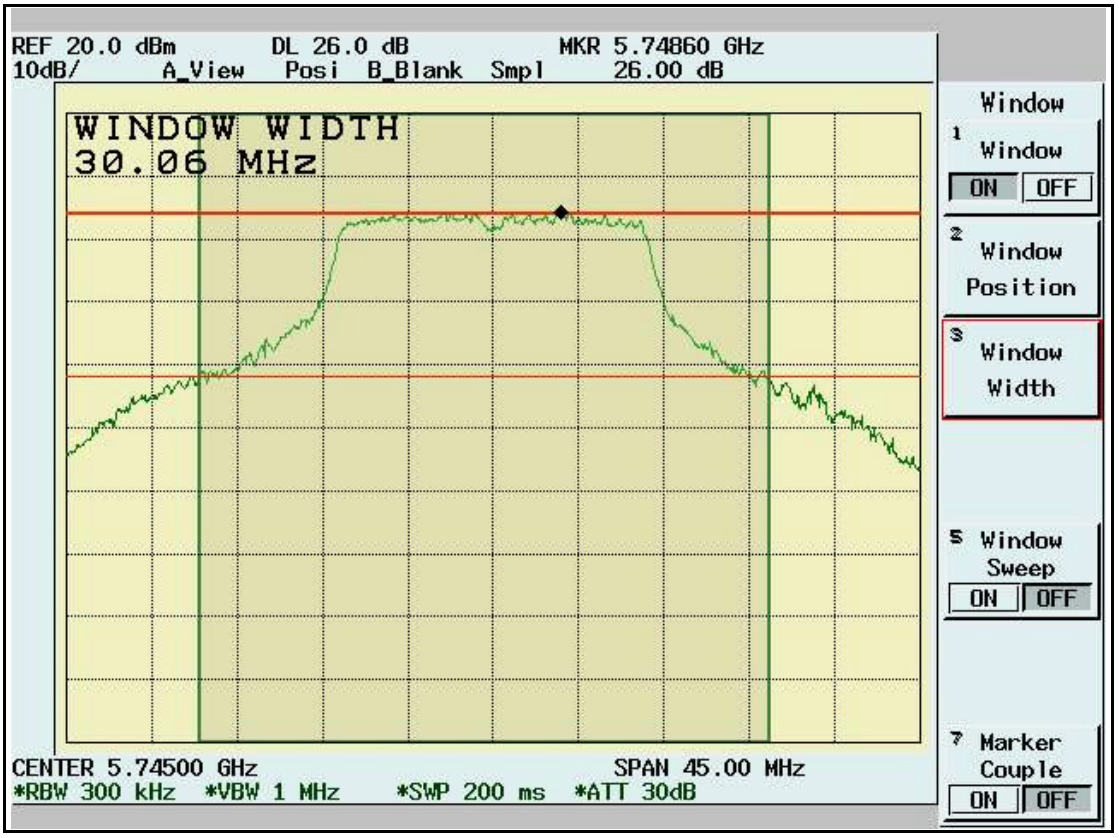
Chennel	Frequency (Mhz)	Peak Power Output (dBm)	26 dBc BW/Limit Mhz/dBm	The lesser Limit (dBm)	Pass/Fail
1	5210	16.668	49.56/ 20.95	17.00	Pass
2	5250	16.418	48.48/ 20.86	17.00	Pass
3	5290	20.043	50.52/ 28.03	24.00	Pass
4	5760	20.262	56.04/ 34.48	30.00	Pass
5	5800	16.543	48.6/ 33.87	30.00	Pass

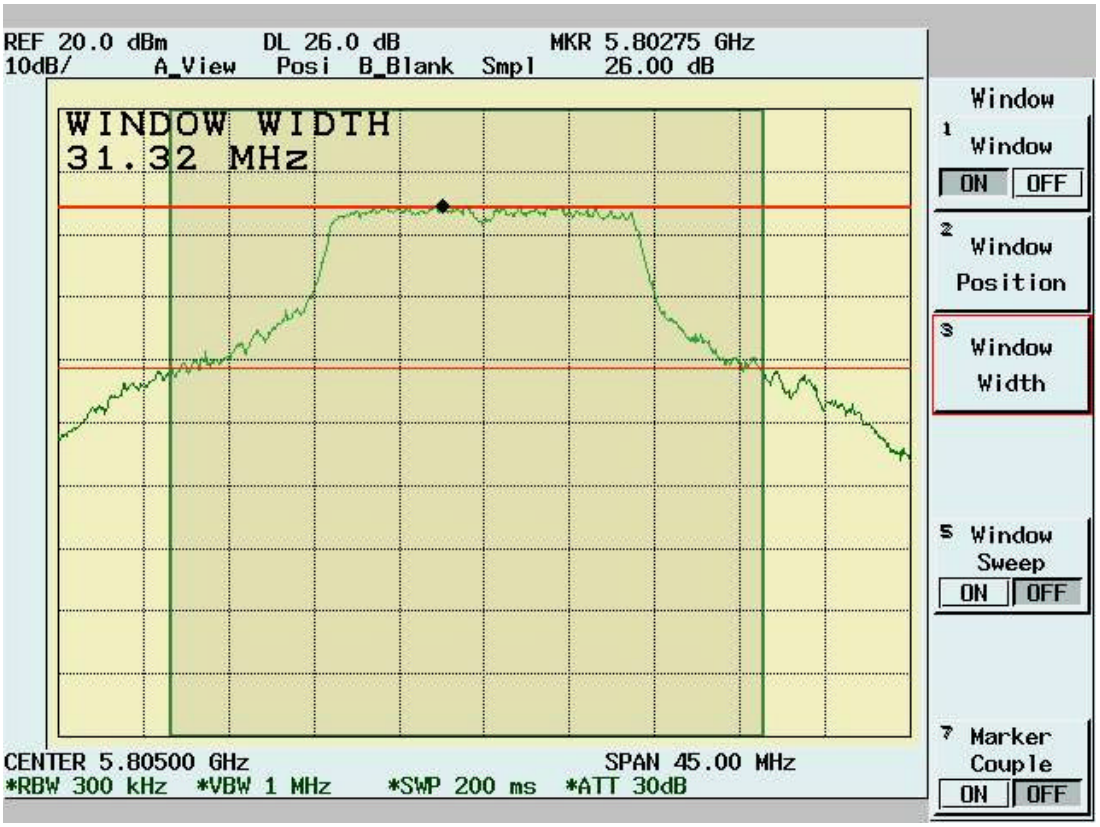

REF 20.0 dBm
10dB/
DL 26.0 dB
A_View
Posi
B_Blank
Posi
MKR 5.18401 GHz
26.00 dB
WINDOW WIDTH
25.65 MHz
CENTER 5.18000 GHz
SPAN 45.00 MHz
*RBW 300 kHz
*VBW 1 MHz
*SWP 200 ms
*ATT 30dB
Window
1 Window
ON OFF
2 Window Position
3 Window Width
5 Window Sweep
ON OFF
7 Marker Couple
ON OFF

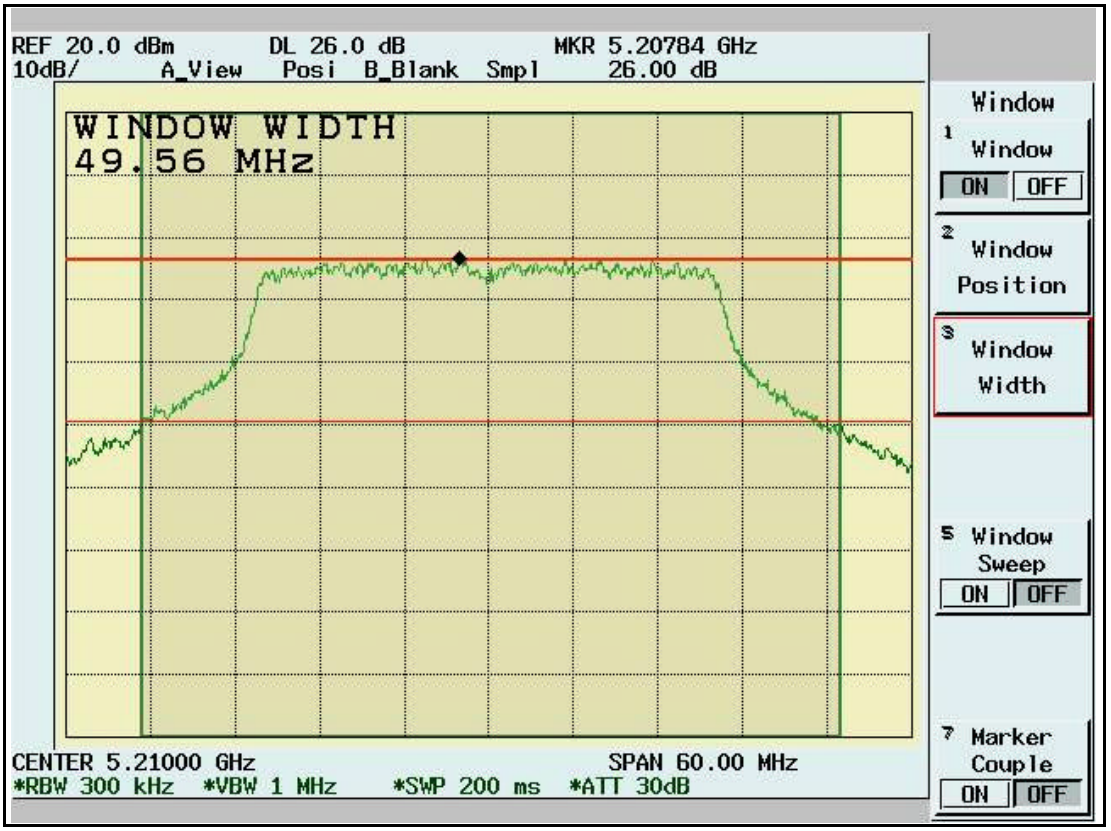

REF 20.0 dBm
10dB/
DL 26.0 dB
A_View
Posi
B_Blank
Smpl
MKR 5.24360 GHz
26.00 dB
WINDOW WIDTH
25.65 MHz
CENTER 5.24000 GHz
SPAN 45.00 MHz
*RBW 300 kHz
*VBW 1 MHz
*SWP 200 ms
*ATT 30dB
Window
1 Window
ON OFF
2 Window Position
3 Window Width
5 Window Sweep
ON OFF
7 Marker Couple
ON OFF

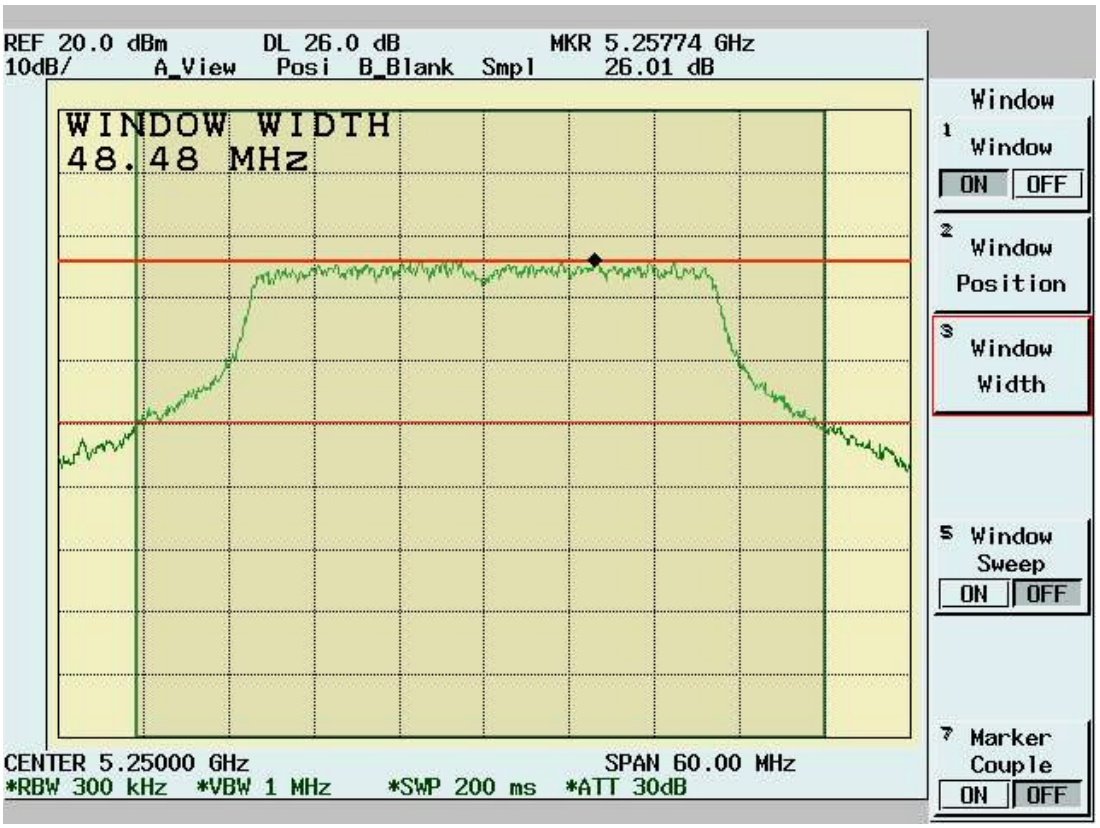

REF 20.0 dBm
10dB/
DL 26.0 dB
A_View
Posi
B_Blank
Smpl
MKR 5.26401 GHz
25.98 dB
WINDOW WIDTH
26.28 MHz
CENTER 5.26000 GHz
SPAN 45.00 MHz
*RBW 300 kHz
*VBW 1 MHz
*SWP 200 ms
*ATT 30dB
Window
1 Window
ON OFF
2 Window Position
3 Window Width
5 Window Sweep
ON OFF
7 Marker Couple
ON OFF

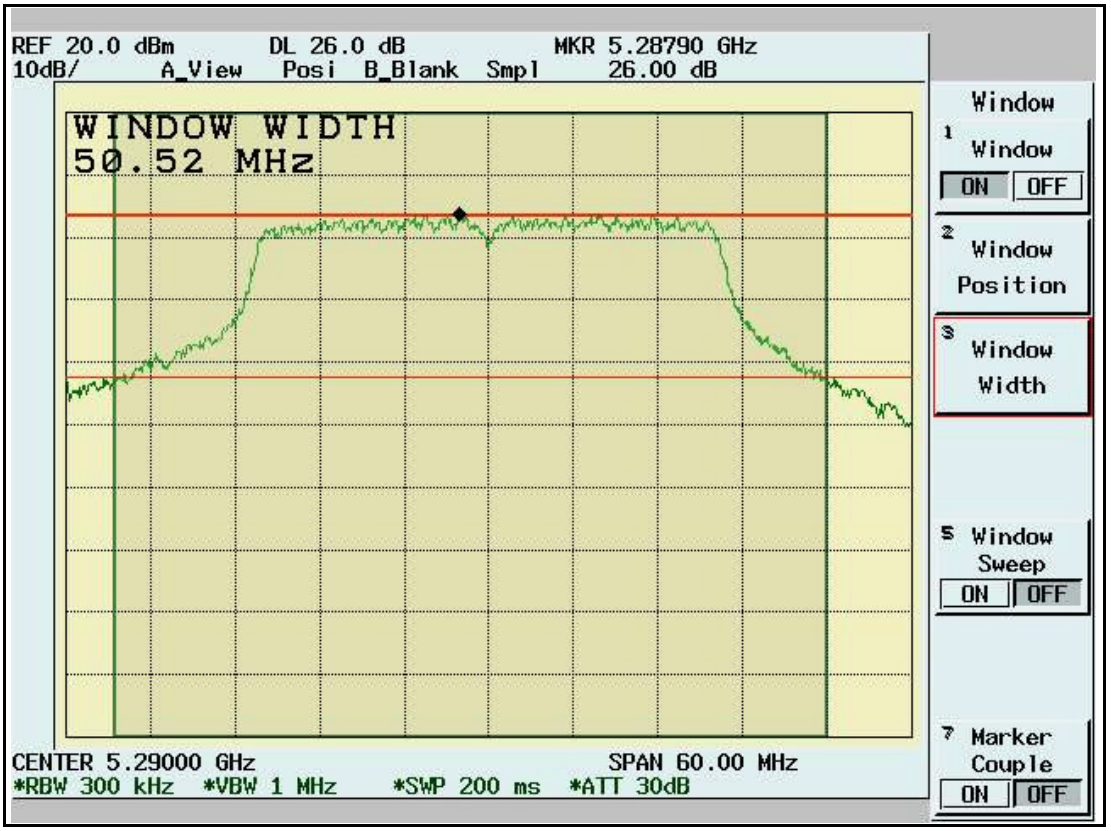

REF 20.0 dBm
10dB/
DL 26.0 dB
A_View
Posi
B_Blank
Smpl
MKR 5.32360 GHz
26.00 dB
WINDOW WIDTH
26.19 MHz
CENTER 5.32000 GHz
SPAN 45.00 MHz
*RBW 300 kHz
*VBW 1 MHz
*SWP 200 ms
*ATT 30dB
Window
1 Window
ON OFF
2 Window Position
3 Window Width
5 Window Sweep
ON OFF
7 Marker Couple
ON OFF

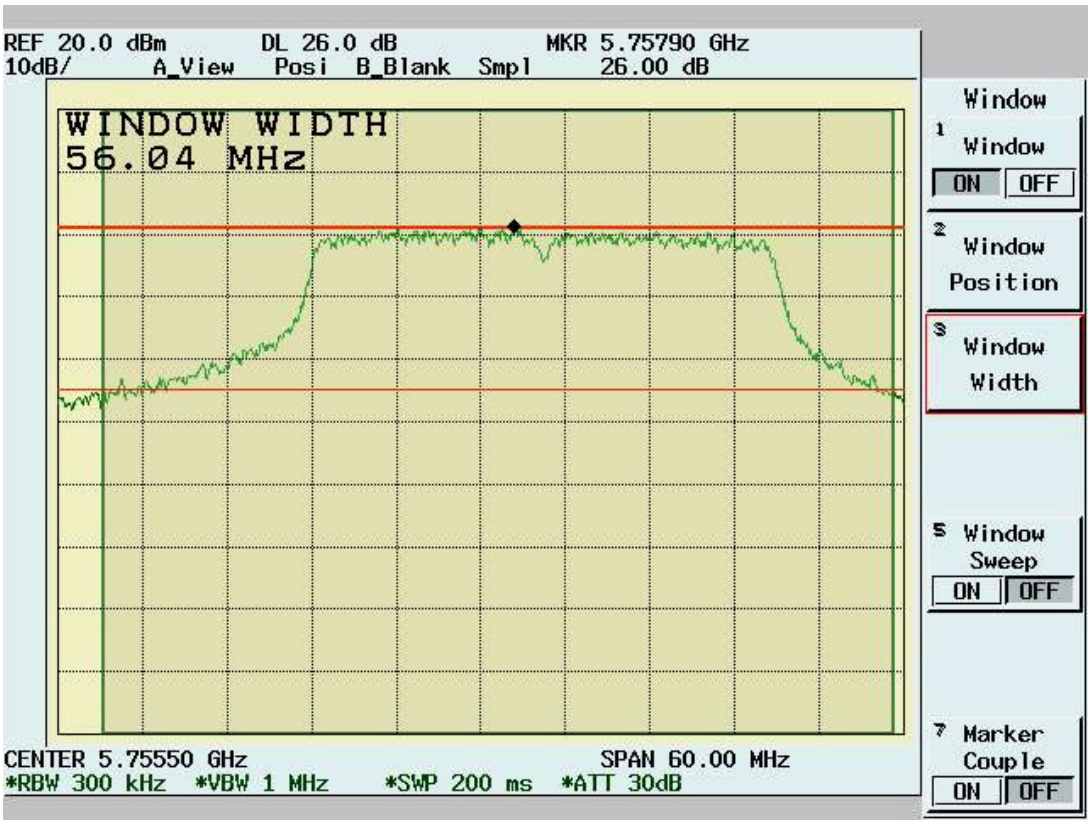

REF 20.0 dBm
10dB/
DL 26.0 dB
A_View
Posi
B_Blank
Smpl
MKR 5.74860 GHz
26.00 dB
WINDOW WIDTH
30.06 MHz
CENTER 5.74500 GHz
SPAN 45.00 MHz
*RBW 300 kHz
*VBW 1 MHz
*SWP 200 ms
*ATT 30dB
Window
1 Window
ON OFF
2 Window Position
3 Window Width
5 Window Sweep
ON OFF
7 Marker Couple
ON OFF

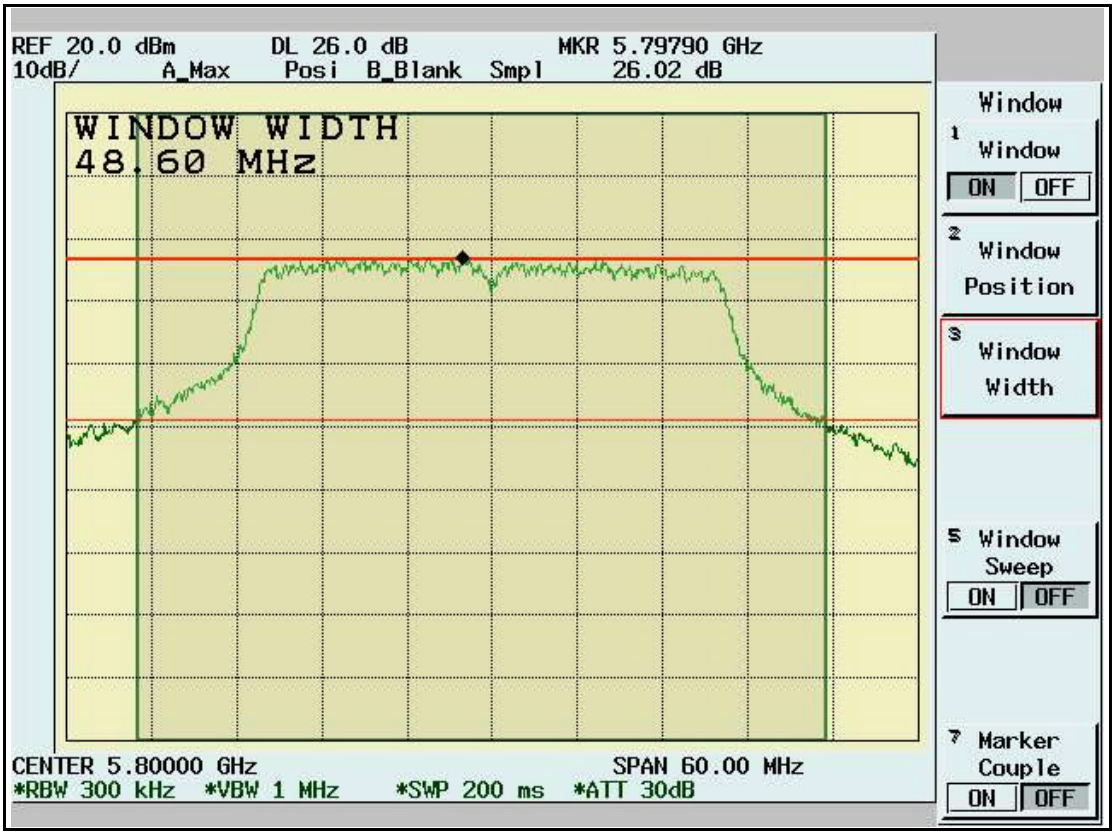

REF 20.0 dBm
10dB/
DL 26.0 dB
A_View
Posi
B_Blank
Smpl
MKR 5.80275 GHz
26.00 dB
WINDOW WIDTH
31.32 MHz
CENTER 5.80500 GHz
SPAN 45.00 MHz
*RBW 300 kHz
*VBW 1 MHz
*SWP 200 ms
*ATT 30dB
Window
1 Window
ON OFF
2 Window Position
3 Window Width
5 Window Sweep
ON OFF
7 Marker Couple
ON OFF


REF 20.0 dBm
10dB/
DL 26.0 dB
A_View
Posi
B_Blank
Smpl
MKR 5.20784 GHz
26.00 dB
WINDOW WIDTH
49.56 MHz
CENTER 5.21000 GHz
SPAN 60.00 MHz
*RBW 300 kHz
*VBW 1 MHz
*SWP 200 ms
*ATT 30dB
Window
1 Window
ON OFF
2 Window Position
3 Window Width
5 Window Sweep
ON OFF
7 Marker Couple
ON OFF


REF 20.0 dBm
10dB/
DL 26.0 dB
A_View
Posi
B_Blank
Smpl
MKR 5.25774 GHz
26.01 dB
WINDOW WIDTH
48.48 MHz
CENTER 5.25000 GHz
SPAN 60.00 MHz
*RBW 300 kHz
*VBW 1 MHz
*SWP 200 ms
*ATT 30dB
Window
1 Window
ON OFF
2 Window Position
3 Window Width
5 Window Sweep
ON OFF
7 Marker Couple
ON OFF


REF 20.0 dBm
10dB/
DL 26.0 dB
A_View
Posi
B_Blank
Smpl
MKR 5.28790 GHz
26.00 dB
WINDOW WIDTH
50.52 MHz
CENTER 5.29000 GHz
SPAN 60.00 MHz
*RBW 300 kHz
*VBW 1 MHz
*SWP 200 ms
*ATT 30dB
Window
1 Window
ON OFF
2 Window Position
3 Window Width
5 Window Sweep
ON OFF
7 Marker Couple
ON OFF


REF 20.0 dBm
10dB/
DL 26.0 dB
A_View
Posi
B_Blank
Smpl
MKR 5.75790 GHz
26.00 dB
WINDOW WIDTH
56.04 MHz
CENTER 5.75550 GHz
SPAN 60.00 MHz
*RBW 300 kHz
*VBW 1 MHz
*SWP 200 ms
*ATT 30dB
Window
1 Window
ON OFF
2 Window Position
3 Window Width
5 Window Sweep
ON OFF
7 Marker Couple
ON OFF


REF 20.0 dBm
10dB/
DL 26.0 dB
A_Max
Posi
B_Blank
Smpl
MKR 5.79790 GHz
26.02 dB
WINDOW WIDTH
48.60 MHz
CENTER 5.80000 GHz
SPAN 60.00 MHz
*RBW 300 kHz
*VBW 1 MHz
*SWP 200 ms
*ATT 30dB
Window
1 Window
ON OFF
2 Window Position
3 Window Width
5 Window Sweep
ON OFF
7 Marker Couple
ON OFF