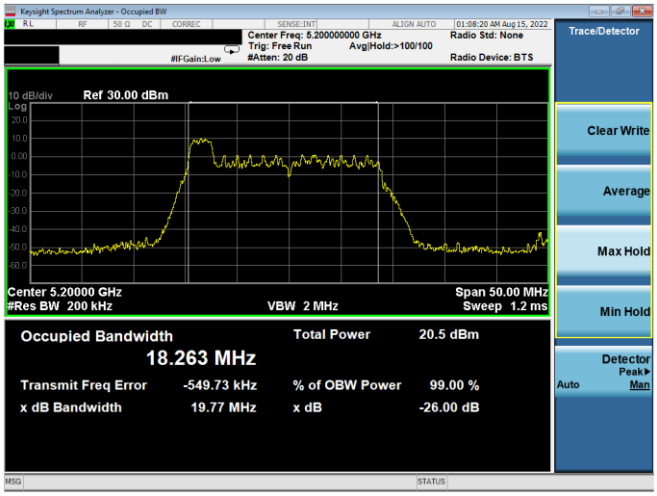
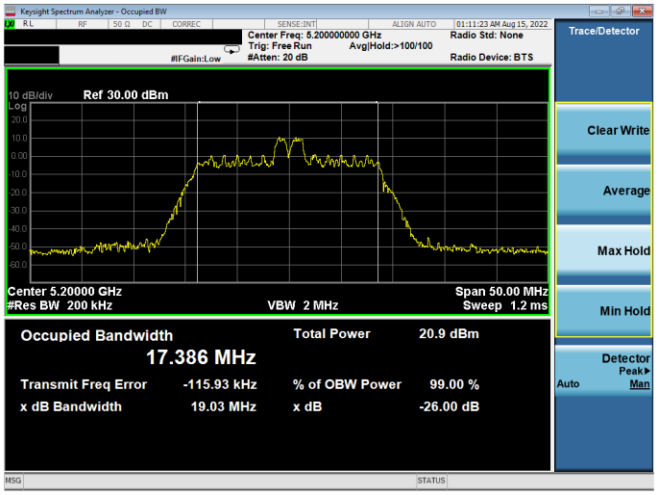
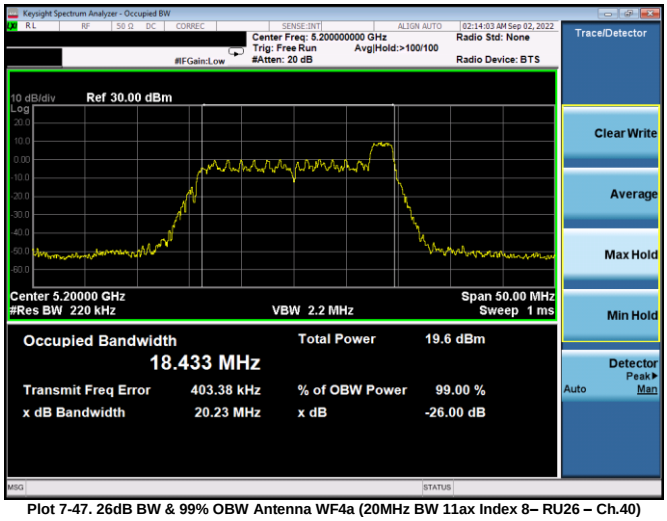


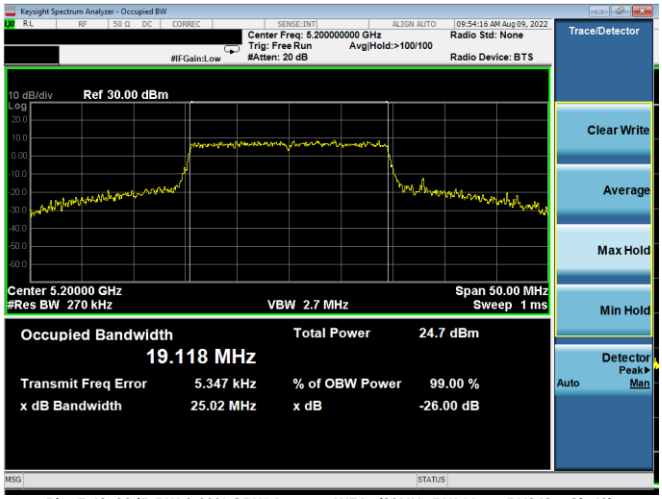
Plot 7-45. 26dB BW & 99% OBW Antenna WF4a (20MHz BW 11ax Index 0 – RU26 – Ch.40)



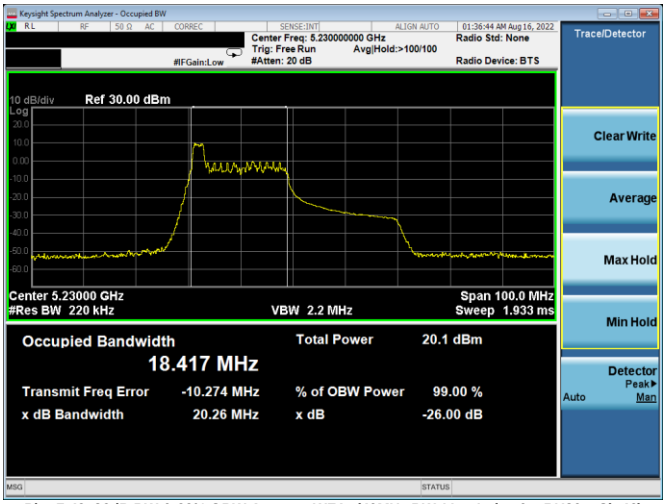
Plot 7-46. 26dB BW & 99% OBW Antenna WF4a (20MHz BW 11ax Index 4 – RU26 – Ch.40)



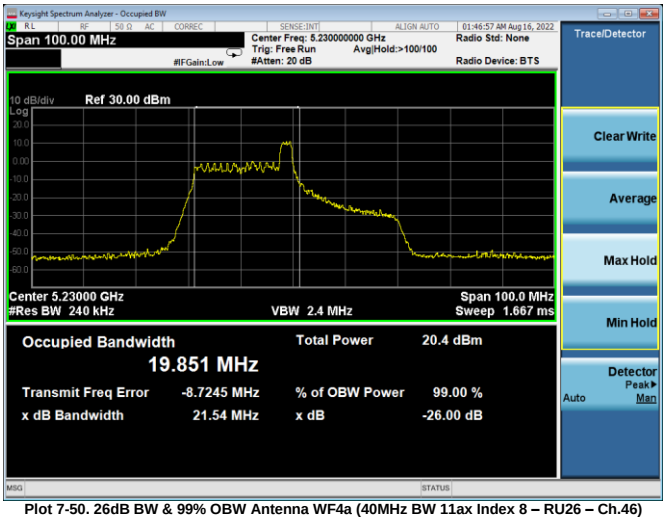
Plot 7-47. 26dB BW & 99% OBW Antenna WF4a (20MHz BW 11ax Index 8– RU26 – Ch.40)



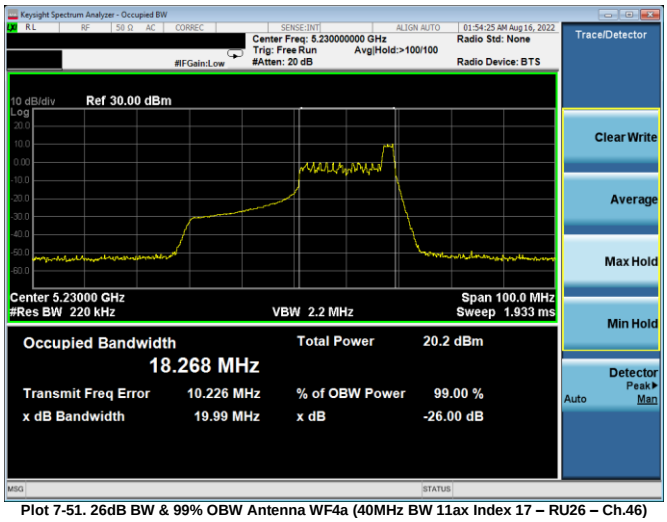
Plot 7-48. 26dB BW & 99% OBW Antenna WF4a (20MHz BW 11ax– RU242 – Ch.40)



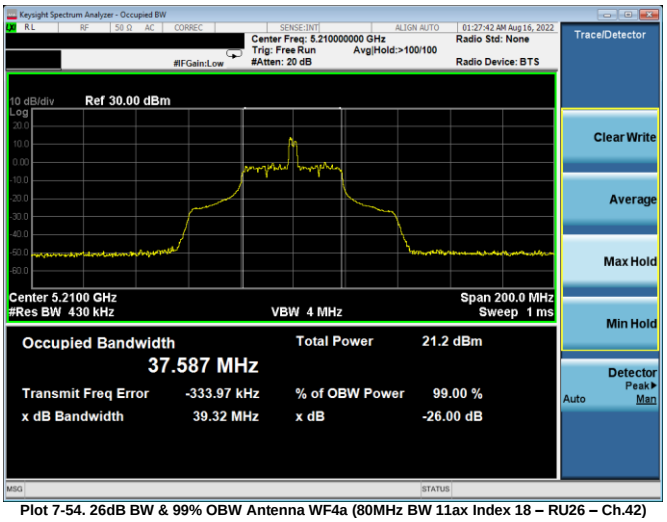
Plot 7-49. 26dB BW & 99% OBW Antenna WF4a (40MHz BW 11ax Index 0 – RU26 – Ch.46)



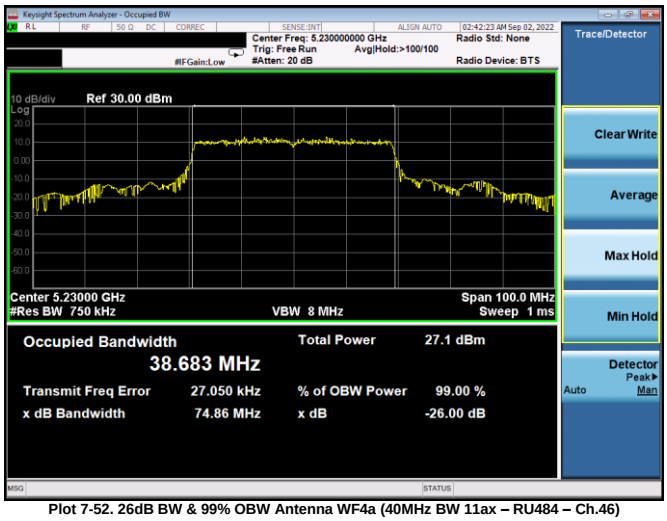
Plot 7-50. 26dB BW & 99% OBW Antenna WF4a (40MHz BW 11ax Index 8 – RU26 – Ch.46)



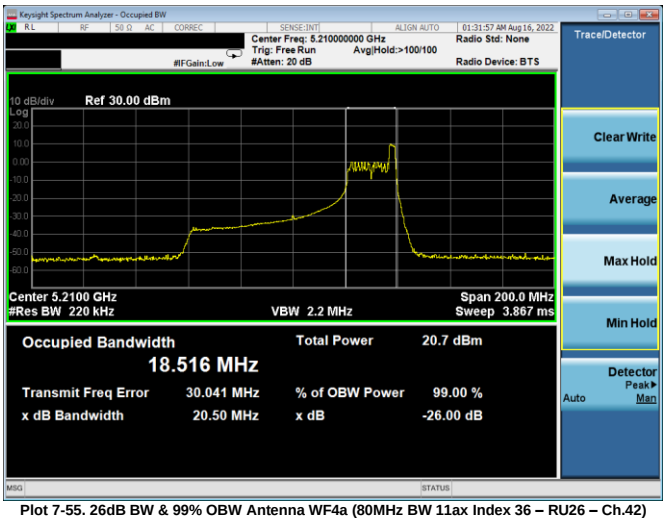
Plot 7-51. 26dB BW & 99% OBW Antenna WF4a (40MHz BW 11ax Index 17 – RU26 – Ch.46)



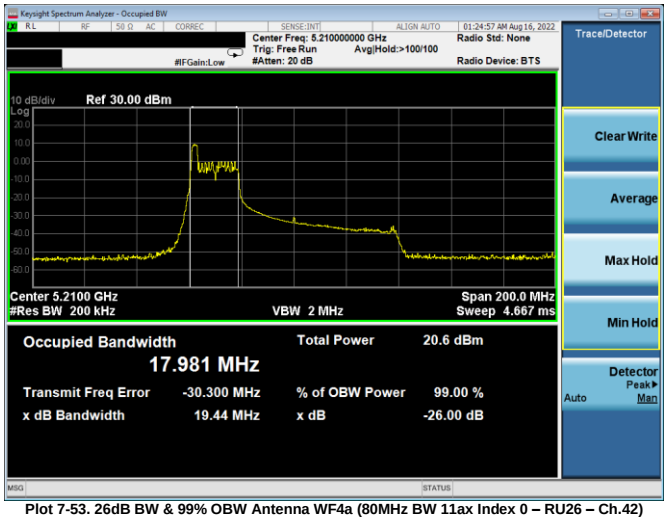
Plot 7-54. 26dB BW & 99% OBW Antenna WF4a (80MHz BW 11ax Index 18 – RU26 – Ch.42)



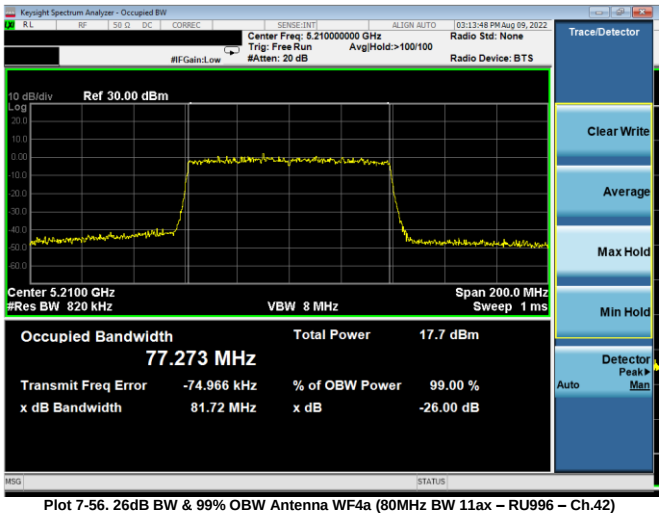
Plot 7-52. 26dB BW & 99% OBW Antenna WF4a (40MHz BW 11ax – RU484 – Ch.46)



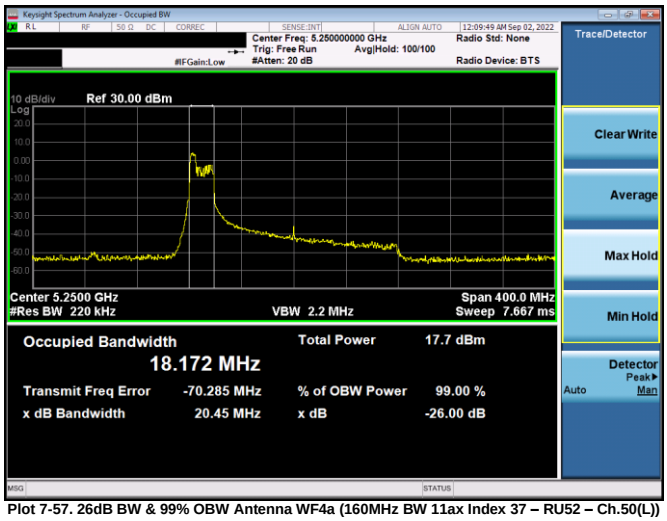
Plot 7-55. 26dB BW & 99% OBW Antenna WF4a (80MHz BW 11ax Index 36 – RU26 – Ch.42)



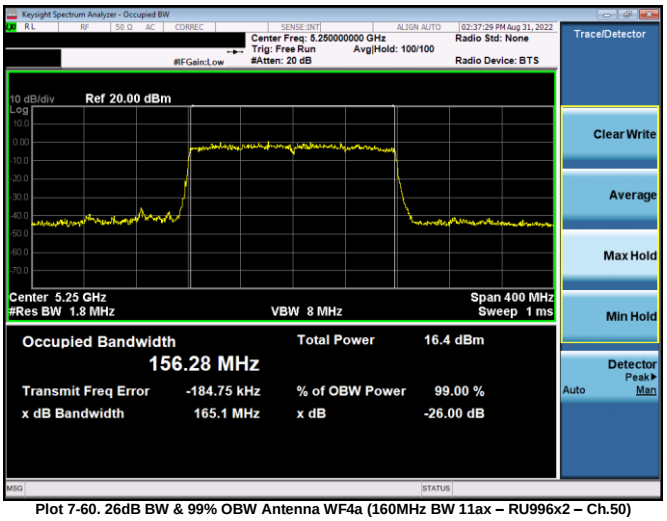
Plot 7-53. 26dB BW & 99% OBW Antenna WF4a (80MHz BW 11ax Index 0 – RU26 – Ch.42)



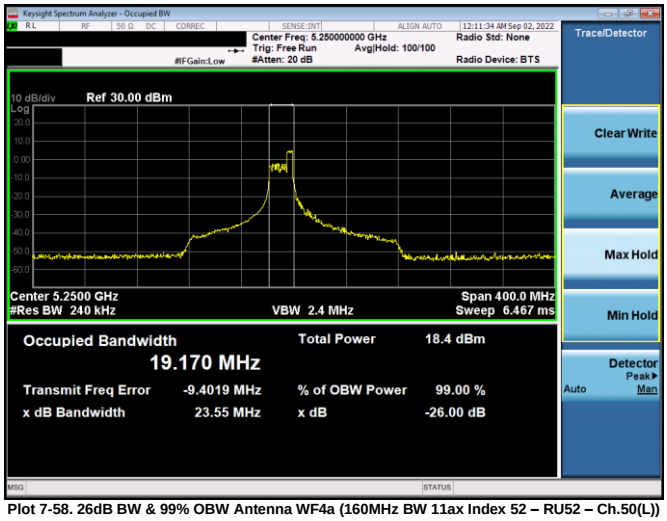
Plot 7-56. 26dB BW & 99% OBW Antenna WF4a (80MHz BW 11ax – RU996 – Ch.42)



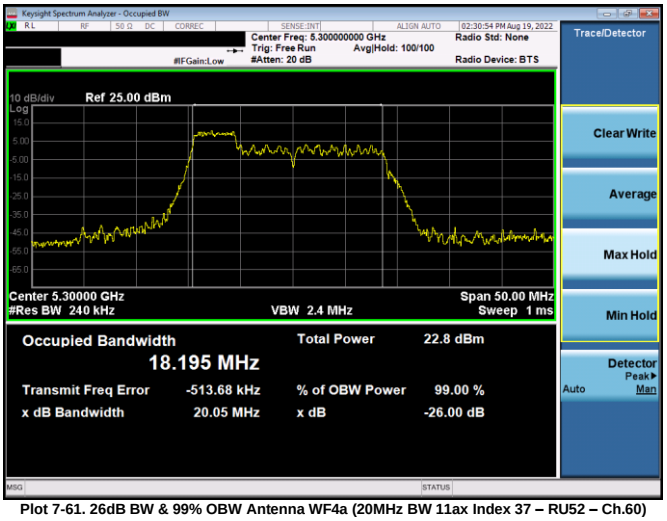
Plot 7-57. 26dB BW & 99% OBW Antenna WF4a (160MHz BW 11ax Index 37 – RU52 – Ch.50(L))



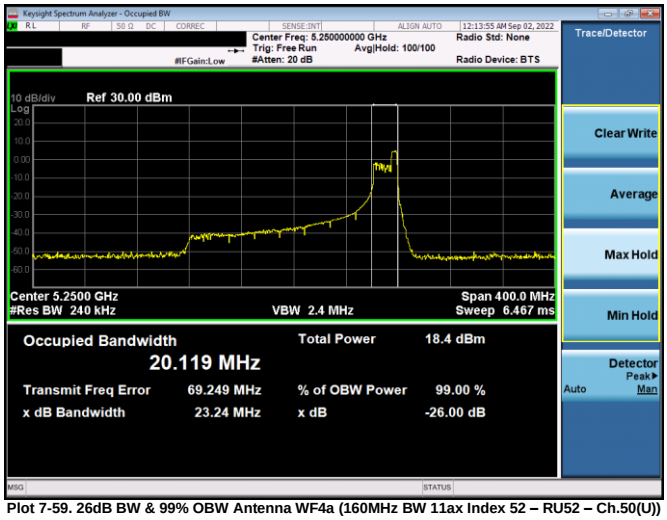
Plot 7-60. 26dB BW & 99% OBW Antenna WF4a (160MHz BW 11ax – RU996x2 – Ch.50)



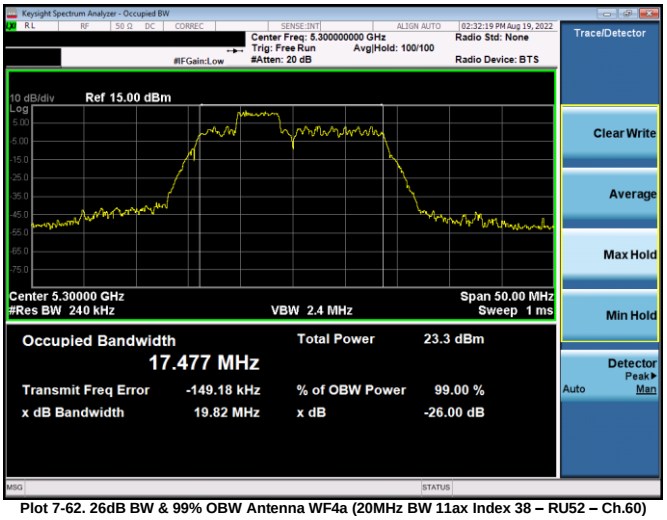
Plot 7-58. 26dB BW & 99% OBW Antenna WF4a (160MHz BW 11ax Index 52 – RU52 – Ch.50(L))



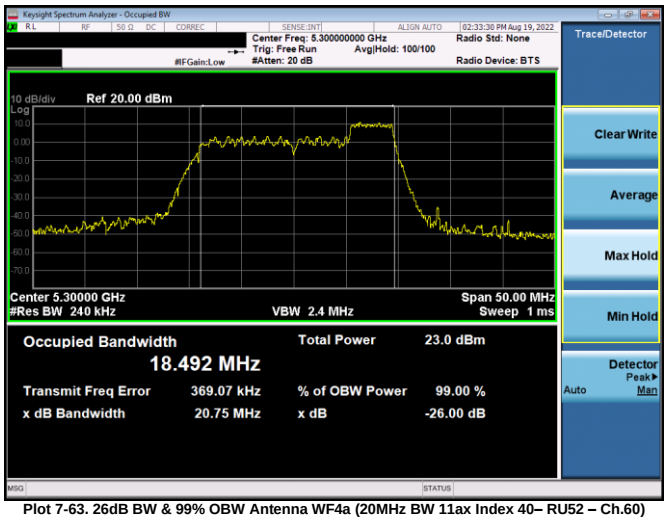
Plot 7-61. 26dB BW & 99% OBW Antenna WF4a (20MHz BW 11ax Index 37 – RU52 – Ch.60)



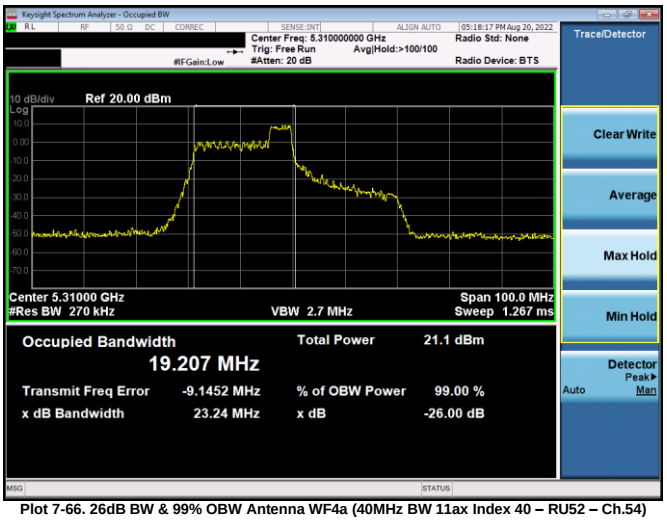
Plot 7-59. 26dB BW & 99% OBW Antenna WF4a (160MHz BW 11ax Index 52 – RU52 – Ch.50(U))



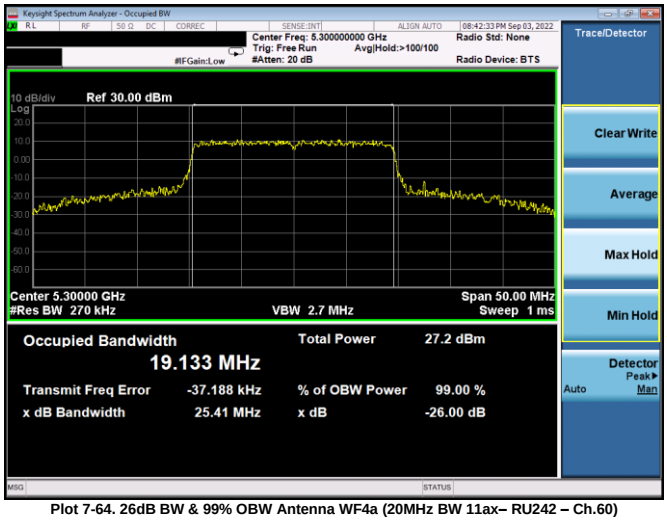
Plot 7-62. 26dB BW & 99% OBW Antenna WF4a (20MHz BW 11ax Index 38 – RU52 – Ch.60)



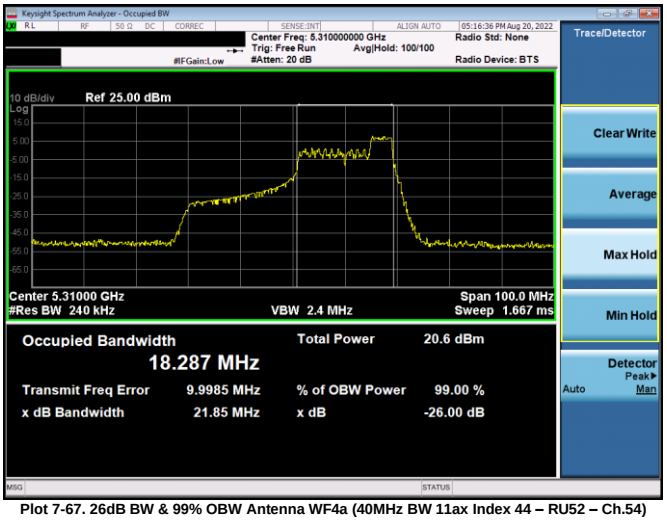
Plot 7-63. 26dB BW & 99% OBW Antenna WF4a (20MHz BW 11ax Index 40– RU52 – Ch.60)



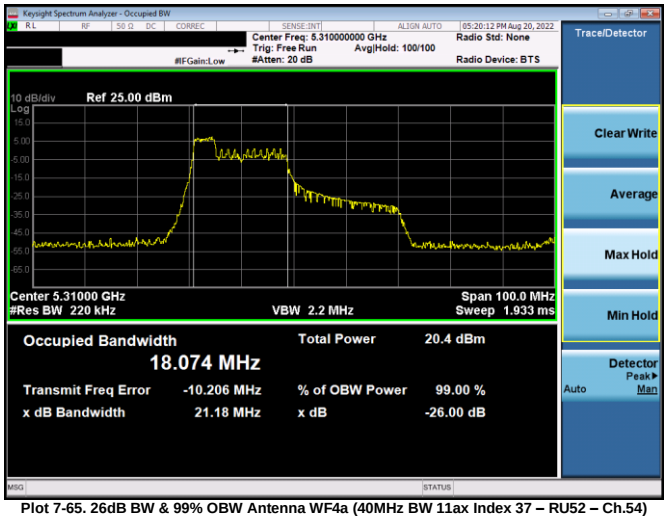
Plot 7-66. 26dB BW & 99% OBW Antenna WF4a (40MHz BW 11ax Index 40 – RU52 – Ch.54)



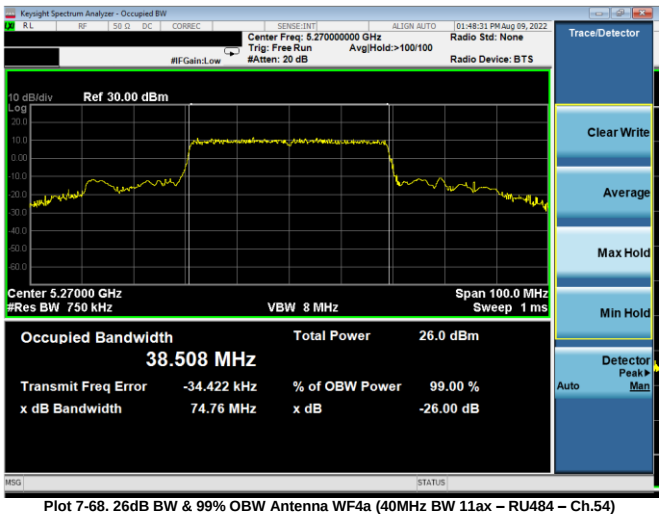
Plot 7-64. 26dB BW & 99% OBW Antenna WF4a (20MHz BW 11ax– RU242 – Ch.60)



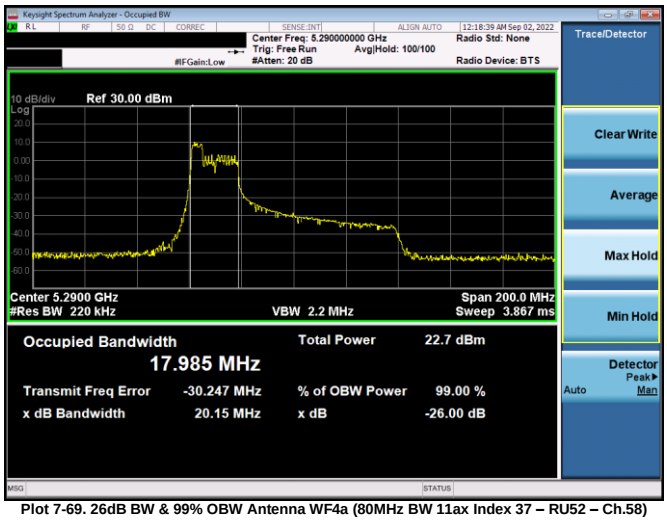
Plot 7-67. 26dB BW & 99% OBW Antenna WF4a (40MHz BW 11ax Index 44 – RU52 – Ch.54)



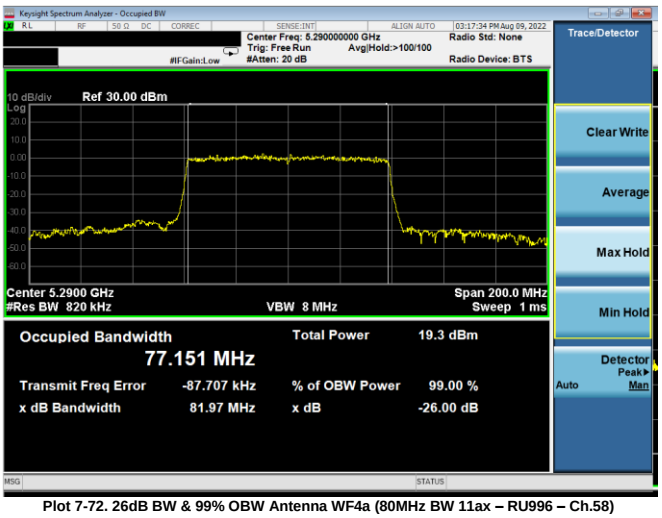
Plot 7-65. 26dB BW & 99% OBW Antenna WF4a (40MHz BW 11ax Index 37 – RU52 – Ch.54)



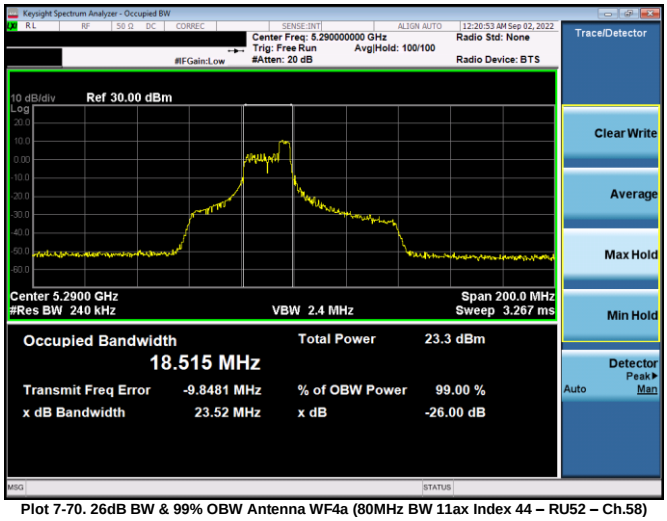
Plot 7-68. 26dB BW & 99% OBW Antenna WF4a (40MHz BW 11ax – RU484 – Ch.54)



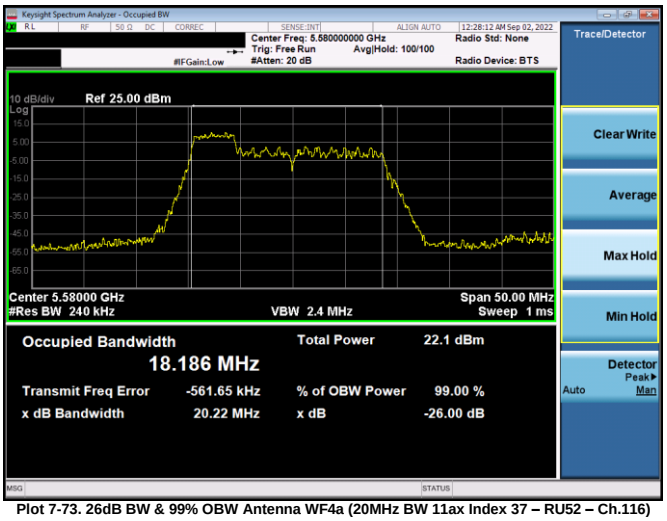
Plot 7-69. 26dB BW & 99% OBW Antenna WF4a (80MHz BW 11ax Index 37 – RU52 – Ch.58)



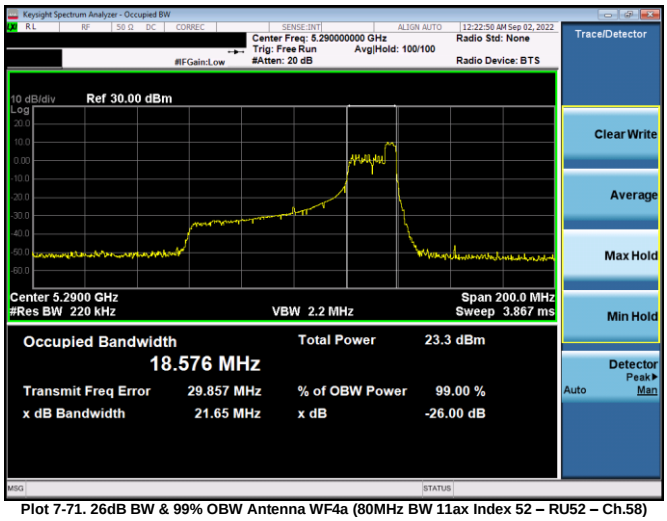
Plot 7-72. 26dB BW & 99% OBW Antenna WF4a (80MHz BW 11ax – RU996 – Ch.58)



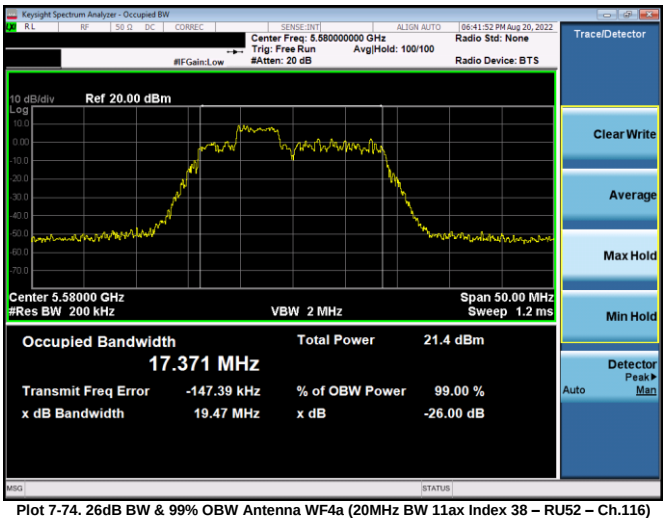
Plot 7-70. 26dB BW & 99% OBW Antenna WF4a (80MHz BW 11ax Index 44 – RU52 – Ch.58)



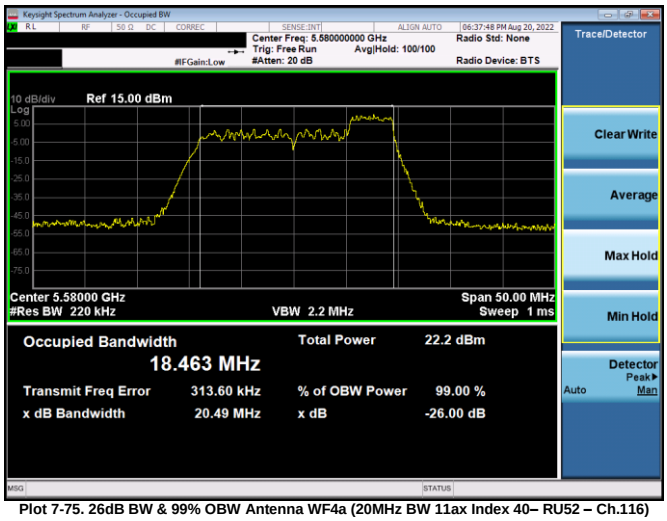
Plot 7-73. 26dB BW & 99% OBW Antenna WF4a (20MHz BW 11ax Index 37 – RU52 – Ch.116)



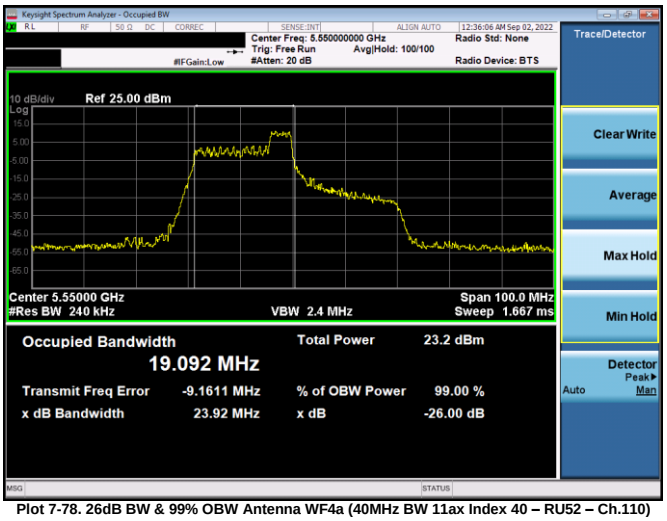
Plot 7-71. 26dB BW & 99% OBW Antenna WF4a (80MHz BW 11ax Index 52 – RU52 – Ch.58)



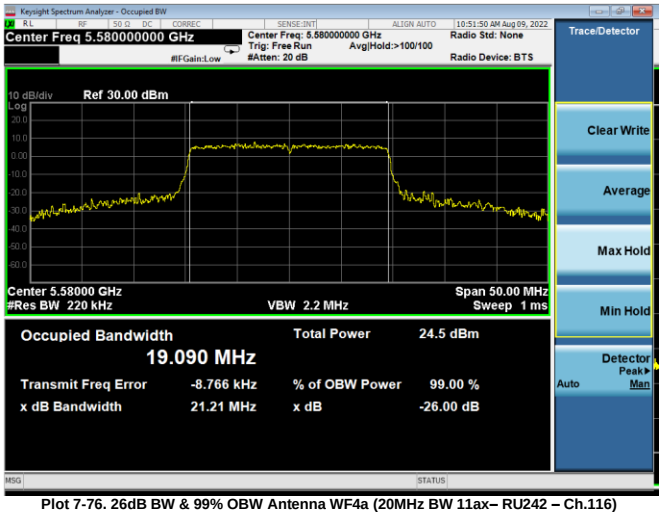
Plot 7-74. 26dB BW & 99% OBW Antenna WF4a (20MHz BW 11ax Index 38 – RU52 – Ch.116)



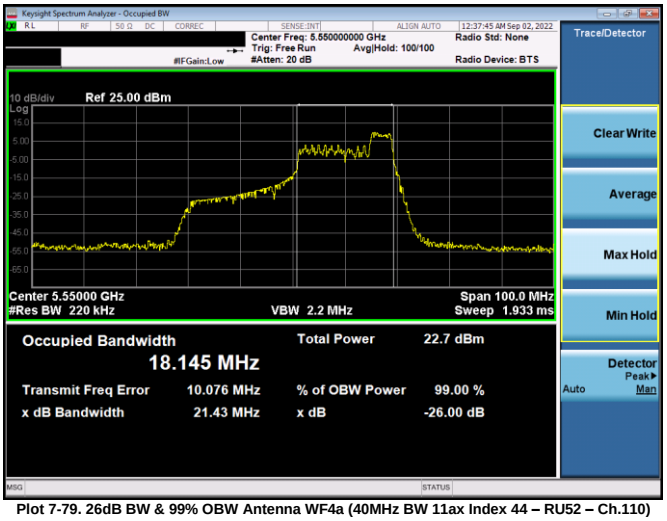
Plot 7-75. 26dB BW & 99% OBW Antenna WF4a (20MHz BW 11ax Index 40– RU52 – Ch.116)



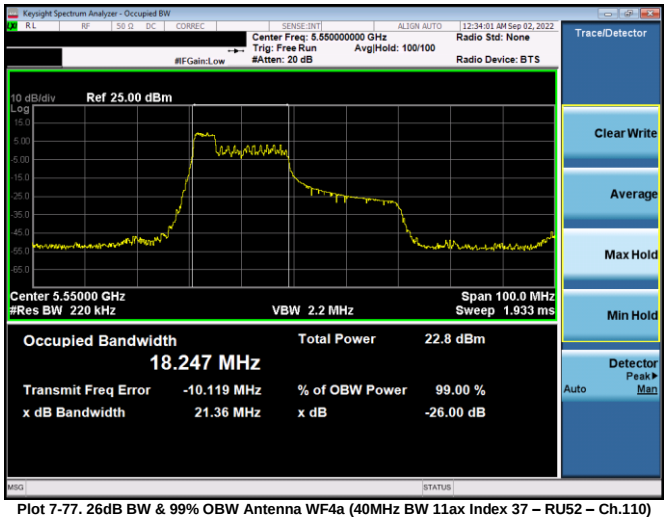
Plot 7-78. 26dB BW & 99% OBW Antenna WF4a (40MHz BW 11ax Index 40 – RU52 – Ch.110)



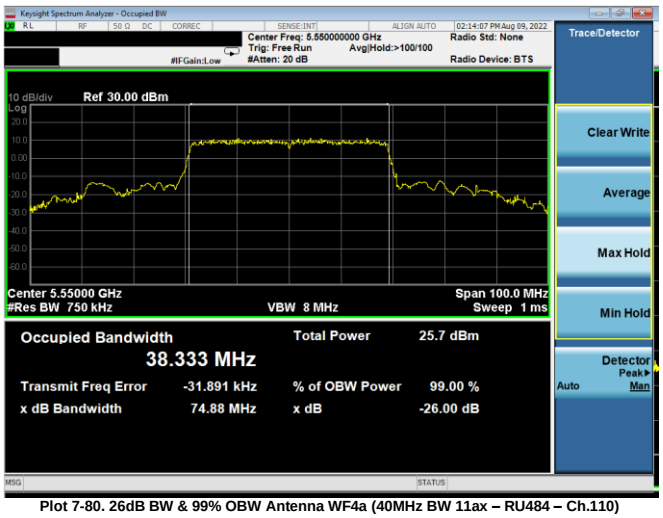
Plot 7-76. 26dB BW & 99% OBW Antenna WF4a (20MHz BW 11ax– RU242 – Ch.116)



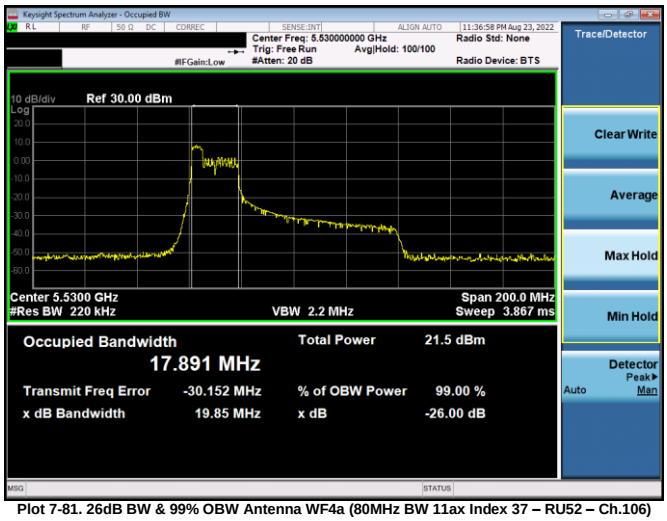
Plot 7-79. 26dB BW & 99% OBW Antenna WF4a (40MHz BW 11ax Index 44 – RU52 – Ch.110)



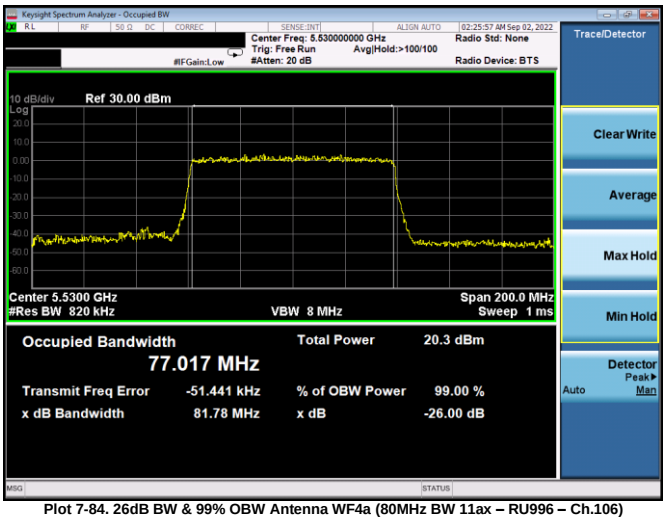
Plot 7-77. 26dB BW & 99% OBW Antenna WF4a (40MHz BW 11ax Index 37 – RU52 – Ch.110)



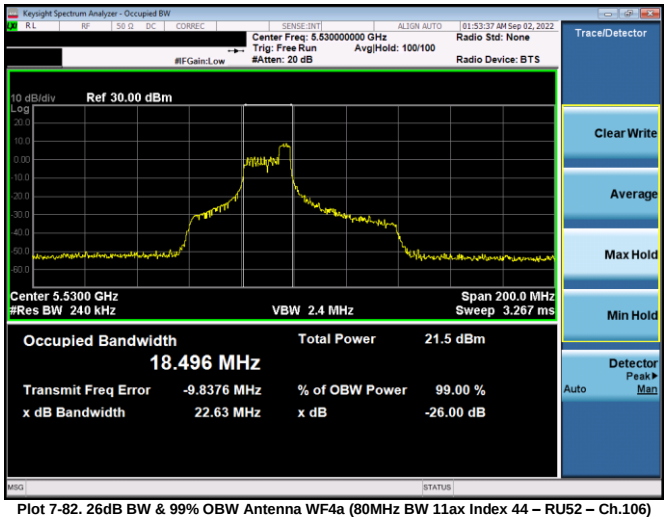
Plot 7-80. 26dB BW & 99% OBW Antenna WF4a (40MHz BW 11ax – RU484 – Ch.110)



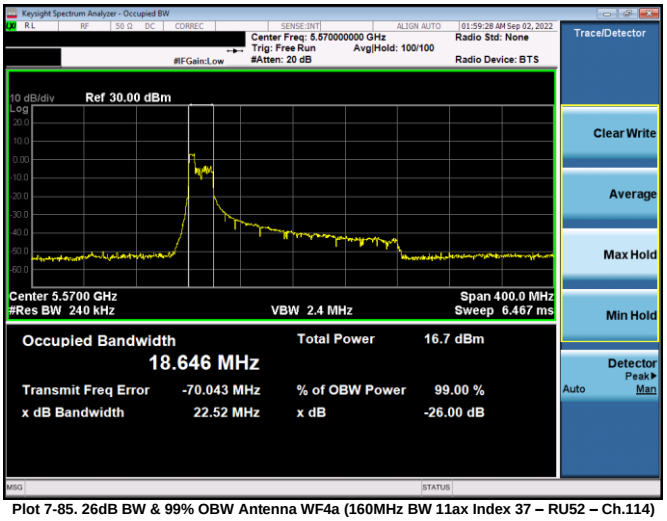
Plot 7-81. 26dB BW & 99% OBW Antenna WF4a (80MHz BW 11ax Index 37 – RU52 – Ch.106)



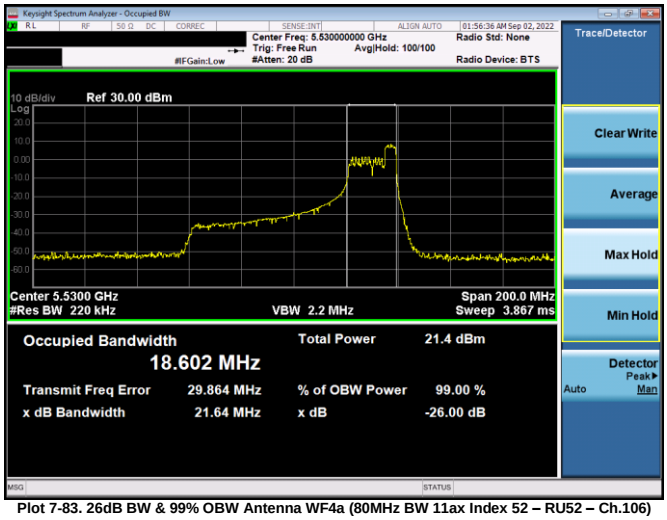
Plot 7-84. 26dB BW & 99% OBW Antenna WF4a (80MHz BW 11ax – RU996 – Ch.106)



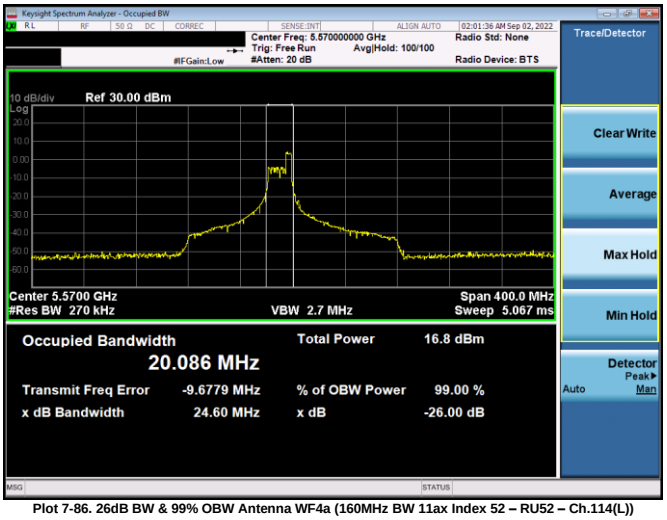
Plot 7-82. 26dB BW & 99% OBW Antenna WF4a (80MHz BW 11ax Index 44 – RU52 – Ch.106)



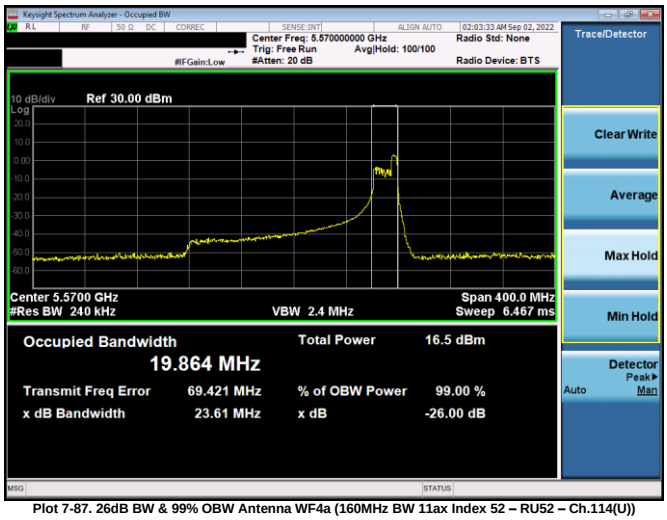
Plot 7-85. 26dB BW & 99% OBW Antenna WF4a (160MHz BW 11ax Index 37 – RU52 – Ch.114)



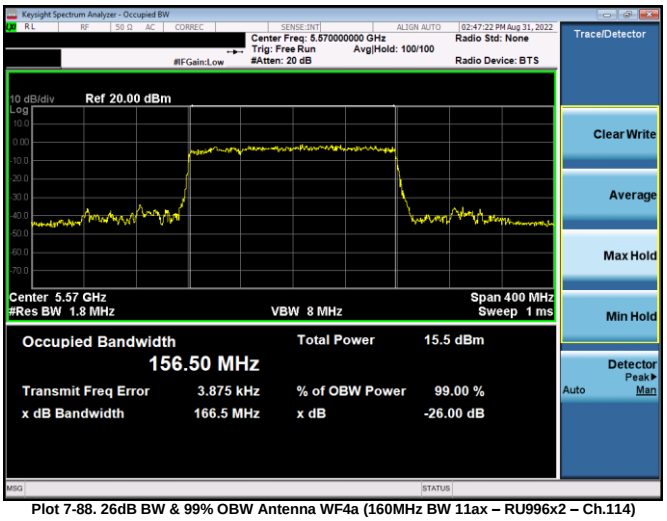
Plot 7-83. 26dB BW & 99% OBW Antenna WF4a (80MHz BW 11ax Index 52 – RU52 – Ch.106)



Plot 7-86. 26dB BW & 99% OBW Antenna WF4a (160MHz BW 11ax Index 52 – RU52 – Ch.114(L))



Plot 7-87. 26dB BW & 99% OBW Antenna WF4a (160MHz BW 11ax Index 52 – RU52 – Ch.114(U))



Plot 7-88. 26dB BW & 99% OBW Antenna WF4a (160MHz BW 11ax – RU996x2 – Ch.114)

7.3 6dB & 99% Bandwidth Measurement – 802.11ax OFDMA

§2.1049; §15.407 (e); RSS-Gen [6.7]

Test Overview and Limit

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 6dB bandwidth.

In the 5.725 – 5.850GHz band, the 6dB bandwidth must be ≥ 500 kHz.

Test Procedure Used

ANSI C63.10-2013 – Subclause 6.9.2
KDB 789033 D02 v02r01 – Section C

Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 100 kHz
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

Figure 7-2. Test Instrument & Measurement Setup

Test Notes

1. All antenna configurations were investigated and only the worst case is reported
2. All RU's were investigated and only worst case partially-loaded and fully-loaded RU's were reported.
3. Low, mid, and high channels were tested and tabular data has been reported. Only mid channel bandwidth plots have been reported.

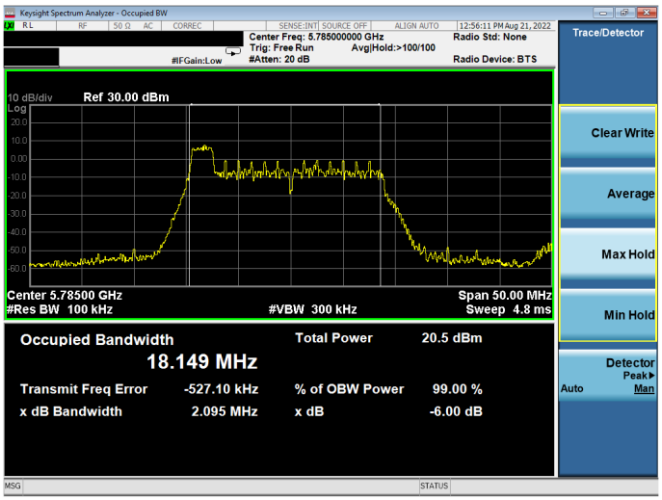
Antenna WF5b 6dB & 99% Bandwidth Measurements

	Frequency [MHz]	Channel No.	802.11 Mode	RU Size	RU Index	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 6dB Bandwidth [MHz]	Minimum 6dB Bandwidth [MHz]	Pass / Fail
Band 3	5745	149	ax (20MHz)	26	0	12.5/14.7 (MCS11)	18.15	2.09	0.50	Pass
				26	4	12.5/14.7 (MCS11)	17.27	2.72	0.50	Pass
				26	8	12.5/14.7 (MCS11)	18.35	2.12	0.50	Pass
	5785	157	ax (20MHz)	26	0	12.5/14.7 (MCS11)	18.15	2.10	0.50	Pass
				26	4	12.5/14.7 (MCS11)	17.28	2.71	0.50	Pass
				26	8	12.5/14.7 (MCS11)	18.35	2.08	0.50	Pass
	5825	165	ax (20MHz)	26	0	12.5/14.7 (MCS11)	18.15	2.09	0.50	Pass
				26	4	12.5/14.7 (MCS11)	17.29	2.71	0.50	Pass
				26	8	12.5/14.7 (MCS11)	18.33	2.10	0.50	Pass
	5755	151	ax (40MHz)	26	0	12.5/14.7 (MCS11)	17.93	2.13	0.50	Pass
				26	8	12.5/14.7 (MCS11)	18.83	2.12	0.50	Pass
				26	17	12.5/14.7 (MCS11)	17.96	2.13	0.50	Pass
	5795	159	ax (40MHz)	26	0	12.5/14.7 (MCS11)	17.99	2.18	0.50	Pass
				26	8	12.5/14.7 (MCS11)	18.95	2.15	0.50	Pass
				26	17	12.5/14.7 (MCS11)	17.98	2.09	0.50	Pass
	5775	155	ax (80MHz)	26	0	12.5/14.7 (MCS11)	17.75	2.21	0.50	Pass
				26	18	12.5/14.7 (MCS11)	36.71	2.85	0.50	Pass
				26	36	12.5/14.7 (MCS11)	17.98	2.30	0.50	Pass

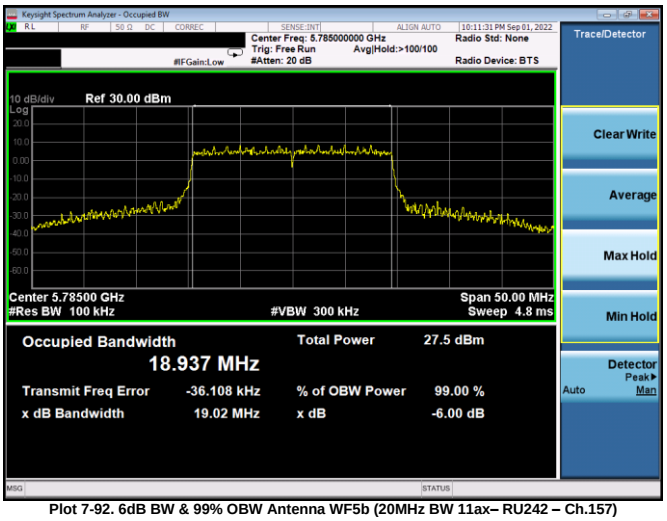
Table 7-8. Conducted Bandwidth Measurements Antenna WF5b (RU26)

	Frequency [MHz]	Channel No.	802.11 Mode	RU Size	RU Index	Data Rate [Mbps]	Measured 99% Occupied Bandwidth [MHz]	Measured 6dB Bandwidth [MHz]	Minimum 6dB Bandwidth [MHz]	Pass / Fail
Band 3	5745	149	ax (20MHz)	242	61	121.9/143.4 (MCS11)	19.01	19.06	0.50	Pass
	5785	157	ax (20MHz)	242	61	121.9/143.4 (MCS11)	18.94	19.02	0.50	Pass
	5825	165	ax (20MHz)	242	61	121.9/143.4 (MCS11)	19.01	19.11	0.50	Pass
	5755	151	ax (40MHz)	484	65	243.8/286.8 (MCS11)	37.90	38.14	0.50	Pass
	5795	159	ax (40MHz)	484	65	243.8/286.8 (MCS11)	38.20	38.36	0.50	Pass
	5775	155	ax (80MHz)	996	67	510.4/600.5 (MCS11)	77.35	78.01	0.50	Pass

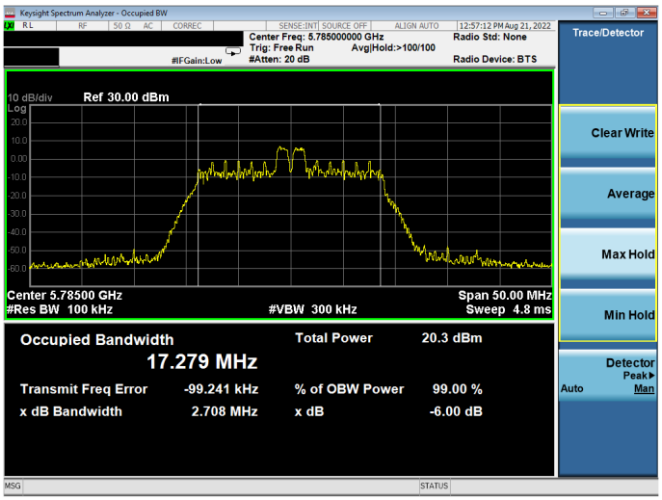
Table 7-9. Conducted Bandwidth Measurements Antenna WF5b (Fully- loaded RU)



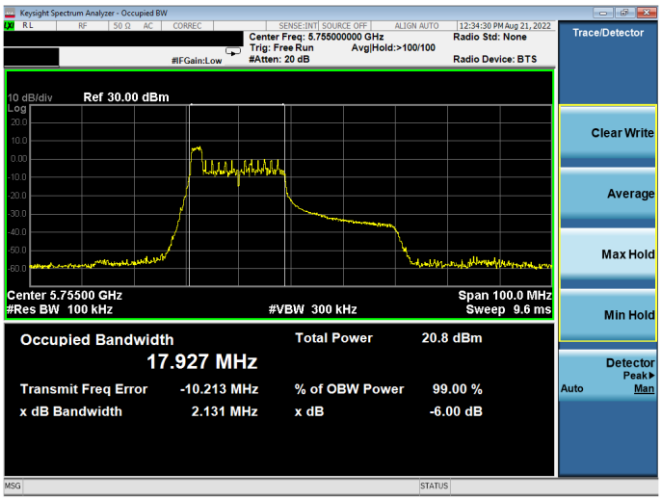
Plot 7-89. 6dB BW & 99% OBW Antenna WF5b (20MHz BW 11ax Index 0 – RU26 – Ch.157)



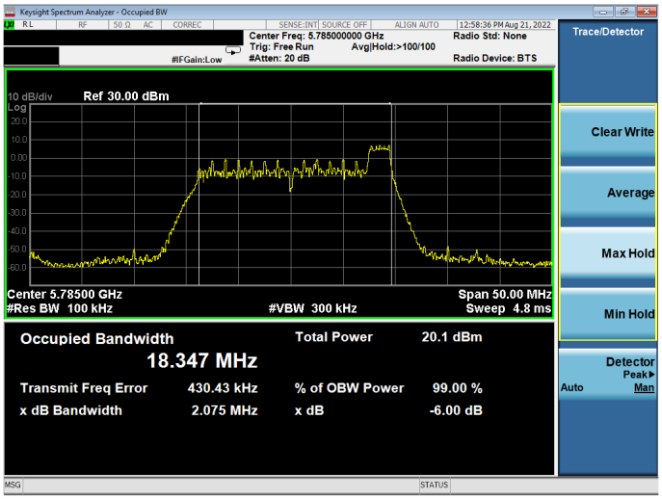
Plot 7-92. 6dB BW & 99% OBW Antenna WF5b (20MHz BW 11ax– RU242 – Ch.157)



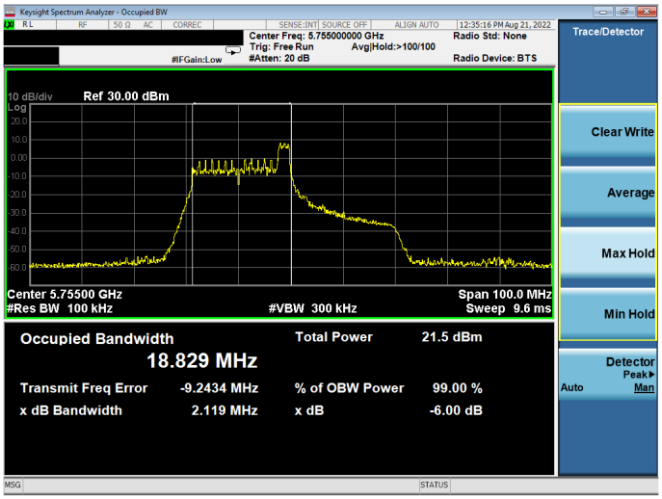
Plot 7-90. 6dB BW & 99% OBW Antenna WF5b (20MHz BW 11ax Index 4 – RU26 – Ch.157)



Plot 7-93. 6dB BW & 99% OBW Antenna WF5b (40MHz BW 11ax Index 0 – RU26 – Ch.151)



Plot 7-91. 6dB BW & 99% OBW Antenna WF5b (20MHz BW 11ax Index 8– RU26 – Ch.157)



Plot 7-94. 6dB BW & 99% OBW Antenna WF5b (40MHz BW 11ax Index 8 – RU26 – Ch.151)