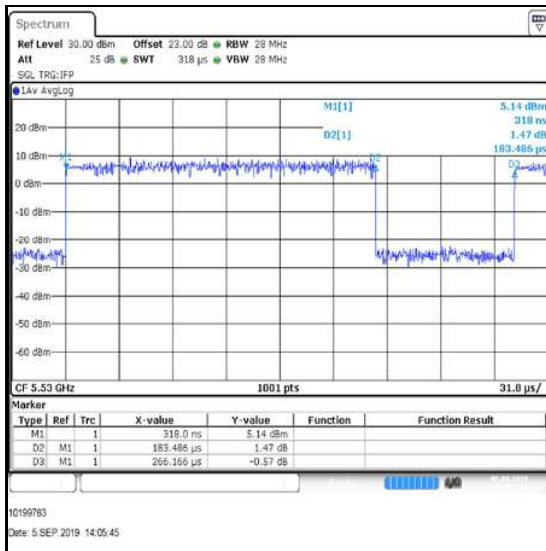


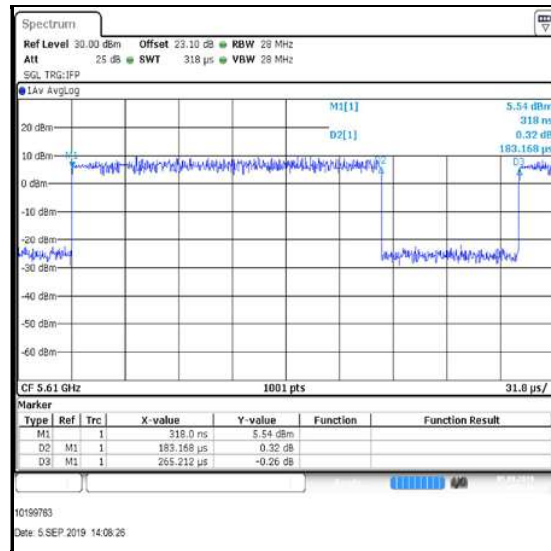
**Transmitter Duty Cycle (continued)**

**Results: 802.11ac / 80 MHz / SISO / QPSK / MCS1x1 / Port 1**

Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5530	0.1835	0.2662	1.6
Top	5610	0.1832	0.2652	1.6



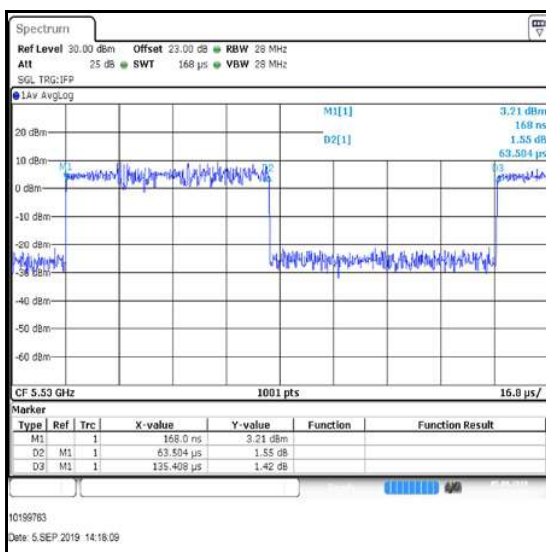
Bottom Channel



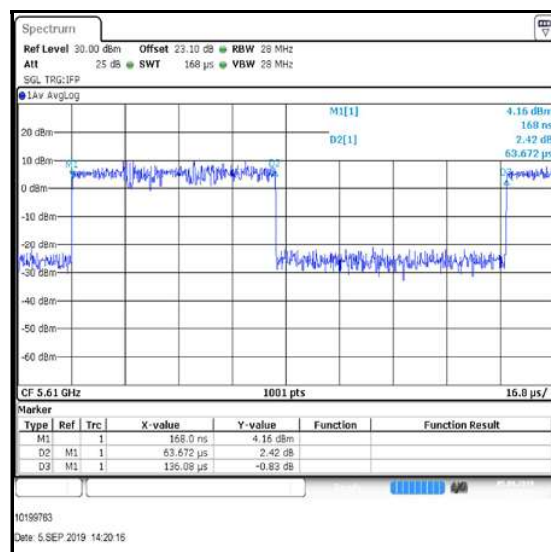
Top Channel

**Results: 802.11ac / 80 MHz / SISO / 256-QAM / MCS8x1 / Port 1**

Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5530	0.0635	0.1354	3.3
Top	5610	0.0637	0.1361	3.3



Bottom Channel

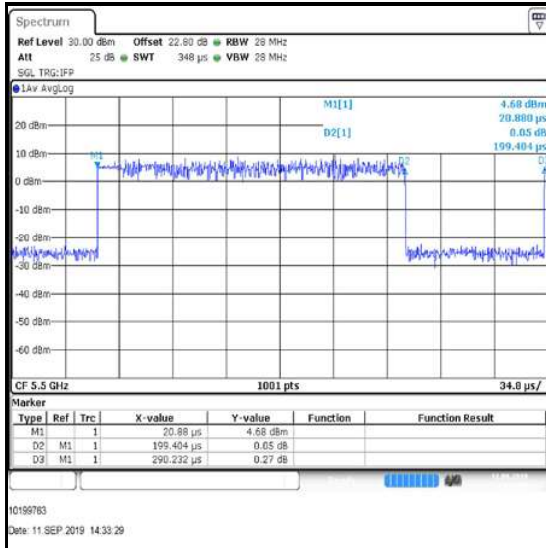


Top Channel

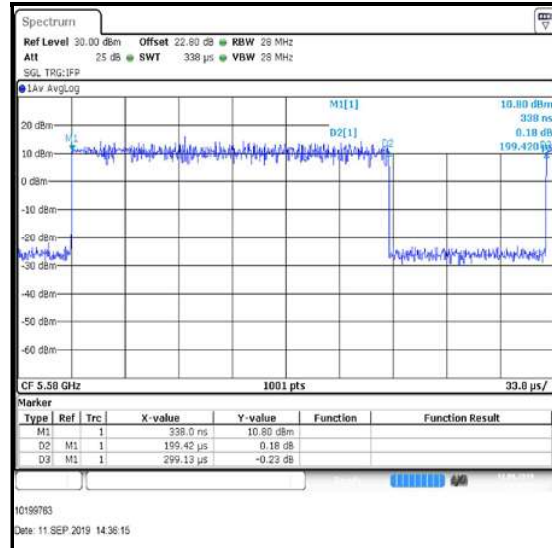
**Transmitter Duty Cycle (continued)**

**Results: 802.11a / 20 MHz / MIMO / 2Tx CDD / 64-QAM / 48 Mbps / Port 1**

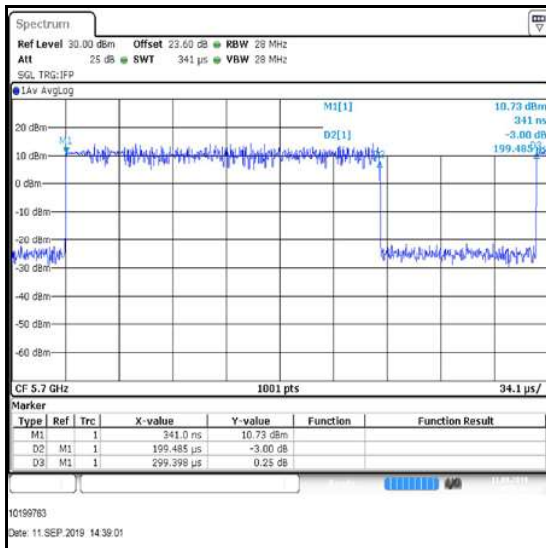
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5500	0.1994	0.2902	1.6
Middle	5580	0.1994	0.2991	1.8
Top	5700	0.1995	0.2994	1.8



**Bottom Channel**



**Middle Channel**

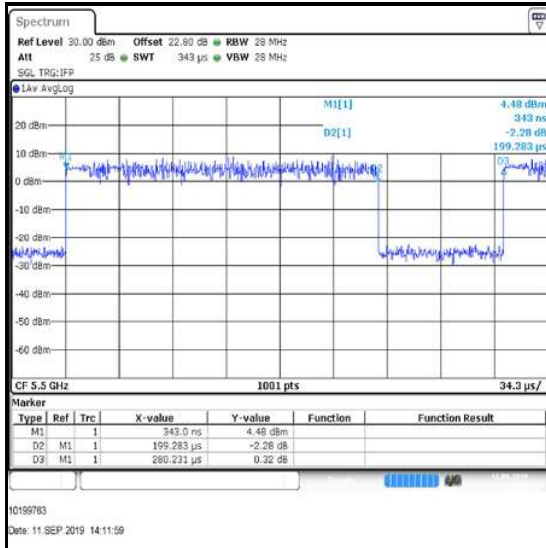


**Top Channel**

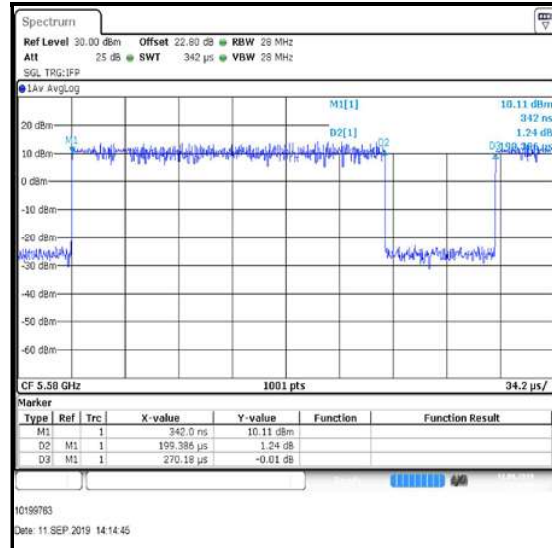
**Transmitter Duty Cycle (continued)**

**Results: 802.11a / 20 MHz / MIMO / 2Tx CDD / 64-QAM / 54 Mbps / Port 1**

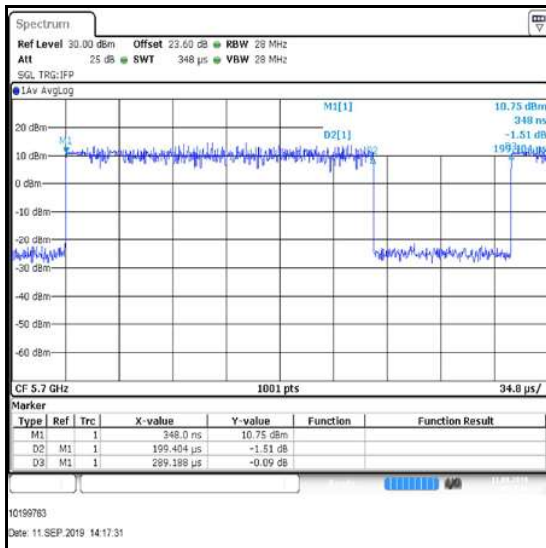
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5500	0.1993	0.2802	1.5
Middle	5580	0.1994	0.2702	1.3
Top	5700	0.1994	0.2892	1.6



**Bottom Channel**



**Middle Channel**

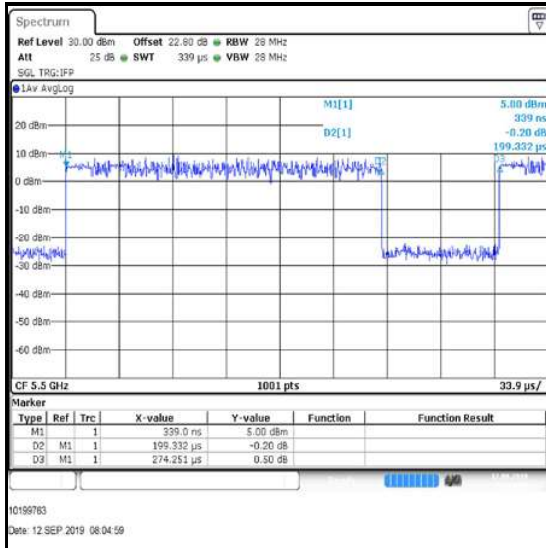


**Top Channel**

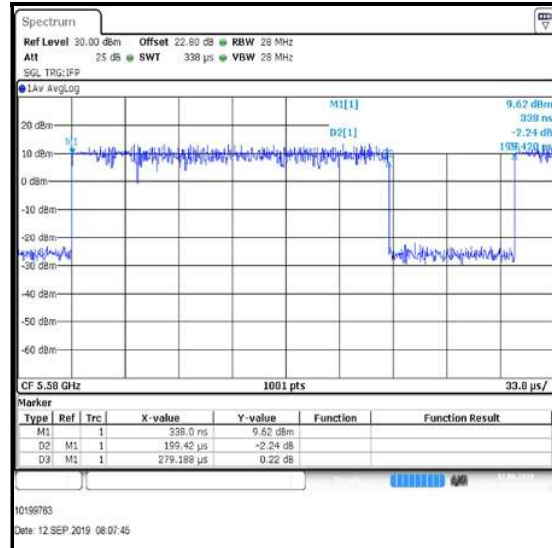
**Transmitter Duty Cycle (continued)**

**Results: 802.11n / 20 MHz / MIMO / 2Tx CDD / BPSK / MCS0 / Port 1**

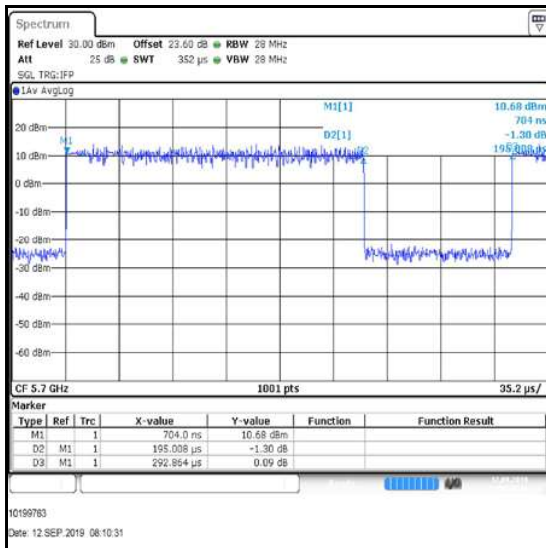
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5500	0.1993	0.2743	1.4
Middle	5580	0.1994	0.2792	1.5
Top	5700	0.1950	0.2929	1.8



**Bottom Channel**



**Middle Channel**

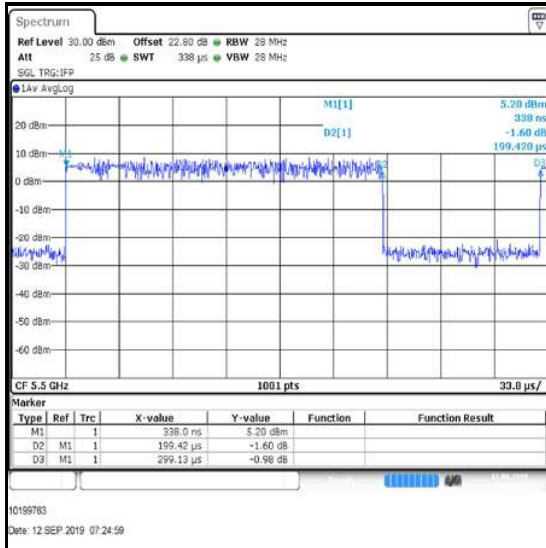


**Top Channel**

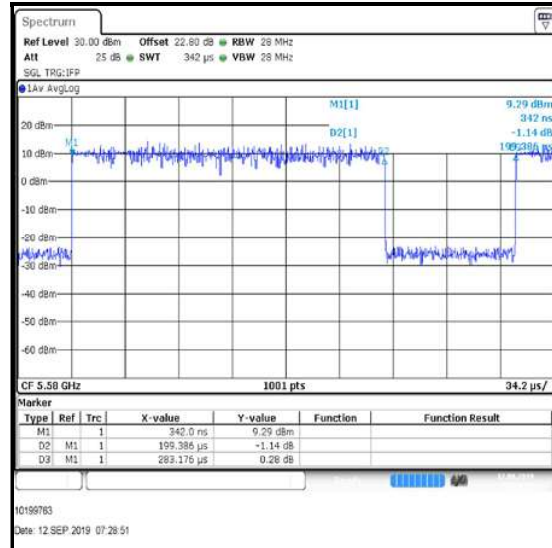
**Transmitter Duty Cycle (continued)**

**Results: 802.11n / 20 MHz / MIMO / 2Tx CDD / 16-QAM / MCS4 / Port 1**

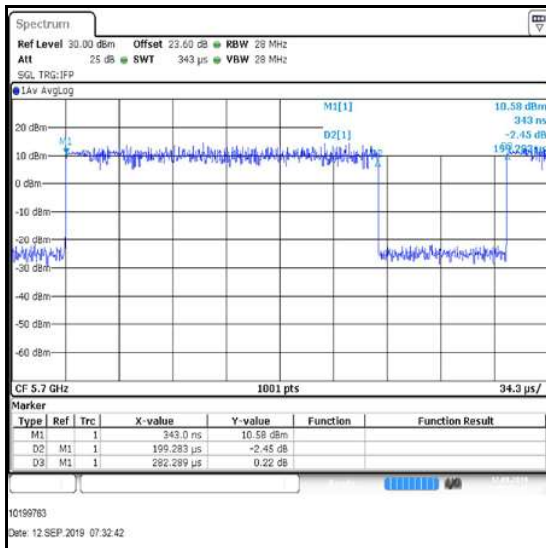
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5500	0.1994	0.2991	1.8
Middle	5580	0.1994	0.2832	1.5
Top	5700	0.1993	0.2823	1.5



**Bottom Channel**



**Middle Channel**

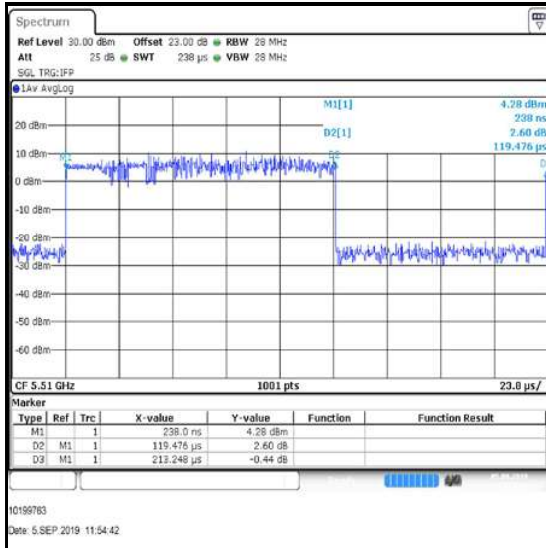


**Top Channel**

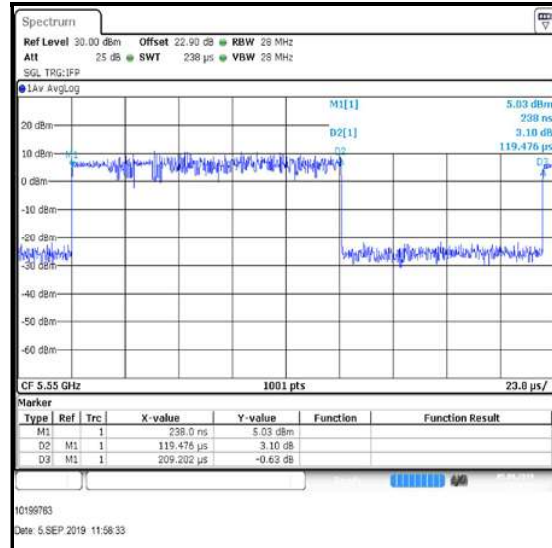
**Transmitter Duty Cycle (continued)**

**Results: 802.11n / 40 MHz / MIMO / 2Tx CDD / 64-QAM / MCS7 / Port 1**

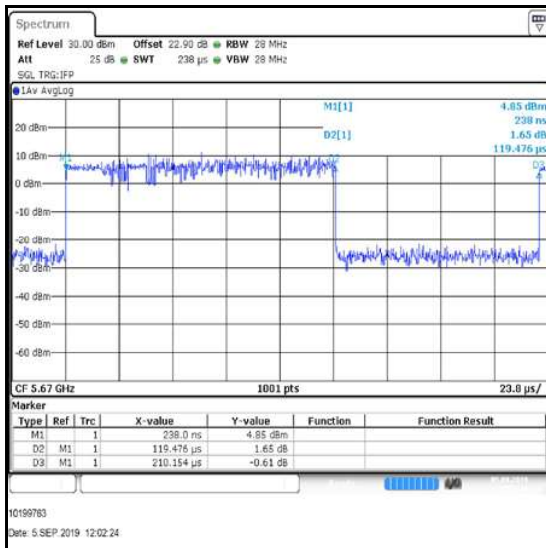
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5510	0.1195	0.2132	2.5
Middle	5550	0.1195	0.2092	2.4
Top	5670	0.1195	0.2102	2.5



**Bottom Channel**



**Middle Channel**

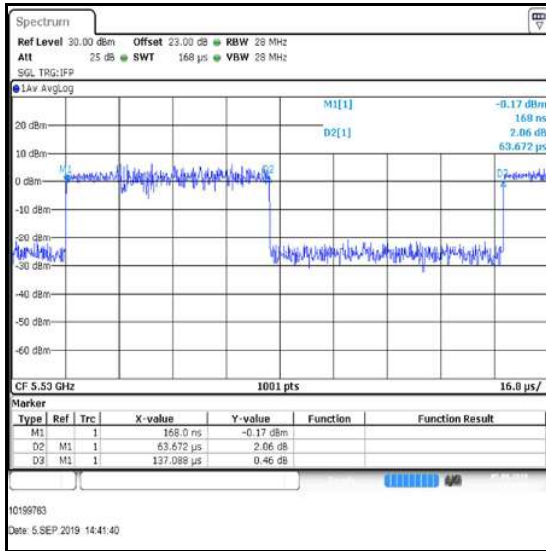


**Top Channel**

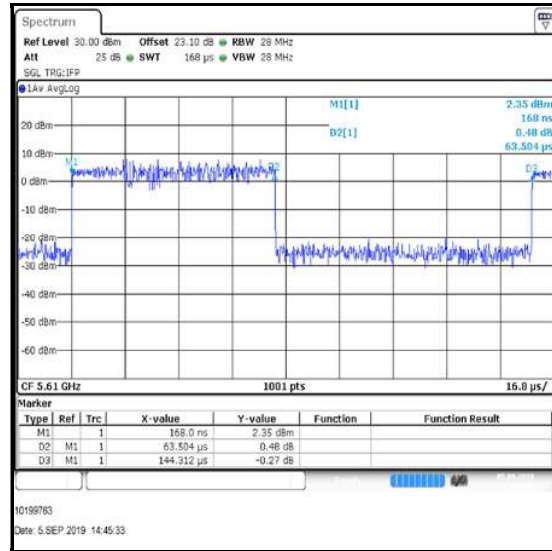
**Transmitter Duty Cycle (continued)**

**Results: 802.11ac / 80 MHz / MIMO / 2Tx CDD / 64-QAM / MCS5x1 / Port 1**

Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5530	0.0637	0.1371	3.3
Top	5610	0.0635	0.1443	3.6



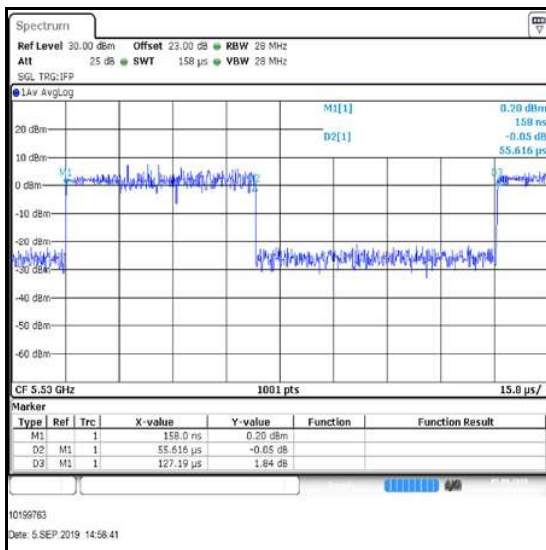
Bottom Channel



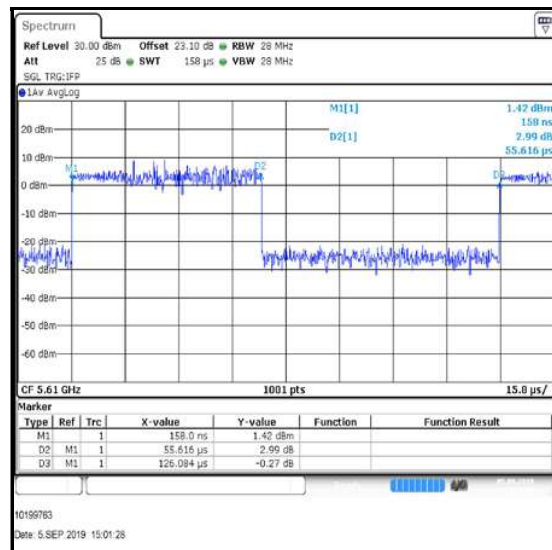
Top Channel

**Results: 802.11ac / 80 MHz / MIMO / 2Tx CDD / 256-QAM / MCS9x1 / Port 1**

Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5530	0.0556	0.1272	3.6
Top	5610	0.0556	0.1261	3.6



Bottom Channel



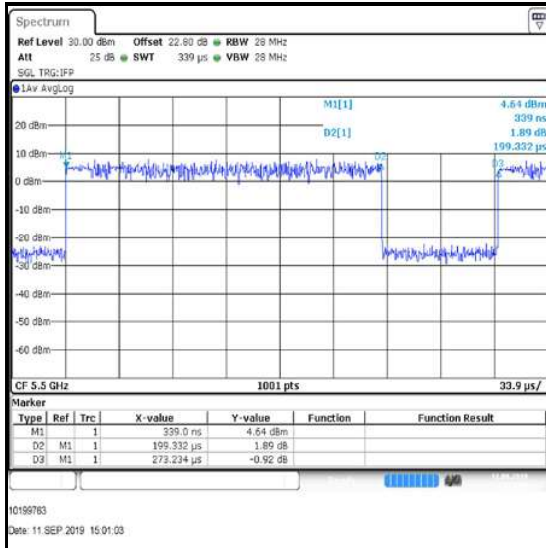
Top Channel



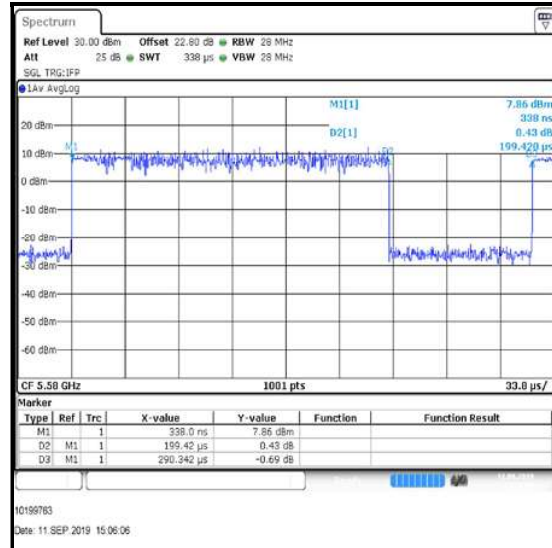
**Transmitter Duty Cycle (continued)**

**Results: 802.11a / 20 MHz / MIMO / 3Tx CDD / BPSK / 9 Mbps / Port 1**

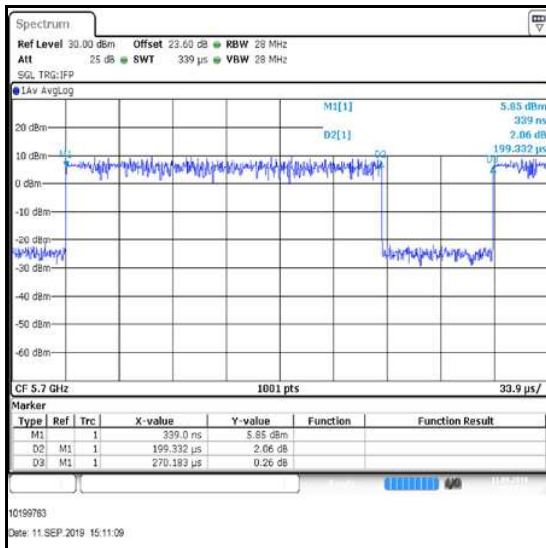
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5500	0.1993	0.2732	1.4
Middle	5580	0.1994	0.2903	1.6
Top	5700	0.1993	0.2702	1.3



**Bottom Channel**



**Middle Channel**



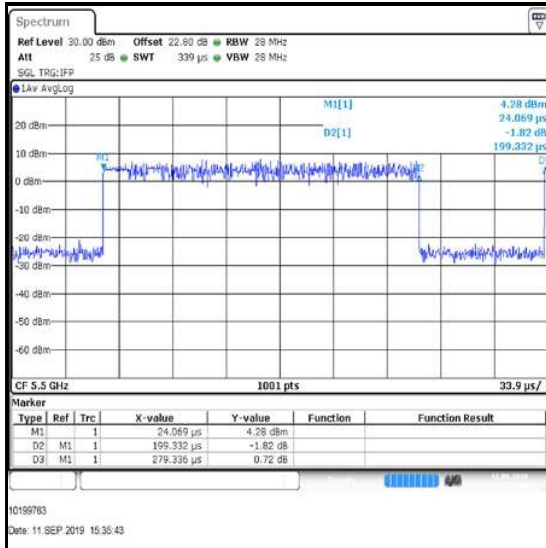
**Top Channel**



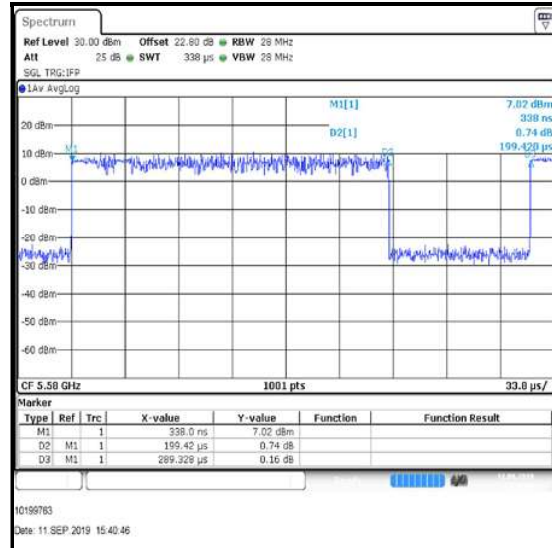
**Transmitter Duty Cycle (continued)**

**Results: 802.11a / 20 MHz / MIMO / 3Tx CDD / QPSK / 12 Mbps / Port 1**

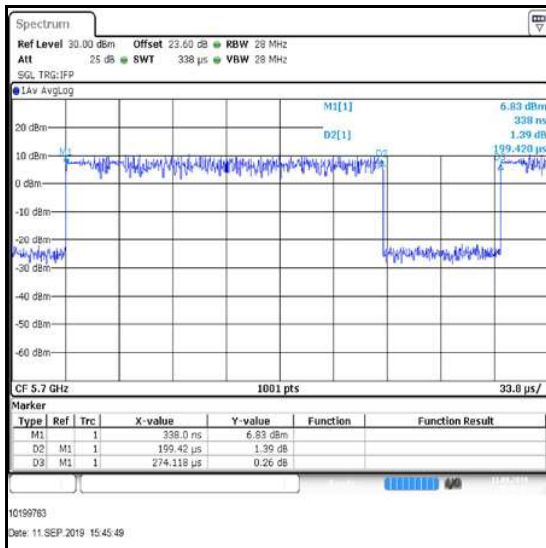
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5500	0.1993	0.2793	1.5
Middle	5580	0.1994	0.2893	1.6
Top	5700	0.1994	0.2741	1.4



**Bottom Channel**



**Middle Channel**

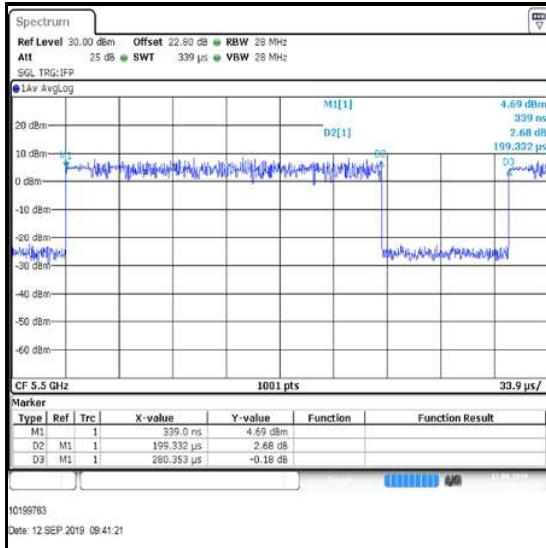


**Top Channel**

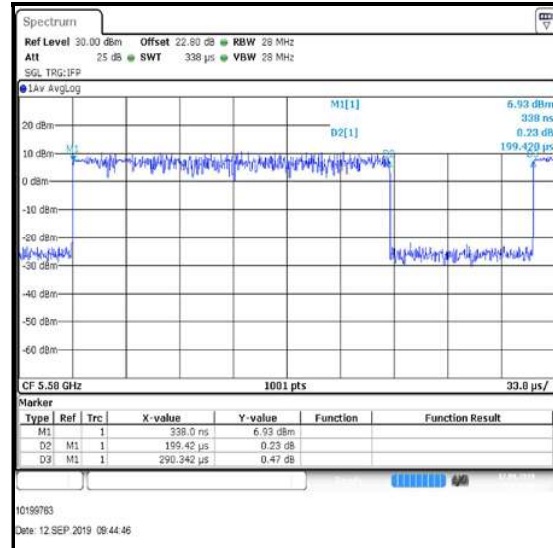
**Transmitter Duty Cycle (continued)**

**Results: 802.11n / 20 MHz / MIMO / 3Tx CDD / 16-QAM / MCS3 / Port 1**

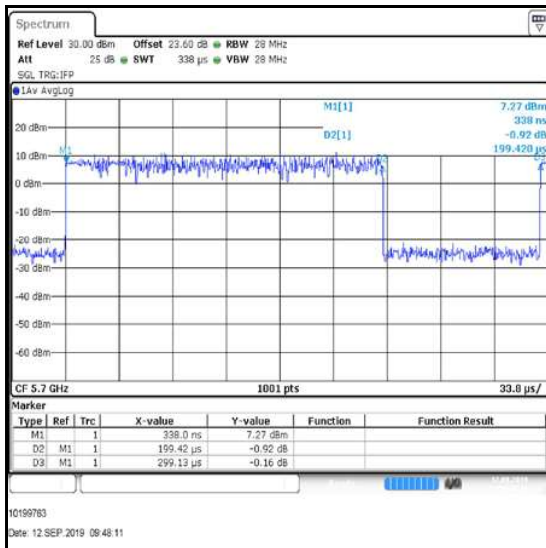
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5500	0.1993	0.2804	1.5
Middle	5580	0.1994	0.2903	1.6
Top	5700	0.1994	0.2991	1.8



**Bottom Channel**



**Middle Channel**

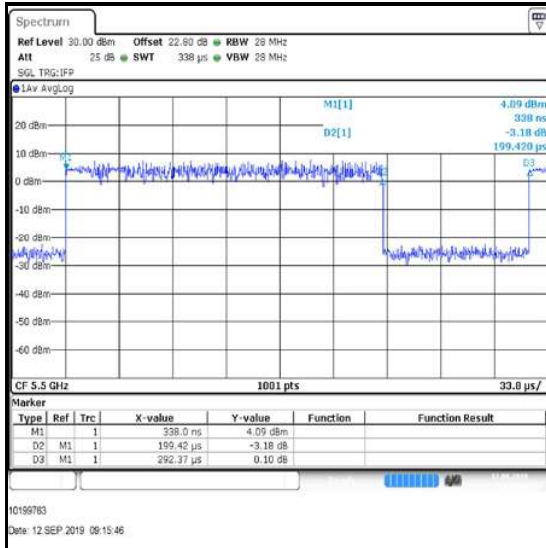


**Top Channel**

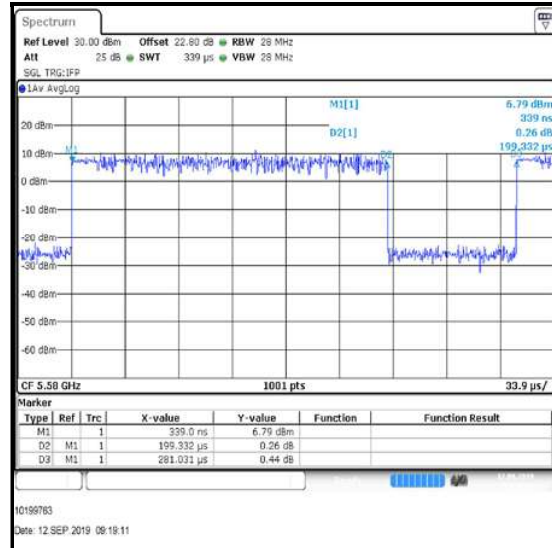
**Transmitter Duty Cycle (continued)**

**Results: 802.11n / 20 MHz / MIMO / 3Tx CDD / 64-QAM / MCS7 / Port 1**

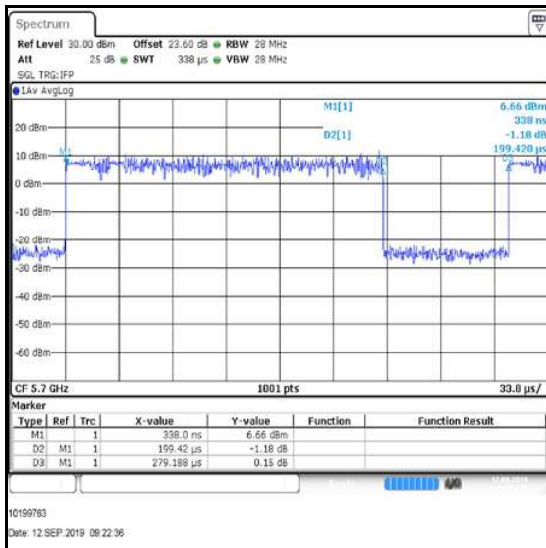
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5500	0.1994	0.2924	1.7
Middle	5580	0.1993	0.2810	1.5
Top	5700	0.1994	0.2792	1.5



**Bottom Channel**



**Middle Channel**

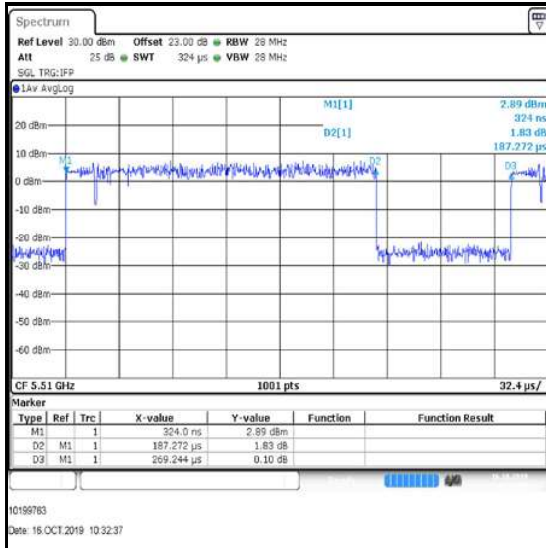


**Top Channel**

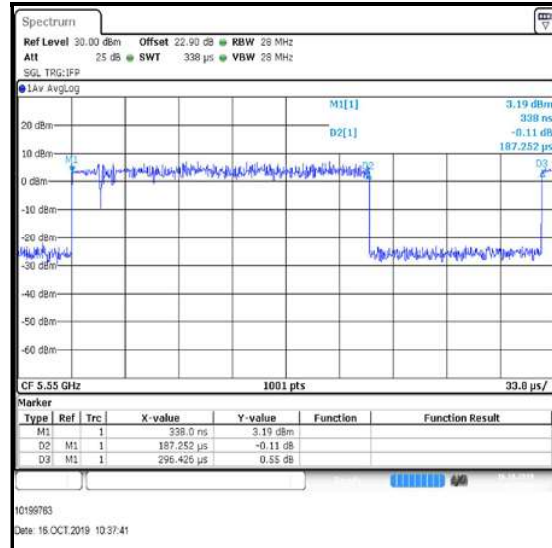
**Transmitter Duty Cycle (continued)**

**Results: 802.11n / 40 MHz / MIMO / 3Tx CDD / 16-QAM / MCS3 / Port 1**

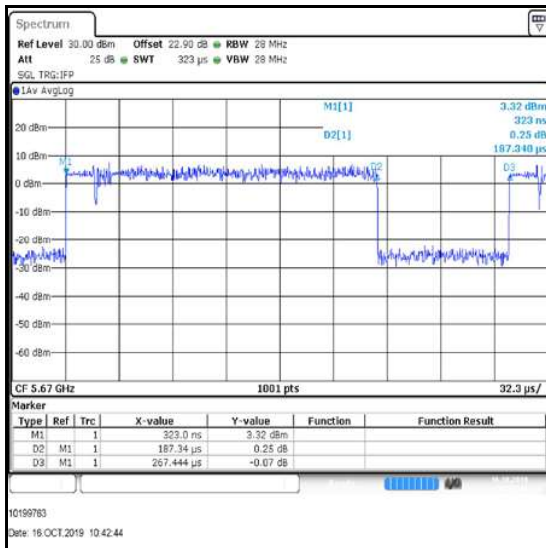
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5510	0.1873	0.2692	1.6
Middle	5550	0.1873	0.2964	2.0
Top	5670	0.1873	0.2674	1.5



**Bottom Channel**



**Middle Channel**

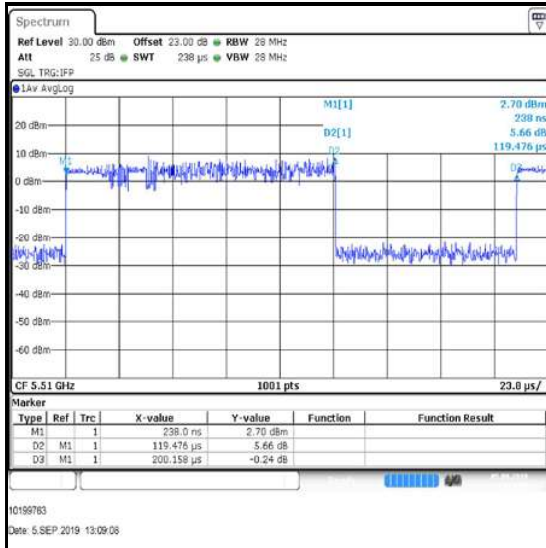


**Top Channel**

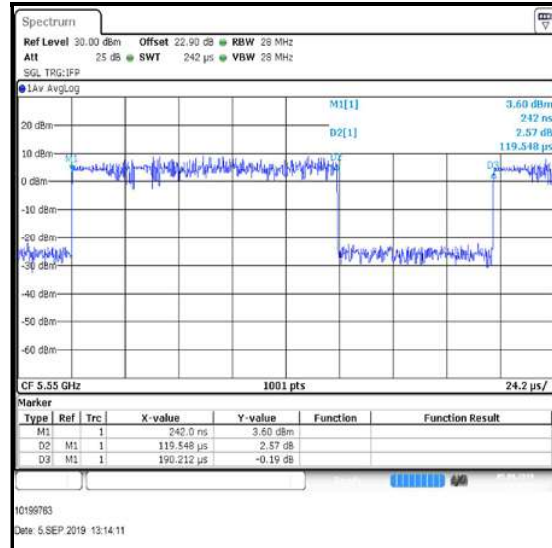
**Transmitter Duty Cycle (continued)**

**Results: 802.11n / 40 MHz / MIMO / 3Tx CDD / 64-QAM / MCS5 / Port 1**

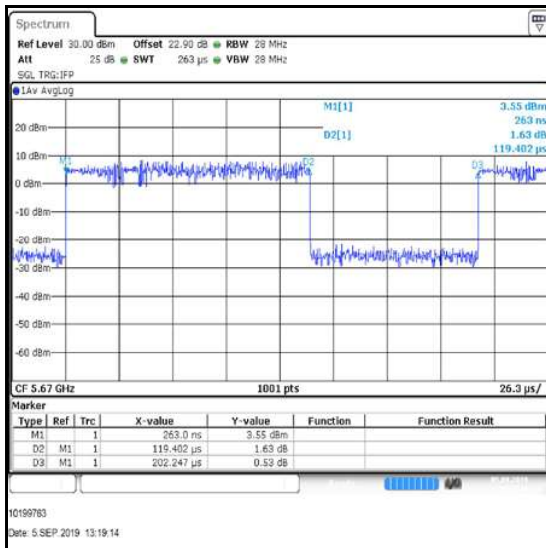
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5510	0.1195	0.2002	2.2
Middle	5550	0.1195	0.1902	2.0
Top	5670	0.1194	0.2022	2.3



**Bottom Channel**



**Middle Channel**

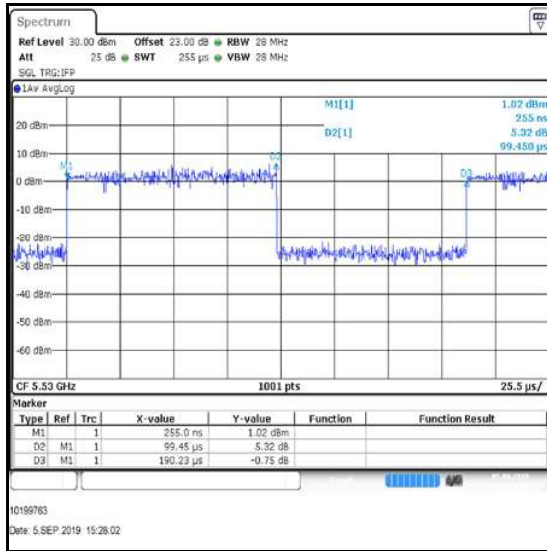


**Top Channel**

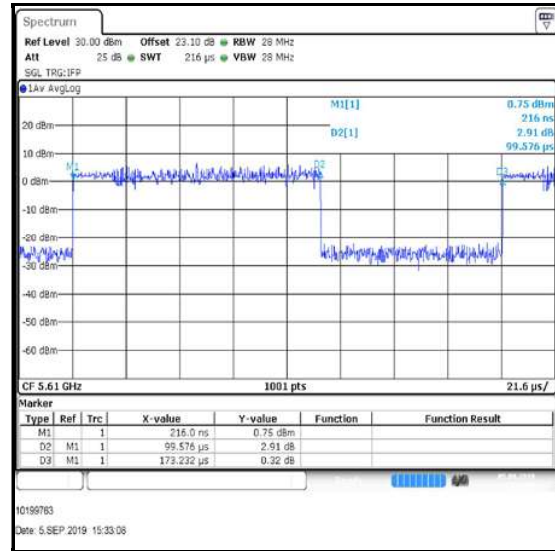
**Transmitter Duty Cycle (continued)**

**Results: 802.11ac / 80 MHz / MIMO / 3Tx CDD / QPSK / MCS1x1 / Port 1**

Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5530	0.0995	0.1902	2.8
Top	5610	0.0996	0.1732	2.4



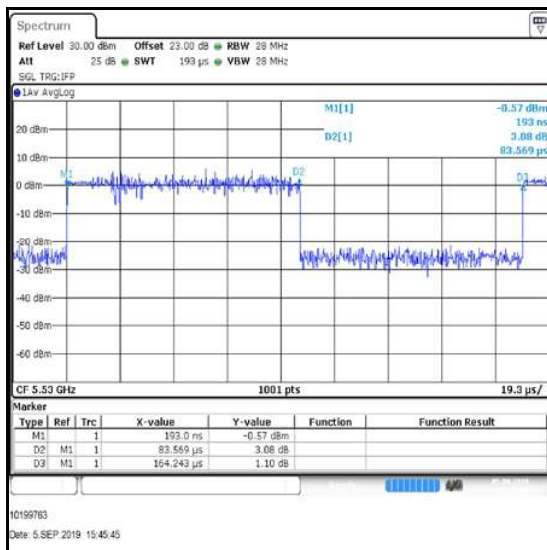
Bottom Channel



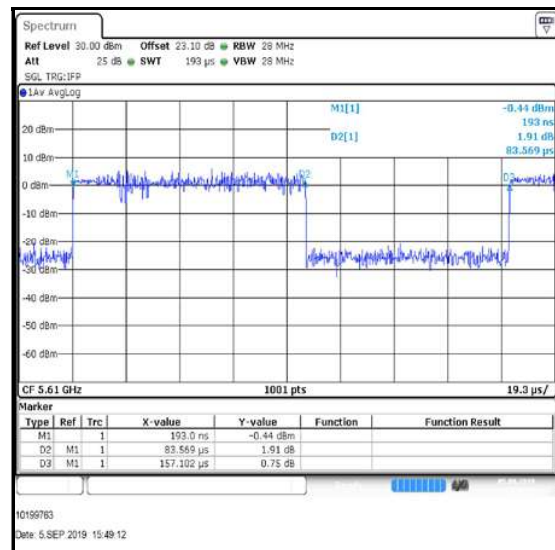
Top Channel

**Results: 802.11ac / 80 MHz / MIMO / 3Tx CDD / QPSK / MCS2x1 / Port 1**

Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5530	0.0836	0.1642	2.9
Top	5610	0.0836	0.1571	2.7



Bottom Channel

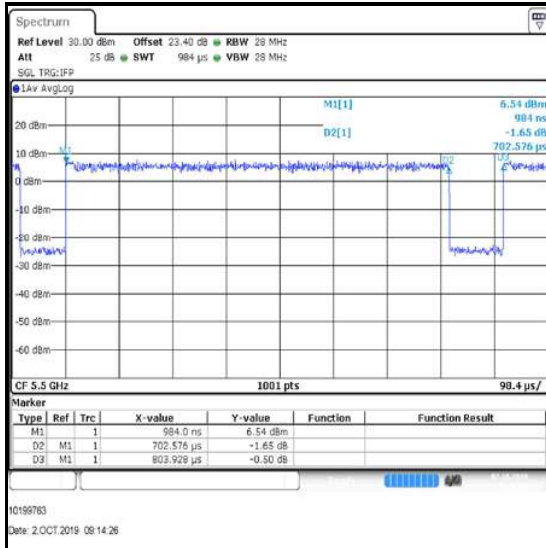


Top Channel

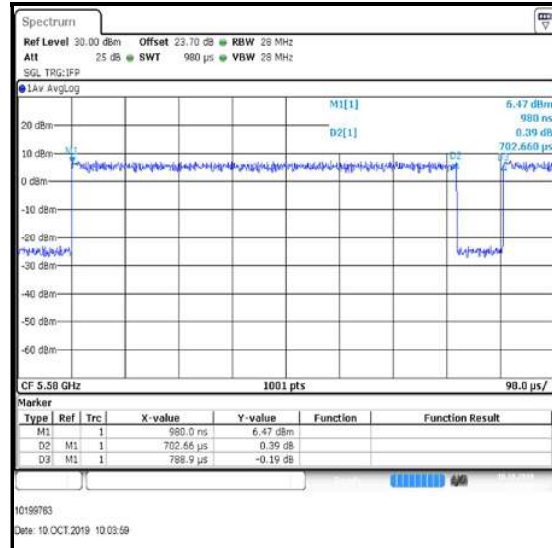
**Transmitter Duty Cycle (continued)**

**Results: 802.11a / 20 MHz / MIMO / 4Tx CDD / QPSK / 12 Mbps / Port 1**

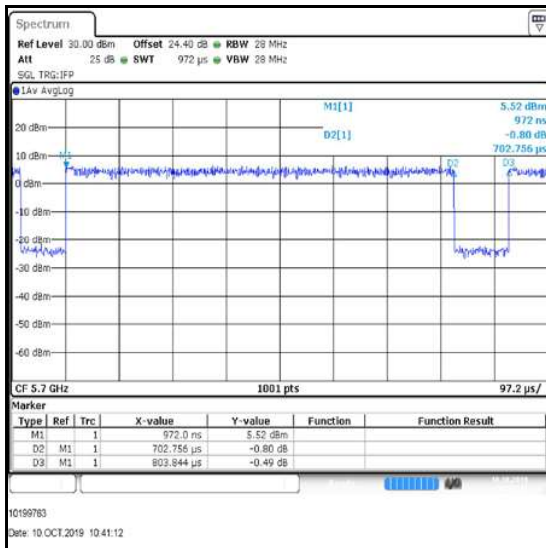
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5500	0.7026	0.8039	0.6
Middle	5580	0.7027	0.7889	0.5
Top	5700	0.7028	0.8038	0.6



**Bottom Channel**



**Middle Channel**



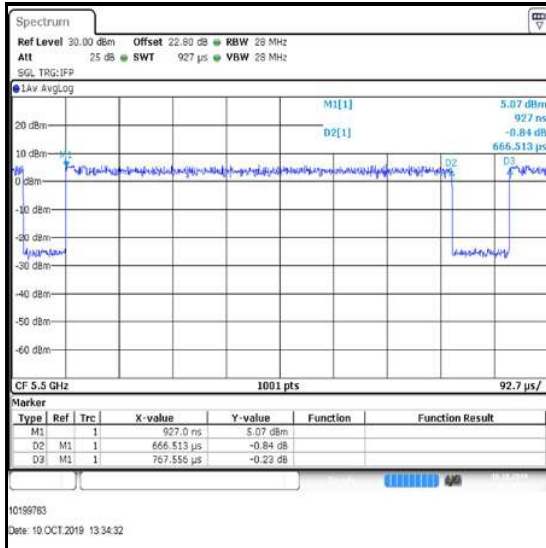
**Top Channel**



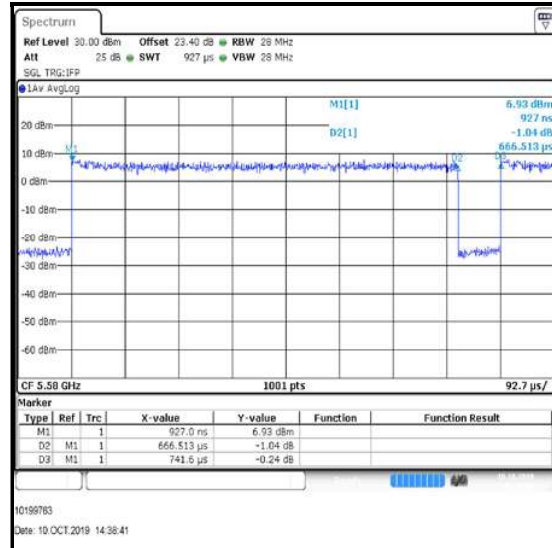
**Transmitter Duty Cycle (continued)**

**Results: 802.11n / 20 MHz / MIMO / 4Tx CDD / QPSK / MCS1 / Port 1**

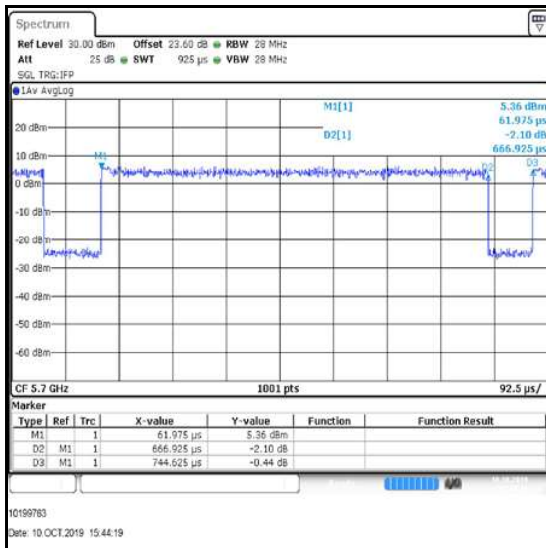
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5500	0.6665	0.7676	0.6
Middle	5580	0.6665	0.7416	0.5
Top	5700	0.6669	0.7446	0.5



**Bottom Channel**



**Middle Channel**

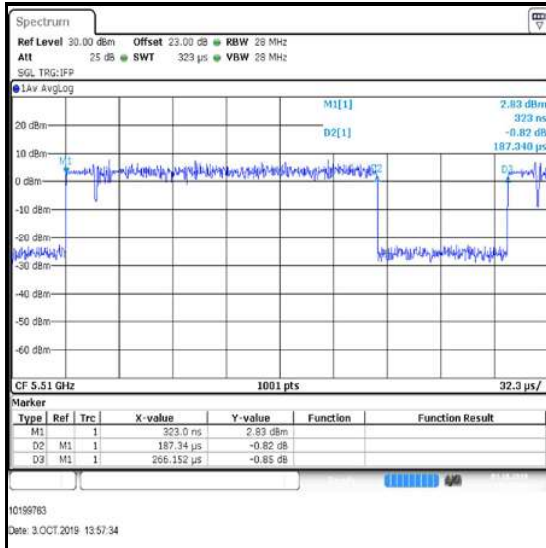


**Top Channel**

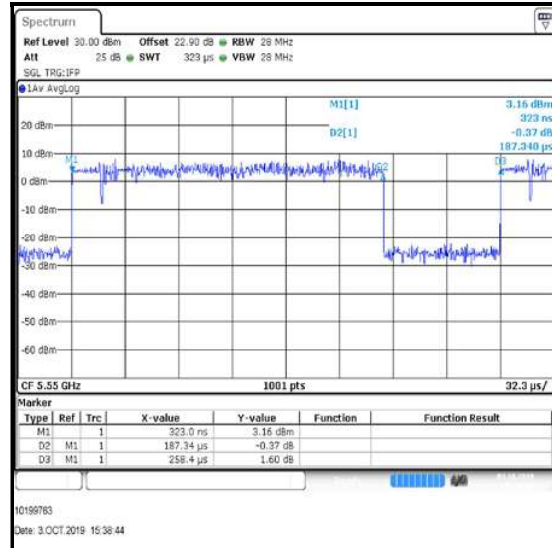
**Transmitter Duty Cycle (continued)**

**Results: 802.11n / 40 MHz / MIMO / 4Tx CDD / 16-QAM / MCS3 / Port 1**

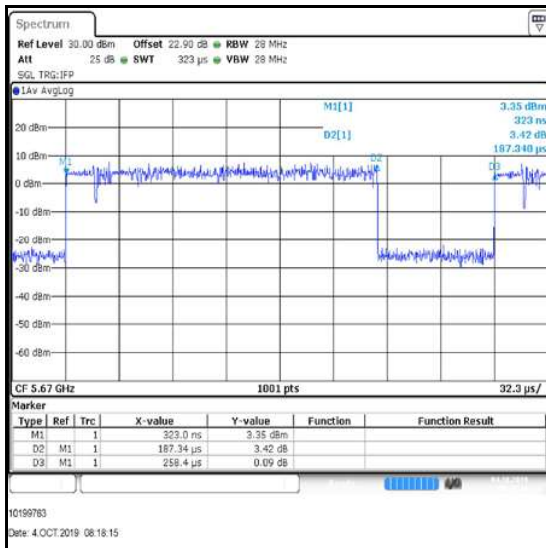
Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5510	0.1873	0.2662	1.5
Middle	5550	0.1873	0.2584	1.4
Top	5670	0.1873	0.2584	1.4



**Bottom Channel**



**Middle Channel**

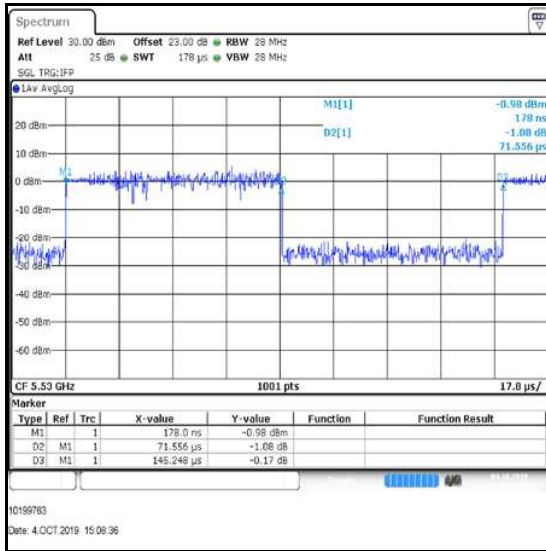


**Top Channel**

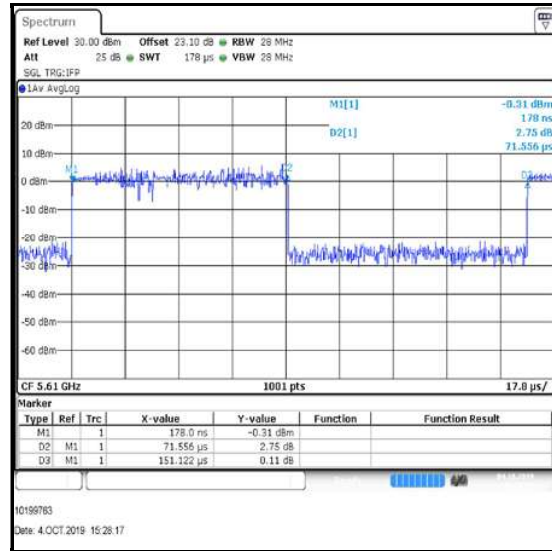
**Transmitter Duty Cycle (continued)**

**Results: 802.11ac / 80 MHz / MIMO / 4Tx CDD / 16-QAM / MCS3x1 / Port 1**

Channel	Frequency (MHz)	Pulse Duration (ms)	Period (ms)	Duty Cycle (dB)
Bottom	5530	0.0716	0.1452	3.1
Top	5610	0.0716	0.1511	3.2



**Bottom Channel**



**Top Channel**

## **4.2. Transmitter 26 dB Emission Bandwidth**

### **Test Summary:**

<b>Test Engineer:</b>	Max Passell	<b>Test Dates:</b>	01 October 2019 to 25 October 2019
<b>Test Sample Serial Number:</b>	2405067		

<b>FCC Reference:</b>	Part 15.403(i)
<b>Test Method Used:</b>	KDB 789033 D02 Section II.C.1.

### **Environmental Conditions:**

<b>Temperatures (°C):</b>	21 to 24
<b>Relative Humidity (%):</b>	35 to 44

### **Note(s):**

1. This section contains results for 4Tx modes only.
2. All configurations supported by the EUT were investigated on one channel in accordance with KDB 789033 Section II.C.1. Emission Bandwidth (EBW) test procedure. The data rates that produced the widest bandwidth and therefore deemed worst case were:
  - 802.11a MIMO – QPSK / 12 Mbps / 4Tx CDD / Ports 1, 2, 3 & 4
  - 802.11n HT20 MIMO – QPSK / MCS1 / 4Tx CDD / Ports 1, 2, 3 & 4
  - 802.11n HT40 MIMO – 16-QAM / MCS3 / 4Tx CDD / Ports 1, 2, 3 & 4
  - 802.11ac VHT80 MIMO – 16-QAM / MCS3x1 / 4Tx CDD / Ports 1, 2, 3 & 4
3. Final measurements were performed in each supported operating band using the above configurations on the bottom, middle and top or single channels.
4. Plots for all data rates are archived on the Company server and available for inspection upon request.
5. The signal analyser's resolution bandwidth was set to approximately 1% of the measured 26 dB emission bandwidth.
6. The signal analyser was connected to the RF port on the EUT using an RF switch, suitable attenuation and RF cables. An RF level offset was entered on the signal analyser to compensate for the loss of the switch, attenuators and RF cables.

**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

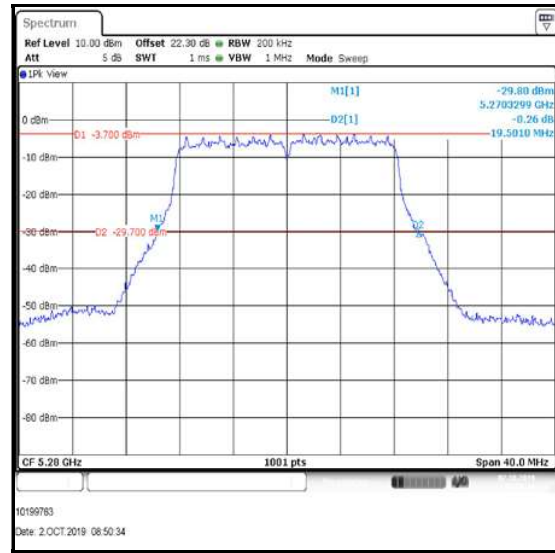
**4.2.1. 5.25-5.35 GHz band**

**Results: 802.11a / 20 MHz / MIMO / 4Tx CDD / QPSK / 12 Mbps / Port 1**

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Bottom	5260	19.501
Middle	5280	19.501
Top	5320	19.620



**Bottom Channel**



**Middle Channel**

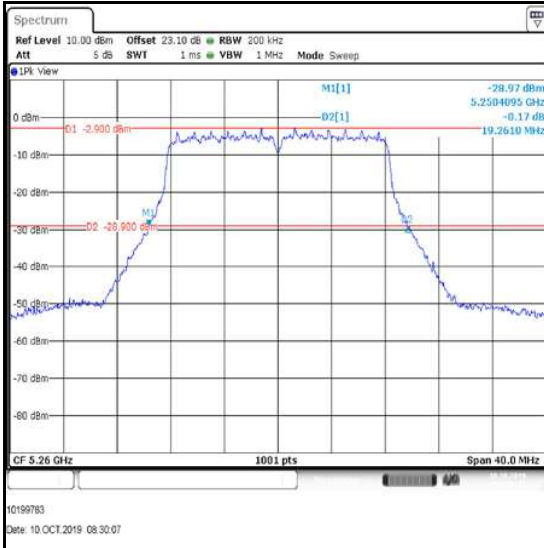


**Top Channel**

**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11a / 20 MHz / MIMO / 4Tx CDD / QPSK / 12 Mbps / Port 2**

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Bottom	5260	19.261
Middle	5280	19.220
Top	5320	19.260



**Bottom Channel**



**Middle Channel**



**Top Channel**

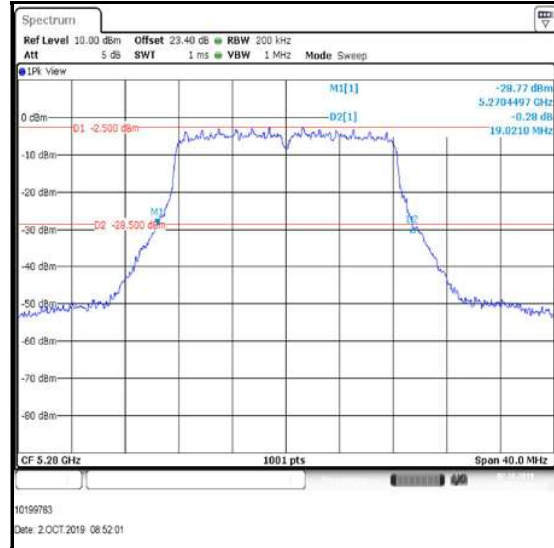
**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11a / 20 MHz / MIMO / 4Tx CDD / QPSK / 12 Mbps / Port 3**

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Bottom	5260	19.181
Middle	5280	19.021
Top	5320	19.061



Bottom Channel



Middle Channel



Top Channel



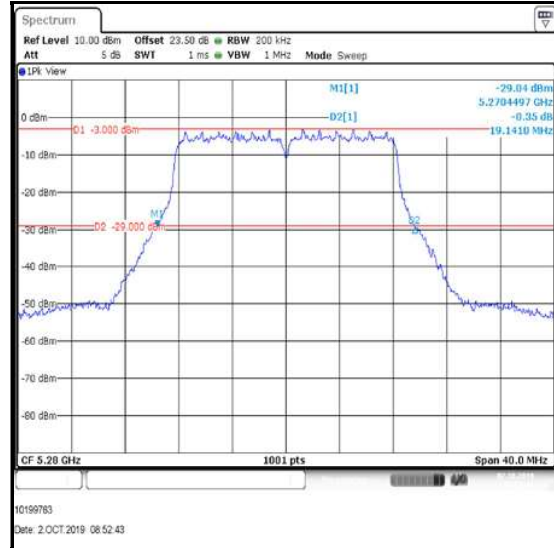
**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11a / 20 MHz / MIMO / 4Tx CDD / QPSK / 12 Mbps / Port 4**

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Bottom	5260	19.381
Middle	5280	19.141
Top	5320	19.260



**Bottom Channel**



**Middle Channel**

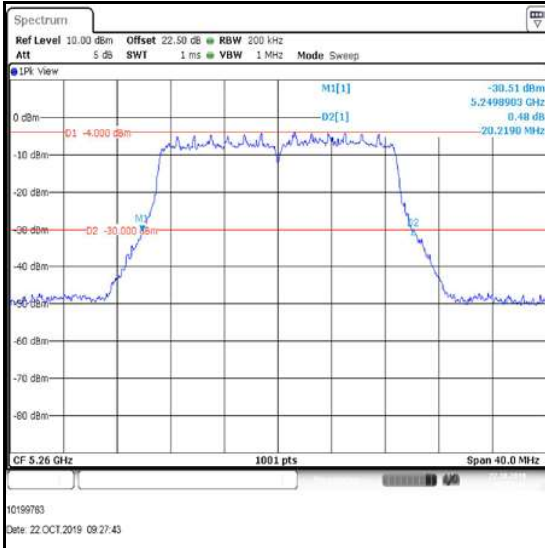


**Top Channel**

**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11n / 20 MHz / MIMO / 4Tx CDD / QPSK / MCS1 / Port 1**

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Bottom	5260	20.219
Middle	5280	20.220
Top	5320	20.220



**Bottom Channel**



**Middle Channel**



**Top Channel**

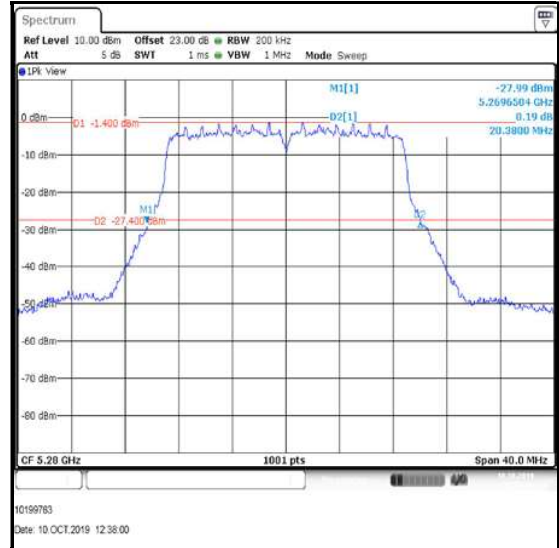
**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11n / 20 MHz / MIMO / 4Tx CDD / QPSK / MCS1 / Port 2**

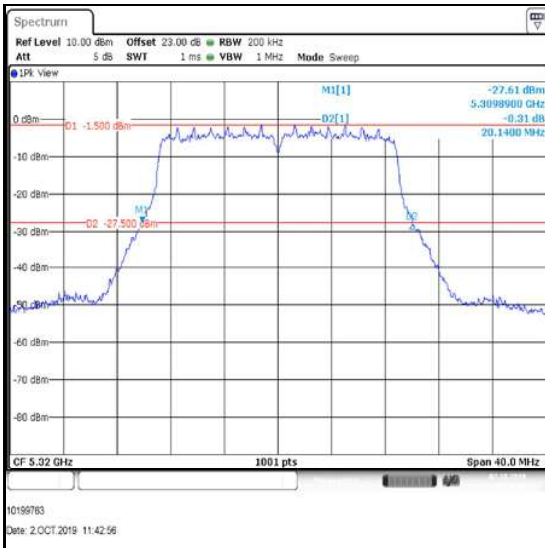
Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Bottom	5260	20.300
Middle	5280	20.380
Top	5320	20.140



**Bottom Channel**



**Middle Channel**

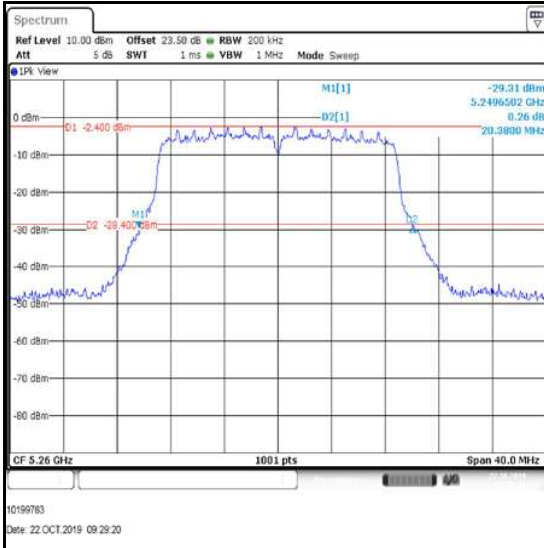


**Top Channel**

**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11n / 20 MHz / MIMO / 4Tx CDD / QPSK / MCS1 / Port 3**

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Bottom	5260	20.380
Middle	5280	20.260
Top	5320	20.260



**Bottom Channel**



**Middle Channel**



**Top Channel**

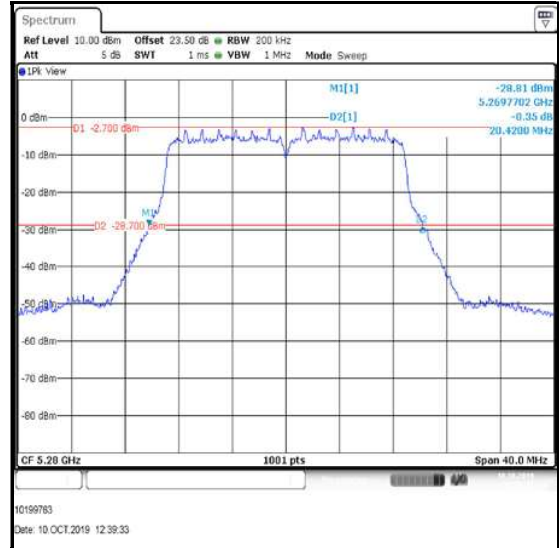
**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11n / 20 MHz / MIMO / 4Tx CDD / QPSK / MCS1 / Port 4**

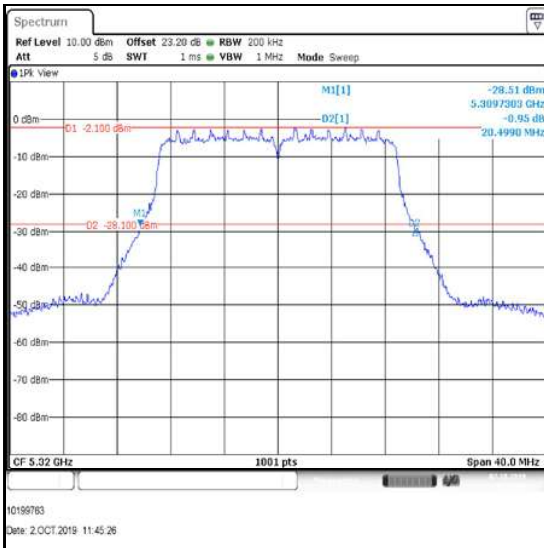
Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Bottom	5260	20.500
Middle	5280	20.420
Top	5320	20.499



**Bottom Channel**



**Middle Channel**



**Top Channel**

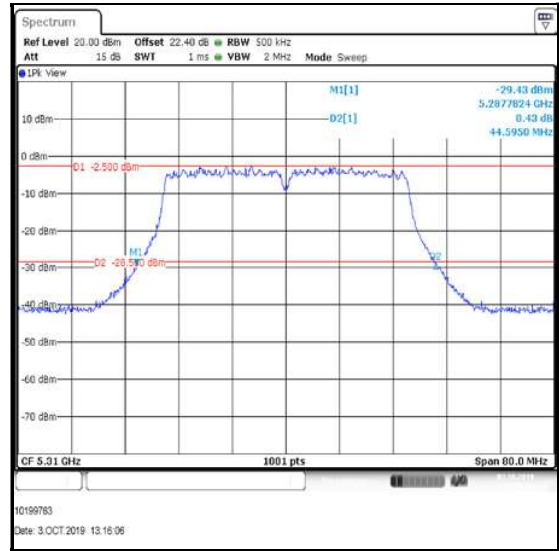
**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11n / 40 MHz / MIMO / 4Tx CDD / 16-QAM / MCS3 / Port 1**

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Bottom	5270	44.116
Top	5310	44.595



Bottom Channel



Top Channel

**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11n / 40 MHz / MIMO / 4Tx CDD / 16-QAM / MCS3 / Port 2**

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Bottom	5270	44.595
Top	5310	44.755



**Bottom Channel**



**Top Channel**



**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11n / 40 MHz / MIMO / 4Tx CDD / 16-QAM / MCS3 / Port 3**

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Bottom	5270	44.516
Top	5310	44.915



**Bottom Channel**



**Top Channel**

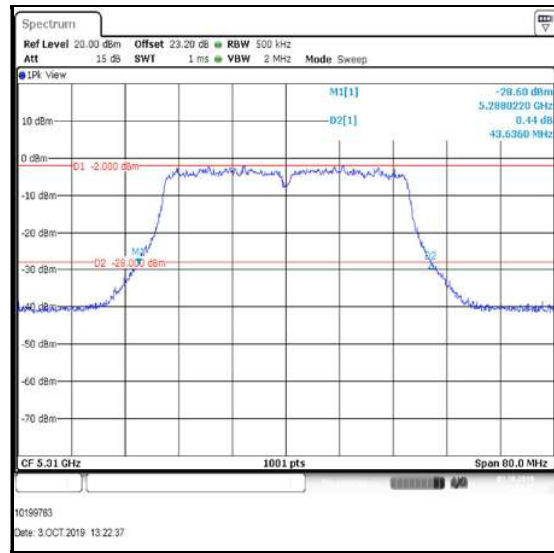
**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11n / 40 MHz / MIMO / 4Tx CDD / 16-QAM / MCS3 / Port 4**

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Bottom	5270	43.876
Top	5310	43.636



**Bottom Channel**

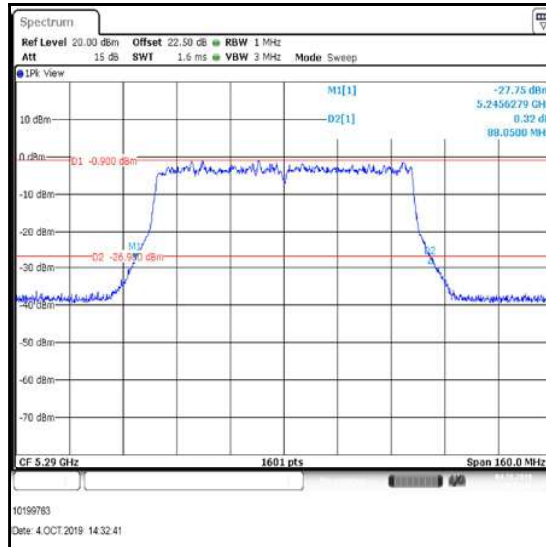


**Top Channel**

**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11ac / 80 MHz / MIMO / 4Tx CDD / 16-QAM / MCS3x1 / Port 1**

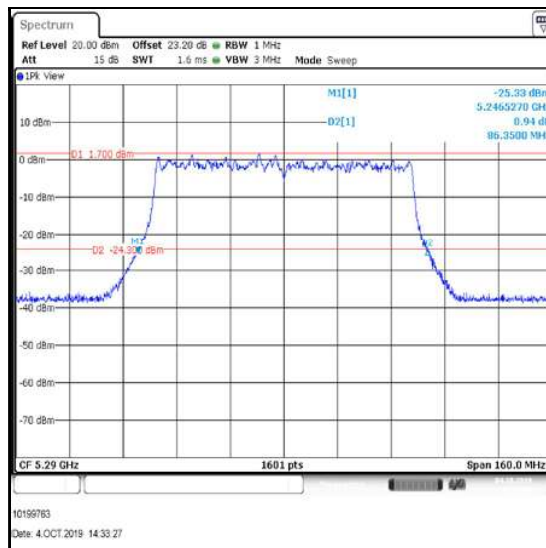
Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Single	5290	88.050



Single Channel

**Results: 802.11ac / 80 MHz / MIMO / 4Tx CDD / 16-QAM / MCS3x1 / Port 2**

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Single	5290	86.350

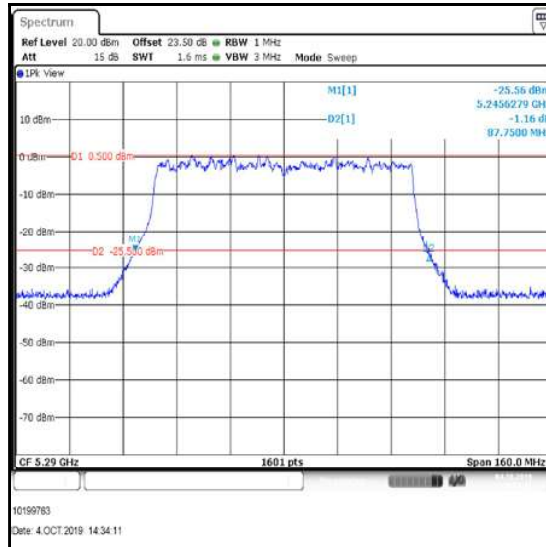


Single Channel

**Transmitter 26 dB Emission Bandwidth (5.25-5.35 GHz band) (continued)**

**Results: 802.11ac / 80 MHz / MIMO / 4Tx CDD / 16-QAM / MCS3x1 / Port 3**

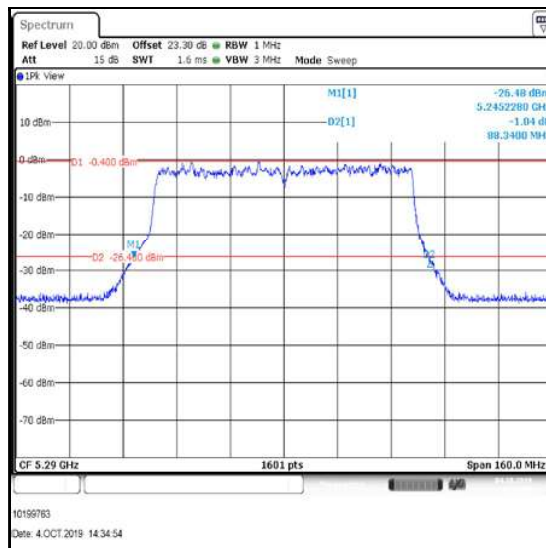
Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Single	5290	87.750



Single Channel

**Results: 802.11ac / 80 MHz / MIMO / 4Tx CDD / 16-QAM / MCS3x1 / Port 4**

Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)
Single	5290	88.340



Single Channel