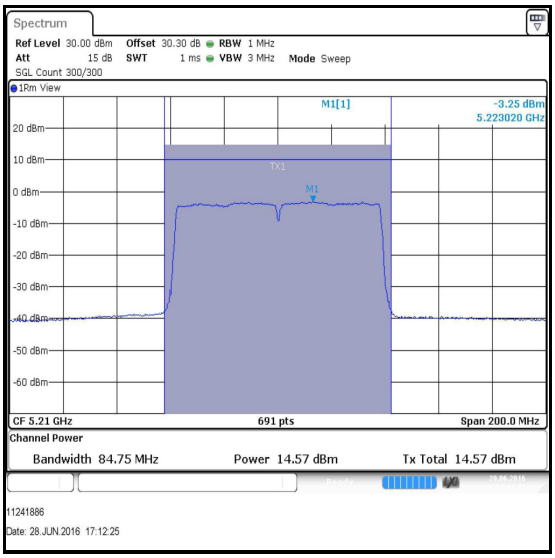
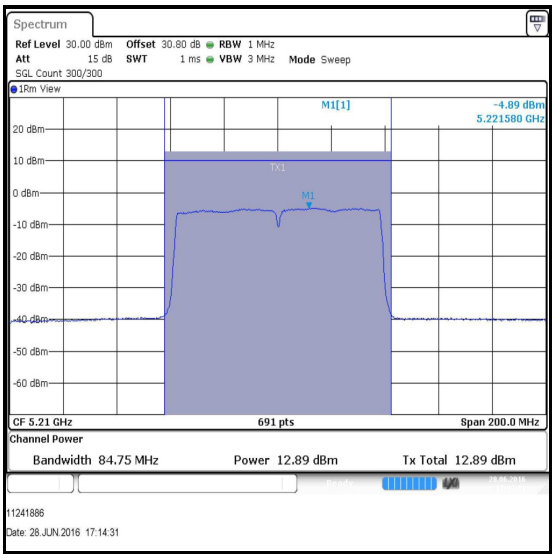
Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band) (continued)

Results: 802.11ac / 80 MHz / BPSK / MCS0x1 / MIMO / Port 1



Single Channel

Results: 802.11ac / 80 MHz / BPSK / MCS0x1 / MIMO / Port 2



Single Channel

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands)

Test Summary:

Test Engineer:	Georgios Vrezas	**Test Dates:**	28 June 2016 & 21 July 2016
Test Sample IMEI:	358640070098109		

FCC Reference:	Part 15.407(a)(2)
Test Method Used:	KDB 789033 D02 Section II.E.2.b) and II.E.2.d)

Environmental Conditions:

Temperature (℃):	24 to 25
Relative Humidity (%):	45 to 46

Note(s):

1. The FCC Part 15.407(a)(2) limit is the lesser of 250 mW (24.0 dBm) or 11 dBm + 10 $\log_{10}$ B, where B is the previously measured 26 dB emission bandwidth in MHz. For both U-NII-2A and U-NII-2C bands, the 26 dB EBW is greater than 20 MHz.

$$\begin{gathered}\text{For B} > 20\text{ MHz} \rightarrow \\ \rightarrow \log_{10}\text{B} > \log_{10} 20 \rightarrow \\ \rightarrow 10\log_{10}\text{B} > 10\log_{10} 20 \rightarrow \\ \rightarrow 11 + 10\log_{10}\text{B} > 11 + 10\log_{10} 20 \rightarrow \\ \rightarrow 11 + 10\log_{10}\text{B} > 24.0\text{ dBm}\end{gathered}$$

   Therefore for measured emission bandwidths greater than 20 MHz, the lesser of the two limits is the fixed limit of 250 mW (24.0 dBm). This was applied to the results.

2. For SISO modes, the antenna gain is < 6 dBi.

3. For MIMO modes presented in this section of the test report, the data stream is correlated as it is single stream with CDD on. The directional antenna gain has been calculated in accordance with ANSI C63.10 Section 14.4.3.2.4 b). The EUT antenna has a gain of -5.0 dBi for port 1 and -4.6 dBi for port 2, in the frequency range 5.25 GHz to 5.35 GHz:

$$\text{Directional Gain} = 10\log\left[\frac{\sum_{j=1}^{N_{SS}}\left(\sum_{k=1}^{N_{ANT}} g_{j,k}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\sum_{j=1}^{1}\left(\sum_{k=1}^{2} g_{j,k}\right)^2}{2}\right]$$

$$= 10\log\left[\frac{\left(g_{1,1}+g_{1,2}\right)^2}{2}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}}+10^{\frac{G_2}{20}}\right)^2}{2}\right] = 10\log\left[\frac{\left(10^{\frac{-5.0}{20}}+10^{\frac{-4.6}{20}}\right)^2}{2}\right] = -1.8\text{ dBi}$$

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Note(s):

4. For MIMO modes presented in this section of the test report, the data stream is correlated as it is single stream with CDD on. The directional antenna gain has been calculated in accordance with ANSI C63.10 Section 14.4.3.2.4 b). The EUT antenna has a gain of -3.6 dBi for port 1 and -3.1 dBi for port 2, in the frequency range 5.47 GHz to 5.725 GHz:

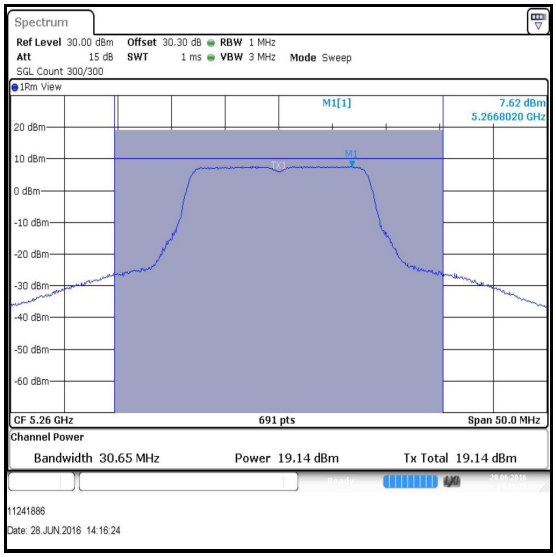
$$\text{Directional Gain} = 10\log\left[\frac{\sum_{j=1}^{N_{SS}}\left(\sum_{k=1}^{N_{ANT}} g_{j,k}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\sum_{j=1}^{1}\left(\sum_{k=1}^{2} g_{j,k}\right)^2}{2}\right]$$

$$= 10\log\left[\frac{\left(g_{1,1}+g_{1,2}\right)^2}{2}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}}+10^{\frac{G_2}{20}}\right)^2}{2}\right] = 10\log\left[\frac{\left(10^{\frac{-3.6}{20}}+10^{\frac{-3.1}{20}}\right)^2}{2}\right] = -0.3\ \text{dBi}$$

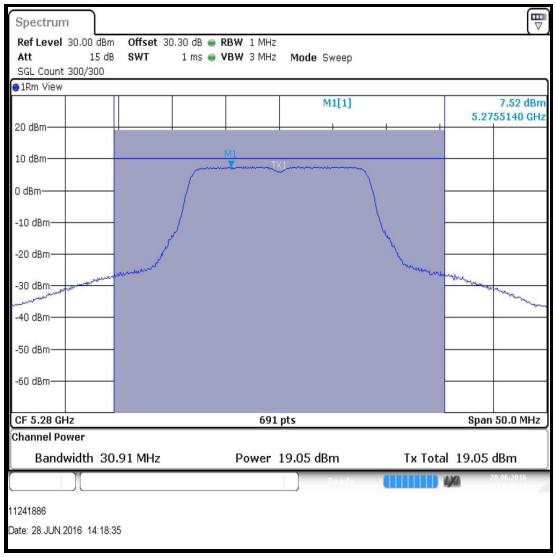
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: 802.11a / 20 MHz / BPSK / 6 Mbps / 5.25-5.35 GHz band

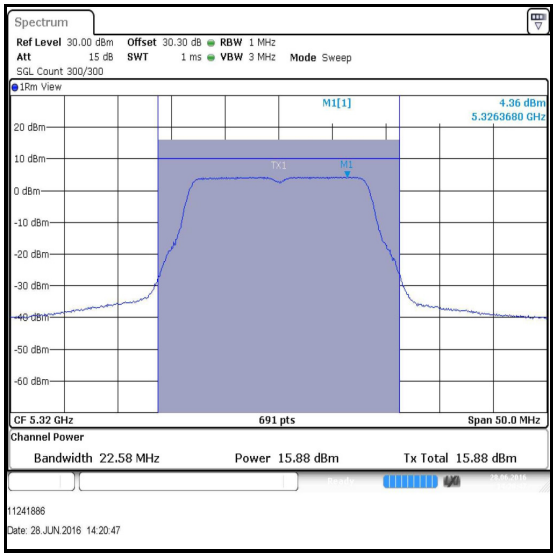
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5260	19.1	24.0	4.9	Complied
Middle	5300	19.1	24.0	4.9	Complied
Top	5320	15.9	24.0	8.1	Complied



Bottom Channel



Middle Channel

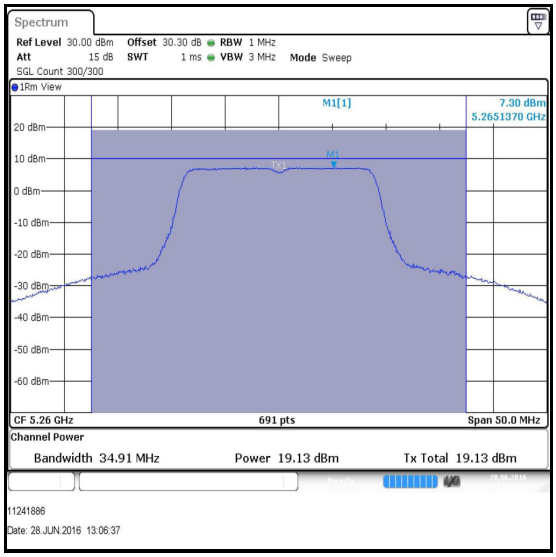


Top Channel

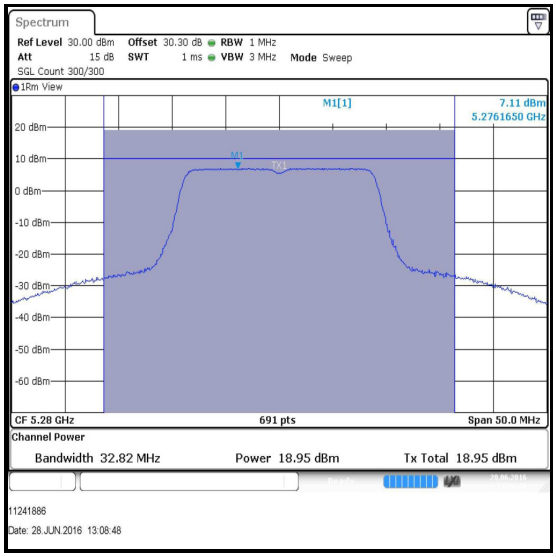
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: 802.11n / 20 MHz / BPSK / MCS0 / SISO / 5.25-5.35 GHz band

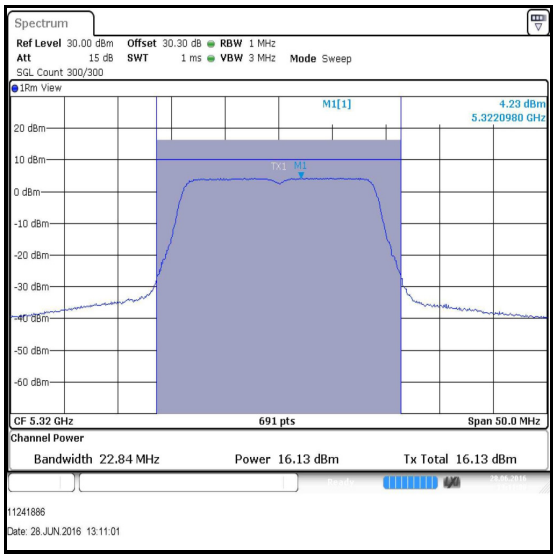
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5260	19.1	24.0	4.9	Complied
Middle	5280	19.0	24.0	5.0	Complied
Top	5320	16.1	24.0	7.9	Complied



Bottom Channel



Middle Channel

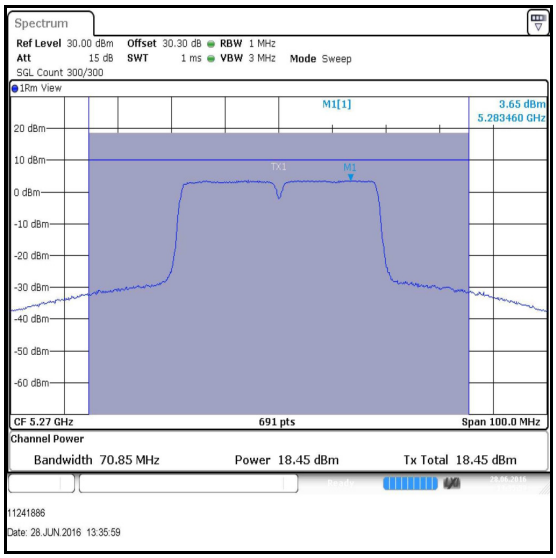


Top Channel

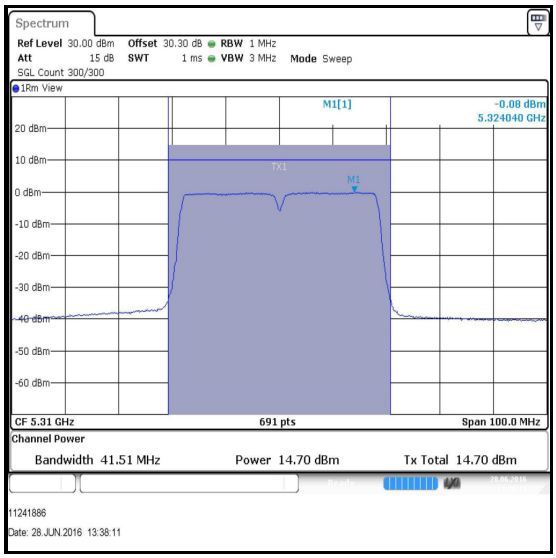
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: 802.11n / 40 MHz / BPSK / MCS0 / SISO / 5.25-5.35 GHz band

Channel	Frequency (MHz)	Conducted Power (dBm)	Duty Cycle Correction (dB)	Corrected Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5270	18.5	0.1	18.6	24.0	5.4	Complied
Top	5310	14.7	0.1	14.8	24.0	9.2	Complied



Bottom Channel

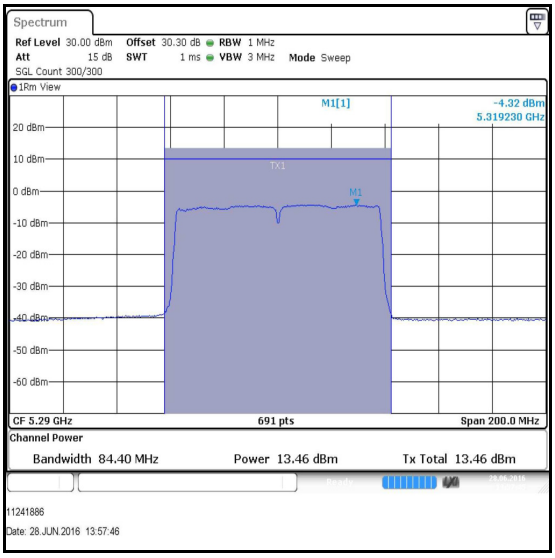


Top Channel

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: 802.11ac / 80 MHz / BPSK / MCS0 / SISO / 5.25-5.35 GHz band

Channel	Frequency (MHz)	Conducted Power (dBm)	Duty Cycle Correction (dB)	Corrected Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Single	5290	13.5	0.2	13.7	24.0	10.3	Complied



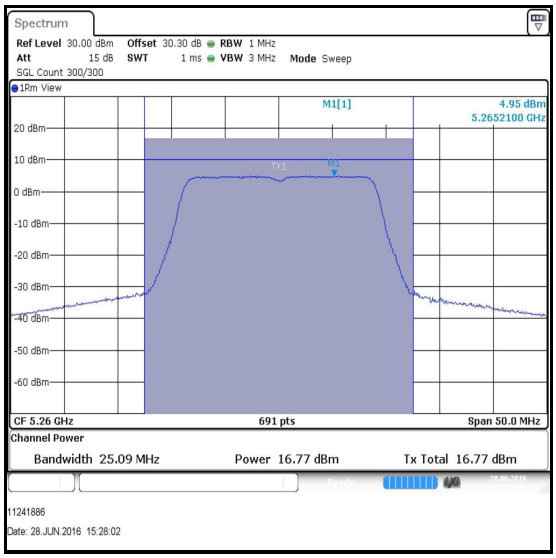
Single Channel

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

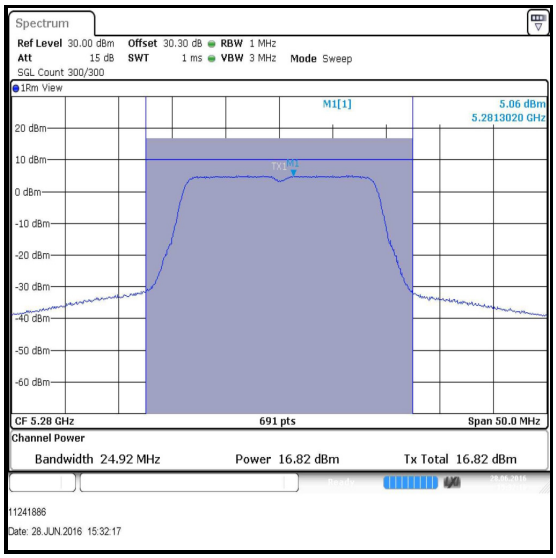
Results: 802.11n / 20 MHz / BPSK / MCS0 / MIMO / 5.25-5.35 GHz band

Channel	Frequency (MHz)	Conducted Peak Power Port 1 (dBm)	Conducted Peak Power Port 2 (dBm)	Combined Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5260	16.8	15.5	19.2	24.0	4.8	Complied
Middle	5280	16.8	15.3	19.1	24.0	4.9	Complied
Top	5320	15.7	14.3	18.1	24.0	5.9	Complied

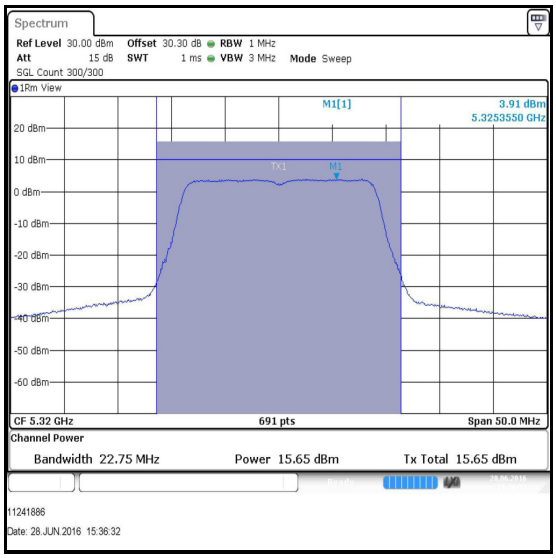
Results: 802.11n / 20 MHz / BPSK / MCS0 / MIMO / 5.25-5.35 GHz band / Port 1



Bottom Channel



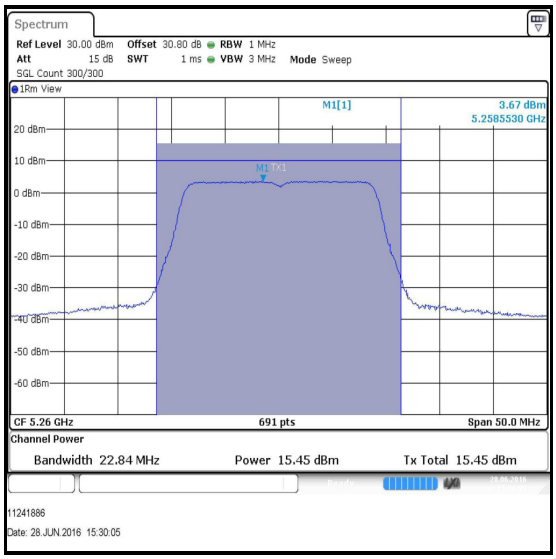
Middle Channel



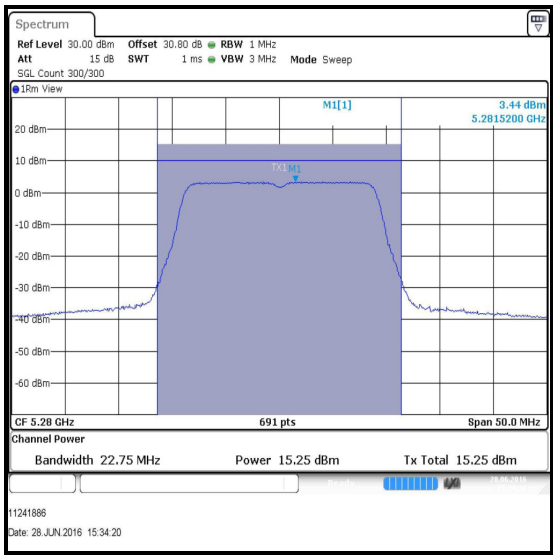
Top Channel

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

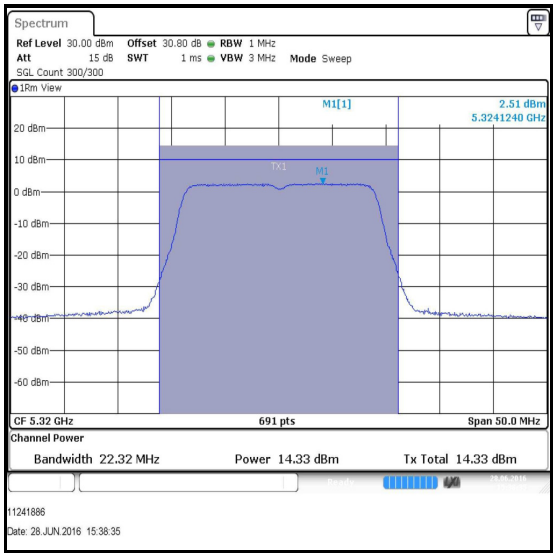
Results: 802.11n / 20 MHz / BPSK / MCS0 / MIMO / 5.25-5.35 GHz band / Port 2



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

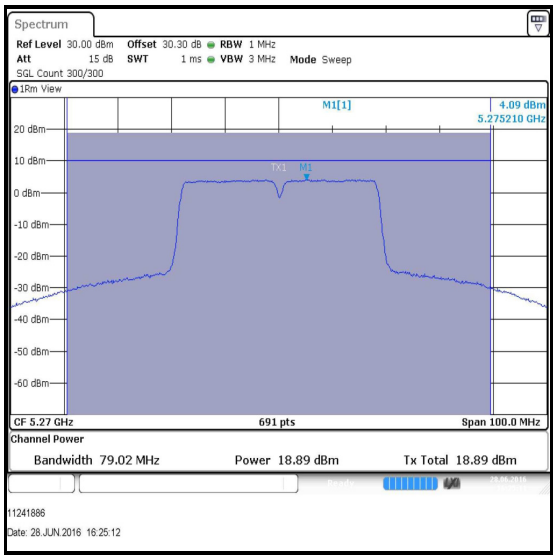
Results: 802.11n / 40 MHz / BPSK / MCS0 / MIMO / 5.25-5.35 GHz band

Channel	Frequency (MHz)	Port 1			Port 2		
		Conducted Peak Power (dBm)	Duty Cycle Correction (dB)	Corrected Conducted Peak Power (dBm)	Conducted Peak Power (dBm)	Duty Cycle Correction (dB)	Corrected Conducted Peak Power (dBm)
Bottom	5270	18.9	0.1	19.0	17.2	0.1	17.3
Top	5310	14.1	0.1	14.2	12.8	0.1	12.9

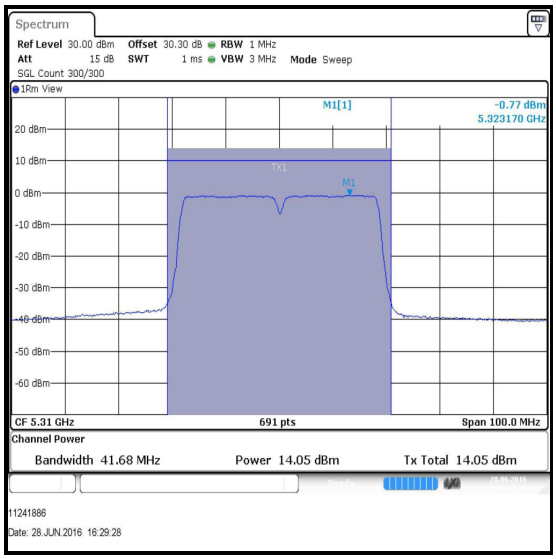
Channel	Frequency (MHz)	Corrected Conducted Peak Power Port 1 (dBm)	Corrected Conducted Peak Power Port 2 (dBm)	Combined Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5270	19.0	17.3	21.2	24.0	2.8	Complied
Top	5310	14.2	12.9	16.6	24.0	7.4	Complied

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: 802.11n / 40 MHz / BPSK / MCS0 / MIMO / 5.25-5.35 GHz band / Port 1

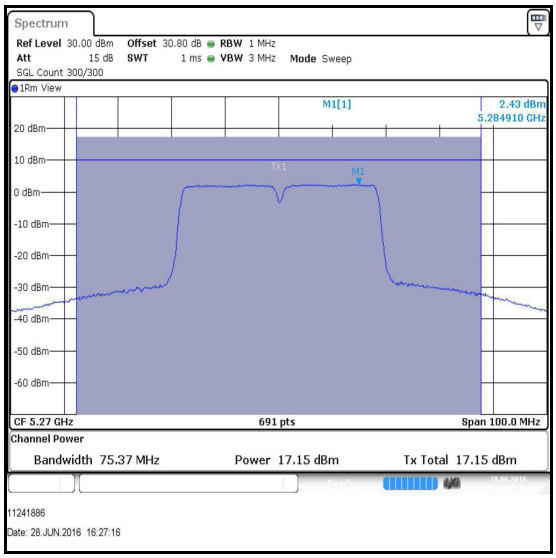


Bottom Channel

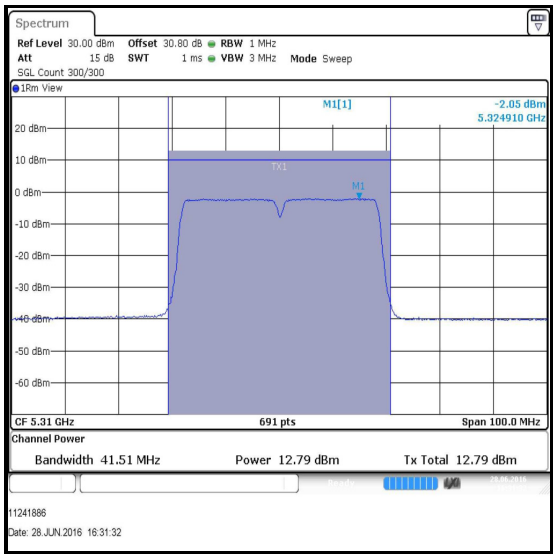


Top Channel

Results: 802.11n / 40 MHz / BPSK / MCS0 / MIMO / 5.25-5.35 GHz band / Port 2



Bottom Channel



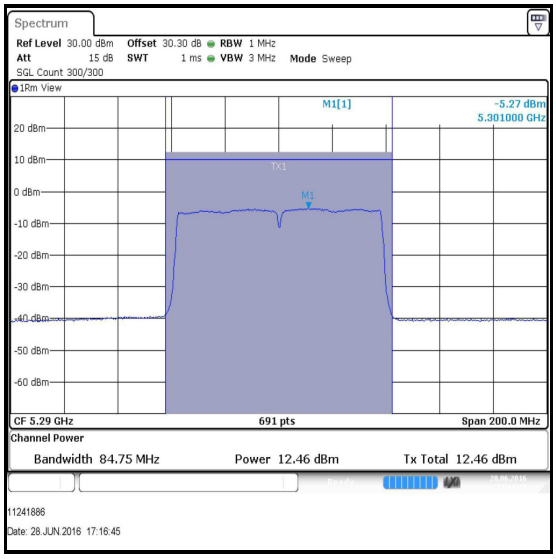
Top Channel

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

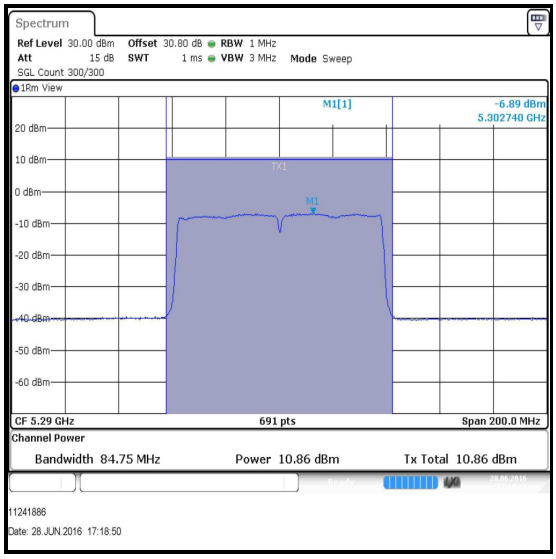
Results: 802.11ac / 80 MHz / BPSK / MCS0x1 / MIMO / 5.25-5.35 GHz band

Channel	Frequency (MHz)	Port 1			Port 2		
		Conducted Peak Power (dBm)	Duty Cycle Correction (dB)	Corrected Conducted Peak Power (dBm)	Conducted Peak Power (dBm)	Duty Cycle Correction (dB)	Corrected Conducted Peak Power (dBm)
Single	5290	12.5	0.2	12.7	10.9	0.2	11.1

Channel	Frequency (MHz)	Corrected Conducted Peak Power Port 1 (dBm)	Corrected Conducted Peak Power Port 2 (dBm)	Combined Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Single	5290	12.7	11.1	15.0	24.0	9.0	Complied



Single Channel / Port 1

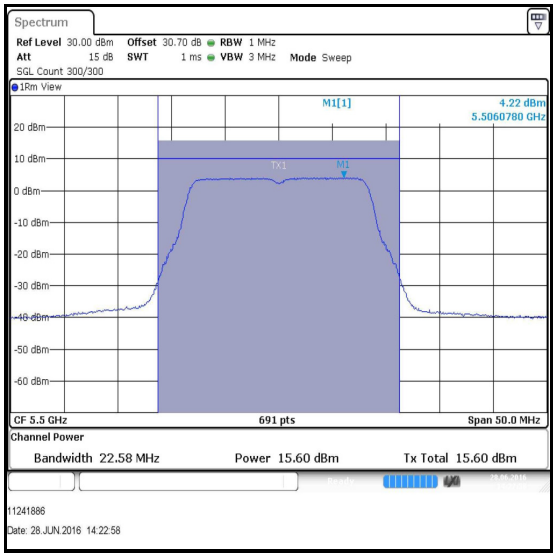


Single Channel / Port 2

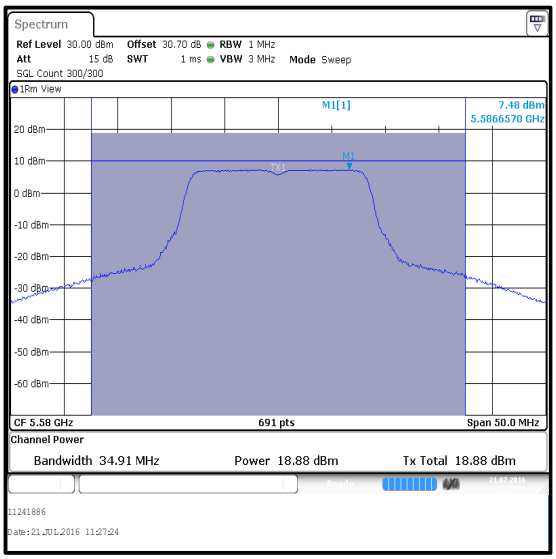
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: 802.11a / 20 MHz / BPSK / 6 Mbps / 5.47-5.725 GHz band

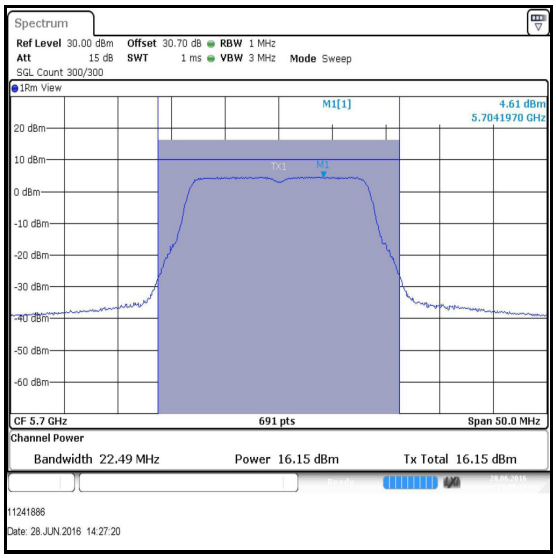
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5500	15.6	24.0	8.4	Complied
Middle	5580	18.9	24.0	5.1	Complied
Top	5700	16.2	24.0	7.8	Complied



Bottom Channel



Middle Channel

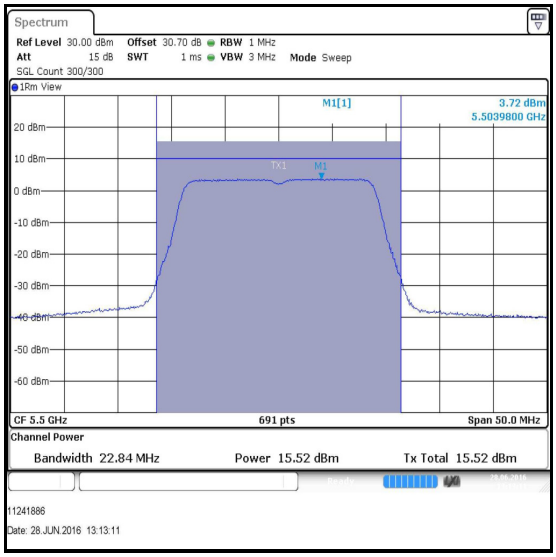


Top Channel

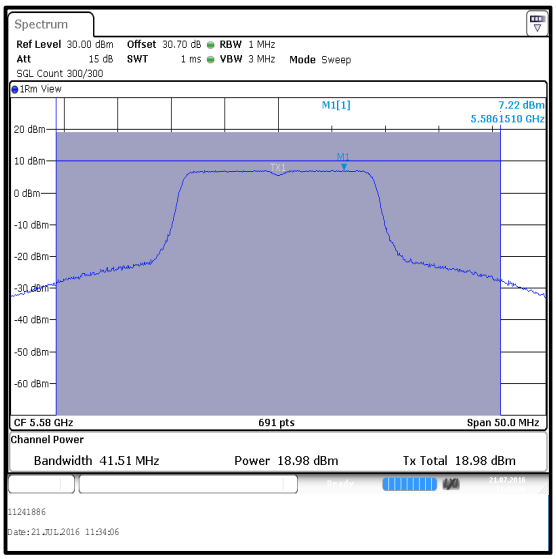
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: 802.11n / 20 MHz / BPSK / MCS0 / SISO / 5.47-5.725 GHz band

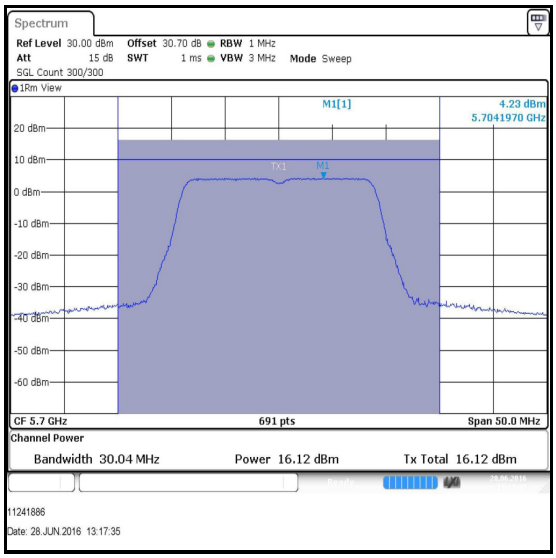
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5500	15.5	24.0	8.5	Complied
Middle	5580	19.0	24.0	5.0	Complied
Top	5700	16.1	24.0	7.9	Complied



Bottom Channel



Middle Channel

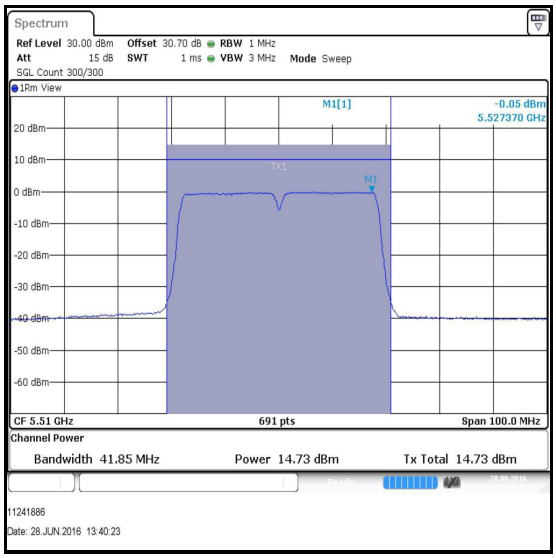


Top Channel

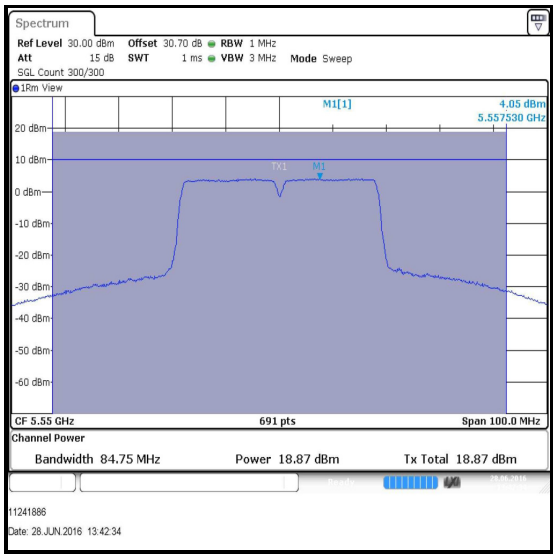
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: 802.11n / 40 MHz / BPSK / MCS0 / SISO / 5.47-5.725 GHz band

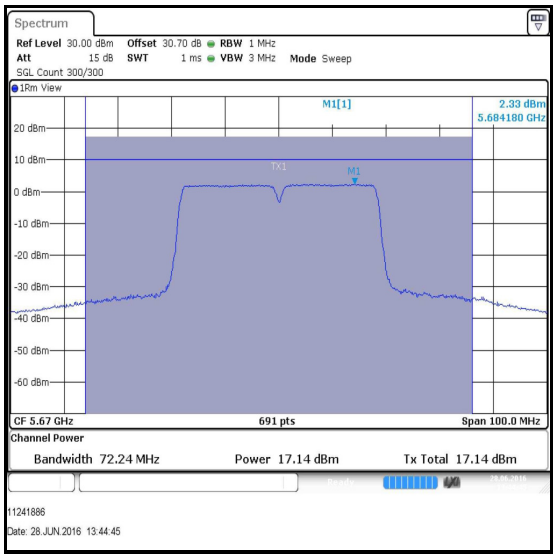
Channel	Frequency (MHz)	Conducted Power (dBm)	Duty Cycle Correction (dB)	Corrected Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5510	14.7	0.1	14.8	24.0	9.2	Complied
Middle	5550	18.9	0.1	19.0	24.0	5.0	Complied
Top	5670	17.1	0.1	17.2	24.0	6.8	Complied



Bottom Channel



Middle Channel

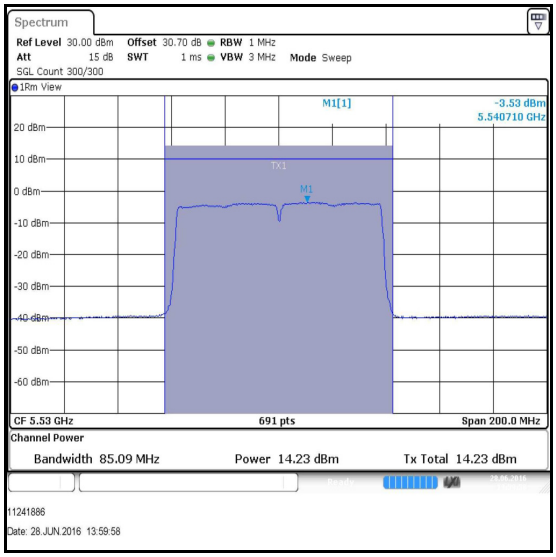


Top Channel

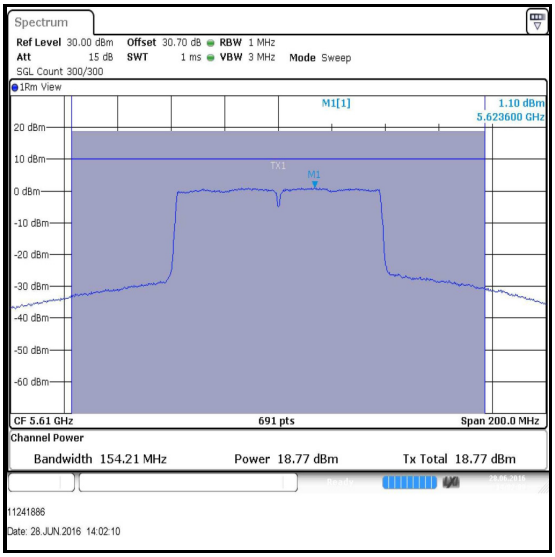
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: 802.11ac / 80 MHz / BPSK / MCS0 / SISO / 5.47-5.725 GHz band

Channel	Frequency (MHz)	Conducted Power (dBm)	Duty Cycle Correction (dB)	Corrected Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5530	14.2	0.2	14.4	24.0	9.6	Complied
Top	5610	18.8	0.2	19.0	24.0	5.0	Complied



Bottom Channel



Top Channel