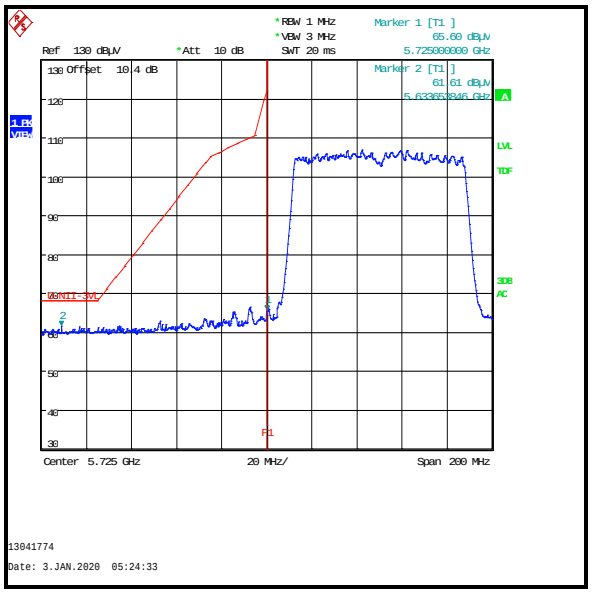
Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

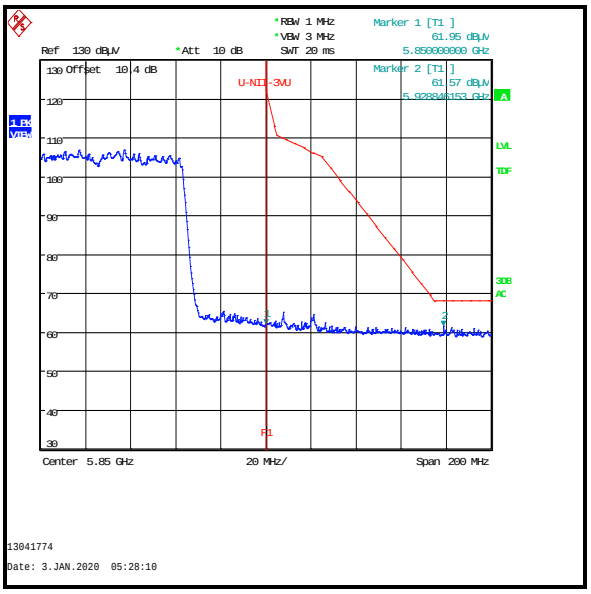
Results: 802.11ac / 80 MHz / MIMO / 2Tx SDM / BPSK / MCS0x2 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5633.654	-33.6	-27.0	6.6	Complied
5725	-29.6	27.0	56.6	Complied
5850	-33.2	27.0	60.2	Complied
5928.846	-33.6	-27.0	6.6	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5633.654	61.6	68.2	6.6	Complied
5725	65.6	122.2	56.6	Complied
5850	62.0	122.2	60.2	Complied
5928.846	61.6	68.2	6.6	Complied



Lower Band Edge



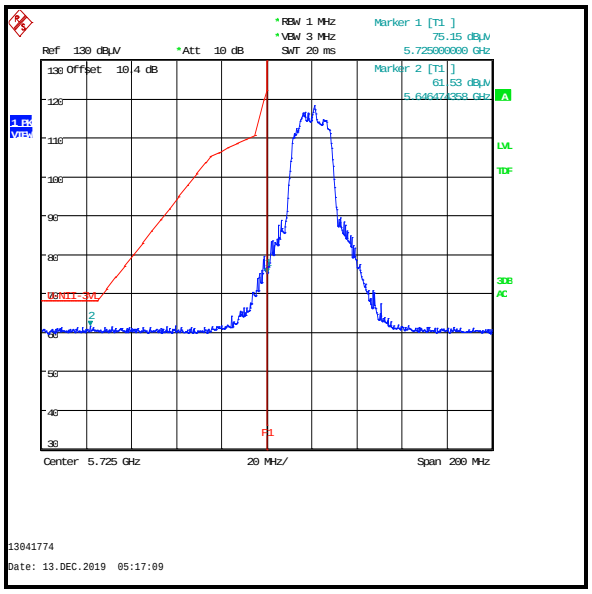
Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

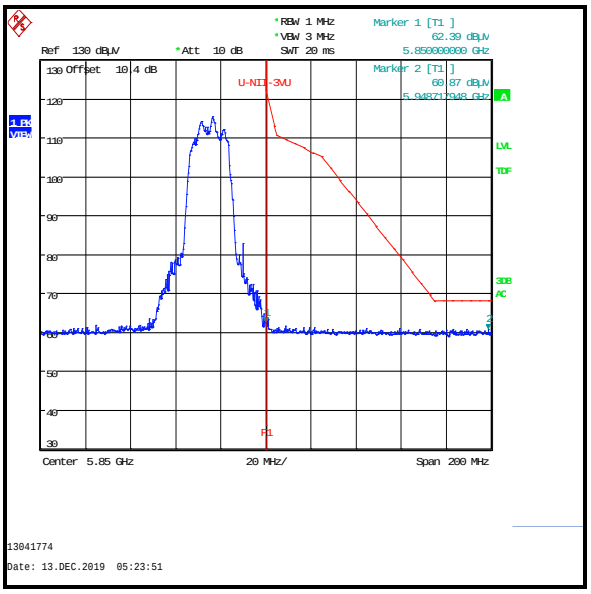
Results: 802.11n / 20 MHz / MIMO / 2Tx TXBF / BPSK / MCS0 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5646.474	-33.7	-27.0	6.7	Complied
5725	-20.0	27.0	47.0	Complied
5850	-32.8	27.0	59.8	Complied
5948.718	-34.3	-27.0	7.3	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5646.474	61.5	68.2	6.7	Complied
5725	75.2	122.2	47.0	Complied
5850	62.4	122.2	59.8	Complied
5948.718	60.9	68.2	7.3	Complied



Lower Band Edge



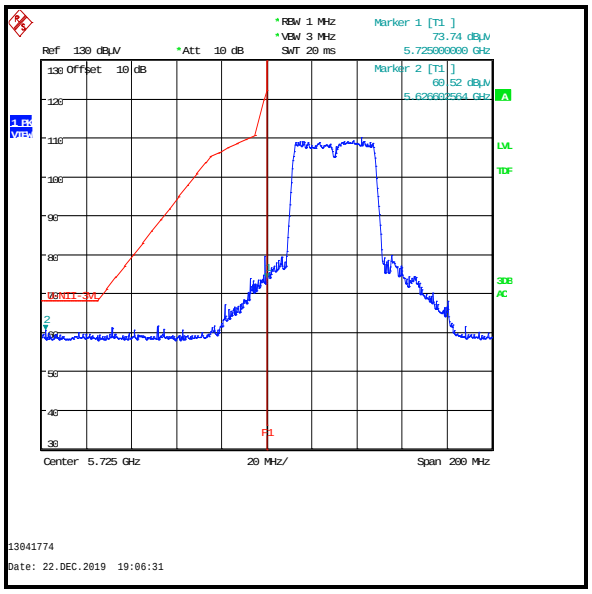
Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

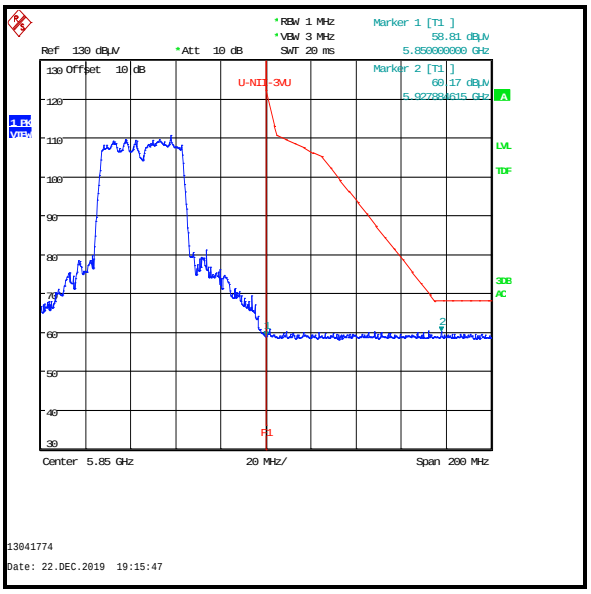
Results: 802.11n / 40 MHz / MIMO / 2Tx TXBF / BPSK / MCS0 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5626.603	-34.7	-27.0	7.7	Complied
5725	-21.5	27.0	48.5	Complied
5850	-36.4	27.0	63.4	Complied
5927.885	-35.0	-27.0	8.0	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5626.603	60.5	68.2	7.7	Complied
5725	73.7	122.2	48.5	Complied
5850	58.8	122.2	63.4	Complied
5927.885	60.2	68.2	8.0	Complied



Lower Band Edge



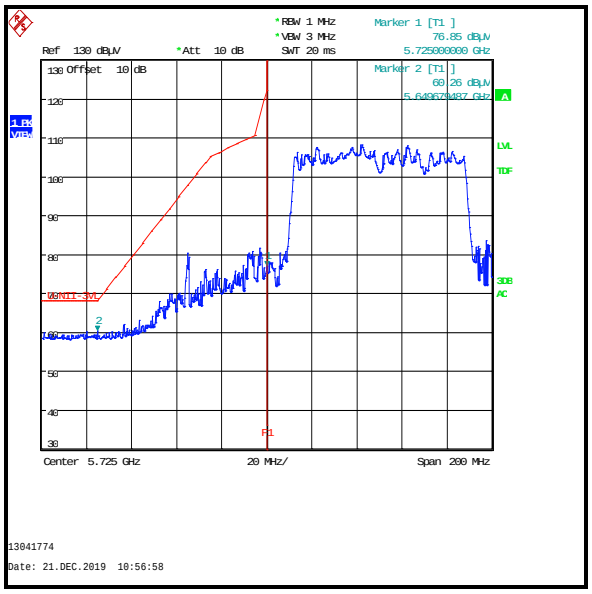
Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

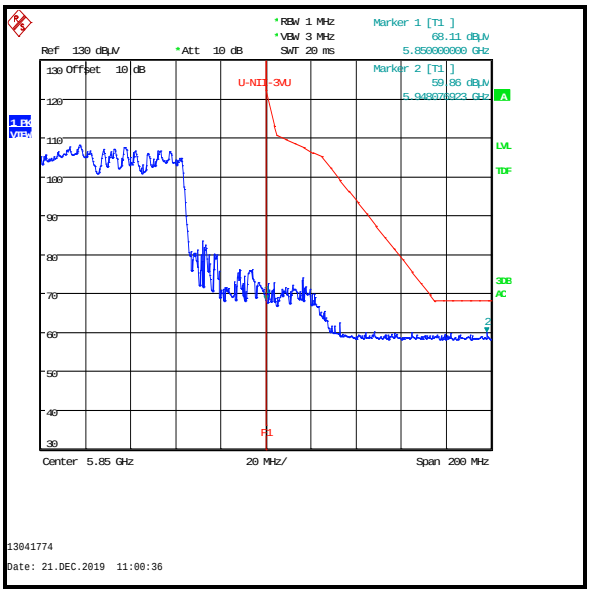
Results: 802.11ac / 80 MHz / MIMO / 2Tx TXBF / BPSK / MCS0x1 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5649.679	-34.9	-27.0	7.9	Complied
5725	-18.3	27.0	45.3	Complied
5850	-27.1	27.0	54.1	Complied
5948.077	-35.3	-27.0	8.3	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5649.679	60.3	68.2	7.9	Complied
5725	76.9	122.2	45.3	Complied
5850	68.1	122.2	54.1	Complied
5948.077	59.9	68.2	8.3	Complied



Lower Band Edge



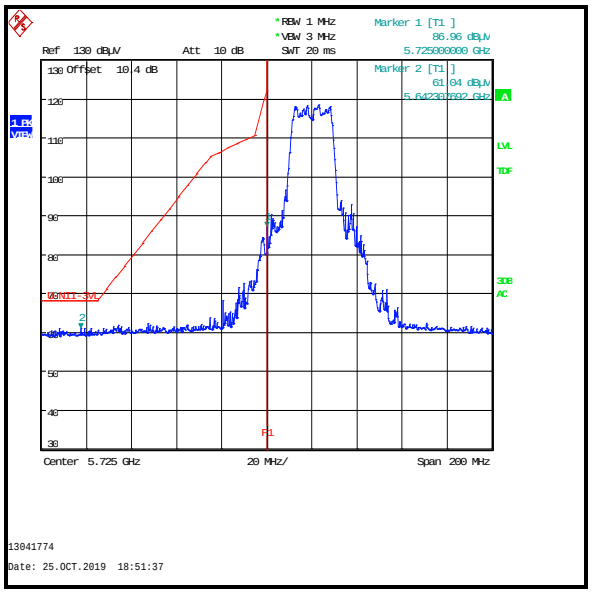
Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

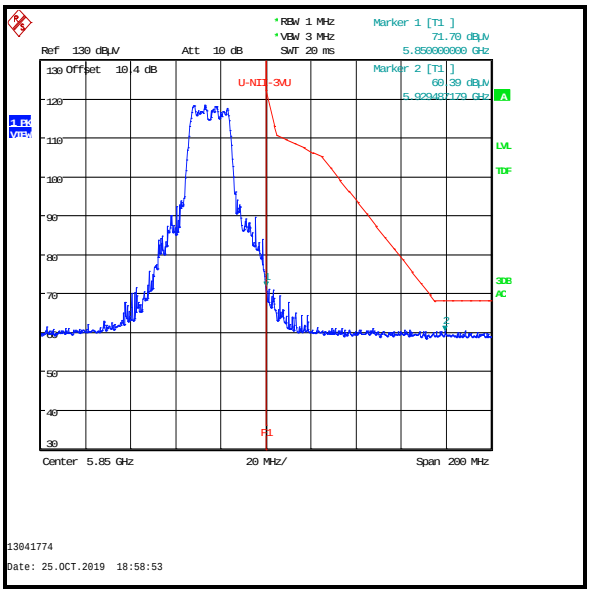
Results: 802.11n / 20 MHz / MIMO / 3Tx CDD / BPSK / MCS0 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5642.308	-34.2	-27.0	7.2	Complied
5725	-8.2	27.0	35.2	Complied
5850	-23.5	27.0	50.5	Complied
5929.487	-34.8	-27.0	7.8	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5642.308	61.0	68.2	7.2	Complied
5725	87.0	122.2	35.2	Complied
5850	71.7	122.2	50.5	Complied
5929.487	60.4	68.2	7.8	Complied



Lower Band Edge



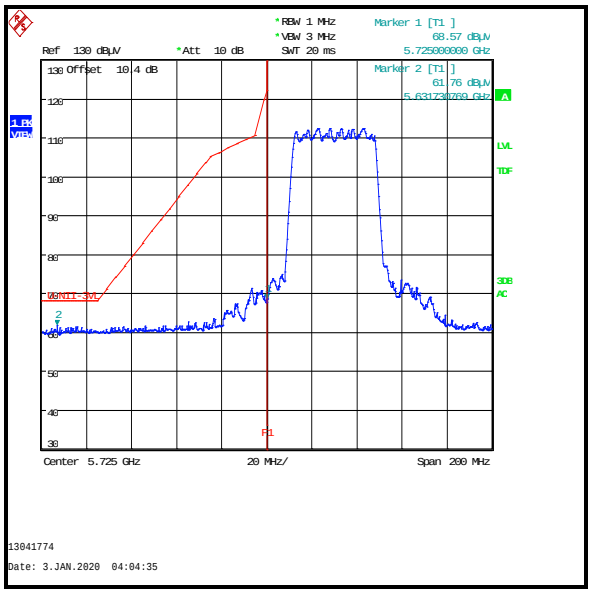
Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

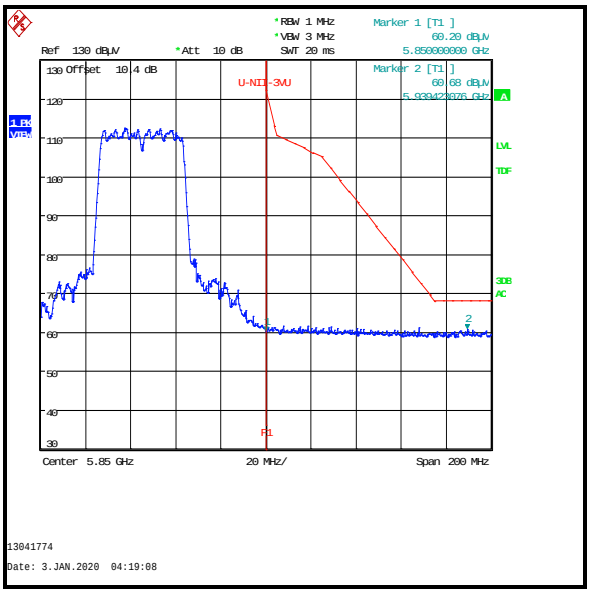
Results: 802.11n / 40 MHz / MIMO / 3Tx CDD / BPSK / MCS0 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5631.731	-33.4	-27.0	6.4	Complied
5725	-26.6	27.0	53.6	Complied
5850	-35.0	27.0	62.0	Complied
5939.423	-34.5	-27.0	7.5	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5631.731	61.8	68.2	6.4	Complied
5725	68.6	122.2	53.6	Complied
5850	60.2	122.2	62.0	Complied
5939.423	60.7	68.2	7.5	Complied



Lower Band Edge



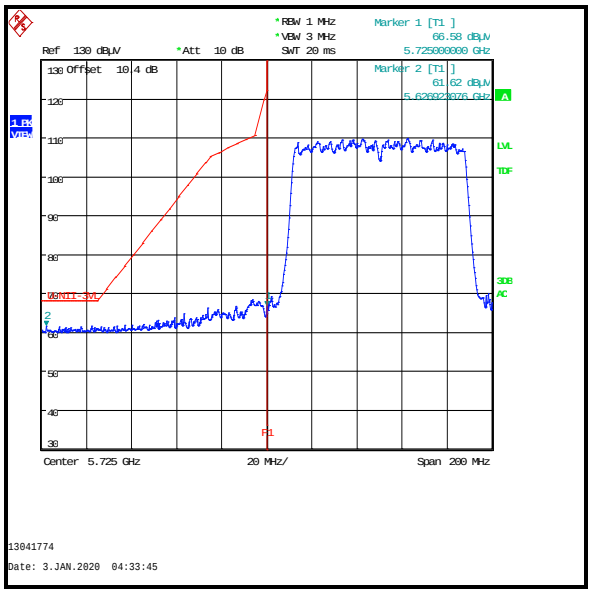
Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

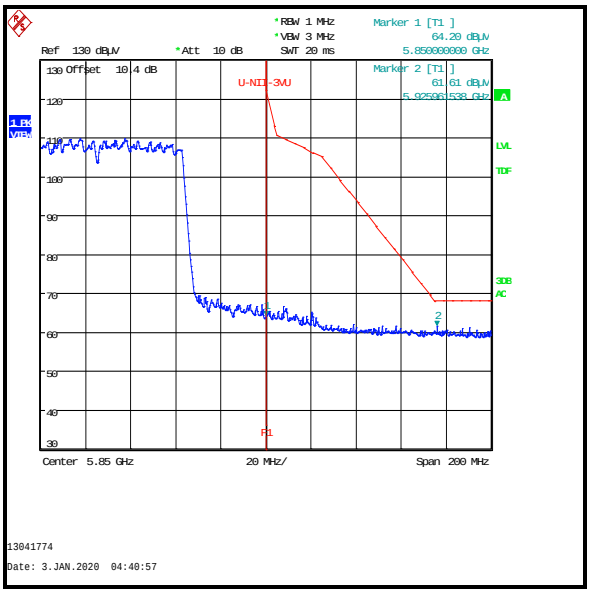
Results: 802.11ac / 80 MHz / MIMO / 3Tx CDD / BPSK / MCS0x1 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5626.923	-33.6	-27.0	6.6	Complied
5725	-28.6	27.0	55.6	Complied
5850	-31.0	27.0	58.0	Complied
5927.564	-33.6	-27.0	6.6	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5626.923	61.6	68.2	6.6	Complied
5725	66.6	122.2	55.6	Complied
5850	64.2	122.2	58.0	Complied
5925.962	61.6	68.2	6.6	Complied



Lower Band Edge



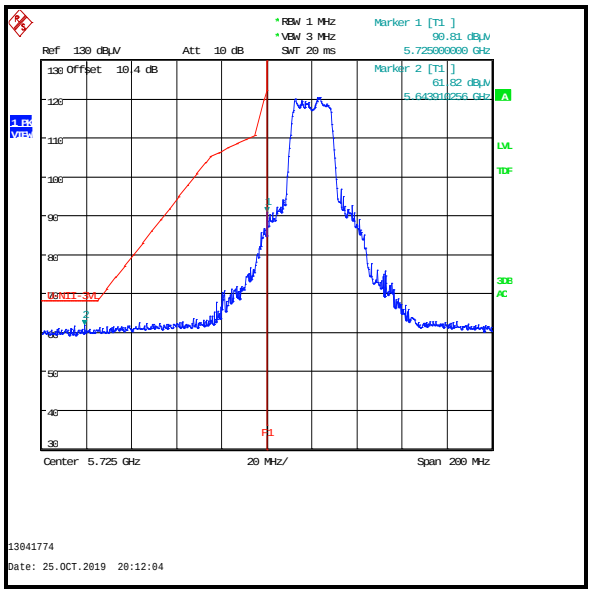
Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

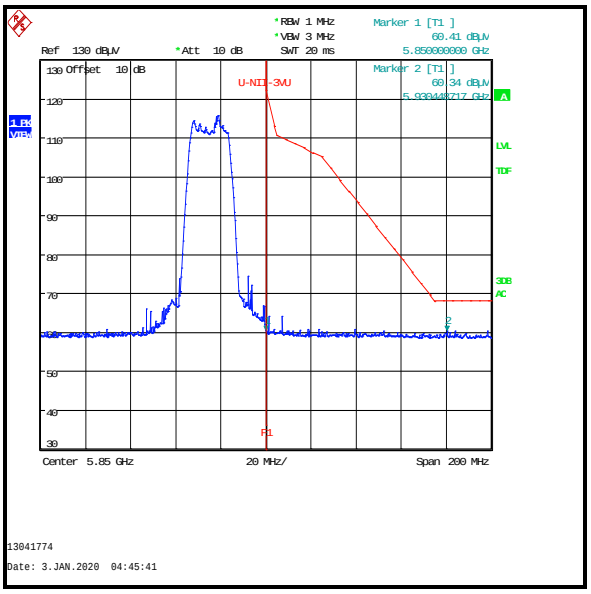
Results: 802.11n / 20 MHz / MIMO / 3Tx SDM / BPSK / MCS16 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5643.910	-33.4	-27.0	6.4	Complied
5725	-4.4	27.0	31.4	Complied
5850	-34.8	27.0	61.8	Complied
5930.449	-34.9	-27.0	7.9	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5643.910	61.8	68.2	6.4	Complied
5725	90.8	122.2	31.4	Complied
5850	60.4	122.2	61.8	Complied
5930.449	60.3	68.2	7.9	Complied



Lower Band Edge



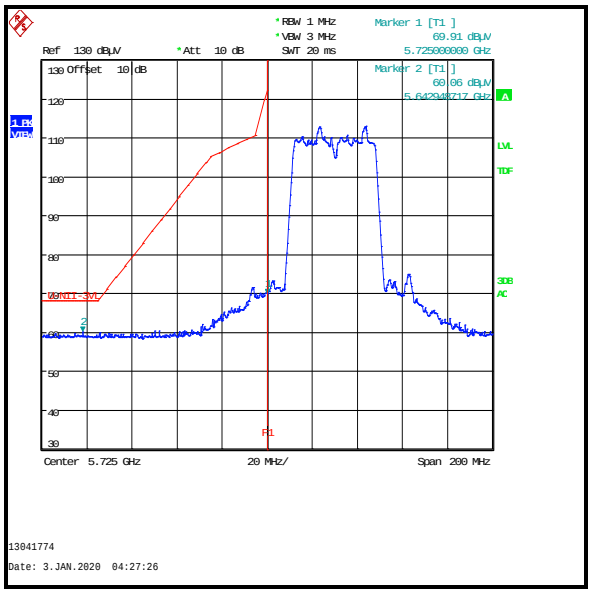
Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

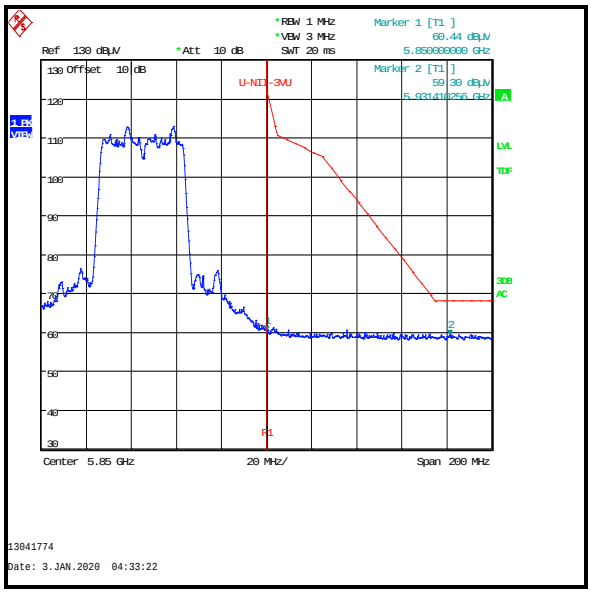
Results: 802.11n / 40 MHz / MIMO / 3Tx SDM / BPSK / MCS16 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5642.949	-35.1	-27.0	8.1	Complied
5725	-25.3	27.0	52.3	Complied
5850	-34.8	27.0	61.8	Complied
5931.410	-35.9	-27.0	8.9	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5642.949	60.1	68.2	8.1	Complied
5725	69.9	122.2	52.3	Complied
5850	60.4	122.2	61.8	Complied
5931.410	59.3	68.2	8.9	Complied



Lower Band Edge



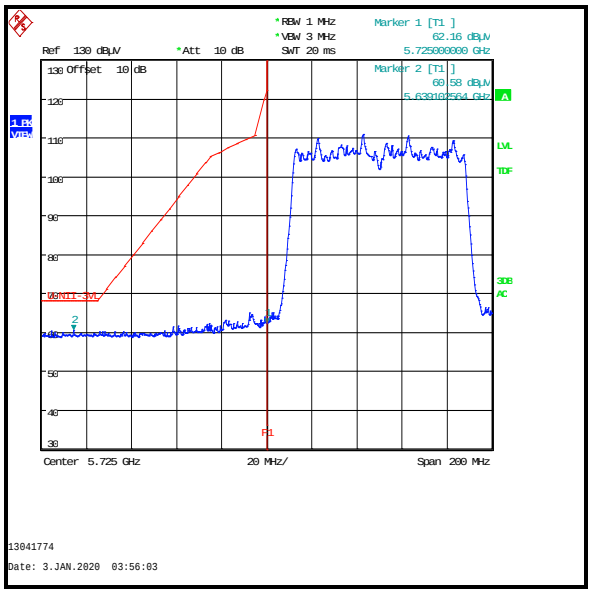
Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

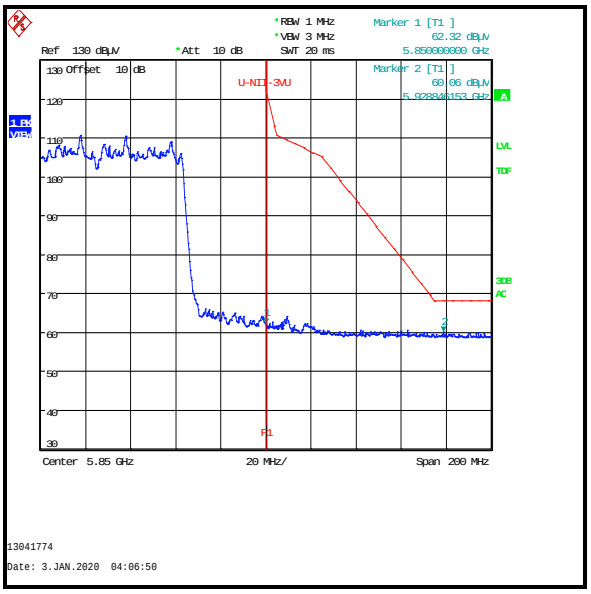
Results: 802.11ac / 80 MHz / MIMO / 3Tx SDM / BPSK / MCS0x3 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5639.103	-34.6	-27.0	7.6	Complied
5725	-33.0	27.0	60.0	Complied
5850	-32.9	27.0	59.9	Complied
5928.846	-35.1	-27.0	8.1	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5639.103	60.6	68.2	7.6	Complied
5725	62.2	122.2	60.0	Complied
5850	62.3	122.2	59.9	Complied
5928.846	60.1	68.2	8.1	Complied



Lower Band Edge



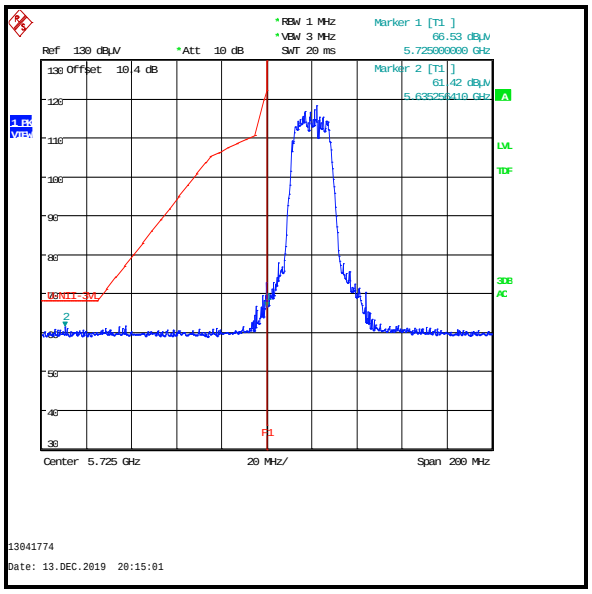
Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

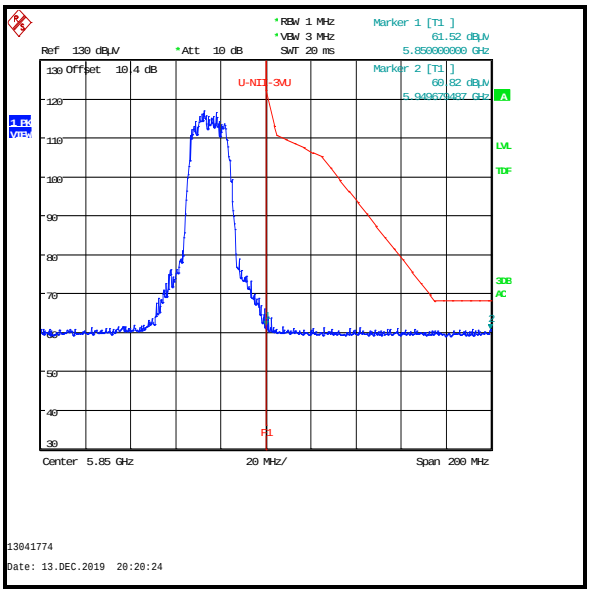
Results: 802.11n / 20 MHz / MIMO / 3Tx TXBF / BPSK / MCS0 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5635.256	-33.8	-27.0	6.8	Complied
5725	-28.7	27.0	55.7	Complied
5850	-33.7	27.0	60.7	Complied
5949.679	-34.4	-27.0	7.4	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5635.256	61.4	68.2	6.8	Complied
5725	66.5	122.2	55.7	Complied
5850	61.5	122.2	60.7	Complied
5949.679	60.8	68.2	7.4	Complied



Lower Band Edge



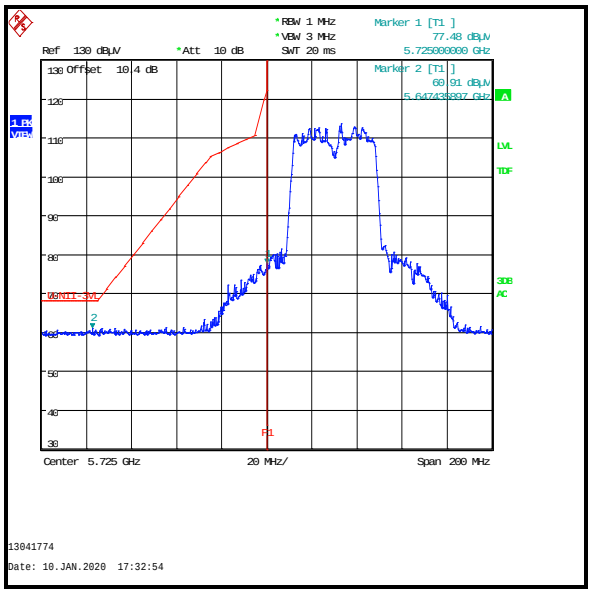
Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

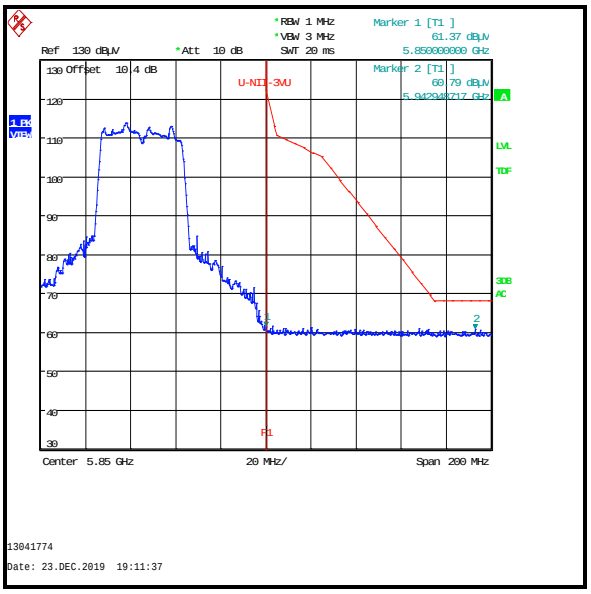
Results: 802.11n / 40 MHz / MIMO / 3Tx TXBF / BPSK / MCS0 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5647.436	-34.3	-27.0	7.3	Complied
5725	-17.7	27.0	44.7	Complied
5850	-33.8	27.0	60.8	Complied
5942.949	-34.4	-27.0	7.4	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5647.436	60.9	68.2	7.3	Complied
5725	77.5	122.2	44.7	Complied
5850	61.4	122.2	60.8	Complied
5942.949	60.8	68.2	7.4	Complied



Lower Band Edge



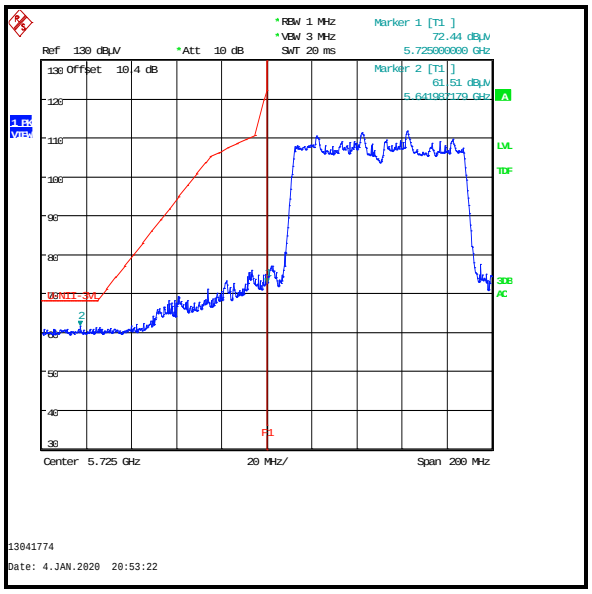
Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.85 GHz band operation) (continued)

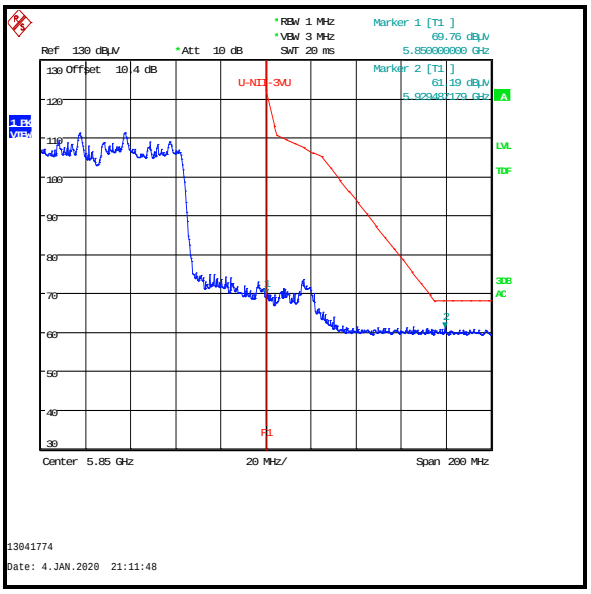
Results: 802.11ac / 80 MHz / MIMO / 3Tx TXBF / BPSK / MCS0x1 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
5641.987	-33.7	-27.0	6.7	Complied
5725	-22.8	27.0	49.8	Complied
5850	-25.4	27.0	52.4	Complied
5929.487	-34.0	-27.0	7.0	Complied

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5641.987	61.5	68.2	6.7	Complied
5725	72.4	122.2	49.8	Complied
5850	69.8	122.2	52.4	Complied
5929.487	61.2	68.2	7.0	Complied



Lower Band Edge



Upper Band Edge

Appendix 1

Directional Antenna Gain Calculations – 2Tx CDD / Output Power Measurements

Frequency Band 5150-5250 MHz

For 2Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) directional antenna gain was calculated using the formula applicable to equal antenna gains. G_{ANT} was set equal to the gain of the antenna having the highest gain. In accordance with KDB 662911 D01 v02r01 Section F)2)f)(i) and for N_{ANT}=2:

Directional gain = G_{ANT} + Array Gain = 5.6 dBi + 0 dB = 5.6 dBi

Frequency Band 5250-5350 MHz

For 2Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) directional antenna gain was calculated using the formula applicable to equal antenna gains. G_{ANT} was set equal to the gain of the antenna having the highest gain. In accordance with KDB 662911 D01 v02r01 Section F)2)f)(i) and for N_{ANT}=2:

Directional gain = G_{ANT} + Array Gain = 5.2 dBi + 0 dB = 5.2 dBi

Frequency Band 5470-5725 MHz

For 2Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) directional antenna gain was calculated using the formula applicable to equal antenna gains. G_{ANT} was set equal to the gain of the antenna having the highest gain. In accordance with KDB 662911 D01 v02r01 Section F)2)f)(i) and for N_{ANT}=2:

Directional gain = G_{ANT} + Array Gain = 4.3 dBi + 0 dB = 4.3 dBi

Frequency Band 5725-5850 MHz

For 2Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) directional antenna gain was calculated using the formula applicable to equal antenna gains. G_{ANT} was set equal to the gain of the antenna having the highest gain. In accordance with KDB 662911 D01 v02r01 Section F)2)f)(i) and for N_{ANT}=2:

Directional gain = G_{ANT} + Array Gain = 4.4 dBi + 0 dB = 4.4 dBi

Appendix 1 (continued)

Directional Antenna Gain Calculations – 3Tx CDD / Output Power Measurements

Frequency Band 5150-5250 MHz

For 3Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) directional antenna gain was calculated using the formula applicable to equal antenna gains. G_{ANT} was set equal to the gain of the antenna having the highest gain. In accordance with KDB 662911 D01 v02r01 Section F)2)f)(i) and for N_{ANT}=3:

Directional gain = G_{ANT} + Array Gain = 5.6 dBi + 0 dB = 5.6 dBi

Frequency Band 5250-5350 MHz

For 3Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) directional antenna gain was calculated using the formula applicable to equal antenna gains. G_{ANT} was set equal to the gain of the antenna having the highest gain. In accordance with KDB 662911 D01 v02r01 Section F)2)f)(i) and for N_{ANT}=3:

Directional gain = G_{ANT} + Array Gain = 5.2 dBi + 0 dB = 5.2 dBi

Frequency Band 5470-5725 MHz

For 3Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) directional antenna gain was calculated using the formula applicable to equal antenna gains. G_{ANT} was set equal to the gain of the antenna having the highest gain. In accordance with KDB 662911 D01 v02r01 Section F)2)f)(i) and for N_{ANT}=3:

Directional gain = G_{ANT} + Array Gain = 4.3 dBi + 0 dB = 4.3 dBi

Frequency Band 5725-5850 MHz

For 3Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) directional antenna gain was calculated using the formula applicable to equal antenna gains. G_{ANT} was set equal to the gain of the antenna having the highest gain. In accordance with KDB 662911 D01 v02r01 Section F)2)f)(i) and for N_{ANT}=3:

Directional gain = G_{ANT} + Array Gain = 4.4 dBi + 0 dB = 4.4 dBi

Appendix 1 (continued)

Directional Antenna Gain Calculations – 2Tx CDD / PSD Measurements

Frequency Band 5150-5250 MHz

For 2Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) and for N_{SS}=1, N_{ANT}=2, $G_1 = G_{ANTENNA\ Core\ 0}$ = 5.6 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 5.0 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\sum_{j=1}^{N_{SS}}\left(\sum_{k=1}^{N_{ANT}} g_{j,k}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\sum_{j=1}^{1}\left(\sum_{k=1}^{3} g_{j,k}\right)^2}{2}\right]$$

$$= 10\log\left[\frac{\left(g_{1,1}+g_{1,2}\right)^2}{2}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}}+10^{\frac{G_2}{20}}\right)^2}{2}\right] = 10\log\left[\frac{\left(10^{\frac{5.6}{20}}+10^{\frac{5.0}{20}}\right)^2}{2}\right] = 8.3\ \text{dBi}$$

Frequency Band 5250-5350 MHz

For 2Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) and for N_{SS}=1, N_{ANT}=2, $G_1 = G_{ANTENNA\ Core\ 0}$ = 5.2 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 4.2 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\sum_{j=1}^{N_{SS}}\left(\sum_{k=1}^{N_{ANT}} g_{j,k}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\sum_{j=1}^{1}\left(\sum_{k=1}^{3} g_{j,k}\right)^2}{2}\right]$$

$$= 10\log\left[\frac{\left(g_{1,1}+g_{1,2}\right)^2}{2}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}}+10^{\frac{G_2}{20}}\right)^2}{2}\right] = 10\log\left[\frac{\left(10^{\frac{5.2}{20}}+10^{\frac{4.2}{20}}\right)^2}{2}\right] = 7.7\ \text{dBi}$$

Frequency Band 5470-5725 MHz

For 2Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) and for N_{SS}=1, N_{ANT}=2, $G_1 = G_{ANTENNA\ Core\ 0}$ = 4.3 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 3.2 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\sum_{j=1}^{N_{SS}}\left(\sum_{k=1}^{N_{ANT}} g_{j,k}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\sum_{j=1}^{1}\left(\sum_{k=1}^{3} g_{j,k}\right)^2}{2}\right]$$

$$= 10\log\left[\frac{\left(g_{1,1}+g_{1,2}\right)^2}{2}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}}+10^{\frac{G_2}{20}}\right)^2}{2}\right] = 10\log\left[\frac{\left(10^{\frac{4.3}{20}}+10^{\frac{3.2}{20}}\right)^2}{2}\right] = 6.8\ \text{dBi}$$

Frequency Band 5725-5850 MHz

For 2Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) and for N_{SS}=1, N_{ANT}=2, $G_1 = G_{ANTENNA\ Core\ 0}$ = 4.4 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 3.2 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\sum_{j=1}^{N_{SS}}\left(\sum_{k=1}^{N_{ANT}} g_{j,k}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\sum_{j=1}^{1}\left(\sum_{k=1}^{3} g_{j,k}\right)^2}{2}\right]$$

$$= 10\log\left[\frac{\left(g_{1,1}+g_{1,2}\right)^2}{2}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}}+10^{\frac{G_2}{20}}\right)^2}{2}\right] = 10\log\left[\frac{\left(10^{\frac{4.4}{20}}+10^{\frac{3.2}{20}}\right)^2}{2}\right] = 6.8\ \text{dBi}$$

Appendix 1 (continued)

Directional Antenna Gain Calculations – 3Tx CDD / PSD Measurements

Frequency Band 5150-5250 MHz

For 3Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) and for N_{SS}=1, N_{ANT}=3, G_1 = $G_{ANTENNA\ Core\ 0}$ = 5.6 dBi, G_2 = $G_{ANTENNA\ Core\ 1}$ = 5.0 dBi, $G_{ANTENNA\ Core\ 2}$ = 4.0 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\sum_{j=1}^{N_{SS}}\left(\sum_{k=1}^{N_{ANT}} g_{j,k}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\sum_{j=1}^{1}\left(\sum_{k=1}^{3} g_{j,k}\right)^2}{3}\right]$$

$$= 10\log\left[\frac{\left(g_{1,1}+g_{1,2}+g_{1,3}\right)^2}{3}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}}+10^{\frac{G_2}{20}}+10^{\frac{G_3}{20}}\right)^2}{3}\right] = 10\log\left[\frac{\left(10^{\frac{5.6}{20}}+10^{\frac{5.0}{20}}+10^{\frac{4.0}{20}}\right)^2}{3}\right] = 9.7\ \text{dBi}$$

Frequency Band 5250-5350 MHz

For 3Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) and for N_{SS}=1, N_{ANT}=3, G_1 = $G_{ANTENNA\ Core\ 0}$ = 5.2 dBi, G_2 = $G_{ANTENNA\ Core\ 1}$ = 4.2 dBi, $G_{ANTENNA\ Core\ 2}$ = 3.3 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\sum_{j=1}^{N_{SS}}\left(\sum_{k=1}^{N_{ANT}} g_{j,k}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\sum_{j=1}^{1}\left(\sum_{k=1}^{3} g_{j,k}\right)^2}{3}\right]$$

$$= 10\log\left[\frac{\left(g_{1,1}+g_{1,2}+g_{1,3}\right)^2}{3}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}}+10^{\frac{G_2}{20}}+10^{\frac{G_3}{20}}\right)^2}{3}\right] = 10\log\left[\frac{\left(10^{\frac{5.2}{20}}+10^{\frac{4.2}{20}}+10^{\frac{3.3}{20}}\right)^2}{3}\right] = 9.0\ \text{dBi}$$

Frequency Band 5470-5725 MHz

For 3Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) and for N_{SS}=1, N_{ANT}=3, G_1 = $G_{ANTENNA\ Core\ 0}$ = 4.3 dBi, G_2 = $G_{ANTENNA\ Core\ 1}$ = 3.2 dBi, $G_{ANTENNA\ Core\ 2}$ = 3.0 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\sum_{j=1}^{N_{SS}}\left(\sum_{k=1}^{N_{ANT}} g_{j,k}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\sum_{j=1}^{1}\left(\sum_{k=1}^{3} g_{j,k}\right)^2}{3}\right]$$

$$= 10\log\left[\frac{\left(g_{1,1}+g_{1,2}+g_{1,3}\right)^2}{3}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}}+10^{\frac{G_2}{20}}+10^{\frac{G_3}{20}}\right)^2}{3}\right] = 10\log\left[\frac{\left(10^{\frac{4.3}{20}}+10^{\frac{3.2}{20}}+10^{\frac{3.0}{20}}\right)^2}{3}\right] = 8.3\ \text{dBi}$$

Frequency Band 5725-5850 MHz

For 3Tx CDD modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(ii) and for N_{SS}=1, N_{ANT}=3, G_1 = $G_{ANTENNA\ Core\ 0}$ = 4.4 dBi, G_2 = $G_{ANTENNA\ Core\ 1}$ = 3.2 dBi, $G_{ANTENNA\ Core\ 2}$ = 3.0 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\sum_{j=1}^{N_{SS}}\left(\sum_{k=1}^{N_{ANT}} g_{j,k}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\sum_{j=1}^{1}\left(\sum_{k=1}^{3} g_{j,k}\right)^2}{3}\right]$$

$$= 10\log\left[\frac{\left(g_{1,1}+g_{1,2}+g_{1,3}\right)^2}{3}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}}+10^{\frac{G_2}{20}}+10^{\frac{G_3}{20}}\right)^2}{3}\right] = 10\log\left[\frac{\left(10^{\frac{4.4}{20}}+10^{\frac{3.2}{20}}+10^{\frac{3.0}{20}}\right)^2}{3}\right] = 8.3\ \text{dBi}$$

Appendix 1 (continued)

Directional Antenna Gain Calculations – 2Tx SDM

Frequency Band 5150-5250 MHz

For 2Tx SDM modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(ii) and for N_{SS}=1, N_{ANT}=2, $G_1 = G_{ANTENNA\ Core\ 0}$ = 5.6 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 5.0 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + \cdots + 10^{\frac{G_N}{10}}}{N_{ANT}}\right] = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}}}{N_{ANT}}\right] = 10\log\left[\frac{10^{\frac{5.6}{10}} + 10^{\frac{5.0}{10}}}{2}\right] = 5.3\ \text{dBi}$$

Frequency Band 5250-5350 MHz

For 2Tx SDM modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(ii) and for N_{SS}=1, N_{ANT}=2, $G_1 = G_{ANTENNA\ Core\ 0}$ = 5.2 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 4.2 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + \cdots + 10^{\frac{G_N}{10}}}{N_{ANT}}\right] = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}}}{N_{ANT}}\right] = 10\log\left[\frac{10^{\frac{5.2}{10}} + 10^{\frac{4.2}{10}}}{2}\right] = 4.7\ \text{dBi}$$

Frequency Band 5470-5725 MHz

For 2Tx SDM modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(ii) and for N_{SS}=1, N_{ANT}=2, $G_1 = G_{ANTENNA\ Core\ 0}$ = 4.3 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 3.2 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + \cdots + 10^{\frac{G_N}{10}}}{N_{ANT}}\right] = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}}}{N_{ANT}}\right] = 10\log\left[\frac{10^{\frac{4.3}{10}} + 10^{\frac{3.2}{10}}}{2}\right] = 3.8\ \text{dBi}$$

Frequency Band 5725-5850 MHz

For 2Tx SDM modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(ii) and for N_{SS}=1, N_{ANT}=2, $G_1 = G_{ANTENNA\ Core\ 0}$ = 4.4 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 3.2 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + \cdots + 10^{\frac{G_N}{10}}}{N_{ANT}}\right] = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}}}{N_{ANT}}\right] = 10\log\left[\frac{10^{\frac{4.4}{10}} + 10^{\frac{3.2}{10}}}{2}\right] = 3.8\ \text{dBi}$$

Appendix 1 (continued)

Directional Antenna Gain Calculations – 3Tx SDM

Frequency Band 5150-5250 MHz

For 3Tx SDM modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(ii) and for N_{SS}=1, N_{ANT}=3, G_1 = $G_{ANTENNA\ Core\ 0}$ = 5.6 dBi, G_2 = $G_{ANTENNA\ Core\ 1}$ = 5.0 dBi, $G_{ANTENNA\ Core\ 2}$ = 4.0 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + \cdots + 10^{\frac{G_N}{10}}}{N_{ANT}}\right] = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + 10^{\frac{G_3}{10}}}{N_{ANT}}\right]$$
$$= 10\log\left[\frac{10^{\frac{5.6}{10}} + 10^{\frac{5.0}{10}} + 10^{\frac{4.0}{10}}}{3}\right] = 4.9 \text{ dBi}$$

Frequency Band 5250-5350 MHz

For 3Tx SDM modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(ii) and for N_{SS}=1, N_{ANT}=3, G_1 = $G_{ANTENNA\ Core\ 0}$ = 5.2 dBi, G_2 = $G_{ANTENNA\ Core\ 1}$ = 4.2 dBi, $G_{ANTENNA\ Core\ 2}$ = 3.3 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + \cdots + 10^{\frac{G_N}{10}}}{N_{ANT}}\right] = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + 10^{\frac{G_3}{10}}}{N_{ANT}}\right]$$
$$= 10\log\left[\frac{10^{\frac{5.2}{10}} + 10^{\frac{4.2}{10}} + 10^{\frac{3.3}{10}}}{3}\right] = 4.3 \text{ dBi}$$

Frequency Band 5470-5725 MHz

For 3Tx SDM modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(ii) and for N_{SS}=1, N_{ANT}=3, G_1 = $G_{ANTENNA\ Core\ 0}$ = 4.3 dBi, G_2 = $G_{ANTENNA\ Core\ 1}$ = 3.2 dBi, $G_{ANTENNA\ Core\ 2}$ = 3.0 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + \cdots + 10^{\frac{G_N}{10}}}{N_{ANT}}\right] = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + 10^{\frac{G_3}{10}}}{N_{ANT}}\right]$$
$$= 10\log\left[\frac{10^{\frac{4.3}{10}} + 10^{\frac{3.2}{10}} + 10^{\frac{3.0}{10}}}{3}\right] = 3.5 \text{ dBi}$$

Frequency Band 5725-5850 MHz

For 3Tx SDM modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(ii) and for N_{SS}=1, N_{ANT}=3, G_1 = $G_{ANTENNA\ Core\ 0}$ = 4.4 dBi, G_2 = $G_{ANTENNA\ Core\ 1}$ = 3.2 dBi, $G_{ANTENNA\ Core\ 2}$ = 3.0 dBi

$$\text{Directional Gain} = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + \cdots + 10^{\frac{G_N}{10}}}{N_{ANT}}\right] = 10\log\left[\frac{10^{\frac{G_1}{10}} + 10^{\frac{G_2}{10}} + 10^{\frac{G_3}{10}}}{N_{ANT}}\right]$$
$$= 10\log\left[\frac{10^{\frac{4.4}{10}} + 10^{\frac{3.2}{10}} + 10^{\frac{3.0}{10}}}{3}\right] = 3.6 \text{ dBi}$$

Appendix 1 (continued)

Directional Antenna Gain Calculations – 2Tx TxBF

Frequency Band 5150-5250 MHz

For 2Tx TxBF modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(i) and for N_{SS}=1, N_{ANT}=2, $G_1 = G_{ANTENNA\ Core\ 0}$ = 5.6 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 5.0 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + \cdots + 10^{\frac{G_N}{20}}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}}\right)^2}{2}\right]$$

$$= 10\log\left[\frac{\left(10^{\frac{5.6}{20}} + 10^{\frac{5.0}{20}}\right)^2}{2}\right] = 8.3\ \text{dBi}$$

Frequency Band 5250-5350 MHz

For 2Tx TxBF modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(i) and for N_{SS}=1, N_{ANT}=2, $G_1 = G_{ANTENNA\ Core\ 0}$ = 5.2 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 4.2 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + \cdots + 10^{\frac{G_N}{20}}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}}\right)^2}{2}\right]$$

$$= 10\log\left[\frac{\left(10^{\frac{5.2}{20}} + 10^{\frac{4.2}{20}}\right)^2}{2}\right] = 7.7\ \text{dBi}$$

Frequency Band 5470-5725 MHz

For 2Tx TxBF modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(i) and for N_{SS}=1, N_{ANT}=2, $G_1 = G_{ANTENNA\ Core\ 0}$ = 4.3 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 3.2 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + \cdots + 10^{\frac{G_N}{20}}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}}\right)^2}{2}\right]$$

$$= 10\log\left[\frac{\left(10^{\frac{4.3}{20}} + 10^{\frac{3.2}{20}}\right)^2}{2}\right] = 6.8\ \text{dBi}$$

Frequency Band 5725-5850 MHz

For 2Tx TxBF modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(i) and for N_{SS}=1, N_{ANT}=2, $G_1 = G_{ANTENNA\ Core\ 0}$ = 4.4 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 3.2 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + \cdots + 10^{\frac{G_N}{20}}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}}\right)^2}{2}\right]$$

$$= 10\log\left[\frac{\left(10^{\frac{4.4}{20}} + 10^{\frac{3.2}{20}}\right)^2}{2}\right] = 6.8\ \text{dBi}$$

Appendix 1 (continued)

Directional Antenna Gain Calculations – 3Tx TxBF

Frequency Band 5150-5250 MHz

For 3Tx TxBF modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(i) and for N_{SS}=1, N_{ANT}=3, $G_1 = G_{ANTENNA\ Core\ 0}$ = 5.6 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 5.0 dBi, $G_{ANTENNA\ Core\ 2}$ = 4.0 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + \cdots + 10^{\frac{G_N}{20}}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + 10^{\frac{G_3}{20}}\right)^2}{3}\right]$$

$$= 10\log\left[\frac{\left(10^{\frac{5.6}{20}} + 10^{\frac{5.0}{20}} + 10^{\frac{4.0}{20}}\right)^2}{3}\right] = 9.7 \text{ dBi}$$

Frequency Band 5250-5350 MHz

For 3Tx TxBF modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(i) and for N_{SS}=1, N_{ANT}=3, $G_1 = G_{ANTENNA\ Core\ 0}$ = 5.2 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 4.2 dBi, $G_{ANTENNA\ Core\ 2}$ = 3.3 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + \cdots + 10^{\frac{G_N}{20}}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + 10^{\frac{G_3}{20}}\right)^2}{3}\right]$$

$$= 10\log\left[\frac{\left(10^{\frac{5.2}{20}} + 10^{\frac{4.2}{20}} + 10^{\frac{3.3}{20}}\right)^2}{3}\right] = 9.0 \text{ dBi}$$

Frequency Band 5470-5725 MHz

For 3Tx TxBF modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(i) and for N_{SS}=1, N_{ANT}=3, $G_1 = G_{ANTENNA\ Core\ 0}$ = 4.3 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 3.2 dBi, $G_{ANTENNA\ Core\ 2}$ = 3.0 dBi:

$$\text{Directional Gain} = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + \cdots + 10^{\frac{G_N}{20}}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + 10^{\frac{G_3}{20}}\right)^2}{3}\right]$$

$$= 10\log\left[\frac{\left(10^{\frac{4.3}{20}} + 10^{\frac{3.2}{20}} + 10^{\frac{3.0}{20}}\right)^2}{3}\right] = 8.3 \text{ dBi}$$

Frequency Band 5725-5850 MHz

For 3Tx TxBF modes, in accordance with KDB 662911 D01 v02r01 Section F)2)d)(i) and for N_{SS}=1, N_{ANT}=3, $G_1 = G_{ANTENNA\ Core\ 0}$ = 4.4 dBi, $G_2 = G_{ANTENNA\ Core\ 1}$ = 3.2 dBi, $G_{ANTENNA\ Core\ 2}$ = 3.0 dBi

$$\text{Directional Gain} = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + \cdots + 10^{\frac{G_N}{20}}\right)^2}{N_{ANT}}\right] = 10\log\left[\frac{\left(10^{\frac{G_1}{20}} + 10^{\frac{G_2}{20}} + 10^{\frac{G_3}{20}}\right)^2}{3}\right]$$

$$= 10\log\left[\frac{\left(10^{\frac{4.4}{20}} + 10^{\frac{3.2}{20}} + 10^{\frac{3.0}{20}}\right)^2}{3}\right] = 8.3 \text{ dBi}$$

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