

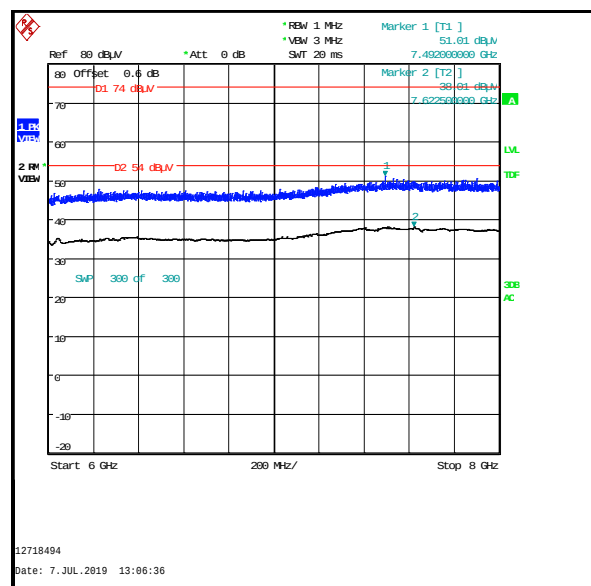
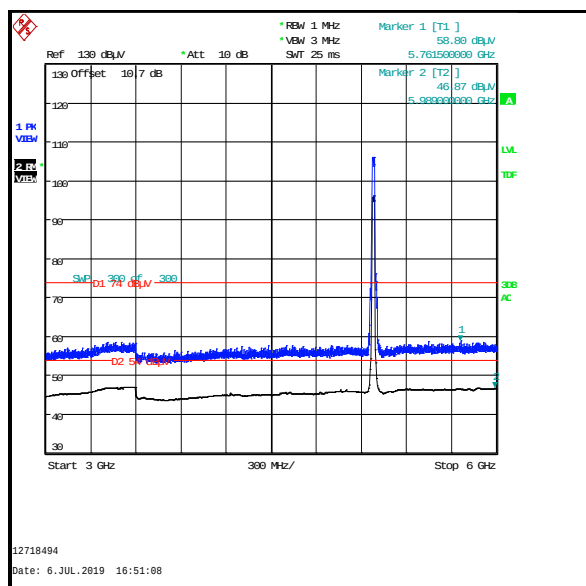
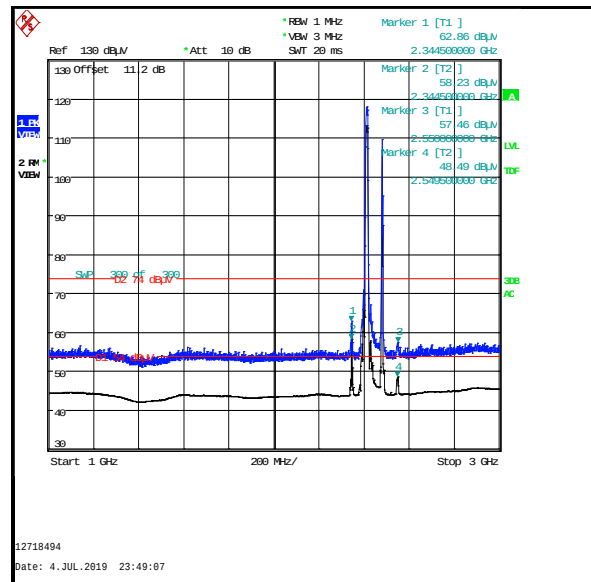
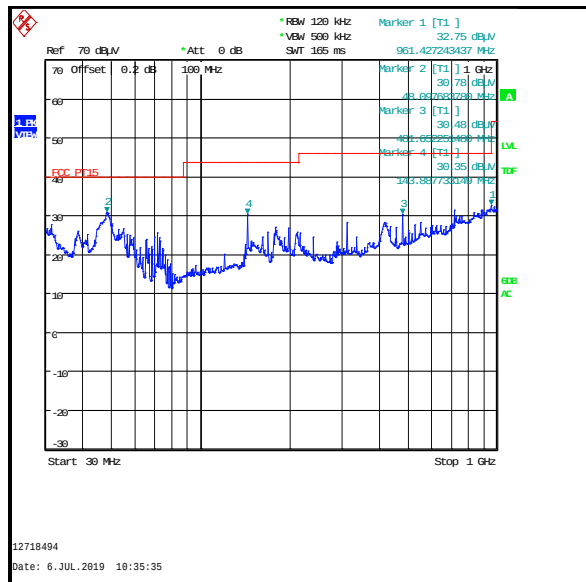
Transmitter Out of Band Radiated Emissions (*Bluetooth* Basic Rate top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) bottom channel) (continued)

Results: Peak

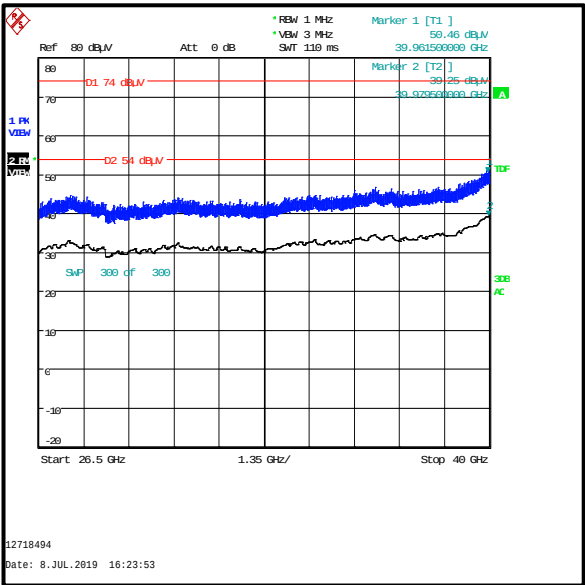
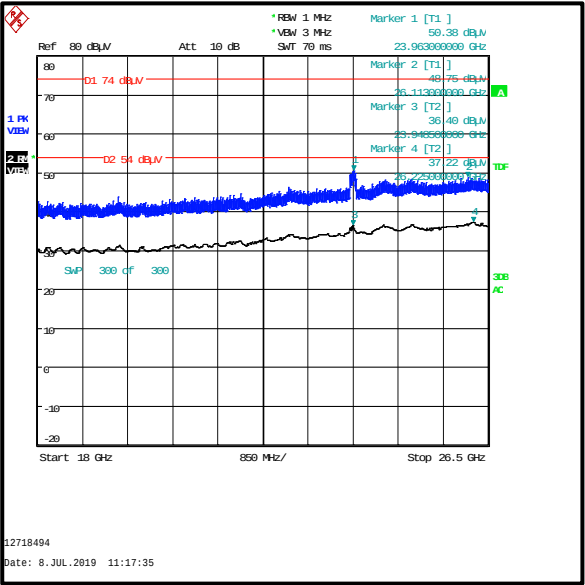
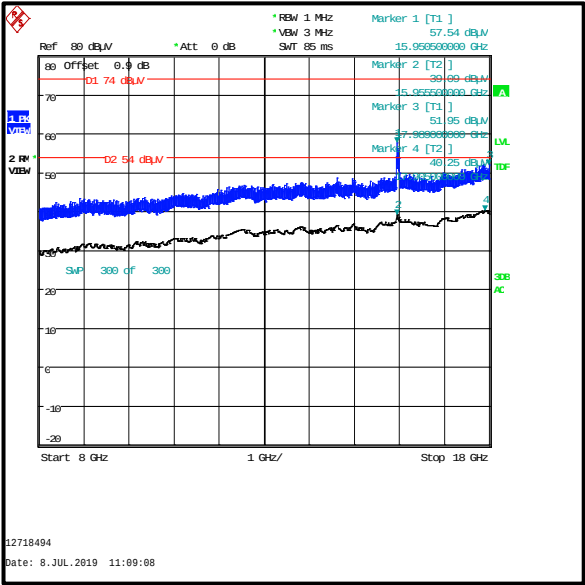
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2343.777	Vertical	56.5	74.0	17.5	Complied
2547.115	Vertical	49.9	89.9*	40.0	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2344.033	Vertical	37.5**	54.0	16.5	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz
WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) bottom channel (continued)



4.14. Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) top channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.4.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6 KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	<i>Bluetooth</i> Basic Rate top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) top channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) top channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2344 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
5. The emission at approximately 2548 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
6. The emissions at approximately 16 GHz and 24 GHz were investigated and found not to be intermodulation products
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. For final measurements the maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. *-20 dBc limit.
12. **Corrected level incorporating a duty cycle correction factor. See Appendix 1 for more information.

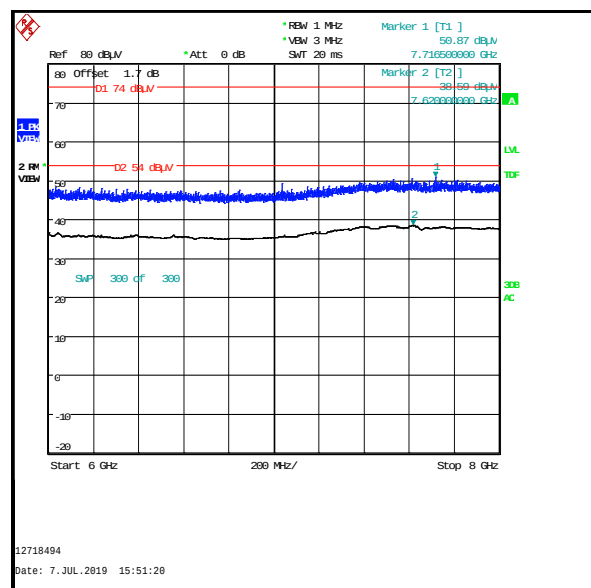
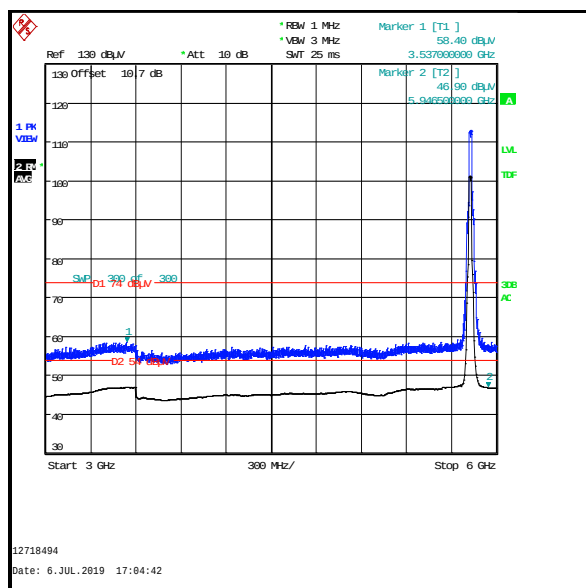
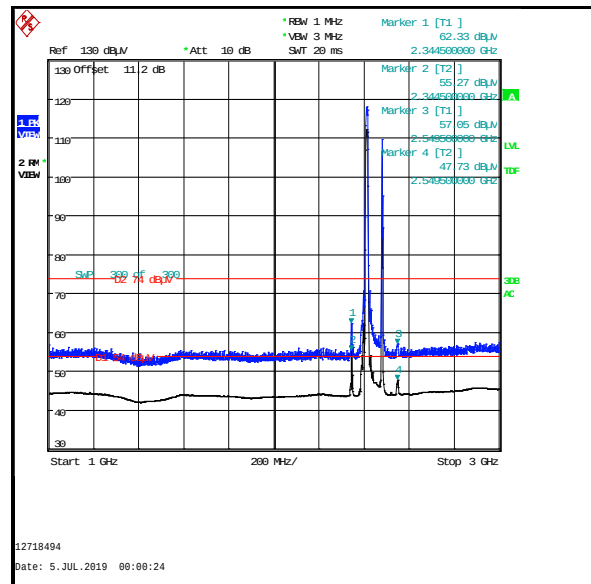
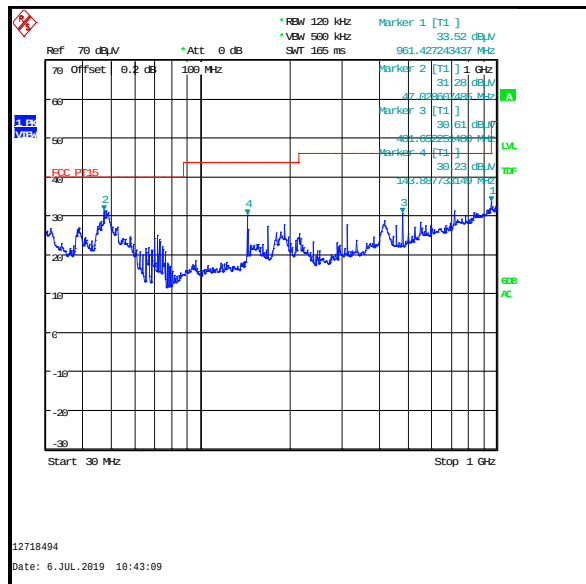
Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) top channel (continued)

Results: Peak

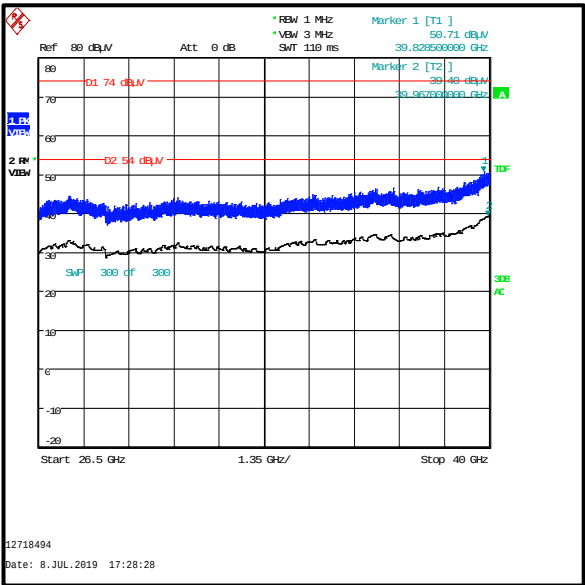
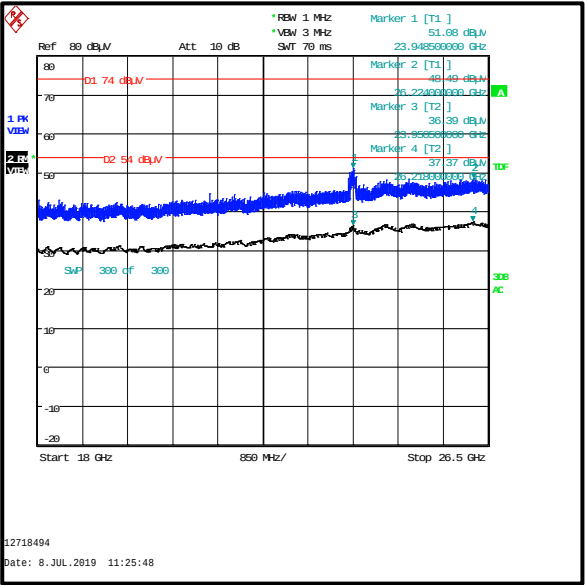
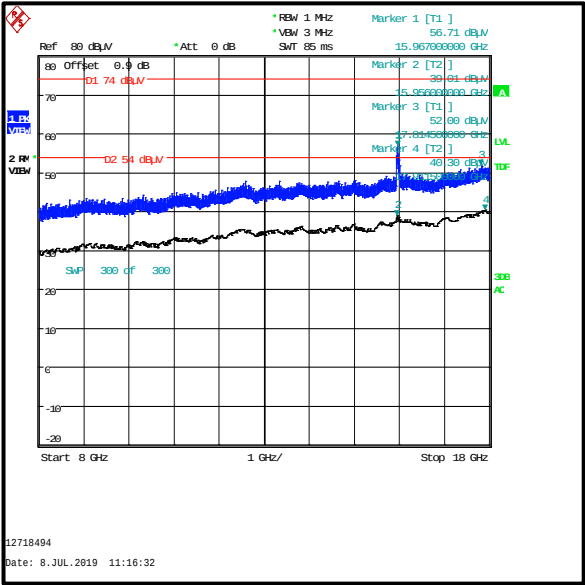
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2343.841	Vertical	54.6	74.0	19.4	Complied
2549.295	Vertical	49.9	89.9*	40.0	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2344.033	Vertical	35.6**	54.0	18.4	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz
WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) top channel (continued)



4.15. Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz WLAN (MIMO) top channel / 5 GHz WLAN (SISO) bottom channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.1.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6, KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	<i>Bluetooth</i> LE bottom channel / 2.4 GHz WLAN (MIMO) top channel / 5 GHz WLAN (SISO) bottom channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz WLAN (MIMO) top channel / 5 GHz WLAN (SISO) bottom channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* LE and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2332 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
5. The emission at approximately 2542 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
6. The emissions at approximately 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. For final measurements the maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. -20 dBc limit

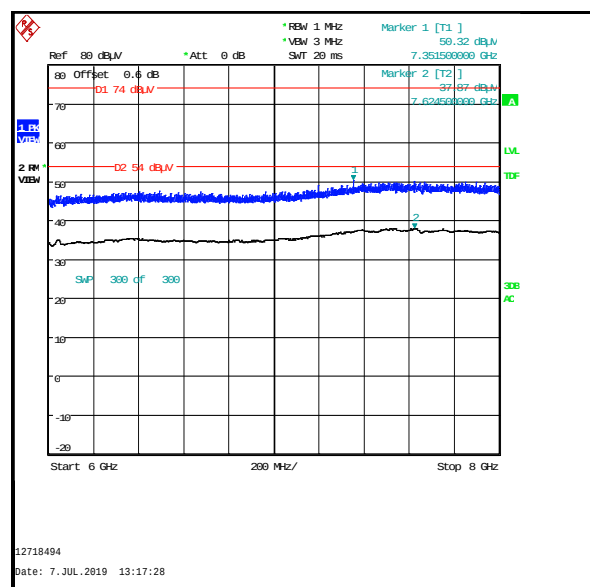
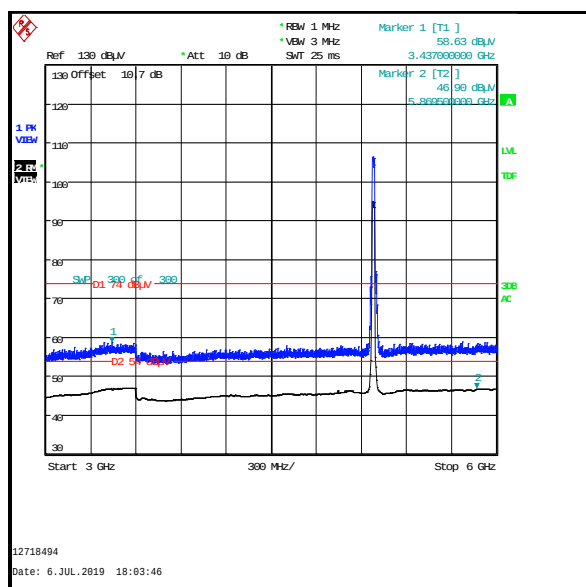
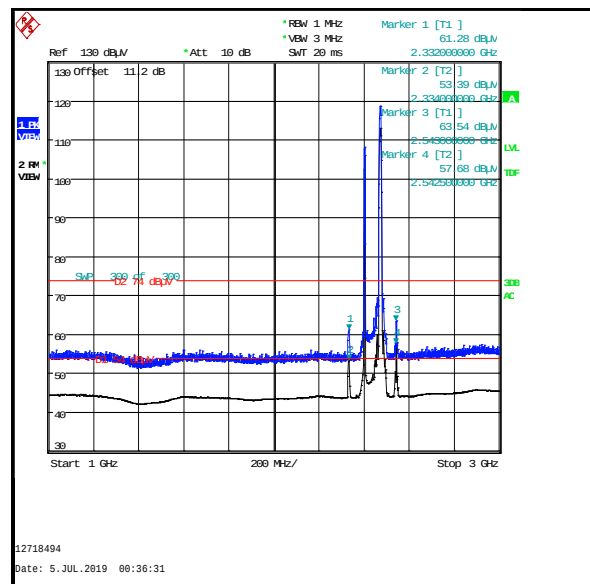
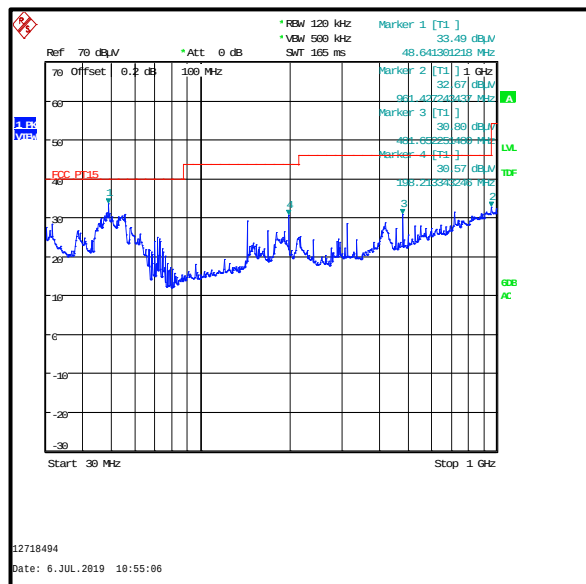
Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz WLAN (MIMO) top channel / 5 GHz WLAN (SISO) bottom channel (continued)

Results: Peak

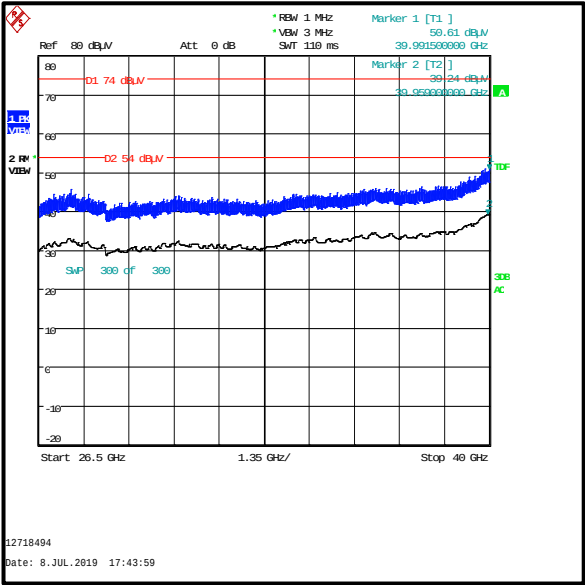
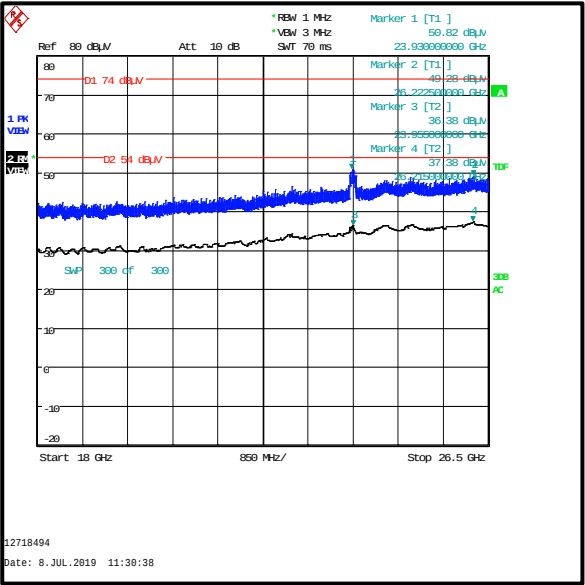
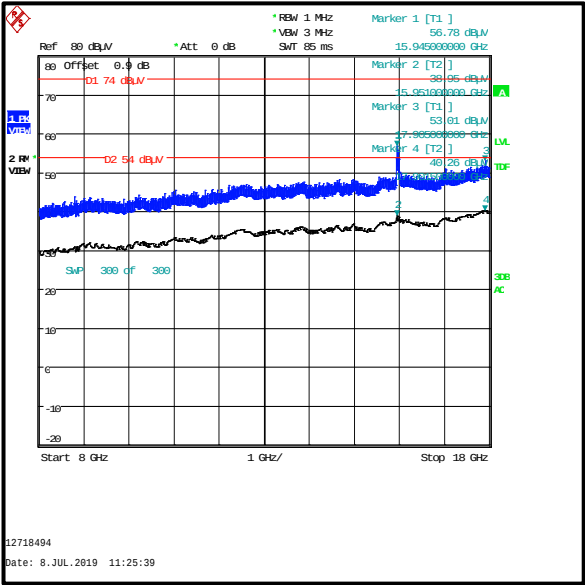
Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Margin (dB)	Result
2330.251	Vertical	52.3	74.0	21.7	Complied
2541.859	Vertical	45.4	87.7*	42.3	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
2331.533	Vertical	47.8	54.0	6.2	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz
WLAN (MIMO) top channel / 5 GHz WLAN (SISO) bottom channel (continued)



4.16. Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz WLAN (MIMO) top channel / 5 GHz WLAN (SISO) top channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.4.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6 KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	<i>Bluetooth</i> LE bottom channel / 2.4 GHz WLAN (MIMO) top channel / 5 GHz WLAN (SISO) top channel

Environmental Conditions:

Temperature (°C):	24 to 26
Relative Humidity (%):	44 to 56

Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz WLAN (MIMO) top channel / 5 GHz WLAN (SISO) top channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* LE and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2332 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
5. The emission at approximately 2542 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
6. The emissions at approximately 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. For final measurements the maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. *-20 dBc limit.

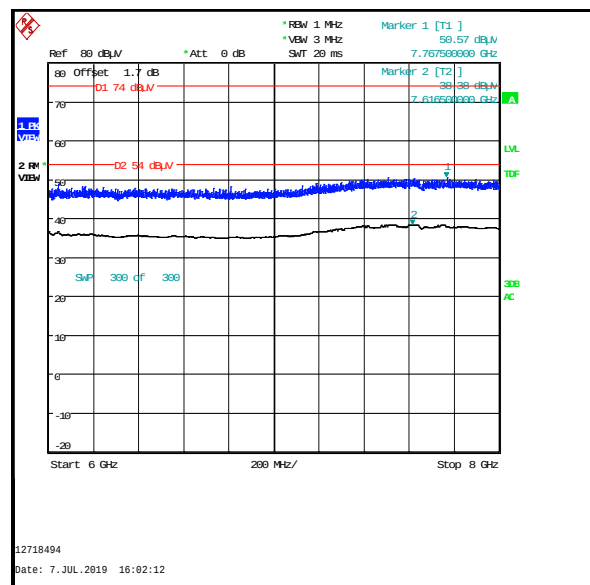
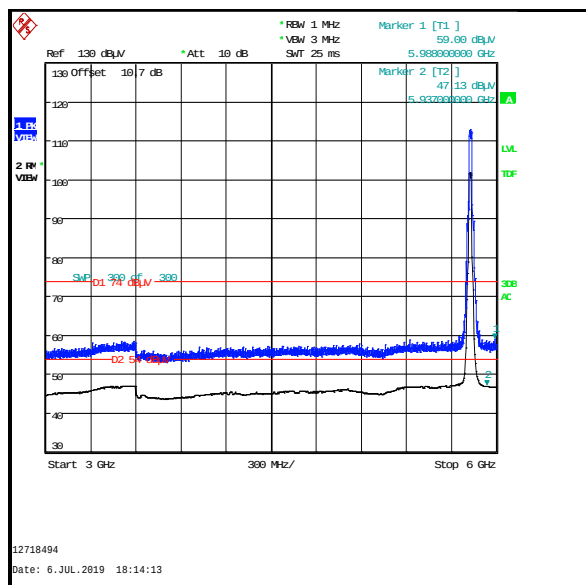
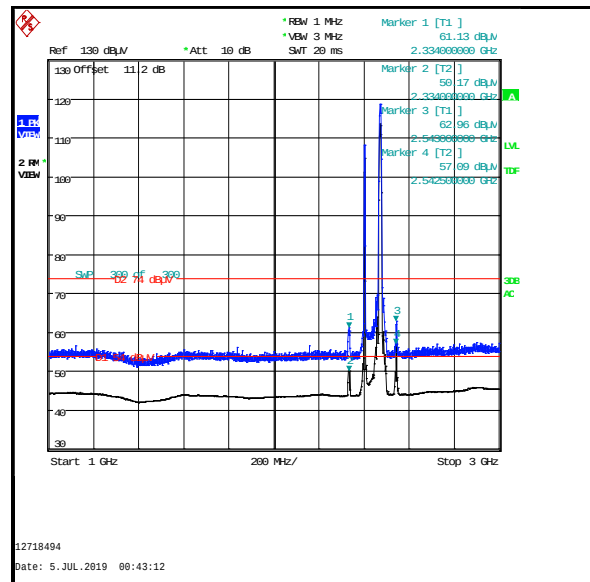
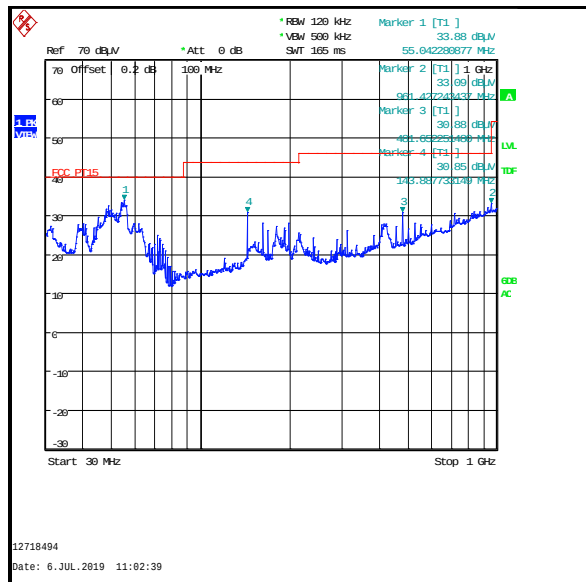
Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz WLAN (MIMO) top channel / 5 GHz WLAN (SISO) top channel (continued)

Results: Peak

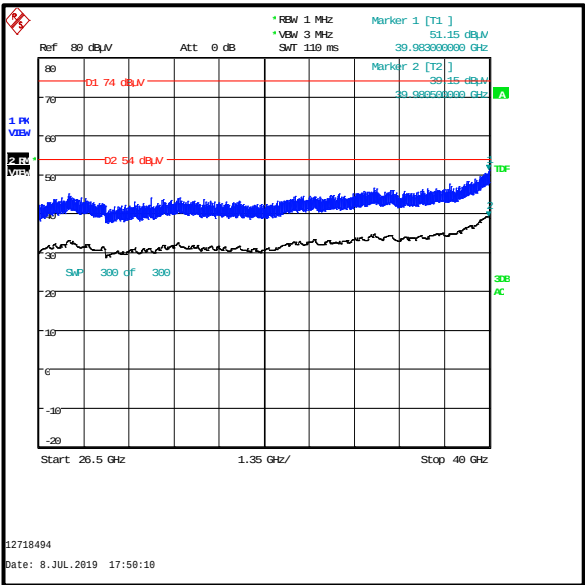
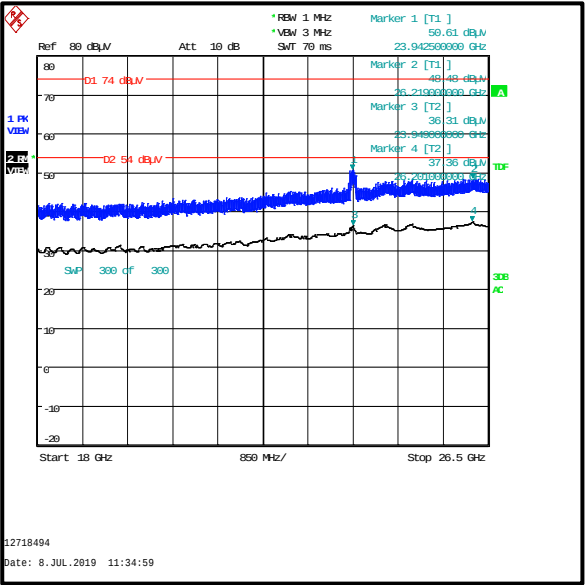
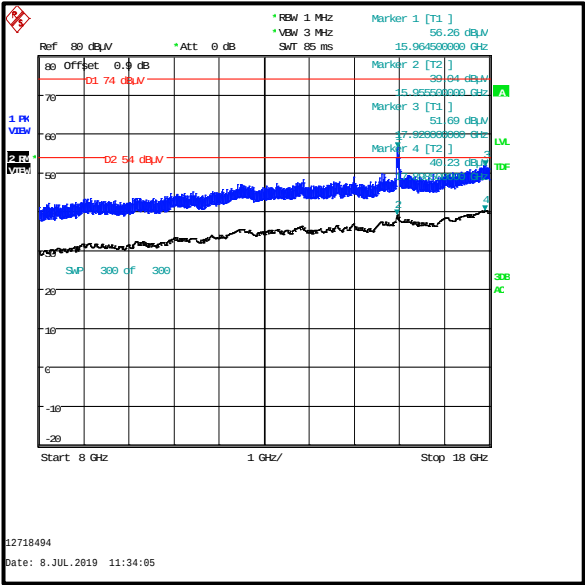
Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2331.021	Vertical	52.5	74.0	21.5	Complied
2542.308	Vertical	45.4	87.7*	42.3	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2330.315	Vertical	44.5	54.0	9.5	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz
WLAN (MIMO) top channel / 5 GHz WLAN (SISO) top channel (continued)



4.17. Transmitter Out of Band Radiated Emissions - *Bluetooth* LE top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) bottom channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.1.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6 KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	<i>Bluetooth</i> LE top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) bottom channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Transmitter Out of Band Radiated Emissions -Bluetooth LE top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) bottom channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* LE and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2344 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
5. The emission at approximately 2548 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
6. The emissions at approximately 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. For final measurements the maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. *-20 dBc limit.

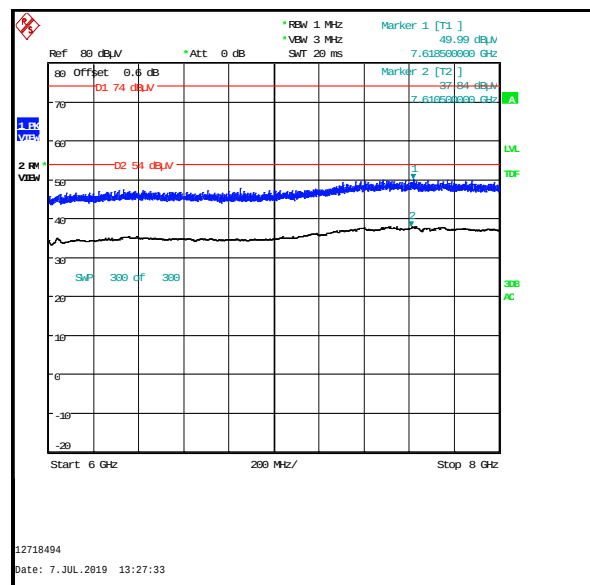
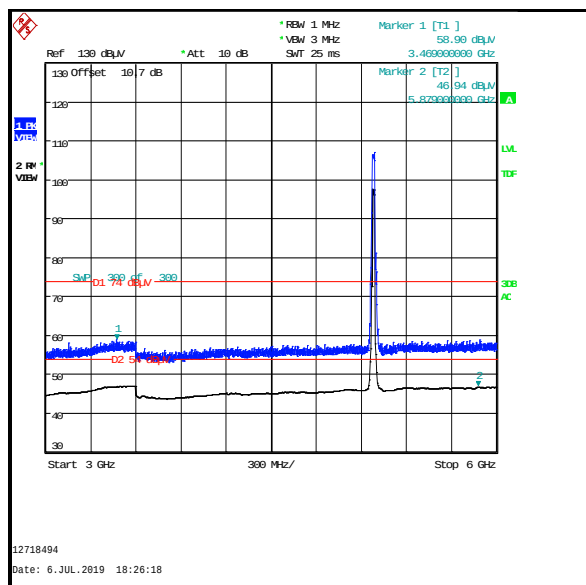
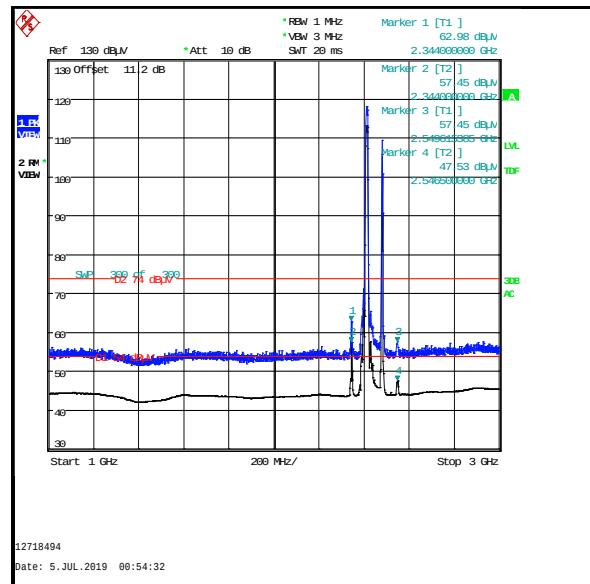
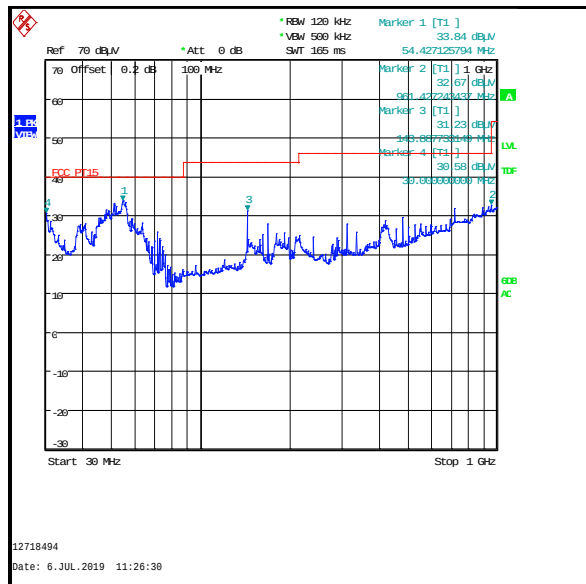
Transmitter Out of Band Radiated Emissions -Bluetooth LE top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) bottom channel (continued)

Results: Peak

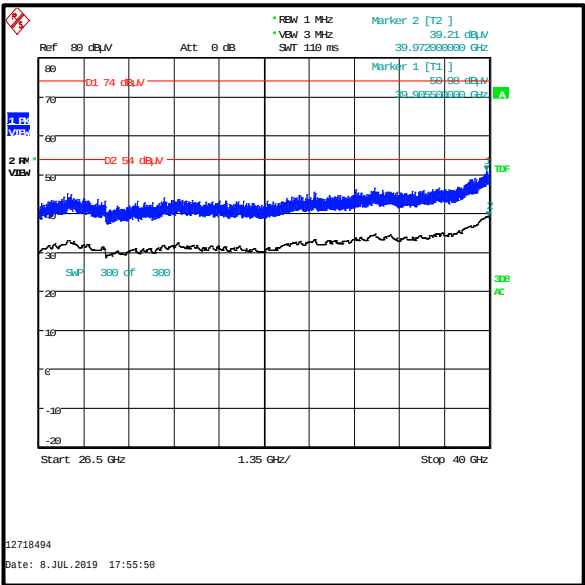
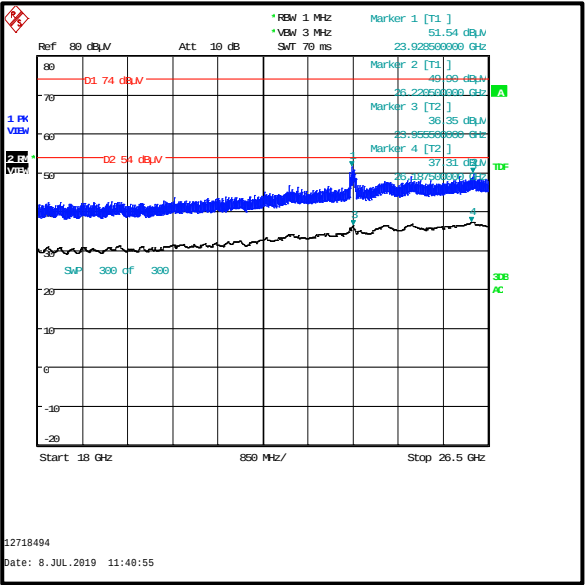
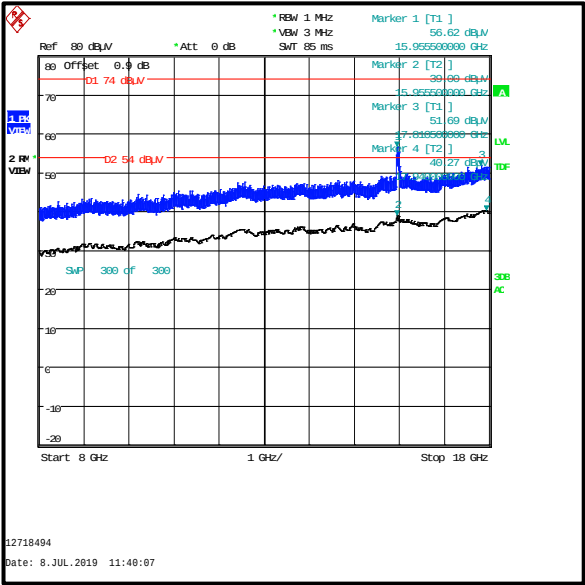
Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Margin (dB)	Result
2343.456	Vertical	56.6	74.0	17.4	Complied
2546.987	Vertical	51.0	85.7*	34.7	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
2343.969	Vertical	52.0	54.0	2.0	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* LE top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) bottom channel (continued)



4.18. Transmitter Out of Band Radiated Emissions - *Bluetooth* LE top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) top channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.4.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6, KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	<i>Bluetooth</i> LE top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) top channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Transmitter Out of Band Radiated Emissions - *Bluetooth* LE top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) top channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* LE and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2344 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
5. The emission at approximately 2548 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
6. The emissions at approximately 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. For final measurements the maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. *-20 dBc limit.

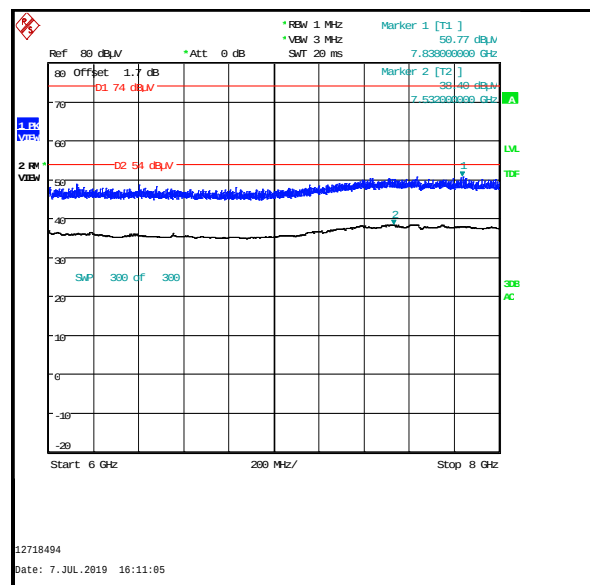
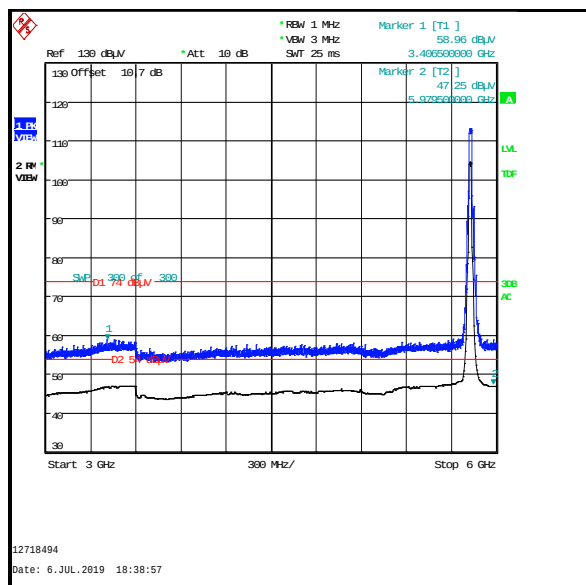
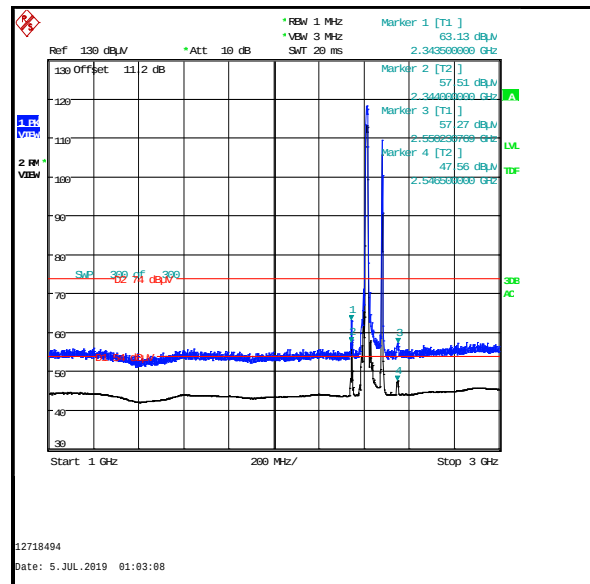
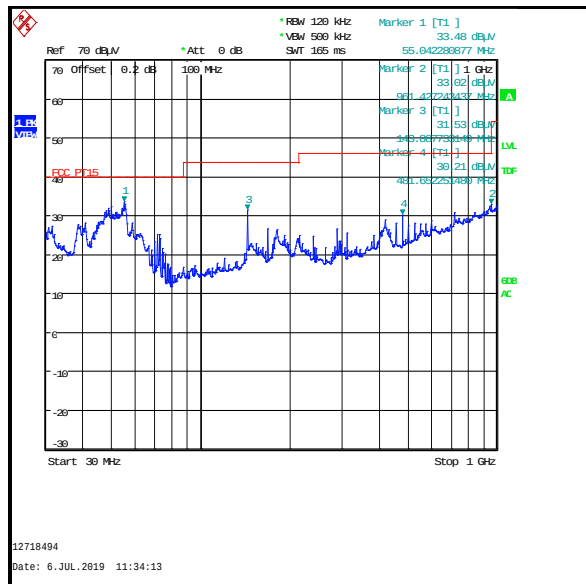
Transmitter Out of Band Radiated Emissions - *Bluetooth* LE top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) top channel (continued)

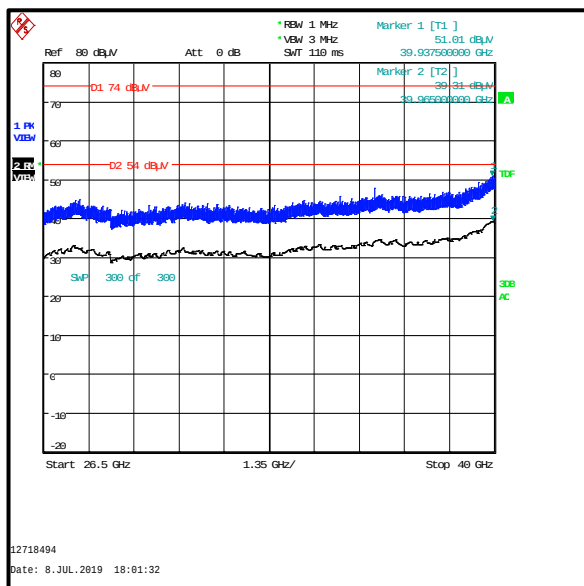
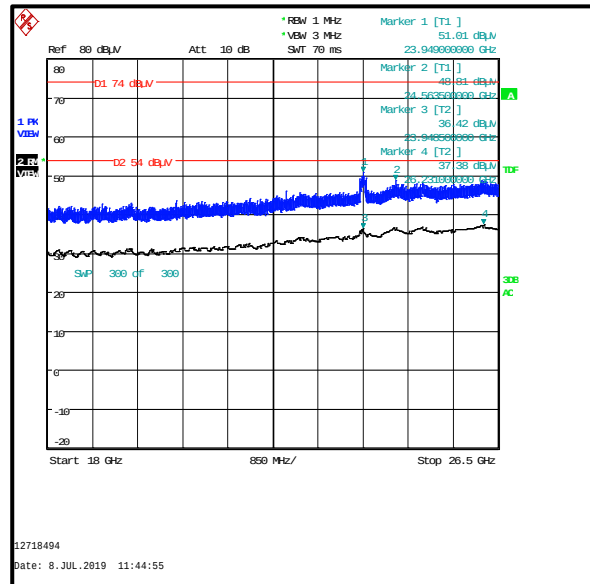
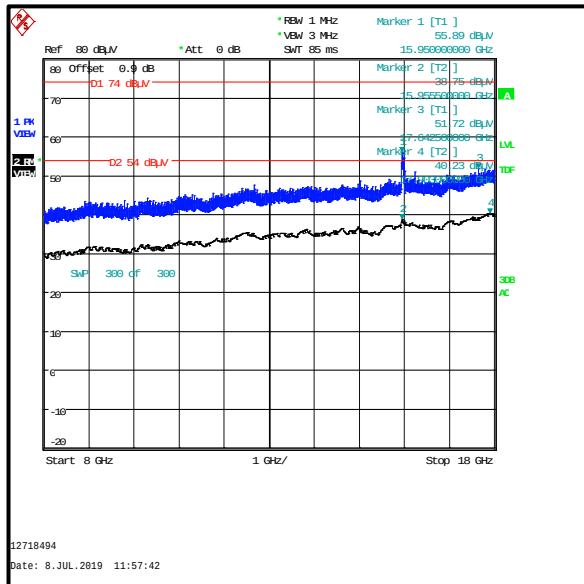
Results: Peak

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2344.610	Vertical	57.0	74.0	17.0	Complied
2548.974	Vertical	48.8	85.7*	36.9	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2343.905	Vertical	52.8	54.0	1.2	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* LE top channel / 2.4 GHz WLAN (MIMO) bottom channel / 5 GHz WLAN (SISO) top channel (continued)

4.19. Transmitter Out of Band Radiated Emissions - 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel

Test Summary:

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5 & 6.2.4.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6 KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Note(s):

1. All intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The 2.4 GHz WLAN fundamental is shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emissions at approximately 6.036 GHz, 6.257 GHz, 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
5. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
6. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
7. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT.
8. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.

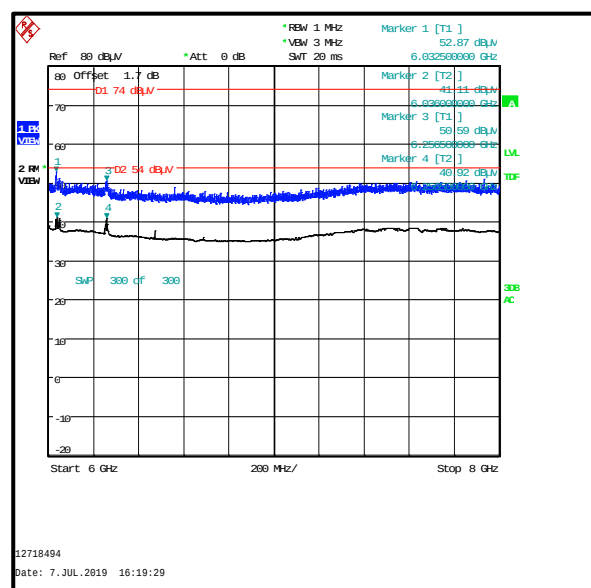
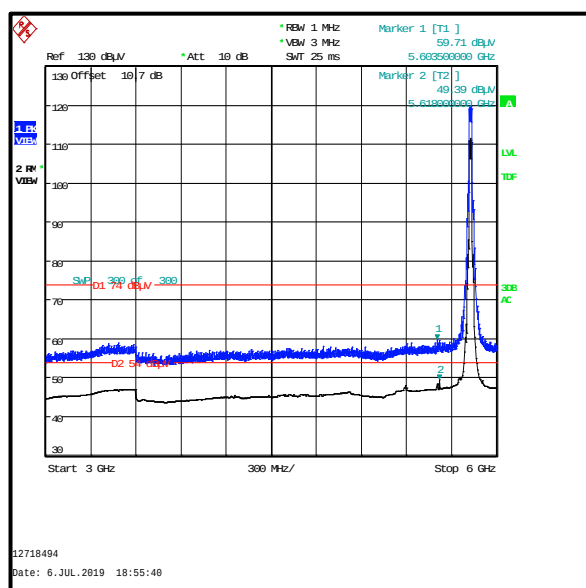
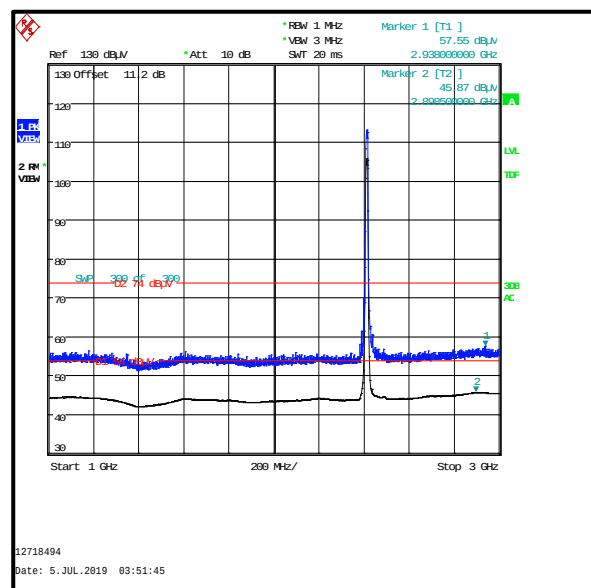
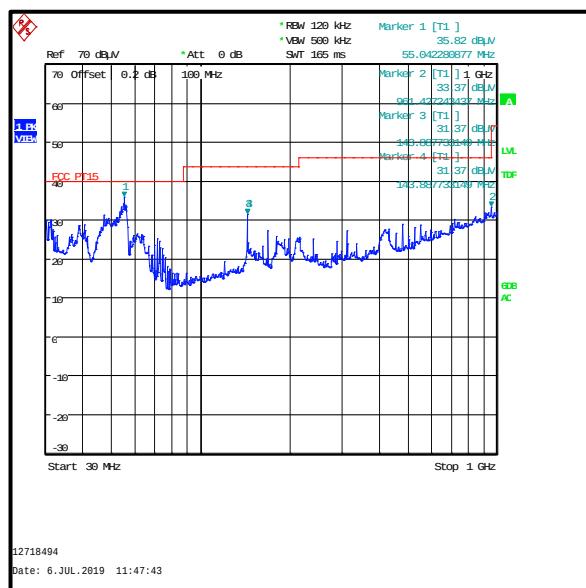
Transmitter Out of Band Radiated Emissions - 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel (continued)

Results: Peak

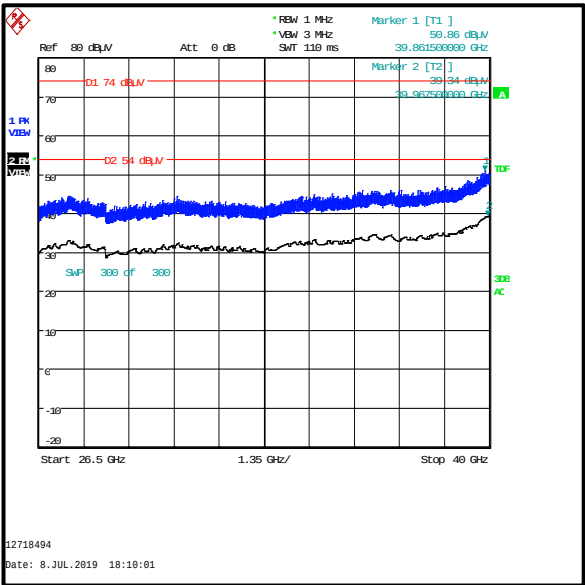
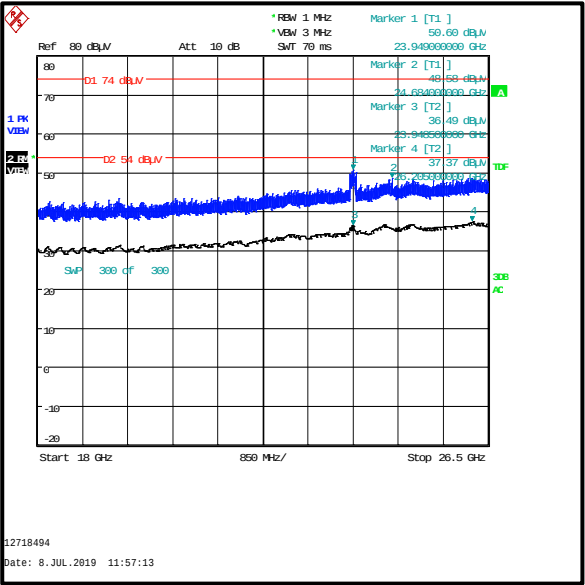
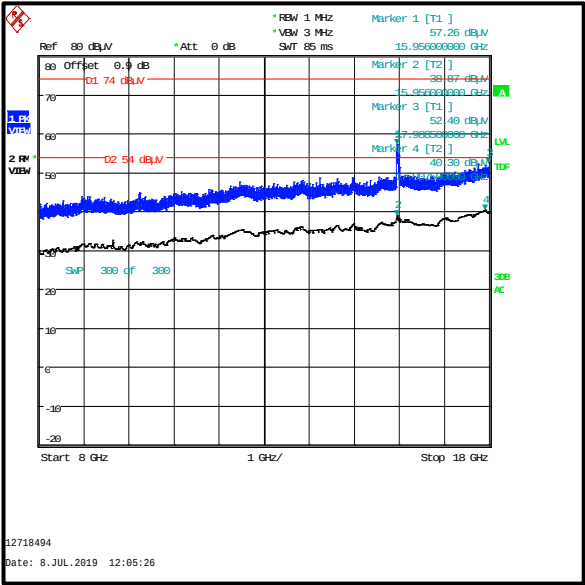
Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
See Note 1					

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
See Note 1					



Transmitter Out of Band Radiated Emissions - 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel (continued)



4.20. Transmitter Out of Band Radiated Emissions - 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5 & 6.2.1.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6, KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Note(s):

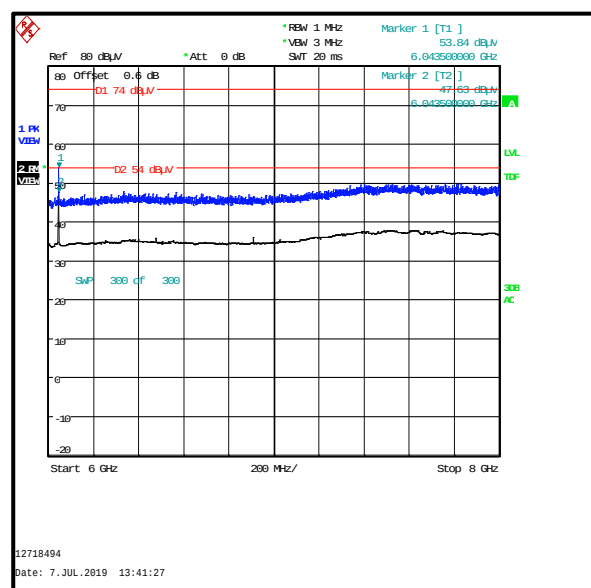
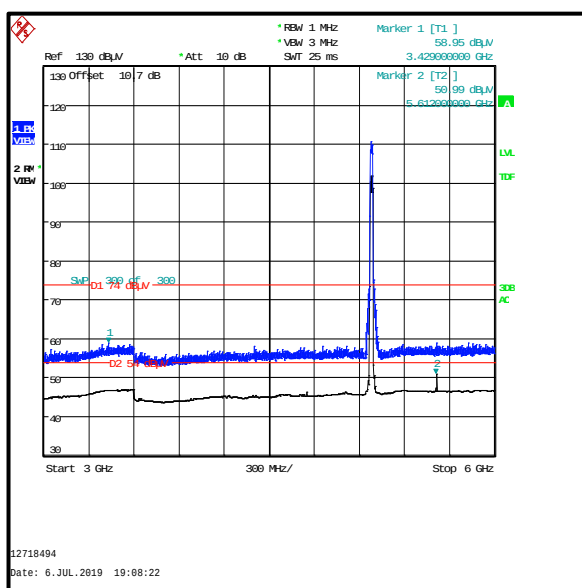
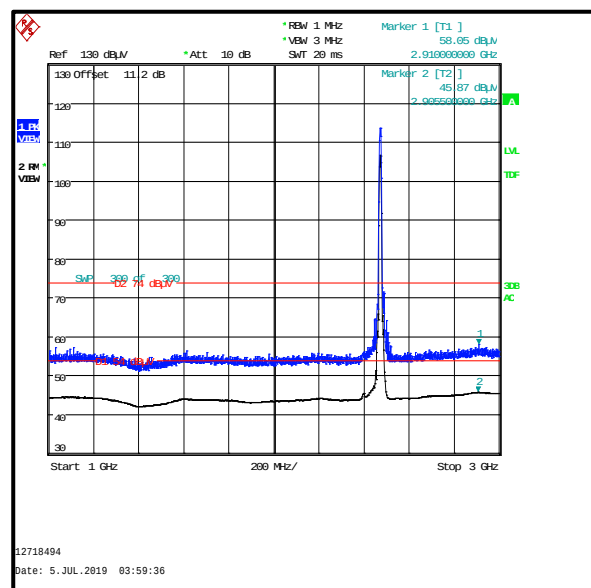
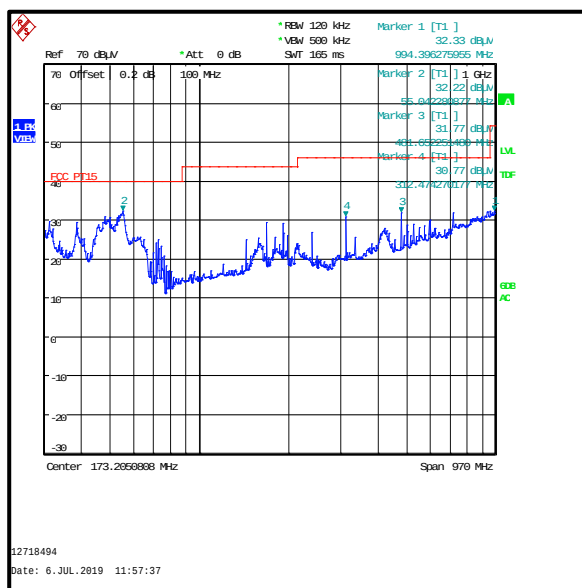
1. All intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The 2.4 GHz WLAN fundamental is shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emissions at approximately 5.612 GHz, 6.044 GHz, 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
5. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
6. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
7. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT.
8. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.

Transmitter Out of Band Radiated Emissions - 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel (continued)**Results: Peak**

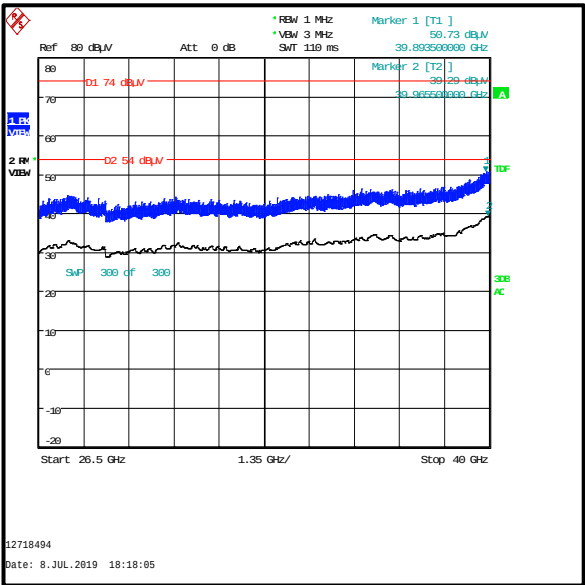
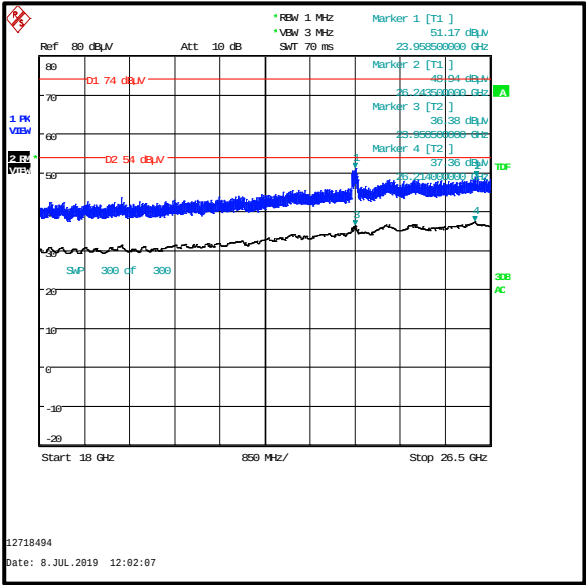
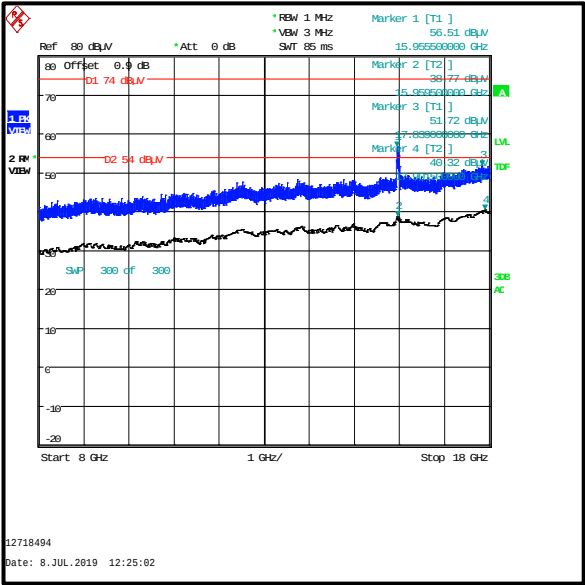
Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
See Note 1					

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
See Note 1					



Transmitter Out of Band Radiated Emissions - 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel (continued)



4.21. Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.1.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6, KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	<i>Bluetooth</i> Basic Rate bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2332 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
5. The emission at approximately 2542 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
6. The emissions at approximately 5.612 GHz, 6.044 GHz, 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT.
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. *-20 dBc limit.
12. **Corrected level incorporating a duty cycle correction factor. See Appendix 1 for more information.

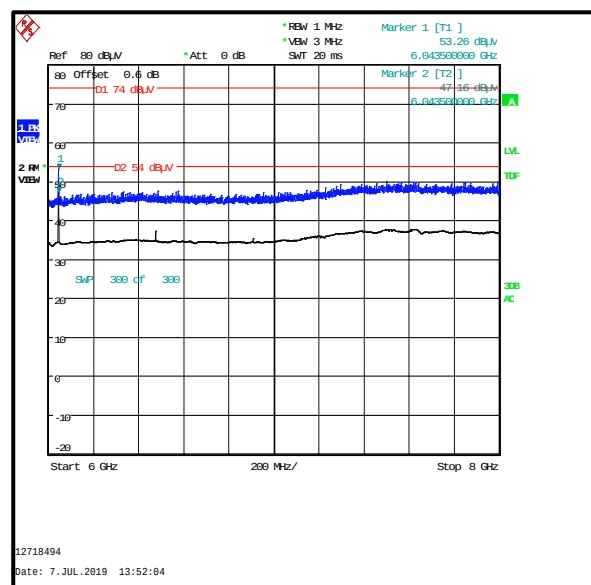
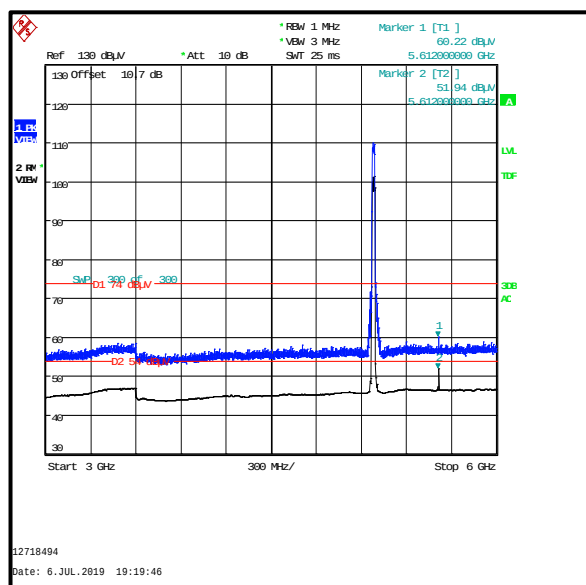
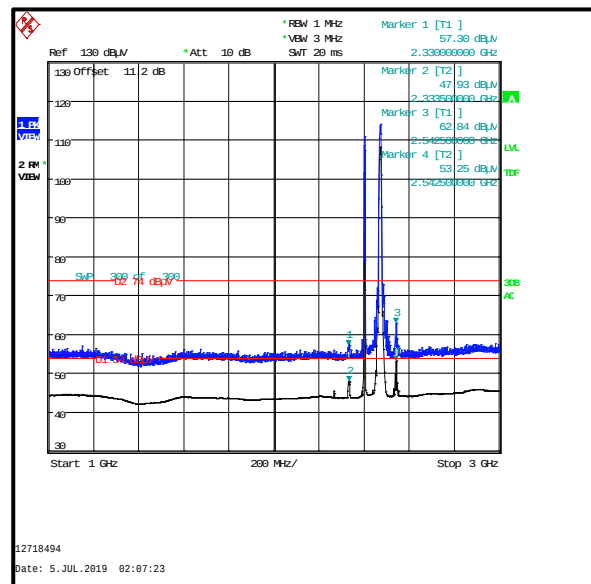
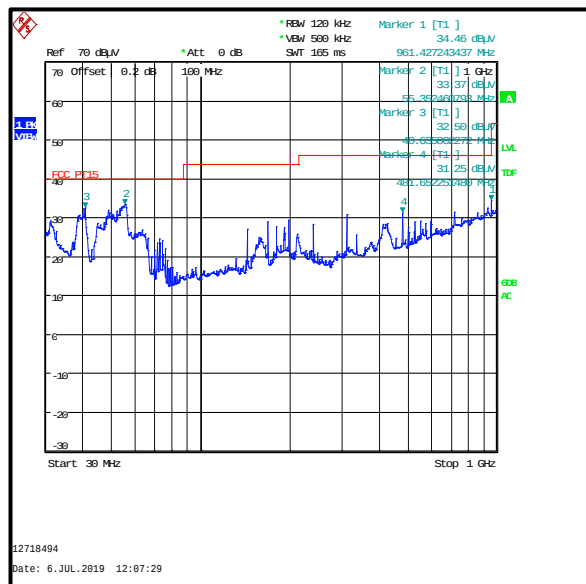
Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel (continued)

Results: Peak

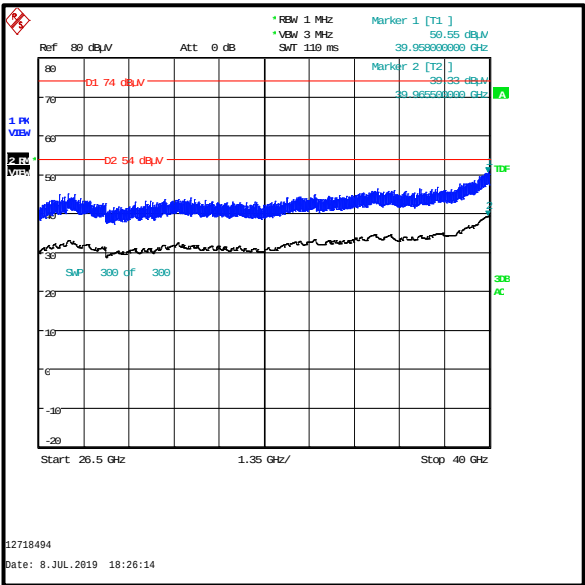
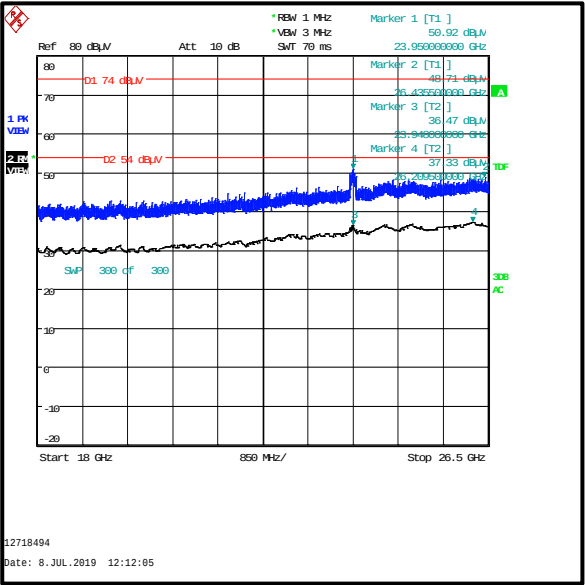
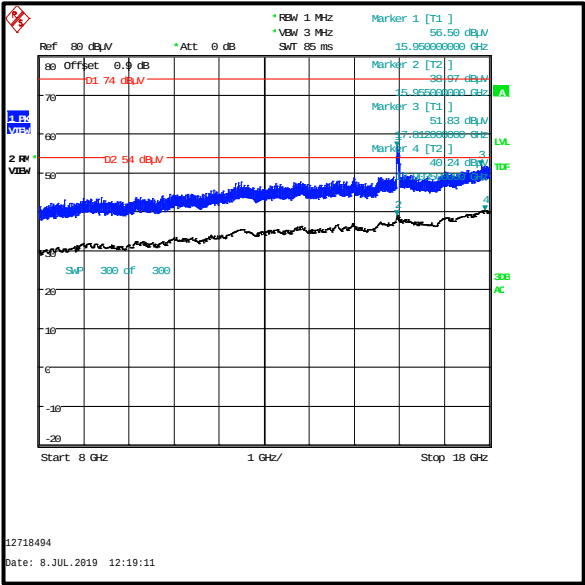
Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Margin (dB)	Result
2331.020	Vertical	49.8	74.0	24.2	Complied
2541.987	Vertical	43.7	88.7*	45.0	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
2330.764	Vertical	30.8**	54.0	23.2	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel (continued)



4.22. Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) top channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.4.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6, KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	<i>Bluetooth</i> Basic Rate bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) top channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) top channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2332 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
5. The emission at approximately 2542 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
6. The emissions at approximately 6.032 GHz, 6.256 GHz, 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT.
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. *-20 dBc limit.

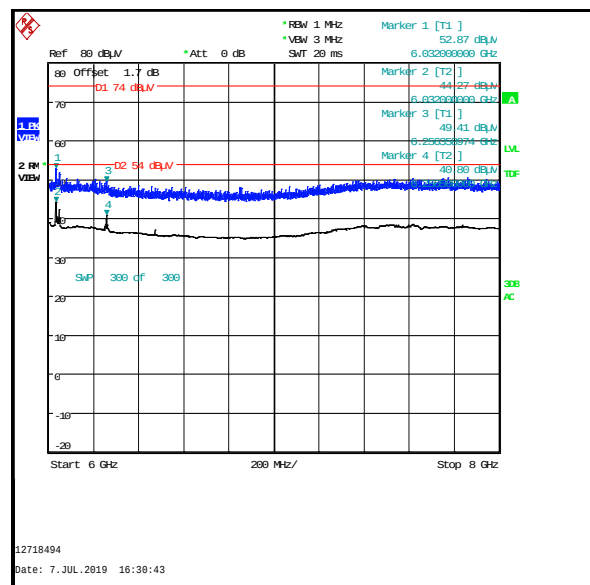
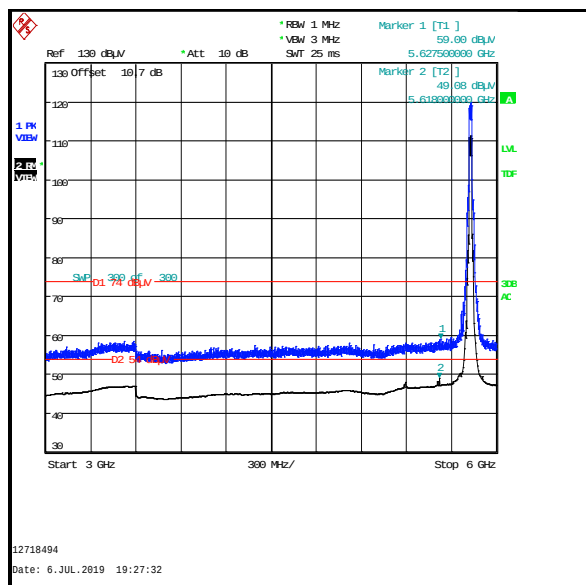
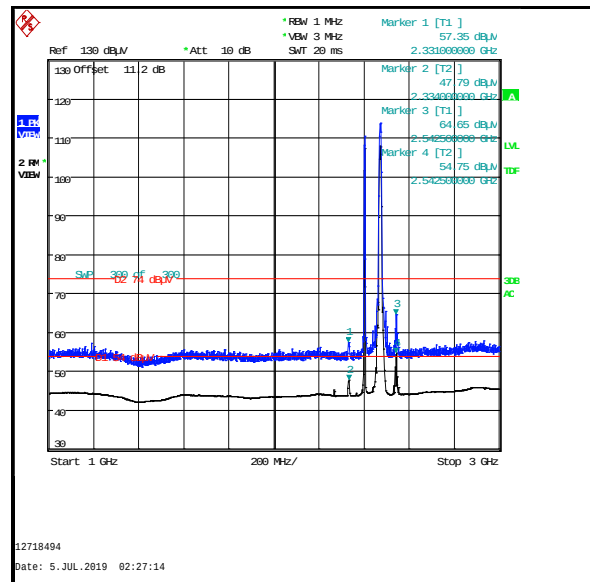
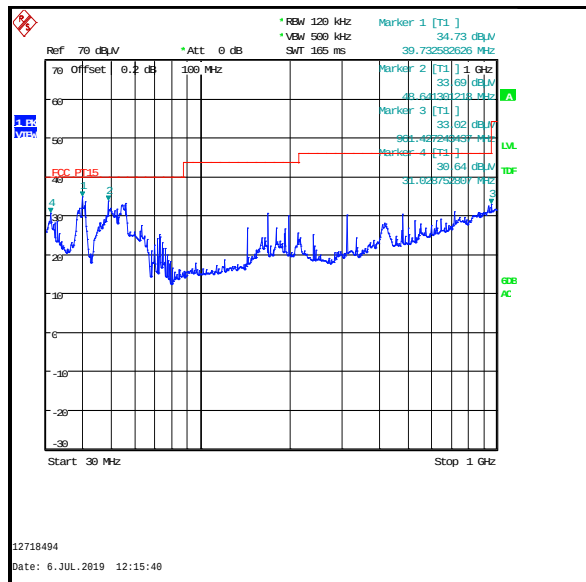
Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) top channel (continued)

Results: Peak

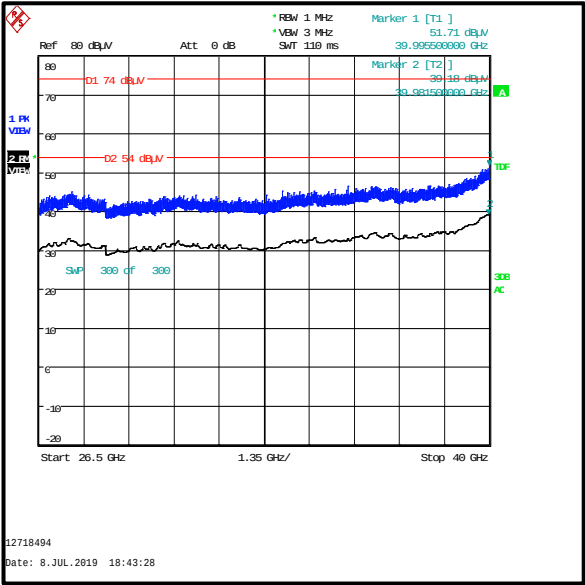
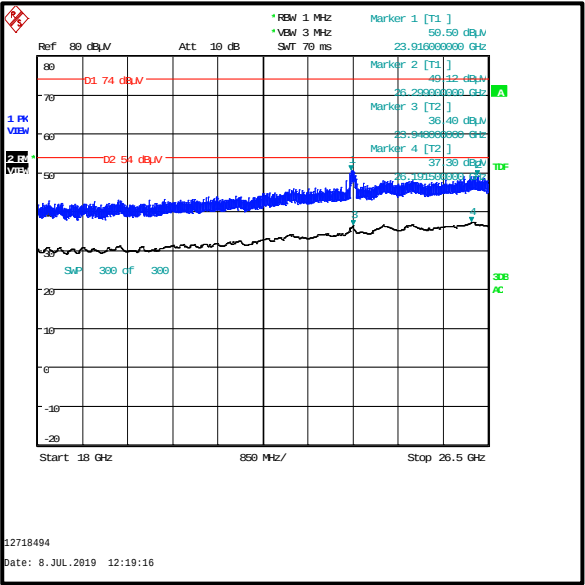
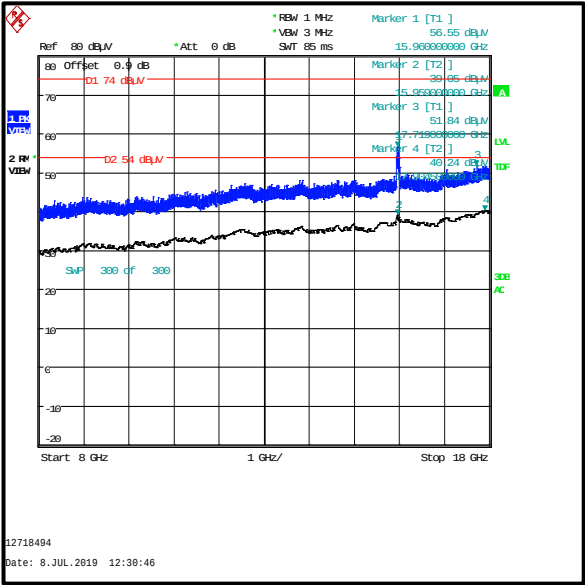
Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2333.328	Vertical	50.8	74.0	23.2	Complied
2541.923	Vertical	46.8	88.7*	41.9	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2330.826	Vertical	31.8**	54.0	22.2	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) top channel (continued)



4.23. Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) bottom channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.1.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6, KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	<i>Bluetooth</i> Basic Rate top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) bottom channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) bottom channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2344 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
5. The emission at approximately 2548 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
6. The emissions at approximately 5.612 GHz, 6.044 GHz, 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT.
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. *-20 dBc limit.
12. **Corrected level incorporating a duty cycle correction factor. See Appendix 1 for more information.

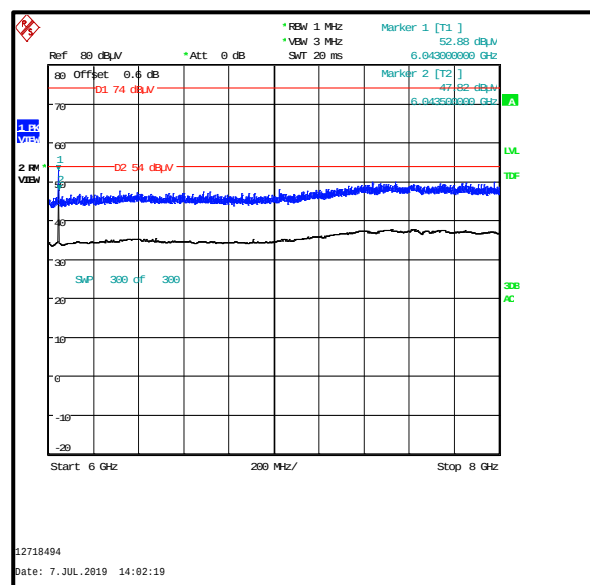
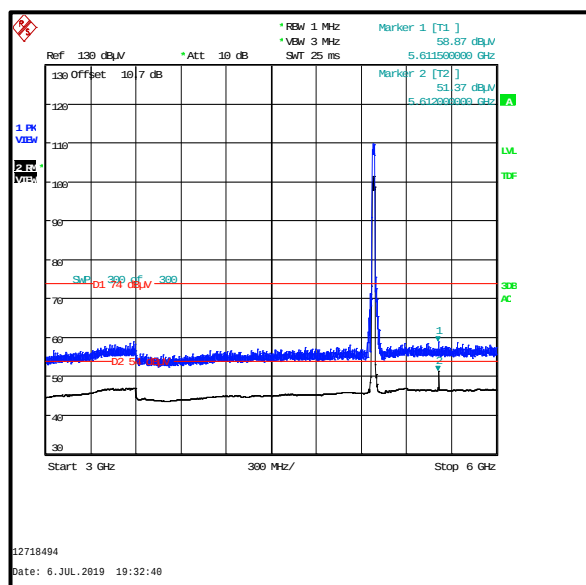
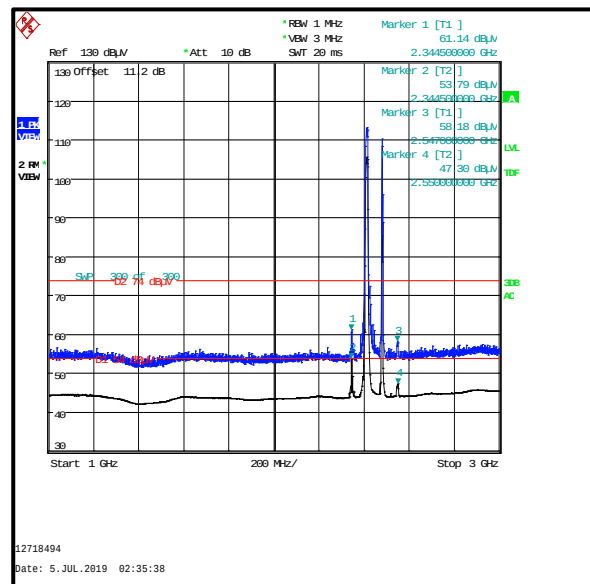
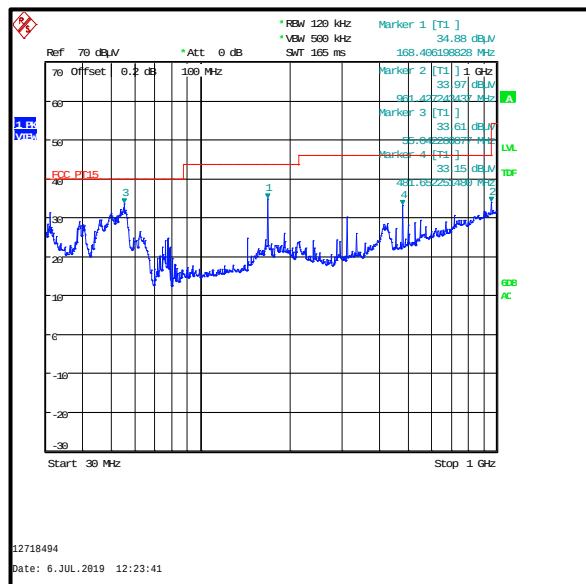
Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) bottom channel (continued)

Results: Peak

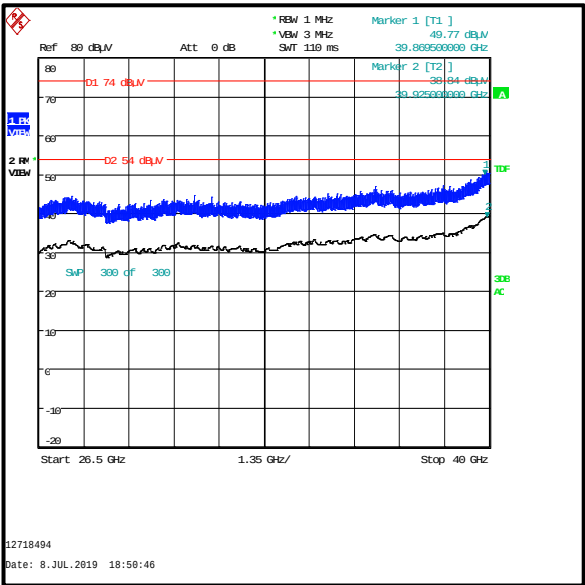
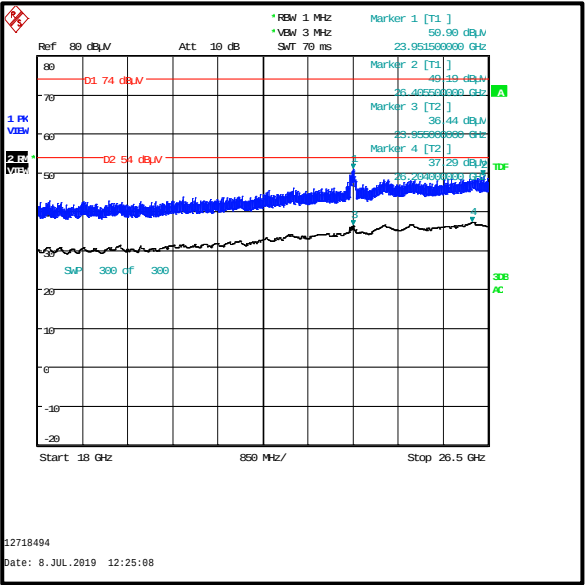
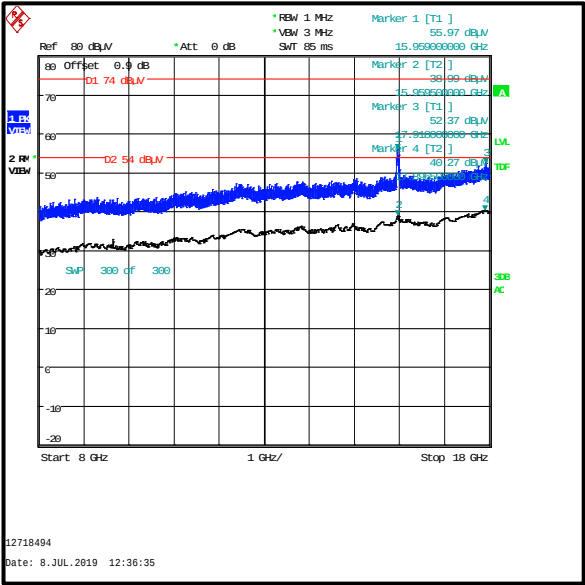
Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Margin (dB)	Result
2343.777	Vertical	54.7	74.0	19.3	Complied
2546.731	Vertical	48.5	89.9*	41.4	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
2343.969	Vertical	35.7**	54.0	18.3	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz
WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) bottom channel (continued)



4.24. Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.4.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6, KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	<i>Bluetooth</i> Basic Rate top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2344 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
5. The emission at approximately 2548 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
6. The emissions at approximately 6.032 GHz, 6.256 GHz, 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT.
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. *-20 dBc limit.
12. **Corrected level incorporating a duty cycle correction factor. See Appendix 1 for more information.

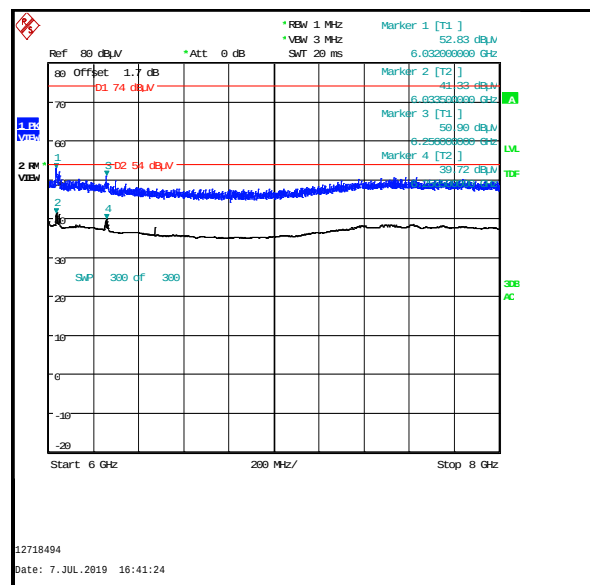
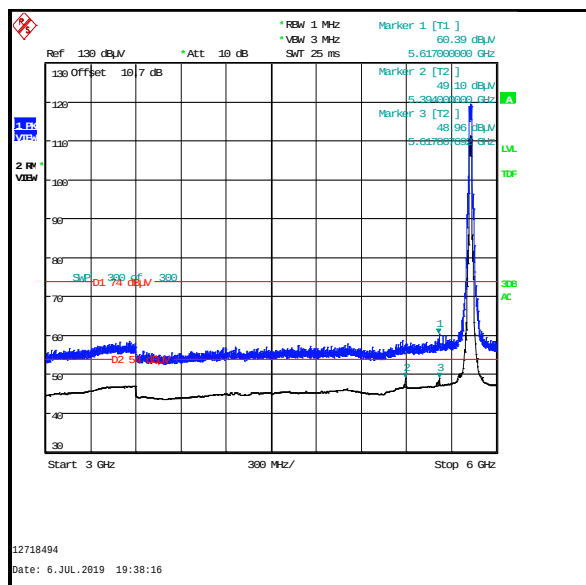
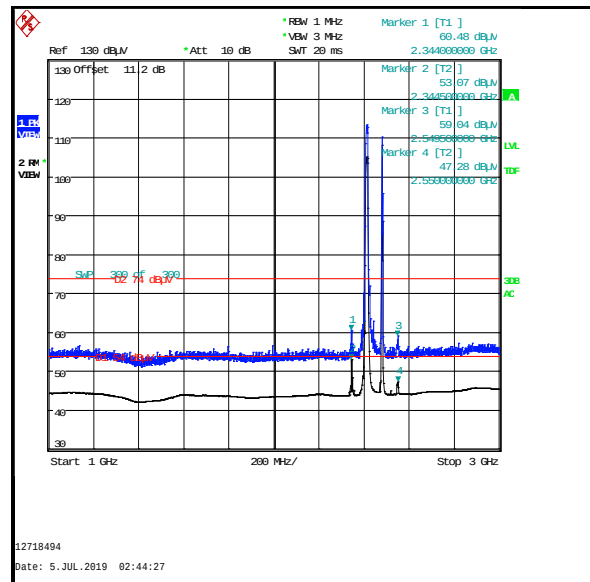
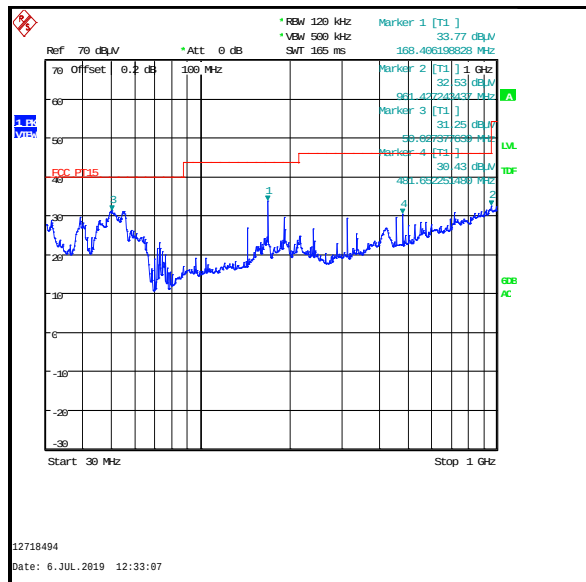
Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel (continued)

Results: Peak

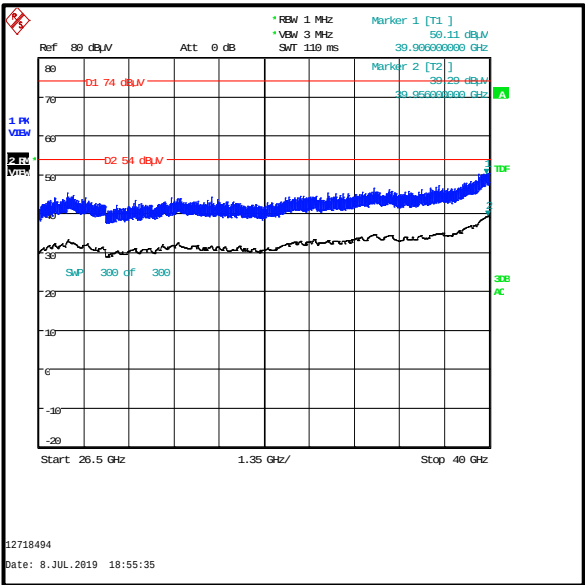
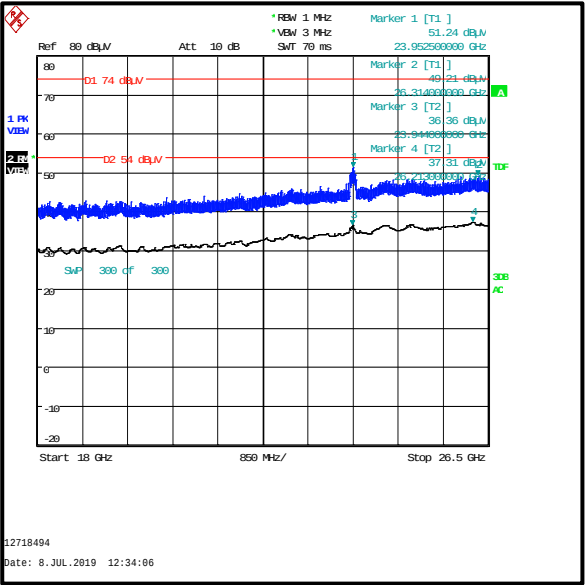
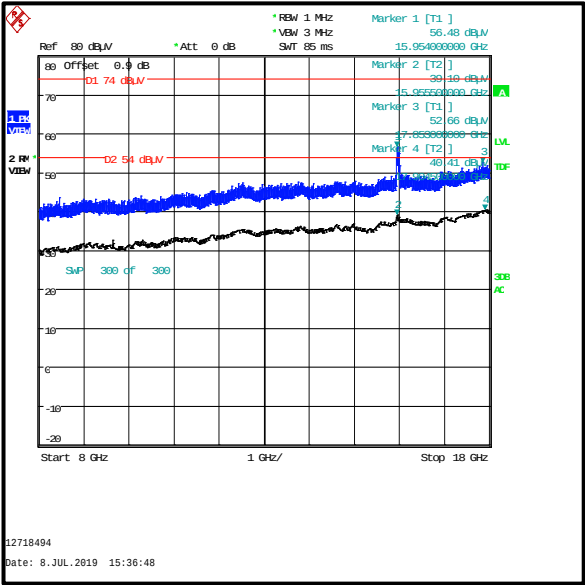
Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2344.033	Vertical	55.5	74.0	18.5	Complied
2546.795	Vertical	42.4	89.9*	47.5	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2343.969	Vertical	36.5**	54.0	17.5	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* Basic Rate top channel / 2.4 GHz
WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel (continued)



4.25. Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.1.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6 KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	<i>Bluetooth</i> LE bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* LE and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2332 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
5. The emission at approximately 2542 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
6. The emissions at approximately 5.612 GHz, 6.044 GHz, 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT.
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. *-20 dBc limit.

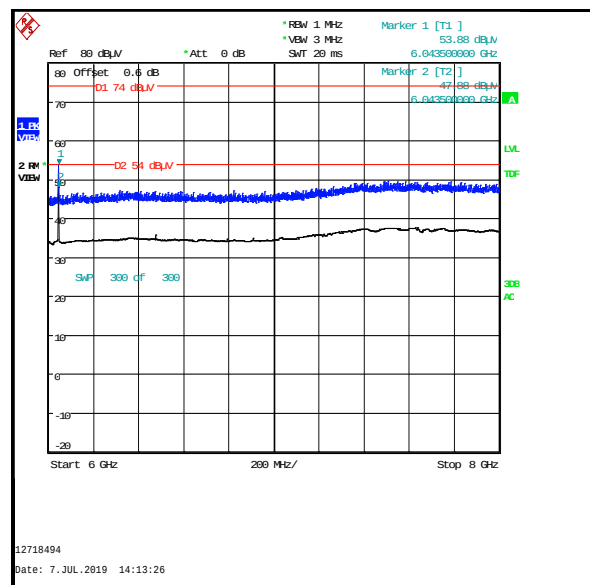
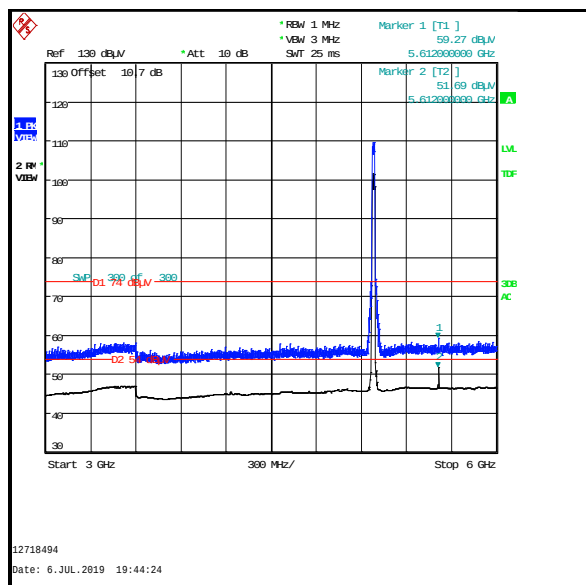
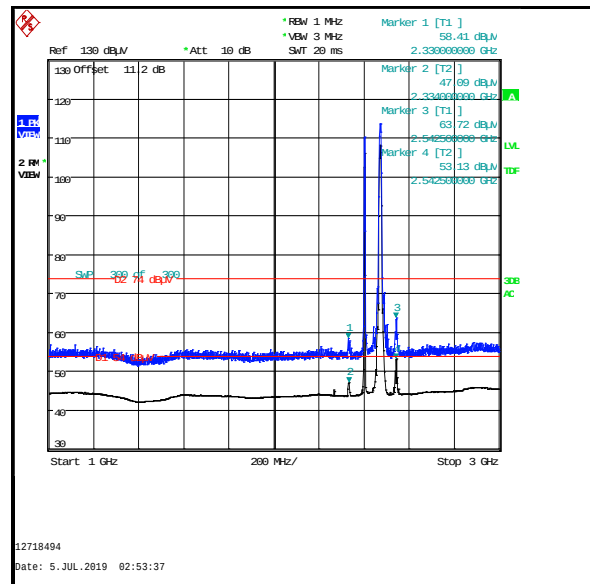
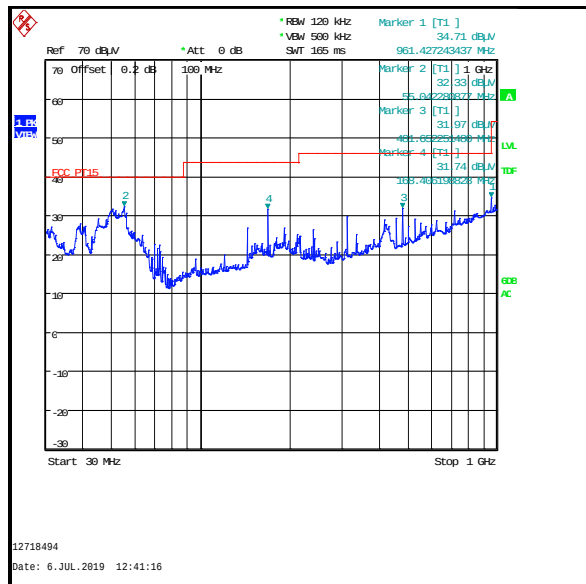
Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel (continued)

Results: Peak

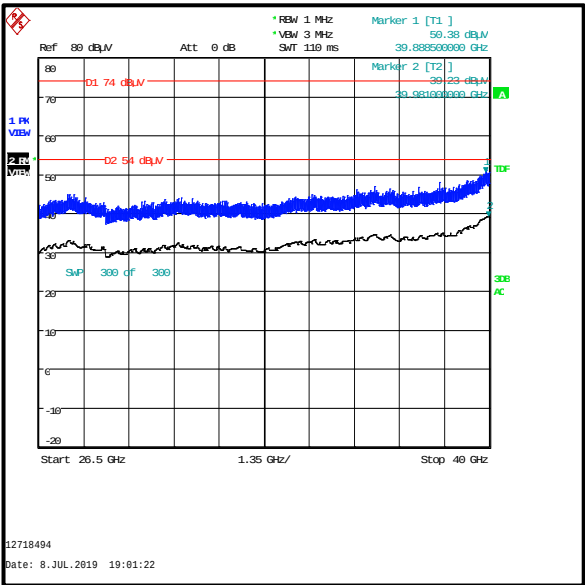
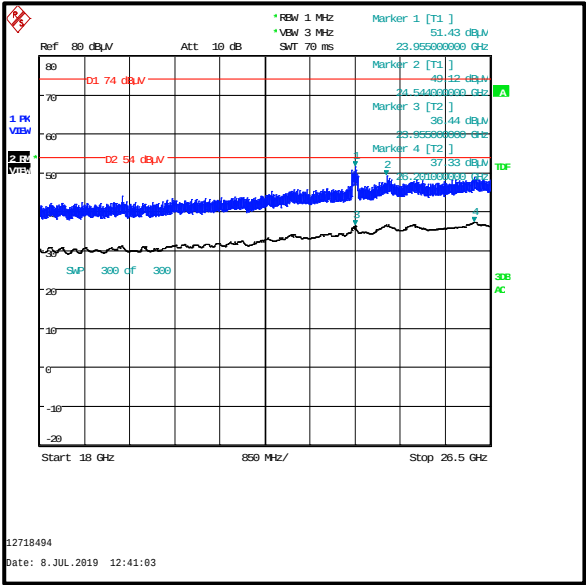
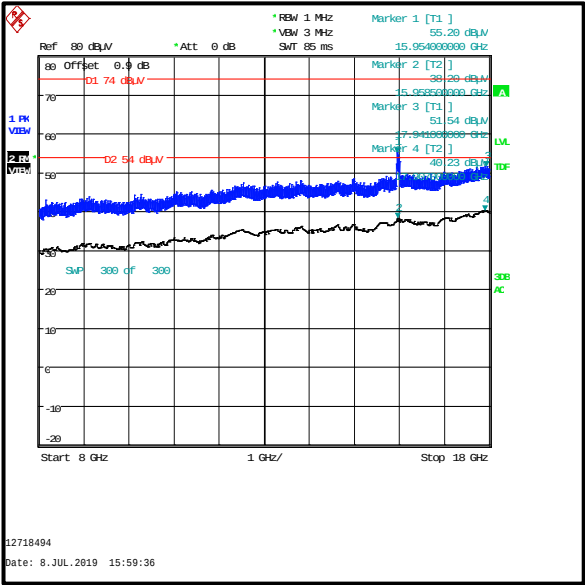
Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Margin (dB)	Result
2331.662	Vertical	50.1	74.0	23.9	Complied
2541.795	Vertical	42.4	87.7*	45.3	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
2333.649	Vertical	41.1	54.0	12.9	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz
WLAN (SISO) top channel / 5 GHz WLAN (MIMO) bottom channel (continued)



4.26. Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) top channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.4.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6, KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	<i>Bluetooth</i> LE bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) top channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) top channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* LE and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2332 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
5. The emission at approximately 2542 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
6. The emissions at approximately 6.033 GHz, 6.257 GHz, 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. For final measurements the maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. *-20 dBc limit.

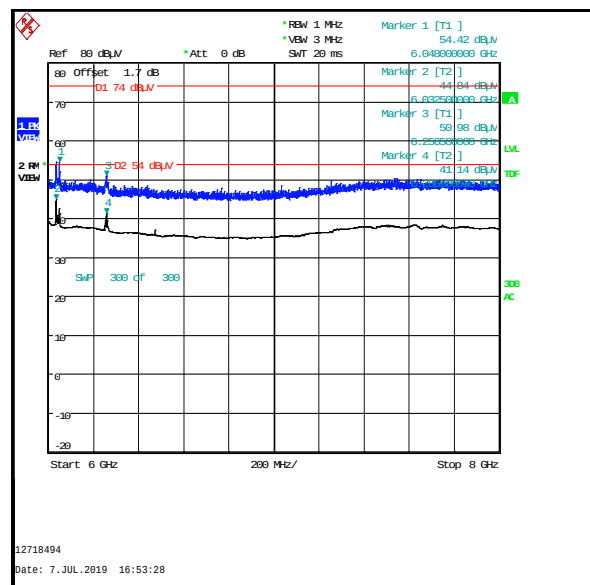
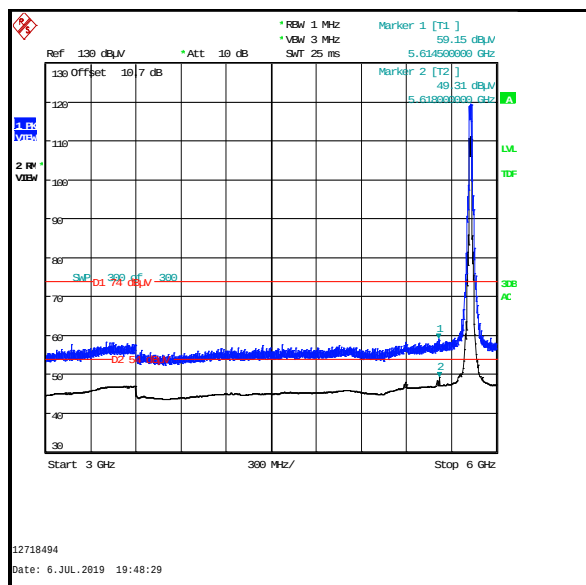
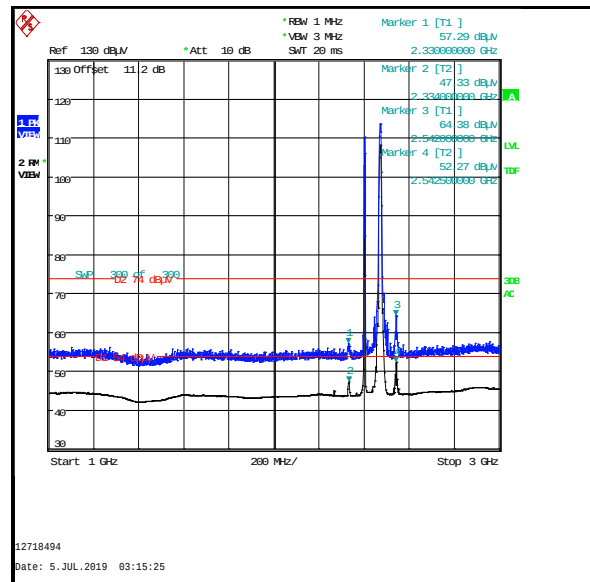
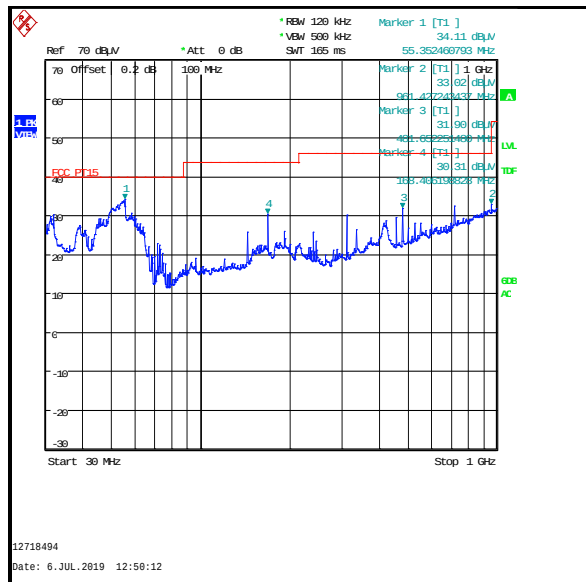
Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz WLAN (SISO) top channel / 5 GHz WLAN (MIMO) top channel (continued)

Results: Peak

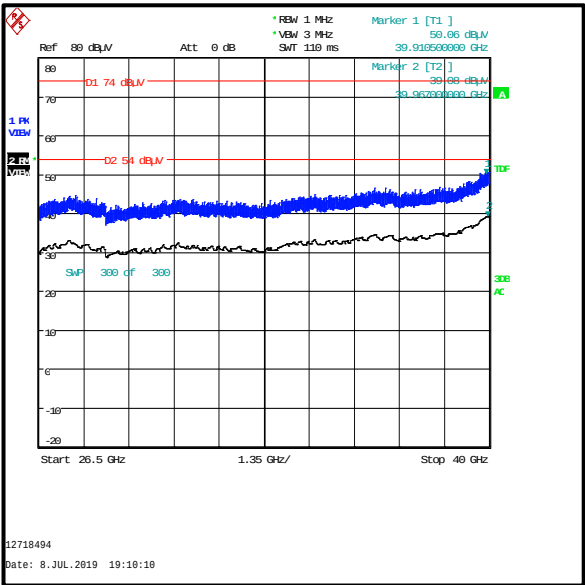
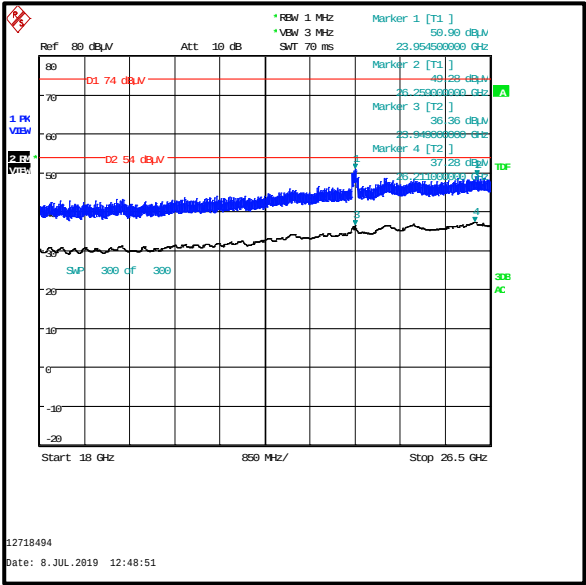
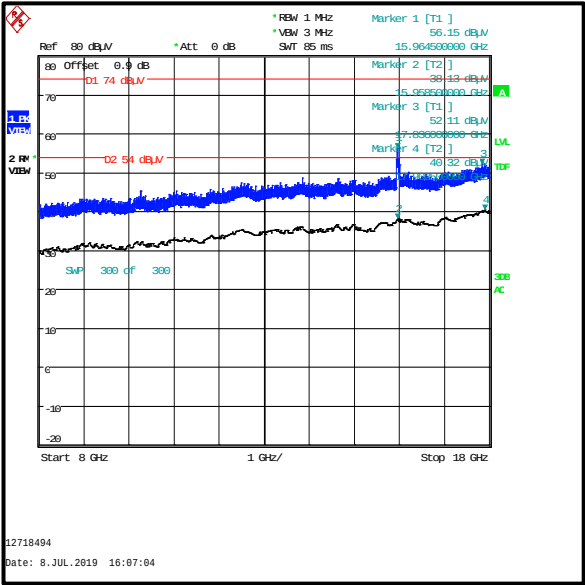
Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Margin (dB)	Result
2332.944	Vertical	50.0	74.0	24.0	Complied
2542.308	Vertical	43.5	87.7*	44.2	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
2330.636	Vertical	40.7	54.0	13.3	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* LE bottom channel / 2.4 GHz
WLAN (SISO) top channel / 5 GHz WLAN (MIMO) top channel (continued)



4.27. Transmitter Out of Band Radiated Emissions - *Bluetooth* LE top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) bottom channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.1.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6, KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	<i>Bluetooth</i> LE top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) bottom channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Transmitter Out of Band Radiated Emissions - *Bluetooth* LE top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) bottom channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* LE and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2344 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
5. The emission at approximately 2548 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
6. The emissions at approximately 5.612 GHz, 6.044 GHz, 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. For final measurements the maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. *-20 dBc limit.

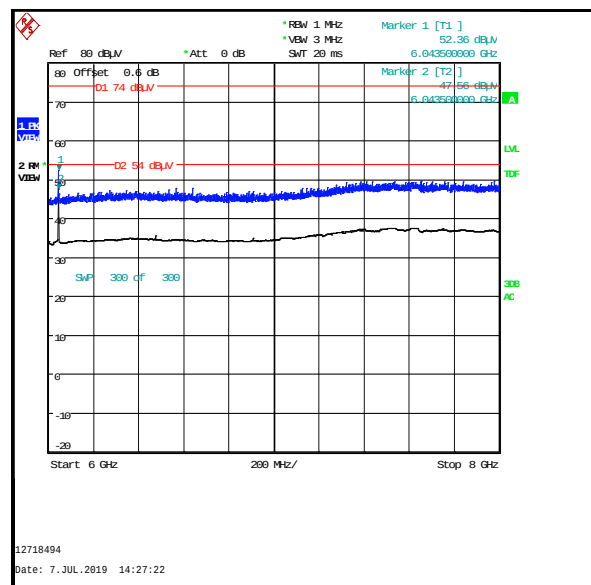
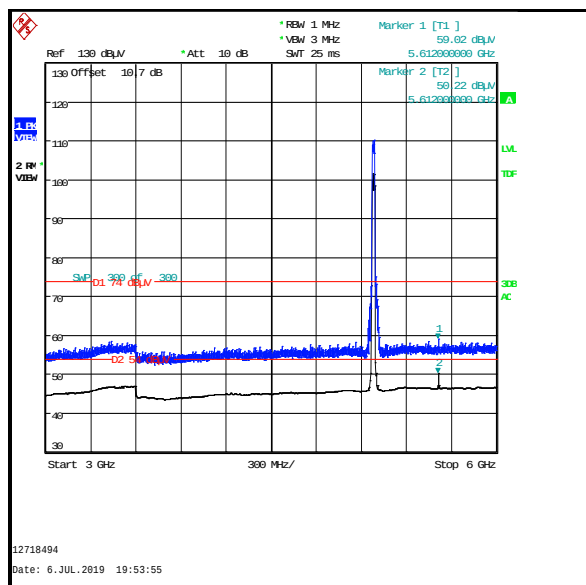
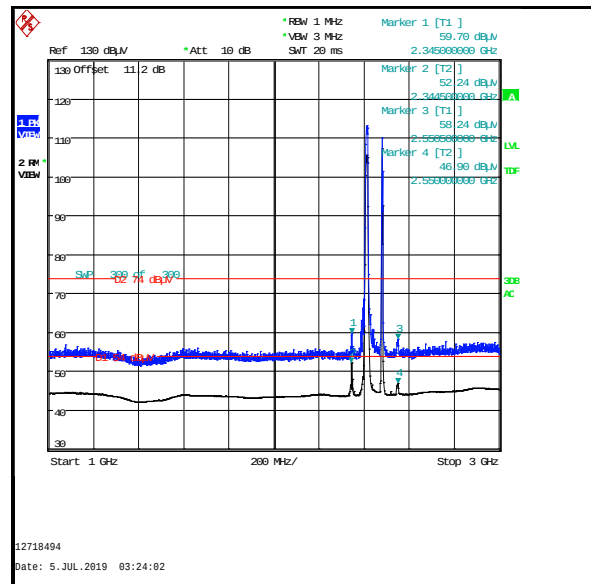
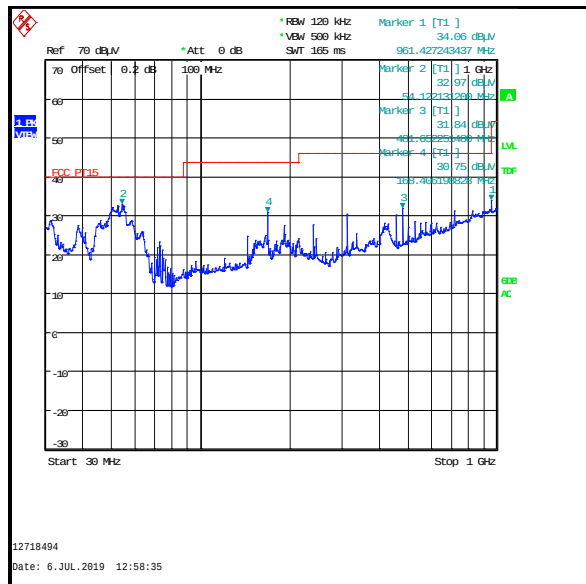
Transmitter Out of Band Radiated Emissions - *Bluetooth* LE top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) bottom channel (continued)

Results: Peak

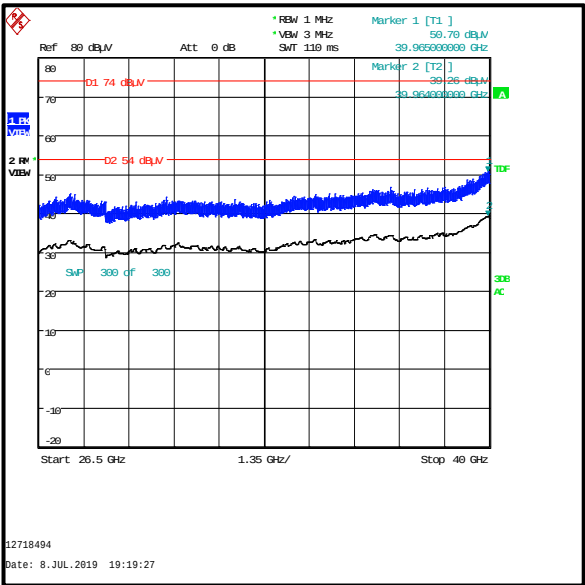
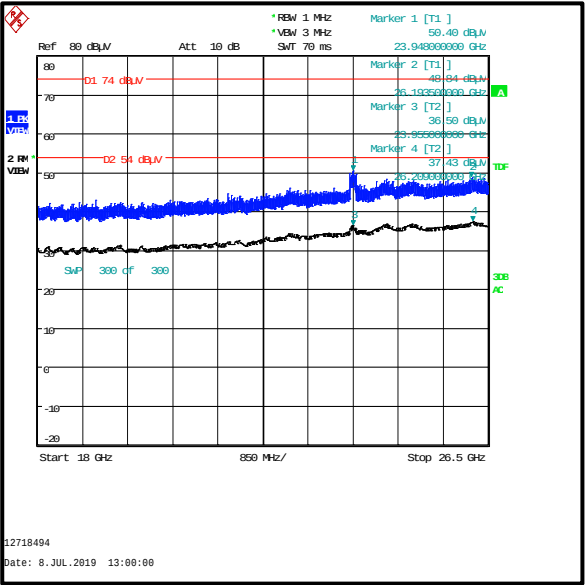
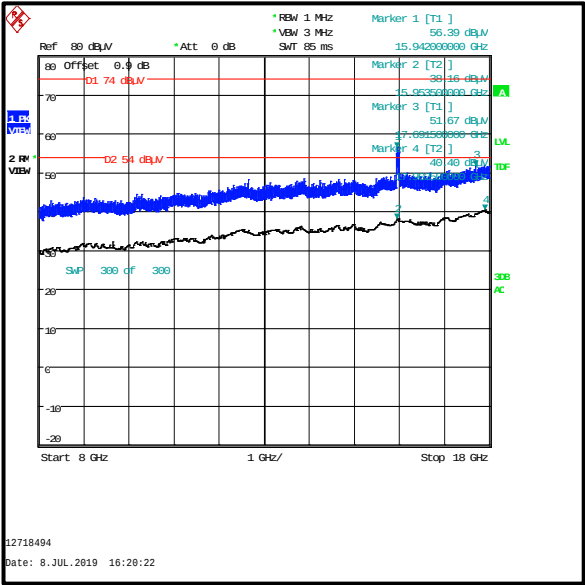
Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Peak Limit (dB μ V/m)	Margin (dB)	Result
2343.456	Vertical	53.9	74.0	20.1	Complied
2545.000	Vertical	41.7	85.7*	44.0	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Average Limit (dB μ V/m)	Margin (dB)	Result
2344.033	Vertical	49.7	54.0	4.3	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* LE top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) bottom channel (continued)



4.28. Transmitter Out of Band Radiated Emissions - Bluetooth LE top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel**Test Summary:**

Test Engineers:	Marco Zunarelli, Mark Perry, David Doyle, James O'Reilly, John Ferdinand & Mohamed Toubella	Test Dates:	05 July 2019 to 08 July 2019
Test Sample Serial Numbers:	C02YF00CMFLF & C02YD006MFLQ		

FCC Reference:	Parts 15.33, 15.205(a), 15.209(a), 15.247(d) & 15.407(b)
ISED Canada Reference:	RSS-Gen 6.13 & 8.9 / RSS-247 5.5, 6.2.4.2
Test Method Used:	ANSI C63.10 Sections 6.3, 6.5, 6.6, 11.11, 11.12.2.4 & 11.12.2.5.1, KDB 558074 Sections 8.5 & 8.6, KDB 789033 II.G
Frequency Range:	30 MHz to 40 GHz
Configuration:	Bluetooth LE top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel

Environmental Conditions:

Temperature (°C):	22 to 26
Relative Humidity (%):	41 to 56

Transmitter Out of Band Radiated Emissions - *Bluetooth* LE top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel (continued)**Note(s):**

1. All other intermodulation products were below the noise floor level or greater than 20 dB from the specification limit.
2. The *Bluetooth* LE and 2.4 GHz WLAN fundamentals are shown on the 1 GHz to 3 GHz plot.
3. The 5 GHz WLAN fundamental is shown on the 3 GHz to 6 GHz plot.
4. The emission at approximately 2344 MHz is an intermodulation product produced by the second harmonic of the 2.4 GHz WLAN signal minus the *Bluetooth* signal.
5. The emission at approximately 2548 MHz is an intermodulation product produced by the second harmonic of the *Bluetooth* signal minus the 2.4 GHz WLAN signal.
6. The emissions at approximately 6.032 GHz, 6.257 GHz, 16 GHz and 24 GHz were investigated and found not to be intermodulation products.
7. Pre-scans were made against the FCC Part 15 general limits for radiated emissions.
8. Measurements below 1 GHz were performed in a semi-anechoic chamber (Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (Asset Number K0001 & K0017) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. For final measurements the maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres
10. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth to 500 kHz, for measurements below 1 GHz. For measurements above 1 GHz the resolution bandwidth was set to 1 MHz and video bandwidth to 3 MHz, with the sweep time set to auto. Markers were placed on the highest measured level.
11. *-20 dBc limit.

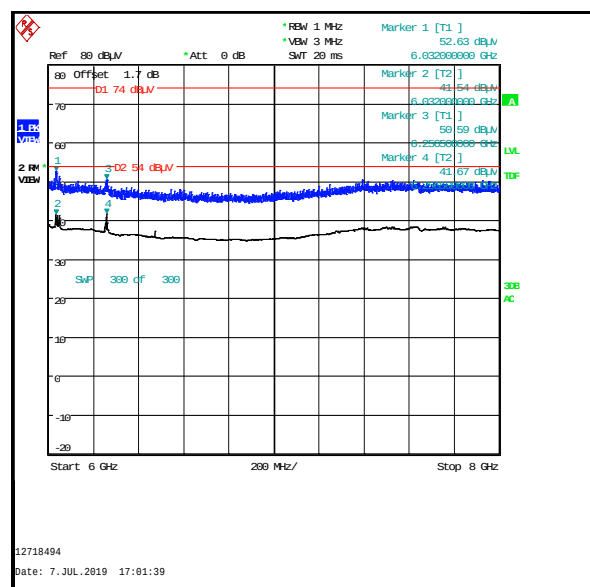
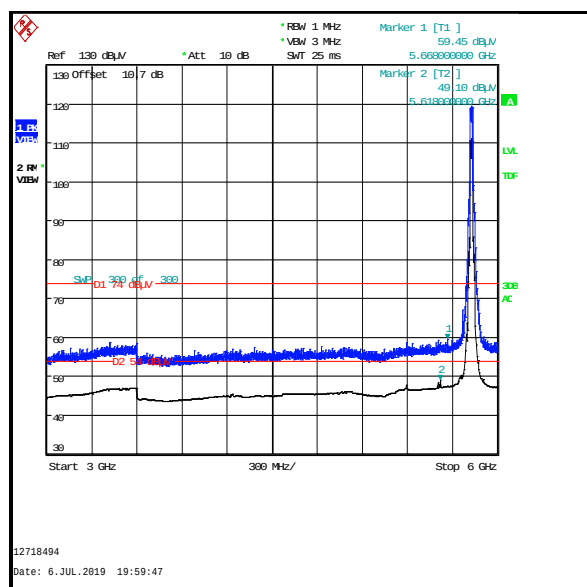
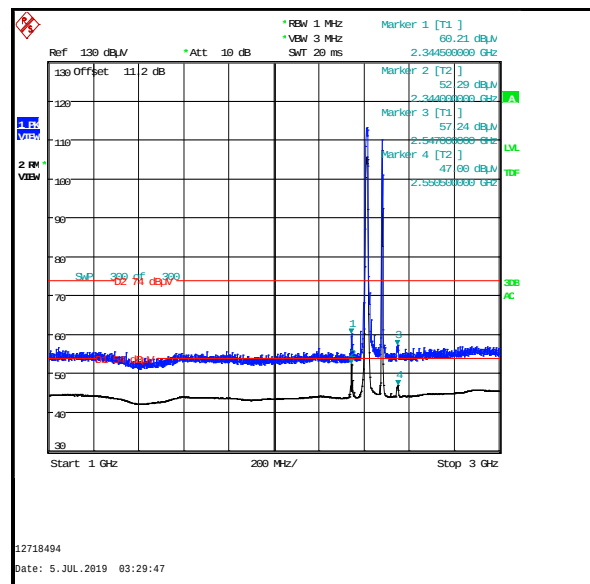
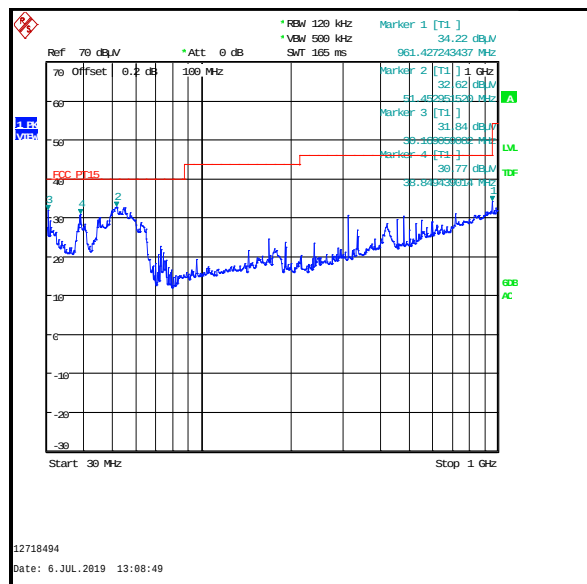
Transmitter Out of Band Radiated Emissions - Bluetooth LE top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel (continued)

Results: Peak

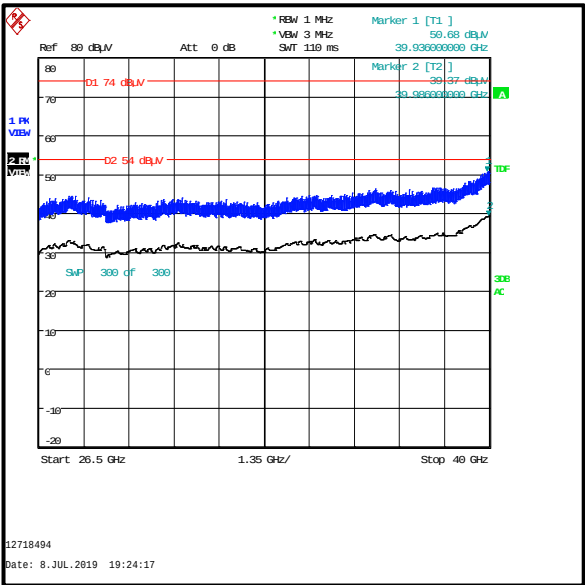
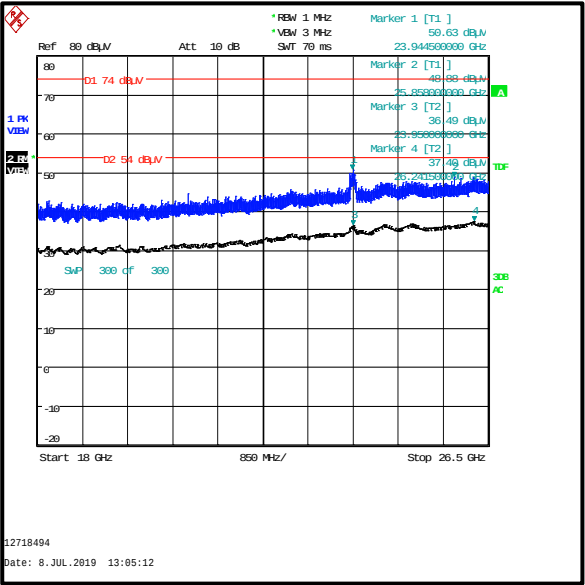
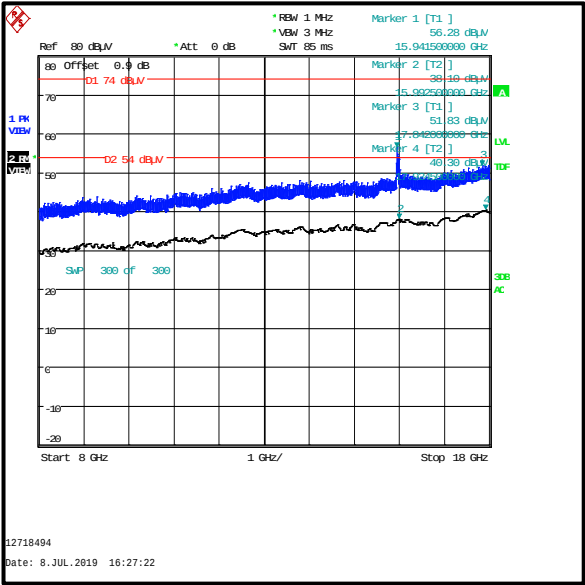
Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Peak Limit (dBμV/m)	Margin (dB)	Result
2344.418	Vertical	54.8	74.0	19.2	Complied
2546.026	Vertical	41.2	85.7*	44.5	Complied

Results: Average

Frequency (MHz)	Antenna Polarity	Average Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
2344.033	Vertical	50.0	54.0	4.0	Complied



Transmitter Out of Band Radiated Emissions - *Bluetooth* LE top channel / 2.4 GHz WLAN (SISO) bottom channel / 5 GHz WLAN (MIMO) top channel (continued)



Appendix 1

FHSS Duty Cycle Correction Factor Calculation

In accordance with KDB 558074 section 9 and ANSI C63.10 section 7.5, a duty cycle correction factor may be applied to calculate the average radiated field strength emission levels for an FHSS device.

For a DH5 *Bluetooth* signal, the following values were taken from the *Bluetooth* Core Specification V5.0 to give the worst case correction:

Channel Hopping Rate (Hops/s)	1600
Tx Timeslots	5
Rx Timeslots	1
Adjusted Hopping Rate for Adaptive Frequency Hopping (Hops/s)	266.667
Time per Hop (ms)	3.75
Minimum Number of Channels	20
Time per Hop Sequence (ms)	75
Maximum Number of Hops on One Channel in any 100 ms Observation Period	3
Maximum Dwell Time on One Channel in any 100 ms Observation Period (ms)	11.25

The duty cycle correction factor was calculated based on the above values:

$$20*\text{Log}(11.25\text{ ms} / 100\text{ ms}) = 19.0\text{ dB}$$

--- END OF REPORT ---