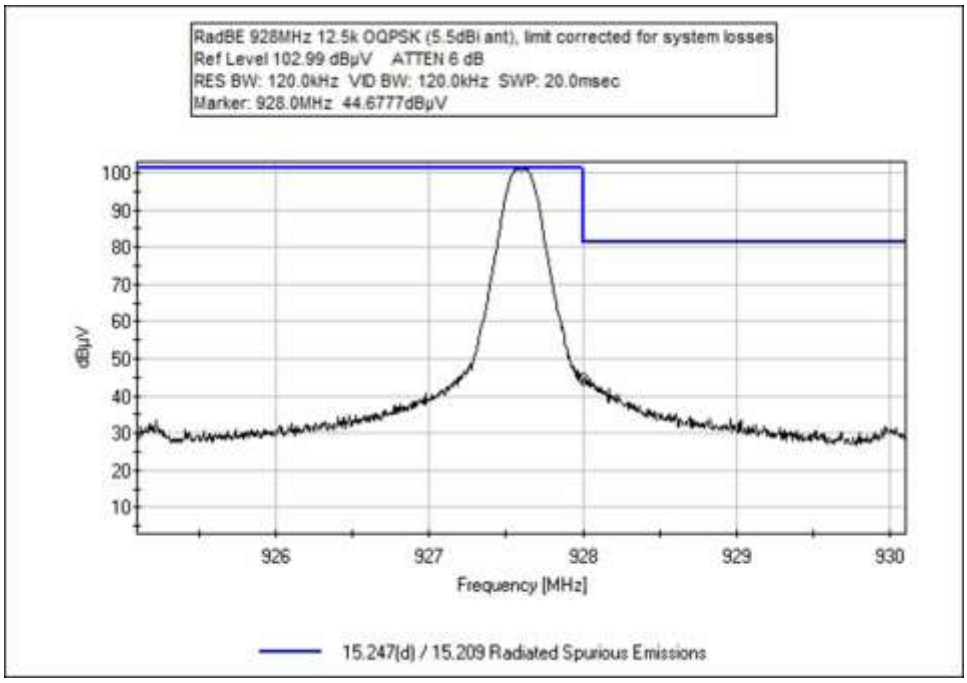
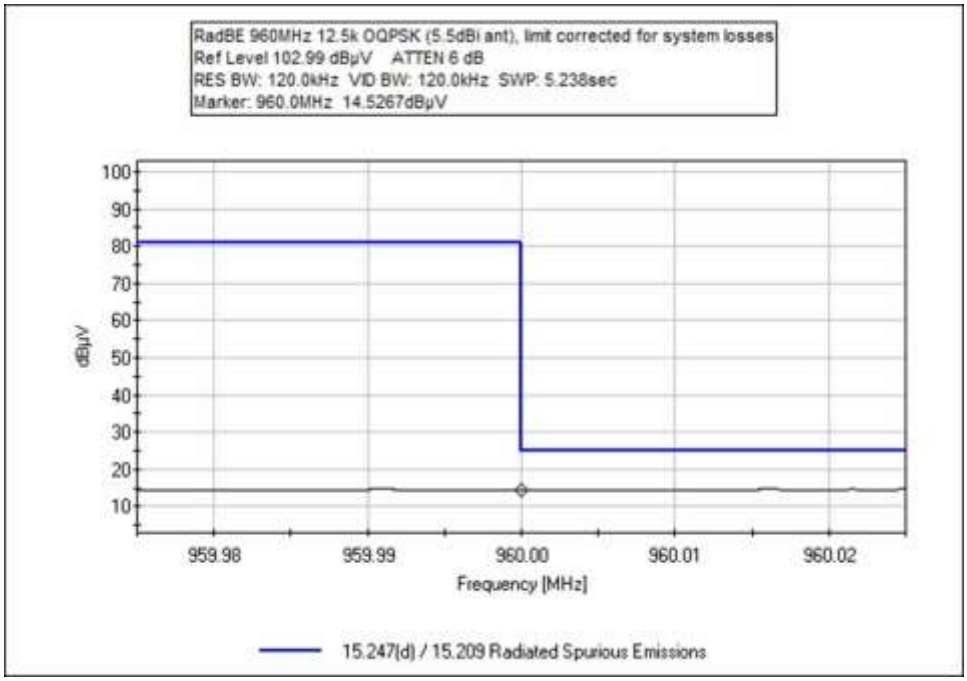
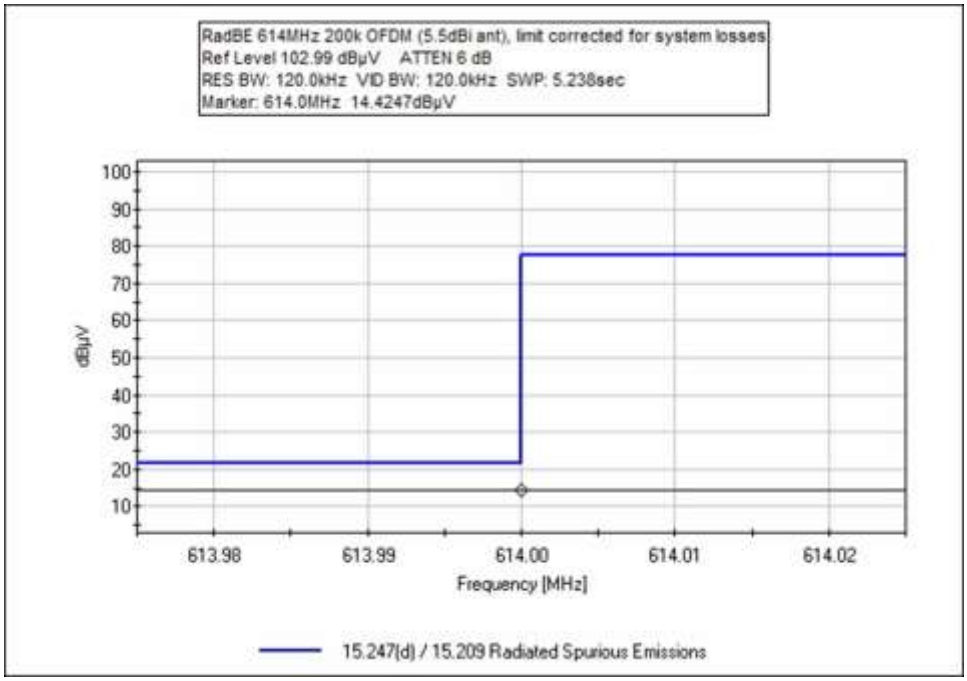
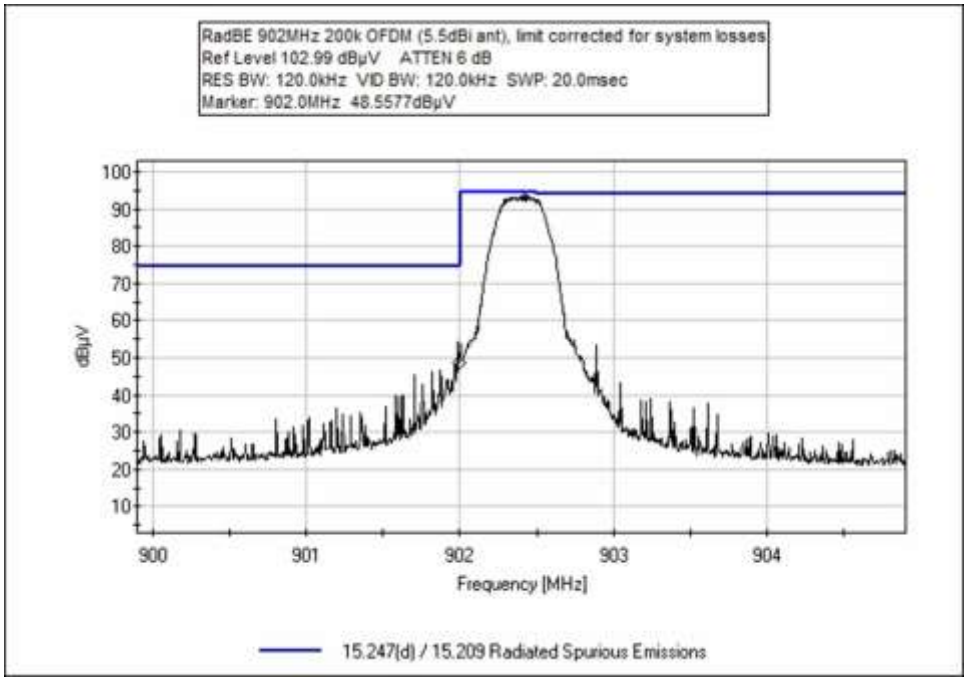
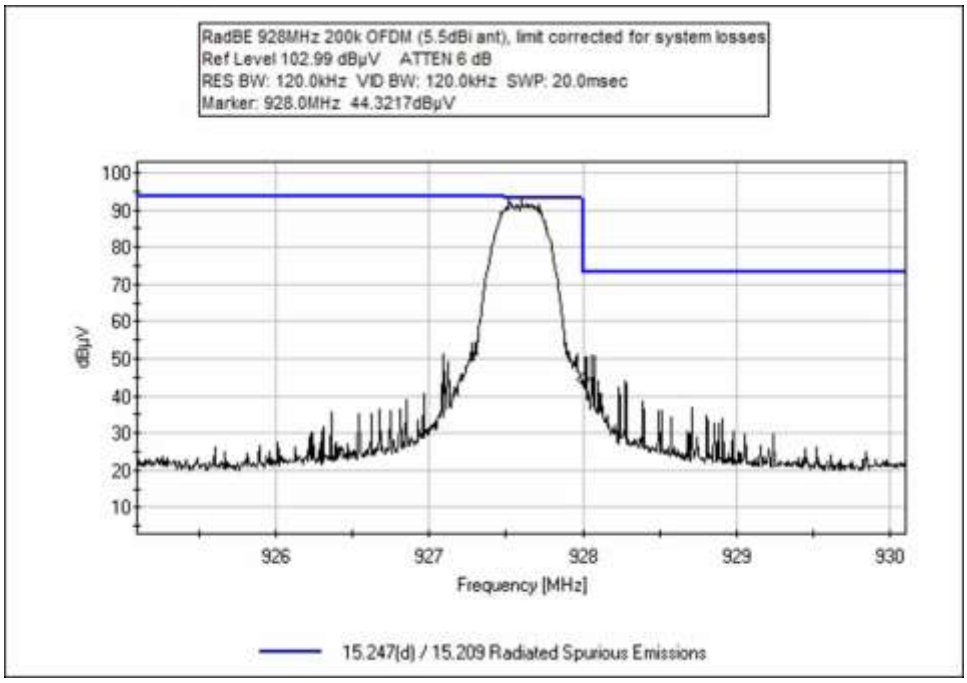

RadBE 928MHz 12.5k OQPSK (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 44.6777dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

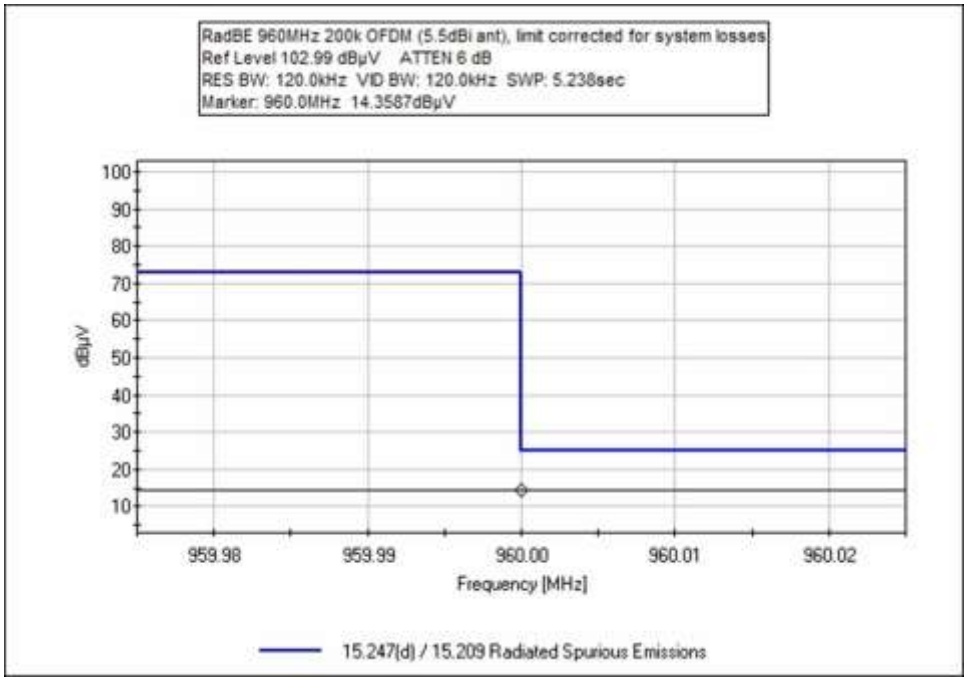

RadBE 960MHz 12.5k OQPSK (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.5267dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

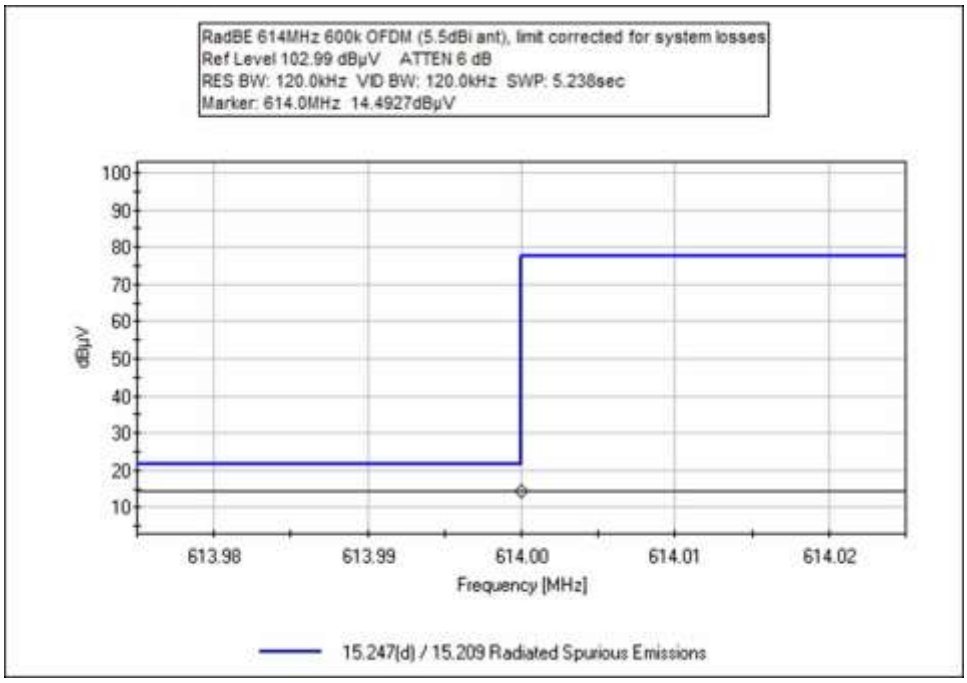
OFDM

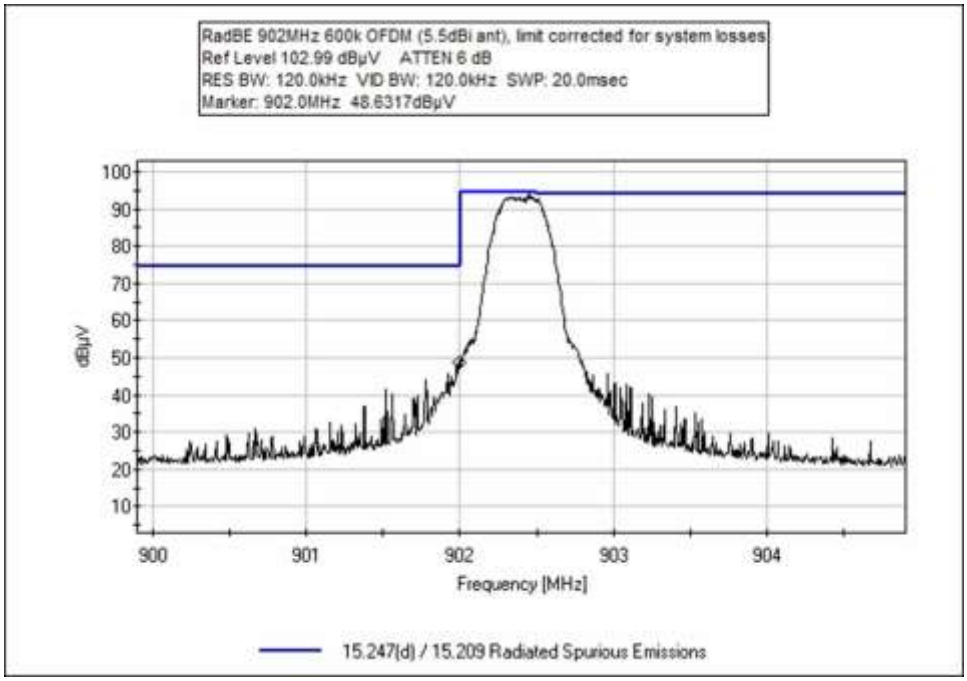

RadBE 614MHz 200k OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 614.0MHz 14.4247dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
613.98
613.99
614.00
614.01
614.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

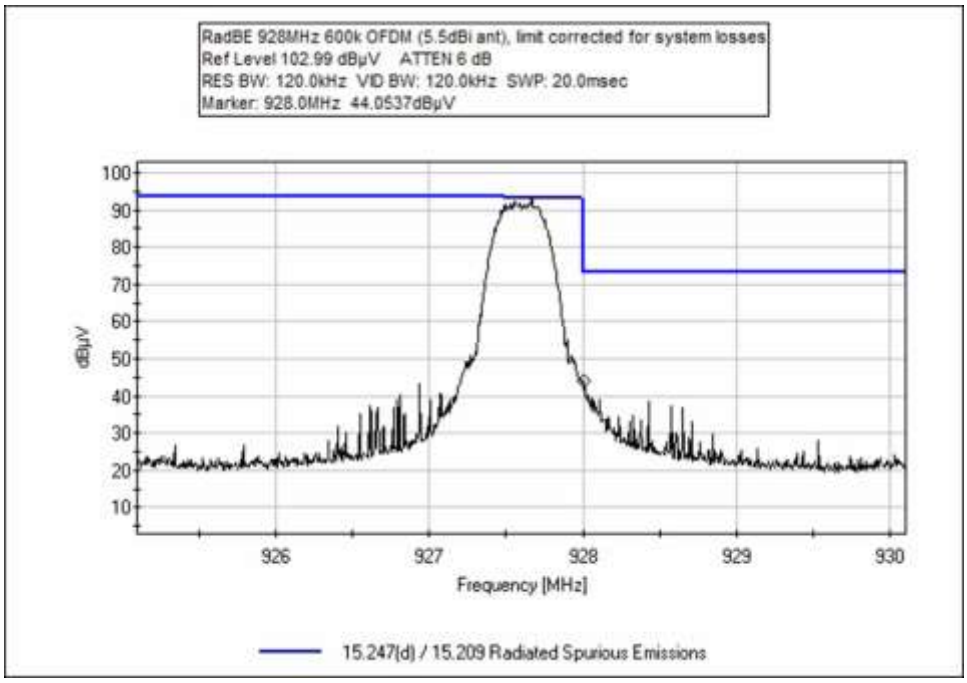

RadBE 902MHz 200k OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 902.0MHz 48.5577dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
900
901
902
903
904
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

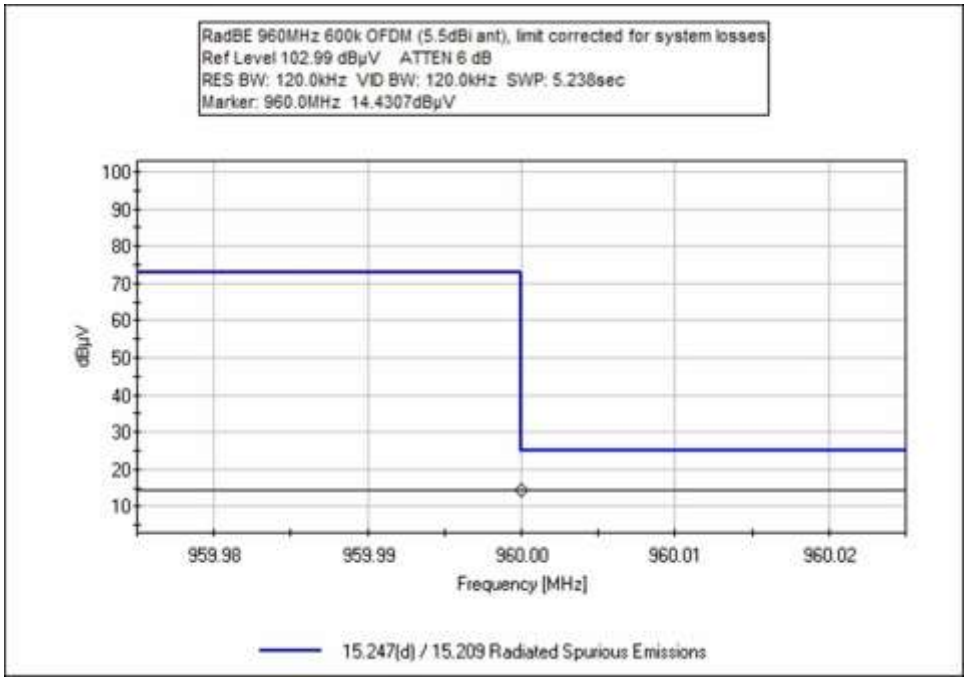

RadBE 928MHz 200k OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 44.3217dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

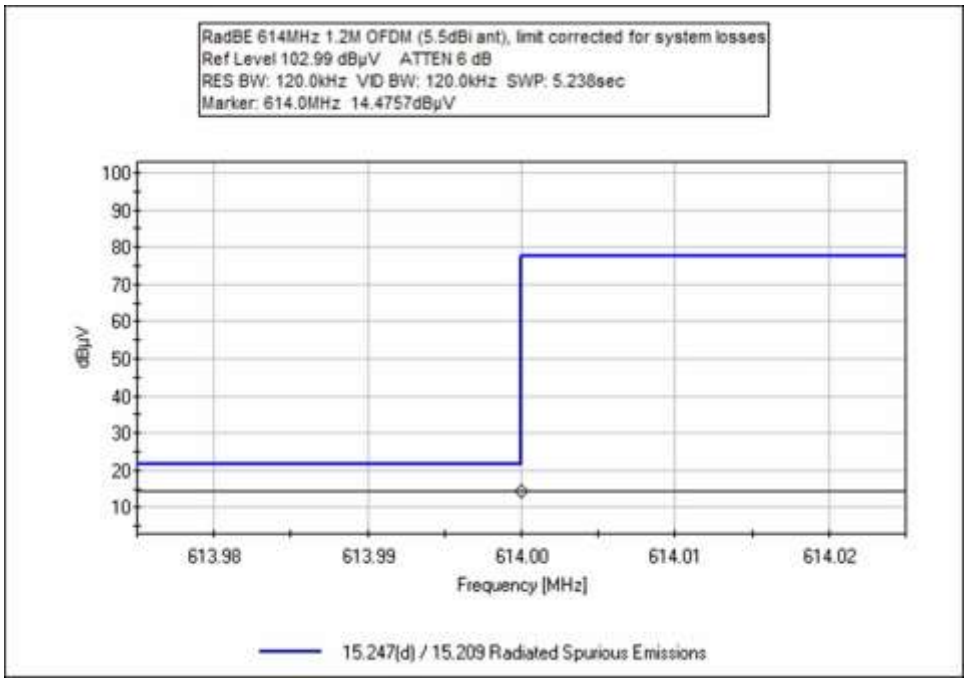

RadBE 960MHz 200k OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.3587dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

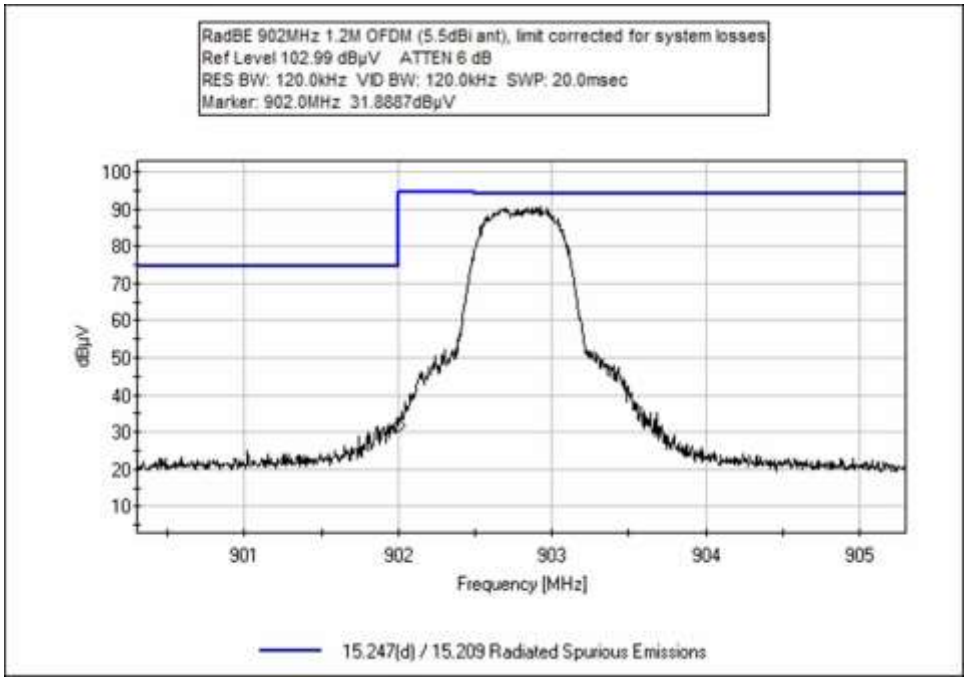

RadBE 614MHz 600k OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 614.0MHz 14.4927dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
613.98
613.99
614.00
614.01
614.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

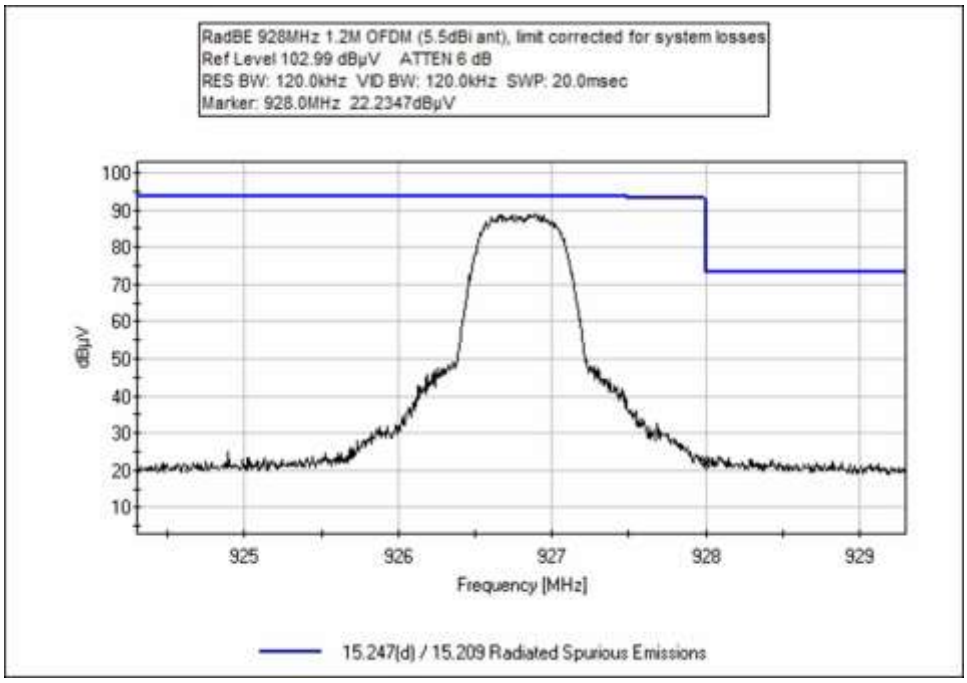

RadBE 902MHz 600k OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 902.0MHz 48.6317dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
900
901
902
903
904
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

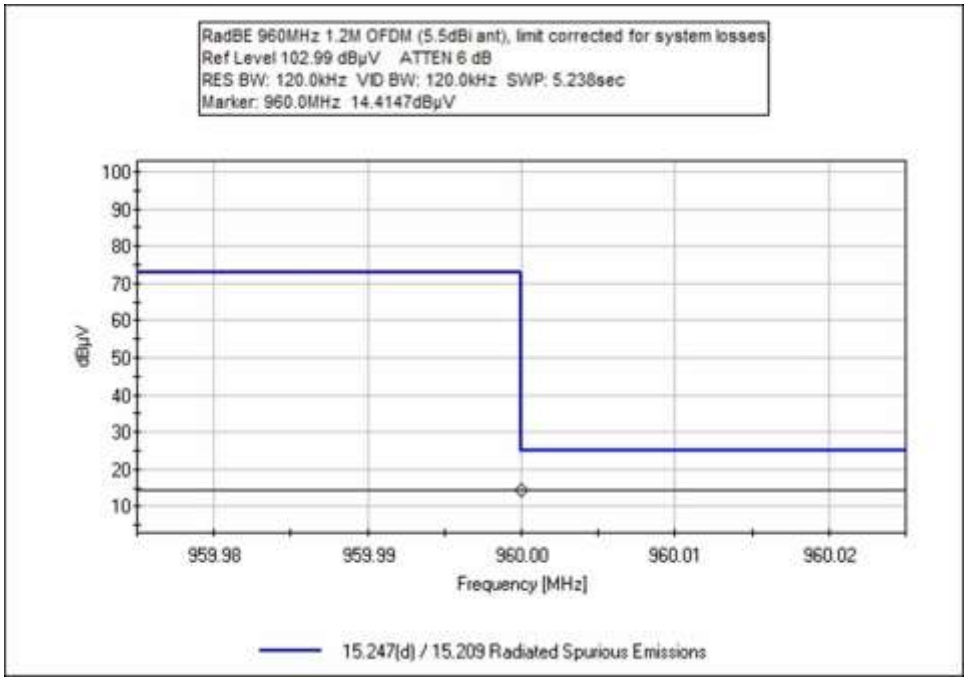

RadBE 928MHz 600k OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 44.0537dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE 960MHz 600k OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.4307dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

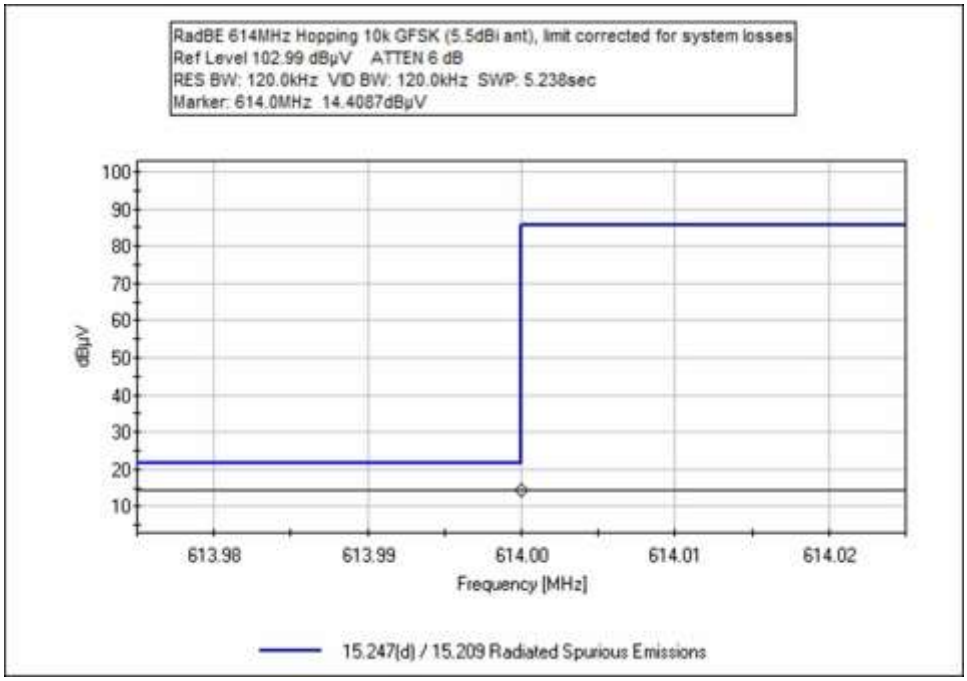

RadBE 614MHz 1.2M OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 614.0MHz 14.4757dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
613.98
613.99
614.00
614.01
614.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

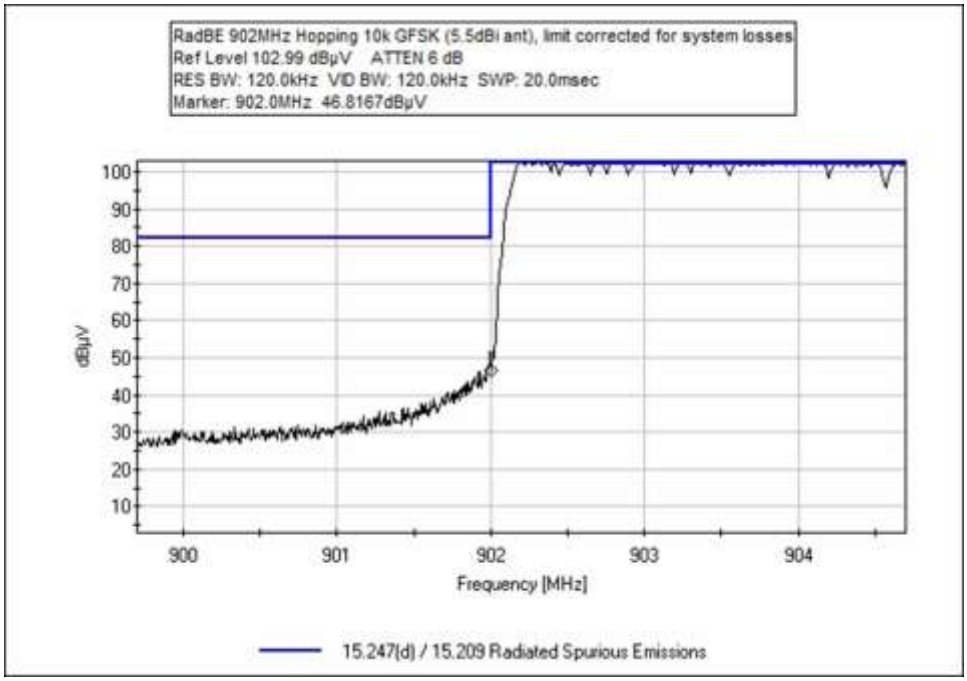

RadBE 902MHz 1.2M OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 902.0MHz 31.8887dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
901
902
903
904
905
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

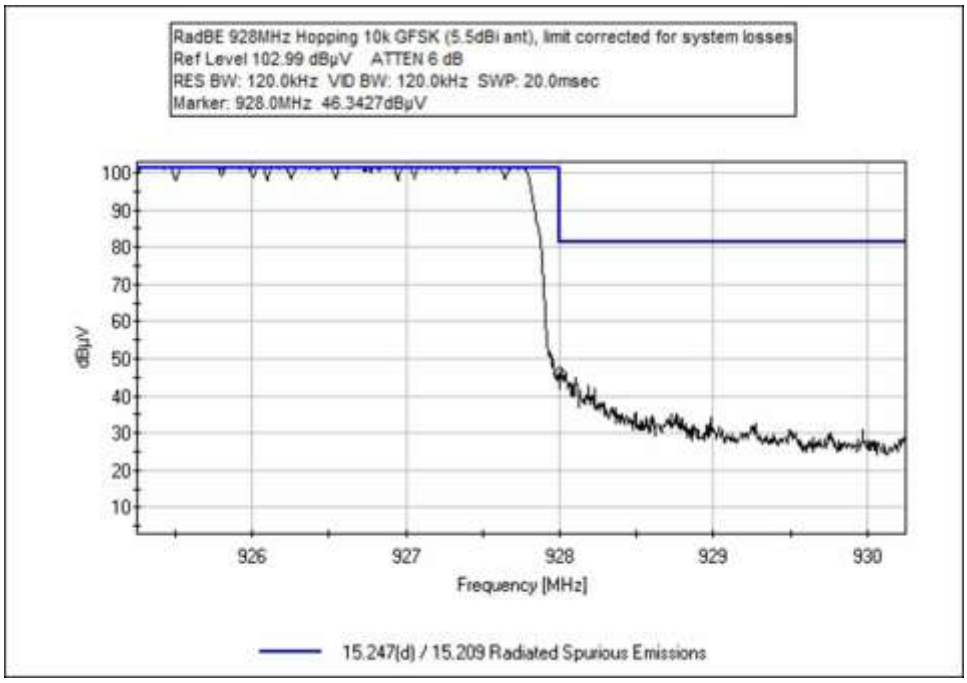

RadBE 928MHz 1.2M OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 22.2347dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

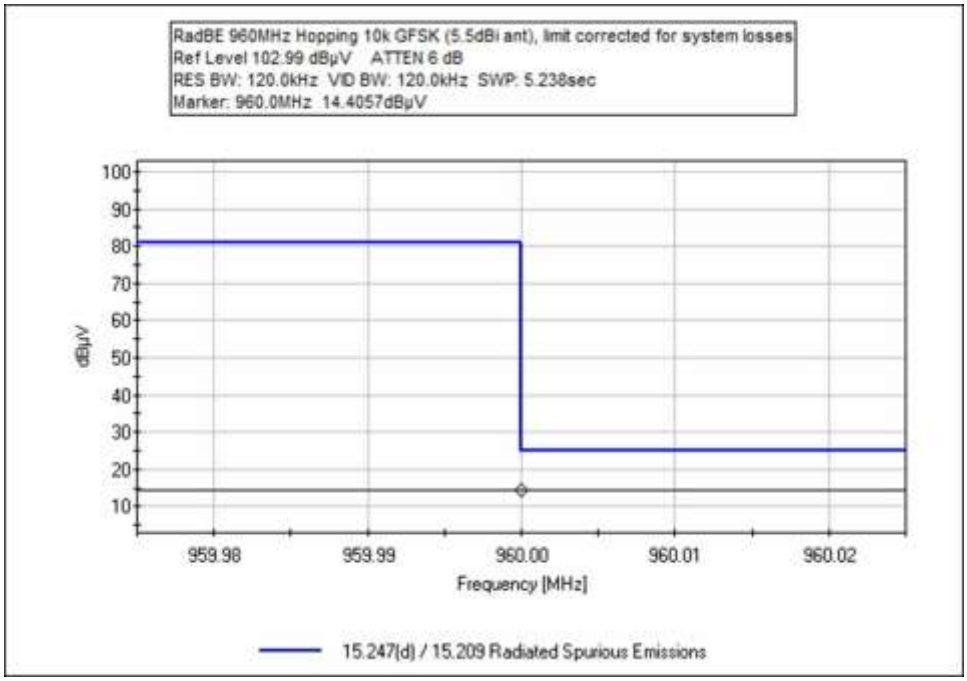

RadBE 960MHz 1.2M OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.4147dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

GFSK Hopping

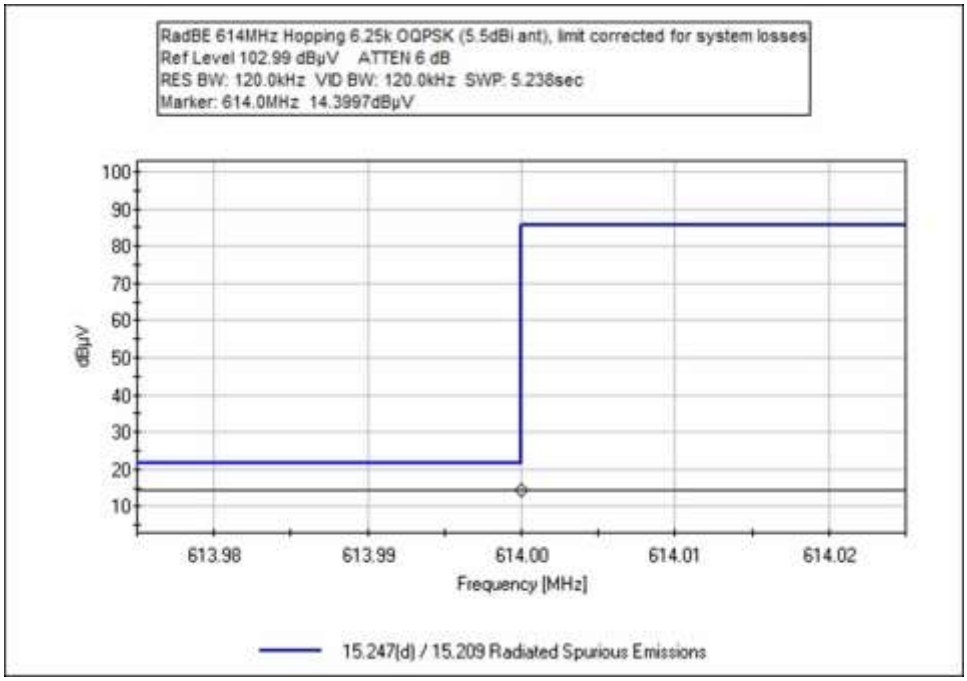


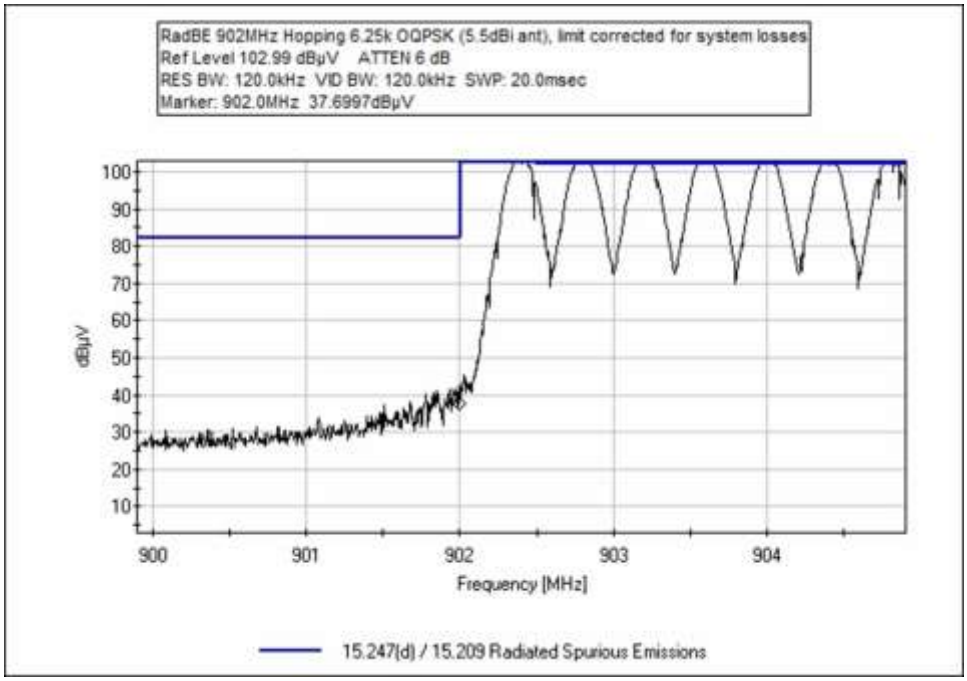


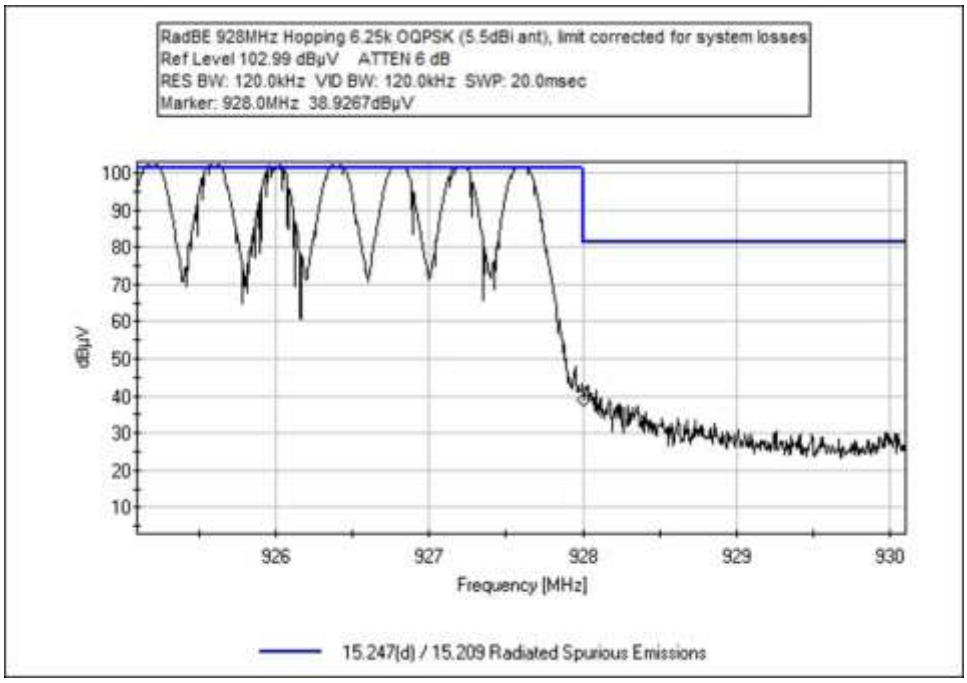

RadBE 928MHz Hopping 10k GFSK (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 46.3427dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

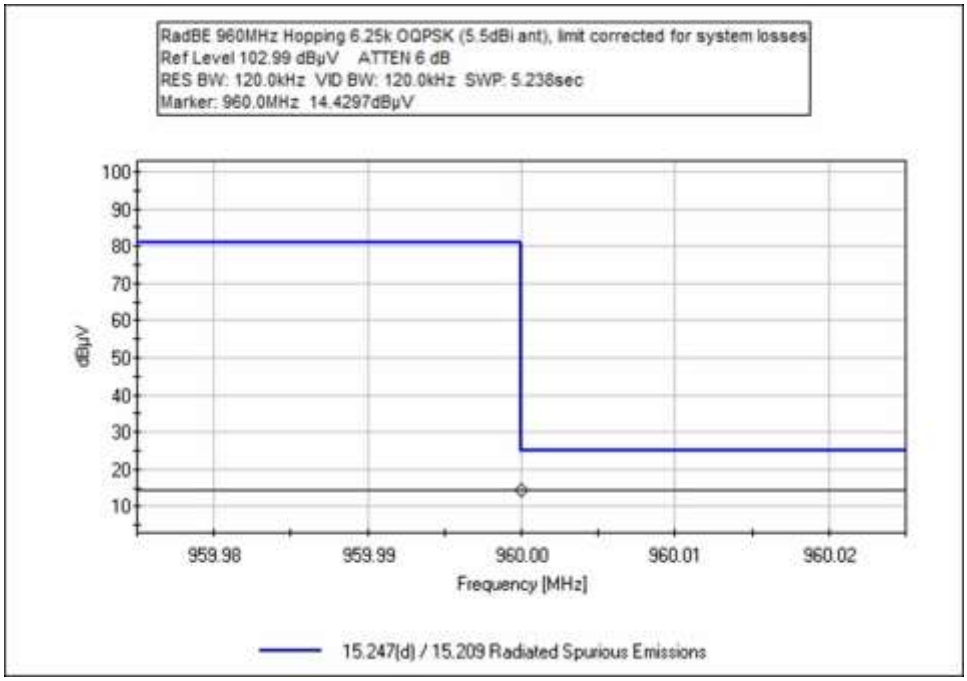

RadBE 960MHz Hopping 10k GFSK (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.4057dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

OQPSK Hopping

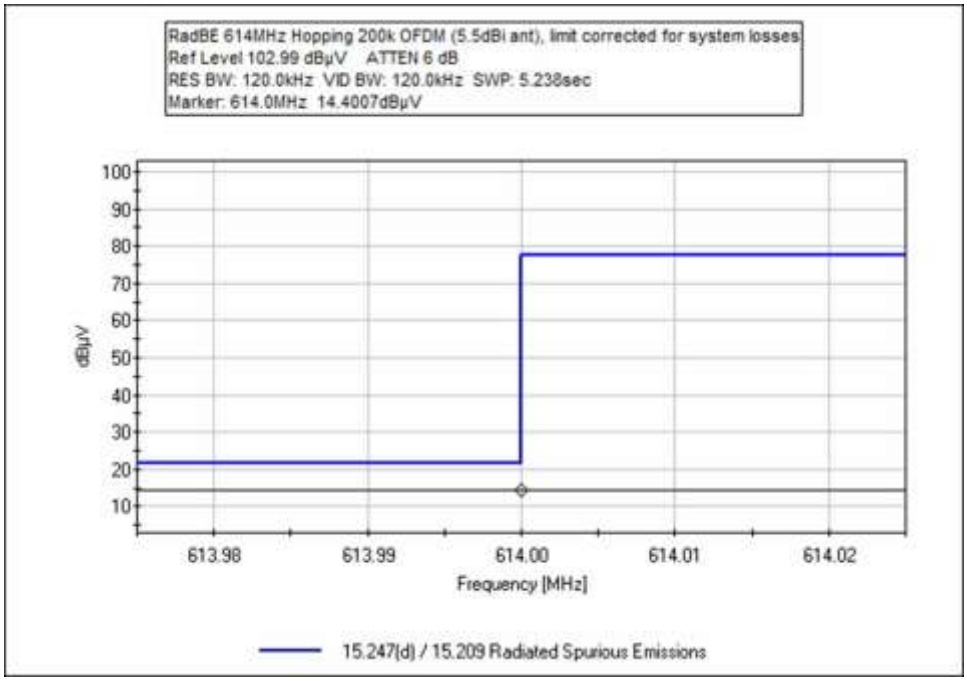


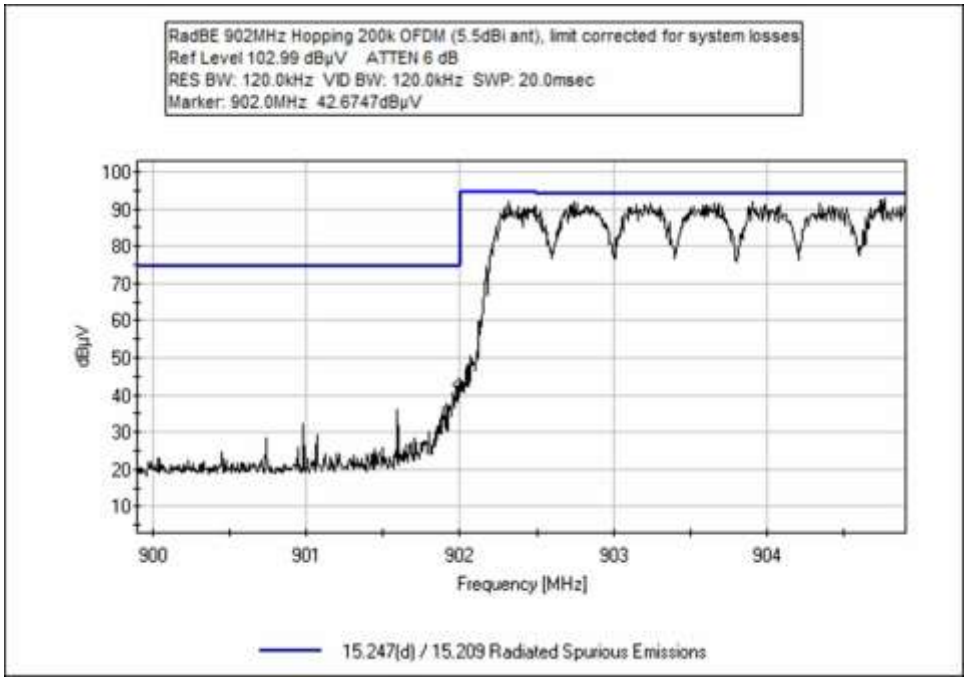


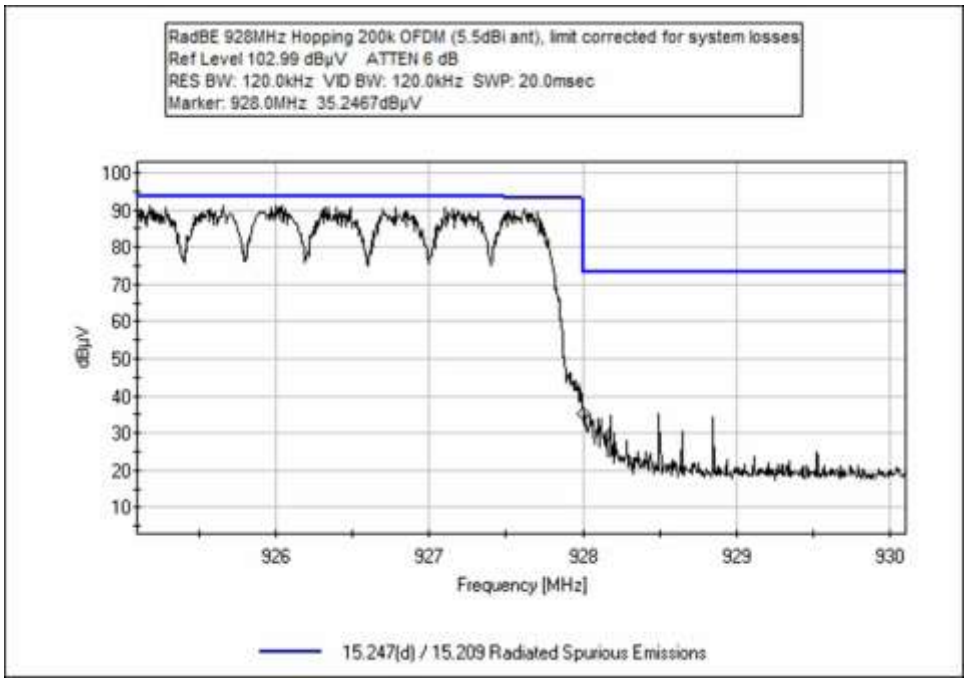

RadBE 928MHz Hopping 6.25k OQPSK (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 38.9267dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

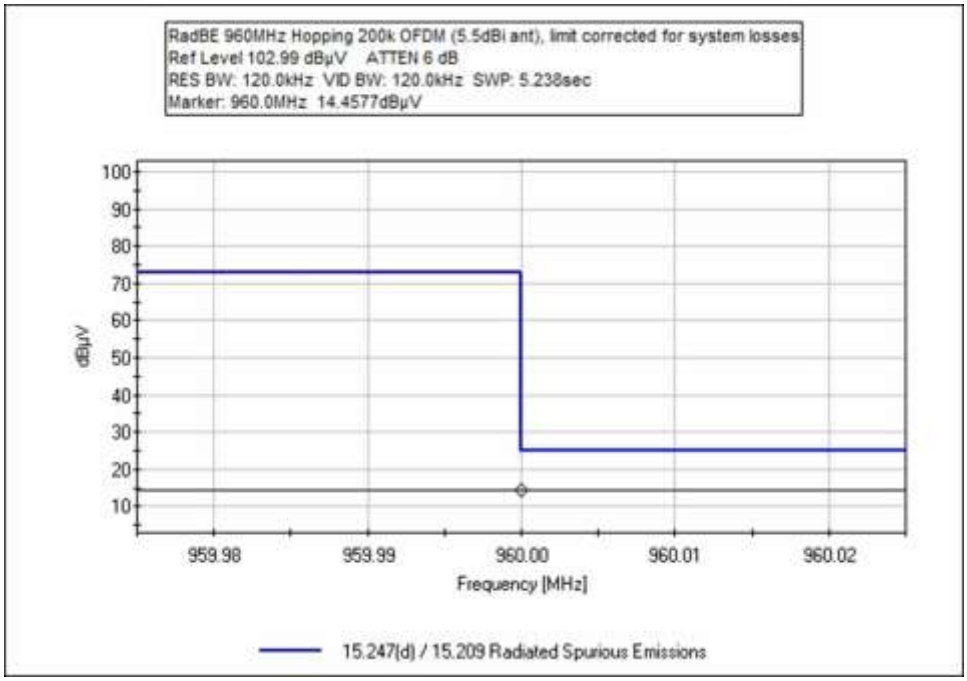

RadBE 960MHz Hopping 6.25k OQPSK (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.4297dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

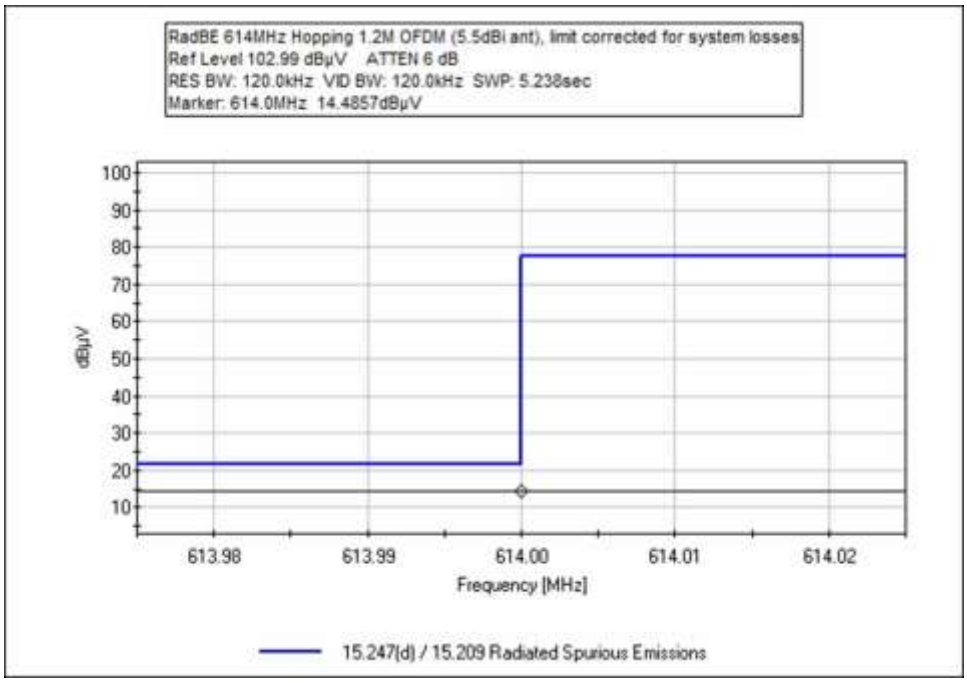
OFDM Hopping

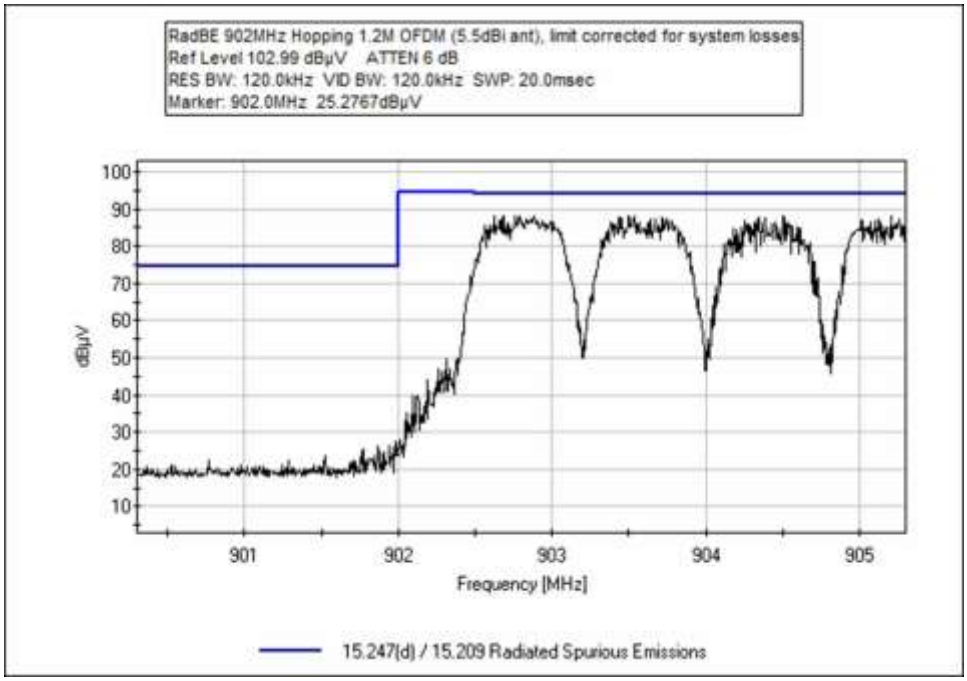


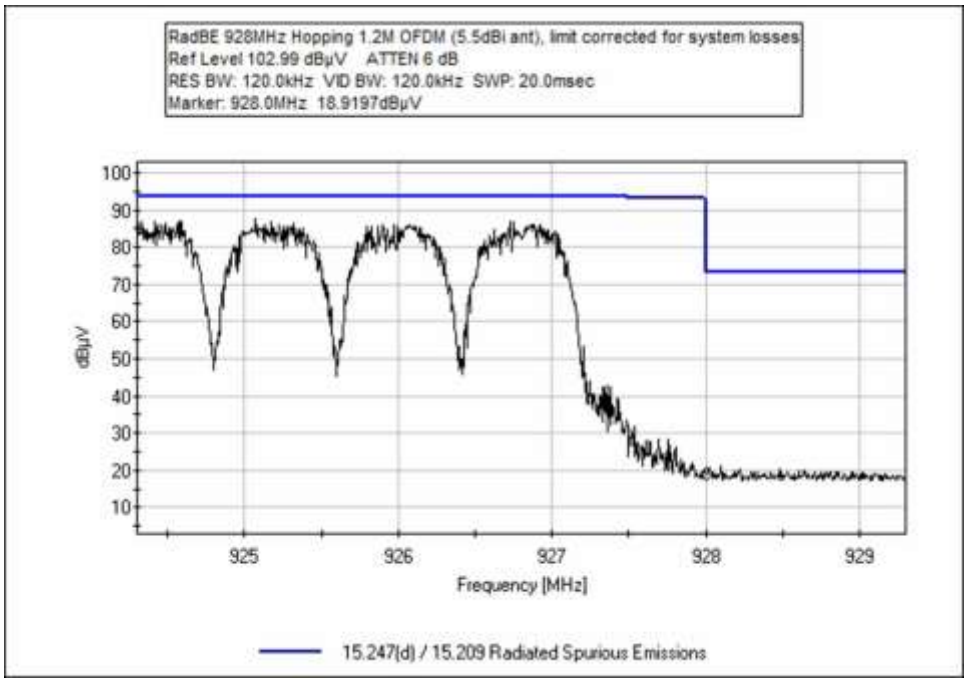


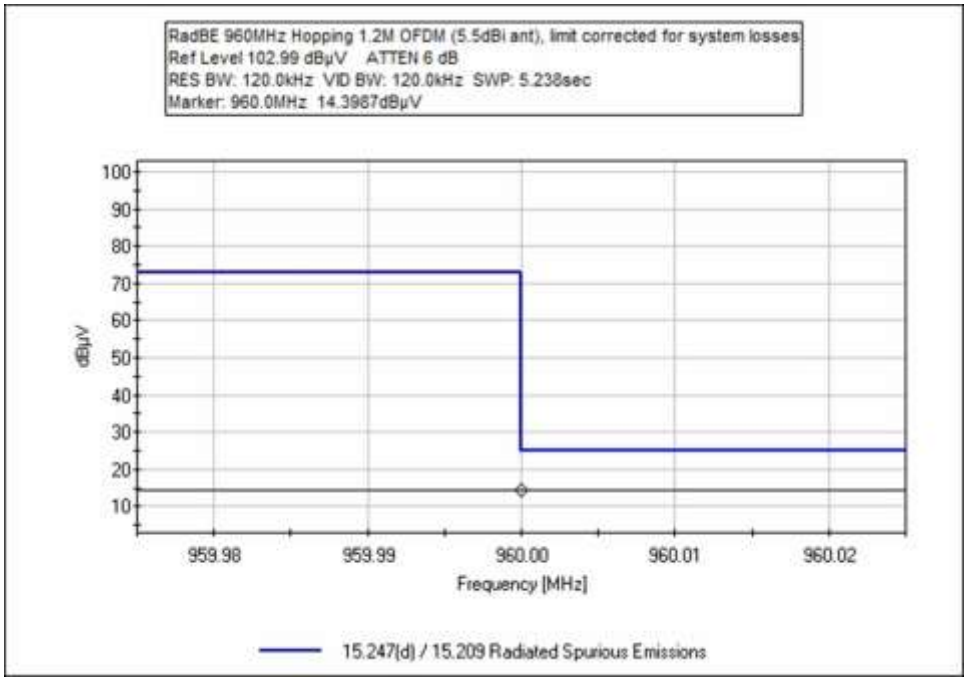

RadBE 928MHz Hopping 200k OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 35.2467dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE 960MHz Hopping 200k OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.4577dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE 614MHz Hopping 1.2M OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 614.0MHz 14.4857dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
613.98
613.99
614.00
614.01
614.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

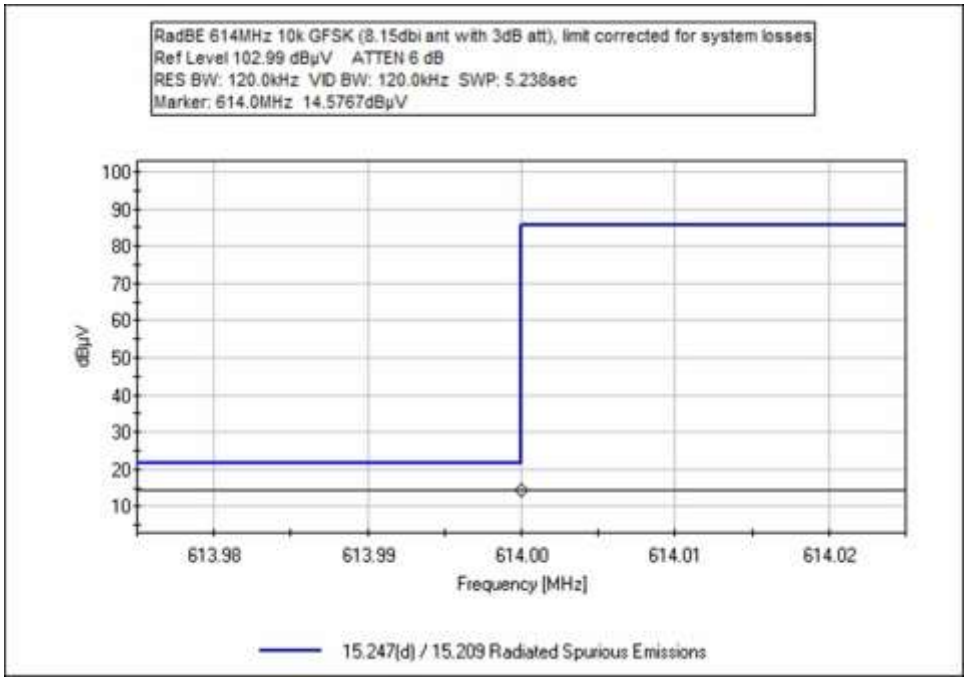

RadBE 902MHz Hopping 1.2M OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 902.0MHz 25.2767dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
901
902
903
904
905
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

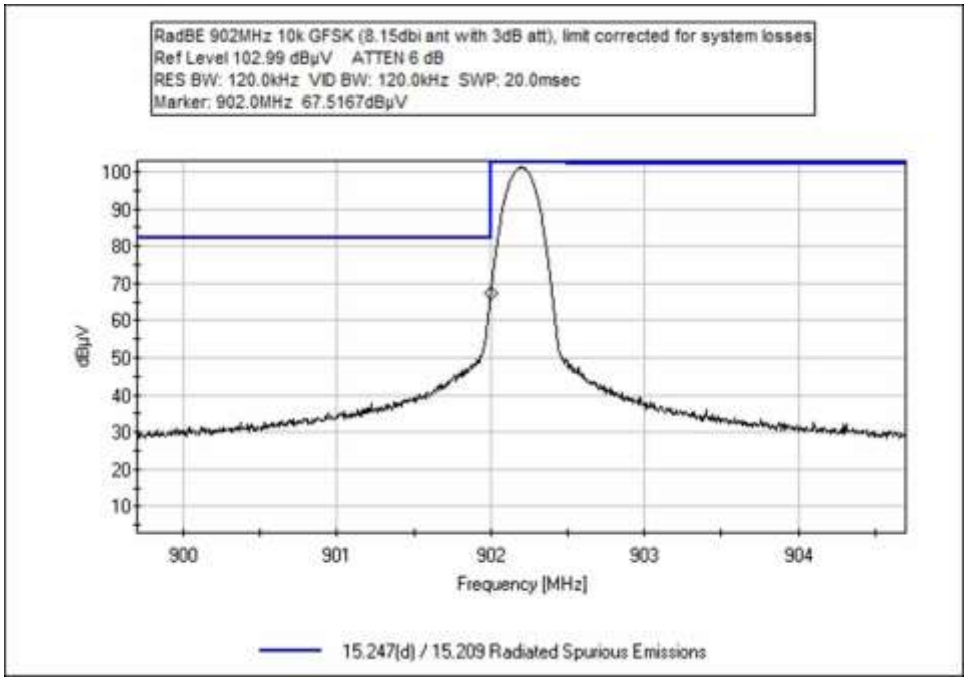

RadBE 928MHz Hopping 1.2M OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 18.9197dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
925
926
927
928
929
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

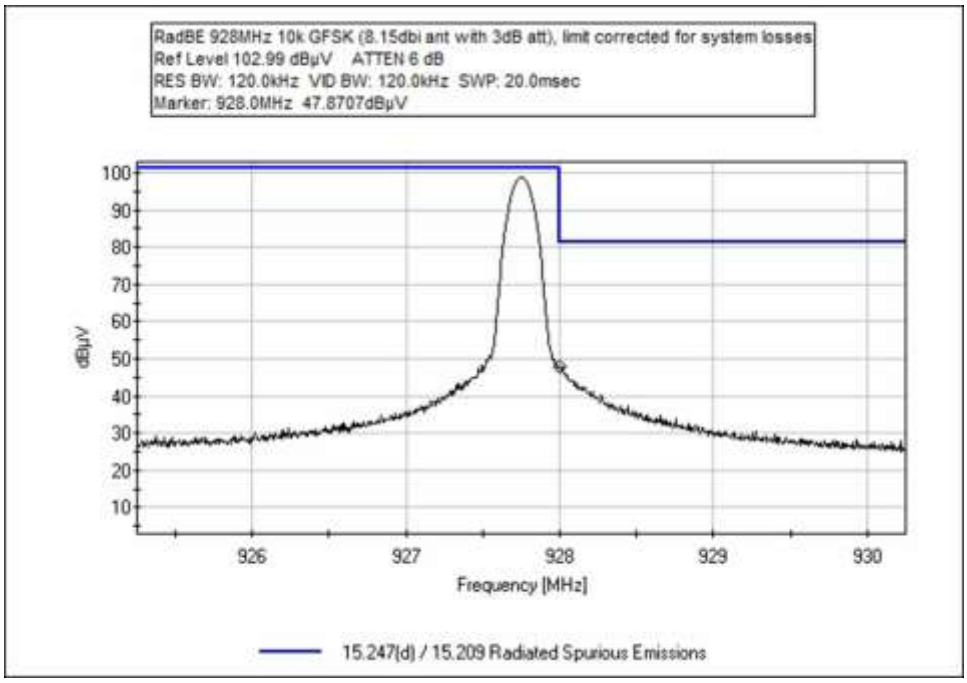

RadBE 960MHz Hopping 1.2M OFDM (5.5dBi ant), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.3987dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

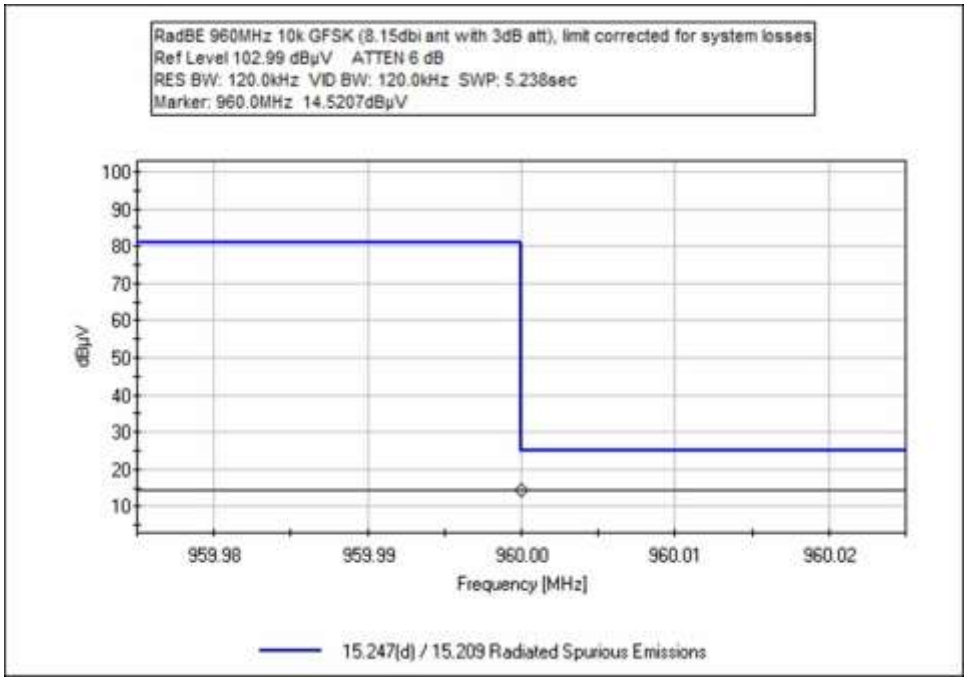
Configuration 4

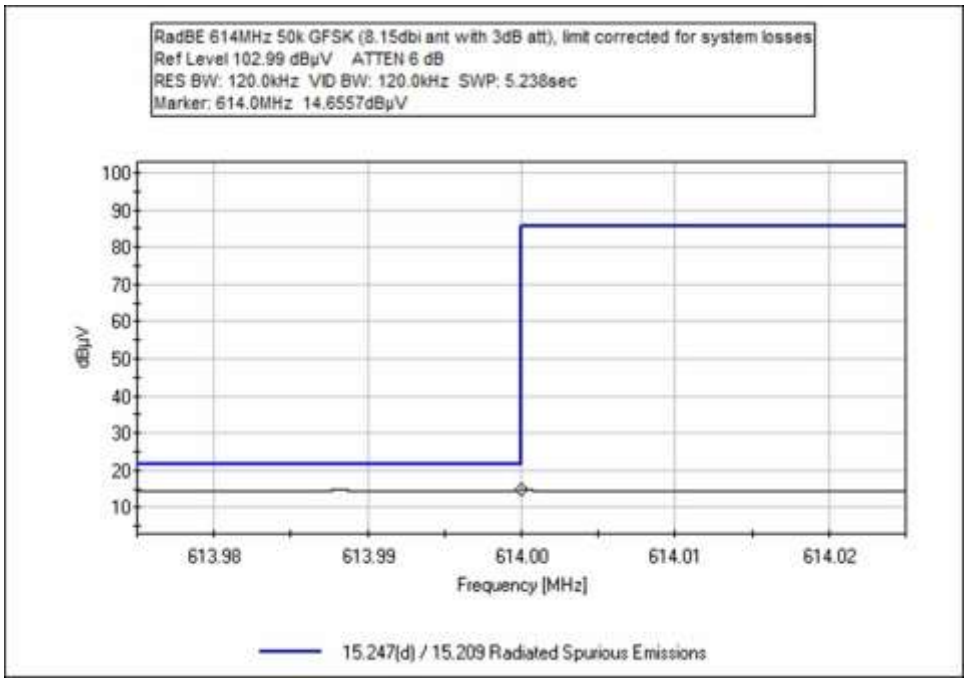
GFSK

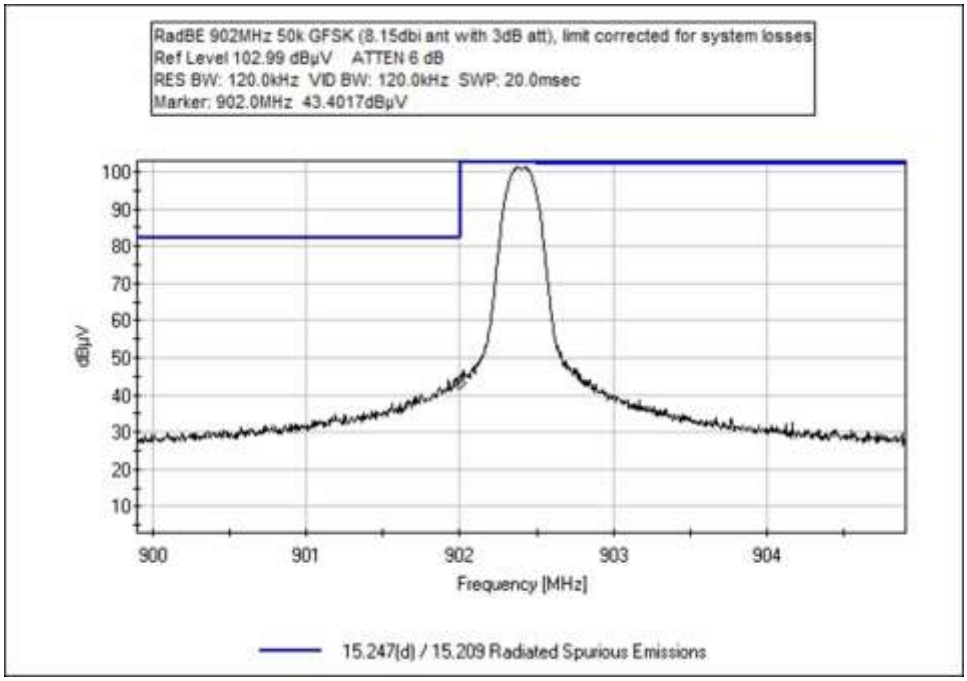


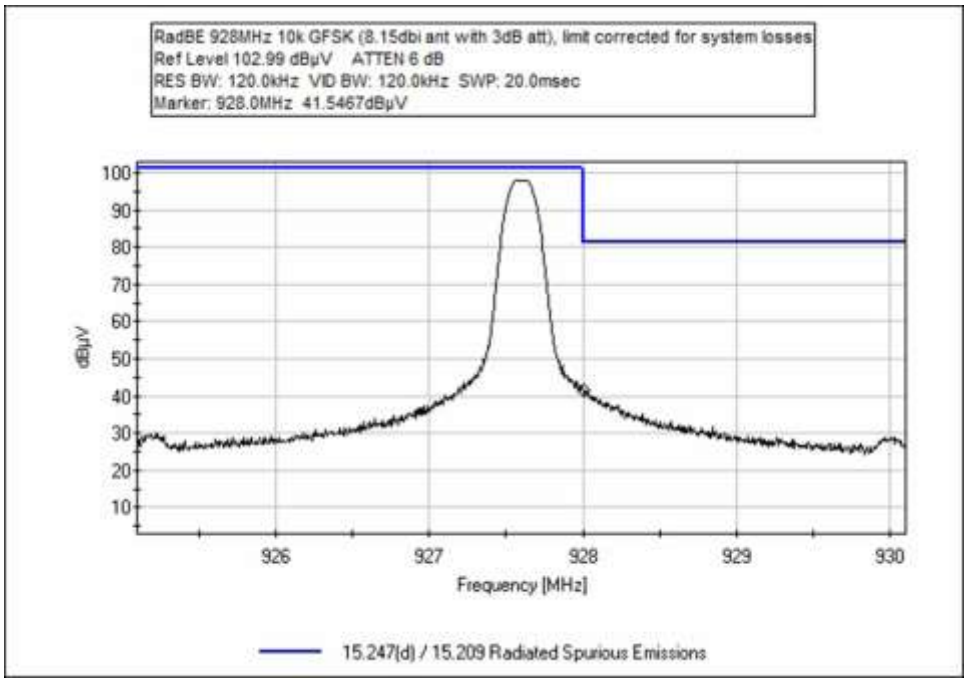


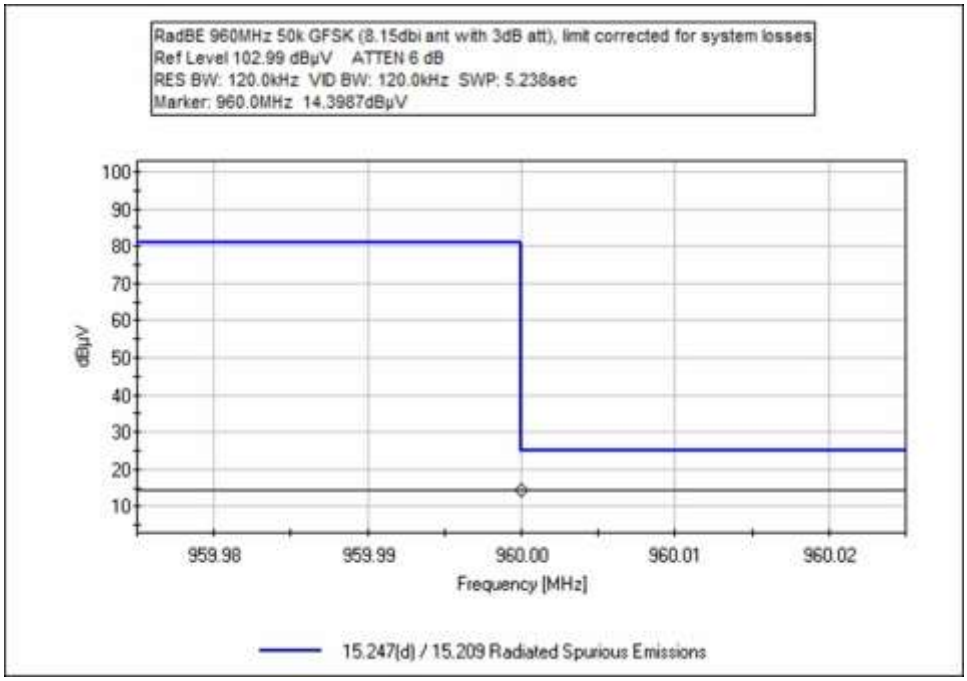

RadBE 928MHz 10k GFSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 47.8707dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

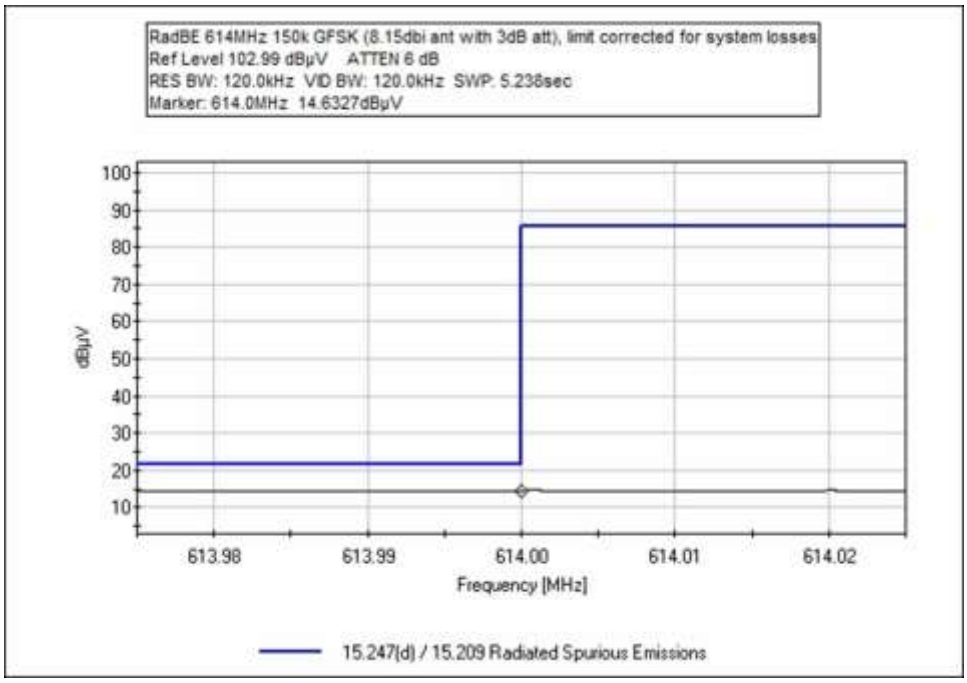

RadBE 960MHz 10k GFSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.5207dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

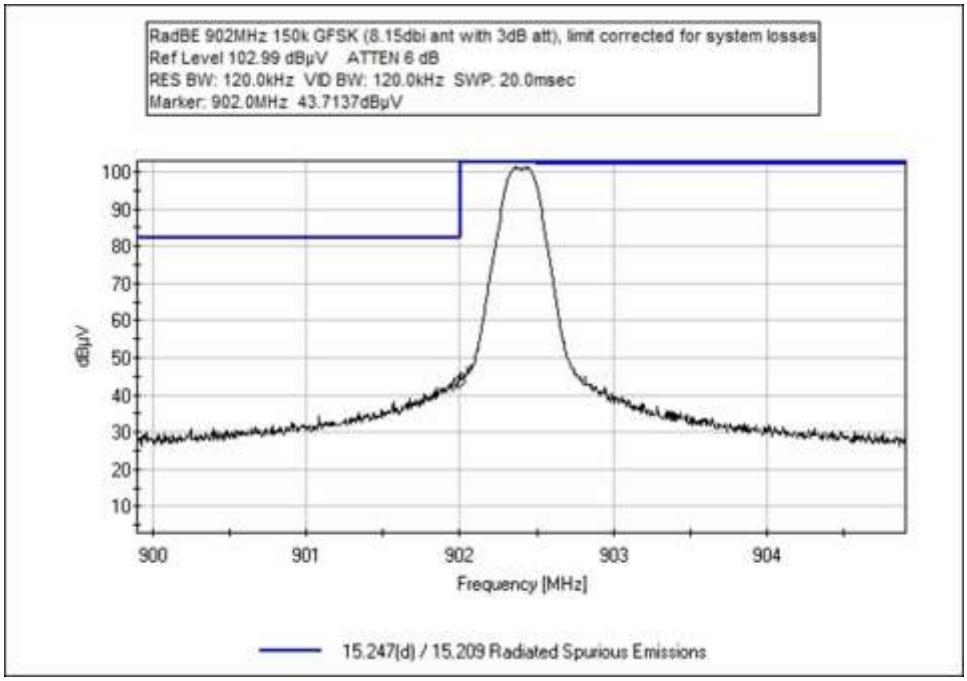

RadBE 614MHz 50k GFSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 614.0MHz 14.6557dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
613.98
613.99
614.00
614.01
614.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

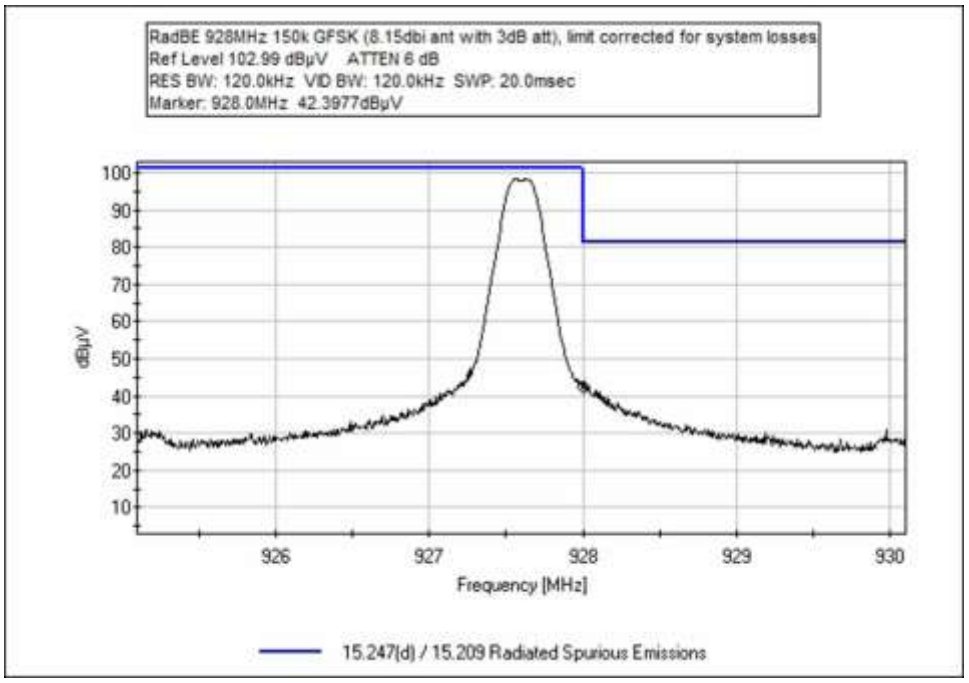

RadBE 902MHz 50k GFSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 902.0MHz 43.4017dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
900
901
902
903
904
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

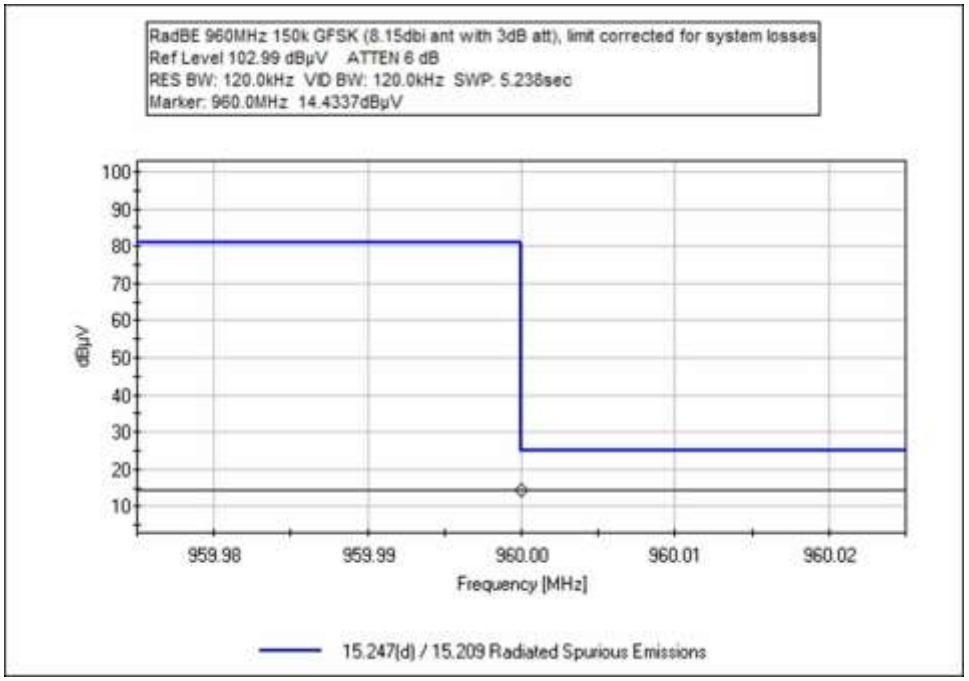

RadBE 928MHz 10k GFSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 41.5467dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE 960MHz 50k GFSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.3987dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

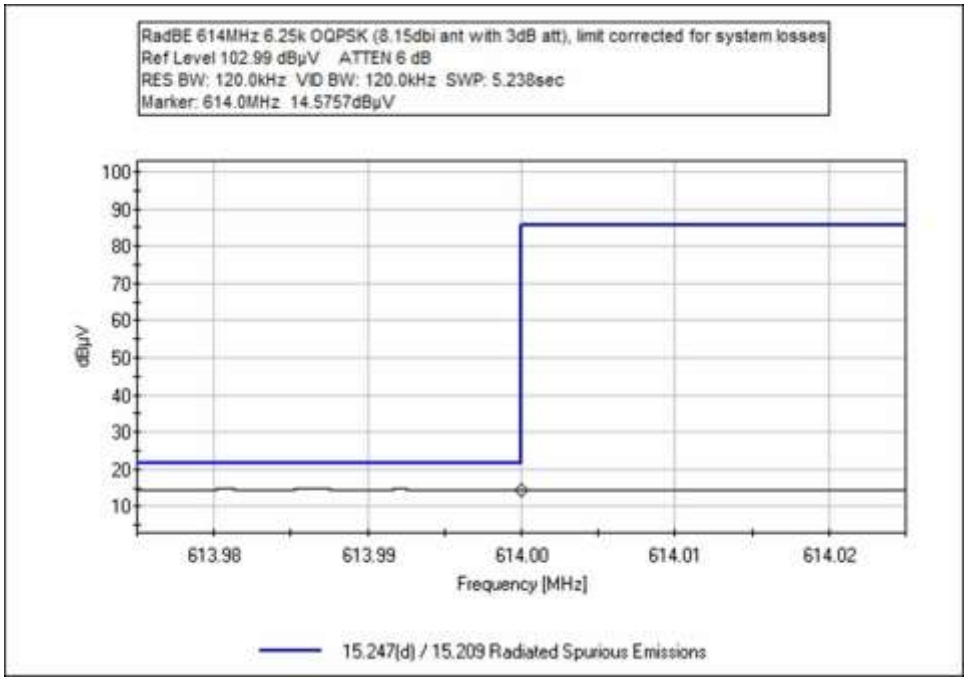

RadBE 614MHz 150k GFSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 614.0MHz 14.6327dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
613.98
613.99
614.00
614.01
614.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

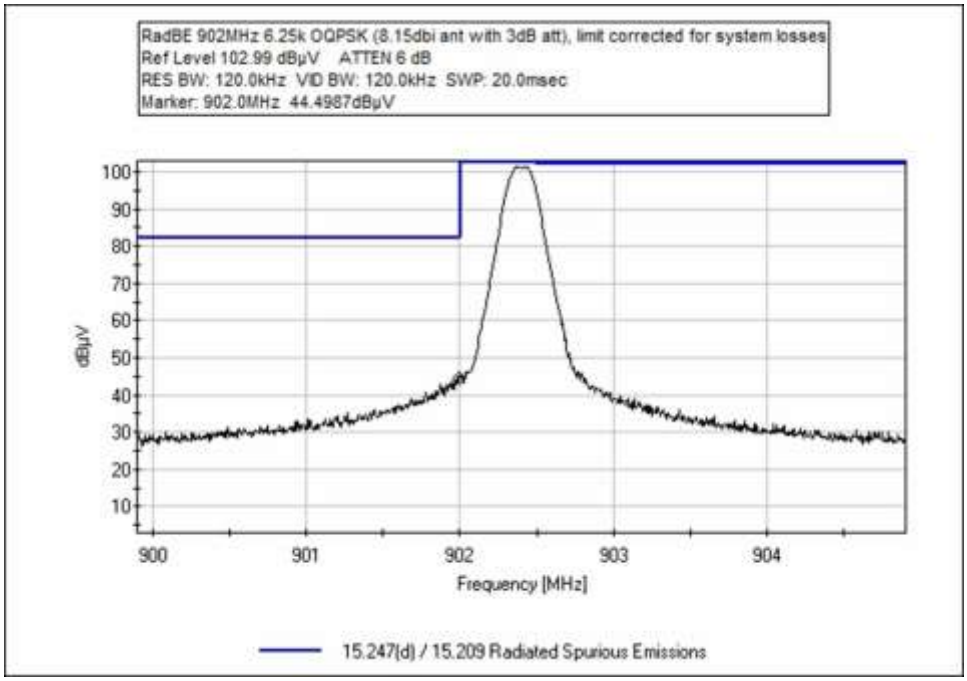

RadBE 902MHz 150k GFSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 902.0MHz 43.7137dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
900
901
902
903
904
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

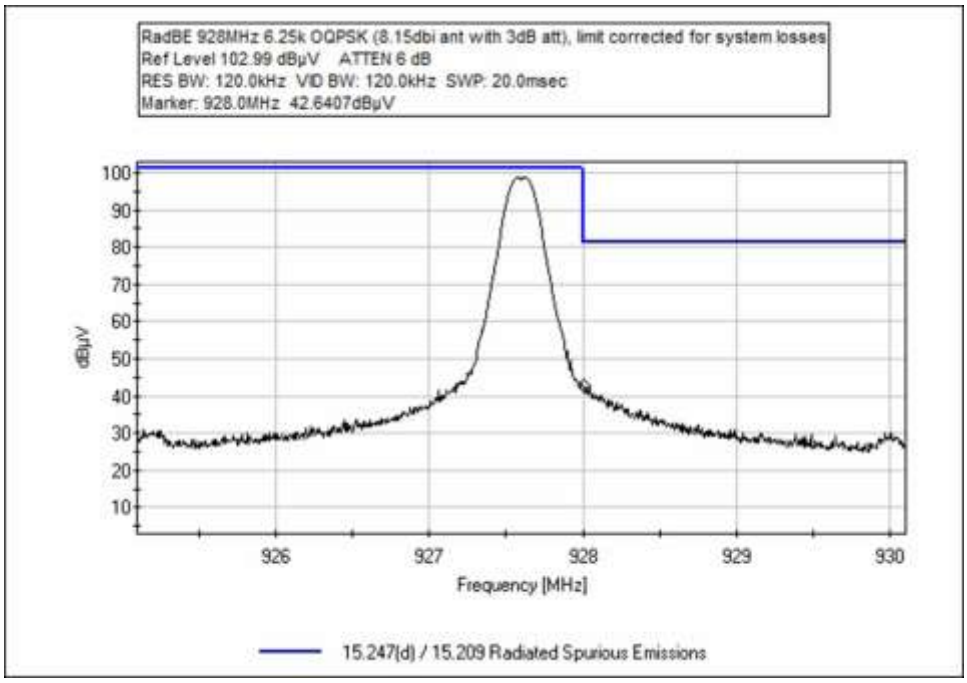

RadBE 928MHz 150k GFSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 42.3977dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

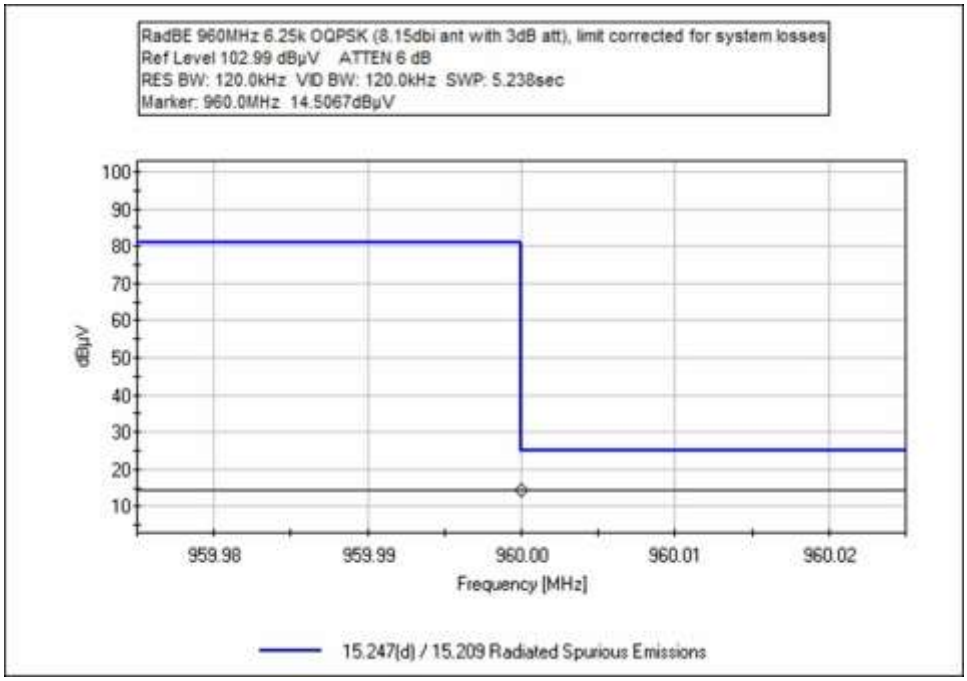

RadBE 960MHz 150k GFSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.4337dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

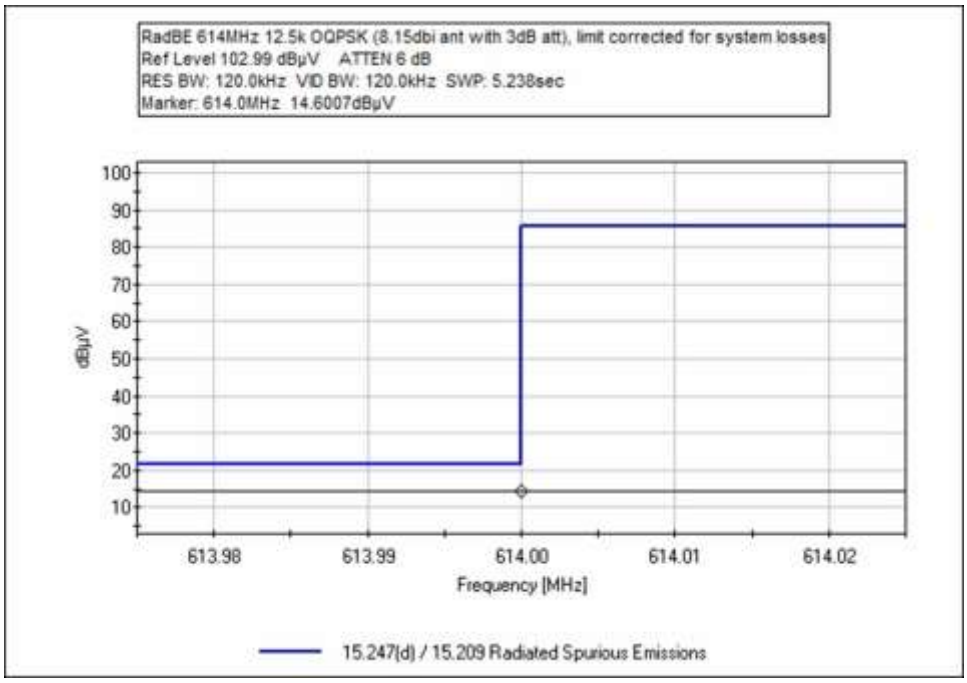
OQPSK

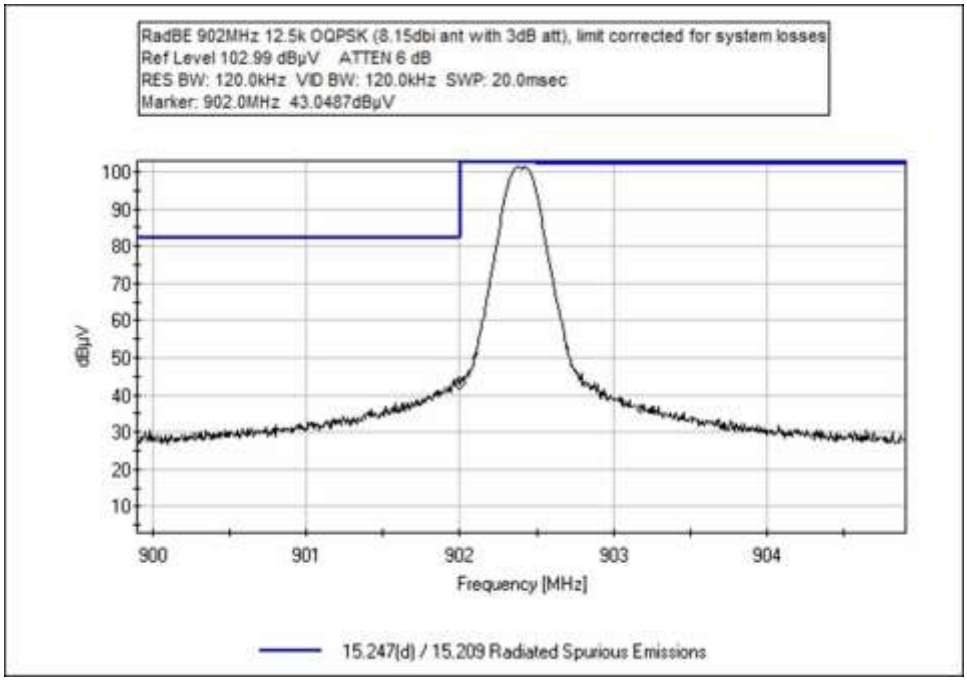

RadBE 614MHz 6.25k OQPSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 614.0MHz 14.5757dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
613.98
613.99
614.00
614.01
614.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

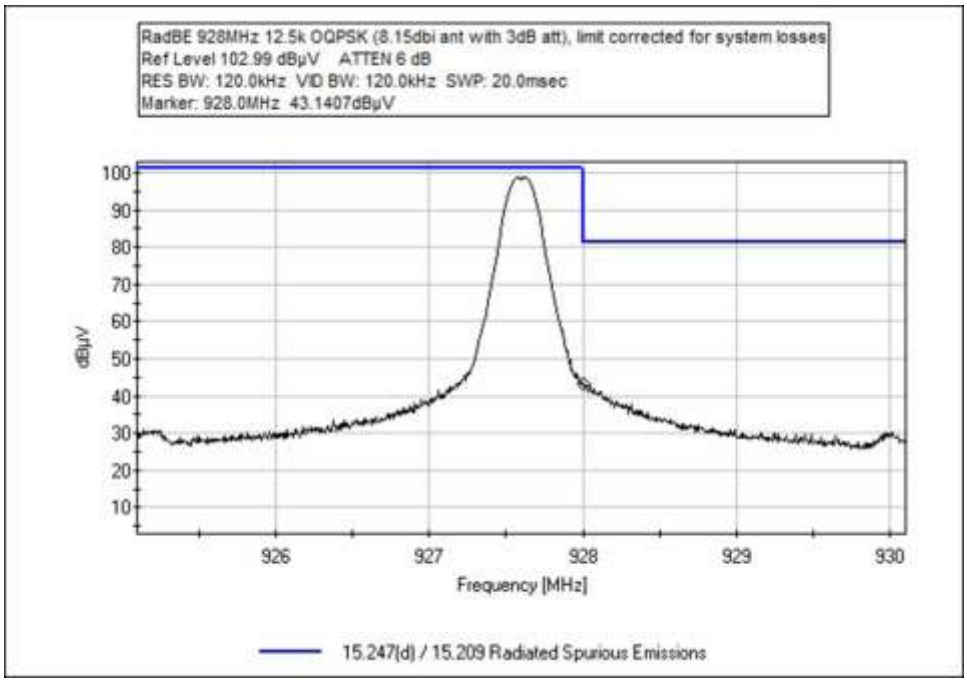

RadBE 902MHz 6.25k OQPSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 902.0MHz 44.4987dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
900
901
902
903
904
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

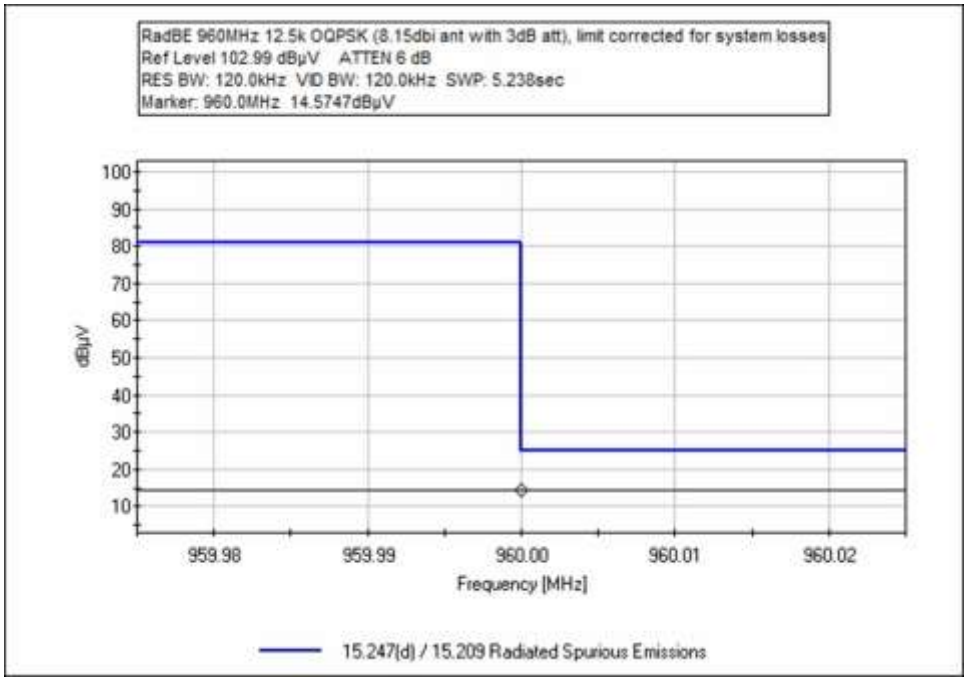

RadBE 928MHz 6.25k OQPSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 42.6407dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE 960MHz 6.25k OQPSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.5067dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

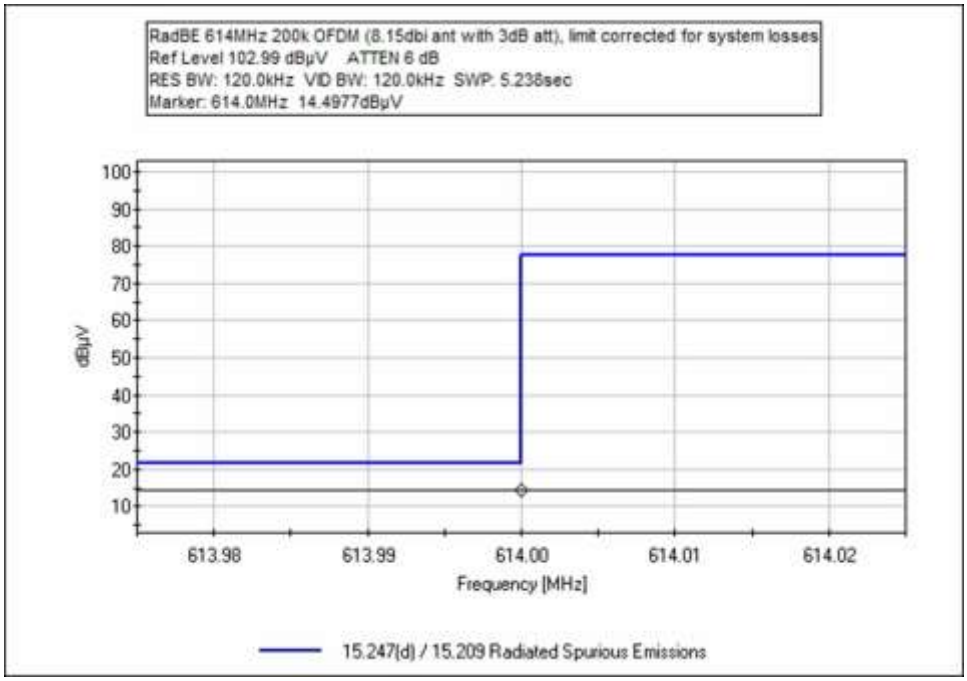

RadBE 614MHz 12.5k OQPSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 614.0MHz 14.6007dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
613.98
613.99
614.00
614.01
614.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

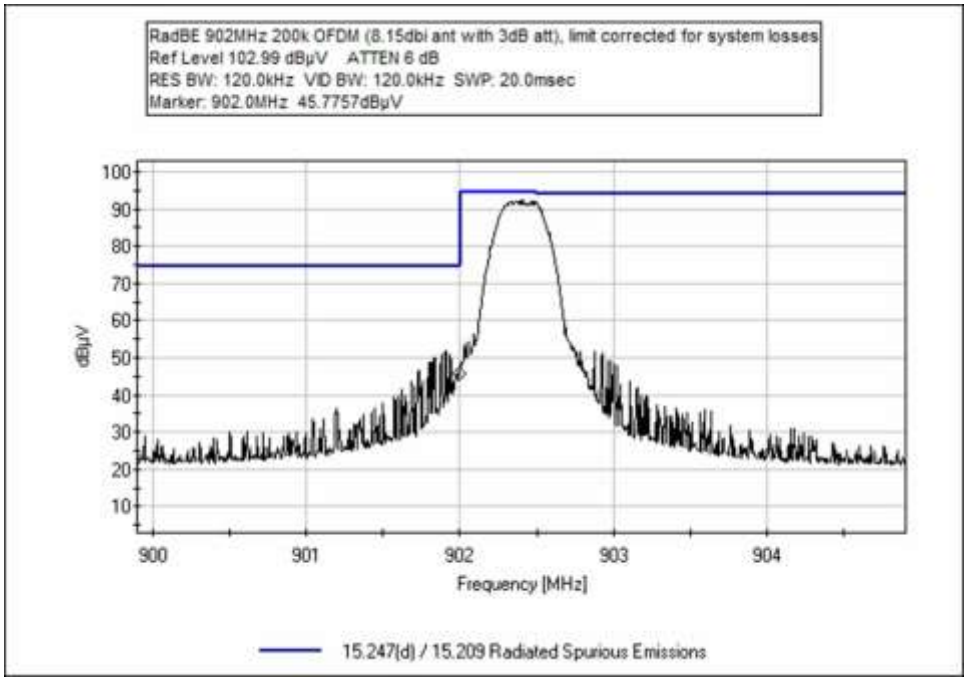

RadBE 902MHz 12.5k OQPSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 902.0MHz 43.0487dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
900
901
902
903
904
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

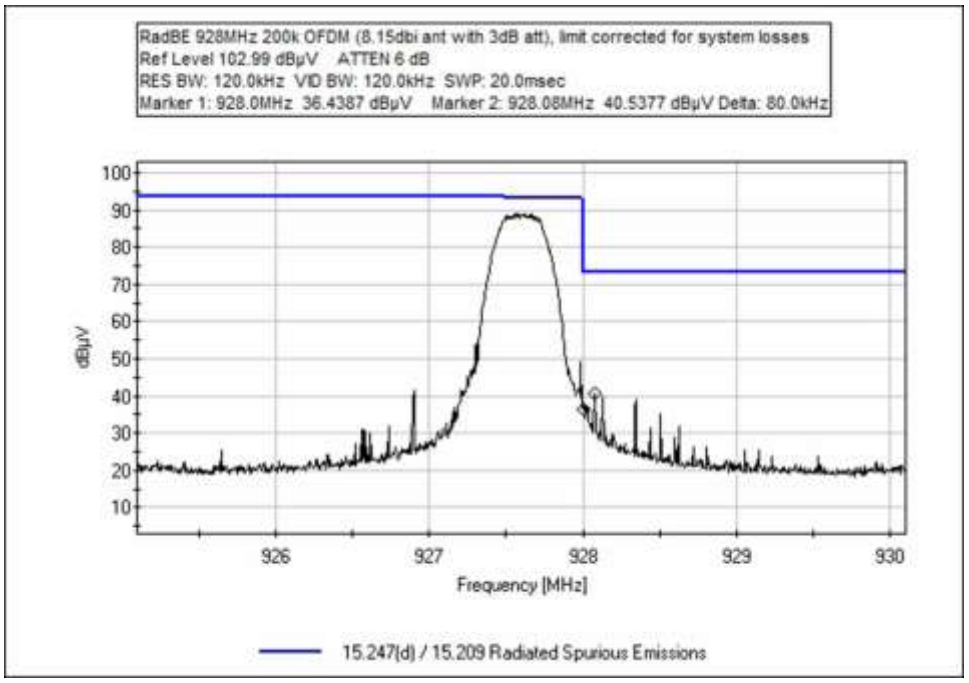

RadBE 928MHz 12.5k OQPSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 43.1407dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

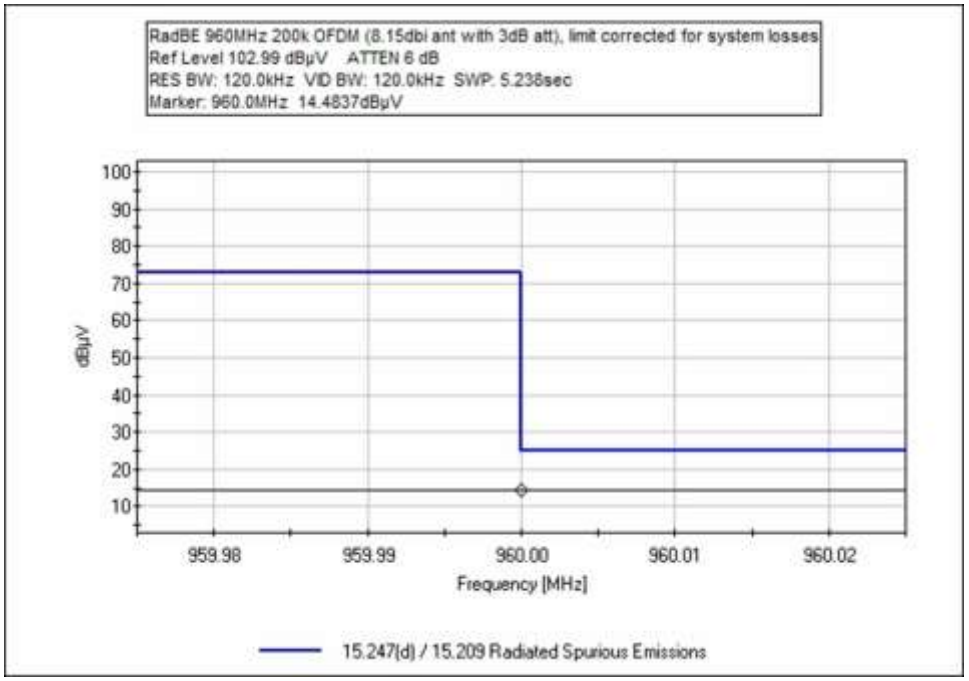

RadBE 960MHz 12.5k OQPSK (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.5747dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

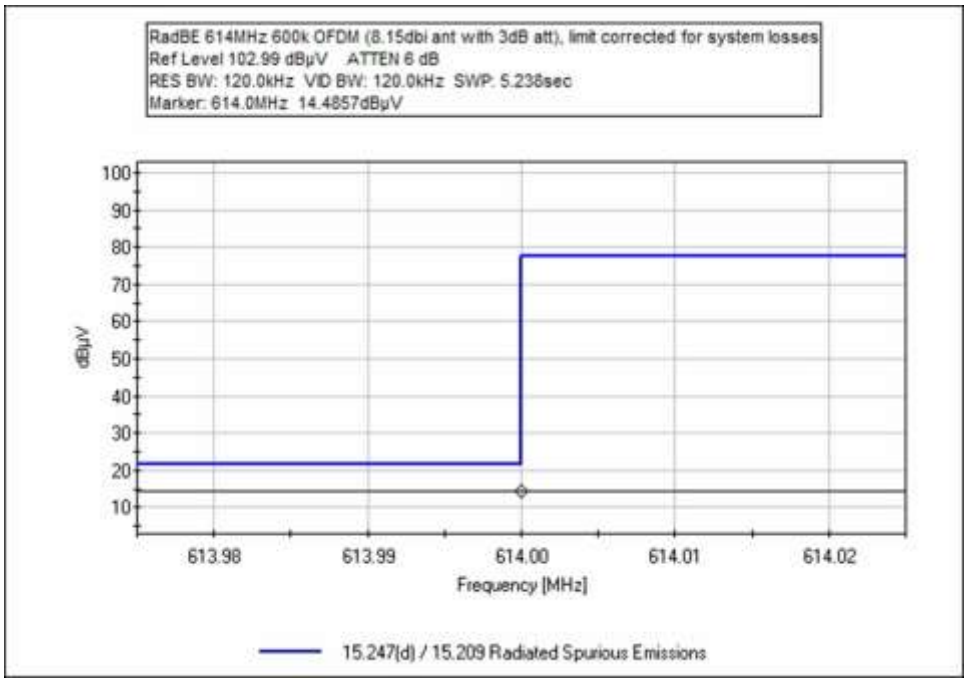
OFDM

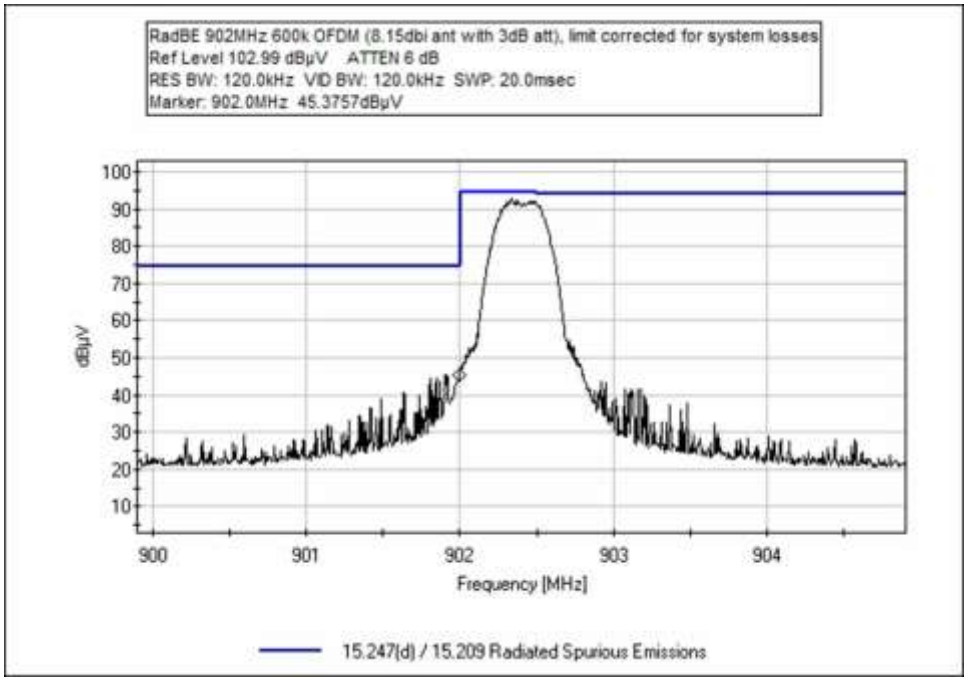

RadBE 614MHz 200k OFDM (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 614.0MHz 14.4977dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
613.98
613.99
614.00
614.01
614.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

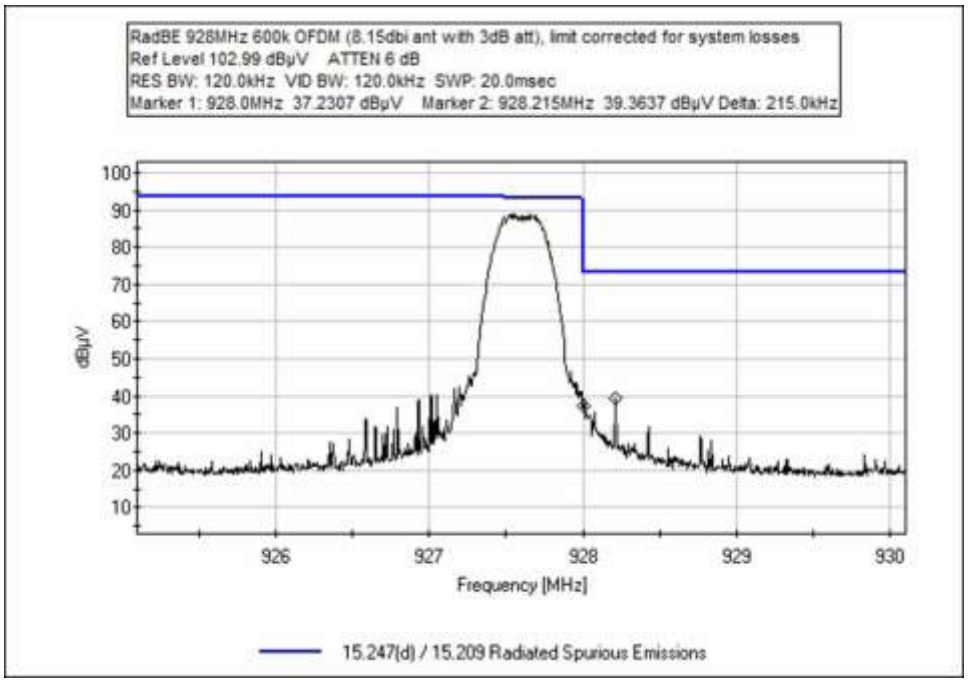

RadBE 902MHz 200k OFDM (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 902.0MHz 45.7757dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
900
901
902
903
904
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

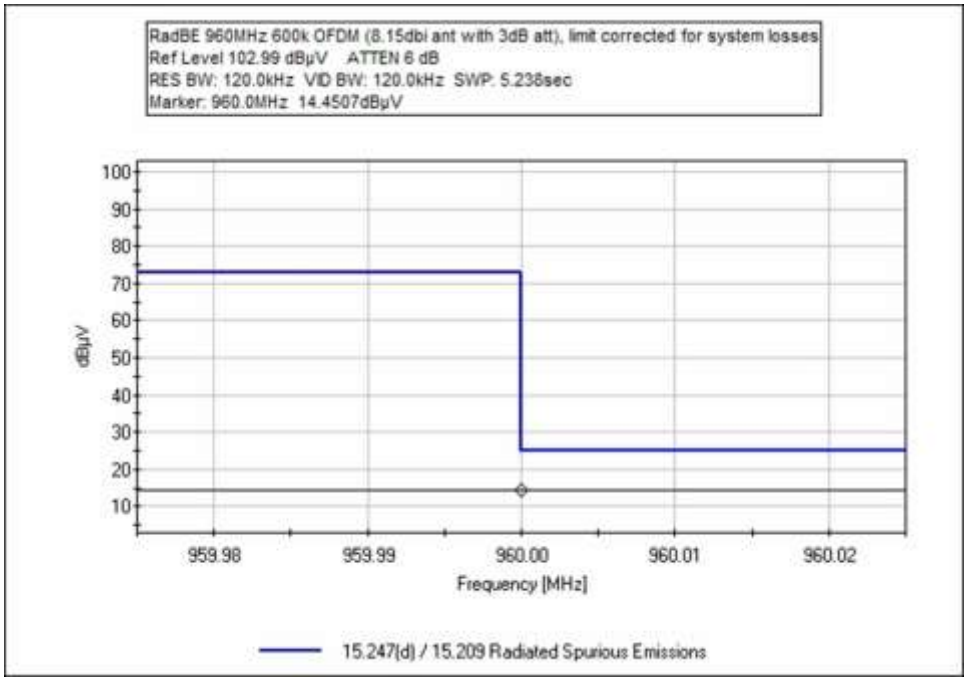

RadBE 928MHz 200k OFDM (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker 1: 928.0MHz 36.4387 dBµV Marker 2: 928.08MHz 40.5377 dBµV Delta: 80.0kHz
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

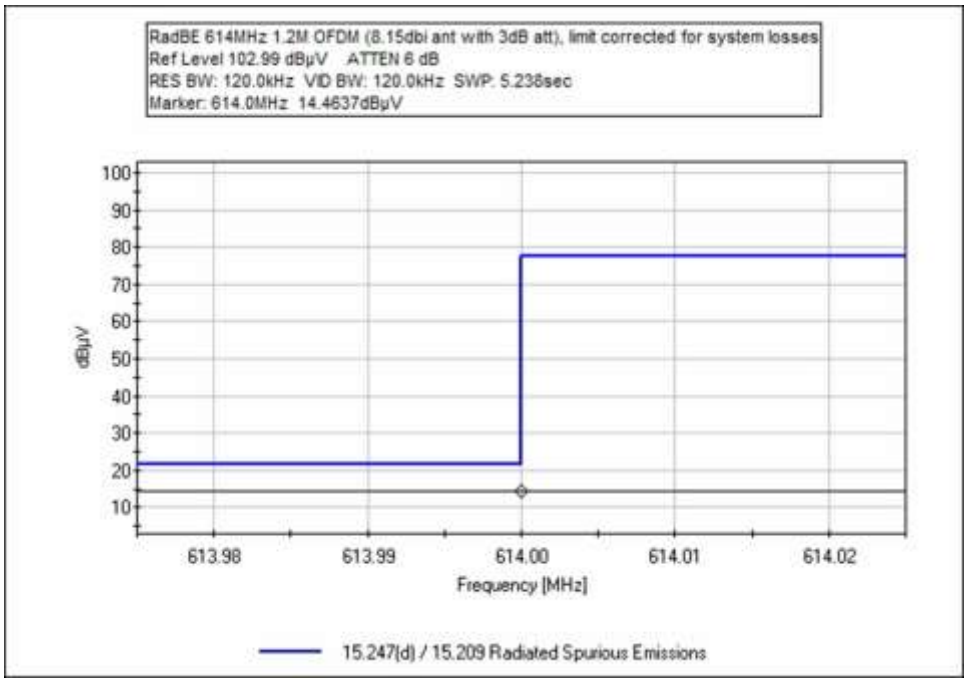

RadBE 960MHz 200k OFDM (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.4837dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

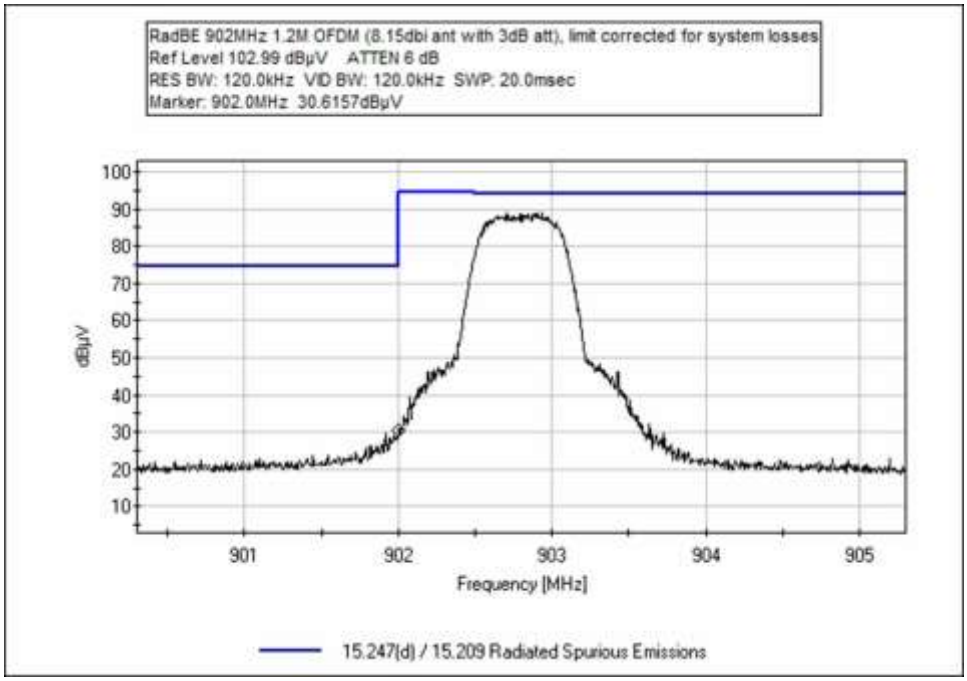

RadBE 614MHz 600k OFDM (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 614.0MHz 14.4857dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
613.98
613.99
614.00
614.01
614.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

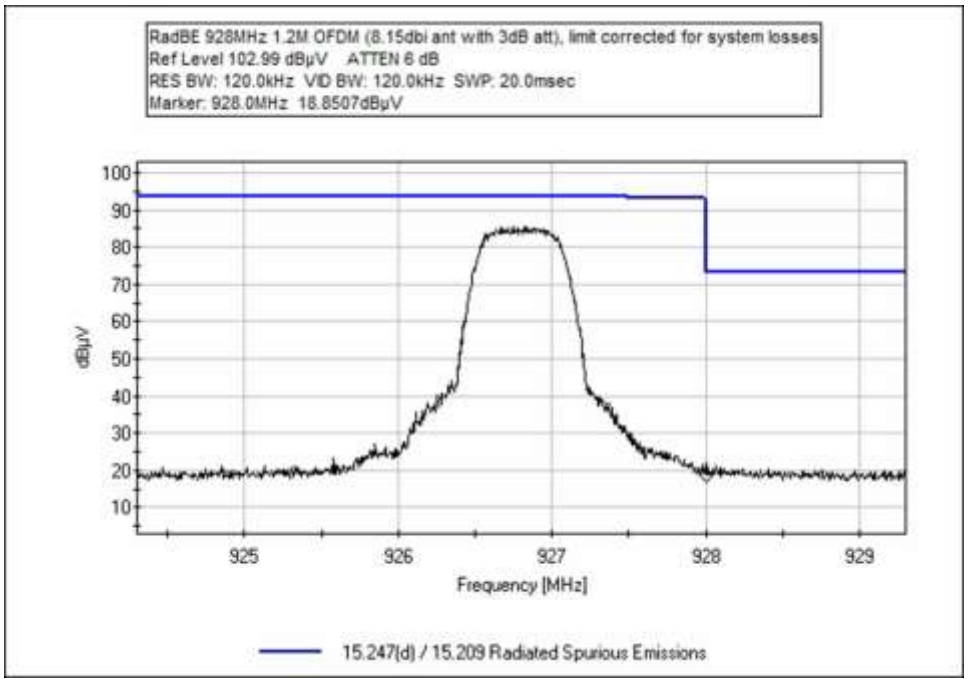

RadBE 902MHz 600k OFDM (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 902.0MHz 45.3757dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
900
901
902
903
904
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

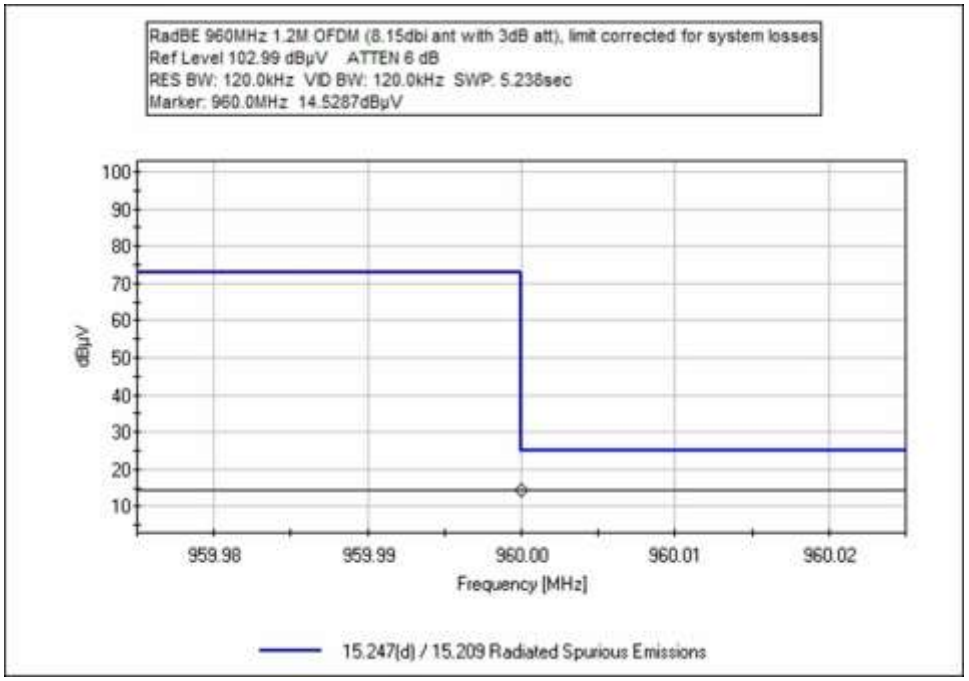

RadBE 928MHz 600k OFDM (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker 1: 928.0MHz 37.2307 dBµV Marker 2: 928.215MHz 39.3637 dBµV Delta: 215.0kHz
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE 960MHz 600k OFDM (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.4507dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

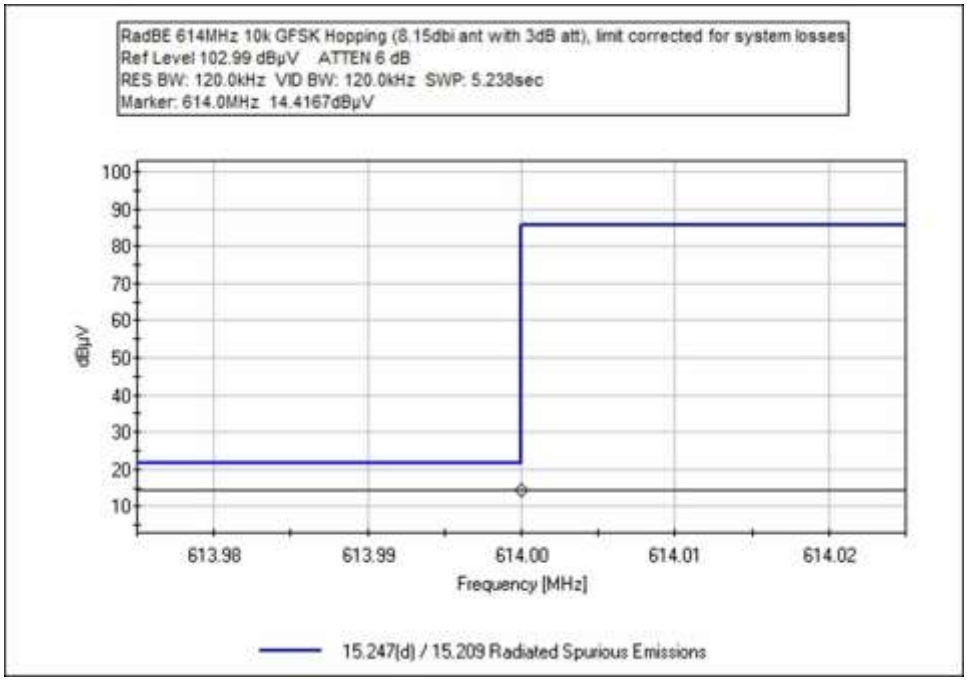

RadBE 614MHz 1.2M OFDM (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 614.0MHz 14.4637dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
613.98
613.99
614.00
614.01
614.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

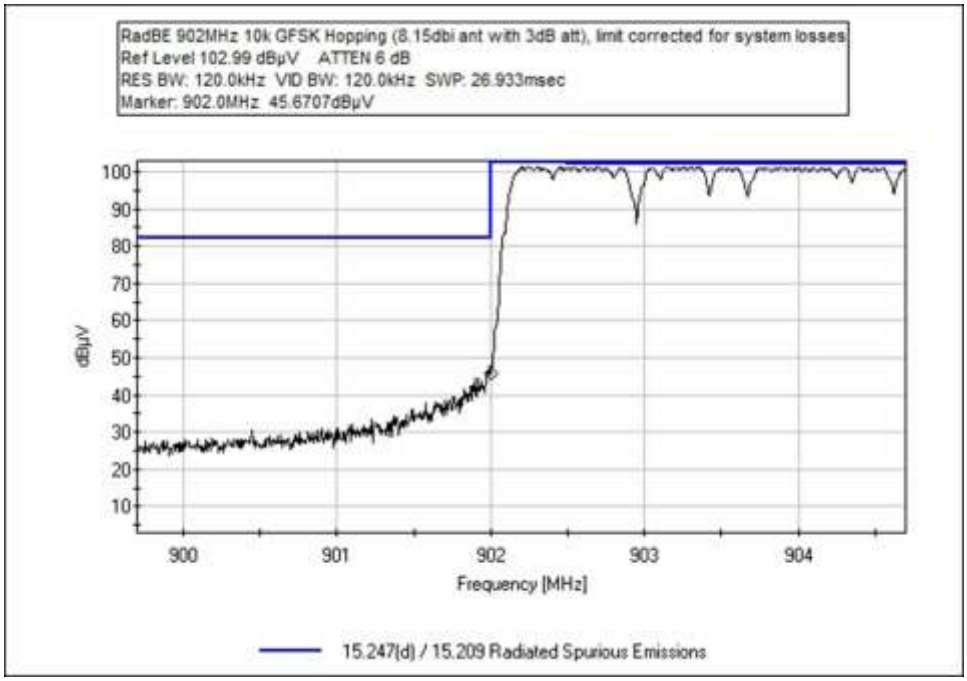

RadBE 902MHz 1.2M OFDM (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 902.0MHz 30.6157dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
901
902
903
904
905
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

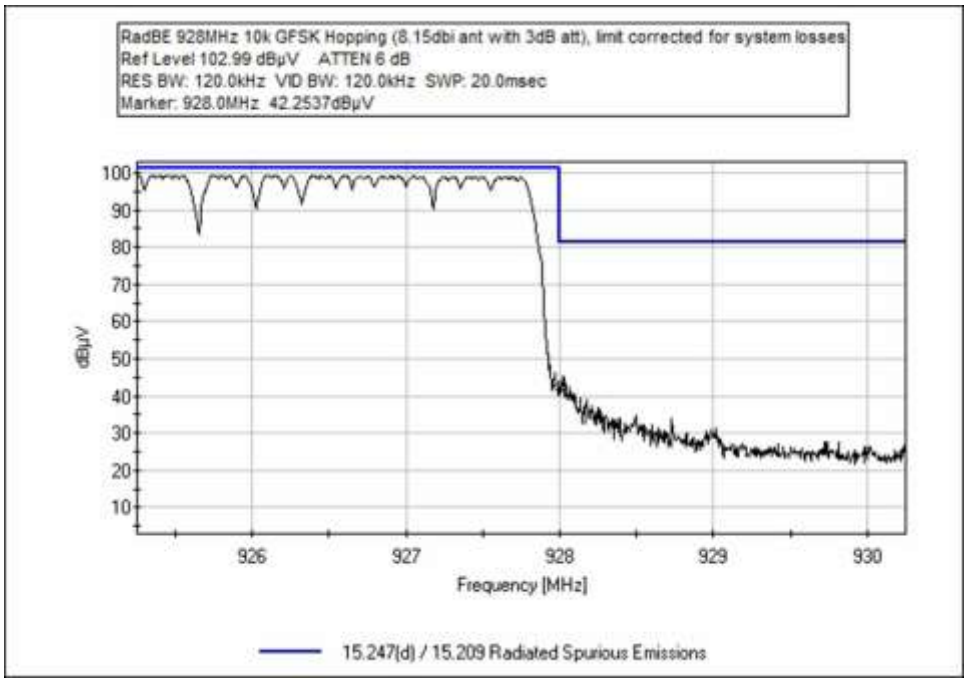

RadBE 928MHz 1.2M OFDM (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 18.8507dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

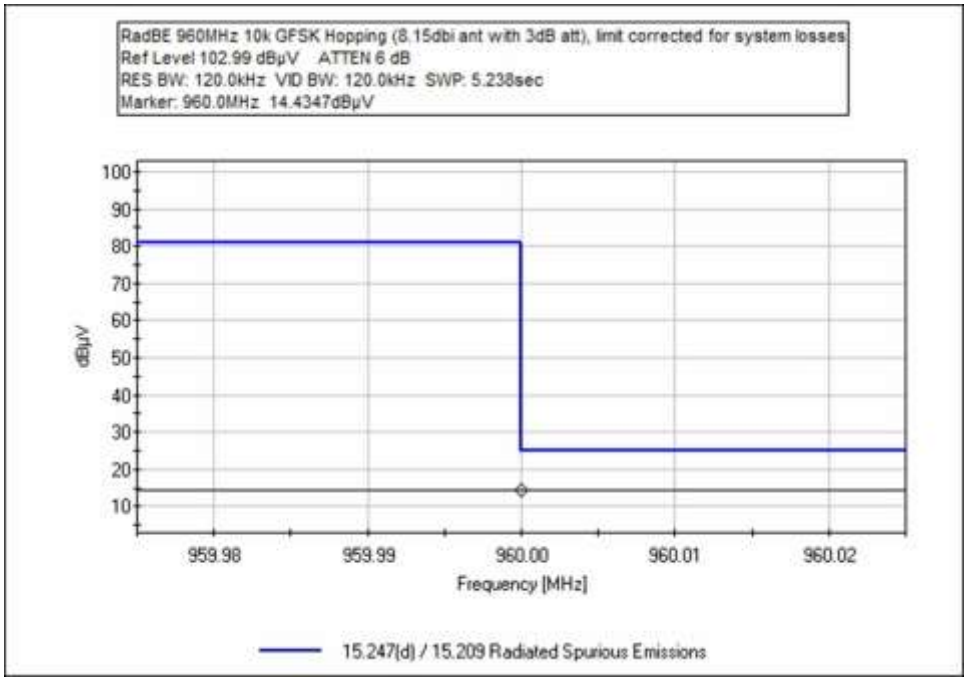

RadBE 960MHz 1.2M OFDM (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.5287dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

GFSK Hopping

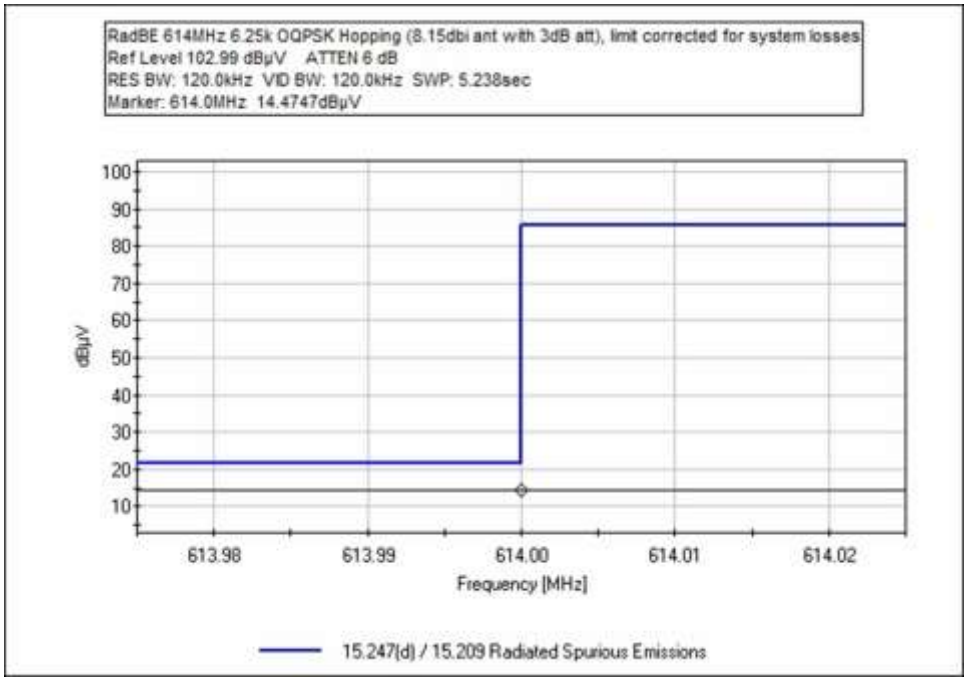


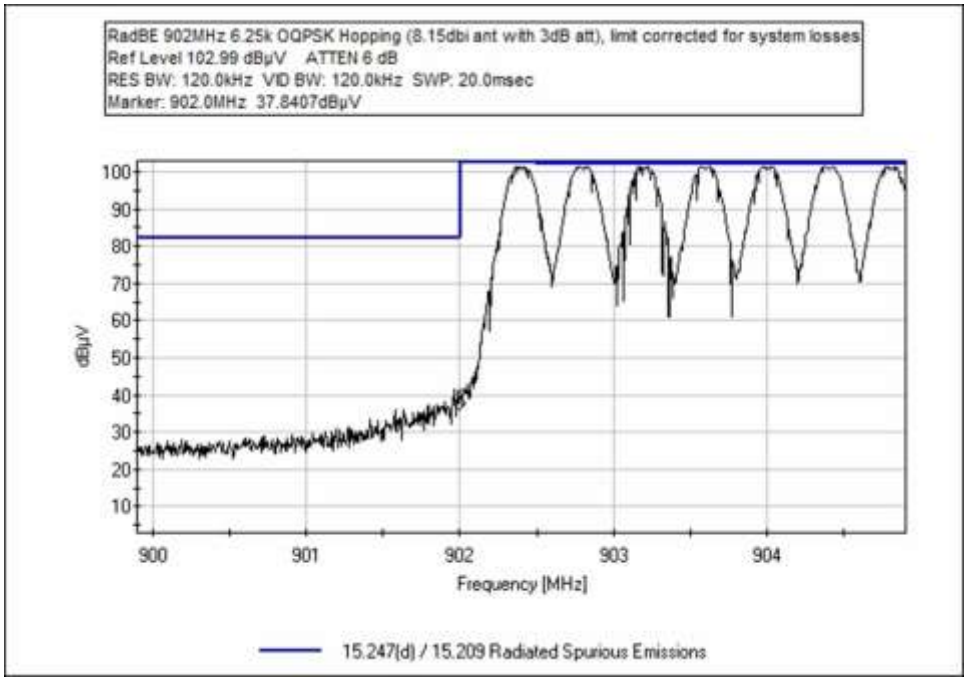


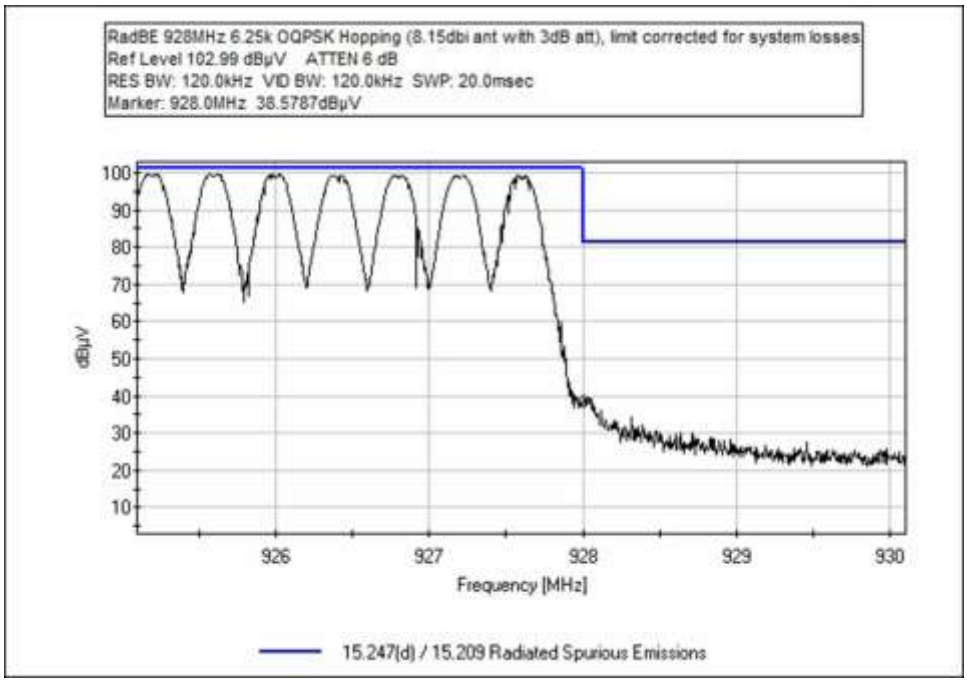

RadBE 928MHz 10k GFSK Hopping (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 42.2537dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

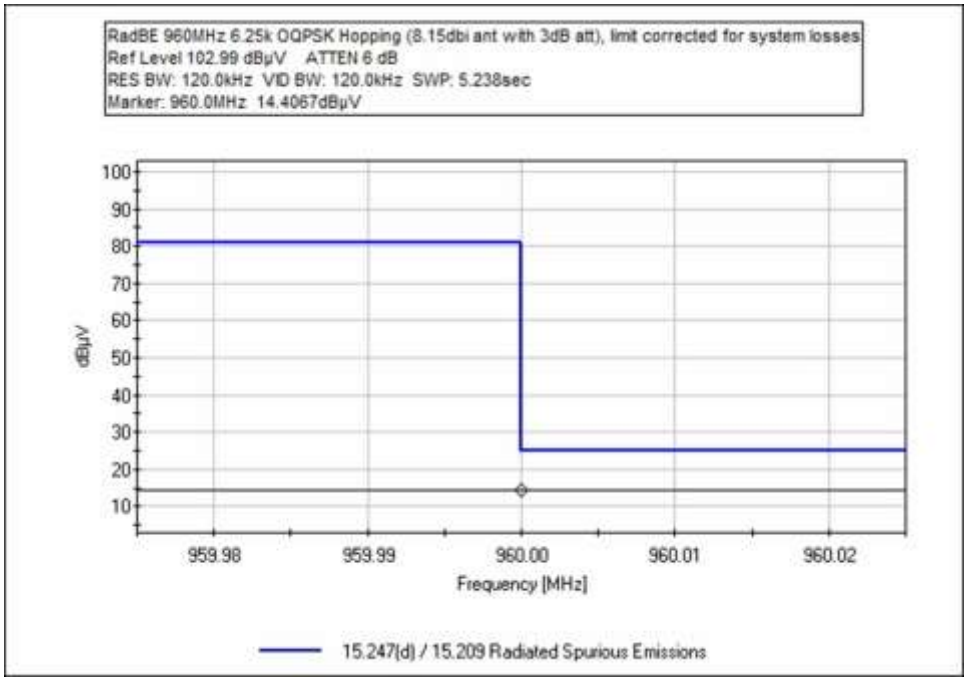

RadBE 960MHz 10k GFSK Hopping (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.4347dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

OQPSK Hopping

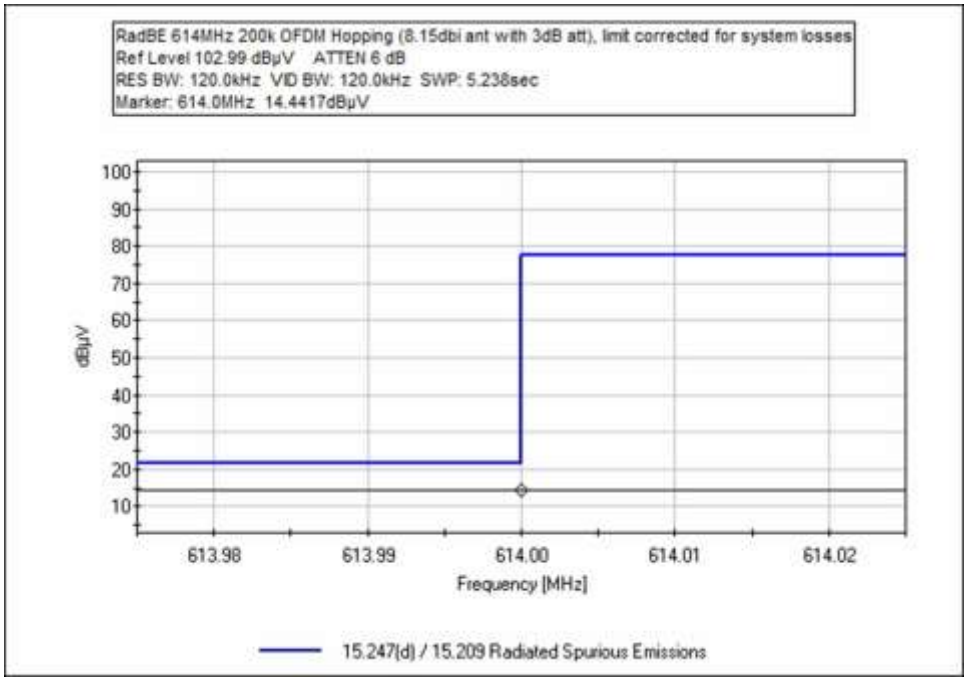


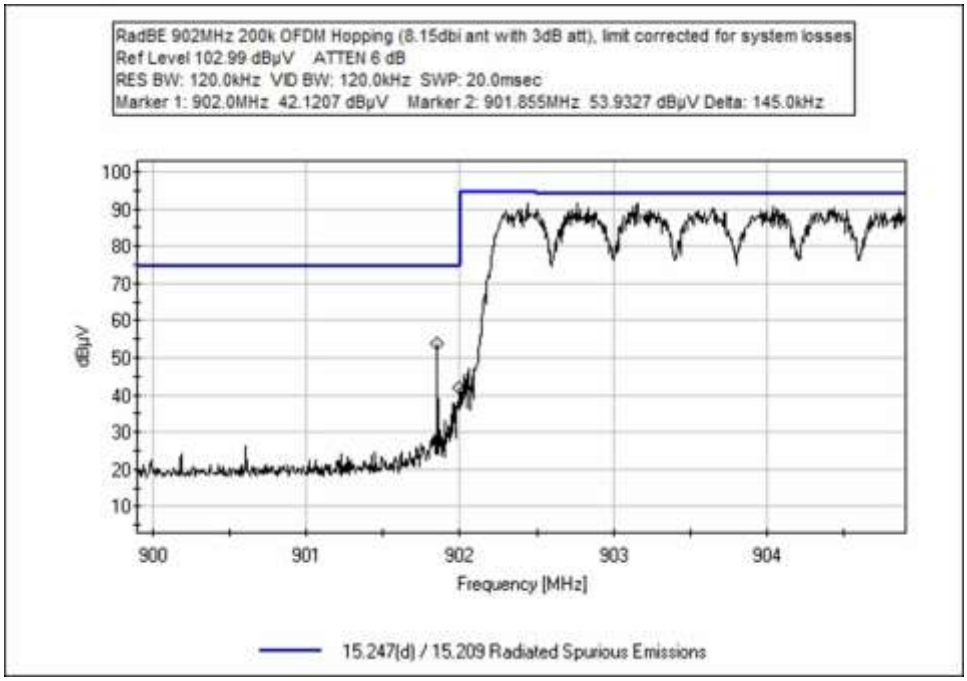


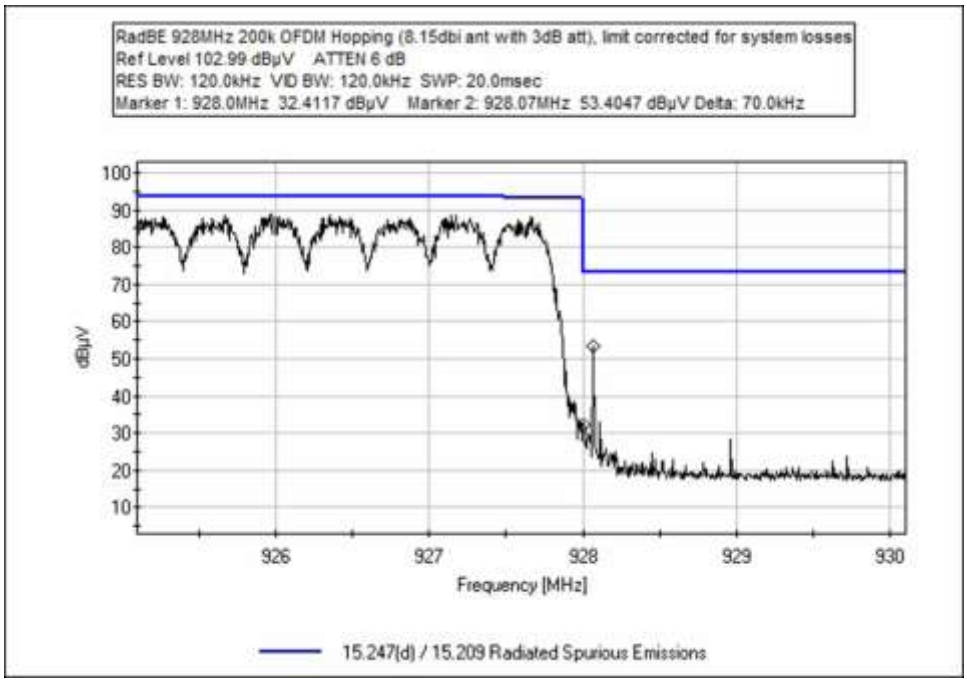

RadBE 928MHz 6.25k OQPSK Hopping (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 38.5787dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

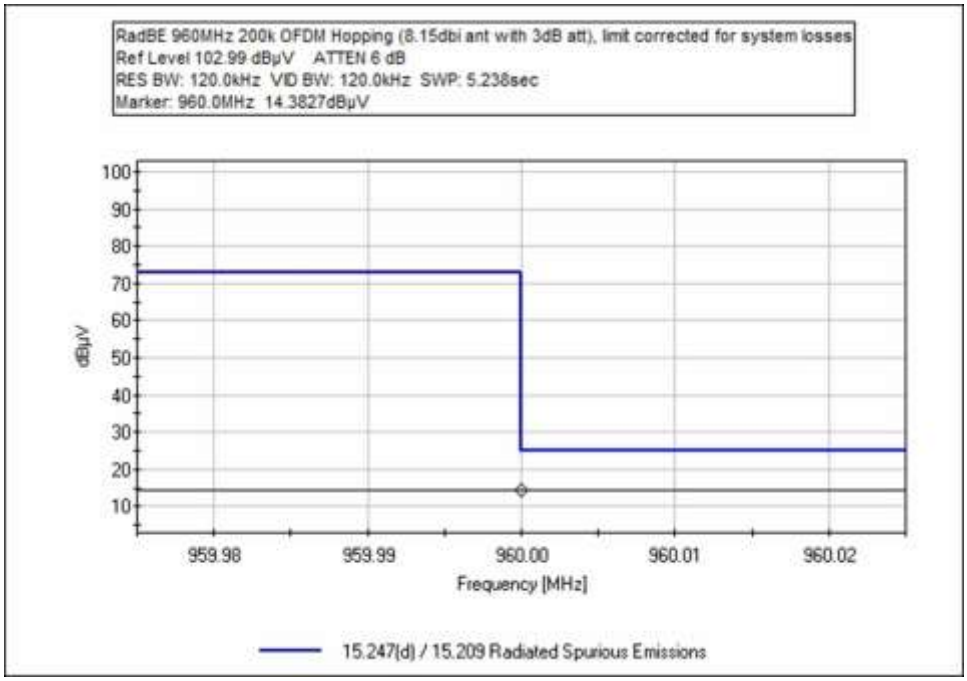

RadBE 960MHz 6.25k OQPSK Hopping (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.4067dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

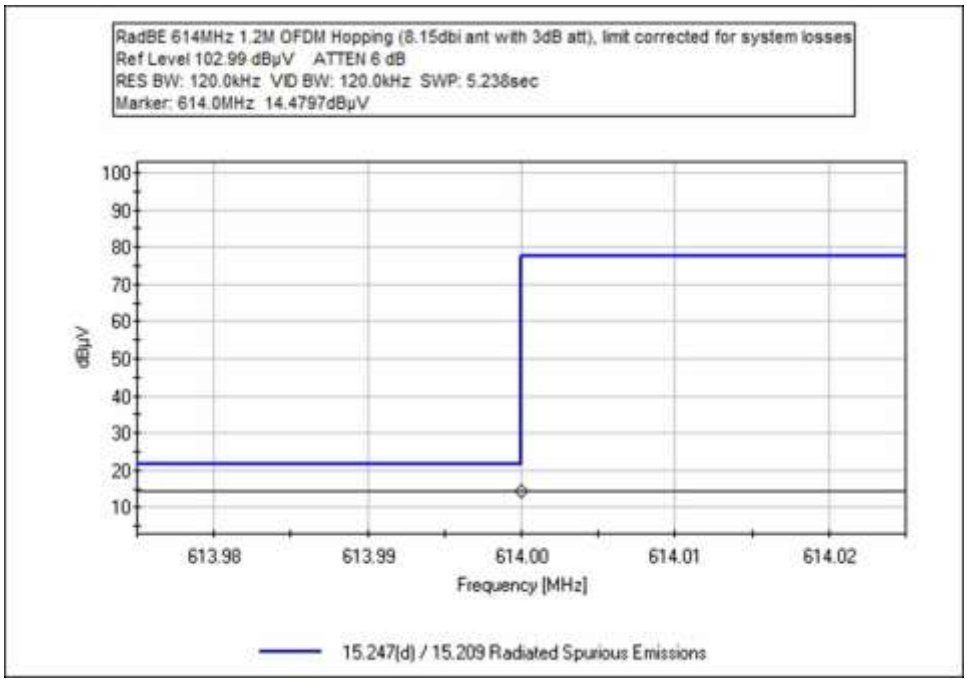
OFDM Hopping

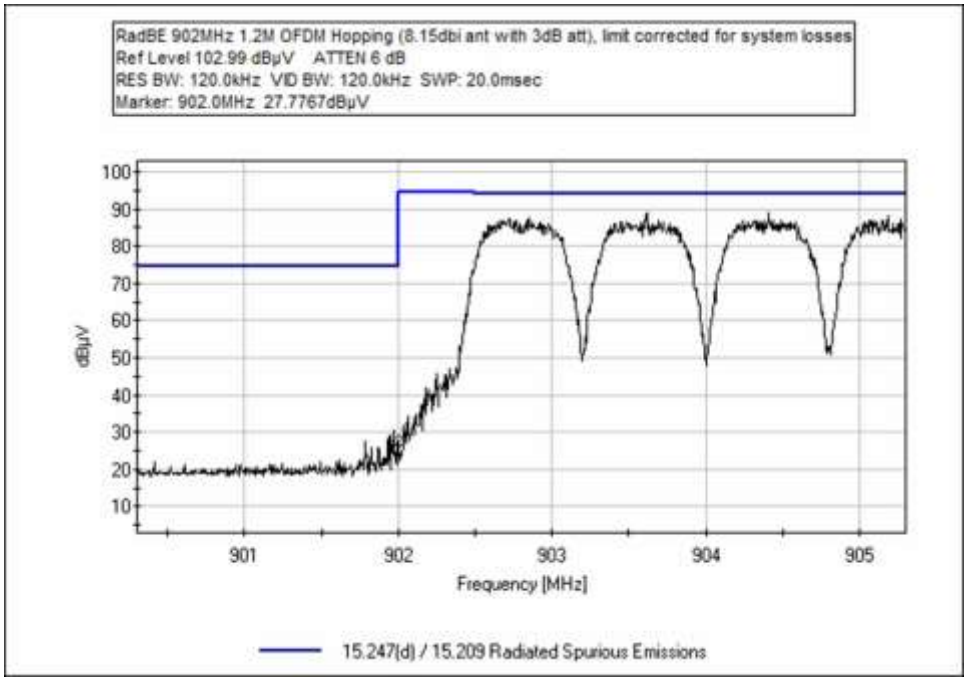


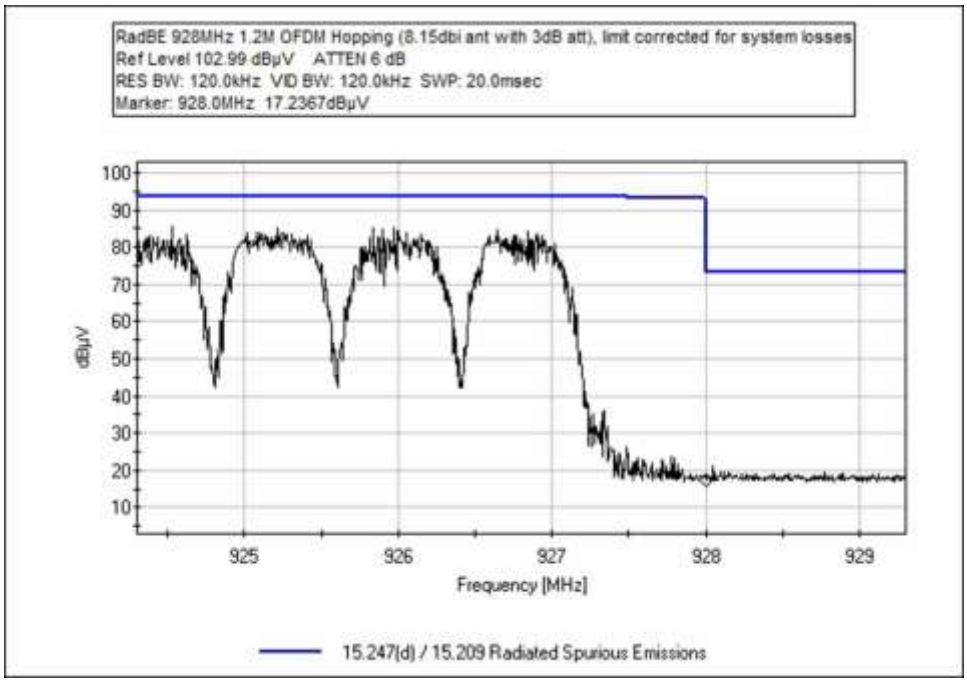


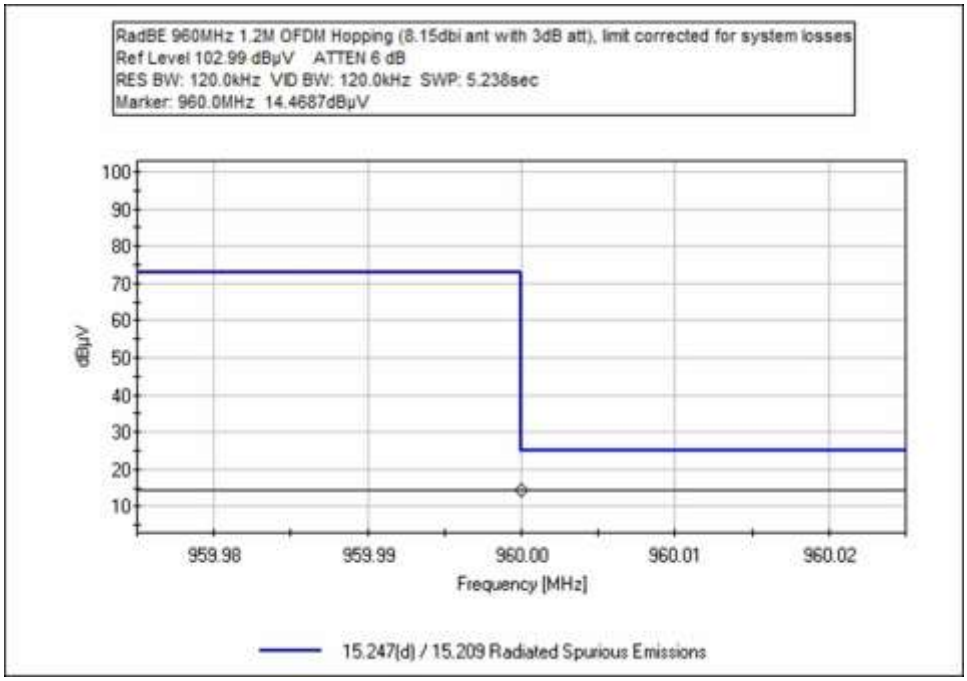

RadBE 928MHz 200k OFDM Hopping (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker 1: 928.0MHz 32.4117 dBµV Marker 2: 928.07MHz 53.4047 dBµV Delta: 70.0kHz
dBµV
100
90
80
70
60
50
40
30
20
10
926
927
928
929
930
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE 960MHz 200k OFDM Hopping (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.3827dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
959.98
959.99
960.00
960.01
960.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE 614MHz 1.2M OFDM Hopping (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 614.0MHz 14.4797dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
613.98
613.99
614.00
614.01
614.02
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE 902MHz 1.2M OFDM Hopping (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 902.0MHz 27.7767dBµV
dBµV
100
90
80
70
60
50
40
30
20
10
901
902
903
904
905
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE 928MHz 1.2M OFDM Hopping (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 20.0msec
Marker: 928.0MHz 17.2367dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions


RadBE 960MHz 1.2M OFDM Hopping (8.15dbi ant with 3dB att), limit corrected for system losses
Ref Level 102.99 dBµV ATTEN 6 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 5.238sec
Marker: 960.0MHz 14.4687dBµV
dBµV
Frequency [MHz]
15.247(d) / 15.209 Radiated Spurious Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**101674**	Date:	8/23/2018
Test Type:	**Radiated Scan**	Time:	11:49:58
Tested By:	Michael Atkinson	Sequence#:	6
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

Frequency Range: Fundamental
Frequency tested: Low and High Channels
Firmware power setting: Max
Firmware: CAM3-DEV Major Number 4, Minor Number 7, Build Number 153, Revision Number 787268
Test Software: CAM3 FCC Test Helper v14

Modulation Types:
10k GFSK, 50k GFSK, 150k GFSK
6.25k OQPSK, 12.5k OQPSK
200k OFDM, 600k OFDM, 1.2M OFDM (Hybrid)
Hopping modes: 10k GFSK, 6.25k OQPSK, 200k OFDM, 1.2M OFDM.

Antenna type: External Colinear Omni
Antenna Gain : 2.8dBi (attached)

Duty Cycle: Tested at 100%

Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 22-24
Relative Humidity (%): 38-42

Setup: The EUT is continuously transmitting with modulation on ISM port.
The EUT is connected to external antenna.
Low and High channels investigated for Band Edge.
All modulation types investigated in addition to several modulations investigated as worst case for frequency hopping mode.
Horizontal and Vertical measurement antennas investigated, worst case reported.
Hopping mode followed correct pseudo-random pattern, but Tx on time and time between hops were not controlled at time of test.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T1	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T2	ANP05305	Cable	ETSI-50T	10/24/2017	10/24/2019
T3	ANP05360	Cable	RG214	1/31/2018	1/31/2020
T4	AN03628	Biconilog Antenna	3142E	6/7/2017	6/7/2019

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	614.000M QP	15.6	+0.3	+1.3	+1.5	+21.2	+0.0	39.9	46.0 10k GFSK	-6.1	Vert
2	614.000M QP	14.5	+0.3	+1.3	+1.5	+21.2	+0.0	38.8	46.0 6.25k OQPSK	-7.2	Vert
3	614.000M QP	14.4	+0.3	+1.3	+1.5	+21.2	+0.0	38.7	46.0 12.5 OQPSK	-7.3	Vert
4	614.000M QP	14.4	+0.3	+1.3	+1.5	+21.2	+0.0	38.7	46.0 150k GFSK	-7.3	Vert
5	614.000M QP	14.4	+0.3	+1.3	+1.5	+21.2	+0.0	38.7	46.0 50k GFSK	-7.3	Vert
6	614.000M QP	14.4	+0.3	+1.3	+1.5	+21.2	+0.0	38.7	46.0 200k OFDM	-7.3	Vert
7	960.000M QP	17.7	+0.4	+1.6	+2.1	+24.9	+0.0	46.7	54.0 10k GFSK	-7.3	Vert
8	614.000M QP	14.3	+0.3	+1.3	+1.5	+21.2	+0.0	38.6	46.0 Hopping (200k OFDM)	-7.4	Vert
9	614.000M QP	14.2	+0.3	+1.3	+1.5	+21.2	+0.0	38.5	46.0 1.2M OFDM	-7.5	Vert
10	614.000M QP	14.2	+0.3	+1.3	+1.5	+21.2	+0.0	38.5	46.0 Hopping (6.25k OQPSK)	-7.5	Vert
11	614.000M QP	14.2	+0.3	+1.3	+1.5	+21.2	+0.0	38.5	46.0 Hopping (10k GFSK)	-7.5	Vert
12	614.000M QP	14.2	+0.3	+1.3	+1.5	+21.2	+0.0	38.5	46.0 600k OFDM	-7.5	Vert
13	614.000M QP	14.2	+0.3	+1.3	+1.5	+21.2	+0.0	38.5	46.0 Hopping (1.2M OFDM)	-7.5	Vert
14	960.000M QP	14.6	+0.4	+1.6	+2.1	+24.9	+0.0	43.6	54.0 12.5 OQPSK	-10.4	Vert
15	960.000M QP	14.6	+0.4	+1.6	+2.1	+24.9	+0.0	43.6	54.0 6.25k OQPSK	-10.4	Vert
16	960.000M QP	14.5	+0.4	+1.6	+2.1	+24.9	+0.0	43.5	54.0 50k GFSK	-10.5	Vert
17	960.000M QP	14.5	+0.4	+1.6	+2.1	+24.9	+0.0	43.5	54.0 150k GFSK	-10.5	Vert
18	960.016M QP	14.3	+0.4	+1.6	+2.1	+24.9	+0.0	43.3	54.0 200k OFDM	-10.7	Vert

19	960.000M	14.2	+0.4	+1.6	+2.1	+24.9	+0.0	43.2	54.0	-10.8	Vert	Hopping (1.2M OFDM)
20	960.000M	14.2	+0.4	+1.6	+2.1	+24.9	+0.0	43.2	54.0	-10.8	Vert	600k OFDM
21	960.000M	14.2	+0.4	+1.6	+2.1	+24.9	+0.0	43.2	54.0	-10.8	Vert	1.2M OFDM
22	960.000M	14.2	+0.4	+1.6	+2.1	+24.9	+0.0	43.2	54.0	-10.8	Vert	Hopping (200k OFDM)
23	960.000M	14.1	+0.4	+1.6	+2.1	+24.9	+0.0	43.1	54.0	-10.9	Vert	Hopping (6.25k OQPSK)
24	960.000M	14.1	+0.4	+1.6	+2.1	+24.9	+0.0	43.1	54.0	-10.9	Vert	Hopping (10k GFSK)
25	902.000M	70.7	+0.3	+1.5	+2.0	+23.8	+0.0	98.3	110.0	-11.7	Vert	10k GFSK
26	928.000M	53.6	+0.4	+1.6	+2.0	+24.6	+0.0	82.2	102.0	-19.8	Vert	200k OFDM
27	901.940M	53.1	+0.3	+1.5	+2.0	+23.8	+0.0	80.7	102.0	-21.3	Vert	200k OFDM
28	902.000M	50.1	+0.3	+1.5	+2.0	+23.8	+0.0	77.7	102.0	-24.3	Vert	600k OFDM
29	928.000M	45.2	+0.4	+1.6	+2.0	+24.6	+0.0	73.8	102.0	-28.2	Vert	600k OFDM
30	928.000M	52.9	+0.4	+1.6	+2.0	+24.6	+0.0	81.5	110.0	-28.5	Vert	10k GFSK
31	928.000M	47.3	+0.4	+1.6	+2.0	+24.6	+0.0	75.9	110.0	-34.1	Vert	Hopping (10k GFSK)
32	902.000M	38.7	+0.3	+1.5	+2.0	+23.8	+0.0	66.3	102.0	-35.7	Vert	Hopping (200k OFDM)
33	902.000M	46.6	+0.3	+1.5	+2.0	+23.8	+0.0	74.2	110.0	-35.8	Vert	Hopping (10k GFSK)
34	928.000M	45.2	+0.4	+1.6	+2.0	+24.6	+0.0	73.8	110.0	-36.2	Vert	150k GFSK
35	928.000M	44.9	+0.4	+1.6	+2.0	+24.6	+0.0	73.5	110.0	-36.5	Vert	6.25k OQPSK
36	928.000M	44.6	+0.4	+1.6	+2.0	+24.6	+0.0	73.2	110.0	-36.8	Vert	12.5 OQPSK
37	928.000M	44.3	+0.4	+1.6	+2.0	+24.6	+0.0	72.9	110.0	-37.1	Vert	50k GFSK
38	928.000M	36.1	+0.4	+1.6	+2.0	+24.6	+0.0	64.7	102.0	-37.3	Vert	Hopping (200k OFDM)
39	902.000M	44.5	+0.3	+1.5	+2.0	+23.8	+0.0	72.1	110.0	-37.9	Vert	12.5 OQPSK

40	902.000M	44.4	+0.3	+1.5	+2.0	+23.8	+0.0	72.0	110.0	-38.0	Vert Hopping (6.25k OQPSK)
41	902.000M	44.4	+0.3	+1.5	+2.0	+23.8	+0.0	72.0	110.0	-38.0	Vert 150k GFSK
42	902.000M	44.1	+0.3	+1.5	+2.0	+23.8	+0.0	71.7	110.0	-38.3	Vert 6.25k OQPSK
43	902.000M	43.8	+0.3	+1.5	+2.0	+23.8	+0.0	71.4	110.0	-38.6	Vert 50k GFSK
44	902.000M	33.4	+0.3	+1.5	+2.0	+23.8	+0.0	61.0	102.0	-41.0	Vert 1.2M OFDM
45	928.510M	36.1	+0.4	+1.6	+2.0	+24.6	+0.0	64.7	110.0	-45.3	Vert Hopping (6.25k OQPSK)
46	928.000M	23.5	+0.4	+1.6	+2.0	+24.6	+0.0	52.1	102.0	-49.9	Vert 1.2M OFDM
47	902.000M	23.8	+0.3	+1.5	+2.0	+23.8	+0.0	51.4	102.0	-50.6	Vert Hopping (1.2M OFDM)
48	928.000M	18.7	+0.4	+1.6	+2.0	+24.6	+0.0	47.3	102.0	-54.7	Vert Hopping (1.2M OFDM)

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**101674**	Date:	8/27/2018
Test Type:	**Radiated Scan**	Time:	17:12:50
Tested By:	Michael Atkinson	Sequence#:	8
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 3			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 3			

Test Conditions / Notes:

Frequency Range: Fundamental
Frequency tested: Low and High Channels
Firmware power setting: Max
Firmware: CAM3-DEV Major Number 4, Minor Number 7, Build Number 153, Revision Number 787268
Test Software: CAM3 FCC Test Helper v14

Modulation Types:
10k GFSK, 50k GFSK, 150k GFSK
6.25k OQPSK, 12.5k OQPSK
200k OFDM, 600k OFDM, 1.2M OFDM (Hybrid)
Hopping modes: 10k GFSK, 6.25k OQPSK, 200k OFDM, 1.2M OFDM.

Antenna type: External Colinear Omni
Antenna Gain : 5.5dBi (remote)

Duty Cycle: Tested at 100%
Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 22-24
Relative Humidity (%): 38-42

Setup: The EUT is continuously transmitting with modulation on ISM port.
The EUT is connected to external antenna.
Low and High channels investigated for Band Edge.
All modulation types investigated in addition to several modulations investigated as worst case for frequency hopping mode.
Horizontal and Vertical measurement antennas investigated, worst case reported.
Hopping mode followed correct pseudo-random pattern, but Tx on time and time between hops were not controlled at time of test.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T1	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T2	ANP05305	Cable	ETSI-50T	10/24/2017	10/24/2019
T3	ANP05360	Cable	RG214	1/31/2018	1/31/2020
T4	AN03628	Biconilog Antenna	3142E	6/7/2017	6/7/2019

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	614.000M QP	14.6	+0.3	+1.3	+1.5	+21.2	+0.0	38.9	46.0 150k GFSK	-7.1	Vert
2	614.000M QP	14.5	+0.3	+1.3	+1.5	+21.2	+0.0	38.8	46.0 6.25k OQPSK	-7.2	Vert
3	614.000M QP	14.5	+0.3	+1.3	+1.5	+21.2	+0.0	38.8	46.0 50k GFSK	-7.2	Vert
4	614.000M QP	14.5	+0.3	+1.3	+1.5	+21.2	+0.0	38.8	46.0 12.5 OQPSK	-7.2	Vert
5	614.000M QP	14.5	+0.3	+1.3	+1.5	+21.2	+0.0	38.8	46.0 600k OFDM	-7.2	Vert
6	614.000M QP	14.5	+0.3	+1.3	+1.5	+21.2	+0.0	38.8	46.0 1.2M OFDM	-7.2	Vert
7	614.000M QP	14.5	+0.3	+1.3	+1.5	+21.2	+0.0	38.8	46.0 10k GFSK	-7.2	Vert
8	614.000M QP	14.4	+0.3	+1.3	+1.5	+21.2	+0.0	38.7	46.0 Hopping (200k OFDM)	-7.3	Vert
9	614.000M QP	14.4	+0.3	+1.3	+1.5	+21.2	+0.0	38.7	46.0 1.2M OFDM	-7.3	Vert
10	614.000M QP	14.4	+0.3	+1.3	+1.5	+21.2	+0.0	38.7	46.0 200k OFDM	-7.3	Vert
11	614.000M QP	14.4	+0.3	+1.3	+1.5	+21.2	+0.0	38.7	46.0 Hopping (10k GFSK)	-7.3	Vert
12	614.000M QP	14.4	+0.3	+1.3	+1.5	+21.2	+0.0	38.7	46.0 Hopping (6.25k OQPSK)	-7.3	Vert
13	960.000M QP	14.6	+0.4	+1.6	+2.1	+24.9	+0.0	43.6	54.0 10k GFSK	-10.4	Vert
14	960.000M QP	14.6	+0.4	+1.6	+2.1	+24.9	+0.0	43.6	54.0 150k GFSK	-10.4	Vert
15	960.000M QP	14.5	+0.4	+1.6	+2.1	+24.9	+0.0	43.5	54.0 50k GFSK	-10.5	Vert
16	960.000M QP	14.5	+0.4	+1.6	+2.1	+24.9	+0.0	43.5	54.0 12.5 OQPSK	-10.5	Vert
17	960.000M QP	14.5	+0.4	+1.6	+2.1	+24.9	+0.0	43.5	54.0 6.25k OQPSK	-10.5	Vert
18	960.000M QP	14.5	+0.4	+1.6	+2.1	+24.9	+0.0	43.5	54.0 Hopping (200k OFDM)	-10.5	Vert

19	960.000M	14.4	+0.4	+1.6	+2.1	+24.9	+0.0	43.4	54.0	-10.6	Vert	QP 1.2M OFDM
20	960.000M	14.4	+0.4	+1.6	+2.1	+24.9	+0.0	43.4	54.0	-10.6	Vert	QP Hopping (10k GFSK)
21	960.000M	14.4	+0.4	+1.6	+2.1	+24.9	+0.0	43.4	54.0	-10.6	Vert	QP 200k OFDM
22	960.000M	14.4	+0.4	+1.6	+2.1	+24.9	+0.0	43.4	54.0	-10.6	Vert	QP 600k OFDM
23	960.000M	14.4	+0.4	+1.6	+2.1	+24.9	+0.0	43.4	54.0	-10.6	Vert	QP Hopping (6.25k OQPSK)
24	960.000M	14.4	+0.4	+1.6	+2.1	+24.9	+0.0	43.4	54.0	-10.6	Vert	QP 1.2M OFDM
25	902.000M	48.6	+0.3	+1.5	+2.0	+23.8	+0.0	76.2	102.0	-25.8	Vert	200k OFDM
26	902.000M	48.6	+0.3	+1.5	+2.0	+23.8	+0.0	76.2	102.0	-25.8	Vert	600k OFDM
27	928.000M	44.3	+0.4	+1.6	+2.0	+24.6	+0.0	72.9	102.0	-29.1	Vert	200k OFDM
28	928.000M	44.1	+0.4	+1.6	+2.0	+24.6	+0.0	72.7	102.0	-29.3	Vert	600k OFDM
29	902.000M	52.8	+0.3	+1.5	+2.0	+23.8	+0.0	80.4	110.0	-29.6	Vert	10k GFSK
30	902.000M	42.7	+0.3	+1.5	+2.0	+23.8	+0.0	70.3	102.0	-31.7	Vert	Hopping (200k OFDM)
31	928.000M	48.7	+0.4	+1.6	+2.0	+24.6	+0.0	77.3	110.0	-32.7	Vert	10k GFSK
32	928.000M	46.3	+0.4	+1.6	+2.0	+24.6	+0.0	74.9	110.0	-35.1	Vert	Hopping (10k GFSK)
33	928.000M	45.9	+0.4	+1.6	+2.0	+24.6	+0.0	74.5	110.0	-35.5	Vert	6.25k OQPSK
34	902.000M	46.8	+0.3	+1.5	+2.0	+23.8	+0.0	74.4	110.0	-35.6	Vert	Hopping (10k GFSK)
35	928.000M	44.8	+0.4	+1.6	+2.0	+24.6	+0.0	73.4	110.0	-36.6	Vert	12.5 OQPSK
36	902.000M	45.8	+0.3	+1.5	+2.0	+23.8	+0.0	73.4	110.0	-36.6	Vert	50k GFSK
37	902.000M	45.5	+0.3	+1.5	+2.0	+23.8	+0.0	73.1	110.0	-36.9	Vert	12.5 OQPSK
38	928.000M	44.2	+0.4	+1.6	+2.0	+24.6	+0.0	72.8	110.0	-37.2	Vert	150k GFSK
39	902.000M	44.7	+0.3	+1.5	+2.0	+23.8	+0.0	72.3	110.0	-37.7	Vert	6.25k OQPSK
40	928.000M	35.2	+0.4	+1.6	+2.0	+24.6	+0.0	63.8	102.0	-38.2	Vert	Hopping (200k OFDM)
41	902.000M	43.3	+0.3	+1.5	+2.0	+23.8	+0.0	70.9	110.0	-39.1	Vert	150k GFSK

42	928.000M	42.2	+0.4	+1.6	+2.0	+24.6	+0.0	70.8	110.0 50k GFSK	-39.2	Vert
43	928.000M	38.9	+0.4	+1.6	+2.0	+24.6	+0.0	67.5	110.0 Hopping (6.25k OQPSK)	-42.5	Vert
44	902.000M	31.9	+0.3	+1.5	+2.0	+23.8	+0.0	59.5	102.0 1.2M OFDM	-42.5	Vert
45	902.000M	37.7	+0.3	+1.5	+2.0	+23.8	+0.0	65.3	110.0 Hopping (6.25k OQPSK)	-44.7	Vert
46	902.000M	25.3	+0.3	+1.5	+2.0	+23.8	+0.0	52.9	102.0 1.2M OFDM	-49.1	Vert
47	928.000M	21.9	+0.4	+1.6	+2.0	+24.6	+0.0	50.5	102.0 1.2M OFDM	-51.5	Vert
48	928.000M	18.9	+0.4	+1.6	+2.0	+24.6	+0.0	47.5	102.0 1.2M OFDM	-54.5	Vert

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Itron, Inc.**		
Specification:	**15.247(d) / 15.209 Radiated Spurious Emissions**		
Work Order #:	**101674**	Date:	8/27/2018
Test Type:	**Radiated Scan**	Time:	11:38:37
Tested By:	Michael Atkinson	Sequence#:	7
Software:	EMITest 5.03.11		

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 4			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 4			

Test Conditions / Notes:

Frequency Range: Fundamental
Frequency tested: Low and High Channels
Firmware power setting: Max
Firmware: CAM3-DEV Major Number 4, Minor Number 7, Build Number 153, Revision Number 787268
Test Software: CAM3 FCC Test Helper v14

Modulation Types:
10k GFSK, 50k GFSK, 150k GFSK
6.25k OQPSK, 12.5k OQPSK
200k OFDM, 600k OFDM, 1.2M OFDM (Hybrid)
Hopping modes: 10k GFSK, 6.25k OQPSK, 200k OFDM, 1.2M OFDM.

Antenna type: External Colinear Omni
Antenna Gain : 8.15dBi with 3dB attenuator (remote)

Duty Cycle: Tested at 100%
Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 22-24
Relative Humidity (%): 38-42

Setup: The EUT is continuously transmitting with modulation on ISM port.
The EUT is connected to external antenna.
Low and High channels investigated for Band Edge.
All modulation types investigated in addition to several modulations investigated as worst case for frequency hopping mode.
Horizontal and Vertical measurement antennas investigated, worst case reported.
Hopping mode followed correct pseudo-random pattern, but Tx on time and time between hops were not controlled at time of test.

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T1	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T2	ANP05305	Cable	ETSI-50T	10/24/2017	10/24/2019
T3	ANP05360	Cable	RG214	1/31/2018	1/31/2020
T4	AN03628	Biconilog Antenna	3142E	6/7/2017	6/7/2019

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	614.000M QP	14.7	+0.3	+1.3	+1.5	+21.2	+0.0	39.0	46.0 50k GFSK	-7.0	Vert
2	614.000M QP	14.6	+0.3	+1.3	+1.5	+21.2	+0.0	38.9	46.0 10k GFSK	-7.1	Vert
3	614.000M QP	14.6	+0.3	+1.3	+1.5	+21.2	+0.0	38.9	46.0 6.25k OQPSK	-7.1	Vert
4	614.000M QP	14.6	+0.3	+1.3	+1.5	+21.2	+0.0	38.9	46.0 150k GFSK	-7.1	Vert
5	614.000M QP	14.6	+0.3	+1.3	+1.5	+21.2	+0.0	38.9	46.0 12.5k OQPSK	-7.1	Vert
6	614.000M QP	14.5	+0.3	+1.3	+1.5	+21.2	+0.0	38.8	46.0 1.2M OFDM	-7.2	Vert
7	614.000M QP	14.5	+0.3	+1.3	+1.5	+21.2	+0.0	38.8	46.0 200k OFDM	-7.2	Vert
8	614.000M QP	14.5	+0.3	+1.3	+1.5	+21.2	+0.0	38.8	46.0 Hopping (1.2M OFDM)	-7.2	Vert
9	614.000M QP	14.5	+0.3	+1.3	+1.5	+21.2	+0.0	38.8	46.0 Hopping (6.25k OQPSK)	-7.2	Vert
10	614.000M QP	14.5	+0.3	+1.3	+1.5	+21.2	+0.0	38.8	46.0 600k OFDM	-7.2	Vert
11	614.000M QP	14.4	+0.3	+1.3	+1.5	+21.2	+0.0	38.7	46.0 Hopping (200k OFDM)	-7.3	Vert
12	614.000M QP	14.4	+0.3	+1.3	+1.5	+21.2	+0.0	38.7	46.0 Hopping (10k GFSK)	-7.3	Vert
13	960.000M QP	14.6	+0.4	+1.6	+2.1	+24.9	+0.0	43.6	54.0 12.5k GFSK	-10.4	Vert
14	960.000M QP	14.5	+0.4	+1.6	+2.1	+24.9	+0.0	43.5	54.0 1.2M OFDM	-10.5	Vert
15	960.000M QP	14.5	+0.4	+1.6	+2.1	+24.9	+0.0	43.5	54.0 600k OFDM	-10.5	Vert
16	960.000M QP	14.5	+0.4	+1.6	+2.1	+24.9	+0.0	43.5	54.0 Hopping (1.2M OFDM)	-10.5	Vert
17	960.000M QP	14.5	+0.4	+1.6	+2.1	+24.9	+0.0	43.5	54.0 6.25k GFSK	-10.5	Vert

18	960.000M QP	14.5	+0.4	+1.6	+2.1	+24.9	+0.0	43.5	54.0	-10.5	Vert 200k OFDM
19	960.000M QP	14.5	+0.4	+1.6	+2.1	+24.9	+0.0	43.5	54.0	-10.5	Vert Hopping (200k OFDM)
20	960.000M QP	14.4	+0.4	+1.6	+2.1	+24.9	+0.0	43.4	54.0	-10.6	Vert Hopping (6.25k OQPSK)
21	960.000M QP	14.4	+0.4	+1.6	+2.1	+24.9	+0.0	43.4	54.0	-10.6	Vert 50k GFSK
22	960.000M QP	14.4	+0.4	+1.6	+2.1	+24.9	+0.0	43.4	54.0	-10.6	Vert 150k GFSK
23	960.000M QP	14.4	+0.4	+1.6	+2.1	+24.9	+0.0	43.4	54.0	-10.6	Vert 10k GFSK
24	960.000M QP	14.4	+0.4	+1.6	+2.1	+24.9	+0.0	43.4	54.0	-10.6	Vert Hopping (10k GFSK)
25	902.000M	67.1	+0.3	+1.5	+2.0	+23.8	+0.0	94.7	110.0	-15.3	Vert 10k GFSK
26	928.070M	53.4	+0.4	+1.6	+2.0	+24.6	+0.0	82.0	102.0	-20.0	Vert Hopping (200k OFDM)
27	901.855M	53.9	+0.3	+1.5	+2.0	+23.8	+0.0	81.5	102.0	-20.5	Vert Hopping (200k OFDM)
28	902.000M	45.8	+0.3	+1.5	+2.0	+23.8	+0.0	73.4	102.0	-28.6	Vert 200k OFDM
29	902.000M	45.4	+0.3	+1.5	+2.0	+23.8	+0.0	73.0	102.0	-29.0	Vert 600k OFDM
30	902.000M	42.1	+0.3	+1.5	+2.0	+23.8	+0.0	69.7	102.0	-32.3	Vert Hopping (200k OFDM)
31	928.080M	40.5	+0.4	+1.6	+2.0	+24.6	+0.0	69.1	102.0	-32.9	Vert 200k OFDM
32	928.000M	47.9	+0.4	+1.6	+2.0	+24.6	+0.0	76.5	110.0	-33.5	Vert 10k GFSK
33	928.215M	39.4	+0.4	+1.6	+2.0	+24.6	+0.0	68.0	102.0	-34.0	Vert 600k OFDM
34	928.000M	38.7	+0.4	+1.6	+2.0	+24.6	+0.0	67.3	102.0	-34.7	Vert 200k OFDM
35	928.000M	37.2	+0.4	+1.6	+2.0	+24.6	+0.0	65.8	102.0	-36.2	Vert 600k OFDM
36	902.000M	45.7	+0.3	+1.5	+2.0	+23.8	+0.0	73.3	110.0	-36.7	Vert Hopping (10k GFSK)
37	928.000M	43.1	+0.4	+1.6	+2.0	+24.6	+0.0	71.7	110.0	-38.3	Vert 12.5k GFSK
38	902.000M	43.7	+0.3	+1.5	+2.0	+23.8	+0.0	71.3	110.0	-38.7	Vert 150k GFSK
39	928.000M	42.6	+0.4	+1.6	+2.0	+24.6	+0.0	71.2	110.0	-38.8	Vert 6.25k GFSK

40	902.000M	43.5	+0.3	+1.5	+2.0	+23.8	+0.0	71.1	110.0	-38.9	Vert 6.25k OQPSK
41	902.000M	43.4	+0.3	+1.5	+2.0	+23.8	+0.0	71.0	110.0	-39.0	Vert 50k GFSK
42	928.000M	42.4	+0.4	+1.6	+2.0	+24.6	+0.0	71.0	110.0	-39.0	Vert 150k GFSK
43	928.000M	42.3	+0.4	+1.6	+2.0	+24.6	+0.0	70.9	110.0	-39.1	Vert Hopping (10k GFSK)
44	902.000M	43.0	+0.3	+1.5	+2.0	+23.8	+0.0	70.6	110.0	-39.4	Vert 12.5k OQPSK
45	928.000M	41.5	+0.4	+1.6	+2.0	+24.6	+0.0	70.1	110.0	-39.9	Vert 50k GFSK
46	928.000M	32.4	+0.4	+1.6	+2.0	+24.6	+0.0	61.0	102.0	-41.0	Vert Hopping (200k OFDM)
47	928.000M	38.6	+0.4	+1.6	+2.0	+24.6	+0.0	67.2	110.0	-42.8	Vert Hopping (6.25k OQPSK)
48	902.000M	30.6	+0.3	+1.5	+2.0	+23.8	+0.0	58.2	102.0	-43.8	Vert 1.2M OFDM
49	902.000M	37.8	+0.3	+1.5	+2.0	+23.8	+0.0	65.4	110.0	-44.6	Vert Hopping (6.25k OQPSK)
50	902.000M	27.8	+0.3	+1.5	+2.0	+23.8	+0.0	55.4	102.0	-46.6	Vert Hopping (1.2M OFDM)
51	928.000M	18.9	+0.4	+1.6	+2.0	+24.6	+0.0	47.5	102.0	-54.5	Vert 1.2M OFDM
52	928.000M	17.2	+0.4	+1.6	+2.0	+24.6	+0.0	45.8	102.0	-56.2	Vert Hopping (1.2M OFDM)

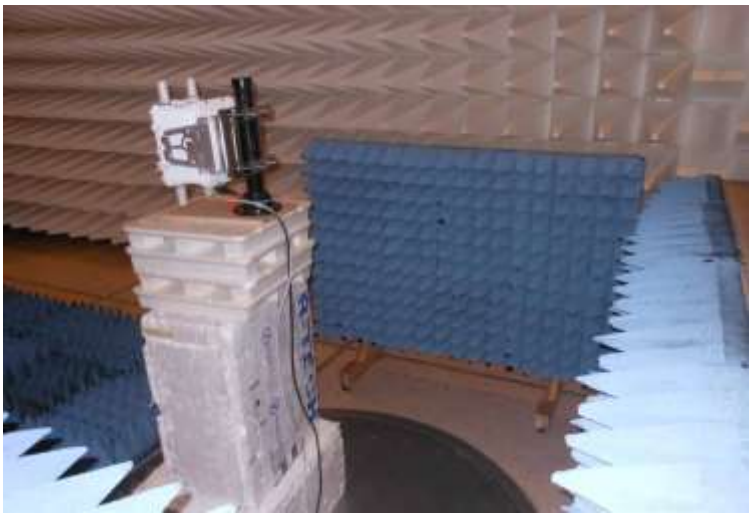
Test Setup Photos

Configuration 2

Below 1GHz

Below 1GHz

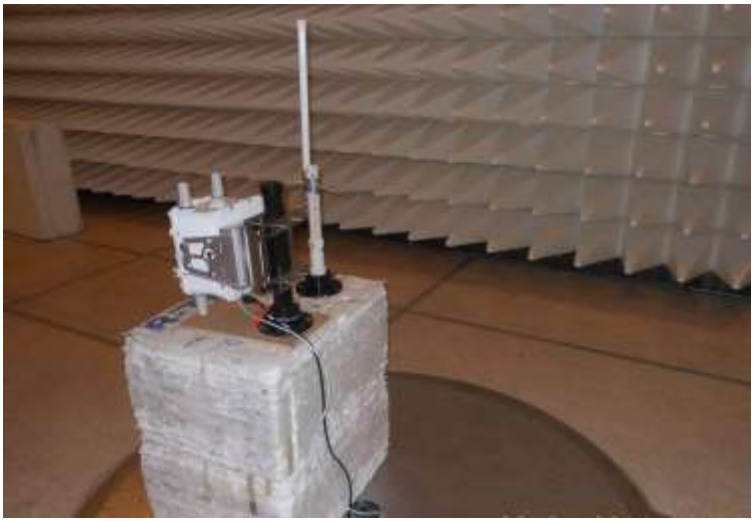
Above 1GHz, Cone placement



Above 1GHz, Cone placement

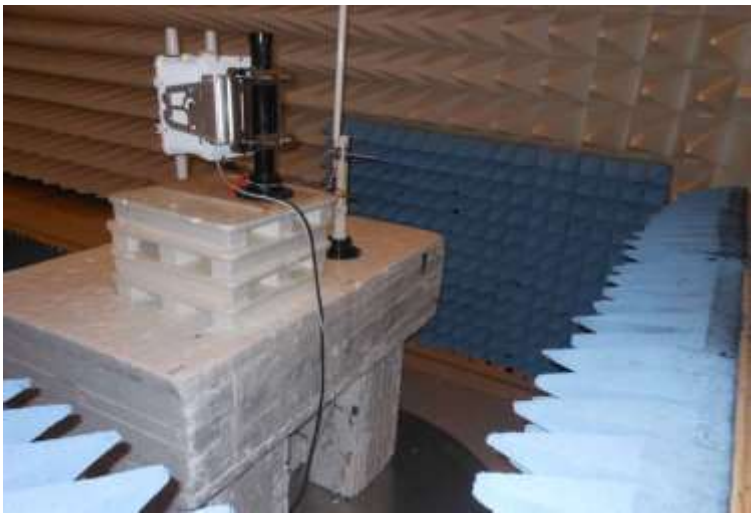
Configuration 3

Below 1GHz



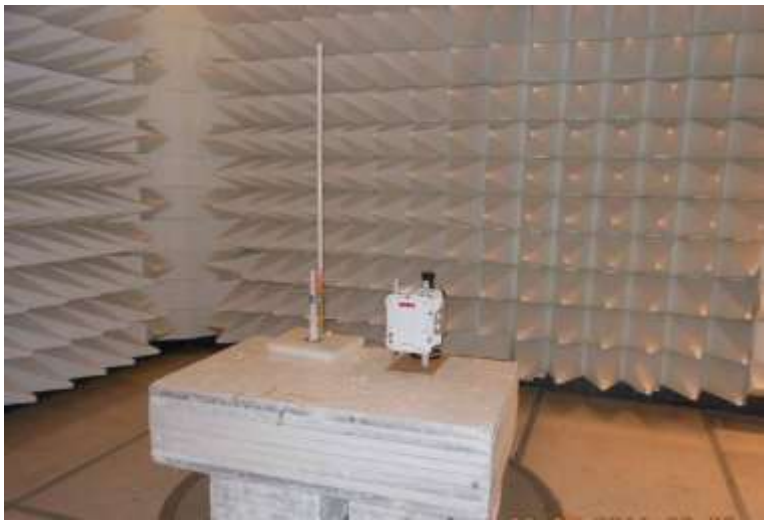
Below 1GHz

Above 1GHz, Cone placement

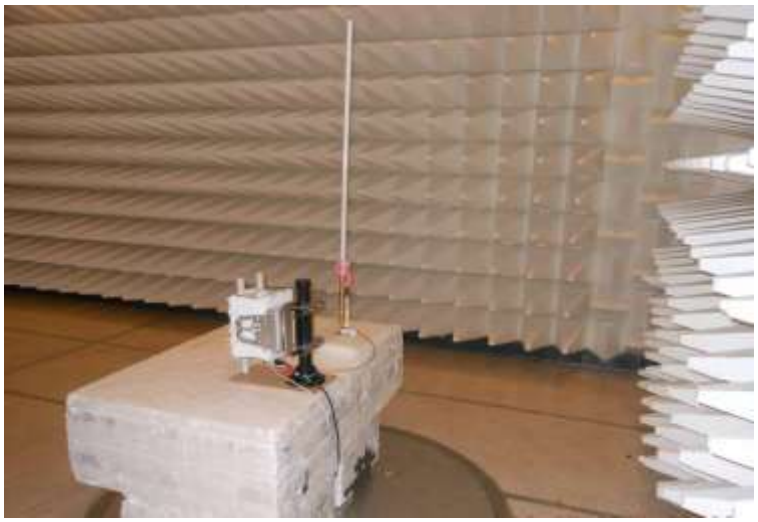


Above 1GHz, Cone placement

Configuration 4

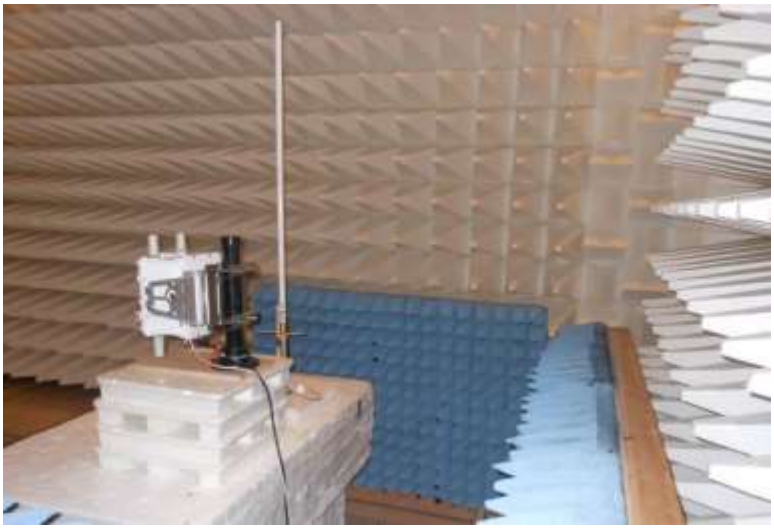


Below 1GHz



Below 1GHz

Above 1GHz, Cone placement



Above 1GHz, Cone placement

15.247(f) Hybrid Systems

15.247(f) Average Time of Occupancy

Manufacturer's Declaration

CKC Laboratories was not contracted to perform the testing due to the required equipment and firmware to exercise the EUT's multiple pseudo-random hopping sequences was not available and that the complexity of the different modulations and modes depend on the device to be in a fully operating network environment.

Therefore, the manufacturer declares the following:

With the multiple modulations, modes and hop tables, the mode with the worst-case Time of Occupancy to demonstrate 400mS compliance is 399.8mS in 10 seconds, since this modulation is > 250kHz and < 500 kHz OBW. Each session of multiple short transmissions takes place on one of 64 different channels in a pseudorandom sequence. The algorithm that determines the pseudo-random hop sequence ensures all 64 channels are used equally on the average.

Additionally, the manufacturer declares the following:

Since the 1.2Mbbs modulation is a hybrid blending both DTS and DSS, we comply with the channel occupancy requirement of 400ms in 12.4 seconds (31 channels X 400mS = 12.4 seconds).

Itron employs hopping patterns based on a pseudo-random sequence generated by an algorithm. The algorithm can have multiple components generated, that each has its own pseudo-random sequence.

The firmware insures the channels are used in the prescribed pseudo random order, therefore, it maintains equal channel usage.

The system has single channel receiver bandwidths that match the transmitter's modulation bandwidth that is enabled.

With the transmitter and receiver in synchronization within the network, transmitters switch frequencies in synchronization with the receiver.

15.247(f) Power Spectral Density

Power Spectral Density

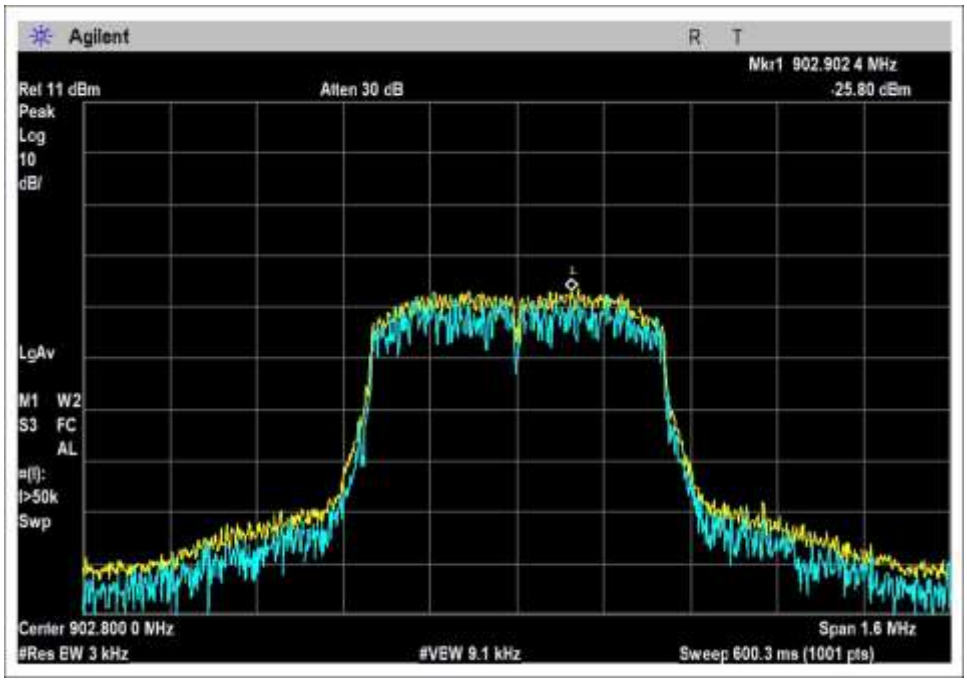
Test Data Summary - RF Conducted Measurement				
Measurement Method: PKPSD				
Frequency (MHz)	**Modulation**	**Measured (dBm/3kHz)**	**Limit (dBm/3kHz)**	**Results**
902.8	1.2M OFDM (Hybrid)	0.8	≤8	Pass
914.8	1.2M OFDM (Hybrid)	1.2	≤8	Pass
926.8	1.2M OFDM (Hybrid)	1.1	≤8	Pass

6dB Occupied Bandwidth (required for PSD measurement)

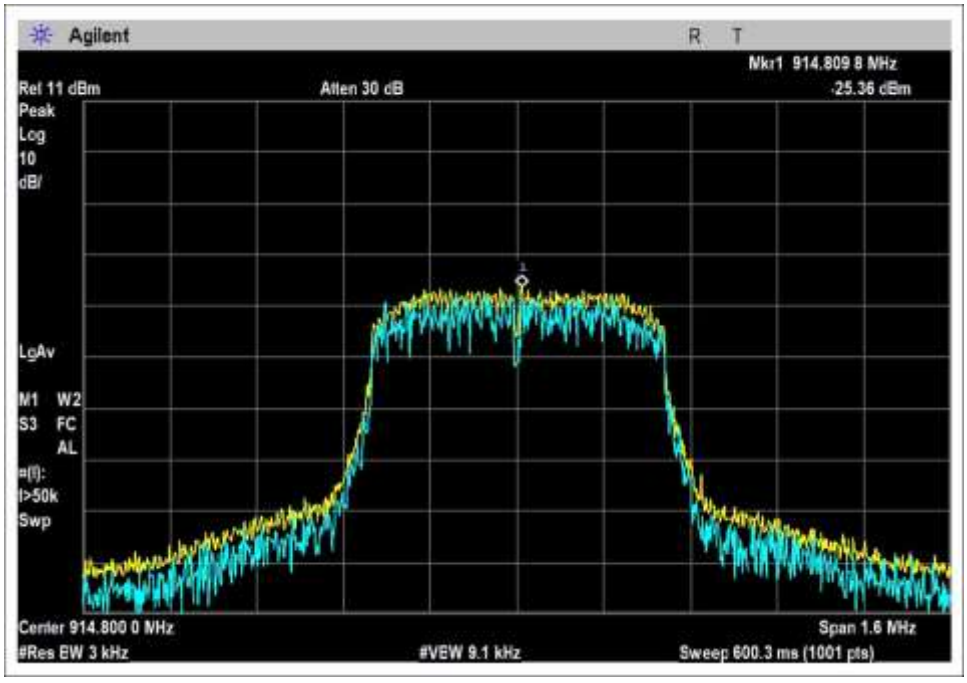
Test Data Summary					
Frequency (MHz)	**Antenna Port**	**Modulation**	**Measured (kHz)**	**Limit (kHz)**	**Results**
902.8	1	1.2M OFDM (Hybrid)	510.00	None	Pass
914.8	1	1.2M OFDM (Hybrid)	514.47		
926.8	1	1.2M OFDM (Hybrid)	514.11		

Plots

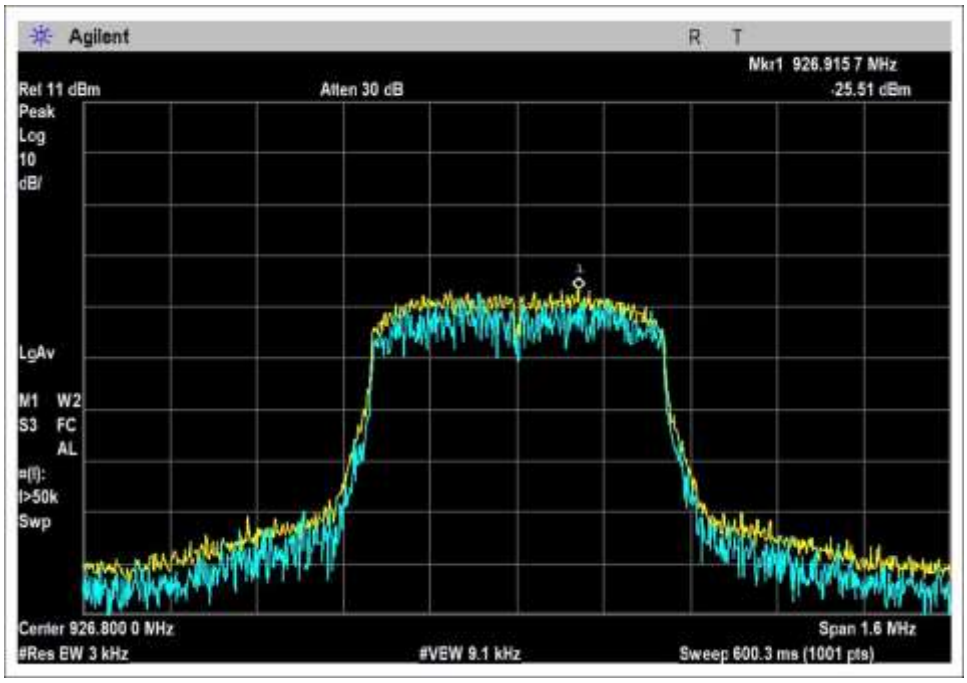
Power Spectral Density



Low Channel, 1.2M OFDM

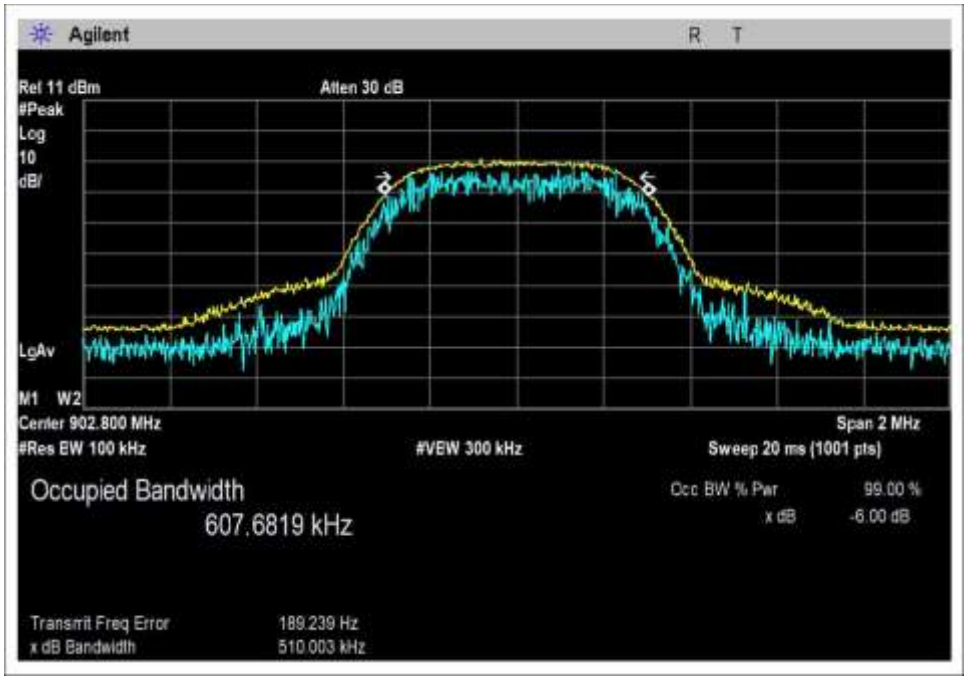


Middle Channel, 1.2M OFDM

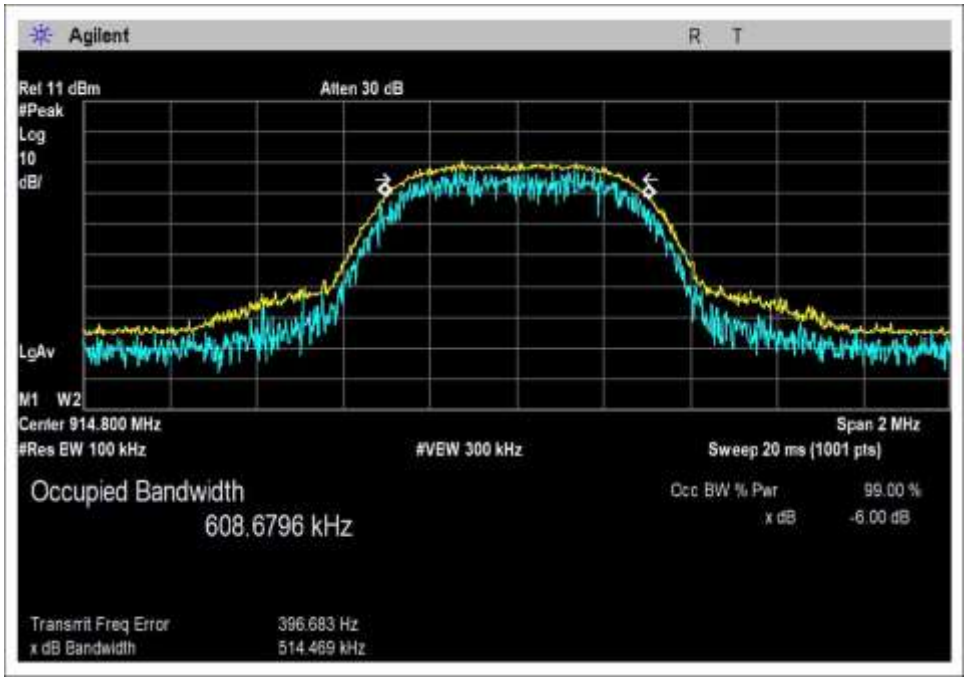


High Channel, 1.2M OFDM

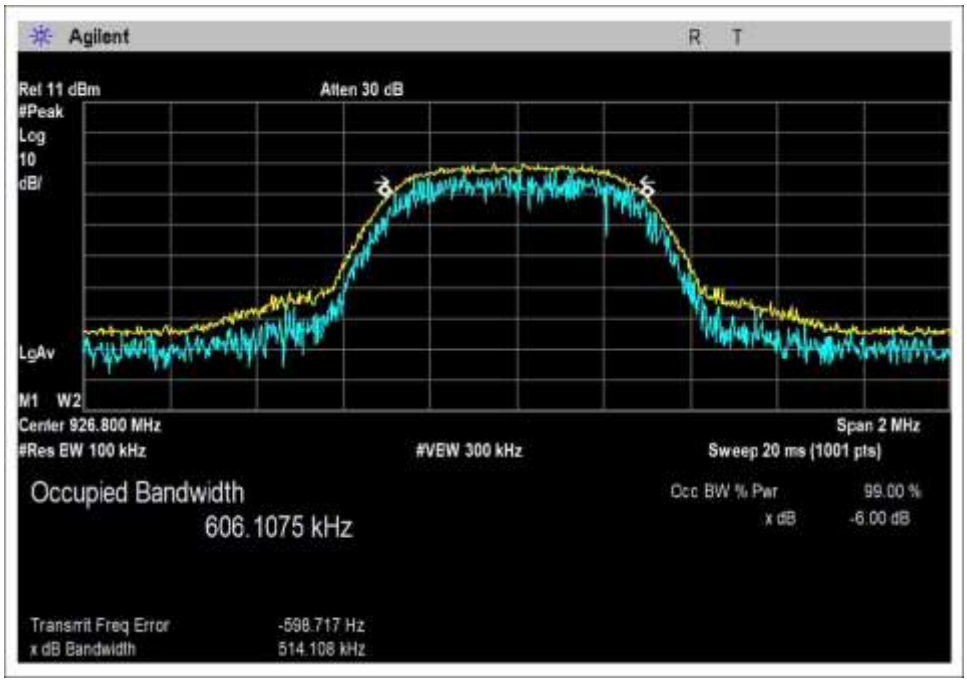
6dB Occupied Bandwidth



Low Channel, 1.2M OFDM



Middle Channel, 1.2M OFDM



High Channel, 1.2M OFDM

Test Setup / Conditions / Data

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Itron, Inc.**		
Specification:	**15.247(f) Peak Power Spectral Density (902-928 MHz DTS)**		
Work Order #:	**101674**	Date:	8/21/2018
Test Type:	**Conducted Emissions**	Time:	10:43:40
Tested By:	Michael Atkinson	Sequence#:	2
Software:	EMITest 5.03.11		115VAC 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 1			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 1			

Test Conditions / Notes:

Frequency Range: Fundamental
Frequency tested: Low, Mid, High Channels
Firmware power setting: Max
Firmware: CAM3-DEV Major Number 4, Minor Number 7, Build Number 153, Revision Number 787268
Test Software: CAM3 FCC Test Helper v14

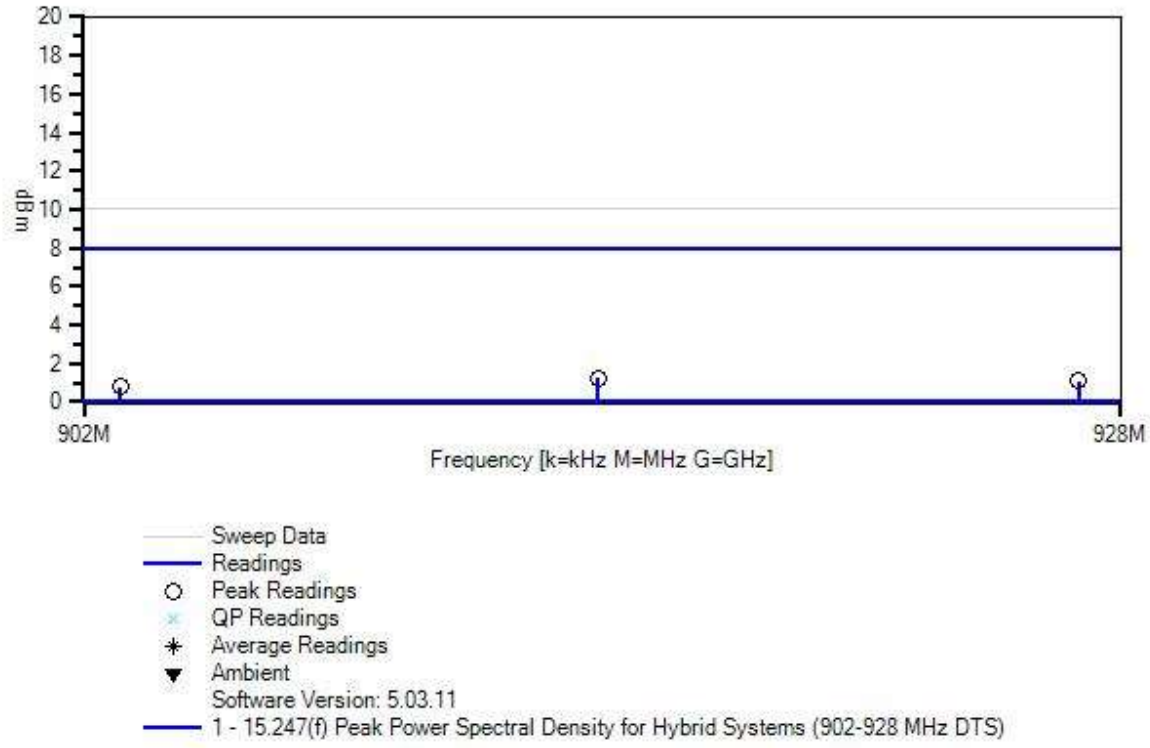
Modulation Types: 1.2M OFDM (Hybrid)

Antenna type: External Colinear Omni
Antenna Gain: 2.8dBi (attached), 5.5dBi (remote), 8.15dBi with 3dB attenuator (remote)

Duty Cycle: Tested at 100%
Test Location: Bothell Lab Bench
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 22-24
Relative Humidity (%): 38-42

Setup: The EUT is continuously transmitting with modulation on ISM port.
The EUT ISM port is connected directly to a spectrum analyzer for direct conducted measurements.
Low, Mid, High channels investigated.

Itron, Inc. WO#: 101674 Sequence#: 2 Date: 8/21/2018
15.247(f) Peak Power Spectral Density for Hybrid Systems (902-928 MHz DTS) Test Lead: 115VAC 60Hz Antenna Port



Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02673	Spectrum Analyzer	E4446A	2/3/2017	2/3/2019
T1	ANP07228	Attenuator	PE7004-20	11/30/2017	11/30/2019
T2	ANP07226	Attenuator	PE7004-6	12/1/2017	12/1/2019
T3	ANP06008	Cable	Heliax	4/10/2018	4/10/2020

Measurement Data: Reading listed by margin. Test Lead: Antenna Port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBm	Spec dBm	Margin dB	Polar Ant
1	914.810M	-25.4	+20.0	+5.8	+0.8		+0.0	1.2	8.0	-6.8	Anten
2	926.916M	-25.5	+20.0	+5.8	+0.8		+0.0	1.1	8.0	-6.9	Anten
3	902.902M	-25.8	+20.0	+5.8	+0.8		+0.0	0.8	8.0	-7.2	Anten

Test Setup Photo

15.207 AC Conducted Emissions

Test Setup / Conditions / Data

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Itron, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**101674**	Date:	8/22/2018
Test Type:	**Conducted Emissions**	Time:	08:41:58
Tested By:	Michael Atkinson	Sequence#:	8
Software:	EMITest 5.03.11		115VAC 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

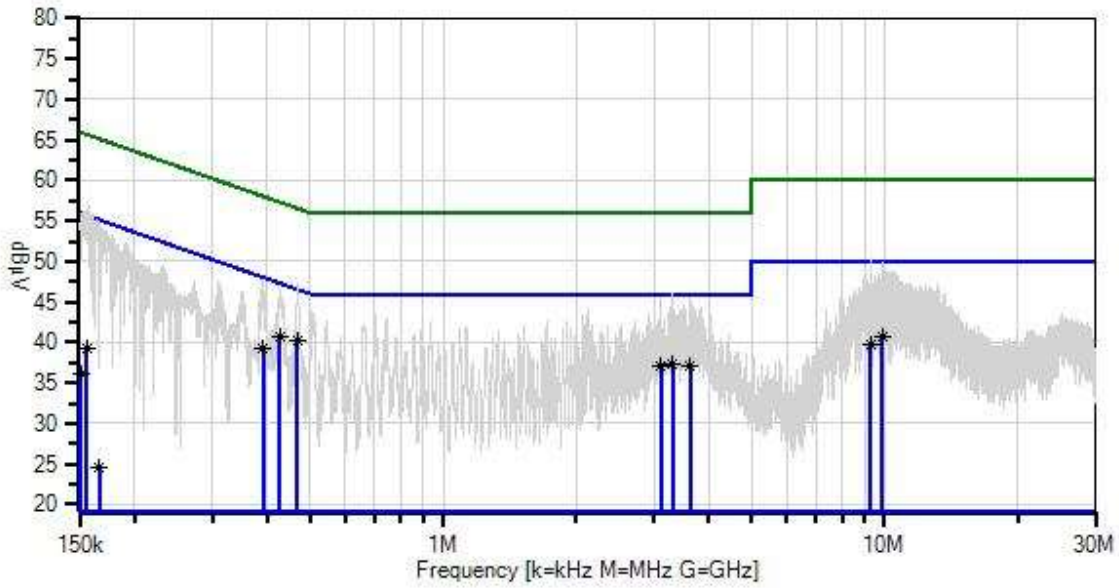
Frequency Range: 150kHz-30MHz
Frequency tested: Mid Channel
Firmware power setting: Max
Firmware: CAM3-DEV Major Number 4, Minor Number 7, Build Number 153, Revision Number 787268
Test Software: CAM3 FCC Test Helper v14
Modulation: 10k GFSK

Antenna type: External Colinear Omni
Antenna Gain: 2.8dBi (attached), 5.5dBi (remote), 8.15dBi with 3dB attenuator (remote)

Duty Cycle: Tested at 100%
Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 22-24
Relative Humidity (%): 38-42

Setup: The EUT connected to AC mains through LISN.
The EUT ISM port is continuously transmitting with modulation into external antenna.
Selected configuration used as representative and worst case.
Also investigated low and high transmit channels, the remotely located antennas, as well as other modulation types 150k GFSK, 6.25k OQPSK, 200k OFDM, 1.2M OFDM, and hopping with modulation on 10k GFSK as well as 1.2M OFDM.

Itron, Inc. WO#: 101674 Sequence#: 8 Date: 8/22/2018
15.207 AC Mains - Average Test Lead: 115VAC 60Hz Line



Sweep Data
× QP Readings
Software Version: 5.03.11
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02871	Spectrum Analyzer	E4440A	2/24/2017	2/24/2019
T1	AN02611	High Pass Filter	HE9615-150K-50-720B	1/15/2018	1/15/2020
T2	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T3	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T4	ANP06219	Attenuator	768-10	4/13/2018	4/13/2020
T5	AN01311	50uH LISN-Line1 (L)	3816/2	3/16/2018	3/16/2020
	AN01311	50uH LISN-Line2 (N)	3816/2	3/16/2018	3/16/2020

Measurement Data: Reading listed by margin. Test Lead: Line

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	468.491k	30.5	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	40.3	46.5	-6.2	Line
Ave											
^	468.491k	37.4	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	47.2	46.5	+0.7	Line
3	426.937k	31.0	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	40.8	47.3	-6.5	Line
Ave											
^	426.936k	36.7	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	46.5	47.3	-0.8	Line
5	390.728k	29.7	+0.1 +0.5	+0.0	+0.0	+9.1	+0.0	39.4	48.0	-8.6	Line
Ave											
^	389.731k	38.0	+0.1 +0.5	+0.0	+0.0	+9.1	+0.0	47.7	48.1	-0.4	Line
7	3.312M	27.7	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	37.3	46.0	-8.7	Line
Ave											
^	3.310M	36.4	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	46.0	46.0	+0.0	Line
9	3.624M	27.5	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	37.1	46.0	-8.9	Line
Ave											
^	3.624M	36.1	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	45.7	46.0	-0.3	Line
11	3.117M	27.4	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	37.0	46.0	-9.0	Line
Ave											
^	3.116M	35.9	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	45.5	46.0	-0.5	Line
13	9.897M	30.9	+0.1 +0.4	+0.0	+0.2	+9.1	+0.0	40.7	50.0	-9.3	Line
Ave											
^	9.897M	40.1	+0.1 +0.4	+0.0	+0.2	+9.1	+0.0	49.9	50.0	-0.1	Line

15	9.313M	30.1	+0.1	+0.0	+0.2	+9.1	+0.0	39.9	50.0	-10.1	Line
	Ave		+0.4								
^	9.315M	40.6	+0.1	+0.0	+0.2	+9.1	+0.0	50.4	50.0	+0.4	Line
			+0.4								
17	156.218k	27.6	+0.8	+0.0	+0.0	+9.1	+0.0	39.2	55.7	-16.5	Line
	Ave		+1.7								
^	158.279k	45.4	+0.7	+0.0	+0.0	+9.1	+0.0	56.9	55.6	+1.3	Line
			+1.7								
19	150.943k	23.4	+1.7	+0.0	+0.0	+9.1	+0.0	36.0	55.9	-19.9	Line
	Ave		+1.8								
^	150.943k	42.5	+1.7	+0.0	+0.0	+9.1	+0.0	55.1	55.9	-0.8	Line
			+1.8								
21	166.768k	13.4	+0.5	+0.0	+0.0	+9.1	+0.0	24.6	55.1	-30.5	Line
	Ave		+1.6								
^	166.767k	43.0	+0.5	+0.0	+0.0	+9.1	+0.0	54.2	55.1	-0.9	Line
			+1.6								

Test Location:	CKC Laboratories • 22116 23rd Drive SE, Suite A • Bothell, WA 98021 • 1-800-500-4EMC (4362)		
Customer:	**Itron, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**101674**	Date:	8/22/2018
Test Type:	**Conducted Emissions**	Time:	08:58:55
Tested By:	Michael Atkinson	Sequence#:	9
Software:	EMITest 5.03.11		115VAC 60Hz

Equipment Tested:

Device	Manufacturer	Model #	S/N
Configuration 2			

Support Equipment:

Device	Manufacturer	Model #	S/N
Configuration 2			

Test Conditions / Notes:

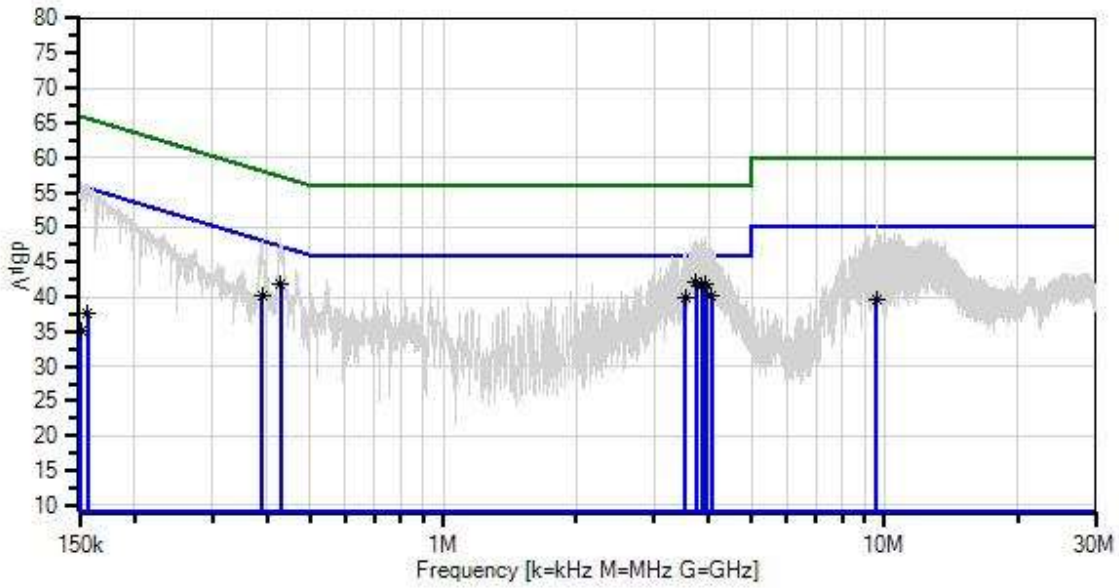
Frequency Range: 150kHz-30MHz
Frequency tested: Mid Channel
Firmware power setting: Max
Firmware: CAM3-DEV Major Number 4, Minor Number 7, Build Number 153, Revision Number 787268
Test Software: CAM3 FCC Test Helper v14
Modulation: 10k GFSK

Antenna type: External Colinear Omni
Antenna Gain: 2.8dBi (attached), 5.5dBi (remote), 8.15dBi with 3dB attenuator (remote)

Duty Cycle: Tested at 100%
Test Location: Bothell Lab C3
Test Method: ANSI C63.10 (2013)
Temperature (ºC): 22-24
Relative Humidity (%): 38-42

Setup: The EUT connected to AC mains through LISN.
The EUT ISM port is continuously transmitting with modulation into external antenna.
Selected configuration used as representative and worst case.
Also investigated low and high transmit channels, the remotely located antennas, as well as other modulation types 150k GFSK, 6.25k OQPSK, 200k OFDM, 1.2M OFDM, and hopping with modulation on 10k GFSK as well as 1.2M OFDM.

Itron, Inc. WO#: 101674 Sequence#: 9 Date: 8/22/2018
15.207 AC Mains - Average Test Lead: 115VAC 60Hz Return



Sweep Data
× QP Readings
Software Version: 5.03.11
Readings
Average Readings
1 - 15.207 AC Mains - Average
Peak Readings
Ambient
2 - 15.207 AC Mains - Quasi-peak

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02871	Spectrum Analyzer	E4440A	2/24/2017	2/24/2019
T1	AN02611	High Pass Filter	HE9615-150K-50-720B	1/15/2018	1/15/2020
T2	ANP06540	Cable	Heliax	10/30/2017	10/30/2019
T3	ANP06515	Cable	Heliax	6/29/2018	6/29/2020
T4	ANP06219	Attenuator	768-10	4/13/2018	4/13/2020
	AN01311	50uH LISN-Line1 (L)	3816/2	3/16/2018	3/16/2020
T5	AN01311	50uH LISN-Line2 (N)	3816/2	3/16/2018	3/16/2020

Measurement Data: Reading listed by margin. Test Lead: Return

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	3.739M	32.4	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	42.0	46.0	-4.0	Retur
Ave											
^	3.739M	38.5	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	48.1	46.0	+2.1	Retur
3	3.934M	32.1	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	41.7	46.0	-4.3	Retur
Ave											
^	3.933M	39.0	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	48.6	46.0	+2.6	Retur
5	3.856M	31.9	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	41.5	46.0	-4.5	Retur
Ave											
^	3.855M	38.9	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	48.5	46.0	+2.5	Retur
7	428.309k	32.1	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	41.9	47.3	-5.4	Retur
Ave											
^	427.648k	38.6	+0.1 +0.5	+0.0	+0.1	+9.1	+0.0	48.4	47.3	+1.1	Retur
9	4.051M	30.5	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	40.1	46.0	-5.9	Retur
Ave											
^	4.051M	37.2	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	46.8	46.0	+0.8	Retur
11	3.544M	30.3	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	39.9	46.0	-6.1	Retur
Ave											
^	3.546M	36.9	+0.1 +0.3	+0.0	+0.1	+9.1	+0.0	46.5	46.0	+0.5	Retur
13	389.562k	30.5	+0.1 +0.5	+0.0	+0.0	+9.1	+0.0	40.2	48.1	-7.9	Retur
Ave											
^	388.841k	38.3	+0.1 +0.5	+0.0	+0.0	+9.1	+0.0	48.0	48.1	-0.1	Retur

15 Ave	9.582M	29.9	+0.1 +0.4	+0.0	+0.2	+9.1	+0.0	39.7	50.0	-10.3	Retur
^	9.585M	41.2	+0.1 +0.4	+0.0	+0.2	+9.1	+0.0	51.0	50.0	+1.0	Retur
17 Ave	156.707k	26.1	+0.7 +1.7	+0.0	+0.0	+9.1	+0.0	37.6	55.6	-18.0	Retur
^	156.707k	44.8	+0.7 +1.7	+0.0	+0.0	+9.1	+0.0	56.3	55.6	+0.7	Retur
19 Ave	151.048k	22.6	+1.6 +1.7	+0.0	+0.0	+9.1	+0.0	35.0	55.9	-20.9	Retur
^	151.047k	44.1	+1.6 +1.7	+0.0	+0.0	+9.1	+0.0	56.5	55.9	+0.6	Retur

Test Setup Photo

SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

Uncertainties reported are worst case for all CKC Laboratories' sites and represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

Unless otherwise indicated, the following configuration parameters are used for equipment setup: The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit. Individual measurements were compared with the displayed limit value in the margin column. The margin was calculated based on subtracting the limit value from the corrected measurement value; a positive margin represents a measurement exceeding the limit, while a negative margin represents a measurement less than the limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB/m)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. Unless otherwise specified, the following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or caret (“^”) was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point, the measuring device is set into the linear mode and the scan time is reduced.