



Spurious Emissions 9kHz-30MHz - TX ON_500 kbps_2440MHz_X-axis - Vertical Co-Axial

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Vertical	200 Hz	1411 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Vertical	9 kHz	5971 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/4/2025	23.8C	9%	992 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2440 MHz	19	TX	X-axis

Limit:
FCC Part 15/FCC §15.209_2025_09_23

Test Results:
Pass

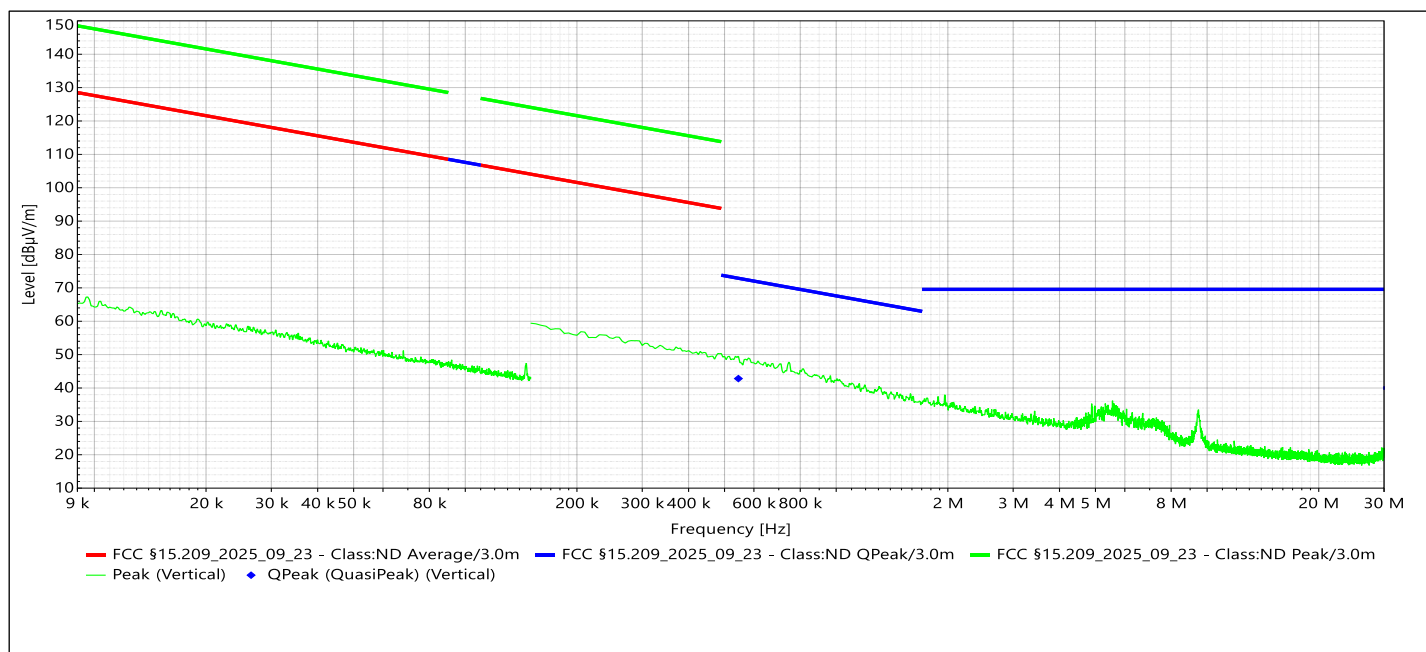


Figure 2.7.7-75 – Radiated Emissions Test Results

**Table 2.7.7-43– Radiated Emissions Test Results**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.545	42.82	72.88	-30.05	63.00	1.00	Vertical	Pass

Test Notes: 500 kbps - TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 30M-1GHz - TX ON _500 kbps_2440MHz_X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	19401 Pts	Auto
30 MHz - 1 GHz	3m	Horizontal	120 kHz	19401 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/3/2025	24.1 C	11 %	993 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2440 MHz	19	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

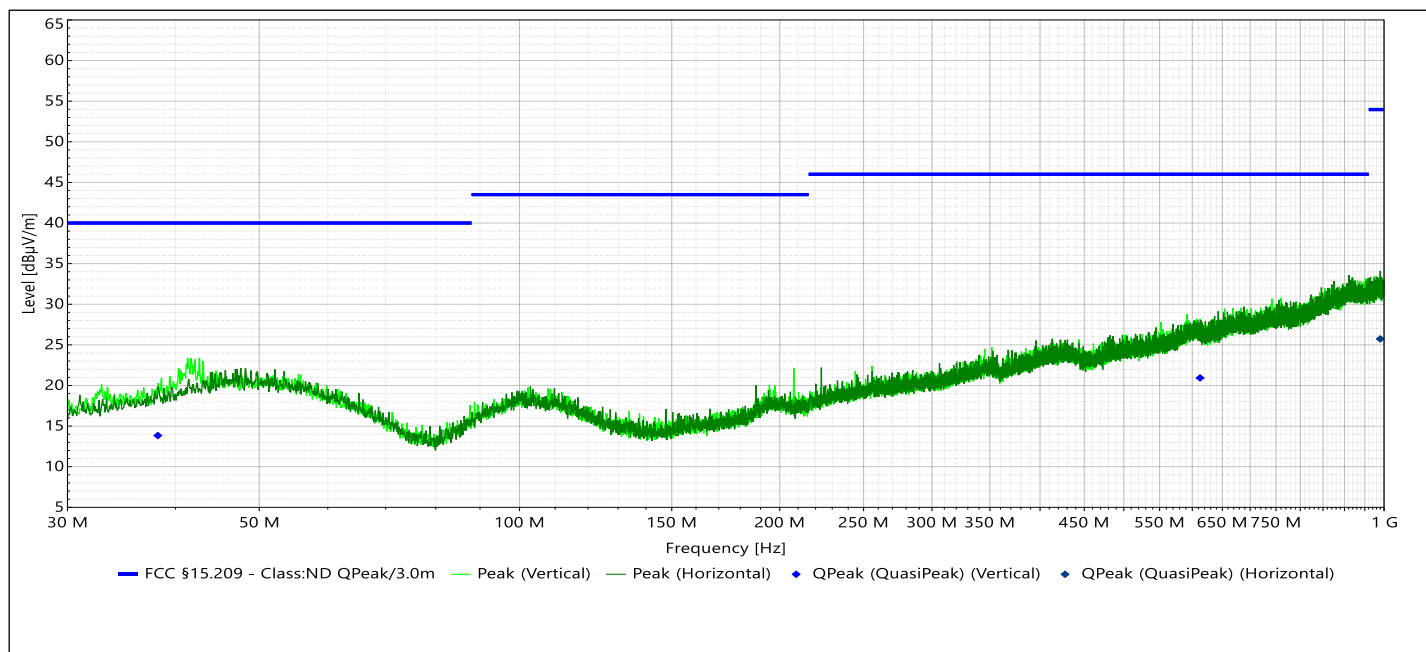


Figure 2.7.7-76 – Radiated Emissions Test Results

**Table 2.7.7-44– Radiated Emissions Test Results**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
38.164	13.83	40.00	-26.17	335.00	1.35	Vertical	Pass
612.596	20.93	46.00	-25.07	124.00	1.00	Vertical	Pass
989.947	25.73	53.97	-28.24	298.00	3.29	Horizontal	Pass

Test Notes: 500 kbps - TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 1-18GHz - TX ON_500 kbps_ 2440 MHz_ X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 18 GHz	3m	Vertical	1 MHz	34001 Pts	200 ms
1 GHz - 18 GHz	3m	Horizontal	1 MHz	34001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	11/21/2025	24.9 C	27%	983 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2440 MHz	19	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

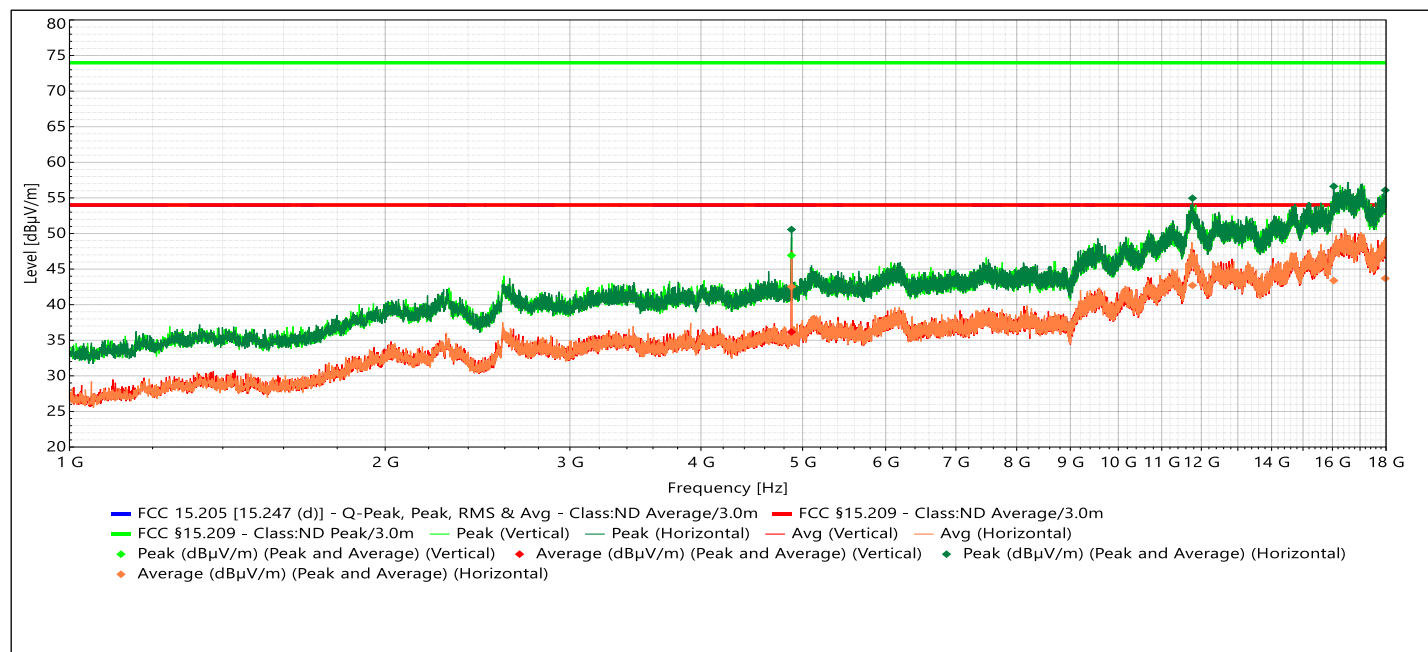


Figure 2.7.7-77 – Radiated Emissions Test Results

**Table 2.7.7-45– Radiated Emissions Test Results**

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
4879.463	46.92	74.00	-27.08	36.17	54.00	-17.83	31.00	3.32	Vertical	Pass
4879.464	50.56	74.00	-23.44	42.53	54.00	-11.47	225.00	1.05	Horizontal	Pass
11768.208	54.96	74.00	-19.04	42.71	54.00	-11.29	31.00	1.74	Horizontal	Pass
16047.776	56.62	74.00	-17.38	43.38	54.00	-10.62	111.00	3.34	Horizontal	Pass
17968.228	56.08	74.00	-17.92	43.69	54.00	-10.31	87.00	1.74	Horizontal	Pass

Test Notes: 500 kbps- TX Power Setting = 0 dBm



Spurious Emissions 18-26GHz - TX ON_500 kbps_ 2440 MHz_ X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
18 GHz - 26 GHz	3m	Vertical	1 MHz	32001 Pts	200 ms
18 GHz - 26 GHz	3m	Horizontal	1 MHz	32001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/3/2025	23.4 C	13%	986 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2440 MHz	19	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

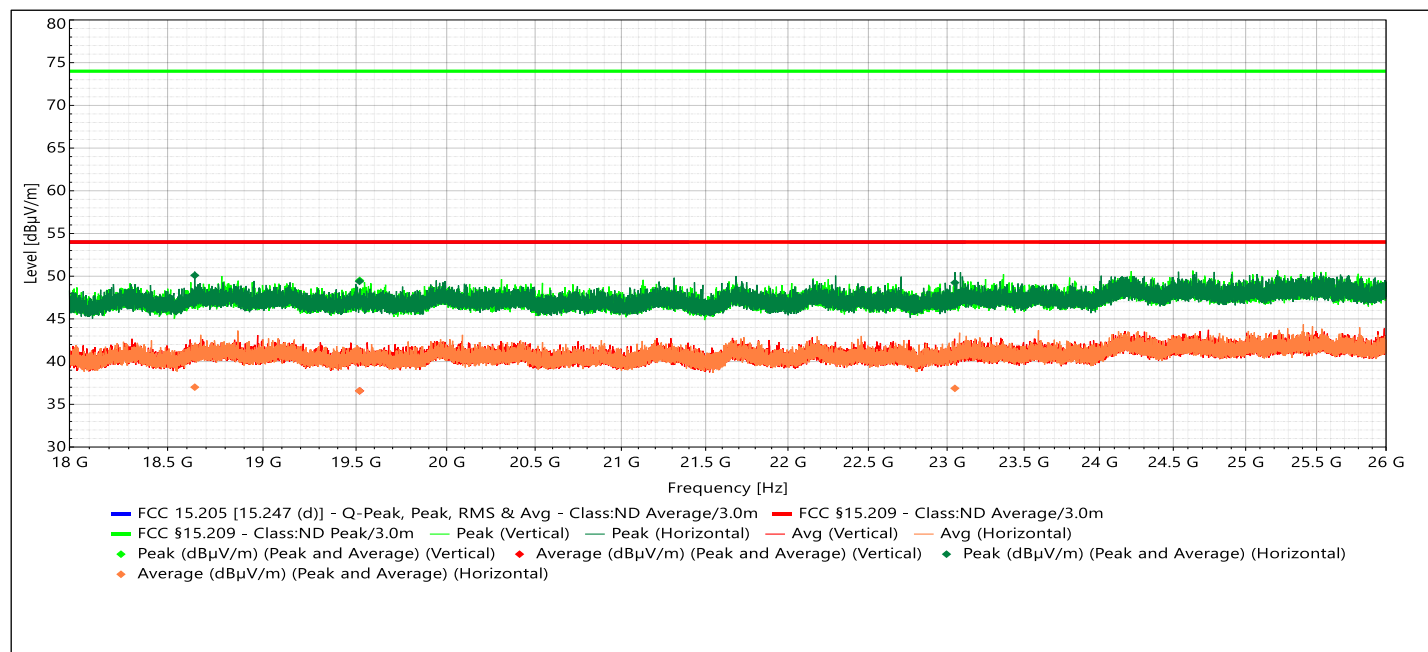


Figure 2.7.7-78 – Radiated Emissions Test Results

**Table 2.7.7-46– Radiated Emissions Test Results**

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
19519.655	49.51	74.00	-24.49	36.58	54.00	-17.42	119.00	2.61	Vertical	Pass
18641.085	50.10	74.00	-23.90	37.01	54.00	-16.99	240.00	2.47	Horizontal	Pass
19518.483	49.40	74.00	-24.60	36.58	54.00	-17.42	241.00	3.32	Horizontal	Pass
23050.053	49.24	74.00	-24.76	36.87	54.00	-17.13	209.00	1.00	Horizontal	Pass

Test Notes: 500 kbps- TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 9kHz-30MHz - TX ON_500 kbps_2480MHz_X-axis - Vertical Co-Axial

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Vertical	200 Hz	1411 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Vertical	9 kHz	5971 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/4/2025	23.8C	9%	992 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2480 MHz	39	TX	X-axis

Limit:
FCC Part 15/FCC §15.209_2025_09_23

Test Results:
Pass

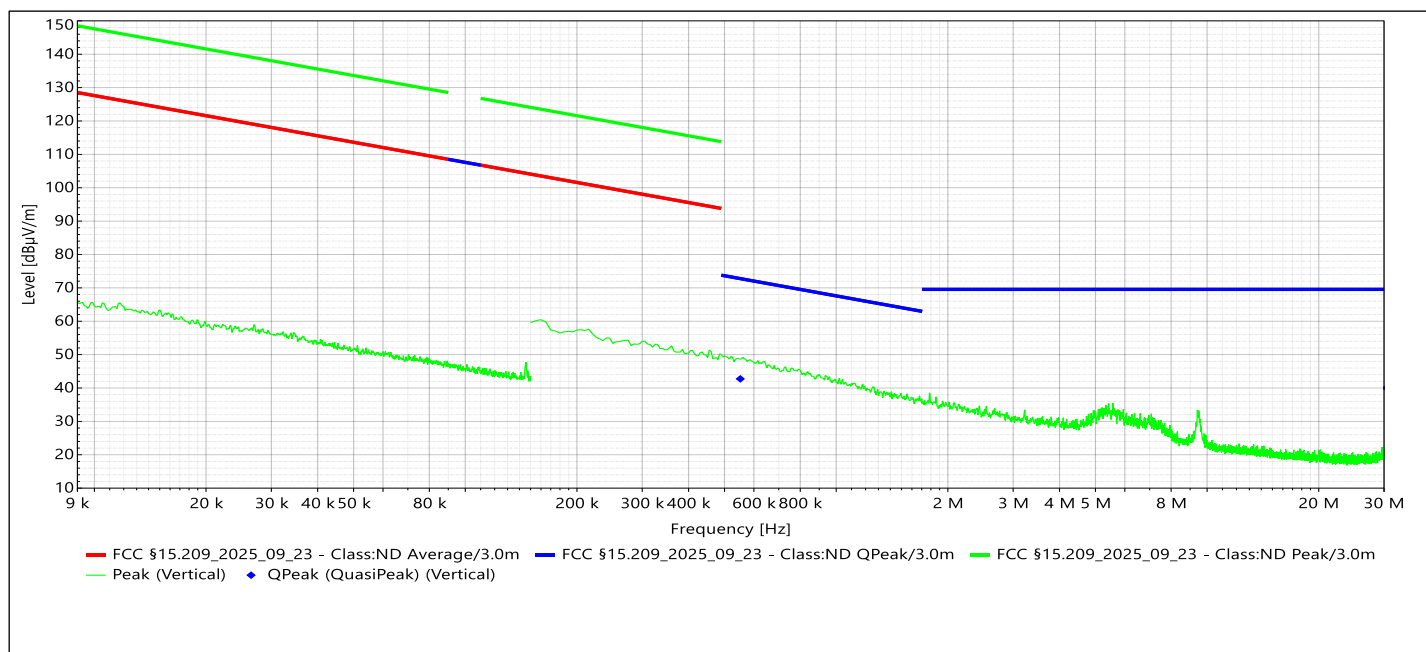


Figure 2.7.7-79 – Radiated Emissions Test Results

**Table 2.7.7-47– Radiated Emissions Test Results**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.551	42.73	72.80	-30.06	134.00	1.00	Vertical	Pass

Test Notes: 500 kbps - TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 30M-1GHz - TX ON _500 kbps_2480MHz_X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	19401 Pts	Auto
30 MHz - 1 GHz	3m	Horizontal	120 kHz	19401 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/3/2025	24.1 C	11 %	993 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2480 MHz	39	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

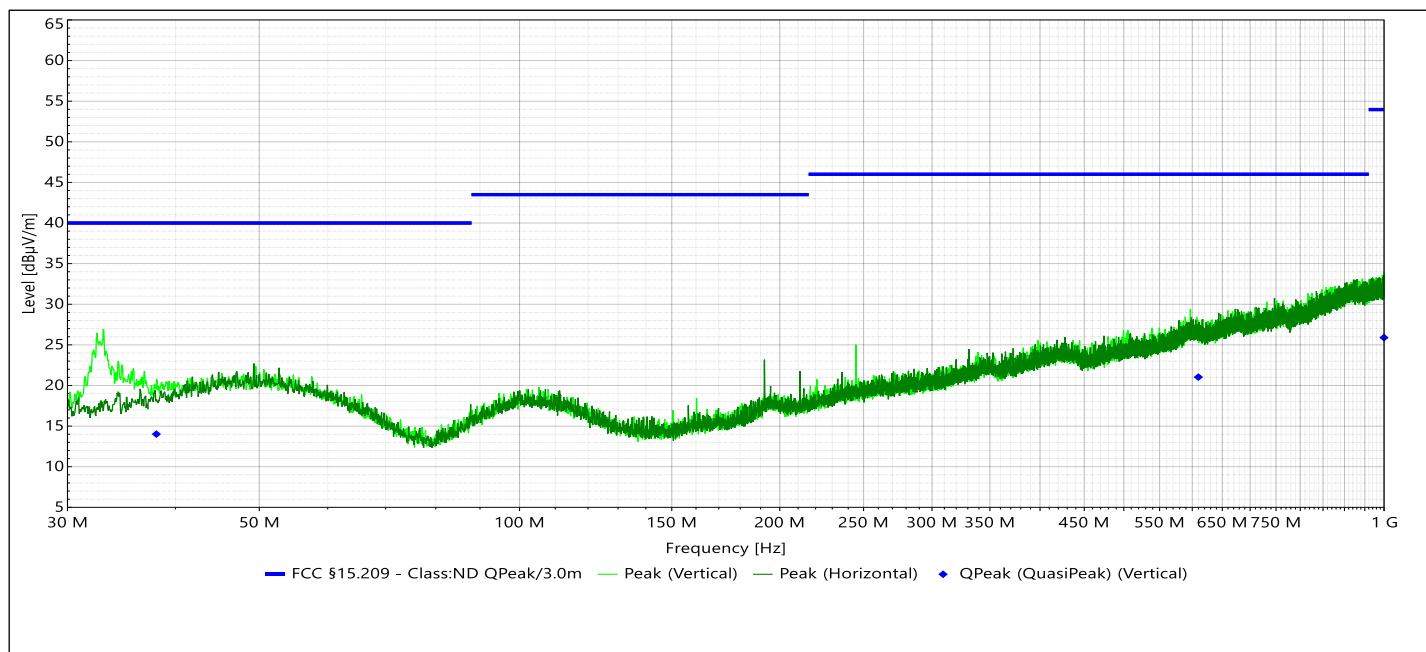


Figure 2.7.7-80 – Radiated Emissions Test Results

**Table 2.7.7-48– Radiated Emissions Test Results**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
38.012	14.02	40.00	-25.98	357.00	1.21	Vertical	Pass
609.824	21.04	46.00	-24.96	5.00	4.00	Vertical	Pass
999.865	25.89	53.97	-28.08	236.00	4.00	Vertical	Pass

Test Notes: 500 kbps - TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 1-18GHz - TX ON_500 kbps_ 2480 MHz_ X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 18 GHz	3m	Vertical	1 MHz	34001 Pts	200 ms
1 GHz - 18 GHz	3m	Horizontal	1 MHz	34001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	11/20/2025	24.9 C	27%	983 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2480 MHz	39	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

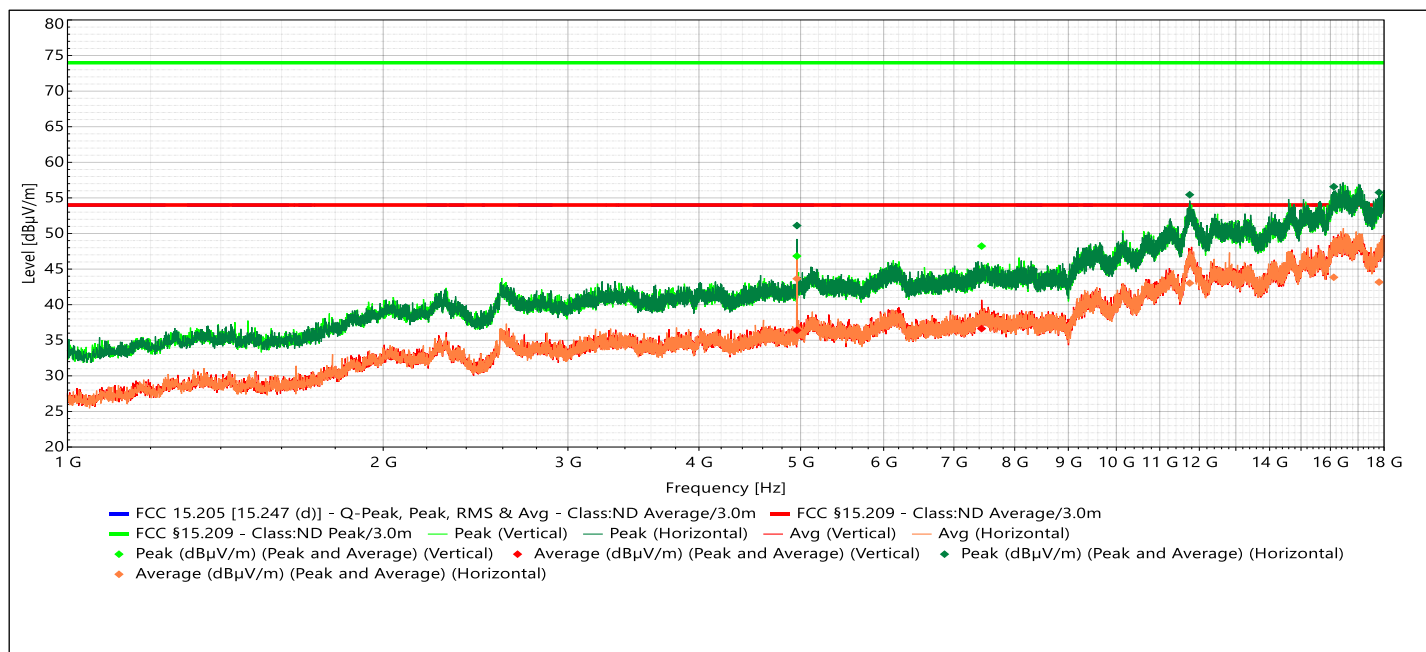


Figure 2.7.7-81 – Radiated Emissions Test Results

**Table 2.7.7-49– Radiated Emissions Test Results**

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
4959.463	46.83	74.00	-27.17	36.41	54.00	-17.59	22.00	1.80	Vertical	Pass
7439.233	48.23	74.00	-25.77	36.64	54.00	-17.36	352.00	1.00	Vertical	Pass
4960.460	51.12	74.00	-22.88	43.65	54.00	-10.35	217.00	2.02	Horizontal	Pass
11747.549	55.45	74.00	-18.55	43.03	54.00	-10.97	72.00	1.00	Horizontal	Pass
16118.234	56.58	74.00	-17.42	43.85	54.00	-10.15	248.00	3.39	Horizontal	Pass
17804.724	55.76	74.00	-18.24	43.17	54.00	-10.83	87.00	3.66	Horizontal	Pass

Test Notes: 500 kbps- TX Power Setting = 0 dBm



Spurious Emissions 18-26GHz - TX ON_500 kbps_ 2480 MHz_ X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
18 GHz - 26 GHz	3m	Vertical	1 MHz	32001 Pts	200 ms
18 GHz - 26 GHz	3m	Horizontal	1 MHz	32001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/3/2025	23.4 C	13%	986 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2480 MHz	39	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

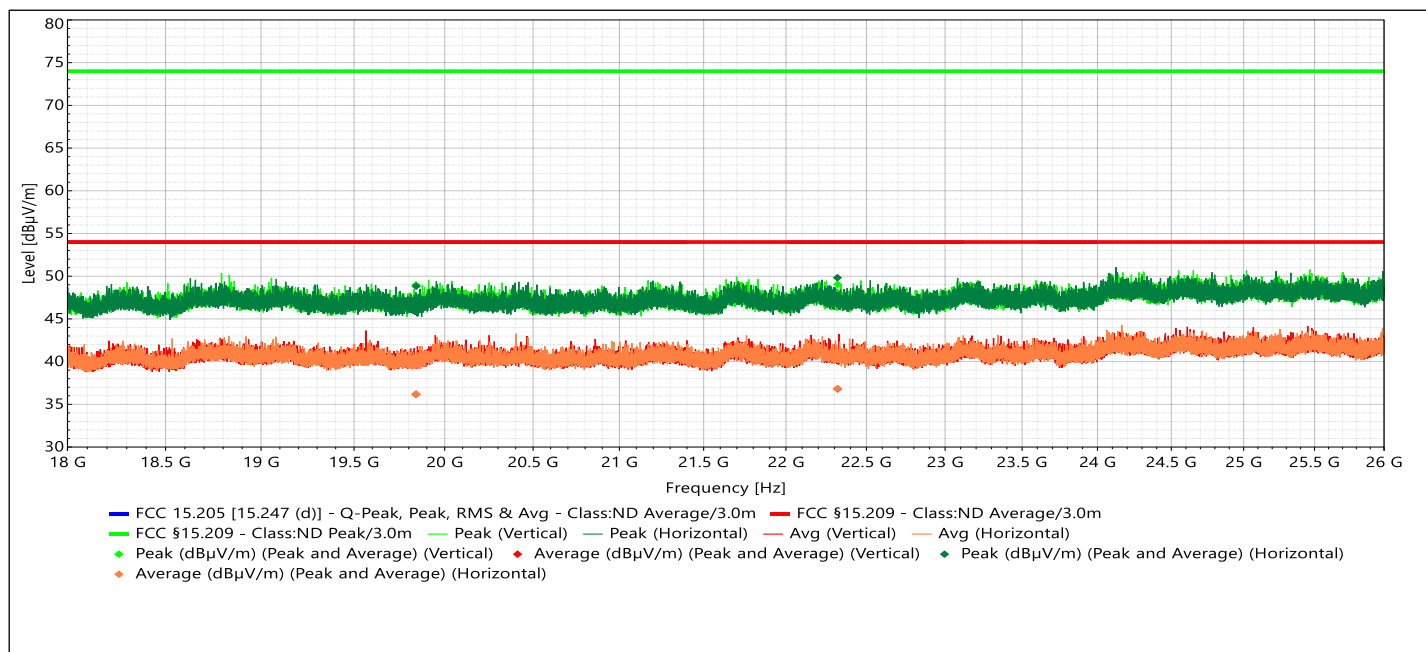


Figure 2.7.7-82 – Radiated Emissions Test Results

**Table 2.7.7-50– Radiated Emissions Test Results**

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
19840.209	48.97	74.00	-25.03	36.18	54.00	-17.82	167.00	1.26	Vertical	Pass
22319.666	49.05	74.00	-24.95	36.80	54.00	-17.20	258.00	1.83	Vertical	Pass
19841.278	48.82	74.00	-25.18	36.20	54.00	-17.80	192.00	1.26	Horizontal	Pass
22318.403	49.83	74.00	-24.17	36.84	54.00	-17.16	305.00	3.18	Horizontal	Pass

Test Notes: 500 kbps- TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 9kHz-30MHz - TX ON_125 kbps_2402MHz_X-axis - Vertical Co-Axial

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Vertical	200 Hz	1411 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Vertical	9 kHz	5971 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/4/2025	23.8C	9%	992 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2402 MHz	0	TX	X-axis

Limit:
FCC Part 15/FCC §15.209_2025_09_23

Test Results:
Pass

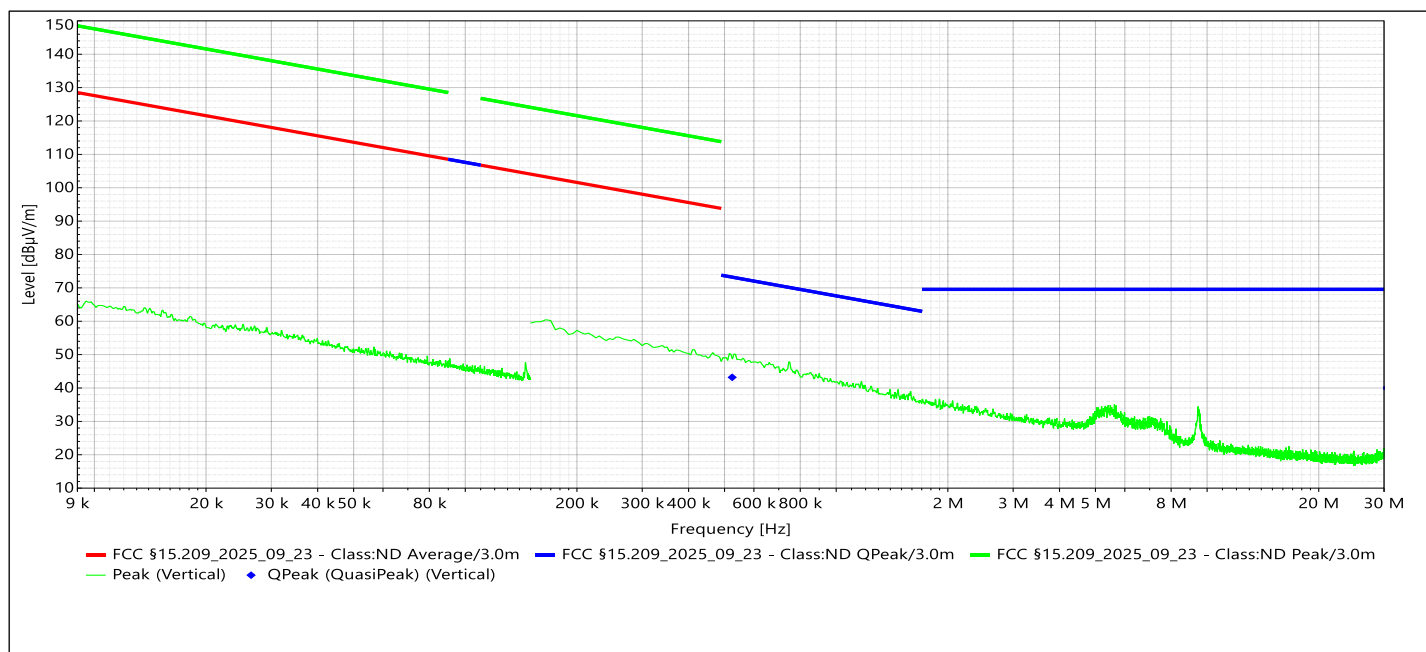


Figure 2.7.7-83 – Radiated Emissions Test Results

**Table 2.7.7-51– Radiated Emissions Test Results**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.524	43.20	73.20	-30.00	113.00	1.00	Vertical	Pass

Test Notes: 125 kbps - TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 30M-1GHz - TX ON _125 kbps_2402MHz_X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	19401 Pts	Auto
30 MHz - 1 GHz	3m	Horizontal	120 kHz	19401 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/4/2025	23.3 C	9 %	994 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2402 MHz	0	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

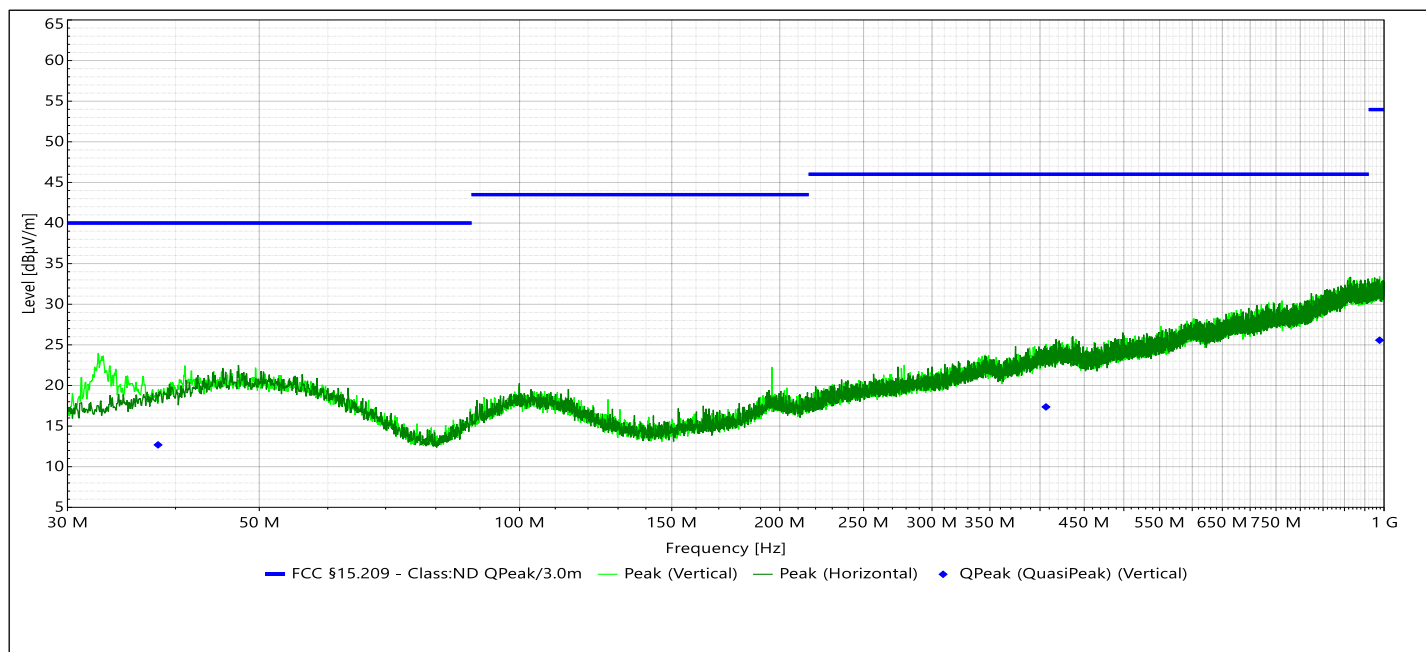


Figure 2.7.7-84 – Radiated Emissions Test Results

**Table 2.7.7-52– Radiated Emissions Test Results**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
38.183	12.69	40.00	-27.31	35.00	2.33	Vertical	Pass
406.390	17.36	46.00	-28.64	0.00	4.00	Vertical	Pass
988.156	25.57	53.97	-28.40	117.00	3.75	Vertical	Pass

Test Notes: 125 kbps - TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 1-18GHz - TX ON_125 kbps_ 2402 MHz_ X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 18 GHz	3m	Vertical	1 MHz	34001 Pts	200 ms
1 GHz - 18 GHz	3m	Horizontal	1 MHz	34001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	11/21/2025	24.9 C	27%	983 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2402 MHz	0	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

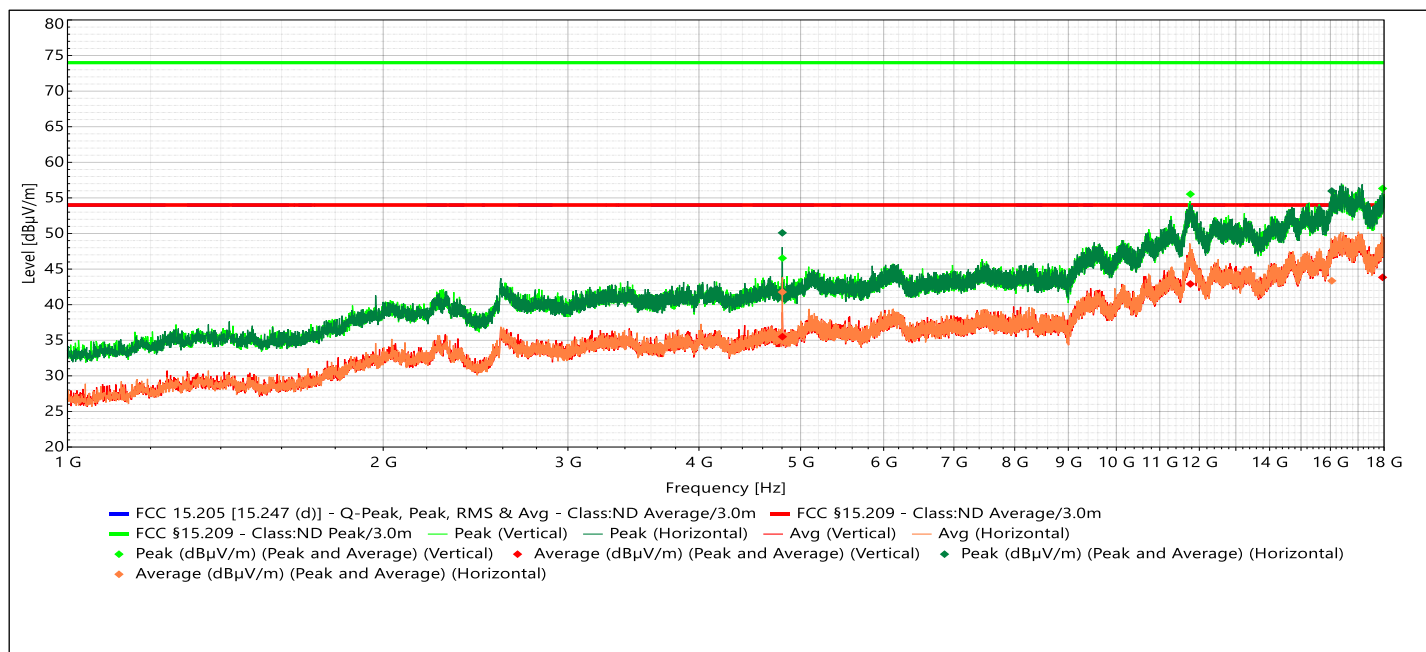


Figure 2.7.7-85 – Radiated Emissions Test Results

**Table 2.7.7-53– Radiated Emissions Test Results**

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
4804.462	46.54	74.00	-27.46	35.50	54.00	-18.50	39.00	1.53	Vertical	Pass
11765.096	55.53	74.00	-18.47	42.91	54.00	-11.09	56.00	3.85	Vertical	Pass
17942.240	56.33	74.00	-17.67	43.84	54.00	-10.16	281.00	3.93	Vertical	Pass
4803.464	50.09	74.00	-23.91	41.77	54.00	-12.23	233.00	2.50	Horizontal	Pass
16049.170	55.97	74.00	-18.03	43.35	54.00	-10.65	16.00	3.00	Horizontal	Pass

Test Notes: 125 kbps- TX Power Setting = 0 dBm



Spurious Emissions 18-26GHz - TX ON_125 kbps_ 2402 MHz_ X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
18 GHz - 26 GHz	3m	Vertical	1 MHz	32001 Pts	200 ms
18 GHz - 26 GHz	3m	Horizontal	1 MHz	32001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/3/2025	23.4 C	13%	986 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2402 MHz	0	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

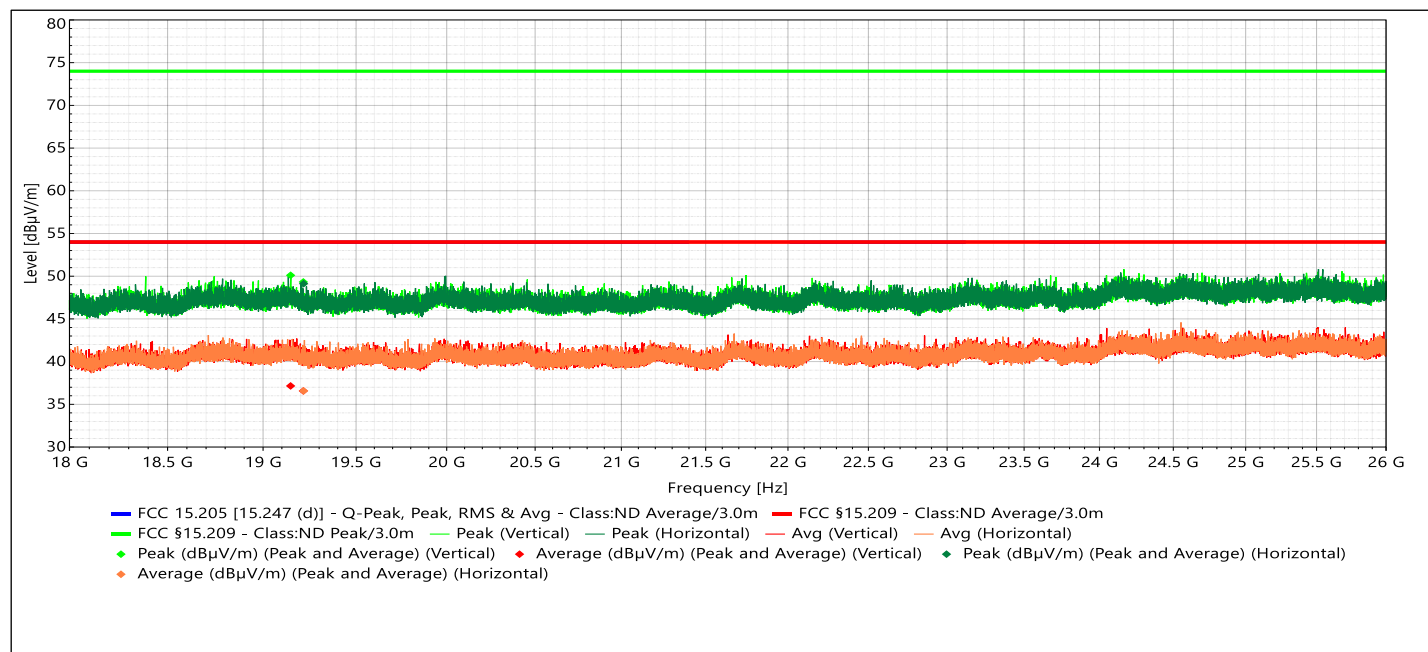


Figure 2.7.7-86 – Radiated Emissions Test Results

**Table 2.7.7-54– Radiated Emissions Test Results**

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
19146.751	50.11	74.00	-23.89	37.15	54.00	-16.85	266.00	3.68	Vertical	Pass
19214.848	49.33	74.00	-24.67	36.57	54.00	-17.43	0.00	1.76	Vertical	Pass
19216.401	49.13	74.00	-24.87	36.57	54.00	-17.43	307.00	1.47	Horizontal	Pass

Test Notes: 125 kbps- TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 9kHz-30MHz - TX ON_125 kbps_2440MHz_X-axis - Vertical Co-Axial

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Vertical	200 Hz	1411 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Vertical	9 kHz	5971 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/4/2025	23.8C	9%	992 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2440 MHz	19	TX	X-axis

Limit:
FCC Part 15/FCC §15.209_2025_09_23

Test Results:
Pass

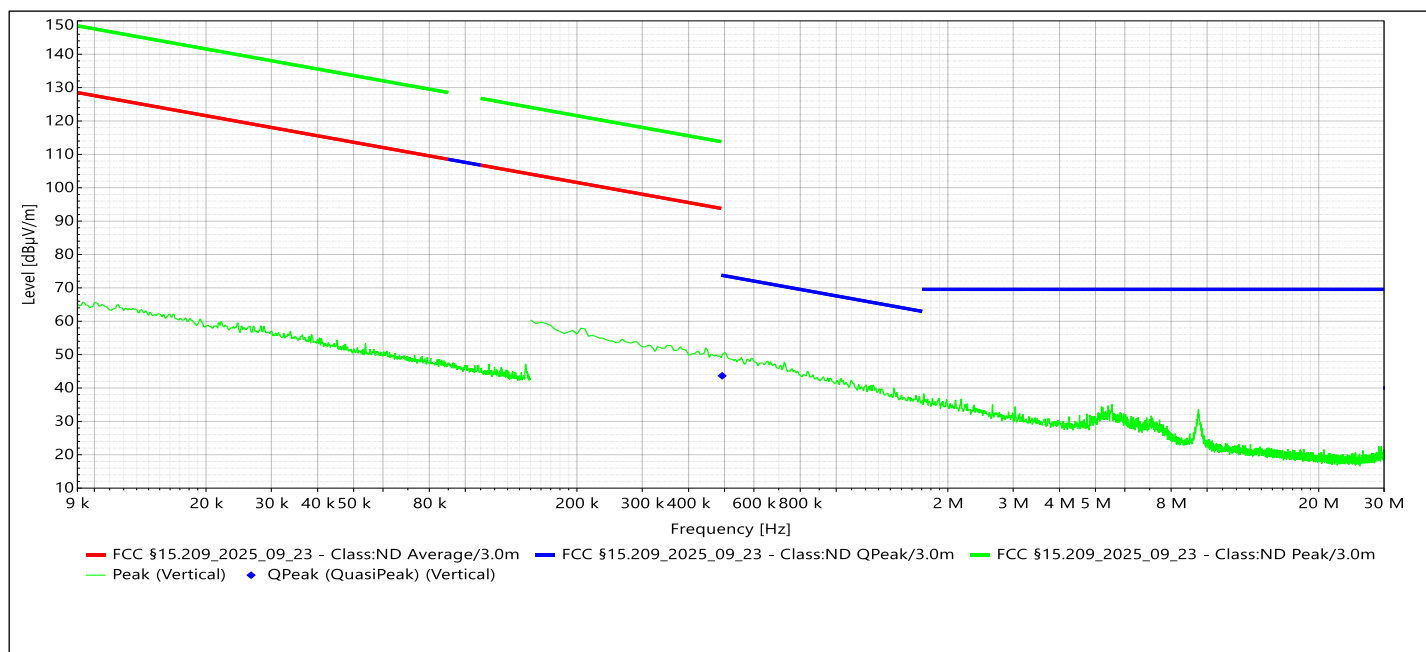


Figure 2.7.7-87 – Radiated Emissions Test Results

**Table 2.7.7-55– Radiated Emissions Test Results**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.493	43.65	73.71	-30.06	98.00	1.00	Vertical	Pass

Test Notes: 125 kbps - TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 30M-1GHz - TX ON _125 kbps_2440MHz_X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	19401 Pts	Auto
30 MHz - 1 GHz	3m	Horizontal	120 kHz	19401 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/4/2025	23.3 C	9 %	994 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2440 MHz	19	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

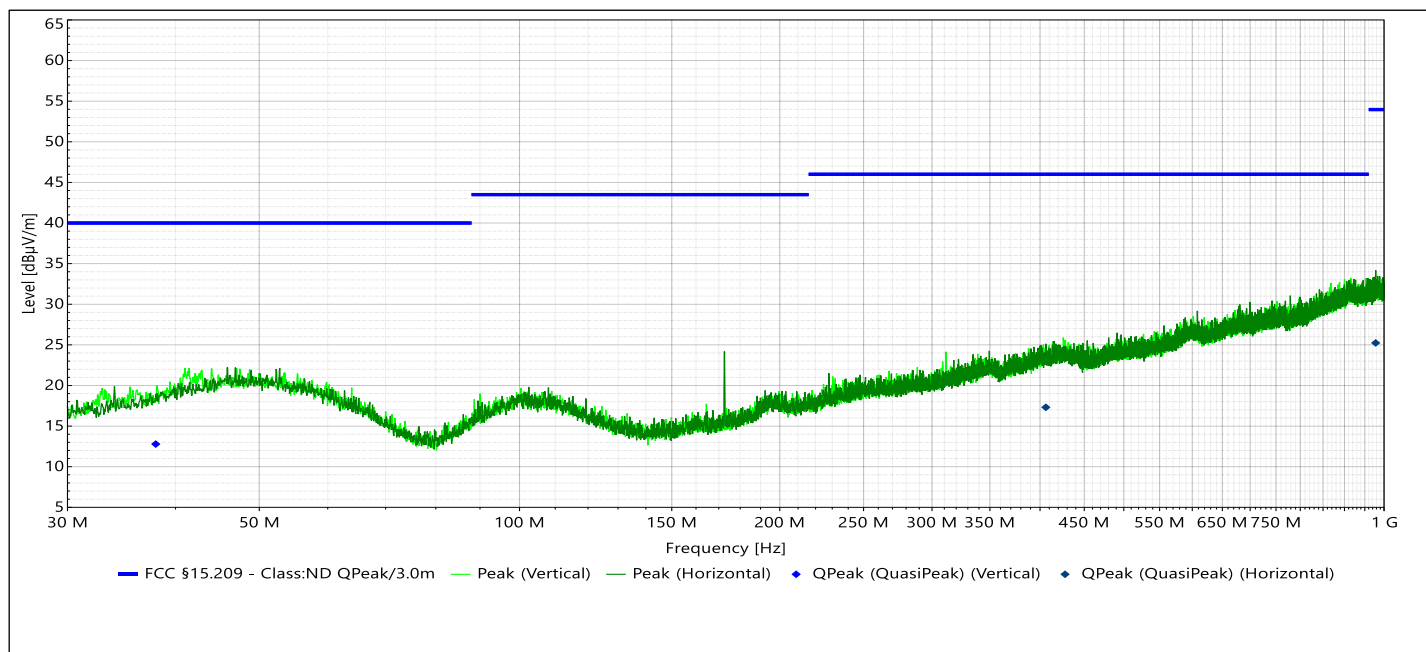


Figure 2.7.7-88 – Radiated Emissions Test Results

**Table 2.7.7-56– Radiated Emissions Test Results**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
37.951	12.78	40.00	-27.22	203.00	1.46	Vertical	Pass
406.247	17.31	46.00	-28.69	223.00	1.62	Horizontal	Pass
977.932	25.24	53.97	-28.73	243.00	1.00	Horizontal	Pass

Test Notes: 125 kbps - TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 1-18GHz - TX ON_125 kbps_ 2440 MHz_ X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 18 GHz	3m	Vertical	1 MHz	34001 Pts	200 ms
1 GHz - 18 GHz	3m	Horizontal	1 MHz	34001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	11/21/2025	24.9 C	27%	983 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2440 MHz	19	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

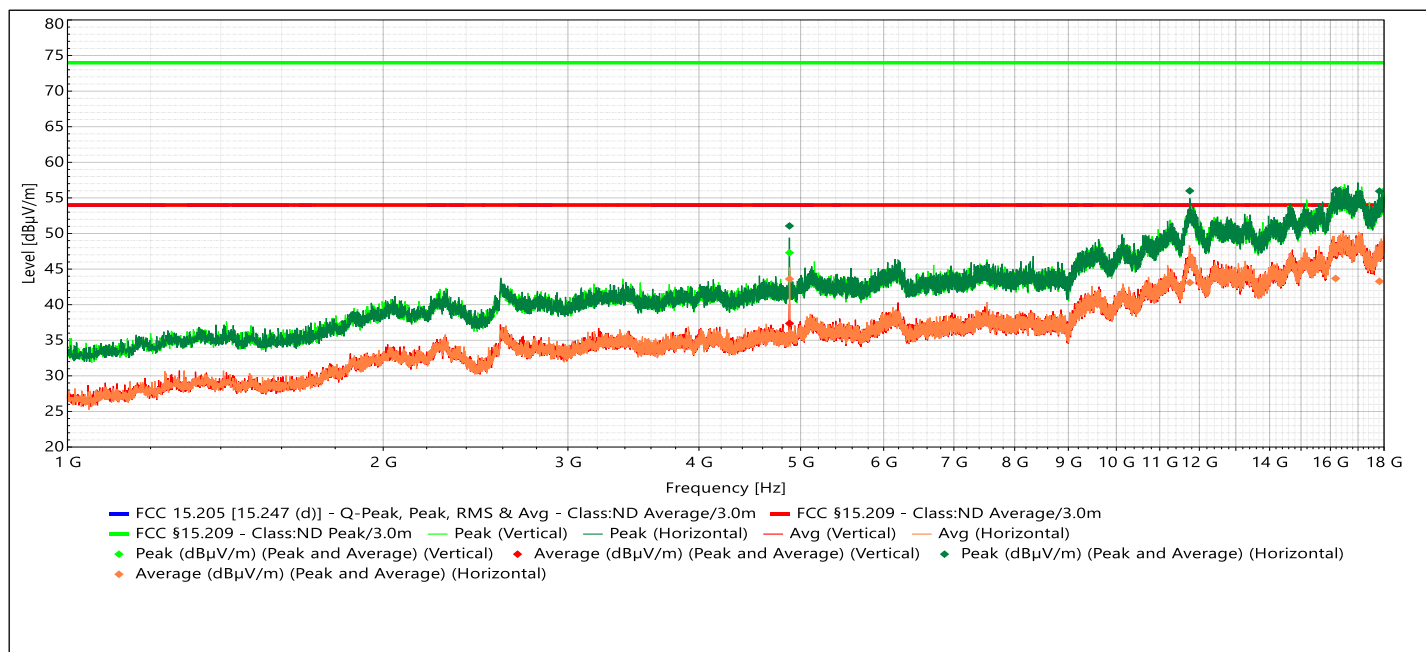


Figure 2.7.7-89 – Radiated Emissions Test Results

**Table 2.7.7-57– Radiated Emissions Test Results**

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
4880.463	47.30	74.00	-26.70	37.36	54.00	-16.64	14.00	3.12	Vertical	Pass
4879.463	51.06	74.00	-22.94	43.61	54.00	-10.39	217.00	1.17	Horizontal	Pass
11749.400	55.99	74.00	-18.01	43.11	54.00	-10.89	39.00	3.73	Horizontal	Pass
16185.630	56.09	74.00	-17.91	43.68	54.00	-10.32	31.00	1.04	Horizontal	Pass
17819.605	55.94	74.00	-18.06	43.28	54.00	-10.72	201.00	1.00	Horizontal	Pass

Test Notes: 125 kbps- TX Power Setting = 0 dBm



Spurious Emissions 18-26GHz - TX ON_125 kbps_ 2440 MHz_ X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
18 GHz - 26 GHz	3m	Vertical	1 MHz	32001 Pts	200 ms
18 GHz - 26 GHz	3m	Horizontal	1 MHz	32001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/3/2025	23.4 C	13%	986 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2440 MHz	19	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

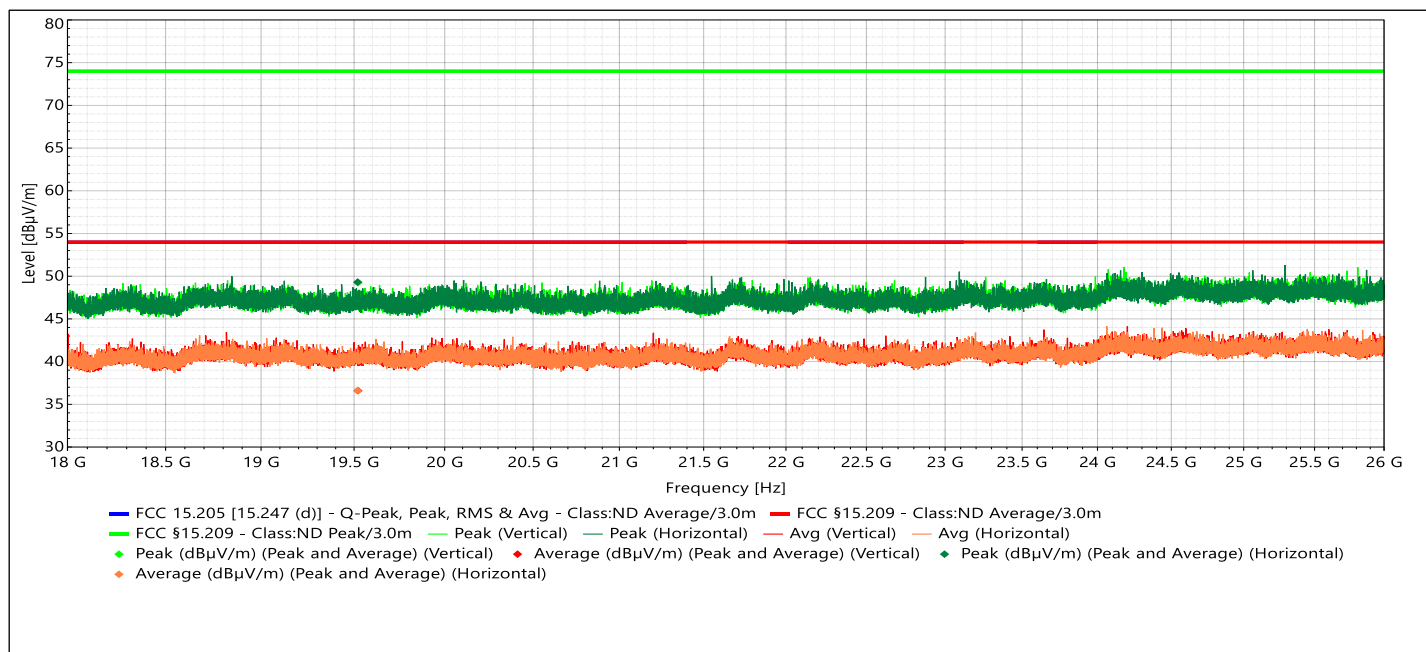


Figure 2.7.7-90 – Radiated Emissions Test Results

**Table 2.7.7-58– Radiated Emissions Test Results**

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
19521.175	49.24	74.00	-24.76	36.60	54.00	-17.40	119.00	2.18	Vertical	Pass
19519.647	49.31	74.00	-24.69	36.60	54.00	-17.40	234.00	3.61	Horizontal	Pass

Test Notes: 125 kbps- TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 9kHz-30MHz - TX ON_125 kbps_2480MHz_X-axis - Vertical Co-Axial

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
9 kHz - 150 kHz	3m	Vertical	200 Hz	1411 Pts	5 ms/MHz
150 kHz - 30 MHz	3m	Vertical	9 kHz	5971 Pts	5 ms/MHz

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/4/2025	23.8C	9%	992 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2480 MHz	39	TX	X-axis

Limit:
FCC Part 15/FCC §15.209_2025_09_23

Test Results:
Pass

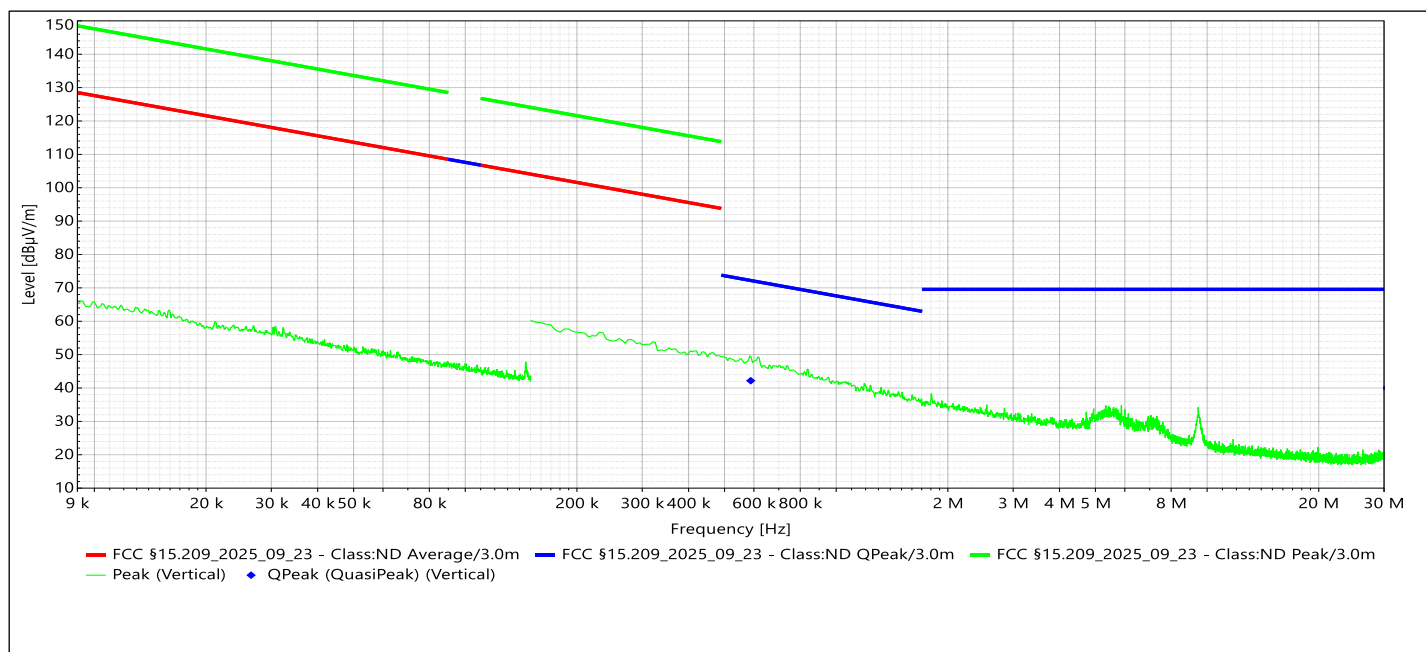


Figure 2.7.7-91 – Radiated Emissions Test Results

**Table 2.7.7-59– Radiated Emissions Test Results**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
0.588	42.18	72.19	-30.00	155.00	1.00	Vertical	Pass

Test Notes: 125 kbps - TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 30M-1GHz - TX ON _125 kbps_2480MHz_X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
30 MHz - 1 GHz	3m	Vertical	120 kHz	19401 Pts	Auto
30 MHz - 1 GHz	3m	Horizontal	120 kHz	19401 Pts	Auto

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/4/2025	23.3 C	9 %	994 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2480 MHz	39	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

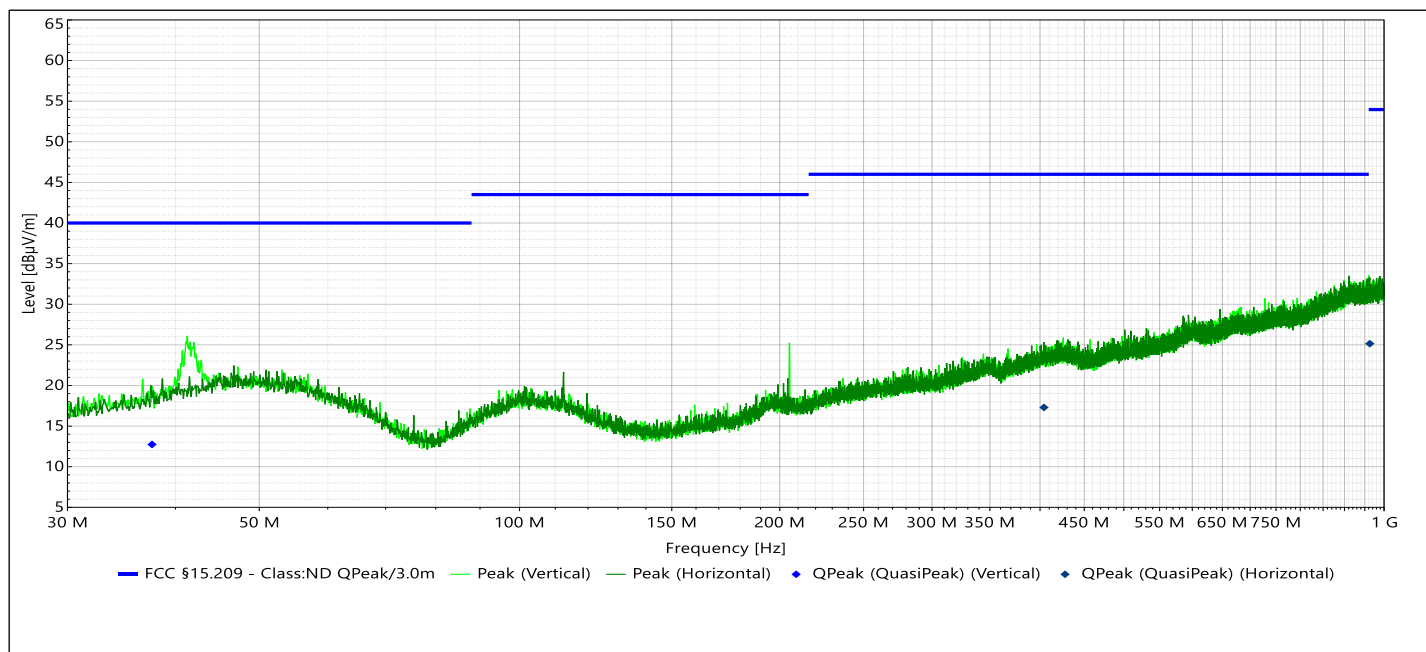


Figure 2.7.7-92 – Radiated Emissions Test Results

**Table 2.7.7-60– Radiated Emissions Test Results**

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
37.578	12.74	40.00	-27.26	312.00	1.02	Vertical	Pass
404.202	17.30	46.00	-28.70	84.00	3.52	Horizontal	Pass
962.673	25.15	53.97	-28.82	117.00	4.00	Horizontal	Pass

Test Notes: 125 kbps - TX Power Setting = 0 dBm, Power Leads



Spurious Emissions 1-18GHz - TX ON_125 kbps_ 2480 MHz_ X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
1 GHz - 18 GHz	3m	Vertical	1 MHz	34001 Pts	200 ms
1 GHz - 18 GHz	3m	Horizontal	1 MHz	34001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	11/20/2025	24.9 C	27%	983 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2480 MHz	39	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

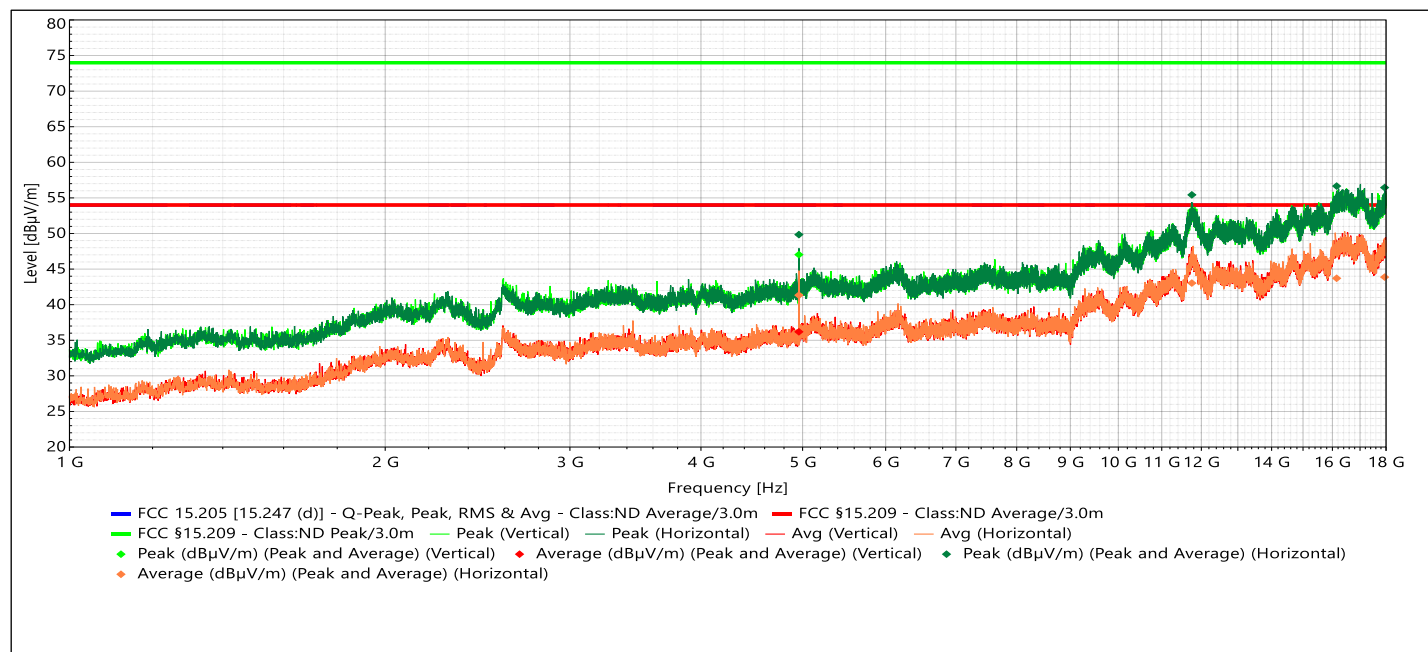


Figure 2.7.7-93 – Radiated Emissions Test Results

**Table 2.7.7-61– Radiated Emissions Test Results**

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
4959.461	47.03	74.00	-26.97	36.19	54.00	-17.81	119.00	1.30	Vertical	Pass
4959.461	49.84	74.00	-24.16	41.33	54.00	-12.67	217.00	1.88	Horizontal	Pass
11751.795	55.43	74.00	-18.57	43.04	54.00	-10.96	360.00	3.75	Horizontal	Pass
16149.476	56.66	74.00	-17.34	43.71	54.00	-10.29	7.00	3.09	Horizontal	Pass
17943.461	56.45	74.00	-17.55	43.87	54.00	-10.13	200.00	1.53	Horizontal	Pass

Test Notes: 125 kbps- TX Power Setting = 0 dBm



Spurious Emissions 18-26GHz - TX ON_125 kbps_ 2480 MHz_ X-axis

Frequency Range	Antenna Distance	Antenna Polarization	RBW	Step Size	Sweep Time
18 GHz - 26 GHz	3m	Vertical	1 MHz	32001 Pts	200 ms
18 GHz - 26 GHz	3m	Horizontal	1 MHz	32001 Pts	200 ms

Test Area	Tested By	Test Date	Temperature	Humidity	Pressure
3mSAC	Thierry Jean-Charles	12/3/2025	23.4 C	13%	986 mBar

Technology	Frequency	Channel	Mode	EUT Orientation
BLE	2480 MHz	39	TX	X-axis

Limit:
FCC Part 15/FCC §15.209

Test Results:
Pass

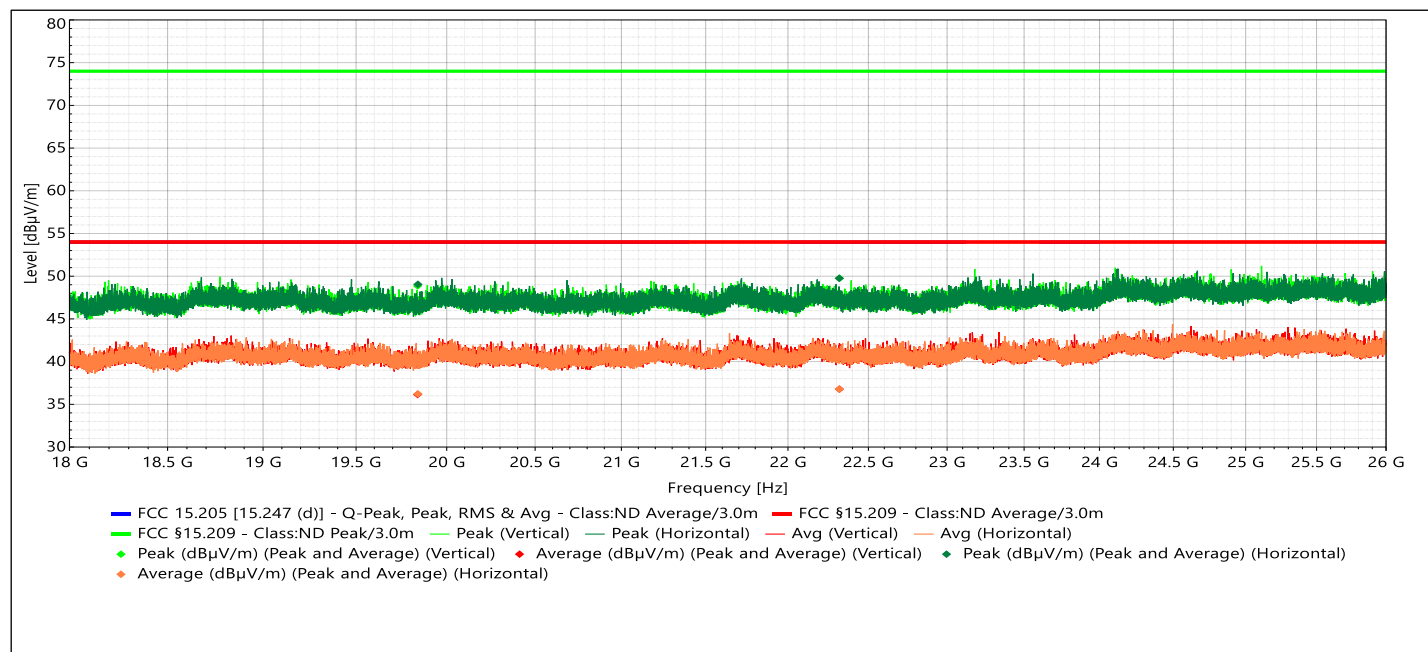


Figure 2.7.7-94 – Radiated Emissions Test Results

**Table 2.7.7-62– Radiated Emissions Test Results**

Frequency (MHz)	Peak Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Average Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)	Azimuth (°)	Height (m)	Polarity	Result
19838.156	48.86	74.00	-25.14	36.15	54.00	-17.85	80.00	3.89	Vertical	Pass
22318.497	49.77	74.00	-24.23	36.78	54.00	-17.22	21.00	1.76	Vertical	Pass
19839.689	49.05	74.00	-24.95	36.22	54.00	-17.78	298.00	1.19	Horizontal	Pass
22317.911	49.75	74.00	-24.25	36.78	54.00	-17.22	200.00	1.76	Horizontal	Pass

Test Notes: 125 kbps- TX Power Setting = 0 dBm, Power Leads



2.7.8 Sample Calculations

$$R_C = R_U + CF_T$$

Where:

CF_T	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R_U	=	Uncorrected Reading
R_C	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

Example Calculation: Peak

Corrected Level: $43.79 + 7.35 = 51.14$ dB μ V/m

Margin: 74 dB μ V/m – 51.14 dB μ V/m = 22.86 dB

Example Calculation: Average

Corrected Level: $32.45 + 7.35 - 0 = 39.80$ dB μ V/m

Margin: 54 dB μ V/m – 39.80 dB μ V/m = 14.20 dB



2.7.9 Test Location and Test Equipment Used

This test was carried out in TÜV SÜD America, Inc., 141 14th Street NW, New Brighton, MN 55112, USA.

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
BEMC00653	Huber & Suhner	Cable (40GHz)	SF-102A	0944/2A	B	05/29/2025	05/29/2026
NBLE03504	Florida RF Labs	Cable, N 3ft	FL335	3ft-1	B	03/19/2025	03/19/2026
NBLE03514	Florida RF Labs	Cable, SMA	FL200	3ft-9	B	10/14/2025	10/14/2026
NBLE10574		Cable, BNC 3M	EF142	10574	B	03/21/2025	03/21/2026
NBLE11142	Hewlett-Packard	Preamplifier, 0.1 to 1300 MHz	8447D	2727A05370	B	10/16/2025	10/16/2026
WRLE02418	EMCO/EMC Test	Antenna, Loop	6502	2215	G	03/18/2025	03/18/2027
WRLE10891		Cable, BNC 5M	EF142/11BNC/11BNC/5M	na	B	03/17/2025	03/17/2026
WRLE11519	Com-Power Corp.	Preamplifier, 500 MHz-18 GHz	PAM-118A	18040002	B	01/23/2025	01/23/2026
NBLE11614	Teledyne Storm Microwave	Cable, N 3m	90-195-3MTR	182984-003	B	02/05/2025	02/05/2026
NBLE11618	Teledyne Storm Microwave	Cable, N 8m	90-195-8MTR	182982-004	B	02/05/2025	02/05/2026
NBLE11630	ETS-Lindgren	Antenna, 1-18 GHz	3117	00218816	G	09/27/2024	09/27/2026
NBLE11645	Schwarzbeck	Antenna, Trilog, 30 MHz-7 GHz	VULB 9162	0254	G	06/24/2025	06/24/2027
NBLE11689	ATM	Antenna, DRG 18-40 GHz	180-442-KF	102040	G	07/08/2025	07/08/2027
NBLE11699	Microwave Circuits	Notch Filter, 2.4-2.4837 GHz	N0324415	502922 DC1947	B	08/05/2025	08/05/2026
TEMC00202	Mini-Circuits	DC-1000 MHz Low Pass Filter	NLP-1200+	VUU19301915	G	02/08/2025	02/08/2026
NBLE11754	Rohde & Schwarz	Receiver, 1 Hz-44 GHz	ESW44	103037	G	10/24/2025	10/24/2026

Cal Code G = Calibration performed by an accredited outside source.

Cal Code B = Calibration verification performed internally.

Cal Code Y = Passive Device, or Calibration not required when used with other calibrated equipment.





2.8 Power Spectral Density

2.8.1 Specification Reference

FCC: Section 15.247(e)
ISED Canada: RSS-247 5.2(b)

2.8.2 Equipment Under Test and Modification State

S/N: 91808625

2.8.3 Date of Test

12/8/2025

2.8.4 Test Method

The power spectral density was measured in accordance with ANSI C63.10 Subclause 11.10.2 Method PKPSD (peak PSD). The RF output port of the EUT was directly connected to the input of the spectrum analyzer. Offset values were input for cable and external attenuation. The spectrum analyzer's RBW was set to 3 kHz and VBW to 10 kHz. The Span was adjusted to 1.5 times the DTS bandwidth and the sweep time was set to auto. The measurements were performed using a Peak detector. The amplitude offset of the spectrum analyzer was adjusted to account for cable and attenuator insertion losses.

2.8.5 Environmental Conditions

Ambient Temperature	22.3 °C
Relative Humidity	10 %
Atmospheric Pressure	992 mbar

2.8.6 Test Results

Battery Powered Operating

Limit FCC: Section 15.247(e), ISED Canada: RSS-247 5.2(b)

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time of continuous transmission.

Test Summary:

The maximum power spectral density was measured to be less than 8 dBm.

Test Result: Pass



Table 2.8.6-1 – Power Spectral Density Test Results – 1 Mbps

Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
2402	-16.99	8	24.99
2440	-17.25	8	25.25
2480	-17.02	8	25.02

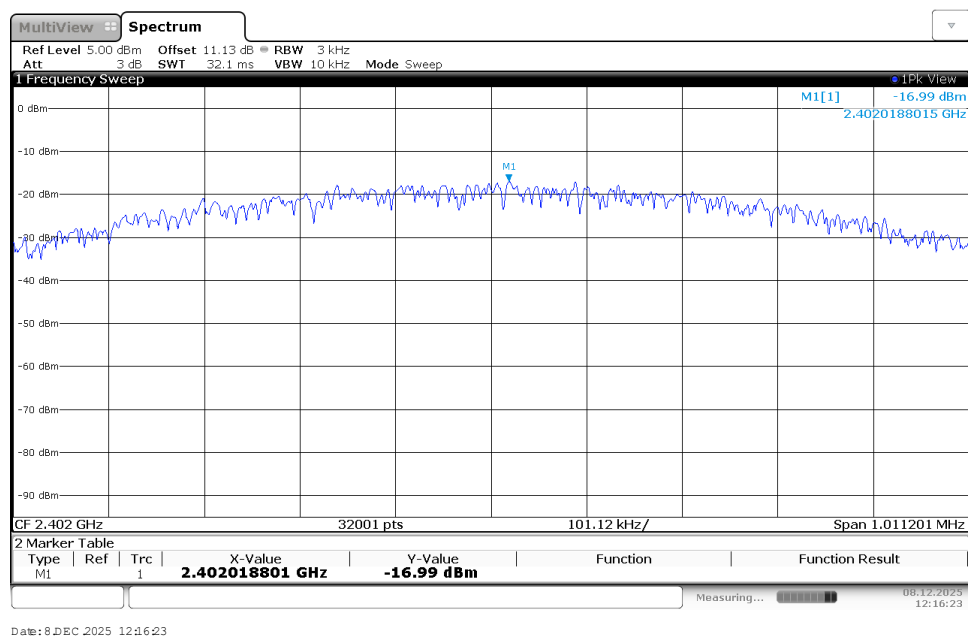


Figure 2.8.6-1 - Power Spectral Density – Low Channel - 1 Mbps

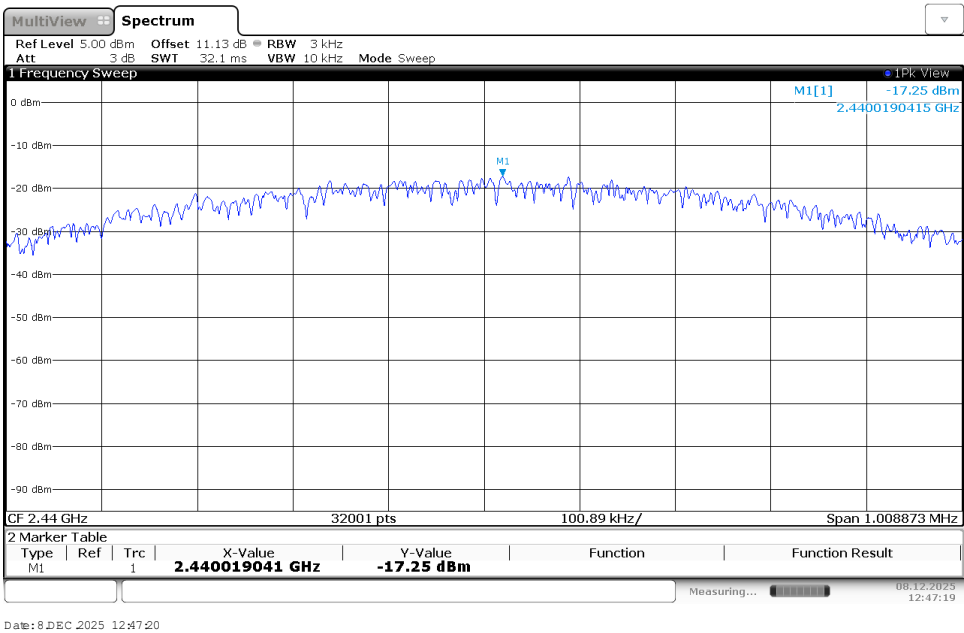


Figure 2.8.6-2 - Power Spectral Density – Middle Channel - 1 Mbps

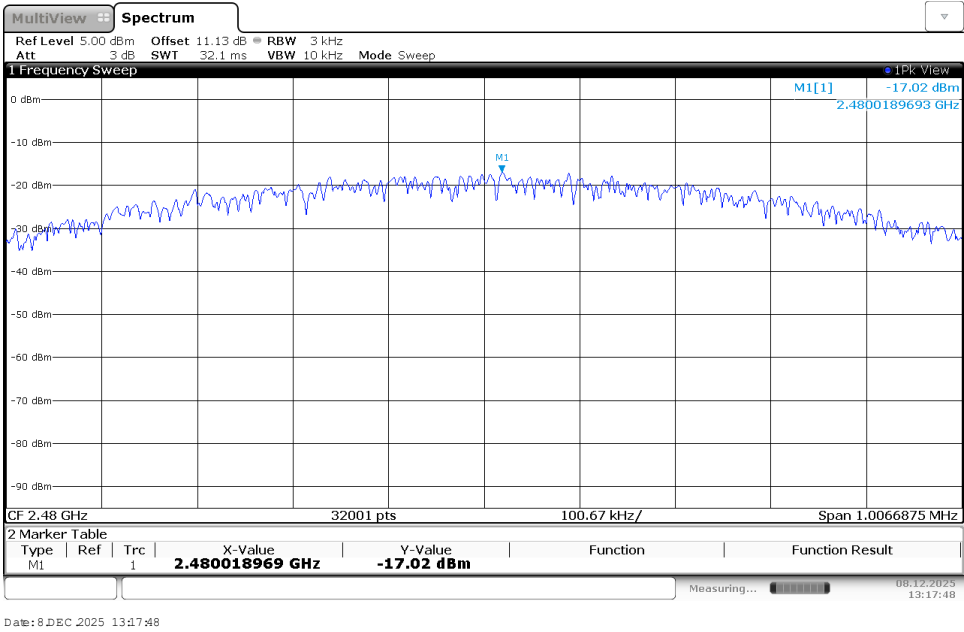


Figure 2.8.6-3 - Power Spectral Density – High Channel - 1 Mbps



Table 2.8.6-2 – Power Spectral Density Test Results – 2 Mbps

Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
2402	-23.00	8	31.00
2440	-23.28	8	31.28
2480	-23.03	8	31.03

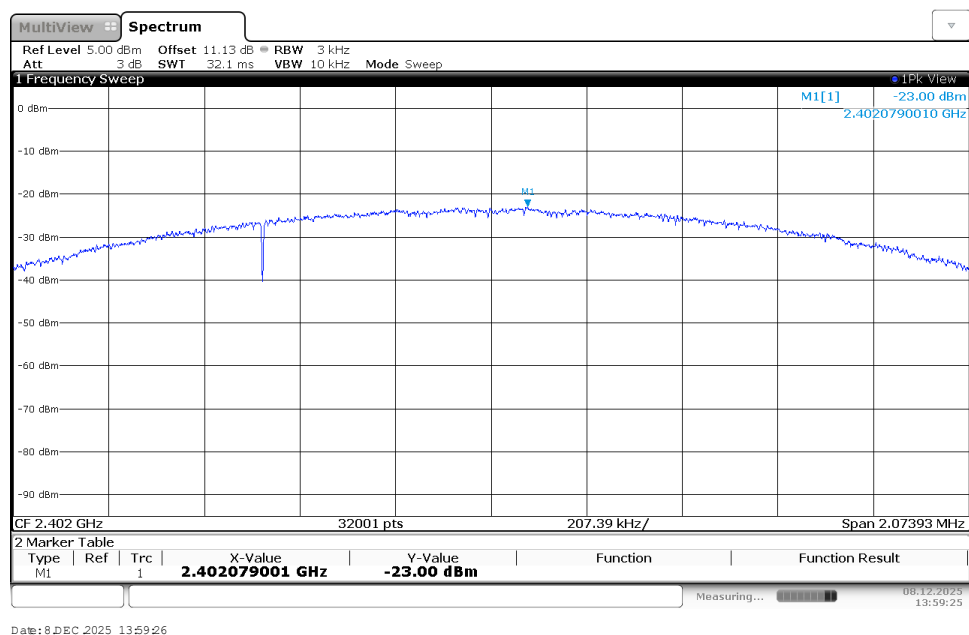


Figure 2.8.6-4 - Power Spectral Density – Low Channel - 2 Mbps

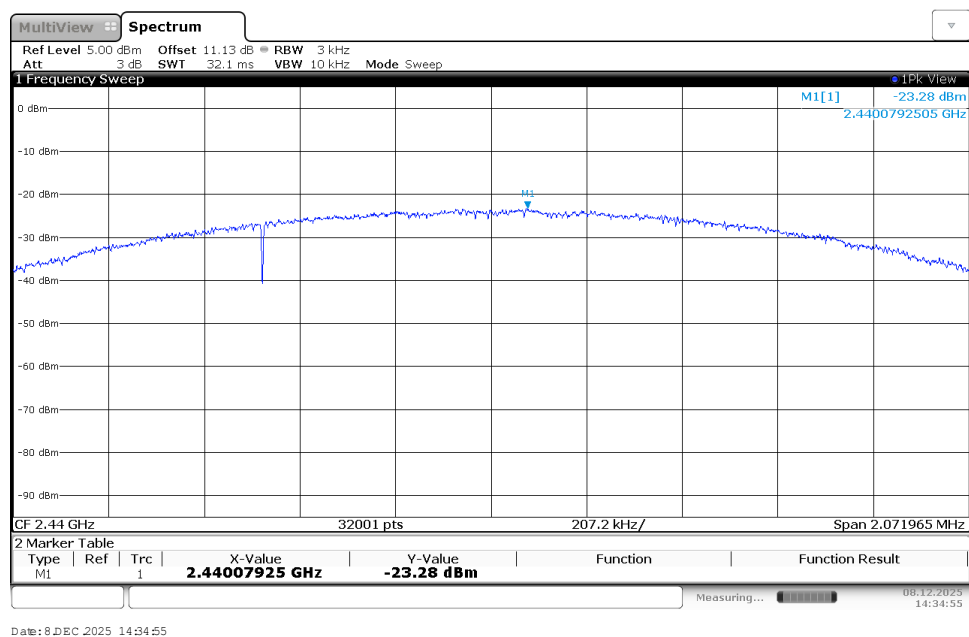


Figure 2.8.6-5 - Power Spectral Density – Middle Channel - 2 Mbps

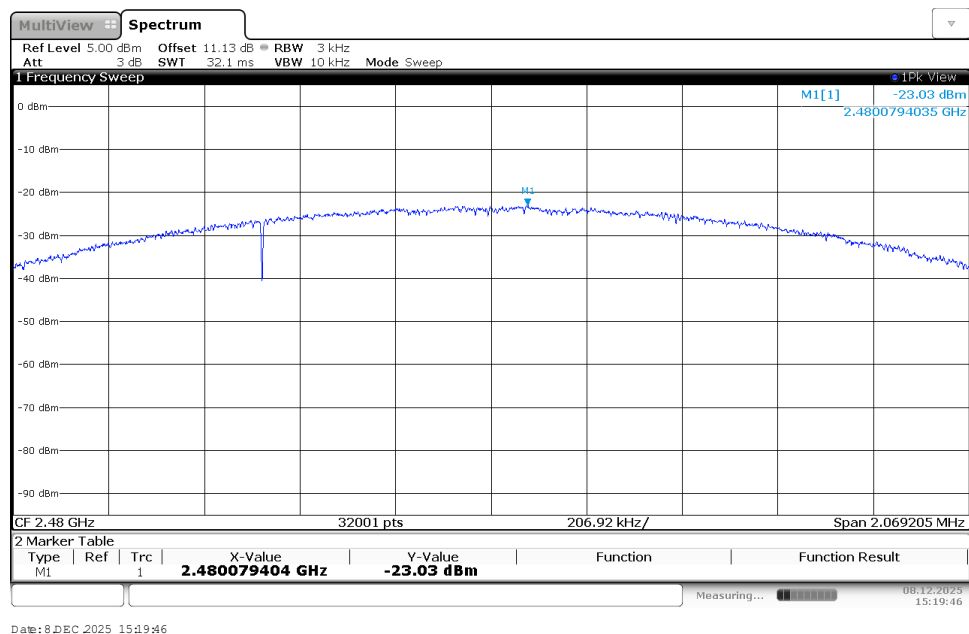


Figure 2.8.6-6 - Power Spectral Density – High Channel - 2 Mbps



Table 2.8.6-3 – Power Spectral Density Test Results – 125 kbps

Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
2402	-6.91	8	14.91
2440	-7.17	8	15.17
2480	-6.99	8	14.99

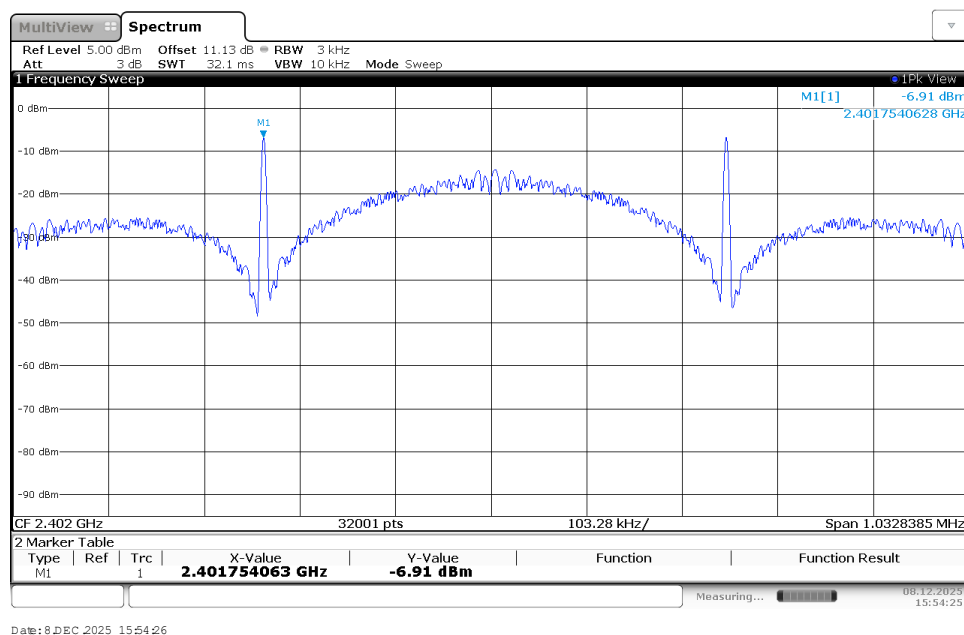


Figure 2.8.6-7 - Power Spectral Density – Low Channel - 125 kbps

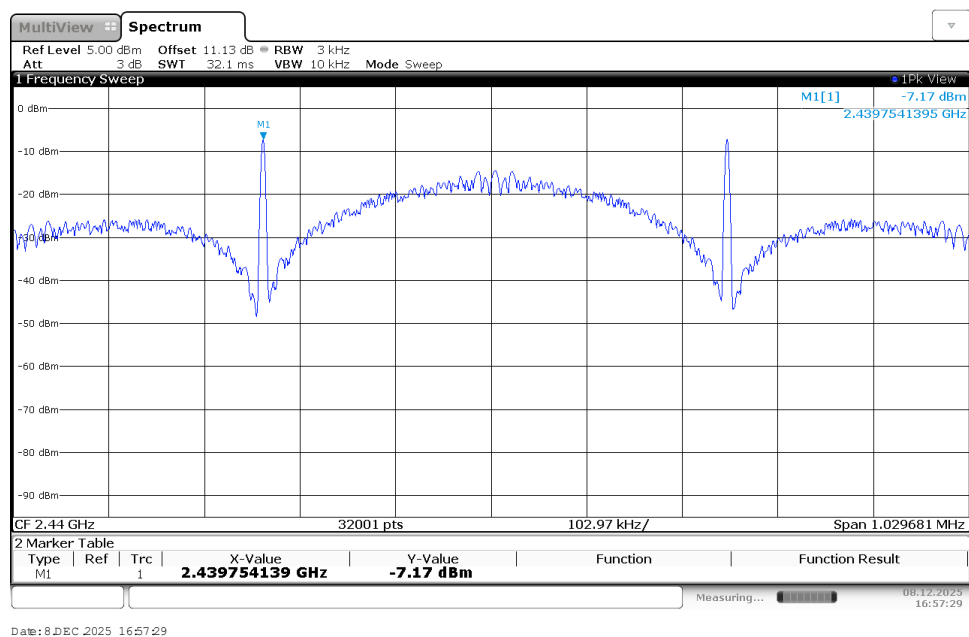


Figure 2.8.6-8 - Power Spectral Density – Middle Channel - 125 kbps

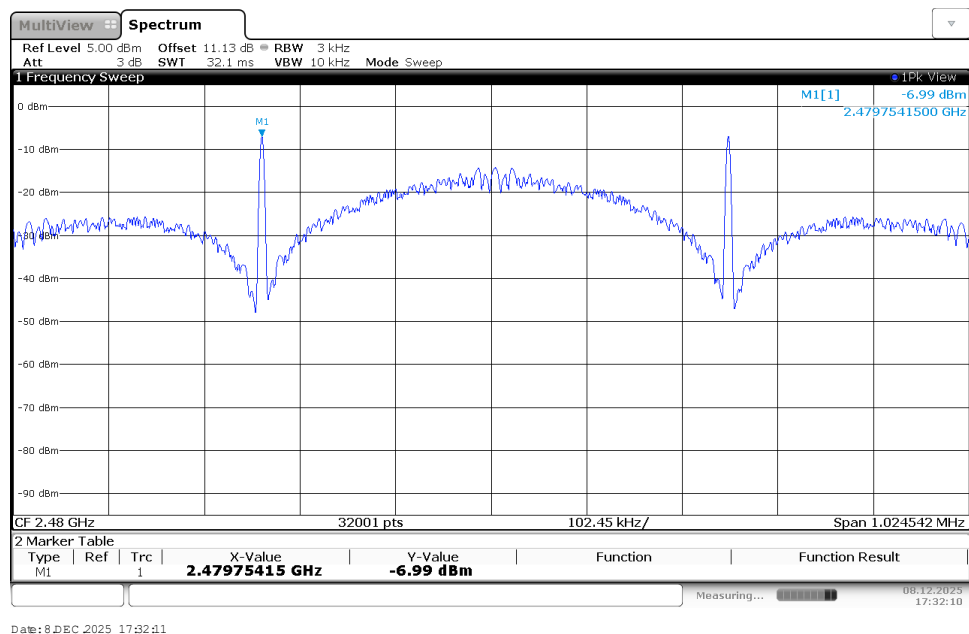
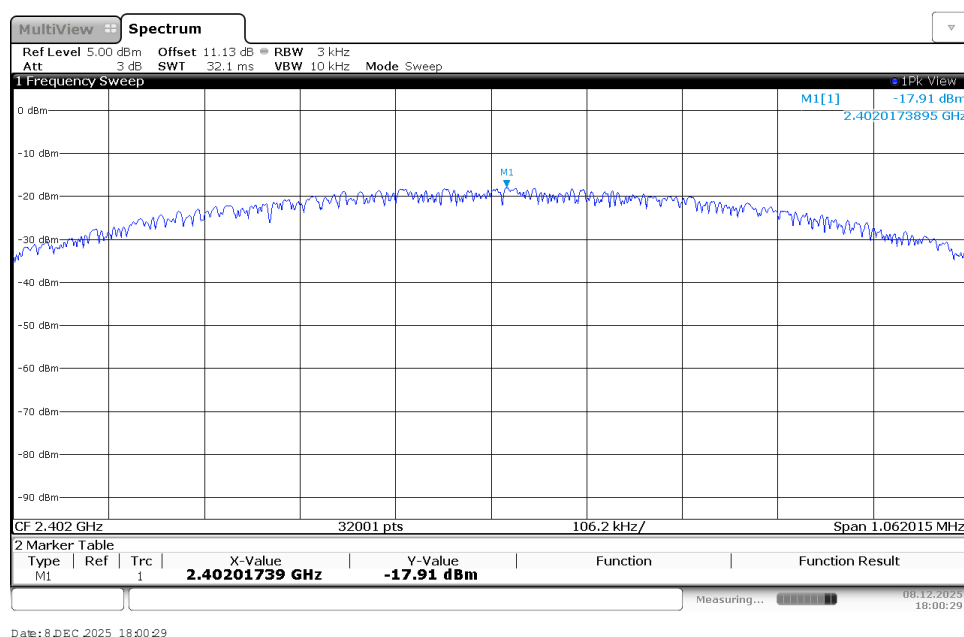


Figure 2.8.6-9 - Power Spectral Density – High Channel - 125 kbps


Table 2.8.6-4 – Power Spectral Density Test Results – 500 kbps

Frequency (MHz)	PSD (dBm)	Limit (dBm)	Margin (dB)
2402	-17.91	8	25.91
2440	-18.00	8	26.00
2480	-17.78	8	25.78


Figure 2.8.6-10 - Power Spectral Density – Low Channel - 500 kbps

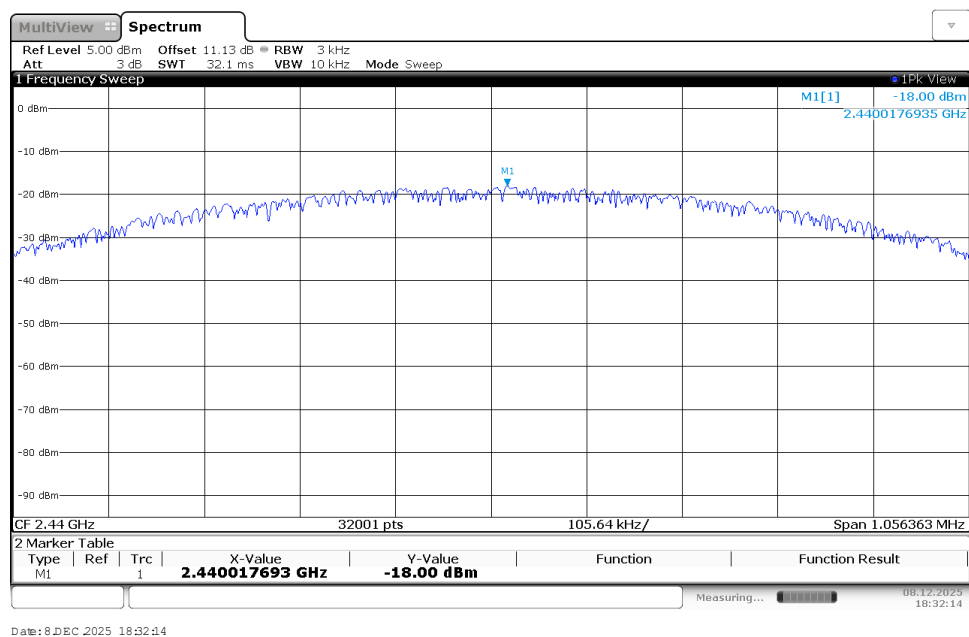


Figure 2.8.6-11 - Power Spectral Density – Middle Channel - 500 kbps

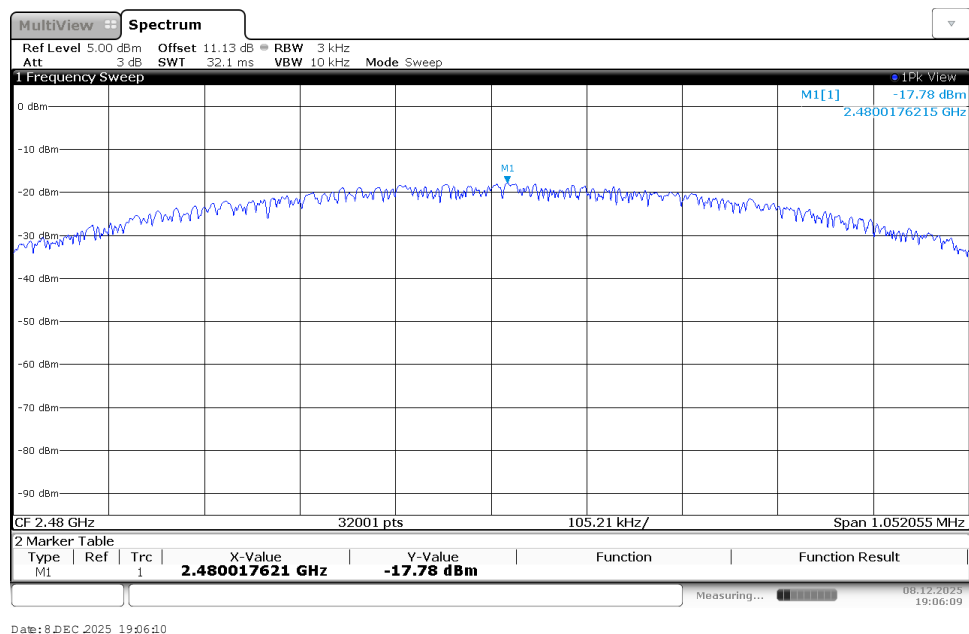


Figure 2.8.6-12 - Power Spectral Density – High Channel - 500 kbps



2.8.7 Test Location and Test Equipment Used

This test was carried out in TÜV SÜD America, Inc., 141 14th Street NW, New Brighton, MN 55112, USA.

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
DEMC3046	Aeroflex Inmet	Atten 10dB 2.9mm-M/F, DC-26.5GHz, 2W	26AH-10	1443	B	05/27/2025	05/27/2026
DEMC3085	Rohde & Schwarz	Signal & Spectrum Analyzer	FSW43	103997	G	08/29/2025	08/29/2026
TEMC00277	Rosenberger Hochfrequenztechnik GmbH & Co. KG	Micro-Coax UtiFlex UFA210A Cable	LU7-022-1000	010-2387464 0056	B	03/18/2025	03/18/2026

Cal Code G = Calibration performed by an accredited outside source.

Cal Code B = Calibration verification performed internally.

Cal Code Y = Passive Device, or Calibration not required when used with other calibrated equipment.



2.9 Duty Cycle

2.9.1 Specification Reference

None

2.9.2 Equipment Under Test and Modification State

S/N: 91808625

2.9.3 Date of Test

12/8/2025

2.9.4 Test Method

The duty cycle was measured in accordance with ANSI C63.10 Section 11.6 Duty cycle (D), transmission duration (T), and maximum power control level. The unit was connected directly to the input of the spectrum analyzer via suitable attenuation. The RBW and VBW were set to 10 MHz and the number of sweep points across duration T was set to exceed 100. The amplitude offset of the spectrum analyzer was adjusted to account for cable and attenuator insertion losses.

2.9.5 Environmental Conditions

Ambient Temperature 22.3 °C
Relative Humidity 10 %
Atmospheric Pressure 992 mbar

2.9.6 Test Results

Battery Powered Operating

Test Summary:

The EUT was operating at 100% duty cycle.

Test Result: Pass

Table 2.9.6-1 – Duty Cycle Test Results – 1 Mbps

Frequency (MHz)	TX On (ms)	Period (ms)	Duty Cycle (%)
2402	100.5	100.5	100%
2440	100.5	100.5	100%
2480	100.5	100.5	100%

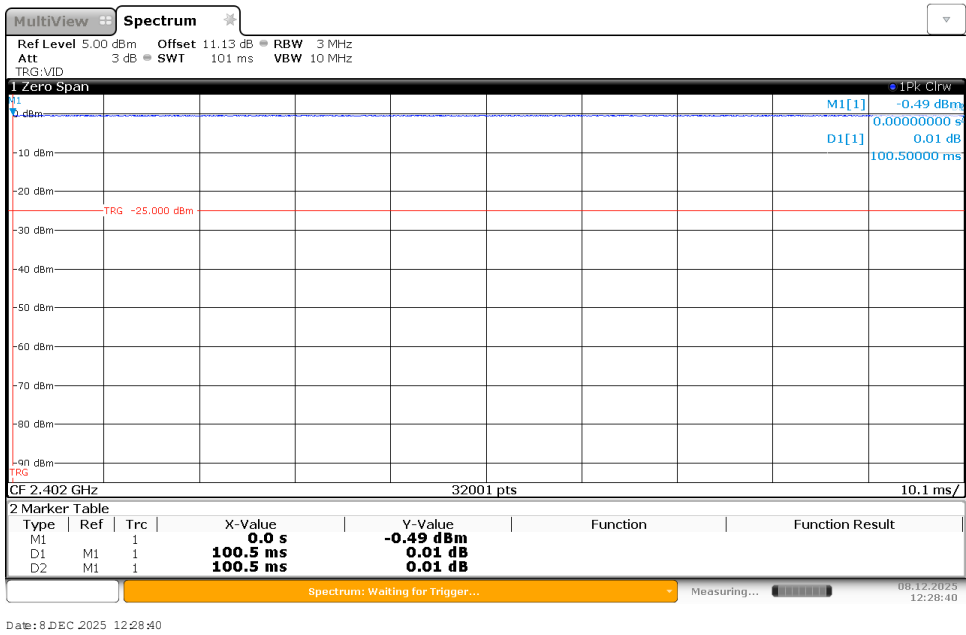


Figure 2.9.6-1 - Duty Cycle – Low Channel - 1 Mbps

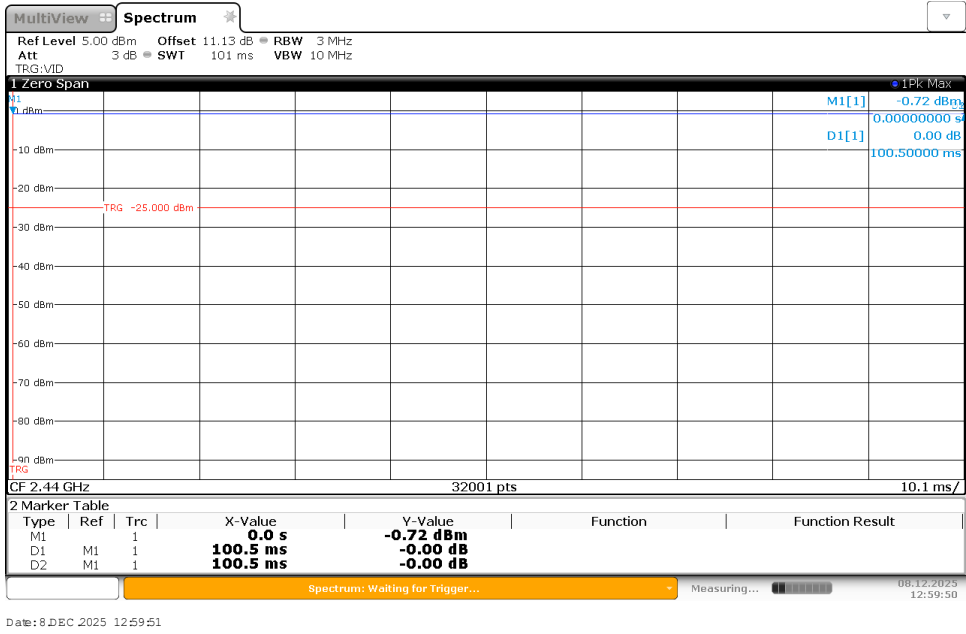


Figure 2.9.6-2 - Duty Cycle – Middle Channel - 1 Mbps

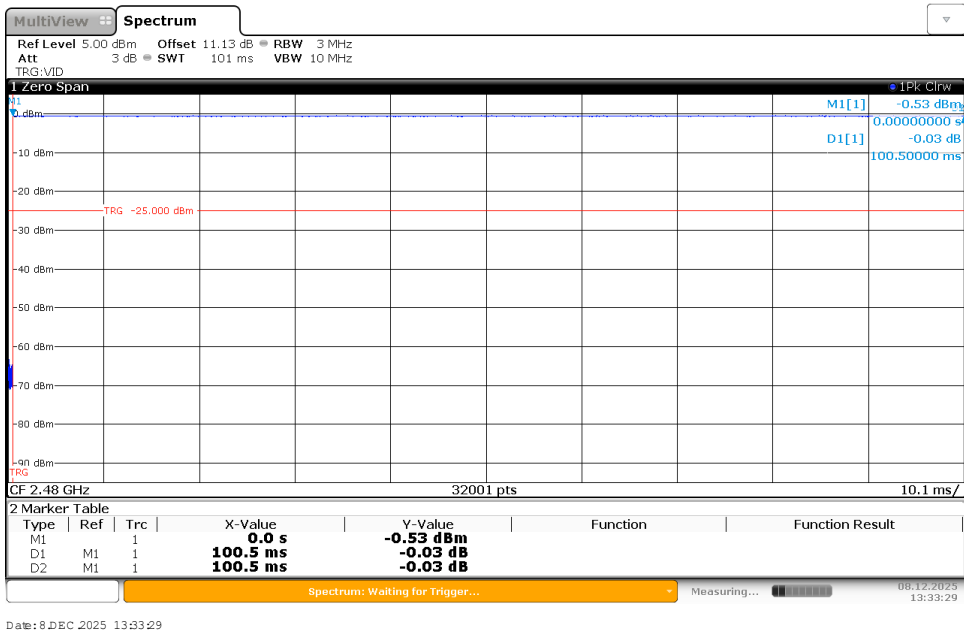


Figure 2.9.6-3 - Duty Cycle – High Channel - 1 Mbps



Table 2.9.6-2 – Duty Cycle Test Results – 2 Mbps

Frequency (MHz)	TX On (ms)	Period (ms)	Duty Cycle (%)
2402	100.5	100.5	100%
2440	100.5	100.5	100%
2480	100.5	100.5	100%

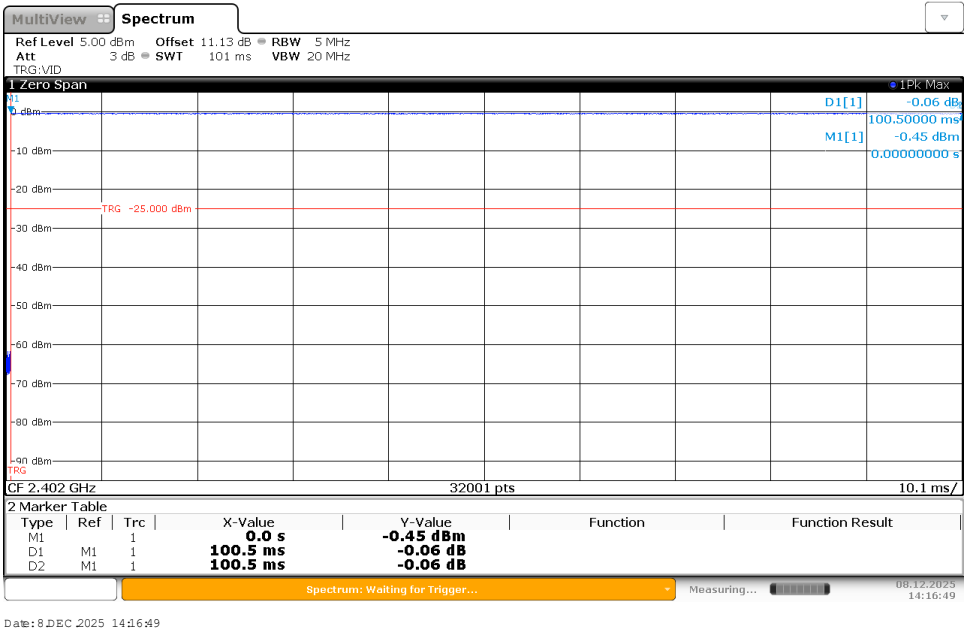


Figure 2.9.6-4 - Duty Cycle – Low Channel - 2 Mbps

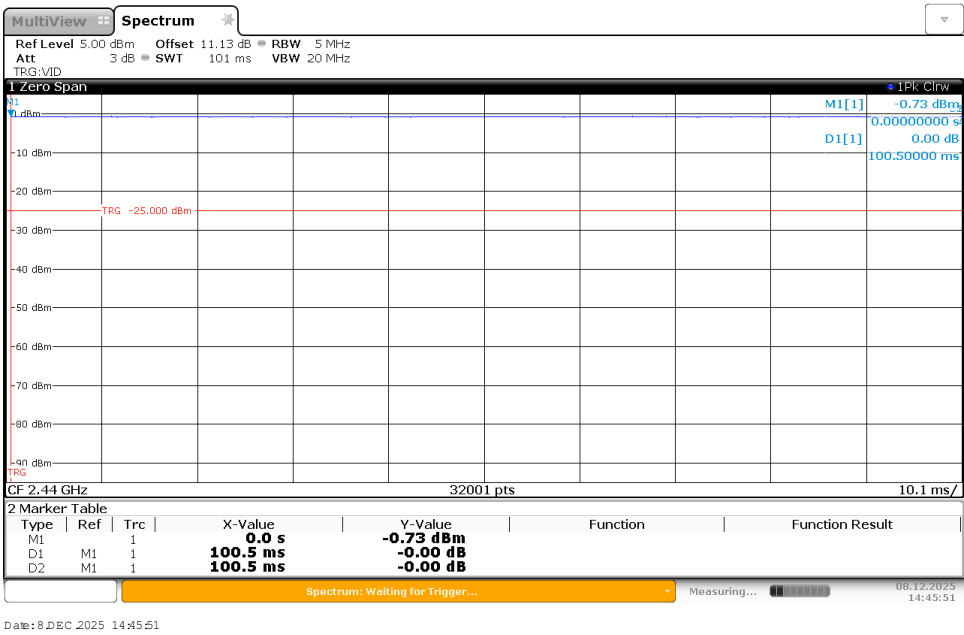


Figure 2.9.6-5 - Duty Cycle – Middle Channel - 2 Mbps

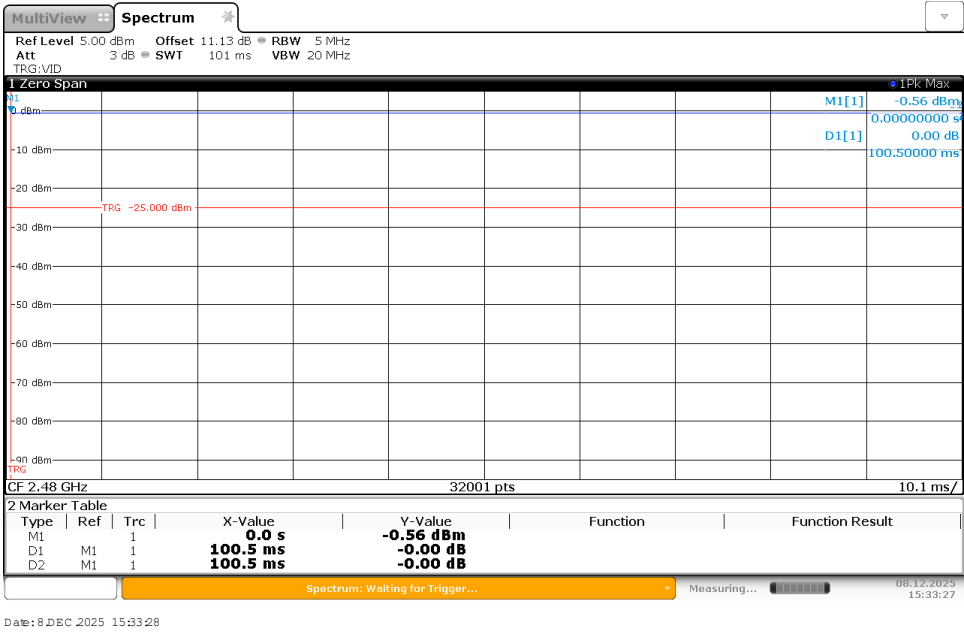


Figure 2.9.6-6 - Duty Cycle – High Channel - 2 Mbps



Table 2.9.6-3 – Duty Cycle Test Results – 125 kbps

Frequency (MHz)	TX On (ms)	Period (ms)	Duty Cycle (%)
2402	100.5	100.5	100%
2440	100.5	100.5	100%
2480	100.5	100.5	100%

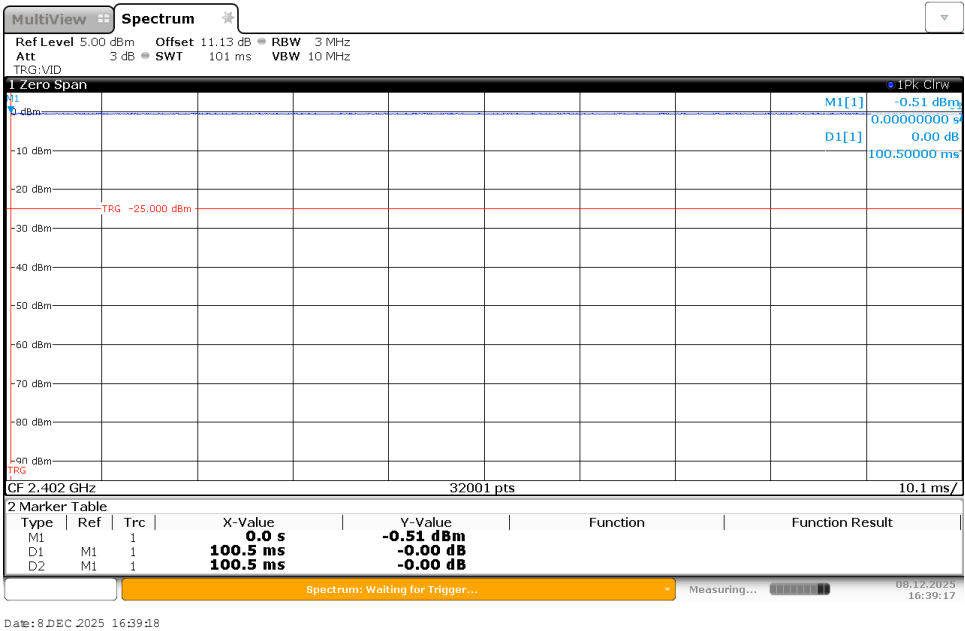


Figure 2.9.6-7 - Duty Cycle – Low Channel - 125 kbps

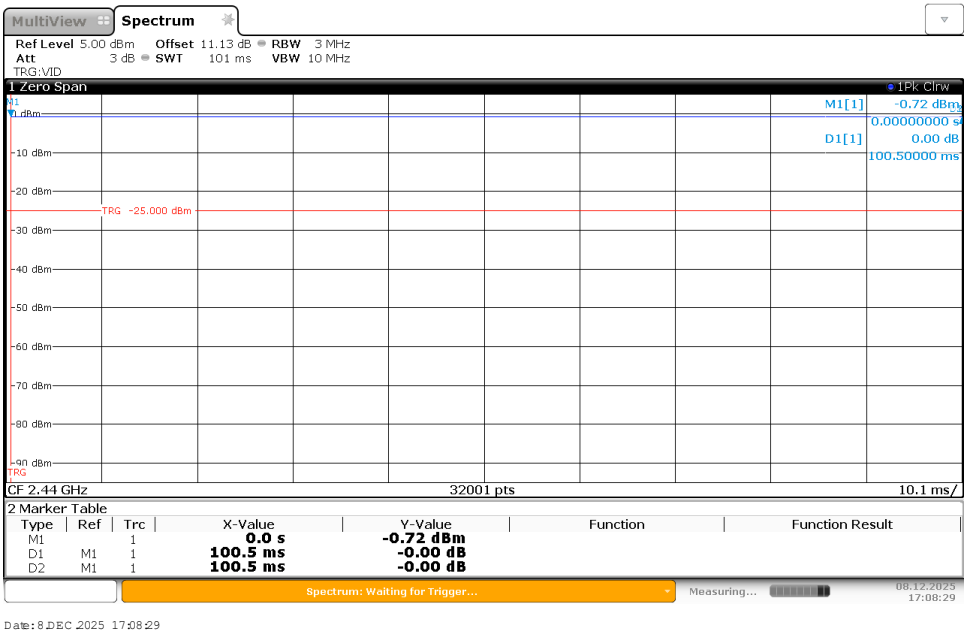


Figure 2.9.6-8 - Duty Cycle – Middle Channel - 125 kbps

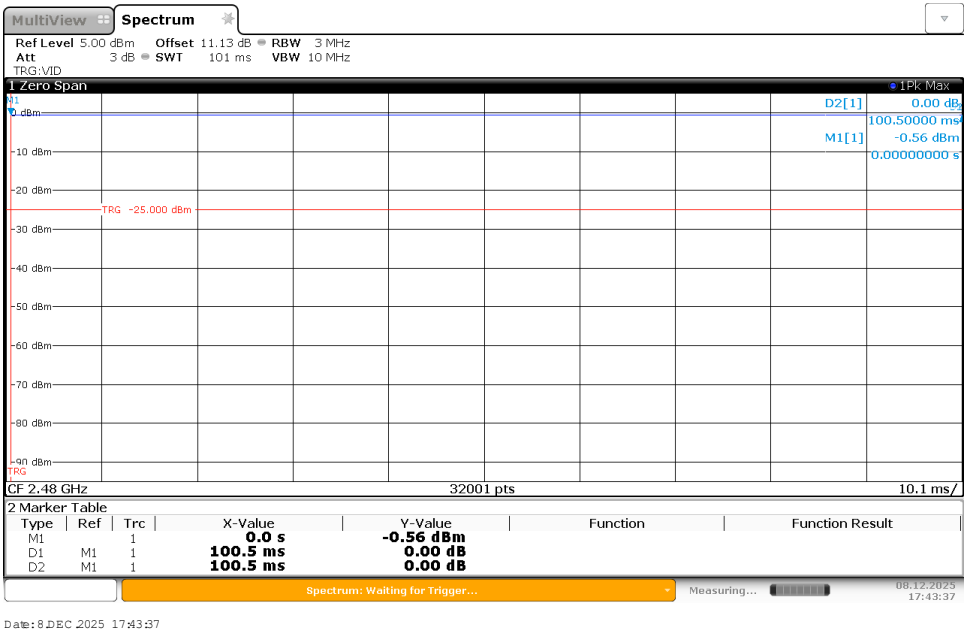


Figure 2.9.6-9 - Duty Cycle – High Channel - 125 kbps



Table 2.9.6-4 – Duty Cycle Test Results – 500 kbps

Frequency (MHz)	TX On (ms)	Period (ms)	Duty Cycle (%)
2402	100.5	100.5	100%
2440	100.5	100.5	100%
2480	100.5	100.5	100%

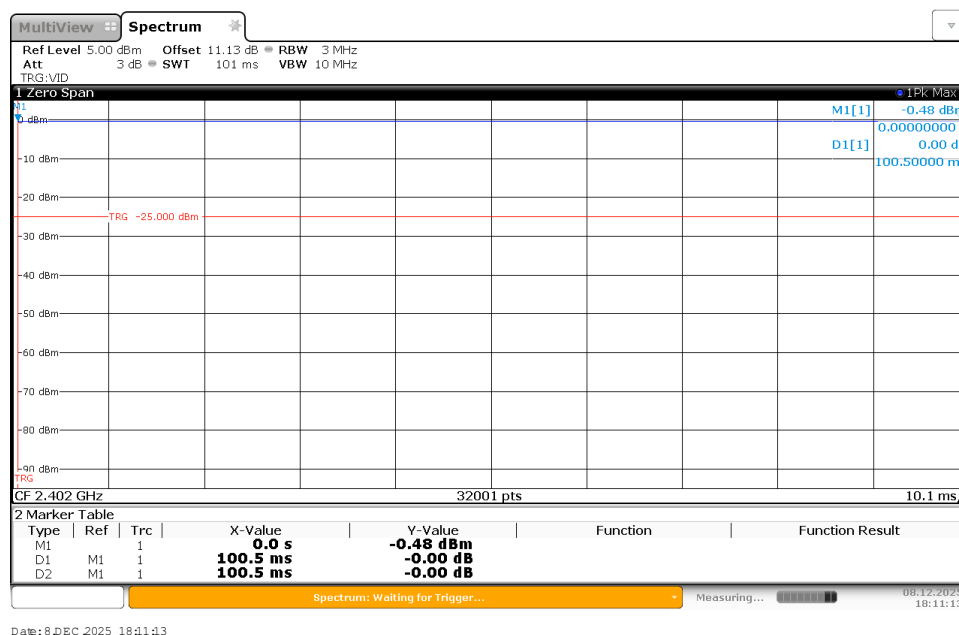


Figure 2.9.6-10 - Duty Cycle – Low Channel - 500 kbps

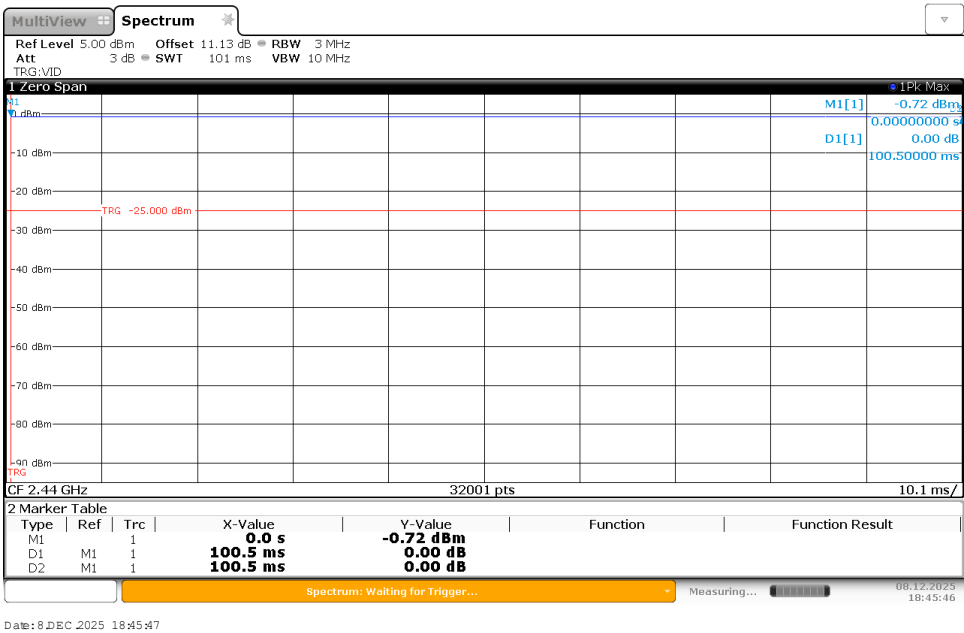


Figure 2.9.6-11 - Duty Cycle – Middle Channel - 500 kbps

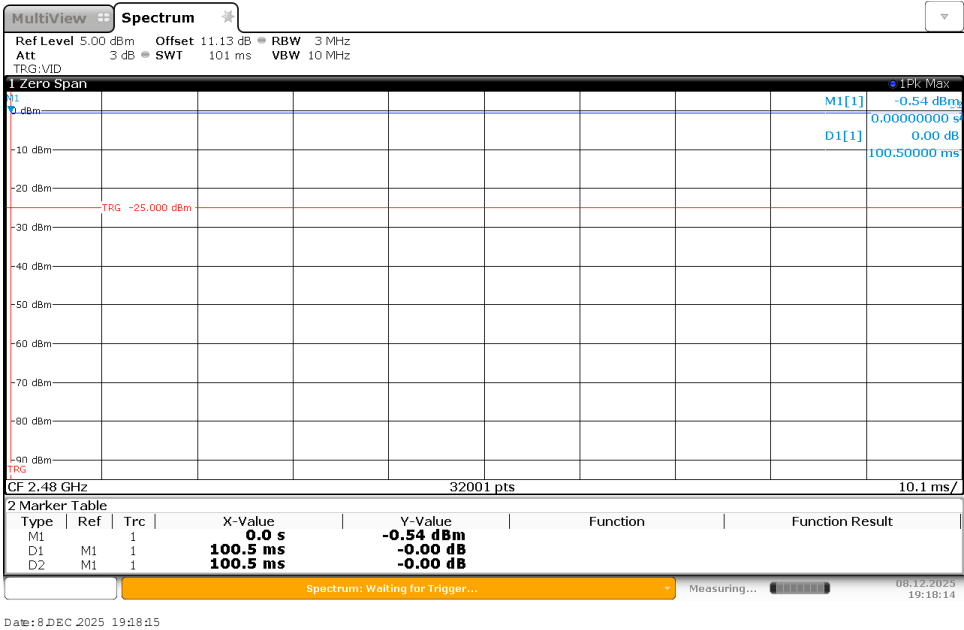


Figure 2.9.6-12 - Duty Cycle – High Channel - 500 kbps



2.9.7 Test Location and Test Equipment Used

This test was carried out in TÜV SÜD America, Inc., 141 14th Street NW, New Brighton, MN 55112, USA.

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
DEMC3046	Aeroflex Inmet	Atten 10dB 2.9mm-M/F, DC-26.5GHz, 2W	26AH-10	1443	B	05/27/2025	05/27/2026
DEMC3085	Rohde & Schwarz	Signal & Spectrum Analyzer	FSW43	103997	G	08/29/2025	08/29/2026
TEMC00277	Rosenberger Hochfrequenztechnik GmbH & Co. KG	Micro-Coax UtiFlex UFA210A Cable	LU7-022-1000	010-2387464 0056	B	03/18/2025	03/18/2026

Cal Code G = Calibration performed by an accredited outside source.

Cal Code B = Calibration verification performed internally.

Cal Code Y = Passive Device, or Calibration not required when used with other calibrated equipment.



3 Test Equipment Information

3.1 General Test Equipment Used

TEST EQUIPMENT

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated to meet test method standard requirements and/or manufacturer's specifications

Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
BEMC00653	Huber & Suhner	Cable (40GHz)	SF-102A	0944/2A	B	05/29/2025	05/29/2026
NBLE03504	Florida RF Labs	Cable, N 3ft	FL335	3ft-1	B	03/19/2025	03/19/2026
NBLE03514	Florida RF Labs	Cable, SMA	FL200	3ft-9	B	10/14/2025	10/14/2026
NBLE10574		Cable, BNC 3M	EF142	10574	B	03/21/2025	03/21/2026
NBLE11142	Hewlett-Packard	Preamplifier, 0.1 to 1300 MHz	8447D	2727A05370	B	10/16/2025	10/16/2026
WRLE02418	EMCO/EMC Test	Antenna, Loop	6502	2215	G	03/18/2025	03/18/2027
WRLE10891		Cable, BNC 5M	EF142/11BNC/11BNC/5M	na	B	03/17/2025	03/17/2026
WRLE11519	Com-Power Corp.	Preamplifier, 500 MHz-18 GHz	PAM-118A	18040002	B	01/23/2025	01/23/2026
NBLE11614	Teledyne Storm Microwave	Cable, N 3m	90-195-3MTR	182984-003	B	02/05/2025	02/05/2026
NBLE11618	Teledyne Storm Microwave	Cable, N 8m	90-195-8MTR	182982-004	B	02/05/2025	02/05/2026
NBLE11630	ETS-Lindgren	Antenna, 1-18 GHz	3117	00218816	G	09/27/2024	09/27/2026
NBLE11645	Schwarzbeck	Antenna, Trilog, 30 MHz-7 GHz	VULB 9162	0254	G	06/24/2025	06/24/2027
NBLE11689	ATM	Antenna, DRG 18-40 GHz	180-442-KF	102040	G	07/08/2025	07/08/2027
NBLE11699	Microwave Circuits	Notch Filter, 2.4-2.4837 GHz	N0324415	502922 DC1947	B	08/05/2025	08/05/2026
TEMC00202	Mini-Circuits	DC-1000 MHz Low Pass Filter	NLP-1200+	VUU19301915	G	02/08/2025	02/08/2026



Device #	Manufacturer	Description	Model	Serial #	Cal Code	Cal Date	Cal Due
NBLE11754	Rohde & Schwarz	Receiver, 1 Hz-44 GHz	ESW44	103037	G	10/24/2025	10/24/2026
DEMC3046	Aeroflex Inmet	Atten 10dB 2.9mm-M/F, DC- 26.5GHz, 2W	26AH-10	1443	B	05/27/2025	05/27/2026
DEMC3085	Rohde & Schwarz	Signal & Spectrum Analyzer	FSW43	103997	G	08/29/2025	08/29/2026
TEMC00277	Rosenberger Hochfrequenztechnik GmbH & Co. KG	Micro-Coax UtiFlex UFA210A Cable	LU7-022-1000	010-2387464 0056	B	03/18/2025	03/18/2026

Cal Code G = Calibration performed by an accredited outside source.

Cal Code B = Calibration verification performed internally.

Cal Code Y = Passive Device, or Calibration not required when used with other calibrated equipment.

4 Diagram of Test Set-ups

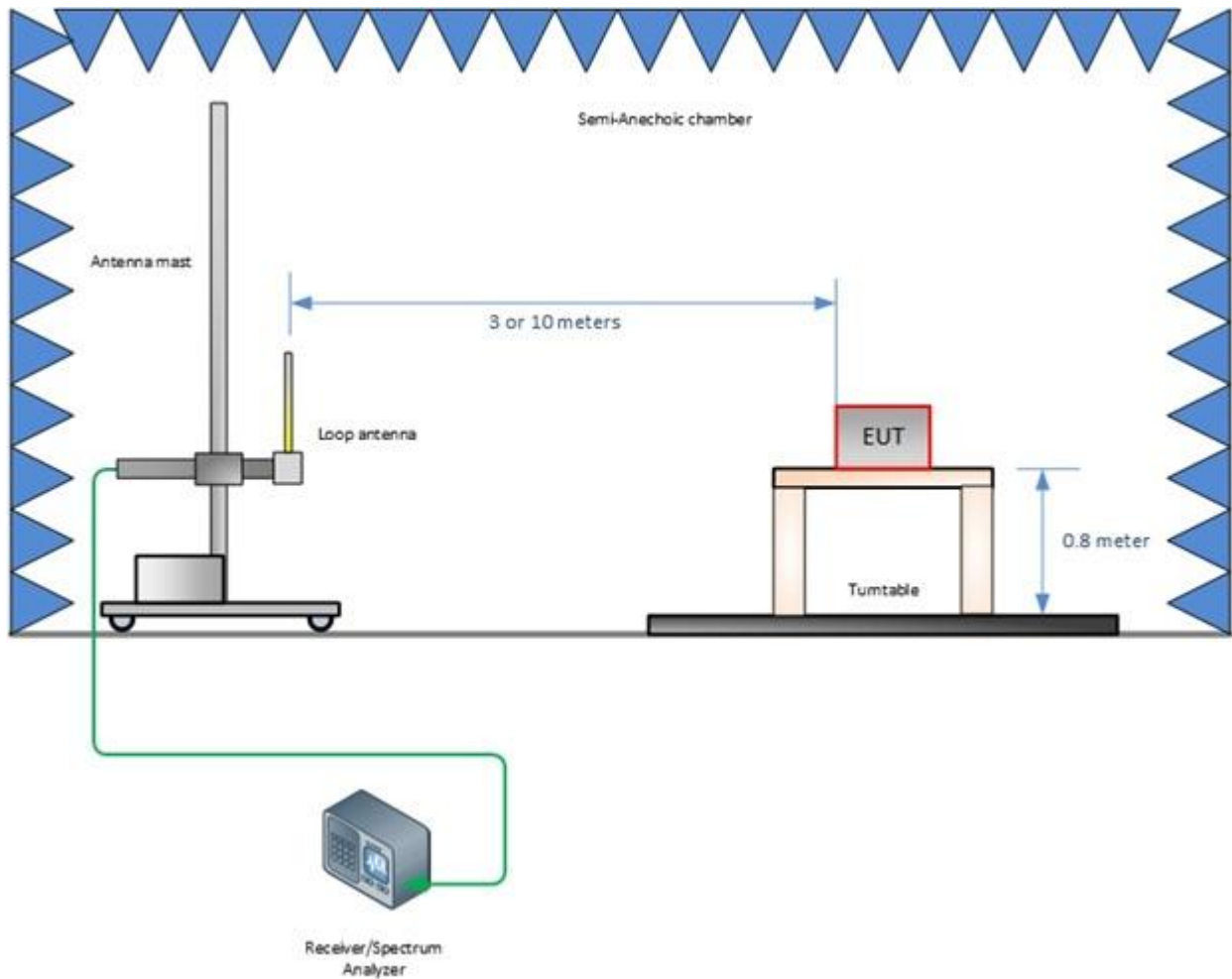


Figure 4-1 – Radiated Emissions Test Setup below 30 MHz

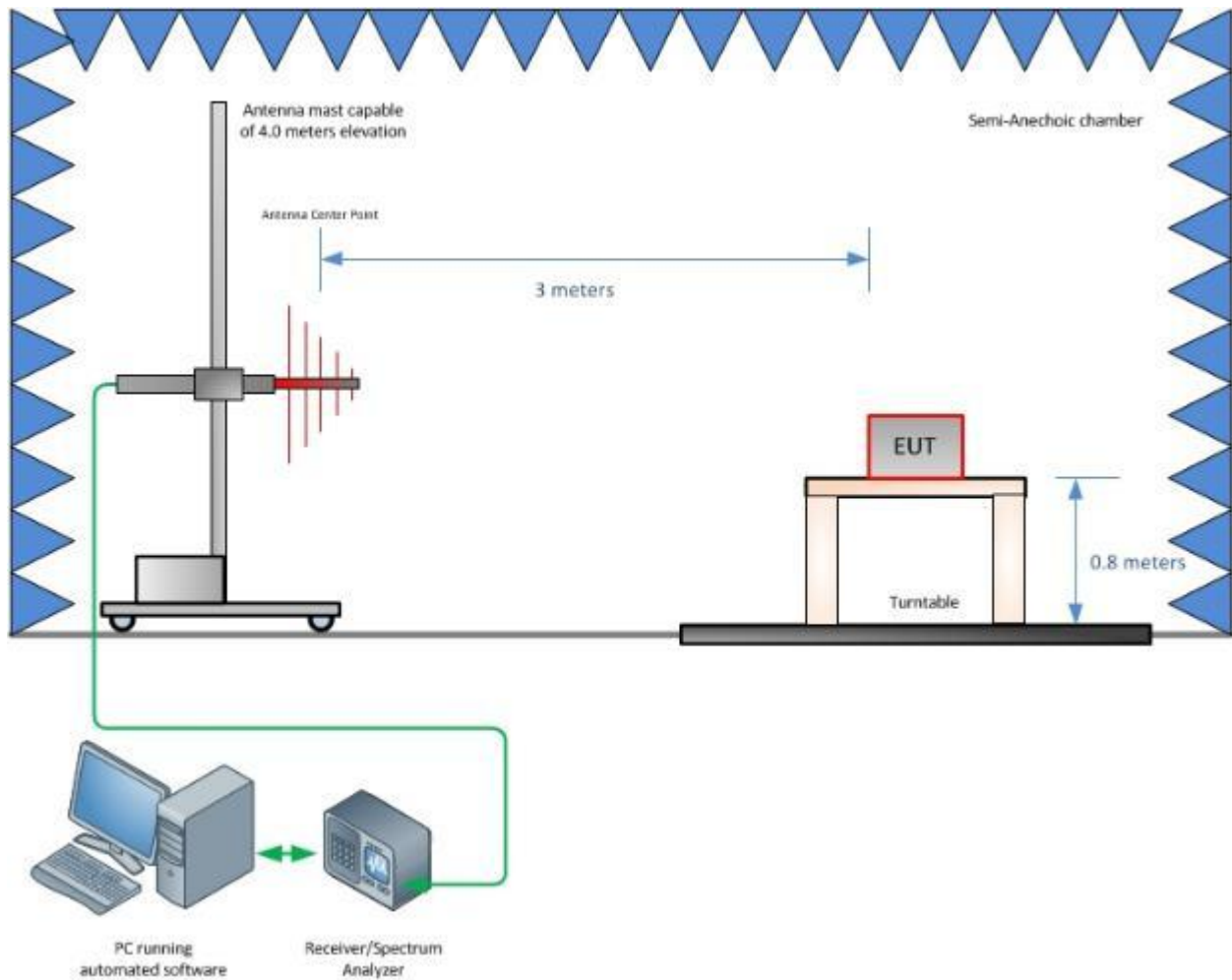


Figure 4-2 – Radiated Emissions Test Setup up to 1 GHz

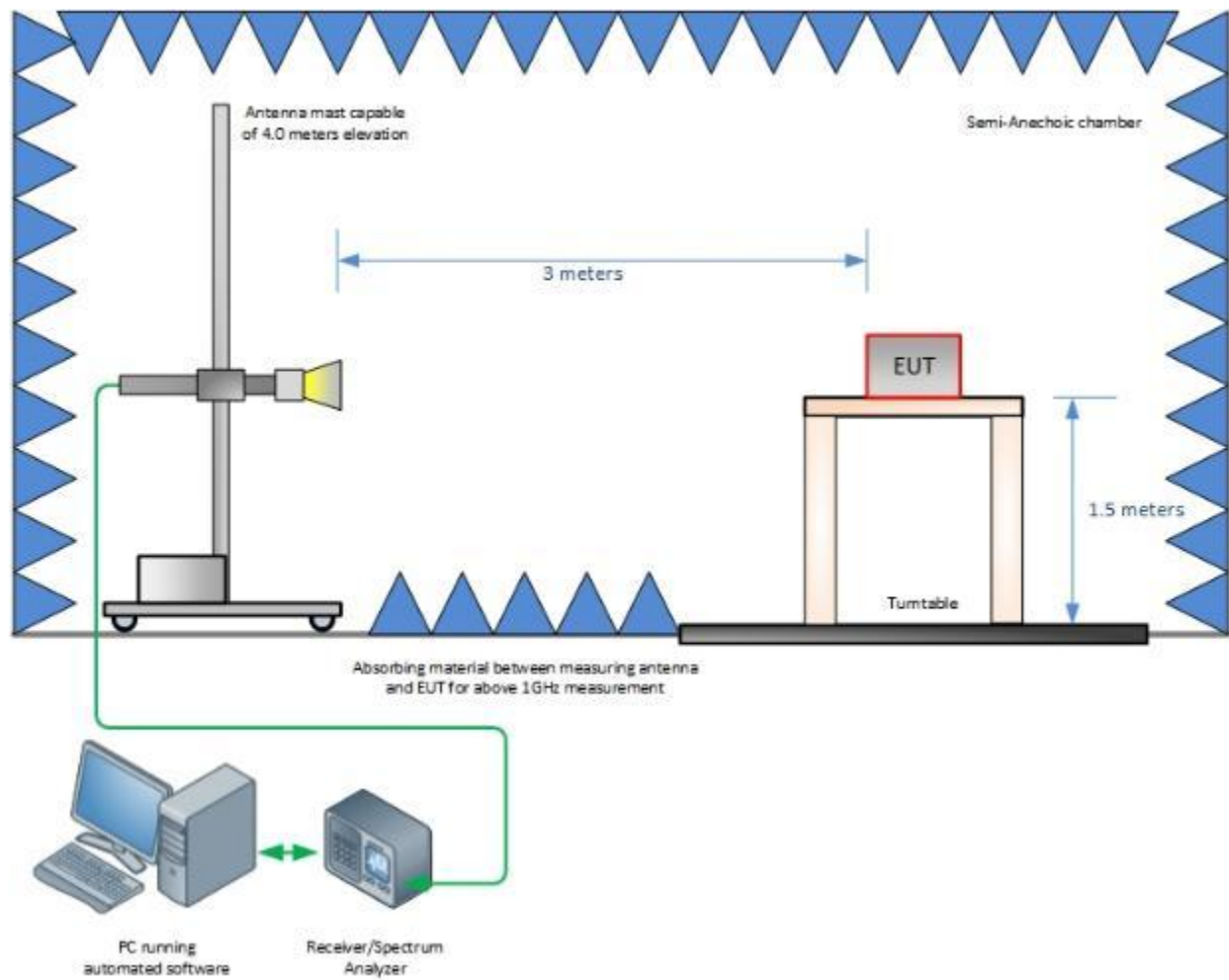


Figure 4-3 – Radiated Emissions Test Setup above 1 GHz



5 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Table 5-1- Values of U_{CISPR} and U_{Lab}

Measurement	U_{CISPR}	U_{Lab}
Radiated disturbance (electric field strength on an open area test site or alternative test site)		
(30 MHz – 1 000 MHz)	6.3 dB	5.85 dB
(1 – 6 GHz)	5.2 dB	4.48 dB
(6-18 GHz)	5.5 dB	4.48 dB

Notes:

U_{CISPR} resembles a value of measurement uncertainty for a specific test, which was determined by considering uncertainties associated with the quantities listed in CISPR 16-4-2:2011.

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. This test system has a measurement uncertainty of ± 3.30 dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. This test system for 30 MHz-1000 MHz has a measurement uncertainty of ± 5.88 dB and above 1 GHz a measurement uncertainty of ± 4.47 dB. The measurement uncertainty values for conducted and radiated emissions meet the requirements as expressed in CISPR 16-4-2. The equipment comprising the test systems is calibrated on an annual basis.



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