

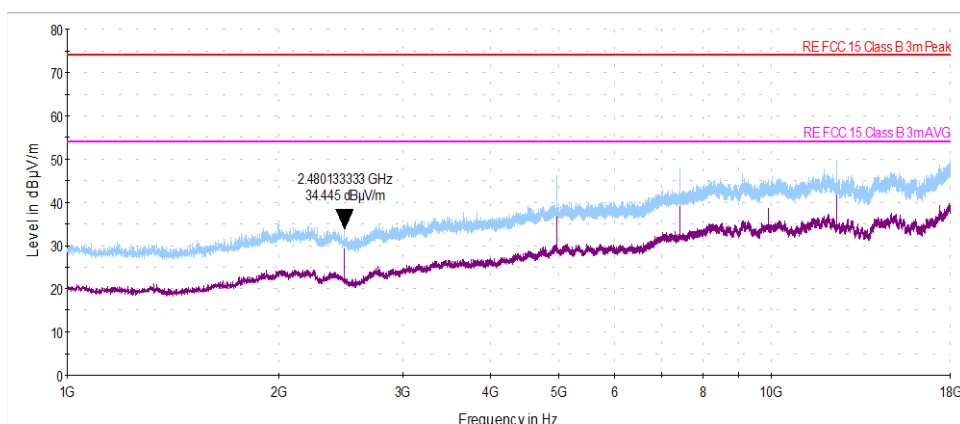


HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 18-Dec-25 - 21-Dec-25			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.6.12 Radiated emission measurements from 1000 to 18000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



NOTE: The frequency range 2.1 – 3.0 GHz was suppressed by the filter HL4339. This part of the spectrum is on the plot below.





HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 18-Dec-25 - 21-Dec-25			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.6.13 Radiated emission measurements from 18000 to 25000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.6.14 Radiated emission measurements from 18000 to 25000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



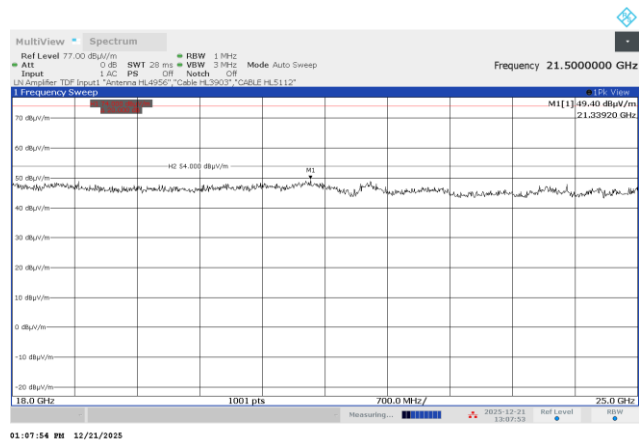


HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 18-Dec-25 - 21-Dec-25			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.6.15 Radiated emission measurements from 18000 to 25000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal





HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 18-Dec-25 - 21-Dec-25			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.6.49 Transmission pulse duration and period





Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

7.7 Field strength of spurious emissions AT98-7-23-11-S-5-N

7.7.1 General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits are given in Table 7.5.1.

Table 7.7.1 Radiated spurious emissions limits

Frequency, MHz	Field strength at 3 m within restricted bands, dB(μV/m)*			Attenuation of field strength of spurious versus carrier outside restricted bands, dBc***
	Peak	Quasi Peak	Average	
0.009 – 0.090	148.5 – 128.5	NA	128.5 – 108.5**	20.0
0.090 – 0.110	NA	108.5 – 106.8**	NA	
0.110 – 0.490	126.8 – 113.8	NA	106.8 – 93.8**	
0.490 – 1.705	NA	73.8 – 63.0**	NA	
1.705 – 30.0*		69.5		
30 – 88		40.0		
88 – 216		43.5		
216 – 960		46.0		
960 - 1000		54.0		
1000 – 10 th harmonic	74.0	NA	54.0	

*- The limit for 3 m test distance was calculated using the inverse square distance extrapolation factor as follows:

$$\text{Lims}_2 = \text{Lims}_1 + 40 \log (S_1/S_2),$$

where S_1 and S_2 – standard defined and test distance respectively in meters.

** - The limit decreases linearly with the logarithm of frequency.

*** - The field strength limits applied from the lowest radio frequency generated in the device, without going below 9 kHz up to the tenth harmonic of the highest fundamental frequency.

7.7.2 Test procedure for spurious emission field strength measurements in 9 kHz to 30 MHz band

7.7.2.1 The EUT was set up as shown in Figure 7.5.1, energized and the performance check was conducted.

7.7.2.2 The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360° and the measuring antenna was rotated around its vertical axis.

7.7.2.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.

7.7.3 Test procedure for spurious emission field strength measurements above 30 MHz

7.7.3.1 The EUT was set up as shown in Figure 7.5.2, Figure 7.5.3, energized and the performance check was conducted.

7.7.3.2 The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360°, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal.

7.7.3.3 The worst test results (the lowest margins) were recorded and shown in the associated plots.



Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Figure 7.7.1 Setup for spurious emission field strength measurements below 30 MHz

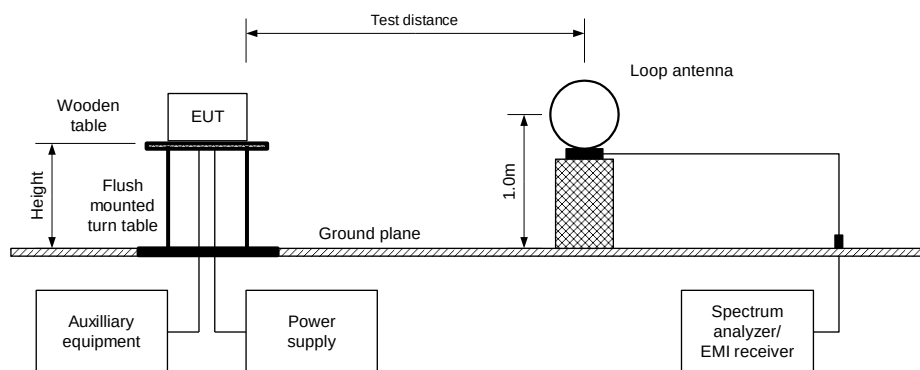
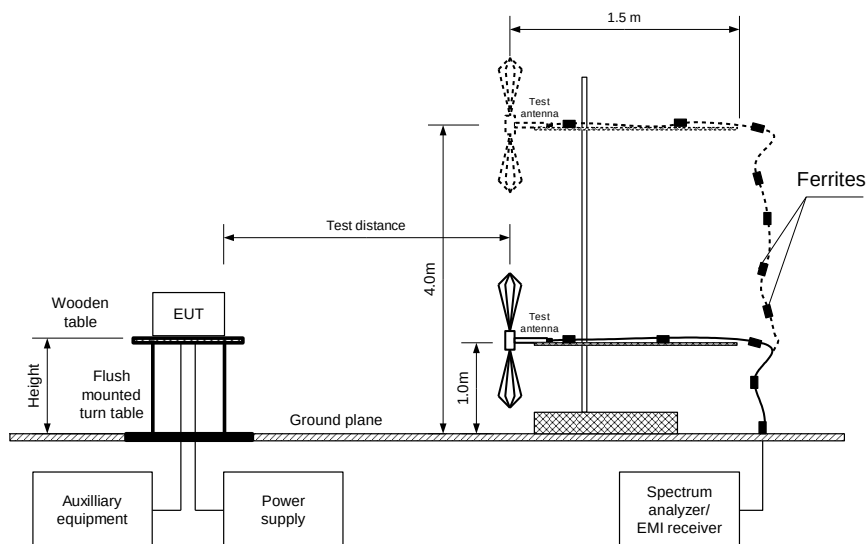


Figure 7.7.2 Setup for spurious emission field strength measurements in 30 -1000 MHz

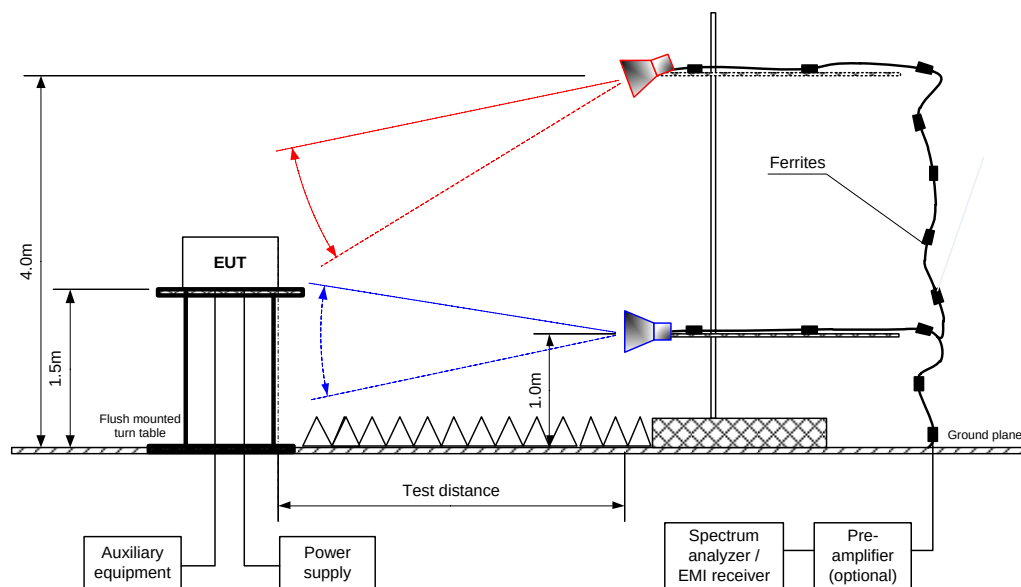




HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Figure 7.7.3 Setup for spurious emission field strength measurements above 1000 MHz





HERMON LABORATORIES

Test specification:		Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions	
Test procedure:		ANSI C63.10, sections 6.5, 6.6	
Test mode:		Verdict: PASS	
Date(s):			
14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Table 7.7.2 Field strength of emissions outside restricted bands

ASSIGNED FREQUENCY: 2400 – 2483.5 MHz
 INVESTIGATED FREQUENCY RANGE: 0.009 - 25000 MHz
 TEST DISTANCE: 3 m
 MODULATION: GFSK
 BIT RATE: 1 Mbps
 TRANSMITTER OUTPUT POWER: 2.50 dBm at low carrier frequency
 1.81 dBm at mid carrier frequency
 2.11 dBm at high carrier frequency
 DETECTOR USED: Peak
 RESOLUTION BANDWIDTH: 100 kHz
 VIDEO BANDWIDTH: 300 kHz
 TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)
 Biconilog (30 MHz – 1000 MHz)
 Double ridged guide (above 1000 MHz)

Frequency, MHz	Field strength of spurious, dB(μV/m)	Antenna polarization	Antenna height, m	Azimuth, degrees*	Field strength of carrier, dB(μV/m)	Attenuation below carrier, dBc	Limit, dBc	Margin, dB**	Verdict
Low carrier frequency 2402 MHz									
106.209	34.39	Vertical	1.37	0	100.74	66.35	20.0	46.35	Pass
142.293	38.05	Vertical	1.00	23		62.69		42.69	
190.276	43.62	Vertical	2.05	48		57.12		37.12	
202.336	45.02	Horizontal	1.98	-75		55.72		35.72	
7206.133	52.06	Vertical	1.66	-35		48.68		28.68	
16814.266	58.33	Vertical	1.87	-23		42.41		22.41	
Mid carrier frequency 2440 MHz									
78.112	39.54	Vertical	1.66	12	100.72	61.18	20.0	41.18	Pass
98.223	33.13	Vertical	1.87	18		67.59		47.59	
142.196	42.47	Horizontal	1.02	27		58.25		38.25	
146.141	40.13	Vertical	1.00	22		60.59		40.59	
218.340	43.50	Horizontal	1.88	-65		57.22		37.22	
High carrier frequency 2480 MHz									
82.024	33.20	Vertical	1.00	12	100.00	66.80	20.0	46.80	Pass
142.164	44.53	Vertical	1.02	28		55.47		35.47	
146.300	45.04	Vertical	1.02	38		54.96		34.96	
210.387	41.30	Horizontal	1.85	-71		58.70		38.70	
226.360	39.48	Horizontal	1.66	-38		60.52		40.52	
9919.385	51.22	Vertical	1.85	-48		48.78		28.78	

*- EUT front panel refers to 0 degrees position of turntable.

**- Margin = Attenuation below carrier – specification limit.



HERMON LABORATORIES

Test specification:		Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions	
Test procedure:		ANSI C63.10, sections 6.5, 6.6	
Test mode:		Verdict: PASS	
Date(s):			
14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Table 7.7.3 Field strength of spurious emissions above 1 GHz within restricted bands

ASSIGNED FREQUENCY: 2400 – 2483.5 MHz
 INVESTIGATED FREQUENCY RANGE: 1000 - 25000 MHz
 TEST DISTANCE: 3 m
 MODULATION: GFSK
 BIT RATE: 1 Mbps
 TRANSMITTER OUTPUT POWER: 2.50 dBm at low carrier frequency
 1.81 dBm at mid carrier frequency
 2.11 dBm at high carrier frequency

DETECTOR USED: Peak
 RESOLUTION BANDWIDTH: 1000 kHz
 TEST ANTENNA TYPE: Double ridged guide

Frequency, MHz	Antenna		Azimuth, degrees*	Peak field strength			Average field strength				Verdict
	Polarization	Height, m		Measured, dB(μV/m)	Limit, dB(μV/m)	Margin, dB**	Measured, dB(μV/m)	Calculated, dB(μV/m)	Limit, dB(μV/m)	Margin, dB***	
Low carrier frequency 2402 MHz											
4803.380	Vertical	1.87	-23	47.07	74.0	-26.93	37.34	32.97	54.0	-21.03	Pass
12010.075	Vertical	1.65	-53	60.85	74.0	-13.15	49.53	46.75	54.0	-7.25	
Mid carrier frequency 2440 MHz											
4879.415	Vertical	1.66	18	51.48	74.0	-22.52	42.35	37.38	54.0	-16.62	Pass
7319.980	Vertical	2.51	-80	55.10	74.0	-18.90	39.42	41.00	54.0	-13.00	
12201.057	Vertical	1.66	-170	55.07	74.0	-18.93	39.94	40.97	54.0	-13.03	
High carrier frequency 2480 MHz											
4959.870	Vertical	1.87	17	50.58	74.0	-23.42	39.96	36.48	54.0	-17.52	Pass
7469.163	Horizontal	1.66	94	50.77	74.0	-23.23	44.53	36.67	54.0	-17.33	
12135.590	Vertical	1.44	79	50.71	74.0	-23.29	45.07	36.61	54.0	-17.39	

*- EUT front panel refers to 0 degrees position of turntable.

**- Margin = Measured field strength - specification limit.

***- Margin = Calculated field strength - specification limit,

where Calculated field strength = Measured field strength + average factor.

Table 7.7.4 Average factor calculation

Transmission pulse		Transmission burst		Transmission train duration, ms	Average factor, dB
Duration, ms	Period, ms	Duration, ms	Period, ms		
NA	NA	NA	NA	NA	NA

*- Average factor was calculated as follows

for pulse train shorter than 100 ms:

$$\text{Average factor} = 20 \times \log_{10} \left(\frac{\text{Pulse duration}}{\text{Pulse period}} \times \frac{\text{Burst duration}}{\text{Train duration}} \times \text{Number of bursts within pulse train} \right)$$

for pulse train longer than 100 ms:

$$\text{Average factor} = 20 \times \log_{10} \left(\frac{\text{Pulse duration}}{\text{Pulse period}} \times \frac{\text{Burst duration}}{100\text{ms}} \times \text{Number of bursts within 100ms} \right)$$



Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Table 7.7.5 Field strength of spurious emissions below 1 GHz within restricted bands

ASSIGNED FREQUENCY: 2400 – 2483.5 MHz
 INVESTIGATED FREQUENCY RANGE: 0.009 – 1000 MHz
 TEST DISTANCE: 3 m
 MODULATION: GFSK
 BIT RATE: 1 Mbps
 TRANSMITTER OUTPUT POWER: 2.50 dBm at low carrier frequency
 1.81 dBm at mid carrier frequency
 2.11 dBm at high carrier frequency
 RESOLUTION BANDWIDTH: 0.2 kHz (9 kHz – 150 kHz)
 9.0 kHz (150 kHz – 30 MHz)
 120 kHz (30 MHz – 1000 MHz)
 VIDEO BANDWIDTH: > Resolution bandwidth
 TEST ANTENNA TYPE: Active loop (9 kHz – 30 MHz)
 Biconilog (30 MHz – 1000 MHz)

Frequency, MHz	Peak emission, dB(μV/m)	Quasi-peak			Antenna polarization	Antenna height, m	Turn-table position**, degrees	Verdict
		Measured emission, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*				
Low carrier frequency 2402 MHz								
74.113	46.62	33.24	40.00	-6.76	Vertical	1.40	33	Pass
170.294	46.63	29.90	43.50	-13.60	Horizontal	1.63	-17	
Mid carrier frequency 2440 MHz								
74.123	43.43	29.85	40.00	-10.15	Vertical	1.80	43	Pass
110.157	35.94	19.63	43.50	-23.87	Vertical	1.00	-172	
High carrier frequency 2480 MHz								
74.161	41.83	28.63	40.00	-11.37	Vertical	1.60	53	Pass
126.209	41.89	26.60	43.50	-16.90	Vertical	1.00	-159	
136.240	39.38	19.79	43.50	-23.71	Vertical	1.00	-180	

*- Margin = Measured emission - specification limit.

** - EUT front panel refer to 0 degrees position of turntable.



HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Table 7.7.6 Restricted bands according to FCC section 15.205

MHz	MHz	MHz	MHz	MHz	GHz
0.09 - 0.11	8.37625 - 8.38675	73 - 74.6	399.9 - 410	2690 - 2900	10.6 - 12.7
0.495 - 0.505	8.41425 - 8.41475	74.8 - 75.2	608 - 614	3260 - 3267	13.25 - 13.4
2.1735 - 2.1905	12.29 - 12.293	108 - 121.94	960 - 1240	3332 - 3339	14.47 - 14.5
4.125 - 4.128	12.51975 - 12.52025	123 - 138	1300 - 1427	3345.8 - 3358	15.35 - 16.2
4.17725 - 4.17775	12.57675 - 12.57725	149.9 - 150.05	1435 - 1626.5	3600 - 4400	17.7 - 21.4
4.20725 - 4.20775	13.36 - 13.41	156.52475 - 156.52525	1645.5 - 1646.5	4500 - 5150	22.01 - 23.12
6.215 - 6.218	16.42 - 16.423	156.7 - 156.9	1660 - 1710	5350 - 5460	23.6 - 24
6.26775 - 6.26825	16.69475 - 16.69525	162.0125 - 167.17	1718.8 - 1722.2	7250 - 7750	31.2 - 31.8
6.31175 - 6.31225	16.80425 - 16.80475	167.72 - 173.2	2200 - 2300	8025 - 8500	36.43 - 36.5
8.291 - 8.294	25.5 - 25.67	240 - 285	2310 - 2390	9000 - 9200	Above 38.6
8.362 - 8.366	37.5 - 38.25	322 - 335.4	2483.5 - 2500	9300 - 9500	

Table 7.7.7 Restricted bands according to RSS-Gen

MHz	MHz	MHz	MHz	MHz	GHz
0.09 - 0.11	8.291 - 8.294	16.80425 - 16.80475	399.9 - 410	3260 - 3267	10.6 - 12.7
2.1735 - 2.1905	8.362 - 8.366	25.5 - 25.67	608 - 614	3332 - 3339	13.25 - 13.4
3.020 - 3.026	8.37625 - 8.38675	37.5 - 38.25	960 - 1427	3345.8 - 3358	14.47 - 14.5
4.125 - 4.128	8.41425 - 8.41475	73 - 74.6	1435 - 1626.5	3500 - 4400	15.35 - 16.2
4.17725 - 4.17775	12.29 - 12.293	74.8 - 75.2	1645.5 - 1646.5	4500 - 5150	17.7 - 21.4
4.20725 - 4.20775	12.51975 - 12.52025	108 - 138	1660 - 1710	5350 - 5460	22.01 - 23.12
5.677 - 5.683	12.57675 - 12.57725	156.52475 - 156.52525	1718.8 - 1722.2	7250 - 7750	23.6 - 24
6.215 - 6.218	13.36 - 13.41	156.7 - 156.9	2200 - 2300	8025 - 8500	31.2 - 31.8
6.26775 - 6.26825	16.42 - 16.423	240 - 285	2310 - 2390	9000 - 9200	36.43 - 36.5
6.31175 - 6.31225	16.69475 - 16.69525	322 - 335.4	2655 - 2900	9300 - 9500	Above 38.6

Reference numbers of test equipment used

HL5288	HL 0446	HL 4933	HL 4956	HL 3903	HL 5902	HL 5112	HL 4339
HL 7585							

Full description is given in Appendix A.

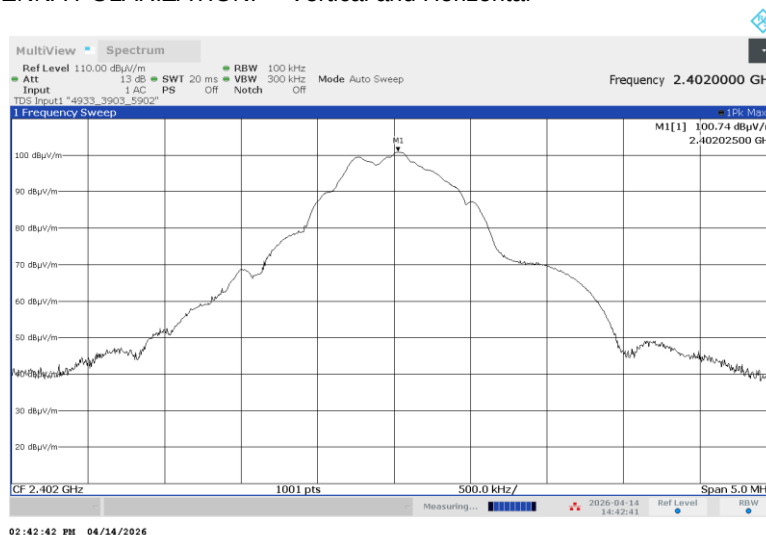


HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

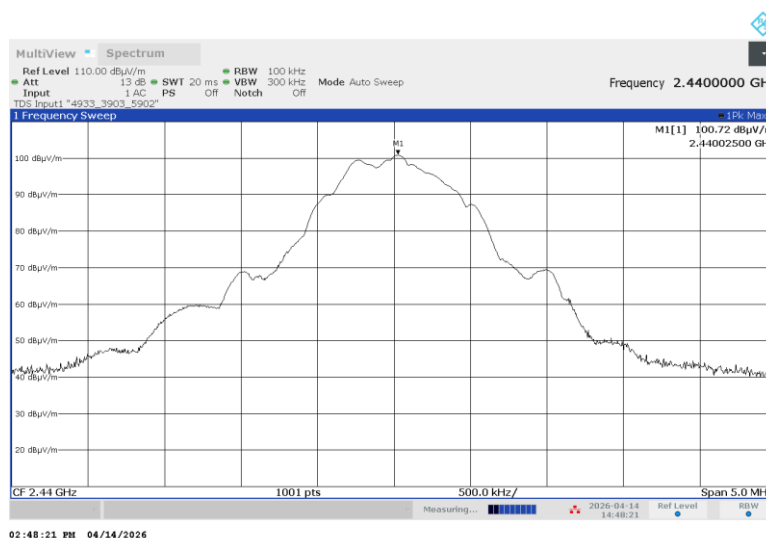
Plot 7.7.1 Radiated emission measurements at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.7.2 Radiated emission measurements at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



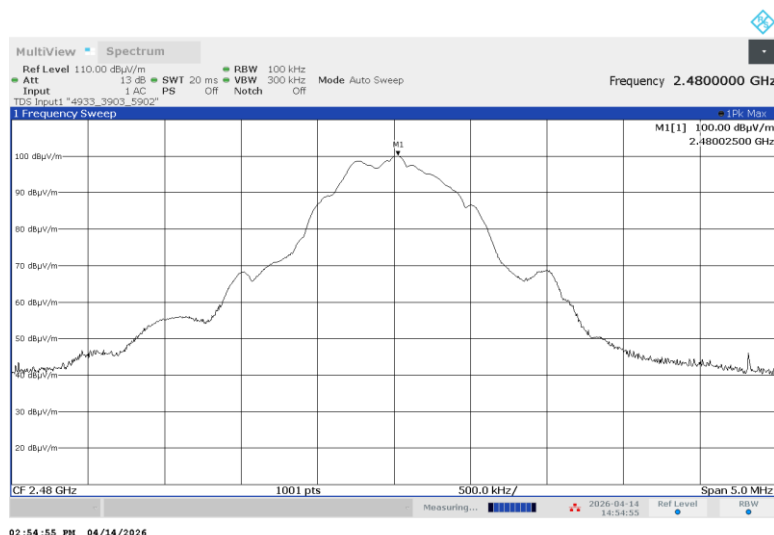


HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.7.3 Radiated emission measurements at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



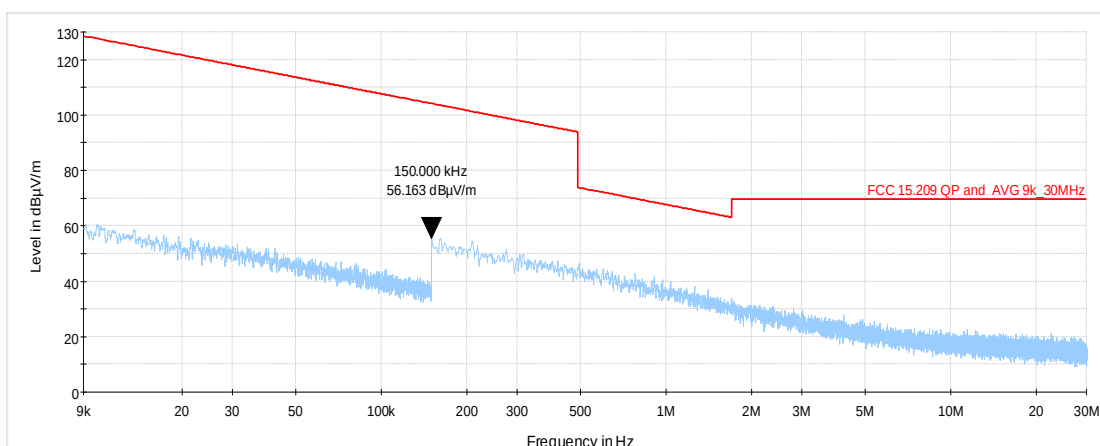


HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

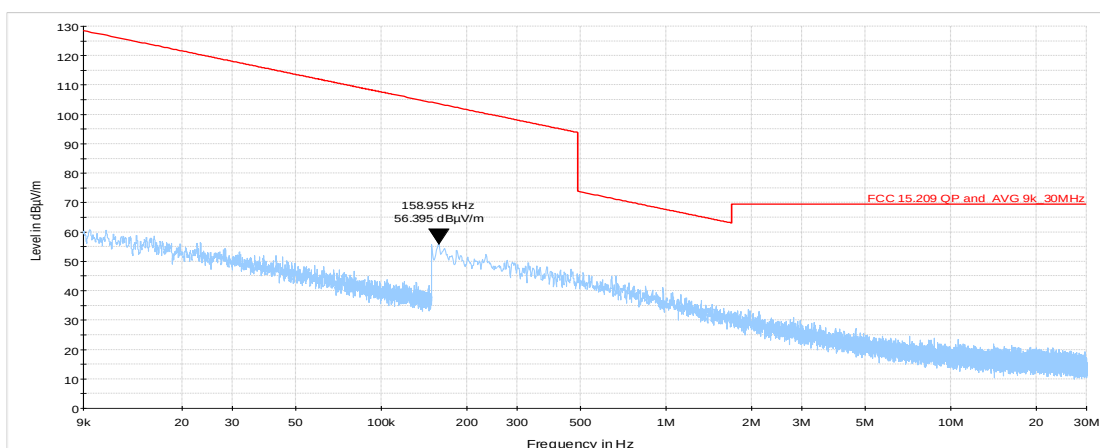
Plot 7.7.4 Radiated emission measurements from 9 kHz to 30 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



Plot 7.7.5 Radiated emission measurements from 9 kHz to 30 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



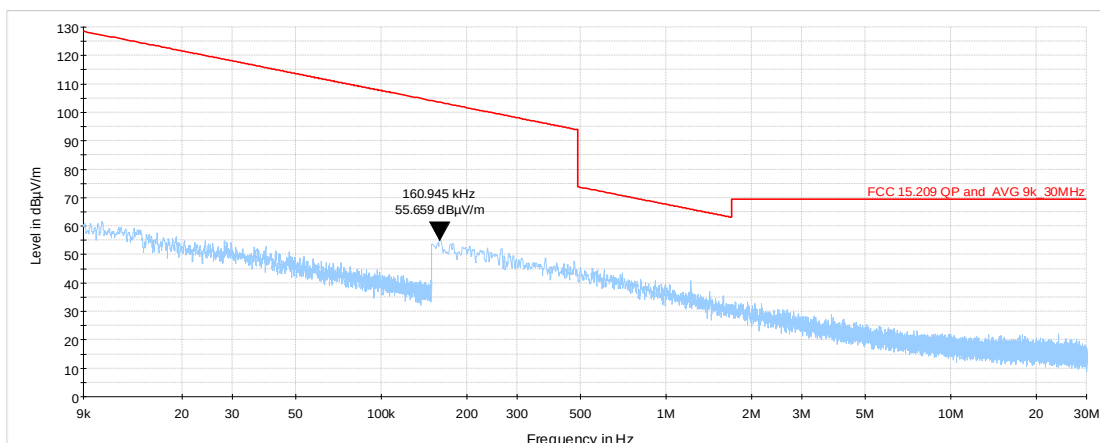


HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.7.6 Radiated emission measurements from 9 kHz to 30 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical



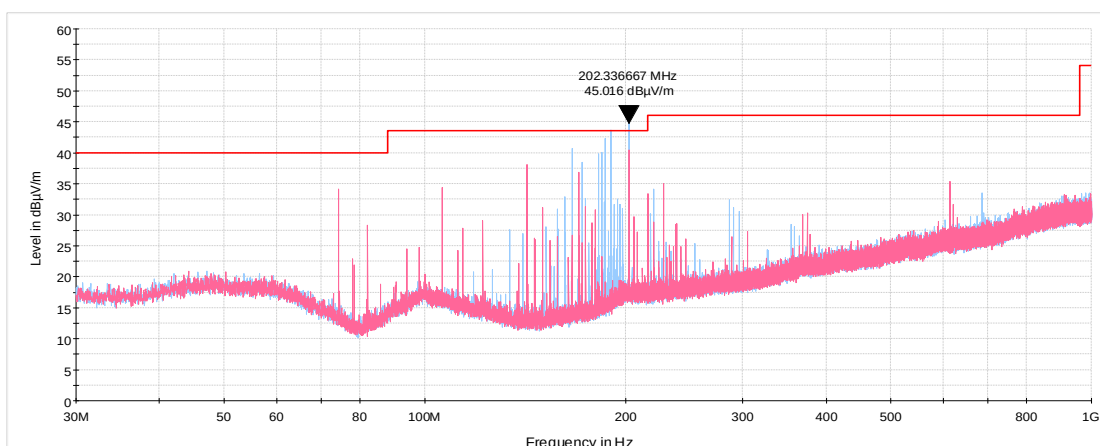


HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

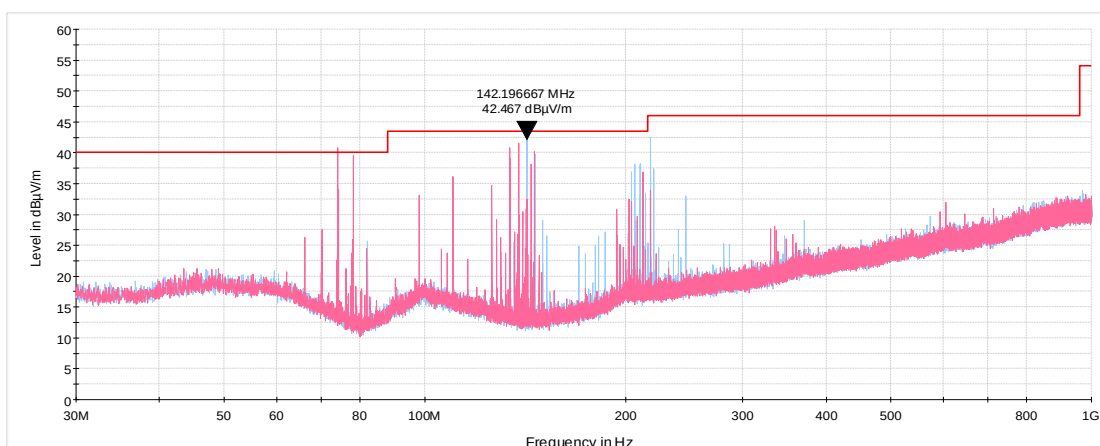
Plot 7.7.7 Radiated emission measurements from 30 to 1000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.7.8 Radiated emission measurements from 30 to 1000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



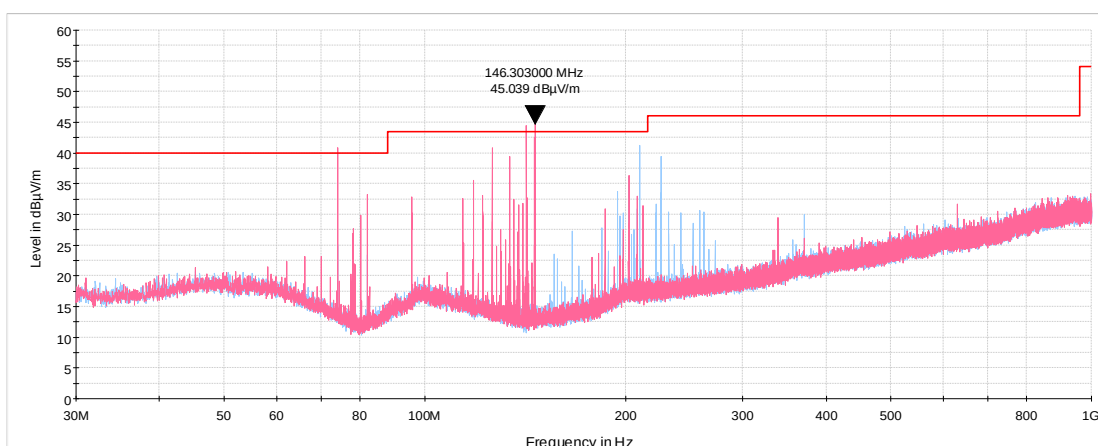


HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.7.9 Radiated emission measurements from 30 to 1000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



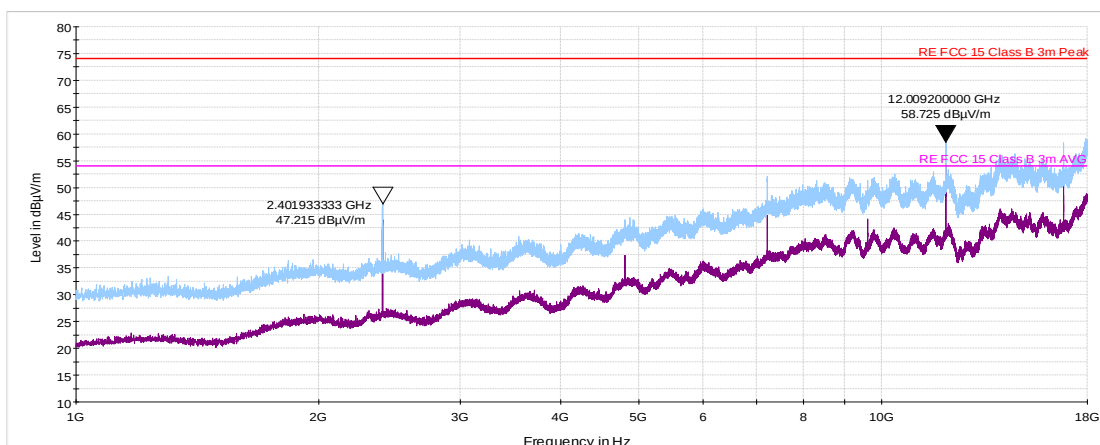


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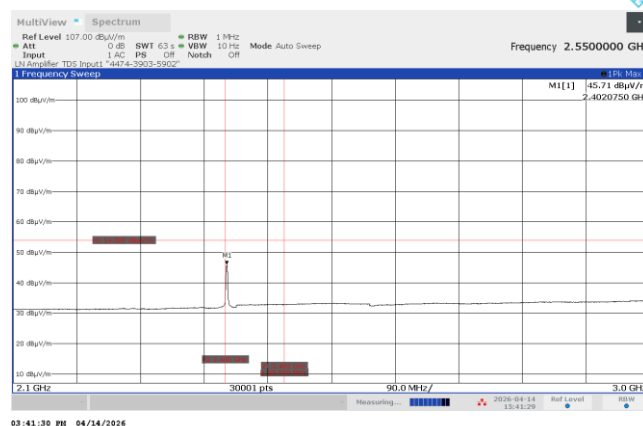
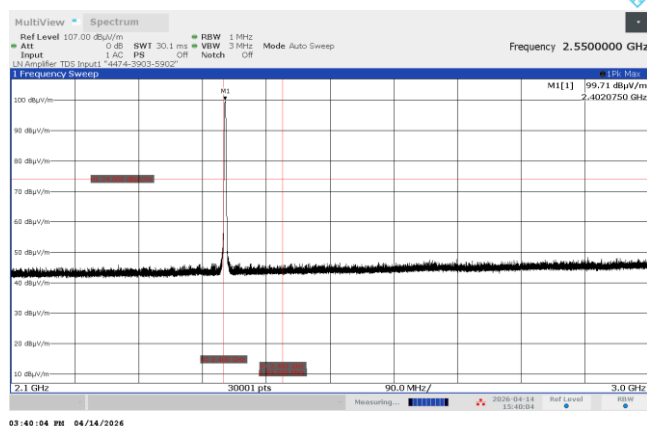
Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.7.10 Radiated emission measurements from 1000 to 18000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



NOTE: The frequency range 2.1 – 3.0 GHz was suppressed by the filter HL4339. This part of the spectrum is on the plot below.



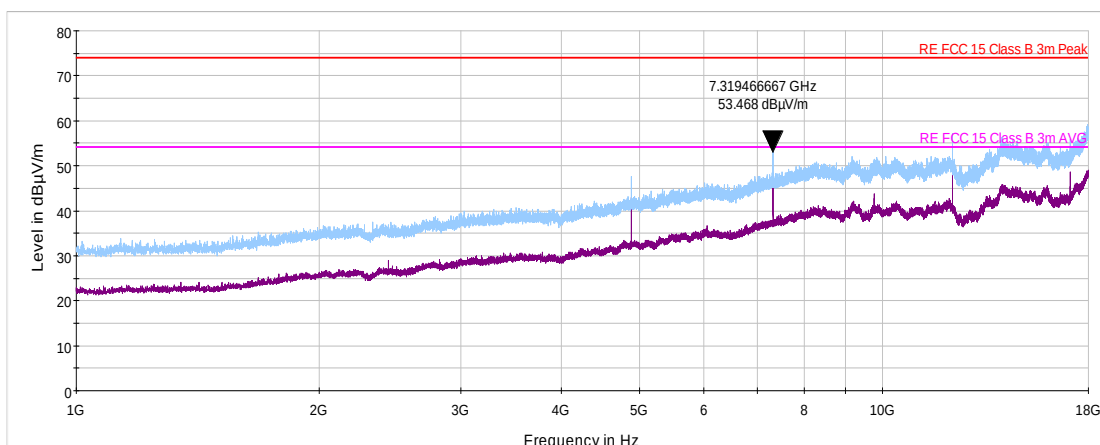


HERMON LABORATORIES

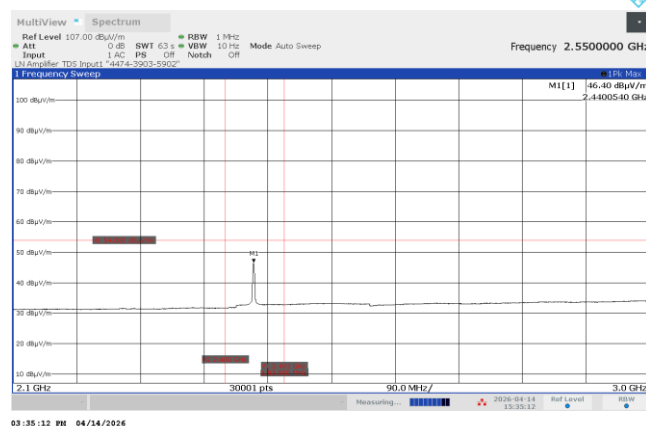
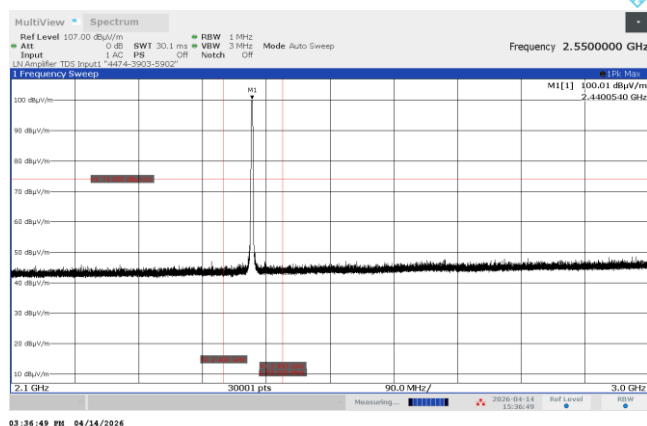
Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.7.11 Radiated emission measurements from 1000 to 18000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



NOTE: The frequency range 2.1 – 3.0 GHz was suppressed by the filter HL4339. This part of the spectrum is on the plot below.



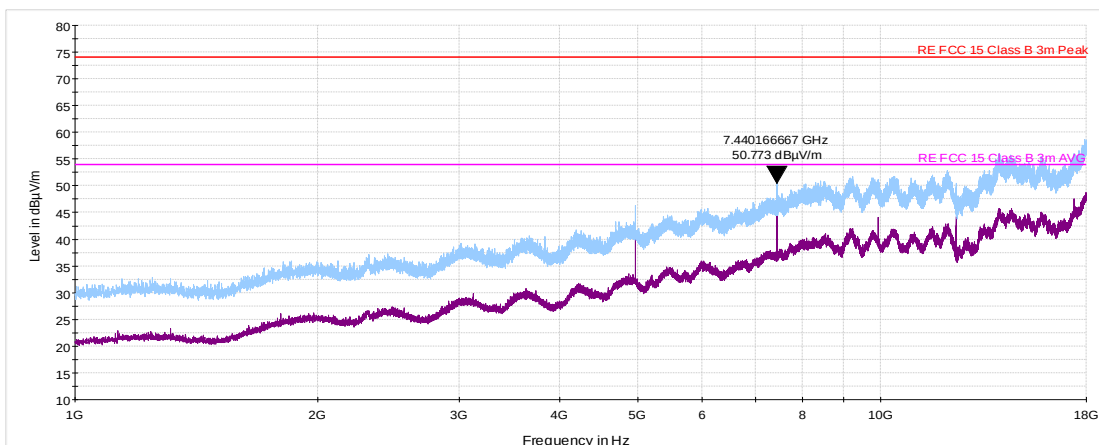


HERMON LABORATORIES

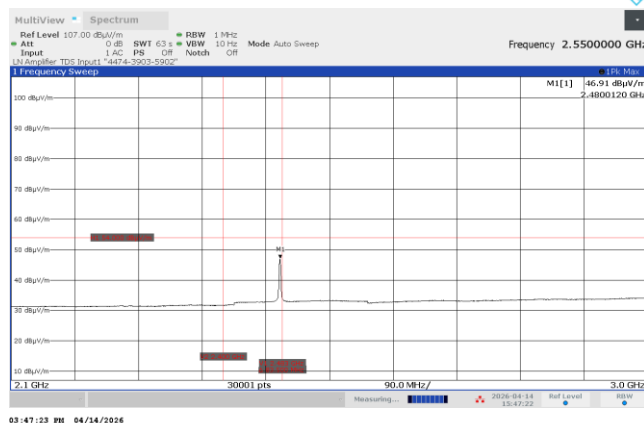
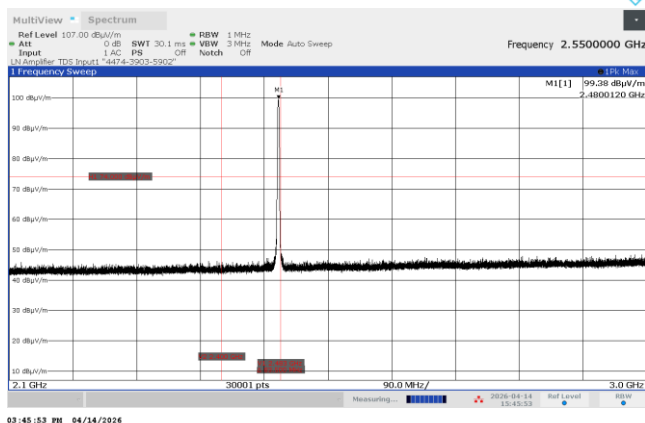
Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.7.12 Radiated emission measurements from 1000 to 18000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



NOTE: The frequency range 2.1 – 3.0 GHz was suppressed by the filter HL4339. This part of the spectrum is on the plot below.





HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

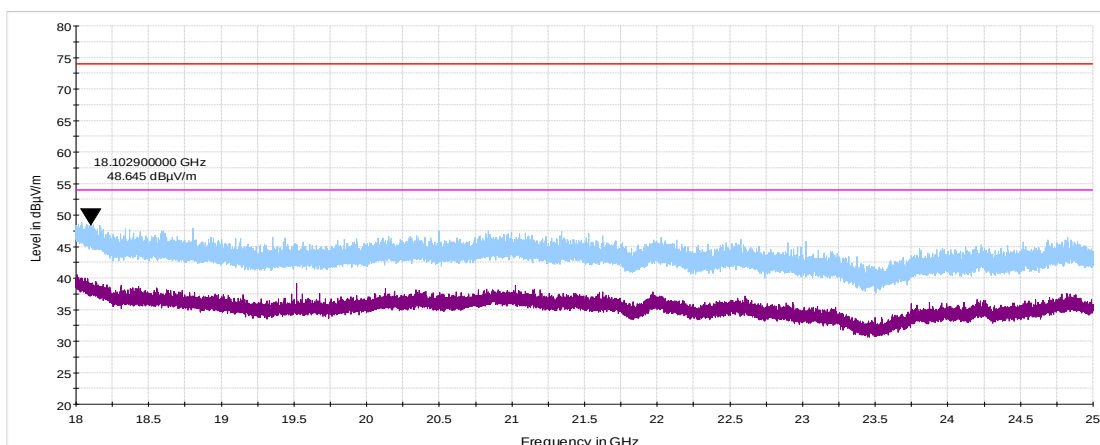
Plot 7.7.13 Radiated emission measurements from 18000 to 25000 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



Plot 7.7.14 Radiated emission measurements from 18000 to 25000 MHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



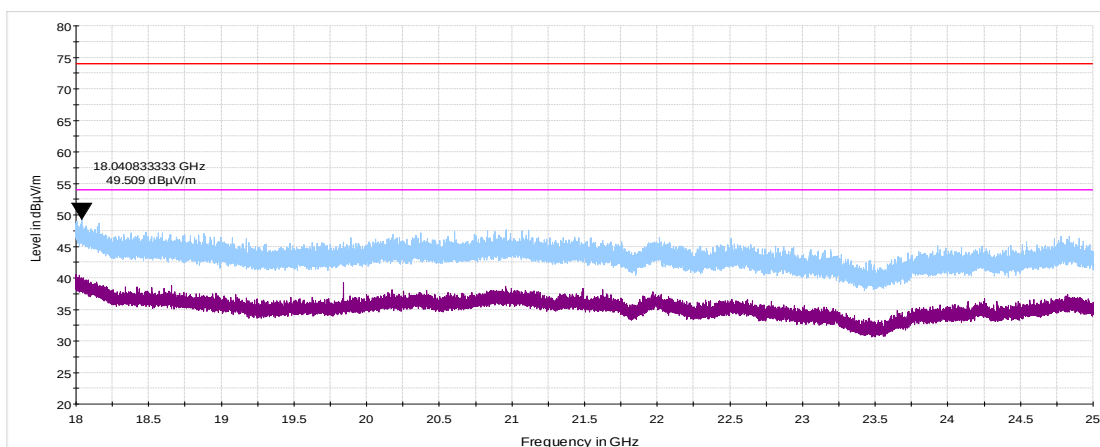


HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Radiated spurious emissions			
Test procedure: ANSI C63.10, sections 6.5, 6.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 14-Apr-26			
Temperature: 27 °C	Relative Humidity: 48 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.7.15 Radiated emission measurements from 18000 to 25000 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal





Test specification: Section 15.247(d), RSS-247 section 5.5, Emissions at band edges			
Test procedure: ANSI C63.10, section 7.8.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 11-Jun-25			
Temperature: 24 °C	Relative Humidity: 42 %	Air Pressure: 1015 hPa	Power: 3.7 VDC
Remarks:			

7.8 Band edge radiated emissions

7.8.1 General

This test was performed to measure emissions, radiated from the EUT at the assigned frequency band edges. Specification test limits are given in Table 7.8.1.

Table 7.8.1 Band edge emission limits

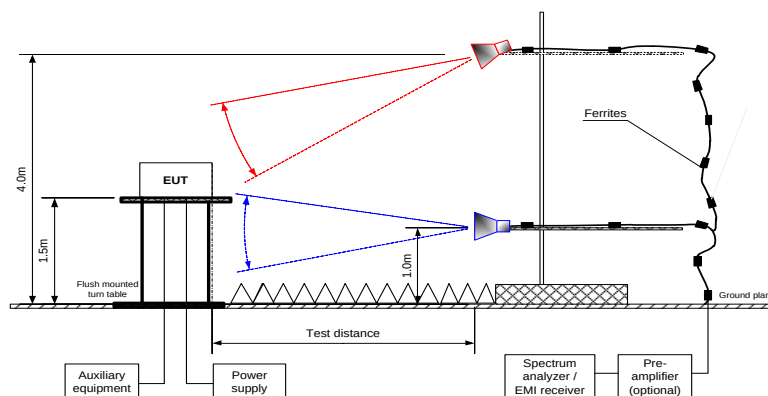
Output power	Assigned frequency, MHz	Attenuation below carrier*, dBc	Field strength at 3 m within restricted bands, dB(μ V/m)	
			Peak	Average
Peak	2400.0 – 2483.5	20.0	74.0	54.0

* - Band edge emission limit is provided in terms of attenuation below the peak of modulated carrier measured with the same resolution bandwidth.

7.8.2 Test procedure

- 7.8.2.1 The EUT was set up as shown in Figure 7.8.1, energized normally modulated at the maximum data rate and its proper operation was checked.
- 7.8.2.2 The EUT was adjusted to produce maximum available to end user RF output power at the lowest carrier frequency.
- 7.8.2.3 The spectrum analyzer span was set to capture the carrier frequency and associated modulation products. The resolution bandwidth was set wider than 1 % of the frequency span.
- 7.8.2.4 The spectrum analyzer was set in max hold mode and allowed trace to stabilize. The highest emission level within the authorized band was measured.
- 7.8.2.5 The maximum band edge emission and modulation product outside of the band were measured as provided in Figure 7.8.1 and associated plots and referenced to the highest emission level measured within the authorized band.
- 7.8.2.6 The above procedure was repeated with the EUT adjusted to produce maximum RF output power at the highest carrier frequency.
- 7.8.2.7 The above procedure was repeated with the frequency hopping function enabled.

Figure 7.8.1 Band edge emission test setup





HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Emissions at band edges			
Test procedure: ANSI C63.10, section 7.8.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 11-Jun-25			
Temperature: 24 °C	Relative Humidity: 42 %	Air Pressure: 1015 hPa	Power: 3.7 VDC
Remarks:			

Table 7.8.2 Band edge emission outside restricted bands test results

ASSIGNED FREQUENCY RANGE: 2400 – 2483.5 MHz
DETECTOR USED: Peak
MODULATION: GFSK
BIT RATE: 1 Mbps
RESOLUTION BANDWIDTH: 100 kHz

Frequency, MHz	Band edge emission, dBuV/m	Emission at carrier, dBuV/m	Attenuation below carrier, dBc	Limit, dBc	Margin, dB*	Verdict
2400.0	54.94	101.08	46.14	20	26.14	Pass

*- Margin = Attenuation below carrier – specification limit.

Table 7.8.3 Band edge emission inside restricted bands test results

ASSIGNED FREQUENCY RANGE: 2400.0 – 2483.5 MHz
DETECTOR USED: Peak
MODULATION: GFSK
BIT RATE: 2 Mbps
RESOLUTION BANDWIDTH: 1 MHz

Frequency, MHz	Peak field strength			Average field strength			Verdict
	Measured, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*	Measured Peak, dB(μV/m)	Limit AVR, dB(μV/m)	Margin, dB*	
2390.0	43.74	74.0	-30.26	43.74	54.0	-10.26	Pass
2483.5	49.18	74.0	-24.82	49.18	54.0	-4.82	Pass

*- Margin = Attenuation below carrier – specification limit.

Reference numbers of test equipment used

HL 3903	HL 4474	HL 5902	HL 7585				
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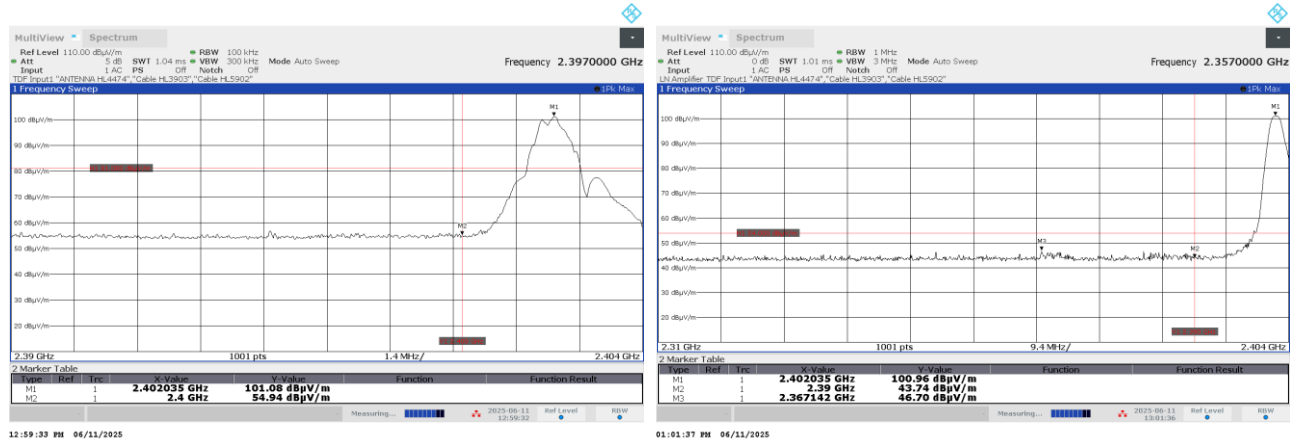
Full description is given in Appendix A.



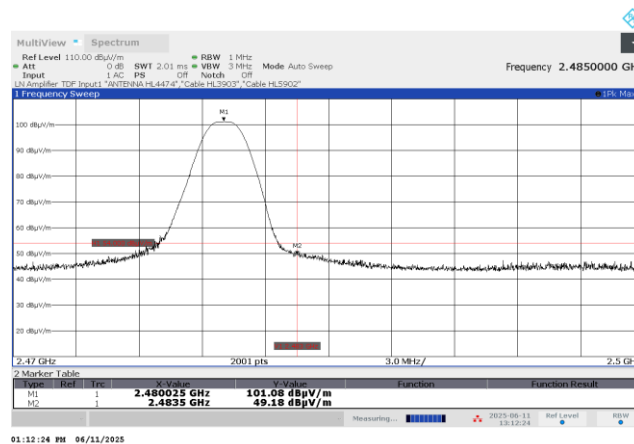
HERMON LABORATORIES

Test specification: Section 15.247(d), RSS-247 section 5.5, Emissions at band edges			
Test procedure: ANSI C63.10, section 7.8.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 11-Jun-25			
Temperature: 24 °C	Relative Humidity: 42 %	Air Pressure: 1015 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.8.1 The highest band edge emission at low carrier frequency



Plot 7.8.2 The highest band edge emission at high carrier frequency





Test specification: Section 15.247(d), RSS-247 section 5.5, Emissions at band edges			
Test procedure: ANSI C63.10, section 7.8.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 18-Dec-25			
Temperature: 24 °C	Relative Humidity: 42 %	Air Pressure: 1015 hPa	Power: 3.7 VDC
Remarks:			

7.9 Band edge radiated emissions AT98-7-22-5-OM-5-N

7.9.1 General

This test was performed to measure emissions, radiated from the EUT at the assigned frequency band edges. Specification test limits are given in Table 7.8.1.

Table 7.9.1 Band edge emission limits

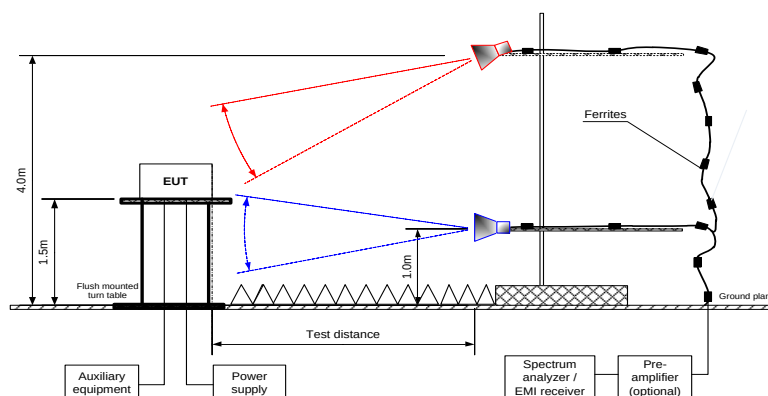
Output power	Assigned frequency, MHz	Attenuation below carrier*, dBc	Field strength at 3 m within restricted bands, dB(μ V/m)	
			Peak	Average
Peak	2400.0 – 2483.5	20.0	74.0	54.0

* - Band edge emission limit is provided in terms of attenuation below the peak of modulated carrier measured with the same resolution bandwidth.

7.9.2 Test procedure

- 7.9.2.1 The EUT was set up as shown in Figure 7.8.1, energized normally modulated at the maximum data rate and its proper operation was checked.
- 7.9.2.2 The EUT was adjusted to produce maximum available to end user RF output power at the lowest carrier frequency.
- 7.9.2.3 The spectrum analyzer span was set to capture the carrier frequency and associated modulation products. The resolution bandwidth was set wider than 1 % of the frequency span.
- 7.9.2.4 The spectrum analyzer was set in max hold mode and allowed trace to stabilize. The highest emission level within the authorized band was measured.
- 7.9.2.5 The maximum band edge emission and modulation product outside of the band were measured as provided in Figure 7.8.1 and associated plots and referenced to the highest emission level measured within the authorized band.
- 7.9.2.6 The above procedure was repeated with the EUT adjusted to produce maximum RF output power at the highest carrier frequency.
- 7.9.2.7 The above procedure was repeated with the frequency hopping function enabled.

Figure 7.9.1 Band edge emission test setup





Test specification: Section 15.247(d), RSS-247 section 5.5, Emissions at band edges			
Test procedure: ANSI C63.10, section 7.8.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 18-Dec-25			
Temperature: 24 °C	Relative Humidity: 42 %	Air Pressure: 1015 hPa	Power: 3.7 VDC
Remarks:			

Table 7.9.2 Band edge emission outside restricted bands test results

ASSIGNED FREQUENCY RANGE: 2400 – 2483.5 MHz
DETECTOR USED: Peak
MODULATION: GFSK
BIT RATE: 1 Mbps
RESOLUTION BANDWIDTH: 100 kHz

Frequency, MHz	Band edge emission, dBuV/m	Emission at carrier, dBuV/m	Attenuation below carrier, dBc	Limit, dBc	Margin, dB*	Verdict
2400.0	69.91	100.17	30.26	20	10.26	Pass

*- Margin = Attenuation below carrier – specification limit.

Table 7.9.3 Band edge emission inside restricted bands test results

ASSIGNED FREQUENCY RANGE: 2400.0 – 2483.5 MHz
DETECTOR USED: Peak
MODULATION: GFSK
BIT RATE: 2 Mbps
RESOLUTION BANDWIDTH: 1 MHz

Frequency, MHz	Peak field strength			Average field strength			Verdict
	Measured, dB(μV/m)	Limit, dB(μV/m)	Margin, dB*	Measured Peak, dB(μV/m)	Limit AVR, dB(μV/m)	Margin, dB*	
2390.0	44.66	74.0	-29.34	44.66	54.0	-9.34	Pass
2483.5	48.04	74.0	-25.96	48.04	54.0	-5.96	Pass

*- Margin = Attenuation below carrier – specification limit.

Reference numbers of test equipment used

HL 3903	HL 4474	HL 5902	HL 7585				
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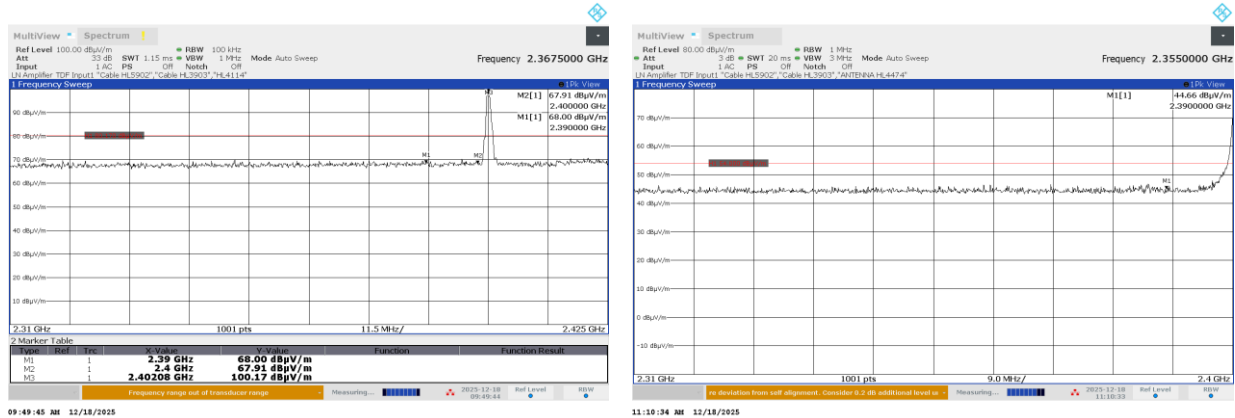
Full description is given in Appendix A.



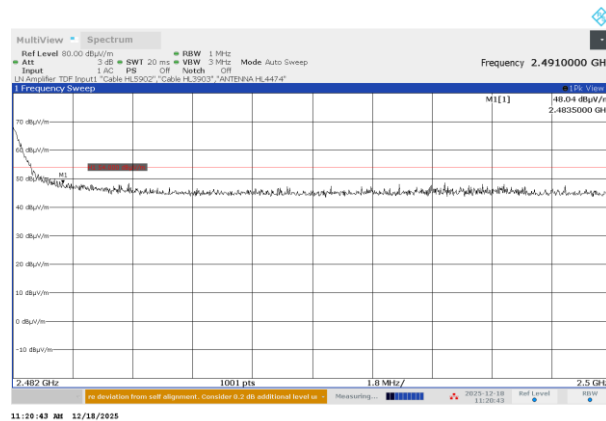
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Test specification: Section 15.247(d), RSS-247 section 5.5, Emissions at band edges			
Test procedure: ANSI C63.10, section 7.8.6			
Test mode: Compliance		Verdict: PASS	
Date(s): 18-Dec-25			
Temperature: 24 °C	Relative Humidity: 42 %	Air Pressure: 1015 hPa	Power: 3.7 VDC
Remarks:			

Plot 7.9.1 The highest band edge emission at low carrier frequency



Plot 7.9.2 The highest band edge emission at high carrier frequency





Test specification: FCC section 15.247(e), RSS-210 A8.2(b), Peak power density			
Test procedure: FR Vol. 62, page 26243, Section 15.247(d)			
Test mode: Compliance		Verdict:	
Date(s): 08-Jul-24 - 11-Jul-24			
Temperature: 25 °C	Relative Humidity: 47 %	Air Pressure: 1003 hPa	Power: 3.6 VDC
Remarks:			

7.10 Peak spectral power density

7.10.1 General

This test was performed to measure the peak spectral power density radiated by the transmitter RF antenna. Specification test are given in Table 7.10.1.

Table 7.10.1 Peak spectral power density limits

Assigned frequency range, MHz	Measurement bandwidth, kHz	Peak spectral power density, dBm	Equivalent field strength limit @ 3m, dB(μV/m)*
902.0 – 928.0	3.0	8.0	103.2
2400.0 – 2483.5			
5725.0 – 5850.0			

* - Equivalent field strength limit was calculated from the peak spectral power density as follows: $E = \sqrt{30 \times P} / r$, where P is peak spectral power density and r is antenna to EUT distance in meters.

7.10.2 Test procedure for field strength measurements

7.10.2.1 The EUT was set up as shown in Figure 7.10.1, energized and its proper operation was checked.

7.10.2.2 The EUT was adjusted to produce maximum available to end user RF output power.

7.10.2.3 The field strength of the EUT carrier frequency was measured with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360° and the measuring antenna height was swept in both vertical and horizontal polarizations.

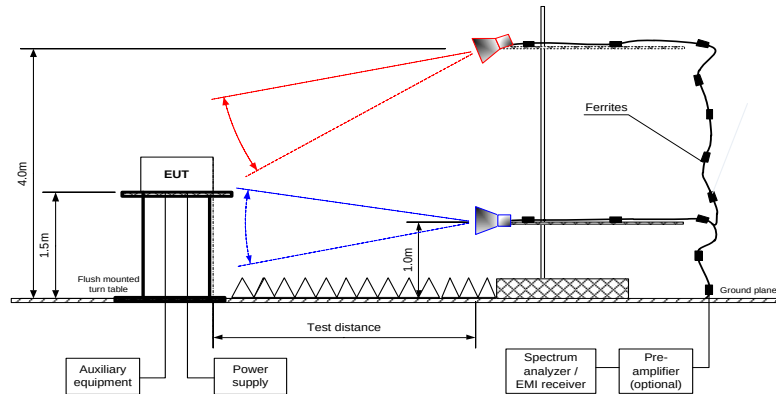
7.10.2.4 The frequency span of spectrum analyzer was set to capture the entire 6 dB band of the transmitter, in peak hold mode with resolution bandwidth set to 3.0 kHz, video bandwidth wider than resolution bandwidth, auto sweep time and sufficient number of sweeps was allowed for trace stabilization. The spectrum lines spacing was verified to be wider than 3 kHz. Otherwise the resolution bandwidth was reduced until individual spectrum lines were resolved and the power of individual spectrum lines was integrated over 3 kHz band.

7.10.2.5 The peak of emission was zoomed with span set just wide enough to capture the emission peak area and sweep time was set equal to span width divided by resolution bandwidth. Spectrum analyzer was set in peak hold mode, sufficient number of sweeps was allowed for trace stabilization and peak spectral power density was measured as provided in Table 7.10.2 and associated plots.



Test specification: FCC section 15.247(e), RSS-210 A8.2(b), Peak power density			
Test procedure: FR Vol. 62, page 26243, Section 15.247(d)			
Test mode: Compliance		Verdict:	
Date(s): 08-Jul-24 - 11-Jul-24			
Temperature: 25 °C	Relative Humidity: 47 %	Air Pressure: 1003 hPa	Power: 3.6 VDC
Remarks:			

Figure 7.10.1 Setup for carrier field strength measurements





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Test specification: FCC section 15.247(e), RSS-210 A8.2(b), Peak power density			
Test procedure: FR Vol. 62, page 26243, Section 15.247(d)			
Test mode: Compliance		Verdict:	
Date(s): 08-Jul-24 - 11-Jul-24			
Temperature: 25 °C	Relative Humidity: 47 %	Air Pressure: 1003 hPa	Power: 3.6 VDC
Remarks:			

Table 7.10.2 Field strength measurement of peak spectral power density

ASSIGNED FREQUENCY: 2400 – 2483.5 MHz
 TEST DISTANCE: 3 m
 TEST SITE: Semi anechoic chamber
 EUT HEIGHT: 1.5 m
 DETECTOR USED: Peak
 RESOLUTION BANDWIDTH: 100 kHz
 VIDEO BANDWIDTH: 300 kHz
 TEST ANTENNA TYPE: Double ridged guide (above 1000 MHz)
 MODULATION: GFSK
 BIT RATE: 1 Mbps
 TRANSMITTER OUTPUT POWER: 3.28 dBm at low carrier frequency
 3.80 dBm at mid carrier frequency
 3.82 dBm at high carrier frequency

Frequency, MHz	Field strength, dB(μV/m)	EUT antenna gain, dBi	Limit, dB(μV/m)	Margin, dB*	Antenna polarization	Antenna height, m	Turn-table position**, degrees
2402	100.71	2.5	103.2	-4.99	H	2.5	30
2440	100.55	2.5	103.2	-5.15	H	1.9	30
2480	100.66	2.5	103.2	-5.04	H	2.7	27

*- Margin = Field strength - EUT antenna gain - calculated field strength limit.

** - EUT front panel refer to 0 degrees position of turntable.

Reference numbers of test equipment used

HL 3903	HL 4474	HL 5902	HL 7585				
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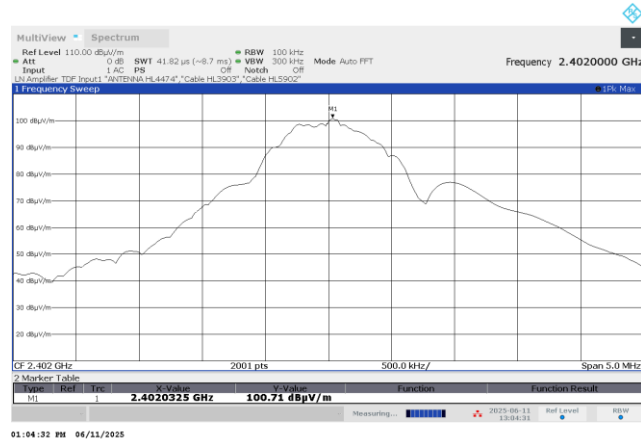
Full description is given in Appendix A.



HERMON LABORATORIES

Test specification: FCC section 15.247(e), RSS-210 A8.2(b), Peak power density			
Test procedure: FR Vol. 62, page 26243, Section 15.247(d)			
Test mode: Compliance		Verdict:	
Date(s): 08-Jul-24 - 11-Jul-24			
Temperature: 25 °C	Relative Humidity: 47 %	Air Pressure: 1003 hPa	Power: 3.6 VDC
Remarks:			

Plot 7.10.1 Peak spectral power density at low frequency



Plot 7.10.2 Peak spectral power density at mid frequency

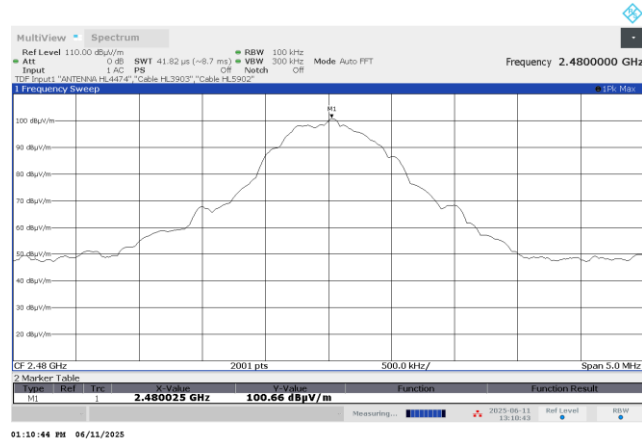




HERMON LABORATORIES

Test specification: FCC section 15.247(e), RSS-210 A8.2(b), Peak power density			
Test procedure: FR Vol. 62, page 26243, Section 15.247(d)			
Test mode: Compliance		Verdict:	
Date(s): 08-Jul-24 - 11-Jul-24			
Temperature: 25 °C	Relative Humidity: 47 %	Air Pressure: 1003 hPa	Power: 3.6 VDC
Remarks:			

Plot 7.10.3 Peak spectral power density at high frequency





Test specification: FCC Section 15.203/ RSS-Gen, Section 7.1.4, Antenna requirement			
Test procedure: Visual inspection / supplier declaration			
Test mode: Compliance		Verdict:	
Date(s): 08-Jul-24 - 11-Jul-24			
Temperature: 25 °C	Relative Humidity: 47 %	Air Pressure: 1003 hPa	Power: 3.6 VDC
Remarks:			

7.11 Antenna requirements

The EUT was verified for compliance with antenna requirements. A transmitter shall be designed to ensure that no antenna other than that furnished by the responsible party will be used with the device. It may be either permanently attached or employs a unique antenna connector for every antenna proposed for use with the EUT. This requirement does not apply to professionally installed transmitters.

The rationale for compliance with the above requirements was either visual inspection results or supplier declaration. The summary of results is provided in Table 7.11.1.

Table 7.11.1 Antenna requirements

Requirement	Rationale	Verdict
The transmitter antenna is permanently attached	Visual inspection	Comply
The transmitter employs a unique antenna connector	NA	
The transmitter requires professional installation	NA	



Test specification: Section 15.109, Radiated emission			
Test procedure: ANSI C63.4, Sections 11.6 and 12.1.4			
Test mode: Compliance		Verdict: PASS	
Date(s): 15-Jun-25			
Temperature: 25 °C	Relative Humidity: 47 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

8 Emissions tests according to FCC 47CFR part 15 subpart B and ICES-003 requirements

8.1 Radiated emission measurements at AT98-7-2-11-S-5-N

8.1.1 General

This test was performed to measure radiated emissions from the EUT enclosure. The specification test limits are given in Table 8.1.1.

Table 8.1.1 Radiated emission test limits

Frequency, MHz	Class B limit, dB(μV/m)		Class A limit, dB(μV/m)	
	10 m distance	3 m distance	10 m distance	3 m distance
FCC 47 CFR, Section 15.109				
30 - 88	29.5*	40.0	39.0	49.5*
88 - 216	33.0*	43.5	43.5	54.0*
216 - 960	35.5*	46.0	46.4	56.9*
Above 960	43.5*	54.0	49.5	60.0*
ICES-003, Section 3.2.2				
30 - 88	30.0	40.0	40.0	50.0
88 - 216	33.1	43.5	43.5	54.0
216 - 230	35.6	46.0	46.4	56.9
230 - 960	37.0	47.0	47.0	57.0
960 - 1000	43.5	54.0	49.5	60.0
1000 - 40000	---	74 (Peak) 54 (AVR)	---	80 (Peak) 60 (AVR)

* - The limit for a test distance other than specified was calculated using the inverse linear distance extrapolation factor as follows: $\text{Lim}_{S2} = \text{Lim}_{S1} + 20 \log(S1/S2)$, where $S1$ and $S2$ – the standard defined and the test distance respectively in meters.

8.1.2 Test procedure for measurements in semi-anechoic chamber

8.1.2.1 30 – 1000 MHz range. The EUT was set up as shown in Figure 8.1.1 and the associated photograph/s, energized and the EUT performance was checked.

8.1.2.2 The measurements were performed in the anechoic chamber at 3 m test distance. The specified frequency range was investigated with the antenna connected to the EMI receiver. To find the highest emission the turntable was rotated 360° and the measuring antenna height was swept from 1 to 4 m in both, vertical and horizontal polarizations. The EUT cables position was varied to maximize emission.

8.1.2.3 1000 – 40000 MHz range. The EUT was set up as shown in Figure 8.1.2 and the associated photograph/s, energized and the EUT performance was checked.

8.1.2.4 The measurements were performed in the semi anechoic chamber at 3 m test distance. The specified frequency range was investigated with the antenna connected to the EMI receiver. To find the highest emission the turntable was rotated 360° and the measuring antenna height was swept from 1 to 4 m in both, vertical and horizontal polarizations. In order to stay within the 3 dB beamwidth while keeping the antenna height scanned from 1 to 4 m, a few sweeps with different antenna angles over the entire height were performed.

8.1.2.5 The worst test results with respect to the limits were recorded in Table 8.1.2 and shown in the associated plots.



Test specification: Section 15.109, Radiated emission			
Test procedure: ANSI C63.4, Sections 11.6 and 12.1.4			
Test mode: Compliance		Verdict: PASS	
Date(s): 15-Jun-25			
Temperature: 25 °C	Relative Humidity: 47 %	Air Pressure: 1012 hPa	Power: 3.7 VDC
Remarks:			

Figure 8.1.1 Setup for radiated emission measurements in anechoic chamber in 30 – 1000 MHz range, table-top EUT

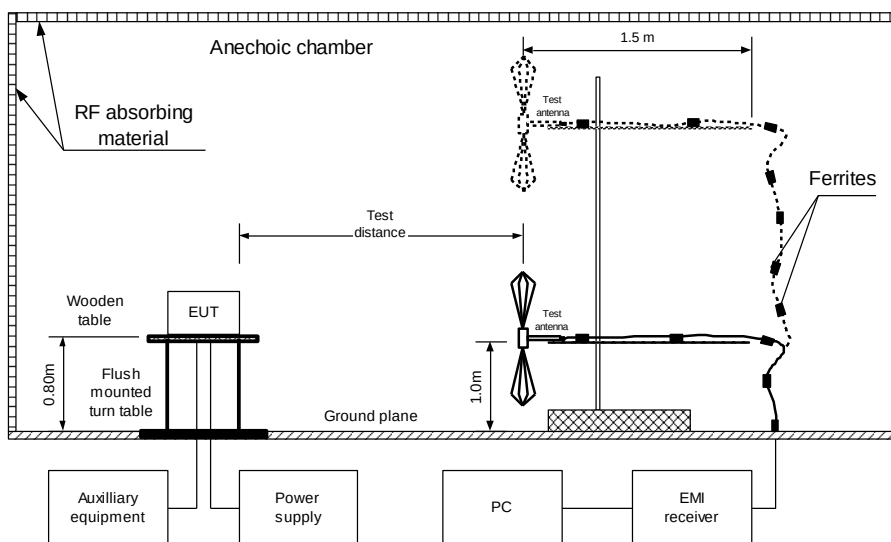


Figure 8.1.2 Setup for radiated emission measurements in 1000 – 40000 MHz range, table-top EUT

