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ELECTRICAL TESTING
1633.01

TEST REPORT

ACCORDING TO:

FCC 47 CFR part 15 subpart C §15.247 (FHSS), RSS-247 Issue 4: 2025, RSS-Gen Issue 5

FOR:
Vence Corp

EUT:
Vence Collar System
Model: Vence Collar

FCC ID: 2AX22-SHVCR30
IC: 26779- SHVCR30

Revision table

Radio test report

for

Vence Collar System, model: Vence Collar

Revision	Description	Affected pages	Date	Approval
-	New release	All	05-Apr-26	
1	Changing model name	1, 2 & 6	04-May-26	
2	Changing Product Name and Software version	1, 2 & 6	14-May-26	

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1. Applicant Information

Client Name	Vence Corp
Address	16855 W. Bernardo Dr Suite 100 San Diego, CA 92127
Telephone	858-688-7640
E-mail	Robert.luo@merck.com
Contact Name	Robert Luo

2. Equipment under test attributes

Product name	Vence Collar System
Model	Vence Collar
Serial number	ZKV51010CR100987
Hardware version	51030
Software (Radio) version	3.0.0.1

3. Manufacturer information

Manufacturer Name	Vence Corp
Address	16855 W. Bernardo Dr Suite 100 San Diego, CA 92127
Telephone	858-688-7640
E-mail	Robert.luo@merck.com
Contact Name	Robert Luo

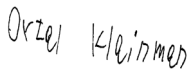
4. Test details

Project ID:	144388
Locations	QualiTech, 43 HaSivim St, Petah Tikva, Israel
Testing started	11-Feb-26
Testing completed	24-Feb-26
Test specifications:	FCC 47 CFR part 15 subpart C §15.247 (FHSS), RSS-247 Issue 3: 2023, RSS-Gen Issue 5

5. Tests summary

Test	Status
FCC 15.247 FHSS_without RF antenna connector	
Section 15.247(a)1, 20 dB bandwidth	Pass
Section 15.247(a)1, Frequency separation	Pass
Section 15.247(a)1, Number of hopping frequencies	Pass
Section 15.247(a)1, Average time of occupancy	Pass
Section 15.247(b), Peak output power	Pass
Section 15.247(c), Radiated spurious emissions	Pass
Section 15.247(c), Emissions at band edges	Pass
Section 15.203, Antenna requirements	Pass

The test results relate only to the items tested. Pass/ fail decision was based on nominal values.

	Name and title	Date	Signature
Tested by	Ortal Klainman, Test Engineer	17-Feb-26 – 23-Feb-26	
Prepared by	Nofar Green, Test Engineer	31-Mar-26	
Reviewed by	Michael Gudovsky, Team Leader	05-Apr-26	
Approved by	Michael Nikishin, Head of Department	05-Apr-26	

6. General information

Note: The following data in Section 6.1 is provided by the customer and represents his sole responsibility.

6.1. EUT description

6.1.1. EUT brief description

The EUT is This is a battery-operated cow neck collar used to track and manage a cow to stay in or out of programmable virtual fences (Vences).
Each cow's location is tracked by the CR electronics and a sound and/or electric stimulus are applied to pressure the animals based on distance to Vence management zone edges.

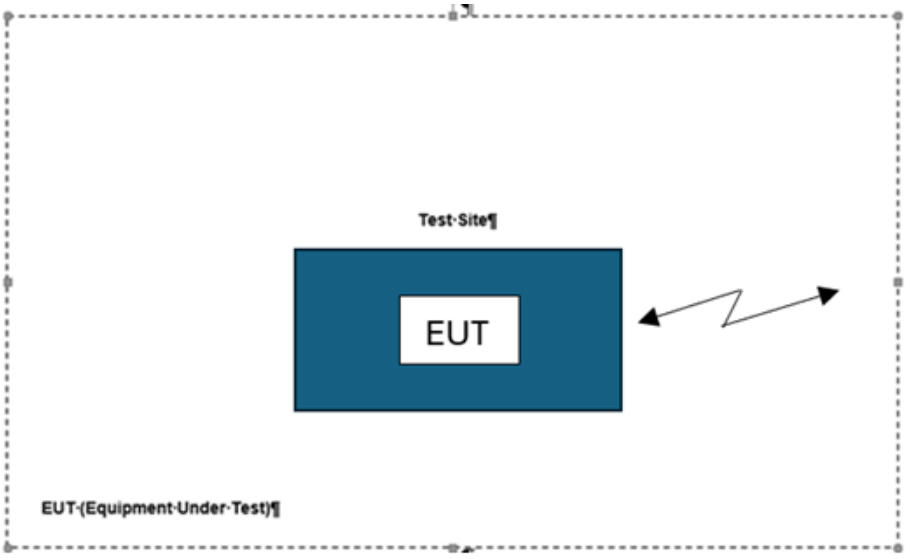
6.1.2. EUT mechanical characteristics

The Equipment Under Test (EUT) measures (H) 169.75 mm by (W) 75.25 mm by (D) 121 mm.
The Equipment Under Test (EUT) weights 1.085kg.

6.1.3. Power supply

Power supply type	Voltage (VDC)	Current (A)
Battery	3.6	0.1

6.1.4. Test configuration



6.1.5. Operating frequencies

Frequency	Description
Uplink 903 to 914.2MHz increments 200 kHz Downlink 923.3 to 927.5 MHz increment 600 kHz	**LoRaWAN chip type:** IC RF LOW POWER SUB-GHz LoRa RF TRANSCEIVER 24QFN **MODEL:** SX1262IMLTRT

6.2. Transmitter characteristics

6.2.1. FHSS

Type of equipment							
V	Stand-alone (Equipment with or without its own control provisions)						
	Combined equipment (Equipment where the radio part is fully integrated within another type of equipment)						
	Plug-in card (Equipment intended for a variety of host systems)						
Assigned frequency ranges	902 – 928 MHz						
Operating frequencies	Uplink:902.3 - 914.9 MHz Downlink: 923.3- 927.5 MHz						
Maximum rated output power	At transmitter 50 Ω RF output connector					dBm	
	Peak output power					24.153 dBm	
Is transmitter output power variable?	**V**	No					
		Yes		continuous variable			
				stepped variable with stepsize		dB	
				minimum RF power		dBm	
				maximum RF power		dBm	
Antenna connection							
unique coupling	standard connector	**V**	integral	with temporary RF connector			
				V without temporary RF connector			
Antenna/s technical characteristics							
Type	Manufacturer	Model number	Gain				
Integrated	NA	NA	1.2 dBi				
Transmitter aggregate data rate/s	1.757 kbps						
Type of modulation	LoRa						
Modulating test signal (baseband)							
Transmitter power source							
V	Battery	**Nominal rated voltage**	3.6 VDC	Battery type	Primary battery cell		
	DC	**Nominal rated voltage**					
	AC mains	**Nominal rated voltage**		Frequency			
Common power source for transmitter and receiver				**V** yes	no		
Spread spectrum technique used	**V**	Frequency hopping (FHSS)					
		Digital transmission system (DTS)					
		Hybrid					
Spread spectrum parameters for transmitters tested per FCC 15.247 only							
FHSS	Total number of hops	64					
	Bandwidth per hop	140.8 kHz					
	Max. separation of hops	200 kHz					

Test specification:	FCC section 15.247(a)1, RSS-247 section 5.1(c), 20 dB bandwidth		
Test procedure:	ANSI C63.10, section 7.8.7		
Test Date:	11-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24.5 °C	Air pressure: 1011 hPa	Relative humidity: 33 %
Remarks:			

7. Transmitter tests according to 47CFR part 15 subpart C and RSS-247 requirements

7.1. 20 dB bandwidth

7.1.1. General

This test was performed to measure the 20 dB bandwidth of the transmitter hopping channel. Specification test limits are given in Table 7.1.1.

Table 7.1.1 The 20 dB bandwidth limits

Assigned frequency, MHz	Maximum bandwidth, kHz	Modulation envelope reference points*, dBc
902.0 – 928.0	**250**	**20**

* - Modulation envelope reference points provided in terms of attenuation below the peak of modulated carrier.

7.1.2. Test procedure

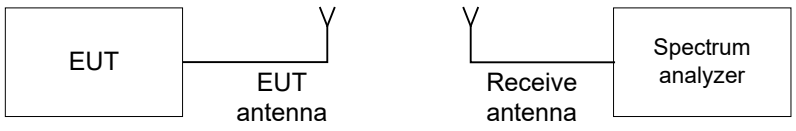
7.1.2.1. The EUT was set up as shown in Figure 7.1.1, energized and its proper operation was checked.

7.1.2.2. The EUT was set to transmit modulated carrier at maximum data rate.

7.1.2.3. The transmitter bandwidth was measured with spectrum analyzer as frequency delta between reference points on modulation envelope and provided in Table 7.1.2 and associated plot.

7.1.2.4. The test was repeated for each data rate and each modulation format.

Figure 7.1.1 The 20 dB bandwidth test setup



Test specification:	**FCC section 15.247(a)1, RSS-247 section 5.1(c), 20 dB bandwidth**		
Test procedure:	ANSI C63.10, section 7.8.7		
Test Date:	11-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.5 °C	**Air pressure:** 1011 hPa	**Relative humidity:** 33 %
Remarks:			

Table 7.1.2 The 20 dB bandwidth test results

ASSIGNED FREQUENCY BAND: 902-928 MHz
DETECTOR USED: Peak
SWEEP TIME: Auto
VIDEO BANDWIDTH: ≥ RBW
MODULATION ENVELOPE REFERENCE POINTS: 20.0 dBc
FREQUENCY HOPPING: Disabled

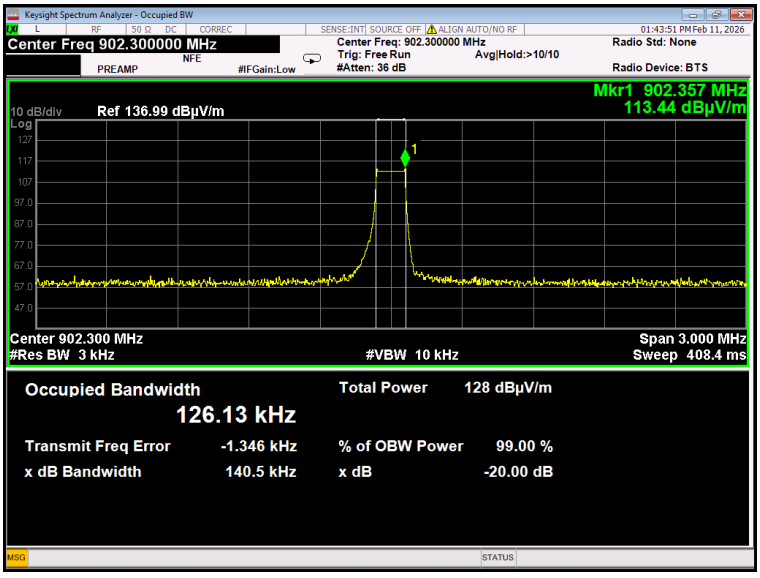
Carrier frequency, MHz	Type of modulation	Data rate, Kbps	99% OBW KHz	20 dB bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
Low frequency							
902.3	LoRa	1.7	126.13	140.5	250	-109.5	PASS
Mid frequency							
908.7	LoRa	1.7	126.61	140.8	250	-109.2	PASS
High frequency							
914.9	LoRa	1.7	126.37	140.7	250	-109.3	PASS

Reference numbers of test equipment used

HL 6208	HL 6573	HL 6918	HL 8120					

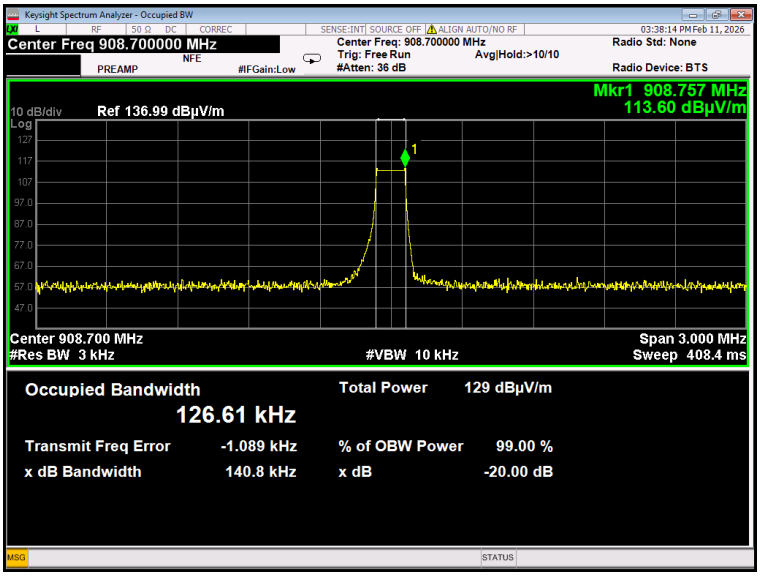
Full description is given in Appendix A.

Plot 7.1.1 The 20 dB bandwidth test result at low frequency

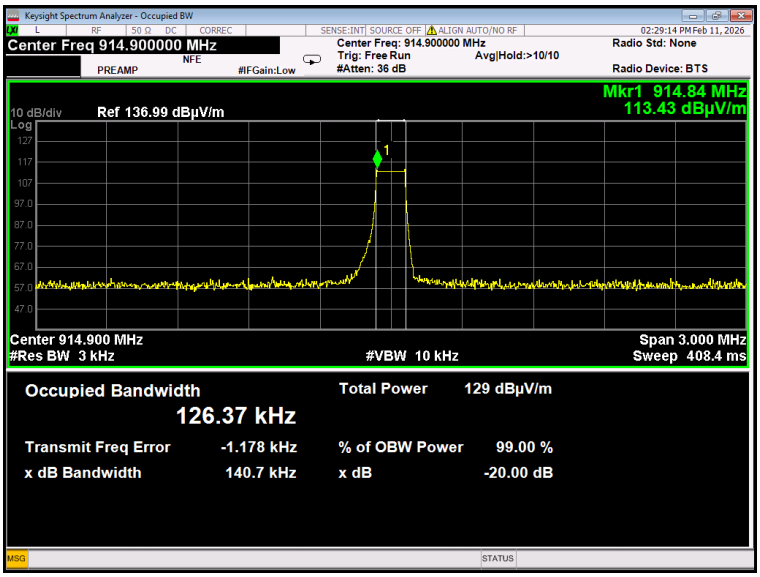


Test specification:	**FCC section 15.247(a)1, RSS-247 section 5.1(c), 20 dB bandwidth**		
Test procedure:	ANSI C63.10, section 7.8.7		
Test Date:	11-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.5 °C	**Air pressure:** 1011 hPa	**Relative humidity:** 33 %
Remarks:			

Plot 7.1.2 The 20 dB bandwidth test result at mid frequency



Plot 7.1.3 The 20 dB bandwidth test result at high frequency



Test specification:	FCC section 15.247(a)1, RSS-247 section 5.1(b), Frequency separation		
Test procedure:	ANSI C63.10, section 7.8.2		
Test Date:	17-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24.3 °C	Air pressure: 1012 hPa	Relative humidity: 45 %
Remarks:			

7.2. Carrier frequency separation

7.2.1. General

This test was performed to measure frequency separation between the peaks of adjacent channels. Specification test limits are given in Table 7.2.1.

Table 7.2.1 Carrier frequency separation limits

Assigned frequency range, MHz	Carrier frequency separation	
	Output power 30 dBm	Output power 21 dBm
902.0 – 928.0	**25 kHz or 20 dB bandwidth of the hopping channel, whichever is greater**	25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater
2400.0 – 2483.5		
5725.0 – 5850.0		

7.2.2. Test procedure

7.2.2.1. The EUT was set up as shown in Figure 7.2.1, energized with frequency hopping function enabled and its proper operation was checked.

7.2.2.2. The spectrum analyzer span was set to capture the carrier frequency and both of adjacent channels, the lower and the higher. The resolution bandwidth was set wider than 1 % of the frequency span.

7.2.2.3. The spectrum analyzer was set in max hold mode and allowed trace to stabilize.

7.2.2.4. The frequency separation between the peaks of adjacent channels was measured as provided in Table 7.2.2 and associated plots.

Figure 7.2.1 Carrier frequency separation test setup

Test specification:	**FCC section 15.247(a)1, RSS-247 section 5.1(b), Frequency separation**		
Test procedure:	ANSI C63.10, section 7.8.2		
Test Date:	17-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.3 °C	**Air pressure:** 1012 hPa	**Relative humidity:** 45 %
Remarks:			

Table 7.2.2 Carrier frequency separation test results

ASSIGNED FREQUENCY:	902-928 MHz
MODULATION:	LoRa
BIT RATE:	1.7 Kbps
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	≥ 1% of the span
VIDEO BANDWIDTH:	≥ RBW
FREQUENCY HOPPING:	Enabled
20 dB BANDWIDTH:	140.8 kHz

Carrier frequency separation, kHz	Limit, kHz	Margin*	Verdict
200	140.8	59.2	PASS

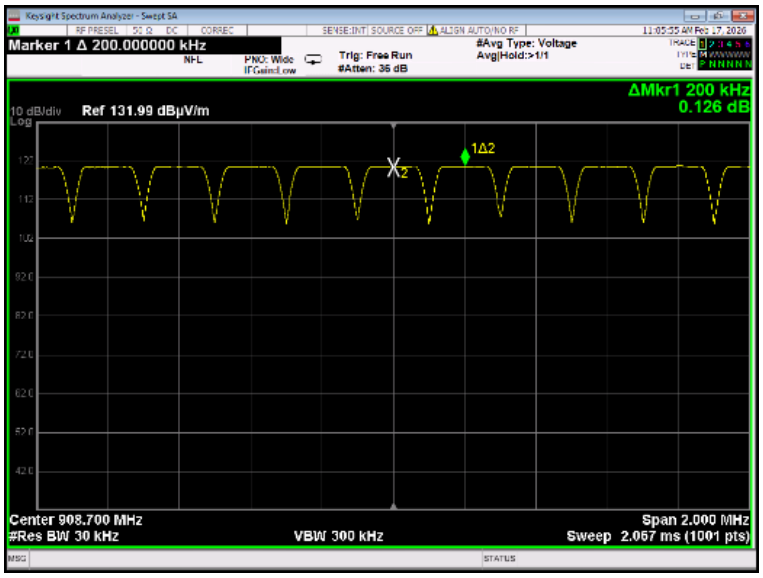
* - Margin = Carrier frequency separation – specification limit.

Reference numbers of test equipment used

HL 6208	HL 6573	HL 6918	HL 8120				

Full description is given in Appendix A.

Plot 7.2.1 Carrier frequency separation



Test specification:	**FCC section 15.247(a)1, RSS-247 section 5.1(c), Number of hopping frequencies**		
Test procedure:	ANSI C63.10, section 7.8.2		
Test Date:	17-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.3 °C	**Air pressure:** 1012 hPa	**Relative humidity:** 34 %
Remarks:			

7.3. Number of hopping frequencies

7.3.1. General

This test was performed to calculate the number of hopping frequencies used by the EUT. Specification test limits are given in Table 7.3.1.

Table 7.3.1 Minimum number of hopping frequencies

Assigned frequency range, MHz	Number of hopping frequencies
902.0 – 928.0	50 (if the 20 dB bandwidth is less than 250 kHz) 25 (if the 20 dB bandwidth is 250 kHz or greater)
2400.0 – 2483.5	15
5725.0 – 5850.0	75

7.3.2. Test procedure

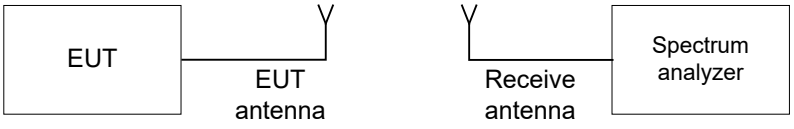
7.3.2.1. The EUT was set up as shown in Figure 7.3.1, energized with frequency hopping function enabled and its proper operation was checked.

7.3.2.2. Initially the spectrum analyzer span was set equal to frequency band of operation and the resolution bandwidth was set wider than 1 % of the frequency span. If the separate hopping channels were not clearly resolved the frequency band of operation was broken to sections and the resolution bandwidth was set wider than 1 % of the frequency span of each section.

7.3.2.3. The spectrum analyzer was set in max hold mode and allowed trace to stabilize.

7.3.2.4. The number of frequency hopping channels was calculated as provided in Table 7.3.2 and associated plots.

Figure 7.3.1 Hopping frequencies test setup



Test specification:	**FCC section 15.247(a)1, RSS-247 section 5.1(c), Number of hopping frequencies**		
Test procedure:	ANSI C63.10, section 7.8.2		
Test Date:	17-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.3 °C	**Air pressure:** 1012 hPa	**Relative humidity:** 34 %
Remarks:			

Table 7.3.2 Hopping frequencies test results

ASSIGNED FREQUENCY:	902-928 MHz
MODULATION:	LoRa
BIT RATE:	1.7 Kbps
DETECTOR USED:	Peak
VIDEO BANDWIDTH:	≥ RBW
FREQUENCY HOPPING:	Enabled

Number of hopping frequencies	Minimum number of hopping frequencies	Margin*	Verdict
64	50	14	PASS

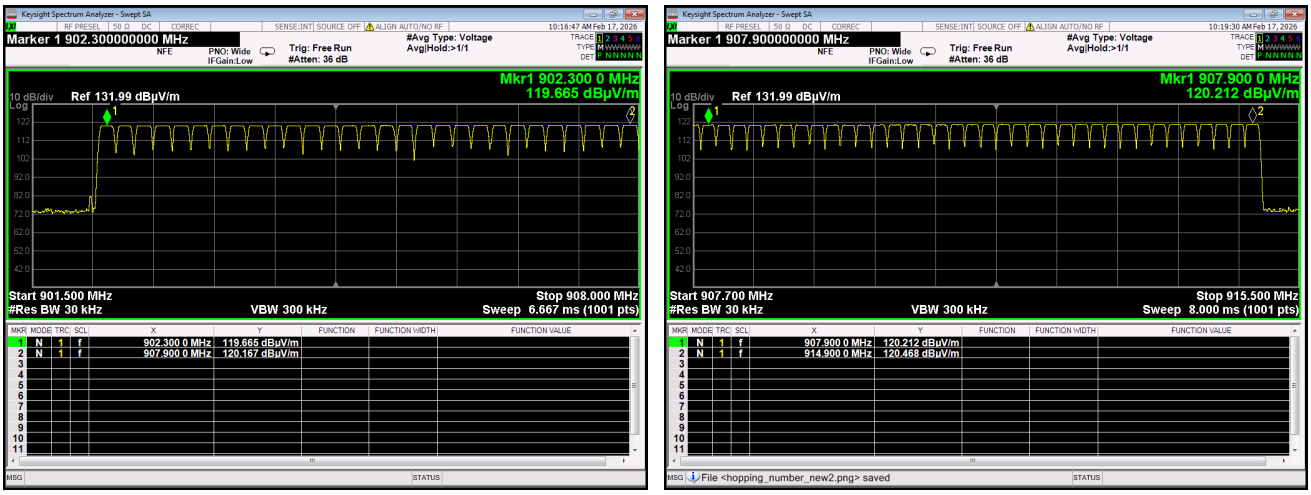
* - Margin = Number of hopping frequencies – Minimum number of hopping frequencies.

Reference numbers of test equipment used

HL 6208	HL 6573	HL 6918	HL 8120				

Full description is given in Appendix A.

Plot 7.3.1 Number of hopping frequencies



Test specification:	FCC section 15.247(a)1, RSS-247 section 5.1(c), Average time of occupancy		
Test procedure:	ANSI C63.10, section 7.8.4		
Test Date:	17-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24.4 °C	Air pressure: 1012 hPa	Relative humidity: 39 %
Remarks:			

7.4. Average time of occupancy

7.4.1. General

This test was performed to calculate the average time of occupancy (dwell time) on any frequency channel of the EUT. Specification test limits are given in Table 7.4.1.

Table 7.4.1 Average time of occupancy limits

Assigned frequency range, MHz	Maximum average time of occupancy, s	Investigated period, s	Number of hopping frequencies
902.0 – 928.0	**0.4**	**20.0**	**≥ 50**
902.0 – 928.0	0.4	10.0	< 50
2400.0 – 2483.5	0.4	0.4 × N	N (≥ 15)
5725.0 – 5850.0	0.4	30.0	≥ 75

7.4.2. Test procedure

7.4.2.1. The EUT was set up as shown in Figure 7.4.1, energized with frequency hopping function enabled and its proper operation was checked.

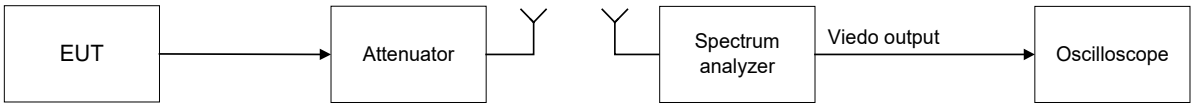
7.4.2.2. The spectrum analyzer span was set to zero centered on a hopping channel.

7.4.2.3. The single transmission duration and period were measured with oscilloscope.

7.4.2.4. The average time of occupancy was calculated as the single transmission time multiplied by the investigated period and divided by the single transmission period.

7.4.2.5. The test was repeated at each data rate and modulation type as provided in Table 7.4.2 and associated plots.

Figure 7.4.1 Average time of occupancy test setup



Test specification:	FCC section 15.247(a)1, RSS-247 section 5.1(c), Average time of occupancy		
Test procedure:	ANSI C63.10, section 7.8.4		
Test Date:	17-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24.4 °C	Air pressure: 1012 hPa	Relative humidity: 39 %
Remarks:			

Table 7.4.2 Average time of occupancy test results

ASSIGNED FREQUENCY:	902-928MHz
MODULATION:	LoRa
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	39 KHz
VIDEO BANDWIDTH:	390 KHz
NUMBER OF HOPPING FREQUENCIES:	64
INVESTIGATED PERIOD:	20s
FREQUENCY HOPPING:	Enabled

Carrier frequency, MHz	Single transmission duration, s	Single transmission period, s	Average time of occupancy*, s	Bit rate, Mbps	Limit, s	Margin, s**	Verdict
902.3	0.380	1	0.380	1.7	0.4	-0.02	PASS
908.7	0.379	1	0.379	1.7	0.4	-0.03	PASS
914.9	0.380	1	0.380	1.7	0.4	-0.02	PASS

* - Average time of occupancy = (Single transmission duration × Investigated period) / (Single transmission period × number of hopping channels).
** - Margin = Average time of occupancy – specification limit.

Reference numbers of test equipment used

HL 6208	HL 6573	HL 6918	HL 8120				

Full description is given in Appendix A.

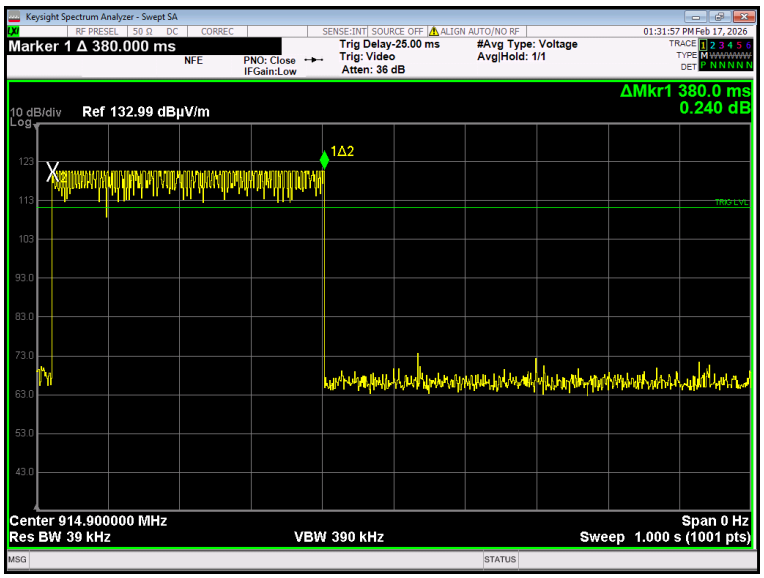
Test specification:	**FCC section 15.247(a)1, RSS-247 section 5.1(c), Average time of occupancy**		
Test procedure:	ANSI C63.10, section 7.8.4		
Test Date:	17-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.4 °C	**Air pressure:** 1012 hPa	**Relative humidity:** 39 %
Remarks:			

Plot 7.4.1 Single transmission duration, 902.3 MHz

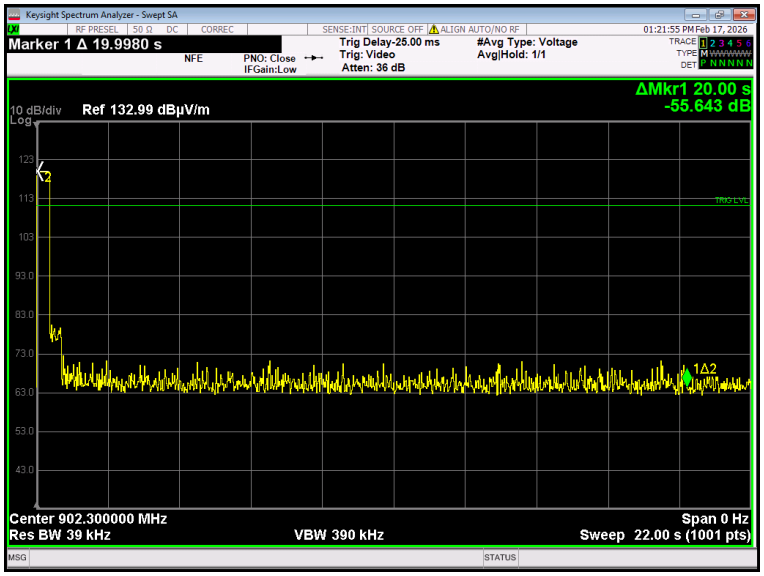
Plot 7.4.2 Single transmission duration, 908.7 MHz

Test specification:	**FCC section 15.247(a)1, RSS-247 section 5.1(c), Average time of occupancy**		
Test procedure:	ANSI C63.10, section 7.8.4		
Test Date:	17-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.4 °C	**Air pressure:** 1012 hPa	**Relative humidity:** 39 %
Remarks:			

Plot 7.4.3 Single transmission duration, 914.9 MHz

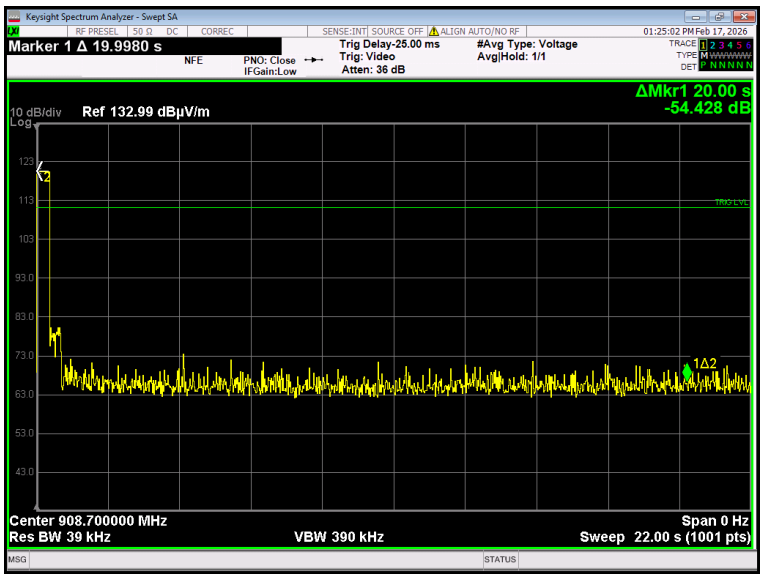


Plot 7.4.4 Single transmission period, 902.3 MHz

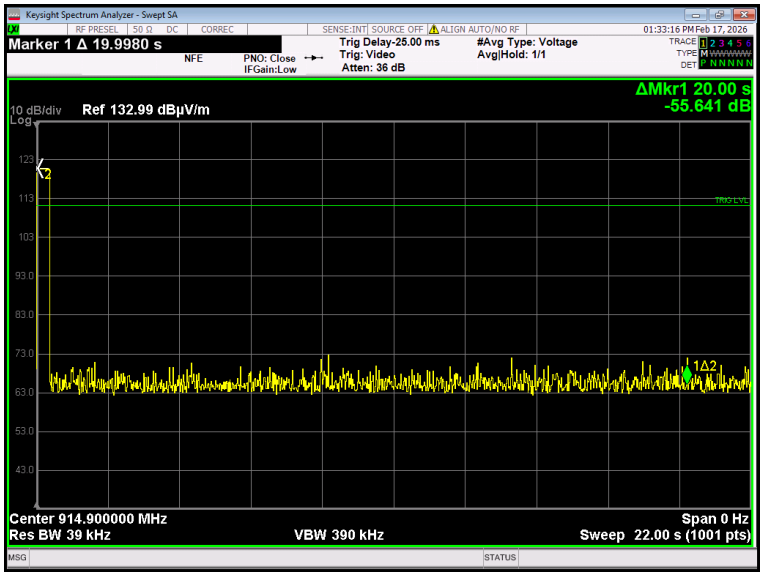


Test specification:	**FCC section 15.247(a)1, RSS-247 section 5.1(c), Average time of occupancy**		
Test procedure:	ANSI C63.10, section 7.8.4		
Test Date:	17-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.4 °C	**Air pressure:** 1012 hPa	**Relative humidity:** 39 %
Remarks:			

Plot 7.4.5 Single transmission period, 908.7 MHz



Plot 7.4.6 Single transmission period, 914.9 MHz



Test specification:	FCC section 15.247(b), RSS-247 section 5.4(a), Peak output power		
Test procedure:	ANSI C63.10, section 7.8.5		
Test Date:	11-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24.5 °C	Air pressure: 1011 hPa	Relative humidity: 33 %
Remarks:			

7.5. Peak output power

7.5.1. General

This test was performed to measure the maximum peak output power radiated by transmitter. Specification test limits are given in Table 7.5.1.

Table 7.5.1 Peak output power limits

Assigned frequency range, MHz	Peak output power*		Equivalent field strength limit @ 3m, dB(μV/m)*	Maximum antenna gain, dBi
	W	dBm		
902.0 – 928.0	**0.25 (<50 hopping channels)** **1.0 (≥50 hopping channels)**	**24.0(<50 hopping channels)** **30.0 (≥50 hopping channels)**	**125.2 (<50 hopping channels)** **131.2 (≥50 hopping channels)**	**6.0***

*- Equivalent field strength limit was calculated from the peak output power as follows: E=sqrt(30×P×G)/r, where P is peak output power in Watts, r is antenna to EUT distance in meters and G is transmitter antenna gain in dBi.
**- The limit is provided in terms of conducted RF power at the antenna connector. If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power limit shall be reduced below the stated value as follows:

- by 1 dB for every 3 dB that the directional gain of antenna exceeds 6 dBi for fixed point-to-point transmitters operate in 2400-2483.5 MHz band;
- without any corresponding reduction for fixed point-to-point transmitters operate in 5725-5850 MHz band;
- by the amount in dB that the directional gain of antenna exceeds 6 dBi for the rest of transmitters.

7.5.2. Test procedure

7.5.2.1. The EUT was set up as shown in Figure 7.5.1, energized and its proper operation was checked.

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

7.5.2.3. The frequency span of spectrum analyzer was set approximately 5 times wider than 20 dB bandwidth of the EUT and the resolution bandwidth was set wider than 20 dB bandwidth of the EUT. To find maximum radiation the turntable was rotated 360^0 and the measuring antenna height was swept in both vertical and horizontal polarizations.

7.5.2.4. The maximum field strength of the EUT carrier frequency was measured as provided in Table 7.5.2 and associated plots.

7.5.2.5. The maximum peak output power was calculated from the field strength of carrier as follows:

$$P = (E \times d)^2 / (30 \times G),$$

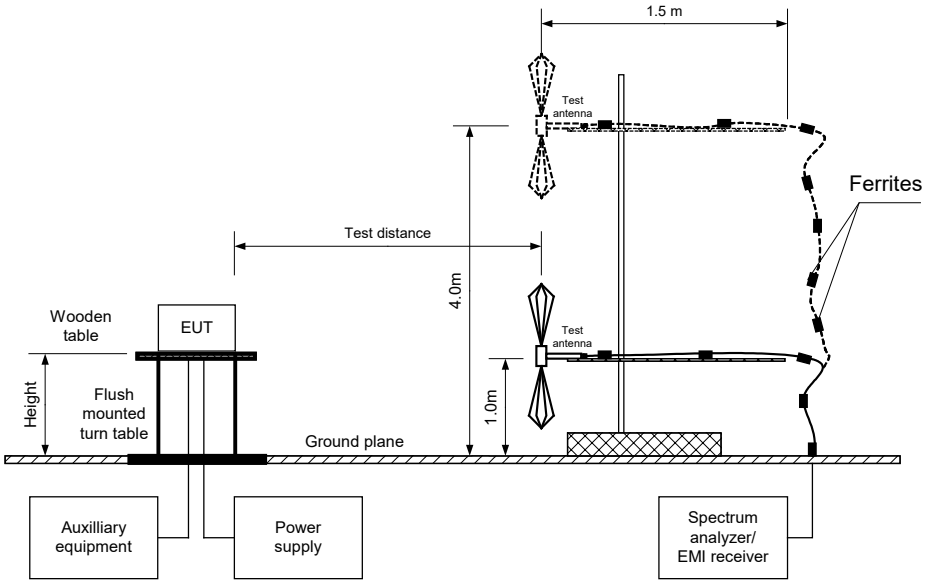
where P is the peak output power in W, E is the field strength in V/m, d is the test distance and G is the transmitter numeric antenna gain over an isotropic radiator.
The above equation was converted in logarithmic units for 3 m test distance:

Peak output power in dBm = Field strength in dB(μV/m) - Transmitter antenna gain in dBi – 95.2 dB

7.5.2.6. The worst test results (the lowest margins) were recorded in Table 7.5.2.

Test specification:	FCC section 15.247(b), RSS-247 section 5.4(a), Peak output power		
Test procedure:	ANSI C63.10, section 7.8.5		
Test Date:	11-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24.5 °C	Air pressure: 1011 hPa	Relative humidity: 33 %
Remarks:			

Figure 7.5.1 Setup for carrier field strength measurements



Test specification:	**FCC section 15.247(b), RSS-247 section 5.4(a), Peak output power**		
Test procedure:	ANSI C63.10, section 7.8.5		
Test Date:	11-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.5 °C	**Air pressure:** 1011 hPa	**Relative humidity:** 33 %
Remarks:			

Table 7.5.2 Peak output power test results

ASSIGNED FREQUENCY:	902-928 MHz
TEST DISTANCE:	3 m
TEST SITE:	Semi anechoic chamber
EUT HEIGHT:	0.8 m
DETECTOR USED:	Peak
TEST ANTENNA TYPE:	Biconilog (30 MHz – 1000 MHz)
MODULATION:	LoRa
BIT RATE:	1.7 Kbps
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
DETECTOR USED:	Peak
EUT 20 dB BANDWIDTH:	140.8 KHz
RESOLUTION BANDWIDTH:	300KHz
VIDEO BANDWIDTH:	1 MHz
FREQUENCY HOPPING:	Disabled
NUMBER OF FREQUENCY HOPPING CHANNELS:	64

Frequency, MHz	Field strength, dB(μV/m)	Antenna polarization	Antenna height, m	Azimuth, degrees*	EUT antenna gain, dBi	Peak output power, dBm**	Limit, dBm	Margin, dB***	Verdict
902.295	120.553	Horizontal	1.50	43	1.2	24.153	30.000	-5.847	PASS
902.265	115.528	Vertical	1.50	95	1.2	19.128	30.000	-10.872	PASS
908.680	120.339	Horizontal	1.5	36	1.2	23.939	30.000	-6.061	PASS
908.670	115.626	Vertical	1.5	99	1.2	19.226	30.000	-10.774	PASS
914.960	120.251	Horizontal	1.5	43	1.2	23.851	30.000	-6.149	PASS
914.945	115.561	Vertical	1.5	96	1.2	19.161	30.000	-10.839	PASS

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

******- Peak output power was calculated from the field strength of carrier as follows: $P = (E \times d)^2 / (30 \times G)$,
where P is the peak output power in W, E is the field strength in V/m, d is the test distance in meters and G is the transmitter numeric antenna gain over an isotropic radiator. The above equation was converted in logarithmic units for 3 m test distance: *Peak output power in dBm = Field strength in dB(μV/m) - Transmitter antenna gain in dBi – 95.2 dB*

***- Margin = Peak output power – specification limit.

Reference numbers of test equipment used

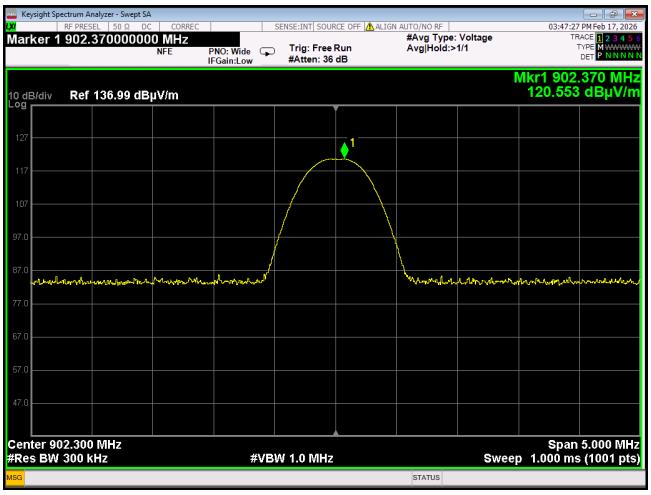
HL 6208	HL 6573	HL 6918	HL 8120				

Full description is given in Appendix A.

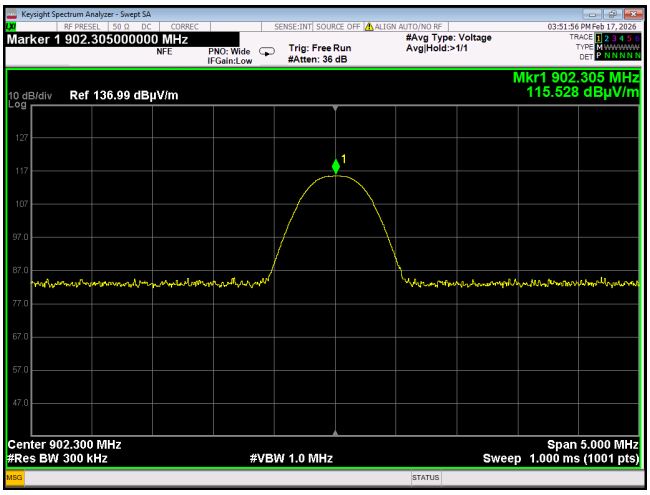
Test specification:	**FCC section 15.247(b), RSS-247 section 5.4(a), Peak output power**		
Test procedure:	ANSI C63.10, section 7.8.5		
Test Date:	11-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.5 °C	**Air pressure:** 1011 hPa	**Relative humidity:** 33 %
Remarks:			

Plot 7.5.1 Field strength of carrier at low frequency and Unom

Horizontal

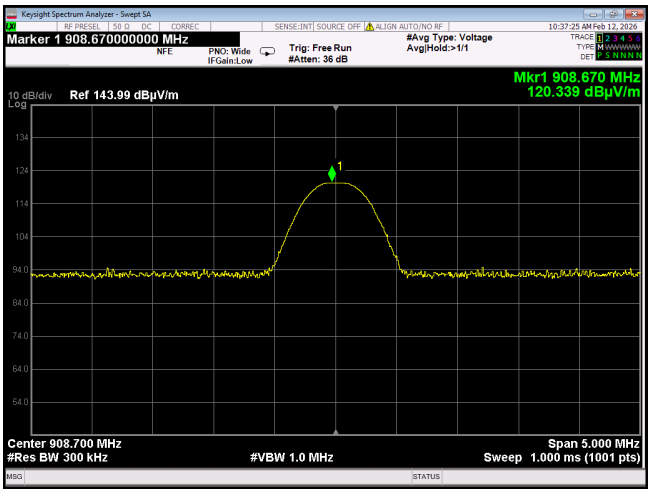


Vertical

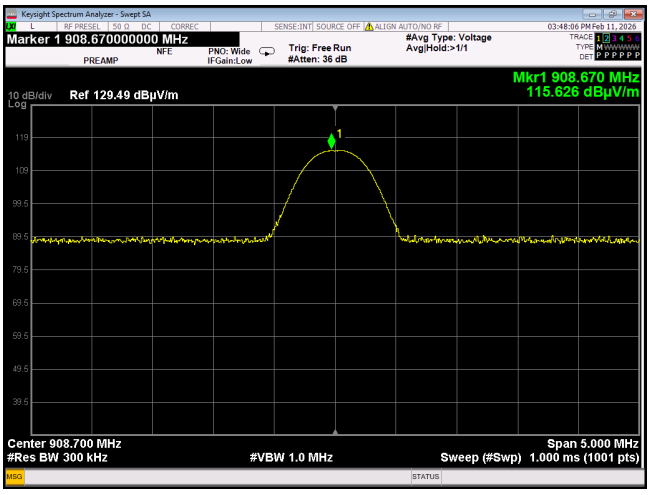


Plot 7.5.2 Field strength of carrier at mid frequency and Unom

Horizontal



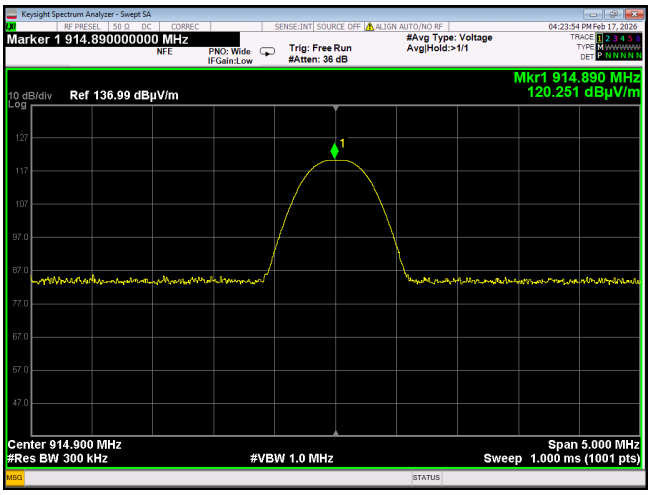
Vertical



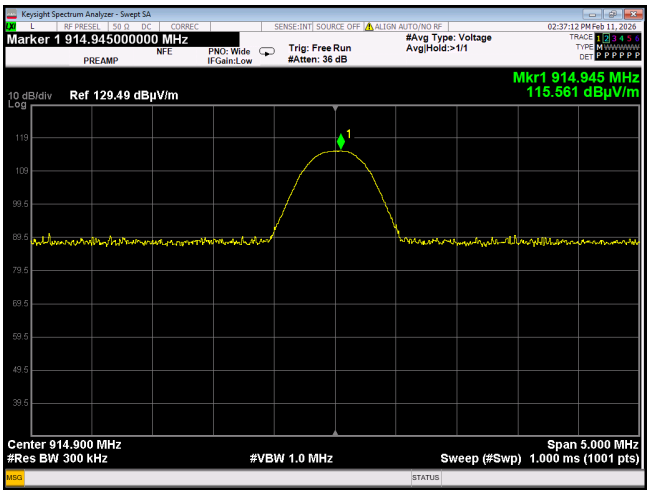
Test specification:	**FCC section 15.247(b), RSS-247 section 5.4(a), Peak output power**		
Test procedure:	ANSI C63.10, section 7.8.5		
Test Date:	11-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.5 °C	**Air pressure:** 1011 hPa	**Relative humidity:** 33 %
Remarks:			

Plot 7.5.3 Field strength of carrier at high frequency and Unom

Horizontal



Vertical



Test specification:	FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24 °C	Air pressure: 1010 hPa	Relative humidity: 34 %
Remarks:			

7.6. Field strength of spurious emissions

7.6.1. General

This test was performed to measure field strength of spurious emissions from the EUT. Specification test limits are given in Table 7.6.1.

Table 7.6.1 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 – 10thharmonic	74.0	NA	54.0	

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

$$Lim_{S2} = Lim_{S1} + 40 \log (S_1/S_2),$$

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.

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

7.6.2.1. The EUT was set up as shown in Figure 7.6.1, energized and the performance check was conducted.

7.6.2.2. The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360^0 and the measuring antenna was rotated around its vertical axis.

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

7.6.3. Test procedure for spurious emission field strength measurements above 30 MHz

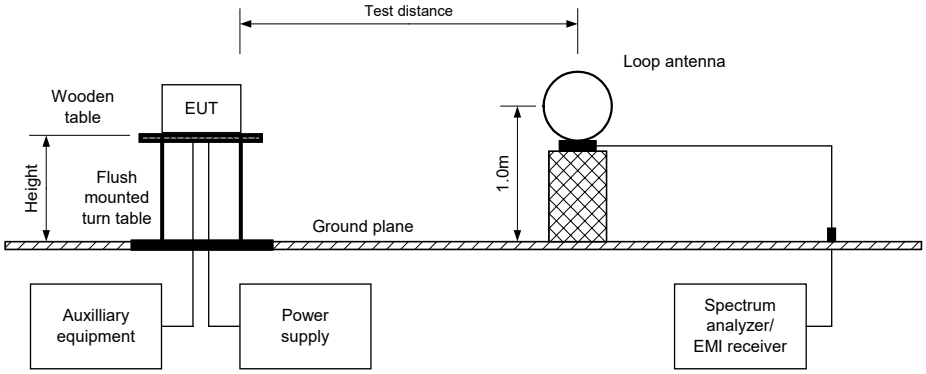
7.6.3.1. The EUT was set up as shown in Figure 7.6.2, Figure 1.1.3, energized and the performance check was conducted.

7.6.3.2. The specified frequency range was investigated with antenna connected to spectrum analyzer/ EMI receiver. To find maximum radiation the turntable was rotated 360^0, the measuring antenna height was changed from 1 to 4 m, its polarization was switched from vertical to horizontal.

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

Test specification:	FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24 °C	Air pressure: 1010 hPa	Relative humidity: 34 %
Remarks:			

Figure 7.6.1 Setup for spurious emission field strength measurements below 30 MHz



Test specification:	FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24 °C	Air pressure: 1010 hPa	Relative humidity: 34 %
Remarks:			

Figure 7.6.2 Setup for spurious emission field strength measurements from 30 to 1000 MHz

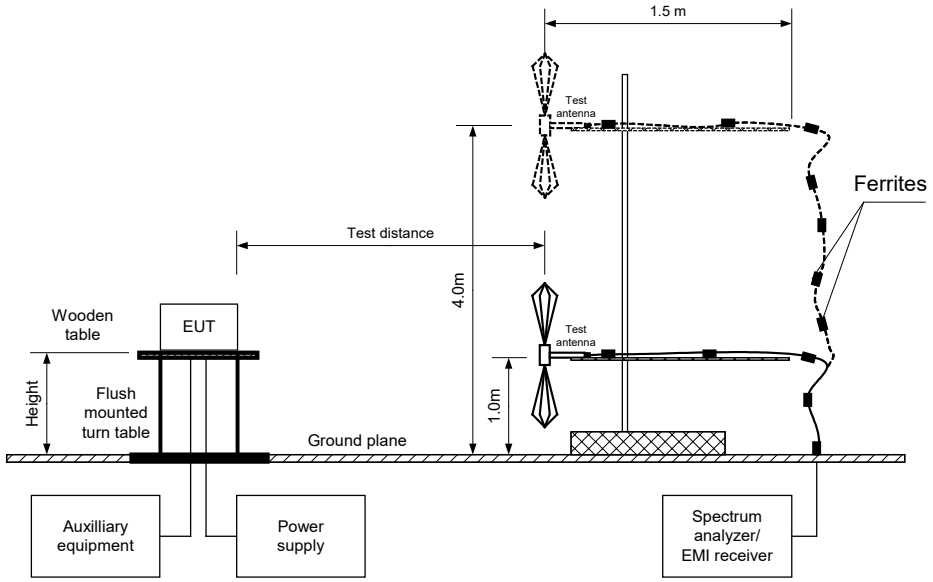
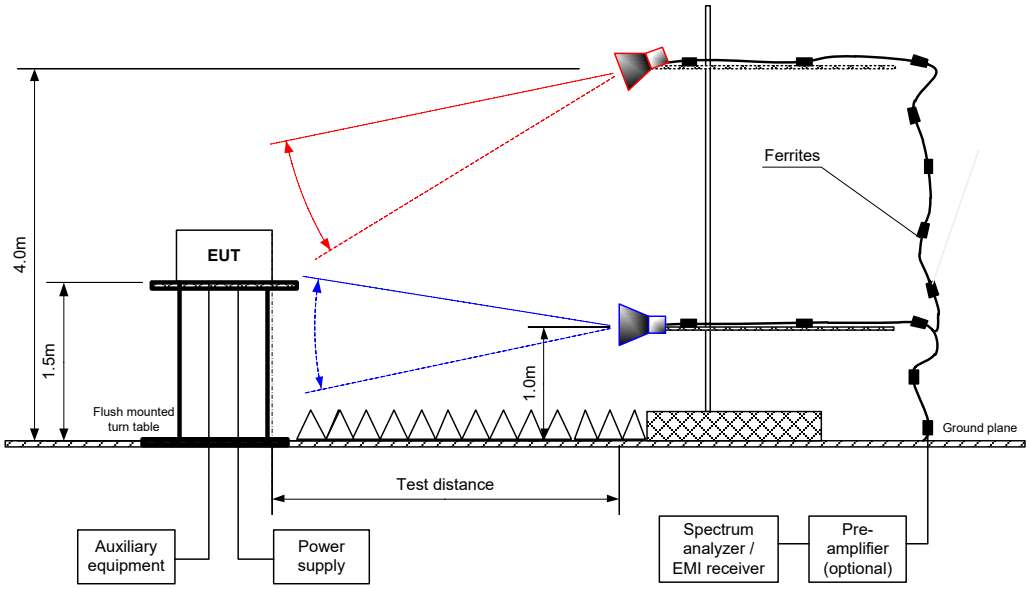


Figure 7.6.3 Setup for spurious emission field strength measurements above1000 MHz



Test specification:	FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24 °C	Air pressure: 1010 hPa	Relative humidity: 34 %
Remarks:			

Table 7.6.2 Field strength of emissions outside restricted bands

ASSIGNED FREQUENCY:	902-928 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 - 10000 MHz
TEST DISTANCE:	3 m
MODULATION:	LoRa
BIT RATE:	1.7 Kbps
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	100 kHz
VIDEO BANDWIDTH:	300 kHz
TEST ANTENNA TYPE:	Active loop (9 kHz – 30 MHz) Biconical (30 MHz – 200 MHz) Double ridged guide (above 1000 MHz)
FREQUENCY HOPPING:	Disabled

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									
30.864	38.477	Vertical	2.57	164	115.445	76.968	20.000	56.968	PASS
872.326	42.392	Vertical	1.63	99		73.053		53.052	
1804.636	39.183	Vertical	1.05	115		76.262		56.262	
870.326	51.620	Horizontal	1.59	42	120.347	68.727		48.727	
934.229	49.530	Horizontal	1.55	90		70.817		50.817	
941.732	45.830	Horizontal	1.51	50		74.517		54.517	
1804.519	41.174	Horizontal	1.16	242		79.173		59.173	
Mid carrier frequency									
30.588	39.256	Vertical	3.17	356	115.522	76.266	20.000	56.232	PASS
153.456	31.617	Vertical	1.00	360		83.905		63.905	
161.977	29.373	Vertical	1.01	360		86.149		66.146	
876.742	49.100	Vertical	1.51	91		66.422		46.422	
1817.295	39.140	Vertical	1.11	176		76.382		56.382	
876.718	50.520	Horizontal	1.65	15	120.478	69.958		49.958	
940.735	50.300	Horizontal	1.56	63		70.178		50.178	
948.834	44.400	Horizontal	1.43	0		76.078		56.078	
1817.405	41.082	Horizontal	1.01	236		79.396		59.396	
High carrier frequency									
30.604	38.941	Vertical	1.38	229	115.072	76.131	20.000	56.131	PASS
139.715	28.993	Vertical	1.10	360		86.079		66.079	
161.534	28.351	Vertical	1.02	338		86.721		66.721	
931.025	44.810	Vertical	1.20	175		70.262		50.262	
1829.801	38.767	Vertical	1.20	175		76.305		56.305	
882.875	51.420	Horizontal	1.63	49	120.826	69.406		49.406	
946.878	49.050	Horizontal	1.60	70		71.776		51.776	
1829.809	42.445	Horizontal	1.18	247		78.381		58.381	

*- EUT front panel refers to 0 degrees position of turntable.
**- Margin = Attenuation below carrier – specification limit.

Test specification:	FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24 °C	Air pressure: 1010 hPa	Relative humidity: 34 %
Remarks:			

Table 7.6.3 Field strength of spurious emissions above 1 GHz within restricted bands

ASSIGNED FREQUENCY:	902-928 MHz
INVESTIGATED FREQUENCY RANGE:	1000 -10000 MHz
TEST DISTANCE:	3 m
MODULATION:	LoRa
BIT RATE:	1.7 kbps
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
DETECTOR USED:	Peak
RESOLUTION BANDWIDTH:	1000 kHz
TEST ANTENNA TYPE:	Double ridged guide
FREQUENCY HOPPING:	Disabled

Frequency, MHz	Antenna		Azimuth, degrees*	Peak field strength(VBW=3 MHz)			Average field strength(VBW=10 Hz)				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											
2706.695	Vertical	3.83	0	45.72	74.00	-28.28	39.74	NA	54.00	-14.26	PASS
3609.240	Vertical	3.67	7	42.38	74.00	-31.62	37.30	NA	54.00	-16.70	
2706.847	Horizontal	1.00	336	46.73	74.00	-27.27	43.23	NA	54.00	-10.77	
3609.348	Horizontal	1.00	336	46.01	74.00	-27.99	42.53	NA	54.00	-11.47	
Mid carrier frequency											
2726.129	Horizontal	1.65	269	42.24	74.00	-31.76	36.42	NA	54.00	-17.58	PASS
3634.927	Horizontal	3.24	356	45.81	74.00	-28.19	40.41	NA	54.00	-13.59	
High carrier frequency											
2744.335	Vertical	1.30	240	43.90	74.00	-30.10	38.52	NA	54.00	-15.48	PASS
3659.665	Vertical	1.07	20	39.63	74.00	-34.37	35.70	NA	54.00	-18.30	
2744.521	Horizontal	1.01	0	46.10	74.00	-27.90	41.84	NA	54.00	-12.16	

*- 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 7.6.4 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:

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

for pulse train longer than 100 ms:

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

Test specification:	FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24 °C	Air pressure: 1010 hPa	Relative humidity: 34 %
Remarks:			

Table 7.6.5 Field strength of spurious emissions below 1 GHz within restricted bands

ASSIGNED FREQUENCY:	902-928 MHz
INVESTIGATED FREQUENCY RANGE:	0.009 – 1000 MHz
TEST DISTANCE:	3 m
MODULATION:	LoRa
BIT RATE:	1.7 Kbps
DUTY CYCLE:	100 %
TRANSMITTER OUTPUT POWER SETTINGS:	Maximum
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 HOPPING:	Disabled

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								
165.726	29.772	24.29	43.50	-19.21	Vertical	1.00	257	PASS
Mid carrier frequency								
No emissions were detected								PASS
High carrier frequency								
0.626	47.83	45.03	71.67	-26.64	Coaxial	1.93	15	PASS

*- Margin = Measured emission - specification limit.
**- EUT front panel refer to 0 degrees position of turntable.

Test specification:	FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24 °C	Air pressure: 1010 hPa	Relative humidity: 34 %
Remarks:			

Table 7.6.6 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 7.6.7 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

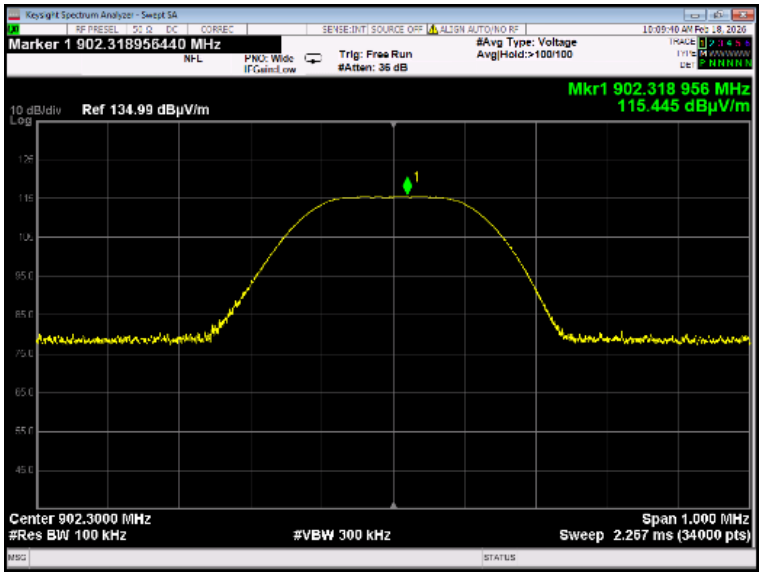
HL 6208	HL 6573	HL 6574	HL 6665	HL 6678	HL 6679	HL 6918	HL 6932
HL 8120							

Full description is given in Appendix A.

Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

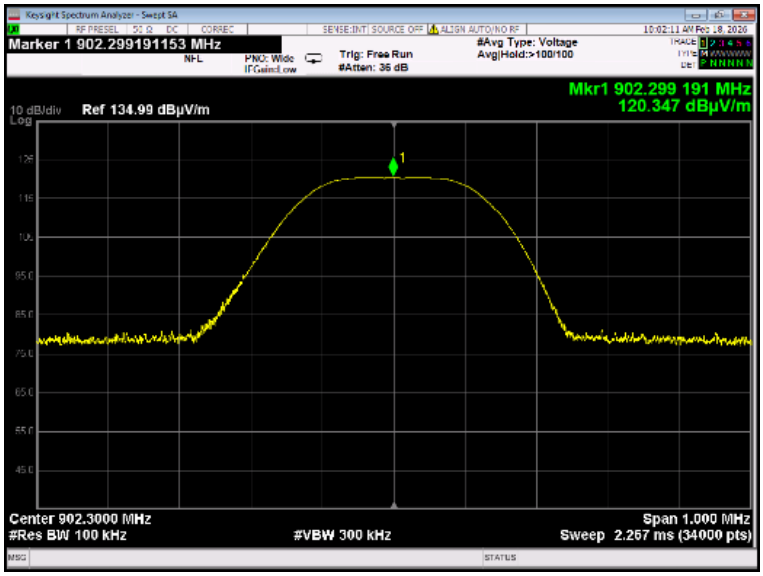
Plot 7.6.1 Radiated emission measurements at the low carrier frequency

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



Plot 7.6.2 Radiated emission measurements at the low carrier frequency

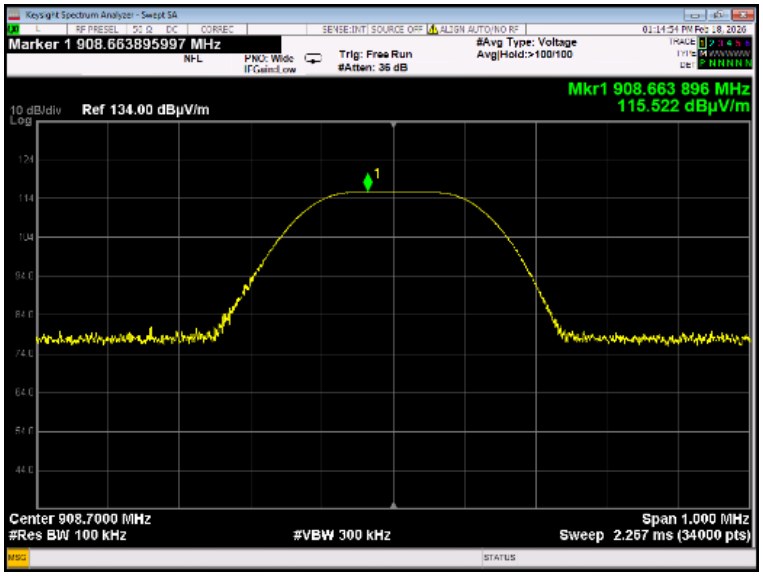
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal



Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

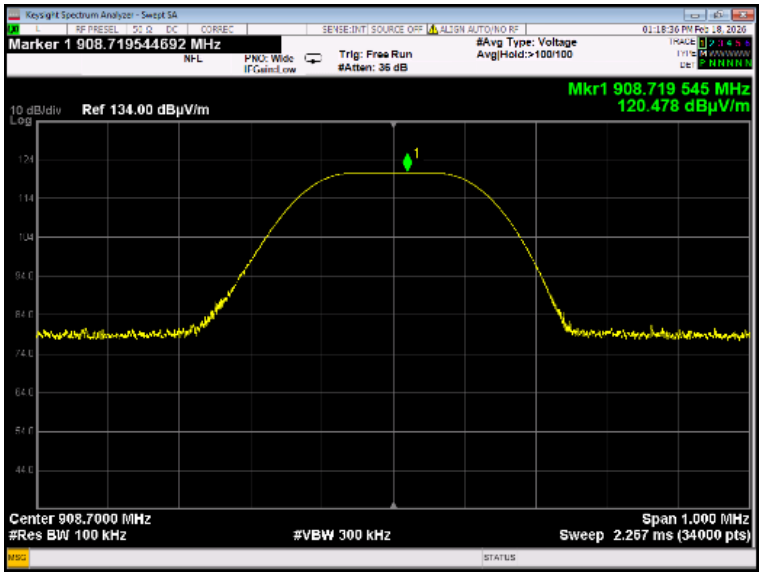
Plot 7.6.3 Radiated emission measurements at the mid carrier frequency

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



Plot 7.6.4 Radiated emission measurements at the mid carrier frequency

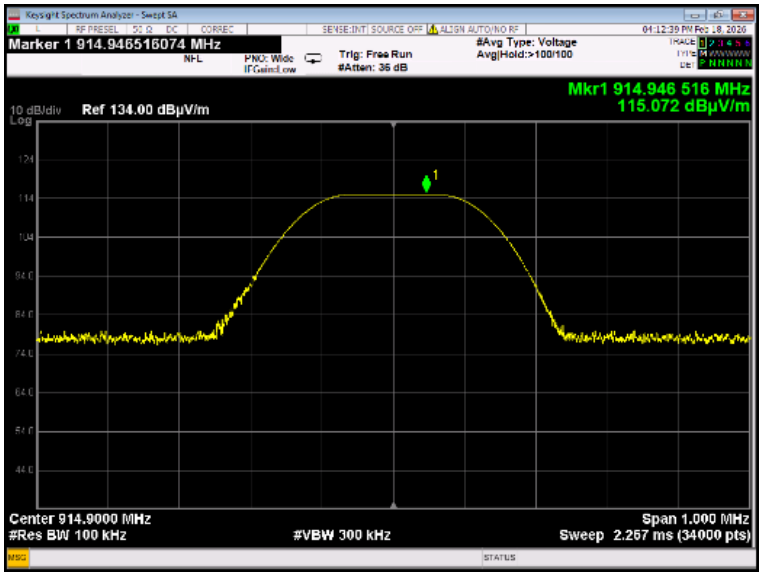
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal



Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

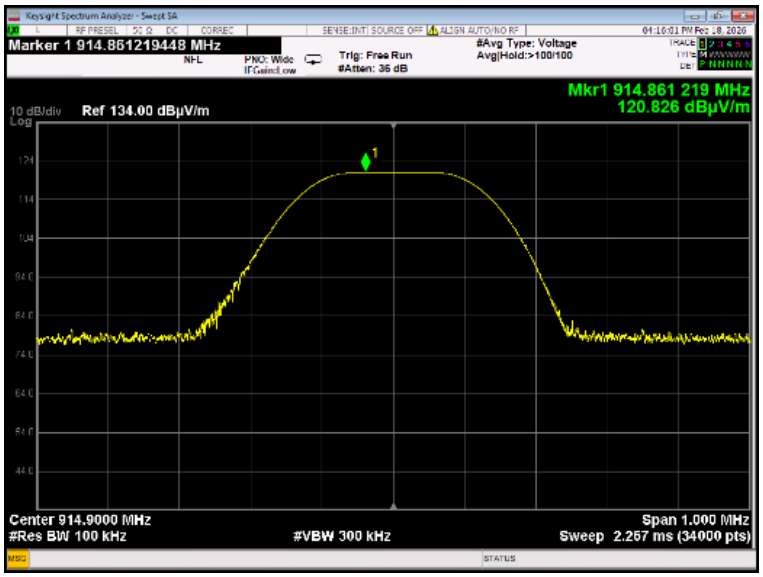
Plot 7.6.5 Radiated emission measurements at the high carrier frequency

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



Plot 7.6.6 Radiated emission measurements at the high carrier frequency

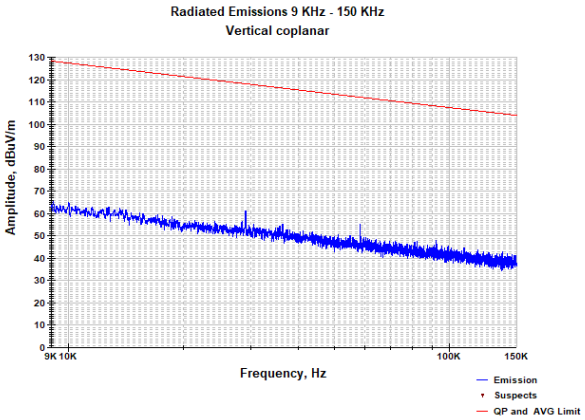
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Horizontal

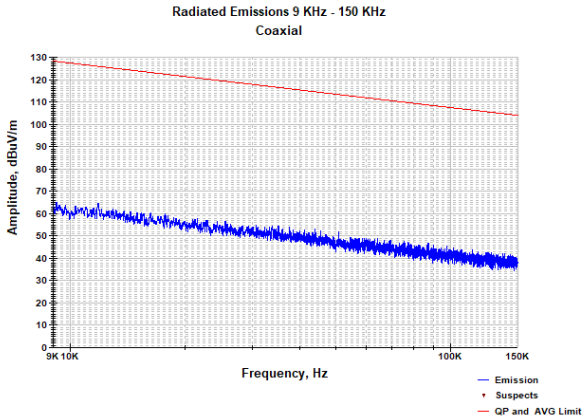


Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

Plot 7.6.7 Radiated emission measurements from 9 to 150 kHz at the low carrier frequency

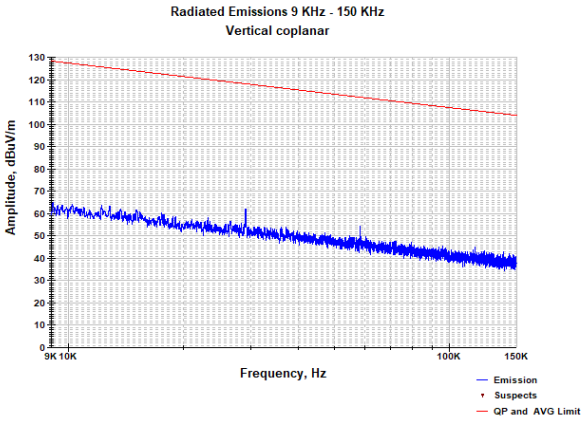
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m

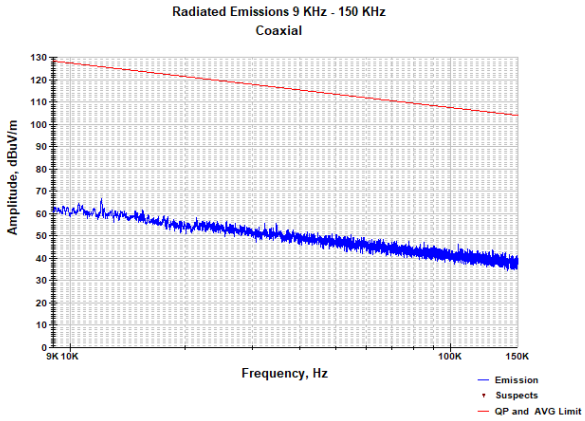




Plot 7.6.8 Radiated emission measurements from 9 to 150 kHz at the mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m

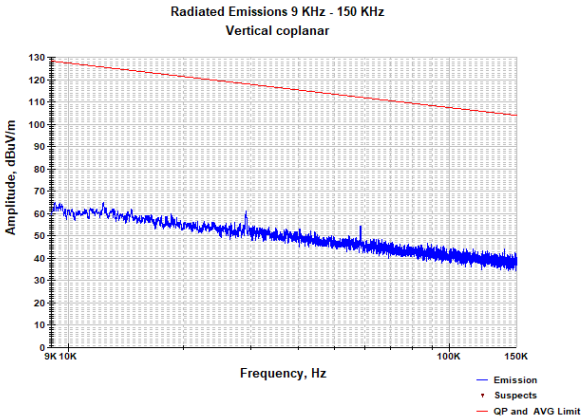


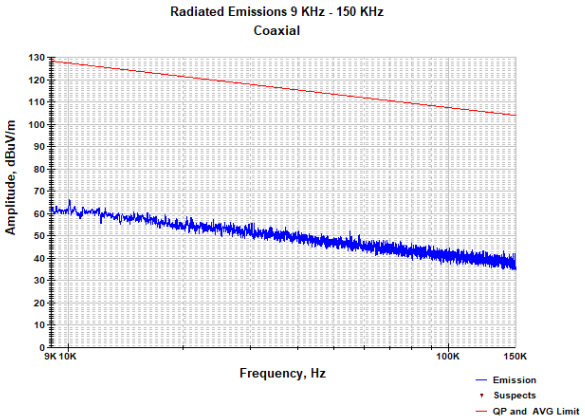


Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

Plot 7.6.9 Radiated emission measurements from 9 to 150 kHz at the high carrier frequency

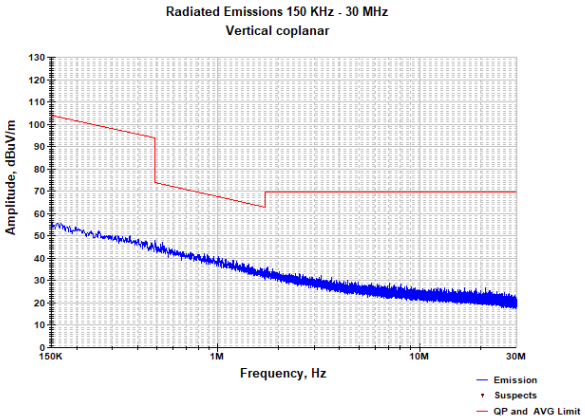
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m

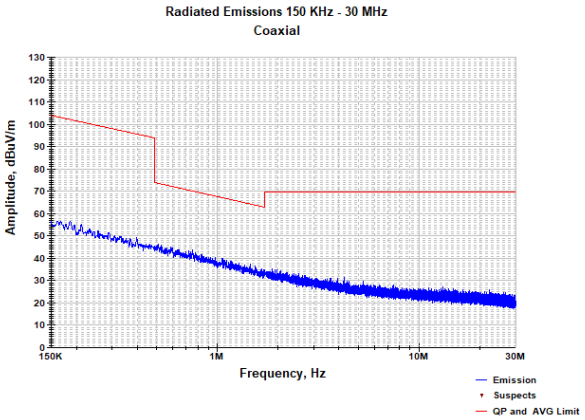




Plot 7.6.10 Radiated emission measurements from 0.15 to 30 MHz at the low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m

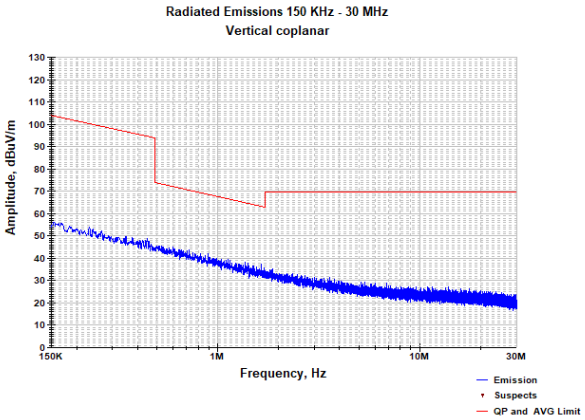


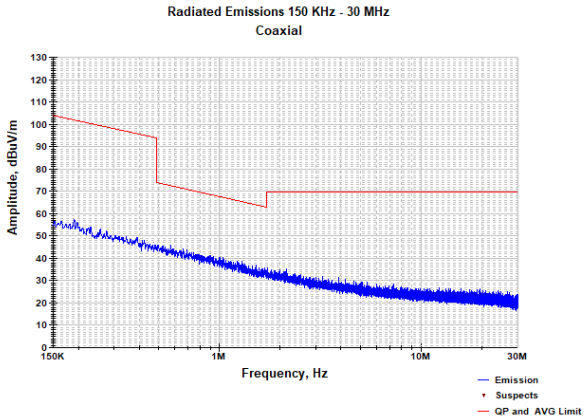


Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

Plot 7.6.11 Radiated emission measurements from 0.15 to 30 MHz at the mid carrier frequency

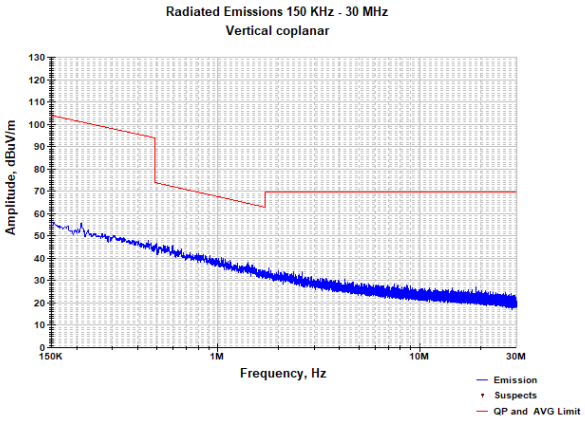
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m

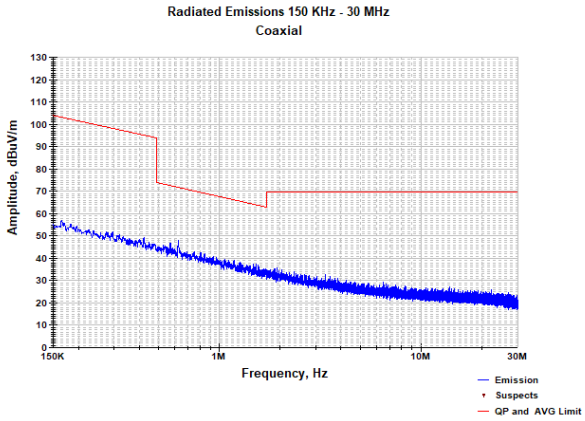




Plot 7.6.12 Radiated emission measurements from 0.15 to 30 MHz at the high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m

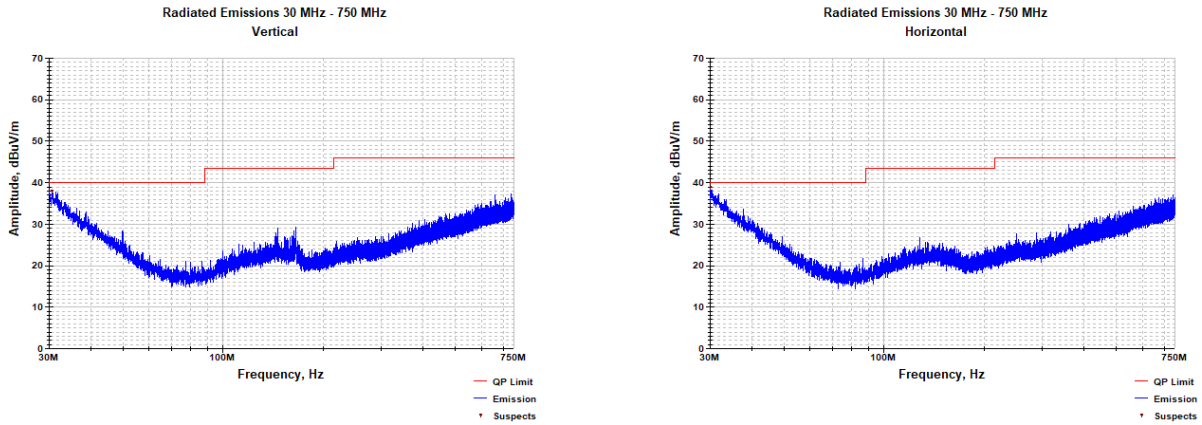




Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

Plot 7.6.13 Radiated emission measurements from 30 to 750 MHz at the low carrier frequency

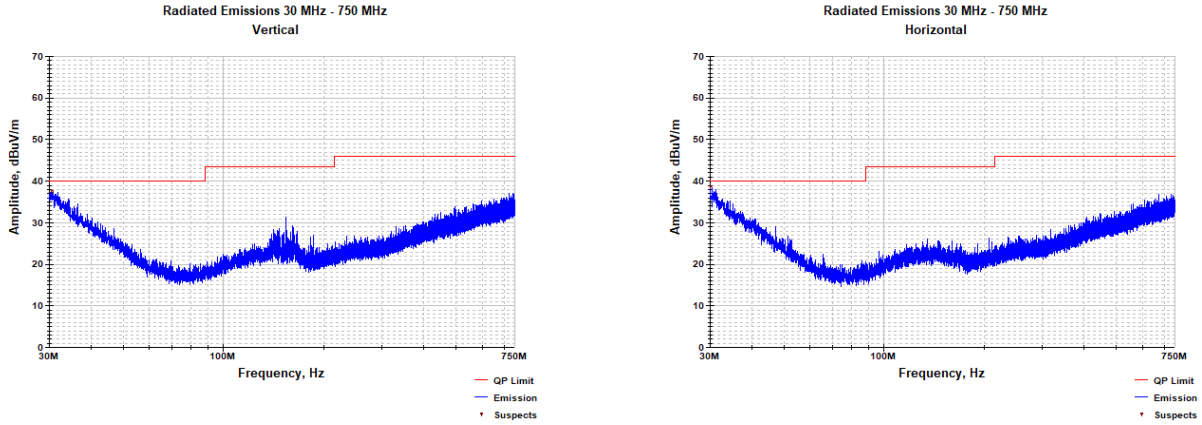
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



* With Low Pass Filter HL 6665

Plot 7.6.14 Radiated emission measurements from 30 to 750 MHz at the mid carrier frequency

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

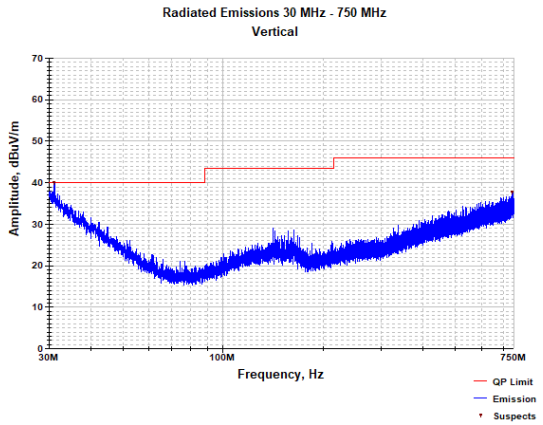


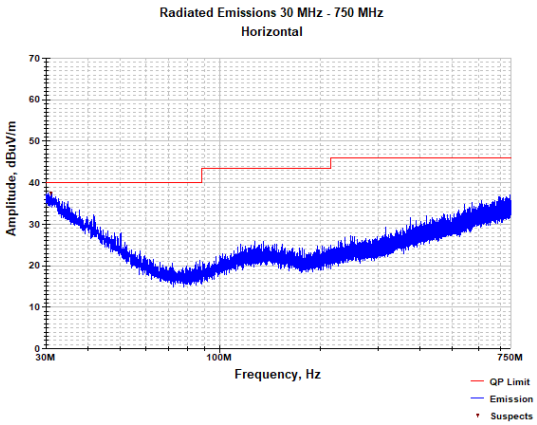
* With Low Pass Filter HL 6665

Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

Plot 7.6.15 Radiated emission measurements from 30 to 750 MHz at the high carrier frequency

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

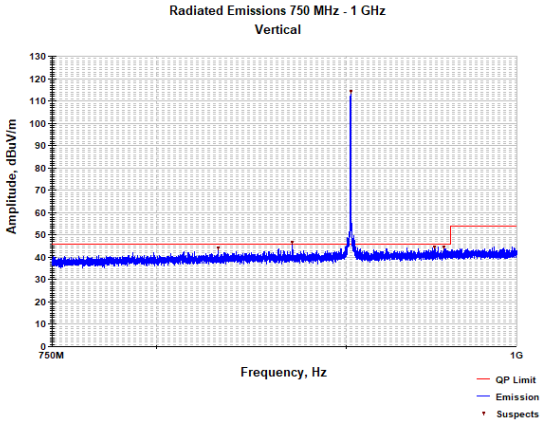


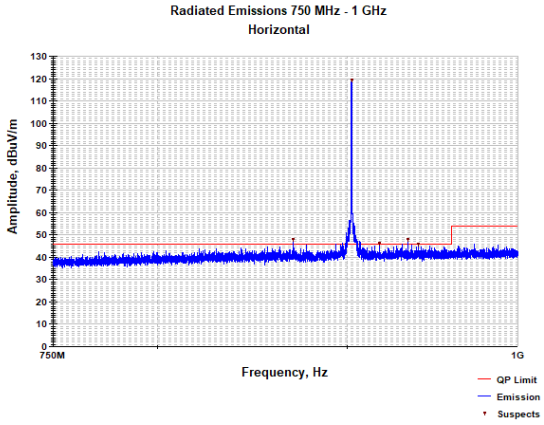


*With Low Pass Filter HL 6665

Plot 7.6.16 Radiated emission measurements from 750 to 1000 MHz at the low carrier frequency

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

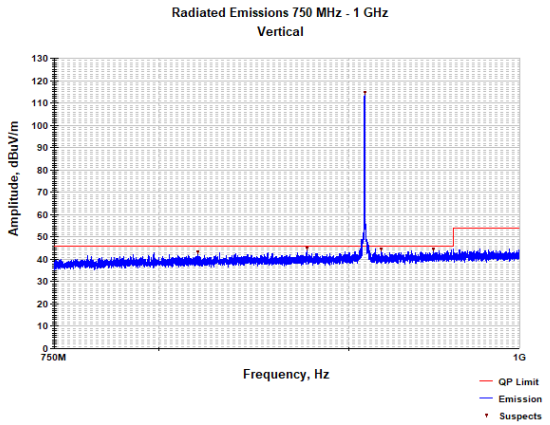


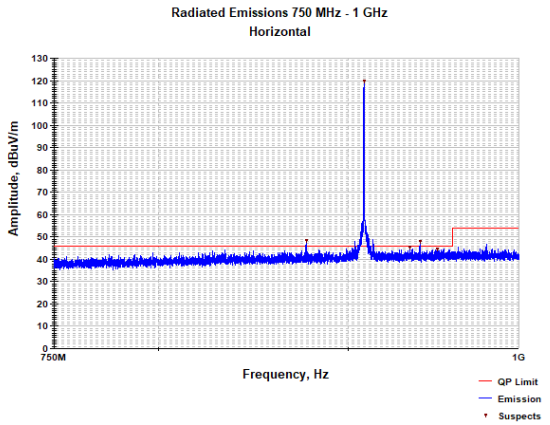


Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

Plot 7.6.17 Radiated emission measurements from 750 to 1000 MHz at the mid carrier frequency

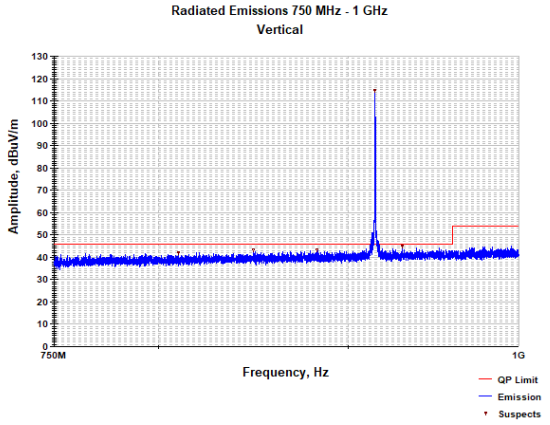
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal

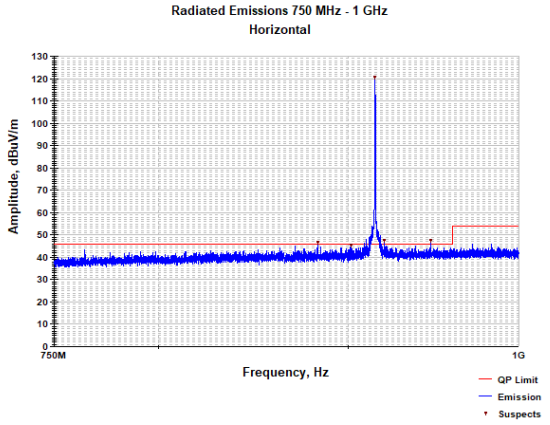




Plot 7.6.18 Radiated emission measurements from 750 to 1000 MHz at the high carrier frequency

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

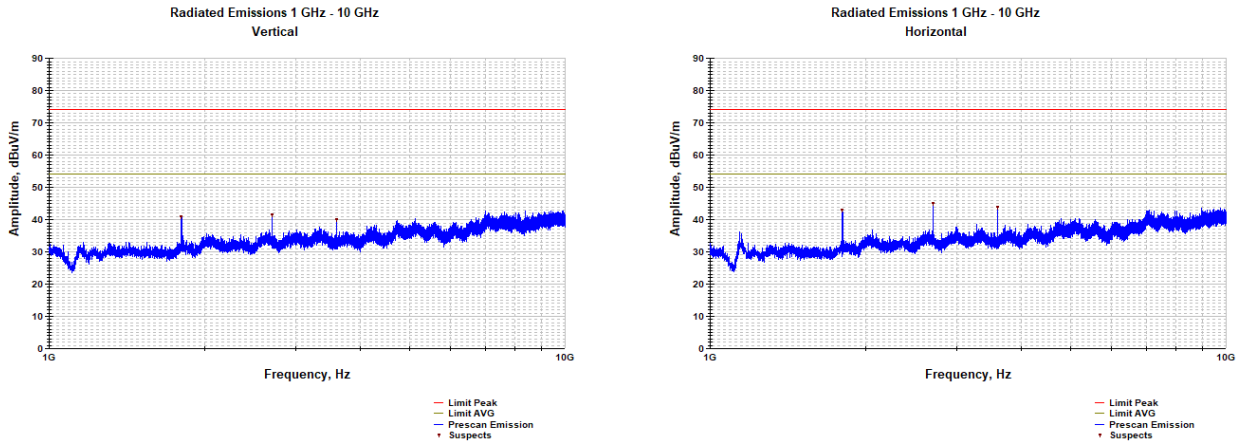




Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

Plot 7.6.19 Radiated emission measurements from 1000 to 10000 MHz at the low carrier frequency

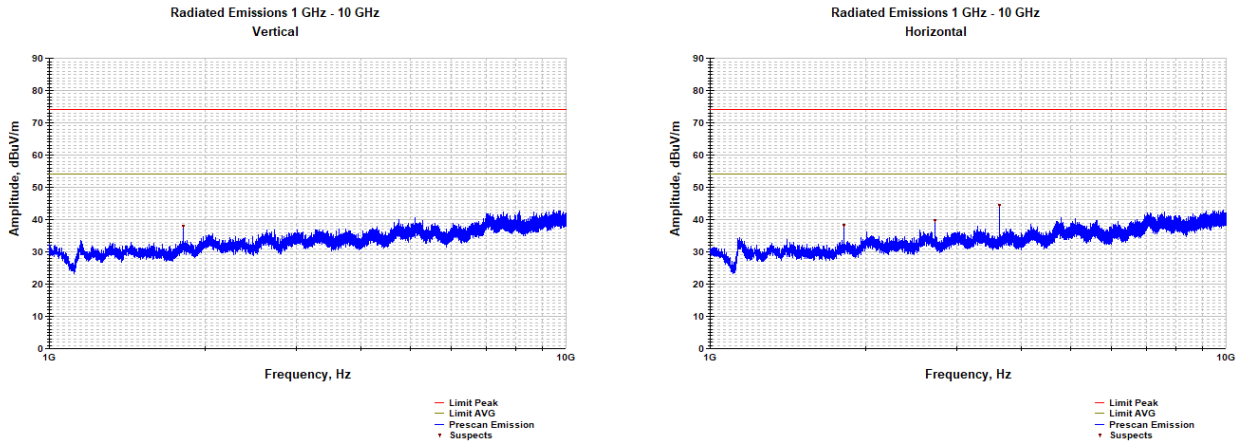
TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m
ANTENNA POLARIZATION: Vertical and Horizontal



* With Filter HL 6932

Plot 7.6.20 Radiated emission measurements from 1000 to 10000 MHz at the mid carrier frequency

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

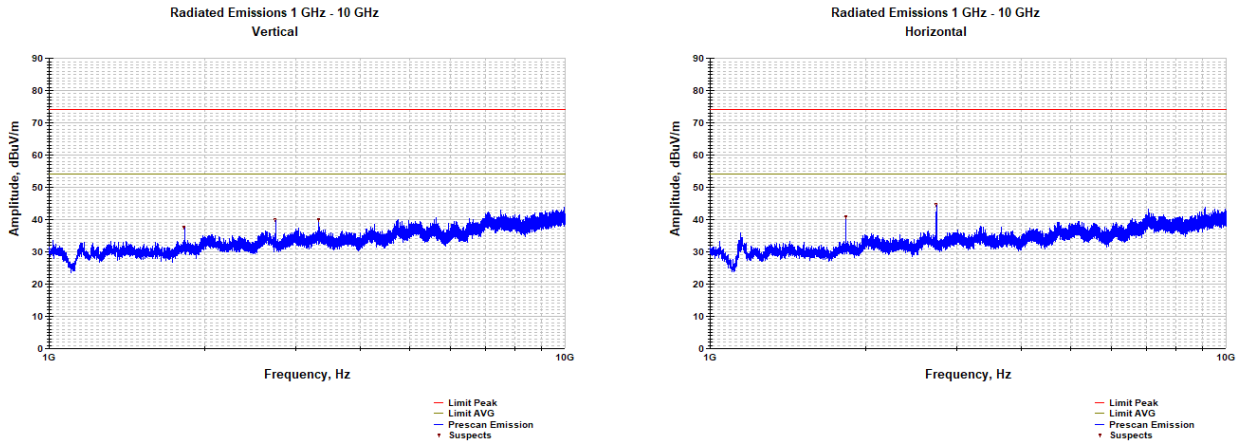


*With Filter HL 6932

Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

Plot 7.6.21 Radiated emission measurements from 1000 to 10000 MHz at the high carrier frequency

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

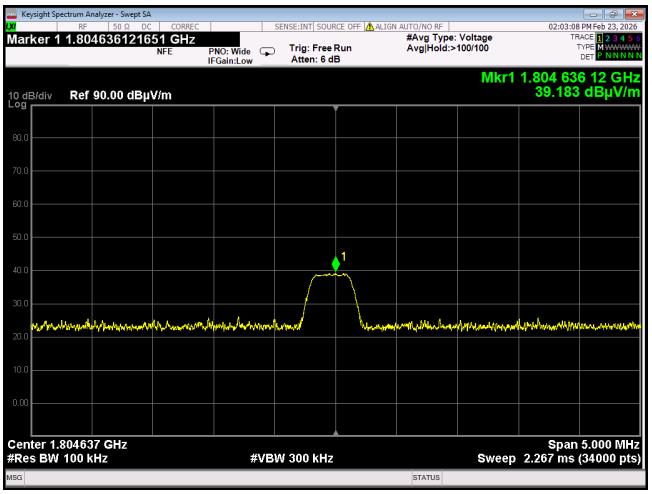


*With Filter HL 6932

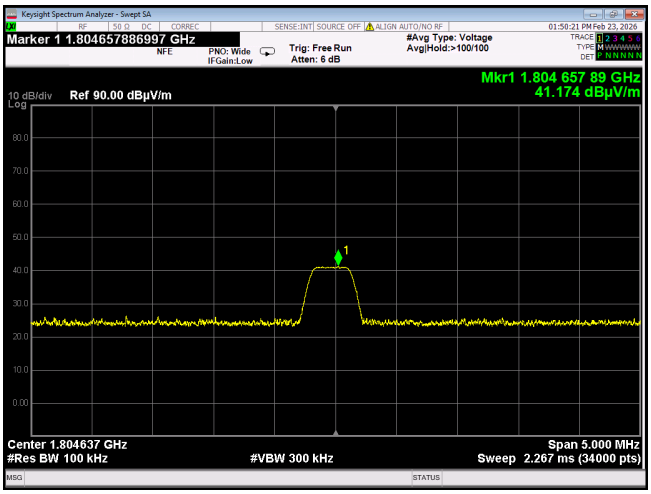
Plot 7.6.22 Radiated emission measurements at the second harmonic of low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m

Vertical



Horizontal

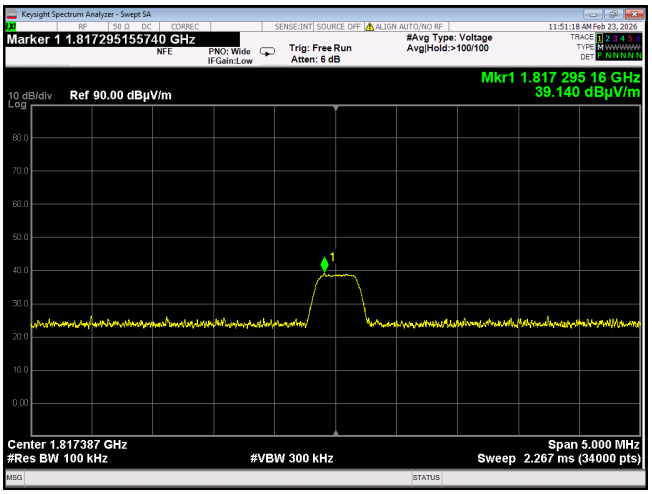


Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

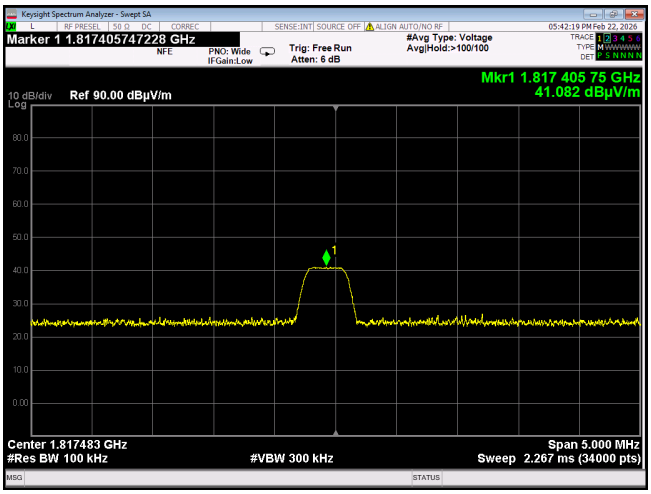
Plot 7.6.23 Radiated emission measurements at the second harmonic of mid carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m

Vertical



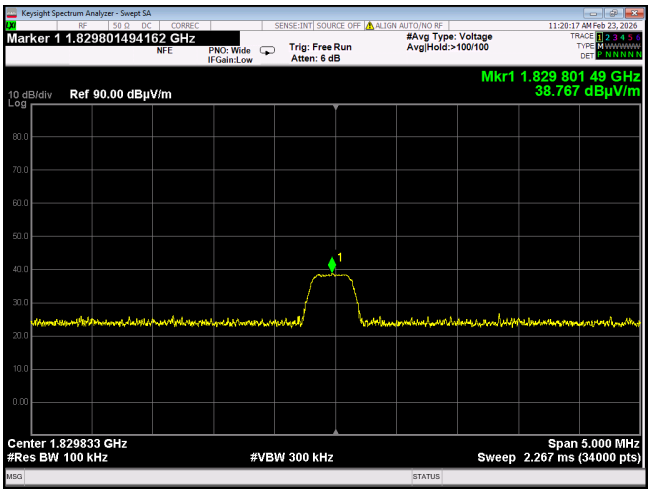
Horizontal



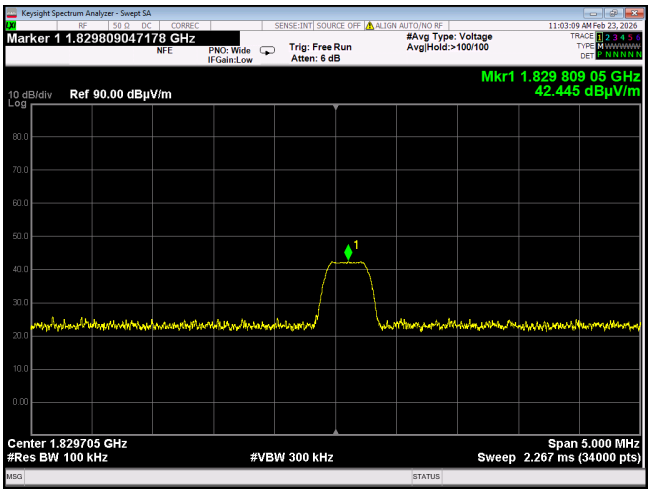
Plot 7.6.24 Radiated emission measurements at the second harmonic of high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m

Vertical



Horizontal

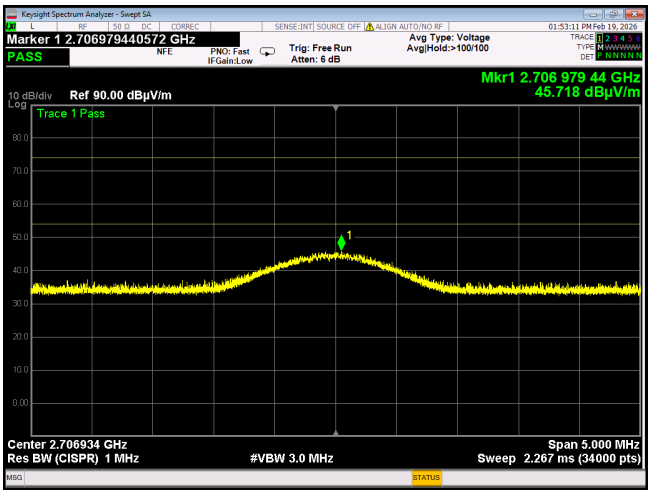


Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

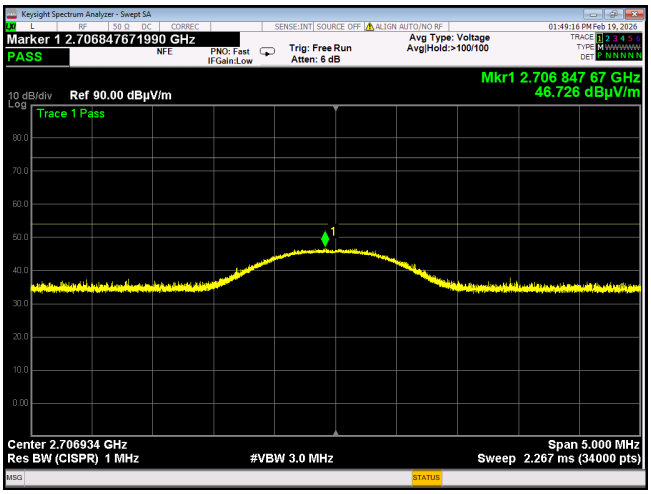
Plot 7.6.25 Radiated emission measurements at the third harmonic of low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m

Vertical

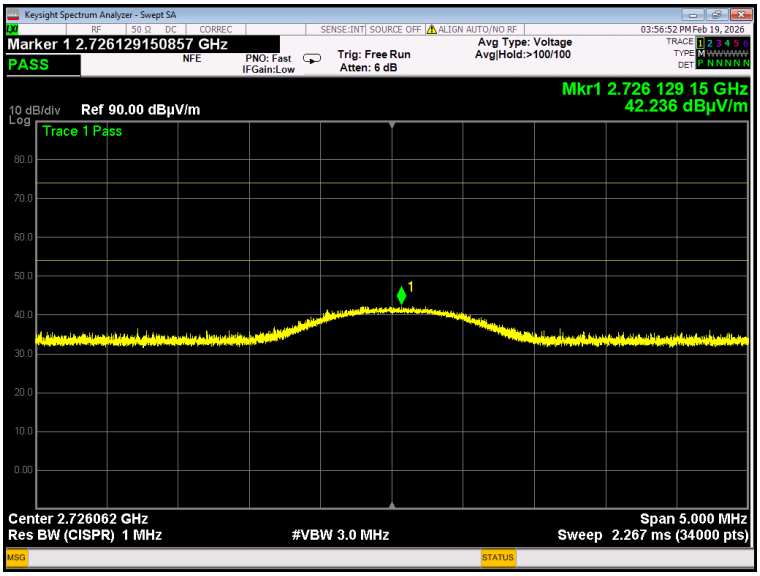


Horizontal



Plot 7.6.26 Radiated emission measurements at the third harmonic of mid carrier frequency

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

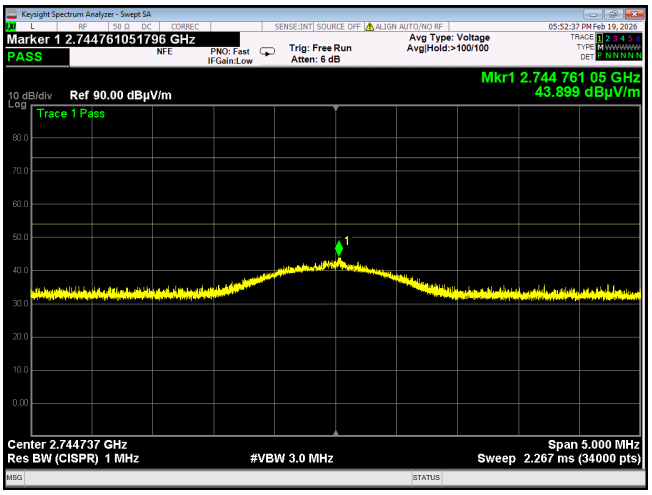


Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

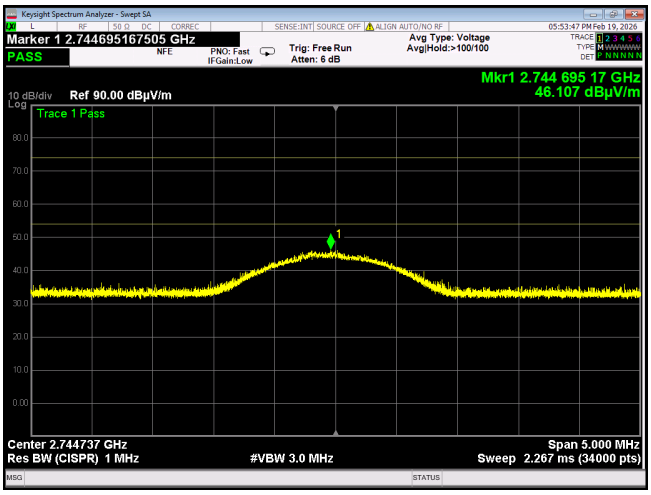
Plot 7.6.27 Radiated emission measurements at the third harmonic of high carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m

Vertical



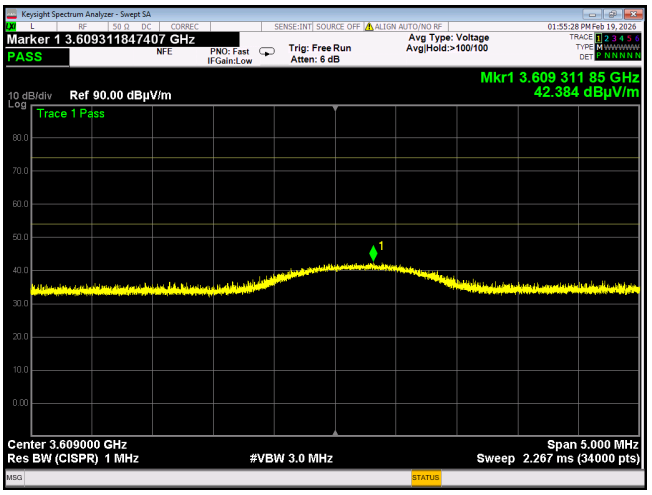
Horizontal



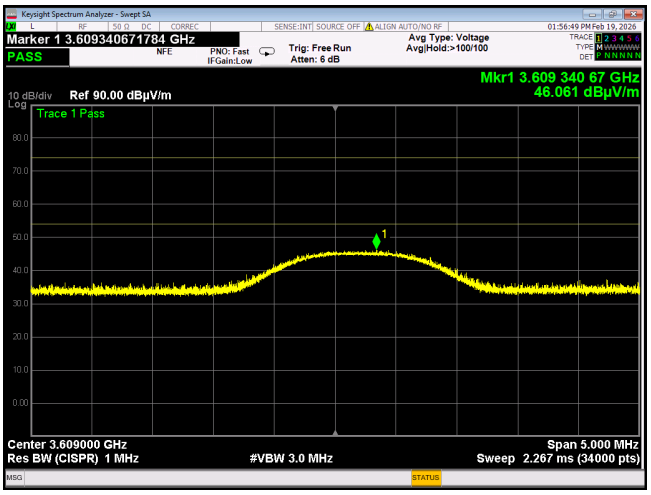
Plot 7.6.28 Radiated emission measurements at the fourth harmonic of low carrier frequency

TEST SITE: Semi anechoic chamber
TEST DISTANCE: 3 m

Vertical



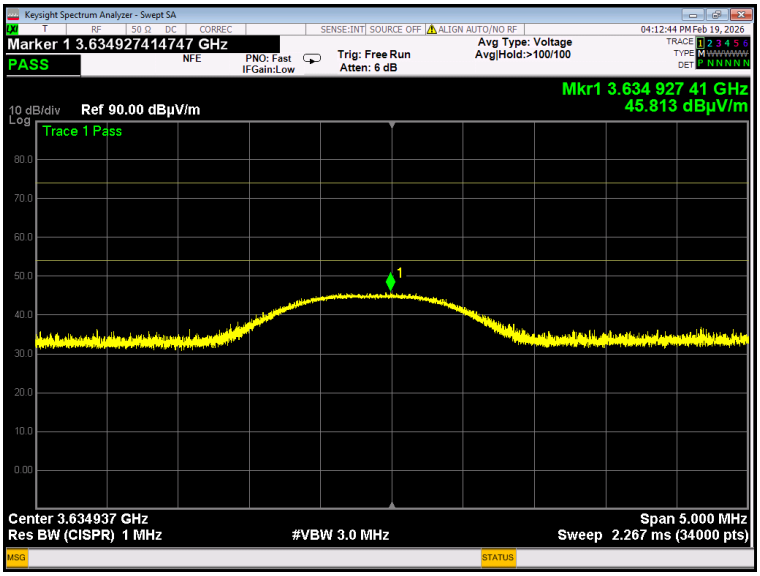
Horizontal



Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Radiated spurious emissions**		
Test procedure:	ANSI C63.10, sections 6.5, 6.6		
Test Date:	18-Feb-26 - 24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24 °C	**Air pressure:** 1010 hPa	**Relative humidity:** 34 %
Remarks:			

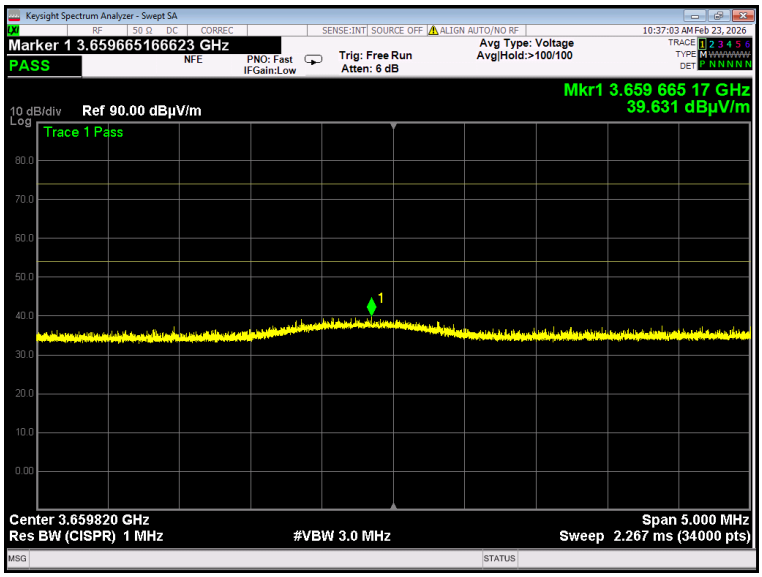
Plot 7.6.29 Radiated emission measurements at the fourth harmonic of mid carrier frequency

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



Plot 7.6.30 Radiated emission measurements at the fourth harmonic of high carrier frequency

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



Test specification:	FCC section 15.247(c), RSS-247 section 5.5, Emissions at band edges		
Test procedure:	ANSI C63.10, section 7.8.6		
Test Date:	17-Feb-26	Verdict:	PASS
Condition during the test:	Temperature: 24.4 °C	Air pressure: 1012 hPa	Relative humidity: 41 %
Remarks:			

7.7. Band edge radiated emissions

7.7.1. 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 7.7.1.

Table 7.7.1 Band edge emission limits

Assigned frequency, MHz	Attenuation below carrier*, dBc	Field strength at 3 m within restricted bands, dB(μV/m)	
		Peak	Average
902.0 – 928.0	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.

7.7.2. Test procedure

The EUT was set up as shown in

7.7.2.1. Figure 7.7.1, energized normally modulated at the maximum data rate with its hopping function disabled and its proper operation was checked.

7.7.2.2. The EUT was adjusted to produce maximum available to end user RF output power at the lowest carrier frequency.

7.7.2.3. 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.

7.7.2.4. The spectrum analyzer was set in max hold mode and allowed trace to stabilize. The highest emission level within the authorized band was measured.

7.7.2.5. The maximum band edge emission and modulation product outside of the band were measured as provided in Table 7.7.2 and associated plots and referenced to the highest emission level measured within the authorized band.

7.7.2.6. The above procedure was repeated with the EUT adjusted to produce maximum RF output power at the highest carrier frequency.

7.7.2.7. The above procedure was repeated with the frequency hopping function enabled.

Figure 7.7.1 Band edge emission test setup

Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Emissions at band edges**		
Test procedure:	ANSI C63.10, section 7.8.6		
Test Date:	17-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.4 °C	**Air pressure:** 1012 hPa	**Relative humidity:** 41 %
Remarks:			

Table 7.7.2 Band edge emission test results

ASSIGNED FREQUENCY RANGE: 902-928 MHz
DETECTOR USED: Peak
MODULATION: LoRa
BIT RATE: 1.7 Kbps
TRANSMITTER OUTPUT POWER SETTINGS: Maximum
RESOLUTION BANDWIDTH: ≥ 1% of the span
VIDEO BANDWIDTH: ≥ RBW

Frequency, MHz	Band edge emission, dBuv/m	Emission at carrier, dBuv/m	Attenuation below carrier, dBc	Limit, dBc	Margin, dB*	Verdict
Frequency hopping disabled						
902.3	79.152	120.361	41.209	20.000	21.209	PASS
914.9	80.034	120.211	40.177		20.177	
Frequency hopping enabled						
902.3	78.147	119.920	41.773	20.000	21.773	PASS
914.9	79.525	120.525	41.000		21.000	

*- Margin = Attenuation below carrier – specification limit.

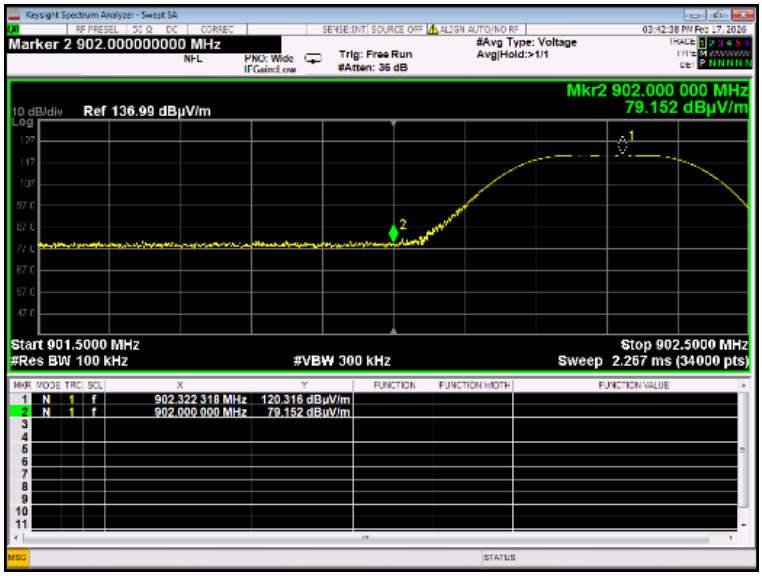
Reference numbers of test equipment used

HL 6208	HL 6573	HL 6918	HL 8120				

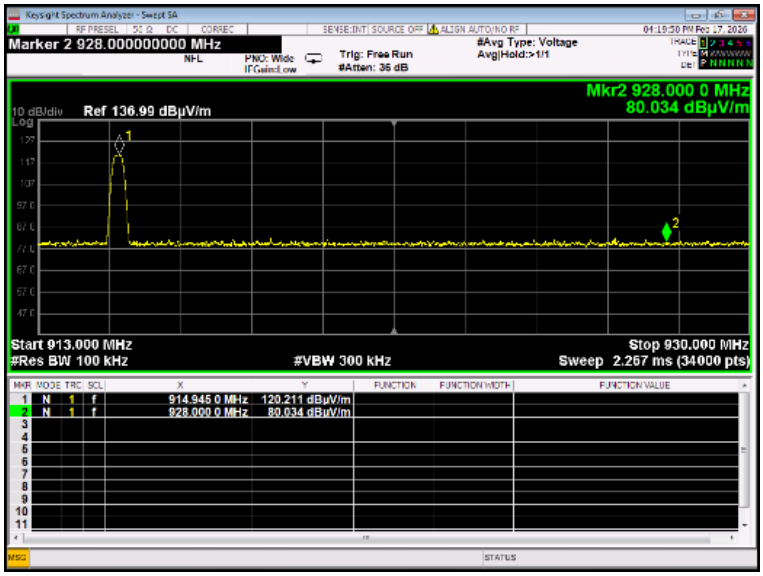
Full description is given in Appendix A.

Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Emissions at band edges**		
Test procedure:	ANSI C63.10, section 7.8.6		
Test Date:	17-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.4 °C	**Air pressure:** 1012 hPa	**Relative humidity:** 41 %
Remarks:			

Plot 7.7.1 The highest band edge emission at low carrier frequency with hopping function disabled

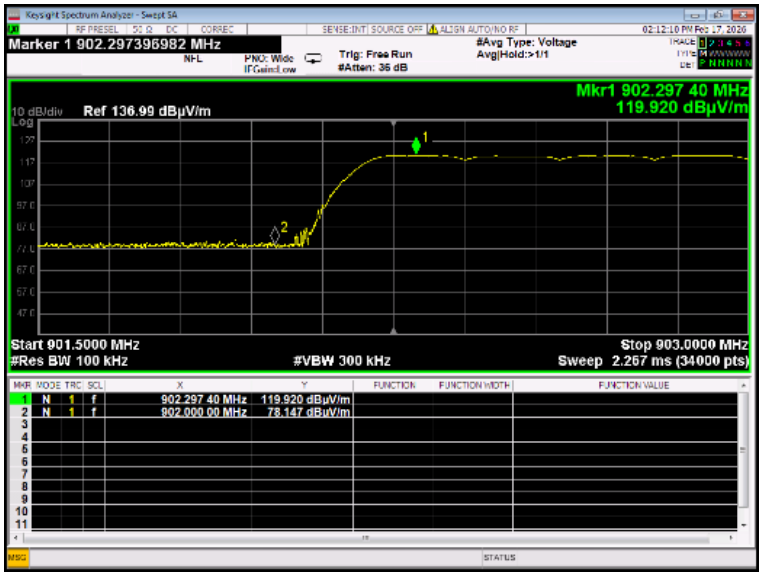


Plot 7.7.2 The highest band edge emission at high carrier frequency with hopping function disabled

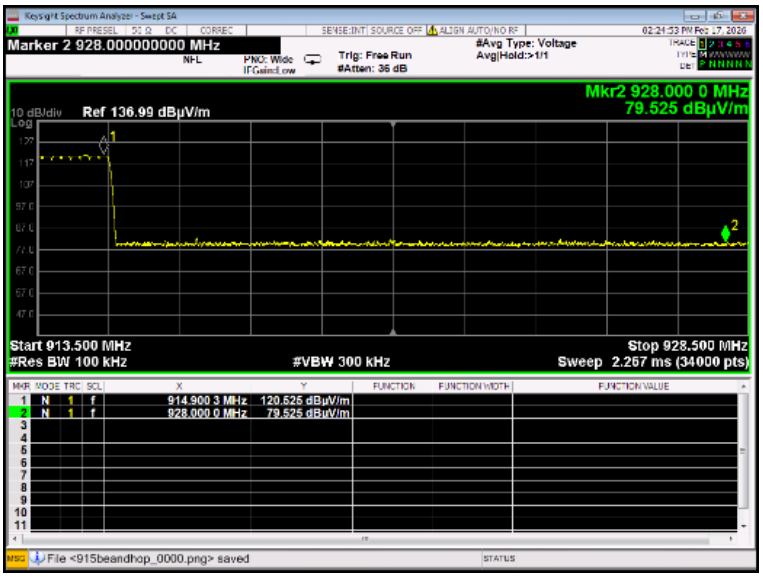


Test specification:	**FCC section 15.247(c), RSS-247 section 5.5, Emissions at band edges**		
Test procedure:	ANSI C63.10, section 7.8.6		
Test Date:	17-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 24.4 °C	**Air pressure:** 1012 hPa	**Relative humidity:** 41 %
Remarks:			

Plot 7.7.3 The highest band edge emission at low carrier frequency with hopping function enabled



Plot 7.7.4 The highest band edge emission at high carrier frequency with hopping function enabled



Test specification:	**FCC Section 15.203/ RSS-Gen, Section 7.1.4, Antenna requirement**		
Test procedure:	Visual inspection / supplier declaration		
Test Date:	24-Feb-26	**Verdict:**	PASS
Condition during the test:	**Temperature:** 22.7 °C	**Air pressure:** 1014 hPa	**Relative humidity:** 40 %
Remarks:			

7.8. 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 7.8.1.

Table 7.8.1 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	

8. APPENDIX A. Test equipment and ancillaries used for tests

Code	Description	Manufacturer	Model	Serial no	Last calibration	Due calibration
6208	MXE EMI Receiver, 3Hz to 44.0 GHz	Keysight Technologies	N9038A	MY56400070	06-Mar-25	06-Mar-26
6573	Antenna Biconilog	Chase	CBL6141	4025	16-Jan-25	16-Jan-27
6574	Antenna, double ridged waveguide horn, 1.0 to 18.0 GHz	ARA Inc	DRG-118/A	17188	04-Nov-25	04-Nov-26
6665	Band Pass Filter	K&L Microwave Inc.	7L340-750/U3000-N/NP	1	23-Oct-25	23-Oct-27
6678	Low Noise Amplifier (LNA) 1-18 GHz	Spacek Labs	SL-1018-56-5	17J29	11-Mar-25	11-Mar-26
6679	Antenna, Loop, Active, 10 (9) kHz - 30 MHz	EMCO	6502	3424	18-Feb-25	16-Mar-26
6918	RF coaxial cable 3m, 26.5 GHz, SMA-m to SMA-m up to 26.5GHz	Huber-Suhner	Sucoflex 126E	110	16-Feb-25	16-Mar-26
6932	High Pass Filter, 1.2 to 15 GHz	Wainwright Instruments	WHKX10-1010-1200-15000-40EF	1	08-Jun-25	08-Jun-27
8120	RF cable, 18 GHz, 10 m, N-N	Huber+Suhner	Sucoflex 118	503311/118	08-May-25	08-May-26

* Software Version of Emission suite is Tile 7.4.2.5

9. APPENDIX B. Test facility description

Tests were performed at QualiTech – subdivision of Hermon Laboratories, which is a fully independent, private, EMC, Radio, Safety, and Environmental testing facility.
QualiTech is recognized and accredited by the Federal Communications Commission (USA) for relevant parts of Code of Federal Regulations 47 (CFR 47), Test Firm Registration Number is 488238, Designation Number is IL1006; Recognized by Innovation, Science and Economic Development Canada for wireless and terminal testing (ISED), CAB identifier is IL1006, ISED# number 4808A; Certified by VCCI, Japan (the registration numbers are C-13775, G-20167, R-13404, T-20046).
The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for electromagnetic compatibility, product safety, telecommunications testing, environmental simulation and calibration (for exact scope please refer to Certificate No. 1633.01 and 1633.02).

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Telephone: +972 4 626 8494
Fax: +972 4 628 8277
e-mail: mail@hermonlabs.com
website: www.hermonlabs.com

Person for contact: Mr. M. Nikishin, Head of Department, EMC and Radio

10. APPENDIX C Abbreviations and acronyms

A	ampere
AC	alternating current
A/m	ampere per meter
AM	amplitude modulation
ASSL	abnormal steady state limits
ATP	acceptance test procedure
AVRG	average (detector)
BB	broad band
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
dB(μA)	decibel referred to one microampere
dBμV	decibel referred to one microvolt
dBμV/m	decibel referred to one microvolt per meter
DC	direct current
EMI	electromagnetic interference
EP	essential performance
ESS	environmental stress screening
ESSL	emergency steady state limits
EUT	equipment under test
FTE	functional test equipment
GHz	gigahertz
GND	ground
H	height
HL	Hermon laboratories
Hz	hertz
k	kilo
kHz	kilohertz
kV	kilovolt
L	length
LISN	line impedance stabilization network
m	meter
ME	Medical electrical
MHz	megahertz
MIL	military
mm	millimeter
ms	millisecond
μF	microfarad
μs	microsecond
NA	not applicable
NB	narrow band
NP	normal performance
NSSL	normal steady state limits
NT	not tested
OATS	open area test site
Ω	Ohm
QP	quasi-peak
PBIT	periodic built in test
PM	pulse modulation
PS	power supply
RE	radiated emission
RF	radio frequency
rms	root mean square
s	second
STD	standard
TBD	to be defined
V	volt
VA	volt-ampere
W	width
W	watt

11. APPENDIX D. Measurement Uncertainty

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

Test Name	Range	Expanded U lab Uncertainty	U CISPR Uncertainty
Radiated Emission	30 MHz - 200 MHz, Horizontal Polarization	± 4.20dB	±5.06
	30 MHz - 200 MHz, Vertical Polarization	± 4.89dB	±5.17
	200 MHz - 1 GHz, Horizontal Polarization	± 5.23dB	±5.34
	200 MHz - 1 GHz, Vertical Polarization	± 6.29dB	±6.32
	1.0 GHz - 6.0 GHz	± 5.11dB	±5.18
	6.0 GHz - 18.0 GHz	± 5.17dB	±5.48
Conducted Emission- Mains	9 kHz - 150 kHz	± 3.69dB	±3.83
	150 kHz - 30 MHz	± 3.31dB	±3.44

Hermon Laboratories is accredited by A2LA for calibration according to present requirements of ISO/IEC 17025 and NCSL Z540-1. The accreditation is granted to perform calibration of parameters that are listed in the Scope of Hermon Laboratories Accreditation.
Hermon Laboratories calibrates its reference and transfer standards by calibration laboratories accredited to ISO/IEC 17025 by a mutually recognized Accreditation Body or by a recognized national metrology institute. All reference and transfer standards used in the calibration system are traceable to national or international standards.
In-house calibration of all test and measurement equipment is performed on a regular basis according to Hermon Laboratories calibration procedures, manufacturer calibration/verification procedures or procedures defined in the relevant standards. The Hermon Laboratories test and measurement equipment is calibrated within the tolerances specified by the manufacturers and/or by the relevant standards.

12. APPENDIX E. Specification references

FCC 47CFR part 15: 2022	Radio Frequency Devices
ANSI C63.10: 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
RSS-247 Issue 4: 2025	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
RSS-Gen Issue 5 with_amendment_1_2: 2021	General Requirements and Information for the Certification of Radiocommunication Equipment
ANSI C63.4-2009	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
ICES-003: 2020, Issue 7	Information Technology Equipment (Including Digital Apparatus)

END OF TEST REPORT