

04/24/2026

HID Global Corporation (US)
611 Center Ridge Drive
Austin, TX 78753
USA

Dear Erik Ray,

Enclosed is the EMC test report for compliance testing of HID Global Corporation (US), Color Card Printer, DTC1500, tested to the requirements of:

- FCC Part 15 Subpart C and RSS-210 Issue 11

Thank you for using the services of Eurofins E&E North America. If you have any questions regarding these results or if we can be of further service to you, please feel free to contact me.

Sincerely,

A handwritten signature in blue ink that reads "Nancy LaBrecque".

Nancy LaBrecque
Documentation Department
Eurofins Electrical and Electronic Testing NA, Inc.

Reference: WIRA139157-FCC-IC-LF

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Eurofins MET Laboratories Inc. (Eurofins E&E North America) is part of the Eurofins Electrical & Electronics (E&E) global compliance network.



**125kHz RFID
Test Report**

for the

**HID Global Corporation (US)
Color Card Printer, DTC1500 (Model: DTC1500)**

Tested under the FCC and ISCED Certification Rules for
FCC Part 15 Subpart C and RSS-210 Issue 11



Bryan Taylor, Wireless Team Lead
Electromagnetic Compatibility Lab



Nancy LaBrecque
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.



Matthew Hinojosa
EMC Manager, Austin Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
Ø	04/24/2026	Initial Issue.

Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the HID Global Corporation (US) Color Card Printer, DTC1500, with the requirements of FCC Part 15 Subpart C and RSS-210 Issue 11. In accordance with FCC Part 15 Subpart C and RSS-210 Issue 11, the following data is presented in support of the Certification of the Color Card Printer, DTC1500. HID Global Corporation (US) should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the Color Card Printer, DTC1500, has been **permanently** discontinued.

B. Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15C and RSS-210, in accordance with HID Global Corporation (US), under purchase order number HID028122. All tests were conducted using measurement procedures ANSI C63.4-2014 and ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024.

FCC Reference	ISED Reference	Description	Compliance
Part 15 §15.203	---	Antenna Requirement	Compliant
Part 15 §15.207(a)	RSS-Gen (8.8)	Conducted Emission Limits	Compliant
Part 15 §15.215	---	20dB Occupied Bandwidth	Compliant
---	RSS-Gen (6.7)	99% Occupied Bandwidth	Compliant
Part 15 §15.209	RSS-210 (7.2) RSS-Gen (8.9)	General Field Strength Limitations	Compliant

Table 1. Executive Summary

Equipment Configuration

A. Overview

Eurofins E&E North America was contracted by HID Global Corporation (US) to perform testing on the Color Card Printer, DTC1500.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the HID Global Corporation (US) Color Card Printer, DTC1500.

The results obtained relate only to the item(s) tested.

Product Name:	Color Card Printer, DTC1500	
Model(s) Tested:	DTC1500	
Model(s) Covered:	DTC1500	
Test Sample Number:	26100-9, 26100-16, 26100-23	
EUT Specifications:	Primary Power: 24VDC via AC / DC Power Adapter	
	Type of Modulation(s):	ASK
	Equipment Code:	DCD
	Maximum Fundamental Field Strength:	70.59dBuV/m
	Antenna Type:	loop
	EUT Frequency Ranges:	125kHz
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35° C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Bryan Taylor	
Sample Receive Date:	11/25/2025	
Test Start Date:	12/2/2025	
Test End Date:	12/12/2025	
Report Date:	04/24/2026	

Table 2. EUT Summary Table

B. References

CFR 47, Part 15, Subpart C	Federal Communication Commission, Code of Federal Regulations, Title 47, Part 15: General Rules and Regulations, Allocation, Assignment, and Use of Radio Frequencies
ANSI C63.4:2017	Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz
ISO/IEC 17025:2017	General Requirements for the Competence of Testing and Calibration Laboratories
ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024	American National Standard for Testing Unlicensed Wireless Devices
RSS-210 Issue 11	Licence-Exempt Radio Apparatus: Category I Equipment
RSS-Gen Issue 5: April 2018	General Requirements for Compliance of Radio Apparatus

Table 3. References

C. Test Site

Eurofins MET Laboratories Inc. (Eurofins E&E North America) is part of the Eurofins Electrical & Electronics (E&E) global compliance network.

All testing was performed at Eurofins E&E North America, 13501 McCallen Pass, Austin, TX 78753. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

ISED Lab Info:

CAB Identifier: US0004

Company Number: 2043D

FCC Lab Info:

Designation Number: US1127

Radiated Emissions measurements were performed in a 10 meter semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at MET Laboratories.

Correlation between semi-anechoic chamber and OATS:

Two calibrated Loop antennas were used on an OATS. One antenna was driven by a signal generator with a known power. The receive antenna was initially placed 1m away from the transmit antenna. The two antennas were placed parallel to each other. The receive antenna was in turn connected to a calibrated spectrum analyzer. The emissions were swept from 9 kHz to 30 MHz. The receive antenna was then rotated 90 degrees and measurements re-taken. Additional measurements were taken when the receive antenna was placed at 3meters. This same setup was taken to inside the semi-anechoic chamber and the measurements repeated.

The data was used to correlate the semi-anechoic chamber and OATS.

D. Measurement Uncertainty

Test Method	Typical Expanded Uncertainty	K	Confidence Level
RF Frequencies	±4.52 Hz	2	95%
RF Power Conducted Emissions	±2.97 dB	2	95%
RF Power Radiated Emissions	±2.95 dB	2	95%
Radiated Emissions, (30 MHz – 1 GHz)	±2.95 dB	2	95%
Radiated Emissions, (1 GHz – 18 GHz)	±3.54 dB	2	95%
Conducted Emission Voltage	±2.97 dB	2	95%

Table 4. Uncertainty Calculations Summary

E. Description of Test Sample

The Color Card Printer, DTC1500 is a modular, direct-to-card printer system designed to print, laminate, and encode ID cards. Three systems were tested to cover all optional modules as follows:

Configuration 0 (Base Model Without OMNIKEY):

Input Hopper, Printer, Flipper, Mag Encoder, Contact Encoder, Laminator Upper RFID, Ribbon RFID

Configuration 1 (SN C5020231):

Input Hopper, Printer, Flipper, Mag Encoder, Contact Encoder, Laminator Upper RFID, Ribbon RFID OMNIKEY 5122

Configuration 2 (SN C5110896):

Input Hopper, Printer, Flipper, Mag Encoder, Contact Encoder, Laminator Upper RFID, Ribbon RFID OMNIKEY 5127SI

Configuration 3 (SN C5110911):

Input Hopper, Printer, Flipper, Mag Encoder, Contact Encoder, Laminator Upper RFID, Ribbon RFID, OMNIKEY 5127CK MINI

Each of the three configurations above are identical with the exception of the OMNIKEY encoder installed into each. Each version includes an identical "ribbon" radio operating at 13.56MHz and identical "Laminator" radio (upper only) operating at 13.56MHz. The table below indicates the radios onboard each OMNIKEY encoder option:

Test Configuration	Model Number	OMNIKEY Encoder Installed	Transmitters Onboard
Configuration 0	DTC1500	None	Ribbon (13.56MHz) Laminator (13.56MHz)
Configuration 1	DTC1500-1	OMNIKEY 5122	Ribbon (13.56MHz) Laminator (13.56MHz) OMNIKEY 5122 (13.56MHz)
Configuration 2	DTC1500-2	OMNIKEY 5127SI	Ribbon (13.56MHz) Laminator (13.56MHz) OMNIKEY 5127SI (125kHz, 13.56MHz)
Configuration 3	DTC1500-3	OMNIKEY 5127CK MINI	Ribbon (13.56MHz) Laminator (13.56MHz) OMNIKEY 5127CK MINI (125kHz, 13.56MHz) BLE (See Note)

Note that the BLE radio onboard the OMNIKEY 5127 CK MINI encoder is not used and is disabled within the DTC1500.

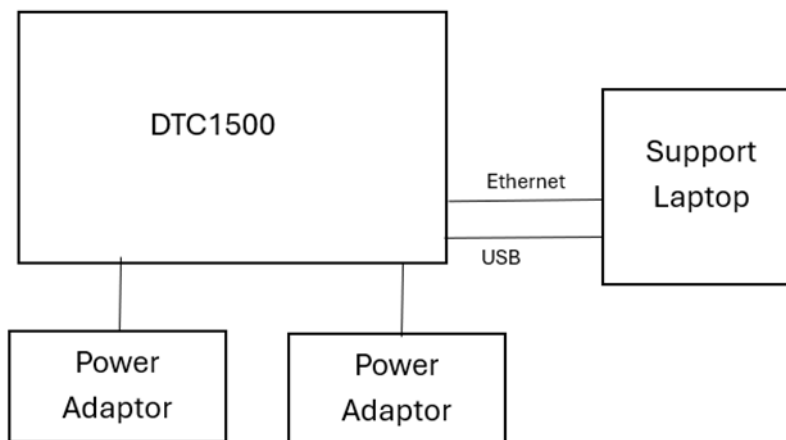


Figure 1. Block Diagram of Test Configuration

F. Equipment Configuration

The individual radios onboard were controlled by software on the support laptop. The software did not allow for adjusting of output power since that is at a fixed non-adjustable level.

G. Support Equipment

Support equipment necessary for the operation and testing of the EUT is included in the following list.

Ref. ID	Name/Description	Manufacturer	Model Number	Customer Supplied Calibration Data
	Laptop Computer	Dell	Latitude	N/A

Table 5. Support Equipment

H. Ports and Cabling Information

Ref. Id	Port Name on EUT	Cable Description or reason for no cable	Qty	Length as tested (m)	Max Length (m)	Shielded? (Y/N)	Termination Box ID & Port Name
	USB	USB-A to USB- C Cable	1	2	2	Yes	Laptop
	Ethernet	Unshielded Network Cable	1	3	>3m	No	Laptop
	Power	DC Power Cable	2	2	2	No	AC outlet

Table 6. Ports and Cabling Information

I. Mode of Operation

The individual radios onboard were controlled by software on the support laptop. The software tools used were proprietary and provided by HID Global Corporation (US) for the sole purpose of controlling the radios during testing. The software did not allow for adjusting of output power since that is at a fixed non-adjustable level. The test tools used are as follows:

- Utility Commander – hdpv Agency edition v2.3
- SC Reader Radio Control Tool v4

J. Modifications

a) Modifications to EUT

No modifications were made to the EUT.

b) Modifications to Test Standard

No modifications were made to the test standard.

K. Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to HID Global Corporation (US) upon completion of testing.

Antenna Requirements

§ 15.203 Antenna Requirement

Test Requirement: **§ 15.203:** An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The structure and application of the EUT were analyzed to determine compliance with Section 15.203 of the Rules. Section 15.203 states that the subject device must meet at least one of the following criteria:

- a.) Antenna must be permanently attached to the unit.
- b.) Antenna must use a unique type of connector to attach to the EUT.
- c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

Test Results: The Color Card Printer, DTC1500 was compliant with this requirement. The antenna is permanently attached to the unit.

Test Engineer(s): Bryan Taylor

Test Date(s): 12/2/2025

Conducted Emissions

§ 15.207(a) Conducted Emissions Limits

Test Requirement(s): **§ 15.207 (a):** For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency range (MHz)	§ 15.207(a), Conducted Limit (dB μ V)	
	Quasi-Peak	Average
* 0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

Table 7. Conducted Limits for Intentional Radiators from FCC Part 15 § 15.207(a)

Note: *Decreases with the logarithm of the frequency.

RSS-GEN (8.8) AC Power-Line Conducted Emissions Limits

Test Requirement(s): **RSS-GEN (8.8):** Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in the below figure, as measured using a 50 μ H / 50 Ω line impedance stabilization network (LISN). This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

For an EUT that connects to the AC power lines indirectly, through another device, the requirement for compliance with the limits in the below figure shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

Frequency (MHz)	Conducted Limit (dB μ V)	
	Quasi-Peak	Average
* 0.15-0.5	66 to 56	56 to 46 ¹
0.5-5	56	46
5-30	60	50

Table 8. AC Power Line Conducted Emissions Limits

Note: *Decreases with the logarithm of the frequency.

Test Procedure: The EUT was placed on a 0.8 m-high non-conducting table above a ground plane. The EUT was situated such that the back of the EUT was 0.4 m from one wall of the vertical ground plane, and the remaining sides of the EUT were no closer than 0.8 m from any other conductive surface. The EUT was powered from a 50 Ω /50 μ H Line Impedance Stabilization Network (LISN). The EMC receiver scanned the frequency range from 150 kHz to 30 MHz. Conducted Emissions measurements were made in accordance with *ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 "Procedures for Compliance Testing of Unlicensed Wireless Devices"*. The measurements were performed over the frequency range of 0.15 MHz to 30 MHz using a 50 Ω /50 μ H LISN as the input transducer to an EMI receiver.

Test Results: The Color Card Printer, DTC1500 was compliant with this requirement.

Test Engineer(s): Sergio Gutierrez

Test Date(s): 12/2/2025 – 12/4/2025

Conducted Emissions Voltage Test Setup

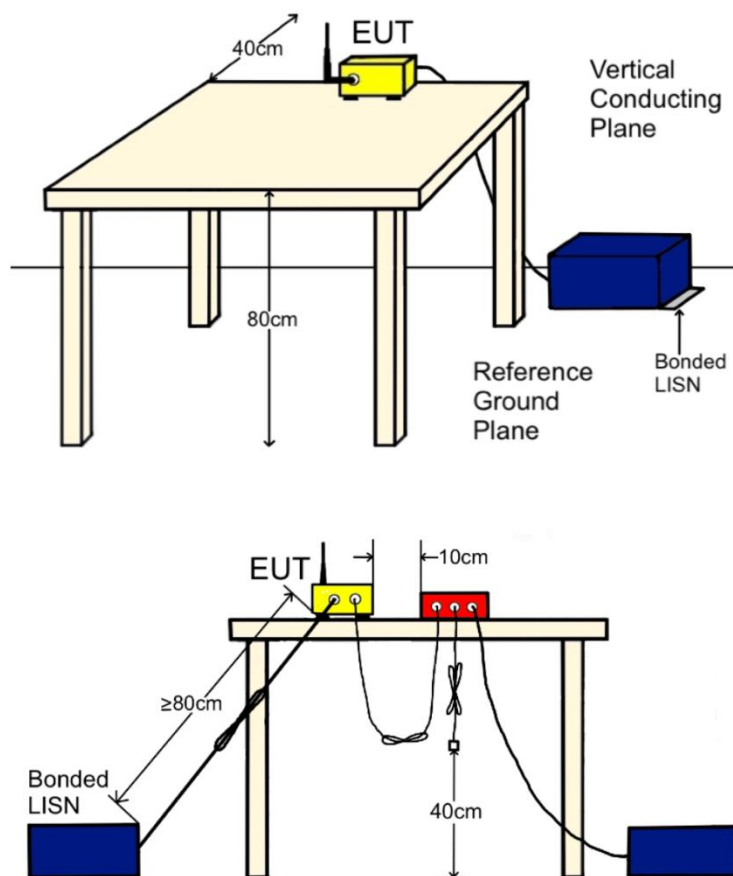
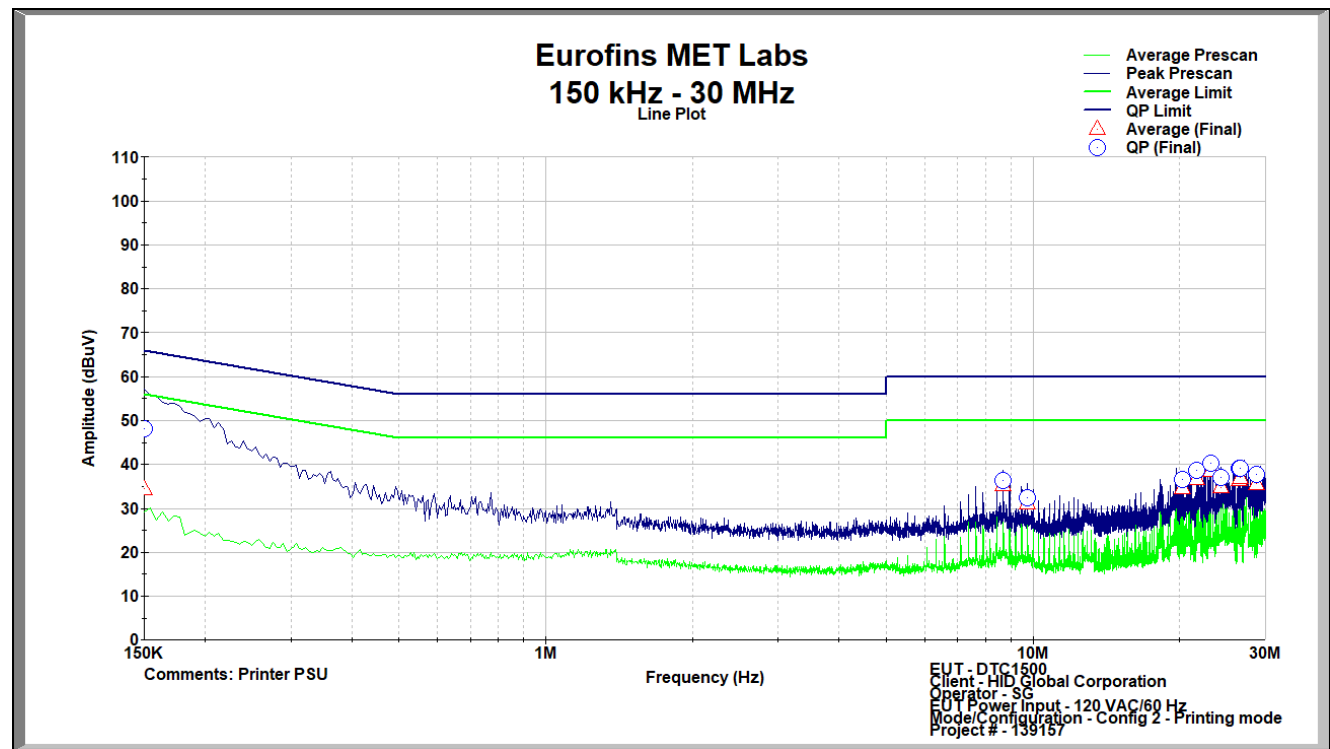


Figure 2. CEV Test Setup

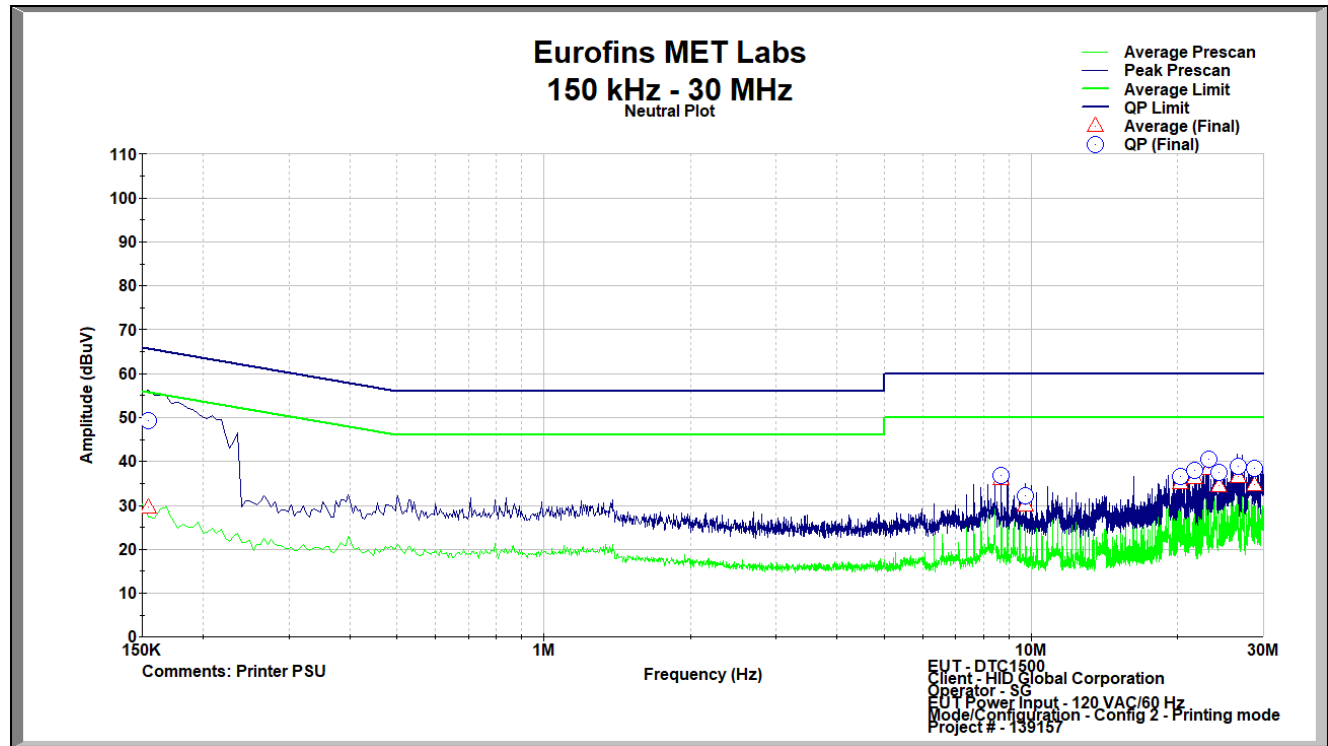
15.207(a) Conducted Emissions Test Results



Conducted Emissions, 15.207(a), Phase (Configuration 2)

Frequency (MHz)	Quasi-Peak (dBμV/m)	Quasi-Peak Limit (dBμV/m)	Quasi-Peak Margin (dB)	Average (dBμV/m)	Average Limit (dBμV/m)	Average Margin (dB)
0.15	48.124	66	17.876	34.495	56	21.505
8.69	36.41	60	23.59	35.422	50	14.578
9.744	32.472	60	27.528	31.213	50	18.787
20.261	36.589	60	23.411	34.817	50	15.183
21.666	38.721	60	21.279	36.87	50	13.13
23.133	40.343	60	19.657	38.741	50	11.259
24.354	37.044	60	22.956	34.831	50	15.169
26.491	39.03	60	20.97	36.51	50	13.49
26.613	39.119	60	20.881	37.133	50	12.867
28.689	37.772	60	22.228	35.575	50	14.425

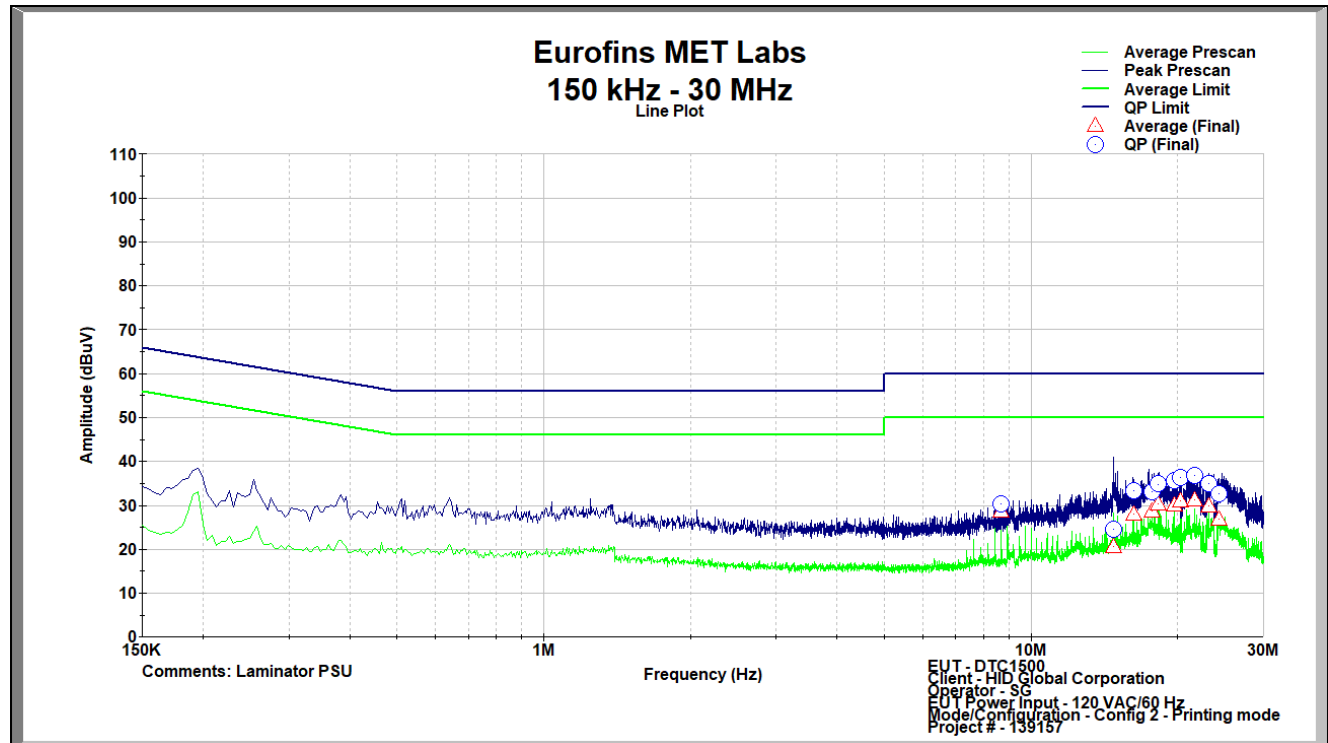
Table 9. Conducted Emissions, 15.207(a), Phase, Test Results (Configuration 2)



Conducted Emissions, 15.207(a), Neutral (Configuration 2)

Frequency (MHz)	Quasi-Peak (dBμV)	Quasi-Peak Limit (dBμV)	Quasi-Peak Margin (dB)	Average (dBμV)	Average Limit (dBμV)	Average Margin (dB)
0.154	49.265	65.871	16.607	29.567	55.871	26.304
8.69	36.821	60	23.179	36.06	50	13.94
9.744	32.224	60	27.776	30.102	50	19.898
20.261	36.488	60	23.512	35.072	50	14.928
21.666	37.877	60	22.123	36.303	50	13.697
23.133	40.407	60	19.593	38.391	50	11.609
24.354	37.581	60	22.419	34.54	50	15.46
26.613	38.975	60	21.025	36.607	50	13.393
28.689	38.412	60	21.588	34.792	50	15.208

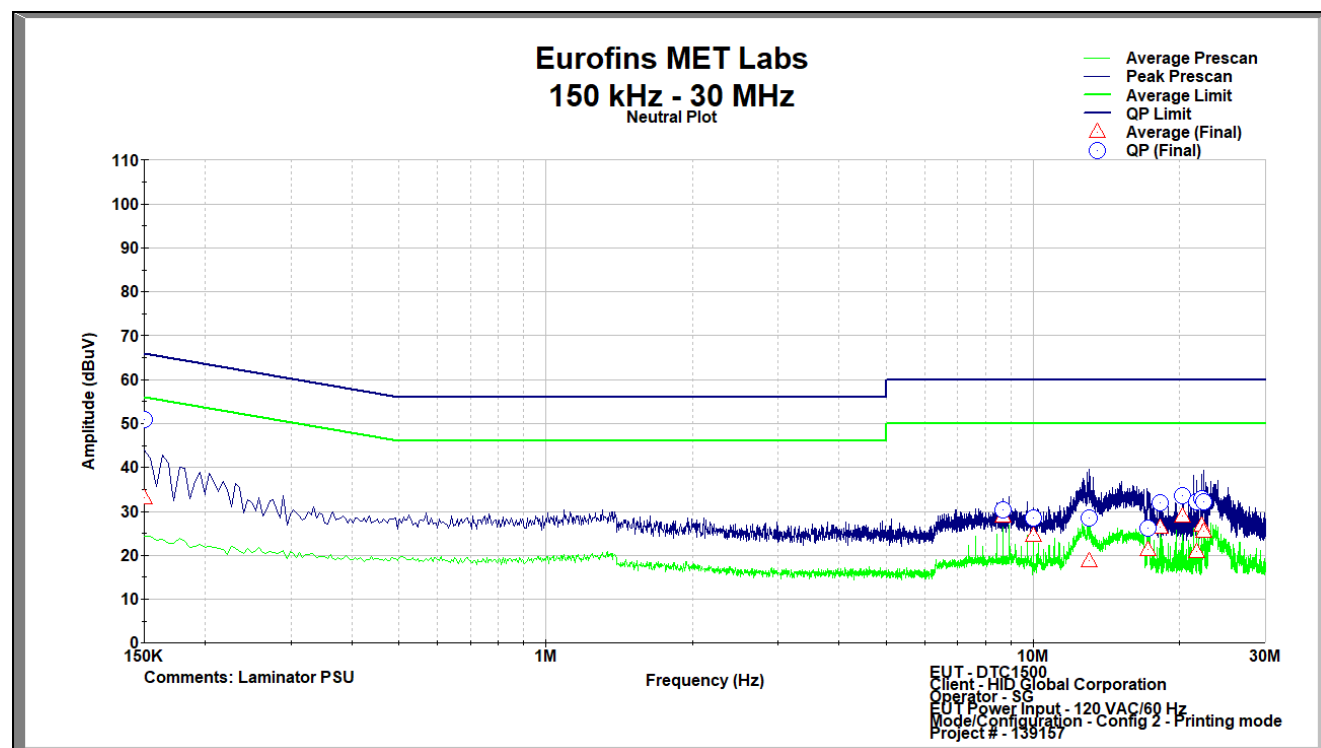
Table 10. Conducted Emissions, 15.207(a), Neutral, Test Results (Configuration 2)



Conducted Emissions, 15.207(a), Phase (Configuration 2, Laminator)

Frequency (MHz)	Quasi-Peak (dBμV/m)	Quasi-Peak Limit (dBμV/m)	Quasi-Peak Margin (dB)	Average (dBμV/m)	Average Limit (dBμV/m)	Average Margin (dB)
8.685	30.397	60	29.603	28.822	50	21.178
14.736	24.439	60	35.561	20.623	50	29.377
16.232	33.252	60	26.748	28.097	50	21.903
17.694	33.053	60	26.947	28.733	50	21.267
18.244	34.827	60	25.173	30.261	50	19.739
19.712	35.658	60	24.342	30.116	50	19.884
20.261	36.257	60	23.743	31.044	50	18.956
21.666	36.754	60	23.246	31.218	50	18.782
23.128	34.847	60	25.153	29.938	50	20.062
24.291	32.576	60	27.424	26.767	50	23.233

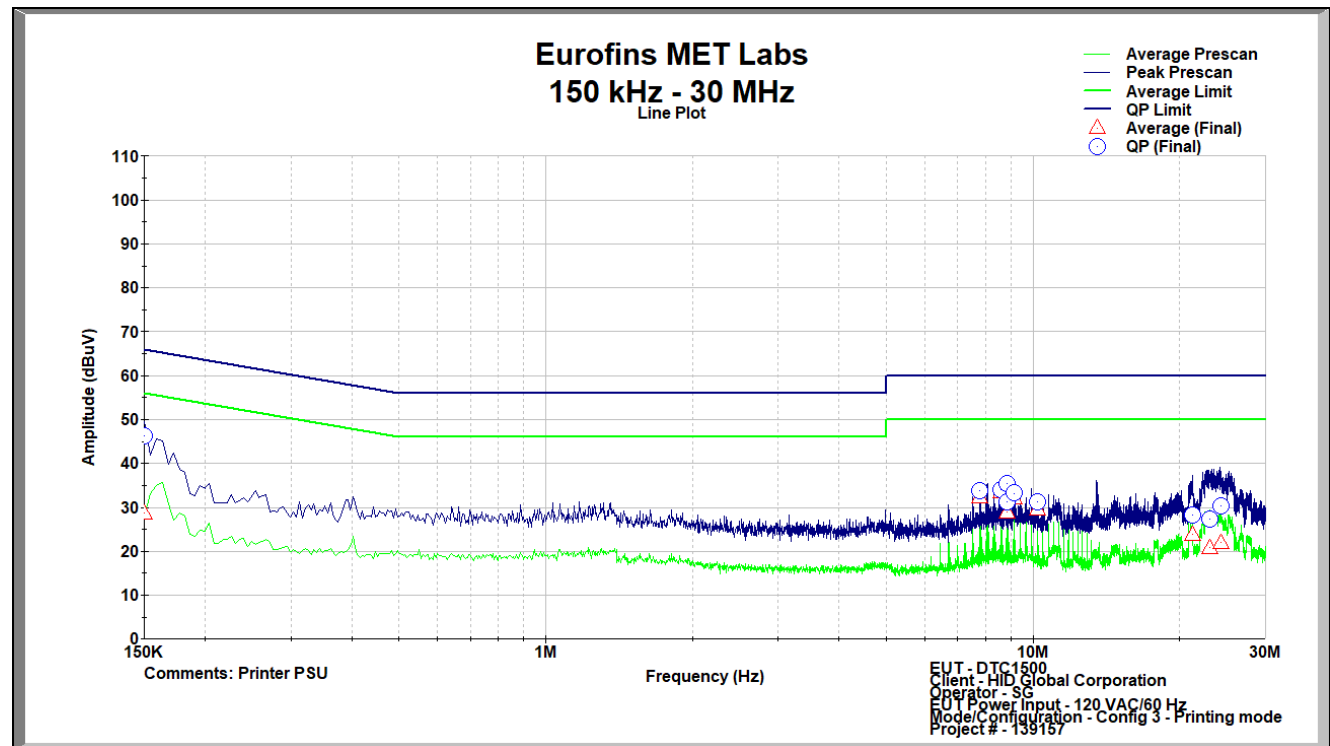
Table 11. Conducted Emissions, 15.207(a), Phase, Test Results (Configuration 2, Laminator)



Conducted Emissions, 15.207(a), Neutral (Configuration 2, Laminator)

Frequency (MHz)	Quasi-Peak (dBμV)	Quasi-Peak Limit (dBμV)	Quasi-Peak Margin (dB)	Average (dBμV)	Average Limit (dBμV)	Average Margin (dB)
0.15	50.84	66	15.16	33.068	56	22.932
8.685	30.429	60	29.571	28.91	50	21.09
10.001	28.502	60	31.498	24.589	50	25.411
13.04	28.403	60	31.597	18.865	50	31.135
17.181	26.182	60	33.818	21.24	50	28.76
18.244	31.942	60	28.058	26.348	50	23.652
20.261	33.633	60	26.367	28.929	50	21.071
21.652	32.27	60	27.73	20.911	50	29.089
22.233	32.764	60	27.236	26.84	50	23.16
22.372	32.073	60	27.927	25.552	50	24.448

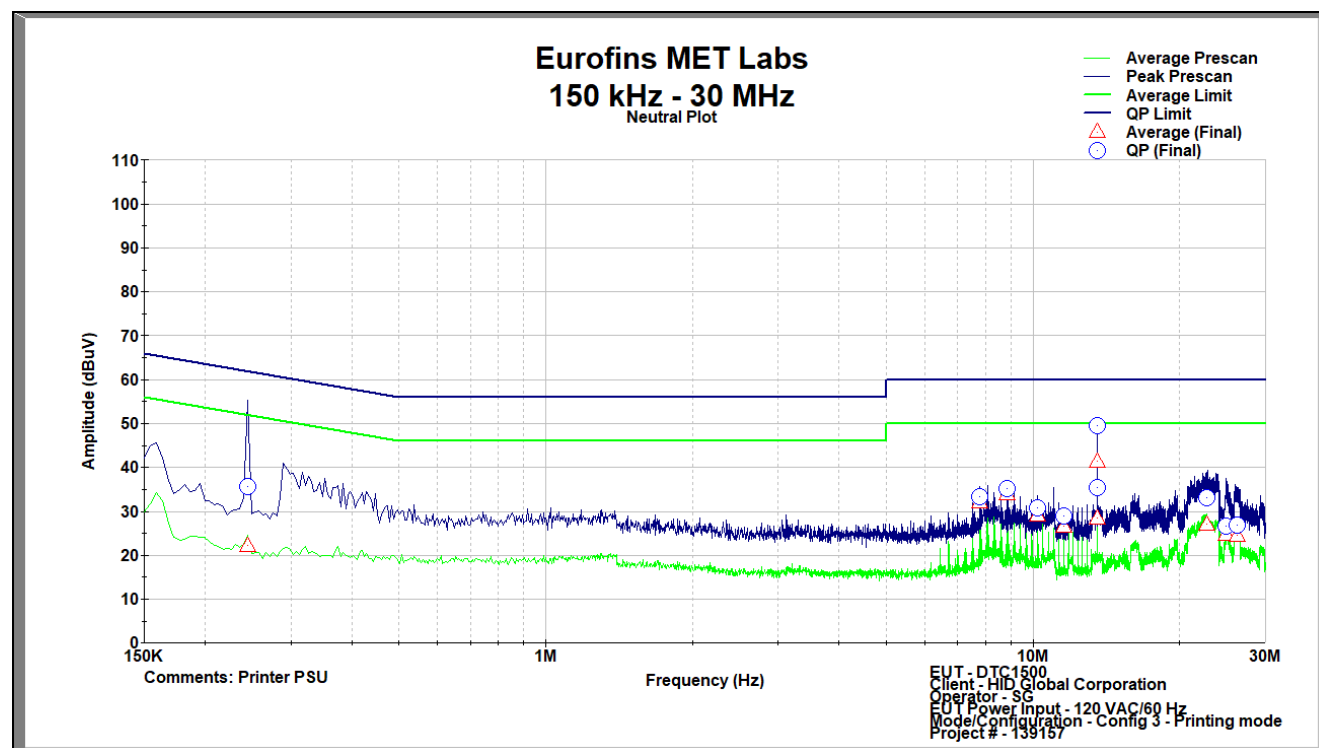
Table 12. Conducted Emissions, 15.207(a), Neutral, Test Results (Configuration 2, Laminator)



Conducted Emissions, 15.207(a), Phase (Configuration 3)

Frequency (MHz)	Quasi-Peak (dBμV/m)	Quasi-Peak Limit (dBμV/m)	Quasi-Peak Margin (dB)	Average (dBμV/m)	Average Limit (dBμV/m)	Average Margin (dB)
0.15	46.337	66	19.663	28.608	56	27.392
7.79	33.728	60	26.272	32.417	50	17.583
8.595	34.008	60	25.992	33.496	50	16.504
8.861	31.152	60	28.848	28.844	50	21.156
8.865	35.312	60	24.688	34.323	50	15.677
9.132	33.206	60	26.794	32.148	50	17.852
10.207	31.191	60	28.809	29.628	50	20.372
21.297	28.319	60	31.681	23.863	50	26.137
23.003	27.435	60	32.565	20.881	50	29.119
24.318	30.256	60	29.744	21.906	50	28.094

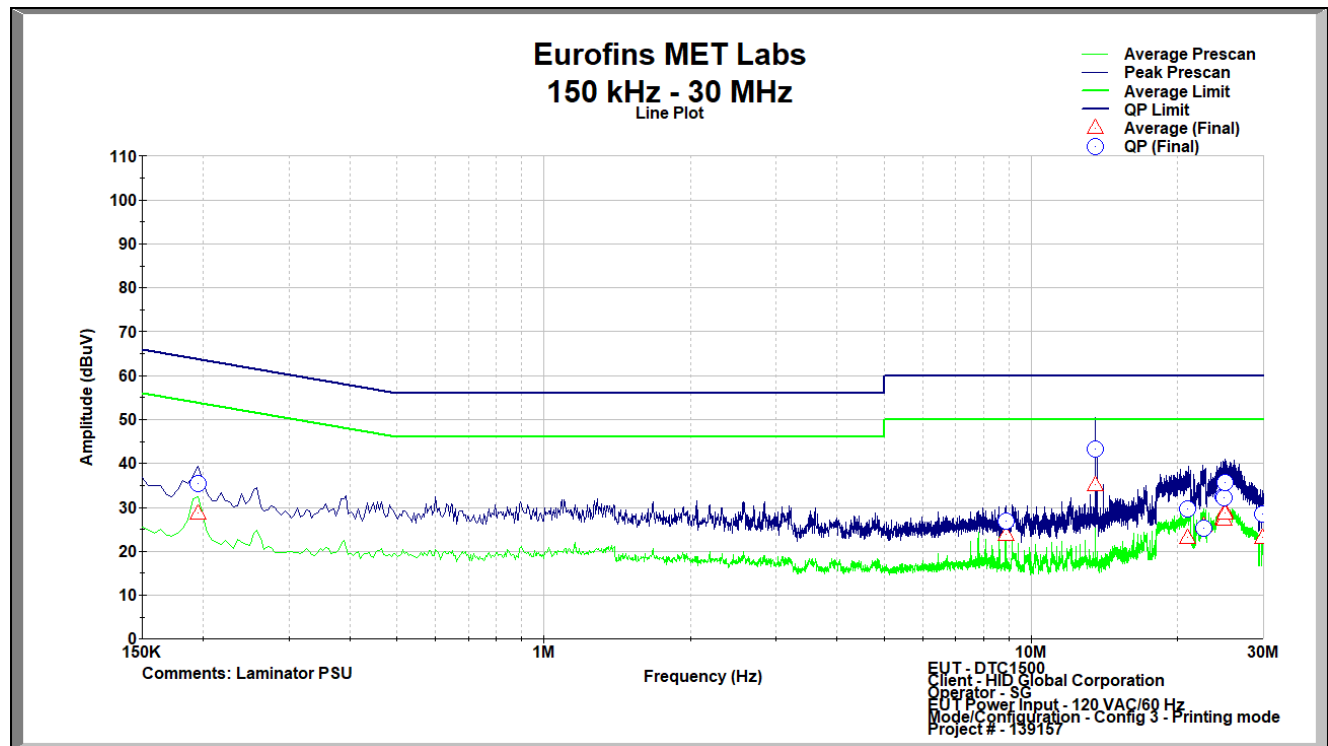
Table 13. Conducted Emissions, 15.207(a), Phase, Test Results (Configuration 3)



Conducted Emissions, 15.207(a), Neutral (Configuration 3)

Frequency (MHz)	Quasi-Peak (dBμV)	Quasi-Peak Limit (dBμV)	Quasi-Peak Margin (dB)	Average (dBμV)	Average Limit (dBμV)	Average Margin (dB)
0.244	35.731	63.3	27.569	22.134	53.3	31.166
7.79	33.329	60	26.671	32.251	50	17.749
8.865	35.096	60	24.904	34.084	50	15.916
10.207	30.751	60	29.249	29.104	50	20.896
11.553	28.962	60	31.038	26.734	50	23.266
13.553	35.424	60	24.576	28.405	50	21.595
13.557	49.439	60	10.561	41.533	50	8.467
22.755	33.163	60	26.837	27.099	50	22.901
24.881	26.716	60	33.284	24.713	50	25.287
26.253	26.783	60	33.217	24.657	50	25.343

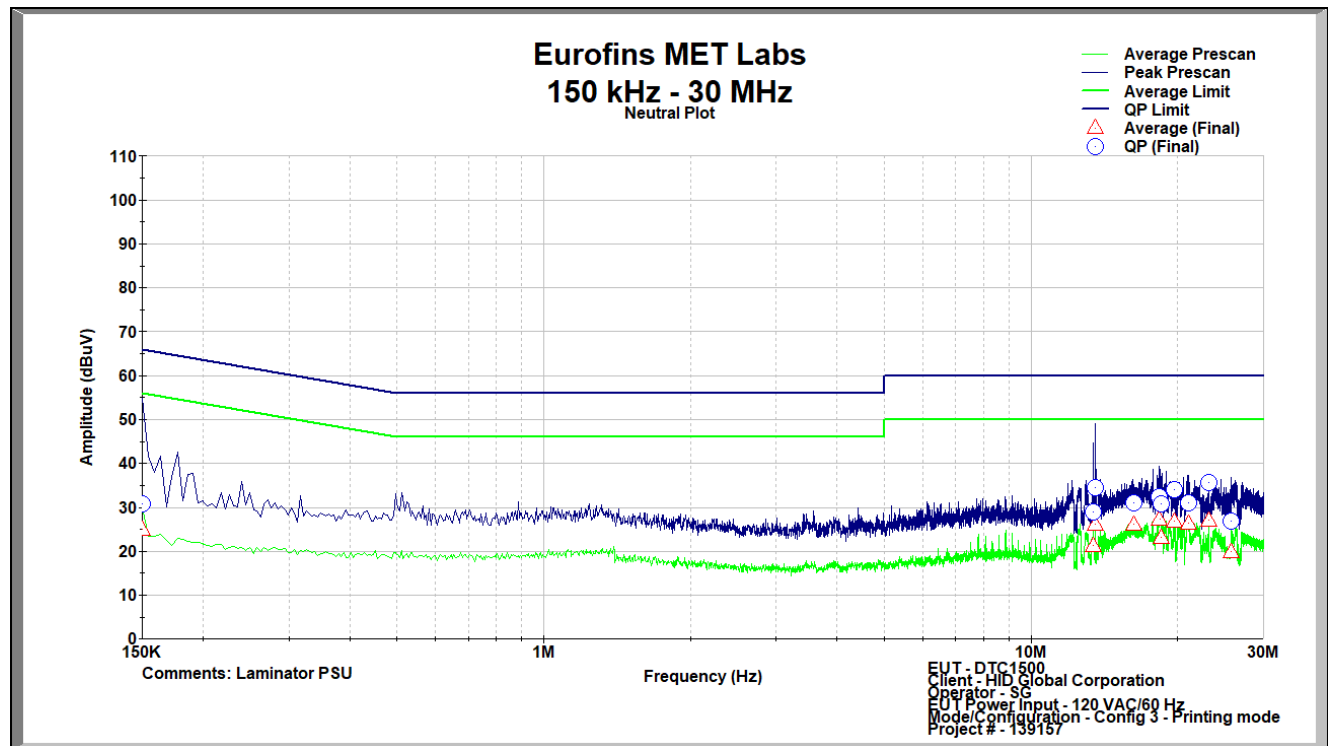
Table 14. Conducted Emissions, 15.207(a), Neutral, Test Results (Configuration 3)



Conducted Emissions, 15.207(a), Phase (Configuration 3, Laminator)

Frequency (MHz)	Quasi-Peak (dBμV/m)	Quasi-Peak Limit (dBμV/m)	Quasi-Peak Margin (dB)	Average (dBμV/m)	Average Limit (dBμV/m)	Average Margin (dB)
0.195	35.506	64.714	29.208	28.621	54.714	26.094
8.87	26.839	60	33.161	23.84	50	26.16
13.553	43.347	60	16.653	35.109	50	14.891
20.94	29.667	60	30.333	23.118	50	26.882
22.638	25.202	60	34.798	25.847	50	24.153
24.732	32.33	60	27.67	27.478	50	22.522
24.939	32.121	60	27.879	27.263	50	22.737
24.98	35.651	60	24.349	29.23	50	20.77
24.997	35.743	60	24.257	28.703	50	21.297
29.931	28.371	60	31.629	23.17	50	26.83

Table 15. Conducted Emissions, 15.207(a), Phase, Test Results (Configuration 3, Laminator)



Conducted Emissions, 15.207(a), Neutral (Configuration 3, Laminator)

Frequency (MHz)	Quasi-Peak (dBμV)	Quasi-Peak Limit (dBμV)	Quasi-Peak Margin (dB)	Average (dBμV)	Average Limit (dBμV)	Average Margin (dB)
0.15	30.882	66	35.118	25.011	56	30.989
13.444	28.956	60	31.044	21.425	50	28.575
13.57	34.54	60	25.46	26.214	50	23.786
16.232	31.036	60	28.964	26.116	50	23.884
18.366	32.297	60	27.703	27.408	50	22.592
18.483	30.86	60	29.14	23.089	50	26.911
19.712	33.958	60	26.042	26.845	50	23.155
21.054	30.995	60	29.005	26.448	50	23.552
23.128	35.74	60	24.26	27.152	50	22.848
25.7	26.942	60	33.058	19.922	50	30.078

Table 16. Conducted Emissions, 15.207(a), Neutral, Test Results (Configuration 3, Laminator)

Occupied Bandwidth Measurements**§ 15.215(c) 20 dB Occupied Bandwidth**

Test Requirement(s):	§ 15.215 (c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.
Test Procedure:	The transmitter was on and transmitting at the highest output power. The bandwidth of the fundamental frequency was measured with the spectrum analyzer. Per ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 the RBW should be between 1% and 5% of the occupied bandwidth. Note that the fundamental emission was very “CW like” and it was not possible to reduce the RBW to the point where it was within 1% and 5% of the occupied bandwidth.
Test Results:	The Color Card Printer, DTC1500 was compliant with this requirement.
Test Engineer(s):	Bryan Taylor
Test Date(s):	12/10/2025 – 12/12/2025

RSS-GEN (6.7) 99% Occupied Bandwidth

Test Requirements: The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

Test Procedure: The EUT was on and transmitting at the highest output power. The bandwidth of the fundamental frequency was measured with the spectrum analyzer. Per ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 the RBW should be between 1% and 5% of the occupied bandwidth. Note that the fundamental emission was very “CW like” and it was not possible to reduce the RBW to the point where it was within 1% and 5% of the occupied bandwidth.

Test Results: The Color Card Printer, DTC1500 was compliant with this requirement. Note that the fundamental emission was very “CW like” and it was not possible to reduce the RBW to the point where it was within 1% and 5% of the occupied bandwidth.

Test Engineer(s): Bryan Taylor

Test Date(s): 12/10/2025 – 12/12/2025

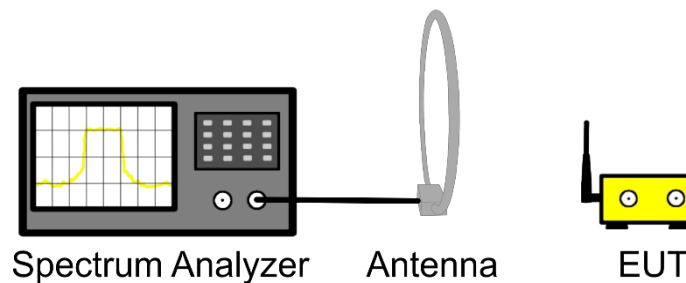


Figure 3. 20 dB Bandwidth and 99% Bandwidth Test Setup

Configuration Tested	Radio	Center Frequency (kHz)	20 dB Bandwidth	99% Bandwidth
Configuration 2	OMNIKEY 5127SI	125kHz	50.65Hz	427.6Hz
Configuration 3	OMNIKEY 5127 CK MINI	125kHz	55.28Hz	107.95Hz

Table 17. Occupied Bandwidth Test Results (With Credential In Place)

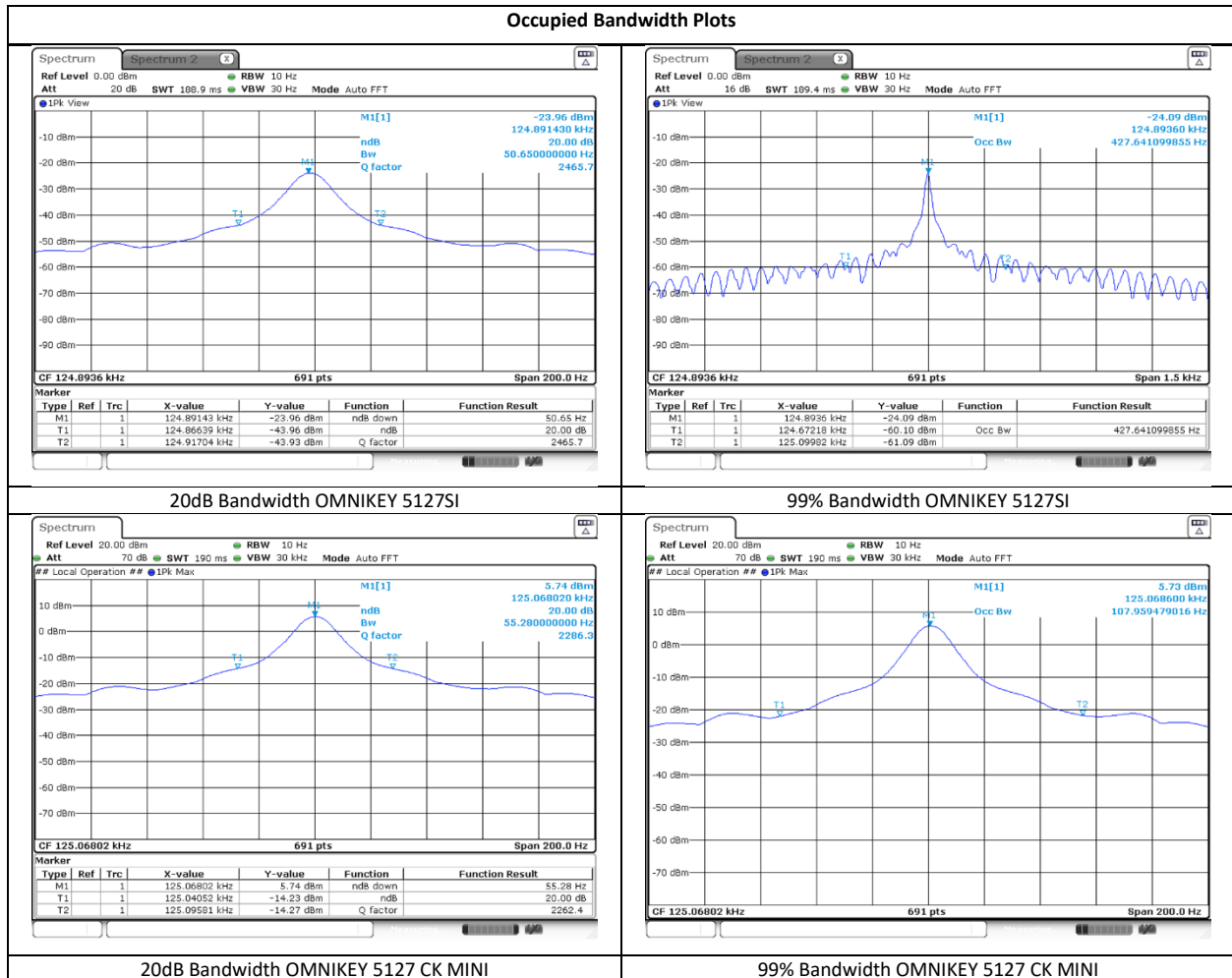


Table 18. Occupied Bandwidth Test Results (With Credential In Place)

Configuration Tested	Radio	Center Frequency (kHz)	20 dB Bandwidth	99% Bandwidth
Configuration 2	OMNIKEY 5127SI	125kHz	55.28Hz	473.22Hz
Configuration 3	OMNIKEY 5127 CK MINI	125kHz	54.41Hz	108.53Hz

Table 19. Occupied Bandwidth Test Results (Without Credential)

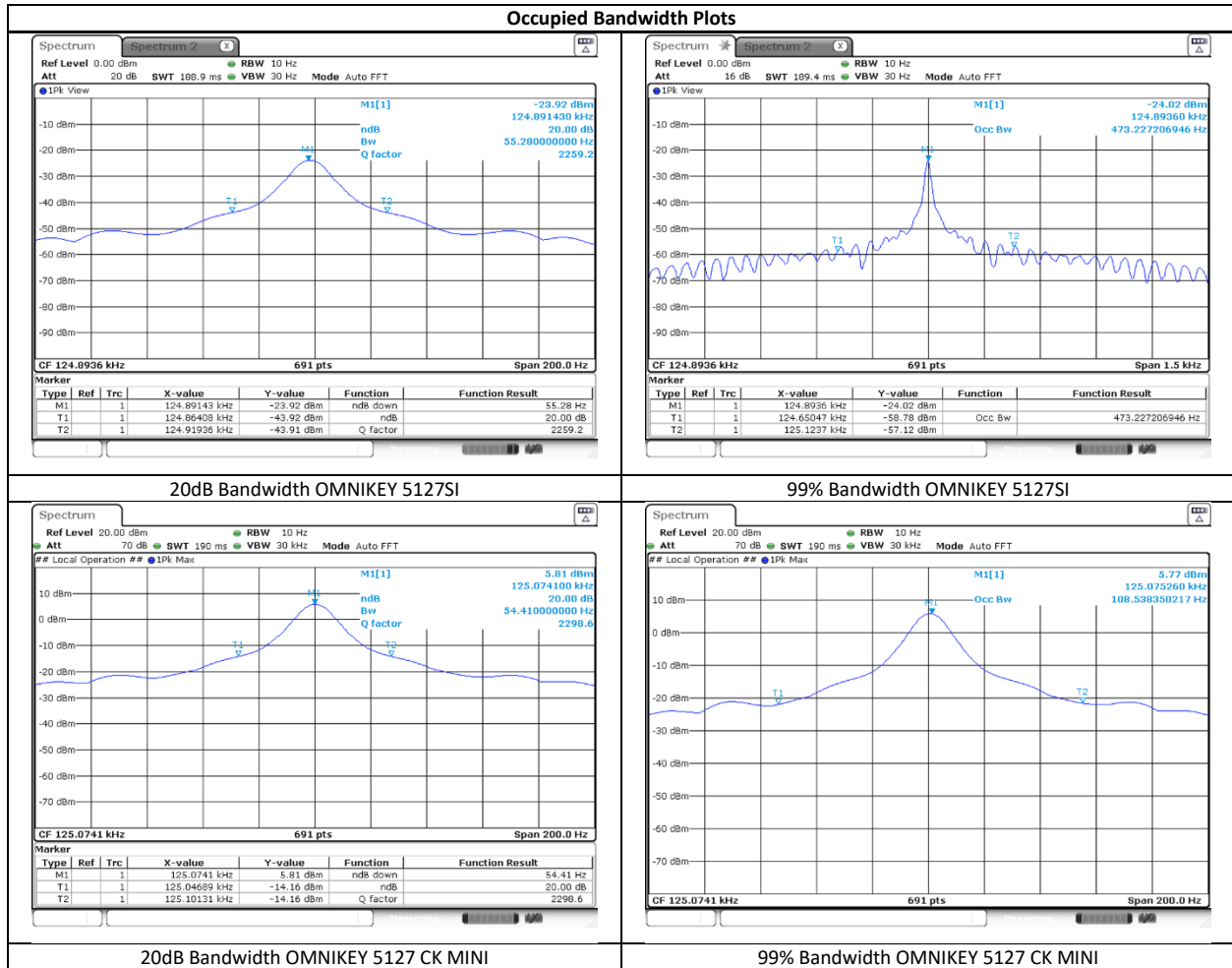


Table 20. Occupied Bandwidth Test Results (Without Credential)

Electromagnetic Compatibility Criteria for Intentional Radiators

Radiated Emissions Limits; General Requirements

Test Requirement(s):

§15.209 (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100 (40dBuV/m) **	3
88-216	150 (43.5dBuV/m)**	3
216-960	200 (46.0dBuV/m)**	3
Above 960	500 (54.0dBuV/m)	3
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.		

(b) In the emission table above, the tighter limit applies at the band edges.

(c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other sections within this part and which are required to reduce their unwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.

(d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

(e) The provisions in [§§ 15.31](#), [15.33](#), and [15.35](#) for measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part.

(f) In accordance with [§ 15.33\(a\)](#), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation of a digital device. If measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in [§ 15.109](#) and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in [§ 15.205](#), the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in [§ 15.109](#) that are applicable to the incorporated digital device.

(g) Perimeter protection systems may operate in the 54–72 MHz and 76–88 MHz bands under the provisions of this section. The use of such perimeter protection systems is limited to industrial, business and commercial applications.

RSS-210 (7.2) General Field Strength Limits

Test Requirement(s): RSS-Gen includes the general field strength limits of unwanted emissions, where applicable, for transmitters and receivers operating in accordance with the provisions specified in this standard.

Unless otherwise indicated, unwanted emissions of transmitters and receivers are permitted to fall within the restricted frequency bands listed in RSS-Gen and the TV bands 54-72 MHz, 76-88 MHz, 174-216 MHz and 470-602 MHz; however, fundamental emissions are prohibited in these bands, except where equipment operation is permitted in the applicable RSS.

RSS-Gen (8.9) Transmitter Emission Limits

Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

Table 5 – General field strength limits at frequencies above 30 MHz		
Frequency (MHz)	Field strength (µV/m at 3 m)	
30 – 88	100	
88 – 216	150	
216 – 960	200	
Above 960	500	

Table 6 – General field strength limits at frequencies below 30 MHz		
Frequency	Magnetic field strength (H-Field) (µA/m)	Measurement distance (m)
9 - 490 kHz ^{Note 1}	6.37/F (F in kHz)	300
490 - 1705 kHz	63.7/F (F in kHz)	30
1.705 - 30 MHz	0.08	30

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

Test Procedure:

The EUT was set to transmit and placed on a 0.8 m-high wooden stand inside a semi-anechoic chamber. The method of testing and test conditions of ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 were used. For measurements below 30 MHz a loop antenna placed 3m away from the unit was used. For measurements above 30 MHz a biconalog antenna placed 10 m away from the unit was used. Measurements below 30 MHz were conducted with the loop antenna at coaxial (parallel) and planar (perpendicular) orientations. Measurements above 30 MHz were conducted with the biconalog antenna in the vertical and horizontal polarizations. A peak detector was used to perform a pre-scan from 9 kHz to 10 times the fundamental frequency. Spurious emissions within 20 dB of the applicable limit were measured using a quasi-peak detector and recorded in the subsequent section. Peak emissions that were observed over the applicable limit were determined to be digital emissions subject to the requirements of FCC Part 15 Subpart B and ICES-003 subsection 6.2 for Class A devices.

The measurements made at 3 m with the loop antenna (below 30MHz) were then extrapolated to 30m or 300 m using the following correction factors which were applied to the limit.

$$40\log(30/3) = 40 \text{ dB}$$

$$40\log(300/3) = 80 \text{ dB}$$

The measurements made at 10 m with the biconilog antenna (above 30MHz) were then extrapolated to the 3m using the following correction factor which were applied to the limit.

$$20\log(10/3) = 10.46 \text{ dB}$$

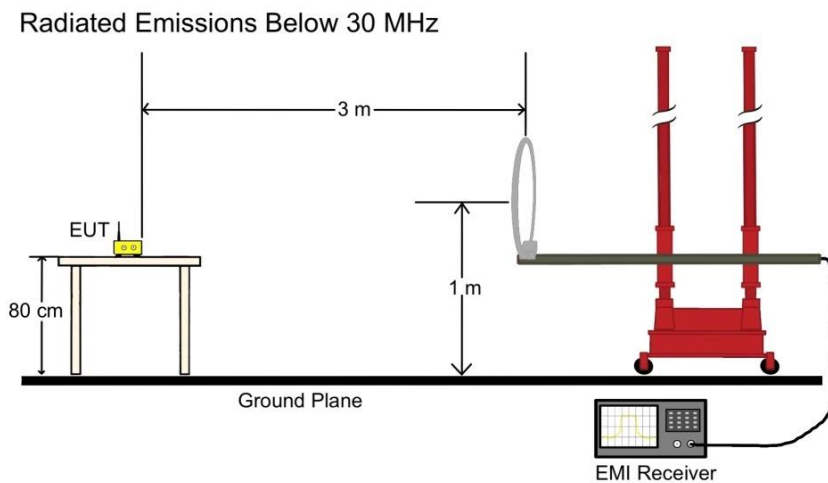


Figure 4: Radiated Emissions (Below 30MHz), Test Setup

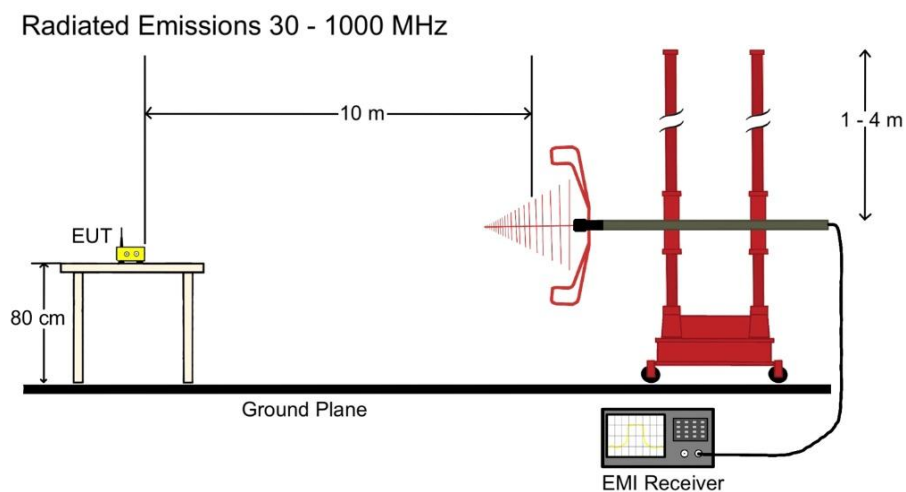


Figure 5. Radiated Emissions (Above 30MHz), Test Setup

Test Results: The Color Card Printer, DTC1500 was compliant with the general radiated emission limits.

Test Engineer(s): Bryan Taylor

Test Date(s): 12/10/2025 – 12/12/2025

Frequency [MHz]	Peak Level [dBμV/m] ¹	Limit [dBμV/m]	Margin [dB]	Correction [dB] ²	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Result
0.014	55.54	124.42	68.88	16.66	V	269.6	1.00	0.200	Pass
0.125	54.62	105.67	51.05	11.31	V	285.2	1.00	0.200	Pass
0.168	55.33	103.09	47.76	11.34	H	290.4	1.00	9.000	Pass
0.560	43.53	72.65	29.11	11.42	V	230.1	1.00	9.000	Pass
0.956	39.00	67.99	28.99	11.64	V	89.3	1.00	9.000	Pass
25.004	25.81	69.50	43.69	9.72	H	296.7	1.00	9.000	Pass

Table 21. Radiated Spurious Emissions 9kHz – 30MHz (5127SI)

Frequency [MHz]	QPK Level [dBμV/m] ¹	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB] ²	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Comment
32.250	15.32	29.55	14.23	-3.39	H	182.5	1.07	120.000	Pass
60.000	21.55	29.55	8.00	-14.11	V	42.6	2.33	120.000	Pass
84.000	27.68	29.55	1.87	-11.81	V	221.9	1.15	120.000	Pass
120.000	21.83	33.07	11.24	-7.67	V	55.6	0.99	120.000	Pass
129.120	15.46	33.07	17.61	-7.75	V	111.7	1.42	120.000	Pass
179.970	28.82	33.07	4.25	-10.07	H	240.5	2.41	120.000	Pass

Table 22. Radiated Spurious Emissions Above 30MHz (5127SI)

¹ This corrected level includes the factor shown in the “correction” column. The corrected level = Raw Reading + Correction Factor. The raw reading is not shown in the table above.

² This correction factor includes cable loss in dB, preamplifier gain in dB, and an electric field antenna factor in (dB/m) or magnetic antenna factor in dB(S/m).

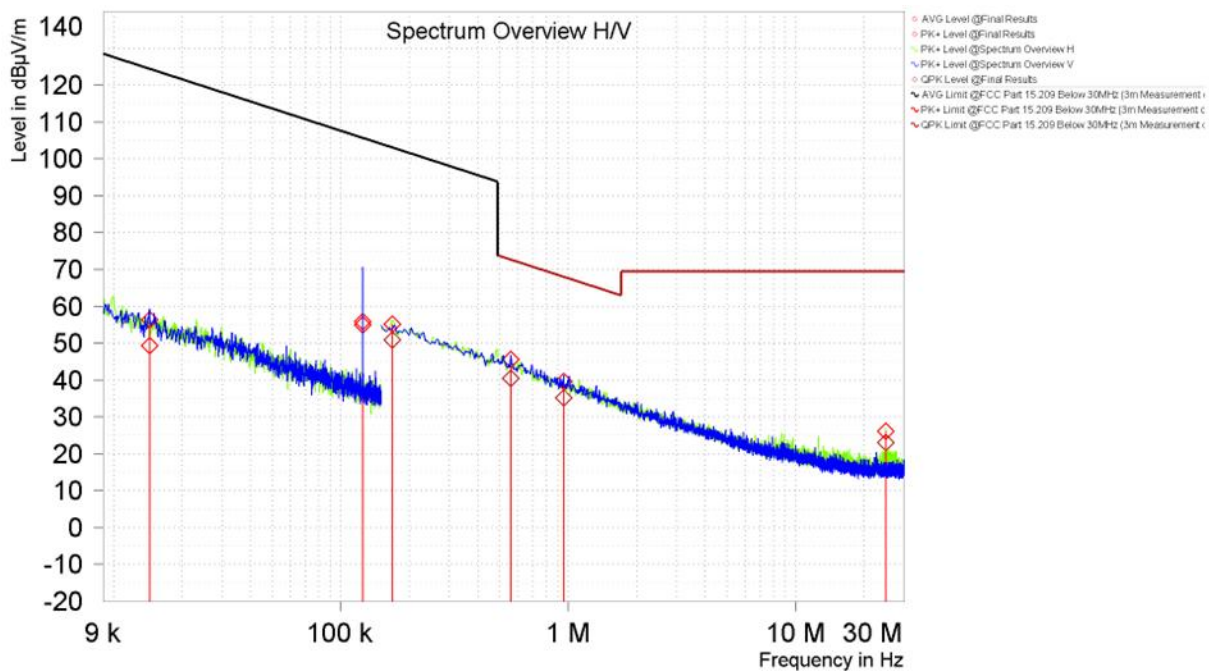


Figure 6. Spurious Emissions Below 30MHz, (5127SI)

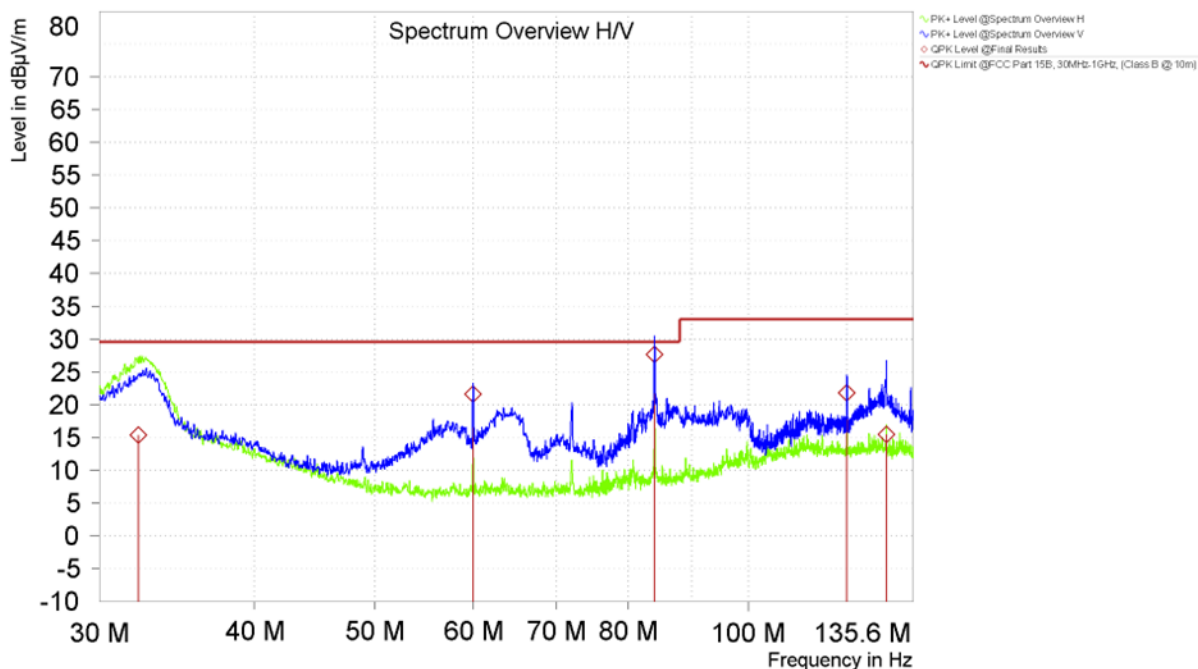


Figure 7. Spurious Emissions 30MHz – 135.6MHz, Vertical and Horizontal (5127SI)

Frequency [MHz]	Peak Level [dBμV/m] ³	Limit [dBμV/m]	Margin [dB]	Correction [dB] ⁴	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Result
0.010	56.96	127.85	70.89	19.44	V	115.9	1.00	0.200	Pass
0.125	70.59	105.67	35.08	11.31	V	236.9	1.00	0.200	Pass
0.420	47.61	95.14	47.53	11.28	H	150.8	1.00	9.000	Pass
0.690	41.65	70.82	29.17	11.46	V	65.7	1.00	9.000	Pass
1.370	36.19	64.86	28.68	11.70	V	244.1	1.00	9.000	Pass
25.004	27.15	69.50	42.35	9.72	H	122.7	1.00	9.000	Pass

Table 23. Radiated Spurious Emissions 9kHz – 30MHz (5127SI, Without Credential)

Frequency [MHz]	QPK Level [dBμV/m] ¹	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB] ²	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Comment
32.430	15.79	29.55	13.76	-3.47	H	225.1	1.00	120.000	Pass
60.000	21.60	29.55	7.95	-14.11	V	31.7	2.02	120.000	Pass
71.970	13.05	29.55	16.50	-13.81	V	224.9	1.93	120.000	Pass
84.000	28.51	29.55	1.04	-11.81	V	285.6	1.46	120.000	Pass
120.000	21.89	33.07	11.18	-7.67	V	49.8	0.99	120.000	Pass
126.930	15.42	33.07	17.65	-7.45	V	351.1	0.99	120.000	Pass

Table 24. Radiated Spurious Emissions Above 30MHz (5127SI, Without Credential)

³ This corrected level includes the factor shown in the “correction” column. The corrected level = Raw Reading + Correction Factor. The raw reading is not shown in the table above.

⁴ This correction factor includes cable loss in dB, preamplifier gain in dB, and an electric field antenna factor in (dB/m) or magnetic antenna factor in dB(S/m).

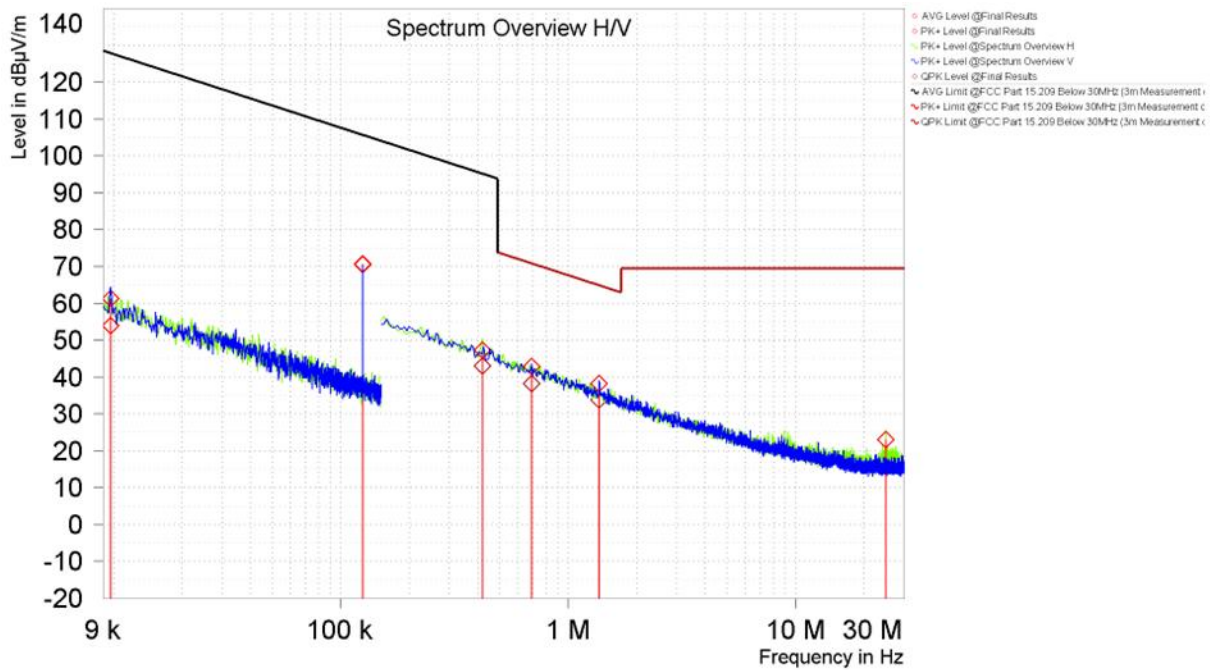


Figure 8. Spurious Emissions Below 30MHz, (5127SI, Without Credential)

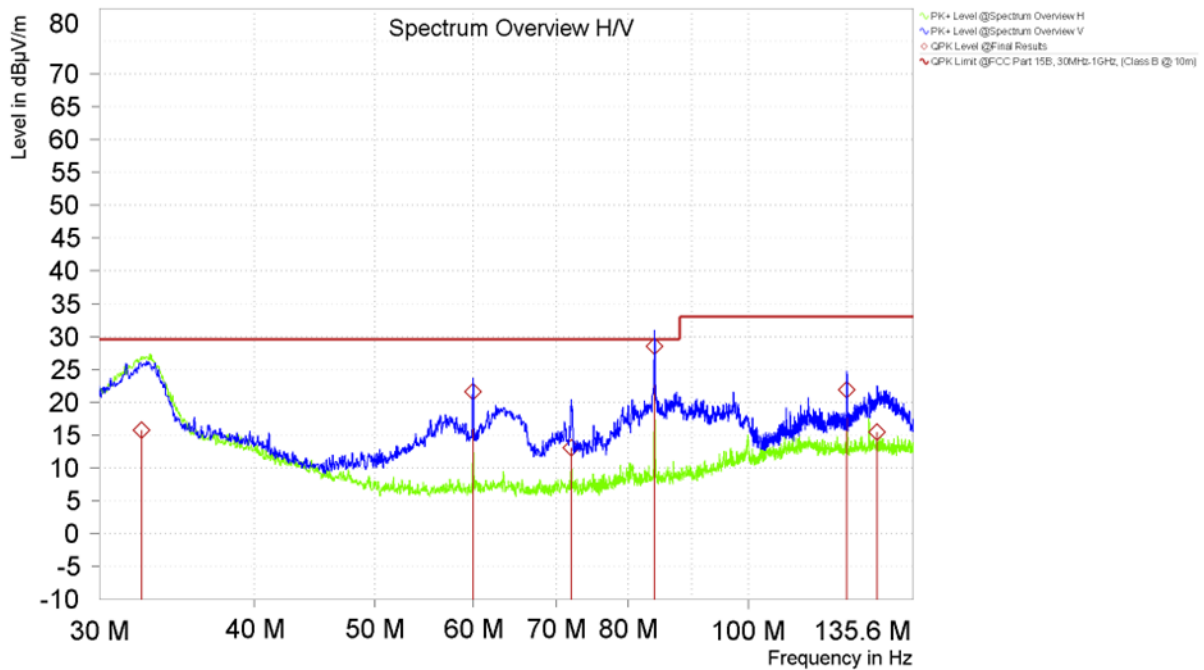


Figure 9. Spurious Emissions 30MHz – 1GHz, Vertical and Horizontal (5127SI, Without Credential)

Frequency [MHz]	Peak Level [dBμV/m] ⁵	Limit [dBμV/m]	Margin [dB]	Correction [dB] ⁶	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Result
0.070	43.04	110.71	67.67	11.42	H	66.2	1.00	0.200	Pass
0.125	61.72	105.67	43.95	11.31	V	285	1.00	0.200	Pass
0.731	50.50	70.33	19.82	11.46	V	255	1.00	9.000	Pass
1.460	34.90	64.31	29.41	11.70	V	255	1.00	9.000	Pass
13.560	47.87	69.50	21.63	10.61	V	3.9	1.00	9.000	Pass
23.132	30.03	69.50	39.47	9.86	H	73.6	1.00	9.000	Pass
24.720	28.68	69.50	40.82	9.67	H	250	1.00	9.000	Pass

Table 25. Radiated Spurious Emissions 9kHz – 30MHz (CK MINI)

Frequency [MHz]	QPK Level [dBμV/m] ¹	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB] ²	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Comment
30.720	20.83	29.55	8.72	-2.71	V	171.9	1.00	120.000	Pass
31.440	22.25	29.55	7.30	-3.20	V	180	1.08	120.000	Pass
32.850	15.05	29.55	14.50	-3.97	V	17.3	1.00	120.000	Pass
72.030	18.83	29.55	10.72	-13.79	V	204.1	2.06	120.000	Pass
83.970	20.88	29.55	8.67	-11.82	V	180.1	1.49	120.000	Pass
95.970	16.63	33.07	16.44	-9.78	V	107.1	1.78	120.000	Pass
120.000	22.25	33.07	10.82	-7.67	V	69	1.15	120.000	Pass

Table 26. Radiated Spurious Emissions Above 30MHz (CK MINI)

⁵ This corrected level includes the factor shown in the “correction” column. The corrected level = Raw Reading + Correction Factor. The raw reading is not shown in the table above.

⁶ This correction factor includes cable loss in dB, preamplifier gain in dB, and an electric field antenna factor in (dB/m) or magnetic antenna factor in dB(S/m).

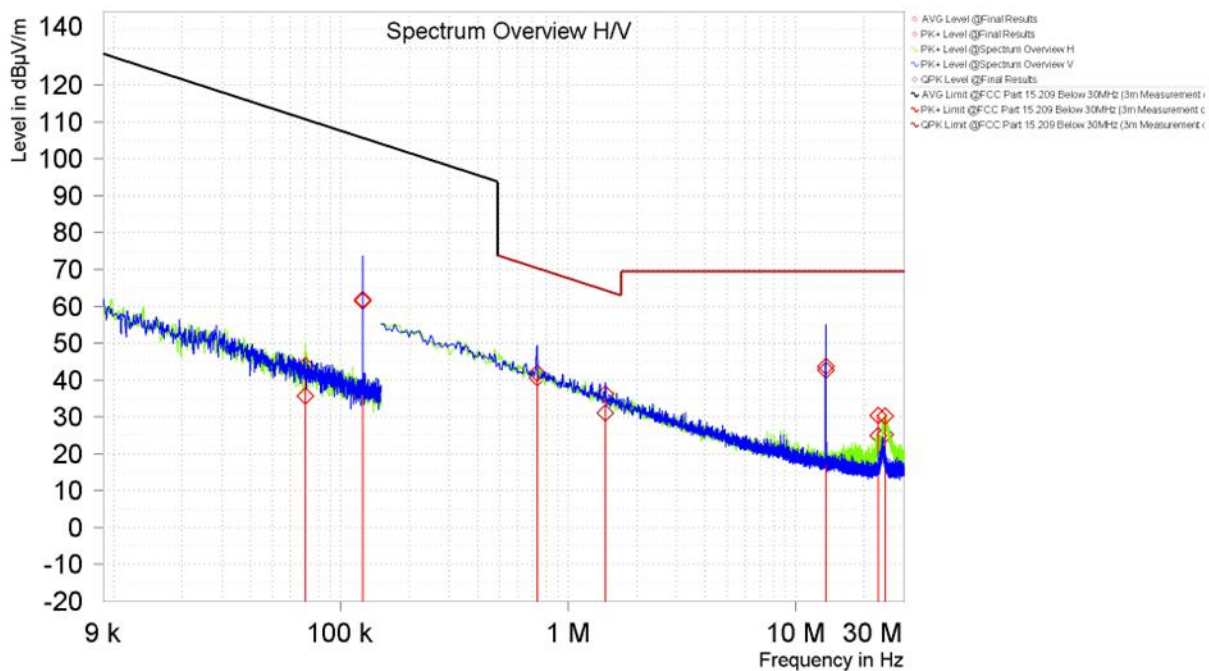


Figure 10. Spurious Emissions Below 30MHz, Coplanar Loop, (CK MINI)

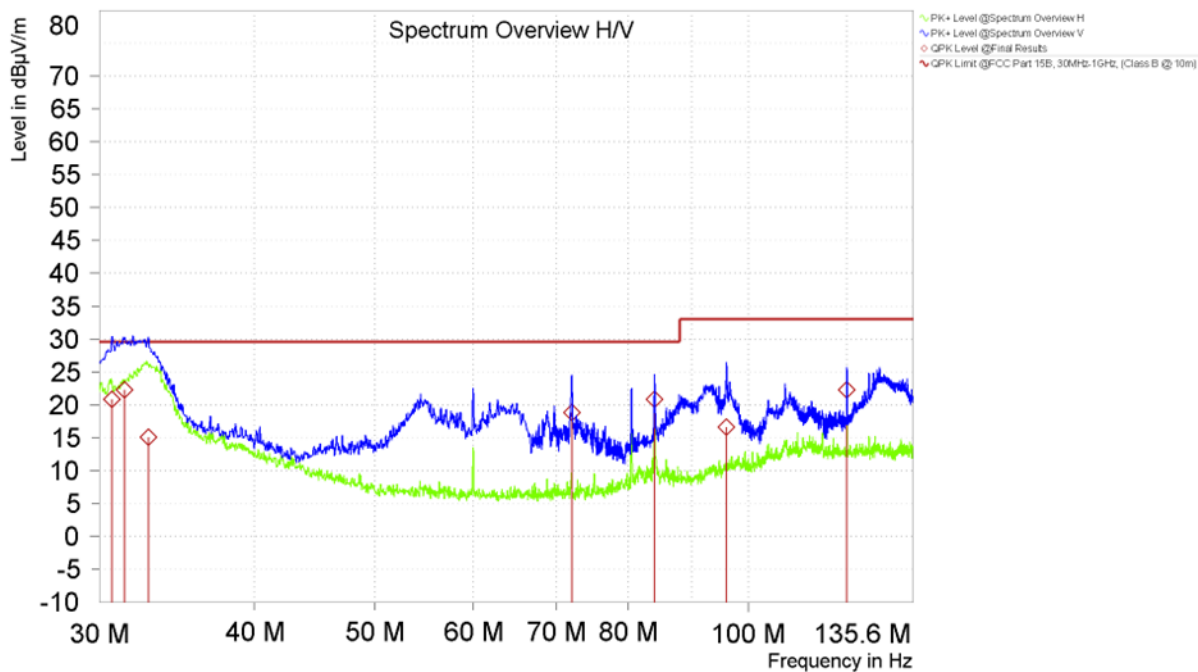


Figure 11. Spurious Emissions 30MHz – 135.6MHz, Vertical and Horizontal (CK MINI)

Frequency [MHz]	Peak Level [dBμV/m] ⁷	Limit [dBμV/m]	Margin [dB]	Correction [dB] ⁸	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Result
0.125	60.85	105.67	44.82	11.31	V	195	1.00	0.200	Pass
0.555	43.06	72.72	29.66	11.42	V	271.9	1.00	9.000	Pass
1.149	38.39	66.39	28.00	11.74	H	14.5	1.00	9.000	Pass
13.560	44.22	69.50	25.28	10.61	V	225.1	1.00	9.000	Pass
23.069	23.02	69.50	46.48	9.88	H	172.1	1.00	9.000	Pass
23.982	16.74	69.50	52.76	9.56	V	289.7	1.00	9.000	Pass

Table 27. Radiated Spurious Emissions 9kHz – 30MHz (CK MINI, Without Credential)

Frequency [MHz]	QPK Level [dBμV/m] ¹	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB] ²	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Comment
32.430	15.79	29.55	13.76	-3.47	H	225.1	1.00	120.000	Pass
60.000	21.60	29.55	7.95	-14.11	V	31.7	2.02	120.000	Pass
71.970	13.05	29.55	16.50	-13.81	V	224.9	1.93	120.000	Pass
84.000	28.51	29.55	1.04	-11.81	V	285.6	1.46	120.000	Pass
120.000	21.89	33.07	11.18	-7.67	V	49.8	0.99	120.000	Pass
126.930	15.42	33.07	17.65	-7.45	V	351.1	0.99	120.000	Pass

Table 28. Radiated Spurious Emissions Above 30MHz (CK MINI, Without Credential)

⁷ This corrected level includes the factor shown in the “correction” column. The corrected level = Raw Reading + Correction Factor. The raw reading is not shown in the table above.

⁸ This correction factor includes cable loss in dB, preamplifier gain in dB, and an electric field antenna factor in (dB/m) or magnetic antenna factor in dB(S/m).

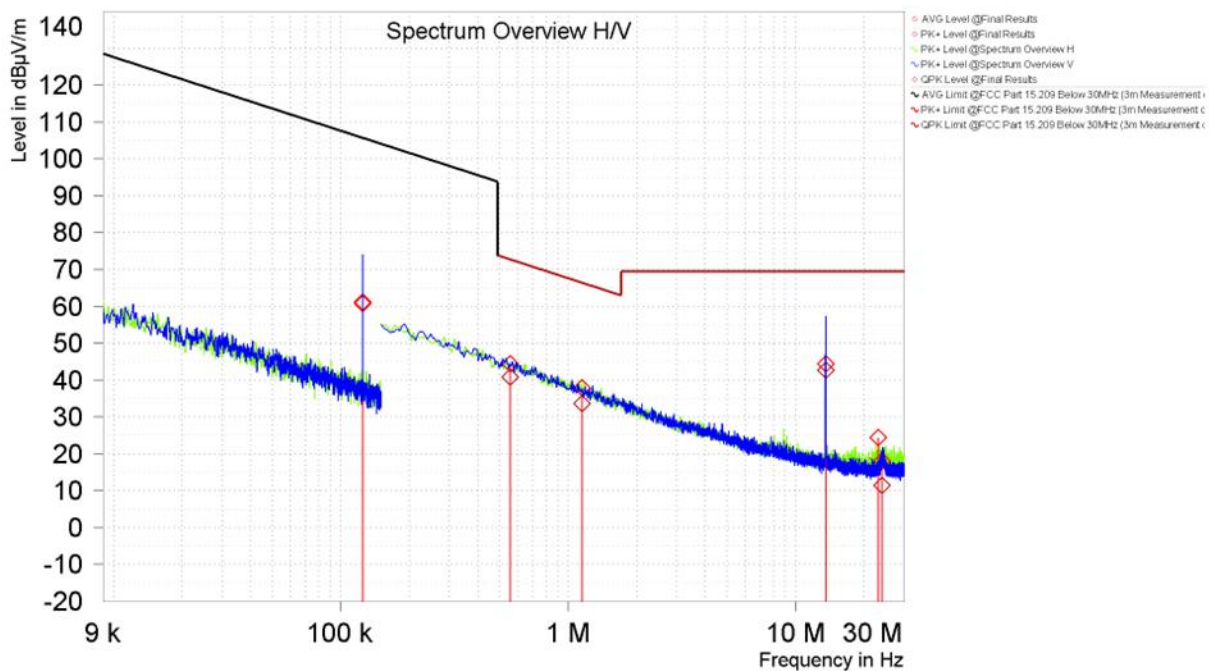


Figure 12. Spurious Emissions Below 30MHz, Coplanar Loop, (CK MINI, Without Credential)

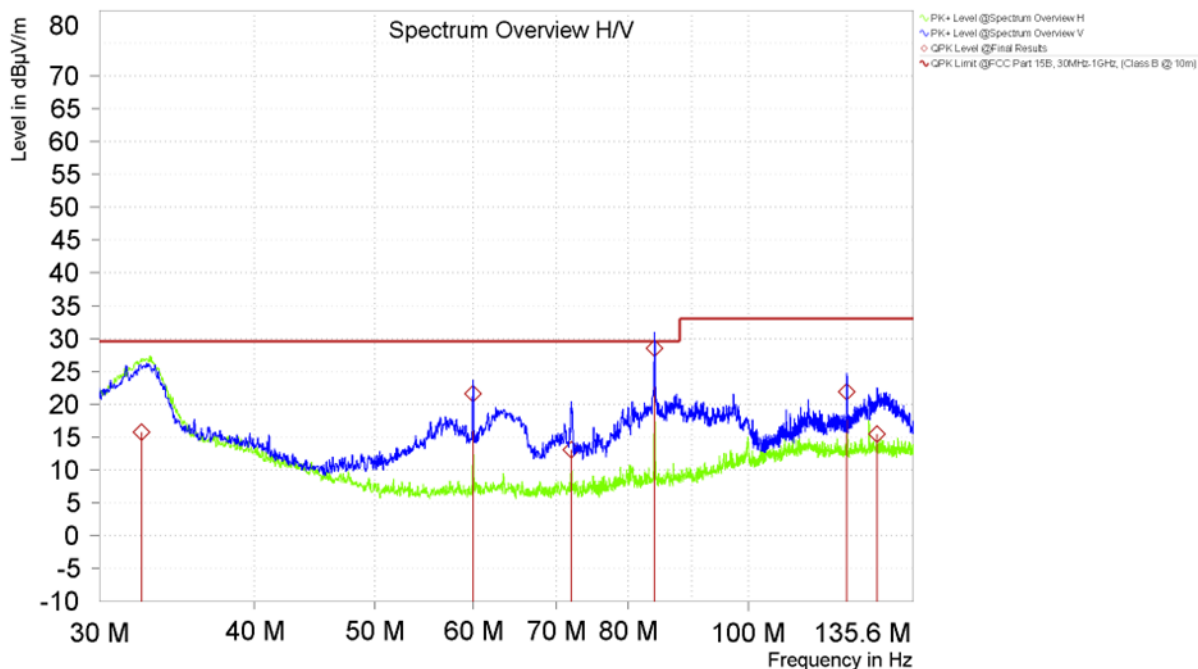


Figure 13. Spurious Emissions 30MHz – 135.6MHz, Vertical and Horizontal (CK MINI, Without Credential)

Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2017.

MET Asset #	Description	Manufacturer	Model	Last Cal Date	Cal Due Date
1A1234	FSV Signal Analyzer	Rohde & Schwarz	FSV 40	03/13/2025	03/13/2026
1A1250	EMI Test Receiver	Rohde & Schwarz	ESW44	03/28/2025	03/28/2026
1A1176	Active Loop Antenna (9KHz-30MHz)	ETS-Lindgren	6502	08/22/2024	08/22/2026
1A1050	Bi-Log Antenna	Schaffner	CBL-6112D	03/05/2024	03/05/2026
1A1065	EMI Test Receiver	Rohde & Schwarz	ESCI	08/28/2025	08/28/2026
1A1177	Pulse Limiter	Rohde & Schwarz	ESH3Z2	12/11/2024	12/11/2025
3A3215	DC Milli-Ohm Meter	Valhalla	4150ATC	05/28/2025	05/28/2026
3A3377	Thermohygrometer with barometer	Omega	Q68706	03/31/2025	03/31/2026
1A1257	True-RMS Multimeter	Fluke	179	02/07/2025	02/07/2026
1A1123	LISN	TESEQ	NNB 51	12/11/2024	12/11/2025
1A1225	Environmental Chamber	Espec	EXP-2H/New	05/16/2025	05/16/2026
1A1099	Generator	Com-Power	CGO-51000	See Note	
1A1044	Generator	Com-Power	CG-520	See Note	
1A1073	Multi Device Controller	ETS	2090	See Note	
1A1074	System Controller	Panasonic	WV-CU101	See Note	
1A1080	Multi-Device	ETS	2090	See Note	
1A1180	Preamplifier	Miteq	AMF-7D-01001800-22-10P	See Note	

Table 29. Test Equipment List

Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.

End of Report