



Neuroptics, Inc

NPi-Connect

FCC 15.225:2026

13.56 MHz Radio

Report: NOPT0047.4 Rev. 02, Issue Date: July 17, 2026



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CERTIFICATE OF TEST

Last Date of Test: July 17, 2026

Neuroptics, Inc
EUT: NPi-Connect

Radio Equipment Testing

Standards

Specification	Method
FCC 15.225:2026	ANSI C63.10:2020 + Cor.1:2023 + C63.10a:2024

Guidance

KDB 174176

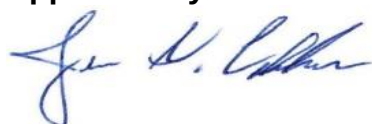
Results

Test Description	Result	Specification Section(s)	Method Section(s)	Comments
Powerline Conducted Emissions	Pass	15.207	6.2	
Emissions Bandwidth	Pass	15.215(c)	6.9.2	
Field Strength of Fundamental	Pass	15.225(a)-(c)	6.4	
Field Strength of Spurious Emissions (Less Than 30 MHz)	Pass	15.225(d), 15.209	6.4	
Field Strength of Spurious Emissions (Greater Than 30 MHz)	Pass	15.225(d), 15.209	6.5	
Frequency Stability	Pass	15.225(e), 15.31(e), 15.215(c), 2.1055	6.8	

Deviations From Test Standards

None

Approved By:



Johnny Candelas, Operations Manager
Signed for and on behalf of Element

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY

Revision Number	Description	Date (yyyy-mm-dd)	Page Number
01	Update protocol and data rate	2026-07-08	11
	Change Description for Conducted Emissions	2026-07-08	17
	Revise data to show 1% to 5% of RBW to Occupied Bandwidth and use Peak detector	2026-07-09	26-28
	Revise Y-Axis on Field Strength of Fundamental	2026-07-09	30
	Revise Configuration for Field Strength of Fundamental	2026-07-08	30, 32
	Revise Configuration for Field Strength of Spurious Emissions (Less than 30 MHz)	2026-07-08	39
	Revise Test Description for Field Strength of Spurious Emissions (Greater than 30 MHz)	2026-07-08	42
	Revise Configuration for Field Strength for Spurious Emissions (Greater than 30 MHz)	2026-07-08	43, 45
	Revise Field Strength of Spurious Emissions (Greater than 30 MHz) to include data up to 5 GHz	2026-07-08	42-47
	Update test description for Frequency Stability Data Sheets and add Comment about how EUT transmits	2026-07-08	48, 49
	Update Protocol Type in Frequency Stability Data sheets	2026-07-08	49-51
02	Update Date on Cover Page	2026-07-17	1
	Update CoT to newest date and Amendment	2026-07-17	3
	Updated date on Product Description	2026-07-17	10
	Update Modifications to show correct last date of testing	2026-07-17	16
	Revise Emissions Bandwidth to new procedure with Amendment and Retake with and without tag.	2026-07-17	26-29
	Revise Test Description for Field Strength of Spurious Emissions (Greater than 30 MHz) and update test equipment for AVJ	2026-07-16	42

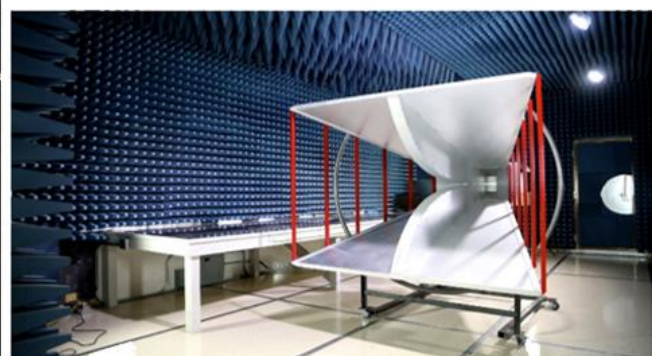
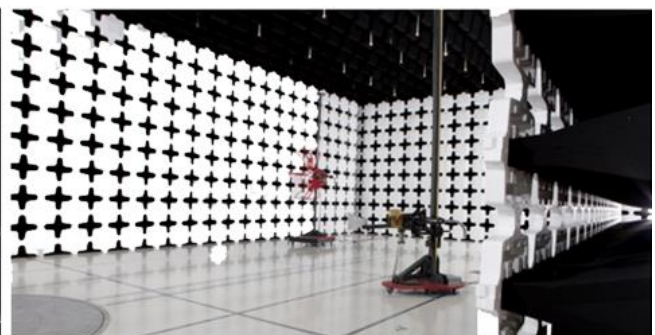
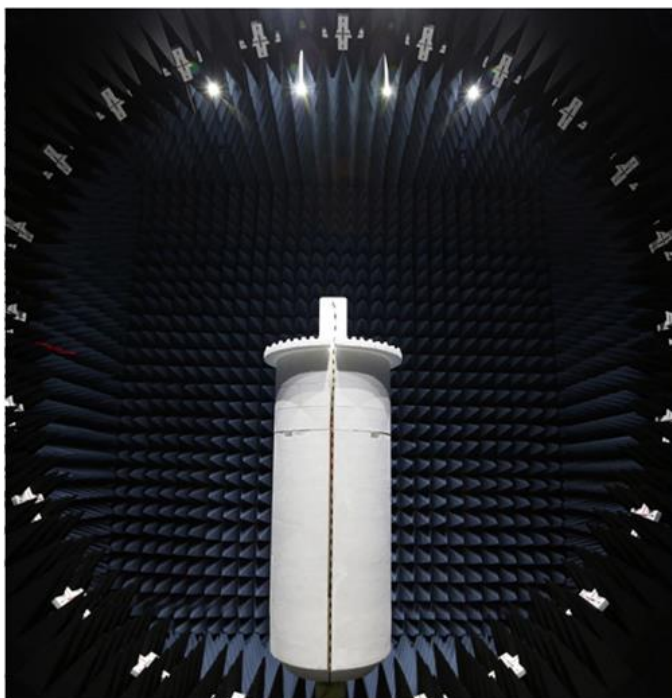
FACILITIES

Testing was performed at the following location(s)

	Location	Labs ⁽¹⁾	Address	A2LA ⁽²⁾	ISED ⁽³⁾	BSMI ⁽⁴⁾	VCCI ⁽⁵⁾	CAB	FDA ⁽⁶⁾
☒	California	OC01-17	41 Tesla Irvine, CA 92618 (949) 861-8918	3310.04	2834B	SL2-IN-E-1154R	A-0029	US0158	TL-55
☐	Minnesota	MN01-11	9349 W Broadway Ave. Brooklyn Park, MN 55445 (612) 638-5136	3310.05	2834E	SL2-IN-E-1152R	A-0109	US0175	TL-57
☐	Oregon	EV01-12	6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	3310.02	2834D	SL2-IN-E-1017	A-0108	US0017	TL-56
☐	Washington	NC01-05	19201 120th Ave NE Bothell, WA 98011 (425) 984-6600	3310.06	2834F	SL2-IN-E-1153R	A-0110	US0157	TL-67
☐	Offsite	N/A	See Product Description	N/A	N/A	N/A	N/A	N/A	N/A

See data sheets for specific labs

- (1) The lab designations denote individual rooms within each location. (OC01, OC02, OC03, etc.)
- (2) A2LA Certificate No.
- (3) ISED Company No.
- (4) BSMI No.
- (5) VCCI Site Filing No.
- (6) FDA ASCA No.



MEASUREMENT UNCERTAINTY

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation reported is based on statistical analysis that was performed by the laboratory. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty ($k=2$) can be found in the table below. A lab specific value may also be found in the applicable test description section. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable) and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Various Measurements

Test	All Labs (+/-)
Frequency Accuracy (%)	0.0007
Amplitude Accuracy (dB)	1.2
Conducted Power (dB)	1.2
Radiated Power via Substitution (dB)	0.7
Temperature (degrees C)	0.7
Humidity (% RH)	2.5
Voltage (AC) (%)	1
Voltage (DC) (%)	0.7
Near-field Measurement of E-Field (dB)	1.89
Near-field Measurement of H-Field (dB)	2.65

Field Strength Measurements (dB)

Range	OC08 (+/-)	OC07 (+/-)
9kHz-30MHz	1.8	1.8
30MHz-1GHz 3m	N/A	4.7
30MHz-1GHz 10m	3.4	N/A
1GHz-6GHz	N/A	5.1
6GHz-40GHz	N/A	5.1
40GHz-220GHz	N/A	4.9

AC Powerline Conducted Emissions Measurements (dB)

Range	OC06 (+/-)
9kHz-150kHz LISN	3.6
150kHz-30MHz LISN	3.2
150kHz-30MHz CVP	3
150kHz-30MHz Telecom-ISN	4.4

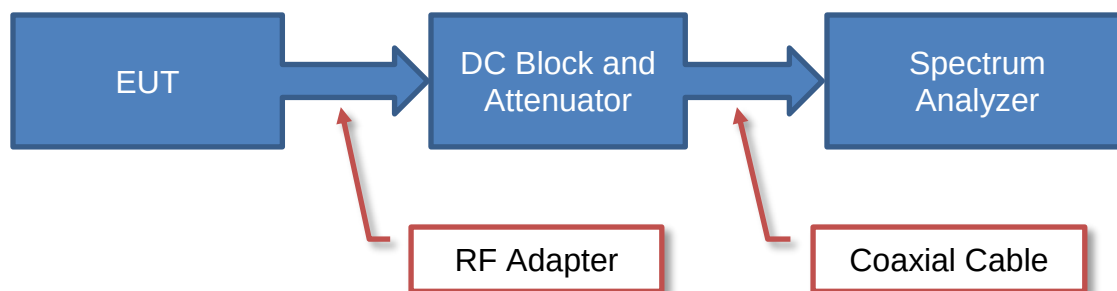
TEST SETUP BLOCK DIAGRAMS

Measurement Bandwidths

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Unless otherwise stated, measurements were made using the bandwidths and detectors specified. No video filter was used.

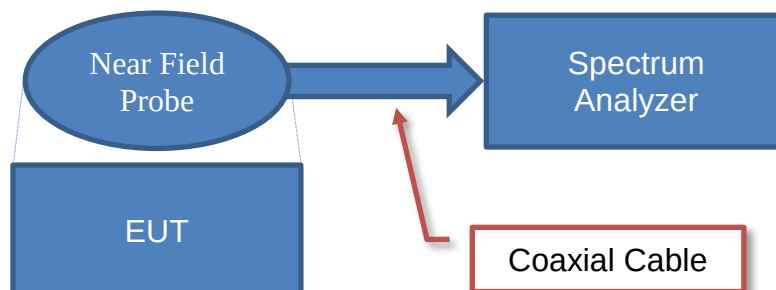
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

Measured Value	=	Measured Level	+	Reference Level Offset
71.2		42.6		28.6

Near Field Test Fixture Measurements

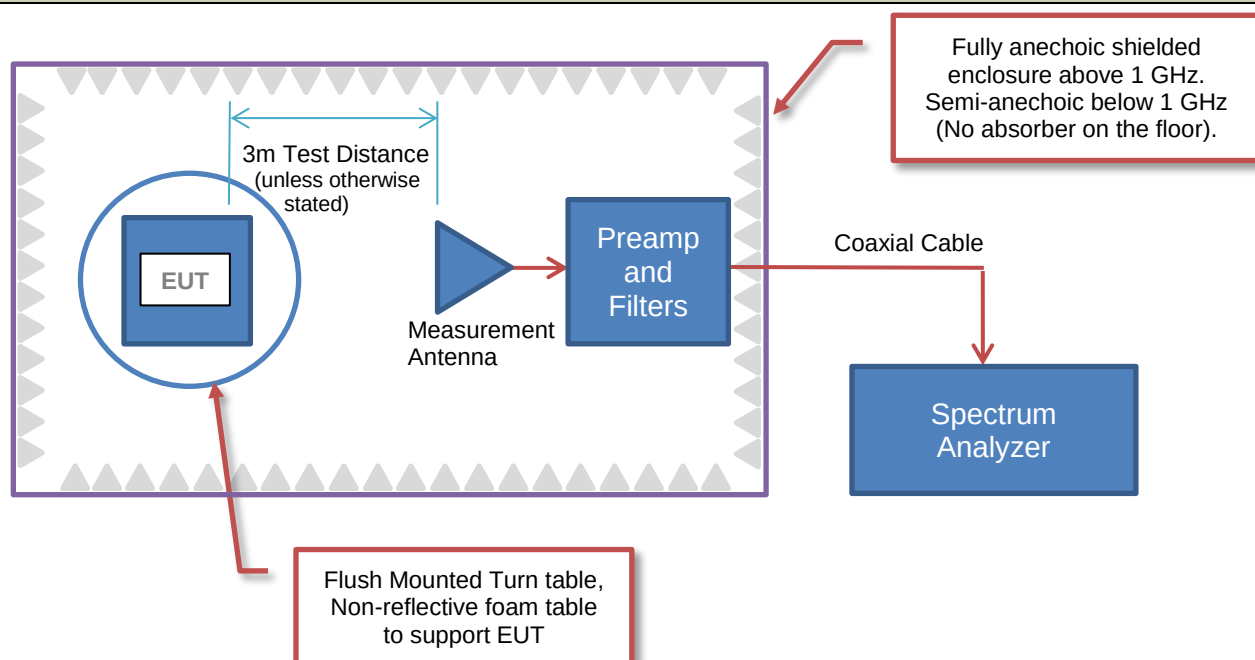


Sample Calculation (logarithmic units)

Measured Value	=	Measured Level	+	Reference Level Offset
71.2		42.6		28.6

TEST SETUP BLOCK DIAGRAMS

Emissions Measurements



Sample Calculation (logarithmic units)

Radiated Emissions:

Measured Level (Amplitude)	Factor			Distance Adjustment Factor	External Attenuation	Field Strength
	Antenna Factor	Cable Factor	Amplifier Gain			
42.6	28.6	3.1	40.8	0.0	0.0	33.5

Conducted Emissions:

Measured Level (Amplitude)	Factor		External Attenuation	Adjusted Level
	Transducer Factor	Cable Factor		
26.7	0.3	0.1	20.0	47.1

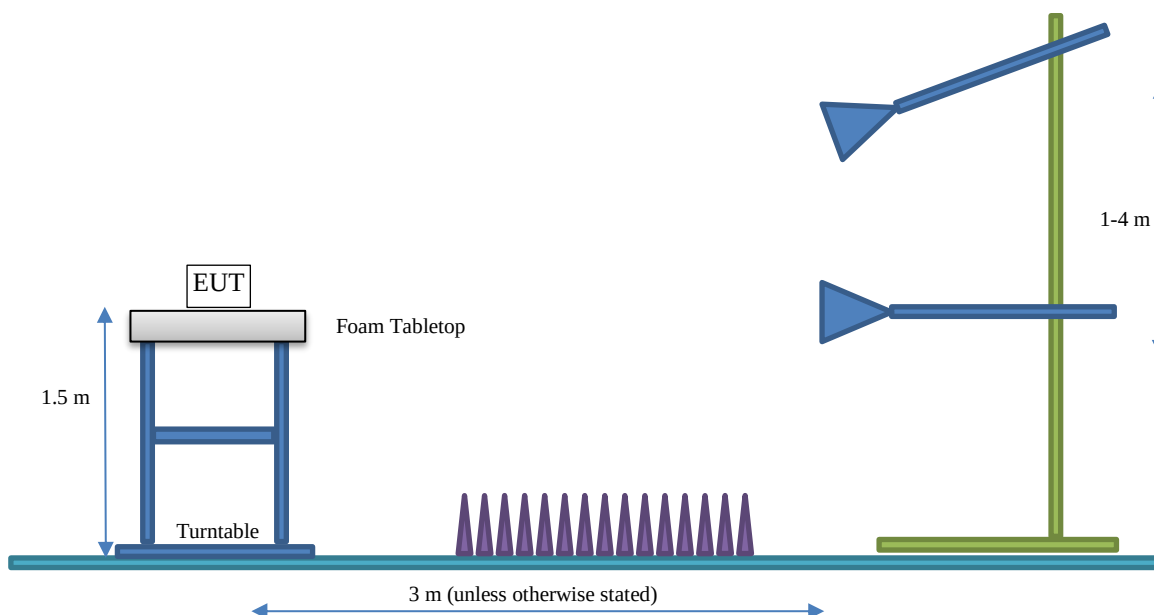
Radiated Power (ERP/EIRP) – Substitution Method:

Measured Level into Substitution Antenna (Amplitude dBm)	Substitution Antenna Factor (dBi)	EIRP to ERP (if applicable)	Measured power (dBm ERP/EIRP)
10.0	6.0	2.15	13.9/16.0

TEST SETUP BLOCK DIAGRAMS

Bore Sighting (>1GHz)

The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. Above 1 GHz, when required by the measurement standard, the antenna is pointed for both azimuth and elevation to maintain the receive antenna within the cone of radiation from the EUT. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.



PRODUCT DESCRIPTION



Client and Equipment under Test (EUT) Information

Company Name:	Neuroptics, Inc
Address:	9223 Research Drive
City, State, Zip:	Irvine, CA 92618
Test Requested By:	Michael Sakla
EUT:	NPI-Connect
First Date of Test:	March 19, 2026
Last Date of Test:	July 17, 2026
Receipt Date of Samples:	March 19, 2026
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Smartguard connectivity hub
Testing Objective:
To demonstrate compliance of the 13.56 MHz radio to FCC 15.225 requirements.

POWER SETTINGS AND ANTENNAS



The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information. The power settings below reflect the maximum power that the EUT is allowed to transmit at during normal operation.

ANTENNA INFORMATION

Type/Shape	Provided by:	Frequency	Outer Dimensions Coil (mm)	Number of Turns
PCB Trace	HID Global	13.56	PCB trace 40 mm x 50 mm, 2 loops	PCB Trace

The EUT was tested using the power settings provided by the manufacturer which were based upon:

- ☒ Test software settings Software / firmware used for testing: Firmware (U-Boot) Version 5.0.1.3
☐ Rated power settings

POWER SETTINGS

Radio	Modulation	Data rate	Power Setting (dBm)
RFID - ISO/IEC 14443 Type A	ASK	106 kbps	+20

No adjustable power settings were provided. The EUT was tested using power settings pre-defined by the manufacturer.

CONFIGURATIONS



Configuration NOPT0047-1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
NPi-Connect	Neuroptics, Inc.	NPi-Connect	NPC241209003

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Power Supply for NPi-Connect	Globtek	GTM96060-0606-1.0	N/A
Router	Netgear	GS605v5	40B1735400FE9
Power Supply for GS605v5 Router	Leader Electronics, Inc.	MU03B8050070-A1	N/A

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Power Supply for NPi-Connect	No	2m	No	NPi-Connect	Globtek Power Supply
Ethernet	Yes	2m	No	GS605v5 Router	NPi-Connect
Power Supply for GS605v5 Router	No	1m	No	GS605v5 Router	Power Supply for GS605v5 Router

Configuration NOPT0047-2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
NPi-Connect	Neuroptics, Inc.	NPi-Connect	NPC260105027

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Power Supply for NPi-Connect	Globtek	GTM96060-0606-1.0	N/A
Router	Netgear	GS605v5	40B1735400FE9
Power Supply for GS605v5 Router	Leader Electronics, Inc.	MU03B8050070-A1	N/A

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Power Supply for NPi-Connect	No	2m	No	NPi-Connect	Globtek Power Supply
Ethernet	Yes	2m	No	GS605v5 Router	NPi-Connect
Power Supply for GS605v5 Router	No	1m	No	GS605v5 Router	Power Supply for GS605v5 Router

CONFIGURATIONS



Configuration NOPT0047-3

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
NPi-Connect	Neuroptics, Inc.	NPi-Connect	NPC241209003

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Power Supply for NPi-Connect	Globtek	GTM96060-0606-1.0	N/A
Router	Netgear	WGR614v9	1SV17C7E8D3B
Power Supply for WGR614v9 Router	Netgear	MT12-Y120100-A1	N/A

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Power Supply for NPi-Connect	No	2m	No	NPi-Connect	Globtek Power Supply
Power Supply for WGR614v9 Router	No	1m	No	WGR614v9 Router	Power Supply for WGR614v9 Router
Ethernet	Yes	2m	No	WGR614v9 Router	NPi-Connect

CONFIGURATIONS



Configuration NOPT0047-10

Software/Firmware Running During Test	
Description	Version
Mirth Connect Server	4.5.2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
NPi-Connect	Neuroptics, Inc.	NPi-Connect	NPC241209003

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Power Supply for NPi-Connect	Globtek	GTM96060-0606-1.0	N/A
Router	Netgear	GS605v5	40B1735400FE9
Power Supply for GS605v5 Router	Leader Electronics, Inc.	MU03B8050070-A1	N/A

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Router	Netgear	RAX50	7C0135CK00047
Power Supply for Wireless Router	Ktec	KSA-36W-120300HU	N/A
Laptop	Lenovo	21CD-S0TX00	PF-4LY0ZZ

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet	Yes	2m	No	GS605v5 Router	NPi-Connect
Power Supply for GS605v5 Router	No	1m	No	GS605v5 Router	Power Supply for GS605v5 Router
Power Supply for Wireless Router	No	2m	Yes	Power Supply for Wireless Router	Wireless Router

CONFIGURATIONS



Configuration NOPT0047-11

Software/Firmware Running During Test	
Description	Version
Mirth Connect Server	4.5.2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
NPi-Connect	Neuroptics, Inc.	NPi-Connect	NPC241209003

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Power Supply for NPi-Connect	Globtek	GTM96060-0606-1.0	N/A
Router	Netgear	GS605v5	40B1735400FE9
Power Supply for GS605v5 Router	Leader Electronics, Inc.	MU03B8050070-A1	N/A

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Router	Netgear	RAX50	7C0135CK00047
Power Supply for Wireless Router	Ktec	KSA-36W-120300HU	N/A
Laptop	Lenovo	21CD-S0TX00	PF-4LY0ZZ

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Power Supply for GS605v5 Router	No	1m	No	GS605v5 Router	Power Supply for GS605v5 Router
Power Supply for Wireless Router	No	2m	Yes	Power Supply for Wireless Router	Wireless Router
Ethernet	Yes	5m	No	GS605v5 Router	NPi-Connect

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2026-03-19	Field Strength of Fundamental	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2026-03-19	Field Strength of Spurious Emissions (Less Than 30 MHz)	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2026-03-24	Field Strength of Spurious Emissions (Greater Than 30 MHz)	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2026-04-01	Frequency Stability	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2026-04-07	Powerline Conducted Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2026-07-17	Emissions Bandwidth	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT.

The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10.

In the event that the operating frequency of 13.56 MHz is causing the product to fail the FCC 15.207 limits, the following guidance can be used:

FCC KDB 174176 D01 AC Conducted FAQ v01r02, Section Q5:

For an intentional radiator with an antenna operating at or below 30 MHz, the FCC compliance can be demonstrated via measurements performed with a suitable dummy load in lieu of the antenna under the following conditions:

- (1) the ac power line conducted tests are performed with the antenna connected to determine compliance with Section 15.207 limits outside the transmitter's fundamental emission band, and
- (2) an additional test with a dummy load in lieu of the antenna is performed to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. For a detachable antenna, the antenna needs to be removed, and a suitable dummy load must be connected to the antenna connector. For a permanent antenna, one needs to remove the antenna and terminate the RF output with a dummy load or network that simulates the antenna in the fundamental frequency band.
- (3) All measurements must be performed as specified in clause 6.2 of ANSI C63.10-2020.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Gauss Instruments	TDEMI 30M	ARO	2025-05-20	2026-05-20
LISN	Solar Electronics	9252-50-24-BNC	LIA	2025-09-11	2026-09-11
Cable - Conducted Cable Assembly	Northwest EMC	OCP, HFP, AWC	OCPA	2026-03-04	2027-03-04
Pulse Limiter	Narda Safety Test Solutions	PL-01	VAA	NCR	NCR
Power Supply	Pacific Power	360AFX-2AG	MTB	NCR	NCR

CONFIGURATIONS INVESTIGATED

NOPT0047-11

MODES INVESTIGATED

The EUT is continuously transmitting at 13.56MHz

POWERLINE CONDUCTED EMISSIONS

EUT:	NPi-Connect	Work Order:	NOPT0047
Serial Number:	NPC241209003	Date:	2026-04-07
Customer:	Neuroptics, Inc	Temperature:	22.3°C
Attendees:	Michael Sakla	Relative Humidity:	50.8%
Customer Project:	None	Bar. Pressure (PMSL):	1013 mb
Tested By:	Kyle Fujimoto	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	NOPT0047-11

TEST PARAMETERS

Run #:	34	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

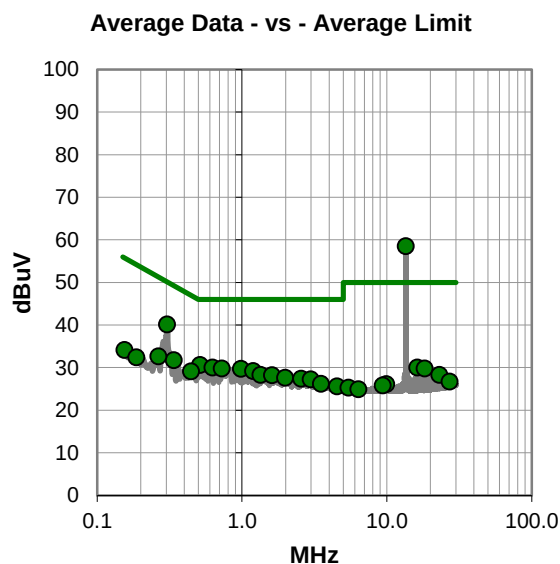
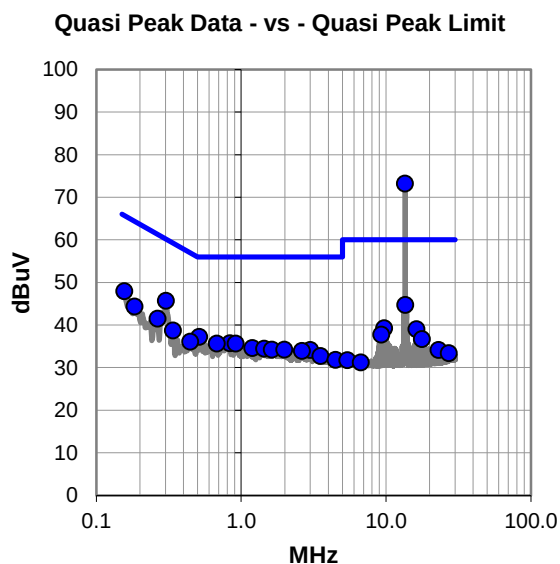
None

EUT OPERATING MODES

The EUT is continuously transmitting at 13.56MHz

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #34

Quasi Peak Data - vs - Quasi Peak Limit

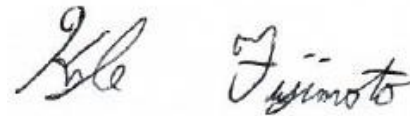
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	52.3	20.9	73.2	60.0	13.2
0.303	25.5	20.2	45.7	60.2	-14.5
13.612	23.8	20.9	44.7	60.0	-15.3
0.156	27.7	20.2	47.9	65.7	-17.8
0.513	17.1	20.1	37.2	56.0	-18.8
0.264	21.3	20.2	41.5	61.3	-19.8
0.184	24.1	20.2	44.3	64.3	-20.0
0.837	15.5	20.2	35.7	56.0	-20.3
0.679	15.4	20.2	35.6	56.0	-20.4
0.917	15.4	20.2	35.6	56.0	-20.4
0.338	18.5	20.2	38.7	59.3	-20.6
9.700	18.5	20.7	39.2	60.0	-20.8
0.444	16.0	20.1	36.1	57.0	-20.9
16.227	17.8	21.2	39.0	60.0	-21.0
1.194	14.3	20.3	34.6	56.0	-21.4
1.445	14.1	20.3	34.4	56.0	-21.6
1.629	14.0	20.2	34.2	56.0	-21.8
1.992	14.0	20.2	34.2	56.0	-21.8
2.997	13.8	20.3	34.1	56.0	-21.9
2.623	13.6	20.3	33.9	56.0	-22.1
9.302	17.1	20.6	37.7	60.0	-22.3
17.694	15.5	21.2	36.7	60.0	-23.3
3.539	12.4	20.3	32.7	56.0	-23.3
4.485	11.4	20.4	31.8	56.0	-24.2
23.129	12.4	21.7	34.1	60.0	-25.9

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	37.6	20.9	58.5	50.0	8.5
0.304	19.9	20.2	40.1	50.1	-10.0
0.513	10.5	20.1	30.6	46.0	-15.4
0.626	9.9	20.1	30.0	46.0	-16.0
0.727	9.6	20.2	29.8	46.0	-16.2
0.986	9.5	20.2	29.7	46.0	-16.3
1.194	8.9	20.3	29.2	46.0	-16.8
0.338	11.5	20.2	31.7	49.3	-17.6
1.346	8.0	20.3	28.3	46.0	-17.7
1.612	8.0	20.2	28.2	46.0	-17.8
0.444	9.0	20.1	29.1	47.0	-17.9
1.987	7.4	20.2	27.6	46.0	-18.4
2.558	7.1	20.3	27.4	46.0	-18.6
0.264	12.4	20.2	32.6	51.3	-18.7
2.980	7.0	20.2	27.2	46.0	-18.8
3.511	5.9	20.3	26.2	46.0	-19.8
16.227	8.8	21.2	30.0	50.0	-20.0
18.243	8.6	21.2	29.8	50.0	-20.2
4.531	5.2	20.4	25.6	46.0	-20.4
0.155	13.9	20.2	34.1	55.8	-21.7
23.129	6.6	21.7	28.3	50.0	-21.7
0.187	12.2	20.2	32.4	54.2	-21.8
27.120	4.4	22.3	26.7	50.0	-23.3
9.937	5.4	20.7	26.1	50.0	-23.9
9.387	5.2	20.6	25.8	50.0	-24.2

CONCLUSION

Fail



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	NPi-Connect	Work Order:	NOPT0047
Serial Number:	NPC241209003	Date:	2026-04-07
Customer:	Neuroptics, Inc	Temperature:	22.3°C
Attendees:	Michael Sakla	Relative Humidity:	50.8%
Customer Project:	None	Bar. Pressure (PMSL):	1013 mb
Tested By:	Kyle Fujimoto	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	NOPT0047-11

TEST PARAMETERS

Run #:	35	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

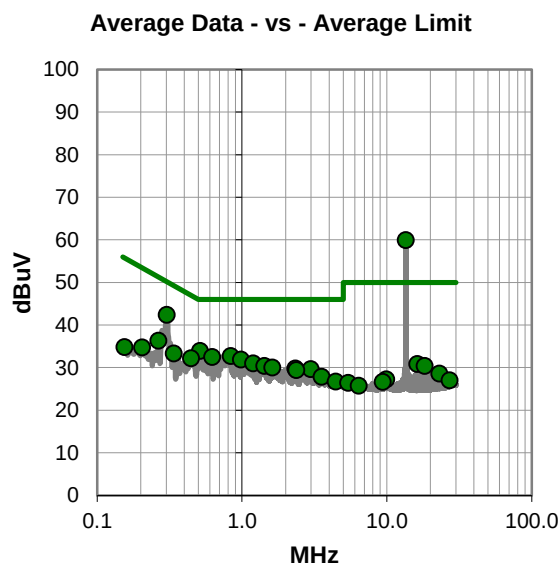
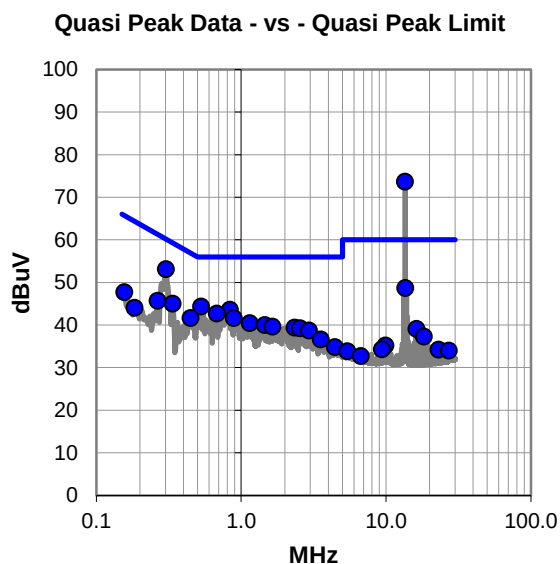
None

EUT OPERATING MODES

The EUT is continuously transmitting at 13.56MHz

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #35

Quasi Peak Data - vs - Quasi Peak Limit

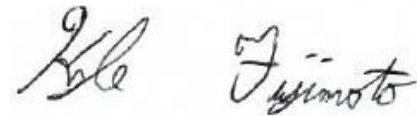
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	52.7	20.9	73.6	60.0	13.6
0.303	32.9	20.2	53.1	60.2	-7.1
13.612	27.8	20.9	48.7	60.0	-11.3
0.530	24.2	20.1	44.3	56.0	-11.7
0.838	23.4	20.2	43.6	56.0	-12.4
0.678	22.5	20.2	42.7	56.0	-13.3
0.336	24.8	20.2	45.0	59.3	-14.3
0.890	21.4	20.2	41.6	56.0	-14.4
0.448	21.5	20.1	41.6	56.9	-15.3
0.264	25.5	20.2	45.7	61.3	-15.6
1.148	20.2	20.2	40.4	56.0	-15.6
1.459	19.7	20.3	40.0	56.0	-16.0
1.644	19.4	20.2	39.6	56.0	-16.4
2.344	19.2	20.2	39.4	56.0	-16.6
2.556	18.9	20.3	39.2	56.0	-16.8
2.947	18.5	20.2	38.7	56.0	-17.3
0.156	27.5	20.2	47.7	65.7	-18.0
3.553	16.3	20.3	36.6	56.0	-19.4
0.184	23.8	20.2	44.0	64.3	-20.3
16.227	17.9	21.2	39.1	60.0	-20.9
4.436	14.4	20.4	34.8	56.0	-21.2
18.243	16.1	21.2	37.3	60.0	-22.7
9.938	14.5	20.7	35.2	60.0	-24.8
9.389	13.7	20.6	34.3	60.0	-25.7
23.127	12.5	21.7	34.2	60.0	-25.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.560	39.0	20.9	59.9	50.0	9.9
0.303	22.2	20.2	42.4	50.2	-7.8
0.513	13.8	20.1	33.9	46.0	-12.1
0.838	12.5	20.2	32.7	46.0	-13.3
0.623	12.4	20.1	32.5	46.0	-13.5
0.983	11.7	20.2	31.9	46.0	-14.1
0.446	12.1	20.1	32.2	46.9	-14.7
0.264	16.1	20.2	36.3	51.3	-15.0
1.195	10.7	20.3	31.0	46.0	-15.0
1.429	10.1	20.3	30.4	46.0	-15.6
0.338	13.1	20.2	33.3	49.3	-16.0
1.625	9.8	20.2	30.0	46.0	-16.0
2.344	9.6	20.2	29.8	46.0	-16.2
2.979	9.4	20.2	29.6	46.0	-16.4
2.375	9.2	20.2	29.4	46.0	-16.6
3.553	7.5	20.3	27.8	46.0	-18.2
0.205	14.5	20.2	34.7	53.4	-18.7
16.227	9.6	21.2	30.8	50.0	-19.2
4.434	6.3	20.4	26.7	46.0	-19.3
18.243	9.2	21.2	30.4	50.0	-19.6
0.155	14.6	20.2	34.8	55.8	-21.0
23.129	6.9	21.7	28.6	50.0	-21.4
9.938	6.5	20.7	27.2	50.0	-22.8
27.122	4.7	22.3	27.0	50.0	-23.0
9.389	6.0	20.6	26.6	50.0	-23.4

CONCLUSION

Fail



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	NPi-Connect	Work Order:	NOPT0047
Serial Number:	NPC241209003	Date:	2026-04-07
Customer:	Neuroptics, Inc	Temperature:	22.3°C
Attendees:	Michael Sakla	Relative Humidity:	50.8%
Customer Project:	None	Bar. Pressure (PMSL):	1013 mb
Tested By:	Kyle Fujimoto	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	NOPT0047-11

TEST PARAMETERS

Run #:	36	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

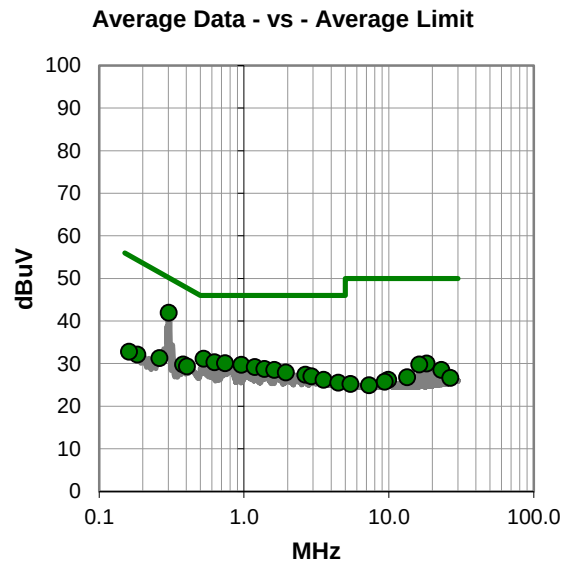
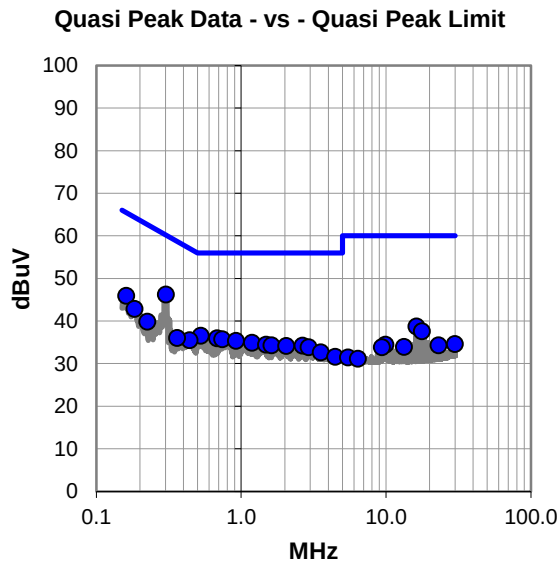
The 13.56 MHz Antenna is terminated to 50 Ohms

EUT OPERATING MODES

The EUT is continuously transmitting at 13.56MHz

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #36

Quasi Peak Data - vs - Quasi Peak Limit

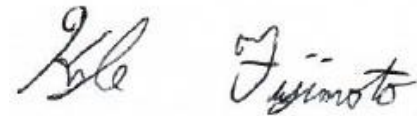
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.303	26.0	20.2	46.2	60.2	-14.0
0.161	25.7	20.2	45.9	65.4	-19.5
0.527	16.4	20.1	36.5	56.0	-19.5
0.683	15.7	20.2	35.9	56.0	-20.1
0.742	15.5	20.2	35.7	56.0	-20.3
0.921	15.1	20.2	35.3	56.0	-20.7
1.186	14.6	20.3	34.9	56.0	-21.1
16.227	17.5	21.2	38.7	60.0	-21.3
0.184	22.6	20.2	42.8	64.3	-21.5
0.441	15.4	20.1	35.5	57.0	-21.5
1.490	14.1	20.3	34.4	56.0	-21.6
1.625	14.1	20.2	34.3	56.0	-21.7
2.654	13.9	20.3	34.2	56.0	-21.8
2.048	13.9	20.2	34.1	56.0	-21.9
2.928	13.6	20.2	33.8	56.0	-22.2
17.694	16.4	21.2	37.6	60.0	-22.4
0.362	15.9	20.1	36.0	58.7	-22.7
0.225	19.6	20.2	39.8	62.6	-22.8
3.549	12.3	20.3	32.6	56.0	-23.4
4.465	11.2	20.4	31.6	56.0	-24.4
29.899	12.2	22.4	34.6	60.0	-25.4
9.938	13.7	20.7	34.4	60.0	-25.6
23.129	12.6	21.7	34.3	60.0	-25.7
13.357	13.0	20.9	33.9	60.0	-26.1
9.389	13.2	20.6	33.8	60.0	-26.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.303	21.7	20.2	41.9	50.2	-8.3
0.527	11.0	20.1	31.1	46.0	-14.9
0.626	10.2	20.1	30.3	46.0	-15.7
0.742	9.9	20.2	30.1	46.0	-15.9
0.962	9.5	20.2	29.7	46.0	-16.3
1.186	8.9	20.3	29.2	46.0	-16.8
1.383	8.4	20.3	28.7	46.0	-17.3
1.625	8.3	20.2	28.5	46.0	-17.5
1.944	7.7	20.2	27.9	46.0	-18.1
0.380	9.7	20.1	29.8	48.3	-18.5
0.405	9.2	20.1	29.3	47.8	-18.5
2.654	7.1	20.3	27.4	46.0	-18.6
2.932	6.8	20.2	27.0	46.0	-19.0
3.549	5.9	20.3	26.2	46.0	-19.8
18.243	8.8	21.2	30.0	50.0	-20.0
0.261	11.1	20.2	31.3	51.4	-20.1
16.227	8.6	21.2	29.8	50.0	-20.2
4.497	5.1	20.4	25.5	46.0	-20.5
23.129	6.8	21.7	28.5	50.0	-21.5
0.184	11.9	20.2	32.1	54.3	-22.2
0.161	12.6	20.2	32.8	55.4	-22.6
13.418	5.9	20.9	26.8	50.0	-23.2
26.609	4.5	22.1	26.6	50.0	-23.4
9.938	5.5	20.7	26.2	50.0	-23.8
9.387	5.1	20.6	25.7	50.0	-24.3

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	NPi-Connect	Work Order:	NOPT0047
Serial Number:	NPC241209003	Date:	2026-04-07
Customer:	Neuroptics, Inc	Temperature:	22.3°C
Attendees:	Michael Sakla	Relative Humidity:	50.8%
Customer Project:	None	Bar. Pressure (PMSL):	1013 mb
Tested By:	Kyle Fujimoto	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	NOPT0047-11

TEST PARAMETERS

Run #:	37	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

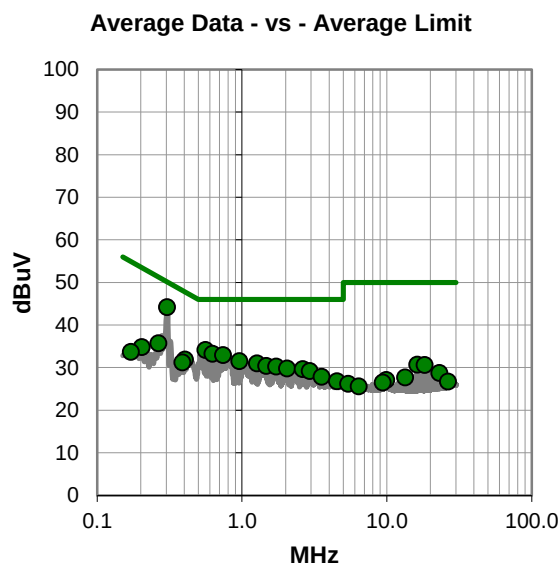
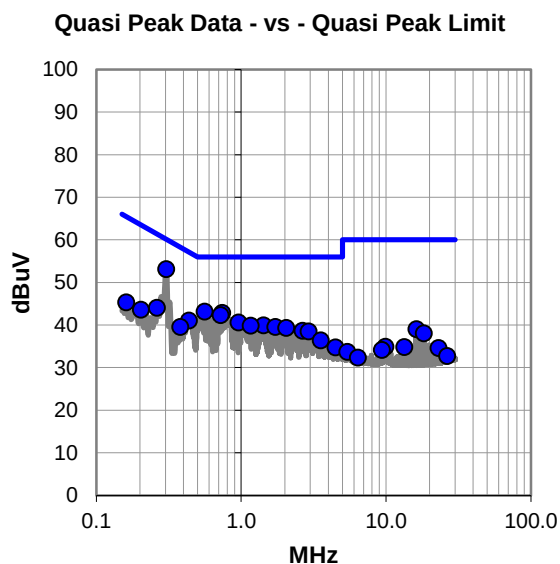
The 13.56 MHz Antenna is terminated to 50 Ohms

EUT OPERATING MODES

The EUT is continuously transmitting at 13.56MHz

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #37

Quasi Peak Data - vs - Quasi Peak Limit

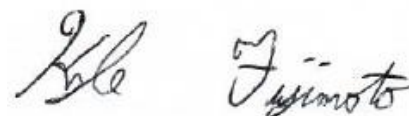
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.304	32.9	20.2	53.1	60.1	-7.0
0.559	23.0	20.1	43.1	56.0	-12.9
0.742	22.6	20.2	42.8	56.0	-13.2
0.724	22.1	20.2	42.3	56.0	-13.7
0.962	20.4	20.2	40.6	56.0	-15.4
1.427	19.6	20.3	39.9	56.0	-16.1
0.435	20.9	20.1	41.0	57.2	-16.2
1.163	19.5	20.3	39.8	56.0	-16.2
1.723	19.3	20.2	39.5	56.0	-16.5
2.047	19.1	20.2	39.3	56.0	-16.7
0.263	23.8	20.2	44.0	61.3	-17.3
2.652	18.3	20.3	38.6	56.0	-17.4
2.930	18.3	20.2	38.5	56.0	-17.5
0.380	19.4	20.1	39.5	58.3	-18.8
3.548	16.1	20.3	36.4	56.0	-19.6
0.203	23.4	20.2	43.6	63.5	-19.9
0.161	25.1	20.2	45.3	65.4	-20.1
16.227	17.8	21.2	39.0	60.0	-21.0
4.480	14.3	20.4	34.7	56.0	-21.3
18.243	16.8	21.2	38.0	60.0	-22.0
9.938	14.2	20.7	34.9	60.0	-25.1
13.418	13.9	20.9	34.8	60.0	-25.2
23.129	12.9	21.7	34.6	60.0	-25.4
9.389	13.5	20.6	34.1	60.0	-25.9
5.425	13.3	20.4	33.7	60.0	-26.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.304	24.0	20.2	44.2	50.1	-5.9
0.559	14.0	20.1	34.1	46.0	-11.9
0.626	13.1	20.1	33.2	46.0	-12.8
0.742	12.7	20.2	32.9	46.0	-13.1
0.962	11.3	20.2	31.5	46.0	-14.5
1.268	10.7	20.3	31.0	46.0	-15.0
0.264	15.5	20.2	35.7	51.3	-15.6
1.473	10.1	20.3	30.4	46.0	-15.6
1.723	10.0	20.2	30.2	46.0	-15.8
0.405	11.8	20.1	31.9	47.8	-15.9
2.047	9.6	20.2	29.8	46.0	-16.2
2.636	9.3	20.3	29.6	46.0	-16.4
2.945	9.0	20.2	29.2	46.0	-16.8
0.388	11.1	20.1	31.2	48.1	-16.9
3.549	7.5	20.3	27.8	46.0	-18.2
0.203	14.6	20.2	34.8	53.5	-18.7
4.541	6.4	20.4	26.8	46.0	-19.2
16.227	9.5	21.2	30.7	50.0	-19.3
18.243	9.4	21.2	30.6	50.0	-19.4
0.171	13.5	20.2	33.7	54.9	-21.2
23.129	7.0	21.7	28.7	50.0	-21.3
13.418	6.8	20.9	27.7	50.0	-22.3
9.938	6.4	20.7	27.1	50.0	-22.9
26.487	4.6	22.1	26.7	50.0	-23.3
9.389	5.9	20.6	26.5	50.0	-23.5

CONCLUSION

Pass



Tested By

EMISSIONS BANDWIDTH (20 DB)

TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the spectrum analyzer. The reference level offset of the analyzer was adjusted to match the full bandwidth ERP measurement made of the output power with the radiated test method.

As defined in FCC 15.215 Part (c), intentional radiators 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 designed in the rule section under which the equipment is operated.

The 20 dB bandwidth must be contained within the band 13.110-14.010 MHz. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

The resolution bandwidth (RBW) of the spectrum analyzer was set to the range of 1% to 5% of the emissions bandwidth (EBW) and video bandwidth (VBW) bandwidth was set to at least 3 times the resolution bandwidth, without going below the RBW specified in section 6.9.1 of ANSI C63.10a: 2024. The analyzer sweep time was set to auto and a peak detector was used.

The spectrum analyzer bandwidth measurement function was used to measure the 20 dB bandwidth.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2025-10-06	2027-10-06
Probe - Near Field Set	EMCO	7405	IPI	NCR	NCR
Block - DC	Fairview Microwave	SD3379	ANG	2025-12-08	2026-12-08
Cable	MegaPhase	KB40-K1K1-72	OCV	NCR	NCR

EMISSIONS BANDWIDTH (20 DB)

EUT:	NPi-Connect	Work Order:	NOPT0047
Serial Number:	NPC241209003	Date:	2026-07-17
Customer:	Neuroptics, Inc	Temperature:	21.3°C
Attendees:	Michael Sakla	Relative Humidity:	50.4%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mbar
Tested By:	Kyle Fujimoto	Job Site:	OC13
Power:	110VAC/60Hz	Configuration:	NOPT0047-1

COMMENTS

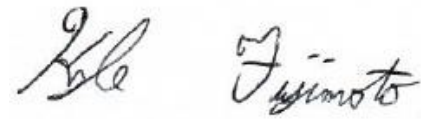
None

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

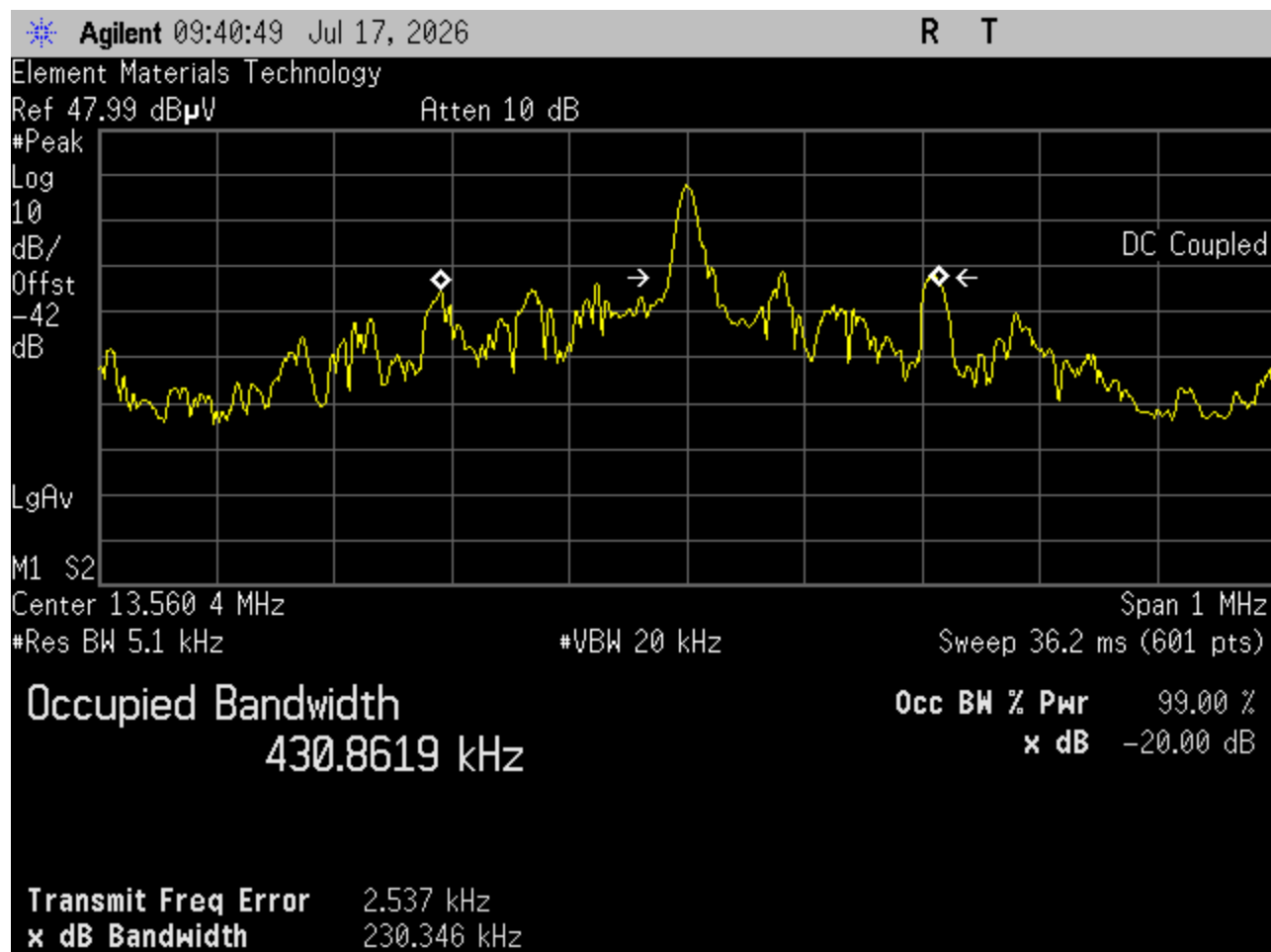


Tested By

TEST RESULTS

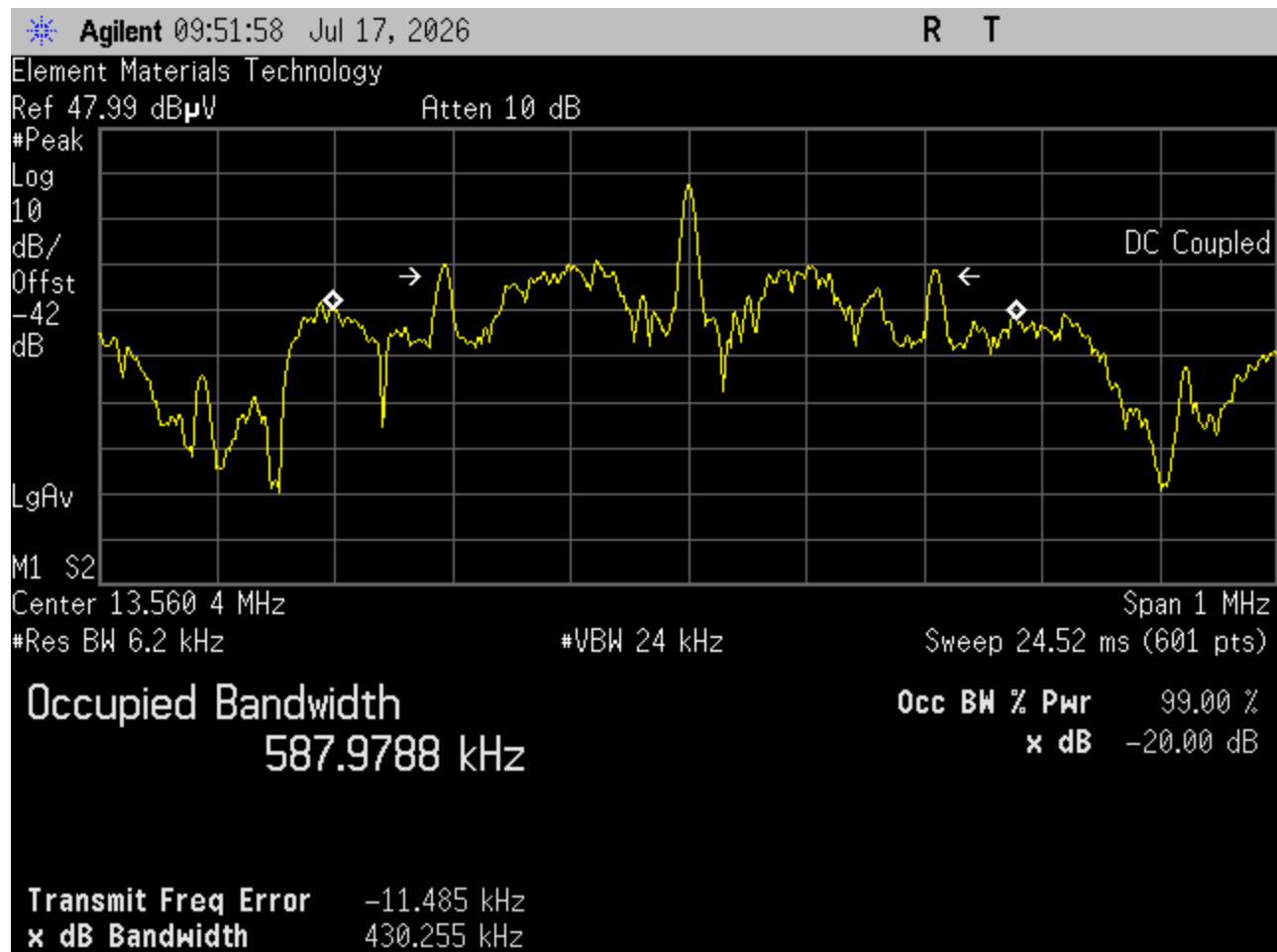
		Limit	
	Value	13.110≤f≤14.010	Result
13.56 MHz RFID, ISO/IEC 14443 Type A			
Normal Conditions (110VAC/60Hz) – Without Tag	230.346 kHz	Within	Pass
Normal Conditions (110VAC/60Hz) – With Tag	430.255 kHz	Within	Pass

EMISSIONS BANDWIDTH (20 DB)



13.56 MHz RFID, ISO/IEC 14443 Type A
Normal Conditions – Without Tag

EMISSIONS BANDWIDTH (20 DB)



13.56 MHz RFID, ISO/IEC 14443 Type A
Normal Conditions – With Tag

FIELD STRENGTH OF FUNDAMENTAL

TEST DESCRIPTION

The fundamental carrier of the EUT was maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A calibrated active loop antenna was used for this test in order to provide sufficient measurement sensitivity. The reference point of the loop antenna was maintained at 1m above the ground plane during the testing.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.5, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Loop	EMCO	6502	AZB	2025-09-23	2027-09-23
Cable	Northwest EMC	3kHz - 1GHz RE Cables	OCB	2025-05-01	2026-05-01
Receiver	Rohde & Schwarz	ESCI	ARG	2025-09-26	2026-09-26

FREQUENCY RANGE INVESTIGATED

12.56 MHz to 14.56 MHz

POWER INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

NOPT0047-2

MODES INVESTIGATED

Transmitting RFID 13.56 MHz

FIELD STRENGTH OF FUNDAMENTAL

EUT:	NPi-Connect	Work Order:	NOPT0047
Serial Number:	NPC260105027	Date:	2026-03-19
Customer:	Neuroptics, Inc	Temperature:	22.6°C
Attendees:	Michael Sakla	Relative Humidity:	47.6%
Customer Project:	None	Bar. Pressure (PMSL):	1017 mb
Tested By:	Kyle Fujimoto	Job Site:	OC08
Power:	110VAC/60Hz	Configuration:	NOPT0047-2

TEST PARAMETERS

Run #:	27	Test Distance (m):	10	Ant. Height(s) (m):	1(m)
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COMMENTS

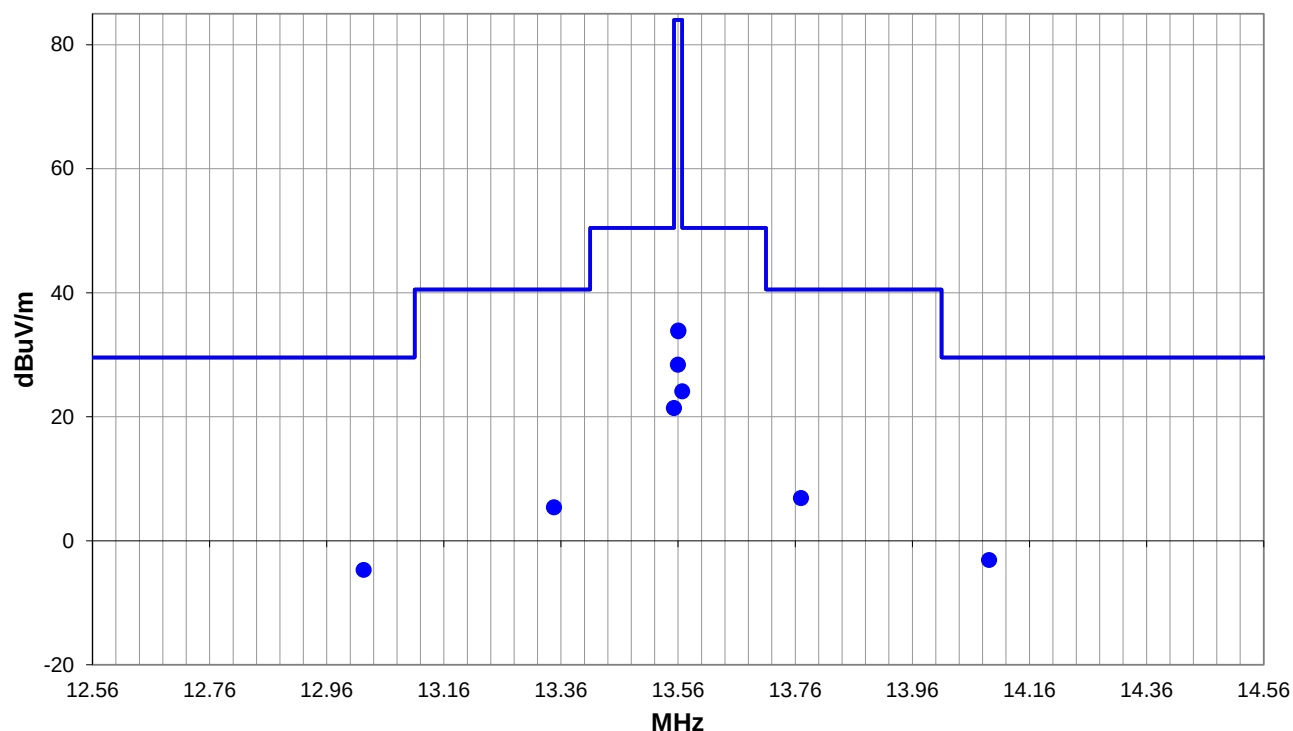
The tag is absent from the EUT

EUT OPERATING MODES

Transmitting RFID 13.56 MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 27

PK AV QP

FIELD STRENGTH OF FUNDAMENTAL

RESULTS - Run #27

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
13.567	32.2	11.0	1.0	240.0	10.0	0.0	Perp to EUT	QP	-19.1	24.1	50.5	-26.4	Tx 13.56 MHz, EUT Horiz
13.553	29.5	11.0	1.0	234.0	10.0	0.0	Perp to EUT	QP	-19.1	21.4	50.5	-29.1	Tx 13.56 MHz, EUT Horiz
14.091	5.0	11.0	1.0	266.0	10.0	0.0	Perp to EUT	QP	-19.1	-3.1	29.5	-32.6	Tx 13.56 MHz, EUT Horiz
13.770	15.0	11.0	1.0	82.0	10.0	0.0	Perp to EUT	QP	-19.1	6.9	40.5	-33.6	Tx 13.56 MHz, EUT Horiz
13.023	3.4	11.0	1.0	151.0	10.0	0.0	Perp to EUT	QP	-19.1	-4.7	29.5	-34.2	Tx 13.56 MHz, EUT Horiz
13.348	13.5	11.0	1.0	360.0	10.0	0.0	Perp to EUT	QP	-19.1	5.4	40.5	-35.1	Tx 13.56 MHz, EUT Horiz
13.560	42.0	11.0	1.0	254.0	10.0	0.0	Perp to EUT	QP	-19.1	33.9	84.0	-50.1	Tx 13.56 MHz, EUT Horiz
13.560	41.9	11.0	1.0	234.0	10.0	0.0	Par to GND	QP	-19.1	33.8	84.0	-50.2	Tx 13.56 MHz, EUT Horiz
13.560	36.5	11.0	1.0	190.0	10.0	0.0	Par to EUT	QP	-19.1	28.4	84.0	-55.6	Tx 13.56 MHz, EUT Horiz

CONCLUSION

Pass



Tested By

FIELD STRENGTH OF FUNDAMENTAL

EUT:	NPi-Connect	Work Order:	NOPT0047
Serial Number:	NPC260105027	Date:	2026-03-19
Customer:	Neuroptics, Inc	Temperature:	22.6°C
Attendees:	Michael Sakla	Relative Humidity:	47.6%
Customer Project:	None	Bar. Pressure (PMSL):	1017 mb
Tested By:	Kyle Fujimoto	Job Site:	OC08
Power:	110VAC/60Hz	Configuration:	NOPT0047-2

TEST PARAMETERS

Run #:	28	Test Distance (m):	10	Ant. Height(s) (m):	1(m)
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COMMENTS

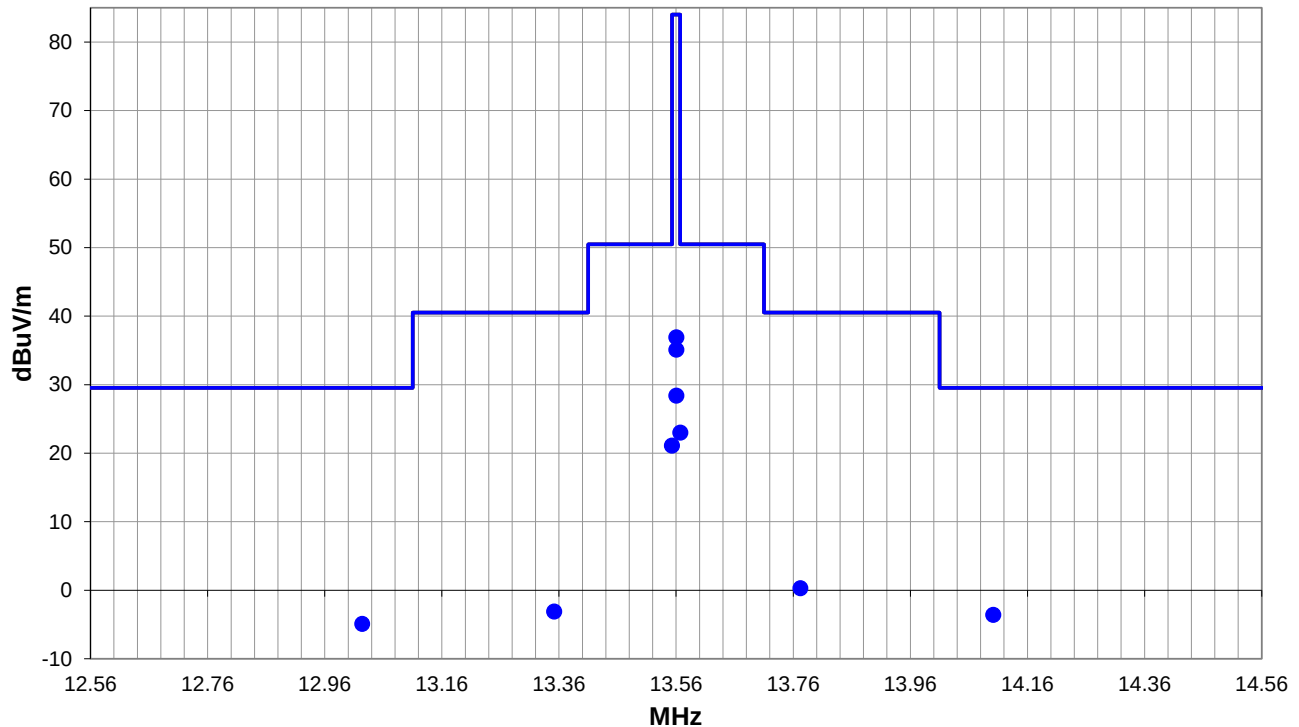
The tag is present on the EUT

EUT OPERATING MODES

Transmitting RFID 13.56 MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 28

PK AV QP

FIELD STRENGTH OF FUNDAMENTAL

RESULTS - Run #28

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
13.567	31.1	11.0	1.0	267.0	10.0	0.0	Par to GND	QP	-19.1	23.0	50.5	-27.5	Tx 13.56 MHz, EUT Horiz
13.553	29.2	11.0	1.0	232.0	10.0	0.0	Par to GND	QP	-19.1	21.1	50.5	-29.4	Tx 13.56 MHz, EUT Horiz
14.102	4.5	11.0	1.0	51.0	10.0	0.0	Par to GND	QP	-19.1	-3.6	29.5	-33.1	Tx 13.56 MHz, EUT Horiz
13.024	3.2	11.0	1.0	212.0	10.0	0.0	Par to GND	QP	-19.1	-4.9	29.5	-34.4	Tx 13.56 MHz, EUT Horiz
13.772	8.4	11.0	1.0	34.0	10.0	0.0	Par to GND	QP	-19.1	0.3	40.5	-40.2	Tx 13.56 MHz, EUT Horiz
13.352	5.0	11.0	1.0	280.0	10.0	0.0	Par to GND	QP	-19.1	-3.1	40.5	-43.6	Tx 13.56 MHz, EUT Horiz
13.561	45.0	11.0	1.0	227.0	10.0	0.0	Par to GND	QP	-19.1	36.9	84.0	-47.1	Tx 13.56 MHz, EUT Horiz
13.561	43.2	11.0	1.0	226.0	10.0	0.0	Perp to EUT	QP	-19.1	35.1	84.0	-48.9	Tx 13.56 MHz, EUT Horiz
13.560	36.5	11.0	1.0	193.0	10.0	0.0	Par to EUT	QP	-19.1	28.4	84.0	-55.6	Tx 13.56 MHz, EUT Horiz

CONCLUSION

Pass

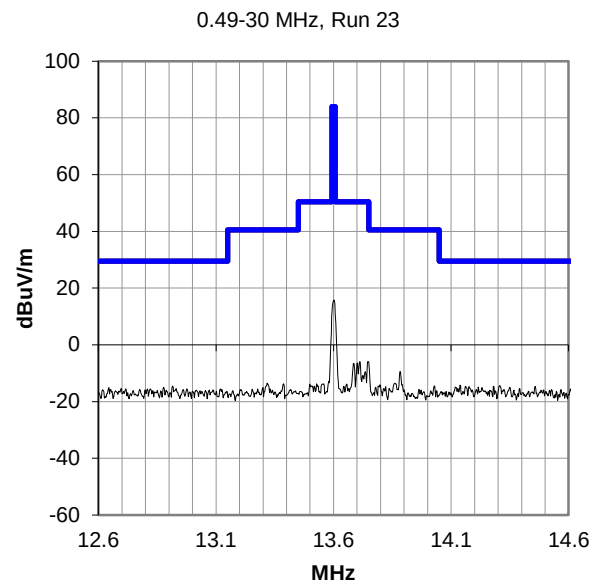
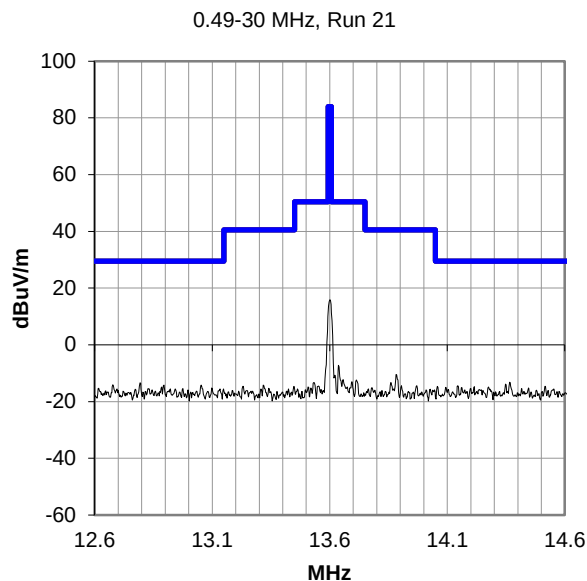
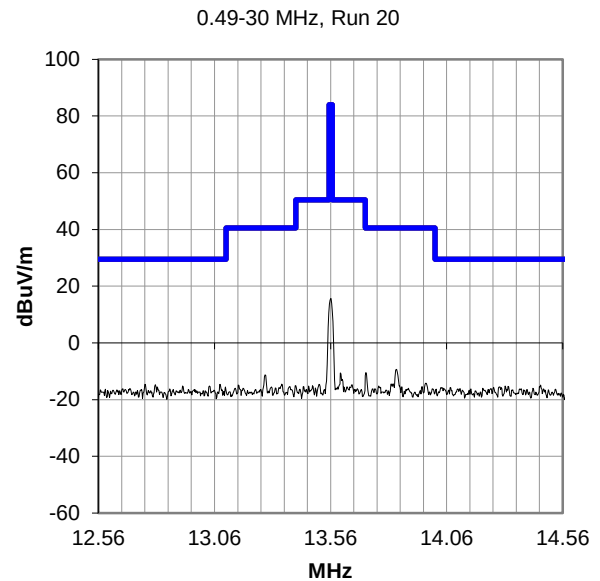
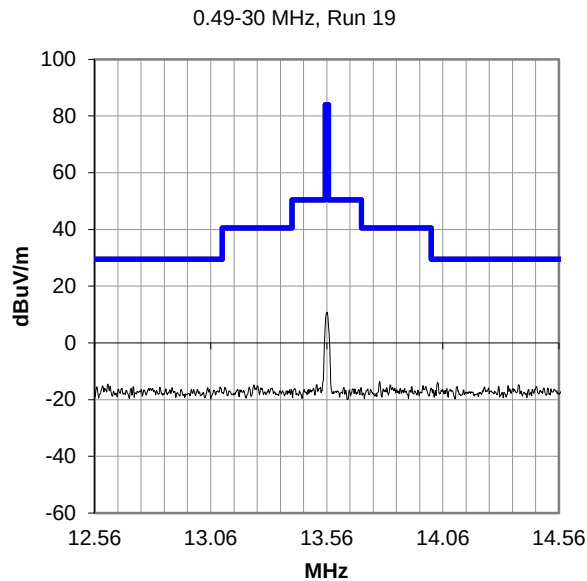


Tested By

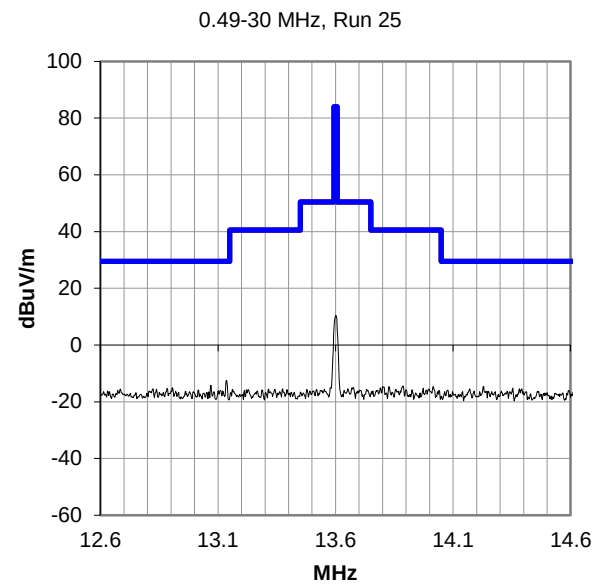
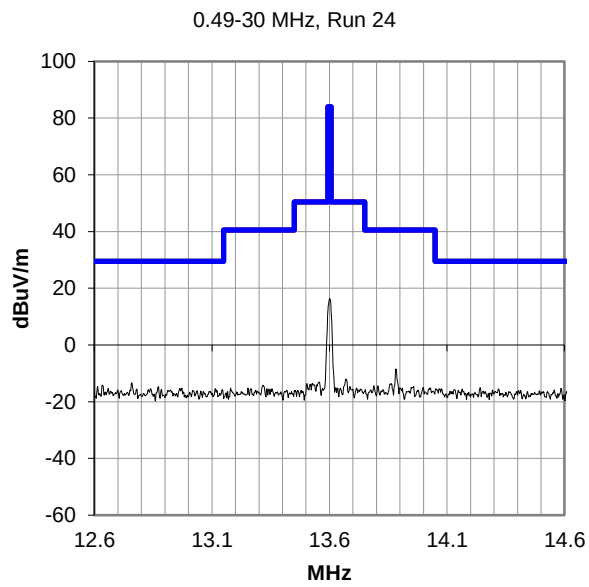
FIELD STRENGTH OF FUNDAMENTAL

PRESCAN DATA

Radiated spurious emissions from the EUT are initially reviewed with Pre-scans (Preview scans). Pre-scans are performed, with the EUT transmitting on the lowest applicable data rate, for both vertical and horizontal polarizations. The Pre-scan plots below are shown with a peak detector and RBW for the following frequency ranges: 9 kHz RBW (< 30 MHz); 120 kHz RBW (30 - 1000 MHz); 1 MHz RBW (> 1 GHz). In the case where unintentional emissions are observed, an ambient or idle pre-scan with the radio off, will be shown for comparison.



FIELD STRENGTH OF FUNDAMENTAL



FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. A reference preview scan (pre-scan) is included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). An active loop antenna was used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.5, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

The limits in CFR 47, Part 15C 15.209(a) are identical to those in RSS-Gen section 8.9 Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohms. For example, an E-Field measurement in dBuV/m can be converted to dBuA/m via the following formula: $\text{dBuV/m} - 51.5 \text{ dB} = \text{dBuA/m}$. E-Field measurements have the same margin in dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limits.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Loop	EMCO	6502	AZB	2025-09-23	2027-09-23
Cable	Northwest EMC	3kHz - 1GHz RE Cables	OCB	2025-05-01	2026-05-01
Receiver	Rohde & Schwarz	ESCI	ARG	2025-09-26	2026-09-26

FREQUENCY RANGE INVESTIGATED

9 kHz TO 30 MHz

POWER INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

NOPT0047-2

MODES INVESTIGATED

Transmitting RFID 13.56 MHz

FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

EUT:	NPi-Connect	Work Order:	NOPT0047
Serial Number:	NPC260105027	Date:	2026-03-19
Customer:	Neuroptics, Inc	Temperature:	22.6°C
Attendees:	Michael Sakla	Relative Humidity:	47.6%
Customer Project:	None	Bar. Pressure (PMSL):	1017 mb
Tested By:	Kyle Fujimoto	Job Site:	OC08
Power:	110VAC/60Hz	Configuration:	NOPT0047-2

TEST PARAMETERS

Run #:	33	Test Distance (m):	10	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

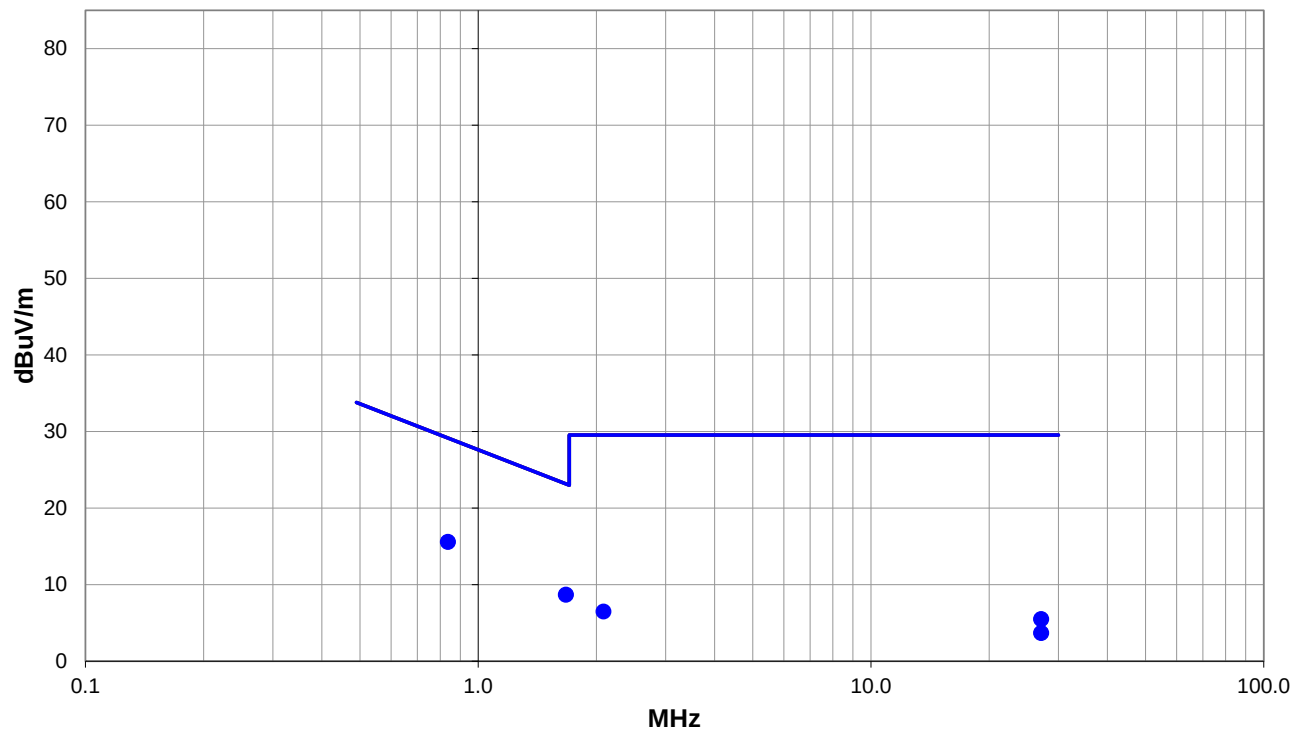
The EUT is continuously transmitting

EUT OPERATING MODES

Transmitting RFID 13.56 MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 33

PK AV QP

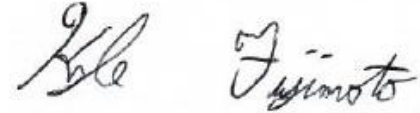
FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

RESULTS - Run #33

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.837	24.6	10.1	1.0	242.0	10.0	0.0	Par to GND	QP	-19.1	15.6	29.2	-13.6	Tx 13.56 MHz, EUT Horiz
1.671	17.4	10.4	1.0	360.0	10.0	0.0	Par to GND	QP	-19.1	8.7	23.2	-14.5	Tx 13.56 MHz, EUT Horiz
2.084	15.2	10.4	1.0	72.0	10.0	0.0	Par to GND	QP	-19.1	6.5	29.5	-23.0	Tx 13.56 MHz, EUT Horiz
27.121	15.3	9.3	1.0	54.0	10.0	0.0	Perp to EUT	QP	-19.1	5.5	29.5	-24.0	Tx 13.56 MHz, EUT Horiz
27.120	13.5	9.3	1.0	91.0	10.0	0.0	Par to GND	QP	-19.1	3.7	29.5	-25.8	Tx 13.56 MHz, EUT Horiz
27.165	2.7	9.3	1.0	207.0	10.0	0.0	Par to EUT	QP	-19.1	-7.1	29.5	-36.6	Tx 13.56 MHz, EUT Horiz

CONCLUSION

Pass



Tested By

FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

EUT:	NPi-Connect	Work Order:	NOPT0047
Serial Number:	NPC260105027	Date:	2026-03-19
Customer:	Neuroptics, Inc	Temperature:	22.6°C
Attendees:	Michael Sakla	Relative Humidity:	47.6%
Customer Project:	None	Bar. Pressure (PMSL):	1017 mb
Tested By:	Kyle Fujimoto	Job Site:	OC08
Power:	110VAC/60Hz	Configuration:	NOPT0047-2

TEST PARAMETERS

Run #:	34	Test Distance (m):	10	Ant. Height(s) (m):	1(m)
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COMMENTS

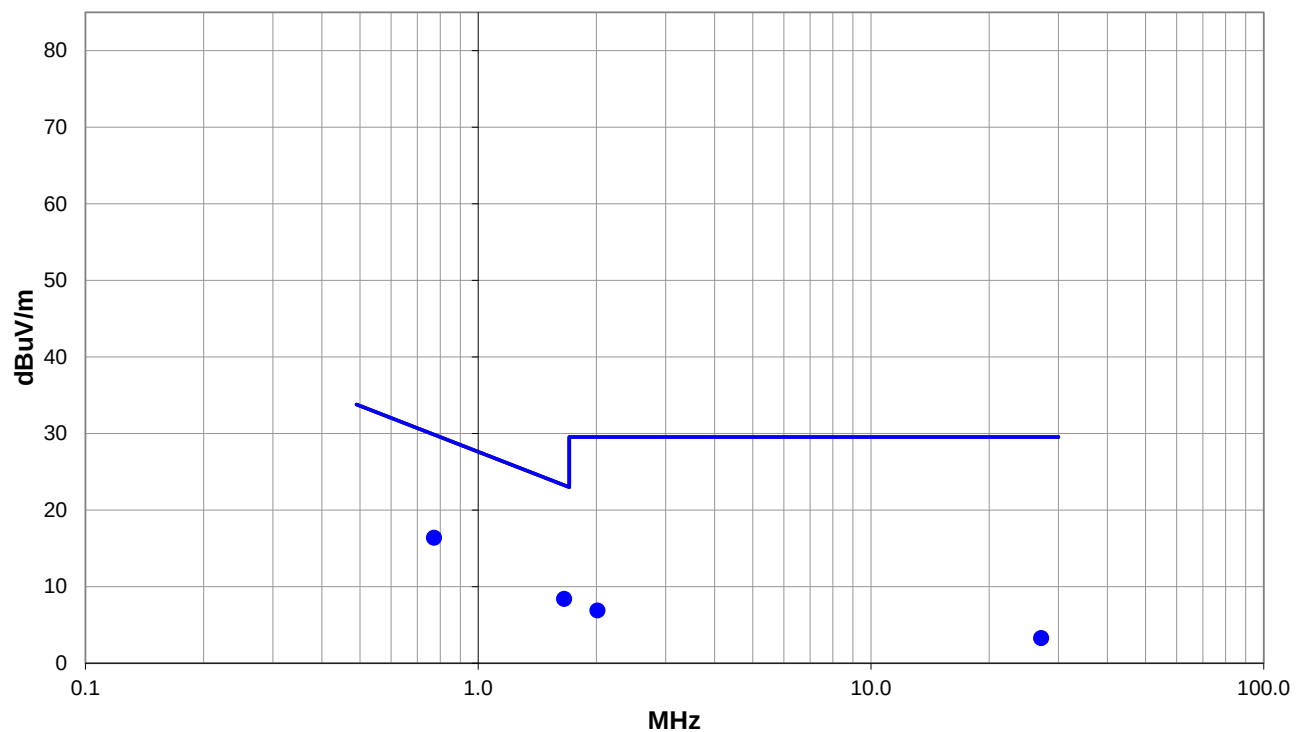
The EUT is continuously reading a tag

EUT OPERATING MODES

Transmitting RFID 13.56 MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 34

■ PK ◆ AV ● QP

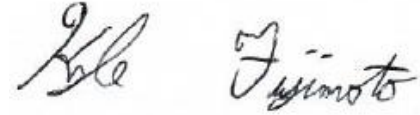
FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

RESULTS - Run #34

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.771	25.3	10.2	1.0	93.0	10.0	0.0	Par to GND	QP	-19.1	16.4	29.9	-13.5	Tx 13.56 MHz, EUT Horiz
1.655	17.1	10.4	1.0	340.0	10.0	0.0	Par to GND	QP	-19.1	8.4	23.3	-14.9	Tx 13.56 MHz, EUT Horiz
2.011	15.6	10.4	1.0	349.0	10.0	0.0	Par to GND	QP	-19.1	6.9	29.5	-22.6	Tx 13.56 MHz, EUT Horiz
27.122	13.1	9.3	1.0	200.0	10.0	0.0	Perp to EUT	QP	-19.1	3.3	29.5	-26.2	Tx 13.56 MHz, EUT Horiz
27.124	5.6	9.3	1.0	277.0	10.0	0.0	Par to GND	QP	-19.1	-4.2	29.5	-33.7	Tx 13.56 MHz, EUT Horiz
27.123	2.8	9.3	1.0	124.0	10.0	0.0	Horz	QP	-19.1	-7.0	29.5	-36.5	

CONCLUSION

Pass

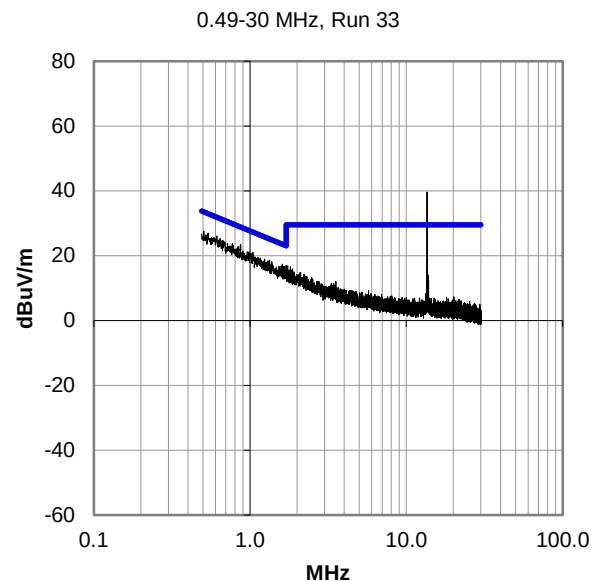
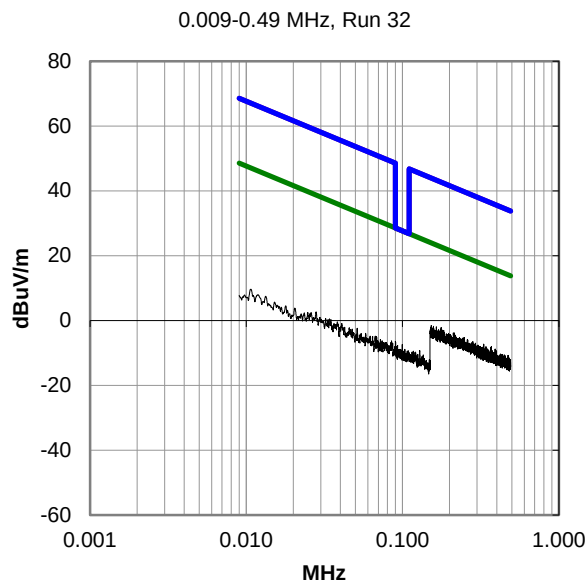
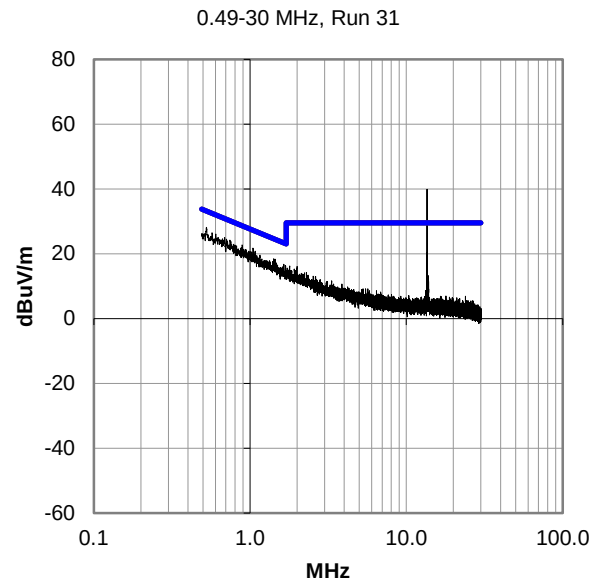
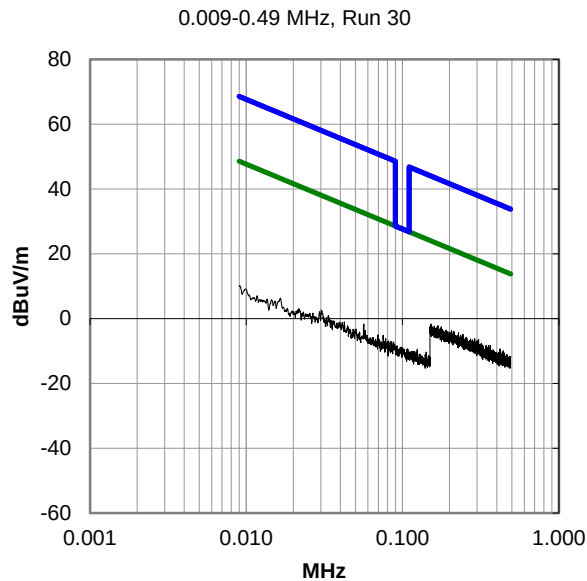


Tested By

FIELD STRENGTH OF SPURIOUS EMISSIONS (LESS THAN 30 MHz)

PRESCAN DATA

Radiated spurious emissions from the EUT are initially reviewed with Pre-scans (Preview scans). Pre-scans are performed, with the EUT transmitting on the lowest applicable data rate, for both vertical and horizontal polarizations. The Pre-scan plots below are shown with a peak detector and RBW for the following frequency ranges: 9 kHz RBW (< 30 MHz); 120 kHz RBW (30 - 1000 MHz); 1 MHz RBW (> 1 GHz). In the case where unintentional emissions are observed, an ambient or idle pre-scan with the radio off, will be shown for comparison.



FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)



TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting while set at the operating channel.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Biconilog	EMCO	3142B	AXK	2025-12-02	2027-12-02
Cable	ESM Cable Corp.	30-1GHz Cables	OCW	2025-12-08	2026-12-08
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAD	2025-12-08	2026-12-08
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	2025-10-06	2027-10-06
Antenna - Double Ridge	EMCO	3115	AHB	2024-04-16	2026-04-16
Cable	ESM Cable Corp.	1-8GHz Cables	OCX	2026-02-05	2027-02-05
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVJ	2026-03-17	2027-03-17

FREQUENCY RANGE INVESTIGATED

30 MHz TO 6 GHz

POWER INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

NOPT0047-3

MODES INVESTIGATED

Transmitting RFID 13.56 MHz

FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)



EUT:	NPi-Connect	Work Order:	NOPT0047
Serial Number:	NPC241209003	Date:	2026-03-23
Customer:	Neuroptics, Inc	Temperature:	23.4°C
Attendees:	Michael Sakla	Relative Humidity:	54.1%
Customer Project:	None	Bar. Pressure (PMSL):	1013 mb
Tested By:	Kyle Fujimoto	Job Site:	OC07
Power:	110VAC/60Hz	Configuration:	NOPT0047-3

TEST PARAMETERS

Run #:	128	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

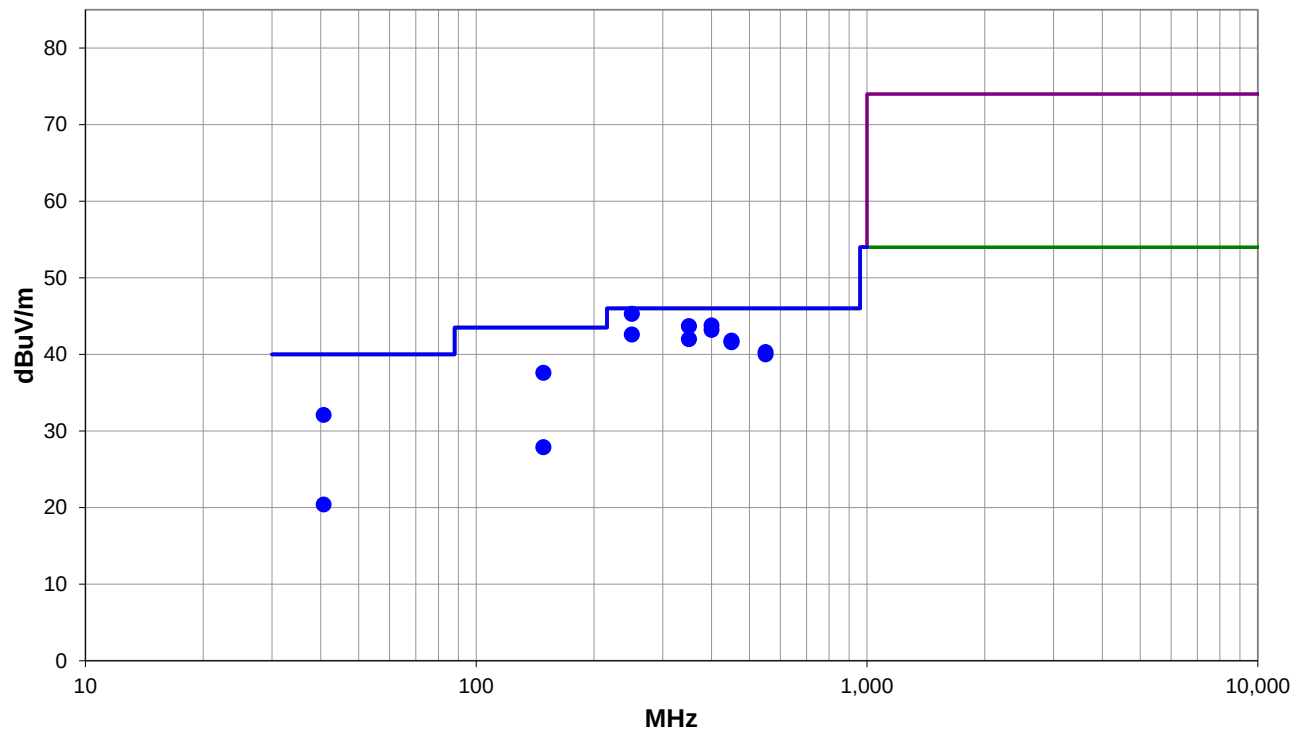
The tag is present on the EUT

EUT OPERATING MODES

Transmitting RFID 13.56 MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 128

PK AV QP

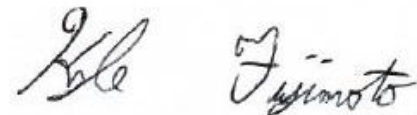
FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)

RESULTS - Run #128

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
249.993	45.7	-0.4	1.0	81.0	3.0	0.0	Vert	QP	0.0	45.3	46.0	-0.7
399.988	39.2	4.6	1.0	37.0	3.0	0.0	Horz	QP	0.0	43.8	46.0	-2.2
349.989	40.4	3.3	1.5	152.0	3.0	0.0	Vert	QP	0.0	43.7	46.0	-2.3
399.986	38.6	4.6	1.5	198.0	3.0	0.0	Vert	QP	0.0	43.2	46.0	-2.8
249.992	43.0	-0.4	1.0	152.0	3.0	0.0	Horz	QP	0.0	42.6	46.0	-3.4
349.988	38.7	3.3	1.0	80.0	3.0	0.0	Horz	QP	0.0	42.0	46.0	-4.0
449.985	36.1	5.7	2.0	218.0	3.0	0.0	Horz	QP	0.0	41.8	46.0	-4.2
449.983	35.9	5.7	1.0	179.0	3.0	0.0	Vert	QP	0.0	41.6	46.0	-4.4
549.981	31.6	8.7	1.86	214.0	3.0	0.0	Vert	QP	0.0	40.3	46.0	-5.7
148.503	42.5	-4.9	1.0	359.0	3.0	0.0	Vert	QP	0.0	37.6	43.5	-5.9
549.982	31.3	8.7	1.61	192.0	3.0	0.0	Horz	QP	0.0	40.0	46.0	-6.0
40.680	34.8	-2.7	1.36	209.0	3.0	0.0	Vert	QP	0.0	32.1	40.0	-7.9
148.493	32.8	-4.9	2.37	71.0	3.0	0.0	Horz	QP	0.0	27.9	43.5	-15.6
40.680	23.1	-2.7	4.0	182.0	3.0	0.0	Horz	QP	0.0	20.4	40.0	-19.6

CONCLUSION

Pass



Tested By

FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)



EUT:	NPi-Connect	Work Order:	NOPT0047
Serial Number:	NPC241209003	Date:	2026-03-24
Customer:	Neuroptics, Inc	Temperature:	22.5°C
Attendees:	Michael Sakla	Relative Humidity:	54.6%
Customer Project:	None	Bar. Pressure (PMSL):	1014 mb
Tested By:	Kyle Fujimoto	Job Site:	OC07
Power:	110VAC/60Hz	Configuration:	NOPT0047-3

TEST PARAMETERS

Run #:	131	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

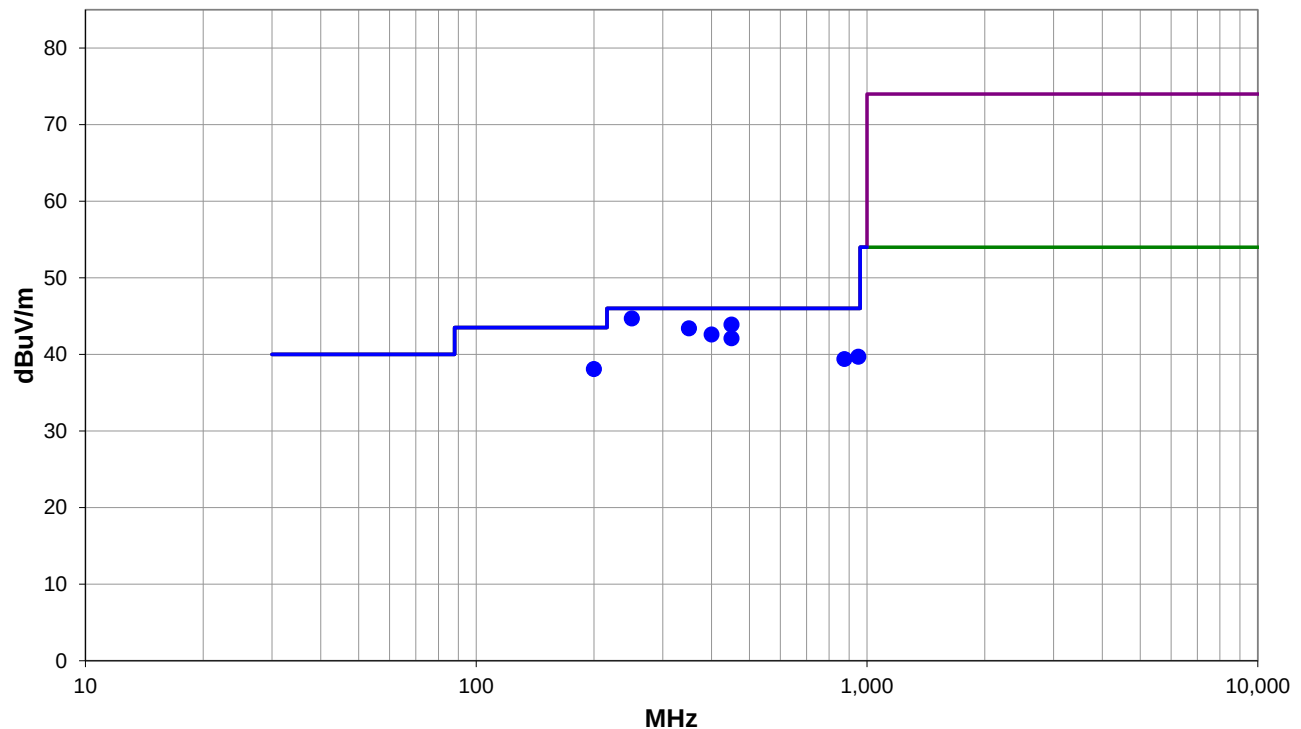
The tag is absent from the EUT

EUT OPERATING MODES

Transmitting RFID 13.56 MHz

DEVIATIONS FROM TEST STANDARD

None



Run #: 131

PK AV QP

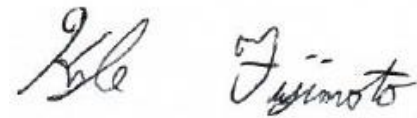
FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)

RESULTS - Run #131

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
249.994	45.1	-0.4	1.51	157.0	3.0	0.0	Horz	QP	0.0	44.7	46.0	-1.3
449.985	38.2	5.7	1.0	149.0	3.0	0.0	Vert	QP	0.0	43.9	46.0	-2.1
349.992	40.1	3.3	1.0	160.0	3.0	0.0	Horz	QP	0.0	43.4	46.0	-2.6
399.985	38.0	4.6	1.5	153.0	3.0	0.0	Vert	QP	0.0	42.6	46.0	-3.4
449.983	36.4	5.7	1.0	125.0	3.0	0.0	Horz	QP	0.0	42.1	46.0	-3.9
199.989	41.3	-3.2	1.5	183.0	3.0	0.0	Horz	QP	0.0	38.1	43.5	-5.4
949.966	24.8	14.9	1.0	163.0	3.0	0.0	Vert	QP	0.0	39.7	46.0	-6.3
874.986	25.1	14.3	1.0	123.0	3.0	0.0	Horz	QP	0.0	39.4	46.0	-6.6

CONCLUSION

Pass



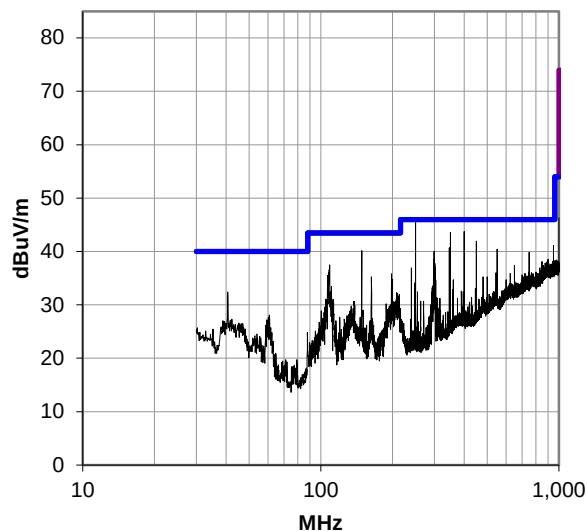
Tested By

FIELD STRENGTH OF SPURIOUS EMISSIONS (GREATER THAN 30 MHz)

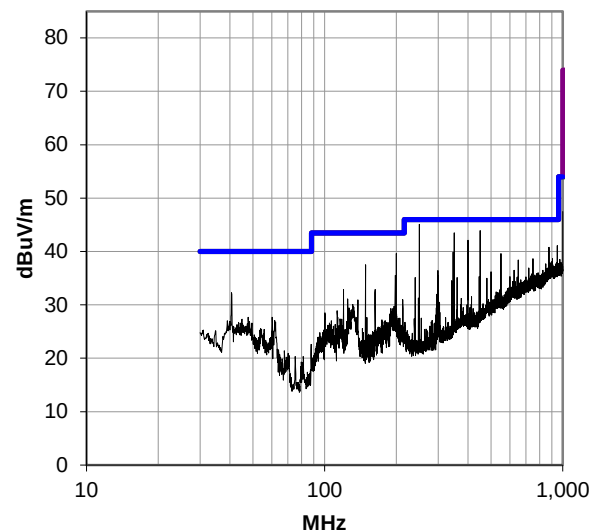
PRESCAN DATA

Radiated spurious emissions from the EUT are initially reviewed with Pre-scans (Preview scans). Pre-scans are performed, with the EUT transmitting on the lowest applicable data rate, for both vertical and horizontal polarizations. The Pre-scan plots below are shown with a peak detector and RBW for the following frequency ranges: 9 kHz RBW (< 30 MHz); 120 kHz RBW (30 - 1000 MHz); 1 MHz RBW (> 1 GHz). In the case where unintentional emissions are observed, an ambient or idle pre-scan with the radio off, will be shown for comparison.

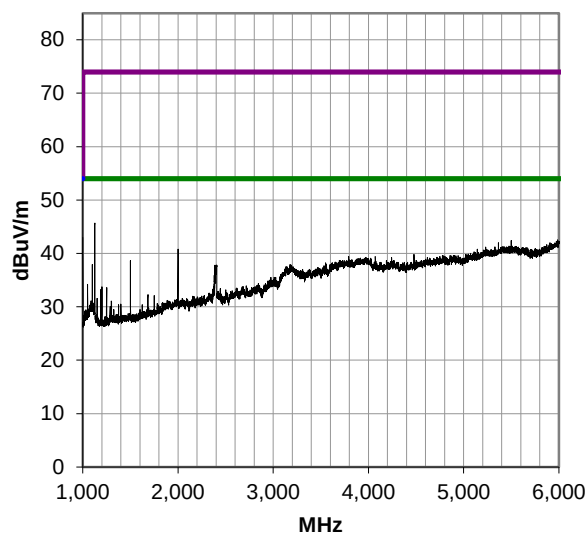
30-1000 MHz, Run 128, EUT Reading a Tag



30-1000 MHz, Run 131, Continuous Transmission



1000-6000 MHz, Run 138



FREQUENCY STABILITY

TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the spectrum analyzer. The reference level offset of the analyzer was adjusted to match the full bandwidth ERP measurement made of the output power with the radiated test method.

The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

Measurements were made on the single transmit frequency as called out on the data sheets.

The primary supply voltage was varied from 85 % to 115% of the nominal voltage while at ambient temperature. Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range of -20 ° to +50° C and at 10°C intervals.

The requirement of a frequency tolerance of $\pm 0.01\%$ is equivalent to 100 ppm
The formula to check for compliance is:

$$\text{ppm} = (\text{Measured Frequency} / \text{Measured Nominal Frequency} - 1) * 1,000,000$$

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFJ	2026-03-24	2027-03-24
Probe - Temperature/Humidity	Omega Engineering, Inc.	iTHP-5-DB9	DVFA	2025-07-07	2026-07-07
Thermometer	Omega Engineering, Inc.	iTHx-SD-5	DVF	2025-07-07	2026-07-07
Meter - Multimeter	Fluke	179	MBB	2026-03-17	2027-03-17
Probe - Near Field Set	EMCO	7405	IPI	NCR	NCR
Block - DC	Fairview Microwave	SD3379	ANG	2025-12-08	2026-12-08
Cable	Element	None	OC5	2025-10-20	2026-10-20
Chamber – Temperature/Humidity	Cincinnati Sub Zero	ZPHS-32-3.5-SCT/AC	TBE	NCR	NCR

FREQUENCY STABILITY

EUT:	NPi-Connect	Work Order:	NOPT0047
Serial Number:	NPC241209003	Date:	2026-04-01
Customer:	Neuroptics, Inc	Temperature:	21.3°C
Attendees:	Michael Sakla	Relative Humidity:	50.4%
Customer Project:	None	Bar. Pressure (PMSL):	1015 mbar
Tested By:	Kyle Fujimoto	Job Site:	OC13
Power:	110VAC/60Hz	Configuration:	NOPT0047-1

COMMENTS

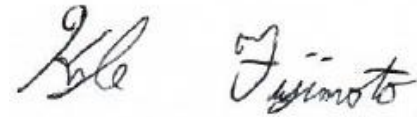
The testing was performed with the tag present on the EUT.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

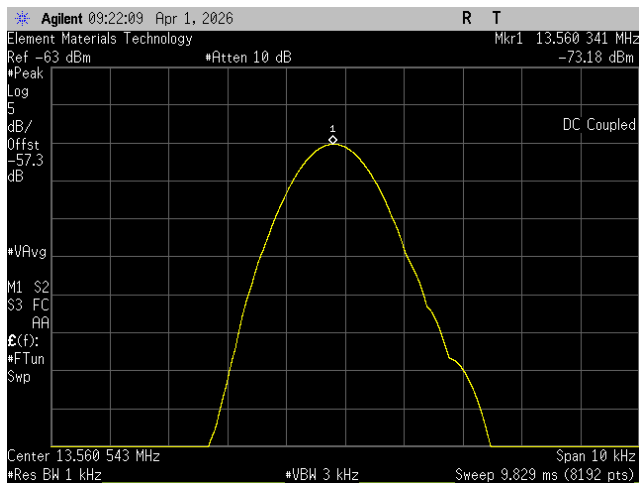


Tested By

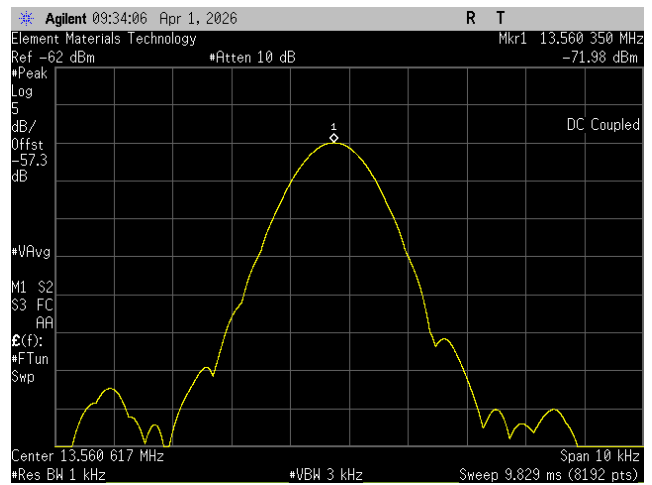
TEST RESULTS

	Measured Value (MHz)	Nominal Value (MHz)	Error (ppm)	Limit (ppm)	Results
13.56 MHz RFID, ISO/IEC 14443 Type A					
Normal Conditions (110VAC/60Hz)	13.560341	13.560341	0	100	Pass
Extreme Voltage 115% (126VAC/60Hz)	13.56035	13.560341	0.66	100	Pass
Extreme Voltage 85% (93.5VAC/60Hz)	13.560343	13.560341	0.15	100	Pass
Extreme Temperature +50°C	13.560343	13.560341	0.15	100	Pass
Extreme Temperature +40°C	13.560328	13.560341	0.96	100	Pass
Extreme Temperature +30°C	13.560321	13.560341	1.47	100	Pass
Extreme Temperature +20°C	13.560334	13.560341	0.52	100	Pass
Extreme Temperature +10°C	13.560359	13.560341	1.33	100	Pass
Extreme Temperature +0°C	13.560376	13.560341	2.58	100	Pass
Extreme Temperature -10°C	13.560387	13.560341	3.39	100	Pass
Extreme Temperature -20°C	13.560386	13.560341	3.32	100	Pass

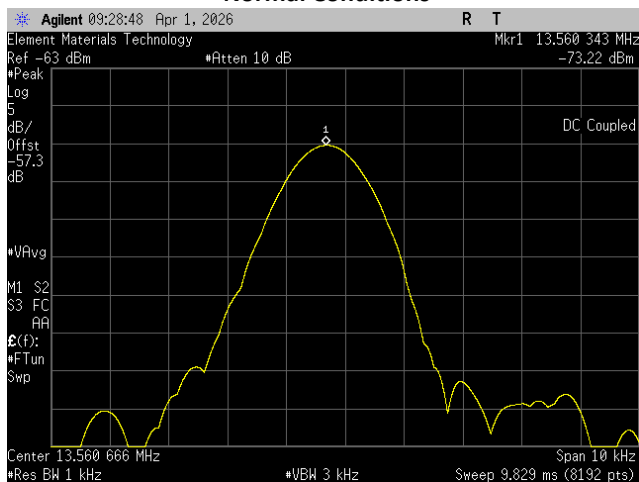
FREQUENCY STABILITY



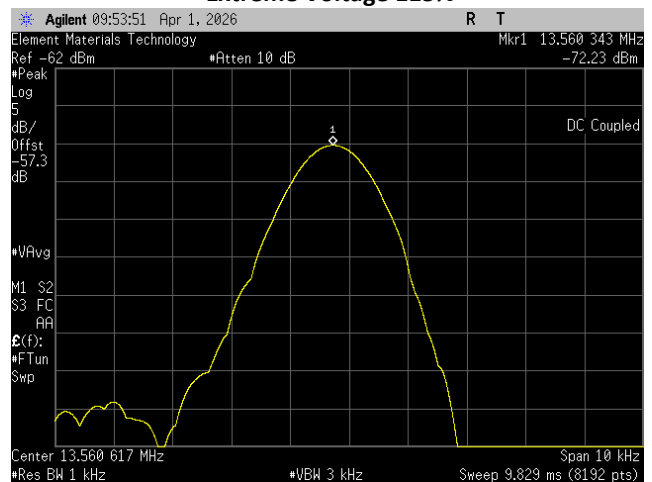
13.56 MHz RFID, ISO/IEC 14443 Type A
Normal Conditions



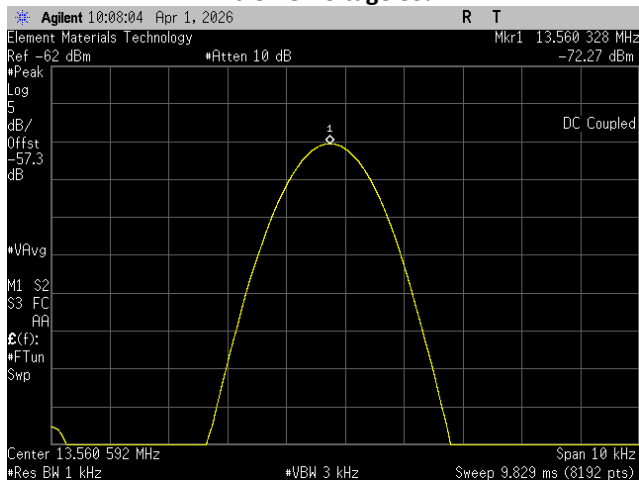
13.56 MHz RFID, ISO/IEC 14443 Type A
Extreme Voltage 115%



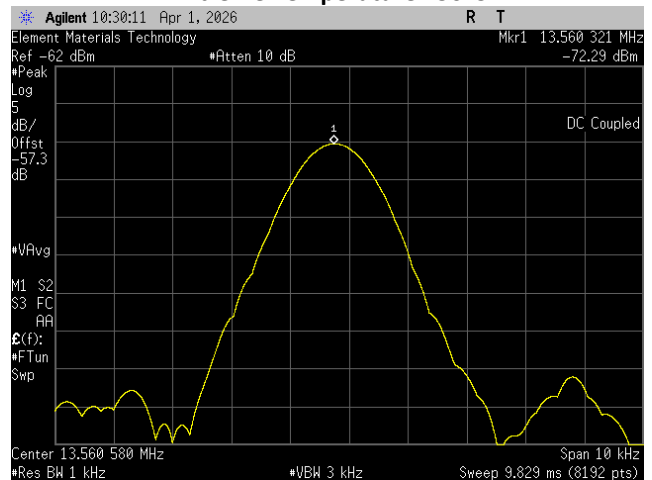
13.56 MHz RFID, ISO/IEC 14443 Type A
Extreme Voltage 85%



13.56 MHz RFID, ISO/IEC 14443 Type A
Extreme Temperature +50°C

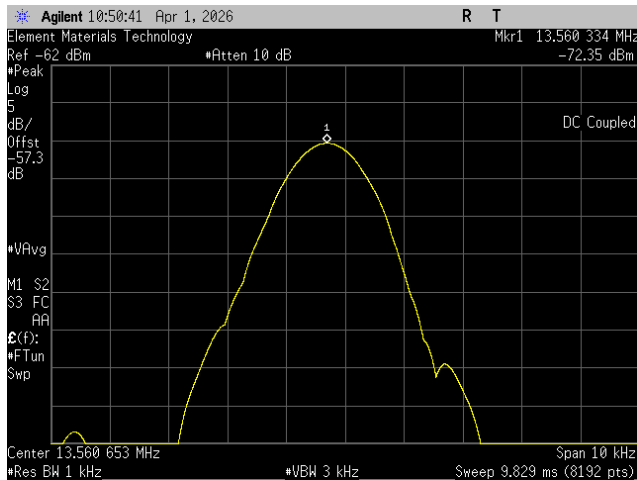


13.56 MHz RFID, ISO/IEC 14443 Type A
Extreme Temperature +40°C

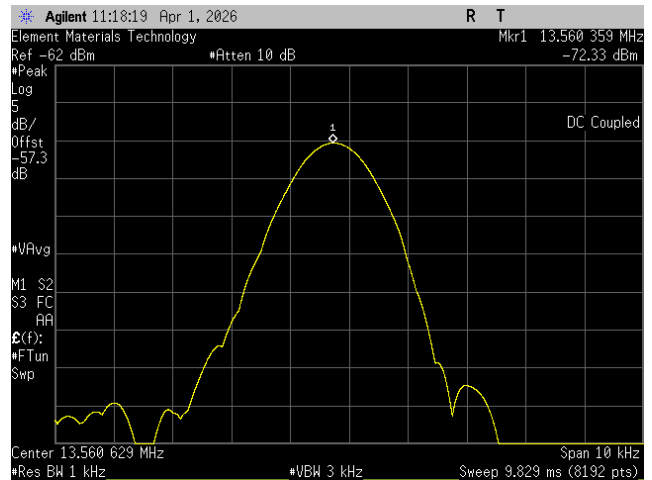


13.56 MHz RFID, ISO/IEC 14443 Type A
Extreme Temperature +30°C

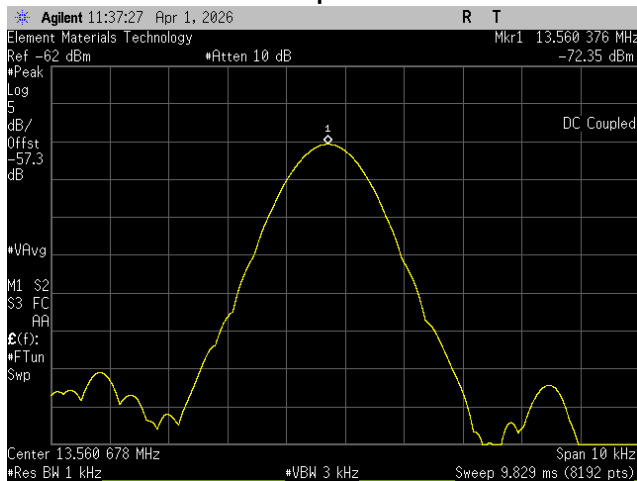
FREQUENCY STABILITY



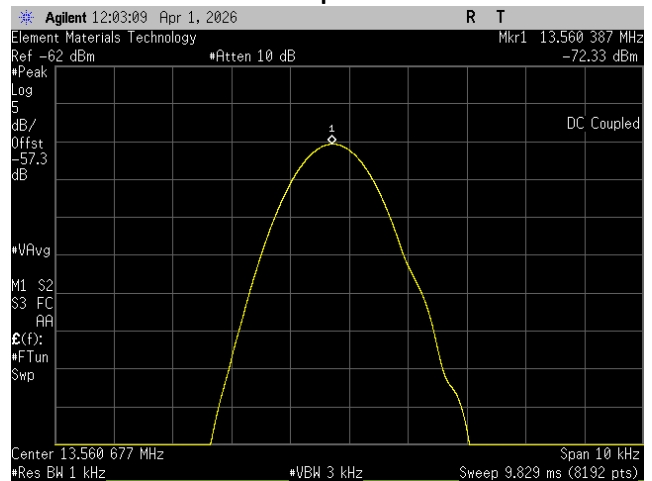
**13.56 MHz RFID, ISO/IEC 14443 Type A
Extreme Temperature +20°C**



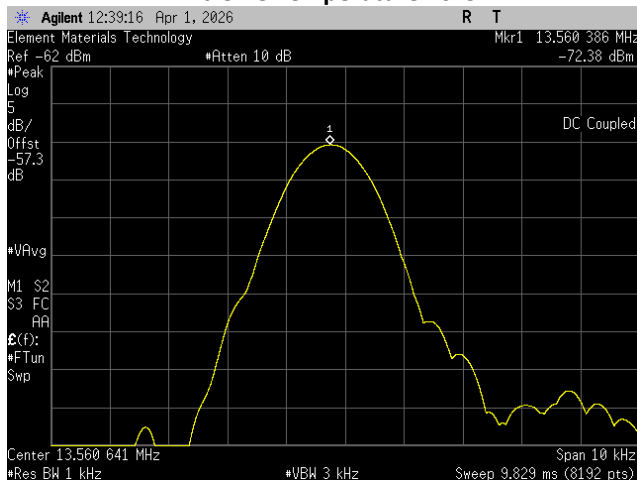
**13.56 MHz RFID, ISO/IEC 14443 Type A
Extreme Temperature +10°C**



**13.56 MHz RFID, ISO/IEC 14443 Type A
Extreme Temperature +0°C**



**13.56 MHz RFID, ISO/IEC 14443 Type A
Extreme Temperature -10°C**



**13.56 MHz RFID, ISO/IEC 14443 Type A
Extreme Temperature -20°C**

End of Test Report