Test Certificate

A sample of the following product received on October 30, 2019 and tested on October 30 and 31 and November 1 and 4, 2019 complied with the requirements of,

- **Subpart B of Part 15 of FCC Rules for Scanning receivers.**

given the measurement uncertainties detailed in National Technical Systems report FR-105382.01-NARF Rev 1.

Bastille Networks
Model Chevy Sensor-2

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EMC Test Report

Scanning receivers

FCC Part 15

Model: Chevy Sensor-2

COMPANY:	Bastille Networks 101 2nd Street, Suite 510 San Francisco, CA 94105
TEST SITE(S):	National Technical Systems
PROJECT NUMBER:	PR105382
REPORT DATE:	November 22, 2019
REISSUE DATE:	December 27, 2019
FINAL TEST DATES:	October 30 and 31 and November 1 and 4, 2019
TOTAL NUMBER OF PAGES:	71

ACCREDITED
Testing Cert #0214.26

VALIDATING SIGNATORIES

PROGRAM MGR

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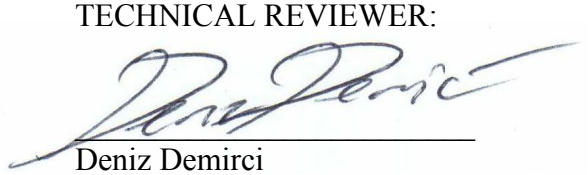
TECHNICAL REVIEWER:



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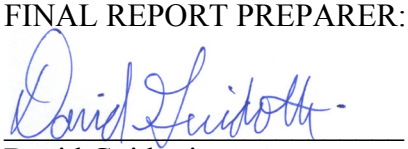

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REVISION HISTORY

Rev#	Date	Comments	Modified By
-	November 22, 2019	First release	-
1	December 27, 2019	The radiated spurious limits are corrected as Class B	Deniz Demirci

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SCOPE

Governments and standards organizations around the world have published requirements regarding the electromagnetic compatibility (EMC) of electronic equipment. Testing has been performed on the Bastille Networks model Chevy Sensor-2, pursuant to the following standards.

Standard	Title	Standard Date
FCC Part 15, Subpart B	Radio Frequency Devices	October 2018 as Amended

All measurements and evaluations have been in accordance with these specifications, test procedures, and measurement guidelines as outlined in National Technical Systems test procedures, and in accordance with the standards referenced therein. National Technical Systems is accredited by the A2LA, certificate number 0214.26, to perform the test(s) listed in this report, except where noted otherwise.

OBJECTIVE

The objective of Bastille Networks is to verify compliance with FCC requirements for scanning receivers.

STATEMENT OF COMPLIANCE

The tested sample of Bastille Networks model Chevy Sensor-2 complied with the requirements of:

Standard/Regulation	Standard Date
Subpart B of Part 15 of the FCC Rules (CFR title 47)	2001 as amended (§15.121)

As specified in Section 15.101 of FCC Part 15, unintentional radiators shall be authorized prior to the initiation of marketing. Based on the description of the EUT, the following criteria per Section 15.101 of FCC Part 15 were applied to the EUT:

Type of device	Equipment authorization required
Scanning Receiver	Certification

The test results recorded herein are based on a single type test of the Bastille Networks model Chevy Sensor-2 and therefore apply only to the tested sample(s). The sample was selected and prepared by Ellis Villafuerte of Bastille Networks.

Maintenance of compliance is the responsibility of the company. Any modification of the product that could result in increased emissions or susceptibility should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different enclosure, different line filter or power supply, harnessing and/or interface cable changes, etc.).

DEVIATIONS FROM THE STANDARDS

The following deviations were made from the published requirements listed in the scope of this report: The EUT has no audio output capabilities hence an alternative test method was used to show compliance with FCC §15.121 (b) requirements.

TEST RESULTS

The following tests were performed on the Bastille Networks model Chevy Sensor-2. The measurements were extracted from the data recorded during testing and represent the highest-amplitude emissions relative to the specification limits. The complete test data is provided in the appendices of this report.

SCANNING RECEIVER

Frequency Range	Standard/Section	Requirement	Measurement Margin	Status
50 MHz – 6 GHz	FCC § 15.121(b)	Cellular Radiotelephone Service frequency bands attenuation of 38 dB	Min. 44 dB attenuation (-6 dB)	Complied

RADIATED EMISSIONS

Frequency Range	Standard/Section	Requirement	Measurement Margin	Status
30 - 1000 MHz	FCC §15.109(b) (Class B)	30 - 88 MHz, 40.0 dBµV/m 88 - 216 MHz, 43.5 dBµV/m 216 - 960 MHz, 46.0 dBµV/m 960 - 1000 MHz, 54.0 dBµV/m (3 m limit)	46.7 dBµV/m @ 11982.1 MHz (-7.3 dB) (Noise floor reading)	Complied
1 - 30 GHz	FCC §15.109(b) (Class B)	54.0 dBµV/m Av 74.0 dBµV/m Pk (3 m limit)		

Note: All other measured spurious emissions are related to host unit digital device and they are not related to the tuned receive frequencies.

CONDUCTED EMISSIONS

Frequency Range Operating Voltage	Standard/Section	Requirement	Measurement Margin	Status
0.15 - 30 MHz, 120 V, 60 Hz	FCC § 15.107(a) (Class B)	0.15-0.5 MHz: 66-56 dBµV QP 56-46 dBµV Av 0.5-5.0 MHz: 56 dBµV QP 46 dBµV Av 5.0-30.0 MHz: 60 dBµV QP 50 dBµV Av	42.9 dBµV @ 0.252 MHz (-8.8 dB)	Complied

MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below were calculated using the approach described in CISPR 16-4-2:2003 using a coverage factor of k=2, which gives a level of confidence of approximately 95%. The levels were found to be below levels of CISPR and therefore no adjustment of the data for measurement uncertainty is required.

Measurement Type	Measurement Unit	Frequency Range	Expanded Uncertainty
RF frequency	Hz	50 MHz to 6 GHz	1.7×10^{-7}
RF power, conducted	dBm	50 MHz to 6 GHz	± 0.5 dB
Conducted Emissions	dBµV or dBµA	150 kHz – 30 MHz	± 2.2 dB
Radiated Electric Field	dBµV/m	30 MHz -1000 MHz	± 3.6 dB
		1 GHz - 40 GHz	± 6.0 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Bastille Networks model Chevy Sensor-2 is a scanning receiver

The samples were received on October 30, 2019 and tested on October 30 and 31 and November 1 and 4, 2019. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Bastille Networks	Chevy Sensor-2	Scanning receiver (RF conducted sample)	AQ43673000090	2AIJ5-SENSOR2
Bastille Networks	Chevy Sensor-2	Scanning receiver (Radiated sample)	1840020025	2AIJ5-SENSOR2

HIGHEST EUT INTERNAL FREQUENCY SOURCE

The highest internal frequency source (F_x) of an EUT is defined as the highest frequency generated or used within the EUT or on which the EUT operates or tunes. The highest internal frequency source determines the frequency range of test for radiated emissions.

The highest internal frequency source of the EUT was declared to be 6.0 GHz.

Based on the declared highest internal frequency source, the upper frequency range of measurement for the current project were:

FCC Part 15, Subpart B

Highest Internal Frequency Source (MHz)	Upper Frequency Range of Measurement (MHz)	Applicability
Below 1.705	30	
1.705 – 108	1000	
108 – 500	2000	
500 – 1000	5000	
Above 1000	5th harmonic of the highest internal source or 40 GHz, whichever is lower	X

ENCLOSURE

The EUT enclosure is primarily constructed of metal/plastic. It measures approximately 30 cm wide by 30 cm deep by 16 cm high.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at National Technical Systems.

SUPPORT EQUIPMENT

The following equipment was used as local support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
PHIHONG	PSC75U-560	AC/DC Power supply	P54406107A1	-

The following equipment was used as remote support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
TP-LINK	Archer C7 (US)	Router	2164524000826	TE7C7V3
IBM	Thinkpad	Laptop	-	-

EUT INTERFACE PORTS

The I/O cabling configuration during testing was as follows:

Port		Cable(s)		
From	To	Description	Shielded/Unshielded	Length(m)
Ethernet	Router	Cat 5	Unshielded	10
DC	AC/DC power supply	DC cable	Unshielded	0.5

EUT OPERATION

During Scanning Receiver Performance Tests the EUT was scanning the full frequency range and reporting the results to the support equipment.

During emissions testing the EUT was in receive mode. Both scanning receivers tuned to the same frequencies required by the test cases with 100 kHz bandwidth setting.

EMISSIONS TESTING

RADIATED AND CONDUCTED EMISSIONS

Final test measurements were taken at the National Technical Systems Anechoic Chambers listed below. The test sites contain separate areas for radiated and conducted emissions testing. The sites conform to the requirements of ANSI C63.4-2014 *American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz* and CISPR 16-1-4:2017 - *Specification for radio disturbance and immunity measuring apparatus and methods Part 1-4: Radio disturbance and immunity measuring apparatus Ancillary equipment Radiated disturbances*. They are registered with the VCCI and are on file with the FCC and Industry Canada.

Site	Company / Registration Numbers		Location
	FCC	Canada	
Chamber 7	US1031	2845B (Wireless Test Lab #US0027)	41039 Boyce Road Fremont, CA 94538-2435

RADIATED EMISSIONS CONSIDERATIONS

Radiated emissions measurements were made with the EUT powered from a supply voltage within the expected tolerances of each nominal operating voltage/frequency for each geographical regions covered by the scope of the standards referenced in this report.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions tests are performed in conformance with ANSI C63.4 and Subpart B of Part 15 of FCC Rules for Digital Devices.

Mains port measurements are made with the EUT connected to the public power network through nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

EMISSIONS MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1-1:2015 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 7 GHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000 MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz.

INSTRUMENT CONTROL COMPUTER

Measurements for radiated and conducted emissions are converted to the field strength at an antenna or voltage developed at the LISN (or ISN) measurement port, which is then compared directly with the appropriate specification limit under software control of the test receivers and spectrum analyzers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically. The software used for measurements is NTS EMI Test Software (rev 2.10).

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted emission measurements utilize a 50 µH Line Impedance Stabilization Network (LISN) as the measurement point. The LISN used may also contain an additional 250 µH inductor. This network provides for calibrated radio-frequency noise measurements by the design of the internal low-pass and high-pass filters on the EUT and measurement ports, respectively.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high-amplitude transient events.

ANTENNAS

A bilog antenna or combination of biconical and log periodic antennas are used to cover the range from 30 MHz to 1000 MHz. Narrowband tuned dipole antennas may be used over the entire 30 to 1000 MHz frequency range for precision measurements of field strength. Above 1000 MHz, horn antennas are used. The antenna calibration factors are included in site factors that are programmed into the test receivers or data collection software.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor drive to vary the antenna height.

ANSI C63.4 specifies that the test height above ground for table-mounted devices shall be 80 cm. Floor-mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material up to 12 mm thick if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the company's specifications. An appendix of this report contains the list of test equipment used and calibration information.

EMISSIONS TEST PROCEDURES

EUT AND CABLE PLACEMENT

The standards require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst-case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4, and the worst-case orientation is used for final measurements.

CONDUCTED EMISSIONS (MAINS)

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 cm in length near the center of the cord. Preliminary measurements are made to determine the highest-amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak-mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord. Emissions that have peak values close to the specification limit are also measured in the quasi-peak and average detection modes to determine compliance except when the amplitude of the emission when measured with the quasi-peak detector is more than 10 dB below the specification limit for average measurements. In this case only quasi-peak measurements are performed.

RADIATED EMISSIONS

General

FCC Part 15 references the test methods of ANSI C63.4-2014 (American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz) for emissions measurements. Radiated emissions measurements are performed in two phases, preliminary scan and final maximization.

Preliminary Scan

A preliminary scan of emissions is conducted in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one or more of these with the antenna polarized vertically and one or more of these are performed with the antenna polarized horizontally. During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied and cable positions are varied as necessary to determine the highest emission relative to the limit.

Note that for the frequency range of 1 - 6 GHz in the "free space" test environment, CISPR 32, allows the antenna to be set at a fixed height equal to the center height of the EUT, except for cases where additional scans are necessary with the antenna height adjusted up and down to ensure the measurement antenna illuminates the entire height of the EUT. However, in cases where a single "free space" test is performed in the 1 - 6 GHz frequency to simultaneously meet the requirements of FCC Part 15 (ANSI C63.4-2014 test methods) and CISPR 32, the antenna height is by default varied since required by ANSI C63.4.

In the frequency range of 30 - 1000 MHz, a speaker (with demodulation) is provided in the receiver to aid in discriminating between EUT and ambient emissions if required. Other possible methods for discriminating between EUT and ambient emissions involve scanning with near-field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final Maximization

During final maximization, the highest-amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth that results in the highest emission is then maintained while varying the antenna height from one to four meters. The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain. Emissions that have values close to the specification limit may also be measured with a tuned dipole antenna to determine compliance.

Final measurements in the frequency range of 30-1000 MHz are made using a quasi-peak detector and compared to the quasi-peak limit. Final measurements above 1 GHz are made using average and peak detectors and compared to the average and peak limits respectively.

The diameter of the test volume demonstrated during the test site validation of Chamber 7 was 2.5 m, while the maximum width of the boundary of the EUT, local AE, and associated cabling within the test volume was 2.5 m.

When testing above 1 GHz, the receive antenna is restricted to a maximum height of 2.5 m. Maximum emissions are found within this restricted range because emission levels decrease over distance and as the antenna is raised above 2.5 m, the distance from the EUT increases. As a result of the increased measurement distance, at antenna heights above 2.5 m, lower emission levels are measured as compared to emissions levels measured at antenna heights at 2.5 m and below. Final measurements are captured at 3 m test distance except in cases where a closer test distance is required due to noise-floor considerations of the test-and-measurement equipment.

For measurements above 1 GHz every effort is made to ensure the EUT remains within the cone of radiation of the measurement antenna (i.e. 3 dB beam-width of the antenna). This may include rotating the product and/or angling the measurement antenna.

SAMPLE CALCULATIONS

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form). The calculation is as follows:

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBµV
S = Specification Limit in dBµV
M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements. A distance factor, when used for electric field measurements, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

F_d = Distance Factor in dB
D_m = Measurement Distance in meters
D_s = Specification Distance in meters

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBµV/m
F_d = Distance Factor in dB
R_c = Corrected Reading in dBµV/m
L_s = Specification Limit in dBµV/m
M = Margin in dB Relative to Spec

Appendix A Test Equipment Calibration Data

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Antenna port measurements, 30-Oct-19					
Agilent Technologies	PSA B	E4446A	WC055670	5/21/2019	5/21/2020
Agilent Technologies	PSG Vector Signal Generator	E8267D	WC055673	2/28/2019	2/28/2020
Antenna port measurements, 31-Oct-19					
National Technical Systems	NTS Capture Analyzer Software (rev 4.0)	N/A	WC022706	N/A	
Agilent Technologies	PSA B	E4446A	WC055670	5/21/2019	5/21/2020
Agilent Technologies	PSG Vector Signal Generator	E8267D	WC055673	2/28/2019	2/28/2020
Radiated Emissions, 30 - 18,000 MHz, 01-Nov-19					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	WC022452	N/A	
Hewlett Packard	Spectrum Analyzer (Red)	8564E (84125C)	WC055584	10/10/2019	10/10/2020
EMCO	Horn Antenna	3115	WC062583	7/9/2018	7/9/2020
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	WC064416	7/18/2019	7/18/2020
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	WC064454	3/11/2019	3/11/2021
Com-Power	Preamplifier, 1-1000 MHz	PAM-103	WC064733	7/18/2019	7/18/2020
Rohde & Schwarz	EMI test receiver	ESI 40	WC068000	3/15/2019	3/15/2020
Radiated Emissions, 1,000 - 30,000 MHz, 04-Nov-19					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	WC022452	N/A	
Hewlett Packard	Spectrum Analyzer (Red)	8564E (84125C)	WC055584	10/10/2019	10/10/2020
Hewlett Packard	Microwave Preamplifier Head, 18-40 GHz (Red)	84125C EMI Test Head	WC055586	10/4/2019	10/4/2020
EMCO	Horn Antenna	3115	WC062583	7/9/2018	7/9/2020
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	WC064416	7/18/2019	7/18/2020
A. H. Systems	Antenna, Horn, 18-40GHz	SAS-574	WC064555	7/8/2019	7/8/2021
Conducted Emissions - AC Power Ports, 04-Nov-19					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	WC022452	N/A	
EMCO	LISN, 10 kHz-100 MHz	3825/2	WC064407	6/13/2019	6/13/2020
Rohde & Schwarz	EMI test receiver	ESI 40	WC068000	3/15/2019	3/15/2020
Rohde & Schwarz	Pulse Limiter	ESH3-Z2	WC072357	6/24/2019	6/24/2020

Appendix B Test Data

TL105382 Pages 20 – 70

Client:	Bastille Networks	PR Number:	PR105382
Product	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
System Configuration:	-	Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Emissions Standard(s):	FCC 15.121 (Scannnig receiver)	Class:	A
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Bastille Networks

Product

Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2

Date of Last Test: 11/5/2019

Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

FCC 15.121 (b)
(Scanning receiver w/o audio output capability)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

The EUT will be placed on a non conducted table in an anechoic chamber.

Ambient Conditions:

Temperature: 21-23 °C
Rel. Humidity: 31-34 %

Summary of Test Results

Run #	Test Performed	Limit	Result	Value / Margin
1	Scanning receiver performance	Worst case in-band attenuation of 38 dB	Pass	Min. 44 dB attenuation (-6 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

The EUT has no audio output capabilities. Proposed alternative test method to show compliance with FCC §15.121 (b) requirement.

Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

Run# 1: Scanning receiver performance.

Requirement

FCC §15.121 (b) Except as provided in paragraph (c) of this section, scanning receivers shall reject any signals from the Cellular Radiotelephone Service frequency bands that are 38 dB or lower based upon a 12 dB SINAD measurement, which is considered the threshold where a signal can be clearly discerned from any interference that may be present.

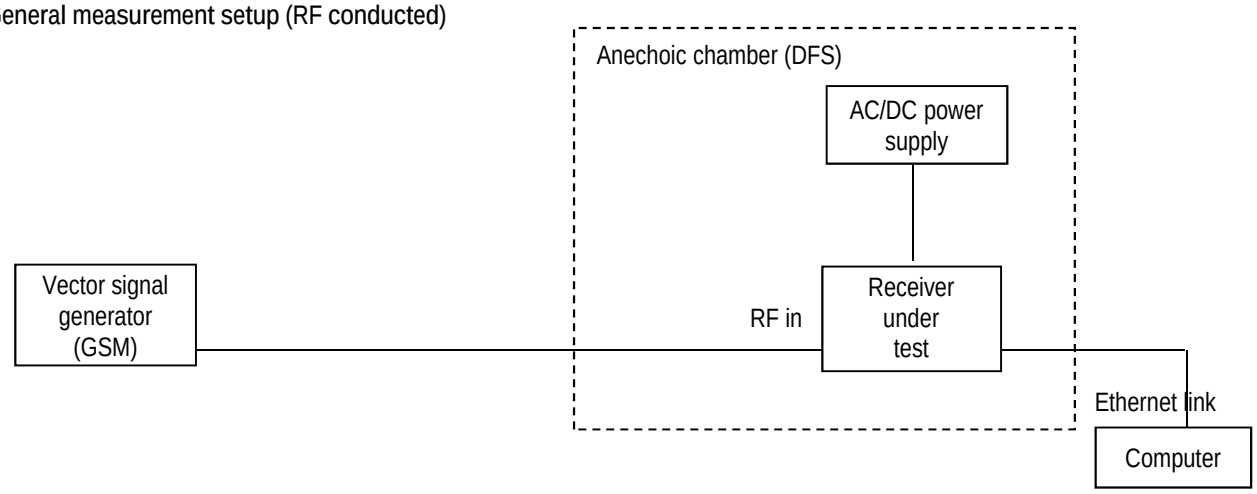
EUT Specifications

The EUT is a scanning receiver (commercial use). Operating range is from 50 MHz to 6 GHz. EUT has no audio output capabilities but capable of providing spectrum plots between 50 MHz and 6 GHz with RF amplitude information.
EUT has two identical scanning receivers with identical antennas. Only one scanning receiver will be tested to show compliance.

Test method

The RF level of vector signal generator will be adjusted to produce -43 dBm GSM signals at the receiver antenna port of the EUT (at least 44 dB above the receiver sensitivity level/noise floor reading). The signal generator will be tuned at selected out of band frequencies and the spectrum plots (provided by the EUT) will be stored with amplitude and frequency information. The signal generator will be tuned to low, mid and high channels of uplink and downlink bands and the spectrum plots will be stored with amplitude and frequency information. The compliance will be determined with the lowest attenuation of in-band signals in the frequency range of 50 MHz and 6 GHz (including image/rx translated frequencies)

General measurement setup (RF conducted)



Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

Run# 1: Out-of-band and in-band measurements

Date of Test: October 29/30/31, 2019
Test Engineer: Deniz Demirci
Test Location: FT Ch #2

Config. Used: 1
Config Change: None
EUT Voltage: 120 Vac 60 Hz

Frequency band (MHz)	Test point center frequency (MHz)	Signal type	Test signal level (dBm)	in-band or out-of-band signal	EUT received frequency (MHz)	EUT received signal level (dBm[1])	in-band attenuation (dB)	Limit (dB)	Result
50 - 824	100.0	GSM	-43.0	out-of-band	100.0	-9.0			
	774.0	GSM	-43.0	out-of-band	774.0	-10.0	Note 2		
	823.8	GSM	-43.0	out-of-band	823.8	-12.0	Note 3		
824 - 849	824.2	GSM	-43.0	in-band	824.2	-54.0	44.0	38.0	Pass
	836.4	GSM	-43.0	in-band	None	-80.0	70 ≤	38.0	Pass
	848.8	GSM	-43.0	in-band	848.8	-58.0	48.0	38.0	Pass
849 - 869	849.2	GSM	-43.0	out-of-band	849.2	-10.0	Note 3		
	859.0	GSM	-43.0	out-of-band	859.0	-11.0	Note 3		
	868.8	GSM	-43.0	out-of-band	868.8	-11.0	Note 3		
869 - 894	869.2	GSM	-43.0	in-band	869.2	-62.0	53.0	38.0	Pass
	881.4	GSM	-43.0	in-band	None	-80.0	70 ≤	38.0	Pass
	893.8	GSM	-43.0	in-band	893.8	-62.0	53.0	38.0	Pass
894 - 6000	894.2	GSM	-43.0	out-of-band	894.2	-12.0	Note 3		
	944.0	GSM	-43.0	out-of-band	944.0	-9.0	Note 2		
	2440.0	GSM	-43.0	out-of-band	2440.0	-14.0			
	5825.0	GSM	-43.0	out-of-band	5825.0	-14.0			

Note 1:	The EUT records the received signal level as dB which does not directly correlate to dBm value
Note 2:	Reference out-of-band receive signal RF level readings taken in those frequencies (block edge ± 50 MHz)
Note 3:	Not to be used as a reference RF power due to receiving filter.

Other emissions received.

Frequency (MHz)	Level (dBm[1])	Detector	Test point center frequency	Comments
56.0	-59.0	Pk	All	Sampling clock frequency - not related to receive frequency.
112.0	-55.0	Pk	All	Sampling clock frequency harmonic - not related to receive frequency.
1647.0	-58.0	Pk	All	Internal noise -not related to receive frequency.
2000.0	-52.0	Pk	All	Internal noise -not related to receive frequency.

Note 4:	All received emissions higher than -60 dBm are reported.

Client:	Bastille Networks	PR Number:	PR105382
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Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

Receiver linearity check at the reference frequencies

Frequency band (MHz)	Test point center frequency (MHz)	Signal type	Test signal level (dBm)	EUT received frequency (MHz)	EUT received signal level (dBm[1])
50 - 824	774.0	GSM	-43.0	774.0	-10.0
	774.0	GSM	-83.0	774.0	-50.0
894 - 6000	944.0	GSM	-43.0	944.0	-10.0
	944.0	GSM	-83.0	944.0	-50.0

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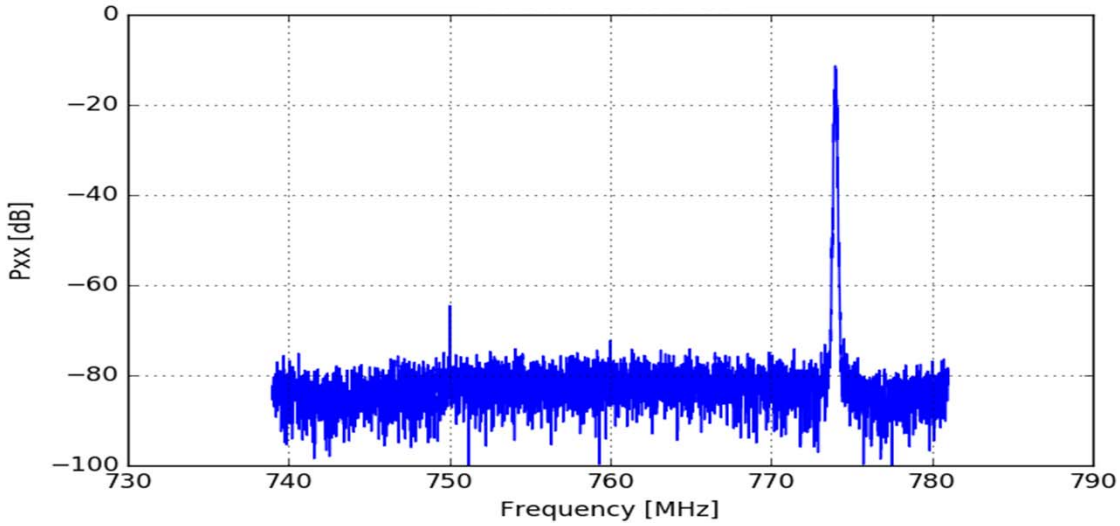
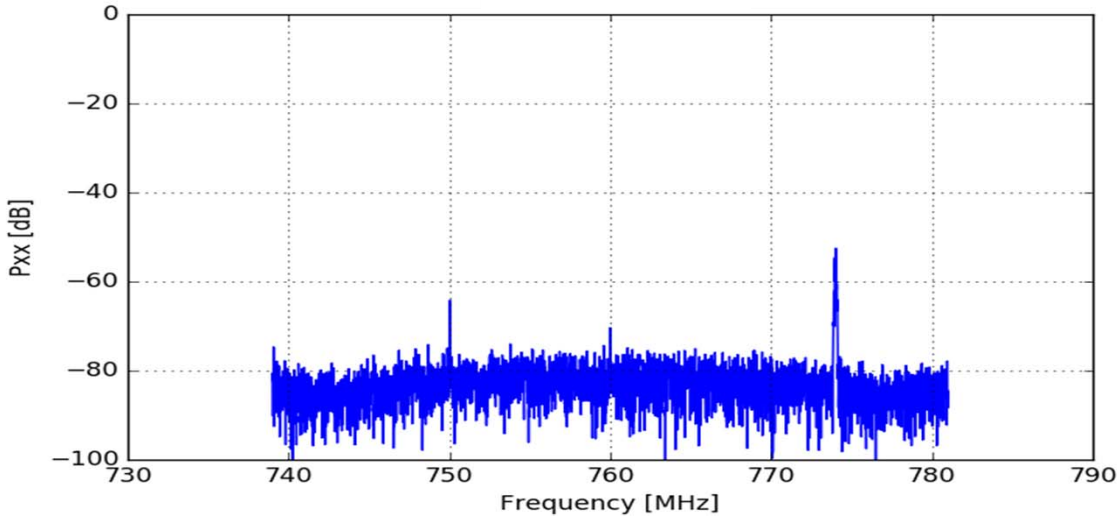
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

Receiver linearity check at 774 MHz





Client:	Bastille Networks	PR Number:	PR105382
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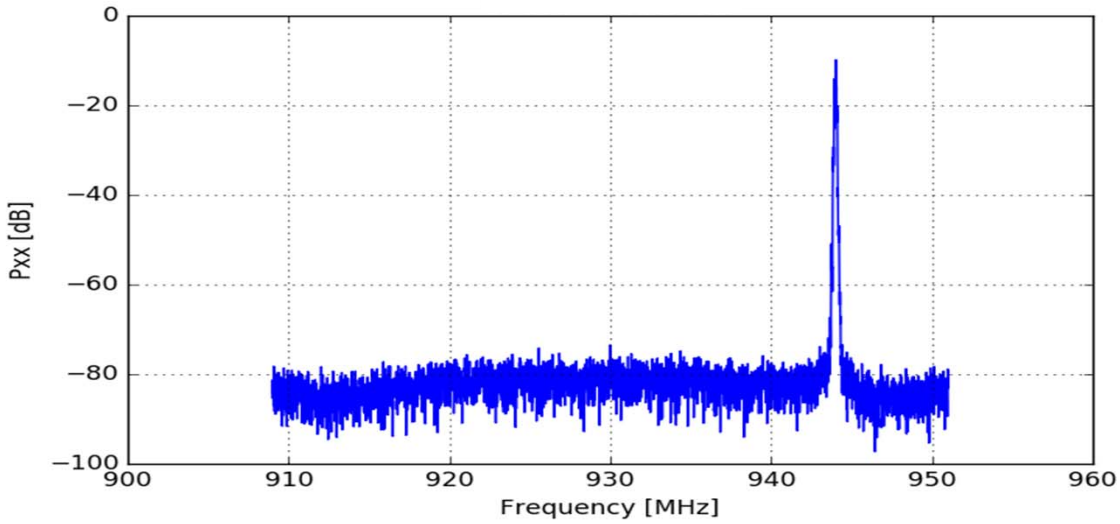
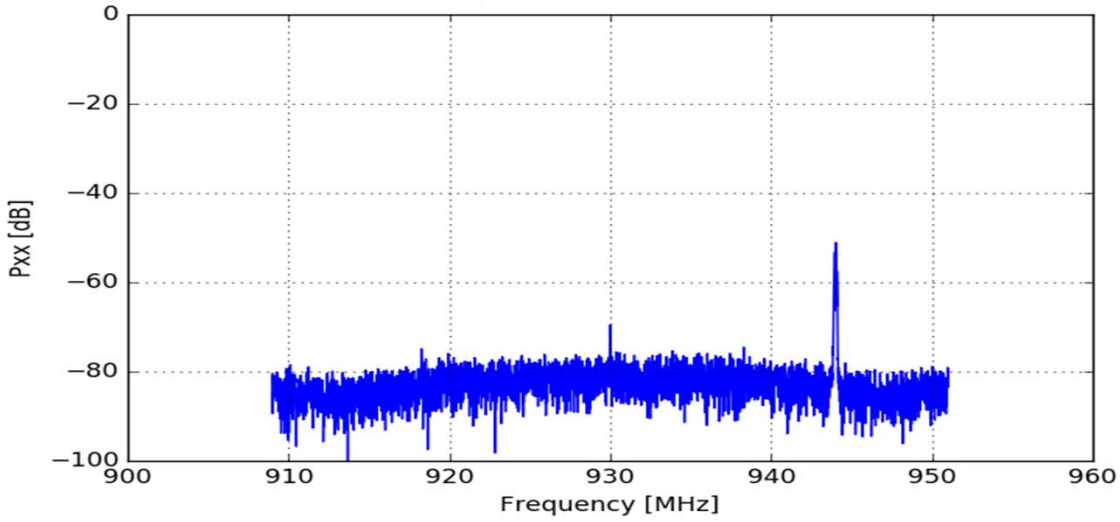
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

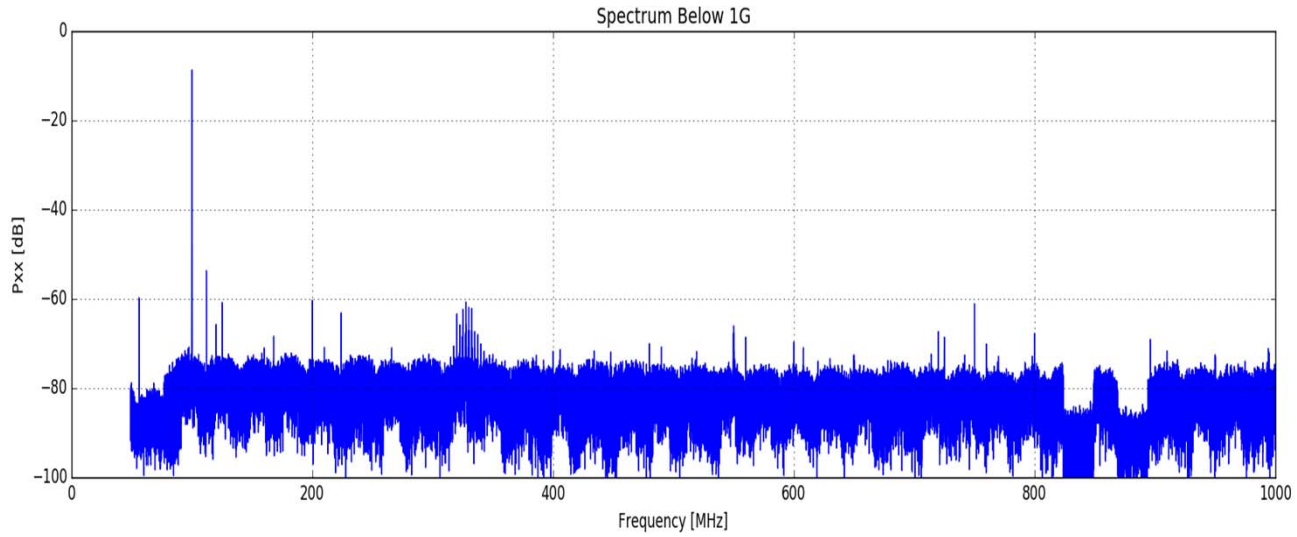
Receiver linearity check at 944 MHz

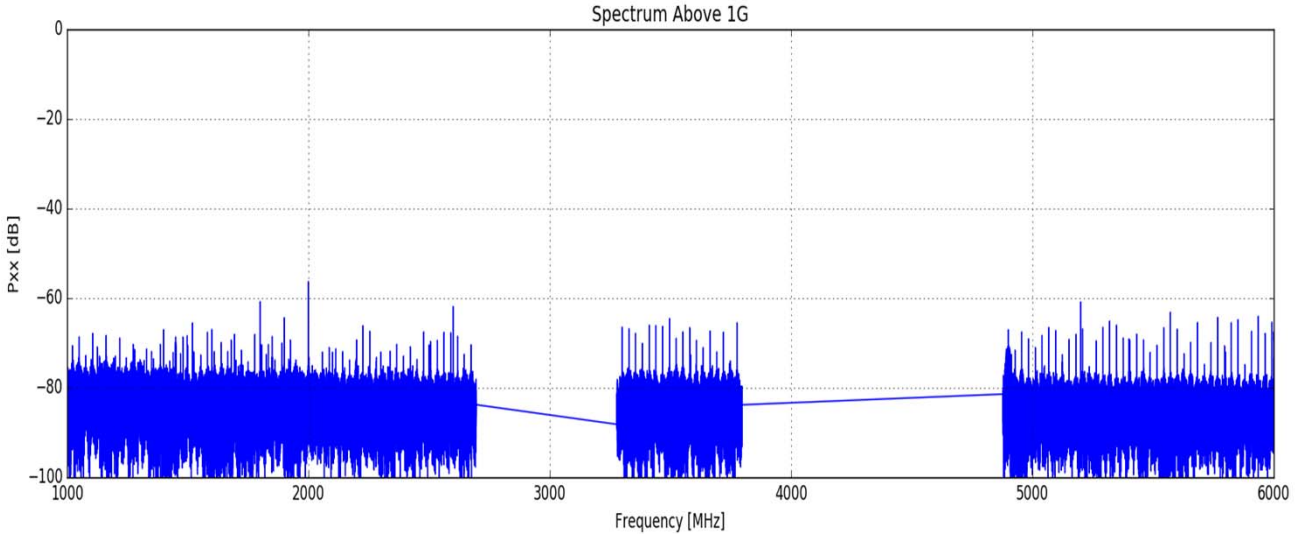




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

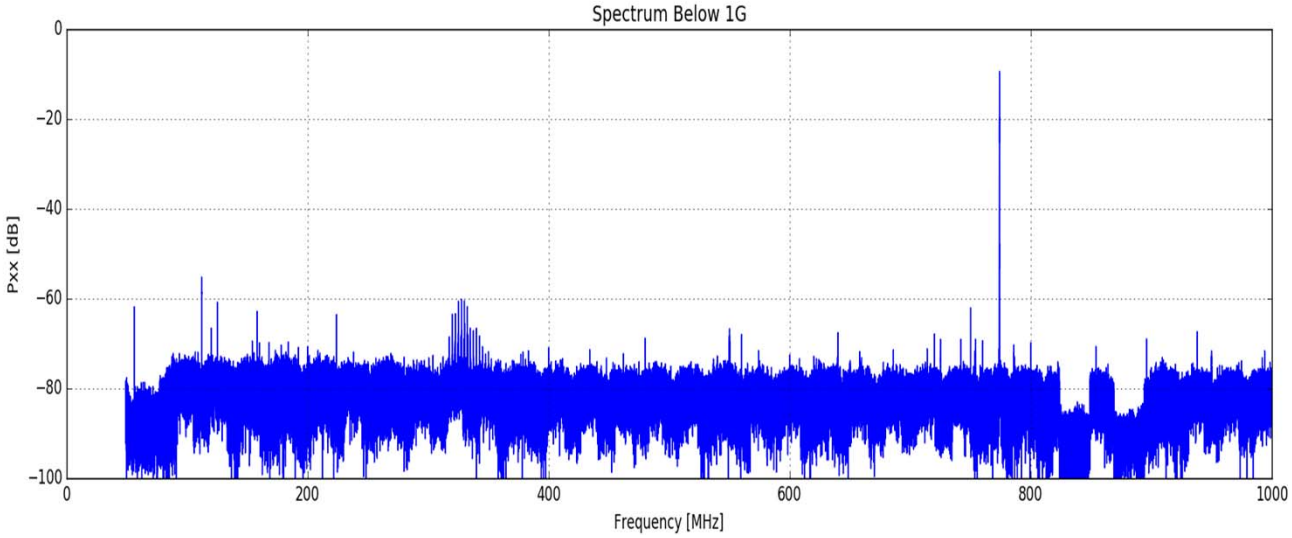
50 MHz to 6 GHz receiver plots for 100 MHz test frequency

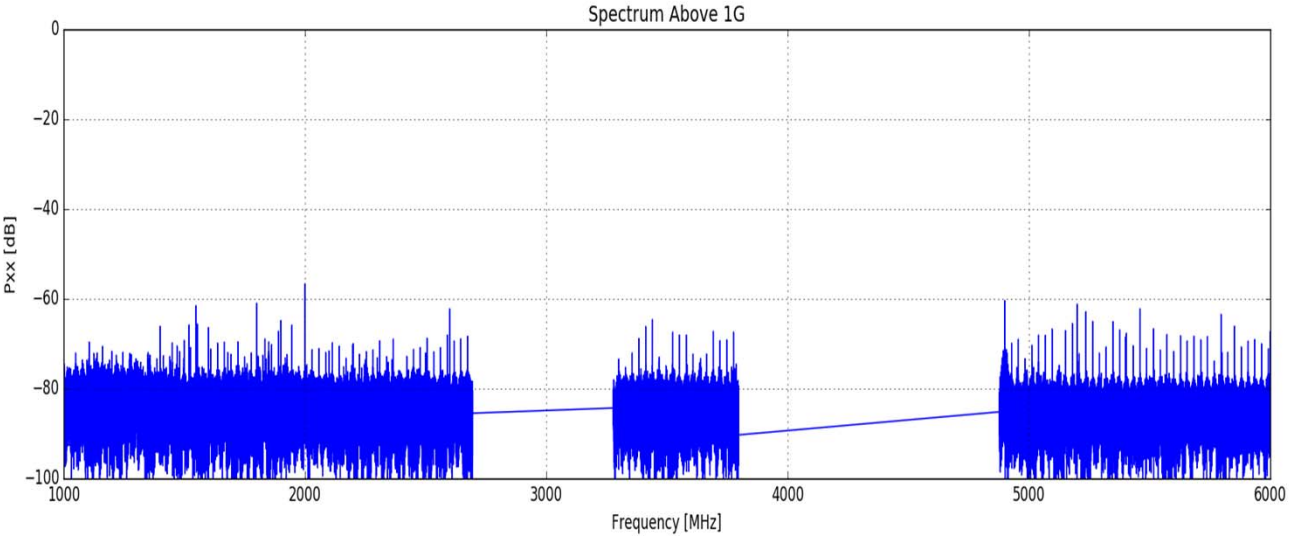




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

50 MHz to 6 GHz receiver plots for 774 MHz test frequency





Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
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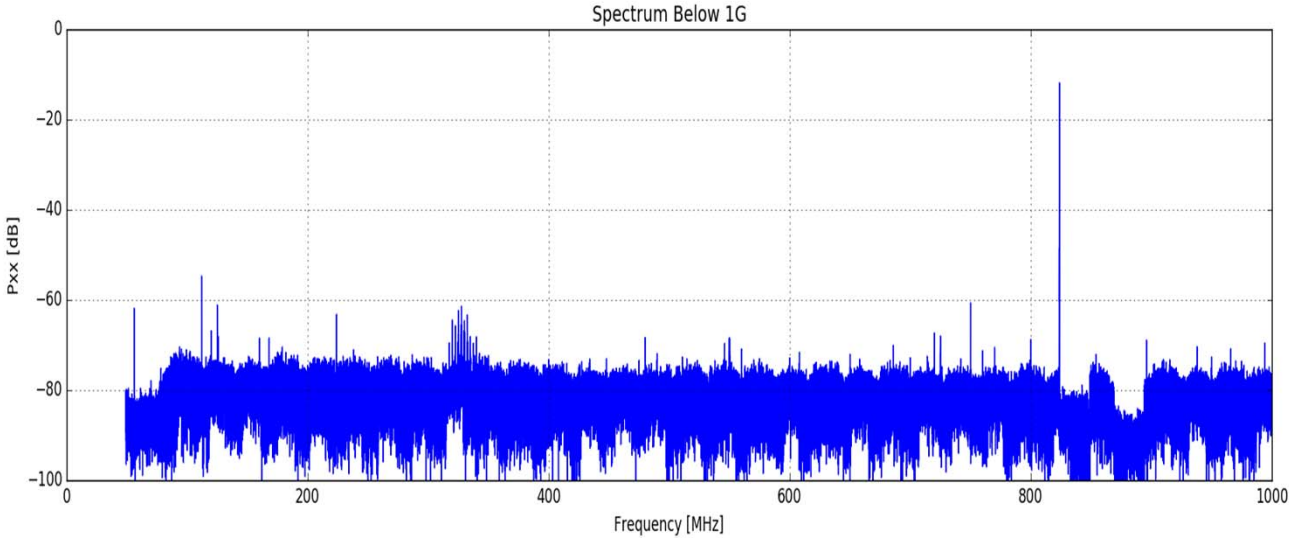
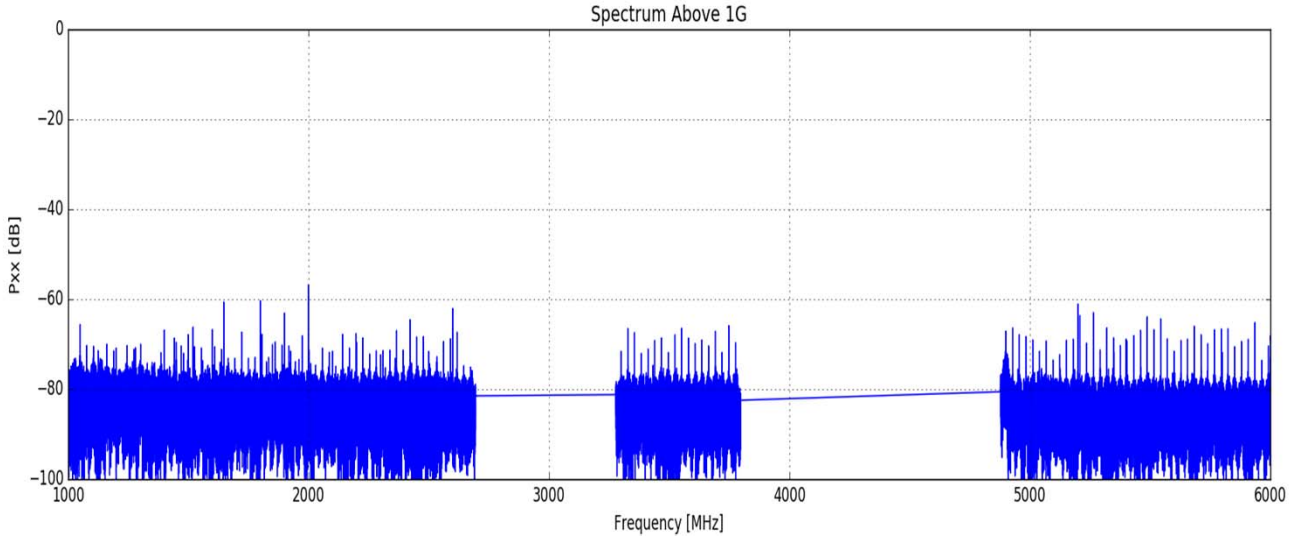
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

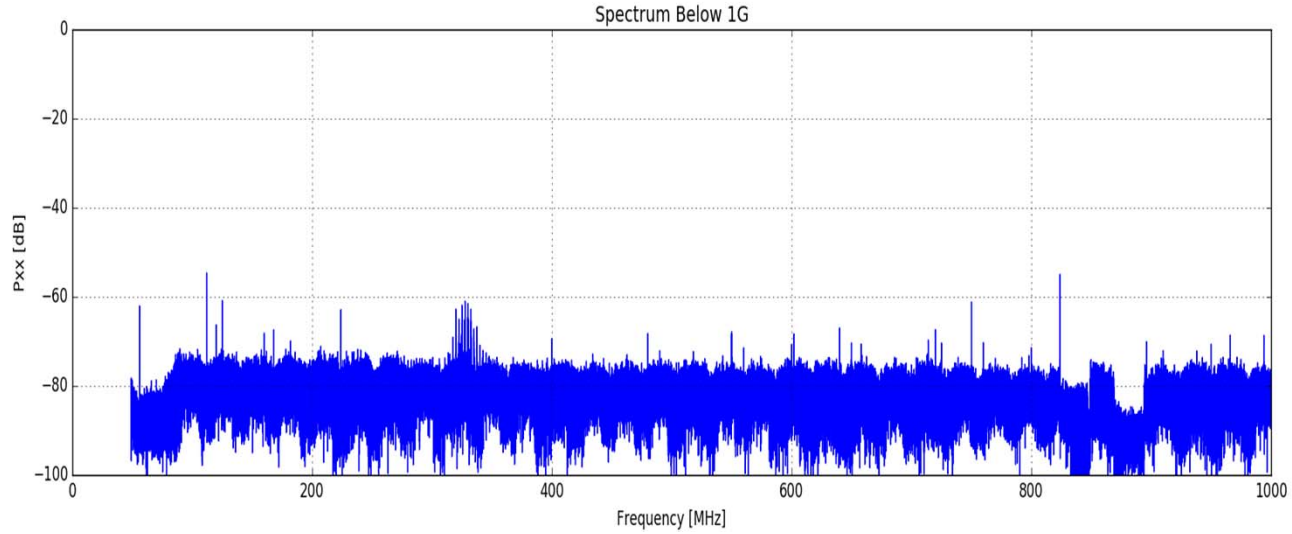
50 MHz to 6 GHz receiver plots for 823.8 MHz test frequency

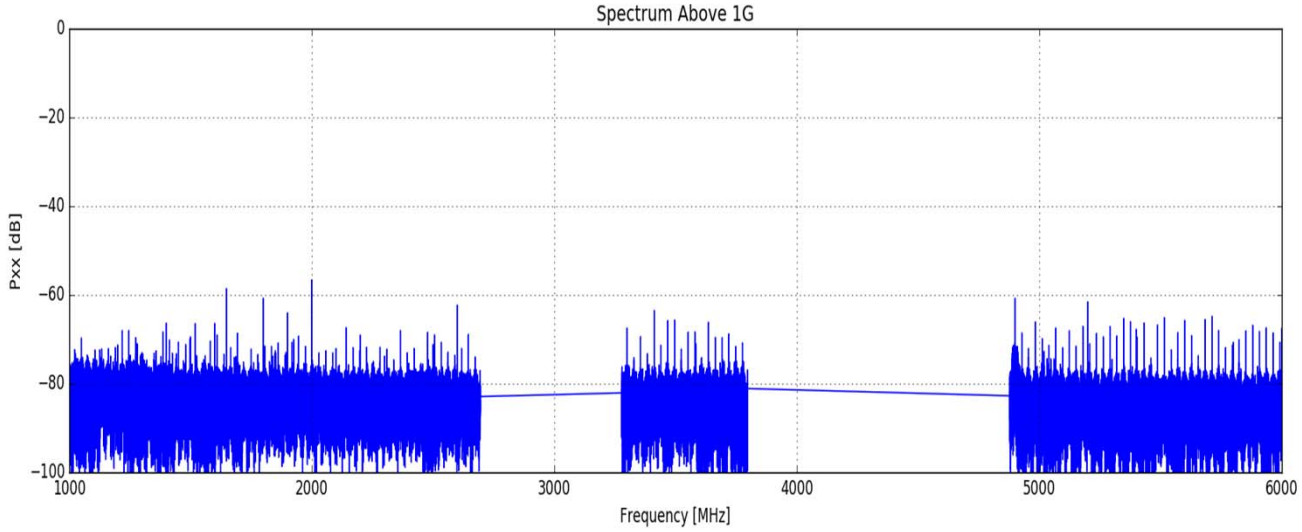




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

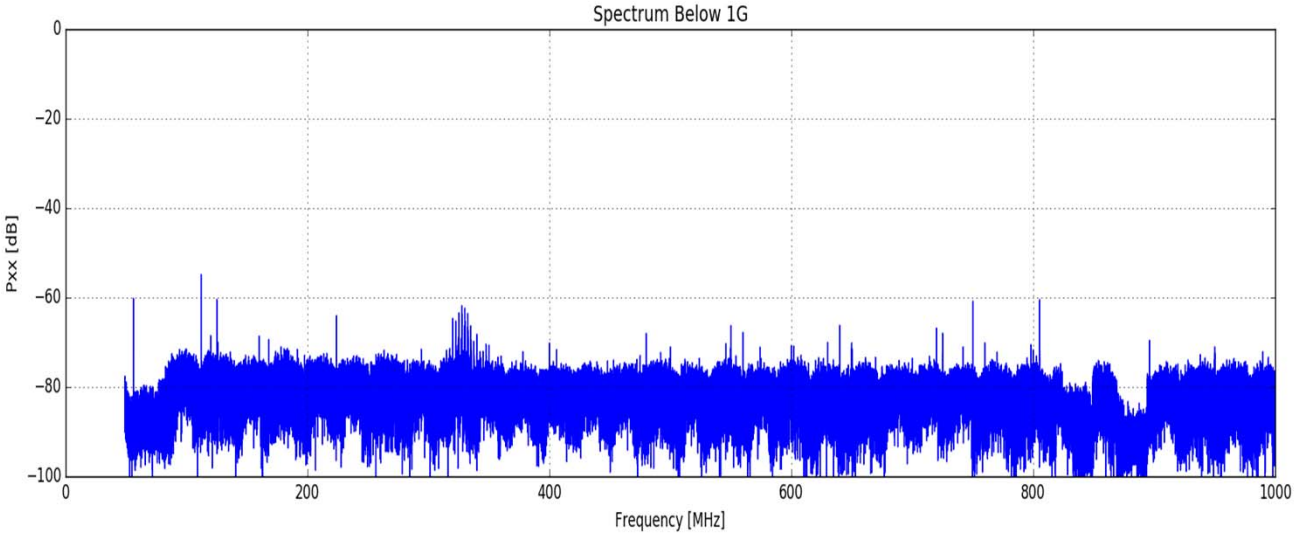
50 MHz to 6 GHz receiver plots for 824.2 MHz test frequency

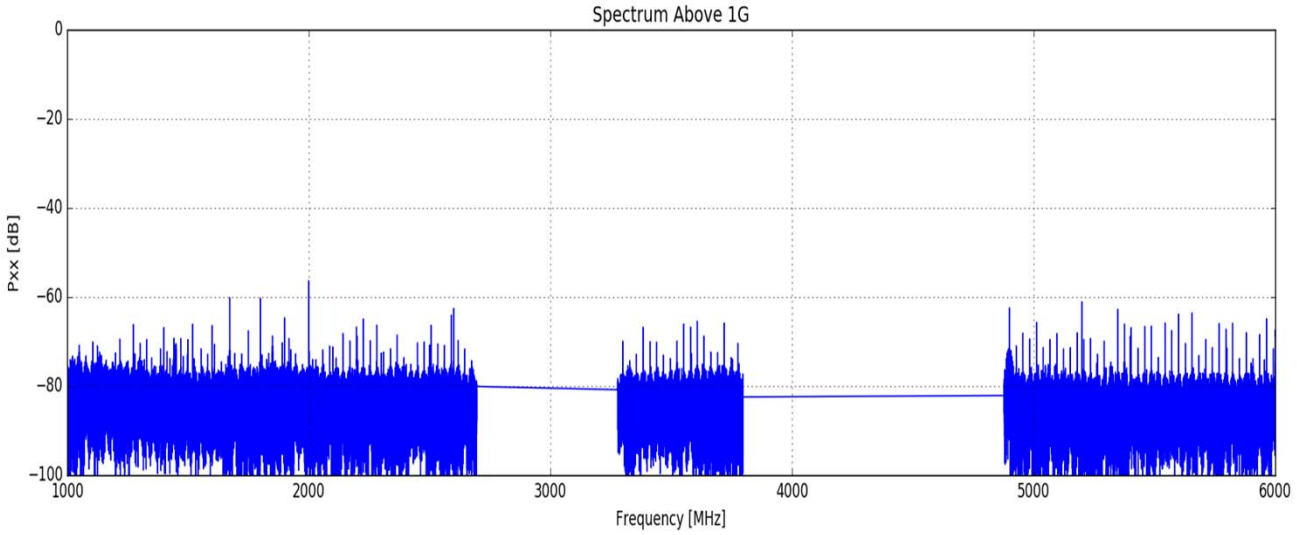




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

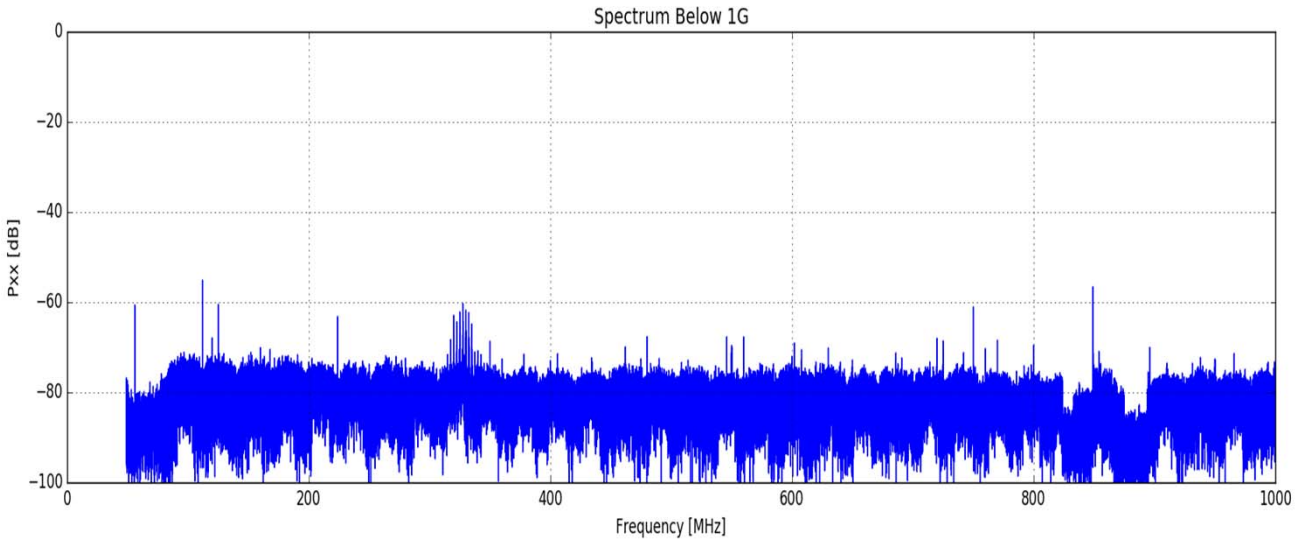
50 MHz to 6 GHz receiver plots for 836.4 MHz test frequency

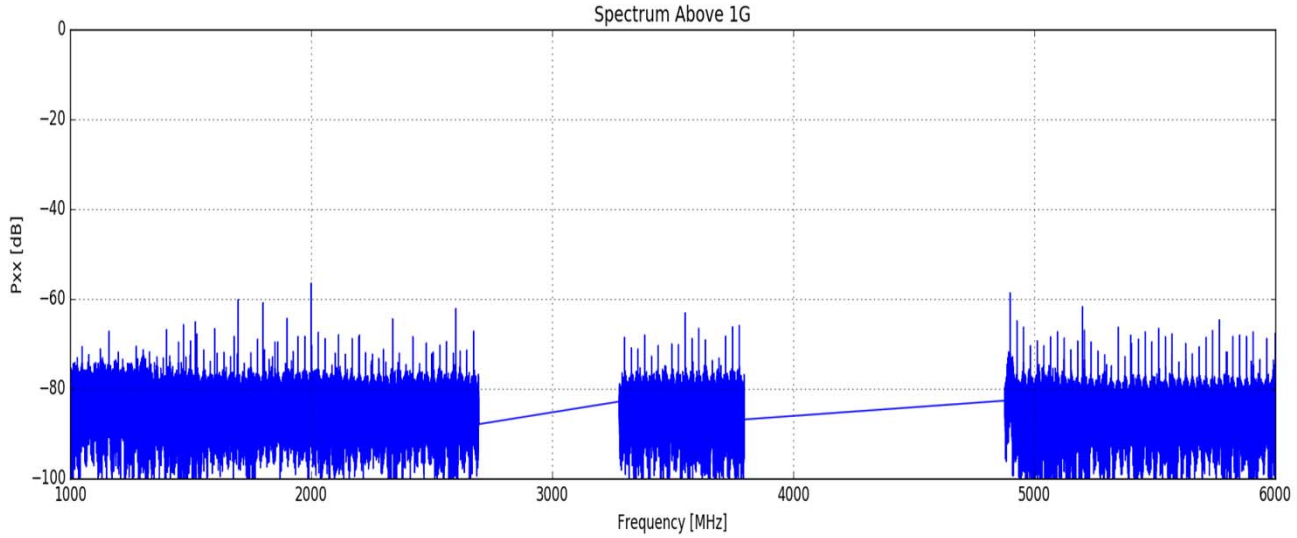




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

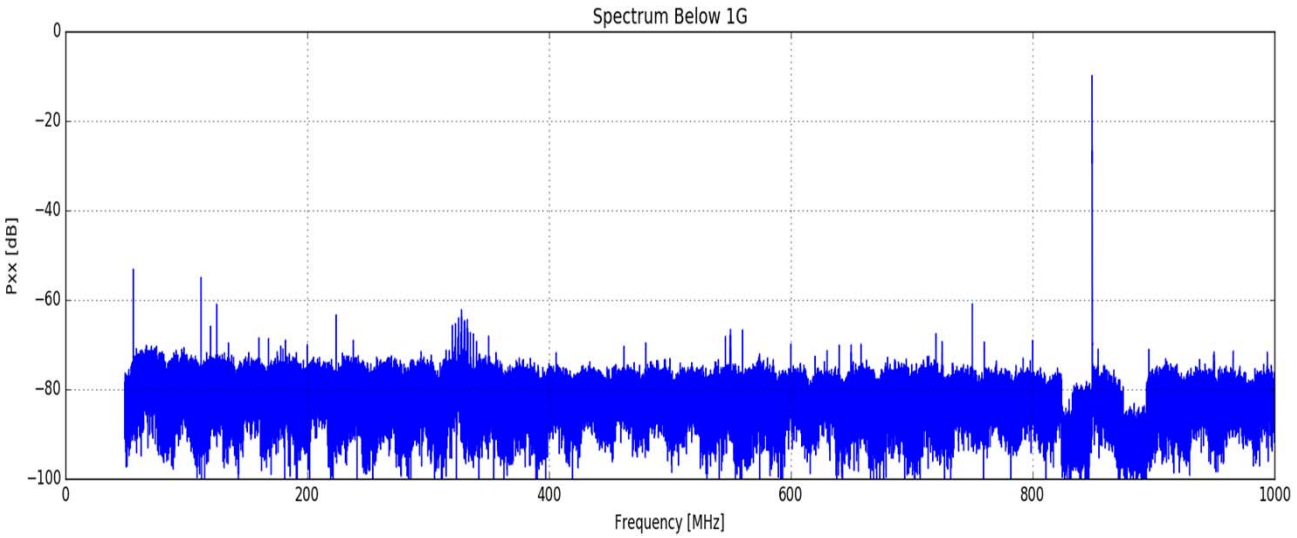
50 MHz to 6 GHz receiver plots for 848.8 MHz test frequency

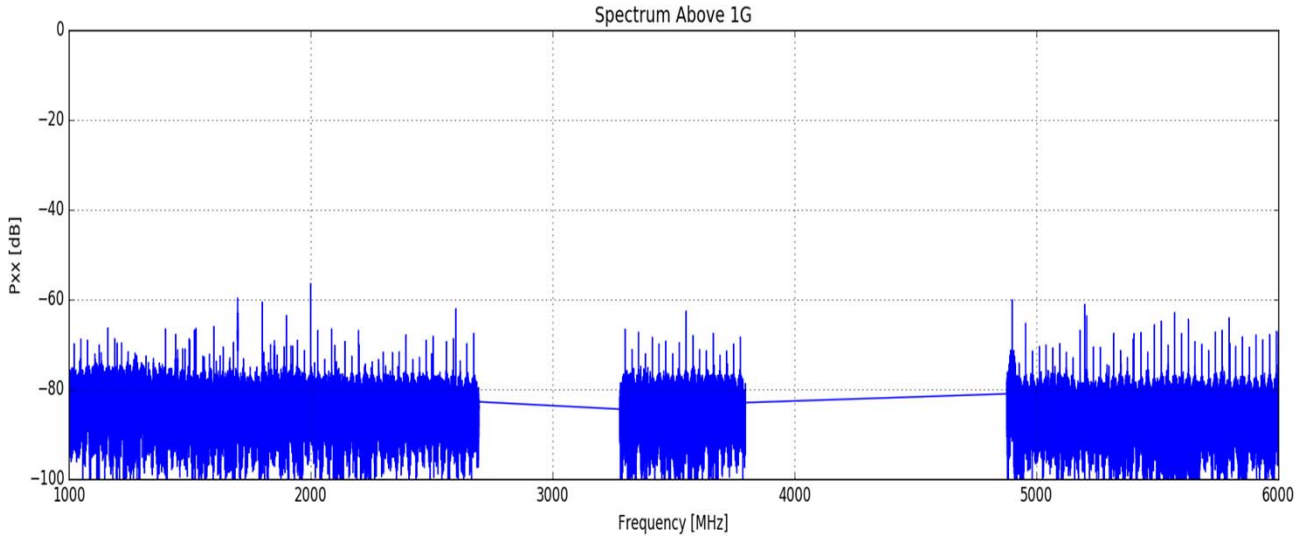




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

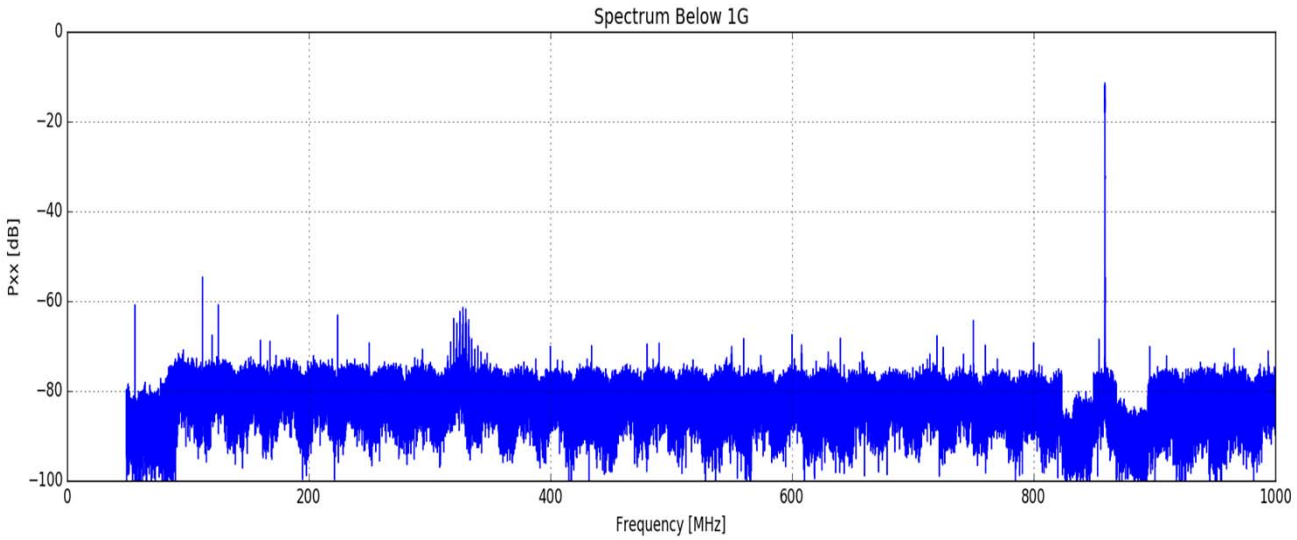
50 MHz to 6 GHz receiver plots for 849.2 MHz test frequency

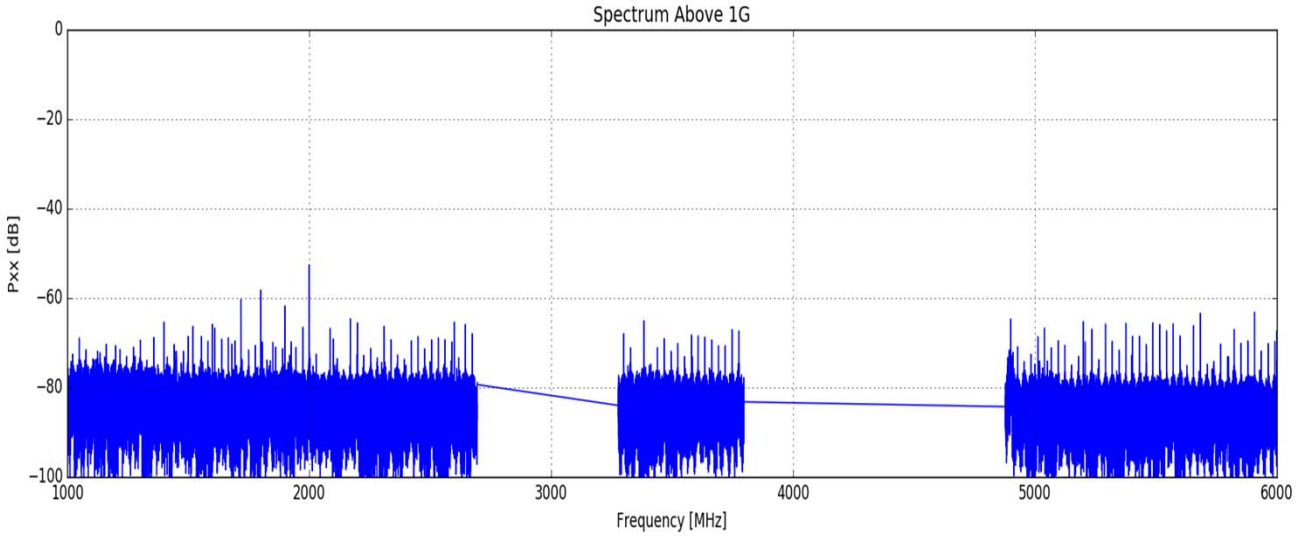




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

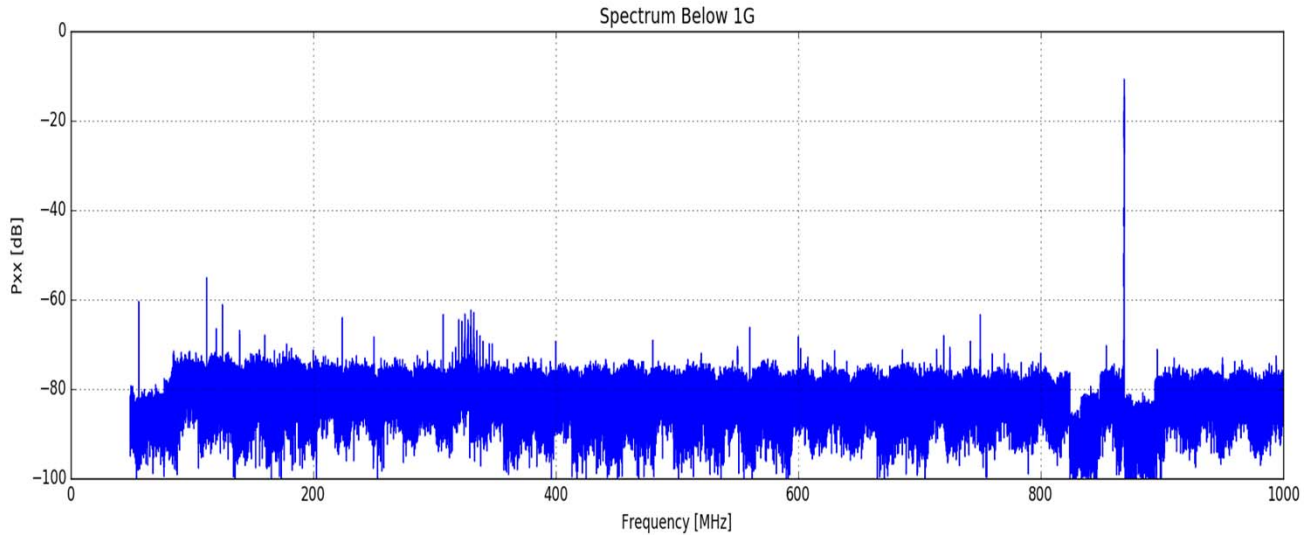
50 MHz to 6 GHz receiver plots for 859 MHz test frequency

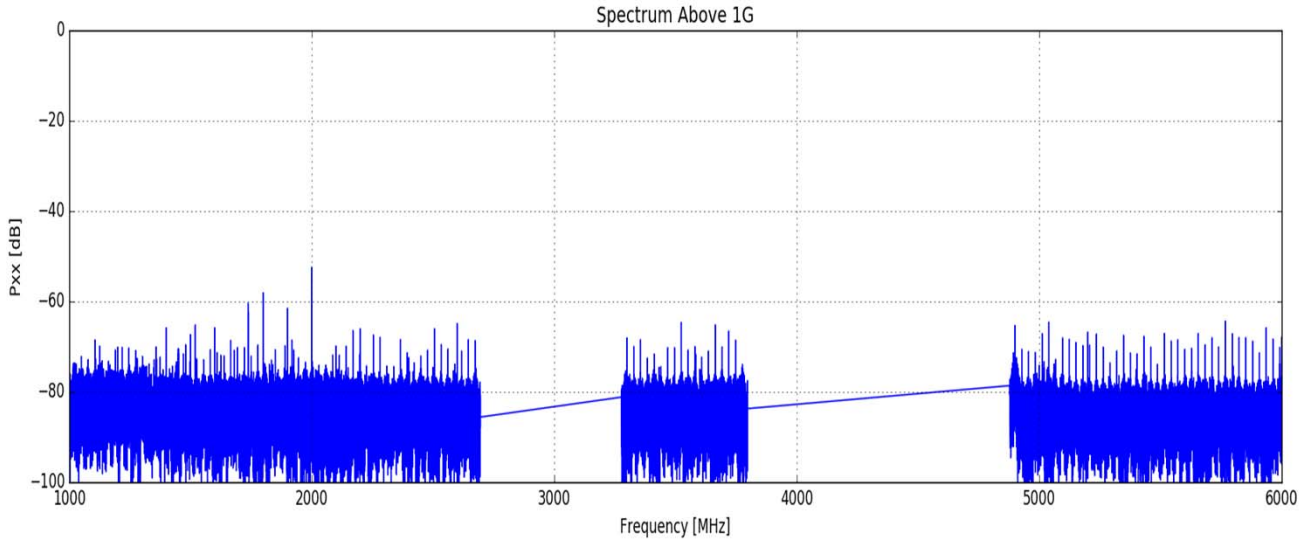




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

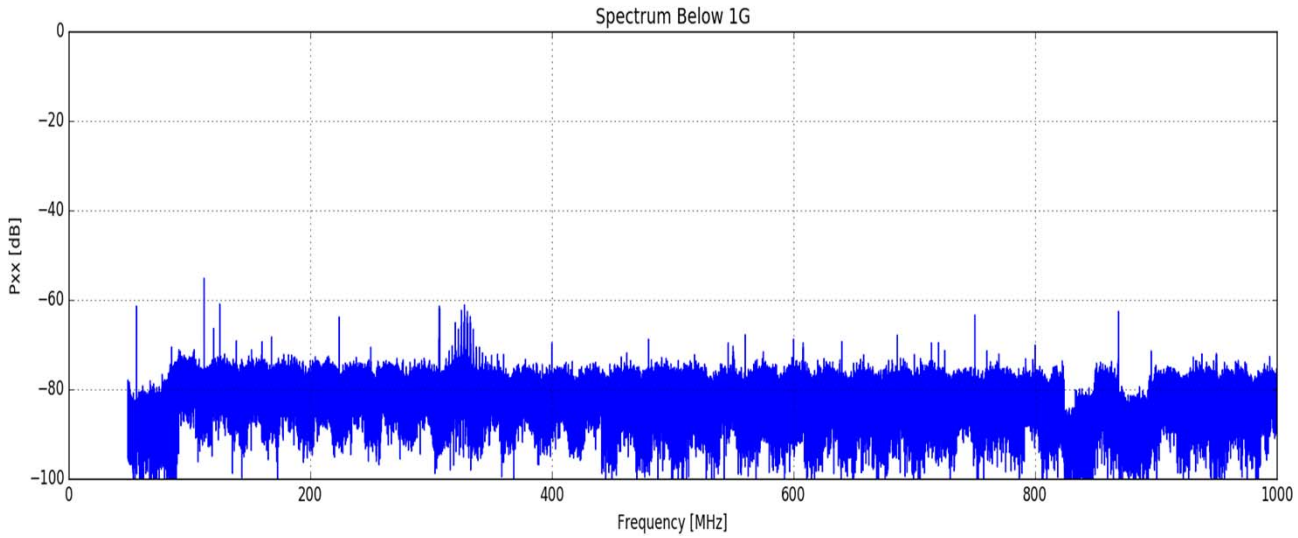
50 MHz to 6 GHz receiver plots for 868.8 MHz test frequency

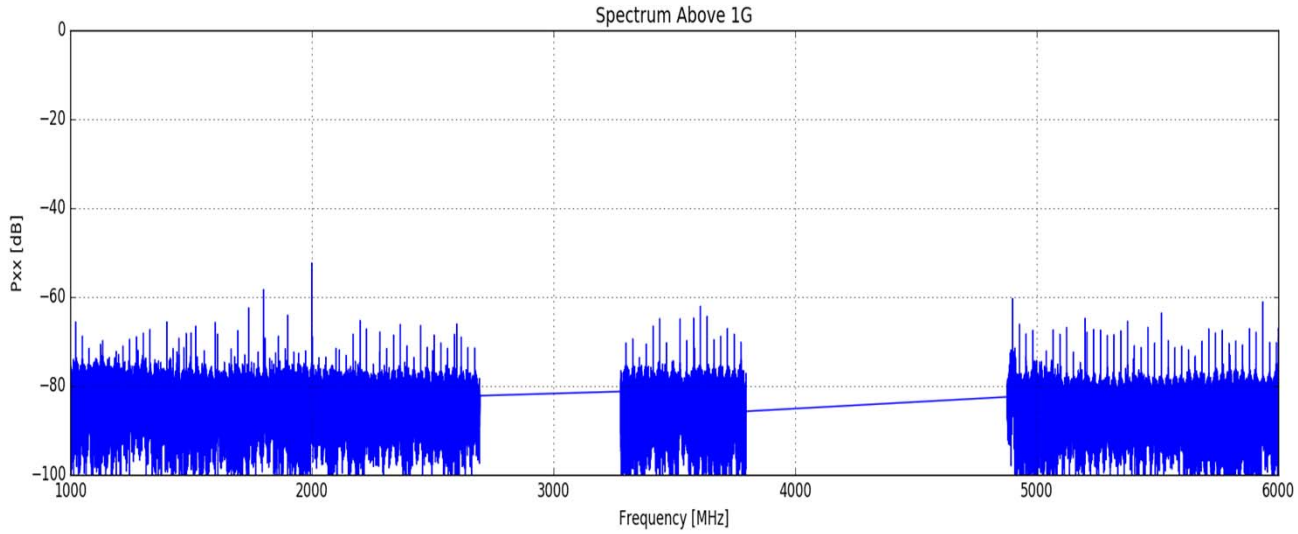




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

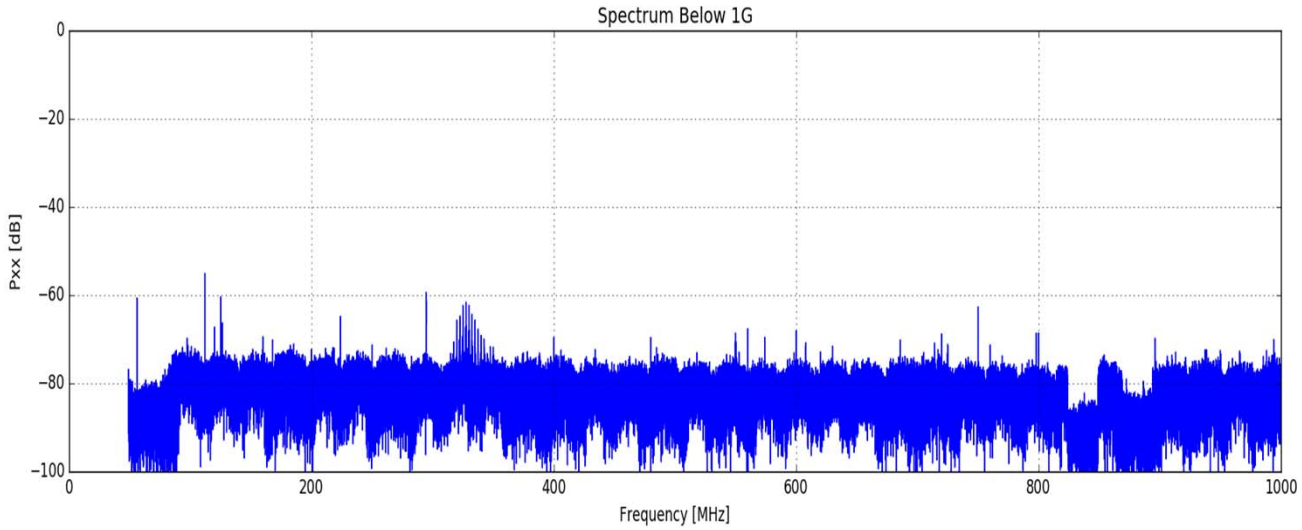
50 MHz to 6 GHz receiver plots for 869.2 MHz test frequency

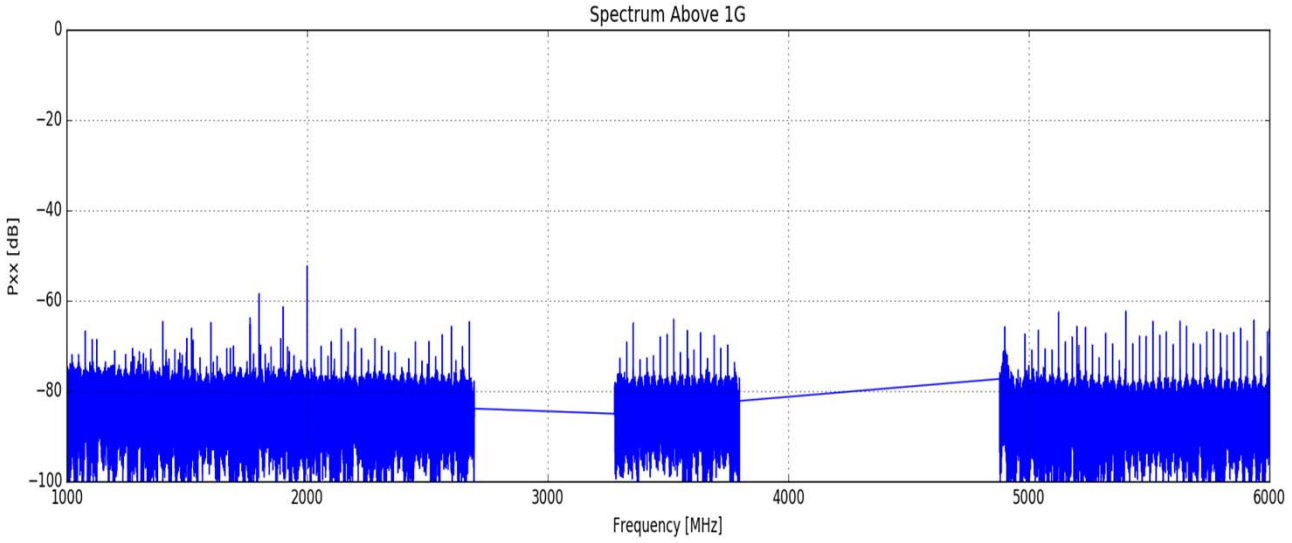




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

50 MHz to 6 GHz receiver plots for 881.4 MHz test frequency





Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
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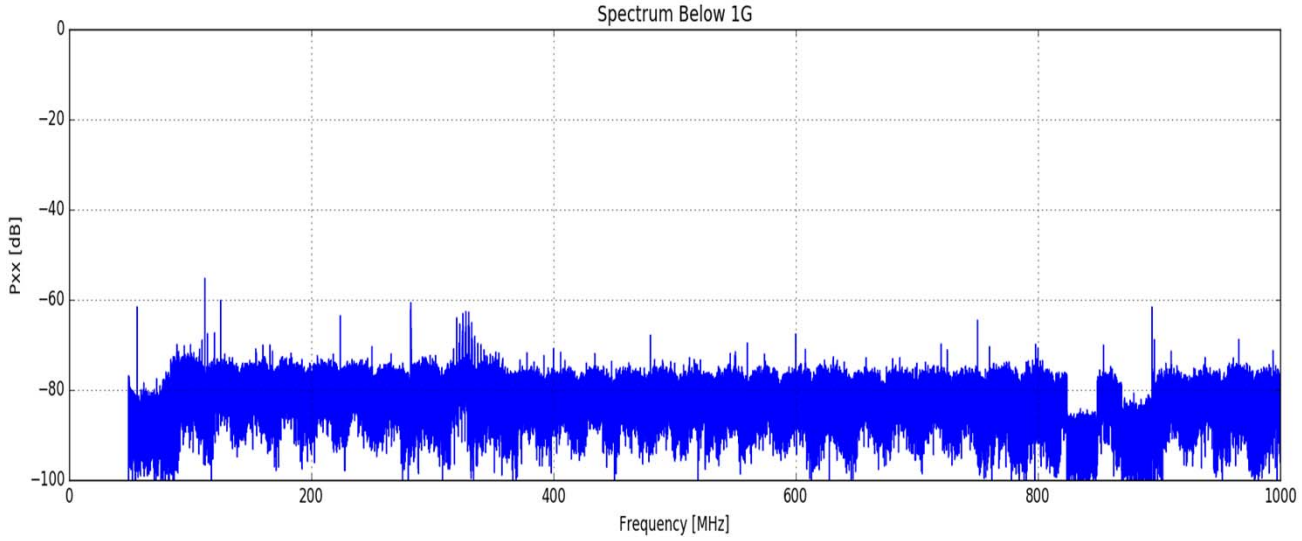
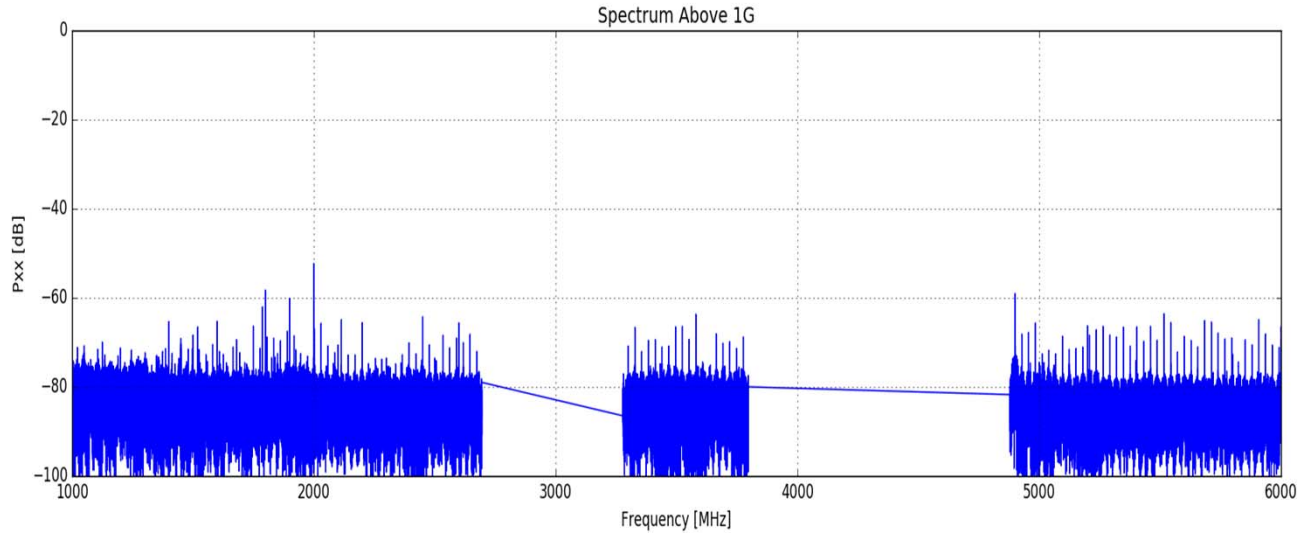
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

50 MHz to 6 GHz receiver plots for 893.8 MHz test frequency





Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
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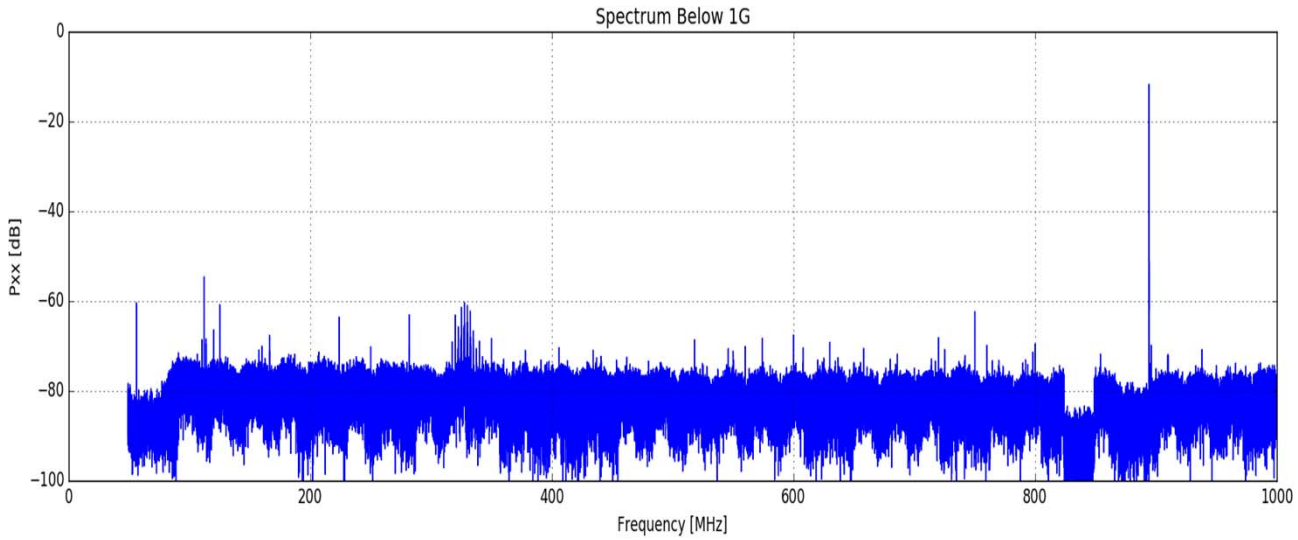
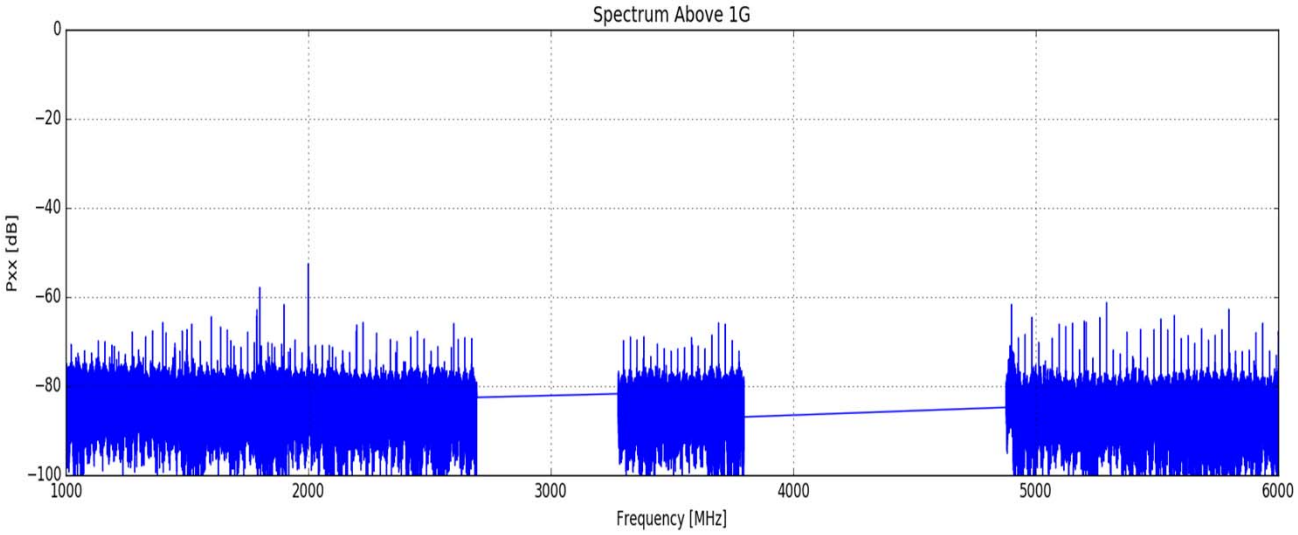
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

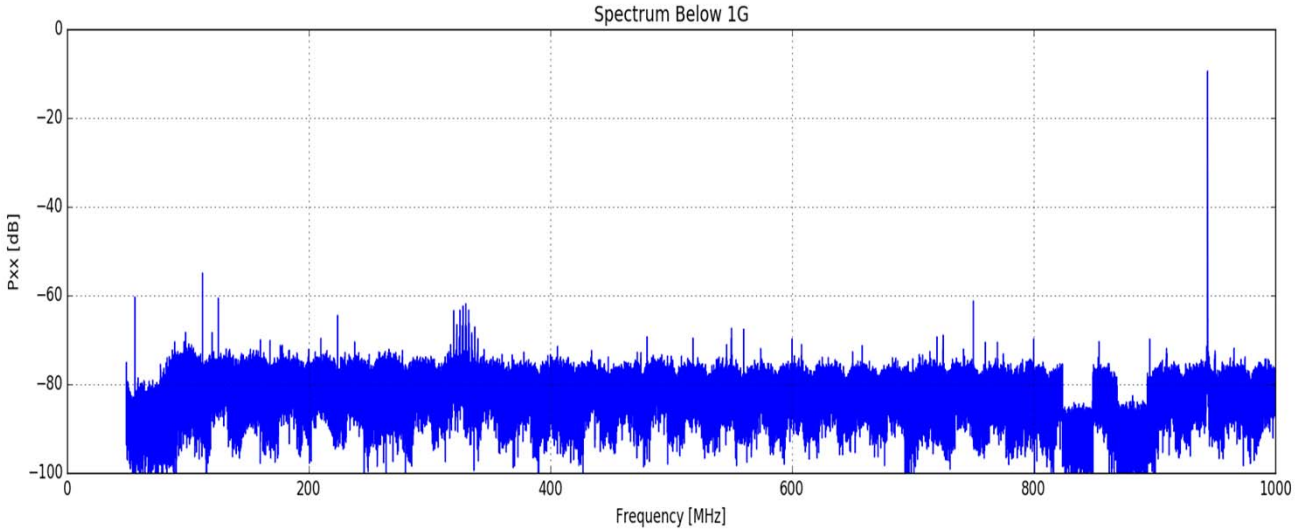
50 MHz to 6 GHz receiver plots for 894.2 MHz test frequency

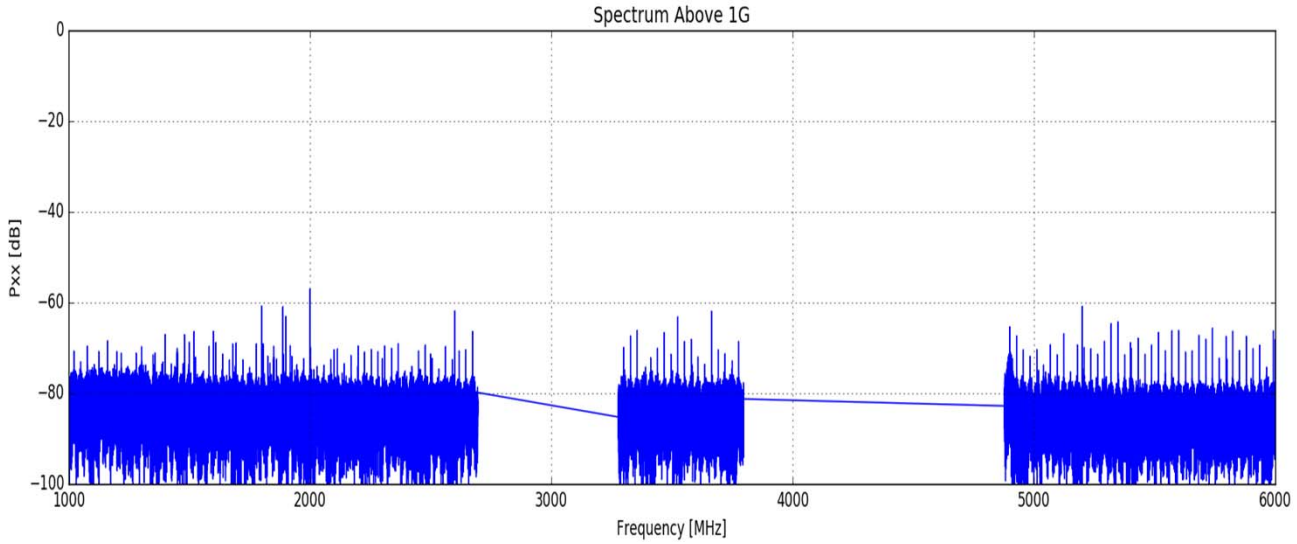




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

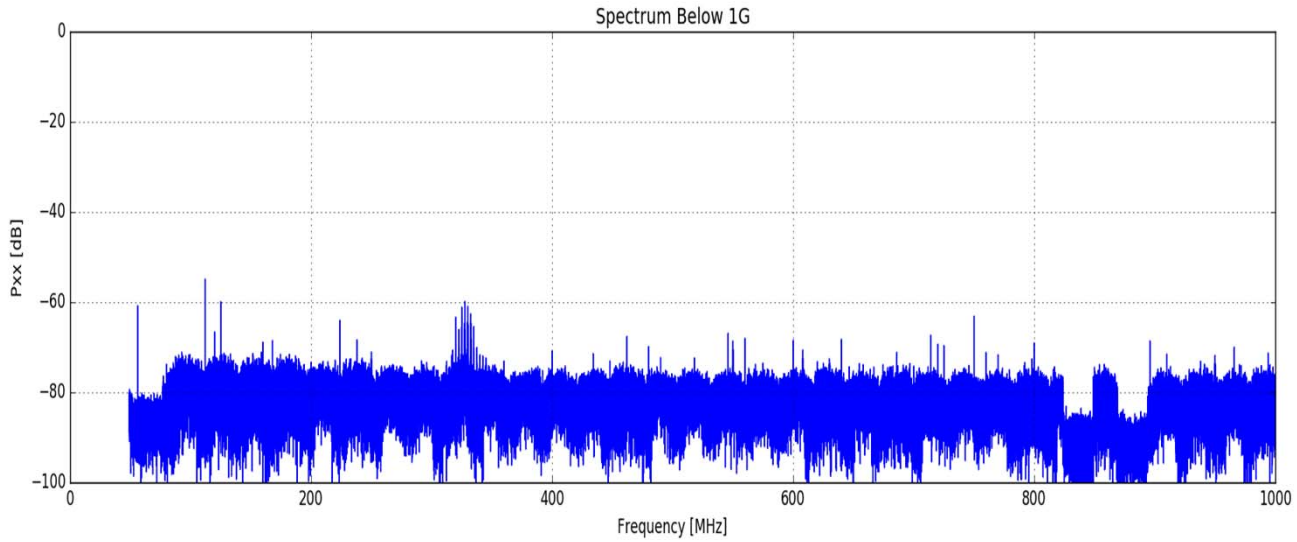
50 MHz to 6 GHz receiver plots for 944 MHz test frequency

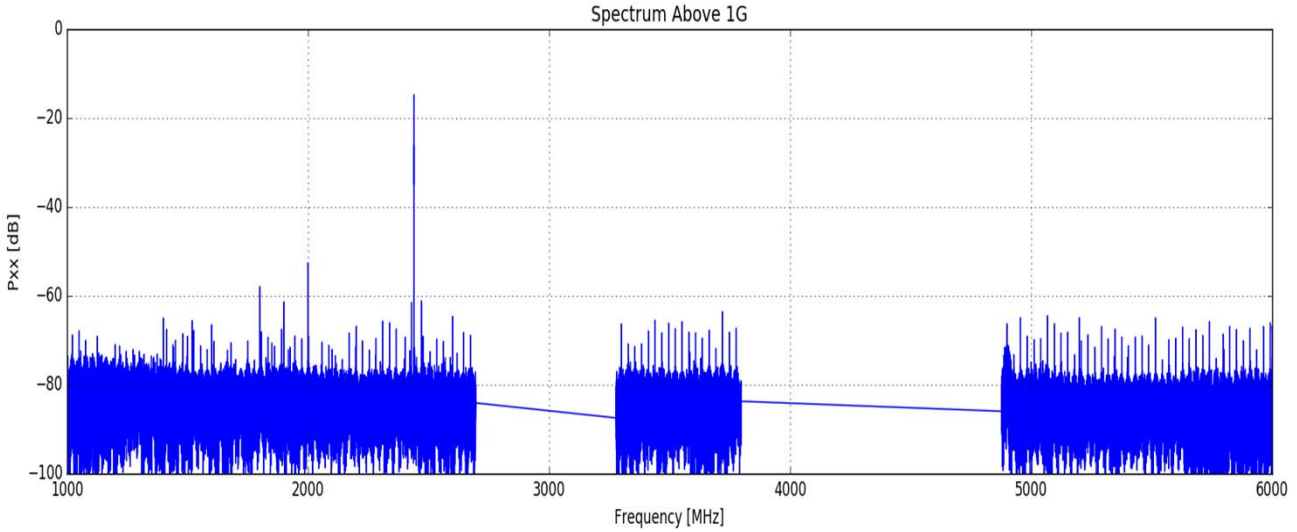




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

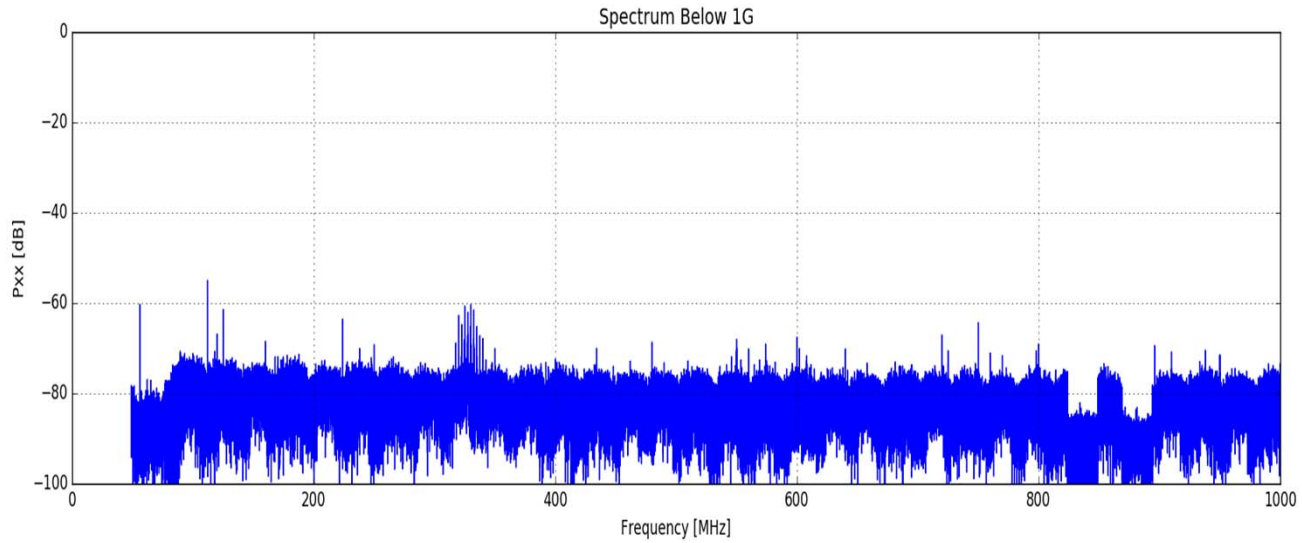
50 MHz to 6 GHz receiver plots for 2440 MHz test frequency

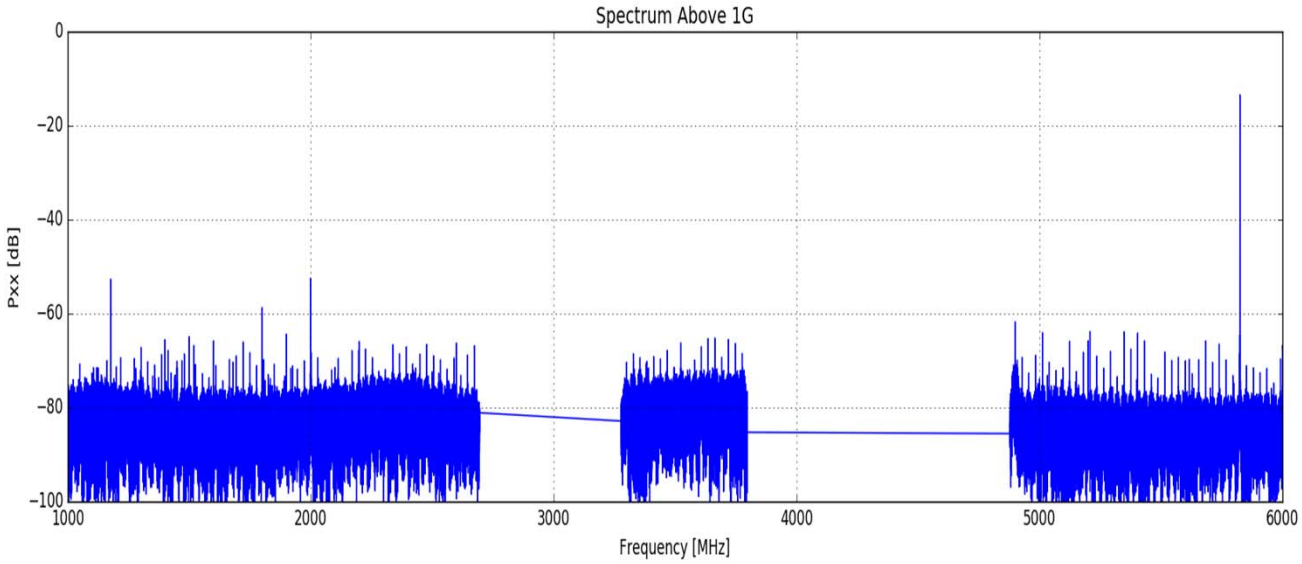




Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

50 MHz to 6 GHz receiver plots for 5825 MHz test frequency





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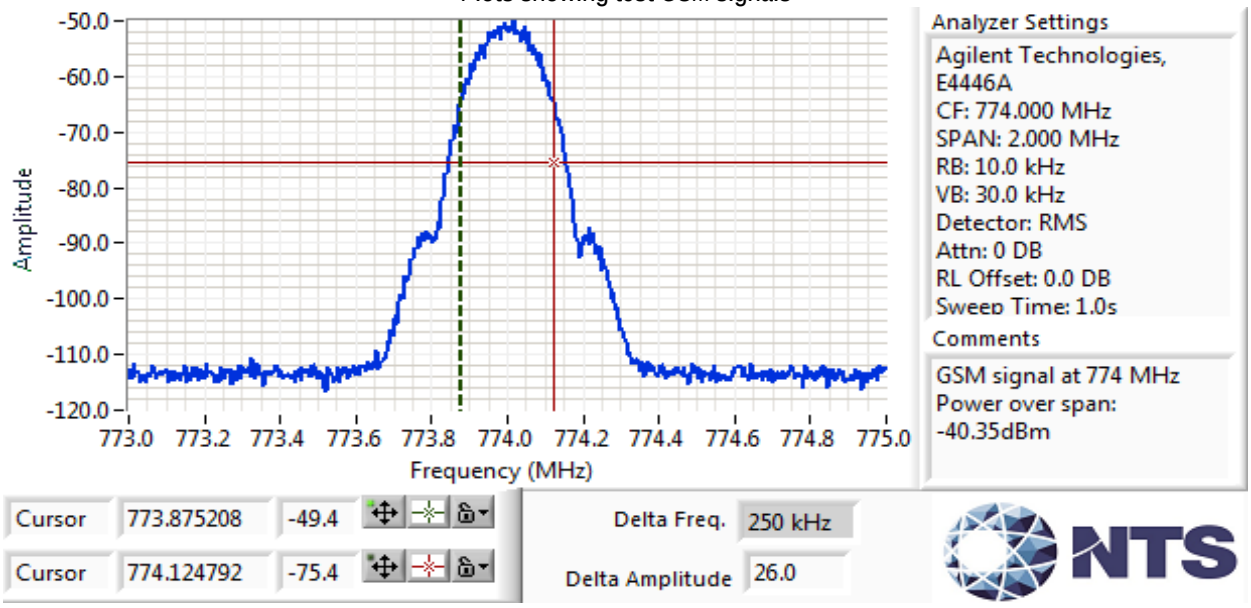
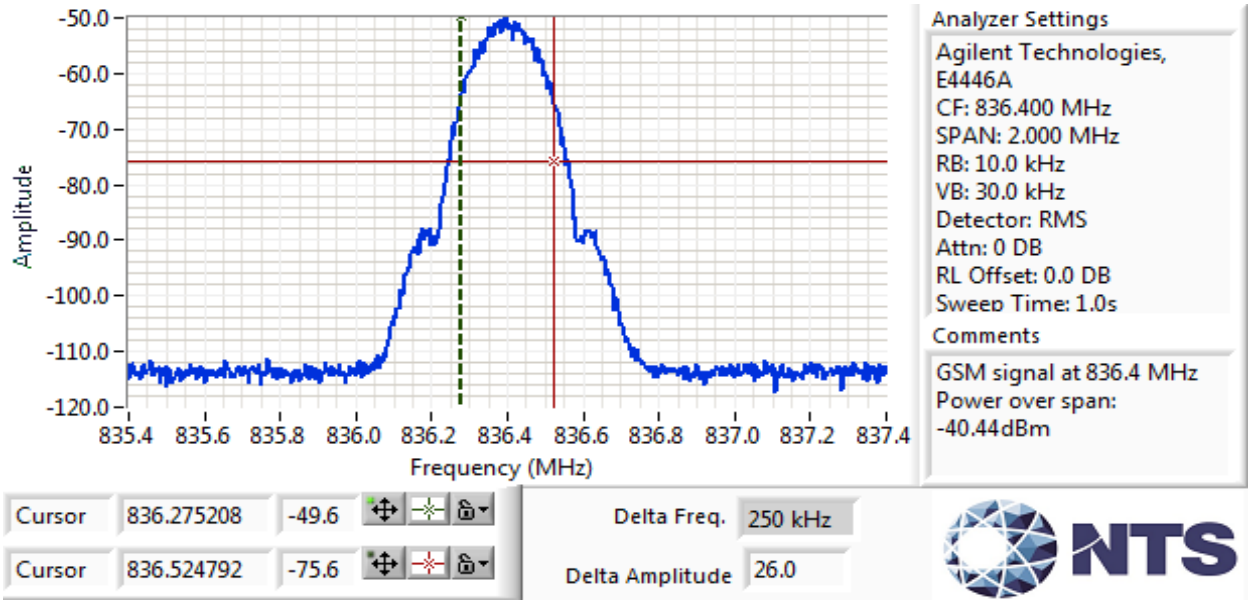
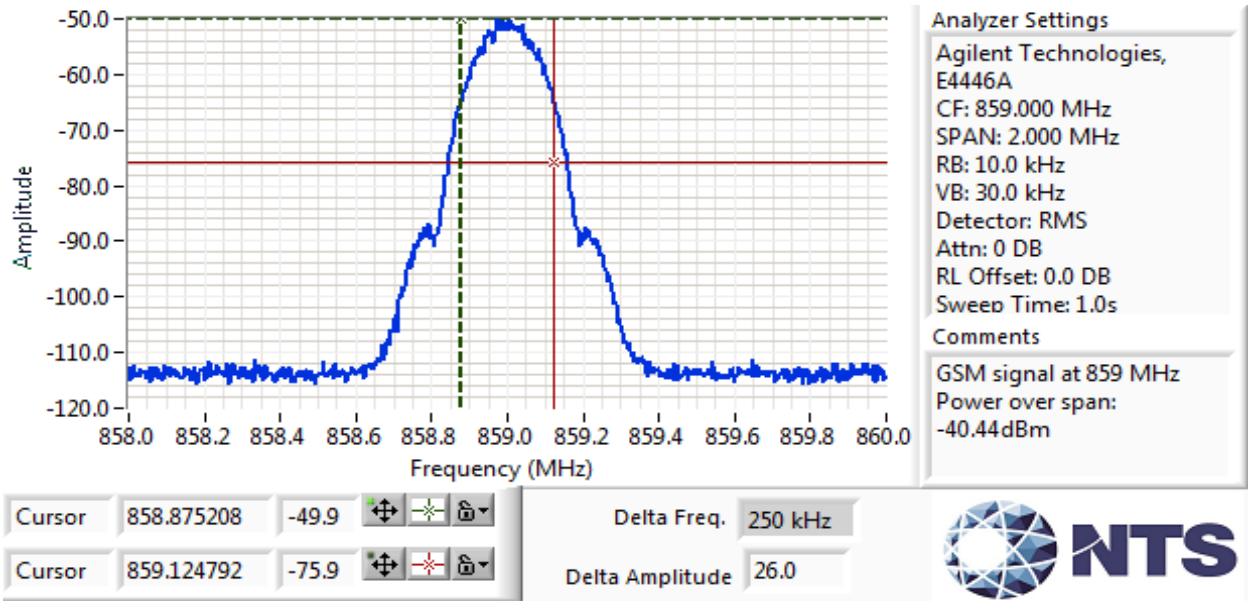
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

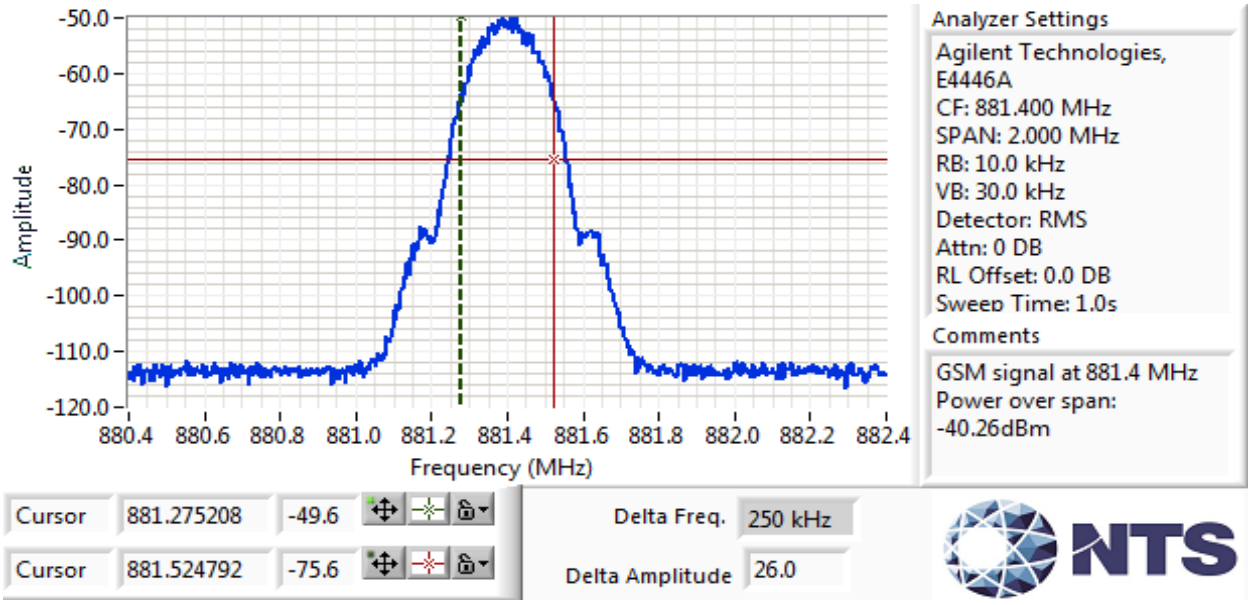
Plots showing test GSM signals



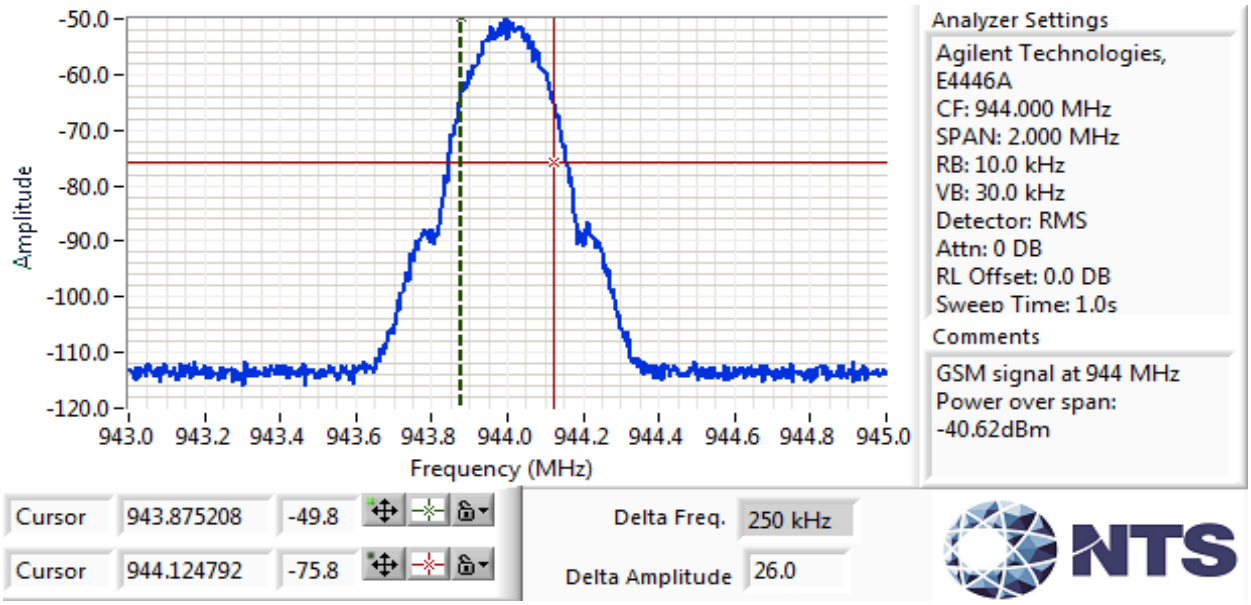


Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A





Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A



Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A

FCC 15.109 (Scanning receiver) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

General Test Configuration

The EUT was located on the turntable for radiated emissions testing. The remote support equipment was located outside the semi-anechoic chamber. The Ethernet cable running to remote support equipment were routed through metal conduit and passed through a ferrite clamp upon exiting the chamber.

Radiated emissions tests above 1 GHz to FCC Part 15 were performed with floor absorbers in place in accordance with the test methods of ANSI C63.4 and CISPR 16-1-4.

The test distance and extrapolation factor (if applicable) are detailed under each run description.

Note, preliminary testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. Maximized testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, and manipulation of the EUT's interface cables.

Ambient Conditions:

Temperature: 21-23 °C

Rel. Humidity: 31-34 %

Summary of Results - Scanning receiver

Run #	Mode	Tuned frequency	Target Power	Power Setting	Test Performed	Limit	Result / Margin
1	Receiver	70 MHz	-	-	Radiated Emissions, 30 MHz - 30 GHz	FCC Part 15.109 Class B	46.2 dBµV/m @ 11994.3 MHz (-7.8 dB)
		460 MHz	-	-	Radiated Emissions, 30 MHz - 30 GHz	FCC Part 15.109 Class B	46.7 dBµV/m @ 11982.1 MHz (-7.3 dB)
		960 MHz	-	-	Radiated Emissions, 30 MHz - 30 GHz	FCC Part 15.109 Class B	46.6 dBµV/m @ 11899.7 MHz (-7.4 dB)
		2480 MHz	-	-	Radiated Emissions, 30 MHz - 30 GHz	FCC Part 15.109 Class B	46.4 dBµV/m @ 11949.2 MHz (-7.6 dB)
		5975 MHz	-	-	Radiated Emissions, 30 MHz - 30 GHz	FCC Part 15.109 Class B	46.7 dBµV/m @ 11996.8 MHz (-7.3 dB)

Note: Highest noise floor readings were presented. All other emissions are not receiver related.

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A

Sample Notes

Sample S/N: 1840020025 MAC: 2c:27:9e:31:99:31 Model: Sensor-2 Rev 5.1

Procedure Comments:

Measurements performed in accordance with ANSI C63.4

Test Parameters for Pre-scans and Maximized Readings			
Frequency Range (MHz)	Test Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	5	10	-6.0
1000 - 12000	3	3	0.0
12000 - 18000	1	3	-9.5
18000 - 30000	3	3	0.0

Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A

Run #1: Radiated Spurious Emissions, 30 MHz - 30 GHz. Operating Mode: Rx

Date of Test: 11/1/2019, 11/4/2019
Test Engineer: Deniz Demirci
Test Location: FT Ch #7

Config. Used: 1
Config Change: None
EUT Voltage: 120 Vac 60 Hz

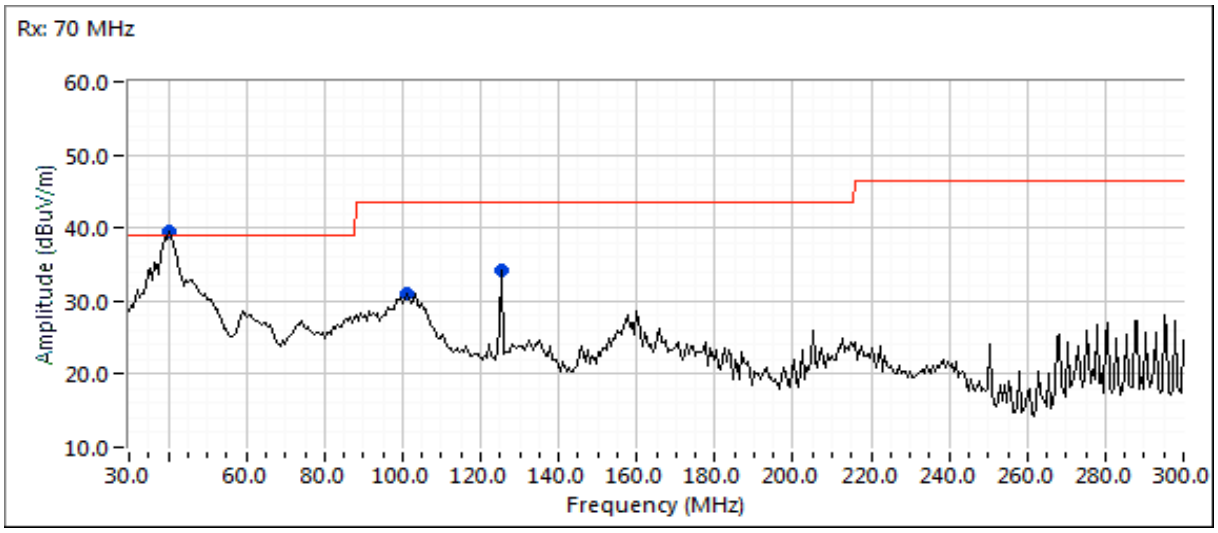
Run #1a; Tuned frequency: 70 MHz (100 kHz RBW)

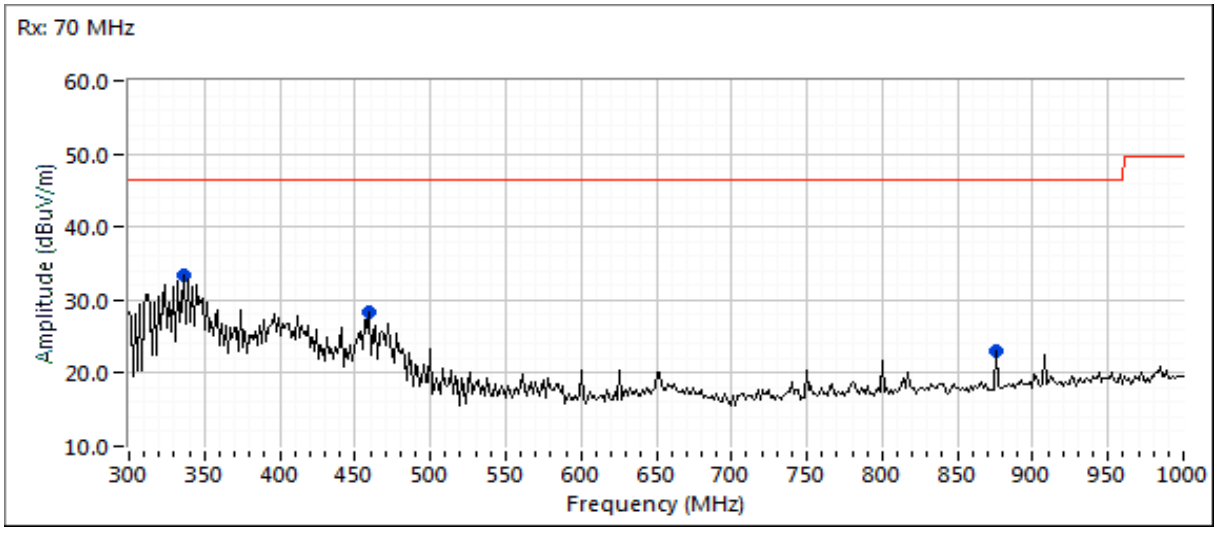
Maximized final readings

Frequency	Level	Pol	15.109 Class B		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
40.325	37.9	V	-	-	QP	290	1.0	QP (1.00s) - Note 1
100.926	29.6	H	-	-	QP	33	3.0	QP (1.00s) - Note 1
125.012	34.0	H	-	-	QP	42	3.0	QP (1.00s) - Note 1
337.531	29.1	H	-	-	QP	62	1.0	QP (1.00s) - Note 1
337.564	28.8	H	-	-	QP	62	1.0	QP (1.00s) - Note 1
460.001	25.8	H	-	-	QP	134	1.0	QP (1.00s) - Note 1
875.029	23.3	H	-	-	QP	124	1.5	QP (1.00s) - Note 1
1249.980	41.3	V	-	-	AVG	70	1.6	RB 1 MHz;VB 10 Hz;Peak - Note 1
1250.350	46.2	V	-	-	PK	70	1.6	RB 1 MHz;VB 3 MHz;Peak - Note 1
11994.270	46.2	H	54.0	-7.8	Peak	120	1.3	Noise floor reading
29260.000	43.1	H	54.0	-10.9	Peak	120	1.3	Noise floor reading

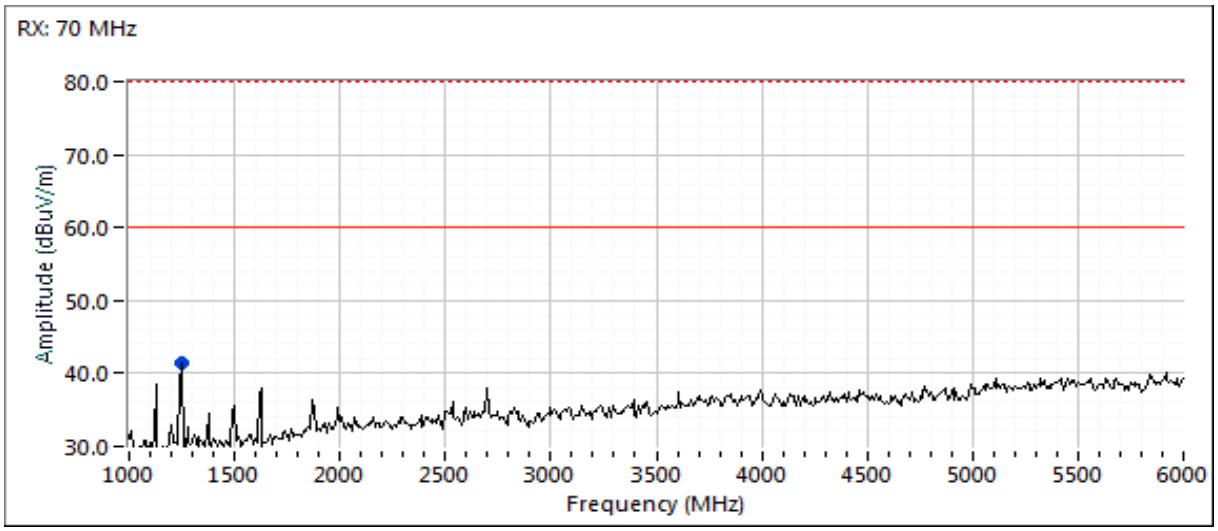
Note 1:	Emissions are not receiver related. Class A digital device limits apply for the host unit.

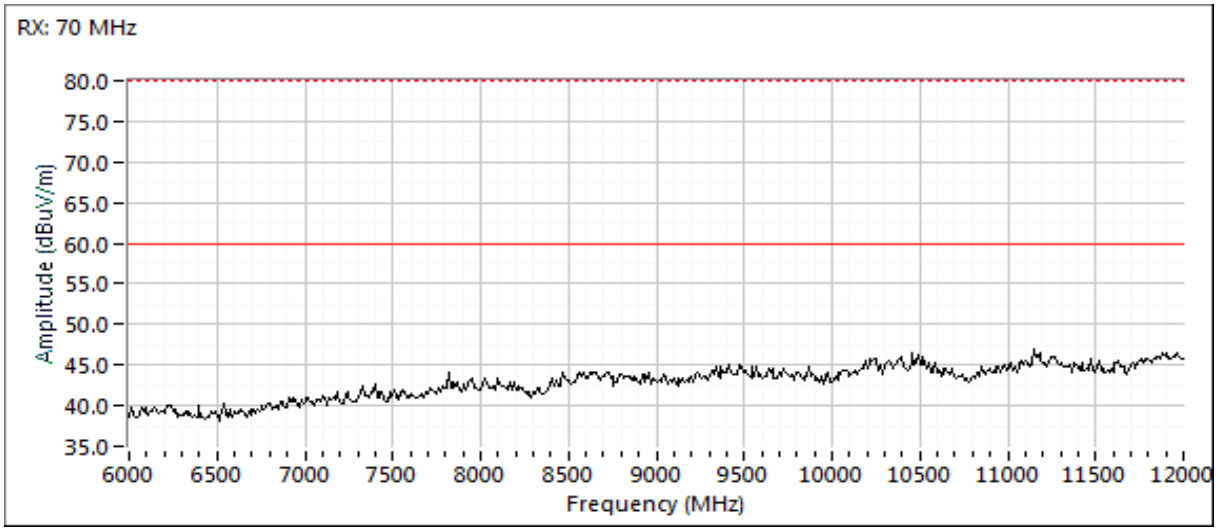
Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A



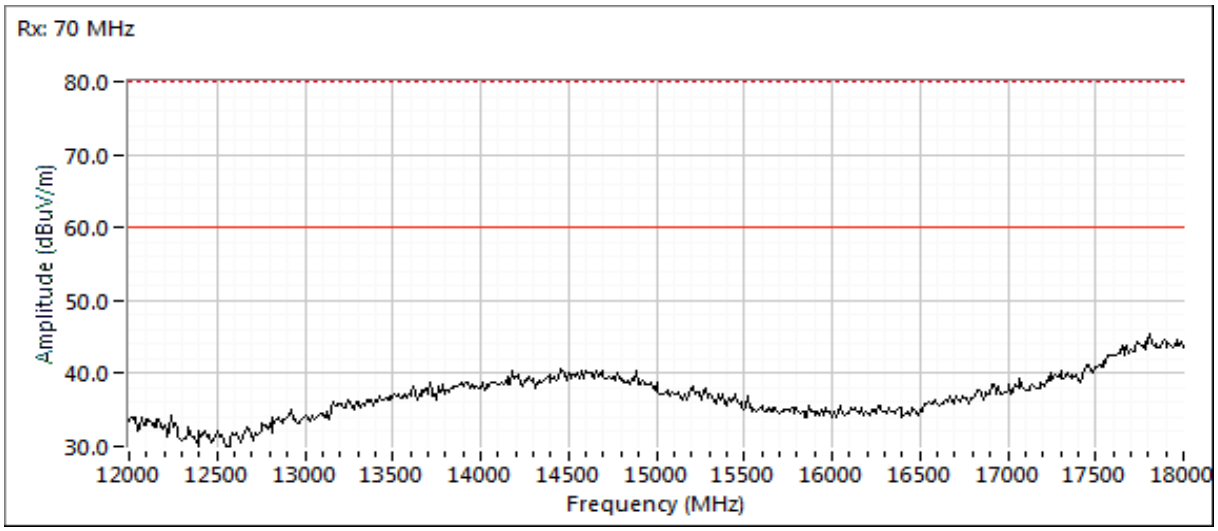


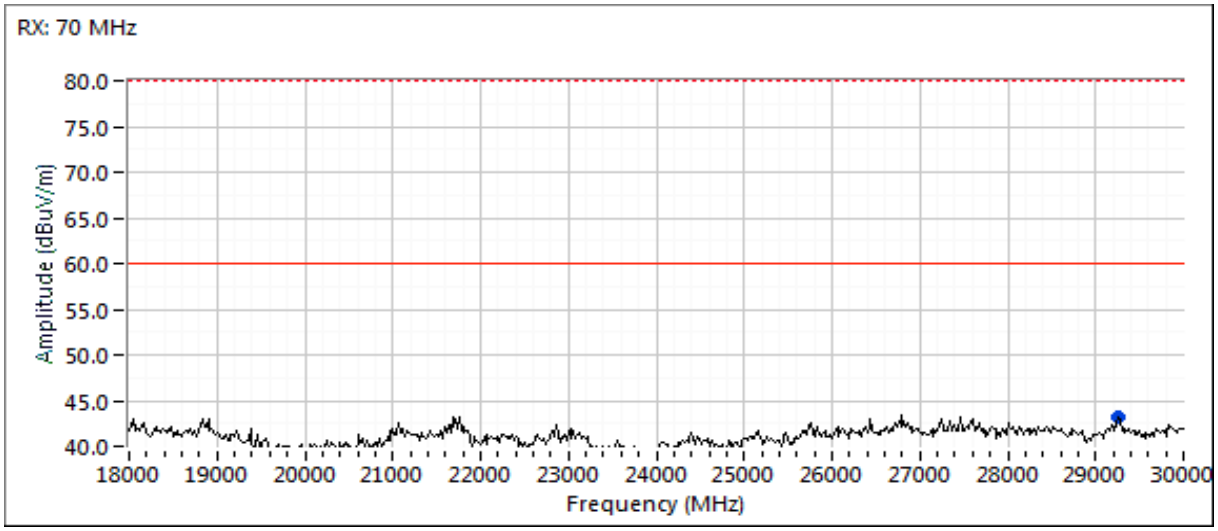
Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A





Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A





Note 2:	The preliminary scans show class A digital device limits. The limits are corrected in the tabular data.

Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A

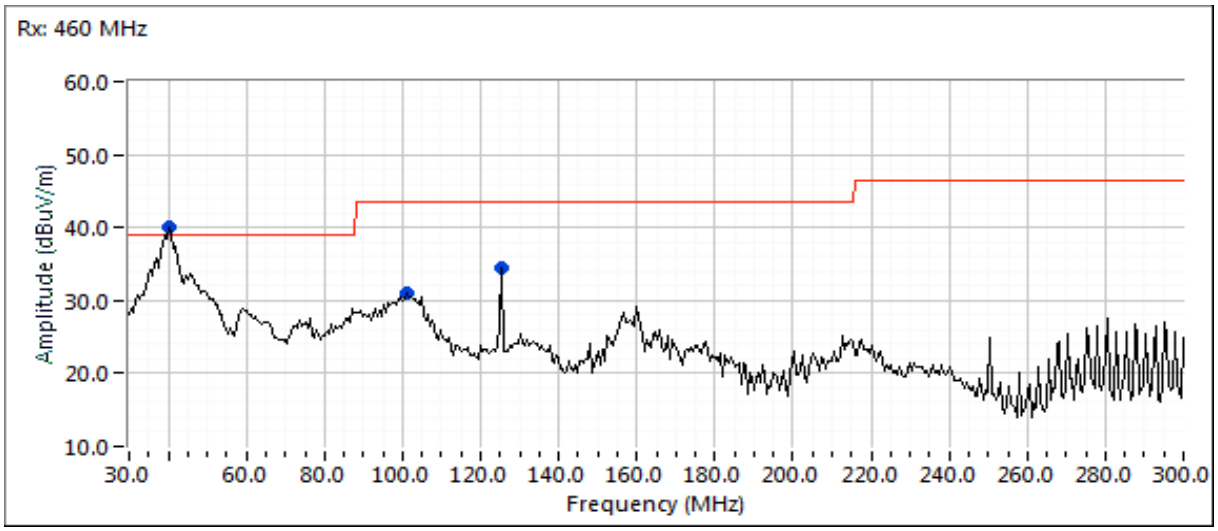
Run #1b; Tuned frequency: 460 MHz (100 kHz RBW)

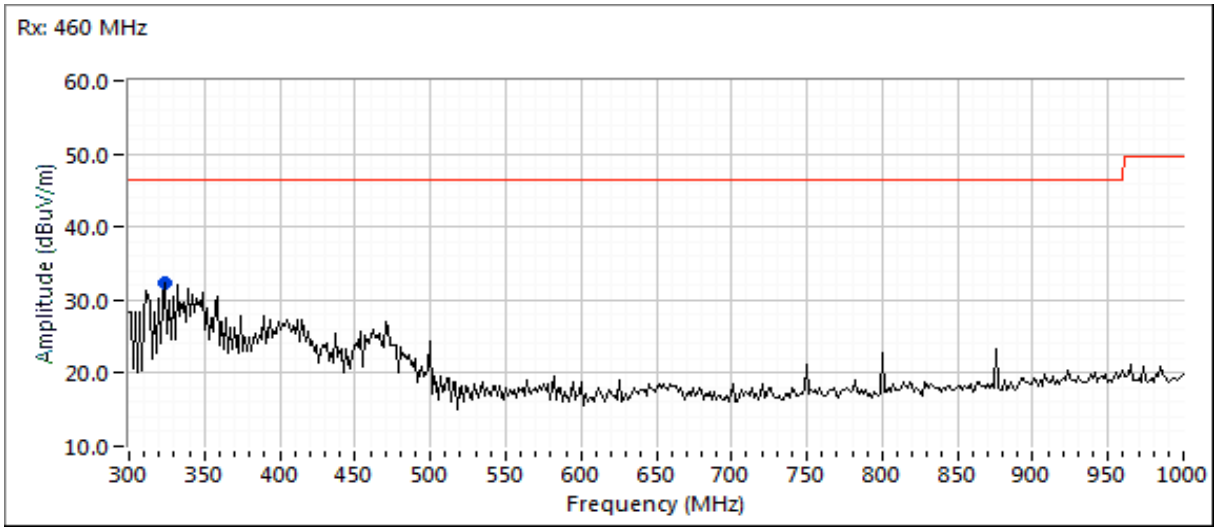
Maximized final readings

Frequency	Level	Pol	15.109 Class B		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
40.328	38.1	V	-	-	QP	3	1.0	QP (1.00s) - Note 1
100.916	29.2	H	-	-	QP	40	3.2	QP (1.00s) - Note 1
125.012	33.9	H	-	-	QP	181	3.0	QP (1.00s) - Note 1
325.029	31.2	H	-	-	QP	60	1.5	QP (1.00s) - Note 1
1249.910	41.6	V	-	-	AVG	70	1.6	RB 1 MHz;VB 10 Hz;Peak - Note 1
1250.100	45.8	V	-	-	PK	70	1.6	RB 1 MHz;VB 3 MHz;Peak - Note 1
11982.140	46.7	H	54.0	-7.3	Peak	120	1.3	Noise floor reading
28160.000	43.8	H	54.0	-10.2	Peak	78	2.0	Noise floor reading

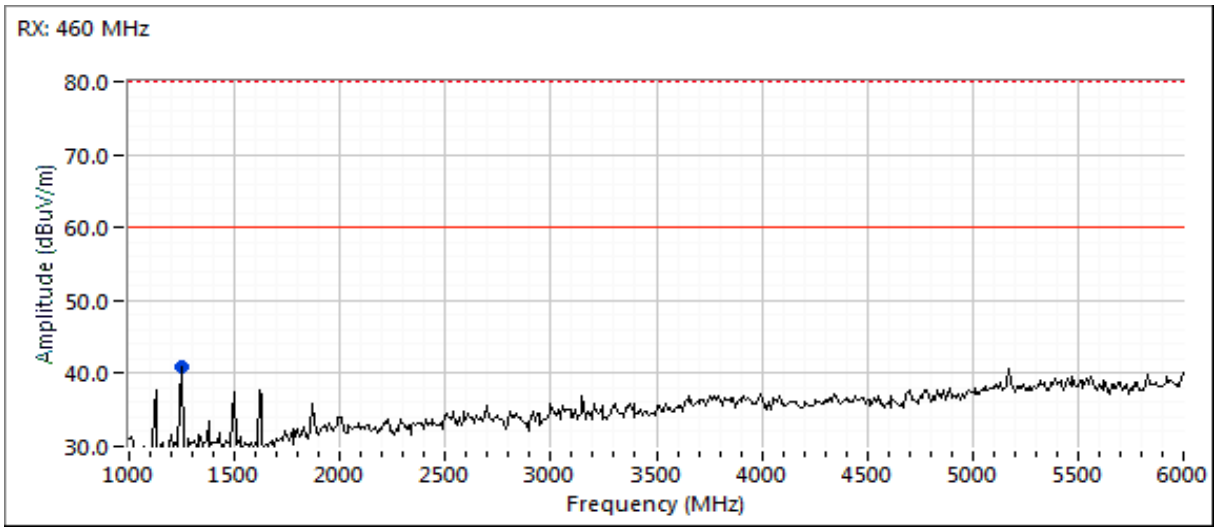
Note 1:	Emissions are not receiver related. Class A digital device limits apply for the host unit.

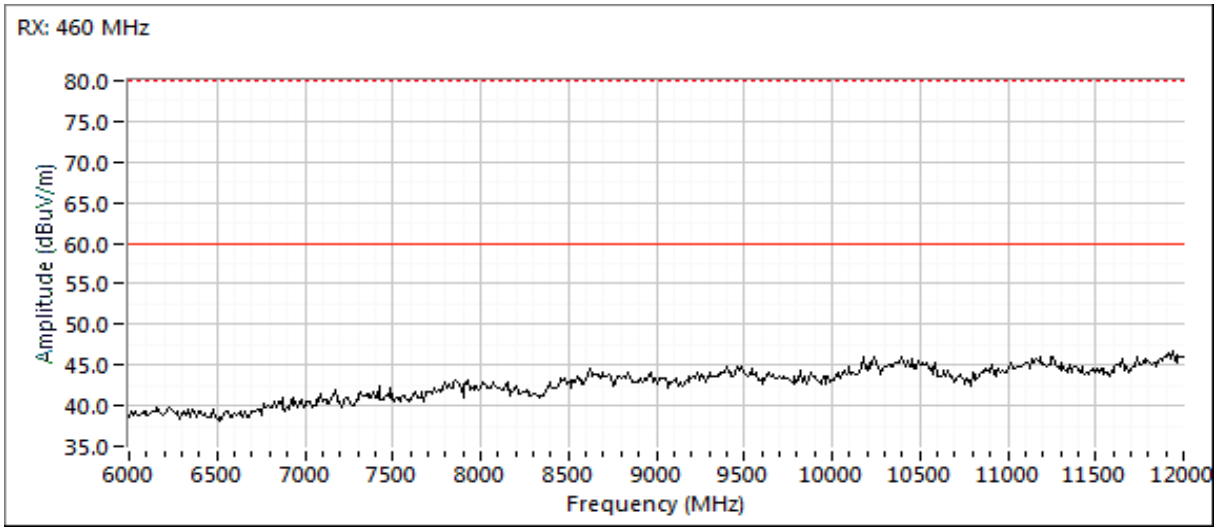
Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A



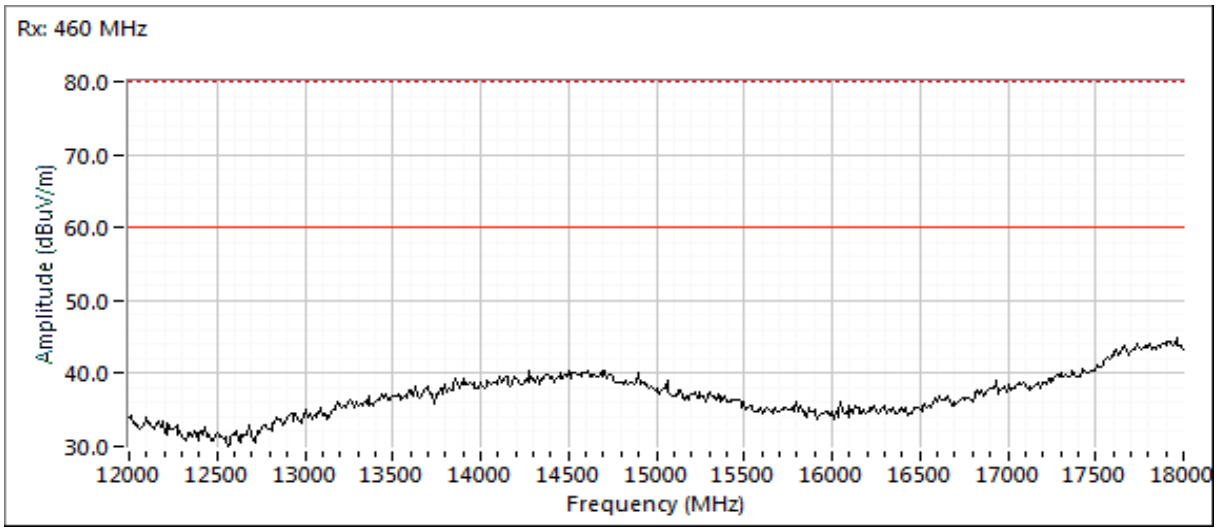


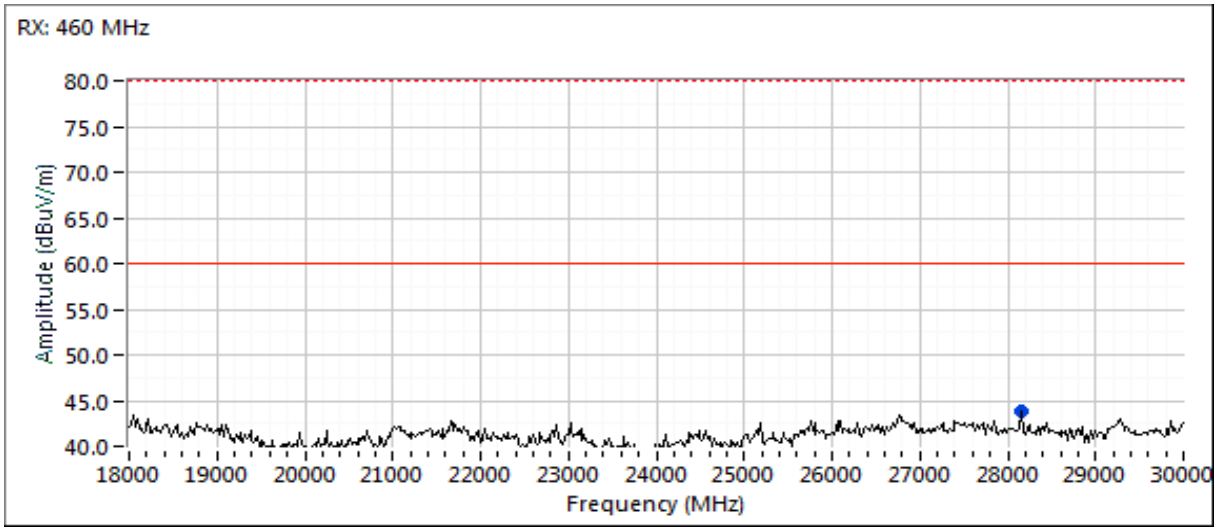
Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A





Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A





Note 2:	The preliminary scans show class A digital device limits. The limits are corrected in the tabular data.

Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A

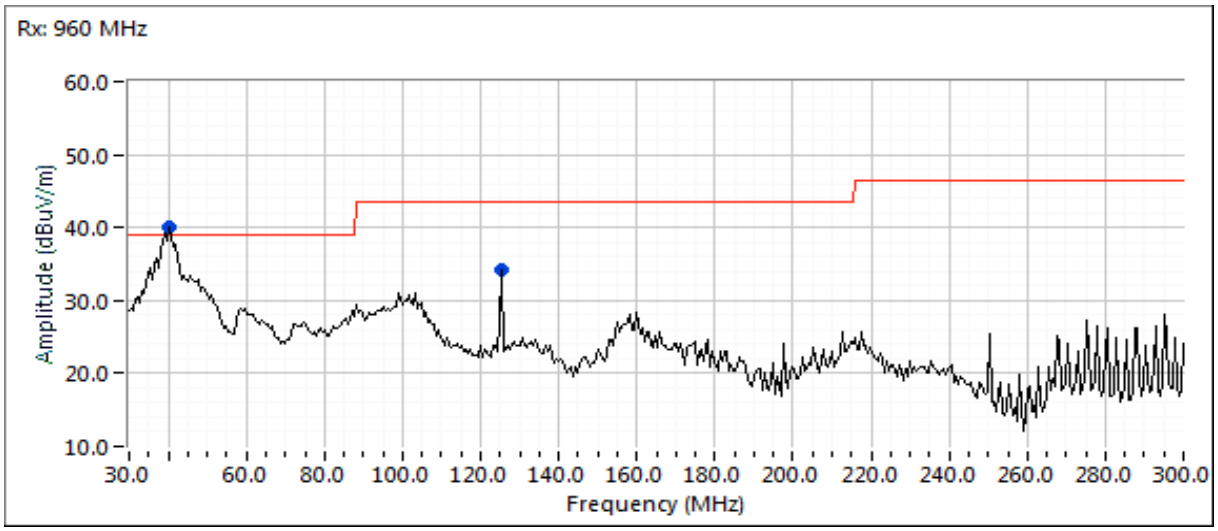
Run #1c; Tuned frequency: 960 MHz (100 kHz RBW)

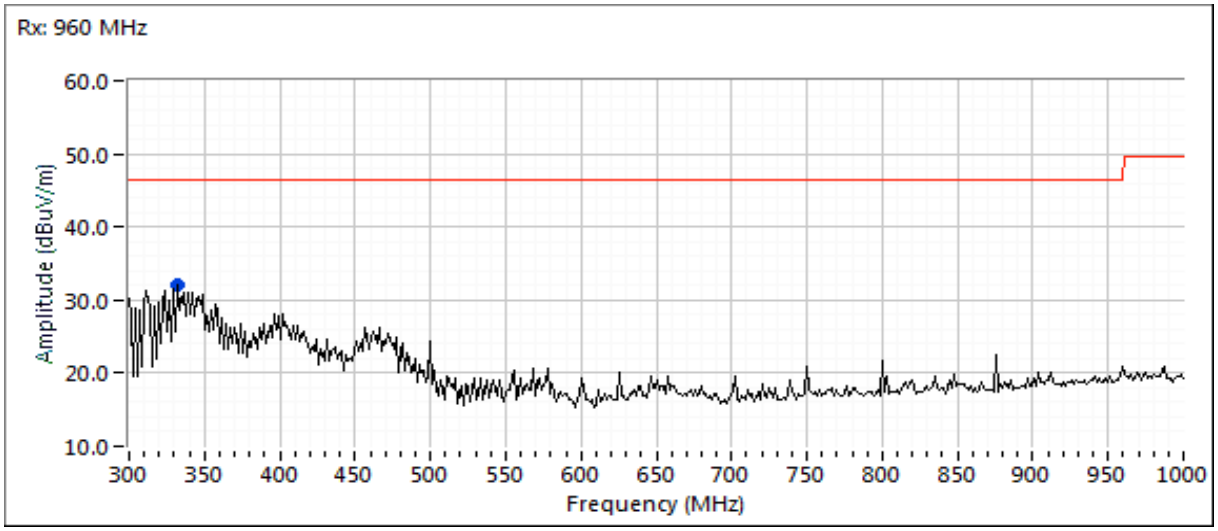
Maximized final readings

Frequency	Level	Pol	15.109 Class B		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
40.325	38.0	V	-	-	QP	246	1.0	QP (1.00s) - Note 1
125.015	34.1	H	-	-	QP	33	3.0	QP (1.00s) - Note 1
332.520	31.0	H	-	-	QP	56	1.5	QP (1.00s) - Note 1
1250.200	41.2	V	-	-	AVG	69	1.6	RB 1 MHz;VB 10 Hz;Peak - Note 1
1250.270	45.8	V	-	-	PK	69	1.6	RB 1 MHz;VB 3 MHz;Peak - Note 1
11899.700	46.6	H	54.0	-7.4	Peak	120	1.3	Noise floor reading
26800.000	43.5	V	54.0	-10.5	Peak	135	1.3	Noise floor reading

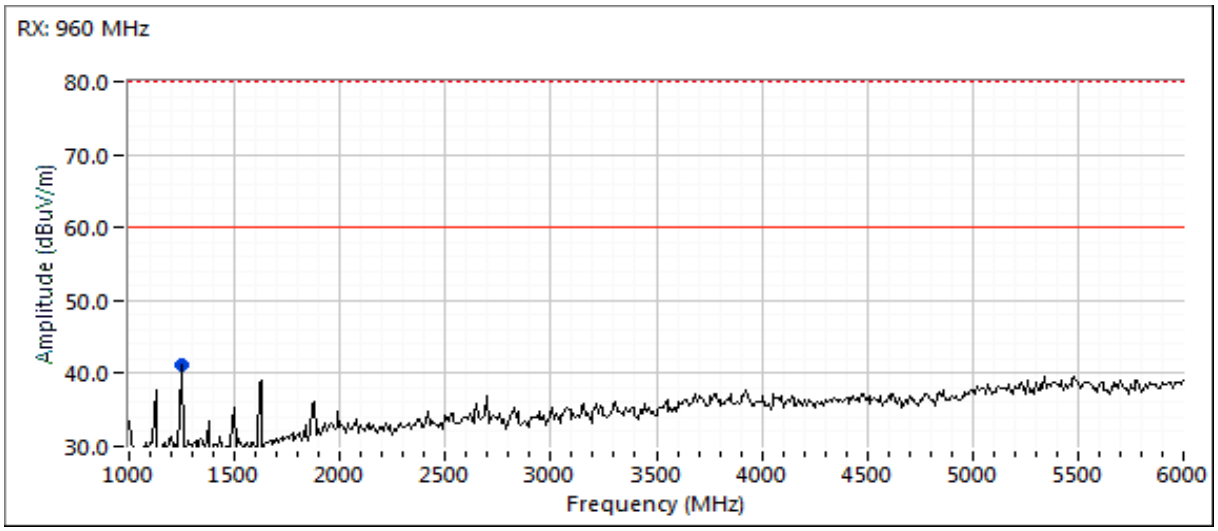
Note 1:	Emissions are not receiver related. Class A digital device limits apply for the host unit.

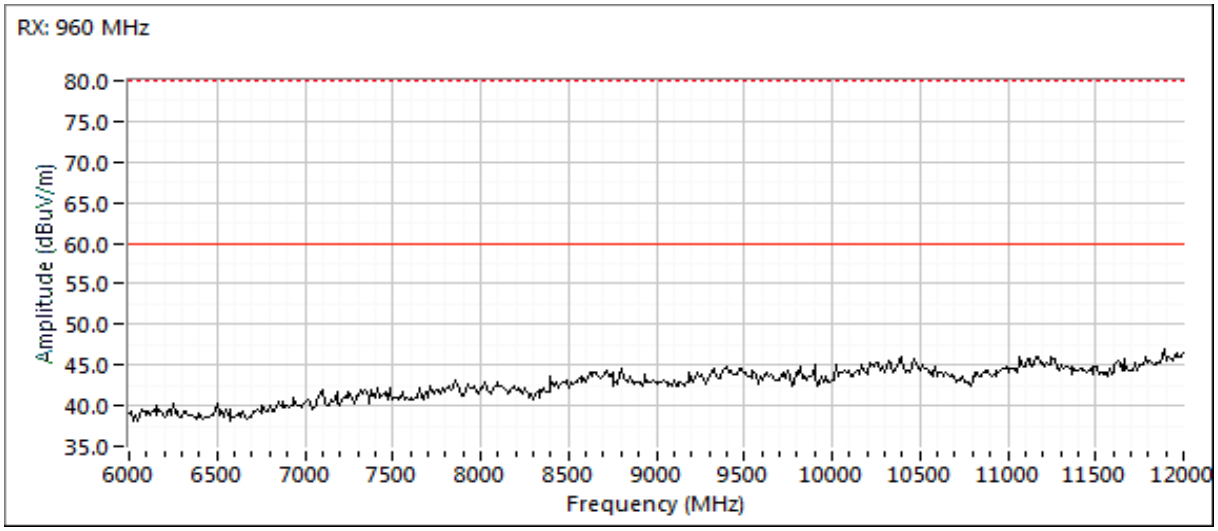
Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A



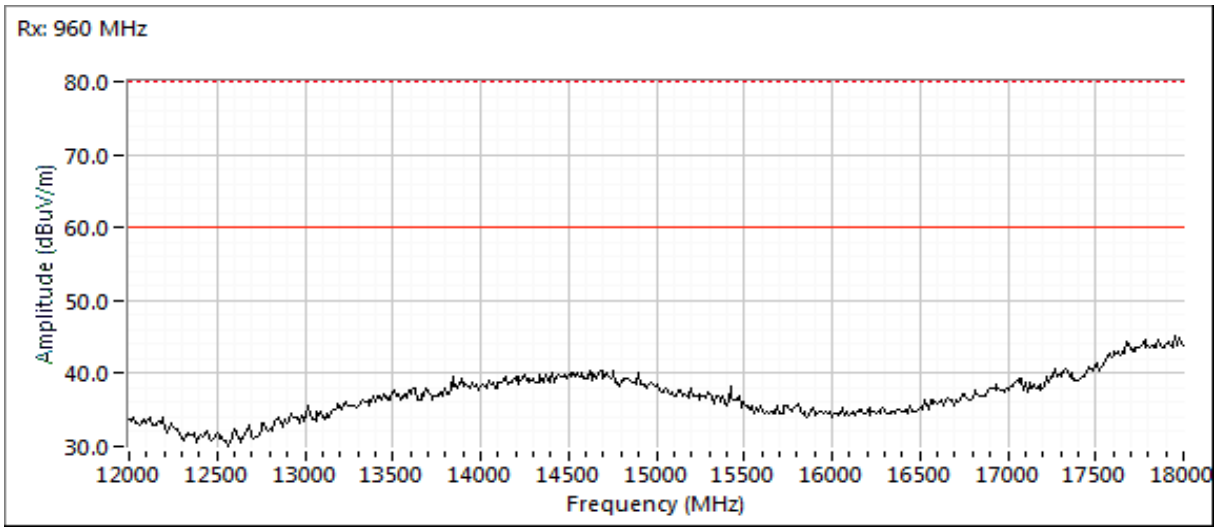


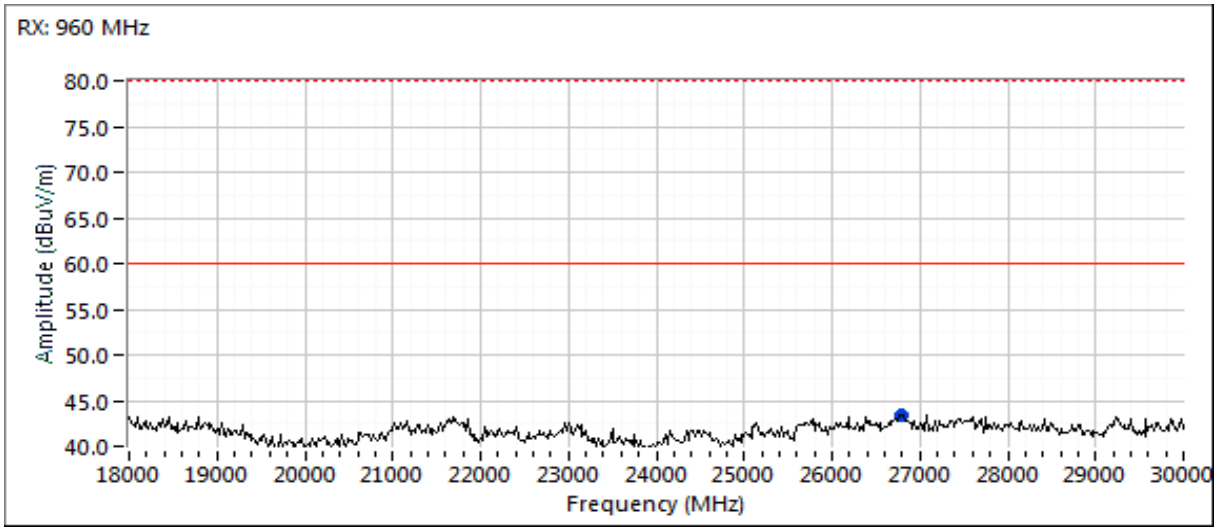
Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A





Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A





Note 2:	The preliminary scans show class A digital device limits. The limits are corrected in the tabular data.

Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A

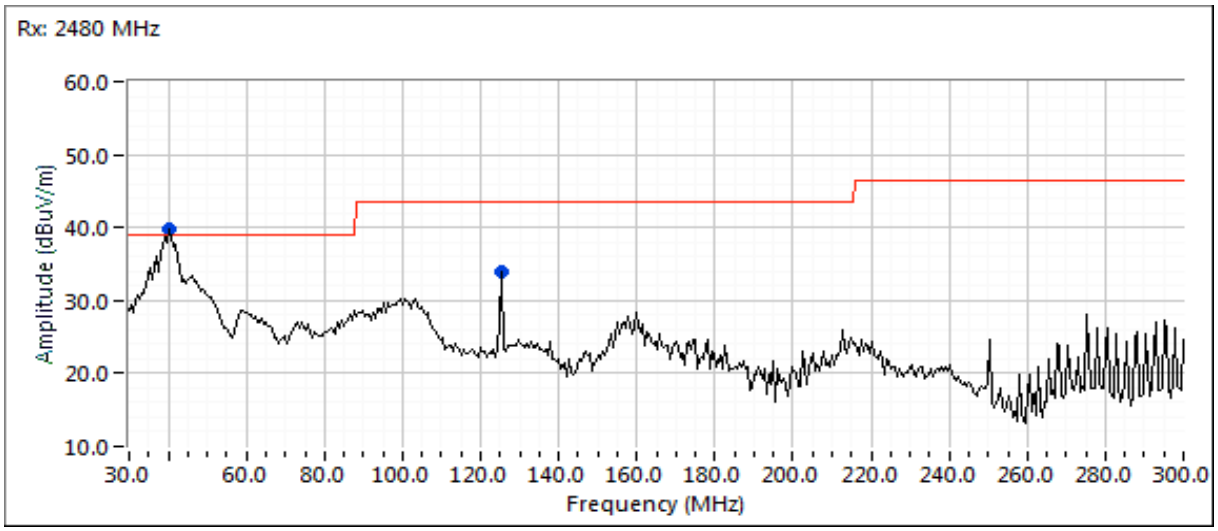
Run #1d; Tuned frequency: 2480 MHz (100 kHz RBW)

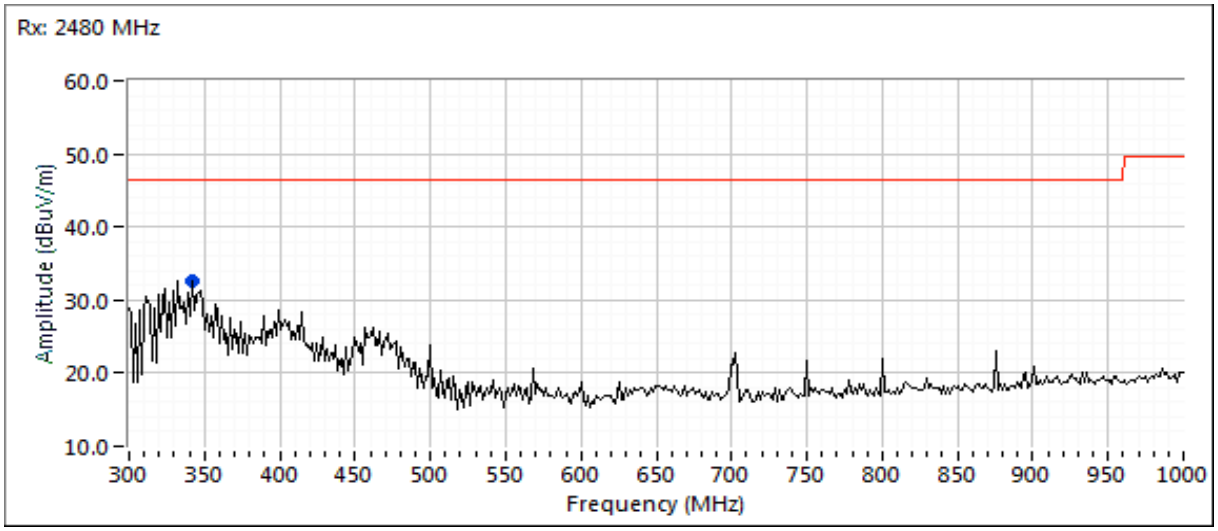
Maximized final readings

Frequency	Level	Pol	15.109 Class B		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
40.321	38.2	V	-	-	QP	222	1.1	QP (1.00s) - Note 1
125.012	34.1	H	-	-	QP	33	3.0	QP (1.00s) - Note 1
342.519	30.6	H	-	-	QP	57	1.0	QP (1.00s) - Note 1
1625.050	39.5	H	-	-	AVG	101	1.3	RB 1 MHz;VB 10 Hz;Peak - Note 1
1624.860	44.9	H	-	-	PK	101	1.3	RB 1 MHz;VB 3 MHz;Peak - Note 1
5172.690	38.1	V	-	-	AVG	130	1.5	RB 1 MHz;VB 10 Hz;Peak - Note 1
5173.540	49.3	V	-	-	PK	130	1.5	RB 1 MHz;VB 3 MHz;Peak - Note 1
11949.200	46.4	H	54.0	-7.6	Peak	120	1.3	Noise floor reading
29980.000	42.7	H	54.0	-11.3	Peak	233	2.0	Noise floor reading

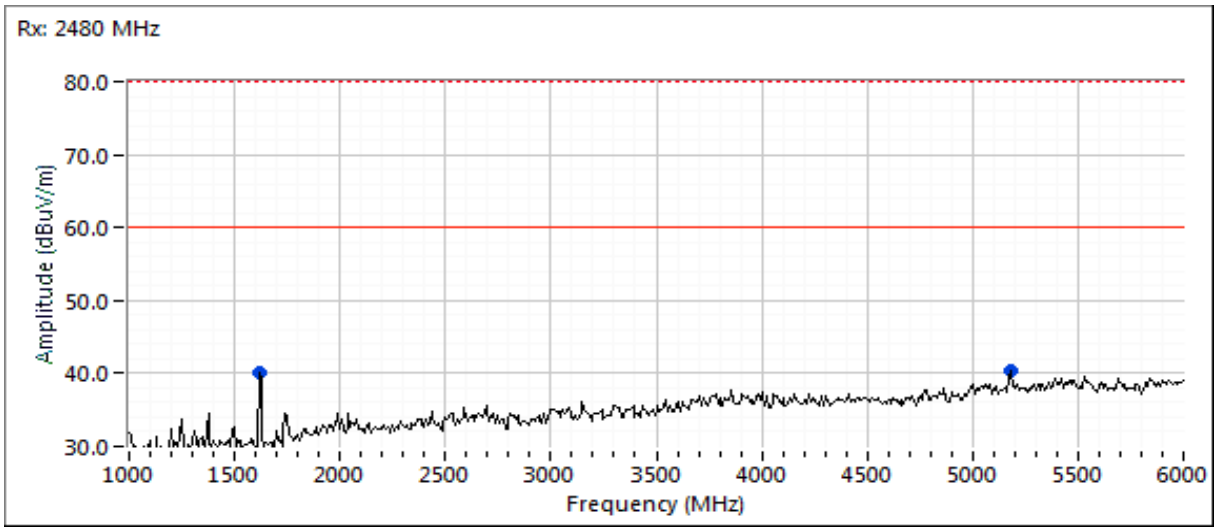
Note 1:	Emissions are not receiver related. Class A digital device limits apply for the host unit.

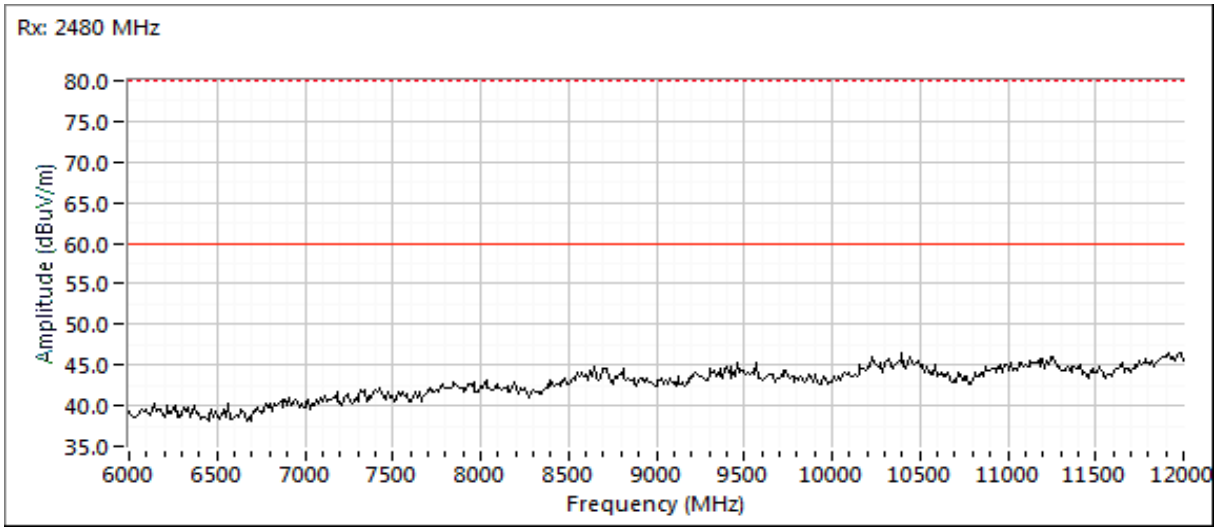
Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A



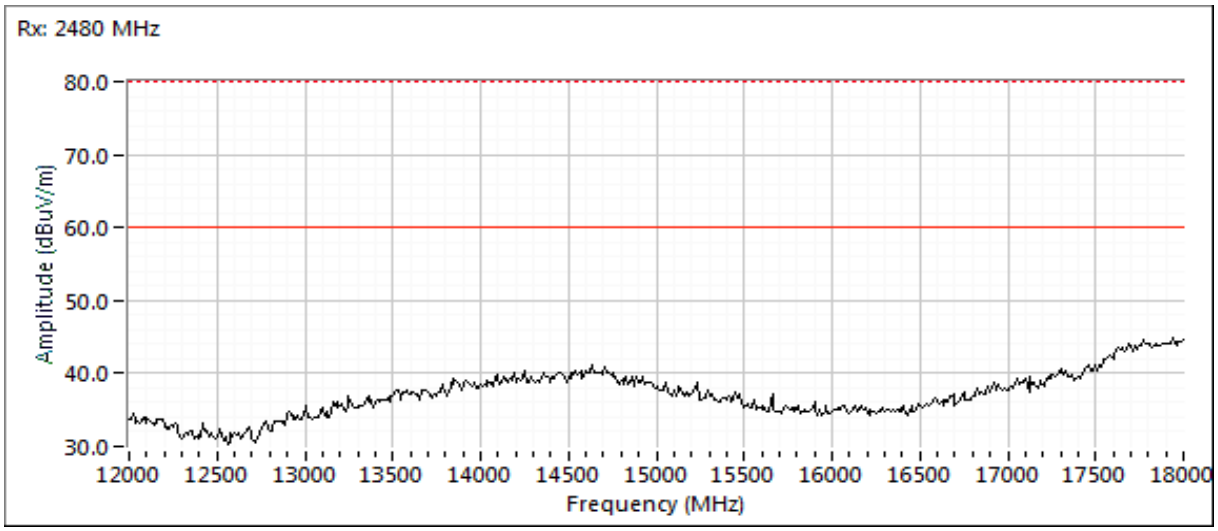


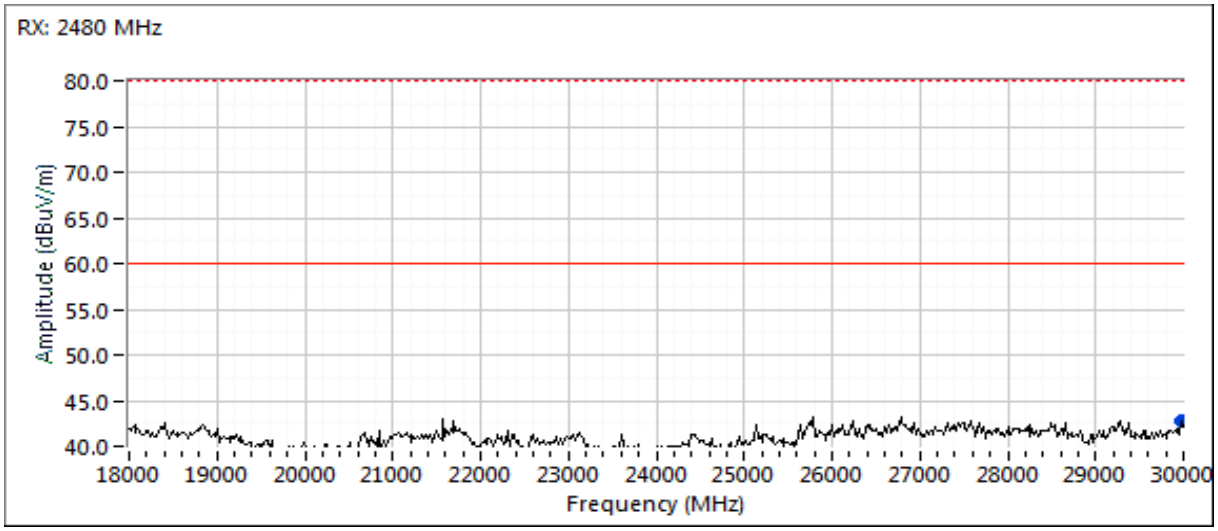
Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A





Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A





Note 2:	The preliminary scans show class A digital device limits. The limits are corrected in the tabular data.

Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
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Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A

Run #1e; Tuned frequency: 5975 MHz (100 kHz RBW)

Maximized final readings

Frequency	Level	Pol	15.109 Class B		Detector	Azimuth	Height	Comments
MHz	dBµV/m	V/H	Limit	Margin	Pk/QP/Avg	degrees	meters	
40.321	38.1	V	-	-	QP	245	1.0	QP (1.00s) - Note 1
125.010	33.9	H	-	-	QP	42	3.0	QP (1.00s) - Note 1
332.515	30.7	H	-	-	QP	52	1.5	QP (1.00s) - Note 1
1625.040	39.9	H	-	-	AVG	100	1.3	RB 1 MHz;VB 10 Hz;Peak - Note 1
1624.990	45.3	H	-	-	PK	100	1.3	RB 1 MHz;VB 3 MHz;Peak - Note 1
5173.230	37.0	V	-	-	AVG	230	1.0	RB 1 MHz;VB 10 Hz;Peak - Note 1
5172.520	48.8	V	-	-	PK	230	1.0	RB 1 MHz;VB 3 MHz;Peak - Note 1
11996.800	46.7	H	54.0	-7.3	Peak	120	1.3	Noise floor reading
29860.000	42.7	H	54.0	-11.3	Peak	170	1.3	Noise floor reading

Note 1:	Emissions are not receiver related. Class A digital device limits apply for the host unit.

Client:	Bastille Networks	PR Number:	PR105382
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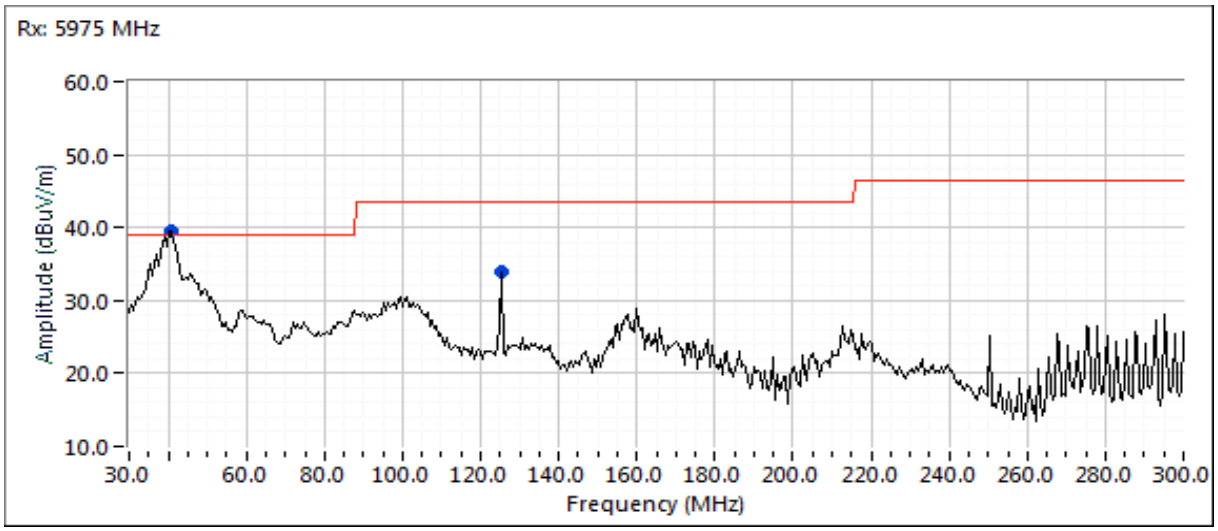
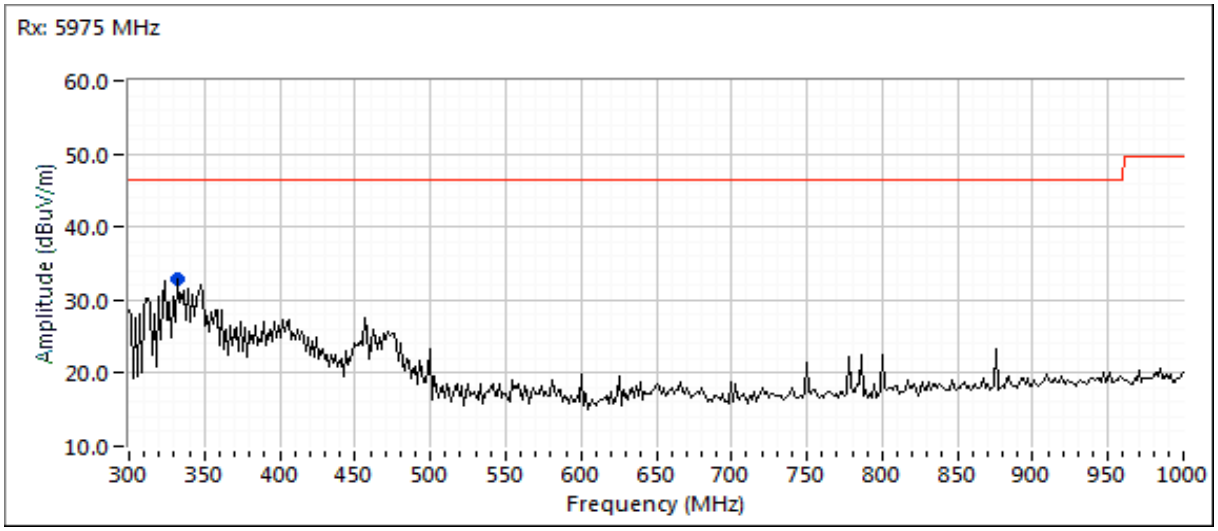
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A





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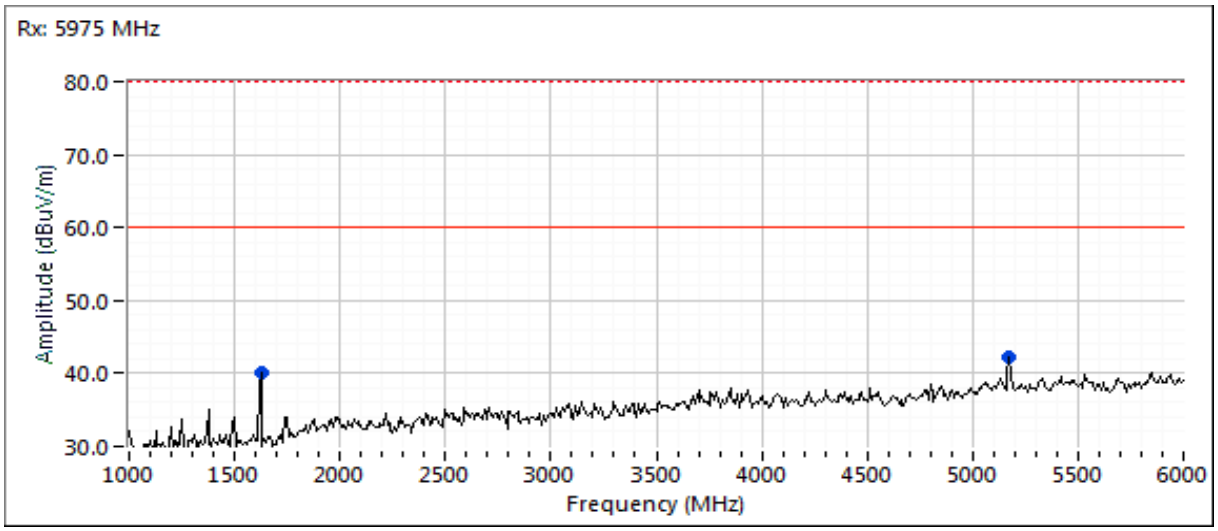
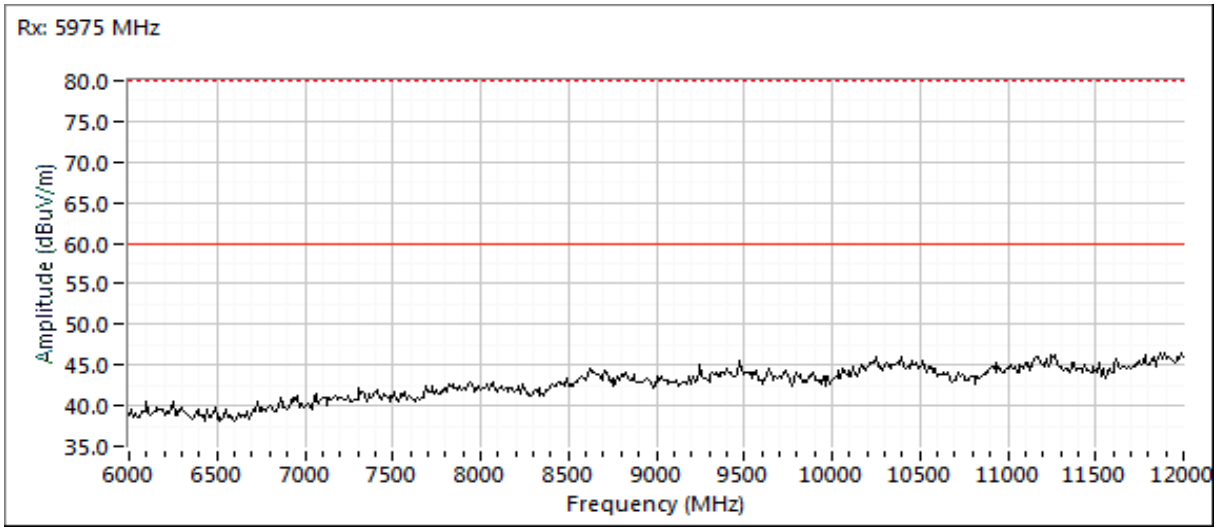
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A





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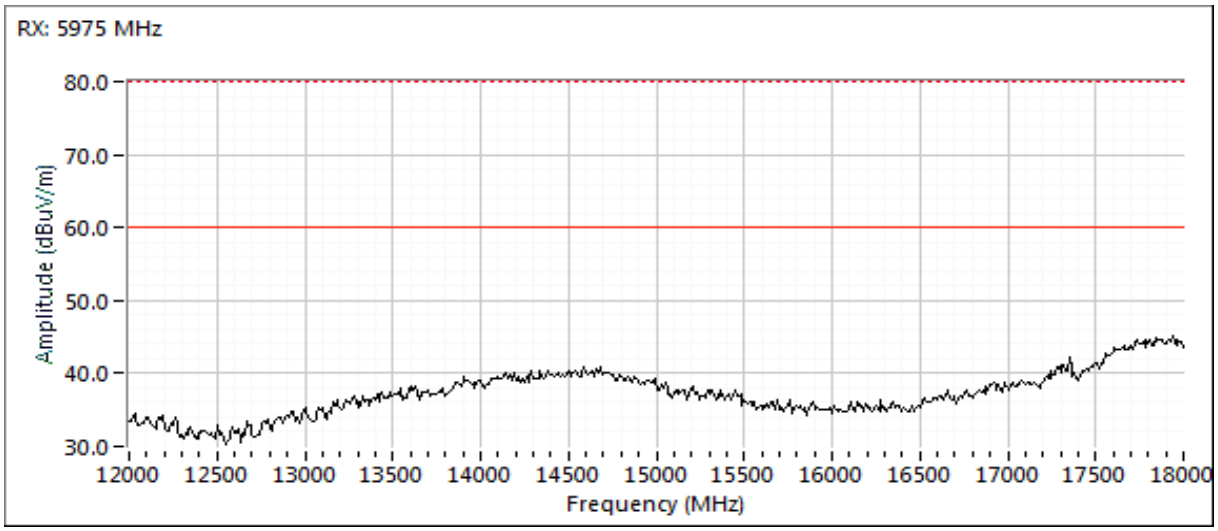
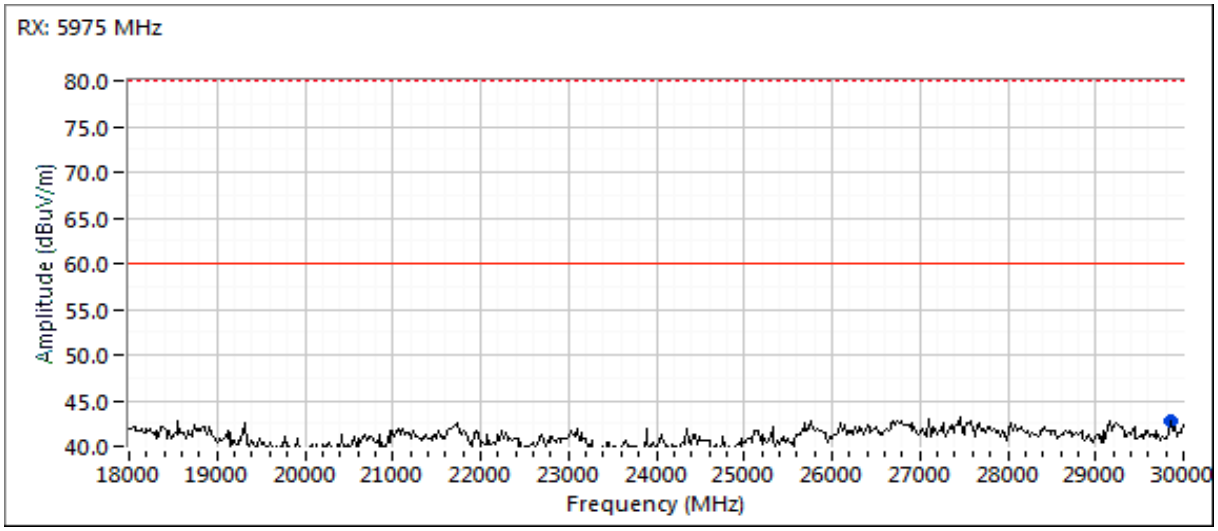
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	N/A





Note 2:	The preliminary scans show class A digital device limits. The limits are corrected in the tabular data.

Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
Contact:	Ellis Villafuerte	Project Engineer:	Deniz Demirci
Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

Conducted Emissions

(NTS Silicon Valley, Fremont Facility, Semi-Anechoic Chamber)

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 11/4/2019
Test Engineer: Deniz Demirci
Test Location: Fremont Chamber #7

Config. Used: 1
Config Change: None
EUT Voltage: 120 V/60 Hz

General Test Configuration

For tabletop equipment, the EUT was located on a table inside the semi-anechoic chamber, 40 cm from a vertical coupling plane and 80 cm from the LISN. Remote support equipment was located outside of the semi-anechoic chamber. The Ethernet cable running to remote support equipment where routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.

Ambient Conditions:

Temperature: 23 °C
Rel. Humidity: 32 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power, 120 V/60 Hz	Class B	Pass	42.9 dBµV @ 0.252 MHz (-8.8 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

Sample S/N: 1840020025 MAC: 2c:27:9e:31:99:31 Model: Sensor-2 Rev 5.1
Rx set to 460 MHz

Client:	Bastille Networks	PR Number:	PR105382
Model:	Chevy Sensor-2 FCC ID: 2AIJ5-SENSOR2	T-Log Number:	TL105382
		Project Manager:	Christine Krebill
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Standard:	FCC 15.121 (Scannnig receiver)	Class:	A

Run #1: AC Power Port Conducted Emissions, 0.15 - 30 MHz, 120 V/60 Hz

Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency	Level	AC	Class B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.163	*54.0*	*Line 1*	*55.3*	*-1.3*	*Peak*	
0.196	*48.0*	*Line 1*	*53.8*	*-5.8*	*Peak*	
0.253	*45.3*	*Line 1*	*51.7*	*-6.4*	*Peak*	
0.518	*36.0*	*Line 1*	*46.0*	*-10.0*	*Peak*	
16.774	*33.9*	*Line 1*	*50.0*	*-16.1*	*Peak*	
0.163	*53.8*	*Neutral*	*55.3*	*-1.5*	*Peak*	
0.196	*48.4*	*Neutral*	*53.8*	*-5.4*	*Peak*	
0.252	*44.6*	*Neutral*	*51.7*	*-7.1*	*Peak*	
0.518	*36.4*	*Neutral*	*46.0*	*-9.6*	*Peak*	
22.786	*31.3*	*Neutral*	*50.0*	*-18.7*	*Peak*	
29.549	*32.0*	*Neutral*	*50.0*	*-18.0*	*Peak*	

Final quasi-peak and average readings

Frequency	Level	AC	Class B		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.162	41.9	Line 1	55.4	-13.5	AVG	AVG (0.10s)
0.162	52.8	Line 1	65.4	-12.6	QP	QP (1.00s)
0.196	35.1	Line 1	53.8	-18.7	AVG	AVG (0.10s)
0.196	46.0	Line 1	63.8	-17.8	QP	QP (1.00s)
0.252	42.0	Line 1	51.7	-9.7	AVG	AVG (0.10s)
0.252	42.4	Line 1	61.7	-19.3	QP	QP (1.00s)
0.517	32.3	Line 1	46.0	-13.7	AVG	AVG (0.10s)
0.517	34.7	Line 1	56.0	-21.3	QP	QP (1.00s)
16.776	28.3	Line 1	50.0	-21.7	AVG	AVG (0.10s)
16.776	31.6	Line 1	60.0	-28.4	QP	QP (1.00s)
0.163	41.7	Neutral	55.3	-13.6	AVG	AVG (0.10s)
0.163	52.4	Neutral	65.3	-12.9	QP	QP (1.00s)
0.196	35.5	Neutral	53.8	-18.3	AVG	AVG (0.10s)
0.196	45.9	Neutral	63.8	-17.9	QP	QP (1.00s)
0.252	42.9	Neutral	51.7	-8.8	AVG	AVG (0.10s)
0.252	43.2	Neutral	61.7	-18.5	QP	QP (1.00s)
0.517	33.4	Neutral	46.0	-12.6	AVG	AVG (0.10s)
0.517	35.0	Neutral	56.0	-21.0	QP	QP (1.00s)
22.784	27.6	Neutral	50.0	-22.4	AVG	AVG (0.10s)
22.784	29.9	Neutral	60.0	-30.1	QP	QP (1.00s)
29.544	26.4	Neutral	50.0	-23.6	AVG	AVG (0.10s)
29.544	29.4	Neutral	60.0	-30.6	QP	QP (1.00s)

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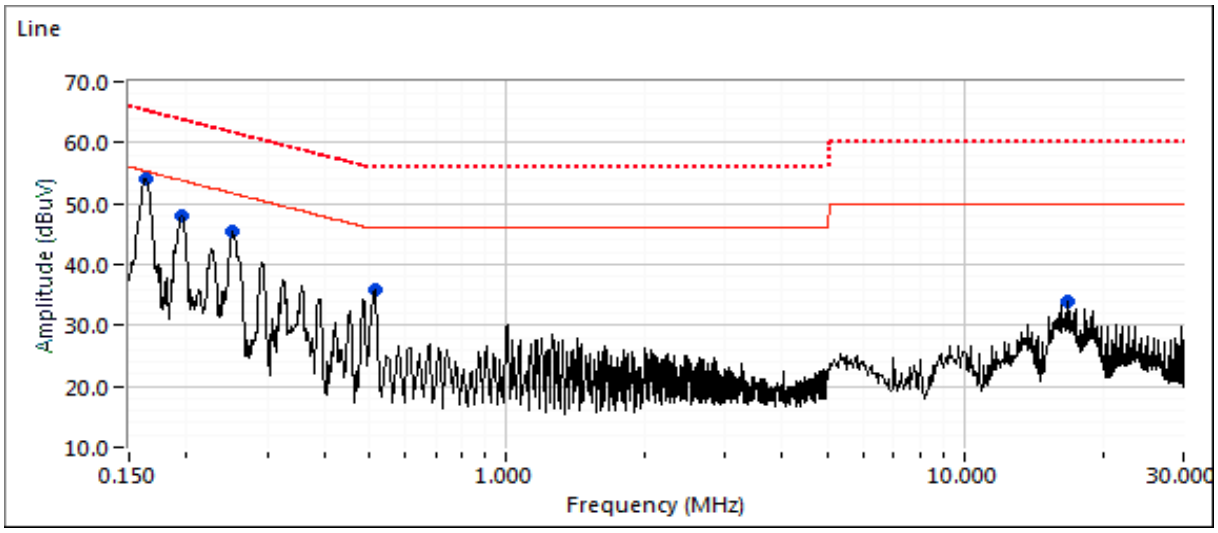

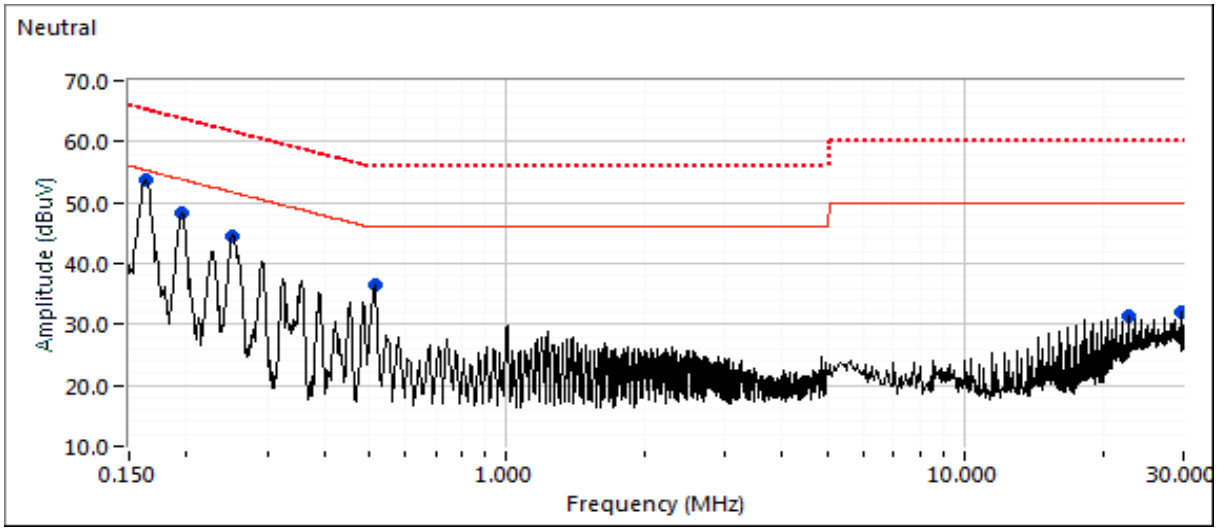

End of Report

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