

EMC Test Report

Project Number: 3878032

Report Number: 3878032 EMC01

Revision Level: 2

Client: ADTRAN, Inc.

Equipment Under Test: Outdoor Wireless Access Point

Model Number: BSAP 2135

FCC ID: HDCBSAP2135

Applicable Standards: FCC Part 15 Subpart C, § 15.407

ANSI C63.10: 2013

Report issued on: 03 March 2016

Test Result: Compliant

Tested by:



Jeremy O. Pickens, Senior EMC Engineer

Reviewed by:



David Schramm, EMC/RF/SAR/HAC Manager

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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1 Summary of Test Results

Test Description	Test Specification	Test Result
Occupied Bandwidth	15.407	NS(1)
Spectral Density	15.407(5)	NS(1)
Peak Power Output	15.407(4)	NS(1)(2)
Peak Excursion	15.407(6)	NS(1)
Radiated Spurious Emissions	15.407(b)	Compliant

(1) This evaluation is to support a Class II Permissive Change. Refer to original filing for results.

(2) In order to maintain compliance when using the higher gain antennas, the power must be reduced. These calculations are included in Appendix A.

1.1 Modifications Required for Compliance

None

2 General Information

2.1 Client Information

Name: ADTRAN, Inc.
Address: 901 Explorer Blvd.
City, State, Zip, Country: Huntsville, AL 35806

2.1 Test Laboratory

Name: SGS North America, Inc.
Address: 620 Old Peachtree Road NW, Suite 100
City, State, Zip, Country: Suwanee, GA 30024, USA

Accrediting Body: A2LA
Type of lab: Testing Laboratory
Certificate Number: 3212.01

2.2 General Information of EUT

Type of Product: Outdoor Wireless Access Point
Model: BSAP-2135
Serial Number: 21352615050002

Frequency Range: 5150 to 5250 MHz and 5725 to 5825MHz
Data Modes: 802.11a, 802.11n (HT20), 802.11n (HT40), 802.11ac (VHT20), 802.11ac (VHT40), 802.11ac (VHT80)
Antenna: TerraWave, 2.4/5 GHz, 6/7 dBi Dual Band MIMO Patch Antenna (P/N: M6060070MP13620)
TerraWave, 2.4/5 GHz, 13/7 dBi High Density MIMO Patch Array (P/N: M6013070P30006I)
TerraWave, 5 GHz, 19 dBi Triple Polarization Directional Antenna (P/N: M5016019D30006I)

Rated Voltage: 48Vdc (PoE)

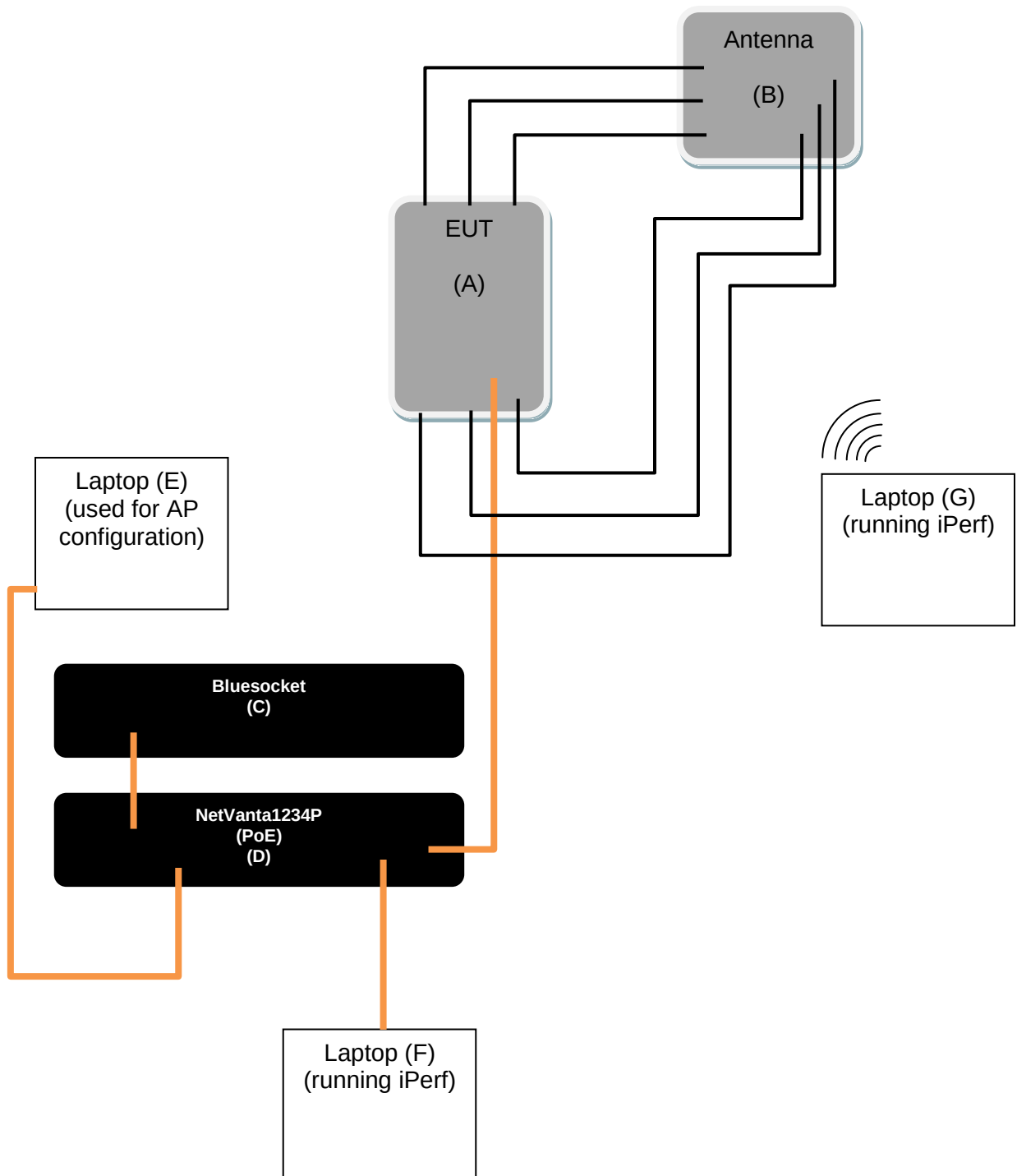
Sample Received Date: 16 September 2015
Dates of testing: 05 – 27 October 2015

Operating Modes and Conditions

For spurious emissions measurements, only the worst-case mode with respect to peak power from the original filing was investigated: 802.11a, 6Mbps. Three different antennas (described in Section 2.2) were used to evaluate the low, middle, and high channels in each the 5150-5250MHz band and the 5725-5825MHz band.

Continuous traffic was generated using iPerf software which established communication between a laptop on the wired side of the access point and a second laptop connected wirelessly to the access point. Software was provided that allowed the access point to be fixed on each channel under investigation.

2.3 EUT Connection Block Diagram



2.4 System Configurations

Device reference	Manufacturer	Description	Model Number	Serial Number
A	ADTRAN, Inc.	Outdoor Access Point	BSAP-2135	21352615050002
B	TerraWave	Dual Band MIMO Patch	M6060070MP13620	Not Labeled
	TerraWave	High Density MIMO Patch Array	M6013070P30006I	Not Labeled
	TerraWave	Triple Polarization Directional (5GHz only)	M5016019D30006I	Not Labeled
C	ADTRAN, Inc.	Bluesocket	1700900F2	80031315020001
D	ADTRAN, Inc.	NetVanta 1234P	1703595G1	Not Labeled
E	Dell	Laptop	Latitude D610	CN-0XD762-48643-629-0517
F	Lenovo	Laptop	T60	L3-PV518
G	Lenovo	Laptop	T420	R8-X9XFV

3 Undesirable Emissions

3.1 Test Result

Test Description	Test Specification	Test Result
Spurious Emissions	15.407(b) ANSI C63.10: 2013	Compliant

3.2 Test Method

Testing was performed using the radiated methods defined in ANSI C63.10: 2013 and KDB 789033 D02 General UNII Test Procedures New Rules v01r01

Limit:

The limit is -27dBm/MHz or 68.2 dBuV/m @3m (applying 95.2dB correction)

3.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 22.2 – 24.1 °C

Relative Humidity: 32.4 - 42.6 %

3.4 Test Equipment

Final Test Date: 22-Oct-2015

Tester: JOP

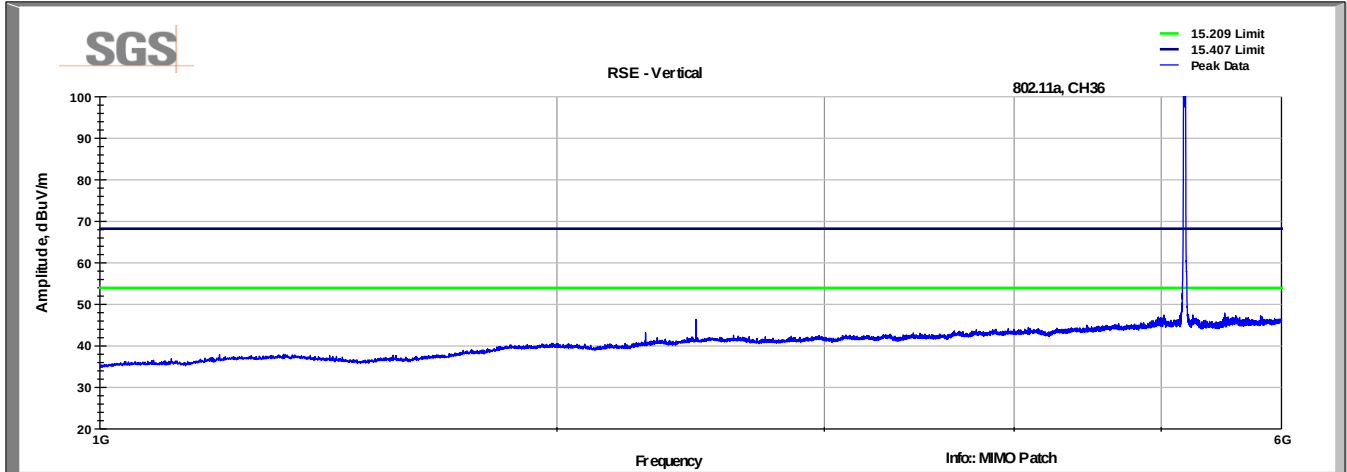
Equipment	Model	Manufacturer	Asset Number	Cal Due Date
EMI TEST RECEIVER	ESU8	ROHDE & SCHWARZ	B085759	9-Jul-2016
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	4-Aug-2016
DRG HORN (MEDIUM)	3117	ETS-LINDGREN	B079691	9-Jul-2016
SMALL HORN ANTENNA	LB-180400-20-C-KF	A-INFOMW	15007	11-Mar-2016
DESKTOP AMPLIFIER 1-18 GHZ	NSP1800-25-HG	MITEQ	B085930	30-Mar-2016
PREAMPLIFIER-ANTENNA SYS	TS-PR18	ROHDE & SCHWARZ	B094463	13-Feb-2016
FIXED GAIN AMPLIFIER	NSP1840-HG	MITEQ	B087572	15-Oct-2016
RF CABLE - 7000MM (10KHZ - 18GHZ)	SF106	HUBER&SUHNER	B079712	3-Aug-2016
DRG HORN (MEDIUM)	3117	ETS-LINDGREN	B079691	9-Jul-2016
RF CABLE - 7500MM (10KHZ - 18GHZ)	SF106	HUBER&SUHNER	B079713	3-Aug-2016
10DB ATTENUATOR	10DB	ROHDE & SCHWARZ	B095594	5-Aug-2016
RF CABLE - 12000MM (10KHZ - 18GHZ)	SF106	HUBER&SUHNER	B079717	3-Aug-2016
COAXIAL CABLE	SUCOFLEX 102	HUBER&SUHNER	B079824	4-Aug-2016
COAXIAL CABLE	SUCOFLEX 102	HUBER&SUHNER	B079823	4-Aug-2016
FILTER	HPM50112	MICRO-TRONICS	B093647	5-Aug-2016
HIGH PASS FILTER	HPM50111	MICRO-TRONICS	B085747	5-Aug-2016

Note: The calibration period equipment is 1 year.

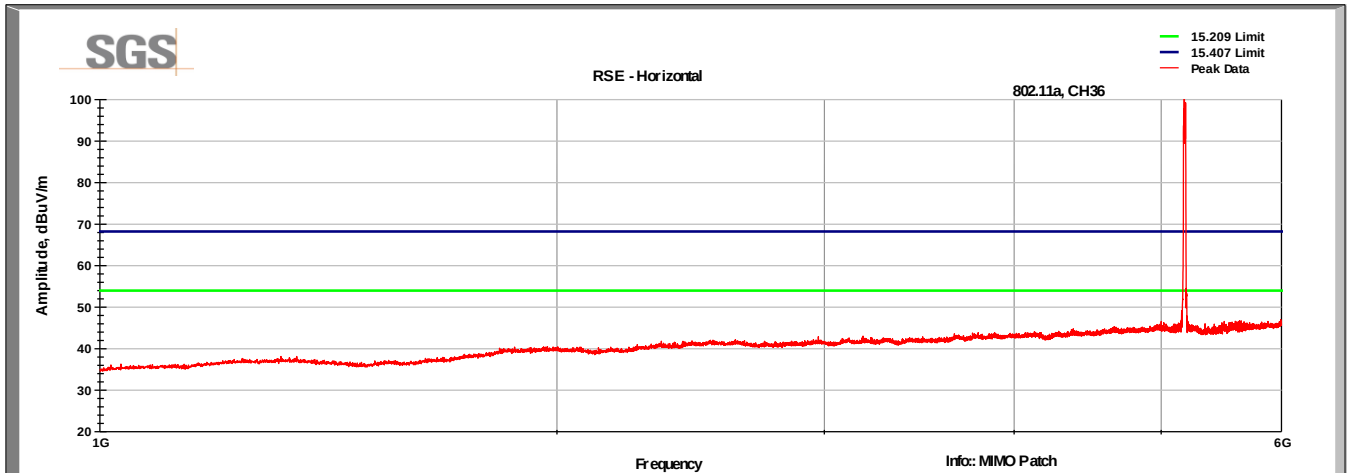
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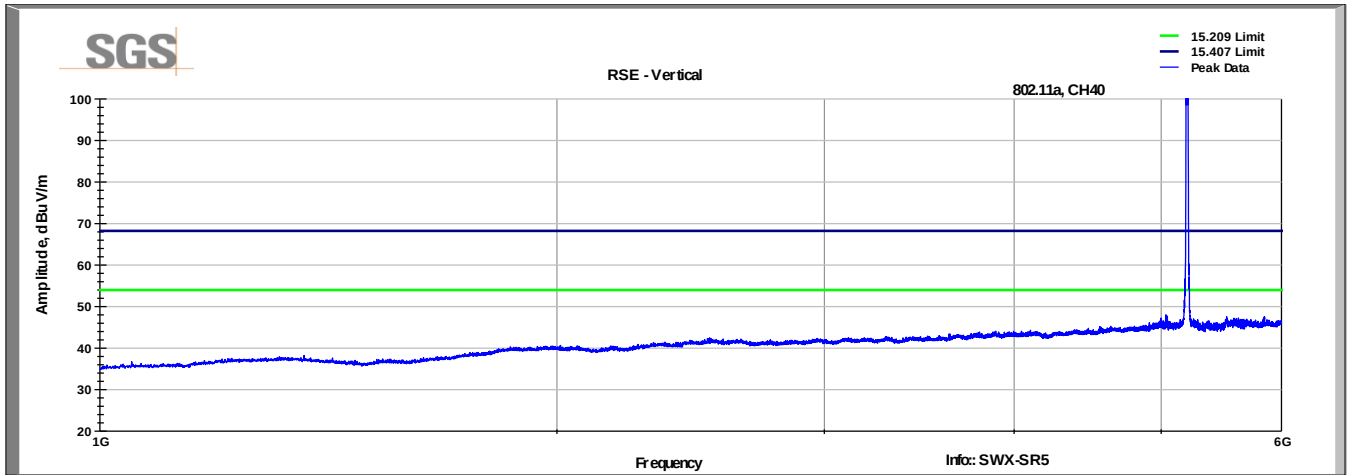
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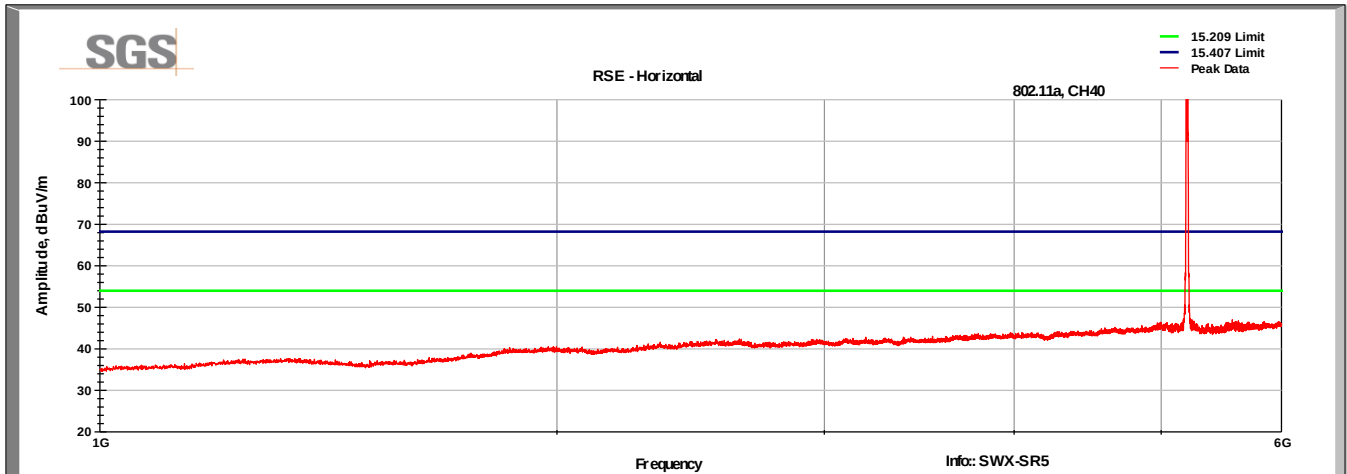
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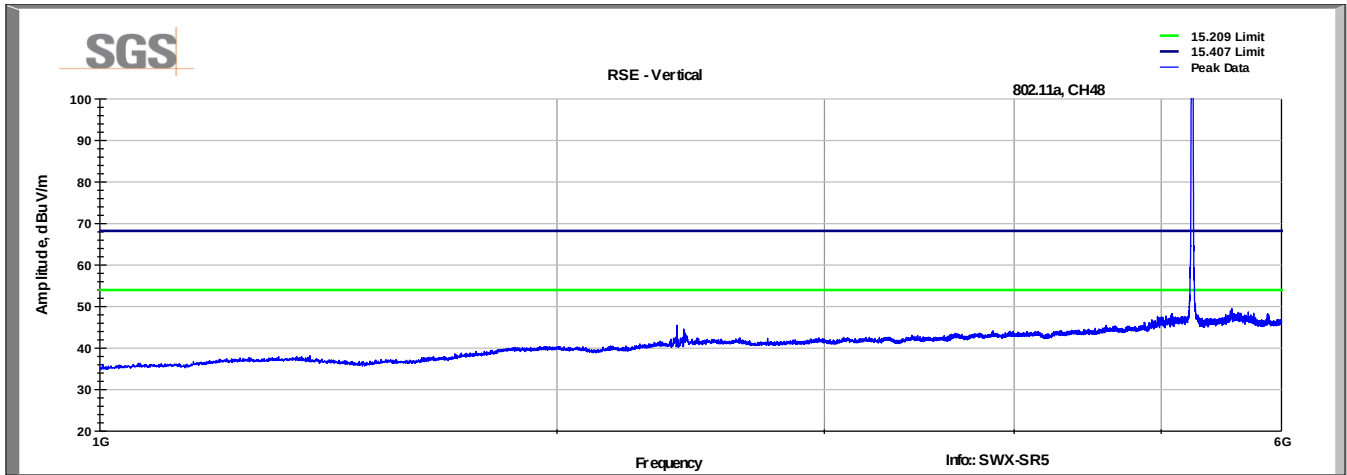
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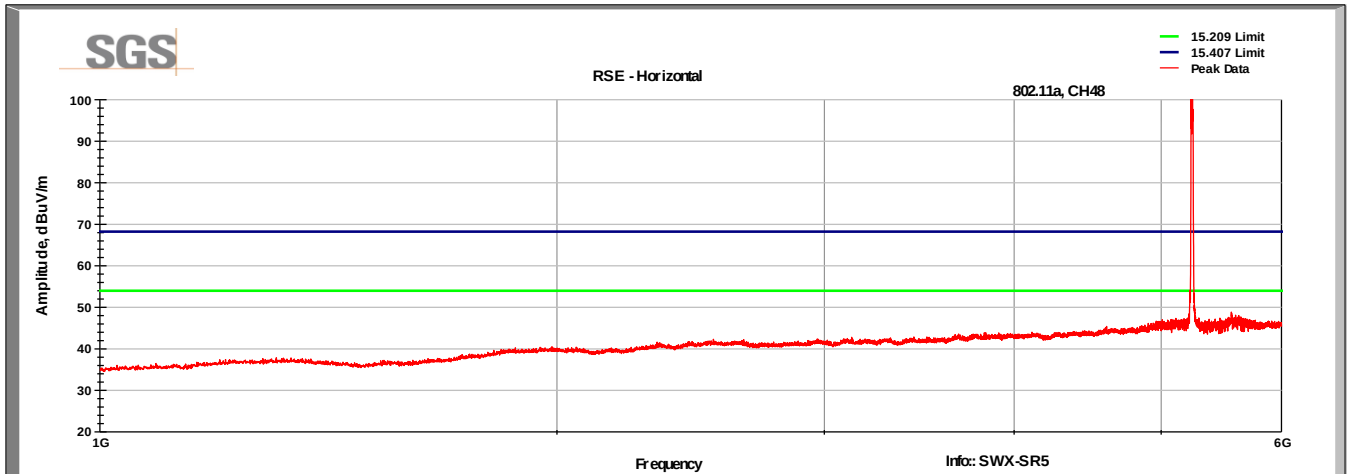
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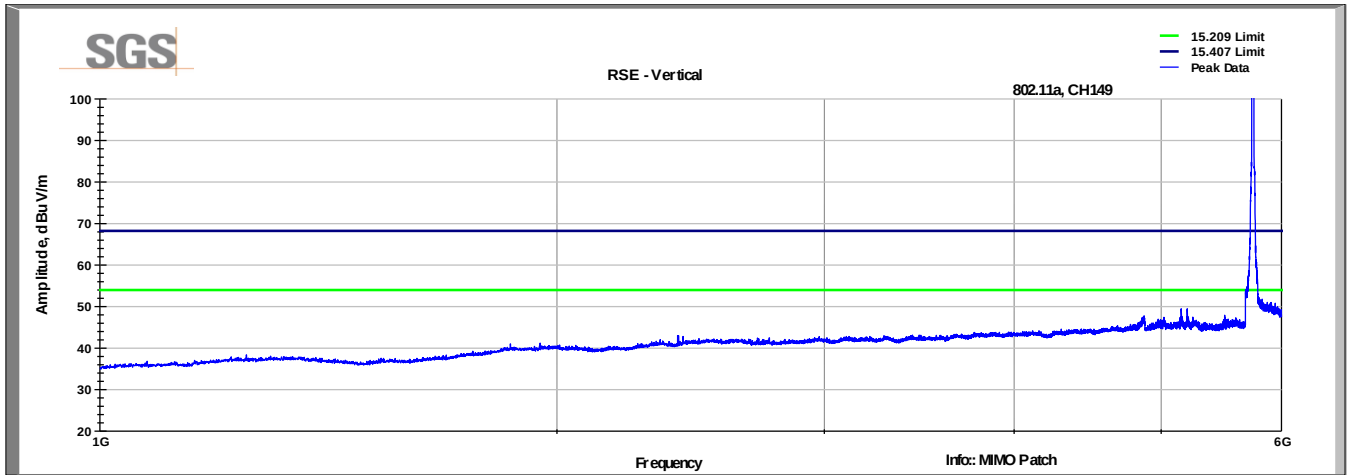
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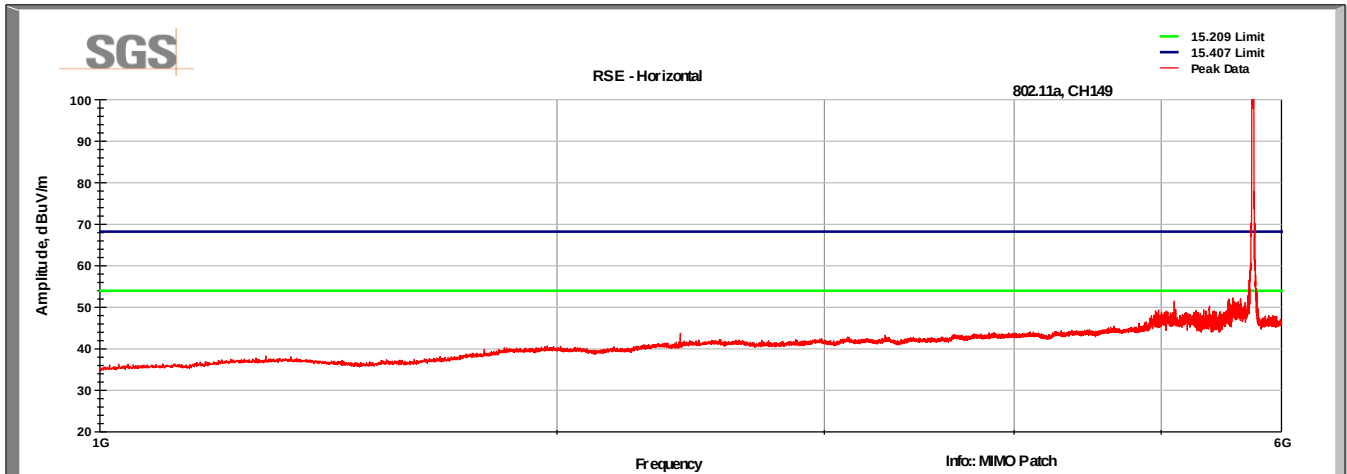
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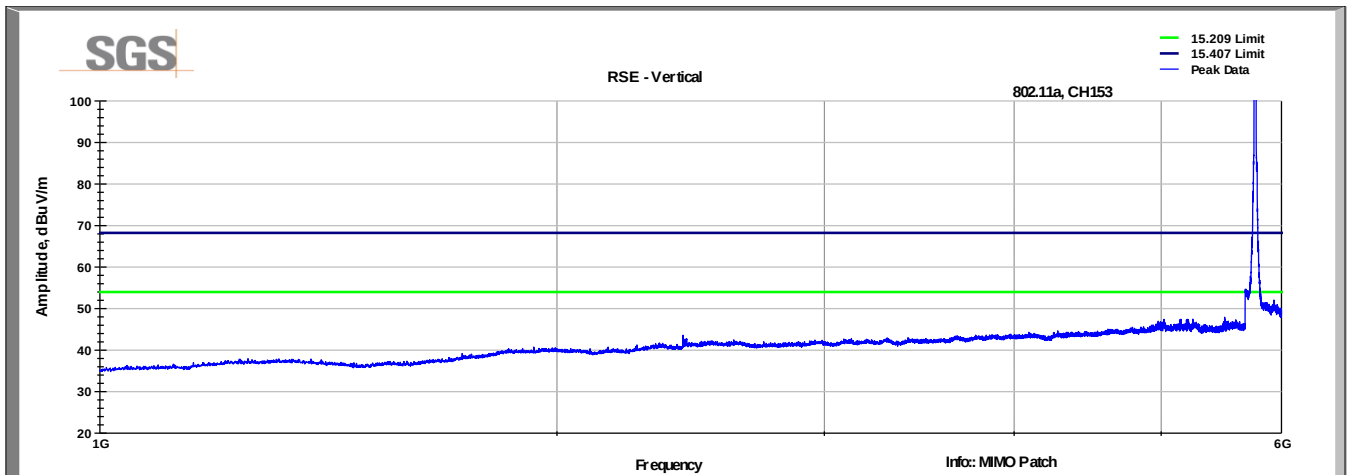
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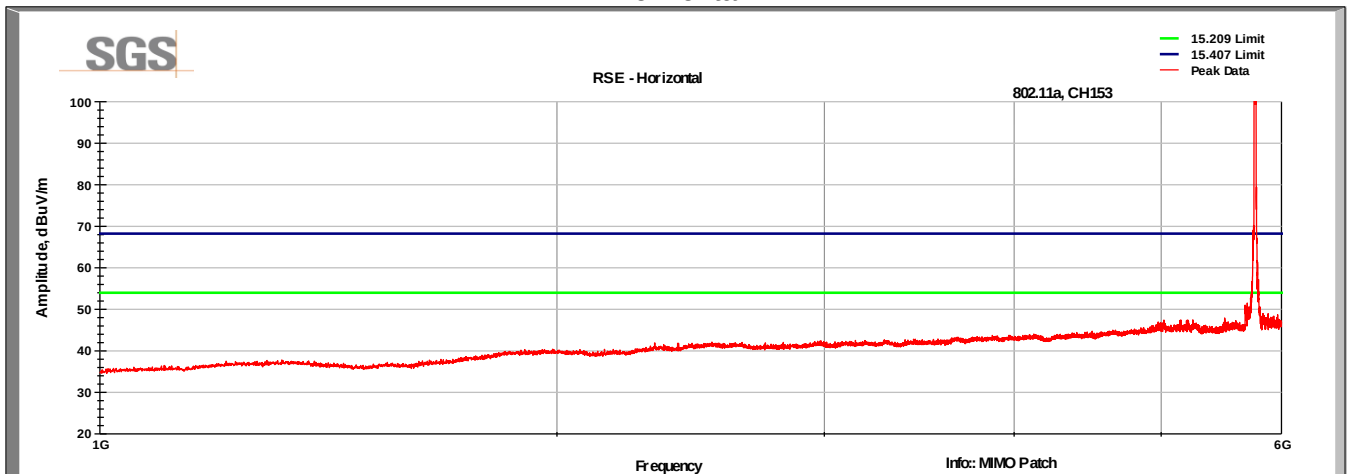
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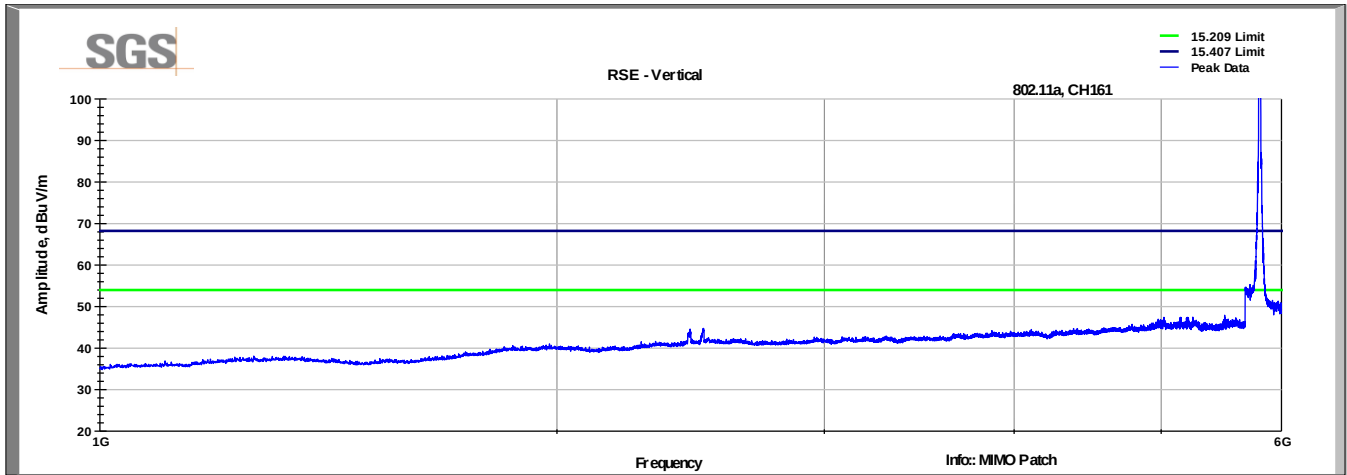
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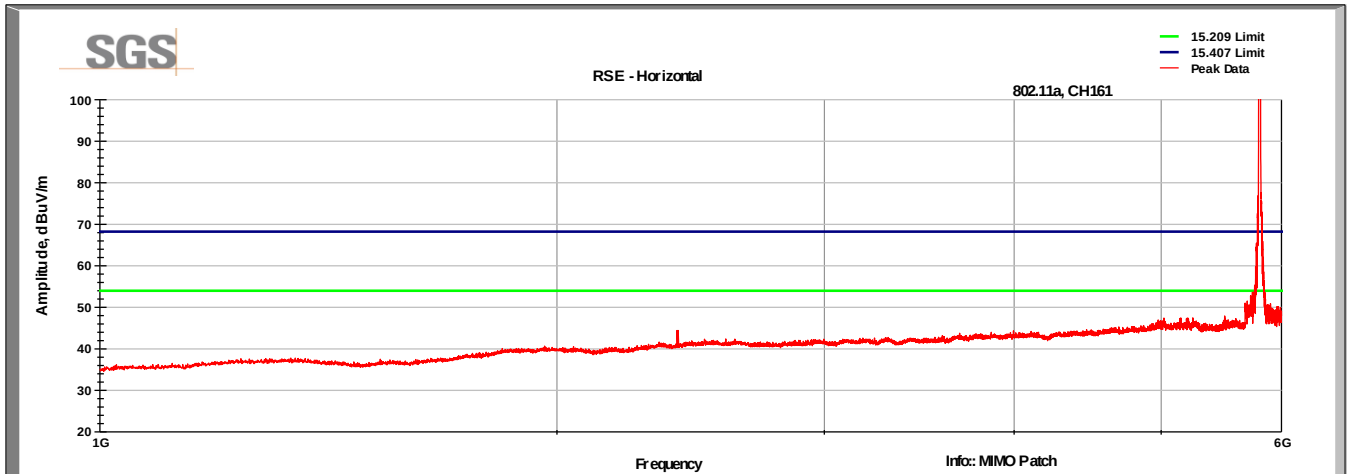
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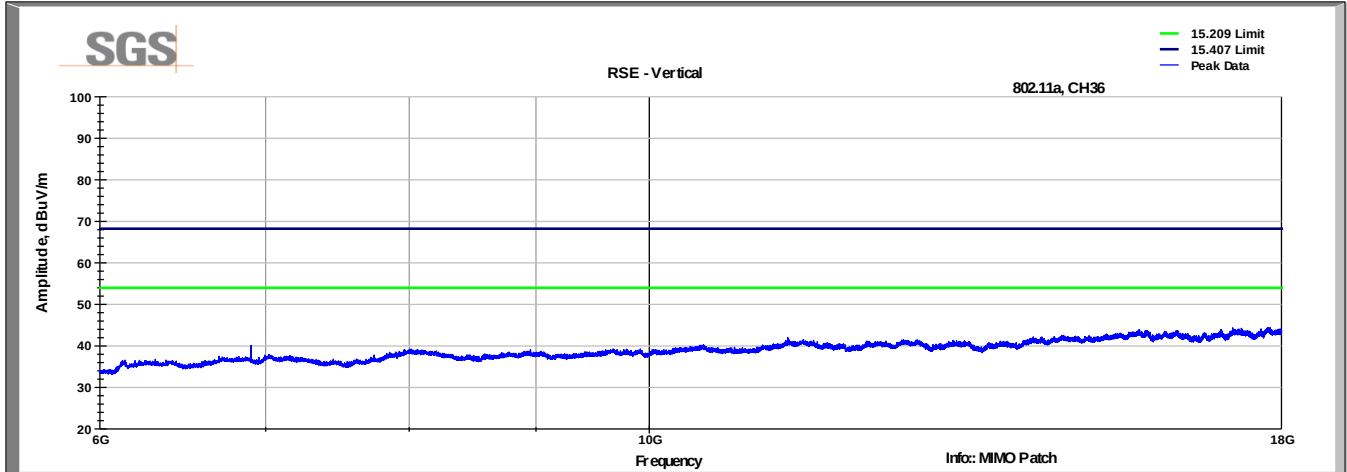
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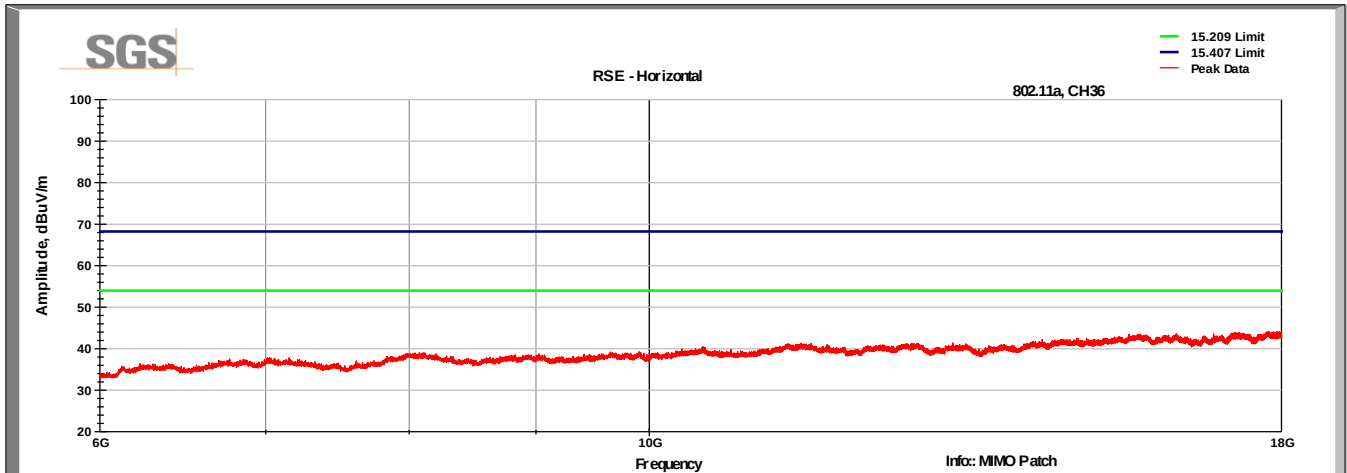
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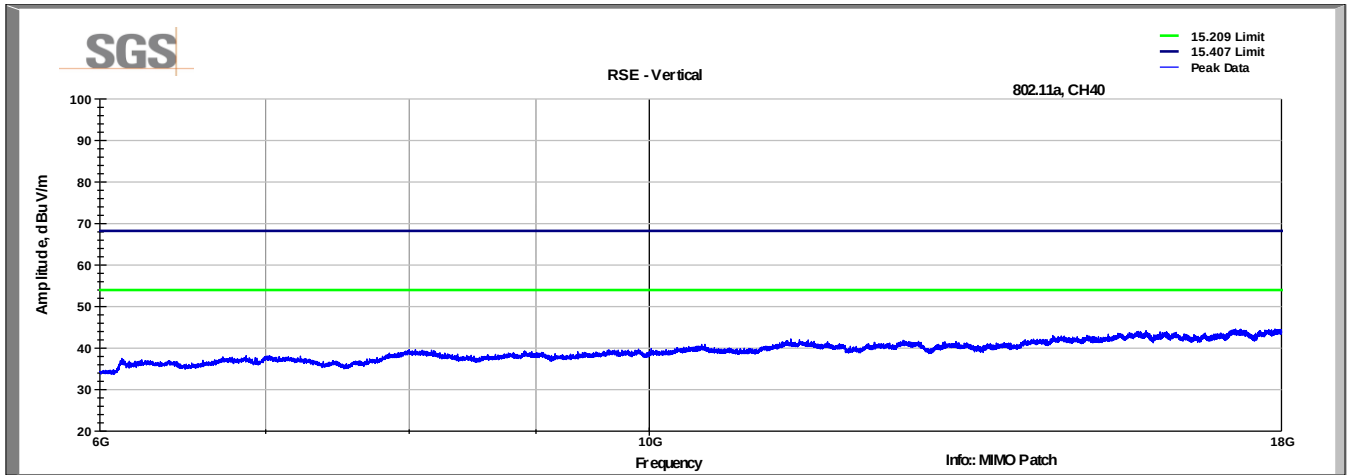
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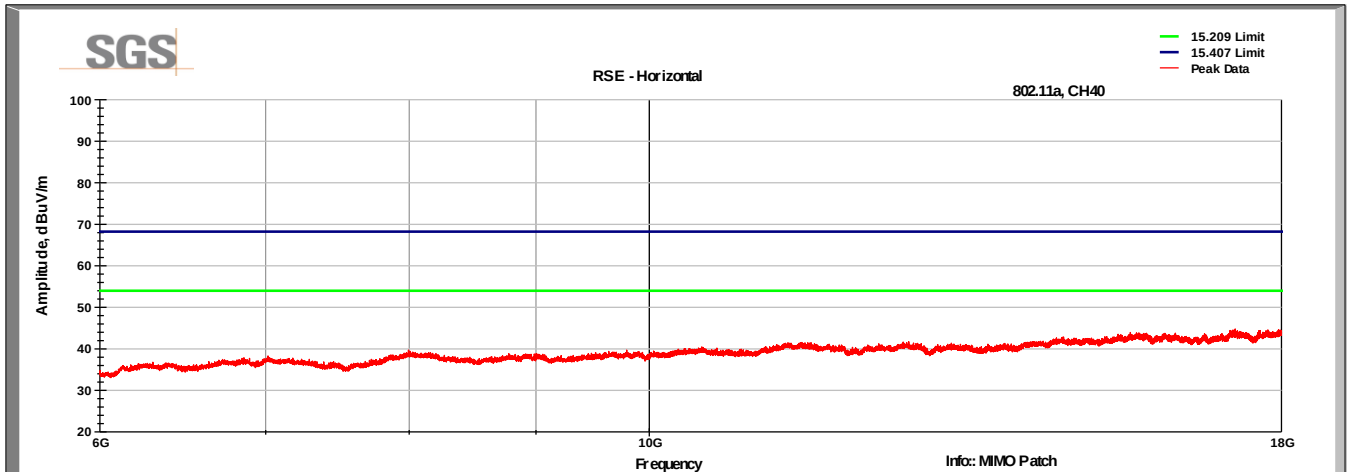
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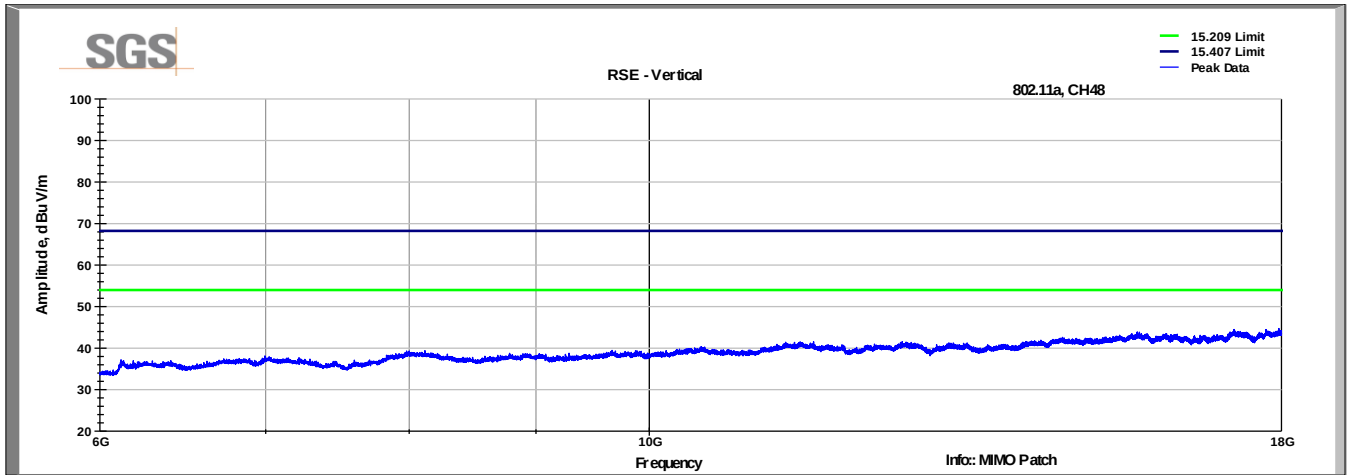
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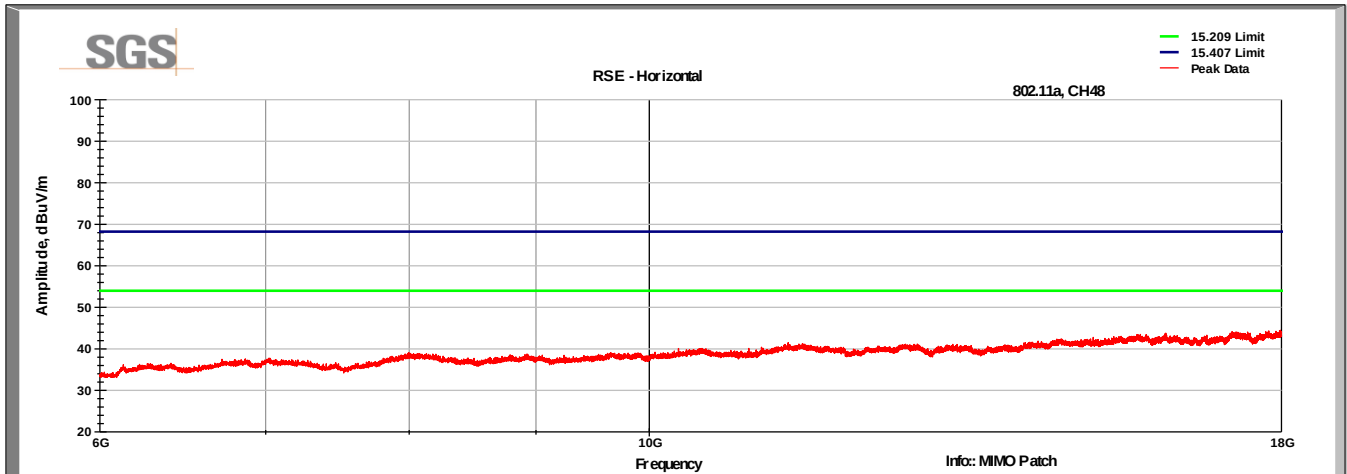
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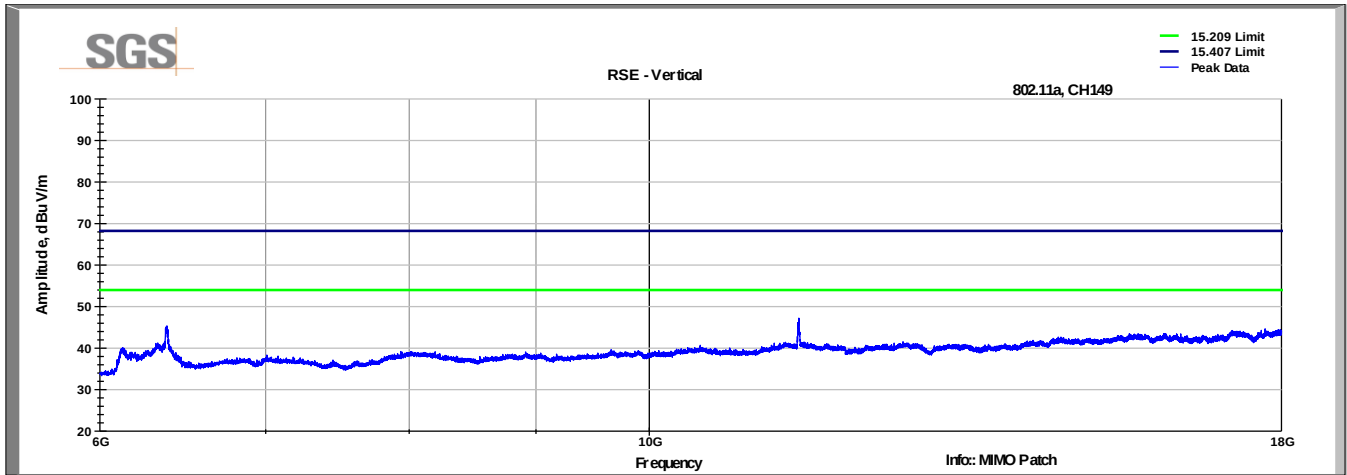
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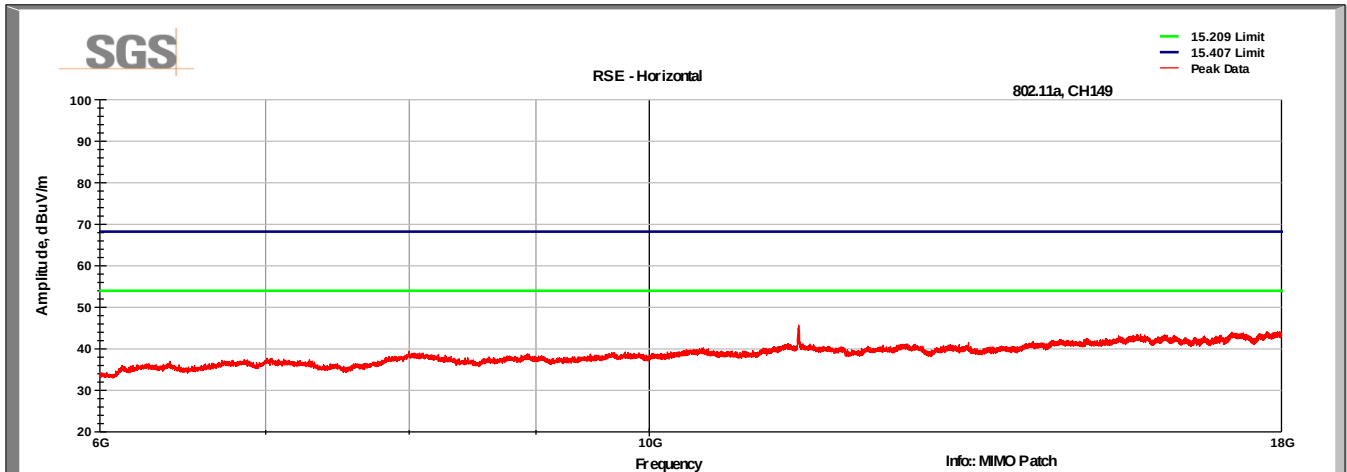
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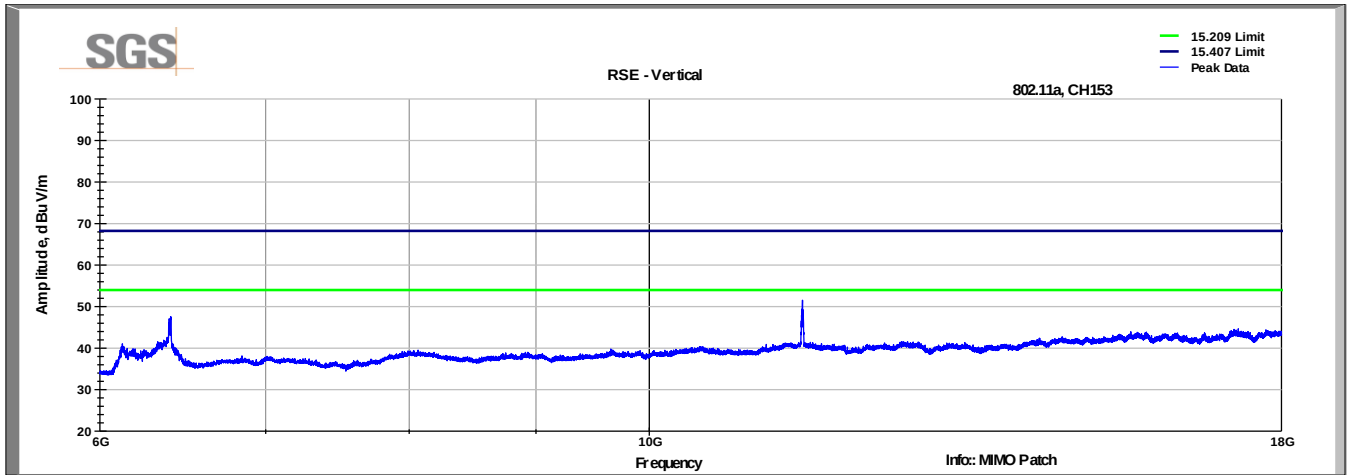
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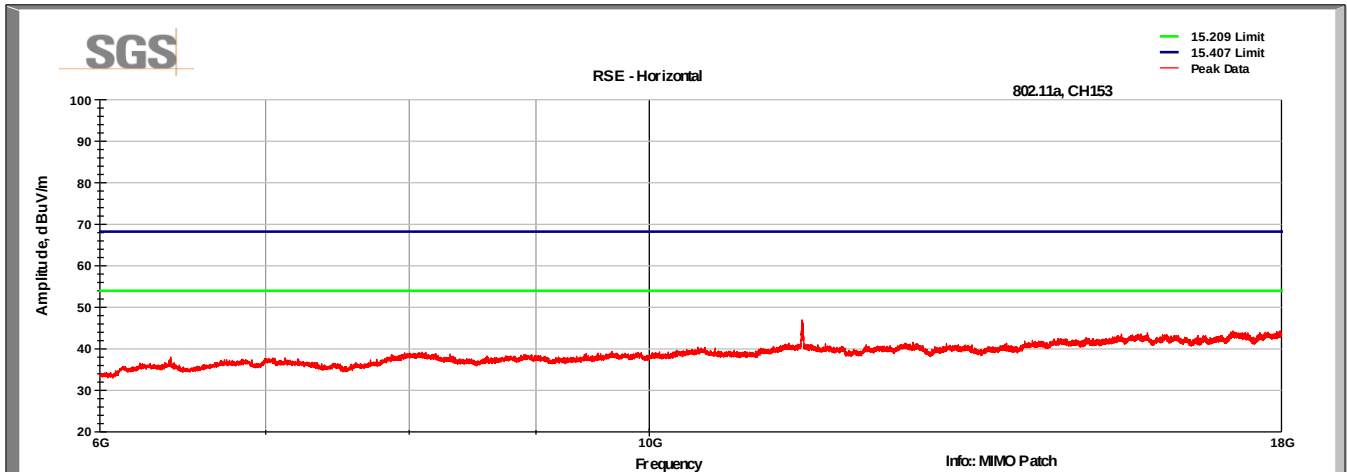
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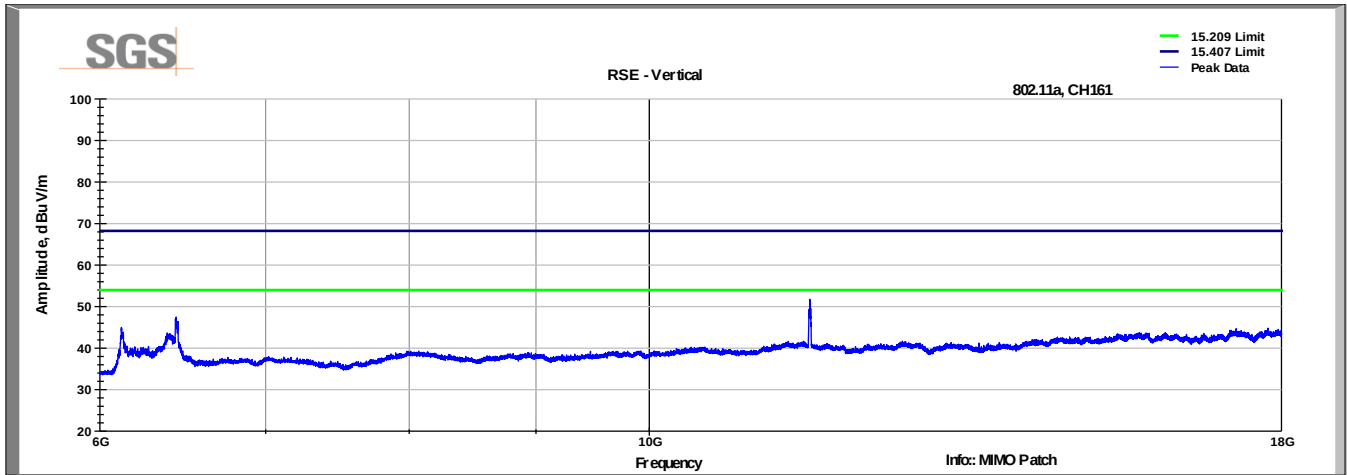
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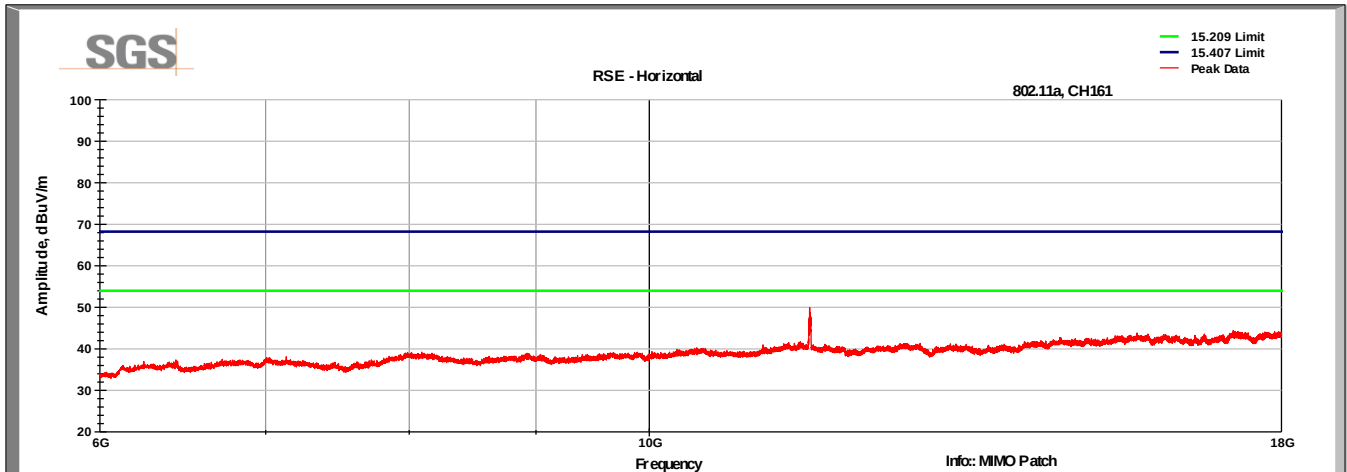
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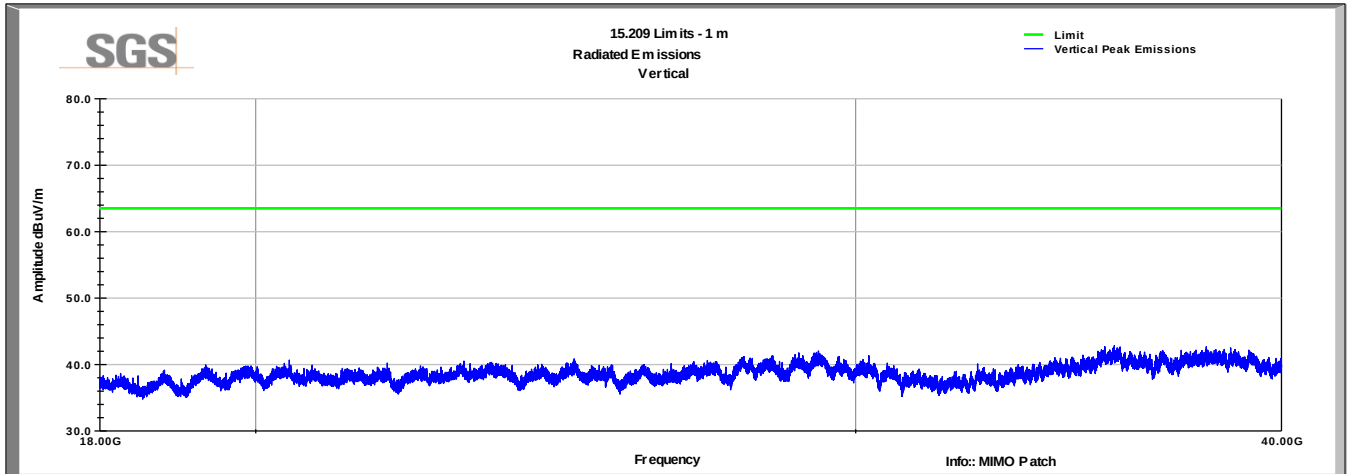
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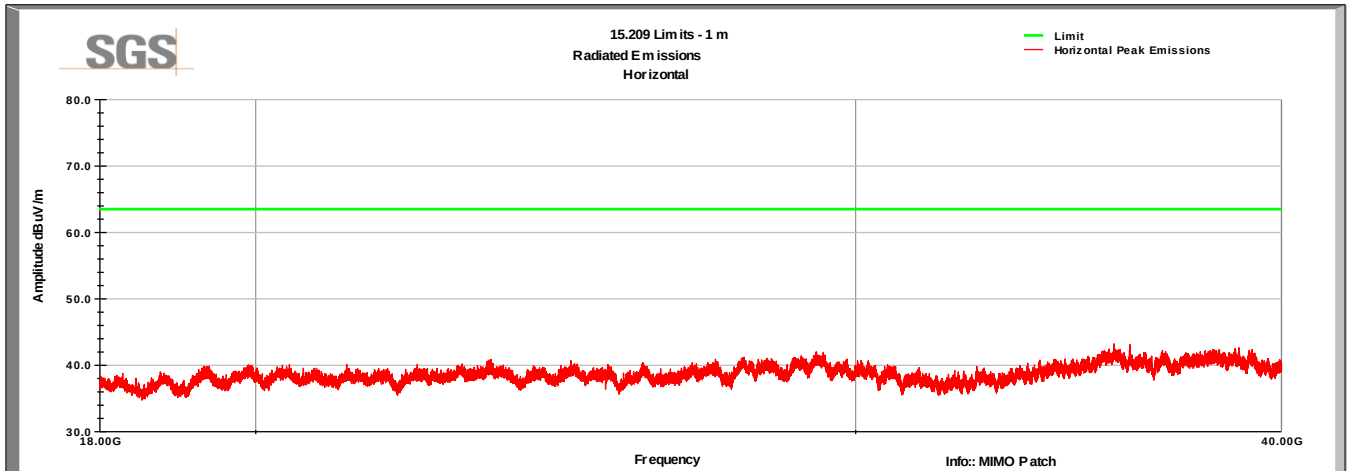
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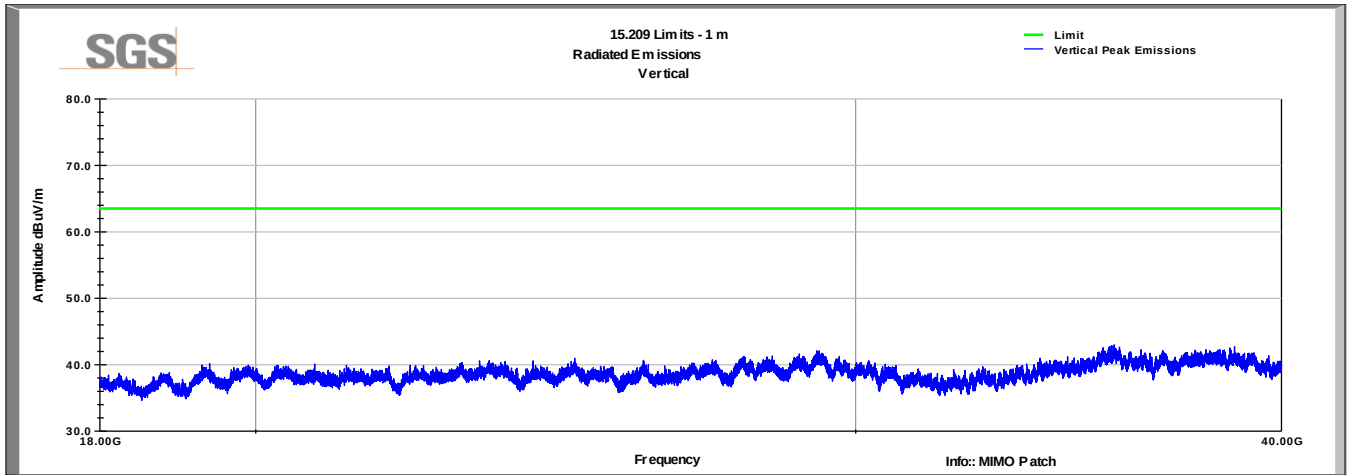
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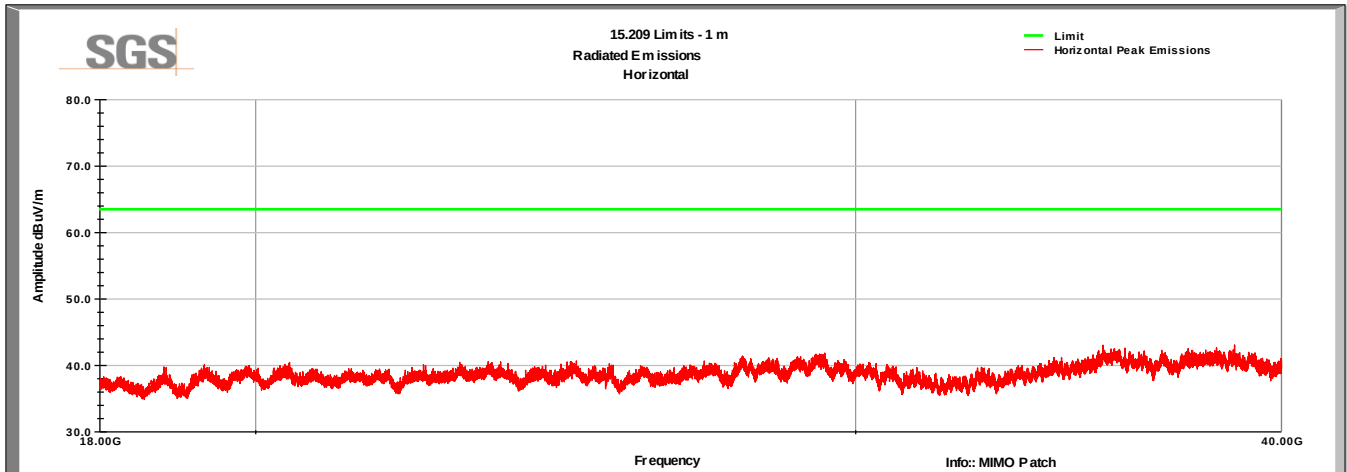
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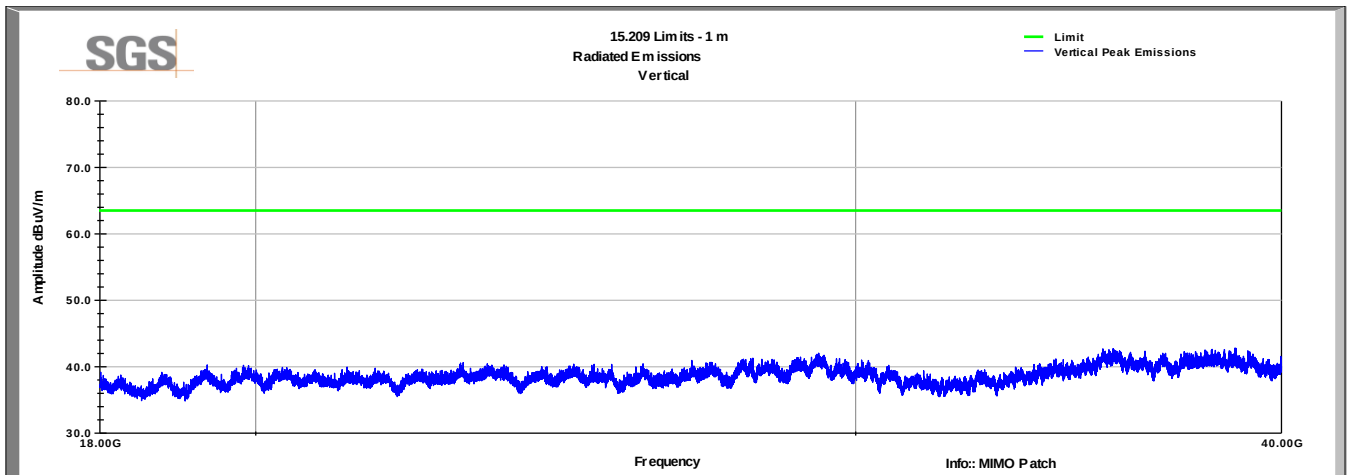
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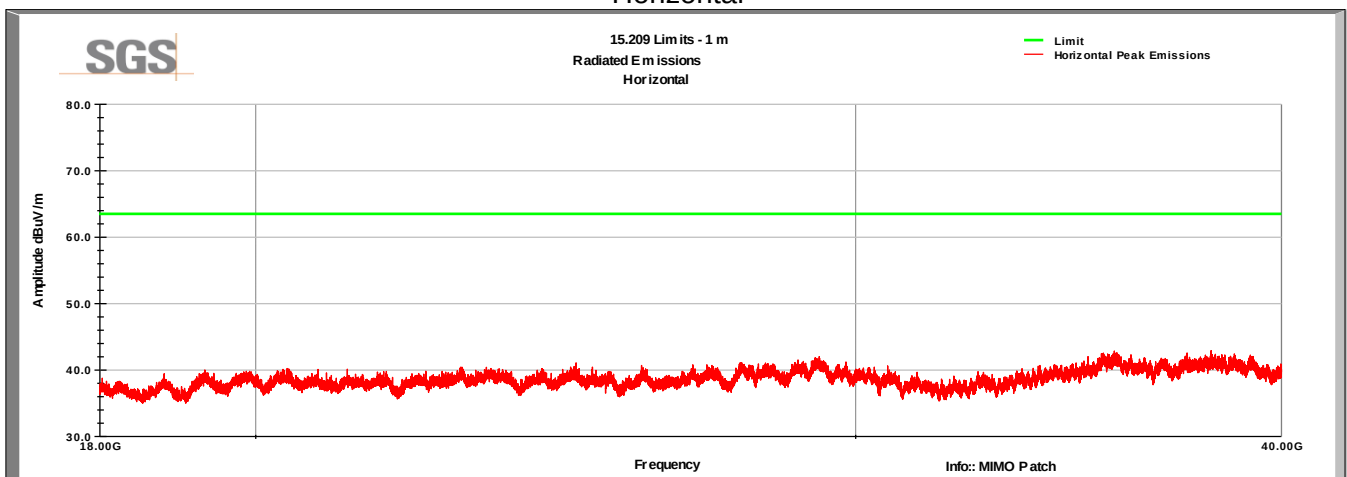
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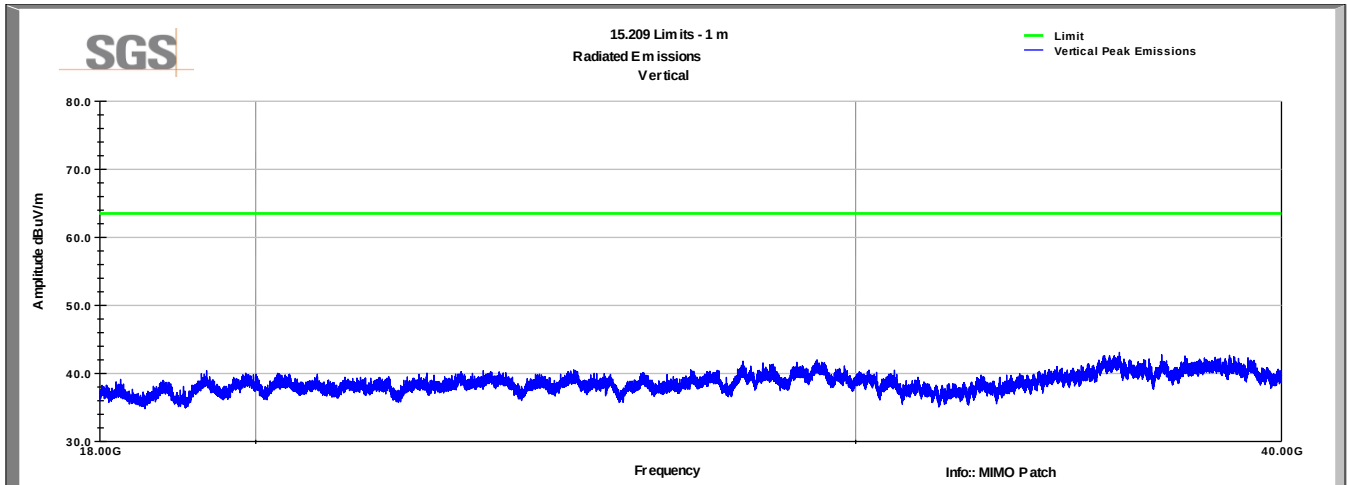
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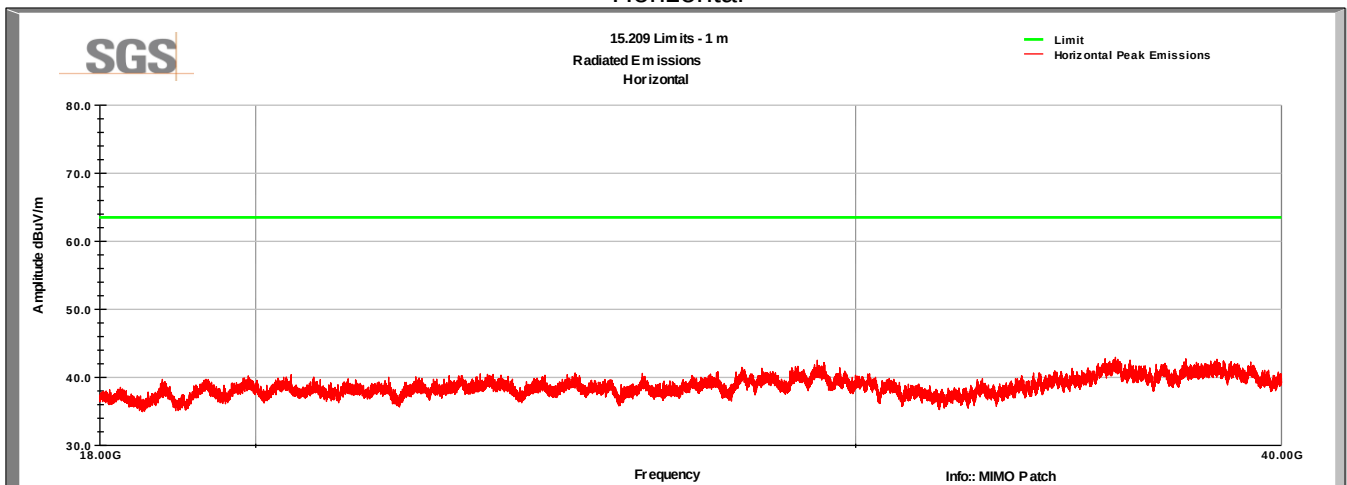
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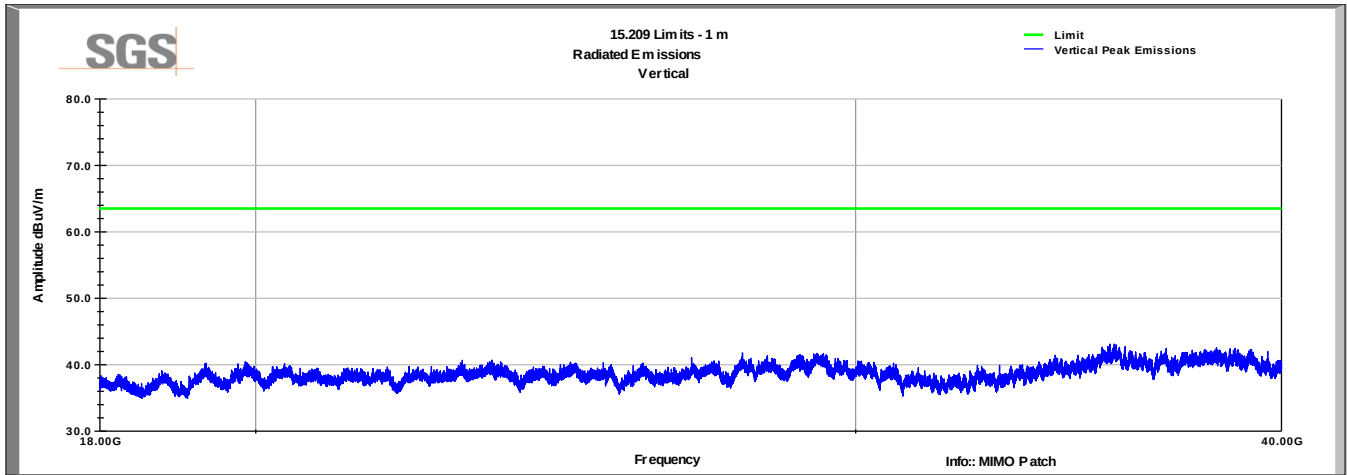
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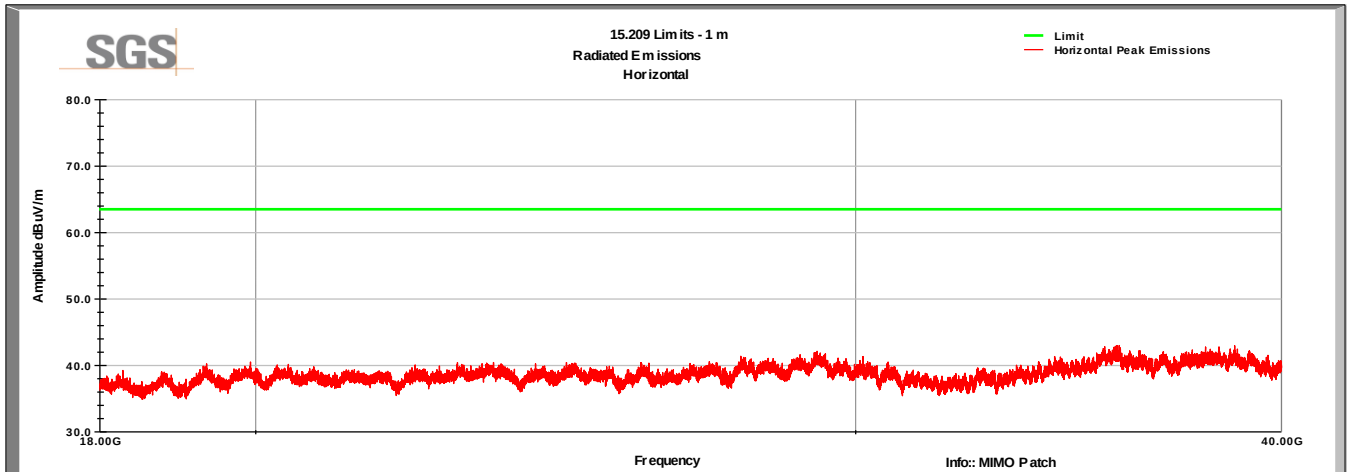
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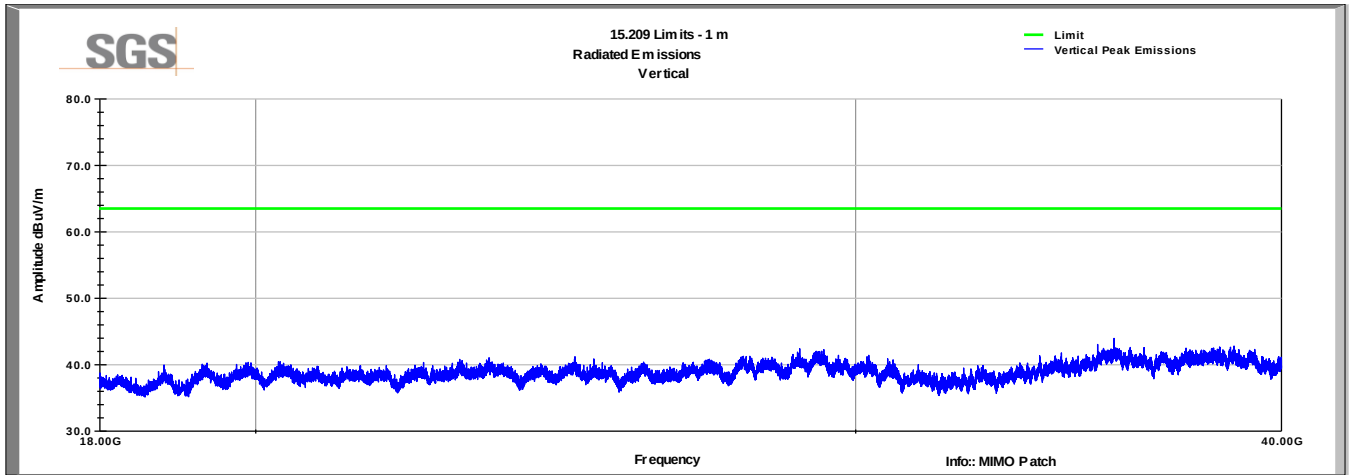
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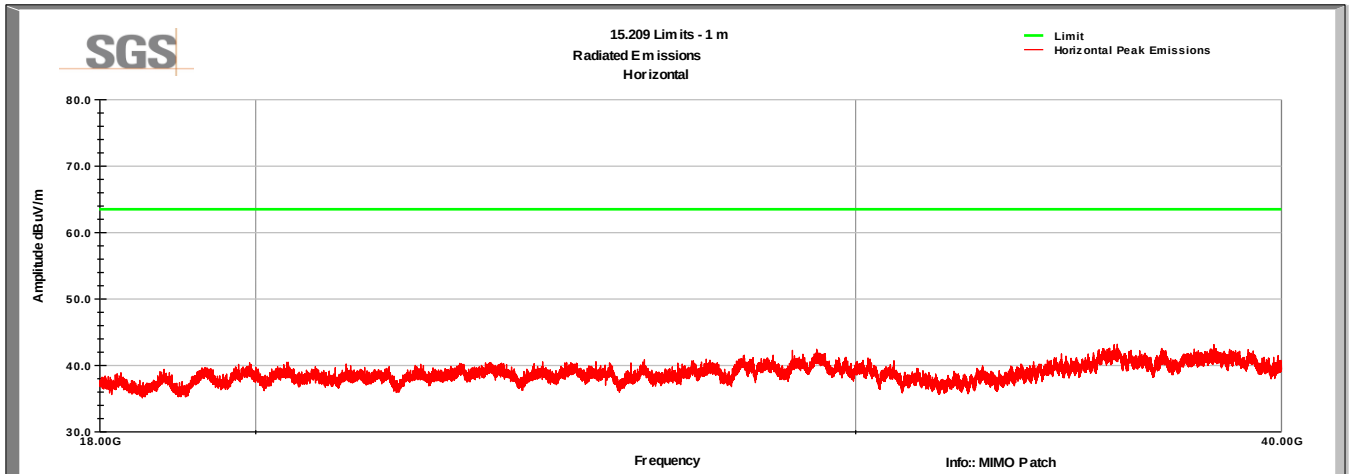
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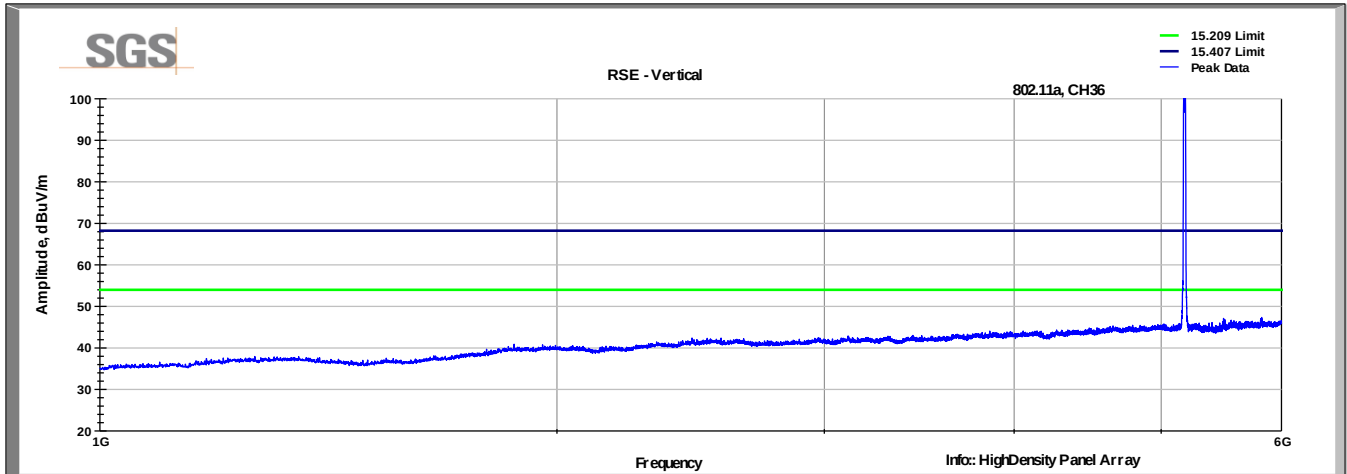
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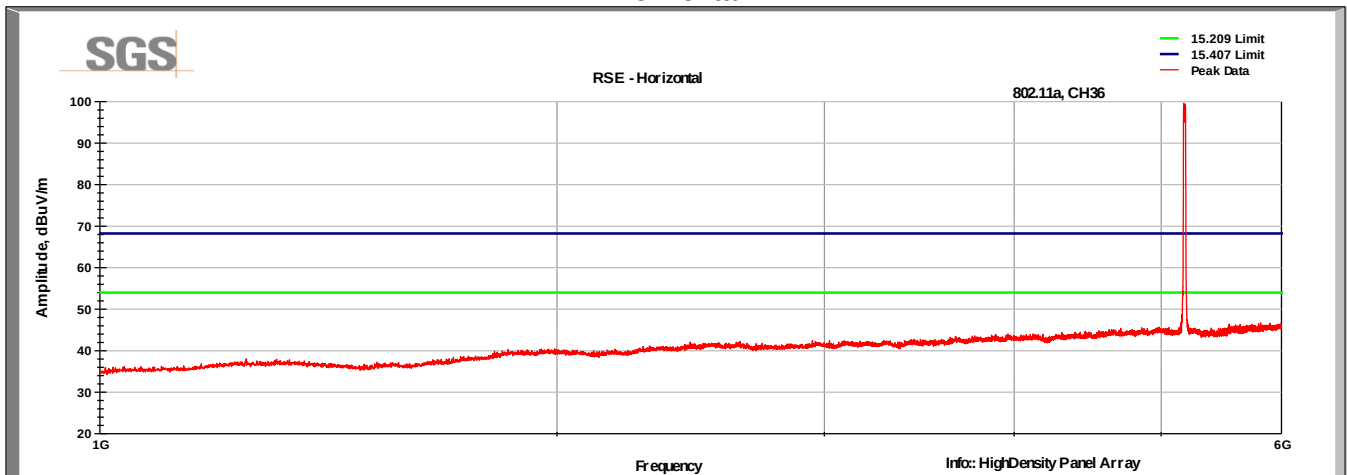
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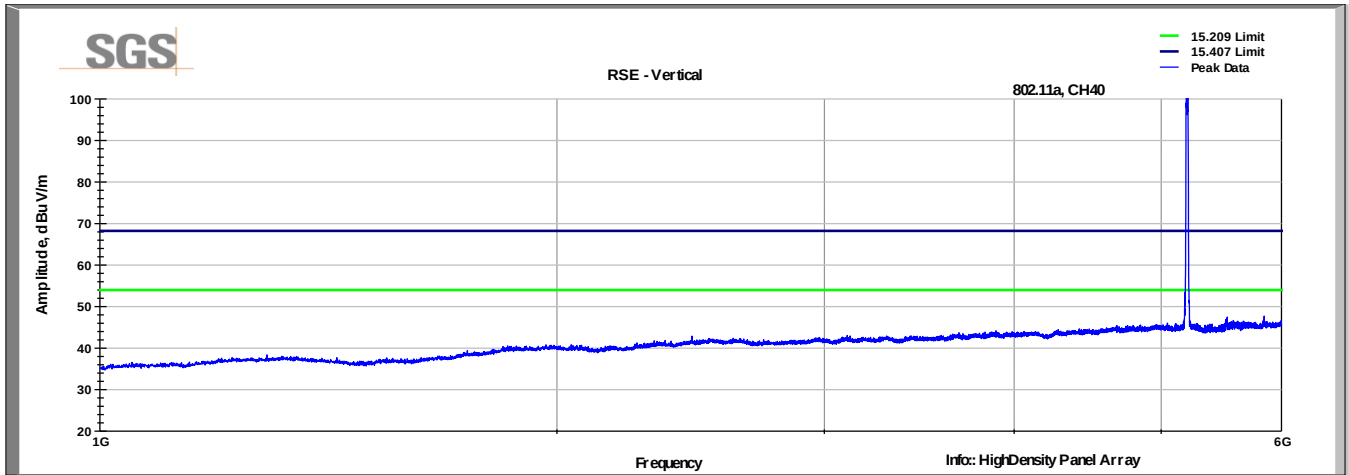
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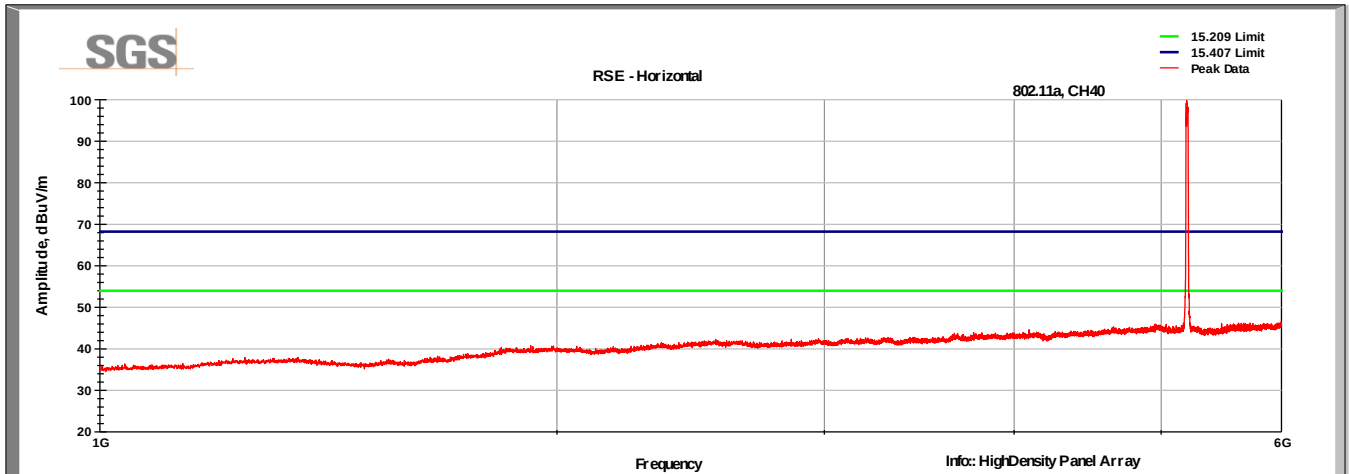
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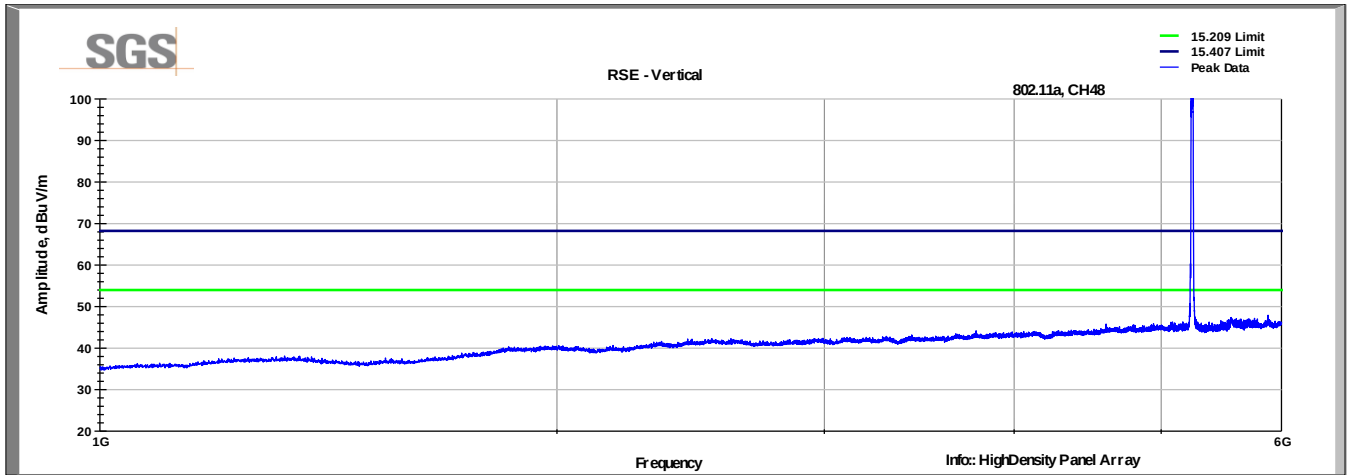
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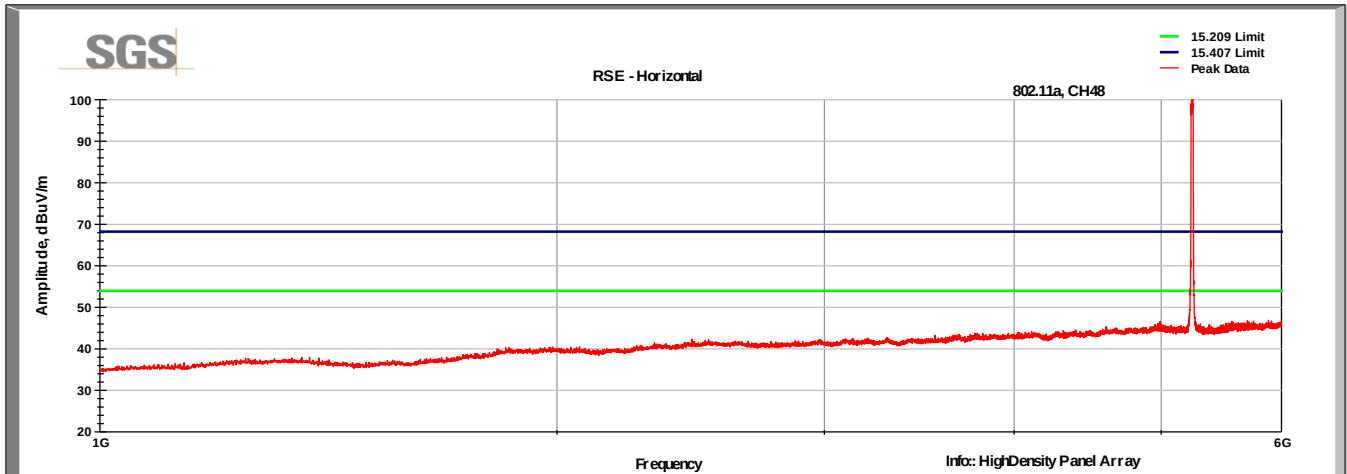
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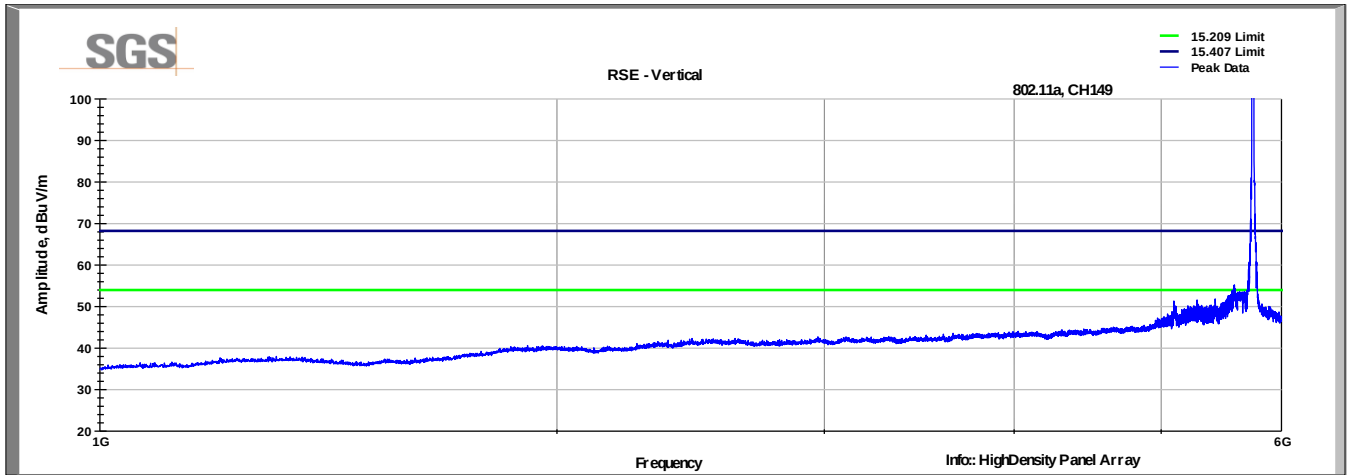
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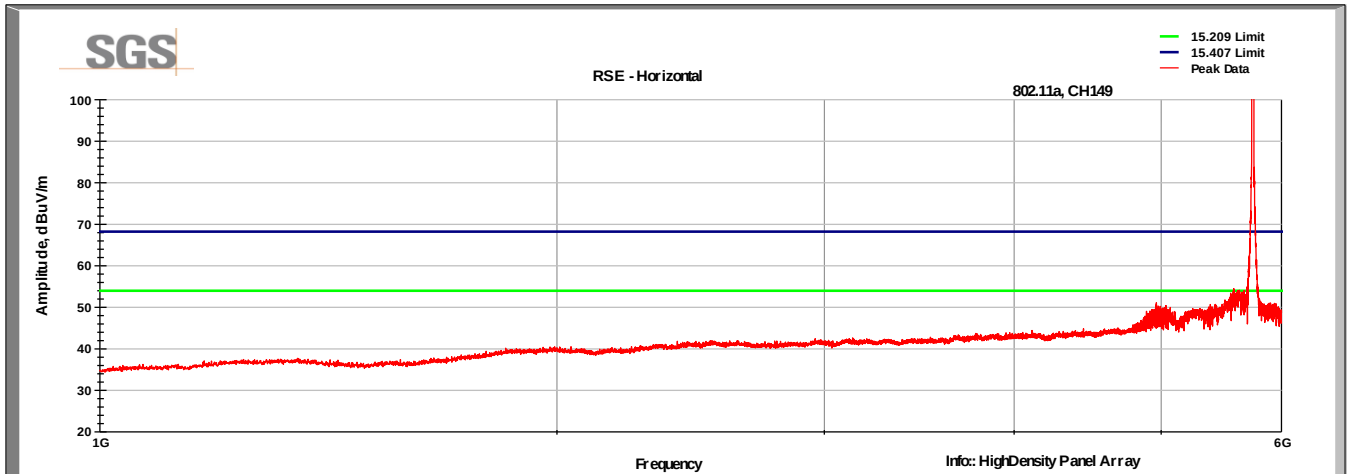
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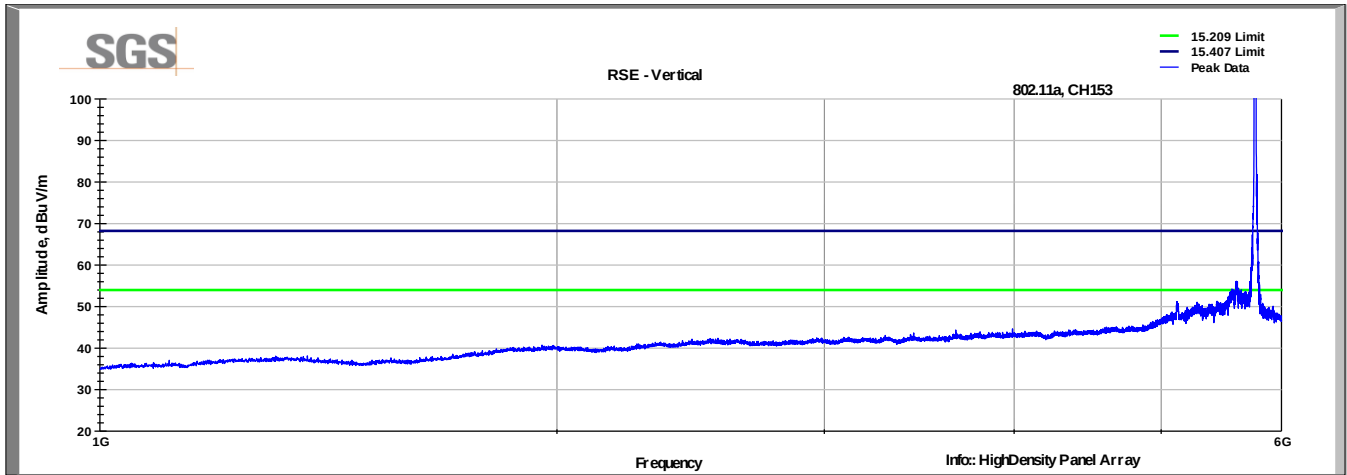
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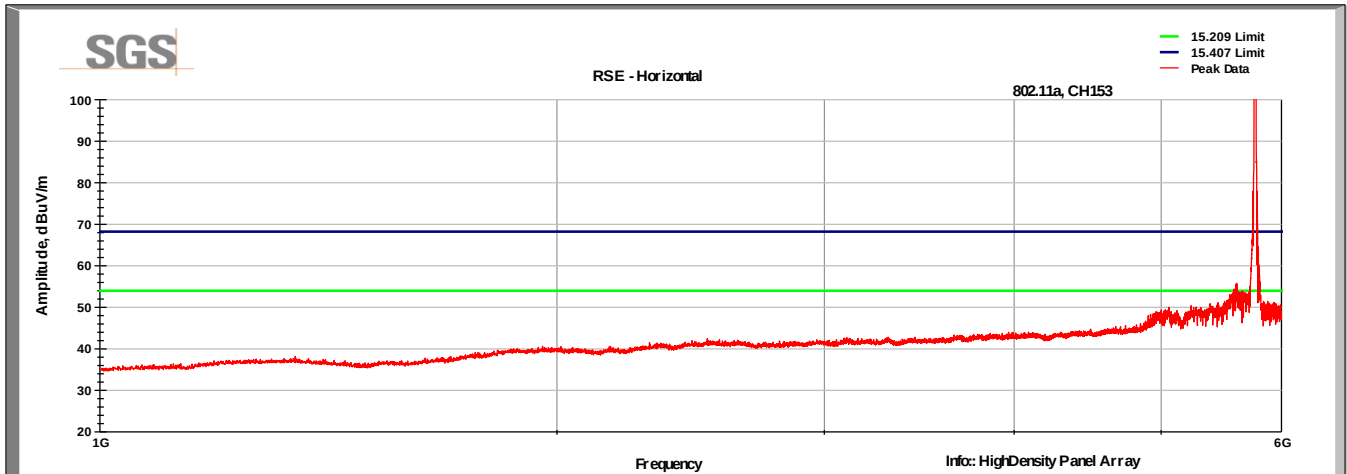
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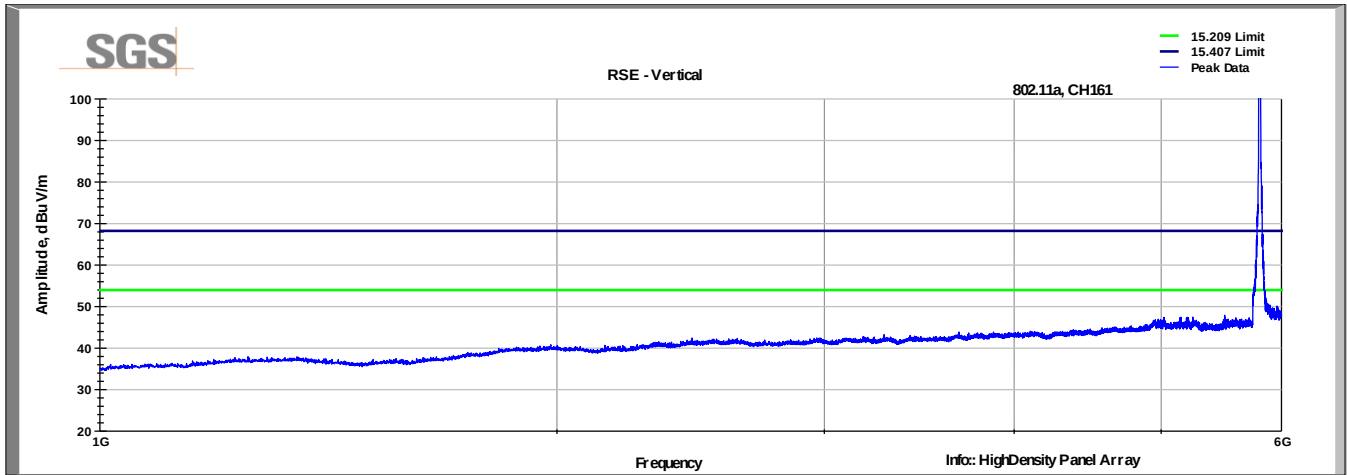
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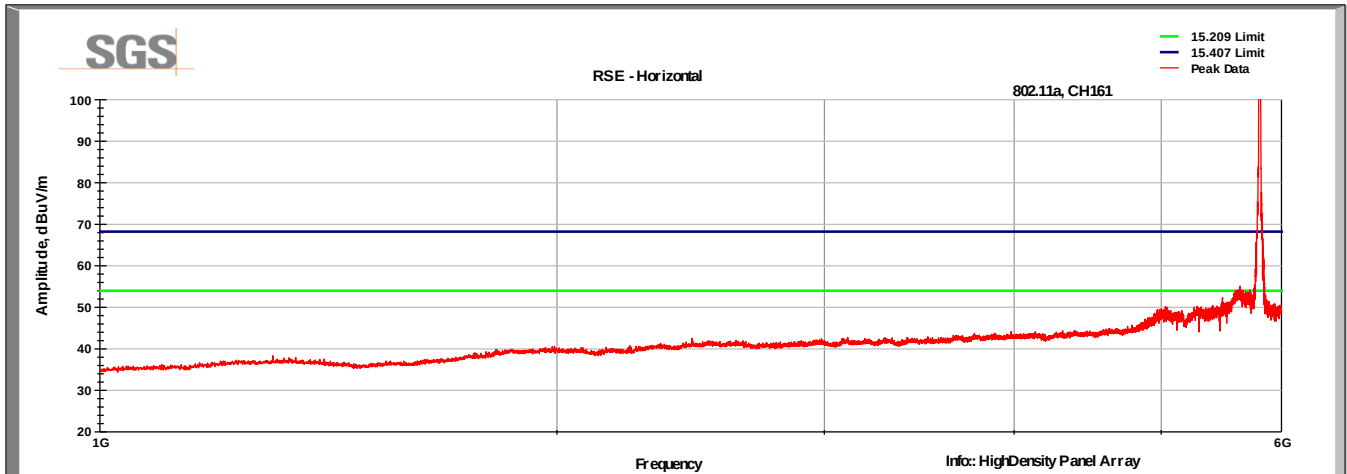
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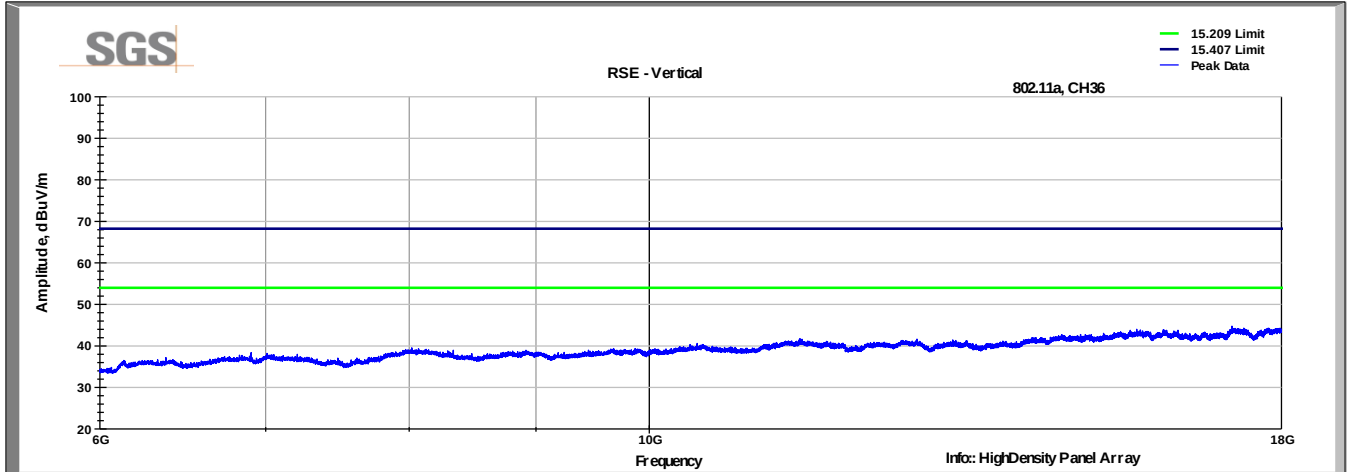
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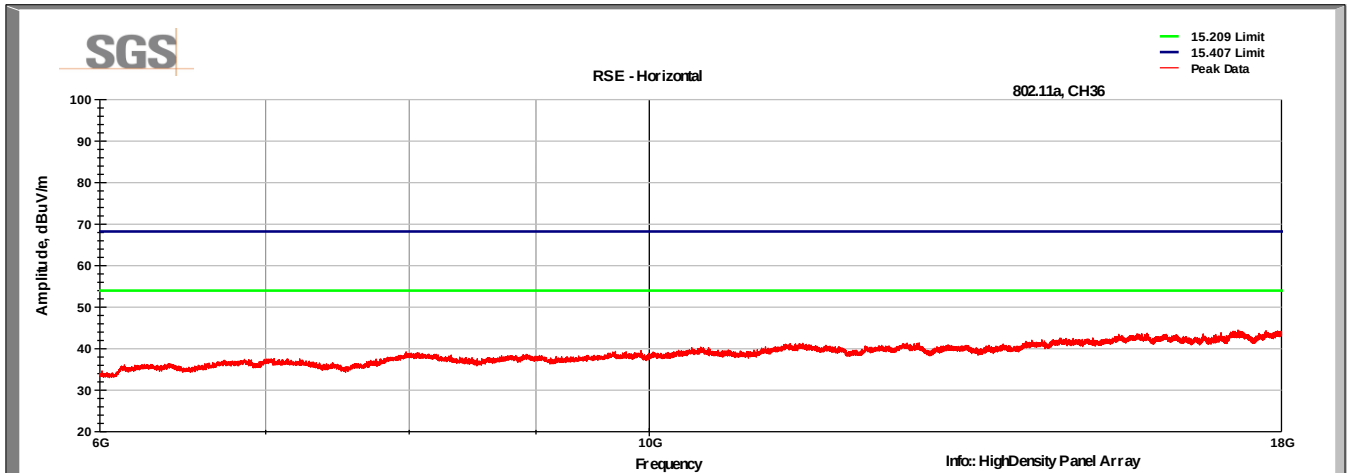
3.9 Test Data – Antenna P/N: M6013070P30006I (6-18GHz)

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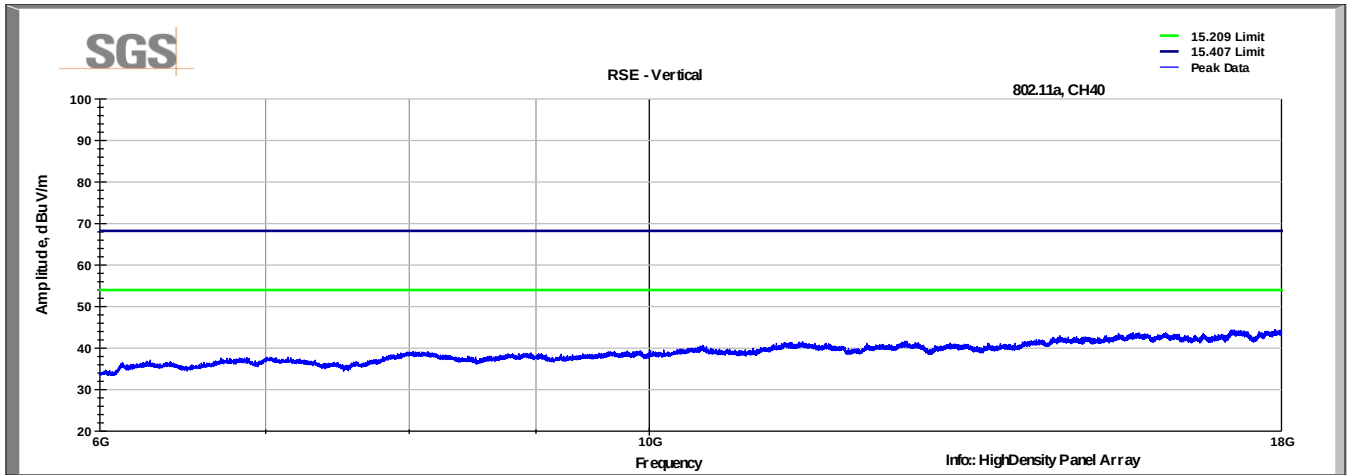
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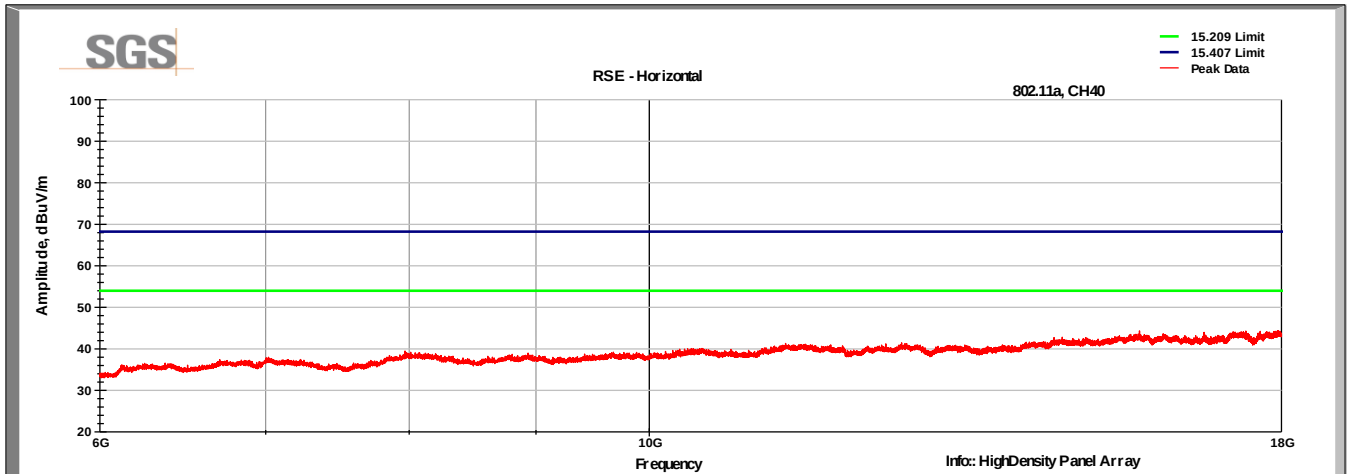
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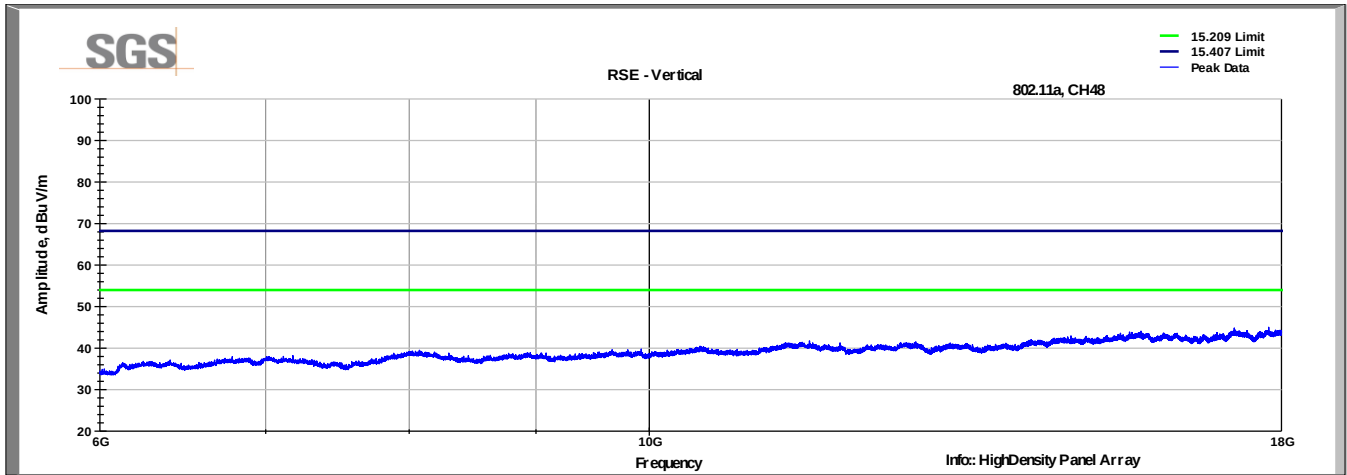
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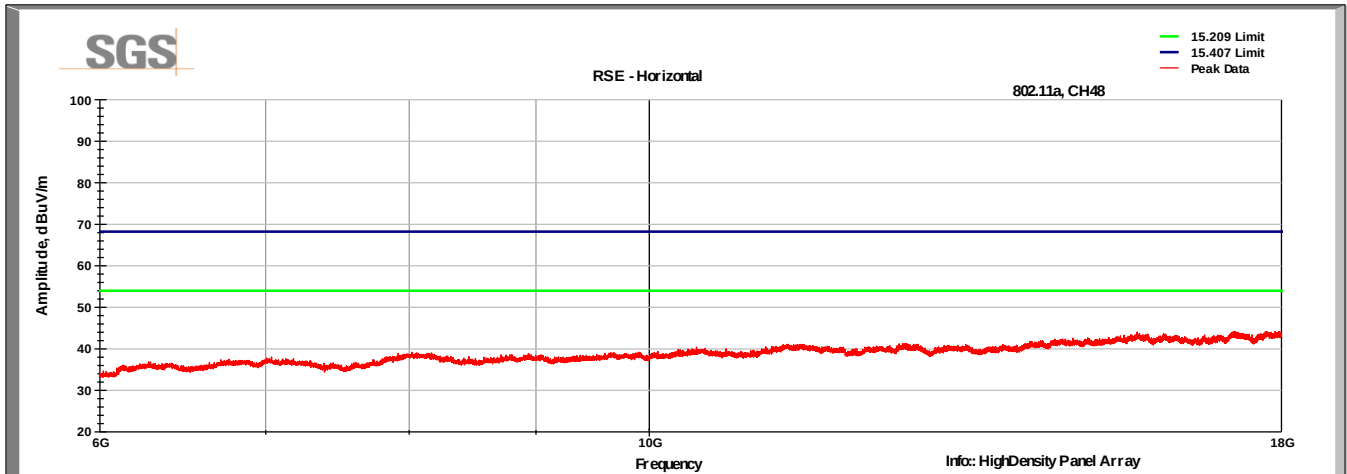
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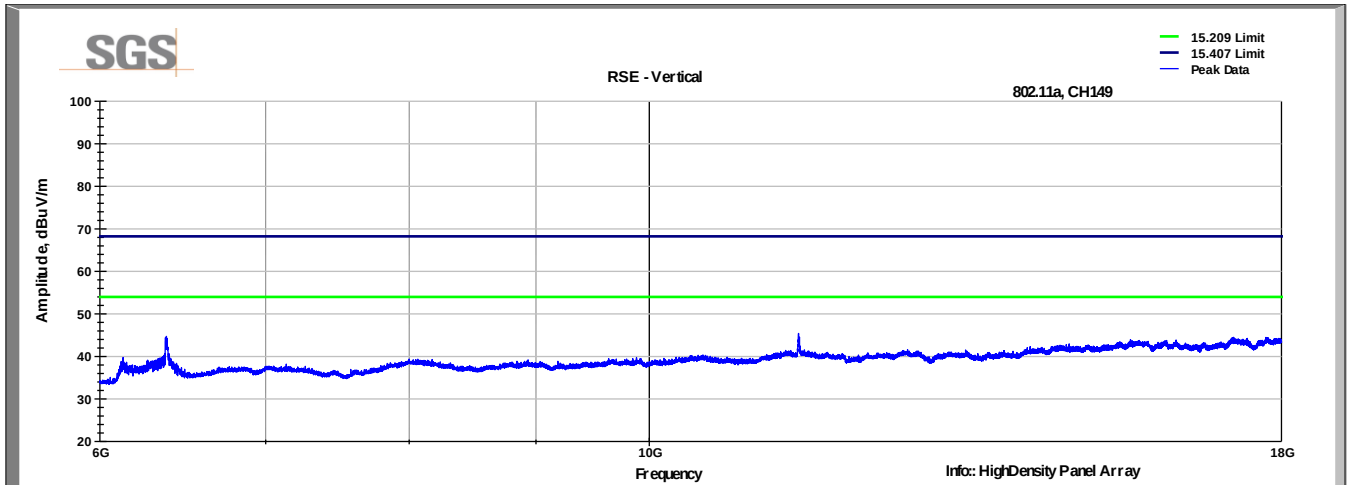
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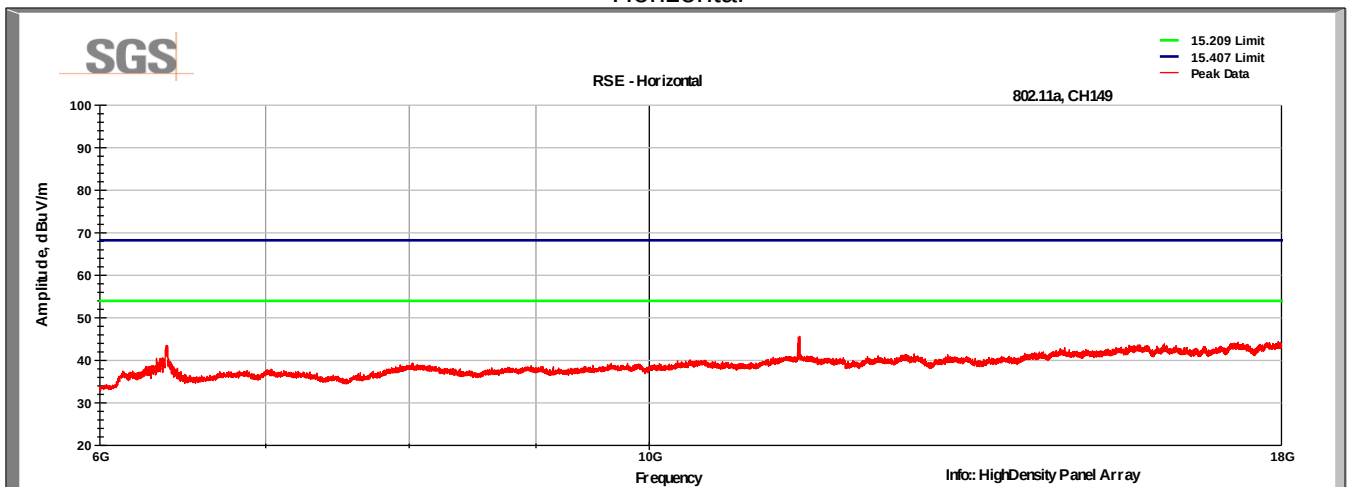
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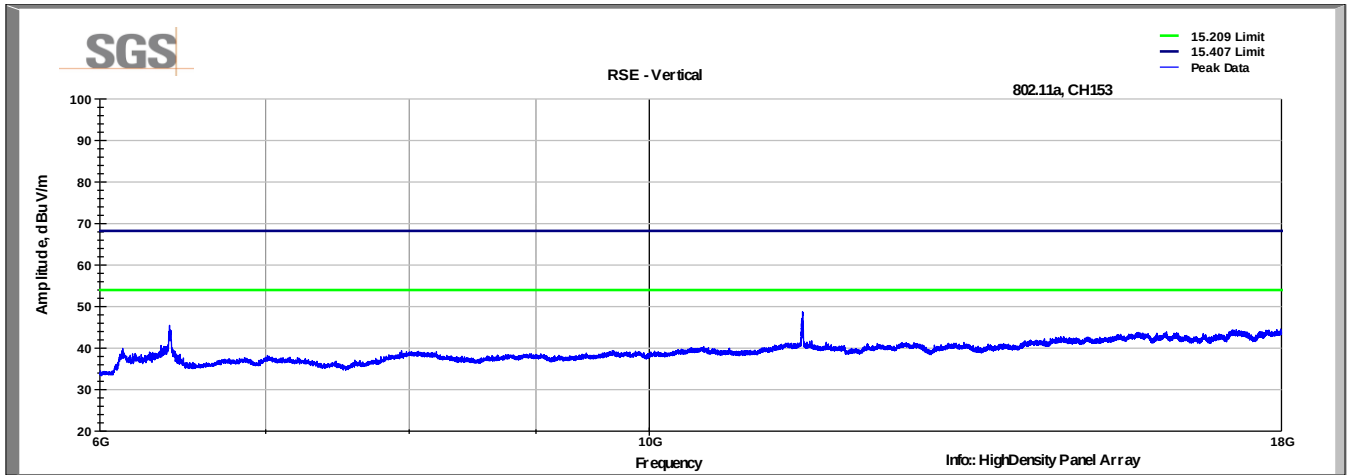
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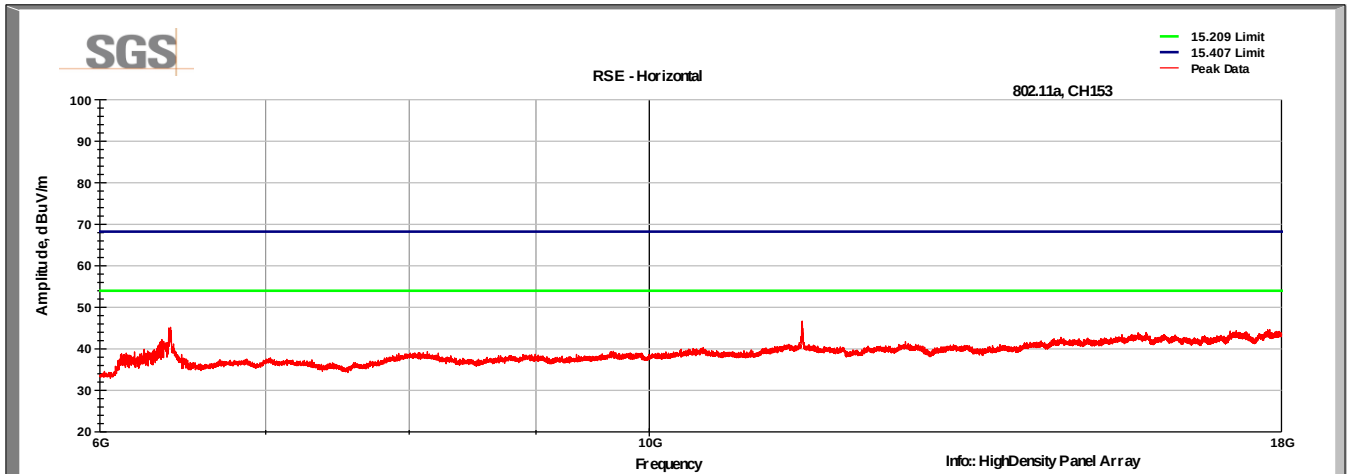
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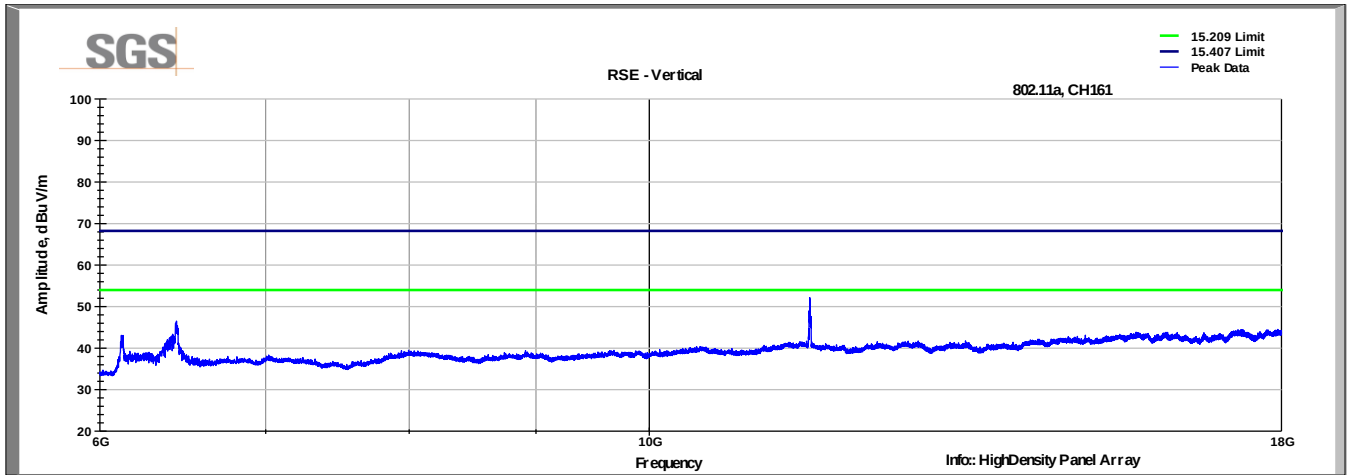
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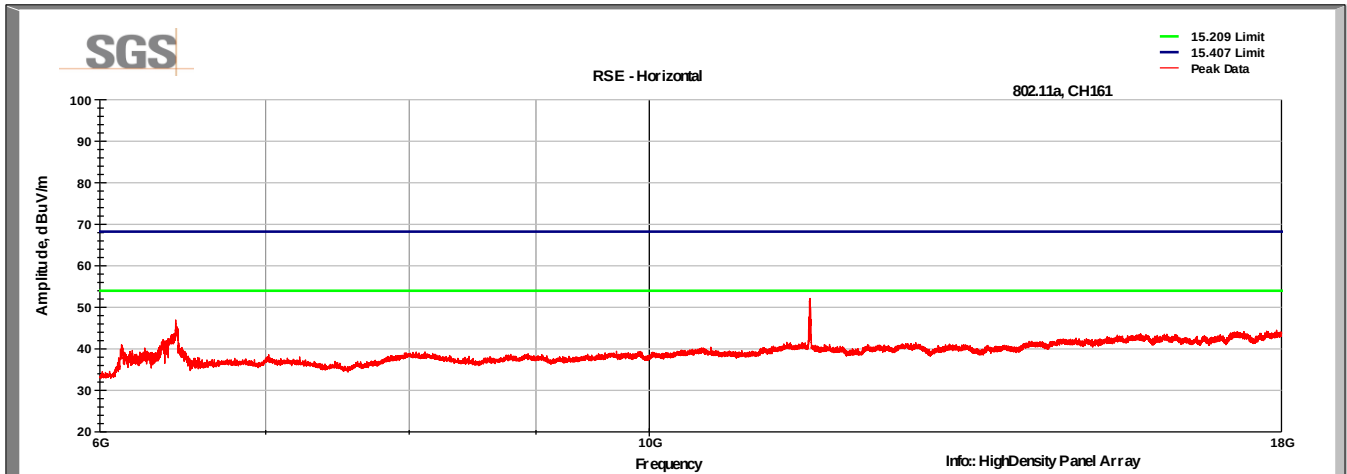
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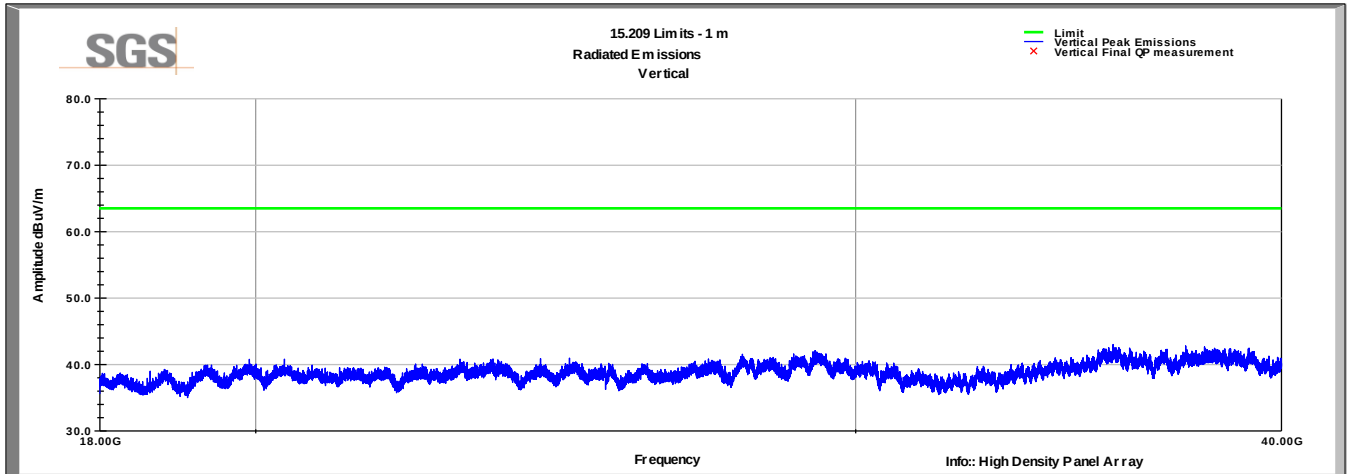
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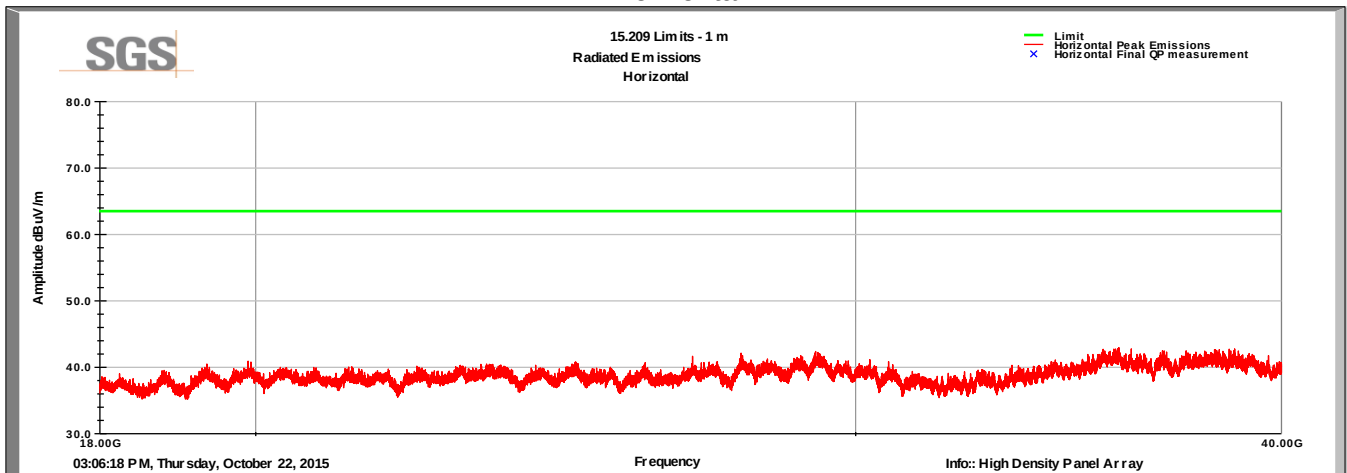
3.10 Test Data – Antenna P/N: M6013070P30006I (18-40GHz)

CH 36 6MB/s

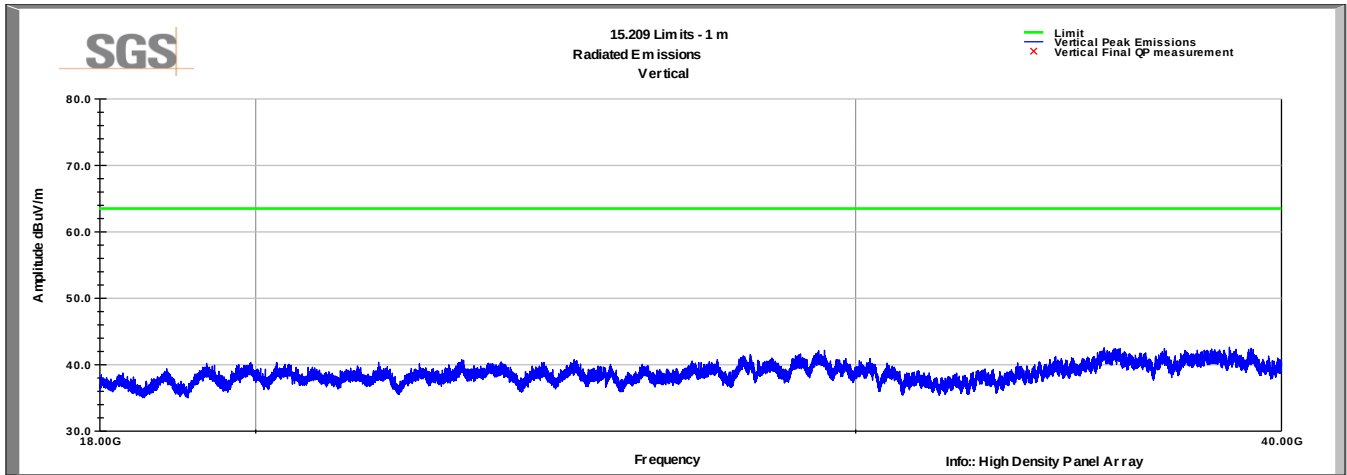
Vertical



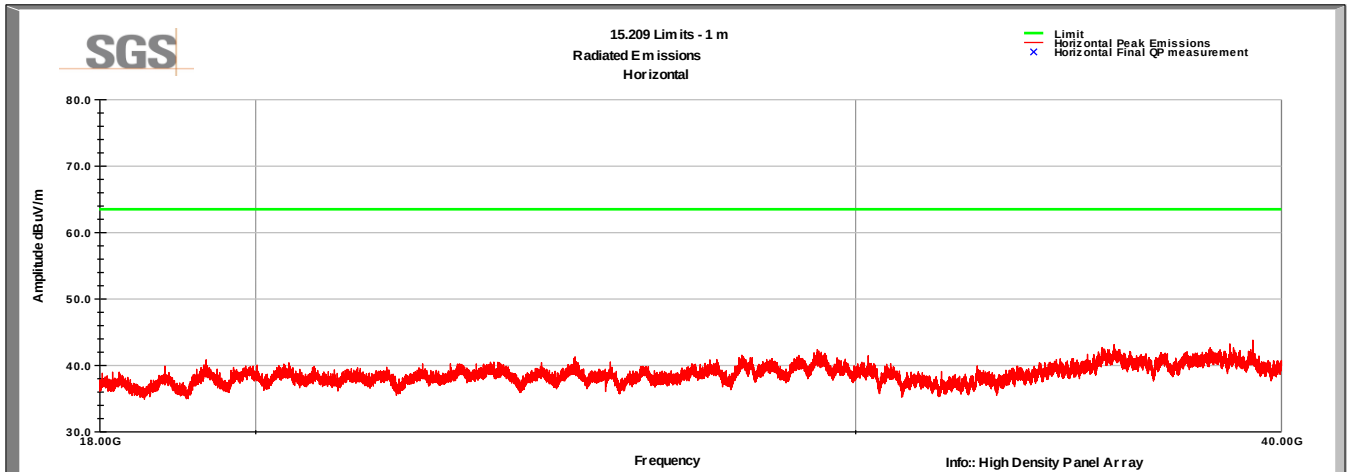
Horizontal



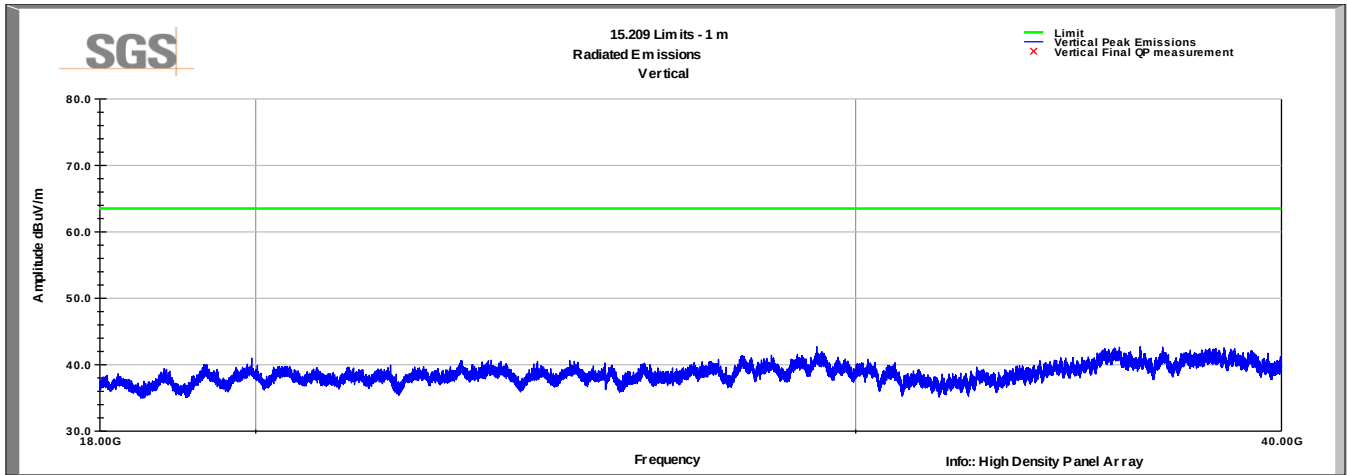
CH 40 6MB/s Vertical



Horizontal



CH 48 6MB/s Vertical



Horizontal

