

EMC Test Report

Project Number: 4066022

Report Number: 4066022EMC01

Revision Level: 0

Client: Numerex Corp

Equipment Under Test: Omnilink Electronic Monitoring Device

Model: OM410

FCC ID: TWVOM410

FCC Rule Parts: Part 2, Part 22(H), Part 24(E)

Report issued on: 05 December 2016

Test Result: Compliant

Tested by:


Martin Taylor, RF-EMC Engineer

Reviewed by:


Jeremy Pickens, Senior EMC Engineer

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.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or Testing done by SGS International Electrical Approvals in connection with distribution or use of the product described in this report must be approved by SGS international Electrical Approvals in writing.

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1 Summary of Test Results

Reference Sections	Test Description	Test Limit	Test Condition	Test Result
2.1046	Conducted Output Power	N/A	Conducted	NS(1)
24.232(d)	Peak-to-Average Ratio	<13 dB		NS(1)
2.1049 22.917(a) 24.238(a)	Occupied Bandwidth	N/A		NS(1)
2.1051 22.917(a) 24.238(a)	Band Edge / Conducted Spurious Emissions	$< 43 + 10\log_{10}(P_{\text{Watts}})$ at band edge and for all out of band emissions		NS(1)
22.913(a)(2)	Effective Radiated Power	< 7 Watts max ERP	Radiated	NS(1)
24.232(c)	Equivalent Isotropically Radiated Power	< 2 Watts max EIRP		NS(1)
2.1053 22.917(a) 24.238(a)	Radiated Spurious Emissions	$< 43 + 10\log_{10}(P_{\text{Watts}})$ at band edge and for all out of band emissions		Compliant
2.1055 22.917(a) 24.238(a)	Frequency Stability	<2.5 ppm		NS(1)

(1) Not under the scope of the evaluation. Refer to certified module report (FCC ID: RIDE910-DUAL).

1.1 Modifications Required to Compliance

None

2 General Information

2.1 Client Information

Name: Numerex Corp
Address: 1095 Windward Ridge, Suite 160
City, State, Zip, Country: Alpharetta, GA 30005, USA

2.2 Test Laboratory

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

2.3 General Information of EUT

Type of Product: Omnilink Electronic Monitoring Device
Model Number: OM410
Serial Number: A1000009D40A8C

IMEI Number: 270113178513896332

Rated Voltage: 3.7 Vdc
Test Voltage: 3.7 Vdc
Tx Frequency Range: 824.7– 848.31 MHz (CDMA BC0)
1851.25– 1908.75 MHz (CDMA BC1)

FCC Classification: PCS Licensed Transmitter PCB
Type: Pre Production

Sample Received Date: 09 November 2016
Dates of testing: 02 December 2016

2.4 Operating Modes and Conditions

The EUT was exercised by connecting a CMW communications tester to the device. The CMW was used to control signaling and channel during testing.

3 Radiated Spurious Emissions

3.1 Test Result

Test Description	Basic Standards	Test Result
Radiated Spurious Emissions	FCC Part 2.1053 FCC Part 22.917(a) FCC Part 24.238(a) ANSI/TIA-603-C-2004	Complaint

3.2 Test Method

The levels of the carrier and the various conducted spurious and harmonics frequencies are measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB. Compliance is based on the use of a spectrum analyzer employing a resolution bandwidth of 1 MHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of a least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emissions bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

The EUT was manipulated through each of its three orthogonal axes with the measurement oriented in both vertical and horizontal polarizations.

A radio link was established between EUT and Radio Communications Tester. The output power of the EUT was set to maximum value by using the maximum power setting on the Radio Communications Tester. The measurements were conducted at the low, middle, and high channels in RC3/SO55 which was determined to be the worst case operating mode.

3.3 Test Equipment

Test Date: 2-Dec-2016

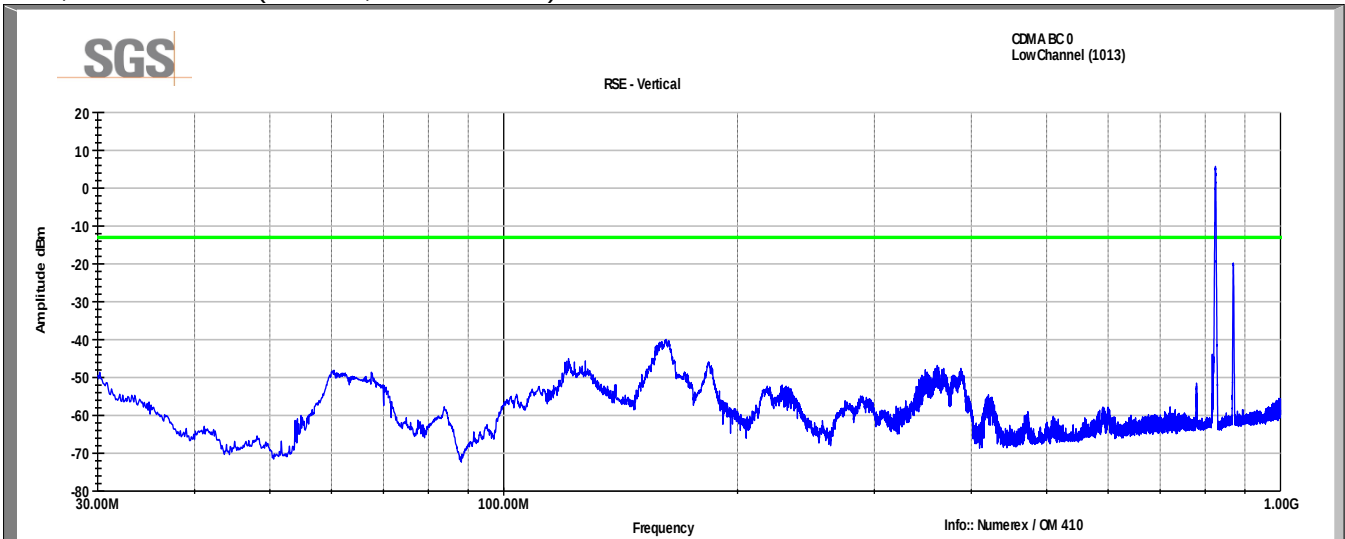
Tester: MT

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
ANTENNA, BILOG	JB6	SUNOL	B079689	8-Sep-2017
DRG HORN (MEDIUM)	3117	ETS LINDGREN	B079699	26-Apr-2017
DRG HORN (MEDIUM)	3117	ETS LINDGREN	B079691	27-Jul-2017
LOW NOISE AMPLIFIER	TS-PR18	ROHDE & SCHWARZ	B094463	16-Feb-2017
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	20-Jun-2017
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	ROHDE & SCHWARZ	B085757	27-Oct-2018
RF CABLE	LMR-240	TIMES MICROWAVE SYSTEMS	B092136	26-Jul-2017
RF CABLE	LMR-240	TIMES MICROWAVE SYSTEMS	B092135	26-Jul-2017
RF CABLE	LMR-240	TIMES MICROWAVE SYSTEMS	B095583	26-Jul-2017
RF CABLE	NFS-290-78.7-NFS	FLORIDA RF LABS	B095019	28-Jul-2017
RF CABLE	NMS-290-236.2-NMS	FLORIDA RF LABS	B095020	29-Jul-2017
RF CABLE	SF106	HUBER & SUHNER	B079661	29-Jul-2017
RF CABLE	SUCOFLEX 100	HUBER & SUHNER	B108523	4-Aug-2017

- Unless otherwise noted, equipment is on a 1 year calibration cycle.
- Based on manufacturer's specifications, the CMW-500 is on a 2 year calibration cycle

3.4 Test Data – BC0

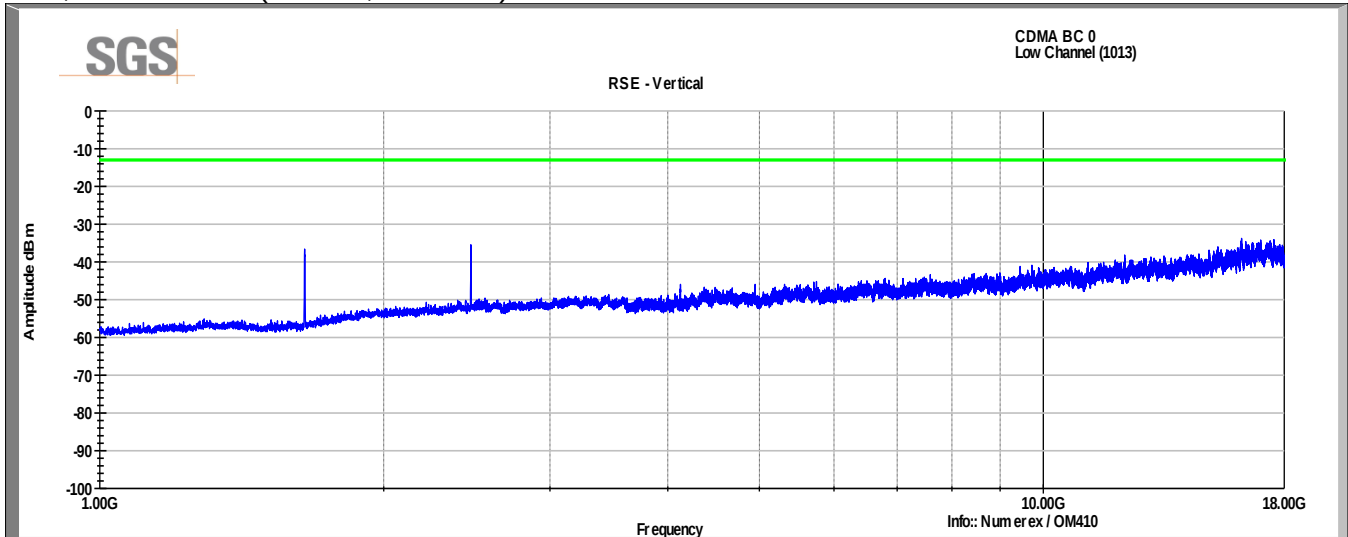
BC0, Low Channel (Vertical, 30-1000MHz)



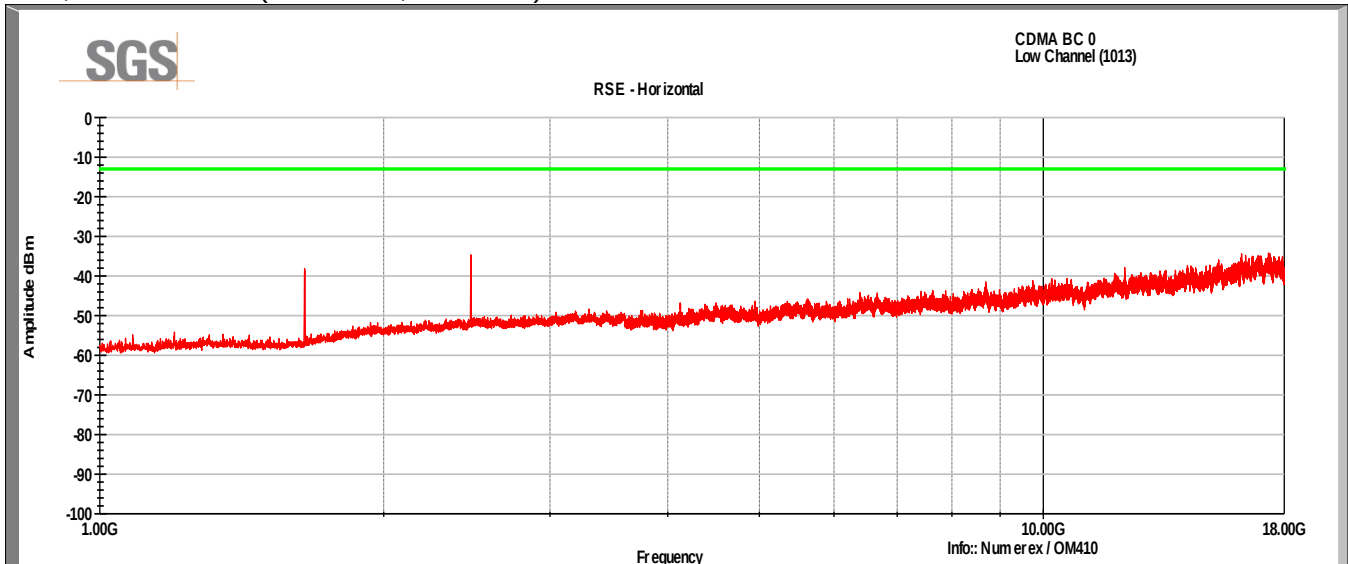
BC0, Low Channel (Horizontal, 30-1000MHz)



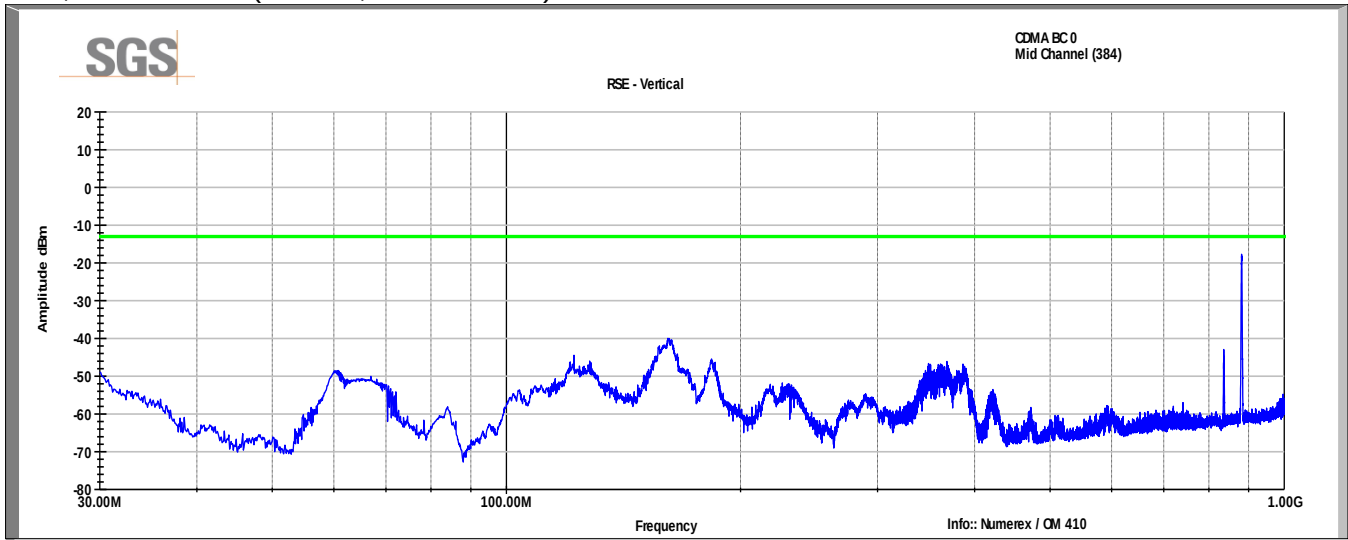
BC0, Low Channel (Vertical, 1-18GHz)



BC0, Low Channel (Horizontal, 1-18GHz)



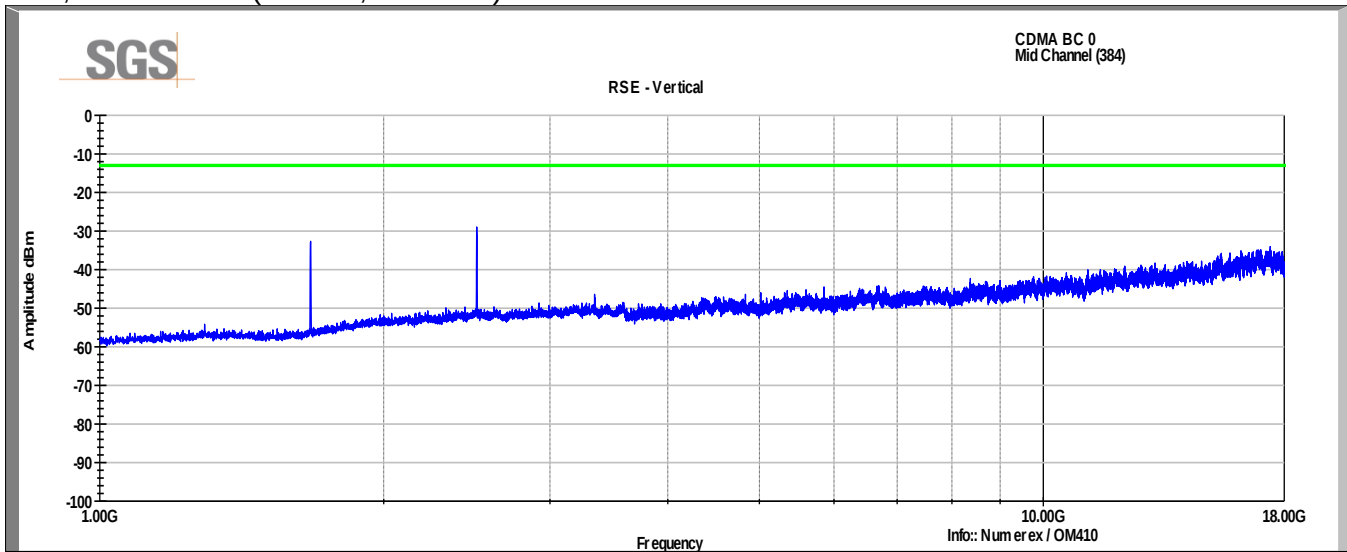
BC0, Mid Channel (Vertical, 30-1000MHz)



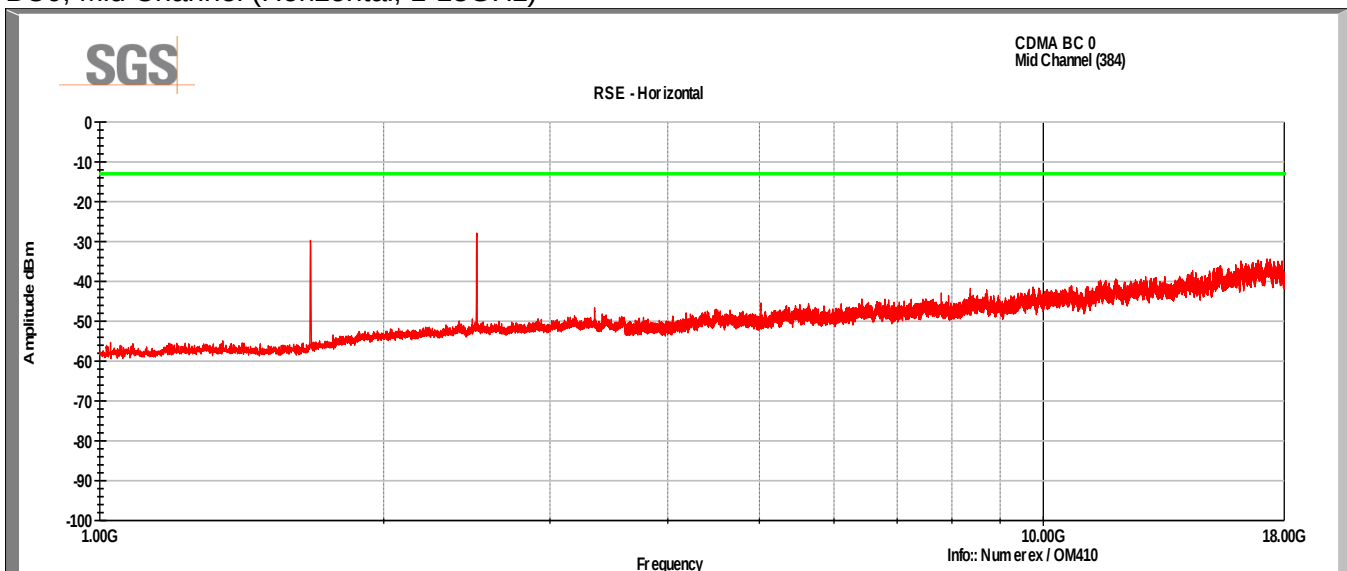
BC0, Mid Channel (Horizontal, 30-1000MHz)



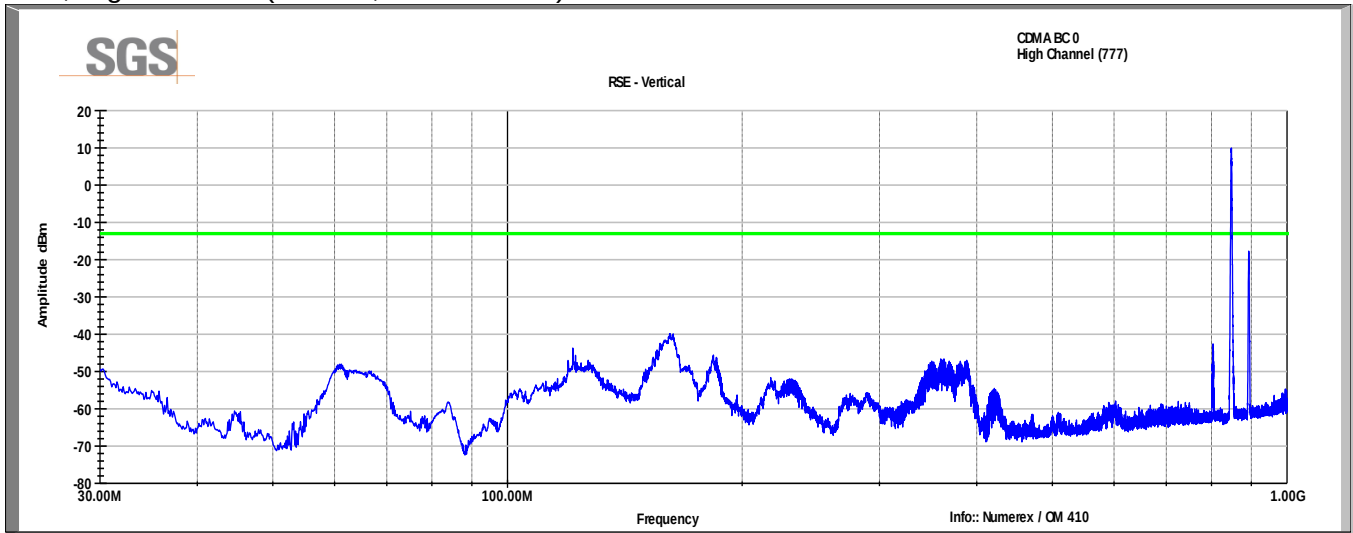
BC0, Mid Channel (Vertical, 1-18GHz)



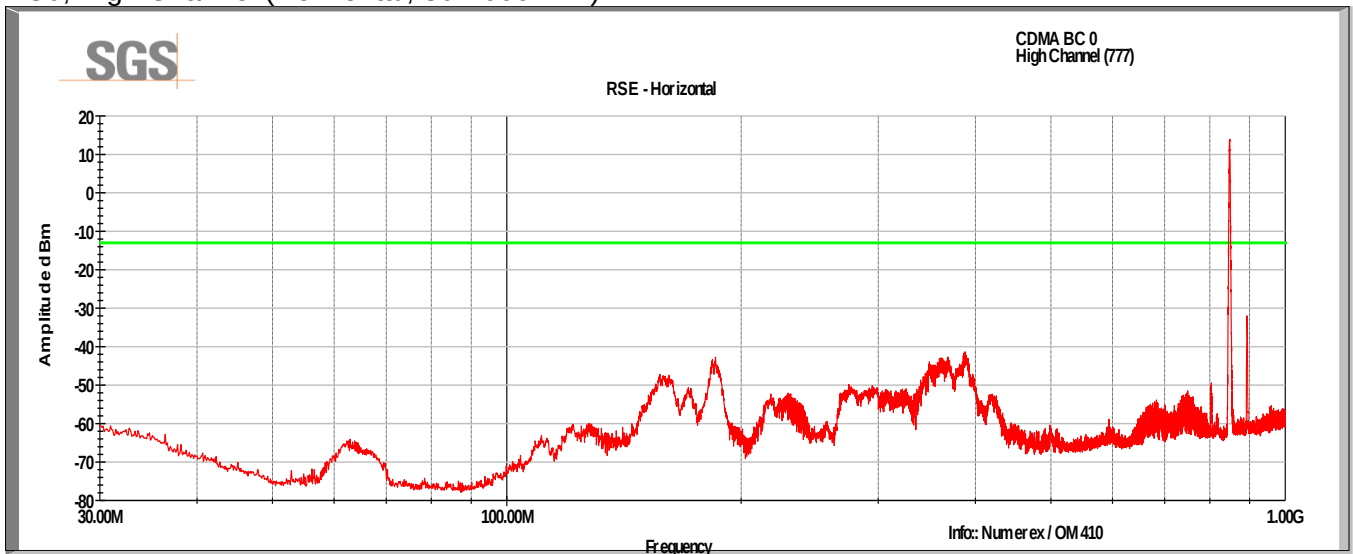
BC0, Mid Channel (Horizontal, 1-18GHz)



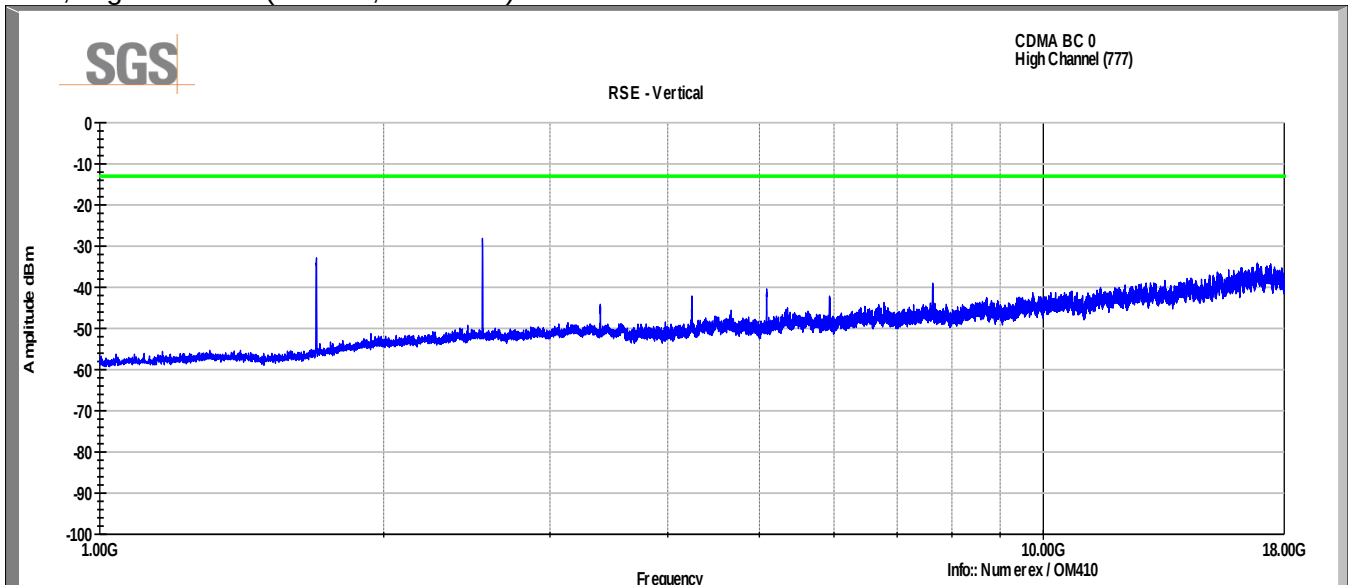
BC0, High Channel (Vertical, 30-1000MHz)



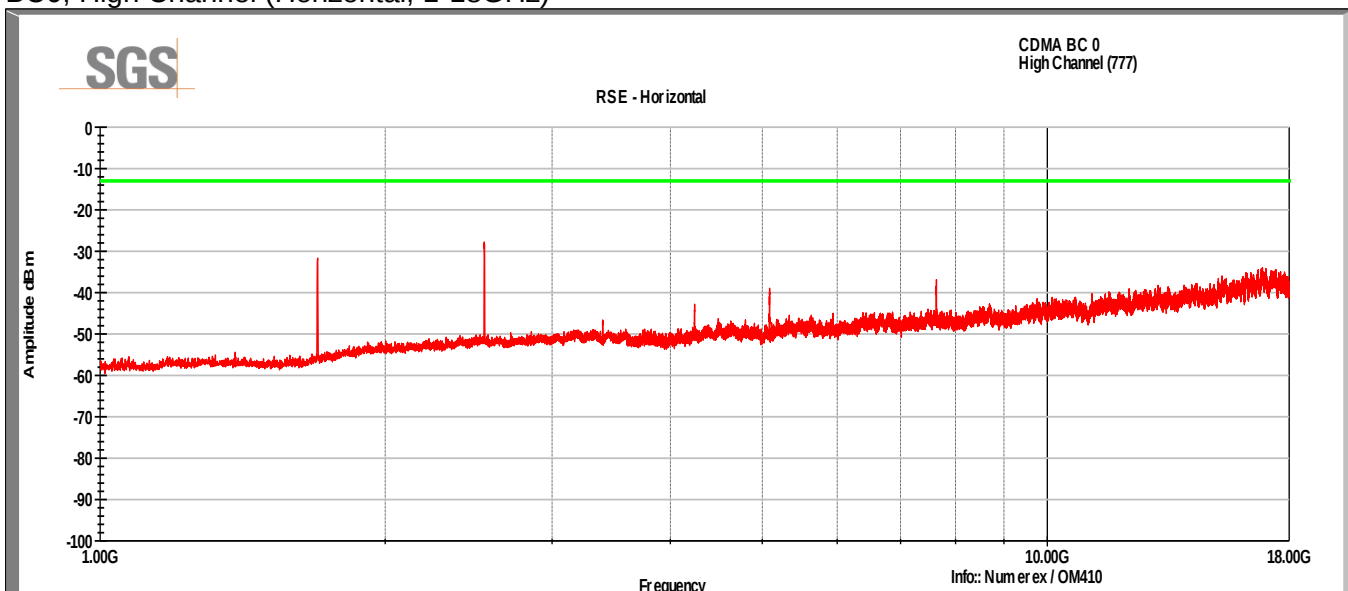
BC0, High Channel (Horizontal, 30-1000MHz)



BC0, High Channel (Vertical, 1-18GHz)

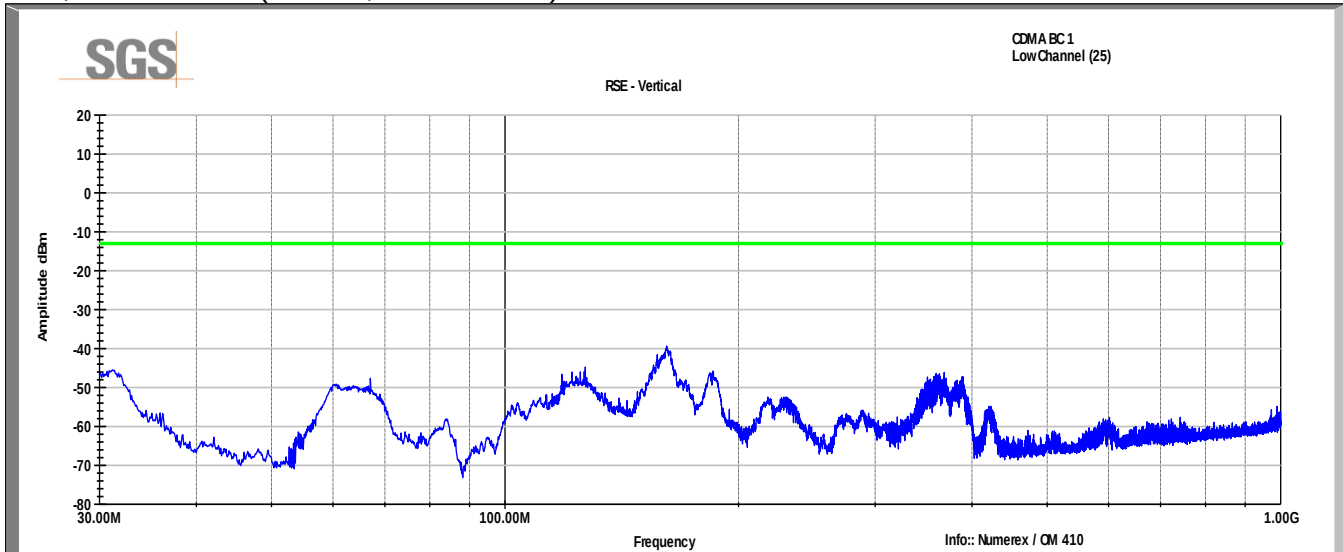


BC0, High Channel (Horizontal, 1-18GHz)



3.5 Test Data – BC1

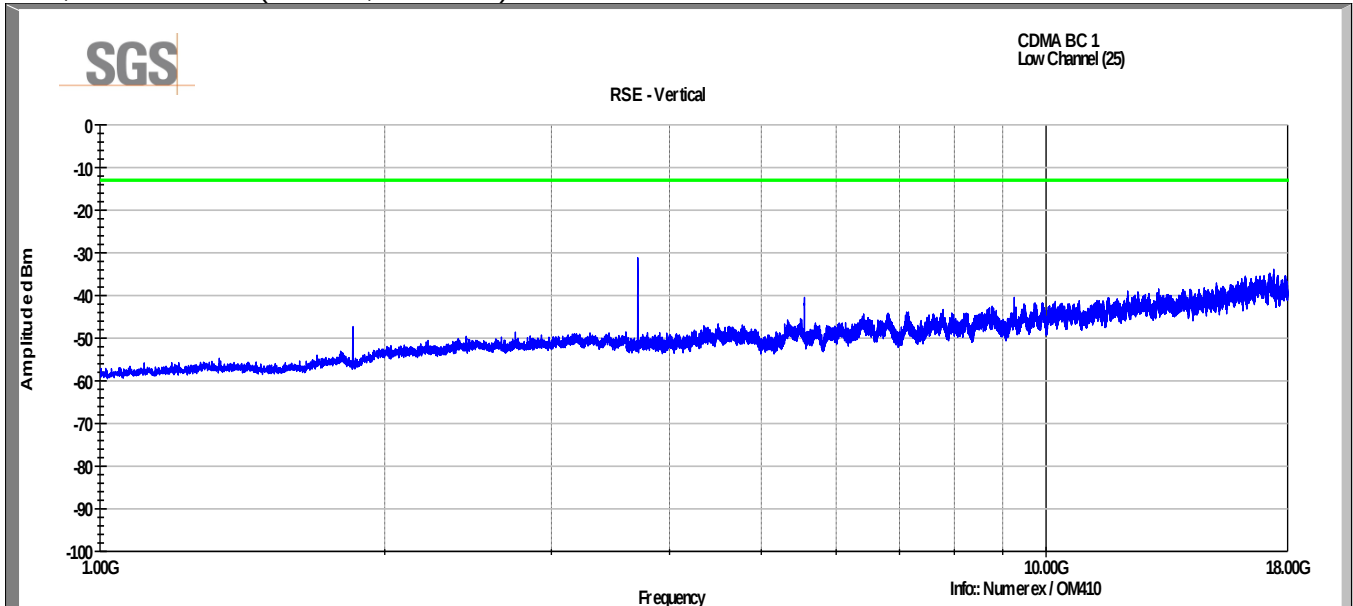
BC1, Low Channel (Vertical, 30-1000MHz)



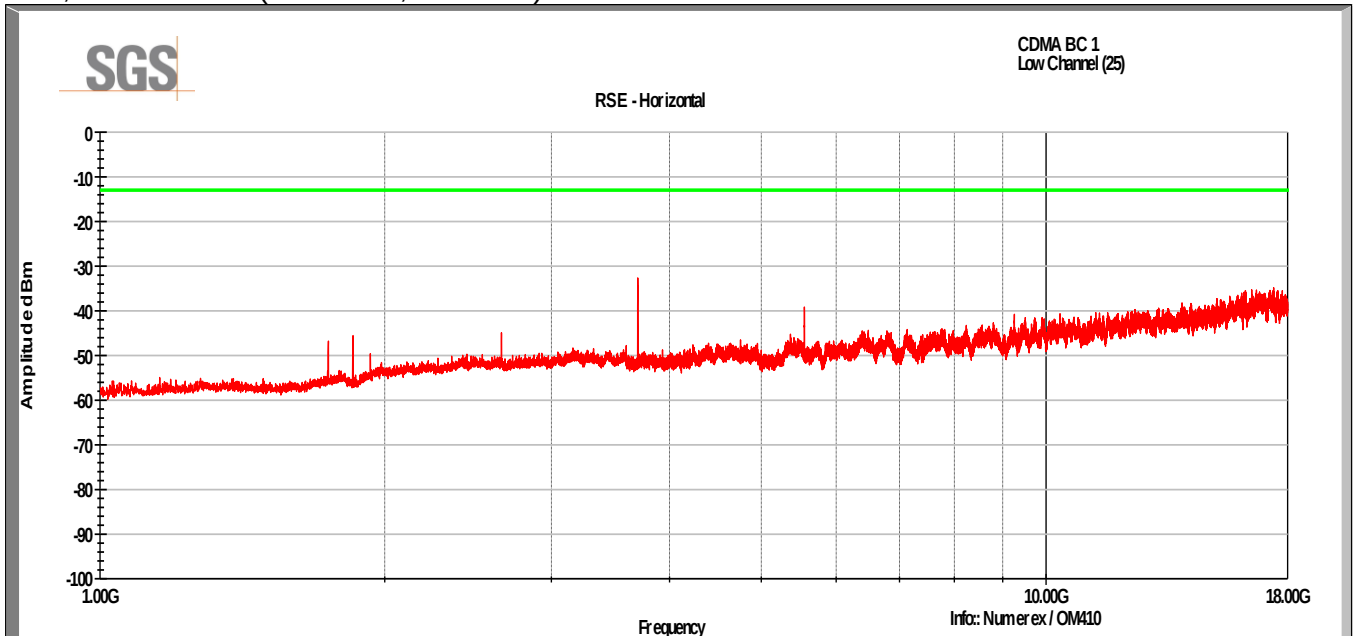
BC1, Low Channel (Horizontal, 30-1000MHz)



BC1, Low Channel (Vertical, 1-18GHz)



BC1, Low Channel (Horizontal, 1-18GHz)



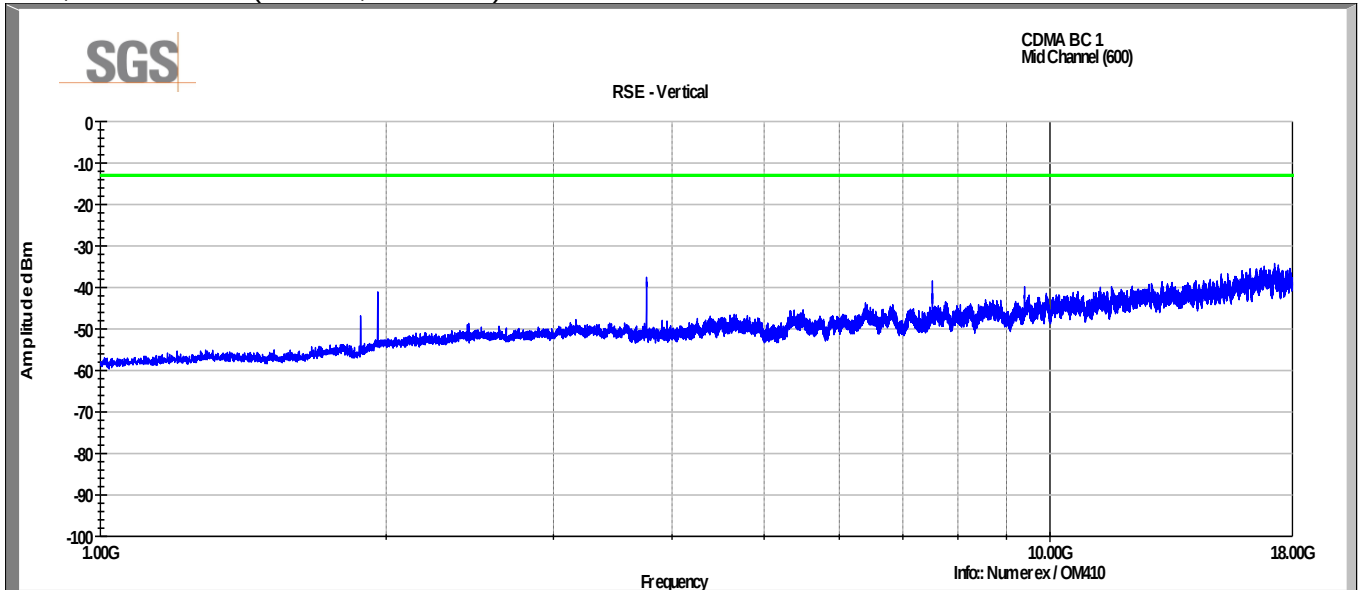
BC1, Mid Channel (Vertical, 30-1000MHz)



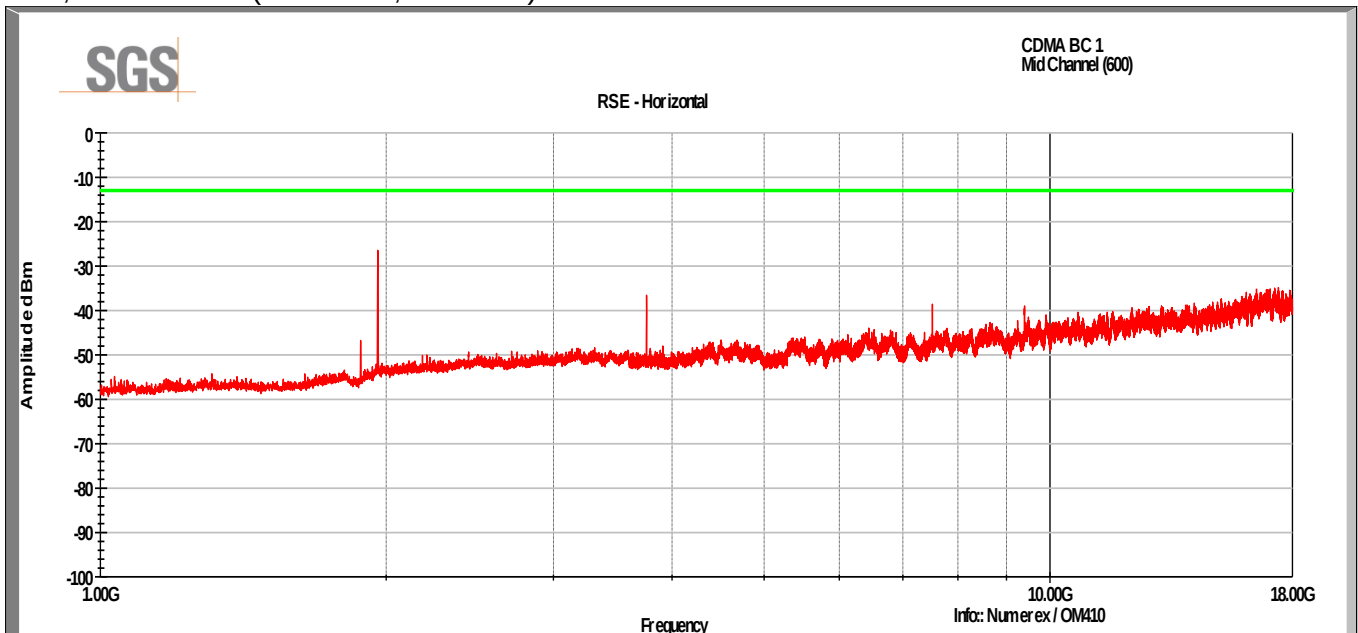
BC1, Mid Channel (Horizontal, 30-1000MHz)



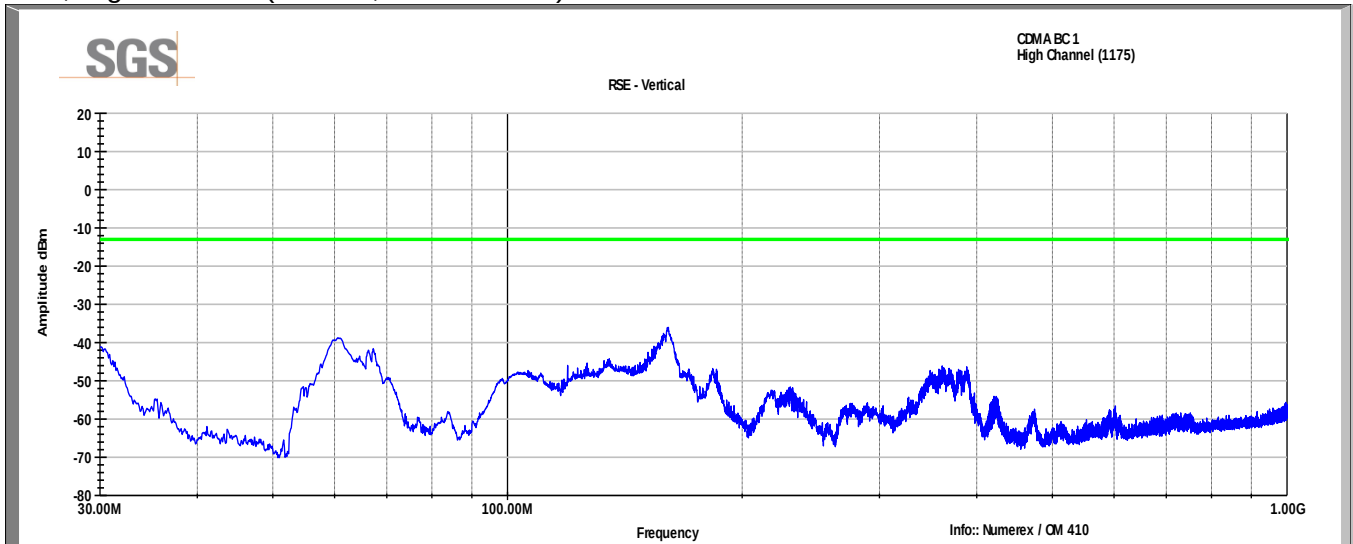
BC1, Mid Channel (Vertical, 1-18GHz)



BC1, Mid Channel (Horizontal, 1-18GHz)



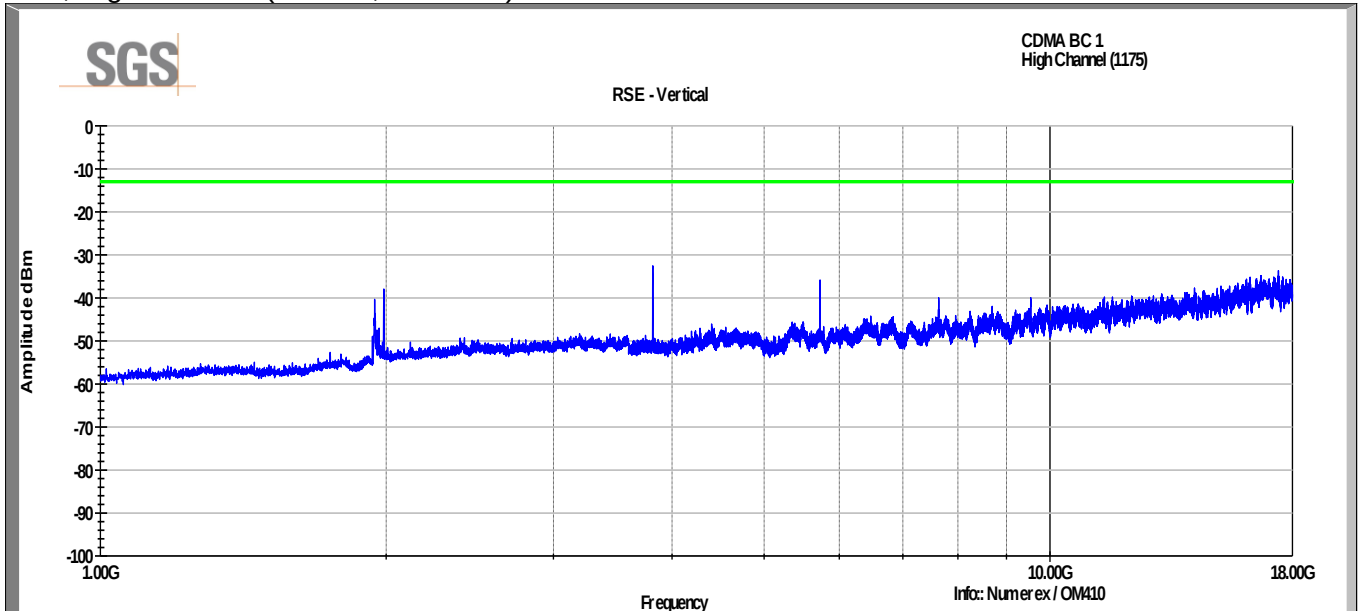
BC1, High Channel (Vertical, 30-1000MHz)



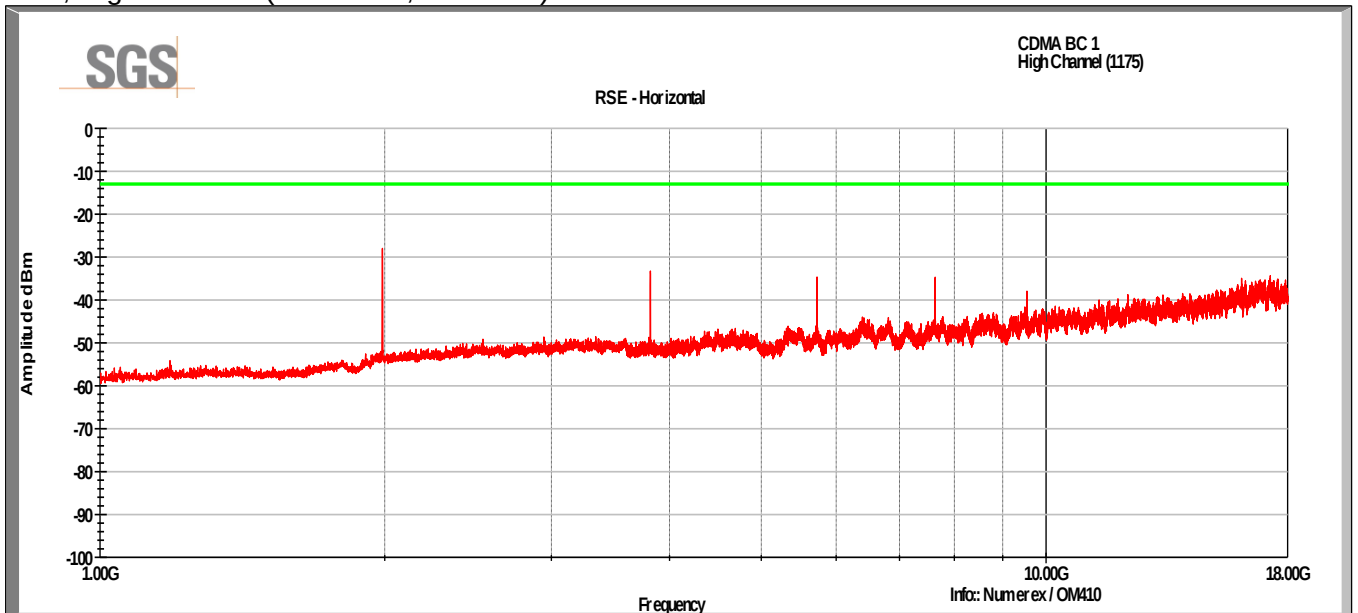
BC1, High Channel (Horizontal, 30-1000MHz)



BC1, High Channel (Vertical, 1-18GHz)



BC1, High Channel (Horizontal, 1-18GHz)



4 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	05 December 2016
	-	