

EMC Test Report

Project Number: 4018827

Report Number: 4018827EMC01

Revision Level: 0

Client: Continental Automotive Systems, Inc.

Equipment Under Test: Wireless Modem Module with WiFi

Model: LNADVW

FCC ID: LHJ-LNADVW

IC ID: 2807E-LNADVW

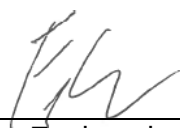
Applicable Standards: FCC Part 15 Subpart C, § 15.407

ANSI C63.10: 2013

Report issued on: 02 August 2016

Test Result: Compliant

Tested by:


Fendy Liauw, Engineering Technician

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.

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1 Summary of Test Results

Test Description	Test Specification	Test Result
Emission Bandwidth	15.407(a), 15.407(e)	Compliant
Spectral Density	15.407(a)	Compliant
Peak Power Output	15.407(a)	Compliant
Unwanted Emissions	15.407(b)	Compliant
AC Powerline Conducted Emission	15.107, 15.207	N/A(1)

(1) Not Applicable – The host device for the module is battery-powered and has no facility for connection to the AC mains.

1.1 Modifications Required for Compliance

None

2 General Information

2.1 Client Information

Name: Continental Automotive System, Inc.
Address: 21440 West Lake Cook Road
City, State, Zip, Country: Deer Park, IL 60010, 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

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

2.3 General Information of EUT

Type of Product: Wireless Modem Module w/ WiFi
Model Number: LNADVW
Serial Number: NIDXG22W000DC01
FCC ID: LHJ-LNADVW
IC ID: 2807E-LNADVW
IMEI Number: 00440181022485
Firmware Version: 1.15.1.0

Frequency Range: 5150 to 5250 MHz and 5725 to 5825MHz
Data Modes: 802.11a, 802.11n (HT20), 802.11n (HT40)
Antenna: Not specified – professional installation only

Rated Voltage: 10.2 – 13.8Vdc
Test Voltage: 12Vdc

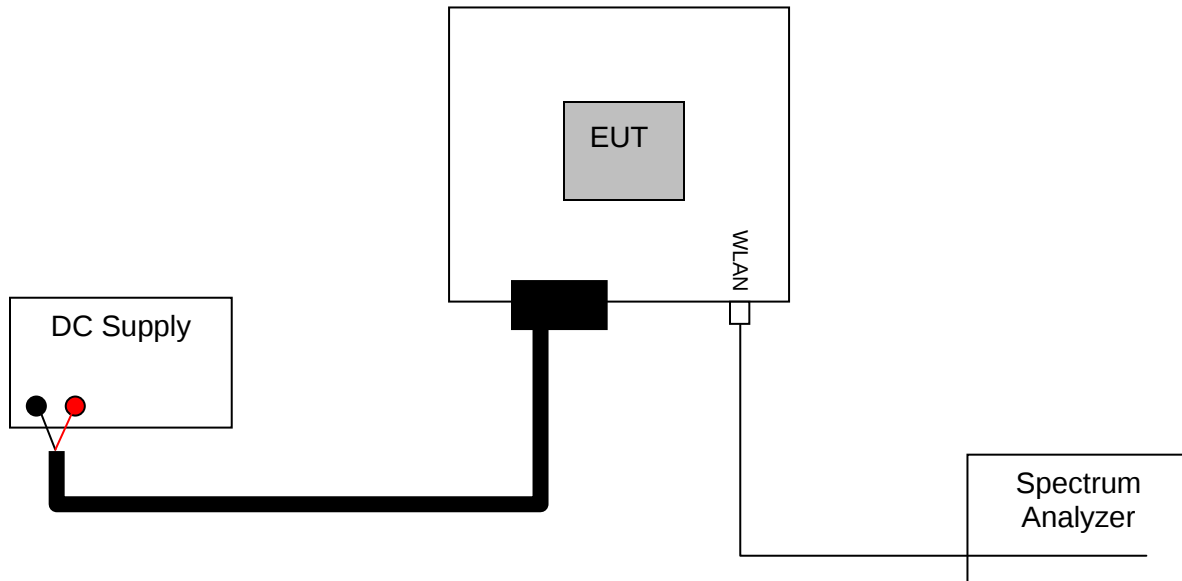
Sample Received Date: 18 July 2016
Dates of testing: 20 July – 02 August 2016

2.4 Operating Modes and Conditions

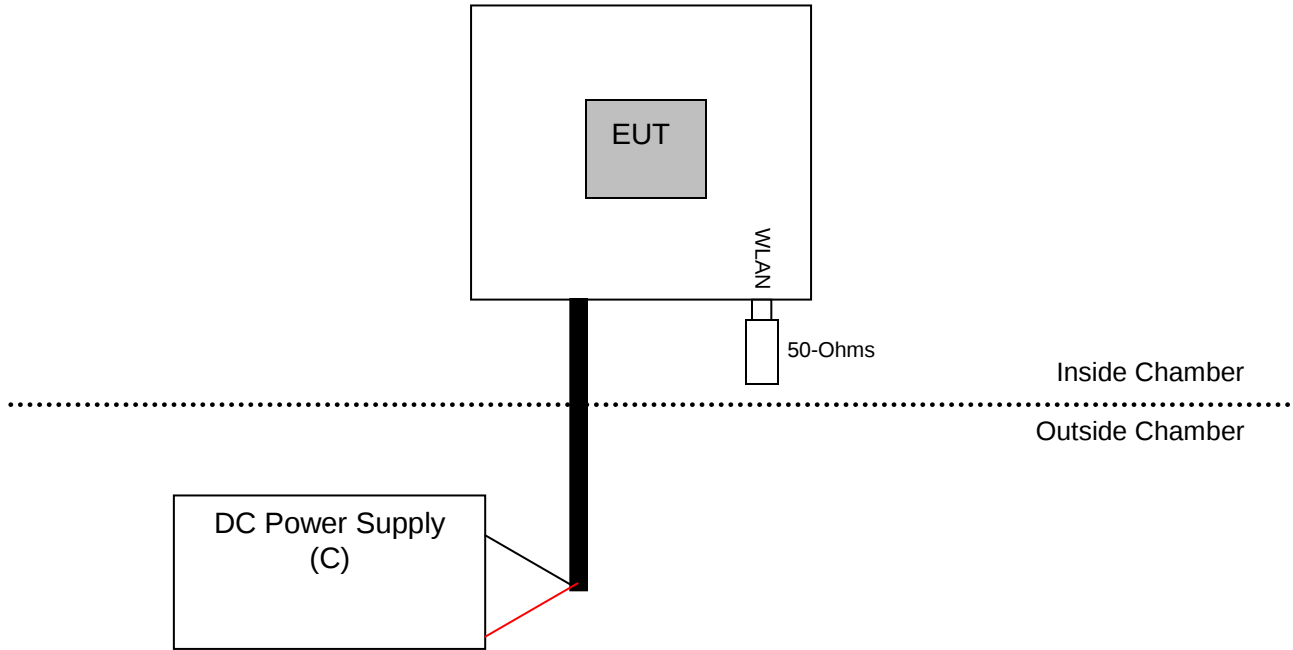
For spurious emissions measurements, only the worst-case mode with respect to peak power from the original filing was investigated: 802.11a, 6Mbps.

Continuous traffic was generated using QRCT test software which allowed selection of band, channel, modulation, and data rate. The lowest data rates for each modulation transmitted at >99% duty cycle. For higher data rates, duty cycle correction was applied where appropriate.

2.5 EUT Connection Block Diagram – Conducted Measurements



2.6 EUT Connection Block Diagram – Radiated Measurements



2.7 System Configurations

Device reference	Manufacturer	Description	Model Number	Serial Number
A	Continental Automotive	WLAN/Cellular Module	LNADVW	NIDXG22W000DC01
B	Extech	DC Power Supply	382280	12010471

3 Emission Bandwidth and Occupied Bandwidth

3.1 Test Result

Test Description	Test Specification	Test Result
Emission bandwidth / 99% OBW	15.407(a), 15.407(e)	Compliant

3.2 Test Method

The procedures from ANSI C63.10: 2013 clause 12.4 and KDB document 789033 D02 General UNII Test Procedures New Rules v01r02 were used to determine the 6 dB bandwidth, the 26dB bandwidth, and 99% OBW.

3.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 23.9 °C
Relative Humidity: 47.2 %

3.4 Test Equipment

Test Date: 26-Jul-2016

Tester: JOP

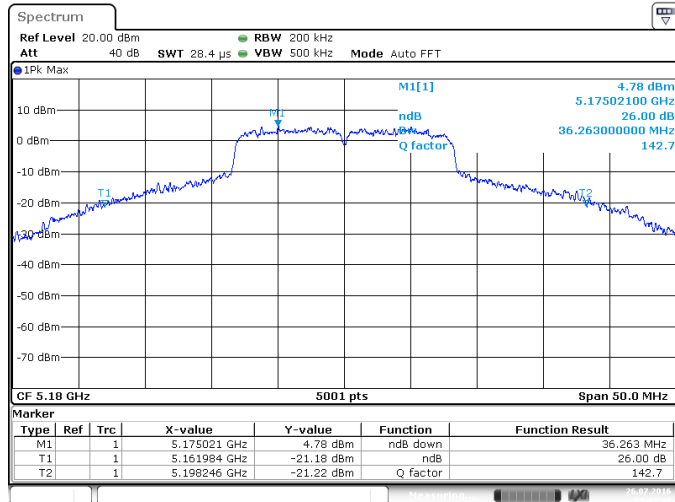
Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER	FSV30	ROHDE & SCHWARZ	B085749	8-Oct-2017
COAXIAL CABLE	SUCOFLEX 102	ROHDE & SCHWARZ	B079822	4-Aug-2016

Note: The equipment calibration period is 1 year except for the FSV30 which is on a 2-year cycle.

3.5 Test Data

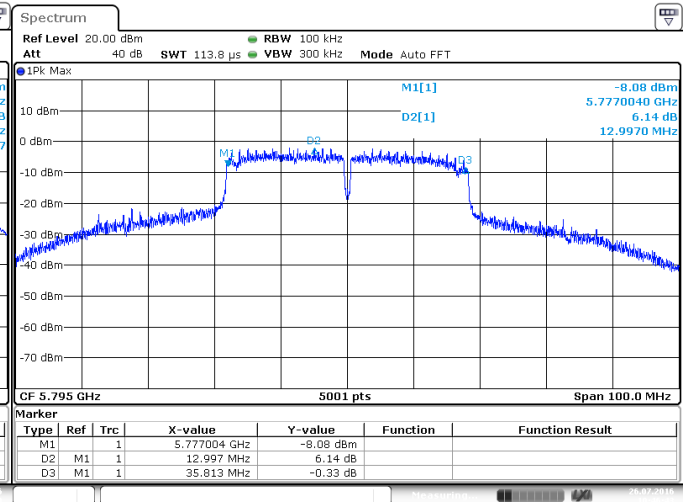
Protocol	Channel	Data Rate	26dB Bandwidth (MHz)	6dB Bandwidth (MHz)	OBW (99%) (MHz)
802.11a	36	54Mbps	36.263	16.04	24.155
802.11a	44	54Mbps	39.902	16.28	26.165
802.11a	48	54Mbps	38.712	15.99	25.925
802.11a	149	54Mbps	35.273	16.46	21.326
802.11a	157	54Mbps	31.974	16.41	18.276
802.11a	165	54Mbps	31.874	16.28	17.137
(HT20)	36	MCS7	34.513	17.57	21.636
(HT20)	44	MCS7	38.782	17.79	24.495
(HT20)	48	MCS7	37.383	17.75	22.925
(HT20)	149	MCS7	32.164	17.7	19.386
(HT20)	157	MCS7	30.324	17.63	18.186
(HT20)	165	MCS7	24.995	17.56	17.856
(HT40)	36+	MCS7	83.183	36.400	58.268
(HT40)	48-	MCS7	86.023	36.393	57.328
(HT40)	149+	MCS7	76.185	36.365	47.75
(HT40)	161-	MCS7	60.708	35.813	41.672

Sample Plots: 26dB BW



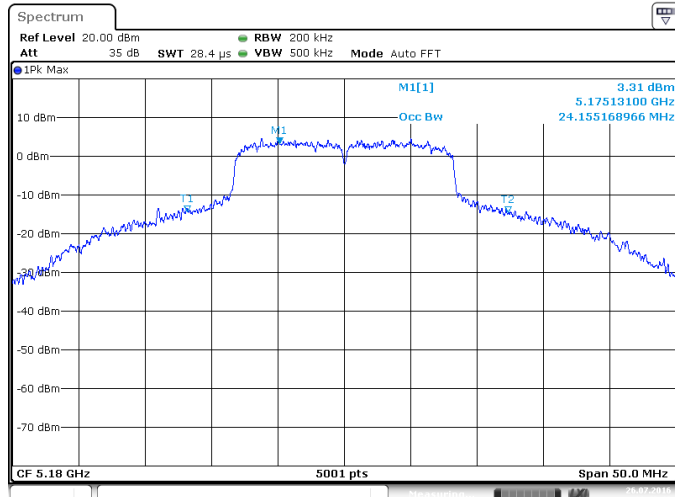
Date: 26.JUL.2016 09:03:41

6dB BW



Date: 26.JUL.2016 10:46:44

99% OBW



Date: 26.JUL.2016 11:48:42

4 Output Power

4.1 Test Result

Test Description	Test Specification	Test Result
Peak Output Power	15.407(a)	Compliant

4.2 Test Method

Fundamental power measurements were recorded using the procedures from ANSI C63.10: 2013 clause 12.3 and KDB document 789033 D02 General UNII Test Procedures New Rules v01r02.

Limit

For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

For using antennas with greater than 6dBi of gain, the limit is reduced in dB by the amount the gain exceeds 6dBi

4.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 23.8 °C
Relative Humidity: 53.7 %

4.4 Test Equipment

Test Date: 20-Jul-2016

Tester: JOP

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER	FSV30	ROHDE & SCHWARZ	B085749	8-Oct-2017
10DB ATTENUATOR	10DB	ROHDE & SCHWARZ	B095593	5-Aug-2016
COAXIAL CABLE	1134	GORE	B094785	4-Aug-2016

Note: The equipment calibration period is 1 year except for the FSV30 which is on a 2-year cycle.

4.5 Test Data – 802.11a

Mode	RateMbps	Channel	Target dBm	Measured dBm	Measured mW
802.11a	6	36	15.5	17.1	51.29
		44	15.5	17.2	52.48
		48	15.5	17.6	57.54
		149	15.5	15.9	38.9
		157	15.5	15.2	33.11
		165	15.5	14.8	30.2
	9	36	15.5	17.1	51.29
		44	15.5	17	50.12
		48	15.5	17.4	54.95
		149	15.5	15.6	36.31
		157	15.5	15.1	32.36
		165	15.5	14.6	28.84
	12	36	15.5	17.1	51.29
		44	15.5	17	50.12
		48	15.5	17.4	54.95
		149	15.5	15.6	36.31
		157	15.5	15	31.62
		165	15.5	14.5	28.18
	18	36	15.5	17	50.12
		44	15.5	17	50.12
		48	15.5	17.3	53.7
		149	15.5	15.6	36.31
		157	15.5	15	31.62
		165	15.5	14.5	28.18
	24	36	15.5	16.8	47.86
		44	15.5	16.9	48.98
		48	15.5	17.3	53.7
		149	15.5	15.6	36.31
		157	15.5	14.7	29.51
		165	15.5	14.4	27.54
	36	36	15.5	16.7	46.77
		44	15.5	16.8	47.86
		48	15.5	17.2	52.48
		149	15.5	15.5	35.48
		157	15.5	14.6	28.84
		165	15.5	14.4	27.54
	48	36	15.5	16.6	45.71
		44	15.5	16.8	47.86
		48	15.5	17.2	52.48
		149	15.5	15.5	35.48
		157	15.5	14.6	28.84
		165	15.5	14.3	26.92
	54	36	15.5	16.5	44.67
		44	15.5	16.7	46.77
		48	15.5	17.1	51.29
		149	15.5	15.4	34.67
		157	15.5	14.5	28.18
		165	15.5	14.3	26.92

4.6 Test Data – 802.11n (HT20)

Mode	RateMbps	Channel	Target dBm	Measured dBm	Measured mW
802.11n (HT20)	MCS0	36	14.5	16.8	47.86
		44	14.5	17	50.12
		48	14.5	17.4	54.95
		149	14.5	15.6	36.31
		157	14.5	14.7	29.51
		161	14.5	14.5	28.18
	MCS1	36	14.5	16.8	47.86
		44	14.5	16.9	48.98
		48	14.5	17.3	53.7
		149	14.5	15.6	36.31
		157	14.5	14.6	28.84
		165	14.5	14.4	27.54
	MCS2	36	14.5	16.7	46.77
		44	14.5	16.9	48.98
		48	14.5	17.3	53.7
		149	14.5	15.6	36.31
		157	14.5	14.6	28.84
		165	14.5	14.4	27.54
	MCS3	36	14.5	16.5	44.67
		44	14.5	17	50.12
		48	14.5	17.1	51.29
		149	14.5	15.7	37.15
		157	14.5	14.7	29.51
		165	14.5	14.2	26.3
	MCS4	36	14.5	16.5	44.67
		44	14.5	16.9	48.98
		48	14.5	17	50.12
		149	14.5	15.7	37.15
		157	14.5	14.8	30.2
		165	14.5	14.2	26.3
	MCS5	36	14.5	16.5	44.67
		44	14.5	16.6	45.71
		48	14.5	17	50.12
		149	14.5	15.6	36.31
		157	14.5	14.7	29.51
		165	14.5	14.2	26.3
	MCS6	36	14.5	16.4	43.65
		44	14.5	16.9	48.98
		48	14.5	16.8	47.86
		149	14.5	15.6	36.31
		157	14.5	14.7	29.51
		165	14.5	14.2	26.3
	MCS7	36	14.5	16.4	43.65
		44	14.5	16.8	47.86
		48	14.5	16.9	48.98
		149	14.5	15.5	35.48
		157	14.5	14.6	28.84
		165	14.5	14	25.12

4.7 Test Data – 802.11n (HT40)

Mode	RateMbps	Channel	Target dBm	Measured dBm	Measured mW
802.11n (HT40)	MCS0	36+	14.5	17.2	52.48
		48-	14.5	17.3	53.7
		149+	14.5	15.6	36.31
		161-	14.5	14.9	30.9
	MCS1	36+	14.5	17.1	51.29
		48-	14.5	17.2	52.48
		149+	14.5	15.5	35.48
		161-	14.5	14.8	30.2
	MCS2	36+	14.5	17	50.12
		48-	14.5	17.1	51.29
		149+	14.5	15.5	35.48
		161-	14.5	14.8	30.2
	MCS3	36+	14.5	16.7	46.77
		48-	14.5	16.8	47.86
		149+	14.5	15.4	34.67
		161-	14.5	14.5	28.18
	MCS4	36+	14.5	16.6	45.71
		48-	14.5	16.6	45.71
		149+	14.5	15.3	33.88
		161-	14.5	14.4	27.54
	MCS5	36+	14.5	16.4	43.65
		48-	14.5	16.5	44.67
		149+	14.5	15.2	33.11
		161-	14.5	14.3	26.92
	MCS6	36+	14.5	16.4	43.65
		48-	14.5	16.4	43.65
		149+	14.5	15.1	32.36
		161-	14.5	14.2	26.3
	MCS7	36+	14.5	16.3	42.66
		48-	14.5	16.4	43.65
		149+	14.5	15.1	32.36
		161-	14.5	14.2	26.3

5 Power Spectral Density

5.1 Test Result

Test Description	Test Specification	Test Result
Power Spectral Density	15.407(a)	Compliant

5.2 Test Method

Fundamental power measurements were recorded using the procedures from ANSI C63.10: 2013 clause 12.5 and KDB document 789033 D02 General UNII Test Procedures New Rules v01r02. The lowest data rate for each modulation was determined to be the worst-case.

Limit

The limit is 17dBm in any 1MHz band for channels in the 5.15-5.25GHz band and 30dBm in any 500-kHz band for channels in the 5.725-5.85GHz band.

5.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.4 °C
Relative Humidity: 43.1 %

5.4 Test Equipment

Test Date: 26-Jul-2016

Tester: JOP

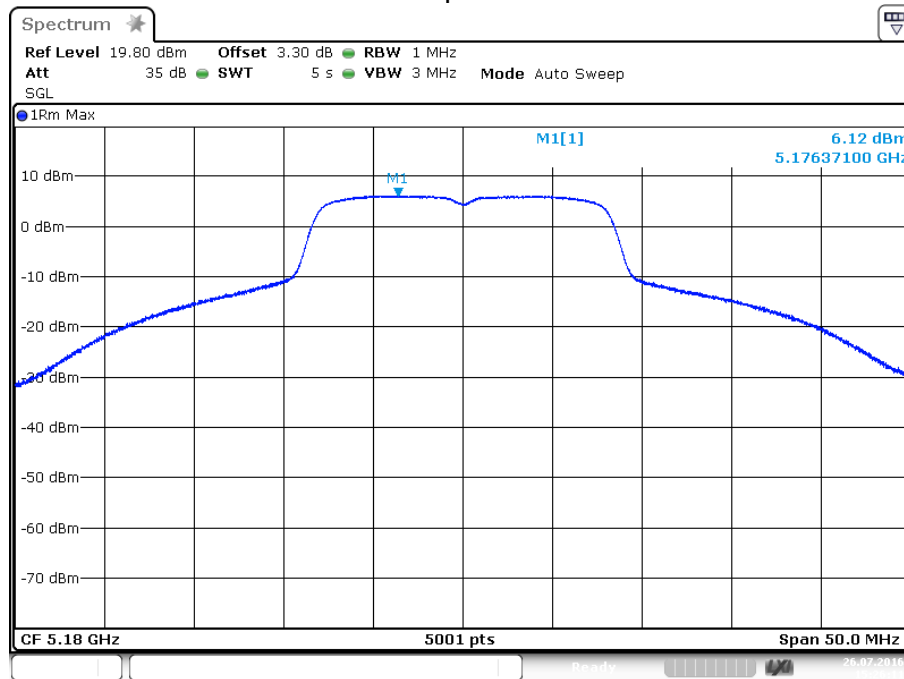
Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER	FSV30	ROHDE & SCHWARZ	B085749	8-Oct-2017
COAXIAL CABLE	SUCOFLEX 102	ROHDE & SCHWARZ	B079822	4-Aug-2016

Note: The equipment calibration period is 1 year except for the FSV30 which is on a 2-year cycle.

5.5 Test Data (UNII Band 1)

Protocol	Channel	Data Rate	DC (%)	DC Corr (dB)	PSD (dBm/MHz)	Limit (dBm)	Margin (dB)
802.11a	36	6 Mbps	99.1	0	6.12	17	-10.88
802.11a	44	6 Mbps	99.1	0	5.74	17	-11.26
802.11a	48	6 Mbps	99.1	0	6.37	17	-10.63
802.11n (HT20)	36	MCS0	99.0	0	5.1	17	-11.9
802.11n (HT20)	44	MCS0	99.0	0	4.97	17	-12.03
802.11n (HT20)	48	MCS0	99.0	0	5.83	17	-11.17
802.11n (HT40)	36+	MCS0	98.0	0	3.28	17	-13.72
802.11n (HT40)	48-	MCS0	98.0	0	3.28	17	-13.72

Sample Plot



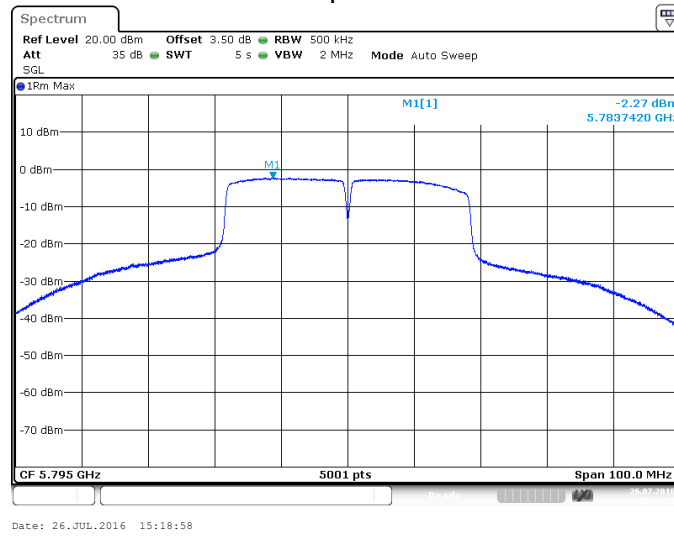
Date: 26.JUL.2016 15:26:11

5.6 Test Data (UNII Band 3)

Protocol	Channel	Data Rate	DC (%)	DC Corr (dB)	PSD (dBm/500kHz)	Limit (dBm)	Margin (dB)
802.11a	149	6 Mbps	99.1	0	2.01	30	-27.99
802.11a	157	6 Mbps	99.1	0	0.99	30	-29.01
802.11a	165	6 Mbps	99.1	0	0.3	30	-29.7
802.11n (HT20)	149	MCS0	99.0	0	0.74	30	-29.26
802.11n (HT20)	157	MCS0	99.0	0	-0.28	30	-30.28
802.11n (HT20)	165	MCS0	99.0	0	0.54	30	-29.46
802.11n (HT40)	149+	MCS0	98.0	0	-1.35	30	-31.35
802.11n (HT40)	161-	MCS0	98.8	0	-2.27	30	-32.27

25

Sample Plot



6 Unwanted Emissions – Antenna Port

6.1 Test Result

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

6.2 Test Method

Testing was performed using the conducted methods defined in ANSI C63.10: 2013 clause 12.7 and KDB 789033 D02 General UNII Test Procedures New Rules v01r02. In lieu of the marker-delta or integration methods, band edge compliance was shown using a peak detector and a 1MHz resolution bandwidth. The correction factor for both the band edge measurements and the conducted spurious tests included cable loss and assumed a 2dBi antenna gain (minimum that may be applied per the KDB for conducted methods).

Lowest, middle, and highest channels were investigated for each band. Only the worst-case (802.11a, 6Mbps) was reported except at the band edges where all three modulations/bandwidths were measured.

Limit:

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

6.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.4 °C
Relative Humidity: 43.1 %

6.4 Test Equipment

Test Date: 26-Jul-2016

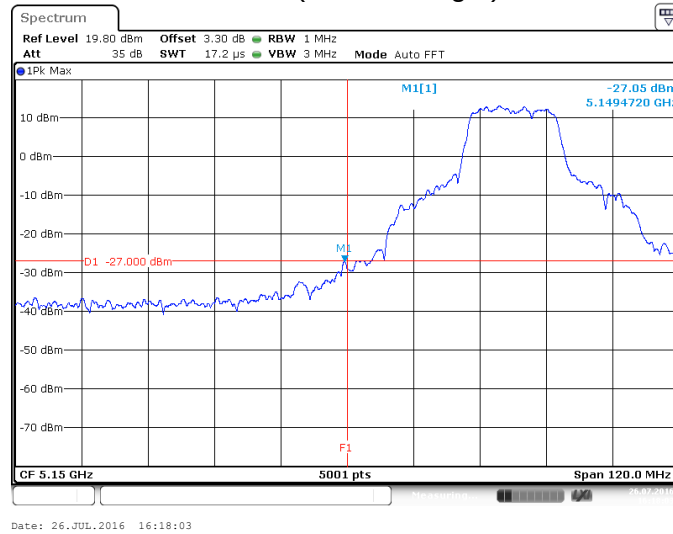
Tester: JOP

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER	FSV30	ROHDE & SCHWARZ	B085749	8-Oct-2017
COAXIAL CABLE	SUCOFLEX 102	ROHDE & SCHWARZ	B079822	4-Aug-2016

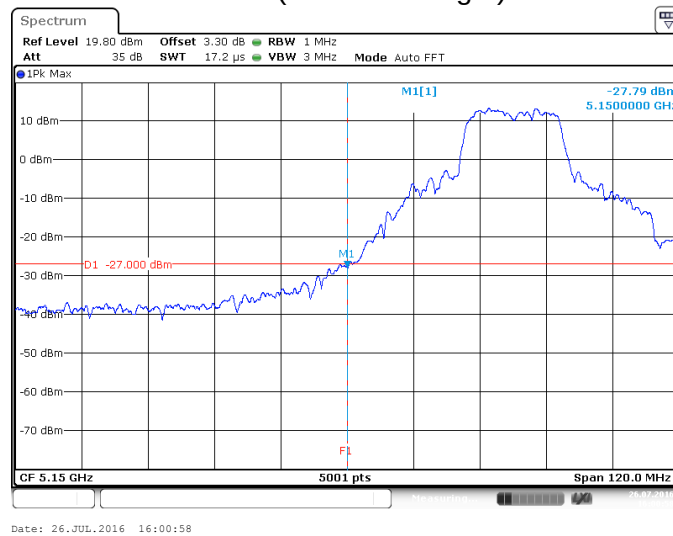
Note: The equipment calibration period is 1 year except for the FSV30 which is on a 2-year cycle.

6.5 Test Data – Band Edge

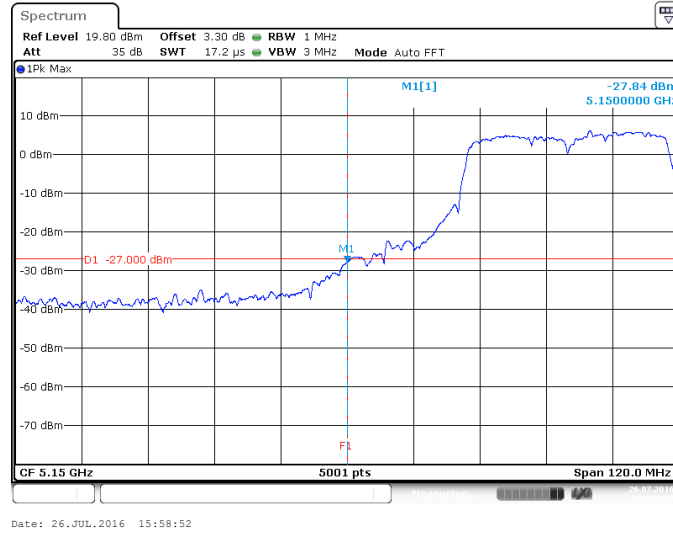
802.11a
Lower band edge
Channel 36
6Mbit/s (13dBm Target)



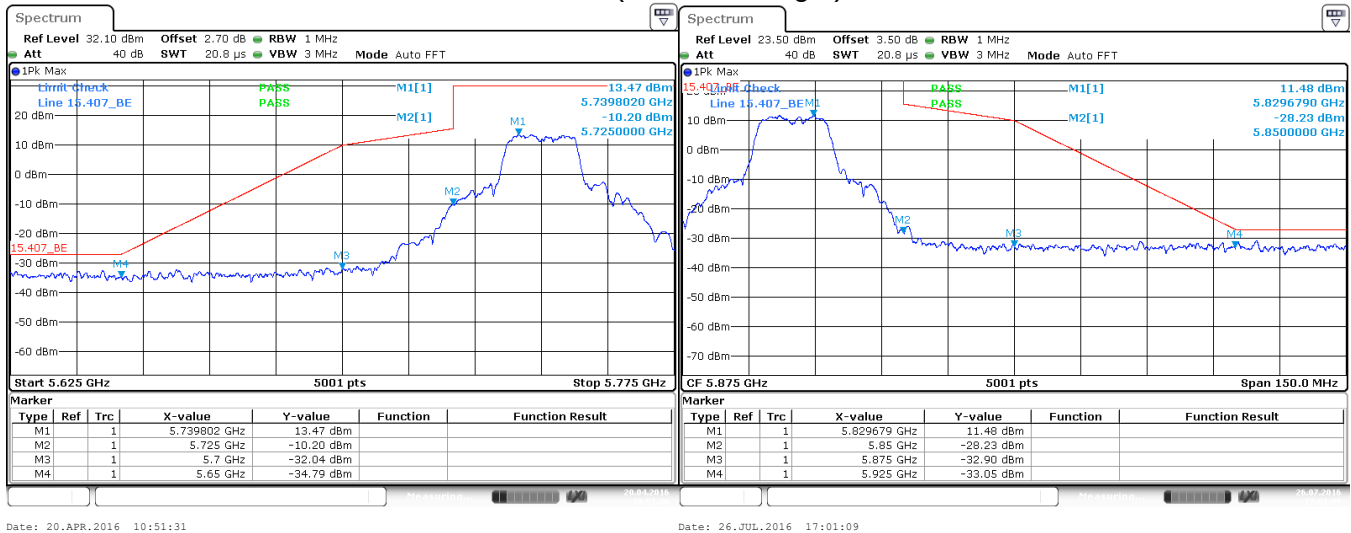
802.11n (HT20)
Lower band edge
Channel 36
MCS0 (12.5dBm Target)



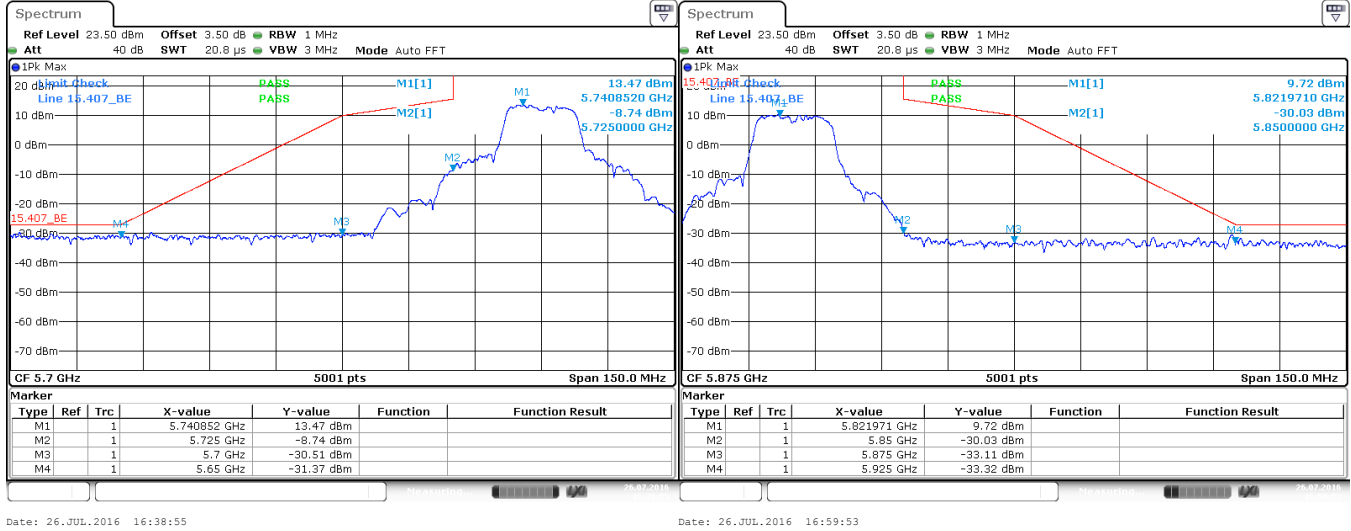
802.11n (HT40)
Lower band edge
Channel 36+
MCS0 (6.5dBm Target)



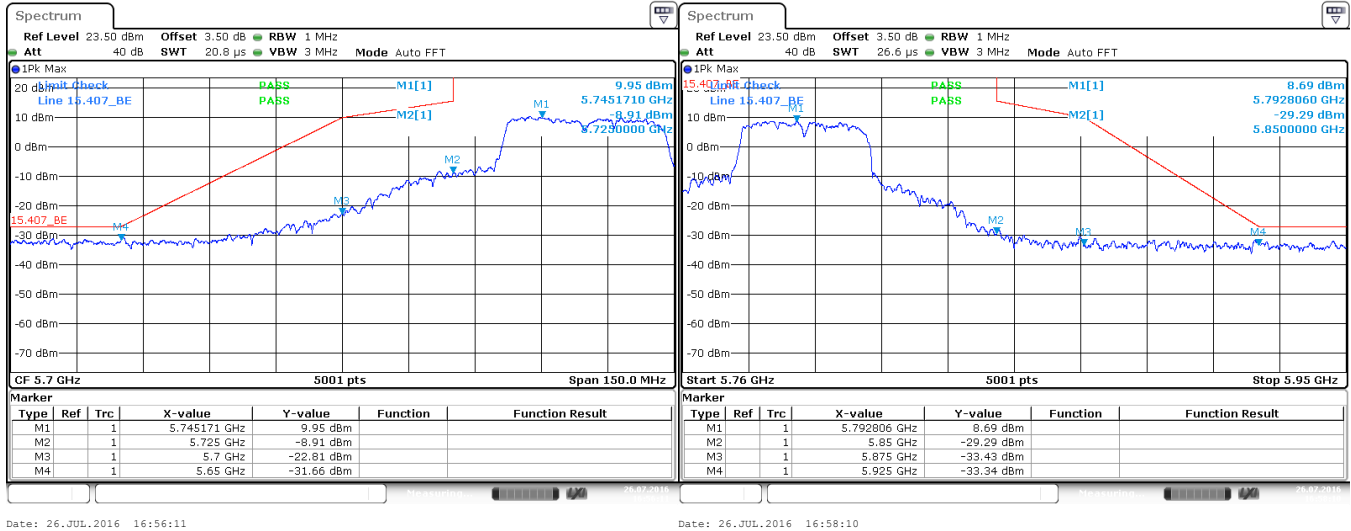
802.11a
Lower band edge / Upper band edge
Channel 149 / Channel 165
6Mbit/s (15.5dBm Target)



802.11n (HT20)
Lower band edge / Upper band edge
Channel 149 / Channel 165
MCS0 (14.5dBm Target)

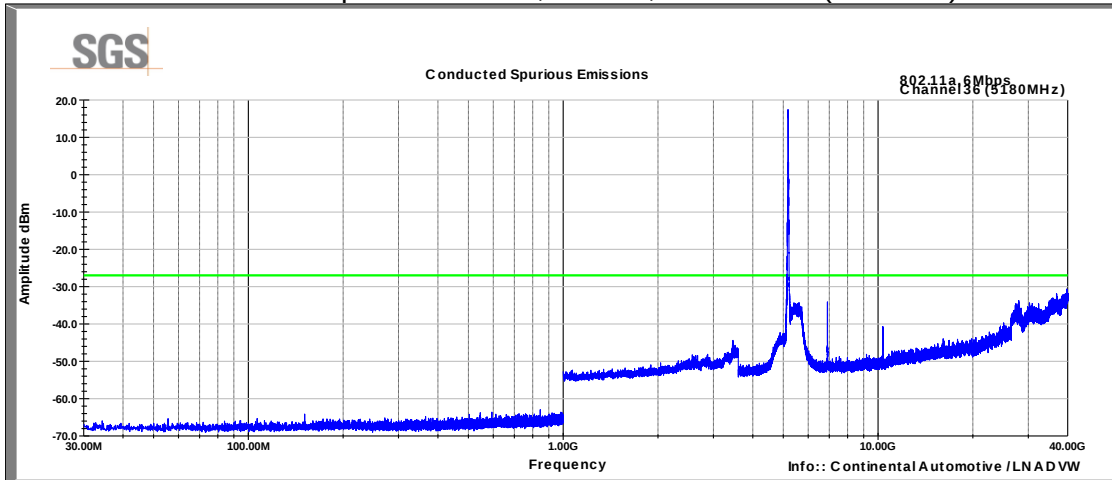


802.11n (HT40)
Lower band edge / Upper band edge
Channel 153 / Channel 161
MCS0 (14.5dBm Target)

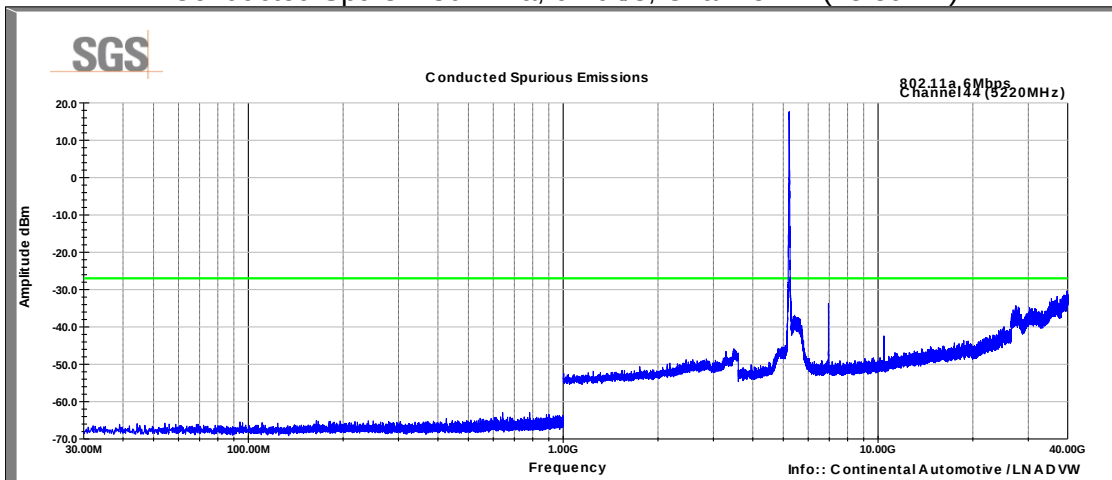


6.6 Test Data – Conducted Spurs

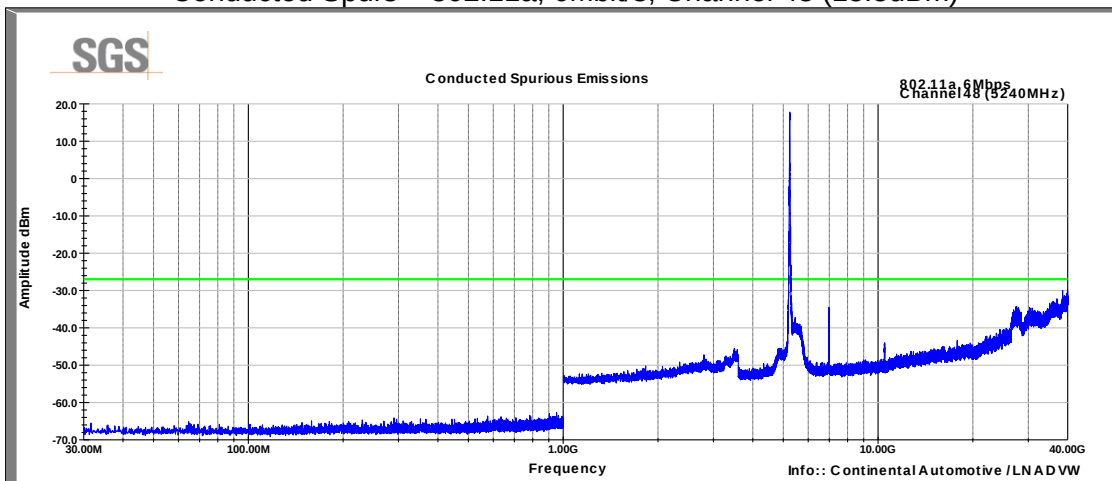
Conducted Spurs – 802.11a, 6Mbit/s, Channel 36 (15.5dBm)



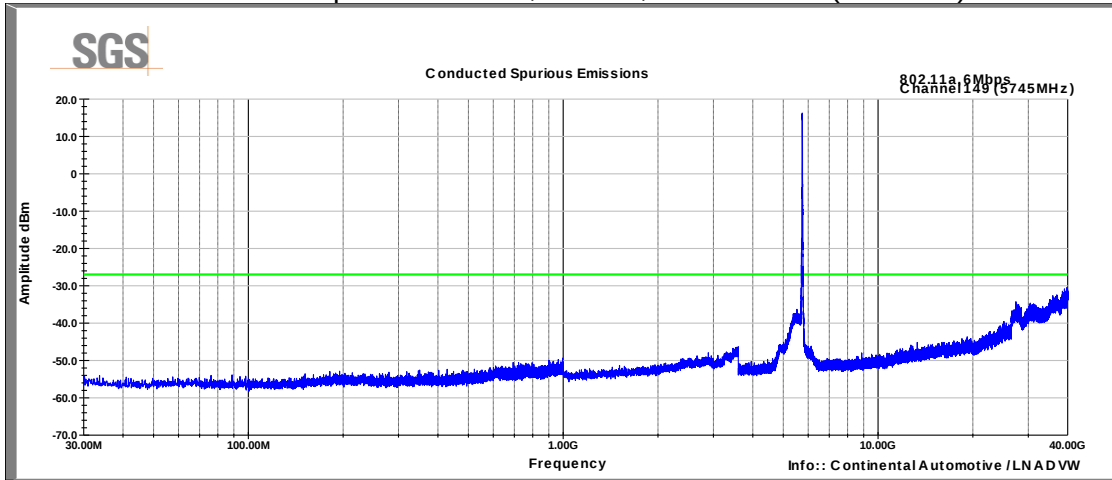
Conducted Spurs – 802.11a, 6Mbit/s, Channel 44 (15.5dBm)



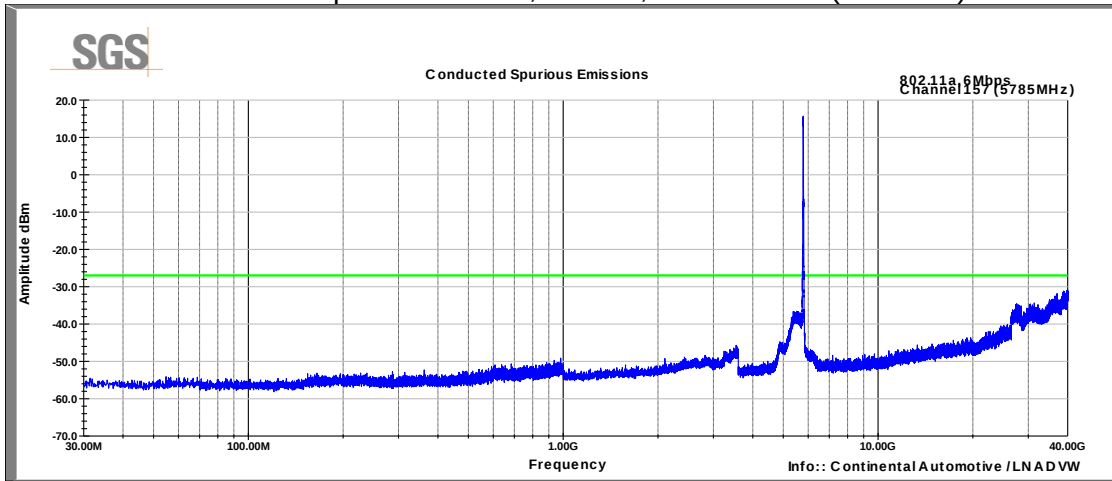
Conducted Spurs – 802.11a, 6Mbit/s, Channel 48 (15.5dBm)



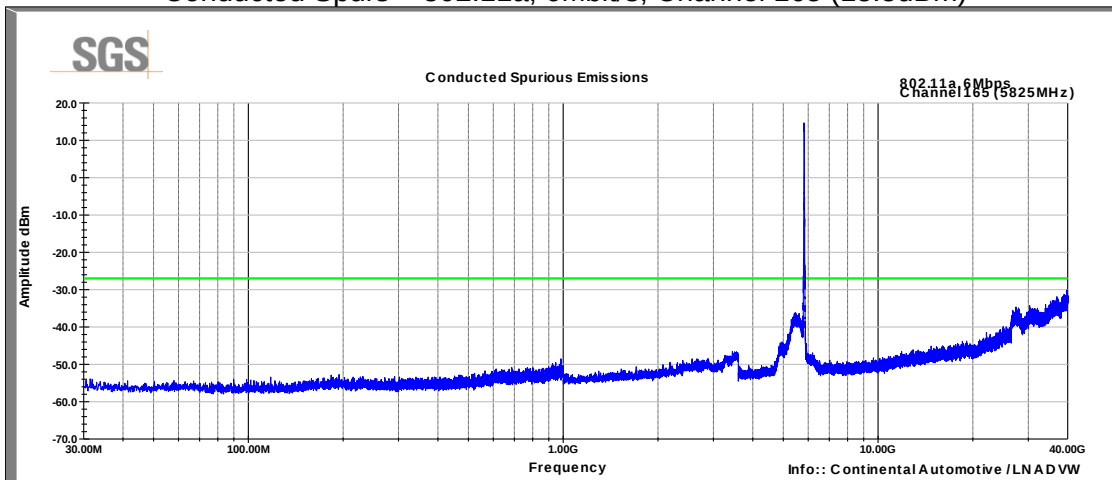
Conducted Spurs – 802.11a, 6Mbit/s, Channel 149 (15.5dBm)



Conducted Spurs – 802.11a, 6Mbit/s, Channel 157 (15.5dBm)



Conducted Spurs – 802.11a, 6Mbit/s, Channel 165 (15.5dBm)



7 Unwanted Emissions – Cabinet Radiation

7.1 Test Result

Test Description	Test Specification		Test Result
Spurious Emissions	15.247 (d) and 15.209	RSS-247 S5.5	Compliant

7.2 Test Method

Cabinet radiation emission measurements were performed with the antenna port terminated with a 50-Ohm load. The measurement methods defined in ANSI C63.4: 2014 were used.

Lowest, middle, and highest channels were investigated. Only the worst-case (802.11a, 6Mbps) was reported.

Test distance:

- 30 to 1000 MHz - The EUT to measurement antenna distance was 3 meters
- 1 to 18 GHz - The EUT to measurement antenna distance was 3 meters
- 18 to 40 GHz - The EUT to measurement antenna distance was 1 meter

Limits within restricted bands of operation:

Frequency	Limits ⁽¹⁾		Peak Limits dBuV/m
	Microvolts/m	dBuV/m	
30 - 88 MHz	100	40 ⁽²⁾	--
88 - 216 MHz	150	43.5 ⁽²⁾	--
216 - 960 MHz	200	46 ⁽²⁾	--
960 - 1000 MHz	500	54 ⁽²⁾	--
1 - 40 GHz	500	54 ⁽³⁾	74

(1) These limits are applicable to emissions outside of the intentional transmit frequency band.

(2) Quasi-peak limit

(3) Average limit

7.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.3 °C
 Relative Humidity: 48.7 %

7.4 Test Equipment

Test Start Date: 28-Jul-2016

Test End Date: 2-Aug-2016

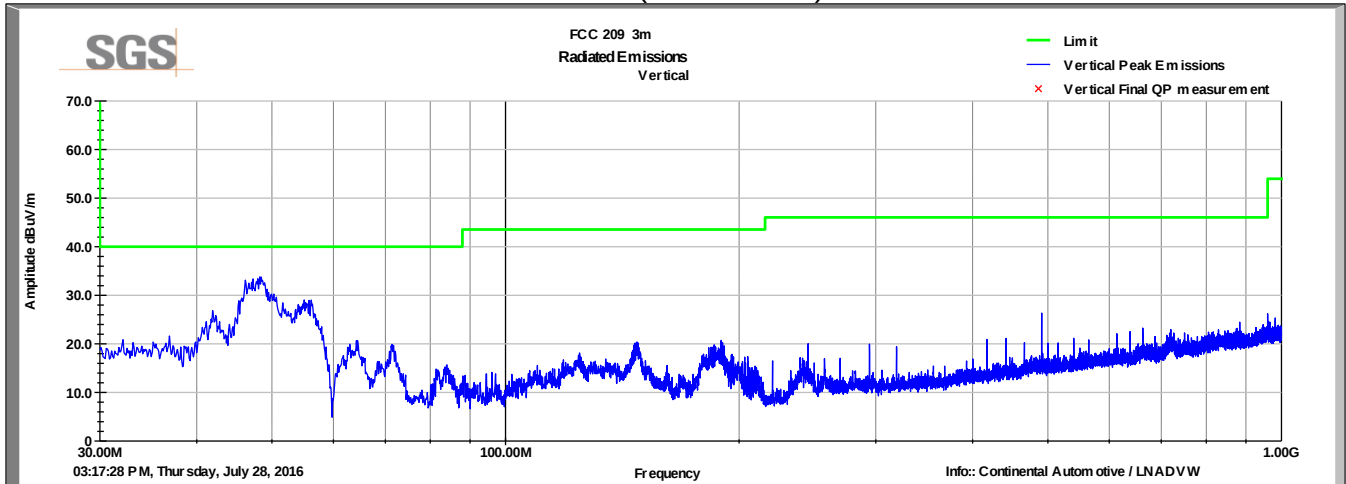
Tester: JOP

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
EMI TEST RECEIVER	ESU8	ROHDE & SCHWARZ	B085759	21-Jul-2017
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	20-Jun-2017
ANTENNA, BILOG	JB6	SUNOL	B079690	21-Oct-2016
RF CABLE	SF106	HUBER & SUHNER	B079716	27-Jul-2017
RF CABLE	SF106	HUBER & SUHNER	B079713	27-Jul-2017
RF CABLE	SF106	HUBER & SUHNER	B079659	26-Jul-2017
RF CABLE	104PE	HUBER & SUHNER	B079793	27-Jul-2017
LOW NOISE AMPLIFIER	ZKL-2+	MINI-CIRCUITS	B079800	29-Jul-2017
DRG HORN (MEDIUM)	3117	ETS Lindgren	B079699	26-Apr-2017
RF CABLE	SF106	HUBER & SUHNER	B079712	27-Jul-2017
RF CABLE	SUCOFLEX 100	HUBER & SUHNER	B108523	27-Oct-2016
LOW NOISE AMPLIFIER	TS-PR18	ROHDE & SCHWARZ	B094463	16-Feb-2017
HORN(SMALL)	LB-180400-20-C-KF	A-INFO	15007	29-Mar-2017
RF CABLE	SF102	HUBER & SUHNER	B079822	27-Jul-2017
RF CABLE	SF102	HUBER & SUHNER	B079823	4-Aug-2016

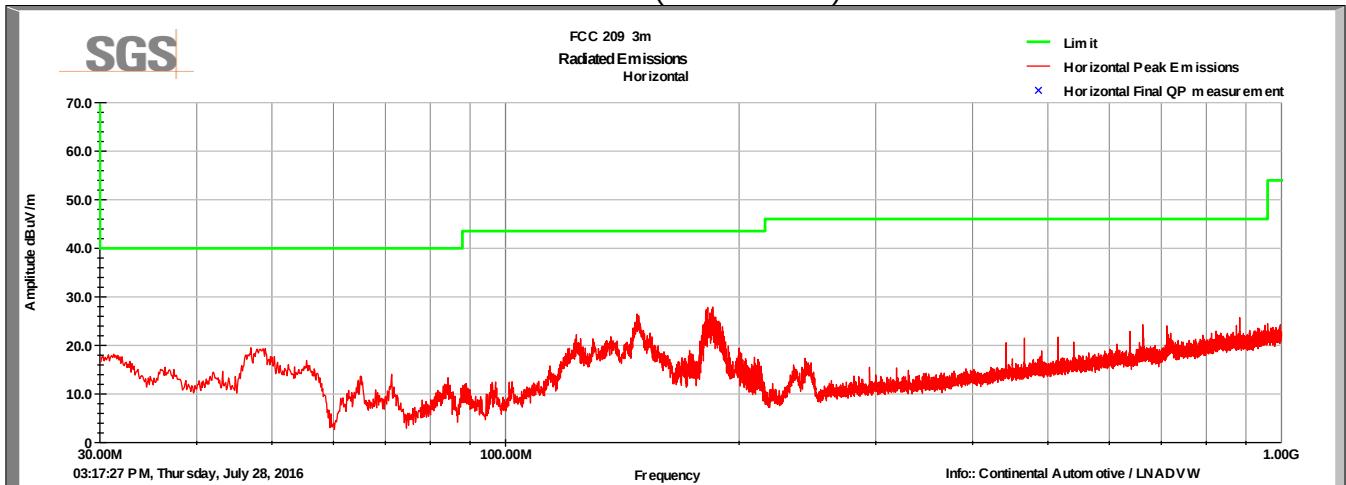
Note: The equipment calibration period is 1 year.

7.5 Test Data – Cabinet Radiation

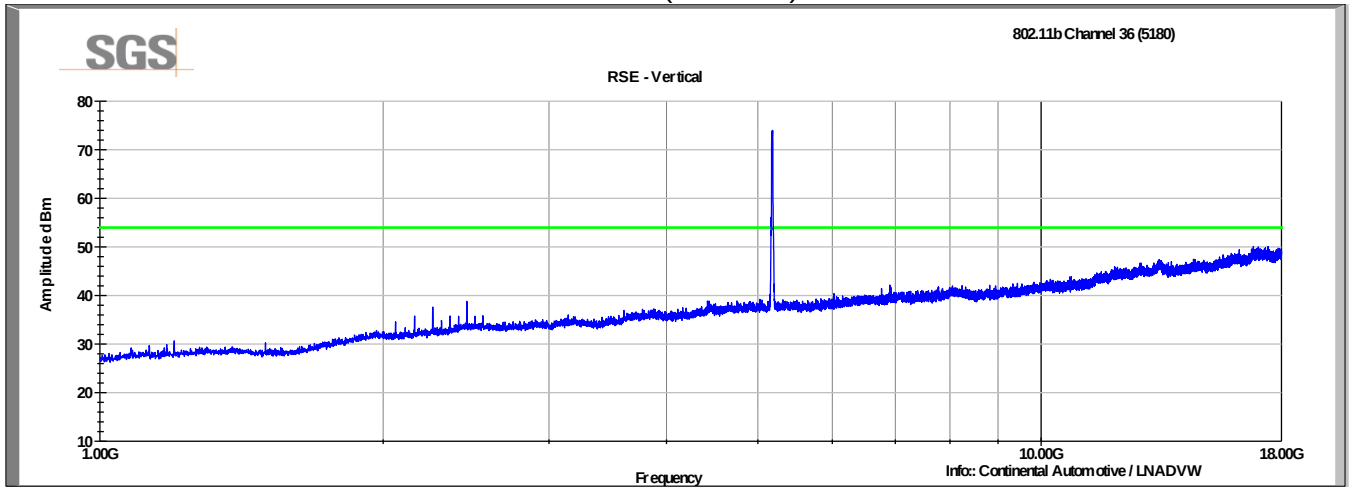
5 GHz CH 36, 6Mbps
Vertical (30-1000MHz)



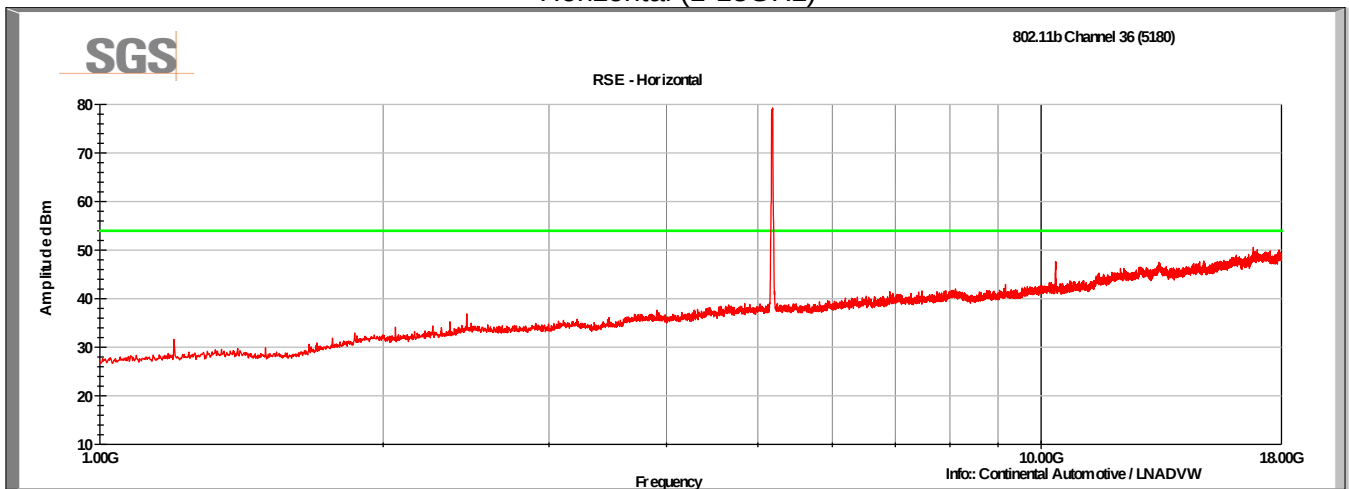
5 GHz CH36, 6Mbps
Horizontal (30-1000MHz)



5 GHz CH 36, 6Mbps
 Vertical (1-18GHz)

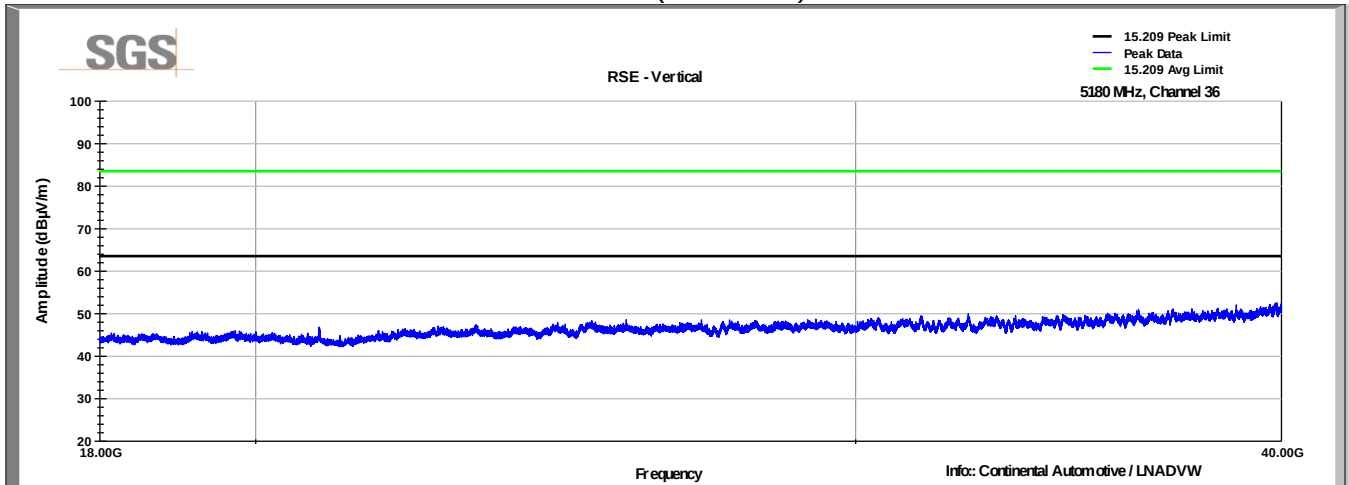


5 GHz CH36, 6Mbps
 Horizontal (1-18GHz)

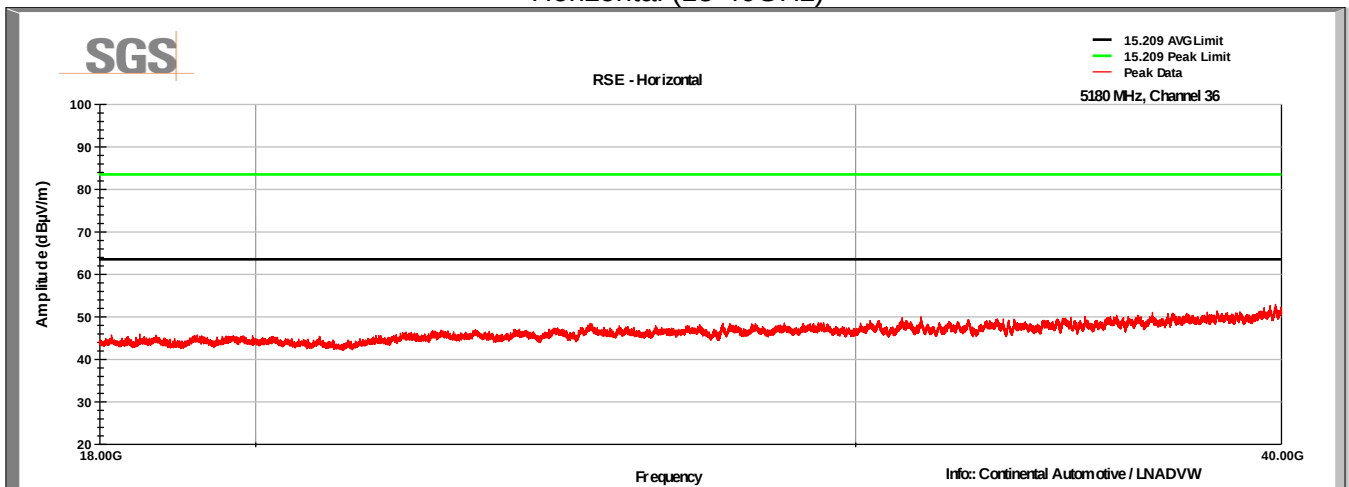


47.6dBμV/m Peak @ 10360MHz

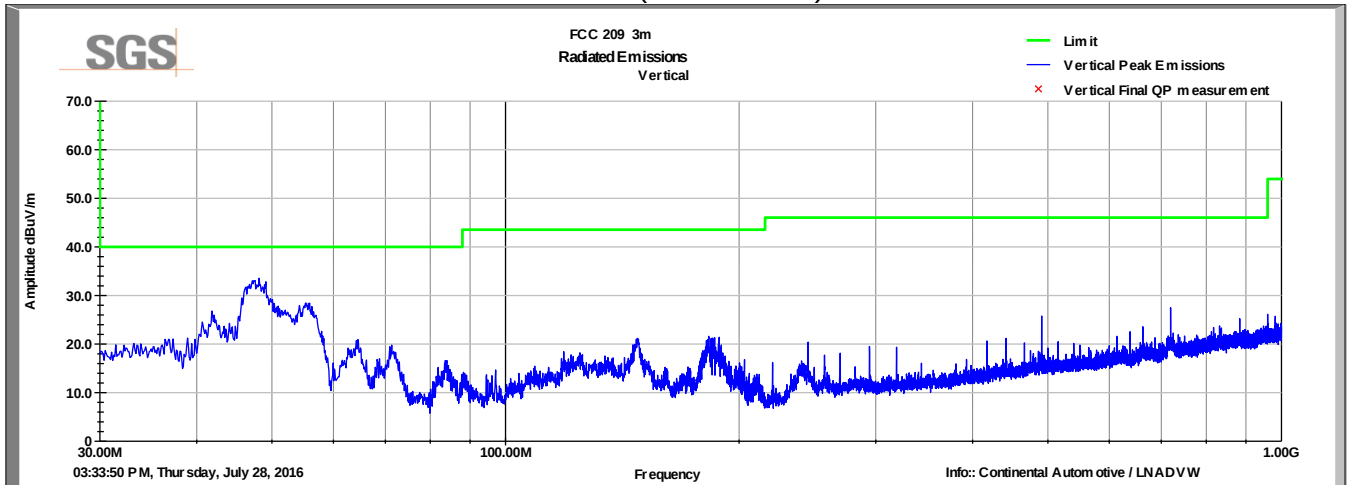
5 GHz CH 36, 6Mbps
 Vertical (18-40GHz)



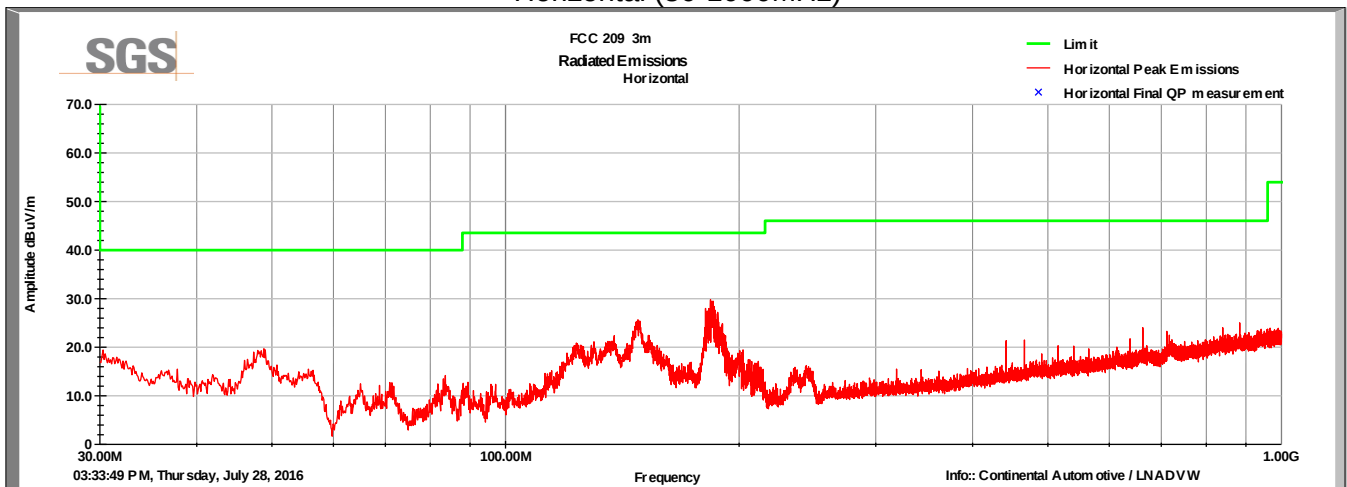
5 GHz CH 36, 6Mbps
 Horizontal (18-40GHz)



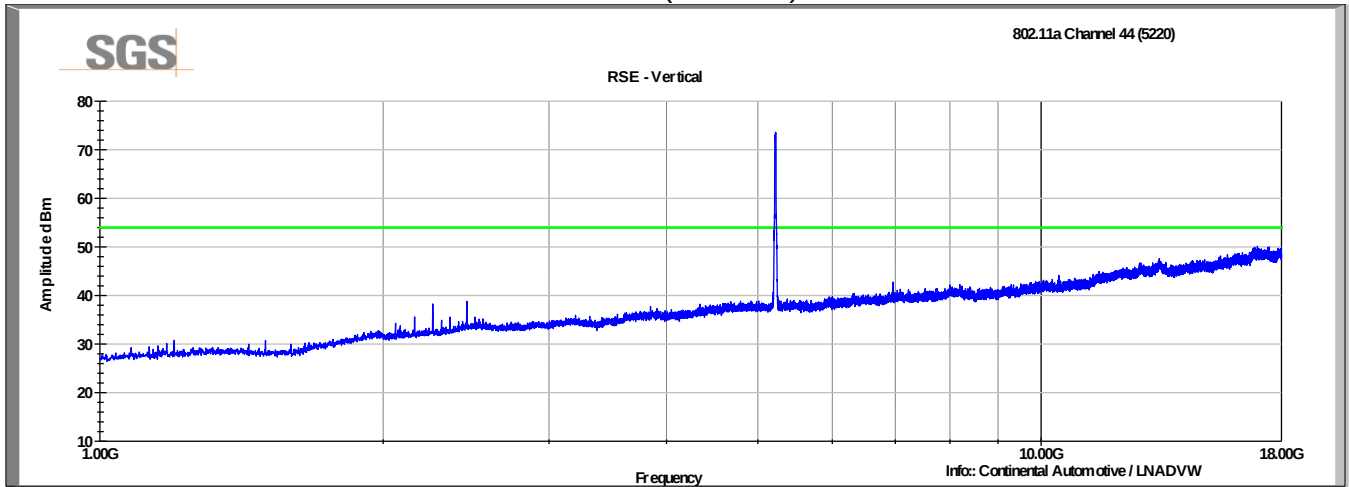
5 GHz CH 44, 6Mbps
Vertical (30-1000MHz)



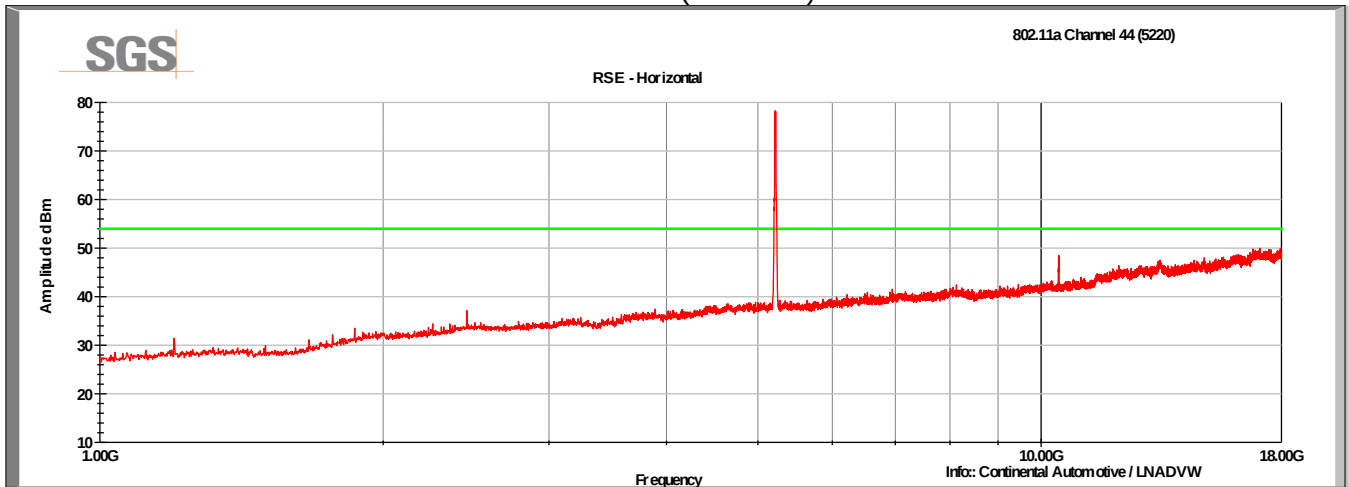
5 GHz CH 44, 6Mbps
Horizontal (30-1000MHz)



5 GHz CH 44, 6Mbps
 Vertical (1-18GHz)

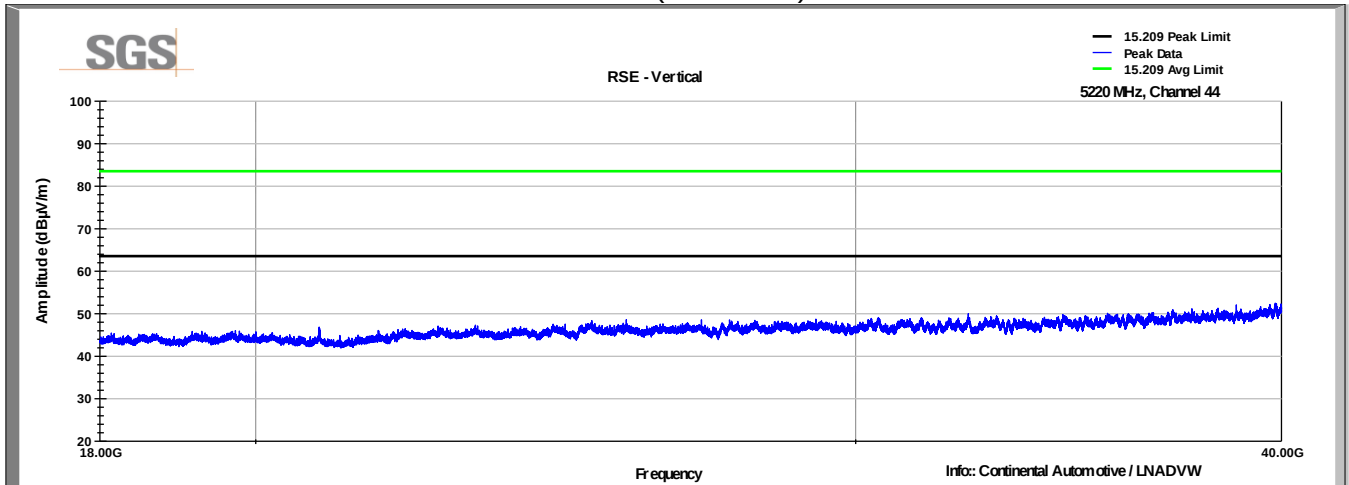


5 GHz CH 44, 6Mbps
 Horizontal (1-18GHz)

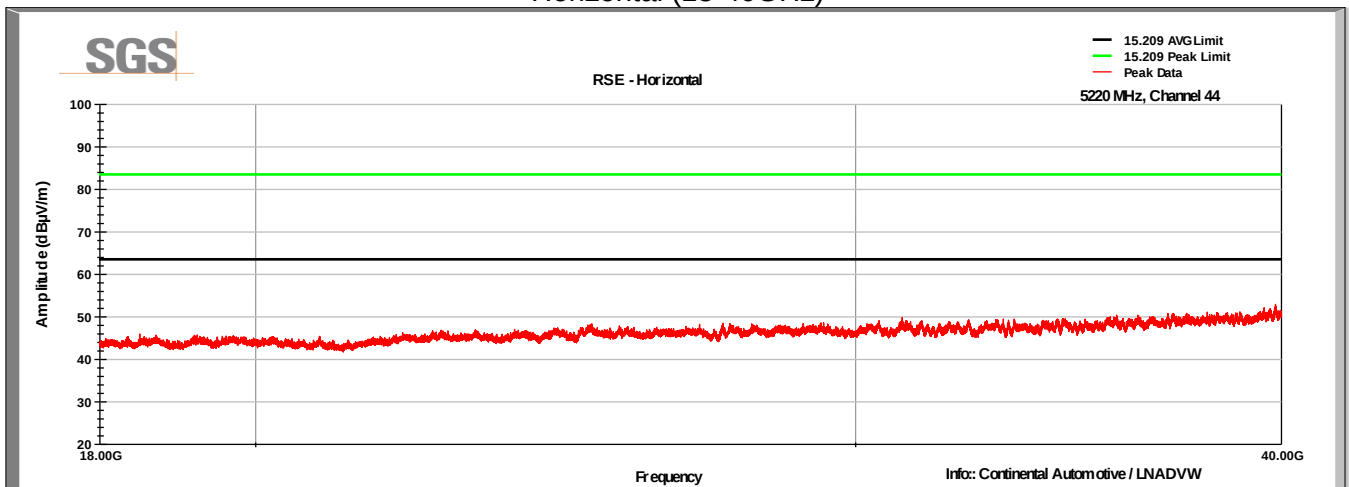


48.5dBμV/m Peak @ 10440MHz

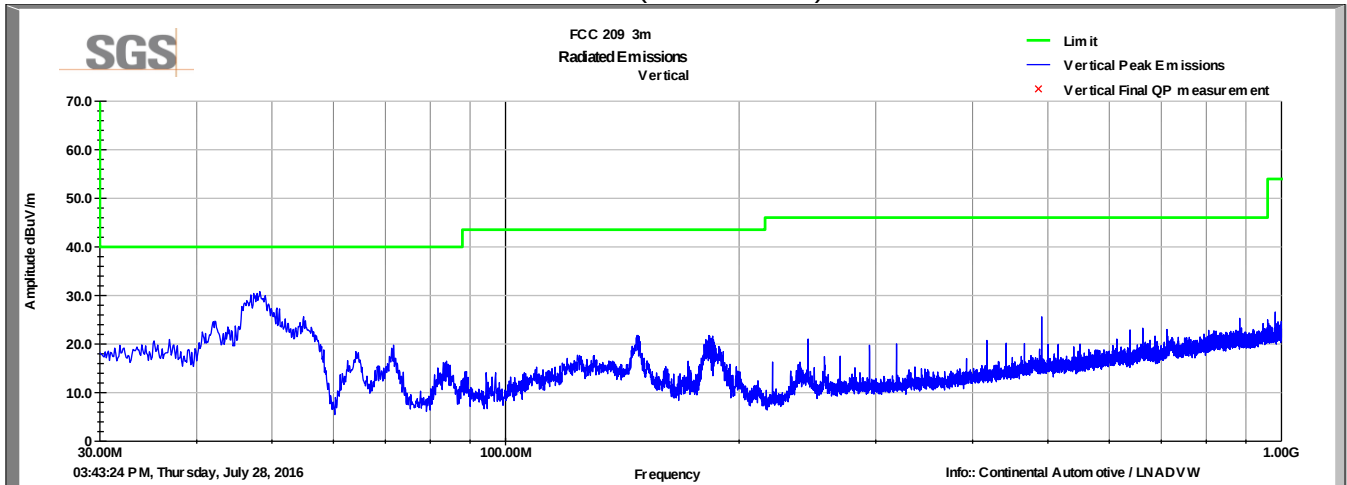
5 GHz CH 44, 6Mbps
Vertical (18-40GHz)



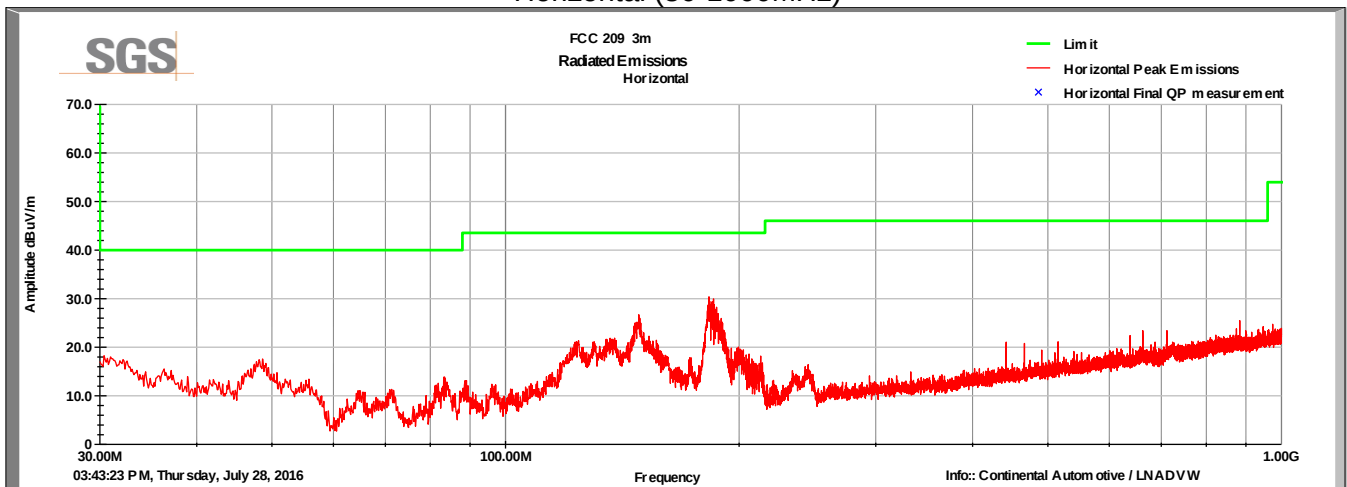
5 GHz CH 44, 6Mbps
Horizontal (18-40GHz)



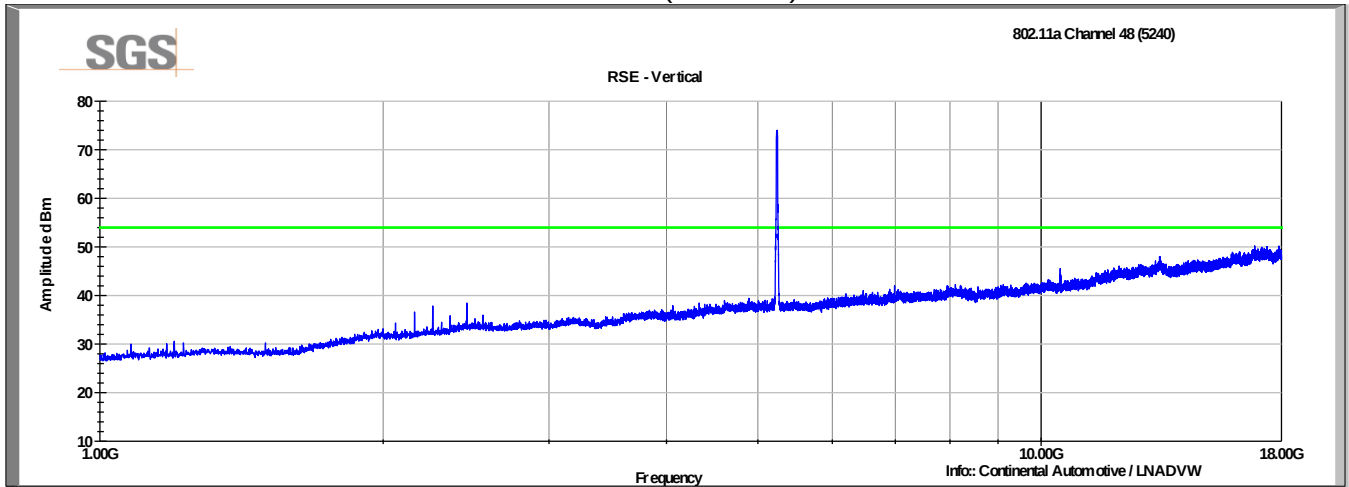
5 GHz CH 48, 6Mbps
Vertical (30-1000MHz)



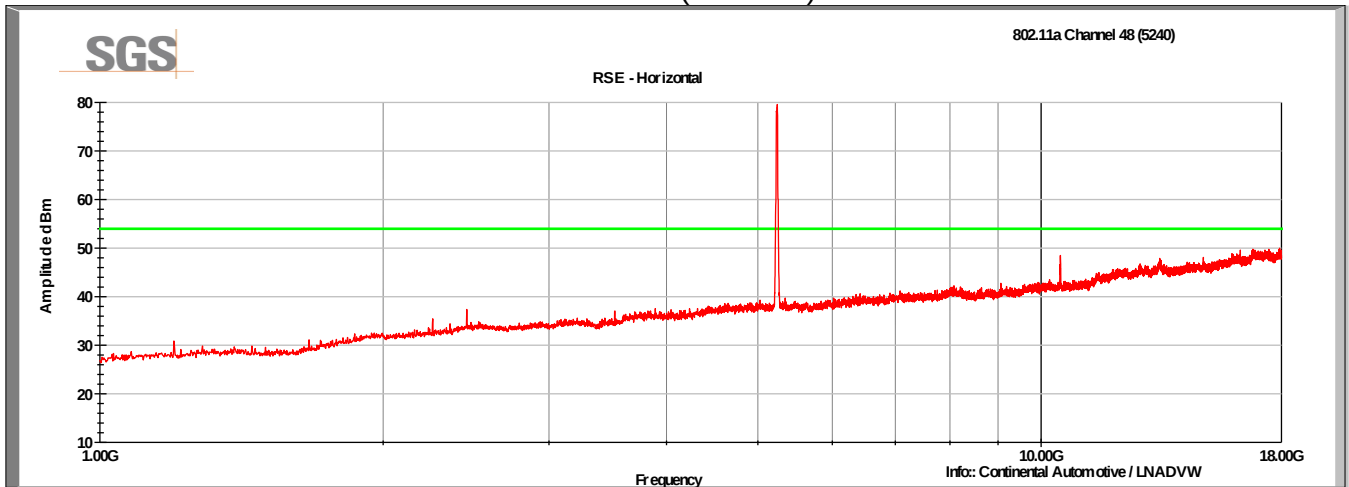
5 GHz CH 48, 6Mbps
Horizontal (30-1000MHz)



5 GHz CH 48, 6Mbps
 Vertical (1-18GHz)

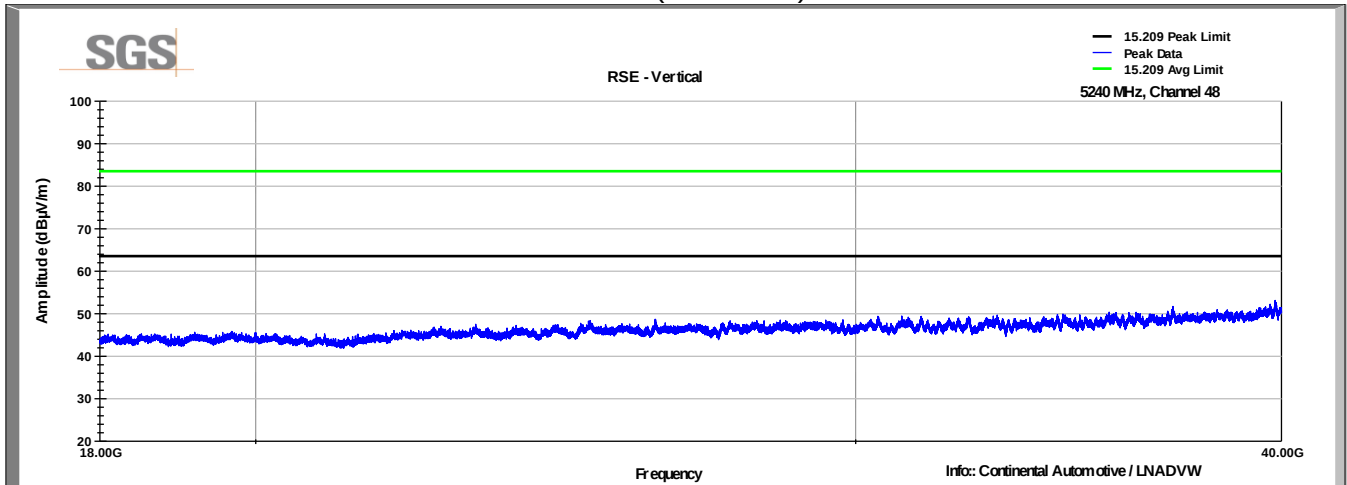


5 GHz CH 48, 6Mbps
 Horizontal (1-18GHz)

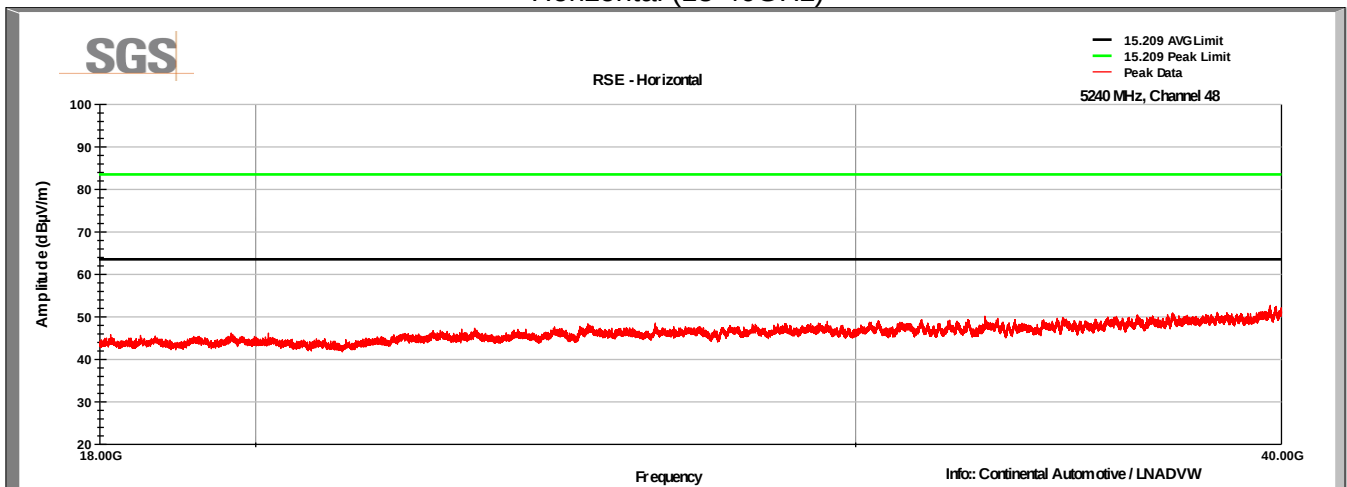


48.5dBμV/m Peak @ 10480MHz

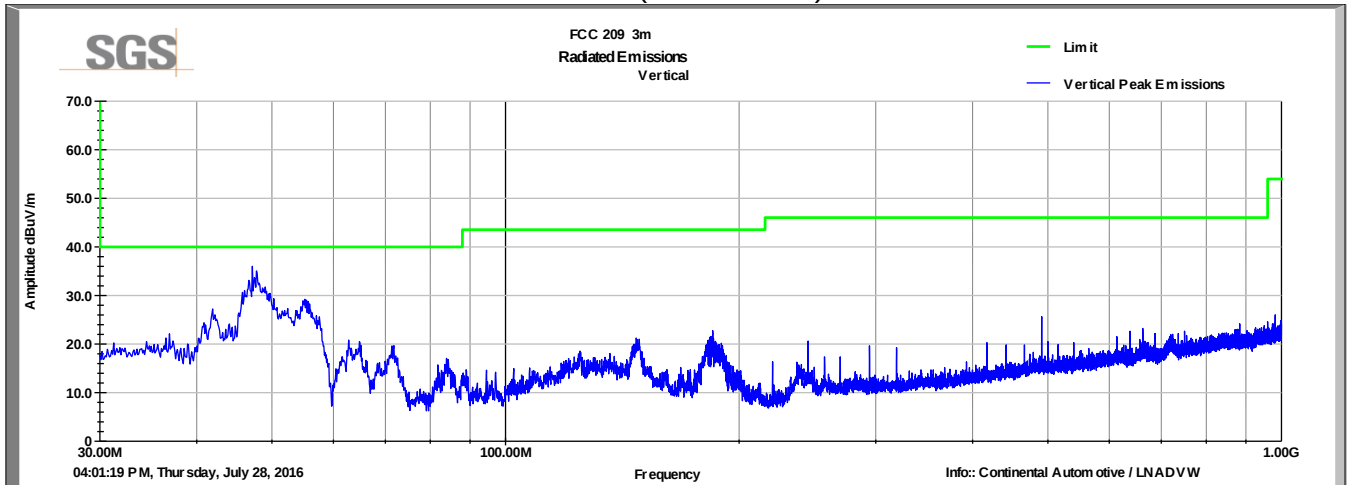
5 GHz CH 48, 6Mbps
Vertical (18-40GHz)



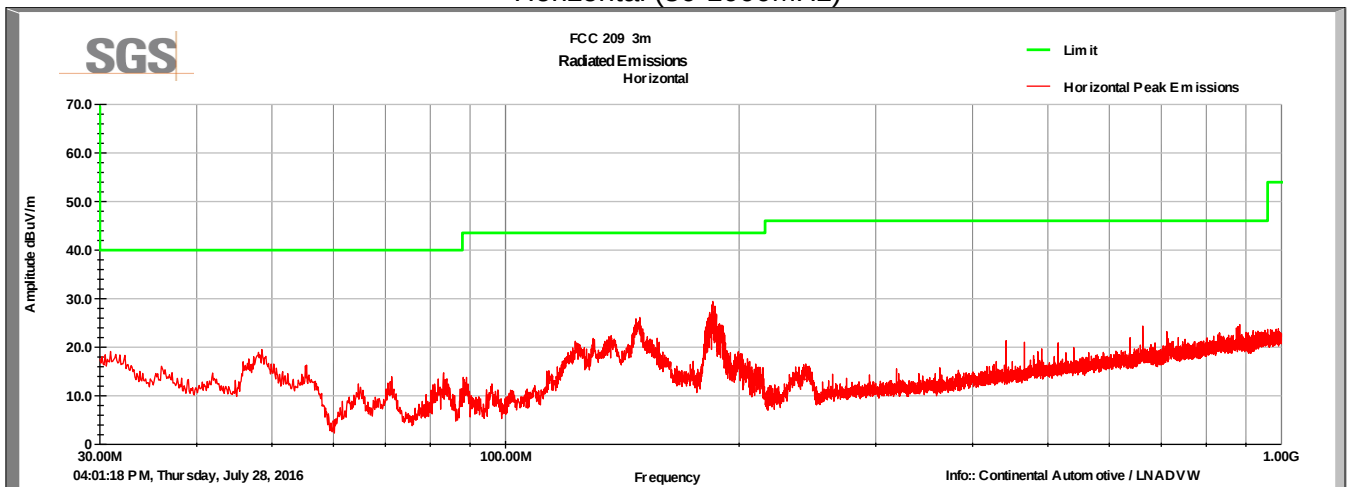
5 GHz CH 48, 6Mbps
Horizontal (18-40GHz)



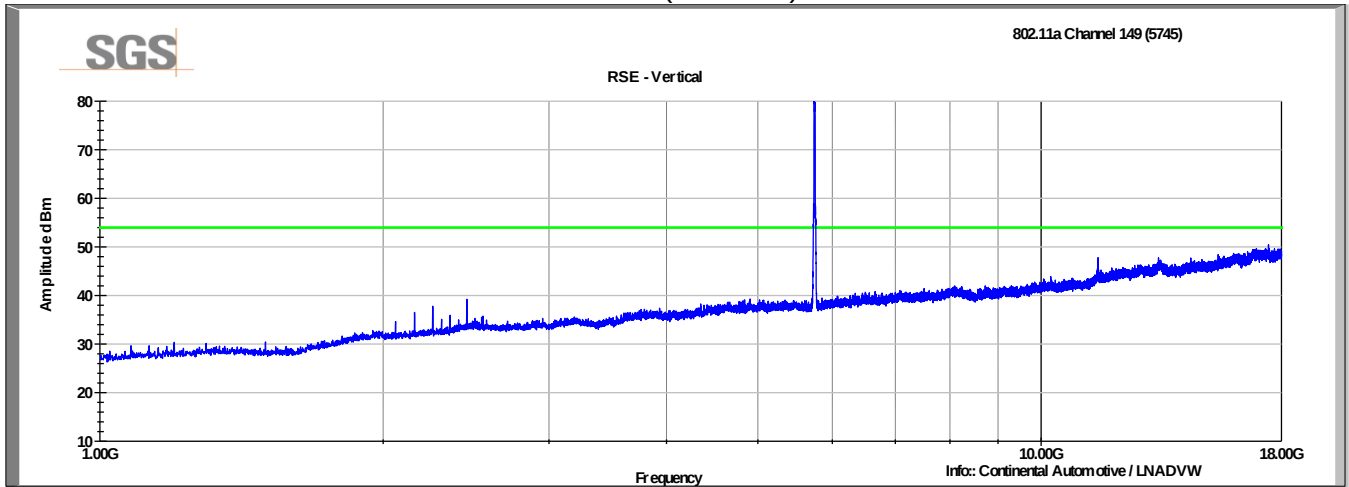
5 GHz CH 149, 6Mbps
Vertical (30-1000MHz)



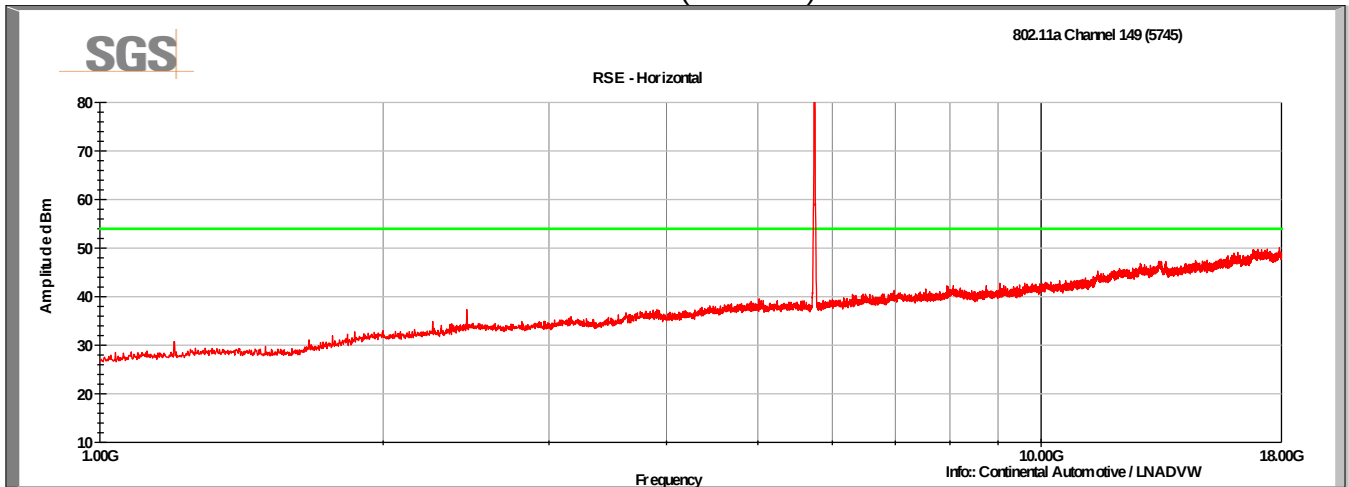
5 GHz CH149, 6Mbps
Horizontal (30-1000MHz)



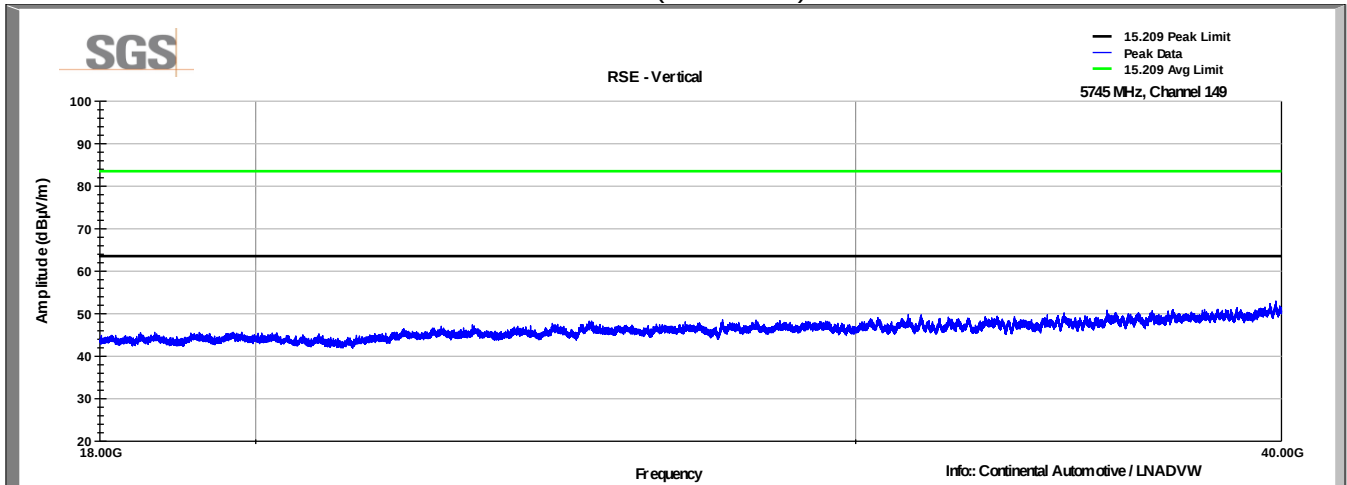
5 GHz CH 149, 6Mbps
 Vertical (1-18GHz)



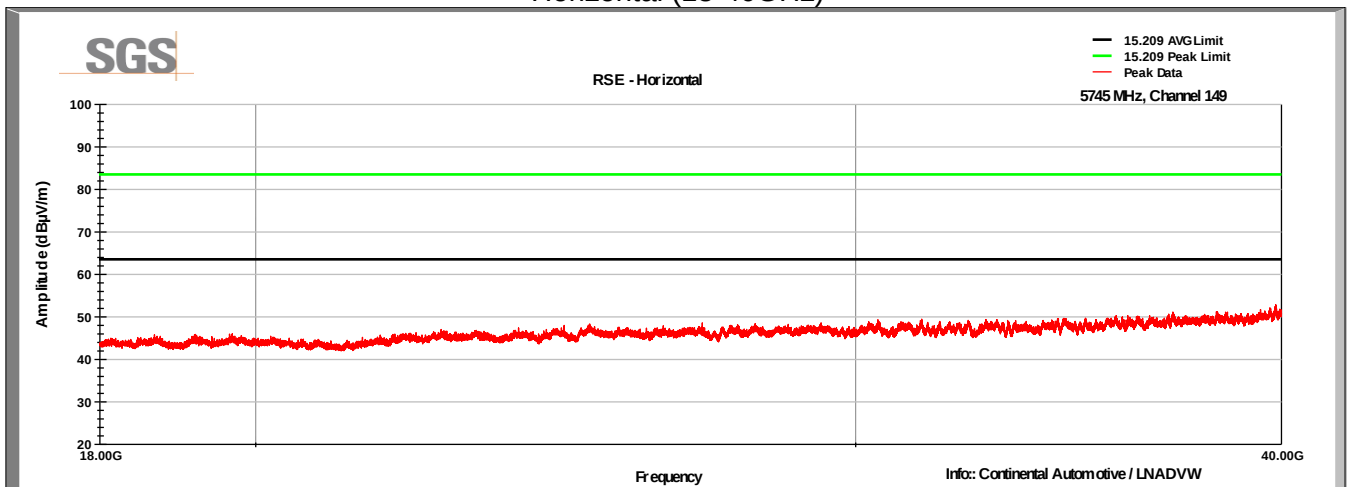
5 GHz CH 149, 6Mbps
 Horizontal (1-18GHz)



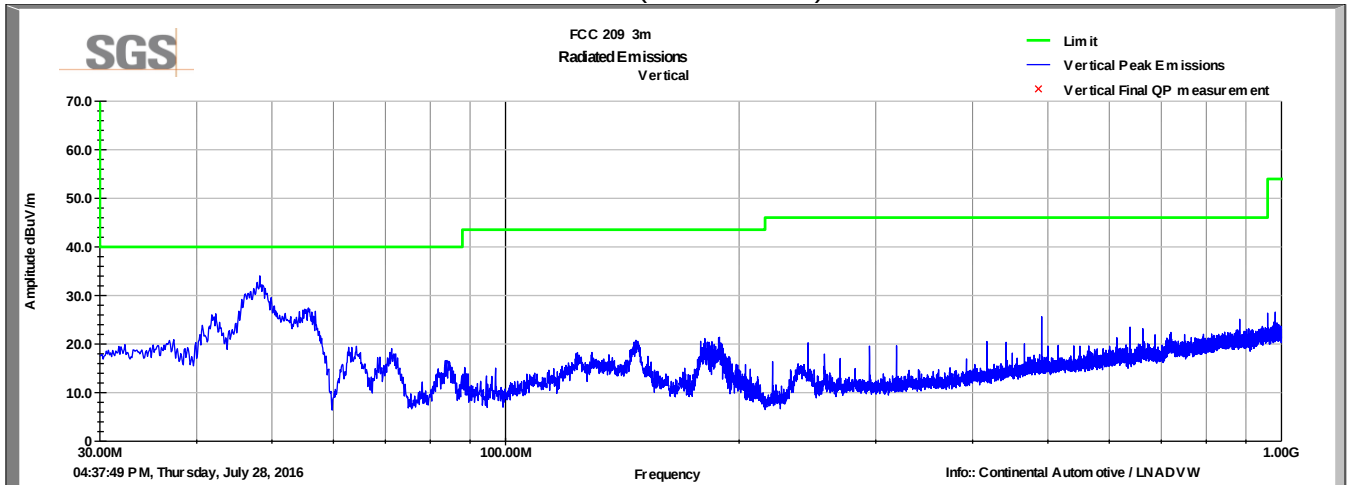
5 GHz CH 149, 6Mbps
Vertical (18-40GHz)



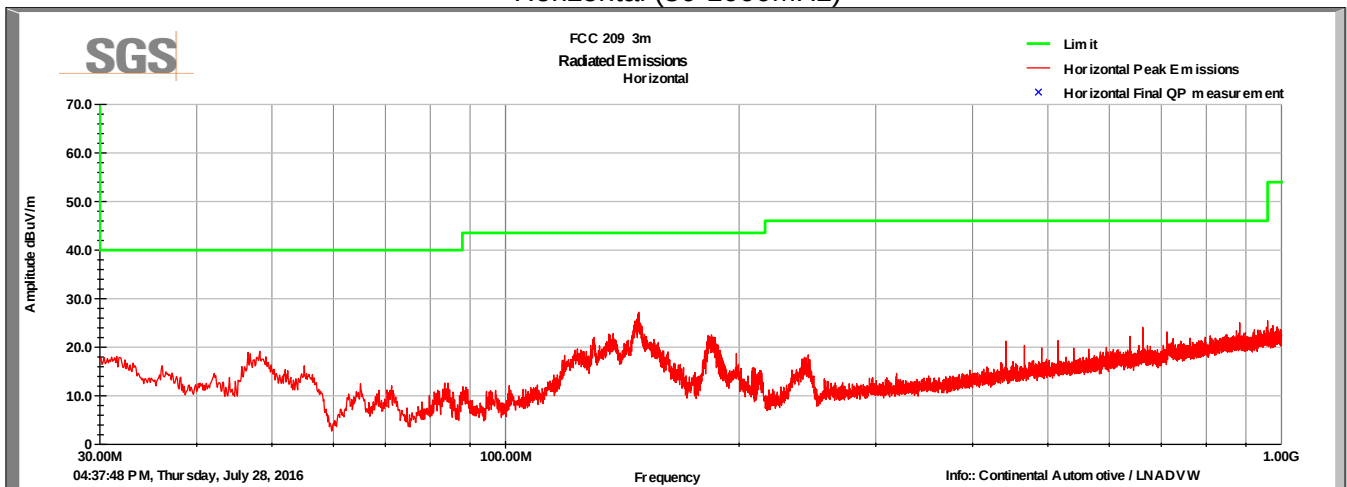
5 GHz CH 149, 6Mbps
Horizontal (18-40GHz)



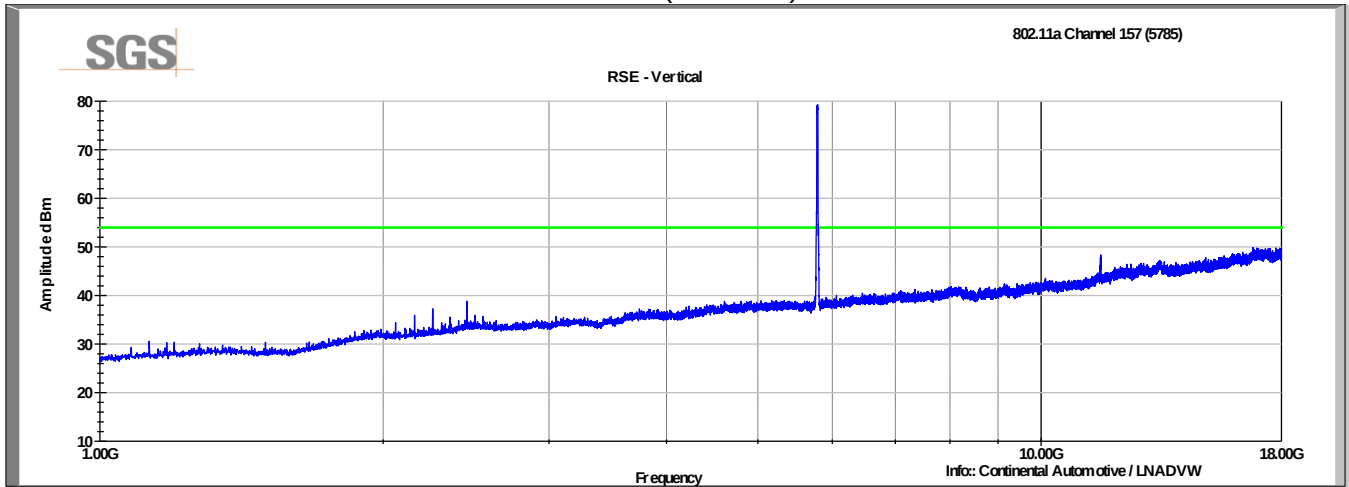
5 GHz CH 157, 6Mbps
Vertical (30-1000MHz)



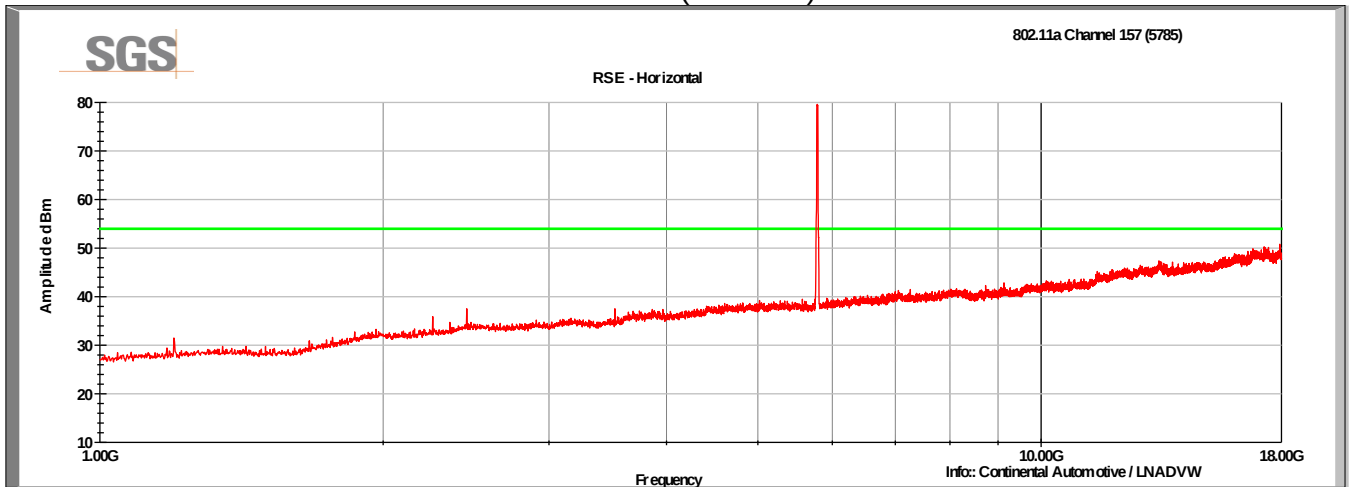
5 GHz CH 157, 6Mbps
Horizontal (30-1000MHz)



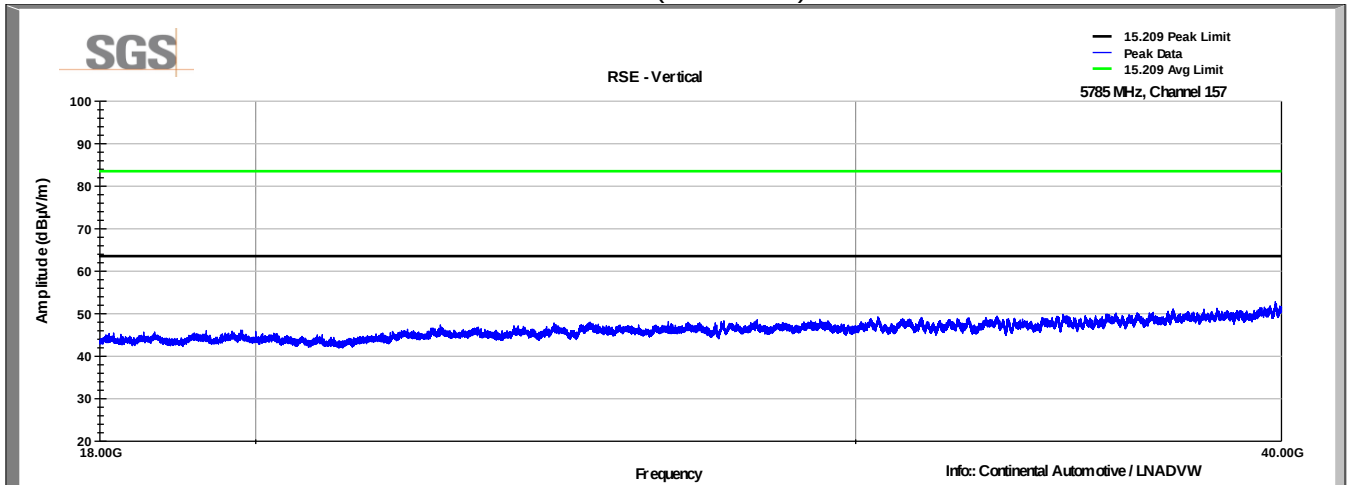
5 GHz CH 157, 6Mbps
 Vertical (1-18GHz)



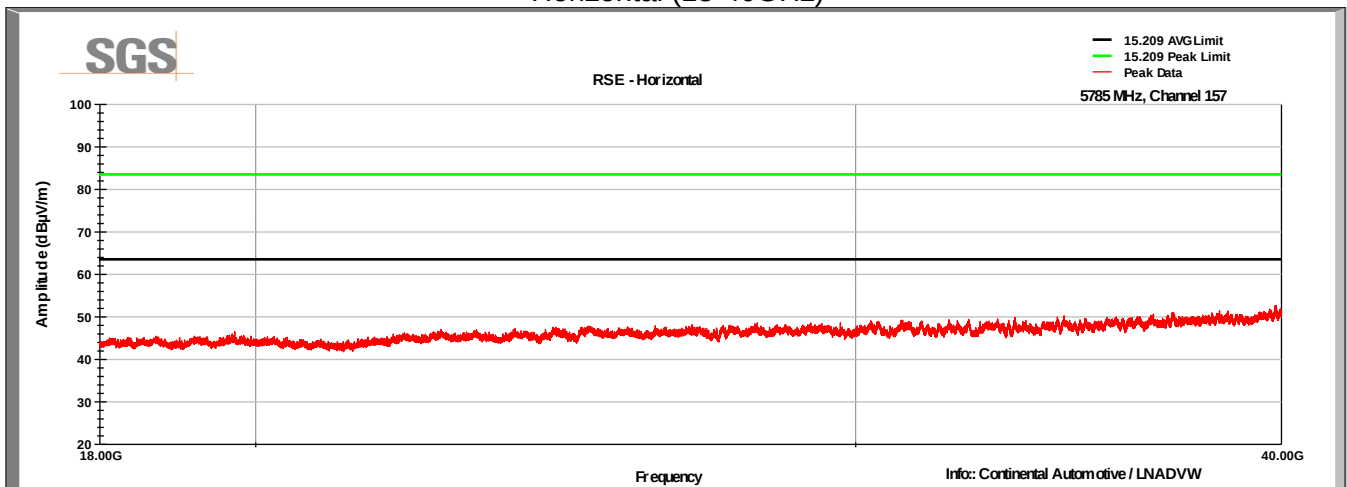
5 GHz CH 157, 6Mbps
 Horizontal (1-18GHz)



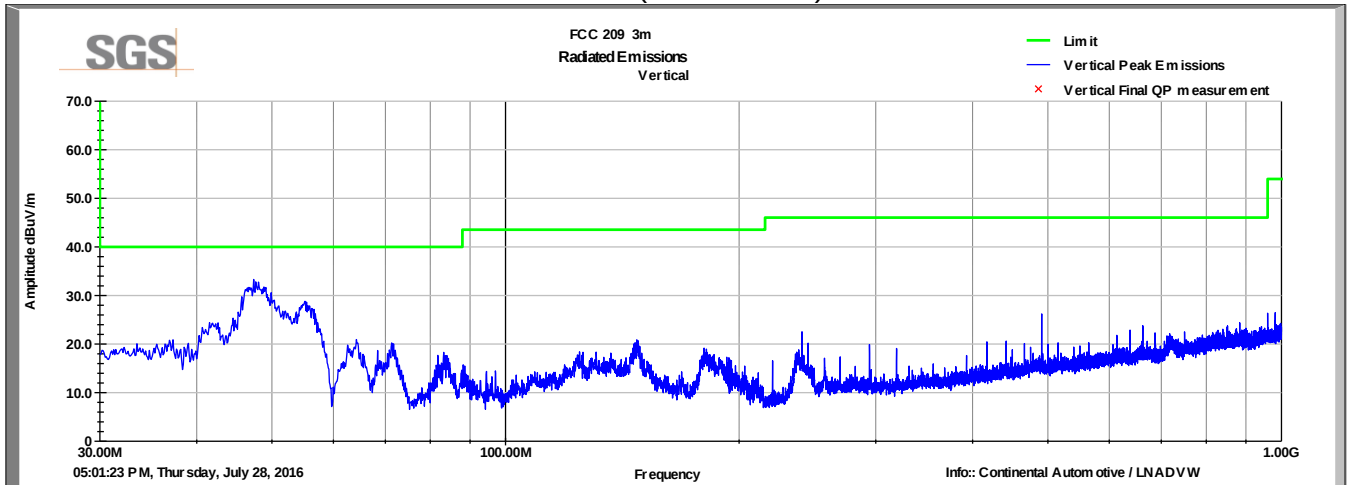
5 GHz CH 157, 6Mbps
Vertical (18-40GHz)



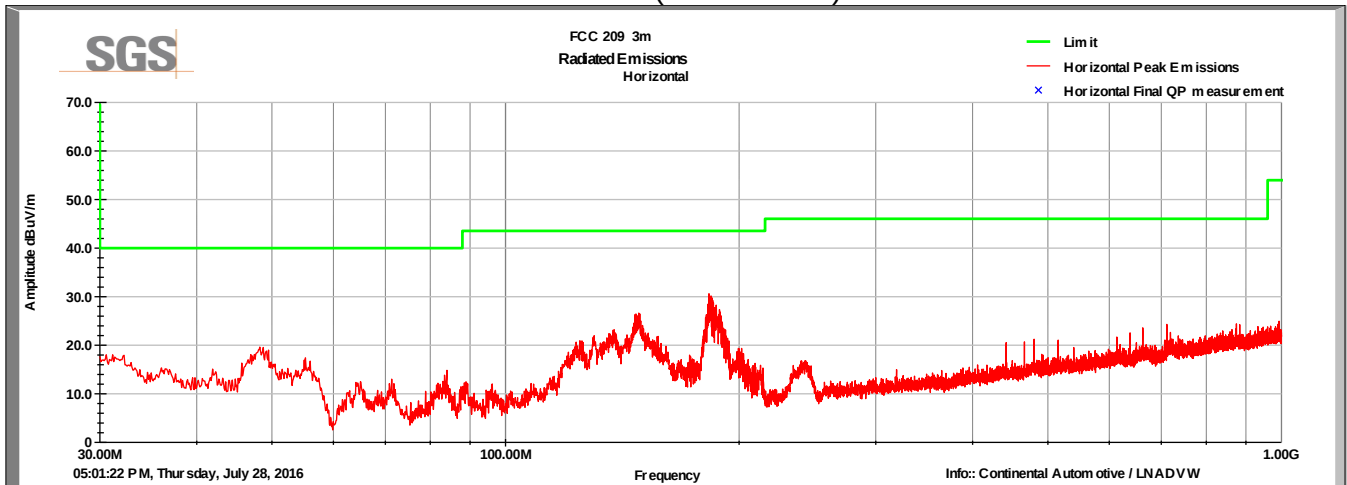
5 GHz CH 157, 6Mbps
Horizontal (18-40GHz)



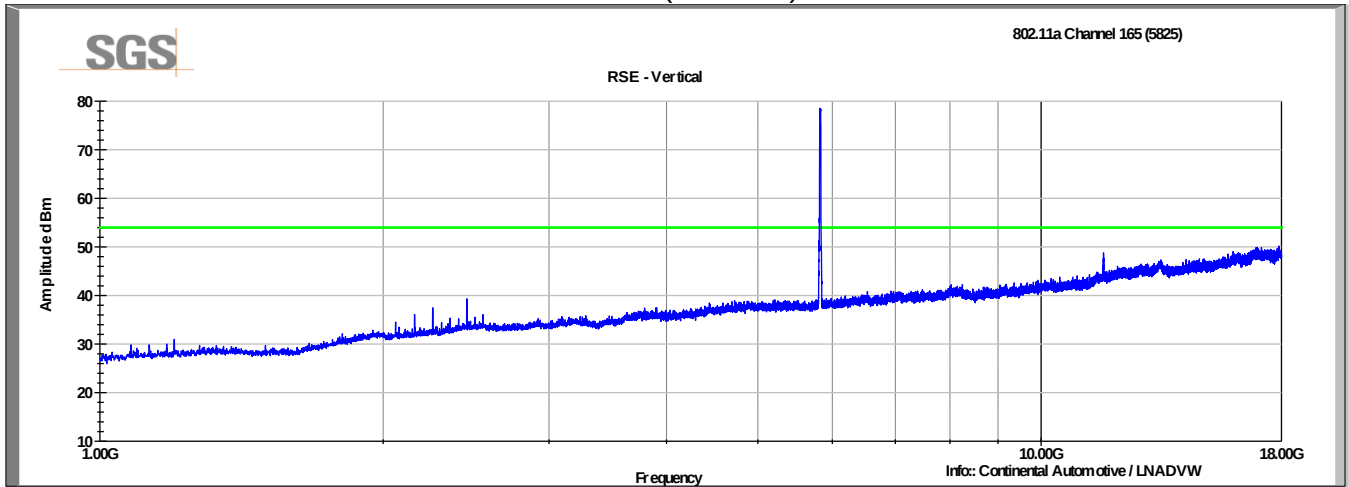
5 GHz CH 165, 6Mbps
Vertical (30-1000MHz)



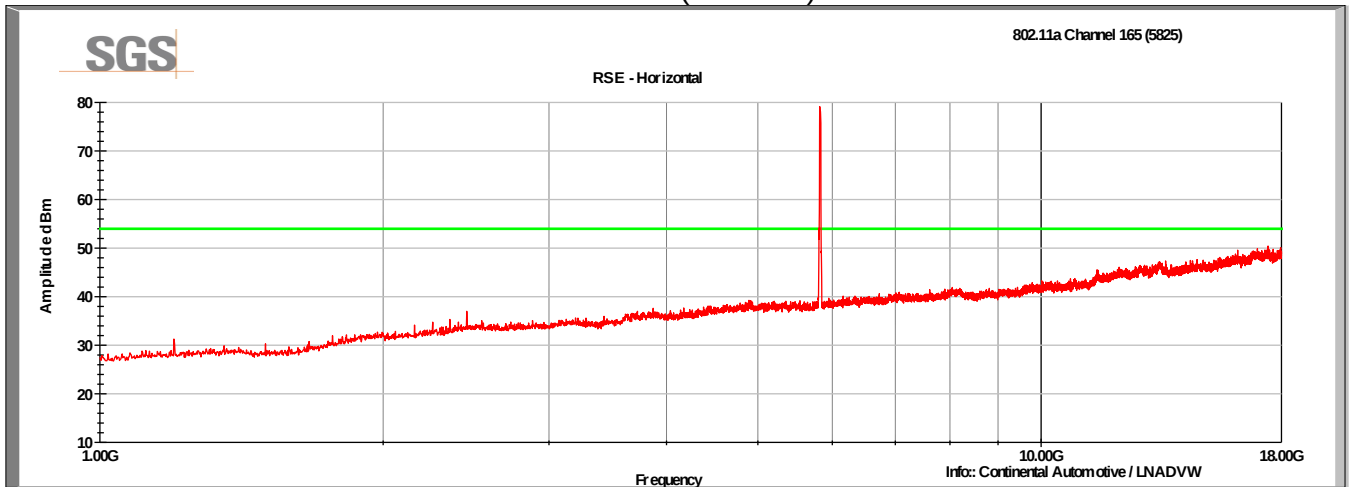
5 GHz CH 165, 6Mbps
Horizontal (30-1000MHz)



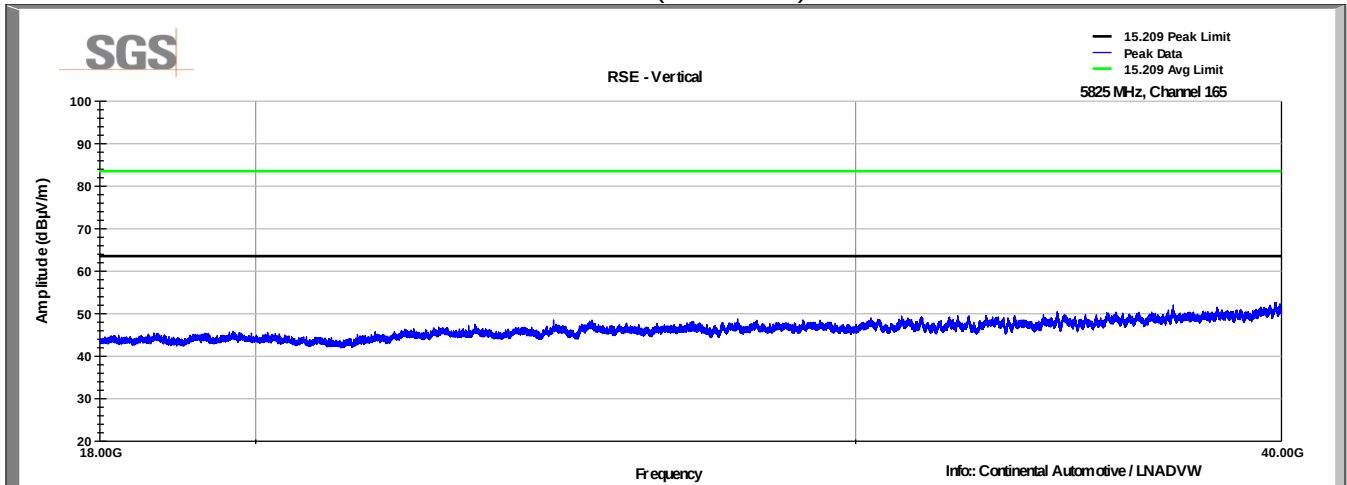
5 GHz CH 165, 6Mbps
 Vertical (1-18GHz)



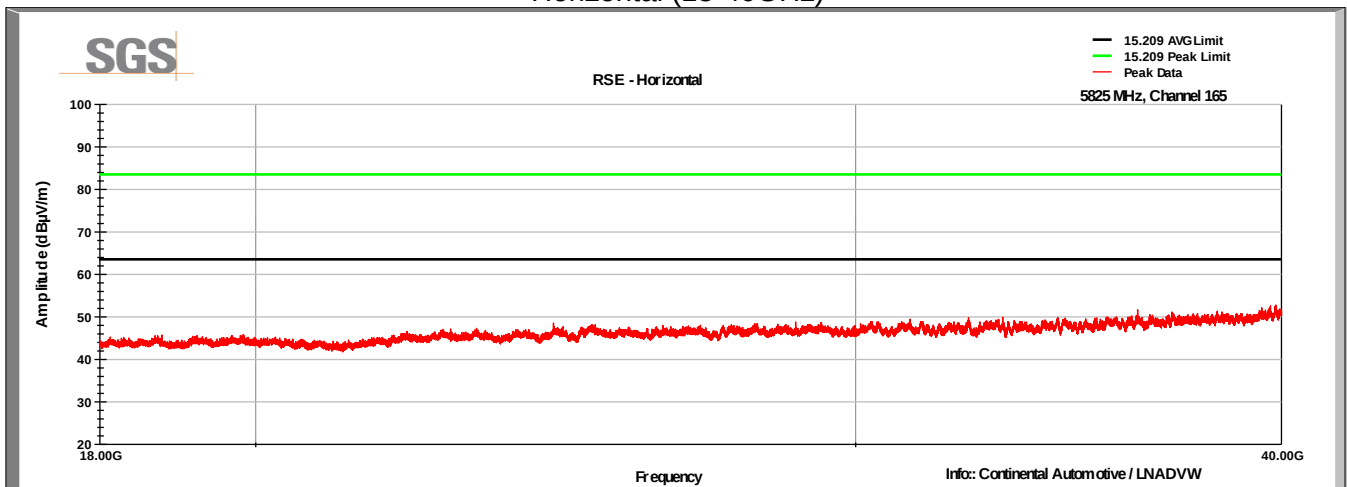
5 GHz CH 165, 6Mbps
 Horizontal (1-18GHz)



5 GHz CH 165, 6Mbps
Vertical (18-40GHz)



5 GHz CH 165, 6Mbps
Horizontal (18-40GHz)



Tabular Data -30-1000MHz, Vertical

Frequency MHz	Raw QP (dBuV)	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	QP Value (dBuV/m)	Limit (dBuV/m)	Margin (dB)
36.95	32.6	V	183.0	173.0	16.8	0.6	31.7	18.4	40.0	-21.6
42.05	41.0	V	218.0	111.0	13.1	0.7	31.7	23.1	40.0	-16.9
47.25	48.3	V	174.0	100.0	9.9	0.7	31.7	27.2	40.0	-12.8
55.14	45.5	V	226.0	115.0	7.6	0.8	31.6	22.2	40.0	-17.8
62.86	35.1	V	200.0	176.0	7.8	0.8	31.6	12.1	40.0	-27.9
71.78	39.1	V	163.0	110.0	8.2	0.9	31.6	16.6	40.0	-23.4
QP Value = Level + AF + CL - Amp										
Margin = QP Value - Limit										

Tabular Data -30-1000MHz, Horizontal

Frequency MHz	Raw (dBuV)	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Corrected (dBuV/m)	Limit (dBuV/m)	Margin (dB)
183.36	37.5	H	231.0	100.0	11.2	1.4	31.4	18.7	43.5	-24.8
184.46	38.7	H	257.0	134.0	11.2	1.4	31.4	20.0	43.5	-23.5
185.11	38.3	H	231.0	182.0	11.2	1.4	31.4	19.5	43.5	-24.0
185.90	39.3	H	225.0	100.0	11.2	1.4	31.4	20.5	43.5	-23.0
186.15	37.3	H	268.0	146.0	11.2	1.4	31.4	18.6	43.5	-24.9
187.16	39.3	H	243.0	106.0	11.3	1.4	31.4	20.7	43.5	-22.8
								47.6		
QP Value = Level + AF + CL - Amp										
Margin = QP Value - Limit										

8 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	02 August 2016
	-	
	-	
	-	