

FCC UNII RF TEST REPORT



Test Report Number.....	WAP-19052921-LC-FCC-UNII-G4
Applicant.....	Ford Motor Company
Applicant Address.....	Building 5, 20300 Rotunda Dr., Dearborn, Michigan, United States 48124
Product Name.....	Vehicle Infotainment System
Model Number.....	SYNC-G4
Family Product/Model.....	N/A
FCC ID.....	KMH-SYNCG4
ISED ID.....	1422A-SYNCG4
Date of EUT received.....	06/12/2019
Date of Test.....	06/12/2019 – 07/29/2019
Report Issue Date.....	08/02/2019
Test Standards.....	47CFR Part 15.407
Test Result.....	Pass

Issued By:

Vista Laboratories

1261 Puerta Del Sol, San Clemente, CA 92673 USA

www.vista-compliance.com

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report. This report is not to be reproduced by any means except in full and in any case not without the written approval of Vista Laboratories.

Tested by:

Bruce Li/Test Engineer

Approved By:

David Zhang/Technical Manager

Laboratory Introduction

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Our comprehensive testing services include safety testing, EMC emission and susceptibility testing, RF and wireless testing (including DFS).

As your partner, Vista investigates appropriate test standards, develops test plans, performs troubleshooting & failure analysis, reviews documentation, and provides test reports for a complete compliance testing and certification package.



17025 Product Testing Accreditation Certificate



17065 Product Certification Accreditation Certificate

Report Number:	WAP-19052921-LC-FCC-UNII-G4
Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



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REVISION HISTORY

Revision	Issue Date	Description	Note
Original	08/06/2019	Original release	N/A
			N/A

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Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



1 General Information

1.1 Applicant

Applicant:	Ford Motor Company
Applicant address:	Building 5, 20300 Rotunda Dr., Dearborn, Michigan, United States 48124
Manufacturer:	Ford Motor Company
Manufacturer Address:	Building 5, 20300 Rotunda Dr., Dearborn, Michigan, United States 48124

1.2 Product information

Product Name	Vehicle Infotainment System
Model Number	SYNC-G4
Family Model Number	N/A
Serial Number	1SN004KB (Conducted), 1SN004K8 (Radiated)
Frequency Band	BLE: 2402-2480MHz 802.11b/g/n-20MHz: 2412-2462MHz 802.11a/n-20MHz: 5180-5320MHz, 5500-5720MHz, 5725-5825MHz 802.11n-40MHz: 5190-5310MHz, 5510-5710MHz, 5755-5795MHz 802.11ac: 5210-5290MHz, 5530-5690MHz, 5775MHz
Type of modulation	BLE: GFSK 802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g: OFDM-CCK (BPSK, QPSK, 16QAM, 64QAM) 802.11a/n/ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Equipment Class/ Category	DSS, DTS, UNII
Maximum output power	See test result
Antenna Information	PCB trace antenna (WiFi1 Antenna, WiFi2 Antenna, Bluetooth Antenna) Peak Gain: WiFi1 Antenna: 2.86 dBi @2.4GHz, 8.07 dBi @5GHz WiFi2 Antenna: 0.91 dBi @2.4GHz, 5.04 dBi @5GHz Bluetooth Antenna: 2.68 dBi @2.4GHz Directional Gain: WiFi1 & WiFi2 Antenna: 4.95 dBi @2.4GHz, 9.70 dBi @5GHz
Clock Frequencies	N/A
Port/Connectors	Micro USB, CAN bus
Input Power	Vehicle Battery powered: 12VDC
Power Adapter Manu/Model	N/A
Power Adapter SN	N/A
Hardware version	N/A
Software version	N/A
Simultaneous Transmission	BLE and WLAN can transmit simultaneously
Additional Info	N/A

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1.3 Test standard and method

Test standard	47CFR Part 15.407
Test method	ANSI C63.10: 2013 789033 D02 General UNII Test Procedures New Rules v02r01

1.4 Test Purpose and statement

The purpose of this test report is intended to demonstrate the compliance of product listed in section 1.2, received from company listed in section 1.1, to the requirements of standard and method listed in section 1.3. Based on our test results, we conclude that the product tested complies with the requirements of the standards indicated.

2 Test site information

Lab performing tests	Vista Laboratories
Lab Address	1261 Puerta Del Sol, San Clemente, CA 92673 USA
Phone Number	+1 (949) 393-1123
Website	www.Vista-compliance.com

Test condition	Test Engineer	Test Environment	Test Date
RF conducted	Bruce Li	23.5°C / 58.2%/996 mbar	06/12/2019 – 07/29/2019
Radiated	Cameron Wu	23.5°C / 58.2%/996 mbar	06/12/2019 – 07/29/2019

3 Modification of EUT

The EUT is an engineering test sample loaded with RF testing software specifically designed to support the RF TX/RX measurement in different aspects.

4 Test configuration and operation

4.1 EUT test configuration

EUT is powered by external DC power supply for testing purpose. EUT's RF antenna port is connected to spectrum analyzer through RF test cable for measurement. The test software is used to set EUT to different transmission mode in terms of radio mode (WLAN, BLE), test channel, data rate, etc.

4.2 EUT test channel

Radio	Channel	Radio	Channel
802.11-a	5180	802.11-a	5260
802.11-a	5200	802.11-a	5280
802.11-a	5240	802.11-a	5320
802.11-n-20	5180	802.11-n-20	5260
802.11-n-20	5200	802.11-n-20	5280
802.11-n-20	5240	802.11-n-20	5320
802.11-n-40	5190	802.11-n-40	5270
802.11-n-40	5230	802.11-n-40	5310
802.11-ac-80	5210	802.11-ac-80	5290

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Radio	Channel	Radio	Channel
802.11-a	5500	802.11-a	5745
802.11-a	5600	802.11-a	5785
802.11-a	5700	802.11-a	5825
802.11-n-20	5500	802.11-n-20	5745
802.11-n-20	5600	802.11-n-20	5785
802.11-n-20	5700	802.11-n-20	5825
802.11-n-40	5510	802.11-n-40	5755
802.11-n-40	5590	802.11-n-40	5795
802.11-n-40	5670	802.11-ac-80	5775
802.11-ac-80	5530		

Radio	Channel		
802.11-a	5720		
802.11-n-20	5720		
802.11-n-40	5710		
802.11-ac-80	5690		

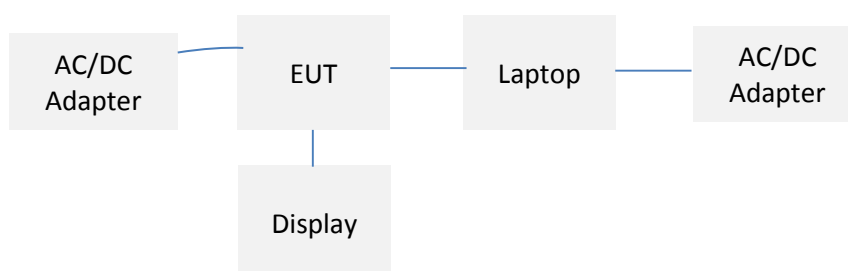
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Model Number:	SYNC-G4



4.3 Supporting Equipment

Index	Description	Model	S/N	Brand	Remark
1	AC/DC Adapter	HA45NM140	00285K	DELL	-
2	Laptop	Inspiron 15	245S2F2	DELL	-
3	Display	-	84007293	Ford	-
4	AC/DC Adapter	GST 60A12-P15	EB74QB1066	MEAN WELL	-

4.4 EUT setup diagram



4.5 EUT operation

The test software is used to set EUT to different transmission mode in terms of radio mode (WLAN, BLE), test channel, data rate, etc.

4.6 Test software

Index	Description	Remark
1	Diagnostic Engineering Tool V8.4.0	Load test firmware to EUT and provide basic control
2	PuTTY V0.70	Establish communication to EUT radio module
3	EMISoft Vasona 6.0049	EMC/Spurious emission test software used during testing

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5 EUT and test setup pictures

[See associated filing](#)

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6 Test Summary

FCC Rules	Test Item	Section	Verdict
§15.203	Antenna Requirement	8.1	Pass
§15.407(e)	6 dB Bandwidth	8.2	Pass
§15.407(a)	26 dB Bandwidth	8.3	Pass
§15.407(a)	Conducted Maximum Output Power	8.5	Pass
§15.407(a)	Power Spectral Density	8.6	Pass
§15.407(c)	Automatically Discontinue Transmission	8.7	Pass
§15.205, §15.209, §15.407(b)	Radiated Emissions & Unwanted Emissions into Restricted Frequency Bands	8.8	Pass
§15.207 (a)	AC Power Line Conducted Emissions	8.9	N/A

Note1: EUT is powered by Vehicle mains. It does not connect to public AC mains. This item is not applicable.

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7 Uncertainty of Measurement

Test item	Measurement Uncertainty (dB)
RF Output Power (Conducted)	±1.2 dB
Power Spectral Density	±0.9 dB
Unwanted Emission (conducted)	±2.6 dB
Occupied Channel Bandwidth	±5 %
Radiated Emission (9KHz-30MHz)	±3.5 dB
Radiated Emission (30MHz-1GHz)	±4.6 dB
Radiated Emission (1-18GHz)	±4.9 dB
Radiated Emission (18-40GHz)	±3.5 dB

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8 Test summary and result

8.1 Antenna Requirement

8.1.1 Requirement

Per § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

8.1.2 Result

Analysis:

- EUT uses PCB trace antenna. No standard RF connector or coupling is used.

Conclusion:

EUT complies with antenna requirement in § 15.203.

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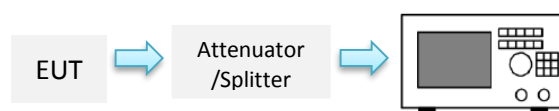
8.2 6 d Bandwidth

8.2.1 Requirement

§ 15.407 (e)

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

8.2.2 Test setup



8.2.3 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01, Section C) Emission bandwidth.

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW $\geq 3 \times$ RBW, peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Use automatic bandwidth measurement capability on instrument to obtain BW result.

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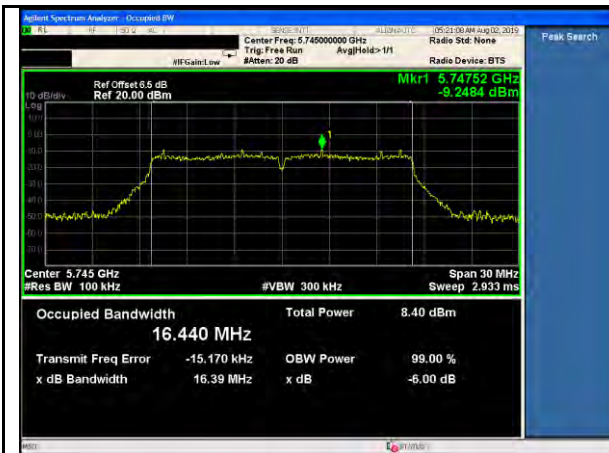


8.2.4 Test Result

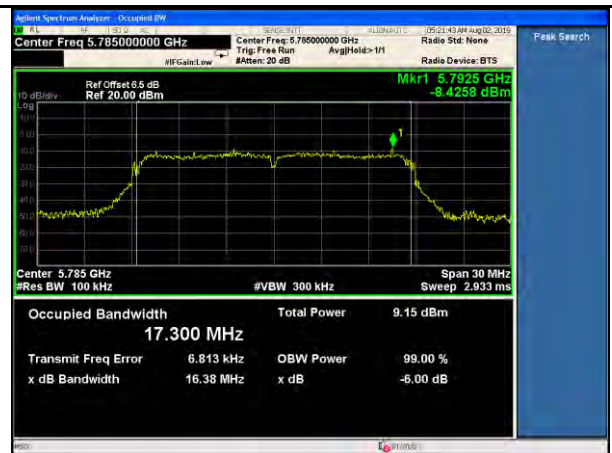
For U-NII-3 band

Mode/ Bandwidth	Channel	Frequency (MHz)	Data rate	Measured Bandwidth (KHz)	Minimum Bandwidth (KHz)	Result
11a	149	5745	6Mbps	16390	500	Pass
11a	157	5785	6Mbps	16380	500	Pass
11a	165	5825	6Mbps	16390	500	Pass
11n-20M	149	5745	MCS0	16320	500	Pass
11n-20M	157	5785	MCS0	16950	500	Pass
11n-20M	165	5825	MCS0	16340	500	Pass
11n-40M	155	5755	MCS0	34500	500	Pass
11n-40M	159	5795	MCS0	36080	500	Pass
11ac-80M	155	5775	VHC-MCS0	76250	500	Pass

8.2.5 Test Plots



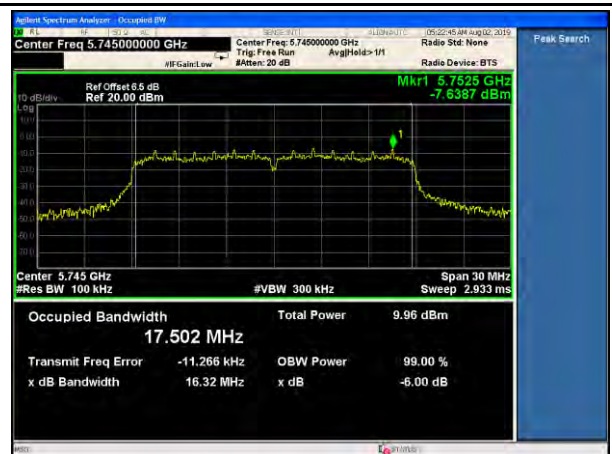
6dB BW 802.11a 5745MHz



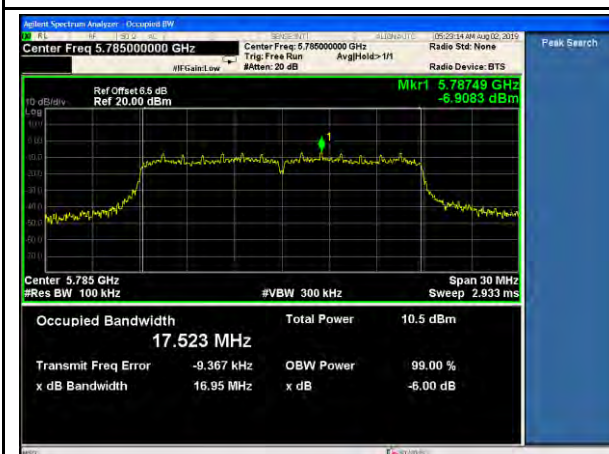
6dB BW 802.11a 5785MHz



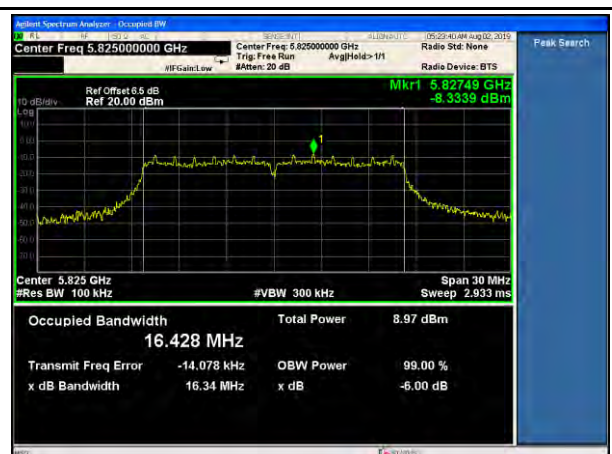
6dB BW 802.11a 5825MHz



6dB BW 802.11n-20M 5745MHz



6dB BW 802.11n-20M 5785MHz

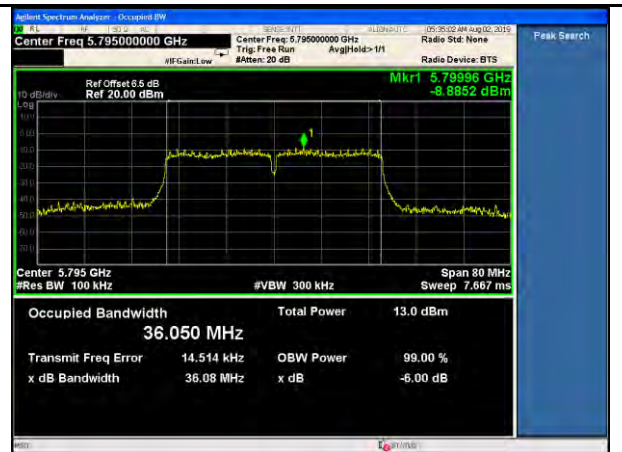


6dB BW 802.11n-20M 5825MHz

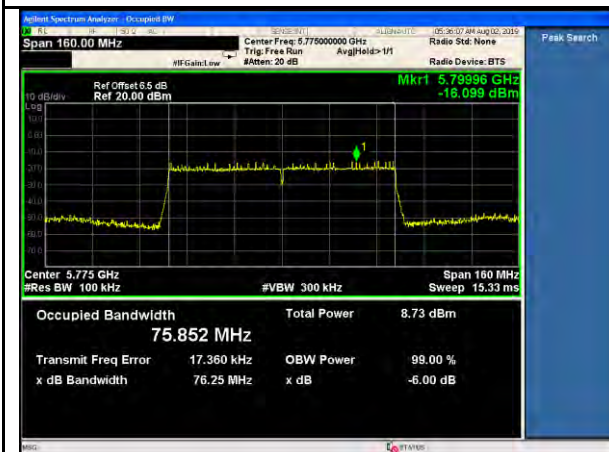
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6dB BW 802.11n-40M 5755MHz



6dB BW 802.11n-40M 5795MHz



6dB BW 802.11ac-80M 5775MHz

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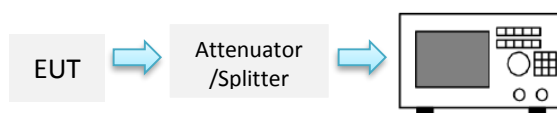
8.3 26 d Bandwidth

8.3.1 Requirement

§ 15.407 (a)

This section is for reporting purpose only. There are no restriction limits for bandwidth.

8.3.2 Test setup



8.3.3 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v01, Section C) Emission bandwidth.

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 26 dB, if the functionality described above (i.e., RBW , VBW $\geq 3 \times$ RBW, peak detector with maximum hold) is implemented by the instrumentation function.

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Use automatic bandwidth measurement capability on instrument to obtain BW result.

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8.3.4 Test Result

For U-NII-1 band

Mode/ Bandwidth	Channel	Frequency (MHz)	Data rate	Measured 26 dB Bandwidth (KHz)	Minimum Bandwidth (KHz)	Result
11a	36	5180	6Mbps	19600	N/A	N/A
11a	44	5220	6Mbps	19290	N/A	N/A
11a	48	5240	6Mbps	19180	N/A	N/A
11n-20M	36	5180	MCS0	19840	N/A	N/A
11n-20M	44	5220	MCS0	19800	N/A	N/A
11n-20M	48	5240	MCS0	19660	N/A	N/A
11n-40M	38	5190	MCS0	40330	N/A	N/A
11n-40M	46	5230	MCS0	40210	N/A	N/A
11ac-80M	42	5210	VHC-MCS0	81410	N/A	N/A

For U-NII-2A band

Mode/ Bandwidth	Channel	Frequency (MHz)	Data rate	Measured 26 dB Bandwidth (KHz)	Minimum Bandwidth (KHz)	Result
11a	52	5260	6Mbps	19580	N/A	N/A
11a	60	5300	6Mbps	19310	N/A	N/A
11a	64	5320	6Mbps	19850	N/A	N/A
11n-20M	52	5260	MCS0	19800	N/A	N/A
11n-20M	60	5300	MCS0	19760	N/A	N/A
11n-20M	64	5320	MCS0	19850	N/A	N/A
11n-40M	54	5270	MCS0	40430	N/A	N/A
11n-40M	62	5310	MCS0	40100	N/A	N/A
11ac-80M	58	5290	VHC-MCS0	81370	N/A	N/A

For U-NII-2C band

Mode/ Bandwidth	Channel	Frequency (MHz)	Data rate	Measured 26 dB Bandwidth (KHz)	Minimum Bandwidth (KHz)	Result
11a	100	5500	6Mbps	19600	N/A	N/A
11a	120	5600	6Mbps	19710	N/A	N/A
11a	140	5700	6Mbps	19480	N/A	N/A
11n-20M	100	5500	MCS0	20070	N/A	N/A
11n-20M	120	5600	MCS0	20030	N/A	N/A
11n-20M	140	5700	MCS0	20060	N/A	N/A
11n-40M	102	5510	MCS0	40010	N/A	N/A
11n-40M	110	5590	MCS0	40270	N/A	N/A
11n-40M	134	5670	MCS0	39770	N/A	N/A
11ac-80M	106	5530	VHC-MCS0	81480	N/A	N/A
11ac-80M	136	5610	VHC-MCS0	81510	N/A	N/A

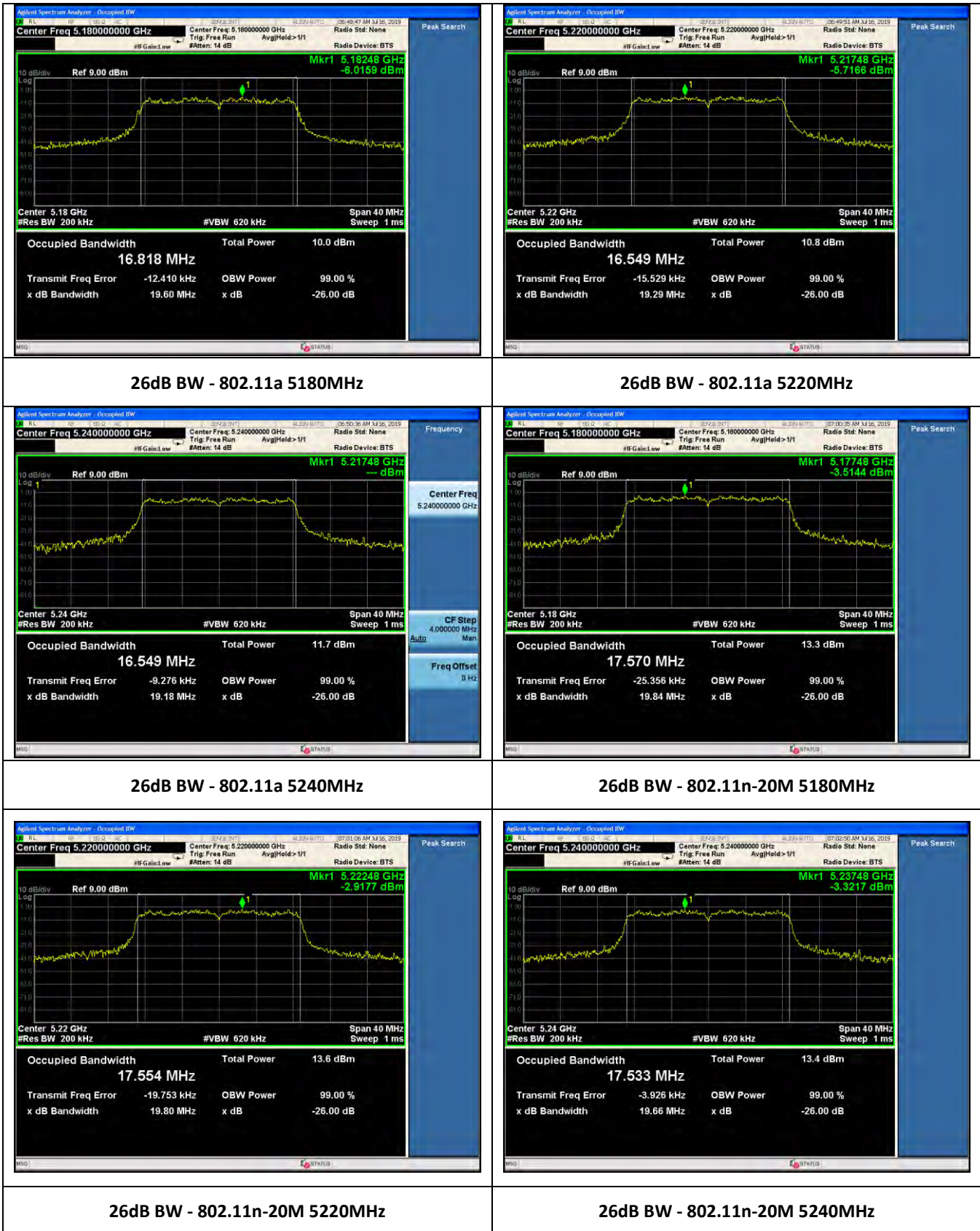
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For U-NII-2C band Cross-band channel

Mode/ Bandwidth	Channel	Frequency (MHz)	Data rate	Measured 26 dB Bandwidth (KHz)	Minimum Bandwidth (KHz)	Result
11a	144	5720	6Mbps	19280	N/A	N/A
11n	144	5720	MCS0	19900	N/A	N/A
11n-40M	144	5710	MCS0	40010	N/A	N/A
11ac-80M	136	5690	VHC-MCS0	81600	N/A	N/A

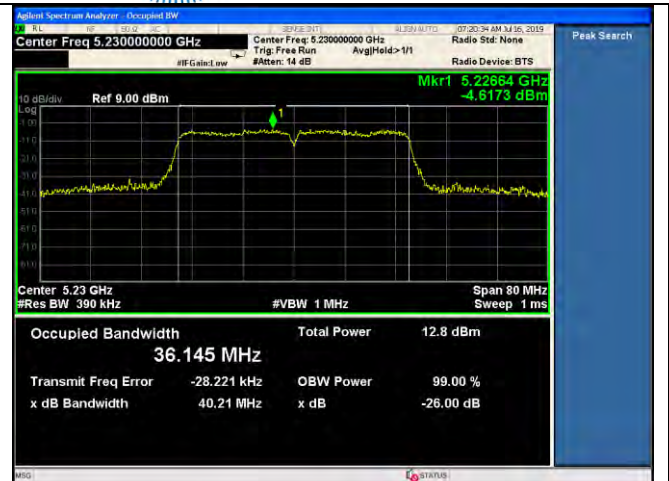
8.3.5 Test Plots



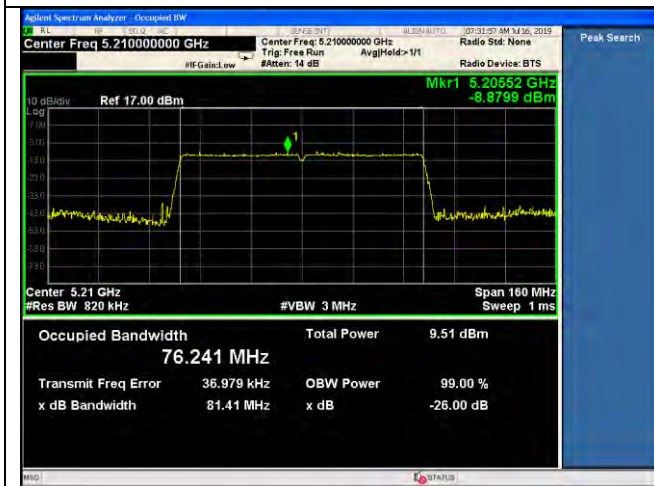
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26dB BW - 802.11n-40M 5190MHz



26dB BW - 802.11n-40M 5230MHz

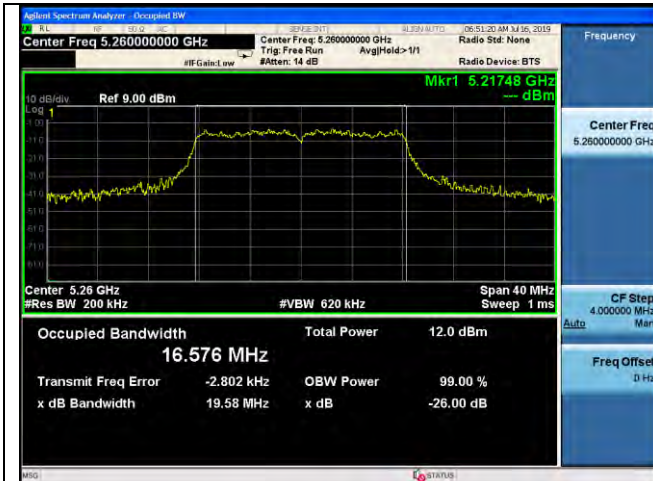


26dB BW - 802.11ac-80M 5210MHz

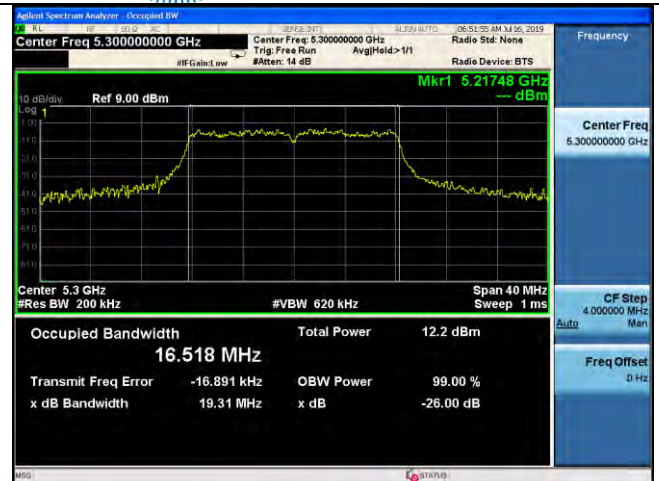
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Product: Vehicle Infotainment System
Model Number: SYNC-G4



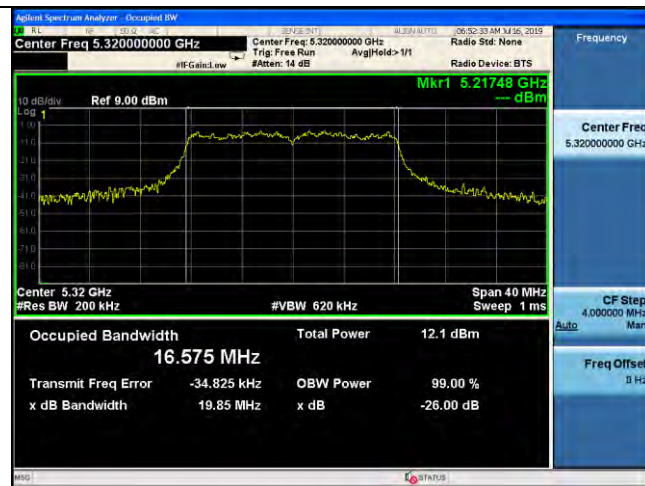
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26dB BW -802.11a 5260MHz



26dB BW -802.11a 5300MHz



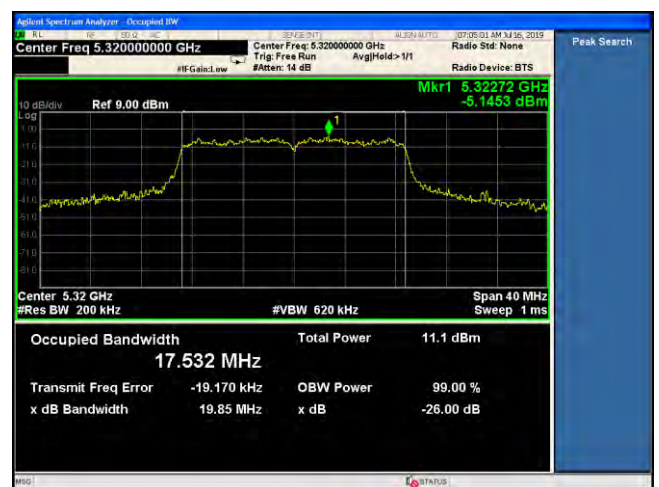
26dB BW -802.11a 5320MHz



26dB BW -802.11n-20M 5260MHz



26dB BW -802.11n-20M 5300MHz



26dB BW -802.11n-20M 5320MHz



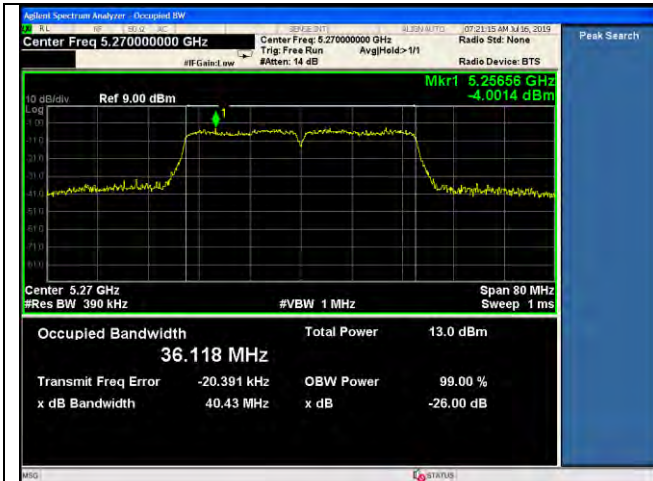
Electromagnetic Compatibility
Radio Frequency
Product Certification
International Approval

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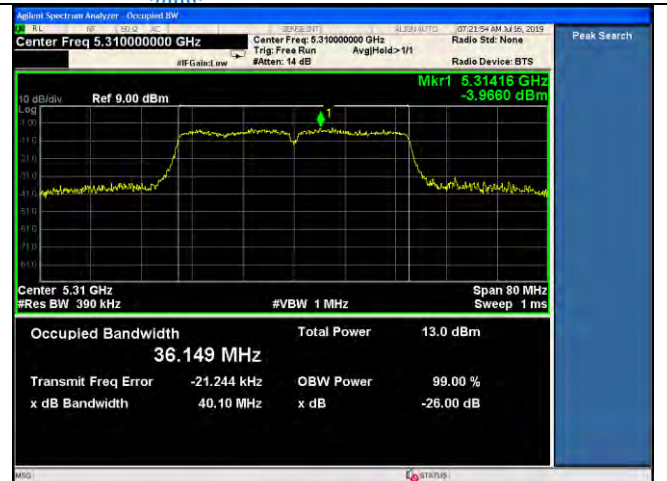
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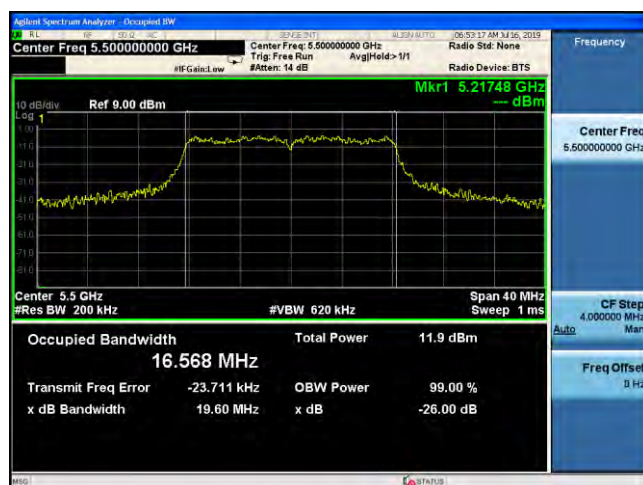
26dB BW -802.11n-40M 5270MHz



26dB BW -802.11n-40M 5310MHz



26dB BW -802.11ac-80M 5290MHz



26dB BW -802.11a 5500MHz



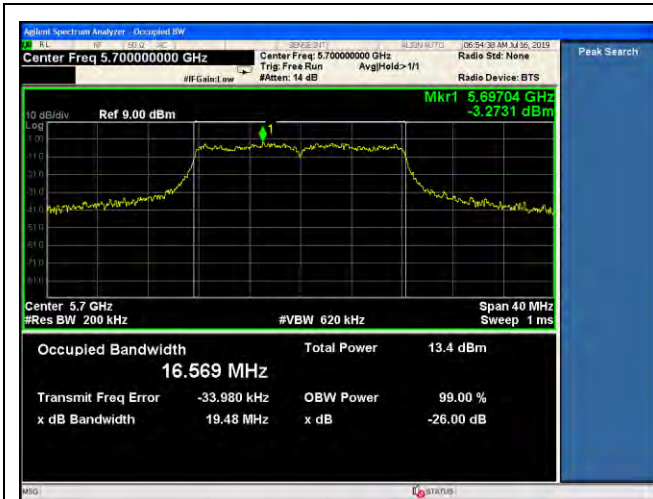
26dB BW -802.11a 5600MHz



Electromagnetic Compatibility
Radio Frequency
Product Certification
International Approval

1261 Puerta Del Sol
San Clemente, CA, 92673
+1 (949) 393-1123
www.vista-compliance.com

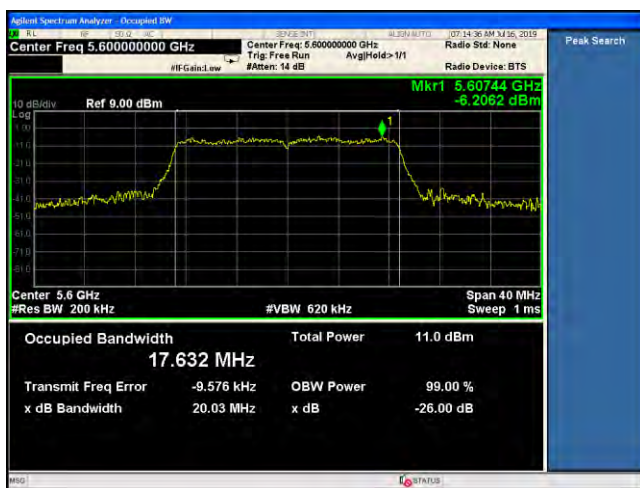
Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



26dB BW -802.11a 5700MHz



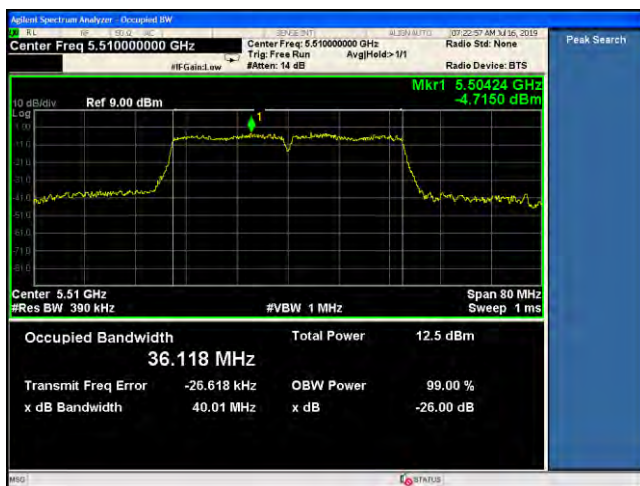
26dB BW -802.11n-20M 5500MHz



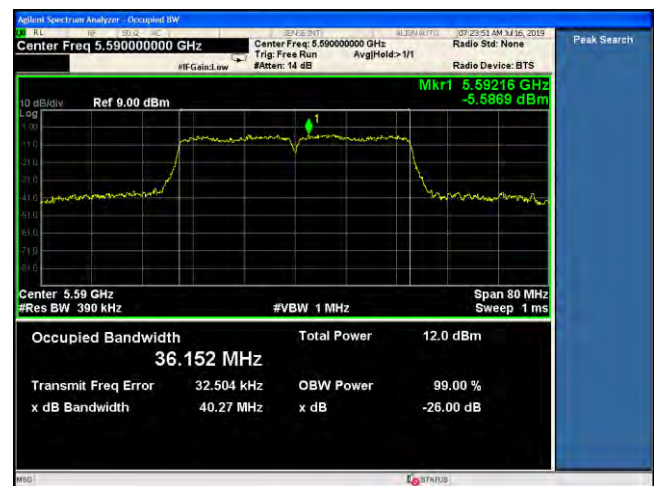
26dB BW -802.11n-20M 5600MHz



26dB BW -802.11n-20M 5700MHz



26dB BW -802.11n-40M 5510MHz

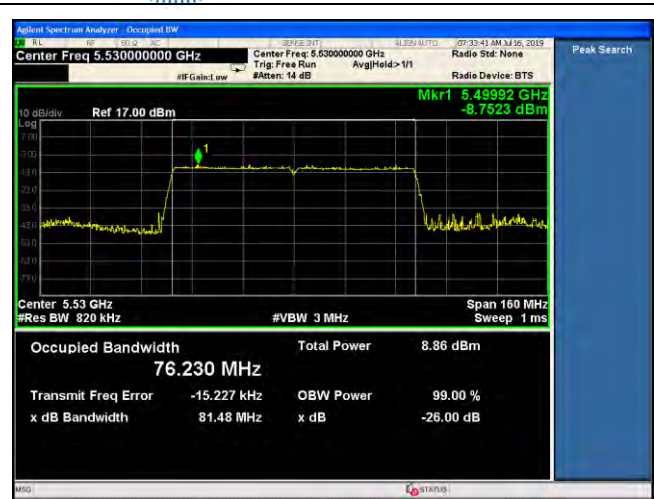


26dB BW -802.11n-40M 5590MHz

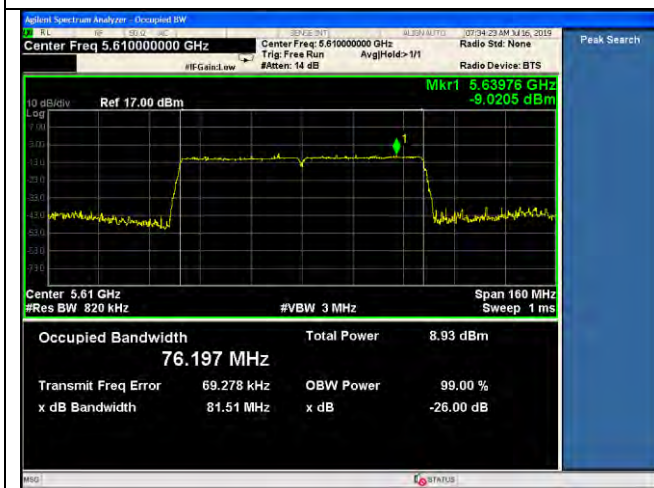
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Product: Vehicle Infotainment System
Model Number: SYNC-G4



26dB BW -802.11n-40M 5670MHz



26dB BW -802.11ac-80M 5530MHz

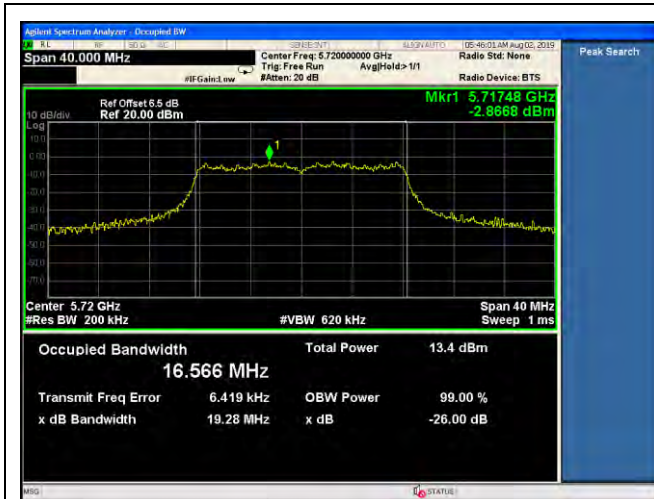


26dB BW -802.11ac-80M 5610MHz

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
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26dB BW -802.11a-20M 5720MHz

26dB BW -802.11n-20M 5720MHz



26dB BW -802.11n-40M 5710MHz

26dB BW -802.11ac-80M 5690MHz



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Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



8.4 Maximum Output Power

8.4.1 Requirement

§ 15.407 (a)

For the 5.15–5.25 GHz bands:

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25–5.725 GHz bands:

The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

For Straddle Channel, according to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, if the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

For the band 5.725-5.85 GHz:

The maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.4.2 Test setup



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Model Number:	SYNC-G4



8.4.3 **Test Procedure**

According to KDB 789033 D02 General UNII Test Procedures New Rules v01, Section E) Maximum conducted output power, 2, b), method SA-1

1. Set span to encompass the entire emission bandwidth (EBW)(or, alternatively, the entire 99% occupied bandwidth) of the signal.
2. Set RBW=1MHz
3. Set VBW $\geq 3 \times$ RBW
4. Number of points in sweep $\geq 2 \times$ span/ RBW. (This ensures that bin-to-bin spacing is $\leq$ RBW/2, so that narrowband signals are not lost between frequency bins.)
5. Sweep time = auto couple.
6. Detector = Power averaging (RMS)
7. Trace average at least 100 traces in power averaging(rms)mode.
8. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges.

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Product:	Vehicle Infotainment System
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8.4.4 Test Result

For U-NII-1 band

Mode/ Bandwidth	Frequency (MHz)	Data rate	TX1 power (dBm)	TX2 power (dBm)	Highest or Total power (dBm)	Max Output Power (dBm)	Result
11a	5180	6Mbps	13.09	8.10	13.09	24	Pass
11a	5220	6Mbps	13.50	7.77	13.50	24	Pass
11a	5240	6Mbps	13.71	8.35	13.71	24	Pass
11n-20M	5180	MCS0	11.76	8.07	13.31	20.3	Pass
11n-20M	5220	MCS0	12.99	8.66	14.35	20.3	Pass
11n-20M	5240	MCS0	12.77	8.23	14.08	20.3	Pass
11n-40M	5190	MCS0	8.17	8.29	11.24	20.3	Pass
11n-40M	5230	MCS0	9.30	8.46	11.91	20.3	Pass
11ac-80M	5210	VHC-MCS0	6.13	4.51	8.41	20.3	Pass

For U-NII-2A band

Mode/ Bandwidth	Frequency (MHz)	Data rate	TX1 power (dBm)	TX2 power (dBm)	Highest or Total power (dBm)	Max Output Power (dBm)	Result
11a	5260	6Mbps	9.69	7.66	9.69	23.92	Pass
11a	5300	6Mbps	9.69	7.84	9.69	23.86	Pass
11a	5320	6Mbps	10.66	8.46	10.66	23.98	Pass
11n-20M	5260	MCS0	11.21	8.40	13.04	20.27	Pass
11n-20M	5300	MCS0	9.38	8.59	12.01	20.26	Pass
11n-20M	5320	MCS0	10.08	8.26	12.27	20.28	Pass
11n-40M	5270	MCS0	11.30	8.72	13.21	20.3	Pass
11n-40M	5310	MCS0	11.08	8.24	12.90	20.3	Pass
11ac-80M	5290	VHC-MCS0	8.16	4.87	9.83	20.3	Pass

For U-NII-2C band

Mode/ Bandwidth	Frequency (MHz)	Data rate	TX1 power (dBm)	TX2 power (dBm)	Highest or Total power (dBm)	Max Output Power (dBm)	Result
11a	5500	6Mbps	8.80	7.77	8.80	23.92	Pass
11a	5600	6Mbps	7.30	7.67	7.67	23.95	Pass
11a	5700	6Mbps	8.44	8.38	8.44	23.90	Pass
11n-20M	5500	MCS0	8.27	8.58	13.925	20.3	Pass
11n-20M	5600	MCS0	8.33	7.99	13.103	20.3	Pass
11n-20M	5700	MCS0	8.43	8.22	13.604	20.3	Pass
11n-40M	5510	MCS0	9.26	8.65	15.762	20.3	Pass
11n-40M	5590	MCS0	8.75	8.73	14.963	20.3	Pass
11n-40M	5670	MCS0	9.72	9.32	17.926	20.3	Pass
11ac-80M	5530	VHC-MCS0	8.75	8.73	14.963	20.3	Pass
11ac-80M	5610	VHC-MCS0	5.53	5.15	6.846	20.3	Pass

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For U-NII-3 band

Mode/ Bandwidth	Frequency (MHz)	Data rate	TX1 power (dBm)	TX2 power (dBm)	Highest or Total power (dBm)	Max Output Power (dBm)	Result
11a	5745	6Mbps	8.21	8.31	8.31	30	Pass
11a	5785	6Mbps	8.28	7.71	8.28	30	Pass
11a	5825	6Mbps	8.63	8.27	8.63	30	Pass
11n-20M	5745	MCS0	8.68	8.99	11.85	26.3	Pass
11n-20M	5785	MCS0	9.84	8.78	12.35	26.3	Pass
11n-20M	5825	MCS0	8.45	8.20	11.34	26.3	Pass
11n-40M	5755	MCS0	9.71	10.59	13.18	26.3	Pass
11n-40M	5795	MCS0	10.14	10.02	13.09	26.3	Pass
11ac-80M	5775	VHC-MCS0	7.43	7.00	10.23	26.3	Pass

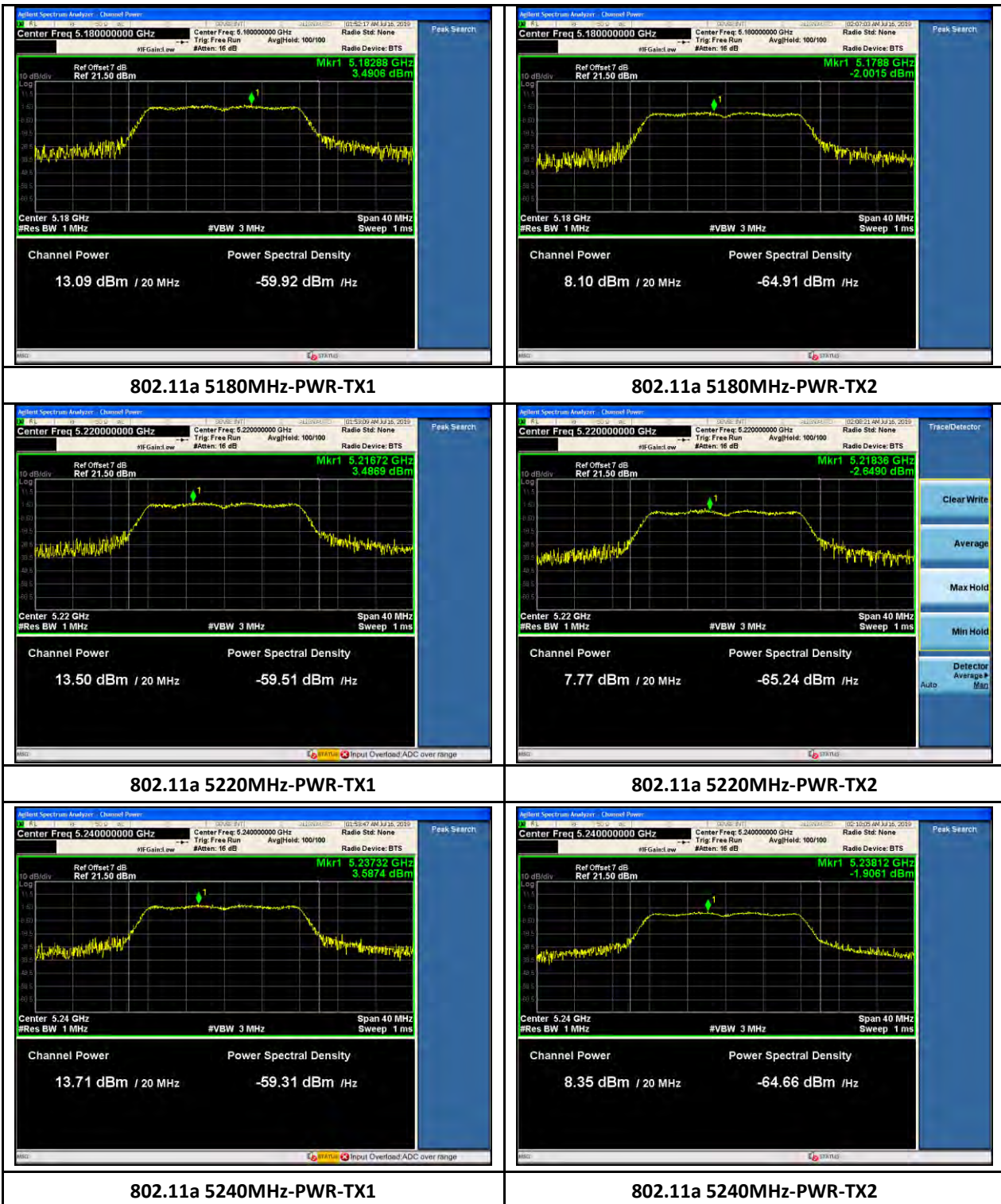
For U-NII-2C band Cross-band channel

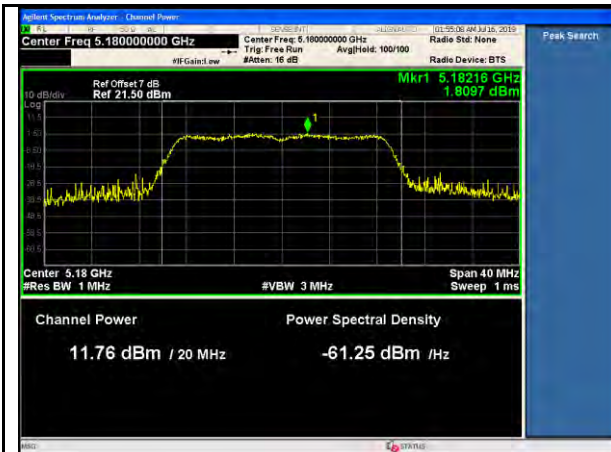
Mode/ Bandwidth	Frequency (MHz)	Data rate	TX1 power (dBm)	TX2 power (dBm)	Highest or Total power (dBm)	Max Output Power (dBm)	Result
11a	5720	6Mbps	11.89	10.57	11.89	23.85	Pass
11n	5720	MCS0	12.05	10.72	14.45	20.29	Pass
11n-40M	5710	MCS0	11.18	8.71	13.13	20.3	Pass
11ac-80M	5690	VHC-MCS0	4.49	2.10	6.47	20.3	Pass

Note:

- 1) For 802.11a, the highest output power is recorded.
- 2) For 5GHz non-11a mode, it's under 2x2 MIMO mode, the output power is combined together to compare to limit.
- 3) For 5GHz non-11a mode, directional gain is calculated per KDB 662911 D01. For 5GHz WiFi non-11a mode, directional gain = 9.70 dBi, exceeding 6 dBi. The power and PSD limit will be reduced by the amount that it exceeds 6 dBi.

8.4.5 Test Plots

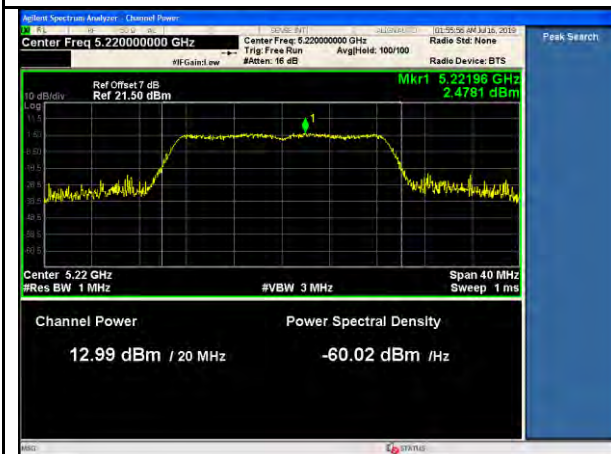




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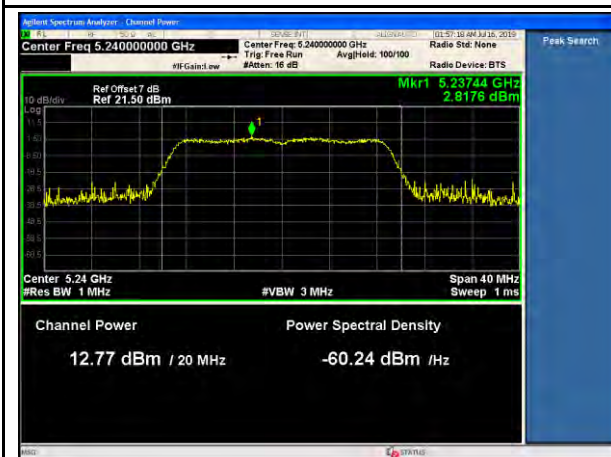
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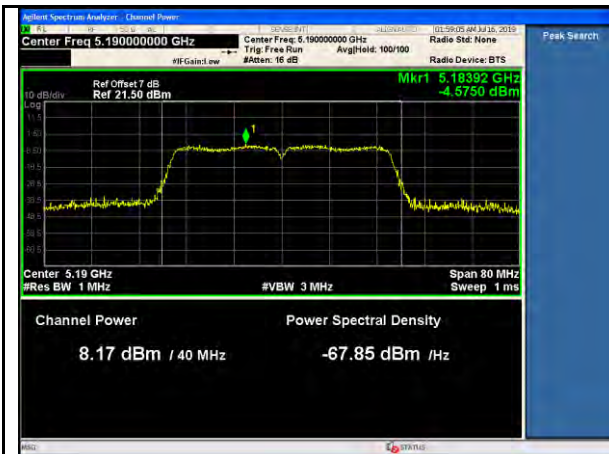
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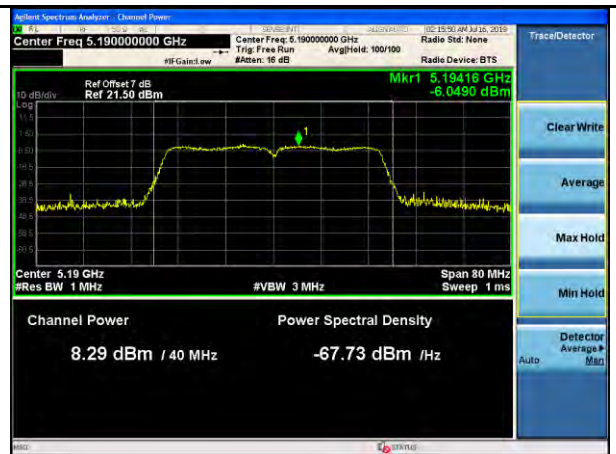
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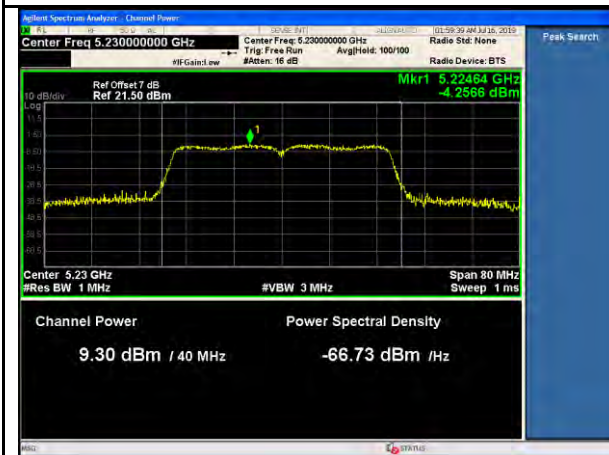
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802.11n-40MHz- 5190MHz-PWR-TX1



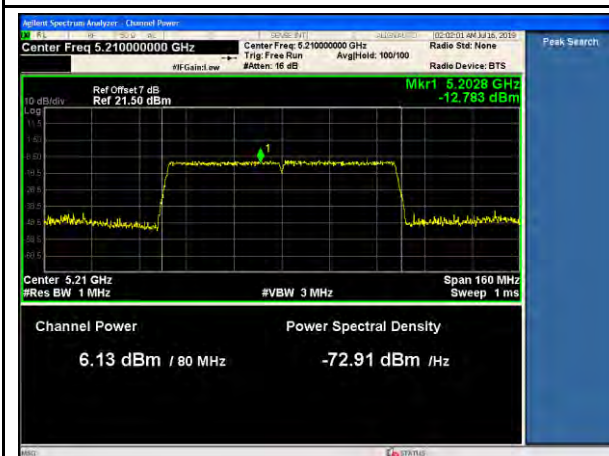
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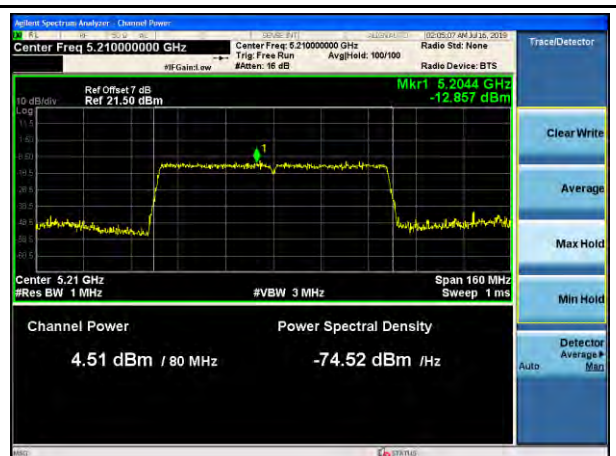
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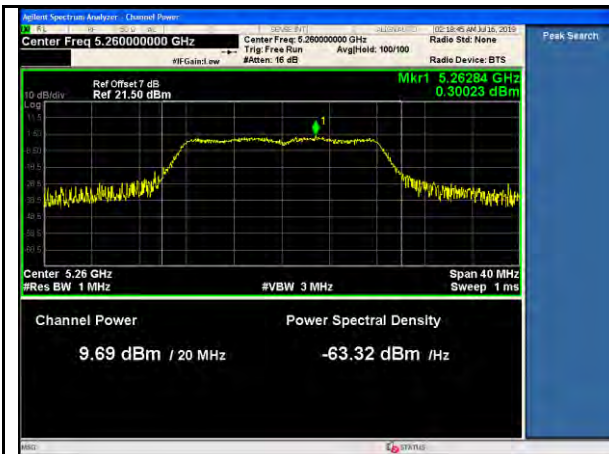
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802.11ac-80MHz- 5210MHz-PWR-TX1



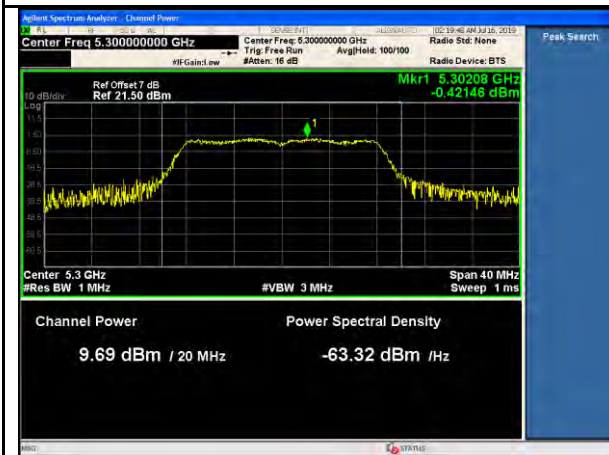
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802.11a 5260MHz-PWR-TX1



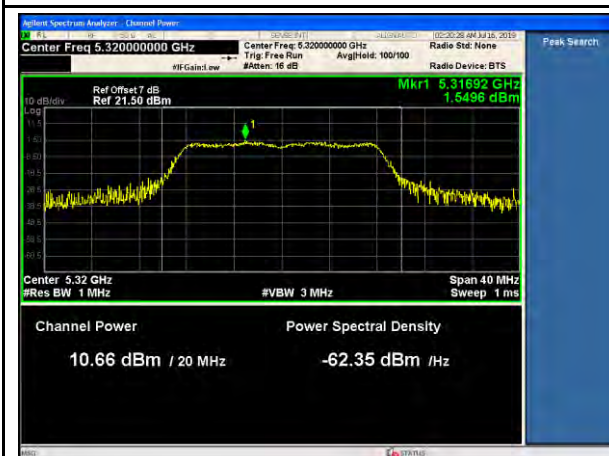
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802.11a 5300MHz-PWR-TX1



802.11a 5300MHz-PWR-TX2

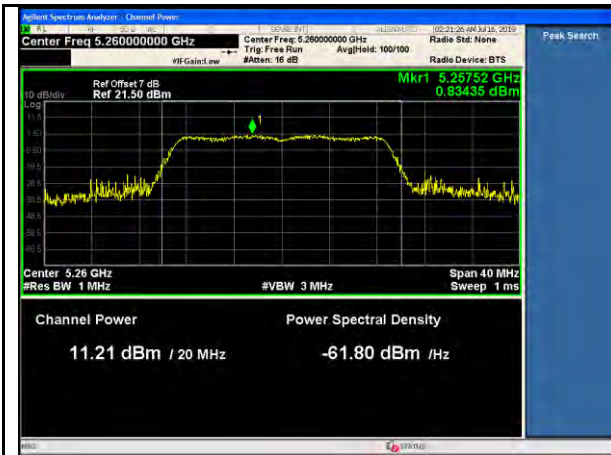


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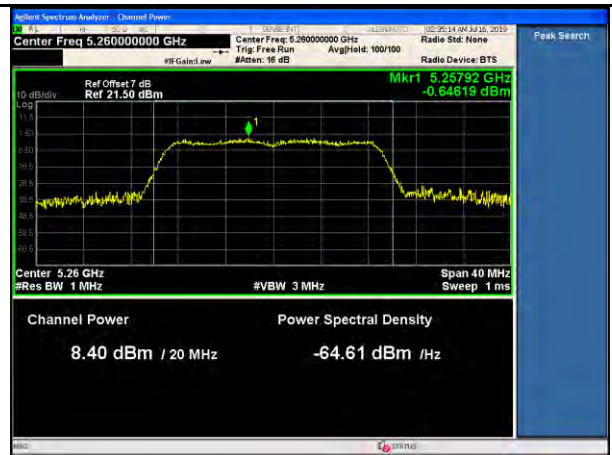


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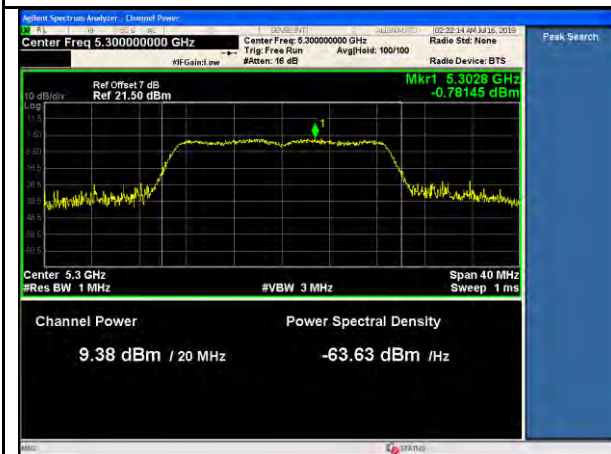
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Product: Vehicle Infotainment System
Model Number: SYNC-G4



802.11n-20MHz- 5260MHz-PWR-TX1



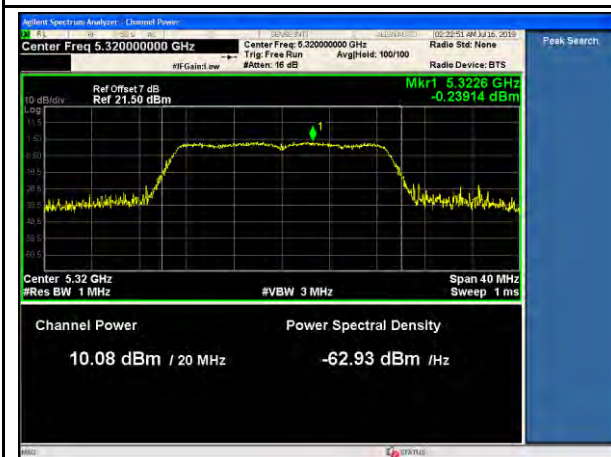
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802.11n-20MHz- 5300MHz-PWR-TX1



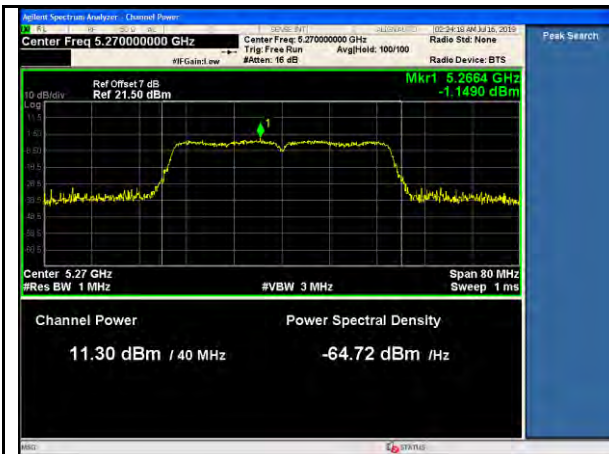
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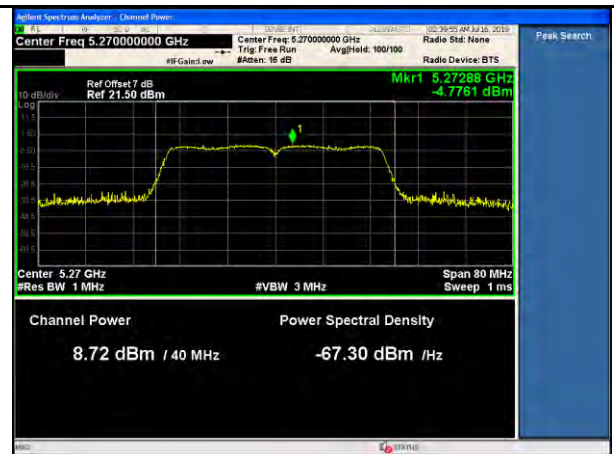
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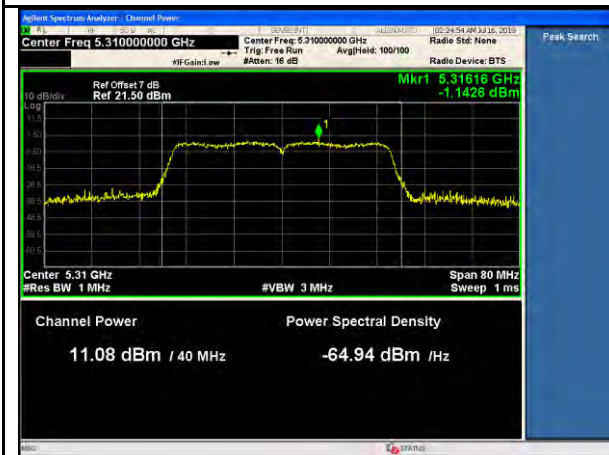
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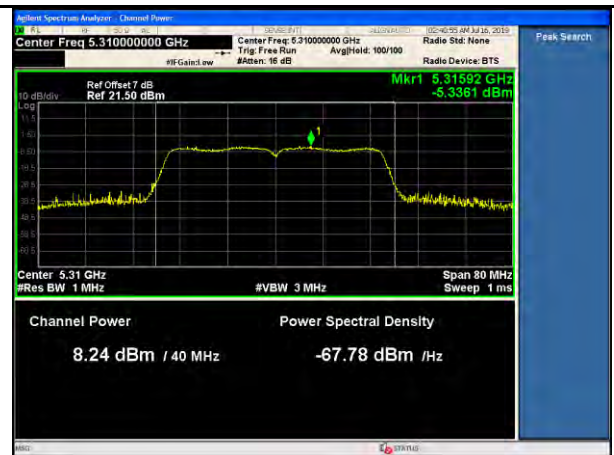
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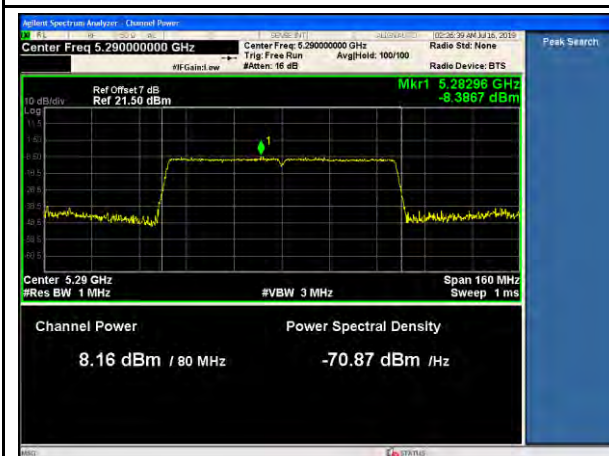
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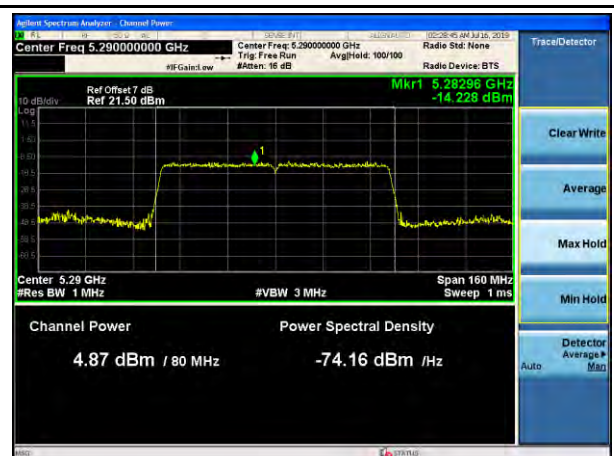
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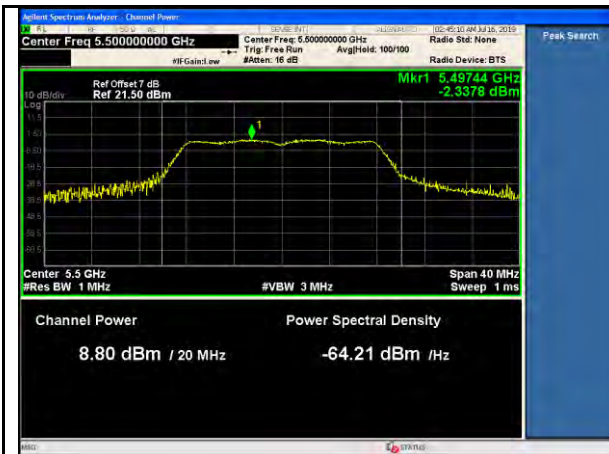
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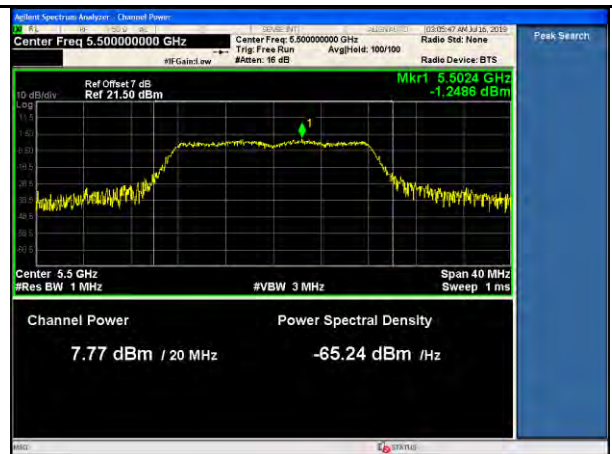
802.11ac-80MHz- 5290MHz-PWR-TX1



802.11ac-80MHz- 5290MHz-PWR-TX2



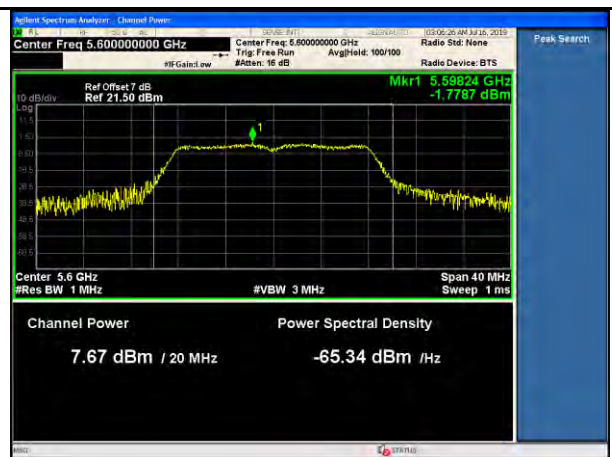
802.11a 5500MHz-PWR-TX1



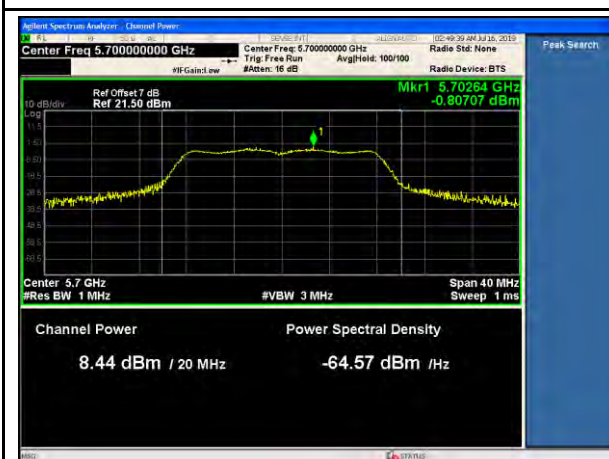
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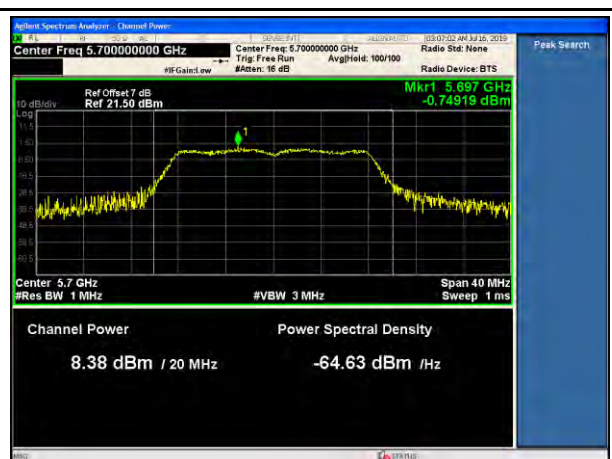
802.11a 5600MHz-PWR-TX1



802.11a 5600MHz-PWR-TX2

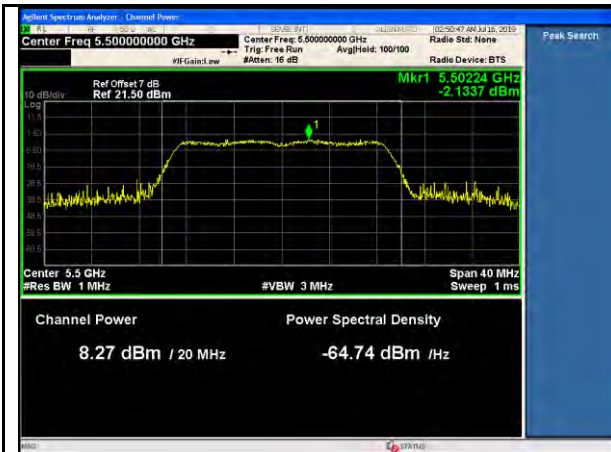


802.11a 5700MHz-PWR-TX1

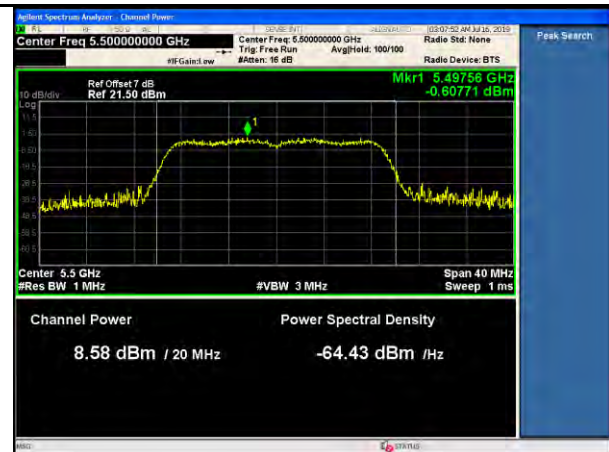


802.11a 5700MHz-PWR-TX2

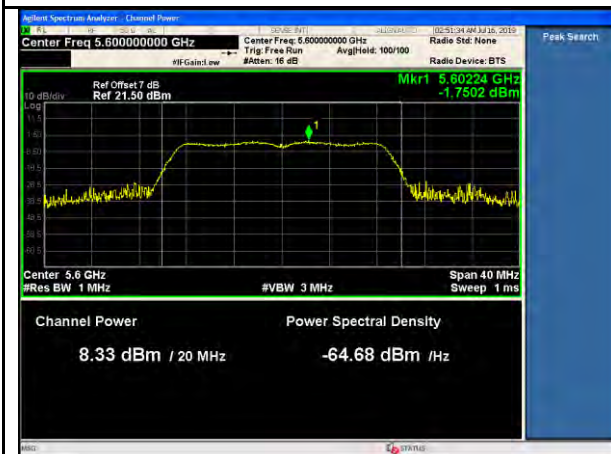
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Product: Vehicle Infotainment System
Model Number: SYNC-G4



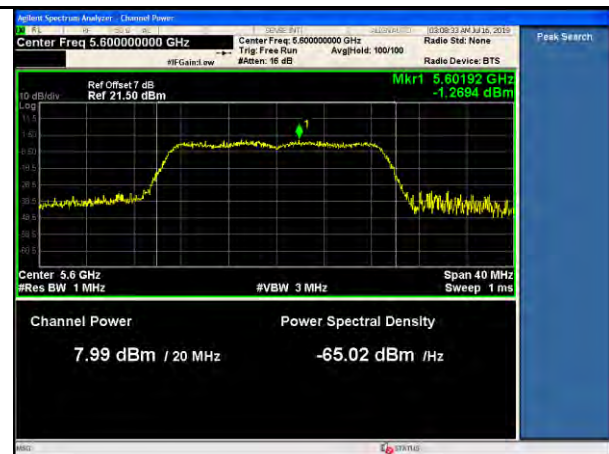
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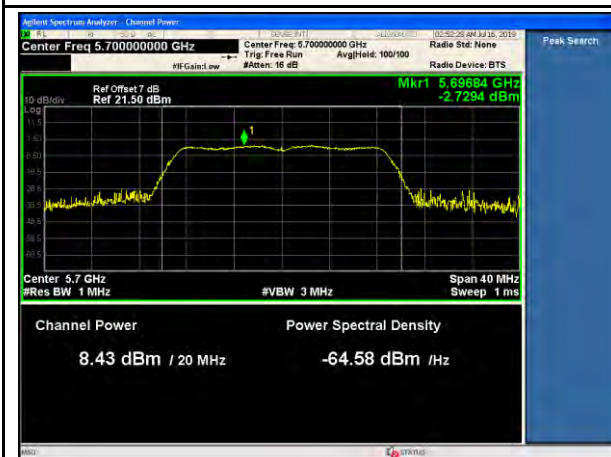
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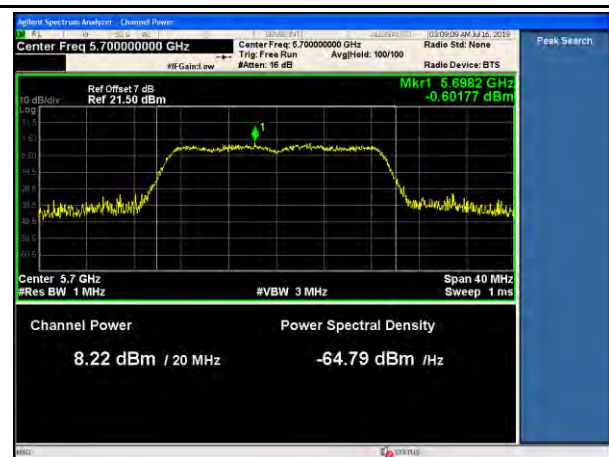
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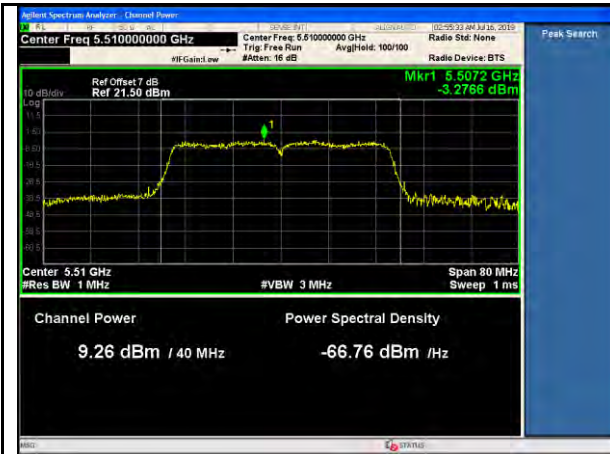
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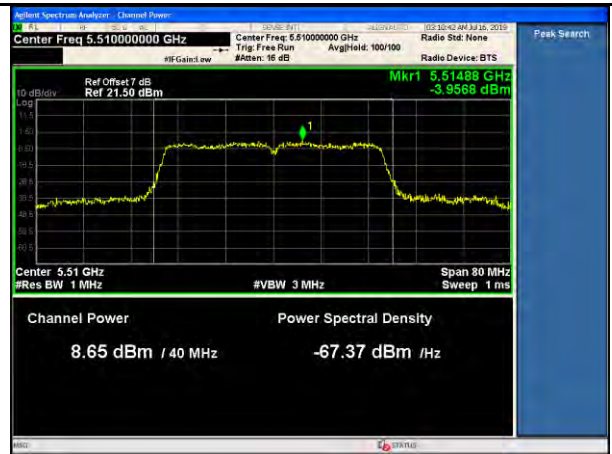
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802.11n-20MHz- 5700MHz-PWR-TX2



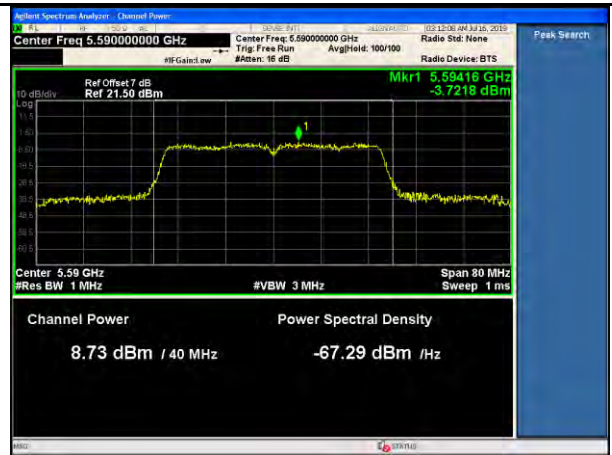
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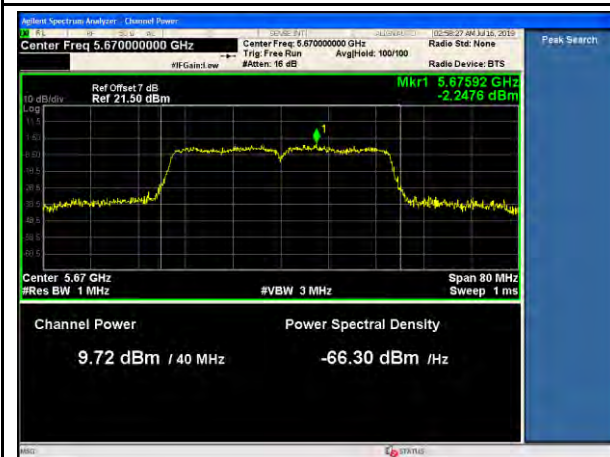
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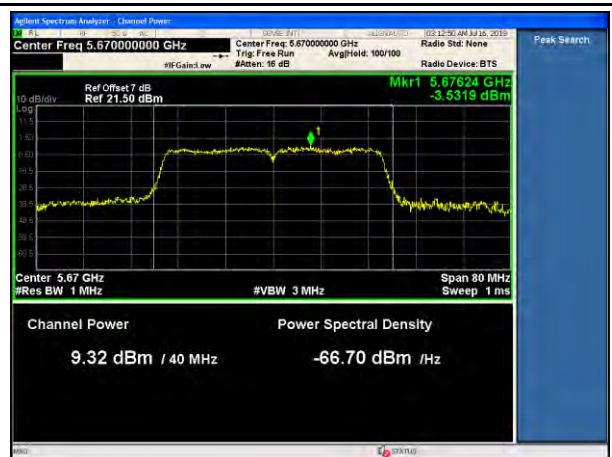
802.11n-40MHz- 5590MHz-PWR-TX1



802.11n-40MHz- 5590MHz-PWR-TX2

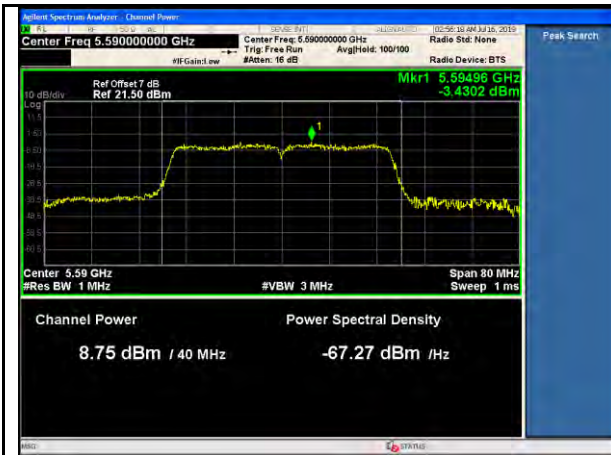


802.11n-40MHz- 5670MHz-PWR-TX1

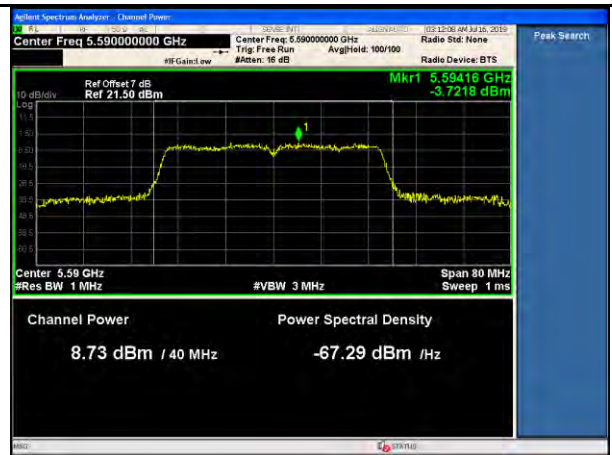


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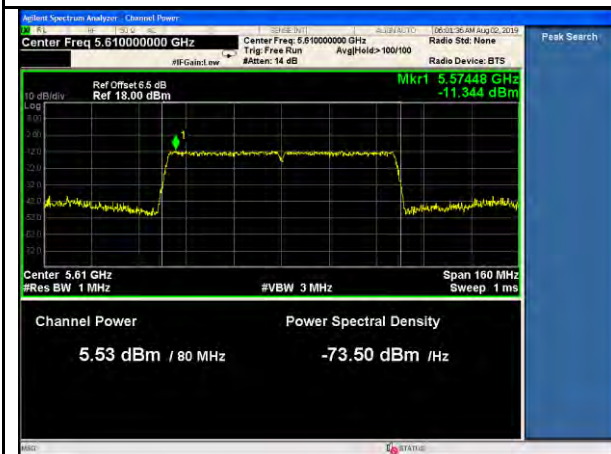
Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



802.11n-40MHz- 5590MHz-PWR-TX1



802.11n-40MHz- 5590MHz-PWR-TX2

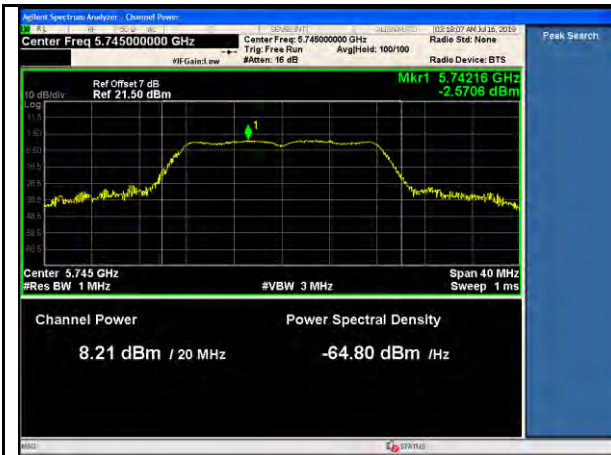


802.11ac-80MHz- 5610MHz-PWR-TX1

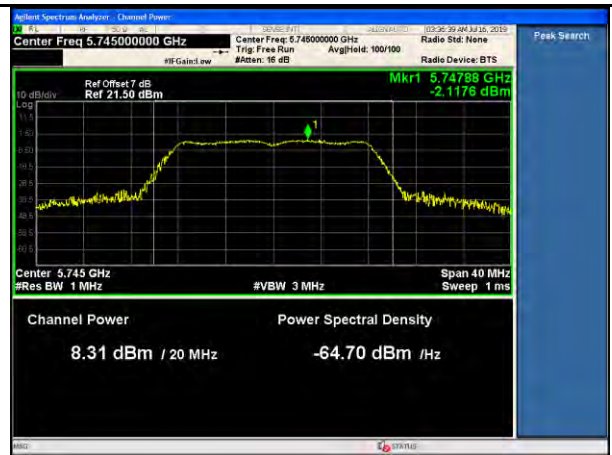


802.11ac-80MHz - 5610MHz-PWR-TX2

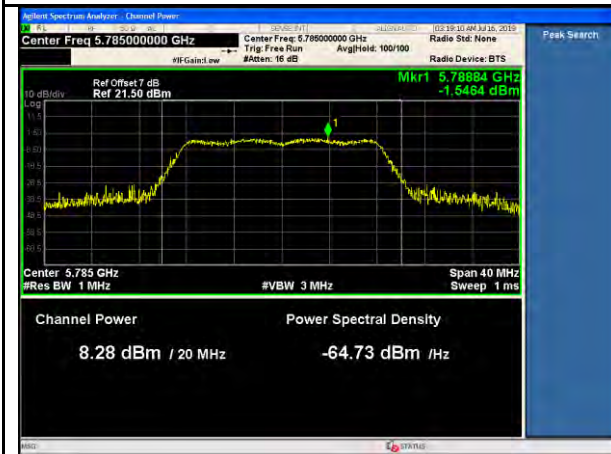
Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



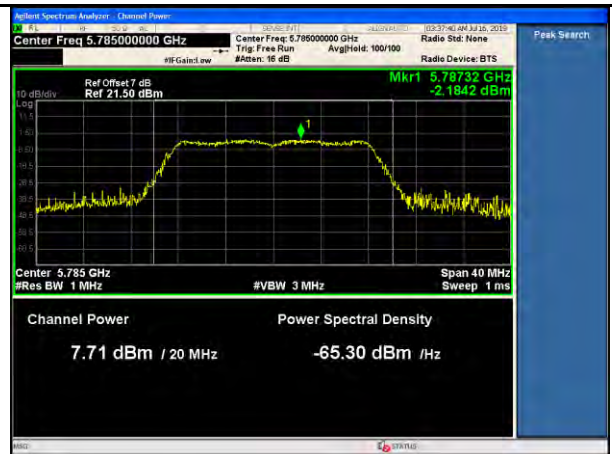
802.11a 5745MHz-PWR-TX1



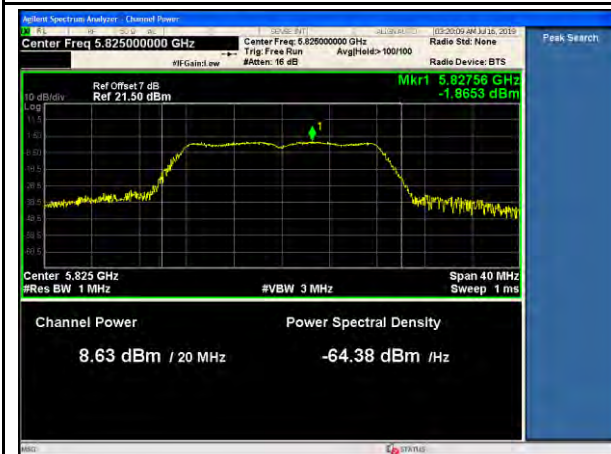
802.11a 5745MHz-PWR-TX2



802.11a 5785MHz-PWR-TX1



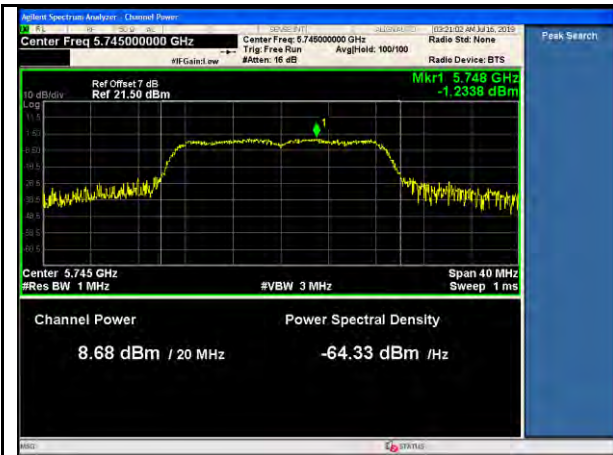
802.11a 5785MHz-PWR-TX2



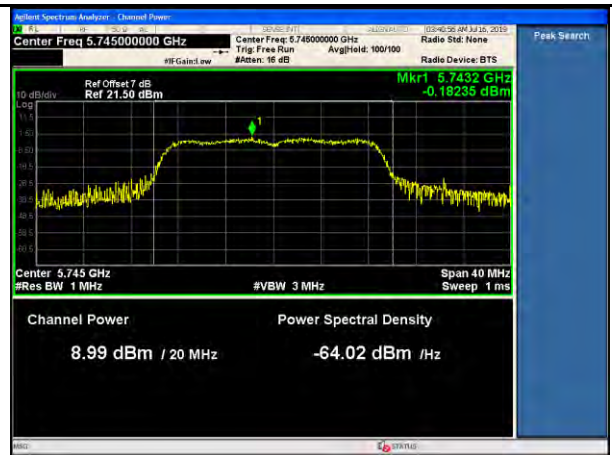
802.11a 5825MHz-PWR-TX1



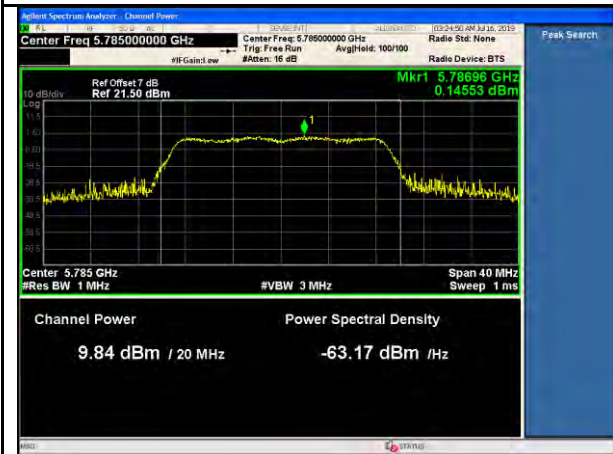
802.11a 5825MHz-PWR-TX2



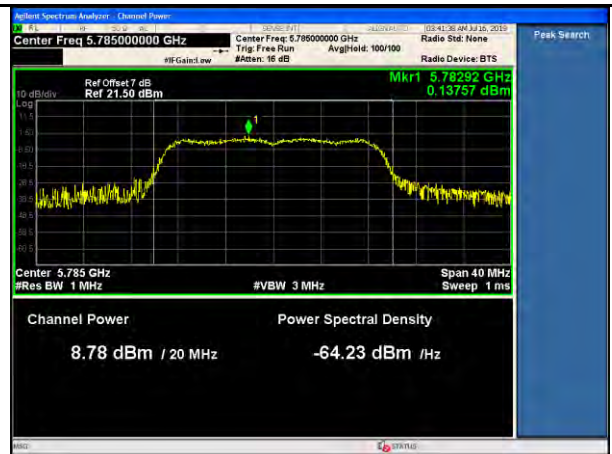
802.11n-20MHz- 5745MHz-PWR-TX1



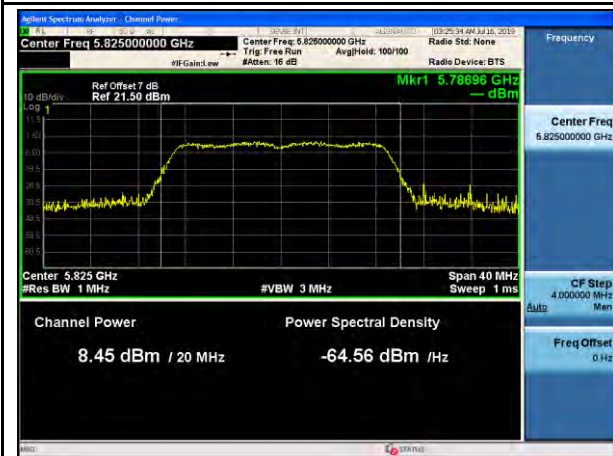
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802.11n-20MHz- 5785MHz-PWR-TX1



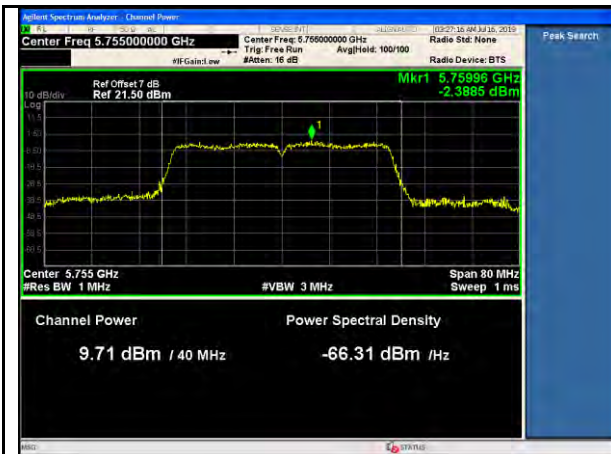
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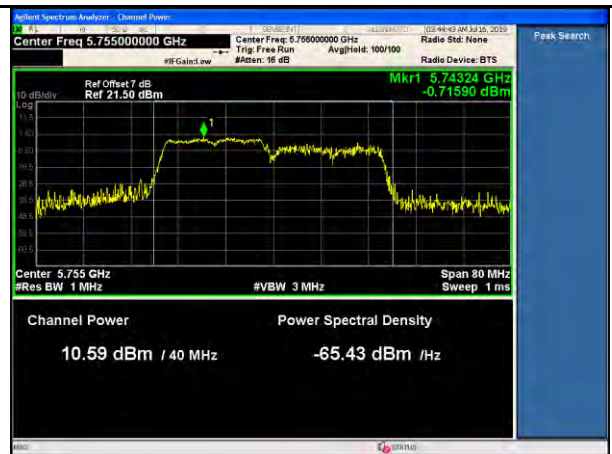
802.11n-20MHz- 5825MHz-PWR-TX1



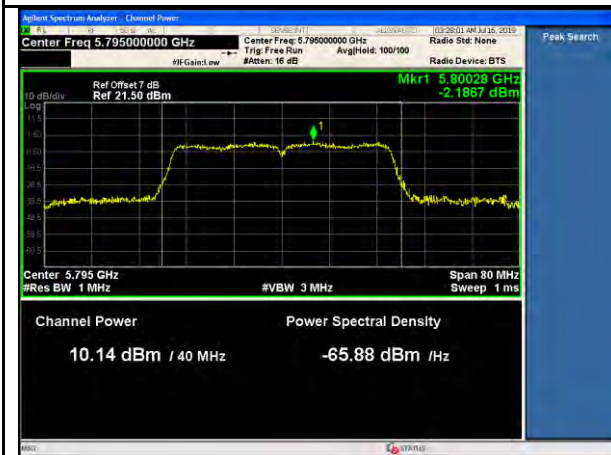
802.11n-20MHz- 5825MHz-PWR-TX2



802.11n-40MHz- 5755MHz-PWR-TX1



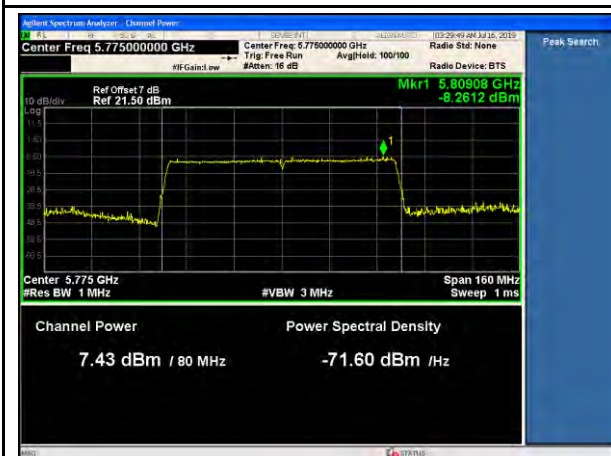
802.11n-40MHz- 5755MHz-PWR-TX2



802.11n-40MHz- 5795MHz-PWR-TX1



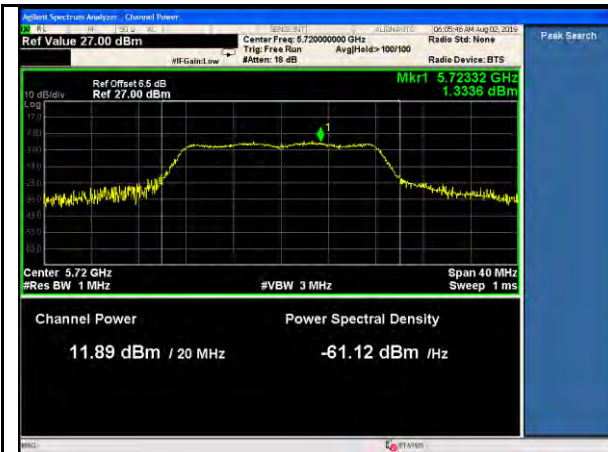
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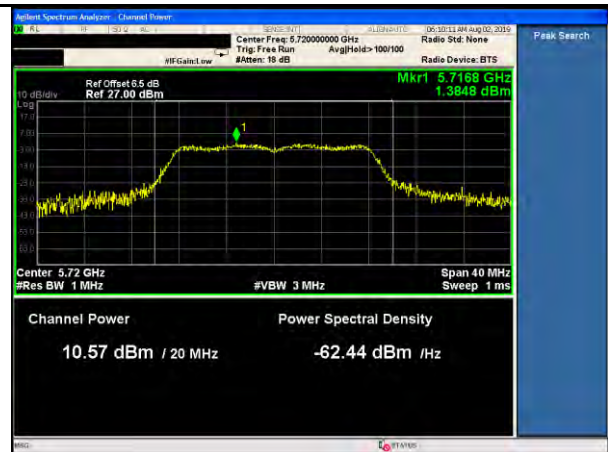
802.11ac-80MHz- 5775MHz-PWR-TX1



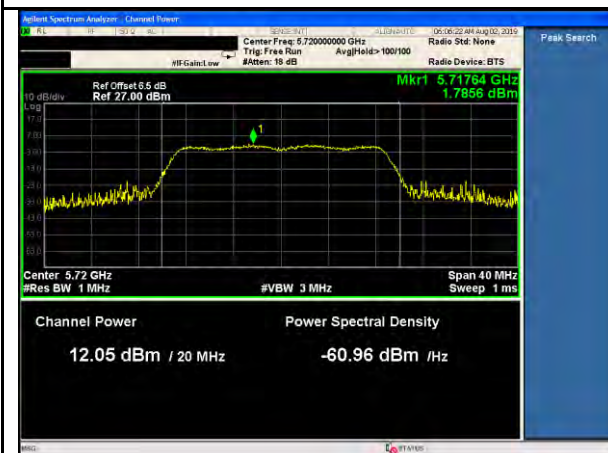
802.11ac-80MHz- 5775MHz-PWR-TX2



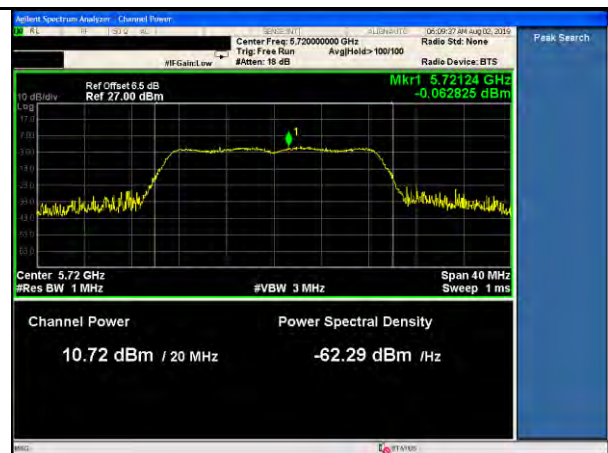
802.11a-20MHz- 5720MHz-PWR-TX1



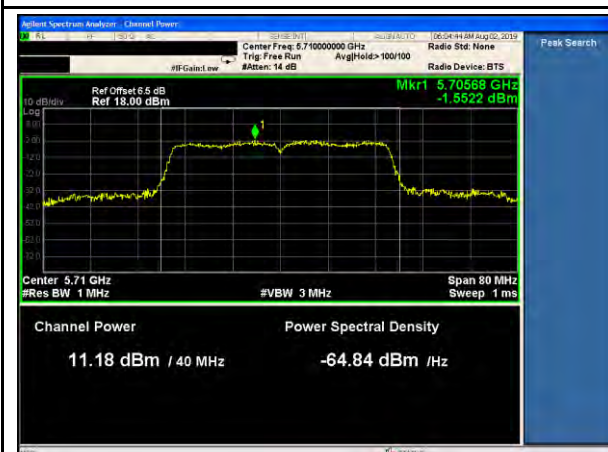
802.11a-20MHz- 5720MHz-PWR-TX2



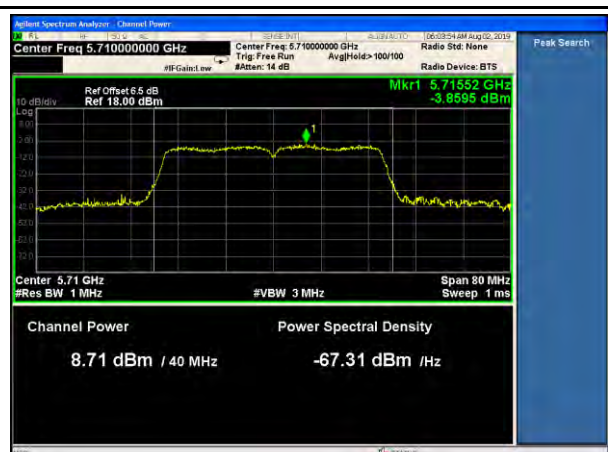
802.11n-20MHz- 5720MHz-PWR-TX1



802.11n-20MHz- 5720MHz-PWR-TX2

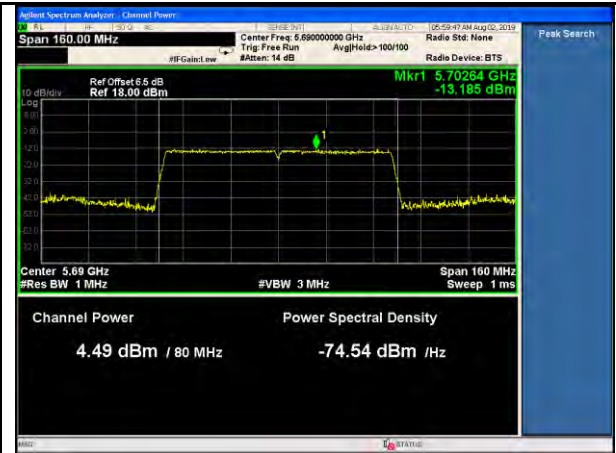


802.11n-40MHz- 5710MHz-PWR-TX1

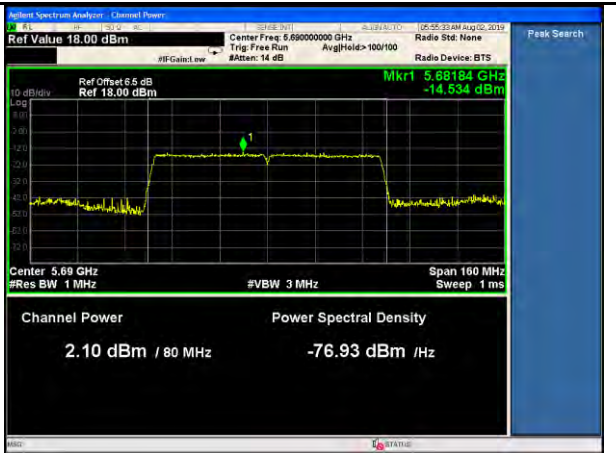


802.11n-40MHz- 5710MHz-PWR-TX2

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Product: Vehicle Infotainment System
Model Number: SYNC-G4



802.11ac-80MHz- 5690MHz-PWR-TX1



802.11ac-80MHz- 5690MHz-PWR-TX2

Report Number:	WAP-19052921-LC-FCC-UNII-G4
Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



8.5 Power Spectral Density

8.5.1 Requirement

§ 15.407 (a)

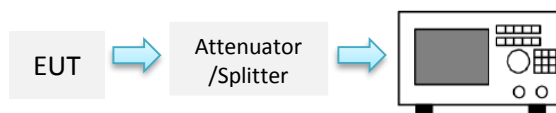
For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

For the 5.25–5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

For Straddle Channel, According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, If the power and PSD of the devices are uniform and comply with the lower limits specified for the U-NII-2 bands, a single measurement over the entire emission bandwidth can be performed to show compliance.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.5.2 Test setup



8.5.3 Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, section F) Maximum power spectral density. Method SA-1

1. Set span to encompass the entire emission bandwidth (EBW)(or, alternatively, the entire 99% occupied bandwidth)of the signal.
2. Set RBW=1MHz
3. Set VBW $\geq 3 \times$ RBW
4. Number of points in sweep $\geq 2 \times$ span/ RBW. (This ensures that bin-to-bin spacing is $\leq$ RBW/2, so that narrowband signals are not lost between frequency bins.)
5. Sweep time = auto couple.
6. Detector = Power averaging (RMS)
7. Trace average at least 100 traces in power averaging(rms)mode.
8. Use the peak marker function to determine the maximum amplitude level within the RBW.

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8.5.4 Test Result

For U-NII-1 band

Mode/ Bandwidth	Frequency (MHz)	Data rate	TX1 PSD (dBm/MHz)	TX2 PSD (dBm/MHz)	Highest or Total PSD (dBm/MHz)	Max PSD (dBm/MHz)	Result
11a	5180	6Mbps	3.491	-2.001	3.491	11	Pass
11a	5220	6Mbps	3.487	-2.649	3.487	11	Pass
11a	5240	6Mbps	3.587	-1.906	3.587	11	Pass
11n-20M	5180	MCS0	1.810	-0.891	3.68	7.3	Pass
11n-20M	5220	MCS0	2.478	-0.886	4.12	7.3	Pass
11n-20M	5240	MCS0	2.818	-1.217	4.26	7.3	Pass
11n-40M	5190	MCS0	-4.575	-6.049	-2.24	7.3	Pass
11n-40M	5230	MCS0	-4.257	-5.186	-1.69	7.3	Pass
11ac-80M	5210	VHC-MCS0	-12.783	-12.857	-9.81	7.3	Pass

For U-NII-2A band

Mode/ Bandwidth	Frequency (MHz)	Data rate	TX1 PSD (dBm/MHz)	TX2 PSD (dBm/MHz)	Highest or Total PSD (dBm/MHz)	Max PSD (dBm/MHz)	Result
11a	5260	6Mbps	0.300	-2.777	0.300	11	Pass
11a	5300	6Mbps	-0.421	-3.352	-0.421	11	Pass
11a	5320	6Mbps	1.550	1.500	1.550	11	Pass
11n-20M	5260	MCS0	0.834	-0.646	3.17	7.3	Pass
11n-20M	5300	MCS0	-0.781	-1.367	1.95	7.3	Pass
11n-20M	5320	MCS0	-0.239	0.204	3.00	7.3	Pass
11n-40M	5270	MCS0	-1.149	-4.776	0.42	7.3	Pass
11n-40M	5310	MCS0	-1.143	-5.336	0.26	7.3	Pass
11ac-80M	5290	VHC-MCS0	-8.387	-14.228	-7.38	7.3	Pass

For U-NII-2C band

Mode/ Bandwidth	Frequency (MHz)	Data rate	TX1 PSD (dBm/MHz)	TX2 PSD (dBm/MHz)	Highest or Total PSD (dBm/MHz)	Max PSD (dBm/MHz)	Result
11a	5500	6Mbps	-2.338	-1.249	-1.249	11	Pass
11a	5600	6Mbps	-2.856	-1.779	-1.779	11	Pass
11a	5700	6Mbps	-0.807	-0.749	-0.749	11	Pass
11n-20M	5500	MCS0	-2.134	-0.608	1.71	7.3	Pass
11n-20M	5600	MCS0	-1.750	-1.269	1.51	7.3	Pass
11n-20M	5700	MCS0	-2.729	-0.602	1.47	7.3	Pass
11n-40M	5510	MCS0	-3.277	-3.957	-0.59	7.3	Pass
11n-40M	5590	MCS0	-3.430	-3.722	-0.56	7.3	Pass
11n-40M	5670	MCS0	-2.248	-3.532	0.17	7.3	Pass
11ac-80M	5530	VHC-MCS0	-3.430	-3.722	-0.56	7.3	Pass
11ac-80M	5610	VHC-MCS0	-11.344	-12.440	-8.85	7.3	Pass

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For U-NII-3 band

Mode/ Bandwidth	Frequency (MHz)	Data rate	TX1 PSD (dBm/MHz)	TX2 PSD (dBm/MHz)	Highest or Total PSD (dBm/MHz)	Corrected PSD (dBm/500KHz)	Max PSD (dBm/500KHz)	Result
11a	5745	6Mbps	-2.571	-2.118	-2.118	1.35	30	Pass
11a	5785	6Mbps	-1.546	-2.184	-1.546	1.11	30	Pass
11a	5825	6Mbps	-1.865	-2.422	-1.865	1.07	30	Pass
11n-20M	5745	MCS0	-1.234	-0.182	2.33	4.56	26.3	Pass
11n-20M	5785	MCS0	0.146	0.138	3.15	4.58	26.3	Pass
11n-20M	5825	MCS0	1.500	-1.854	3.15	4.32	26.3	Pass
11n-40M	5755	MCS0	-2.389	-0.716	1.54	1.03	26.3	Pass
11n-40M	5795	MCS0	-2.187	-1.474	1.19	0.96	26.3	Pass
11ac-80M	5775	VHC-MCS0	-8.261	-10.512	-6.23	-7.81	26.3	Pass

Note: If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

For U-NII-2C band Cross-band channel

Mode/ Bandwidth	Frequency (MHz)	Data rate	TX1 PSD (dBm/MHz)	TX2 PSD (dBm/MHz)	Highest or Total PSD (dBm/MHz)	Max PSD (dBm/MHz)	Result
11a	5720	6Mbps	1.334	1.385	1.385	11	Pass
11n	5720	MCS0	1.786	-0.063	3.97	7.3	Pass
11n-40M	5710	MCS0	-1.552	-3.860	0.46	7.3	Pass
11ac-80M	5690	VHC-MCS0	-13.185	-14.534	-10.80	7.3	Pass

Note:

- 1) For 802.11a, the highest PSD is recorded.
- 2) For 5GHz non-11a mode, it's under 2x2 MIMO mode, the PSD is combined together to compare to limit.
- 3) For 5GHz non-11a mode, directional gain is calculated per KDB 662911 D01. For 5GHz WiFi non-11a mode, directional gain = 9.98 dBi, exceeding 6 dBi. The power and PSD limit will be reduced by the amount that it exceeds 6 dBi.

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8.5.5 Test Plots

Refer to test plots in conducted peak output power

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Model Number:	SYNC-G4



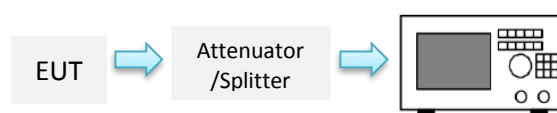
8.6 Automatically Discontinue Transmission

8.6.1 Requirement

§ 15.407 (c)

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

8.6.2 Test setup



8.6.3 Test Result

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

8.7 Radiated Spurious Emissions into Restricted Frequency Bands

8.7.1 Requirement

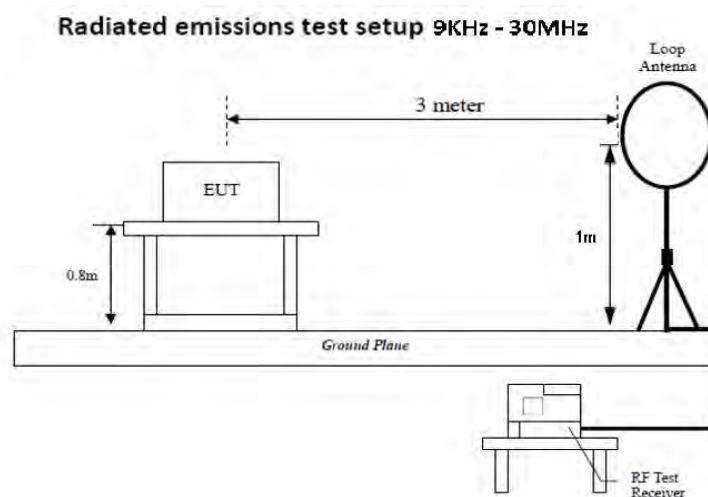
§ 15.205, 15.209, 15.407(b)

- (1) 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 EIRP of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.
- (3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.
- (5) Restricted band, emission must also comply with the radiated emission limits specified in 15.209

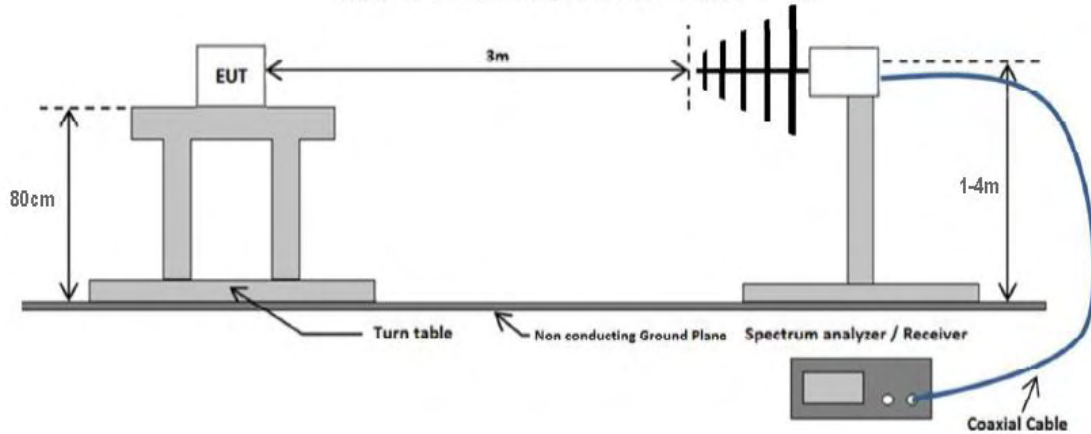
Attenuation below the general limits specified in §15.209(a) and RSS-Gen is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Frequency range (MHz)	Field Strength ($\mu\text{V}/\text{m}$)
0.009~0.490	2400/F(KHz)
0.490~1.705	24000/F(KHz)
1.705~30.0	30
30 – 88	100
88 – 216	150
216 960	200
Above 960	500

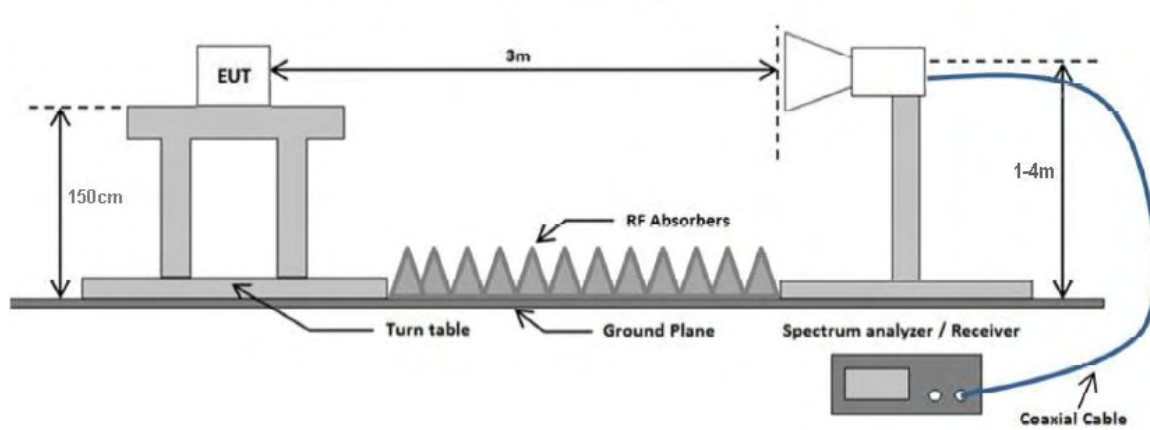
8.7.2 Test setup



Radiated emissions test setup 30 MHz - 1 GHz



Radiated emissions test setup above 1 GHz



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Product:	Vehicle Infotainment System
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8.7.3 Test Procedure

According to FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement. And subclause 12.7 Radiated spurious emission measurements in ANSI C62.10-2013 as well as the procedures for maximizing and measuring radiated emissions that are described in ANSI C63.10 was followed. Boresight antenna mast was used during the scanning to point to EUT to maximize the emission. The process will be repeated in 3 EUT orientations.

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. The test was carried out at the selected frequency points obtained from the EUT characterization. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
 - a. Vertical or horizontal polarization (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
 - b. The EUT was then rotated to the direction that gave the maximum emission.
 - c. Finally, the antenna height was adjusted to the height that gave the maximum emission.
3. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 300 Hz for frequency below 150KHz.
4. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 10 kHz for frequency between 150KHz – 30MHz.
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-Peak detection at frequency between 30MHz - 1GHz.
6. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with Peak detection for Peak and average measurement at frequency above 1GHz.
7. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.

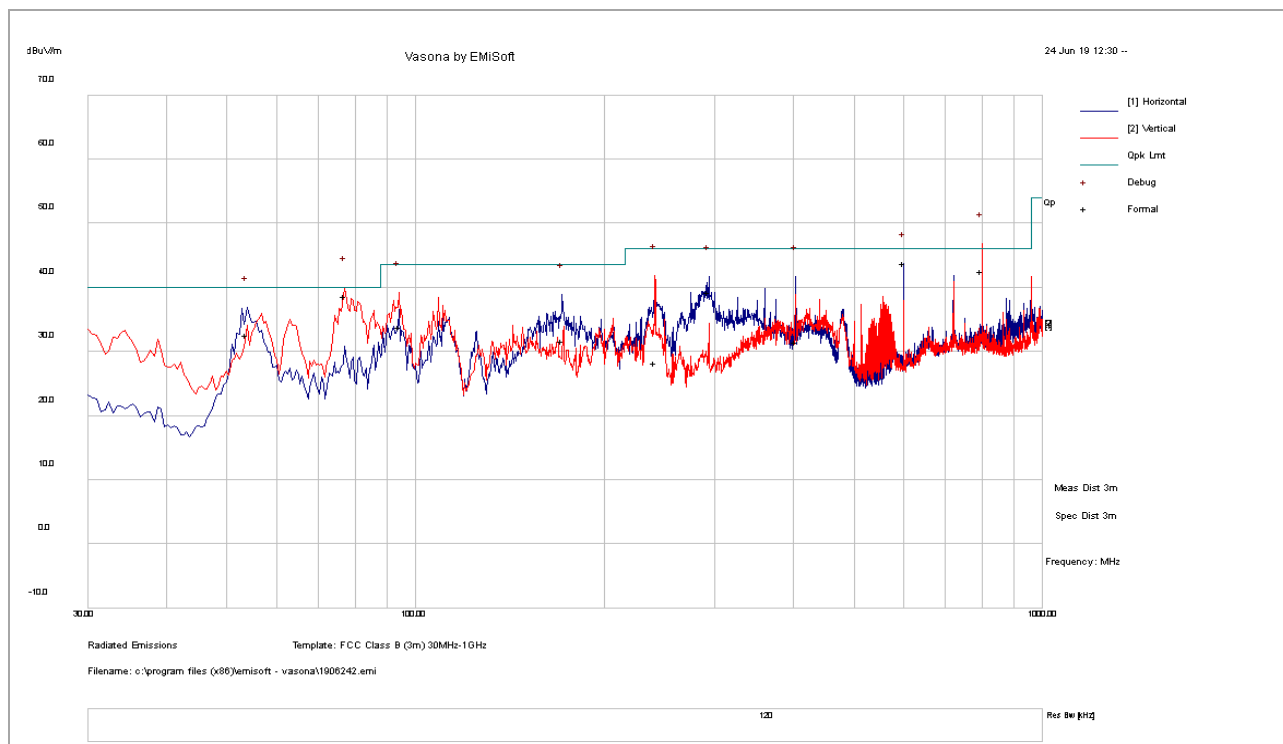
Report Number:	WAP-19052921-LC-FCC-UNII-G4
Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



8.7.4 Test Result

30-1000MHz test result

Test Standard:	15.209	Mode:	11a-5180MHz
Frequency Range:	30-1000MHz	Test Date:	06/24/2019
Antenna Type/Polarity:	Bi-Log/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
799.98	42.07	7.24	-6.76	42.55	QP	V	141	67	46.00	-3.45
77.19	59.88	3.28	-24.50	38.66	QP	V	112	78	40.00	-1.34
600.01	46.62	7.17	-9.91	43.88	QP	H	114	59	46.00	-2.12
53.79	54.44	2.87	-24.74	32.57	QP	H	397	176	40.00	-7.43
240.67	42.81	5.16	-19.69	28.28	QP	V	203	16	46.00	-17.72
293.60	52.54	5.63	-18.79	39.38	QP	H	100	0	46.00	-6.62
94.08	54.57	3.50	-24.22	33.85	QP	V	110	174	43.50	-9.65
403.78	38.68	6.36	-13.48	31.56	QP	H	214	345	46.00	-14.44
171.35	49.45	4.47	-22.19	31.73	QP	H	180	286	43.50	-11.77

Note:

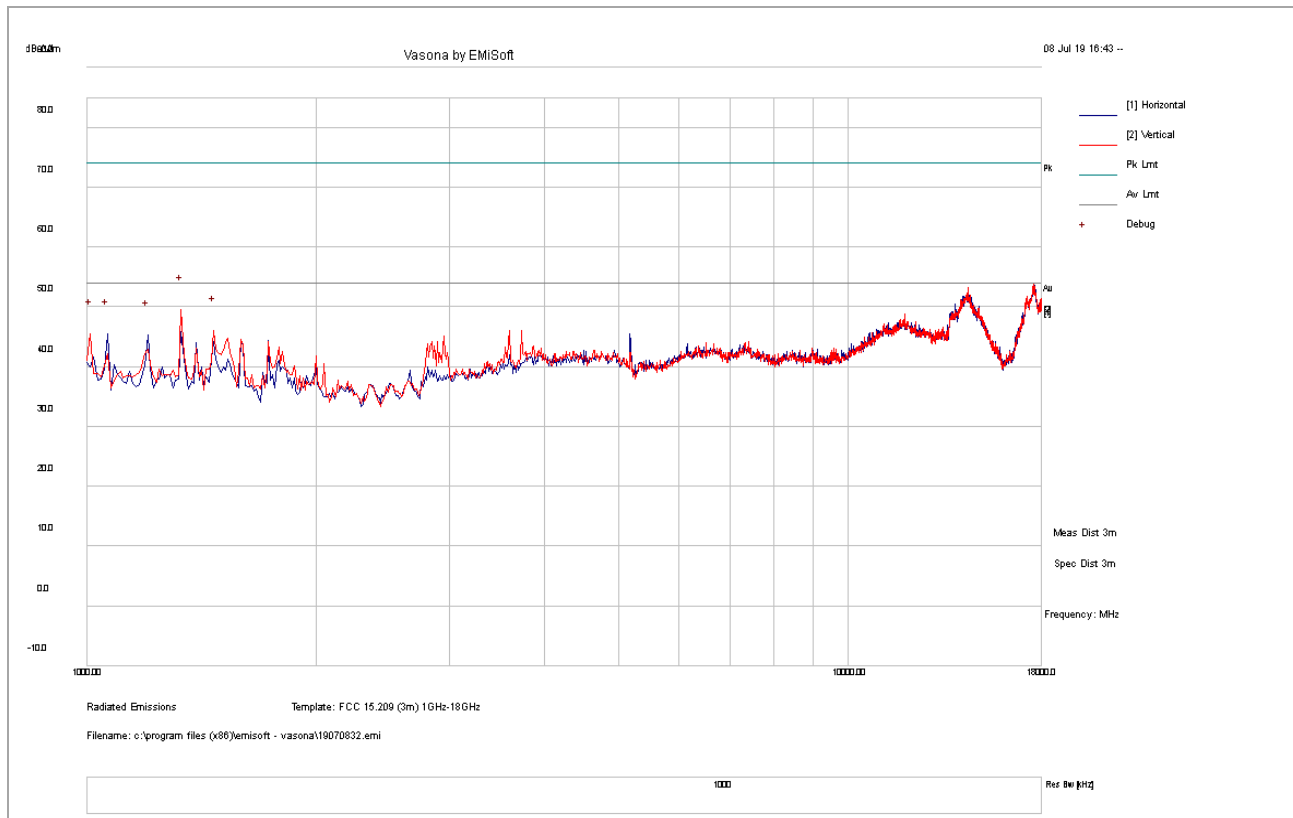
- 1) For below 1GHz, all different channel and modes were verified but only the worst case result is shown here.

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1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11a-5180MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



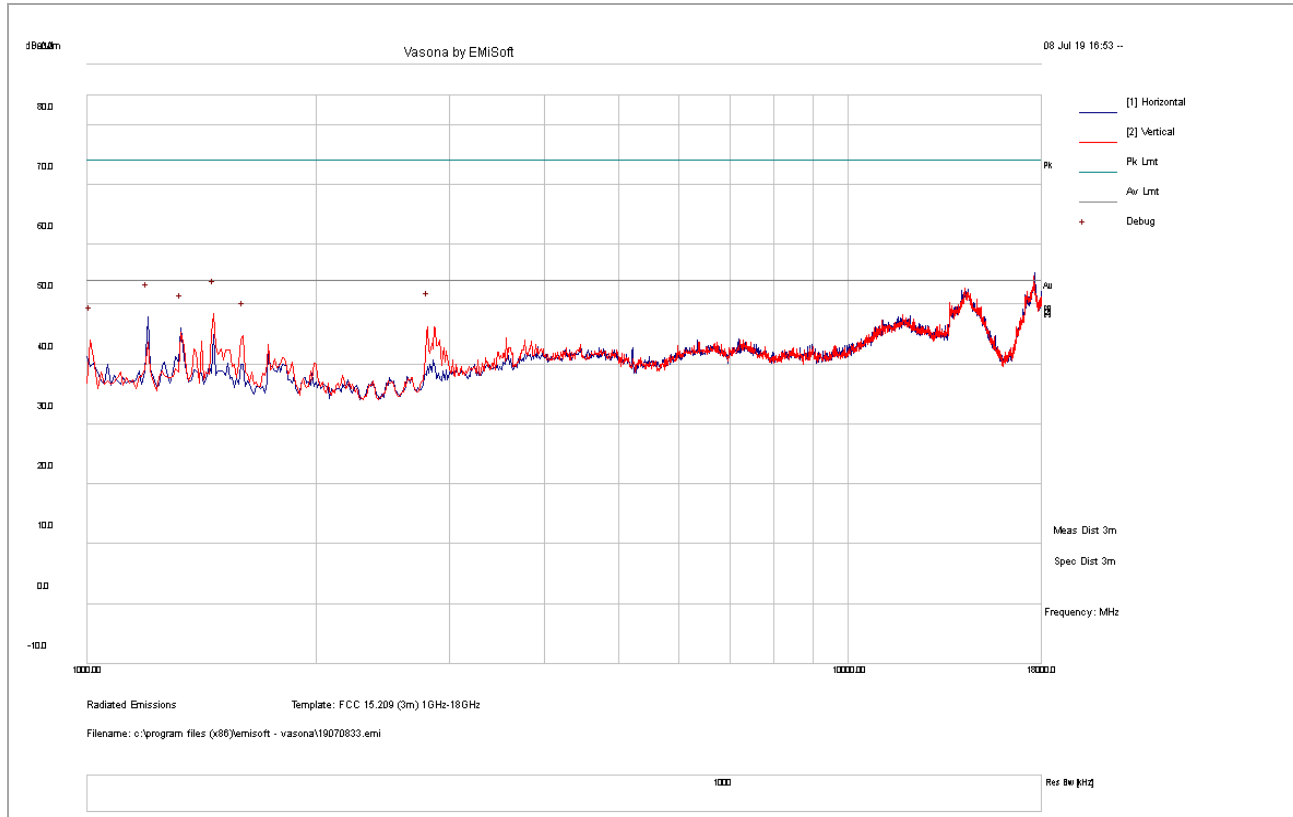
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1010.63	41.19	9.87	-5.57	45.49	PK	V	111	202	54	-8.51
1063.75	40.43	10.00	-4.90	45.53	PK	H	107	215	54	-8.47
1201.88	39.19	10.31	-4.18	45.32	PK	H	131	341	54	-8.68
1329.38	42.69	10.56	-3.81	49.43	PK	V	197	145	54	-4.57
1467.50	38.88	10.81	-3.75	45.94	PK	V	107	186	54	-8.06

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11a-5220MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



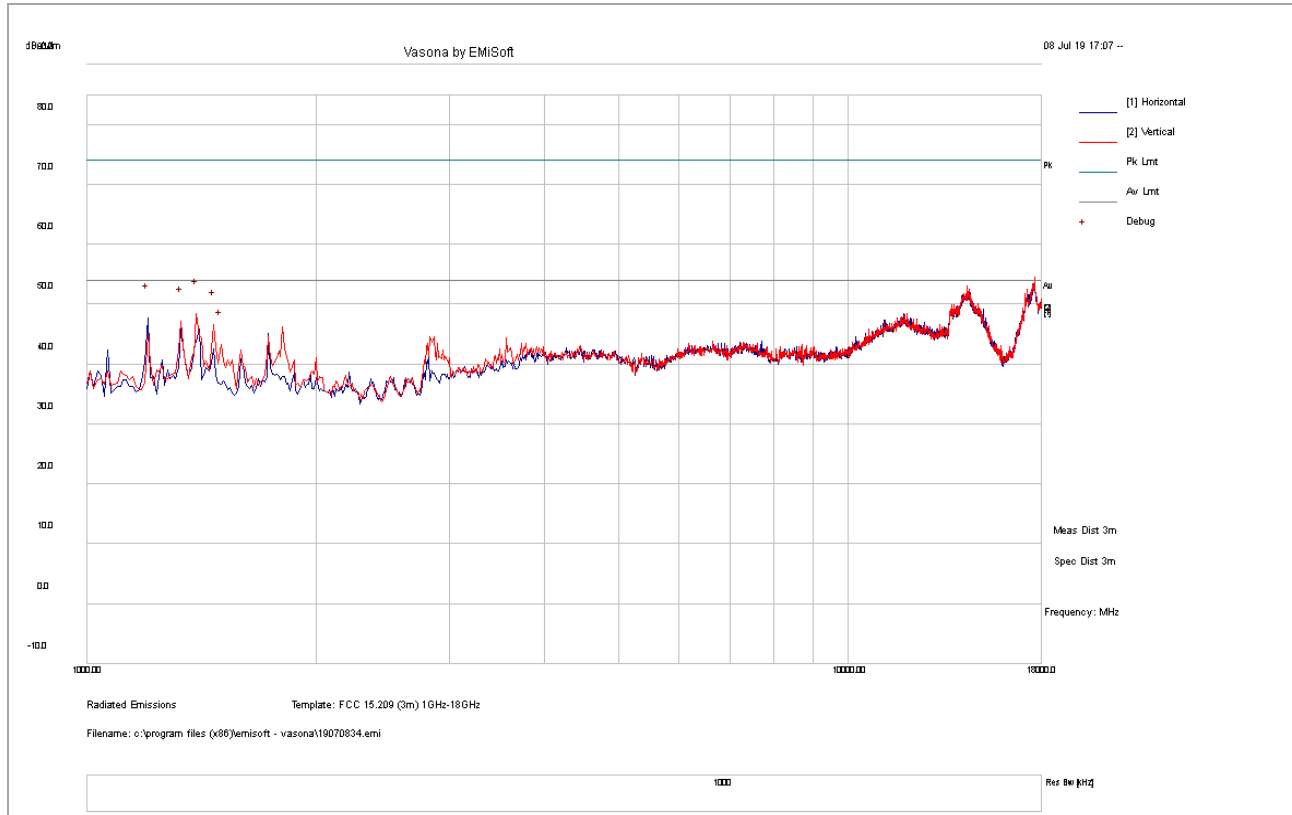
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1010.63	39.60	9.87	-5.57	43.90	PK	V	247	16	54	-10.10
1201.88	41.65	10.31	-4.18	47.79	PK	H	113	223	54	-6.22
1329.38	39.33	10.56	-3.81	46.07	PK	H	107	186	54	-7.93
1467.50	41.36	10.81	-3.75	48.42	PK	V	152	176	54	-5.58
1605.63	37.30	10.72	-3.34	44.68	PK	V	127	298	54	-9.32
2806.25	33.31	11.13	1.83	46.28	PK	V	187	109	54	-7.72

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11a-5240MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



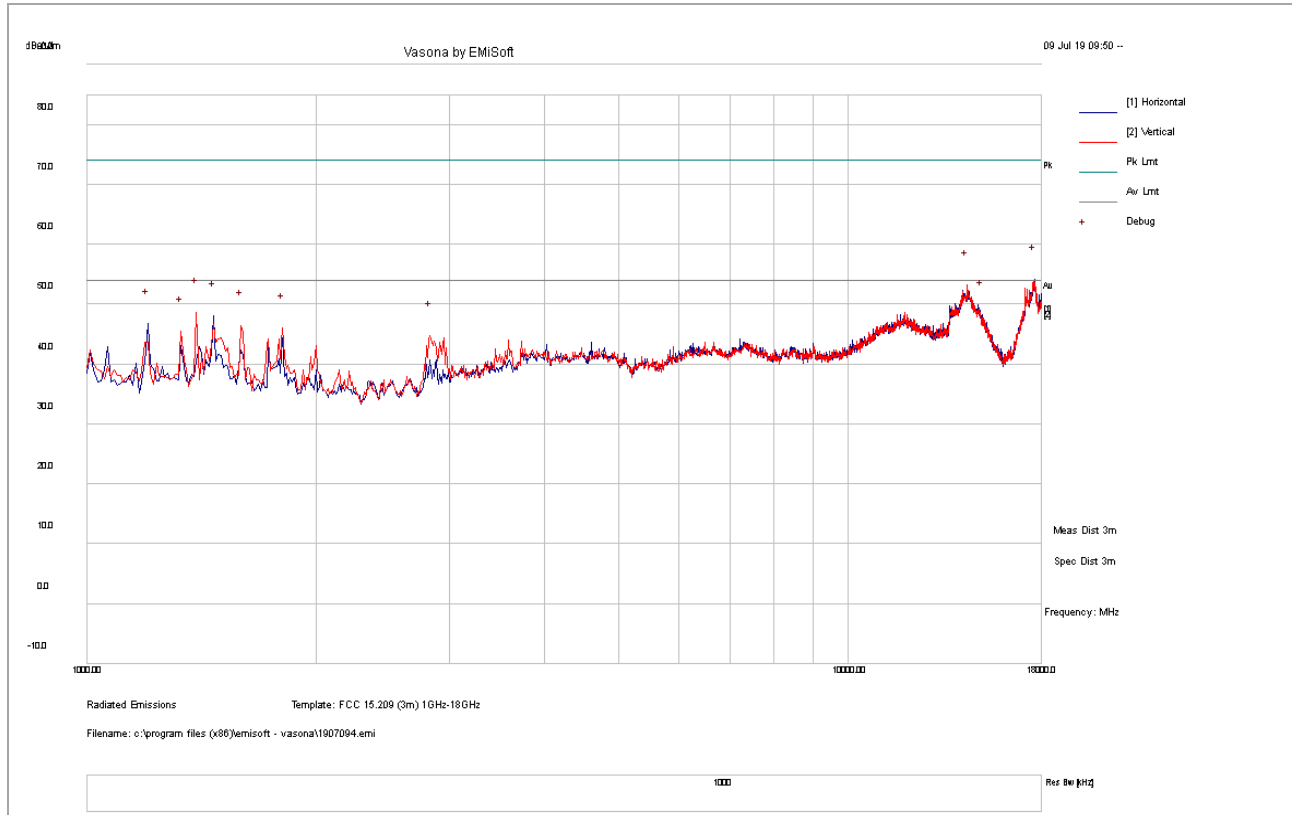
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	41.48	10.31	-4.18	47.61	PK	H	151	281	54	-6.39
1329.38	40.43	10.56	-3.81	47.18	PK	V	101	116	54	-6.82
1393.13	41.26	10.68	-3.55	48.39	PK	V	211	126	54	-5.61
1467.50	39.42	10.81	-3.75	46.48	PK	V	145	198	54	-7.52
1499.38	36.14	10.86	-3.78	43.22	PK	V	123	111	54	-10.79

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11a-5260MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



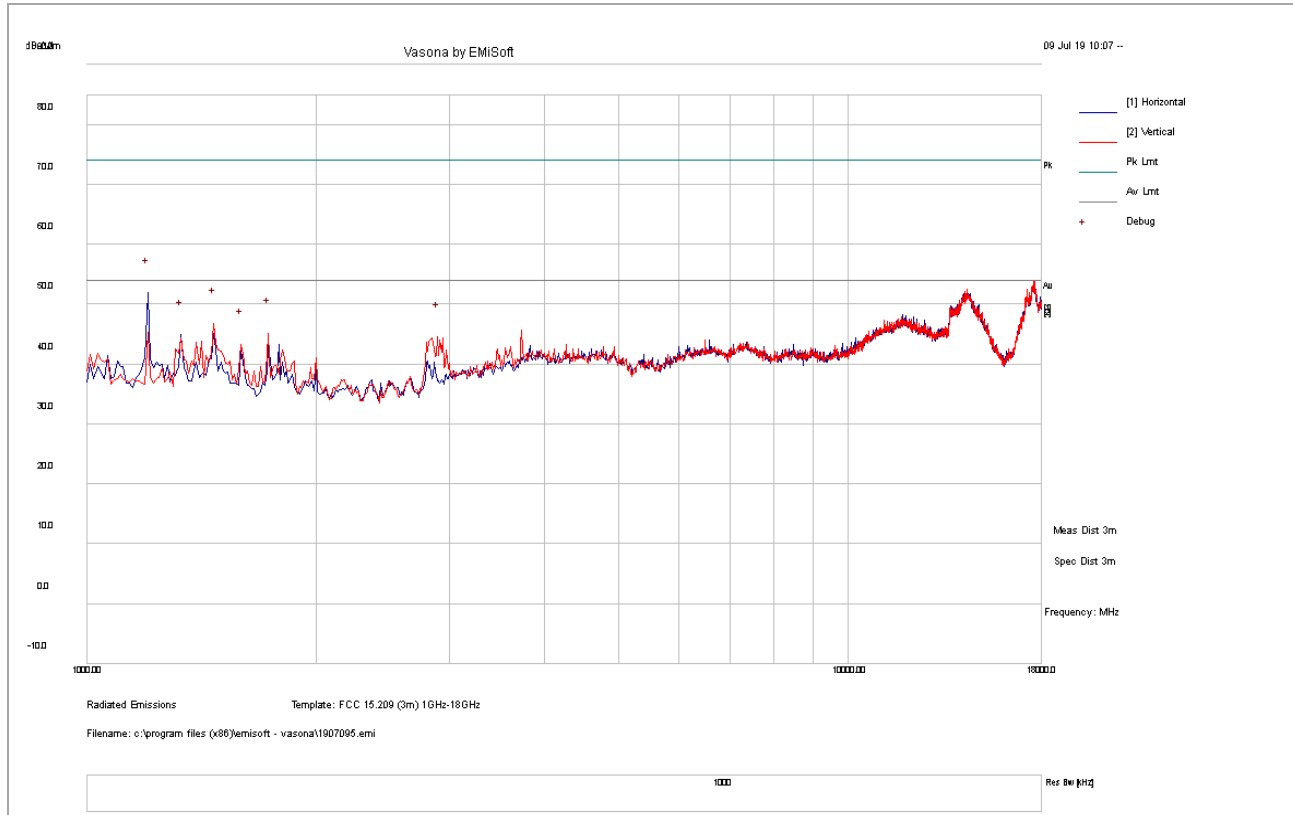
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	40.63	10.31	-4.18	46.77	PK	H	339	71	54	-7.24
1329.38	38.75	10.56	-3.81	45.50	PK	V	400	29	54	-8.51
1393.13	41.46	10.68	-3.55	48.58	PK	V	100	95	54	-5.42
1467.50	40.90	10.81	-3.75	47.96	PK	H	178	276	54	-6.04
1595.00	39.10	10.73	-3.37	46.47	PK	V	343	312	54	-7.53
1807.50	37.13	10.47	-1.57	46.03	PK	V	312	22	54	-7.97

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11a-5300MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



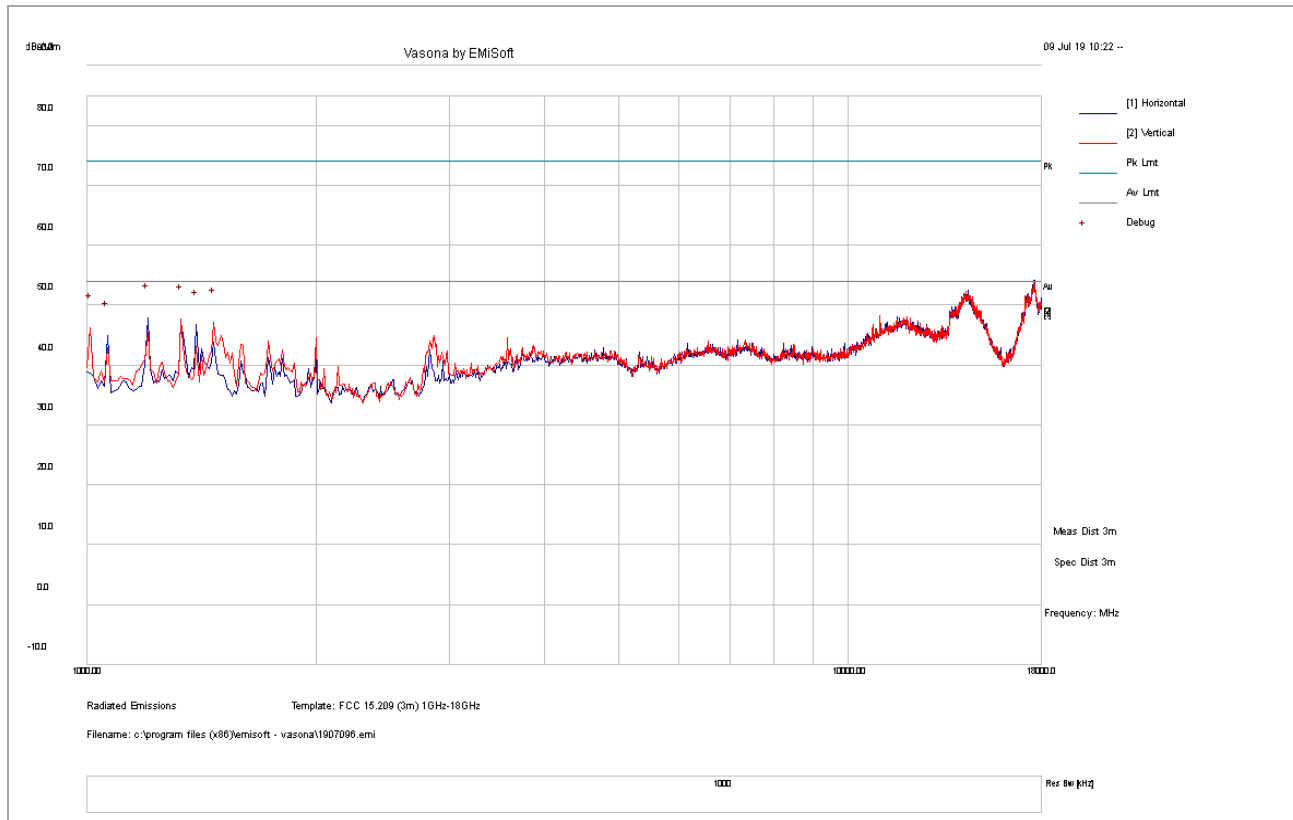
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	45.72	10.31	-4.18	51.85	PK	H	146	57	54	-2.15
1329.38	38.17	10.56	-3.81	44.92	PK	H	209	258	54	-9.08
1467.50	39.77	10.81	-3.75	46.83	PK	V	400	361	54	-7.17
1595.00	35.97	10.73	-3.37	43.33	PK	V	295	56	54	-10.67
1733.13	37.29	10.56	-2.68	45.17	PK	V	102	172	54	-8.83
2891.25	30.82	11.21	2.41	44.45	PK	V	226	229	54	-9.55

Report Number:	WAP-19052921-LC-FCC-UNII-G4
Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11a-5320MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



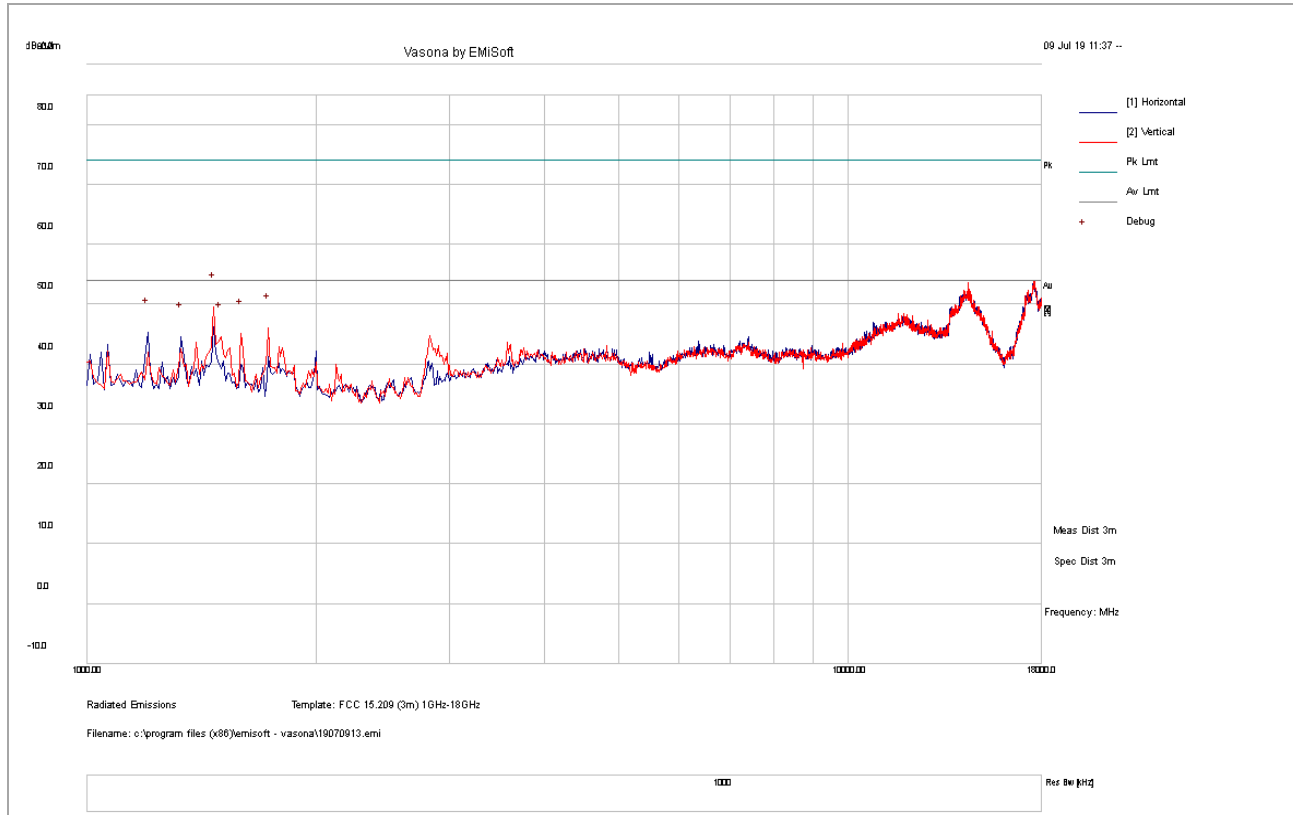
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1010.63	41.87	9.87	-5.57	46.17	PK	V	101	110	54	-7.83
1063.75	39.71	10.00	-4.90	44.81	PK	H	172	192	54	-9.19
1201.88	41.76	10.31	-4.18	47.89	PK	H	156	322	54	-6.11
1329.38	40.92	10.56	-3.81	47.66	PK	V	162	88	54	-6.34
1393.13	39.61	10.68	-3.55	46.74	PK	H	182	19	54	-7.26
1467.50	40.00	10.81	-3.75	47.07	PK	V	122	12	54	-6.94

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11a-5500MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



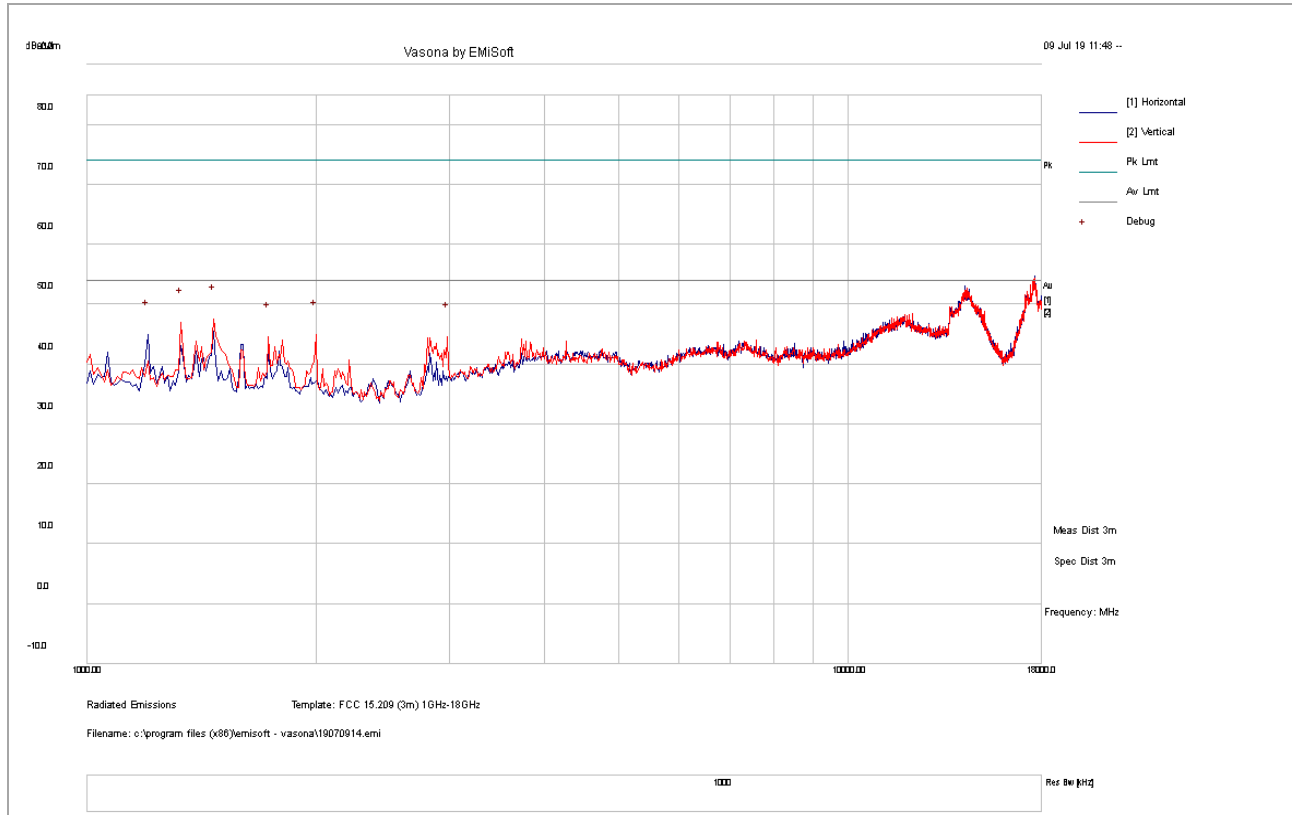
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	39.12	10.31	-4.18	45.25	PK	H	281	310	54	-8.75
1329.38	37.83	10.56	-3.81	44.58	PK	H	217	301	54	-9.42
1467.50	42.50	10.81	-3.75	49.56	PK	V	131	98	54	-4.44
1499.38	37.51	10.86	-3.78	44.59	PK	V	119	228	54	-9.41
1595.00	37.73	10.73	-3.37	45.10	PK	V	172	19	54	-8.91
1733.13	38.18	10.56	-2.68	46.06	PK	V	192	113	54	-7.94

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11a-5600MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



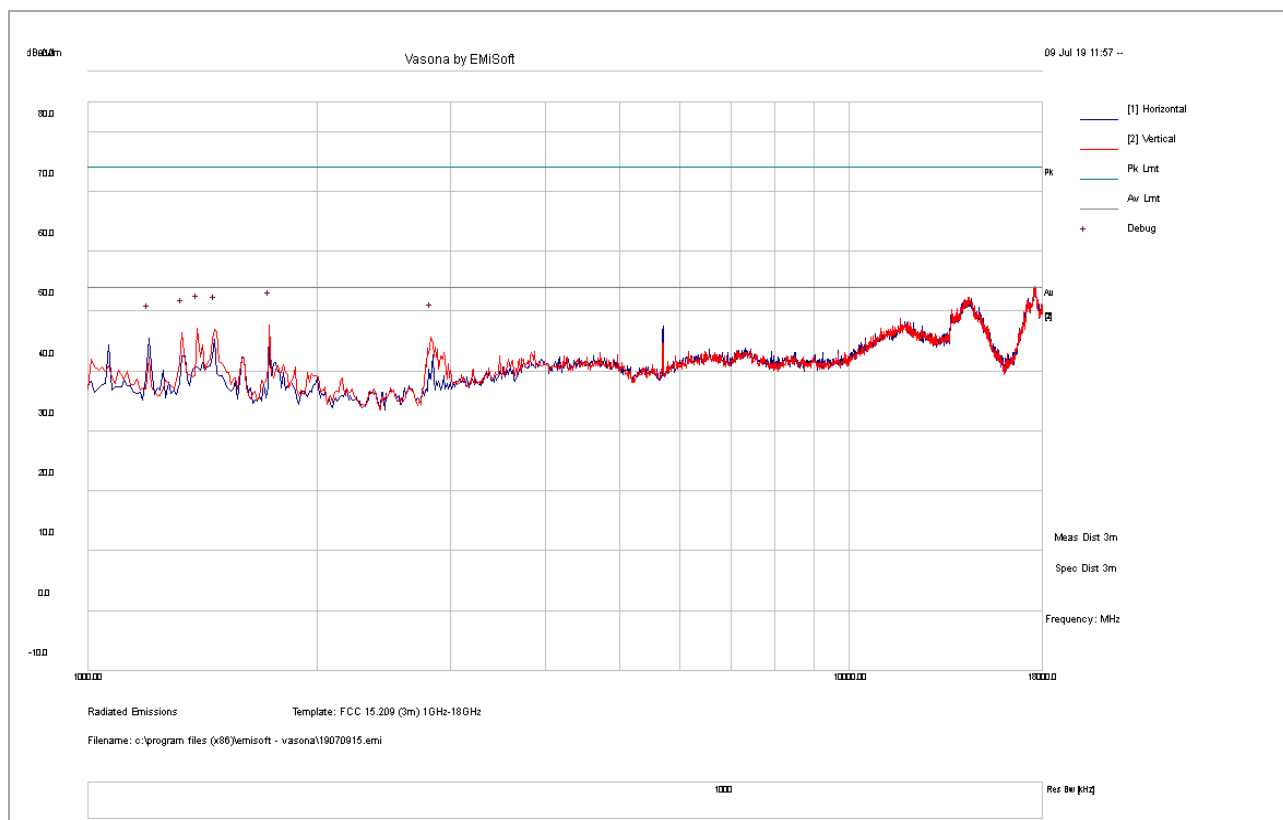
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	38.84	10.31	-4.18	44.97	PK	H	109	72	54	-9.03
1329.38	40.10	10.56	-3.81	46.85	PK	V	121	45	54	-7.15
1467.50	40.43	10.81	-3.75	47.49	PK	V	187	192	54	-6.51
1733.13	36.64	10.56	-2.68	44.52	PK	V	113	148	54	-9.48
1998.75	35.33	10.25	-0.73	44.86	PK	V	162	195	54	-9.15
2976.25	30.15	11.29	3.02	44.47	PK	V	143	132	54	-9.54

Report Number:	WAP-19052921-LC-FCC-UNII-G4
Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11a-5700MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



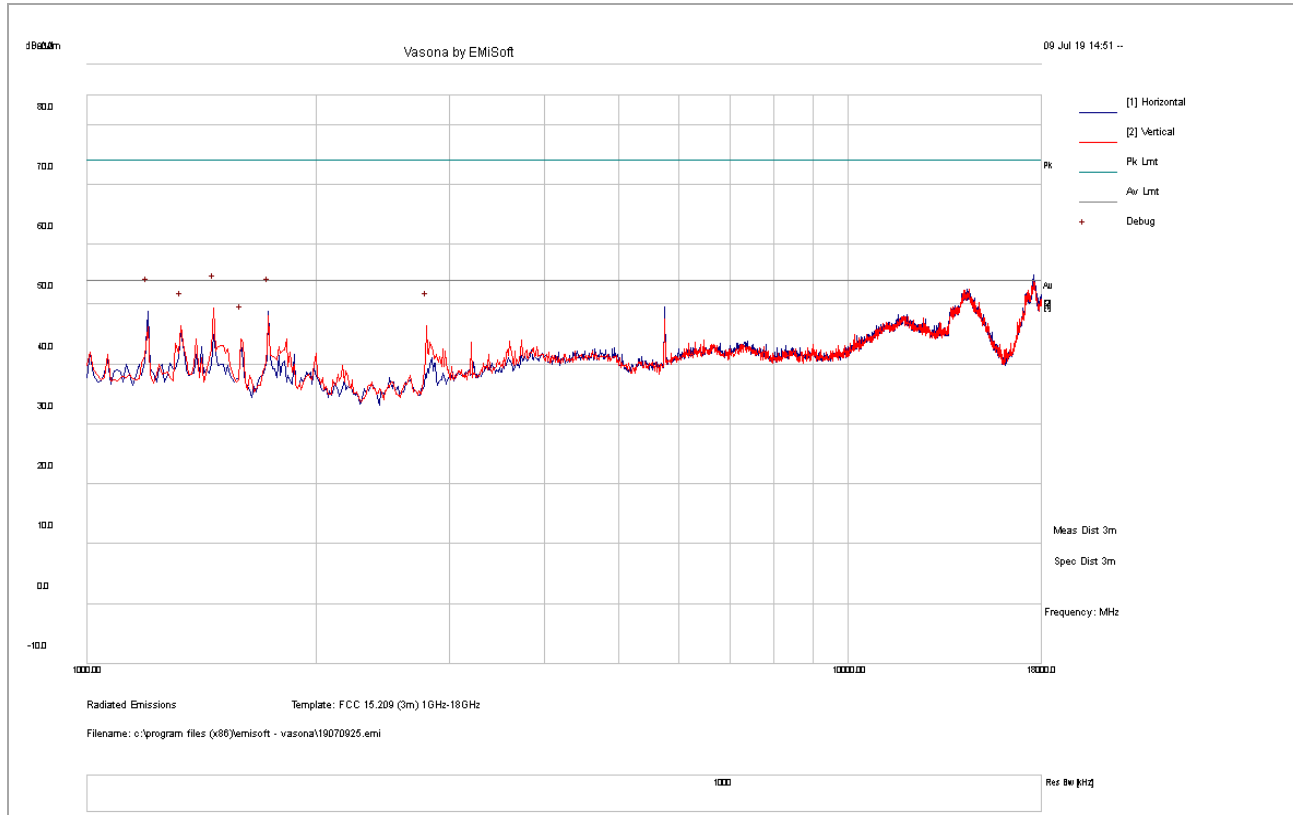
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	39.30	10.31	-4.18	45.43	PK	H	154	231	54	-8.57
1329.38	39.63	10.56	-3.81	46.38	PK	V	137	164	54	-7.62
1393.13	40.00	10.68	-3.55	47.12	PK	V	171	178	54	-6.88
1467.50	39.94	10.81	-3.75	47.00	PK	V	102	113	54	-7.00
1733.13	39.71	10.56	-2.68	47.59	PK	V	189	109	54	-6.41
2827.50	32.46	11.15	1.97	45.59	PK	V	118	62	54	-8.41

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11a-5745MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



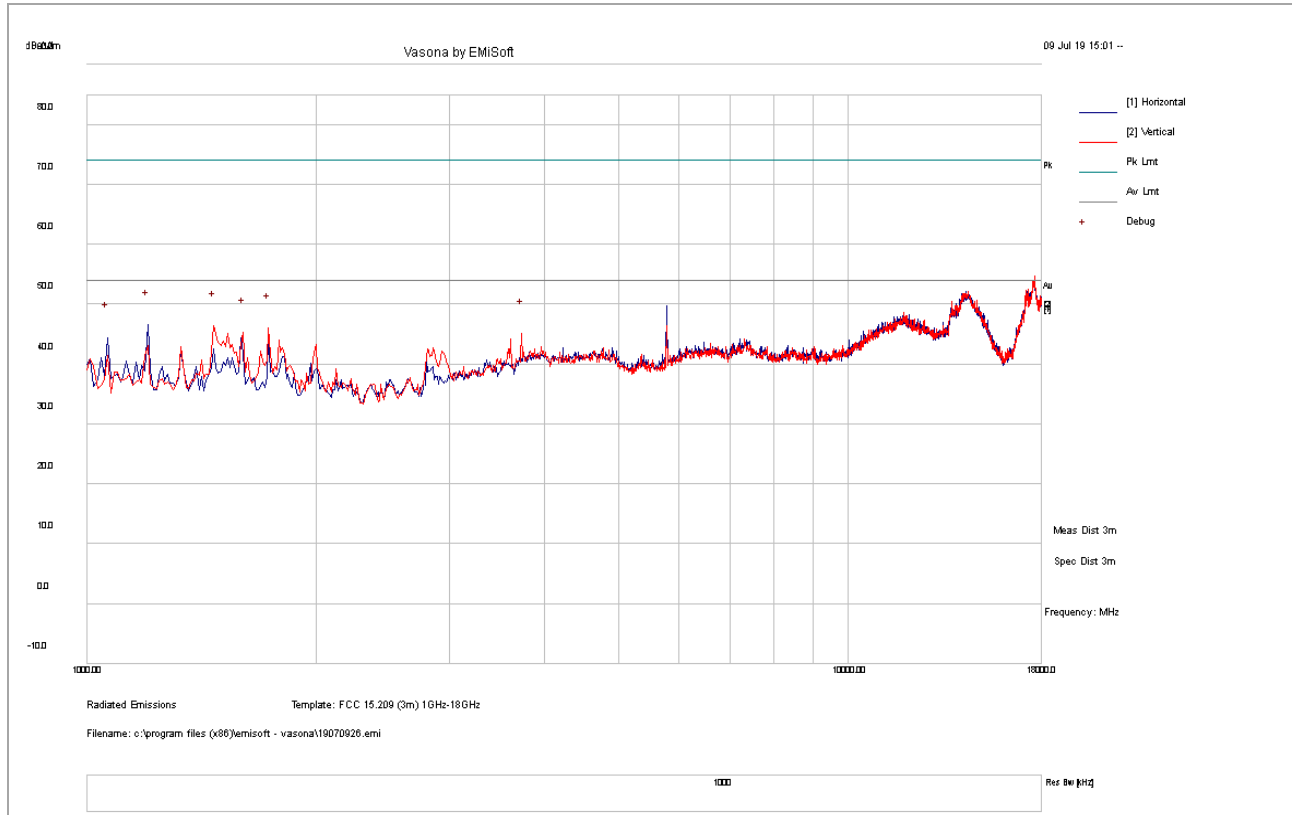
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	42.71	10.31	-4.18	48.84	PK	H	212	13	54	-5.16
1329.38	39.63	10.56	-3.81	46.38	PK	V	110	0	54	-7.62
1467.50	42.25	10.81	-3.75	49.31	PK	V	175	66	54	-4.69
1595.00	36.83	10.73	-3.37	44.19	PK	V	152	84	54	-9.81
1733.13	40.94	10.56	-2.68	48.82	PK	H	115	364	54	-5.18
2795.63	33.43	11.12	1.77	46.32	PK	V	281	353	54	-7.68

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11a-5785MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



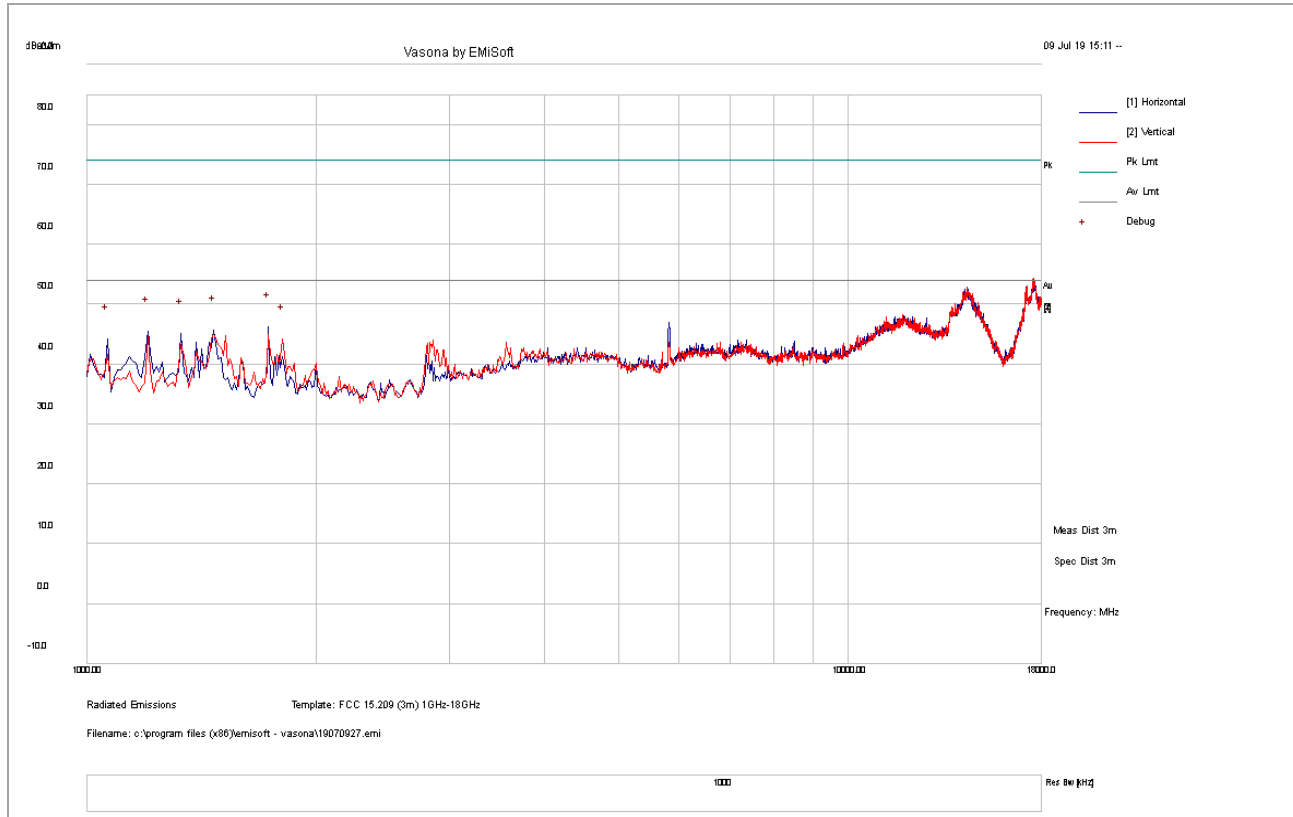
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1063.75	39.34	10.00	-4.90	44.44	PK	H	170	116	54	-9.57
1201.88	40.37	10.31	-4.18	46.51	PK	H	117	67	54	-7.49
1467.50	39.27	10.81	-3.75	46.33	PK	V	182	102	54	-7.67
1605.63	37.86	10.72	-3.34	45.24	PK	V	128	76	54	-8.76
1733.13	38.16	10.56	-2.68	46.04	PK	V	109	161	54	-7.96
3730.63	25.82	12.30	7.01	45.13	PK	V	152	98	54	-8.87

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11a-5825MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



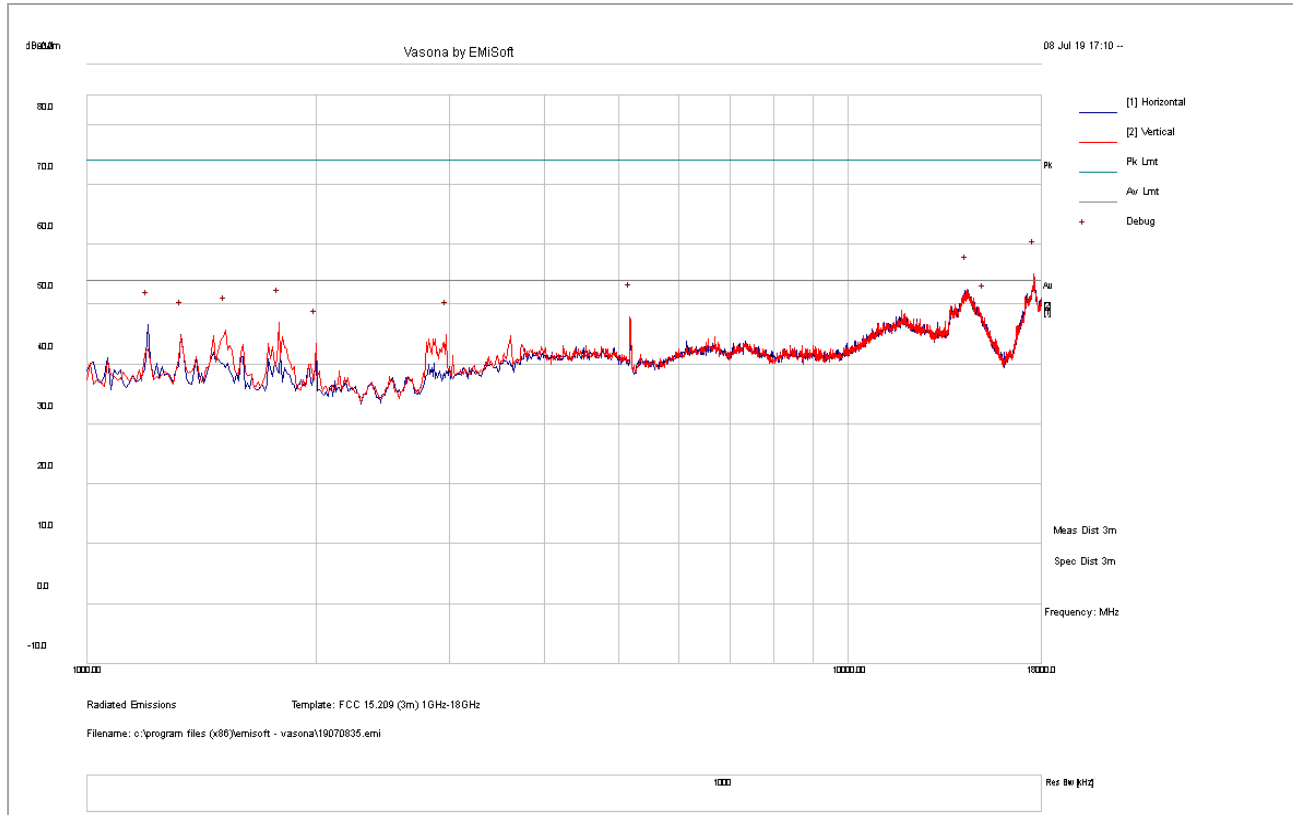
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1063.75	39.09	10.00	-4.90	44.19	PK	H	213	87	54	-9.81
1201.88	39.33	10.31	-4.18	45.46	PK	H	172	12	54	-8.54
1329.38	38.35	10.56	-3.81	45.09	PK	H	109	291	54	-8.91
1467.50	38.52	10.81	-3.75	45.58	PK	H	158	118	54	-8.42
1733.13	38.31	10.56	-2.68	46.19	PK	H	353	59	54	-7.81
1807.50	35.20	10.47	-1.57	44.09	PK	V	265	113	54	-9.91

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n-5180MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



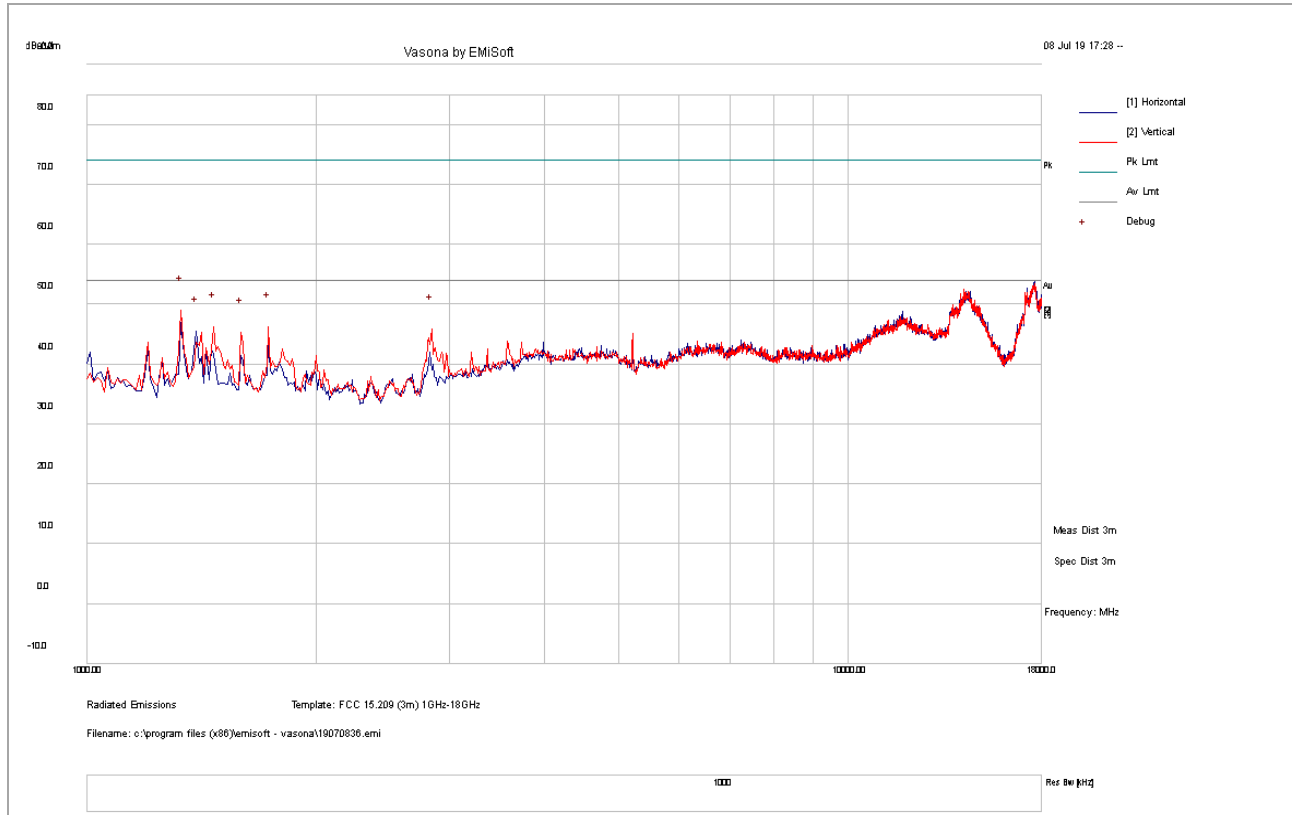
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	40.45	10.31	-4.18	46.58	PK	H	294	9	54	-7.42
1329.38	38.08	10.56	-3.81	44.82	PK	H	359	152	54	-9.18
1520.63	38.57	10.84	-3.72	45.69	PK	V	201	27	54	-8.31
1786.25	38.41	10.49	-1.91	47.00	PK	V	251	74	54	-7.00
1998.75	33.85	10.25	-0.73	43.38	PK	V	332	66	54	-10.63
2965.63	30.59	11.28	2.94	44.81	PK	V	375	141	54	-9.19

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n-5220MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



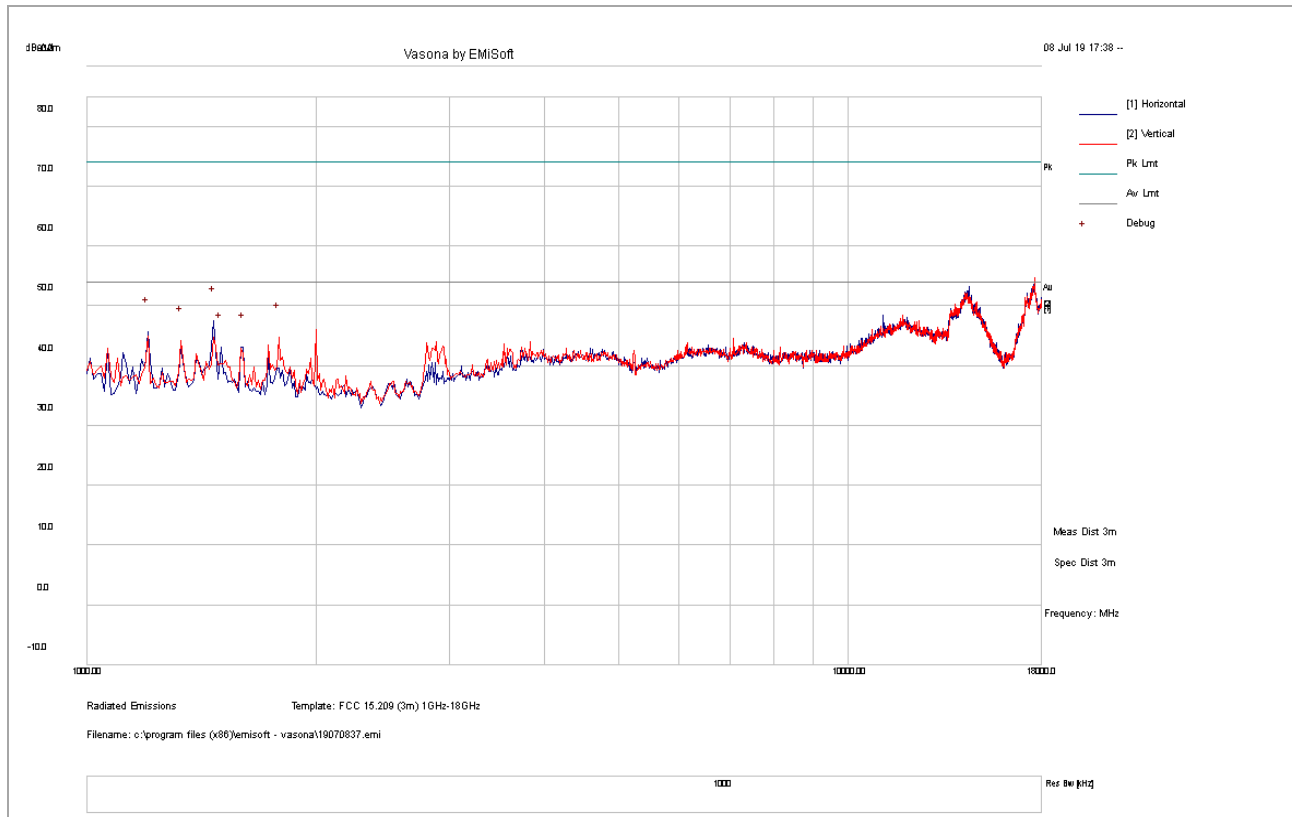
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1329.38	42.15	10.56	-3.81	48.90	PK	V	378	248	54	-5.11
1393.13	38.26	10.68	-3.55	45.39	PK	H	201	22	54	-8.61
1467.50	39.18	10.81	-3.75	46.24	PK	V	306	100	54	-7.76
1595.00	37.84	10.73	-3.37	45.20	PK	V	331	198	54	-8.80
1733.13	38.33	10.56	-2.68	46.21	PK	V	323	326	54	-7.80
2838.13	32.63	11.16	2.04	45.84	PK	V	150	0	54	-8.16

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n-5240MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



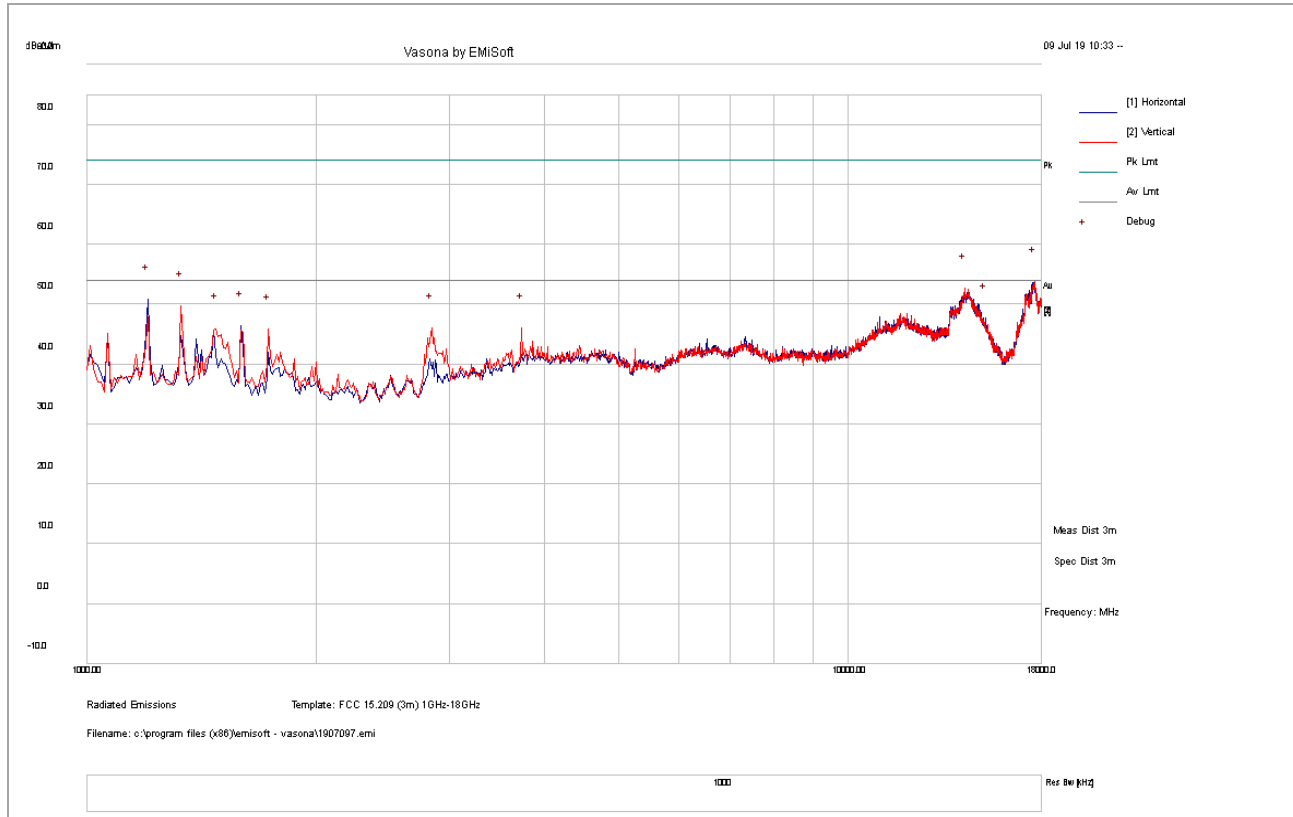
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	39.42	10.31	-4.18	45.56	PK	H	148	360	54	-8.44
1329.38	37.35	10.56	-3.81	44.10	PK	V	130	118	54	-9.90
1467.50	40.50	10.81	-3.75	47.56	PK	H	296	0	54	-6.44
1499.38	36.00	10.86	-3.78	43.08	PK	H	273	286	54	-10.92
1605.63	35.60	10.72	-3.34	42.98	PK	H	148	360	54	-11.02
1786.25	36.21	10.49	-1.91	44.80	PK	V	148	360	54	-9.21

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n-5260MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



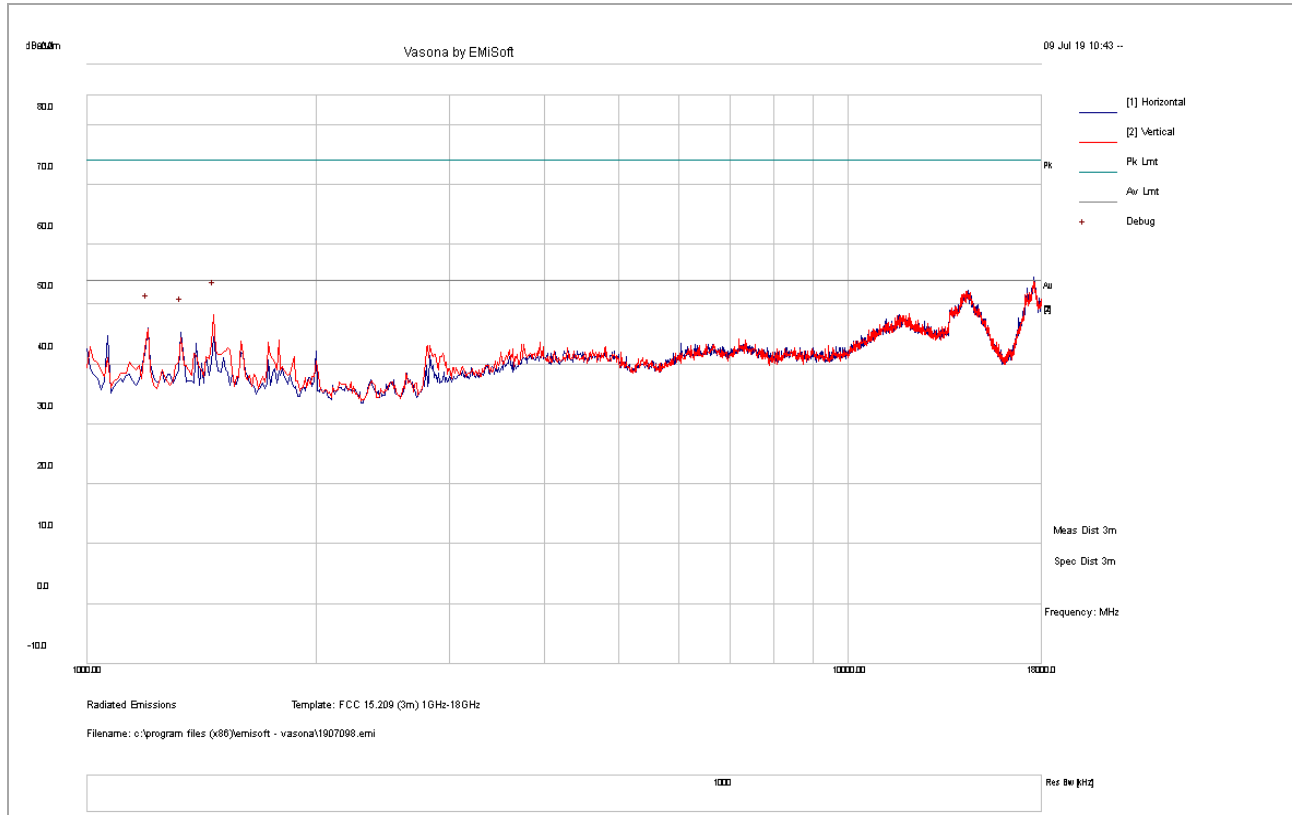
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
17596.25	12.48	25.28	15.01	52.77	PK	V	171	180	54	-1.23
14249.38	15.72	22.28	14.62	52.62	PK	V	132	75	54	-1.38
1201.88	44.70	10.31	-4.18	50.83	PK	H	109	46	54	-3.17
1329.38	42.97	10.56	-3.81	49.71	PK	V	325	113	54	-4.29
15173.75	14.08	24.37	9.24	47.69	PK	H	126	222	54	-6.31
1595.00	39.00	10.73	-3.37	46.37	PK	H	223	0	54	-7.63

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n-5300MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



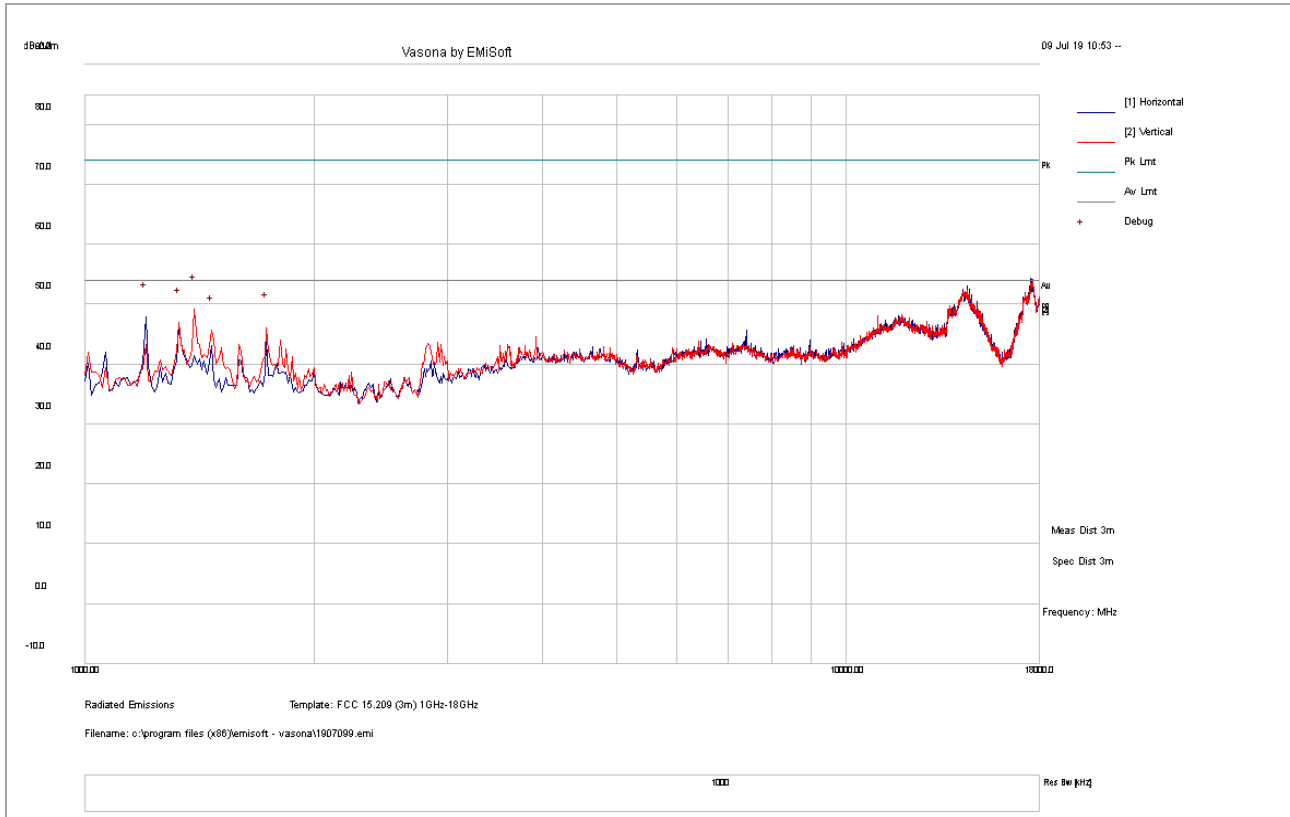
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	39.80	10.31	-4.18	45.93	PK	H	103	260	54	-8.07
1329.38	38.61	10.56	-3.81	45.36	PK	H	308	265	54	-8.64
1467.50	41.22	10.81	-3.75	48.28	PK	V	235	102	54	-5.72

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n-5320MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



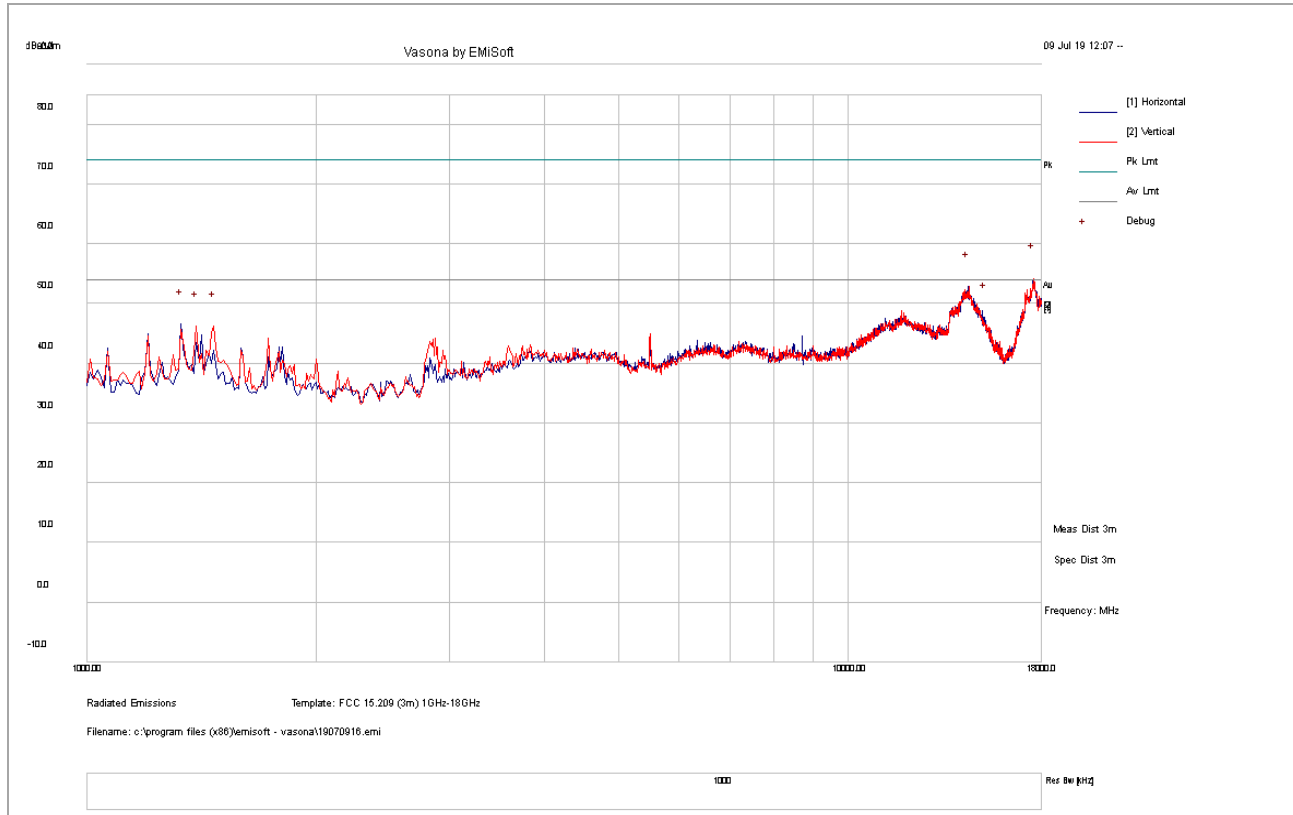
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	41.71	10.31	-4.18	47.84	PK	H	226	357	54	-6.16
1329.38	40.23	10.56	-3.81	46.98	PK	V	189	110	54	-7.02
1393.13	42.09	10.68	-3.55	49.22	PK	V	318	227	54	-4.78
1467.50	38.60	10.81	-3.75	45.66	PK	V	226	357	54	-8.34
1733.13	38.22	10.56	-2.68	46.09	PK	V	189	110	54	-7.91

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n-5500MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



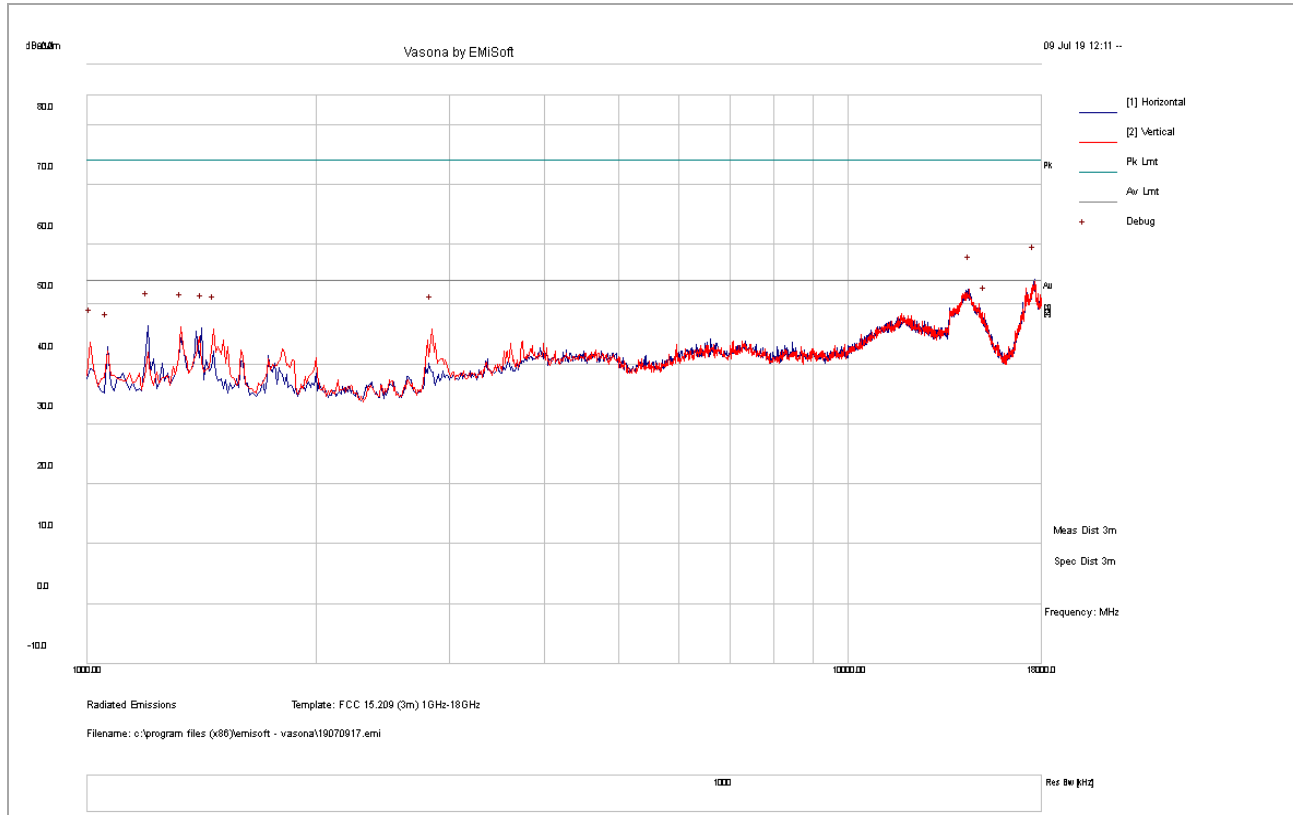
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
17553.75	14.53	25.22	14.45	54.20	PK	V	208	17	54	0.20
14398.13	15.68	22.73	14.44	52.85	PK	H	221	109	54	-1.16
15152.50	13.91	24.39	9.35	47.65	PK	H	184	92	54	-6.35
1329.38	39.85	10.56	-3.81	46.60	PK	H	112	98	54	-7.41
1393.13	39.13	10.68	-3.55	46.26	PK	V	183	19	54	-7.74
1467.50	39.19	10.81	-3.75	46.25	PK	V	209	331	54	-7.75

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n-5600MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



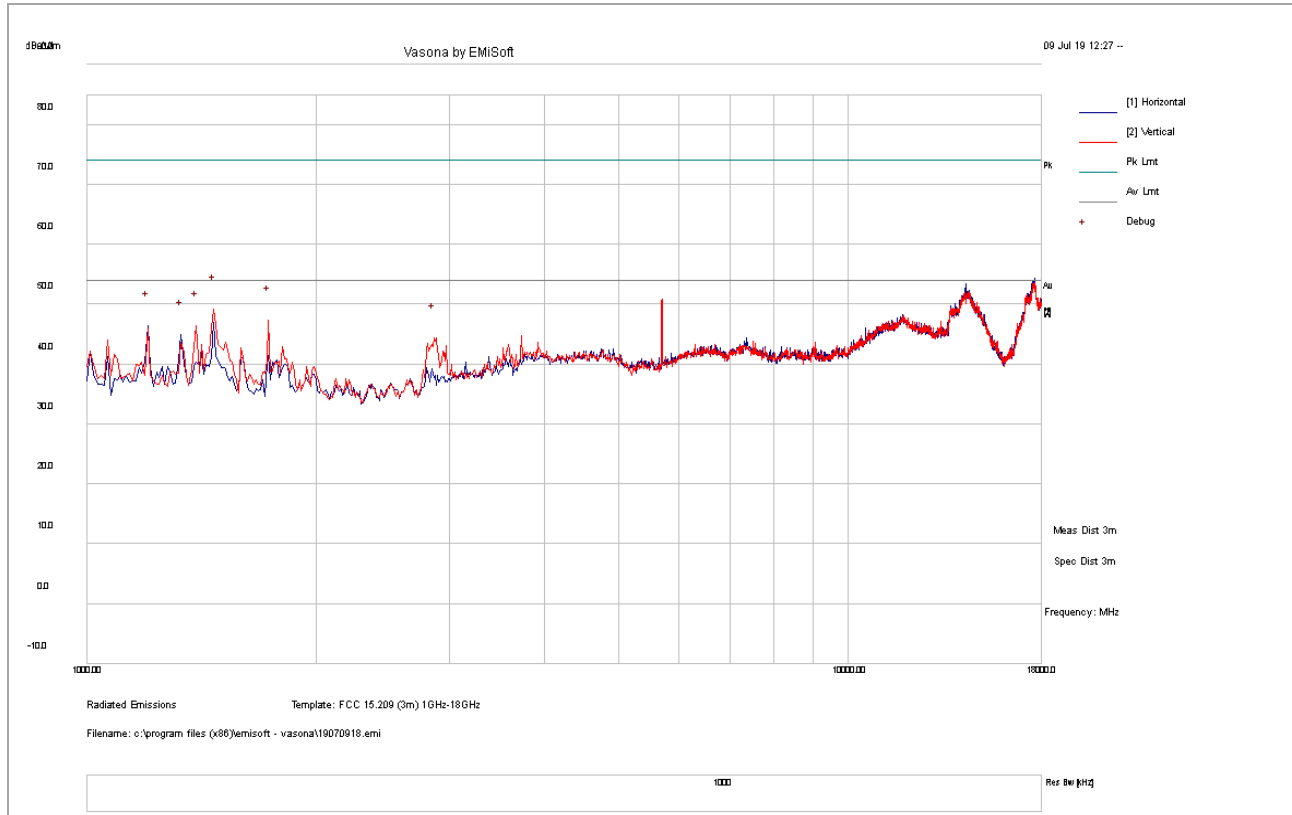
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1010.63	39.39	9.87	-5.57	43.69	PK	V	192	261	54	-10.31
1063.75	37.71	10.00	-4.90	42.81	PK	H	227	74	54	-11.19
1201.88	40.26	10.31	-4.18	46.39	PK	H	181	118	54	-7.61
1329.38	39.46	10.56	-3.81	46.21	PK	V	147	108	54	-7.79
1414.38	38.82	10.72	-3.57	45.97	PK	H	306	360	54	-8.03

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n-5700MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



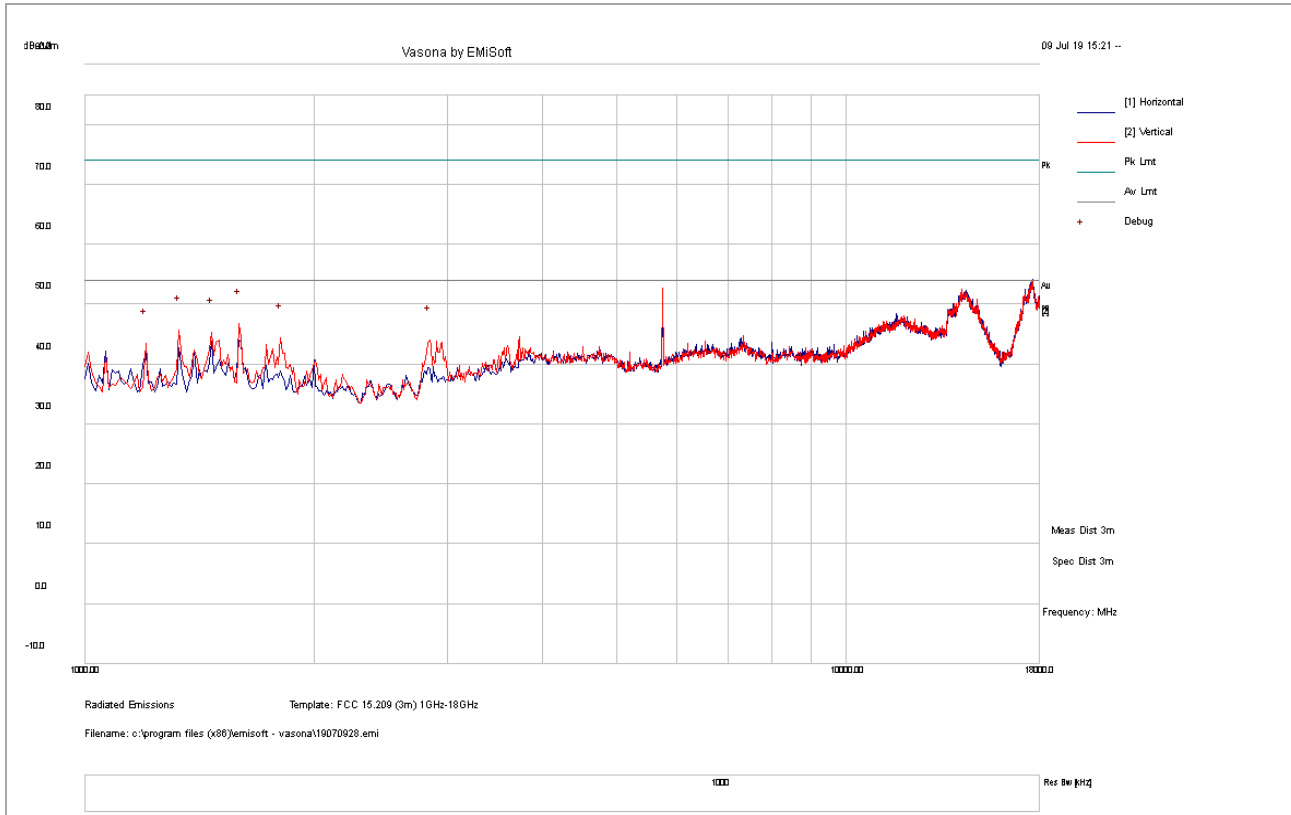
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	40.17	10.31	-4.18	46.30	PK	H	181	118	54	-7.70
1329.38	38.21	10.56	-3.81	44.96	PK	H	147	108	54	-9.04
1393.13	39.22	10.68	-3.55	46.35	PK	V	306	360	54	-7.65
1467.50	42.09	10.81	-3.75	49.15	PK	V	178	98	54	-4.85
1733.13	39.41	10.56	-2.68	47.29	PK	V	209	96	54	-6.71
2859.38	30.96	11.18	2.19	44.34	PK	V	257	340	54	-9.67

Report Number:	WAP-19052921-LC-FCC-UNII-G4
Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n-5745MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



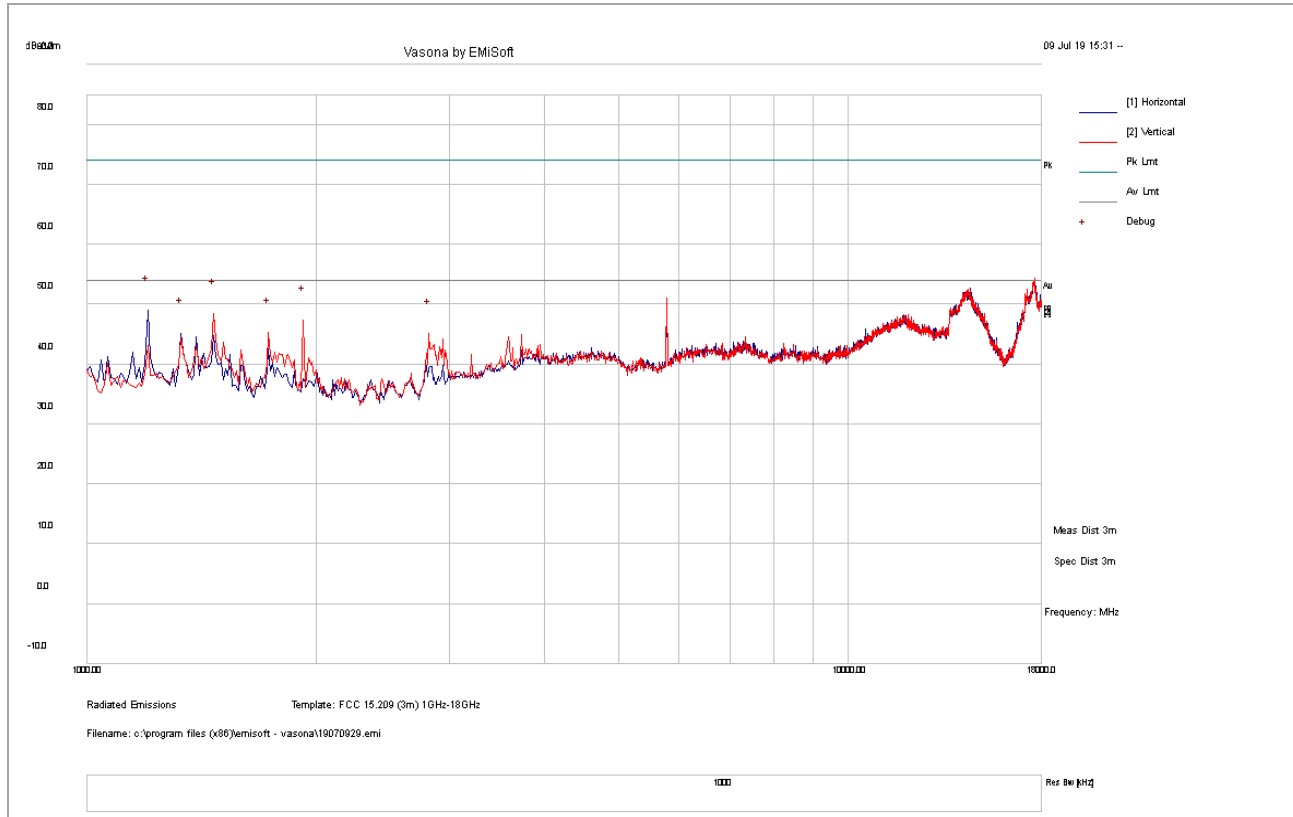
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	37.30	10.31	-4.18	43.44	PK	V	178	98	54	-10.56
1329.38	38.87	10.56	-3.81	45.61	PK	V	209	96	54	-8.39
1467.50	38.20	10.81	-3.75	45.26	PK	V	253	93	54	-8.74
1595.00	39.32	10.73	-3.37	46.68	PK	V	352	81	54	-7.32
1807.50	35.51	10.47	-1.57	44.41	PK	V	169	110	54	-9.59
2838.13	30.76	11.16	2.04	43.97	PK	V	253	93	54	-10.03

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n-5785MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



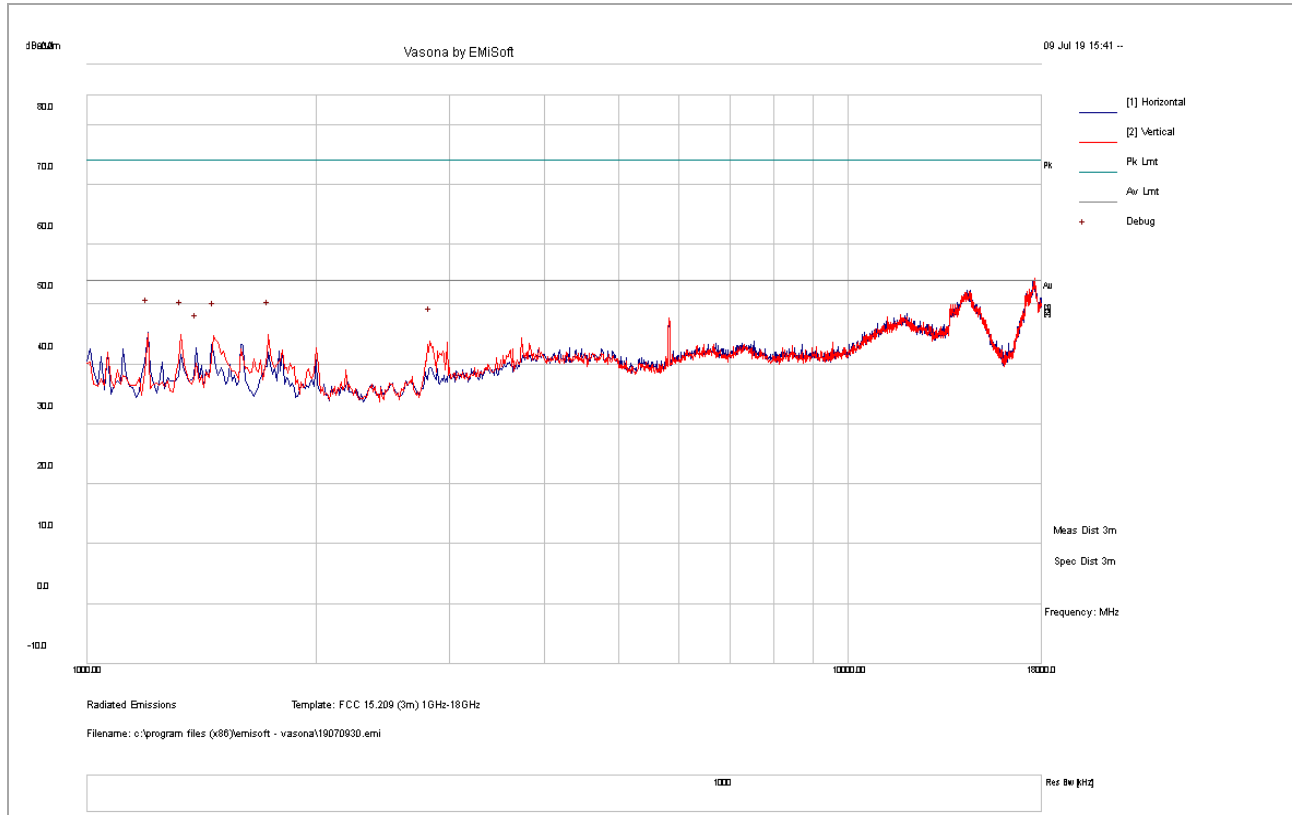
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	42.77	10.31	-4.18	48.90	PK	H	100	128	54	-5.10
1329.38	38.42	10.56	-3.81	45.17	PK	H	145	110	54	-8.83
1467.50	41.29	10.81	-3.75	48.35	PK	V	115	154	54	-5.65
1733.13	37.45	10.56	-2.68	45.33	PK	V	104	354	54	-8.67
1924.38	37.75	10.33	-0.87	47.21	PK	V	226	29	54	-6.79
2816.88	32.11	11.14	1.90	45.16	PK	V	293	287	54	-8.84

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n-5825MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



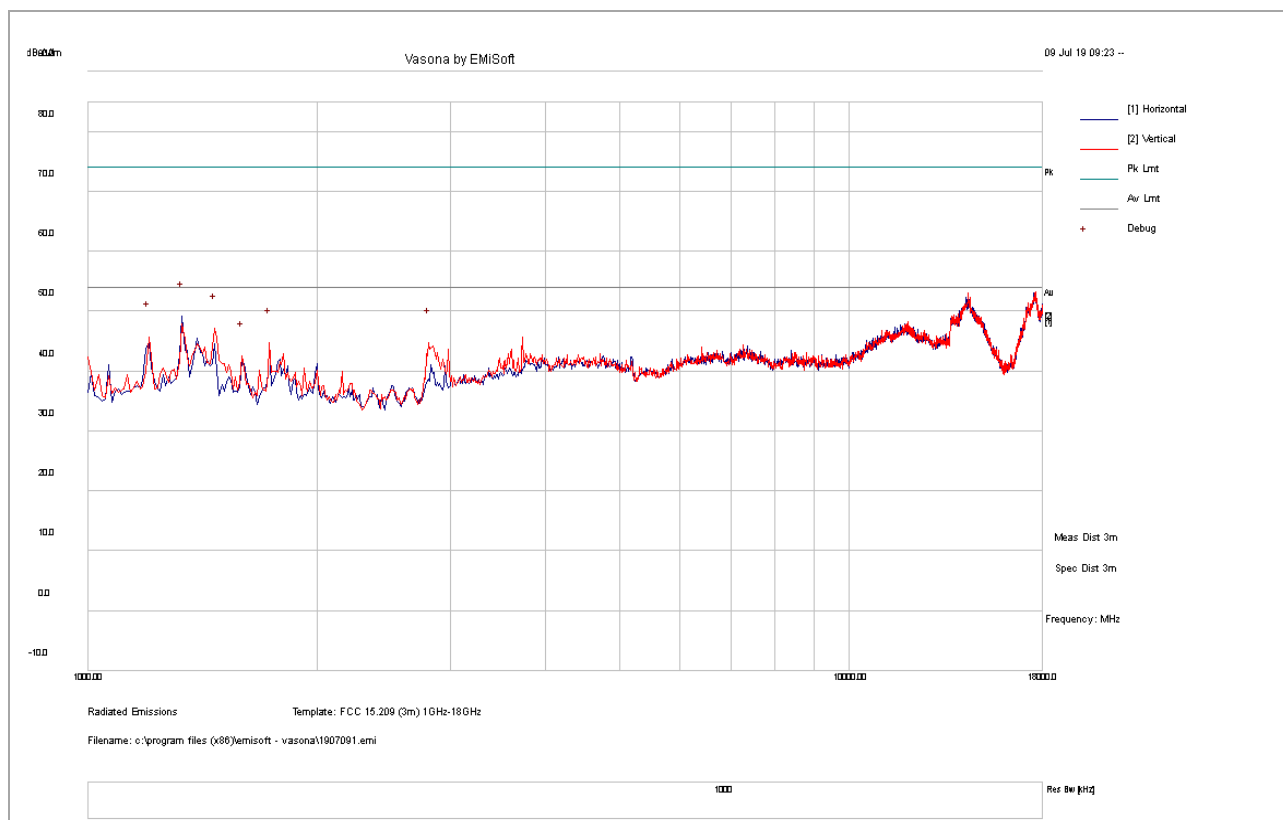
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	39.09	10.31	-4.18	45.22	PK	H	360	131	54	-8.78
1329.38	38.13	10.56	-3.81	44.88	PK	V	325	28	54	-9.12
1393.13	35.55	10.68	-3.55	42.67	PK	H	259	86	54	-11.33
1467.50	37.57	10.81	-3.75	44.63	PK	V	114	35	54	-9.37
1733.13	37.06	10.56	-2.68	44.94	PK	V	205	30	54	-9.06
2827.50	30.65	11.15	1.97	43.78	PK	V	229	252	54	-10.22

Report Number:	WAP-19052921-LC-FCC-UNII-G4
Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n40-5190MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



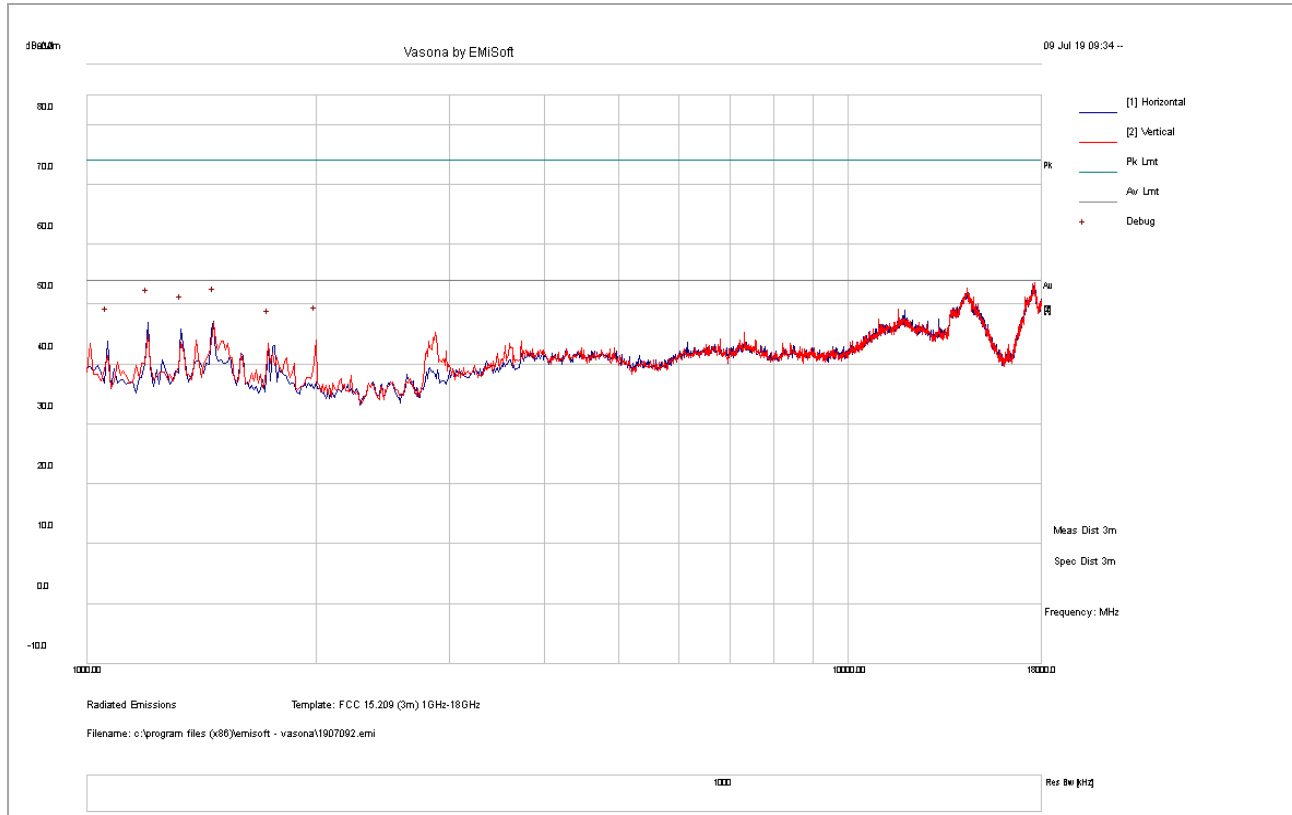
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	39.59	10.31	-4.18	45.72	PK	V	232	0	54	-8.28
1329.38	42.36	10.56	-3.81	49.11	PK	H	310	180	54	-4.89
1467.50	40.09	10.81	-3.75	47.15	PK	V	315	127	54	-6.85
1595.00	35.09	10.73	-3.37	42.45	PK	V	152	83	54	-11.55
1733.13	36.76	10.56	-2.68	44.64	PK	V	255	160	54	-9.36
2806.25	31.70	11.13	1.83	44.67	PK	V	224	0	54	-9.33

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n40-5230MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



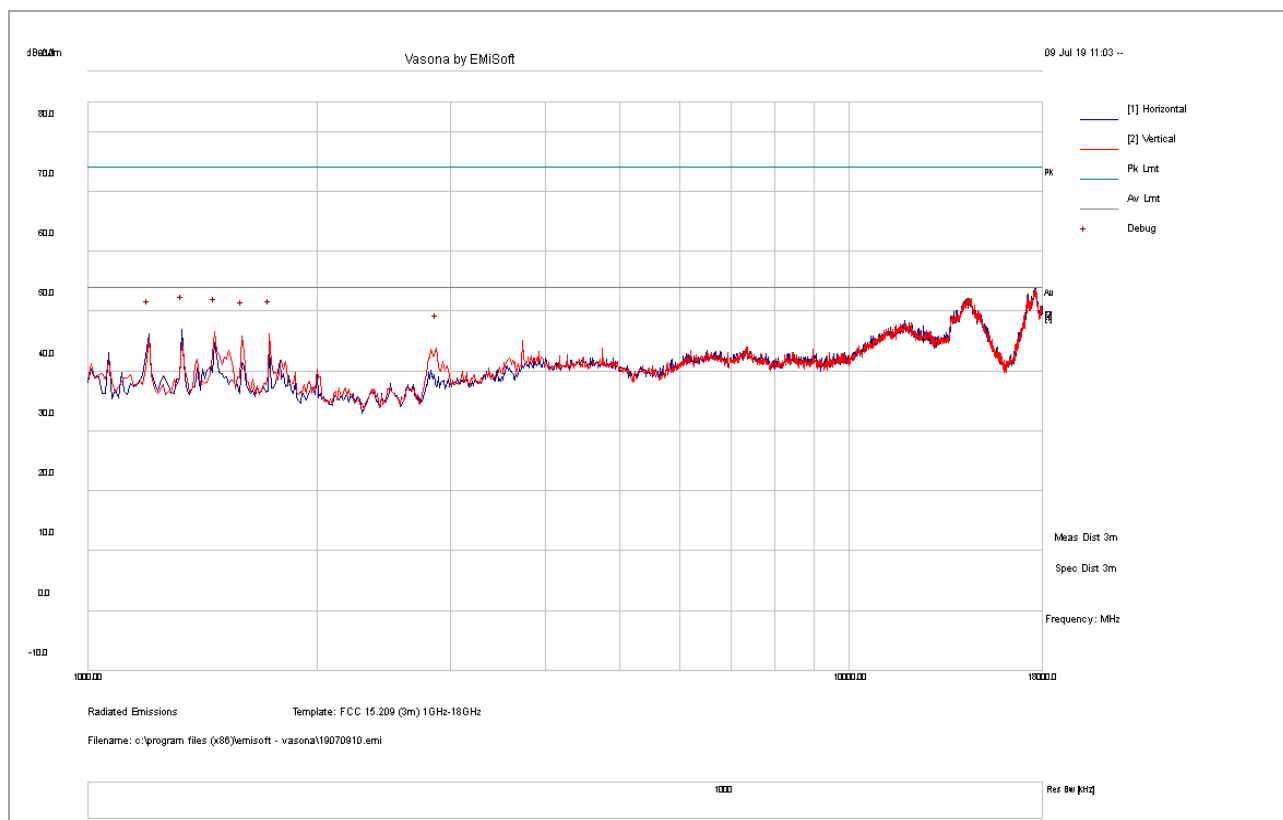
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1063.75	38.63	10.00	-4.90	43.72	PK	H	339	241	54	-10.28
1201.88	40.79	10.31	-4.18	46.93	PK	H	222	1	54	-7.08
1329.38	39.07	10.56	-3.81	45.82	PK	H	245	85	54	-8.18
1467.50	40.13	10.81	-3.75	47.19	PK	H	400	303	54	-6.81
1733.13	35.49	10.56	-2.68	43.37	PK	V	287	344	54	-10.63
1998.75	34.43	10.25	-0.73	43.95	PK	V	100	0	54	-10.05

Report Number:	WAP-19052921-LC-FCC-UNII-G4
Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n40-5270MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



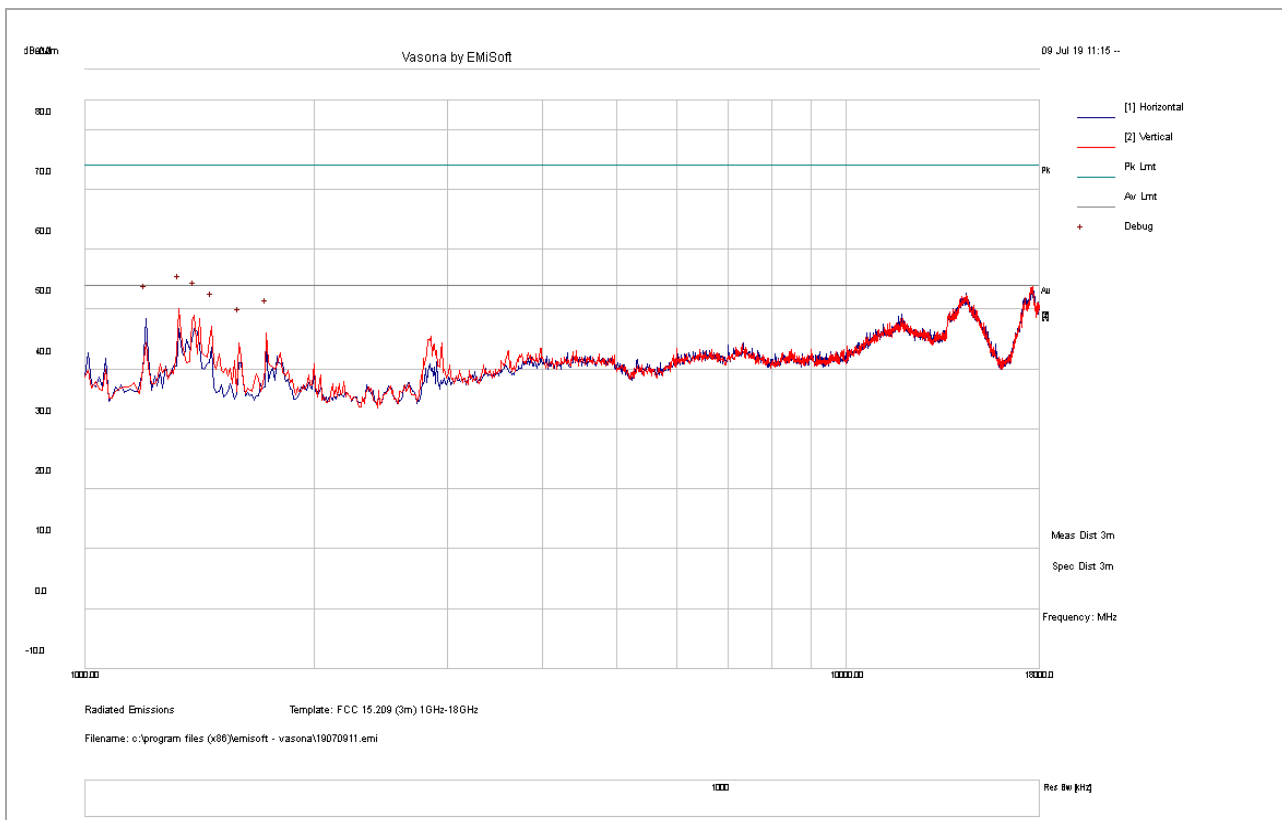
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	40.02	10.31	-4.18	46.16	PK	H	196	303	54	-7.84
1329.38	40.18	10.56	-3.81	46.93	PK	H	276	233	54	-7.07
1467.50	39.46	10.81	-3.75	46.52	PK	V	291	358	54	-7.48
1595.00	38.54	10.73	-3.37	45.90	PK	V	365	284	54	-8.10
1733.13	38.28	10.56	-2.68	46.16	PK	V	100	108	54	-7.84
2870.00	30.36	11.19	2.26	43.81	PK	V	275	5	54	-10.19

Report Number:	WAP-19052921-LC-FCC-UNII-G4
Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n40-5310MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



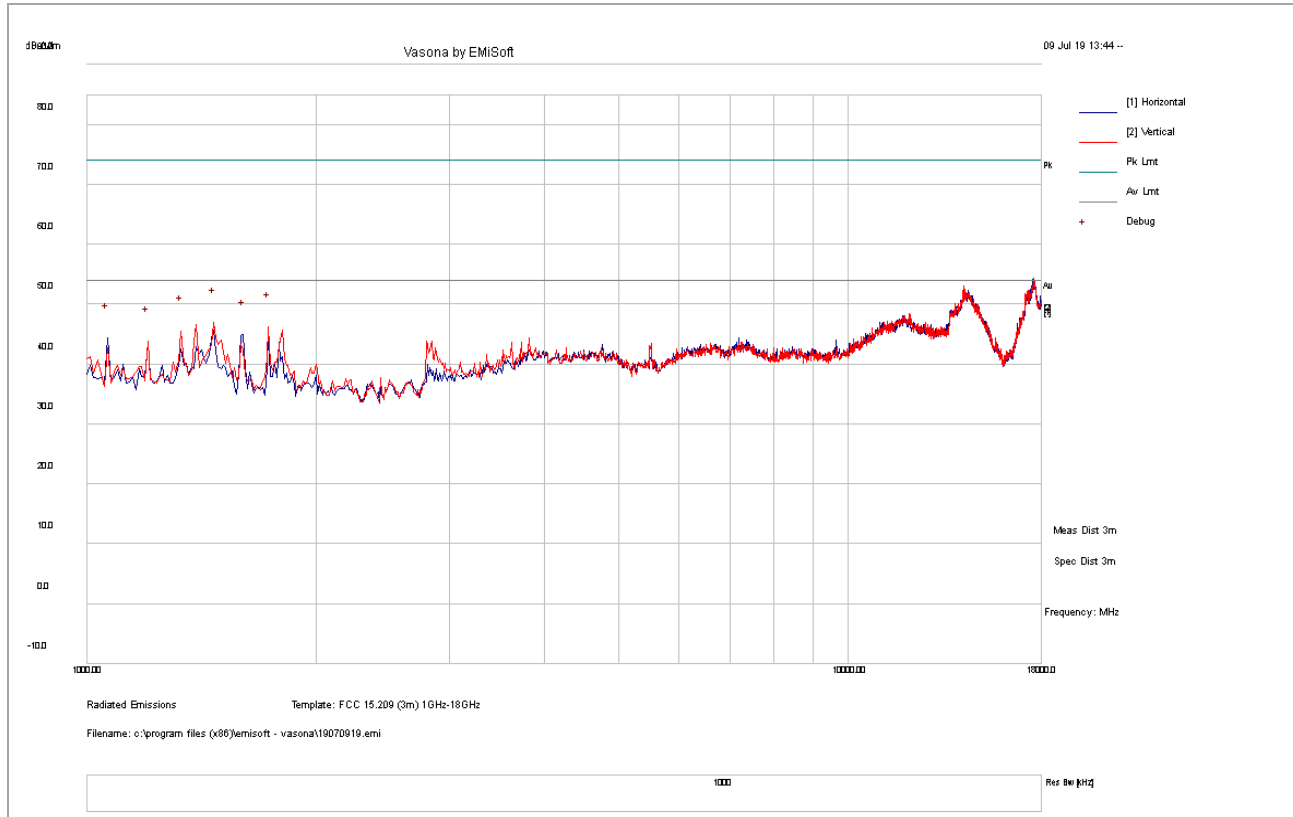
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	42.31	10.31	-4.18	48.44	PK	H	162	35	54.00	-5.56
1329.38	43.31	10.56	-3.81	50.06	PK	V	102	27	54.00	-3.94
1393.13	41.88	10.68	-3.55	49.01	PK	V	261	109	54.00	-4.99
1467.50	40.06	10.81	-3.75	47.12	PK	V	182	38	54.00	-6.88
1595.00	37.06	10.73	-3.37	44.43	PK	V	214	25	54.00	-9.57
1733.13	38.12	10.56	-2.68	46.00	PK	V	221	6	54.00	-8.00

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n40-5510MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



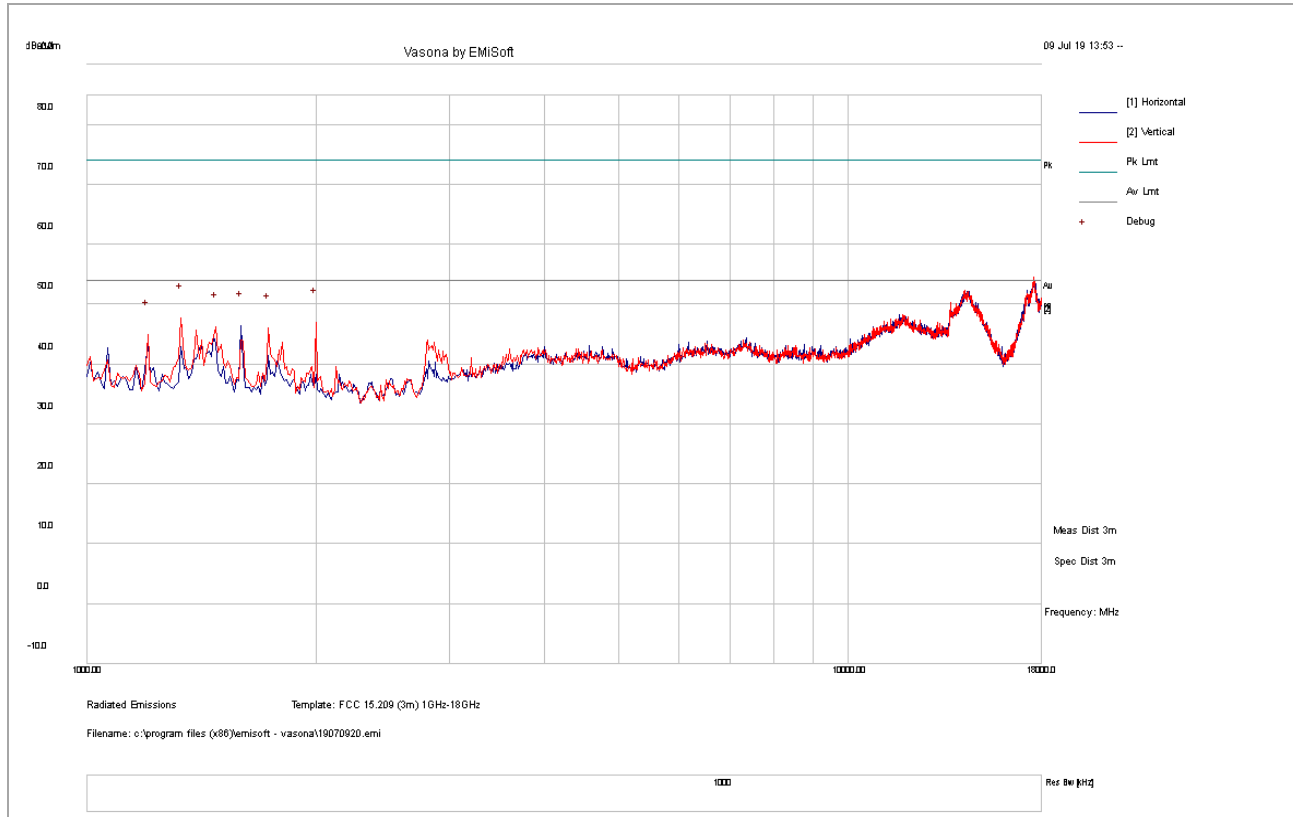
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1063.75	39.26	10.00	-4.90	44.36	PK	H	399	286	54	-9.64
1201.88	37.61	10.31	-4.18	43.74	PK	V	384	57	54	-10.26
1329.38	38.79	10.56	-3.81	45.54	PK	V	119	62	54	-8.46
1467.50	39.91	10.81	-3.75	46.97	PK	V	150	354	54	-7.03
1605.63	37.46	10.72	-3.34	44.84	PK	H	224	44	54	-9.16
1733.13	38.29	10.56	-2.68	46.17	PK	V	324	28	54	-7.83

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n40-5590MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



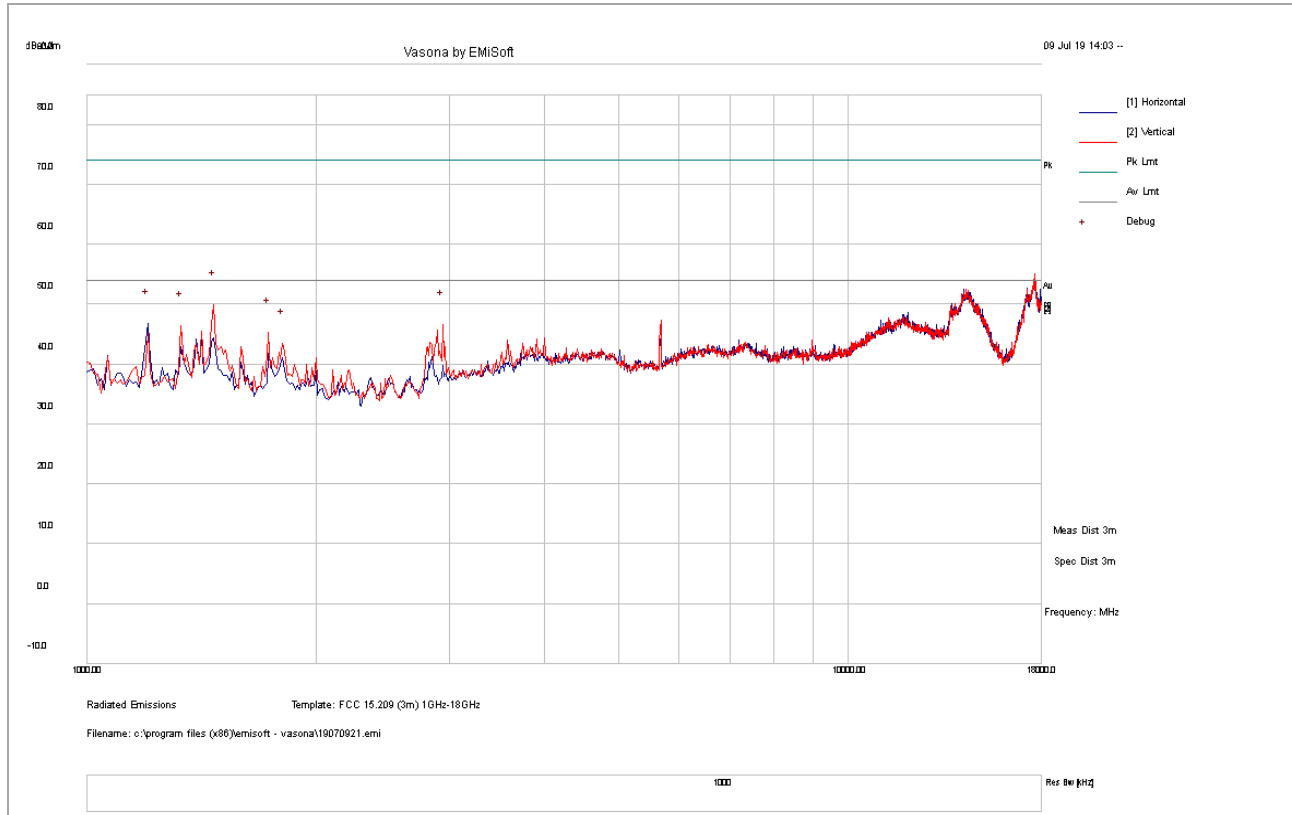
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	38.82	10.31	-4.18	44.95	PK	V	188	170	54	-9.05
1329.38	40.90	10.56	-3.81	47.65	PK	V	115	26	54	-6.35
1478.13	39.12	10.83	-3.76	46.18	PK	V	152	356	54	-7.82
1595.00	38.95	10.73	-3.37	46.32	PK	H	280	136	54	-7.69
1733.13	38.20	10.56	-2.68	46.08	PK	V	314	317	54	-7.92
1998.75	37.35	10.25	-0.73	46.87	PK	V	321	198	54	-7.13

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n40-5670MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



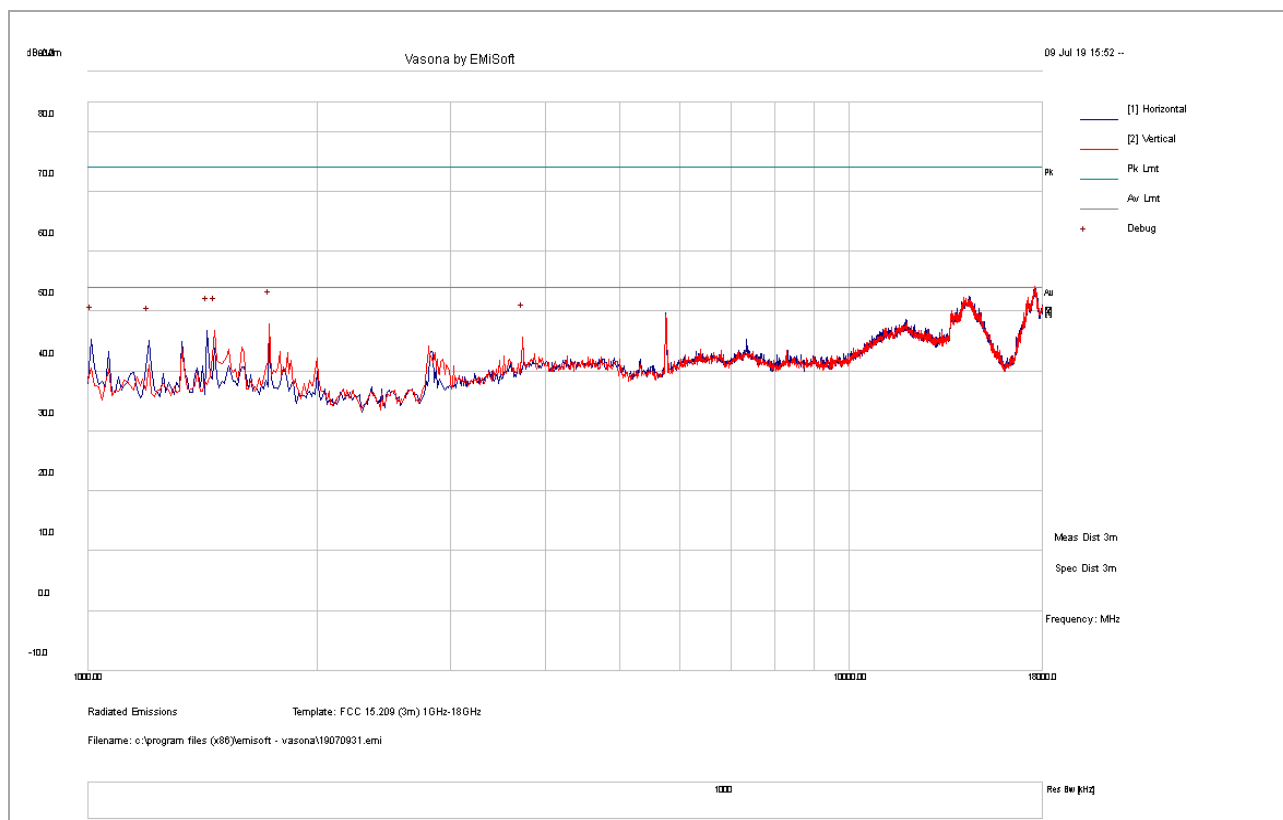
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	40.67	10.31	-4.18	46.80	PK	H	257	192	54	-7.20
1329.38	39.61	10.56	-3.81	46.36	PK	V	350	0	54	-7.64
1467.50	42.81	10.81	-3.75	49.87	PK	V	129	101	54	-4.13
1733.13	37.39	10.56	-2.68	45.27	PK	V	228	86	54	-8.73
1807.50	34.61	10.47	-1.57	43.50	PK	V	149	70	54	-10.50
2933.75	32.53	11.25	2.71	46.49	PK	V	103	300	54	-7.51

Report Number:	WAP-19052921-LC-FCC-UNII-G4
Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n40-5755MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



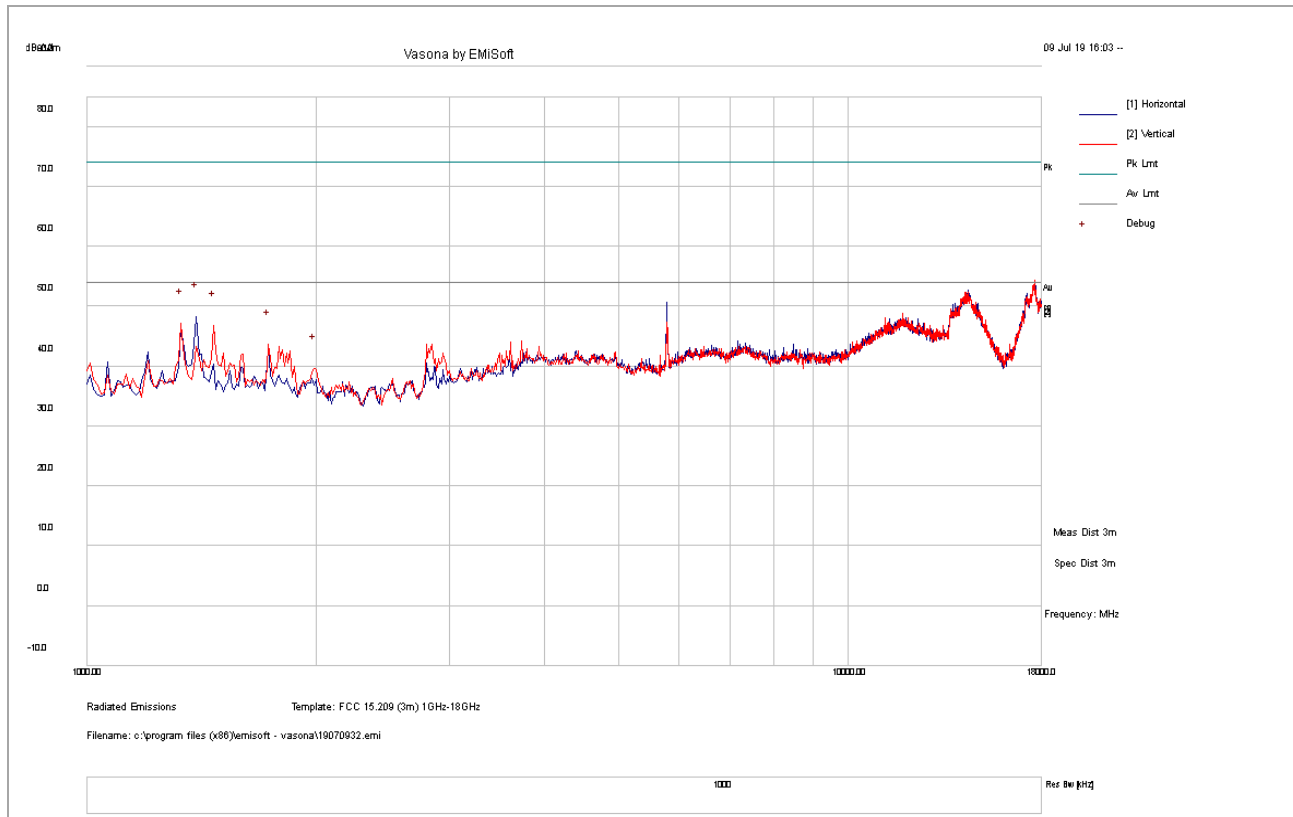
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1010.63	40.95	9.87	-5.57	45.25	PK	H	258	41	54	-8.76
1201.88	38.95	10.31	-4.18	45.08	PK	H	108	0	54	-8.92
1435.63	39.64	10.75	-3.67	46.73	PK	H	101	105	54	-7.27
1467.50	39.74	10.81	-3.75	46.80	PK	V	103	0	54	-7.20
1733.13	39.99	10.56	-2.68	47.86	PK	V	202	132	54	-6.14
3730.63	26.28	12.30	7.01	45.58	PK	V	128	349	54	-8.42

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11n40-5795MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



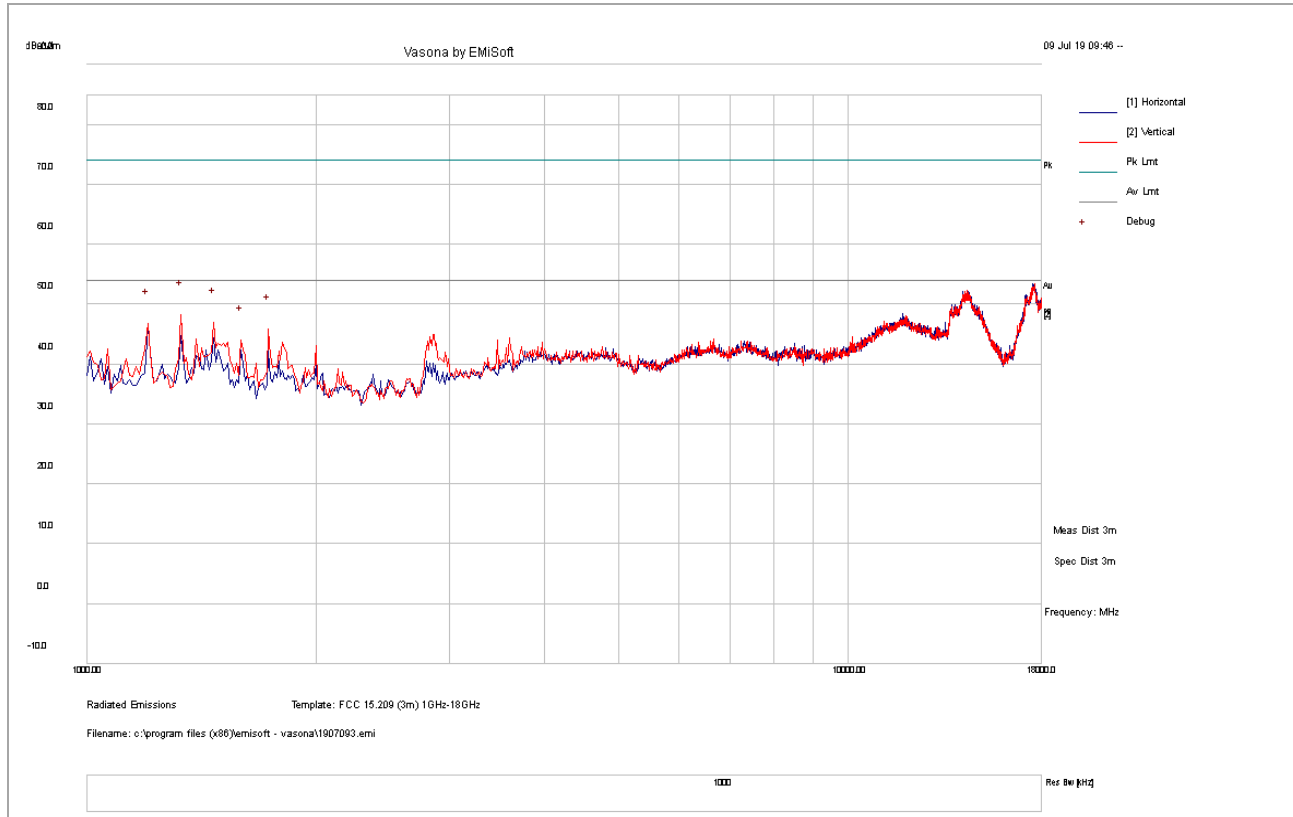
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1329.38	40.33	10.56	-3.81	47.07	PK	V	124	14	54	-6.93
1393.13	41.17	10.68	-3.55	48.30	PK	H	272	360	54	-5.71
1467.50	39.76	10.81	-3.75	46.82	PK	V	155	1	54	-7.18
1733.13	35.78	10.56	-2.68	43.65	PK	V	127	40	54	-10.35
1988.13	30.11	10.26	-0.76	39.62	PK	V	169	46	54	-14.38

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11ac80-5210MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



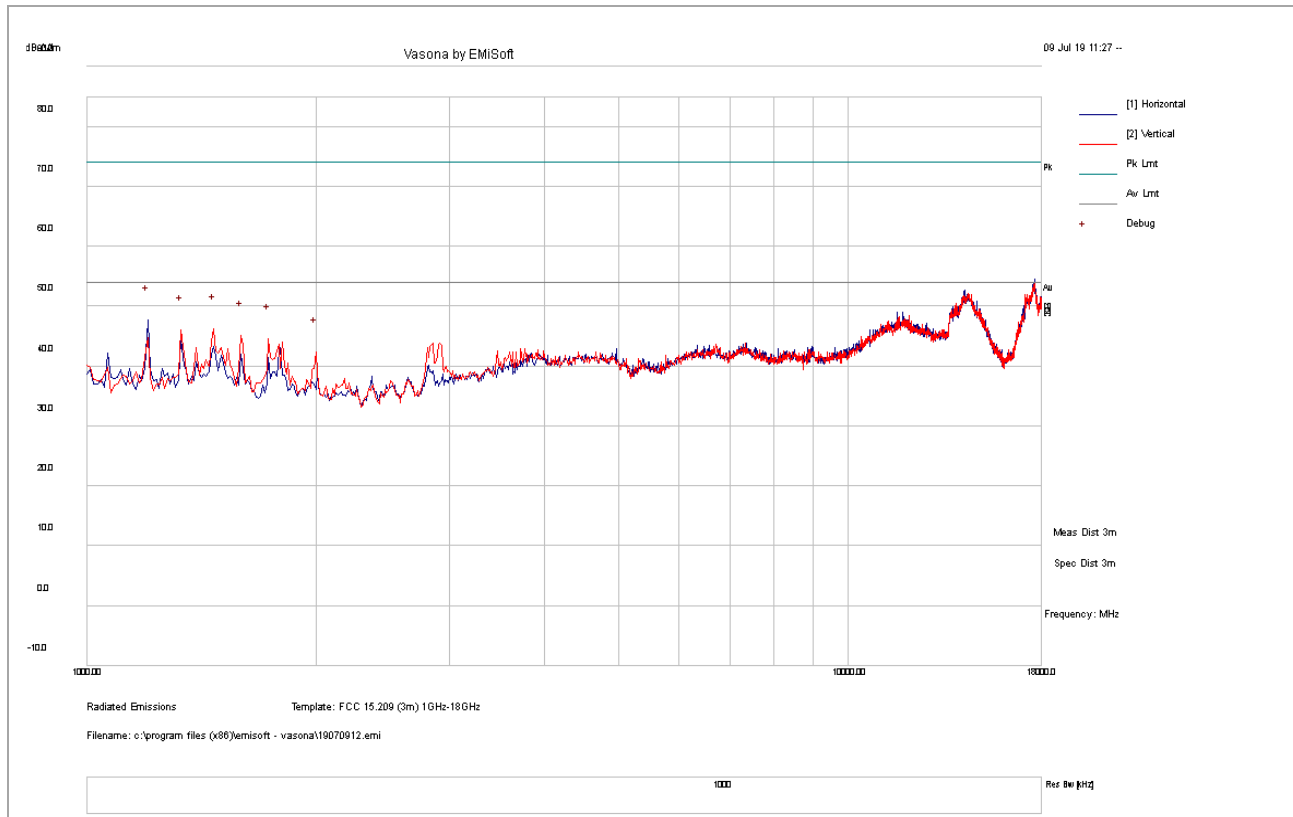
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	40.68	10.31	-4.18	46.81	PK	V	100	50	54	-7.19
1329.38	41.44	10.56	-3.81	48.19	PK	V	205	0	54	-5.81
1467.50	39.81	10.81	-3.75	46.87	PK	V	244	329	54	-7.13
1595.00	36.60	10.73	-3.37	43.97	PK	V	100	56	54	-10.03
1733.13	37.87	10.56	-2.68	45.75	PK	V	113	140	54	-8.25

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11ac80-5290MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



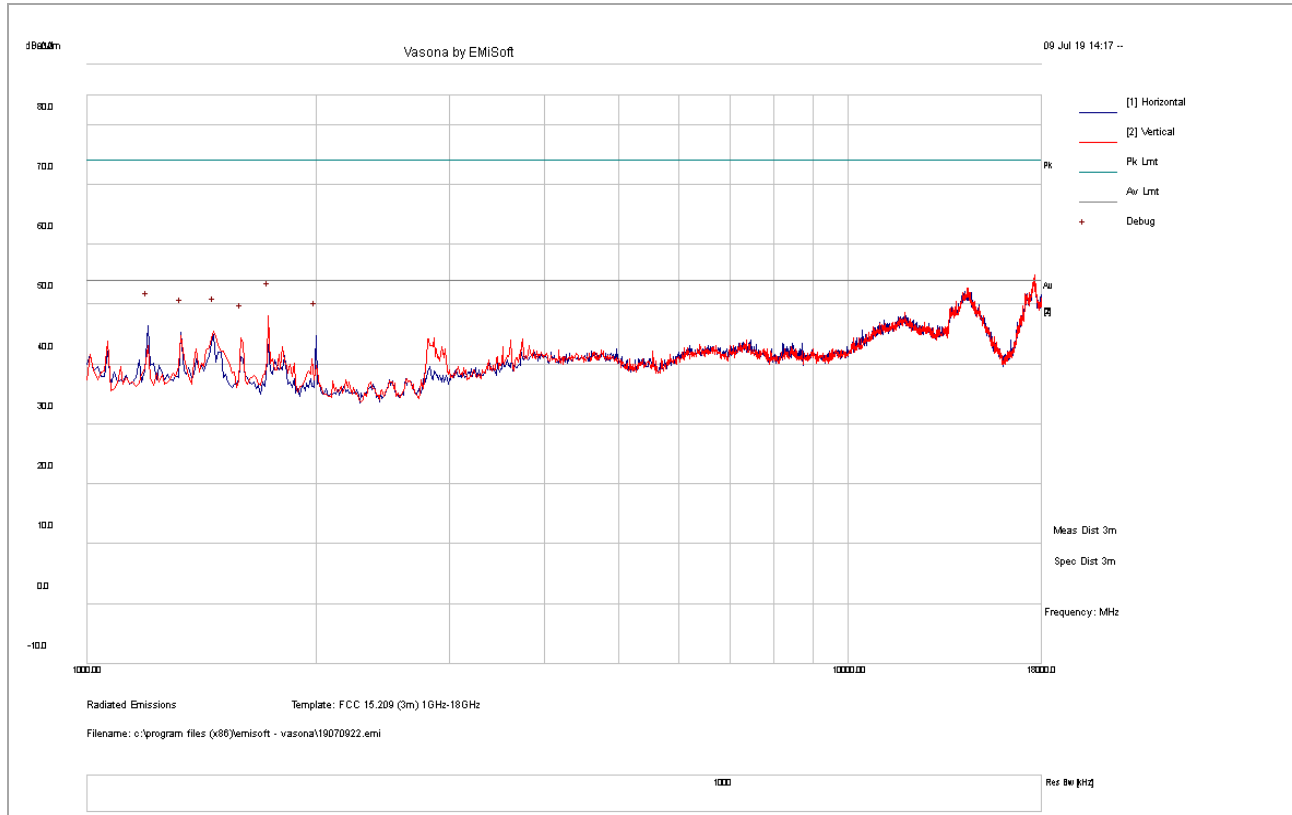
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	41.53	10.31	-4.18	47.66	PK	H	325	339	54.00	-6.34
1329.38	39.20	10.56	-3.81	45.95	PK	V	217	322	54.00	-8.05
1467.50	39.16	10.81	-3.75	46.22	PK	V	100	68	54.00	-7.78
1595.00	37.71	10.73	-3.37	45.07	PK	V	212	342	54.00	-8.93
1733.13	36.70	10.56	-2.68	44.57	PK	V	137	226	54.00	-9.43
1998.75	32.83	10.25	-0.73	42.35	PK	V	377	93	54.00	-11.65

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11ac80-5530MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



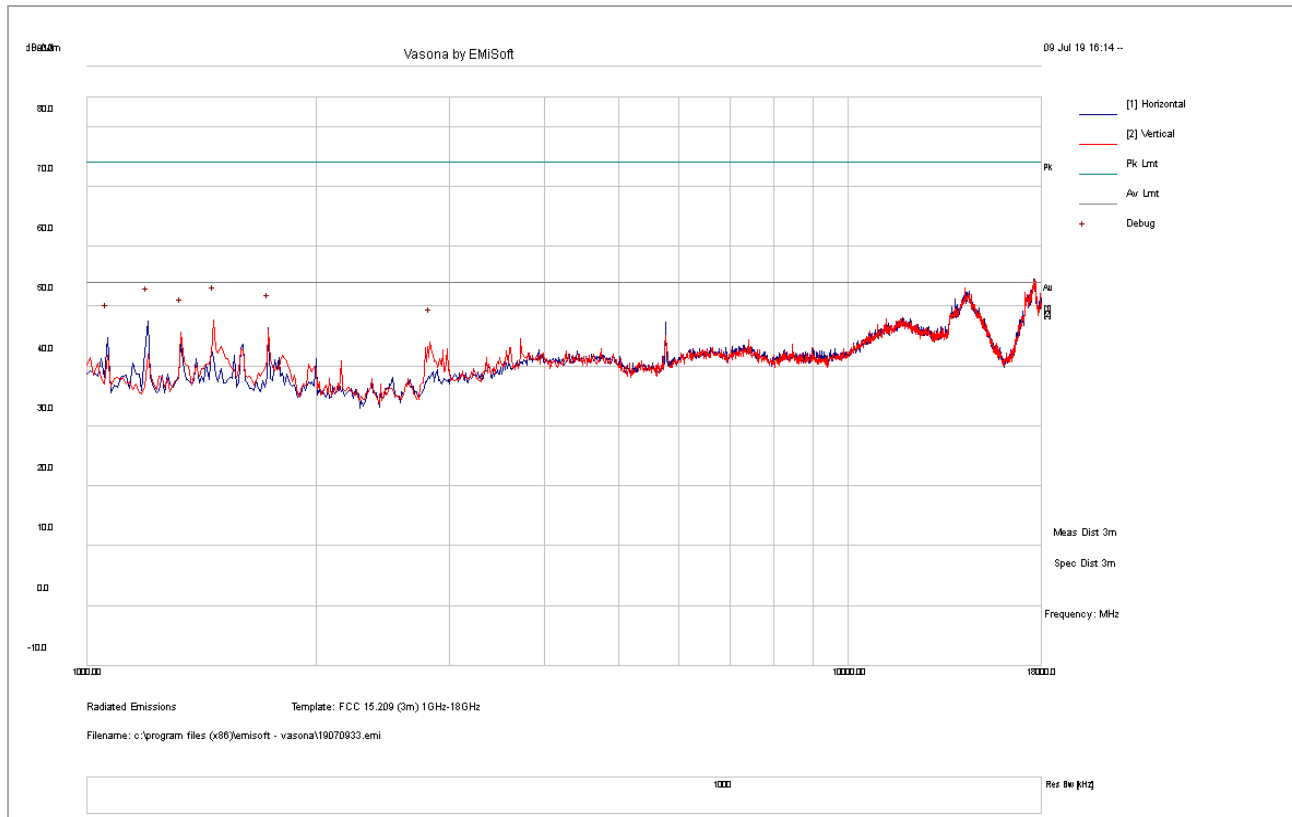
Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1201.88	40.31	10.31	-4.18	46.44	PK	H	183	113	54	-7.56
1329.38	38.54	10.56	-3.81	45.29	PK	H	100	86	54	-8.71
1467.50	38.33	10.81	-3.75	45.39	PK	V	345	163	54	-8.61
1595.00	37.00	10.73	-3.37	44.37	PK	V	128	348	54	-9.63
1733.13	40.23	10.56	-2.68	48.11	PK	V	100	78	54	-5.89
1998.75	35.24	10.25	-0.73	44.76	PK	H	147	73	54	-9.24

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



1GHz – 18GHz test result

Test Standard:	15.209	Mode:	11ac80-5775MHz
Frequency Range:	1GHz-18GHz	Test Date:	07/08/2019
Antenna Type/Polarity:	Horn/Hor & Ver	Test Personnel:	Cameron Wu
Remark:	N/A	Test Result:	Pass



Frequency MHz	Raw dB	Cable dB	AF dB	Level dBuV/m	Det	Pol deg	Height cm	Table deg	Limit dBuV/m	Margin dB
1063.75	39.69	10.00	-4.90	44.78	PK	H	263	250	54	-9.22
1201.88	41.28	10.31	-4.18	47.41	PK	H	318	328	54	-6.59
1329.38	38.97	10.56	-3.81	45.71	PK	V	182	68	54	-8.29
1467.50	40.54	10.81	-3.75	47.60	PK	V	376	332	54	-6.40
1733.13	38.42	10.56	-2.68	46.29	PK	H	132	28	54	-7.71
2827.50	30.81	11.15	1.97	43.94	PK	V	173	41	54	-10.06

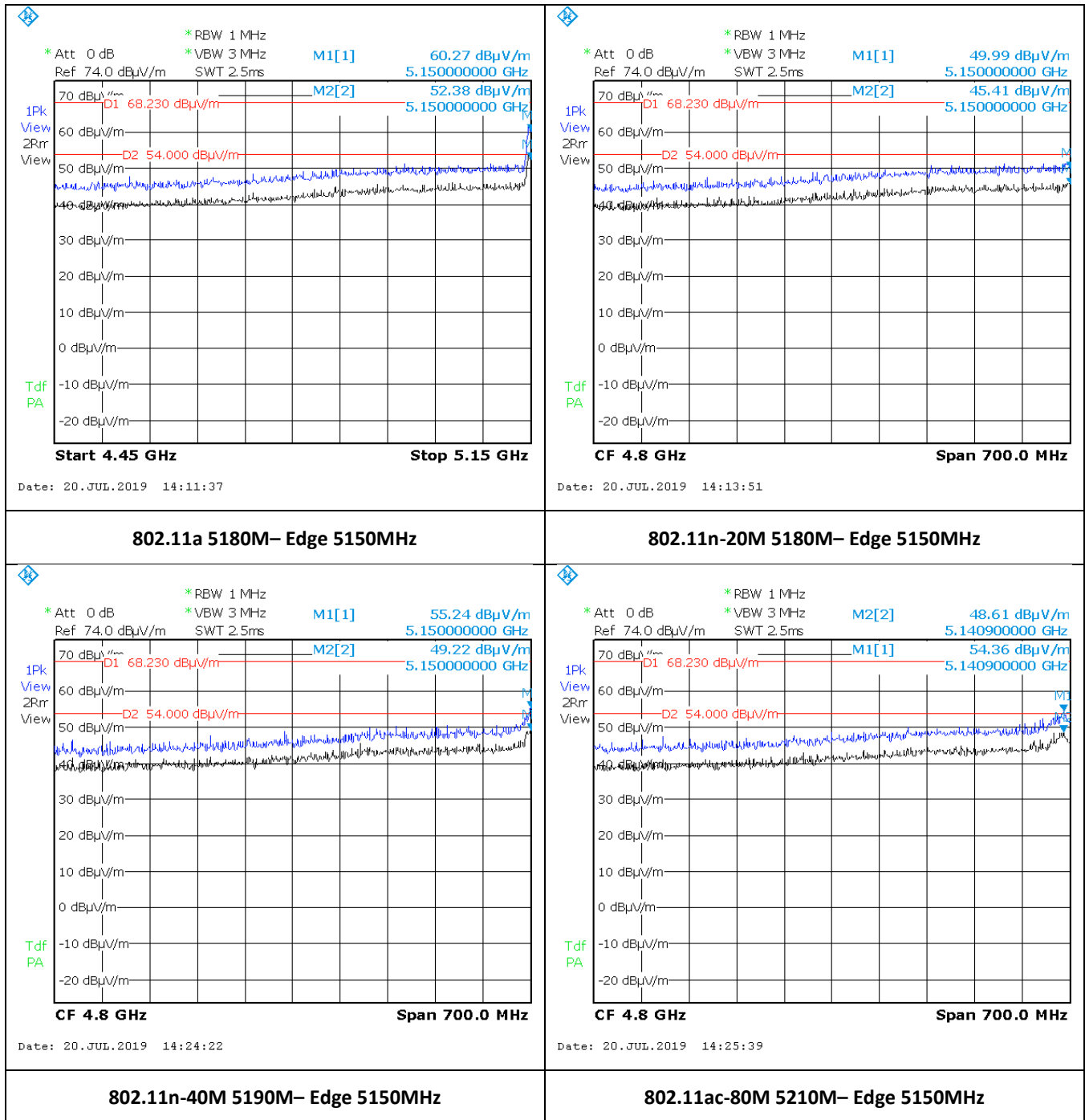
Report Number:	WAP-19052921-LC-FCC-UNII-G4
Product:	Vehicle Infotainment System
Model Number:	SYNC-G4



18GHz – 40GHz test result

Note: no substantial emission is found other than the noise floor.

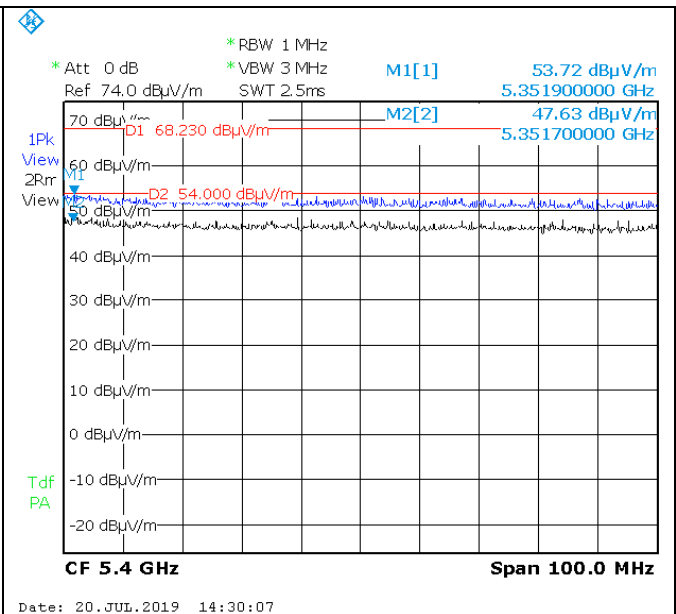
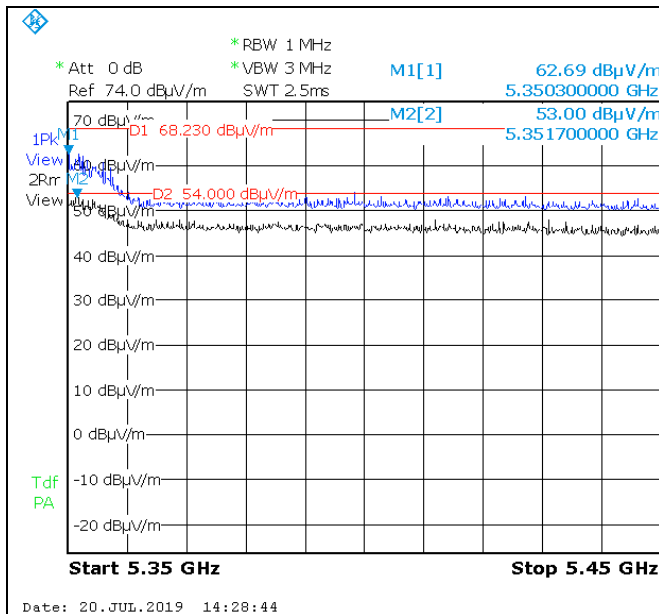
Radiated Band Edge measurement result



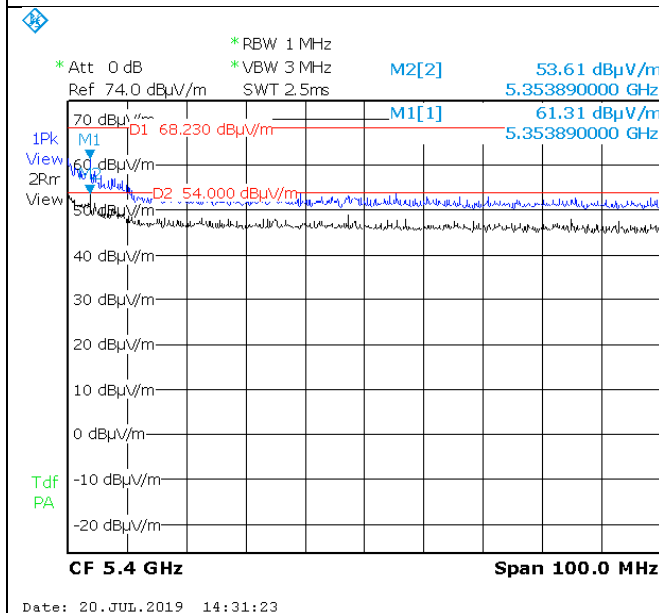
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Product: Vehicle Infotainment System
Model Number: SYNC-G4



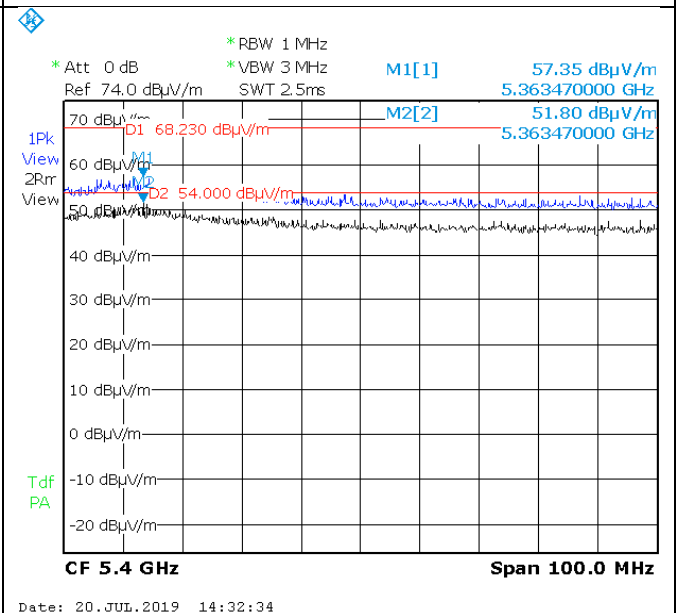
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802.11a 5320M– Edge 5350MHz



802.11n 5320M– Edge 5350MHz



802.11n40MHz 5310M– Edge 5350MHz

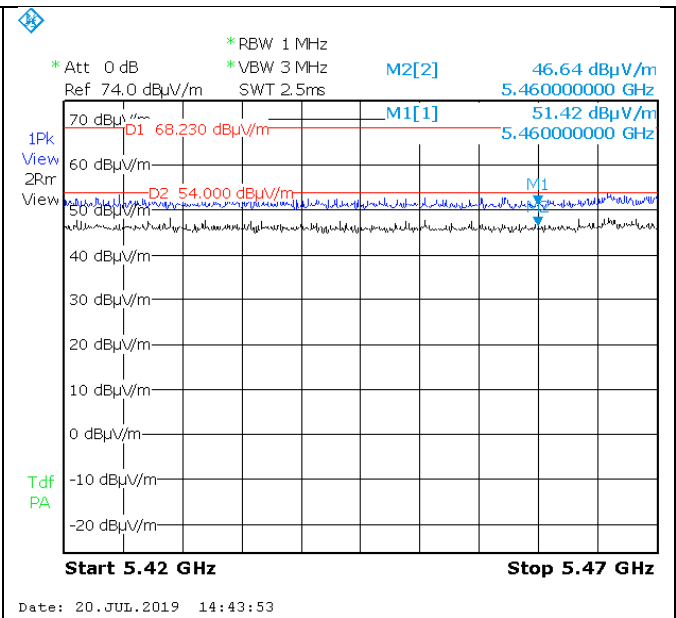
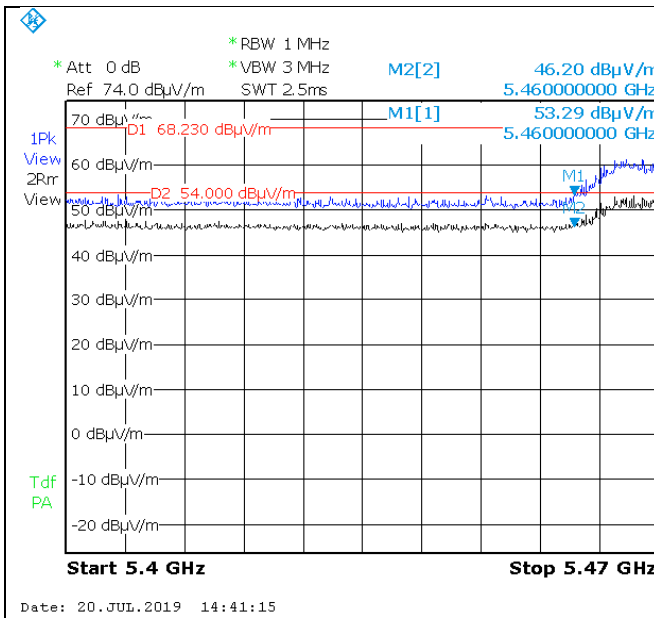
802.11ac80MHz 5290M– Edge 5350MHz



Electromagnetic Compatibility
Radio Frequency
Product Certification
International Approval

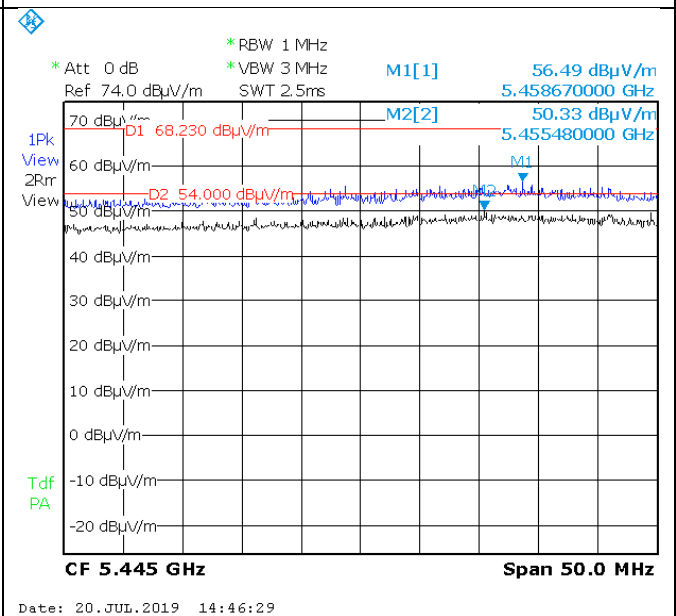
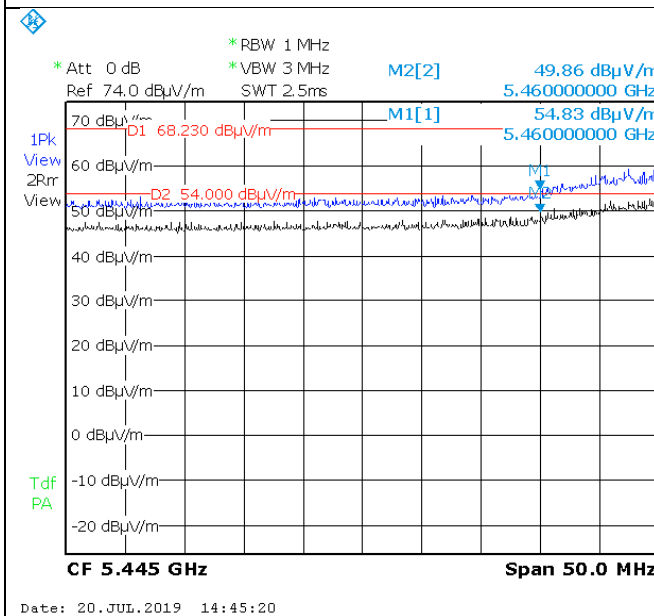
1261 Puerta Del Sol
San Clemente, CA, 92673
+1 (949) 393-1123
www.vista-compliance.com

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



802.11a 5500M- Edge 5470MHz

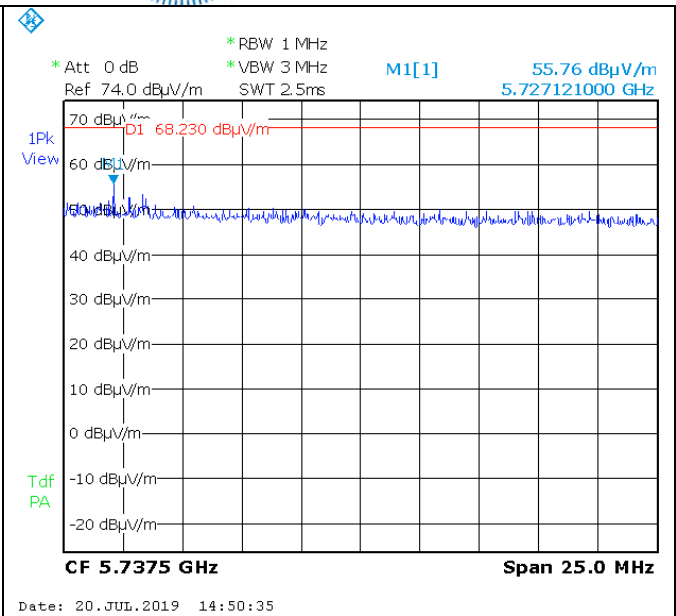
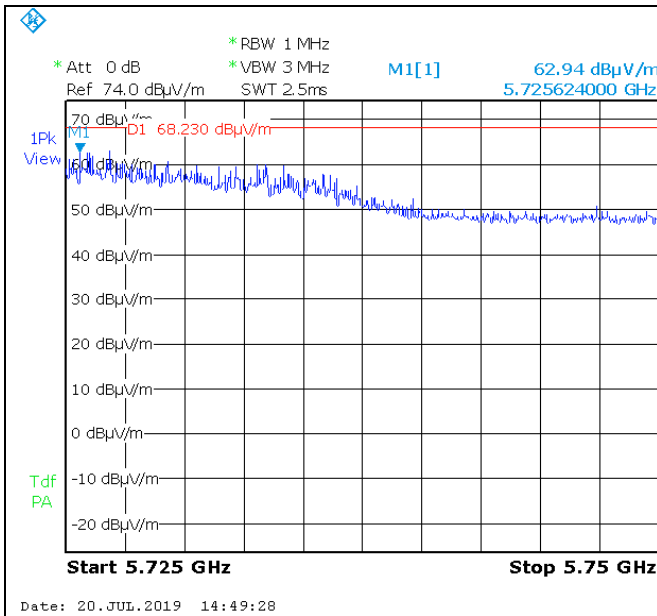
802.11n 5500M- Edge 5470MHz



802.11n40MHz 5510M- Edge 5470MHz

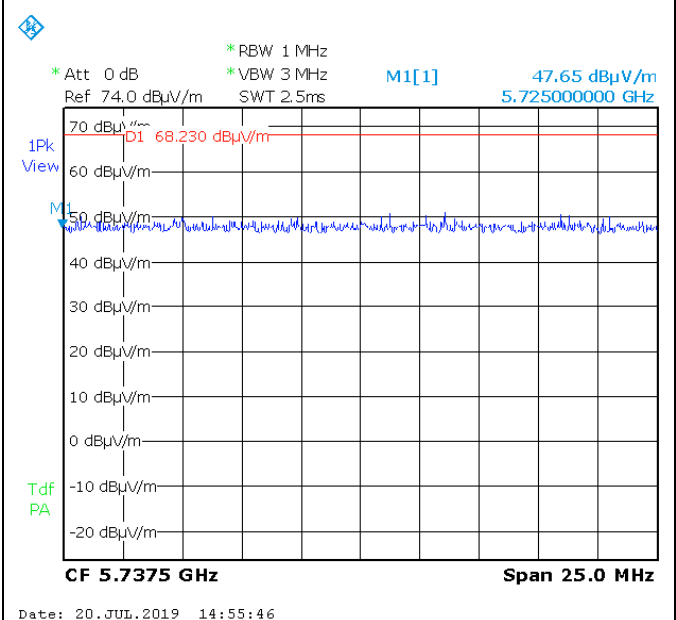
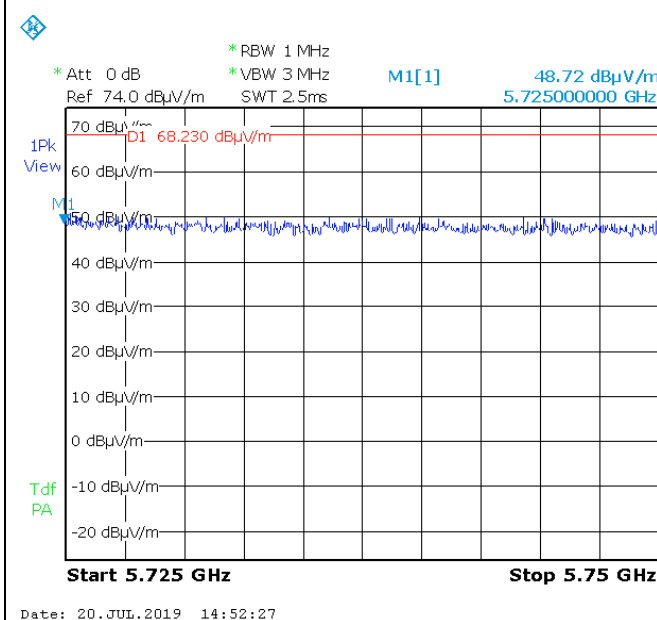
802.11ac40MHz 5530M- Edge 5470MHz

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



802.11a 5700M- Edge 5725MHz

802.11n 5700M- Edge 5725MHz



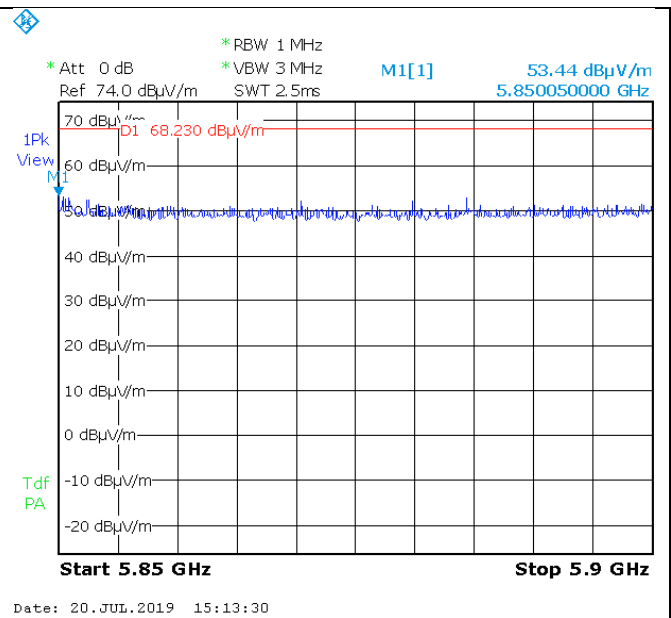
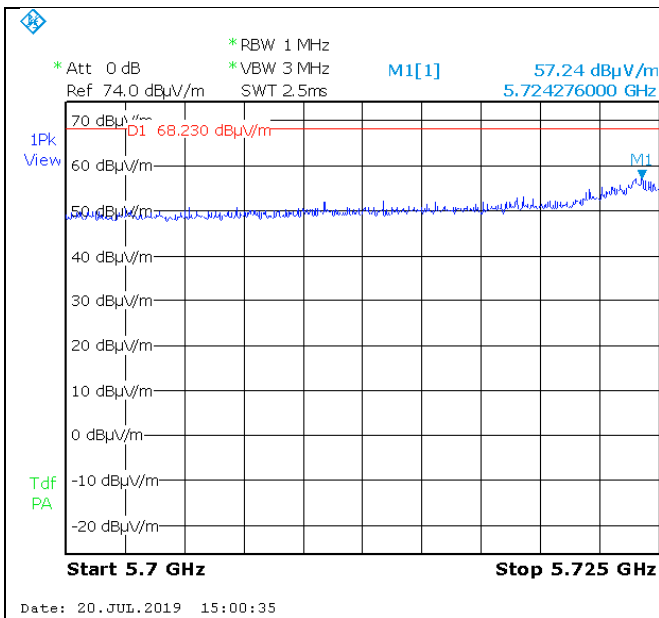
802.11n40MHz 5670M- Edge 5725MHz

802.11ac80MHz 5610M- Edge 5725MHz

Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4

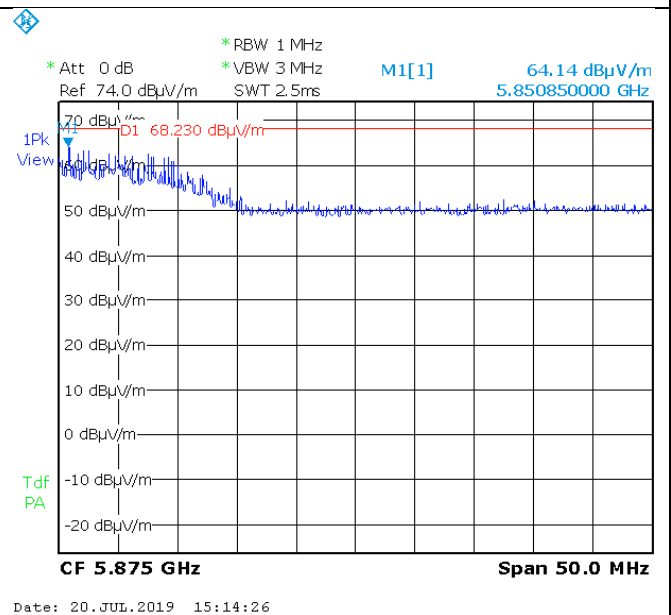
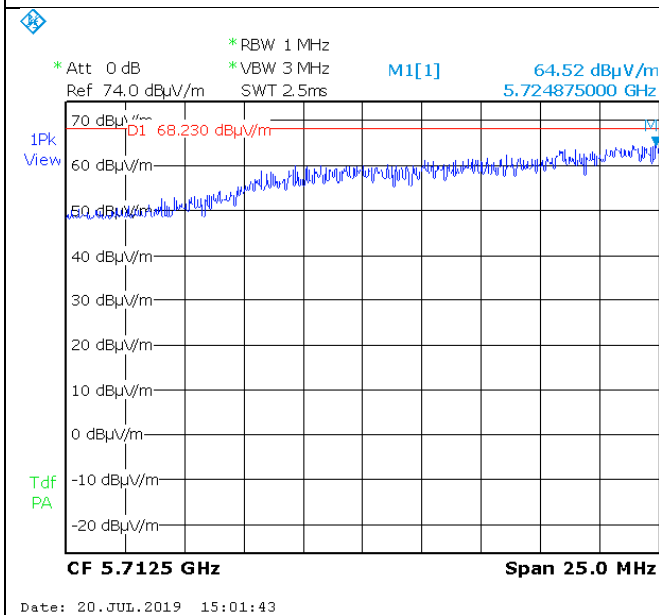


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Radiated Band Edge-802.11a 5745M– Edge 5725MHz

Radiated Band Edge-802.11a 5825M– Edge 5850MHz



Radiated Band Edge-802.11n 5745M– Edge 5725MHz

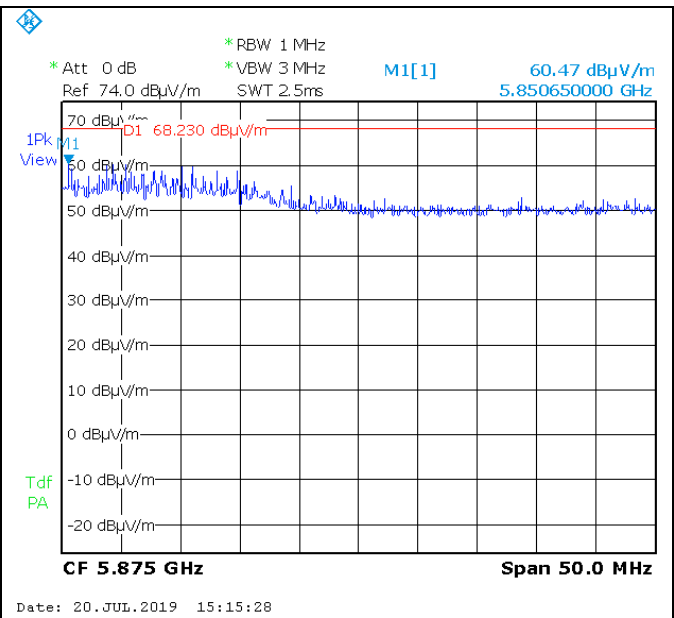
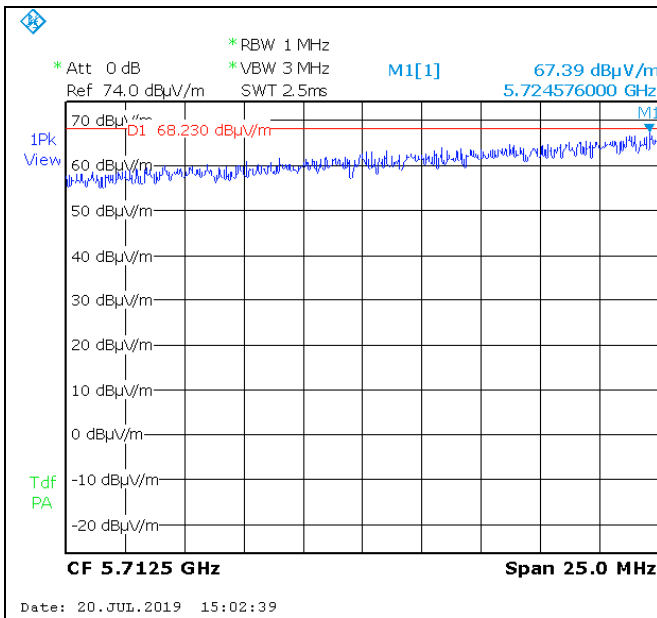
Radiated Band Edge-802.11n 5825M– Edge 5850MHz



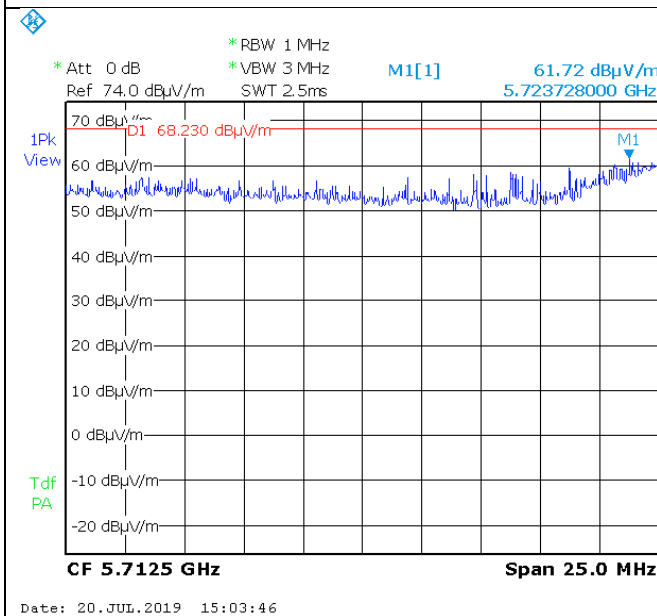
Electromagnetic Compatibility
 Radio Frequency
 Product Certification
 International Approval

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 San Clemente, CA, 92673
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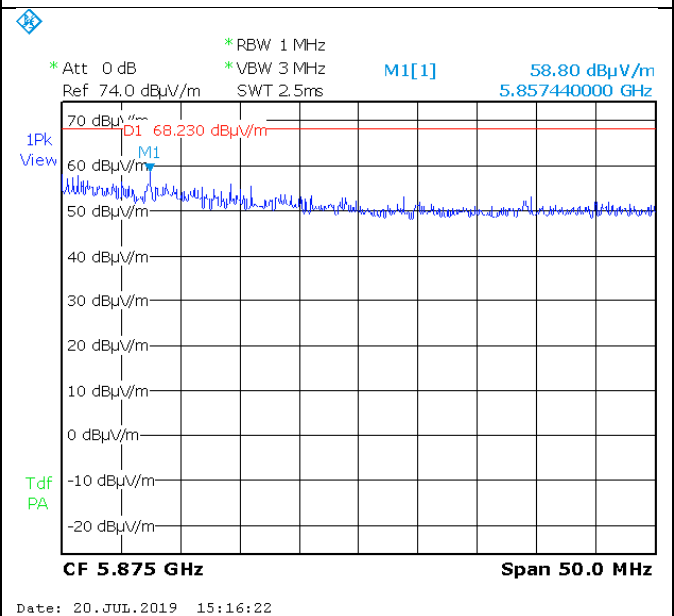
Report Number: WAP-19052921-LC-FCC-UNII-G4
Product: Vehicle Infotainment System
Model Number: SYNC-G4



Radiated Band Edge-802.11n 5755M– Edge 5725MHz



Radiated Band Edge-802.11n 5795M– Edge 5850MHz



Restricted Band-802.11ac 5775M– Edge 5725MHz

Radiated Band Edge-802.11ac 5775M– Edge 5850MHz

9 Test instrument list

Equipment	Manufacturer	Model	Serial Number	Cal. Date	Cal. Due
Semi-Anechoic Chamber	ETS-Lindgren	10M	VL001	5/11/2019	5/11/2020
Shielding Control Room	ETS-Lindgren	Series 81	VL006	N/A	N/A
Spectrum Analyzer	Keysight	N9020A	MY50110074	5/4/2019	5/4/2020
EMC Test Receiver	R&S	ESL6	100230	5/7/2019	5/7/2020
LISN (9KHz – 30MHz)	EMCO	3816/2	9705-1066	5/4/2019	5/4/2020
Bi-Log Antenna	ETS-Lindgren	3142E	217921	11/15/2018	11/15/2019
Horn Antenna (1-18GHz)	Electro-Metrics	EM-6961	6292	5/2/2019	5/2/2020
Horn Antenna (18-40GHz)	Com-Power	AH-840	101109	5/2/2019	5/2/2020
Preamplifier	RF Bay, Inc.	LPA-10-20	11180621	5/10/2019	5/10/2020
True RMS Multi-meter	UNI-T	UT181A	C173014829	5/10/2019	5/10/2020
Temp / Humidity / Pressure Meter	PCE Instruments	PCE-THB 40	R062028	5/9/2019	5/9/2020
RF Attenuator	Pasternack	PE7005-3	VL061	5/10/2019	5/10/2020
Preamplifier 100KHz - 40GHz	Aeroflex	33711-392- 77150-11	064	5/10/2019	5/10/2020
EM Center Control	ETS-Lindgren	7006-001	160136	N/A	N/A
Turn Table	ETS-Lindgren	2181-3.03	VL002	N/A	N/A
Boresight Antenna Tower	ETS-Lindgren	2171B	VL003	N/A	N/A
Loop Antenna (9k-30MHz)	Com-Power	AL-130	121012	5/9/2019	5/9/2020
RE test cable(below 6GHz)	Vista	RE-6GHz-01	RE-6GHz-01	5/10/2019	5/10/2020
RE test cable (1-18GHz)	PhaseTrack	II-240	RE-18GHz-01	5/10/2019	5/10/2020
RE test cable (>18GHz)	Sucoflex	104	344903/4	5/10/2019	5/10/2020
Pulse limiter	Com-Power	LIT-930A	531727	5/15/2019	5/15/2020
CE test cable #1	FIRST RF	FRF-C-1002-001	CE-6GHz-01	5/10/2019	5/10/2020
CE test cable#2	FIRST RF	FRF-C-1002-001	CE-6GHz-02	5/9/2019	5/9/2020
Wideband Communication	R&S	CMW500	147508	5/8/2019	5/8/2020