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Ann Arbor, Michigan 48109-2122 USA
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Testing of

Electromagnetic Emissions

per

USA: CFR Title 47, Part 18.305
Canada: ICES-001

are herein reported for

Visteon Corporation
VECAMF-12A661-AB

Test Report No.: 417124-667r2

Applicant/Provider:
Visteon Corporation
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Report by: Valdis V. Liepa, Ph.D. Report Date of Issue: April 4, 2014

Results of testing completed on (or before) April 4, 2014 are as follows.

Emissions: The transmitter intentional emissions **COMPLY** with the regulatory limit(s) by no less than 24.4 dB. Transmit chain spurious harmonic emissions **COMPLY** by no less than 13.5 dB.

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1 Test Specifications, General Procedures, and Location

1.1 Test Specification and General Procedures

The ultimate goal of Visteon Corporation is to demonstrate that the Equipment Under Test (EUT) complies with the Rules and/or Directives below. Detailed in this report are the results of testing the Visteon Corporation VECAMF-12A661-AB for compliance to:

Country/Region	Rules or Directive	Referenced Section(s)
United States	Code of Federal Regulations	CFR Title 47, Part 18.305
Canada	Industry Canada	ICES-001

In association with the rules and directives outlined above, the following specifications and procedures are followed herein.

ANSI C63.4-2003	"Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"
MP-5:1986	"FCC Methods of Measuremens of Radio Noise Emissions from Industrial, Scientific, and Medical Equipement"
IEEE Trans. EMC, Vol. 47, No. 3 August 2005	"Extrapolating Near-Field Emissions of Low-Frequency Loop Transmitters," J.D.Brunett, V.V.Liepa, D.L.Sengupta
Industry Canada	"The Measurement of Occupied Bandwidth"

1.2 Test Location and Equipment Used

Test Location The EUT was fully tested by **The University of Michigan Radiation Laboratory**, 3228 EECS Building, Ann Arbor, Michigan 48109-2122 USA. The Test Facility description and attenuation characteristics are on file with the FCC Laboratory, Columbia, Maryland (FCC Reg. No: 91050) and with Industry Canada, Ottawa, ON (File Ref. No: IC 2057A-1).

Test Equipment Pertinent test equipment used for measurements at this facility is listed in Table 1. The quality system employed at The University of Michigan Radiation Laboratory has been established to ensure all equipment has a clearly identifiable classification, calibration expiry date, and that all calibrations are traceable to the SI through NIST, other recognized national laboratories, accepted fundamental or natural physical constants, ratio type of calibration, or by comparison to consensus standards.

Table 1: The University of Michigan Radiation Laboratory Equipment List.

Test Instrument	Manufacturer/Model	Q Number
Spectrum Analyzer (9kHz-26GHz)	Hewlett-Packard 8593E, SN: 3412A01131	HP8593E1
Power Meter	Hewlett-Packard, 432A	HP432A1
Harmonic Mixer (26-40 GHz)	Hewlett-Packard 11970A, SN: 3003A08327	HP11970A1
Harmonic Mixer (40-60 GHz)	Hewlett-Packard 11970U, SN: 2332A00500	HP11970U1
Harmonic Mixer (75-110 GHz)	Hewlett-Packard 11970W, SN: 2521A00179	HP11970W1
Harmonic Mixer (140-220 GHz)	Pacific Millimeter Prod., GMA, SN: 26	PMPGMA1
S-Band Std. Gain Horn	S/A, Model SGH-2.6	SBAND1
C-Band Std. Gain Horn	University of Michigan, NRL design	CBAND1
XN-Band Std. Gain Horn	University of Michigan, NRL design	XNBAND1
X-Band Std. Gain Horn	S/A, Model 12-8.2	XBAND1
X-band horn (8.2- 12.4 GHz)	Narda 640	XBAND2
X-band horn (8.2- 12.4 GHz)	Scientific Atlanta , 12-8.2, SN: 730	XBAND3
K-band horn (18-26.5 GHz)	FXR, Inc., K638KF	KBAND1
Ka-band horn (26.5-40 GHz)	FXR, Inc., U638A	KABAND1
U-band horn (40-60 GHz)	Custom Microwave, HO19	UBAND1
W-band horn(75-110 GHz)	Custom Microwave, HO10	WBAND1
G-band horn (140-220 GHz)	Custom Microwave, HO5R	GBAND1
Bicone Antenna (30-250 MHz)	University of Michigan, RLBC-1	LBBIC1
Bicone Antenna (200-1000 MHz)	University of Michigan, RLBC-2	HBBIC1
Dipole Antenna Set (30-1000 MHz)	University of Michigan, RLDP-1,-2,-3	UMDIP1
Dipole Antenna Set (30-1000 MHz)	EMCO 3121C, SN: 992 (Ref. Antennas)	EMDIP1
Active Rod Antenna (30 Hz-50 MHz)	EMCO 3301B, SN: 3223	EMROD1
Active Loop Antenna (30 Hz-50 MHz)	EMCO 6502, SN:2855	EMLOOP1
Ridge-horn Antenna (300-5000 MHz)	University of Michigan	UMRH1
Magnetic Field Strength Probe	HP 11941A	HPMFSP1
Electric Field Strength Probe	EG&G ACD-4A(R)	EGGACD41
Amplifier (5-1000 MHz)	Avantek, A11-1, A25-1S	AVAMP1
Amplifier (5-4500 MHz)	Avantek	AVAMP2
Amplifier (4.5-13 GHz)	Avantek, AFT-12665	AVAMP3
Amplifier (6-16 GHz)	Trek	TRAMP1
Amplifier (16-26 GHz)	Avantek	AVAMP4
LISN Box	University of Michigan	UMLISN1
Signal Generator	Hewlett-Packard 8657B	HPSG1

2 Configuration and Identification of the Equipment Under Test

2.1 Description and Declarations

The equipment under test is a wireless charging pad. The EUT is approximately 95 x 45 x 25 mm in dimension, and is depicted in Figure 1. It is powered by a 13.2 VDC vehicle power system. In use, this device is permanently affixed inside the console of a motor vehicle. Table 2 outlines provider declared EUT specifications.

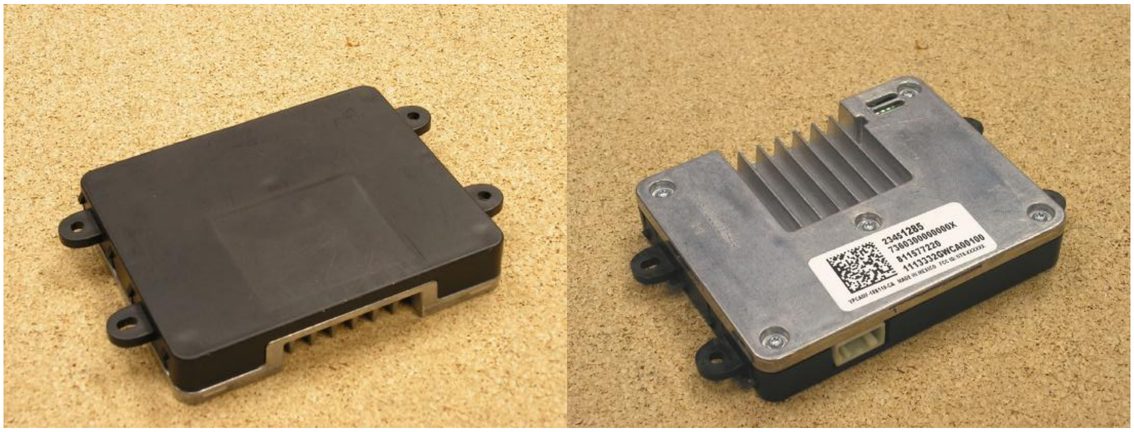


Figure 1: Photos of EUT.

Table 2: EUT Declarations.

General Declarations			
Equipment Type:	Wireless Charging System	**Country of Origin:**	Mexico
Nominal Supply:	13.2 VDC	**Oper. Temp Range:**	Not Declared
Frequency Range:	0.110 – 0.190 MHz	**Antenna Dimension:**	3 cm loop (approx)
Antenna Type:	coil	**Antenna Gain:**	Integral
Number of Channels:	1	**Channel Spacing:**	Not Applicable
Alignment Range:	Not Declared	**Type of Modulation:**	CW
United States			
FCC ID Number:	NT8-14WCSCB	**Classification:**	8CC
Canada			
IC Number:	Not-Applicable	**Classification:**	Vehicular Device

2.1.1 EUT Configuration

The EUT is configured for testing as depicted in Figure 2.

2.1.2 Modes of Operation

This device is an OEM installed wireless charger for use in a motor vehicle, and uses magnetic inductive coupling to transfer energy from itself to a compatible, portable receiving device, such as a cellular phone. The EUT is based upon the Powermat Dual Mode wireless charging consumer product, but will work with (a) PowerMat and (b) WPC (Wireless Power Consortium) compliant receivers. Both PowerMat and WPC modes are tested herein.

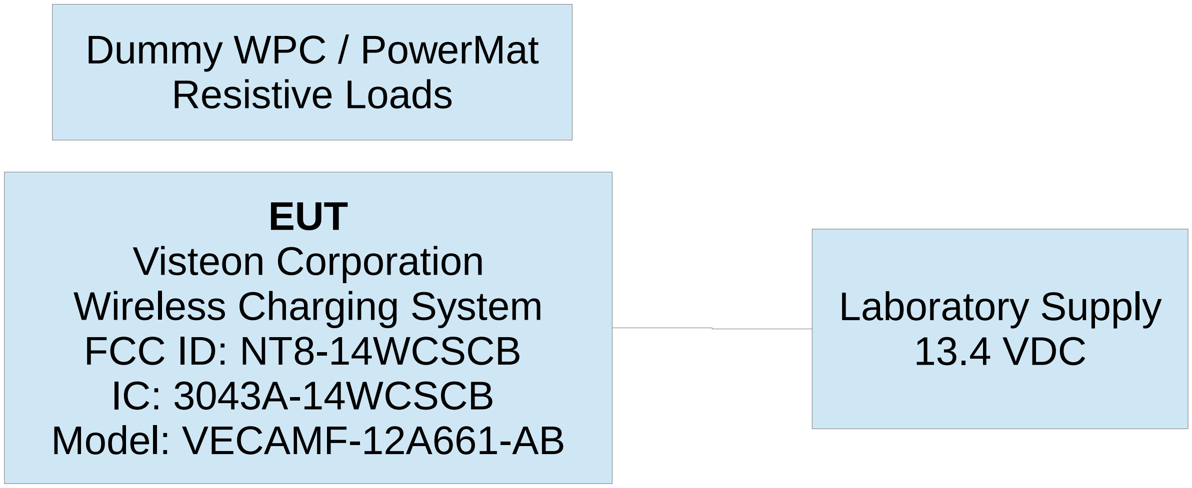


Figure 2: EUT Test Configuration Diagram.

2.1.3 Variants

There is only a single variant of the EUT, as tested.

2.1.4 Test Samples

Two samples in total were provided. One sample for photographs and one normal operating sample. Dummy battery loads (resistive) were provided to activate the device for testing.

2.1.5 Functional Exerciser

Normal operating EUT functionality was verified by observation of transmitted signal.

2.1.6 Modifications Made

There were no modifications made to the EUT by this laboratory.

2.1.7 Production Intent

The EUT appears to be a production ready sample.

2.1.8 Declared Exemptions and Additional Product Notes

The EUT is permanently installed in a transportation vehicle. As such, digital emissions are exempt from US and Canadian digital emissions regulations (per FCC 15.103(a) and IC correspondence on ICES-003).

3 Emissions

3.1 General Test Procedures

3.1.1 Radiated Test Setup and Procedures

Radiated electromagnetic emissions from the EUT are first evaluated in our shielded fully anechoic chamber. Spectrum and modulation characteristics of all emissions are recorded, and emissions above 1 GHz are fully characterized. The anechoic chamber contains a set-up similar to that of our outdoor 3-meter site, with a turntable and antenna mast. Instrumentation, including spectrum analyzers and other test equipment as detailed in Section 1.2 are employed. After indoor pre-scans, emission measurements are made on our outdoor 3-meter Open Area Test Site (OATS). If the EUT connects to auxiliary equipment and is table or floor standing, the configurations prescribed in ANSI C63.4 / CISPR-22 are followed. Alternatively, a layout closest to normal use (as declared by the provider) is employed if the resulting emissions appear to be worst-case in such a configuration. See Figure 3. All

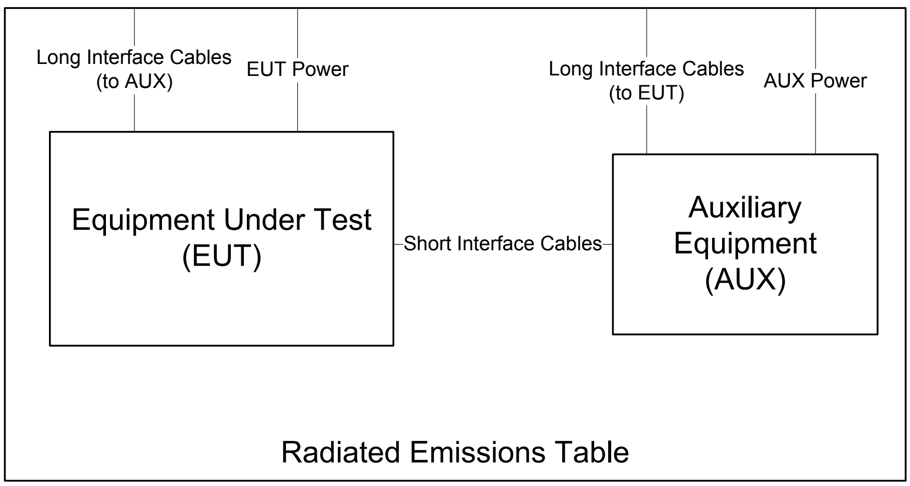


Figure 3: Radiated Emissions Diagram of the EUT.

intentionally radiating elements that are not fixed-mounted in use are placed on the test table lying flat, on their side, and on their end (3-axes) and the resulting worst case emissions are recorded. If the EUT is fixed-mounted in use, measurements are made with the device oriented in the manner consistent with installation and then emissions are recorded.

If the EUT exhibits spurious emissions due to internal receiver circuitry, such emissions are measured with an appropriate carrier signal applied. For devices with intentional emissions below 30 MHz, a shielded loop antenna is used as the test antenna. It is placed at a 1 meter receive height and appropriate low frequency magnetic field extrapolation to the regulatory limit distance is employed. Emissions between 30 MHz and 1 GHz are measured using tuned dipoles and/or calibrated broadband antennas. For both horizontal and vertical polarizations, the test antenna is raised and lowered from 1 to 4 m in height until a maximum emission level is detected. The EUT is then rotated through 360^o in azimuth until the highest emission is detected. The test antenna is then raised and lowered one last time from 1 to 4 m and the worst case value is recorded. Emissions above 1 GHz are characterized using standard gain horn antennas or calibrated broadband ridge-horn antennas. Care is taken to ensure that test receiver resolution and video bandwidths meet the regulatory requirements, and that the emission bandwidth of the EUT is not reduced. Photographs of the test setup employed are depicted in Figure 4.

Where regulations allow for direct measurement of field strength, power values (dBm) measured on the test receiver / analyzer are converted to dBμV/m at the regulatory distance, using

$$E_{dist} = 107 + P_R + K_A - K_G + K_E - C_F$$

where P_R is the power recorded on spectrum analyzer, in dBm, K_A is the test antenna factor in dB/m, K_G is the combined pre-amplifier gain and cable loss in dB, K_E is duty correction factor (when applicable) in dB, and C_F is a distance conversion (employed only if limits are specified at alternate distance) in dB. This field strength value is then compared with the regulatory limit. If effective isotropic radiated power (EIRP) is compute, it is computed as

$$EIRP(dBm) = E_{3m}(dB\mu V/m) - 95.2.$$

When presenting data at each frequency, the highest measured emission under all possible EUT orientations (3-axes) is reported.

Figure 4: Radiated Emissions Test Setup Photograph(s).

3.1.2 Conducted Emissions Test Setup and Procedures

Vehicle Power Conducted Spurious The EUT is not subject to power line conducted emissions regulations as it is powered solely by the vehicle power system for use in said motor vehicle.

3.1.3 Power Supply Variation

Tests at extreme supply voltages are made if required by the the procedures specified in the test standard, and results of this testing are detailed in this report.

3.2 Intentional Emissions

3.2.1 Fundamental Emission Pulsed Operation

The details and results of testing the EUT for pulsed operation are summarized in Table 3.

Table 3: Pulsed Emission Characteristics (Duty Cycle).

The EUT employs only CW transmission. No modulation of the CW source occurs, and basic load identification is performed in a passive transponder fashion, where the battery/load modulates its coil resulting only in a observed loading variation of the source. Thus, no duty cycle applies.

Duty Cycle Computation							0
1	KE = 0.0 dB						
2							

TEST EQUIPMENT USED: HP8593E1, EMLOOP1 Univ. of Mich. 02/04/201

3.2.2 Fundamental Emission Bandwidth

Emission bandwidth (EBW) of the EUT is measured with the device placed in the test mode(s) with the shortest available frame length and minimum frame spacing. Radiated emissions are recorded following the test procedures listed in Section 1.1. The 20 dB EBW is measured as the max-held peak-detected signal when the IF bandwidth is greater than or equal to 1% of the receiver span. For complex modulations other than ASK and FSK, the 99% emission bandwidth per IC test procedures has a different result, and is also separately reported.The results of EBW testing are summarized in Table 4. Plots showing measurements employed to obtain the emission bandwidth reported are provided in Figure 5.

Table 4: Intentional Emission Bandwidth.

The CW emission of the signal is shown in the following Figure. Depending on load placement on the charging pad and the current charging state of the load, the CW oscillator frequency shifts from 110 kHz to 190 kHz. During charging the emission in the 110 kHz restricted band remains more than 30 dB down from the fundamental emission.

Measured Emission Bandwidth							0
#	EBW meas. (kHz)						
1	3.3						

TEST EQUIPMENT USED: HP8593E1, EMLOOP1 Univ. of Mich. 02/04/201

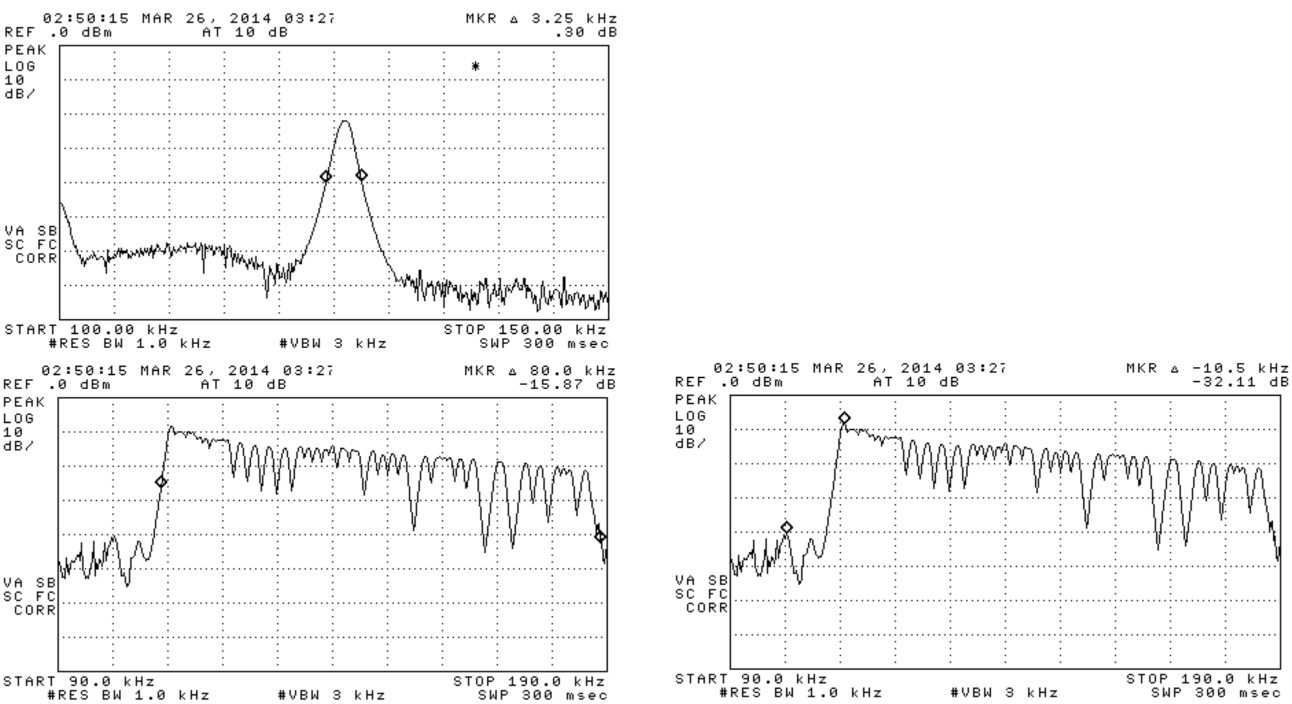


Figure 5: Intentional Emission Bandwidth.

3.2.3 Fundamental Emission

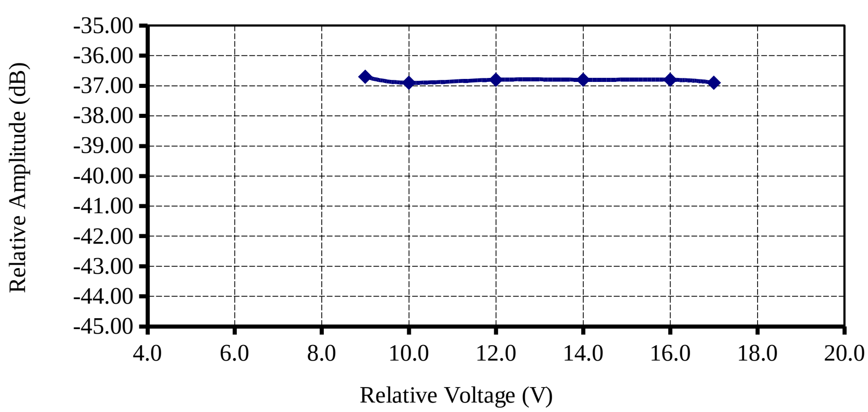
Following the test procedures listed in Section 1.1, field emissions measurements are made on the EUT for both Horizontal and Vertically polarized coupling fields. The EUT's loop antenna(s) are measured when the EUT loop axes are (1) aligned along the same axis as the test loop antenna and horizontal with respect to the test site ground plane, (2) aligned coplanar (in the same plane) with the test antenna and aligned horizontal with respect to the test site ground plane, and (3) aligned coplanar (in the same plane) with the test antenna and vertical with respect to the test site ground plane. Table 5 details the results of these measurements.

Table 5: Fundamental Radiated Emissions.

IC RSS-GEN – Averaging applies up to 490 kHz, 0.0 dB in this case (CW transmission for power tr
RSS-GEN: Limit at 300m for f<0.490MHz; 30m for f>0.490MHz
9 kHz RBW for f > 150 kHz; 300 Hz RBW for f<150 kHz
Conv.: 40 dB/dec Near-Field Decay Rate within NF/FF distance, 20 dB/dec Far-field decay rate applied beyond NF/FF distance.

Radiated Emission - LF																Visteon Charger; FCC/IC
											FCC Part 18		IC RSS-210			
	Freq.	Ant.	Ant.	Pr, 3m	Det.	Ka	Kg	NF/FF	Conv.	Conv.	E	Elim	E	Elim	Pass	
#	kHz	Used	Orien.	dBm	Used	dB/m	dB	m	3/300 m	3/30 m	dBμV/m	dBμV/m	dBμV/m	dBμV/m	dB	Comments
1	**PowerMat Mode**															
2	125	Loop	V/perp	-64.5	Pk	9.7	.0	382.0	80.0		-27.8	23.5	-27.8	25.7	51.3	loop perp. (axis in dir. of prop.)
3	125	Loop	V/par	-64.3	Pk	9.7	.0	382.0	80.0		-27.6	23.5	-27.6	25.7	51.1	loop paral. (loop in dir. of prop.)
4	125	Loop	H	-43.3	Pk	9.7	.0	382.0	80.0		-6.6	23.5	-6.6	25.7	**30.1**	loop horiz. (loop in horiz. plane)
5	**WPC Mode**															
6	125	Loop	V/perp	-45.3	Pk	9.7	.0	382.0	80.0		-8.6	23.5	-8.6	25.7	32.1	loop perp. (axis in dir. of prop.)
7	125	Loop	V/par	-39.3	Pk	9.7	.0	382.0	80.0		-2.6	23.5	-2.6	25.7	26.1	loop paral. (loop in dir. of prop.)
8	125	Loop	H	-37.6	Pk	9.7	.0	382.0	80.0		-.9	23.5	-.9	25.7	**24.4**	loop horiz. (loop in horiz. plane)

TEST EQUIPMENT USED: HP8593E1, EMLOOP1 Univ. of Mich. 02/04/2014



3.3 Unintentional Emissions

3.3.1 Transmit Chain Spurious Emissions

The results for the measurement of transmit chain spurious emissions at the nominal voltage and temperature are provided in Table 6. Following the test procedures listed in Section 1.1, field emissions measurements are made on the EUT for both Horizontal and Vertically polarized coupling fields. The EUT's loop antenna(s) are measured when the EUT loop axes are (1) aligned along the same axis as the test loop antenna and horizontal with respect to the test site ground plane, (2) aligned coplanar (in the same plane) with the test antenna and aligned horizontal with respect to the test site ground plane, and (3) aligned coplanar (in the same plane) with the test antenna and vertical with respect to the test site ground plane. The results for the measurement of transmit chain spurious emissions at the nominal voltage and temperature are provided in Table 6. Measurements are performed to 10 times the highest fundamental operating frequency.

Table 6(a): Transmit Chain Spurious Emissions.

IC RSS-GEN – Averaging applies up to 490 kHz, 0.0 dB in this case (CW transmission for power tr
RSS-GEN: Limit at 300m for f<0.490MHz; 30m for f>0.490MHz
9 kHz RBW for f > 150 kHz; 300 Hz RBW for f<150 kHz
Conv.: 40 dB/dec Near-Field Decay Rate within NF/FF distance, 20 dB/dec Far-field decay rate applied beyond NF/FF distance.

						Radiated Emission - LF										Visteon , PowerMat Mode
											FCC Part 18		IC RSS-210			
	Freq.	Ant.	Ant.	Pr, 3m	Det.	Ka	Kg	NF/FF	Conv.	Conv.	E	Elim	E	Elim	Pass	
#	kHz	Used	Orien.	dBm	Used	dB/m	dB	m	3/300 m	3/30 m	dBμV/m	dBμV/m	dBμV/m	dBμV/m	dB	Comments
1	125	Loop	V/perp													
2	125	Loop	V/par													
3	125	Loop	H													
4	250	Loop	V/perp	-74.0	Pk	10.2	.0	191.0	76.1		-32.9	23.5	-32.9	19.6	52.5	noise
5	250	Loop	V/par	-76.0	Pk	10.2	.0	191.0	76.1		-34.9	23.5	-34.9	19.6	54.5	noise
6	250	Loop	H	-75.0	Pk	10.2	.0	191.0	76.1		-33.9	23.5	-33.9	19.6	53.5	noise
7	375	Loop	V/perp	-76.0	Pk	10.2	.0	127.3	72.6		-31.4	23.5	-31.4	16.1	47.5	noise
8	375	Loop	V/par	-70.0	Pk	10.2	.0	127.3	72.6		-25.4	23.5	-25.4	16.1	41.5	noise
9	375	Loop	H	-80.0	Pk	10.2	.0	127.3	72.6		-35.4	23.5	-35.4	16.1	51.5	noise
10	500	Loop	V/perp	-80.0	Pk	10.2	.0	95.5	70.1	40.0	-32.9	23.5	-2.8	33.6	36.4	noise
11	500	Loop	V/par	-78.0	Pk	10.2	.0	95.5	70.1	40.0	-30.9	23.5	-.8	33.6	34.4	noise
12	500	Loop	H	-82.0	Pk	10.2	.0	95.5	70.1	40.0	-34.9	23.5	-4.8	33.6	38.4	noise
13	625	Loop	V/perp	-79.0	Pk	10.2	.0	76.4	68.1	40.0	-29.9	23.5	-1.8	31.7	33.5	noise
14	625	Loop	V/par	-83.0	Pk	10.2	.0	76.4	68.1	40.0	-33.9	23.5	-5.8	31.7	37.5	noise
15	625	Loop	H	-84.0	Pk	10.2	.0	76.4	68.1	40.0	-34.9	23.5	-6.8	31.7	38.5	noise
16	750	Loop	V/perp	-85.0	Pk	10.1	.0	63.7	66.5	40.0	-34.4	23.5	-7.9	30.1	38.0	noise
17	750	Loop	V/par	-83.0	Pk	10.1	.0	63.7	66.5	40.0	-32.4	23.5	-5.9	30.1	36.0	noise
18	750	Loop	H	-86.0	Pk	10.1	.0	63.7	66.5	40.0	-35.4	23.5	-8.9	30.1	39.0	noise
19	875	Loop	V/perp	-81.0	Pk	10.0	.0	54.6	65.2	40.0	-29.2	23.5	-4.0	28.8	32.8	noise
20	875	Loop	V/par	-86.0	Pk	10.0	.0	54.6	65.2	40.0	-34.2	23.5	-9.0	28.8	37.8	noise
21	875	Loop	H	-87.0	Pk	10.0	.0	54.6	65.2	40.0	-35.2	23.5	-10.0	28.8	38.8	noise
22	1000	Loop	V/perp	-87.3	Pk	10.0	.0	47.7	64.0	40.0	-34.3	23.5	-10.3	27.6	37.9	noise
23	1000	Loop	V/par	-87.0	Pk	10.0	.0	47.7	64.0	40.0	-34.0	23.5	-10.0	27.6	37.6	noise
24	1000	Loop	H	-90.1	Pk	10.0	.0	47.7	64.0	40.0	-37.1	23.5	-13.1	27.6	40.7	noise
25	1125	Loop	V/perp	-66.5	Pk	10.0	.0	42.4	63.0	40.0	-12.6	23.5	10.5	26.6	16.1	background
26	1125	Loop	V/par	-76.8	Pk	10.0	.0	42.4	63.0	40.0	-22.8	23.5	.2	26.6	26.4	noise
27	1125	Loop	H	-63.5	Pk	10.0	.0	42.4	63.0	40.0	-9.5	23.5	13.5	26.6	**13.1**	background
28	1250	Loop	V/perp	-71.6	Pk	9.9	.0	38.2	62.1	40.0	-16.8	23.5	5.3	25.7	20.3	background
29	1250	Loop	V/par	-76.4	Pk	9.9	.0	38.2	62.1	40.0	-21.6	23.5	.5	25.7	25.2	noise
30	1250	Loop	H	-74.0	Pk	9.9	.0	38.2	62.1	40.0	-19.2	23.5	2.9	25.7	22.8	noise
31	1375	Loop	V/perp	-83.2	Pk	9.9	.0	34.7	61.3		-27.6	23.5			51.1	noise
32	1375	Loop	V/par	-85.1	Pk	9.9	.0	34.7	61.3		-29.5	23.5			53.0	noise
33	1375	Loop	H	-86.3	Pk	9.9	.0	34.7	61.3		-30.7	23.5			54.2	noise
34	1500	Loop	V/perp	-82.4	Pk	9.8	.0	31.8	60.5		-26.1	23.5			49.6	noise
35	1500	Loop	V/par	-91.1	Pk	9.8	.0	31.8	60.5		-34.8	23.5			58.3	noise
36	1500	Loop	H	-83.0	Pk	9.8	.0	31.8	60.5		-26.7	23.5			50.2	noise
37	1625	Loop	V/perp	-88.1	Pk	9.8	.0	29.4	59.8		-31.1	23.5			54.6	noise
38	1625	Loop	V/par	-91.0	Pk	9.8	.0	29.4	59.8		-34.0	23.5			57.5	noise
39	1625	Loop	H	-94.0	Pk	9.8	.0	29.4	59.8		-37.0	23.5			60.5	noise
40	1750	Loop	V/perp	-91.3	Pk	9.8	.0	27.3	59.2		-33.7	23.5			57.2	noise
41	1750	Loop	V/par	-90.7	Pk	9.8	.0	27.3	59.2		-33.1	23.5			56.6	noise
42	1750	Loop	H	-94.8	Pk	9.8	.0	27.3	59.2		-37.2	23.5			60.7	noise
43	1875	Loop	V/perp	-96.5	Pk	9.8	.0	25.5	58.6		-38.3	23.5			61.8	noise
44	1875	Loop	V/par	-95.4	Pk	9.8	.0	25.5	58.6		-37.2	23.5			60.7	noise
45	1875	Loop	H	-96.0	Pk	9.8	.0	25.5	58.6		-37.8	23.5			61.3	noise
46	2000	Loop	V/perp	-93.5	Pk	9.8	.0	23.9	58.0		-34.7	23.5			58.2	noise
47	2000	Loop	V/par	-94.1	Pk	9.8	.0	23.9	58.0		-35.3	23.5			58.8	noise
48	2000	Loop	H	-95.0	Pk	9.8	.0	23.9	58.0		-36.2	23.5			59.7	noise
49	10000	Loop	All	-95.0	Pk	9.7	.0	4.8	44.0		-22.3	23.5			45.9	all noise
50	20000	Loop	All	-94.7	Pk	9.7	.0	2.4	38.0		-16.0	23.5			39.5	all noise
51	30000	Loop	All	-94.3	Pk	9.7	.0	1.6	34.5		-12.1	23.5			35.6	all noise

TEST EQUIPMENT USED: HP8593E1, EMLOOP1 Univ. of Mich. 02/04/2014

Table 6(b): Transmit Chain Spurious Emissions.

IC RSS-GEN – Averaging applies up to 490 kHz, 0.0 dB in this case (CW transmission for power
RSS-GEN: Limit at 300m for f<0.490MHz; 30m for f>0.490MHz
9 kHz RBW for f > 150 kHz; 300 Hz RBW for f<150 kHz
Conv.: 40 dB/dec Near-Field Decay Rate within NF/FF distance, 20 dB/dec Far-field decay rate applied beyond NF/FF distance.

Radiated Emission - LF																Visteon , WPC Mode
											FCC Part 18		IC RSS-210			
	Freq.	Ant.	Ant.	Pr, 3m	Det.	Ka	Kg	NF/FF	Conv.	Conv.	E	Elim	E	Elim	Pass	
#	kHz	Used	Orien.	dBm	Used	dB/m	dB	m	3/300 m	3/30 m	dBμV/m	dBμV/m	dBμV/m	dBμV/m	dB	Comments
1	125	Loop														
2	125	Loop														
3	125	Loop														
4	250	Loop	V/perp	-74.0	Pk	10.2	.0	191.0	76.1		-32.9	23.5	-32.9	19.6	52.5	noise
5	250	Loop	V/par	-72.0	Pk	10.2	.0	191.0	76.1		-30.9	23.5	-30.9	19.6	50.5	noise
6	250	Loop	H	-75.0	Pk	10.2	.0	191.0	76.1		-33.9	23.5	-33.9	19.6	53.5	noise
7	375	Loop	V/perp	-68.2	Pk	10.2	.0	127.3	72.6		-23.6	23.5	-23.6	16.1	39.7	noise
8	375	Loop	V/par	-62.8	Pk	10.2	.0	127.3	72.6		-18.2	23.5	-18.2	16.1	34.3	noise
9	375	Loop	H	-58.5	Pk	10.2	.0	127.3	72.6		-13.9	23.5	-13.9	16.1	30.0	noise
10	500	Loop	V/perp	-82.0	Pk	10.2	.0	95.5	70.1	40.0	-34.9	23.5	-4.8	33.6	38.4	noise
11	500	Loop	V/par	-84.0	Pk	10.2	.0	95.5	70.1	40.0	-36.9	23.5	-6.8	33.6	40.4	noise
12	500	Loop	H	-83.0	Pk	10.2	.0	95.5	70.1	40.0	-35.9	23.5	-5.8	33.6	39.4	noise
13	625	Loop	V/perp	-77.5	Pk	10.2	.0	76.4	68.1	40.0	-28.4	23.5	-.3	31.7	32.0	noise
14	625	Loop	V/par	-71.0	Pk	10.2	.0	76.4	68.1	40.0	-21.9	23.5	6.2	31.7	25.5	noise
15	625	Loop	H	-68.3	Pk	10.2	.0	76.4	68.1	40.0	-19.3	23.5	8.9	31.7	22.8	noise
16	750	Loop	V/perp	-88.0	Pk	10.1	.0	63.7	66.5	40.0	-37.4	23.5	-10.9	30.1	41.0	noise
17	750	Loop	V/par	-86.0	Pk	10.1	.0	63.7	66.5	40.0	-35.4	23.5	-8.9	30.1	39.0	noise
18	750	Loop	H	-86.0	Pk	10.1	.0	63.7	66.5	40.0	-35.4	23.5	-8.9	30.1	39.0	noise
19	875	Loop	V/perp	-88.3	Pk	10.0	.0	54.6	65.2	40.0	-36.5	23.5	-11.3	28.8	40.1	noise
20	875	Loop	V/par	-75.0	Pk	10.0	.0	54.6	65.2	40.0	-23.2	23.5	2.0	28.8	26.8	background
21	875	Loop	H	-74.0	Pk	10.0	.0	54.6	65.2	40.0	-22.2	23.5	3.0	28.8	25.8	background
22	1000	Loop	V/perp	-89.0	Pk	10.0	.0	47.7	64.0	40.0	-36.0	23.5	-12.0	27.6	39.6	noise
23	1000	Loop	V/par	-84.0	Pk	10.0	.0	47.7	64.0	40.0	-31.0	23.5	-7.0	27.6	34.6	noise
24	1000	Loop	H	-92.0	Pk	10.0	.0	47.7	64.0	40.0	-39.0	23.5	-15.0	27.6	42.6	noise
25	1125	Loop	V/perp	-86.0	Pk	10.0	.0	42.4	63.0	40.0	-32.0	23.5	-9.0	26.6	35.6	noise
26	1125	Loop	V/par	-82.0	Pk	10.0	.0	42.4	63.0	40.0	-28.0	23.5	-5.0	26.6	31.6	noise
27	1125	Loop	H	-78.0	Pk	10.0	.0	42.4	63.0	40.0	-24.0	23.5	-1.0	26.6	27.6	background
28	1250	Loop	V/perp	-93.0	Pk	9.9	.0	38.2	62.1	40.0	-38.2	23.5	-16.1	25.7	41.8	noise
29	1250	Loop	V/par	-92.0	Pk	9.9	.0	38.2	62.1	40.0	-37.2	23.5	-15.1	25.7	40.8	noise
30	1250	Loop	H	-91.0	Pk	9.9	.0	38.2	62.1	40.0	-36.2	23.5	-14.1	25.7	39.8	noise
31	1375	Loop	V/perp	-87.2	Pk	9.9	.0	34.7	61.3		-31.6	23.5			55.1	noise
32	1375	Loop	V/par	-86.0	Pk	9.9	.0	34.7	61.3		-30.4	23.5			53.9	noise
33	1375	Loop	H	-85.0	Pk	9.9	.0	34.7	61.3		-29.4	23.5			52.9	noise
34	1500	Loop	V/perp	-94.0	Pk	9.8	.0	31.8	60.5		-37.7	23.5			61.2	noise
35	1500	Loop	V/par	-91.0	Pk	9.8	.0	31.8	60.5		-34.7	23.5			58.2	noise
36	1500	Loop	H	-90.0	Pk	9.8	.0	31.8	60.5		-33.7	23.5			57.2	noise
37	1625	Loop	V/perp	-89.0	Pk	9.8	.0	29.4	59.8		-32.0	23.5			55.5	noise
38	1625	Loop	V/par	-87.3	Pk	9.8	.0	29.4	59.8		-30.3	23.5			53.8	noise
39	1625	Loop	H	-87.0	Pk	9.8	.0	29.4	59.8		-30.0	23.5			53.5	noise
40	1750	Loop	V/perp	-92.0	Pk	9.8	.0	27.3	59.2		-34.4	23.5			57.9	noise
41	1750	Loop	V/par	-93.0	Pk	9.8	.0	27.3	59.2		-35.4	23.5			58.9	noise
42	1750	Loop	H	-94.0	Pk	9.8	.0	27.3	59.2		-36.4	23.5			59.9	noise
43	1875	Loop	V/perp	-93.0	Pk	9.8	.0	25.5	58.6		-34.8	23.5			58.3	noise
44	1875	Loop	V/par	-88.0	Pk	9.8	.0	25.5	58.6		-29.8	23.5			53.3	noise
45	1875	Loop	H	-87.0	Pk	9.8	.0	25.5	58.6		-28.8	23.5			52.3	noise
46	2000	Loop	V/perp	-94.0	Pk	9.8	.0	23.9	58.0		-35.2	23.5			58.7	noise
47	2000	Loop	V/par	-94.0	Pk	9.8	.0	23.9	58.0		-35.2	23.5			58.7	noise
48	2000	Loop	H	-94.0	Pk	9.8	.0	23.9	58.0		-35.2	23.5			58.7	noise
49	10000	Loop	All	-94.0	Pk	9.7	.0	4.8	44.0		-21.3	23.5			44.9	all noise
50	20000	Loop	All	-93.0	Pk	9.7	.0	2.4	38.0		-14.3	23.5			37.8	all noise
51	30000	Loop	All	-93.5	Pk	9.7	.0	1.6	34.5		-11.3	23.5			34.8	all noise

TEST EQUIPMENT USED: HP8593E1, EMLOOP1 Univ. of Mich. 02/04/2014