DEKRA Certification, Inc.
405 Glenn Dr. Suite 12,
Sterling, VA 20164
United States of America

ACCREDITED
Test Lab
Cert 2764.01

FCC LISTED, REGISTRATION NUMBER: 2764.01

ISED LISTED REGISTRATION NUMBER: 23595-1

Test report No:
2668ERM.005

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-18 Edition)
&
ICES-003 ISSUE 6 – Update April (2017)

Identification of item tested	Automotive Electronics Infotainment Head Unit
Trademark	Visteon Corporation
Model and /or type reference	MAZDA_68_CMU
Other identification of the product	---
Features	Bluetooth 4.0 + EDR, 802.11b/g/n
Manufacturer	VISTEON CORPORATION One Village Center Drive, Van Buren Township, MI 48111, USA
Test method requested, standard	FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-18 Edition) ICES-003 ISSUE 6 – Update April (2017)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager Digitally signed by Domingo Galvez DN: cn=Domingo Galvez, o=DEKRA Certification Inc., ou=Regulatory Lab, email=dgalvez@dekra.com, c=US Date: 2020.02.19 22:43:06 -05'00'
Date of issue	02-17-2020
Report template No	FDT08_21

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Competences and guarantees

DEKRA Certification Inc. is a testing laboratory accredited by A2LA (The American Association for Laboratory Accreditation), to perform the tests indicated in the Certificate 2764.01

DEKRA Certification Inc. is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Certification Inc. has a calibration and maintenance program for its measurement equipment.

DEKRA Certification Inc. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Certification at the time of performance of the test.

DEKRA Certification Inc. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Certification Inc.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Certification Inc. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Certification internal document PODT000.

	Frequency (MHz)	U(k=2)	Units
Conducted emission	0,009 - 30	2.69	dB
Radiated emission	30-180	3.82	dB
	180-1000	2.61	dB
	1000-18000	2.92	dB
	18000-40000	2.15	dB

Data provided by the client

The CMU is an infotainment head unit that combines a wealth of options and features into the Mazda vehicle. Bluetooth, Wi-Fi, USB, touch screen capability, navigation and connected services are all features that the CMU has control over. The CMU is designed to have a multimodal interface where the user can exercise the system using voice control, multimodal commander input or touch screen interface.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: The client.

Sample S/01 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
2668.04	Vehicular radio	MAZDA_68_CMU	VPLFYF55885494AB	12/09/2019
2668.08	Harness	-	-	12/09/2019

Following Accessory items were used with Sample S/01 to perform testing

Control Nº	Description	Model	Serial Nº	Date of reception
2668.11	USB cable	-	-	12/09/2019

Following Auxiliary items were used with Sample S/01 to perform testing

Control Nº	Description	Serial Number
Dekra-1	Android Smart Phone	R58509ZP5Z
CTC-8997-8	Laptop	IPOMG92

1. Sample S/01 has undergone following test(s): All the tests indicated in appendix A.

Test sample description

<table>
<tr><td rowspan="6">Ports…… :</td><td rowspan="2">Port name and description</td><td colspan="4">Cable</td></tr>
<tr><td>Specified max length [m]</td><td>Attached during test</td><td>Shielded</td><td>Coupled to patient(3)</td></tr>
<tr><td>4 pin LVDS Connector</td><td></td><td>☐</td><td>☐</td><td>☐</td></tr>
<tr><td>8 pin USB Connector</td><td></td><td>☐</td><td>☐</td><td>☐</td></tr>
<tr><td>GPS Connector</td><td></td><td>☐</td><td>☐</td><td>☐</td></tr>
<tr><td>28 pin Vehicle Connector</td><td>1</td><td>☐</td><td>☐</td><td>☐</td></tr>
<tr><td>18 pin Power connector</td><td></td><td>☐</td><td>☐</td><td>☐</td></tr>
<tr><td>Supplementary information to the ports…… :</td><td colspan="5"></td></tr>
<tr><td rowspan="5">Rated power supply .....:</td><td colspan="2" rowspan="2">Voltage and Frequency</td><td colspan="4">Reference poles</td></tr>
<tr><td>L1</td><td>L2</td><td>L3</td><td>N</td><td>PE</td></tr>
<tr><td>☐</td><td>AC:</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td></tr>
<tr><td>☐</td><td>AC:</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td></tr>
<tr><td>✓</td><td colspan="5">DC: Nominal voltage: 12 VDC</td></tr>
<tr><td>☐</td><td colspan="5">DC:</td></tr>
<tr><td>Rated Power .....:</td><td colspan="6">No Data Provided</td></tr>
<tr><td>Clock frequencies .....:</td><td colspan="6">No Data Provided</td></tr>
<tr><td>Other parameters.....:</td><td colspan="6">No Data Provided</td></tr>
<tr><td>Software version .....:</td><td colspan="6">74.00.040A</td></tr>
<tr><td>Hardware version.....:</td><td colspan="6">VPHALF-14B115-FD</td></tr>
<tr><td>Dimensions in cm (W x H x D)....:</td><td colspan="6">178X150.9X50 mm</td></tr>
<tr><td rowspan="5">Mounting position.....:</td><td>☐</td><td colspan="5">Table top equipment</td></tr>
<tr><td>☐</td><td colspan="5">Wall/Ceiling mounted equipment</td></tr>
<tr><td>☐</td><td colspan="5">Floor standing equipment</td></tr>
<tr><td>☐</td><td colspan="5">Hand-held equipment</td></tr>
<tr><td>✓</td><td colspan="5">Other: Installed in a vehicle</td></tr>
</table>

Modules/parts .....:	Module/parts of test item	Type	Manufacturer
	No Data Provided		
	No Data Provided		
Accessories (not part of the test item) .....:	Description	Type	Manufacturer
	No Data Provided		
	No Data Provided		
Documents as provided by the applicant.....:	Description	File name	Issue date
	Declaration Equipment Data	FDT30_16 Declaration Equipment Data	12-23-2019

Copy of marking plate:

Identification of the client

VISTEON CORPORATION
ONE VILLAGE CENTER DRIVE, VAN BUREN TOWNSHIP,
MI, 48111 U.S.A

Testing period and place

Test Location	DEKRA Certification, Inc
Date (start)	11-05-2019
Date (finish)	12-13-2019

Document history

Report number	Date	Description
2668ERM.005	02-17-2020	First release

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the semi-anechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

Remarks and comments

The tests have been performed by the technical personnel: Nasir Khan, Koji Nishimoto and Poojita Bhattu

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Summary

Emission Test			
Report Section	**Requirement – Test case**	**Verdict**	**Remark**
A.1.	Radiated emission electromagnetic field test (30 MHz – 1000 MHz)	P	N/A
A.1.	Radiated emission electromagnetic field test (1 GHz – 18 GHz)	P	N/A
-	Radiated emission electromagnetic field test (18 GHz – 40 GHz)	N/A	Refer 1
-	Conducted emission test (150 kHz to 30 MHz)	N/A	Refer 2

Supplementary information and remarks:

1) As per standard 47 CFR §15.33 due to the highest frequency generated or used in the device is above 1000MHz the upper frequency of measurement range is up to 5th harmonic of the highest frequency or 40GHz, whichever is lower.
2) Device is DC powered from a battery

List of equipment used during the test

CONTROL NUMBER	DESCRIPTION	MANUFACTURER	MODEL	LAST CALIBRATION	NEXT CALIBRATION
1179	Semi anechoic Absorber Lined Chamber	FRANKONIA	SAC 3 plus “L”	2017/08	2020/08
1064	Biconical Log antenna	ETS LINDGREN	3142E	2018/01	2020/01
1057	Double-ridge Waveguide Horn antenna 1-18 GHz	ETS LINDGREN	3115	2017/03	2020/03
1012	EMI Test Receiver	Rohde & Schwarz	ESR26	2018/09	2020/09
0981	Preamplifier	BONN ELEKTRONIK	BLMA0118-2A	2018/10	2020/10

Appendix A: Test results

Appendix A Content

DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. Every operation mode takes failure criteria for the immunity test that they were applying to it and a monitoring to guarantee performance of the same ones.

The operation modes used by the samples to which the present report refers, are shown in the following table:

OPERATION MODE*	DESCRIPTION
OM#01	EUT ON. Powered by 12 Vdc • BT in Idle mode • Wi-Fi in idle mode • GPS in RX mode

*Worst configurations detected

A.1.RADIATED EMISSION. ELECTROMAGNETIC FIELD MEASURE

LIMITS:	Reference standard:	FCC CFR 47, Part 15, Subpart B (10-1-18 Edition), Secs. 15.109 & ICES-003 Issue 6 – Update April (2017)
	Test standard:	FCC CFR 47, Part 15, Subpart B (10-1-18 Edition), Secs. 15.109 & ICES-003 Issue 6 – Update April (2017); ANSI C63.4 (2014)

Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-01-18 Edition), Secs. 15.109 & ICES-003 Issue 6 – Update April (2017) in the frequency range 30 MHz to 40 GHz for class B equipment.

Frequency range (MHz)	QP Limit for 3 m	
	(μV/m)	(dBμV/m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46
Above 960	500	54

Frequency range (MHz)	AVG Limit for 3 m		PK Limit for 3 m (1)
	(μV/m)	(dBμV/m)	(dBμV/m)
Above 1000	500	54	74

(1) Frequencies above 1 GHz, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test, as per §15.35(b)

TEST SETUP	

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m for the frequency ranges of 30-1000 MHz (Bilog antenna) and 1-18 GHz (Double ridge horn antenna).

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360º and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

TEST SETUP (Cont.)	

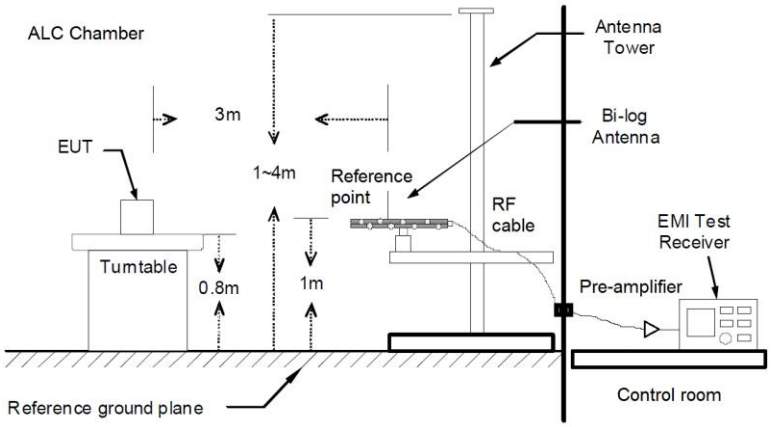


Fig A1: Generic setup for measurements from 30 to 1000MHz

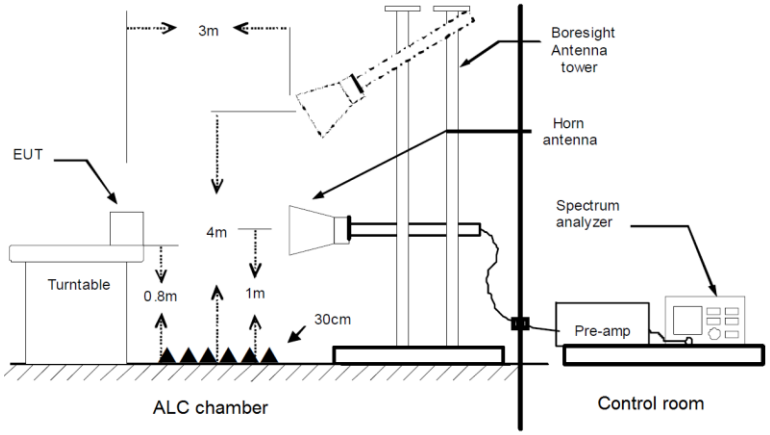


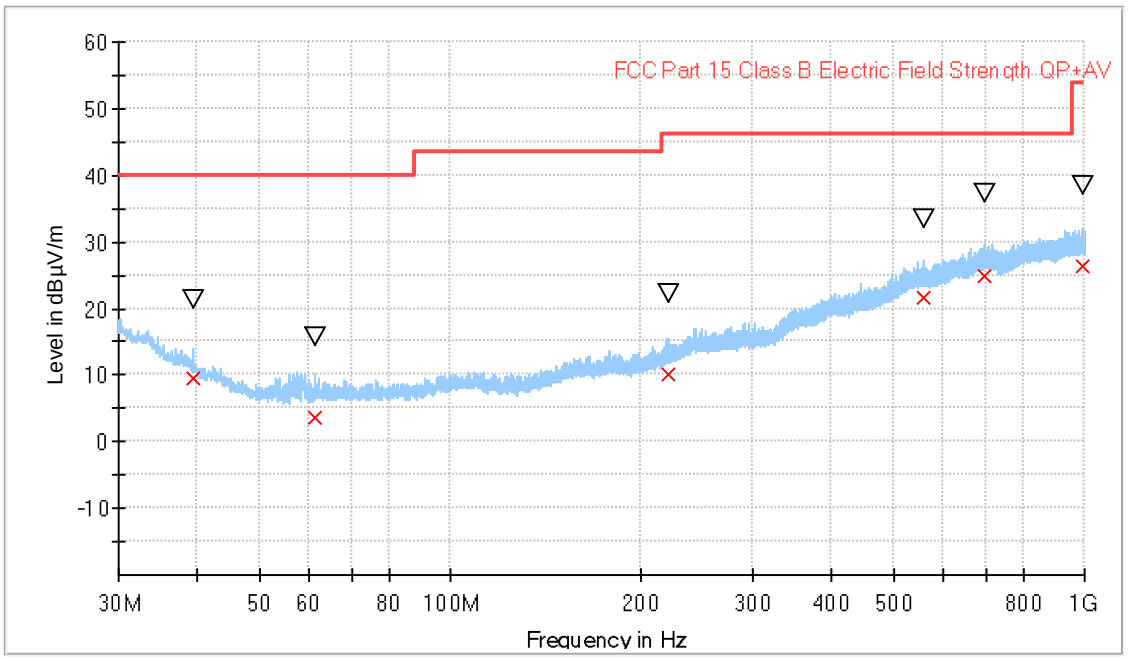
Fig A2: Generic setup for measurements from 1 to 18GHz (Analyzer outside the chamber)

TESTED SAMPLES:	S/01
TESTED OPERATION MODES:	OM#01
TEST RESULTS:	**CR**mmnnXX: CR, Radiation Condition; mm: Sample number; nn: Operation mode.,XX: Frequency Range,

CRmmnnXX	Description	Result
CR0101LR	Range: 30 MHz - 1000 MHz Horizontal Polarization	P
CR0101LR	Range: 30 MHz - 1000 MHz Vertical Polarization	P
CR0101HR	Range: 1-18 GHz Horizontal Polarization	P
CR0101HR	Range: 1-18 GHz Vertical Polarization	P

Radiated Emission. CR0101LR_PH and CR0101LR_PV

Project:	2668ERM005
Company:	Visteon Japan
Sample:	S/01
Operation mode:	OM#01
Description:	EUT ON. (Wi-Fi 2.4 GHz and BLE in IDLE mode, GPS in RX mode). Power supply 12 Vdc



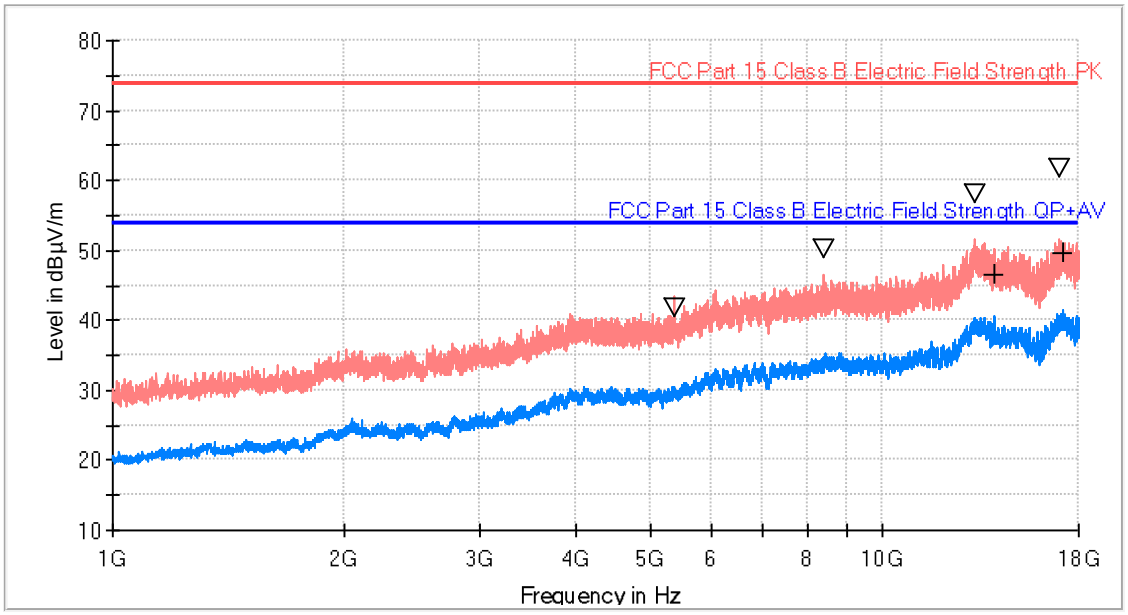
Preview Result 1-PK+
FCC Part 15 Class B Electric Field Strength QP+AV
Final_Result QPK
Final_Result PK+

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
39.279000	9.63	---	40.00	30.37	126.0	V	-66.0
39.279000	---	21.28	---	---	126.0	V	-66.0
61.159000	3.52	---	40.00	36.48	281.0	V	-142.0
61.159000	---	15.65	---	---	281.0	V	-142.0
220.280239	---	22.26	---	---	168.0	V	-133.0
220.280239	9.99	---	40.00	30.01	168.0	V	-133.0
556.439000	---	33.53	---	---	202.0	V	106.0
556.439000	21.52	---	47.00	25.48	202.0	V	106.0
695.559309	24.75	---	47.00	22.25	267.0	H	-139.0
695.559309	---	37.21	---	---	267.0	H	-139.0
991.520801	26.40	---	47.00	20.60	300.0	H	56.0
991.520801	---	38.49	---	---	300.0	H	56.0

Radiated Emission. CR0101HR_PH and CR0101LR_PV

Project:	2668ERM005
Company:	Visteon Japan
Sample:	S/01
Operation mode:	OM#01
Description:	EUT ON. (Wi-Fi 2.4 GHz and BLE in IDLE mode, GPS in RX mode). Power Supply: 12 Vdc



Preview Result 2-AVG
Preview Result 1-PK+
FCC Part 15 Class B Electric Field Strength PK
FCC Part 15 Class B Electric Field Strength QP+AV
Final_Result PK+
Final_Result AVG

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
5371.200000	41.85	---	73.90	32.05	147.0	H	149.0
8398.750000	50.20	---	73.90	23.70	100.0	V	-83.0
13211.600000	58.14	---	73.90	15.76	230.0	H	-135.0
13969.950000	---	46.45	53.90	7.45	236.0	V	-12.0
16926.100000	61.61	---	73.90	12.29	165.0	H	-56.0
17154.750000	---	49.57	53.90	4.33	230.0	V	-150.0