



FCC LISTED, REGISTRATION
NUMBER: 2764.01

ISED LISTED REGISTRATION
NUMBER: 23595-1

Test report No:
3231ERM.008A1

Test report

**FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-20 Edition)
&
ICES-003 ISSUE 7 – October (2020)**

(*) Identification of item tested	In vehicle infotainment
(*) Trademark	Visteon
(*) Model and /or type reference tested	CRONY 2010
Other identification of the product	FCC ID: NT8-CRONY2010
(*) Features	AM/FM receiver, BT EDR, WiFi@5 GHz 802.11a/n20/n40/ac80, GNSS/GPS
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 (10-1-20 Edition) ICES-003 ISSUE 7 – October (2020)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager
Date of issue	03-24-2022
Report template No	FDT08_23 (*) "Data provided by the client"

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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.

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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
Radiated emission	30 - 1000	5.94	dB
	1000-18000	5.89	dB

Data provided by the client

An in-vehicle infotainment system that combines entertainment and information delivery for driver and passengers. This system consists of features like AM/FM Radio, GPS, RVC, USB & BT/WiFi interfaces with 10.25 Inch TFT & Touch screen interface.

This Infotainment can allow a driver to perform a number of tasks, such as standard radio and listen to music over a USB flash drive or Bluetooth, hands-free phone connections to make phone calls, vehicle voice commands, and other types of Interactive audio or video.

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 used for testing have been selected by **The Client**.

Sample S/01 is composed of the following elements:

Control N°	Description	Model	Serial N°	Date of reception
3231/08	Radiated sample	VPNPLF-18C815-CB	-	12/17/2021
3231/35	Harness + Speaker board	PSSA-AEE2010	-	12/17/2021

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

Control N°	Description	Model	Serial N°	Date of reception
3231/15	GPS Antenna	PP GF30	2210910950	12/17/2022
3231/16	FM/AM Antenna	A0056I-01	3017417509121	12/17/2021
3231/21	USB type A (Male) to DB9 cable	-	-	12/17/2021
3231/30	Adapter USB 3.0 to Gigabit Ethernet	UE300	-	12/17/2021

1. Sample S/01 was used for the following test(s): All tests indicated in appendix A

Test sample description

Ports..... :	Port name and description		Cable								
			Specified length [m]	Attached during test	Shielded	Coupled to patient					
	Main connector			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
	USB OTG			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
	GPS Antenna FAKRA connector			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
	AM/FM Antenna FAKRA connector			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Supplementary information to the ports..... :	No Data Provided										
Rated power supply	Voltage and Frequency		Reference poles								
			L1	L2	L3	N PE					
	<input type="checkbox"/>	AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
	<input type="checkbox"/>	AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
	<input checked="" type="checkbox"/>	DC: 13.5 V vehicle battery									
	<input type="checkbox"/>	DC:									
Rated Power	Nominal current 3A										
Clock frequencies.....	DDR3 800 MHz, NAND Memory 100 MHz, TFT 298.5 kHz, LVDS 39.4 MHz, IMX8 1,2 GHz										
Other parameters	No Data Provided										
Software version	26381										
Hardware version	08.01.01										
Dimensions in cm (W x H x D)	285.2 x 135.5 x 197.5 mm										
Mounting position	<input type="checkbox"/>	Table top equipment									
	<input type="checkbox"/>	Wall/Ceiling mounted equipment									
	<input type="checkbox"/>	Floor standing equipment									
	<input type="checkbox"/>	Hand-held equipment									
	<input checked="" type="checkbox"/>	Other: Installed in vehicle dashboard									
Modules/parts.....	Module/parts of test item		Type		Manufacturer						
	Commercial samples										
	Radiated samples										
	Conducted samples										

Accessories (not part of the test item)	Description	Type	Manufacturer
	Harness		
	AM/FM Antenna		
	GPS antenna		
	Speakers		
	Test panel		
	USB convertors		
Documents as provided by the applicant	Description	File name	Issue date
	Declaration Equipment	FDT30_18 Declaration Equipment Data 12/17/2021	01/06/2022
	General description Crony 2010		01/06/2022
	FERMUSA201_0 test samples Questionnaire		
Copy of marking plate:			

Identification of the client

Visteon Corporation
One Village Center Drive,
Van Buren Township, MI 48111, USA

Testing period and place

Test Location	DEKRA Certification Inc.
Date (start)	01-10-2022
Date (finish)	01-11-2022

Document history

Report number	Date	Description
3231ERM.008	02-15-2022	First release
3231ERM.008A1	03-24-2022	Second release

Modifications to the reference test report

It was introduced the following modifications in respect to the test report number 3231ERM.008 related with the same samples:

Clauses/ Sub-Clauses	Modification	Justification
Page 4: Usage of samples	Added more details for the antennas used	Requested by the TCB
Page 11: Description of the operation modes	Added more details in the operation mode	Requested by the TCB
This modification test report cancels and replaces the test report 3231ERM.008.		

Environmental conditions

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

Temperature	Min. = 15 °C Max. = 35 °C
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 °C Max. = 35 °C
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 °C Max. = 35 °C
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: Koji Nishimoto, Nasir Khan and Cheikhna Ouattara.

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 test (30 MHz – 1000 MHz)	P	N/A
A.1	Radiated emission test (1 GHz – 18 GHz)	P	N/A
A.1	Radiated emission test (18 GHz – 40 GHz)	P	N/A
-	Conducted emission test (150 kHz to 30 MHz)	N/A	Refer 1
Supplementary information and remarks: 1) According with the requirements of FCC Rules and Regulations, title 47, Chapter I, Subchapter A, Part 15, Subpart B, §15.107 Conducted limits, (d) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provision for, the use of battery chargers which permit operating while charging, AC adaptors or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.			

List of equipment used during the test

Radiated Emission Equipment

CONTROL NUMBER	DESCRIPTION	MANUFACTURER	MODEL	LAST CALIBRATION	NEXT CALIBRATION
981	RF pre-amplifier 1-18 GHz	Bonn Elektronik	BLMA 0118-2A	2020/11	2022/11
1010	ESR7 EMI Test Receiver	Rohde & Schwarz	ESR7	2020/10	2022/10
1014	FSV40 Signal Analyzer 40GHz	Rohde & Schwarz	FSV40	2021/05	2023/05
1058	Double-ridge Waveguide Horn antenna	ETS Lindgren	3115	2020/05	2023/05
1065	Biconical log Antenna	ETS Lindgren	3142E	2020/08	2023/08
1108	Ethernet SNMP Thermometer- CR Room	HW Group	HWg-STE Plain	2020/08	2022/08
1111	Ethernet SNMP Thermometer- SAC	HW Group	HWg-STE Plain	2020/08	2022/08
1179	Semi-Anechoic Chamber	Frankonia	SAC 3plus 'L'	N/A	N/A
1217	Frankonia Transparent Test Table 1	Frankonia	FFT-Square	N/A	N/A
1314	Wireless measurement software EMC 32	Rohde & Schwarz	-	N/A	N/A

Appendix A: Test results

Appendix A Content

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DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph represent functionalities of the sample under test.

The following operation modes of the samples were used during the test executions:

OPERATION MODE	DESCRIPTION
OM#01*	DUT ON. Power supply. 13.5 Vdc. <ul style="list-style-type: none">• Wi-Fi and BT in IDLE mode.• FM radio in Rx mode• GPS in RX mode

*Worst configuration detected

A.1. RADIATED EMISSION ELECTROMAGNETIC FIELD

LIMITS:	Product standard:	FCC CFR 47, Part 15, Subpart B (10-1-20 Edition), Secs. 15.109 & ICES-003 Issue 7 – October (2020)
	Test standard:	FCC CFR 47, Part 15, Subpart B (10-1-20 Edition), Secs. 15.109 & ICES-003 Issue 7 – October (2020); ANSI C63.4 (2014)

Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, in the frequency range 30 MHz to 40 GHz for class B equipment, according with the requirements of:

FCC Rules and Regulations 47 CFR Part 15, Subpart B, Secs. 15.109 (a) (10-01-20 Edition).

Frequency range (MHz)	QP Limit for 3 m	
	($\mu\text{V/m}$)	(dB $\mu\text{V/m}$)
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)
	($\mu\text{V/m}$)	(dB $\mu\text{V/m}$)	(dB $\mu\text{V/m}$)
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)

ICES-003 Issue 7, Secs 3.2.2, table 2 & 4 (October 2020).

Frequency range (MHz)	QP Limit for 3 m	
	($\mu\text{V/m}$)	(dB $\mu\text{V/m}$)
30 to 88	100	40
88 to 216	150	43.5
216 to 230	200	46
230 to 960	224	47
Above 960	500	54

Frequency range (MHz)	AVG Limit for 3 m		PK Limit for 3 m (1)
	($\mu\text{V/m}$)	(dB $\mu\text{V/m}$)	(dB $\mu\text{V/m}$)
Above 1000	500	54	74

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 range 30-100 MHz (Bilog antenna) and 1-18 GHz (Double ridge horn antenna) and at a distance of 1m for the frequency range 18-40 GHz (18-40 GHz Double ridge horn antenna).

For radiated emissions in the range 18-40 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

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 360° 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.

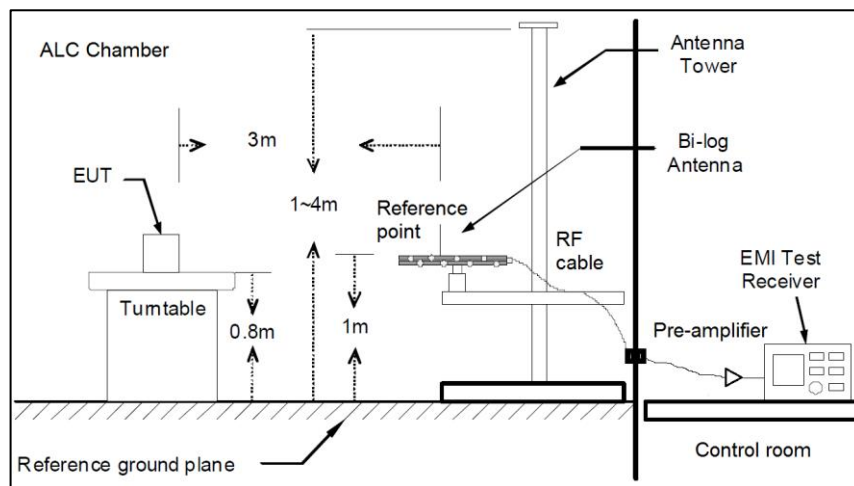


Fig A1: Generic setup for measurements from 30 to 1000 MHz

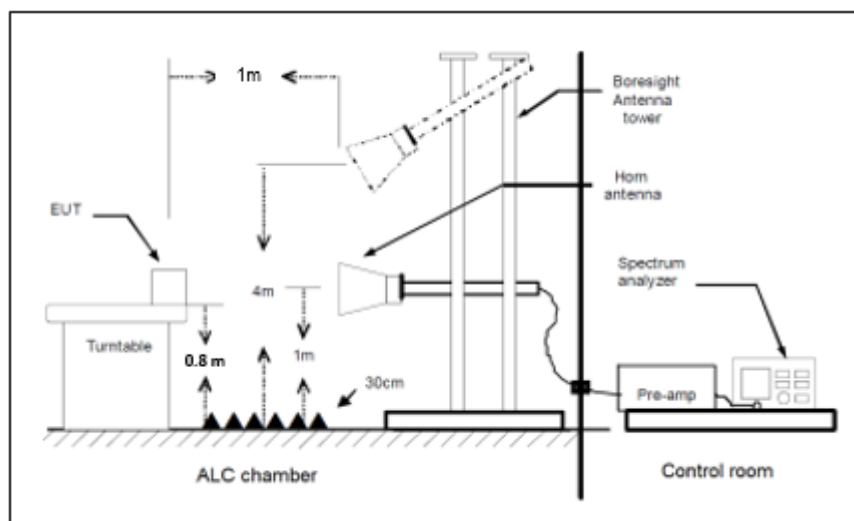


Fig A2: Generic setup for measurements from 1 to 18 GHz

TEST SETUP (CONT.)

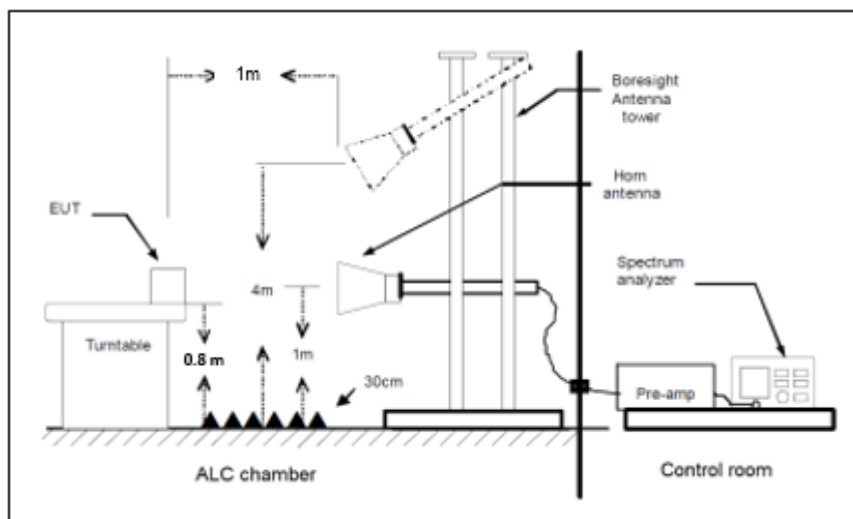


Fig A3: Generic setup for measurements from 18 to 40 GHz

TESTED SAMPLES:

S/01

TESTED CONDITIONS MODES:

OM#01

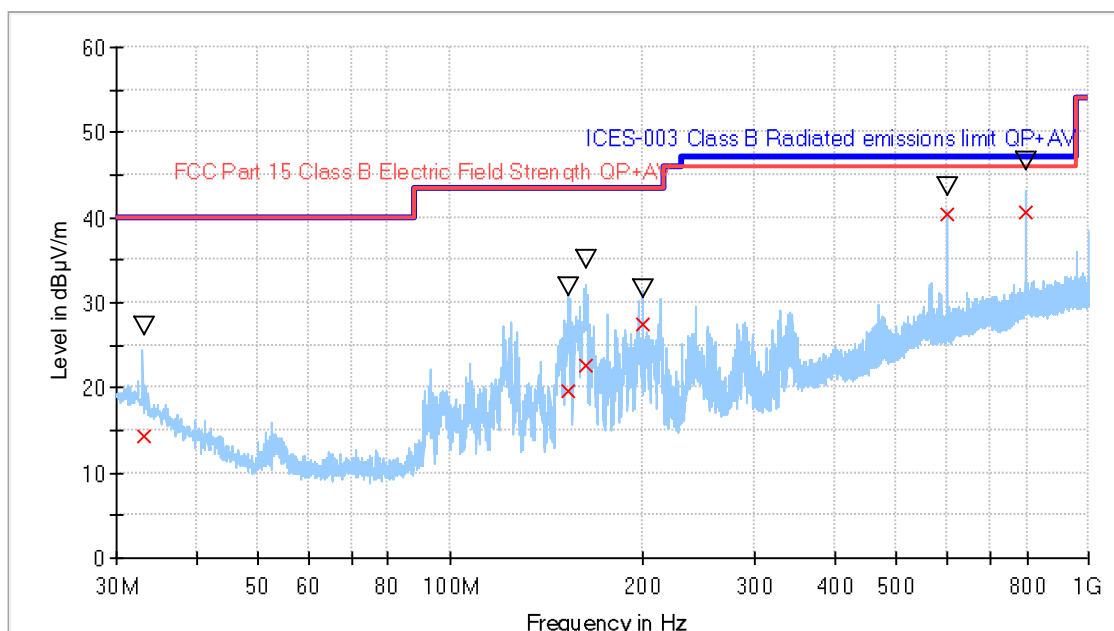
TEST RESULTS:

CRmmnnxx: CR: Radiation Condition, mm: Sample number, nn: Operation mode, xx: Frequency Range

CRmmnnxx	Description	Result
CR0101LR	Range: 30 MHz - 1000 MHz Horizontal and Vertical Polarization	P
CR0101HR	Range: 1GHz - 18 GHz Horizontal and Vertical Polarization	P
CR0101HR2	Range: 18 - 40 GHz Horizontal and Vertical Polarization	P

TEST RESULTS (Cont.):

CR0101LR

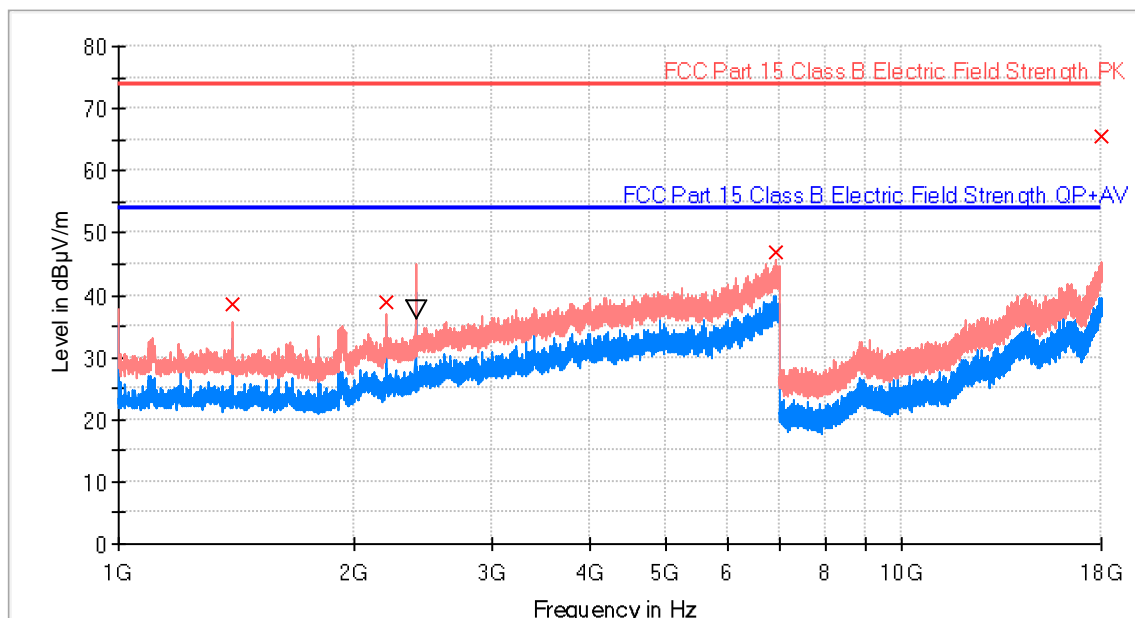


- Preview Result 1-PK+
- ICES-003 Class B Radiated emissions limit QP+AV
- FCC Part 15 Class B Electric Field Strength QP+AV
- x Final_Result QPK
- v Final_Result PK+

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
33.167000	14.32	27.29	40.00	25.68	130.0	V	-180.0
153.214500	19.64	31.83	43.50	23.86	130.0	V	-113.0
162.703000	22.68	35.19	43.50	20.82	100.0	V	175.0
199.982500	27.57	31.69	43.50	15.93	115.0	V	116.0
599.982000	40.35	43.67	46.00	5.65	145.0	V	180.0
797.987500	40.56	46.60	46.00	5.44	122.0	V	13.0

TEST RESULTS (Cont.):

CR0101HR

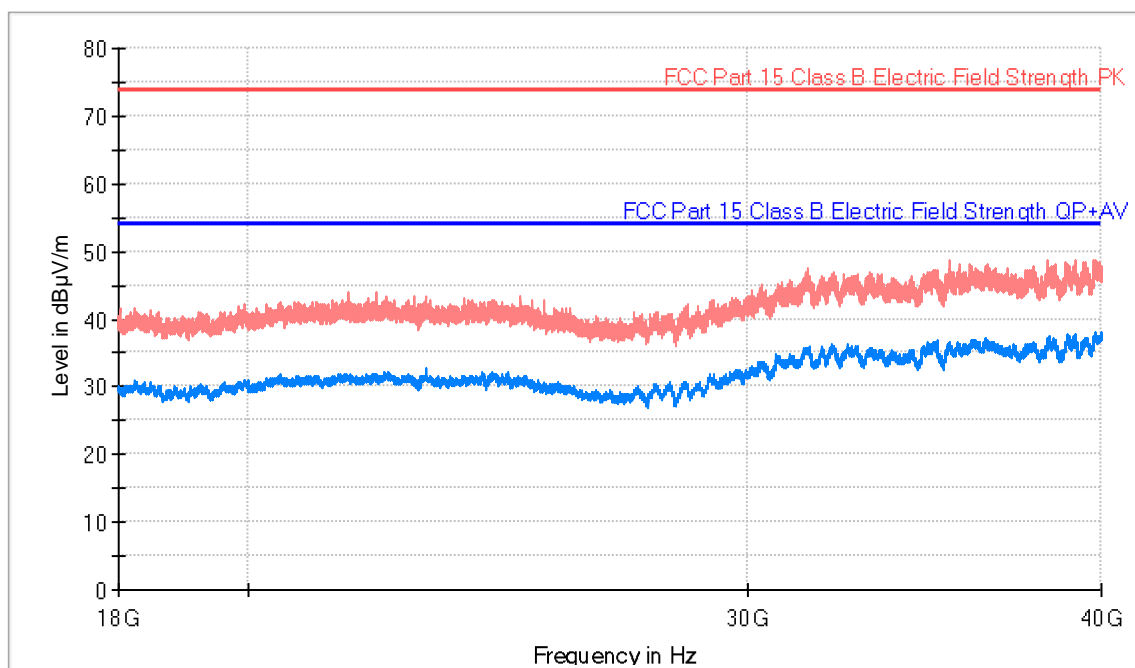


- Preview Result 2-AVG
- Preview Result 1-PK+
- FCC Part 15 Class B Electric Field Strength PK
- FCC Part 15 Class B Electric Field Strength QP+AV
- Final Result PK+
- Final Result AVG

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
1400.000000	38.50	---	73.90	35.40	100.0	H	-98.0
2199.900000	38.91	---	73.90	34.99	100.0	H	-54.0
2394.000000	---	37.55	53.90	16.35	114.0	H	36.0
6909.000000	47.01	---	73.90	26.89	179.0	V	-79.0
17992.400000	65.64	---	73.90	8.26	154.0	H	72.0

TEST RESULTS (Cont.):

CR0102HR



- AVG_MAXH
- PK+_MAXH
- FCC Part 15 Class B Electric Field Strength PK
- FCC Part 15 Class B Electric Field Strength QP+AV

Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Height (cm)	Pol	Azimuth (deg)	Margin – AVG (dB)	Limit – AVG (dBµV/m)
36001.500000	49.3	36.9	100.0	V	-136.0	17.0	53.9
39798.700000	48.6	38.5	100.0	V	-85.0	15.4	53.9