

TEST REPORT

Applicant: Autel Intelligent Tech. Corp., Ltd.

Address of Applicant: 7th-8th, 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd. Xili, Nanshan, Shenzhen 518055, China

Manufacturer: Autel Intelligent Tech. Corp., Ltd.

Address of Manufacturer: 7th-8th, 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd. Xili, Nanshan, Shenzhen 518055, China

Factory 1: Autel Intelligent Technology Corp., Ltd.

Address of Factory 1: 6th Floor, Building 1, Yanxiang Zhigu, NO.11 Gaoxin West Rd, Guangming New District, Shenzhen City, Guangdong Province, China.

Factory 2: AUTEL VIETNAM COMPANY LIMITED

Address of Factory 2: 4th Floor, Factory#6, Land#CN1, An Duong Industrial Zone, Hong Phong Township, An Duong County, Hai Phong, Viet Nam

Equipment Under Test (EUT)

Product Name: MaxiFlash VCI

Model No.: MaxiFlash VCI

Trade Mark: Autel

FCC ID: WQ818MXFULTRA

Applicable standards: FCC CFR Title 47 Part 15 Subpart B

Date of sample receipt: September 25, 2019

Date of Test: September 25-29, 2019

Date of report issued: September 29, 2019

Test Result : Pass *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Lo

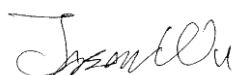
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	September 29, 2019	Original

Prepared By:

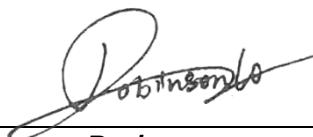


Date:

September 29, 2019

Project Engineer

Check By:



Date:

September 29, 2019

Reviewer

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4 Test Summary

Test Item	Test Requirement	Test Method	Class / Severity	Result
Conducted Emission	FCC Part15.107	ANSI C63.4	Class B	Pass
Radiated Emissions	FCC Part15.109	ANSI C63.4	Class B	Pass

Remark:

1. Pass: The EUT complies with the essential requirements in the standard.
2. # Refer to FCC Part 15.33 (b)(1) conditional testing procedure :

The highest frequency generated or used in the EUT	Test frequency range of Radiated emission
<108MHz	30MHz ~ 1GHz
108MHz ~ 500MHz	30MHz ~ 2GHz
500MHz ~ 1GHz	30MHz ~ 5GHz
>1GHz	30MHz ~ 5th harmonic of the highest frequency or 40 GHz, whichever is lower.

The highest frequency of the internal sources of the EUT is more than 108MHz.

5 General Information

5.1 General Description of EUT

Product Name:	MaxiFlash VCI
Model No.:	MaxiFlash VCI
Serial No.:	123456789101112
Hardware Version:	V3
Software Version:	V1.01.05
Test sample(s) ID:	GTS201909000204-2
Sample(s) Status	Normal sample
Power Supply:	Adapter Model: A361-1203000DI Input: AC 100-240V, 50/60Hz, 1.5A Output: DC 12V, 3000mA

5.2 Test mode and Test voltage

Test mode:	
OBD	Keep the EUT in OBD mode.
Test voltage:	
AC 120V/60Hz	

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
Supplied by client	ECU (MED17.1.6)	N/A	N/A
AUTEL	DV1912	Maxisys_Ultra	N/A

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383.

- **IC —Registration No.: 9079A**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.7 Test Location

Tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

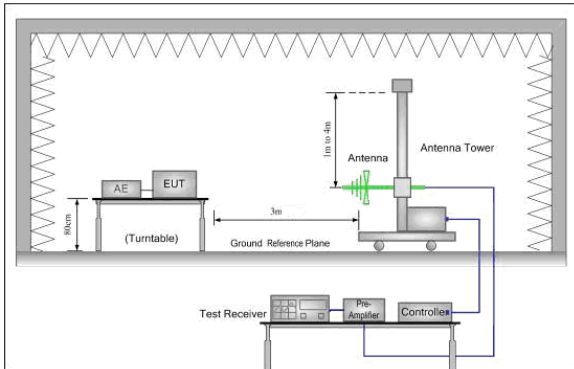
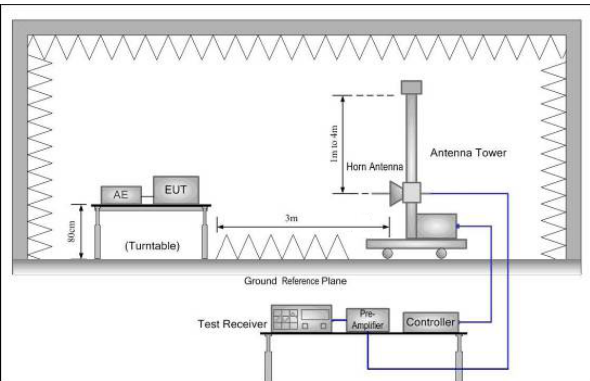
Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 26 2019	June. 25 2020
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 26 2019	June. 25 2020
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 26 2019	June. 25 2020
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 26 2019	June. 25 2020
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 26 2019	June. 25 2020
9	Coaxial Cable	GTS	N/A	GTS211	June. 26 2019	June. 25 2020
10	Coaxial cable	GTS	N/A	GTS210	June. 26 2019	June. 25 2020
11	Coaxial Cable	GTS	N/A	GTS212	June. 26 2019	June. 25 2020
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 26 2019	June. 25 2020
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 26 2019	June. 25 2020
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 26 2019	June. 25 2020
15	Band filter	Amindeon	82346	GTS219	June. 26 2019	June. 25 2020
16	Power Meter	Anritsu	ML2495A	GTS540	June. 26 2019	June. 25 2020
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 26 2019	June. 25 2020
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 26 2019	June. 25 2020
19	Splitter	Agilent	11636B	GTS237	June. 26 2019	June. 25 2020
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 26 2019	June. 25 2020
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 20 2018	Oct. 19 2019
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 20 2018	Oct. 19 2019
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 20 2018	Oct. 19 2019
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 26 2019	June. 25 2020

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 26 2019	June. 25 2020
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 26 2019	June. 25 2020
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 26 2019	June. 25 2020
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 26 2019	June. 25 2020
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 26 2019	June. 25 2020
9	ISN	SCHWARZBECK	NTFM 8158	GTD565	June. 26 2019	June. 25 2020

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 26 2019	June. 25 2020
2	Barometer	ChangChun	DYM3	GTS255	June. 26 2019	June. 25 2020

7 Test Results and Measurement Data

7.1 Radiated Emission

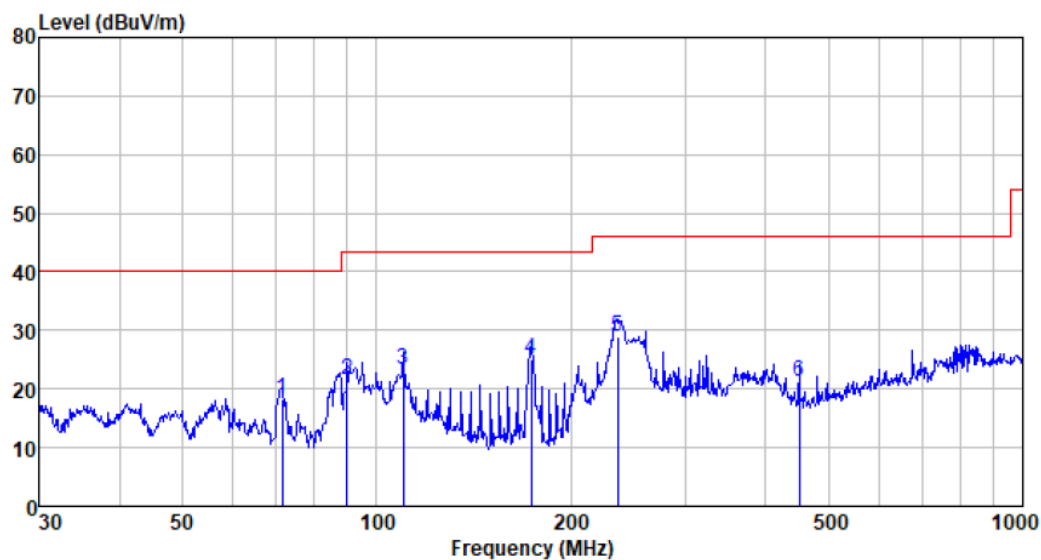
Test Requirement:	FCC Part15 B Section 15.109																				
Test Method:	ANSI C63.4:2014																				
Test Frequency Range:	30MHz to 6GHz																				
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)																				
Receiver setup:	<table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Value</td></tr><tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td>Quasi-peak</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr><tr><td>Average</td><td>1MHz</td><td>3MHz</td><td>Average</td></tr></table>	Frequency	Detector	RBW	VBW	Value	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak	Above 1GHz	Peak	1MHz	3MHz	Peak	Average	1MHz	3MHz	Average	
Frequency	Detector	RBW	VBW	Value																	
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak																	
Above 1GHz	Peak	1MHz	3MHz	Peak																	
	Average	1MHz	3MHz	Average																	
Limit:	<table><tr><td>Frequency</td><td>Limit (dBμV/m @3m)</td><td>Value</td></tr><tr><td>30MHz-88MHz</td><td>40.00</td><td>Quasi-peak</td></tr><tr><td>88MHz-216MHz</td><td>43.50</td><td>Quasi-peak</td></tr><tr><td>216MHz-960MHz</td><td>46.00</td><td>Quasi-peak</td></tr><tr><td>960MHz-1GHz</td><td>54.00</td><td>Quasi-peak</td></tr><tr><td rowspan="2">Above 1GHz</td><td>54.00</td><td>Average</td></tr><tr><td>74.00</td><td>Peak</td></tr></table>	Frequency	Limit (dBμV/m @3m)	Value	30MHz-88MHz	40.00	Quasi-peak	88MHz-216MHz	43.50	Quasi-peak	216MHz-960MHz	46.00	Quasi-peak	960MHz-1GHz	54.00	Quasi-peak	Above 1GHz	54.00	Average	74.00	Peak
Frequency	Limit (dBμV/m @3m)	Value																			
30MHz-88MHz	40.00	Quasi-peak																			
88MHz-216MHz	43.50	Quasi-peak																			
216MHz-960MHz	46.00	Quasi-peak																			
960MHz-1GHz	54.00	Quasi-peak																			
Above 1GHz	54.00	Average																			
	74.00	Peak																			
Test setup:	Below 1GHz  Above 1GHz 																				
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above																				

	the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. - The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. - The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. - For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. - The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. - If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test environment:	Temp.: 25 °C Humid.: 52% Press.: 1 012mbar
Test Instruments:	Refer to section 6 for details
Test mode:	Refer to section 5.2 for details ,and only show the worst mode
Test results:	Pass

Measurement Data

Below 1GHz

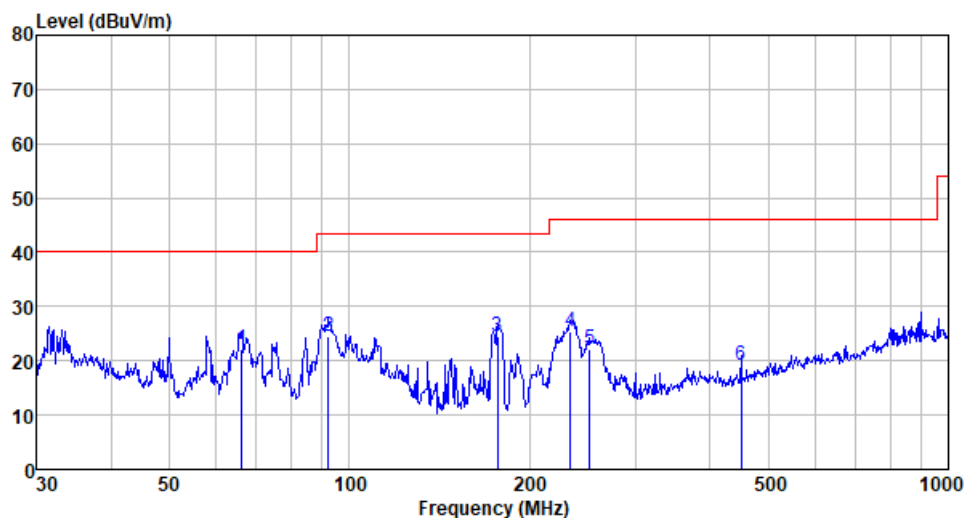
Test mode:	OBD	Antenna Polarity:	Horizontal
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
71.330	46.45	7.49	0.95	36.46	18.43	40.00	-21.57	QP
89.905	46.46	10.57	1.11	36.64	21.50	43.50	-22.00	QP
109.796	47.83	11.10	1.28	36.80	23.41	43.50	-20.09	QP
173.205	51.90	8.63	1.70	37.20	25.03	43.50	-18.47	QP
235.816	52.50	11.71	2.05	37.37	28.89	46.00	-17.11	QP
451.135	39.28	16.40	3.09	37.51	21.26	46.00	-24.74	QP

Remarks: level = Reading level + Antenna factor + Cable loss - Preamp Factor

Test mode:	OBD	Antenna Polarity:	Vertical
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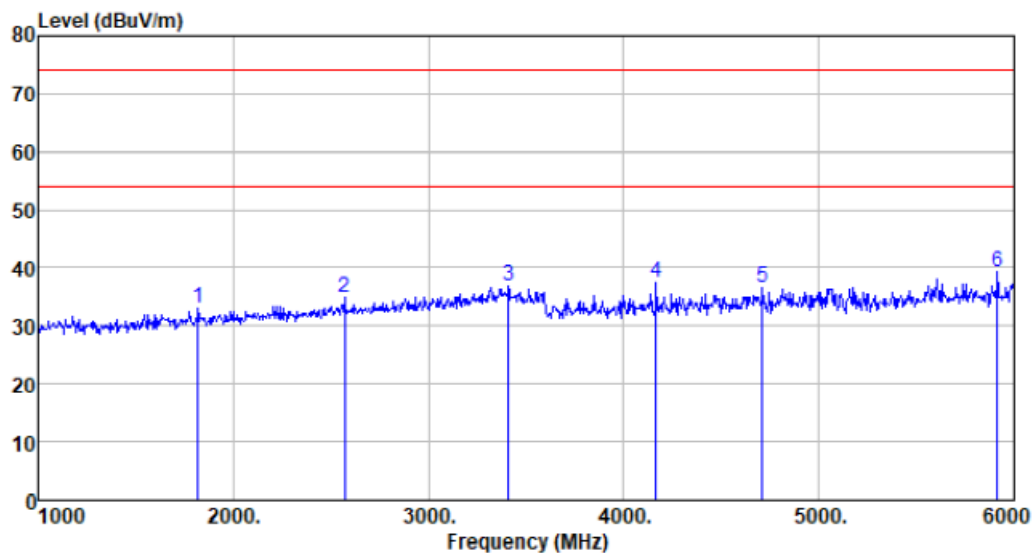


Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
66.034	48.69	9.00	0.91	36.40	22.20	40.00	-17.80	QP
92.139	49.11	11.04	1.13	36.66	24.62	43.50	-18.88	QP
176.888	51.19	8.77	1.72	37.22	24.46	43.50	-19.04	QP
234.168	49.17	11.64	2.04	37.37	25.48	46.00	-20.52	QP
252.063	45.15	12.22	2.14	37.38	22.13	46.00	-23.87	QP
451.135	37.09	16.40	3.09	37.51	19.07	46.00	-26.93	QP

Remarks: level = Reading level + Antenna factor + Cable loss - Preamp Factor

Above 1GHz

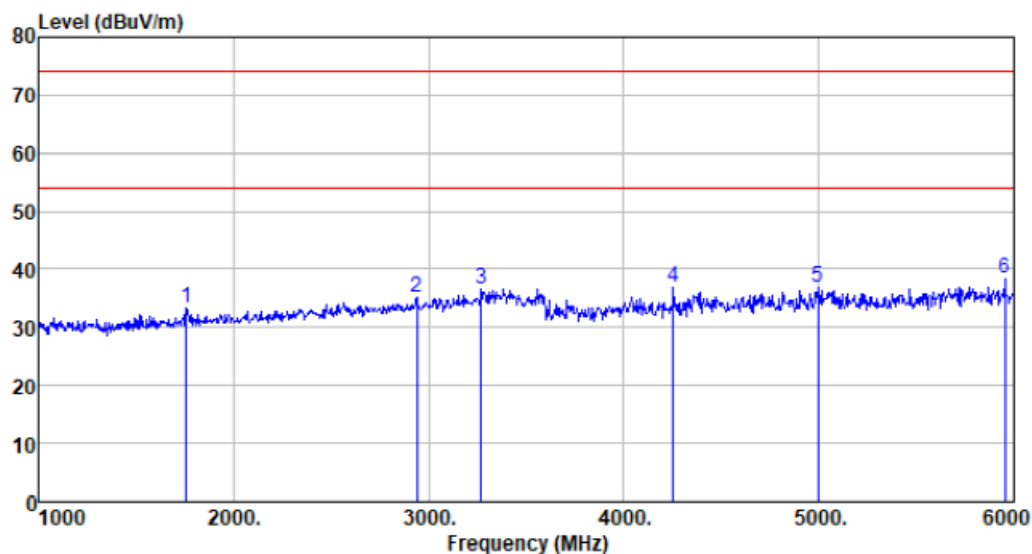
Test mode:	OBD	Antenna Polarity:	Horizontal
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamplifier factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
1820.000	38.00	26.08	5.45	36.39	33.14	74.00	-40.86	Peak
2570.000	37.35	27.83	6.58	37.00	34.76	74.00	-39.24	Peak
3410.000	38.15	28.35	7.85	37.34	37.01	74.00	-36.99	Peak
4165.000	36.02	30.00	8.86	37.47	37.41	74.00	-36.59	Peak
4710.000	33.86	31.18	9.29	37.69	36.64	74.00	-37.36	Peak
5915.000	32.87	32.60	10.22	36.51	39.18	74.00	-34.82	Peak

Remarks: level = Reading level + Antenna factor + Cable loss - Preamplifier Factor

Test mode:	OBD	Antenna Polarity:	Vertical
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Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
1760.000	38.42	25.97	5.36	36.35	33.40	74.00	-40.60	Peak
2940.000	36.85	28.49	7.14	37.26	35.22	74.00	-38.78	Peak
3270.000	37.93	28.44	7.63	37.33	36.67	74.00	-37.33	Peak
4255.000	35.38	30.21	8.93	37.51	37.01	74.00	-36.99	Peak
4995.000	33.45	31.69	9.51	37.79	36.86	74.00	-37.14	Peak
5955.000	32.01	32.69	10.25	36.47	38.48	74.00	-35.52	Peak

Remarks: level = Reading level + Antenna factor + Cable loss - Preamp Factor

Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

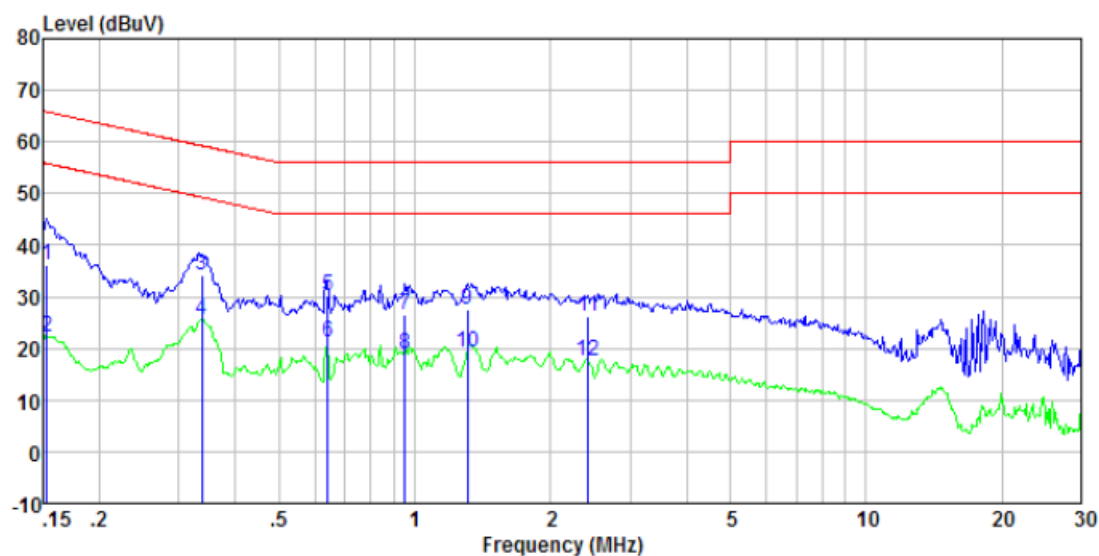
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

7.2 Conducted Emissions

Test Requirement:	FCC Part15 B Section 15.107																		
Test Method:	ANSI C63.4:2014																		
Test Frequency Range:	150kHz to 30MHz																		
Class / Severity:	Class B																		
Receiver setup:	RBW=9kHz, VBW=30kHz																		
Limit:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>0.5-30</td><td>60</td><td>50</td></tr></table>					Frequency range (MHz)	Limit (dBμV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	0.5-30	60	50
Frequency range (MHz)	Limit (dBμV)																		
	Quasi-peak	Average																	
0.15-0.5	66 to 56*	56 to 46*																	
0.5-5	56	46																	
0.5-30	60	50																	
Test setup:	Reference Plane Test table/Insulation plane <i>Remark</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m																		
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement.																		
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar													
Test Instruments:	Refer to section 6 for details																		
Test mode:	Refer to section 5.2 for details,and only shows the worst mode																		
Test results:	Pass																		

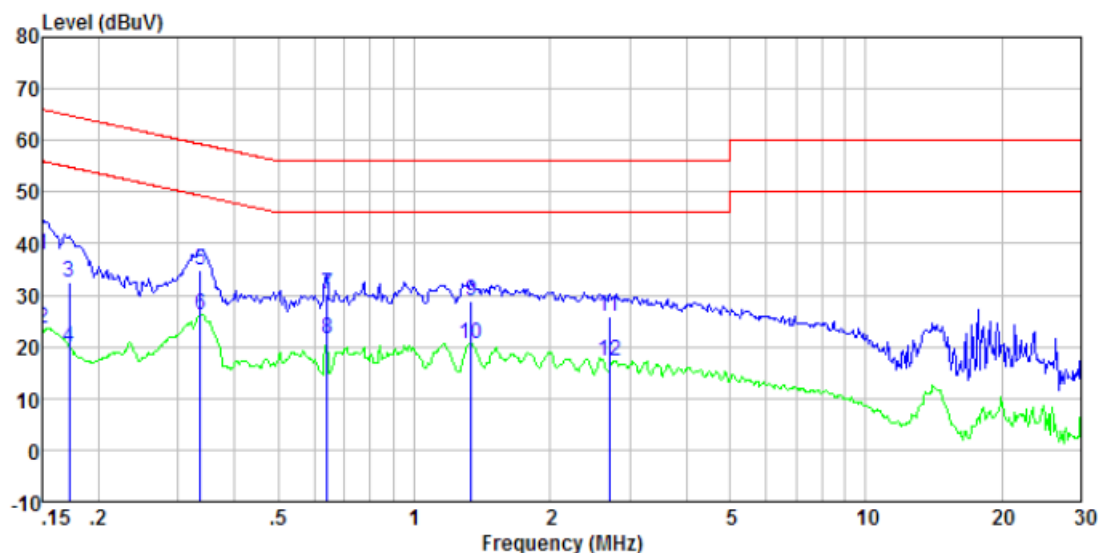
Measurement Data

Test mode:	OBD	Phase Polarity:	Line
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Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.15	35.79	0.40	0.07	36.26	65.82	-29.56	QP
0.15	21.80	0.40	0.07	22.27	55.82	-33.55	Average
0.34	33.77	0.38	0.10	34.25	59.27	-25.02	QP
0.34	25.03	0.38	0.10	25.51	49.27	-23.76	Average
0.64	29.67	0.27	0.12	30.06	56.00	-25.94	QP
0.64	20.70	0.27	0.12	21.09	46.00	-24.91	Average
0.95	26.28	0.21	0.15	26.64	56.00	-29.36	QP
0.95	18.45	0.21	0.15	18.81	46.00	-27.19	Average
1.31	27.29	0.20	0.16	27.65	56.00	-28.35	QP
1.31	18.99	0.20	0.16	19.35	46.00	-26.65	Average
2.42	25.88	0.20	0.18	26.26	56.00	-29.74	QP
2.42	17.33	0.20	0.18	17.71	46.00	-28.29	Average

Test mode:	OBD	Phase Polarity:	Neutral
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Freq MHz	Reading level dBuV	LISN/ISN factor dB/m	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.15	37.32	0.40	0.07	37.79	66.00	-28.21	QP
0.15	23.10	0.40	0.07	23.57	56.00	-32.43	Average
0.17	32.15	0.40	0.09	32.64	64.86	-32.22	QP
0.17	19.55	0.40	0.09	20.04	54.86	-34.82	Average
0.34	34.31	0.38	0.10	34.79	59.31	-24.52	QP
0.34	25.58	0.38	0.10	26.06	49.31	-23.25	Average
0.64	29.77	0.27	0.12	30.16	56.00	-25.84	QP
0.64	21.10	0.27	0.12	21.49	46.00	-24.51	Average
1.34	28.38	0.20	0.16	28.74	56.00	-27.26	QP
1.34	20.25	0.20	0.16	20.61	46.00	-25.39	Average
2.71	25.46	0.20	0.19	25.85	56.00	-30.15	QP
2.71	16.85	0.20	0.19	17.24	46.00	-28.76	Average

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

-----End-----