FCC RADIO TEST REPORT

FCC ID	:	**2AEIM-1735511**
Equipment	:	**Universal Wall Connector**
Brand Name	:	**Tesla**
Model Name	:	**1734412-XX-Y** **Note: For internal purposes, the X will be the style code and Y will be the revision. X and Y can be any from 0~9 or A~Z**
Applicant	:	**Tesla, Inc.** **3500 DEER CREEK ROAD PALO ALTO, CA 94304**
Manufacturer	:	**Tesla, Inc.** **3500 DEER CREEK ROAD PALO ALTO, CA 94304**
Standard	:	**FCC Part 15 Subpart C §15.231**

The product was received on Mar. 21, 2023, and testing was performed from Mar. 21, 2023 to Apr. 20, 2023. We, Sporton International (USA) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (USA) Inc., the test report shall not be reproduced except in full.

Approved by: Abi Lin

Sporton International (USA) Inc.
1175 Montague Expressway, Milpitas, CA 95035

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History of this test report

Report No.	Version	Description	Issue Date
FR230315009C	01	Initial issue of report	Aug. 18, 2023
FR230315009C	02	Revise Equipment Name and Model Name This report is an updated version, replacing the report issued on Aug. 18, 2023.	Oct. 05, 2023

Summary of The Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.4	15.207	AC Power Line Conducted Emissions	PASS	3.36 dB Under the limit at 0.22 MHz
3.1	15.231(a)	Types of Momentary Signals	PASS	-
3.2	15.231(c)	20dB and 99% Occupied Bandwidth	PASS	-
3.3	15.231(b) 15.231(e)	Field Strength of Fundamental and Spurious Emissions	PASS	0.50 dB Under the limit at 944.71 MHz

Note:

1. The device in this test report is identical to the device of another test report FR230315009. The device activated BLE and NFC function via SW change and there is no hardware change, thus there is no performance change on UHF. All the data in this report are derived from test report FR230315009.
2. The information above is declared by manufacturer.

Conformity Assessment Condition:
1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account. 2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”.
Disclaimer:
The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1. General Information

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Universal Wall Connector
Brand Name	Tesla
Model Name	1734412-XX-Y Note: For internal purposes, the X will be the style code and Y will be the revision. X and Y can be any from 0~9 or A~Z
FCC ID	2AEIM-1735511
EUT supports Radios application	NFC/UHF 315MHz WLAN 11b/g/n HT20 Bluetooth - LE

Remark: The above EUT's information was declared by manufacturer.

1.2 Product Specification of Equipment Under Test

Product Specification is subject to this standard	
Tx/Rx Frequency Range	315 MHz
Antenna Type	PCB Antenna
Antenna Gain	-39.28 dBi
Type of Modulation	OOK

Remark: The above EUT's information is declared by manufacturer. Please refer to Disclaimer in report summary.

1.3 Modification of EUT

No modifications are made to the EUT during all test items.

1.4 Testing Location

Test Site	Sporton International (USA) Inc.	
Test Site Location	1175 Montague Expressway, Milpitas, CA 95035 TEL : 408 9043300	
Test Site No.	**Sporton Site No.**	
	03CH01-CA, CO01-CA	

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: US1250

1.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.231
- ANSI C63.10-2013
- FCC KDB 414788 D01 Radiated Test Site v01r01

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2. Test Configuration of Equipment Under Test

2.1 Descriptions of Test Mode

Investigation has been done on all the possible configurations for searching the worst cases.

The following table is a list of the test modes shown in this test report.

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.

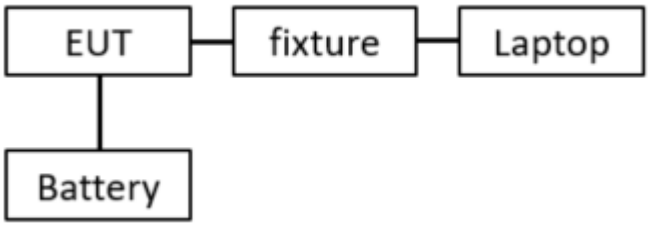
Test Items
Transmission time
20dB and 99% occupied bandwidth
Field Strength of Fundamental and Spurious Emissions
AC power line conducted emission

Test Configuration – Radiated measurement	
Mode	**Frequency**
1	315MHz

Test Configuration – AC power line conducted emission	
Mode	**Configuration**
1	315MHz on + WLAN (2.4GHz) on + Charging Mode on

2.2 Connection Diagram of Test System

Radiated measurement:



AC power line Conducted measurement:

2.3 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	Acer	N18Q13	PD9AX201NG	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
2.	Fixture board	Texas Instruments	CC1352R1	N/A	Unshielded, 1.0 m	N/A
3.	Battery	Precision Consumer	BLA12V	N/A	N/A	N/A
4.	AC Adapter	Triad	N-150MG	N/A	N/A	Unshielded, 1.7 m

2.4 EUT Operation Test Setup

Connect EUT to Laptop via fixture board. Use the software “SmartRF Studio” to set EUT in continuous transmission mode.

3. Test Results

3.1 Types of Momentarily Operated Devices

3.1.1 Limit

☒	§15.231 (a)(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

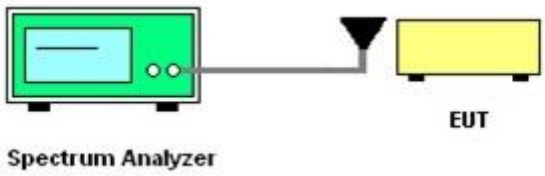
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The antenna is placed 3 meter away from EUT and connected to spectrum analyzer.
2. RBW is set to be greater than EUT bandwidth. VBW ≧ RBW.
3. Set the spectrum to clear-write and zero span.
4. Measured the transmission time of EUT under specified condition.

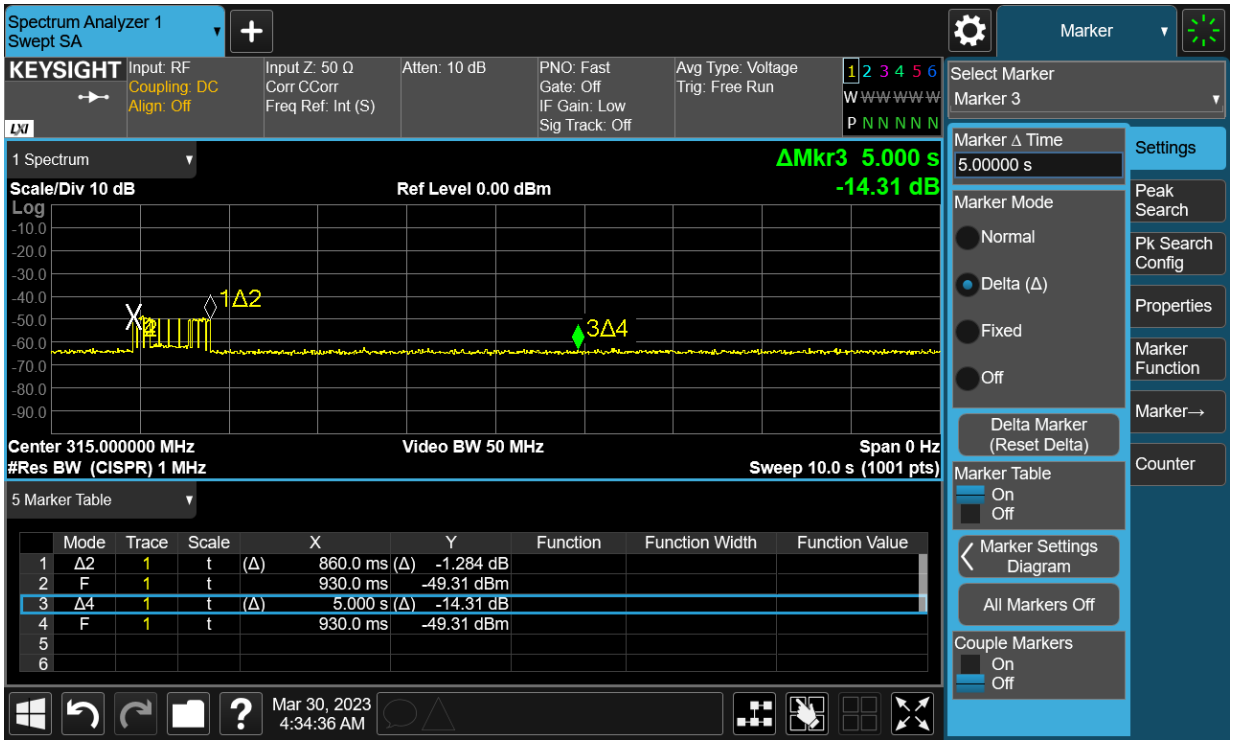
3.1.4 Test Setup



3.1.5 Test Result of transmission time

☒ §15.231 (a)(1)

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.



Transmission is activated at the same time as marker 2.

The transmission stopped at the same time as marker 1Δ2.

Transmission time: 860 msec.

3.2 20dB and 99% Occupied Bandwidth Measurement

3.2.1 Limit

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

The 99% bandwidth of momentarily operated devices shall be less or equal to 0.25% of the centre frequency for devices operating between 70 MHz and 900 MHz. For devices operating above 900 MHz, the 99% bandwidth shall be less or equal to 0.5% of the centre frequency.

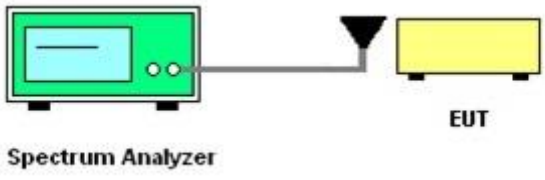
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

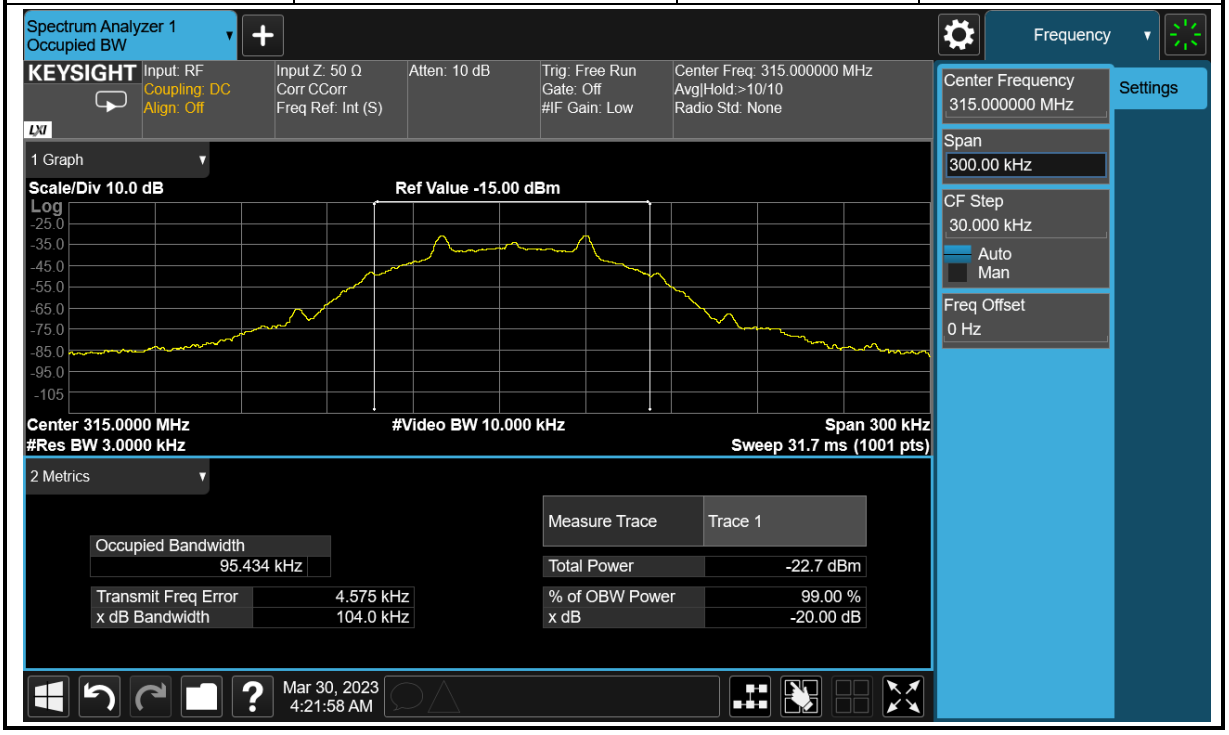
1. The antenna is placed 3 meter away from EUT and connected to spectrum analyzer.
2. RBW is set to be greater than 1% of OBW but less than 5% of OBW.
3. VBW is set to be ≧ 3 * RBW
4. Set the spectrum to peak detector and max hold.
5. Measured the 20dB bandwidth.
6. Measured the 99% OBW.

3.2.4 Test Setup



3.2.5 Test Result of 20dB BW and OBW

315MHz			
20dB BW	20dB BW Limit	99% OBW	99% OBW Limit
104 kHz	< 787.5 kHz	95.434 kHz	< 787.5 kHz



3.3 Field Strength of Fundamental and Spurious Emissions

3.3.1 Limit

☒ 15.231(b)

In addition to the provisions of §15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following

From 15.231(b)(3), the limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in § 15.209, whichever limit permits a higher field strength.

Rules and specifications	FCC CFR 47 Part 15 section 15.231	
Fundamental frequency (f) (MHz)	Field strength of fundamental (μV/m) at 3m	Field strength of spurious emissions (dBμV/m) at 3m
40.66 ≤ f ≤ 40.70	2250	225
70 < f ≤ 130	1250	125
130 < f ≤ 174	1250 to 3750*	125 to 375*
174 < f ≤ 260	3750	375
260 < f ≤ 470	3750 to 12500*	375 to 1250*
470 < f	12500	1250

* Linear interpolation with frequency, f, in MHz.

3.3.2 Measuring Instruments

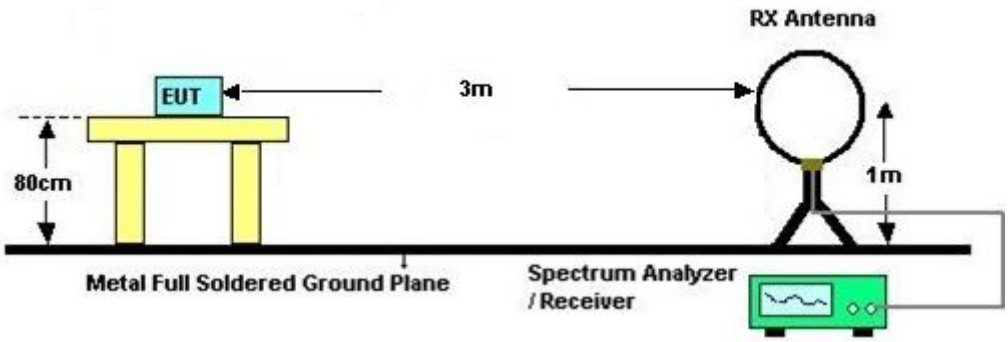
See list of measuring instruments of this test report.

3.3.3 Test Procedures

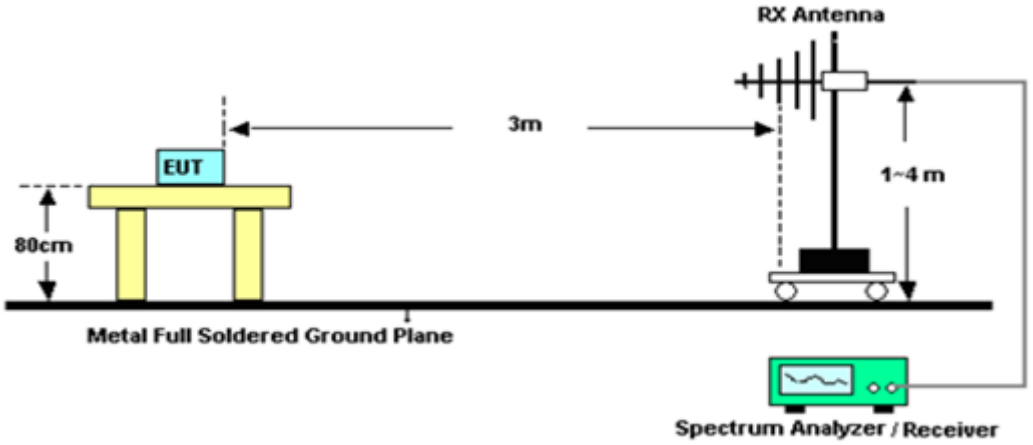
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the loop receiving antenna mounted antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the receiving antenna was fixed at one meter above ground to find the maximum emissions field strength.
4. For Fundamental emissions, use the receiver to measure Average reading.
5. For average measurement: use duty cycle correction factor method per 15.35(c).
   Duty cycle = On time/100 milliseconds
   On time = N1*L1+N2*L2+...+Nn-1*LNn-1+Nn*Ln
   Where N1 is number of type 1 pulses, L1 is length of type 1 pulses, etc.
   Average Emission Level = Peak Emission Level + 20*log(Duty cycle)
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as "-".
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as "-".

3.3.4 Test Setup

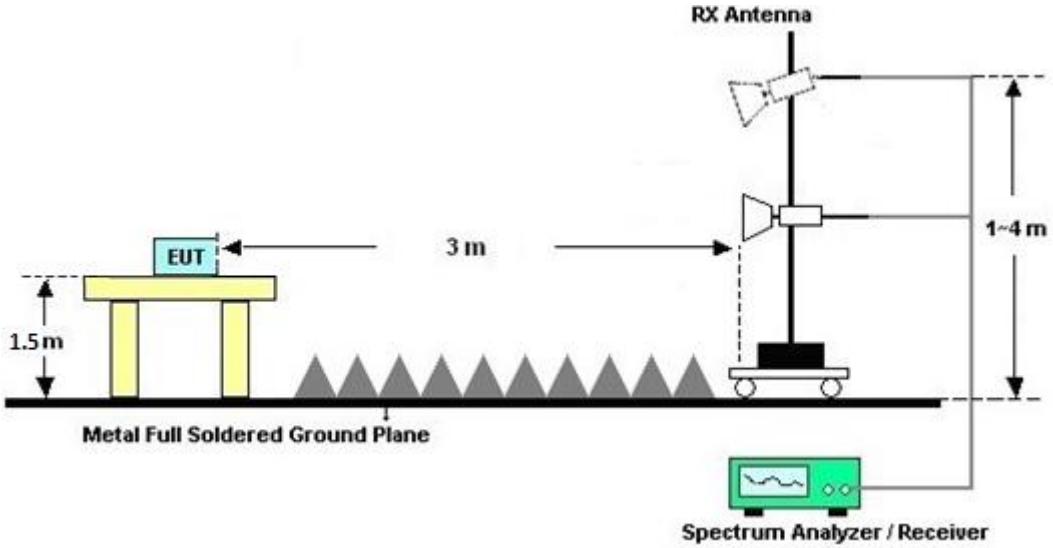
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



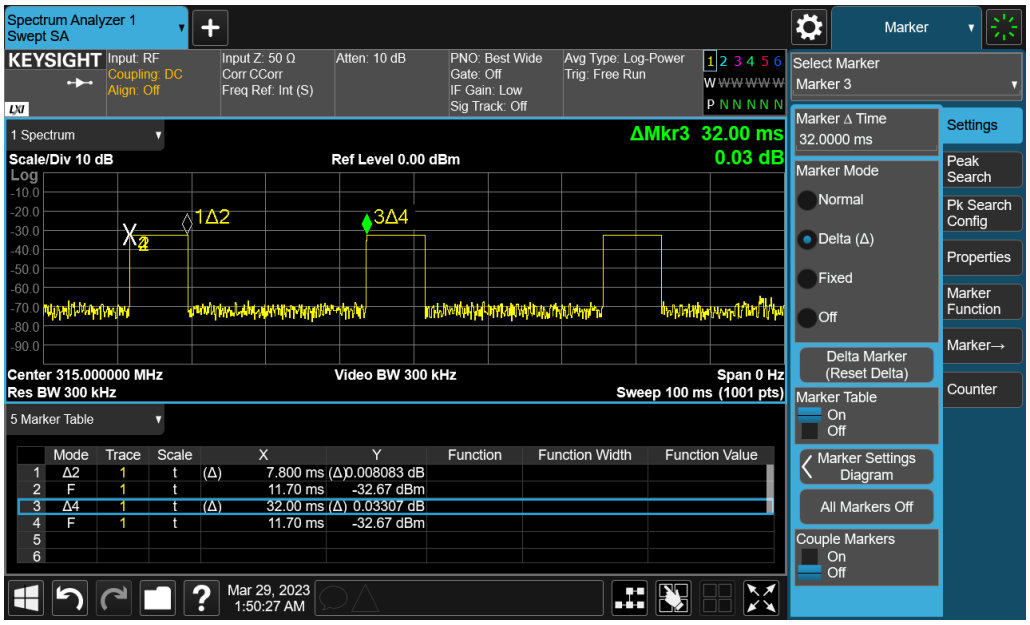
3.3.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result comes out very similar.

3.3.6 Duty Cycle

315MHz on time Plot



Note:

1. Duty cycle = 7.8 ms / 32 ms = 24.375 %
2. Duty cycle correction factor = 20*log(Duty cycle) = -12.26 dB

3.3.7 Test Result of Fundamental and Spurious Emissions

Please refer to Appendix B.

3.4 AC Conducted Emission Measurement

3.4.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

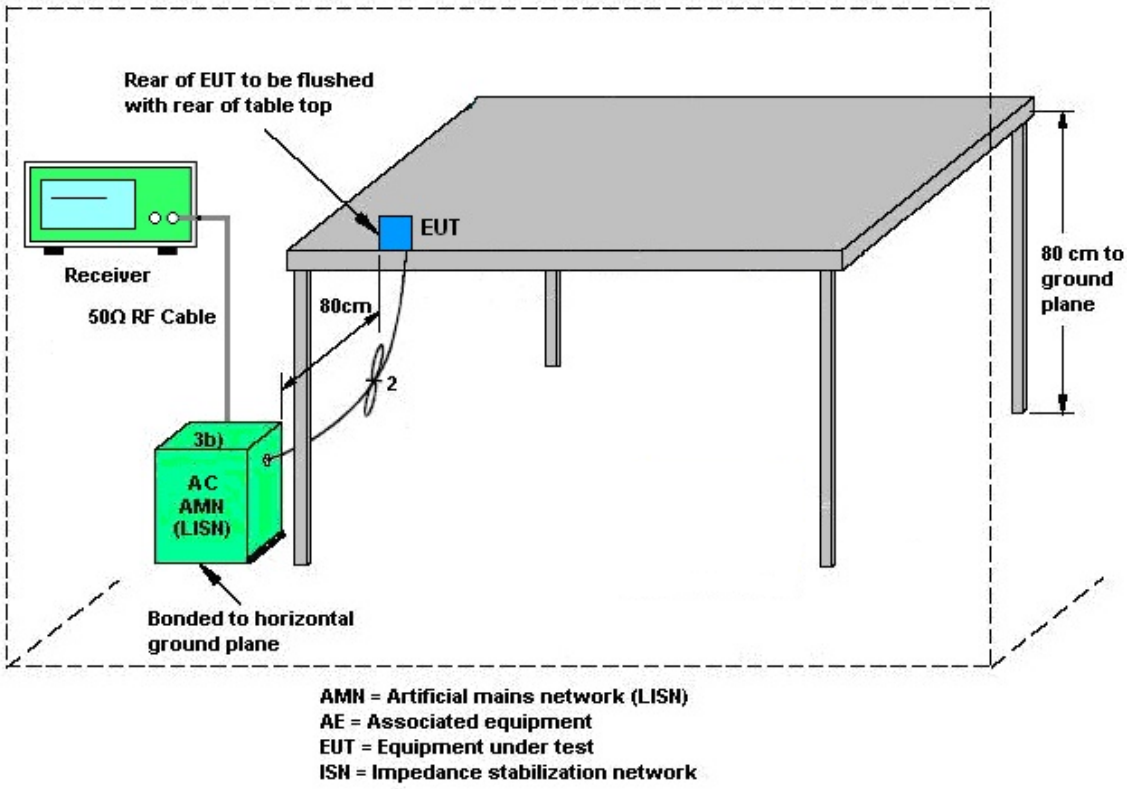
3.4.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.4.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9 kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

3.4.4 Test Setup



3.4.5 Test Result of AC Conducted Emission

Please refer to Appendix A.

4. List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	TESEQ	6111D	54683	30MHz~1GHz	Nov. 01, 2022	Mar. 21, 2023~ Apr. 20, 2023	Oct. 31, 2023	Radiation (03CH01-CA)
Horn Antenna	SCHWARZBECK	BBHA 9120D	02115	1GHz~18GHz	Aug. 16, 2022	Mar. 21, 2023~ Apr. 20, 2023	Aug. 15, 2023	Radiation (03CH01-CA)
Preamplifier	SONOMA	310N	372241	9kHz~1GHz	May 09, 2022	Mar. 21, 2023~ Apr. 20, 2023	May 08, 2023	Radiation (03CH01-CA)
Preamplifier	E-instrument	ERA-100M-18G-56-01-A70	EC1900252	1GHz~18GHz	May 09, 2022	Mar. 21, 2023~ Apr. 20, 2023	May 08, 2023	Radiation (03CH01-CA)
EMI Test Receiver	R&S	ESU26	100049	20Hz~26.5GHz	Jun. 01, 2022	Mar. 21, 2023~ Apr. 20, 2023	May 31, 2023	Radiation (03CH01-CA)
Spectrum Analyzer	Keysight	N9010B	MY63440343	10Hz~44GHz	Jan. 15, 2023	Mar. 21, 2023~ Apr. 20, 2023	Jan. 14, 2024	Radiation (03CH01-CA)
RF Cable	HUBER+SUHNER	SUCOFLEX 102	8015932/2, 8015762/2, 804938/2	N/A	Mar. 06, 2023	Mar. 21, 2023~ Apr. 20, 2023	Mar. 05, 2024	Radiation (03CH01-CA)
Filter	Wainwright	WLK12-1200-12 72-11000-40SS	SN1	1.2GHz Low Pass Filter	Jul. 21, 2022	Mar. 21, 2023~ Apr. 20, 2023	Jul. 20, 2023	Radiation (03CH01-CA)
Filter	Wainwright	WHKX12-900-10 00-15000-60TS	SN2	1GHz High Pass Filter	Feb. 24, 2023	Mar. 21, 2023~ Apr. 20, 2023	Feb. 23, 2024	Radiation (03CH01-CA)
Hygrometer	TESTO	608-H1	45141354	N/A	Jul. 27, 2022	Mar. 21, 2023~ Apr. 20, 2023	Jul. 26, 2023	Radiation (03CH01-CA)
Controller	Chaintek	EM-1000	060881	Control Turn Table & Antenna Mast	N/A	Mar. 21, 2023~ Apr. 20, 2023	N/A	Radiation (03CH01-CA)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Mar. 21, 2023~ Apr. 20, 2023	N/A	Radiation (03CH01-CA)
Test Software	Audix E3	E6.2009-8-24d	PK-002093	N/A	N/A	Mar. 21, 2023~ Apr. 20, 2023	N/A	Radiation (03CH01-CA)
LISN	TESEQ	NNB51	47407	N/A	May 10, 2022	Mar. 31, 2023	May 09, 2023	Conduction (CO01-CA)
LISN	TESEQ	NNB51	47415	N/A	May 10, 2022	Mar. 31, 2023	May 09, 2023	Conduction (CO01-CA)
EMI Test Receiver	R&S	ESR7	102177	9kHz~7GHz	May 31, 2022	Mar. 31, 2023	May 30, 2023	Conduction (CO01-CA)
Pulse limiter with 10dB attenuation	R&S	VTSD 9561-F N	9561-F-N00412	N/A	Jul. 05, 2022	Mar. 31, 2023	Jul. 04, 2023	Conduction (CO01-CA)
Test Software	R&S	EMC32 V10.30.0	N/A	N/A	N/A	Mar. 31, 2023	N/A	Conduction (CO01-CA)

5. Measurement Uncertainty

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.7 dB**

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.6 dB**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.2 dB**

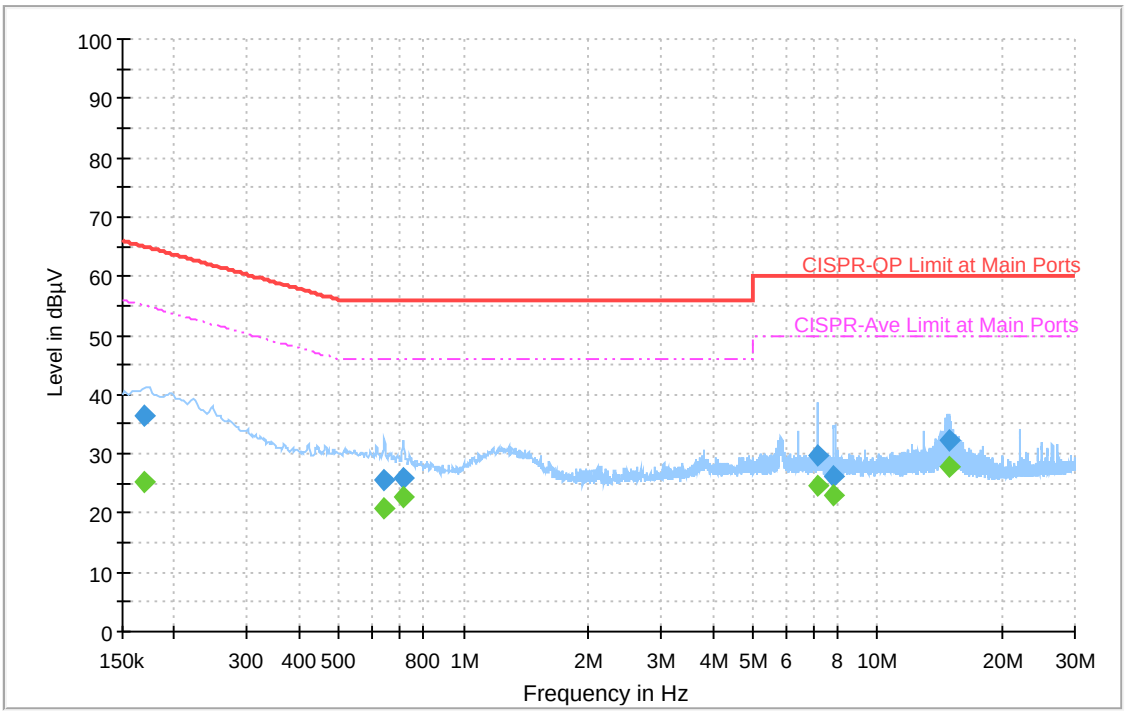
Appendix A. Test Results of AC Conducted Emission

Test Engineer :	Leo Liu	**Temperature :**	19~22℃
		Relative Humidity :	39~41%

EUT Information

Test Site Location :	CO01-CA
Power:	120Vac/60Hz
Project	230315009

Full Spectrum



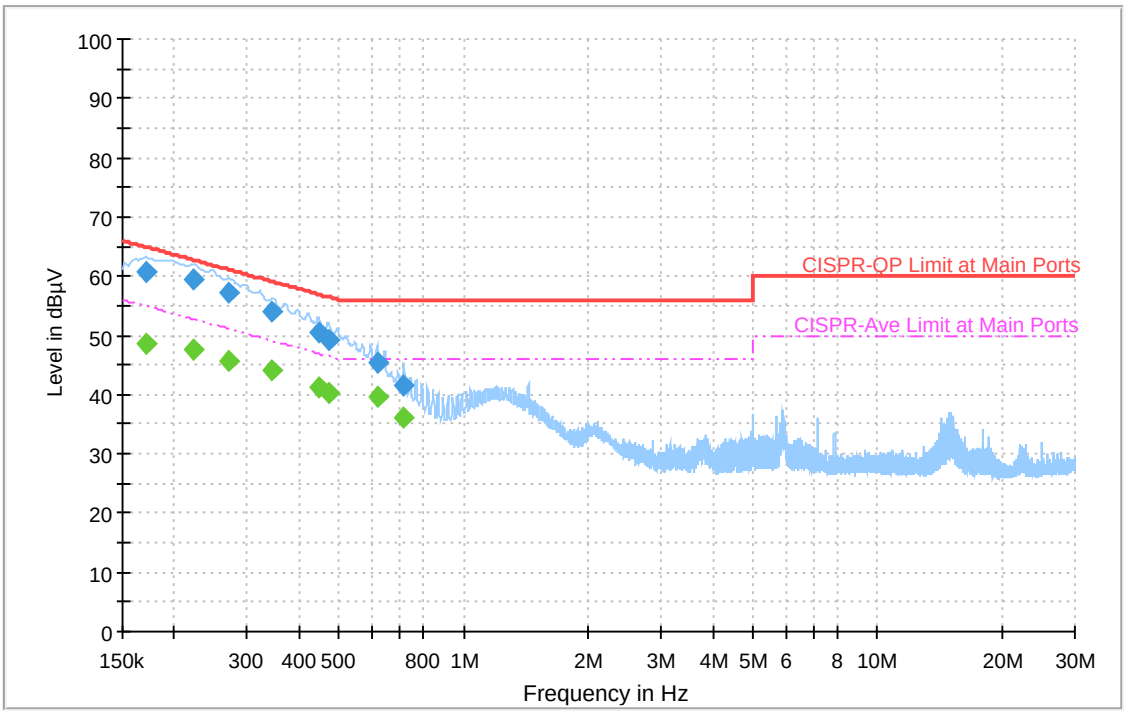
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.169341	---	25.21	54.99	29.78	L1	OFF	20.3
0.169341	36.53	---	64.99	28.46	L1	OFF	20.3
0.644712	---	20.74	46.00	25.26	L1	OFF	20.3
0.644712	25.58	---	56.00	30.42	L1	OFF	20.3
0.713139	---	22.56	46.00	23.44	L1	OFF	20.3
0.713139	25.94	---	56.00	30.06	L1	OFF	20.3
7.150083	---	24.54	50.00	25.46	L1	OFF	20.4
7.150083	29.59	---	60.00	30.41	L1	OFF	20.4
7.868733	---	22.94	50.00	27.06	L1	OFF	20.4
7.868733	26.23	---	60.00	33.77	L1	OFF	20.4
14.859033	---	27.80	50.00	22.20	L1	OFF	20.5
14.859033	32.14	---	60.00	27.86	L1	OFF	20.5

EUT Information

Site:	CO01-CA
Power:	120Vac/60Hz
Project	230315009

Full Spectrum



Final_Result

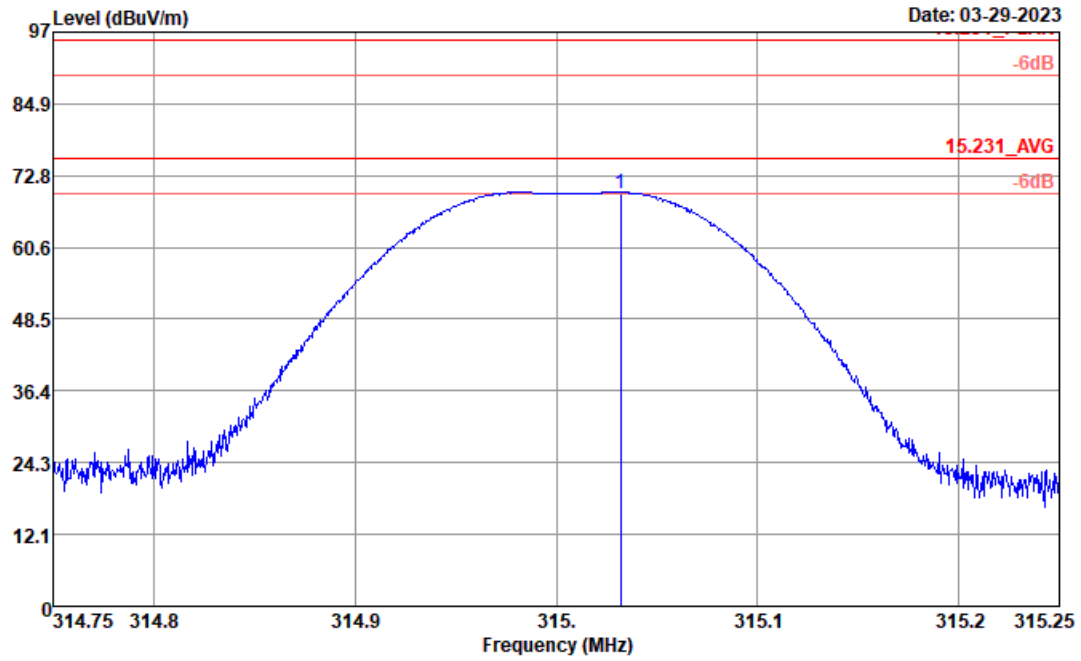
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.171726	---	48.54	54.88	6.34	N	OFF	20.3
0.171726	60.80	---	64.88	4.08	N	OFF	20.3
0.221559	---	47.59	52.76	5.17	N	OFF	20.3
0.221559	59.40	---	62.76	3.36	N	OFF	20.3
0.270879	---	45.68	51.09	5.41	N	OFF	20.3
0.270879	57.09	---	61.09	4.00	N	OFF	20.3
0.345579	---	43.97	49.07	5.10	N	OFF	20.3
0.345579	53.87	---	59.07	5.20	N	OFF	20.3
0.446010	---	41.33	46.95	5.62	N	OFF	20.3
0.446010	50.32	---	56.95	6.63	N	OFF	20.3
0.470625	---	40.27	46.50	6.23	N	OFF	20.3
0.470625	49.33	---	56.50	7.17	N	OFF	20.3
0.619413	---	39.74	46.00	6.26	N	OFF	20.3
0.619413	45.35	---	56.00	10.65	N	OFF	20.3
0.716856	---	36.20	46.00	9.80	N	OFF	20.3
0.716856	41.45	---	56.00	14.55	N	OFF	20.3

Appendix B. Test Results of Radiated Test Items

B1. Test Result of Field Strength of Fundamental Emissions

Test Mode	Mode 1	Test Frequency (MHz)	315MHz Tx

Horizontal

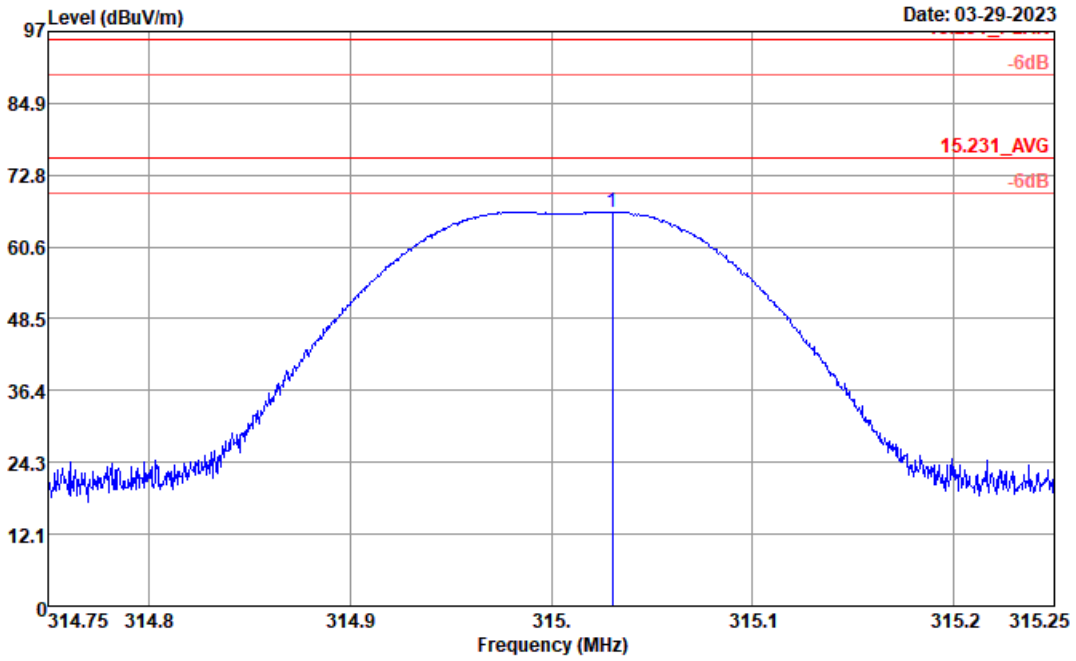


Site : 03CH01-CA
Condition : 15.231_PEAK 3m BILOG_54683_221101 HORIZONTAL
Project : 230315009
Power : 12V
Plane : Y
: Car battery

	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	315.18	69.84	-25.78	95.62	79.65	19.6	3.07	32.48	100	245	P	H
	315.18	57.58	-18.04	75.62	-	-	-	-	-	-	A	H

Note:
- Path Loss (dB) = Cable Loss (dB) + Filter Loss (dB)
- Level (dBuV/m) = Antenna Factor (dB/m) + Path Loss (dB) + Read Level (dBuV) - Preamp Factor (dB)
- Margin (dB) = Level (dBuV/m) – Limit Line (dBuV/m)
- Duty cycle correction factor = -12.26dB

Vertical



Site : 03CH01-CA
Condition : 15.231_PEAK 3m BILOG_54683_221101 VERTICAL
Project : 230315009
Power : 12V
Plane : Y
: Car battery

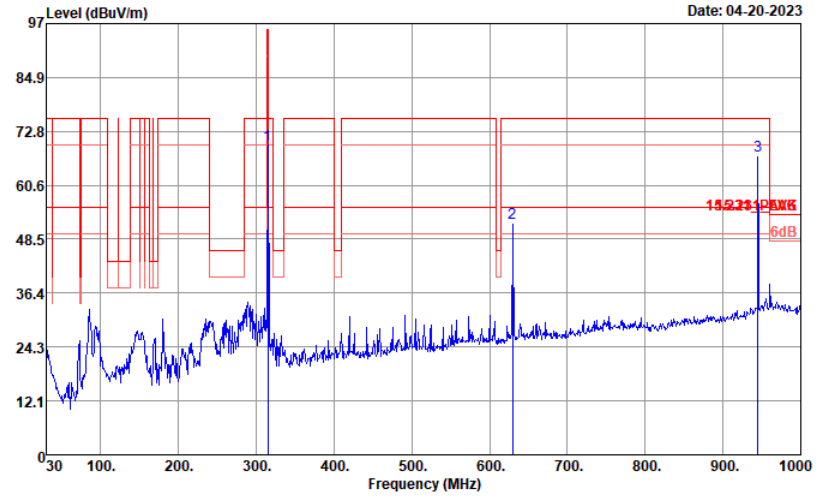
	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	315.18	66.53	-29.09	95.62	76.34	19.6	3.07	32.48	100	134	P	V
	315.18	54.27	-21.35	75.62	-	-	-	-	-	-	A	V

Note:
- Path Loss (dB) = Cable Loss (dB) + Filter Loss (dB)
- Level (dBuV/m) = Antenna Factor (dB/m) + Path Loss (dB) + Read Level (dBuV) - Preamp Factor (dB)
- Margin (dB) = Level (dBuV/m) – Limit Line (dBuV/m)
- Duty cycle correction factor = -12.26dB

B2. Test Result of Radiated Spurious Emissions (30MHz~1GHz)

Test Mode	Mode 1	Test Frequency (MHz)	315MHz Tx

Horizontal

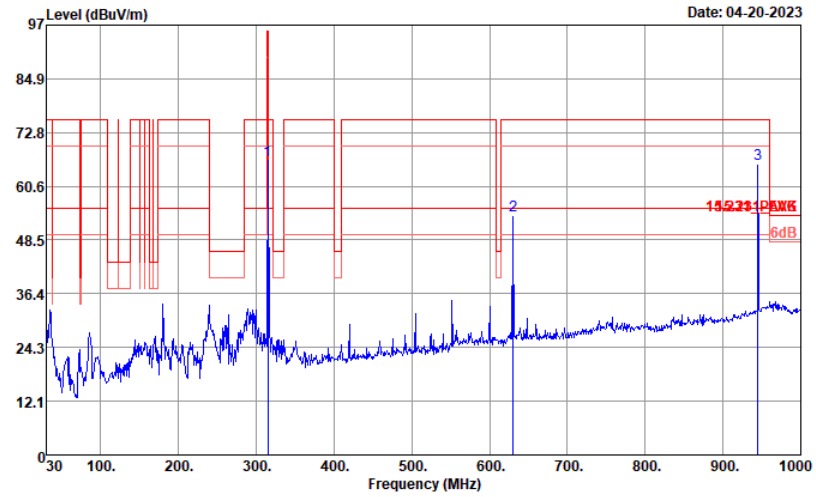


Site : 03CH01-CA
Condition : 15.231_PEAK 3m BILOG_54683_221101 HORIZONTAL
Project : 230315009
Power : 12V
Plane : Y

	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
*	315.18	69.84	-25.78	95.62	79.65	19.6	3.07	32.48	100	245	P	H
*	315.18	57.58	-18.04	75.62	-	-	-	-	-	-	A	H
	629.46	52.22	-23.4	75.62	54.5	26.17	4.41	32.86	151	252	P	H
	629.46	39.96	-15.66	55.62	-	-	-	-	-	-	A	H
	944.71	67.38	-8.24	75.62	62.59	30.88	5.45	31.54	100	340	P	H
	944.71	55.12	-0.5	55.62	-	-	-	-	-	-	A	H

Note:
- 315.18 MHz is fundamental signal which can be ignored
- Path Loss (dB) = Cable Loss (dB) + Filter Loss (dB) + Attenuator Loss (dB)
- Level (dBuV/m) = Antenna Factor (dB/m) + Path Loss (dB) + Read Level (dBuV) - Preamp Factor (dB)
- Margin (dB) = Level (dBuV/m) – Limit Line (dBuV/m)
- Duty cycle correction factor = -12.26dB

Vertical



Site : 03CH01-CA
Condition : 15.231_PEAK 3m BILOG_54683_221101 VERTICAL
Project : 230315009
Power : 12V
Plane : Y

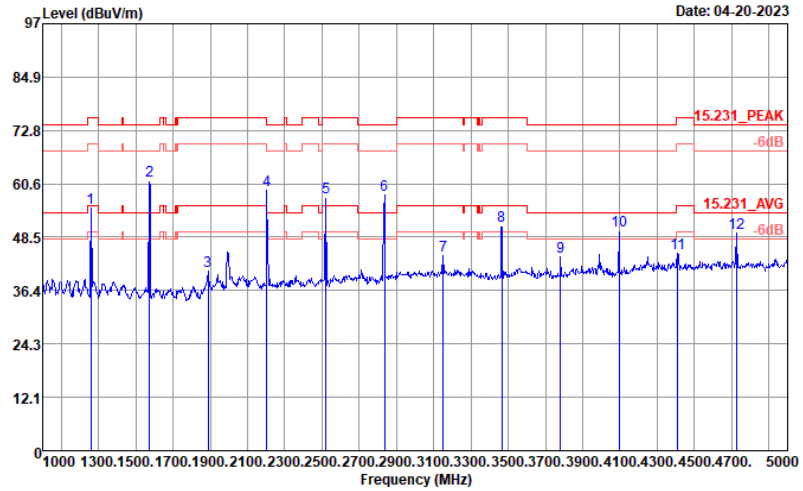
	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
*	315.18	66.53	-29.09	95.62	76.34	19.6	3.07	32.48	100	134	P	V
*	315.18	54.27	-21.35	75.62	-	-	-	-	-	-	A	V
	630.43	54.06	-21.56	75.62	56.3	26.21	4.41	32.86	103	74	P	V
	630.43	41.8	-13.82	55.62	-	-	-	-	-	-	A	V
	944.71	65.57	-10.05	75.62	60.78	30.88	5.45	31.54	123	348	P	V
	944.71	53.31	-2.31	55.62	-	-	-	-	-	-	A	V

Note:
- 315.18 MHz is fundamental signal which can be ignored
- Path Loss (dB) = Cable Loss (dB) + Filter Loss (dB)
- Level (dBuV/m) = Antenna Factor (dB/m) + Path Loss (dB) + Read Level (dBuV) - Preamp Factor (dB)
- Margin (dB) = Level (dBuV/m) – Limit Line (dBuV/m)
- Duty cycle correction factor = -12.26dB

B3. Test Result of Field Radiated Spurious Emissions (1GHz~5GHz)

Test Mode	Mode 1	Test Frequency (MHz)	315MHz Tx

Polarization: H



Site : 03CH01-CA
Condition : 15.231_PEAK 3m HORN_02115_220816 HORIZONTAL
Project : 230315009
Power : 12V
Plane : Y

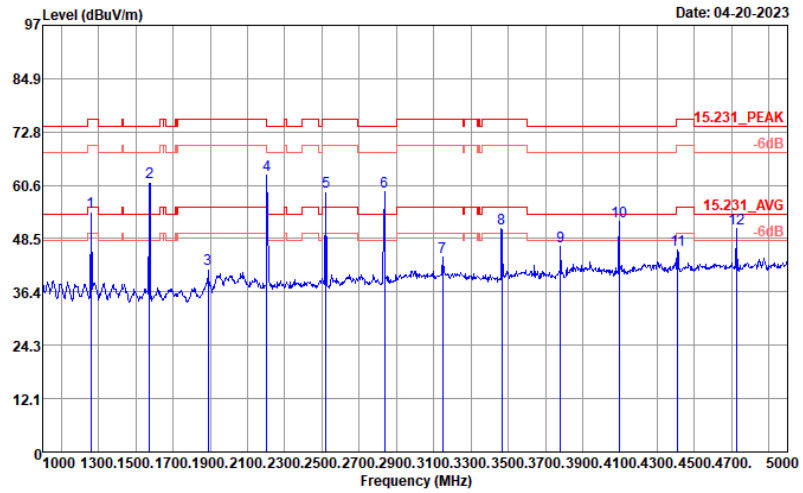
	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	1260	55.17	-20.45	75.62	90.81	26.16	6.6	68.4	271	276	P	H
	1260	42.91	-12.71	55.62	-	-	-	-	-	-	A	H
	1575	61.3	-12.7	74	96.99	25.36	6.82	67.87	202	129	P	H
	1575	49.04	-4.96	54	-	-	-	-	-	-	A	H
	1890	40.81	-34.81	75.62	75.49	25.59	7.37	67.64	-	-	P	H
	1890	28.55	-27.07	55.62	-	-	-	-	-	-	A	H
	2205	59.26	-14.74	74	92.15	27.19	7.92	68	101	7	P	H
	2205	47	-7	54	-	-	-	-	-	-	A	H
	2520	57.47	-18.15	75.62	89	27.92	8.31	67.76	240	41	P	H
	2520	45.21	-10.41	55.62	-	-	-	-	-	-	A	H
	2835	58.1	-15.9	74	87.68	28.52	8.78	66.88	101	328	P	H
	2835	45.84	-8.16	54	-	-	-	-	-	-	A	H
	3150	44.2	-31.42	75.62	72.59	29.8	9.15	67.34	-	-	P	H
	3150	31.94	-23.68	55.62	-	-	-	-	-	-	A	H
	3465	51.08	-24.54	75.62	79	29.37	9.62	66.91	151	159	P	H
	3465	38.82	-16.8	55.62	-	-	-	-	-	-	A	H
	3780	43.98	-30.02	74	70.03	30.3	10.51	66.86	165	2	P	H
	3780	31.72	-22.28	54	-	-	-	-	-	-	A	H
	4095	49.9	-24.1	74	76	30.94	10.84	67.88	233	129	P	H
	4095	37.64	-16.36	54	-	-	-	-	-	-	A	H

	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	4410	44.88	-30.74	75.62	69.76	31.66	11.08	67.62	-	-	P	H
	4410	32.62	-23	55.62	-	-	-	-	-	-	A	H
	4725	49.48	-24.52	74	73.4	31.99	11.38	67.29	111	225	P	H
	4725	37.22	-16.78	54	-	-	-	-	-	-	A	H

Note:

- Path Loss (dB) = Cable Loss (dB) + Filter Loss (dB)
- Level (dBuV/m) = Antenna Factor (dB/m) + Path Loss (dB) + Read Level (dBuV) - Preamp Factor (dB)
- Margin (dB) = Level (dBuV/m) – Limit Line (dBuV/m)
- Duty cycle correction factor = -12.26dB
- The emission position marked as “-” means no emission found with sufficient margin against limit line or noise floor only.

Vertical



Site : 03CH01-CA
Condition : 15.231_PEAK 3m HORN_02115_220816 VERTICAL
Project : 230315009
Power : 12V
Plane : Y

	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	1260	54.48	-21.14	75.62	90.02	26.26	6.6	68.4	202	27	P	V
	1260	42.22	-13.4	55.62	-	-	-	-	-	-	A	V
	1575	61.3	-12.7	74	97.01	25.34	6.82	67.87	250	35	P	V
	1575	49.04	-4.96	54	-	-	-	-	-	-	A	V
	1890	41.65	-33.97	75.62	76.02	25.9	7.37	67.64	-	-	P	V
	1890	29.39	-26.23	55.62	-	-	-	-	-	-	A	V
	2205	63.04	-10.96	74	95.67	27.45	7.92	68	150	22	P	V
	2205	50.78	-3.22	54	-	-	-	-	-	-	A	V
	2520	59.06	-16.56	75.62	90.41	28.1	8.31	67.76	155	12	P	V
	2520	46.8	-8.82	55.62	-	-	-	-	-	-	A	V
	2835	59.27	-14.73	74	88.76	28.61	8.78	66.88	202	46	P	V
	2835	47.01	-6.99	54	-	-	-	-	-	-	A	V
	3148	44.33	-31.29	75.62	72.5	30.03	9.15	67.34	-	-	P	V
	3148	32.07	-23.55	55.62	-	-	-	-	-	-	A	V
	3465	50.81	-24.81	75.62	78.6	29.5	9.62	66.91	152	40	P	V
	3465	38.55	-17.07	55.62	-	-	-	-	-	-	A	V
	3780	46.77	-27.23	74	72.74	30.38	10.51	66.86	318	357	P	V
	3780	34.51	-19.49	54	-	-	-	-	-	-	A	V
	4095	52.41	-21.59	74	78.54	30.91	10.84	67.88	202	183	P	V
	4095	40.15	-13.85	54	-	-	-	-	-	-	A	V
	4410	45.93	-29.69	75.62	70.64	31.83	11.08	67.62	-	-	P	V
	4410	33.67	-21.95	55.62	-	-	-	-	-	-	A	V

	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
	4725	50.81	-23.19	74	74.61	32.11	11.38	67.29	303	183	P	V
	4725	38.55	-15.45	54	-	-	-	-	-	-	A	V

Note:

- Path Loss (dB) = Cable Loss (dB) + Filter Loss (dB)
- Level (dBuV/m) = Antenna Factor (dB/m) + Path Loss (dB) + Read Level (dBuV) - Preamp Factor (dB)
- Margin (dB) = Level (dBuV/m) – Limit Line (dBuV/m)
- Duty cycle correction factor = -12.26dB
- The emission position marked as “-” means no emission found with sufficient margin against limit line or noise floor only.