

🧲 Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Report No: CCISE180602801

FCC/IC REPORT

Applicant: Automotive Data Solutions Inc.

Address of Applicant: 8400 Bougainville Montreal Quebec Canada H4P 2G1

Equipment Under Test (EUT)

Product Name: CAR ALARM (TWO WAY)

Model No.: TR3420BF

FCC ID: 2AEPJ-TR3420BF

Canada IC: 11418A-TR3420BF

FCC CFR Title 47 Part 15 Subpart C Section 15.247

Applicable standards: RSS-Gen Issue 4, November 2014

RSS-247 Issue 2, February 2017

Date of sample receipt: 24 May, 2018

Date of Test: 31 May, to 14 Jul., 2018

Date of report issued: 15 Jul., 2018

Test Result: PASS *

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

Authorized Signature:



Bruce Zhang Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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2 Version

| Version No. | Date | Description |
|-------------|---------------|-------------|
| 00 | 15 Jul., 2018 | Original |
| | | |
| | | |
| | | |
| | | |

Tested by: Date: 15 Jul., 2018

Test ⊈naineer

Reviewed by: Date: 15 Jul., 2018

Project Engineer



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4 Test Summary

| Tool Home | S | Danult | |
|---|-------------------|---|--------|
| Test Items | FCC | IC | Result |
| Antenna Requirement | 15.203/15.247 (c) | / | Pass |
| AC Power Line Conducted Emission | 15.207 | RSS-GEN Section 8.8 | N/A |
| Conducted Peak Output Power | 15.247 (b)(3) | RSS-247 Section 5.4 (d) | Pass |
| 6dB Emission Bandwidth 99% Occupied Bandwidth | 15.247 (a)(2) | RSS-247 Section 5.2 (a) | Pass |
| Power Spectral Density | 15.247 (e) | RSS-247 Section 5.2 (b) | Pass |
| Band Edge | 15.247(d) | RSS-GEN Section 8.10 RSS-247 Section 5.5 | Pass |
| Conducted and Radiated Spurious Emission | 15.205/15.209 | RSS-GEN Section 6.13 RSS-247 Section 5.5 | Pass |

Pass: The EUT complies with the essential requirements in the standard.



5 General Information

5.1 Client Information

| Applicant: | Automotive Data Solutions Inc. |
|------------------------|---|
| Address: | 8400 Bougainville Montreal Quebec Canada H4P 2G1 |
| Manufacturer/ Factory: | Portman Electronics (Dongguan) CO., LTD |
| Address: | NO.10, LUYI 2 ROAD, TANGXIA TOWN, DONGGUAN CITY, GUANGDONG PROVINCE CHINA |

5.2 General Description of E.U.T.

| Product Name: | CAR ALARM (TWO WAY) |
|------------------------|---------------------|
| Model No.: | TR3420BF |
| Operation Frequency: | 915 MHz |
| Channel numbers: | 1 |
| Modulation technology: | Lora |
| Antenna Type: | Internal Antenna |
| Antenna gain: | -1.25 dBi |
| Power supply: | DC3V (CR2450) |



5.3 Test environment and test mode

| Operating Environment: | |
|------------------------|---|
| Temperature: | 24.0 °C |
| Humidity: | 54 % RH |
| Atmospheric Pressure: | 1010 mbar |
| Test mode: | |
| Transmitting mode | Keep the EUT in continuous transmitting with modulation |

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The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. Duty cycle setting during the transmission is 100% with maximum power setting for all modulations.

5.4 Description of Support Units

The EUT has been tested as an independent unit.

5.5 Measurement Uncertainty

| Parameters | Expanded Uncertainty |
|-------------------------------------|----------------------|
| Radiated Emission (9kHz ~ 30MHz) | ±2.76 dB (k=2) |
| Radiated Emission (30MHz ~ 1000MHz) | ±4.28 dB (k=2) |
| Radiated Emission (1GHz ~ 18GHz) | ±5.72 dB (k=2) |
| Radiated Emission (18GHz ~ 40GHz) | ±2.88 dB (k=2) |

5.6 Laboratory Facility

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

FCC - Registration No.: 727551

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.

IC - Registration No.: 10106A-1

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

CNAS - Registration No.: CNAS L6048

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

A2LA - Registration No.: 4346.01

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

5.7 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,

Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China
Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366



5.8 Test Instruments list

| Radiated Emission: | | | | | |
|--------------------|-----------------|---------------|------------|-------------------------|-----------------------------|
| Test Equipment | Manufacturer | Model No. | Serial No. | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| 3m SAC | SAEMC | 9m*6m*6m | 966 | 07-22-2017 | 07-21-2020 |
| Loop Antenna | SCHWARZBECK | FMZB1519B | 00044 | 03-16-2018 | 03-15-2019 |
| BiConiLog Antenna | SCHWARZBECK | VULB9163 | 497 | 03-16-2018 | 03-15-2019 |
| Horn Antenna | SCHWARZBECK | BBHA9120D | 916 | 03-16-2018 | 03-15-2019 |
| EMI Test Software | AUDIX | E3 | 6.110919b | N/A | N/A |
| Pre-amplifier | HP | 8447D | 2944A09358 | 03-07-2018 | 03-06-2019 |
| Pre-amplifier | CD | PAP-1G18 | 11804 | 03-07-2018 | 03-06-2019 |
| Spectrum analyzer | Rohde & Schwarz | FSP30 | 101454 | 03-07-2018 | 03-06-2019 |
| EMI Test Receiver | Rohde & Schwarz | ESRP7 | 101070 | 03-07-2018 | 03-06-2019 |
| Cable | ZDECL | Z108-NJ-NJ-81 | 1608458 | 03-07-2018 | 03-06-2019 |
| Cable | MICRO-COAX | MFR64639 | K10742-5 | 03-07-2018 | 03-06-2019 |
| Cable | SUHNER | SUCOFLEX100 | 58193/4PE | 03-07-2018 | 03-06-2019 |



6 Test results and Measurement Data

6.1 Antenna requirement:

Standard requirement:

FCC Part 15 C Section 15.203 /247(c)

15.203 requirement:

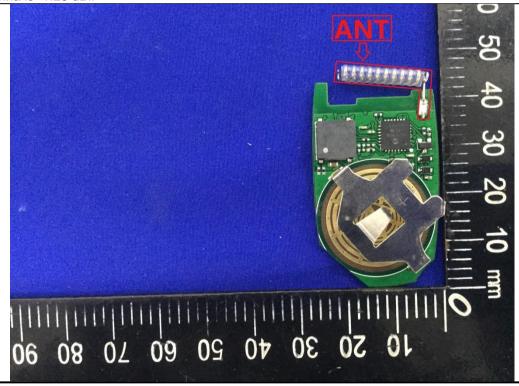
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

E.U.T Antenna:

The antenna is an Internal Antenna which cannot replace by end-user, the best-case gain of the antenna is -1.25 dBi.





6.2 Conducted Output Power

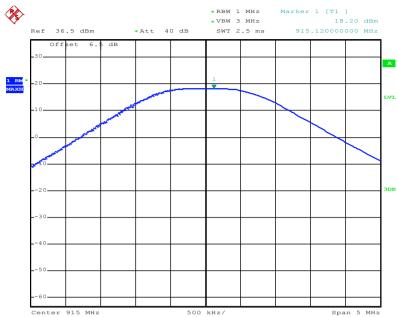
| Test Requirement: | FCC Part 15 C Section 15.247 (b)(3) RSS-247 section 5.4(d) | | |
|-------------------|---|--|--|
| Test Method: | ANSI C63.10:2013 and KDB 558074 | | |
| Limit: | 30dBm | | |
| Test setup: | Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane | | |
| Test Instruments: | Refer to section 5.8 for details | | |
| Test mode: | Refer to section 5.3 for details | | |
| Test results: | Passed | | |

Measurement Data:

| Test Frequency | Maximum Conducted Output Power (dBm) | Limit(dBm) | Result |
|----------------|--------------------------------------|------------|--------|
| 915MHz | 18.20 | 30.00 | Pass |



Test plot as follows:



Date: 8.JUN.2018 18:57:30



6.3 Occupy Bandwidth

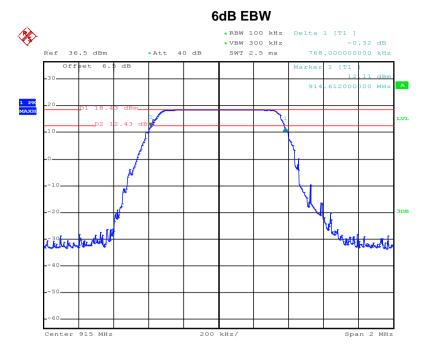
| Test Requirement: Test Method: | FCC Part 15 C Section 15.247 (a)(2) RSS-247 section 5.2(a) ANSI C63.10:2013 and KDB 558074 | |
|---------------------------------|--|--|
| | | |
| Limit: | >500kHz | |
| Test setup: | Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane | |
| Test Instruments: | Refer to section 5.8 for details | |
| Test mode: | Refer to section 5.3 for details | |
| Test results: | Passed | |

Measurement Data:

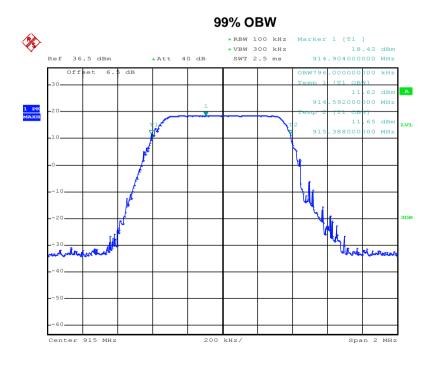
| Test Frequency | 6dB Emission Bandwidth (MHz) | Limit(kHz) | Result |
|----------------|------------------------------|------------|--------|
| 915 MHz | 0.768 | >500 | Pass |
| Test Frequency | 99% Occupy Bandwidth (MHz) | Limit(kHz) | Result |
| 915 MHz | 0.796 | N/A | N/A |



Test plot as follows:



Date: 8.JUN.2018 19:02:40



Date: 8.JUN.2018 19:05:19



6.4 Power Spectral Density

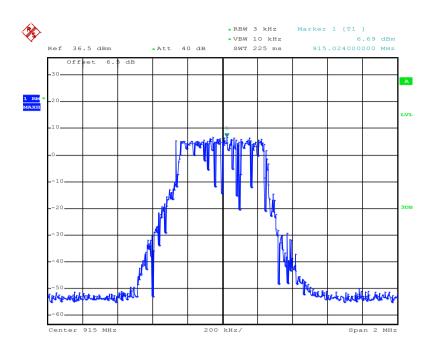
| Test Requirement: Test Method: | FCC Part 15 C Section 15.247 (e) RSS-247 section 5.2(b) ANSI C63.10:2013 and KDB 558074 | | | |
|---------------------------------|---|--|--|--|
| | | | | |
| Limit: | 8 dBm | | | |
| Test setup: | Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane | | | |
| Test Instruments: | Refer to section 5.8 for details | | | |
| Test mode: | Refer to section 5.3 for details | | | |
| Test results: | Passed | | | |

Measurement Data:

| Test Frequency | Power Spectral Density (dBm) | Limit(dBm) | Result |
|----------------|------------------------------|------------|--------|
| 915 MHz | 6.69 | 8.00 | Pass |



Test plots as follow:



Date: 8.JUN.2018 19:12:27



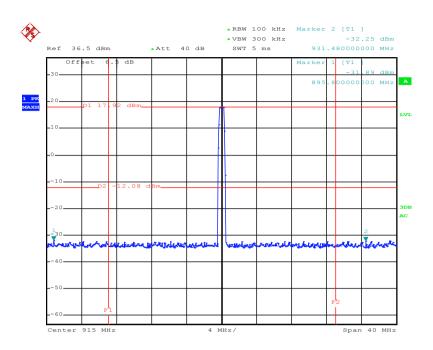
6.5 Band Edge

6.5.1 Conducted Emission Method

| 0.3.1 Conducted Linission | | | | | |
|---------------------------|---|--|--|--|--|
| Test Requirement: | FCC Part 15 C Section 15.247 (d) RSS-247 section 5.5 | | | | |
| Test Method: | ANSI C63.10:2013 and KDB 558074 | | | | |
| Limit: | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. | | | | |
| Test setup: | Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane | | | | |
| Test Instruments: | Refer to section 5.8 for details | | | | |
| Test mode: | Refer to section 5.3 for details | | | | |
| Test results: | Passed | | | | |



Test plots as follow:



Date: 14.JUN.2018 15:40:18

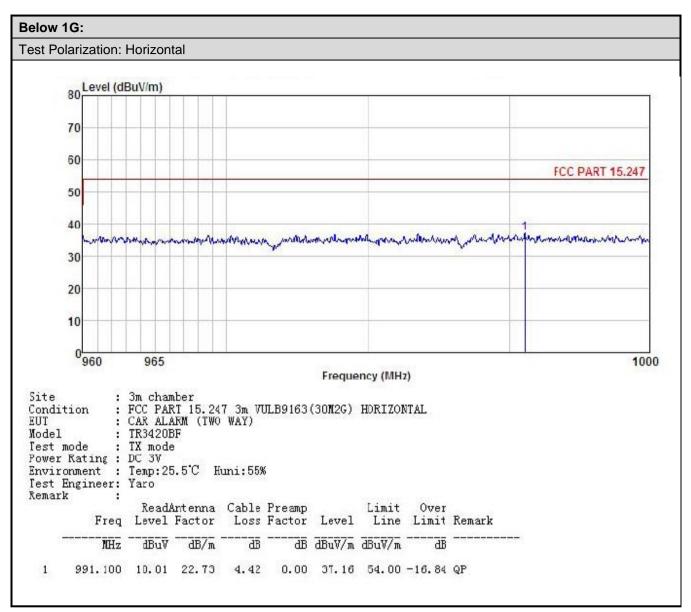


6.5.2 Radiated Emission Method

| 6.5.2 | 5.2 Radiated Emission Method | | | | | | | | |
|-------|------------------------------|--|--|--|---|--|--|--|--|
| | Test Requirement: | FCC Part 15 C Section 15.209 and 15.205 RSS-GEN section 8.10 | | | | | | | |
| | Test Method: | ANSI C63.10: 2013 and KDB 558074 | | | | | | | |
| | Test Frequency Range: | 2.3GHz to 2.5G | iHz | | | | | | |
| | Test Distance: | 3m | | | | | | | |
| | Receiver setup: | <u> </u> | | | | | | Remark | |
| | • | Above 1GHz | Peak | | 1MHz | | MHz | Peak Value | |
| | | | RMS | 1 : | 1MHz | | MHz | Average Value | |
| | Limit: | Frequenc | ;y | Lim | nit (dBuV/m @3 54.00 | sm) | ۸۰ | Remark /erage Value | |
| | | Above 1GI | Hz | | 74.00 | | | Peak Value | |
| | Test potuni | the ground to determing to determing the EUT wantenna, watower. 3. The antennate the ground Both horizon make the nate of the end of the end of the end of the end of the EUT have 10 determing the EUT the end of th | at a 3 menter the post vas set 3 which was the post vas set 3 which was the post of the po | eter continued to the c | camber. The tall of the highest rs away from the read on the top ried from one nathe maximum versions, the EUT has was turned from the was turned from the was turned from the was set to Pear Maximum Holle EUT in peak testing could be orted. Otherwis | ble wradiane into of a neter value s of the was a beginn 0 modern stopped the brief one brief br | as rotat tion. erference variable to four of the fi he anter arrange ghts from degrees etect Fun de was 10 ped and emission y one us | meters above eld strength. Inna are set to dis worst in 1 meter to 4 is to 360 degrees inction and displayed by the peak values ons that did not sing peak, quasi- | |
| | Test setup: | AE Magazine (Turr | EUT I | Ground R | Horn Antenna elerence Plane Pre- Amptider Contr | Antenna T | lower - | | |
| | Test Instruments: | Refer to section 5.8 for details | | | | | | | |
| | Test mode: | Refer to section 5.3 for details | | | | | | | |
| | Test results: | Passed | | | | | | | |
| | | | | | | | | | |

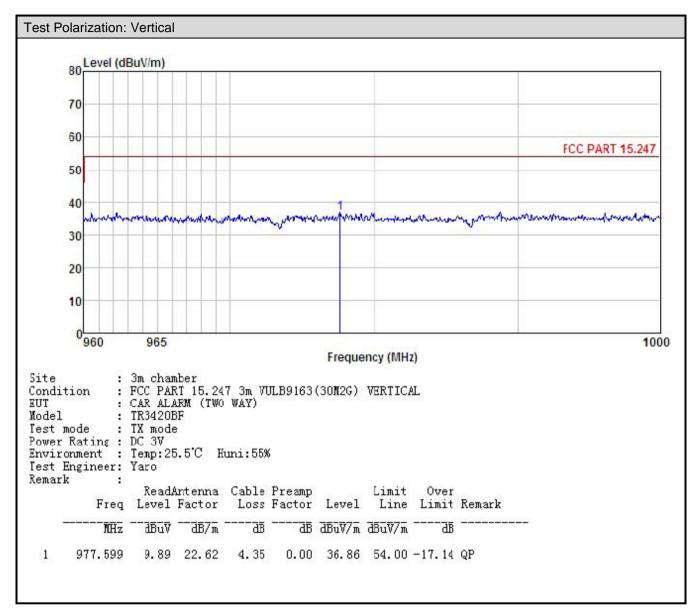






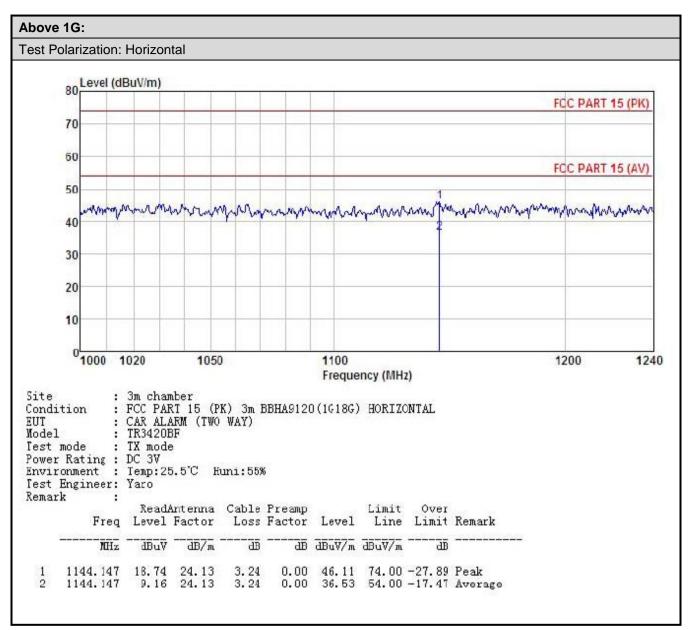






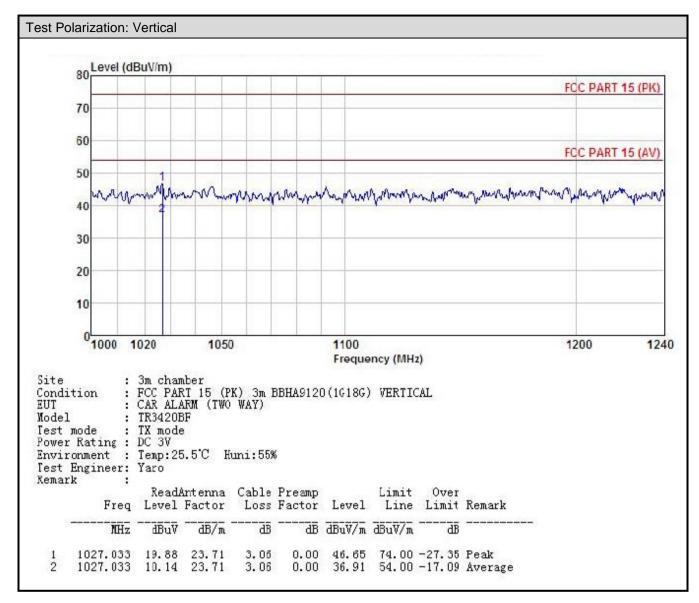














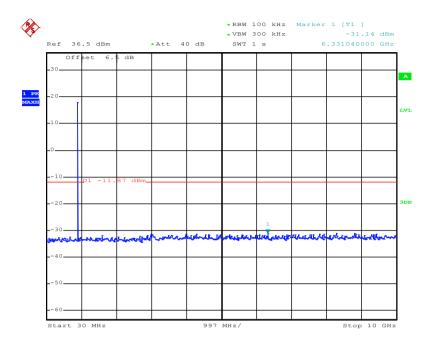
6.6 Spurious Emission

6.6.1 Conducted Emission Method

| Test Requirement: | FCC Part 15 C Section 15.247 (d) RSS-247 section 5.5 | | | | |
|-------------------|---|--|--|--|--|
| Test Method: | ANSI C63.10:2013 and KDB 558074 | | | | |
| Limit: | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. | | | | |
| Test setup: | Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane | | | | |
| Test Instruments: | Refer to section 5.8 for details | | | | |
| Test mode: | Refer to section 5.3 for details | | | | |
| Test results: | Passed | | | | |



Test plot as follows:



Date: 14.JUN.2018 14:16:29

30MHz~10GHz



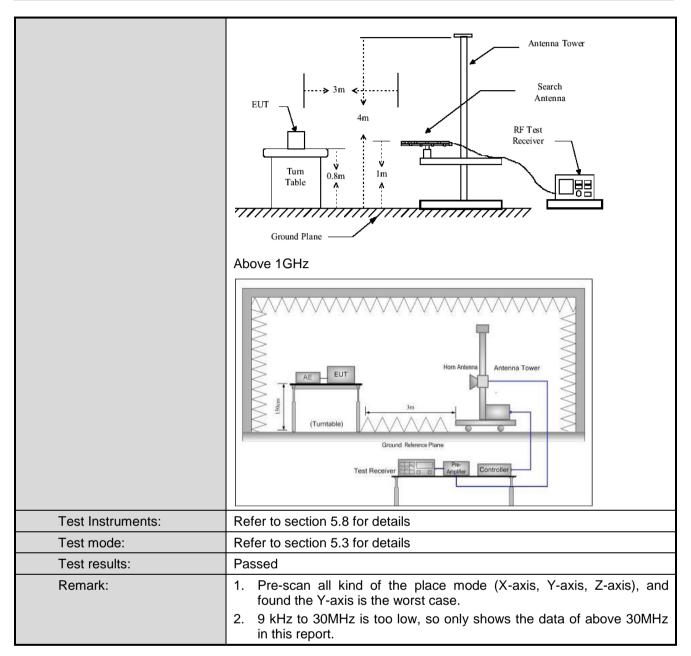


6.6.2 Radiated Emission Method

| Limit: Frequency Limit (dBuV/m @3m) Remark 30MHz-88MHz 40.0 Quasi-peak Value 88MHz-216MHz 40.0 Quasi-peak Value 89MHz-960MHz 40.0 Quasi-peak Value 216MHz-960MHz Above 1GHz Above 1GHz Test Procedure: 1. The EUT was placed on the top of a rotating table 0.8m(be 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter cam The table was rotated 360 degrees to determine the position of highest radiation. 2. The EUT was set 3 meters away from the interference-receivantenna, which was mounted on the top of a variable-height ante tower. 3. The antenna height is varied from one meter to four meters ab the ground to determine the maximum value of the field stren Both horizontal and vertical polarizations of the antenna are se make the measurement. 4. For each suspected emission, the EUT was arranged to its w case and then the antenna was tuned to heights from 1 meters meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10 dB lower the limit specified, then testing could be stopped and the peak val of the EUT would be reported. Otherwise the emissions that did have 10 dB margin would be re-tested one by one using peak, que peak or average method as specified and then reported in a content of the surface of the surface of the restered one by one using peak, que peak or average method as specified and then reported in a content of the surface of the surface of the surface one by one using peak, que peak or average method as specified and then reported in a content of the surface of the surface of the surface one by one using peak, que peak or average method as specified and then reported in a content of the surface of the surface of the surface one by one using peak, que peak or average method as specified and then reported in a content of the surface of the surface of the surface of the surface of the surfa | Test Requirement: | FCC Part 15 C Section 15.209 and 15.205 RSS-Gen section 6.13 | | | | | |
|--|-----------------------|--|-----------|----------|------|-----|------------------|
| Test Distance: Receiver setup: Frequency Detector RBW VBW Remark | Test Method: | ANSI C63.10:2013 | | | | | |
| Receiver setup: Frequency Detector RBW VBW Remark 30MHz-1GHz Quasi-peak 120KHz 300KHz Quasi-peak Value Above 1GHz Peak 1MHz 3MHz Peak Value RMS 1MHz 3MHz Average Value RMS 1MHz 3MHz Average Value Above 1GHz RMS 1MHz 3MHz Average Value Average Value MSMHz-88MHz 40.0 Quasi-peak Value 216MHz-960MHz 43.5 Quasi-peak Value Q60MHz-1GHz 54.0 Quasi-peak Value Above 1GHz 74.0 Peak Value Average Valu | Test Frequency Range: | 9kHz to 25GHz | | | | | |
| Summary Peak 120KHz 300KHz Quasi-peak Above 1GHz Peak 1MHz 3MHz Peak Value RMS 1MHz 3MHz Average Value RMS 1MHz 3MHz Average Value Above 1GHz Summary Author | Test Distance: | 3m | | | | | |
| Summary Deak 120KHz 300KHz Quasi-peak New 1GHz Peak 1MHz 3MHz Peak Value | Receiver setup: | Frequency | Detector | RBW | VB | SW | Remark |
| Limit: Frequency Limit (dBuV/m @3m) Remark 30MHz-88MHz 40.0 Quasi-peak Value 88MHz-216MHz 43.5 Quasi-peak Value 216MHz-960MHz 46.0 Quasi-peak Value 960MHz-1GHz 54.0 Average Value Above 1GHz Test Procedure: 1. The EUT was placed on the top of a rotating table 0.8m(be 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter cam The table was rotated 360 degrees to determine the position of highest radiation. 2. The EUT was set 3 meters away from the interference-receive antenna, which was mounted on the top of a variable-height ante tower. 3. The antenna height is varied from one meter to four meters abe the ground to determine the maximum value of the field stren Both horizontal and vertical polarizations of the antenna are see make the measurement. 4. For each suspected emission, the EUT was arranged to its we case and then the antenna was tuned to heights from 1 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10 dB lower to the limit specified, then testing could be stopped and the peak val of the EUT would be reported. Otherwise the emissions that did have 10 dB margin would be re-tested one by one using peak, que peak or average method as specified and then reported in a content of the supplementation. | · | 30MHz-1GHz | Quasi-pea | k 120KHz | 3001 | KHz | Quasi-peak Value |
| Limit: Frequency | | Above 1GHz | | | - | | Peak Value |
| 30MHz-88MHz 40.0 Quasi-peak Value 88MHz-216MHz 43.5 Quasi-peak Value 216MHz-960MHz 46.0 Quasi-peak Value 960MHz-1GHz 54.0 Quasi-peak Value Above 1GHz 54.0 Average Value 74.0 Peak Value 74.0 Peak Value 1GHz//1.5m(above 1GHz) above the ground at a 3 meter cam The table was rotated 360 degrees to determine the position of highest radiation. 2. The EUT was set 3 meters away from the interference-receivantenna, which was mounted on the top of a variable-height ante tower. 3. The antenna height is varied from one meter to four meters ab the ground to determine the maximum value of the field stren Both horizontal and vertical polarizations of the antenna are semake the measurement. 4. For each suspected emission, the EUT was arranged to its w case and then the antenna was tuned to heights from 1 meter meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10 dB lower the limit specified, then testing could be stopped and the peak val of the EUT would be reported. Otherwise the emissions that did have 10 dB margin would be re-tested one by one using peak, que peak or average method as specified and then reported in a content of the state of the second of the peak of the reported of the reported on the reported in a content of the reported of the reported on the reported | | | | | - | Hz | Average Value |
| S8MHz-216MHz | Limit: | | | , | @3m) | | |
| Test Procedure: 216MHz-960MHz | | | | | | | |
| Set Procedure: Set. | | | | | | | |
| Test Procedure: 1. The EUT was placed on the top of a rotating table 0.8m(be 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter cam The table was rotated 360 degrees to determine the position of highest radiation. 2. The EUT was set 3 meters away from the interference-receivantenna, which was mounted on the top of a variable-height ante tower. 3. The antenna height is varied from one meter to four meters ab the ground to determine the maximum value of the field stren Both horizontal and vertical polarizations of the antenna are semake the measurement. 4. For each suspected emission, the EUT was arranged to its we case and then the antenna was turned to heights from 1 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10 dB lower to the limit specified, then testing could be stopped and the peak val of the EUT would be reported. Otherwise the emissions that did have 10 dB margin would be re-tested one by one using peak, que peak or average method as specified and then reported in a contraction of the EUT would be reported and then reported in a contraction of the EUT would be reported and then reported in a contraction of the EUT would be reported and then reported in a contraction of the EUT would be reported and then reported in a contraction of the EUT would be reported and then reported in a contraction of the EUT would be reported and then reported in a contraction of the EUT would be reported and then reported in a contraction of the EUT would be reported and then reported in a contraction of the EUT would be reported and then reported in a contraction of the EUT would be reported and then reported in a contraction of the EUT would be reported and then reported in a contraction of the EUT would be reported and then reported in a contraction of the EUT would be reported and then reported in a contract | | | | 46.0 | | | |
| Test Procedure: 1. The EUT was placed on the top of a rotating table 0.8m(be 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter cam The table was rotated 360 degrees to determine the position of highest radiation. 2. The EUT was set 3 meters away from the interference-receivantenna, which was mounted on the top of a variable-height ante tower. 3. The antenna height is varied from one meter to four meters abe the ground to determine the maximum value of the field stren Both horizontal and vertical polarizations of the antenna are semake the measurement. 4. For each suspected emission, the EUT was arranged to its we case and then the antenna was tuned to heights from 1 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10 dB lower to the limit specified, then testing could be stopped and the peak value of the EUT would be reported. Otherwise the emissions that did have 10 dB margin would be re-tested one by one using peak, que peak or average method as specified and then reported in a contraction of the EUT would be re-tested one by one using peak, que peak or average method as specified and then reported in a contraction of the EUT would be re-tested one by one using peak, que peak or average method as specified and then reported in a contraction of the EUT would be re-tested one by one using peak, que peak or average method as specified and then reported in a contraction of the EUT would be re-tested one by one using peak, que peak or average method as specified and then reported in a contraction of the EUT would be re-tested one by one using peak, que peak or average method as specified and then reported in a contraction of the EUT would be re-tested one by one using peak, que peak or average method as specified and then reported in a contraction of the EUT would be re-tested one by one using peak, que p | | 960MHz-1G | Hz | | | | |
| Test Procedure: 1. The EUT was placed on the top of a rotating table 0.8m(be 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter cam The table was rotated 360 degrees to determine the position of highest radiation. 2. The EUT was set 3 meters away from the interference-receive antenna, which was mounted on the top of a variable-height ante tower. 3. The antenna height is varied from one meter to four meters abe the ground to determine the maximum value of the field stren Both horizontal and vertical polarizations of the antenna are seemake the measurement. 4. For each suspected emission, the EUT was arranged to its we case and then the antenna was tuned to heights from 1 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10 dB lower to the limit specified, then testing could be stopped and the peak valued of the EUT would be reported. Otherwise the emissions that did have 10 dB margin would be re-tested one by one using peak, question and the reported in a contraction of the EUT would be re-tested one by one using peak, question average method as specified and then reported in a contraction of the EUT would be re-tested one by one using peak, question average method as specified and then reported in a contraction of the EUT would be re-tested one by one using peak, question average method as specified and then reported in a contraction of the EUT would be re-tested one by one using peak, question average method as specified and then reported in a contraction of the EUT would be re-tested one by one using peak, question and the reported in a contraction of the EUT would be re-tested one by one using peak, question and the reported in a contraction of the EUT would be re-tested one by one using peak, question of the EUT would be re-tested one by one using peak, question of the EUT would be re-tested one by o | | Above 1GF | lz – | | | Š . | |
| 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter cam The table was rotated 360 degrees to determine the position of highest radiation. 2. The EUT was set 3 meters away from the interference-received antenna, which was mounted on the top of a variable-height ante tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strent Both horizontal and vertical polarizations of the antenna are seen make the measurement. 4. For each suspected emission, the EUT was arranged to its work case and then the antenna was tuned to heights from 1 meters and the rotate table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10 dB lower to the limit specified, then testing could be stopped and the peak valued of the EUT would be reported. Otherwise the emissions that did have 10 dB margin would be re-tested one by one using peak, queries the emissions that did have 10 dB margin would be re-tested one by one using peak, queries the emissions that did have 10 dB margin would be specified and then reported in a contraction. | | 4 TI FUT | | | | | |
| sheet. | | The EUT was placed on the top of a rotating table 0.8m(below 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter camber. 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 rota 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 10 dB 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 10 dB margin would be re-tested one by one using peak, quasi- | | | | | |
| Test setup: Below 1GHz | Test setup: | | | | | | |





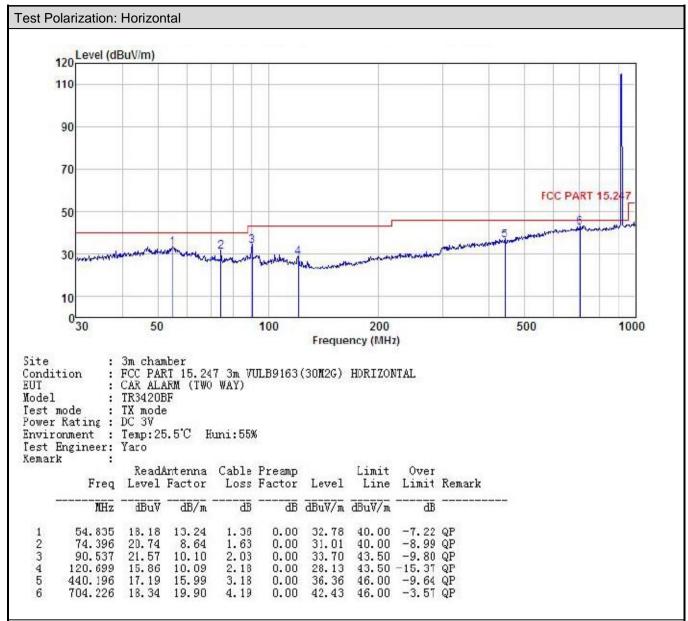






Measurement Data (worst case):

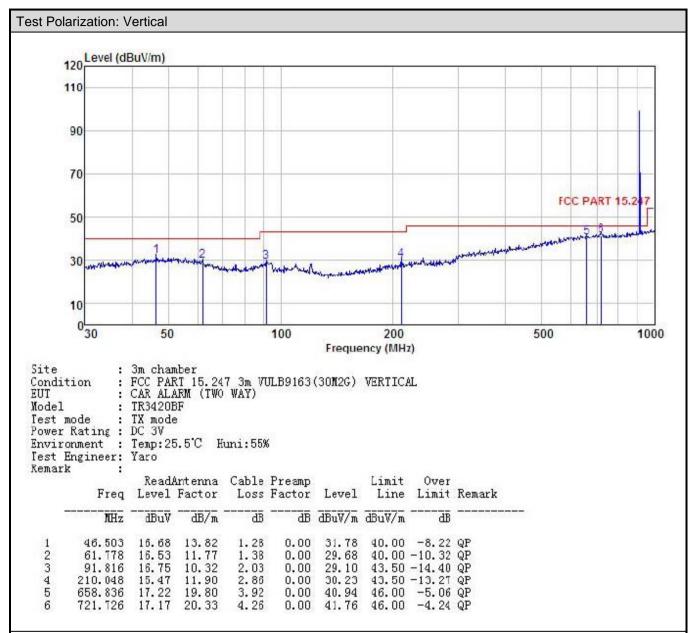
Below 1GHz:



Remark:

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.





Remark:

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.



Above 1GHz

| Peak value | | | | | | | | |
|--------------------|-------------------------|-----------------------------|-----------------------|--------------------------|-------------------|------------------------|-----------------------|--------------|
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 1830.00 | 51.33 | 26.10 | 4.18 | 41.35 | 40.26 | 74.00 | -33.74 | Vertical |
| 2745.00 | 45.48 | 28.12 | 5.09 | 41.71 | 36.98 | 74.00 | -37.02 | Vertical |
| 3660.00 | 47.02 | 29.32 | 5.95 | 41.62 | 40.67 | 74.00 | -33.33 | Vertical |
| 4575.00 | 47.11 | 31.24 | 6.89 | 42.13 | 43.11 | 74.00 | -30.89 | Vertical |
| 5490.00 | 46.77 | 32.38 | 7.20 | 41.83 | 44.52 | 74.00 | -29.48 | Vertical |
| 6405.00 | 47.41 | 34.23 | 8.22 | 41.93 | 47.93 | 74.00 | -26.07 | Vertical |
| 1830.00 | 54.29 | 26.10 | 4.18 | 41.35 | 43.22 | 74.00 | -30.78 | Horizontal |
| 2745.00 | 46.00 | 28.12 | 5.09 | 41.71 | 37.50 | 74.00 | -36.50 | Horizontal |
| 3660.00 | 46.48 | 29.35 | 5.95 | 41.62 | 40.16 | 74.00 | -33.84 | Horizontal |
| 4575.00 | 46.99 | 31.24 | 6.89 | 42.13 | 42.99 | 74.00 | -31.01 | Horizontal |
| 5490.00 | 47.72 | 32.40 | 7.22 | 41.83 | 45.51 | 74.00 | -28.49 | Horizontal |
| 6405.00 | 47.31 | 34.23 | 8.22 | 41.93 | 47.83 | 74.00 | -26.17 | Horizontal |
| | | | - | Averagevalu | е | | • | |
| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
| 1830.00 | 46.28 | 26.10 | 4.18 | 41.35 | 35.21 | 54.00 | -18.79 | Vertical |
| 2745.00 | 39.21 | 28.12 | 5.09 | 41.71 | 30.71 | 54.00 | -23.29 | Vertical |
| 3660.00 | 40.36 | 29.32 | 5.95 | 41.62 | 34.01 | 54.00 | -19.99 | Vertical |
| 4575.00 | 39.89 | 31.24 | 6.89 | 42.13 | 35.89 | 54.00 | -18.11 | Vertical |
| 5490.00 | 39.21 | 32.38 | 7.20 | 41.83 | 36.96 | 54.00 | -17.04 | Vertical |
| 6405.00 | 40.13 | 34.23 | 8.22 | 41.93 | 40.65 | 54.00 | -13.35 | Vertical |
| 1830.00 | 46.38 | 26.10 | 4.18 | 41.35 | 35.31 | 54.00 | -18.69 | Horizontal |
| 2745.00 | 40.21 | 28.12 | 5.09 | 41.71 | 31.71 | 54.00 | -22.29 | Horizontal |
| 3660.00 | 39.57 | 29.35 | 5.95 | 41.62 | 33.25 | 54.00 | -20.75 | Horizontal |
| 4575.00 | 39.92 | 31.24 | 6.89 | 42.13 | 35.92 | 54.00 | -18.08 | Horizontal |
| 5490.00 | 40.51 | 32.40 | 7.22 | 41.83 | 38.30 | 54.00 | -15.70 | Horizontal |
| 6405.00 | 39.28 | 34.23 | 8.22 | 41.93 | 39.80 | 54.00 | -14.20 | Horizontal |

Remark:

^{1.} Final Level =Receiver Read level + Antenna Factor + Cable Loss - Preamplifier Factor

^{2.} The emission levels of other frequencies are very lower than the limit and not show in test report.