

Global United Technology Services Co., Ltd.

Report No.: GTS201701000007F05

FCC Report

Autel Intelligent Tech. Corp., Ltd. Applicant:

Address of Applicant: 6th - 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd., Xili, Nanshan

Shenzhen China

Manufacturer/ Factory: Autel Intelligent Tech. Corp., Ltd.

6th - 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd., Xili, Nanshan Address of

Shenzhen China Manufacturer/ Factory:

Equipment Under Test (EUT)

COMPREHENSIVE TPMS TOOL **Product Name:**

MaxiTPMS TS608, MaxiTPMS MX808TS Model No.:

AUTEL Trade Mark:

FCC ID: WQ8MX808-TPMS

Applicable standards: FCC CFR Title 47 Part 15 Subpart B:2016

January 04, 2017 Date of sample receipt:

January 05-16, 2017 Date of Test:

January 17, 2017 Date of report issue:

PASS * Test Result:

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.

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



2 Version

| Version No. | Date | Description |
|-------------|------------------|-------------|
| 00 | January 17, 2017 | Original |
| | | |
| | | |
| | | |
| | | |

| Prepared By: | Jamelly | Date: | January 17, 2017 |
|--------------|------------------|-------|------------------|
| | Project Engineer | | |
| Check By: | Andy wa | Date: | January 17, 2017 |
| | Reviewer | | |



3 Contents

| | | Pa | age |
|---|---|--------------------------------|------------------|
| 1 | COV | /ER PAGE | 1 |
| 2 | VER | SION | 2 |
| 3 | CON | NTENTS | 3 |
| 4 | TES | T SUMMARY | 4 |
| | 4.1 | MEASUREMENT UNCERTAINTY | 4 |
| 5 | GEN | IERAL INFORMATION | 5 |
| 6 | 5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8 5.9 | CLIENT INFORMATION | 5 6 6 6 |
| 7 | TES | T RESULTS AND MEASUREMENT DATA | 8 |
| | 7.1 7.2 | CONDUCTED EMISSIONS | 8 . 11 |
| 8 | TES | T SETUP PHOTO | . 17 |
| 9 | EUT | CONSTRUCTIONAL DETAILS | . 18 |



4 Test Summary

| Test Item | Section in CFR 47 | Result |
|--------------------|-------------------|--------|
| Conducted Emission | Part15.107 | PASS |
| Radiated Emissions | Part15.109 | PASS |

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

Remark: Test according to ANSI C63.4:2014.

4.1 Measurement Uncertainty

| Test Item | Frequency Range Measurement Unco | | Notes |
|-------------------------------------|-------------------------------------|---------------------------------|-------|
| Radiated Emission | 9kHz ~ 30MHz ± 4.34dB | | (1) |
| Radiated Emission | 30MHz ~ 1000MHz | ± 4.24dB | (1) |
| Radiated Emission | 1GHz ~ 26.5GHz | ± 4.68dB | (1) |
| AC Power Line Conducted Emission | 0.15MHz ~ 30MHz | ± 3.45dB | (1) |
| Note (1): The measurement unce | rtainty is for coverage factor of k | =2 and a level of confidence of | 95%. |



5 General Information

5.1 General Description of EUT

| Product Name: | COMPREHENSIVE TPMS TOOL |
|---------------|--|
| Model No.: | MaxiTPMS TS608, MaxiTPMS MX808TS |
| Test Model: | MaxiTPMS TS608 |
| Remark: | All above models are identical in the same PCB layout, interior structure and electrical circuits. The only difference is the model name for commercial purpose. |
| Power Supply: | Adapter: |
| | Model:GME10C-050200FUu |
| | Input: AC 100-240V, 50-60Hz, 0.28A |
| | Output: DC 5V, 2A |
| | DC 3.7V 5000mAh Lithium Battery |

5.2 Test mode

| Test mode: | | | |
|---------------------------|--|--|--|
| Play with TF card mode | Keep the EUT in playing with TF card mode | | |
| Play with USB disk mode | Keep the EUT in playing with USB disk mode | | |
| Play with Int.memory mode | Keep the EUT in playing with Int.memory mode | | |
| Operation mode | Keep the EUT in operation mode | | |
| OTG mode | Keep the EUT in OTG mode | | |
| PC mode | Keep the EUT in PC status. | | |
| HDMI output mode | Keep the EUT in HDMI output mode. | | |



5.3 Test Facility

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

• FCC —Registration No.: 600491

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 600491, June 22, 2016.

• Industry Canada (IC) —Registration No.: 9079A-2

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-2, August 15, 2016

5.4 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480 Fax: 0755-27798960

5.5 Description of Support Units

| Manufacturer | Description | Model | Serial Number | FCC Approval |
|--------------|-------------|--------------|----------------|--------------|
| Apple | PC | A1278 | C1MN99ERDTY3 | DoC |
| DELL | KEYBOARD | SK-8115 | N/A | DoC |
| DELL | MOUSE | MOC5UO | N/A | DoC |
| Kingston | TF card | SD-C01G | N/A | DoC |
| Kingston | USB disk | 4GB | N/A | DoC |
| PHILIPS | LCD TV | 19PFL3120/T3 | AU1A1212002906 | DOC |

5.6 Deviation from Standards

Biconical, log.per. antenna and horn antenna were used instead of dipole antenna. Semi-anechoic Chamber was used as alternation of open air test sites, and all test suites were performed with radiated method in it.

5.7 Abnormalities from Standard Conditions

None.

5.8 Other Information Requested by the Customer

None.



6 Test Instruments list

| Radi | 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 | 9.0(L)*6.0(W)* 6.0(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 | ESU EMI Test Receiver | R&S | ESU26 | GTS203 | June. 29 2016 | June. 28 2017 | |
| 4 | BiConiLog Antenna | SCHWARZBECK | VULB9163 | GTS214 | June. 29 2016 | June. 28 2017 | |
| 5 | Double-ridged horn antenna | SCHWARZBECK | 9120D | GTS208 | June. 29 2016 | June. 28 2017 | |
| 6 | RF Amplifier | HP | 8347A | GTS204 | June. 29 2016 | June. 28 2017 | |
| 7 | Broadband Preamplifier | SCHWARZBECK | BBV9718 | GTS535 | June. 29 2016 | June. 28 2017 | |
| 8 | EMI Test Software | AUDIX | E3 | N/A | N/A | N/A | |
| 9 | Coaxial cable | GTS | N/A | GTS210 | N/A | N/A | |
| 10 | Coaxial Cable | GTS | N/A | GTS211 | N/A | N/A | |
| 11 | Thermo meter | N/A | N/A | GTS256 | June. 29 2016 | June. 28 2017 | |

| Conduc | 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.16 2014 | May.15 2019 | |
| 2 | EMI Test Receiver | R&S | ESCI 7 | GTS552 | June. 29 2016 | June. 28 2017 | |
| 3 | Coaxial Switch | ANRITSU CORP | MP59B | GTS225 | June. 29 2016 | June. 28 2017 | |
| 4 | Artificial Mains Network | SCHWARZBECK MESS | NSLK8127 | GTS226 | June. 29 2016 | June. 28 2017 | |
| 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. 29 2016 | June. 28 2017 | |

| Gen | General used equipment: | | | | | | |
|------|-------------------------|--------------|-----------|------------------|------------------------|-------------------------|--|
| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) | |
| 1 | Barometer | ChangChun | DYM3 | GTS257 | Jun. 29 2016 | Jun. 28 2017 | |



7 Test Results and Measurement Data

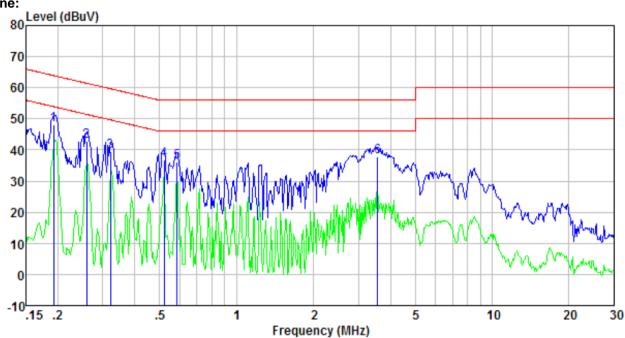
7.1 Conducted Emissions

| 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, Sv | weep time=auto | | | |
| Limit: | Fragues and (MILE) | Limit (c | dBuV) | | |
| | Frequency range (MHz) Quasi-peak Average | | | | |
| | 0.15-0.5 | 66 to 56* | 56 to 46* | | |
| | 0.5-5 | 56 | 46 | | |
| | * Decreases with the logarithm | 60 | 50 | | |
| Toot ootup: | • | Tor the frequency. | | | |
| Test setup: | Reference Plane | | - | | |
| Total | AUX Equipment E.U.T EMI Receiver Remark E.U.T Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m | | | | |
| Test procedure: | The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides 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 refer 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: 2014 on conducted measurement. | | | | |
| Test Instruments: | Refer to section 6 for details | | | | |
| Test mode: | Pre-scan all modes in section 5.2, only the data of worst mode was show on the test report. The worst case is Play with TF card mode. | | | | |
| Test results: | Pass | | | | |



Measurement Data

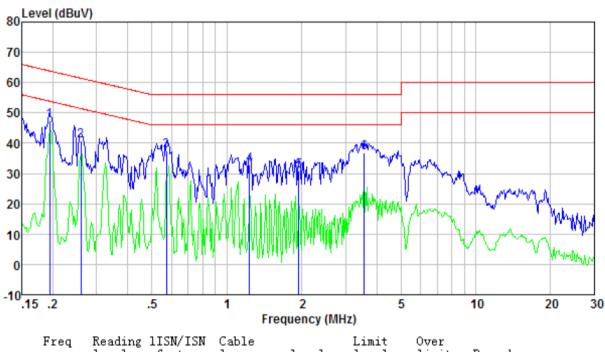




| Freq MHz | Reading level dBuV | lISN/ISN factor dB | Cable loss dB | _ | evel dBuV | Limit level dBuV | 1 | ver imit B | Rem | ark |
|--|---|--------------------------------------|--------------------------------------|----------------|---|---|----------------|--------------------------------------|----------------------------|-----|
| 0. 192 0. 259 0. 322 0. 521 0. 585 | 47.69 42.21 39.00 36.42 35.80 | 0.43 0.44 0.43 0.37 0.32 | 0.13 0.11 0.10 0.11 0.12 | 4: 3: 3: | 8. 25 2. 76 9. 53 6. 90 6. 24 | 63.93 61.47 59.66 56.00 56.00 | -1 -2 -1 | 5.68 8.71 0.13 9.10 9.76 | QP QP QP QP QP | |
| 3.565 | 37.59 | 0.21 | 0.15 | _ | 7.95 | 56.00 | - | 8.05 | QΡ | |



Neutral:



| Freq | Reading level dBuV | 1ISN/ISN factor dB | Cable loss dB | level dBuV | Limit level dBuV | Over limit dB | Remark |
|-------|--------------------------|--------------------------|---------------------|---------------|------------------------|---------------------|--------|
| 0.194 | 46.77 | 0.41 | 0.13 | 47.31 | 63.84 | -16.53 | QP |
| 0.259 | 40.30 | 0.42 | 0.11 | 40.83 | 61.47 | -20.64 | QP |
| 0.573 | 36.92 | 0.29 | 0.12 | 37.33 | 56.00 | -18.67 | QP |
| 1.236 | 32.62 | 0.21 | 0.13 | 32.96 | 56.00 | -23.04 | QP |
| 1.949 | 30.40 | 0.20 | 0.14 | 30.74 | 56.00 | -25.26 | QP |
| 3.565 | 36.47 | 0.21 | 0.15 | 36.83 | 56.00 | -19.17 | QP |

Notes:

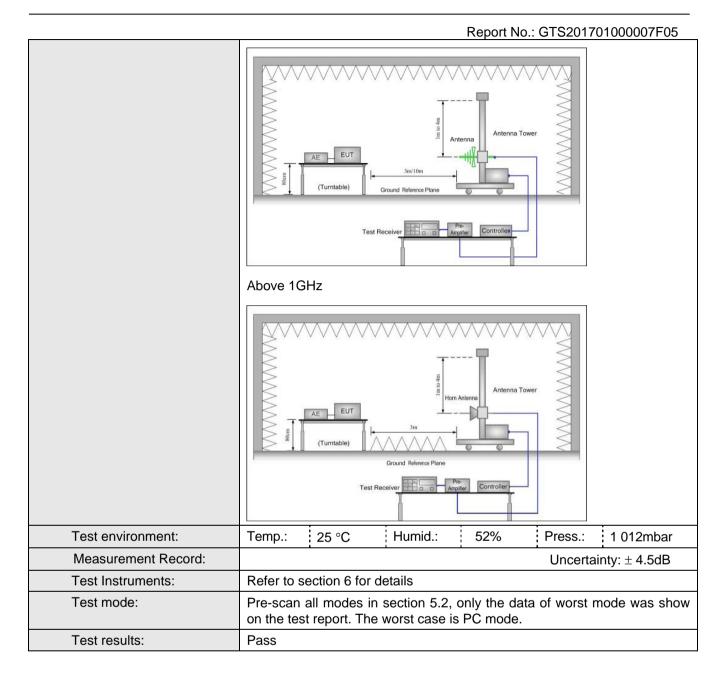
- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss
- 4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.
- 5. Only the worst case shows above



7.2 Radiated Emission

| 7.2 Radiated Linission | | | | | | | | |
|------------------------|-----------------------|--|-----------------------|-----------------|---------------|-------------------------|--|--|
| | Test Requirement: | FCC Part15 B Section 15.109 | | | | | | |
| | Test Method: | ANSI C63.4:20 | 14 | | | | | |
| | Test Frequency Range: | 30MHz to 6GHz | <u>7</u> | | | | | |
| | Test site: | Measurement D | istance: 3m | (Semi-Anecho | ic Chambe | r) | | |
| | Receiver setup: | _ | | | | | | |
| | | Frequency 30MHz- | Detector Quasi-pea | RBW k 120kHz | VBW 300kHz | Remark Quasi-peak Value | | |
| | | 1GHz Above 1GHz Quasi-peak Peak Peak | | K 120KHZ | 300KI 12 | Quasi-peak value | | |
| | | | | 1MHz | 3MHz | Peak Value | | |
| | | | | 1MHz | 10Hz | Average Value | | |
| | Limit: | | | | | | | |
| | | Freque | ency | Limit (dBuV | /m @3m) | Remark | | |
| | | 30MHz-8 | 8MHz | 40.0 | 0 | Quasi-peak Value | | |
| | | 88MHz-2 | 16MHz | 43.5 | 0 | Quasi-peak Value | | |
| | | 216MHz-960MHz | | 46.0 | 0 | Quasi-peak Value | | |
| | | 960MHz-1GHz | | 54.00 | | Quasi-peak Value | | |
| | | Above 1GHz | | 54.00 | | Average Value | | |
| | | 7,5000 | 0112 | 74.0 | 0 | Peak Value | | |
| | Test Procedure: | The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. | | | | | | |
| | | 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. | | | | | | |
| | | 3. 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. | | | | | | |
| | | 4. 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. | | | | | | |
| | | 5. The test-rece Bandwidth w | | | ak Detect F | unction and Specified | | |
| | | 6. 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 setup: | Below 1GHz | | | | | | |
| | | · | · | · | · | | | |





Note 1:
The field strength is calculated by adding the Antonna Factor, Cable I.

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

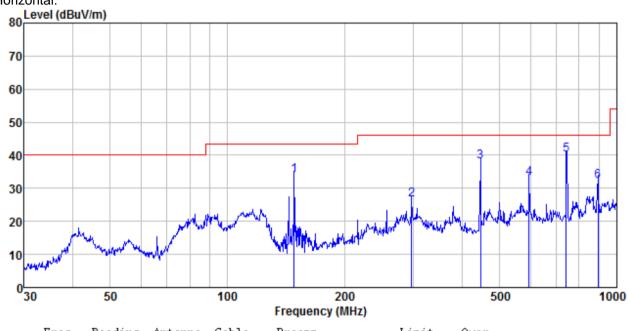
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor



Measurement Data

Below 1GHz

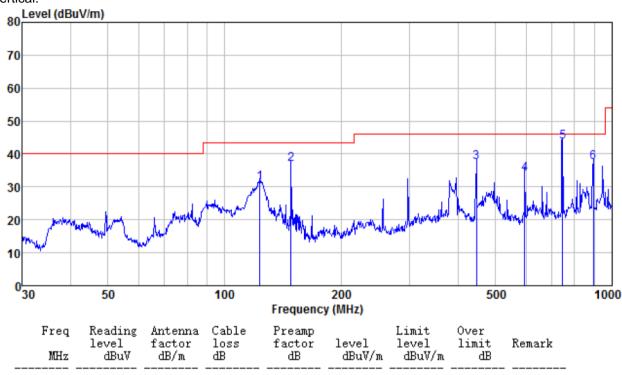




| Freq MHz | Reading level dBuV | Antenna factor dB/m | Cable loss dB | Preamp factor dB | level dBuV/m | Limit level dBuV/m | Over limit dB | Remark |
|--|--|---|--|--|--|--|---|--|
| 148. 441 297. 224 446. 414 595. 133 742. 259 893. 857 | 54.40 40.82 48.14 39.60 44.81 34.21 | 7.50 13.40 16.41 19.19 20.44 22.15 | 1.56 2.35 3.07 3.70 4.24 4.83 | 29. 41 29. 99 29. 40 29. 30 29. 20 29. 10 | 34.05 26.58 38.22 33.19 40.29 32.09 | 43.50 46.00 46.00 46.00 46.00 46.00 | -9. 45 -19. 42 -7. 78 -12. 81 -5. 71 -13. 91 | QP QP QP QP QP QP QP |



Vertical:



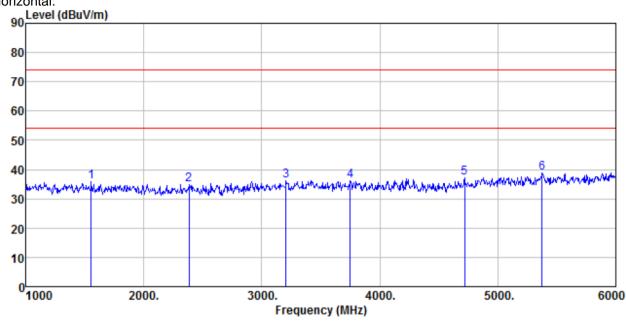
| Freq MHz | Reading level dBuV | Antenna factor dB/m | Cable loss dB | Preamp factor dB | level dBuV/m | Limit level dBuV/m | Over limit dB | Remark |
|-------------|--------------------------|---------------------------|---------------------|------------------------|-----------------|--------------------------|---------------------|--------|
| 123.266 | 50. 49 | 9.07 | 1.38 | 29.55 | 31.39 | 43.50 | -12.11 | QP |
| 148.441 | 57.28 | 7.50 | 1.56 | 29.41 | 36.93 | 43.50 | -6.57 | Q̈́P |
| 446.414 | 47.48 | 16.41 | 3.07 | 29.40 | 37.56 | 46.00 | -8.44 | Q̈́P |
| 595.133 | 40.35 | 19.19 | 3.70 | 29.30 | 33.94 | 46.00 | -12.06 | QΡ |
| 744.866 | 48.09 | 20.48 | 4.26 | 29.20 | 43.63 | 46.00 | -2.37 | QΡ |
| 893.857 | 39.61 | 22.15 | 4.83 | 29.10 | 37.49 | 46.00 | -8.51 | QP |

Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102



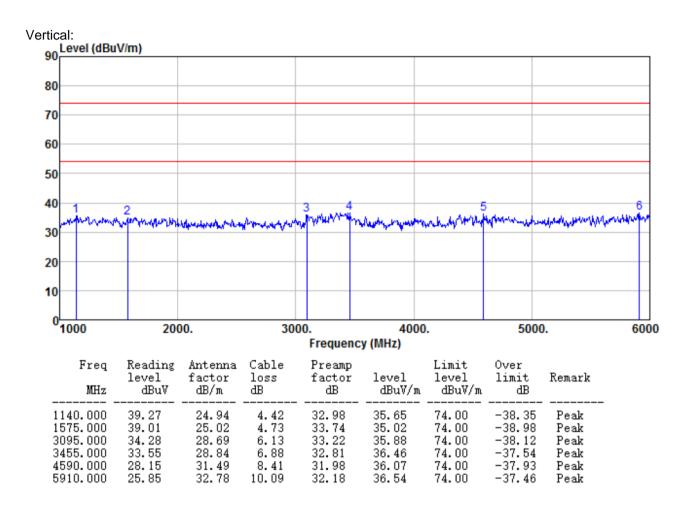
Above 1GHz





| Freq MHz | Reading level dBuV | Antenna factor dB/m | Cable loss dB | Preamp factor dB | level dBuV/m | Limit level dBuV/m | Over limit dB | Remark | |
|--|----------------------------------|----------------------------------|------------------------------|----------------------------------|--------------------------------------|----------------------------------|--|--------------------------------------|---|
| 1555.000 2385.000 3205.000 3750.000 | 39.92 35.86 34.30 32.02 | 25.08 27.61 28.71 29.30 | 4.72 5.38 6.37 7.42 | 33.71 34.03 33.08 32.46 | 36. 01 34. 82 36. 30 36. 28 | 74.00 74.00 74.00 74.00 | -37. 99 -39. 18 -37. 70 -37. 72 | Peak Peak Peak Peak Peak | _ |
| 4720.000 5375.000 | 28. 89 30. 23 | 31.68 31.77 | 8.53 9.33 | 32.05 32.36 | 37.05 38.97 | 74.00 74.00 | -36.95 -35.03 | Peak Peak | |







8 Test Setup Photo

Radiated Emission







Conducted Emission



9 EUT Constructional Details

Reference to the test report No. GTS201701000007E01

----- End-----