

| Report Reference ID: | 372719-3TRFWL |
|----------------------|---------------|
|----------------------|---------------|

| Test specification: | Title 47 – Telecommunication Chapter I – Federal Communications Commission Subchapter B – Common carrier services Part 27 – Miscellaneous wireless communications services |
|---------------------|--|
|---------------------|--|

| Applicant: | TEKO Telecom Srl. Via Meucci, 24/a I-40024 Castel S. Pietro Terme (BO) (Italy) | |
|------------|--|--|
| Apparatus: | Medium Power Remote Unit | |
| Model: | TRU67E8AEWM/AC-WT | |
| FCC ID: | XM2- MP67E8AE | |

| Testing laboratory: | Nemko Italy Spa Via del Carroccio, 4 20853 Biassono (MB) – Italy Telephone: +39 039 2201201 Facsimile: +39 039 2201221 |
|---------------------|--|
|---------------------|--|

| | Name and title | Date |
|--------------|--|------------|
| Tested by: | Rulun Poul P. Barbieri, Wireless/EMC Specialist | 06/24/2019 |
| Reviewed by: | R. Giampaglia, Wireless/EMC Specialist | 06/24/2019 |

Nemko Spa, 20853 Biassono (MB) - Italy. All rights reserved.

This publication may be reproduced in whole for non-commercial purposes as long as Nemko Spa is acknowledged as copyright owner and source of the material. Nemko Spa takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context. Nemko Spa accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This test report may not be partially reproduced, except with the prior written permission of Nemko Spa. The test report merely corresponds to the test sample. The phase of sampling / collection of equipment under test is carried out by the customer.

This Test Report, when bearing the Nemko name and logo is only valid when issued by a Nemko laboratory, or by a laboratory having special agreement with Nemko.

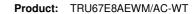
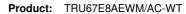




Table of contents

| Section 1: | Report summary | |
|--------------------------|--|----|
| 1.1 | Test specification | |
| 1.2 | Statement of compliance | 4 |
| 1.3 | Exclusions | 4 |
| 1.4 | Registration number | 4 |
| 1.5 | Test report revision history | 4 |
| 1.6 | Limits of responsibility | 4 |
| Section 2: 2.1 | Summary of test results | |
| Section 3: 3.1 | Equipment under test (EUT) and application details | |
| 3.2 | Modular equipment | 6 |
| 3.3 | Product details | 6 |
| 3.4 | Application purpose | 6 |
| 3.5 | Composite/related equipment | 7 |
| 3.6 | Sample information | 7 |
| 3.7 | EUT technical specifications | 7 |
| 3.8 | Accessories and support equipment | 8 |
| 3.9 | Operation of the EUT during testing | 9 |
| 3.10 | EUT setup diagram | 9 |
| Section 4: 4.1 | Engineering considerations | |
| 4.2 | Deviations from laboratory tests procedures | 10 |
| 4.3 | Technical judgment | 10 |
| | Test conditions | |
| 5.2 | Test conditions, power source and ambient temperatures | 11 |
| 5.3 | Measurement uncertainty | 12 |
| 5.4 | Test equipment | 13 |
| | A: Test results | |
| Clause 935 | 5210 D05v01r01 (3.3) Out of band rejection | 15 |
| Clause 935 | 5210 D05v01r01 (3.4) Occupied bandwidth | 16 |
| Clause 27. | 50(b) Peak output power at RF antenna connector | 18 |
| Clause 27. | 53(c) Spurious emissions at RF antenna connector | 21 |





| Clause 27.53(c) Radiated Spurious emissions | 28 |
|---|----------|
| Clause 27.53(f) Radiated spurious emissions within 1559–1610 MHz band | 34 |
| Appendix B: Block diagrams of test set-ups Appendix C: EUT Photos | 37 38 |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |



Specification: FCC 27

Section 1: Report summary

Test specification

Specifications

Part 27 – Miscellaneous wireless communications services

1.2 Statement of compliance

Compliance

In the configuration tested the EUT was found compliant

Yes X No □

This report contains an assessment of apparatus against specifications based upon tests carried out on samples submitted at Nemko Spa. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 27. Radiated tests were conducted in accordance with ANSI C63.26-2015.

1.3 **Exclusions**

Exclusions None

1.4 Registration number

| Test site FCC | |
|---------------|---|
| ID number | ı |

682159

Test report revision history

| · 1 | |
|------------|--|
| Revision # | Details of changes made to test report |
| TRF | Original report issued |
| R1TRF | |

1.6 Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. Nemko Spa authorizes the applicant to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such

Nemko Spa accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.



Section 2: Summary of test results

| 2.1 FCC Part 27, test results | | | |
|-------------------------------|-----------------------------|---|---------|
| Part | Methods | Test description | Verdict |
| | § 935210 D05v01r03 (3.2) | AGC threshold | Pass |
| | § 935210 D05v01r3 (3.3) | Out of band rejection | Pass |
| | § 935210 D05v01r03 (3.4) | Occupied bandwidth | Pass |
| §27.50(b) | § 935210 D05v01r03 (3.5) | Peak output power at RF antenna connector | Pass |
| §27.53(c) | § 935210 D05v01r03 (3.6) | Spurious emissions at RF antenna connector | Pass |
| §27.53(c) | § 935210 D05v01r03 (3.8) | Radiated spurious emissions | Pass |
| §27.53(f) | § 935210 D05v01r03 (3.8) | Radiated spurious emissions within 1559–1610 MHz band | Pass |
| §27.54 | § 935210 D05v01r03 (3.7) | Frequency stability | N/A a) |

Notes:

a) NOT APPLICABLE: Modulation/frequency conversion circuitry not in use. No frequency change in EUT (input and output have same frequency)



Specification: FCC 27

Section 3: Equipment under test (EUT) and application details

| 3.1 Applicant of | details | | | |
|-------------------|-------------------------|--|--|--|
| Applicant | Name: | Teko Telecom Srl | | |
| complete | Federal | 1000 1000000 00 | | |
| business name | Registration | 0018963462 | | |
| | Number (FRN): | 0010000102 | | |
| | Grantee code | XM2 | | |
| Mailing address | Address: | Via Meucci, 24/a | | |
| manning address | City: | Castel S. Pietro Terme | | |
| | Province/State: | Bologna | | |
| | Post code: | 40024 | | |
| | Country: | Italy | | |
| | Country. | Italy | | |
| | | | | |
| 3.2 Modular ed | | | | |
| a) Single modular | Single modular approval | | | |
| approval | Yes | No ⊠ | | |
| b) Limited single | Limited single modula | Limited single modular approval | | |
| modular approval | Yes | No ⊠ | | |
| | | | | |
| 3.3 Product de | etails | | | |
| FCC ID | Grantee code: | XM2 | | |
| | Product code: | -MP67E8AE | | |
| Equipment class | B2I | | | |
| Description of | Booster | | | |
| product as it is | Model | TRUCTES A FLAVA (A C. M.T. | | |
| marketed | name/number: | TRU67E8AEWM/AC-WT | | |
| | Serial number: | 1012791001 | | |
| | | | | |
| 0.4 A. I'. | | | | |
| 3.4 Application | | | | |
| Type of | Original certi | | | |
| application | | lentification of presently authorized equipment | | |
| | Original FCC | | | |
| | ☐ Class II pern | nissive change or modification of presently authorized | | |
| | equipment | · • | | |



Specification: FCC 27

Section 3: Equipment under test

| 3.5 Composite/related equipment | | | |
|---------------------------------|--|--|--|
| a) Composite | The EUT is a composite device subject to an additional equipment | | |
| equipment | authorization | | |
| | Yes ⊠ No □ | | |
| b) Related | The EUT is part of a system that operates with, or is marketed with, | | |
| equipment | another device that requires an equipment authorization | | |
| | Yes □ No ⊠ | | |
| c) Related FCC ID | If either of the above is "yes": | | |
| | has been granted under the FCC ID(s) listed below: | | |
| | is in the process of being filled under the FCC ID(s) listed below: | | |
| | is pending with the FCC ID(s) listed below: | | |
| | has a mix of pending and granted statues under the FCC ID(s) | | |
| | listed below: | | |
| | i FCC ID: XM2-MP67E8AE | | |
| | ii FCC ID: | | |
| | 1 | | |

| 3.6 Sample inf | ormation |
|-------------------------|------------|
| Receipt date: | 05/27/2019 |
| Nemko sample ID number: | |

| 3.7 EUT techn | ical specifications |
|----------------------|---|
| Operating band: | Down Link 746–758 MHz, Up Link 776-788 MHz |
| Operating frequency: | Wideband |
| Modulation type: | LTE-FDD (QAM and QPSK) |
| Occupied bandwidth: | LTE: 1,4 MHz – 3 MHz – 5 MHz – 10MHz |
| Channel spacing: | standard |
| Emission designator: | LTE: D7W |
| RF Output | Down Link: 33dBm (2W) Up Link: N.A. (The EUT does not transmit over the air in the up-link direction) |
| Gain | Down Link: 38dB Up Link: N.A. (The EUT does not transmit over the air in the up-link direction) |
| Antenna type: | External Antenna is not provided, equipment that has an external 50 Ω RF connector |
| Power source: | 100-240 Vac |



Specification: FCC 27

Section 3: Equipment under test

| 3.8 Accessories and | d support equipment |
|------------------------|--|
| | dentifies accessories used to exercise the EUT during testing: |
| Item # 1 | |
| Type of equipment: | Master Unit - Subrack |
| Brand name: | Teko Telecom srl |
| Model name or number: | SUB-TRX-PSU |
| Serial number: | 101083001 |
| Nemko sample number: | |
| Connection port: | |
| Cable length and type: | |
| Item # 2 | |
| Type of equipment: | Master Unit – Management Module |
| Brand name: | Teko Telecom srl |
| Model name or number: | TSPV-R |
| Serial number: | 110942253 |
| Nemko sample number: | |
| Connection port: | LAN port |
| Cable length and type: | |
| Item # 3 | |
| Type of equipment: | Master Unit – Optical Module |
| Brand name: | Teko Telecom srl |
| Model name or number: | TTRU4W-S-M |
| Serial number: | 110679007 |
| Nemko sample number: | |
| Connection port: | DL/UL RF connector (to connect to the base station) |
| | Optical port (to connect to remote unit) |
| Cable length and type: | |
| Item # 4 | |
| Type of equipment: | Master Unit – Power Supply |
| Brand name: | Teko Telecom srl |
| Model name or number: | TPSU/AC |
| Serial number: | 081063004 |
| Nemko sample number: | |
| Connection port: | |
| Cable length and type: | |
| | |



Specification: FCC 27

3.9 Operation of the EUT during testing

Details:

In down-link direction, normal working at max gain with max RF power output.

3.10 EUT setup diagram

In this system, Remote Unit is the EUT. Master Unit includes only management module and optical module (to convert RF signal in optical signal in down link direction and viceversa optical signal in RF signal in up link direction). As described in "Operational description", master unit is connected directly to base station, so the system doesn't use another equipment (under another FCC ID) to exercise the EUT. Signal generator is linked directly to the RF connector of optical module in the Master Unit.

Test setup for output power, occupied bandwidth, spurious emissions:



Procedure

Connect the signal modulated generator to the input of the EUT, so that the EUT works at the max gain. Raise the input level to the EUT until reach the maximum output power. Connect the spectrum analyzer to the RF output connector of the EUT.



Product: TRU67E8AEWM/AC-WT

4.1 Modifications incorporated in the EUT

Modifications

Modifications performed to the EUT during this assessment None
Yes ☐, performed by Client ☐ or Nemko ☐ Details:

4.2 Deviations from laboratory tests procedures

Deviations

Deviations from laboratory test procedures
None ☑ Yes ☐ - details are listed below:

| 4.3 Technical | judgment |
|---------------|----------|
| Judgment | None |



Specification: FCC 27

Section 5: Test conditions

5.1 Deviations from laboratory tests procedures

No deviations were made from laboratory test procedures.

| 5.2 Test conditions, power source and ambient temperatures | | | | | |
|---|--|--|--|--|--|
| Normal temperature, humidity and air pressure test conditions | Temperature: 15–30 °C Relative humidity: 20–75 % Air pressure: 86–106 kPa | | | | |
| | When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated. | | | | |
| Power supply range: | The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ±5 %, for which the equipment was designed. | | | | |



Section 5: Test conditions, continued

| 5.3 Measurement uncertainty | | | | | |
|-----------------------------|-----------|---|-----------------------------|-------------------------|-------|
| EUT | Туре | Test | Range and Setup features | Measurement Uncertainty | Notes |
| | | Frequency error | 0.001 MHz ÷ 40 GHz | 0.08 ppm | (1) |
| | | | 10 kHz ÷ 30 MHz | 1.0 dB | (1) |
| | | Carrier power RF Output Power | 30 MHz ÷ 18 GHz | 1.5 dB | (1) |
| | | Til Odipat i owei | 18 MHz ÷ 40 GHz | 3.0 dB | (1) |
| | | Adjacent channel power | 1 MHz ÷ 18 GHz | 1.6 dB | (1) |
| | | 0 | 10 kHz ÷ 26 GHz | 3.0 dB | (1) |
| | | Conducted spurious emissions | 26 GHz ÷ 40 GHz | 4.5 dB | (1) |
| | | Intermodulation attenuation | 1 MHz ÷ 18 GHz | 2.2 dB | (1) |
| | | Attack time – frequency behaviour | 1 MHz ÷ 18 GHz | 2.0 ms | (1) |
| | | Attack time – power behaviour | 1 MHz ÷ 18 GHz | 2.5 ms | (1) |
| | | Release time – frequency behaviour | 1 MHz ÷ 18 GHz | 2.0 ms | (1) |
| | Conducted | Release time – power behaviour | 1 MHz ÷ 18 GHz | 2.5 ms | (1) |
| Transmitter | Conducted | Transient behaviour of the transmitter– Transient frequency behaviour | 1 MHz ÷ 18 GHz | 0.2 kHz | (1) |
| | | Transient behaviour of the transmitter – Power level slope | 1 MHz ÷ 18 GHz | 9% | (1) |
| | | Frequency deviation - Maximum permissible frequency deviation | 0.001 MHz ÷ 18 GHz | 1.3% | (1) |
| | | Frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz | 0.001 MHz ÷ 18 GHz | 0.5 dB | (1) |
| | | Dwell time | - | 3% | (1) |
| | | Hopping Frequency Separation | 0.01 MHz ÷ 18 GHz | 1% | (1) |
| | | Occupied Channel Bandwidth | 0.01 MHz ÷ 18 GHz | 2% | (1) |
| | | Modulation Bandwidth | 0.01 MHz ÷ 18 GHz | 2% | (1) |
| | | Radiated spurious emissions | 10 kHz ÷ 26.5 GHz | 6.0 dB | (1) |
| | Radiated | riadiated spurious erilissions | 26.5 GHz ÷ 40 GHz | 8.0 dB | (1) |
| | naulateu | Effective radiated power | 10 kHz ÷ 26.5 GHz | 6.0 dB | (1) |
| | | transmitter | 26,5 GHz ÷ 40 GHz | 8.0 dB | (1) |
| | | Dedicted country 1 | 10 kHz ÷ 26.5 GHz | 6.0 dB | (1) |
| | Radiated | Radiated spurious emissions | 26.5 GHz ÷ 40 GHz | 8.0 dB | (1) |
| Receiver | | Sensitivity measurement | 1 MHz ÷ 18 GHz | 6.0 dB | (1) |
| | Conducted | | 10 kHz ÷ 26 GHz | 3.0 dB | (1) |
| | | Conducted spurious emissions | 26 GHz ÷ 40 GHz | 4.5 dB | (1) |

⁽¹⁾ The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2 which has been derived from the assumed normal probability distribution with infinite degrees of freedom and for a coverage probability of 95 %



Specification: FCC 27

| 5.4 Test equ | ipment | | | |
|--|--------------|---------------------------|------------------|-----------|
| Equipment | Manufacturer | Model No. | Asset/Serial No. | Next cal. |
| Vector Signal Generator | Agilent | N5172B EXG | MY53051238 | 05/2021 |
| Vector Signal Generator | Agilent | E4438C ESG | MY45094485 | 08/2019 |
| Spectrum Analyzer | Agilent | N9030A PXA | MY53120882 | 12/2019 |
| Trilog Broad Band Antenna 25-8000 MHz | Schwarzbeck | VULB 9162 | VULB 9162-25 | 07/2021 |
| Antenna 1-18 GHz | Schwarzbeck | STLP 9148 | STPL 9148-123 | 07/2021 |
| Double ridge horn antenna (4 ÷ 40 GHz) | RFSpin | DRH40 | 061106A40 | 02/2020 |
| Broadband preamplifier (18 ÷ 40 GHz) | Miteq | JS44-18004000-35-8P- R | 1.627 | 09/2019 |
| Broadband preamplifier 1-18 GHz | Schwarzbeck | BBV 9718 | 9718-137 | 08/2019 |
| EMI receiver 20 Hz ÷ 8 GHz | R&S | ESU8 | 100202 | 01/2020 |
| EMI receiver 2 Hz ÷ 44 GHz | R&S | ESW44 | 101620 | 05/2019 |
| Hydraulic revolving platform | Nemko | RTPL 01 | 4.233 | NCR |
| Turning-table | R&S | HCT | 835 803/03 | NCR |
| Antenna mast | R&S | HCM | 836 529/05 | NCR |
| Controller | R&S | HCC | 836 620/7 | NCR |
| Semi-anechoic chamber | Nemko | 10m semi-anechoic chamber | 530 | 09/2021 |
| Shielded room | Siemens | 10m control room | 1947 | NCR |
| Semi-anechoic chamber | Nemko | 10m semi-anechoic chamber | 70 | NCR |
| Shielded Room | Siemens | 3m semi-anechoic chamber | 3 | NCR |
| Motor controller | Emco | 1051-25 | 9012-1559 | NCR |
| Motor controller | Emco | 1061-1.521 | 9012-1508 | NCR |
| Antenna Tower | Emco | 2071-2 | 9601-1940 | NCR |
| Controller pole/table | Emco | 2090 | 9511-1099 | NCR |

Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use (*) Equipment supplied by manufacturer's



Specification: FCC 27

Appendix A: Test results

Clause 935210 D05v01r01 (3.2) AGC threshold

Measure of EUT AGC Threshold

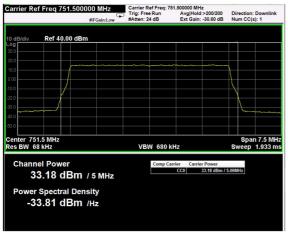
Test date: 05/27/2019 to 06/24/2019

Test results: Pass

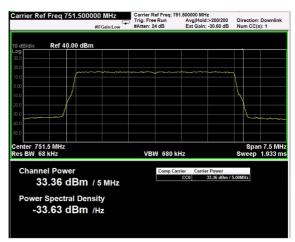
Special notes

Broadband amplifiers: AWGN test signal used (5 MHz LTE channel)

Test data



AWGN signal, nominal input signal



AWGN signal, nominal input signal + 1dB



Specification: FCC 27

Clause 935210 D05v01r01 (3.3) Out of band rejection

Out of Band Rejection - Test for rejection of out of band signals.

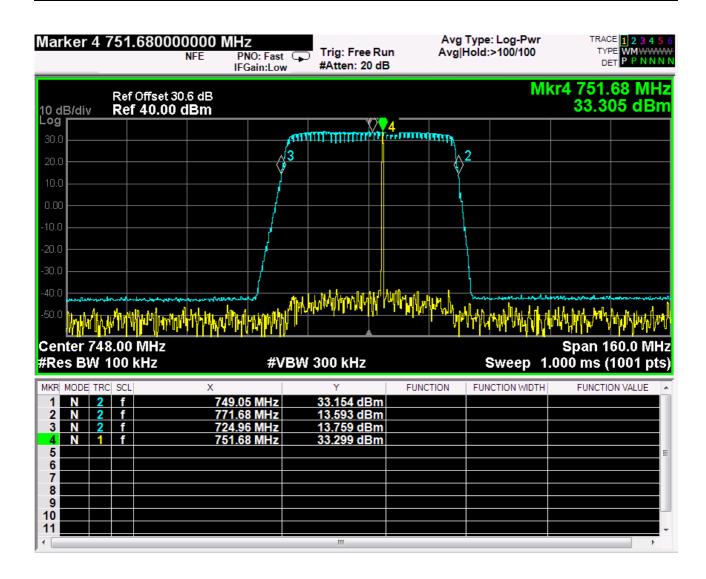
Test date: 05/27/2019 to 06/24/2019

Test results: Pass

Special notes

_

Test data



Nemko

Product: TRU67E8AEWM/AC-WT

Specification: FCC 27

Clause 935210 D05v01r01 (3.4) Occupied bandwidth

A 26 dB bandwidth measurement shall be performed on the input signal and the output signal; alternatively, the 99% OBW can be measured and used.

Test date: 05/27/2019 to 06/24/2019

Test results: Pass

Special notes

- Broadband amplifiers: AWGN test signal used (5 MHz LTE channel)

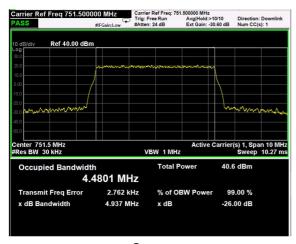


Product: TRU67E8AEWM/AC-WT

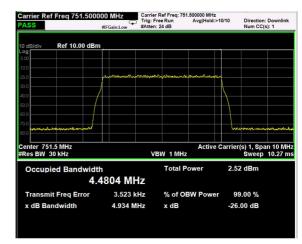
Clause 935210 D05v01r01 (3.4) Occupied bandwidth, continued

Test data

AWGN signal, nominal input signal

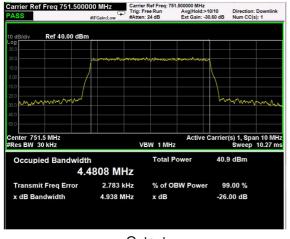


Output

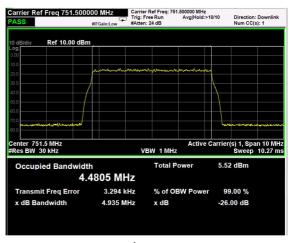


Input

AWGN signal, nominal input signal + 3dB









Specification: FCC 27

Clause 27.50(b) Peak output power at RF antenna connector

§ 27.50(b) Operation within the bands: 746-758 MHz, 775-788 MHz and 805-806 MHz.

- 4) Fixed and base stations transmitting a signal in the 746–757 MHz and 776–787 MHz bands with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts/MHz ERP accordance with Table 3 of this section.
- 12) For transmissions in the 746–757, 776–787 MHz bands, licensees may employ equipment operating in compliance with either the measurement techniques described in paragraph (b)(11) of this section or a Commission-approved average power technique. In both instances, equipment employed must be authorized in accordance with the provisions of §27.51

Test date: 05/27/2019 to 06/24/2019

Test results: Pass

Special notes

- Broadband amplifiers: AWGN test signal used (5 MHz LTE channel)



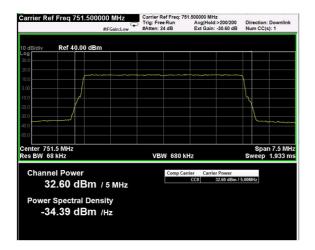
Specification: FCC 27

Clause 27.50(b) Peak output power at RF antenna connector

Test data

AWGN signal, nominal input signal -0.5dBm

| Test data | | | | | | |
|-----------|------------------|--------------------|--------------------------------|-----------------------------------|-------------------------------|-------------|
| Direction | Modulation | Frequency (MHz) | RF output Power (dBm) | RF output channel Power (W) | RF output Power (W/MHz) | PAR (dB) |
| Down-link | AWGN (LTE, 5MHz) | 751.5 | 32.60 | 1.82 | 0.364 | 11.47 |





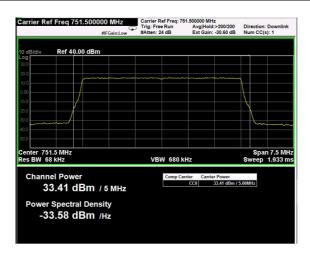
PAR measure is performed by the "CCDF" function installed on Spectrum analyzer that provides average power (the same measured with "Channel power" function), peak power and PAR.



Specification: FCC 27

AWGN signal, nominal input signal + 3dB

| Test data | | | | | |
|-----------|------------------|--------------------|--------------------------------|-----------------------------------|-------------------------------|
| Direction | Modulation | Frequency (MHz) | RF output Power (dBm) | RF output channel Power (W) | RF output Power (W/MHz) |
| Down-link | AWGN (LTE, 5MHz) | 751.5 | 33.41 | 2.20 | 0.44 |





Specification: FCC 27

Clause 27.53(c) Spurious emissions at RF antenna connector

- (c) For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
 - (1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
 - (3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;
 - (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
 - (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

Test date: 05/27/2019 to 06/24/2019

Test results: Pass

Special notes

- Broadband amplifiers: AWGN test signal used (5 MHz LTE channel)



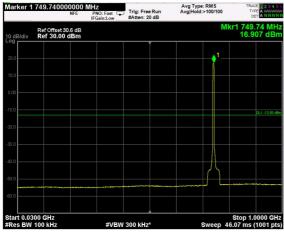
Clause 27.53 (c) Spurious emissions at RF antenna connector, continued

| Test data | | | |
|-----------------------|-------------------------|----------------|----------------|
| See Plots below | | | |
| Spurious emissions me | asurement results: | | |
| Frequency (MHz) | Spurious emission (dBm) | Limit (dBm) | Margin (dB) |
| Low channel | | | |
| First channel | Negligible | -13 | |
| | | | |
| Mid channel | | | |
| 751.5 MHz | Negligible | -13 | |
| | | | |
| High channel | | | |
| Last channel | Negligible | -13 | |
| | | | |

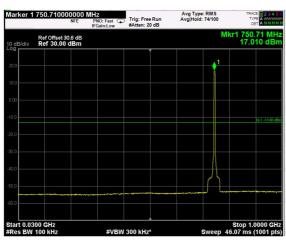
Specification: FCC 27

Test data, continued: spurious emissions at antenna terminal

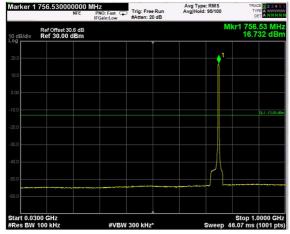
AWGN signal



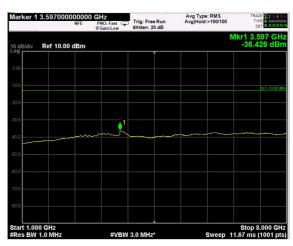
30MHz-1GHz, First Channel



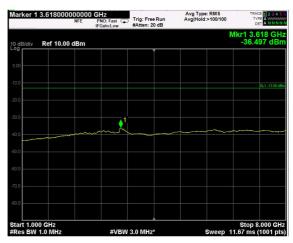
30MHz-1GHz, Middle Channel



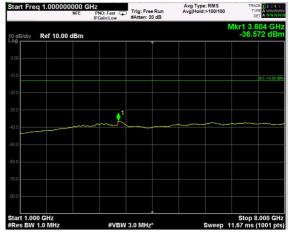
30MHz-1GHz, Last Channel



1GHz-8GHz, First Channel



1GHz-8GHz, Middle Channel



1GHz-8GHz, Last Channel

Specification: FCC 27

Test data, continued: Spurious emissions at antenna terminal, band 763-775MHz and 793-805MHz

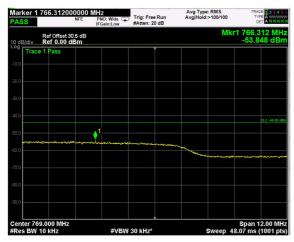
Special notes

On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations

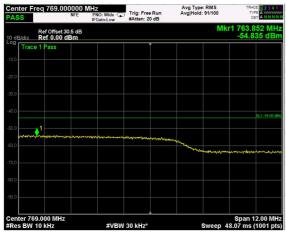
 $76 + 10 \log P(W) = 76 + 10 \log 2W = 79$

P(W) = 2W = 33 dBm

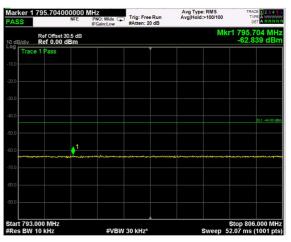
 \rightarrow limit: 33 – 79 = -46 dBm/6,25kHz = -44dBm/10kHz



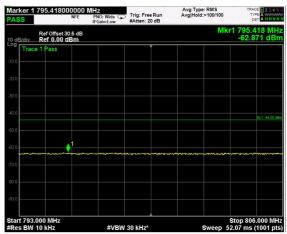
763MHz-775MHz, First Channel



763MHz-775MHz, Middle Channel

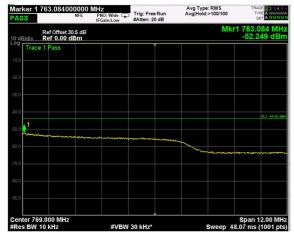


793MHz-806MHz, First Channel



793MHz-806MHz, Middle Channel





763MHz-775MHz, Last Channel

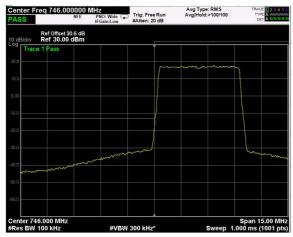


793MHz-806MHz, Last Channel

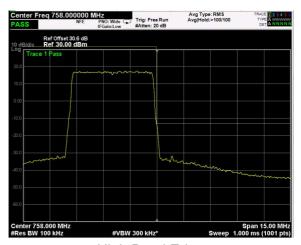
Specification: FCC 27

Test data, continued: band edges Inter modulation

AWGN signal, 1 Carrier, Nominal input signal

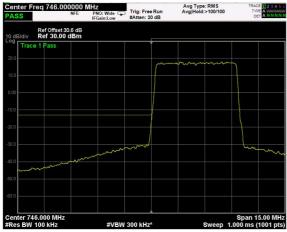




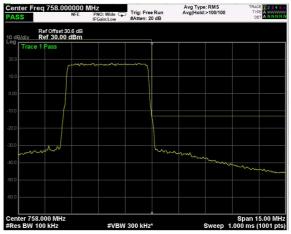


High Band Edge

AWGN signal, 1 Carrier, Nominal input signal + 3dBm



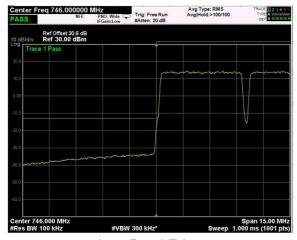
Low Band Edge



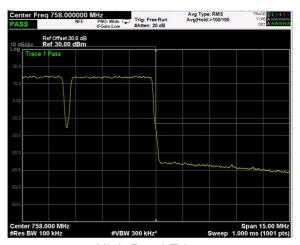
High Band Edge

Specification: FCC 27

AWGN signal, 2 carrier, Nominal input signal

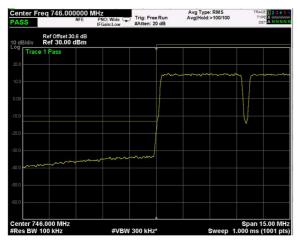






High Band Edge

AWGN signal, 2 carrier, Nominal input signal + 3dBm



Low Band Edge



High Band Edge



Specification: FCC 27

Clause 27.53(c) Radiated Spurious emissions

Test date: 05/27/2019 to 06/24/2019

Test results: Pass

- (c) For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
 - (1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
 - (3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;
 - (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
- (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

| Special notes | | |
|---------------|--|--|
| | | |
| | | |
| | | |
| | | |
| | | |



Specification: FCC 27

Clause 27.53(c) Radiated spurious emissions, continued

Test data

The D.U.T. was positioned according to the radiated emissions set-up

The D.U.T. antenna connector was terminated by a 50 Ω shielded dummy load.

The spectrum was searched from 30 MHz to 1 GHz (RBW 100 kHz) & 1 GHz (RBW 1 MHz) to the tenth harmonic of the carrier.

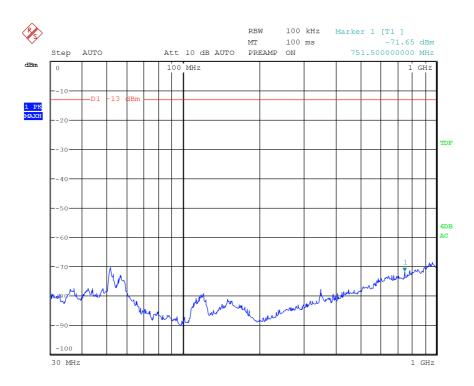
There were no emissions detected above the noise floor which was at least 20 dB below the specification limit.

Spurious emissions measurement results:

| | is measurement rest | | | |
|---------------|---------------------|----------------|-------|--------|
| Frequency | Polarization. | Field strength | Limit | Margin |
| (MHz) | V/H | (dBm) | (dBm) | (dB) |
| Low channel | T | Γ | T | T |
| First Channel | V/H | Negligible | -13 | |
| Mid channel | | | | |
| 751.5 | V/H | Negligible | -13 | |
| High channel | | | | |
| | | | | |
| Last Channel | V/H | Negligible | -13 | |
| | | | | |

Note: Field strength includes correction factor of antenna, cable loss, amplifier, and attenuators where applicable.

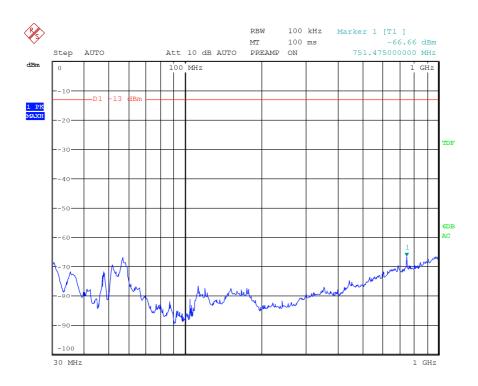




Date: 19.JUN.2019 10:32:46

30MHz-1GHz - H Pol

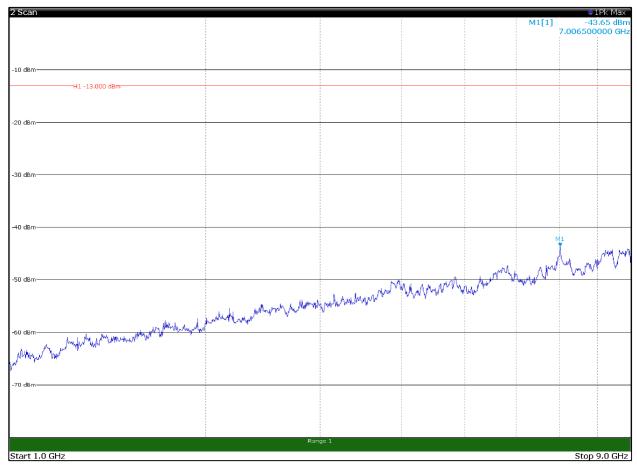




Date: 19.JUN.2019 10:32:06

30MHz-1GHz - V Pol

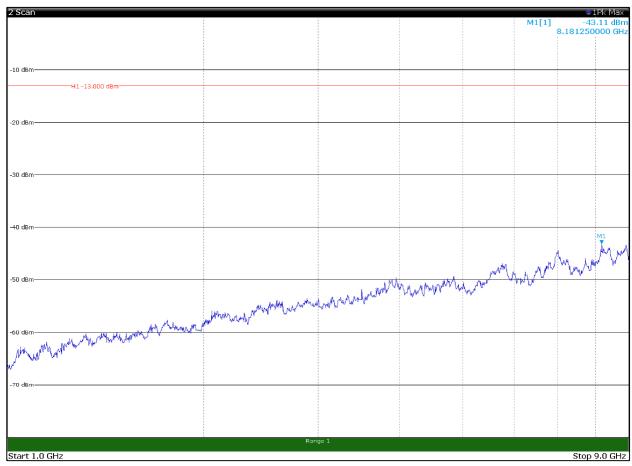




08:34:07 18.06.2019 Page 1/1

1GHz-9GHz - H Pol





08:34:33 18.06.2019 Page 1/1

1GHz-9GHz - V Pol



Specification: FCC 27

Clause 27.53(f) Radiated spurious emissions within 1559-1610 MHz band

(f) For operations in the 746–763 MHz, 775–793 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to –70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and –80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Test date: 05/27/2019 to 06/24/2019

Test results: Pass

Special notes

Method of measurement according to TIA-603-C (EIRP in GNSS band: 1.556 to 1.610 GHz) .

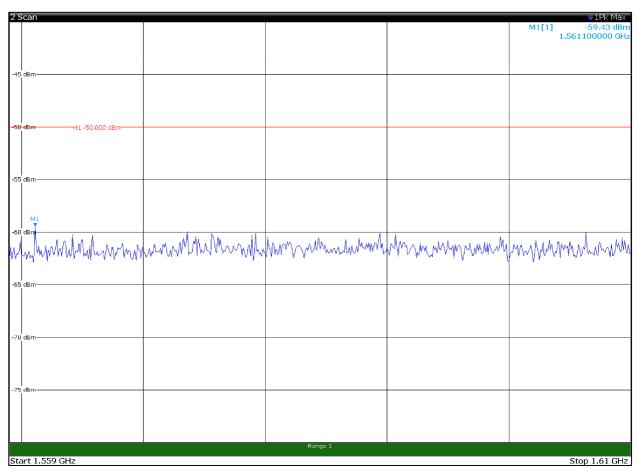
 Δ Band = 51 MHz, Correction Factor calculated at central band 1604.5 MHz. in Fraunhofer Region.

Limit used for discrete emissions: -80 dBw = -50 dBm

Specification: FCC 27

Clause 27.53(f) Radiated spurious emissions within 1559-1610 MHz band, continued

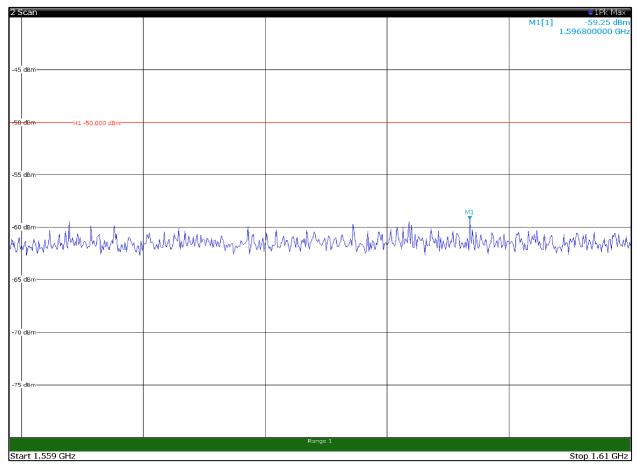
Test data



09:07:53 18.06.2019 Page 1/1

1559MHz-1610MHz - H Pol



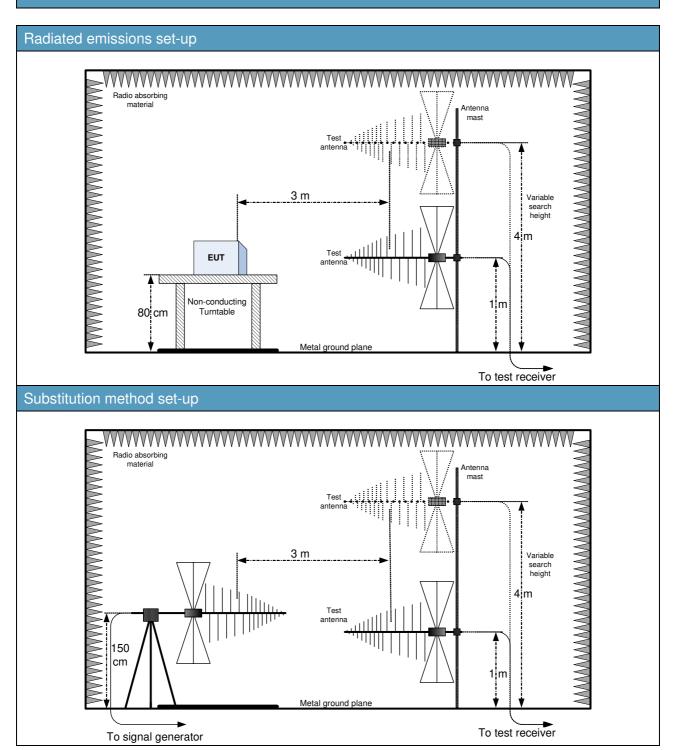


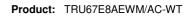
09:06:59 18.06.2019 Page 1/1

1559MHz-1610MHz - V Pol

Product: TRU67E8AEWM/AC-WT

Appendix B: Block diagrams of test set-ups







Appendix C: EUT Photos

Photo Set up





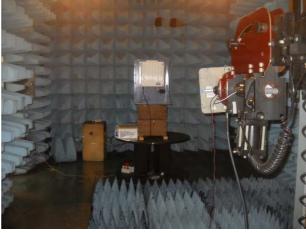




Photo EUT









END OF REPORT