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| Report Reference ID: | 372837-4TRFWL |
|-----------------------------|---------------|

| | |
|----------------------------|--|
| Test specification: | Title 47 – Telecommunication Chapter I – Federal Communications Commission Subchapter B – Common carrier services Part 101 – Fixed Microwave Services |
|----------------------------|--|

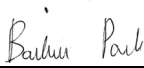

| | |
|-------------------|--|
| Applicant: | TEKO Telecom Srl. Via Meucci, 24/a I-40024 Castel S. Pietro Terme (BO) (Italy) |
|-------------------|--|

| | |
|-------------------|--------------------------|
| Apparatus: | Medium Power Remote Unit |
|-------------------|--------------------------|

| | |
|---------------|--------------------|
| Model: | TRU7FL8P9PWM/AC-WT |
|---------------|--------------------|

| | |
|----------------|----------------|
| FCC ID: | XM2-MP7FL8P9PP |
|----------------|----------------|

| | |
|----------------------------|---|
| 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: |  _____ P. Barbieri, Wireless/EMC Specialist | 06/24/2019 |
| Reviewed by: |  _____ R. Giampaglia, Wireless/EMC Specialist | 06/24/2019 |

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Section 1: Report summary

1.1 Test specification

| | |
|-----------------------|--|
| Specifications | Part 101 – Fixed Microwave Services |
|-----------------------|--|

1.2 Statement of compliance

| | |
|-------------------|---|
| Compliance | <p>In the configuration tested the EUT was found compliant Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>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 101. Radiated tests were conducted in accordance with ANSI C63.26-2015.</p> |
|-------------------|---|

1.3 Exclusions

| | |
|-------------------|------|
| Exclusions | None |
|-------------------|------|

1.4 Registration number

| | |
|--------------------------------|--------|
| Test site FCC ID number | 682159 |
|--------------------------------|--------|

1.5 Test report revision history

| 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.

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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 D05v01r03 (3.3) | Out of band rejection | Pass |
| | § 935210 D05v01r03 (3.4) | Occupied bandwidth | Pass |
| §101.113 | § 935210 D05v01r03 (3.5) | Peak output power at RF antenna connector | Pass |
| §101.111 | § 935210 D05v01r03 (3.6) | Spurious emissions at RF antenna connector | Pass |
| §101.111 | § 935210 D05v01r03 (3.8) | Radiated spurious emissions | Pass |
| §101.107 | § 935210 D05v01r03 (3.7) | Frequency stability | N/A a) |
| <p>Notes:</p> <p style="padding-left: 40px;">a) NOT APPLICABLE: Modulation/frequency conversion circuitry not in use. No frequency change in EUT (input and output have same frequency)</p> | | | |

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

3.1 Applicant details

| | | |
|---|------------------------------------|------------------------|
| Applicant complete business name | Name: | Teko Telecom Srl |
| | Federal Registration Number (FRN): | 0018963462 |
| | Grantee code | XM2 |
| Mailing address | Address: | Via Meucci, 24/a |
| | City: | Castel S. Pietro Terme |
| | Province/State: | Bologna |
| | Post code: | 40024 |
| | Country: | Italy |

3.2 Modular equipment

| | |
|---|--|
| a) Single modular approval | Single modular approval Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| b) Limited single modular approval | Limited single modular approval Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |

3.3 Product details

| | | |
|---|--------------------|--------------------|
| FCC ID | Grantee code: | XM2 |
| | Product code: | -MP7FL8P9PP |
| Equipment class | BOS | |
| Description of product as it is marketed | Booster | |
| | Model name/number: | TRU7FL8P9PWM/AC-WT |
| | Serial number: | 1012793001 |

3.4 Application purpose

| | |
|----------------------------|--|
| Type of application | <input checked="" type="checkbox"/> Original certification <input type="checkbox"/> Change in identification of presently authorized equipment Original FCC ID: _____ Grant date: _____ <input type="checkbox"/> Class II permissive change or modification of presently authorized equipment |
|----------------------------|--|

Section 3: Equipment under test

3.5 Composite/related equipment

| | |
|-------------------------------|---|
| a) Composite equipment | The EUT is a composite device subject to an additional equipment authorization Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| b) Related equipment | The EUT is part of a system that operates with, or is marketed with, another device that requires an equipment authorization Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| c) Related FCC ID | If either of the above is "yes": <input type="checkbox"/> has been granted under the FCC ID(s) listed below: <input type="checkbox"/> is in the process of being filled under the FCC ID(s) listed below: <input type="checkbox"/> is pending with the FCC ID(s) listed below: <input type="checkbox"/> has a mix of pending and granted statuses under the FCC ID(s) listed below: i FCC ID: XM2-MP7FL8P9PP ii FCC ID: |

3.6 Sample information

| | |
|--------------------------------|------------|
| Receipt date: | 05/27/2019 |
| Nemko sample ID number: | ----- |

3.7 EUT technical specifications

| | |
|-----------------------------|---|
| Operating band: | Down Link: 928-929 MHz |
| Operating frequency: | Narrowband |
| Modulation type: | P25, FM |
| Occupied bandwidth: | Standard |
| Channel spacing: | standard |
| Emission designator: | F1E, F1D, F3E |
| RF Output | Down Link: 33dBm (2,00W) 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 |

Section 3: Equipment under test

3.8 Accessories and support equipment
 The following information identifies 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: | ----- |
| | |

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.

Section 4: Engineering considerations

4.1 Modifications incorporated in the EUT

| | |
|----------------------|---|
| Modifications | Modifications performed to the EUT during this assessment None <input checked="" type="checkbox"/> Yes <input type="checkbox"/> , performed by Client <input type="checkbox"/> or Nemko <input type="checkbox"/> Details: |
|----------------------|---|

4.2 Deviations from laboratory tests procedures

| | |
|-------------------|---|
| Deviations | Deviations from laboratory test procedures None <input checked="" type="checkbox"/> Yes <input type="checkbox"/> - details are listed below: |
|-------------------|---|

4.3 Technical judgment

| | |
|-----------------|------|
| Judgment | None |
|-----------------|------|

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 $\pm 5\%$, for which the equipment was designed. |

Section 5: Test conditions, continued

5.3 Measurement uncertainty

| EUT | Type | Test | Range and Setup features | Measurement Uncertainty | Notes |
|-------------|--------------------------------------|---|------------------------------|-------------------------|--------|
| Transmitter | Conducted | Frequency error | 0.001 MHz ÷ 40 GHz | 0.08 ppm | (1) |
| | | Carrier power RF Output Power | 10 kHz ÷ 30 MHz | 1.0 dB | (1) |
| | | | 30 MHz ÷ 18 GHz | 1.5 dB | (1) |
| | | | 18 MHz ÷ 40 GHz | 3.0 dB | (1) |
| | | Adjacent channel power | 1 MHz ÷ 18 GHz | 1.6 dB | (1) |
| | | Conducted spurious emissions | 10 kHz ÷ 26 GHz | 3.0 dB | (1) |
| | | | 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) |
| | | Release time – power behaviour | 1 MHz ÷ 18 GHz | 2.5 ms | (1) |
| | | 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 | Radiated spurious emissions | 10 kHz ÷ 26.5 GHz | 6.0 dB | (1) | |
| | | 26.5 GHz ÷ 40 GHz | 8.0 dB | (1) | |
| | Effective radiated power transmitter | 10 kHz ÷ 26.5 GHz | 6.0 dB | (1) | |
| | | 26,5 GHz ÷ 40 GHz | 8.0 dB | (1) | |
| Receiver | Radiated | Radiated spurious emissions | 10 kHz ÷ 26.5 GHz | 6.0 dB | (1) |
| | | | 26.5 GHz ÷ 40 GHz | 8.0 dB | (1) |
| | Sensitivity measurement | 1 MHz ÷ 18 GHz | 6.0 dB | (1) | |
| | | Conducted | Conducted spurious emissions | 10 kHz ÷ 26 GHz | 3.0 dB |
| | | | 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 %

| 5.4 Test equipment | | | | |
|---|--------------|---------------------------|------------------|-----------|
| Equipment | Manufacturer | Model No. | Asset/Serial No. | Next cal. |
| Vector Signal Generator | Agilent | E4432B ESG | GB38450308 | 08/2019 |
| 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 | | | | |

Appendix A: Test results

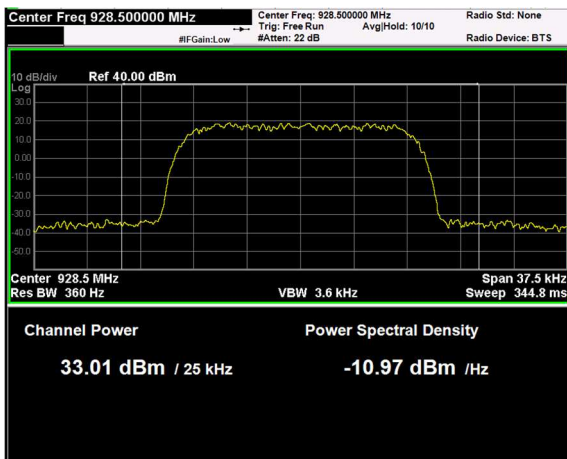
Clause 935210 D05v01r01 (3.2) AGC threshold

Measure of EUT AGC Threshold

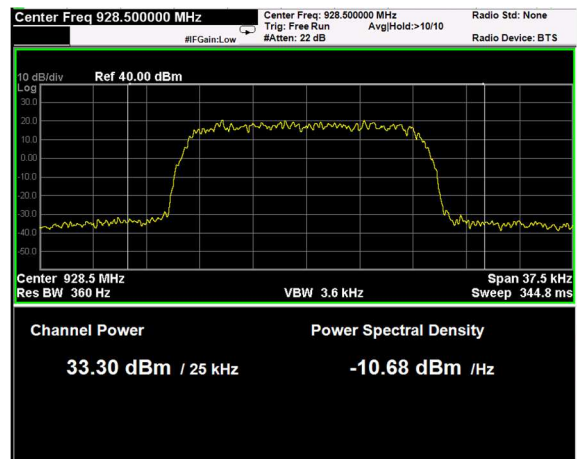
Test date: 05/27/2019 to 06/24/2019
 Test results: Pass

—

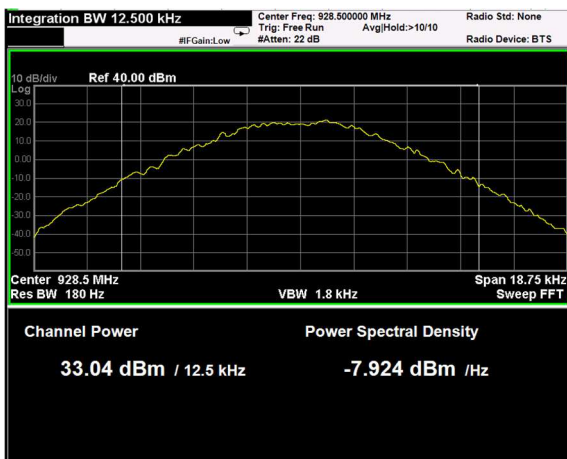
Test data



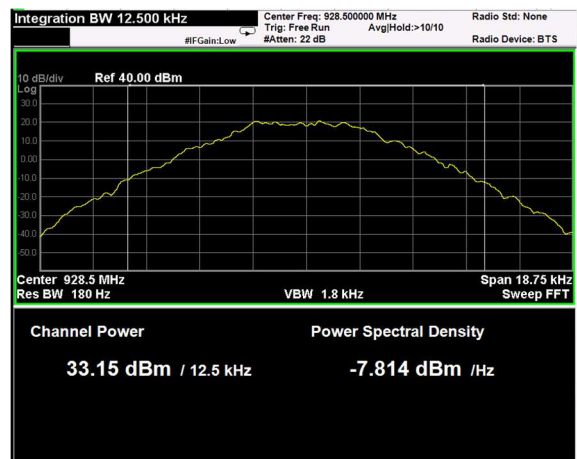
16k signal, nominal input signal



16k signal, nominal input signal +1 dB



P25 signal, nominal input signal



P25 signal, nominal input signal +1 dB

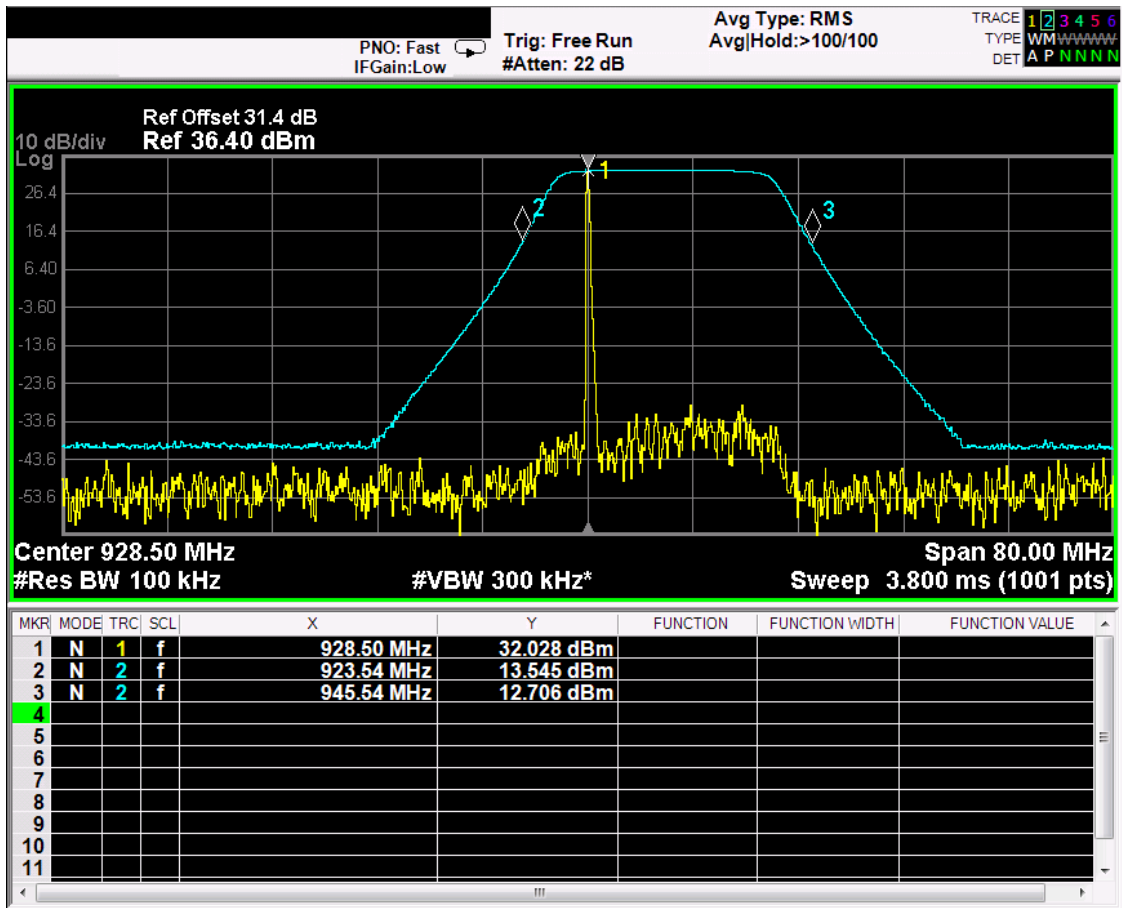
Clause 935210 D05v01r01 (3.3) Out of band rejection

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



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**

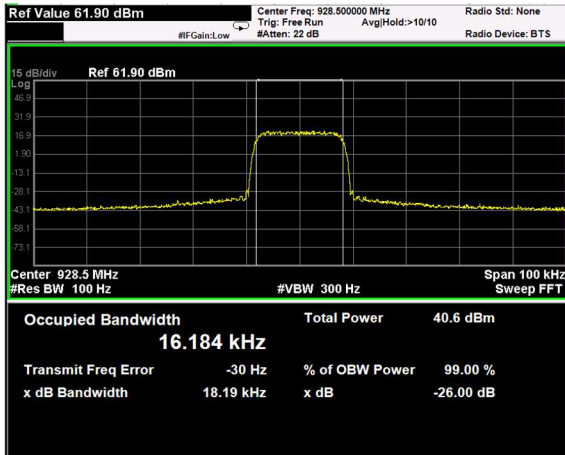
Special notes

-

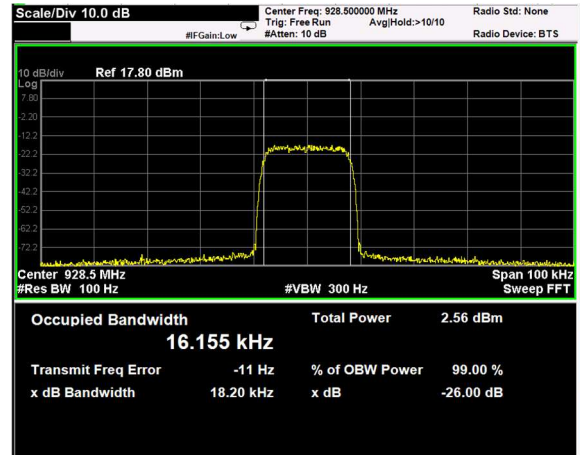
Clause 935210 D05v01r01 (3.4) Occupied bandwidth, continued

Test data

16k signal, nominal input signal

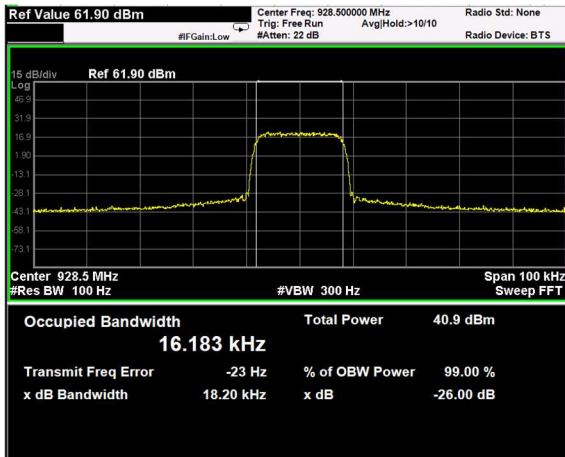


Output

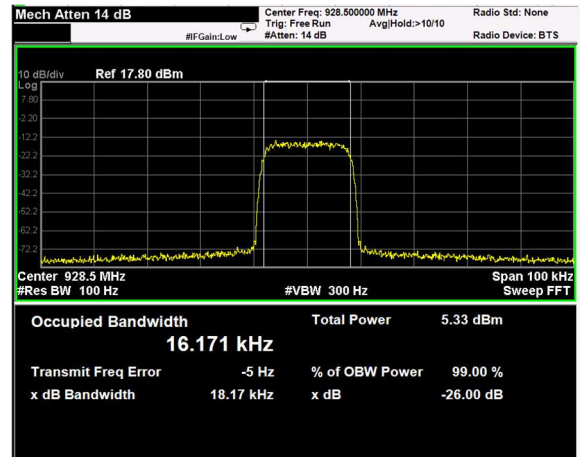


Input

16k signal, nominal input signal + 3dB

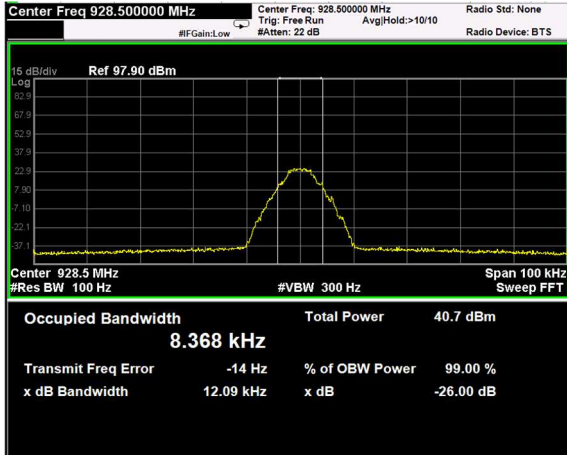


Output

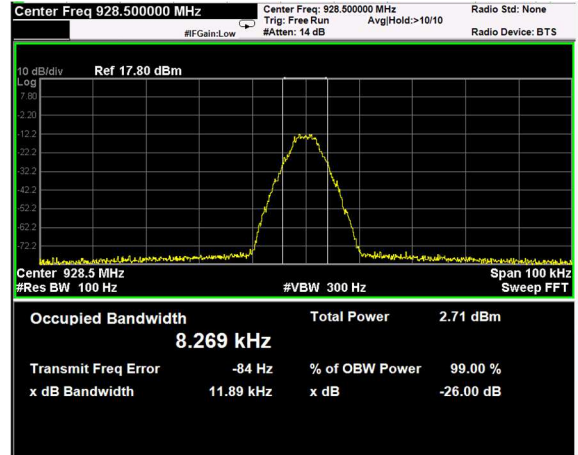


Input

P25 signal, nominal input signal

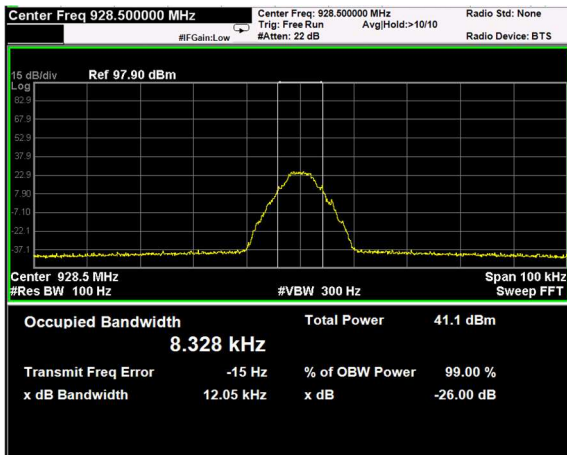


Output

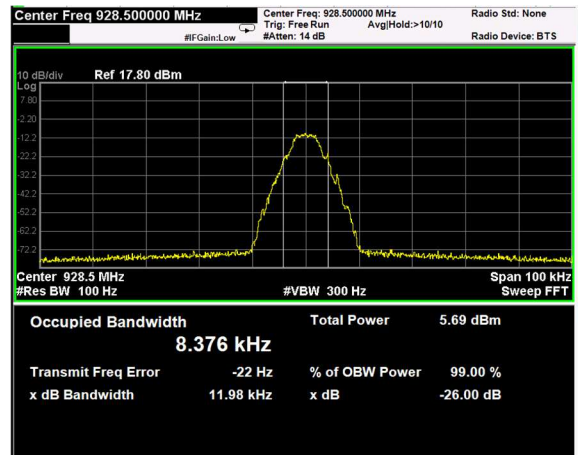


Input

P25 signal, nominal input signal + 3dB



Output



Input

Clause 101.113 Peak output power at RF antenna connector

§ 101.113 Transmitter power limitations.

(a) On any authorized frequency, the average power delivered to an antenna in this service must be the minimum amount of power necessary to carry out the communications desired. Application of this principle includes, but is not to be limited to, requiring a licensee who replaces one or more of its antennas with larger antennas to reduce its antenna input power by an amount appropriate to compensate for the increased primary lobe gain of the replacement antenna(s). In no event shall the average equivalent isotropically radiated power (EIRP), as referenced to an isotropic radiator, exceed the values specified below. In cases of harmful interference, the Commission may, after notice and opportunity for hearing, order a change in the effective radiated power of this station. Further, the output power of a transmitter on any authorized frequency in this service may not exceed the following table.

Test date: [05/27/2019 to 06/24/2019](#)

Test results: [Pass](#)

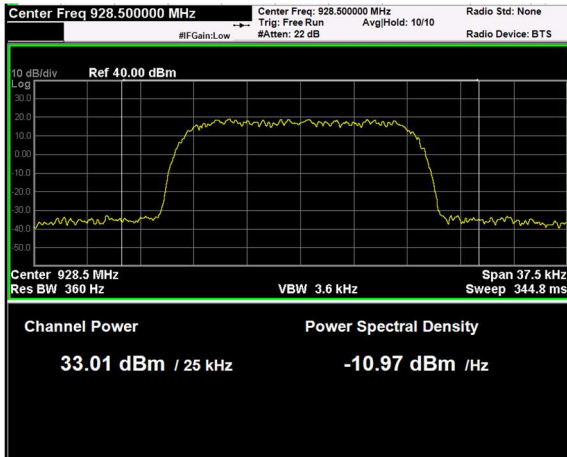
Special notes

Clause 101.113 Peak output power at RF antenna connector

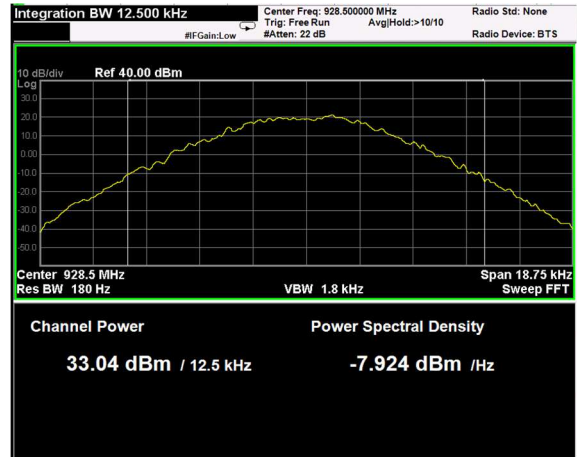
Test data

Nominal input signal

| Test data | | | | |
|-----------|------------|-----------------|-----------------------|-----------------------------|
| Direction | Modulation | Frequency (MHz) | RF output Power (dBm) | RF output channel Power (W) |
| Down-link | 16k | 928.5 | 33.01 | 2.00 |
| Down-link | P25 | 928.5 | 33.04 | 2.01 |



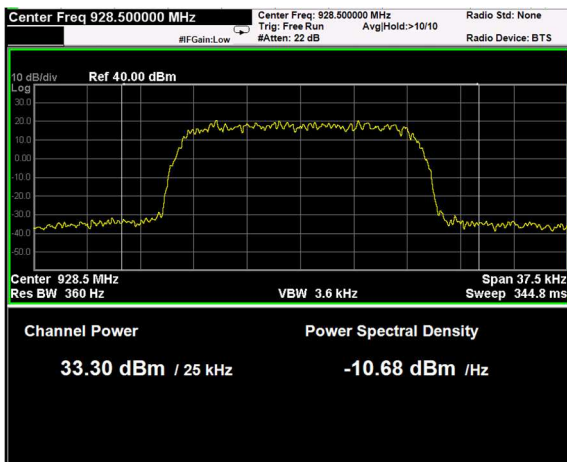
16k



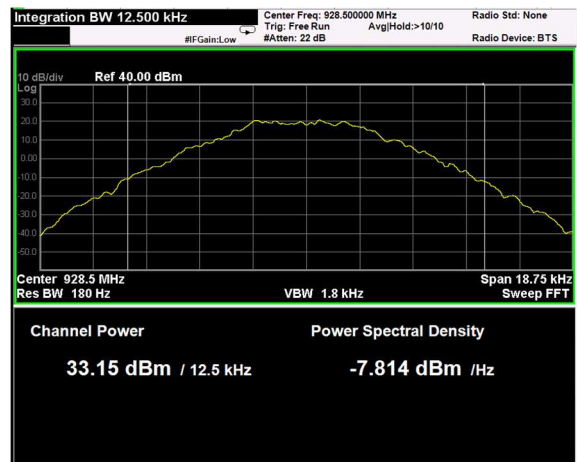
P25

Nominal input signal + 3dB

| Test data | | | | |
|-----------|------------|-----------------|-----------------------|-----------------------------|
| Direction | Modulation | Frequency (MHz) | RF output Power (dBm) | RF output channel Power (W) |
| Down-link | 16k | 928.5 | 33.30 | 2.14 |
| Down-link | P25 | 928.5 | 33.15 | 2.06 |



16k



P25

Clause 101.111 Spurious emissions at RF antenna connector

(a) The mean power of emissions must be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(5) When using transmissions employing digital modulation techniques on the 900 MHz multiple address frequencies with a 12.5 KHz bandwidth, the power of any emission must be attenuated below the unmodulated carrier power of the transmitter (P) in accordance with the following schedule:

- (i) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in KHz) of more than 2.5 KHz up to and including 6.25 KHz: At least $53 \log_{10}(f_d/2.5)$ decibels;
- (ii) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in KHz) of more than 6.25 KHz up to and including 9.5 KHz: At least $103 \log_{10}(f_d/3.9)$ decibels;
- (iii) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in KHz) of more than 9.5 KHz up to and including 15 KHz: At least $157 \log_{10}(f_d/5.3)$ decibels; and
- (iv) On any frequency removed from the center of the authorized bandwidth by a displacement frequency greater than 15 KHz: At least 50 plus $10 \log_{10}(P)$ or 70 decibels, whichever is the lesser attenuation.

(6) When using transmissions employing digital modulation techniques on the 900 MHz multiple address frequencies with a bandwidth greater than 12.5 KHz, the power of any emission must be attenuated below the unmodulated carrier power of the transmitter (P) in accordance with the following schedule:

- (i) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in KHz) of more than 5 KHz up to and including 10 KHz: At least $83 \log_{10}(f_d/5)$ decibels;
- (ii) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in KHz) of more than 10 KHz up to and including 250 percent of the authorized bandwidth: At least $116 \log_{10}(f_d/6.1)$ decibels or 50 plus $10 \log_{10}(P)$ or 70 decibels, whichever is the lesser attenuation; and
- (iii) On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least 43 plus $10 \log_{10}(\text{output power in watts})$ decibels or 80 decibels, whichever is the lesser attenuation.

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

Test results: Pass

Special notes

Clause 101.111 Spurious emissions at RF antenna connector, continued

Test data

See Plots below

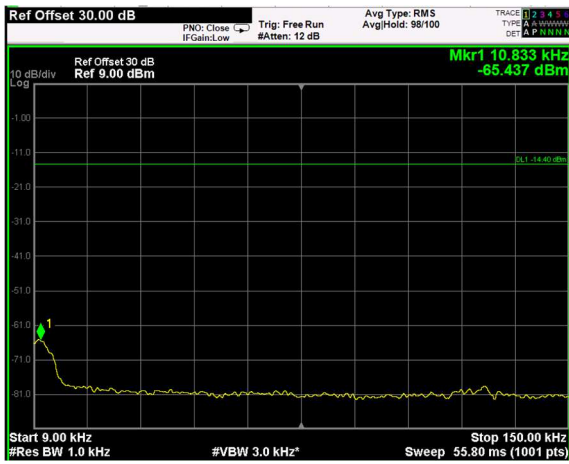
Spurious emissions measurement results:

| Frequency (MHz) | Spurious emission (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------------|-------------|-------------|
| Low channel | | | |
| First channel | Negligible | -13 | |
| | | | |
| Mid channel | | | |
| 928,5 MHz | Negligible | -13 | |
| | | | |
| High channel | | | |
| Last channel | Negligible | -13 | |
| | | | |

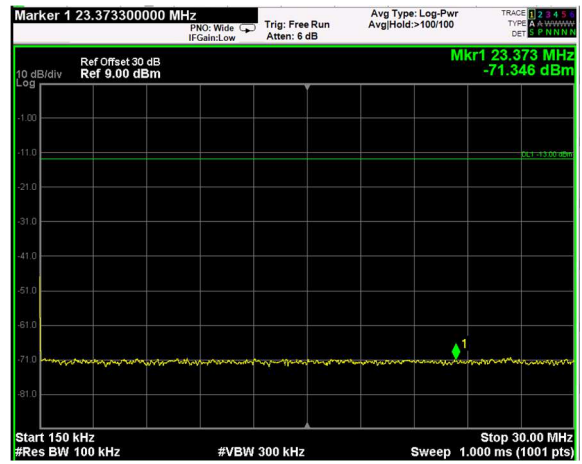
Test data, continued: spurious emissions at antenna terminal

16k signal

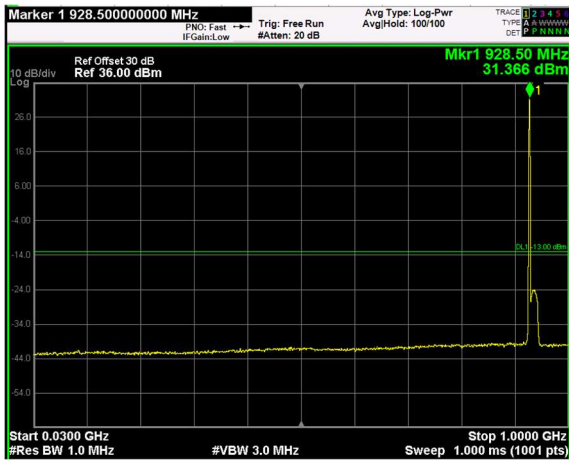
(Plots are referred to modulated carrier at the Middle Channel)



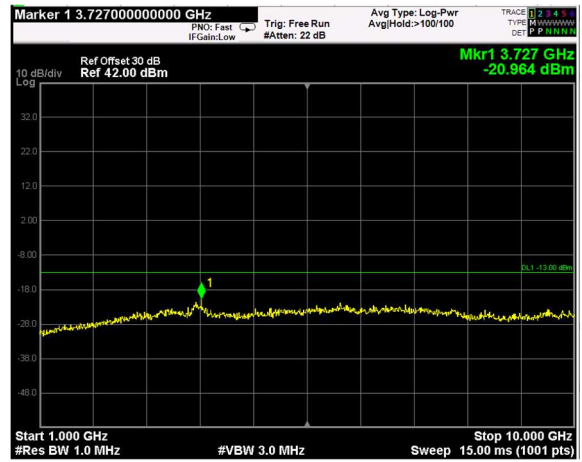
9KHz-150KHz



150KHz-30MHz



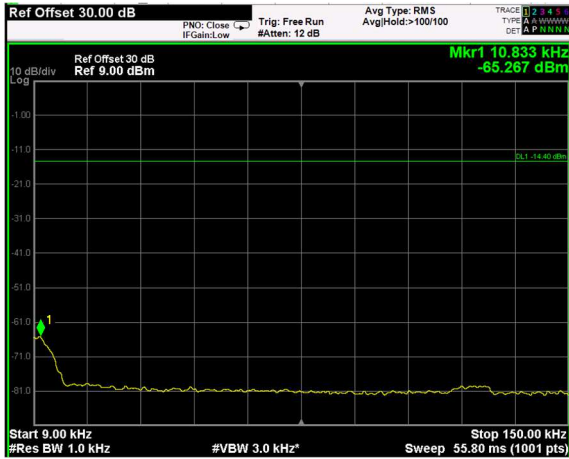
30MHz-1GHz



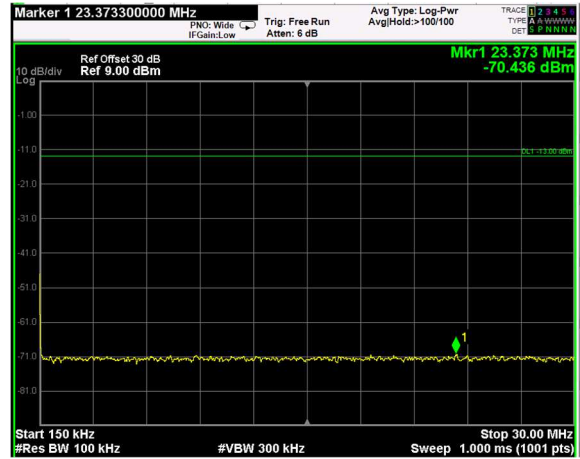
1GHz-10GHz

P25 signal

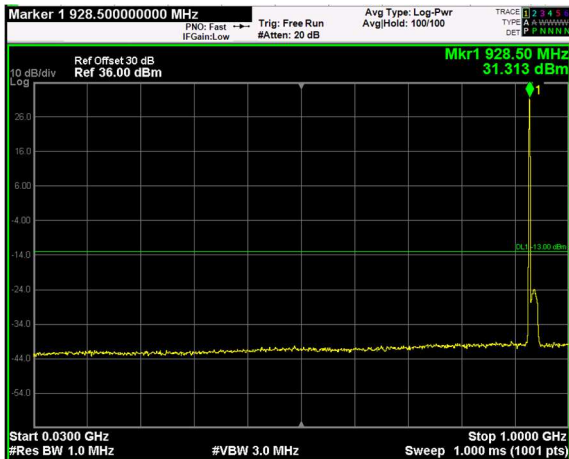
(Plots are referred to modulated carrier at the Middle Channel)



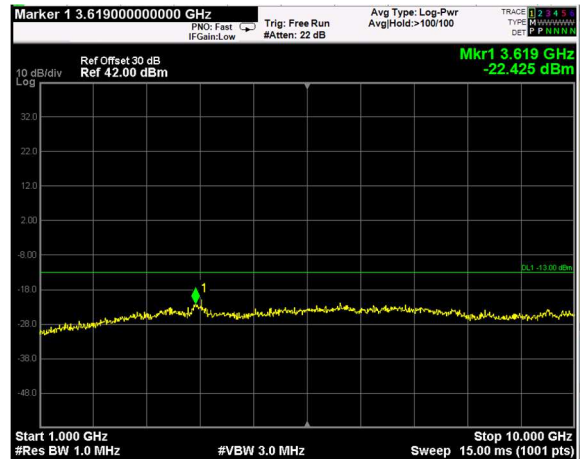
9KHz-150KHz



150KHz-30MHz



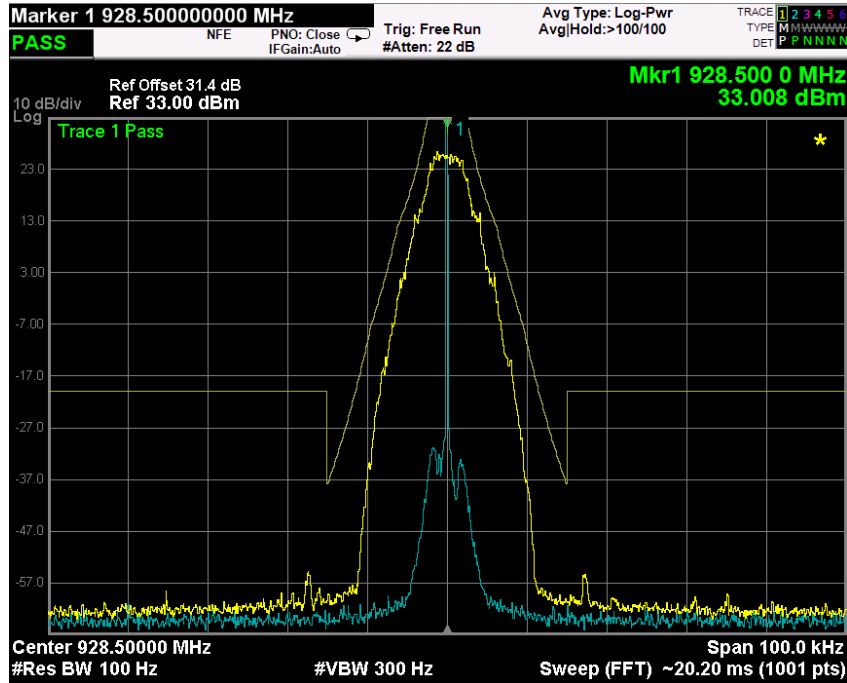
30MHz-1GHz



1GHz-10GHz

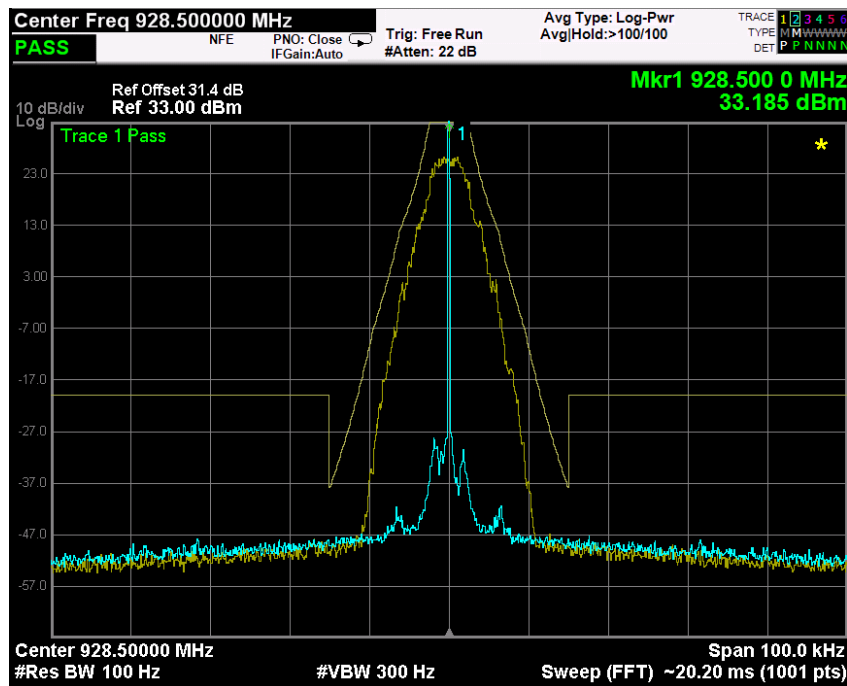
Test data, continued: Mask

P25 signal, nominal input signal (928,5MHz)



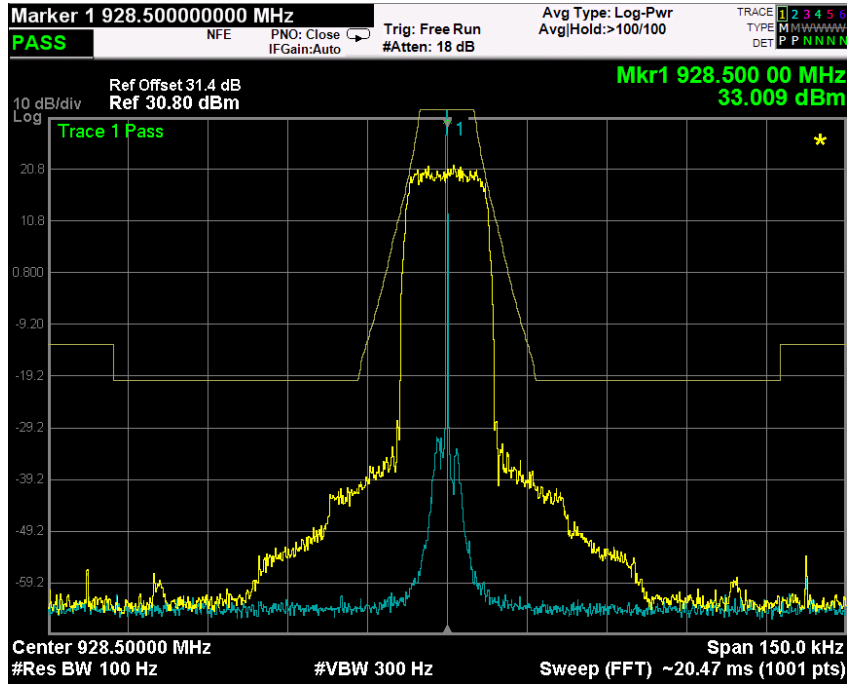
Mask with BW < 12,5kHz signal

P25 signal, nominal input signal + 3dB (928,5MHz)



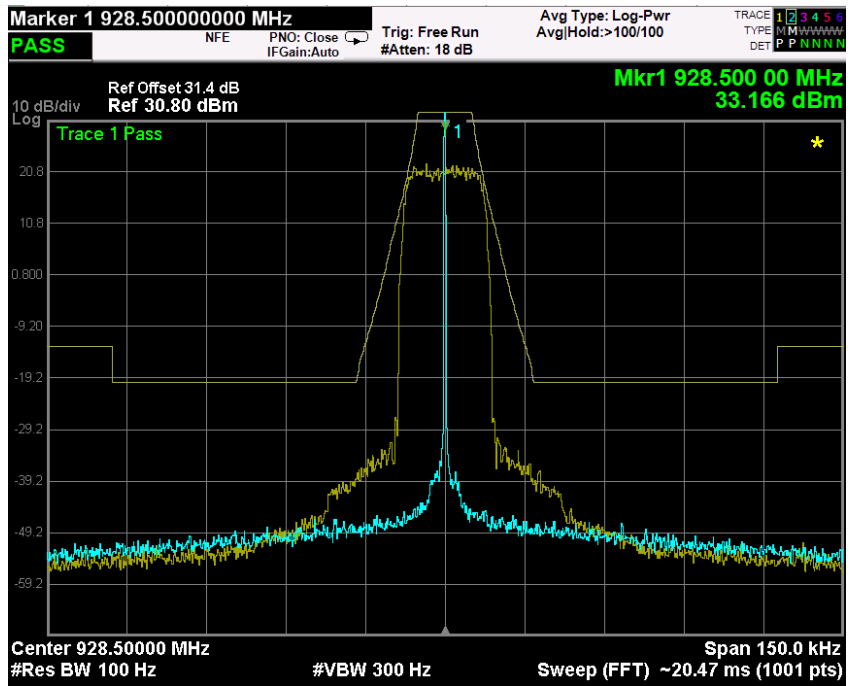
Mask with BW < 12,5KHz signal

16k signal, nominal input signal (928,5MHz)



Mask with BW >12,5KHz signal

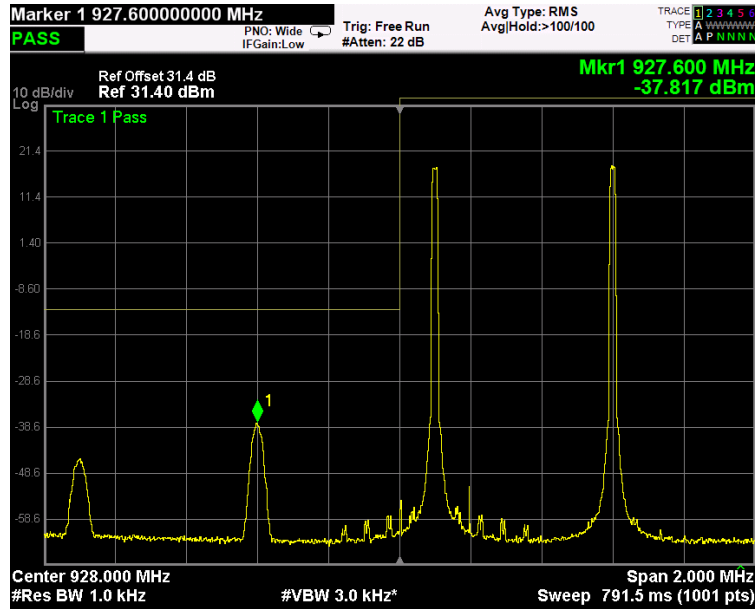
16k signal, nominal input signal + 3dB (928,5MHz)



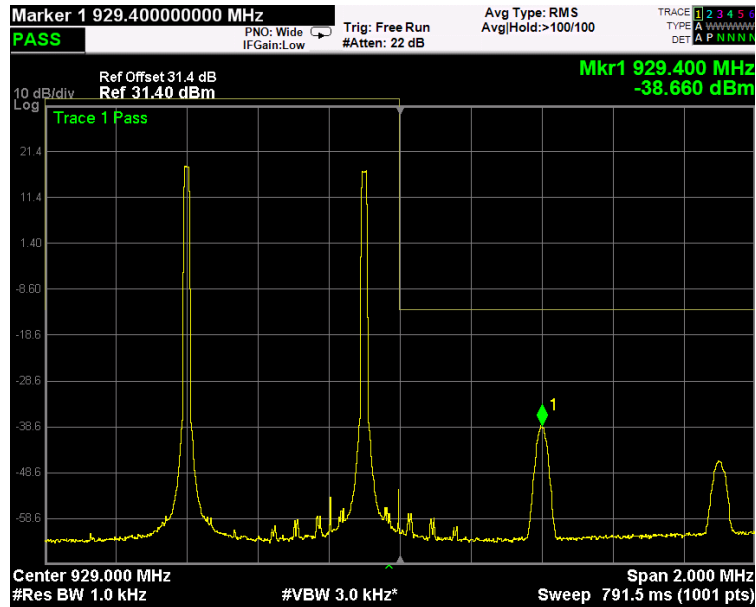
Mask with BW >12,5KHz signal

Test data, continued: band edges Inter modulation

16k signal, nominal input signal

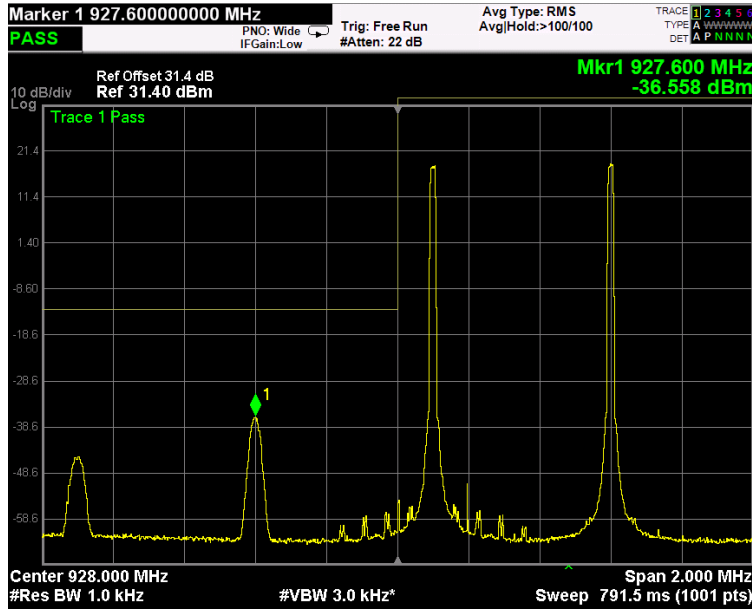


Low Band Edge

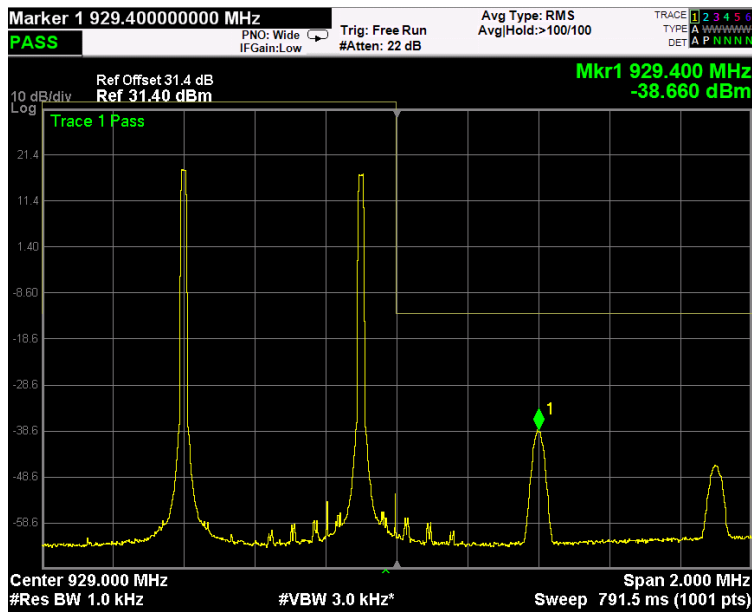


High Band Edge

16k signal, nominal input signal + 3dB

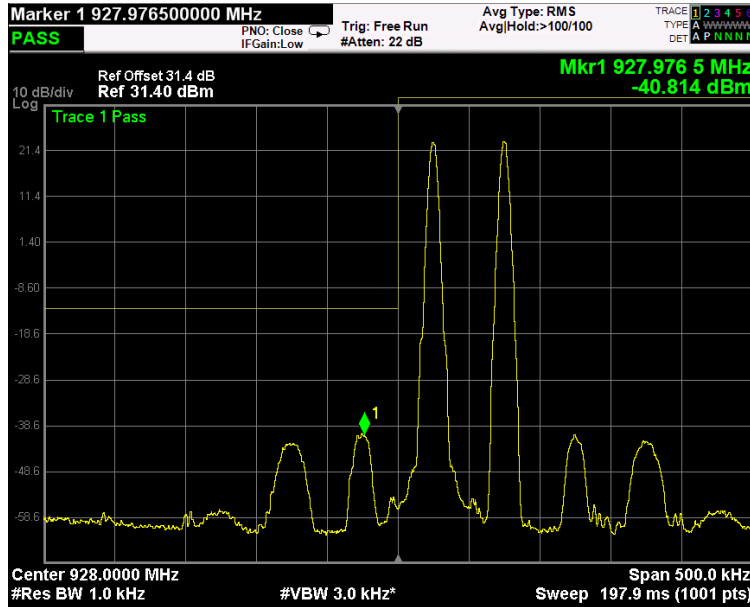


Low Band Edge

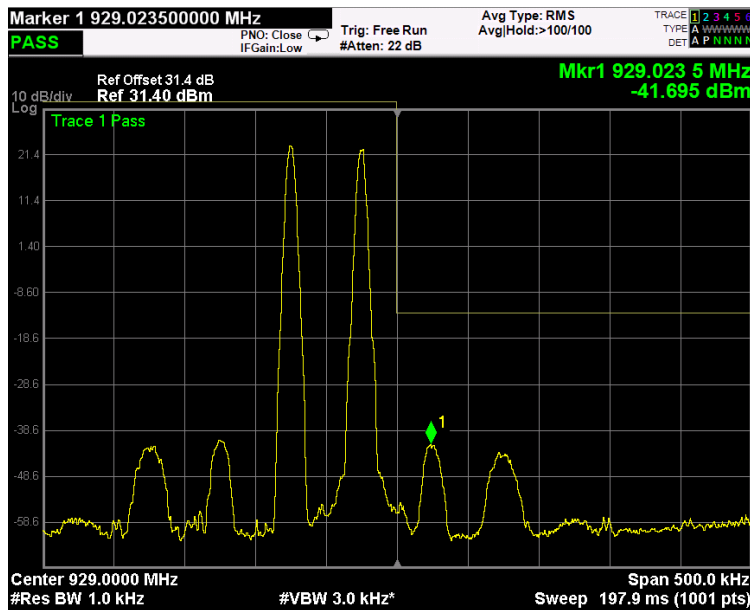


High Band Edge

P25 signal, nominal input signal

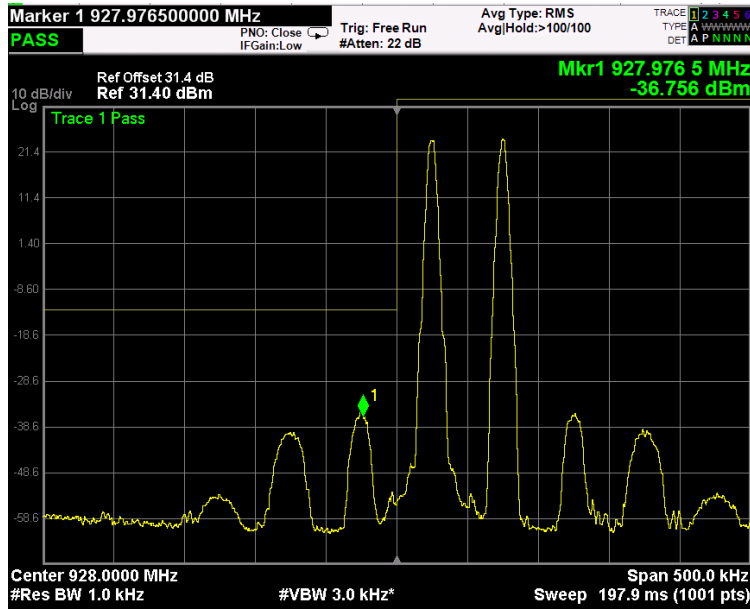


Low Band Edge

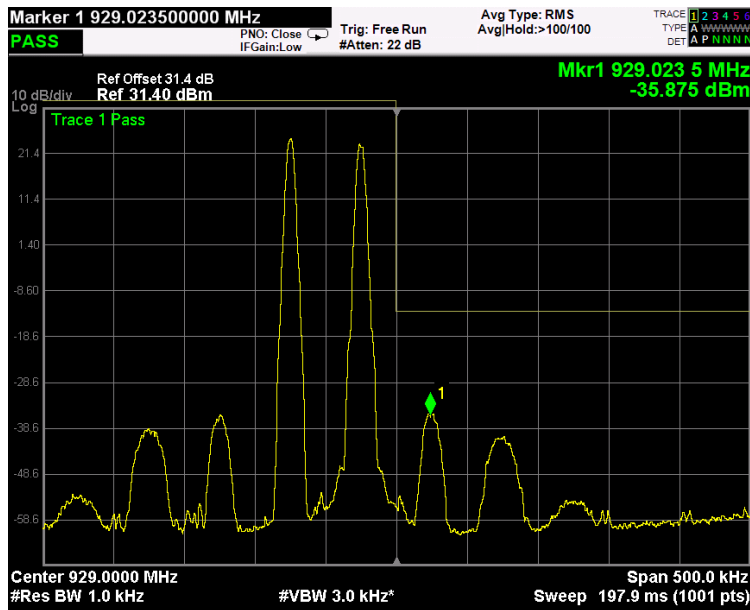


High Band Edge

P25 signal, nominal input signal + 3dB



Low Band Edge



High Band Edge

Clause 101.111 Radiated Spurious emissions

(a) The mean power of emissions must be attenuated below the mean output power of the transmitter in accordance with the following schedule:

(5) When using transmissions employing digital modulation techniques on the 900 MHz multiple address frequencies with a 12.5 KHz bandwidth, the power of any emission must be attenuated below the unmodulated carrier power of the transmitter (P) in accordance with the following schedule:

(i) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in KHz) of more than 2.5 KHz up to and including 6.25 KHz: At least $53 \log_{10}(f_d/2.5)$ decibels;

(ii) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in KHz) of more than 6.25 KHz up to and including 9.5 KHz: At least $103 \log_{10}(f_d/3.9)$ decibels;

(iii) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in KHz) of more than 9.5 KHz up to and including 15 KHz: At least $157 \log_{10}(f_d/5.3)$ decibels; and

(iv) On any frequency removed from the center of the authorized bandwidth by a displacement frequency greater than 15 KHz: At least 50 plus $10 \log_{10}(P)$ or 70 decibels, whichever is the lesser attenuation.

(6) When using transmissions employing digital modulation techniques on the 900 MHz multiple address frequencies with a bandwidth greater than 12.5 KHz, the power of any emission must be attenuated below the unmodulated carrier power of the transmitter (P) in accordance with the following schedule:

(i) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in KHz) of more than 5 KHz up to and including 10 KHz: At least $83 \log_{10}(f_d/5)$ decibels;

(ii) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in KHz) of more than 10 KHz up to and including 250 percent of the authorized bandwidth: At least $116 \log_{10}(f_d/6.1)$ decibels or 50 plus $10 \log_{10}(P)$ or 70 decibels, whichever is the lesser attenuation; and

(iii) On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least 43 plus $10 \log_{10}(\text{output power in watts})$ decibels or 80 decibels, whichever is the lesser attenuation.

Test date: [05/27/2019 to 06/24/2019](#)

Test results: [Pass](#)

Special notes

Clause 101.111 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.

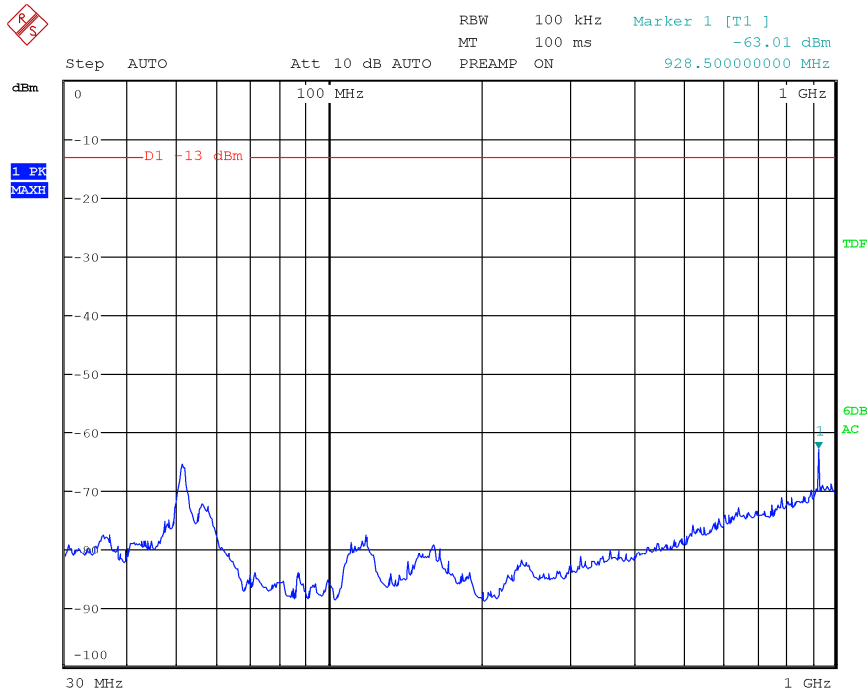
The spectrum was searched from 30 MHz to 1 GHz (RBW 100 kHz) & 1 GHz (RBW 1 MHz) to the tenth harmonic of the carrier.

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

Spurious emissions measurement results:

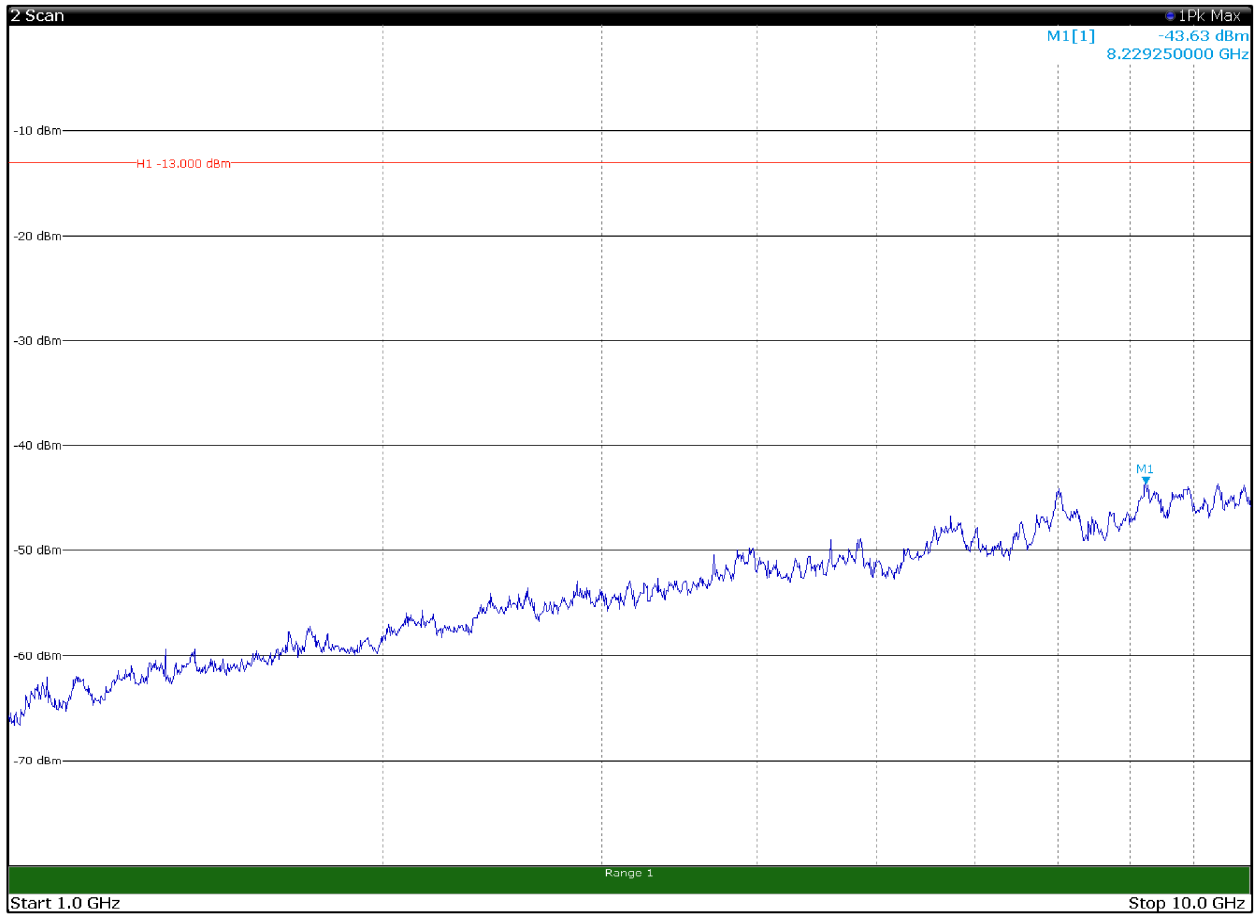
| Frequency (MHz) | Polarization. V/H | Field strength (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|-------------------|----------------------|-------------|-------------|
| Low channel | | | | |
| First Channel | V/H | Negligible | -13 | |
| Mid channel | | | | |
| 928.5 | V/H | Negligible | -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 12:00:55

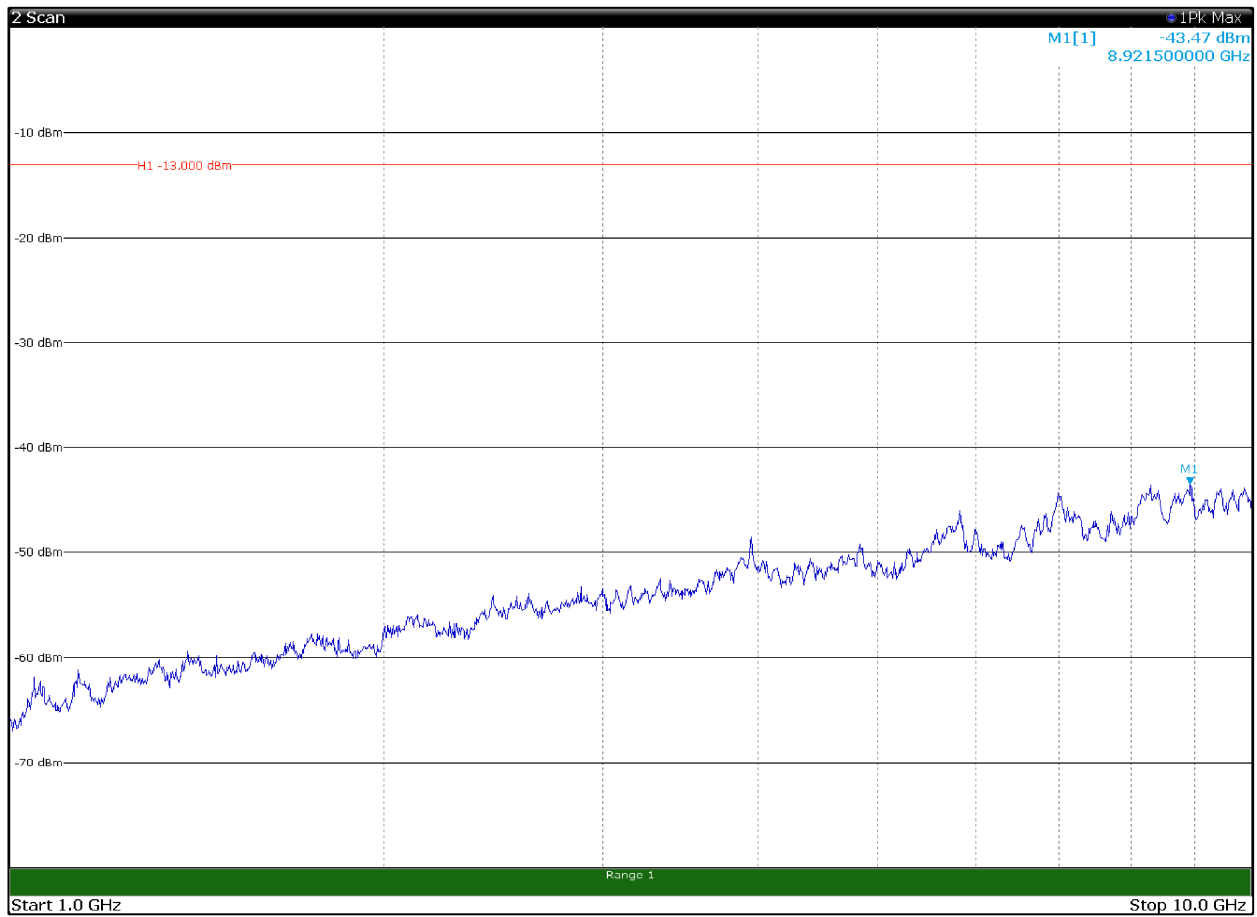
30MHz-1GHz – H Pol



10:11:13 18.06.2019

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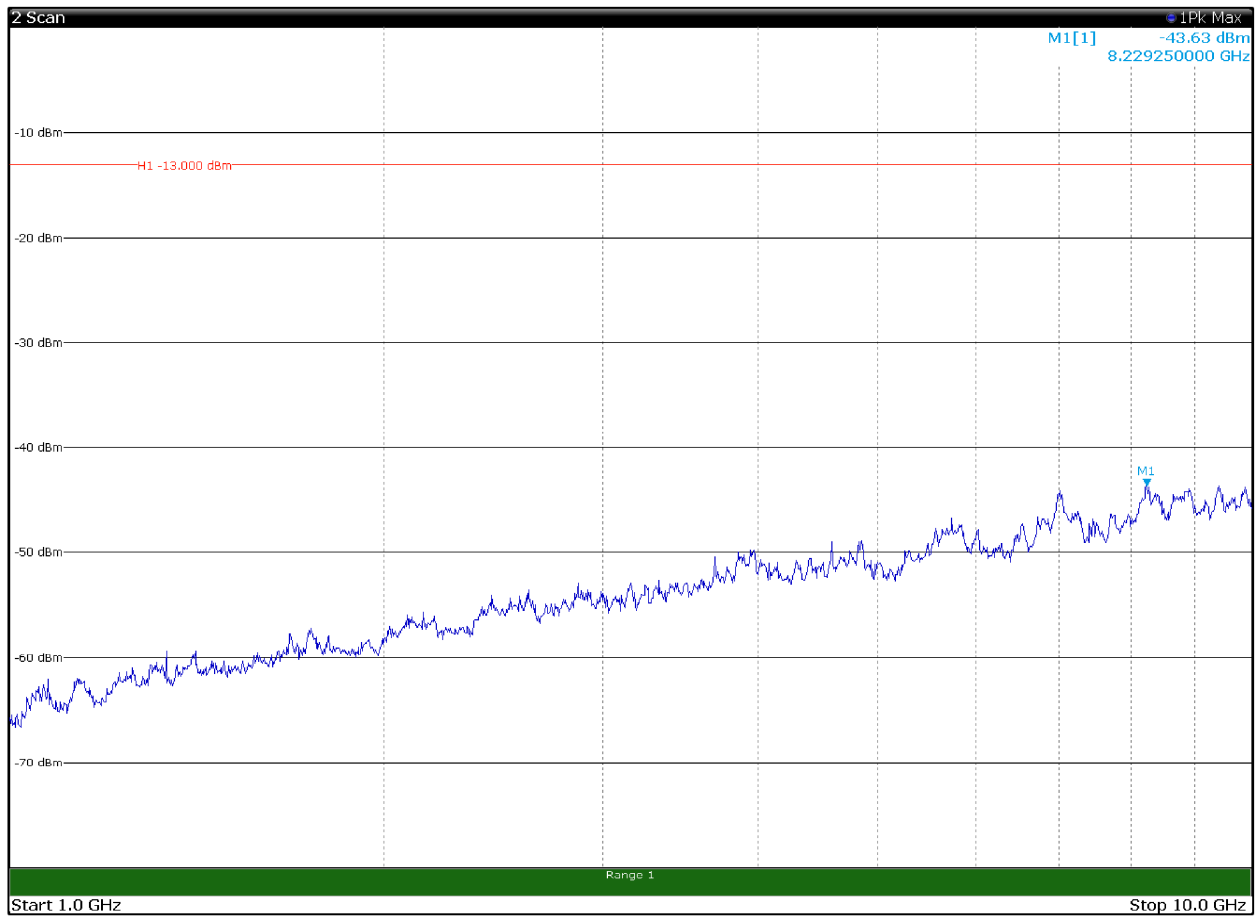
30MHz-1GHz – V Pol



10:11:46 18.06.2019

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1GHz-10GHz – H Pol



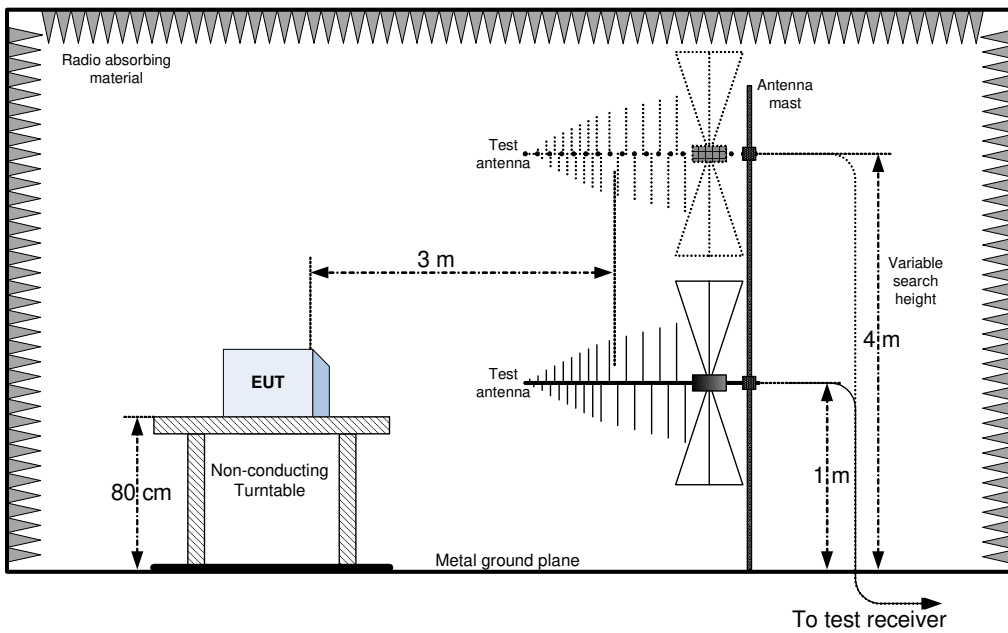
10:11:13 18.06.2019

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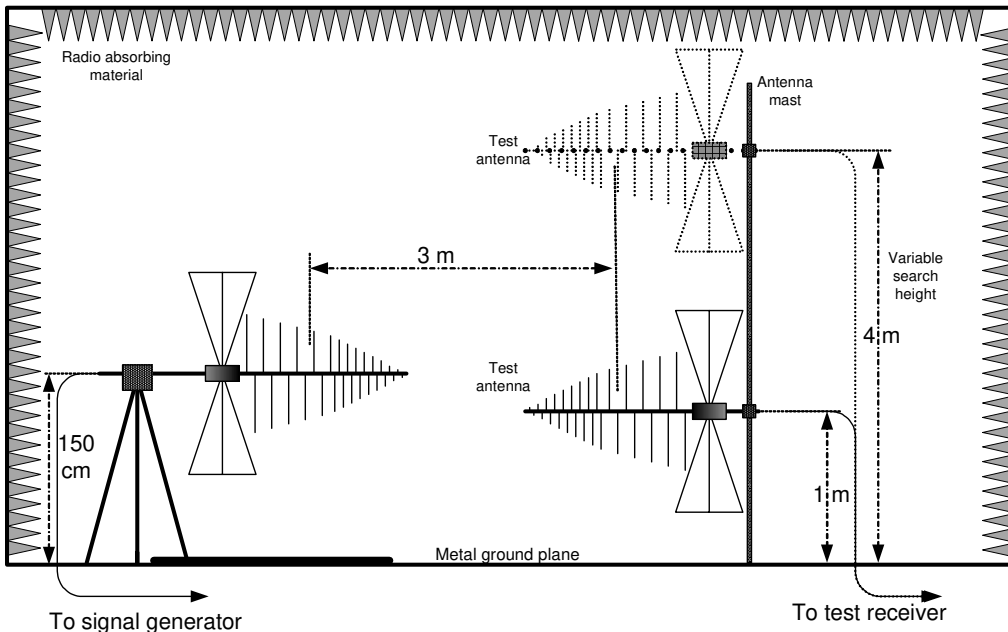
1GHz-10GHz – V Pol

Appendix B: Block diagrams of test set-ups

Radiated emissions set-up



Substitution method set-up



Appendix C: EUT Photos

Photo Set up

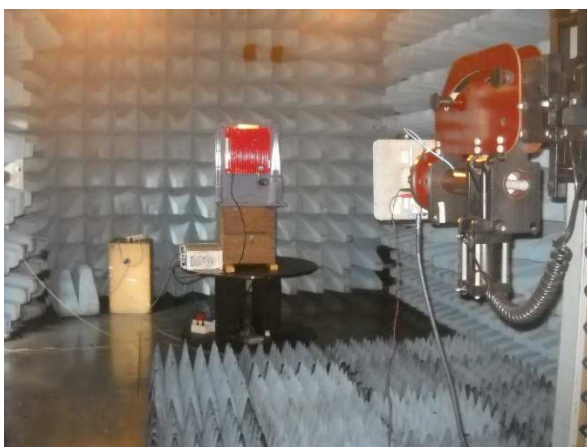


Photo EUT







END OF REPORT