

Report Reference ID:	372837-7TRFWL	
Test specification:	Title 47 – Telecommunication Chapter I – Federal Communications Commission Subchapter A – General	
	Part 22 – Public Mobile Services Subpart E – Paging and radiotelephone service	
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:	Bailun Park 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 1.1	: Report summary	
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
<b>Section 2</b> 2.1	<b>2: Summary of test results5</b> FCC Part 22, test results	
Section 3 3.1	B: 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	g
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
<b>Section 5</b> 5.1	: Test conditions	
5.2	Test conditions, power source and ambient temperatures	11
5.3	Measurement uncertainty	12
5.4	Test equipment	
<b>Appendix</b> Clause 93	<b>A: Test results</b>	14
Clause 93	35210 D05v01 (3.3) Out of band rejection	15
Clause 22	2.531 Occupied bandwidth	16
Clause 22	2.535 Peak output power at RF antenna connector	19
Clause 22	2.359 Spurious emissions at RF antenna connector	22



Clause 22.359 Radiated Spurious emissions	
Appendix B: Block diagrams of test set-ups Appendix C: EUT Photos	



# Section 1: Report summary

1.1 Test spo	1.1 Test specification		
Specifications	Part 22 Subpart E, Paging and radiotelephone service		

1.2 Statement of compliance		
Compliance	In the configuration tested the EUT was found compliant Yes 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 22. Radiated tests were conducted in accordance with ANSI C63.26-2015.	

1.3 Exclusions		
Exclusions	None	

# 1.4Registration numberTest site FCC682159ID number682159

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.

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 third parties.

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

Part	Methods	Test description	Verdict
	§ 935210 D05v01r03 (3.2)	AGC threshold	Pass
	§ 935210 D05v01r03 (3.3)	Out of band rejection	Pass
§22.531	§ 935210 D05v01r03 (3.4)	Occupied bandwidth	Pass
§22.535	§ 935210 D05v01r03 (3.5)	Peak output power at RF antenna connector	Pass
§22.359	§ 935210 D05v01r03 (3.6)	Spurious emissions at RF antenna connector	Pass
§22.359	§ 935210 D05v01r03 (3.8)	Radiated spurious emissions	Pass
§22.355	§ 935210 D05v01r03 (3.7)	Frequency stability	N/A a)
Notes:			
		Modulation/frequency conversion circuitry not in t EUT (input and output have same frequency)	use. No



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

3.1 Applicant of	details	
Applicant	Name:	Teko Telecom Srl
complete	Federal	
business name	Registration	0018963462
	Number (FRN):	
	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	Single modular approval	
approval	Yes 🗌 No 🖂	
b) Limited single	Limited single modular approval	
modular approval	Yes 🗌 No 🖂	

3.3 Product de	tails	
FCC ID	Grantee code:	XM2
	Product code:	-MP7FL8P9PP
Equipment class	B2I	
Description of	Booster	
product as it is marketed	Model name/number:	TRU7FL8P9PWM/AC-WT
	Serial number:	1012793001

3.4 Application	i purpo	ose
Type of	$\boxtimes$	Original certification
application		Change in identification of presently authorized equipment
		Original FCC ID: Grant date:
		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
equipment	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-MP7FL8P9PP
	ii FCC ID:

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

3.7 EUT techn	ical specifications
Operating band:	Down Link 931-932 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 $\Omega$ RF connector
Power source:	100-240 Vac



#### Section 3: Equipment under test

	d support equipment
The following information id	lentifies 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 setur	o diagram
optical module (to co signal in RF signal ir connected directly to FCC ID) to exercise module in the Maste	bet Unit is the EUT. Master Unit includes only management module and onvert RF signal in optical signal in down link direction and viceversa optical in up link direction). As described in "Operational description", master unit is base station, so the system doesn't use another equipment (under another the EUT. Signal generator is linked directly to the RF connector of optical r Unit.
	I modulated nerator EUT Spectrum Analyzer
max gain. Raise the	nodulated generator to the input of the EUT, so that the EUT works at the input level to the EUT until reach the maximum output power. Connect the to the RF output connector of the EUT.



# Section 4: Engineering considerations

Modifications     Modifications performed to the EUT during this assessment       None ⊠     Yes □, performed by Client □ or Nemko □       Details:	4.1 Modification	ns incorporated in the EUT
Botallor		5

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



# Section 5: Test conditions

# 5.1 Deviations from laboratory tests procedures

No deviations were made from laboratory test procedures.

5.2 Test condit	tions, 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

Transmitter     10 kHz       Conducted     30 MHz       Adjacent channel power     1 MHz       Adjacent channel power     1 MHz       Conducted spurious emissions     26 GHz       Intermodulation attenuation     1 MHz       Attack time – frequency behaviour     1 MHz       Attack time – power behaviour     1 MHz       Release time – power behaviour     1 MHz       Release time – power behaviour     1 MHz       Transient behaviour of the transmitter – Transient frequency behaviour     1 MHz       Transent behaviour of the transmitter – Power level slope     1 MHz       Frequency deviation - Maximum permissible frequency deviation - Maximum permissible 3 kHz     0.001 MH       Dwell time     0.001 MH       Hopping Frequency Separation     0.01 MH       Occupied Channel Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH	z ÷ 40 GHz 0.08 ppm ÷ 30 MHz 1.0 dB ÷ 18 GHz 1.5 dB ÷ 40 GHz 3.0 dB • 18 GHz 1.6 dB ÷ 26 GHz 3.0 dB ÷ 40 GHz 4.5 dB • 18 GHz 2.2 dB • 18 GHz 2.0 ms	(1)         (1)         (1)         (1)         (1)         (1)         (1)         (1)         (1)         (1)         (1)         (1)
Transmitter     Carrier power RF Output Power     30 MHz       Adjacent channel power     1 MHz       Adjacent channel power     1 MHz       Conducted spurious emissions     10 kHz       Conducted spurious emissions     10 kHz       Attack time – frequency behaviour     1 MHz       Attack time – power behaviour     1 MHz       Release time – power behaviour     1 MHz       Release time – power behaviour     1 MHz       Transient behaviour of the transmitter – Transient frequency behaviour     1 MHz       Transient behaviour of the transmitter – Power level slope     1 MHz       Frequency deviation - Maximum permissible     0.001 MH       Frequency deviation - Maximum permissible     0.001 MH       Modulation frequencies above 3 kHz     0.001 MH       Dwell time     0.001 MH       Modulation Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH	÷ 18 GHz     1.5 dB       ÷ 40 GHz     3.0 dB       • 18 GHz     1.6 dB       ÷ 26 GHz     3.0 dB       ÷ 40 GHz     4.5 dB       • 18 GHz     2.2 dB	(1) (1) (1) (1)
Transmitter     RF Output Power     30 MH2       Adjacent channel power     1 MHz       Adjacent channel power     1 MHz       Conducted spurious emissions     10 kHz       26 GHz     Intermodulation attenuation     1 MHz       Attack time – frequency behaviour     1 MHz       Attack time – power behaviour     1 MHz       Release time – frequency behaviour     1 MHz       Release time – power behaviour     1 MHz       Transient behaviour     1 MHz       Frequency deviation - Maximum permissible     0.001 MH       Frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz     0.001 MH       Dwell time     10 kHz - 2000000000000000000000000000000000000	÷ 40 GHz   3.0 dB     ÷ 18 GHz   1.6 dB     ÷ 26 GHz   3.0 dB     ÷ 40 GHz   4.5 dB     ÷ 18 GHz   2.2 dB	(1) (1) (1)
Transmitter     18 MHz       Adjacent channel power     1 MHz       Conducted spurious emissions     26 GHz       Intermodulation attenuation     1 MHz       Attack time – frequency behaviour     1 MHz       Attack time – power behaviour     1 MHz       Release time – frequency behaviour     1 MHz       Release time – power behaviour     1 MHz       Release time – power behaviour     1 MHz       Transient behaviour     1 MHz       Transient behaviour     1 MHz       Transient behaviour     1 MHz       Transient behaviour     1 MHz       Transeint behaviour     1 MHz       Trequency deviation - Maximum permissible     0.001 MHz       Frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz     0.001 MH       Occupied Channel Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MHz	- 18 GHz     1.6 dB       ÷ 26 GHz     3.0 dB       ÷ 40 GHz     4.5 dB       • 18 GHz     2.2 dB	(1) (1)
Transmitter     Intermodulation attenuation     10 kHz       Conducted spurious emissions     26 GHz       Intermodulation attenuation     1 MHz       Attack time – frequency behaviour     1 MHz       Attack time – power behaviour     1 MHz       Release time – frequency behaviour     1 MHz       Release time – power behaviour     1 MHz       Release time – power behaviour     1 MHz       Transient behaviour of the transmitter – Transient     1 MHz       Transient behaviour of the transmitter – Power level slope     1 MHz       Frequency deviation - Maximum permissible     0.001 MH       Frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz     0.001 MH       Dwell time     10 kHz       Hopping Frequency Separation     0.01 MH       Occupied Channel Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH	÷ 26 GHz 3.0 dB ÷ 40 GHz 4.5 dB • 18 GHz 2.2 dB	(1)
Transmitter     Conducted spurious emissions     26 GHz       Intermodulation attenuation     1 MHz       Attack time – frequency behaviour     1 MHz       Attack time – power behaviour     1 MHz       Release time – power behaviour     1 MHz       Release time – power behaviour     1 MHz       Transient behaviour of the transmitter – Transient frequency behaviour     1 MHz       Transient behaviour of the transmitter – Power level slope     1 MHz       Frequency deviation - Maximum permissible frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz     0.001 MH       Dwell time     0.001 MH       Occupied Channel Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       Radiated     Radiated spurious emissions	÷ 40 GHz 4.5 dB - 18 GHz 2.2 dB	
Conducted     Intermodulation attenuation     1 MHz       Attack time – frequency behaviour     1 MHz       Attack time – power behaviour     1 MHz       Release time – frequency behaviour     1 MHz       Release time – power behaviour     1 MHz       Release time – power behaviour     1 MHz       Transient behaviour     0.001 MHz       Frequency deviation - Maximum permissible frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz     0.001 MHz       Dwell time     Hopping Frequency Separation     0.01 MHz       Occupied Channel Bandwidth     0.01 MHz       Modulation Bandwidth     0.01 MHz       26.5 GHz     26.5 GHz	- 18 GHz 2.2 dB	(4)
Attack time – frequency behaviour     1 MHz       Attack time – power behaviour     1 MHz       Release time – frequency behaviour     1 MHz       Release time – power behaviour     1 MHz       Release time – power behaviour     1 MHz       Release time – power behaviour     1 MHz       Transient behaviour of the transmitter – Transient     1 MHz       Transient behaviour of the transmitter – Power level slope     1 MHz       Frequency deviation - Maximum permissible     0.001 MHz       Frequency deviation - Maximum permissible     0.001 MHz       Frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz     0.001 MHz       Dwell time     1       Hopping Frequency Separation     0.01 MHz       Occupied Channel Bandwidth     0.01 MHz       Modulation Bandwidth     0.01 MHz		(1)
Conducted   behaviour   1 MHz     Attack time – power behaviour   1 MHz     Release time – frequency behaviour   1 MHz     Release time – power behaviour   1 MHz     Release time – power behaviour   1 MHz     Transient behaviour of the transmitter– Transient frequency behaviour   1 MHz     Transient behaviour of the transmitter – Power level slope   1 MHz     Frequency deviation - Maximum permissible   0.001 MHz     Frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz   0.001 MH     Dwell time   0.001 MH     Occupied Channel Bandwidth   0.01 MH     Modulation Bandwidth   0.01 MH     Modulation Bandwidth   0.01 MH	- 18 GHz 2 0 ms	(1)
Conducted     Release time – frequency behaviour     1 MHz       Release time – power behaviour     1 MHz       Transient behaviour of the transmitter – Transient     1 MHz       Transient behaviour of the transmitter – Transient     1 MHz       Transient behaviour     1 MHz       Transient behaviour     1 MHz       Frequency behaviour     1 MHz       Transient behaviour of the transmitter – Power level slope     1 MHz       Frequency deviation - Maximum permissible     0.001 MH       Frequency deviation - Maximum permissible     0.001 MH       Frequency deviation - Response of the transmitter to modulation frequencies above     0.001 MH       Well time     0.001 MH       Occupied Channel Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH		(1)
Conducted     behaviour     I MHz       Release time – power behaviour     1 MHz       Transient behaviour of the transmitter – Transient     1 MHz       Transient behaviour     1 MHz       Transient behaviour     1 MHz       Transient behaviour     1 MHz       frequency behaviour     1 MHz       Transient behaviour of the transmitter – Power level slope     1 MHz       Frequency deviation - Maximum permissible     0.001 MH       Frequency deviation - Maximum permissible     0.001 MH       Frequency deviation - Response of the transmitter to modulation frequencies above     0.001 MH       Occupied Channel Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       Radiated     Radiated spurious emissions	- 18 GHz 2.5 ms	(1)
Conducted     behaviour     I MHZ       Transient behaviour of the transmitter     1 MHz     1 MHz       Transient behaviour of the transmitter – Transient     1 MHz       Transient behaviour of the transmitter – Power level slope     1 MHz       Frequency deviation - Maximum permissible     0.001 MH       Frequency deviation - Maximum permissible     0.001 MH       Frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz     0.001 MH       Dwell time     0.001 MH       Occupied Channel Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH	- 18 GHz 2.0 ms	(1)
Transient behaviour of the transmitter – Transient     1 MHz       Transmitter – Transient     1 MHz       Transient behaviour     1 MHz       Transient behaviour of the transmitter – Power level slope     1 MHz       Frequency deviation -     1 MHz       Maximum permissible     0.001 MH       frequency deviation -     0.001 MH       Response of the transmitter to modulation frequencies above 3 kHz     0.001 MH       Dwell time     0.001 MH       Occupied Channel Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH	- 18 GHz 2.5 ms	(1)
Transient behaviour of the transmitter – Power level slope     1 MHz       Frequency deviation - Maximum permissible     0.001 MH       frequency deviation     0.001 MH       Frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz     0.001 MH       Dwell time     0.001 MH       Occupied Channel Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH	- 18 GHz 0.2 kHz	(1)
Maximum permissible     0.001 MH       frequency deviation     0.001 MH       Frequency deviation -     Response of the transmitter to modulation frequencies above 3 kHz     0.001 MH       Dwell time     0.001 MH     0.001 MH       Hopping Frequency     0.01 MH     0.01 MH       Occupied Channel Bandwidth     0.01 MH     0.01 MH       Modulation Bandwidth     0.01 MH     0.01 MH       Radiated     spurious emissions     10 kHz	- 18 GHz 9%	(1)
Frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz     0.001 MH       Dwell time     0.001 MH       Hopping Frequency Separation     0.01 MH       Occupied Channel Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       26.5 GH     26.5 GH	z ÷ 18 GHz 1.3%	(1)
Hopping Frequency Separation     0.01 MH       Occupied Channel Bandwidth     0.01 MH       Modulation Bandwidth     0.01 MH       Radiated spurious emissions     10 kHz       26.5 GH     20.01 MH	z ÷ 18 GHz 0.5 dB	(1)
Separation   0.01 MH     Occupied Channel Bandwidth   0.01 MH     Modulation Bandwidth   0.01 MH     Radiated spurious emissions   10 kHz     26.5 GH	- 3%	(1)
Modulation Bandwidth   0.01 MH     Radiated spurious emissions   10 kHz     26.5 GHz	÷ 18 GHz 1%	(1)
Radiated spurious emissions 10 kHz - 26.5 GH	: ÷ 18 GHz 2%	(1)
Radiated spurious emissions 26.5 GH	: ÷ 18 GHz 2%	(1)
Radiated 26.5 GH	26.5 GHz 6.0 dB	(1)
	÷ 40 GHz 8.0 dB	(1)
	26.5 GHz 6.0 dB	(1)
transmitter 26,5 GH	÷ 40 GHz 8.0 dB	(1)
Dedicted environs emissions 10 kHz -	26.5 GHz 6.0 dB	(1)
Radiated Radiated spurious emissions 26.5 GH	÷ 40 GHz 8.0 dB	(1)
Receiver Sensitivity measurement 1 MHz		(1)
Our dustade Our dust is in in in in 10 kHz	- 18 GHz 6.0 dB	(1)
Conducted Conducted spurious emissions 26 GHz	+ 18 GHz 6.0 dB + 26 GHz 3.0 dB	(1)



quipment	Manufacturer	Model No.	Asset/Serial No.	Next cal
ctor Signal enerator	Agilent	E4432B ESG	GB38450308	08/2019
tor Signal erator	Agilent	E4438C ESG	MY45094485	08/2019
ectrum Analyzer	Agilent	N9030A PXA	MY53120882	12/2019
g Broad Band nna 25-8000 MHz	Schwarzbeck	VULB 9162	VULB 9162-25	07/2021
enna 1-18 GHz	Schwarzbeck	STLP 9148	STPL 9148-123	07/2021
ole ridge horn nna (4 ÷ 40 GHz)	RFSpin	DRH40	061106A40	02/2020
adband preamplifier ÷ 40 GHz)	Miteq	JS44-18004000-35-8P- R	1.627	09/2019
adband preamplifier 8 GHz	Schwarzbeck	BBV 9718	9718-137	08/2019
l receiver 20 Hz ÷ 8 z	R&S	ESU8	100202	01/2020
l receiver 2 Hz ÷ 44 z	R&S	ESW44	101620	05/2019
draulic revolving tform	Nemko	RTPL 01	4.233	NCR
rning-table	R&S	HCT	835 803/03	NCR
enna mast	R&S	HCM	836 529/05	NCR
troller	R&S	HCC	836 620/7	NCR
i-anechoic nber	Nemko	10m semi-anechoic chamber	530	09/2021
elded room	Siemens	10m control room	1947	NCR
ni-anechoic mber	Nemko	10m semi-anechoic chamber	70	NCR
ielded Room	Siemens	3m semi-anechoic chamber	3	NCR
tor controller	Emco	1051-25	9012-1559	NCR
or controller	Emco	1061-1.521	9012-1508	NCR
enna Tower	Emco	2071-2	9601-1940	NCR
ntroller 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

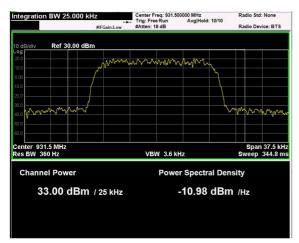
# Clause 935210 D05v01 (3.2) AGC threshold

Measure of EUT AGC Threshold

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

Special notes

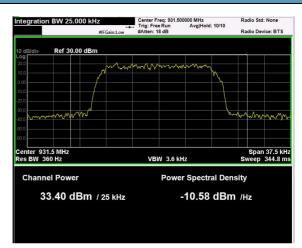
#### Test data



16k signal, nominal input signal



P25 signal, nominal input signal



16k signal, nominal input signal+1



P25 signal, nominal input signal+1



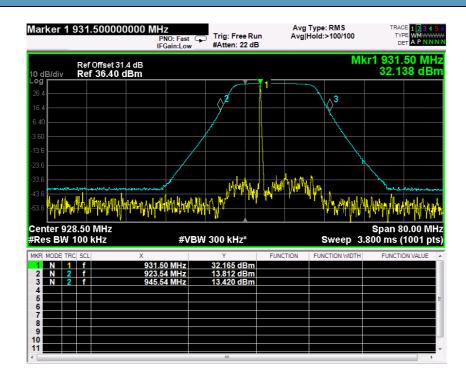
### Clause 935210 D05v01 (3.3) Out of band rejection

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 22.531 Occupied bandwidth

The following channels are allocated for assignment to base transmitters that provide paging service, either individually or collectively under a paging geographic area authorization. Unless otherwise indicated, all channels have a bandwidth of 20 kHz and are designated by their center frequencies in MegaHertz.

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

Test results: Pass

Special notes

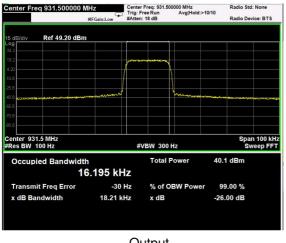
\_

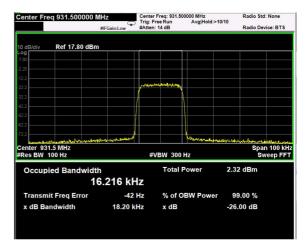


#### Clause 22.531 Occupied bandwidth, continued

#### Test data

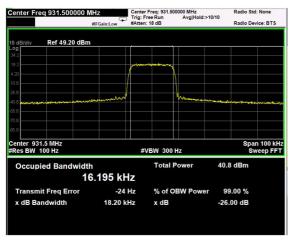
#### 16k signal, nominal input signal





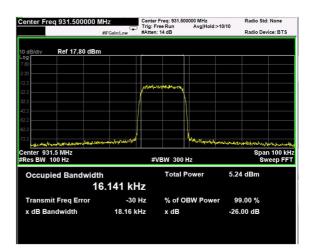
Output

#### 16k signal, nominal input signal+ 3dB



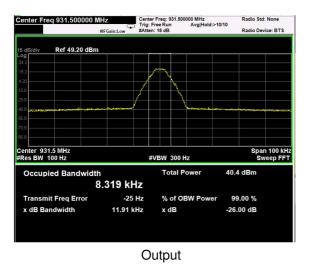
Output

Input



Input



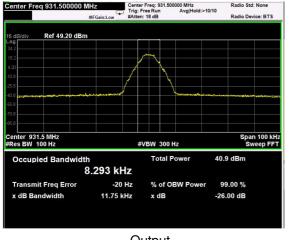


#### P25 signal, nominal input signal

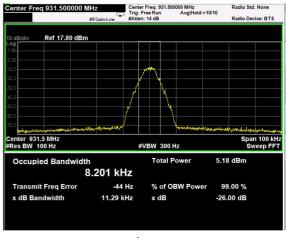


Input

#### P25 signal, nominal input signal+1



Output



Input



### Clause 22.535 Peak output power at RF antenna connector

The effective radiated power (ERP) of transmitters operating on the channels listed in §22.531 must not exceed the limits in this section.

(a) Maximum ERP. The ERP must not exceed the applicable limits in this paragraph under any circumstances. Frequency range: 931-932MHz. Maximum ERP 3500Watts.

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

Special notes

Report reference 372837-7TRFWL

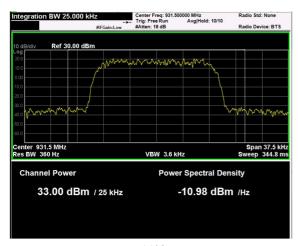


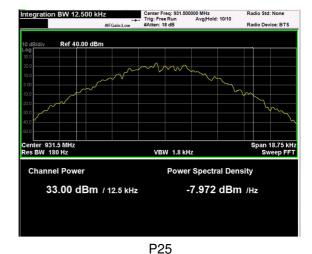
#### Clause 22.535 Peak output power at RF antenna connector

#### Test data

#### Nominal input signal

Test data				
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)
Down-link	16k	931.5	33.00	2.00
Down-link	P25	931.5	33.00	2.00



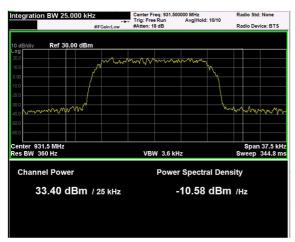


16K

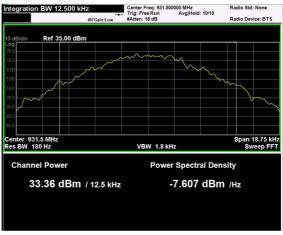


#### Nominal input signal + 3dB

Test data				
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)
Down-link	16k	931.5	33.40	2.19
Down-link	P25	931.5	33.36	2.17



16K



P25



#### Clause 22.359 Spurious emissions at RF antenna connector

#### § 22.359(a)

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P) dB$ 

#### § 22.359(b)

Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 30 kHz or more. In the 60 kHz bands immediately outside and adjacent to the authorized frequency range or channel, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e., 30 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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

Special notes



#### Clause 22.359 Spurious emissions at RF antenna connector, continued

10	het.	0	ote	
	est	u	alc	1

#### See Plots below

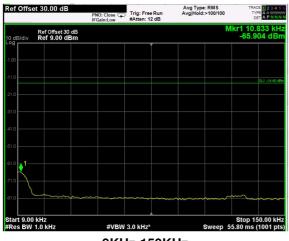
Spurious emissions me	easurement results:		
Frequency	Spurious emission	Limit	Margin
(MHz)	. (dBm)	(dBm)	(dB)
Low channel			
First channel	Negligible	-13	
Mid channel			
931,5 MHz	Negligible	-13	
High channel			
Last channel	Negligible	-13	



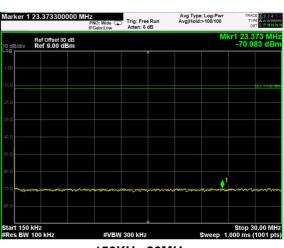
#### Test data: spurious emissions at antenna terminal

#### 16k signal

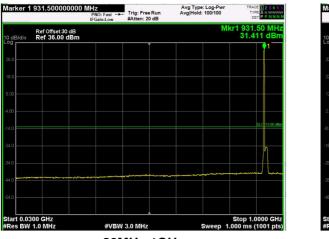
(Plots are referred to modulated carrier at the Middle Channel)



9KHz-150KHz



150KHz-30MHz



30MHz-1GHz



1GHz-10GHz

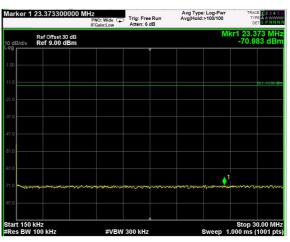


#### P25 signal

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



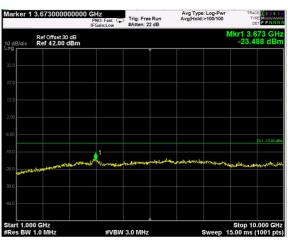








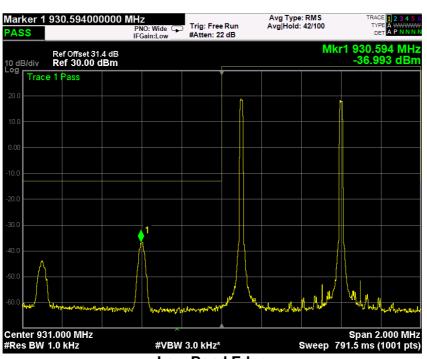
30MHz-1GHz



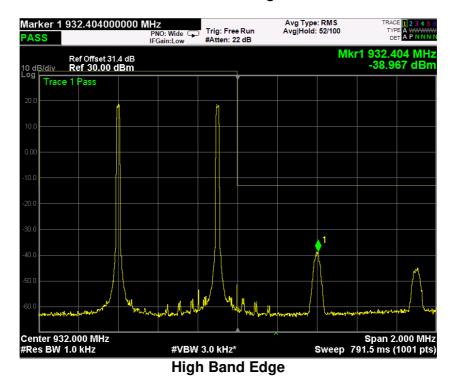
1GHz-10GHz

#### Test data, continued: band edges Inter modulation

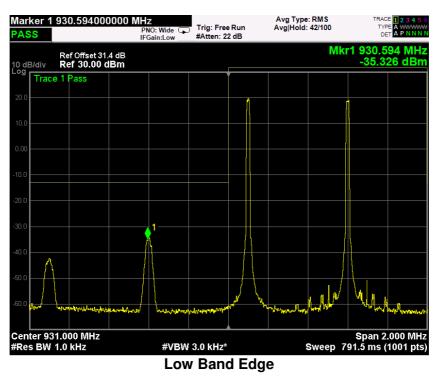
#### 16k signal, nominal input signal



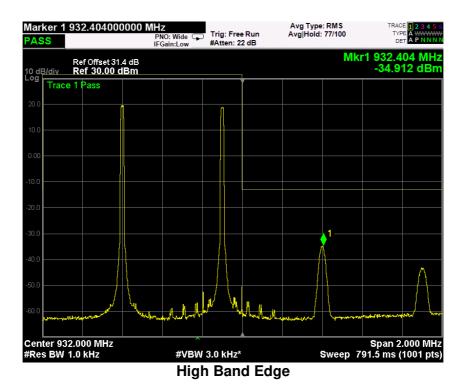
#### Low Band Edge





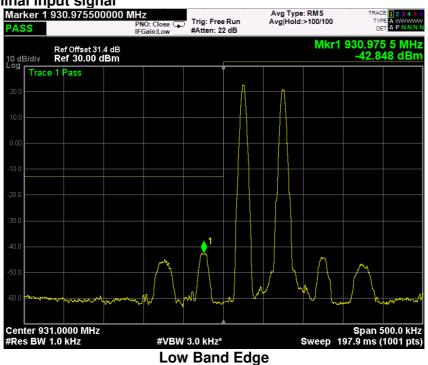


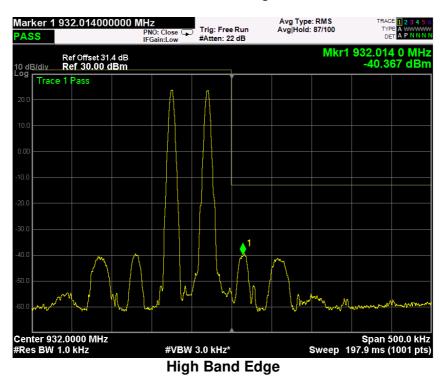
#### 16k signal, nominal input signal + 3dB

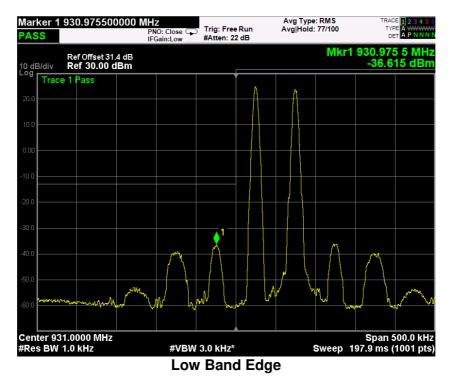




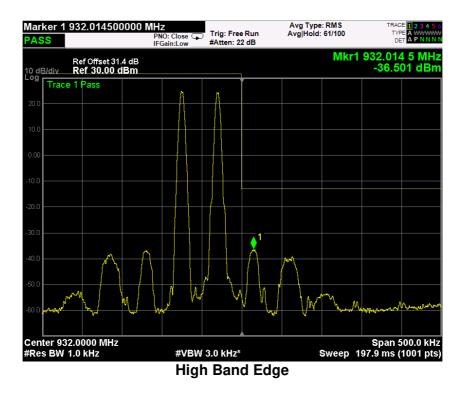
#### P25 signal, nominal input signal







#### P25 signal, nominal input signal + 3dB



#### Clause 22.359 Radiated Spurious emissions

#### § 22.359(a)

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P) dB$ 

#### § 22.359(b)

Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 30 kHz or more. In the 60 kHz bands immediately outside and adjacent to the authorized frequency range or channel, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e., 30 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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

Special notes



#### Clause 22.359 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  $\Omega$  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.

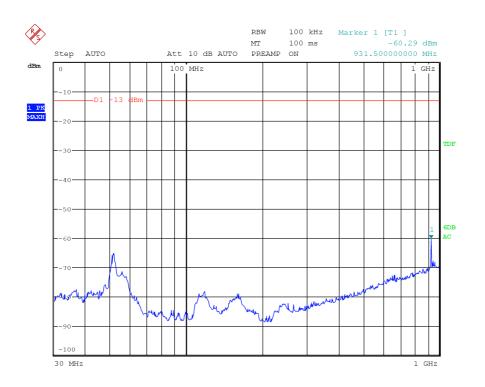
There were no emissions detected above the noise floor which was at least 20 dB below the specification limit.

Spurious emissions measurement results:

Frequency	Polarization.	Field strength	Limit	Margin
(MHz)	V/H	(dBm)	(dBm)	(dB)
Low channel				1
First Channel	V/H	Negligible	-13	
Mid channel				
931.5	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.



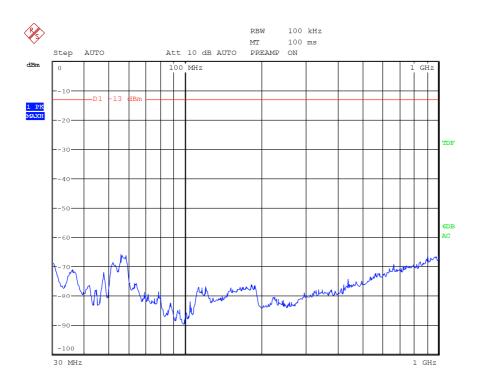


Date: 19.JUN.2019 12:14:35

30MHz-1GHz – H Pol

Page 32 of 41

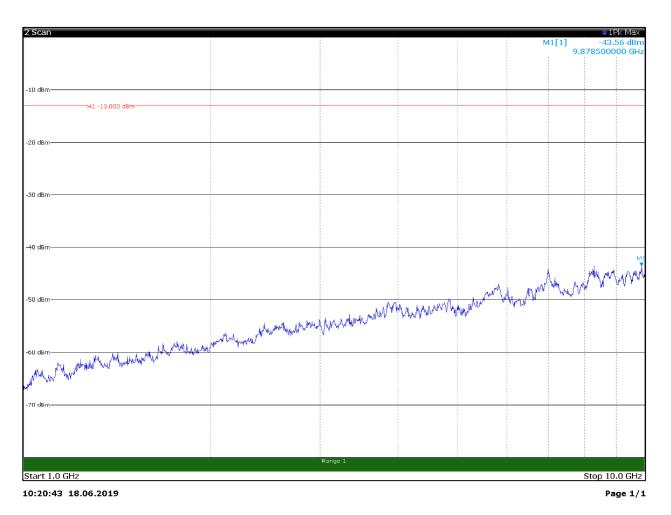




Date: 19.JUN.2019 12:15:23

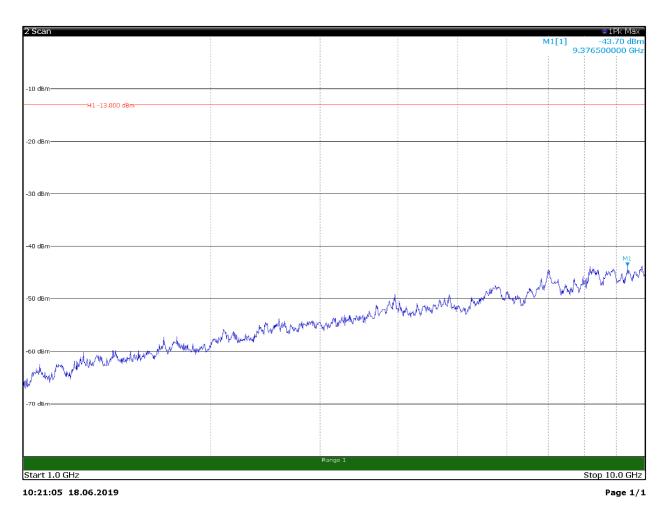
30MHz-1GHz – V Pol







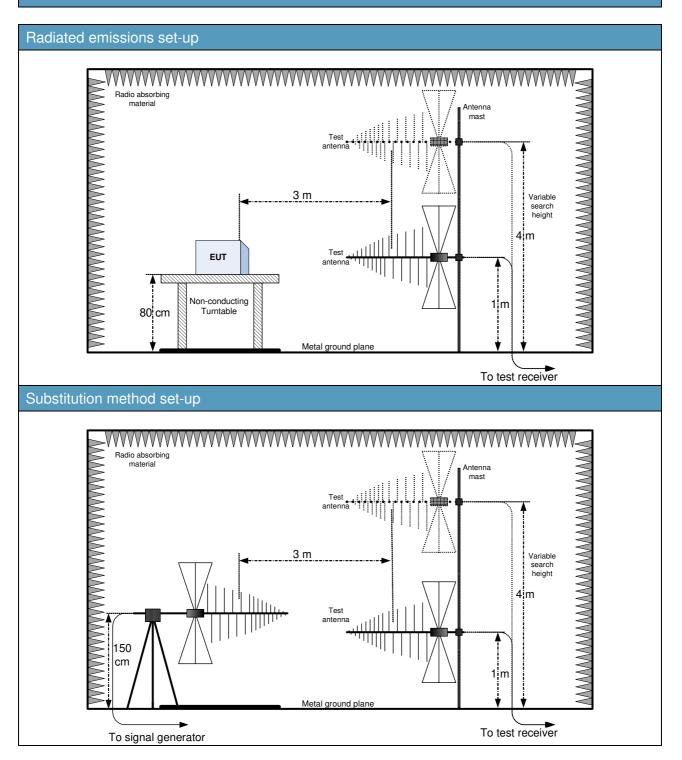








# Appendix B: Block diagrams of test set-ups





# Appendix C: EUT Photos

Photo Set up





#### Photo EUT









END OF REPORT