

Report Reference ID:	372837-9TRFWL	
Test specification:	Title 47 — Telecommunication Chapter I — Federal Communications Commission Subchapter D — Safety and special radio services Part 90 — Private land mobile services Subpart I — General technical standards	
	TEVO Telescom Onl	
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
	Name and title	Date
Tested by:	P. Barbieri, Wireless/EMC Specialist	06/24/2019
Reviewed by:	ale	06/24/2019

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R. Giampaglia, Wireless/EMC Specialist

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Specification: FCC 90

Section 1: Report summary

1.1 Test specification

Specifications | Part 90 – Private land mobile services

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 90. Radiated tests were conducted in accordance with ANSI C63.26-2015.

1.3 Exclusions

Exclusions None

1.4 Registration number

Test site FCC	682159
ID number	

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 90, test results			
Part	Methods	Test description	Verdict
	§ 935210 D05v01r03 (4.2)	AGC threshold	Pass
	§ 935210 D05v01r03 (4.3)	Out of band rejection	Pass
§90.209 §90.219(e)(4)	§ 935210 D05v01r03 (4.4)	Occupied bandwidth	Pass
§90.205 §90.219(e)(1)	§ 935210 D05v01r03 (4.5)	Output power at RF antenna connector	Pass
§90.219(e)(2)	§ 935210 D05v01r03 (4.6)	Noise Figure	Pass
§90.210(i), §90.210(j), §90.219(e)(3)	§ 935210 D05v01r03 (4.7)	Spurious emissions at RF antenna connector	Pass
§90.210(i), §90.210(j), §90.219(e)(3)	§ 935210 D05v01r03 (4.9)	Radiated spurious emissions	Pass
§90.213	§ 935210 D05v01r03 (4.8)	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)



Product: TRU7FL8P9PWM/AC-WT

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

O. 1. Applicants	lataila	
3.1 Applicant of		
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
	-	
O O Madularia	w. do oo oo l	
3.2 Modular ed		
a) Single modular	Single modular approval	
approval	Yes 🗌	No ⊠
b) Limited single	Limited single modula	• •
modular approval	Yes ☐ No ⊠	
3.3 Product de	tails	
FCC ID	Grantee code:	XM2
	Product code:	-MP7FL8P9PP
Equipment class	B9B	
Description of	Booster	
product as it is	Model	TRUZEL ODODWAWA CAME
marketed	name/number:	TRU7FL8P9PWM/AC-WT
	Serial number:	1012793001
3.4 Application	purpose	
Type of		fication
application	0	entification of presently authorized equipment
	Original FCC	
		nissive change or modification of presently authorized
		iliosivo orialigo of modification of prosently authorized



Product: TRU7FL8P9PWM/AC-WT

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 equipment	The EUT is part of a system that operates with, or is marketed with, 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	3.6 Sample information	
Receipt date:	05/27/2019	
Nemko sample ID number:		

3.7 EUT technical specifications		
Operating band:	Down Link: 935-940 MHz, Up Link: 896-901 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	



Specification: FCC 90

Section 3: Equipment under test

3.8 Accessories and support equipment The following information identifies accessories used to exercise the EUT during testing: No other FCC-ID equipment are used to exercise the EUT during testing: Item # 1 Type of equipment: Master Unit - Subrack Brand name: 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: 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 Module name or number: Teko Telecom srl Model name or number: Truudw-S-M Serial number: 110679007 Nemko sample number: Connection port: Cable length and type: Item # 4 Type of equipment: Master Unit - Optical Module Brand name: Teko Telecom srl Model name or number: 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: Teko Telecom srl Model name or number: Teko Telecom srl Master Unit - Power Supply Brand name: Teko Telecom srl Model name or number: Teko Telecom srl		
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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:		Teko Telecom srl
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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:	DL/UL RF connector (to connect to the base station)
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:	·	
Type of equipment: Master Unit – Power Supply Brand name: Teko Telecom srl Model name or number: TPSU/AC Serial number: 081063004 Nemko sample number:	Cable length and type:	
Brand name: Teko Telecom srl Model name or number: TPSU/AC Serial number: 081063004 Nemko sample number: Connection port:	Item # 4	
Brand name: Teko Telecom srl Model name or number: TPSU/AC Serial number: 081063004 Nemko sample number: Connection port:	Type of equipment:	Master Unit – Power Supply
Serial number: 081063004 Nemko sample number: Connection port:		Teko Telecom srl
Nemko sample number: Connection port:	Model name or number:	TPSU/AC
Connection port:		081063004
Connection port:	Nemko sample number:	
Cable length and type:		
	Cable length and type:	



Product: TRU7FL8P9PWM/AC-WT

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.

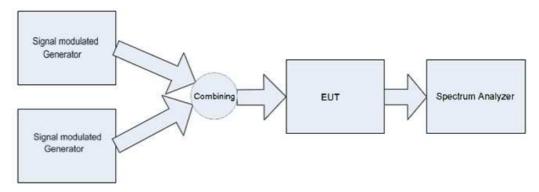
Test setup for output power, occupied bandwidth, spurious emissions:



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.

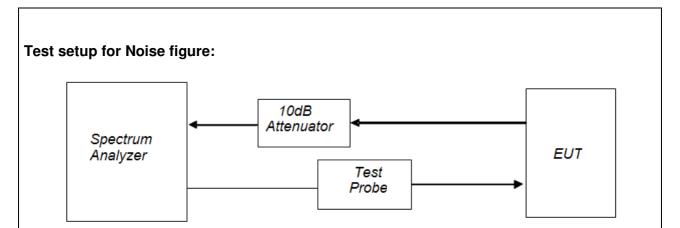
Test setup for intermodulation:



Procedure

Connect two signal modulated generators to the input of the EUT, so that the two input signals are same level. 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. At maximum drive level, for each modulation applies two tones for fulfill two tests (high-band edge and low-band-edge)





Procedure

Connect the EUT with the spectrum analyzer as described in the picture below. Connect the "Output Noise Source" spectrum analyzer with the RF input connector of the Remote Unit. Connect the output RF connector with the spectrum analyzer. Between spectrum analyzer and Remote Unit use a "Noise Source" (Test probe), so the noise of reference is generated. Set the EUT at max gain.



Product: TRU7FL8P9PPWE/AC-WT



Specification: FCC 90

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.	



Specification: FCC 90

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)
		Till Gatput Fower	18 MHz ÷ 40 GHz	3.0 dB	(1)
		Adjacent channel power	1 MHz ÷ 18 GHz	1.6 dB	(1)
		Conducted anurious emissions	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)
	Conducted	Release time – frequency behaviour	1 MHz ÷ 18 GHz	2.0 ms	(1)
		Release time – power behaviour	1 MHz ÷ 18 GHz	2.5 ms	(1)
Transmitter		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 spunious emissions	26.5 GHz ÷ 40 GHz	8.0 dB	(1)
	iadiated	Effective radiated power transmitter	10 kHz ÷ 26.5 GHz	6.0 dB	(1)
			26,5 GHz ÷ 40 GHz	8.0 dB	(1)
		Radiated spurious emissions	10 kHz ÷ 26.5 GHz	6.0 dB	(1)
	Radiated		26.5 GHz ÷ 40 GHz	8.0 dB	(1)
Receiver		Sensitivity measurement	1 MHz ÷ 18 GHz	6.0 dB	(1)
	Conducted	Conducted spurious emissions	10 kHz ÷ 26 GHz	3.0 dB	(1)
(1) The	Conducted	Conducted Spanous 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 90

	ipment		<u> </u>	
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
Network Analyzer	Agilent	E5071C ENA	MY46106183	09/2019
V-network	R&S	ESH2-Z5	872 460/041	10/2017
Trilog Broad Band Antenna 25-2000 MHz	Schwarzbeck	VULB 9168	VULB 9168-242	06/2018
Trilog Broad Band Antenna 25-8000 MHz	Schwarzbeck	VULB 9162	VULB 9162-25	07/2018
Antenna 1-18 GHz	Schwarzbeck	STLP 9148	STPL 9148-123	06/2018
Antenna horn	A.H.System Inc.	SAS-574	061106A40	10/2017
Preamplifier 18-40 GHz	Miteq	JS44	1648665	12/2017
Broadband preamplifier 1-18 GHz	Schwarzbeck	BBV 9718	9718-137	12/2017
EMI receiver 20 Hz ÷ 8 GHz	R&S	ESU8	100202	04/2018
EMI receiver 20 Hz ÷ 3 GHz	R&S	ESCI	100888	08/2017
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
Spectrum Analyzer 9kHz ÷ 40GHz	R&S	FSEK	848255/005	01/2018
Semi-anechoic chamber	Nemko	10m semi-anechoic chamber	530	10/2018
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 90

Appendix A: Test results

Clause 935210 D05v01 (4.2) AGC threshold

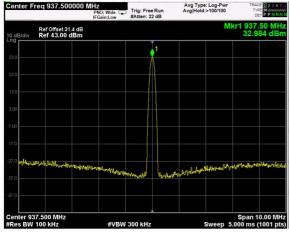
Measure of EUT AGC Threshold

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

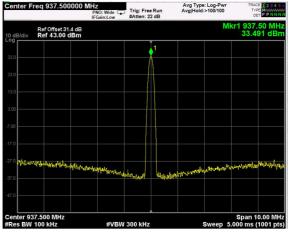
Test results: Pass

Special notes

Test data



CW signal, nominal input signal



CW signal, nominal input signal + 1dB

Specification: FCC 90

Clause 935210 D05v01 (4.3) Out of band rejection

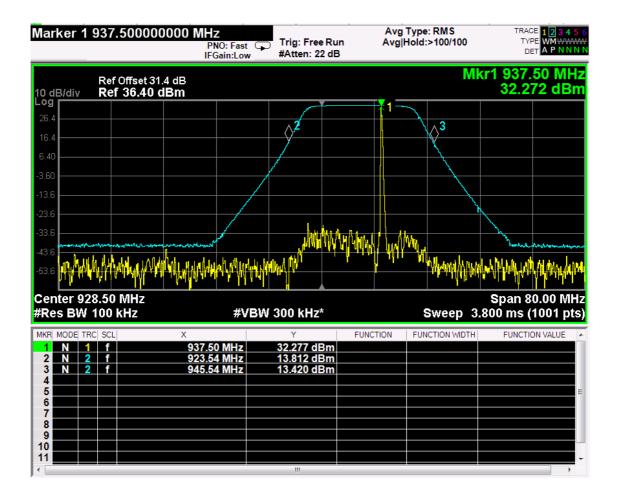
Out of Band Rejection – Test for rejection of out of band signals.

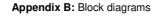
Test date: 05/27/2019 to 06/24/2019

Test results: Pass

Special notes

Test data







Specification: FCC 90

Clause 90.209, 90.219(e)(4) Occupied bandwidth

§ 90.219(e)(4)

A signal booster must be designed such that all signals that it retransmits meet the following requirements:

- (i) The signals are retransmitted on the same channels as received. Minor departures from the exact provider or reference frequencies of the input signals are allowed, *provided that* the retransmitted signals meet the requirements of § 90.213.
 - (ii) There is no change in the occupied bandwidth of the retransmitted signals.
- (iii) The retransmitted signals continue to meet the unwanted emissions limits of § 90.210 applicable to the corresponding received signals (assuming that these received signals meet the applicable unwanted emissions limits by a reasonable margin).

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

Test results: Pass

Special notes

Span 100 kHz Sweep FFT

99.00 %

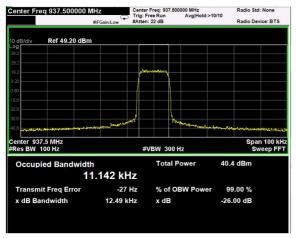
-26.00 dB

Product: TRU7FL8P9PWM/AC-WT

Occupied bandwidth, continued

Test data

11K signal, nominal input signal





Ref -10.00 dBm

Occupied Bandwidth

Transmit Freq Error

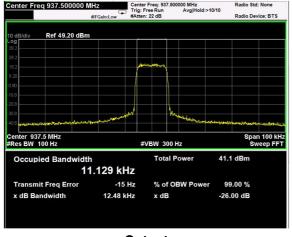
11.188 kHz

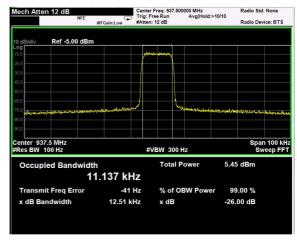
-33 Hz

12.53 kHz

Output

11K signal, nominal input signal + 3dB





#VBW 300 Hz

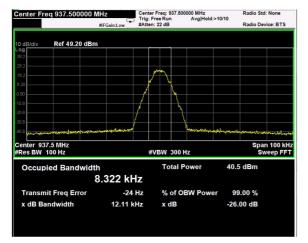
x dB

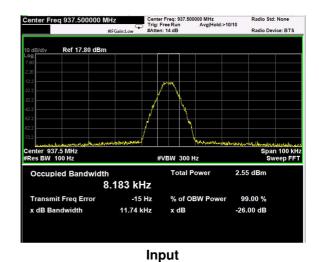
% of OBW Power

Output Input

Specification: FCC 90

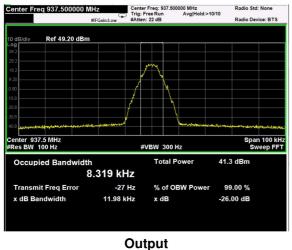
P25 signal, nominal input signal

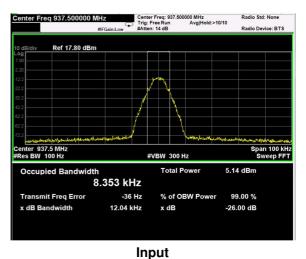




Output

P25 signal, nominal input signal +3





Julpul inpul



Specification: FCC 90

Clause 90.205, 90.219(e)(1) Output power at RF antenna connector

§ 90.205

Applicants for licenses must request and use no more power than the actual power necessary for satisfactory operation. Except where otherwise specifically provided for, the maximum power that will be authorized to applicants whose license applications for new stations are filed after August 18, 1995 is as follows in FCC Part 90.205 (a) through (r).

§ 90.219(e)(1)

The output power capability of a signal booster must be designed for deployments providing a radiated power not exceeding 5 Watts ERP for each retransmitted channel.

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

Test results: Pass

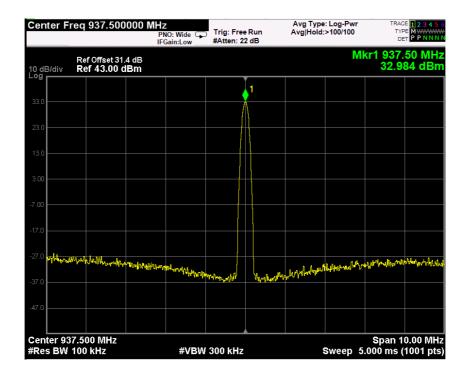
Special notes



Output power at RF antenna connector

CW signal, nominal input signal

Test data				
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)
Down-link	CW	937.5	32.984	1.99



Test result

Gmax antenna gain (dBi) = 39 - 32.98 = 6.02 dBi

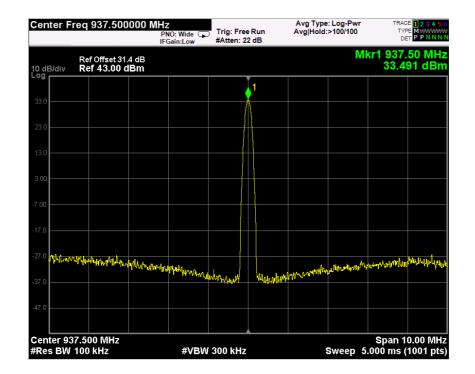
EIRP = 32.98 + 6.02 = 39 dBm

ERP = 39 - 2.14 = 36.86dBm = 4.85W < 5 W ERP



CW signal, nominal input signal + 3dB

Test data					
Direction	Modulation	Frequency (MHz)	RF output Power (dBm)	RF output channel Power (W)	
Down-link	CW	937,5	33,491	2,24	



Specification: FCC 90

Clause 935210 D05v01 (4.6) Noise figure

§ 90.219(e)(2)

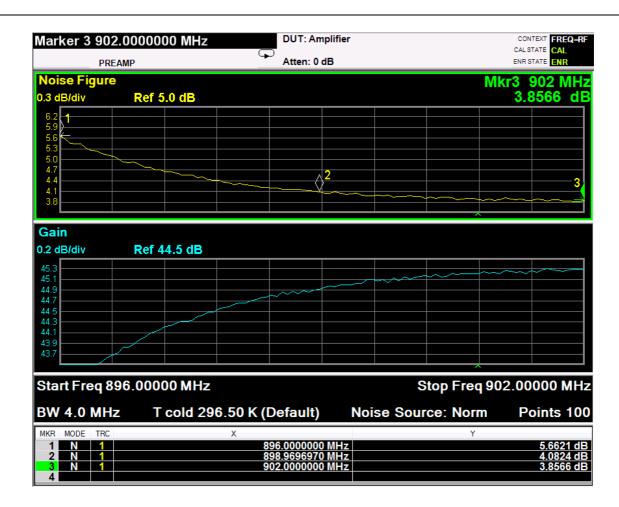
The noise figure of a signal booster must not exceed 9 dB in either direction.

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

Test results: Pass

Special notes

In the Remote Unit, only up-link measurement can be performed (test probe is connect to antenna port)





Specification: FCC 90

Clause 90.210(i), 90.210(j), 90.219(e)(3) Spurious emissions at the antenna terminal

§ 90.210(i)

- (i) Emission Mask I. For transmitters that are equipped with an audio low pass filter, the power of any emission must be attenuated below the unmodulated carrier power of the transmitter (P) as follows:
- (1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency of more than 6.8 kHz, but no more than 9.0 kHz: At least 25 dB;
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency of more than 9.0 kHz, but no more than 15 kHz: At least 35 dB;
- (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency of more than 15 kHz: At least 43 + 10 log (P) dB, or 70 dB, whichever is the lesser attenuation.

§ 90.210(j)

- (j) Emission Mask J. For transmitters that are not equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power of the transmitter (P) as follows:
- (1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 2.5 kHz, but no more than 6.25 kHz: At least 53 log (fd/2.5) dB;
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 6.25 kHz, but no more than 9.5 kHz: At least 103 log (fd/3.9) dB;
- (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 9.5 kHz: At least 157 log (fd/5.3) dB, or 50 + 10 log (P) dB or 70 dB, whichever is the lesser attenuation.

§ 90.219(e)(3)

Spurious emissions from a signal booster must not exceed -13dBm within any 100 kHz measurement bandwidth.

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

Special notes



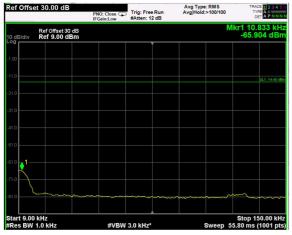
Test data: Spurious emissions at RF antenna connector

Test data			
See Plots below			
Spurious emissions me	easurement results:		
Frequency (MHz)	Spurious emission (dBm)	Limit (dBm)	Margin (dB)
Low channel			
First channel	Negligible	-13	
Mid channel			
937,5 MHz	Negligible	-13	
High channel			
Last channel	Negligible	-13	

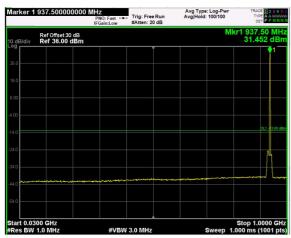


CW signal

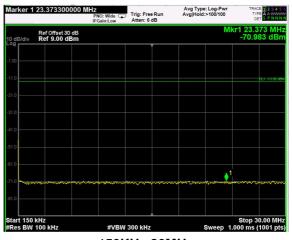
(Plots are referred to carrier at the Middle Channel)



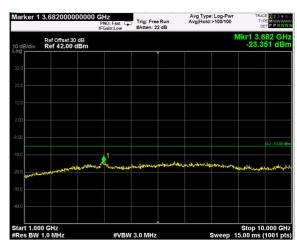
9KHz-150KHz



30MHz-1GHz



150KHz-30MHz

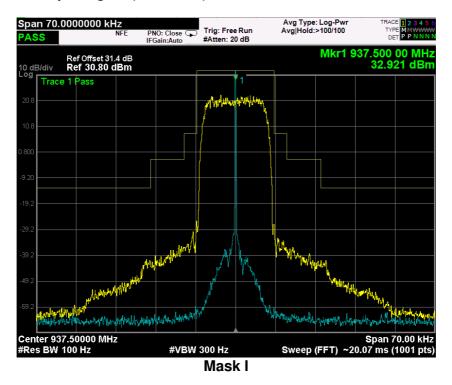


1GHz-10GHz

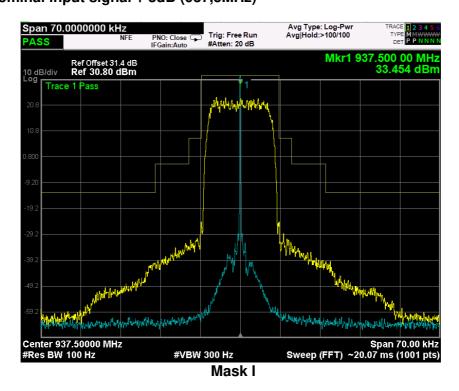


Test data, continued: Mask

11k signal, nominal input signal (937,5MHz)

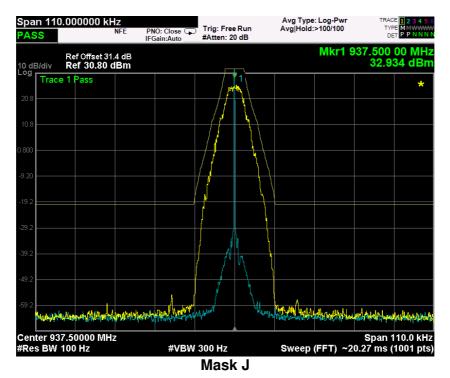


11k signal, nominal input signal + 3dB (937,5MHz)

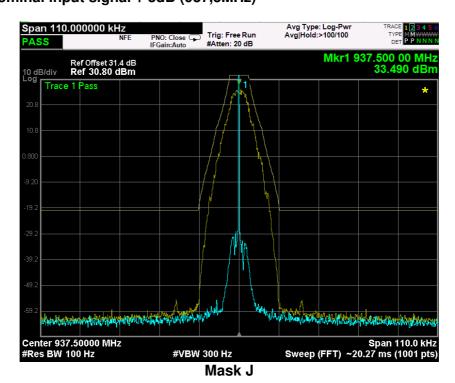




P25 signal, nominal input signal (937,5MHz)



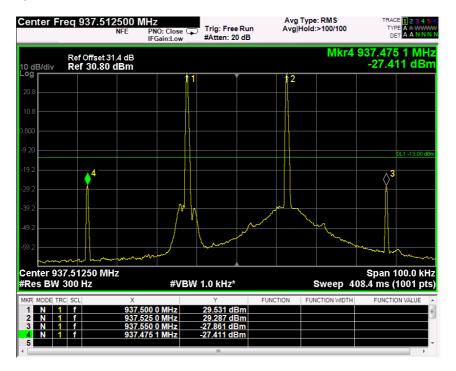
P25 signal, nominal input signal + 3dB (937,5MHz)



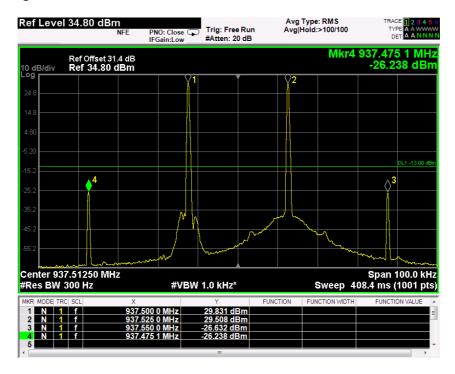


Test data: Spurious emissions at RF antenna connector: intermodulation

Nominal input signal



Nominal input signal + 3dB





Specification: FCC 90

Clause 90.210(i), 90.210(j), 90.219(e)(3) Spurious emissions radiated

§ 90.210(i)

- (i) Emission Mask I. For transmitters that are equipped with an audio low pass filter, the power of any emission must be attenuated below the unmodulated carrier power of the transmitter (P) as follows:
- (1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency of more than 6.8 kHz, but no more than 9.0 kHz: At least 25 dB;
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency of more than 9.0 kHz, but no more than 15 kHz: At least 35 dB;
- (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency of more than 15 kHz: At least 43 + 10 log (P) dB, or 70 dB, whichever is the lesser attenuation.

§ 90.210(i)

- (j) Emission Mask J. For transmitters that are not equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power of the transmitter (P) as follows:
- (1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 2.5 kHz, but no more than 6.25 kHz: At least 53 log (fd/2.5) dB;
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 6.25 kHz, but no more than 9.5 kHz: At least 103 log (fd/3.9) dB;
- (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 9.5 kHz: At least 157 log (fd/5.3) dB, or 50 + 10 log (P) dB or 70 dB, whichever is the lesser attenuation.

§ 90.219(e)(3)

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

Test results: Pass

Spurious emissions from a signal booster must not exceed –13dBm within any 100 kHz measurement bandwidth.

Special notes		

Specification: FCC 90

Radiated spurious emissions, continued

Teet 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.

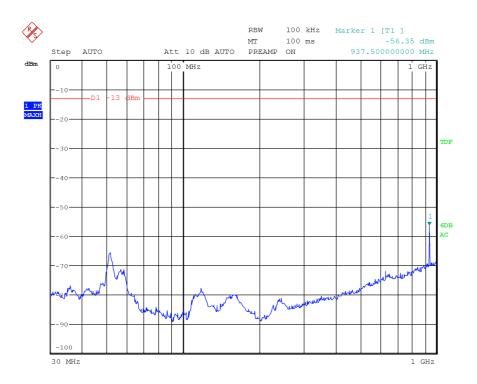
There were no emissions detected above the noise floor which was at least 20 dB below the specification limit.

Spurious emissions measurement results:

Frequency	Polarization.	Field strength	Limit	Margin
(MHz)	V/H	(dBm)	(dBm)	(dB)
Low channel				
First Channel	V/H	Negligible	-13	
Mid channel				
937.5	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.

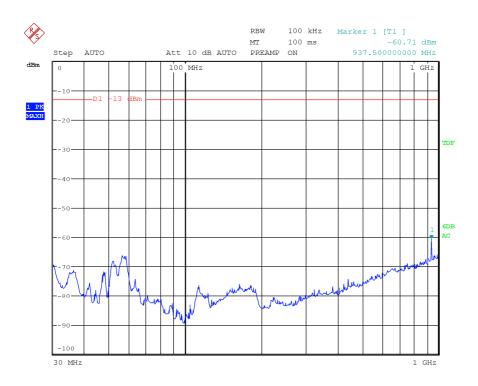




Date: 19.JUN.2019 12:24:31

30MHz-1GHz - H Pol

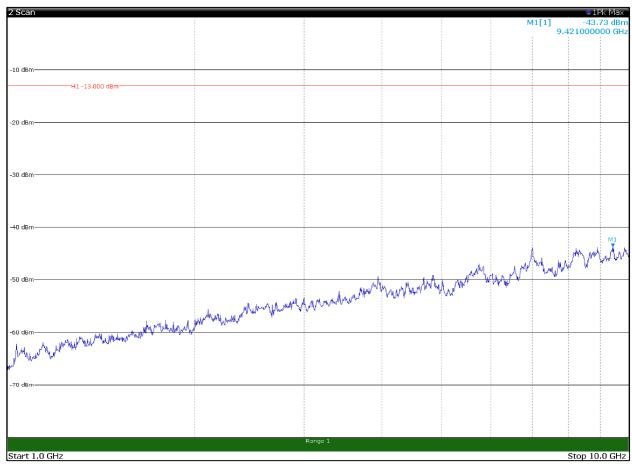




Date: 19.JUN.2019 12:25:18

30MHz-1GHz - V Pol

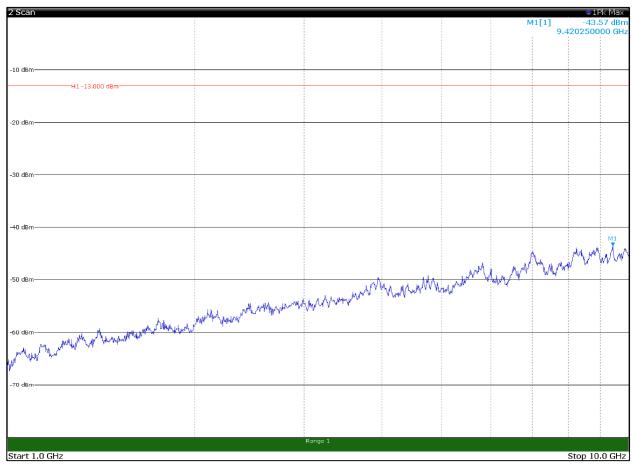




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1GHz-10GHz - H Pol



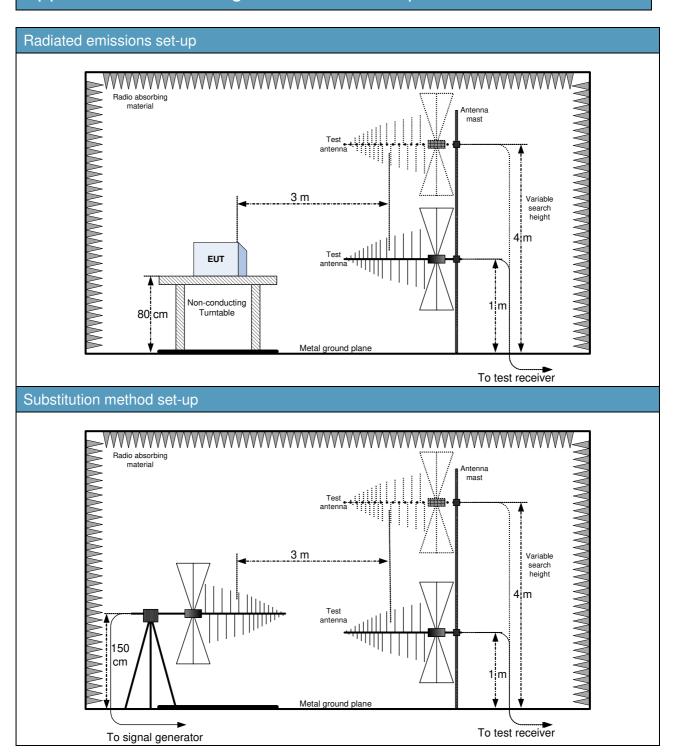


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1GHz-10GHz - V Pol

Specification: FCC 90

Appendix B: Block diagrams of test set-ups





Appendix C: EUT Photos

Photo Set up









Photo EUT















Specification: FCC 90

Label EUT



WARNING. This is NOT a CONSUMER device, it is designed for installation by FCC LICENSEES and QUALIFIED INSTALLERS, You MUST have an FCC LICENSE or express consent of an FCC Licensee to operate this device, Unauthorized use may result in significant forfeiture penalties, including penalties in excess of \$100,000 for each continuing violation.

WARNING. This is NOT a CONSUMER device. This is a 90.219 Class B signal booster. It is designed for installation by FCC LICENSEES and QUALIFIED INSTALLERS. You MUST have an FCC LICENSE or express consent of an FCC Licensee to operate this device. You MUST register Class B signal boosters (as defined in 47 CFR 90.219) online at www.fcc.gov/signal-boosters/registration. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of \$100,000 for each continuing violation.

END OF REPORT