

Specification Sheet

# VIAVI

## IFF-45TS

### MK XIIA/TACAN Bench Test Set

#### User Interface

Interfaces Supported	IEEE-488, RS232 and Ethernet (VXI-11)
	PC Windows based GUI provided

#### Modes of Operation

Transponder Testing: 1, 2, 3/A, C, S, 4, 5
Interrogator Testing: 1, 2, 3/A, C, S, 4, 5
DME/TACAN Testing: G/A, INV G/A, BG/A, BA/A, A/A, INV A/A
ADS-B Transponder Out
GCIB Decode

#### Signal Generator

<b>Frequency Range</b>
955 to 1223 MHz, 10 KHz resolution



#### Output Amplitude Direct Port

0.0 dBm to -110.0 dBm (into 50 Ω) in 0.1 dB increments	
Accuracy@ 25° ± 5° C	
0.0 dBm to -80.0 dbm	±0.5 dB
< -80.0 dBm to -100 dBm	± [0.5 dB + 0.05 dB per dB below -80 dBm] <sup>1</sup>
< -100.0 dBm	± [1.5 dB + 0.35 dB per dB below -100 dBm] <sup>2</sup>
Accuracy over full temp	
0.0 dBm to -80.0 dbm	±1.0 dB
< -80.0 dBm to -100 dBm	± [1.0 dB + 0.10 dB per dB below -80 dBm] <sup>2</sup>
< -100.0 dBm	±[3.0 dB + 0.70 dB per dB below -100 dBm] <sup>2</sup>

#### Antenna Port

+30.0 dBm to -60.0 dBm (into 50 Ω) in 0.1 dB increments	
Accuracy @ 25° ± 5° C	
Power ≥ -30.0 dBm	±1.0 dB
Power < -30.0 dBm	±[1.0 dB + 0.033 dB per dB below -30 dBm] <sup>2</sup>
Accuracy over full temp	
Power ≥ -30.0 dBm	±2.0 dB
Power < -30.0 dBm	±[2.0 dB + 0.066 dB per dB below -30 dBm] <sup>2</sup>

#### Pulse Formats

Transponder/Interrogator	1, 2, 3/A, C, S
Secure Modes	4, 5
Modes 3/A, C, S comply with RTCA/DO-181C; Modes 1, 2, 4, 5 comply with DOD AIMS 03-1000A.	
DME/TACAN	/A, A/A, INVERSE G/A, INVERSE A/A, BEACON G/A, BEACON A/A

1 - Hence, for a power setting of -85 dBm, the accuracy will be + [0.5 + 0.05\*5], or ±0.75 dB, and for a power setting of -95 dBm, the accuracy will be ±[0.5 + 0.05\*15], or ±1.25 dB.

2 - As per example above

## Signal Generator (continued)

Pulse Position Deviations	
XPDR	±1 µs
INT Non-Mode 5	±1 µs
INT Mode5	±0.25 µs
Accuracy [XPDR/INT]	±10 ns
TACAN <sup>3</sup>	12 ± 0.1 µs
Accuracy [TACAN]	±100 ns
Pulse Width Deviations	
Transponder <sup>4</sup>	Nominal ±0.6 µs (fixed in Mode S-SPR)
Accuracy	±10 ns
Interrogator <sup>4</sup>	Nominal ±0.5 µs
Accuracy	±10 ns
TACAN	3.5 µs to 9.0 µs
Accuracy	±0.1 µs
Pulse Amplitude	
XPDR/INT	+5 to -15 dB
TACAN	±5 to -15 dB
Interference Pulse Characteristics (1 or 2 pulses)	
Position	-1 µs to +400 relative to reference
Offset range	
XPDR	-44 µs to 400 µs
INT	-1 µs to 400 µs
Accuracy	±10 ns
Interference Pulse Spacing (multiple pulse interference mode)	
Range	-1 µs to +400 relative to 1st pulse
Max 2nd pulse position	400 µs - 1st pulse position
Accuracy	±10 ns
Range Delay	
DME/TACAN	1 to 400.00 nmi in 0.01 nm steps
Accuracy	0.02 nm or 0.0003% of simulated range
INT	0 to 400.00 nmi
Accuracy	±0.01 nmi
Diversity	
Timing (either channel)	0 to ±1 µs, ±10 ns accuracy
Echo	
DME/TACAN	
Amplitude Variation	
Accuracy	
Channel Signal Assignment	
Transponder Test	Top/Bottom
Interrogator Test	Sum/Difference
TACAN	Top/Bottom

<sup>3</sup> - Pulse overlap not allowed

<sup>4</sup> - Minimum pulse width is 200 ns

Interrogation Generator	
Independent/Unique Interrogations 1-12	
Fixed Mode	SIF Mode: 1-10000 PRF
	Mode 5: 1-1200 PRF
	Mode S: 1-2500 PRF
	Mode 4: 1-3500 PRF (internal) 1-2500 PRF (external)
Double/Supermode	
Spacing between interrogations (slaved delay)	0-400 µs
Pair generation rate	1-400 PRF
Supermode interrogations	2 interrogations
Burst Mode	
Bursts/trigger	1-1000 or infinite
Interrogations/burst	1-2500
Interrogation rate (within a burst)	1-400 PRF
Spacing between burst sequences	0.1-20 sec
Interlaced Mode	
Interlace ratio	1:1 - 1:63
Group rate	1-400 PRF
Reply Generator	
Independent/Unique Replies	1-12
Data and Range	Individually configured
Selectable Modes	1,2,3/A,C,S,4,5
Selectable Efficiency	1-100%
Spectral Purity Residual Level	
Harmonics	Direct: <50 dBc
	Antenna: <40 dBc
Spurious (> modulation BW)	<60dBc, 350 - 1800 MHz
Phase Noise	<80 dBc/Hz @ 100 kHz
Signal Receiver Measurements	
Frequency Range	
1020 to 1155	
Input Amplitude	
Pulse Power Measurements	
25 ±5 ° C	Direct +30 dBm to +66 dBm: +0.5 dB
	Antenna -40 to +30 dBm: +1 dB
	Resolution: 0.01 dB
-10 ° to 55 ° C	Direct +30 dBm to +66 dBm: +1 dB
	Antenna -40 to +30 dBm: +2 dB
	Resolution: 0.01 dB

## Signal Receiver Measurements (continued)

Pulse to Pulse Spacing	
XPDR/INT	
Non-Mode 5	±0.3 µs
Mode 5	±0.0625 µs
Accuracy	±10 ns
TACAN	
Accuracy	±50 ns
Pulse Width	
XPDR/INT	
Accuracy	±0.200 µs
Accuracy	±10 ns
TACAN	
Accuracy	2.5 to 4.5 µs
Accuracy	±50 ns
Reply Delay	
Accuracy	±20 ns
Reply Delay Jitter	
Accuracy	±20 ns
Frequency	
Accuracy	±50 KHz
% Reply	
Range	0-100% for each interrogation type
Resolution	0.0125% (for sample size = 8000)
Sample Size	1 - 8000 interrogations
Specific Application	
TACAN/DME	
Ident	
Variable	10 sec to 60 sec
Alphanumeric Character	1 to 8 [A to Z]
Bearing	
Range	0° to 359.9° in 0.1° steps
Accuracy	±0.05°
Rate	0° to 39° sec in 0.01° steps
Velocity	
Range	0 to 9999 Kts in 1 Kt steps
Accuracy	±0.001%
Squitter	
Range	10 to 8000 Hz
Accuracy	10 Hz or 2%, whichever is greater
Distribution	Compliant with ARINC 568 @ 2700 Hz
Main Reference Burst	
Adjustable Burst (all modes)	+1, +2, -1 or -2
Selectable	On/Off
X Channel	12 pulse pairs
Y Channel	13 single pulses
A/A (all channels)	10 single pulses
Accuracy	±100 ns

Auxiliary Reference Burst	
Adjustable Burst (all modes)	+1, +2, -1, or -2
X Channel	6 pulse pairs
Y Channel	13 single pulses
Accuracy	±100 ns
TACAN Modulation	
Range	0% to 39% in 1 Hz steps (15 Hz and 135 Hz separately adjustable)
Accuracy	±1%
Distortion	<5% of either tone
A/A Interrogation Rate	0 to 3999 Hz in 1 Hz steps
Reply Efficiency	0 to 100% in 1% steps
Crypto Appliqué Compatibility	
KIV-77 - AIMS Type B, Mode 4/5	
KIV-78 - AIMS Type A, Mode 4/5	
KIV-6 - Mode 4	
KIT-1(A/C) / KIR-1(A/C) cables (external power cable)	
Built-in Crypto Appliqué Function	
Mode 4 Internal Crypto Simulator (standard) Word A/B, C1 - C16	
Mode 5 Internal Crypto Simulator (standard with options 1 and 3) As defined by the U.S. Navy Mode 5 Program Office	

## Interface Signals

Analog Signal Ports (programmable output)	
2 Ports	
Programmable Sources	Various
Level	±1 V into 50 Ω
Trigger Out (front panel)	
Programmable Source	TX timing ref, RX detection
Level	3.3 V logic
Trigger In (front panel)	
Functions	Interrogation Trigger Reply Trigger
Level	3.3 or 5 V logic
Suppression Out	
Amplitude into 2 KΩ	12 V to 80 V
Variable Pulse Width	0.25 µs - 300 µs
Suppression In	
Amplitude	10 V to 80 V
Impedance	2.2 KΩ
Action	Inhibits response to incoming signal

## General

Frequency/Time Reference	2.5 ppm composed of 1 ppm/year aging and 1 ppm accuracy over temp
External Reference Input	2.5 ppm composed of 1 ppm/year aging and 1 ppm accuracy over temp
VSWR	Direct = 1.2:1 over frequency range
	Antenna = 2.5:1 over frequency range
Input Power	100-240 VAC, 50-60 Hz, 3 Amp fuse

## Environmental

Temperature Range	-10° to 55° C (14° to 131° F)
Warm-up (for specified accuracy)	45 minutes

## Physical Characteristics

Dimensions (w/o controller)	17.75" W x 4" H x 21" D (45 cm x 10 cm x 53 cm)
Weight	24 lbs (10 kg)

## Test Set Certifications

UL
CE
DoD AIMS MK XIIIA Level 1 and Level 2

### Export Control and Warning

VIAMI Solution's military products are controlled for export under the International Traffic in Arms Regulations (ITAR). A license from the U.S. Department of State is required prior to the export of this product from the United States. This product may not be sold or proposed or offered for sale to certain countries including: Belarus, Burma, China, Cuba, Haiti, Iran, Liberia, Libya, North Korea, Somalia, Syria, Sudan, and Vietnam. See ITAR 126.1 for complete information.



Contact Us +1 316 522 4981  
AvComm.Sales@viamisolutions.com

To reach the VIAMI office nearest you, visit  
[viamisolutions.com/contact](http://viamisolutions.com/contact).

© 2018 VIAMI Solutions Inc.  
Product specifications and descriptions in this document are subject to change without notice.  
IFF45TS-ss-avi-nse-ae  
30187483 900 1018