

**Project 25 Compliance Assessment Program  
 Summary Test Report  
 Viking VP6230F2/F3 VHF Portable Subscriber Unit  
 STR-EFJ-17071701  
 July 17, 2017**

**Test Item Description**

<b>Manufacturer</b>	EF Johnson Technologies
<b>Manufacturer Contact</b>	Randy O'Connor (972) 819-0911
<b>Product Name</b>	Viking VP6230F2/F3 VHF Portable Subscriber Unit
<b>Installed Options</b>	SEM Installed
<b>Vocoder Identification</b>	Enhanced Full Rate

<b>Test Description</b>
P25-CAB-CAI_TEST_REQ – March 2010, Section 2.1.1.1 – Project 25 Phase 1 Common Air Interface Conventional Subscriber Unit Performance
P25-CAB-CAI_TEST_REQ – March 2010, Section 2.1.1.2 – Project 25 Phase 1 Common Air Interface Trunked Subscriber Unit Performance
P25-CAB-CAI_TEST_REQ – March 2010, Section 2.1.3.2 – Project 25 Phase 1 Common Air Interface Trunked Subscriber Unit Interoperability

**Laboratory Information**

<b>Laboratory</b>	<b>Details</b>
<b>P25 CAP Laboratory Code</b>	P25CAP081010 (EF Johnson Technologies)
<b>Date(s) of Test</b>	January 27, 2017 - March 10, 2017
<b>Date of Issue</b>	March 13, 2017

<b>Laboratory</b>	<b>Details</b>
<b>P25 CAP Laboratory Code</b>	P25CAP081016 (TIMCO Engineering)
<b>Date(s) of Test</b>	March 22, 2017
<b>Date of Issue</b>	March 22, 2017

<b>Laboratory</b>	<b>Details</b>
<b>P25 CAP Laboratory Code</b>	P25CAP081010 (EF Johnson Technologies)
<b>Date(s) of Test</b>	May 12, 2017
<b>Date of Issue</b>	June 14, 2017

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**Informative References**

Date	Title
Mar 2010	P25-CAB-CAI_TEST_REQ – March 2010

**Other Devices Tested with Viking VP6230F3/F2 Portable Subscriber Unit**

Manufacturer	Product Name, Definition, and Unique ID	Installed Options
EF Johnson	ATLAS Trunked Infrastructure	TSNI 2.0.2.3
Airbus / Tait	P25 Trunked Infrastructure TB5500i	EADS P25V11_06 E22
Tait Limited	P25 Trunked Infrastructure TN9400	V1.12
Motorola	ASTRO25 Trunked Infrastructure	System Release: ASTRO25 7.17

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**Receiver Tests – Conventional**

Test Identification	Detailed Test Report Identification
P25-CAB-CAI_TEST_REQ – March 2010, Section 2.1.1.1 – Project 25 Phase 1 Common Air Interface Conventional Subscriber Unit Performance	DTR-P25CAP081010-17031601

Receiver Tests			
Test Case	Description	Requirement	Results
2.1.4	Reference Sensitivity	≤ -116 dBm (Class A)	P1
2.1.5	Faded Reference Sensitivity	≤ -108 dBm (Class A)	P2
2.1.6	Signal Delay Spread Capability	≥ 50 μs	P3
2.1.7	Adjacent Channel Rejection	≥ 60 dB (Class A)	P4
2.1.8	Co-Channel Rejection	≤ 9 dB	P
2.1.9	Spurious Response Rejection	≥ 80 dB (Class A)	P
2.1.10	Intermodulation Rejection	≥ 75 dB (Class A)	P
2.1.11	Signal Displacement Bandwidth	≥ 1000 Hz	P
2.1.17	Late Entry Unsquelch Delay		
	No Talk Group or Encryption	≤ 125 ms	P
	Talk Group Only	≤ 370 ms	P
	Encryption Only	≤ 370 ms	P
	Both Talk Group and Encryption	≤ 460 ms	P
2.1.18	Receiver Throughput Delay	≤ 125 ms	P

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**Transmitter Tests – Conventional**

Test Identification	Detailed Test Report Identification
P25-CAB-CAI_TEST_REQ – March 2010, Section 2.1.1.1 – Project 25 Phase 1 Common Air Interface Conventional Subscriber Unit Performance	DTR-P25CAP081010-17031601

Transmitter Tests			
Test Case	Description	Requirement	Results
2.2.8	Unwanted Emissions: Adjacent Channel Power Ratio	$\geq 67$ dB	P
2.2.12	Transmitter Power and Encoder Attack Time		
	Power Attack Time	$\leq 50$ ms	P
	Encoder Attack Time	$\leq 100$ ms	P
2.2.14	Transmitter Throughput Delay	$\leq 125$ ms	P
2.2.15	Frequency Deviation for C4FM		
	High Level Signal Deviation	$2544 \text{ Hz} < f_{\text{dev}} \leq 3111 \text{ Hz}$	P
	Low Level Signal Deviation	$848 \text{ Hz} < f_{\text{dev}} \leq 1037 \text{ Hz}$	P
2.2.16	Modulation Fidelity	$\leq 5\%$ (Class A)	P
2.2.18	Transient Frequency Behavior		
	Time Interval $t_1 = 5$ ms	$ \Delta f  \leq 12.5$ kHz	P
	Time Interval $t_2 = 20$ ms	$ \Delta f  \leq 6.25$ kHz	P
	Time Interval $t_3 = 5$ ms	$ \Delta f  \leq 12.5$ kHz	P

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**Receiver Tests - Trunked**

Test Identification	Detailed Test Report Identification
P25-CAB-CAI_TEST_REQ – March 2010, Section 2.1.1.2 – Project 25 Phase 1 Common Air Interface Trunked Subscriber Unit Performance	DTR-P25CAP081010-17031601 DTR-P25CAP081010-17031602

Receiver Tests			
Test Case	Description	Requirement	Results
2.1.4	Reference Sensitivity	≤ -116 dBm (Class A)	P1
2.1.5	Faded Reference Sensitivity	≤ -108 dBm (Class A)	P2
2.1.6	Signal Delay Spread Capability	≥ 50 μs	P3
2.1.7	Adjacent Channel Rejection	≥ 60 dB (Class A)	P4
2.1.8	Co-Channel Rejection	≤ 9 dB	P
2.1.9	Spurious Response Rejection	≥ 80 dB (Class A)	P
2.1.10	Intermodulation Rejection	≥ 75 dB (Class A)	P
2.1.11	Signal Displacement Bandwidth	≥ 1000 Hz	P

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Transmitter Tests			
Test Case	Description	Requirement	Results
2.2.8	Unwanted Emissions: Adjacent Channel Power Ratio	$\geq 67$ dB	P
2.2.12	Transmitter Power and Encoder Attack Time		
	Power Attack Time	$\leq 50$ ms	P
	Encoder Attack Time	$\leq 100$ ms	P
2.2.14	Transmitter Throughput Delay	$\leq 125$ ms	P
2.2.15	Frequency Deviation for C4FM		
	High Level Signal Deviation	$2544 \text{ Hz} < f_{\text{dev}} \leq 3111 \text{ Hz}$	P
	Low Level Signal Deviation	$848 \text{ Hz} < f_{\text{dev}} \leq 1037 \text{ Hz}$	P
2.2.16	Modulation Fidelity	$\leq 5\%$ (Class A)	P
2.2.18	Transient Frequency Behavior		
	Time Interval $t_1 = 5$ ms	$ \Delta f  \leq 12.5$ kHz	P
	Time Interval $t_2 = 20$ ms	$ \Delta f  \leq 6.25$ kHz	P
	Time Interval $t_3 = 5$ ms	$ \Delta f  \leq 12.5$ kHz	P

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**Trunked Subscriber Unit Tests – Trunked**

Test Identification	Detailed Test Report Identification
P25-CAB-CAI_TEST_REQ – March 2010, Section 2.1.1.2 – Project 25 Phase 1 Common Air Interface Trunked Subscriber Unit Performance	DTR-P25CAP081010-17031601 DTR-P25CAP081010-17031602

Trunked Subscriber Unit Tests			
Test Case	Description	Requirement	Results
2.3.1	Trunking Control Channel Slot Times (45 ms slot) N7		
	Encode Attack Time	$2.00 \text{ ms} \leq t \leq 11.65 \text{ ms}$	P
	RF Power Attack Time	$0 \text{ ms} \leq t \leq 11.65 \text{ ms}$	P
	RF Power Turn Off Time	$\leq 1.57 \text{ ms}$	P
2.3.2	Trunking Request Time	$\leq 167.5 \text{ ms}$	P
2.3.3	Trunking Voice Access Time	500 ms (Manufacturer Specified)	P
2.3.5	Transmitter Time to Key on a Traffic Channel Short Channel Form	$\leq 150.0 \text{ ms}$	P

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Test Identification	Product
P25-CAB-CAI_TEST_REQ – March 2010, Section 2.1.3.2 – Project 25 Phase 1 Common Air Interface Trunked Subscriber Unit Interoperability	Viking VP6230F2/F3 Portable Subscriber

Product	Detailed Test Report Identification
EF Johnson Technologies	DTR-P25CAP081010-17031001
Airbus / Tait	229AZUT17_2.1.3.3 Airbus TRUNKING SU IOT DTR 170208
Tait Limited	229AZUT17_2.1.3.3 TN9400 TRUNKING SU IOT DTR 170103
Motorola Solutions	DTR-P25CAP081010-17061402

Test Case	Description	EF Johnson Atlas Trunked Infrastructure	Airbus/Tait Trunked Infrastructure	Tait Limited Trunked Infrastructure	Motorola Trunked Infrastructure
<b>2.2.1</b>	<b>Full Registration</b>				
<b>2.2.1.4.1</b>	Test Case 1 - Valid Registration				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.1.4.2</b>	Test Case 2 – Denied or Refused Registration				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.1.4.3</b>	Test Case 3 - Unverified Registration				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.2</b>	<b>Group Voice Call</b>				
<b>2.2.2.4.1</b>	Test Case 1 – Group Call Granted				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.2.4.2</b>	Test Case 2 – Group Call Denied				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.2.4.3</b>	Test Case 3 – Group Call Request Queued				



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Test Case	Description	EF Johnson Atlas Trunked Infrastructure	Airbus/Tait Trunked Infrastructure	Tait Limited Trunked Infrastructure	Motorola Trunked Infrastructure
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4

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Product	Detailed Test Report Identification
EF Johnson Technologies	DTR-P25CAP081010-17031001
Airbus / Tait	229AZUT17_2.1.3.3 Airbus TRUNKING SU IOT DTR 170208
Tait Limited	229AZUT17_2.1.3.3 TN9400 TRUNKING SU IOT DTR 170103
Motorola Solutions	DTR-P25CAP081010-17061402

Test Case	Description	EF Johnson Atlas Trunked Infrastructure	Airbus/Tait Trunked Infrastructure	Tait Limited Trunked Infrastructure	Motorola Trunked Infrastructure
<b>2.2.3</b>	<b>Unit-To-Unit Voice Call</b>				
<b>2.2.3.4.1</b>	Test Case 1 – Unit-To-Unit Call With Target Availability Check				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.3.4.2</b>	Test Case 2 – Unit-To-Unit Call Target Availability Check Denied By Target				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.3.4.3</b>	Test Case 3 – Unit-To-Unit Call Queued With Target Availability Check – traffic channel assignment after target availability check				
	Home Operation	P	N/A 2	N/A 2	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.3.4.4</b>	Test Case 4 – Unit-To-Unit Call Queued With Target Availability Check – traffic channel assignment before target availability check				
	Home Operation	N/A 1	N/A 2	N/A 2	N/A 1
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.3.4.5</b>	Test Case 5 – Unit-To-Unit Call Without Target Availability Check				
	Home Operation	N/A 1	N/A 2	N/A 2	N/A 1

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Test Case	Description	EF Johnson Atlas Trunked Infrastructure	Airbus/Tait Trunked Infrastructure	Tait Limited Trunked Infrastructure	Motorola Trunked Infrastructure
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.3.4.6</b>	Test Case 6 – Unit-To-Unit Call Queued Without Target Availability Check				
	Home Operation	N/A 1	N/A 2	N/A 2	N/A 1
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.3.4.7</b>	Test Case 7 – Unit-To-Unit Call Denied				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4

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Tait Limited	229AZUT17_2.1.3.3 TN9400 TRUNKING SU IOT DTR 170103
Motorola Solutions	DTR-P25CAP081010-17061402

Test Case	Description	EF Johnson Atlas Trunked Infrastructure	Airbus/Tait Trunked Infrastructure	Tait Limited Trunked Infrastructure	Motorola Trunked Infrastructure
<b>2.2.4</b>	<b>Broadcast Voice Call</b>				
<b>2.2.4.4.1</b>	Test Case 1 – Broadcast Voice Call				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.5</b>	<b>Affiliation</b>				
<b>2.2.5.4.1</b>	<i>Test Case 1 - Radio Permitted To Affiliate With New Group</i>				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.5.4.2</b>	Test Case 2 - Radio Denied Affiliation To New Group				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.6</b>	<b>Announcement Group Call</b>				
<b>2.2.6.4.1</b>	Test Case 1 - Collection Of Talk Groups Receive Call				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.7</b>	<b>Emergency Alarm</b>				
<b>2.2.7.4.1</b>	Test Case 1 - Emergency Alarm				
	Home Operation	P	P	P	P

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	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4

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Motorola Solutions	DTR-P25CAP081010-17061402

Test Case	Description	EF Johnson Atlas Trunked Infrastructure	Airbus/Tait Trunked Infrastructure	Tait Limited Trunked Infrastructure	Motorola Trunked Infrastructure
<b>2.2.8</b>	<b>Emergency Group Call</b>				
<b>2.2.8.4.1</b>	Test Case 1 - Emergency Call				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.10</b>	<b>Encryption</b>				
<b>2.2.10.4.1</b>	Test Case 1 - Call Privacy For Encrypted Call				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4
<b>2.2.11</b>	<b>Intra-Location Registration Area Roaming</b>				
<b>2.2.11.4.1</b>	Test Case 1 – Idle Radio				
	Home Operation	P	P	P	P
	Inter-System Operation	N1	N2	N3	N4
	Inter-WACN Operation	N1	N2	N3	N4

**Model Class Definition**

Applied to P25-CAB-CAI\_Test\_Req Mar 2010, 2.1.3.2

Model Class Name	Product Name, Definition, and Unique ID	Installed Options
Viking VP6230 Portable	Viking VP6230F2/F3 Portable Subscriber	<b>Firmware:</b> 8.18.12

**Test Case Result Definitions**

<b>No Test Performed</b>	---
<b>Test Does Not Apply to the Test Object</b>	N/A
<b>Test Object Meets Requirements</b>	P (Pass)
<b>Test Object Does Not Meet Requirements</b>	F (Fail)
<b>Test Object is Not Conclusive</b>	I (Inconclusive)

**Comments**

N/A 1:	Test case 2.2.3.4.4, 2.2.3.4.5, 2.2.3.4.6 is not applicable for these infrastructures; see results of test 2.2.3.4.3.
N/A 2:	Test case 2.2.3.4.3, 2.2.3.4.4, 2.2.3.4.5, 2.2.3.4.6 is not applicable for these infrastructures
N1:	EF Johnson infrastructure does not support Inter-System or Inter-WACN roaming.
N2:	Airbus/Tait infrastructure does not support Inter-System or Inter-WACN roaming.
N3:	Tait Limited infrastructure does not support Inter-System or Inter-WACN roaming.
N4:	Motorola infrastructure does not support Inter-System or Inter-WACN roaming.
P1:	VP 6230 VHF subscriber passes Reference Sensitivity ( $\leq -116$ dBm) specification for C4FM (Non-Simulcast) and Simulcast modulations.
P2:	VP 6230 VHF subscriber passes Faded Reference Sensitivity ( $\leq -108$ dBm) specification for C4FM (Non-Simulcast) and Simulcast modulations.
P3:	VP 6230 VHF subscriber passes Signal Delay Spread Capability specification for C4FM (Non-Simulcast) ( $\geq 50$ $\mu$ s) and Simulcast modulations ( $\geq 80$ $\mu$ s).
P4:	VP 6230 VHF subscriber passes Adjacent Channel Rejection ( $\geq 60$ dB) specification for C4FM (Non-Simulcast) and Simulcast modulations.

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**OMB NO:** 1640-0015

**EXPIRATION DATE:** 06/30/2019

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DHS FORM 10044 – June 2009