Test Item Description	
Manufacturer	EF Johnson Technologies
Manufacturer Contact John Oblak (507) 837-5116	
Product Name	5300 ES and 53SL ES Series VHF Mobile Subscriber Unit
Installed Options	SEM Module Installed
Vocoder Identification	Enhanced Full Rate

Test Description

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

Test Information		
P25 CAP Laboratory Code P25CAP081017 (Harris)		
Date(s) of Test	June 22, 2009	
Date of Issue	July 1, 2009	

Test Information		
P25 CAP Laboratory Code P25CAP081012 (Motorola)		
Date(s) of Test	July 20, 2009 to July 22, 2009	
Date of Issue	July 22, 2009	

Test Information		
P25 CAP Laboratory Code P25CAP081010 (EF Johnson Technologies)		
Date(s) of Test	November 25, 2009	
Date of Issue	November 30, 2009	

Test Information	
P25 CAP Laboratory Code P25CAP081010 (EF Johnson Technologies)	
Date(s) of Test	November 23, 2009 to January 12, 2010
Date of Issue	January 14, 2010

Test Information		
P25 CAP Laboratory Code P25CAP081010 (EF Johnson Technologies)		
Date(s) of Test	January 29, 2010 to February 2, 2010	
Date of Issue	February 8, 2010	

Test Information		
P25 CAP Laboratory Code P25CAP081016 (Timco Engineering)		
Date(s) of Test	June 16, 2010	
Date of Issue	June 29, 2010	

Test Information		
P25 CAP Laboratory Code P25CAP081015 (TELTEST Laboratories)		
Date(s) of Test	October 28, 2010	
Date of Issue	November 2, 2010	

Test Information		
P25 CAP Laboratory Code P25CAP081010 (EF Johnson Technologies)		
Date(s) of Test Feb 22, 2011 to March 4, 2011		
Date of Issue	March 4, 2011	

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

Other Devices Tested with 5300 ES Mobile Subscriber Unit			
Manufacturer	Product Name, Definition, and Unique ID	Installed Options	
Harris	P25 Trunked Infrastructure	System release 6.4.2	
Motorola	ASTRO 25 Trunked Infrastructure	System Release 7.7	
Tait	TaitNet P25/EADS COR P25 Network	P25V11_05.E21	
EF Johnson	IP25 Trunked Infrastructure	Release 3.1-RC1	
PowerTrunk	PowerTrunk 25 B800014 Infrastructure	Version 9.4.52	

P25-CAB-CAI_	TEST_	REQ - March	2010,
Section 2.1.1.1	– Proj	ect 25 Phase	1 Common
Air Interface Conventional Subscriber Unit			
Performance			

DTR-P25CAP081010-10011402 DTR-P25CAP081010-11030403

Cironnance			
	Receive	er 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	Р
2.1.9	Spurious Response Rejection	≥ 70 dB (Class B)	Р
2.1.10	Intermodulation Rejection	≥ 75 dB (Class A)	Р
2.1.11	Signal Displacement Bandwidth	≥ 1000 Hz	Р
2.1.17	Late Entry Unsquelch Delay		
	No Talk Group or Encryption	≤ 125 ms	Р
	Talk Group Only	≤ 370 ms	Р
	Encryption Only	≤ 370 ms	Р
	Both Talk Group and Encryption	≤ 460 ms	Р
2.1.18	Receiver Throughput Delay	≤ 125 ms	Р

P25-CAB-CAI_TEST_REQ - March 2010,
Section 2.1.1.1 – Project 25 Phase 1 Common
Air Interface Conventional Subscriber Unit
Performance

DTR-P25CAP081010-10011402

	Transmitter Tests							
	I ransmi	tter lests						
Test Case	Description	Requirement	Results					
2.2.8	Unwanted Emissions: Adjacent Channel Power Ratio	≥ 67 dB	Р					
2.2.12	Transmitter Power and Encoder Attack Time							
	Power Attack Time	≤ 50 ms	Р					
	Encoder Attack Time	≤ 100 ms	Р					
2.2.14	Transmitter Throughput Delay	≤ 125 ms	Р					
2.2.15	Frequency Deviation for C4FM							
	High Level Signal Deviation	$2544 \; Hz \leq f_{dev} \leq 3111 \; Hz$	Р					
	Low Level Signal Deviation	$848~Hz \leq f_{dev} \leq 1037~Hz$	Р					
2.2.16	Modulation Fidelity	≤ 5% (Class A)	Р					
2.2.18	Transient Frequency Behavior							
	Time Interval t ₁ = 5 ms	≤ ± 12.5 kHz	Р					
	Time Interval t ₂ = 20 ms	≤ ± 6.25 kHz	Р					
	Time Interval t ₃ = 5 ms	≤ ± 12.5 kHz	Р					

P25-CAB-CAI_TEST_REQ - March 2010,
Section 2.1.1.2 - Project 25 Phase 1 Common
Air Interface Trunked Subscriber Unit
Performance

DTR-P25CAP081010-10011402 DTR-P25CAP081010-11030403

	Receive	er 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	Р
2.1.9	Spurious Response Rejection	≥ 70 dB (Class B)	Р
2.1.10	Intermodulation Rejection	≥ 75 dB (Class A)	Р
2.1.11	Signal Displacement Bandwidth	≥ 1000 Hz	Р

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Section 2.1.1.2	- Project 25 I	Phase 1 Common
Air Interface Ti	runked Subsc	riber Unit
Performance		

DTR-P25CAP081010-10011402

	Transmitter Tests								
Test Case	Description	Requirement	Results						
2.2.8	Unwanted Emissions: Adjacent Channel Power Ratio	≥ 67 dB	Р						
2.2.12	Transmitter Power and Encoder Attack Time								
	Power Attack Time	≤ 50 ms	Р						
	Encoder Attack Time	≤ 100 ms	Р						
2.2.14	Transmitter Throughput Delay	≤ 125 ms	Р						
2.2.15	Frequency Deviation for C4FM								
	High Level Signal Deviation	2544 Hz \leq f _{dev} \leq 3111 Hz	Р						
	Low Level Signal Deviation	$848~Hz \leq f_{dev} \leq 1037~Hz$	Р						
2.2.16	Modulation Fidelity	≤ 5% (Class A)	Р						
2.2.18	Transient Frequency Behavior								
	Time Interval t ₁ = 5 ms	≤ ± 12.5 kHz	Р						
	Time Interval t ₂ = 20 ms	≤ ± 6.25 kHz	Р						
	Time Interval t ₃ = 5 ms	≤ ± 12.5 kHz	Р						

P25-CAB-CAI_TEST_REQ – March 2010, Section 2.1.1.2 – Project 25 Phase 1 Common Air Interface Trunked Subscriber Unit Performance		DTR-P25CAP081010-10020802			
	Trunked Subs	criber Unit Tests			
Test Case	Description	Requirement	Results		
2.3.1	Trunking Control Channel Slot Times (45 ms slot) Encode Attack Time RF Power Attack Time RF Power Turn Off Time	$2.00 \text{ ms} \le t \le 11.65 \text{ ms}$ $0 \text{ ms} \le t \le 11.65 \text{ ms}$ $\le 1.57 \text{ ms}$	P P P		
2.3.2	Trunking Request Time	≤ 160 ms	Р		
2.3.3	Trunking Voice Access Time	500 ms (Manufacturer Specified)	Р		
2.3.5	Transmitter Time to Key on a Traffic Channel Short Channel Form	≤ 150.0 ms	Р		

Section 2.1	Al_TEST_REQ – March 2010, .3.2 – Project 25 Phase 1 ir Interface Trunked Subscriber perability	DTR- P25CAP081017- 1090622E02	DTR-MOT-40016- M1-MC2	DTR- P25CAP081015- 3204	DTR- P25CAP081010- 09113001	DTR-TIMCO081016- 023-5377-720	
EF Johnson	n 5300 ES Mobile	Harris P25 Trunking Infrastructure	Motorola ASTRO 25 Trunking	TaitNet P25/EADS Core P25	EF Johnson IP25 Trunking Infrastructure	PowerTrunk B800014 Trunking	
Test Case	Description						
2.2.1	Full Registration						
2.2.1.4.1	Test Case 1 - Valid Registration		I	1	1	I	
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.1.4.2	Test Case 2 – Denied or Refused		Т	T	T	Т	
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.1.4.3	Test Case 3 - Unverified Registration		ı	1	1	ı	
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.2	Group Voice Call						
2.2.2.4.1	Test Case 1 – Group Call Granted		ı	1	1	ı	
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.2.4.2	Test Case 2 – Group Call Denied		Т	1	T	Т	
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.2.4.3	Test Case 3 – Group Call Request		Г	1	1	Г	
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	

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EF Johnson 5300 ES Mobile		Harris P25 Trunking Infrastructure	Motorola ASTRO25 Trunking	TaitNet P25/EADS Core P25	EF Johnson IP25 Trunking Infrastructure	PowerTrunk B800014 Trunking	
Test Case	Description						
2.2.3	Unit-To-Unit Voice Call						
2.2.3.4.1	Test Case 1 – Unit-To-Unit Call With Target Availability Check						
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.3.4.2	Test Case 2 – Unit-To-Unit Call Target Availability Check Denied By Target						
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.3.4.3	Test Case 3 – Unit-To-Unit Call Queued With Target Availability Check – traffic channel assignment after target availability check						
	Home Operation	Р	Р	N/A 1	Р	N/A 3	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.3.4.4	Test Case 4 – Unit-To-Unit Call Queued With Target Availability Check – traffic channel assignment before target availability check						
	Home Operation	N/A 2	N/A 2	Р	N/A 2	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.3.4.5	Test Case 5 – Unit-To-Unit Call Without Target Availability Check						
	Home Operation	N1	N2	N3	N4	N5	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	

Section 2 Common	-CAI_TEST_REQ – March 2010, d.1.3.2 – Project 25 Phase 1 Air Interface Trunked Subscriber operability	DTR-P25CAP081017- 1090622E02	DTR-MOT-40016-M1- MC2	DTR-P25CAP081015- 3204	DTR-P25CAP081010- 09113001	DTR-TIMCO081016- 023-5377-720	
EF Johns	on 5300 ES Mobile	Harris P25 Trunking Infrastructure	Motorola ASTRO25 Trunking	TaitNet P25/EADS Core P25	EF Johnson IP25 Trunking Infrastructure	PowerTrunk B800014 Trunking	
Test Case	Description						
2.2.3	Unit-To-Unit Voice Call						
2.2.3.4.6	Test Case 6 – Unit-To-Unit Call Queued Without Target Availability Check						
	Home Operation	N1	N2	N3	N4	N5	
	Inter-System Operation	N1	N1	N1	N1	N1	
-	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.3.4.7	Test Case 7 – Unit-To-Unit Call Denied						
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	

Section 2.1.	Al_TEST_REQ – March 2010, 3.2 – Project 25 Phase 1 Common e Trunked Subscriber Unit ility	DTR- P25CAP081017- 1090622E02	DTR-MOT-40016- M1-MC2	DTR- P25CAP081015- 3204	DTR- P25CAP081010- 09113001	DTR-TIMCO081016- 023-5377-720	
EF Johnson	ı 5300 ES Mobile	Harris P25 Trunking Infrastructure	Motorola ASTRO25 Trunking	TaitNet P25/EADS Core P25	EF Johnson IP25 Trunking Infrastructure	PowerTrunk B800014 Trunking	
Test Case	Description						
2.2.4	Broadcast Voice Call						
2.2.4.4.1	Test Case 1 – Broadcast Voice Call						
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.5	Affiliation						
2.2.5.4.1	Test Case 1 - Radio Permitted To Affiliate With New Group						
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.5.4.2	Test Case 2 - Radio Denied Affiliation To New Group						
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.6	Announcement Group Call						
2.2.6.4.1	Test Case 1 - Collection Of Talk Groups Receive Call						
	Home Operation	Р	Р	Р	Р	N6	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.7	Emergency Alarm			•	•		
2.2.7.4.1	Test Case 1 - Emergency Alarm	1					
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	

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EF Johnson 5300 ES Mobile		Harris P25 Trunking Infrastructure	Motorola ASTRO25 Trunking	TaitNet P25/EADS Core P25	EF Johnson IP25 Trunking Infrastructure	PowerTrunk B800014 Trunking	
Test Case	Description						
2.2.8	Emergency Group Call						
2.2.8.4.1	Test Case 1 - Emergency Call						
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.10	Encryption						
2.2.10.4.1	Test Case 1 - Call Privacy For Encrypted Call						
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	
2.2.11	Intra-Location Registration Area Roaming						
2.2.11.4.1	Test Case 1 – Idle Radio		1	1	1	1	,
	Home Operation	Р	Р	Р	Р	Р	
	Inter-System Operation	N1	N1	N1	N1	N1	
	Inter-WACN Operation	N1	N1	N1	N1	N1	

Model Class Definition	Applied to P25-CAB-CAI_Test_Req Mar 2010, 2.1.3.2			
Model Class Name	Product Definition	Name, n, and Unique ID	Installed Op	tions
5300 ES Series Mobile	5300 ES	Series Mobile	Firmware:	6.10.6
	5300 ES	Series Mobile	Firmware:	6.12.2

Test Case Result Definitions			
No Test Performed			
Test Does Not Apply to the Test Object	N/A		
Test Object Meets Requirements	P (Pass)		
Test Object Does Not Meet Requirements	F (Fail)		
Test Object is Not Conclusive	I (Inconclusive)		

_	_			_		4_
С	റ	m	m	e	n	TS

- N/A 1: Test case 2.2.3.4.3 is not applicable for Taitnet/EADS COR P25 Infrastructure; see results of test case 2.2.3.4.4
- N/A 2: Test case 2.2.3.4.4 is not applicable for these infrastructures; see results of test 2.2.3.4.3
- N/A 3: Test case 2.2.3.4.3 is not applicable for PowerTrunk 25 infrastructure; see results of test case 2.2.3.4.4
- N1: EF Johnson 5300 ES subscriber does not support these features
- N2: Motorola trunking system release 7.7 and EF Johnson 5300 ES subscriber do not support these features
- N3: TaitNet P25 / EADS COR P25 and EF Johnson 5300 ES subscriber do not support these features
- N4: EF Johnson trunking system release 3.1-RC1 and EF Johnson 5300 ES subscriber do not support these features
- N5: PowerTrunk 25 infrastructure and EF Johnson 5300ES Subscriber do not support these features
- N6: PowerTrunk 25 infrastructure does not support these features
- P1: EF Johnson 5300 ES VHF subscriber passes Reference Sensitivity (≤ -116 dBm) specification for C4FM (Non-Simulcast) and Simulcast modulations.
- P2: EF Johnson 5300 ES VHF subscriber passes Faded Reference Sensitivity (≤ -108 dBm) specification for C4FM (Non-Simulcast) and Simulcast modulations.
- P3: EF Johnson 5300 ES VHF subscriber passes Signal Delay Spread Capability specification for C4FM (Non-Simulcast) (≥ 50 µs) and Simulcast modulations (≥ 80 µs).
- P4: EF Johnson 5300 ES VHF subscriber passes Adjacent Channel Rejection (≥ 60 dB) specification for C4FM (Non-Simulcast) and Simulcast modulations.

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