

Estimated project roadmap



Final payment in accordance with the spent man-hours, travel and accommodation expenses

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This is an example of a preliminary calculation of the project budget before signing a contract with our customers. All figures in this document are for reference only.

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Project description

Project name	Automation of Wi-Fi equipments precompliance test
Standards	ETSI EN 300 328 V2.1.0
List of measured parameters	RF output power Power Spectral Density Duty Cycle Tx-sequence Tx-gap Medium Utilization (MU) factor Occupied Channel Bandwidth Transmitter unwanted emissions Receiver spurious emissions
Measuring equipments	N9322C Basic Spectrum Analyzer 11713B Attenuator/Switch Driver Cisco router for a test network and traffic emulation
DUT's description	Any type of wi-fi adapters with external antennae connector

Project architecture and implementation method

To perform measurements, DUT must be connected to the test network and be loaded with traffic. For this purpose, we use the cisco router.
For traffic simulation we use ICMP (ping) multiple instances or iPerf.
For cisco remote control we use telnet.
Via telnet we can change band, channel, modulation type and etc.
We use the N9322C spectrum analyzer for parameter measuring with conducted connection to DUT. We use IVI driver from Keysight for remote control.

Composition of the software suite

TestPatron Automation Studio, 1 license
TestPatron Script for measuring automation and test report creation
TestPantron Plugin for cisco remote control, traffic simulation with user interface
TestPatron Driver for Keysight 11713B

Project RoadMap

The project will be carried out by three employees in three stages under the supervision of the project manager. To develop the documentation, a technical writer is involved.

The 1st and 2nd stage run simultaneously.

1st stage: TestPatron driver development for Keysight 11713B

2nd stage: TestPatron plugin development for cisco router

3rd stage: TestPatron script development

Then the customer will be trained and the project will be submitted for technical support.

1st stage: TestPatron driver development for Keysight 11713B

The stage is performed by labview developer

Substage	Duration, man-hours		Remark
	remote	on site	
examination of instrument documentation	8		
development of the command system	4		
driver template development	8		
on-site driver debugging manual and automatic testing		12	Can be performed remotely if the customer provides access to the computer to install the virtual machine and will assist with connecting to the device and feedback
release to production	2		
preparation of documentation	4		

2st stage: TestPatron plugin development for cisco router			
The stage is performed by labview developer			
Substage	Duration, man-hours		Remark
	remote	on site	
examination of cisco documentation	12		
develop plugin architecture and GUI	16		
GUI customer approval, adjustment	8		
plugin development	60		
on-site debugging		32	Can be performed remotely if the customer provides access to the computer to install the virtual machine and will assist with connecting to the device and feedback
customer approval		8	
remarks correction		16	
release to production	4		
preparation of documentation	16		

3rd stage: TestPatron script development			
The stage is performed by script developer			
Substage	Duration, man-hours		Remark
	remote	on site	
method of test customer approval	8		
test report template dev. Customer approval	8		
script development	40		
on-site debugging		40	Can be performed remotely if the customer provides access to the computer to install the virtual machine and will assist with connecting to the device and feedback
customer approval remarks correction		8	TestPatron allows to correct script on the fly
customer training		24	
release to production	8		Prepare an installation disk with all software components
preparation of documentation	16		user manuals for software suite

Project duration estimation

Total spent man-hours	362	
# of business trips	3	
Expected time of project implementation, weeks	7	since the stages run simultaneously and several employees work

Project cost estimation

Initial data*

Description	Unit cost	Remark
TestPatron Automation Studio, 1 license, USD	1450	the license is associated with the computer identifier
Script developer hour rate, USD	30	
Labview developer hour rate, USD	50	
Travel expenses, 2 way, 1 person, USD Berlin, Germany	250	
Accommodation expenses, 1 day, USD	150	
TestPatron Automation Studio,	1900	

* The cost depends on the terms of the contract

Calculation	quantity	Amount, usd
TestPatron License	1	1450
Script developer, man-hours	152	4560
Labview developer, man-hours	210	10500
Travel and accomodation expenses	3	2575
Project management and accounting	10%	1908,5
1 year technical support	10%	2099,35
Estimated project cost*		23092,85

*Possible error in time and cost estimation less than 30% (confidence levels is 90%)