

H/Q : 新北市汐止區新台五路一段 79 號 20 樓之 4 (遠東世界中心 C 棟) 台灣汐止公司
20F-4, No.79, Sec.1, Xintai 5th Rd., Xizhi Dist., New Taipei City 22101, Taiwan

TEL: 886-2-2698-2191 (REP.)

FAX: 886-2-2698-2192 / 2698-2193

E-MAIL: service@yic.com.tw

URL: www.yic.com.tw

Reliability Test Report

Reliability Test Report

Product name: GNSS Module		Product model: YIC51612EBGGB			
Test item: Low-temperature working test		Sampling: 5 pcs		Date: 2024/07/22	
<p>Test method / Requirement:</p> <ol style="list-style-type: none"> 1. The QA-LP-28 constant-temperature and wet test box was used. 2. Put the 5 PCS sample into the high and low temperature test box, and use the DC power supply of 3.3V to make the module in normal working state. 3. The starting temperature was set to 23 °C, reduced to -40°C within an hour, and continued at -40°C for 48 hours. 4. After test for 48 hours at -40°C. Samples were removed to test the module performance in a fully open sky environment. 5. Cold start <40S, hot start <5S. (Pre-test and post-test data are considered qualified within the index) 6. Search star: Four stars C/N0≥40 One stars C/N0≥45. (Pre-test and post-test data are considered qualified within the index) 					
Data before working at low temperature					
Module number	1	2	3	4	5
Cold start(S)	34	32	33	33	35
hot star(S)	1	1	1	2	1
C/N0(GPS)	44-47	43-46	43-45	44-47	45-48
C/N0(BDS)	42-46	43-47	42-47	43-46	44-47
C/N0(GA)	39-44	40-44	39-43	40-45	41-44
C/N0(GL)	40-45	39-46	40-45	41-45	40-44
Data after working at low temperature					
Module number	1	2	3	4	5
Cold start(S)	33	36	34	34	33
hot star(S)	1	1	2	1	1
C/N0(GPS)	43-47	44-47	45-48	43-48	44-47
C/N0(BDS)	43-47	43-46	44-47	42-46	43-47
C/N0(GA)	38-45	40-44	40-43	39-45	41-44
C/N0(GL)	39-45	40-46	41-46	39-45	41-45
Test result	Qualified <input checked="" type="checkbox"/>			Unqualified <input type="checkbox"/>	
TEST ENGINEER: <u>Ben</u> AUDIT ENGINEER: <u>Kevin</u> APPROVAL: <u>Max</u>					

Reliability Test Report

Product name: GNSS Module		Product model: YIC51612EBGGB			
Test item: :Low-temperature storage test		Sampling: 5 pcs		Date:2024/07/25	
Test method / Requirement: 1. The QA-LP-28constant-temperature and wet test box was used. 2. Put the 5 PCS sample into the high and low temperature test box. 3. At the ambient temperature was set to-40°C , after the module is storage for 48 hours, remove the sample and recover for 2 hours, and test the module performance in the fully open sky environment. 4. Cold start <40S, hot start 5S.(Pre-test and post-test data are considered qualified within the index) 5. Search star: Four stars C/N0≥ 40One stars C/N0≥45.(Pre-test and post-test data are considered qualified within the index)					
Data before Cryo-store test					
Module number	1	2	3	4	5
Cold start(S)	33	37	35	36	33
hot star(S)	1	1	1	1	1
C/N0(GPS)	42-47	44-47	43-46	44-46	42-46
C/N0(BDS)	44-47	43-47	43-47	44-46	42-46
C/N0(GA)	40-45	39-44	41-45	40-44	39-45
C/N0(GL)	40-46	39-45	40-45	41-44	40-44
Data after Cryo-store test					
Module number	1	2	3	4	5
Cold start(S)	35	36	33	34	34
hot star(S)	1	2	1	1	1
C/N0(GPS)	43-47	43-46	42-47	43-47	43-46
C/N0(BDS)	43-47	43-46	44-46	42-46	44-47
C/N0(GA)	39-44	40-45	41-44	39-45	39-44
C/N0(GL)	41-46	40-44	39-44	40-45	41-46
Test result	Qualified <input checked="" type="checkbox"/>		Unqualified <input type="checkbox"/>		
TEST ENGINEER: <u>Ben</u> AUDIT ENGINEER: <u>Kevin</u> APPROVAL: <u>Max</u>					

Reliability Test Report

Product name: GNSS Module		Product model: YIC51612EBGGB			
Test item: High-temperature working test		Sampling: 5 pcs	Date:2024/07/29		
<p>Test method / Requirement:</p> <p>1. The QA-LP-28constant-temperature and wet test box was used.</p> <p>2 Put the 5 PCS sample into the high and low temperature test box, and use the DC power supply of 3.3V to make the module in normal working state.</p> <p>3 Set the starting temperature of the cold box as 23°C , heating to 85°C within an hour , and continued at 85°C for 48 hours.</p> <p>4 Normal operating condition lasted for 48 hours at 85°C environment. Samples were removed to test the module performance in a fully open sky environment.</p> <p>5 Cold start <40S, hot start <5S.(Pre-test and post-test data are considered qualified within the index)</p> <p>6 Search star: Four stars C/N0≥40 One stars C/N0≥45.(Pre-test and post-test data are considered qualified within the index)</p>					
Data before working at high temperature					
Module number	1	2	3	4	5
Cold start(S)	33	36	37	34	35
hot star(S)	1	1	2	1	1
C/N0(GPS)	42-46	43-46	44-47	43-47	44-47
C/N0(BDS)	43-47	44-47	43-47	44-46	44-46
C/N0(GA)	39-45	40-44	41-45	40-45	41-44
C/N0(GL)	39-43	40-46	41-46	40-44	39-44
Data after working at high temperature					
Module number	1	2	3	4	5
Cold start(S)	36	34	35	33	36
hot star(S)	1	1	1	1	1
C/N0(GPS)	44-47	43-47	43-48	43-46	43-48
C/N0(BDS)	42-46	44-48	44-46	42-47	43-47
C/N0(GA)	40-45	41-45	40-44	39-45	40-45
C/N0(GL)	40-45	41-45	39-45	39-44	40-45
Test result	Qualified <input checked="" type="checkbox"/>		Unqualified <input type="checkbox"/>		
TEST ENGINEER: <u>Ben</u> AUDIT ENGINEER: <u>Kevin</u> APPROVAL: <u>Max</u>					

Reliability Test Report

Product name: GNSS Module		Product model: YIC51612EBGGB			
Test item: High-temperature storage test		Sampling: 5 pcs		Date:2024/08/01	
Test method / Requirement: 1. The QA-LP-28constant-temperature and wet test box was used. 2. Put the 5 PCS sample into the high and low temperature test box. 3. At the ambient temperature was set to 105 °C, after the module is storage for 48hours, remove the sample and recover for 2 hours, and test the module performance in the fully open sky environment. 4. Cold start <40S, hot start <5S.(Pre-test and post-test data are considered qualified within the index) 5. Search star: Four stars C/N0≥40One stars C/N0≥45.(Pre-test and post-test data are considered qualified within the index)					
Data before high temperature storage test					
Module number	1	2	3	4	5
Cold start(S)	34	36	36	35	37
hot star(S)	1	1	2	1	1
C/N0(GPS)	42-46	43-47	42-48	43-48	43-46
C/N0(BDS)	43-47	42-46	44-46	43-47	44-47
C/N0(GA)	40-44	39-45	39-44	41-44	40-45
C/N0(GL)	40-45	41-46	40-44	39-44	40-45
Data after high temperature storage test					
Module number	1	2	3	4	5
Cold start(S)	33	35	34	35	33
hot star(S)	2	1	1	1	1
C/N0(GPS)	42-47	44-48	43-47	44-47	44-47
C/N0(BDS)	43-48	42-47	44-48	43-47	42-46
C/N0(GA)	39-44	40-45	39-43	40-44	40-45
C/N0(GL)	40-46	39-45	40-45	41-45	40-44
Test result	Qualified <input checked="" type="checkbox"/>			Unqualified <input type="checkbox"/>	
TEST ENGINEER: <u>Ben</u> AUDIT ENGINEER: <u>Kevin</u> APPROVAL: <u>Max</u>					

Reliability Test Report

Product name: GNSS Module		Product model: YIC51612EBGGB			
Test item: High and low temperature frequency conversion work test		Sampling: 5 pcs		Date: 2024/08/05	
<p>Test method / Requirement:</p> <p>1. The QA-LP-28 constant-temperature and wet test box was used.</p> <p>2. Put the 5 PCS sample into the high and low temperature test box, and use the DC power supply of 3.3V to make the module in normal working state.</p> <p>3. The temperature is set to cycle between -40°C and 85°C, and the number of cycles is 12 times, each cycle is 4 hours. Satellite navigation products need to keep them on and search for star signals.</p> <p>4. Cold start <40S, hot start <5S. (Pre-test and post-test data are considered qualified within the index)</p> <p>5. Search star: Four stars C/N0 ≥ 40 One stars C/N0 ≥ 45. (Pre-test and post-test data are considered qualified within the index)</p>					
Data before the temperature cycle					
Module number	1	2	3	4	5
Cold start(S)	35	36	34	37	33
hot star(S)	1	1	1	1	2
C/N0(GPS)	44-47	43-46	42-46	43-48	44-47
C/N0(BDS)	42-47	43-47	44-46	43-47	42-46
C/N0(GA)	40-45	39-44	40-44	41-45	40-44
C/N0(GL)	41-46	40-45	39-45	41-44	40-46
Data after the temperature cycle					
Module number	1	2	3	4	5
Cold start(S)	33	36	37	32	33
hot star(S)	1	1	1	1	1
C/N0(GPS)	43-48	42-46	43-46	44-47	43-46
C/N0(BDS)	43-47	44-48	42-47	43-46	44-48
C/N0(GA)	39-45	40-44	41-45	40-45	39-43
C/N0(GL)	40-46	41-46	40-45	40-45	41-46
Test result	Qualified <input checked="" type="checkbox"/>			Unqualified <input type="checkbox"/>	
TEST ENGINEER: <u>Ben</u> AUDIT ENGINEER: <u>Kevin</u> APPROVAL: <u>Max</u>					

Reliability Test Report

Product name: GNSS Module		Product model: YIC51612EBGGB			
Test item: High and low temperature frequency conversion storage test		Sampling: 5 pcs		Date:2024/08/08	
Test method / Requirement: 1. The QA-LP-28 constant-temperature and wet test box was used. 2. Put the 5 PCS sample into the high and low temperature test box. 3. Set low temperature -40°C , high temperature 105°C , high and low temperature alternating storage every 2 hours. After continuous cycle storage for 48 hours, remove the sample and recover for 2 hours, and test the module performance in the fully open sky environment. 4. Cold start <40S, hot start <5S.(Pre-test and post-test data are considered qualified within the index) 5. Search star: Four stars C/N0≥40 One stars C/N0≥45.(Pre-test and post-test data are considered qualified within the index)					
Data before the high and low temperature cycle storage					
Module number	1	2	3	4	5
Cold start(S)	33	34	35	36	37
hot star(S)	1	1	1	1	1
C/N0(GPS)	42-47	43-46	43-47	44-47	43-48
C/N0(BDS)	43-48	42-47	44-48	43-46	42-47
C/N0(GA)	41-45	40-44	39-43	40-44	41-45
C/N0(GL)	40-46	41-45	39-44	40-44	41-45
Data after the high and low temperature cycle storage					
Module number	1	2	3	4	5
Cold start(S)	33	35	32	36	34
hot star(S)	1	1	1	1	2
C/N0(GPS)	43-46	44-47	43-48	43-46	44-47
C/N0(BDS)	43-46	43-48	43-47	44-48	43-47
C/N0(GA)	40-45	39-44	39-44	41-45	40-45
C/N0(GL)	41-46	40-46	40-45	41-45	40-44
Test result	Qualified <input checked="" type="checkbox"/>			Unqualified <input type="checkbox"/>	
TEST ENGINEER: <u>Ben</u> AUDIT ENGINEER: <u>Kevin</u> APPROVAL: <u>Max</u>					

Reliability Test Report

Product name: GNSS Module		Product model: YIC51612EBGGB			
Test item: Vibration test		Sampling: 5 pcs		Date: 2024/08/05	
<p>Test method / Requirement:</p> <ol style="list-style-type: none"> 1. Use YUY-Q50 vibration tester 2. The 5PCS samples were placed on the YUY-Q50 vibrator table, and the performance was tested at the vibration frequency of 10-55- 10Hz, amplitude of 0.5mm, and acceleration of 20m/s². The vibration was carried out in horizontal and vertical directions for 3 hours. 3. The module appearance is intact. 4. Cold start <40S, hot start <5S.(Pre-test and post-test data are considered qualified within the index) 5. Search star: Four stars C/N0≥40One stars C/N0≥45.(Pre-test and post-test data are considered qualified within the index) 					
Data before the vibration test					
Module number	1	2	3	4	5
Cold start(S)	34	37	35	35	33
hot star(S)	1	1	1	1	1
C/N0(GPS)	43-46	42-47	42-48	44-47	44-48
C/N0(BDS)	42-47	43-47	44-46	43-46	44-47
C/N0(GA)	39-44	40-45	41-44	40-44	39-43
C/N0(GL)	40-46	41-45	39-45	40-44	40-45
Data after the vibration test					
Module number	1	2	3	4	5
Cold start(S)	35	34	36	36	33
hot star(S)	1	1	1	1	1
C/N0(GPS)	44-46	43-47	43-47	43-46	43-47
C/N0(BDS)	43-48	42-47	43-46	44-47	43-47
C/N0(GA)	40-45	39-44	40-43	40-44	40-45
C/N0(GL)	41-46	41-44	40-44	40-45	39-44
Test result	Qualified <input checked="" type="checkbox"/>			Unqualified <input type="checkbox"/>	
TEST ENGINEER: <u>Ben</u> AUDIT ENGINEER: <u>Kavin</u> APPROVAL: <u>Max</u>					

Reliability Test Report

Product name: GNSS Module		Product model: YIC51612EBGGB
Test item: Chip aging test	Sampling: 5 pcs	Date: 2024/08/05
<p>Test method / Requirement:</p> <ol style="list-style-type: none"> 1. Place the 5 PCS sample on the aging test rack with the DC power supply. 2. Provide 3.3V power supply for the chip continuously to detect whether it will lose its positioning under the state of high power supply. The test time is 14 days . 3. Criterion for judgment : <ol style="list-style-type: none"> A. After power supply to the module, check the NMEA statement, if the chip is continuously positioned during the test, it is qualified. B. After power supply to the module, check the NMEA statement, if the chip loses its positioning during the test, it means unqualified. <p>Test result : After 14 days of test, number of occurrence of the chip loses its positioning <1, the judgment test qualified.</p>		
Product name: GNSS Module		Product model: YIC51612EBGGB
Test item: Switch machine aging test	Sampling: 5 pcs	Date: 2024/08/05
<p>Test method / Requirement:</p> <ol style="list-style-type: none"> 1. Place the 5 PCS sample on the aging test rack with the DC power supply . 2. Power supply 3.3V to the module for 30S after the module is located, and disconnect the power supply to the module for 5S. 3. Cycle the second step, continuous testing for 14 days. 4. Criterion for judgment : <ol style="list-style-type: none"> A. After power supply to the module, there should output the NMEA data within 2S, otherwise record the error once. <p>Test result : After 14 days of test, the error record <2, the judgment test qualified.</p>		
<p>Test status:</p> <p>After viewing the NMEA0183 statement, all the sampled products meet the qualification standards.</p>		
Test result	Qualified <input checked="" type="checkbox"/>	Unqualified <input type="checkbox"/>
<p>TEST ENGINEER: <u>Ben</u> AUDIT ENGINEER: <u>Kevin</u> APPROVAL: <u>Max</u></p>		