Test Report

No. C150114013001 Date: Jan 19, 2015 Page 1 of 14

DRAGINO TECHNOLOGY CO., LIMITED

ROOM 7009, ZI ` AN COMMERCIAL BUILDING, QIAN JIN 1 ROAD, XIN ` AN 6TH DISTRICT, BAO ` AN DISTRICT; SHENZHEN 518101, CHINA

The following samples were submitted and identified on behalf of the clients as

Sample Name:	WIRELESS SENSOR NODE
CPST Internal Reference No.:	C150114013
Model:	HE
Sample Received Date:	Jan 14, 2015
Test Period:	Jan 14, 2015 to Jan 19, 2015
Test Requested:	In accordance with RoHS Directive 2011/65/EU Annex II —Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs and PBDEs Content
Test Method:	Please refer to next pages
Test Result:	Please refer to next pages

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CONCLUSION :

TESTED SAMPLES	TEST ITEM	RESULT
WIRELESS SENSOR NODE	Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs and PBDEs Content — RoHS Directive 2011/65/EU Annex II	**PASS**

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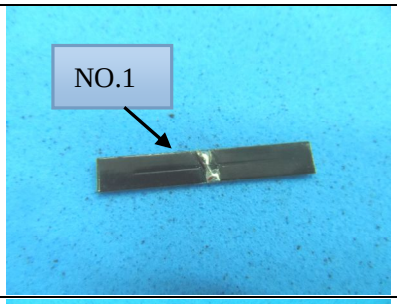
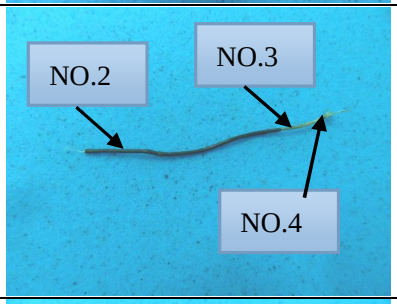
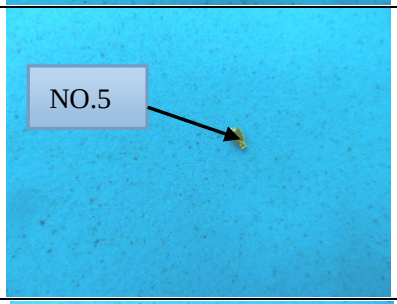
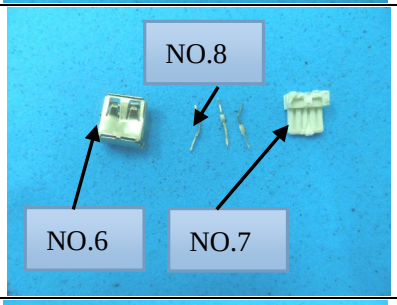
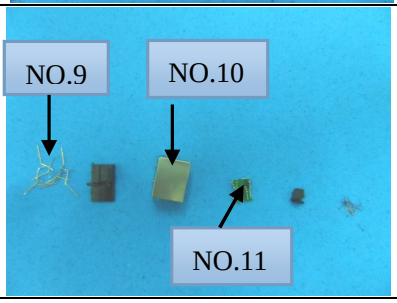
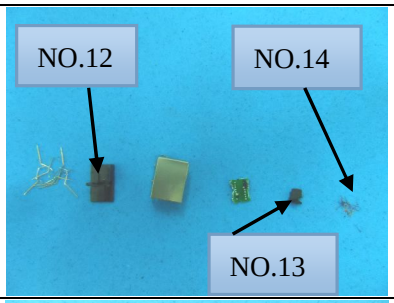
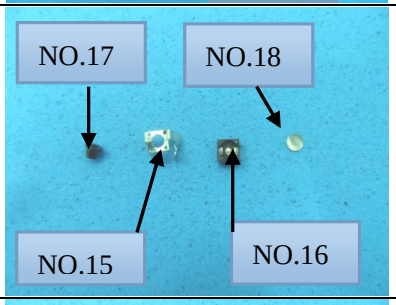
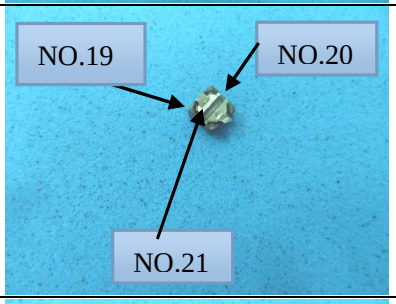
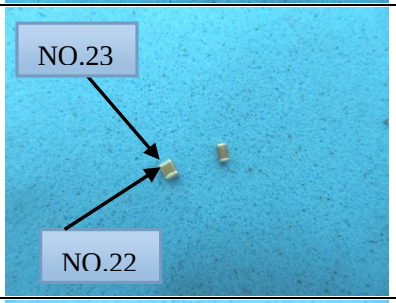
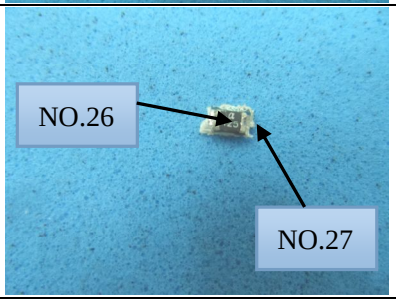
Signed for and on behalf of Consumer Products Testing Service Co., Ltd.

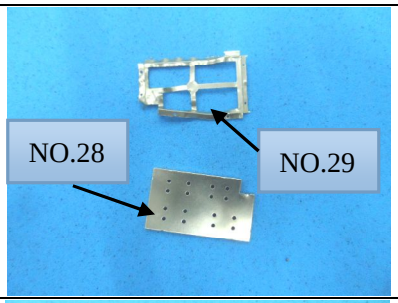
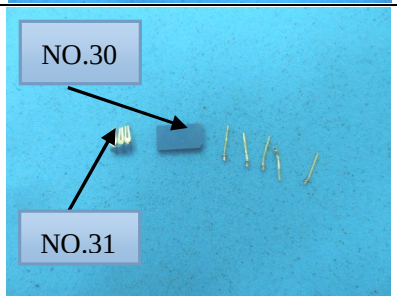
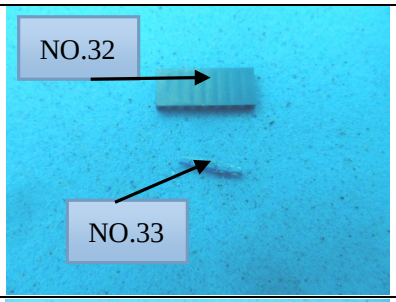
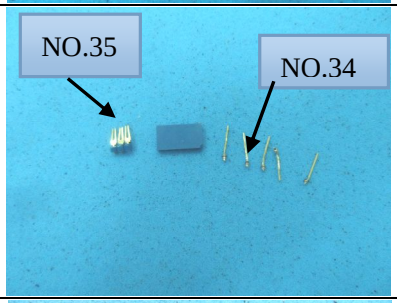
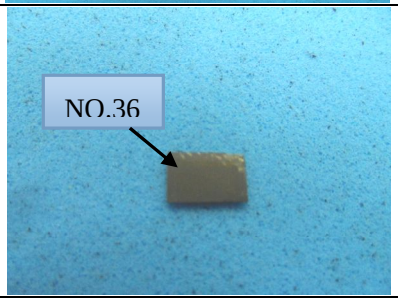
Gino

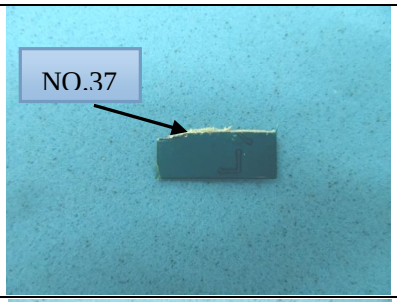
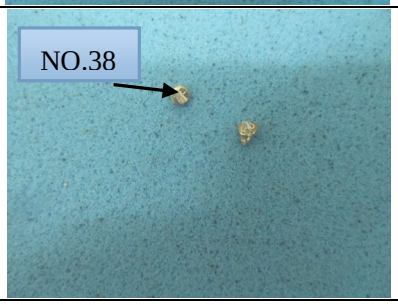
Gao Feng, Gino
Laboratory Manager

Test Item Description And Photo List

Sample No.	Description	Photograph
001	**Brown PCB**	
002	Black plastic wire jacket	
003	Gray fibers	
004	Silver metal wire	
005	Coppery metal wire interface	
006	Silvery metal shell(USB interface)	
007	White plastic(USB interface)	
008	Silvery metal pin(USB interface)	
009	Coppery metal pin(X2)	
010	Silvery metal shell(X2)	
011	Green PCB inner(X2)	

Sample No.	Description	Photograph
012	Black hard plastic(X2)	
013	Black soft plastic(X2)	
014	Coppery metal wire(X2)	
015	Silvery metal shell(S1 switch)	
016	Black plastic(S1 switch)	
017	Black plastic button(S1 switch)	
018	Silvery metal sheet(S1 switch)	
019	Black plastic(L2)	
020	Coppery metal wire inner(L2)	
021	Silvery metal(L2)	
022	Brown plastic (C10)	
023	Silvery metal (C10)	
024	Black plastic(L1)	
025	Silvery metal(L1)	

Sample No.	Description	Photograph
026	Silvery metal shell	
027	Silvery metal frame	
028	Blue plastic ①	
029	Blue plastic ②	
030	Blue plastic ③	
031	Blue plastic ④	
032	Blue plastic gold metal pin ①	
033	Blue plastic silver metal pin ②	
034	Black plastic winband	

035	Blue PCB board	
036	Silvery solder	

Test Results

1.1 Screening test for the specified hazardous substances of RoHS for the selected materials of the submitted sample:

- Heavy Metal (Cadmium, Chromium, Mercury, Lead) Content Test
- Bromine Content Test

According to IEC 62321:2013, and Quantification analyzed with Energy Dispersive X-ray Fluorescence Spectrometers.

Sample No.	Total Cadmium	Total Lead	Total Mercury	Total Chromium	Total Bromine
Sample 001	BL	BL	BL	BL	Inconclusive
Sample 002	BL	BL	BL	BL	BL
Sample 003	BL	BL	BL	BL	BL
Sample 004	BL	BL	BL	BL	N.A.
Sample 005	BL	BL	BL	BL	N.A.
Sample 006	BL	BL	BL	BL	N.A.
Sample 007	BL	BL	BL	BL	BL
Sample 008	BL	BL	BL	BL	N.A.
Sample 009	BL	BL	BL	BL	N.A.
Sample 010	BL	BL	BL	BL	N.A.
Sample 011	BL	BL	BL	BL	Inconclusive
Sample 012	BL	BL	BL	BL	Inconclusive
Sample 013	BL	BL	BL	BL	BL
Sample 014	BL	BL	BL	BL	N.A.
Sample 015	BL	BL	BL	BL	N.A.
Sample 016	BL	BL	BL	BL	Inconclusive
Sample 017	BL	BL	BL	BL	Inconclusive
Sample 018	BL	BL	BL	BL	N.A.
Sample 019	BL	BL	BL	BL	BL
Sample 020	BL	BL	BL	BL	N.A.
Sample 021	BL	BL	BL	BL	N.A.
Sample 022	BL	BL	BL	BL	BL
Sample 023	BL	BL	BL	BL	N.A.

Sample No.	Total Cadmium	Total Lead	Total Mercury	Total Chromium	Total Bromine
Sample 024	BL	BL	BL	BL	Inconclusive ^
Sample 025	BL	BL	BL	BL	N.A.
Sample 026	BL	BL	BL	BL	N.A.
Sample 027	BL	BL	BL	BL	N.A.
Sample 028	BL	BL	BL	BL	Inconclusive ^
Sample 029	BL	BL	BL	BL	Inconclusive ^
Sample 030	BL	BL	BL	BL	Inconclusive ^
Sample 031	BL	BL	BL	BL	BL
Sample 032	BL	BL	BL	BL	N.A.
Sample 033	BL	BL	BL	BL	N.A.
Sample 034	BL	BL	BL	BL	BL
Sample 035	BL	BL	BL	BL	Inconclusive ^
Sample 036	BL	Inconclusive ^	BL	BL	N.A.

Note:

1. All Concentrations express in “mg/kg” (milligram per kilogram), mg/kg ~ ppm
2. “OL” denotes “over limit”
3. “BL” denotes “below limit”
4. “N.A.” denotes “Not Applicable”
5. “Inconclusive” denotes result is intermediate between “OL” and “BL”
6. “^”denotes the screening result was inconclusive(X) or over limit (OL), thus further confirmation test was conducted, results are listed in 3.2 and 3.3.
7. “φ” denotes as the information (the submitted sample is electronic ceramic part) provided by the client, when Lead in electronic ceramic parts is exempted from RoHS Directive 2011/65/EU Annex III.

XRF screening limits for different materials:

Materials	Concentration (mg/kg)				
	Cd	Cr	Pb	Hg	Br
Metal	BL≤(70-3σ)<X<(130+3σ)≤OL	BL≤(700-3σ)<X	BL≤(700-3σ)<X<(1300+3σ)≤OL	BL≤(700-3σ)<X<(1300+3σ)≤OL	N.A.
Polymers	BL≤(70-3σ)<X<(130+3σ)≤OL	BL≤(700-3σ)<X	BL≤(700-3σ)<X<(1300+3σ)≤OL	BL≤(700-3σ)<X<(1300+3σ)≤OL	BL≤(300-3σ)<X
Composite material	BL≤(50-3σ)<X<(150+3σ)≤OL	BL≤(500-3σ)<X	BL≤(500-3σ)<X<(1500+3σ)≤OL	BL≤(500-3σ)<X<(1500+3σ)≤OL	BL≤(250-3σ)<X

1. 2 Test for Heavy Metals

– Lead, Cadmium, Hexavalent Chromium and Mercury Tests according to IEC 62321:2013.

Element	Total Cadmium [mg/kg]	Total Lead [mg/kg]	Total Mercury [mg/kg]	Hexavalent Chromium [-]	Hexavalent Chromium [mg/kg]
Detection Limit	**5**	**5**	**5**	**Δ**	**5**
RoHS Requirements	**100**	**1000**	**1000**	**#**	**1000**
Sample 036	/	357	/	/	/

Note:

1. All Concentrations express in “mg/kg”(milligram per kilogram), mg/kg ~ ppm.
2. “N.D.” = “Not Detected”.
3. Δ =Spot-Test:
   Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;
   (The tested sample should be further verified by boiling-water-extraction method if the spot test result is negative or cannot be confirmed.)
   Boiling-water-extraction:
   Negative = Absence of CrVI coating
   Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02mg/kg with 50 cm^2 sample surface area.
   Storage conditions and production date of the tested sample are unavailable and thus results of Cr(VI) represent status of the sample at the time of testing
4. # = Positive indicates the presence of CrVI on the tested areas.
   Negative indicates the absence of CrVI on the tested areas.
5. “-” = Not regulated

φ sample 031 is glass of electrical and electronic components. The lead content is applications exempted from the restriction

1. 3 Test for Flame retardants

Test Method: With reference to IEC 62321:2008, extracted by toluene and analyzed by Gas Chromatography and Mass Spectrometry (GC-MS). [Reporting Limit: 5mg/kg]

Test Item		Result [mg/kg]			RoHS Requirement [mg/kg]
		Sample 001	Sample 011	Sample 012	
PBBs	Monobromobiphenyl	< 5	< 5	<5	Sum of PBBs < 1000
	Dibromobiphenyl	< 5	<5	<5	
	Tribromobiphenyl	< 5	<5	<5	
	Tetrabromobiphenyl	< 5	<5	<5	
	Pentabromobiphenyl	< 5	<5	<5	
	Hexabromobiphenyl	< 5	<5	<5	
	Heptabromobiphenyl	< 5	<5	<5	
	Octabromobiphenyl	< 5	<5	<5	
	Nonabromobiphenyl	< 5	<5	<5	
	Decabromobiphenyl	< 5	<5	<5	
	Sum of PBBs	< 5	<5	<5	
PBDEs	Monobromodiphenyl Ether	< 5	<5	<5	Sum of PBDEs < 1000
	Dibromodiphenyl Ether	< 5	<5	<5	
	Tribromodiphenyl Ether	< 5	<5	<5	
	Tetrabromodiphenyl Ether	< 5	<5	<5	
	Pentabromodiphenyl Ether	< 5	<5	<5	
	Hexabromodiphenyl Ether	< 5	<5	<5	
	Heptabromodiphenyl Ether	< 5	<5	<5	
	Octabromodiphenyl Ether	< 5	<5	<5	
	Nonabromodiphenyl Ether	< 5	<5	<5	
	Decabromodiphenyl Ether	< 5	<5	<5	
	Sum of PBDEs	< 5	<5	<5	

Note:

1. All Concentrations express in “mg/kg” (milligram per kilogram), mg/kg ~ ppm.
2. “<” denotes less than

Test Item		Result [mg/kg]			RoHS Requirement [mg/kg]
		Sample 016	Sample 017	Sample 024	
PBBs	Monobromobiphenyl	< 5	< 5	<5	Sum of PBBs < 1000
	Dibromobiphenyl	< 5	<5	<5	
	Tribromobiphenyl	< 5	<5	<5	
	Tetrabromobiphenyl	< 5	<5	<5	
	Pentabromobiphenyl	< 5	<5	<5	
	Hexabromobiphenyl	< 5	<5	<5	
	Heptabromobiphenyl	< 5	<5	<5	
	Octabromobiphenyl	< 5	<5	<5	
	Nonabromobiphenyl	< 5	<5	<5	
	Decabromobiphenyl	< 5	<5	<5	
	Sum of PBBs	< 5	<5	<5	
PBDEs	Monobromodiphenyl Ether	< 5	<5	<5	Sum of PBDEs < 1000
	Dibromodiphenyl Ether	< 5	<5	<5	
	Tribromodiphenyl Ether	< 5	<5	<5	
	Tetrabromodiphenyl Ether	< 5	<5	<5	
	Pentabromodiphenyl Ether	< 5	<5	<5	
	Hexabromodiphenyl Ether	< 5	<5	<5	
	Heptabromodiphenyl Ether	< 5	<5	<5	
	Octabromodiphenyl Ether	< 5	<5	<5	
	Nonabromodiphenyl Ether	< 5	<5	<5	
	Decabromodiphenyl Ether	< 5	<5	<5	
	Sum of PBDEs	< 5	<5	<5	

Note:

1. All Concentrations express in “mg/kg” (milligram per kilogram), mg/kg ~ ppm.
2. “<” denotes less than

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Test Item		Result [mg/kg]			RoHS Requirement [mg/kg]
		Sample 028	Sample 029	Sample 030	
PBBs	Monobromobiphenyl	< 5	< 5	<5	Sum of PBBs < 1000
	Dibromobiphenyl	< 5	<5	<5	
	Tribromobiphenyl	< 5	<5	<5	
	Tetrabromobiphenyl	< 5	<5	<5	
	Pentabromobiphenyl	< 5	<5	<5	
	Hexabromobiphenyl	< 5	<5	<5	
	Heptabromobiphenyl	< 5	<5	<5	
	Octabromobiphenyl	< 5	<5	<5	
	Nonabromobiphenyl	< 5	<5	<5	
	Decabromobiphenyl	< 5	<5	<5	
	Sum of PBBs	< 5	<5	<5	
PBDEs	Monobromodiphenyl Ether	< 5	<5	<5	Sum of PBDEs < 1000
	Dibromodiphenyl Ether	< 5	<5	<5	
	Tribromodiphenyl Ether	< 5	<5	<5	
	Tetrabromodiphenyl Ether	< 5	<5	<5	
	Pentabromodiphenyl Ether	< 5	<5	<5	
	Hexabromodiphenyl Ether	< 5	<5	<5	
	Heptabromodiphenyl Ether	< 5	<5	<5	
	Octabromodiphenyl Ether	< 5	<5	<5	
	Nonabromodiphenyl Ether	< 5	<5	<5	
	Decabromodiphenyl Ether	< 5	<5	<5	
	Sum of PBDEs	< 5	<5	<5	

Note:

1. All Concentrations express in “mg/kg” (milligram per kilogram), mg/kg ~ ppm.
2. “<” denotes less than

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Test Item		Result [mg/kg]	RoHS Requirement [mg/kg]
		Sample 035	
PBBs	Monobromobiphenyl	< 5	Sum of PBBs < 1000
	Dibromobiphenyl	< 5	
	Tribromobiphenyl	< 5	
	Tetrabromobiphenyl	< 5	
	Pentabromobiphenyl	< 5	
	Hexabromobiphenyl	< 5	
	Heptabromobiphenyl	< 5	
	Octabromobiphenyl	< 5	
	Nonabromobiphenyl	< 5	
	Decabromobiphenyl	< 5	
	Sum of PBBs	< 5	
PBDEs	Monobromodiphenyl Ether	< 5	Sum of PBDEs < 1000
	Dibromodiphenyl Ether	< 5	
	Tribromodiphenyl Ether	< 5	
	Tetrabromodiphenyl Ether	< 5	
	Pentabromodiphenyl Ether	< 5	
	Hexabromodiphenyl Ether	< 5	
	Heptabromodiphenyl Ether	< 5	
	Octabromodiphenyl Ether	< 5	
	Nonabromodiphenyl Ether	< 5	
	Decabromodiphenyl Ether	< 5	
	Sum of PBDEs	< 5	

Note:

1. All Concentrations express in “mg/kg” (milligram per kilogram), mg/kg ~ ppm.
2. “<” denotes less than

检测
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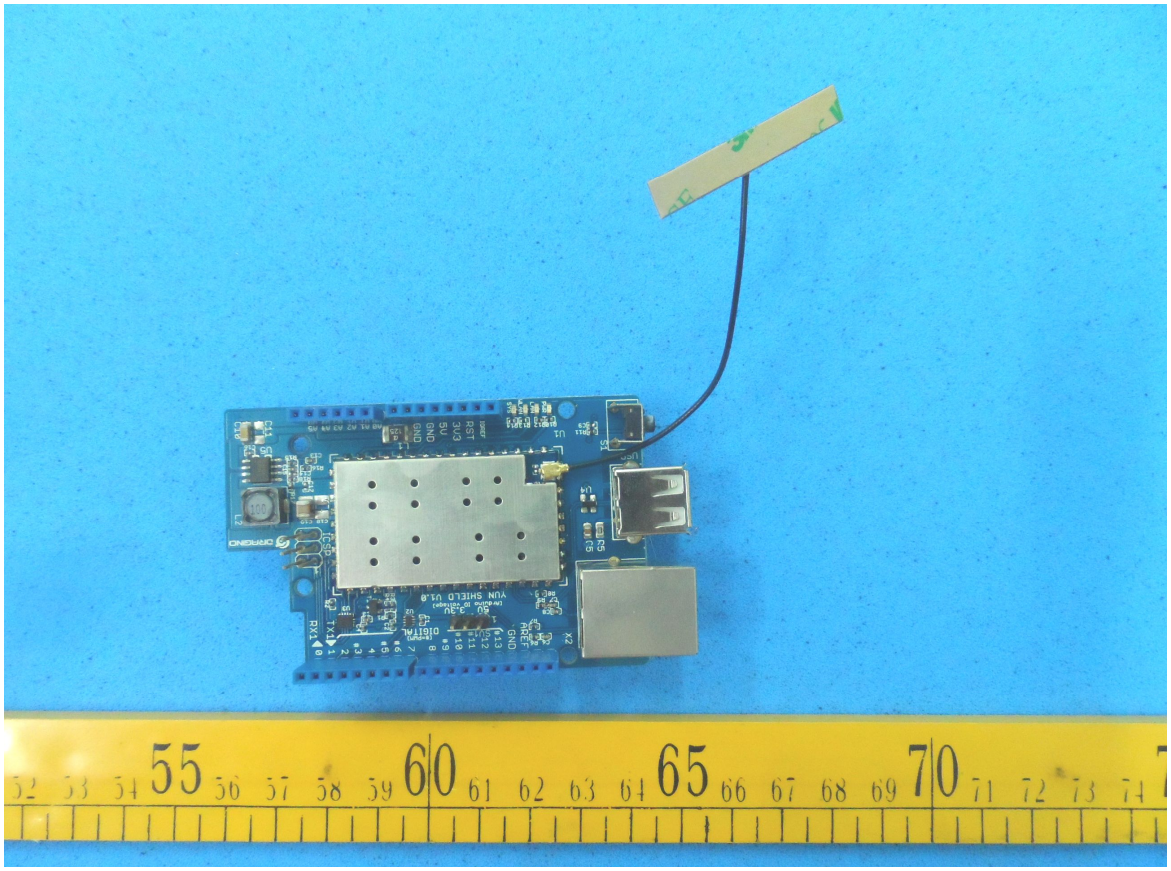
Photo of the Submitted Sample



*** End of Report ***