HYCON 紘康科技

HY2215 Series
Quality Approval Sheet

Table of Contents

1 Statement 3
2 ISO Certificate 4
3 Reliability Test Introduction 5
3.1 Package Reliability Test Flow 5
3.2 Package Reliability Test Plan 6
3.3 Product Reliability Test Flow 7
3.4 Product Reliability Test Plan 7
4 Product Information 8
4.1 Package Reliability Result 8
4.2 Product Reliability Result 8
4.3 Product Storage Condition 9
4.4 Reflow Profile Suggestion 10
4.5 Product Label System 11
5 Green Product 12
5.1 Hazardous Substances Control Item within test report 12
5.2 Restricted Use of Conflict Minerals 13

1 Statement

HYCON Technology Corporation positions ourselves as a leading manufacturer of high precision integrated circuits in analog and digital signal processing applications.

Our quality system is in full accordance with ISO 9001: 2015 procedures. Our products are not only innovative and leading-edge from a design perspective, but they are also, based on our reliability data, exceptionally robust and conform to industrial standards resulted from their high stability. HYCON Technology Corporation strives to produce reliable and high-quality products that meet customers' requirements.

Due to the rising environmental and human rights concerns around the world, the need for environmental protection and hazardous (banned) substance elimination in electronic components and systems is receiving increased attention within the semiconductor and electronics industries. HYCON Technology Corporation asserts the concept of sustainable corporate development and social responsibility and respects international human rights therefore we not only have been devoted to the provision of Green products which are in compliance with Restriction of Hazardous Substances (RoHS) Directive (EU) 2016/293, (EU) 2015/863, 2011/65/EU, Halogen Free (IEC 61249-2-21) and REACH 1907/2006(EC) ANNEX XVII and SVHC (Substance of Very High Concern) under REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) current version of restricted substances and prescribed regulations but also all products supplied to customers are of conflict-free minerals.

If necessary, please contact HYCON Technology Corporation's sales/agents for more information, and we will keep on providing our best support and service to you.

Arch Huang

Senior Director,
Quality Assurance Division.
HYCON TECHNOLOGY CORPORATION

2 ISO Certificate

Audited by creditworthy TÜV SUD Asia Pacific Ltd. TÜV Süddeutschland Group, HYCON Technology Corporation procured the anticipating certificate of ISO 9001: 2015.

HYCON Technology Corporation is certified in the scope of “Design, Manufacturing, Marketing and Service of Integrated Circuits”.

By fulfilling ISO 9001: 2015, it is the very first stage of quality management system of HYCON Technology Corporation. We’re going to continuously practice quality objective, “Ceaseless Quality Improvement”, “Fearless in Confronting Challenges”, “Innovative Thinking” and “Sticking to Commitment” in every products realization and company evolving activities. HYCON Technology Corporation devotes to provide customers, representatives, suppliers with total satisfaction.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

The Certification Body
of TÜV SÜD Asia Pacific TÜV SÜD Group
certifies that

HYCON TECHNOLOGY CORPORATION
5F., No. 172, Sec. 4, Chengde Rd., Taipei City 11167, Taiwan

has established and applies
a Quality Management System for

Design, Manufacture Management,
Marketing and Service of Integrated Circuits

An audit was performed, Report No. 718850414.
Proof has been furnished that the requirements according to

ISO 9001:2015

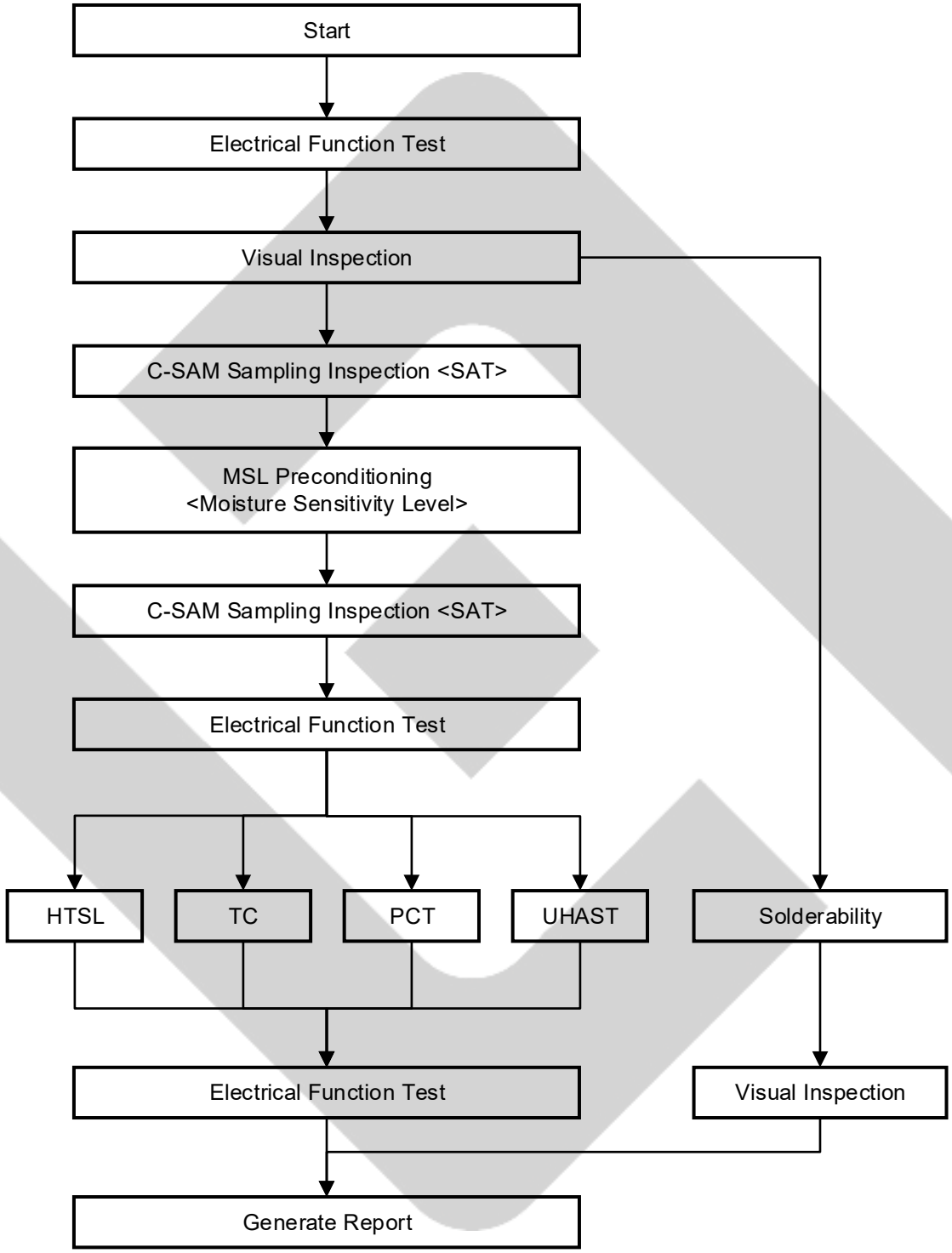
are fulfilled. The certificate is valid from 2020-09-23 until 2023-09-22.
Certificate Registration No.: TUV100 02 1154
2020-09-07

Certification Body
of TÜV SÜD Asia Pacific
TÜV SÜD Group

JAS-ANZ

3 Reliability Test Introduction

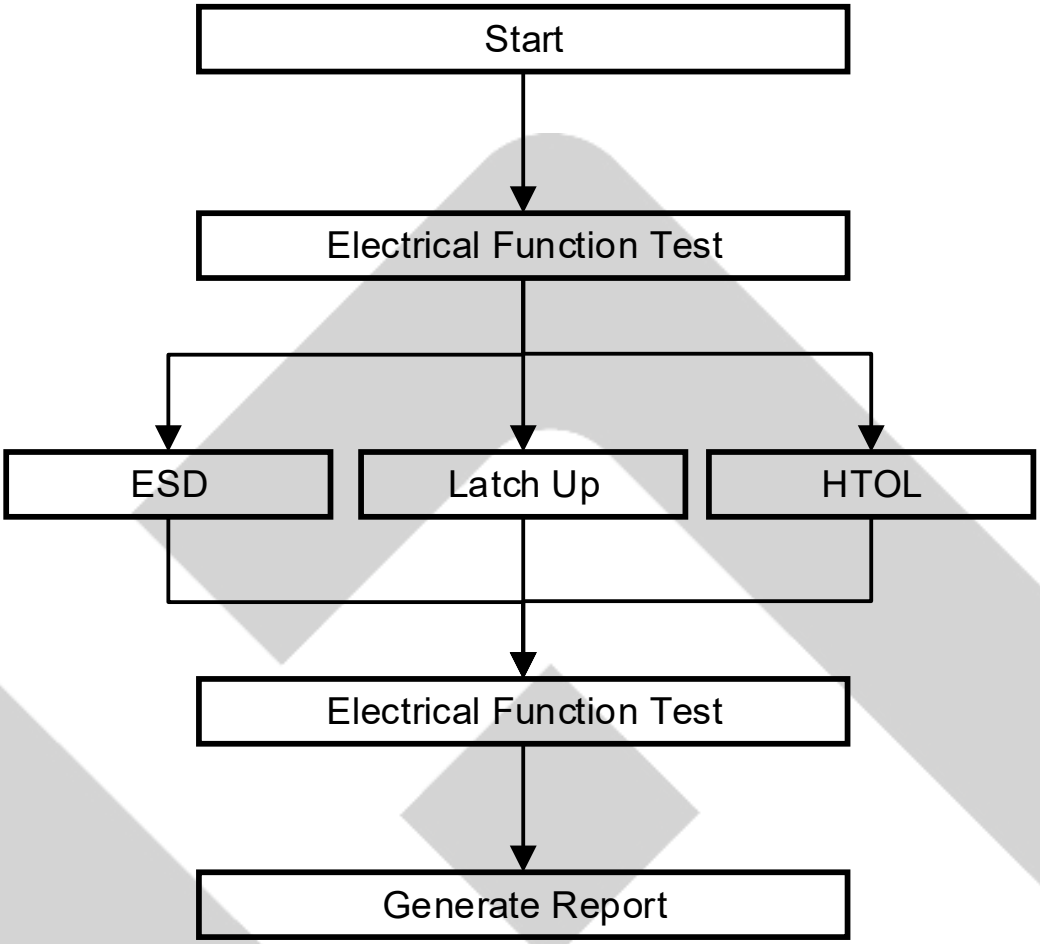
3.1 Package Reliability Test Flow



3.2 Package Reliability Test Plan

Test Item	Reference Document	Test Condition and Readout	Sampling Plan	
			SS/Acc.	LTPD
MSL Preconditioning **(PC)**	JESD22-A113 IPC/JEDEC J-STD-020	Temperature Cycling： -65℃～150℃, 5 cycles Bake：125℃, 24 hrs. Soaking：*(MSL1 or MSL3)* MSL1：85℃, 85%RH, 168 hrs. MSL3：30℃, 60%RH, 192 hrs. Reflow：3 times @ 260℃ Peak	231/0	1%
High Temperature Storage Life **(HTSL)**	JESD22-A103	150℃, 1000 hrs.	25/0	10%
Temperature Cycling **(TC)**	MIL-STD-883 Method 1010 JESD22-A104	-65℃～150℃, 500 cycles	25/0	10%
Pressure Cooker Test **(PCT)**	JESD22-A102	121℃, 100%RH, 2atm, 168hrs.	25/0	10%
High Temperature Accelerated Stress Test **(UHAST)**	JESD22-A118	130℃, 85%RH, 96 hrs.	25/0	10%
Solderability **(SD)**	JESD22-B102	5 ± 0.5 sec.	15/0	15%

3.3 Product Reliability Test Flow



3.4 Product Reliability Test Plan

Test Item	Reference Document	Test Condition and Readout	SS/Acc.
ESD-HBM	MIL-STD-883 Method 3015	It is proceeded until condition we can carry out using test equipment.	3/0
ESD-MM	JESD22-A115		3/0
Latch-Up	JESD78		3/0
High Temperature Operating Life **(HTOL)**	MIL-STD-883 Method 1005 JESD22-A108 JESD85	125℃, 1000 hrs.	77/0 LTPD 3%

4 Product Information

4.1 Package Reliability Result

Model	Type	Pins	Material Composition	Package Reliability					
				MSL	HTSL	TC	PCT	UHAST	SD
HY2215-XWXX	Wafer	-	Green	-	-	-	-	-	-
HY2215-XBXX	SOT23-6	6	Green	3	PASS	PASS	PASS	PASS	PASS

4.2 Product Reliability Result

Test Item	Result
ESD-HBM	Pass ± 4KV
ESD-MM	Pass ± 400V
Latch-Up	Pass ± 200mA
High Temperature Operating Life **(HTOL)**	At 90% Confidence Level λ = 43.43 FIT MTTF = 2,628 years

4.3 Product Storage Condition

4.3.1 Wafer Product

4.3.1.1 The product should be **vacuum sealed in dry pack** and kept in an environmentally controlled area within 15°C～35°C and ≤ 60%RH, and besides, should be used within 6 months.

4.3.1.2 The package assembly process must be finished within 7 days.

4.3.1.3 To reduce the risk of containment or oxidation, the residual wafer product must be kept in Nitrogen (N_2) purge cabinet within 20℃～30℃ or well **vacuum sealed in dry pack** once again.

4.3.2 Dice Product

4.3.2.1 The product should be **vacuum sealed in dry pack** and kept in an environmentally controlled area within 15°C～35°C and ≤ 60%RH, and besides, should be used within 6 months.

4.3.2.2 The package assembly process should be finished within 24 hours.

4.3.2.3 To reduce the risk of containment or oxidation, the residual dices product should be well **vacuum sealed in dry pack**.

4.3.3 Package Product

4.3.3.1 Moisture Classification Level and Floor Life and Baking Condition.(J-STD-033)

Moisture Sensitive Level	Floor Life (out of bag) at Factory Ambient
Level 1	**Unlimited at ≤ 30°C/85% RH**
Level 2	1 year (≤ 30°C/60% RH)
Level 2a	4 weeks (≤ 30°C/60% RH)
Level 3	**168 hours (≤ 30°C/60% RH)**
Level 4	72 hours (≤ 30°C/60% RH)
Level 5	48 hours (≤ 30°C/60% RH)
Level 5a	24 hours (≤ 30°C/60% RH)
Level 6	Mandatory bake before use.

Table 4-1 Reference Conditions for Drying Mounted or Unmounted SMD Packages (User Bake: Floor life begins counting at time = 0 after bake)

Package Body	Level	Bake @ 125 °C +10/-0 °C		Bake @ 90 °C +8/-0 °C ≤5% RH		Bake @ 40 °C +5/-0 °C ≤5% RH	
		Exceeding Floor Life by >72 h	Exceeding Floor Life by ≤72 h	Exceeding Floor Life by >72 h	Exceeding Floor Life by ≤72 h	Exceeding Floor Life by >72 h	Exceeding Floor Life by ≤72 h
Thickness ≤1.4 mm	2	5 hours	3 hours	17 hours	11 hours	8 days	5 days
	2a	7 hours	5 hours	23 hours	13 hours	9 days	7 days
	3	9 hours	7 hours	33 hours	23 hours	13 days	9 days
	4	11 hours	7 hours	37 hours	23 hours	15 days	9 days
	5	12 hours	7 hours	41 hours	24 hours	17 days	10 days
	5a	16 hours	10 hours	54 hours	24 hours	22 days	10 days

4.3.3.2 The product should be **vacuum sealed** and kept in an environmentally controlled area at ≤ 30°C/60% RH, and besides, should be used within 12 months.

4.3.3.3 Floor Life,

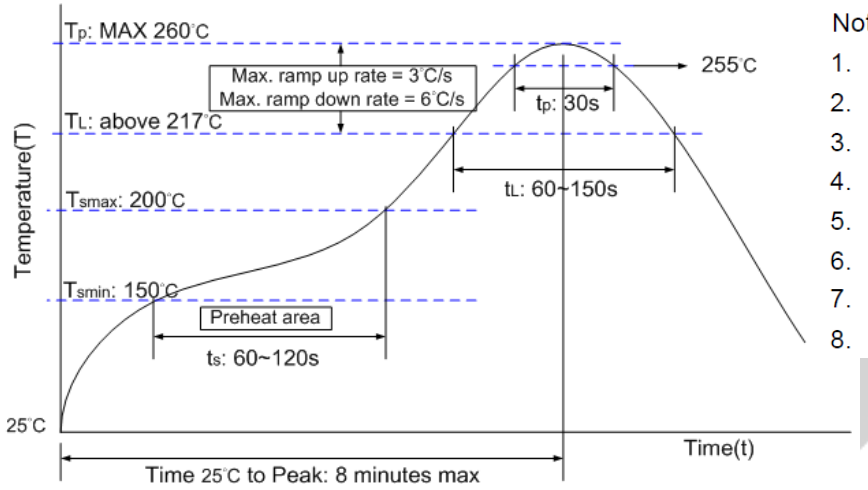
- MSL-1：Unlimited at ≤ 30°C/85% RH.
- MSL-3：The assembly process should be finished within **168 hours**. (≤ 30°C/60% RH).

4.3.3.4 After the floor life has expired (e.g., MSL-3：168 hours) or other conditions (e.g., Bag Damaged) have occurred to indicate excess moisture exposure, the baking condition as below,

- MSL-1：No need to bake.
- MSL-3：
  - Tray packing：125 ºC ± 5ºC, 9 hours.
  - Tape & Reel packing：40 ºC @ ≤ 5%RH Chamber, 13 days.
  - Tube packing：25 ºC @ ≤ 5%RH Chamber, 13 days.

4.4 Reflow Profile Suggestion

HYCON products are all green products (Halogen Free, Pb-Free), the reflow profile suggestion refers to J-STD-020 as below：



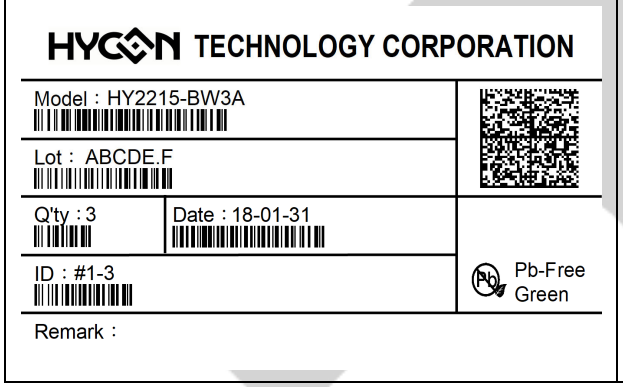
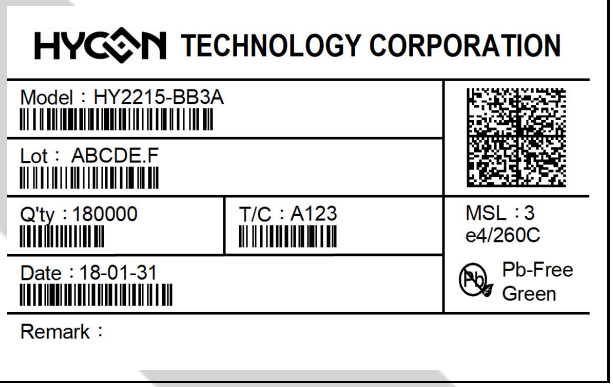
Note:

1. Tsmin: Preheat/Soak Temperature Min
2. Tsmax: Preheat/Soak Temperature Max
3. TL: Liquidous Temperature
4. Tp: Peak Temperature
5. ts: Preheat/Soak Time from Tsmin to Tsmax
6. tL: Time maintained above TL
7. tp: Time within 5℃ of Tp
8. Please refer to J-STD-020 for detail

4.5 Product Label System

In order to improve management and traceability, we upgrade label system and introduce 1D and 2D barcode. The barcode label was launched since 2015 Q4. The change of label shall not affect the product function and specification.

4.5.1 Label Example

Wafer Product	Package Product
	

4.5.2 Symbols of Label

4.5.2.1 The ”Pb-free, Green” mark means it is Green Product that meets RoHS Directive, SVHC under REACH and Halogen free.

4.5.2.2 MSL：Moisture Sensitivity Level.

4.5.2.3 Plating Spec：

e3：Pure Sn

e4：Precious Metal.

4.5.2.4 260C：Peak temperature of Reflow.

4.5.2.5 “MSL”, “Plating SPEC” and “260C” are showed on package product label ONLY.

4.5.2.6 Above data refers to IPC/JEDEC Joint Standard J-STD-609.

5 Green Product

5.1 Hazardous Substances Control Item within test report

No.	Material & Substance	Legal Reference	Threshold	M.D.L
1	***RoHS2.0*** Lead (**Pb**) and its compounds	**EU Directive 2011/65/EU** California Proposition 65 EU REACH Regulation 86/677/EEC Norway's PoHS	1000ppm (0.1wt%)	≦2ppm
2	***RoHS2.0*** Mercury (**Hg**) and its compounds	**EU Directive 2011/65/EU** EU REACH Regulation TCO 5.2	1000ppm (0.1wt%)	≦2ppm
3	***RoHS2.0*** Cadmium (**Cd**) and its compounds	**EU Directive 2011/65/EU** EU REACH Regulation Norway's PoHS EU Directive 98/101/EC	100ppm (0.01wt%)	≦2ppm
4	***RoHS2.0*** Hexavalent chromium (**Cr^{6+}**) compounds	**EU Directive 2011/65/EU** EU REACH Regulation	1000ppm (0.1wt%)	≦2ppm
5	***RoHS2.0*** Polybrominated Biphenyls **(PBBs)**	**EU Directive 2011/65/EU** EU REACH Regulation	1000ppm (0.1wt%)	≦5ppm
6	***RoHS2.0*** Polybrominated Diphenyl Ethers (PBDEs) (**PBDEs**,PBBE,PBDOs,PBBOs, DecaBDE)	**EU Directive 2011/65/EU** EU REACH Regulation	1000ppm (0.1wt%)	≦5ppm
7	***RoHS2.0*** Phthalates, e.g. : ● Di (2-ethylhexyl) Phthalate **(DEHP)** ● Di-n-butyl Phthalate **(DBP)** ● Butyl Benzyl Phthalate **(BBP)** ● Diisobutyl Phthalate **(DIBP)** ● Di-iso-nonyl Phthalate (DINP) ● Diisodecyl phthalate (DIDP) ● Di-n-hexyl Phthalate (DNHP)	**(EU) 2015/863/EU, 2011/65/EU** JIG-101 Ed 4.1 Canadian Environmental Protection Act OSPAR	1000ppm (0.1wt%)	≦50ppm
8	***Halogen Free*** Bromine (Br)	**IEC 61249-2-21** JPCA-ES01 2003	900ppm (0.09 wt%)	≦50ppm
9	***Halogen Free*** Chlorine (Cl)	**IEC 61249-2-21** JPCA-ES01 2003	900ppm (0.09 wt%)	≦50ppm
10	***Halogen Free*** Total Halogen Contained (Cl+Br)	**IEC 61249-2-21** JPCA-ES01 2003	1500 ppm (0.15wt%)	≦50ppm
11	Perfluorooctyl acid (PFOA) and individual salts and esters of PFOA Perfluorooctane Sulphnate (PFOS) related substances,	**2006/122/EC** **(EU) 757/2010** **(EU) 2020/784** Norway PoHS Stockholm Convention SONY GP (SS-00259)	25 ppb (0.0000025wt%)	≦10ppm
12	Halogenated Flame Restardants, e.g.: ● Hexabromocyclododecane (HBCCD) ● TBBP-A	**(EU) 2016/293** Stockholm Convention Norway PoHS JIG-101 Ed 4.1 SONY GP (SS-00259)	Forbidden(N.D)	≦5ppm
13	Ozone Depleting Substances : ● Chlorofluorocarbons (CFCs) ● Hydrochlorofluorocarbons (HCFCs) ● Halons ● Bromodifluoromethane and Isomers (HBFCs) ● Hydrofluorocarbon (HFC) and Perfluorocarbons (PFC) ● Other ozone depleting substances	Montreal Protocol Annex A, B, C JIG-101 Ed 4.1	Forbidden(N.D)	≦1ppm
14	***TSCA*** ● Decabromodiphenyl ether **(DecaBDE)** ● Phenol, isopropylated phosphate (3:1) **[PIP (3:1)]** ● Pentachlorothiophenol **(PCTP)** ● Hexachlorobutadiene **(HCBD)** ● 2,4,6-tris(tert-butyl) phenol **(2,4,6-TTBP)**	Toxic Substances Control Act (TSCA) section 6(h)	● Prohibited ● Prohibited ● 0.1 wt% ● Prohibited ● 0.3 wt%	
15	SVHC (Substance of Very High Concern) under REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) latest version of restricted substances and prescribed regulations Refer to http://echa.europa.eu/candidate-list-table	REACH Regulation (EC)	1000 ppm (0.1 wt%)	

※ Third-Party Test Reports provided by our suppliers and updated ***within 14 days after the original report test date plus 12-months*** are available upon customer request

※ HYCON Environmental Policy : http://www.hycontek.com/en/company-en/1781#tab2

※ The SVHC is ***not contained*** in HYCON Technology Corporation's product based on our supply chain's information.

The ***"not contained"*** means equal or less than the defined threshold in the material. The defined threshold is 0.1 % (1,000 ppm) per weight, unless otherwise specified.

Our products are in compliance with the SVHC under REACH current version of restricted substances and prescribed regulations.

5.2 Restricted Use of Conflict Minerals

HYCON Technology Corporation hereby declares all products supplied to customers are of conflict-free minerals.

Over the past few years, provoking society and environmental problems generated from manufacturing product raw materials and processes has grabbed the public's attention. Minerals from Democratic Republic of the Congo (DRC) even raised serious armed conflicts. Despite HYCON Technology Corporation does not procure minerals directly ourselves, still asserting the concept of sustainable corporate development and social responsibility and respects international human rights. HYCON Technology Corporation is in support of not using conflict minerals and is committed to fully survey supply chain, taking social and environmental responsibilities together with joint vendors, thus hereby declares：

1. Not to purchase conflict minerals from mines in the conflict regions.
2. Demand joint vendors not to use conflict minerals and to disclose the origin of Tantalum (Ta), Tin (Sn), Gold (Au), Tungsten (W), Cobalt (Co), Palladium (Pd) used in products and to provide restricted use of conflict minerals letter of commitment.
3. Demand joint vendors to formally convey the request of Restricted Use of Conflict Minerals to their upstream suppliers.
4. Conflict-Free Minerals Policy：http://www.hycontek.com/en/company-en/1781#tab4