

**HYCON 紘康科技**

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**HY16F Series  
Quality Approval Sheet**

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## 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 ISO9000 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 have been devoted to the provision of Green products and all products supplied to customers are of conflict-free minerals.

Our products are Green Products that are Halogen Free and in compliance with the Prohibited / Restricted Hazardous Substances List and are in compliance with Restriction of Hazardous Substances (RoHS) Directive (EU) 2016/293, (EU) 2015/863, 2011/65/EU 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.

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.



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Sam Sun  
Senior Manager, QC. Dept.,  
Quality Assurance Division.  
HYCON TECHNOLOGY CORPORATION

## 2 ISO Certificate



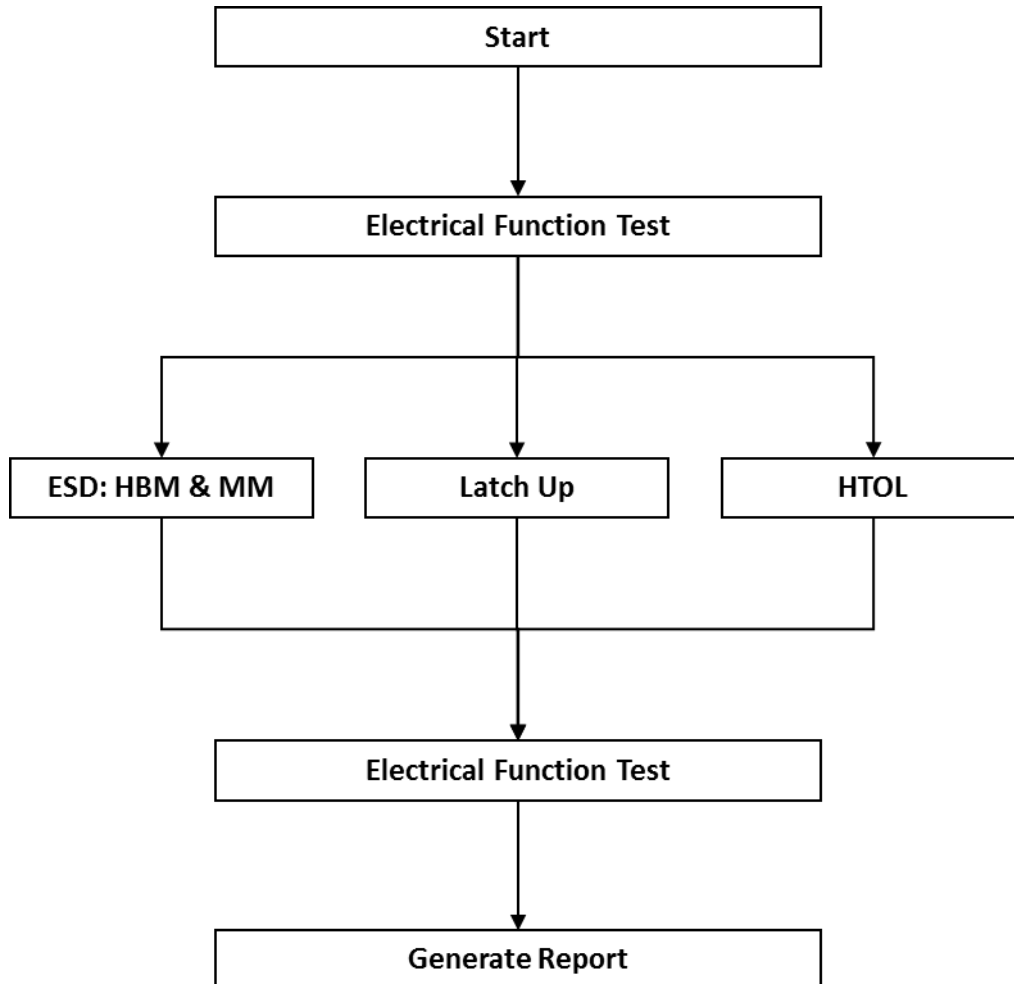
Audited by creditworthy TÜV SUD Asia Pacific Ltd. TÜV Süddeutschland Group, HYCON Technology Corporation procured the anticipating certificate of ISO 9001:2008.

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

By fulfilling ISO 9001:2008, 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.

## 3 Reliability Test Introduction

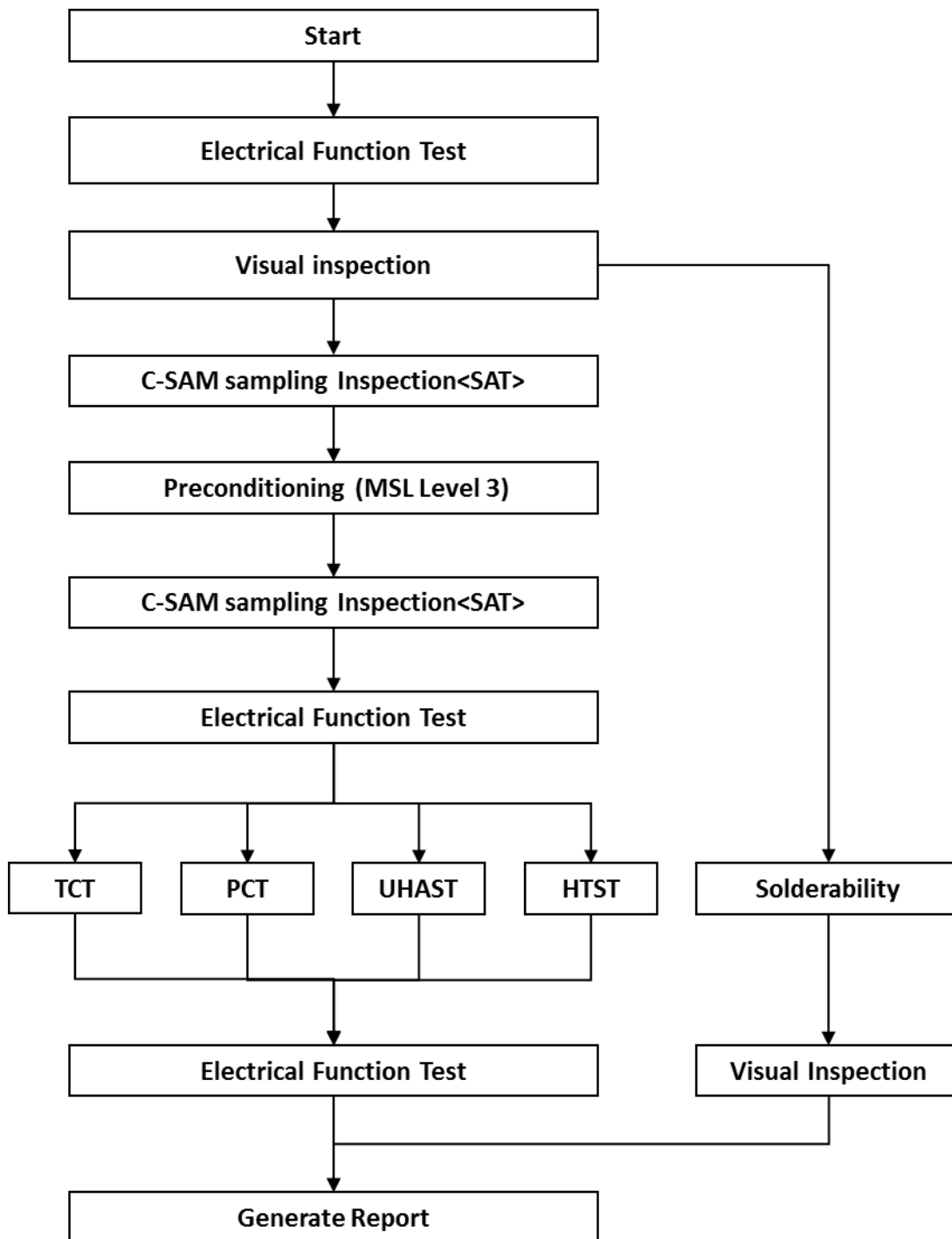
### 3.1 Product Reliability Test Flow



### 3.2 Product Reliability Test Plan

Test Item	Reference Document	Test Qty	Test Readout (hour)	SS/Acc.
ESD-HBM	MIL-STD-883G Method 3015.7 (Class 2)	3	N/A	3/0
ESD-MM	JESD22-A115 (M3)	3	N/A	3/0
Latch up	JESD78 (Class I ; Level A)	3	N/A	3/0
High Temperature Operating Life Test (HTOL)	MIL-STD-883G Method 1005 JESD22-A108	77	500	77/1

## 3.3 Package Reliability Test Flow



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## 3.4 Package Reliability Test Plan

Test Item	Reference Document	Test Qty	Test Readout (hour)	Sampling Plan	
				SS/Acc.	LTPD
Moisture Sensitivity Level Test (MSL)	JESD22-A113 MSL Level 3	410	N/A	410/11	5%
High Temperature Storage Test (HTST)	JESD22-A103	77	500/1000	77/1	5%
Temperature Cycling Test (TCT)	MIL-STD-883G Method 1010.7 JESD22-A104	77	500 Cycles	77/1	5%
High Temperature Accelerated Stress Test (UHAST)	JESD22-A118	45	100	45/0	5%
Pressure Cooker Test (PCT)	JESD22-A102	45	168	45/0	5%
Solderability	JESD22-B102	15	5 ± 0.5 sec	15/0	15%

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## 4 Product Information

### 4.1 Product Identification and Package Reliability Result

Model	Type	Pins	Package Drawing		Material Composition	MSL	Package Reliability
HY16FXXX-D000	Die	-	D	000	Green	-	-
HY16F184-L048	LQFP	48	L	048	Green	MSL-3	Pass
HY16F184-N033	QFN	33	N	033	Green	MSL-3	Pass
HY16F184-N028	QFN	28	N	033	Green	MSL-3	Pass
HY16F187-L048	LQFP	48	L	048	Green	MSL-3	Pass
HY16F187-N033	QFN	33	N	033	Green	MSL-3	Pass
HY16F188-L048	LQFP	48	L	048	Green	MSL-3	Pass
HY16F196-L064	LQFP	64	L	064	Green	MSL-3	Pass
HY16F196-N068	QFN	68	N	068	Green	MSL-3	Pass
HY16F196B-L064	LQFP	64	L	064	Green	MSL-3	Pass
HY16F196B-N068	QFN	68	N	068	Green	MSL-3	Pass
HY16F197-L064	LQFP	64	L	064	Green	MSL-3	Pass
HY16F197-N068	QFN	68	N	068	Green	MSL-3	Pass
HY16F197B-L064	LQFP	64	L	064	Green	MSL-3	Pass
HY16F197B-N068	QFN	68	N	068	Green	MSL-3	Pass
HY16F198-L100	LQFP	100	L	100	Green	MSL-3	Pass
HY16F198-N088	QFN	88	N	088	Green	MSL-3	Pass
HY16F198B-L100	LQFP	100	L	100	Green	MSL-3	Pass
HY16F198B-N088	QFN	88	N	088	Green	MSL-3	Pass

### 4.2 Product ESD performance and MTTF(HTOL) Result

Item	Result
ESD-HBM	Pass +3000V, -4000V
ESD-MM	Pass ± 300V
Latch Up	Pass ± 200mA
High Temperature Operating Life Test (HTOL)	On-Going



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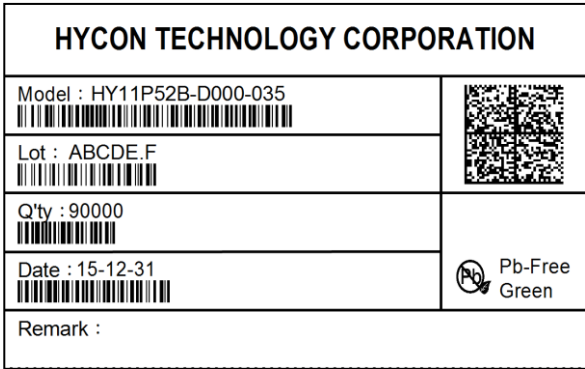

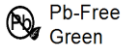
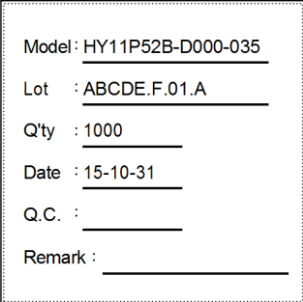
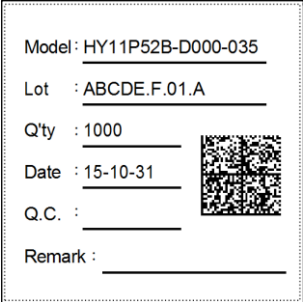

## 4.3 Identification of Product Label

### 4.3.1 Label System Upgrade



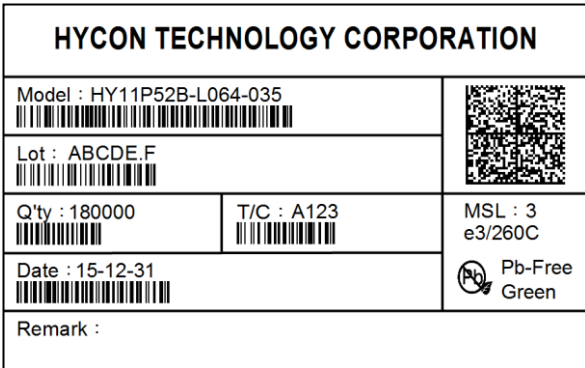

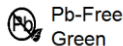
In order to improve management and traceability, we upgrade label system and introduce 1D and 2D bar code. New label was launched since 2015 Q4.

Currently, both labels are standard HYCON formats and the change of label shall not affect the function and specification of the products.

### 4.3.2 Die Type Example

	Original Label	Upgraded Label
Product label on packing bag or inner box	 <p> <b>HYCON</b>             Model : <u>HY11P52B-D000-035</u>            Packing : <u>Tray in Vac</u>            Lot No : <u>ABCDE.F</u>            D/C : _____            Q'TY : <u>90000</u>            Date : <u>2015/12/31</u>            Remark : _____         </p>	 <p> <b>HYCON TECHNOLOGY CORPORATION</b>            Model : <u>HY11P52B-D000-035</u>            Lot : <u>ABCDE.F</u>            Q'ty : <u>90000</u>            Date : <u>15-12-31</u>            Remark : _____         </p> <p>    </p>
Product label on dice tray	 <p>           Model : <u>HY11P52B-D000-035</u>            Lot : <u>ABCDE.F.01.A</u>            Q'ty : <u>1000</u>            Date : <u>15-10-31</u>            Q.C. : _____            Remark : _____         </p>	 <p>           Model : <u>HY11P52B-D000-035</u>            Lot : <u>ABCDE.F.01.A</u>            Q'ty : <u>1000</u>            Date : <u>15-10-31</u>            Q.C. : _____            Remark : _____         </p> <p>  </p>

### 4.3.3 Package Type Example

	Original Label	Upgraded Label
Product label on box	 <p> <b>HYCON</b>             Model : <u>HY11P52B-L064-035</u>            Packing : <u>T&amp;R in Vac</u> MSL:3            Lot No : <u>ABCDE.F</u> e3/260C            D/C : <u>A123</u>            Q'TY : <u>180000</u>            Date : <u>2015/12/31</u>            Remark : _____         </p>	 <p> <b>HYCON TECHNOLOGY CORPORATION</b>            Model : <u>HY11P52B-L064-035</u>            Lot : <u>ABCDE.F</u>            Q'ty : <u>180000</u> T/C : <u>A123</u>            Date : <u>15-12-31</u>            Remark : _____         </p> <p>             MSL : 3            e3/260C   </p>

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### 4.3.4 Symbols of Label

- 4.3.4.1 The "Pb-free, Green" mark means it is Green Product that meets RoHS Directive, SVHC under REACH and Halogen free.
- 4.3.4.2 MSL: Moisture Sensitivity Level.
- 4.3.4.3 Plating Spec:
  - e3: Pure Sn
  - e4: Precious Metal.
- 4.3.4.4 260C: Peak temperature of IR Reflow.
- 4.3.4.5 "MSL", "Plating SPEC" and "260C" are showed on package type of product label ONLY.
- 4.3.4.6 Above data refers to IPC/JEDEC Joint Standard J-STD-609.

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## 5 Green Product

### 5.1 Hazardous Substances List

No.	Material & Substances	Legal Reference	HYCON Threshold	M.D.L.
1	Lead (Pb) and its compounds	2011/65/EU California Proposition 65 Norway PoHS	50 ppm (0.005wt%)	≤2ppm
2	Mercury (Hg) and its compounds	2011/65/EU	Forbidden (N.D.)	≤2ppm
3	Cadmium (Cd) and its compounds	2011/65/EU	Forbidden (N.D.)	≤2ppm
4	Hexavalent chromium (Cr6+) compounds	2011/65/EU	Forbidden (N.D.)	≤2ppm
5	Polybrominated Biphenyls (PBBs)	2011/65/EU	Forbidden (N.D.)	≤5ppm
6	Polybrominated Diphenyl Ethers (PBDEs) (Including Decabromodiphenyl ether [DecaBDE])	2011/65/EU	Forbidden (N.D.)	≤5ppm
7	Phthalates, e.g.: Di (2-ethylhexyl) Phthalate (DEHP), Di-n-butyl Phthalate (DBP), Butyl Benzyl Phthalate (BBP) Diisobutyl Phthalate (BIBP)	(EU) 2015/863, 2011/65/EU JIG-101 Ed 4.1 Canadian Environmental Protection Act OSPAR	Forbidden (N.D.)	≤50ppm
8	Halogenated Flame Restardants, included: Hexabromocyclododecane (HBCDD), TBBP-A	(EU) 2016/293 Stockholm Convention JIG-101 Ed 4.1	Forbidden (N.D.)	≤5ppm
9	Polychlorinated Biphenyls and Derivatives (PCB) Polychlorinated terphenyls and Derivatives (PCT) Polychlorinated Phenols and Derivatives (PCP) Polychlorinated Naphthalenes and Derivatives (PCN)	EU REACH Regulation Stockholm Convention Norway PoHS JIG-101 Ed 4.1	Forbidden (N.D.)	≤5ppm
10	Persistent Organic Pollutants (POPs)	Stockholm Convention	Forbidden (N.D.)	≤10ppm
11	Short-chain chlorinated paraffins (SCCP) Medium-chain chlorinated paraffins (MCCP) Long-chain chlorinated paraffins (LCCP) Chlorinated Paraffins (CP)	ED/67/2008 EU REACH Regulation Norway PoHS	Forbidden (N.D.)	≤5ppm
12	Polyvinyl Chloride (PVC), Vinyl Chloride and PVC blends	JIG-101 Ed 4.1	Forbidden (N.D.)	≤1ppm
13	Dimethyl Fumarate	2009/251/EC	Forbidden (N.D.)	≤0.1ppm
14	Ozone Depleting Substances: Chlorofluorocarbons (CFC), Hydrochlorofluorocarbons (HCFC), Halons, Bromodifluoromethane and Isomers (HBFC), Hydrofluorocarbon(HFC) and Perfluorocarbons (PFC), Other ozone depleting substances	Montreal Protocol Annex A, B, C JIG-101 Ed 4.1	Forbidden (N.D.)	≤1ppm
15	Aliphatic Chlorinated hydrocarbon (CHCs)	94/60/EEC	Forbidden (N.D.)	≤1ppm
16	Perfluorooctane Sulphnate (PFOS) related substances, Perfluorooctyl acid (PFOA) and individual salts and esters of PFOA	2006/122/EC Norway PoHS Stockholm Convention	Forbidden (N.D.)	≤10ppm
17	Bromine (Br)		900 ppm (0.09 wt%)	≤50ppm
18	Chlorine (Cl)	IEC 61249-2-21 JPCA-ES01 2003	900 ppm (0.09 wt%)	≤50ppm
19	Total Halogen Contained (Cl+Br)		1500 ppm (0.15 wt%)	≤50ppm
20	Azo compounds	EU REACH Regulation SONY GP (SS-00259)	Forbidden (N.D.)	≤5ppm
21	Asbestos	EU REACH Regulation JIG-101 Ed 4.1	Forbidden (N.D.)	≤1ppm
22	Red Phosphorus, Yellow Phosphorus	Japan Industrial Safety and Health Law (ISHL)	Forbidden (N.D.)	-
23	Arsenic (As) and Arsenic compounds	EU REACH Regulation 86/677/EEC	300 ppm (0.03 wt%)	≤2ppm
24	Antimony (Sb) and its compounds	JIG-101 Ed 4.1 Basel Convention	900 ppm (0.09 wt%)	≤2ppm
25	Selenium (Se) and its compounds	86/677/EEC 76/769/EEC Basel Convention	1000 ppm (0.1 wt%)	≤2ppm
26	Tellurium (Te) and its compounds	Basel Convention	1000 ppm (0.1 wt%)	≤2ppm
27	Beryllium (Be) and its compounds	Basel Convention	Forbidden (N.D.)	≤2ppm
28	Beryllium Oxide	Japan Industrial Safety and Health Law (ISHL)	100 ppm (0.01 wt%)	≤2ppm
29	Formaldehyde and its compounds	JIG-101 Ed 4.1	Forbidden (N.D.)	≤1ppm
30	Bi- substituted Organic Tin Compounds Tri-substituted Organic Tin Compounds e.g.: Tributyltin (TBT) and Triphenyltin (TPT)	89/677/EEC, 99/51/EEC, 2009/425/EC Japan Chem-sub Law	Forbidden (N.D.)	≤0.03ppm
31	Bisphenol A	JIG-101 Ed 4.1	50 ppm (0.005 wt%)	-
32	Hexachlorocyclohexaneisomers (HCH)	OSPAR	Forbidden (N.D.)	≤1ppm

✘ The definition of criterial is based on the specification of DIRECTIVE REACH 1907/2006(EC), (EU) 2016/293, (EU) 2015/863, 2011/65/EU (RoHS 2.0), 2006/122/EC(PFOS), 2002/61/EEC(AZO Colorants), 2003/03/EEC, IEC 61249-2-21 (Halogen Free), Norway PoHS (Prohibition on Certain Hazardous Substances in consumer Products), JIG-101 Ed 4.1, Japan Chem-sub Law, Japan Industrial Safety and Health Law (ISHL), Basel Convention, Stockholm Convention, OSPAR and etc., and refer to SONY GP (SS-00259), Apple (069-1857-B, Halogen Free) and (069-0135), Dell (A01-00), and Foxconn (ESD-A0RH-004). Test reports provided by our suppliers are available upon request.

### 5.2 Substances of Very High Concern for authorization (SVHC)

- 5.2.1 The substances of Very High Concern (SVHC) are not contained in HYCON Technology Corporation's product based upon the information collected from our supply chain. 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.
- 5.2.2 Our products are in compliance with the SVHC under REACH current version of restricted substances and prescribed regulations.
- 5.2.3 The latest list could be referred to <http://echa.europa.eu/candidate-list-table>

### 5.3 Restricted Use of Conflict Minerals

- 5.3.1 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.