

检测报告

TEST REPORT

申请商(Applicant): 上海雷蒙物联科技有限公司 Shanghai Raymon IOT Technology Co., Ltd
地址(Address): 上海市闵行区申贵路 719 号虹桥绿谷 F 幢 204 室
Room 204, building F, Hongqiao Lvgu, No. 719, Shengui Road, Minhang District, Shanghai

以下的检测样品及样品信息由客户提供并确认:

The following sample(s) was/were submitted and identified on behalf of the client as:

产品名称(Product name): Wi-Fi Module WiFi 模组
型号(Model): X-C13SG
系列型号(Serial model): X-C13SG-1/X-C13SG-0
商标(Trade mark): RaymonIoT
制造商(Manufacturer): 上海雷蒙物联科技有限公司 Shanghai Raymon IOT Technology Co., Ltd
地址(Address): 上海市闵行区申贵路 719 号虹桥绿谷 F 幢 204 室 Room 204, building F, Hongqiao Lvgu, No. 719, Shengui Road, Minhang District, Shanghai

样品接收日期
(Sample Received Date): 2022-08-16
检测期间
(Testing Period): 2022-08-16~2022-08-18

检测要求: 请参考下页;

Test Requirement: Please refer to the following page(s);

检测结果: 请参考下页;

Test Result(s): Please refer to the following page(s);

检测方法: 请参考下页;

Test Method: Please refer to the following page(s);

编制:

银良燕

审核:

张新新

批准:

廖武和

日期:

2022-08-29

检测要求(Test Requirement):

根据客户要求, 依据欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863 对所提交样品中铅(Pb), 镉(Cd), 汞(Hg), 六价铬(Cr(VI)), 多溴联苯(PBBs), 多溴二苯醚(PBDEs), 邻苯二甲酸二(2-乙基己基)酯(DEHP), 邻苯二甲酸丁苄酯(BBP), 邻苯二甲酸二丁酯(DBP), 邻苯二甲酸二异丁酯(DIBP)的含量进行测定。

(As specified by client, to determine the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Bis(2-ethylhexyl) phthalate (DEHP), Benzyl butyl Phthalate (BBP), Dibutyl Phthalate (DBP) and Diisobutyl Phthalate(DIBP)contents in the submitted sample in accordance with RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.)

样品描述(Sample Description) :

No.	Description	No.	Description
1	黑色 PCB Black PCB	2	银色金属屏蔽罩 Silvery metal shield
3	银色金属屏蔽罩-白色带丝印标签 White label of silvery metal shield	4	贴片芯片 SMD chip
5	贴片晶振 SMD crystal	6	贴片电容 SMD capacitor
7	天线接口-金色金属壳 Golden metal shell of antenna interface	8	天线接口-金色金属插针 Golden metal plug pin of antenna interface
9	天线接口-白色塑料底座 White plastic pedestal of antenna interface	/	/

检测结果 (Test Result(s)):

铅(Pb)、镉(Cd)、汞(Hg)、六价铬(Cr(VI))、多溴联苯(PBBs)、多溴联苯醚(PBDEs)

Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers(PBDEs)

1.PCB(X-C13SG_V1.0)

序号 No.	检测项目 Test Items	XRF 扫描结果 XRF Screening Result(mg/kg)	化学测试结果 Chemical Test Result(mg/kg)	结论 Conclusion
1	铅 (Pb)	BL	/	符合 (Pass)
	镉 (Cd)	BL	/	
	汞 (Hg)	BL	/	
	铬(六价铬) Cr(Cr(VI))	BL	/	
	溴 (多溴联苯/多溴二苯醚) Br(PBBs&PBDEs)	IN	N.D.	
2	铅 (Pb)	BL	/	符合 (Pass)
	镉 (Cd)	BL	/	
	汞 (Hg)	BL	/	
	铬(六价铬) Cr(Cr(VI))	BL	/	
	溴 (多溴联苯/多溴二苯醚) Br(PBBs&PBDEs)	/	/	
3	铅 (Pb)	BL	/	符合 (Pass)
	镉 (Cd)	BL	/	
	汞 (Hg)	BL	/	
	铬(六价铬) Cr(Cr(VI))	BL	/	
	溴 (多溴联苯/多溴二苯醚) Br(PBBs&PBDEs)	BL	/	
4	铅 (Pb)	BL	/	符合 (Pass)
	镉 (Cd)	BL	/	
	汞 (Hg)	BL	/	
	铬(六价铬) Cr(Cr(VI))	BL	/	
	溴 (多溴联苯/多溴二苯醚) Br(PBBs&PBDEs)	BL	/	
5	铅 (Pb)	BL	/	符合 (Pass)
	镉 (Cd)	BL	/	
	汞 (Hg)	BL	/	
	铬(六价铬) Cr(Cr(VI))	BL	/	
	溴 (多溴联苯/多溴二苯醚) Br(PBBs&PBDEs)	BL	/	

6	铅 (Pb)	BL	/	符合 (Pass)
	镉 (Cd)	BL	/	
	汞 (Hg)	BL	/	
	铬(六价铬) Cr(Cr(VI))	BL	/	
	溴 (多溴联苯/多溴二苯醚) Br(PBBs&PBDEs)	BL	/	

2.测差异-PCB (X-C13SG-0_V1.0) Difference-PCB (X-C13SG-0_V1.0)

7	铅 (Pb)	BL	/	符合 (Pass)
	镉 (Cd)	BL	/	
	汞 (Hg)	BL	/	
	铬(六价铬) Cr(Cr(VI))	BL	/	
	溴 (多溴联苯/多溴二苯醚) Br(PBBs&PBDEs)	/	/	
8	铅 (Pb)	BL	/	符合 (Pass)
	镉 (Cd)	BL	/	
	汞 (Hg)	BL	/	
	铬(六价铬) Cr(Cr(VI))	BL	/	
	溴 (多溴联苯/多溴二苯醚) Br(PBBs&PBDEs)	/	/	
9	铅 (Pb)	BL	/	符合 (Pass)
	镉 (Cd)	BL	/	
	汞 (Hg)	BL	/	
	铬(六价铬) Cr(Cr(VI))	BL	/	
	溴 (多溴联苯/多溴二苯醚) Br(PBBs&PBDEs)	BL	/	

邻苯二甲酸二(2-乙基己基)酯 (DEHP)、邻苯二甲酸丁苄酯 (BBP)、邻苯二甲酸二丁酯 (DBP) 和
邻苯二甲酸二异丁酯 (DIBP)

Bis(2-ethylhexyl) phthalate (DEHP), Benzyl butyl Phthalate (BBP), Dibutyl Phthalate (DBP) and Diisobutyl Phthalate(DIBP)

检测项目 Test Items	结果 Result (mg/kg)			
	1	3	4	5
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	N.D.	N.D.	N.D.	N.D.
邻苯二甲酸丁苄酯 (BBP)	N.D.	N.D.	N.D.	N.D.
邻苯二甲酸二丁酯 (DBP)	N.D.	N.D.	N.D.	N.D.
邻苯二甲酸二异丁酯 (DIBP)	N.D.	N.D.	N.D.	N.D.
结论 Conclusion	符合(Pass)	符合(Pass)	符合(Pass)	符合(Pass)

检测项目 Test Items	结果 Result (mg/kg)	
	6	9
邻苯二甲酸二(2-乙基己基)酯 (DEHP)	N.D.	N.D.
邻苯二甲酸丁苄酯 (BBP)	N.D.	N.D.
邻苯二甲酸二丁酯 (DBP)	N.D.	N.D.
邻苯二甲酸二异丁酯 (DIBP)	N.D.	N.D.
结论 Conclusion	符合(Pass)	符合(Pass)

- 说明 1.N.D. =未检出(<MDL) MDL =方法检出限
- Note: 1mg/kg = 1ppm = 0.0001% /=未控制或不适用
N.D. = Not Detected (<MDL) MDL = Method Detection Limit
1mg/kg = 1ppm = 0.0001% /=Not Regulated or Not Applicable
2. BL = 在 XRF 扫描限值下 IN = 当扫描结果不确定时需进行化学测试
OL= 当结果超过扫描限值时进行化学测试
BL = Below the XRF screening limit
IN = Further chemical test will be conducted when the screening result inconclusive
OL = Further chemical test will be conducted while the result is above the screening limit.
3. 对于金属样品, 当六价铬的浓度小于 $0.10 \mu\text{g}/\text{cm}^2$ 时, 样品为阴性, 即不含有六价铬;
当六价铬的浓度大于 $0.13 \mu\text{g}/\text{cm}^2$ 时, 样品为阳性, 即含有六价铬;
六价铬浓度介于 $0.10\mu\text{g}/\text{cm}^2$ 及 $0.13\mu\text{g}/\text{cm}^2$ 之间, 无法确定是否检出六价铬, 不可避免因样品的不一致性导致测试的不确定性。
由于未获知样品的存储条件和生产日期, 样品的六价铬检测结果仅能代表检测时样品含六价铬的状态。
For metal samples, The sample is negative for Cr(VI), if the Cr(VI) concentration is less than $0.10 \mu\text{g}/\text{cm}^2$, The coating is considered a non- Cr(VI) based coating;
The sample is positive for Cr(VI), if the Cr(VI) concentration is greater than $0.13 \mu\text{g}/\text{cm}^2$,
The sample coating is considered to contain Cr(VI);
The result is considered to be inconclusive, The Cr(VI) concentration is between the $0.10\mu\text{g}/\text{cm}^2$ and $0.13 \mu\text{g}/\text{cm}^2$, Unavoidable coating variations may influence the determination.
Because the storage condition and production date of the sample are not known, the test results of the sample of hexavalent chromium can only represent the state of hexavalent chromium in the samples tested.
- 备注 1.在测试样品中的 PBBs 和 PBDEs 时, XRF 只能扫描其中的溴元素; 在测试样品中六价铬
- Remark: 时, XRF 只能扫描其中的铬元素。
When conducting the test for PBBs&PBDEs, XRF was introduced to screen Br Exclusively;
When conducting the test for Hexavalent Chromium, XRF was introduced to screen Chromium exclusively.

检测方法 (Test Method) :

先用 IEC 62321-3-1: 2013 方法对样品进行 XRF 扫描筛选, 并对超过筛选限值的样品进一步用化学测试的方法确认样品中的铅(Pb), 镉(Cd), 汞(Hg), 六价铬(Cr(VI)), 多溴联苯(PBBs), 多溴二苯醚(PBDEs) 的含量。

(when screening results exceed the XRF screening limit in IEC 62321-3-1: 2013, further use of chemical methods are required to test the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs) and Polybrominated Diphenyl Ethers(PBDEs))

1.IEC 62321-3-1:2013 对管控元素的 XRF 扫描限值

(XRF screening limits in mg/kg for regulated elements according to IEC 62321-3-1:2013)

检测元素 Test element	IEC 62321-3-1:2013 要求的限值 (mg/kg) Limit of IEC 62321-3-1:2013 (mg/kg)		
	聚合物 Polymers	金属 Metals	合成材料 Composite material
铅 (Pb)	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X$ $< (1500+3\sigma) \leq OL$
镉 (Cd)	$BL \leq (70-3\sigma) < X$ $< (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X$ $< (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
汞 (Hg)	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X$ $< (1500+3\sigma) \leq OL$
铬 (Cr)	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$
溴 (Br)	$BL \leq (300-3\sigma) < X$	/	$BL \leq (250-3\sigma) < X$

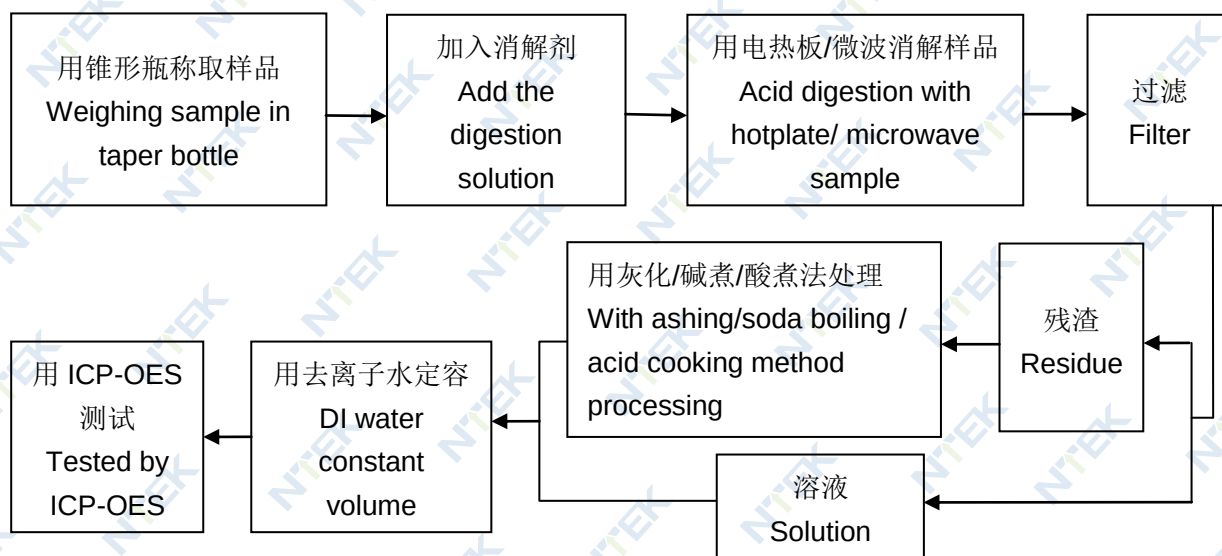
说明(Note): BL=在 XRF 扫描限值以下(BL= Below the XRF screening limit)
OL=在 XRF 扫描限值以上.(OL=Over the XRF screening limit)
X= X 代表一个区域, 落在此区域的值需进一步确认.
(The symbol "X" marks the region where further investigation is necessary.)
3σ= 分析仪器的重复性(The reproducibility of analytical instruments)
LOD= 检测限(Detection limit)

2.化学测试 Chemical Test

检测项目 Test item	检测方法 Test method	检测仪器 Test instrument	方法检出限 MDL	限值 Limit [△]
铅Lead (Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES	10 mg/kg	1000 mg/kg
镉Cadmium (Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES	10 mg/kg	100 mg/kg
汞Mercury (Hg)	IEC 62321-4:2013+AMD1:2017	ICP-OES	10 mg/kg	1000 mg/kg
六价铬 Hexavalent Chromium (Cr (VI))	IEC 62321-7-1:2015 Ed.1.0	UV-Vis	0.10µg/cm ²	1000 mg/kg
	IEC 62321-7-2:2017 Ed.1.0		8 mg/kg	
多溴联苯 Polybrominated Biphenyls(PBBs)	IEC 62321-6:2015 Ed.1.0	GC-MS	100 mg/kg	1000 mg/kg
多溴二苯醚 Polybrominated, Diphenyl Ethers(PBDEs)	IEC 62321-6:2015 Ed.1.0	GC-MS	100 mg/kg	1000 mg/kg
邻苯二甲酸二(2-乙基己基)酯 Bis(2-ethylhexyl) phthalate (DEHP)	IEC 62321-8:2017 Ed.1.0	GC-MS	50 mg/kg	1000 mg/kg
邻苯二甲酸丁苄酯 Benzyl butyl Phthalate (BBP)	IEC 62321-8:2017 Ed.1.0	GC-MS	50 mg/kg	1000 mg/kg
邻苯二甲酸二丁酯 Dibutyl Phthalate (DBP)	IEC 62321-8:2017 Ed.1.0	GC-MS	50 mg/kg	1000 mg/kg
邻苯二甲酸二异丁 Diisobutyl Phthalate (DIBP)	IEC 62321-8:2017 Ed.1.0	GC-MS	50 mg/kg	1000 mg/kg
[△] 限值来源于欧盟 RoHS 指令 2011/65/EU 附录 II 的修正指令(EU) 2015/863 Limit is from RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU				

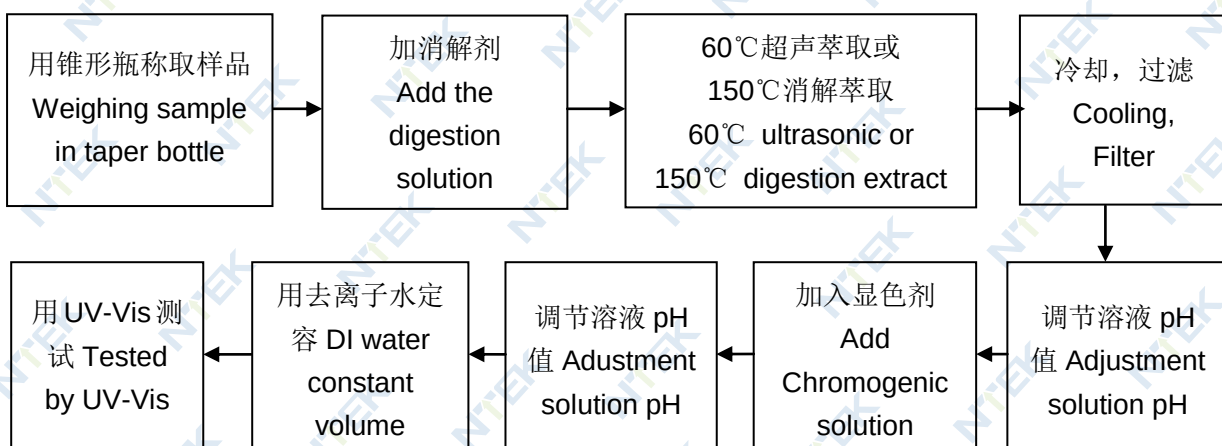
检测流程 (Test Flow) :

1. 铅 Lead(Pb), 镉 Cadmium(Cd), 汞 Mercury (Hg)

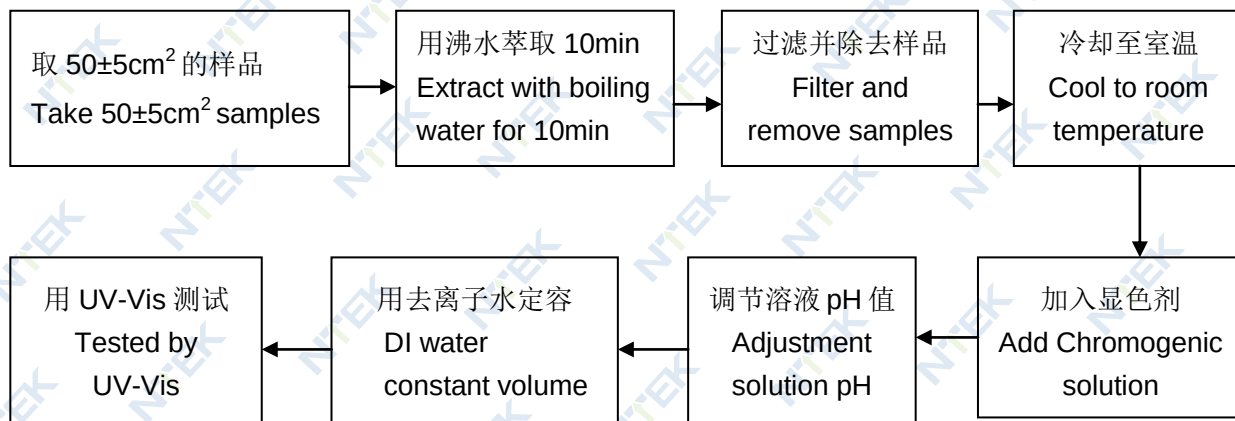


2. 六价铬 Hexavalent Chromium (Cr (VI))

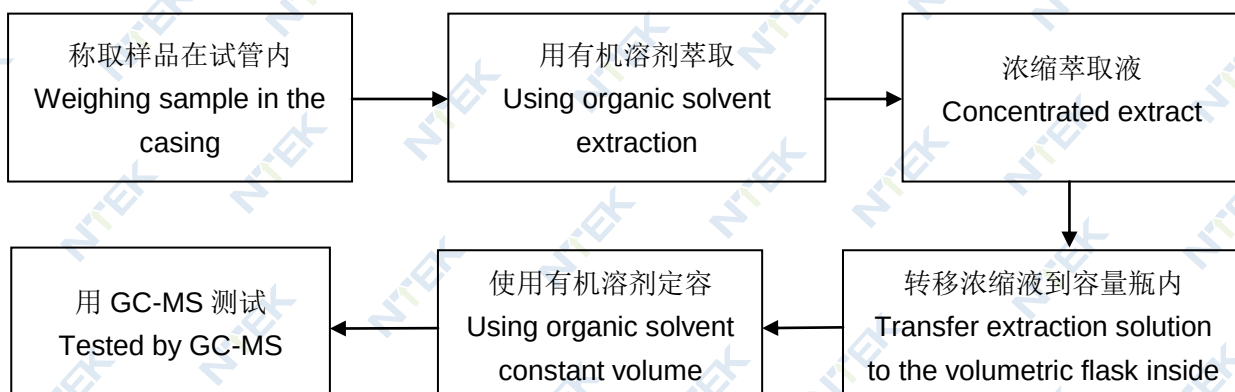
2.1 非金属样品(Non-metal samples)



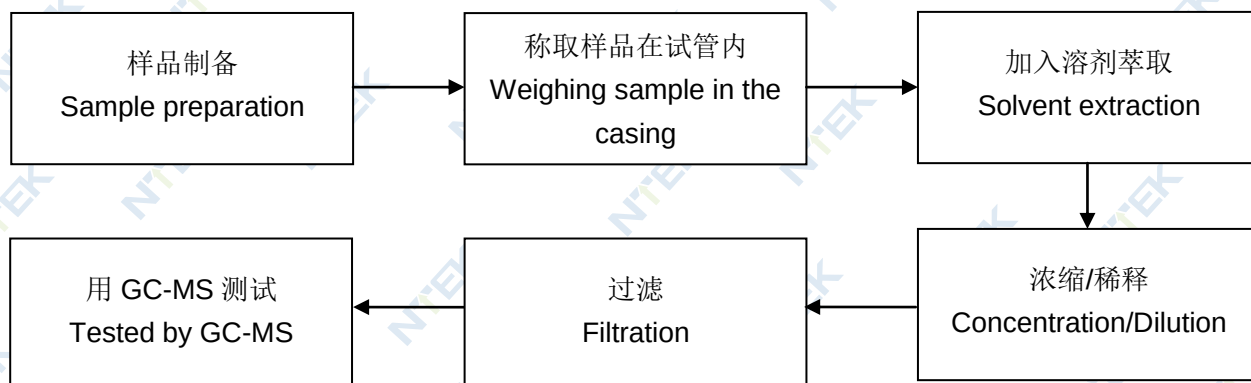
2.2 金属样品 (Metal samples)



3. 多溴联苯/多溴二苯醚 (PBBs/ PBDEs)



4. 邻苯二甲酸盐 (Phthalates)



样品照片(Sample photo):



图(Fig).1



图(Fig).2



图(Fig).3



图(Fig).4



图(Fig).5



图(Fig).6



图(Fig).7



图(Fig).8

****报告结束(End of Report)****

本报告中的数据、结果仅供教学、科研、企业产品研发及企业内部质量控制等目的使用。

The test results or data in this report will be used only for education, scientific research, enterprise product development and internal quality control or other purposes.

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