Customer Complaint 8D Report (客訴 8D 回覆報告)

Prepared by: ■ TAITIEN-SL □TAITIEN-NJ □TAITIEN-SZ □ISOTEMP

□ Preliminary	□ Update	■ Final
初步報告	**更新報告**	**結案報告**
Date：04/17/2017	Date：	Date：04/21/2017

Customer Information： **TAITIEN Information：**

客戶資訊 泰藝資訊

Customer / Contact： 客戶窗口		Sales 業務窗口	
Contact E-mail： 聯絡郵件		RMA Number 泰藝客訴編號	SLQ1704001
Customer VCAR # 客戶客訴編號	-	TAITIEN P/N (Spec #) 泰藝料號(規格)	VT006144000006336020
Customer Part Number： 客戶料號	-	Date Code 產品週期碼	-
Returned Q’ty 退貨數量	10 pcs	Open Date	04/12/2017
Failure ratio 不良率	25%	Received sample Date	04/14/2017
Product Description 產品描述	Voltage Compensated Crystal O.S.C. 61.440000 MHZ (VTEUPLJAND)		
Failure Type 不良形式	□ Incoming 進貨檢驗 ■ Process 製程 □ OQC 成品檢驗 □ Field 市場 □ Unknown 無法得知		
Problem title 客訴標題	產品丟包，Phase noise 無法滿足要求		
Background 詳細情形	產品丟包，Phase noise 無法滿足要求		

※Index 目錄※

D1：Form the team

專案小組

Name 姓名	Function/Title 職稱	Phone 電話	Email 聯絡信箱

D2：Identify Failure Phenomenon

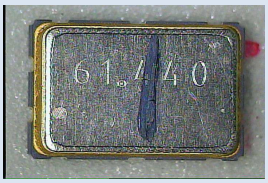
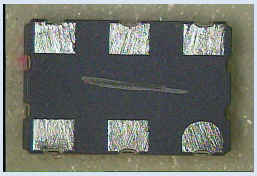
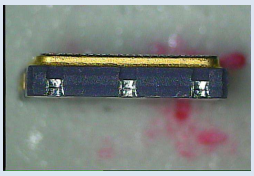
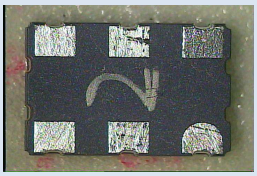
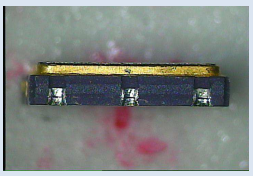
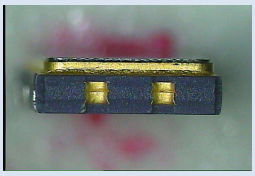
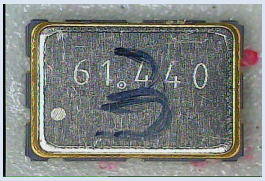
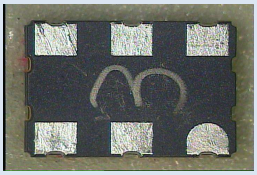
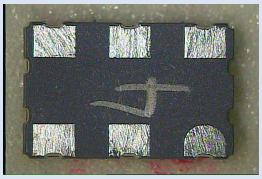
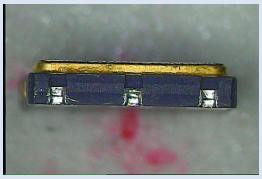
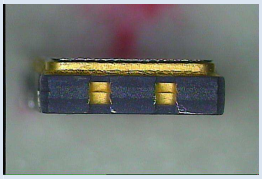
不良現象確認

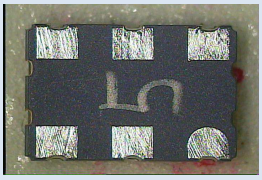
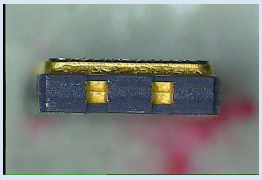
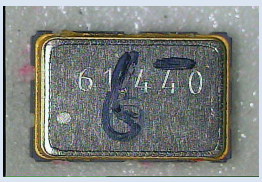
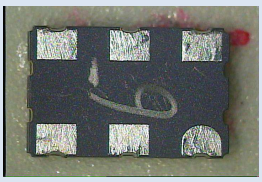
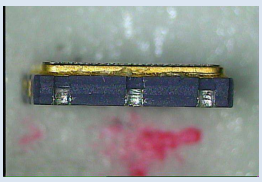
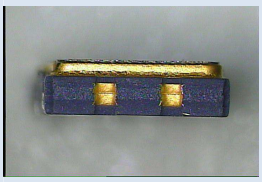
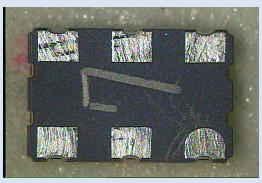
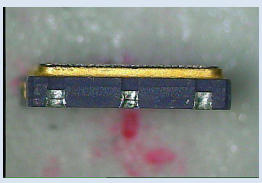
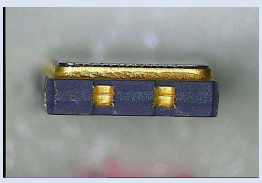
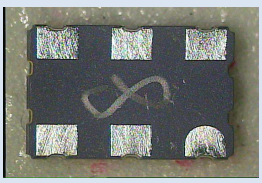
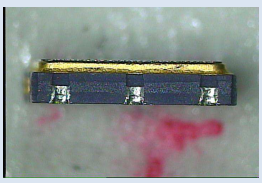
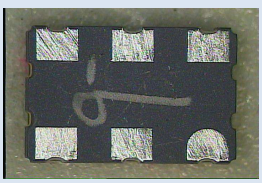
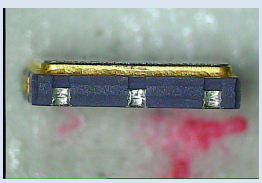
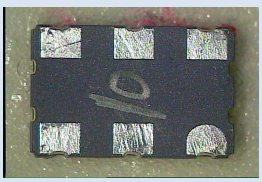
1. Visual inspection

外觀檢查

檢查設備：Nikon microscope

檢查結果：正常, 返回品外觀無異常與破損。(外觀檢視圖如下所示)

編號	正面	背面	長側面	短側面
No.1				
No.2				
No.3				
No.4				

No.5				
No.6				
No.7				
No.8				
No.9				
No.10				

2. Functional Test

除錫前後常溫特性測試

測試設備：Tektronix DPO 7354 Oscilloscope & Agilent 53132A Counter

測試結果：1PCS 返回品頻率超出規格，9PCS 合格

除錫前

NO		Frequency (MHz)	(ppm)	Idd (mA)	Istby (uA)	V_Ver (ppm)		Tri-State	Rise (nSec)	Fall (nSec)	Duty (%)		Start_T (mSec)	Pull_H (ppm)	Pull_L (ppm)
	Max.		20	10	10		5		3	3	55		5		-100
	Min.		-20				-5				45			100	
1	1	61.4395465	-7.382	4.941	1.339	-0.129	0.204	OK	2.062	2.131	49.39	50.61	0.1	154.33	-159.314
	2	61.4395435	-7.43	4.944	1.516	-0.116	0.202	OK	2.166	2.041	48.9	51.1	0.1	154.015	-158.963
	3	61.439542	-7.455	4.945	1.162	-0.108	0.187	OK	2.09	2.066	49.07	50.93	0.1	153.968	-158.947
2	4	61.4403789	6.166	4.998	0.619	-0.092	0.237	OK	2.17	2.186	49.18	50.82	0.1	147.04	-150.039
	5	61.4403742	6.091	4.998	1.314	-0.037	0.14	OK	2.125	2.075	49.03	50.97	0.1	146.644	-149.606
	6	61.440367	5.972	4.998	1.39	-0.042	0.156	OK	2.123	1.997	49.26	50.74	0.1	146.468	-149.546
3	7	61.4391946	-13.11	5.046	0.998	-0.153	0.23	OK	1.987	1.99	49.65	50.35	0.1	159.381	-162.981
	8	61.4391871	-13.23	5.05	1.542	-0.182	0.274	OK	1.99	1.969	49.35	50.65	0.1	159.554	-162.557
	9	61.4392043	-12.95	5.051	2.022	-0.221	0.3	OK	2	1.983	49.46	50.54	0.1	159.682	-162.66

4	10	61.4405345	8.7	5.025	1.908	0.062	0.084	OK	2.098	1.971	49.35	50.65	0.1	155.342	-153.365
	11	61.4404471	7.278	5.027	1.668	-0.086	0.182	OK	2.144	2.056	49.53	50.47	0.1	154.428	-152.413
	12	61.4404413	7.183	5.027	1.832	-0.067	0.22	OK	2.058	2.007	49.35	50.65	0.1	153.425	-152.346
5	13	61.4399009	-1.613	5.022	2.768	-0.257	0.202	OK	2.05	2.033	49.18	50.82	0.1	145.677	-148.222
	14	61.4399013	-1.607	5.019	2.351	-0.16	0.28	OK	2.087	2.044	49.37	50.63	0.1	145.153	-148.092
	15	61.4399057	-1.535	5.02	1.504	-0.201	0.257	OK	1.975	1.937	49.8	50.2	0.1	145.009	-148.117
6	16	61.4403513	5.718	5.008	1.618	0.197	-0.268	OK	2.103	2.025	49.18	50.82	0.1	154.976	-159.78
	17	61.4401207	1.965	5.01	1.529	0.021	0.014	OK	2.112	1.887	49.08	50.92	0.1	153.436	-158.436
	18	61.4400331	0.539	5.011	1.011	-0.053	0.108	OK	2.022	1.847	49.19	50.81	0.1	153.305	-158.454
7	19	61.4399601	-0.649	4.998	1.441	-0.057	0.242	OK	2.071	2.069	49.05	50.95	0.1	149.53	-152.598
	20	61.4399593	-0.663	5.002	1.554	-0.021	-0.09	OK	2.179	2.126	48.78	51.22	0.1	146.499	-152.318
	21	61.4398744	-2.045	5.002	1.971	1.204	1.381	OK	2.157	2.087	49.03	50.97	0.1	144.675	-152.297
8	22	61.4396664	-5.429	4.913	1.706	-0.236	0.299	OK	2.194	2.237	49.39	50.61	0.1	153.362	-152.393
	23	61.439615	-6.266	4.921	2.287	-0.319	0.437	OK	2.087	2.233	49.74	50.26	0.1	153.635	-152.459
	24	61.4396443	-5.789	4.924	1.908	-0.275	0.448	OK	2.071	2.096	49.47	50.53	0.1	153.024	-153.044
9	25	61.4340834	-96.3	5.087	1.984	-0.356	-0.168	OK	2.017	2.062	49.31	50.69	0.1	151.21	-152.641
	26	61.4340881	-96.22	5.086	2.262	-0.386	0.485	OK	1.921	2.007	49.39	50.61	0.1	152.122	-152.853
	27	61.434129	-95.56	5.089	1.592	-0.402	0.355	OK	2.021	2.071	49.44	50.56	0.1	152.798	-152.879
10	28	61.4401118	1.82	5.051	2.654	0.109	-0.018	OK	1.906	1.955	49.23	50.77	0.1	149.815	-152.361
	29	61.4400952	1.549	5.054	2.351	0.083	0.01	OK	1.929	1.944	49.08	50.92	0.1	150.361	-152.193
	30	61.4400929	1.513	5.054	2.186	0.081	0.013	OK	1.907	1.745	49.23	50.77	0.1	150.468	-152.203

除錫後

NO		Frequency (MHz)	(ppm)	Idd (mA)	Istby (uA)	V_Ver (ppm)		Tri-State	Rise (nSec)	Fall (nSec)	Duty (%)		Start_T (mSec)	Pull_H (ppm)	Pull_L (ppm)
	Max.		20	10	10		5		3	3	55		5		-100
	Min.		-20				-5				45			100	
1	1	61.4395326	-7.608	4.947	0.481	-0.526	0.468	OK	2.15	2.117	49.61	50.39	0.1	154.801	-159.469
	2	61.4395238	-7.751	4.95	0.759	-0.318	0.428	OK	2.067	2.217	49.41	50.59	0.1	154.556	-159.102
	3	61.4395186	-7.836	4.959	0.771	-0.276	0.389	OK	2.083	2.087	49.27	50.73	0.1	154.491	-159.106
2	4	61.4403775	6.145	5.004	0.708	-0.149	0.253	OK	2.183	2.1	49.04	50.96	0.1	147.921	-150.611
	5	61.4403871	6.301	5.005	0.746	-0.107	0.23	OK	2.158	2.062	49.31	50.69	0.1	147.736	-150.271
	6	61.4403907	6.358	5.005	1.075	-0.147	0.232	OK	2.308	2.1	49.72	50.28	0.1	147.784	-150.195
3	7	61.4392264	-12.59	5.038	0.809	-0.188	0.279	OK	2.103	2.069	49.02	50.98	0.1	159.808	-162.884
	8	61.4392301	-12.53	5.038	0.784	-0.206	0.233	OK	2.22	2.075	49.02	50.98	0.1	159.838	-162.527
	9	61.4392413	-12.35	5.04	0.885	-0.2	0.279	OK	2.1	2.05	49.46	50.54	0.1	159.831	-162.621
4	10	61.4404414	7.184	5.023	0.557	-0.03	0.479	OK	2.15	2.008	49.39	50.61	0.1	154.828	-152.937
	11	61.4403783	6.157	5.032	0.974	-0.154	0.273	OK	2.093	2.087	49.04	50.96	0.1	154.248	-152.885
	12	61.4403776	6.146	5.03	1.012	-0.172	0.317	OK	2.083	2.167	49.54	50.46	0.1	154.248	-152.532
5	13	61.4399755	-0.399	4.996	0.784	-0.219	0.389	OK	2.117	1.95	49.37	50.63	0.1	144.487	-148.357
	14	61.439942	-0.945	4.994	1.113	-0.35	0.256	OK	2.296	2.057	49.62	50.38	0.1	144.596	-147.823
	15	61.439918	-1.335	4.996	1.239	-0.203	0.52	OK	2.095	2.142	49.26	50.74	0.1	146.743	-147.588
6	16	61.4402942	4.789	4.999	1.012	0.079	-0.006	OK	2.055	1.869	48.93	51.07	0.1	155.156	-159.19
	17	61.4401558	2.535	4.998	1.1	0.048	0.078	OK	2.154	2.04	49.01	50.99	0.1	154.034	-158.611
	18	61.4400984	1.602	4.996	1.062	-0.04	0.117	OK	2.249	2.037	48.89	51.11	0.1	153.864	-158.343
7	19	61.4399552	-0.729	5.004	1.151	-0.012	0.087	OK	2.2	2.125	49.49	50.51	0.1	150.398	-153.343
	20	61.4398922	-1.755	5.007	0.645	-0.095	0.247	OK	2.154	2.119	49.21	50.79	0.1	147.056	-151.872
	21	61.4399038	-1.565	5.009	0.62	-0.162	0.359	OK	2.087	2.125	49.26	50.74	0.1	147.166	-151.441
8	22	61.4396939	-4.982	4.915	0.847	-0.132	0.239	OK	2.304	2.217	49.57	50.43	0.1	153.115	-153.274
	23	61.4396951	-4.963	4.918	1.239	-0.169	0.082	OK	2.233	2.154	49.4	50.6	0.1	153.036	-152.378
	24	61.4396959	-4.949	4.919	0.784	-0.177	0.276	OK	2.183	2.371	49.23	50.77	0.1	153.1	-152.395
9	25	61.434057	-96.73	5.092	1.113	-0.745	-0.15	OK	2.054	2.043	49.39	50.61	0.1	150.938	-152.288
	26	61.4338883	-99.47	5.096	0.948	-0.186	0.425	OK	1.95	1.95	49.21	50.79	0.1	152.1	-151.301
	27	61.433926	-98.86	5.092	1.125	-0.375	0.386	OK	2.05	2.107	49.5	50.5	0.1	152.691	-151.435
10	28	61.4400898	1.462	5.022	1.429	-0.071	0.173	OK	2.08	1.879	49.28	50.72	0.1	150.304	-152.529
	29	61.4400784	1.276	5.027	1.012	-0.092	0.187	OK	2.073	1.937	49.08	50.92	0.1	150.747	-152.333
	30	61.4400765	1.246	5.028	1.062	-0.097	0.19	OK	2.119	1.844	49.04	50.96	0.1	150.683	-152.342

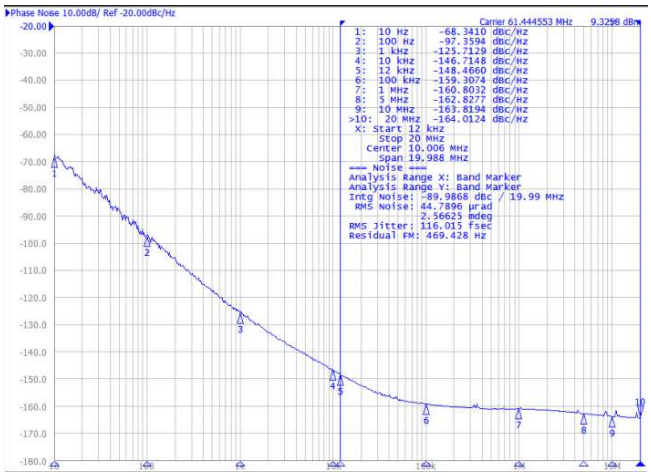
3. Phase Noise test

測試設備：Agilent E5052B

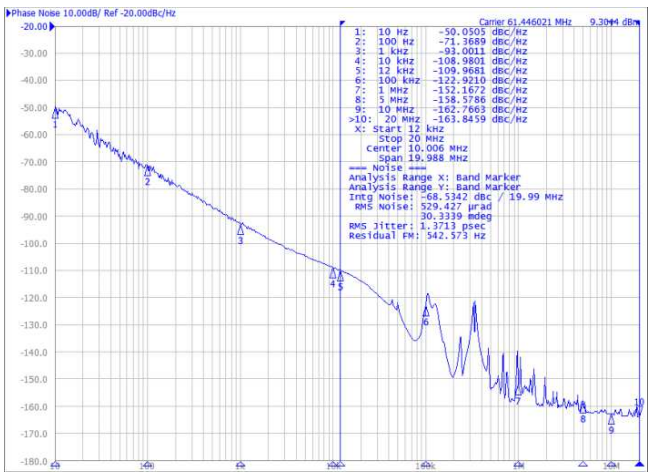
測試結果：

NO	1	2	3	4	5	6	7	8	9	10
Results	OK	NG	NG	NG	NG	NG	NG	NG	NG	OK

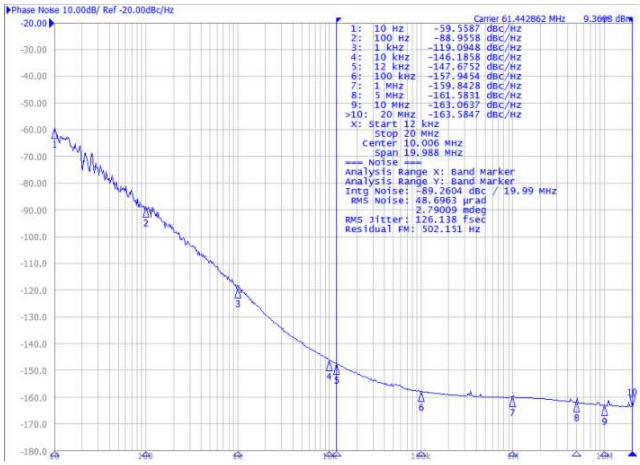
No1



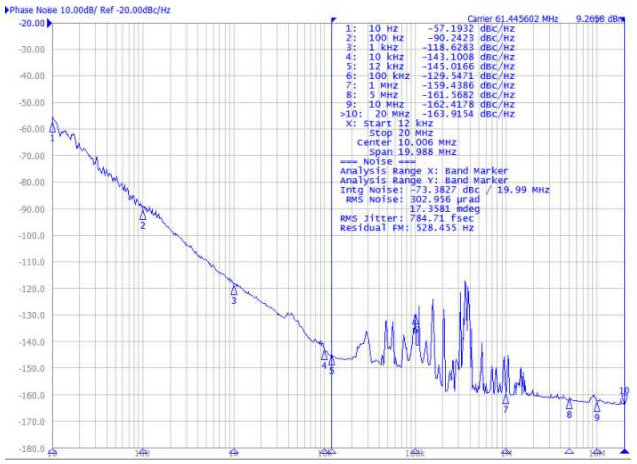
No2



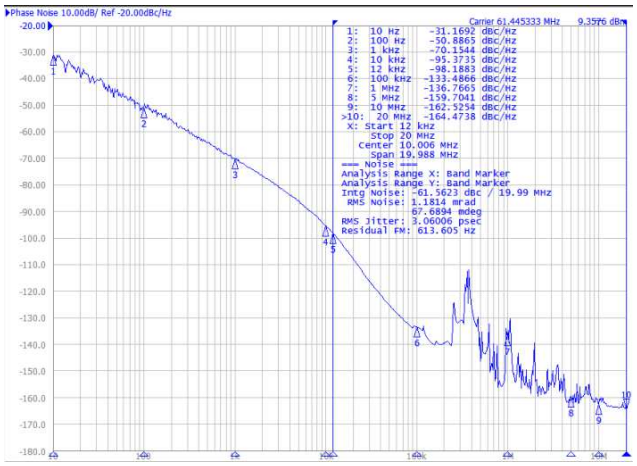
No3



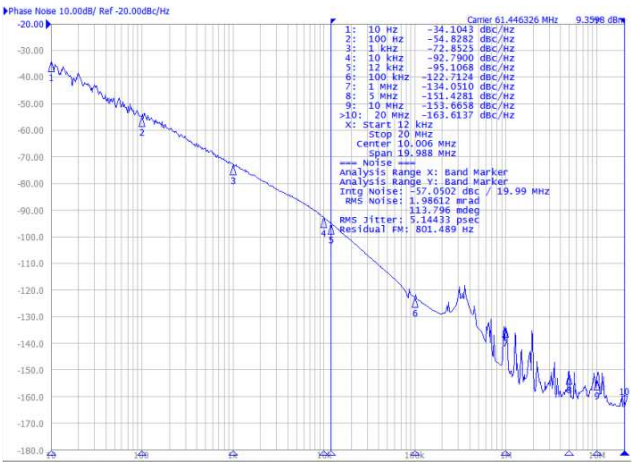
No4



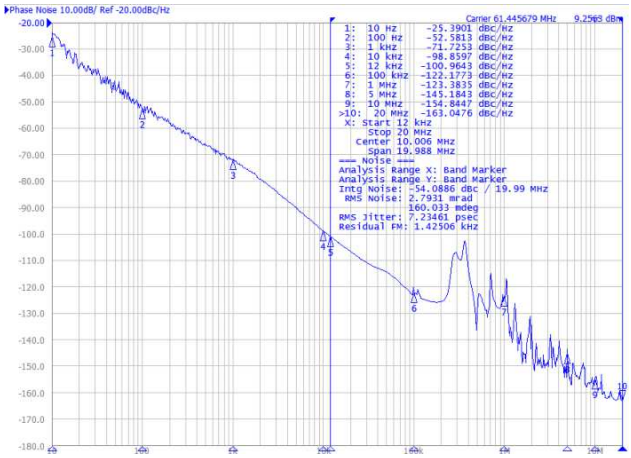
No5



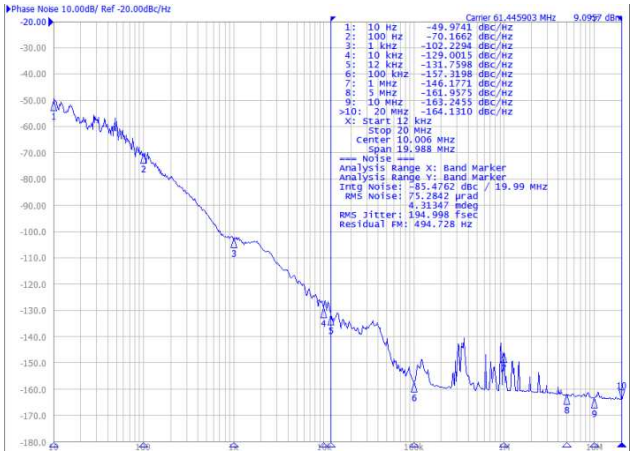
No6



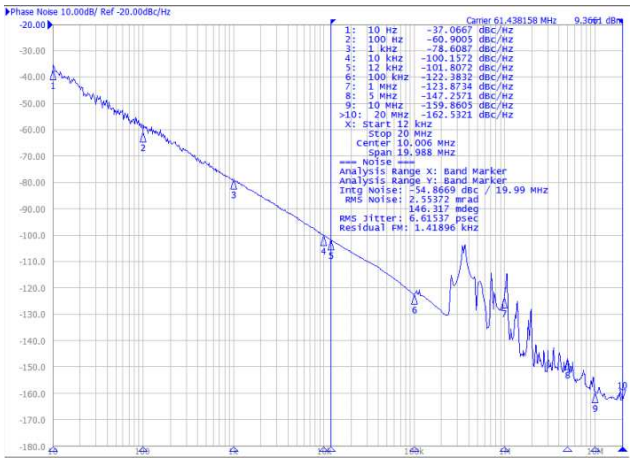
No7



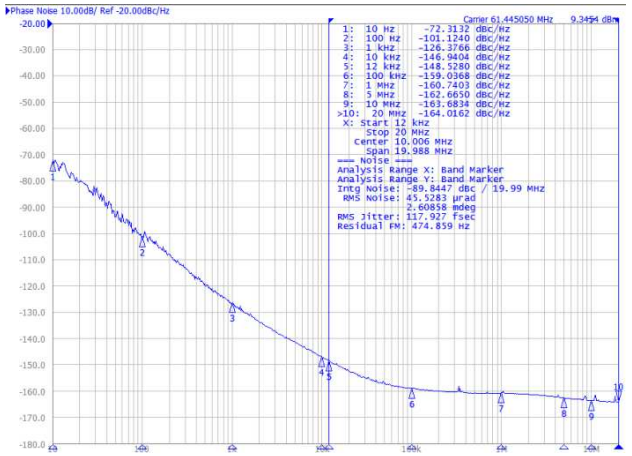
No8



No9



No10



4. Crystal Impedance Test

Test equipment : S&A 250B

Criteria : DLD2≦15 ohms

Test results : 2PCS NG

NO	Crystal	First Failure	FL	FL	RR	DLD2	RLD2	SPDB
			MHz	ppm	Ohms	Ohms	Ohms	dB
	High Limit		61.501440	1,000.0	40.0	15	40.0	
	Low Limit		61.378560	-1,000.0				
1	1	PASS	61.41	-555.64	10.39	0.43	10.54	-5.06
	2	PASS	61.41	-557.01	10.41	0.21	10.53	-5.04
	3	PASS	61.41	-557.26	10.39	0.24	10.54	-5.04
2	4	PASS	61.41	-522.52	18.25	2.82	19.70	-10.66
	5	PASS	61.41	-524.48	18.04	2.75	19.09	-10.75
	6	PASS	61.41	-523.17	19.19	2.62	19.14	-10.41
3	7	PASS	61.40	-574.49	16.80	0.77	17.27	-4.51
	8	PASS	61.40	-574.91	16.78	0.69	17.27	-4.50
	9	PASS	61.40	-575.31	16.79	0.63	17.24	-4.49
4	10	PASS	61.41	-527.63	21.70	3.24	23.95	-14.44
	11	PASS	61.41	-528.22	21.66	1.70	22.97	-14.42
	12	PASS	61.41	-529.15	21.57	1.97	22.89	-14.41
5	13	PASS	61.41	-522.20	13.38	1.84	15.21	-8.55
	14	PASS	61.41	-523.61	13.23	2.34	15.55	-8.63
	15	PASS	61.41	-524.19	13.21	2.54	15.77	-8.63
6	16	PASS	61.41	-557.05	19.82	4.88	20.09	-13.71
	17	PASS	61.41	-553.90	15.69	3.59	18.31	-14.42
	18	PASS	61.41	-556.42	15.06	3.33	17.94	-14.52
7	19	Fail RR High	61.41	-536.95	45.42	19.82	57.19	-15.32
	20	Fail RR High	61.41	-541.29	46.82	15.87	55.32	-9,999.00
	21	Fail RR High	61.41	-541.63	46.76	14.45	52.74	-9,999.00
8	22	PASS	61.41	-535.89	20.39	6.31	26.50	-1.00
	23	PASS	61.41	-537.65	20.01	3.80	23.73	-1.09
	24	PASS	61.41	-538.47	19.98	2.98	22.86	-1.12
9	25	Fail DLD2 High	61.40	-613.13	39.36	28.07	59.86	1.14
	26	Fail RLD2 High	61.40	-621.51	38.08	12.45	42.50	1.02
	27	Fail RLD2 High	61.40	-621.56	37.91	10.91	41.01	0.99
10	28	PASS	61.41	-526.75	9.91	0.44	10.08	-6.18
	29	PASS	61.41	-527.15	9.92	0.43	10.06	-6.17
	30	PASS	61.41	-527.39	9.91	0.43	10.07	-6.18

5. Leakage Test

Test Equipment：PFEIFFER VACUMM RC-260

Criteria：≤2.0*10^{-8} atm. cc / sec

Test results　: These units passed

NO.	測試結果
1	0.3X10-8
2	0.3X10-8
3	0.3X10-8
4	0.3X10-8
5	0.4X10-8
6	0.4X10-8
7	0.3X10-8
8	0.3X10-8
9	0.3X10-8
10	0.3X10-8

D2: Conclusion

初步結論

以下是返回品測試結果統整：

Number #	Test item	Test result
#1	**外觀檢查**	正常, 返回品外觀無異常與破損
#2	**常溫特性測試**	1PCS 返回品頻率超出規格
#3	**Phase Noise**	8PCS 返回品不合格
#4	**Crystal Impedance Test**	2PCS 返回品不合格

D3：Containment Actions

圍堵措施

Action

行動: 該批無庫存

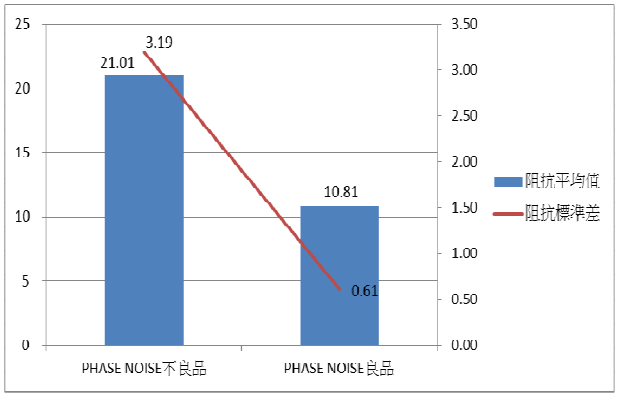
D4：Identify Root Cause

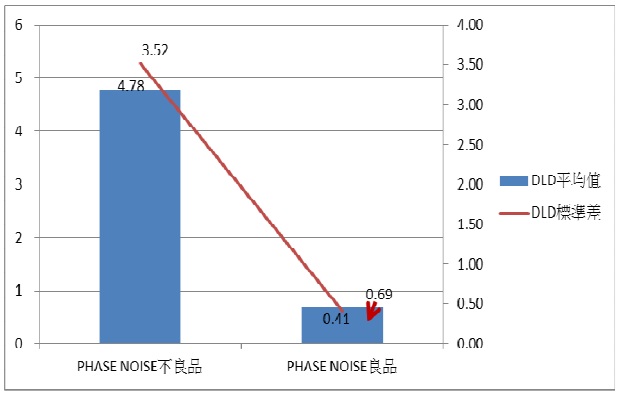
不良原因的確認

Action

行動:

比較 PHASE NOISE 良品與不良品，阻抗與 DLD 平均值，阻抗與 DLD 值較低，PHASE NOISE 較佳





阻抗不良造成 PHASE NOISE 不良

D5：Formulate Corrective Actions

制定與實施矯正措施

Action

行動:

成品篩選措施 ： 加嚴 CI 測試站規格值，

阻抗從 40 ohms 加嚴為 15 ohms，

DLD 從 15 ohms 加嚴為 5 ohms

執行日期 ：03/13/2017

D6：Verification of Corrective Action

矯正措施有效性的驗證

Action

行動: 如上

D7：Prevent the problem

預防問題的再發生

Action

行動: 如上

D8：Congratulate the Team

認同團隊成就

Signature 簽名	Position 職稱	Date 日期
Mr. Jeffrey Huang / 黃昱天	Project Manager	04/21/2017
Ms. Gina Wang/ 王惠錦	QC Manager	04/21/2017
Mr. C.H.Chien/ 簡嘉皇	PE Engineer	04/21/2017

Customer Comments
客戶意見

Customer Comments:

客戶意見

Please notice that without any response from your side within 10 days, Taitien will consider this 8D report approved.

我們謹於此提供報告給貴公司，期望於 10 天內收到貴公司回覆。本案將於接到您的回覆或發出 10 天後結案.

Reviewed By： 接收者	Title： 職稱	Date： 日期