China

FCC - TEST REPORT

Report Number	:	**60.790.16.043.03R01**	Date of Issue	:	September 21, 2016
Model	:	**SP1601, 52097**			
Product Type	:	**Bluetooth Speaker**			
Applicant	:	Blue Square Ltd			
Address	:	Unit 5-10, 9th Floor, Tower 1, Ever Gain Plaza, 88 Container Port Road, Kwai Chung, New Territories, Hong Kong			
Production Facility	:	Blue Square Ltd			
Address	:	Unit 5-10, 9th Floor, Tower 1, Ever Gain Plaza, 88 Container Port Road, Kwai Chung, New Territories, Hong Kong			
Test Result	:	■**Positive** ☐**Negative**			
Total pages including Appendices	:	50			

China

1 Table of Contents

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

2 Description of Equipment Under Test

Description of the Equipment Under Test

Product:	Bluetooth Speaker
Model no.:	SP1601, 52097
FCC ID:	2AJCJ-SP1601
Rating:	1) 6.0VDC (4 x 1.5VDC size “AA” batteries) 2) 3.7VDC (1 x 3.7VDC Rechargeable battery) 3) 5.0VDC (USB port)
Frequency:	2402MHz-2480MHz
Antenna gain:	0 dBi
Number of operated channel:	79
Modulation:	GFSK

China

3 Summary of Test Standards

Test Standards
FCC Part 15 Subpart C 10-1-15 Edition Federal Communications Commission, PART 15 — Radio Frequency Devices, Subpart C — Unintentional Radiators

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

4 Details about the Test Laboratory

Site 1

Company name: TÜV SÜD Hong Kong Ltd.
3/F, West Wing, Lakeside 2,
10 Science Park West Avenue,
Science Park, Shatin, Hong Kong

Site 2

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12&13 Zhiheng Wisdomland Business Park,
Nantou Checkpoint Road 2,
Shenzhen 518052, P.R.China
FCC Registration Number: 502708

Emission Tests	
Test Item	Test Site
FCC Part 15 Subpart C	
FCC Title 47 Part 15.205, 15.209 & 15.247(d) Spurious Radiated Emission	Site 2
FCC Title 47 Part 15.207 Conduct Emission	Site 2
FCC Title 47 Part 15.247(a)(1) 20dB & 99% Bandwidth	Site 2
FCC Title 47 Part 15.247(b) Peak Output Power	Site 2
FCC Title 47 Part 2.1051 & 15.247(d) Spurious Emissions at Antenna Terminals	Site 2
FCC Title 47 Part 15.247(d) 100kHz Bandwidth of band edges	Site 2
FCC Title 47 Part 15.247(a)(1) Minimum Number of Hopping Frequencies	Site 2
FCC Title 47 Part 15.247(a)(1) Minimum Hopping Channel Carrier Frequency Separation	Site 2
FCC Title 47 Part 15.247(a)(1) Average Time of Occupancy	Site 2
FCC Title 47 Part 15.203 & 15.247(b) Antenna Requirement	Site 2

China

4.1 Test Equipment Site List

Radiated emission Test – Site 2

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	15-July-17
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	15-July-17
Horn Antenna	Rohde & Schwarz	HF907	102294	15-July-17
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	15-July-17
3m Semi-anechoic chamber	TDK	9X6X6	----	29-May-19

20dB & 99% Bandwidth, Peak Output Power, Spurious Emissions at Antenna Terminals, 100kHz Bandwidth of band edges, Min. No. of Hopping Frequencies, Min. Hopping Channel Carrier Frequency Separation and Average Time of Occupancy – Site 2

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Generator	Rohde & Schwarz	SMB100A	108272	15-July-17
Signal Analyzer	Rohde & Schwarz	FSV40	101030	15-July-17
Vector Signal Generator	Rohde & Schwarz	SMU 200A	105324	15-July-17
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157	101226/100851	15-July-17

Conducted emission Test – Site 2

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	15-July-17
LISN	Rohde & Schwarz	ENV4200	100249	15-July-17
LISN	Rohde & Schwarz	ENV216	100326	15-July-17
ISN	Rohde & Schwarz	ENY81	100177	15-July-17
ISN	Rohde & Schwarz	ENY81-CAT6	101664	15-July-17
High Voltage Probe	Rohde & Schwarz	TK9420(VT9420)	9420-58	15-July-17
RF Current Probe	Rohde & Schwarz	EZ-17	100816	15-July-17

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

4.2 Measurement System Uncertainty

Measurement System Uncertainty Emissions

System Measurement Uncertainty	
Items	**Extended Uncertainty**
Uncertainty for Radiated Emission in 3m chamber 9kHz-30MHz	4.54dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.83dB; Vertical: 4.91dB;
Uncertainty for Radiated Emission in 3m chamber 1000MHz-25000MHz	Horizontal: 4.89dB; Vertical: 4.88dB;
Uncertainty for Conducted RF test	2.04dB
Uncertainty for Conducted Emission 150kHz-30MHz	3.50dB

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

5 Summary of Test Results

Emission Tests				
FCC Part 15 Subpart C				
Test Condition	Pages	Test Result		
		Pass	Fail	N/A
FCC Title 47 Part 15.205, 15.209 & 15.247(d) Spurious Radiated Emission	10-15	☒	☐	☐
FCC Title 47 Part 15.207 Conduct Emission	16-17	☒	☐	☐
FCC Title 47 Part 15.247(a)(2) 6dB & 99% Bandwidth	18-20	☒	☐	☐
FCC Title 47 Part 15.247(b) Peak Output Power	21-23	☒	☐	☐
FCC Title 47 Part 2.1051 & 15.247(d) Spurious Emissions at Antenna Terminals	24-26	☒	☐	☐
FCC Title 47 Part 15.247(d) 100kHz Bandwidth of band edges	27-30	☒	☐	☐
FCC Title 47 Part 15.247(a)(1) Min. No. of Hopping Frequencies	31	☒	☐	☐
FCC Title 47 Part 15.247(a)(1) Min. of Hopping Channel Carrier Frequency Separation	32	☒	☐	☐
FCC Title 47 Part 15.247(a)(1) Average Time of Occupancy	33	☒	☐	☐
FCC Title 47 Part 15.203 & 15.247(b) Antenna Requirement	34	☒	☐	☐

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

6 General Remarks

Remarks

Client informs that the model 52097 has the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction, with Bluetooth Speaker, SP1601. The difference lies only on different buyer of the different models. (Client's confirmation letter shown at appendix C)

EMC tests were performed on model: SP1601

SUMMARY:

- All tests according to the regulations cited on page 5 were

■ - Performed

☐ - **Not** Performed

- The Equipment Under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: July 7, 2016

Testing Start Date: July 8, 2016

Testing End Date: September 9, 2016

- TÜV SÜD HONG KONG LTD. -

Reviewed by: Prepared by:

TSENG Chi Kit	CHAN Kwong Ngai
EMC Project Engineer	EMC Test Engineer

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

7 Emission Test Results

7.1 Spurious Radiated Emission

EUT: SP1601
Op Condition: Operated, TX Mode (2402MHz)
Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Horizontal
Comment: 3.7VDC
Remark: 9kHz to 25GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
59.423	32.92	40	-7.08	Quasi Peak
176.847	37.88	43.5	-5.62	Quasi Peak
232.783	36.55	46	-9.45	Quasi Peak
528.680	27.33	46	-18.67	Quasi Peak
1004.330	32.09	74	-41.91	Peak
1004.330	22.46	54	-31.54	Average
1245.400	27.78	74	-46.22	Peak
1245.400	19.44	54	-34.56	Average
4804.000	42.18	74	-31.82	Peak
4804.000	30.53	54	-23.47	Average
7206.000	37.12	74	-36.88	Peak
7206.000	26.98	54	-27.02	Average
12010.000	40.07	74	-33.93	Peak
12010.000	29.05	54	-24.95	Average

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

Spurious Radiated Emission

EUT: SP1601
Op Condition: Operated, TX Mode (2402MHz)
Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Vertical
Comment: 3.7VDC
Remark: 9kHz to 25GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
59.423	28.29	40	-11.71	Quasi Peak
176.847	37.37	43.5	-6.13	Quasi Peak
232.783	29.63	46	-16.37	Quasi Peak
528.680	26.92	46	-19.08	Quasi Peak
1004.330	26.39	74	-47.61	Peak
1004.330	19.47	54	-34.53	Average
1245.400	30.41	74	-43.59	Peak
1245.400	22.29	54	-31.71	Average
4804.000	38.30	74	-35.70	Peak
4804.000	26.81	54	-27.19	Average
7206.000	41.46	74	-32.54	Peak
7206.000	29.03	54	-24.97	Average
12010.000	42.38	74	-31.62	Peak
12010.000	31.66	54	-22.34	Average

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

Spurious Radiated Emission

EUT: SP1601
Op Condition: Operated, TX Mode (2441MHz)
Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Horizontal
Comment: 3.7VDC
Remark: 9kHz to 25GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
45.573	28.31	40	-11.69	Quasi Peak
58.668	29.48	40	-10.52	Quasi Peak
179.111	37.36	43.5	-6.14	Quasi Peak
534.400	26.84	46	-19.16	Quasi Peak
1004.133	30.48	74	-43.52	Peak
1004.133	21.34	54	-32.66	Average
1757.800	31.22	74	-42.78	Peak
1757.800	21.85	54	-32.15	Average
4882.000	43.30	74	-30.70	Peak
4882.000	30.31	54	-23.69	Average
7323.000	40.15	74	-44.90	Peak
7323.000	29.10	54	24.90	Average
12205.000	41.82	74	-32.18	Peak
12205.000	30.27	54	-23.73	Average

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

Spurious Radiated Emission

EUT: SP1601
Op Condition: Operated, TX Mode (2441MHz)
Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Vertical
Comment: 3.7VDC
Remark: 9kHz to 25GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
45.573	29.2	40	-10.80	Quasi Peak
58.668	30.04	40	-9.96	Quasi Peak
179.111	36.91	43.5	-6.59	Quasi Peak
534.400	27.33	46	-18.67	Quasi Peak
1004.133	32.59	74	-41.41	Peak
1004.133	22.82	54	-31.18	Average
1757.800	36.17	74	-37.83	Peak
1757.800	26.35	54	-27.65	Average
4882.000	40.27	74	-33.73	Peak
4882.000	30.12	54	-23.88	Average
7323.000	39.19	74	-44.59	Peak
7323.000	29.41	54	24.59	Average
12205.000	42.57	74	-31.43	Peak
12205.000	30.79	54	-23.21	Average

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

Spurious Radiated Emission

EUT: SP1601
Op Condition: Operated, TX Mode (2480MHz)
Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Horizontal
Comment: 3.7VDC
Remark: 9kHz to 25GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
59.315	33.14	40	-6.86	Quasi Peak
176.793	33.58	40	-6.42	Quasi Peak
229.227	35.19	43.5	-8.31	Quasi Peak
706.244	25.87	46	-20.13	Quasi Peak
1006.331	33.10	74	-40.90	Peak
1006.331	23.57	54	-30.43	Average
1248.665	28.56	74	-45.44	Peak
1248.665	20.19	54	-33.81	Average
4960.000	41.78	74	-32.22	Peak
4960.000	30.34	54	-23.66	Average
7440.000	40.26	74	-44.92	Peak
7440.000	29.08	54	24.92	Average
12400.000	43.62	74	-30.38	Peak
12400.000	30.73	54	-23.27	Average

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

Spurious Radiated Emission

EUT: SP1601
Op Condition: Operated, TX Mode (2480MHz)
Test Specification: FCC15.205, 15.209 & 15.247(d) Antenna: Vertical
Comment: 3.7VDC
Remark: 9kHz to 25GHz

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
59.315	32.84	40	-7.16	Quasi Peak
176.793	33.25	40	-6.75	Quasi Peak
229.227	34.93	43.5	-8.57	Quasi Peak
706.244	25.92	46	-20.08	Quasi Peak
1006.331	30.95	74	-43.05	Peak
1006.331	21.96	54	-32.04	Average
1248.665	32.00	74	-42.00	Peak
1248.665	22.48	54	-31.52	Average
4960.000	40.75	74	-33.25	Peak
4960.000	29.22	54	-24.78	Average
7440.000	40.61	74	-44.99	Peak
7440.000	29.01	54	24.99	Average
12400.000	43.86	74	-30.14	Peak
12400.000	31.51	54	-22.49	Average

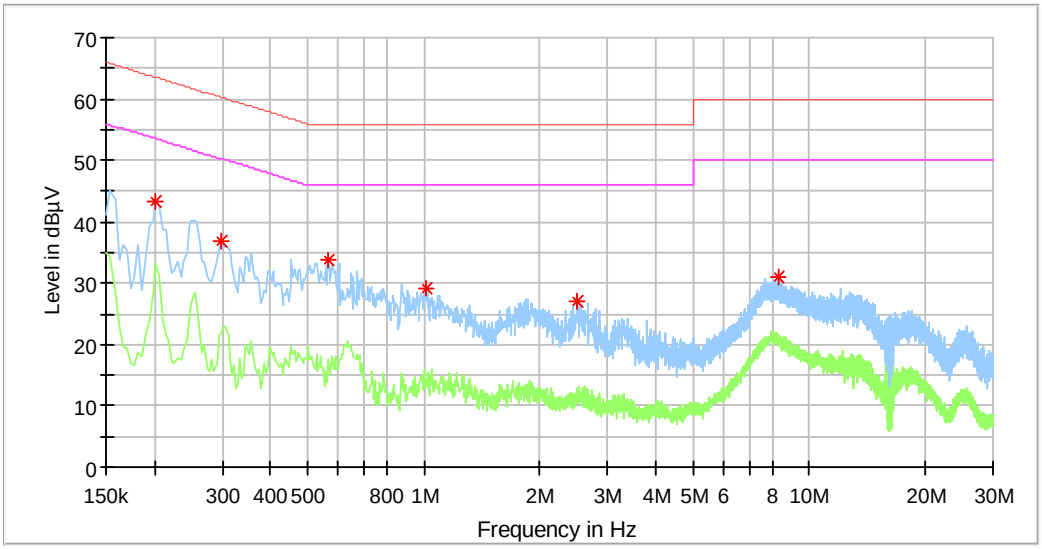
TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

7.2 Conducted Emission

EUT: SP1601
Op Condition: Normal Link
Test Specification: AC Mains, L Line
Comment: 120VAC, 60Hz (From external adaptor)

Test Result
☒ Passed
☐ Not Passed



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)
0.202000	43.22	---	63.53	-20.31
0.298000	36.92	---	60.30	-23.38
0.566000	33.73	---	56.00	-22.27
1.014000	29.28	---	56.00	-26.72
2.502000	27.00	---	56.00	-29.00
8.326000	31.14	---	60.00	-28.86

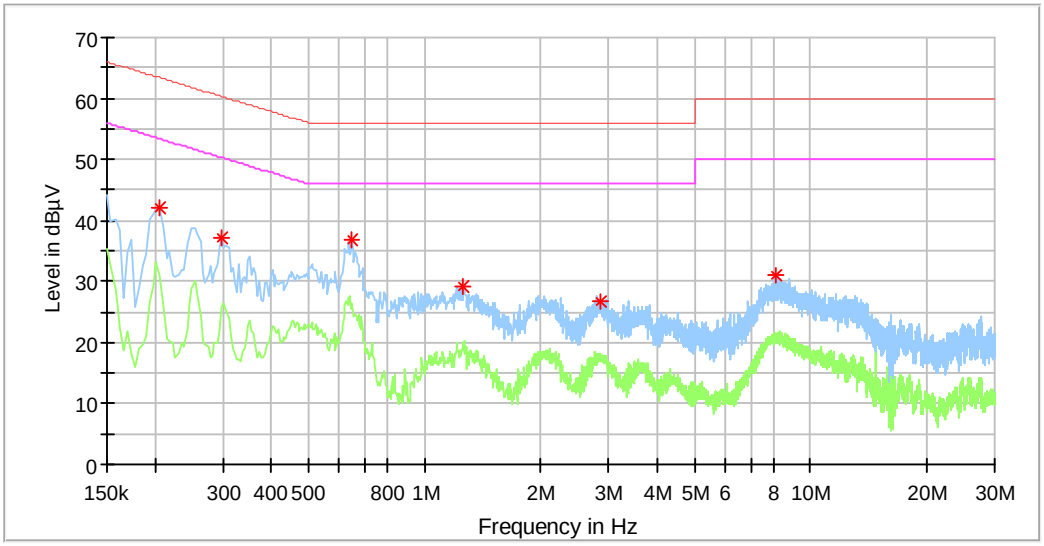
TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

Conducted Emission

EUT: SP1601
Op Condition: Normal Link
Test Specification: AC Mains, N Line
Comment: 120VAC, 60Hz (From external adaptor)

Test Result
☒ Passed
☐ Not Passed



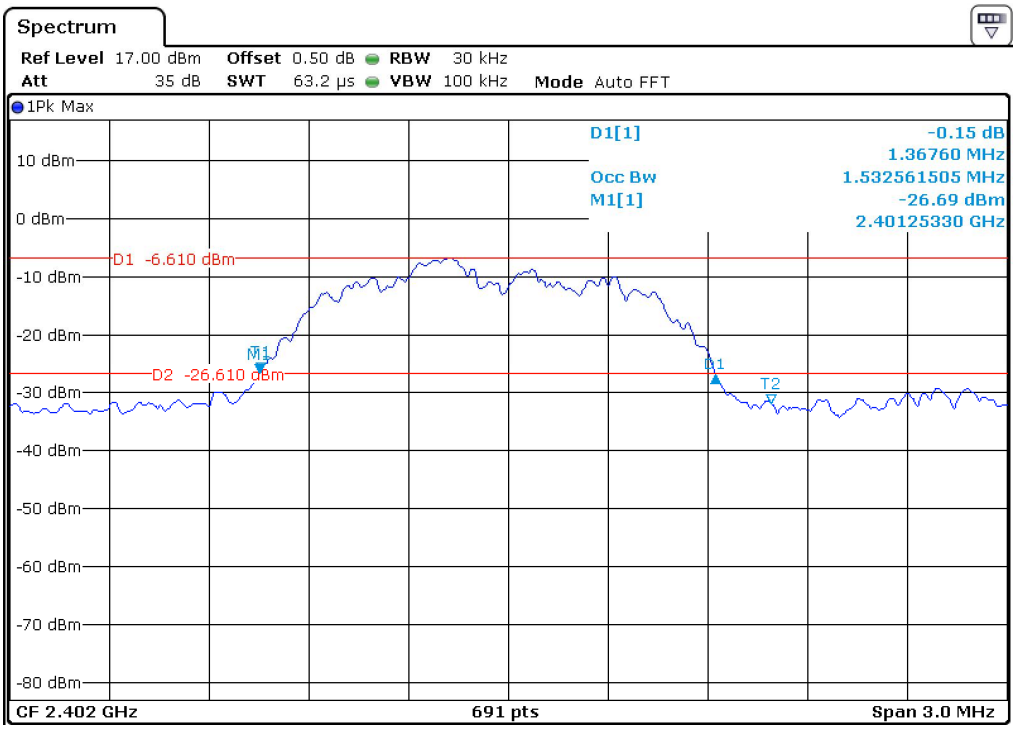
Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)
0.206000	42.18	---	63.37	-21.18
0.298000	37.21	---	60.30	-23.09
0.650000	36.94	---	56.00	-19.06
1.254000	29.19	---	56.00	-26.81
2.866000	26.78	---	56.00	-29.22
8.146000	30.93	---	60.00	-29.07

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

7.3 20dB & 99% Bandwidth

EUT:	SP1601
Op Condition:	Operated, TX Mode (2402MHz)
Test Specification:	FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
Comment:	3.7VDC

Test Result
☒ Passed
☐ Not Passed



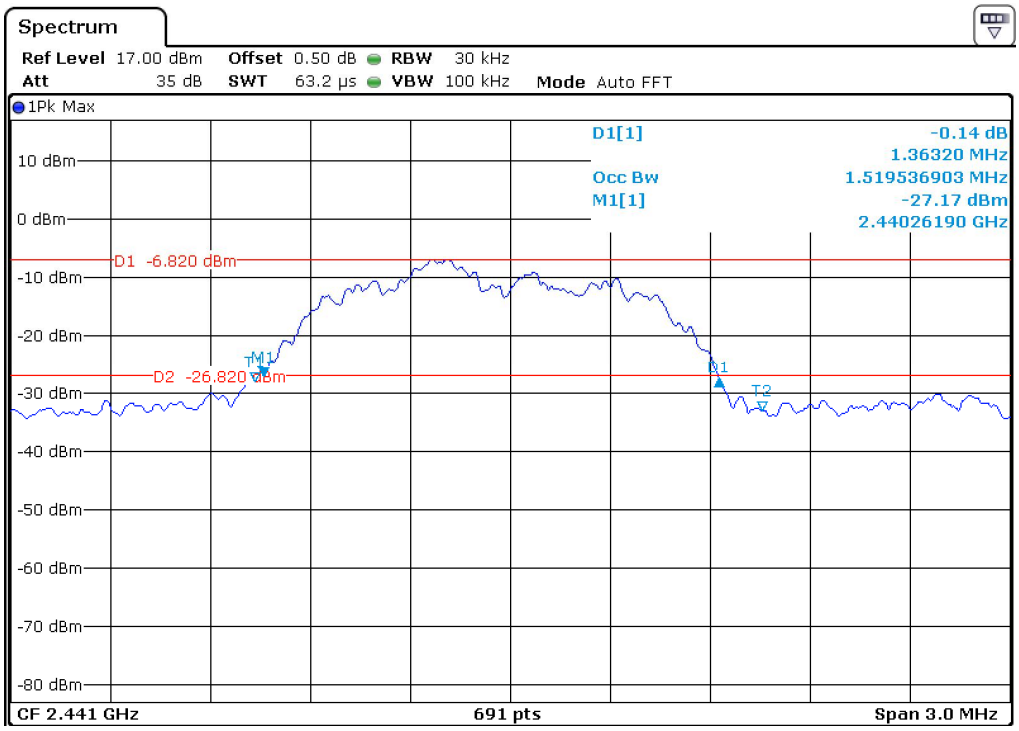
20dB bandwidth	99% bandwidth
1384.900 kHz	1450.007 kHz

China

20dB & 99% Bandwidth

EUT:	SP1601
Op Condition:	Operated, TX Mode (2441MHz)
Test Specification:	FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
Comment:	3.6VDC

Test Result
☒ Passed
☐ Not Passed



20dB bandwidth	99% bandwidth
1363.200 kHz	1519.537 kHz

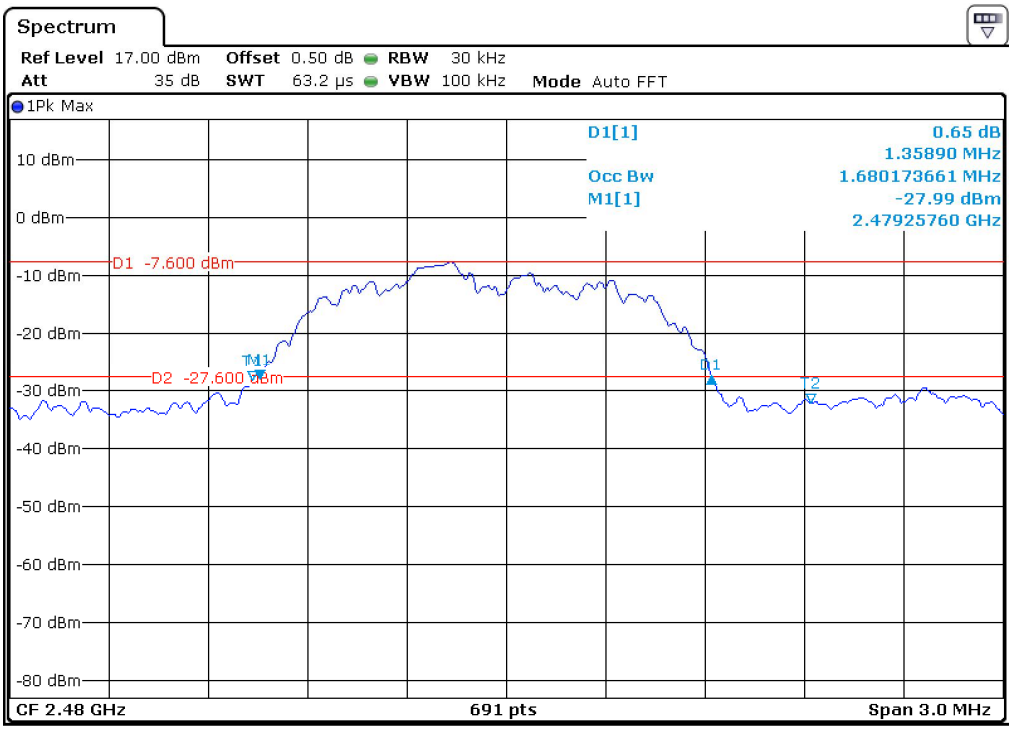
TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

20dB & 99% Bandwidth

EUT: SP1601
Op Condition: Operated, TX Mode (2480MHz)
Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



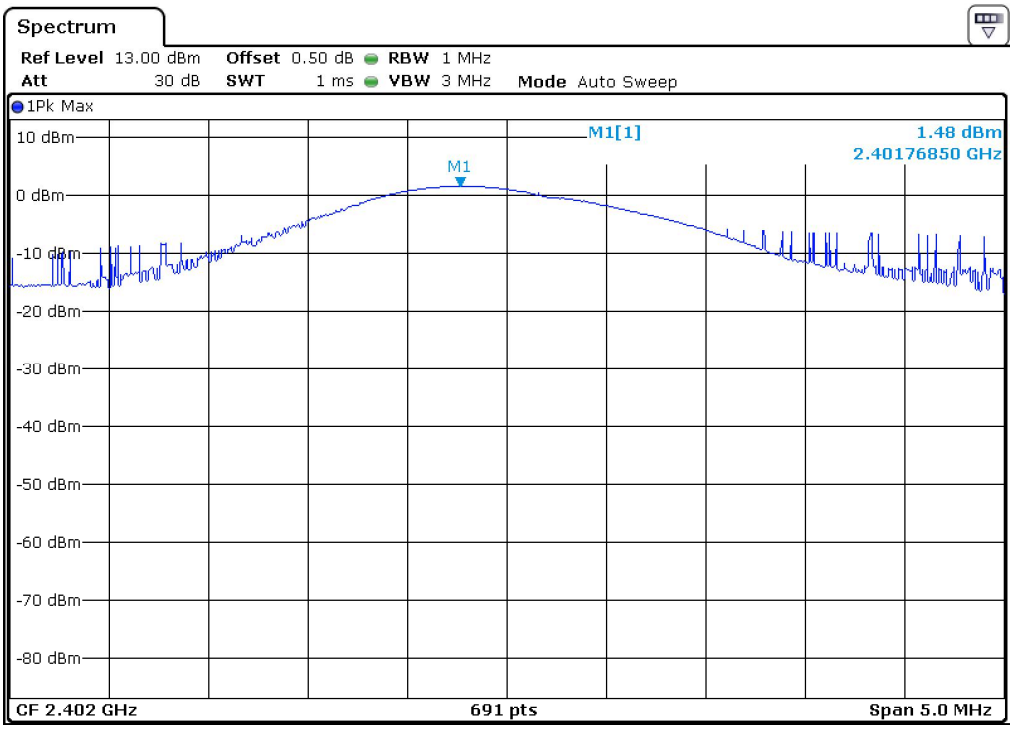
20dB bandwidth	99% bandwidth
1358.900 kHz	1680.174 kHz

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

7.4 Peak Output Power

EUT:	SP1601
Op Condition:	Operated, TX Mode (2402MHz)
Test Specification:	FCC15.247(b)
Comment:	3.7VDC, Antenna gain: 0 dBi, Cable Loss: 0.5dB

Test Result
☒ Passed
☐ Not Passed



Conducted Output Power (dBm)	Conducted Output Power (mW)	Limit (mW)
1.48	1.406	125.0

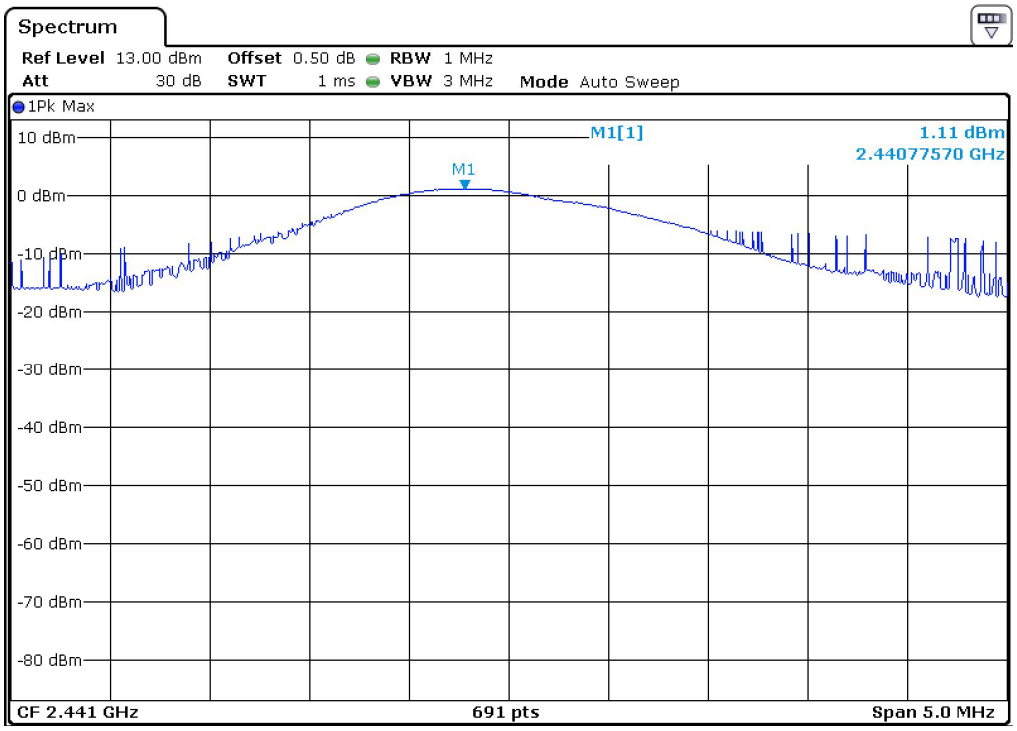
TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

Peak Output Power

EUT: SP1601
Op Condition: Operated, TX Mode (2441MHz)
Test Specification: FCC15.247(b)
Comment: 3.7VDC, Antenna gain: 0 dBi, Cable Loss: 0.5dB

Test Result
☒ Passed
☐ Not Passed



Conducted Output Power (dBm)	Conducted Output Power (mW)	Limit (mW)
1.11	1.291	125.0

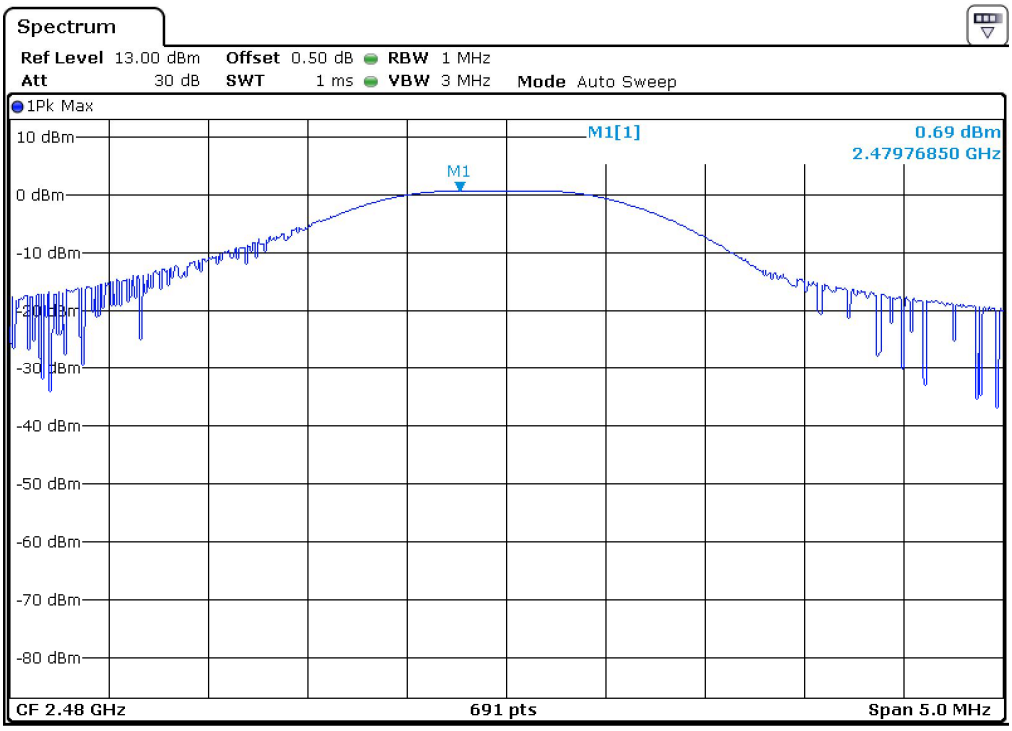
TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

Peak Output Power

EUT:	SP1601
Op Condition:	Operated, TX Mode (2480MHz)
Test Specification:	FCC15.247(b)
Comment:	3.7VDC, Antenna gain: 0 dBi, Cable Loss: 0.5dB

Test Result
☒ Passed
☐ Not Passed



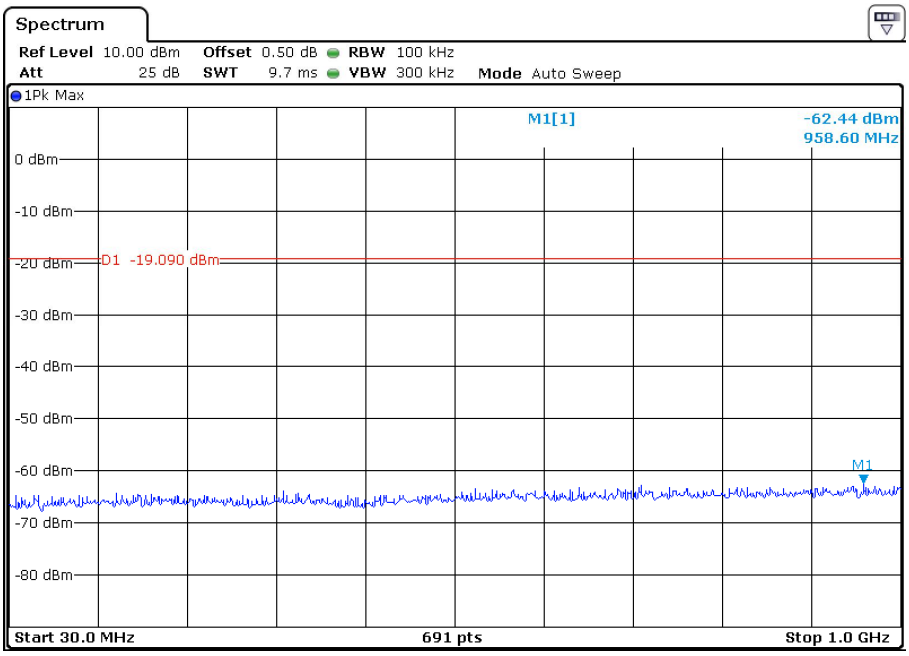
Conducted Output Power (dBm)	Conducted Output Power (mW)	Limit (mW)
0.69	1.172	125.0

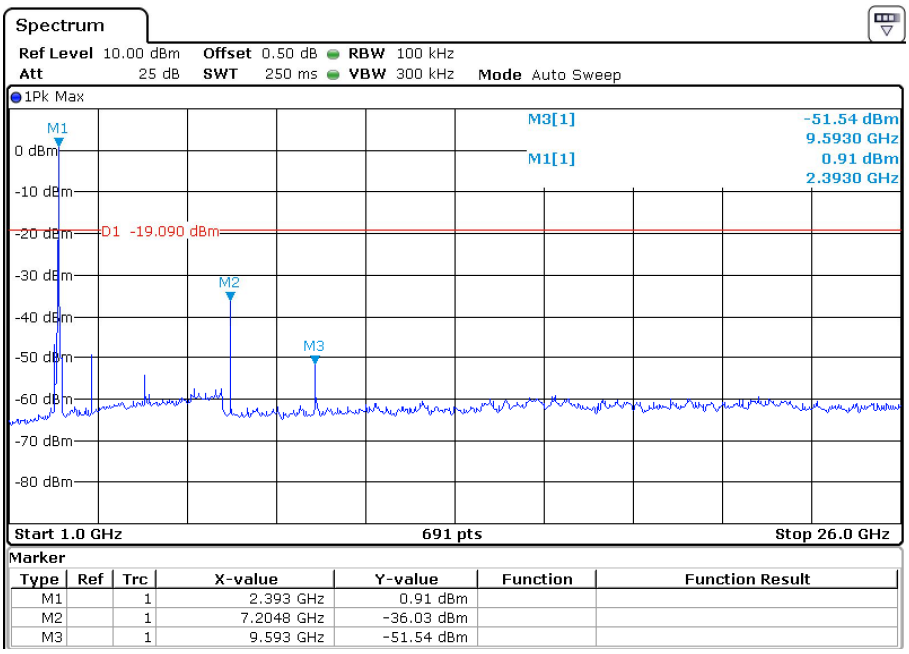
TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

7.5 Spurious Emissions at Antenna Terminals

EUT: SP1601
Op Condition: Operated, TX Mode (2402MHz)
Test Specification: FCC2.1051 & 15.247(d)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed





Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.393 GHz	0.91 dBm		
M2		1	7.2048 GHz	-36.03 dBm		
M3		1	9.593 GHz	-51.54 dBm		

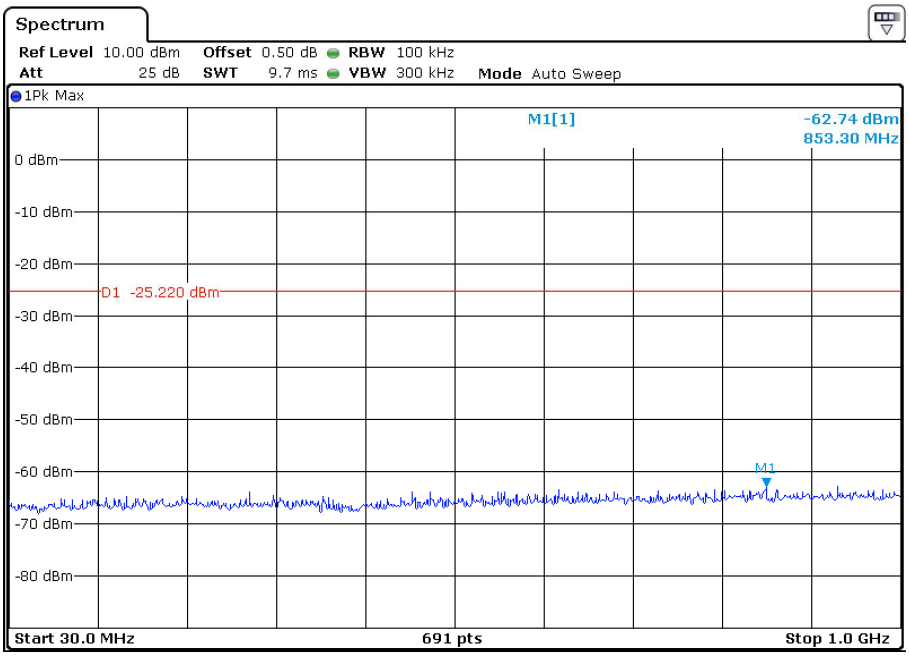
Limit: 20dB below the highest level of the desired power in the passband

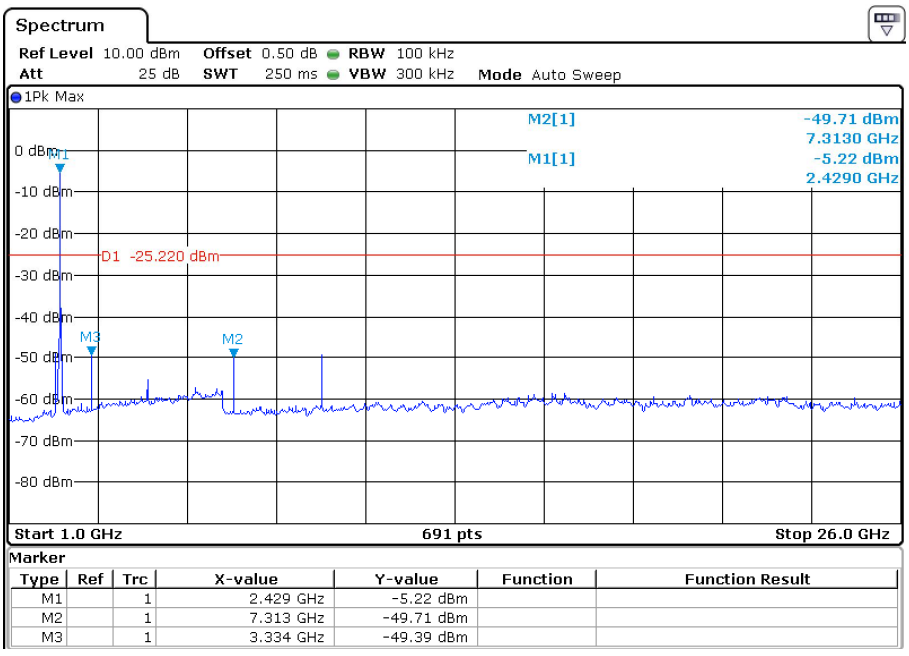
China

Spurious Emissions at Antenna Terminals

EUT: SP1601
Op Condition: Operated, TX Mode (2441MHz)
Test Specification: FCC2.1051 & 15.247(d)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed





Limit: 20dB below the highest level of the desired power in the passband

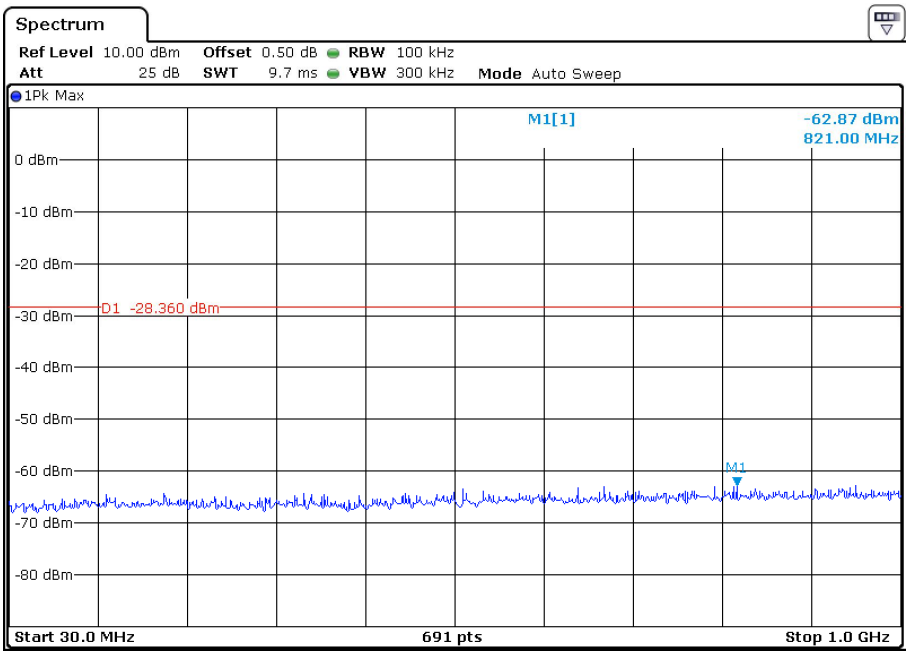
TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

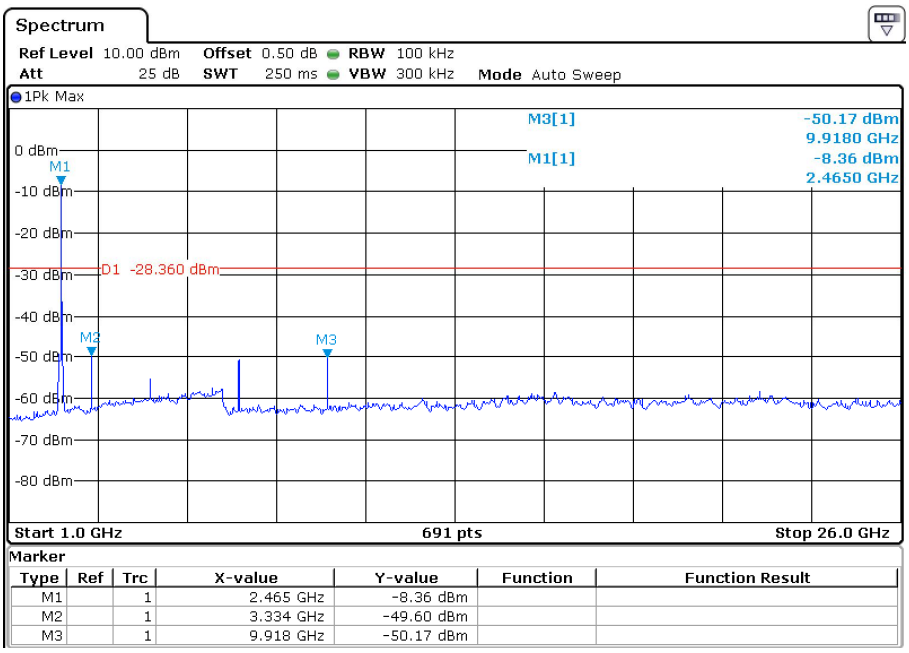
China

Spurious Emissions at Antenna Terminals

EUT: SP1601
Op Condition: Operated, TX Mode (2480MHz)
Test Specification: FCC2.1051 & 15.247(d)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed





Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.465 GHz	-8.36 dBm		
M2		1	3.334 GHz	-49.60 dBm		
M3		1	9.918 GHz	-50.17 dBm		

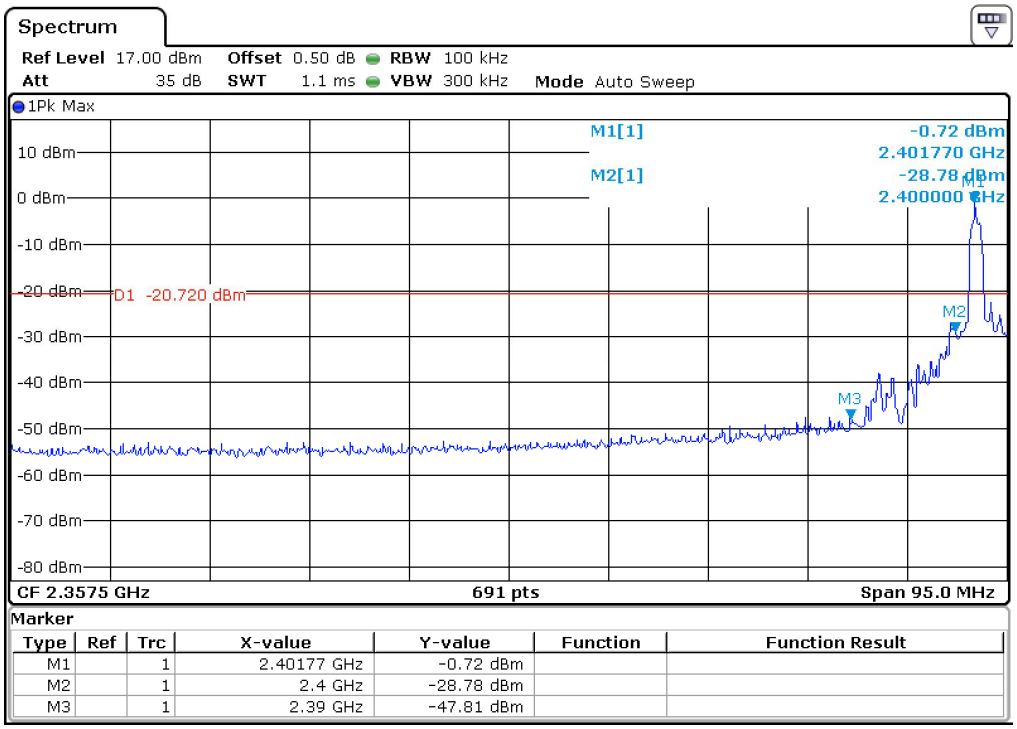
Limit: 20dB below the highest level of the desired power in the passband

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

7.6 100kHz Bandwidth of band edges

EUT: SP1601
Op Condition: Operated, TX Mode (2402MHz)
Test Specification: FCC15.247(d), Conducted
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Band edges	Limit
28.06 dB	> 20dB

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

100kHz Bandwidth of band edges

EUT: SP1601
Op Condition: Operated, TX Mode (2402MHz)
Test Specification: FCC15.247(d), Radiated
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
2390.000	47.40	74	-26.60	Peak
2390.000	34.18	54	-19.82	Average

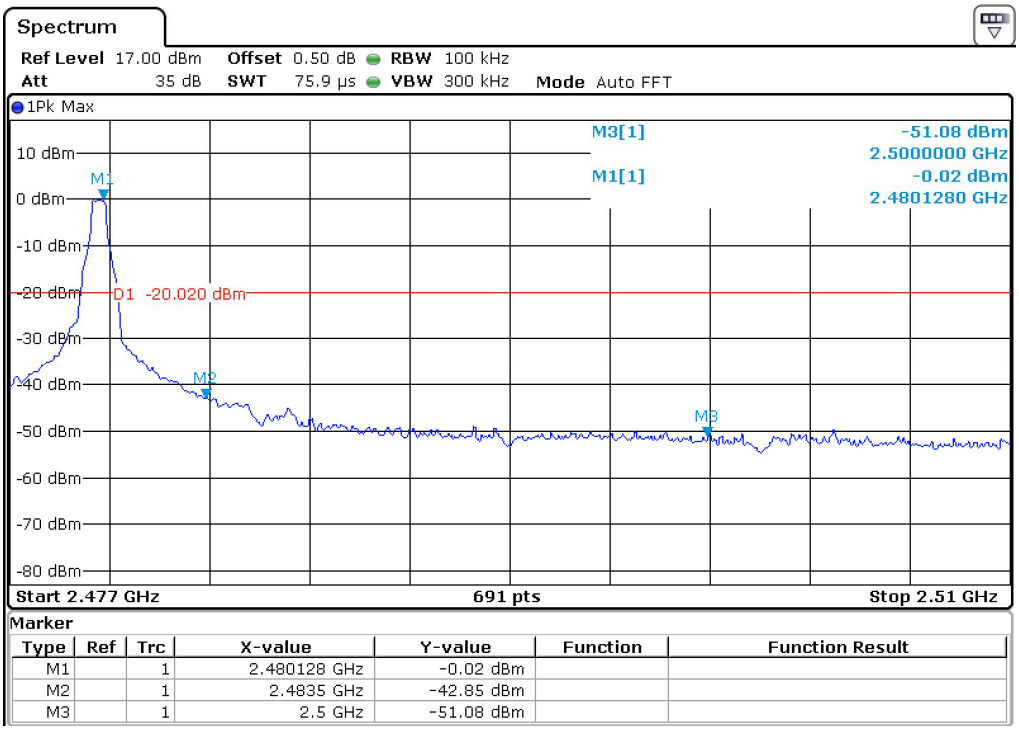
TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

100kHz Bandwidth of band edges

EUT: SP1601
Op Condition: Operated, TX Mode (2480MHz)
Test Specification: FCC15.247(d), Conducted
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Band edges	Limit
42.83 dB	> 20dB

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

100kHz Bandwidth of band edges

EUT: SP1601
Op Condition: Operated, TX Mode (2480MHz)
Test Specification: FCC15.247(d), Radiated
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed

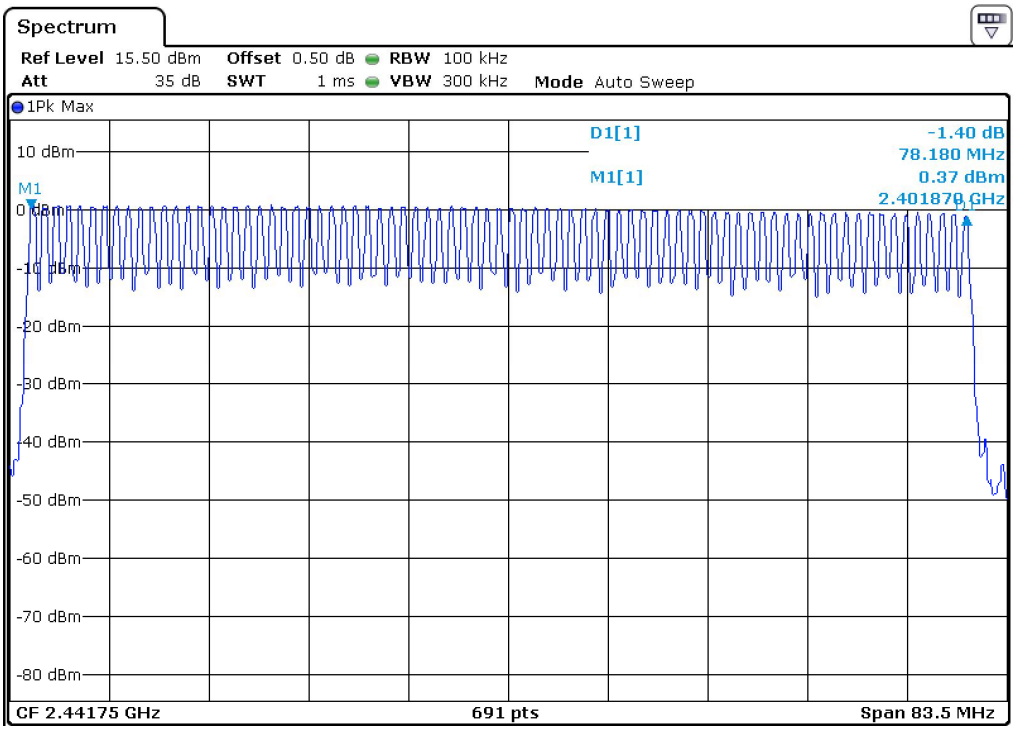
Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector
2483.500	51.16	74	-22.84	Peak
2483.500	36.33	54	-17.67	Average

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

7.7 Minimum. Number of Hopping Frequencies

EUT: SP1601
Op Condition: Operated, TX Mode (2402-2480MHz)
Test Specification: FCC15.247(a)(1)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Hopping Channels	Limit
79	≥ 15

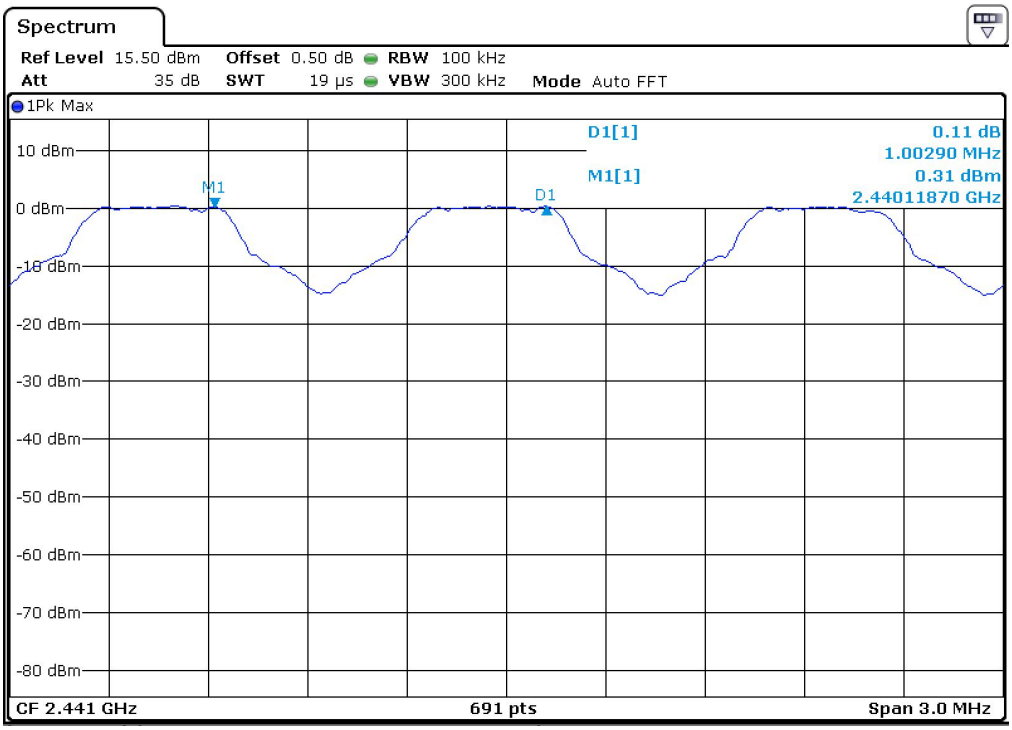
TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

7.8 Minimum Hopping Channel Carrier Frequency Separation

EUT: SP1601
Op Condition: Operated, TX Mode (2402-2480MHz)
Test Specification: FCC15.247(a)(1)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed



Chanel Separation	Limit
1002.90 kHz	924 kHz

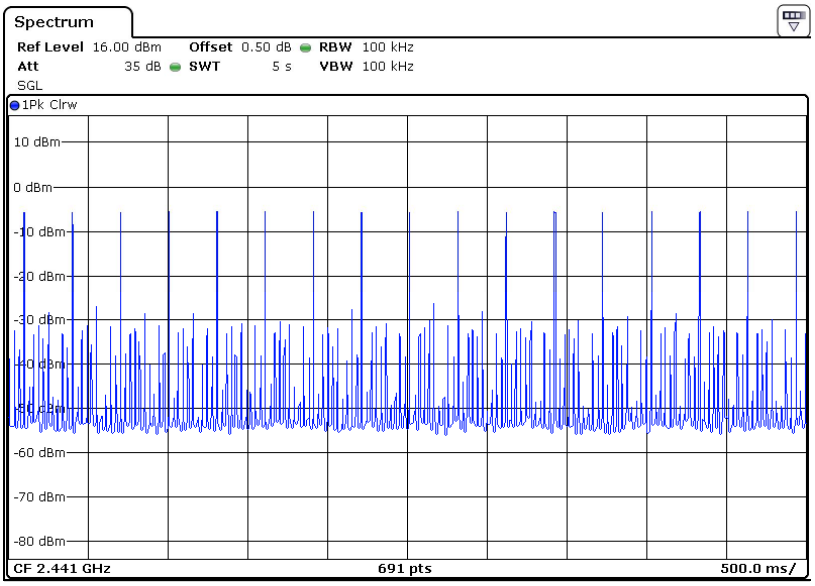
Limit: 2/3 of 20dB bandwidth of hopping channel

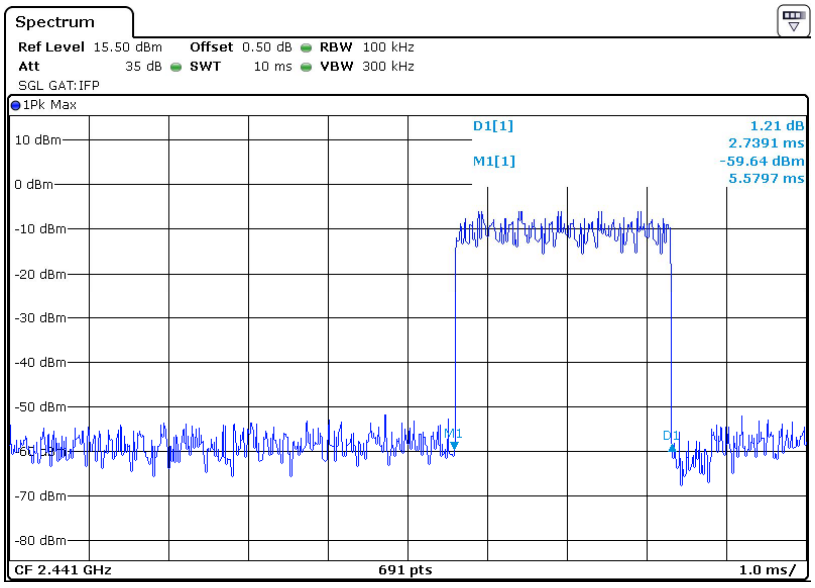
TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

7.9 Average Channel Occupancy Time

EUT: SP1601
Op Condition: Operated, TX Mode (2402MHz)
Test Specification: FCC15.247(a)(1)
Comment: 3.7VDC

Test Result
☒ Passed
☐ Not Passed





Average time of occupancy	Limit
Number of hops in 5 sec.: 17 Period: 0.4 x 79 Ch. = 31.6 sec. Total number of hops in 31.6 sec.: (17/5)*31.6=108 Time of single pulse: 2.739 ms Average time of occupancy: 2.739 ms x 108 = 0.2958 sec.	0.4 Seconds

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

7.10 Antenna Requirement

EUT:	SP1601
Op Condition:	Operated, TX Mode
Test Specification:	FCC15.203 & 15.247(b)
Comment:	3.7VDC

Test Result
☒ Passed
☐ Not Passed

Limit

For intentional device, according to FCC Title 47 Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC Title 47 Part 15.247(b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The antenna used in this product is PCB antenna, and the maximum gain of this antenna is 0.0 dBi.

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

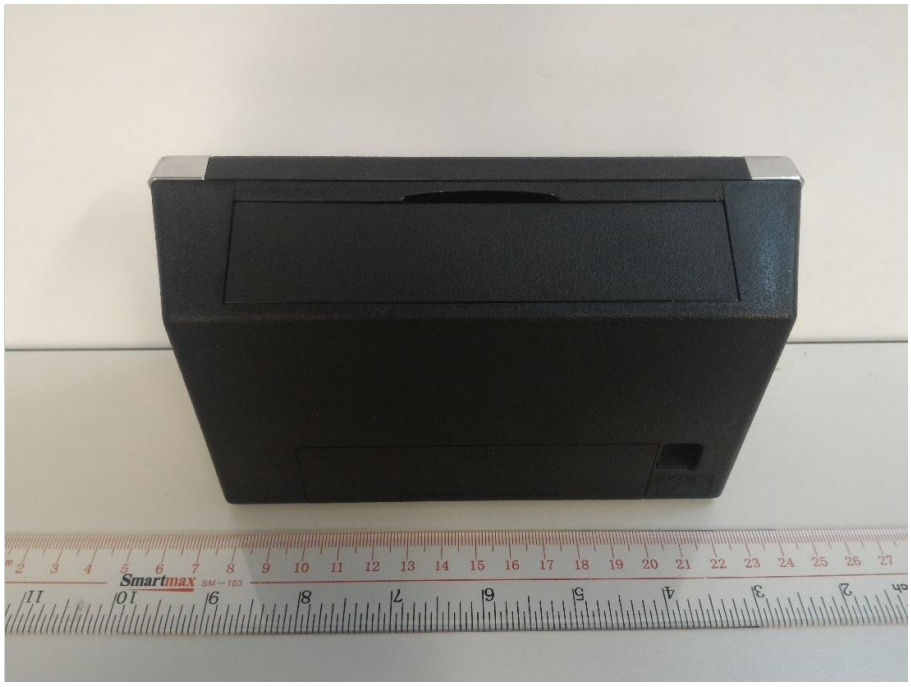
China

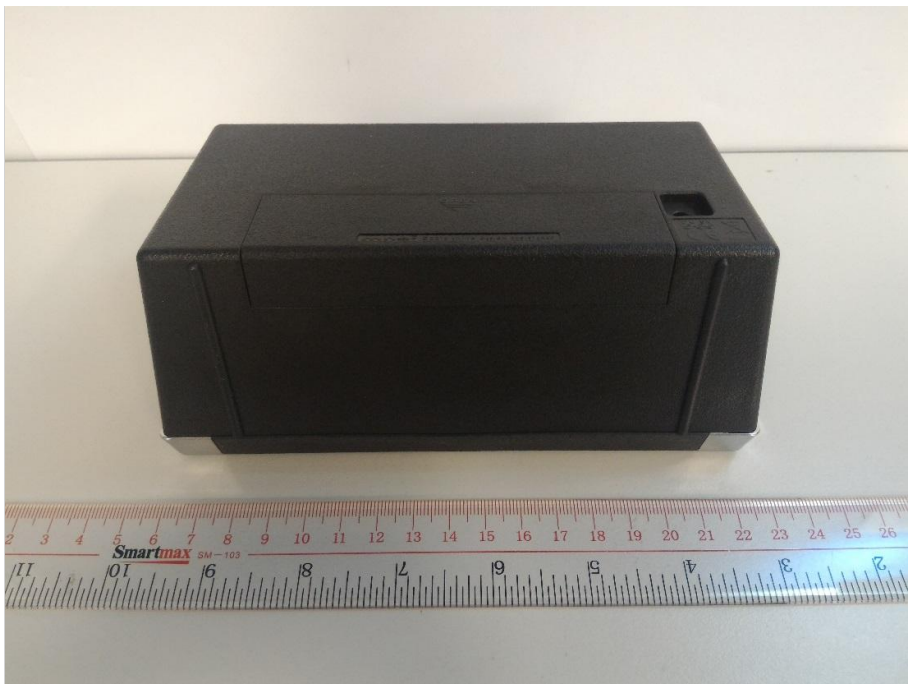
8 Appendix A - Photographs of EUT

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

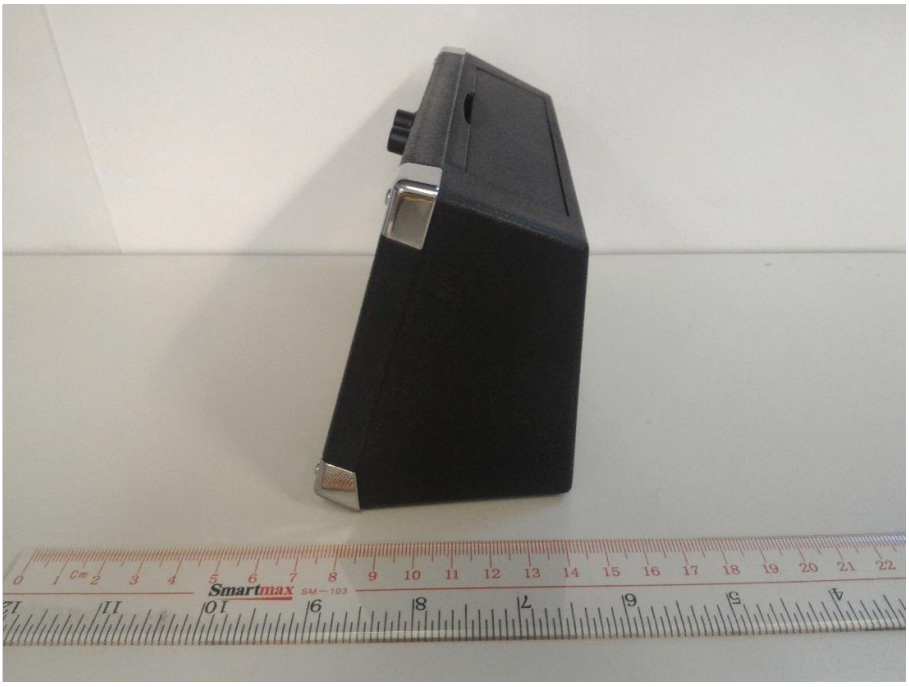
Appendix A





China

Appendix A



China

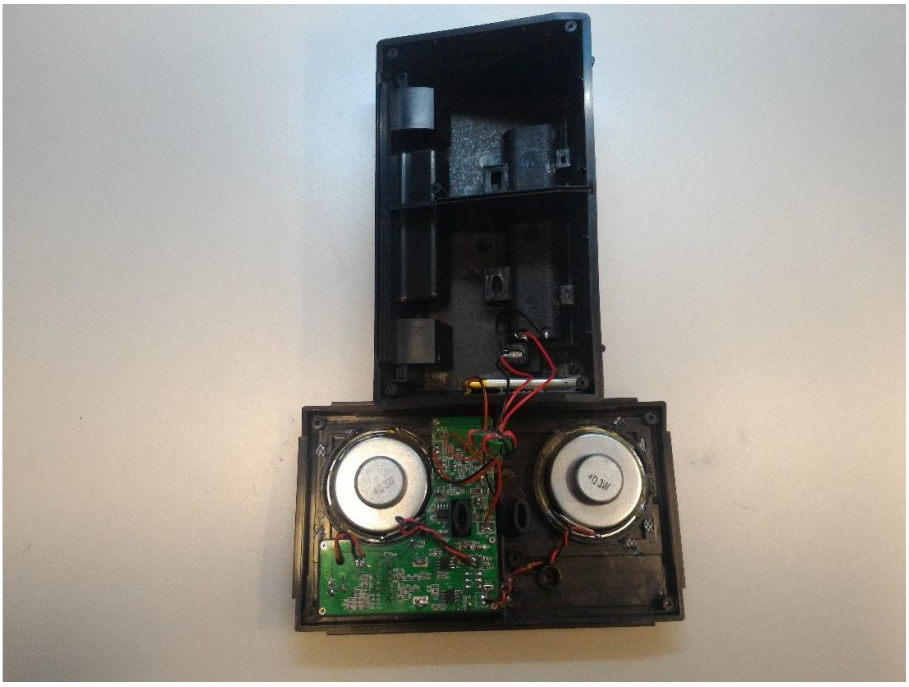
Appendix A

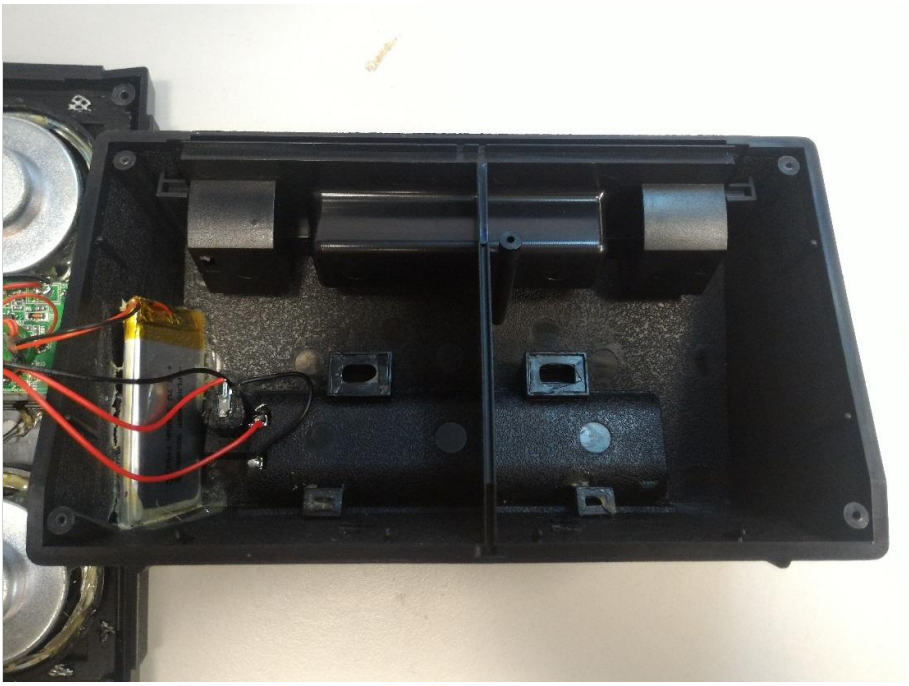
China

Appendix A

China

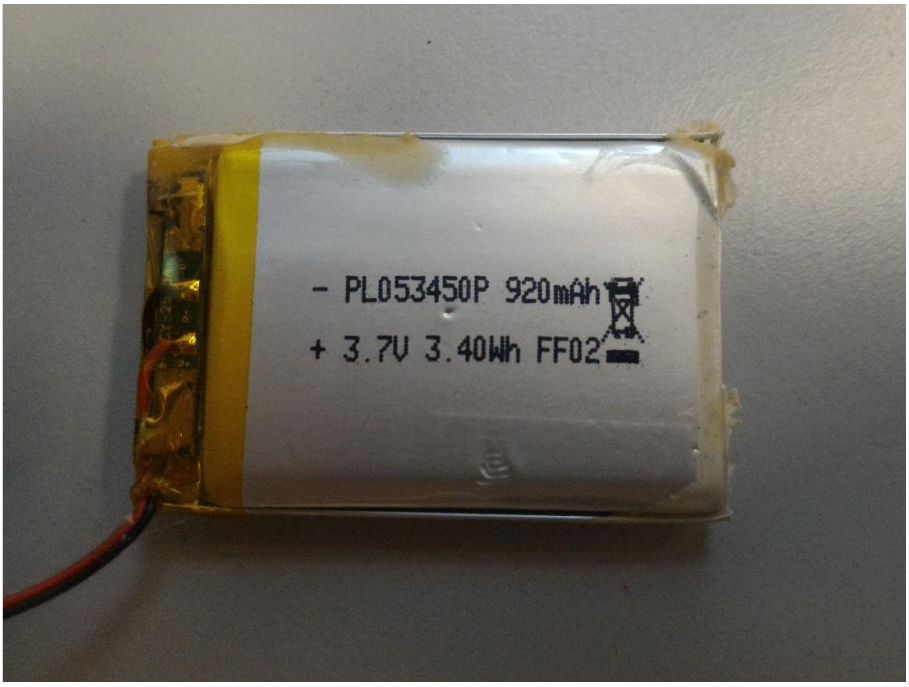
Appendix A





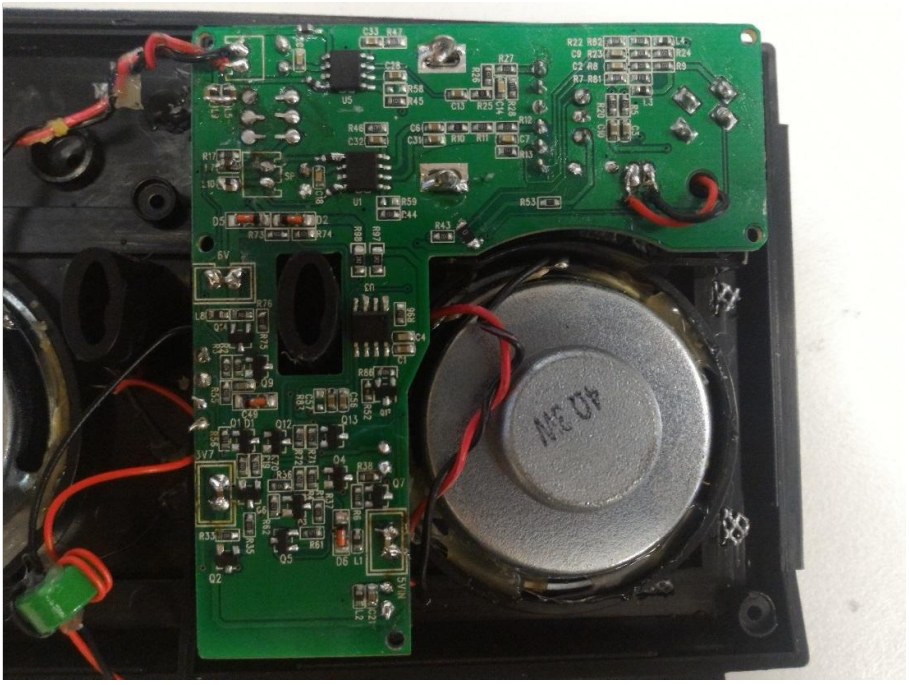
China

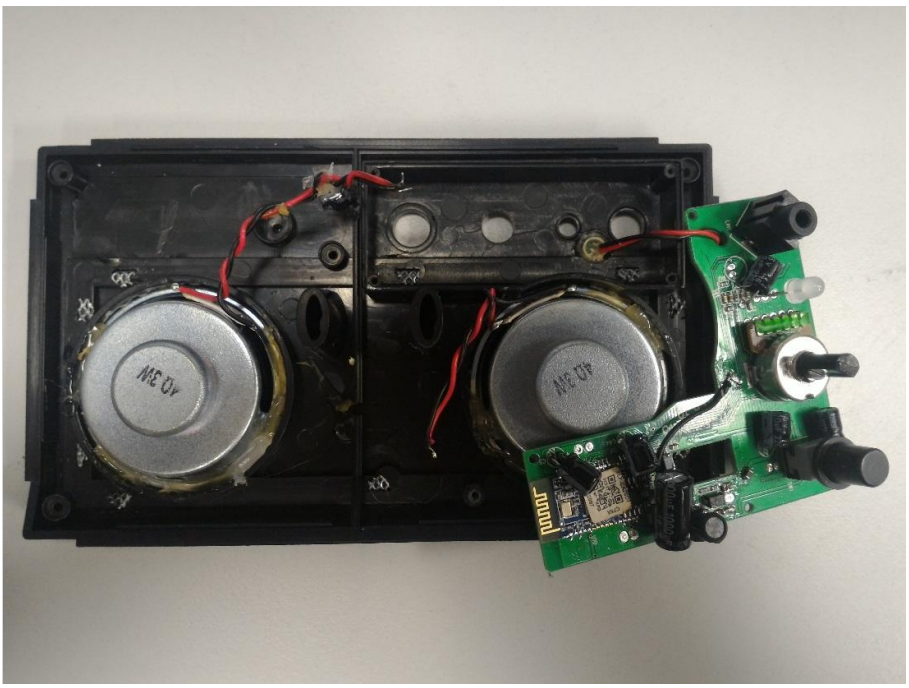
Appendix A



China

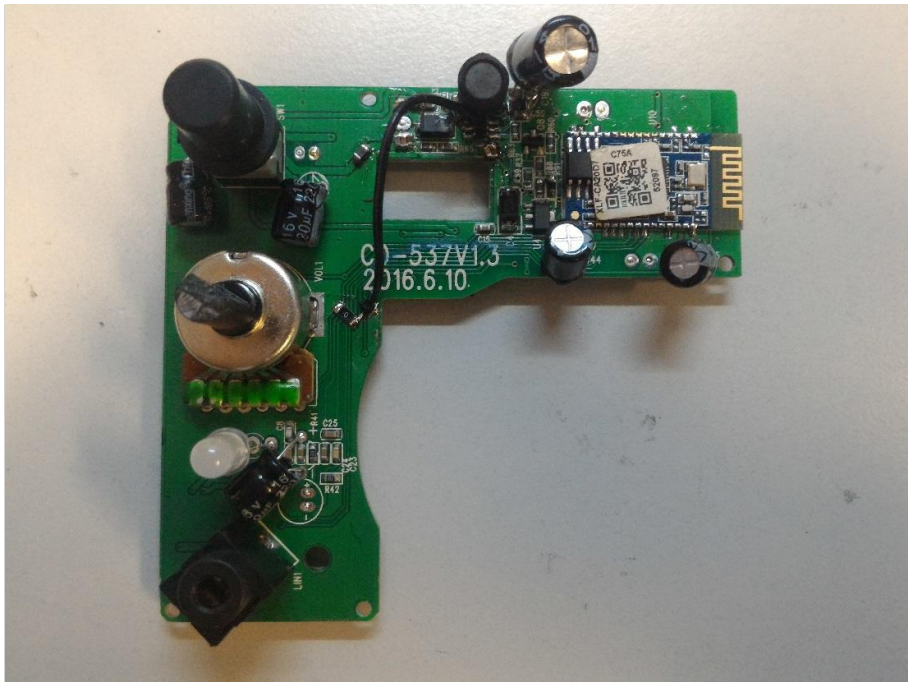
Appendix A

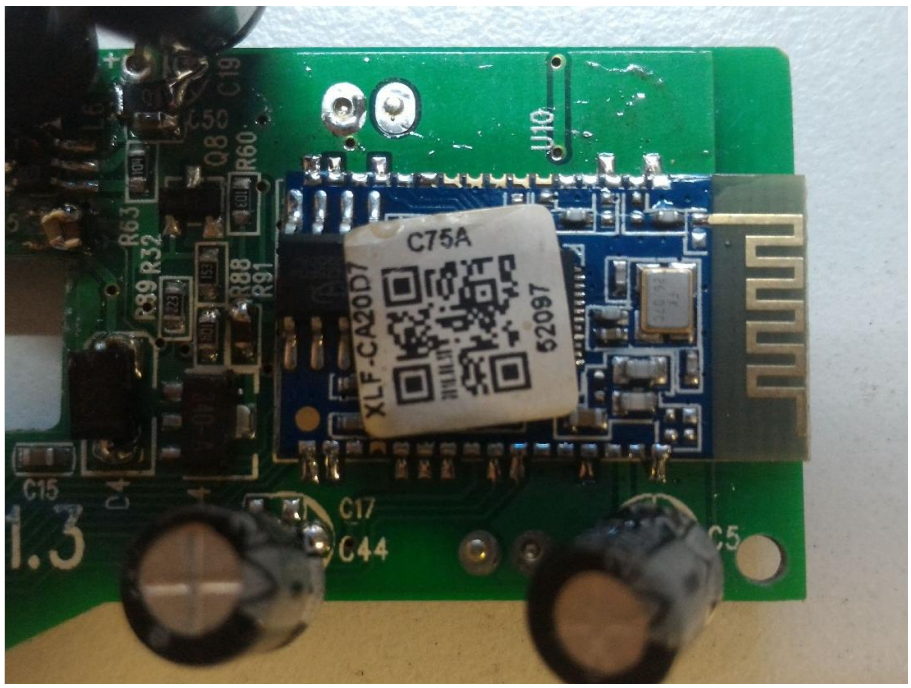




China

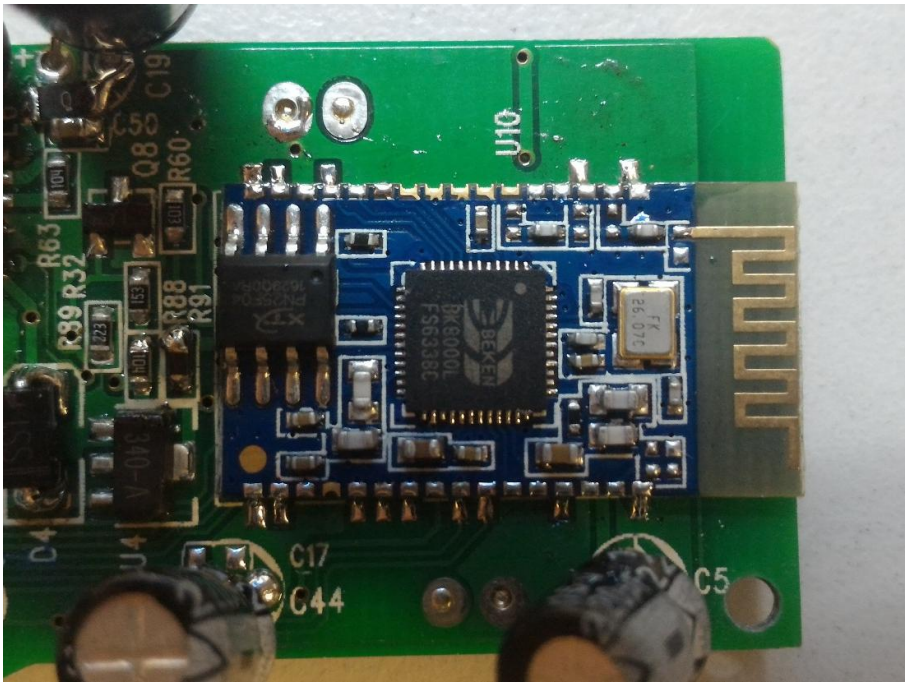
Appendix A

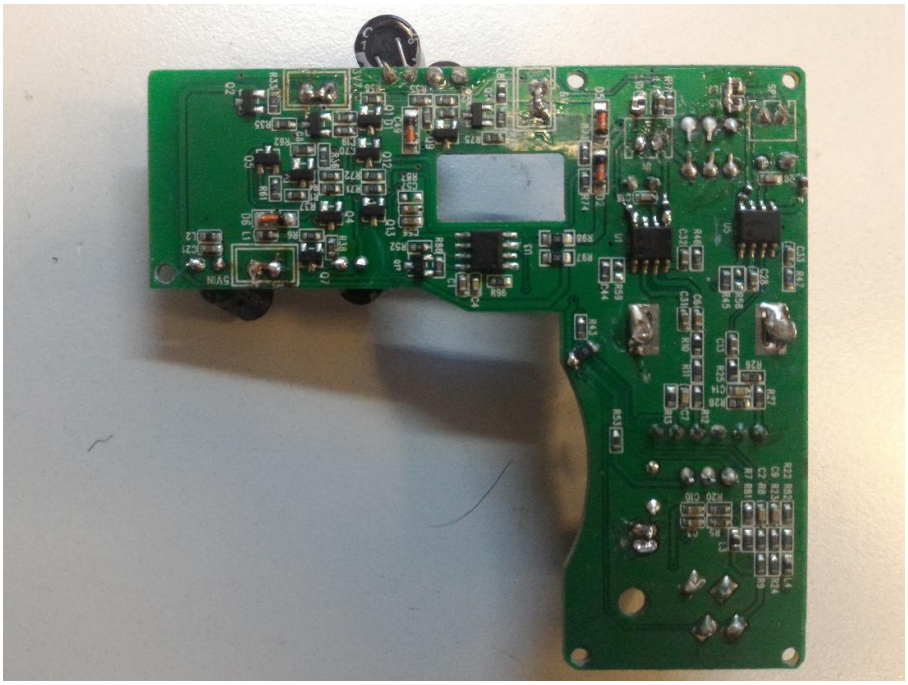




China

Appendix A





China

Appendix A

China

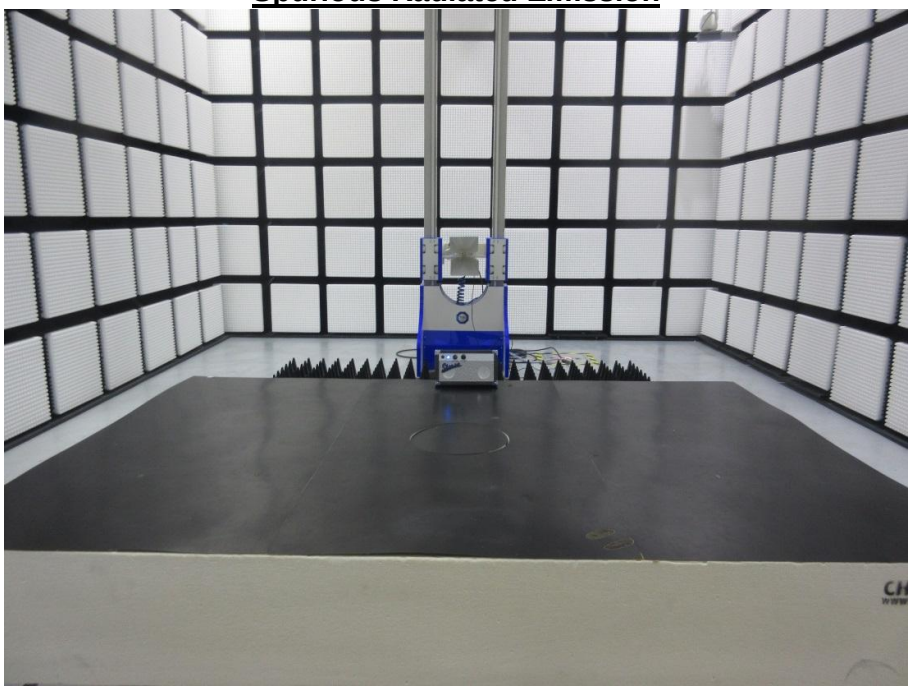
Appendix A

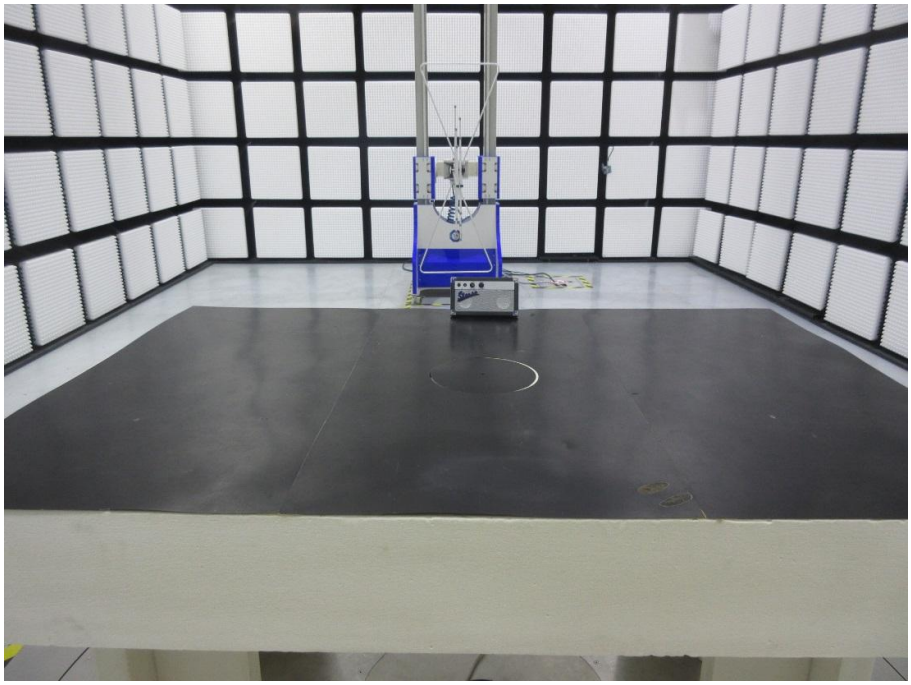
TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

9 Appendix B - Setup Photographs of EUT

Spurious Radiated Emission





Appendix B

Conducted Emission

20dB & 99% Bandwidth, Peak Output Power,
Spurious Emissions at Antenna Terminals,
100kHz Bandwidth of band edges, Min. No. of Hopping Frequencies,
Min. Hopping Channel Carrier Frequency Separation, Average Time of Occupancy

China

10 Appendix C - General Product Information

Radiofrequency radiation exposure evaluation

According to KDB 447498 D01v05r02 section 4.3.1,

>> The 1-g SAR test exclusion thresholds, for 100MHz to 6GHz, at test separation distances ≤ 50 mm are determined by:

Power at 2402MHz = 1.406 mW EIRP
Power at 2441MHz = 1.291 mW EIRP
Power at 2480MHz = 1.172 mW EIRP

[(1.406 mW) / (20 mm)] · [sqrt (2.402 GHz)] = 0.1005 which is ≤ 3.0 for 1-g SAR.
[(1.291 mW) / (20 mm)] · [sqrt (2.441 GHz)] = 0.1009 which is ≤ 3.0 for 1-g SAR.
[(1.172 mW) / (20 mm)] · [sqrt (2.480 GHz)] = 0.0923 which is ≤ 3.0 for 1-g SAR.

Therefore the device is exempt from stand-alone SAR test requirements.

>> The fundamental frequency of the EUT is 2402MHz-2480MHz, the test separation distance is < 50mm. (Manufacturer specification distance is <20mm)

>> The power of EUT measured is:

- For 2402MHz: 1.406mW = 10 log (1.406) dBm ~ 1.48dBm
- For 2440MHz: 1.291mW = 10 log (1.291) dBm ~ 1.11dBm
- For 2480MHz: 1.172mW = 10 log (1.172) dBm ~ 0.69dBm

TÜV SÜD HONG KONG LTD.
3/F, West Wing, Lakeside 2, 10 Science Park West Avenue, Science Park, Shatin, HK.
Tel: +852-2776 1323 Fax: +852-2776 1206

China

Appendix C

To: TÜV SÜD HKG Ltd.

Attention: **Mr. Edmond Fung**
From: **Blue Square Ltd** Date: September 6, 2016
Fax No: Total Page (Cover Included): 1

Declaration Letter

Subject:

We:

Officially notify TÜV SÜD HKG Ltd. that the 52097 have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction, with Bluetooth Speaker, SP1601.
The difference lies only on different buyer of the different models.

<<Additional Model >>: 52097

<<Main Test Model >>: SP1601

<<Product>>: Bluetooth Speaker

Applicant:

Sep 6, 2016
(Date)

(Applicant's authorized signature and company Chop)

file: declaration letter-template

Page 1 of 1