



FCC SDOC TEST REPORT

Report No.: VTC-221213025F1
Product: QSFP/QSFP+/QSFP28/QSFP56/QSFP-DD Optical Transceivers
Model No.: ATQPP(b/c/d)-40G-w-m/s-L-xD, See model list
Applicant: Approved Technology Ltd
Address: Wyncombe House, 2A Wyncombe Road, Southbourne, Dorset, BH5 2JU,
United Kingdom
Shenzhen VTC Testing Technology Co., Ltd.
Issued by: 211 Factory Room, No.96, Yangchong Road, Tangxiachong
Lab Location: Community, Yanluo Street, Bao'an District,
Shenzhen, Guangdong, China
Date of Receipt:
Dec. 07, 2022
Date of Test:
Dec. 07, 2022 to Dec. 13, 2022
Date of Issue:
Dec. 13, 2022
Test Result: Pass

Testing Engineer :

Jake Wang

(Jake Wang)

Technical Manager :

Ada Li

(Ada Li)

Authorize Signatory :

Can Liu

(Can Liu)



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INFORMATION

Applicant : Approved Technology Ltd
Address : Wyncombe House, 2A Wyncombe Road, Southbourne,
Dorset, BH5 2JU, United Kingdom
Manufacturer : Approved Technology Ltd
Address : Wyncombe House, 2A Wyncombe Road, Southbourne,
Dorset, BH5 2JU, United Kingdom
EUT : QSFP/QSFP+/QSFP28/QSFP56/QSFP-DD Optical Transceivers
Model Number : ATQPP(b/c/d)-40G-w-m/s-L-xD, ATQPP(b/c/d)-40G-w-m/s-MPO-xD,
ATQPP(b/c/d)-40G-w-m/s-L-xD, ATQP28(b/c/d)-100G-w-m/s-MPO-xD,
ATQP28(b/c/d)-100G-w-m/s-L-xD, ATQP56(b/c/d)-200G-w-m/s-MPO-xD,
ATQP56(b/c/d)-200G-w-m/s-L-xD, ATQPDD(b/c/d)-400G-w-m/s-MPO-xD,
ATQPDD(b/c/d)-400G-w-m/s-L-xD
Trademark : ATGBICS
Test Standard : FCC Part 15 B:2016
ANSI C63.4:2014
Test Result: : Pass



1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : QSFP/QSFP+/QSFP28/QSFP56/QSFP-DD Optical Transceivers
Trademark : ATGBICS
Model Number : See model list

Model Difference : Apart from the name of the model, the others are the same

Power Supply : DC3.3V,5V

Note:ATQPP(b/c/d)-40G-w-m/s-L-xD was selected as the test model and the datas have been recorded in thisreport.

1.2. Tested System Details

Personal Computer : ASUS

M/N : ATQPP(b/c/d)-40G-w-m/s-L-xD

1.3. Test Summary

Test Item	Condition	Standard	Result
Conducted disturbance at mains terminals	150kHz to 30MHz	FCC Part 15, Subpart B: 2016 ANSI C63.4:2014	N/A
Radiated Emission (below 1 GHz)	30MHz to 1GHz	FCC Part 15, Subpart B: 2016 ANSI C63.4:2014	Pass
Radiated Emission (above 1 GHz)	Above 1GHz	FCC Part 15, Subpart B: 2016 ANSI C63.4:2014	N/A
Remark: 1. The symbol "N/A" in above table means <u>N</u> ot <u>A</u> pplicable. 2.When determining the test results, measurement uncertainty of tests has been considered.			
System Measurement Uncertainty			
Test Items		Extended Uncertainty	
Uncertainty for Radiated Emission in 3m chamber		3.60dB	
Uncertainty for Conducted Emission.		2.60dB	



2. TEST INSTRUMENT USED

For Conducted Emission at the mains terminals Test

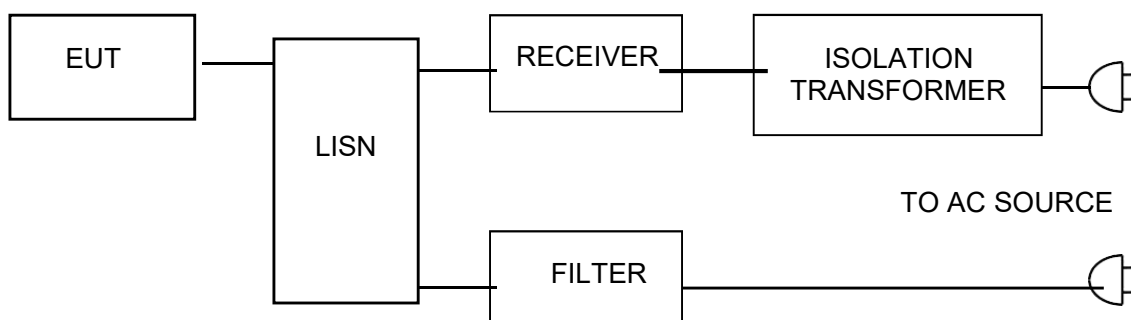
Conducted Emission Test (A --- site)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
843 Shielded Room	ChengYu	843 Room	843	July.11, 2022	July.10, 2023
EMI Receiver	R&S	ESCI	101421	July.11, 2022	July.10, 2023
LISN	Schwarzbeck	NSLK8127	8127739	July.11, 2022	July.10, 2023
Attenuator	R&S	ESH3-Z2	BCTC021E	July.11, 2022	July.10, 2023
843 Cable 1#	FUJIKURA	843C1#	001	July.11, 2022	July.10, 2023

For Radiated Emission Test

Radiation Emission Test (966 chamber)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	July.11, 2022	July.10, 2023
Spectrum Analyzer	Agilent	E4407B	MY45109572	July.11, 2022	July.10, 2023
Amplifier	Schwarzbeck	BBV9743	9743-119	July.11, 2022	July.10, 2023
Amplifier	Schwarzbeck	BBV9718	9718-270	July.11, 2022	July.10, 2023
Log-periodic Antenna	Schwarzbeck	VULB9160	VULB9160-3369	July.11, 2022	July.10, 2023
EMI Receiver	R&S	ESCI	101421	July.11, 2022	July.10, 2023
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1275	July.11, 2022	July.10, 2023
966 Cable 1#	CHENGYU	966	004	July.11, 2022	July.10, 2023
966 Cable 2#	CHENGYU	966	003	July.11, 2022	July.10, 2023

3. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

3.1. Block Diagram Of Test Setup



3.2. Test Standard

FCC PART 15 B

3.3. Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet FCC PART 15 B requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.5. Operating Condition of EUT

3.5.1 Setup the EUT and simulators as shown in Section 3.1.

3.5.2 Turn on the power of all equipment.

3.5.3 Let the EUT work in test modes and testit.



3.6. Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipment. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **FCC PART 15 B** regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 10KHz.

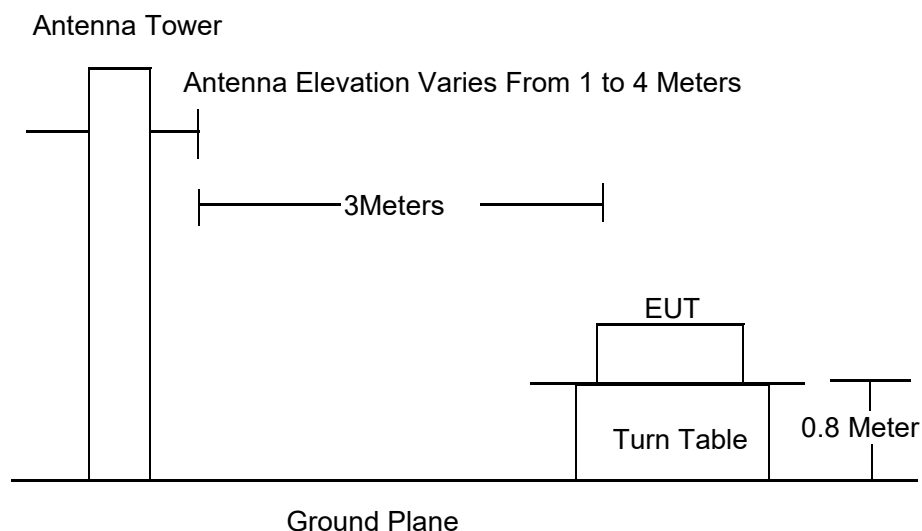
The frequency range from 150 KHz to 30 MHz is investigated.

3.7. Test Result

The EUT is powered by the DC only, the test item is not applicable.

4. RADIATION EMISSION TEST

4.1. Block Diagram of Test Setup



4.2. Test Standard

FCC PART 15 B

4.3. Radiation Limit

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dB μ V/m)
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
960 ~ 1000	3	54.0

4.4. EUT Configuration on Test

The FCC PART 15 B regulations test method must be used to find the maximum emission during radiated emission test.

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.2.

4.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.2 except the test set up replaced as Section 4.1.



4.6. Test Procedure

The EUT and its simulators are placed on a turned table that is 0.8 meter above the ground. The turned table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find the maximum emission levels, the interface cable must be manipulated according to FCC PART 15 B on radiated emission test.

The bandwidth setting on the field strength meter (R&S Test Receiver ESCI) is set at 120KHz below 1GHz, set at 1MHz above 1GHz

The frequency range from 30MHz to 1000MHz is checked.

The highest frequency of the internal sources of the EUT was 1.3GHz, so the measurement was only made up to 6GHz.

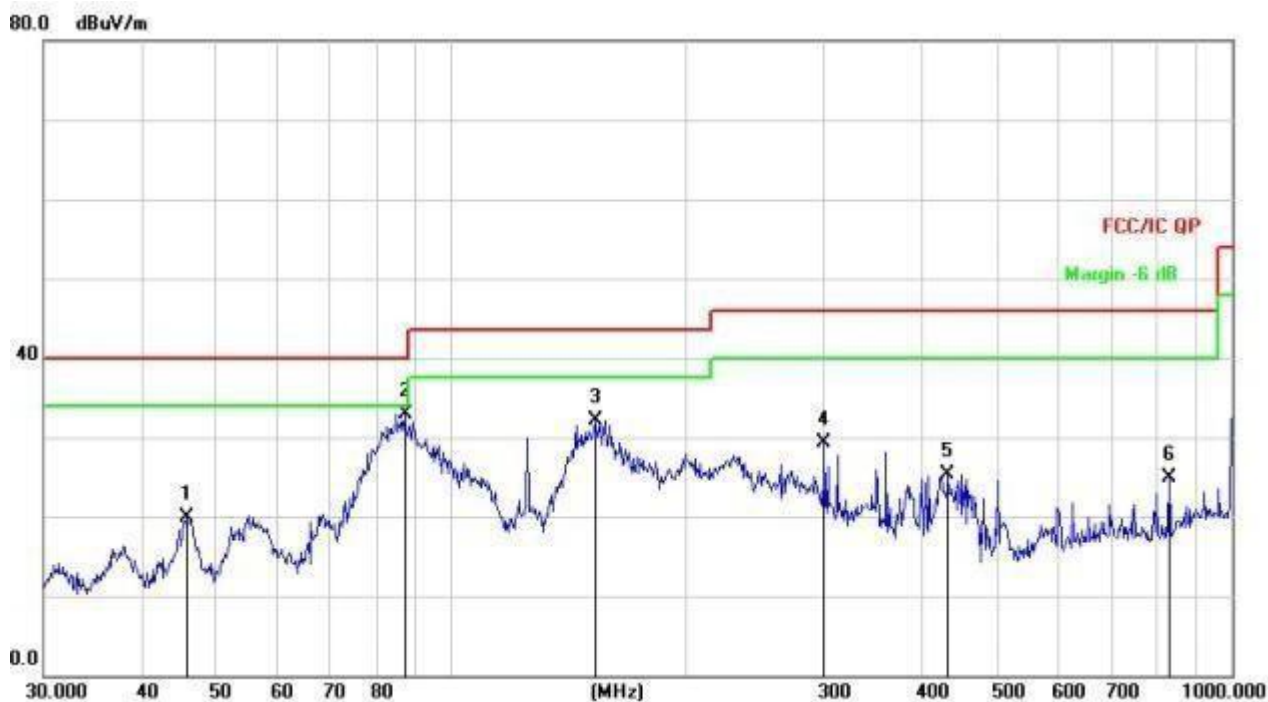
4.7. Test Result

PASS

Please refer to the following page.



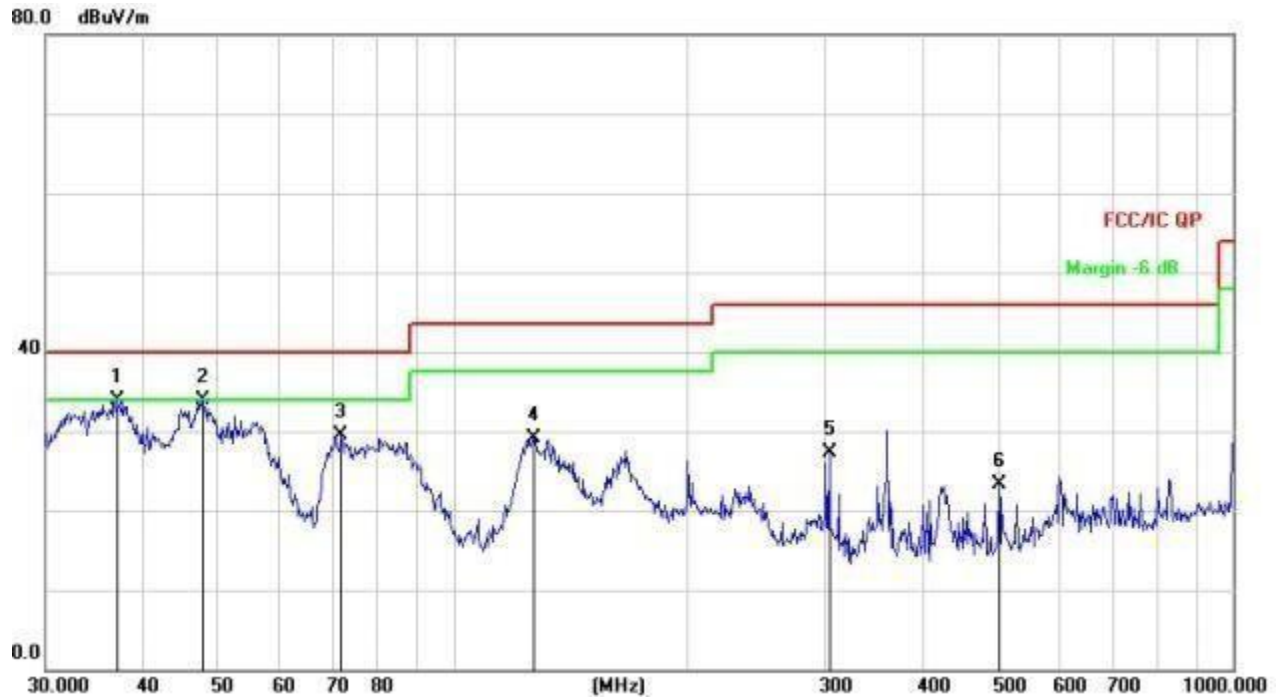
Radiation Emission Test Data			
Temperature:	24.6 °C	Relative Humidity:	55%
Pressure:	1009hPa	Phase :	Horizontal
Test Voltage :	DC 5V	Test Mode:	ON Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	cm	degree	Comment
1		45.6948	33.90	-14.03	19.87	40.00	-20.13	QP		
2	*	87.1117	51.05	-18.07	32.98	40.00	-7.02	QP		
3		152.6641	51.12	-18.99	32.13	43.50	-11.37	QP		
4		300.3672	42.72	-13.45	29.27	46.00	-16.73	QP		
5		432.5457	36.24	-10.84	25.40	46.00	-20.60	QP		
6		830.4002	28.40	-3.57	24.83	46.00	-21.17	QP		



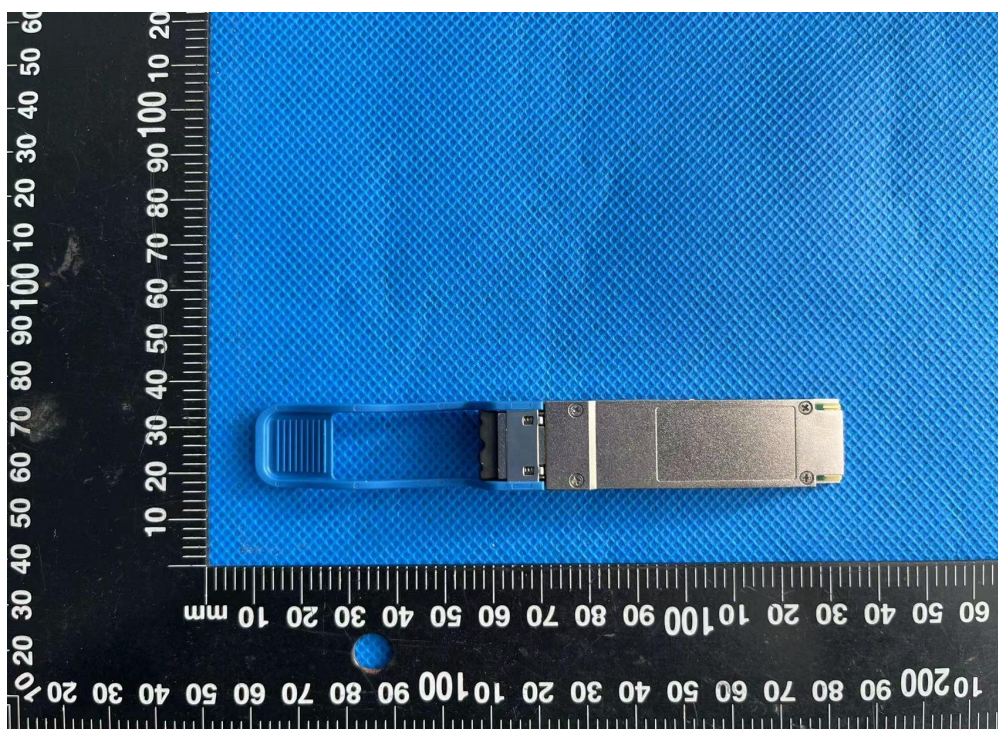
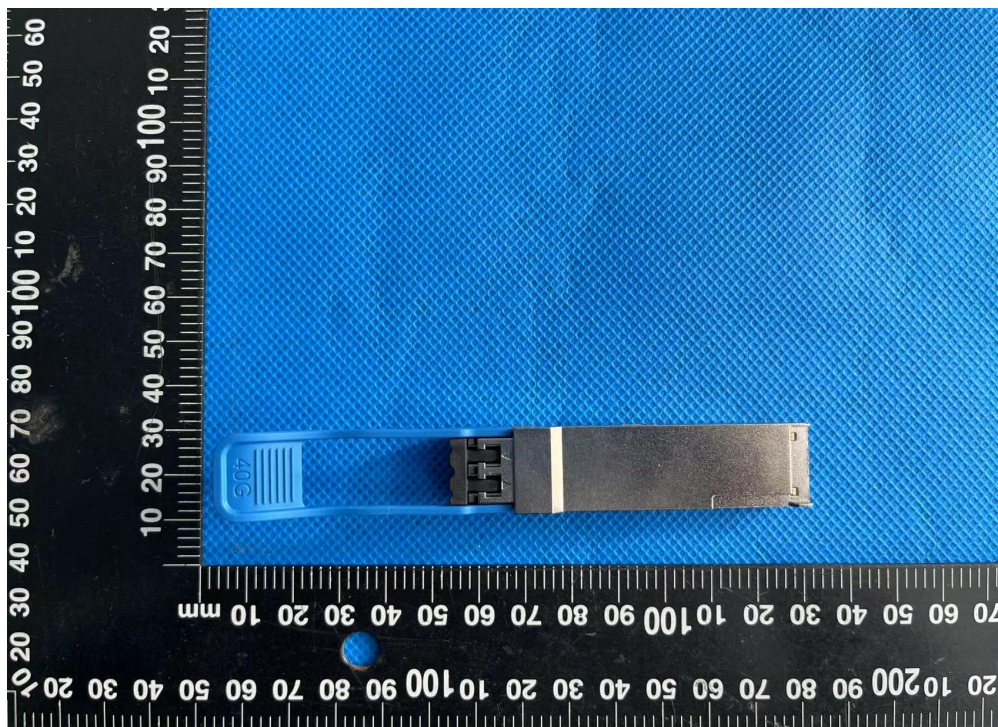
Radiation Emission Test Data			
Temperature:	24.6 °C	Relative Humidity:	55%
Pressure:	1009hPa	Phase :	Vertical
Test Voltage :	DC 5V	Test Mode:	ON Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	cm	degree	Comment
1	*	37.1550	49.67	-15.73	33.94	40.00	-6.06	QP		
2		47.8260	47.79	-13.98	33.81	40.00	-6.19	QP		
3		71.8320	47.50	-17.96	29.54	40.00	-10.46	QP		
4		126.7723	47.60	-18.54	29.06	43.50	-14.44	QP		
5		303.5437	40.73	-13.47	27.26	46.00	-18.74	QP		
6		501.1790	32.56	-9.29	23.27	46.00	-22.73	QP		

5. EUT PHOTOGRAPHS

EUT Photo 1



***** END OF REPORT *****