

EMC TEST REPORT

Product Name Optical Transceiver Module

Trade mark HERMESYS

Model No. SFP-22200001Q5655W, SFP-22200001Q5685W, SFP-22200001Q5615W,
SFP-22200001Q5625W, SFP-22200001Q5635W, SFP-22200001Q5645W,
SFP-22200001Q5665W, SFP-22200001Q5675W, SFP-22200001Q5695W

Report No. CTB220406028E(REV1)

Applicant Hermesys Private Limited

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Manufacturer Hermesys Private Limited

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Date of Receipt 2022-04-01

Date of Test(s) 2022-04-01 to 2022-04-06

Date of Issue 2022-04-26

Test Standard(s) CFR47, FCC Part 15 Subpart B, ANSI C63.4: 2014

Test Result Pass

All test data come from the report of No.CTB220406025E

In the configuration tested, the EUT complied with the standards specified above.

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Note: The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report shall not be reproduced except in full, without prior written approval of CTB. This document may be altered or revised by CTB, personnel only, and shall be noted in the revision of the document.

Table of Contents

1.	Description of version.....	3
2.	Test summary.....	4
3.	Measurement uncertainty	5
4.	General information	6
4.1.	Description of EUT.....	6
4.2.	Description of accessory device.....	6
4.3.	Test conditions	6
4.4.	Block diagram of EUT configuration	7
4.5.	Operating condition of EUT.....	7
5.	List of Test and Measurement Instruments.....	8
6.	Radiated emissions	9
6.1.	Limit	9
6.2.	Test setup	9
6.3.	EMI test receiver setup and spectrum analyzer setup	10
6.4.	Test procedure	10
6.5.	Corrected Amplitude & Margin Calculation.....	10
6.6.	Test results	11
7.	Photographs of test setup.....	15
8.	Photographs of EUT	16

1. Description of version

Report No.	Issue Date	Description	Approved
CTB220406028E	2022-04-12	Original	Invalid
CTB220406028E(REV1)	2022-04-26	Reversion	Valid
Note: This report has modified the trademark on the basis of the original report CTB220406028E.			

2. Test summary

Test procedures according to the technical standards:

Standard	Test Item	Test Result
§15.107	Conducted Emission	N/A ¹
§15.109	Radiated Emission	PASS

Note: N/A is abbreviation for Not Applicable.

1. The Product is powered by DC power, this test items is not applicable.

3. Measurement uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard

Test Item	Frequency	Expanded Uncertainty (U_{Lab})
Conducted Emission	150 kHz to 30 MHz	± 3.2 dB
Radiated Emission	30 MHz to 1000 MHz	± 4.8 dB

uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %

4. General information

4.1. Description of EUT

Product name	Optical Transceiver Module
Trade mark	HERMESYS
Model No.	SFP-22200001Q5655W
Serial No.	SFP-22200001Q5685W, SFP-22200001Q5615W, SFP-22200001Q5625W, SFP-22200001Q5635W, SFP-22200001Q5645W, SFP-22200001Q5665W, SFP-22200001Q5675W, SFP-22200001Q5695W
Model Difference	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: SFP-22200001Q5655W.
Rated Power	/
Rated Voltage& current	DC3.3V
Configuration	☒ Table-top ☐ Floor-standing
The highest frequency of the internal sources of the EUT :	☐ below 1.705 MHz, the measurement shall only be made up to 30 MHz. ☐ between 1.705 MHz and 108 MHz, the measurement shall only be made up to 1 GHz. ☐ between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. ☐ between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. ☒ above 1 GHz, the measurement shall be made up to 5th harmonic of the highest frequency or 40 GHz, whichever is lower.

Note: The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

4.2. Description of accessory device

No.	Device Type	Brand	Model	Specification	Note
1	Laptop	DELL	Inspiron 5507	/	/
2	Switches	/	/	/	/

4.3. Test conditions

Temperature: 15-25°C

Relative Humidity: 30-60 %

Atmospheric pressure: 800hPa-1060hPa

4.4. Block diagram of EUT configuration



4.5. Operating condition of EUT

Operating condition	Mode 1*	Working	Test Voltage	DC3.3V
Note: This test covers all possible operating modes of the device, only the worst data are listed in the report. The worst data are shown. (*) is the nearest standard limit which was recorded in this report.				

5. List of Test and Measurement Instruments

Radiated Emission Measurement					
No.	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	1911	2022.08.07
2	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	869	2022.08.07
3	Amplifier	Agilent	8449B	3008A01838	2022.08.05
4	Amplifier	HP	8447E	2945A02747	2022.08.05
5	EMI TEST RECEIVER	ROHDE&SCHWARZ	ESPI7	100362	2022.08.05
6	Coaxial cable	ETS	RFC-SNS-100- NMS-80 NI	/	2022.08.05
7	Coaxial cable	ETS	RFC-SNS-100- NMS-20 NI	/	2022.08.05
8	Coaxial cable	ETS	RFC-SNS-100- SMS-20 NI	/	2022.08.05
9	Coaxial cable	ETS	RFC-NNS-100- -NMS-300 NI	/	2022.08.05
10	EZ-EMC	Frad	EMC-con3A1.1	/	/

6. Radiated emissions

6.1. Limit

☒ Except for Class A devices (at 3m):

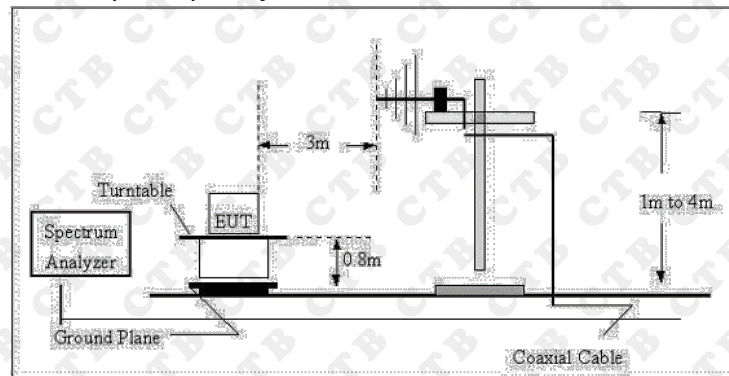
Frequency of emission (MHz)	Field strength (microvolts/meter)	
	(microvolts/meter)	(dB μ V/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

☐ For Class A devices (at 10m):

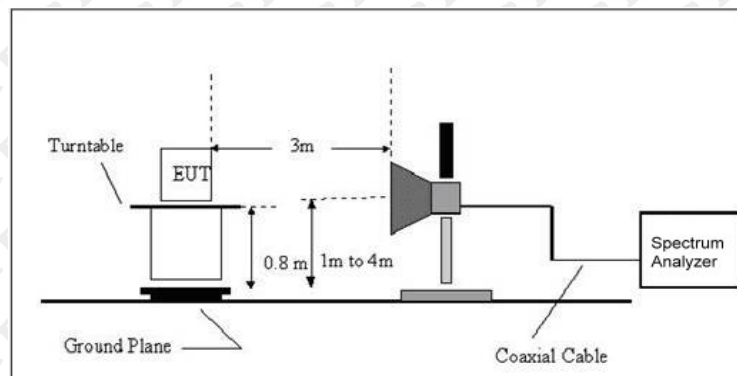
Frequency of emission (MHz)	Field strength (microvolts/meter)	
	(microvolts/meter)	(dB μ V/m)
30-88	90	39
88-216	150	43.5
216-960	210	46.4
Above 960	300	49.5

6.2. Test setup

Radiated Emission Test Set-Up Frequency Below 1 GHz



Radiated Emission Test Set-Up Frequency Above 1GHz



The radiated tests were performed in 3 meter Chamber test site, using the setup accordance with the ANSI C63.4:2014.

6.3.EMI test receiver setup and spectrum analyzer setup

During the radiated emission test, the EMI test receiver and Spectrum Analyzer were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30MHz-1000MHz	100kHz	300kHz	120kHz	QP
Above 1GHz	1MHz	3MHz	/	PK
	1MHz	10Hz	/	AVG

6.4. Test procedure

1. The measurement was performed in a semi-anechoic chamber, and instruments used were followed clause 4 of ANSI C63.4
2. Detailed test procedure was following clause 8 of ANSI C63.4.

6.5. Corrected Amplitude & Margin Calculation

1. The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

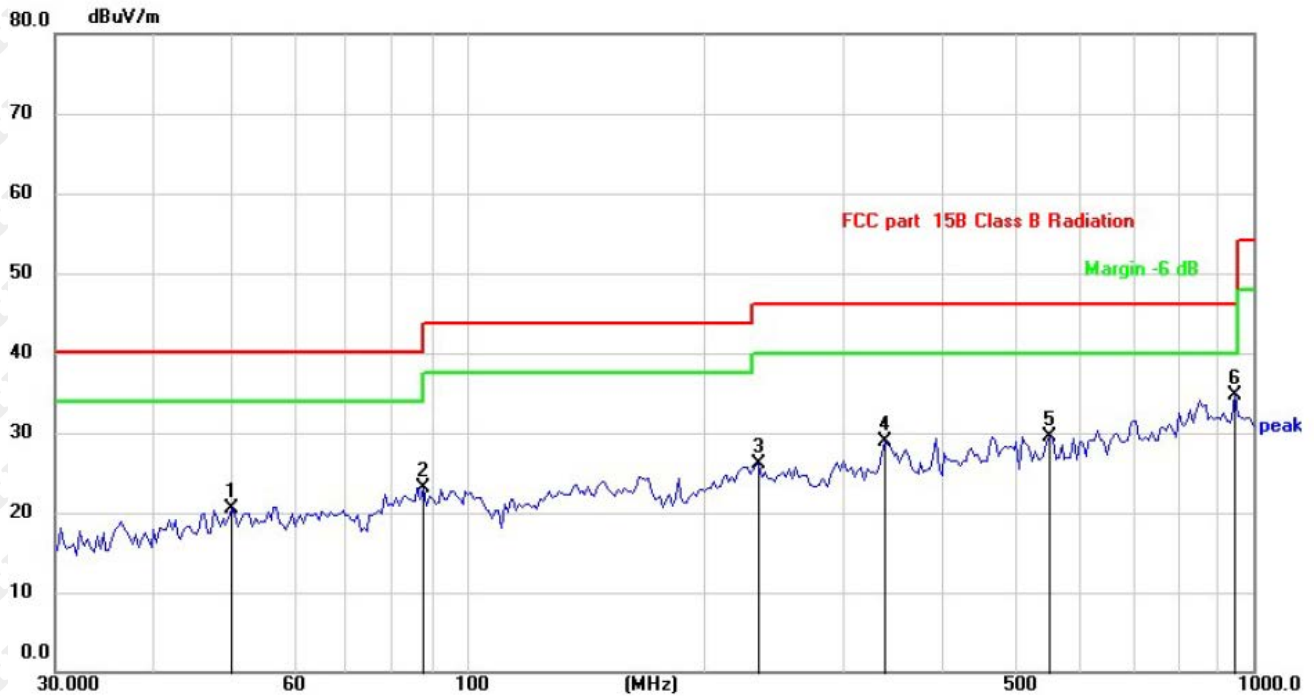
2. The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

6.6. Test results

Temperature:	23°C	Relative Humidity:	54 %
Pressure:	101kPa	Polarization :	Horizontal
Test Voltage :	DC3.3V	Test Mode:	Mode 1

Up to 1GHz:



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		50.3206	26.08	-5.66	20.42	40.00	-19.58	QP
2		88.1873	32.89	-9.74	23.15	43.50	-20.35	QP
3		235.4032	31.91	-5.84	26.07	46.00	-19.93	QP
4		340.1847	32.74	-3.80	28.94	46.00	-17.06	QP
5		550.9480	27.84	1.66	29.50	46.00	-16.50	QP
6	*	948.7609	28.89	5.91	34.80	46.00	-11.20	QP

Note: Result=Reading+Factor
Over Limit=Result-Limit

Temperature:	23°C	Relative Humidity:	54 %
Pressure:	101kPa	Polarization :	Vertical
Test Voltage :	DC3.3V	Test Mode:	Mode 1

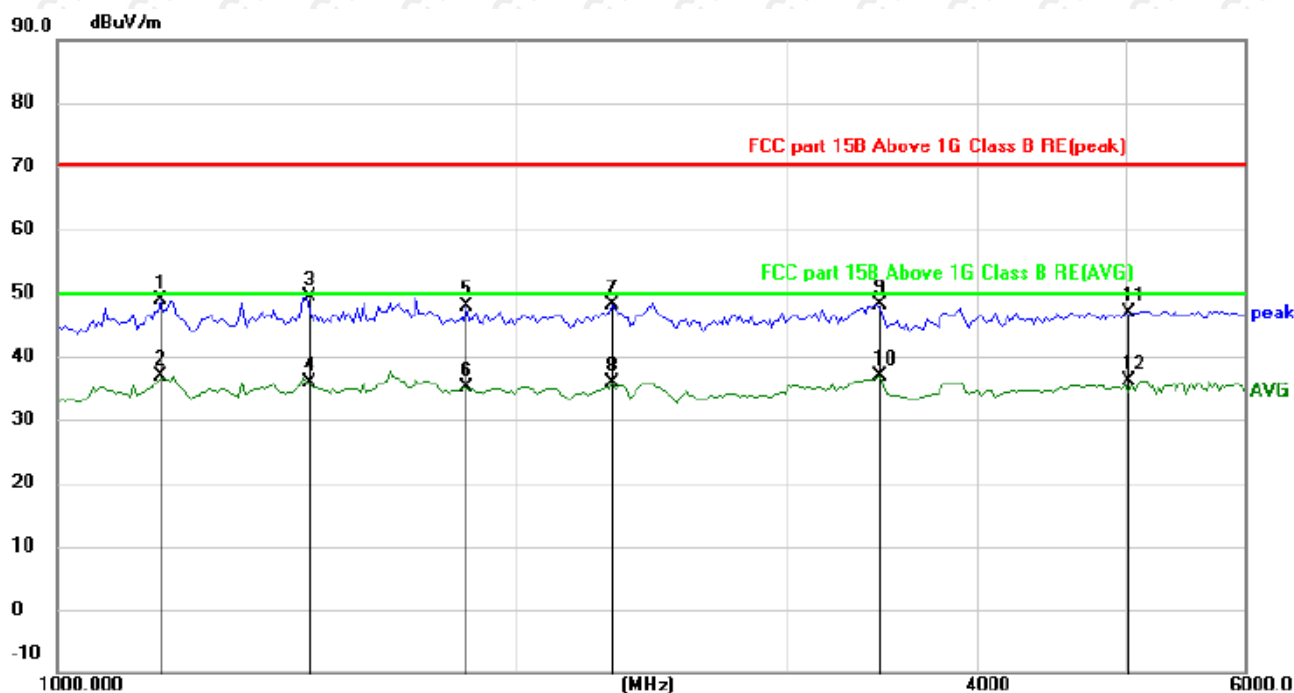


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		49.4459	24.14	-5.62	18.52	40.00	-21.48	peak
2		108.8375	28.37	-8.07	20.30	43.50	-23.20	peak
3		268.4852	33.25	-5.52	27.73	46.00	-18.27	peak
4		394.8544	31.63	-1.86	29.77	46.00	-16.23	peak
5		628.3745	28.53	2.97	31.50	46.00	-14.50	peak
6	*	948.7608	29.39	5.91	35.30	46.00	-10.70	peak

Note: Result=Reading+Factor
Over Limit=Result-Limit

Temperature:	23°C	Relative Humidity:	54 %
Pressure:	101kPa	Polarization :	Vertical
Test Voltage :	DC3.3V	Test Mode:	Mode 1

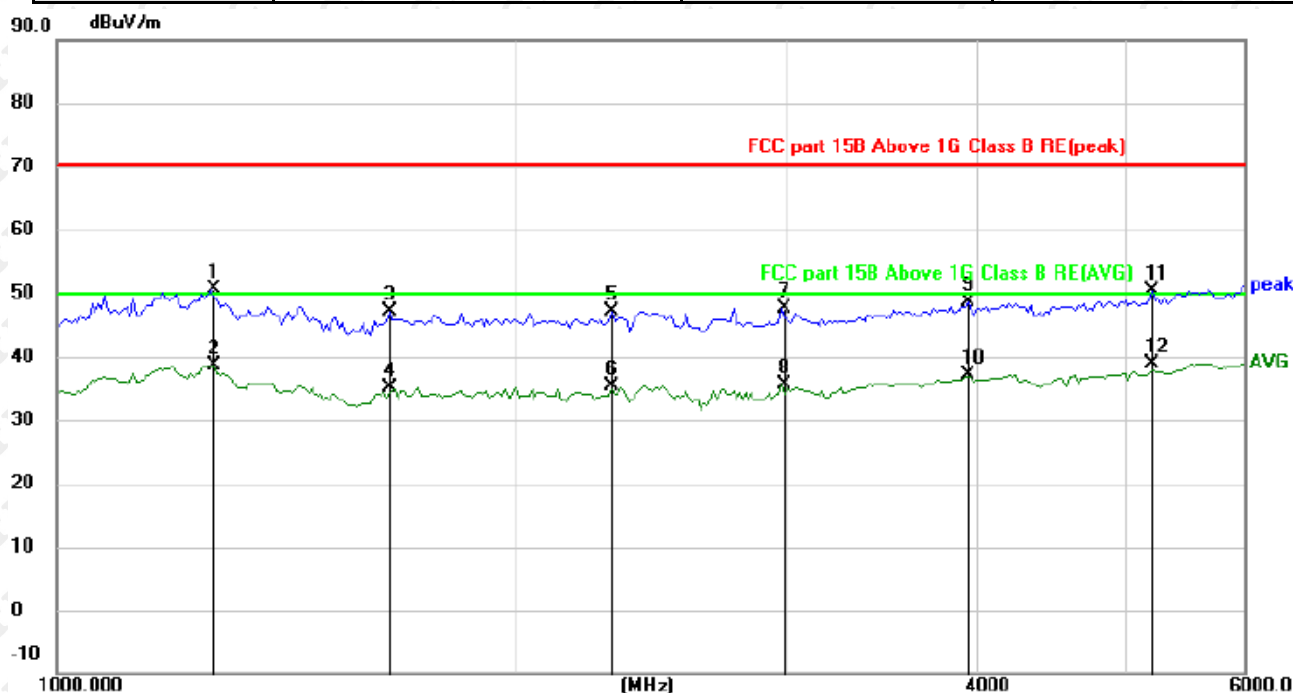
Above 1GHz:



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dB/m	dB	
1		1169.737	51.43	-2.60	48.83	70.00	-21.17	peak
2	*	1169.737	39.50	-2.60	36.90	50.00	-13.10	AVG
3		1456.840	50.28	-0.90	49.38	70.00	-20.62	peak
4		1456.840	36.83	-0.90	35.93	50.00	-14.07	AVG
5		1855.505	46.59	1.26	47.85	70.00	-22.15	peak
6		1855.505	33.83	1.26	35.09	50.00	-14.91	AVG
7		2310.924	45.73	2.29	48.02	70.00	-21.98	peak
8		2310.924	33.66	2.29	35.95	50.00	-14.05	AVG
9		3442.900	43.85	4.29	48.14	70.00	-21.86	peak
10		3442.900	32.60	4.29	36.89	50.00	-13.11	AVG
11		5015.753	38.54	8.39	46.93	70.00	-23.07	peak
12		5015.753	27.73	8.39	36.12	50.00	-13.88	AVG

Note: Result=Reading+Factor
Over Limit=Result-Limit

Temperature:	23°C	Relative Humidity:	54 %
Pressure:	101kPa	Polarization :	Horizontal
Test Voltage :	DC3.3V	Test Mode:	Mode 1



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		1262.292	52.74	-2.22	50.52	70.00	-19.48	peak
2		1262.292	40.81	-2.22	38.59	50.00	-11.41	AVG
3		1651.514	47.07	0.15	47.22	70.00	-22.78	peak
4		1651.514	34.87	0.15	35.02	50.00	-14.98	AVG
5		2310.924	44.90	2.29	47.19	70.00	-22.81	peak
6		2310.924	32.99	2.29	35.28	50.00	-14.72	AVG
7		2983.131	44.79	2.85	47.64	70.00	-22.36	peak
8		2983.131	32.88	2.85	35.73	50.00	-14.27	AVG
9		3955.770	42.78	5.96	48.74	70.00	-21.26	peak
10		3955.770	31.22	5.96	37.18	50.00	-12.82	AVG
11		5222.092	41.46	9.02	50.48	70.00	-19.52	peak
12	*	5222.092	29.93	9.02	38.95	50.00	-11.05	AVG

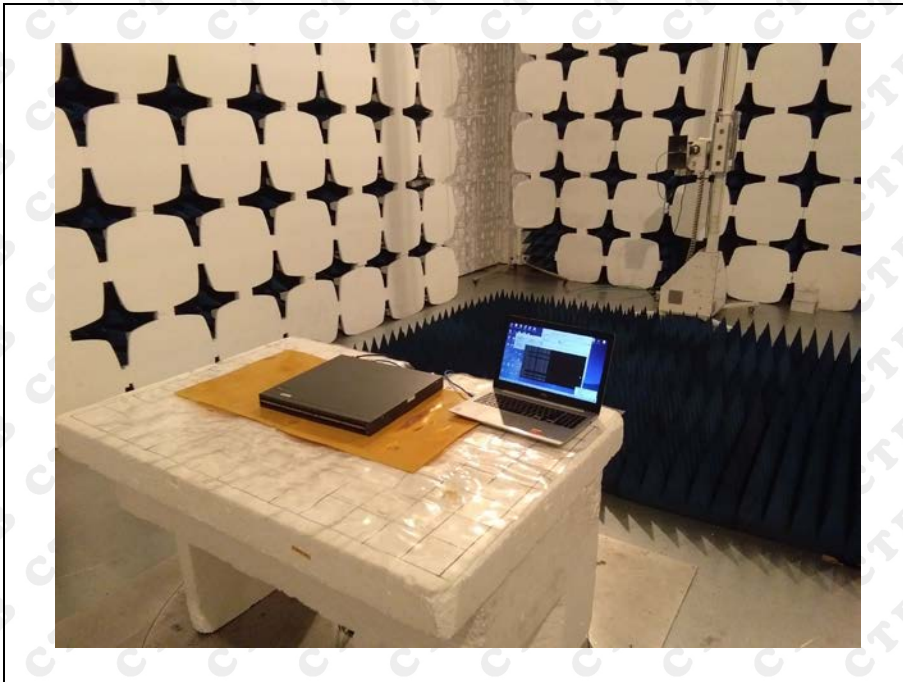
Note: Result=Reading+Factor
Over Limit=Result-Limit

7. Photographs of test setup

RE



RE(Above 1GHz)

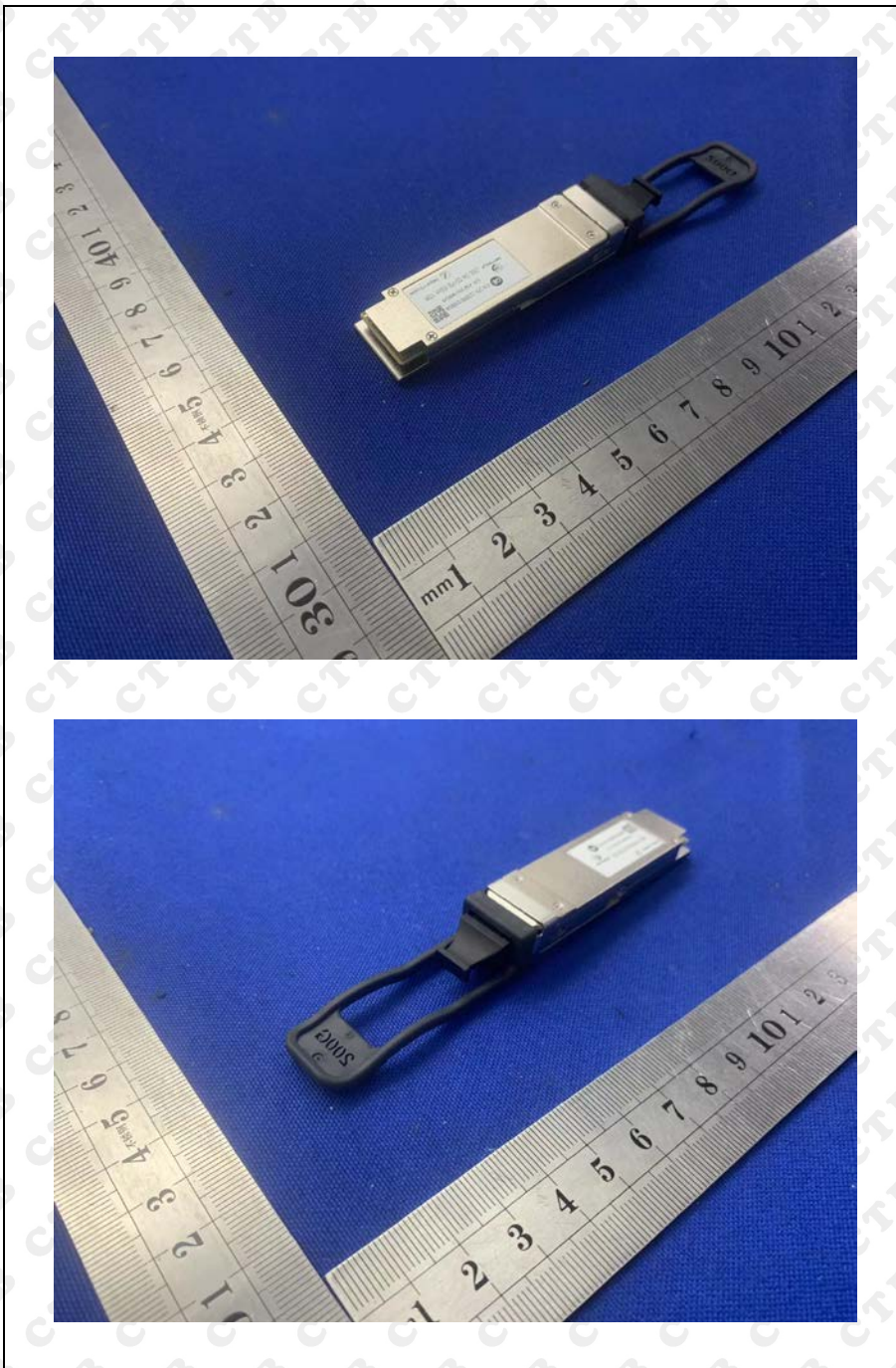


8. Photographs of EUT

EUT photo 1



EUT photo 2



End of report