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TEST REPORT

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KCTL

1. Client

- Name : FOSC Technology
- Address : 42, Jomaru-ro 397beon-gil, Bucheon-si, Gyeonggi-do 14559, Rep. of Korea
- Date of Receipt : 2020-04-01

2. Use of Report : -

3. Name of Product and Model : Non-Contact IR Temp Measurement / FOSC-2000T

4. Manufacturer and Country of Origin : FOSC Technology / Korea

5. Date of Test : 2020-04-03

6. Test method used : ANSI C63.4:2014, Class B

7. FCC ID : 2AV3QFOSC-2000T

8. Test Results : Refer to the test result in the test report

Affirmation	Tested by Name : Gunhee Lee (Signature)	Technical Manager Name : Gunsu Park (Signature)

2020-04-21

KCTL Inc.

As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by KCTL Inc.

REPORT REVISION HISTORY

Date	Revision	Page No
2020-04-07	Originally issued	-
2020-04-16	Added 4.5 phrase note	11
2020-04-21	Changed the FCC ID	1

Note. The report No. KR20-SEC0060 is superseded by the report No. KR20-SEC0060-A
The report No. KR20-SEC0060-A is superseded by the report No. KR20-SEC0060-B

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1. Applicant information

Applicant:	FOSC Technology
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2. Laboratory information

Address

KCTL Inc. (Suwon Lab.)

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Telephone Number: 82 31 285 0894

Facsimile Number: 82 505 299 8311

FCC Site Designation No: KR0040

VCCI Registration No. : R-20080, G-20078, C-20059, T-20056

Industry Canada Registration No. : 8035A

KOLAS NO.: KT231

SITE MAP

3. Test system configuration

3.1 Operation environment

	Temperature	Humidity	Pressure
Chamber 10 m(RE)	21.2 °C	34.3 % R.H.	-

Test site

These testing items were performed following locations;

Test item	Test site
Conducted Emission	Shielded Room
Radiated Emission	10 m Chamber

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3.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC.
The factors contributing to uncertainties are test receiver, cable loss, antenna factor calibration, Antenna directivity, antenna factor variation with height, antenna phase center variation, antenna frequency interpolation, measurement distance variation, site imperfection, mismatch, and system repeatability. Based on CISPR 16-4-2, the measurement uncertainty level with a 95 % confidence level was applied.

Conducted Emission measurement (Confidence level about 95 %, *k* = 2)		
Shielded Room (CE#1)	9 kHz ~ 150 kHz: 3.66 dB	
	150 kHz ~ 30 MHz: 3.26 dB	
Shielded Room (CE#2)	9 kHz ~ 150 kHz: 3.48 dB	
	150 kHz ~ 30 MHz: 3.06 dB	
Radiated Emission measurement (Confidence level about 95 %, *k* = 2)		
10 m Chamber (4F)	30 MHz ~ 300 MHz	3 m: 5.36 dB
		10 m: 5.34 dB
	300 MHz ~ 1 000 MHz	3 m: 5.48 dB
		10 m: 5.36 dB
	1 GHz ~ 6 GHz	3 m: 6.36 dB
	6 GHz ~ 18 GHz	3 m: 6.64 dB
	18 GHz ~ 30 GHz	3 m: 6.74 dB
	30 GHz ~ 40 GHz	3 m: 6.16 dB
10 m Chamber (2F)	30 MHz ~ 300 MHz	3 m: 4.98 dB
		10 m: 4.96 dB
	300 MHz ~ 1 000 MHz	3 m: 5.16 dB
		10 m: 5.02 dB
	1 GHz ~ 6 GHz	3 m: 6.36 dB
	6 GHz ~ 18 GHz	3 m: 6.64 dB

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3.3 Measurement Program

These test items were performed by software programs;

Test item	Measurement Program		Used
Conducted Emission	EP5CE_V 5.4.0(TOYO)		☐
Radiated Emission	2F	EP5RE_V 4.6.0(TOYO)	☒
	4F	EP5RE_V 5.11.10(TOYO)	

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4. Description of EUT

4.1 General information

Operating temp	10~40℃	Weight	50g (witout battery)
Resolution	0.2℃/0.2℉	Measuring range	32.0~42.5℃
Storage temp	0~50℃		
Humidity rate	≤85%	Precision	±0.2
Power	DC3V (2*AAA)	Measuring distance	3~5cm
Size	141(L)×41(W)×38(D)	Auto off	15second

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4.2 Product description

Type of product	Non-Contact IR Temp Measurement
Model name (Basic)	FOSC-2000T
Model name (Variant)	-
Difference	-
Serial no	-
Testing voltage	DC 3 V
Input rating	DC 3 V (Built in Battery)
Internal clock frequency	4 MHz
Note	-

4.3 Auxiliary equipments

Type	Model / Part #	S/N	Manufacturer
-	-	-	-

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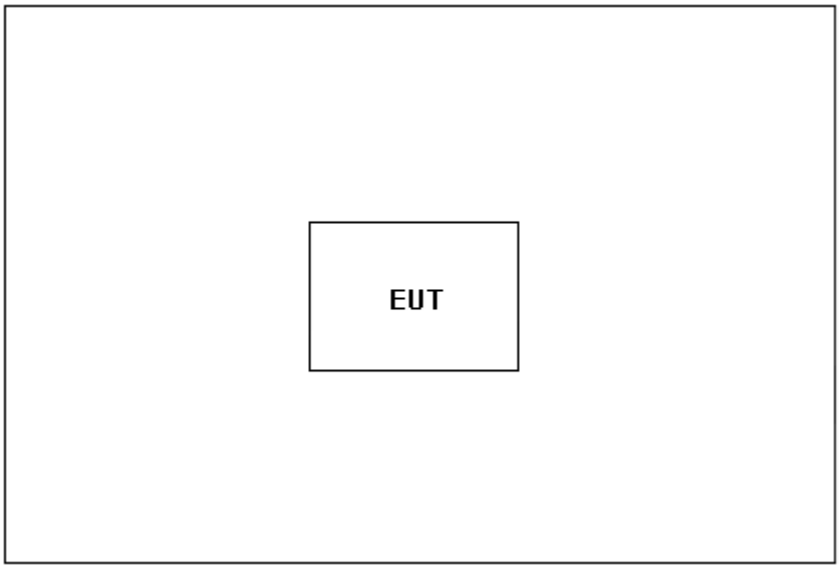
4.4 Test configuration



	Start		End		Cable	
	Name	I/O port	Name	I/O port	Length (m)	Spec.
-	**EUT**	-	-	-	-	-

4.5 Operating conditions

The EUT was configured as normal intended use.

Test Mode	Normal operating
Test #1	Check the operation status of the EUT on the LCD display and test it in the standby state.

Note 1. The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z.
It was determined that Z orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in Z orientation.

5. Summary of test results

5.1 Summary of EMI emission test results

Applied	Test items	Test method	Result
☐	Conducted Emission	ANSI C63.4:2014, Class B FCC Part 15 Subpart B	Note 1)
☒	Radiated Emission	ANSI C63.4:2014, Class B FCC Part 15 Subpart B	Pass

Note 1): This test item is not applicable because the product is supplied power from battery.

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6. Test results

6.1 Radiated Emission

Test specification	ANSI C63.4:2014, Class B FCC Part 15 Subpart B		
Testing voltage	DC 3 V		
Test facility	10 m Chamber (4F)		
Test distance	3 m		
Date	2020-04-03		
Temperature (°C)	21.2 °C	Humidity (% R.H.)	34.3 % R.H.
Remarks	Pass		

6.1.1 Limits of radiated emission measurement

Frequency [MHz]	Class A (dB(μV/m)) @ 10 m	Class B (dB(μV/m)) @ 3 m
30-88	39	40
88-216	43.5	43.5
216-960	46.4	46
Above 960	49.5	54

Note- Alternative standard: CISPR, Pub. 22

6.1.2 Measurement procedure

The test was done at a 10 m chamber with a quasi-peak detector. EUT was placed on a non-metallic table height of 0.8 m above the reference ground plane. Cables were folded back and forth forming a bundle 0.3 m to 0.4 m long and were hanged at a 0.4 m height to the ground plane.

Cables connected to EUT were fixed to cause maximum emission. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

6.1.3 Used equipments

Equipment	Model no.	Serial no.	Makers	Next Cal. Date	Used
EMI TEST RECEIVER	ESR7	101078	R&S	2020.08.22	☒
Bilog Antenna	CBL 6112D	37876	TESEQ	2020.07.20	☒
AMPLIFIER	310N	293004	SONOMA	2020.08.22	☒
ATTENUATOR	8491B	MY39270292	AGILENT	-	☒
Antenna Mast	MA4640-XP-ET	-	Innco Systems	-	☒
Turn Table	TT 3.0-3t	-	MATURO	-	☒

6.1.4 Sample calculation

The field strength is calculated adding the antenna Factor, cable loss and, Antenna pad adding, subtracting the amplifier gain from the measured reading.

The sample calculation is as follow:

Result = M.R + C.F(A.F + C.L + 6 dB Att – A.G)

M.R = Meter Reading

C.F = Correction Factor

A.F = Antenna Factor

C.L = Cable Loss

A.G = Amplifier Gain

6 dB Att = 6 dB Attenuator

If M.R is 30 dB, A.F 12 dB, C.L 5 dB, 6 dB, A.G 35 dB

The result is 30 + 12 + 5 + 6 – 35 = 18 dB (μN/m)

Bilog Antenna and ATTENUATOR (6 dB) were calibrated together.

AV = CAV : Abbreviation of CISPR Average

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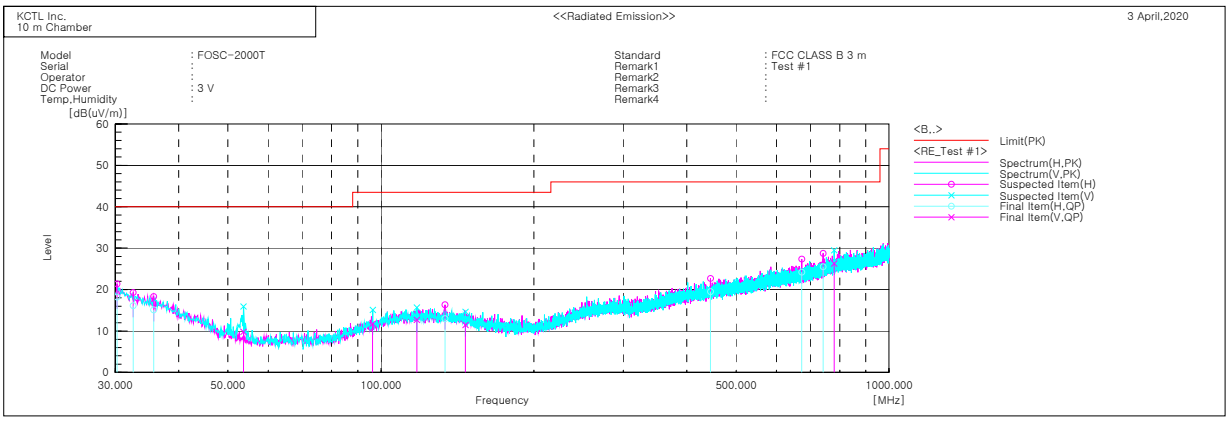
6.1.5 Radiated emission measurement result

30 MHz ~ 1 GHz



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	30.241	H	23.3	-5.1	18.2	40.0	21.8	394.0	18.0
2	32.543	H	22.3	-6.2	16.1	40.0	23.9	390.0	34.0
3	35.697	H	22.8	-7.7	15.1	40.0	24.9	210.0	118.0
4	53.641	V	26.1	-16.3	9.8	40.0	30.2	114.0	147.0
5	96.322	V	23.4	-11.6	11.8	43.5	31.7	122.0	215.0
6	117.661	V	22.0	-9.3	12.7	43.5	30.8	315.0	117.0
7	133.666	H	22.4	-9.4	13.0	43.5	30.5	398.0	15.0
8	146.641	V	21.3	-9.8	11.5	43.5	32.0	121.0	13.0
9	445.283	H	19.6	-0.1	19.5	46.0	26.5	387.0	184.0
10	673.471	H	19.2	5.0	24.2	46.0	21.8	390.0	14.0
11	741.856	H	18.8	6.7	25.5	46.0	20.5	304.0	6.0
12	780.172	V	18.6	7.7	26.3	46.0	19.7	112.0	29.0