FCC TEST REPORT

Job No. : **GPWE2112000276EC**

Applicant : **Pittasoft Co., Ltd.**

Equipment Under Test (EUT) :

Product Name: Blackvue Connectivity Module

Model Name: CM100GLTE

FCC Authorization Type : **Certification**

Applied Standards : **FCC Part 15 Subpart B, Class B**
ANSI C63.4a:2017

FCC ID : **YCK-CM100GLTE**

Date of Receipt : **December 8, 2021**

Date of Test : **December 28, 2021**

Date of Issue : **February 9, 2022**

Test Results : **Complied**

Tested by : ----------
Kevin Jo

Reviewed by : ----------
Paul Kang

This test report does not assure KOLAS accreditation.
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2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.

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Contents

Revision History

Revision	Report number	Description
0	F690501-RF-EMC000386	Initial
1	F690501-RF-EMC000386-1	Clause 1.1, 1,4 were revised.

1. General Information

1.1 Client Information

Applicant	Pittasoft Co., Ltd.
Applicant Address	A 4th floor, ABN Tower, 311, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Manufacturer	Pittasoft Co., Ltd.
Manufacturer Address	A 4th floor, ABN Tower, 311, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Republic of Korea
Factory	SMT SCOUT Co., Ltd.
Factory Address	38 Dangjeong-ro, Gunpo-si, Gyeonggi-do, Republic of Korea, 15849

1.2 Test Laboratory

Name and Address	SGS Korea Co., Ltd.
- Giheung 1 Laboratory	35, Giheungdanji-ro 121beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea
- Giheung 2 Laboratory	23, Giheungdanji-ro 24beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea
- Gunpo 1 Laboratory	4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, 15807, Republic of Korea
FCC Registration No.	KR0150
Phone	+ 82 31 428 5719
Fax	+ 82 31 427 2370
e-mail	paul.kang@sgs.com

1.3 General Information of E.U.T.

Classification	Specification
Product Name	Blackvue Connectivity Module
Model Name	CM100GLTE
Serial No.	NA000000000002
EMI Classification	Class B
Test Voltage	DC 5.0 V
Rated Voltage	DC 5.0 V (Min DC 2.7 / Max DC 5.5V)
Highest Internal Frequency	1 910 ㎒
H/W Version	Rev1.0
S/W Version	Ver.090
Function	Blackvue Connectivity Module

1.4 Operating Modes and Conditions

Operating mode	Operating Condition
LTE BAND 2 Idle	Wired to Dash Cam and connect to LTE BAND 2 Idle status

1.5 Peripheral Equipments

Description	Model	Serial No.	Manufacturer	Note.
Wideband Radio Communication Tester	CMW 500	144034	R & S	-
Car Battery	GB 90L	-	SEBANG GLOBAL BATTERY CO.,LTD.	-
DASH CAM	DR750X	-	Pittasoft Co., Ltd.	-

1.6 Cable List

Start		END		Cable Spec.		Used core
Name	I/O Port	Name	I/O Port	Length (m)	Shield	
AC Source	AC OUT	Wideband Radio Communication Tester	AC IN	1.2	Unshield	-
Car Battery	DC OUT	DASH CAM	DC IN	1.2	Unshield	-
DASH CAM	5pin USB	EUT	5pin USB	3.0	Unshield	-

1.7 System Configurations

Description	Model	Serial No.	Manufacturer	Note
MainBoard	CM100GLTE_REV1.0	-	Pittasoft Co., Ltd.	-

1.8 Test System Layout

Test System Layout


1.9 Modifications/Notes

- There was no modified item during the test.

1.10 Applicable Standards for Testing

Standards	Status	Deviation
FCC Part 15 Subpart B ANSI C63.4a:2017	Applicable	No Deviation

1.11 Summary of Test Results

Test Item	Standards	Results
Radiated Emission	FCC Part 15 Subpart B Section 15.109 ANSI C63.4a:2017	Complied

Note: Test methods of all test items are performed according to the basic standards in this table.

EMISSION

2.1 Test Results

Test Items	Standards	Test Results
Radiated Emission	FCC Part 15 Subpart B Section 15.109 ANSI C63.4a:2017	Complied

2.2 Test Method and Limits

2.2.1 Test Method

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Radiated Emission	30 ㎒ ~ 1 ㎓	120 ㎑	10 m & 3 m
	Above 1 ㎓	1 ㎒	3 m

Note: 10 m method of radiated emission measurement is only applied to Class A equipment over the frequency range of 30 ㎒ ~ 1 ㎓. Except this, 3 m method is applied to Class B equipment over the frequency range of 30 ㎒ ~ 1 ㎓ and Class A and Class B equipment above 1 ㎓.

2.2.2 Test Limits

-Radiated Emission Limits below 1 ㎓

Frequency Range	Limits(dB μV/m)	Class
	Quasi-peak	
30 ㎒ ~ 88 ㎒	39.0	Class A (10 m method)
88 ㎒ ~ 216 ㎒	43.5	
216 ㎒ ~ 960 ㎒	46.4	
960 ㎒ ~ 1 ㎓	49.5	
30 ㎒ ~ 88 ㎒	40.0	Class B (3 m method)
88 ㎒ ~ 216 ㎒	43.5	
216 ㎒ ~ 960 ㎒	46.0	
960 ㎒ ~ 1 ㎓	54.0	

-Radiated Emission Limits above 1 ㎓ (3 m method)

Frequency Range	Limits(dB μV/m)		Class
	Average	Peak	
Above 1 ㎓	59.5	79.5	Class A
Above 1 ㎓	54.0	74.0	Class B

Note: The limits of class A equipment is extrapolated using an extrapolation factor of 20 ㏈/decade because it was measured at 3 m distance not 10 m distance.

2.3 Radiated Emission

The initial preliminary exploratory scans were performed over the measuring frequency range (30 ㎒ to 6 ㎓) using a max hold mode incorporating a Peak detector by using the EMI measuring software. The final test data was measured using a Quasi-Peak detector below 1 ㎓, Peak and CISPR-Average detector above 1 ㎓. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

Note. Measuring software
-Giheung 1Lab.: EMC32(V9.26.01) from R&S
-Gunpo 1Lab.: EP5RE(V5.3.70) from TOYO

2.3.1 Test Equipments

Equipment	Model	Manufacturer	Serial No	Cal Due. Date
Horn Antenna	HF906	R & S	100326	2022.02.04
Signal Conditioning Unit	SCU 18	R & S	10117	2022.06.09
Test Receiver	ESU26	R & S	100194	2022.06.08
Hybrid Antenna	VULB9163	SCHWARZBECK	396	2022.03.18
Amplifier	8447F	HP	2944A03909	2022.08.06
Coaxial Cable	MWX221-NMSNMS	RF ONE	J023142	2022.03.14
Coaxial Cable	PL520-NMNM-10M	RF ONE	0200324001	2022.03.14

Note: The calibration period of every equipment is 1 year except cables that is 6 months.

2.3.2 Test Site

3 m SEMI-ANECHOIC CHAMBER in Gunpo 1 Laboratory (Below 1 ㎓, Above 1 ㎓)

2.3.3 Environment Conditions

Below 1 ㎓

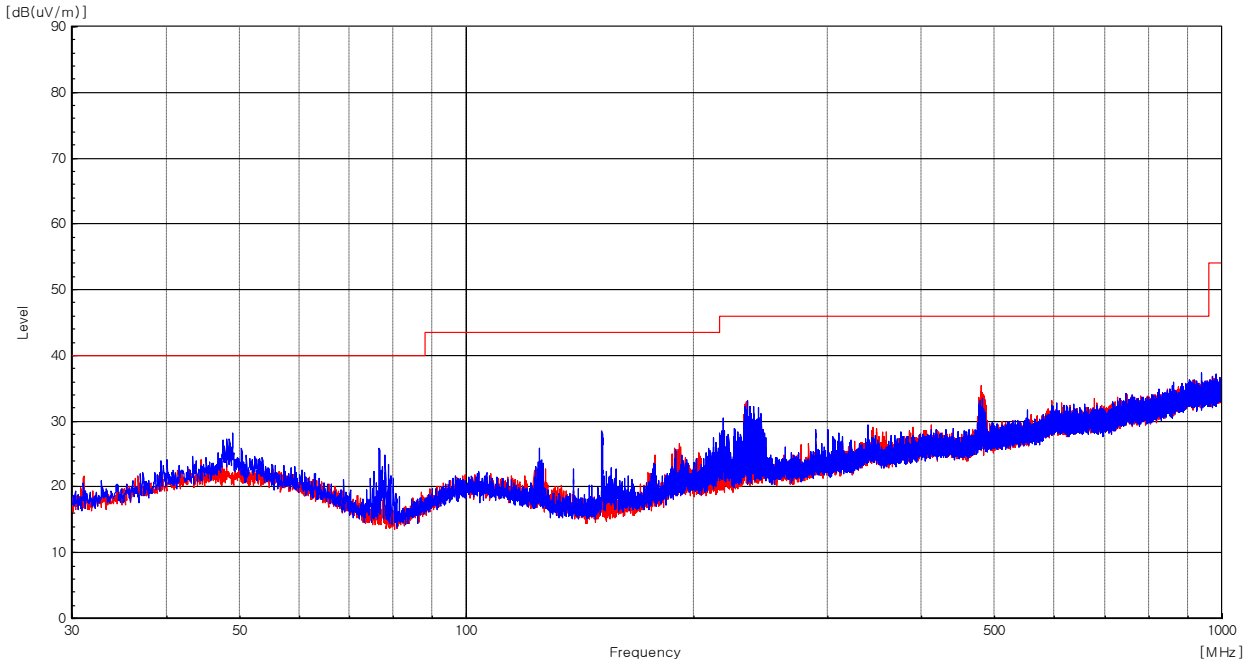
Temperature	(Minimum 19.6, Maximum 19.8) ℃
Humidity	(Minimum 25.0, Maximum 25.0) % R.H.
Atmospheric Pressure	(Minimum 102.5, Maximum 102.5) ㎪
Test Date	December 28, 2021

Above 1 ㎓

Temperature	(Minimum 20.0, Maximum 21.3) ℃
Humidity	(Minimum 24.0, Maximum 25.0) % R.H.
Atmospheric Pressure	(Minimum 102.5, Maximum 102.5) ㎪
Test Date	December 28, 2021

2.3.4 Test Results

Below 1 ㎓ (3 m method)



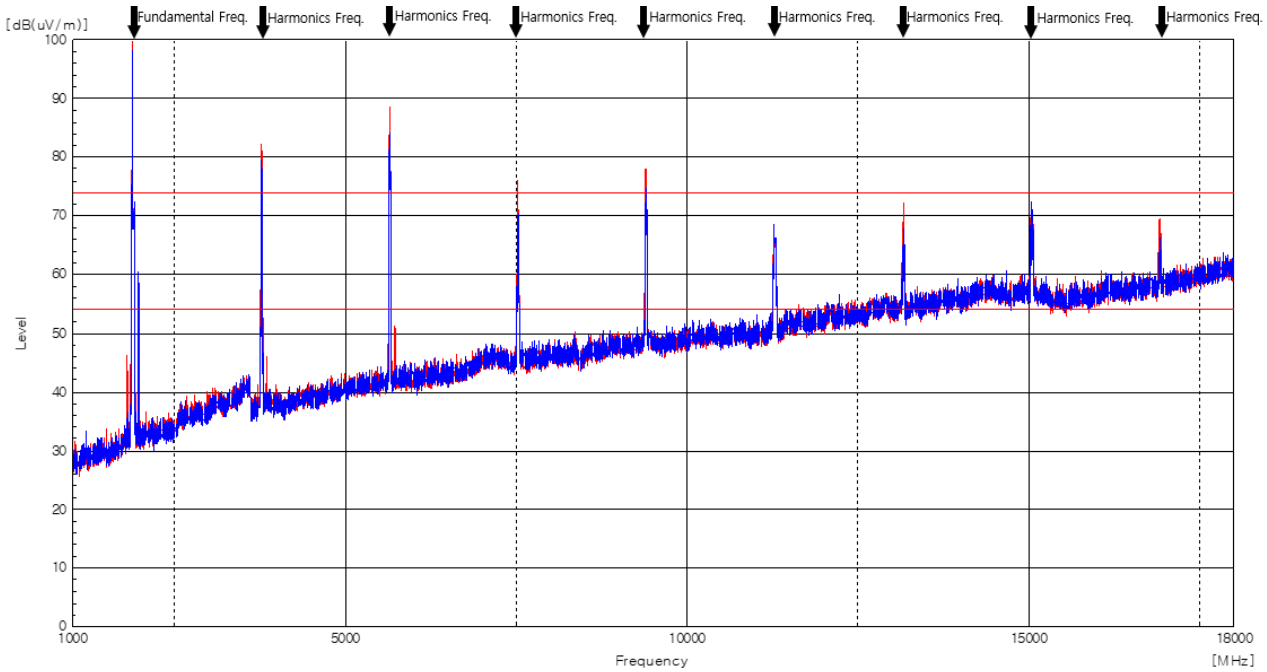
Freq. (㎒)	Reading (dBμV/m)	Pol. (H/V)	A (°)	H (㎝)	AF (dB/m)	CL (dB)	Amp. (dB)	F/S (dBμV/m)	Limit (dBμV/m)	Margin (dB)
48.96	35.20	V	86	100	20.10	1.09	28.19	28.20	40.00	11.80
150.97	40.90	V	138	110	13.70	1.92	28.00	28.52	43.50	14.98
234.55	40.40	H	344	185	17.78	2.38	27.70	32.86	46.00	13.14
235.24	40.50	V	108	120	17.81	2.38	27.69	33.00	46.00	13.00
480.04	38.10	H	116	100	22.50	3.37	28.58	35.39	46.00	10.61
482.06	36.20	V	5	120	22.58	3.37	28.59	33.56	46.00	12.44

Measurement Uncertainty :See the Appendix A

Note:
- AF = Antenna Factor
- CL = Cable Loss
- Amp. = Amplifier Gain
- Pol. H = Horizontal
- Pol. V = Vertical
- A = Angle
- H = Height
- Margin = Limit – Result
- F/S = Level + AF + CL – AMP

Above 1 GHz (1 GHz - 6 GHz)(3 m method)

(Measurement Distance: 3.0 m)



Freq.	Level (dBμV/m)		Pol.	A	H	AF	CL	Amp.	CF	F/S	Limit	Margin
(MHz)	Peak	C-AV	(H/V)	(°)	(cm)	(dB)	(dB)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
1 199.04	53.00	-	H	229	100	25.49	5.77	45.30	0.00	38.96	74.00	35.04
1 199.04	-	33.60	H	229	100	25.49	5.77	45.30	0.00	19.56	54.00	34.44
1 201.88	52.40	-	V	76	100	25.11	5.78	45.30	0.00	37.99	74.00	36.01
1 201.88	-	33.50	V	76	100	25.11	5.78	45.30	0.00	19.09	54.00	34.91
1 729.58	46.00	-	H	202	100	26.18	7.40	45.47	0.00	34.11	74.00	39.89
1 729.58	-	34.20	H	202	100	26.18	7.40	45.47	0.00	22.31	54.00	31.69
2 394.00	52.20	-	V	247	100	28.44	8.69	45.31	0.00	44.02	74.00	29.98
2 394.00	-	33.50	V	247	100	28.44	8.69	45.31	0.00	25.32	54.00	28.68
2 622.08	46.80	-	H	3	100	28.78	9.56	45.27	0.00	39.87	74.00	34.13
2 622.08	-	33.40	H	3	100	28.78	9.56	45.27	0.00	26.47	54.00	27.53
3 985.63	46.80	-	V	54	100	32.13	11.51	43.06	0.00	47.38	74.00	26.62
3 985.63	-	34.20	V	54	100	32.13	11.51	43.06	0.00	34.78	54.00	19.22

Measurement Uncertainty: See the Appendix A

Note:
- AF = Antenna Factor
- CL = Cable Loss
- F/S = Field Strength
- Pol.(H) = Horizontal
- Pol.(V) = Vertical
- Amp. = Amplifier Gain
- Margin = Limit – F/S
- F/S = Level + AF + CL – Amp.
- A: Angle
- H: Height

Appendix A : Measurement Uncertainty

- Giheung 1 Laboratory

Test Method		Measurement Uncertainty	
Conducted Emission		ENV216	3.5 dB (The confidential level is 95 %, *k*=2)
		ESH2-Z5	3.2 dB (The confidential level is 95 %, *k*=2)
		ESH3-Z6	3.2 dB (The confidential level is 95 %, *k*=2)
		NNLK8129	3.2 dB (The confidential level is 95 %, *k*=2)
Conducted Emission - Signal		ISN T800	5.6 dB (The confidential level is 95 %, *k*=2)
		ISNT8-Cat6	5.4 dB (The confidential level is 95 %, *k*=2)
		ISN S751	5.6 dB (The confidential level is 95 %, *k*=2)
Discontinuous		3.4 dB (The confidential level is 95 %, *k*=2)	
Disturbance Voltage at Antenna Terminal		2.0 dB (The confidential level is 95 %, *k*=2)	
Radiated Emission	9 kHz ~30 MHz (3m chamber)	Horizontal	3.4 dB (The confidential level is 95 %, *k*=2)
		Vertical	3.4 dB (The confidential level is 95 %, *k*=2)
	30 MHz ~ 1 000 MHz (10m chamber)	Horizontal	4.4 dB (The confidential level is 95 %, *k*=2)
		Vertical	4.6 dB (The confidential level is 95 %, *k*=2)
	1 GHz ~ 18 GHz (3m chamber)	Horizontal	4.0 dB (The confidential level is 95 %, *k*=2)
		Vertical	4.0 dB (The confidential level is 95 %, *k*=2)
Radiated Immunity Test		0.9 dB (The confidential level is 95 %, *k*=2)	
Conducted Immunity Test		4.5 dB (The confidential level is 95 %, *k*=2)	
Magnetic Field		5.0 dB (The confidential level is 95 %, *k*=2)	

- Gunpo 1 Laboratory

Test Method		Measurement Uncertainty	
Conducted Emission		ENV216	3.4 dB (The confidential level is 95 %, *k*=2)
		ESH2-Z5	3.2 dB (The confidential level is 95 %, *k*=2)
		ESH3-Z6	3.4 dB (The confidential level is 95 %, *k*=2)
Conducted Emission - Signal		ISN T800	5.6 dB (The confidential level is 95 %, *k*=2)
		ISNT8-Cat6	5.6 dB (The confidential level is 95 %, *k*=2)
		ISN S751	7.3 dB (The confidential level is 95 %, *k*=2)
Disturbance Voltage at Antenna Terminal		2.4 dB (The confidential level is 95 %, *k*=2)	
Radiated Emission	9 kHz ~30 MHz (3 m chamber)	Horizontal	3.3 dB (The confidential level is 95 %, *k*=2)
		Vertical	3.3 dB (The confidential level is 95 %, *k*=2)
	30 MHz ~ 1 000 MHz (3 m chamber)	Horizontal	4.8 dB (The confidential level is 95 %, *k*=2)
		Vertical	5.2 dB (The confidential level is 95 %, *k*=2)
	1 GHz ~ 18 GHz (3 m chamber)	Horizontal	3.9 dB (The confidential level is 95 %, *k*=2)
		Vertical	4.0 dB (The confidential level is 95 %, *k*=2)
Radiated Immunity Test		1.8 dB (The confidential level is 95 %, *k*=2)	
Conducted Immunity Test		1.9 dB (The confidential level is 95 %, *k*=2)	
Magnetic Field		2.0 dB (The confidential level is 95 %, *k*=2)	

- End of Test Report -