

FCC TEST REPORT

Job No. : GPEM2110000510EC

Applicant Name : Coledy Cred Inc.

Equipment Under Test (EUT) :

Product Name : DOSAGE TRACER SYSTEM

Model Name : DT100A1

FCC Authorization Type : Certification

Applied Standards : FCC Part 15 Subpart B, Class B

ANSI C63.4a:2017

FCC ID : 2A4FM-DT100A1

Date of Receipt : November 1, 2021

Date of Test : January 20, 2022 ~ January 28, 2022

Date of Issue : April 22, 2022

Test Results : Complied

Tested by

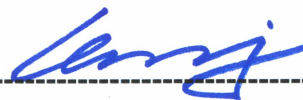
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Youngsik Na

Reviewed by

:



Julia Choi

This test report does not assure KOLAS accreditation.

- 1) The results of this test report are effective only to the items tested.
- 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

1. General Information.....	4
1.1 Client Information.....	4
1.2 Test Laboratory.....	4
1.3 General Information of E.U.T.	4
1.4 Operating Modes and Conditions.....	4
1.5 Peripheral Equipments.....	4
1.6 Cable List.....	5
1.7 System Configurations.....	5
1.8 Test System Layout	5
1.9 Modifications/Note	5
1.10 Applicable Standards for Testing	5
1.11 Summary of Test Results.....	5
2. Emission Test.....	6
2.1 Test Results.....	6
2.2 Test Method and Limits.....	6
2.2.1 Test Method	6
2.2.2 Test Limits.....	6
2.3 Radiated Emission	7
2.3.1 Test Equipments	7
2.3.2 Test Site.....	7
2.3.3 Environment Conditions	7
2.3.4 Test Results.....	8
Appendix A : Measurement Uncertainty	10

Revision History

Revision	Report number	Description
0	F690501-RF-EMC000436	Initial
1	F690501-RF-EMC000436_1	Revision for 1.3 General Information of E.U.T., 1.5 Peripheral Equipments, 1.8 Test System Layout

1. General Information

1.1 Client Information

Applicant	Coledy Cred Inc.
Applicant Address	1-A, 939, Gwacheon-daero, Gwanak-gu, Seoul, Republic of Korea
Manufacturer	Coledy Cred Inc.
Manufacturer Address	1-A, 939, Gwacheon-daero, Gwanak-gu, Seoul, Republic of Korea
Factory 1	MJTec Co., Ltd.
Factory 1 Address	65, Heungan-daero 439beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, Republic of Korea
Factory 2	SMT SCOUT
Factory 2 Address	38, Dangjeong-ro, Gunpo-si, Gyeonggi-do, Republic of Korea

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
- Gunpo 1 Laboratory	4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea
FCC Registration No.	KR0150
IC Registration No.	7837B
Phone	+ 82 31 548 0710
Fax	+ 82 31 548 0719
e-mail	julia.choi@sgs.com

1.3 General Information of E.U.T.

Classification	Specification
Product Name	DOSAGE TRACER SYSTEM
Model Name	DT100A1
Internal Clock Frequency	2.4 GHz
Tested Power	DC 3.0 V(CR2032)
Rated Voltage	DC 3.0 V(CR2032)
HW version	R42AD-AZ
SW version	KRCCA2LN2BV
Function	The product that indicates how many pills have been taken in real time through Bluetooth communication
Port	USB(Not used for test. only for administrator)

1.4 Operating Modes and Conditions

Operating mode	Operating Condition
1) Operating	A state that the EUT spits out the pill, and the quantity is transmitted to the mobile phone through Bluetooth communication

1.5 Peripheral Equipments

Description	Model	Serial No.	Manufacturer
Mobile phone	SM-G935S	R39HB09ZRF	Samsung Electronics Co., Ltd..

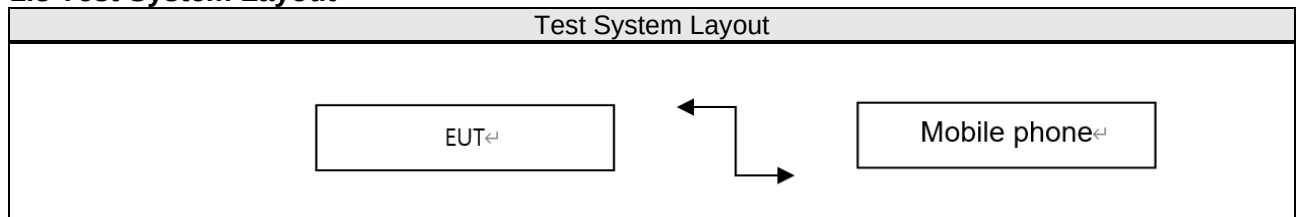
1.6 Cable List

Start		END		Cable Spec.		Used core
Name	I/O Port	Name	I/O Port	Length (m)	Shield	
EUT	-	Mobile phone	-	-	-	-

1.7 System Configurations

Description	Model	Serial No.	Manufacturer	Note
Main Board	BT-SENSOR Rev 4.2AD	-	-	-

1.8 Test System Layout



1.9 Modifications/Note

- 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
Conducted Emission	FCC Part 15 Subpart B Section 15.107 ANSI C63.4a :2017	N/A
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
Conducted Emission	FCC Part 15 Subpart B Section 15.107 ANSI C63.4a :2017	N/A
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
Conducted Emission	0.15 MHz ~ 30 MHz	9 kHz	-
Radiated Emission	30 MHz ~ 1 GHz	120 kHz	10 m & 3 m
	Above 1 GHz	1 MHz	3 m

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

2.2.2 Test Limits

-Conducted Emission Limits

Frequency Range	Limits(dB μ V)		Class
	Quasi-peak	Average	
0.15 MHz ~ 0.5 MHz	79	66	Class A
0.5 MHz ~ 30 MHz	73	60	
0.15 MHz ~ 0.5 MHz	66 to 56	56 to 46	Class B
0.5 MHz ~ 5 MHz	56	46	
5 MHz ~ 30 MHz	60	50	

Note : The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

-Radiated Emission Limits below 1 GHz

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

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

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

Note : The limits of class A equipment is extrapolated using an extrapolation factor of 20 dB/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 MHz to 12 GHz) 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 GHz, Peak and CISPR-Average detector above 1 GHz. 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 1 Lab: EMC32(V9.26.01) from R&S
- Gunpo 1 Lab: EP5RE(V5.3.70) from TOYO

2.3.1 Test Equipments

Equipment	Model	Manufacturer	Serial No	Cal Due. Date
EMI TEST RECEIVER	ESU26	R&S	100570	2022.02.24
Hybrid ANTENNA	VULB 9163	SCHWARZBECK	9163-437	2022.05.14
PREAMPLIFIER	AM-1431	MITEQ	1336160	2022.05.24
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	100109	2023.01.18
RF Cable	EMH-1Lab-RE-01	-	-	-
RF Cable	EMH-1Lab-RE-03	-	-	-
RF Cable	EMH-1Lab-RE-04	-	-	-
RF Cable	-	-	-	-
RF Cable	MWX221-NMSNMS (4m)	RF ONE	J023142	-
RF Cable	PL520-NMNM-10M (10m)	RF ONE	0200324001	-

2.3.2 Test Site

① Below 1 GHz

10m SEMI-ANECHOIC CHAMBER in Giheung 1 Laboratory

② Above 1 GHz

3m SEMI-ANECHOIC CHAMBER in Gunpo 1 Laboratory

2.3.3 Environment Conditions

① Below 1 GHz

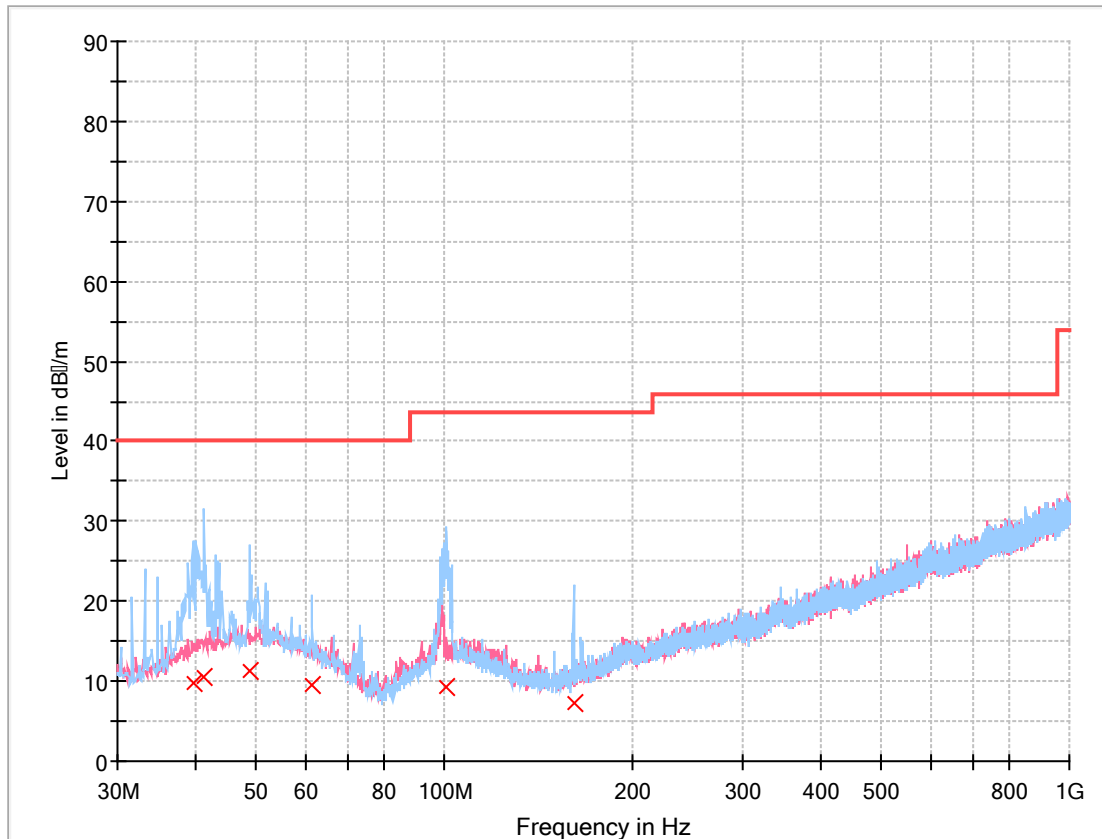
Temperature	(Minimum 19.0, Maximum 20.0) °C
Humidity	(Minimum 28.0, Maximum 29.0) % R.H.
Atmospheric Pressure	(Minimum 101.3, Maximum 101.3) kPa
Test Date	January 20, 2022

② Above 1 GHz

Temperature	(Minimum 21.0, Maximum 22.0) °C
Humidity	(Minimum 30.0, Maximum 31.0) % R.H.
Atmospheric Pressure	(Minimum 102.1, Maximum 102.1) kPa
Test Date	January 28, 2022

2.3.4 Test Results

① Below 1 GHz (3 m method)



Final Result

Frequency (MHz)	QuasiPeak (dB μV/m)	Limit (dB μV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
39.603	9.71	40.00	30.29	15 000.0	120.000	152.0	H	103.0	-18.0
41.349	10.59	40.00	29.41	15 000.0	120.000	141.0	H	152.0	-17.5
48.818	11.34	40.00	28.66	15 000.0	120.000	139.0	H	284.0	-16.4
61.428	9.62	40.00	30.38	15 000.0	120.000	115.0	H	0.0	-18.2
100.713	9.40	43.50	34.10	15 000.0	120.000	121.0	H	0.0	-18.5
160.950	7.17	43.50	36.33	15 000.0	120.000	333.0	H	0.0	-21.1

Measurement Uncertainty : See Appendix A

Note : • POL H = Horizontal

• Margin = Limit – Quasi Peak

• POL V = Vertical

• Corr. = Antenna Factor + Cable loss – Amplifier Gain

Ex) In case

Freq ; 100 MHz, level ; 30 dB(μ V/m), AF ; 10 dB/m, CL ; 4 dB, Amp ; 25 dB

Result = Level + AF + CL – Amp

= 30 + 10 + 4 - 25

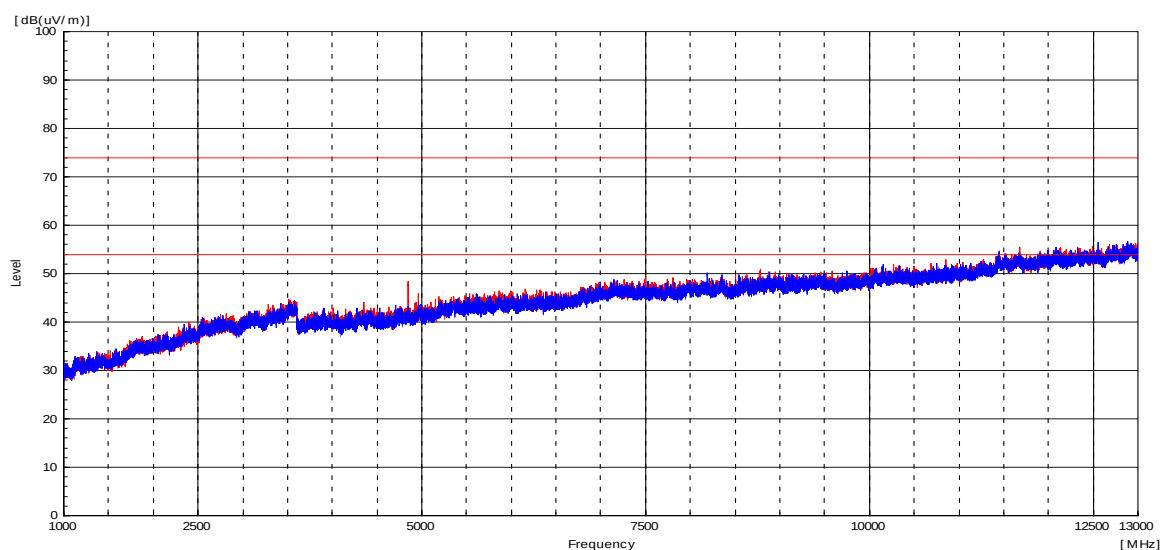
= 19

Margin = Limit – Result

= 43.5 – 19

= 24.5

② Above 1 GHz (3 m method)



Final Result

Frequency (MHz)	MaxPeak (dB μV /m)	CAverage (dB μV /m)	Limit (dB μV /m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3 109.50	40.80	-	74.00	37.84	15 000.0	1 000.000	191.0	V	2.0	4.64
3 109.50	-	28.70	54.00	29.94	15 000.0	1 000.000	191.0	V	2.0	4.64
4 852.60	50.20	-	74.00	21.22	15 000.0	1 000.000	100.0	H	116.0	-2.58
4 852.60	-	30.10	54.00	21.32	15 000.0	1 000.000	100.0	H	116.0	-2.58
6 602.00	43.00	-	74.00	24.89	15 000.0	1 000.000	100.0	V	182.0	-6.11
6 602.00	-	28.60	54.00	19.29	15 000.0	1 000.000	100.0	V	182.00	-6.11
7 594.90	42.70	-	74.00	22.98	15 000.0	1 000.000	200.0	V	167.0	-8.32
7 594.90	-	28.80	54.00	16.88	15 000.0	1 000.000	200.0	V	167.0	-8.32
8 340.70	41.90	-	74.00	22.89	15 000.0	1 000.000	198.0	H	38.0	-9.21
8 340.70	-	28.60	54.00	16.19	15 000.0	1 000.000	198.0	H	38.0	-9.21
9 386.20	42.10	-	74.00	21.43	15 000.0	1 000.000	189.0	H	210.0	-10.47
9 386.20	-	28.60	54.00	14.93	15 000.0	1 000.000	189.0	H	210.0	-10.47

Measurement Uncertainty : See 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
- Result = Level + AF + CL – AMP

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 -