

FCC Test Report

Product Name	Service Key Reader
Model No.	KR0164
FCC ID.	QLXKR0164

Applicant	Tera Tron GmbH
Address	Martin-Siebert-Str. 5, 51647 Gummersbach, Germany

Date of Receipt	Feb. 05, 2020
Issued Date	Apr. 10, 2020
Report No.	2020041R-RFUSP20V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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Test Report

Issued Date: Apr. 10, 2020

Report No.: 2020041R-RFUSP20V00



Product Name	Service Key Reader
Applicant	Tera Tron GmbH
Address	Martin-Siebert-Str. 5, 51647 Gummersbach, Germany
Manufacturer	Tera Tron GmbH
Model No.	KR0164
FCC ID.	QLXKR0164
EUT Rated Voltage	DC 12V / 2500mA
EUT Test Voltage	AC 120V / 60Hz
Trade Name	TeraTron
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By :

Ida Tung

(Adm. Assistant / Ida Tung)

Tested By :

Bill Lin

(Senior Engineer / Bill Lin)

Approved By :



(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Service Key Reader
Trade Name	TeraTron
Model No.	KR0164
FCC ID.	QLXKR0164
Frequency Range	21.85 kHz, 125 kHz
Type of Modulation	125 kHz MHz for ASK 21,85 kHz for BPSK
Type of antenna	Coil Antenna
Power Adapter	MFR: ANSMANN, M/N: ANHG10609 Input: AC 100-240V ~ 60/50Hz, 0.7A Output: DC 12V, 2500mA, 30VA Cable Out: Non-shielded, 1.87m USB Cable: Non-shielded, 2m

Frequency of Each Channel:

Channel	Frequency	Channel	Frequency
1	21.85 kHz	2	125 kHz

Note:

1. The EUT is a Service Key Reader with a built-in 21.85 kHz, 125 kHz RFID transceiver.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.209.

Test Mode	Mode 1: Transmit
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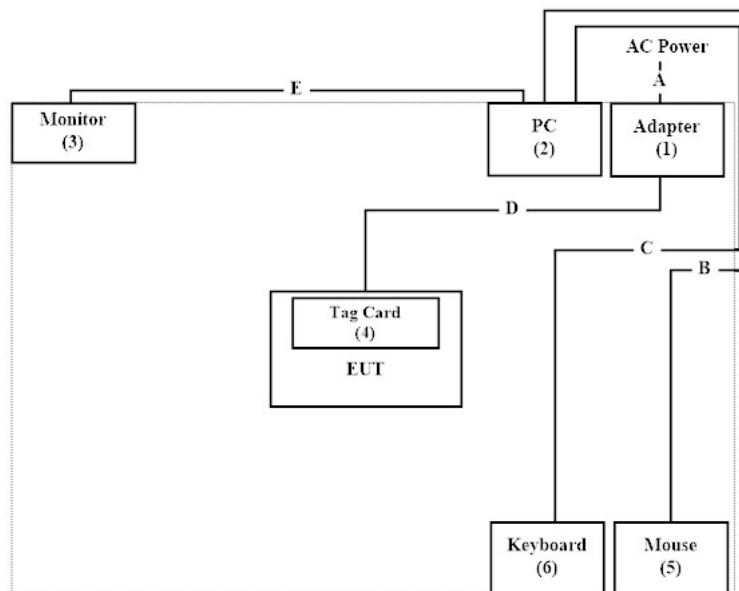
1.3. Test System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1 Adapter	ANSMANN	ANHG0609	N/A	N/A
2 PC	DELL	D19M	N/A	N/A
3 Monitor	DELL	P2314H	CN-0G9D5T-74445-620-295S-A01	N/A
4 Tag Card	IB	N/A	N/A	N/A
5 Mouse	Logitech	U0026	N/A	N/A
6 Keyboard	Logitech	K120	N/A	N/A

Signal Cable Type	Signal cable Description
A Power Cable	Non-shielded, 1.8m
B Mouse Cable	Non-shielded, 1.8m
C Keyboard Cable	Non-shielded, 1.5m
D Power Code	Non-shielded, 1.87m
E HDMI Cable	Shielded, 1.8m

1.4. Configuration of Test System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Turn on the power of all equipment.
- (3) Using tag to trigger NFC continuous transmission.
- (4) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	22.7 °C
	Humidity (%RH)	10~90 %	57.5 %
Radiated Emission	Temperature (°C)	10~40 °C	18.3 °C
	Humidity (%RH)	10~90 %	51.7 %

USA : FCC Registration Number: TW0023

Canada : IC Registration Number: 4075A

Site Description : Accredited by TAF
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd
Address : No.159, Sec. 2, Wenhua 1st Rd., Linkou Dist.,
New Taipei City 24457, Taiwan, R.O.C.
Phone number : 886-2-2602-7968
Fax number : 866-2-2602-3286
Email address : info.tw@dekra.com
Website : <http://www.dekra.com.tw>

1.7. List of Test Equipment

For Radiated measurements /ACB1

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Loop Antenna	AMETEK	HLA6121	49611	2020.03.16	2021.03.15
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-953	2020.01.03	2021.01.02
	Horn Antenna	ETS-Lindgren	3117	00203800	2019.12.12	2020.12.11
	Horn Antenna	Com-Power	AH-840	101087	2019.05.30	2020.05.29
X	Pre-Amplifier	EMCI	EMC001330	980316	2019.06.14	2020.06.13
	Pre-Amplifier	EMCI	EMC051835SE	980311	2019.06.13	2020.06.12
	Pre-Amplifier	EMCI	EMC05820SE	980310	2019.06.24	2020.06.23
	Pre-Amplifier	EMCI	EMC184045SE	980314	2019.05.28	2020.05.27
	Filter	MICRO TRONICS	BRM50702	G251	2019.09.03	2020.09.02
	Filter	MICRO TRONICS	BRM50716	G188	2019.09.03	2020.09.02
X	EMI Test Receiver	R&S	ESR7	101602	2019.12.16	2020.12.15
X	Spectrum Analyzer	R&S	FSV40	101148	2020.03.16	2021.03.15
X	Coaxial Cable	SUHNER	SUCOFLEX 106	RF002	2019.07.03	2020.07.02
	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2019.05.28	2020.05.27

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Testing System V1.1

1.8. Summary of Test Results

Performed Item	Result
Conducted Emission	PASS
Radiated Emission	PASS

1.9. Uncertainty

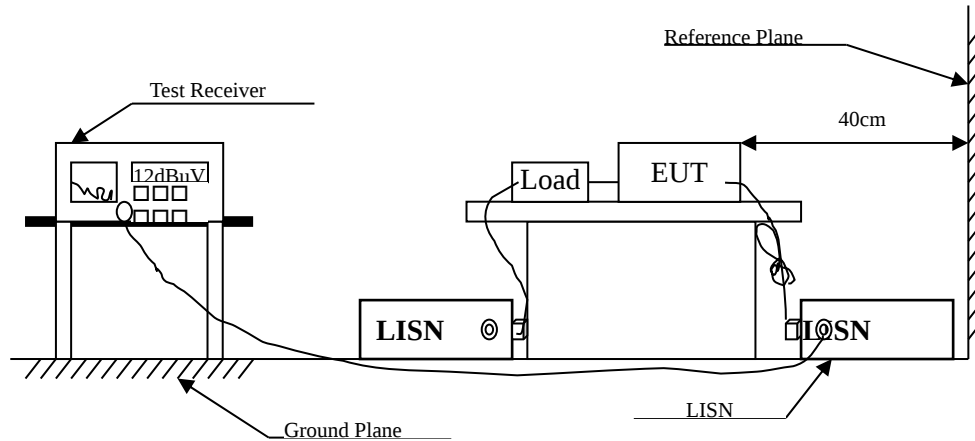
Uncertainties have been calculated according to the DEKRA internal document, and is described in each test chapter of this report.

The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dB μ V) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56 _(註)	56-46 _(註)
0.50-5.0	56	46
5.0 - 30	60	50

2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

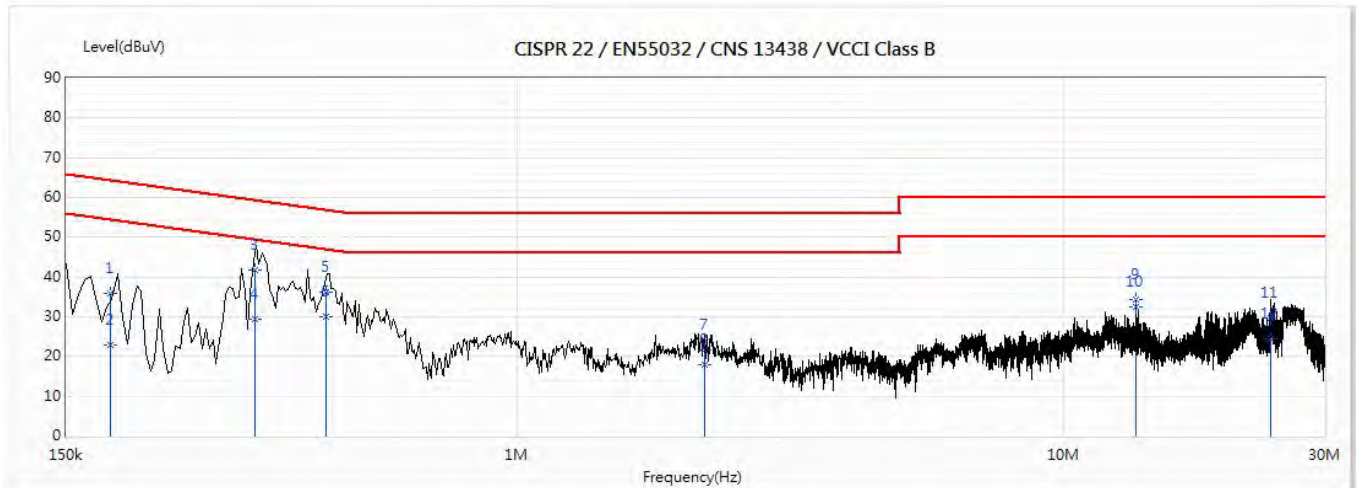
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Uncertainty

± 2.35 dB

2.5. Test Result of Conducted Emission

Product : Service Key Reader
 Test Item : Radiated Emission
 Power Line : L1
 Test date : 2020/03/06
 Test Mode : Mode 1: Transmit_21.85 kHz

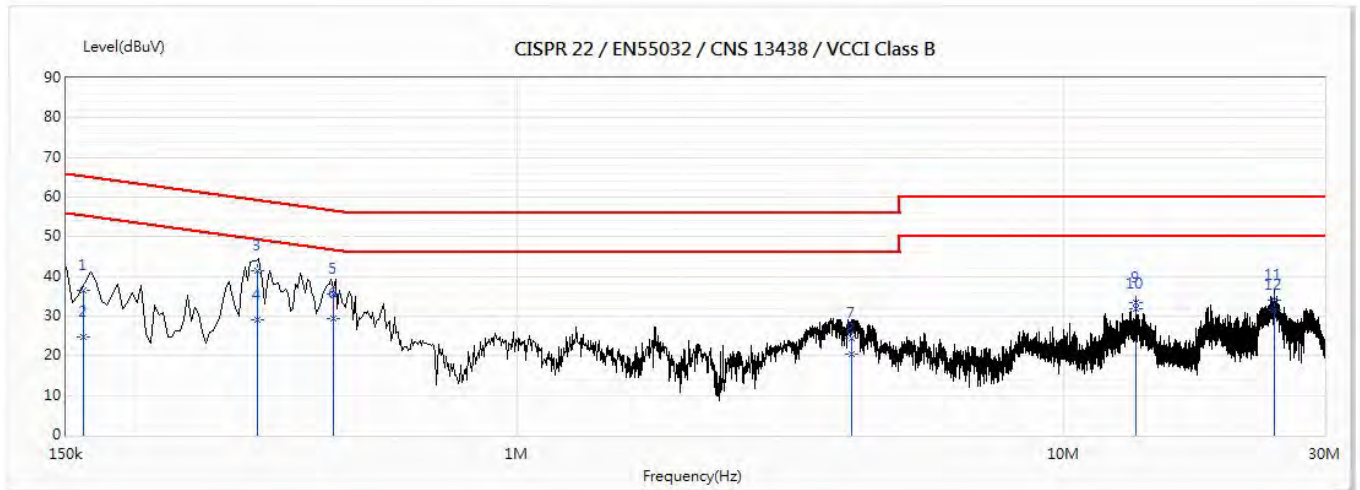


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.181	35.87	64.44	-28.57	26.23	9.63	QP
2	0.181	22.90	54.44	-31.54	13.26	9.63	AV
3	0.332	41.87	59.39	-17.52	32.23	9.64	QP
4	0.332	29.27	49.39	-20.12	19.63	9.64	AV
5	0.448	36.16	56.92	-20.75	26.52	9.65	QP
*6	0.448	29.95	46.92	-16.97	20.31	9.65	AV
7	2.204	21.77	56.00	-34.23	12.06	9.71	QP
8	2.204	17.85	46.00	-28.15	8.13	9.71	AV
9	13.56	34.23	60.00	-25.77	24.31	9.92	QP
10	13.56	32.59	50.00	-17.41	22.67	9.92	AV
11	23.932	29.66	60.00	-30.34	19.69	9.96	QP
12	23.932	24.36	50.00	-25.64	14.39	9.96	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Service Key Reader
 Test Item : Radiated Emission
 Power Line : N
 Test date : 2020/03/06
 Test Mode : Mode 1: Transmit_21.85 kHz

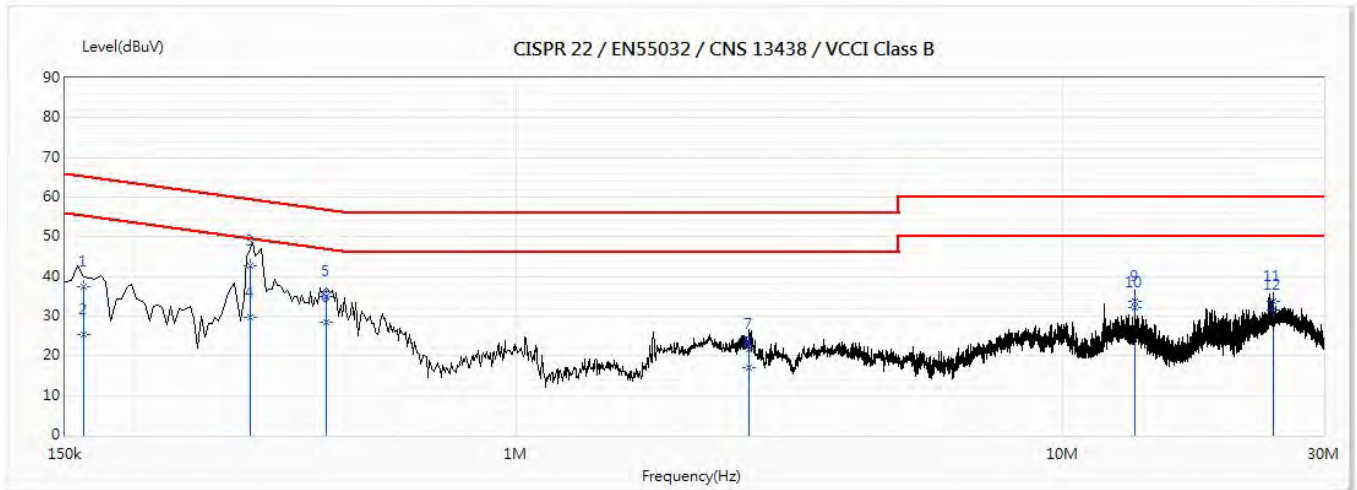


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.162	36.49	65.38	-28.89	26.84	9.65	QP
2	0.162	24.71	55.38	-30.68	15.06	9.65	AV
3	0.336	41.54	59.30	-17.76	31.88	9.65	QP
4	0.336	28.95	49.30	-20.35	19.30	9.65	AV
5	0.461	35.43	56.67	-21.24	25.77	9.66	QP
*6	0.461	29.34	46.67	-17.33	19.69	9.66	AV
7	4.092	24.46	56.00	-31.54	14.70	9.76	QP
8	4.092	20.29	46.00	-25.71	10.53	9.76	AV
9	13.561	33.40	60.00	-26.60	23.44	9.96	QP
10	13.561	31.94	50.00	-18.06	21.98	9.96	AV
11	24.287	34.08	60.00	-25.92	24.01	10.08	QP
12	24.287	31.47	50.00	-18.53	21.40	10.08	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Service Key Reader
 Test Item : Radiated Emission
 Power Line : L1
 Test date : 2020/03/06
 Test Mode : Mode 1: Transmit_125 kHz

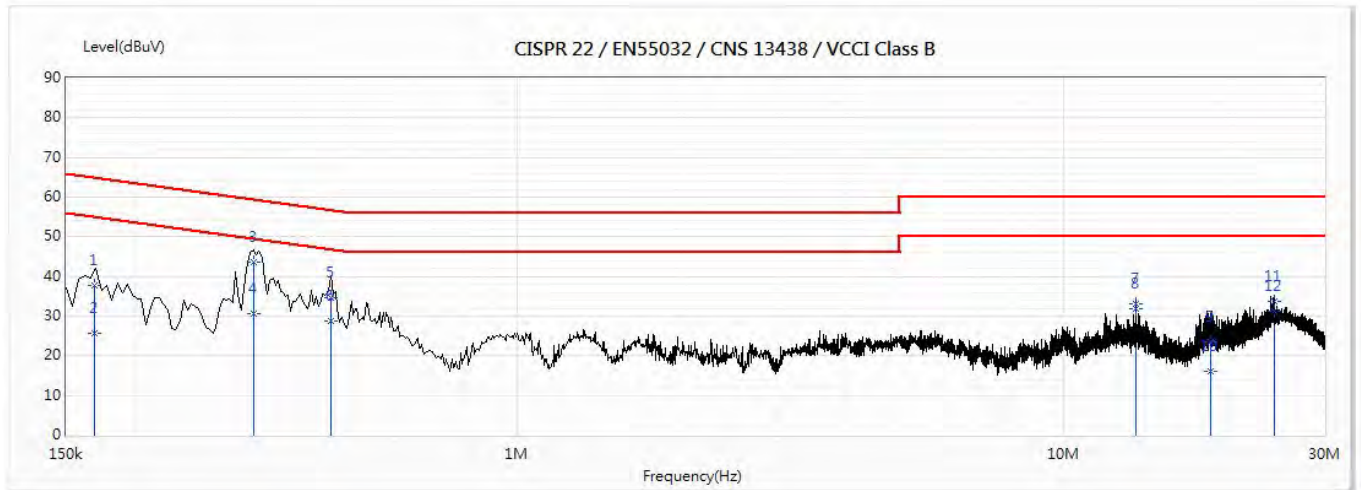


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.162	37.47	65.36	-27.89	27.83	9.64	QP
2	0.162	25.46	55.36	-29.90	15.82	9.64	AV
*3	0.327	42.58	59.54	-16.95	32.94	9.64	QP
4	0.327	29.65	49.54	-19.89	20.01	9.64	AV
5	0.45	34.82	56.88	-22.06	25.17	9.65	QP
6	0.45	28.58	46.88	-18.30	18.93	9.65	AV
7	2.675	21.72	56.00	-34.28	11.99	9.72	QP
8	2.675	16.93	46.00	-29.07	7.21	9.72	AV
9	13.561	33.71	60.00	-26.29	23.79	9.92	QP
10	13.561	32.31	50.00	-17.69	22.39	9.92	AV
11	24.287	33.80	60.00	-26.20	23.84	9.97	QP
12	24.287	31.62	50.00	-18.38	21.66	9.97	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Service Key Reader
 Test Item : Radiated Emission
 Power Line : N
 Test date : 2020/03/06
 Test Mode : Mode 1: Transmit_125 kHz



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.169	37.67	65.03	-27.37	28.01	9.65	QP
2	0.169	25.70	55.03	-29.33	16.05	9.65	AV
*3	0.331	43.48	59.43	-15.94	33.83	9.65	QP
4	0.331	30.47	49.43	-18.95	20.82	9.65	AV
5	0.457	34.50	56.75	-22.24	24.85	9.66	QP
6	0.457	28.82	46.75	-17.92	19.17	9.66	AV
7	13.56	33.14	60.00	-26.86	23.18	9.96	QP
8	13.56	31.85	50.00	-18.15	21.89	9.96	AV
9	18.578	23.58	60.00	-36.42	13.55	10.03	QP
10	18.578	16.21	50.00	-33.79	6.18	10.03	AV
11	24.287	33.72	60.00	-26.28	23.65	10.08	QP
12	24.287	31.28	50.00	-18.72	21.21	10.08	AV

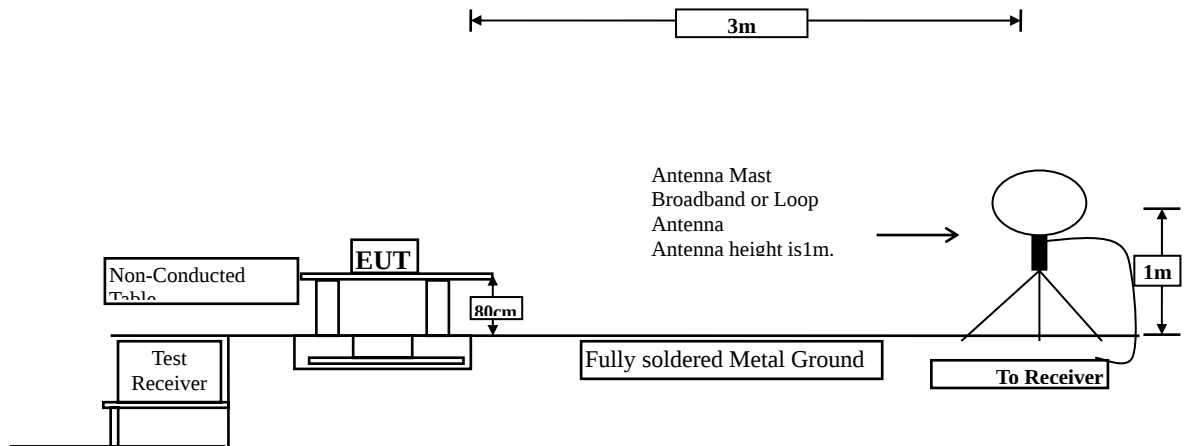
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ * ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

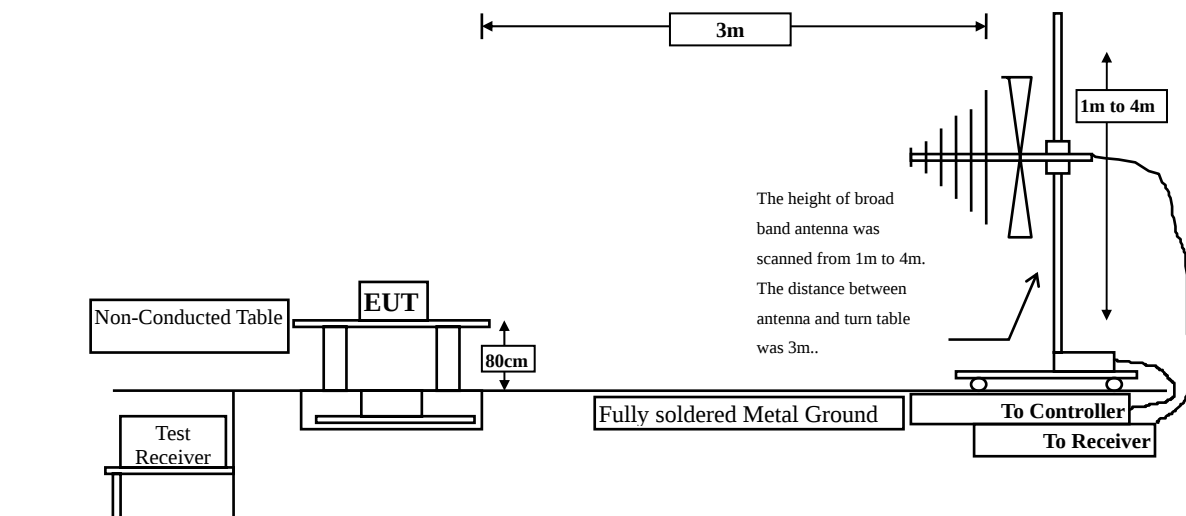
3. Radiated Emission

3.1. Test Setup

Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



3.2. Limits

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks :

1. RF Voltage (dB μ V) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.209 requirements.

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz. Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

3.4. Uncertainty

Horizontal :

30-300MHz: $\pm 4.08\text{dB}$; 300M-1GHz: $\pm 3.86\text{dB}$ °

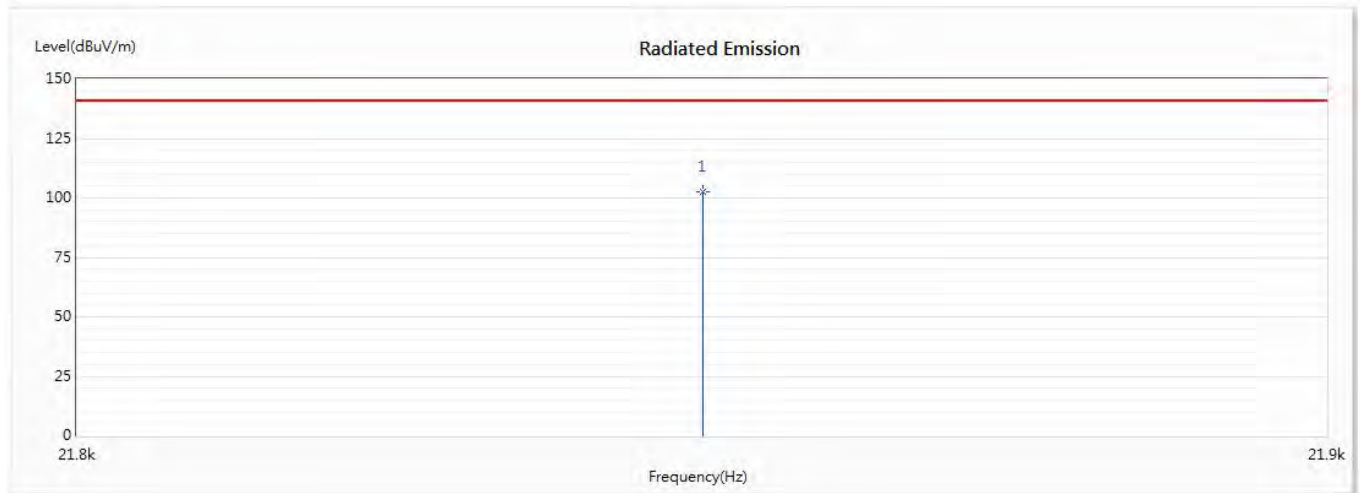
Vertical :

30-300MHz: $\pm 4.81\text{dB}$; 300M-1GHz: $\pm 3.87\text{dB}$ °

3.5. Test Result of Radiated Emission

Product : Service Key Reader
 Test Item : Fundamental Radiated Emission
 Test date : 2020/03/20
 Test Mode : Mode 1: Transmit_21.85 kHz

Horizontal



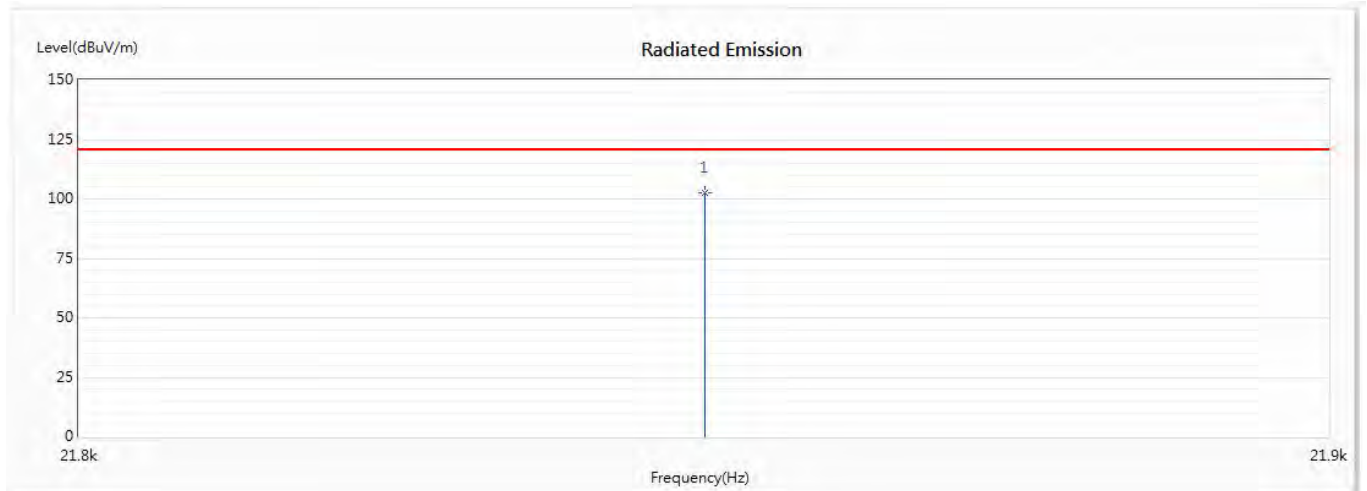
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	0.02185	102.77	140.81	-38.04	83.00	19.77	PK

Note:

1. The reading levels are peak values.
2. Measurement Level = Reading Level + Correct Factor.

Product : Service Key Reader
 Test Item : Fundamental Radiated Emission
 Test date : 2020/03/20
 Test Mode : Mode 1: Transmit_21.85 kHz

Horizontal



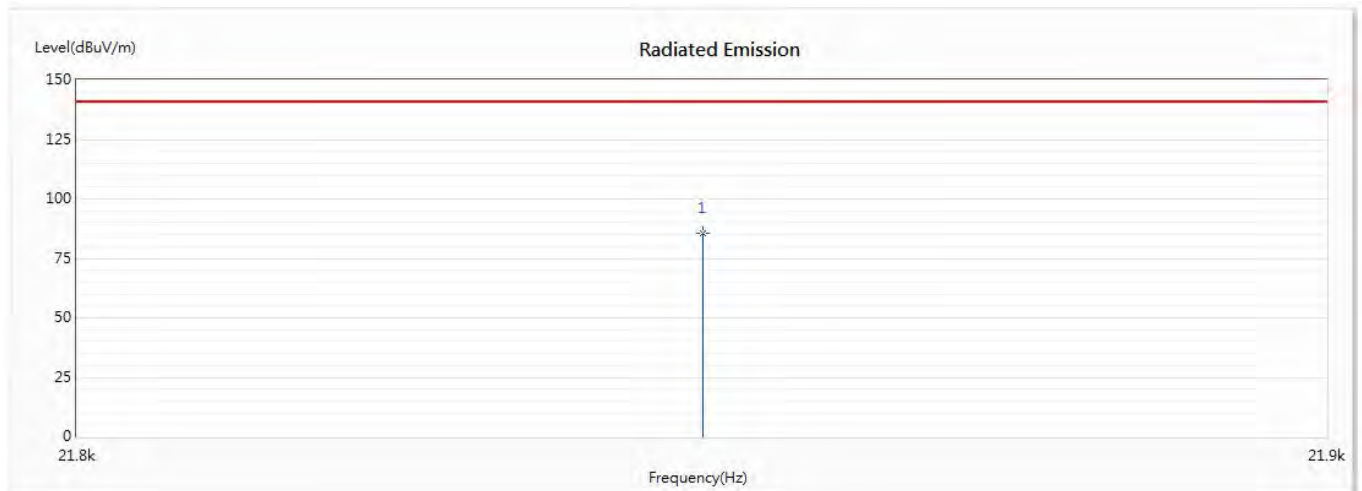
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	0.02185	102.67	120.81	-18.14	82.90	19.77	AV

Note:

1. The reading levels are peak values.
2. Measurement Level = Reading Level + Correct Factor.

Product : Service Key Reader
 Test Item : Fundamental Radiated Emission
 Test date : 2020/03/20
 Test Mode : Mode 1: Transmit_21.85 kHz

Vertical



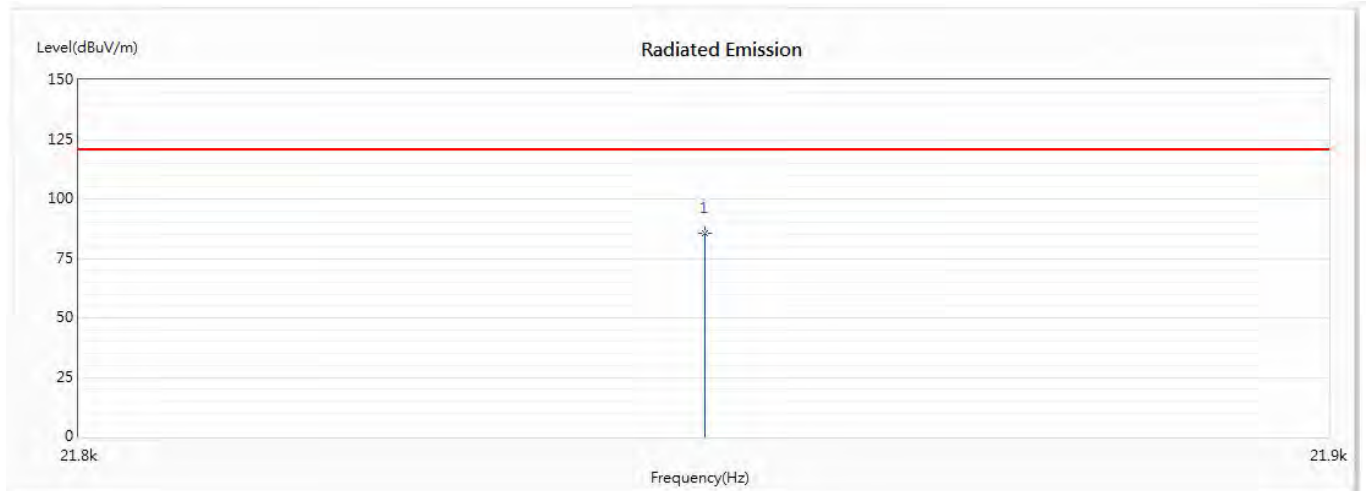
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	0.02185	85.57	140.81	-55.24	65.80	19.77	PK

Note:

1. The reading levels are peak values.
2. Measurement Level = Reading Level + Correct Factor.

Product : Service Key Reader
 Test Item : Fundamental Radiated Emission
 Test date : 2020/03/20
 Test Mode : Mode 1: Transmit_21.85 kHz

Vertical



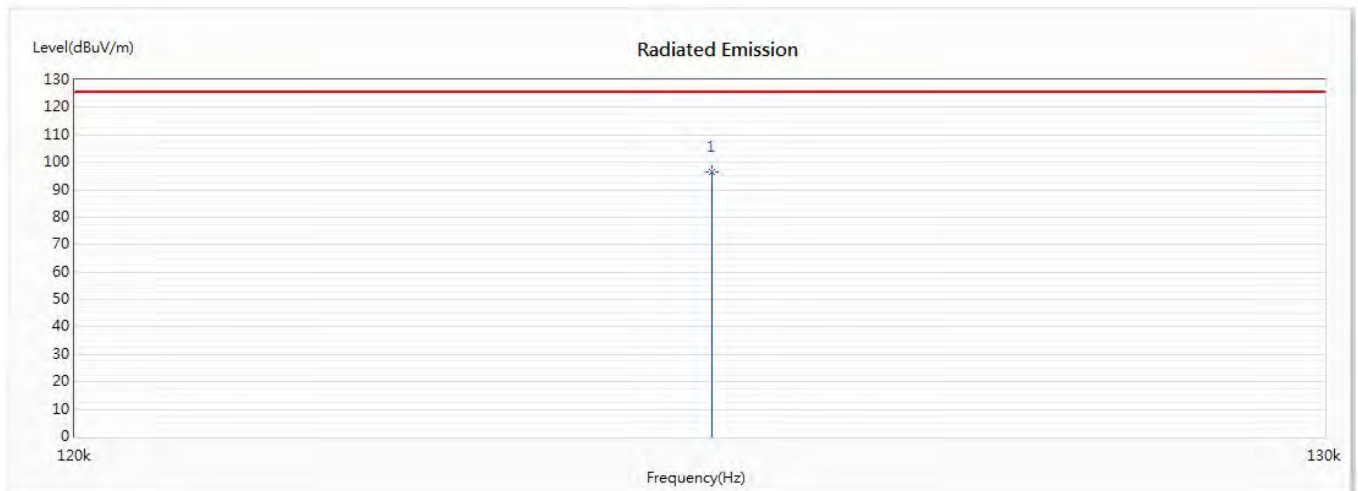
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	0.02185	85.47	120.81	-35.34	65.70	19.77	AV

Note:

1. The reading levels are peak values.
2. Measurement Level = Reading Level + Correct Factor.

Product : Service Key Reader
 Test Item : Fundamental Radiated Emission
 Test date : 2020/03/20
 Test Mode : Mode 1: Transmit_125 kHz

Horizontal



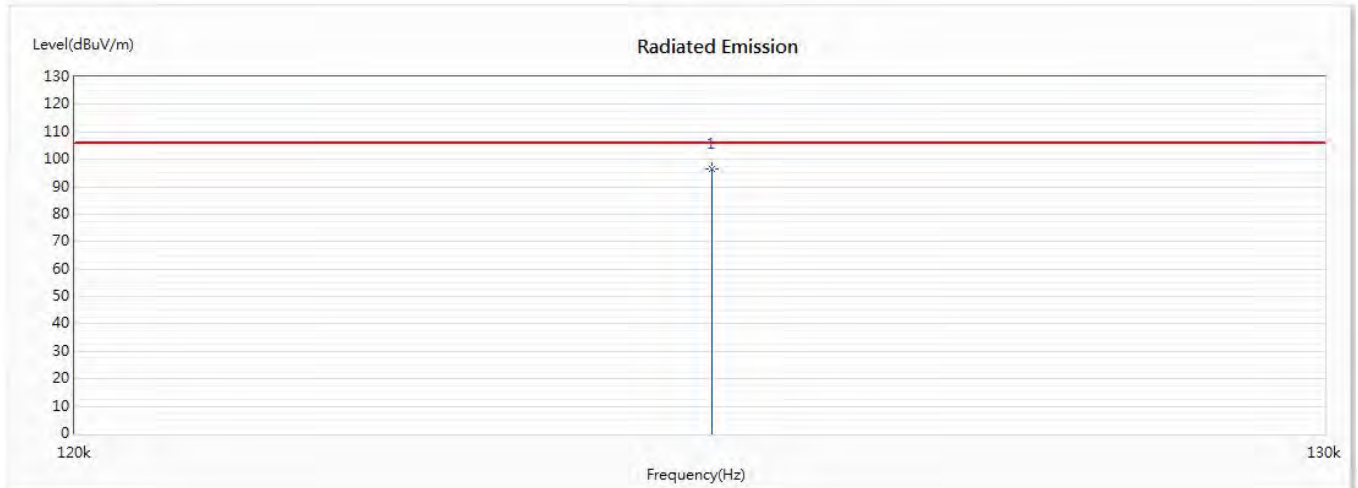
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	0.125	96.41	125.66	-29.25	77.00	19.41	PK

Note:

1. The reading levels are peak values.
2. Measurement Level = Reading Level + Correct Factor.

Product : Service Key Reader
 Test Item : Fundamental Radiated Emission
 Test date : 2020/03/20
 Test Mode : Mode 1: Transmit_125 kHz

Horizontal



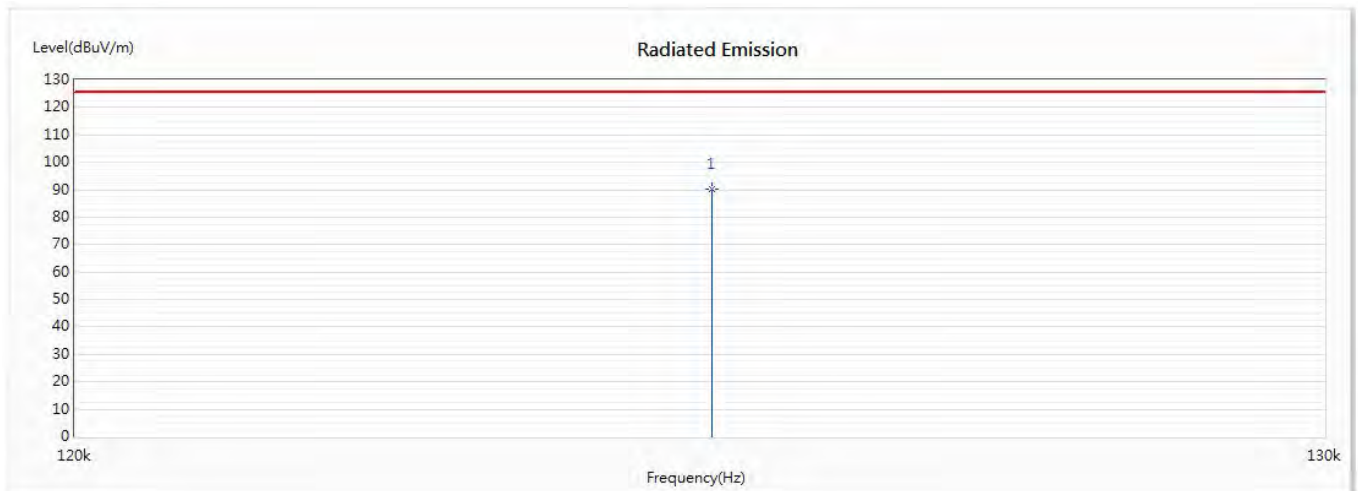
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	0.125	96.31	105.66	-9.35	76.90	19.41	AV

Note:

1. The reading levels are peak values.
2. Measurement Level = Reading Level + Correct Factor.

Product : Service Key Reader
 Test Item : Fundamental Radiated Emission
 Test date : 2020/03/20
 Test Mode : Mode 1: Transmit_125 kHz

Vertical



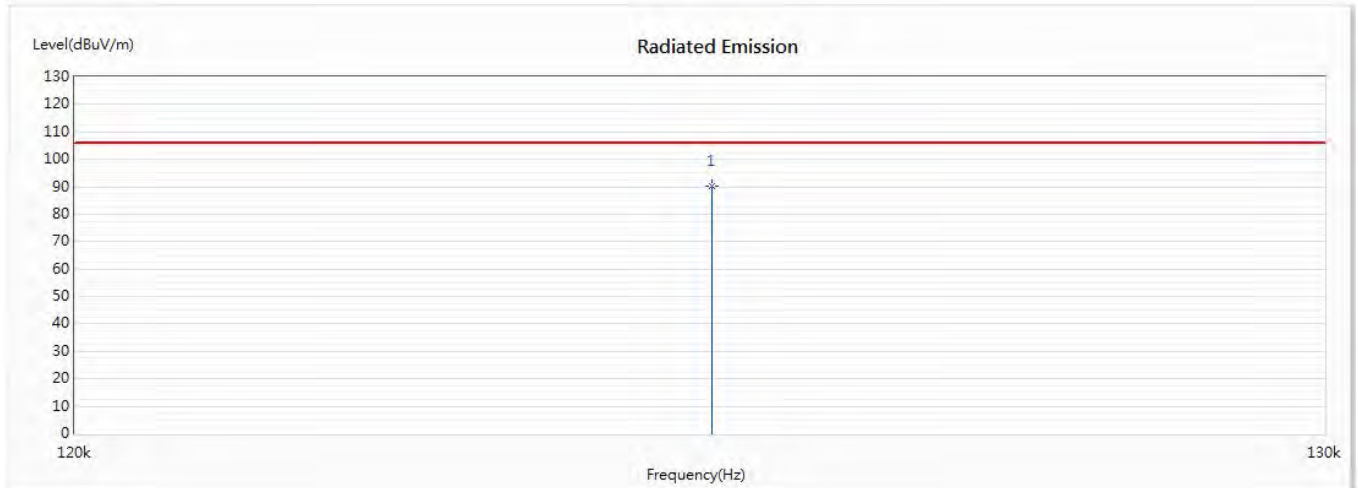
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	0.125	90.31	125.66	-35.35	70.90	19.41	PK

Note:

1. The reading levels are peak values.
2. Measurement Level = Reading Level + Correct Factor.

Product : Service Key Reader
 Test Item : Fundamental Radiated Emission
 Test date : 2020/03/20
 Test Mode : Mode 1: Transmit_125 kHz

Vertical



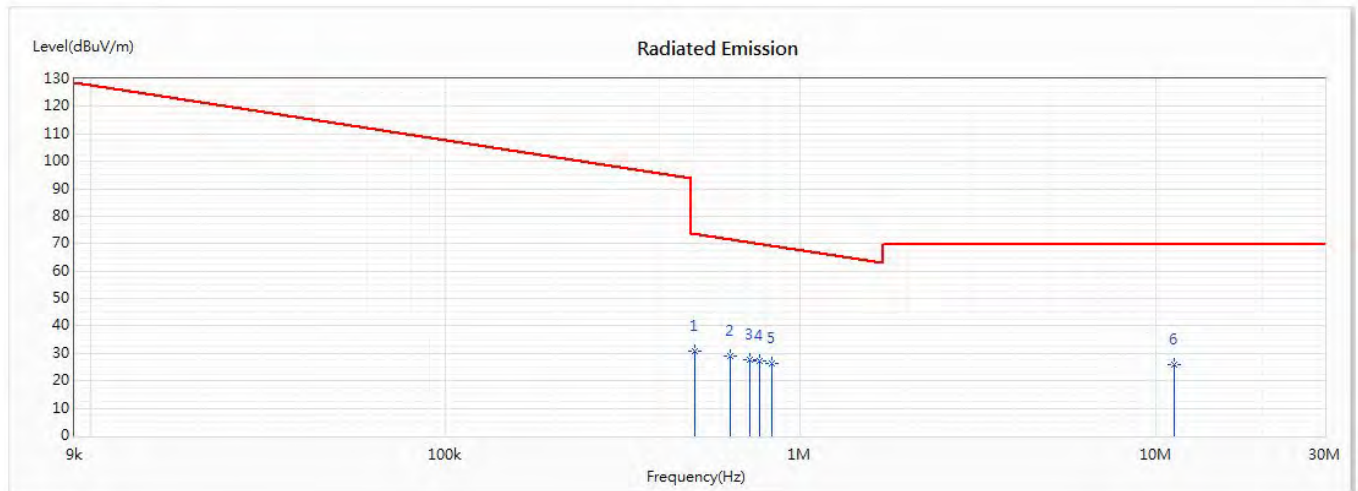
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	0.125	90.21	105.66	-15.45	70.80	19.41	AV

Note:

1. The reading levels are peak values.
2. Measurement Level = Reading Level + Correct Factor.

Product : Service Key Reader
 Test Item : Radiated Emission (below 30MHz)
 Test date : 2020/03/19
 Test Mode : Mode 1: Transmit_21.85 kHz

Horizontal



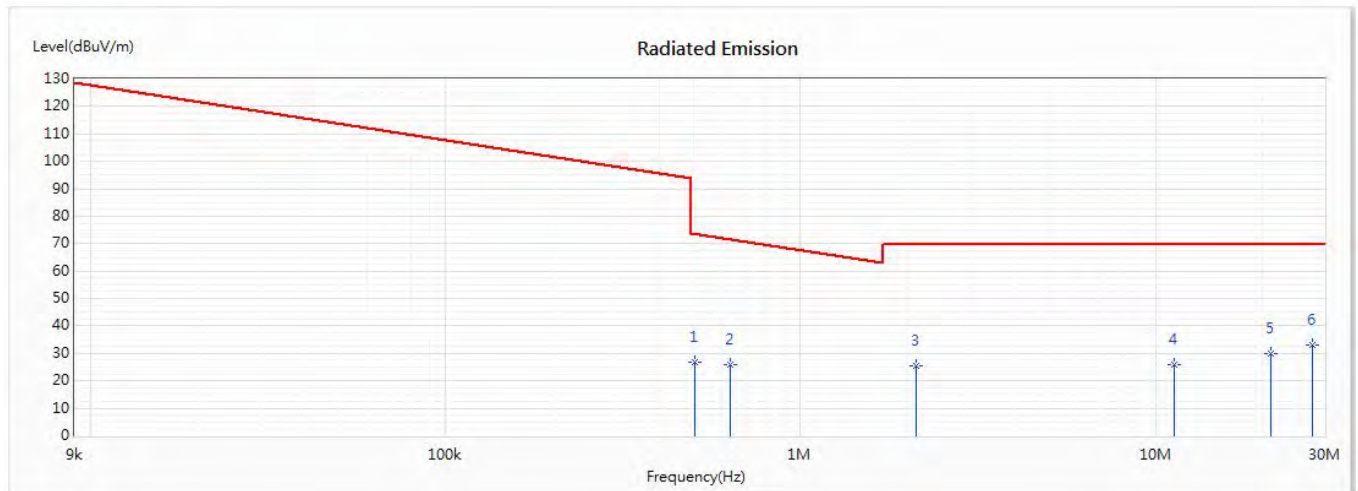
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	0.503	30.80	73.58	-42.78	10.80	20.00	QP
* 2	0.634	29.00	71.57	-42.57	9.00	20.00	QP
3	0.721	27.70	70.45	-42.75	7.70	20.00	QP
4	0.765	27.20	69.94	-42.74	7.20	20.00	QP
5	0.831	26.50	69.23	-42.73	6.50	20.00	QP
6	11.343	25.78	69.54	-43.76	4.40	21.38	QP

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. "*" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Service Key Reader
 Test Item : Radiated Emission (below 30MHz)
 Test date : 2020/03/19
 Test Mode : Mode 1: Transmit_21.85 kHz

Vertical



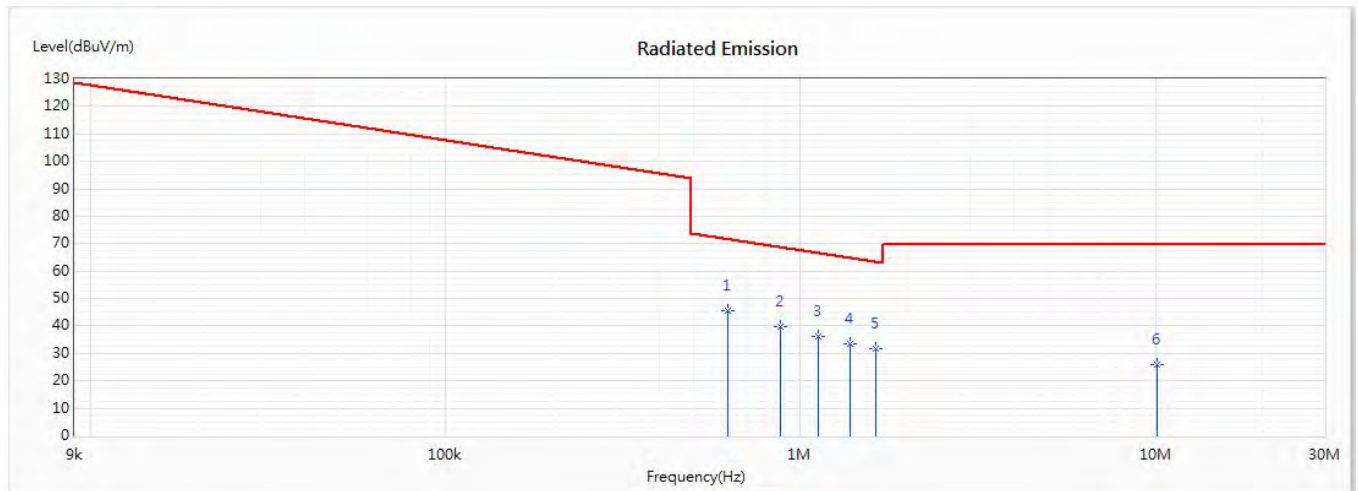
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	0.503	26.80	73.58	-46.78	6.80	20.00	QP
2	0.634	26.00	71.57	-45.57	6.00	20.00	QP
3	2.12	25.52	69.54	-44.02	5.80	19.72	QP
4	11.343	25.78	69.54	-43.76	4.40	21.38	QP
5	21.19	29.96	69.54	-39.58	8.00	21.96	QP
* 6	27.765	32.99	69.54	-36.55	10.70	22.29	QP

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. "*" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Service Key Reader
 Test Item : Radiated Emission (below 30MHz)
 Test date : 2020/03/19
 Test Mode : Mode 1: Transmit_125 kHz

Horizontal



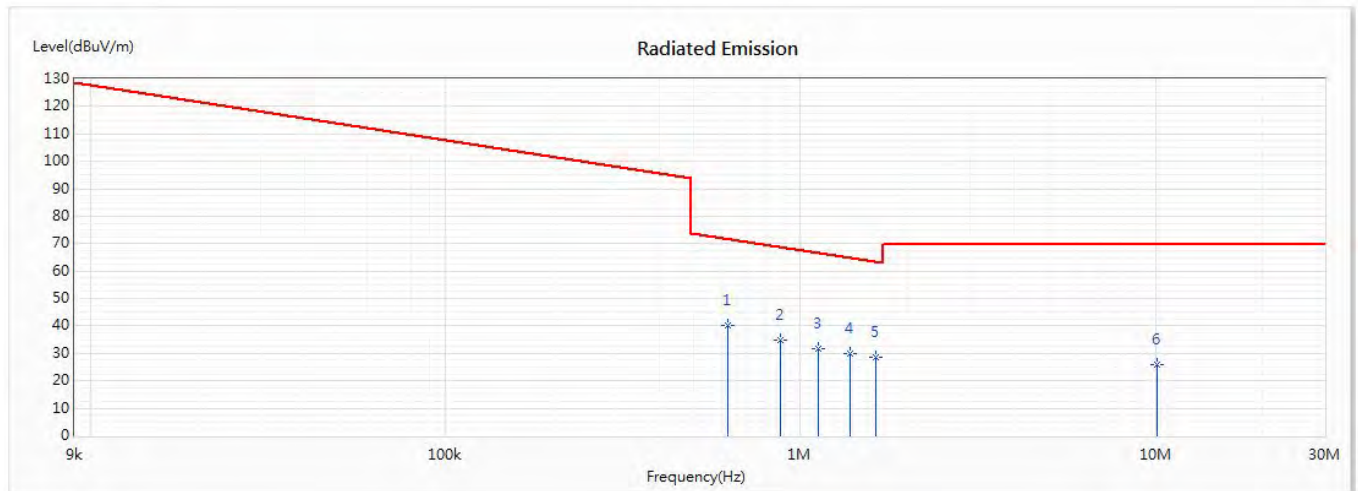
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	0.625	45.40	71.69	-26.29	25.40	20.00	QP
2	0.875	39.80	68.78	-28.98	19.80	20.00	QP
3	1.125	36.07	66.60	-30.53	16.10	19.97	QP
4	1.374	33.51	64.87	-31.36	13.60	19.91	QP
5	1.624	31.54	63.42	-31.87	11.70	19.84	QP
6	10.1	25.91	69.54	-43.63	4.60	21.31	QP

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. “*” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Service Key Reader
 Test Item : Radiated Emission (below 30MHz)
 Test date : 2020/03/19
 Test Mode : Mode 1: Transmit_125 kHz

Vertical



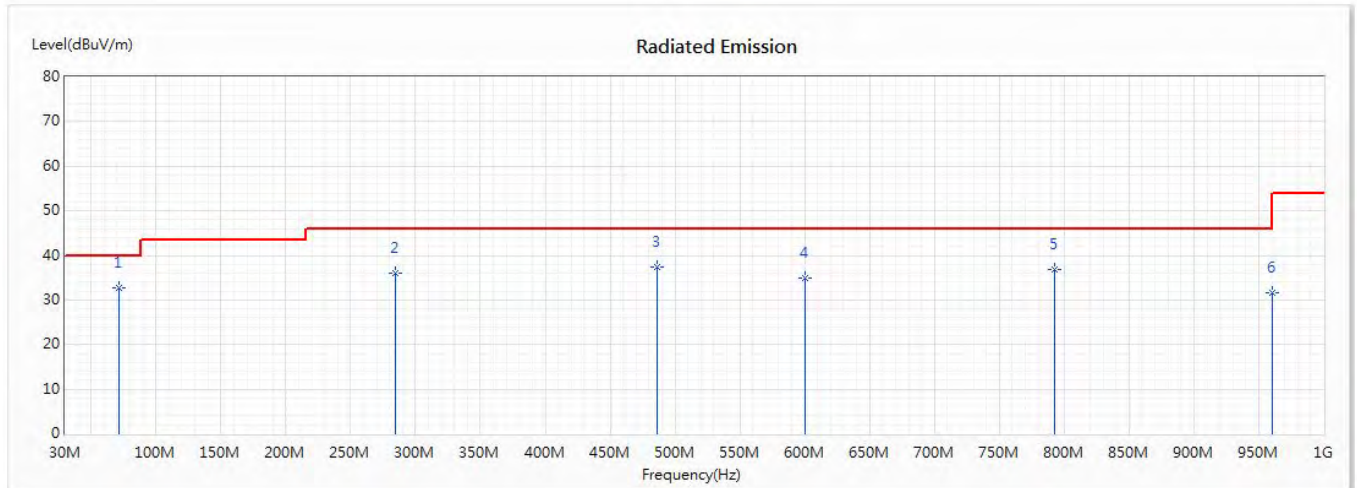
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	0.625	40.00	71.69	-31.69	20.00	20.00	QP
2	0.875	35.00	68.78	-33.78	15.00	20.00	QP
3	1.125	31.87	66.60	-34.73	11.90	19.97	QP
4	1.374	29.81	64.87	-35.06	9.90	19.91	QP
5	1.624	28.44	63.42	-34.97	8.60	19.84	QP
6	10.09	25.81	69.54	-43.73	4.50	21.31	QP

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. “*” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Service Key Reader
 Test Item : General Radiated Emission (above 30MHz)
 Test date : 2020/03/14
 Test Mode : Mode 1: Transmit_21.85 kHz

Horizontal



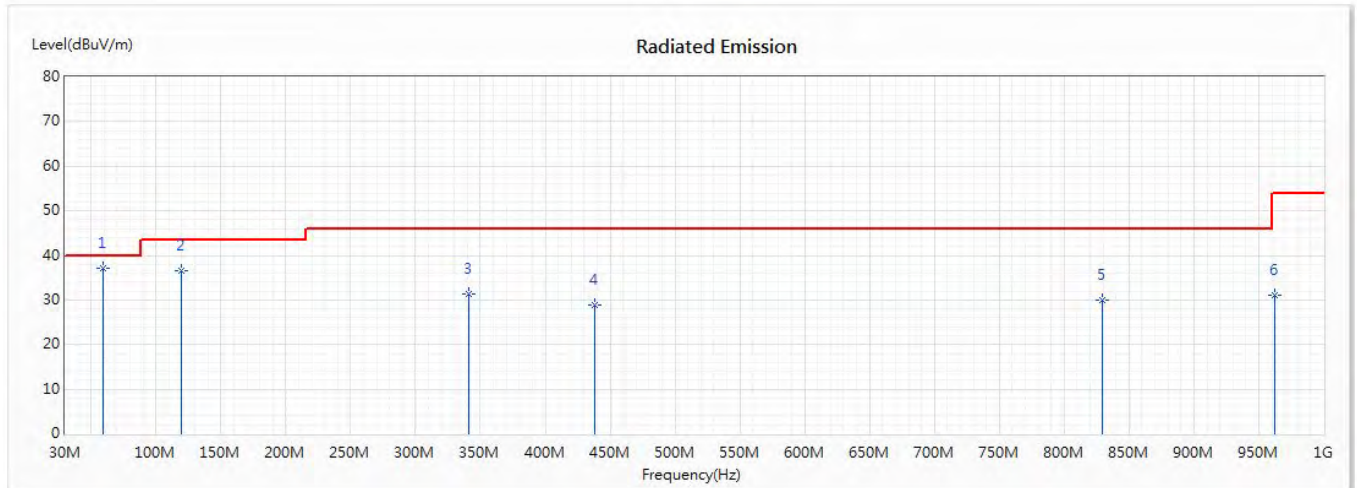
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	71.71	32.81	40.00	-7.19	46.11	-13.30	QP
2	284.14	35.90	46.00	-10.10	45.86	-9.96	QP
3	485.9	37.26	46.00	-8.74	42.73	-5.47	QP
4	600.36	35.01	46.00	-10.99	38.00	-2.99	QP
5	792.42	36.74	46.00	-9.26	37.23	-0.49	QP
6	960.23	31.50	54.00	-22.50	30.07	1.43	QP

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. “*” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Service Key Reader
 Test Item : General Radiated Emission (above 30MHz)
 Test date : 2020/03/14
 Test Mode : Mode 1: Transmit_21.85 kHz

Vertical



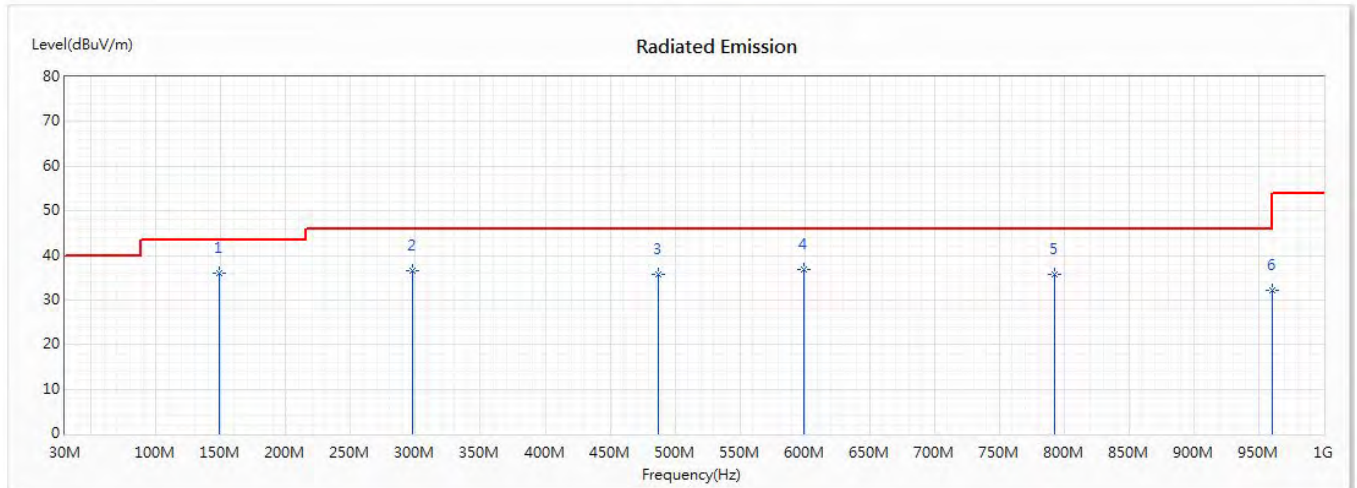
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	59.1	37.13	40.00	-2.87	48.11	-10.98	QP
2	119.24	36.61	43.50	-6.89	49.75	-13.14	QP
3	341.37	31.21	46.00	-14.79	39.64	-8.43	QP
4	438.37	28.90	46.00	-17.10	35.20	-6.30	QP
5	829.28	29.97	46.00	-16.03	30.09	-0.12	QP
6	962.17	31.19	54.00	-22.81	29.68	1.51	QP

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. “*” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Service Key Reader
 Test Item : General Radiated Emission (above 30MHz)
 Test date : 2020/03/14
 Test Mode : Mode 1: Transmit_125 kHz

Horizontal



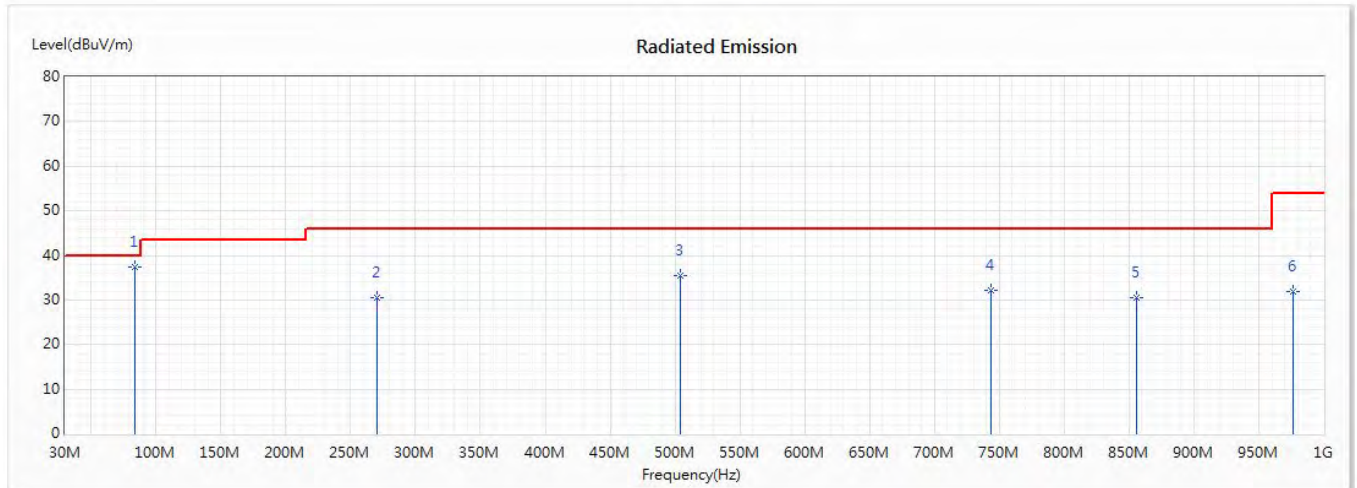
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	148.34	36.13	43.50	-7.37	46.65	-10.52	QP
2	297.72	36.56	46.00	-9.44	46.33	-9.77	QP
3	486.87	35.76	46.00	-10.24	41.22	-5.46	QP
4	599.39	36.81	46.00	-9.19	39.81	-3.00	QP
5	792.42	35.61	46.00	-10.39	36.10	-0.49	QP
6	960.23	32.15	54.00	-21.85	30.72	1.43	QP

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. “*” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Service Key Reader
 Test Item : General Radiated Emission (above 30MHz)
 Test date : 2020/03/14
 Test Mode : Mode 1: Transmit_125 kHz

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	83.35	37.49	40.00	-2.51	53.05	-15.56	QP
2	270.56	30.43	46.00	-15.57	40.88	-10.45	QP
3	504.33	35.44	46.00	-10.56	40.58	-5.14	QP
4	743.92	32.20	46.00	-13.80	33.37	-1.17	QP
5	855.47	30.39	46.00	-15.61	30.25	0.14	QP
6	976.72	31.84	54.00	-22.16	30.09	1.75	QP

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. “*” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.