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FCC TEST REPORT

Report No: STS2005284W02

Issued for

Hangzhou Hikvision Digital Technology Co., Ltd.

No. 555 Qianmo Road, Binjiang District, Hangzhou, 310052
Zhejiang, P.R. China

Product Name:	Fingerprint Access Control Terminal
Brand Name:	HIKVISION
Model Name:	DS-K1T201AEF
Series Model:	DS-K1T201AEFUHK, DS-K1T201AEFCKV, DS-K1T201AEFUVS, DS-K1T201AEFKVO, DS-K1T201AEFHUN
FCC ID:	2ADTD-K1T201AEF
Test Standard:	CFR47 FCC Part 15: Subpart C Section 15.209

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Applicant's Name.....: Hangzhou Hikvision Digital Technology Co., Ltd.

Address.....: No.555 Qianmo Road,Binjiang District Hangzhou 310052,China

Manufacture's Name.....: Hangzhou Hikvision Digital Technology Co., Ltd.

Address.....: No.555 Qianmo Road,Binjiang District Hangzhou 310052,China

Product Description

Product Name: Fingerprint Access Control Terminal

Brand Name.....: HIKVISION

Model Name.....: DS-K1T201AEF

SeriesModel: DS-K1T201AEFUHK, DS-K1T201AEFCKV, DS-K1T201AEFUVS,
DS-K1T201AEFKVO, DS-K1T201AEFHUN

Test Standards.....: CFR47 FCC Part 15: Subpart C Section 15.209

Test Procedure: ANSI C63.10-2013

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test.....:

Date of receipt of test item.....: 28 May 2020

Date (s) of performance of tests: 28 May 2020 ~ 10 June 2020

Date of Issue.....: 10 June 2020

Test Result: **Pass**

Testing Engineer :

(Chris Chen)

Technical Manager :

(Sean she)

Authorized Signatory :

(Vita Li)





Table of Contents	Page
1. SUMMARY OF TEST RESULTS	6
1.1 TEST FACTORY	7
1.2 MEASUREMENT UNCERTAINTY	7
2. GENERAL INFORMATION	8
2.1 GENERAL DESCRIPTION OF THE EUT	8
2.2 DESCRIPTION OF THE TEST MODES	9
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	10
2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS	10
2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	11
3. CONDUCTED EMISSION MEASUREMENT	12
3.1. POWER LINE CONDUCTED EMISSION LIMITS	12
3.2 TEST PROCEDURE	13
3.3 TEST SETUP	13
3.4 EUT OPERATING CONDITIONS	13
3.5 TEST RESULT	14
4. RADIATED&FIELD EMISSION TEST RESULT (SECTION 15.209)	16
4.1 LIMIT	16
4.2 TEST PROCEDURE	16
4.3 TEST SETUP	17
4.4 TEST RESULTS	18
5. ANTENNA REQUIREMENT	22
5.1 STANDARD REQUIREMENT	22
5.2 EUT ANTENNA	22



Table of Contents

Page

APPENDIX-PHOTOS OF TEST SETUP

23



**Revision History**

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	10 June 2020	STS2005284W02	ALL	Initial Issue





1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207(a)	Conducted Emission	PASS	--
15.209	Radiated emission, Spurious Emission	PASS	--
15.205	Restricted Band Edge Emission	PASS	--
15.203	Antenna Requirement	PASS	--





1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95** %.

No.	Item	Uncertainly
1	RF output power, conducted	$\pm 0.68\text{dB}$
2	Unwanted Emissions, conducted	$\pm 2.988\text{dB}$
3	All emissions, radiated 30-1GHz	$\pm 6.7\text{dB}$
4	All emissions, radiated 1G-6GHz	$\pm 5.5\text{dB}$
5	All emissions, radiated >6G	$\pm 5.8\text{dB}$
6	Conducted Emission (9KHz-150KHz)	$\pm 4.43\text{dB}$
7	Conducted Emission (150KHz-30MHz)	$\pm 5\text{dB}$

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Fingerprint Access Control Terminal
Trade Name	HIKVISION
Model Name	DS-K1T201AEF
Series Model	DS-K1T201AEFUHK, DS-K1T201AEFCKV, DS-K1T201AEFUVS, DS-K1T201AEFKVO, DS-K1T201AEFHUN
Model Difference	All models are fully identical except model name.
Channel List	Please refer to the Note 2.
Equipemnt Category	Non-ISM frequency
Operating frequency	125KHz
Modulation Type	ASK
Adapter	Input: AC 100-240V 50/60Hz 0.7A Output: DC 12V 1.5A
Hardware version number	N/A
Software version number	N/A
Connecting I/O Port(s)	Please refer to the Note 1.

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.

2.

Channel List					
Channel	Frequency (KHz)	Channel	Frequency (KHz)	Channel	Frequency (KHz)
00	125	--	--	--	--

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	NOTE
1	HIKVISION	DS-K1T201A EF	coil	N/A	Antenna

2.2 DESCRIPTION OF THE TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

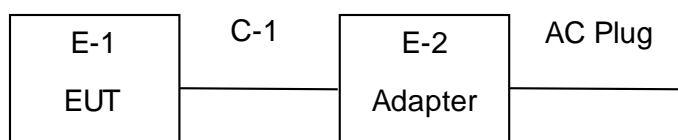
Radiated Emission & Conducted Emission	
Final Test Mode	Description
Mode 1	RFID transmitting mode



2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters

Radiated Emission Test



2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
E-2	Adapter	HOIOTO	ADS-26FSG-12 12018EPG	N/A	N/A
C-1	DC Cable	N/A	150cm	N/A	N/A

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
N/A	N/A	N/A	N/A	N/A	N/A

Note:

- (1) FCC DOC approved.
- (2) FTP is Foiled Twisted Pair.



2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.10.09	2020.10.08
Signal Analyzer	Agilent	N9020A	MY51110105	2020.03.05	2021.03.04
Active loop Antenna	ZHINAN	ZN30900C	16035	2018.03.11	2021.03.10
Bilog Antenna	TESEQ	CBL6111D	34678	2017.11.02	2020.11.01
Pre-Amplifier (0.1M-3GHz)	EM	EM330	060665	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.17	2020.10.16
Test SW	BULUN	BL410-E/18.905			

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.07.29	2020.07.28
LISN	R&S	ENV216	101242	2019.10.09	2020.10.08
LISN	EMCO	3810/2NM	23625	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.12	2020.10.11
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 CE)			

3. CONDUCTED EMISSION MEASUREMENT

3.1. POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 207(a) limit in the table below has to be followed.

FREQUENCY (MHz)	Conducted Emission limit (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of “*” marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

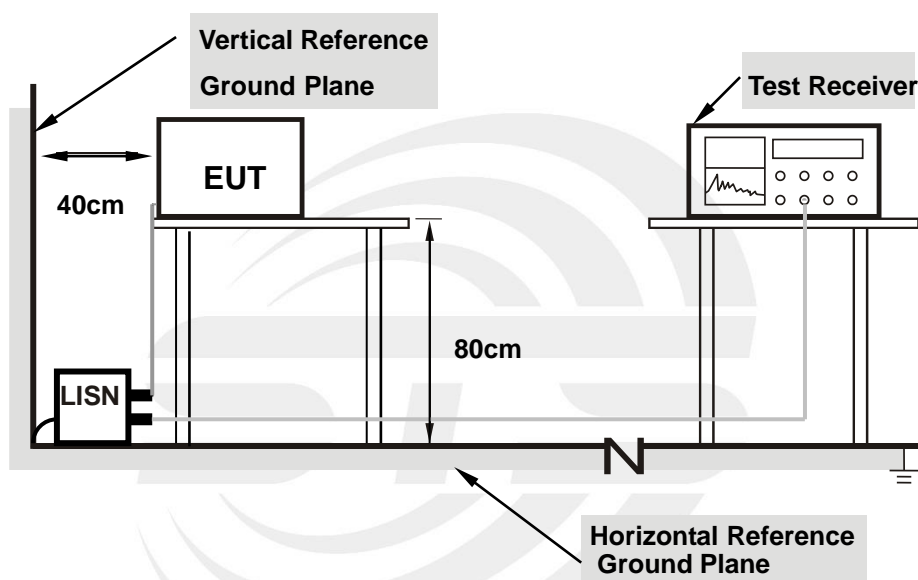
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.2 TEST PROCEDURE

- The EUT was 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.4 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



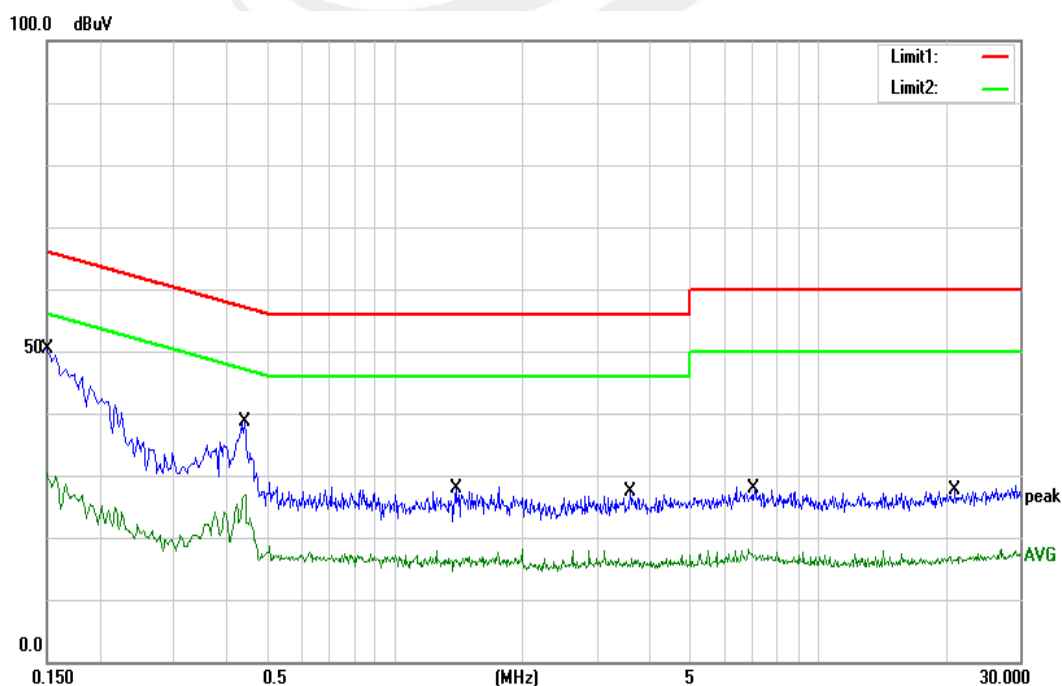
3.5 TEST RESULT

Temperature:	23.2(C)	Relative Humidity:	54%RH
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 1		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	30.26	20.23	50.49	66.00	-15.51	QP
2	0.1500	10.08	20.23	30.31	56.00	-25.69	AVG
3	0.4420	18.12	20.49	38.61	57.02	-18.41	QP
4	0.4420	6.45	20.49	26.94	47.02	-20.08	AVG
5	1.3900	7.79	20.12	27.91	56.00	-28.09	QP
6	1.3900	-3.82	20.12	16.30	46.00	-29.70	AVG
7	3.5900	7.31	19.96	27.27	56.00	-28.73	QP
8	3.5900	-3.44	19.96	16.52	46.00	-29.48	AVG
9	7.0820	7.96	19.92	27.88	60.00	-32.12	QP
10	7.0820	-3.54	19.92	16.38	50.00	-33.62	AVG
11	21.1340	7.13	20.62	27.75	60.00	-32.25	QP
12	21.1340	-4.24	20.62	16.38	50.00	-33.62	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor) – Limit



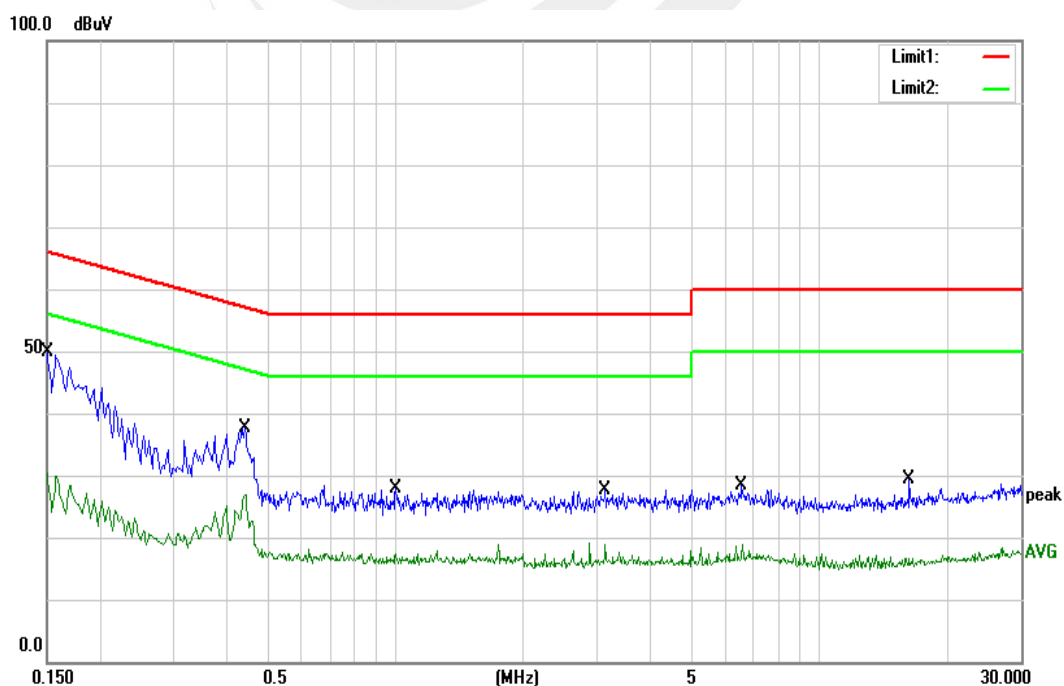


Temperature:	23.2(C)	Relative Humidity:	54%RH
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	Mode 1		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	29.73	20.23	49.96	66.00	-16.04	QP
2	0.1500	10.19	20.23	30.42	56.00	-25.58	AVG
3	0.4420	17.14	20.49	37.63	57.02	-19.39	QP
4	0.4420	4.14	20.49	24.63	47.02	-22.39	AVG
5	1.0020	7.61	20.16	27.77	56.00	-28.23	QP
6	1.0020	-3.81	20.16	16.35	46.00	-29.65	AVG
7	3.1260	7.67	19.97	27.64	56.00	-28.36	QP
8	3.1260	-3.74	19.97	16.23	46.00	-29.77	AVG
9	6.5740	8.36	19.91	28.27	60.00	-31.73	QP
10	6.5740	-3.14	19.91	16.77	50.00	-33.23	AVG
11	16.3740	9.05	20.33	29.38	60.00	-30.62	QP
12	16.3740	-4.70	20.33	15.63	50.00	-34.37	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor)–Limit



4. RADIATED&FIELD EMISSION TEST RESULT (SECTION 15.209)

4.1 LIMIT

Frequency [MHz]	Field Strength [uV/m]	Measurement Distance [Meters]
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

Note:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

§ 15.209(d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

4.2 TEST PROCEDURE

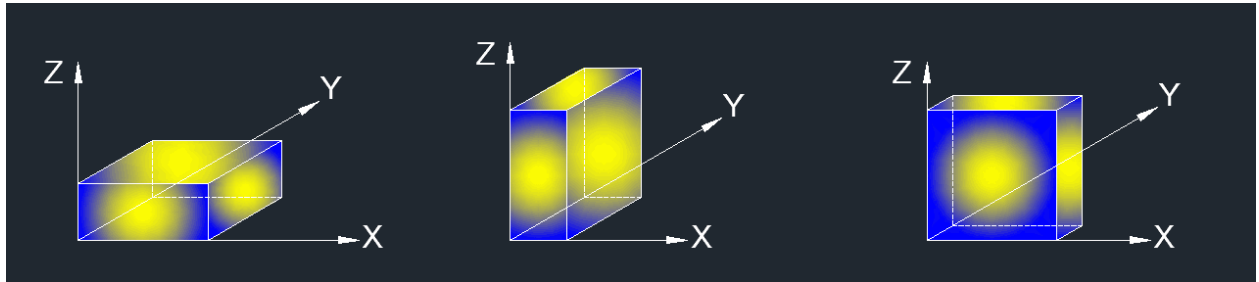
- a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- d. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

- f. For the actual test configuration, please refer to the related item in this test report
(Photographs of the Test Configuration)

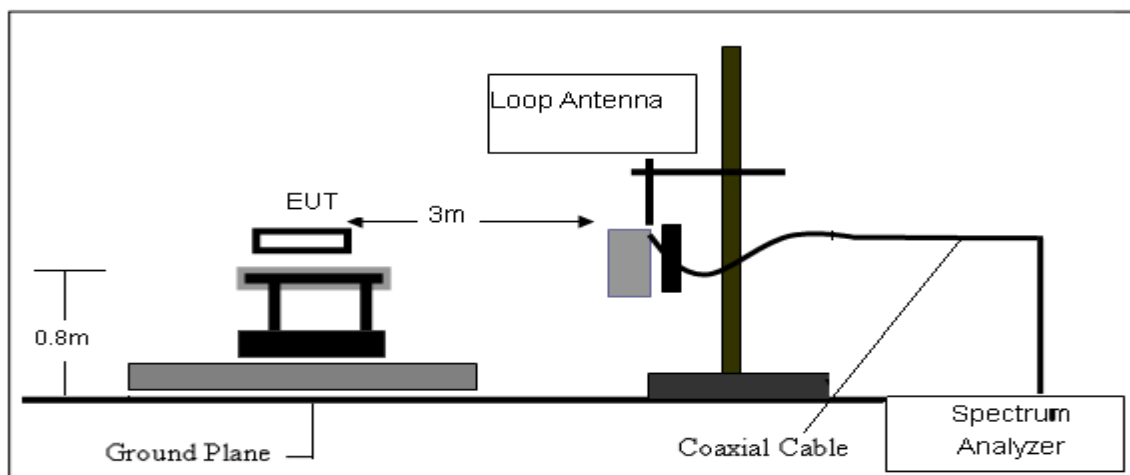
X axis, Y axis, Z axis positions:



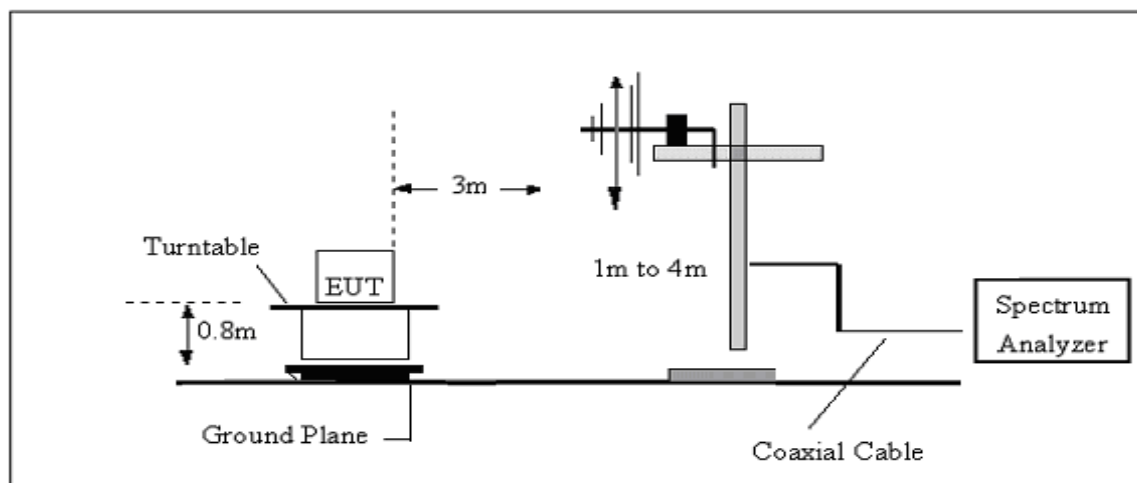
The EUT as shown in Figure 1 is the worst mode, the report only shown the worst mode data.

4.3 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



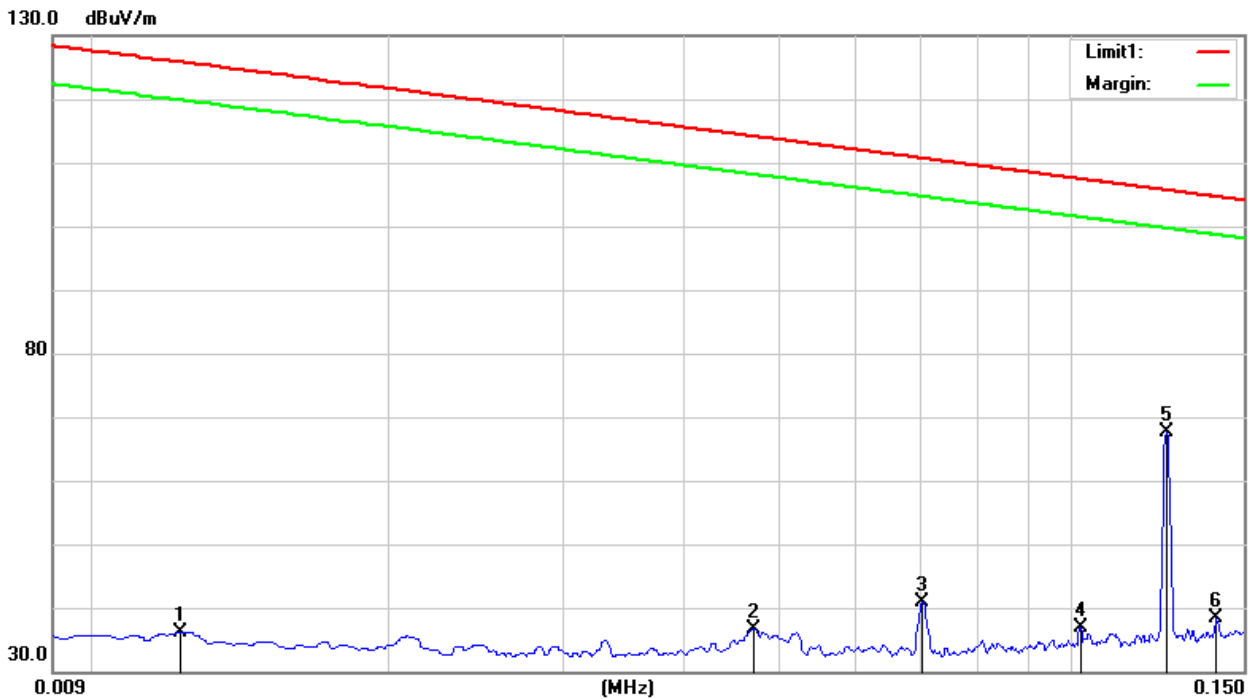


4.4 TEST RESULTS

4.4.1 Spurious Radiated Emission Below 30 MHz

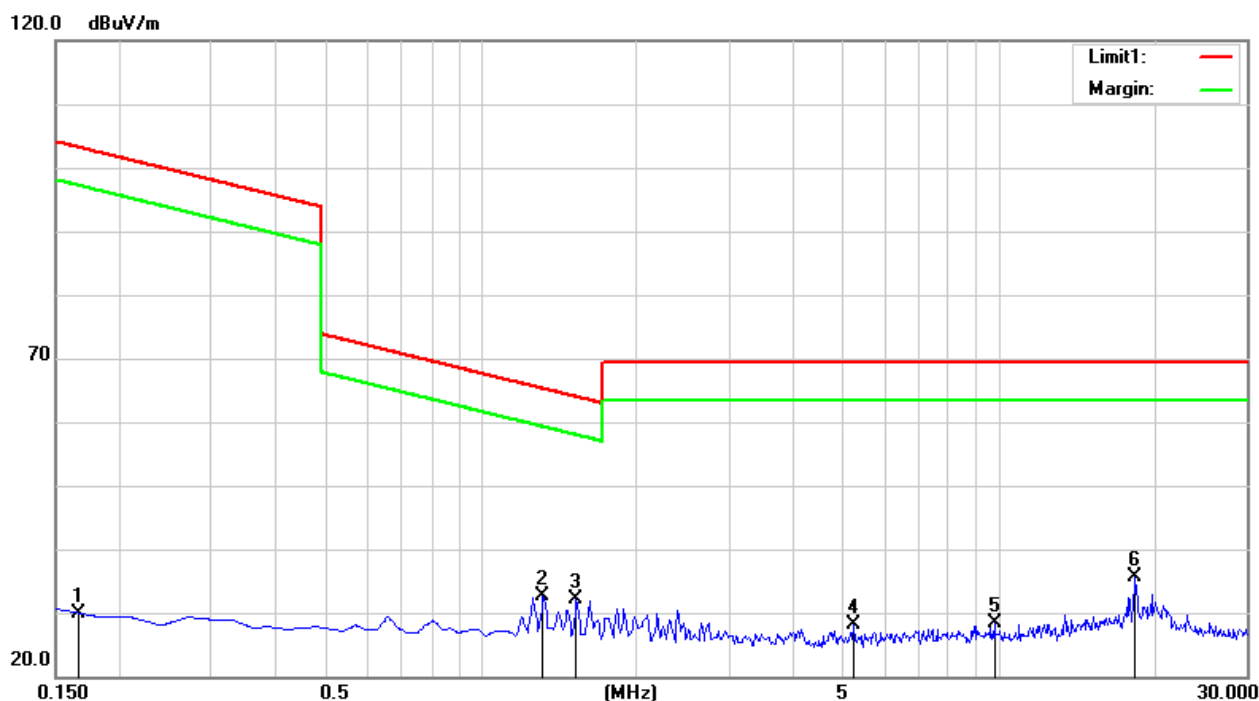
Temperature :	23.5℃	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Test Mode :	TX Mode

9K-150K



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(KHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.0122	16.62	19.61	36.23	125.88	-89.65	QP
2	0.0472	16.99	19.64	36.63	114.13	-77.50	QP
3	0.0703	21.93	19.01	40.94	110.67	-69.73	QP
4	0.1021	19.19	17.68	36.87	107.42	-70.55	QP
5	0.1250	50.00	17.63	67.63	105.67	-38.04	QP
6	0.1406	20.67	17.60	38.27	104.64	-66.37	QP

150K-30M



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.1660	11.99	18.00	29.99	103.20	-73.21	QP
2	1.3141	12.38	20.34	32.72	65.23	-32.51	QP
3	1.5231	11.83	20.38	32.21	63.95	-31.74	QP
4	5.2245	7.49	20.68	28.17	69.50	-41.33	QP
5	9.7916	7.55	20.82	28.37	69.50	-41.13	QP
6	18.2391	12.67	22.99	35.66	69.50	-33.84	QP

Note: All emissions in restricted band 0.090 to 0.110 and 0.495 to 0.505 are background noise, it comply with the restricted band requirements.

4.4.2 Spurious Radiated Emission below 1 GHz

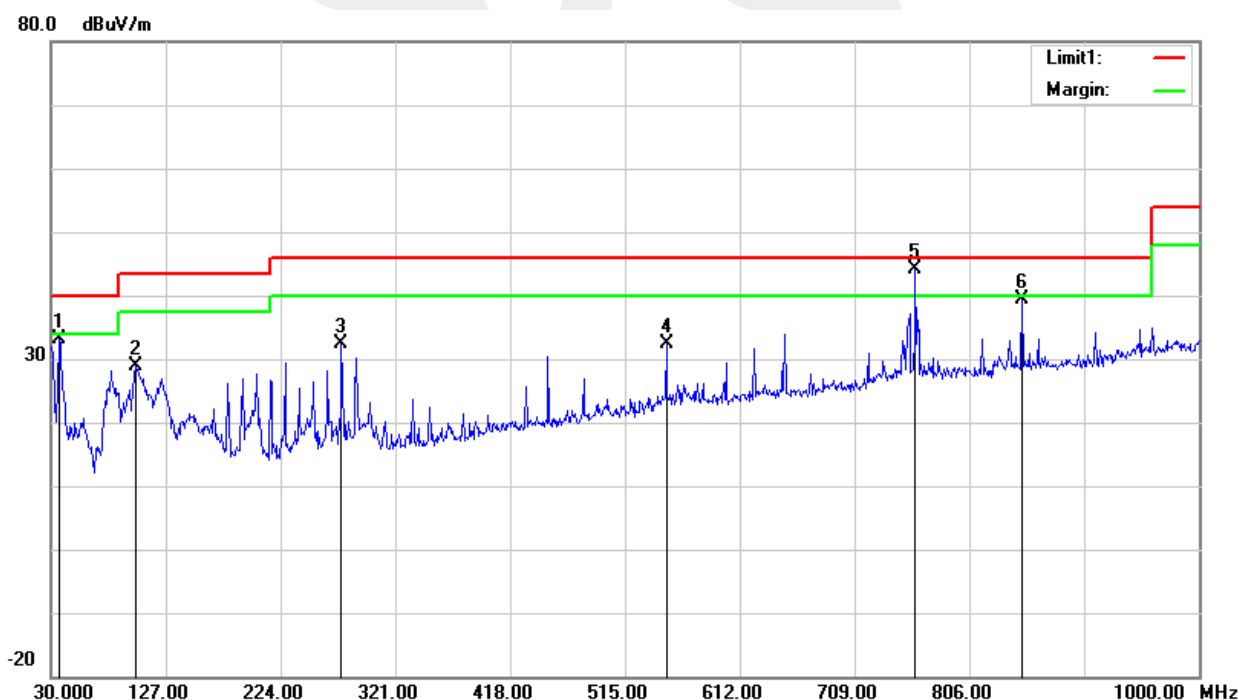
Temperature :	23.5℃	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 1

The following table shows the highest levels of radiated emissions on polarizations of vertical

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
36.7900	49.49	-16.39	33.10	40.00	-6.90	QP
101.7800	48.91	-19.94	28.97	43.50	-14.53	QP
275.4100	47.72	-15.46	32.26	46.00	-13.74	QP
549.9200	38.16	-5.78	32.38	46.00	-13.62	QP
760.4100	46.39	-2.18	44.21	46.00	-1.79	QP
850.6200	40.00	-0.73	39.27	46.00	-6.73	QP

Remark:

1. Margin = Result (Result =Reading + Factor)–Limit





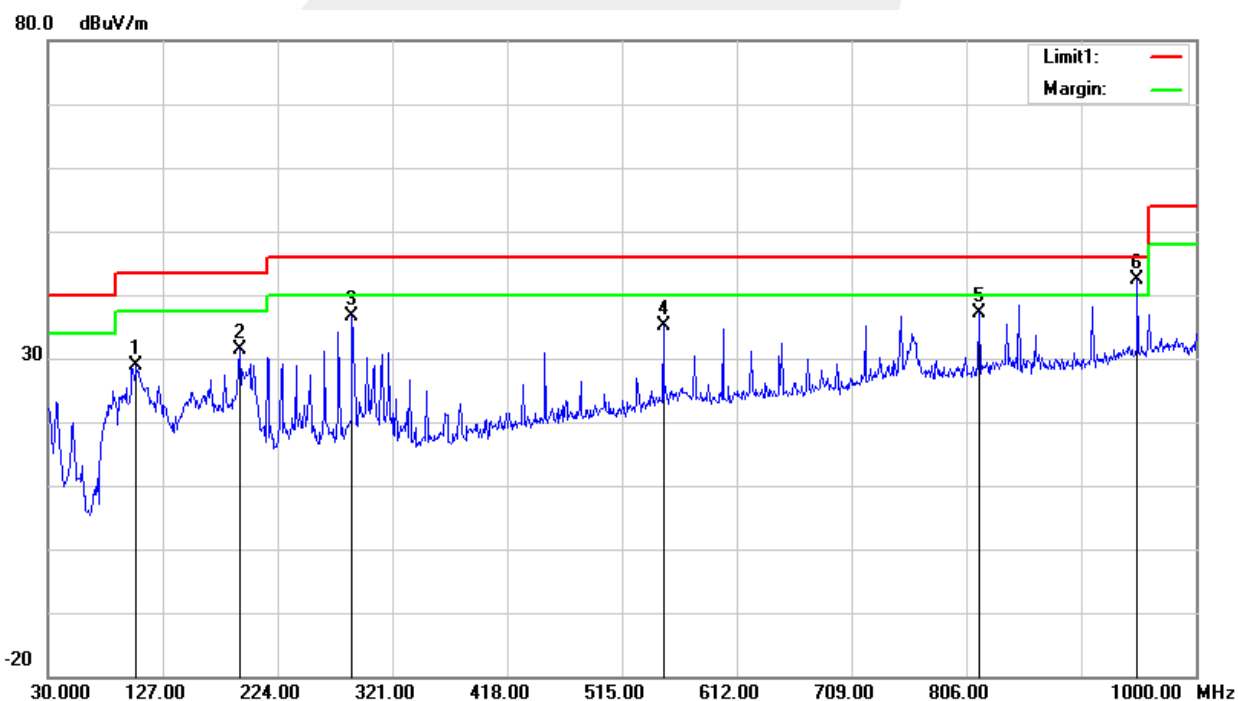
Temperature :	23.5℃	Relative Humidity :	60%
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 1

The following table shows the highest levels of radiated emissions on polarizations of horizontal

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
104.6900	48.40	-19.63	28.77	43.50	-14.73	QP
191.9900	52.33	-21.04	31.29	43.50	-12.21	QP
287.0500	51.85	-15.31	36.54	46.00	-9.46	QP
549.9200	41.00	-5.78	35.22	46.00	-10.78	QP
816.6700	39.06	-1.97	37.09	46.00	-8.91	QP
950.5300	40.70	1.61	42.31	46.00	-3.69	QP

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit





5. ANTENNA REQUIREMENT

5.1 STANDARD REQUIREMENT

According to the FCC Part 15 Paragraph 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

5.2 EUT ANTENNA

The EUT antenna is an air coil Antenna, the directional gain of antenna of RFID is 0 dBi. It conforms to the standard requirements.





APPENDIX-PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

XXXXXXXXEND OF THE REPORTXXXXXXXX

