

TEST REPORT

FCC Rules Part 15.225

Report Reference No.....: MTEB22120067

FCC ID..... : 2A397-HS520M

Compiled by
(position+printed name+signature)..: File administrators Alisa Luo



Supervised by
(position+printed name+signature)..: Test Engineer Sunny Deng



Approved by
(position+printed name+signature)..: Manager Yvette Zhou



Date of issue.....: **February 10, 2023**

Representative Laboratory Name .: Shenzhen Most Technology Service Co., Ltd.

Address: No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park,
Nanshan, Shenzhen, Guangdong, China.

Applicant's name.....: QINGDAO HISTONE INTELLIGENT COMMERCIAL SYSTEM CO., LTD.

Address: Wisdom Valley, No.8 Shengshui Road, Laoshan District, Qingdao
City, China

Test specification/ Standard: FCC Rules Part 15.225

TRF Originator.....: Shenzhen Most Technology Service Co., Ltd.

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Test item description: Self-Checkout Terminal

Trade Mark: Histone

Manufacturer: QINGDAO HISTONE INTELLIGENT COMMERCIAL SYSTEM
CO., LTD.

Model/Type reference.....: HS520M

Listed Models: N/A

Modulation Type.....: ASK

Operation Frequency.....: 13.56MHz

Hardware Version.....: HS-KBLU

Software Version: HSKBU

Rating: 100-120V~/200-240V~, 50/60Hz, 3A/1.7A

Result.....: **PASS**

TEST REPORT

Equipment under Test : Self-Checkout Terminal

Model /Type : HS520M

Listed Models : N/A

Remark : N/A

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Address : Wisdom Valley, No.8 Shengshui Road, Laoshan District, Qingdao City, China

Test Result:	PASS
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The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. Revision History

Revision	Issue Date	Revisions	Revised By
00	2023-02-10	Initial Issue	Alisa Luo

2 . TEST STANDARDS

The tests were performed according to following standards:

The tests were performed according to following standards:

FCC Rules Part 15.225: Operation within the band 13.110-14.010 MHz.

ANSI C63.10:2013 : American National Standard for Testing Unlicensed Wireless Devices

ANSI C63.4: 2014: –American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz
Range of 9 kHz to 40GHz

3. SUMMARY

3.1. General Remarks

Date of receipt of test sample	:	2022.12.02
Testing commenced on	:	2022.12.03
Testing concluded on	:	2022.12.30

3.2. Product Description

Product Name:	Self-Checkout Terminal
Model/Type reference:	HS520M
Power Supply:	100-120V~/200-240V~, 50/60Hz, 3A/1.7A
Testing sample ID:	MT22110324-326
Modulation:	ASK
Operation frequency:	13.56MHZ
Channel number:	1 (declared by the client)

3.3. Equipment Under Test

Power supply system utilised

Power supply voltage	:	<input type="radio"/> 230V / 50 Hz	<input checked="" type="radio"/> 120V / 60Hz
		<input type="radio"/> 12 V DC	<input type="radio"/> 24 V DC
		<input type="radio"/> Other (specified in blank below)	

100-120V~/200-240V~,50/60Hz,3A/1.7A

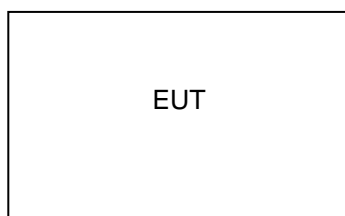
3.4. Short description of the Equipment under Test (EUT)

This is a Self-Checkout Terminal For more details, refer to the user's manual of the EUT.

3.5. EUT operation mode

Channel	Freq.(MHz)	Note(Modulation Type)
1	13.56MHz	ASK

3.6. Block Diagram of Test Setup



3.7. Test Item (Equipment Under Test) Description*

Short designation	EUT Name	EUT Description	Serial number	Hardware status	Software status
EUT A			/	/	/
EUT B			/	/	/

*: declared by the applicant. According to customers information EUTs A and B are the same devices. Only the secondary screen size is different

3.8. Auxiliary Equipment (AE) Description

AE short designation	EUT Name (if available)	EUT Description	Serial number (if available)	Software (if used)
AE 1	/	/	/	/
AE 2	-	/	/	/

3.9 Antenna Information*

Short designation	Antenna Name	Antenna Type	Frequency Range	Serial number	Antenna Peak Gain
Antenna 1	---	/	/	---	/
Antenna 2	/	/	/	/	/

*: declared by the applicant.

3.10. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

○ - supplied by the manufacturer

● - Supplied by the lab

<input type="radio"/>	ADAPTER	M/N:	
<input type="checkbox"/>		Manufacturer:	

3.11. Modifications

No modifications were implemented to meet testing criteria.

4. TEST ENVIRONMENT

4.1. Address of the test laboratory

Shenzhen Most Technology Service Co., Ltd.

No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen, Guangdong, China.
The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 0031192610

Shenzhen Most Technology Service Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

A2LA-Lab Cert. No.: 6343.01

Shenzhen Most Technology Service Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

4.2. Environmental conditions

Radiated Emission:

Temperature:	23 ° C
Humidity:	48 %
Atmospheric pressure:	950-1050mbar

Conducted testing:

Temperature:	24 ° C
Humidity:	45 %
Atmospheric pressure:	950-1050mbar

4.3. Test Description

FCC and IC Requirements		
FCC Part 15.203	Antenna Requirement	PASS
FCC Part 15.207	AC Power Conducted Emission	PASS
FCC Part 15.209&15.205 (a) &15.225(a,b,c,d)	Spurious Emissions	PASS
FCC Part 15.215 (c) &15.225	20dB Occupied Bandwidth	PASS
FCC Part 15.225(e)	Frequency Tolerance	PASS

Remark:

1. The measurement uncertainty is not included in the test result.
2. NA = Not Applicable; NP = Not Performed

4.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Most Technology Service Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Most Technology Service Co., Ltd. is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10 dB	(1)
Radiated Emission	1~18GHz	4.32 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.12 dB	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.5. Equipments Used during the Test

5.

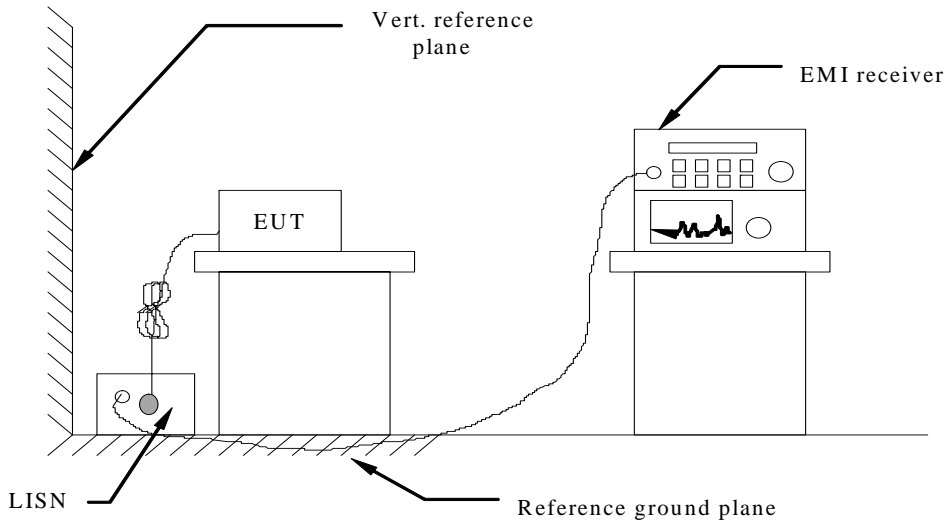
Item	Equipment	Manufacturer	Model No.	Serial No.	Firmware versions	Last Cal.	Cal. Interval
1.	L.I.S.N.	R&S	ENV216	100093	/	2022/04/18	1 Year
2	Three-phase artificial power network	Schwarzback Mess	NNLK8129	8129178	/	2022/04/18	1 Year
3.	Receiver	R&S	ESCI	100492	V3.0-10-2	2022/04/06	1 Year
4	Receiver	R&S	ESPI	101202	V3.0-10-2	2022/04/06	1 Year
5	Spectrum analyzer	Agilent	9020A	MT-E306	A14.16	2022/04/06	1 Year
6	Bilong Antenna	Sunol Sciences	JB3	A121206	/	2022/03/13	1 Year
7	Horn antenna	HF Antenna	HF Antenna	MT-E158	/	2022/04/06	1 Year
8	Loop antenna	Beijing Daze	ZN30900B	/	/	2022/04/15	1 Year
9	Horn antenna	R&S	OBH100400	26999002	/	2022/04/15	1 Year
10	Wireless Communication Test Set	R&S	CMW500	/	CMW-BASE-3.7.21	2022/04/14	1 Year
11	Spectrum analyzer	R&S	FSP	100019	V4.40 SP2	2022/04/14	1 Year
12	High gain antenna	Schwarzbeck	LB-180400KF	MT-E389	/	2022/03/13	1 Year
13	Preamplifier	Schwarzbeck	BBV 9743	MT-E390	/	2022/03/13	1 Year
14	Pre-amplifier	EMCI	EMC051845S E	MT-E391	/	2022/03/13	1 Year
15	Pre-amplifier	Agilent	83051A	MT-E392	/	2022/03/13	1 Year
16	High pass filter unit	Tonscend	JS0806-F	MT-E393	/	2022/03/13	1 Year
17	RF Cable(below1GHz)	Times	9kHz-1GHz	MT-E394	/	2022/03/13	1 Year
18	RF Cable(above 1GHz)	Times	1-40G	MT-E395	/	2022/03/13	1 Year
19	RF Cable (9KHz-40GHz)	Tonscend	170660	N/A	/	2022/03/13	1 Year

6. Note: The Cal.Interval was one year.

7. TEST CONDITIONS AND RESULTS

7.1. AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10-2013.
- 2 Support equipment, if needed, was placed as per ANSI C63.10-2013
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2013
- 4 The EUT received DC5V power, the adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

AC Power Conducted Emission Limit

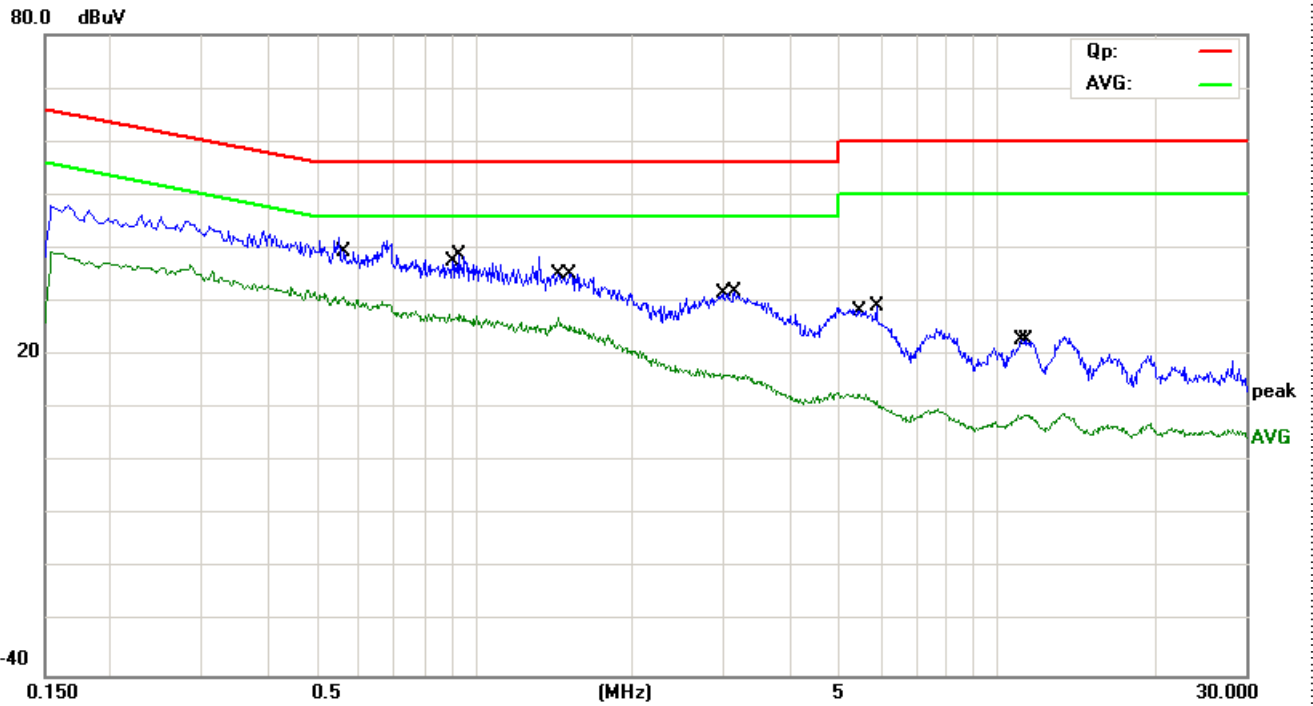
For unintentional device, according to RSS Gen 8.8 and § 15.207(a) Line Conducted Emission Limits is as following:

Frequency (MHz)	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

TEST RESULTS

Pass

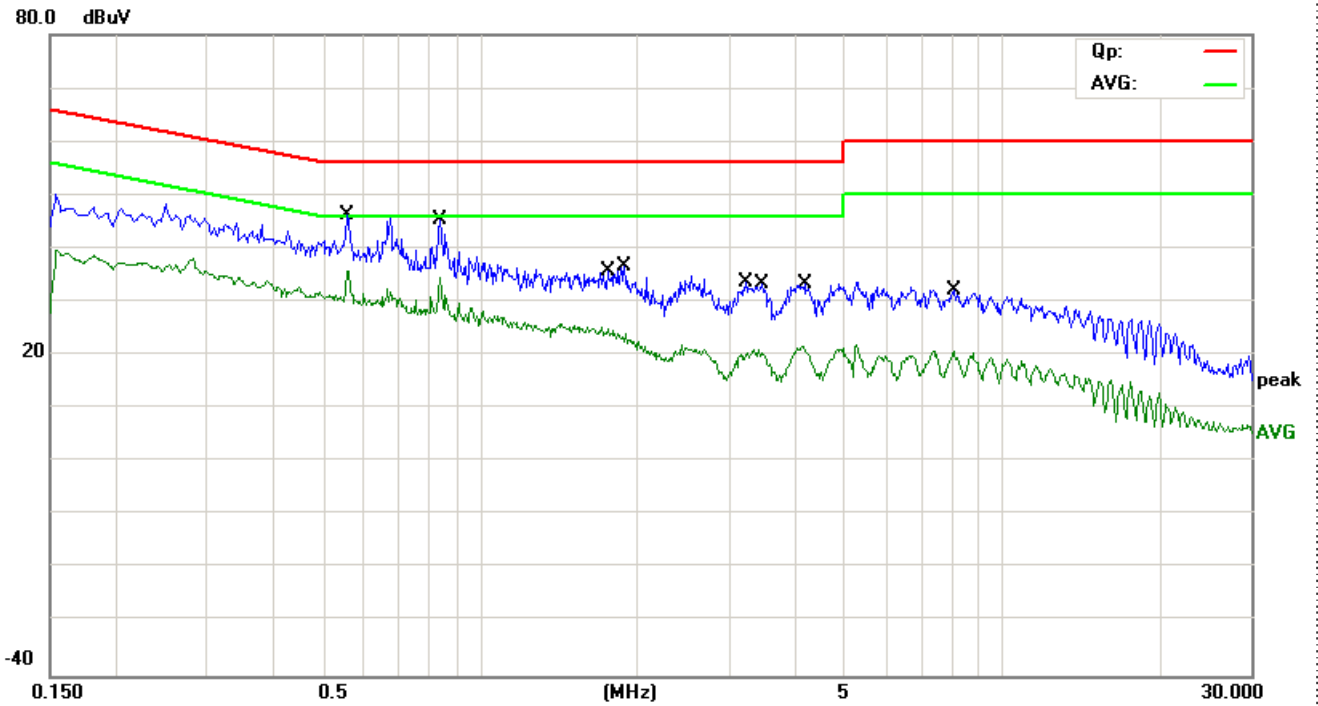
Power Supply	AC 120V/60Hz	Line	L
M/N:		HS520M	



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.5620	29.88	9.59	39.47	56.00	-16.53	QP	
2	*	0.5620	21.35	9.59	30.94	46.00	-15.06	AVG	
3		0.8940	18.14	9.60	27.74	46.00	-18.26	AVG	
4		0.9300	29.04	9.60	38.64	56.00	-17.36	QP	
5		1.4420	17.39	9.60	26.99	46.00	-19.01	AVG	
6		1.5180	25.64	9.60	35.24	56.00	-20.76	QP	
7		2.9980	6.76	9.61	16.37	46.00	-29.63	AVG	
8		3.1540	22.09	9.61	31.70	56.00	-24.30	QP	
9		5.4660	2.90	9.63	12.53	50.00	-37.47	AVG	
10		5.8980	19.40	9.64	29.04	60.00	-30.96	QP	
11		11.1660	13.23	9.69	22.92	60.00	-37.08	QP	
12		11.3300	-0.87	9.69	8.82	50.00	-41.18	AVG	

*:Maximum data x:Over limit !:over margin

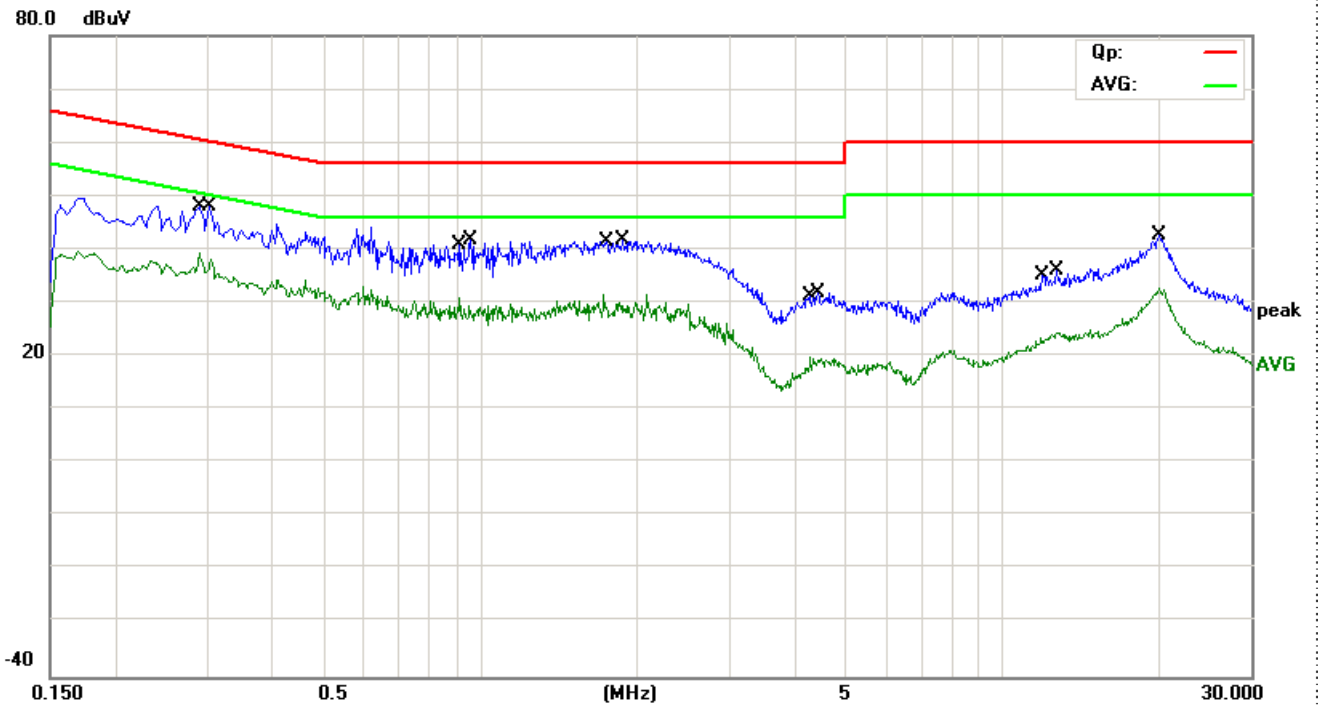
Power Supply	AC 120V/60Hz	Line	N
M/N:		HS520M	



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
		MHz	dBuV	Factor	ment	dBuV	dB		
1	*	0.5580	36.78	9.59	46.37	56.00	-9.63	QP	
2		0.5580	26.20	9.59	35.79	46.00	-10.21	AVG	
3		0.8380	24.99	9.60	34.59	46.00	-11.41	AVG	
4		0.8420	35.85	9.60	45.45	56.00	-10.55	QP	
5		1.7540	15.22	9.60	24.82	46.00	-21.18	AVG	
6		1.8900	27.10	9.60	36.70	56.00	-19.30	QP	
7		3.2260	23.89	9.61	33.50	56.00	-22.50	QP	
8		3.4260	11.37	9.61	20.98	46.00	-25.02	AVG	
9		4.1580	12.18	9.62	21.80	46.00	-24.20	AVG	
10		4.1860	23.77	9.62	33.39	56.00	-22.61	QP	
11		8.0740	22.41	9.66	32.07	60.00	-27.93	QP	
12		8.0740	11.05	9.66	20.71	50.00	-29.29	AVG	

*:Maximum data x:Over limit !:over margin

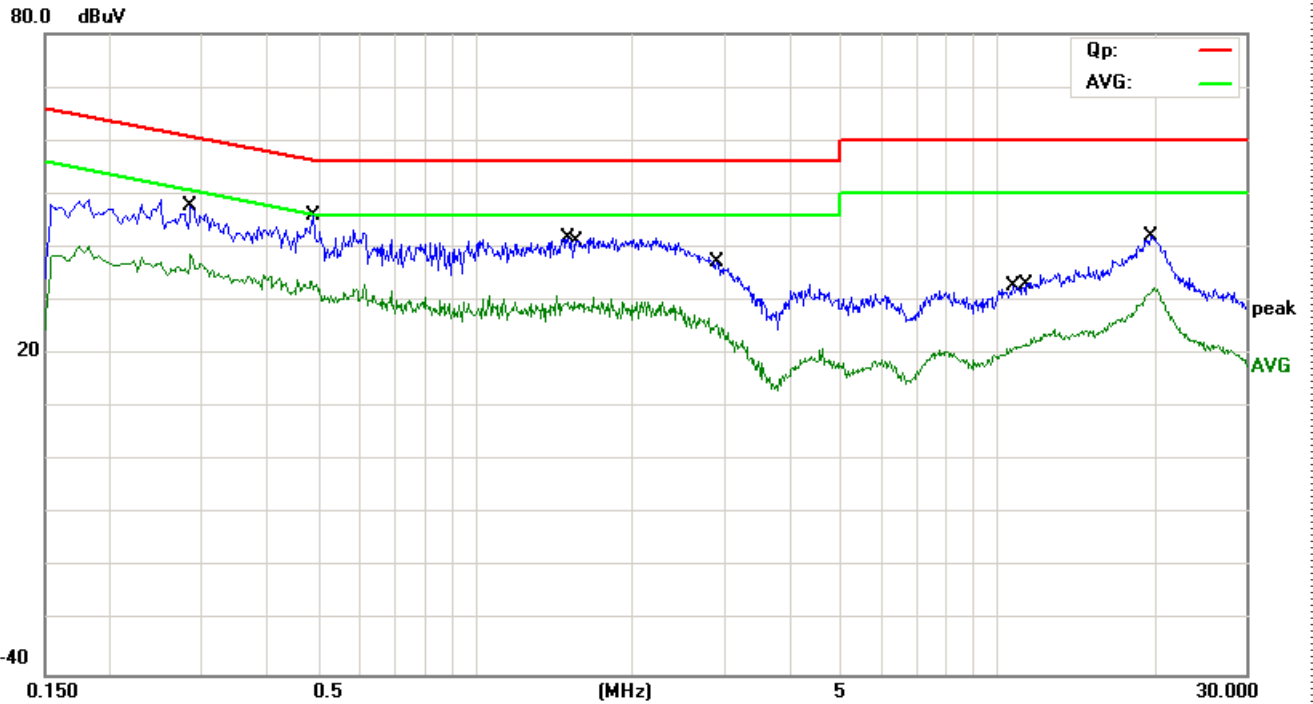
Power Supply	AC 120V/60Hz	Line	L
M/N:	HS520M+Scanner Base		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.2900	29.70	9.59	39.29	50.52	-11.23	AVG	
2		0.3020	38.54	9.59	48.13	60.19	-12.06	QP	
3		0.9180	21.26	9.60	30.86	46.00	-15.14	AVG	
4		0.9620	32.11	9.60	41.71	56.00	-14.29	QP	
5		1.7340	21.93	9.60	31.53	46.00	-14.47	AVG	
6		1.8820	32.19	9.60	41.79	56.00	-14.21	QP	
7		4.3140	10.17	9.62	19.79	46.00	-26.21	AVG	
8		4.4540	22.12	9.62	31.74	56.00	-24.26	QP	
9		11.9660	25.32	9.69	35.01	60.00	-24.99	QP	
10		12.7220	14.69	9.70	24.39	50.00	-25.61	AVG	
11		19.9900	32.88	9.73	42.61	60.00	-17.39	QP	
12		19.9900	22.91	9.73	32.64	50.00	-17.36	AVG	

*:Maximum data x:Over limit !:over margin

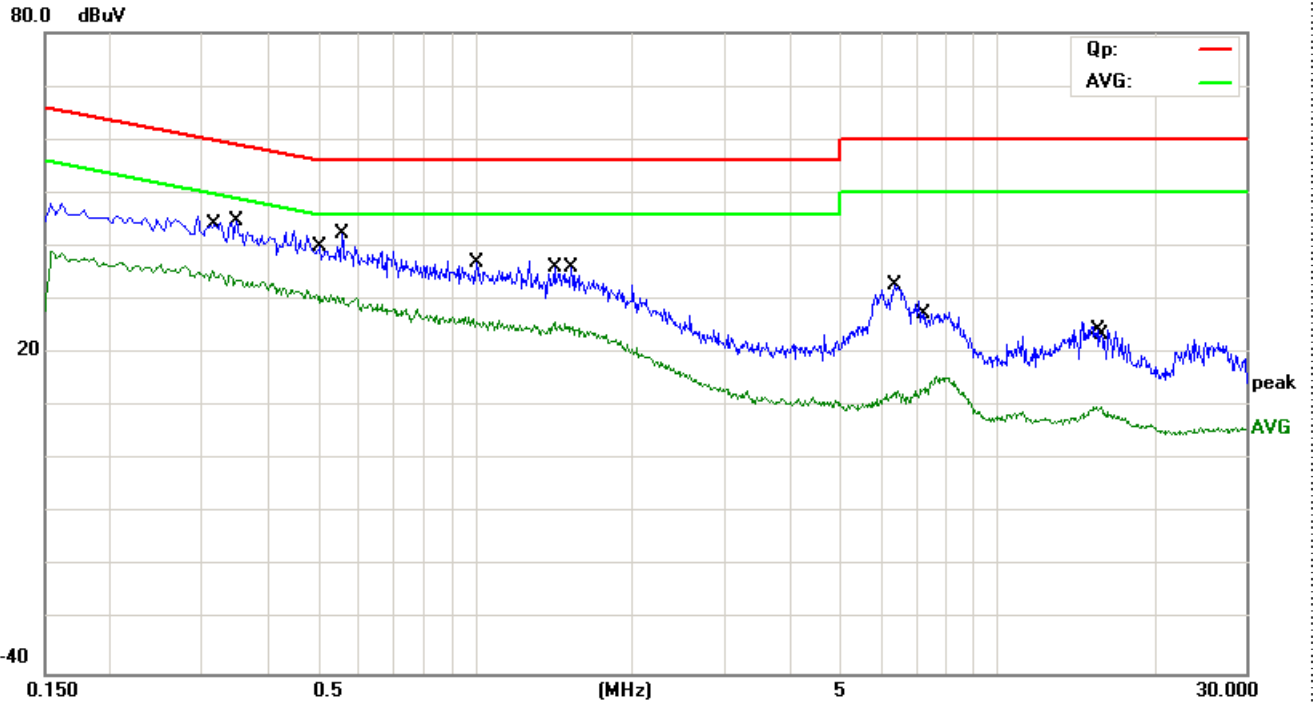
Power Supply	AC 120V/60Hz	Line	N
M/N:	HS520M+Scanner Base		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2860	38.14	9.59	47.73	60.64	-12.91	QP	
2		0.2860	29.20	9.59	38.79	50.64	-11.85	AVG	
3		0.4860	24.06	9.59	33.65	46.24	-12.59	AVG	
4	*	0.4900	36.26	9.59	45.85	56.17	-10.32	QP	
5		1.5100	32.27	9.60	41.87	56.00	-14.13	QP	
6		1.5500	20.23	9.60	29.83	46.00	-16.17	AVG	
7		2.9100	27.59	9.61	37.20	56.00	-18.80	QP	
8		2.9100	15.80	9.61	25.41	46.00	-20.59	AVG	
9		10.7500	23.18	9.69	32.87	60.00	-27.13	QP	
10		11.2500	12.01	9.69	21.70	50.00	-28.30	AVG	
11		19.8420	32.30	9.73	42.03	60.00	-17.97	QP	
12		20.0220	22.57	9.73	32.30	50.00	-17.70	AVG	

*:Maximum data x:Over limit !:over margin

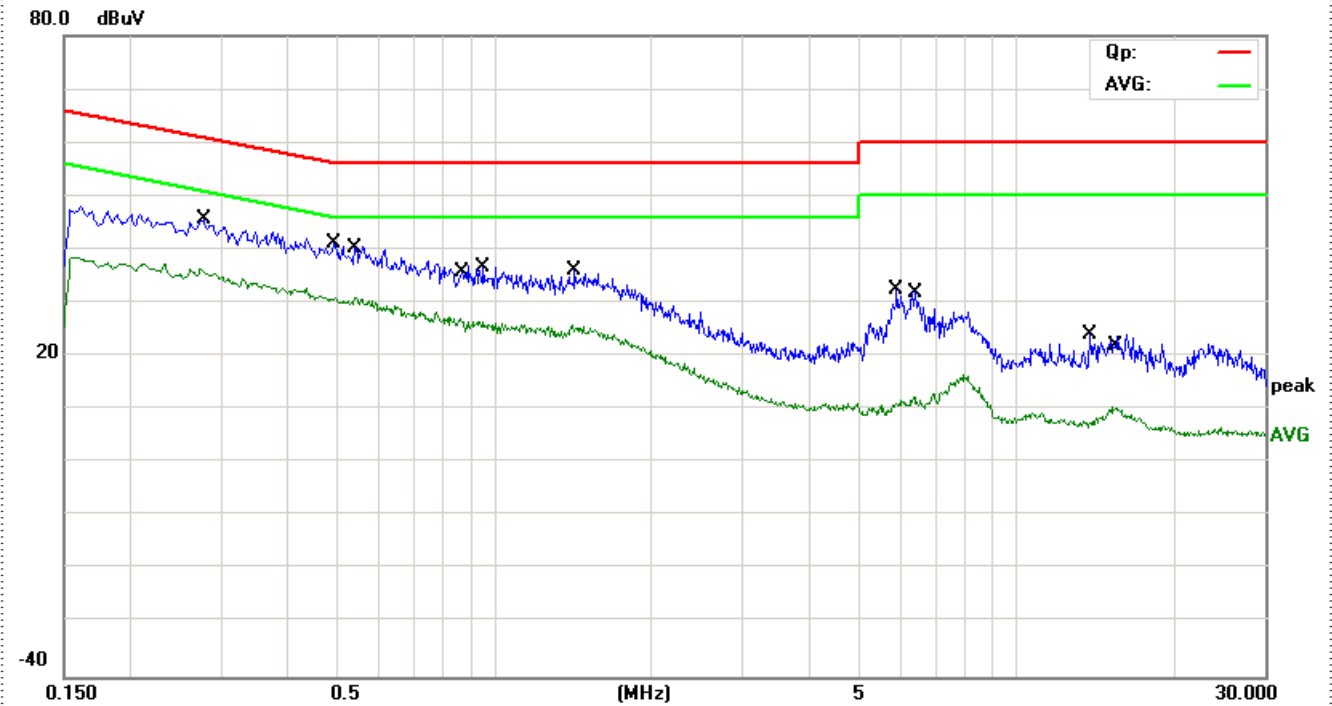
Power Supply	AC 120V/60Hz	Line	L
M/N:	HS520M+RFID Base		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.3140	25.78	9.59	35.37	49.86	-14.49	AVG	
2		0.3500	35.15	9.59	44.74	58.96	-14.22	QP	
3		0.4980	21.43	9.59	31.02	46.03	-15.01	AVG	
4	*	0.5580	32.73	9.59	42.32	56.00	-13.68	QP	
5		0.9900	16.76	9.60	26.36	46.00	-19.64	AVG	
6		1.0100	27.34	9.60	36.94	56.00	-19.06	QP	
7		1.4220	16.14	9.60	25.74	46.00	-20.26	AVG	
8		1.5300	26.45	9.60	36.05	56.00	-19.95	QP	
9		6.3780	23.08	9.64	32.72	60.00	-27.28	QP	
10		7.1660	3.56	9.65	13.21	50.00	-36.79	AVG	
11		15.6100	14.67	9.70	24.37	60.00	-35.63	QP	
12		15.8540	0.26	9.71	9.97	50.00	-40.03	AVG	

*:Maximum data x:Over limit !:over margin

Power Supply	AC 120V/60Hz	Line	N
M/N:	HS520M+RFID Base		



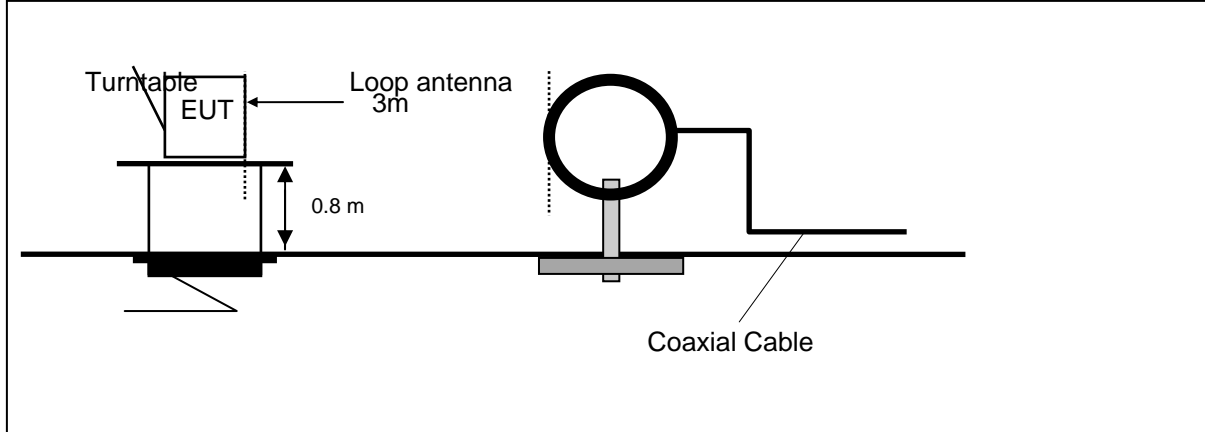
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.2740	26.68	9.60	36.28	51.00	-14.72	AVG	
2		0.2780	36.09	9.59	45.68	60.88	-15.20	QP	
3		0.4940	31.43	9.59	41.02	56.10	-15.08	QP	
4		0.5420	21.32	9.59	30.91	46.00	-15.09	AVG	
5		0.8620	17.48	9.60	27.08	46.00	-18.92	AVG	
6		0.9540	27.06	9.60	36.66	56.00	-19.34	QP	
7		1.4180	16.20	9.60	25.80	46.00	-20.20	AVG	
8		1.4300	26.59	9.60	36.19	56.00	-19.81	QP	
9		5.9140	22.79	9.64	32.43	60.00	-27.57	QP	
10		6.3020	2.16	9.64	11.80	50.00	-38.20	AVG	
11		13.8740	14.35	9.70	24.05	60.00	-35.95	QP	
12		15.3700	0.82	9.70	10.52	50.00	-39.48	AVG	

*:Maximum data x:Over limit !:over margin

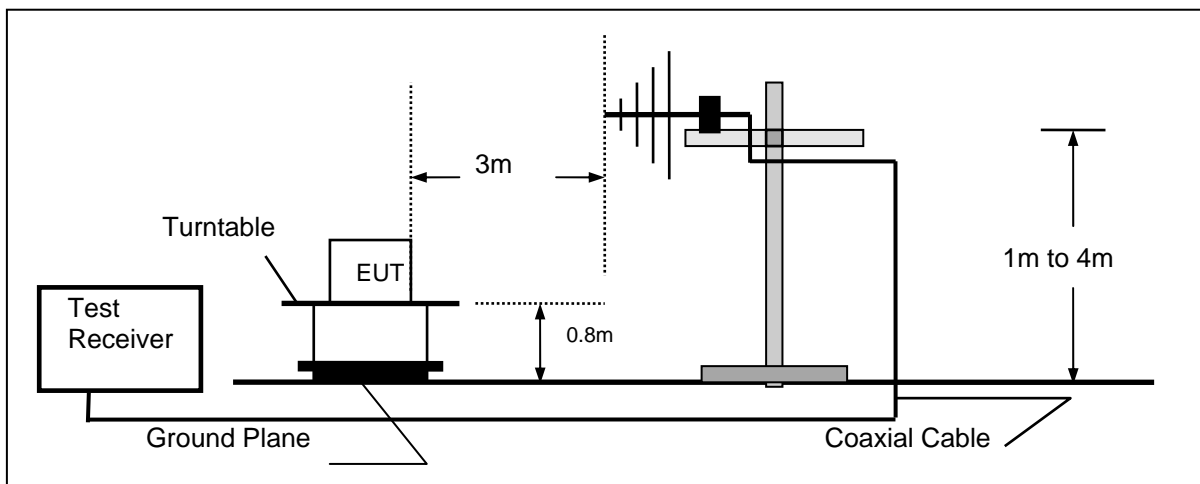
7.2. Radiated Emission

TEST CONFIGURATION

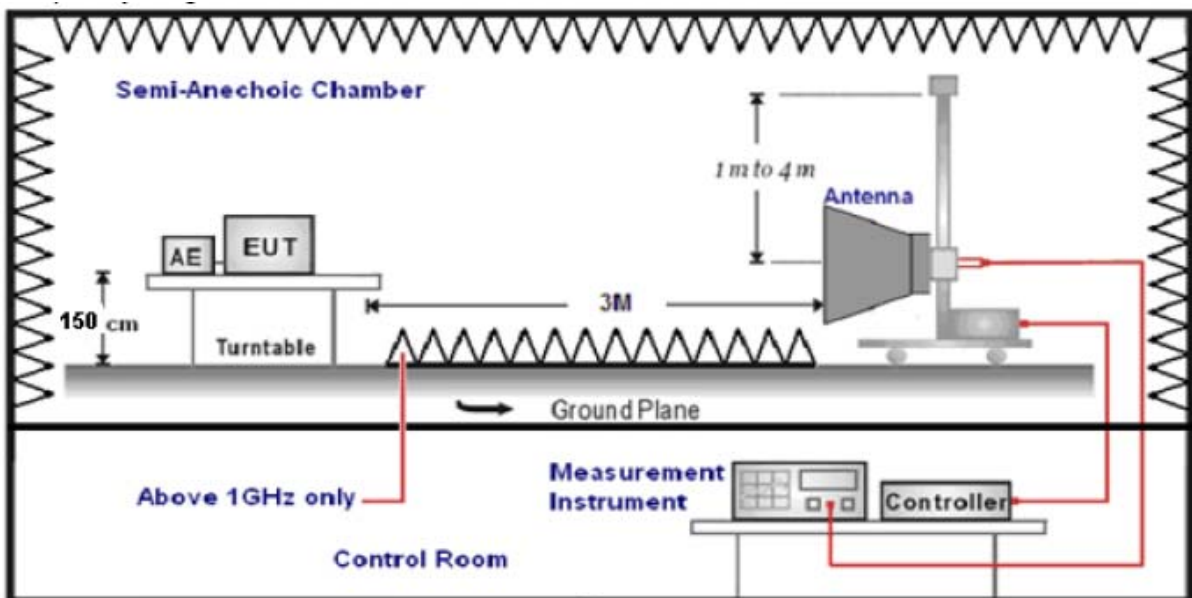
Frequency range 9 KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



TEST PROCEDURE

1. The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 9 KHz –1GHz;the EUT was placed on a turn table which is 1.5m above ground plane when testing frequency range 1GHz – 25GHz.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. The EUT minimum operation frequency was 32.768KHz and maximum operation frequency was 2480MHz.so radiated emission test frequency band from 9KHz to 25GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Antenna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz, Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz, Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz, Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

Transd=AF +CL-AG

RADIATION LIMIT

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits shown in table below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter’s fundamental emission

Unwanted emissions that fall into restricted bands shall comply with the limits specified in RSS-Gen; and Unwanted emissions that do not fall within the restricted frequency bands shall comply either with the limits specified in the applicable RSS or with those specified in this RSS-Gen.

Frequency (MHz)	Distance (Meters)	Radiated (dB μ V/m)	Radiated (μ V/m)
0.009-0.49	3	$20\log(2400/F(\text{KHz}))+40\log(300/3)$	2400/F(KHz)
0.49-1.705	3	$20\log(24000/F(\text{KHz}))+40\log(30/3)$	24000/F(KHz)
1.705-30	3	$20\log(30)+40\log(30/3)$	30
30-88	3	49.0	100
88-216	3	53.5	150
216-960	3	56.0	200
Above 960	3	64.0	500

According to FCC Part 15.205,Rastricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

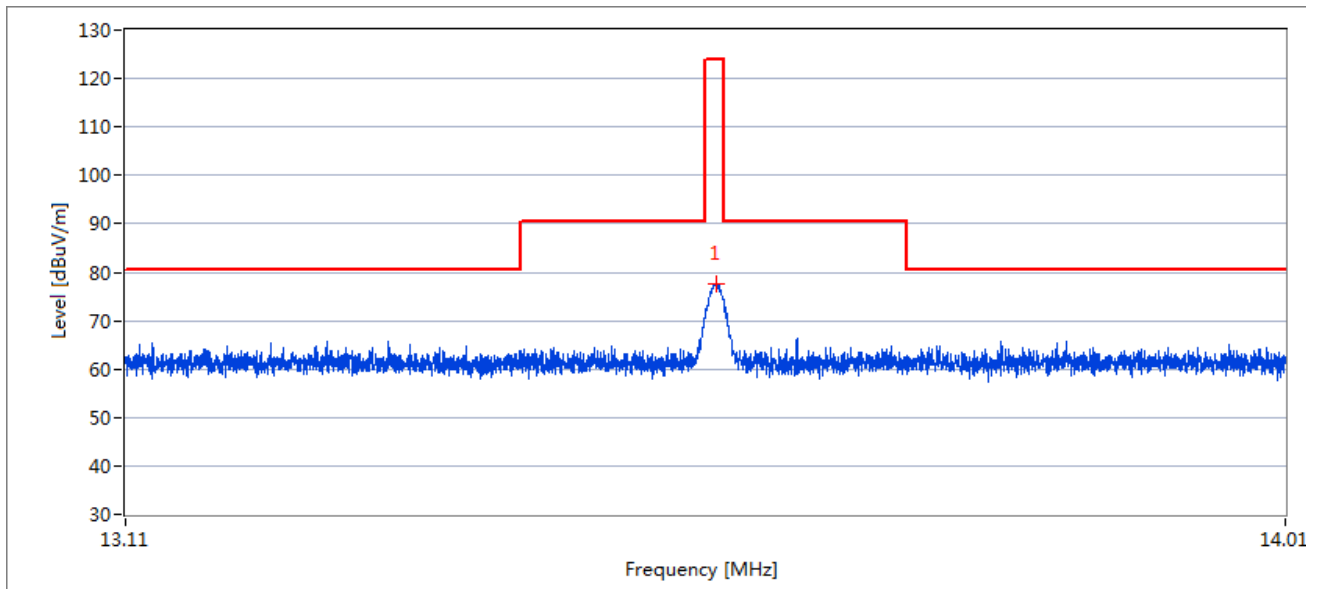
LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.225)

- (a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters, equal to 124dBuV/m at 3 meters.
- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters, equal to 90.5dBuV/m at 3 meters.
- (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters, equal to 80.5dBuV/m at 3 meters..
- (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

TEST RESULTS (BELOW 30MHz)

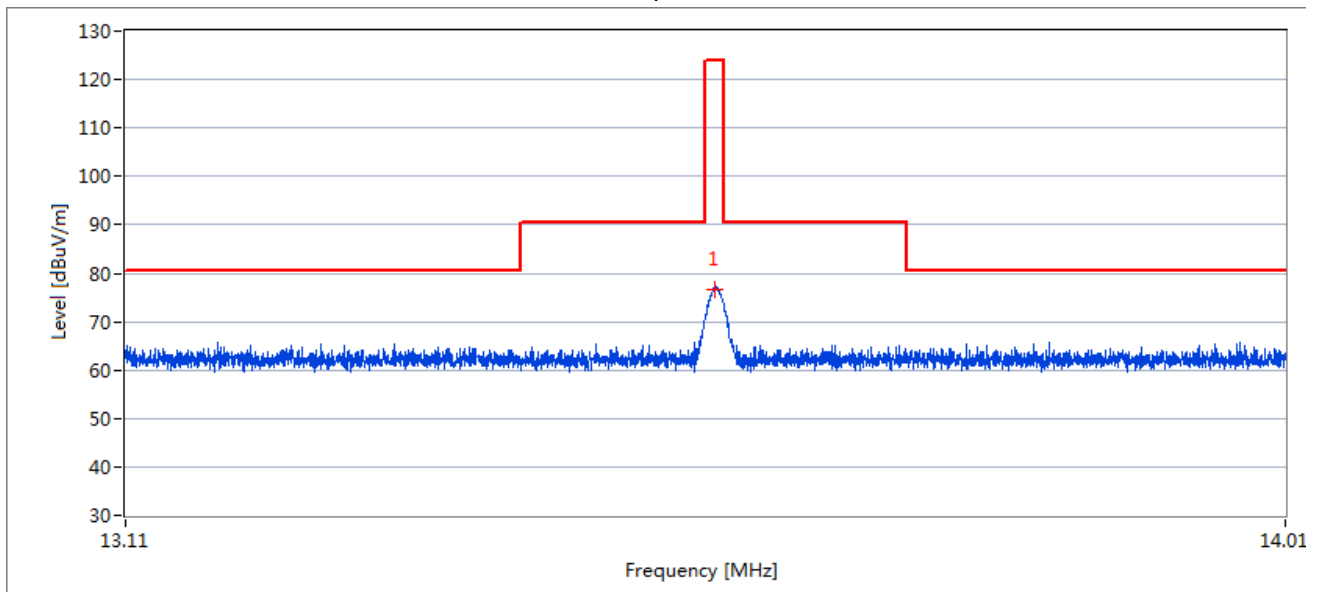
- 1: This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in X position.
- 2: Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9 KHz to 30MHz and not recorded in this report.

X

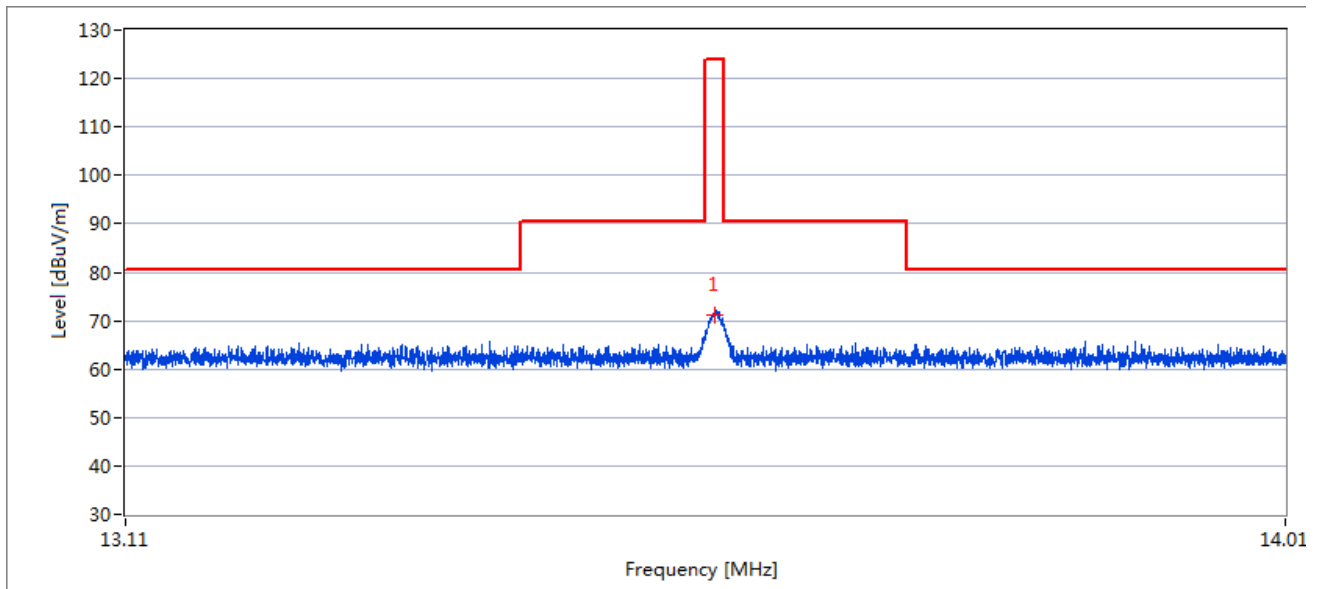


Frequency	Pre-scan Level MaxPeak	Final Test Level MaxPeak	Limit MaxPeak	Margin
MHz	dBuV/m	dBuV/m	dBuV/m	dB
13.56	78.2	78.2	124.0	45.8

Y



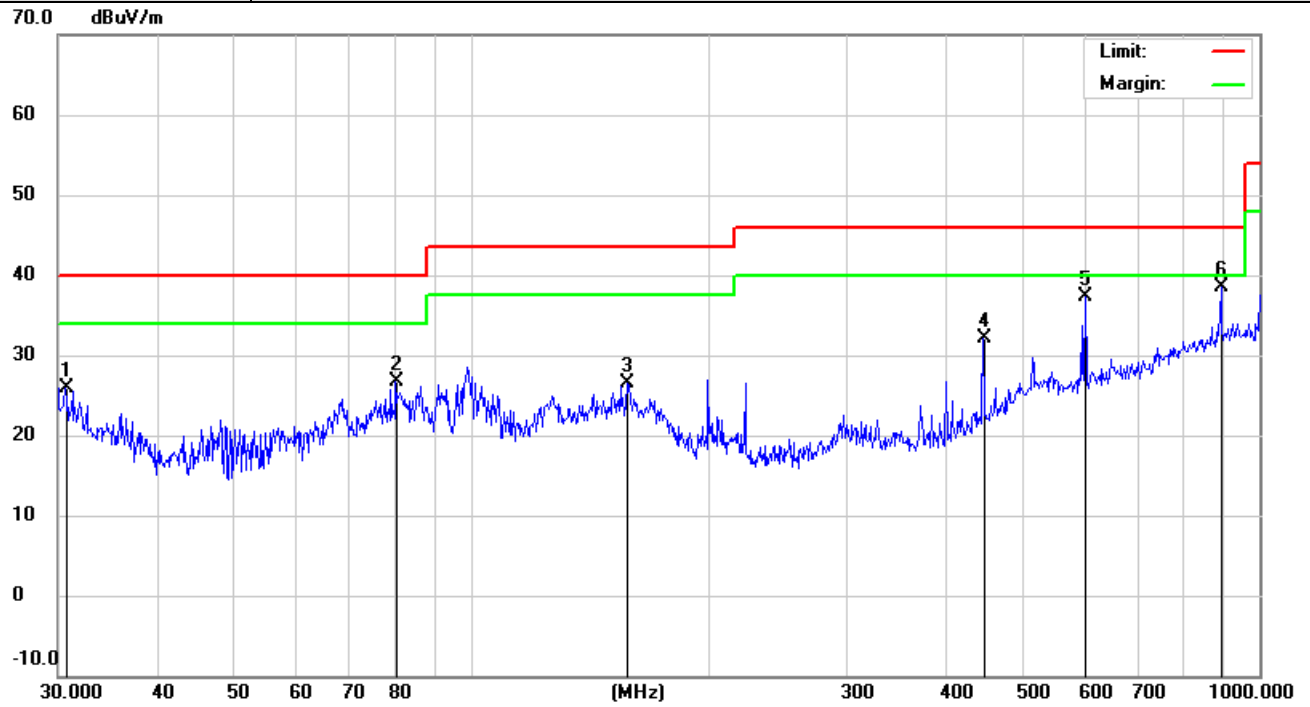
Frequency	Pre-scan Level MaxPeak	Final Test Level MaxPeak	Limit MaxPeak	Margin
MHz	dBuV/m	dBuV/m	dBuV/m	dB
13.56	76.8	77.5	124.0	46.5



Frequency	Pre-scan Level MaxPeak	Final Test Level MaxPeak	Limit MaxPeak	Margin
MHz	dBuV/m	dBuV/m	dBuV/m	dB
13.56	72.5	72.5	124.0	51.5

For 30MHz-1GHz

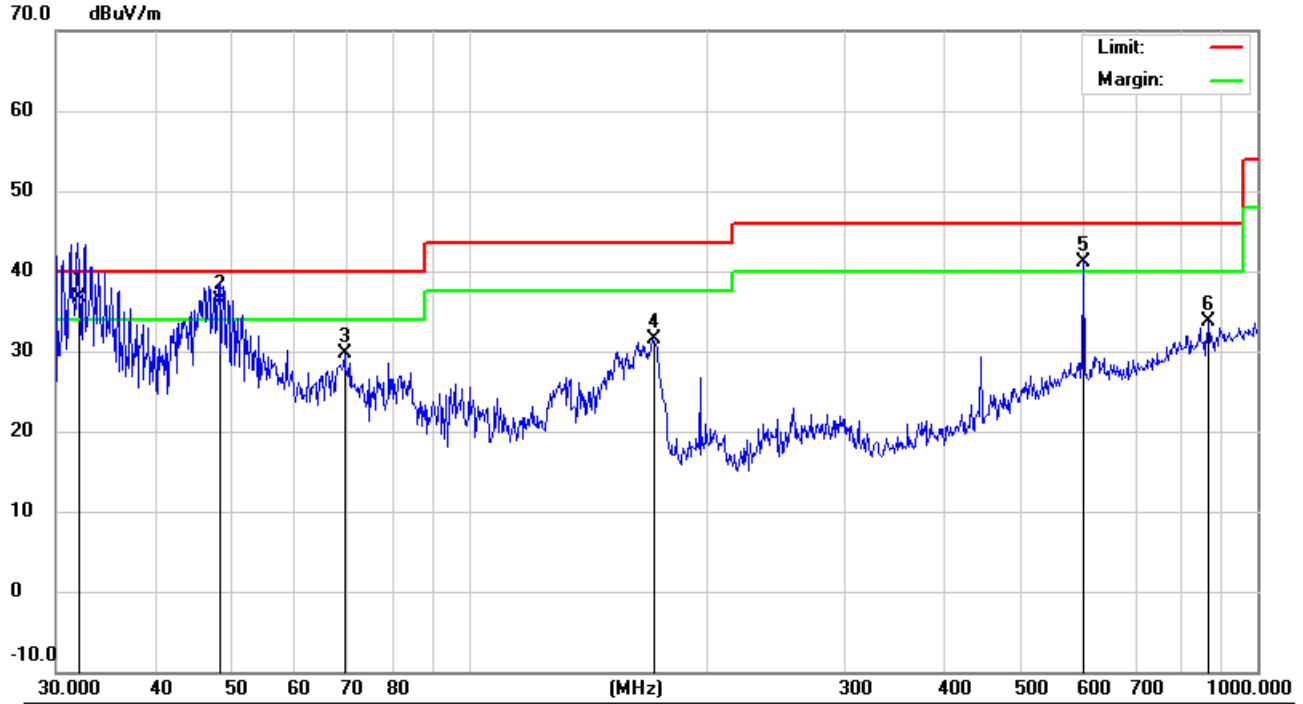
Power Supply	AC 120V/60Hz	Polarization	Horizontal
M/N:	HS520M		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		30.6379	5.39	20.47	25.86	40.00	-14.14	QP	200	41
2		80.3619	16.56	10.09	26.65	40.00	-13.35	QP	200	87
3		158.1123	9.18	17.38	26.56	43.50	-16.94	QP	200	142
4		446.4141	12.19	19.86	32.05	46.00	-13.95	QP	200	199
5		601.4265	13.52	23.82	37.34	46.00	-8.66	QP	200	285
6	*	893.8567	9.53	28.93	38.46	46.00	-7.54	QP	200	316

*:Maximum data x:Over limit !:over margin

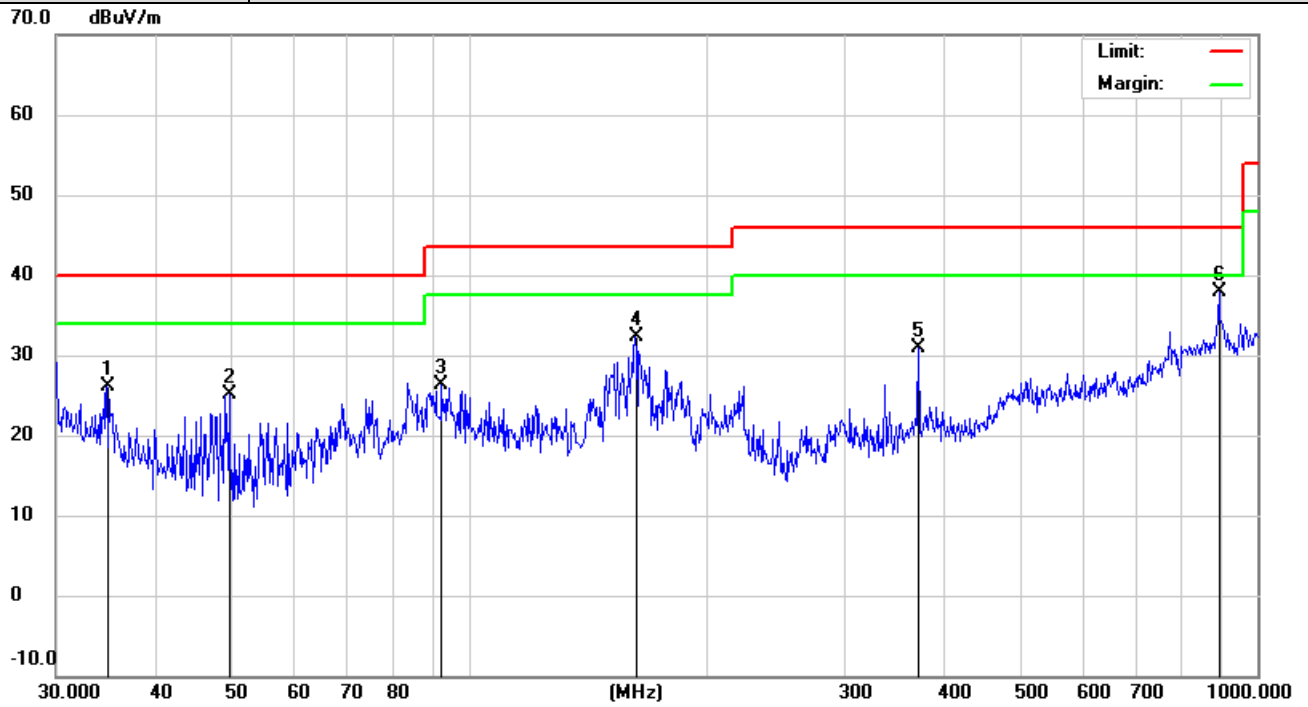
Power Supply AC 120V/60Hz Polarization Vertical
 M/N: HS520M



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1	*	31.9546	17.20	19.57	36.77	40.00	-3.23	QP	100	42
2	!	48.3318	27.50	8.90	36.40	40.00	-3.60	QP	100	98
3		69.6005	20.39	9.27	29.66	40.00	-10.34	QP	100	168
4		171.3926	14.54	16.92	31.46	43.50	-12.04	QP	100	231
5	!	601.4265	17.38	23.82	41.20	46.00	-4.80	QP	100	297
6		866.0879	5.00	28.63	33.63	46.00	-12.37	QP	100	341

*:Maximum data x:Over limit !:over margin

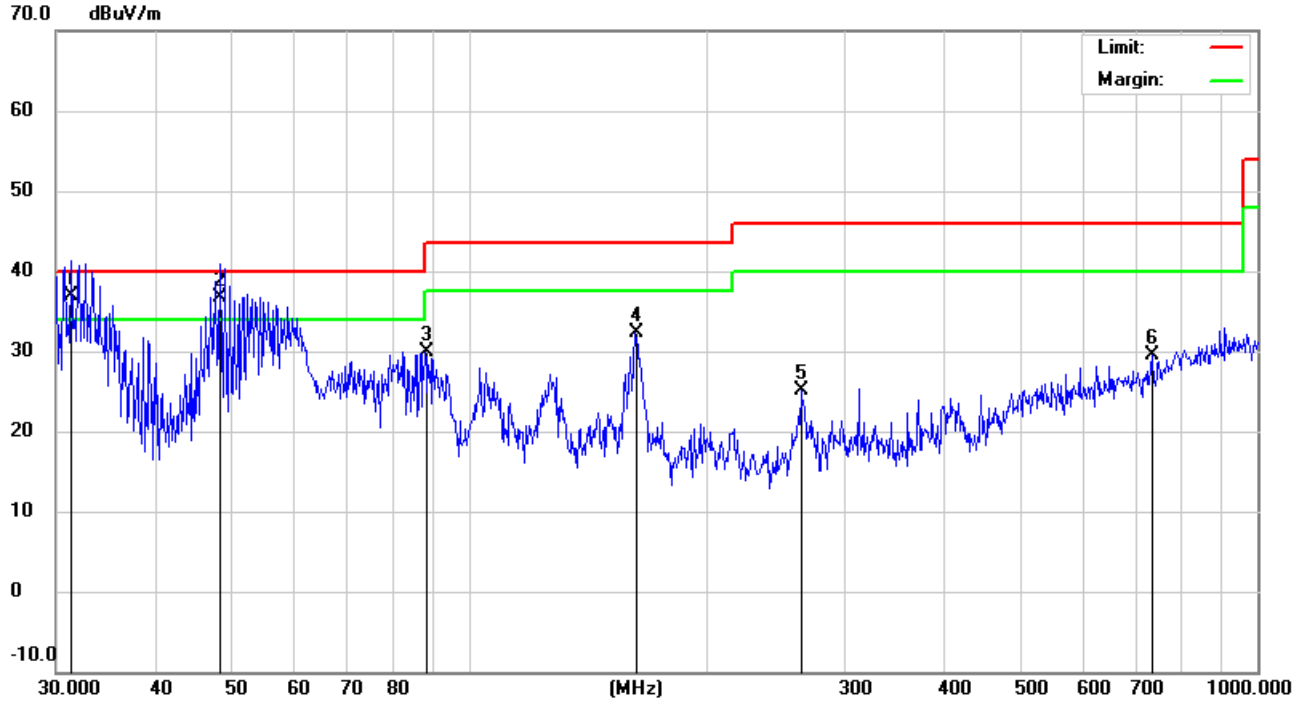
Power Supply	AC 120V/60Hz	Polarization	Horizontal
M/N:	HS520M+Scanner Base		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		34.7602	8.46	17.66	26.12	40.00	-13.88	QP	200	24	
2		49.7068	16.95	8.24	25.19	40.00	-14.81	QP	200	67	
3		92.4624	15.44	10.81	26.25	43.50	-17.25	QP	200	106	
4		162.6106	15.05	17.21	32.26	43.50	-11.24	QP	200	184	
5		372.0045	14.05	16.87	30.92	46.00	-15.08	QP	200	237	
6	*	893.8567	8.89	28.93	37.82	46.00	-8.18	QP	200	298	

*:Maximum data x:Over limit !:over margin

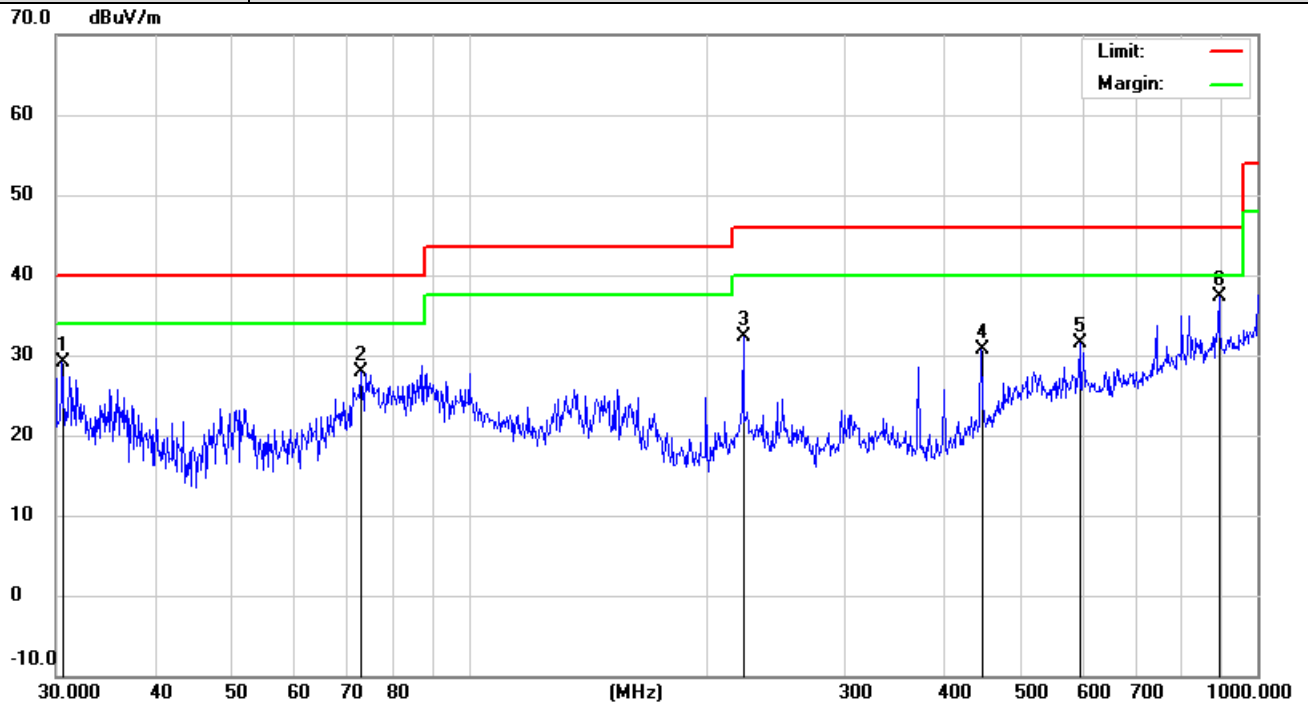
Power Supply AC 120V/60Hz Polarization Vertical
 M/N: HS520M+Scanner Base



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1	*	31.3992	17.00	19.95	36.95	40.00	-3.05	QP	100	36
2	!	48.3318	27.90	8.90	36.80	40.00	-3.20	QP	100	87
3		88.0329	20.00	9.94	29.94	43.50	-13.56	QP	100	147
4		162.6106	15.13	17.21	32.34	43.50	-11.16	QP	100	197
5		263.8190	10.81	14.27	25.08	46.00	-20.92	QP	100	254
6		734.4913	3.44	26.07	29.51	46.00	-16.49	QP	100	301

*:Maximum data x:Over limit !:over margin

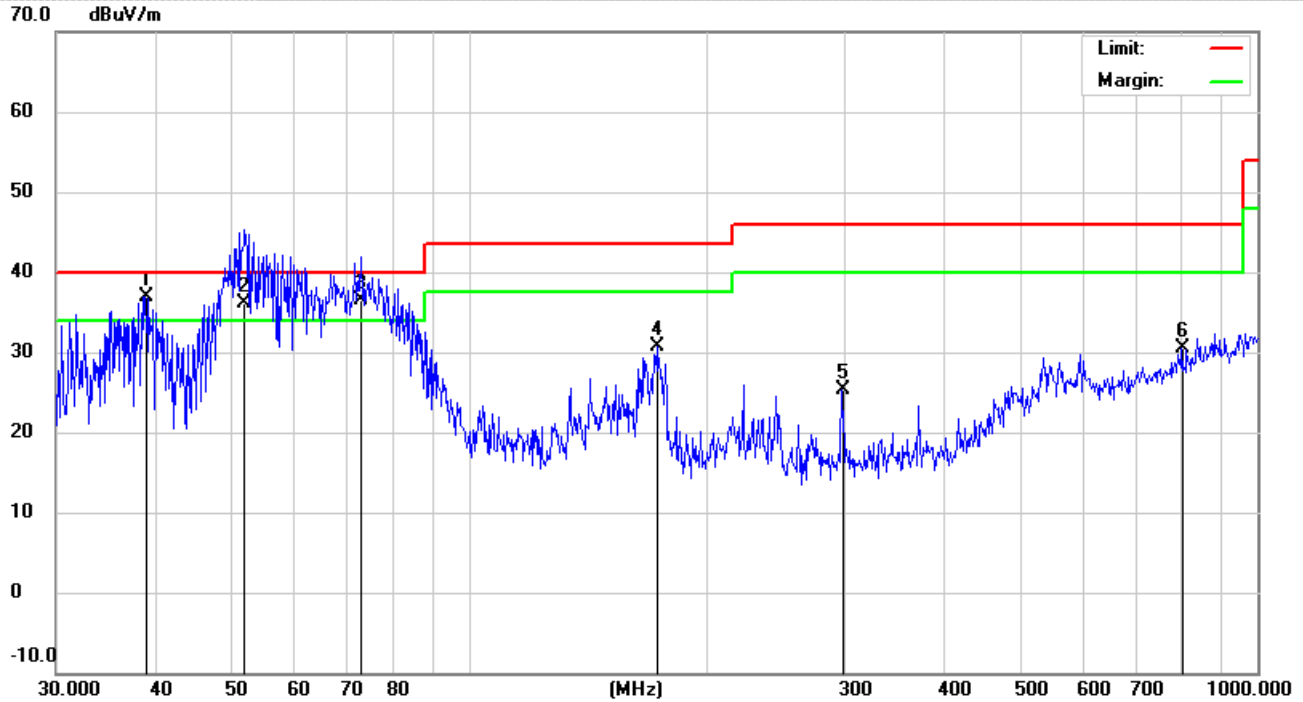
Power Supply	AC 120V/60Hz	Polarization	Horizontal
M/N:	HS520M+RFID Base		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1		30.5306	8.56	20.54	29.10	40.00	-10.90	200	61	
2		73.1025	18.27	9.55	27.82	40.00	-12.18	200	99	
3		222.9502	17.66	14.56	32.22	46.00	-13.78	200	136	
4		446.4141	10.91	19.86	30.77	46.00	-15.23	200	198	
5		595.1329	7.70	23.75	31.45	46.00	-14.55	200	264	
6	*	893.8567	8.32	28.93	37.25	46.00	-8.75	200	312	

*:Maximum data x:Over limit !:over margin

Power Supply AC 120V/60Hz Polarization Vertical
 M/N: HS520M+RFID Base

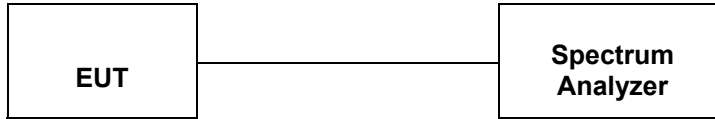


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1	*	38.8878	22.32	14.62	36.94	40.00	-3.06	QP	100	28
2	!	52.0251	28.00	8.20	36.20	40.00	-3.80	QP	100	69
3	!	73.1025	27.00	9.55	36.55	40.00	-3.45	QP	100	136
4		173.2051	13.78	16.86	30.64	43.50	-12.86	QP	100	198
5		297.2241	9.93	15.41	25.34	46.00	-20.66	QP	100	267
6		801.7863	2.55	27.92	30.47	46.00	-15.53	QP	100	318

*:Maximum data x:Over limit !:over margin

7.3. 20dB Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

The 20dB bandwidth and 99% bandwidth is measured with a spectrum analyzer connected via a receive antenna placed near the EUT while the EUT is operating in transmission mode.

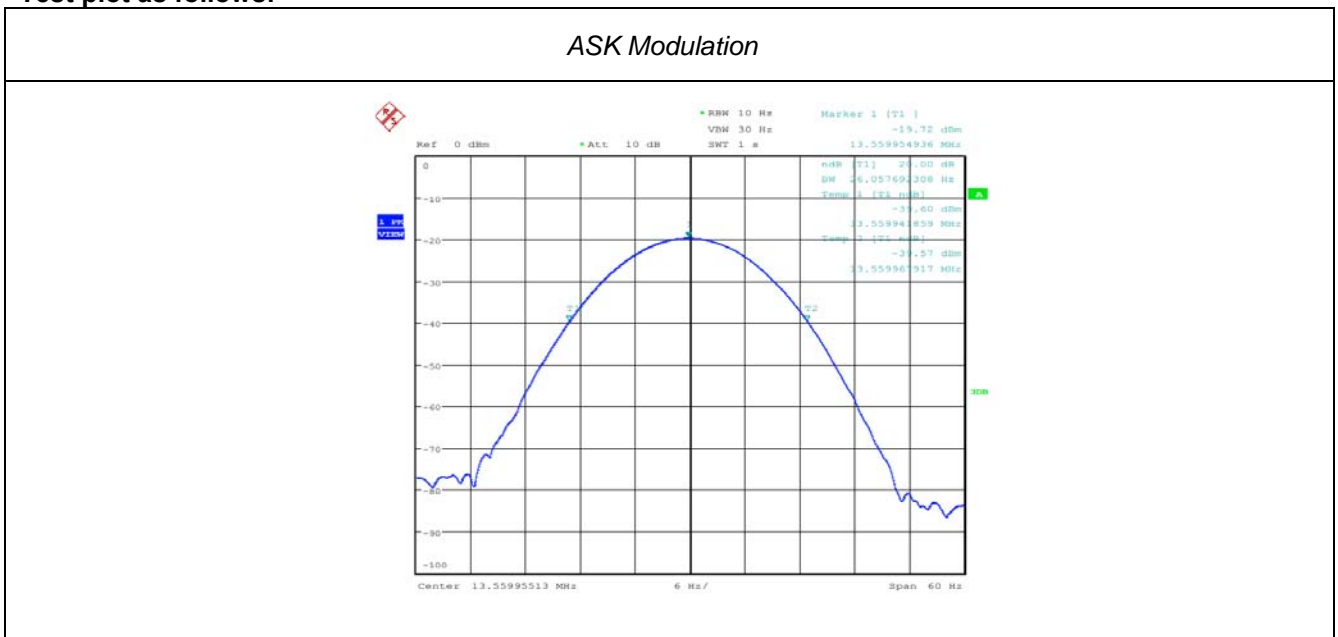
The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

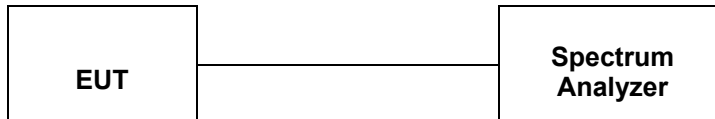
The occupied bandwidth (OBW), that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission

TEST RESULTS

Modulation	Channel Frequency (MHz)	20dB bandwidth (KHz)	Result
ASK	13.56	0.026	Pass

Test plot as follows:



7.4. FREQUENCY TOLERANCE**TEST CONFIGURATION****TEST PROCEDURE**

The EUT was placed on a turn table which is 0.8m above ground plane.

Set EUT as normal operation

Set SPA Center Frequency = fundamental frequency, RBW, VBW= 10kHz, Span=100K

Set SPA Max hold. Mark peak.

TEST RESULTS

Power Supply	Temperature(°C)	Measured Frequency (MHz)	Frequency Error (MHz)	Result(ppm)	Part 15.225 Limit
AC 240V	-20	13.56015	0.00015	1.14	+/- 0.01%(100ppm)
	20	13.56065	0.00065	4.76	+/- 0.01%(100ppm)
	50	13.56086	0.00086	6.31	+/- 0.01%(100ppm)
AC 120V	-20	13.56040	0.00040	2.97	+/- 0.01%(100ppm)
	20	13.56048	0.00048	3.53	+/- 0.01%(100ppm)
	50	13.56090	0.00090	6.66	+/- 0.01%(100ppm)
AC 100V	-20	13.56078	0.00078	5.76	+/- 0.01%(100ppm)
	20	13.56055	0.00055	4.02	+/- 0.01%(100ppm)
	50	13.56087	0.00087	6.42	+/- 0.01%(100ppm)

8. Test Setup Photos of the EUT



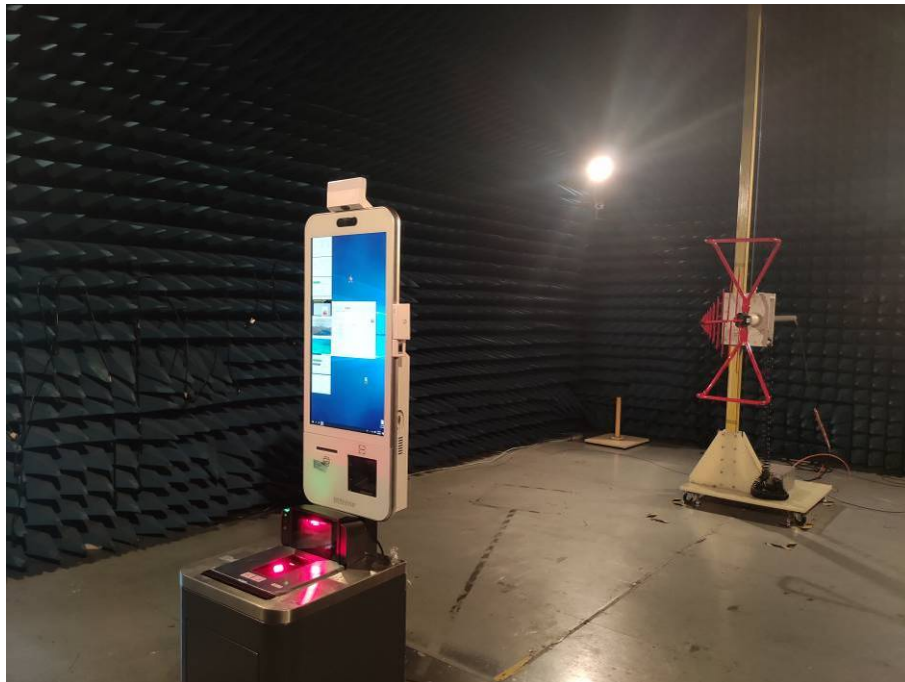
HS520M



HS520M



HS520M+Scanner Base



HS520M+Scanner Base



HS520M+RFID Base



HS520M+RFID Base



9. External and Internal Photos of the EUT

See related photo report.

.....**End of Report**.....