



FCC TEST REPORT

FCC ID: A5M-HS2420MODELS

Report Number..... : ZKT-211025L5702

Date of Test..... Aug. 28, 2021 to Oct. 13,, 2021

Date of issue : Oct. 13, 2021

Total number of pages 15

Test Result : PASS

Testing Laboratory..... : Shenzhen ZKT Technology Co., Ltd.

Address : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name : Lenovo(Beijing)Ltd.

Address : 201-H2-6,Floor2,Building2,No.6 Shangdi West Road, Haidian District, Beijing, China 10008

Manufacturer's name : Lenovo(Beijing)Ltd.

Address : 201-H2-6,Floor2,Building2,No.6 Shangdi West Road, Haidian District, Beijing, China 10008

Test specification:

Standard..... : FCC Part 15 B
ANSI C63.4:2014

Test procedure : /

Non-standard test method : N/A

Test Report Form No. : TRF-EL-117_V0

Test Report Form(s) Originator : ZKT Testing

Master TRF : Dated: 2020-01-06

This device described above has been tested by ZKT, and 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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Product name..... : Self-service Terminal

Trademark : Lenovo

Model/Type reference : MT-2420 MODEL S

Ratings..... : Input: AC110-240V

**Testing procedure and testing location:****Testing Laboratory**.....: **Shenzhen ZKT Technology Co., Ltd.**Address.....: 1/F, No. 101, Building B, No. 6, Tangwei Community
Industrial Avenue, Fuhai Street, Bao'an District,
Shenzhen, ChinaTested by (name + signature): Alen HeReviewer (name + signature).....: Joe LiuApproved (name + signature): Lake Xie



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1.VERSION

Report No.	Version	Description	Approved
ZKT-211025L5702	Rev.01	Initial issue of report	Oct. 13, 2021



2.GENERAL INFORMATION

2.1 Description of Device (EUT)

EUT : Self-service Terminal
Trademark : Lenovo
Model Number : MT-2420 MODEL S
Model Difference : /.
Power Supply : Input: AC110-240V

2.2 Tested System Details

None.

2.3 Test Facility

Shenzhen ZKT Technology Co., Ltd.
Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225
Designation Number: CN1299
IC Registered No.: 27033

2.4 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Conducted Emission (150K-30MHZ)	3.6
Radiated disturbance30MHz-1000MHz	5.0



2.5 Test Instrument Used

Conducted emissions Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	LISN	R&S	R&S ENV216	3560.6550.12-101891-Ne	2021.08.02	2022.08.02
2	Receiver	R&S	ESR7	1316.3003K07-101445-uL	2021.04.25	2022.04.25

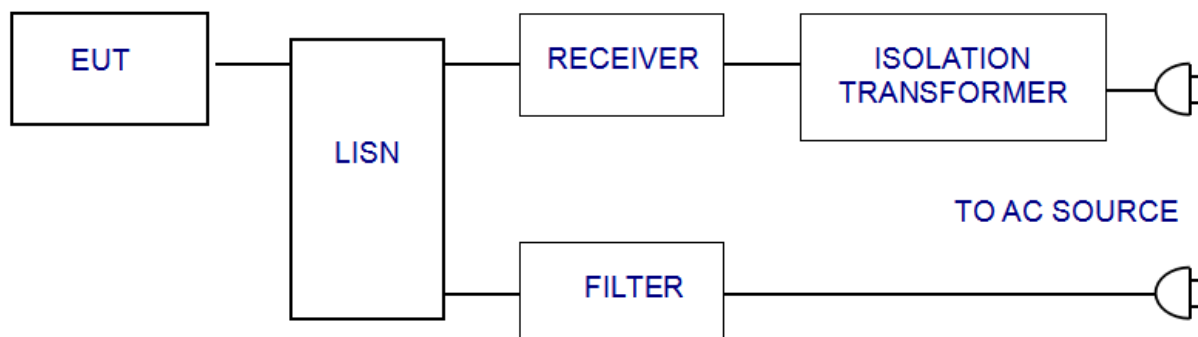
Radiated emissions Test (966 chamber)

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Test Receiver	R&S	ESR 7	1316.3003K07-101589-Vz	2021.04.25	2022.04.25
2	receiving antenna	R&S	HL 562E	4100.0007.02-100811-Bc	2019.07.30	2022.07.30
3	Test Software	R&S	EMC32	\	\	\



3.CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

3.1 Block Diagram Of Test Setup



3.2 Test Standard

FCC PART 15 B

3.3 Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	79	66
0.50 ~ 30.00	73	60

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.4 EUT Configuration on Test

The following equipments are installed on conducted emission test to meet FCC PART 15 B requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.5 Operating Condition of EUT

- 3.5.1 Setup the EUT and simulators as shown in Section 3.1.
- 3.5.2 Turn on the power of all equipments.
- 3.5.3 Let the EUT work in test modes and test it.

3.6 Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **FCC PART 15 B** regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 10KHz.

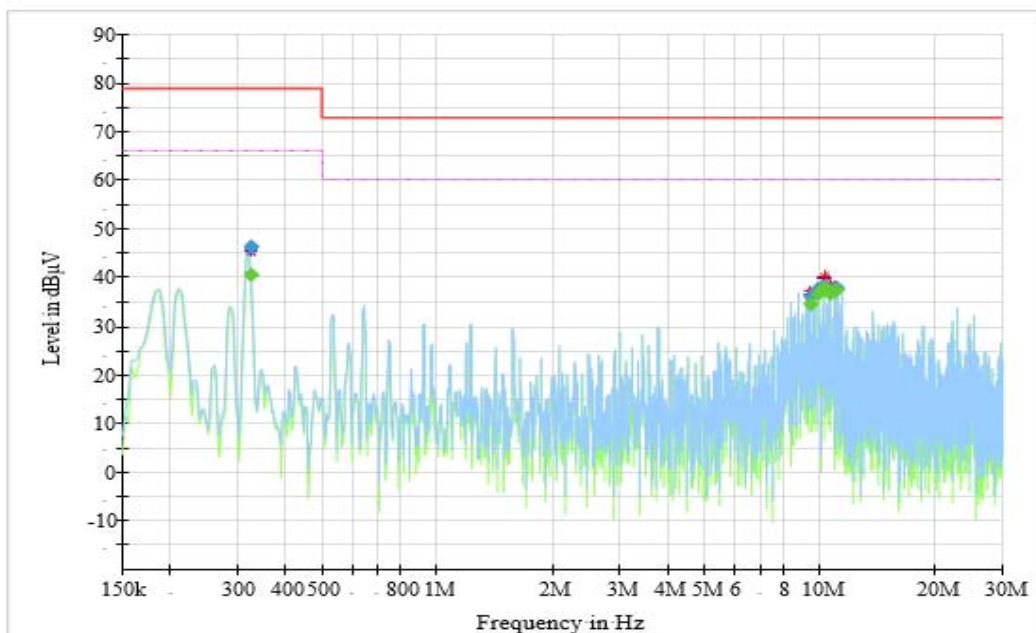
The frequency range from 150 KHz to 30 MHz is investigated.

3.7 Test Result



Conducted emissions at the Mains Ports Test Data

Temperature:	24°C	Relative Humidity:	50%
Pressure:	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode:	working



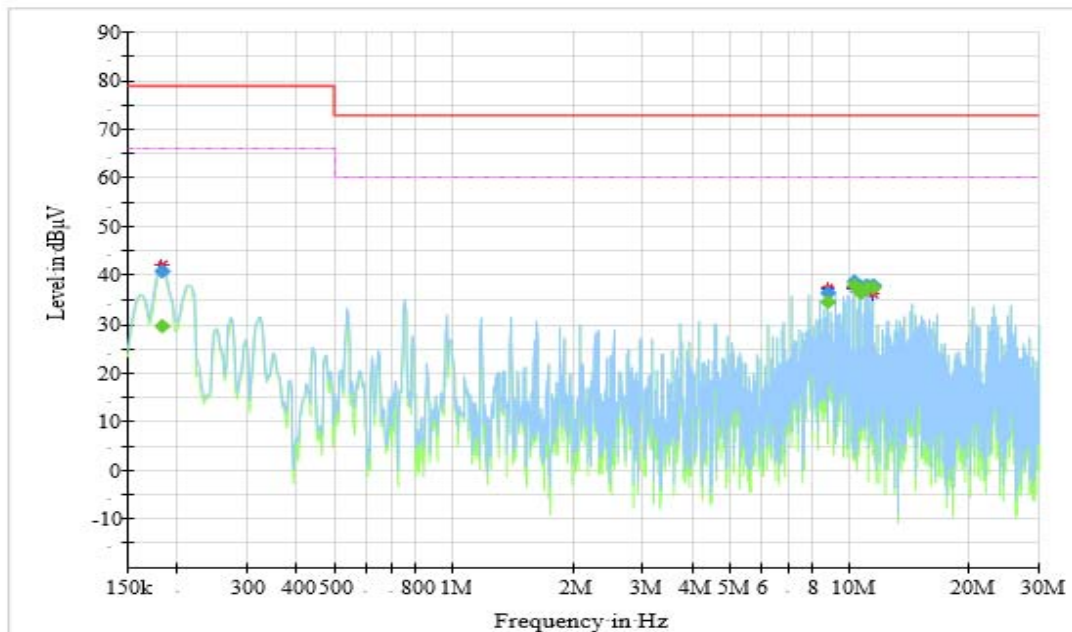
Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line
0.324645	---	40.69	66.00	25.31	1000.0	9.000	L
0.324645	46.35	---	79.00	32.65	1000.0	9.000	L
9.448275	---	34.69	60.00	25.31	1000.0	9.000	L
9.448275	36.11	---	73.00	36.89	1000.0	9.000	L
9.854235	---	36.69	60.00	23.31	1000.0	9.000	L
9.854235	37.73	---	73.00	35.27	1000.0	9.000	L
10.260195	---	38.02	60.00	21.98	1000.0	9.000	L
10.260195	38.37	---	73.00	34.63	1000.0	9.000	L
10.663170	37.45	---	73.00	35.55	1000.0	9.000	L
10.663170	---	36.59	60.00	23.41	1000.0	9.000	L
11.069130	---	37.46	60.00	22.54	1000.0	9.000	L
11.069130	38.10	---	73.00	34.90	1000.0	9.000	L



Conducted emissions at the Mains Ports Test Data

Temperature:	24°C	Relative Humidity:	50%
Pressure:	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode:	working

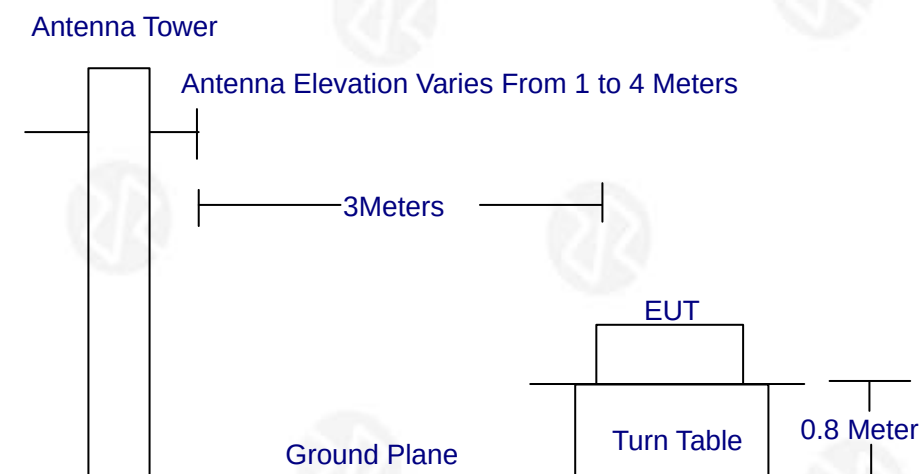
**Final Result**

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line
0.182835	---	29.64	66.00	36.36	1000.0	9.000	N
0.182835	40.81	---	79.00	38.19	1000.0	9.000	N
8.773665	---	34.57	60.00	25.43	1000.0	9.000	N
8.773665	36.40	---	73.00	36.60	1000.0	9.000	N
10.260195	---	38.11	60.00	21.89	1000.0	9.000	N
10.260195	38.92	---	73.00	34.08	1000.0	9.000	N
10.663170	37.36	---	73.00	35.64	1000.0	9.000	N
10.663170	---	36.56	60.00	23.44	1000.0	9.000	N
11.069130	38.06	---	73.00	34.94	1000.0	9.000	N
11.069130	---	37.37	60.00	22.63	1000.0	9.000	N
11.475090	---	37.53	60.00	22.47	1000.0	9.000	N
11.475090	37.92	---	73.00	35.08	1000.0	9.000	N



4. RADIATION EMISSION TEST

4.1 Block Diagram of Test Setup



4.2 Test Standard

FCC PART 15 B

4.3 Radiation Limit

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (micorvolts/meter)
30 ~ 88	3	300
88 ~ 216	3	500
216 ~ 960	3	700
960 ~ 1000	3	1000

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	79.5	59.5

4.4 EUT Configuration on Test

The FCC PART 15 B regulations test method must be used to find the maximum emission during radiated emission test. The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.2.

4.5 Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.2 except the test set up replaced as Section 4.1.

4.6 Test Procedure

The EUT and its simulators are placed on a turned table that is 0.8 meter above the ground. The turned table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find the maximum emission levels, the interface cable must be manipulated according to FCC PART 15 B on radiated emission test.

The bandwidth setting on the field strength meter (R&S Test Receiver ESCI) is set at 120KHz below 1GHz, set at 1MHz above 1GHz. The frequency range from 30MHz to 1000MHz is checked..

4.7 Test Result

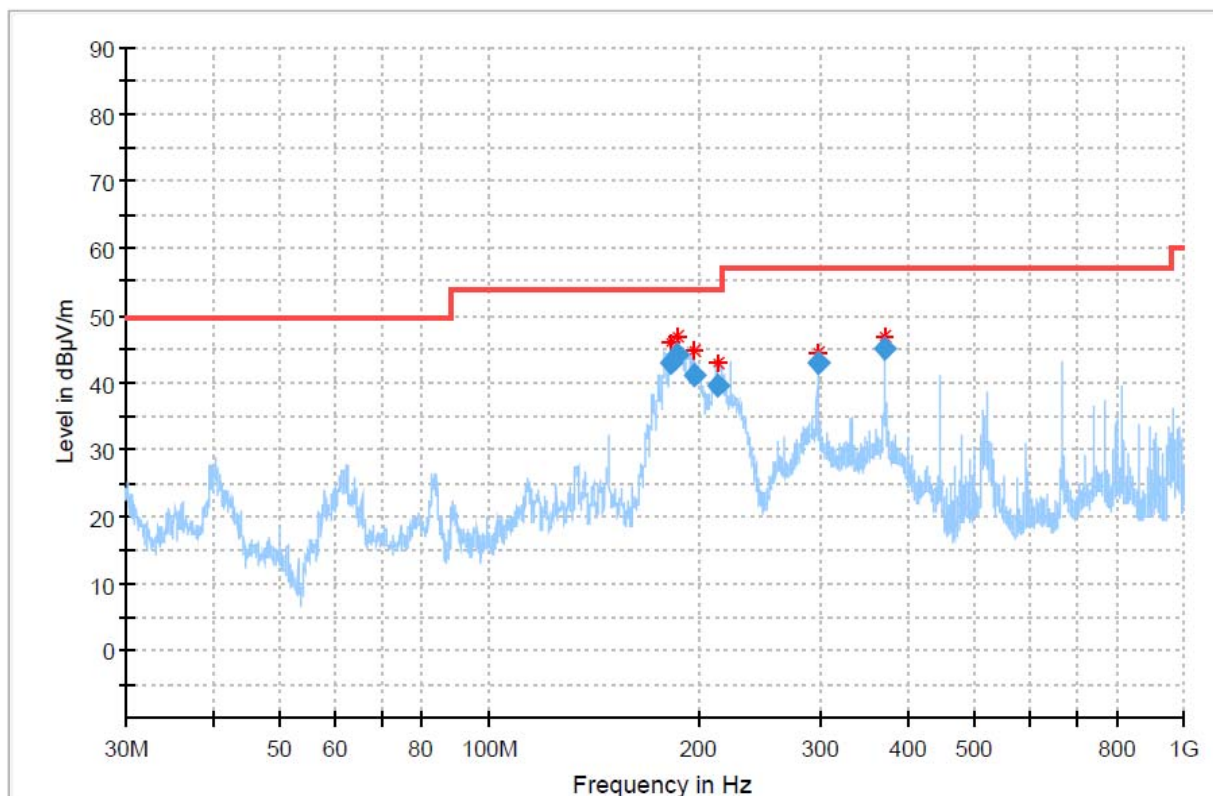
PASS

Please refer to the following page.



30MHz – 1GHz

Radiation Emission Test Data			
Temperature:	22°C	Relative Humidity:	51%
Pressure:	101 kPa	Phase :	Horizontal
Test Voltage :	AC 120V/60Hz	Test Mode:	Working



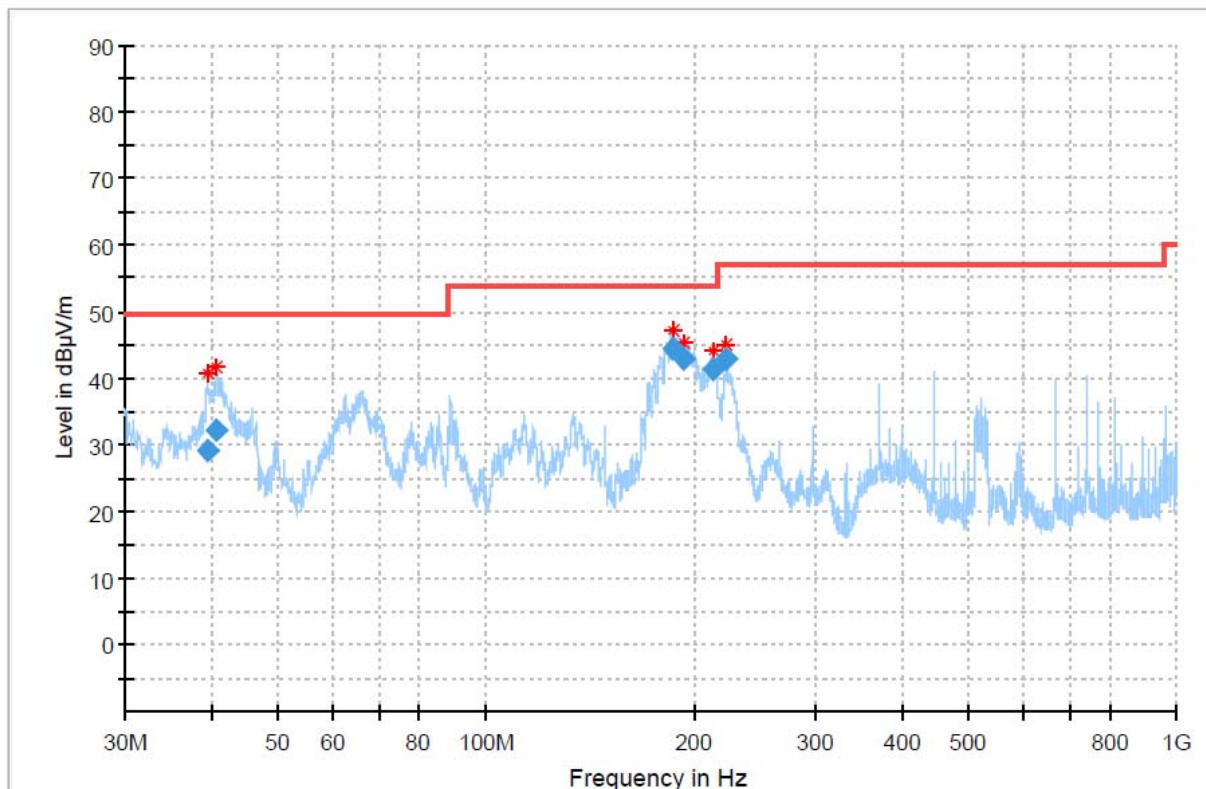
Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
182.941111	42.98	53.97	10.99	500.0	120.000	200.0	H	271.0	-33.6
186.417778	44.00	53.97	9.97	500.0	120.000	200.0	H	271.0	-33.8
196.938333	41.13	53.97	12.84	500.0	120.000	200.0	H	271.0	-33.2
212.718889	39.55	53.97	14.42	500.0	120.000	100.0	H	301.0	-32.5
296.999444	42.98	56.90	13.92	500.0	120.000	100.0	H	191.0	-29.4
371.298333	45.06	56.90	11.84	500.0	120.000	100.0	H	149.0	-26.8



30MHz – 1GHz

Radiation Emission Test Data			
Temperature:	22°C	Relative Humidity:	51%
Pressure:	101kPa	Phase :	Vertical
Test Voltage :	AC 120V/60Hz	Test Mode:	Working



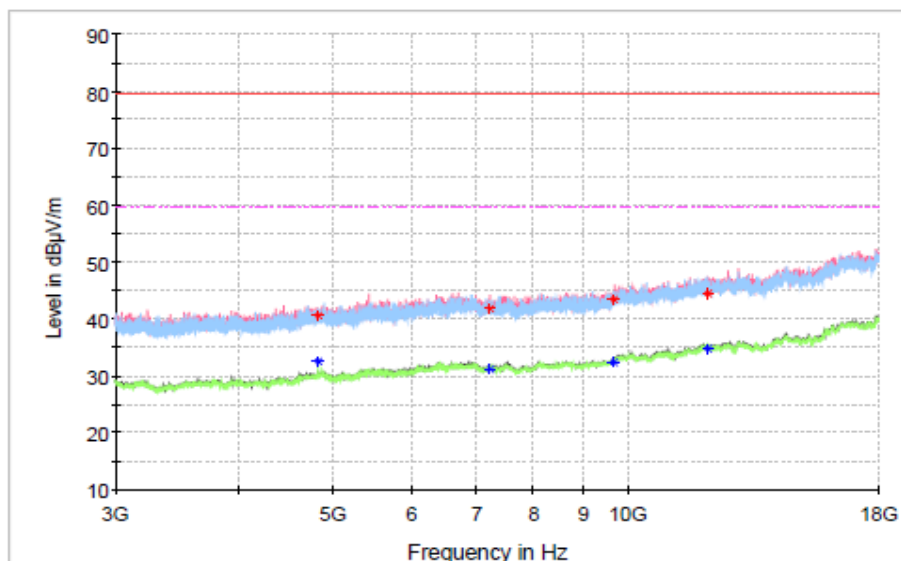
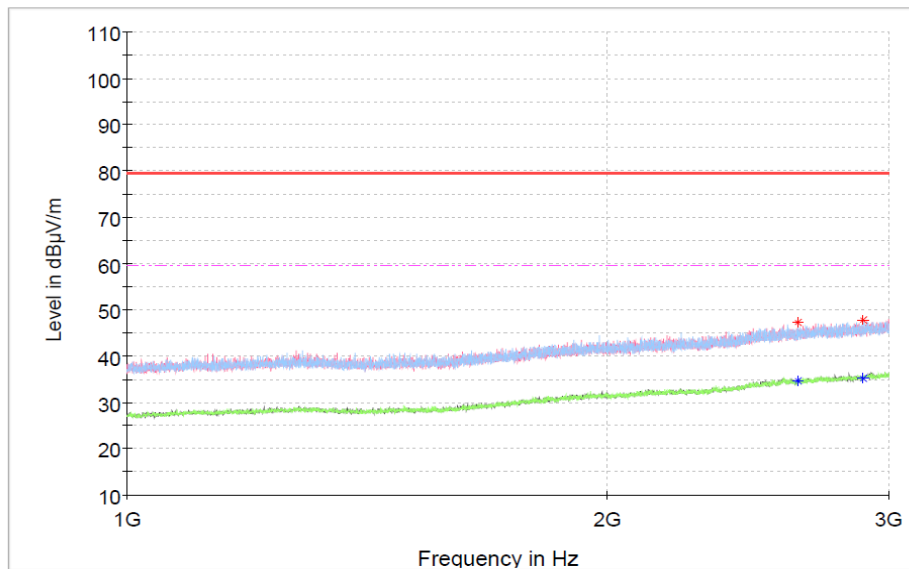
Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
39.504444	29.18	49.54	20.36	500.0	120.000	200.0	V	79.0	-29.3
40.823889	32.09	49.54	17.45	500.0	120.000	100.0	V	29.0	-29.6
185.946667	44.39	53.97	9.58	500.0	120.000	100.0	V	173.0	-33.8
193.745000	42.97	53.97	11.00	500.0	120.000	100.0	V	173.0	-33.4
212.892778	41.39	53.97	12.58	500.0	120.000	100.0	V	194.0	-32.5
222.766667	42.92	56.90	13.98	500.0	120.000	100.0	V	194.0	-32.4



Above 1G

Radiation Emission Test Data			
Temperature:	22°C	Relative Humidity:	51%
Pressure:	101 kPa	Phase :	Horizontal
Test Voltage :	AC 120V/60Hz	Test Mode:	Working



Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2632.800000	47.34	—	70.00	22.66	—	—	100.0	H	340.0	13.5
2632.800000	—	34.59	50.00	15.41	—	—	100.0	H	340.0	13.5
2889.600000	47.68	—	70.00	22.32	—	—	100.0	H	8.0	14.6
2889.600000	—	35.29	50.00	14.71	—	—	100.0	H	8.0	14.6

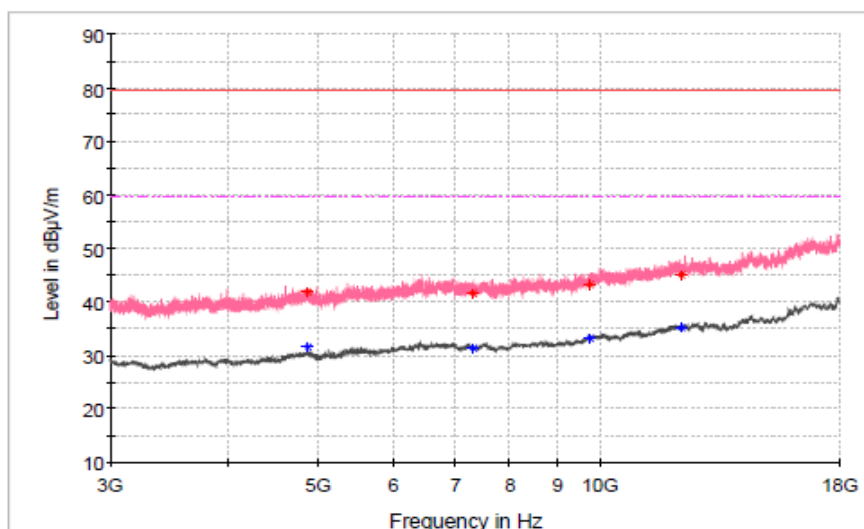
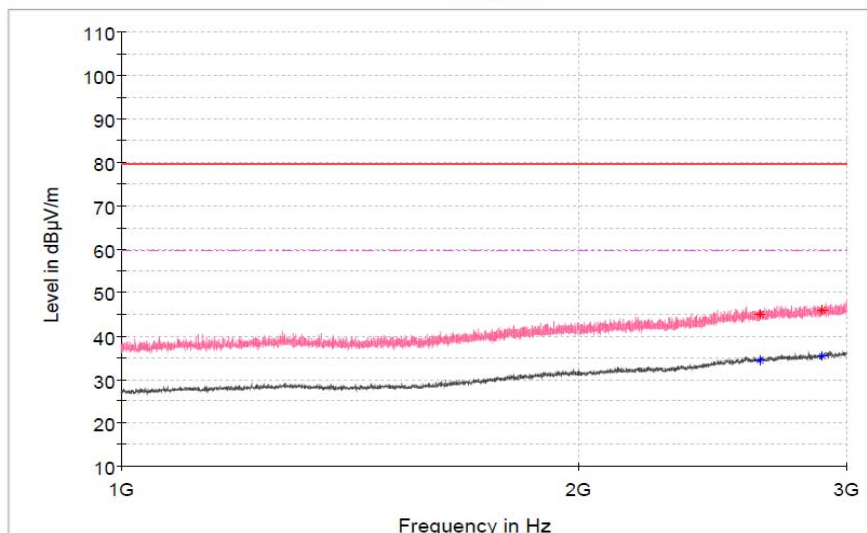
Critical Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4824.000000	—	32.56	59.50	26.94	5000.0	1000.000	150.0	H	327.0	-0.3
4824.000000	40.72	—	79.50	38.78	5000.0	1000.000	150.0	H	327.0	-0.3
7236.000000	—	31.23	59.50	28.27	5000.0	1000.000	150.0	H	0.0	2.5
7236.000000	41.80	—	79.50	37.70	5000.0	1000.000	150.0	H	0.0	2.5
9648.000000	—	32.38	59.50	27.12	5000.0	1000.000	150.0	H	0.0	4.5
9648.000000	43.36	—	79.50	36.14	5000.0	1000.000	150.0	H	0.0	4.5
12060.000000	—	34.72	59.50	24.78	5000.0	1000.000	150.0	H	254.0	8.0
12060.000000	44.42	—	79.50	35.08	5000.0	1000.000	150.0	H	254.0	8.0



Above 1G

Radiation Emission Test Data			
Temperature:	22°C	Relative Humidity:	51%
Pressure:	101kPa	Phase :	Vertical
Test Voltage :	AC 120V/60Hz	Test Mode:	Working



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2632.800000	---	34.46	50.00	15.54	---	---	100.0	V	137.0	13.5
2632.800000	45.06	---	70.00	24.94	---	---	100.0	V	137.0	13.5
2889.600000	45.98	---	70.00	24.02	---	---	100.0	V	39.0	14.6
2889.600000	---	35.36	50.00	14.64	---	---	100.0	V	39.0	14.6

Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4874.000000	---	31.61	59.50	27.89	5000.0	1000.000	150.0	V	211.0	0.1
4874.000000	41.80	---	79.50	37.70	5000.0	1000.000	150.0	V	211.0	0.1
7311.000000	---	31.40	59.50	28.10	5000.0	1000.000	150.0	V	171.0	2.4
7311.000000	41.64	---	79.50	37.86	5000.0	1000.000	150.0	V	171.0	2.4
9748.000000	---	33.12	59.50	26.38	5000.0	1000.000	150.0	V	171.0	4.7
9748.000000	43.31	---	79.50	36.19	5000.0	1000.000	150.0	V	171.0	4.7
12185.000000	---	35.18	59.50	24.32	5000.0	1000.000	150.0	V	174.0	8.4
12185.000000	45.13	---	79.50	34.37	5000.0	1000.000	150.0	V	174.0	8.4



5. PHOTOGRAPHS OF THE EUT

5.1 See the APPENDIX 1-EUT PHOTO.

***** END OF REPORT *****