TEST REPORT

FCC PART 15B

Report Reference No.....:	**TZ230904884-E**
Compiled by (position+printed name+signature)..:	File administrators Nancy Li
Name of the organization performing the tests (position+printed name+signature)..:	Technique principal Hugo Chen
Approved by (position+printed name+signature)..:	Manager Andy Zhang
Date of issue.....:	09 October 2023
Representative Laboratory Name ....:	Shenzhen Tongzhou Testing Co.,Ltd
Address.....:	1th Floor, Building 1, Haomai High-tech Park, Huating Road 387, Dalang Street, Longhua, Shenzhen, China
Applicant's name.....:	**TECNO MOBILE LIMITED**
Address.....:	FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG
Test specification:	
Standard .....:	**FCC Part 15B**
TRF Originator.....:	Shenzhen Tongzhou Testing Co.,Ltd
Master TRF.....:	Dated 2012-06

Test item description ..... :	Mini PC
Trade Mark .....:	TECNO
Model/Type reference.....:	M1AA
Listed Models .....:	M1AA(i5),M1AA(i7)
Manufacturer .....:	TECNO MOBILE LIMITED
Power Supply.....:	DC 19 by Adapter
Result.....:	**Pass**

Note : Models difference

Model	CPU
M1AA	i5
M1AA	i7
The main test is M1AA (i7)	

TEST REPORT

Test Report No. :	TZ230904884-E	09 October 2023 Date of issue

Equipment under Test	:	Mini PC
Model /Type	:	M1AA
Listed Models	:	M1AA(i5),M1AA(i7)
Applicant	:	**TECNO MOBILE LIMITED**
Address	:	FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG
Manufacturer	:	**TECNO MOBILE LIMITED**
Address	:	FLAT N 16/F BLOCK B UNIVERSAL INDUSTRIAL CENTRE 19-25 SHAN MEI STREET FOTAN NT HONGKONG

Test Result according to the standards on page 4:	**Pass**

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.

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15 Subpart B
Unintentional Radiators

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 40 GHz

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample : 31 July 2023

Testing commenced on : 31 July 2023

Testing concluded on : 08 October 2023

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	●	120V / 60 Hz	○	230V / 50Hz
	○	12 V DC	○	24 V DC
	○	Other (specified in blank below)		

DC 19 by Adapter

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

Mini PC
For more details, refer to the user's manual of the EUT.

2.4. EUT operation mode

The EUT has been tested under typical operating condition.

Test Item	
EMI	
Mode 1	Transfer between USB Disk and SD card
Mode 2	BT+WLAN
Mode-3	Connect the network port and use HDMI to connect the monitor for web browsing

2.5. EUT configuration

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

No.	Equipment	Manufacturer	Model No.	Serial No.	Length	shielded/ unshielded	Notes
1	Monitor	HP	DX2700	CNG7140T7P	/	/	/
2	SD Card	Kingston	/	/	/	/	/
3	USB Disk	Kingston	/	/	/	/	/

2.6. Related Submittal(s) / Grant (s)

This test report is intended for Mini PC filing to comply with the FCC Part 15, Subpart B Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

2.8. Test Result Summary

Test Item	Test Requirement	Standard Paragrph	Result
Radiated Emission	FCC PART 15	Section 15.109	PASS
Conducted Emission	FCC PART 15	Section 15.107	PASS

Remark: The measurement uncertainty is not included in the test result.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Tongzhou Testing Co.,Ltd

1th Floor, Building 1, Haomai High-tech Park, Huating Road 387, Dalang Street, Longhua, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2014) and CISPR Publication 22.

3.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.3. 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 Tongzhou Testing 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 Tongzhou Testing Co.,Ltd is reported:

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty		30MHz~1000MHz	±3.92dB	(1)
		1GHz~40GHz	±4.28dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	±2.71dB	(1)

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

3.4. Equipments Used during the Test

Conducted emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI-7	100849/003	2022/12/28	2023/12/27
2	Artificial Mains	ROHDE & SCHWARZ	ENV 216	101333-IP	2022/12/28	2023/12/27
3	EMI Test Software	ROHDE & SCHWARZ	ESK1	V1.71	N/A	N/A

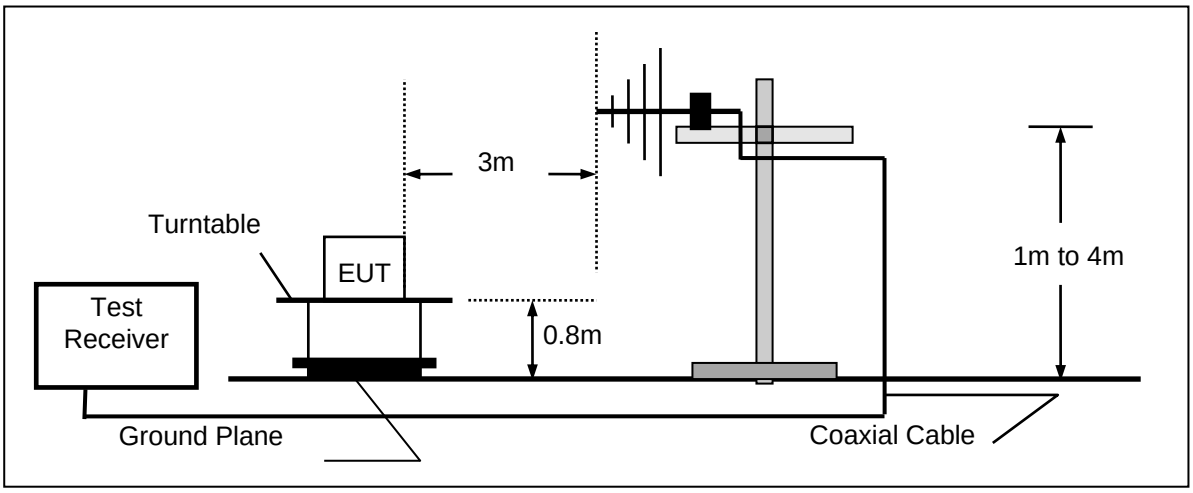
Radiated emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due
1	Test Receiver	R&S	ESCI-7	100849/003	2022/12/28	2023/12/27
2	wideband Antenna	Schwarzbeck	VULB 9163	958	2022/11/13	2025/11/12
3	Horn Antenna	Schwarzbeck	BBHA 9120D	01989	2022/11/13	2025/11/12
4	Amplifier	Schwarzbeck	BBV 9743	209	2022/12/28	2023/12/27
5	Amplifier	Tonscend	TSAMP-0518SE	--	2022/12/28	2023/12/27
6	Postional Controller	MF	MF7802	--	--	--
7	RE test software	Tonscend	JS32-RE	V2.0.2.0	--	--

4. TEST CONDITIONS AND RESULTS

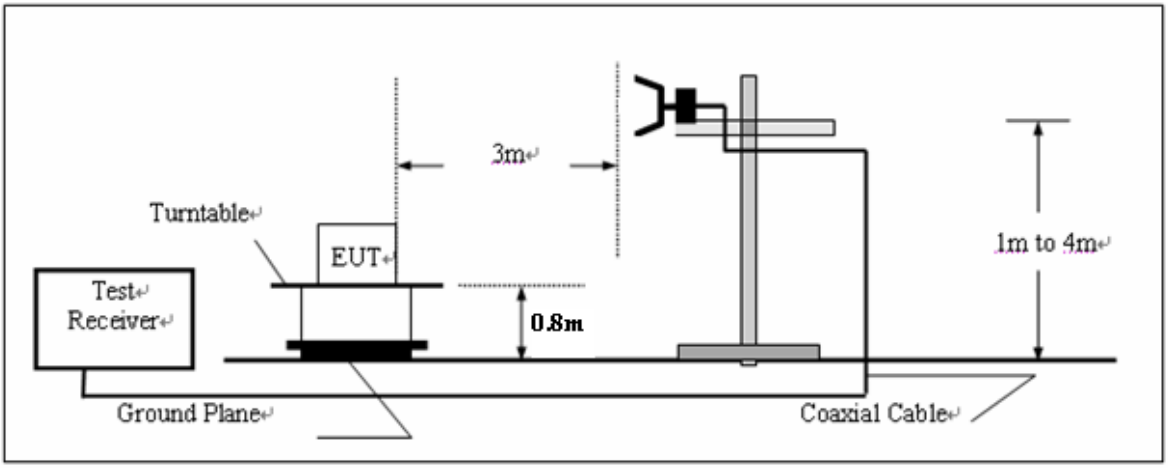
4.1. Radiated Emission Test

TEST CONFIGURATION

(A) Radiated Emission Test Set-Up, Frequency below 1000MHz



(B) Radiated Emission Test Set-Up, Frequency above 1000MHz



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	

RADIATION LIMIT

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

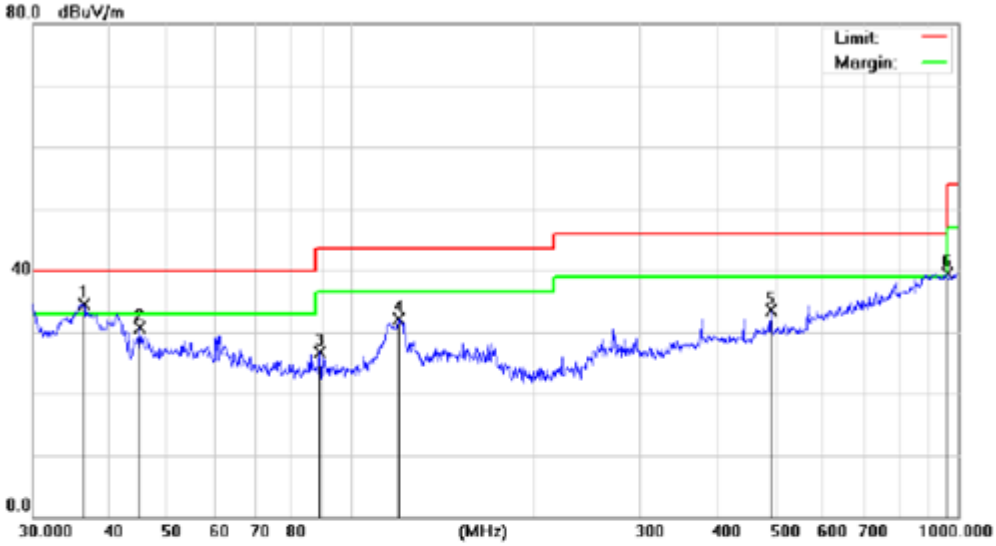
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

Radiation Test Results

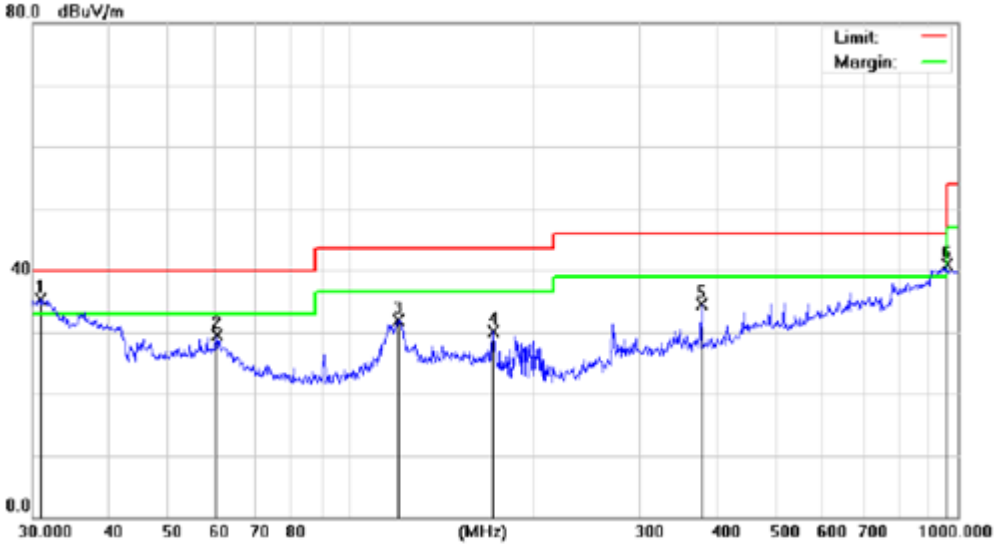
Below 1000MHz(Worst Case: Mode 1 with DC 19V by Adapter)
Polarization: Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	36.3814	31.56	2.94	34.50	40.00	-5.50	QP
2		44.9006	27.73	3.01	30.74	40.00	-9.26	QP
3		88.9639	28.07	-1.33	26.74	43.50	-16.76	QP
4		119.8556	30.91	1.16	32.07	43.50	-11.43	QP
5		492.4685	27.28	6.25	33.53	46.00	-12.47	QP
6	!	958.7943	24.31	15.18	39.49	46.00	-6.51	QP

Note:
Freq. = Emission frequency in MHz
Reading level (dBμV) = Receiver reading
Corr. Factor (dB) = Antenna factor + Cable loss - Amplifier factor.
Measurement (dBμV/m) = Reading level (dBμV) + Corr. Factor (dB)
Over (dB) = Measurement (dBμV/m) – Limit(dBμV/m)

Polarization: Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	30.9619	51.89	-16.59	35.30	40.00	-4.70	QP
2		60.2801	46.19	-16.70	29.49	40.00	-10.51	QP
3		119.8556	48.66	-16.83	31.83	43.50	-11.67	QP
4		171.9946	46.98	-16.90	30.08	43.50	-13.42	QP
5		378.5843	51.70	-17.15	34.55	46.00	-11.45	QP
6	!	958.7943	55.29	-14.30	40.99	46.00	-5.01	QP

Note:
Freq. = Emission frequency in MHz
Reading level (dBμV) = Receiver reading
Corr. Factor (dB) = Antenna factor + Cable loss - Amplifier factor.
Measurement (dBμV/m) = Reading level (dBμV) + Corr. Factor (dB)
Over (dB) = Measurement (dBμV/m) – Limit(dBμV/m)

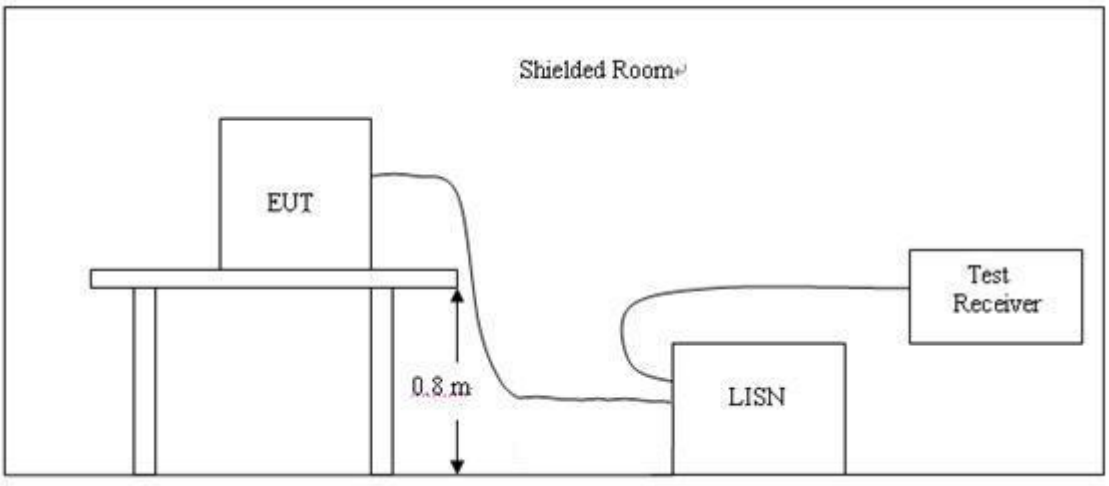
Above 1000MHz(Mode 1 with DC 19V by Adapter)

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
1538.97	V	60.43	39.43	74	54	-13.57	-14.57
2355.15	V	59.42	39.04	74	54	-14.58	-14.96
1620.64	H	58.99	39.47	74	54	-15.01	-14.53
2309.48	H	59.42	40.42	74	54	-14.58	-13.58

Remark:
All emissions not reported were more than 20dB below the specified limit or in the noise floor.
Freq.= Emission frequency in MHz
Over= Emission Level - Limit.
All the x/y/z orientation has been investigated, and only worst case is presented in this report.

4.2. Conducted Emissions Test

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 C63.4.
2 Support equipment, if needed, was placed as per ANSI C63.4.
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
4 The EUT received 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.

Conducted Power Line Emission Limit

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following：

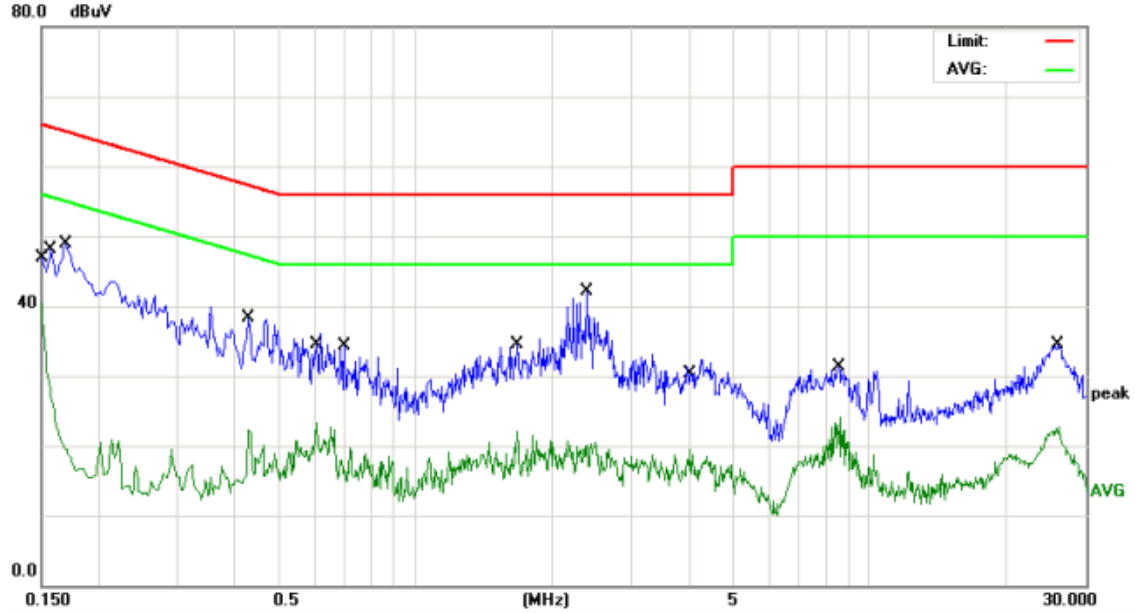
Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

TEST RESULTS

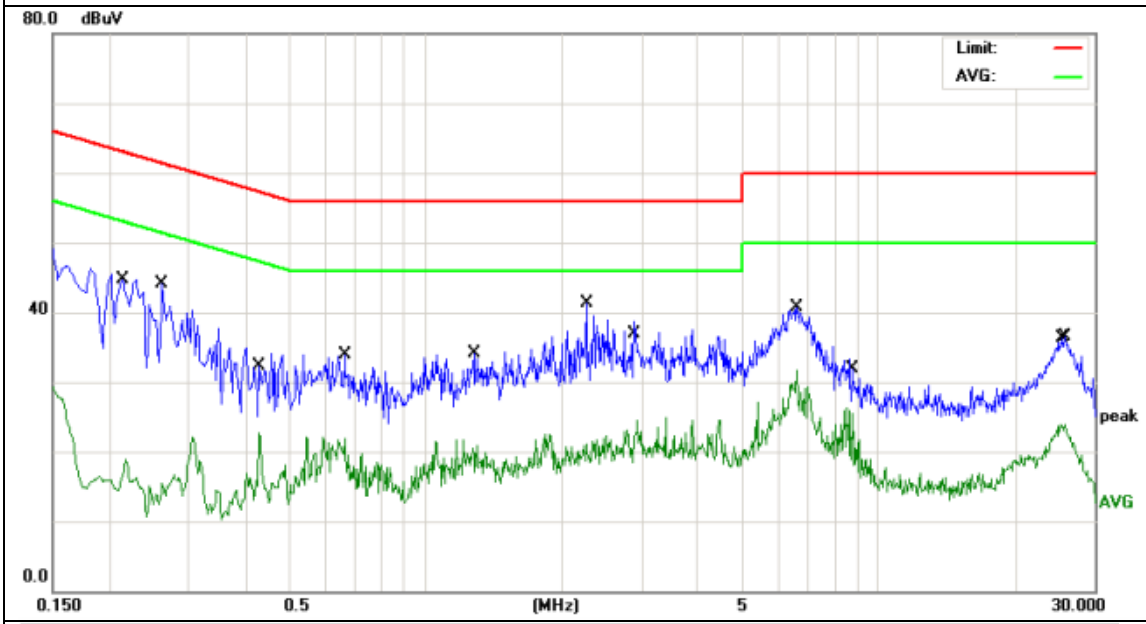
Neutral Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1500	29.95	10.45	40.40	55.99	-15.59	AVG
2		0.1556	18.74	10.45	29.19	55.69	-26.50	AVG
3		0.1700	38.52	10.45	48.97	64.96	-15.99	QP
4		0.4300	27.85	10.50	38.35	57.25	-18.90	QP
5		0.6060	12.68	10.53	23.21	46.00	-22.79	AVG
6		0.6980	23.83	10.53	34.36	56.00	-21.64	QP
7		1.6740	11.42	10.66	22.08	46.00	-23.92	AVG
8	*	2.3860	31.44	10.71	42.15	56.00	-13.85	QP
9		4.0380	8.79	10.73	19.52	46.00	-26.48	AVG
10		8.5620	20.55	10.80	31.35	60.00	-28.65	QP
11		8.6180	13.32	10.81	24.13	50.00	-25.87	AVG
12		26.0580	23.34	11.14	34.48	60.00	-25.52	QP

Note:
Freq. = Emission frequency in MHz
Reading level (dBμV) = Receiver reading
Corr. Factor (dB) = Attenuation factor + Cable loss
Level (dBμV) = Reading level (dBμV) + Corr. Factor (dB)
Limit (dBμV) = Limit stated in standard
Over (dB) = Level (dBμV) – Limits (dBμV)
Q.P. =Quasi-Peak
Pre-scan all modes and recorded the worst case results in this report (Transfer between USB Disk and SD card mode).

Live Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.2140	34.34	10.45	44.79	63.04	-18.25	QP
2		0.2620	33.64	10.46	44.10	61.36	-17.26	QP
3		0.4300	12.25	10.50	22.75	47.25	-24.50	AVG
4		0.6620	11.31	10.53	21.84	46.00	-24.16	AVG
5		1.2820	23.50	10.60	34.10	56.00	-21.90	QP
6	*	2.2700	30.60	10.71	41.31	56.00	-14.69	QP
7		2.9340	13.83	10.72	24.55	46.00	-21.45	AVG
8		6.5940	29.95	10.77	40.72	60.00	-19.28	QP
9		6.5940	20.87	10.77	31.64	50.00	-18.36	AVG
10		8.8580	12.02	10.81	22.83	50.00	-27.17	AVG
11		25.2420	12.86	11.12	23.98	50.00	-26.02	AVG
12		25.7420	25.30	11.13	36.43	60.00	-23.57	QP

Note:
Freq. = Emission frequency in MHz
Reading level (dBµV) = Receiver reading
Corr. Factor (dB) = Attenuation factor + Cable loss
Level (dBµV) = Reading level (dBµV) + Corr. Factor (dB)
Limit (dBµV) = Limit stated in standard
Over (dB) = Level (dBµV) – Limits (dBµV)
Q.P. =Quasi-Peak
Pre-scan all modes and recorded the worst case results in this report (Transfer between USB Disk and SD card mode).

5. Test Setup Photos of the EUT

Please refer to separated files for Test Setup Photos of the EUT.

6. External and Internal Photos of the EUT

External Photos

Please refer to separated files for External Photos of the EUT.

Internal Photos

Please refer to separated files for Internal Photos of the EUT.

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