EMC TEST REPORT

Product Name: DTEN D7X 75

Model Name: DB71475, DB71475-S1

FCC ID: 2AQ7Q- DB71475

Issued For : DTEN Inc

97 E Brokaw Road suite 180 San Jose CA 95112

Issued By : Shenzhen LGT Test Service Co., Ltd.

Room 205, Building 13, Zone B, Chen Hsong Industrial Park, No.177 Renmin West Road, Jinsha Community, Kengzi Street, Pingshan New District, Shenzhen, China

Report Number:	LGT22J013EM03
Sample Received Date:	Oct. 13, 2022
Date of Tested:	Oct. 13, 2022 – Nov.18, 2022
Date of Issue:	Nov. 18, 2022

TEST REPORT CERTIFICATION

Applicant	DTEN Inc.
Address	97 E Brokaw Road suite 180 San Jose CA 95112
Manufacture	DTEN Inc
Address	97 E Brokaw Road suite 180 San Jose CA 95112
Product Name	DTEN D7X 75
Trademark	DTEN
Model Name	DB71475, DB71475-S1
Sample Status:	Normal

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC 47 CFR Part 15 Subpart B ANSI C63.4-2014	**PASS**

Prepared by:

Terry Zhao

Terry Zhao
Engineer

Approved by:

Vita Li
Technical Director

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Revision History

Rev.	Issue Date	Revisions
00	Nov. 18, 2022	Initial Issue

1. TEST SUMMARY

EMC Emission				
Standard	Test Item	Limit	Judgement	Remark
FCC 47 CFR Part 15 Subpart B ANSI C63.4-2014	Conducted Emissions	Class B	PASS	
	Radiated Emissions Below 1GHz	Class B	PASS	
	Radiated Emissions Above 1GHz	Class B	PASS	Note 1 Note 2

Note:

1 “N/A” denotes test is not applicable in this Test Report

2 If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40 GHz, whichever is less.

3 For model DB71475 and DB71475-S1, the TP control board have two types of A and B. DB71475 with type A was selected as the typical model for all necessary tests performed, DB71475 with type B only performed RE, ESD & RS tests. For the details of type A&B, please refer to the EUT photos.

1.1 TEST LABORATORY

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Chen Hsong Industrial Park, No.177 Renmin West Road, Jinsha Community, Kengzi Street, Pingshan New District, Shenzhen, China
Accreditation Certificate	A2LA Certificate No.: 6727.01
	FCC Registration No.: 746540
	CAB ID: CN0136

1.2 MEASUREMENT UNCERTAINTY

Test Item	Measurement Frequency Range MHz	Uncertainty dB
Conducted Emissions at AC mains power port	0.009 ~ 30	2.80
Radiated Emissions	0.009 ~ 30	2.16
Radiated Emissions	30 ~ 1000	4.40
Radiated Emissions	1000 ~ 18000	5.49
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.		

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	DTEN D7X 75
Trademark	DTEN
Model Name	DB71475
Series Model	DB71475-S1
Model Difference	Only the model name and shipping packaging method are different.
Rated Input	100-240V~ 50/60Hz 3.0A
Test voltage	AC 120V/60Hz
Hardware Version Number	OPSC17_V12
Software Version Number	3.0.10

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

2.2 DESCRIPTION OF THE TEST MODES

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

Test Mode	Description
Mode 1	HDMI OUT+USB+LAN+Thunderbolt+Headset+HDMI IN+ 2.4GHz Wi-Fi operating
Mode 2	HDMI OUT+USB+LAN+Thunderbolt+Headset+HDMI IN+ 5GHz Wi-Fi operating
Mode 3	HDMI OUT+USB+LAN +Camera+Headset+6GHz Wi-Fi operating

Note: Only the data of worst-case mode 1 was recorded in this report.

2.3 DESCRIPTION OF THE 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.

Accessories Equipment

Description	Manufacturer	Model	S/N	Rating
USB C-to-C cable	DTEN	N/A	N/A	1.9m
stylus	DTEN	N/A	N/A	N/A
Power cord	XIEKANG ELECTRONIC	N/A	N/A	3m, US plug
Camera	DTEN	N/A	N/A	2pcs

Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Keyboard	Lenovo	EKB-536A	N/A	N/A
Mouse	Lenovo	EMS-537A	N/A	N/A
USB Flash disk	Hewlett-Packard	V206	N/A	2pcs
Laptop	Lenovo	小新 Air 14	N/A	N/A
HDMI cable	GIMI	E81280-D	N/A	1.8m, shielded
HDMI cable	SONY	N/A	N/A	1.1m, shielded
Monitor	HKC	T275IU	N/A	N/A
Earphone	N/A	39630078	N/A	N/A
RJ45 cable	N/A	N/A	N/A	1m, unshielded
Router	CHINA TELECOM	WTA541	N/A	N/A

Note:

(1) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 MEASUREMENT INSTRUMENTS LIST

Conducted Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Cal. Until**
EMI Test Receiver	R&S	ESU8	100372	2022.04.12	2023.04.11
LISN	COM-POWER	LI-115	02032	2022.04.13	2023.04.12
LISN	SCHWARZBECK	NNLK 8121	00847	2022.08.19	2023.08.18
CE Cable	N.A	C01	N.A	2022.05.05	2023.05.04
ISN	FCC	T4-02	91317	2022.06.08	2023.06.07
ISN	SCHWARZBECK	NTFM 8158	00303	2022.08.19	2023.08.18
Transient Limiter	CYBERTEK	EM5010A	E2250100049	2022.08.19	2023.08.18
Temperature & Humidity	KTJ	TA218B	N.A	2022.05.05	2023.05.04
Testing Software	EMC-I_V1.4.0.3_SKET				
Radiated Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Cal. Until**
EMI Test Receiver	R&S	ESU8	100372	2022.04.12	2023.04.11
Active loop Antenna	R&S	HFH2-Z2	POS871398181	2022.06.02	2024.06.01
Spectrum Analyzer	Kesight	N9010B	MY60242508	2022.04.29	2023.04.28
Bilog Antenna	SCHAFFNER	CBL6112B	2705	2022.06.05	2024.06.04
Horn Antenna	SCHWARZBECK	3115	10SL0060	2022.06.02	2024.06.01
Pre-amplifier(0.1M-3GHz)	HP	8447D	2727A05655	2022.04.11	2023.04.10
Pre-amplifier(1-26.5G)	Agilent	8449B	3008A4722	2022.04.13	2023.04.12
RE Cable (9K-1G)	N.A	R01	N.A	2022.05.05	2023.05.04
RE Cable (1-26G)	N.A	R02	N.A	2022.05.05	2023.05.04
Temperature & Humidity	KTJ	TA218B	N.A	2022.05.05	2023.05.04
Testing Software	EMC-I_V1.4.0.3_SKET				

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS

FREQUENCY (MHz)	Conducted Emission Limits (dBuV)			
	Class A		Class B	
	Quasi-peak	Average	Quasi-peak	Average
0.15 ~ 0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.5 ~ 5	73.00	60.00	56.00	46.00
5 ~ 30	73.00	60.00	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.

(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor
Margin Level = Measurement Value - Limit Value

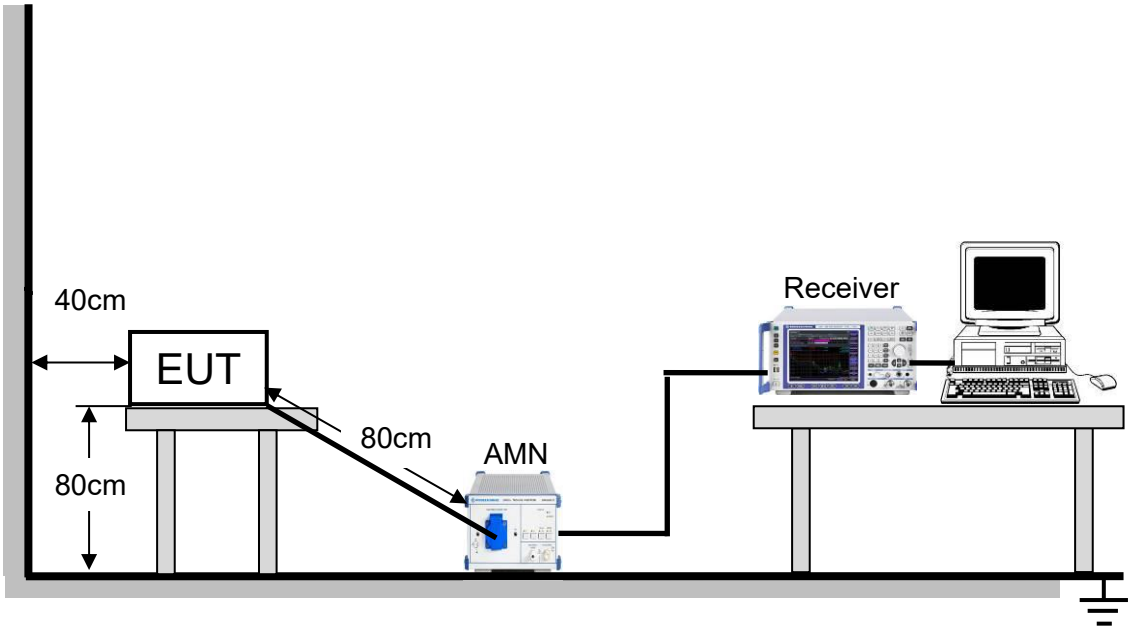
The following table is the setting of the receiver

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

3.1.2 TEST PROCEDURE

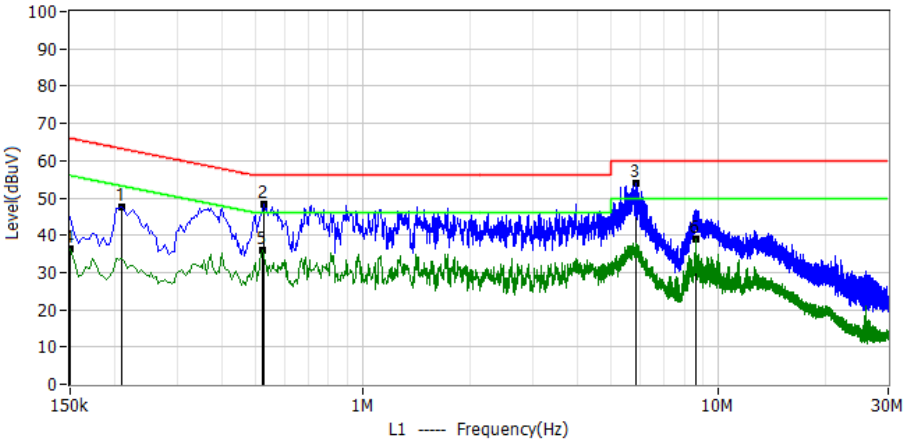
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. 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.
c. 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.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item - EUT Test Photos.

3.1.3 TEST SETUP

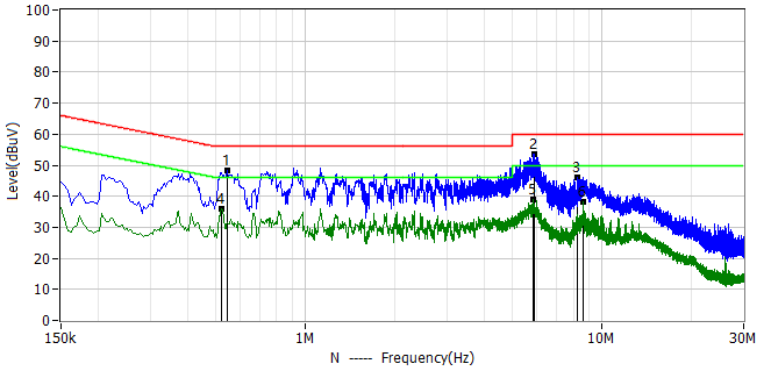


3.1.4 TEST RESULTS

Project: LGT22J013	Test Engineer: Dylan.shi
EUT: DTEN D7X 75	Temperature: 25.1℃
M/N: DB71475	Humidity: 48%RH
Test Voltage: AC 120V/60Hz	Test Data: 2022-10-26
Test Mode: HDMI OUT+USB+LAN+Thunderbolt+Headset+HDMI IN+ 2.4GHz Wi-Fi operating	
Note:	



No.	Frequency	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Margin dB	Detector	Polar
1*	210.000kHz	36.89	10.50	47.39	63.21	-15.81	PK	L1
2*	526.000kHz	37.84	10.51	48.35	56.00	-7.65	PK	L1
3*	5.870MHz	42.93	10.84	53.77	60.00	-6.23	PK	L1
4*	150.000kHz	25.96	10.50	36.46	56.00	-19.54	AV	L1
5*	522.000kHz	25.32	10.51	35.83	46.00	-10.17	AV	L1
6*	8.606MHz	28.07	10.92	38.99	50.00	-11.01	AV	L1



No.	Frequency	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Margin dB	Detector	Polar
1*	546.000kHz	37.98	10.51	48.49	56.00	-7.51	PK	N
2*	5.926MHz	42.77	10.85	53.62	60.00	-6.38	PK	N
3*	8.286MHz	35.29	10.91	46.20	60.00	-13.80	PK	N
4*	522.000kHz	25.50	10.51	36.01	46.00	-9.99	AV	N
5*	5.830MHz	27.96	10.84	38.80	50.00	-11.20	AV	N
6*	8.666MHz	27.33	10.93	38.26	50.00	-11.74	AV	N

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS

Below 1 GHz

Frequency (MHz)	Class A	Class B
	Field strength (dBuV/m) (at 3m)	Field strength (dBuV/m) (at 3m)
30 - 88	49.5	40
88 - 216	53.9	43.5
216 - 960	56.9	46
Above 960	60	54

Above 1 GHz

Frequency (MHz)	Class A		Class B	
	Field strength (dBuV/m) (at 3m)		Field strength (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
Above 1000	80	60	74	54

Frequency Range of Radiated Disturbance Measurement

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 - 108	1000
108 - 500	2000
500 - 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

Note:

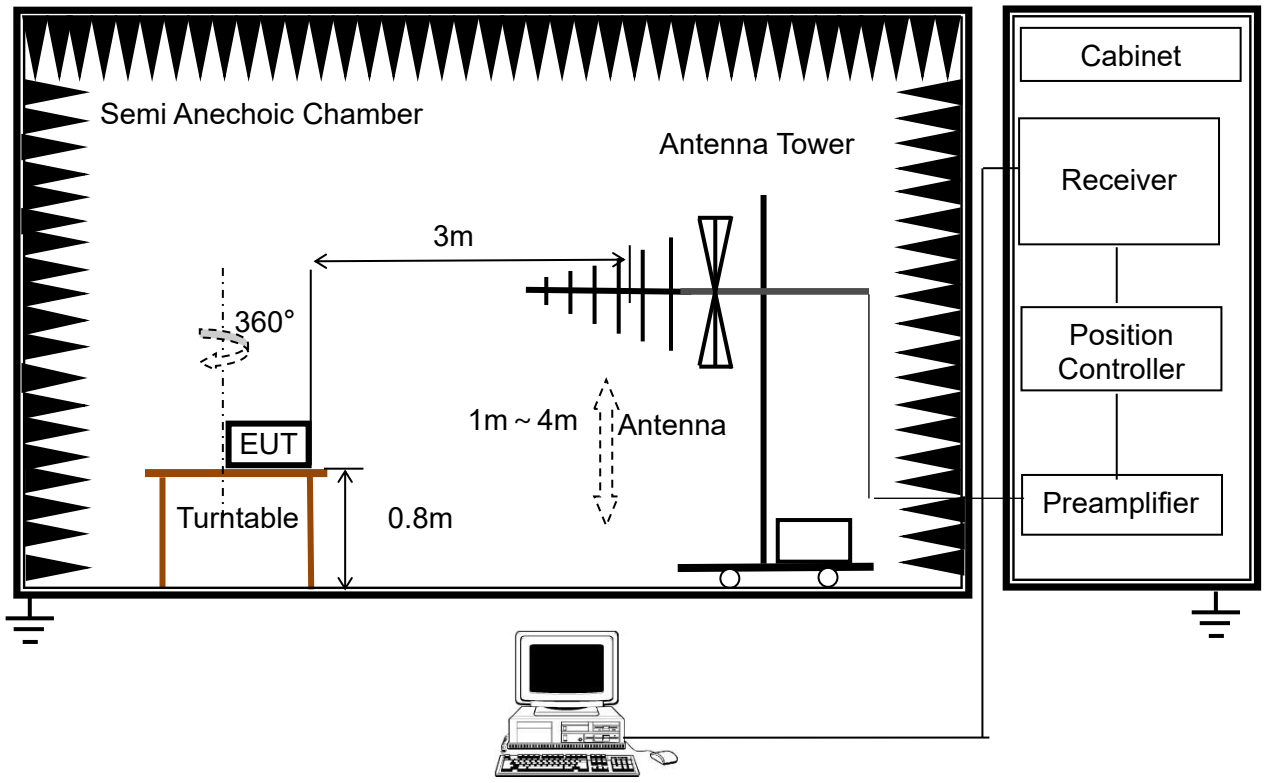
(1) The limit for radiated test was performed according to FCC Part 15, Subpart B;
(2) The tighter limit applies at the band edges;
(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use),
Margin Level = Measurement Value - Limit Value.

3.2.2 TEST PROCEDURE

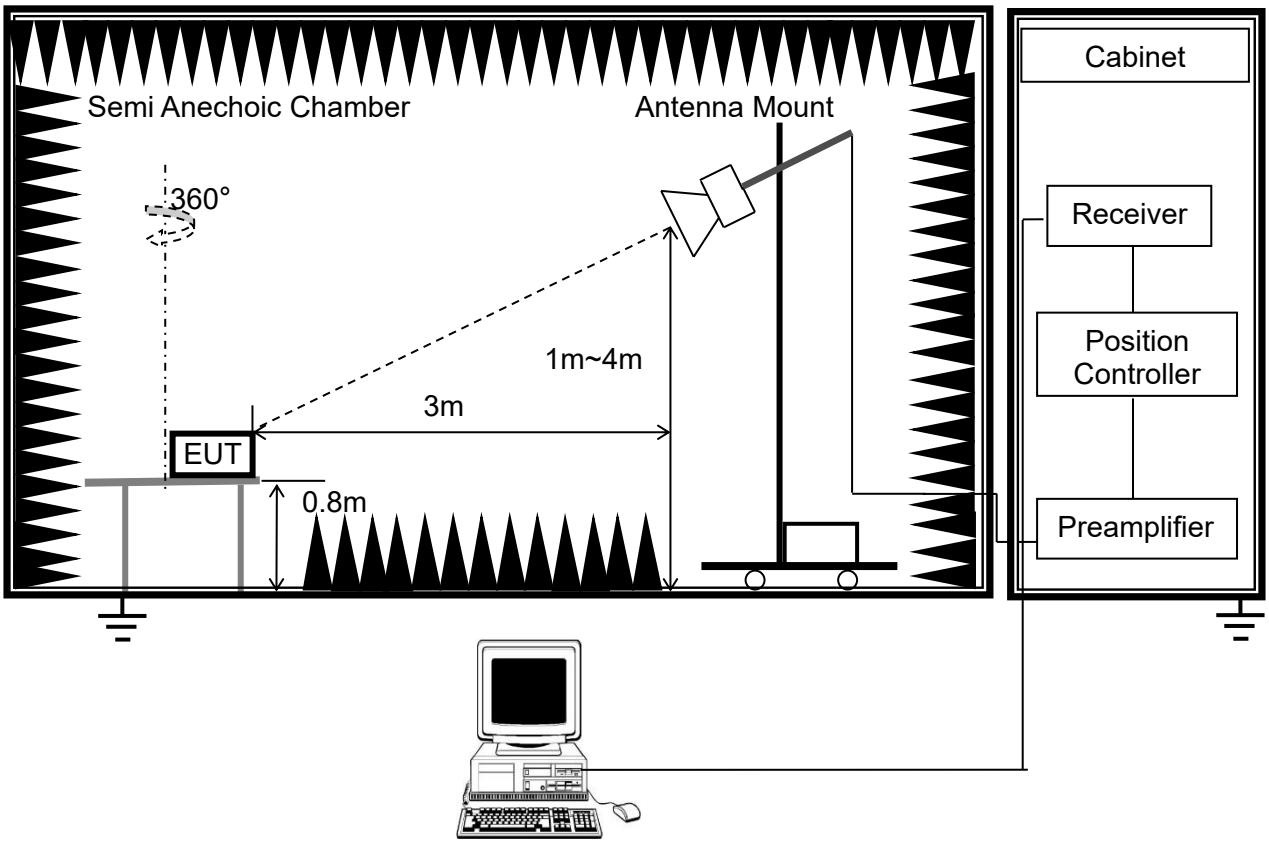
a. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. EUT as the center to the edge of the auxiliary device, the distance from the maximum edge to the center of the antenna is 3 meter.
c. The height of antenna is varied from 1 meter to 4 meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meter and the rotatable table was turned from 0 degrees to 360 degree to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz

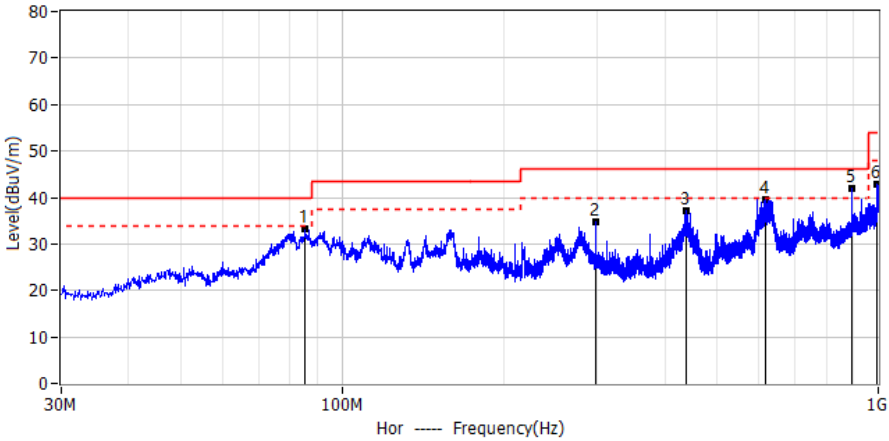


(B) Radiated Emission Test Set-Up Frequency Above 1GHz

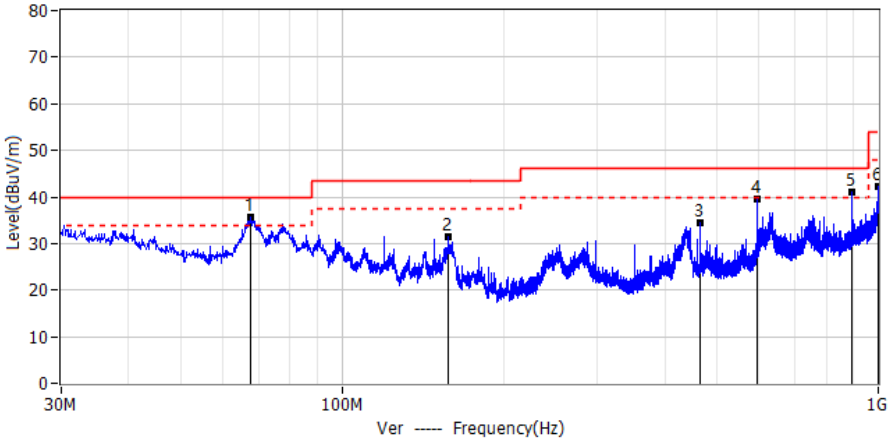


3.2.4 TEST RESULTS - BELOW 1GHZ

Project: LGT22J013	Test Engineer: Dylan.shi
EUT: DTEN D7X 75	Humidity: 43%RH
Temperature: 24.9℃	Test Voltage: AC 120V/60Hz
M/N: DB71475	Test Data: 2022-10-17
Test Mode: HDMI OUT+USB+LAN+Thunderbolt+Headset+HDMI IN+ 2.4GHz Wi-Fi operating	
Note:	

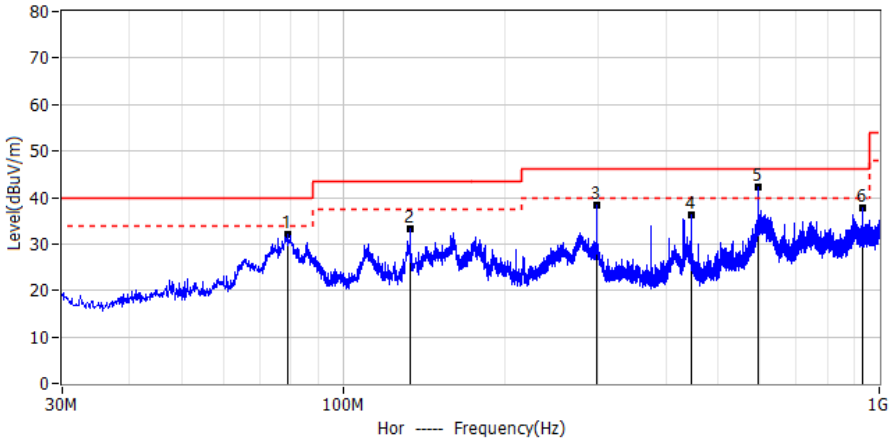


No.	Frequency	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	85.411MHz	23.60	9.51	33.11	40.00	-6.89	PK	Hor
2*	296.993MHz	20.44	14.32	34.76	46.00	-11.24	PK	Hor
3*	439.340MHz	18.97	18.18	37.15	46.00	-8.85	PK	Hor
4*	617.214MHz	17.03	22.53	39.56	46.00	-6.44	PK	Hor
5*	890.996MHz	15.58	26.50	42.08	46.00	-3.92	PK	Hor
6*	996.969MHz	15.04	27.87	42.91	54.00	-11.09	PK	Hor

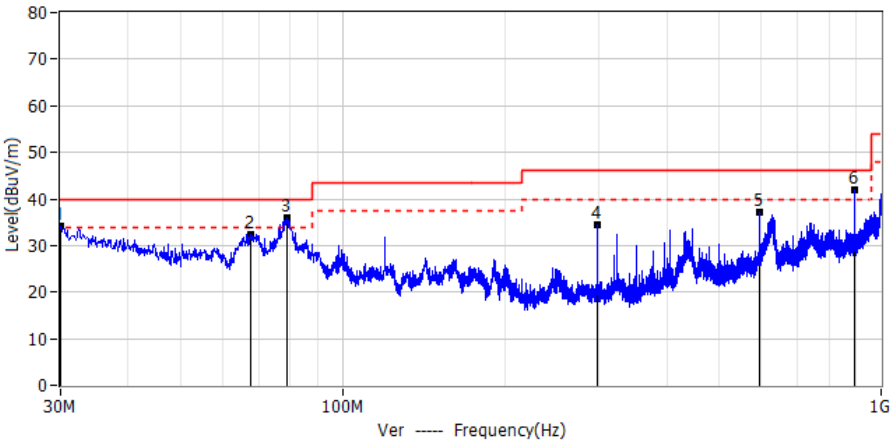


No.	Frequency	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	67.709MHz	23.65	11.89	35.54	40.00	-4.46	PK	Ver
2*	158.283MHz	17.33	14.20	31.53	43.50	-11.97	PK	Ver
3*	466.621MHz	15.72	18.76	34.48	46.00	-11.52	PK	Ver
4*	594.055MHz	17.60	21.99	39.59	46.00	-6.41	PK	Ver
5*	890.996MHz	14.67	26.50	41.17	46.00	-4.83	PK	Ver
6*	999.515MHz	14.42	27.87	42.29	54.00	-11.71	PK	Ver

Project: LGT22J013	Test Engineer: Dylan.shi
EUT: DTEN D7X 75	Humidity: 57%RH
Temperature: 22.6℃	Test Voltage: AC 120V/60Hz
M/N: DB71475-S1	Test Data: 2022-11-06
Test Mode: HDMI OUT+USB+LAN+Thunderbolt+Headset+HDMI IN+ 2.4GHz Wi-Fi operating	
Note:	

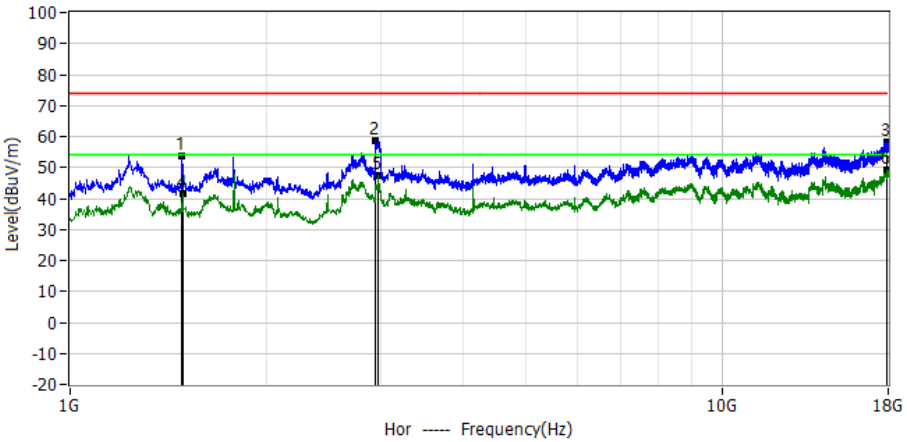


No.	Frequency	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	78.864MHz	22.36	9.76	32.12	40.00	-7.88	PK	Hor
2*	133.305MHz	20.27	13.07	33.34	43.50	-10.16	PK	Hor
3*	296.993MHz	24.02	14.32	38.34	46.00	-7.66	PK	Hor
4*	445.524MHz	17.88	18.37	36.25	46.00	-9.75	PK	Hor
5*	594.055MHz	20.33	21.99	42.32	46.00	-3.68	PK	Hor
6*	933.191MHz	10.42	27.33	37.75	46.00	-8.25	PK	Hor

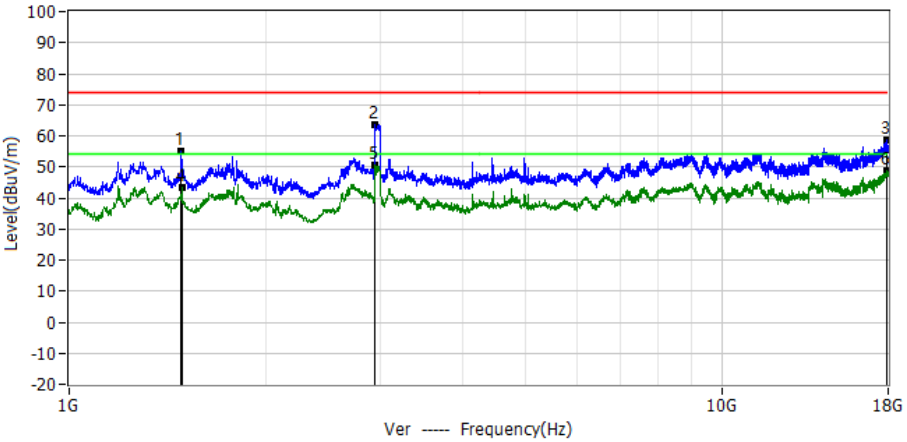


No.	Frequency	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	30.000MHz	21.38	12.77	34.15	40.00	-5.85	PK	Ver
2*	67.588MHz	20.50	11.91	32.41	40.00	-7.59	PK	Ver
3*	79.106MHz	26.17	9.71	35.88	40.00	-4.12	PK	Ver
4*	296.993MHz	20.22	14.32	34.54	46.00	-11.46	PK	Ver
5*	594.055MHz	15.11	21.99	37.10	46.00	-8.90	PK	Ver
6*	890.996MHz	15.47	26.50	41.97	46.00	-4.03	PK	Ver

Project: LGT22J013	Test Engineer: Dylan.shi
EUT: DTEN D7X 75	Humidity: 46%RH
Temperature: 26.9℃	Test Voltage: AC 120V/60Hz
M/N: DB71475	Test Data: 2022-10-18
Test Mode: HDMI OUT+USB+LAN+Thunderbolt+Headset+HDMI IN+ 2.4GHz Wi-Fi operating	
Note:	

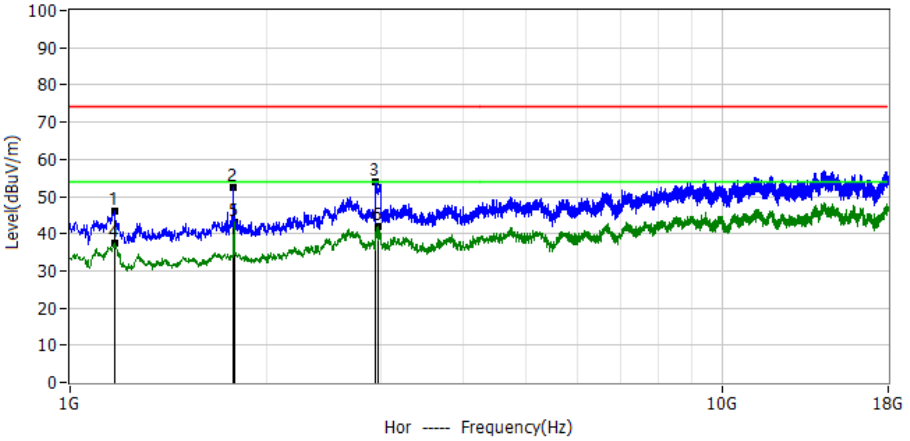


No.	Frequency	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1.485GHz	74.75	-20.92	53.83	74.00	-20.17	PK	Hor
2*	2.940GHz	67.49	-8.66	58.83	74.00	-15.17	PK	Hor
3*	17.949GHz	49.88	8.48	58.36	74.00	-15.64	PK	Hor
4*	1.487GHz	62.52	-20.91	41.61	54.00	-12.39	AV	Hor
5*	2.972GHz	55.95	-8.49	47.46	54.00	-6.54	AV	Hor
6*	17.955GHz	40.54	8.49	49.03	54.00	-4.97	AV	Hor

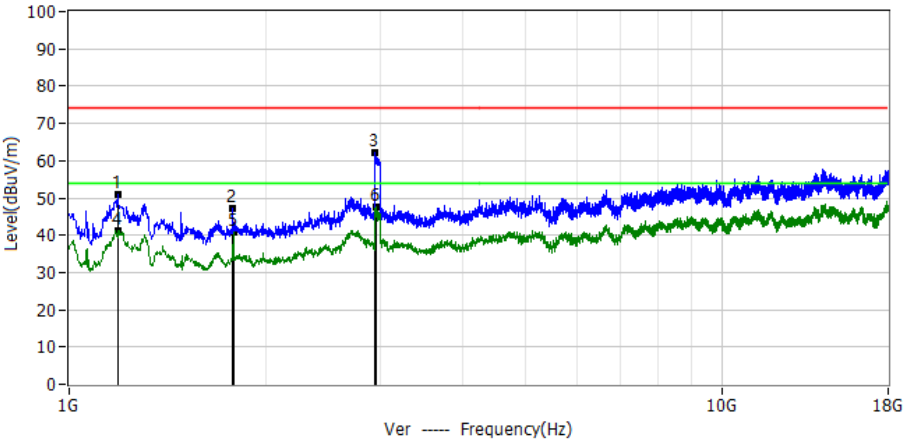


No.	Frequency	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1.485GHz	75.95	-20.92	55.03	74.00	-18.97	PK	Ver
2*	2.940GHz	72.10	-8.66	63.44	74.00	-10.56	PK	Ver
3*	17.881GHz	50.38	8.44	58.82	74.00	-15.18	PK	Ver
4*	1.487GHz	64.31	-20.91	43.40	54.00	-10.60	AV	Ver
5*	2.944GHz	59.21	-8.63	50.58	54.00	-3.42	AV	Ver
6*	17.902GHz	40.34	8.45	48.79	54.00	-5.21	AV	Ver

Project: LGT22J013	Test Engineer: Dylan.shi
EUT: DTEN D7X 75	Humidity: 55%RH
Temperature: 24.4℃	Test Voltage: AC 120V/60Hz
M/N: DB71475-S1	Test Data: 2022-11-06
Test Mode: HDMI OUT+USB+LAN+Thunderbolt+Headset+HDMI IN+ 2.4GHz Wi-Fi operating	
Note:	



No.	Frequency	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1.170GHz	69.20	-23.23	45.97	74.00	-28.03	PK	Hor
2*	1.782GHz	71.05	-18.43	52.62	74.00	-21.38	PK	Hor
3*	2.947GHz	62.59	-8.62	53.97	74.00	-20.03	PK	Hor
4*	1.168GHz	60.53	-23.25	37.28	54.00	-16.72	AV	Hor
5*	1.784GHz	61.33	-18.41	42.92	54.00	-11.08	AV	Hor
6*	2.972GHz	50.56	-8.49	42.07	54.00	-11.93	AV	Hor

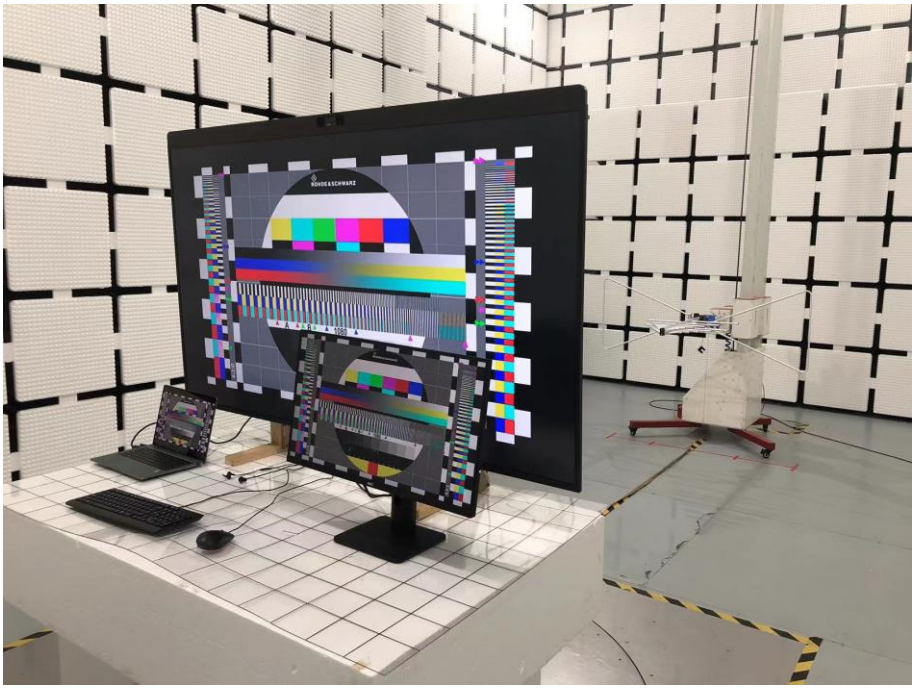


No.	Frequency	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1.187GHz	74.04	-23.08	50.96	74.00	-23.04	PK	Ver
2*	1.782GHz	65.73	-18.43	47.30	74.00	-26.70	PK	Ver
3*	2.940GHz	70.95	-8.66	62.29	74.00	-11.71	PK	Ver
4*	1.191GHz	64.40	-23.04	41.36	54.00	-12.64	AV	Ver
5*	1.784GHz	59.40	-18.41	40.99	54.00	-13.01	AV	Ver
6*	2.957GHz	56.05	-8.57	47.48	54.00	-6.52	AV	Ver

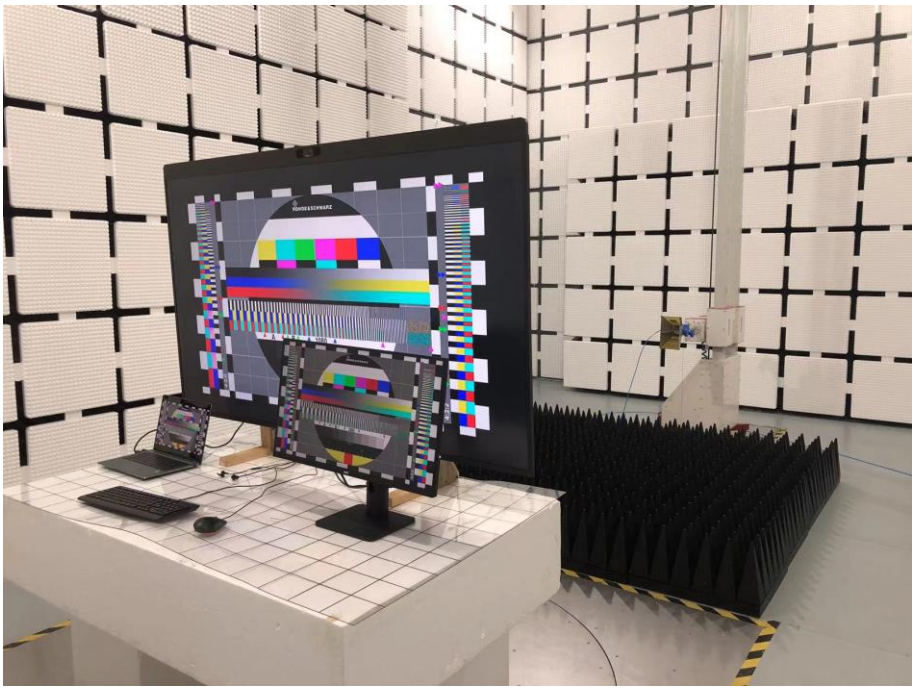
APPENDIX 1 - TEST SETUP

Conducted Emission Test Setup Photo

Radiated Emission Test Setup Photo - Below 1GHz



Radiated Emission Test Setup Photo - Above 1GHz



※※※※※END OF THE REPORT※※※※※