



TEST REPORT

Application No.: SZEM2010010866CR
Applicant: DT Research, Inc.
Address of Applicant: 3RD FL NO 36 WUQUAN 7TH RD WUGU DISTRICT, NEW TAIPEI, Taiwan
Manufacturer: DT Research, Inc.
Address of Manufacturer: 2000 Concourse Drive, San Jose, CA 95131, USA
Factory: DT Research, Inc. Taiwan Branch
Address of Factory: 6F., No.36 Wuquan 7 th Rd., Wugu Dist. New Taipei City 248 Taiwan
Equipment Under Test (EUT):
EUT Name: Medical-Grade Integrated LCD System
Model No.: 504XX-XXX (X=blank, A~Z or 0~9) ♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade mark: DT Research, Inc.
Standard(s) : 47 CFR Part 15, Subpart B
Date of Receipt: 2020-10-29
Date of Test: 2020-10-29 to 2020-12-16
Date of Issue: 2020-12-17

Test Result:

Pass*

* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu

Keny Xu
EMC Laboratory Manager



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch EMC Laboratory

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020-12-17		Original

Authorized for issue by:			
			
		Edison Li/Project Engineer	
			
		Eric Fu/Reviewer	



2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass*
Radiated Emissions (above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass*

*: the radiated emissions were scanned from 30MHz-40GHz, only the 30MHz-18GHz data is shown in the report, No emission was detected in the range 18GHz-40GHz.

Remark:

Model No.: 504XX-XXX (X=blank, A~Z or 0~9)

Only the model 504T was tested, since according to the declaration from the applicant, the electrical circuit design, layout, components used, internal wiring and functions were identical for all the above models, with only difference on model No..



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4 General Information

4.1 Details of E.U.T.

Power adapter:	AC Adapter Model: EM11011M-190 Input: AC 100-240V, 2.0~1.0A, 50/60Hz Output: DC 19V, 6.31A, 120W
Test voltage:	AC 120V, 60Hz
Battery:	Rechargeable Lithium Battery Model: ACC-006-524N(31NR9/66) Rated Capacity: 2300mAh Voltage: DC 10.8V Watt-Hour: 24.84Wh
EUT Interfaces:	USB3.0*4+USB2.0*2, RJ45*2, 1.7mm DC-in Jack, HDMI*1, 3.5mm Headset Jack, Serial*3, POAG Jack*1
Internal Source:	Max 3.8GHz
Sample Type:	Fixed device

4.2 Cable

Cable	Length	Shielding	Core
AC Cable	172cm	Unshielded	Non-Core
DC Cable	114cm	Unshielded	With-Core

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Earphone	PHILIPS	SHE6000	REF. No.SEA1000
HDMI Cable	Apple	MC838FE/B	REF. No.SEA0900
Network Cable	SGS	N/A	REF. No.SEA1100
Router	NETGEAR	DGN2200	REF. No.SEA2200
U-disk	Sandisk	SDCZ60-016G	REF. No.SEA0100
Television	HISENSE	TLM19V66	REF. No.SEA2600
Keyboard	IBM	KB-0225	/
Mouse	IBM	MO28UOL	/

4.4 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at Mains Terminals (150kHz-30MHz)	$\pm 3.0\text{dB}$
Radiated Emissions (30MHz-1GHz)	$\pm 4.5\text{dB}$
Radiated Emissions (above 1GHz)	$\pm 4.8\text{dB}$
Remark: The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty), so the test results – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit; – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.	

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.6 Test Facility

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

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2019-06-13	2022-06-12
EMI Test Receiver	Rohde&Schwarz	ESCI	SEM004-02	2020-03-24	2021-03-23
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2020-07-10	2021-07-09
LISN	Rohde&Schwarz	ENV216	SEM007-01	2020-09-23	2021-09-22
LISN	ETS-LINDGREN	3816/2	SEM007-02	2020-04-01	2021-03-31

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2020-07-19	2023-07-18
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2020-11-02	2021-11-01
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-02	2019-05-24	2022-05-23
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2020-04-01	2021-03-31
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2020-07-10	2021-07-09

Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018-03-13	2021-03-12
EXA Signal Analyzer	Agilent Technologies Inc	N9010A	SEM004-12	2020-04-09	2021-04-08
Horn Antenna (1-18GHz)	Rohde&Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2020-10-17	2023-10-16
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2020-09-23	2021-09-22
Pre-amplifier (26-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2020-04-01	2021-03-31
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2020-07-10	2021-07-09

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2020-09-15	2021-09-14
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2020-09-15	2021-09-14
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2020-04-07	2021-04-06



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6 Emission Test Results

6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement: 47 CFR Part 15, Subpart B
Test Method: ANSI C63.4:2014
Limit:
0.15M-0.5MHz 66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz 56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz 60dB(μV) quasi-peak, 50dB(μV) average
Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

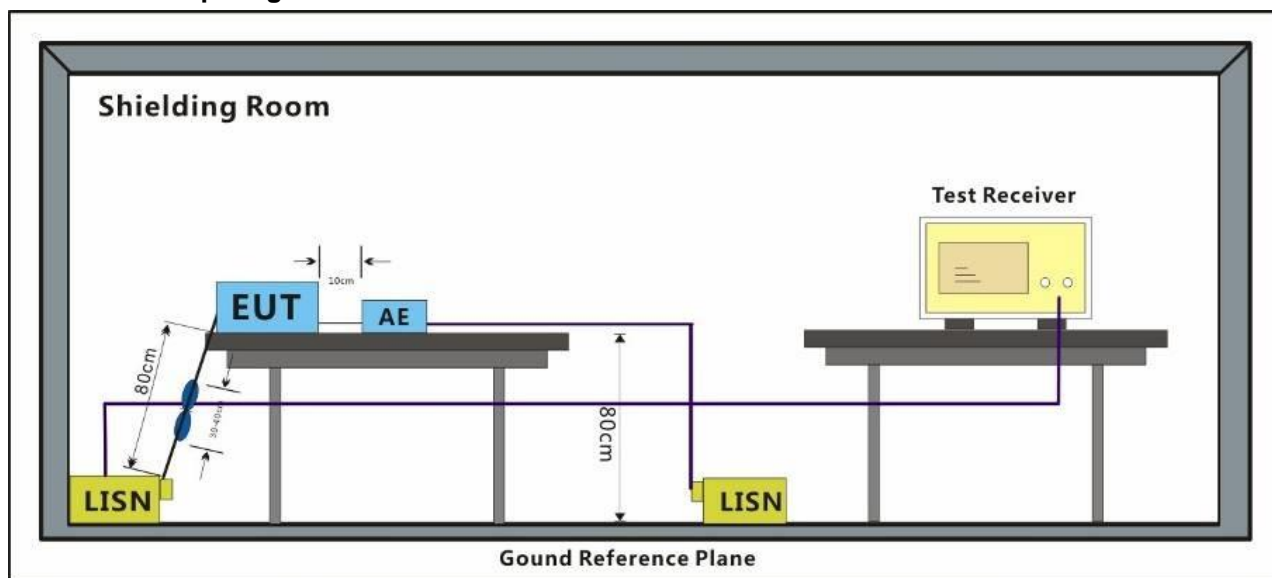
6.1.1 E.U.T. Operation

Operating Environment:
Temperature: 21.3 °C Humidity: 45.9 % RH Atmospheric Pressure: 1015 mbar

6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	00	On mode, keep EUT working normally.
Pre-scan	01	USB1 Play: Keep EUT playing with USB stick.
Pre-scan	02	USB2 Play: Keep EUT playing with USB stick.
Pre-scan	03	USB3 Play: Keep EUT playing with USB stick.
Pre-scan	04	USB4 Play: Keep EUT playing with USB stick.
Pre-scan	05	USB5 Play: Keep EUT playing with USB stick.
Pre-scan	06	USB6 Play: Keep EUT playing with USB stick.
Pre-scan	07	HDMI: Keep EUT working with external HDMI source.
Pre-scan	08	RS-232: Keep EUT connected to an external load via RS-232.
Pre-scan	09	LAN: Keep EUT working via LAN port.
Pre-scan	10	Idle mode, Keep the EUT at standby mode.
Pre-scan	11	Bluetooth mode, Keep the EUT communicate with other Bluetooth devices.
Pre-scan	12	Wifi mode, Keep the EUT communication with router via wifi, exchange data at the same time.
Pre-scan	13	Wireless mode, Keep the EUT communicate with other wireless devices.
Final test	14	BT+ WLAN + adapter + USB1 + USB2 + USB3 + USB4 + USB5 + USB6 + LAN1 + LAN2 + HDMI + RS-232 + Earphone.

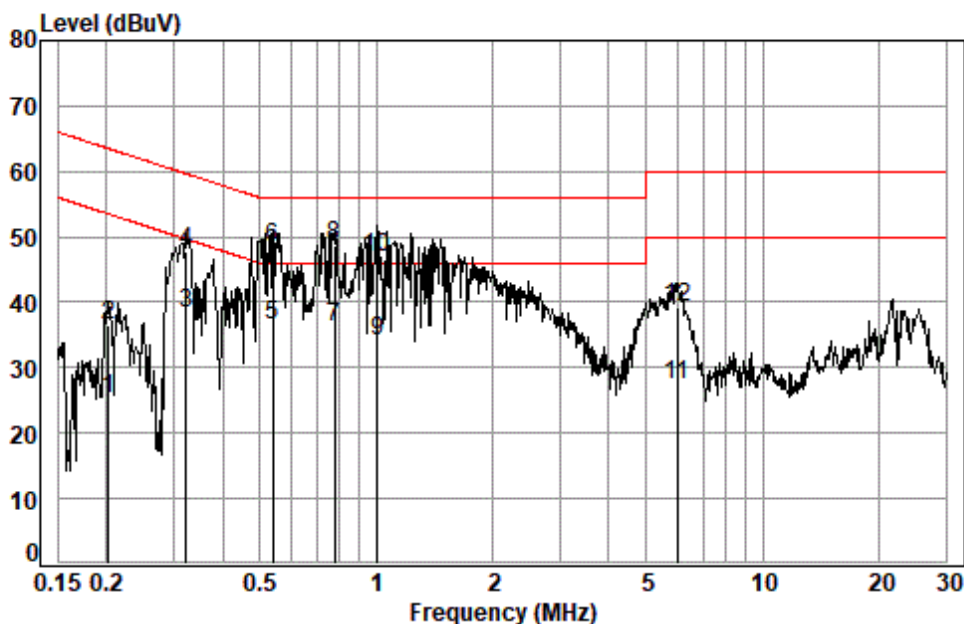
6.1.3 Test Setup Diagram



6.1.4 Measurement Procedure and Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

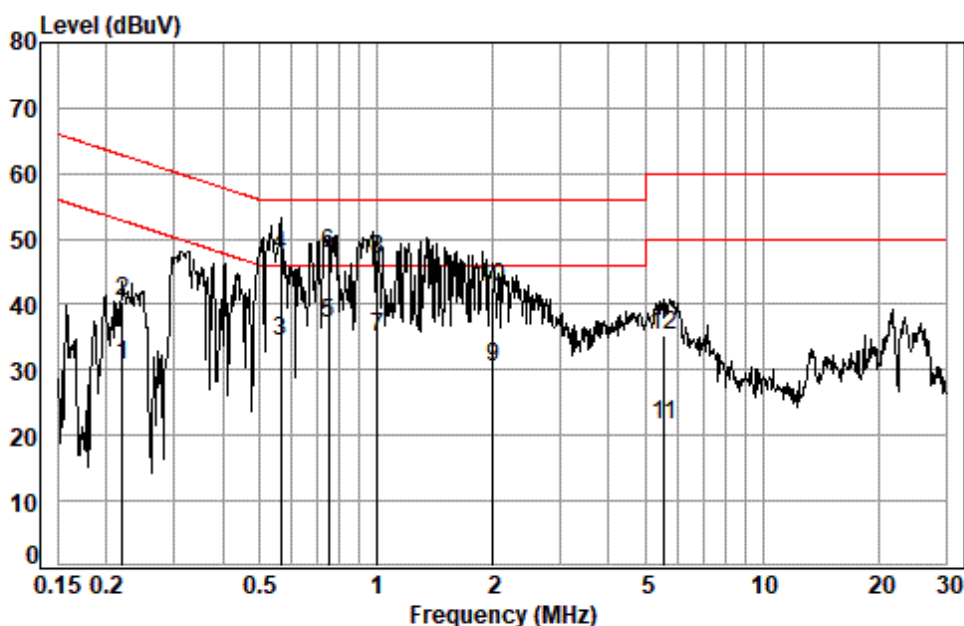
Test Mode: 14; Line: Live line



Site : Shielding Room
Condition: Line
Job No. : 10866CR
Test mode: 14

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.2029	0.02	9.72	15.65	25.39	53.49	-28.10	Average
2	0.2029	0.02	9.72	26.75	36.49	63.49	-27.00	QP
3	0.3217	0.04	9.74	28.58	38.36	49.66	-11.30	Average
4	0.3217	0.04	9.74	38.09	47.87	59.66	-11.79	QP
5	0.5407	0.06	9.77	26.65	36.48	46.00	-9.52	Average
6	0.5407	0.06	9.77	38.60	48.43	56.00	-7.57	QP
7	0.7793	0.08	9.78	26.31	36.17	46.00	-9.83	Average
8	0.7793	0.08	9.78	38.81	48.67	56.00	-7.33	QP
9	1.0050	0.09	9.78	24.09	33.96	46.00	-12.04	Average
10	1.0050	0.09	9.78	36.86	46.73	56.00	-9.27	QP
11	6.0243	0.17	9.99	17.19	27.35	50.00	-22.65	Average
12	6.0243	0.17	9.99	29.00	39.16	60.00	-20.84	QP

Test Mode: 14; Line: Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 10866CR
Test mode: 14

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.2208	0.03	9.72	21.04	30.79	52.79	-22.00	Average
2	0.2208	0.03	9.72	30.75	40.50	62.79	-22.29	QP
3	0.5671	0.07	9.77	24.65	34.49	46.00	-11.51	Average
4	0.5671	0.07	9.77	37.65	47.49	56.00	-8.51	QP
5	0.7509	0.08	9.77	27.25	37.10	46.00	-8.90	Average
6	0.7509	0.08	9.77	38.04	47.89	56.00	-8.11	QP
7	1.0050	0.09	9.78	24.97	34.84	46.00	-11.16	Average
8	1.0050	0.09	9.78	36.90	46.77	56.00	-9.23	QP
9	2.0012	0.16	9.81	20.48	30.45	46.00	-15.55	Average
10	2.0012	0.16	9.81	32.57	42.54	56.00	-13.46	QP
11	5.5641	0.17	9.96	11.61	21.74	50.00	-28.26	Average
12	5.5641	0.17	9.96	25.19	35.32	60.00	-24.68	QP

6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Limit:

FREQUENCY (MHz)	dBμV/m (At 10m)	dBμV/m (At 3m)
	Class B	Class B
30MHz -88MHz	29.5	40.0
88MHz-216MHz	33.1	43.5
216MHz-960MHz	35.6	46.0
960MHz-1000MHz	43.5	54.0
Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz		

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25.5 °C

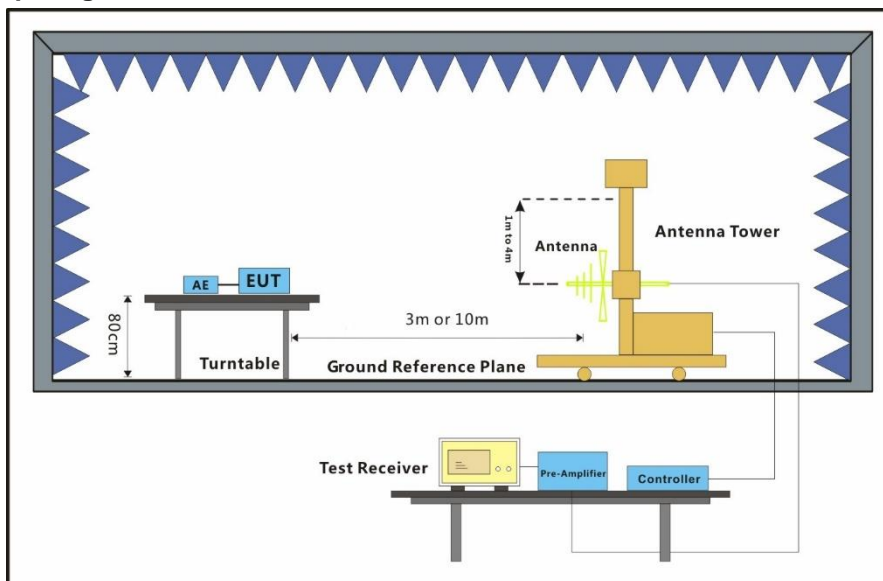
Humidity: 51.1 % RH

Atmospheric Pressure: 1015 mbar

6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	00	On mode, keep EUT working normally.
Pre-scan	01	USB1 Play: Keep EUT playing with USB stick.
Pre-scan	02	USB2 Play: Keep EUT playing with USB stick.
Pre-scan	03	USB3 Play: Keep EUT playing with USB stick.
Pre-scan	04	USB4 Play: Keep EUT playing with USB stick.
Pre-scan	05	USB5 Play: Keep EUT playing with USB stick.
Pre-scan	06	USB6 Play: Keep EUT playing with USB stick.
Final test	07	HDMI: Keep EUT working with external HDMI source.
Pre-scan	08	RS-232: Keep EUT connected to an external load via RS-232.
Pre-scan	09	LAN: Keep EUT working via LAN port.
Pre-scan	10	Idle mode, Keep the EUT at standby mode.
Pre-scan	11	Bluetooth mode, Keep the EUT communicate with other Bluetooth devices.
Pre-scan	12	Wifi mode, Keep the EUT communication with router via wifi, exchange data at the same time.
Pre-scan	13	Wireless mode, Keep the EUT communicate with other wireless devices.
Pre-scan	14	BT+ WLAN + adapter + USB1 + USB2 + USB3 + USB4 + USB5 + USB6 + LAN1 + LAN2 + HDMI + RS-232 + Earphone.

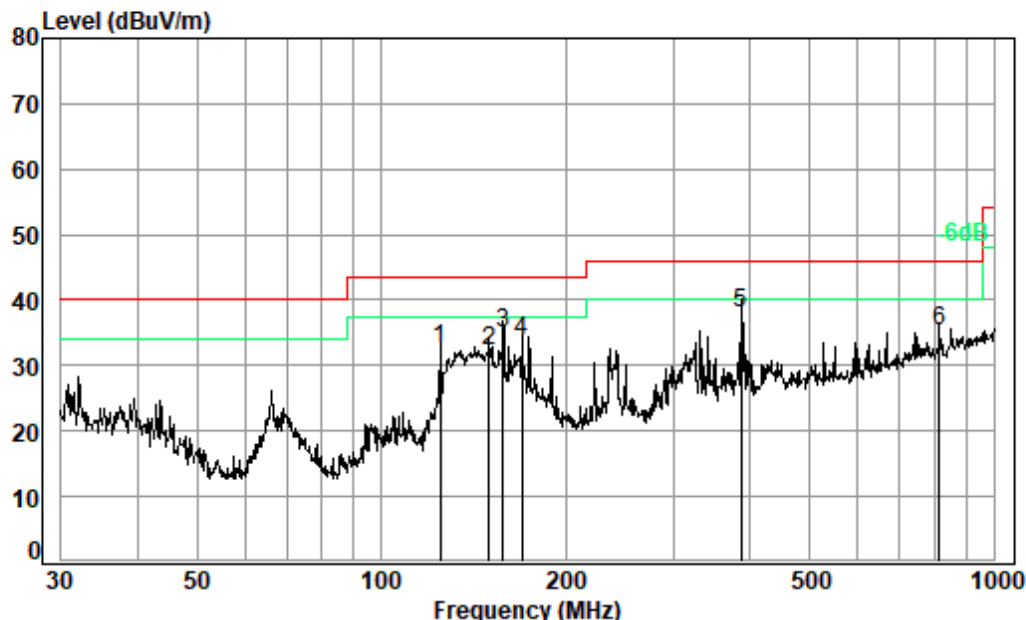
6.2.3 Test Setup Diagram



6.2.4 Measurement Procedure and Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Test Mode: 07; Polarity: Horizontal



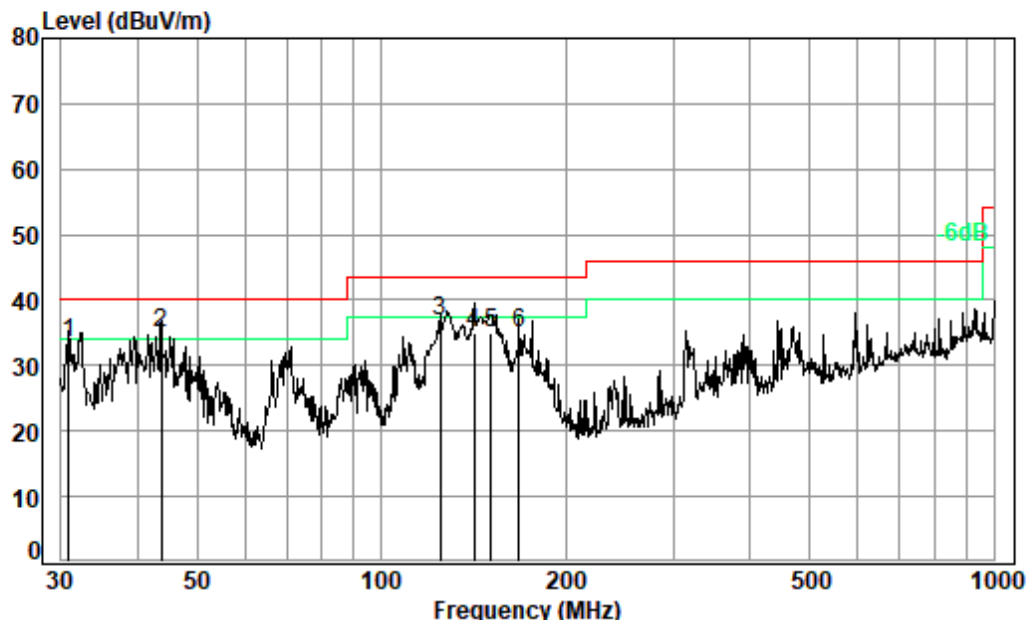
Condition: 3m HORIZONTAL

Job No. : 10866CR

Test Mode: 07

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	125.01	1.13	12.74	27.46	46.18	32.59	43.50	-10.91	QP
2	150.01	1.16	14.70	27.34	43.67	32.19	43.50	-11.31	QP
3	158.11	1.17	15.27	27.30	45.77	34.91	43.50	-8.59	QP
4	169.60	1.18	15.59	27.25	44.18	33.70	43.50	-9.80	QP
5 pp	386.63	2.26	22.27	27.33	40.90	38.10	46.00	-7.90	QP
6	815.97	3.33	27.94	27.64	31.60	35.23	46.00	-10.77	QP

Test Mode: 07; Polarity: Vertical



Condition: 3m VERTICAL

Job No. : 10866CR

Test Mode: 07

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	30.85	0.61	22.35	27.73	38.14	33.37	40.00	-6.63	QP
2	43.81	0.70	16.31	27.70	45.57	34.88	40.00	-5.12	QP
3	125.01	1.13	12.74	27.46	50.25	36.66	43.50	-6.84	QP
4	141.83	1.15	13.64	27.37	47.45	34.87	43.50	-8.63	QP
5	151.07	1.16	14.78	27.33	46.24	34.85	43.50	-8.65	QP
6	167.82	1.17	15.56	27.26	45.58	35.05	43.50	-8.45	QP

6.3 Radiated Emissions (above 1GHz)

Test Requirement: 47 CFR Part 15, Subpart B
 Test Method: ANSI C63.4:2014
 Limit:
 Above 1GHz 74(dBμV/m) peak, 54(dBμV/m) average
 Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000MHz to 40000MHz

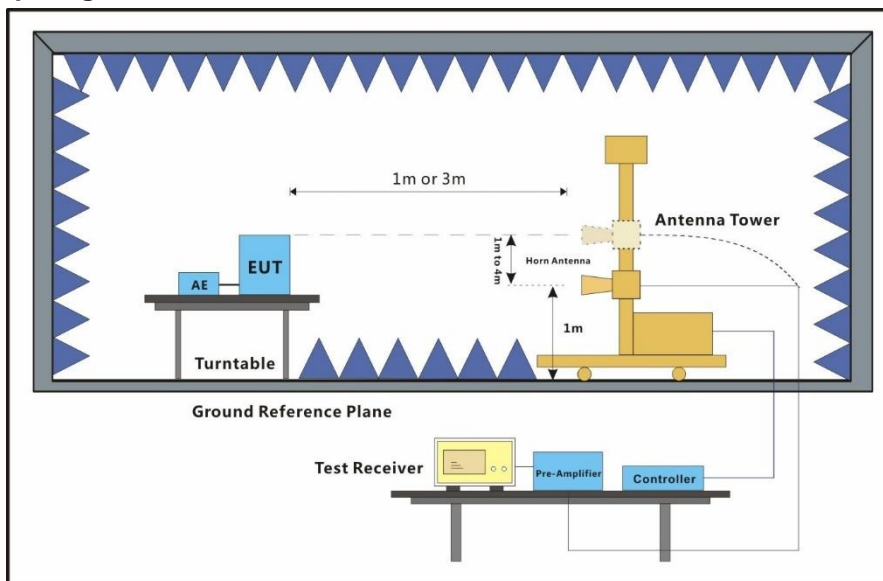
6.3.1 E.U.T. Operation

Operating Environment:
 Temperature: 24.3 °C Humidity: 50.3 % RH Atmospheric Pressure: 1015 mbar

6.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	00	On mode, keep EUT working normally.
Pre-scan	01	USB1 Play: Keep EUT playing with USB stick.
Pre-scan	02	USB2 Play: Keep EUT playing with USB stick.
Pre-scan	03	USB3 Play: Keep EUT playing with USB stick.
Pre-scan	04	USB4 Play: Keep EUT playing with USB stick.
Pre-scan	05	USB5 Play: Keep EUT playing with USB stick.
Pre-scan	06	USB6 Play: Keep EUT playing with USB stick.
Final test	07	HDMI: Keep EUT working with external HDMI source.
Pre-scan	08	RS-232: Keep EUT connected to an external load via RS-232.
Pre-scan	09	LAN: Keep EUT working via LAN port.
Pre-scan	10	Idle mode, Keep the EUT at standby mode.
Pre-scan	11	Bluetooth mode, Keep the EUT communicate with other Bluetooth devices.
Pre-scan	12	Wifi mode, Keep the EUT communication with router via wifi, exchange data at the same time.
Pre-scan	13	Wireless mode, Keep the EUT communicate with other wireless devices.
Pre-scan	14	BT+ WLAN + adapter + USB1 + USB2 + USB3 + USB4 + USB5 + USB6 + LAN1 + LAN2 + HDMI + RS-232 + Earphone.

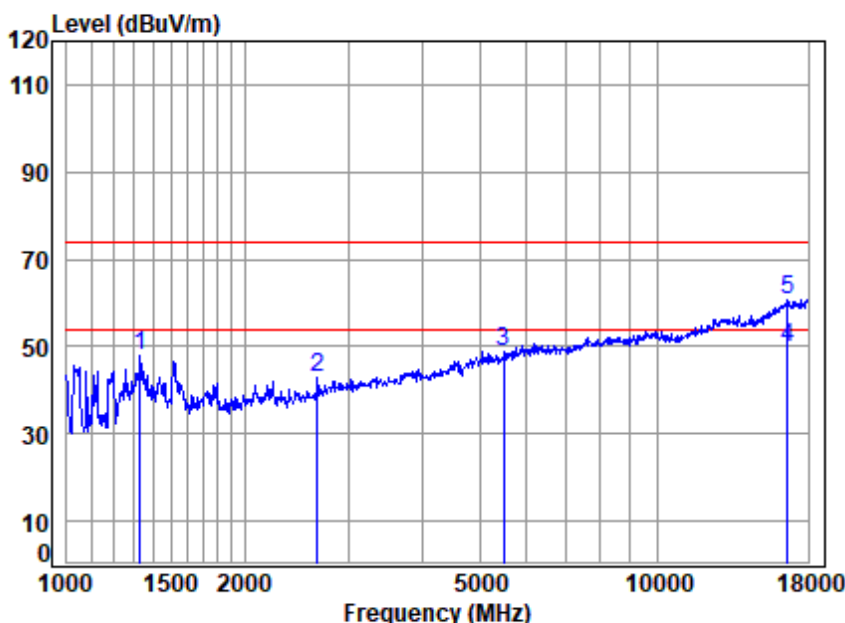
6.3.3 Test Setup Diagram



6.3.4 Measurement Procedure and Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

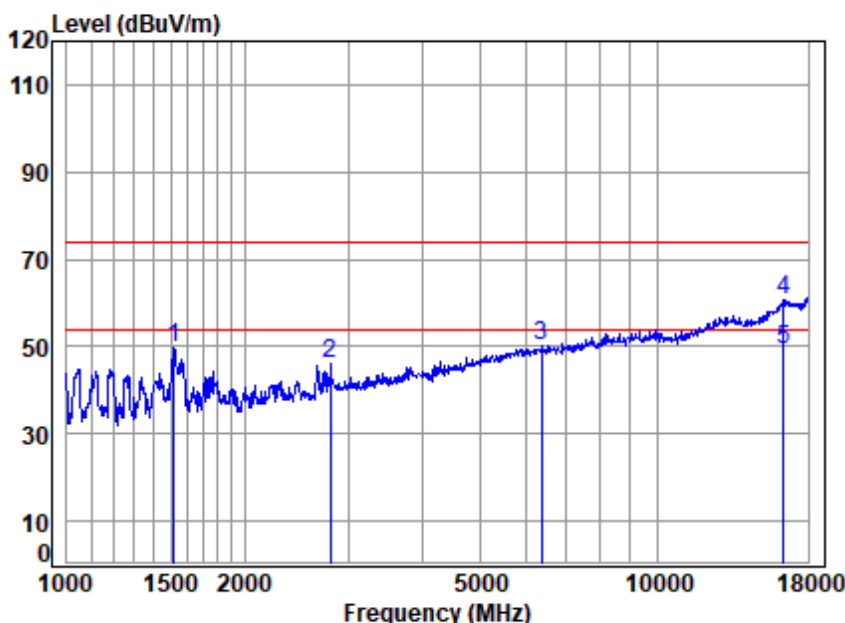
Test Mode: 07; Polarity: Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : 10866CR
Mode : 07
Note :

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1331.288	3.00	25.15	40.39	59.92	47.68	74.00	-26.32	Peak
2	2656.331	4.63	29.43	41.08	49.96	42.94	74.00	-31.06	Peak
3	5503.143	8.18	34.60	42.55	48.77	49.00	74.00	-25.00	Peak
4	16600.640	14.69	42.28	40.54	33.43	49.86	54.00	-4.14	Average
5	16600.640	14.69	42.28	40.54	44.21	60.64	74.00	-13.36	Peak

Test Mode: 07; Polarity: Vertical

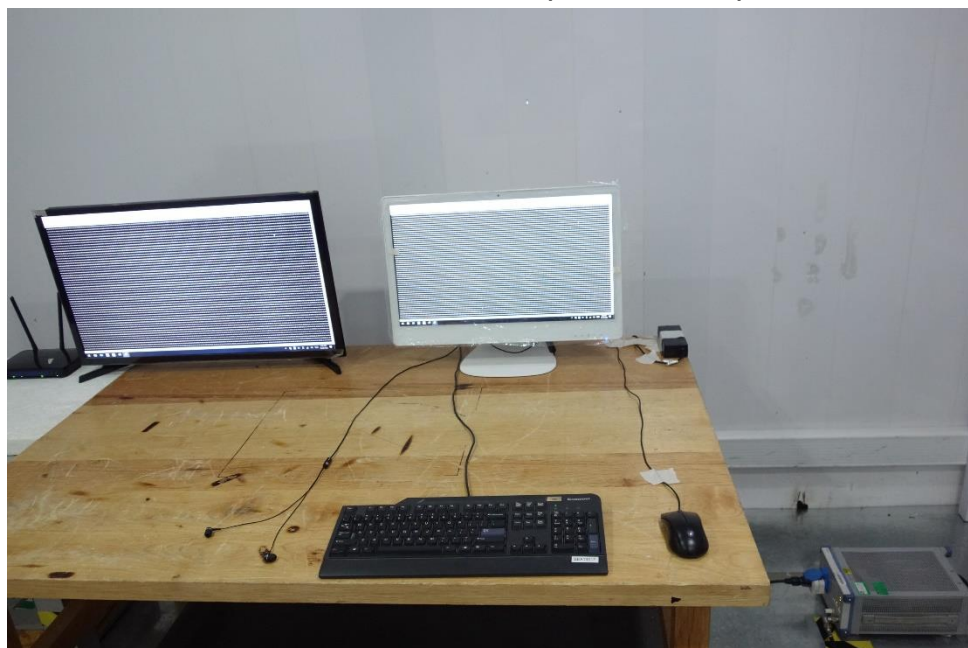


Site : chamber
Condition: 3m VERTICAL
Job No : 10866CR
Mode : 07
Note :

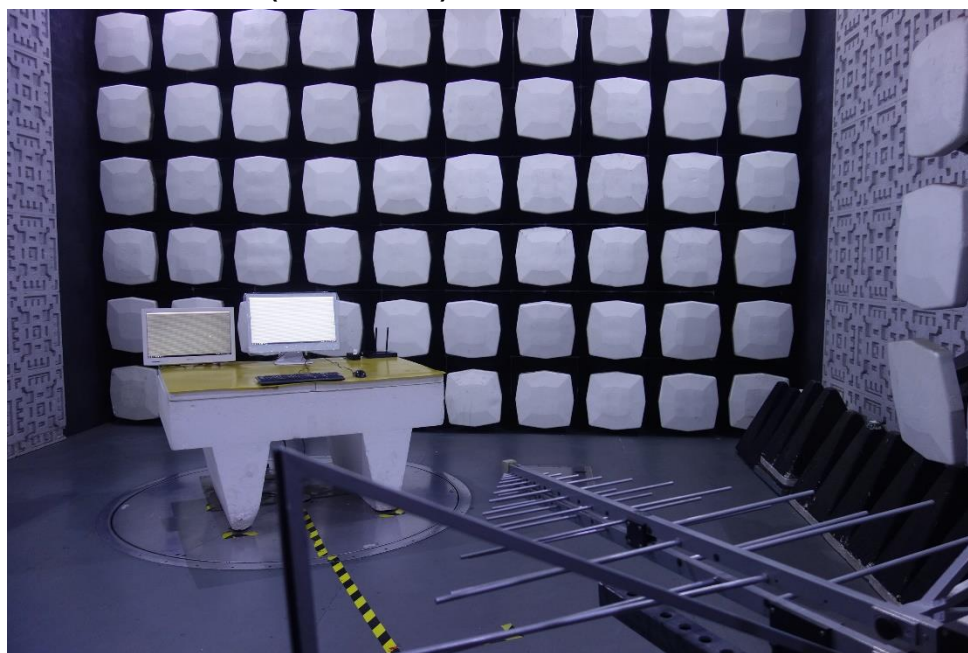
	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1520.598	3.28	25.89	40.52	61.26	49.91	74.00	-24.09	Peak
2	2798.189	4.73	30.06	41.13	52.25	45.91	74.00	-28.09	Peak
3	6358.789	8.27	35.46	42.03	48.57	50.27	74.00	-23.73	Peak
4	16362.460	14.64	41.87	40.55	44.91	60.87	74.00	-13.13	Peak
5	16362.460	14.64	41.87	40.55	33.36	49.32	54.00	-4.68	Average

7 Test Setup Photo

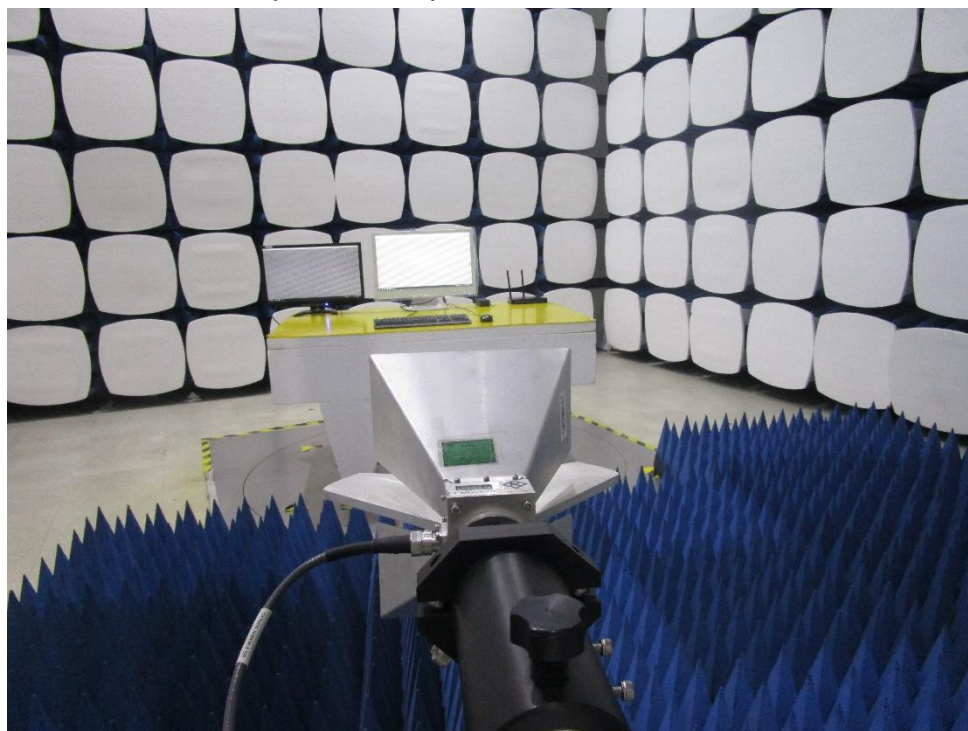
Conducted Emissions at Mains Terminals (150kHz-30MHz)



Radiated Emissions (30MHz-1GHz)



Radiated Emissions (above 1GHz)



8 EUT Constructional Details (EUT Photos)

Please Refer to external and internal photos for details.

- End of the Report -