

TEST REPORT

of

FCC Part 15 Subpart B Certificate

☒ New Application; ☐ Class I PC; ☐ Class II PC

Product : 7 inch Android Panel PC PoE LED
Brand Name: ProDVX
Model: APPC-7XPL, APPC-7XPLN
Model Difference: For different markets
FCC Rule Part: Part 15 B, Certificate
Applicant: ProDVX Europe B.V.
Address: Europalaan 12F, 5232 BC Den Bosch, The Netherlands

Test Performed by:

International Standards Laboratory Corp.

<LT Lab.>

*Site Registration No.

BSMI: SL2-IN-E-0013; MRA TW1036; TAF: 0997; IC: IC4067B-4;

*Address:

No. 120, Lane 180, Hsin Ho Rd.,

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Report No.: **ISL-20LR400FB**

Issue Date : **2021/01/15**

Test results given in this report apply only to the specific sample(s) tested and are traceable to national or international standard through calibration of the equipment and evaluating measurement uncertainty herein.

The uncertainty of the measurement does not include in consideration of the test result unless the customer required the determination of uncertainty via the agreement, regulation or standard document specification.

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VERIFICATION OF COMPLIANCE

Applicant: ProDVX Europe B.V.
Product Description: 7 inch Android Panel PC PoE LED
Brand Name: ProDVX
Model No.: APPC-7XPL, APPC-7XPLN
Model Difference: For different markets
FCC Rule Part: Part 15 B, Certificate
Date of test: 2020/12/04 ~ 2021/01/14
Date of EUT Received: 2020/12/04

We hereby certify that:

All the tests in this report have been performed and recorded in accordance with the standards described above and performed by an independent electromagnetic compatibility consultant, International Standards Laboratory Corp.

The test results contained in this report accurately represent the measurements of the characteristics and the energy generated by sample equipment under test at the time of the test. The sample equipment tested as described in this report is in compliance with the limits of above standards.

Test By:



Date:

2021/01/15

Jason Chao / Senior Engineer

Prepared By:



Date:

2021/01/15

Gigi Yeh / Senior Engineer

Approved By:



Date:

2021/01/15

Jerry Liu / Technical Manager

Version

Version No.	Date	Description
00	2021/01/15	Initial creation of document

Uncertainty of Measurement

Description Of Test	Uncertainty
Conducted Emission (AC power line)	2.586 dB
Field Strength of Spurious Radiation	<=30MHz: 2.96dB 30-1GHz: 4.22 dB 1-40 GHz: 4.08 dB
Conducted Power	2.412 GHz: 1.30 dB 5.805 GHz: 1.55 dB
Power Density	2.412 GHz: 1.30 dB 5.805 GHz: 1.67 dB
Frequency	0.0032%

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1. GENERAL INFORMATION

1.1. Product Description

General:

Product Name	7 inch Android Panel PC PoE LED	
Brand Name	ProDVX	
Model Name	APPC-7XPL, APPC-7XPLN	
Model Difference	For different markets	
USB port	One provided	
Micro USB	One provided	
SD	One provided	
RJ45	One provided	
Audio ouy	One provided	
Power Supply	12Vdc from AC/DC adapter	
	Adapter:	1. Model: SOY-1200200-068 2. Model: 2AAJ024FC 3. Model: 2ABL024F US

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

This submittal(s) (test report) is intended for Part15 Subpart B, is authorized under Certificate.

1.3. Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4: 2014). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4. Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of **International Standards Laboratory Corp.** <LT Lab.> No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist., Tao Yuan City 325, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2014. FCC Registration Number is: TW1036, Canada Registration Number: 4067B-4.

1.5. Special Accessories

Not available for this EUT intended for grant.

1.6. Equipment Modifications

Not available for this EUT intended for grant.

2. System Test Configuration

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The EUT was operated in the normal mode.

2.3. Test Procedure

2.3.1 Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. According to the requirements in Section 7 of ANSI C63.4: 2014. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna. according to the requirements in Section 8 of ANSI C63.4: 2014.

2.4. Limitation

(1) Conducted Emission

According to section 15.107(a) Conducted Emission Limits is as following.

Frequency range MHz	Class B Limits dB (uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

(1) Radiated Emission

According to section 15.109(a) or CISPR 22 Radiated Emission Class B Limits is as following:

Frequency (MHz)	Field strength $\mu\text{V}/\text{m}$	Distance (m)	Field strength at 3m $\text{dB}\mu\text{V}/\text{m}$
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

Standard	Date	Description
CISPR 22	2010	Limits and methods of measurement of radio interference characteristics of information technology equipment.

CISPR 22 Limit:

Frequency range MHz	Limits dBuV/m (10m)
	Quasi-peak
30 to 230	30
230 to 1000	37

Frequency range GHz	Limits dBuV/m (3m)	
	Average	Peak
1 to 3	50	70
3 to 6	54	74

Remark: 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of 3 meters.

2.5. Configuration of Tested System

Fig. 1-1 Configuration

Config 5

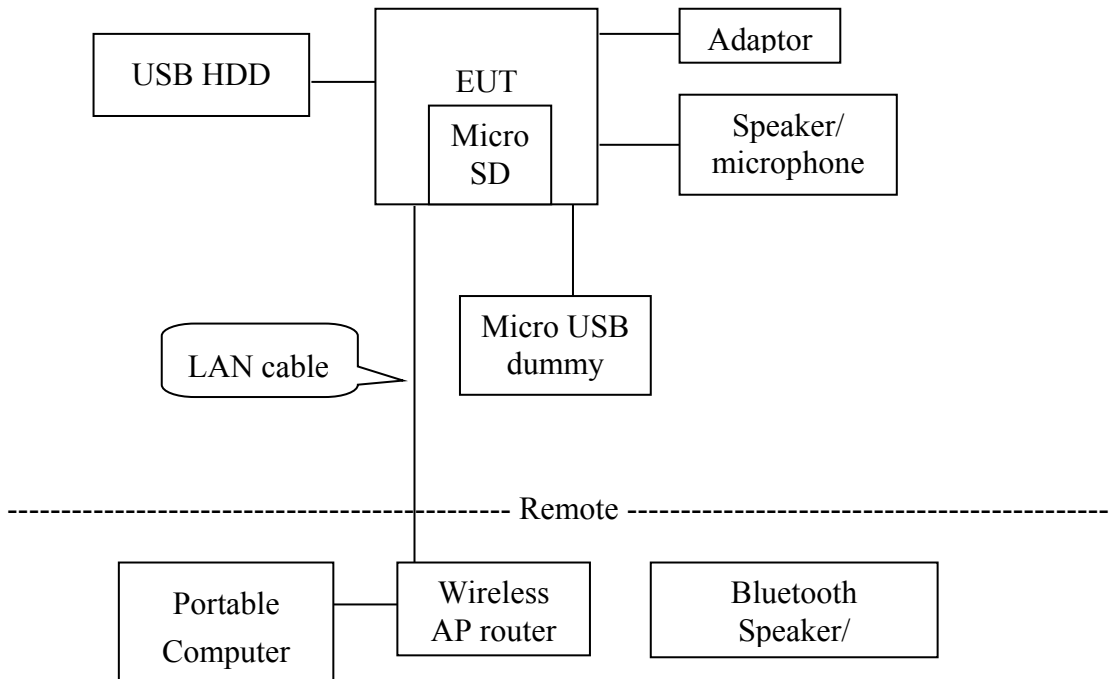


Table 1-1 Support Equipment Used in Tested System

Item	Equipment	Mrf/Brand	Model name	Series No	Data Cable	Power Cable
1	USB HDD	AKiTIO	SK2-U31AS-AKT	N/A	Shielded /1m	N/A
2	Portable Computer	Lenovo	TP00067B	N/A	N/A	Non-shielded /1.8m
3	Speaker/microphone	HTC	RC-E160	N/A	Non-shielded /1.5m	N/A
4	Bluetooth Speaker/microphone	N/A	SA-868	N/A	N/A	N/A
5	Wireless AP router	ASUS	RT-AC66U	80195030	Non-shield / 10m	Non-shield / 1.8m
6	Micro SD	SanDisk	11287080S2CARD	N/A	N/A	N/A

I/O Cable Condition of EUT and Support Units

Description	Path	Cable Length	Cable Type	Connector Type
DC Power cable	EUT adaptor to EUT DC input port	1.8m	Non-shielded	Metal
USB Data Cable(for EMI)	USB HDD to EUT USB Port	1m	Shielded	Metal
USB Data Cable	USB Data Cable to EUT Micro USB Port with dummy	1m	Non-shielded	Metal
LAN Data Cable	NB LAN Port to EUT LAN Port	10m	Non-shielded	Plastic
Audio Data Cable	Digital expansion machine S/PDIF Port to Speaker/microphone	1.5m	Non-shielded	Metal

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

3. Summary of Test Results

Rules	Description Of Test	Result
§15.107	Conducted Emission Class A	Compliant
§15.109	Radiated Emission(Below 1GHz) Class A	Compliant
§15.109	Radiated Emission(above 1GHz) Class A	Compliant

4. Description of test modes

This is a modular application and the EUT was stayed in normal operation mode.

Test Plan

	Config 1	Config 2	Config 3
Applicable standard	FCC 15B		
Accessories	EUT+adaptor +SD+USB+WiFi+BT+ethernet+NFC	EUT+adaptor +SD+USB+WiFi+BT+ethernet+NFC	EUT+adaptor +SD+USB+WiFi+BT+ethernet+NFC
	Ethernet and BT and Wi-Fi and NFC link (adaptor:2ABL024F)	Ethernet and BT and Wi-Fi and NFC link (adaptor:2AAJ024FC)	Ethernet and BT and Wi-Fi and NFC link (adaptor:SOY-1200200)
Description			
Radiated emission(30M~1GHz) (above 1GHz)	Pre-test	Pre-test	Pre-test
Conducted emission (AC Power)	Pre-test	Pre-test	Pre-test

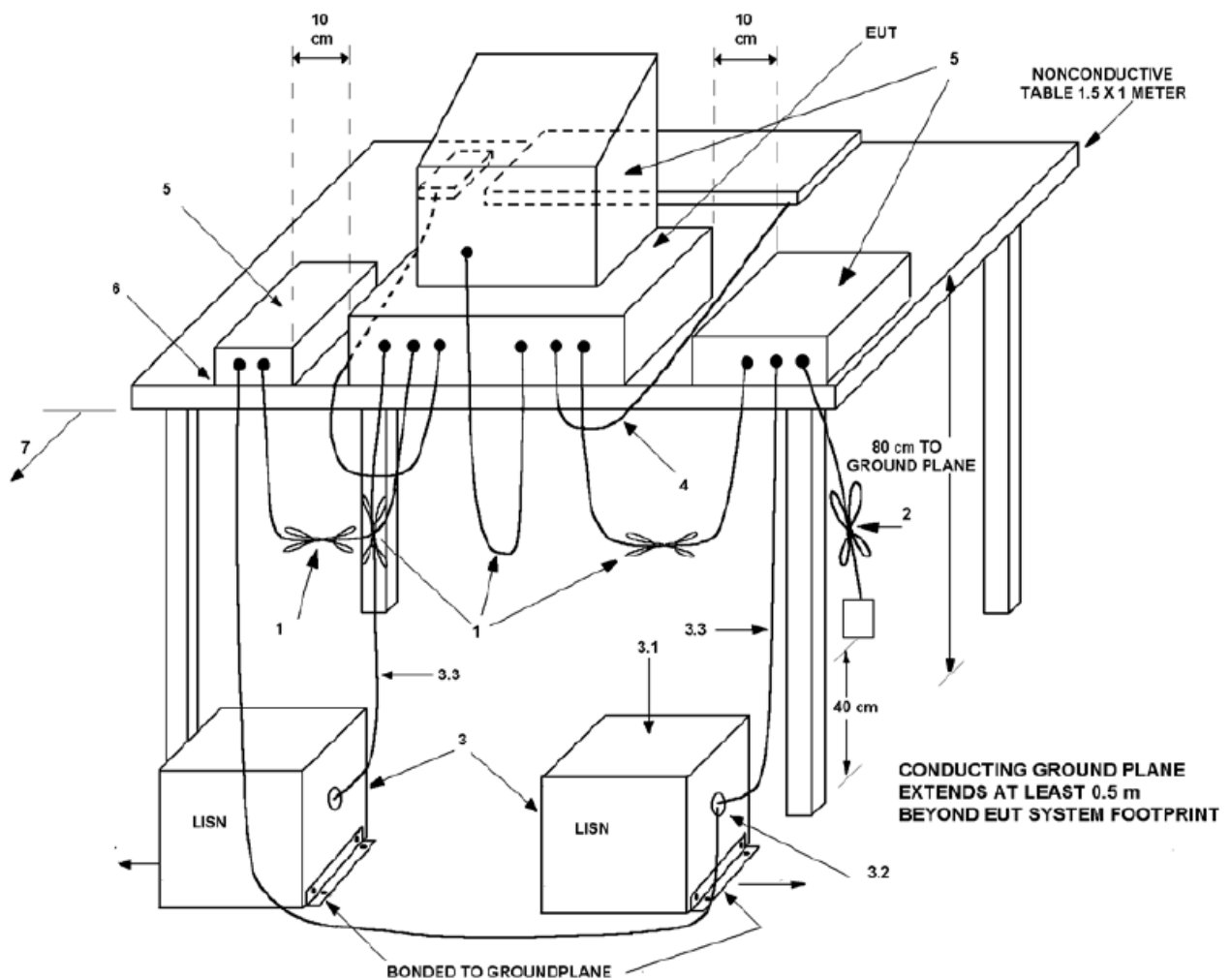
	Config 4	Config 5	Config 6
Applicable standard	FCC 15B		
Accessories	EUT+ethernet(POE) +USB+WiFi+BT+NFC	EUT+adaptor +SD+USB+WiFi+BT+e thernet+NFC+barcode scanner	EUT+adaptor +SD+USB+WiFi+BT+e thernet+NFC+barcode scanner
	Ethernet(POE) and BT and Wi-Fi link	Ethernet and BT and Wi-Fi and NFC link with barcode scanner (adaptor:2ABL024F)	Ethernet and BT and Wi-Fi and NFC link with barcode scanner (adaptor:2ABL024F)
Description			
Radiated emission(30M~1GHz) (above 1GHz)	Pre-test	Pre-test	Pre-test
Conducted emission (AC Power)	Pre-test	Pre-test	Pre-test

5. Conducted Emissions Test

5.1. Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

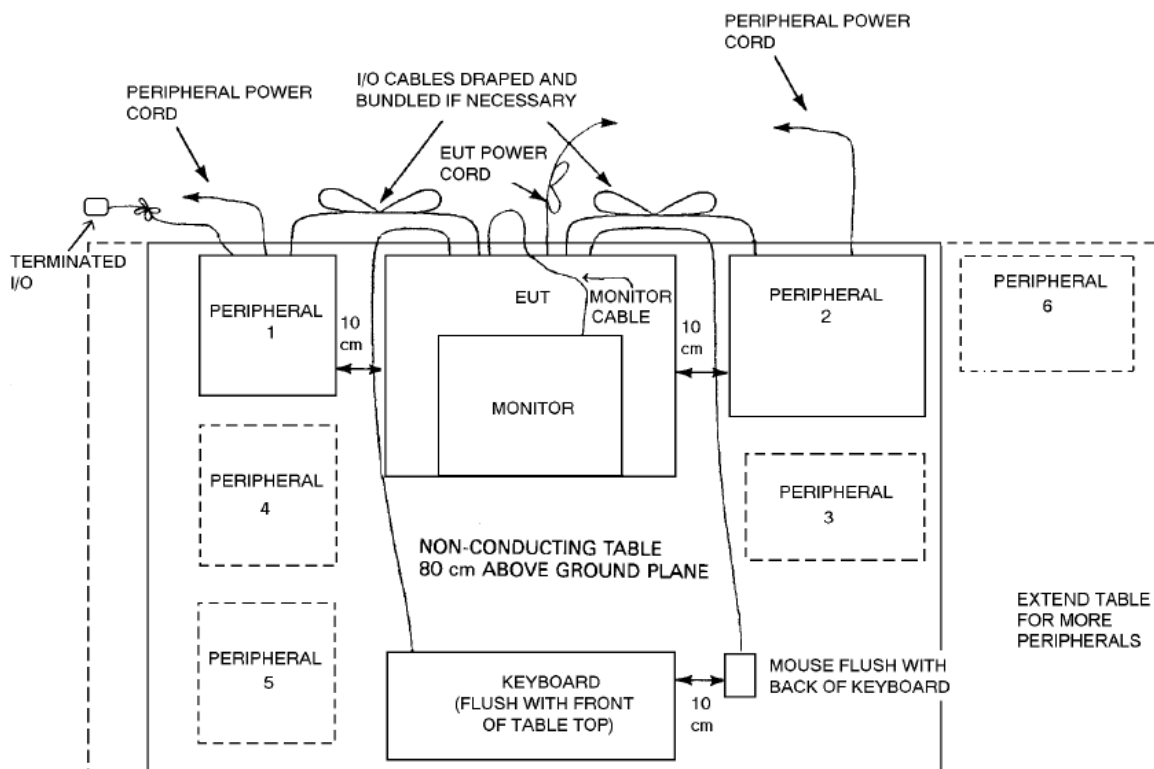
5.2. Test SET-UP (Block Diagram of Configuration)



LEGEND:

1. 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 cm to 40 cm long (see 6.2.5, also 11.5.5).
2. Input/output (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 (see 6.2.5).
3. EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated into 50 Ω loads. LISN can be placed on top of, or immediately beneath, reference ground plane (see 5.2.4 and 7.3.1).
 - 3.1 All other equipment powered from additional LISN(s).
 - 3.2 Multiple outlet strips can be used for multiple power cords of non-EUT equipment.
 - 3.3 LISN at least 80 cm from nearest part of EUT chassis.
4. Cables of hand-operated devices, such as keyboards and mice, shall be placed as for normal use (see 6.3.2.4 and 11.5.5).
5. Non-EUT components of EUT system being tested (see also Figure 7).
6. Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop (see 6.3.2.2 and 6.3.2.3).
7. Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane (see 5.2.3 for options).

Figure 7 —EUT test configuration/arrangement for tabletop equipment (radiated and conducted emissions)—top view

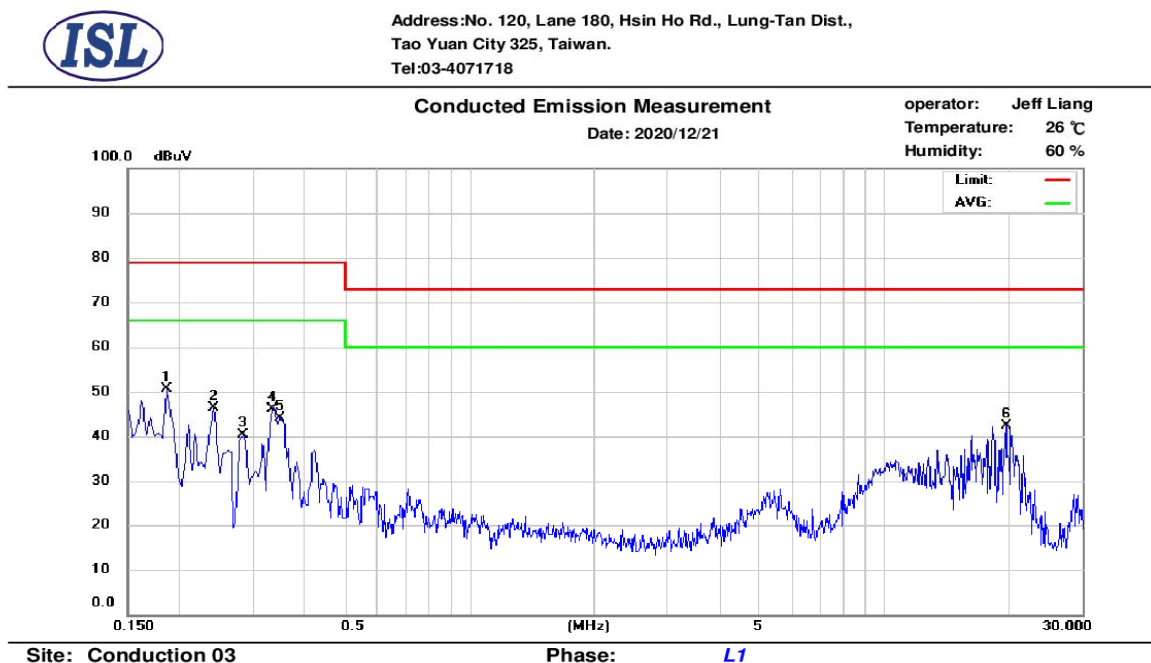


5.3. Measurement Equipment Used:

Location	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Conduction 02	LISN 26	R&S	ENV216	102378	11/21/2019	11/21/2020
Conduction 02	LISN 21	R&S	ENV216	101476	07/21/2020	07/21/2021
Conduction 02	Conduction 02-1 Cable	WOKEN	CFD 300-NL	Conduction 02 -1	09/11/2020	09/11/2021
Conduction 02	EMI Receiver 14	ROHDE&SCHWARZ	ESCI	101034	05/22/2020	05/22/2021
Conduction 02	ISN T4 07	Teseq GmbH	ISN T400A	49913	08/02/2020	08/02/2021
Conduction 02	ISN T8 10	Teseq GmbH	ISN T800	42773	08/02/2020	08/02/2021

5.4. Measurement Result:

Config 5



No.	Frequency (MHz)	QP_R (dBuV)	AVG_R (dBuV)	Correct Factor (dB)	QP Emission (dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVG Emission (dBuV)	AVG Limit (dBuV)	AVG Margin (dB)
1	0.186	37.10	23.24	9.70	46.80	79.00	-32.20	32.94	66.00	-33.06
2	0.242	32.96	18.93	9.71	42.67	79.00	-36.33	28.64	66.00	-37.36
3	0.286	26.79	14.10	9.71	36.50	79.00	-42.50	23.81	66.00	-42.19
4	0.334	33.85	26.91	9.70	43.55	79.00	-35.45	36.61	66.00	-29.39
5	0.350	32.84	22.94	9.70	42.54	79.00	-36.46	32.64	66.00	-33.36
6	19.710	30.94	28.35	9.98	40.92	73.00	-32.08	38.33	60.00	-21.67



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Tel: 03-4071718

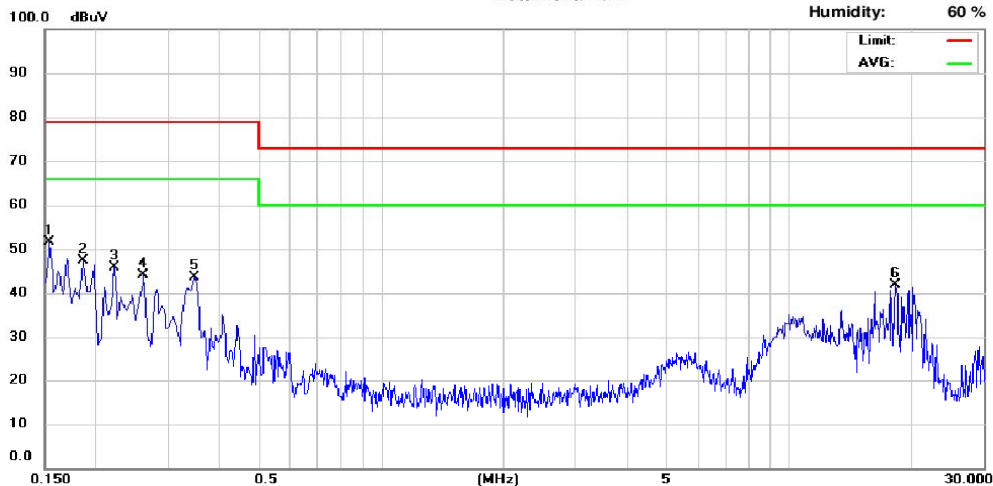
Conducted Emission Measurement

Date: 2020/12/21

operator: Jeff Liang

Temperature: 26 °C

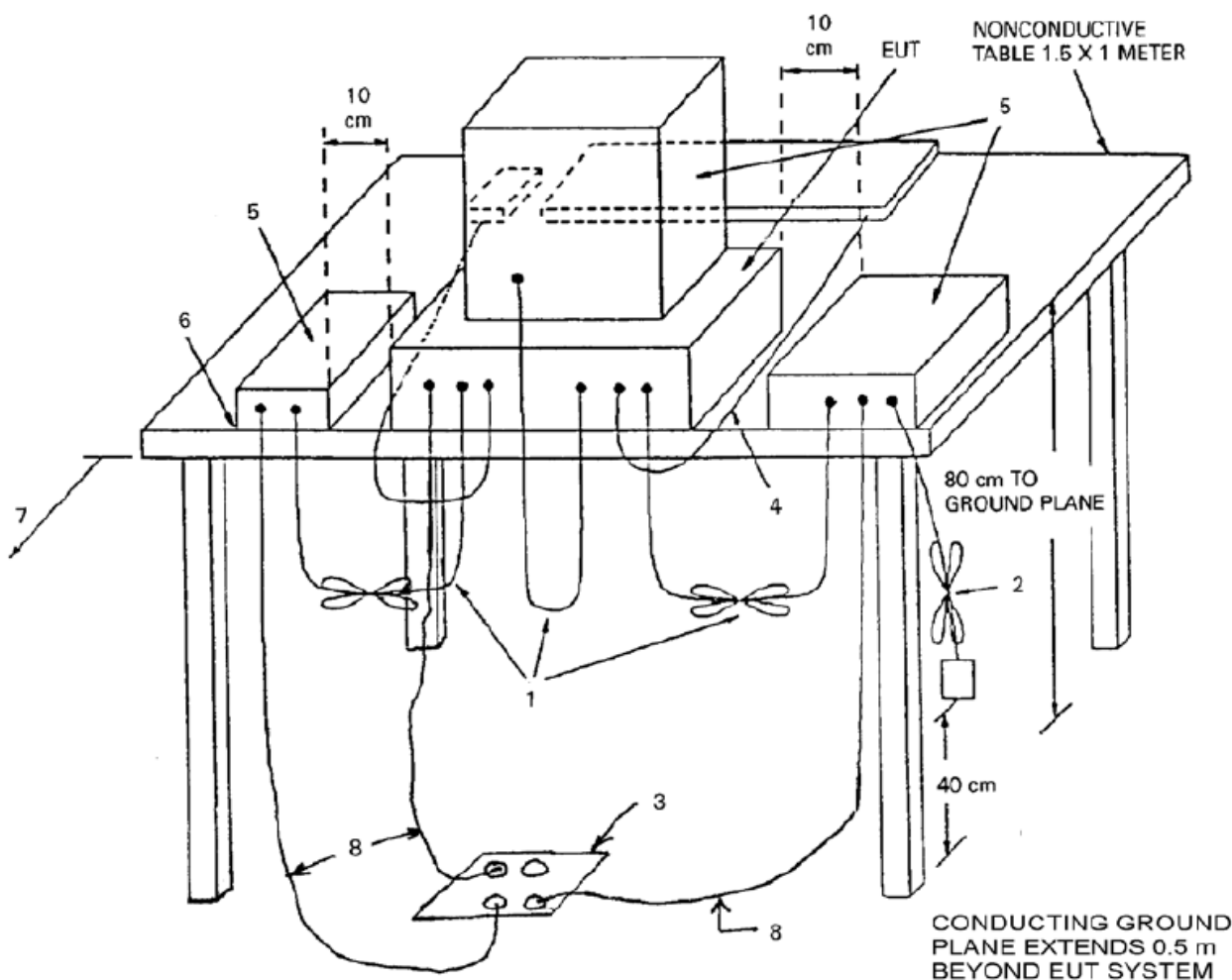
Humidity: 60 %



Site: Conduction 03

Phase: N

No.	Frequency (MHz)	QP_R (dBuV)	AVG_R (dBuV)	Correct Factor (dB)	QP Emission (dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVG Emission (dBuV)	AVG Limit (dBuV)	AVG Margin (dB)
1	0.154	43.07	26.44	9.70	52.77	79.00	-26.23	36.14	66.00	-29.86
2	0.186	36.16	22.53	9.70	45.86	79.00	-33.14	32.23	66.00	-33.77
3	0.222	33.47	17.36	9.71	43.18	79.00	-35.82	27.07	66.00	-38.93
4	0.262	30.27	16.74	9.71	39.98	79.00	-39.02	26.45	66.00	-39.55
5	0.350	30.63	20.50	9.70	40.33	79.00	-38.67	30.20	66.00	-35.80
6	18.242	32.75	29.99	9.98	42.73	73.00	-30.27	39.97	60.00	-20.03



LEGEND:

1. 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 cm to 40 cm long (see 6.2.5 and 11.5.5).
2. 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 total length shall not exceed 1 m (see 6.2.5).
3. If LISNs are kept in the test setup for radiated emissions, it is preferred that they be installed under the ground plane with the receptacle flush with the ground plane (see 6.2.5).
4. Cables of hand-operated devices, such as keyboards and mice, shall be placed as for normal use (see 6.3.2.4 and 11.5.5).
5. Non-EUT components of EUT system being tested (see also Figure 7).
6. Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop (see 6.3.2.2 and 6.3.2.3).
7. No vertical conducting plane used (see 5.2.3).
8. Power cords drape to the floor and are routed over to receptacle (see 6.2.5).

Figure 10 —Test arrangement for radiated emissions of tabletop equipment

6.3. Measurement Equipment Used:

Location	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
CHAMBER 19	SIGNAL ANALYZER	R&S	FSV40	101919	08/13/2020	08/13/2021
CHAMBER 19	EMI RECEIVER	R&S	ESR3	102461	05/05/2020	05/05/2021
CHAMBER 19	LOOP ANTENNA	EM	EM-6879	271	05/21/2020	05/21/2021
CHAMBER 19	BILOG ANTENNA (30MHz-1GHz)	SCHWARZBECK	VULB9168 w 6dB ATT.	736	02/11/2020	02/11/2021
CHAMBER 19	HORN ANTENNA (1GHz-18GHz)	ETS LINDGREN	3117	00218718	09/25/2020	09/25/2021
CHAMBER 19	HORN ANTENNA (18GHz-26GHz)	COM-POWER	AH-826	081001	11/23/2020	11/23/2021
CHAMBER 19	HORN ANTENNA (26GHz-40GHz)	COM-POWER	AH-640	100A	03/13/2020	03/13/2021
CHAMBER 19	PREAMPLIFIER (9kHz-1GHz)	HP	8447F	3113A04621	06/19/2020	06/19/2021
CHAMBER 19	PREAMPLIFIER (1GHz - 26GHz)	EM	EM01M26G	060681	05/04/2020	05/04/2021
CHAMBER 19	PREAMPLIFIER (26GHz-40GHz)	MITEQ	JS4-26004000- 27-5A	818471	05/04/2020	05/04/2021
CHAMBER 19	RF CABLE (9kHz-18GHz)	HUBER SUHNER & WOKEN	SUCOFLEX 104A & 18GHz SMA(M)-SM A(M)-10M	MY817/4A & 20200525	12/25/2020	12/25/2021
CHAMBER 19	RF CABLE (18GHz-40GHz)	HUBER SUHNER	SUCOFLEX 102	27963/2&374 21/2	11/19/2020	11/19/2021
CHAMBER 19	SIGNAL GENERATOR	ANRITSU	MG3692A	20311	01/03/2021	01/03/2022
CHAMBER 19	TEST SOFTWARE	AUDIX	E3 VER:6.12023	N/A	N/A	N/A

6.4. Field Strength Calculation

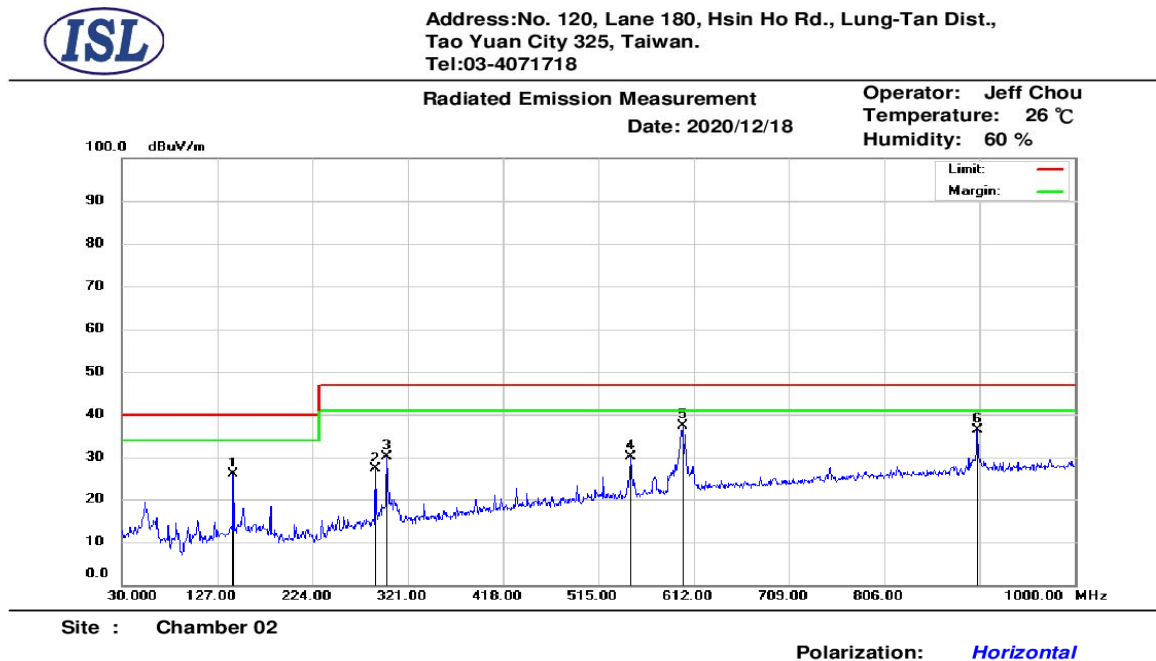
The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

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

6.5. Measurement Result:

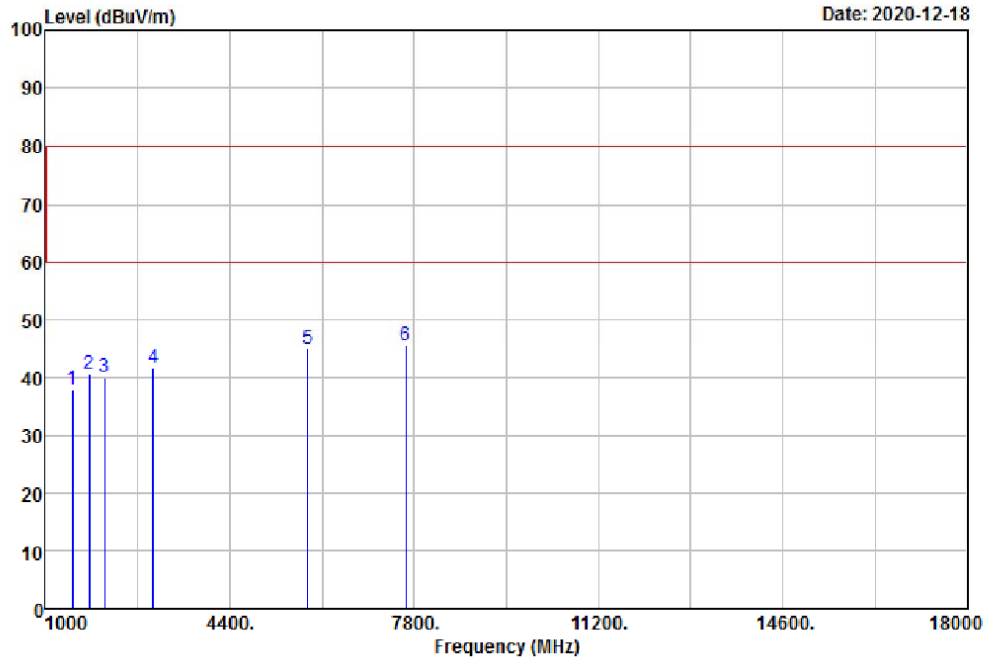
Config 5



Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	143.49	41.92	-16.11	25.81	40.00	-14.19	399	360	peak
2	288.02	41.63	-14.49	27.14	47.00	-19.86	300	174	peak
3	299.66	44.24	-14.17	30.07	47.00	-16.93	100	201	peak
4	547.98	37.73	-7.58	30.15	47.00	-16.85	100	205	peak
5	600.36	43.44	-6.08	37.36	47.00	-9.64	100	176	peak
6	901.06	38.13	-1.74	36.39	47.00	-10.61	100	187	peak



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Condition: FCC CLASS A 3M PK 3m HORIZONTAL
Site : Chamber 19

Operator : Jason

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	1493.00	54.15	-16.38	37.77	80.00	-42.23	Peak	HORIZONTAL
2	1799.00	54.04	-13.53	40.51	80.00	-39.49	Peak	HORIZONTAL
3	2088.00	52.20	-12.11	40.09	80.00	-39.91	Peak	HORIZONTAL
4	2989.00	51.98	-10.29	41.69	80.00	-38.31	Peak	HORIZONTAL
5	5828.00	49.34	-4.33	45.01	80.00	-34.99	Peak	HORIZONTAL
6	7647.00	47.98	-2.41	45.57	80.00	-34.43	Peak	HORIZONTAL

Config 5



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Tel: 03-4071718

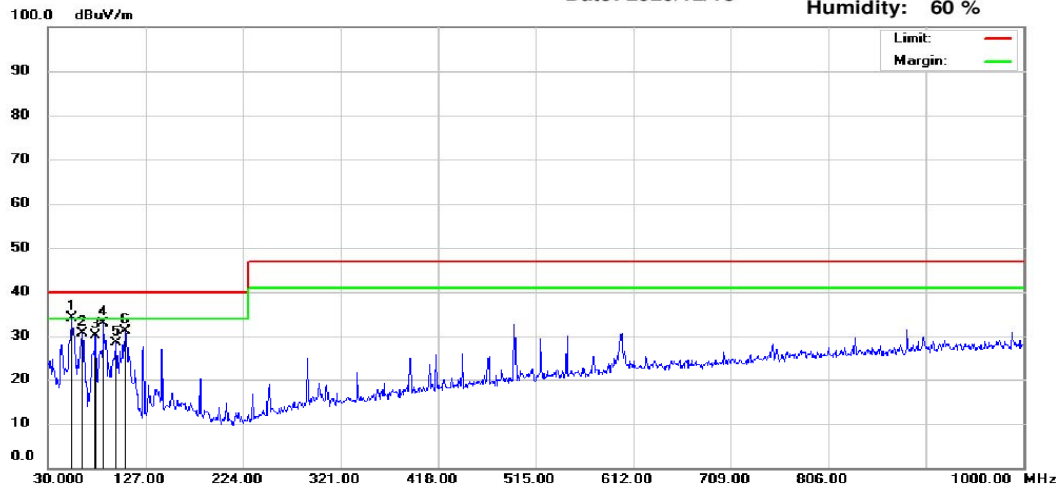
Radiated Emission Measurement

Date: 2020/12/18

Operator: Jeff Chou

Temperature: 26 °C

Humidity: 60 %



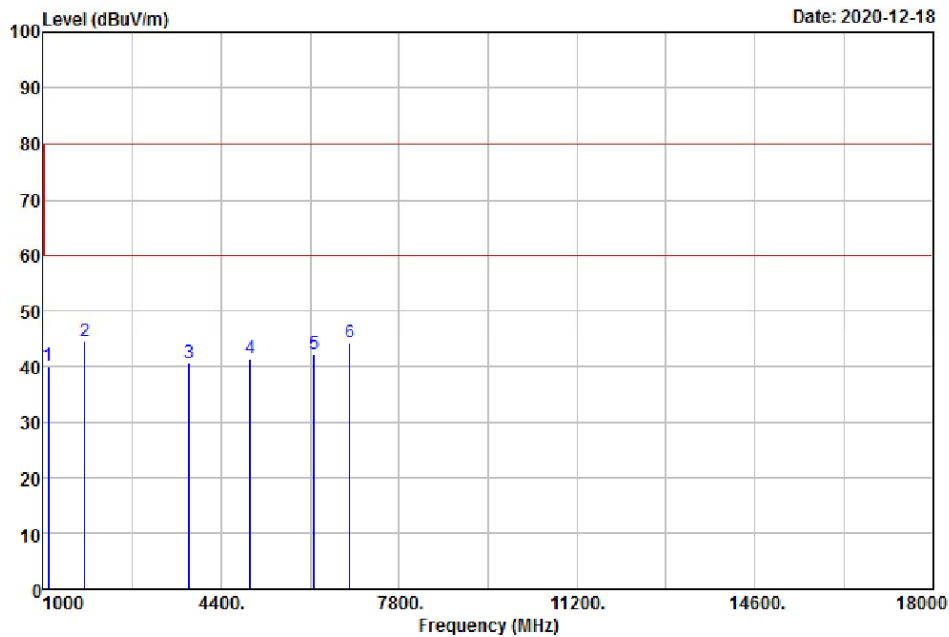
Site : Chamber 02

Polarization: *Vertical*

Mk.	Frequency (MHz)	RX_R (dBuV)	Correct Factor(dB/m)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant.Pos (cm)	Tab.Pos (deg.)	Detector
1	53.28	51.11	-17.00	34.11	40.00	-5.89	106	145	peak
2	63.95	48.45	-17.84	30.61	40.00	-9.39	100	118	peak
3	77.53	50.64	-20.54	30.10	40.00	-9.90	263	38	peak
4	85.29	55.10	-22.28	32.82	40.00	-7.18	278	259	peak
5	97.90	49.80	-21.38	28.42	40.00	-11.58	154	277	peak
6	106.63	51.09	-19.87	31.22	40.00	-8.78	153	173	peak



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Tel: (03) 4071718 ; Fax: (03) 4071738
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Condition: FCC CLASS A 3M PK 3m VERTICAL
Site : Chamber 19

Operator : Jason

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	1085.00	57.04	-16.92	40.12	80.00	-39.88	Peak	VERTICAL
2	1782.00	58.08	-13.61	44.47	80.00	-35.53	Peak	VERTICAL
3	3788.00	49.26	-8.60	40.66	80.00	-39.34	Peak	VERTICAL
4	4944.00	47.88	-6.49	41.39	80.00	-38.61	Peak	VERTICAL
5	6168.00	45.67	-3.47	42.20	80.00	-37.80	Peak	VERTICAL
6	6865.00	47.04	-2.89	44.15	80.00	-35.85	Peak	VERTICAL