

FCC TEST REPORT

Report No.: FVC-ESH-P20112378B-15

FCC ID: T2C-CTP18

Product: Collaboration Touch Panel

Test Model: CTP18

Received: Dec.30, 2020

ISSUED: Jan.20, 2021

Applicant: YEALINK(XIAMEN) NETWORK TECHNOLOGY CO.,LTD.

Address: 309, 3rd Floor, No.16, Yun Ding North Road, Huli District, Xiamen City,
Fujian, P.R. China

Issued By: BUREAU VERITAS ADT (Shanghai) Corporation

Lab Location: No. 829, Xinzhuan Road, Shanghai, P.R.China (201612)

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Contents

1. TEST PROGRAM.....	3
2. Summary of Test Procedure and Test Results	4
3. Test Configuration of Equipment under Test	5
3.1 Manufacturer information.....	5
3.2 Feature of Equipment under Test.....	5
3.3 Description of support units	5
3.4 Measurement Uncertainty	6
4 Test of Conducted Emission	7
4.1 Test Limit	7
4.2 Test Procedures	8
4.3 Typical Test Setup	8
4.4 Measurement Equipment	9
4.5 Test Result and Data	10
4.6 Test Photographs	14
5 Test of Radiated Emission	14
5.1 Test Limit	15
5.2 Test Procedures	16
5.3 Typical Test Setup	16
5.4 Measurement Equipment	17
5.5 Test Result and Data (30MHz ~ 1GHz)	18
5.6 Test Result and Data (1GHz ~ 18GHz)	20
5.7 Test Photographs (30MHz ~ 1000MHz)	22
5.8 Test Photographs (1000MHz ~ 18000MHz)	23
6 Photographs of EUT	24

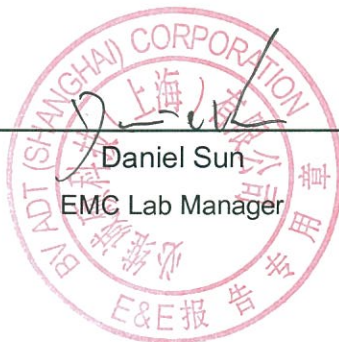
1. TEST PROGRAM

PRODUCT: Collaboration Touch Panel
TEST MODEL: CTP18
APPLICANT: YEALINK(XIAMEN) NETWORK TECHNOLOGY CO.,LTD.
TESTED: Jan.02 to Jan.18, 2021
STANDARDS: 47 CFR FCC Part15, Subpart B, Class B
ANSI C63.4:2014

We, BUREAU VERITAS ADT (Shanghai) Corporation, declare that the equipment above has been tested and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

PREPARED BY : Yuan Zhang, **DATE:** Jan.20, 2021
Yuan ZHANG
Project Engineer

APPROVED BY : Daniel Sun, **DATE:** Jan.20, 2021
Daniel Sun
EMC Lab Manager



2. Summary of Test Procedure and Test Results

EMISSION (47 CFR FCC Part15, Subpart B)		
Test Item	Normative References	Test Result
Conducted Emission	47 CFR FCC Part15, Subpart B 15.107	Meets the Class B requirements
Radiated Emission	47 CFR FCC Part15, Subpart B 15.109	Meets the Class B requirements

3. Test Configuration of Equipment under Test

3.1 Manufacturer information

Manufacturer : YEALINK(XIAMEN) NETWORK TECHNOLOGY CO.,LTD.

Address : 309, 3rd Floor, No.16, Yun Ding North Road, Huli District, Xiamen City,
Fujian, P.R. China

3.2 Feature of Equipment under Test

Product Name:	Collaboration Touch Panel
Brand:	Yealink
Test Model:	CTP18
Model Discrepancy:	--
EUT Power Rating:	48Vdc, 0.2A or PoE 48Vdc, 0.27A

Note:

1. Please refer to user manual.

3.3 Description of support units

NO.	PRODUCT	BRAND/ Manufacturer	MODEL NO.
1	PC	ThinkPad	L470
2	Network Cable	--	--
3	POE Switch	DAHUA	DH-PFS3006-4ET-60

3.4 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

This listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement		Value
Conducted emissions		2.55 dB
Radiated emissions	30 MHz ~ 1GHz	3.22 dB
	Above 1GHz	2.89 dB

4 Test of Conducted Emission

4.1 Test Limit

TEST STANDARD:

CFR 47 FCC Part 15, Subpart B (Section: 15.107)

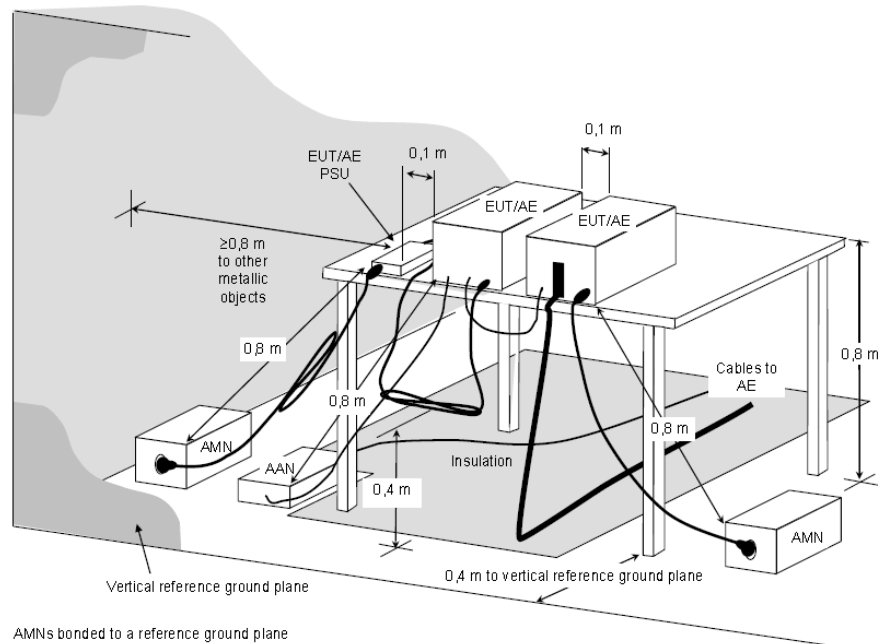
FREQUENCY (MHz)	Class A (dB μ V)		Class B (dB μ V)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

- NOTES:**
1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2 Test Procedures

1. The EUT was placed on a desk 0.8 meter height from the metal ground plane and 0.4 meter from the conducting wall of the shielding room and it was kept at least 0.8 meters from any other grounded conducting surface.
2. Connect EUT to the power mains through a Artificial Mains Network (AMN).
3. All the support units are connecting to the other AMN.
4. The AMN provides 50 ohm coupling impedance for the measuring instrument.
5. The CISPR states that a 50 ohm, 50 micro-Henry AMN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched
8. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

4.3 Typical Test Setup



NOTE The 0.8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be ≥ 0.8 m.

**Figure D.2 – Example measurement arrangement for table-top EUT
(Conducted emission measurement – alternative 1)**

4.4 Measurement Equipment

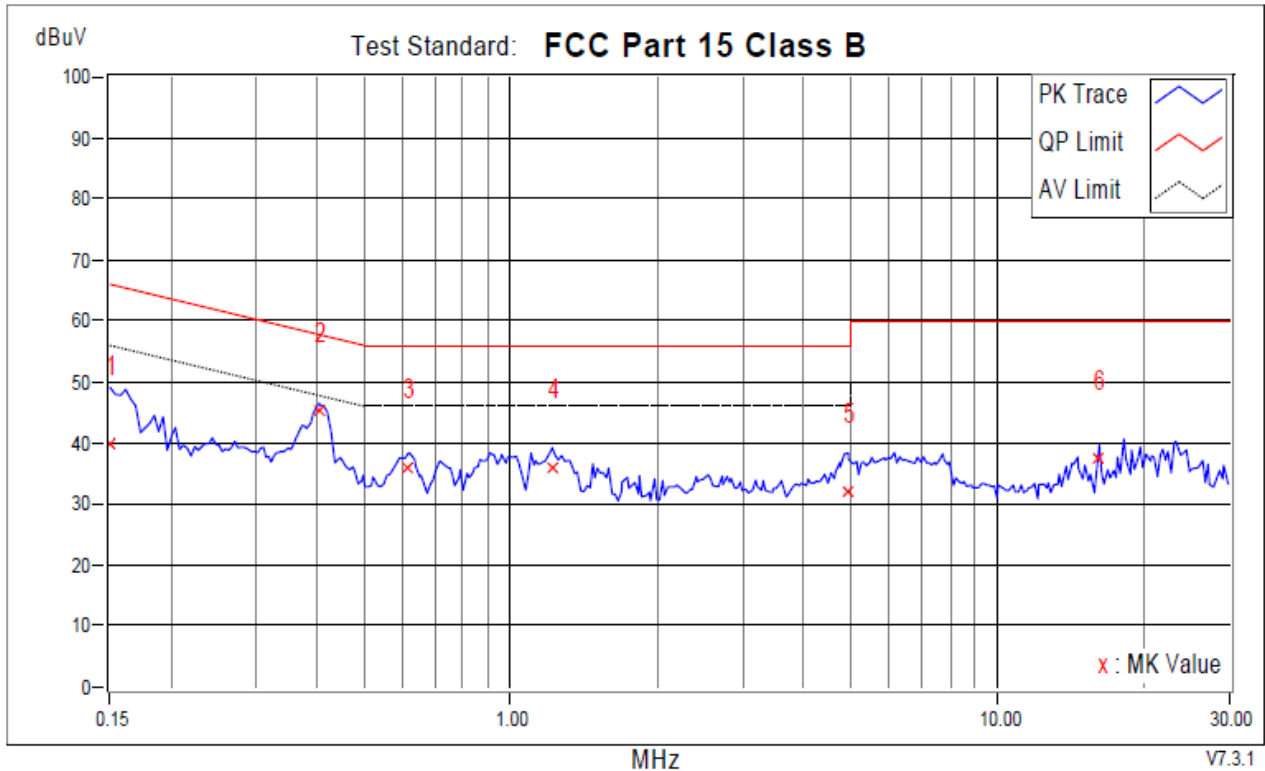
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	E1R1001	Mar.11, 2021
LISN ROHDE & SCHWARZ	ENV216	E1L1011	Mar.11, 2021
Software ADT	ADT_Cond_V7.3.0	N/A	N/A

4.5 Test Result and Data

Conducted Emission Test Data

120Vac/60Hz

Phase : LINE

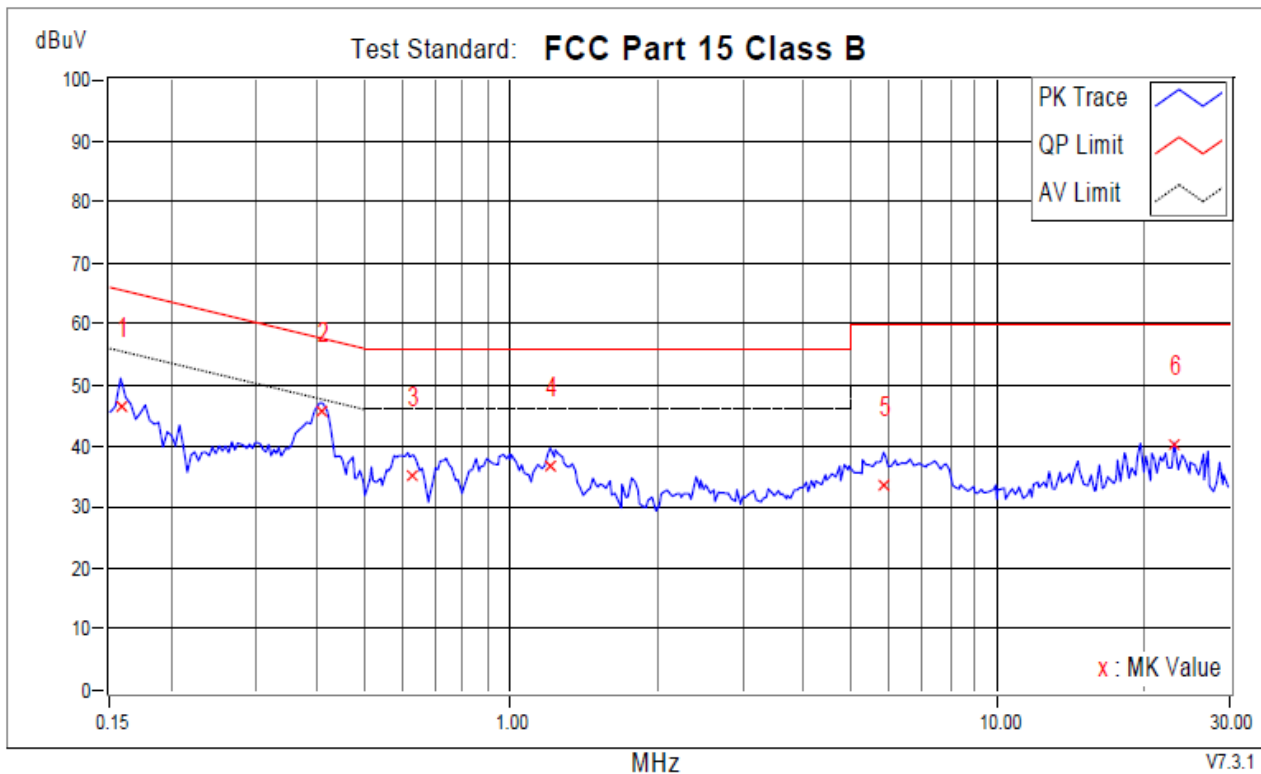


	Frequency	Corr. Factor	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
No.	MHz	dB	QP	AV	QP	AV	QP	AV	QP	AV	
1	0.15000	9.87	30.04	14.11	39.91	23.98	66.00	56.00	-26.09	-32.02	
+2	0.40415	9.75	35.38	30.47	45.13	40.22	57.77	47.77	-12.64	-7.55	
3	0.61529	9.68	26.18	19.86	35.86	29.54	56.00	46.00	-20.14	-16.46	
4	1.21896	9.65	26.21	19.97	35.86	29.62	56.00	46.00	-20.14	-16.38	
5	4.94910	10.07	22.05	15.60	32.12	25.67	56.00	46.00	-23.88	-20.33	
6	16.22863	10.33	27.04	22.64	37.37	32.97	60.00	50.00	-22.63	-17.03	

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

Phase : NEUTRAL



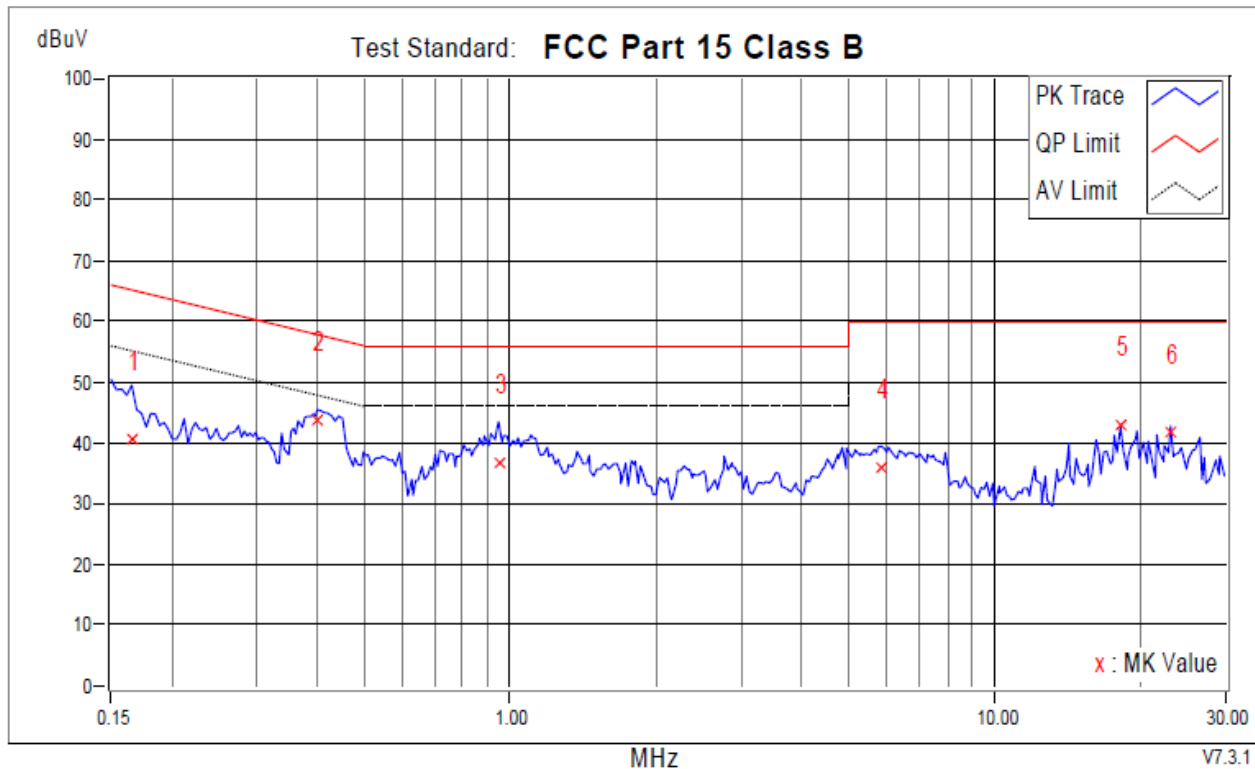
No.	Frequency	Corr. Factor	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
	MHz	dB	QP	AV	QP	AV	QP	AV	QP	AV	
1	0.15782	9.87	36.78	25.63	46.65	35.50	65.58	55.58	-18.93	-20.08	
+2	0.40806	9.89	35.98	28.76	45.87	38.65	57.69	47.69	-11.81	-9.03	
3	0.63093	9.84	25.44	18.84	35.28	28.68	56.00	46.00	-20.72	-17.32	
4	1.20723	9.92	26.81	21.18	36.73	31.10	56.00	46.00	-19.27	-14.90	
5	5.84449	9.93	23.78	17.81	33.71	27.74	60.00	50.00	-26.29	-22.26	
6	23.12978	10.32	30.08	26.27	40.40	36.59	60.00	50.00	-19.60	-13.41	

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

240Vac/50Hz

Phase: LINE

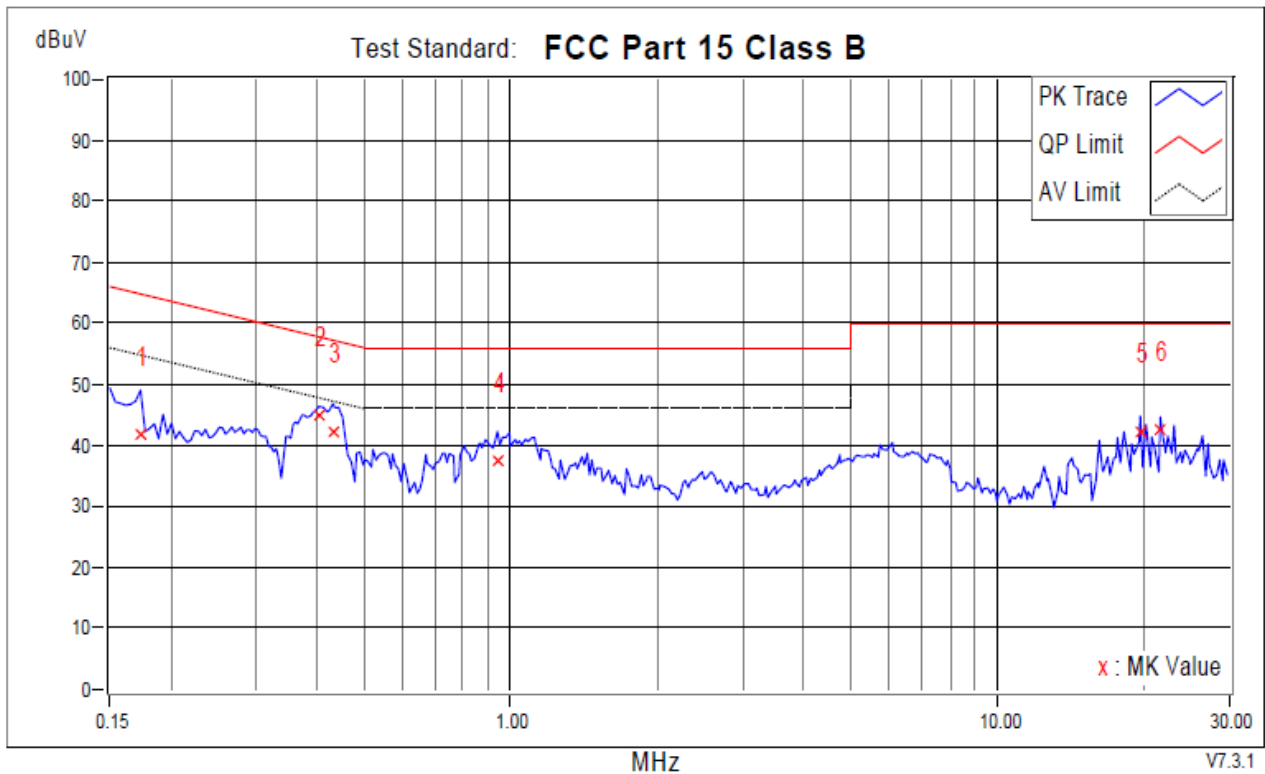


	Frequency	Corr. Factor	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
No.	MHz	dB	QP	AV	QP	AV	QP	AV	QP	AV	
1	0.16564	9.88	30.56	21.55	40.44	31.43	65.18	55.18	-24.74	-23.75	
+2	0.40024	9.75	34.18	27.92	43.93	37.67	57.85	47.85	-13.92	-10.18	
3	0.94764	9.61	27.25	21.77	36.86	31.38	56.00	46.00	-19.14	-14.62	
4	5.84840	10.13	25.80	20.79	35.93	30.92	60.00	50.00	-24.07	-19.08	
5	18.24228	10.30	32.72	27.43	43.02	37.73	60.00	50.00	-16.98	-12.27	
6	23.12978	10.13	31.81	28.29	41.94	38.42	60.00	50.00	-18.06	-11.58	

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

Phase: NEUTRAL



No.	Frequency	Corr. Factor	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
	MHz	dB	QP	AV	QP	AV	QP	AV	QP	AV	
1	0.17346	9.86	31.97	23.91	41.83	33.77	64.79	54.79	-22.97	-21.03	
+2	0.40415	9.89	35.13	30.05	45.02	39.94	57.77	47.77	-12.74	-7.82	
3	0.43152	9.89	32.15	26.81	42.04	36.70	57.22	47.22	-15.19	-10.53	
4	0.93982	9.91	27.51	22.49	37.42	32.40	56.00	46.00	-18.58	-13.60	
5	19.70853	10.42	31.68	27.80	42.10	38.22	60.00	50.00	-17.90	-11.78	
6	21.66353	10.37	32.05	27.72	42.42	38.09	60.00	50.00	-17.58	-11.91	

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

4.6 Test Photographs

Please refer to the attached file (Test Setup Photo).

5 Test of Radiated Emission

5.1 Test Limit

TEST STANDARD:

CFR 47 FCC Part 15, Subpart B (Section: 15.109)

FOR FREQUENCY BELOW 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 – 88	90	39.1	100	40.0
88 – 216	150	43.5	150	43.5
216 – 960	210	46.4	200	46.0
960 – 1000	300	49.5	500	54.0

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

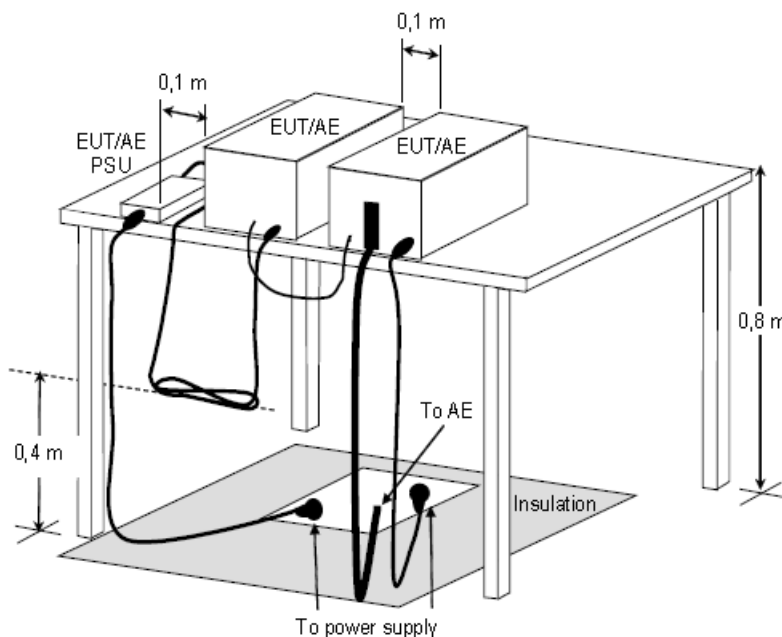
FREQUENCY (MHz)	Class A ($\text{dB}\mu\text{V/m}$) (at 3m)		Class B ($\text{dB}\mu\text{V/m}$) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

- Note:**
1. The lower limit shall apply at the transition frequencies.
 2. Emission level ($\text{dB}\mu\text{V/m}$) = $20 \log$ Emission level ($\mu\text{V/m}$).
 3. All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

5.2 Test Procedures

1. The EUT was placed on a rotatable table top 0.8 meter above ground.
2. The EUT was set 3/10 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
5. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

5.3 Typical Test Setup



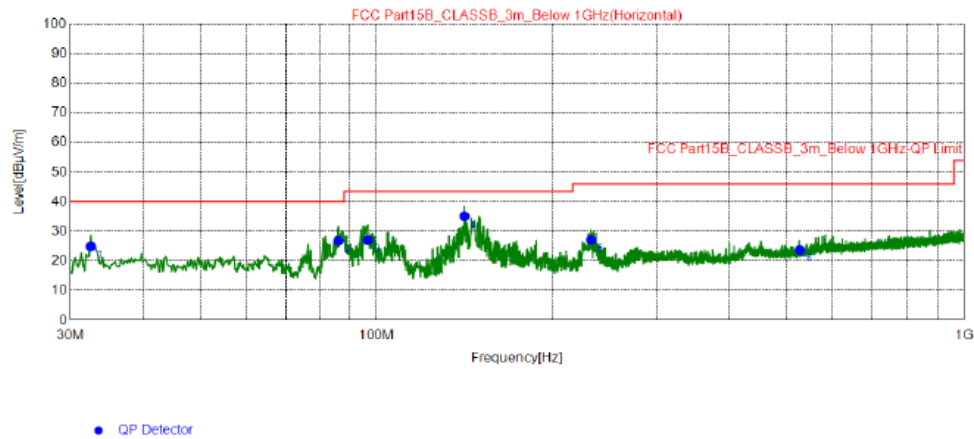
**Figure D.8 – Example measurement arrangement for table-top EUT
(Radiated emission measurement)**

5.4 Measurement Equipment

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
EMI Test Spectrum ROHDE & SCHWARZ	ESR7	E1R1005	May.11, 2021
Spectrum Analyzer Keysight	N9030B	E1S1003	Aug.03, 2021
Broad-Band Antenna Schwarzbeck	VULB9168	E1A1012	Jul.27, 2021
Double Riaged Vroadband Horn Antenna Schwarzbeck	BBHA9120D	E1A1017	Jan.25, 2021
Preamplifier Agilent	8447D	E1A2001	Apr.19, 2021
Preamplifier Agilent	EMC051845SE	E1A2009	Jul.05, 2021

5.5 Test Result and Data (30MHz ~ 1GHz)

Position: Horizontal



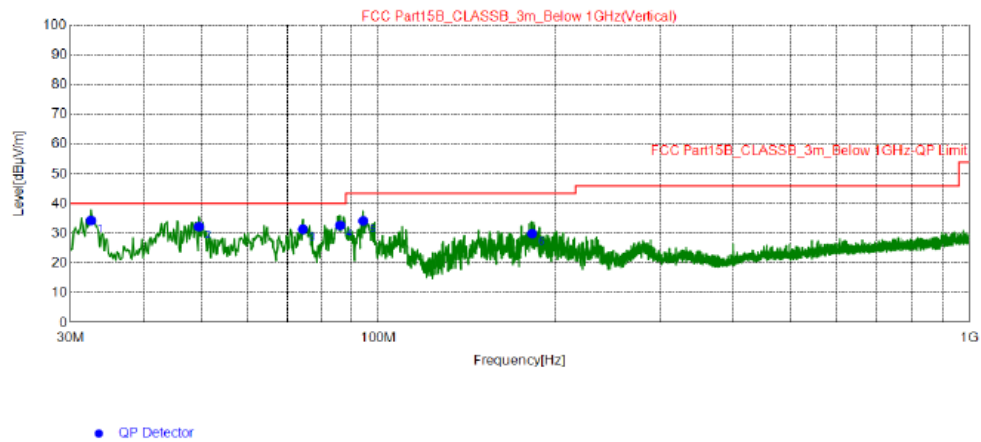
Final Data List

NO.	Freq. [MHz]	QP Reading [dB µV/m]	Factor [dB]	QP Value [dB µV/m]	QP Limit [dB µV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	32.52	36.27	-11.35	24.92	40.00	15.08	200	228	Horizontal
2	86.06	42.08	-15.28	26.80	40.00	13.20	200	196	Horizontal
3	96.54	42.34	-15.29	27.05	43.50	16.45	200	214	Horizontal
4	141.1	45.44	-10.29	35.15	43.50	8.35	200	322	Horizontal
5	232.1	38.47	-11.33	27.14	46.00	18.86	200	349	Horizontal
6	527.0	27.74	-4.08	23.66	46.00	22.34	200	300	Horizontal

REMARKS:

1. Q.P. is abbreviation of quasi-peak individually.
2. The emission levels of other frequencies were very low against the limit.
3. QP Margin value = QP Limit value – QP value.
4. Factor = Antenna Factor + Amplifier Factor + Cable loss.
5. QP value = Factor + Reading Value.

Position: Vertical



Final Data List

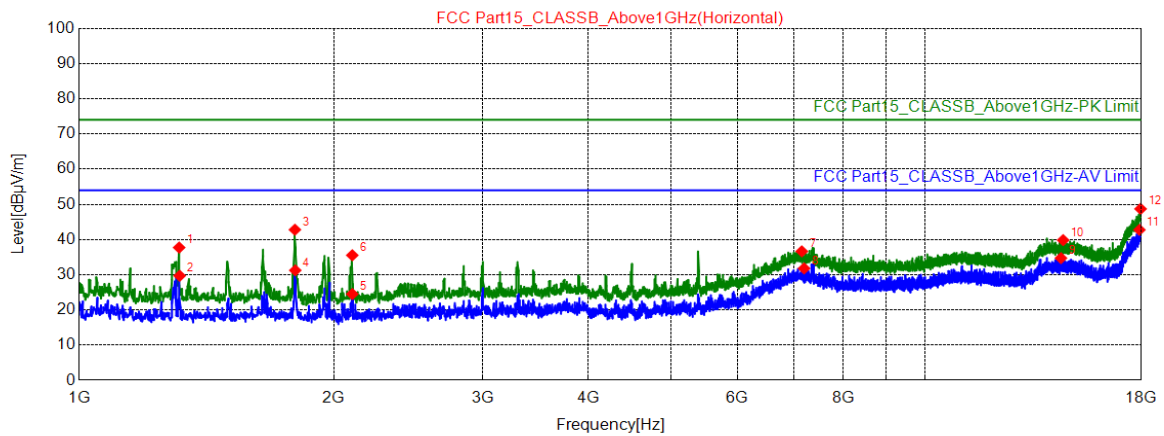
NO.	Freq. [MHz]	QP Reading [dB μV/m]	Factor [dB]	QP Value [dB μV/m]	QP Limit [dB μV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	32.52	45.63	-11.35	34.28	40.00	5.72	100	198	Vertical
2	49.59	42.01	-9.73	32.28	40.00	7.72	100	38	Vertical
3	74.42	44.45	-13.06	31.39	40.00	8.61	100	270	Vertical
4	86.06	48.03	-15.28	32.75	40.00	7.25	100	261	Vertical
5	94.21	49.7	-15.51	34.19	43.50	9.31	100	293	Vertical
6	182.2	41.01	-11.04	29.97	43.50	13.53	100	243	Vertical

REMARKS:

1. Q.P. is abbreviation of quasi-peak individually.
2. The emission levels of other frequencies were very low against the limit.
3. QP Margin value = QP Limit value – QP value
4. Factor = Antenna Factor + Amplifier Factor + Cable loss
5. QP value = Factor + Reading Value.

5.6 Test Result and Data (1GHz ~ 18GHz)

Position: Horizontal



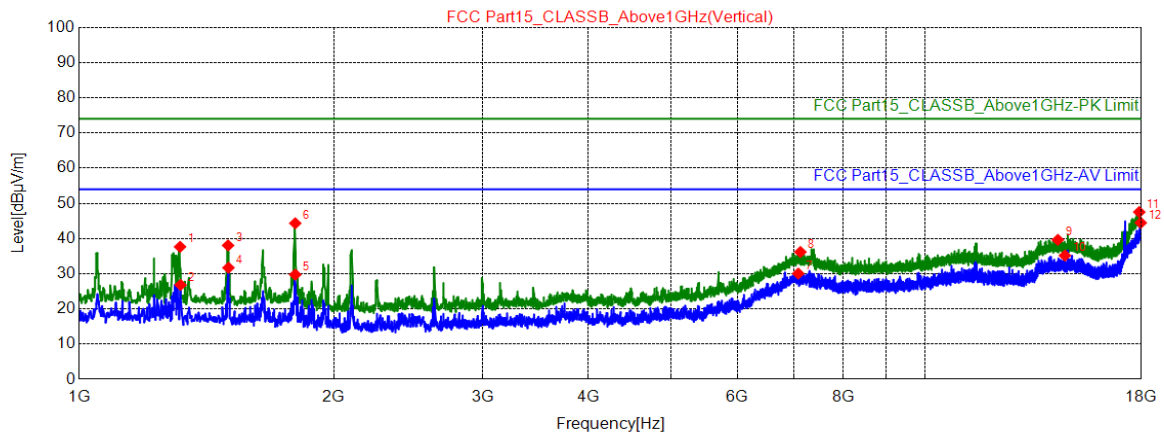
★ AV Detector

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	1312.8000	57.21	37.73	74.00	36.27	100	17	Horizontal	PK
2	1314.5000	49.18	29.71	54.00	24.29	100	17	Horizontal	AV
3	1799.0000	60.67	42.80	74.00	31.20	100	208	Horizontal	PK
4	1800.7000	49.10	31.24	54.00	22.76	100	230	Horizontal	AV
5	2103.3000	41.38	24.51	54.00	29.49	100	218	Horizontal	AV
6	2103.3000	52.40	35.53	74.00	38.47	100	218	Horizontal	PK
7	7147.2000	37.08	36.65	74.00	37.35	100	198	Horizontal	PK
8	7191.4000	32.34	31.80	54.00	22.20	100	272	Horizontal	AV
9	14467.400	31.55	34.72	54.00	19.28	100	251	Horizontal	AV
10	14554.100	36.64	39.84	74.00	34.16	100	176	Horizontal	PK
11	17913.300	28.85	42.75	54.00	11.25	100	6	Horizontal	AV
12	17969.400	34.22	48.71	74.00	25.29	100	324	Horizontal	PK

REMARKS:

1. The emission levels of other frequencies were very low against the limit.
2. Margin = Limit – Level

Position: Vertical



★ AV Detector

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	1316.2000	57.11	37.65	74.00	36.35	100	259	Vertical	PK
2	1317.9000	46.28	26.82	54.00	27.18	100	270	Vertical	AV
3	1499.8000	56.91	38.05	74.00	35.95	100	112	Vertical	PK
4	1501.5000	50.56	31.71	54.00	22.29	100	112	Vertical	AV
5	1800.7000	47.60	29.74	54.00	24.26	100	81	Vertical	AV
6	1800.7000	62.21	44.35	74.00	29.65	100	71	Vertical	PK
7	7079.2000	30.31	30.05	54.00	23.95	100	280	Vertical	AV
8	7120.0000	36.53	36.17	74.00	37.83	100	228	Vertical	PK
9	14346.700	36.52	39.63	74.00	34.37	100	60	Vertical	PK
10	14623.800	31.94	35.17	54.00	18.83	100	218	Vertical	AV
11	17904.800	33.71	47.53	74.00	26.47	100	333	Vertical	PK
12	17977.900	29.89	44.47	54.00	9.53	100	81	Vertical	AV

REMARKS:

1. The emission levels of other frequencies were very low against the limit.
2. Margin = Limit –Level

5.7 Test Photographs (30MHz ~ 1000MHz)

Please refer to the attached file (Test Setup Photo).

5.8 Test Photographs (1000MHz ~ 18000MHz)

Please refer to the attached file (Test Setup Photo).

6 Photographs of EUT



--- END ---