



Test report No. : 4790081725-US-R0-V0
Page : 1 of 31
Issued date : 2021/12/9
FCC ID : JNZF00011

RADIO TEST REPORT

Product : PEN
Model Name : F00011
FCC ID : JNZF00011
Test Regulation : FCC 47 CFR Part 15 Subpart C (Section 15.209)
Received Date : 2021/9/15
Test Date : 2021/9/15 ~ 2021/10/6
Issued Date : 2021/12/9

Applicant : Logitech Far East Ltd.
#2 Creation Rd. 4, Science-Based Ind. Park Hsinchu Taiwan,
R.O.C.

Issued By : Underwriters Laboratories Taiwan Co., Ltd.
Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd.,
Zhudong Township, Hsinchu County, Taiwan



The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report are responsible of the test sample(s) provided by the client only and are not to be used to indicate applicability to other similar products.

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Doc No: 17-EM-F0972 / 2.0



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1. Attestation of Test Results

APPLICANT: Logitech Far East Ltd.
 #2 Creation Rd. 4, Science-Based Ind. Park Hsinchu Taiwan, R.O.C.

MANUFACTURER: Logitech Europe S.A.
 EPFL – Quartier de l’Innovation, Daniel Borel Innovation
 Center, 1015 Lausanne, Switzerland

EUT DESCRIPTION: PEN

BRAND: Logitech

MODEL: F00011

SAMPLE STAGE: Engineering Verification Test sample

DATE of TESTED: 2021/9/15 ~ 2021/10/6

APPLICABLE STANDARDS	
STANDARD	Test Results
FCC 47 CFR PART 15 Subpart C (Section 15.209)	PASS

Underwriters Laboratories Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Prepared By:

Sally Lu
 Project Handler

Date : 2021/12/9

Approved and Authorized By:

Waternil Guan
 Engineer

Date : 2021/12/9

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2. Summary of Test Results

Summary of Test Results		
FCC Clause	Test Items	Result
15.209	Radiated Emissions	PASS
15.207	AC Power Conducted Emission	PASS
2.1049	20dB Bandwidth	PASS
15.203	Antenna Requirement	PASS

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3. Test Methodology and Reference Procedures

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2, KDB414788 D01 Radiated Test Site v01r01, ANSI C63.10-2013.

4. Facilities and Accreditation

Test Location	Underwriters Laboratories Taiwan Co., Ltd.
Address	Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Accreditation Certificate	Underwriters Laboratories Taiwan Co., Ltd. is accredited by TAF, Laboratory Code 3398.

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5. Measurement Uncertainty

For statement of conformity, accuracy method (Section 8.2.4 and 8.2.5 of ISO Guide 98-4) was applied as decision rule for measurement in this test report.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k=2$.

Measurement	Frequency	Uncertainty
Conducted disturbance at mains terminals ports	150kHz ~ 30MHz	± 3.1 dB
Radiated disturbance below 30MHz	9 kHz - 30 MHz	± 1.9 dB
Radiated disturbance below 1 GHz	30MHz ~ 1GHz	± 5.4 dB
Radiated disturbance above 1 GHz	1GHz ~ 40GHz	± 4.7 dB

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6. Equipment under Test

6.1. Description of EUT

Product	PEN
Brand Name	Logitech
Model Name	F00011
Modulation	D-BPSK
Operating Frequency	110 - 495 kHz
Normal Voltage	3.7Vdc from battery 5Vdc from Host
Sample ID	4271095

Note:

1. The EUT could be supplied with rechargeable battery as the following table:

Brand Name	Model	Description
SYNERGY	AHB65340PCT	Rechargeable Li-ion Battery, 3.7Vdc, 80mAh

2. The above EUT information is declared by manufacturer and for more detailed features description, please refer the manufacturer's or user's manual.

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6.2. Test Condition

Test Item	Test Site No.	Environmental Condition	Input Power	Test Date	Tested by
Radiated Spurious Emission	966-2	24~26°C/ 59~64%RH	5Vdc	2021/09/15~ 2021/10/06	Patrick Kuan
AC power Line Conducted Emission	SR1	24~26°C/ 59~64%RH	5Vdc	2021/09/15~ 2021/10/06	Patrick Kuan

FCC Test Firm Registration Number: 498077

6.3. Description of Available Antennas

Ant. No.	Brand Name	Model Name	Frequency Range	Ant. Type	Maximum Gain (dBi)
TX	N/A	N/A	100 ~ 500 kHz	Rod	0
RX	N/A	N/A	100 ~ 500 kHz	Ring	0

Note: The above antenna information was provided from customer and for more detailed features description, please refer the manufacturer's specification or user's manual.

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6.4. Test Mode Applicability and Tested Channel Detail

- The fundamental of the EUT was investigated in three orthogonal axes X-Y/Y-Z/X-Z, it was determined that X-Z plane was worst-case. Therefore, all final radiated testing was performed with the EUT in X-Z plane.
- The EUT has two power source types: 3.7Vdc from battery and 5Vdc from Host, above two types were pre-tested, the worst case was found in the 5Vdc from Host. Therefore, only the test data of the 5Vdc from Host was recorded in this report.
- For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.
- For below 1 GHz radiated emission and AC power line conducted emission have performed all modes of operation were investigated and the worst-case emissions are reported.

Test Item	Modulation Type	Test Frequency
Radiated Emissions (Below 1GHz)	D-BPSK	333 kHz
AC Power Line Conducted Emission	D-BPSK	333 kHz

Note: EUT operation frequency is in the range 110kHz to 495kHz, following FCC Part 15.31, frequency range less than 1MHz, should provide 1 middle channel for test, 333kHz is the typical usage frequency of this technology on middle channel.



7. Test Equipment

Test Equipment List					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Expired date
Radiated Spurious Emission					
Spectrum Analyzer	Keysight	N9010A	MY56070827	2020/11/11	2021/11/10
EMI Test Receiver	Rohde & Schwarz	ESR7	101754	2020/12/11	2021/12/10
Loop Antenna	ETS lindgren	6502	00213440	2020/12/25	2021/12/24
Trilog-Broadband Antenna with 5dB Attenuator	Schwarzbeck & EMCI	VULB 9168 & N-6-05	774 & AT-N0538	2021/1/13	2022/1/12
Preamplifier (30-1000 MHz)	EMCI	EMC330E	980405	2021/6/8	2022/6/7
Cables	Hanyitek	K1K50-UP0264-K1K50-2500	170214-4 & 170425-2	2021/1/22	2022/1/21
AC power Line Conducted Emission					
EMI Test Receiver	Rohde & Schwarz	ESR7	101753	2020/11/17	2021/11/16
Two-Line V-Network	Rohde & Schwarz	ENV216	102136	2021/8/30	2022/8/29
Impuls-Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	2021/8/26	2022/8/25
Cables	TITAN	CFD200	T0732ACFD2 0020A300-1	2021/3/2	2022/3/1

UL Software		
Description	Name	Version
Radiated measurement	e3	6.191211 (V6)
AC power Line Conducted Emission	EZ_EMG	UL-3A1.2

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8. Description of Test Setup

Support Equipment

ID	Equipment	Brand Name	Model Name	S/N	Remark
A	USB adapter	HTC	TCP900-US	79H00130-01M	Provide by lab

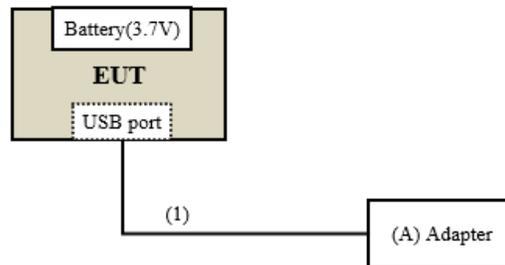
I/O Cables

ID	Equipment	Brand Name	Model Name	Length (m)	Remark
1	Type C Cable	UGREEN	US287	1	Provide by Client

Test Setup

The EUT was worked in engineering mode to transmit signal.

Setup Diagram for Test



Under Table

Remote Site

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9. Test Results

9.1. Radiated Spurious Emission

Requirements

According to FCC Clause 15.209 (a), Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency(MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

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Test Procedures

[For 9 kHz ~ 30 MHz]

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. For measurement below 30MHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

[For above 30 MHz]

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters 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 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

Note:

- a. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
- b. All modes of operation were investigated (includes all external accessories) and the worst-case emissions are reported.

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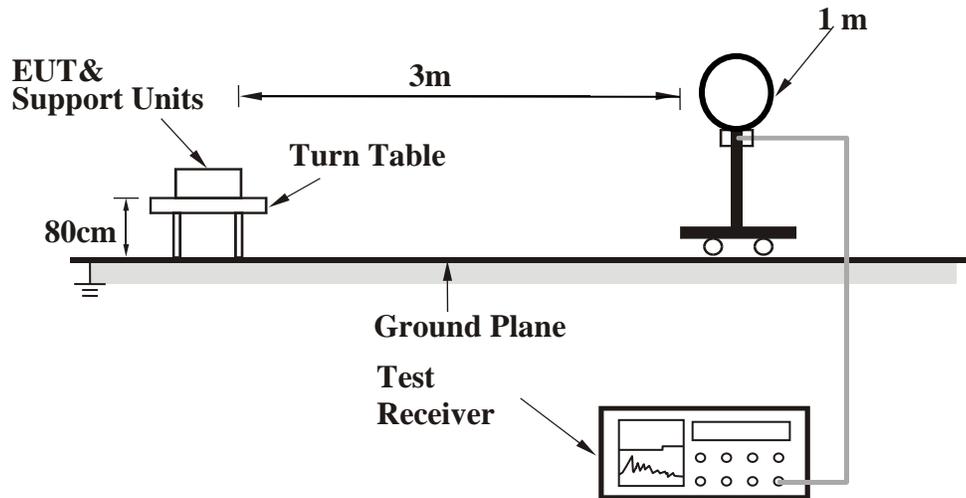
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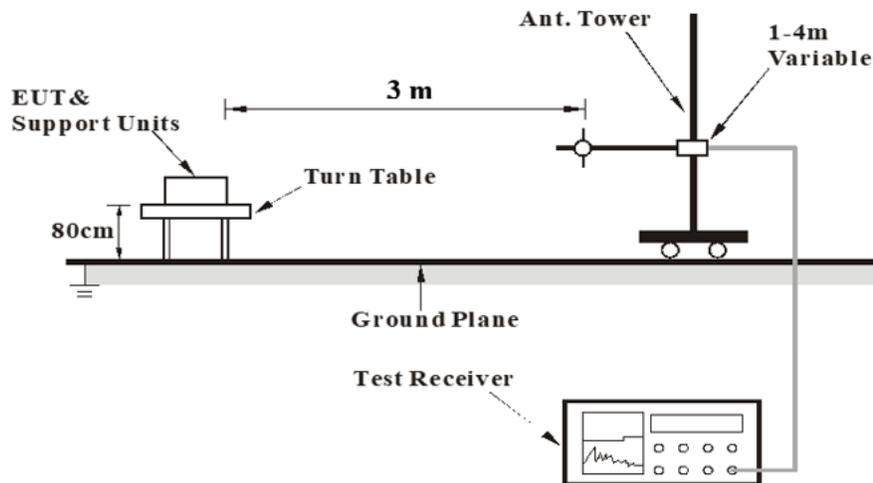
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Test Setup

<Frequency Range 9 kHz ~ 30 MHz>



<Frequency Range 30 MHz ~ 1 GHz >



For the actual test configuration, please refer to the Setup Configurations.

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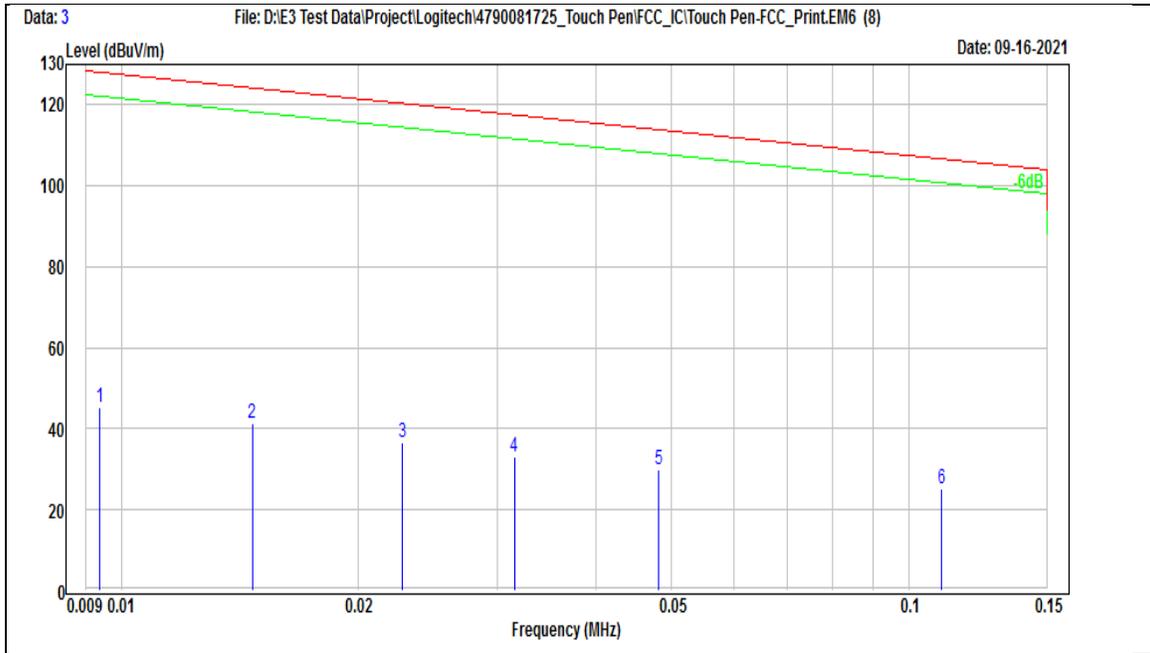
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Test Data

9 kHz ~ 30 MHz Data

EUT Test Condition		Measurement Detail	
Frequency Range	9 kHz ~ 0.15 MHz	Antenna Polarity	Parallel



Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.00939	27.3	17.83	-80	-34.87	48.15	-83.02	Peak
2	0.01468	24.81	16.47	-80	-38.72	44.27	-82.99	Peak
3	0.02277	21.52	15.11	-80	-43.37	40.46	-83.82	Peak
4	0.03156	19.11	14.16	-80	-46.73	37.62	-84.35	Peak
5	0.04814	16.62	13.33	-80	-50.05	33.95	-84	Peak
6	0.11007	13.5	11.84	-80	-54.66	26.77	-81.43	Peak

Remarks:

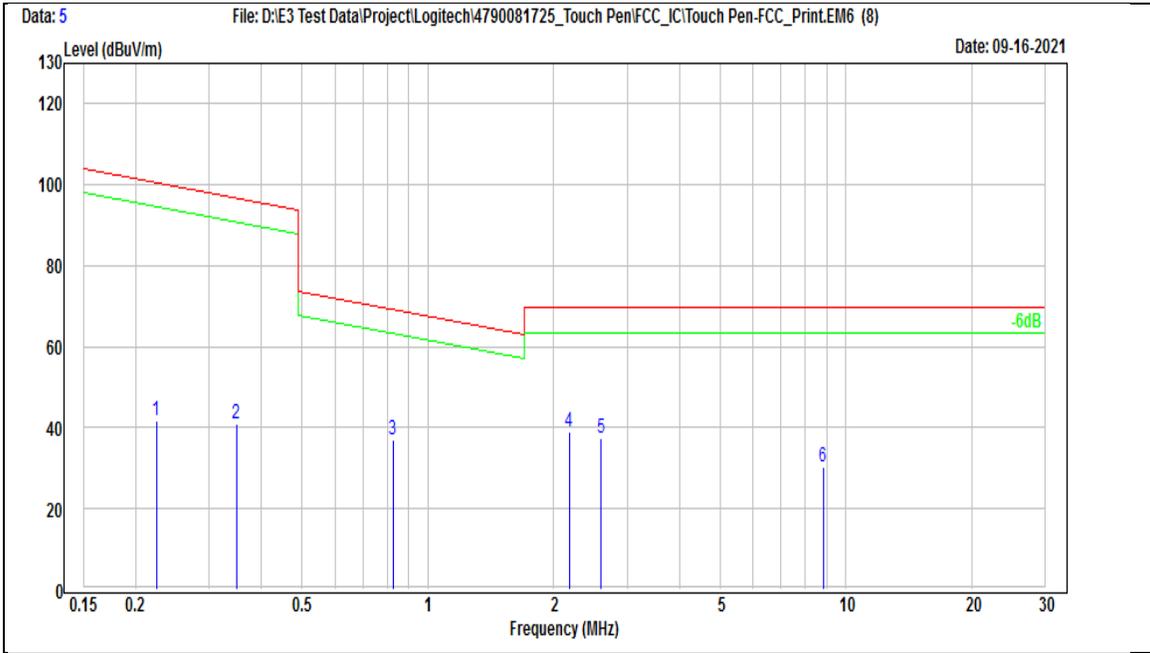
- DCF = distance correction factor = $40 \log (d_{test} / d_{limit})$ is in dB
- Result value (dBuV/m) = Reading value (dBuV) + Correction Factor (dB/m) + DCF(dB).
- Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB).
- The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Frequency Range	0.15 MHz ~ 30 MHz	Antenna Polarity	Parallel



Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.22437	29.51	12.31	-80	-38.18	20.58	-58.76	Peak
2	0.3483	28.63	12.48	-80	-38.89	16.77	-55.65	Peak
3	0.82608	24.46	12.53	-40	-3.01	29.26	-32.27	Peak
4	2.178	26.92	12.21	-40	-0.87	29.54	-30.41	Peak
5	2.594	25.3	12.14	-40	-2.56	29.54	-32.1	Peak
6	8.822	17.6	12.86	-40	-9.54	29.54	-39.08	Peak

Remarks:

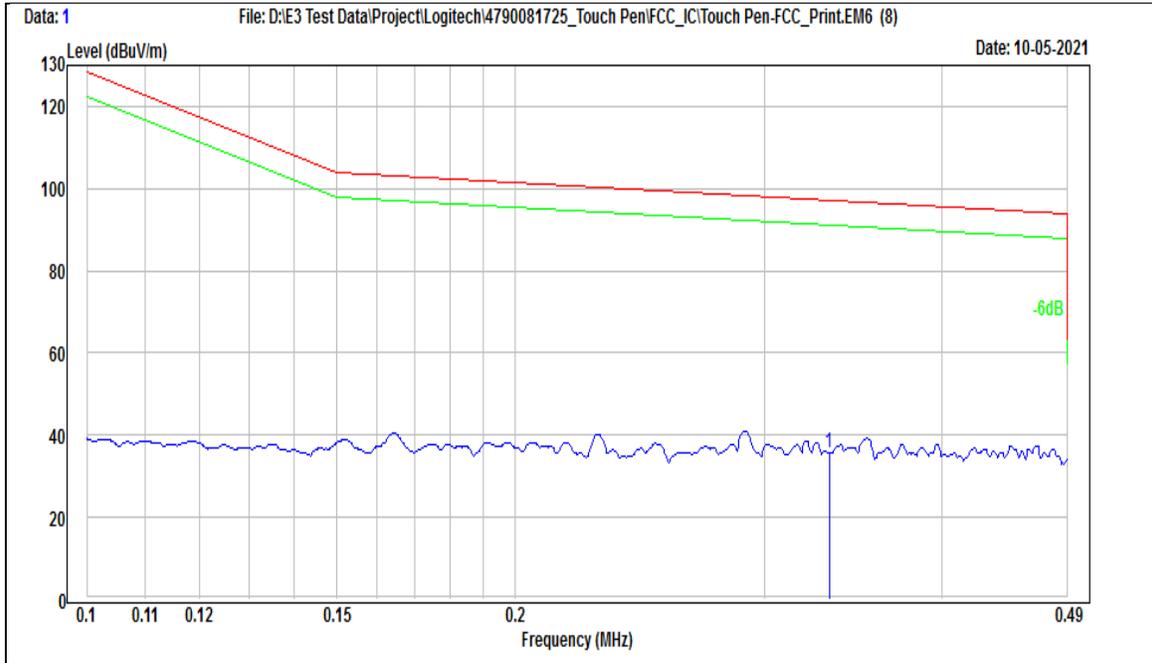
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EUT Test Condition		Measurement Detail	
Frequency Range	0.1 MHz ~ 0.49 MHz	Antenna Polarity	Parallel



Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.333	23.26	12.49	-80	-44.25	17.16	-61.41	Peak

Remarks:

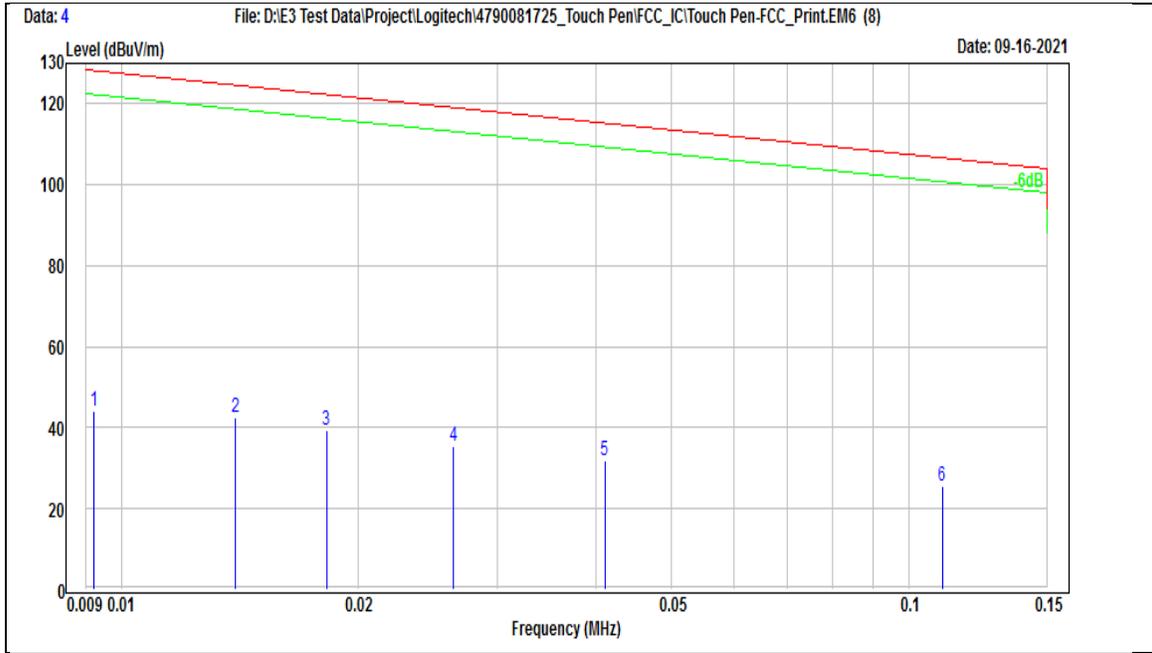
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- Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB).
- According to 15.209(c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. However, the device fundamental signal and the spurious emissions are all below the noise floor of the measurement instrumentation at the 3m test distance. At a very close distance of less than 1m the fundamental signal was observed above the noise floor. No other emissions were observed. Therefore, the unwanted emissions are lower than the intentional emissions as required by 15.209(c). The measurements at 3m for the wanted and spurious emissions from the transmitter are of the instrumentation's noise floor.

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EUT Test Condition		Measurement Detail	
Frequency Range	9 kHz ~ 0.15 MHz	Antenna Polarity	Perpendicular



Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.00923	26.34	17.88	-80	-35.78	48.3	-84.08	Peak
2	0.01396	25.88	16.63	-80	-37.49	44.71	-82.2	Peak
3	0.01824	23.42	15.8	-80	-40.78	42.38	-83.16	Peak
4	0.02644	20.88	14.65	-80	-44.47	39.16	-83.63	Peak
5	0.04112	18.3	13.63	-80	-48.07	35.32	-83.39	Peak
6	0.11038	13.93	11.84	-80	-54.23	26.75	-80.98	Peak

Remarks:

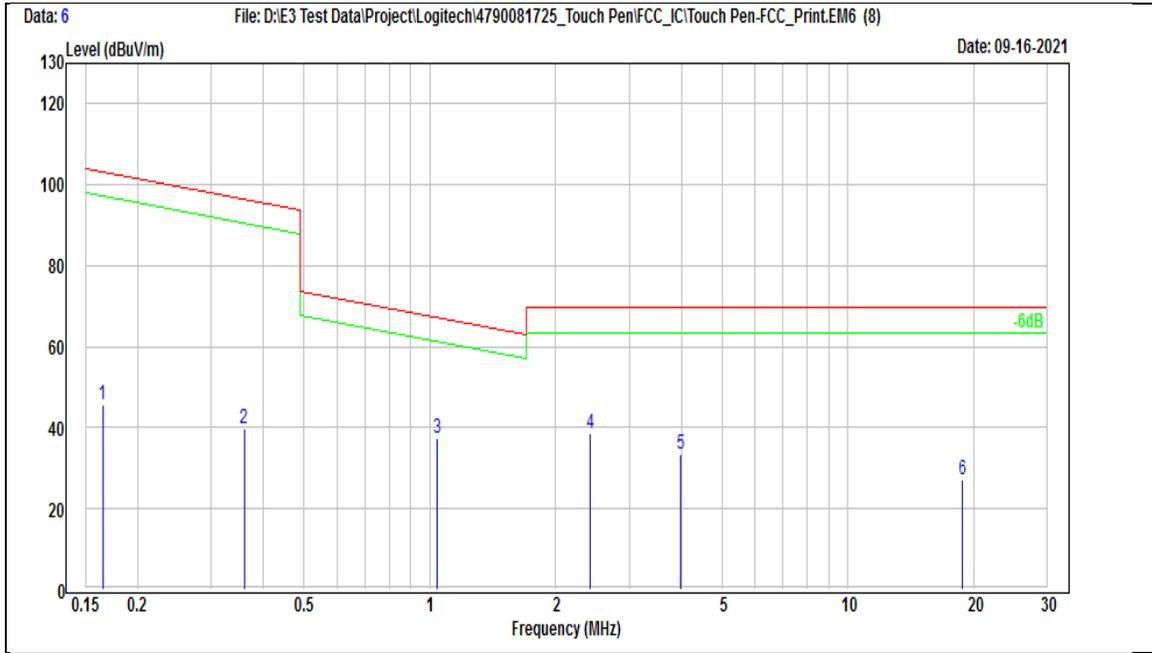
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- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB).
- The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Frequency Range	0.15 MHz ~ 30 MHz	Antenna Polarity	Perpendicular



Notation	Frequency	Reading	Correct	DCF	Result	Limit	Margin	Remark
	(MHz)	(dBUV)	dB/m	(dB)	(dBUV/m)	(dBUV/m)	(dB)	
1	0.16501	33.67	12.1	-80	-34.23	23.25	-57.48	Peak
2	0.35955	27.24	12.48	-80	-40.28	16.49	-56.77	Peak
3	1.043	24.68	12.56	-40	-2.76	27.24	-30	Peak
4	2.422	26.34	12.17	-40	-1.49	29.54	-31.03	Peak
5	3.985	21.4	12.11	-40	-6.49	29.54	-36.03	Peak
6	18.82	14.84	12.48	-40	-12.68	29.54	-42.22	Peak

Remarks:

- DCF = distance correction factor = $40 \log (d_{test} / d_{limit})$ is in dB
- Result value (dBUV/m) = Reading value (dBUV) + Correction Factor (dB/m) + DCF(dB).
- Margin(dB) = Result value (dBUV/m) - Limit value (dBUV/m).
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB).
- The other emission levels were very low against the limit.

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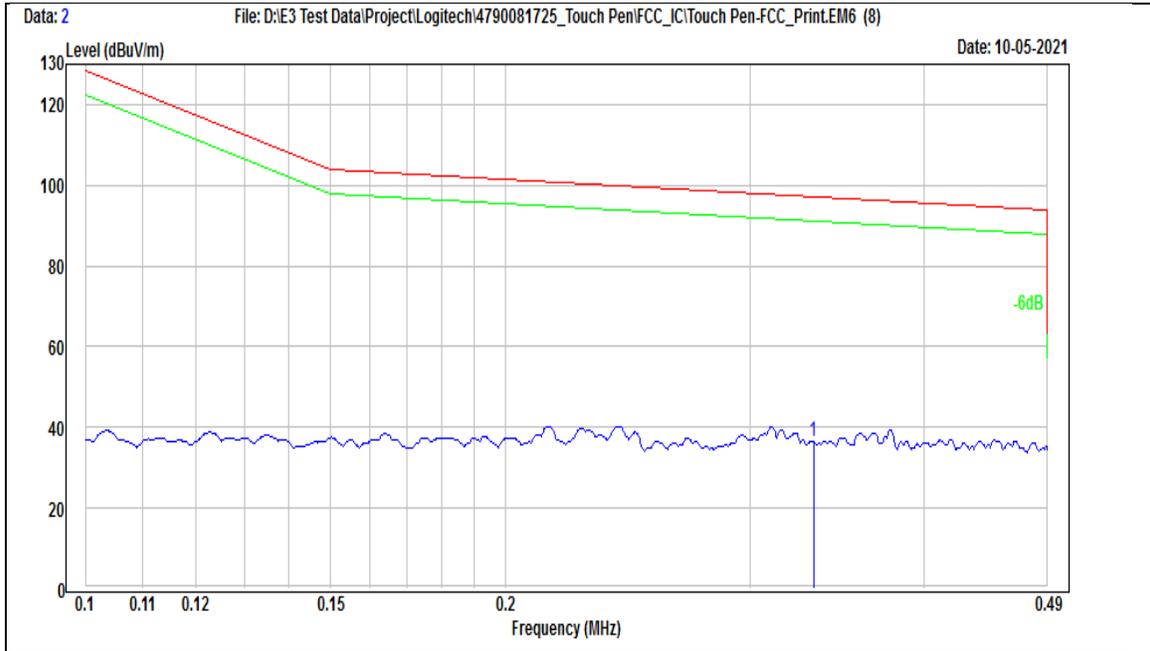
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EUT Test Condition		Measurement Detail	
Frequency Range	0.1 MHz ~ 0.49 MHz	Antenna Polarity	Perpendicular



Notation	Frequency	Reading	Correct	DCF	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.333	23.9	12.49	-80	-43.61	17.16	-60.77	Peak

Remarks:

- DCF = distance correction factor = $40 \log (d_{test} / d_{limit})$ is in dB
- Result value (dBuV/m) = Reading value (dBuV) + Correction Factor (dB/m) + DCF(dB).
- Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB).
- According to 15.209(c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. However, the device fundamental signal and the spurious emissions are all below the noise floor of the measurement instrumentation at the 3m test distance. At a very close distance of less than 1m the fundamental signal was observed above the noise floor. No other emissions were observed. Therefore, the unwanted emissions are lower than the intentional emissions as required by 15.209(c). The measurements at 3m for the wanted and spurious emissions from the transmitter are of the instrumentation's noise floor.

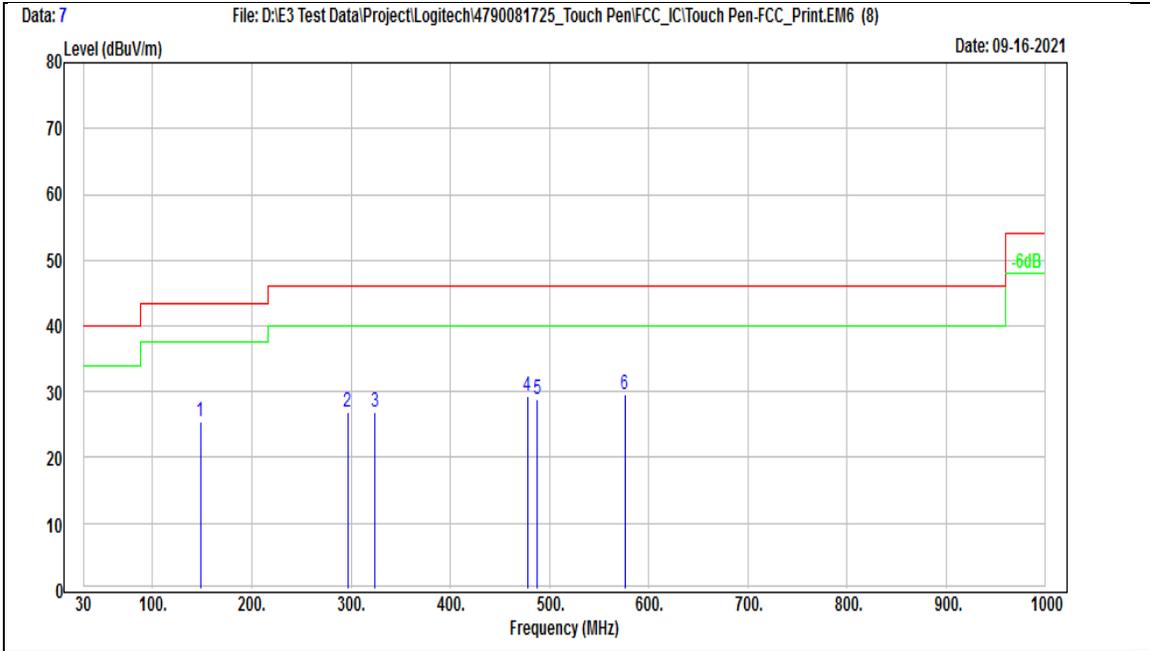
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30 MHz ~ 1 GHz Data

EUT Test Condition		Measurement Detail	
Frequency Range	30MHz ~ 1 GHz	Antenna Polarity	Horizontal



Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	148.34	37.01	-11.54	25.47	43.5	-18.03	Peak
2	296.75	37.08	-10.08	27	46	-19	Peak
3	323.91	36.03	-9.18	26.85	46	-19.15	Peak
4	478.14	34.54	-5.17	29.37	46	-16.63	Peak
5	487.84	33.74	-4.89	28.85	46	-17.15	Peak
6	576.11	32.56	-2.89	29.67	46	-16.33	Peak

Remarks:

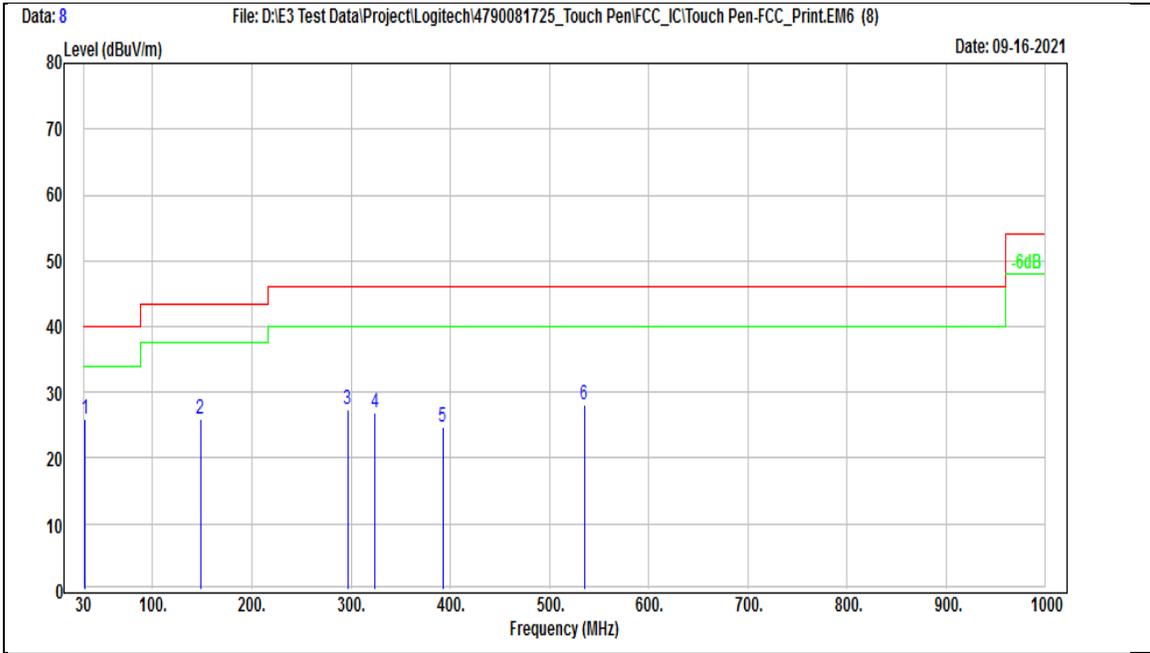
1. Result value (dBuV/m) = Reading value (dBuV) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB).
4. The peak result complies with QP limit, QP result is deemed to comply with QP limit.
5. The other emission levels were very low against the limit.

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EUT Test Condition		Measurement Detail	
Frequency Range	30MHz ~ 1 GHz	Antenna Polarity	Vertical



Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	31.94	38.4	-12.47	25.93	40	-14.07	Peak
2	148.34	37.4	-11.54	25.86	43.5	-17.64	Peak
3	296.75	37.41	-10.08	27.33	46	-18.67	Peak
4	323.91	36.03	-9.18	26.85	46	-19.15	Peak
5	392.78	31.97	-7.23	24.74	46	-21.26	Peak
6	535.37	31.66	-3.58	28.08	46	-17.92	Peak

Remarks:

1. Result value (dBuV/m) = Reading value (dBuV) + Correction Factor (dB/m).
2. Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB).
4. The peak result complies with QP limit, QP result is deemed to comply with QP limit.
5. The other emission levels were very low against the limit.

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9.2. AC Power Line Conducted Emission

Requirements

Frequency (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note:

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.

Test Procedures

- 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. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

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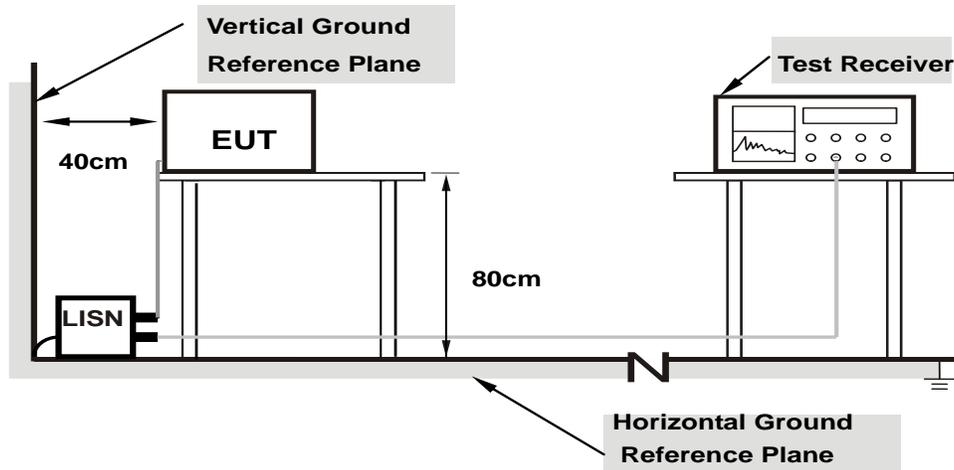
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Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the Setup Configurations.

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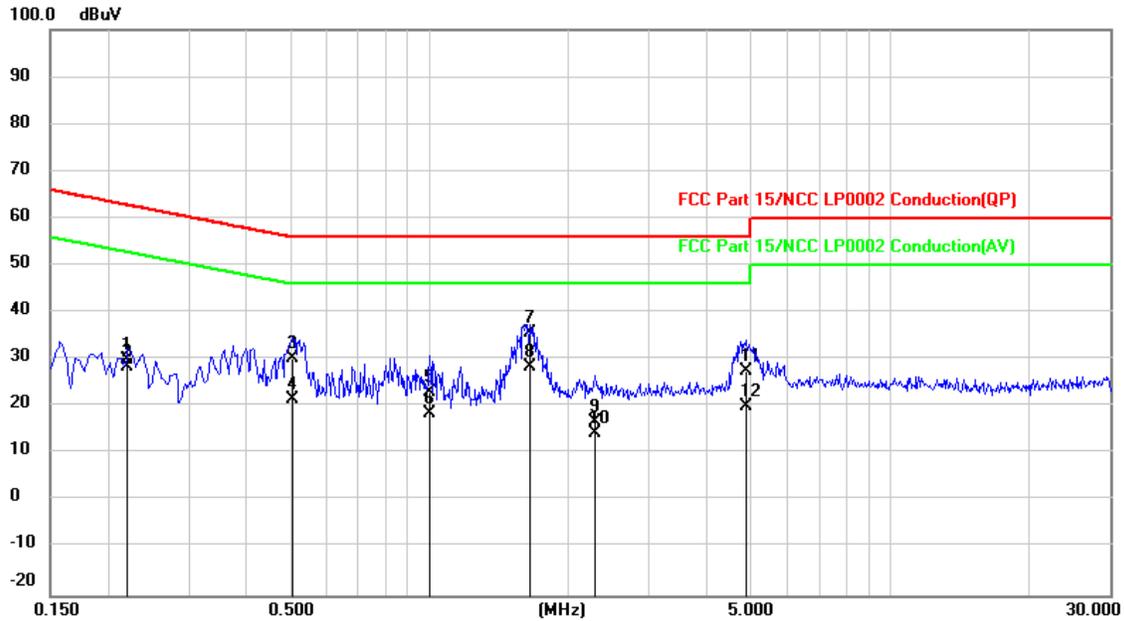
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Test Data

EUT Test Condition		Measurement Detail	
Channel	333 kHz	Frequency Range	150 kHz ~ 30 MHz

Phase of Power : Line (L)



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No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.2220	10.39	19.49	29.88	62.74	-32.86	QP
2	0.2220	8.82	19.49	28.31	52.74	-24.43	AVG
3	0.5060	10.62	19.50	30.12	56.00	-25.88	QP
4	0.5060	2.11	19.50	21.61	46.00	-24.39	AVG
5	1.0020	3.47	19.51	22.98	56.00	-33.02	QP
6	1.0020	-1.04	19.51	18.47	46.00	-27.53	AVG
7	1.6540	15.99	19.53	35.52	56.00	-20.48	QP
8	1.6540	9.02	19.53	28.55	46.00	-17.45	AVG
9	2.2940	-2.74	19.54	16.80	56.00	-39.20	QP
10	2.2940	-5.16	19.54	14.38	46.00	-31.62	AVG
11	4.8700	8.02	19.60	27.62	56.00	-28.38	QP
12	4.8700	0.56	19.60	20.16	46.00	-25.84	AVG

Remarks:

1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

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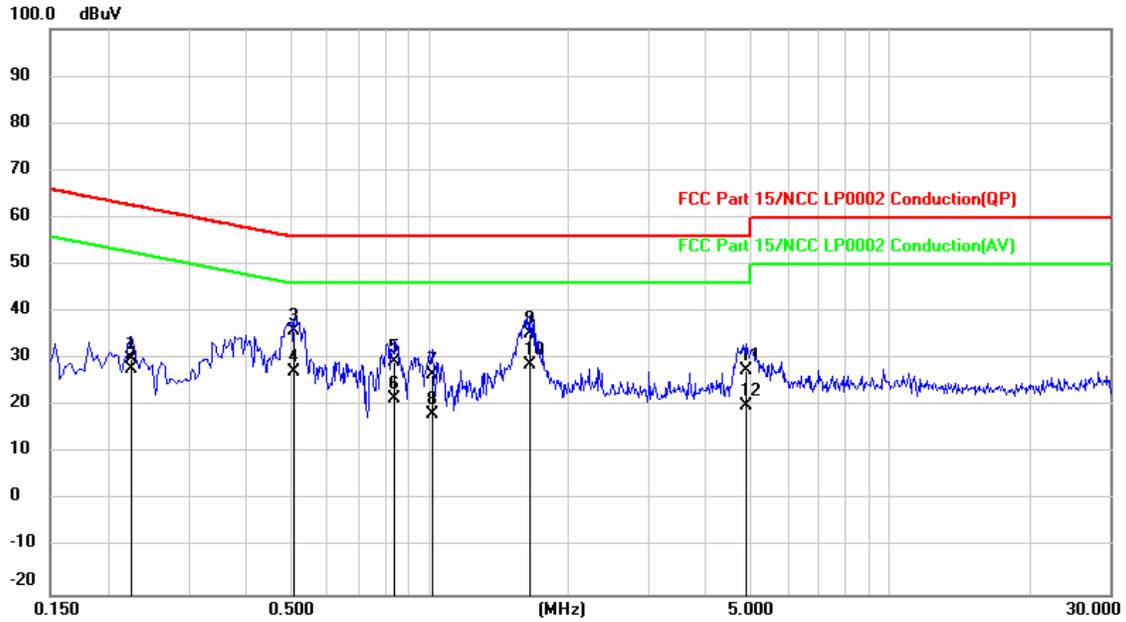
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Phase of Power : Neutral (N)



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No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.2260	10.61	19.49	30.10	62.60	-32.50	QP
2	0.2260	8.29	19.49	27.78	52.60	-24.82	AVG
3	0.5100	16.33	19.50	35.83	56.00	-20.17	QP
4	0.5100	7.77	19.50	27.27	46.00	-18.73	AVG
5	0.8420	9.77	19.51	29.28	56.00	-26.72	QP
6	0.8420	2.16	19.51	21.67	46.00	-24.33	AVG
7	1.0180	7.09	19.50	26.59	56.00	-29.41	QP
8	1.0180	-1.23	19.50	18.27	46.00	-27.73	AVG
9	1.6500	15.82	19.52	35.34	56.00	-20.66	QP
10	1.6500	9.09	19.52	28.61	46.00	-17.39	AVG
11	4.8980	8.10	19.60	27.70	56.00	-28.30	QP
12	4.8980	0.35	19.60	19.95	46.00	-26.05	AVG

Remarks:

1. Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB)
2. Margin(dB) = Result value (dBuV) - Limit value (dBuV)
3. Correction Factor(dB) = Insertion loss(dB) + Cable loss(dB)
4. The other emission levels were very low against the limit.

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9.3. 20dB Bandwidth

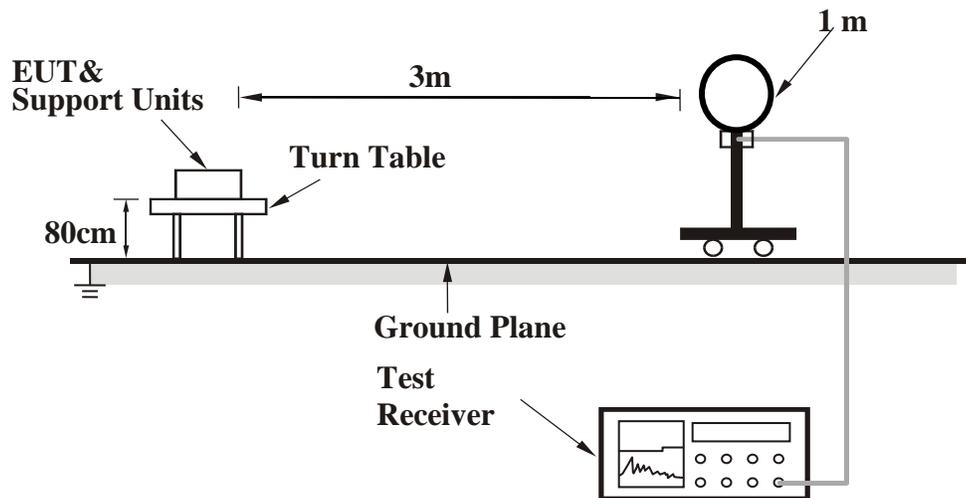
Requirements

The 20 dB bandwidth shall be specified in operating frequency band.

Test Procedures

- The testing follows the guidelines in ANSI C63.10-2013.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The bandwidth of the fundamental frequency was measured by spectrum analyzer with 200Hz RBW and 620Hz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

Test Setup



For the actual test configuration, please refer to the Setup Configurations.

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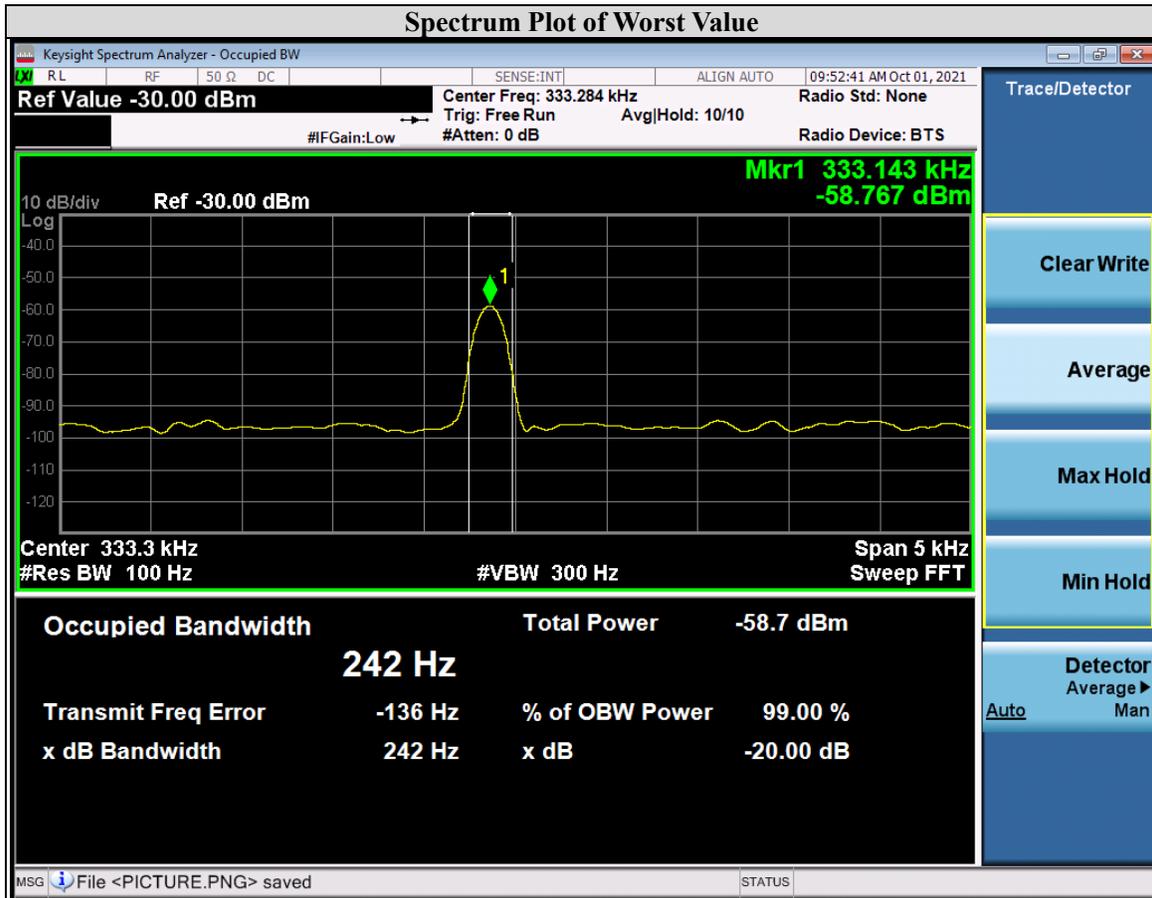
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Test Data

Frequency (kHz)	20dB Bandwidth (Hz)
333	242



Note: The characteristics of the transmitter signal is CW-like will cause the spectrum analyzer RBW is impractical to use set comply with 1~5% emission bandwidth, since the emission bandwidth will be proportional to the RBW. However, test plot set the RBW:100 Hz for spectrum analyzer it can meet the emission is contained within the operated frequency band designated in the rule section, so no longer continue to reduce RBW setting.

END OF REPORT

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