

# FCC Test Report

Product Name	Notebook PC
Model No.	G732LXS, GL732LXS, G742LXS
FCC ID	MSQG732LXS

Applicant	ASUSTeK COMPUTER INC.
Address	1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan

Date of Receipt	Feb. 28, 2020
Issued Date	Mar. 27, 2020
Report No.	2020625R-RFUSP17V01
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

# Test Report

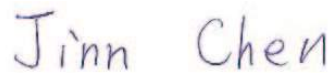
Issued Date: Mar. 27, 2020

Report No.: 2020625R-RFUSP17V01



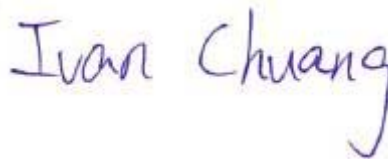
Product Name	Notebook PC
Applicant	ASUSTeK COMPUTER INC.
Address	1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan
Manufacturer	ASUSTeK COMPUTER INC.
Model No.	G732LXS, GL732LXS, G742LXS
FCC ID.	MSQG732LXS
EUT Rated Voltage	AC 100-240V~50-60Hz
EUT Test Voltage	AC 120 V / 60 Hz
Trade Name	ASUS
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By :



( Senior Adm. Specialist / Jinn Chen )

Tested By :



( Senior Engineer / Ivan Chuang )

Approved By :



( Director / Vincent Lin )

## TABLE OF CONTENTS

Description	Page
<b>1. GENERAL INFORMATION .....</b>	<b>4</b>
1.1. EUT Description.....	4
1.2. Operational Description .....	5
1.3. Tested System Details.....	6
1.4. Configuration of tested System .....	7
1.5. EUT Exercise Software .....	7
1.6. Test Facility .....	8
1.7. List of Test Equipment .....	9
<b>2. Conducted Emission.....</b>	<b>11</b>
2.1. Test Setup .....	11
2.2. Limits .....	11
2.3. Test Procedure .....	12
2.4. Uncertainty .....	12
2.5. Test Result of Conducted Emission.....	13
<b>3. Radiated Emission.....</b>	<b>15</b>
3.1. Test Setup .....	15
3.2. Limits .....	16
3.3. Test Procedure .....	17
3.4. Uncertainty .....	17
3.5. Test Result of Radiated Emission.....	18
<b>4. Band Edge .....</b>	<b>24</b>
4.1. Test Setup .....	24
4.2. Limits .....	24
4.3. Test Procedure .....	25
4.4. Uncertainty .....	25
4.5. Test Result of Band Edge .....	26
<b>5. Frequency Tolerance .....</b>	<b>28</b>
5.1. Test Setup .....	28
5.2. Limits .....	28
5.3. Test Procedure .....	28
5.4. Uncertainty .....	28
5.5. Test Result of Frequency Stability.....	29
<b>6. EMI Reduction Method During Compliance Testing .....</b>	<b>31</b>
Attachment 1: EUT Test Photographs	
Attachment 2: EUT Detailed Photographs	

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	Notebook PC
Trade Name	ASUS
Model No.	G732LXS, GL732LXS, G742LXS
FCC ID	MSQG732LXS
Frequency Range	13.56MHz
Modulation	ASK
Antenna Type	Loop coil Antenna
Power Adapter	MFR: DELTA, M/N: ADP-280BB B Input: AC 100-240V~50-60Hz, 3.2A Output: 20V $\overline{\text{---}}$ , 14A Cable Out: Non-shielded, 1.2m, with two ferrite cores bonded. Power Cord: Non-shielded, 1.8m

Frequency of Each Channel:

Channel	Frequency
Channel 1:	13.56 MHz

Note:

1. This device is a Notebook PC with a built-in 13.56MHz transceiver.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.225.
3. The different of each model is shown as below:

Model Number	Description
G732LXS	All models are electrically identical, different model names are for marketing purpose.
GL732LXS	
G742LXS	

4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit
-----------	------------------

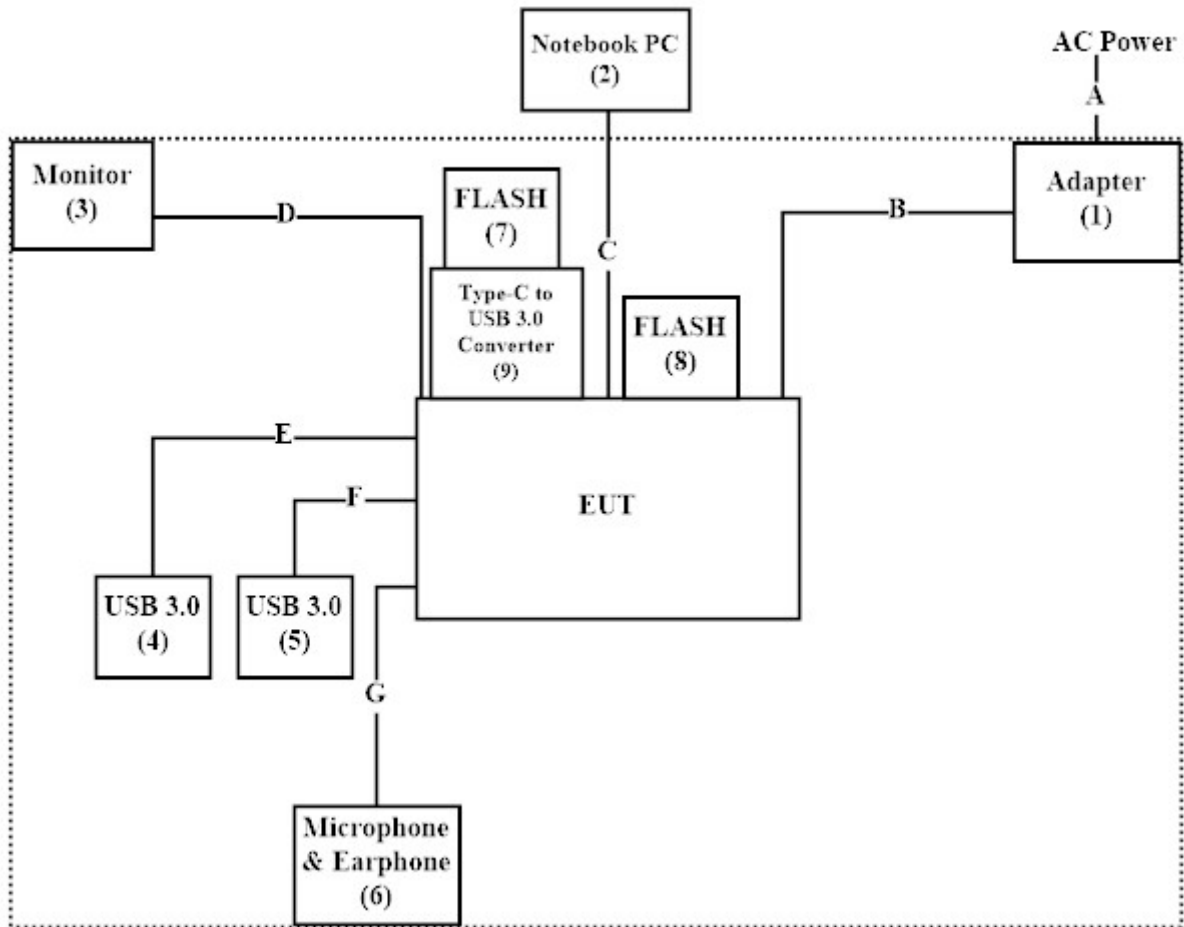
### 1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	Power Cord
(1)	Adapter	DELTA	ADP-28BB B	N/A	N/A
(2)	Notebook PC	DELL	P62G	CY9FJC2	N/A
(3)	Monitor	DELL	U2415	CN-01RMGX-7426 1-63H-09UL-A02	N/A
(4)	USB 3.0	Transcend	TS1TSJ25M3	D468623814	N/A
(5)	USB 3.0	Transcend	TS1TSJ25M3	D468623813	N/A
(6)	Microphone & Earphone	Verbatim	N/A	N/A	N/A
(7)	FLASH	Kingston	DT100G3/8GB	N/A	N/A
(8)	FLASH	Transcend	USB 3.0 16GB	N/A	N/A
(9)	Type-C to USB 3.0 Converter	Hawk	N/A	N/A	N/A

	Signal Cable Type	Signal cable Description
A	Power Cable	Non-shielded, 1.8m
B	Power Cable	Non-shielded, 1.2m, with two ferrite cores bonded.
C	LAN Cable	Non-shielded, 2m
D	HDMI Cable	Shielded, 1.8m
E	USB Cable	Shielded, 0.4m
F	USB Cable	Shielded, 0.4m
G	Audio Cable	Non-shielded, 1.2m

#### 1.4. Configuration of tested System



#### 1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.3.
2. Execute software "SimpleATK/V1.0" on the EUT.
3. Configure the test mode, the test channel, and the data rate.
4. Press "OK" to start the continuous transmit.
5. Verify that the EUT works properly.

## 1.6. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	23.6°C
	Humidity (%RH)	10~90 %	52.6%
Radiated Emission	Temperature (°C)	10~40 °C	21.5°C
	Humidity (%RH)	10~90 %	62.3%
Conductive	Temperature (°C)	10~40 °C	21.3°C
	Humidity (%RH)	10~90 %	59%

**USA : FCC Registration Number: TW0023**

**Canada : IC Registration Number: 25880**

Site Description : Accredited by TAF  
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd  
Address : No.159, Sec. 2, Wenhua 1st Rd., Linkou Dist.,  
New Taipei City 24457, Taiwan, R.O.C.

Phone number : 886-2-2602-7968  
Fax number : 866-2-2602-3286  
Email address : [info.tw@dekra.com](mailto:info.tw@dekra.com)  
Website : <http://www.dekra.com.tw>

## 1.7. List of Test Equipment

### For Conduction measurements /ASR1

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	EMI Test Receiver	R&S	ESR7	101601	2019.05.13	2020.05.12
X	Two-Line V-Network	R&S	ENV216	101306	2019.03.11	2020.03.10
X	Two-Line V-Network	R&S	ENV216	101307	2019.04.03	2020.04.02
X	Coaxial Cable	Quietek	RG400_BNC	RF001	2019.05.24	2020.05.23

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Testing System V1.1

### For Conducted measurements /ASR3

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Temperature Chamber	KSON	THS-D4T-100	A0606	2019.04.29	2020.04.28
X	Spectrum Analyzer	R&S	FSV40	101149	2019.12.16	2020.12.15
X	AC Power Source	eec	6605	1570547	2019.12.11	2020.12.10

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Conduction Test System V9.0.5

### For Radiated measurements /ACB1

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Loop Antenna	Teseq	HLA6121	37133	2019.10.15	2021.10.14
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-953	2020.01.03	2021.01.02
	Horn Antenna	ETS-Lindgren	3117	00203800	2019.12.12	2020.12.11
	Horn Antenna	Com-Power	AH-840	101087	2019.05.30	2020.05.29
X	Pre-Amplifier	EMCI	EMC001330	980316	2019.06.14	2020.06.13
	Pre-Amplifier	EMCI	EMC051835SE	980311	2019.06.13	2020.06.12
	Pre-Amplifier	EMCI	EMC05820SE	980310	2019.06.24	2020.06.23
	Pre-Amplifier	EMCI	EMC184045SE	980314	2019.05.28	2020.05.27
	Filter	MICRO TRONICS	BRM50702	G251	2019.09.03	2020.09.02
	Filter	MICRO TRONICS	BRM50716	G188	2019.09.03	2020.09.02
X	EMI Test Receiver	R&S	ESR7	101602	2019.12.16	2020.12.15
X	Spectrum Analyzer	R&S	FSV40	101149	2019.12.16	2020.12.15
X	Coaxial Cable	SUHNER	SUCOFLEX 106	RF002	2019.07.03	2020.07.02
	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2019.05.28	2020.05.27

Note:

1. Loop Antenna is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : DEKRA Testing System V1.1



## 1.8. Uncertainty

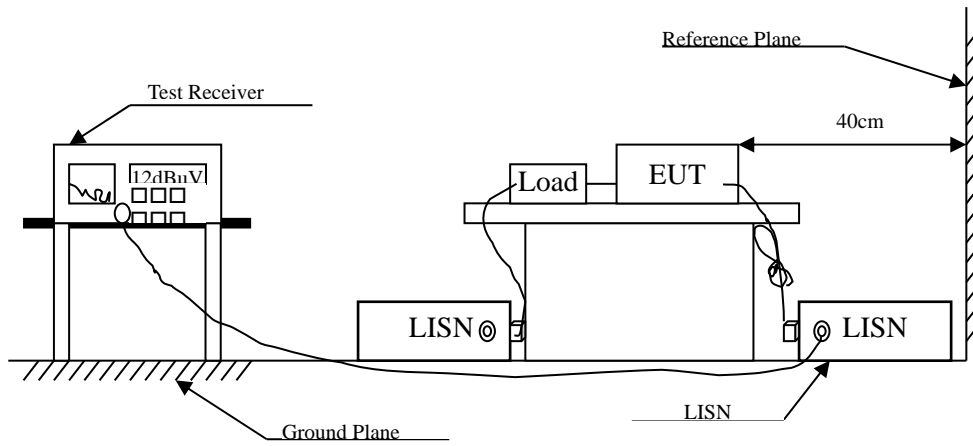
Uncertainties have been calculated according to the DEKRA internal document, and is described in each test chapter of this report.

The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

## 2. Conducted Emission

### 2.1. Test Setup



### 2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56 <sup>(註)</sup>	56-46 <sup>(註)</sup>
0.50-5.0	56	46
5.0 - 30	60	50

### **2.3. Test Procedure**

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

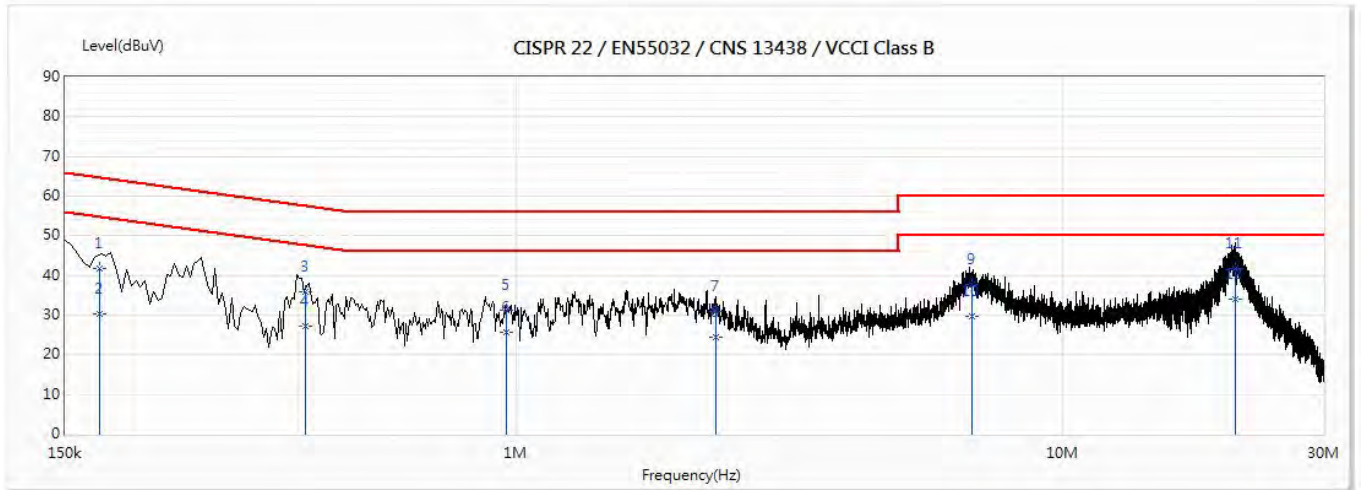
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

### **2.4. Uncertainty**

±2.35dB

### 2.5. Test Result of Conducted Emission

Product : Notebook PC  
 Test Item : Conducted Emission Test  
 Power Line : L 1  
 Test Mode : Mode 1: Transmit  
 Test Date : 2020/03/10

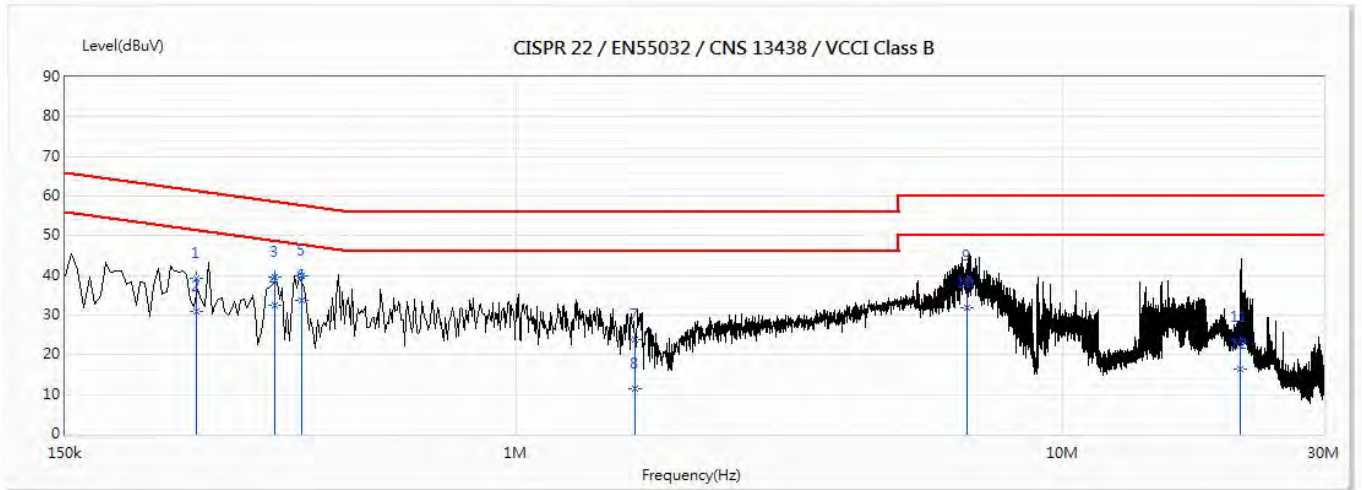


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.173	41.68	64.80	-23.12	32.04	9.64	QP
2	0.173	30.36	54.80	-24.44	20.73	9.64	AV
3	0.413	35.95	57.58	-21.64	26.30	9.65	QP
4	0.413	27.18	47.58	-20.41	17.53	9.65	AV
5	0.961	31.12	56.00	-24.88	21.45	9.67	QP
6	0.961	25.62	46.00	-20.38	15.95	9.67	AV
7	2.318	30.99	56.00	-25.01	21.27	9.72	QP
8	2.318	24.41	46.00	-21.59	14.69	9.72	AV
9	6.808	37.59	60.00	-22.41	27.77	9.81	QP
10	6.808	29.75	50.00	-20.25	19.94	9.81	AV
11	20.683	41.72	60.00	-18.28	31.75	9.96	QP
*12	20.683	34.14	50.00	-15.86	24.17	9.96	AV

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ \* “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Notebook PC  
 Test Item : Conducted Emission Test  
 Power Line : N  
 Test Mode : Mode 1: Transmit  
 Test Date : 2020/03/10



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.261	39.42	61.39	-21.97	29.77	9.66	QP
2	0.261	30.94	51.39	-20.46	21.28	9.66	AV
3	0.363	39.46	58.65	-19.19	29.81	9.65	QP
4	0.363	32.42	48.65	-16.23	22.77	9.65	AV
5	0.405	40.02	57.74	-17.73	30.36	9.65	QP
*6	0.405	33.70	47.74	-14.05	24.04	9.65	AV
7	1.652	23.71	56.00	-32.29	14.00	9.71	QP
8	1.652	11.45	46.00	-34.55	1.75	9.71	AV
9	6.687	38.57	60.00	-21.43	28.74	9.83	QP
10	6.687	32.01	50.00	-17.99	22.18	9.83	AV
11	21.104	23.16	60.00	-36.84	13.10	10.06	QP
12	21.104	16.32	50.00	-33.68	6.26	10.06	AV

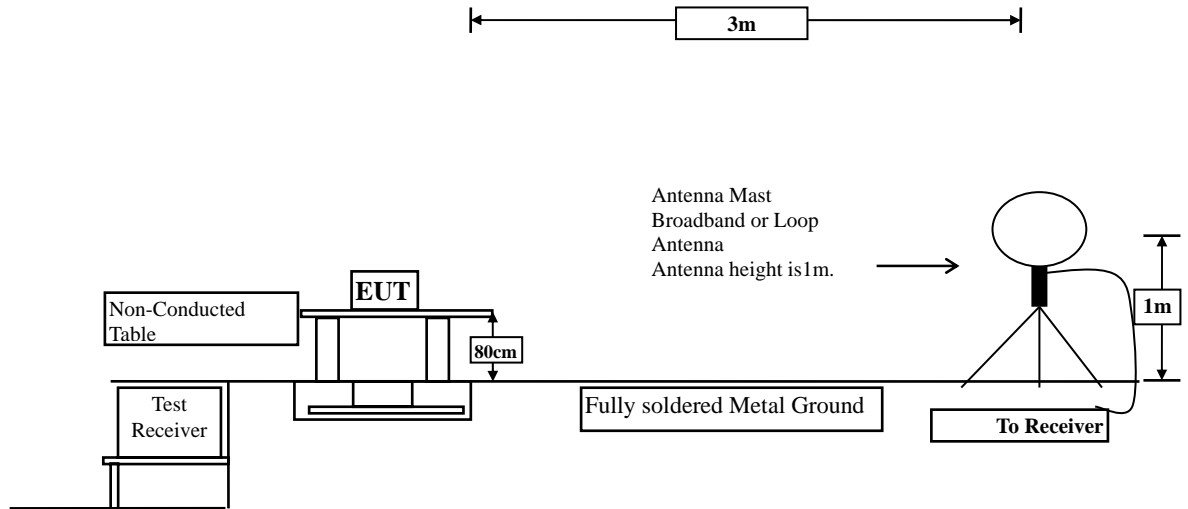
Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ \* “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

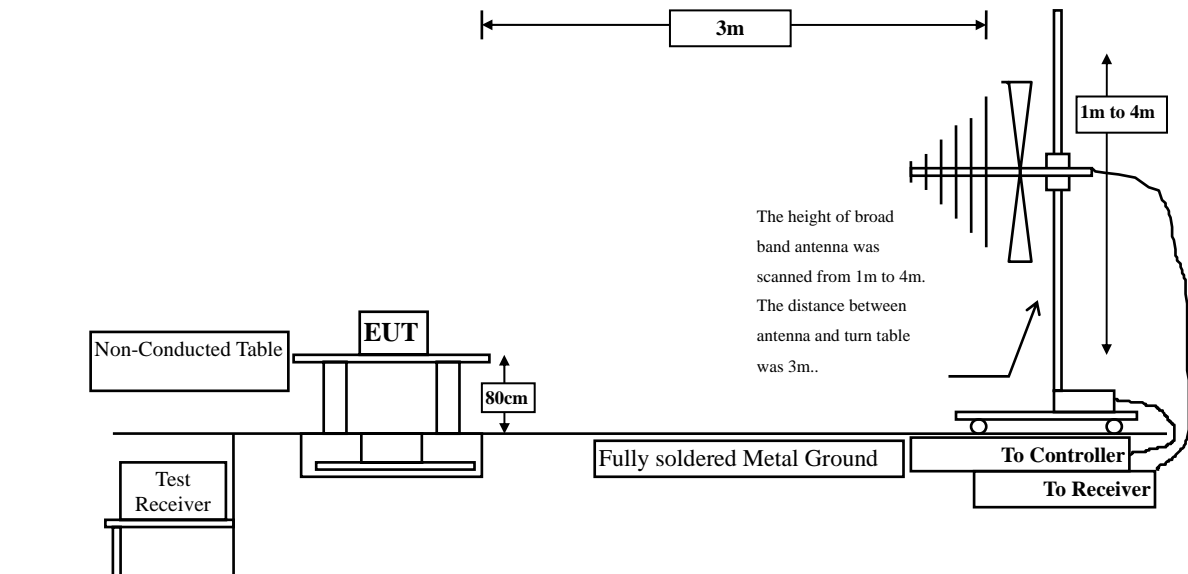
### 3. Radiated Emission

#### 3.1. Test Setup

Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



### 3.2. Limits

➤ Fundamental electric field strength Limit

<b>FCC Part 15 Subpart C Paragraph 15.225 Limits</b>				
Fundamental Frequency MHz	Field strength of fundamental			
	uV/m	Distance (meter)	dBuV/m	Distance (meter)
13.553 – 13.567	15848	30	124	3
13.410 – 13.553 and 13.567 – 13.710	334	30	90.47	3
13.110 – 13.410 and 13.710 – 14.010	106	30	80.50	3
Outside of the 13.110 – 14.010	See 15.209 Limits			

Remarks :

1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. The emission limit in this paragraph is based on measurement instrumentation employing an quasi-peak detector.

➤ Spurious electric field strength Limit

<b>FCC Part 15 Subpart C Paragraph 15.209 Limits</b>		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks :

1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### 3.3. Test Procedure

Fundamental electric field strength:

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum electric field strength.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna which is 1 meter above ground. All X-axis, Y-axis and Z-axis polarization of the antenna are set on measurement.

Spurious electric field strength:

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth below 30MHz setting on the field strength meter is 9kHz and above 30MHz is 120kHz. The frequency range from 9kHz to 10th harmonics is checked.

### 3.4. Uncertainty

Horizontal polarization :

30-300MHz:  $\pm 4.08$ dB ; 300M-1GHz:  $\pm 3.86$ dB ; 1-18GHz:  $\pm 3.77$ dB ; 18-40GHz:  $\pm 3.98$ dB

Vertical polarization :

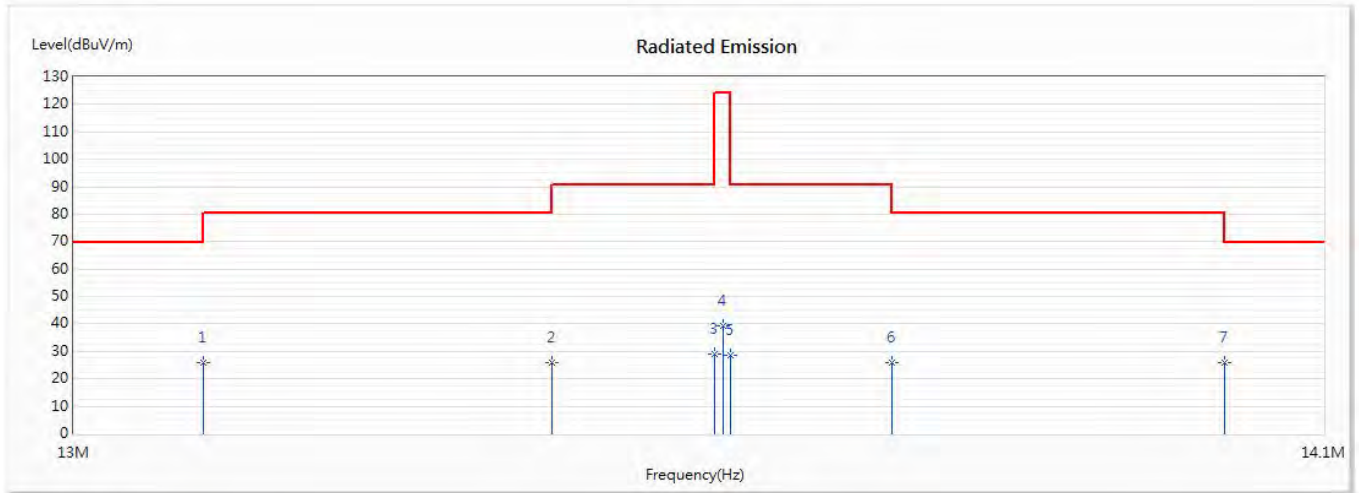
30-300MHz:  $\pm 4.81$ dB ; 300M-1GHz:  $\pm 3.87$ dB ; 1-18GHz:  $\pm 3.83$ dB ; 18-40GHz:  $\pm 3.98$ dB



### 3.5. Test Result of Radiated Emission

Product : Notebook PC  
 Test Item : Fundamental Radiated Emission  
 Test Mode : Mode 1: Transmit  
 Test date : 2020/03/11

#### Horizontal



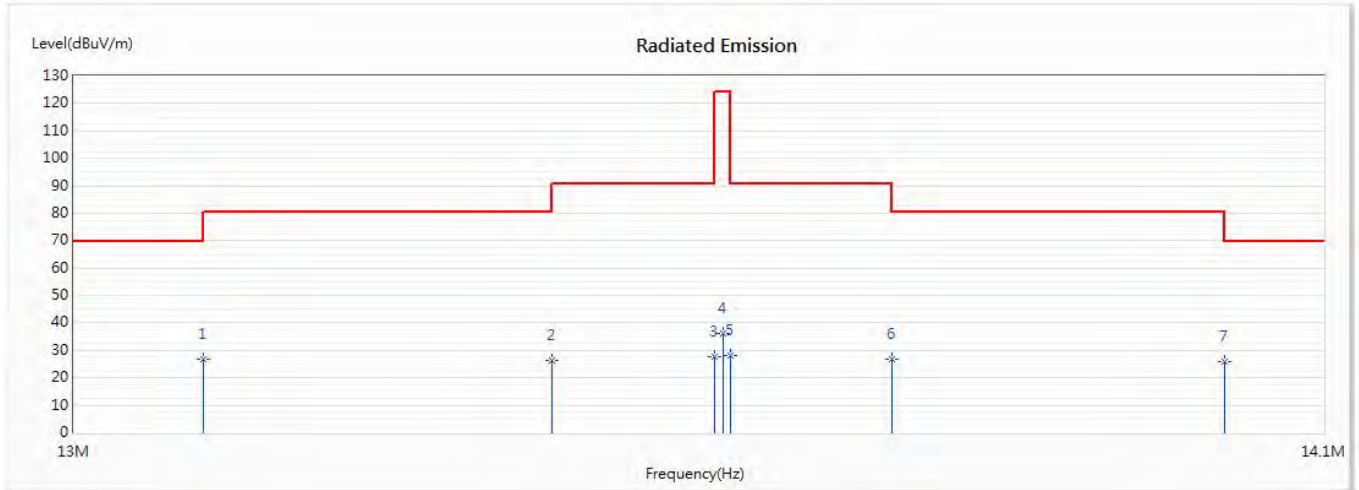
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	13.11	25.79	69.50	-43.71	4.30	21.49	QP
2	13.41	25.90	80.50	-54.6	4.40	21.50	QP
3	13.553	29.01	90.47	-61.46	7.50	21.51	QP
4	13.56	39.51	124.00	-84.49	18.00	21.51	QP
5	13.567	28.51	90.47	-61.96	7.00	21.51	QP
6	13.71	25.82	80.50	-54.68	4.30	21.52	QP
*7	14.01	25.84	69.50	-43.66	4.30	21.54	QP

Note:

1. Fundamental Limit=84dBuV/m + 40\*Log (30(m)/3(m))=124dBuV/m
2. All Readings below 1GHz are Quasi-Peak, above are average value.
3. “ \* ” means the worst emission level.
4. Measurement Level = Reading Level + Correct Factor.

Product : Notebook PC  
 Test Item : Fundamental Radiated Emission  
 Test Mode : Mode 1: Transmit  
 Test date : 2020/03/11

**Vertical**



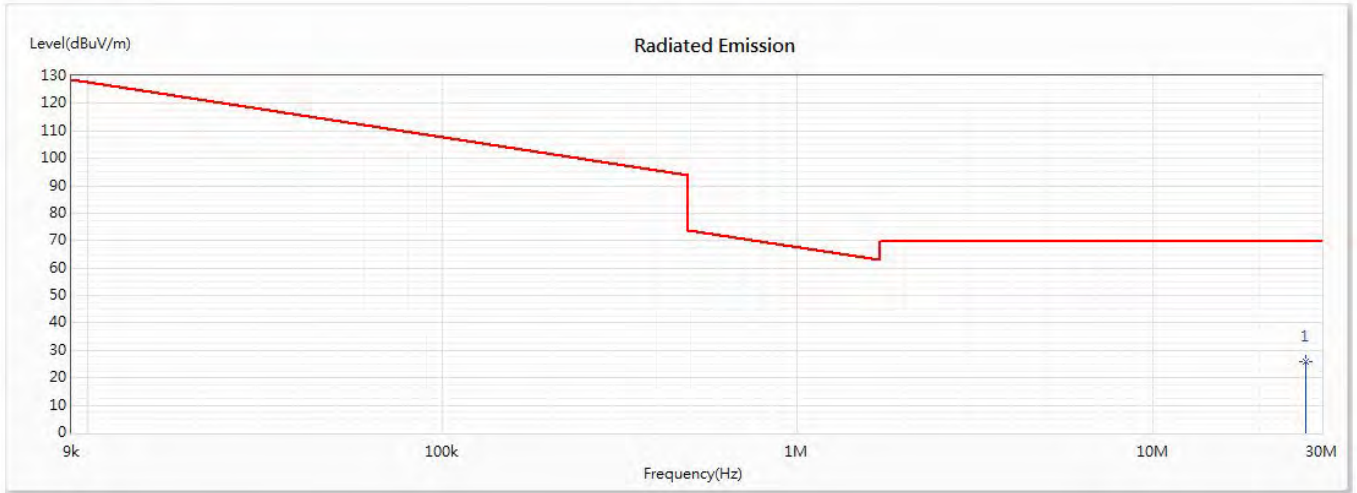
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
*1	13.11	26.59	69.50	-42.91	5.10	21.49	QP
2	13.41	26.40	80.50	-54.1	4.90	21.50	QP
3	13.553	27.81	90.47	-62.66	6.30	21.51	QP
4	13.56	36.21	124.00	-87.79	14.70	21.51	QP
5	13.567	28.01	90.47	-62.46	6.50	21.51	QP
6	13.71	26.62	80.50	-53.88	5.10	21.52	QP
7	14.01	26.04	69.50	-43.46	4.50	21.54	QP

**Note:**

1. Fundamental Limit=84dBuV/m + 40\*Log (30(m)/3(m))=124dBuV/m
2. All Readings below 1GHz are Quasi-Peak, above are average value.
3. “ \* ” means the worst emission level.
4. Measurement Level = Reading Level + Correct Factor.

Product : Notebook PC  
 Test Item : General Radiated Emission Data (below 30MHz)  
 Test Mode : Mode 1: Transmit  
 Test date : 2020/03/11

**Horizontal**



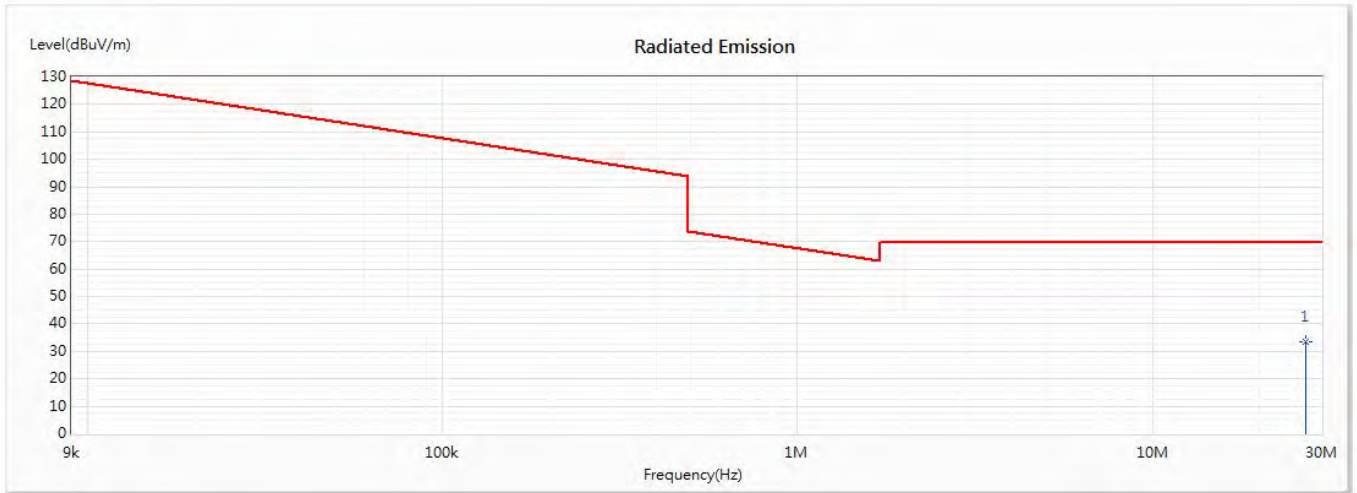
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	27.12	25.76	69.54	-43.78	3.50	22.26	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ \* ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Notebook PC  
 Test Item : General Radiated Emission Data (below 30MHz)  
 Test Mode : Mode 1: Transmit  
 Test date : 2020/03/11

**Vertical**



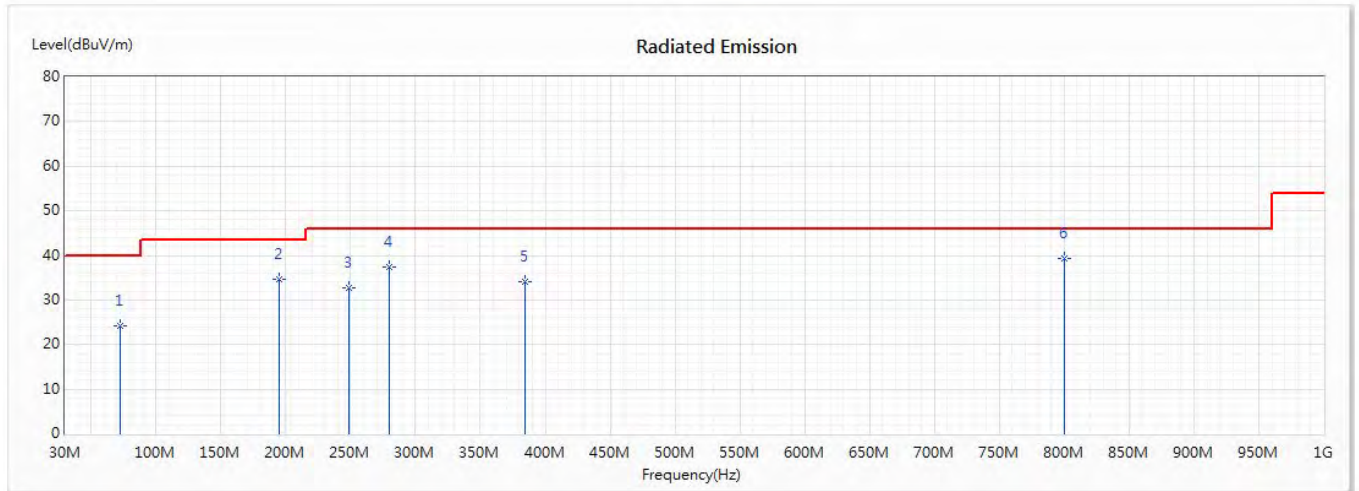
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	27.12	33.46	69.54	-36.08	11.20	22.26	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ \* ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Notebook PC  
 Test Item : General Radiated Emission Data (above 30MHz)  
 Test Mode : Mode 1: Transmit  
 Test date : 2020/03/07

**Horizontal**



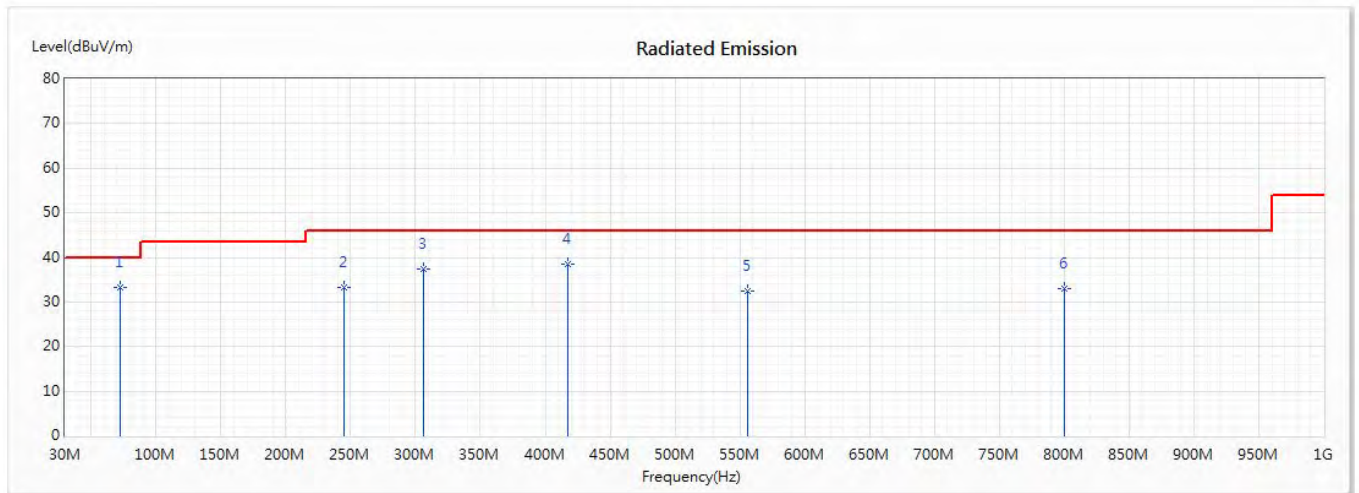
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	72.15	24.28	40.00	-15.72	37.67	-13.39	QP
2	195.22	34.77	43.50	-8.73	47.45	-12.68	QP
3	248.52	32.60	46.00	-13.40	43.74	-11.14	QP
4	279.53	37.30	46.00	-8.70	47.38	-10.08	QP
5	384.18	34.17	46.00	-11.83	41.49	-7.32	QP
* 6	799.9	39.30	46.00	-6.70	39.88	-0.58	QP

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ \* ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Notebook PC  
 Test Item : General Radiated Emission Data (above 30MHz)  
 Test Mode : Mode 1: Transmit  
 Test date : 2020/03/07

**Vertical**



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	72.15	33.38	40.00	-6.62	46.77	-13.39	QP
2	244.64	33.31	46.00	-12.69	44.54	-11.23	QP
3	306.66	37.32	46.00	-8.68	46.78	-9.46	QP
4	417.13	38.46	46.00	-7.54	45.24	-6.78	QP
5	555.7	32.39	46.00	-13.61	36.56	-4.17	QP
6	799.9	33.00	46.00	-13.00	33.58	-0.58	QP

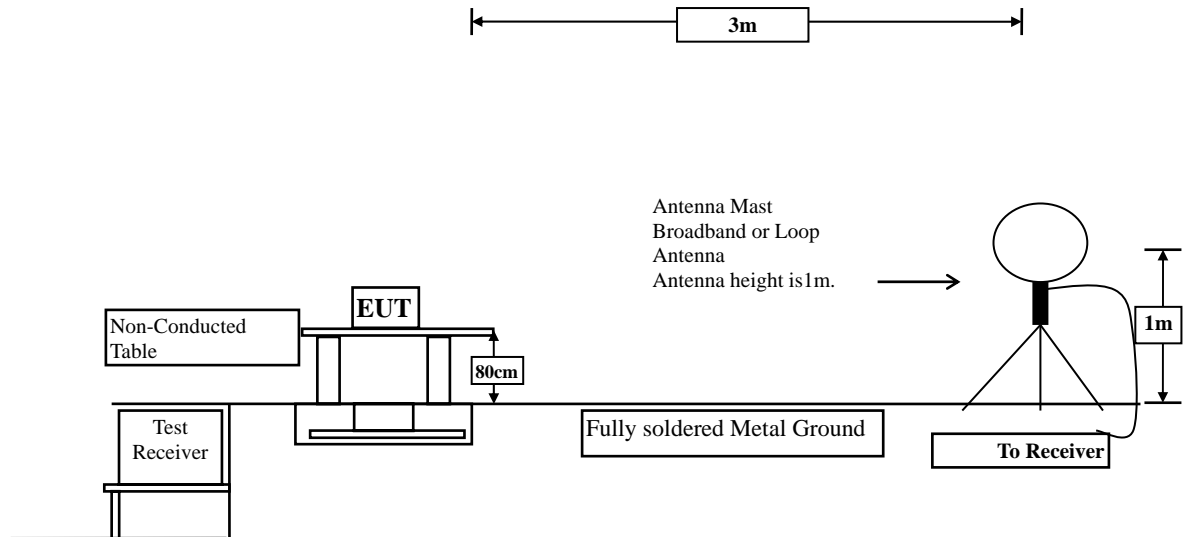
**Note:**

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ \* ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

## 4. Band Edge

### 4.1. Test Setup

Radiated Emission Under 30MHz



### 4.2. Limits

The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in Section 15.209. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209

### 4.3. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth below 30MHz setting on the field strength meter is 9kHz and above 30MHz is 120kHz.

### 4.4. Uncertainty

Horizontal polarization :

30-300MHz:  $\pm 4.08$ dB ; 300M-1GHz:  $\pm 3.86$ dB ; 1-18GHz:  $\pm 3.77$ dB ; 18-40GHz:  $\pm 3.98$ dB

Vertical polarization :

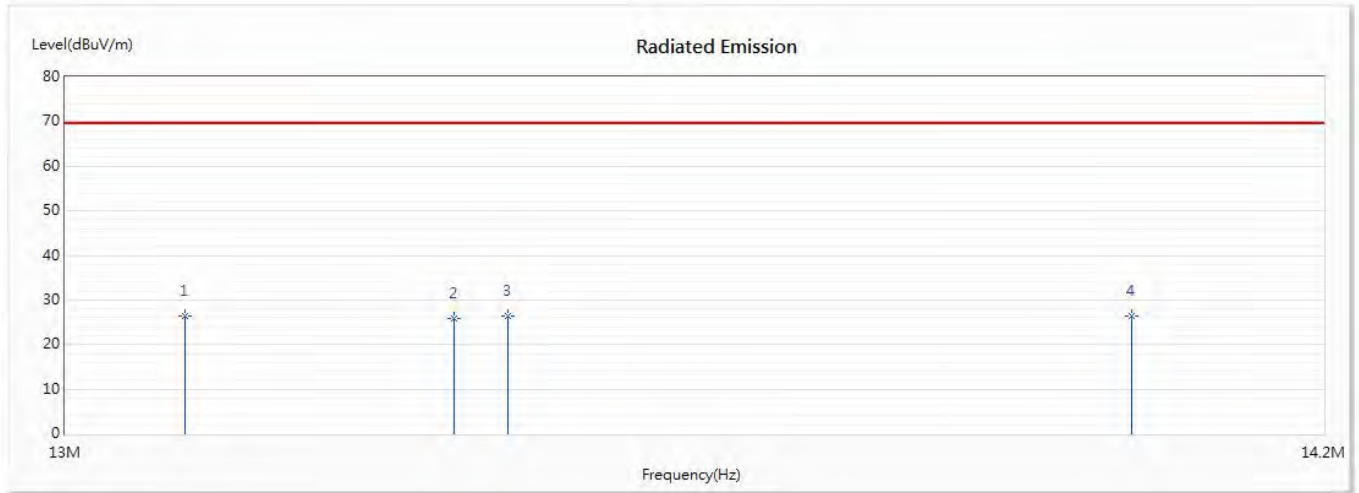
30-300MHz:  $\pm 4.81$ dB ; 300M-1GHz:  $\pm 3.87$ dB ; 1-18GHz:  $\pm 3.83$ dB ; 18-40GHz:  $\pm 3.98$ dB



#### 4.5. Test Result of Band Edge

Product : Notebook PC  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit  
 Test date : 2020/03/11

##### Horizontal



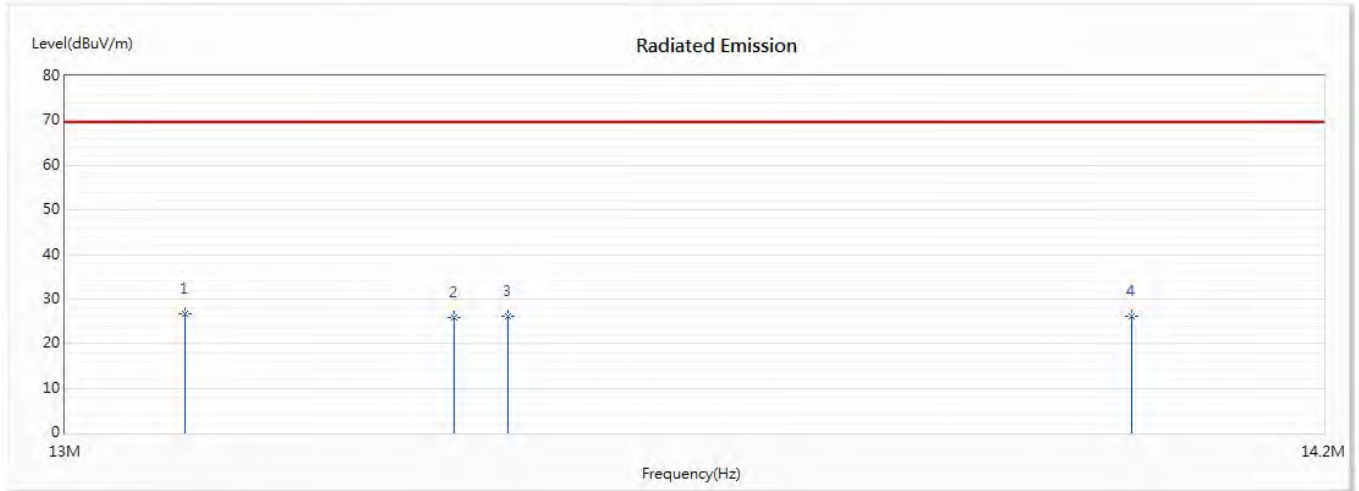
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	13.11	26.29	69.54	-43.25	4.80	21.49	QP
2	13.36	25.90	69.54	-43.64	4.40	21.50	QP
3	13.41	26.30	69.54	-43.24	4.80	21.50	QP
* 4	14.01	26.44	69.54	-43.10	4.90	21.54	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ \* ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Notebook PC  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit  
 Test date : 2020/03/11

**Vertical**



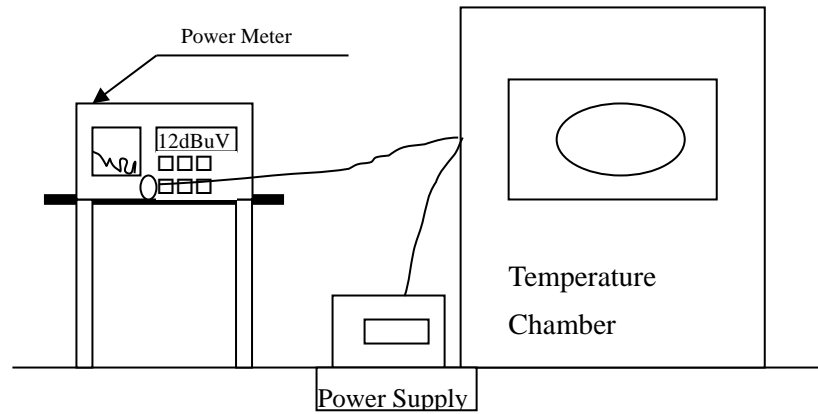
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	13.11	26.69	69.54	-42.85	5.20	21.49	QP
2	13.36	25.90	69.54	-43.64	4.40	21.50	QP
3	13.41	26.00	69.54	-43.54	4.50	21.50	QP
4	14.01	26.24	69.54	-43.30	4.70	21.54	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ \* ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

## 5. Frequency Tolerance

### 5.1. Test Setup



### 5.2. Limits

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency.

### 5.3. Test Procedure

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of  $-20$  degrees to  $+ 50$  degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

### 5.4. Uncertainty

$\pm 279.2\text{Hz}$

### 5.5. Test Result of Frequency Stability

Product : Notebook PC  
 Test Item : Frequency Tolerance  
 Test Mode : Mode 1: Transmit  
 Test date : 2020/03/06

Temperature (°C)	Voltage (V)	Observe Time	Declared Frequency (MHz)	Read Frequency (MHz)	Tolerance (%)	Limit (%)
20	120	start	13.56	13.56000	0.000000	±0.01 %
		2mins	13.56	13.56000	0.000000	
		5mins	13.56	13.56000	0.000000	
		10mins	13.56	13.56000	0.000000	
20	138	start	13.56	13.56000	0.000000	±0.01 %
		2mins	13.56	13.56000	0.000000	
		5mins	13.56	13.56000	0.000000	
		10mins	13.56	13.56000	0.000000	
20	102	start	13.56	13.56000	0.000000	±0.01 %
		2mins	13.56	13.56000	0.000000	
		5mins	13.56	13.56000	0.000000	
		10mins	13.56	13.56000	0.000000	
50	120	start	13.56	13.55900	-0.007375	±0.01 %
		2mins	13.56	13.55900	-0.007375	
		5mins	13.56	13.55900	-0.007375	
		10mins	13.56	13.55900	-0.007375	
40	120	start	13.56	13.55900	-0.007375	±0.01 %
		2mins	13.56	13.55900	-0.007375	
		5mins	13.56	13.55900	-0.007375	
		10mins	13.56	13.55900	-0.007375	
30	120	start	13.56	13.56000	0.000000	±0.01 %
		2mins	13.56	13.56000	0.000000	
		5mins	13.56	13.56000	0.000000	
		10mins	13.56	13.56000	0.000000	

10	120	start	13.56	13.56000	0.000000	±0.01 %
		2mins	13.56	13.56000	0.000000	
		5mins	13.56	13.56000	0.000000	
		10mins	13.56	13.56000	0.000000	
0	120	start	13.56	13.55900	-0.007375	±0.01 %
		2mins	13.56	13.55900	-0.007375	
		5mins	13.56	13.55900	-0.007375	
		10mins	13.56	13.55900	-0.007375	
-10	120	start	13.56	13.56050	0.003687	±0.01 %
		2mins	13.56	13.56050	0.003687	
		5mins	13.56	13.56050	0.003687	
		10mins	13.56	13.56050	0.003687	
-20	120	start	13.56	13.56000	0.000000	±0.01 %
		2mins	13.56	13.56000	0.000000	
		5mins	13.56	13.56000	0.000000	
		10mins	13.56	13.56000	0.000000	

## **6. EMI Reduction Method During Compliance Testing**

No modification was made during testing.