FCC Test Report

Product Name	:	Tablet
Brand Name	:	MiTAC
Model No.	:	Cappuccino-Tablet
FCC ID	:	2ADL6-CAPPUCCINO
Applicant	:	MITAC COMPUTING TECHNOLOGY CORPORATION
Address	:	No. 200, Wen Hwa 2nd Rd., Kuei Shan Dist., TAOYUAN, 33383 Taiwan
Date of Receipt	:	Apr. 06, 2020
Issued Date	:	Mar. 17, 2022
Report No.	:	2040094R-E3032110103
Report Version	:	V3.0

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 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.
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.

Test Report Certification

Product Name	:	Tablet
Applicant	:	MITAC COMPUTING TECHNOLOGY CORPORATION
Address	:	No. 200, Wen Hwa 2nd Rd., Kuei Shan Dist., TAOYUAN, 33383 Taiwan
Manufacturer	:	MITAC COMPUTING TECHNOLOGY CORPORATION
Address	:	No. 200, Wen Hwa 2nd Rd., Kuei Shan Dist., TAOYUAN, 33383 Taiwan
Brand Name	:	MiTAC
Model No.	:	Cappuccino-Tablet
FCC ID	:	2ADL6-CAPPUCCINO
EUT Voltage	:	AC 120 ~ 240V, 50-60Hz (Adapter) DC 7.6V (Battery)
Testing Voltage	:	AC 120V/60Hz
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C Section 15.225 ANSI C63.10: 2013
Laboratory Name	:	Hsin Chu Laboratory
Address	:	No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 310, Taiwan, R.O.C. TEL: +886-3-582-8001 / FAX: +886-3-582-8958
Test Result	:	Complied

Documented By : Amelia Wu

(Amelia Wu / Project Specialist)

Approved By : Louis Hsu

(Louis Hsu / Deputy Manager)

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of DEKRA Testing and Certification Co., Ltd.

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Jun. 05, 2020
V2.0	Modify P.29 & 30 Test Condition Description	Jul. 07, 2020
V3.0	1. Revising the antenna information. 2. Adding the power adapter and power cord (for docking station or extension cover). After evaluating, it was re-test for AC Power Line Conducted Emission and Radiated Emission 30 MHz ~ 1 GHz.	Mar. 17, 2022

TABLE OF CONTENTS

1. General Information

1.1. EUT Description

Product Name	Tablet
Brand Name	MiTAC
Model No.	Cappuccino-Tablet
Frequency	13.56 MHz
Channel Number	1 Channel
Type of Modulation	ASK

Accessories Information				
No.	Equipment Name	Brand Name	Model No.	Rating
1	Power Adapter with power cord (for EUT)	APD	NB65B19	INPUT: 100 ~ 240V,50/60Hz, 1.6A OUTPUT: 19V, 3.42A Cable In: Non-Shielded, 0.9 m Cable Out: Non-Shielded, 1.7m
2	Power Adapter (for Docking Station or Extension Cover)	DELTA	DPS-180AB-21	INPUT: 100 ~ 240V,50/60Hz, 3-1.5A OUTPUT: 24V, 7.5A Cable Out: Non-Shielded, 1.2m with 2 ferrite cores
3	Power cord (for Docking Station or Extension Cover)	DELTA	CCBL-0317	Cable In: Non-Shielded, 1.7 m
4	Battery	Getac	BP-CAP-21/2570 VKB	7.6V, 2570mAh, 19.532Wh
No.	Equipment Name	Brand Name		Model No.
5	Docking Station	Cappuccino		Cappuccino-Docking Station
6	Extension Cover	Cappuccino		Cappuccino-Extension Cover
7	Charging Cradle	Cappuccino		Cappuccino-Charging Cradle
No.	Equipment Name	Remark		
8	Strap	1Pcs		

Antenna Information				
Ant.	Brand Name	Model No.	Type	Gain (dBi)
0	Smart Approach Co., Ltd.	SM-MSN27-C01	Integrated Antenna	0

Working Frequency of Each Channel	
Channel	Frequency
01	13.56 MHz

Note: The above EUT information is declared by the manufacturer.

1.2. Test Mode

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Test Mode	Mode 1: Transmit_Adapter Mode 2: Transmit_Docking Station Mode 3: Transmit_Extension Cover

Test Items	Test Mode	Modulation	Result
AC Power Line Conducted Emission	Mode 1, Mode 2, Mode 3	ASK	Pass
20dB Bandwidth	Mode 1	ASK	Pass
Field Strength of Fundamental Emissions and Spectrum Mask	Mode 3	ASK	Pass
Radiated Emission (9 kHz ~ 30 MHz)	Mode 3	ASK	Pass
Radiated Emission (30 MHz ~ 1 GHz)	Mode 1, Mode 2, Mode 3	ASK	Pass
Frequency Tolerance	Mode 1	ASK	Pass

Note:

1. Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. For radiated emission 9 kHz ~ 30 MHz and AC power line conducted emission have performed all modes of operation were investigated and the worst-case emissions are reported.
3. The EUT was investigated in five modes X axis, Y axis, Z axis, docking station, and extension cover. Pre-scan radiated emission and radiated emission band edge has been determined by the extension cover mode (the worst-case).

1.3. Comments and Remarks

The product specification and testing instructions for the EUT declared in the report are provided by the manufacturer who will take all responsibilities for the accuracy.

1.4. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system.

For Mode 1: Transmit_Adapter

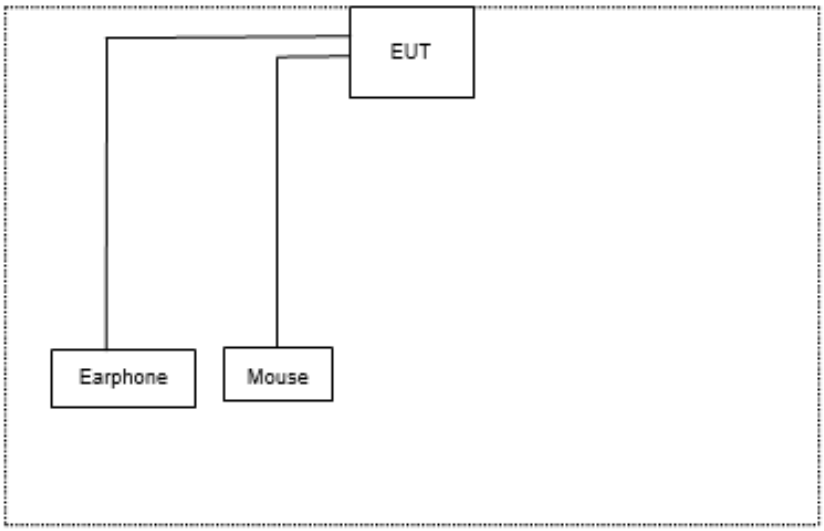
Product		Manufacturer	Model No.	Serial No.
1	Mouse	HP	M150	B1M150210802968
2	Earphone	ASUS	3.5mm	N/A

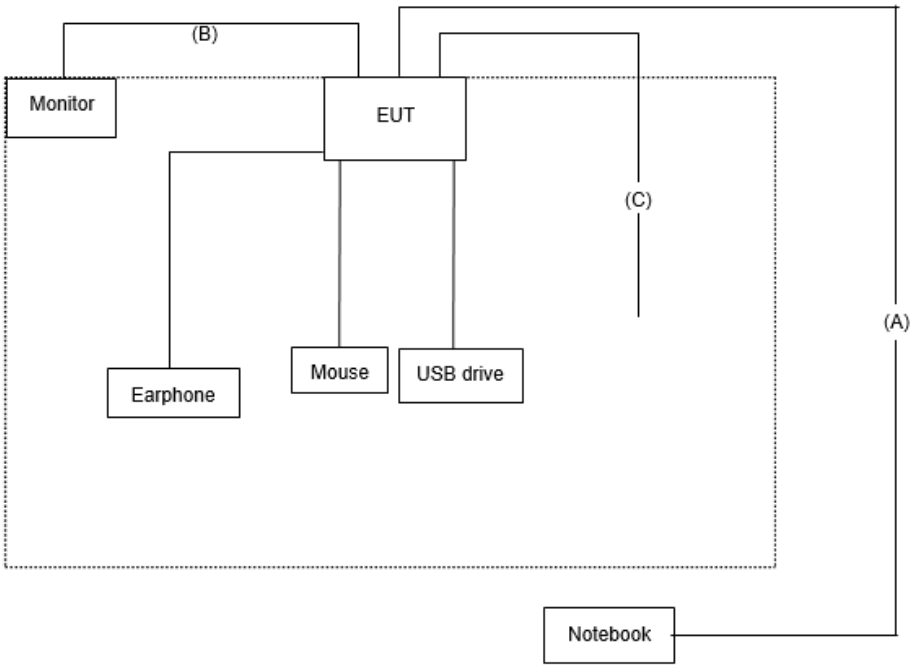
For Mode 2: Transmit_Docking Station / Mode 3: Transmit_Extension Cover

Product		Manufacturer	Model No.	Serial No.
1	Mouse	HP	M150	B1M150210802968
2	Monitor	Philps	223V5LHSB2	QMZ081201587
3	USB drive	Verbatim	OTG Tiny	N/A
4	Earphone	ASUS	3.5mm	N/A
5	Notebook	DELL	Latitude E6320	8208580717

1.5. Configuration of tested System

Connection Diagram for Mode 1: Transmit_Adapter



Connection Diagram for Mode 2: Transmit_Docking Station / Mode 3: Transmit_Extension Cover


Signal Cable Type		Signal cable Description
A	Ethernet cable	Non-Shielded, 2m
B	HDMI cable	Shielded, 2m
C	RS232 cable	Shielded, 2m

1.6. EUT Operation of during Test

1	Set the EUT as shown.
2	EUT power on.
3	Put a magnetic card.
4	Make the EUT to start the continuous transmitting.
5	Verify that device is working properly.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Actually	Tested by	Test Date	Test Site
Temperature (°C)	AC Power Line Conducted Emission	19.4	Ling Chen	2022/2/21	SR2-H
Humidity (%RH)		59			
Temperature (°C)	Emission Bandwidth	24.5	Clemens Fang	2020/5/12	SR12-H
Humidity (%RH)		63			
Temperature (°C)	Field Strength of Fundamental Emissions and Spectrum Mask	22.5	Rueyyan Lin	2020/4/17	CB4-H
Humidity (%RH)		51			
Temperature (°C)	Radiated Emission (9 kHz ~ 30 MHz)	22.5	Rueyyan Lin	2020/4/17	CB4-H
Humidity (%RH)		51			
Temperature (°C)	Radiated Emission (30 MHz ~ 1 GHz)	22.3	Ling Chen	2022/2/17	CB4-H
Humidity (%RH)		53			
Temperature (°C)	Frequency Stability	24.5	Clemens Fang	2020/5/12	SR12-H
Humidity (%RH)		63			

Note: Test site information refers to Laboratory Information.

Laboratory Information

USA	**:**	**FCC Registration Number: TW3024**
Canada	**:**	**CAB identifier : TW3024**

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 2. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-582-8001 2. +886-3-582-8001
Fax number	1. +886-3-582-8958 2. +886-3-582-8958
Email address	info.tw@dekra.com
Website	http://www.dekra.com.tw
Note: Test site number for address 1 includes SR2-H. Test site number for address 2 includes CB2-H, CB3-H, CB4-H, SR10-H and SR12-H.	

1.8. List of Test Equipment

SR2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	2021/12/27	2022/12/26
EMI Test Receiver	R&S	ESR3	102608	2021/06/03	2022/06/02
LISN	R&S	ENV216	100092	2021/06/08	2022/06/07
Coaxial Cable(9 m)	Harbour	RG-400	SR2-H	2021/08/15	2022/08/14
DEKRA Testing System	DEKRA	Version 2.0	SR2-H	N/A	N/A

SR12-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Keysight	N9030B	MY57140404	2019/06/18	2020/06/17
Spectrum Analyzer	Keysight	N9010B	MY57110159	2020/04/15	2021/04/14
Spectrum Analyzer	Agilent	N9010A	US47140172	2019/06/28	2020/06/27
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29

CB4-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2019/10/21	2020/10/20
Signal Analyzer	R&S	FSVA40	101455	2021/10/22	2022/10/21
Signal & Spectrum Analyzer	R&S	FSV40	101049	2020/03/30	2021/03/29
Signal & Spectrum Analyzer	R&S	FSV40	101049	2021/03/31	2022/03/30
Signal Analyzer	R&S	FSV40	101435	2019/07/08	2020/07/07
Signal Analyzer	R&S	FSVA40	101435	2021/06/04	2022/06/03
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2020/02/21	2021/02/20
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2022/01/07	2023/01/06
Trilog Broadband Antenna	Schwarzbeck	VULB 9168	1209	2021/05/28	2022/05/27
Pre-Amplifier	DEKRA	AP-025C	12183122	2019/09/24	2020/09/23
Pre-Amplifier	EMCI	EMC01820I	980364	2021/08/27	2022/08/26
Pre-Amplifier	EMCI	EMC11830I	980366	2019/12/03	2020/12/02
Pre-Amplifier	EMEC	EM01G18GA	060835	2021/07/12	2022/07/11
Pre-Amplifier	DEKRA	AP-400C	201801231	2019/12/03	2020/12/02
Pre-Amplifier	DEKRA	AP-400C	201801231	2021/12/24	2022/12/23
Band Reject Filter	Micro-Tronics	BRM50702	G192	2020/03/09	2021/03/08
Coaxial Cable(19m)	Suhner	SF102_SF104	CB4_2	2019/07/25	2020/07/24
Coaxial Cable(10m)	Suhner	SF102_SF104	CB4-H	2021/08/09	2022/08/08
EMI system	DEKRA	Version 1.0	CB4-H	N/A	N/A
EMI Test Receiver	R&S	ESR7	102260	2021/12/22	2022/12/21
Magnetic Loop Antenna	Teseq	HLA 6121	44287	2019/09/24	2020/09/23
DEKRA Testing System	DEKRA	Version 2.0	CB4-H	N/A	N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

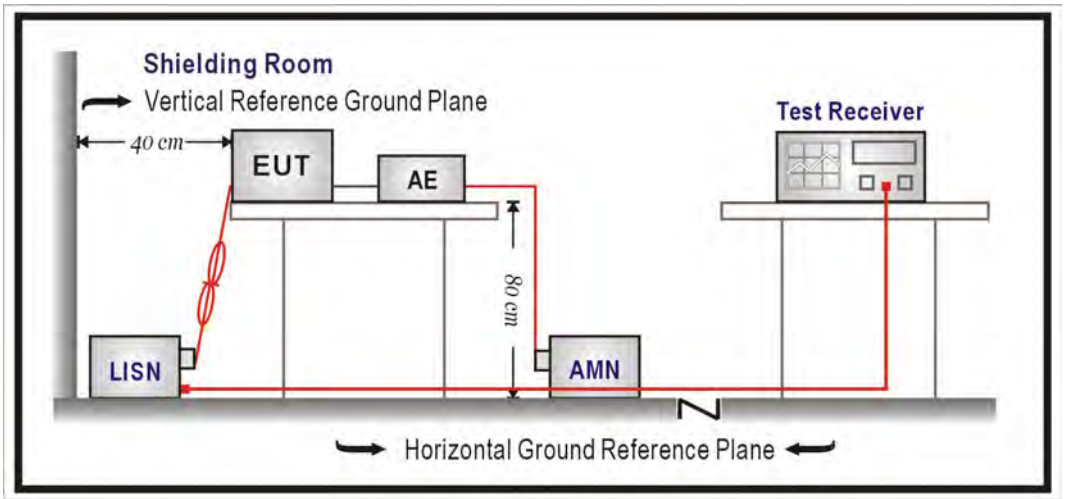
1.9. Measurement Uncertainty

Uncertainties have been calculated according to the DEKRA internal document with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2).

Test item	Uncertainty
AC Power Line Conducted Emission	± 2.10 dB
Emission Bandwidth	± 150 Hz
Field Strength of Fundamental Emissions and Spectrum Mask	± 3.43 dB
Radiated Emission	± 3.43 dB (9 kHz ~ 30 MHz) ± 3.25 dB (30 MHz ~ 1 GHz)
Frequency Stability	± 150 Hz

2. AC Power Line Conducted Emission

2.1. Test Setup



2.2. Test Limit

Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edgeS.

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 50 ohm termination. (Please refer 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 C63.10: 2013 on conducted measurement.

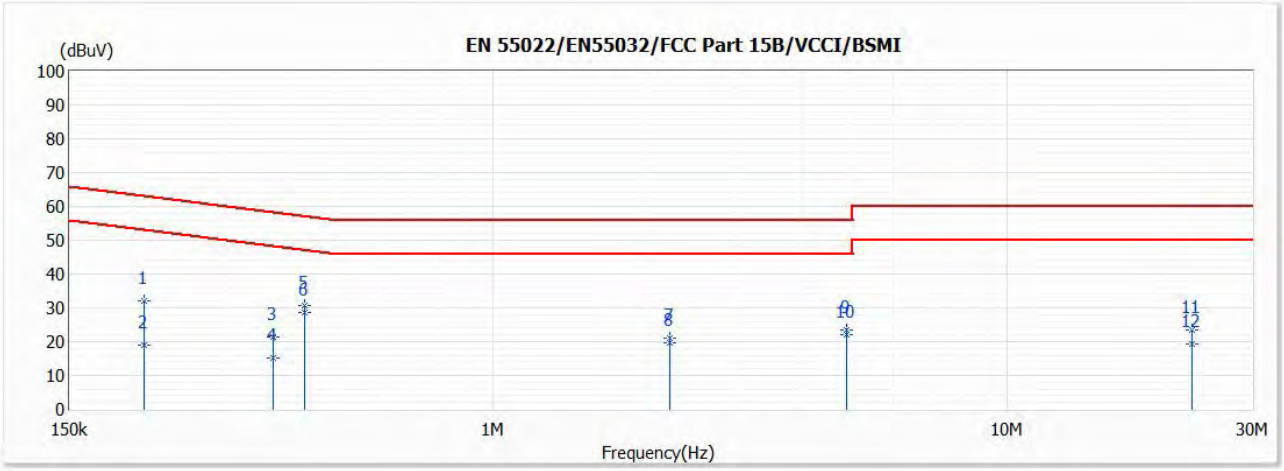
Conducted emissions were invested over the frequency range from 0.15 MHz to 30 MHz using a receiver bandwidth of 9 kHz.

2.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207

2.5. Test Result of AC Power Line Conducted Emission

Test Mode	Mode 1: Transmit_Adapter	Phase	Line
Test Condition	13.56 MHz		



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.210	31.98	63.22	-31.24	22.34	9.64	QP
2	0.210	19.10	53.22	-34.12	9.46	9.64	AV
3	0.373	21.33	58.43	-37.10	11.67	9.66	QP
4	0.373	15.07	48.43	-33.36	5.41	9.66	AV
5	0.429	30.84	57.27	-26.43	21.18	9.66	QP
*6	0.429	28.52	47.27	-18.75	18.86	9.66	AV
7	2.203	21.12	56.00	-34.88	11.33	9.79	QP
8	2.203	19.73	46.00	-26.27	9.94	9.79	AV
9	4.877	23.56	56.00	-32.44	13.63	9.93	QP
10	4.877	21.90	46.00	-24.10	11.97	9.93	AV
11	22.925	23.40	60.00	-36.60	12.99	10.41	QP
12	22.925	19.47	50.00	-30.53	9.06	10.41	AV

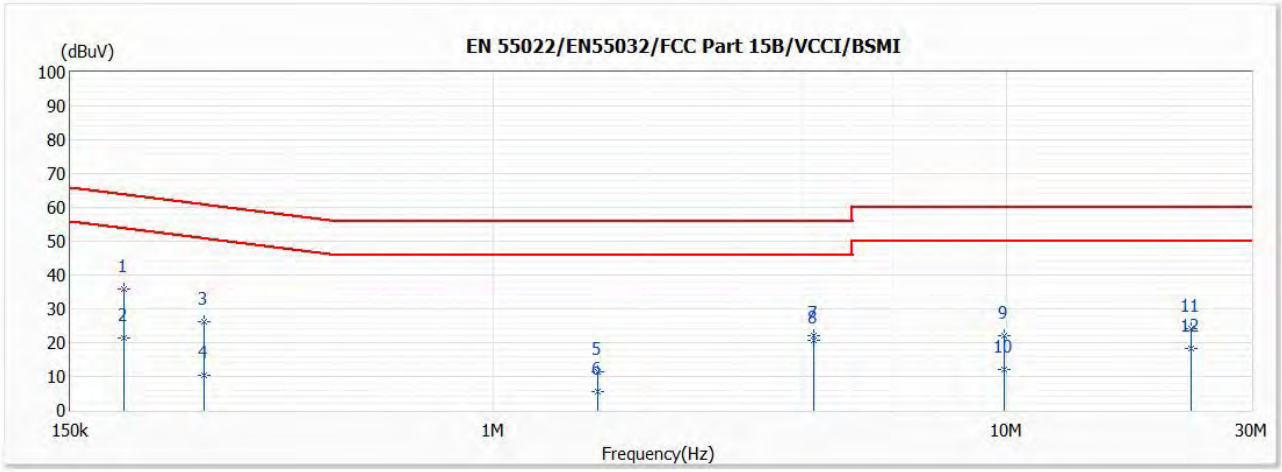
Remark:

1. "*" means this data is the worst emission level.

2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).

3. Margin = Emission Level - Limit.

Test Mode	Mode 1: Transmit_Adapter	Phase	Neutral
Test Condition	13.56 MHz		



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.191	35.93	64.00	-28.07	26.31	9.62	QP
2	0.191	21.54	54.00	-32.46	11.92	9.62	AV
3	0.274	26.11	61.01	-34.90	16.48	9.63	QP
4	0.274	10.46	51.01	-40.55	0.83	9.63	AV
5	1.596	11.33	56.00	-44.67	1.57	9.76	QP
6	1.596	5.46	46.00	-40.54	-4.30	9.76	AV
7	4.215	21.92	56.00	-34.08	12.03	9.89	QP
*8	4.215	20.63	46.00	-25.37	10.74	9.89	AV
9	9.900	22.16	60.00	-37.84	12.02	10.14	QP
10	9.900	12.05	50.00	-37.95	1.91	10.14	AV
11	22.936	24.08	60.00	-35.92	13.46	10.62	QP
12	22.936	18.25	50.00	-31.75	7.63	10.62	AV

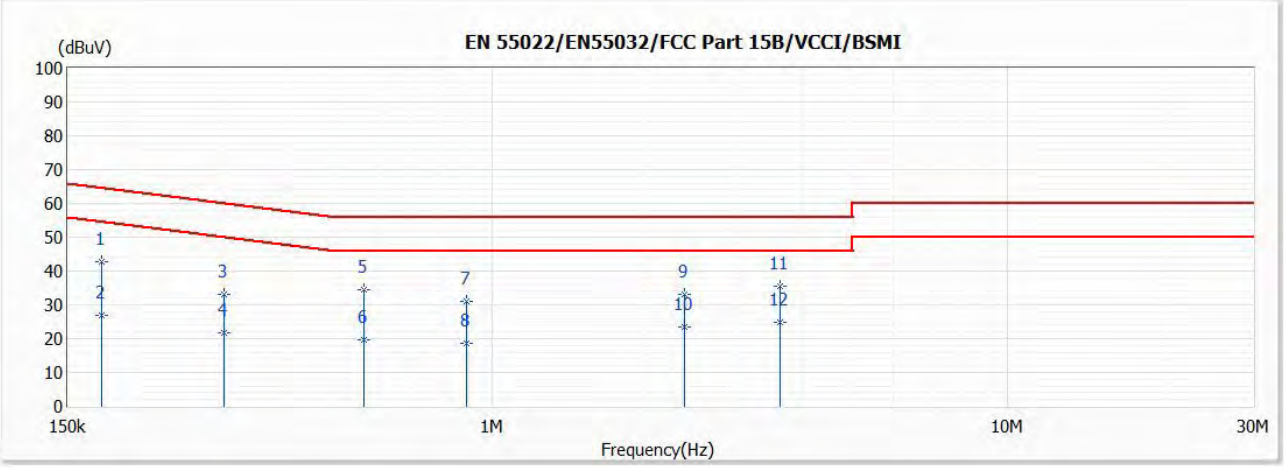
Remark:

1. "*" means this data is the worst emission level.

2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).

3. Margin = Emission Level - Limit.

Test Mode	Mode 2: Transmit_Docking Station	Phase	Line
Test Condition	13.56 MHz		



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.174	42.60	64.75	-22.15	32.97	9.63	QP
2	0.174	27.01	54.75	-27.74	17.38	9.63	AV
3	0.301	33.23	60.21	-26.98	23.58	9.65	QP
4	0.301	21.83	50.21	-28.38	12.18	9.65	AV
5	0.564	34.41	56.00	-21.59	24.73	9.68	QP
6	0.564	19.76	46.00	-26.24	10.08	9.68	AV
7	0.891	31.18	56.00	-24.82	21.47	9.71	QP
8	0.891	18.54	46.00	-27.46	8.83	9.71	AV
9	2.356	33.23	56.00	-22.77	23.44	9.79	QP
10	2.356	23.56	46.00	-22.44	13.77	9.79	AV
*11	3.620	35.59	56.00	-20.41	25.73	9.86	QP
12	3.620	25.00	46.00	-21.00	15.14	9.86	AV

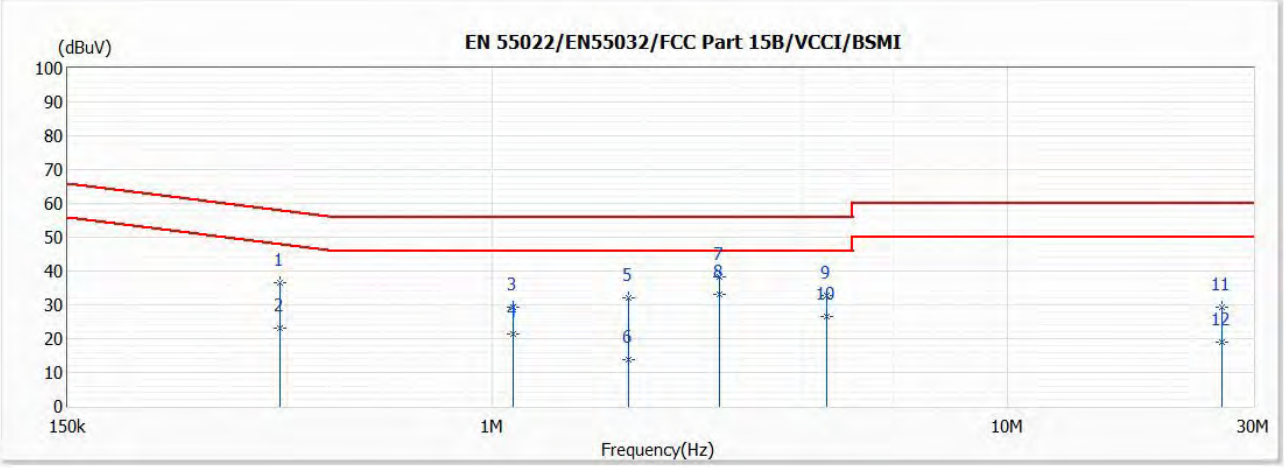
Remark:

1. "*" means this data is the worst emission level.

2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).

3. Margin = Emission Level - Limit.

Test Mode	Mode 2: Transmit_Docking Station	Phase	Neutral
Test Condition	13.56 MHz		



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.387	36.41	58.14	-21.73	26.75	9.66	QP
2	0.387	23.15	48.14	-24.99	13.49	9.66	AV
3	1.096	29.41	56.00	-26.59	19.69	9.72	QP
4	1.096	21.35	46.00	-24.65	11.63	9.72	AV
5	1.836	32.12	56.00	-23.88	22.35	9.77	QP
6	1.836	13.79	46.00	-32.21	4.02	9.77	AV
7	2.763	38.27	56.00	-17.73	28.45	9.82	QP
*8	2.763	33.12	46.00	-12.88	23.30	9.82	AV
9	4.452	32.75	56.00	-23.25	22.84	9.91	QP
10	4.452	26.41	46.00	-19.59	16.50	9.91	AV
11	26.064	29.33	60.00	-30.67	18.63	10.70	QP
12	26.064	19.06	50.00	-30.94	8.36	10.70	AV

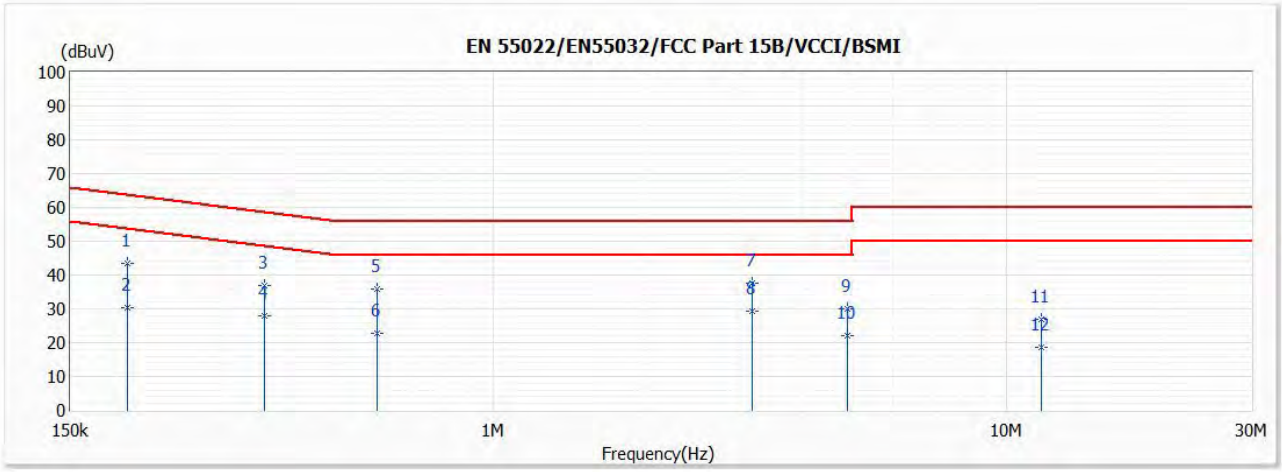
Remark:

1. "*" means this data is the worst emission level.

2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).

3. Margin = Emission Level - Limit.

Test Mode	Mode 3: Transmit_Extension Cover	Phase	Line
Test Condition	13.56 MHz		



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.193	43.34	63.90	-20.56	33.71	9.63	QP
2	0.193	30.29	53.90	-23.61	20.66	9.63	AV
3	0.357	36.86	58.79	-21.93	27.21	9.65	QP
4	0.357	27.85	48.79	-20.94	18.20	9.65	AV
5	0.593	35.96	56.00	-20.04	26.28	9.68	QP
6	0.593	22.88	46.00	-23.12	13.20	9.68	AV
7	3.189	37.45	56.00	-18.55	27.61	9.84	QP
*8	3.189	29.46	46.00	-16.54	19.62	9.84	AV
9	4.889	29.96	56.00	-26.04	20.03	9.93	QP
10	4.889	21.91	46.00	-24.09	11.98	9.93	AV
11	11.679	26.87	60.00	-33.13	16.72	10.15	QP
12	11.679	18.75	50.00	-31.25	8.60	10.15	AV

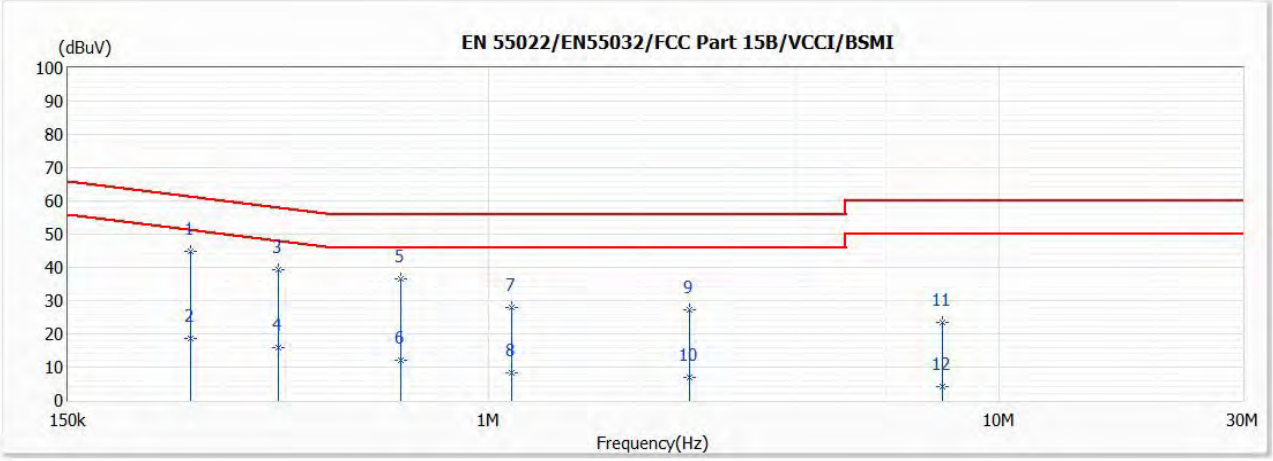
Remark:

1. "*" means this data is the worst emission level.

2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).

3. Margin = Emission Level - Limit.

Test Mode	Mode 3: Transmit_Extension Cover	Phase	Neutral
Test Condition	13.56 MHz		



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
*1	0.261	44.74	61.39	-16.65	35.11	9.63	QP
2	0.261	18.71	51.39	-32.68	9.08	9.63	AV
3	0.387	39.19	58.14	-18.95	29.53	9.66	QP
4	0.387	15.90	48.14	-32.24	6.24	9.66	AV
5	0.672	36.56	56.00	-19.44	26.88	9.68	QP
6	0.672	12.23	46.00	-33.77	2.55	9.68	AV
7	1.111	27.85	56.00	-28.15	18.12	9.73	QP
8	1.111	8.17	46.00	-37.83	-1.56	9.73	AV
9	2.476	27.34	56.00	-28.66	17.54	9.80	QP
10	2.476	6.96	46.00	-39.04	-2.84	9.80	AV
11	7.740	23.29	60.00	-36.71	13.24	10.05	QP
12	7.740	4.20	50.00	-45.80	-5.85	10.05	AV

Remark:

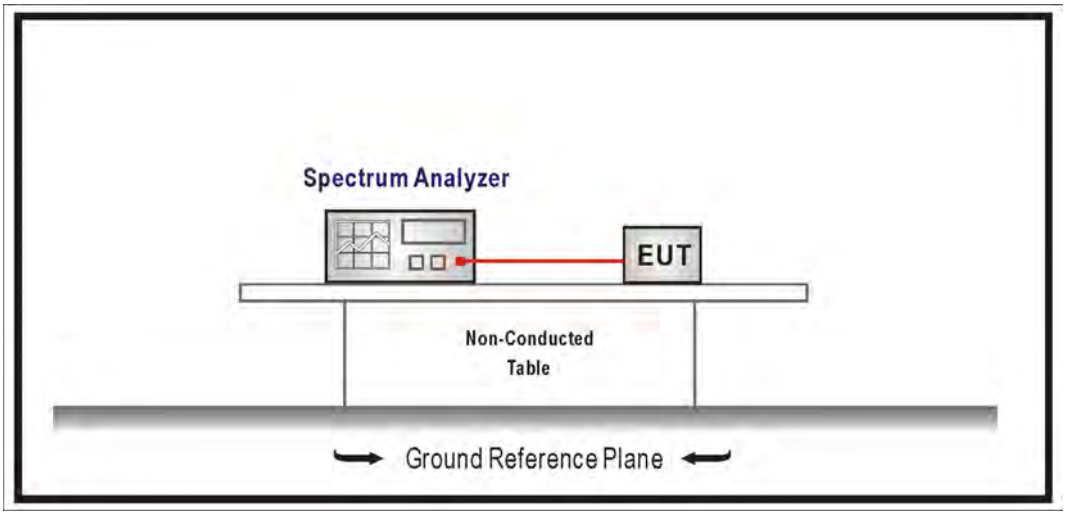
1. "*" means this data is the worst emission level.

2. Emission Level = Reading Level + Correct Factor (Correct Factor = LISN Insertion Loss + Cable Loss).

3. Margin = Emission Level - Limit.

3. Emission Bandwidth

3.1. Test Setup



3.2. Test Limit

Intentional radiators must be designed to ensure that the emission bandwidth of the emissions in the specific band. (13.553 ~ 13.567 MHz)

3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 1 kHz and the video bandwidth of 3 kHz were used.

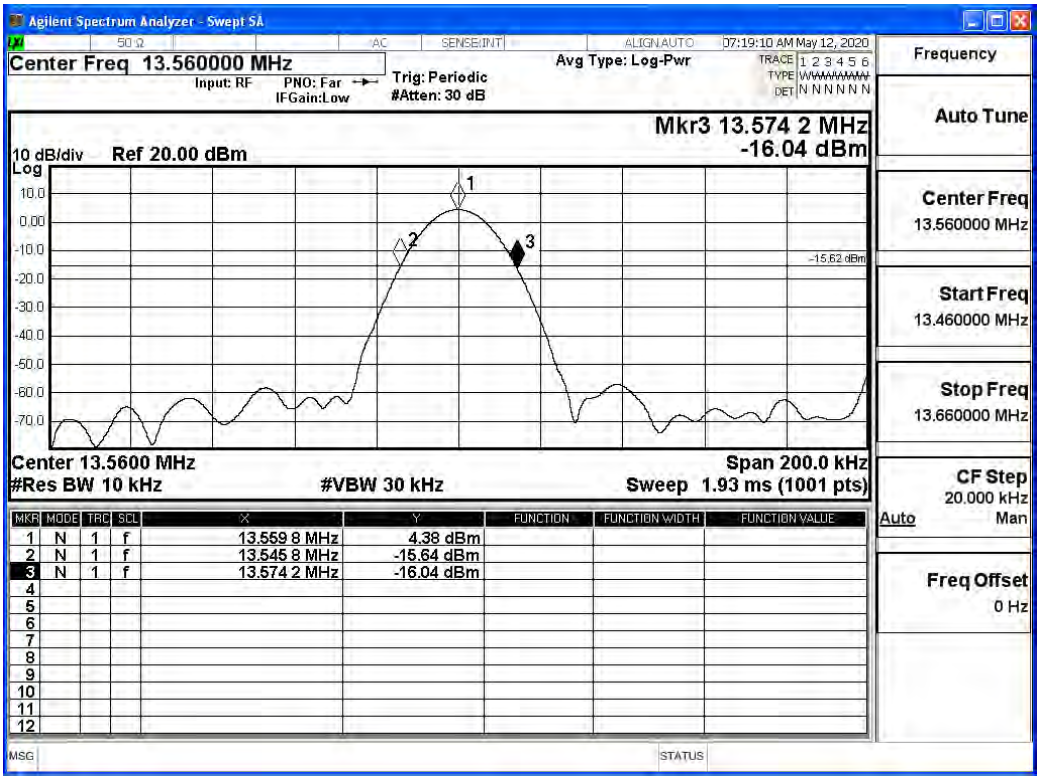
3.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.225.

3.5. Test Result of Emission Bandwidth

Frequency (MHz)	Measure Level (kHz)	Limit (MHz)
13.56	28.4	-

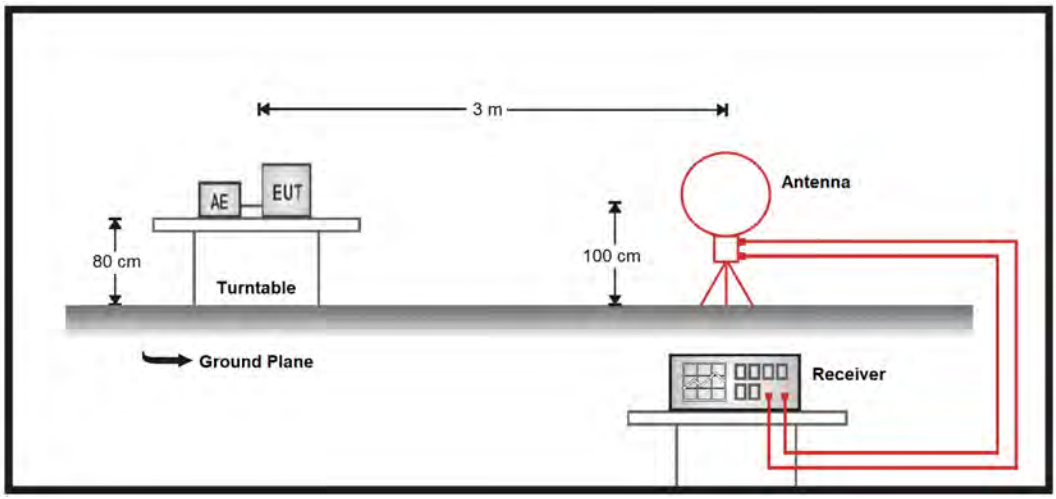
13.56 MHz



Measure Level (kHz) = 13.5742 – 13.5458 = 0.284 MHz = 284 kHz

4. Field Strength of Fundamental Emissions and Spectrum Mask

4.1. Test Setup



4.2. Test Limit

Field Strength of Fundamental Emissions			
Frequencies (MHz)	Field Strength (microvolts/meter) at 30m	Field Strength (dBμV/m) at 10m	Field Strength (dBμV/m) at 3m
13.553 – 13.567 MHz	15848	103.08 (QP)	124 (QP)
Quasi peak measurement of the fundamental.			

Spectrum Mask					
Rules and specifications	CFR 47 Part 15 section 15.225(a)-(d)				
Description	Compliance with the spectrum mask is tested using a spectrum analyzer with RBW set to a 9kHz for the band 13.553 – 13.567 MHz.				
Limit	Freq. of Emission (MHz)	Field Strength			
		(uV/m)@30m	(dBuV/m)@30m	(dBuV/m)@10m	(dBuV/m)@3m
	1.705~13.110	30	29.5	48.6	69.5
	13.110~13.410	106	40.5	59.6	80.5
	13.410~13.553	334	50.5	69.6	90.5
	13.553~13.567	15848	84.0	103.1	124.0
	13.567~13.710	334	50.5	69.6	90.5
	13.710~14.010	106	40.5	59.6	80.5
	14.010~30.000	30	29.5	48.6	69.5

4.3. Test Procedure

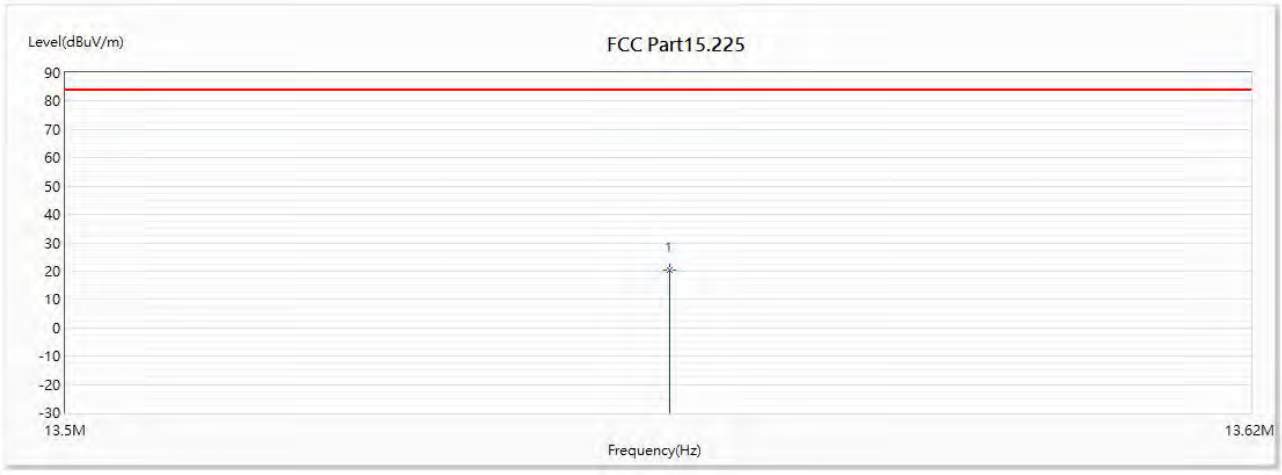
1. Configure the EUT according to ANSI C63.10: 2013. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the loop receiving antenna mounted antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the receiving antenna was fixed at one meter above ground to find the maximum emissions field strength.
4. For Fundamental emissions, use the receiver to measure QP reading.
5. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
6. Compliance with the spectrum mask is tested using a spectrum analyzer with RBW set to a 9kHz for the band 13.553 – 13.567 MHz.

4.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.225.

4.5. Test Result of Field Strength of Fundamental Emissions

Test Mode	Mode 3: Transmit_Extension Cover
Test Condition	13.56 MHz / Antenna X axis

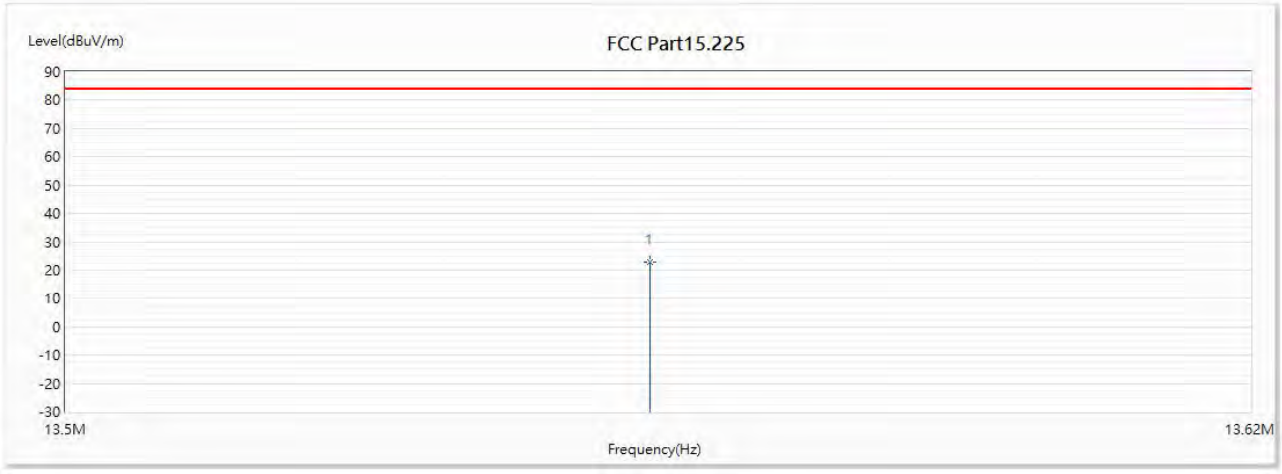


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	13.561	20.20	84.00	-63.80	38.86	-18.66	PK

Note:

1. All Reading Levels is Peak value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Correct Factor

Test Mode	Mode 3: Transmit_Extension Cover
Test Condition	13.56 MHz / Antenna Y axis

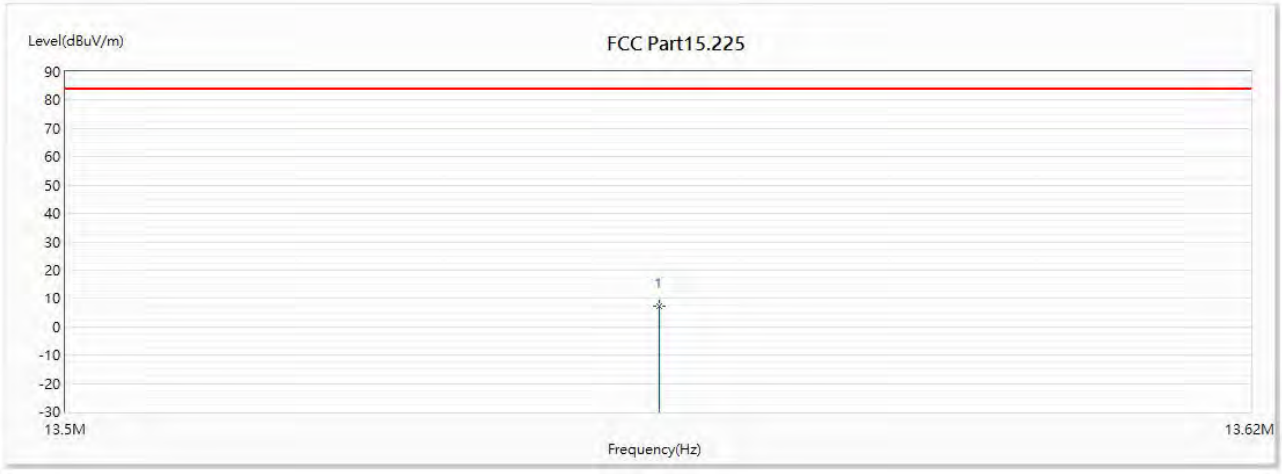


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	13.559	22.91	84.00	-61.09	41.57	-18.66	PK

Note:

1. All Reading Levels is Peak value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Correct Factor

Test Mode	Mode 3: Transmit_Extension Cover
Test Condition	13.56 MHz / Antenna Z axis



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	13.56	7.09	84.00	-76.91	25.75	-18.66	PK

Note:

1. All Reading Levels is Peak value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Correct Factor

4.6. Test Result of Spectrum Mask

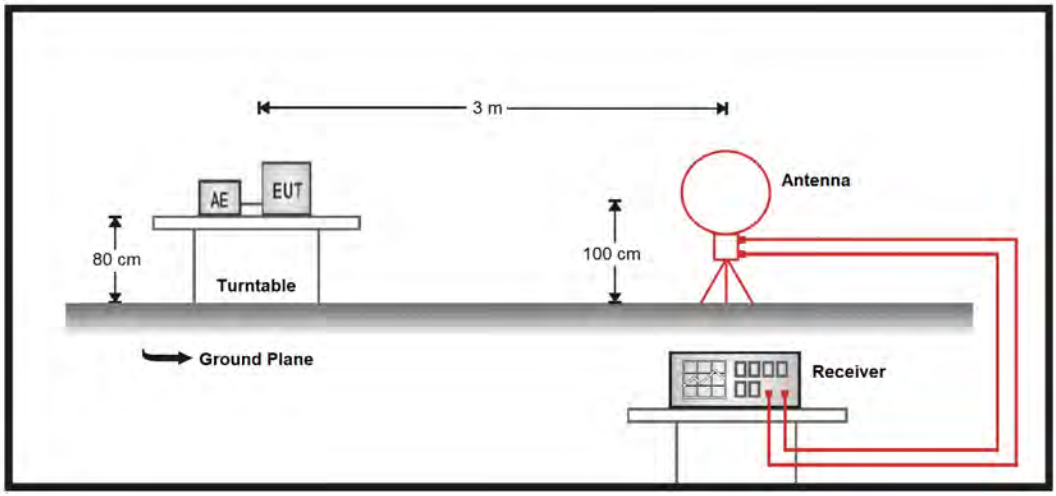
Frequency (MHz)	Reading Level (dBuV/m) 3m	Emission Level (dBuV/m) 30m	Limit (dBuV/m) 30m	Margin (dB)
Outside13.11	18.28	-0.40	29.54	-29.94
13.11~13.41	25.52	6.85	40.51	-33.66
13.41~13.553	27.94	9.28	50.47	-41.19
13.553~13.567	41.69	23.03	84.00	-60.97
13.567~13.71	27.12	8.47	50.47	-42.00
13.71~14.01	22.31	3.66	40.51	-36.85
Outside14.01	13.84	-4.80	29.54	-34.34

Spectrum mask measurements at 30m.

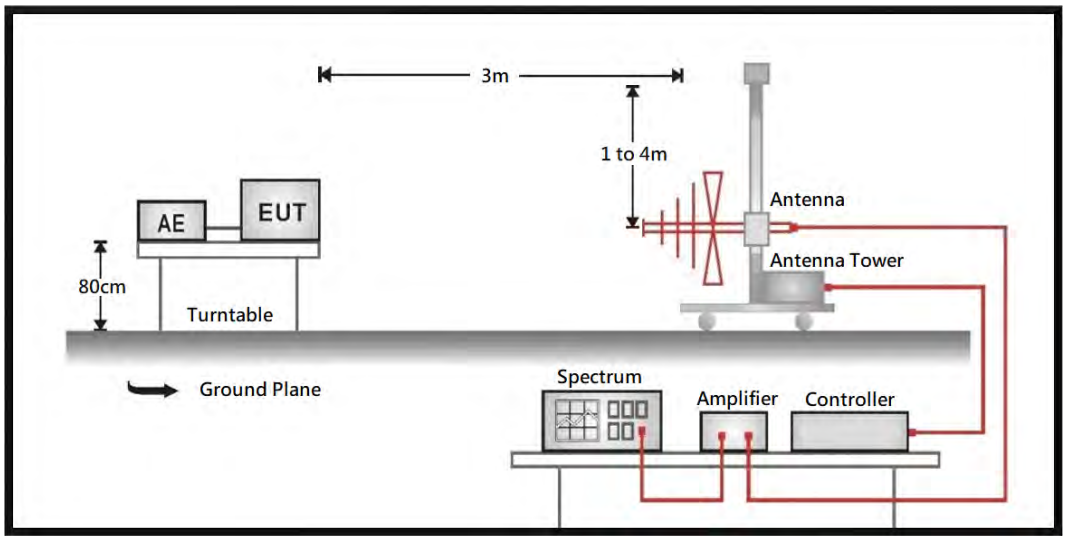
5. Radiated Emission

5.1. Test Setup

9 kHz ~ 30 MHz



30 MHz ~ 1 GHz



5.2. Test Limit

The field strength of any emissions which appear outside of 13.553 ~ 13.567MHz band shall not exceed the general radiated emissions limits.

Frequency (MHz)	Field strength (uV/m)	Field strength (dBuV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	20 log (2400/F(kHz))	300
0.490 – 1.705	24000/F(kHz)	20 log (24000/F(kHz))	30
1.705 - 30	30	29.5	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

Remarks:

1. Field strength (dBuV/m) = 20 log Field strength (uV/m)
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

5.3. Test Procedure

1. Configure the EUT according to ANSI C63.10: 2013. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
7. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

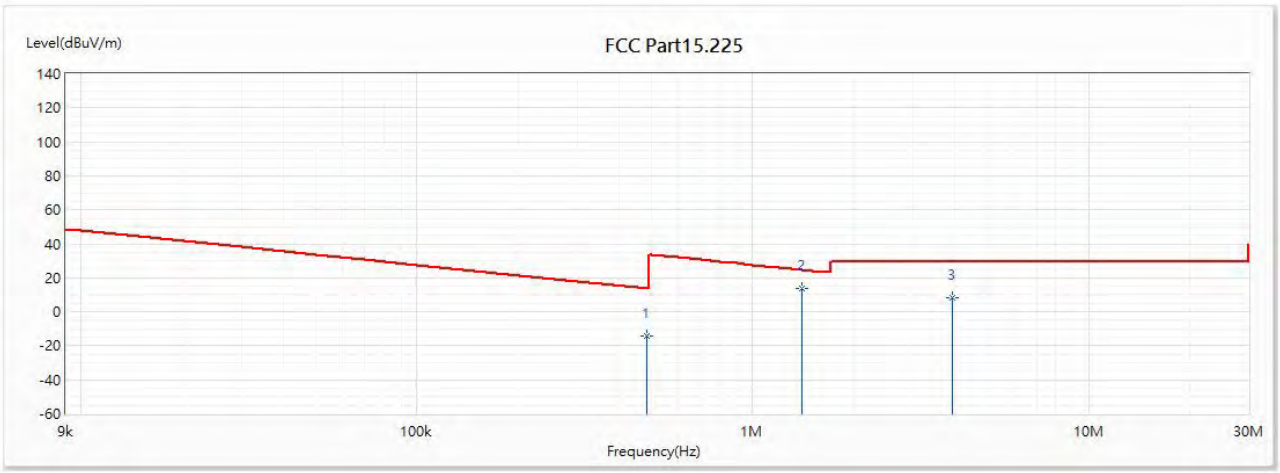
5.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.225.

5.5. Test Result of Radiated Emissions

9 kHz ~ 30 MHz

Test Mode	Mode 3: Transmit_Extension Cover
Test Condition	13.56 MHz / Antenna Y axis



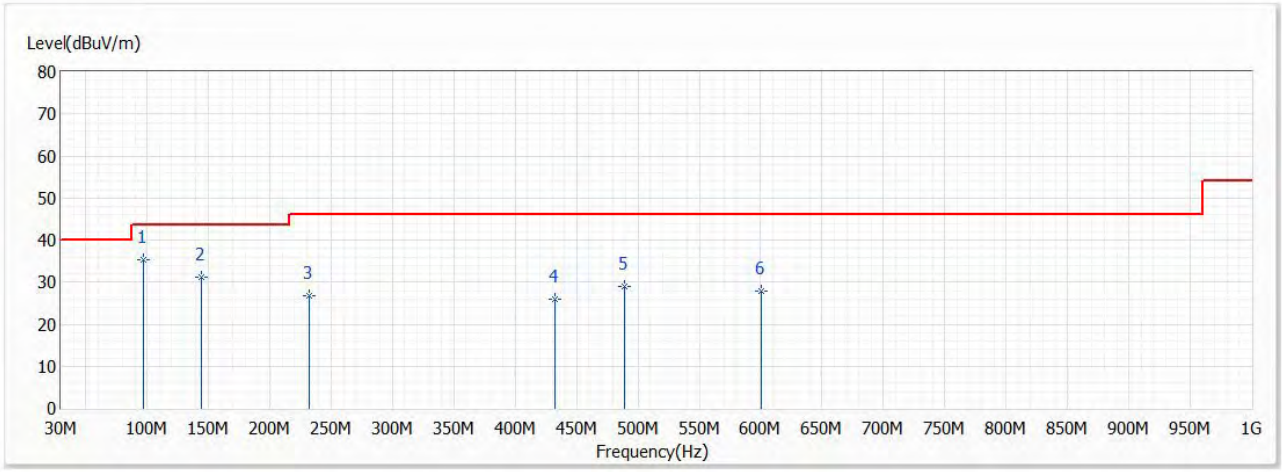
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.485	-14.43	13.89	-28.32	45.99	-60.42	PK
* 2	1.4	13.62	24.68	-11.06	33.96	-20.34	PK
3	3.934	8.14	29.54	-21.40	28.64	-20.50	PK

Note:

1. All Reading Levels is Peak value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Correct Factor

30 MHz ~ 1 GHz

Test Mode	Mode 1: Transmit_Adapter	Polarity	Horizontal
Test Condition	13.56 MHz		

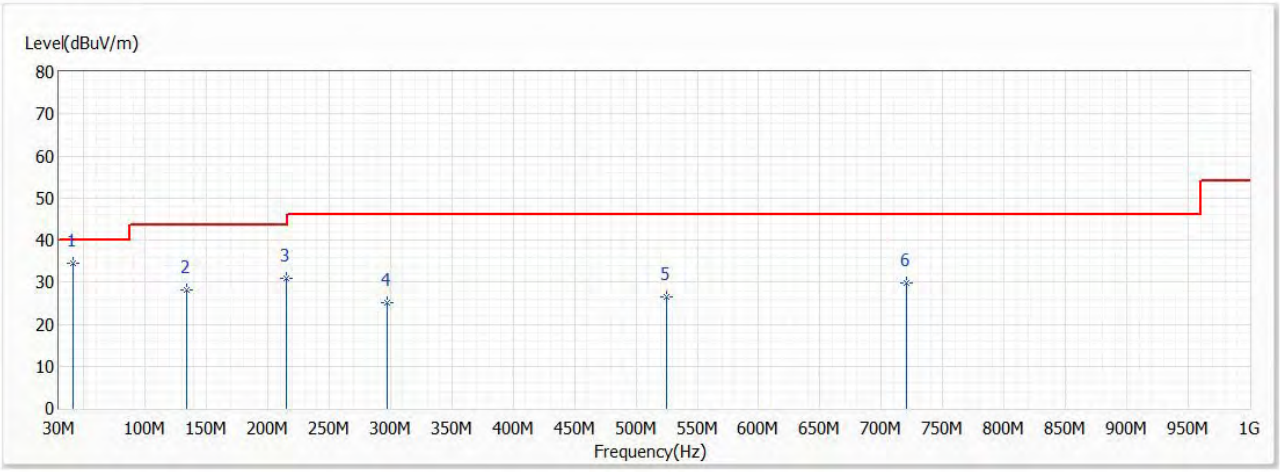


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	96.688	35.29	43.50	-8.21	43.49	-8.20	QP
2	144.096	31.15	43.50	-12.35	34.45	-3.30	QP
3	232.488	26.64	46.00	-19.36	31.86	-5.22	QP
4	432.186	26.06	46.00	-19.94	24.90	1.16	QP
5	489.174	28.95	46.00	-17.05	26.61	2.34	QP
6	600.239	27.75	46.00	-18.25	22.59	5.16	QP

Note:

1. All Reading Levels is Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Correct Factor

Test Mode	Mode 1: Transmit_Adapter	Polarity	Vertical
Test Condition	13.56 MHz		

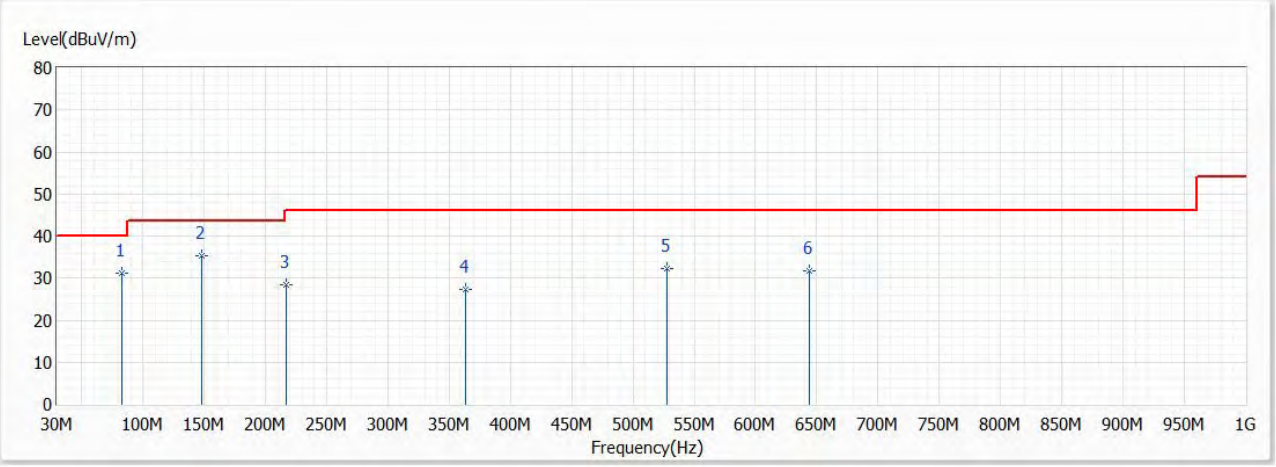


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	41.276	34.48	40.00	-5.52	37.13	-2.65	QP
2	134.275	28.13	43.50	-15.37	32.05	-3.92	QP
3	214.785	30.99	43.50	-12.51	37.48	-6.49	QP
4	296.993	25.12	46.00	-20.88	27.60	-2.48	QP
5	524.821	26.36	46.00	-19.64	23.18	3.18	QP
6	720.398	29.82	46.00	-16.18	22.96	6.86	QP

Note:

1. All Reading Levels is Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Correct Factor

Test Mode	Mode 2: Transmit_Docking Station	Polarity	Horizontal
Test Condition	13.56 MHz		

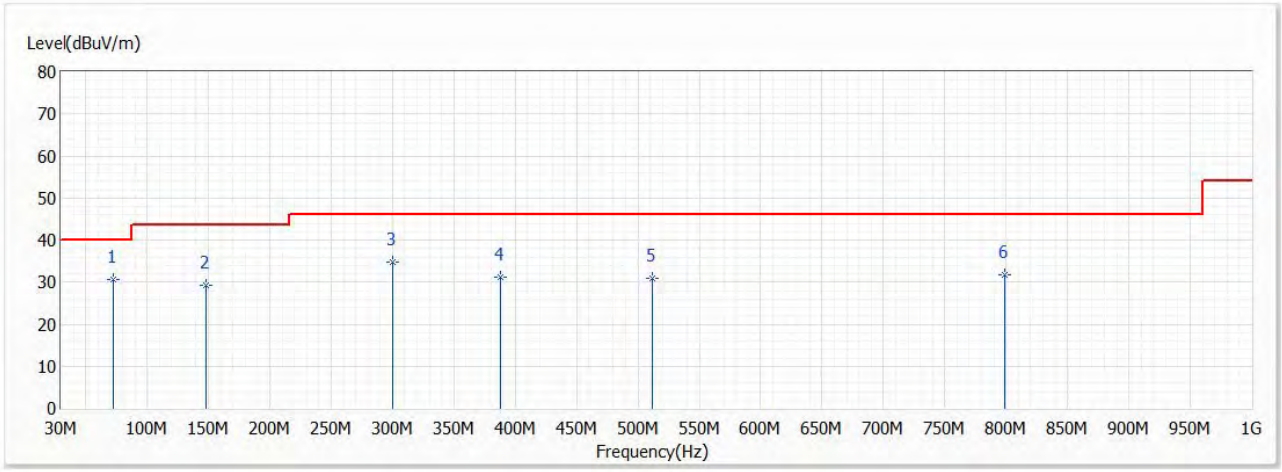


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	82.501	31.18	40.00	-8.82	38.76	-7.58	QP
* 2	148.461	35.34	43.50	-8.16	38.56	-3.22	QP
3	216.968	28.48	46.00	-17.52	34.92	-6.44	QP
4	362.953	27.31	46.00	-18.69	28.19	-0.88	QP
5	527.974	32.18	46.00	-13.82	28.98	3.20	QP
6	643.525	31.82	46.00	-14.18	25.94	5.88	QP

Note:

1. All Reading Levels is Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Correct Factor

Test Mode	Mode 2: Transmit_Docking Station	Polarity	Vertical
Test Condition	13.56 MHz		

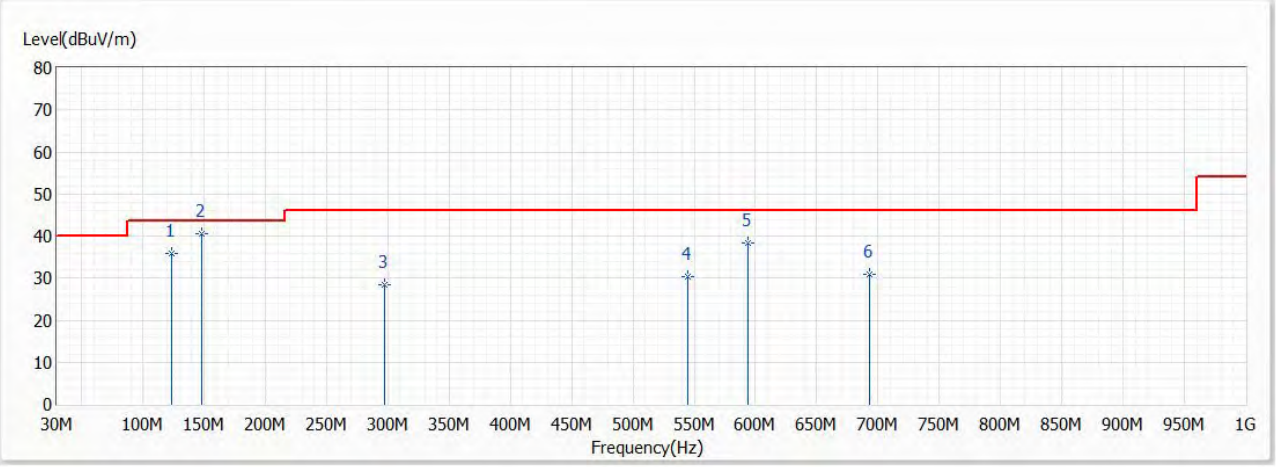


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	72.316	30.56	40.00	-9.44	35.53	-4.97	QP
2	148.461	29.30	43.50	-14.20	32.52	-3.22	QP
3	300.266	34.66	46.00	-11.34	37.12	-2.46	QP
4	388.051	31.06	46.00	-14.94	31.20	-0.14	QP
5	511.484	30.86	46.00	-15.14	27.92	2.94	QP
6	798.361	31.60	46.00	-14.40	23.67	7.93	QP

Note:

1. All Reading Levels is Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Correct Factor

Test Mode	Mode 3: Transmit_Extension Cover	Polarity	Horizontal
Test Condition	13.56 MHz		

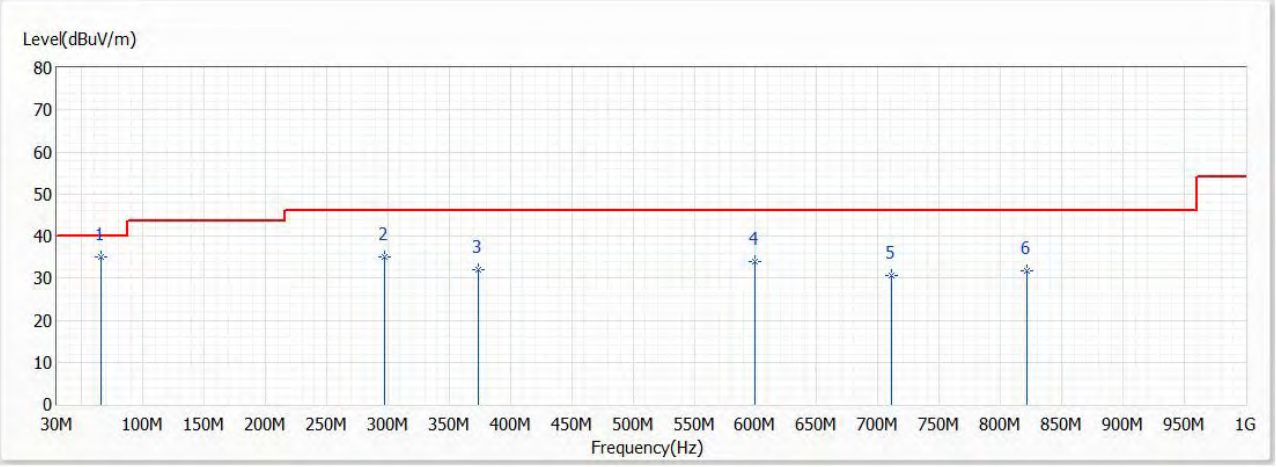


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	123.848	35.75	43.50	-7.75	40.51	-4.76	QP
* 2	148.461	40.49	43.50	-3.01	43.71	-3.22	QP
3	296.871	28.53	46.00	-17.47	31.01	-2.48	QP
4	544.464	30.24	46.00	-15.76	26.78	3.46	QP
5	593.934	38.41	46.00	-7.59	33.52	4.89	QP
6	693.238	30.95	46.00	-15.05	24.68	6.27	QP

Note:

1. All Reading Levels is Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Correct Factor

Test Mode	Mode 3: Transmit_Extension Cover	Polarity	Vertical
Test Condition	13.56 MHz		



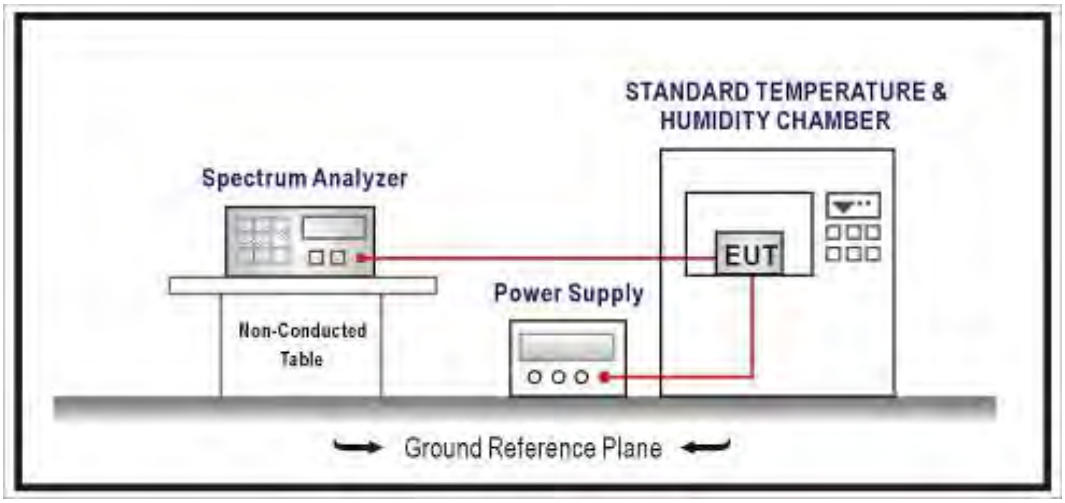
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	66.011	34.90	40.00	-5.10	39.04	-4.14	QP
2	297.114	35.16	46.00	-10.84	37.64	-2.48	QP
3	373.865	31.97	46.00	-14.03	32.45	-0.48	QP
4	599.996	34.01	46.00	-11.99	28.85	5.16	QP
5	710.576	30.61	46.00	-15.39	23.89	6.72	QP
6	821.884	31.84	46.00	-14.16	23.64	8.20	QP

Note:

1. All Reading Levels is Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Correct Factor

6. Frequency Stability

6.1. Test Setup



6.2. Test Limit

Carrier frequency stability shall be maintained to ±0.01% (±100 ppm).

6.3. Test Procedures

The frequency tolerance of the carrier signal shall be maintained within ±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.

6.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.225.

6.5. Test Result of Frequency Stability

Test Conditions		Center Frequency (MHz)			Frequency Tolerance (%)	Limit (%)
		F_L	F_C	F_H		
20℃	7.6V	13.5458	13.5600	13.5742	0.00000	< 0.01
20℃	6.5V	13.5458	13.5600	13.5742	0.00000	< 0.01
20℃	8.7V	13.5456	13.5599	13.5742	-0.00074	< 0.01

Test Conditions		Center Frequency (MHz)			Frequency Tolerance (%)	Limit (%)
		F_L	F_C	F_H		
-20℃	7.6V	13.5456	13.5599	13.5742	-0.00074	< 0.01
-10℃	7.6V	13.5456	13.5599	13.5742	-0.00074	< 0.01
0℃	7.6V	13.5458	13.5600	13.5742	0.00000	< 0.01
10℃	7.6V	13.5456	13.5599	13.5742	-0.00074	< 0.01
20℃	7.6V	13.5456	13.5599	13.5742	-0.00074	< 0.01
30℃	7.6V	13.5456	13.5599	13.5742	-0.00074	< 0.01
40℃	7.6V	13.5456	13.5599	13.5742	-0.00074	< 0.01
50℃	7.6V	13.5456	13.5599	13.5742	-0.00074	< 0.01
60℃	7.6V	13.5456	13.5599	13.5742	-0.00074	< 0.01
70℃	7.6V	13.5456	13.5599	13.5742	-0.00074	< 0.01