FCC Test Report

Product Name	WCDMA/LTE/5G Mobile Phone
Model No.	EA211001,EC211001,EC211004
FCC ID	RYQEA211001

Applicant	FIH CO., LTD.
Address	No.4, Minsheng St., Tu-Cheng Dist., New Taipei City 23679, Taiwan

Date of Receipt	Apr. 23, 2021
Issued Date	June 22, 2021
Report No.	2150419R-E3032110103
Report Version	V2.0

Testing Laboratory
3023

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.
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

Issued Date: June 22, 2021
Report No.: 2150419R-E3032110103

Product Name	WCDMA/LTE/5G Mobile Phone
Applicant	FIH CO., LTD.
Address	No.4, Minsheng St., Tu-Cheng Dist., New Taipei City 23679, Taiwan
Manufacturer	FIH CO., LTD.
Model No.	EA211001,EC211001,EC211004
FCC ID.	RYQEA211001
EUT Rated Voltage	AC 100-240V, 50-60Hz or DC 3.85V by battery
EUT Test Voltage	AC 120V / 60Hz
Trade Name	FIH
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By : Genie Chang

(Senior Adm. Specialist / Genie Chang)

Tested By : Ivan Chuang

(Senior Engineer / Ivan Chuang)

Approved By : Vinc Yeh

(Senior Engineer / Vincent Yeh)

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Revision History

Report No.	Version	Description	Issued Date
2150419R-E3032110103	V1.0	Initial issue of report.	2021-06-10
2150419R-E3032110103	V2.0	Update Product Name	2021-06-22

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	WCDMA/LTE/5G Mobile Phone
Trade Name	FIH
Model No.	EA211001,EC211001,EC211004
FCC ID	RYQEA211001
Frequency Range	13.56MHz
Channel Number	1
Modulation	ASK
Antenna Type	Loop Antenna
USB Cable	Shielded, 1m
Power Adapter	MFR: CHEN YANG, M/N: CK18W02U Input: AC 100-240V, 50-60Hz, 0.5A Output: 5V⎓3A or 9V⎓2A or 12V⎓1.5A

Note:

1. This device is a WCDMA/LTE/5G Mobile Phone with a built-in 2.4 GHz、5 GHz WLAN、Bluetooth V5.1, V3.0, V2.1+EDR、NFC and WWAN transceiver, this report for NFC.
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. It's declared by manufacture about all models are electrically identical, different model names for marketing purpose. The identification of test sample is EA211001.
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

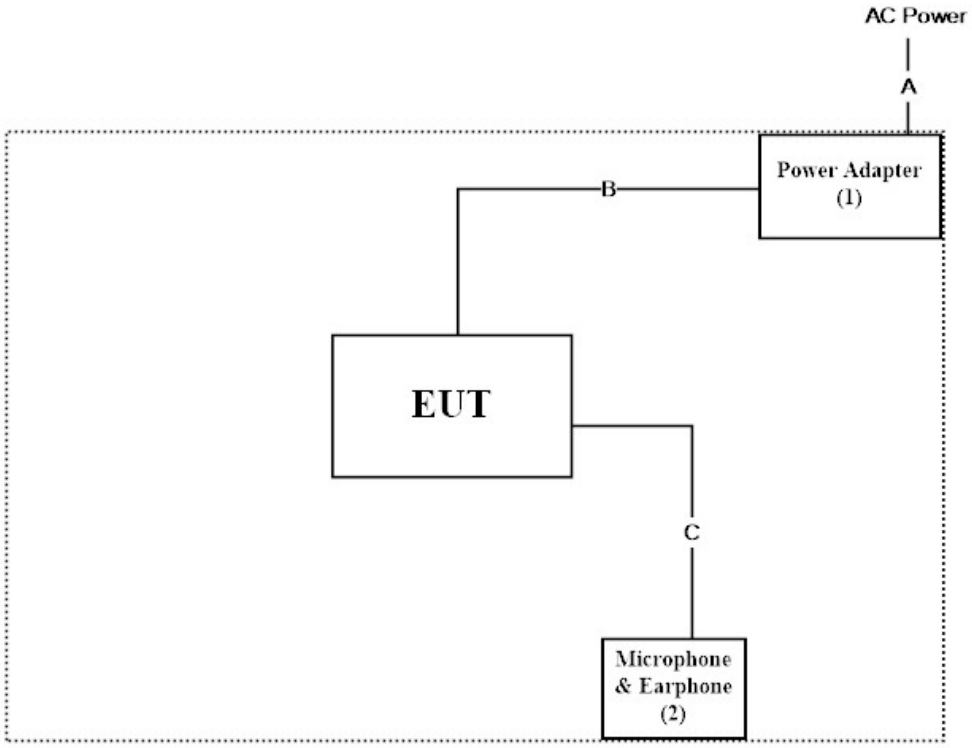
1.2. Tested System Datails

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	Power Adapter	CHEN YANG	CK18W02U	N/A	N/A
2	Microphone & Earphone	Ergotech	ET-E201	N/A	N/A

Signal Cable Type		Signal cable Description
A	Power Cable	Non-shielded, 1.8m
B	USB Cable	Shielded, 1m
C	Audio Cable	Non-shielded, 1.2m

1.3. Configuration of tested System



1.4. EUT Exercise Software

(1) Setup the EUT as shown in Section 1.3.

(2) Turn on the power of all equipment.

(3) Verify that the EUT works properly.

1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	23.5 °C
	Humidity (%RH)	10~90 %	60.1 %
Radiated Emission	Temperature (°C)	10~40 °C	25.4 °C
	Humidity (%RH)	10~90 %	64.3 %
Conductive	Temperature (°C)	10~40 °C	22 °C
	Humidity (%RH)	10~90 %	55 %

USA : FCC Registration Number: TW0033
Canada : IC Registration Number: 26930

Site Description : Accredited by TAF
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd
Address : No. 26, Huaya 1st Rd., Guishan Dist., Taoyuan City
Phone number : 886-2-2602-7968
Fax number : 866-2-2602-3286
Email address : info.tw@dekra.com
Website : http://www.dekra.com.tw

1.6. List of Test Equipment

For Conduction measurements / ASR1-1

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	EMI Test Receiver	R&S	ESR7	101601	2021.01.04	2022.01.03
X	Two-Line V-Network	R&S	ENV216	101306	2021.04.08	2022.04.07
X	Two-Line V-Network	R&S	ENV216	101307	2021.05.04	2022.05.03
X	Coaxial Cable	DEKRA	RG400_BNC	RF001	2021.05.24	2022.05.23

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 V2.0.

For Conducted measurements /SH1

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Temperature Chamber	KSON	THS-D4T-100	A0606	2021.04.22	2022.04.21
X	Spectrum Analyzer	R&S	FSV30	103466	2020.12.28	2021.12.27

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 /AC2

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Loop Antenna	AMETEK	HLA6121	49611	2021.03.16	2022.03.15
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-678	2020.09.04	2021.09.03
	Horn Antenna	ETS-Lindgren	3117	00203799	2020.12.22	2021.12.21
	Horn Antenna	Com-Power	AH-840	101101	2020.11.19	2021.11.18
X	Pre-Amplifier	EMCI	EMC001330	980302	2020.07.08	2021.07.07
	Pre-Amplifier	EMCI	EMC051835SE	980312	2020.06.10	2021.06.09
	Pre-Amplifier	EMCI	EMC05820SE	980361	2020.12.21	2021.12.20
	Pre-Amplifier	EMCI	EMC184045SE	980369	2021.04.27	2022.04.26
	Filter	MICRO TRONICS	BRM50702	G251	2020.09.17	2021.09.16
	Filter	MICRO TRONICS	BRM50716	G188	2020.09.17	2021.09.16
X	EMI Test Receiver	R&S	ESR	102793	2020.12.17	2021.12.16
X	Spectrum Analyzer	R&S	FSV3044	101114	2021.02.04	2022.02.03
X	Coaxial Cable	SUHNER	SUCOFLEX 106	RF003	2021.03.03	2022.03.02
X	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2020.06.10	2021.06.09

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 V2.0.

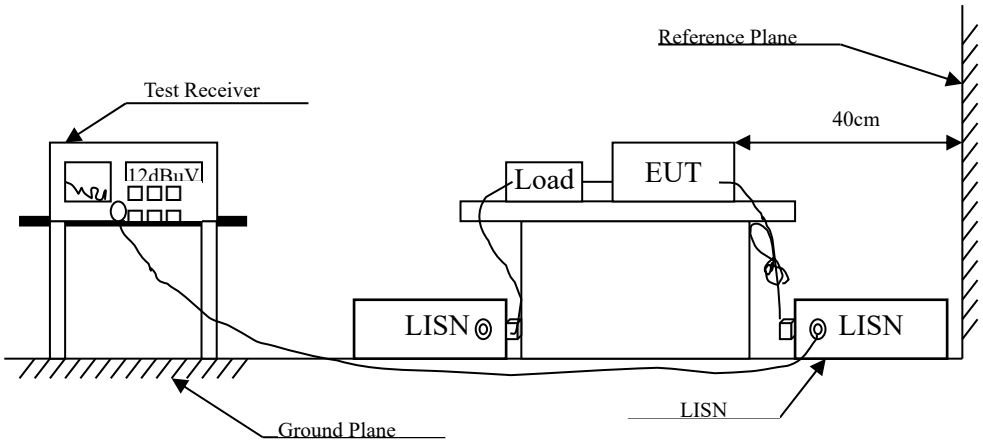
1.7. Uncertainty

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.

Test item	**Uncertainty**	
Conducted Emission	±3.42 dB	
Radiated Emission	Under 1GHz ±4.05 dB	Above 1GHz ±3.73 dB
Band Edge	Under 1GHz ±4.05 dB	Above 1GHz ±3.73 dB
20dB Bandwidth	±1544.74Hz	
Frequency Tolerance	±1544.74Hz	

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(注)	56-46(注)
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.)

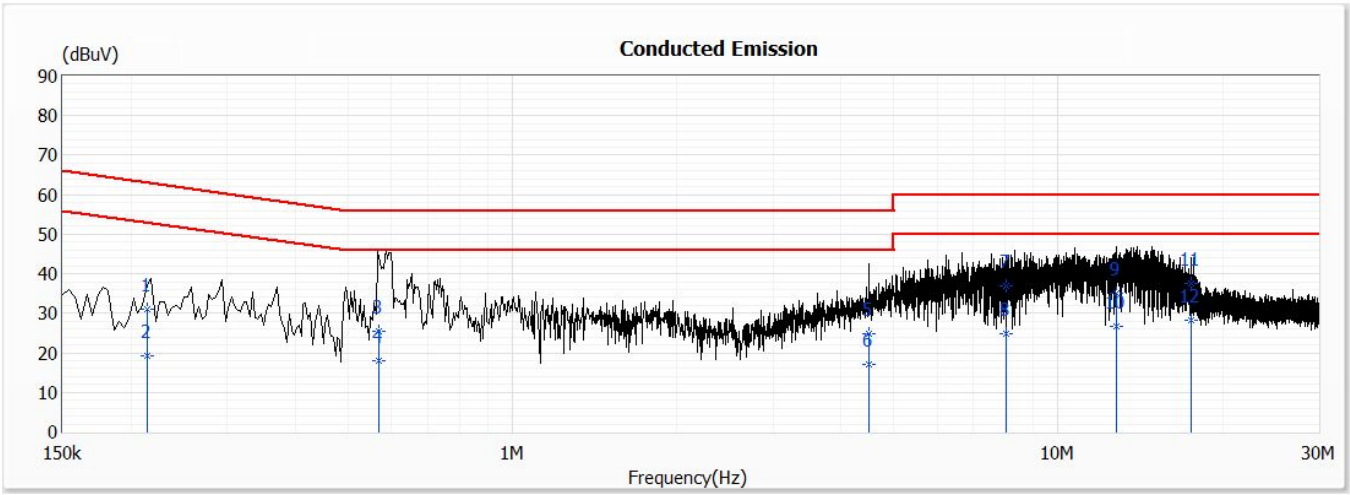
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

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

2.4. Test Result of Conducted Emission

Product	:	WCDMA/LTE/5G Mobile Phone
Test Item	:	Conducted Emission Test
Test date	:	2021/06/10
Test Mode	:	Mode 1: Transmit

Line1



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.215	31.17	63.02	-31.85	21.52	9.65	QP
2	0.215	19.33	53.02	-33.69	9.68	9.65	AV
3	0.570	25.49	56.00	-30.51	15.83	9.66	QP
4	0.570	18.11	46.00	-27.89	8.45	9.66	AV
5	4.502	24.96	56.00	-31.04	15.18	9.78	QP
6	4.502	17.08	46.00	-28.92	7.30	9.78	AV
7	8.019	36.90	60.00	-23.10	27.05	9.85	QP
8	8.019	24.87	50.00	-25.13	15.02	9.85	AV
9	12.800	35.06	60.00	-24.94	25.14	9.92	QP
10	12.800	26.54	50.00	-23.46	16.62	9.92	AV
11	17.515	37.58	60.00	-22.42	27.62	9.96	QP
*12	17.515	28.30	50.00	-21.70	18.34	9.96	AV

Remark:

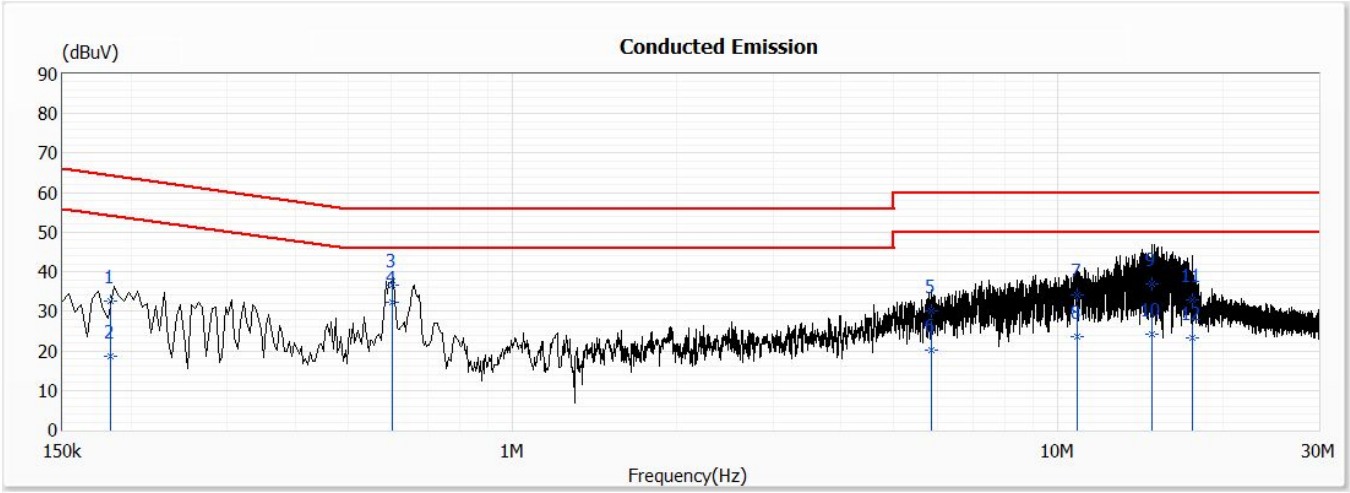
1. "*" means this data is the worst emission level;"!" means this data is over limit.

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

3. Margin=Emission Level-Limit

Product : WCDMA/LTE/5G Mobile Phone
Test Item : Conducted Emission Test
Test date : 2021/06/10
Test Mode : Mode 1: Transmit

N



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.184	32.70	64.32	-31.62	23.03	9.67	QP
2	0.184	18.65	54.32	-35.67	8.98	9.67	AV
3	0.602	36.54	56.00	-19.46	26.87	9.67	QP
*4	0.602	32.26	46.00	-13.74	22.59	9.67	AV
5	5.864	30.19	60.00	-29.81	20.36	9.83	QP
6	5.864	20.17	50.00	-29.83	10.34	9.83	AV
7	10.828	34.18	60.00	-25.82	24.26	9.92	QP
8	10.828	23.49	50.00	-26.51	13.57	9.92	AV
9	14.878	36.93	60.00	-23.07	26.94	9.99	QP
10	14.878	24.34	50.00	-25.66	14.35	9.99	AV
11	17.588	32.84	60.00	-27.16	22.81	10.03	QP
12	17.588	23.15	50.00	-26.85	13.12	10.03	AV

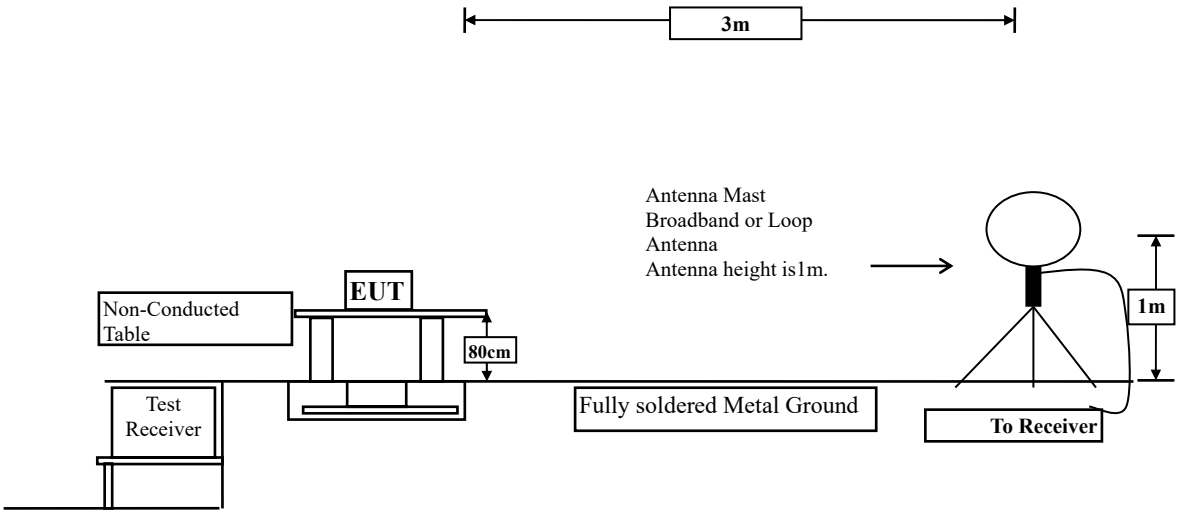
Remark:

1. "*" means this data is the worst emission level;"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=LISN Factor+Cable Loss).
3. Margin=Emission Level-Limit

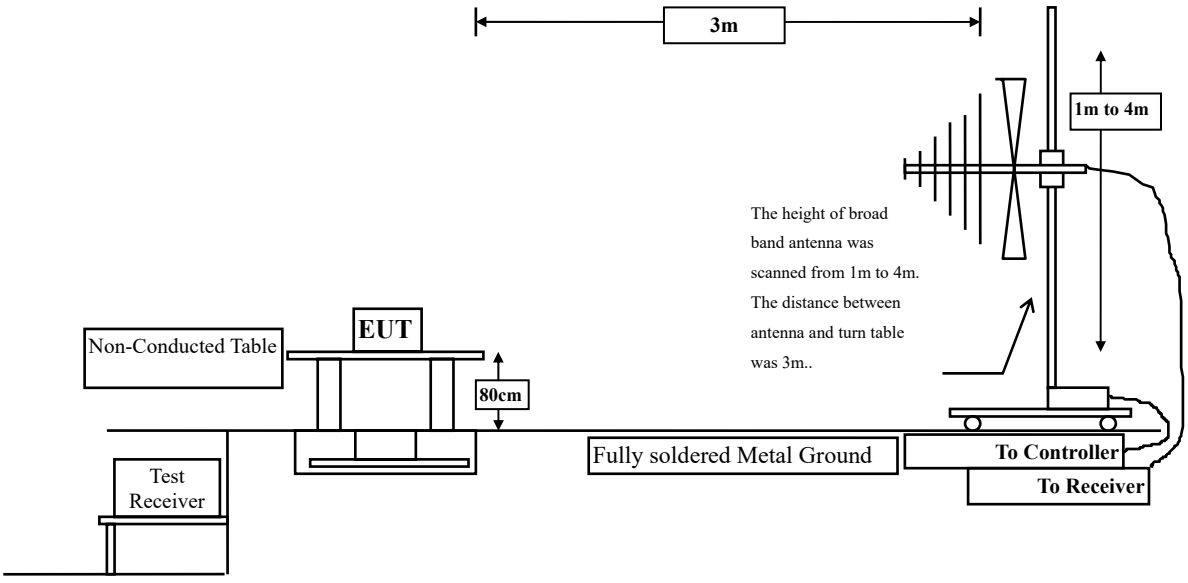
3. Radiated Emission

3.1. Test Setup

Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



3.2. Limits

➢ Fundamental electric field strength Limit

FCC Part 15 Subpart C Paragraph 15.225 Limits				
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 a quasi-peak detector.

➢ Spurious electric field strength Limit

FCC Part 15 Subpart C Paragraph 15.209 Limits		
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.

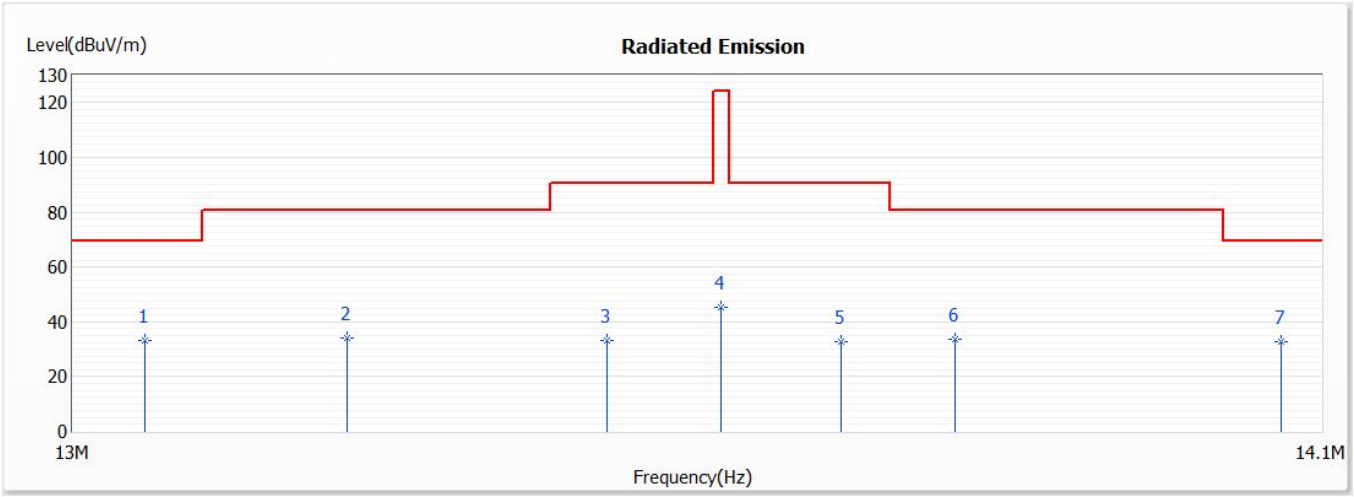
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

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. Test Result of Radiated Emission

Product	:	WCDMA/LTE/5G Mobile Phone
Test Item	:	Fundamental Radiated Emission
Test Mode	:	Mode 1: Transmit
Test date	:	2021/06/09

Horizontal_X-axis



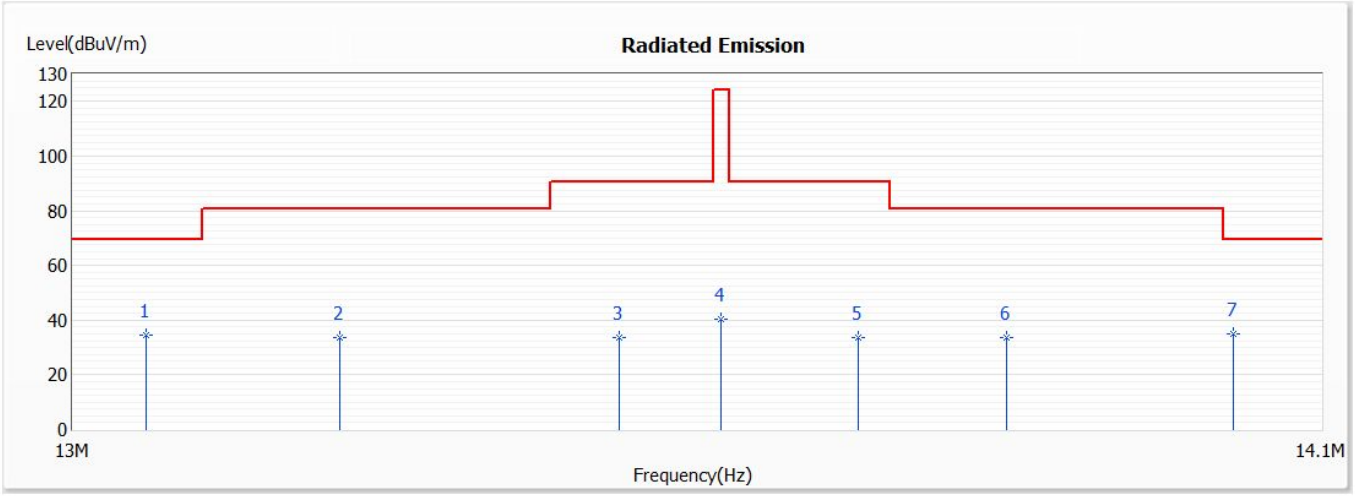
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	13.061	33.32	69.50	-36.18	12.98	20.34	QP
2	13.234	34.29	80.50	-46.21	14.02	20.27	QP
3	13.460	33.25	90.47	-57.22	13.07	20.18	QP
4	13.560	45.38	124.00	-78.62	25.24	20.14	QP
5	13.666	32.66	90.47	-57.81	12.57	20.09	QP
6	13.768	33.65	80.50	-46.85	13.60	20.05	QP
7	14.063	32.93	69.50	-36.57	12.97	19.96	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. Emission Level = Reading Level + Correct Factor.

Product : WCDMA/LTE/5G Mobile Phone
Test Item : Fundamental Radiated Emission
Test Mode : Mode 1: Transmit
Test date : 2021/06/09

Vertical_X-axis



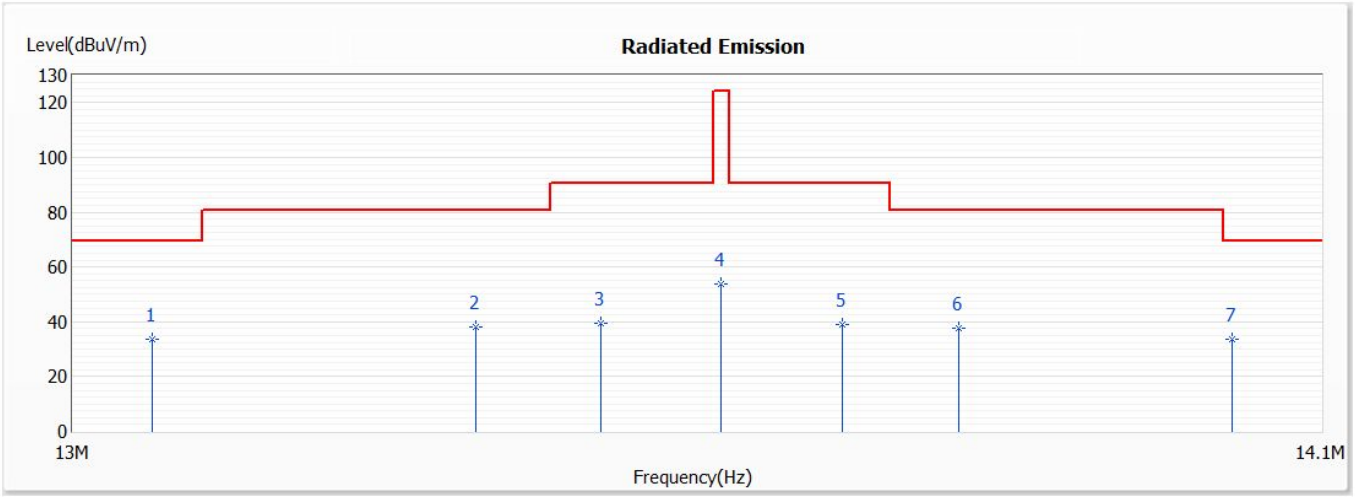
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	13.062	34.34	69.50	-35.16	14.00	20.34	QP
2	13.228	33.68	80.50	-46.82	13.41	20.27	QP
3	13.471	33.64	90.47	-56.83	13.47	20.17	QP
4	13.560	40.42	124.00	-83.58	20.28	20.14	QP
5	13.682	33.69	90.47	-56.78	13.60	20.09	QP
6	13.814	33.65	80.50	-46.85	13.62	20.03	QP
* 7	14.019	34.93	69.50	-34.57	14.97	19.96	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. Emission Level = Reading Level + Correct Factor.

Product : WCDMA/LTE/5G Mobile Phone
Test Item : Fundamental Radiated Emission
Test Mode : Mode 1: Transmit
Test date : 2021/06/09

Horizontal_Y-axis



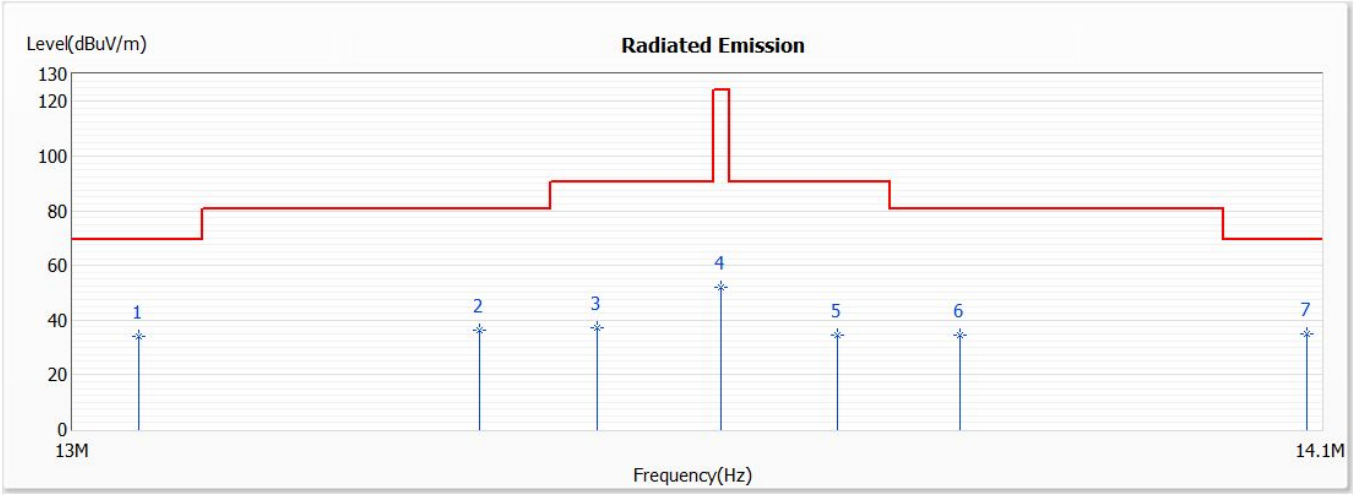
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	13.068	33.50	69.50	-36.00	13.17	20.33	QP
2	13.345	37.91	80.50	-42.59	17.69	20.22	QP
3	13.454	39.59	90.47	-50.88	19.41	20.18	QP
4	13.560	53.68	124.00	-70.32	33.54	20.14	QP
5	13.667	38.84	90.47	-51.63	18.75	20.09	QP
6	13.771	37.54	80.50	-42.96	17.49	20.05	QP
* 7	14.018	33.58	69.50	-35.92	13.62	19.96	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. Emission Level = Reading Level + Correct Factor.

Product : WCDMA/LTE/5G Mobile Phone
Test Item : Fundamental Radiated Emission
Test Mode : Mode 1: Transmit
Test date : 2021/06/09

Vertical_Y-axis



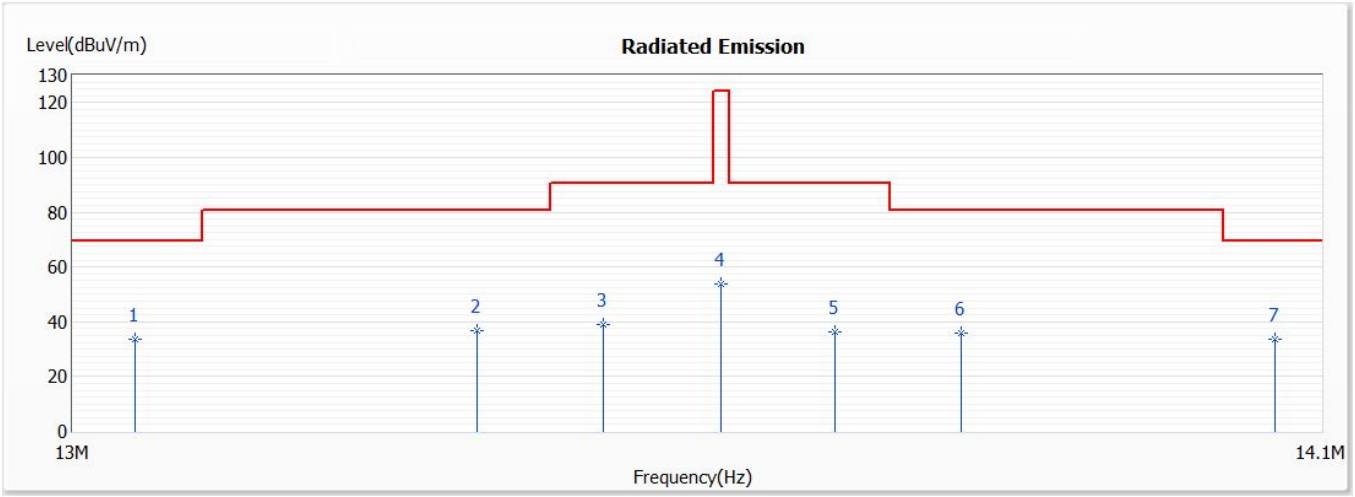
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	13.056	34.06	69.50	-35.44	13.72	20.34	QP
2	13.349	36.22	80.50	-44.28	16.00	20.22	QP
3	13.451	37.20	90.47	-53.27	17.02	20.18	QP
4	13.560	51.85	124.00	-72.15	31.71	20.14	QP
5	13.663	34.65	90.47	-55.82	14.56	20.09	QP
6	13.772	34.59	80.50	-45.91	14.54	20.05	QP
* 7	14.086	34.89	69.50	-34.61	14.93	19.96	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. Emission Level = Reading Level + Correct Factor.

Product	:	WCDMA/LTE/5G Mobile Phone
Test Item	:	Fundamental Radiated Emission
Test Mode	:	Mode 1: Transmit
Test date	:	2021/06/09

Horizontal_Z-axis



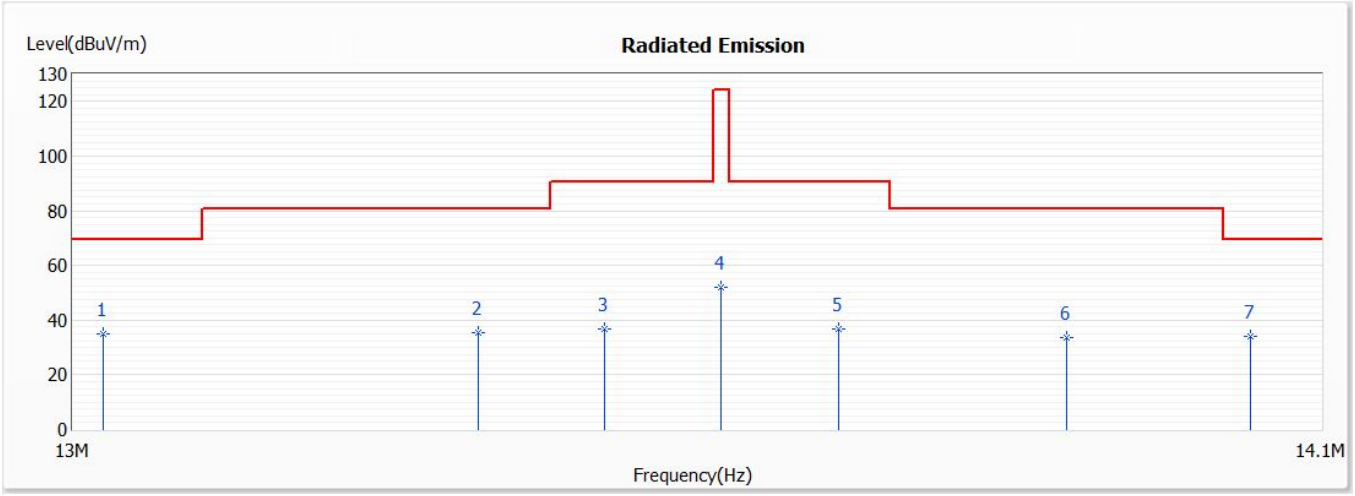
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	13.053	33.72	69.50	-35.78	13.38	20.34	QP
2	13.347	36.96	80.50	-43.54	16.74	20.22	QP
3	13.457	39.14	90.47	-51.33	18.96	20.18	QP
4	13.560	53.77	124.00	-70.23	33.63	20.14	QP
5	13.661	36.39	90.47	-54.08	16.29	20.10	QP
6	13.773	35.98	80.50	-44.52	15.93	20.05	QP
7	14.057	33.57	69.50	-35.93	13.61	19.96	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. Emission Level = Reading Level + Correct Factor.

Product : WCDMA/LTE/5G Mobile Phone
Test Item : Fundamental Radiated Emission
Test Mode : Mode 1: Transmit
Test date : 2021/06/09

Vertical_Z-axis



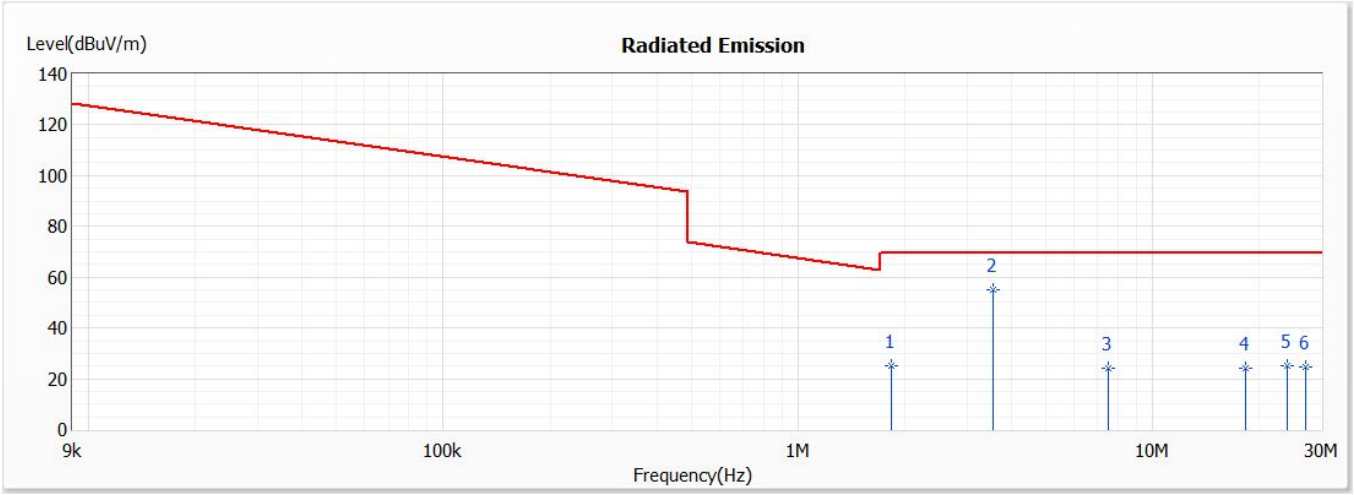
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	13.026	34.92	69.50	-34.58	14.57	20.35	QP
2	13.348	35.39	80.50	-45.11	15.17	20.22	QP
3	13.458	36.91	90.47	-53.56	16.73	20.18	QP
4	13.560	51.80	124.00	-72.20	31.66	20.14	QP
5	13.664	36.94	90.47	-53.53	16.85	20.09	QP
6	13.868	33.76	80.50	-46.74	13.75	20.01	QP
7	14.035	34.00	69.50	-35.50	14.04	19.96	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. Emission Level = Reading Level + Correct Factor.

Product	:	WCDMA/LTE/5G Mobile Phone
Test Item	:	General Radiated Emission Data (below 30MHz)
Test Mode	:	Mode 1: Transmit
Test date	:	2021/06/09

Horizontal



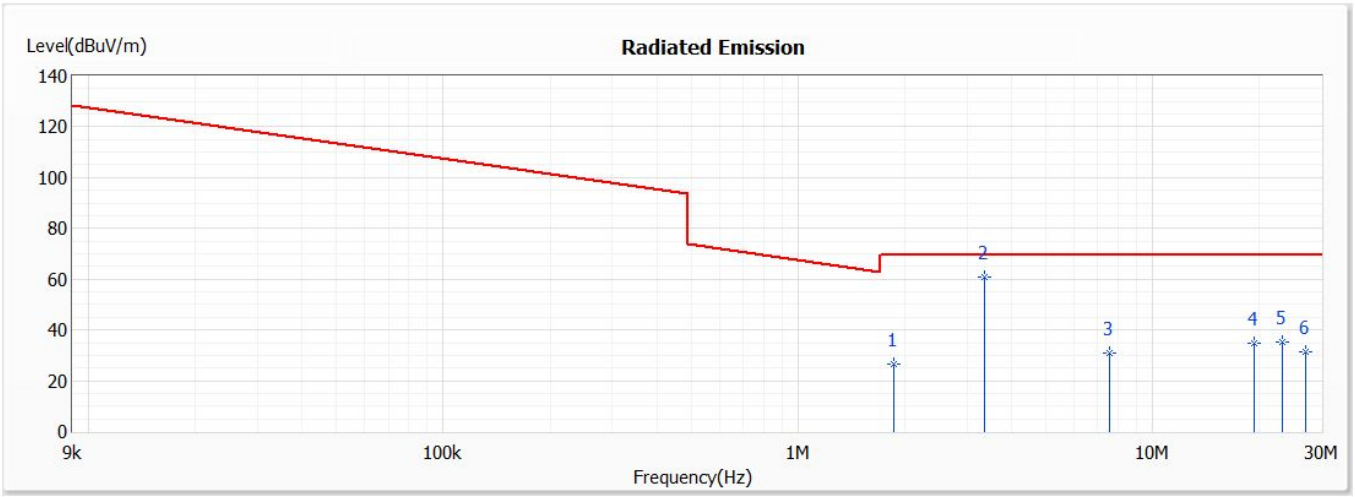
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	1.838	24.88	69.54	-44.66	4.79	20.09	QP
* 2	3.548	55.19	69.54	-14.35	35.06	20.13	QP
3	7.507	24.01	69.54	-45.53	3.91	20.10	QP
4	18.274	24.30	69.54	-45.24	4.45	19.85	QP
5	24.032	24.98	69.54	-44.56	5.21	19.77	QP
6	27.120	24.72	69.54	-44.82	4.78	19.94	QP

Note:

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

Product	:	WCDMA/LTE/5G Mobile Phone
Test Item	:	General Radiated Emission Data (below 30MHz)
Test Mode	:	Mode 1: Transmit
Test date	:	2021/06/09

Vertical



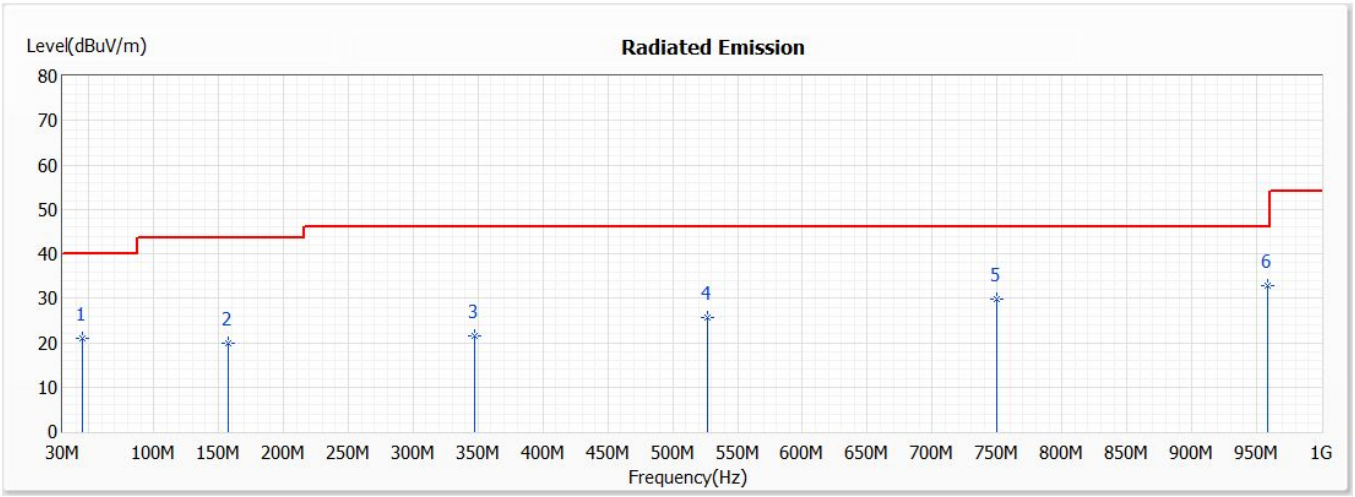
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	1.868	26.52	69.54	-43.02	6.43	20.09	QP
* 2	3.368	60.98	69.54	-8.56	40.86	20.12	QP
3	7.597	30.80	69.54	-38.74	10.70	20.10	QP
4	19.413	34.84	69.54	-34.70	15.05	19.79	QP
5	23.312	35.09	69.54	-34.45	15.35	19.74	QP
6	27.120	31.32	69.54	-38.22	11.38	19.94	QP

Note:

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

Product	:	WCDMA/LTE/5G Mobile Phone
Test Item	:	General Radiated Emission Data (above 30MHz)
Test Mode	:	Mode 1: Transmit
Test date	:	2021/06/09

Horizontal



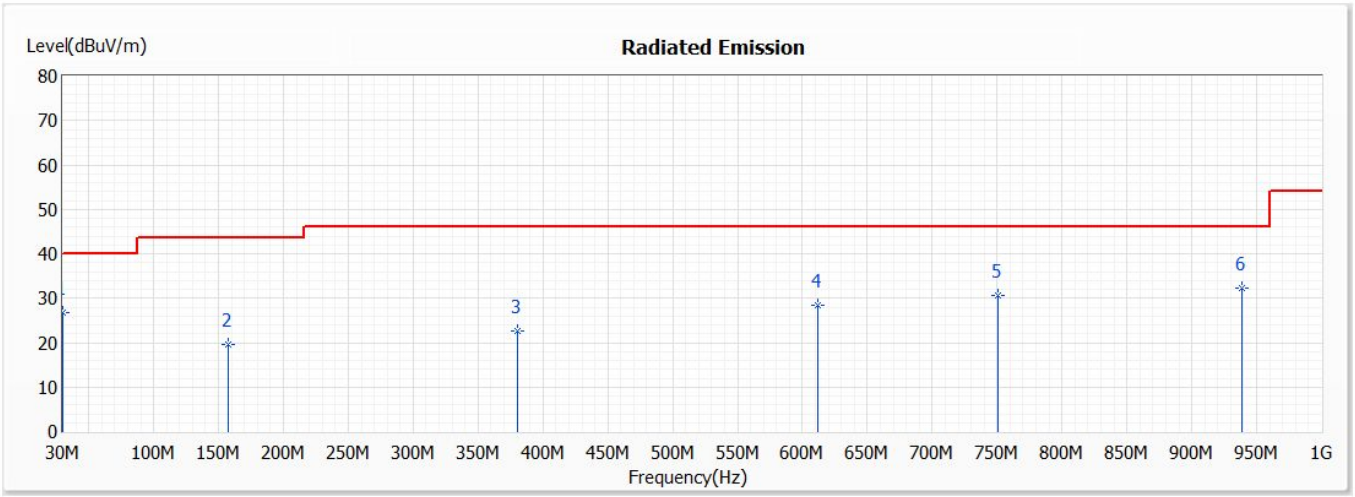
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	45.520	21.08	40.00	-18.92	31.52	-10.44	QP
2	157.070	19.97	43.50	-23.53	30.39	-10.42	QP
3	347.190	21.48	46.00	-24.52	30.00	-8.52	QP
4	526.640	25.75	46.00	-20.25	30.30	-4.55	QP
5	749.740	29.86	46.00	-16.14	30.47	-0.61	QP
* 6	958.290	32.70	46.00	-13.30	30.72	1.98	QP

Note:

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

Product : WCDMA/LTE/5G Mobile Phone
Test Item : General Radiated Emission Data (above 30MHz)
Test Mode : Mode 1: Transmit
Test date : 2021/06/09

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
* 1	30.000	26.65	40.00	-13.35	38.40	-11.75	QP
2	157.070	19.61	43.50	-23.89	30.03	-10.42	QP
3	380.170	22.67	46.00	-23.33	30.24	-7.57	QP
4	612.000	28.50	46.00	-17.50	31.24	-2.74	QP
5	750.710	30.55	46.00	-15.45	31.14	-0.59	QP
6	938.890	32.33	46.00	-13.67	30.59	1.74	QP

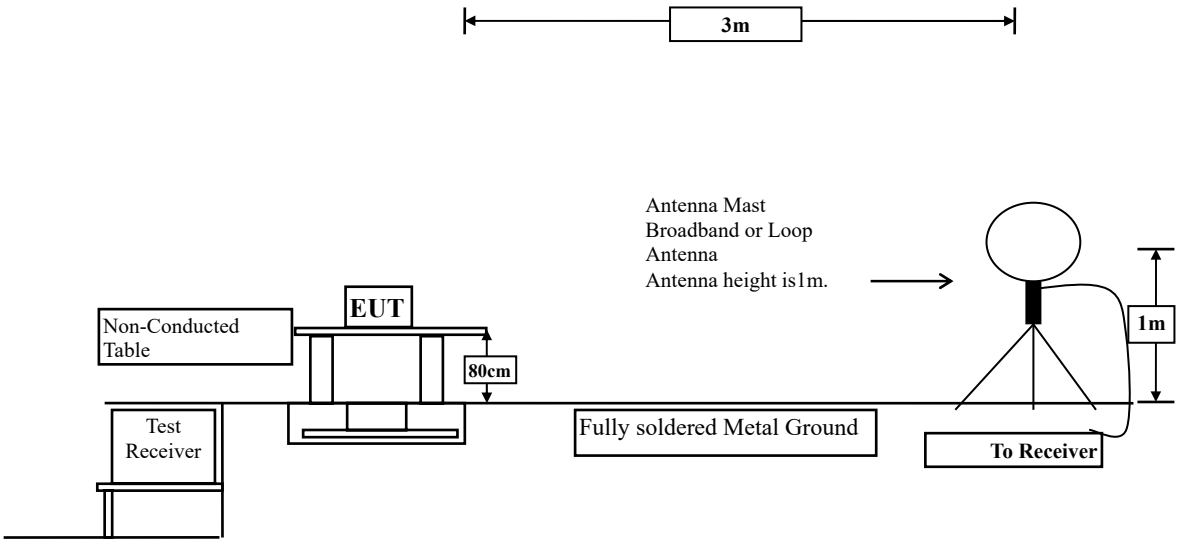
Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “*” means the worst emission level.
3. Emission 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.

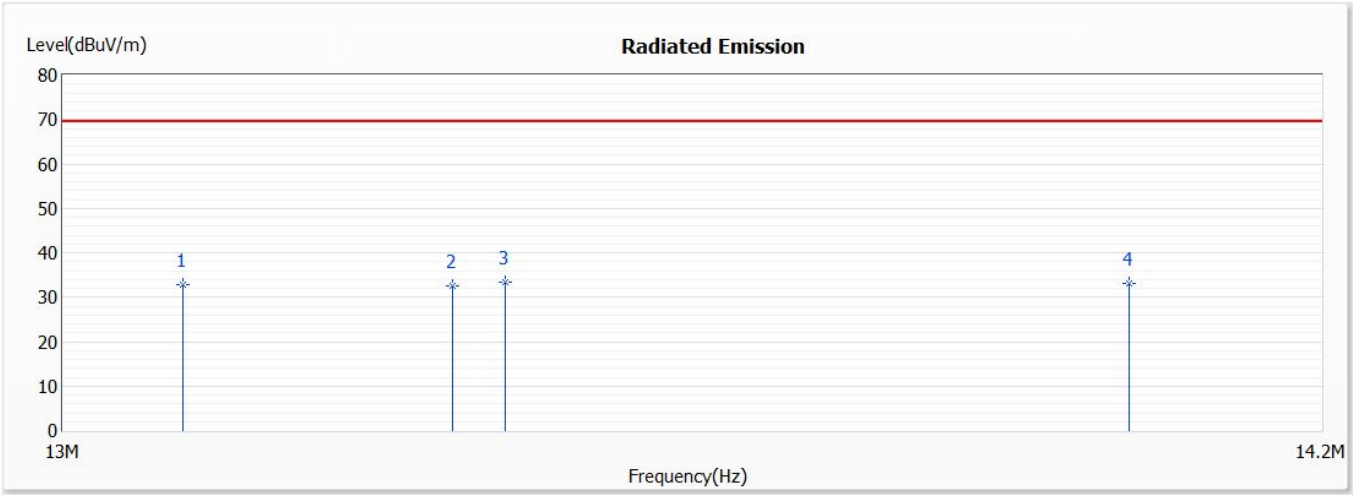
4.3. Test Procedure

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. Test Result of Band Edge

Product	:	WCDMA/LTE/5G Mobile Phone
Test Item	:	Band Edge Data
Test Mode	:	Mode 1: Transmit
Test date	:	2021/06/09

Horizontal



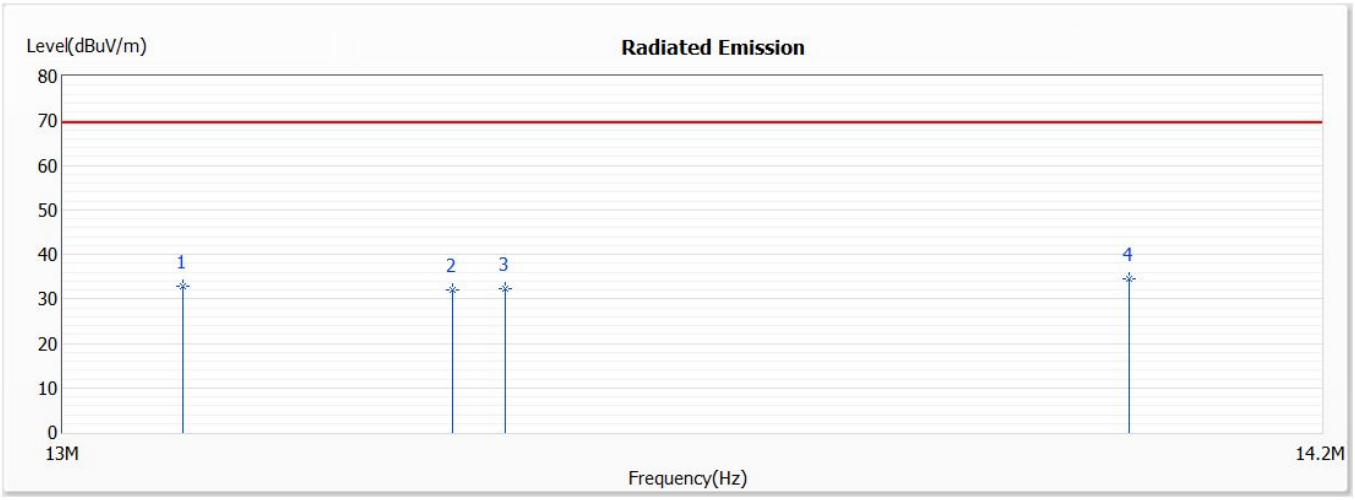
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	13.110	32.92	69.54	-36.62	12.60	20.32	QP
2	13.360	32.59	69.54	-36.95	12.37	20.22	QP
* 3	13.410	33.27	69.54	-36.27	13.07	20.20	QP
4	14.010	33.18	69.54	-36.36	13.22	19.96	QP

Note:

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

Product : WCDMA/LTE/5G Mobile Phone
Test Item : Band Edge Data
Test Mode : Mode 1: Transmit
Test date : 2021/06/09

Vertical



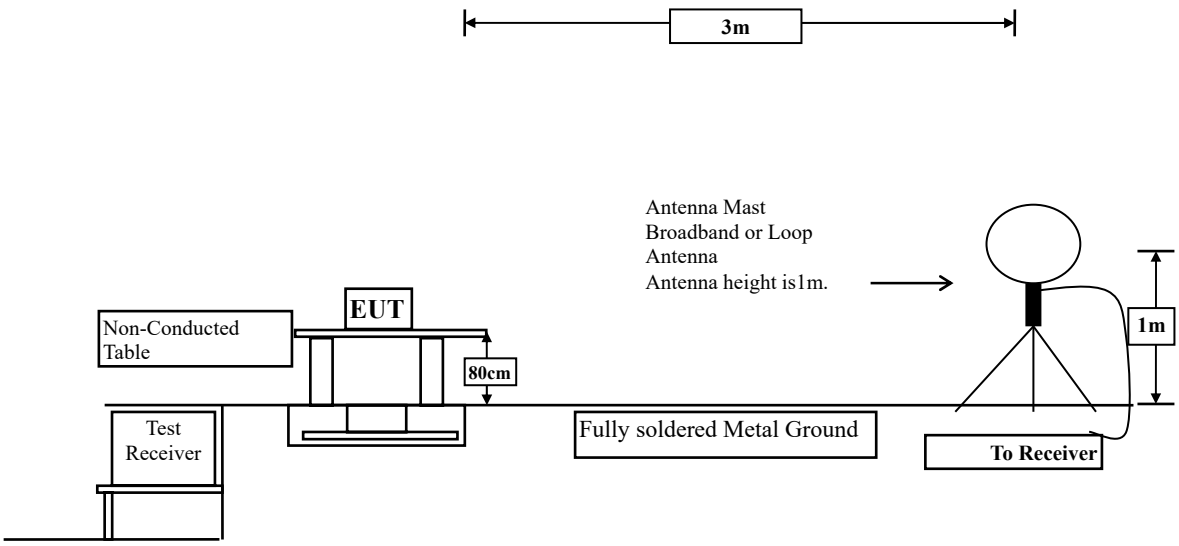
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	13.110	32.93	69.54	-36.61	12.61	20.32	QP
2	13.360	32.06	69.54	-37.48	11.84	20.22	QP
3	13.410	32.19	69.54	-37.35	11.99	20.20	QP
* 4	14.010	34.57	69.54	-34.97	14.61	19.96	QP

Note:

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

5. 20dB Bandwidth

5.1. Test Setup



5.2. Limits

§15.215

(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in§15.217 through §15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

§15.225

Operation within the band 13.11MHz ~ 14.01MHz.

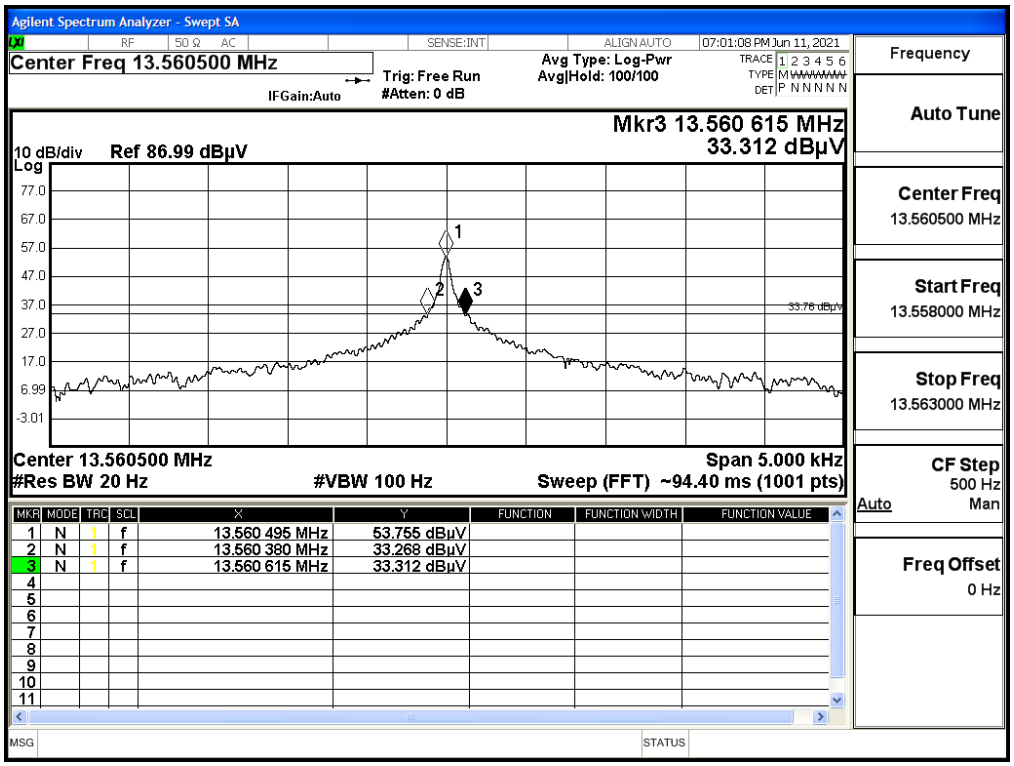
5.3. Test Procedure

The spectrum analyzer connects to the receiver antenna and setting the RBW = 20Hz, the VBW is set to 3 times or more than RBW.

5.4. Test Result of 20dB Bandwidth

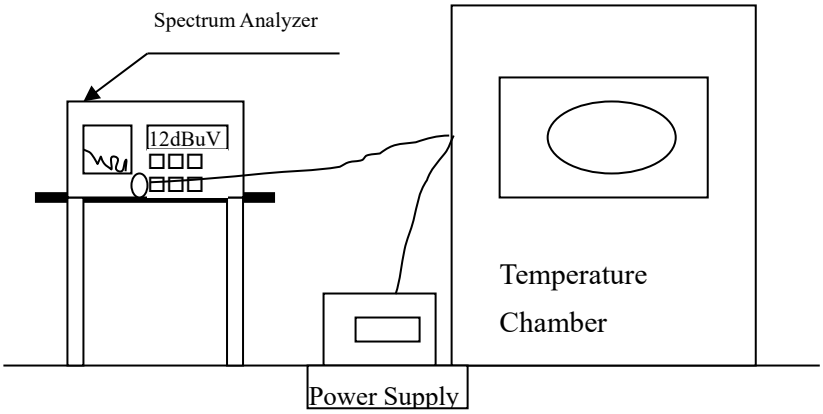
Product : WCDMA/LTE/5G Mobile Phone
Test Item : 20dB Bandwidth
Test date : 2021/06/11
Test Mode : Mode 1: Transmit

Test Frequency (MHz)	Measurement Level (MHz)	Limit (MHz)	Result
13.56	13.5604	>13.11	PASS
	13.5606	<14.01	



6. Frequency Tolerance

6.1. Test Setup



6.2. Limits

The frequency tolerance of the carrier signal shall be maintained within ±0.01％ of the operating frequency.

6.3. Test Procedure

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 Result of Frequency Stability

Product : WCDMA/LTE/5G Mobile Phone
Test Item : Frequency Tolerance
Test Mode : Mode 1: Transmit
Test date : 2021/06/10

Temperature (°C)	Voltage (V)	Observe Time	Declared Frequency (MHz)	Read Frequency (MHz)	Tolerance (%)	Limit (%)
20	3.85	start	13.56	13.56045	0.003319	± 0.01 %
		2mins	13.56	13.56045	0.003319	
		5mins	13.56	13.56045	0.003319	
		10mins	13.56	13.56045	0.003319	
20	4.4275	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	3.50	start	13.56	13.56045	0.003319	± 0.01 %
		2mins	13.56	13.56045	0.003319	
		5mins	13.56	13.56045	0.003319	
		10mins	13.56	13.56045	0.003319	
50	3.85	start	13.56	13.56060	0.004425	± 0.01 %
		2mins	13.56	13.56060	0.004425	
		5mins	13.56	13.56060	0.004425	
		10mins	13.56	13.56050	0.003687	
40	3.85	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	
30	3.85	start	13.56	13.56045	0.003319	± 0.01 %
		2mins	13.56	13.56045	0.003319	
		5mins	13.56	13.56045	0.003319	
		10mins	13.56	13.56050	0.003687	

10	3.85	start	13.56	13.56045	0.003319	± 0.01 %
		2mins	13.56	13.56045	0.003319	
		5mins	13.56	13.56045	0.003319	
		10mins	13.56	13.56045	0.003319	
0	3.85	start	13.56	13.56045	0.003319	± 0.01 %
		2mins	13.56	13.56045	0.003319	
		5mins	13.56	13.56045	0.003319	
		10mins	13.56	13.56045	0.003319	
-10	3.85	start	13.56	13.56065	0.004794	± 0.01 %
		2mins	13.56	13.56065	0.004794	
		5mins	13.56	13.56065	0.004794	
		10mins	13.56	13.56065	0.004794	
-20	3.85	start	13.56	13.56065	0.004794	± 0.01 %
		2mins	13.56	13.56065	0.004794	
		5mins	13.56	13.56065	0.004794	
		10mins	13.56	13.56065	0.004794	

Note:

SPEC:

Nominal voltage: 3.85V

High voltage: 4.45V

Low voltage: 3.60V

7. EMI Reduction Method During Compliance Testing

No modification was made during testing.