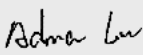


Test report No:
2190372R-RF-US-P06V01

FCC TEST REPORT

Product Name	M8 DeskPhone
Trademark	Alcatel-Lucent Enterprise
Model and /or type reference	M8
FCC ID	OL3M8
Applicant's name / address	ALE International 32, Avenue Kléber – 92700 Colombes – FRANCE
Test method requested, standard	FCC CFR Title 47 Part 15 Subpart C Section 15.247 ANSI C63.10: 2013 KD558074 D01 15.247 Meas Guidance v05r02
Verdict Summary	IN COMPLIANCE
Tested by (name / position & signature)	Adma Lu/Project Engineer 
Approved by (name / position & signature)	Jack Zhang/ Supervisor 
Date of issue	2022-03-08
Report Version	V1.2
Report template No	Template_FCC 15.247-RF-V1.0

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COMPETENCES AND GUARANTEES

DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

GENERAL CONDITIONS

Test Location	No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China
Date(receive sample)	Sep. 13, 2021
Date (start test)	Sep. 25, 2021
Date (finish test)	Dec. 22, 2021

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT	: Equipment Under Test
QP	: Quasi-Peak
CAV	: CISPR Average
AV	: Average
CDN	: Coupling Decoupling Network
SAC	: Semi-Anechoic Chamber
OATS	: Open Area Test Site
BW	: Bandwidth
AM	: Amplitude Modulation
PM	: Pulse Modulation
HCP	: Horizontal Coupling Plane
VCP	: Vertical Coupling Plane
U_N	: Nominal voltage
T_x	: Transmitter
R_x	: Receiver
N/A	: Not Applicable
N/M	: Not Measured

DOCUMENT HISTORY

Report No.	Version	Description	Issued Date
2190372R-RF-US-P06V01	V1.0	Initial issue of report.	2022-03-01
2190372R-RF-US-P06V01	V1.1	Page8 Updated equipment list information, Page21-22updated AC Power Line Conducted Emission,Page45-46 Radiated Emission (30MHz-1GHz) test data.	2022-03-07
2190372R-RF-US-P06V01	V1.2	Page22 Modified Note for AC Power Line Conducted Emission Test Data, Removed Page 45 redundant test data.	2022-03-08

REMARKS AND COMMENTS

1. The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart C Paragraph 15.247.
3. The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to account the uncertainty associated with the measurement result.
4. The test results presented in this report relate only to the object tested.
5. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.
6. This report will not be used for social proof function in China market.
7. DEKRA declines any responsibility with the following test data provided by customer that may affect the validity of result:
 - Chapter 1.1 General Description of the Item(s);
 - Chapter 1.2 Antenna Information;
 - Chapter 1.3Channel List.

USED EQUIPMENT

AC Power Line Conducted Emission / TR1

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EMI Test Receiver	R&S	ESCI	100906	2021.04.28	2022.04.27
Two-Line V-Network	R&S	ENV216	101044	2021.03.20	2022.03.19
50ohm Termination	SHX	TF2	7081403	2021.09.04	2022.09.03
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	N/A	N/A
Temperature/Humidity Meter	RTS	RTS-8S	TR1-TH	2021.07.09	2022.07.08
Dekra test software	Dekra	-	-	-	-

Emissions in non-restricted frequency bands/ Occupied Bandwidth/ Fundamental emission output power/ Power Spectral Density/Band Edge/ TR8

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2021.07.11	2022.07.10
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2021.03.20	2022.03.19
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2021.07.11	2022.07.10
4TX MIMO Power Sensor	Keysight	X8750A	MY59400102	2022.02.10	2023.02.09
Coaxial Cable	Woken	SFL402	F02-150410-044	2021.12.30	2022.12.29
Temperature/Humidity Meter	RTS	RTS-8S	RF08	2021.07.09	2022.07.08

Radiated Emission(30MHz-1GHz) / AC3

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EMI Test Receiver	R&S	ESCI	100176	2021.08.15	2022.08.14
Loop Antenna	R&S	HFH2-Z2	833799/003	2022.03.02	2023.03.01
Bilog Antenna	Teseq GmbH	CBL6112D	27613	2021.08.23	2022.08.22
Coaxial Cable	Huber+Suhner	RG 214	AC3-C	2021.03.31	2022.03.30
Temperature/Humidity Meter	RTS	RTS-8S	AC3-TH	2021.11.23	2022.11.22
Dekra test software	Dekra	-	-	-	-

Radiated Emission(1GHz-40GHz) / AC5

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2021.03.20	2022.03.19
Preamplifier	EMCI	EMC184045SE	980263	2021.05.22	2022.05.21
DRG Horn Antenna	ETS-Lindgren	3117	00167055	2021.08.23	2022.08.22
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2021.04.14	2023.04.13
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2021.03.31	2022.03.30
Coaxial Cable	ROSENBERGER	LA1-C011- 2000/3000	AC5-40G	2021.03.20	2022.03.19
Temperature/Humidity Meter	RTS	RTS-8S	AC5-TH	2021.07.09	2022.07.08
Dekra test software	Dekra	-	-	-	-

UNCERTAINTY

Uncertainties have been calculated according to the DEKRA internal document. 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%. The Uncertainties is comply with standard required as below.

Test item	Uncertainty
Conducted Emission	± 2.02 dB
Emissions in restricted frequency bands	above 1G : ± 3.9 dB below 1G is : ± 3.8 dB
20dB Bandwidth	± 1 kHz
Carrier Frequency Separation	± 1 kHz
Number of Hopping Frequencies	± 1 kHz
Time of Occupancy (Dwell Time)	± 0.1 us
Peak OutputPower	± 1.0 dB
Emissions in non-restricted frequency bands	± 1.0 dB
Radiated Emission Band Edge	above 1G : ± 3.9 dB below 1G : ± 3.8 dB

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Product Name	M8 DeskPhone
Model No.	M8
FCC ID	OL3M8
Manufacturer	ALE International
Manufacturer Address.....	32, Avenue Kléber – 92700 Colombes – FRANCE

Wireless specification.....	Bluetooth					
Bluetooth Specification.....	V3.0					
Operating frequency range(s)	2400~2483.5MHz					
Type of Modulation.....	GFSK					
PHYS	☒	GFSK	☒	Pi/4 DQPSK	☒	8DPSK
Data Rate	☒	1Mbit/s	☒	2Mbit/s	☒	3Mbit/s
Number of channel.....	79					

Rated power supply	Voltage and Frequency					
	☐	AC: 220 – 240 V, 50/60 Hz				
	☐	AC: 100 – 240 V, 50/60 Hz				
	☒	19 Vdc and POE 44-57V for ESY10I4, ESY15I4, ESY22I4				
	☒	Adapter: Input: 100-240V,50/60H, 0.3A Output:5V,2A ,10W				
Mounting position	☒	Table top equipment				
	☐	Wall/Ceiling mounted equipment				
	☐	Floor standing equipment				
	☐	Head-mounted equipment				
	☐	Other: Watch				

1.2 Antenna Information

Antenna model / type number	N/A		
Antenna serial number	N/A		
Antenna Delivery	☒	1TX + 1RX	
	☐	2TX + 2RX	
	☐	Others:.....	
Antenna technology	☒	SISO	
	☐	MIMO	☐ CDD
	☐ Beam-forming		
Antenna Type	☐	External	☐ Dipole
	☐		☐ Sectorized
	☒	Internal	☐ PIFA
	☐		☒ PCB
	☐		☐ Dipole
	☐		☐ Others.....
Antenna Gain	2.61 dBi		

1.3 Channel List

Bluetooth Working Frequency of Each Channel: (For V3.0)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2403 MHz	02	2404 MHz	03	2405 MHz
04	2406 MHz	05	2407 MHz	06	2408 MHz	07	2409 MHz
08	2410 MHz	09	2411 MHz	10	2412 MHz	11	2413 MHz
12	2414 MHz	13	2415 MHz	14	2416 MHz	15	2417 MHz
16	2418 MHz	17	2419 MHz	18	2420 MHz	19	2421 MHz
20	2422 MHz	21	2423 MHz	22	2424 MHz	23	2425 MHz
24	2426 MHz	25	2427 MHz	26	2428 MHz	27	2429 MHz
28	2430 MHz	29	2431 MHz	30	2432 MHz	31	2433 MHz
32	2434 MHz	33	2435 MHz	34	2436 MHz	35	2437 MHz
36	2438 MHz	37	2439 MHz	38	2440 MHz	39	2441 MHz
40	2442 MHz	41	2443 MHz	42	2444 MHz	43	2445 MHz
44	2446 MHz	45	2447 MHz	46	2448 MHz	47	2449 MHz
48	2450 MHz	49	2451 MHz	50	2452 MHz	51	2453 MHz
52	2454 MHz	53	2455 MHz	54	2456 MHz	55	2457 MHz
56	2458 MHz	57	2459 MHz	58	2460 MHz	59	2461 MHz
60	2462 MHz	61	2463 MHz	62	2464 MHz	63	2465 MHz
64	2466 MHz	65	2467 MHz	66	2468 MHz	67	2469 MHz
68	2470 MHz	69	2471 MHz	70	2472 MHz	71	2473 MHz
72	2474 MHz	73	2475 MHz	74	2476 MHz	75	2477 MHz
76	2478 MHz	77	2479 MHz	78	2480 MHz	N/A	N/A

Note: The general description of the Item(s), antenna information and channel list in clause 1 are provided and confirmed by the client.

2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

Test Mode For Bluetooth	Mode 1: Transmitter-1Mbps(GFSK_DH5)
	Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)
	Mode 3: Transmitter-3Mbps(8DPSK_DH5)
	Mode 4: Transmitter-Hopping-1Mbps(GFSK_DH5)
	Mode 5: Transmitter-Hopping-2Mbps(Pi/4 DQPSK_DH5)
	Mode 6: Transmitter-Hopping-3Mbps(8DPSK_DH5)

2.2 Accessories Information

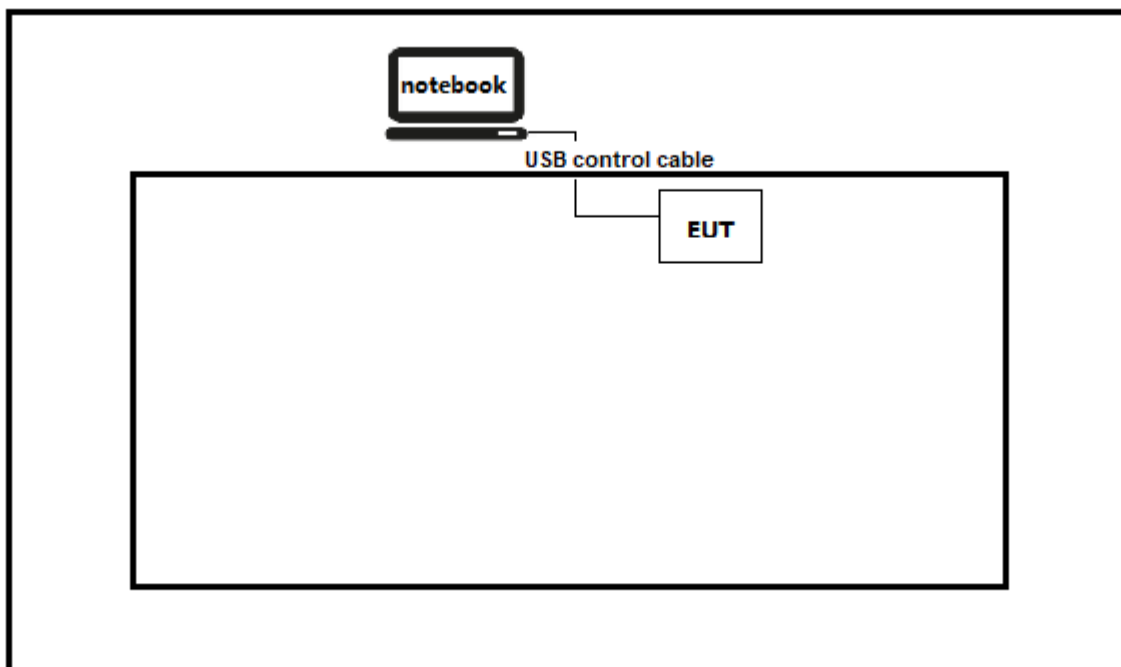
Accessories Information	Brand/model name	Cable		
		Length used during test [m]	Attached during test	Shielded
LAN Cable	N/A	10	☒	☒
LAN Cable	N/A	0.5	☒	☒

2.3 Auxiliary equipment / Test software for the EUT

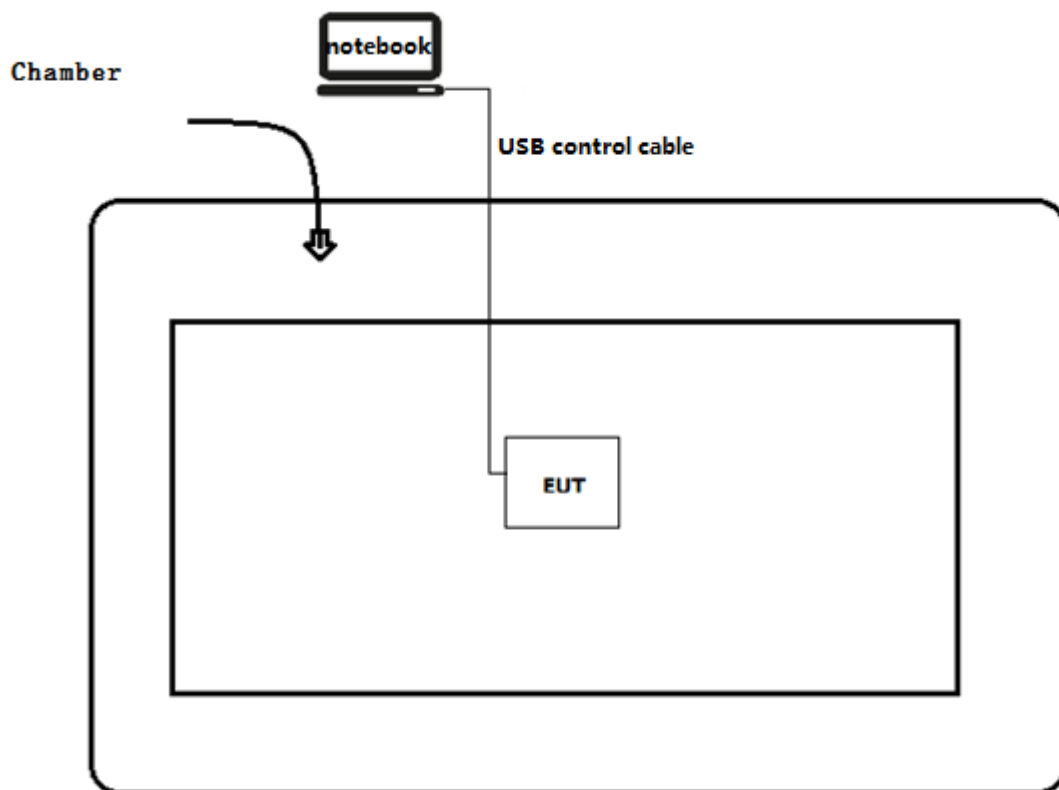
Auxiliary equipment	Type / Version	Manufacturer	Supplied by
Notebook	2526	Think Pad	N/A
Software	Type / Version	Manufacturer	Supplied by
MobaXterm	N/A	N/A	N/A

2.4 Test Configuration / Block diagram used for tests

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- Radiated Emission



2.5 Testing process

1	Setup the EUT as shown in Section 2.3
2	Run the software “MobaXterm” on the notebook computer.
3	Open the serial port and enter the corresponding commands to configure the test mode, test channel, test power and data rate.
4	Verify that the EUT works properly.

3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
FCC CFR Title 47 Part 15 Subpart C Section 15.247	2021	Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.
ANSI C63.10	2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB558074 D01 v05r02	2019	Guidance for performing compliance measurements on Digital Transmission System (DTS) operating under section 15.247
RSS-Gen Issue 5 Amendment 2	2021	General Requirements for Compliance of Radio Apparatus
RSS-247 Issue 2	2017	Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

3.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards: N/A.

(Please define the deviations from the standard(s) if applicable)

3.3 Overview of results

For FCC

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2015Section 15.207	Yes	No
Emissions in restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015Section 15.209	Yes	No
20dB Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(1)	Yes	No
Carrier Frequency Separation	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(1)	Yes	No
Number of Hopping Frequencies	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(1)(iii)	Yes	No
Time of Occupancy (Dwell Time)	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(1)(iii)	Yes	No
Peak OutputPower	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(b)(1)	Yes	No
Emissions in non-restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.215(c), 15.247(d)	Yes	No
Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2015 15.247(d)	Yes	No
Antenna Requirement	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.203	Yes	No

3.4 Test Facility

USA : FCC Designation Number: CN1199

4 TEST RESULTS

4.1 Conducted Emission

VERDICT: PASS

4.1.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.207	
Frequency range [MHz]	Limit: QP [dB(μV) ¹⁾]	Limit: AV [dB(μV) ¹⁾]
0,15 - 0,50	66 - 56 ²⁾	56 - 46 ²⁾
0,50 - 5,0	56	46
5,0 - 30	60	50

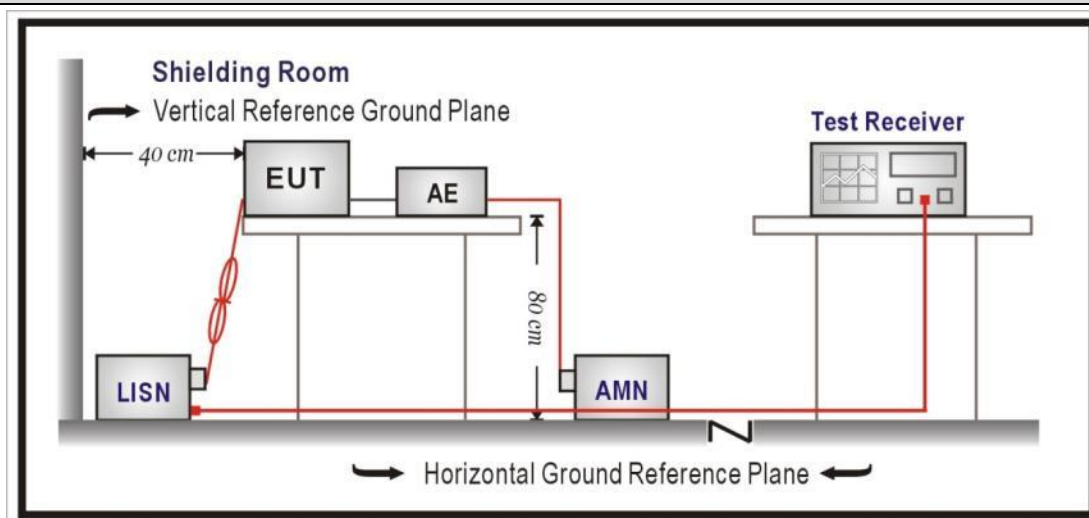
¹⁾ At the transition frequency, the lower limit applies.

²⁾ The limit decreases linearly with the logarithm of the frequency.

NOTE 1: The exclusion band for transmitters shall be considered for transmitters operating at frequencies below 30 MHz.

NOTE 2: Where the AC output port is directly connected (or via a circuit breaker) to the AC power input port of the EUT the AC power output port need not to be tested.

4.1.2 Test Setup

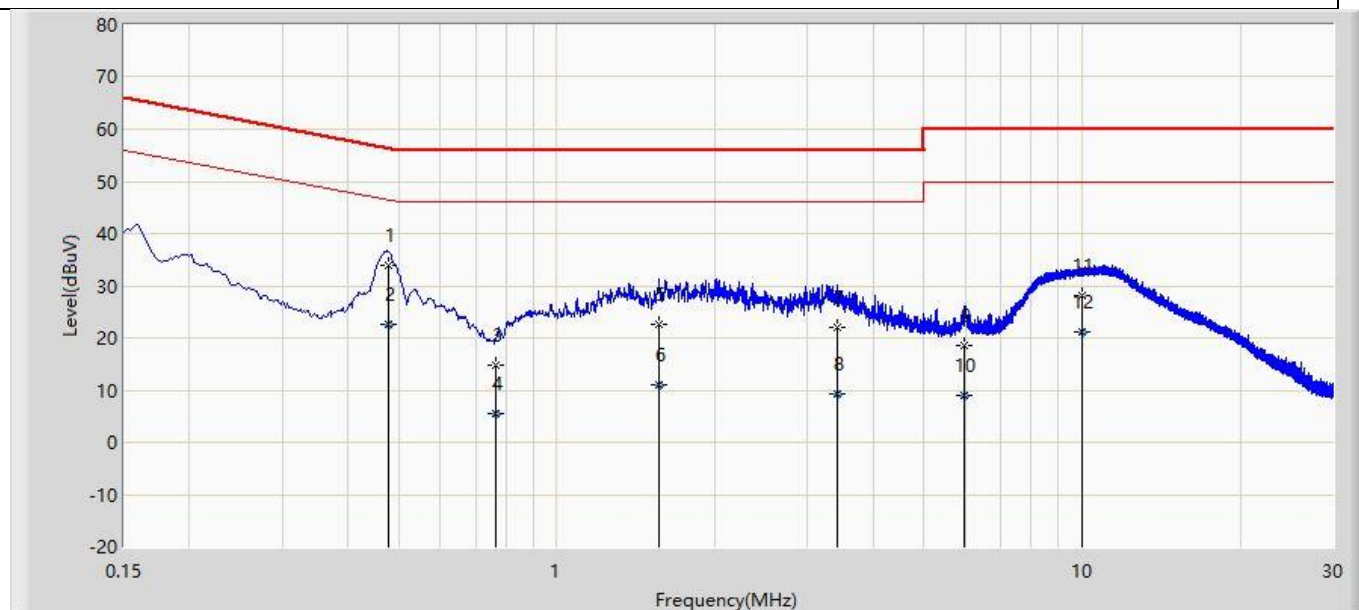


4.1.3 Test Procedure

	References Rule	Chapter	Item
☒	ANSI C63.10-2013	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices

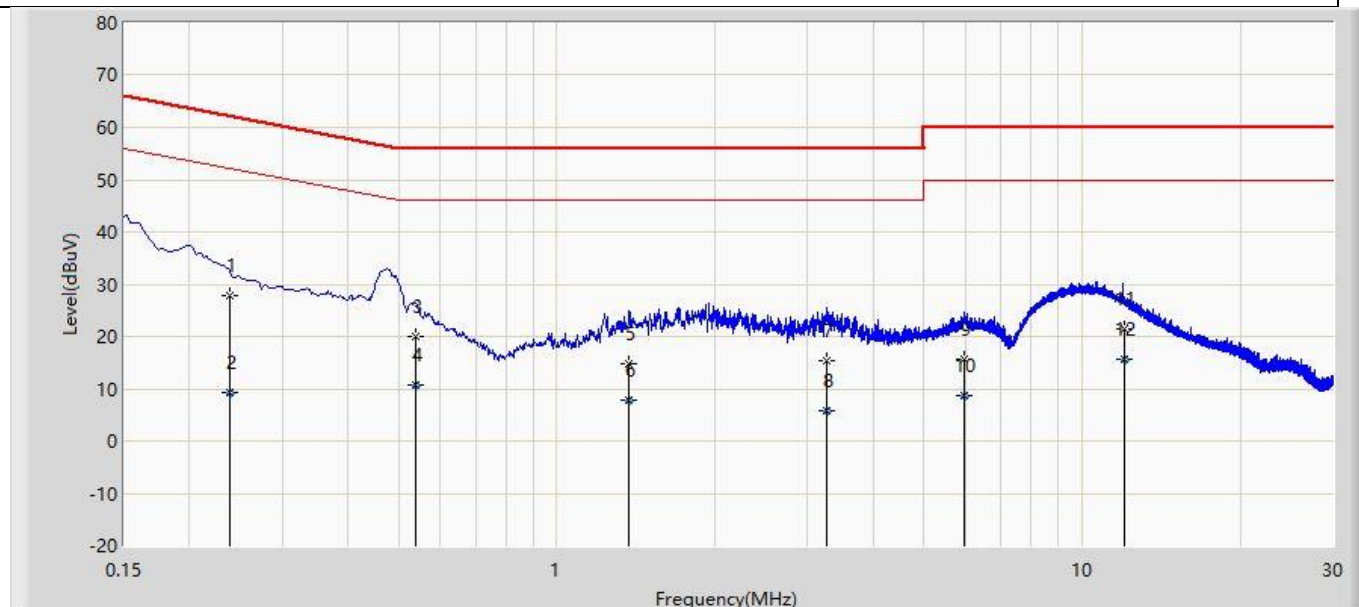
4.1.4 Test Data

Profile:2190372R	Page No.: 19
Engineer: Tim Cao	
Site: TR1	Time: 2022/03/07 - 10:05
Limit: FCC_Part15.107_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode: 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1	*	0.479	33.831	24.215	-22.527	56.358	9.617	QP
2		0.479	22.612	12.995	-23.747	46.358	9.617	AV
3		0.766	14.861	5.230	-41.139	56.000	9.631	QP
4		0.766	5.504	-4.128	-40.496	46.000	9.631	AV
5		1.563	22.671	13.009	-33.329	56.000	9.663	QP
6		1.563	11.023	1.360	-34.977	46.000	9.663	AV
7		3.426	22.084	12.343	-33.916	56.000	9.742	QP
8		3.426	9.341	-0.400	-36.659	46.000	9.742	AV
9		5.978	18.453	8.603	-41.547	60.000	9.850	QP
10		5.978	9.109	-0.741	-40.891	50.000	9.850	AV
11		10.001	28.205	18.195	-31.795	60.000	10.010	QP
12		10.001	21.025	11.015	-28.975	50.000	10.010	AV

Profile: 2190372R	Page No.: 20
Engineer: Tim Cao	
Site: TR1	Time: 2022/03/07 - 10:07
Limit: FCC_Part15.107_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode: 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.238	27.772	18.181	-34.402	62.174	9.591	QP
2		0.238	9.239	-0.352	-42.935	52.174	9.591	AV
3		0.539	20.120	10.497	-35.880	56.000	9.624	QP
4		0.539	10.624	1.000	-35.376	46.000	9.624	AV
5		1.374	14.925	5.265	-41.075	56.000	9.660	QP
6		1.374	7.959	-1.701	-38.041	46.000	9.660	AV
7		3.260	15.441	5.704	-40.559	56.000	9.737	QP
8		3.260	5.905	-3.833	-40.095	46.000	9.737	AV
9		5.973	15.574	5.714	-44.426	60.000	9.860	QP
10		5.973	8.565	-1.295	-41.435	50.000	9.860	AV
11		12.051	21.383	11.324	-38.617	60.000	10.060	QP
12	*	12.051	15.621	5.562	-34.379	50.000	10.060	AV

4.2 Emissions in restricted frequency bands**VERDICT: PASS****4.2.1 Limit**

Standard	FCC Part 15 Subpart C Paragraph 15.209
-----------------	--

Restricted Bands of operation for FCC

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	2690 – 2900	22.01 – 23.12
8.81425 – 8.81475	162.0125 – 167.17	3260 – 3267	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3332 – 3339	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3345.8 – 3358	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4	3600 – 4400	
13.36 – 13.41			

Restricted Band Emissions Limit

Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Field strength (dB $\mu\text{V/m}$)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300 _(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30 _(Note 1)
1.705 - 30	30	29.5	30 _(Note 1)
30 - 88	100	40	3 _(Note 2)
88-216	150	43.5	3 _(Note 2)
216 - 960	200	46	3 _(Note 2)
Above 960	500	54	3 _(Note 2)

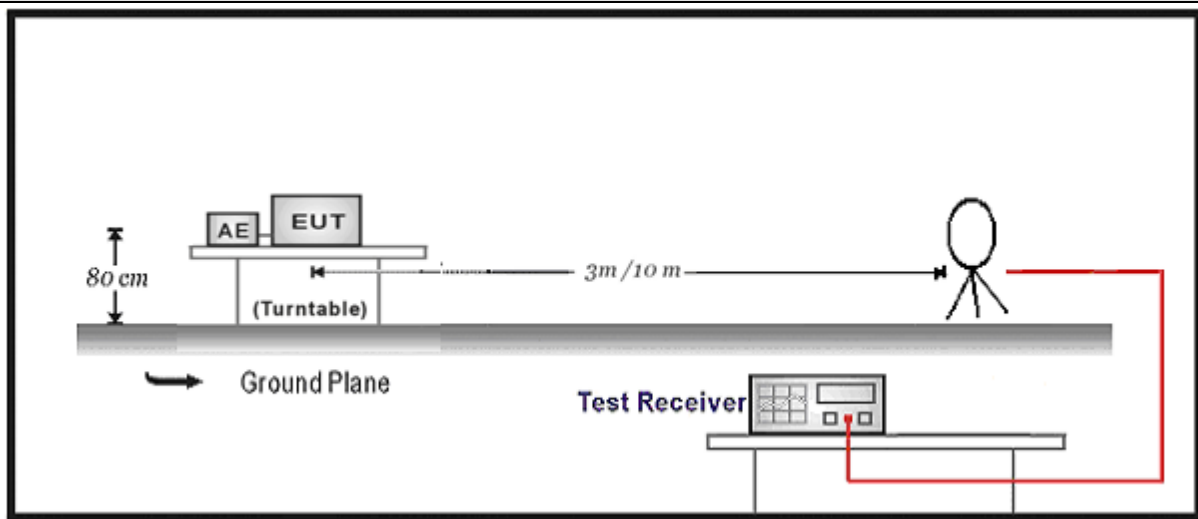
Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment.

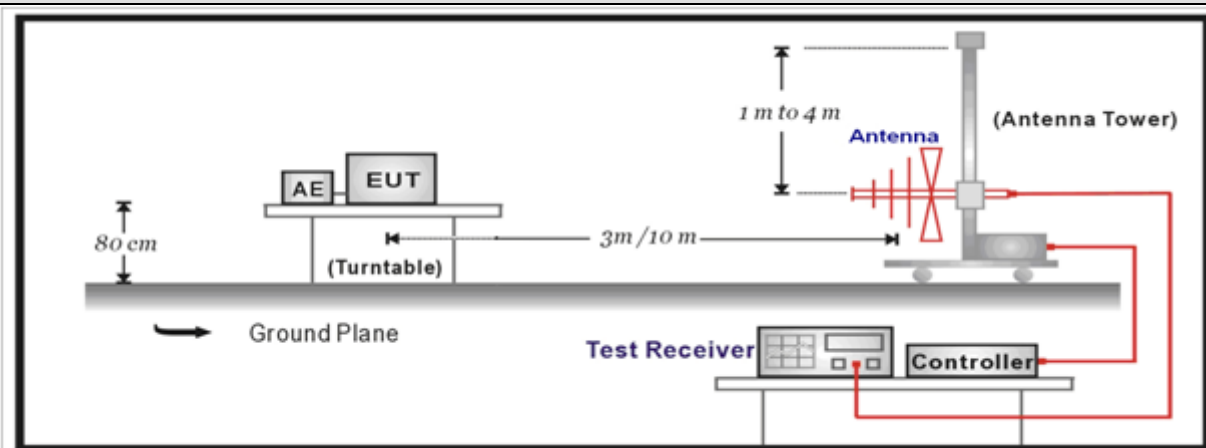
Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

4.2.2 Test Setup

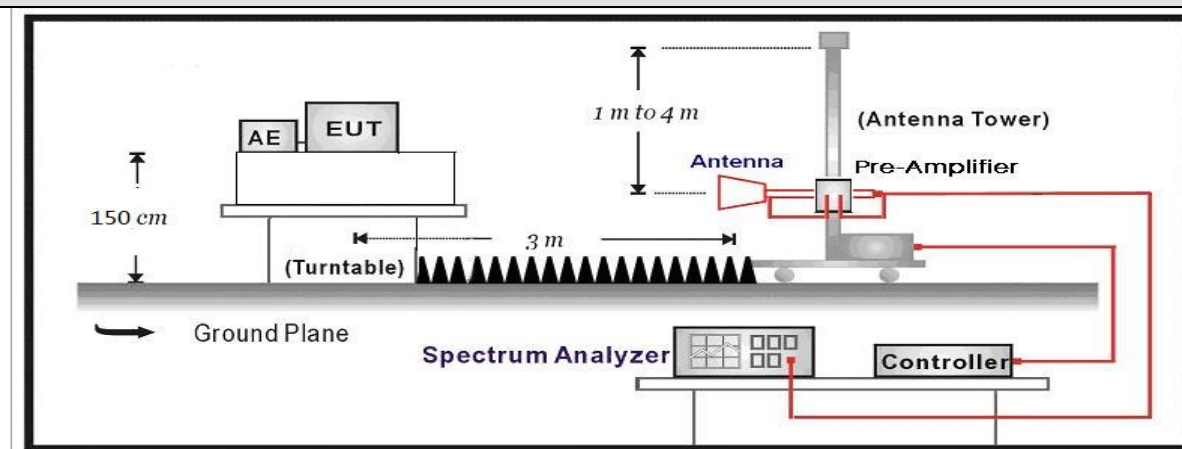
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



4.2.3 Test Procedure

	References Rule		Chapter	Description
☒	ANSI C63.10		11.12	Emissions in restricted frequency bands
	☒	ANSI C63.10	11.12.1	Radiated emission measurements
	☒	ANSI C63.10	11.12.2.7	Radiated spurious emission test
	☒	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
	☒	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
	☒	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz

4.2.4 Test Data

Profile: 2190372R

Page No.: 25

Engineer: Carlos shen

Site: AC5

Time: 2021/12/17 - 04:29

Limit: FCC_Part15.209_RE(3m)

Margin: 0

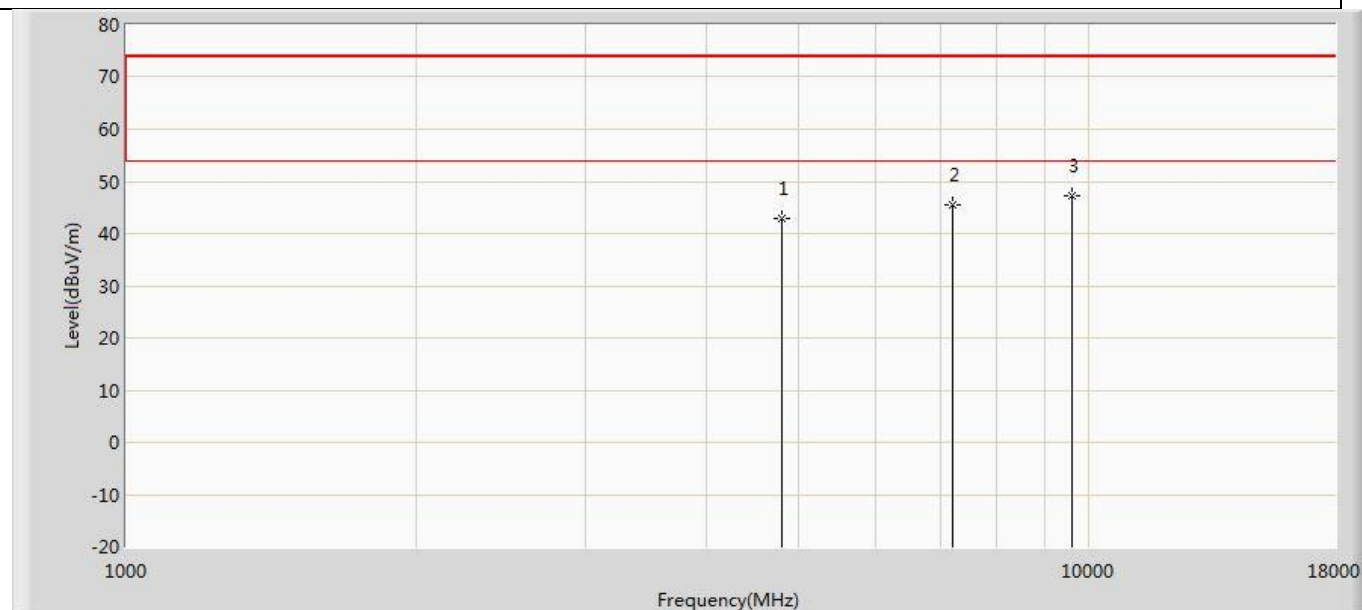
Probe: Horn_3117_00123988_(1-18GHz)

Polarity: Horizontal

EUT: M8 DESKPHONE

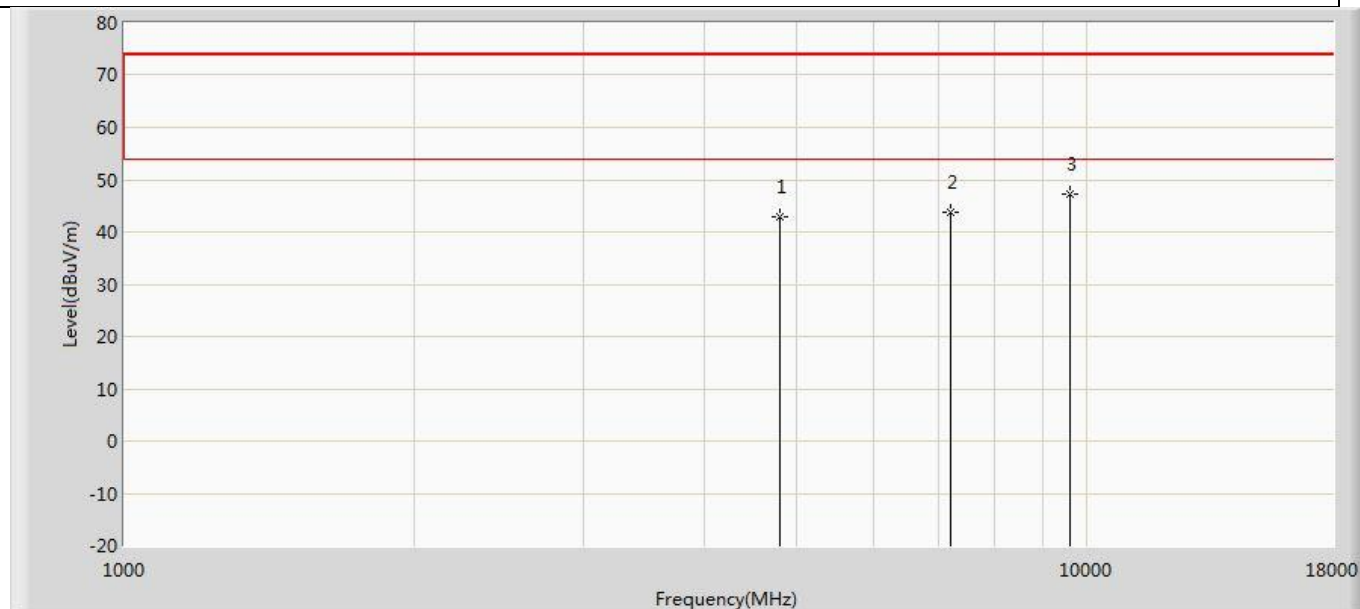
Power: AC 120V/60Hz

Note: Mode 1:Transmit at 2402MHz by DH5



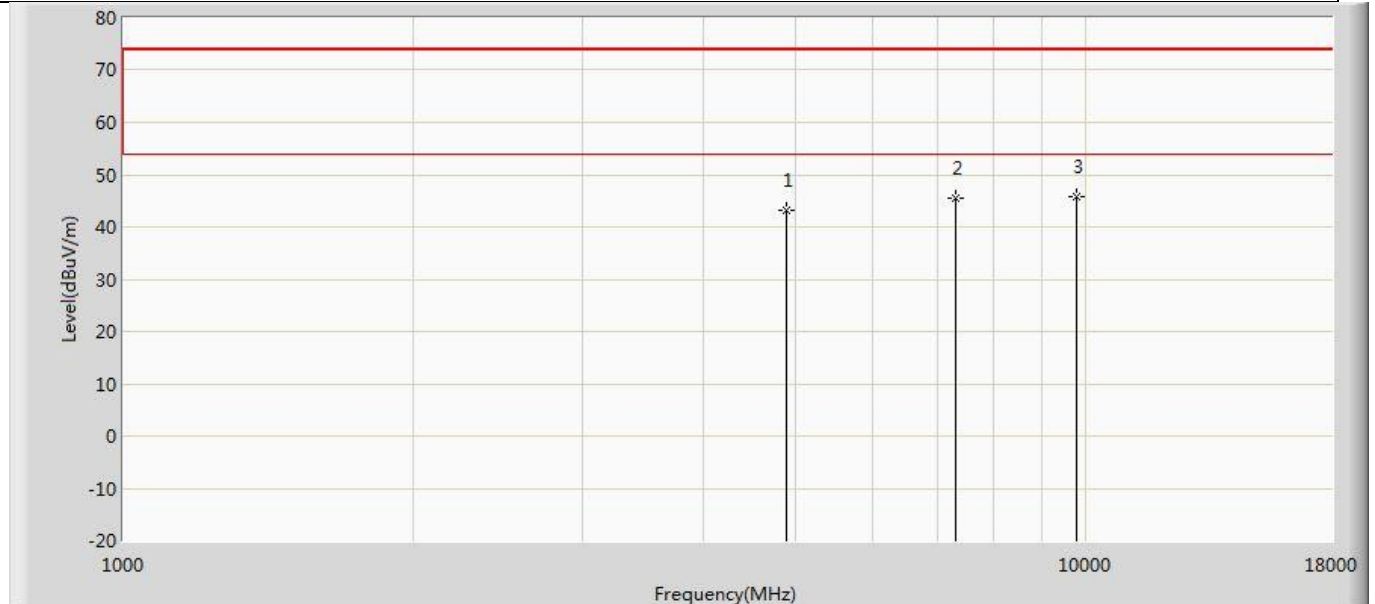
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	42.861	52.547	-31.139	74.000	-9.686	PK
2		7206.000	45.518	51.586	-28.482	74.000	-6.068	PK
3	*	9608.000	47.233	51.160	-26.767	74.000	-3.927	PK

Profile: 2190372R	Page No.: 26
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by DH5	



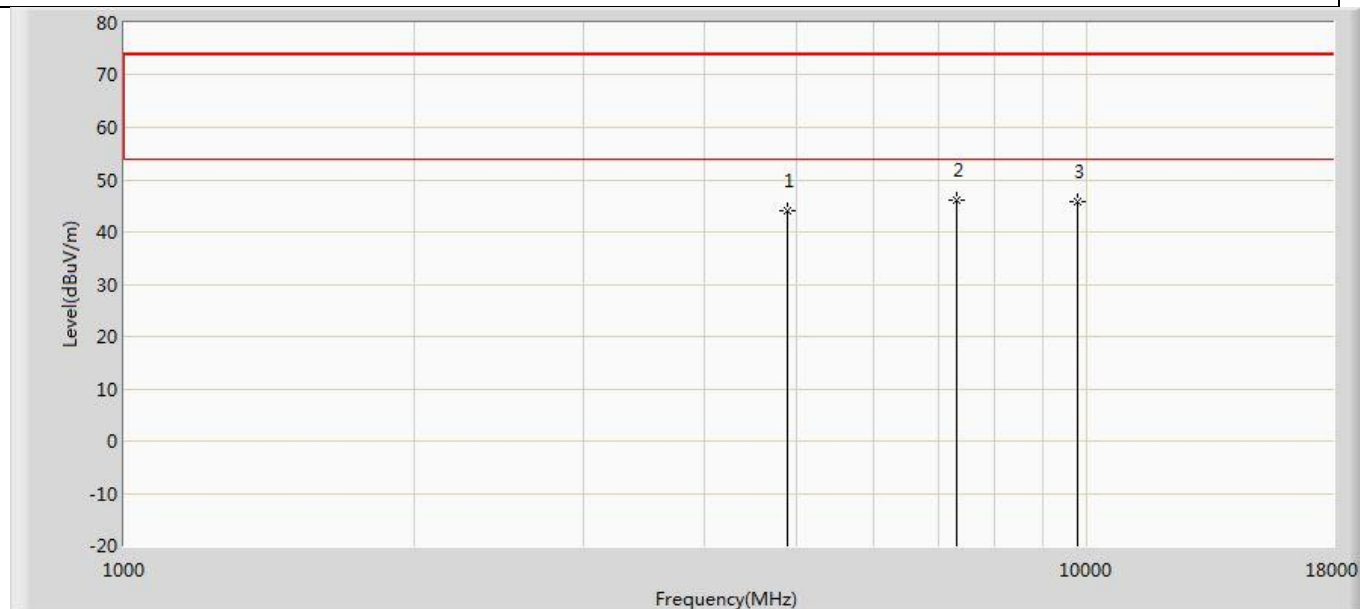
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	42.993	52.679	-31.007	74.000	-9.686	PK
2		7206.000	43.842	49.910	-30.158	74.000	-6.068	PK
3	*	9608.000	47.241	51.168	-26.759	74.000	-3.927	PK

Profile: 2190372R	Page No.: 27
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2441MHz by DH5	



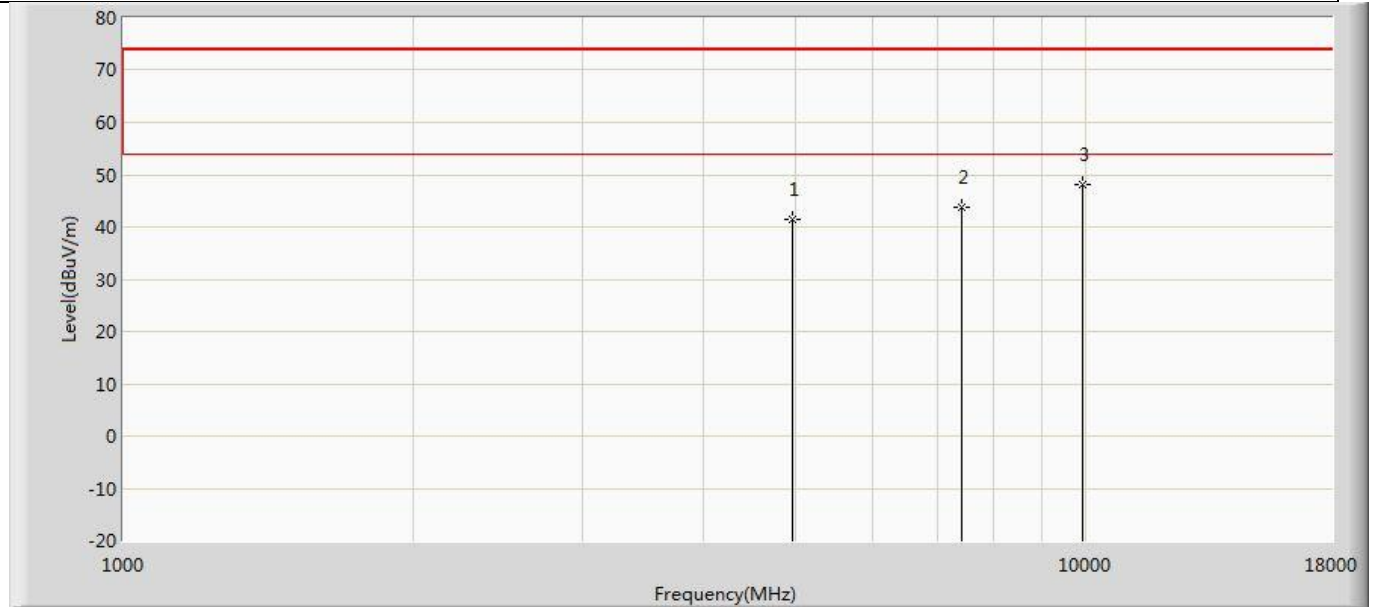
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	43.072	52.428	-30.928	74.000	-9.356	PK
2		7323.000	45.643	51.346	-28.357	74.000	-5.703	PK
3	*	9764.000	45.819	49.508	-28.181	74.000	-3.689	PK

Profile: 2190372R	Page No.: 28
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 244MHz by DH5	



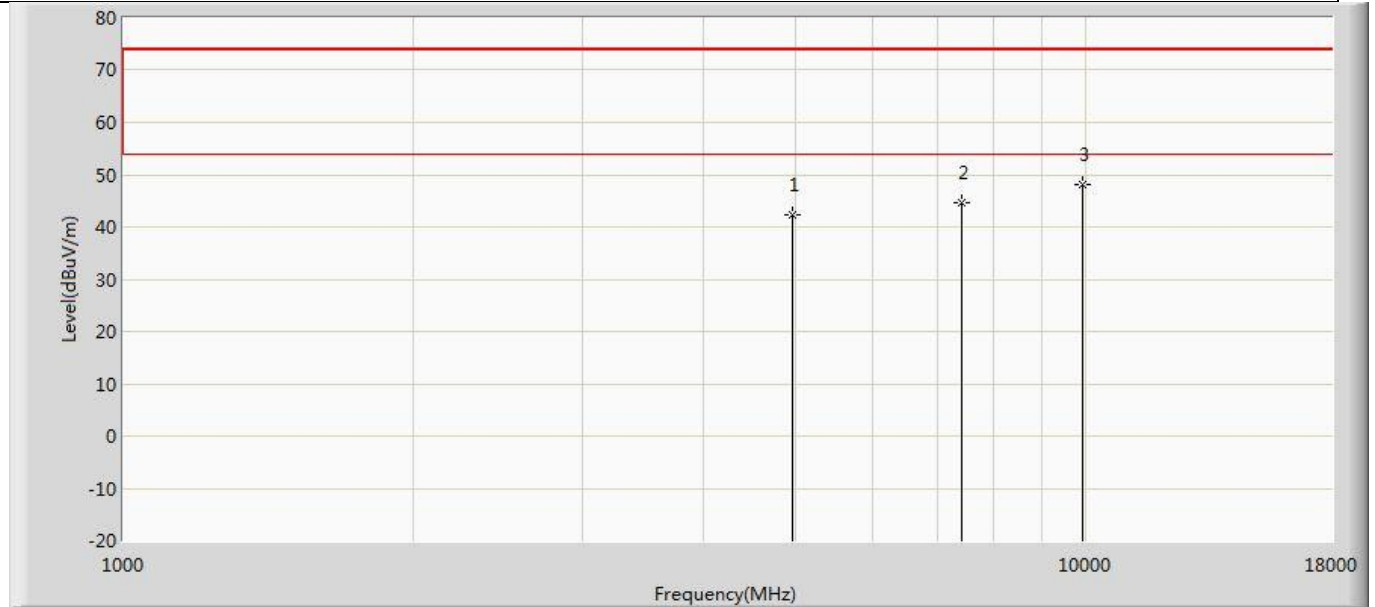
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	44.074	53.430	-29.926	74.000	-9.356	PK
2	*	7323.000	45.991	51.694	-28.009	74.000	-5.703	PK
3		9764.000	45.940	49.629	-28.060	74.000	-3.689	PK

Profile: 2190372R	Page No.: 29
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	



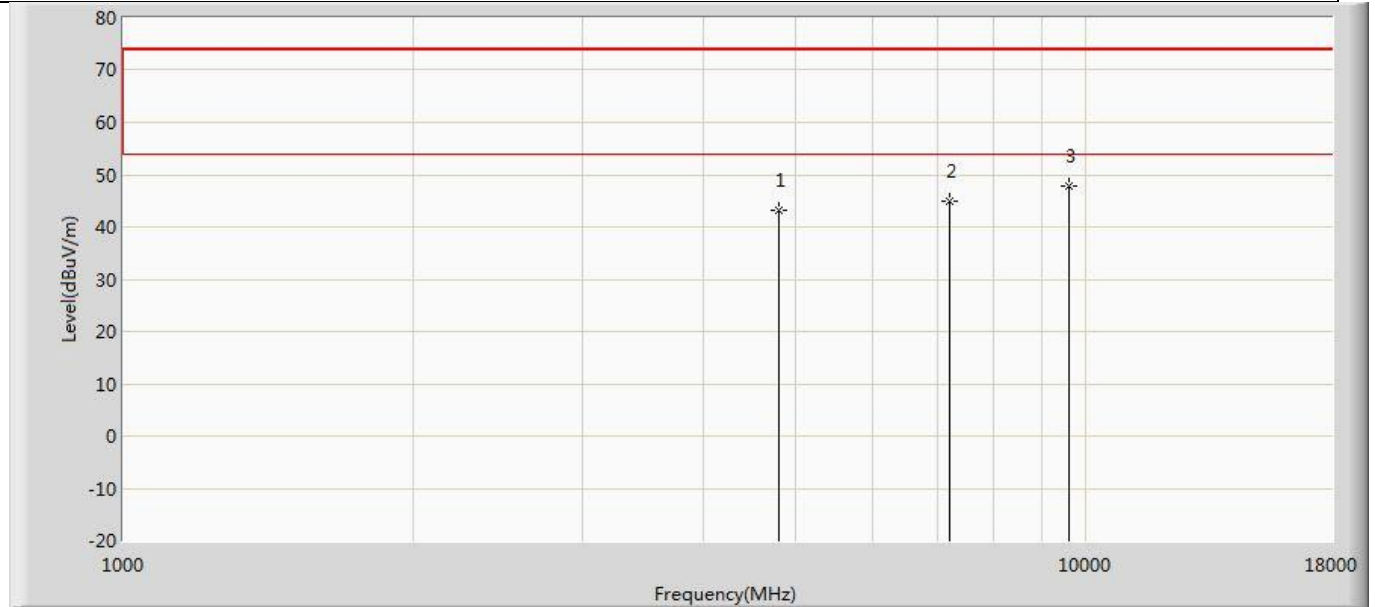
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	41.406	51.258	-32.594	74.000	-9.851	PK
2		7440.000	43.826	49.954	-30.174	74.000	-6.128	PK
3	*	9920.000	48.029	50.767	-25.971	74.000	-2.739	PK

Profile: 2190372R	Page No.: 30
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by DH5	



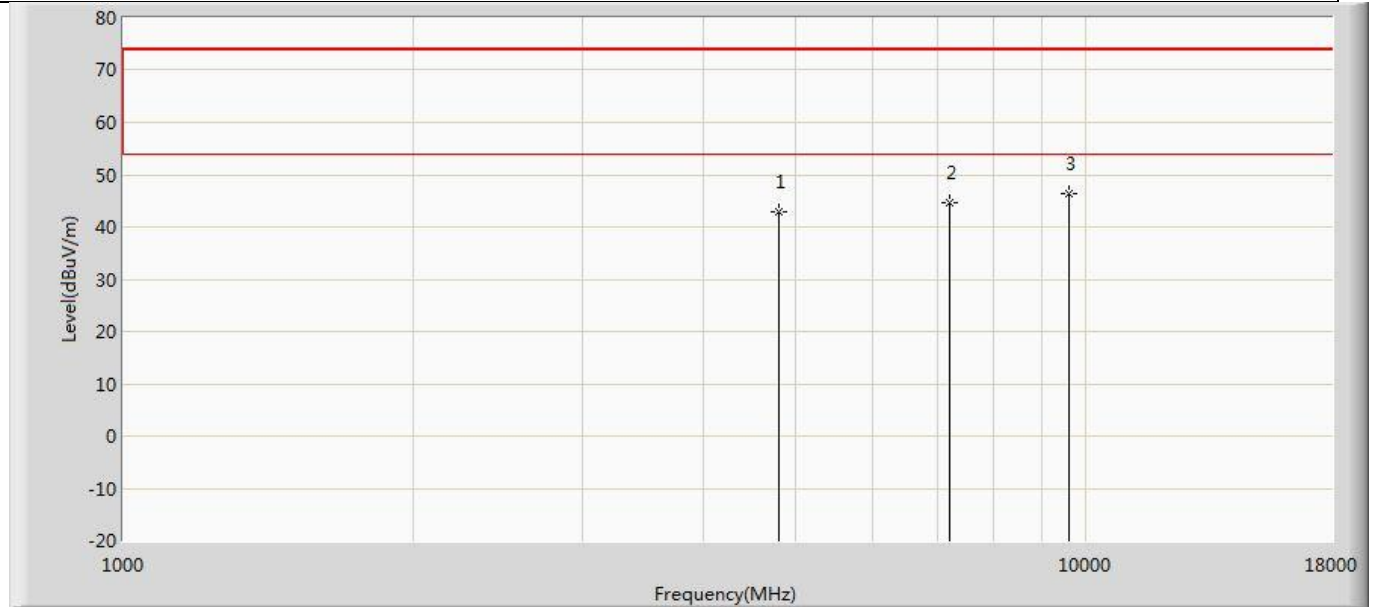
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	42.353	52.205	-31.647	74.000	-9.851	PK
2		7440.000	44.556	50.684	-29.444	74.000	-6.128	PK
3	*	9920.000	48.091	50.829	-25.909	74.000	-2.739	PK

Profile: 2190372R	Page No.: 31
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by 2DH5	



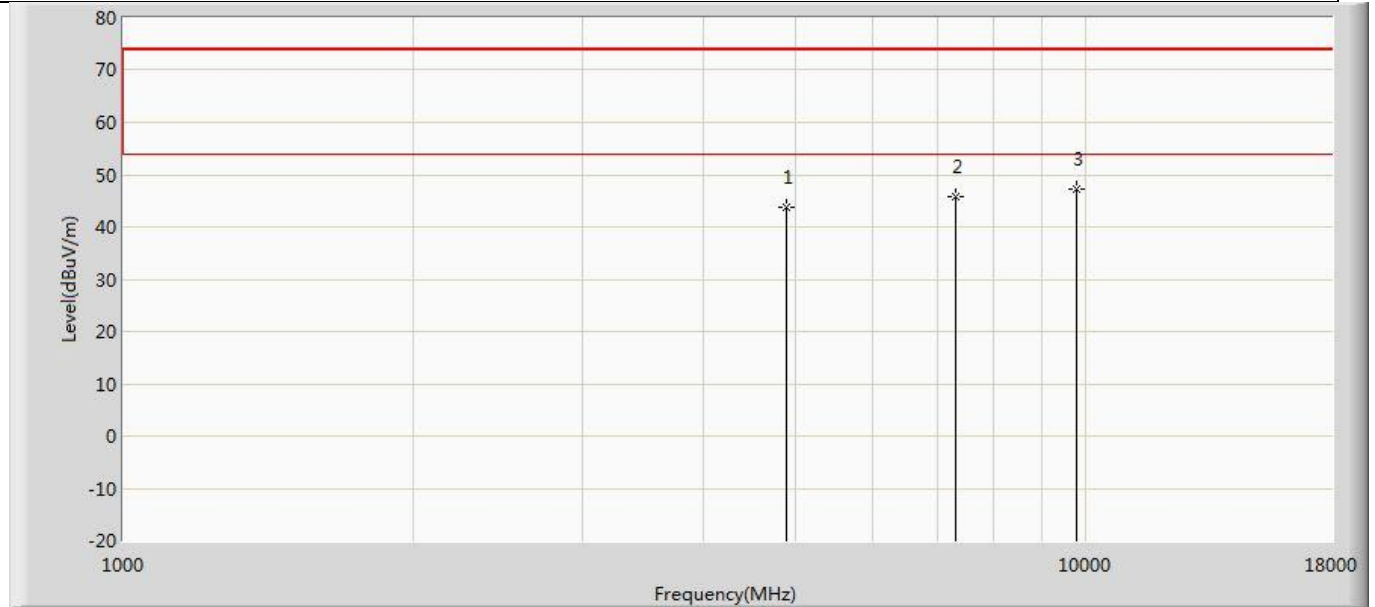
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	43.097	52.783	-30.903	74.000	-9.686	PK
2		7206.000	44.805	50.873	-29.195	74.000	-6.068	PK
3	*	9608.000	47.769	51.696	-26.231	74.000	-3.927	PK

Profile: 2190372R	Page No.: 32
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by 2DH5	



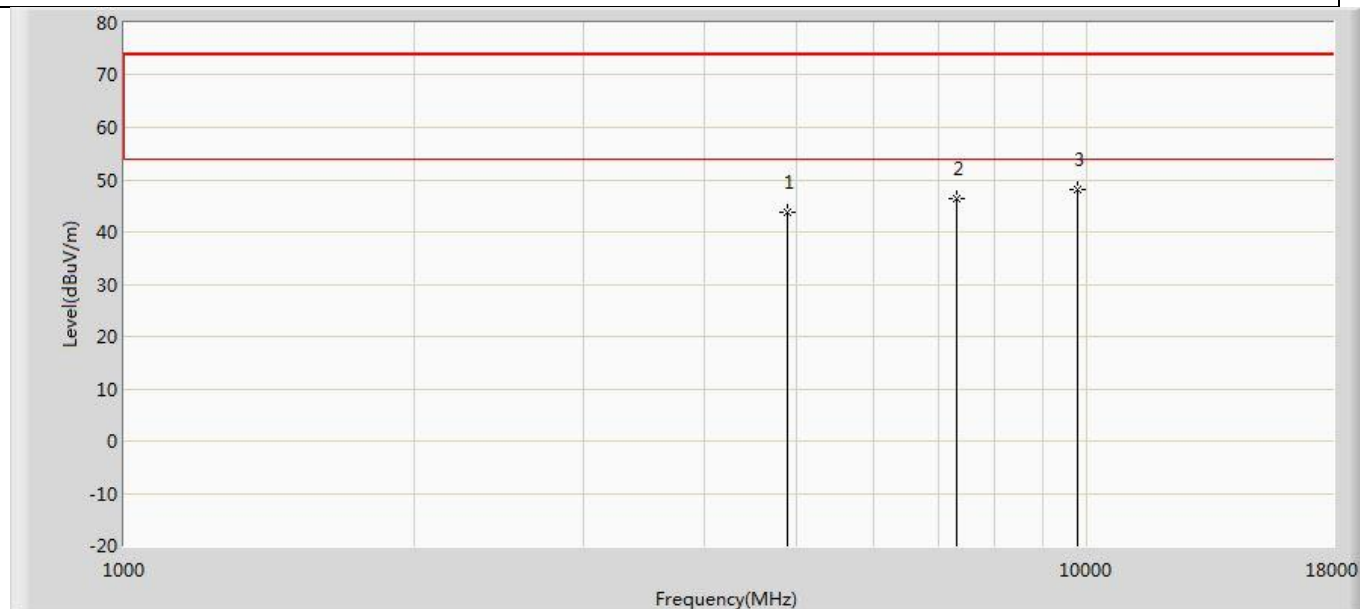
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	42.959	52.645	-31.041	74.000	-9.686	PK
2		7206.000	44.547	50.615	-29.453	74.000	-6.068	PK
3	*	9608.000	46.287	50.214	-27.713	74.000	-3.927	PK

Profile: 2190372R	Page No.: 33
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2441MHz by 2DH5	



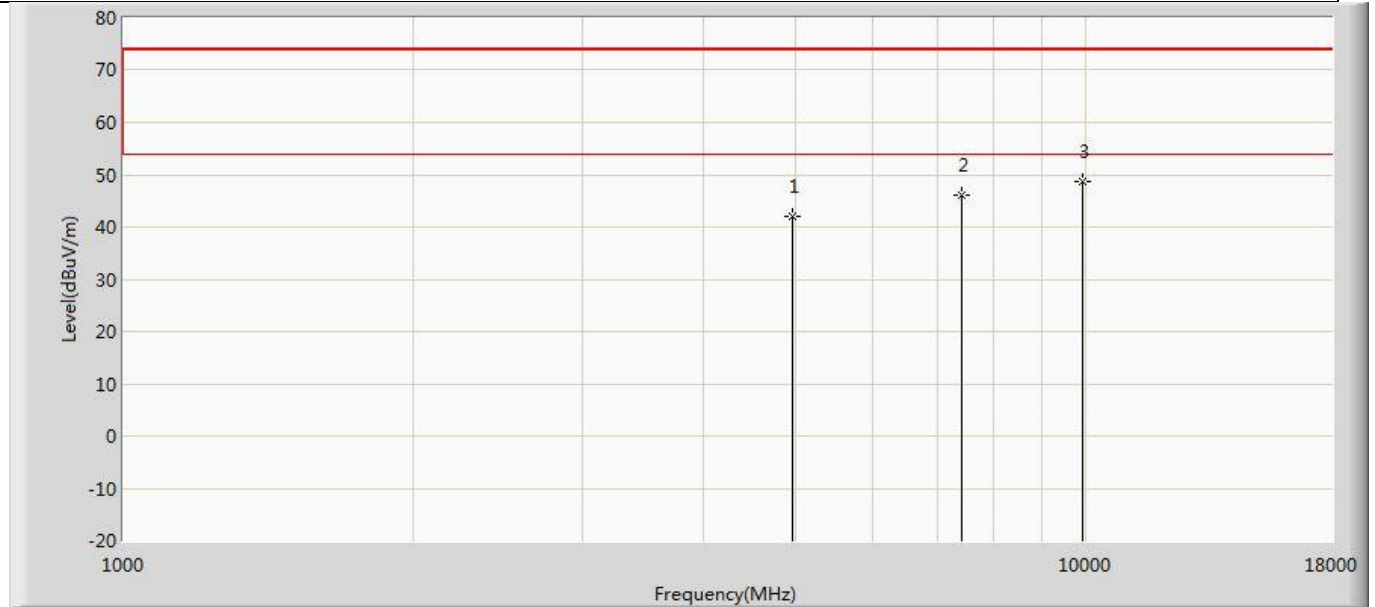
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	43.895	53.251	-30.105	74.000	-9.356	PK
2		7323.000	45.907	51.610	-28.093	74.000	-5.703	PK
3	*	9764.000	47.145	50.834	-26.855	74.000	-3.689	PK

Profile: 2190372R	Page No.: 34
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2441MHz by 2DH5	



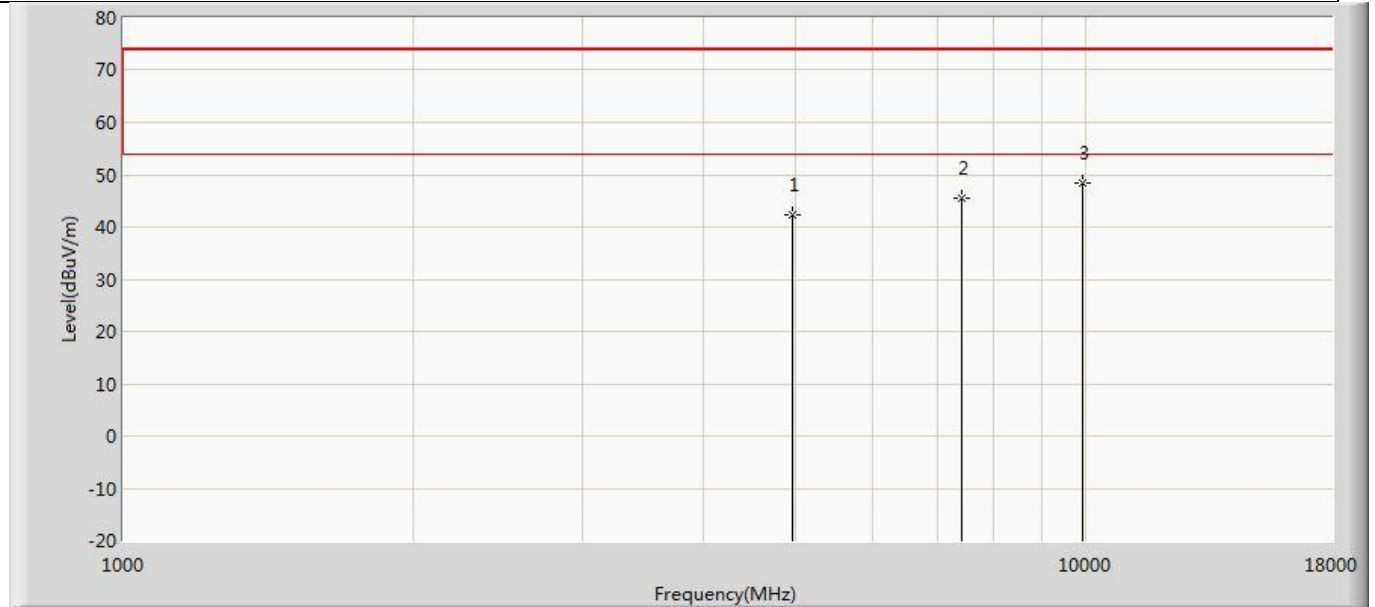
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	43.714	53.070	-30.286	74.000	-9.356	PK
2		7323.000	46.363	52.066	-27.637	74.000	-5.703	PK
3	*	9764.000	48.074	51.763	-25.926	74.000	-3.689	PK

Profile: 2190372R	Page No.: 35
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by 2DH5	



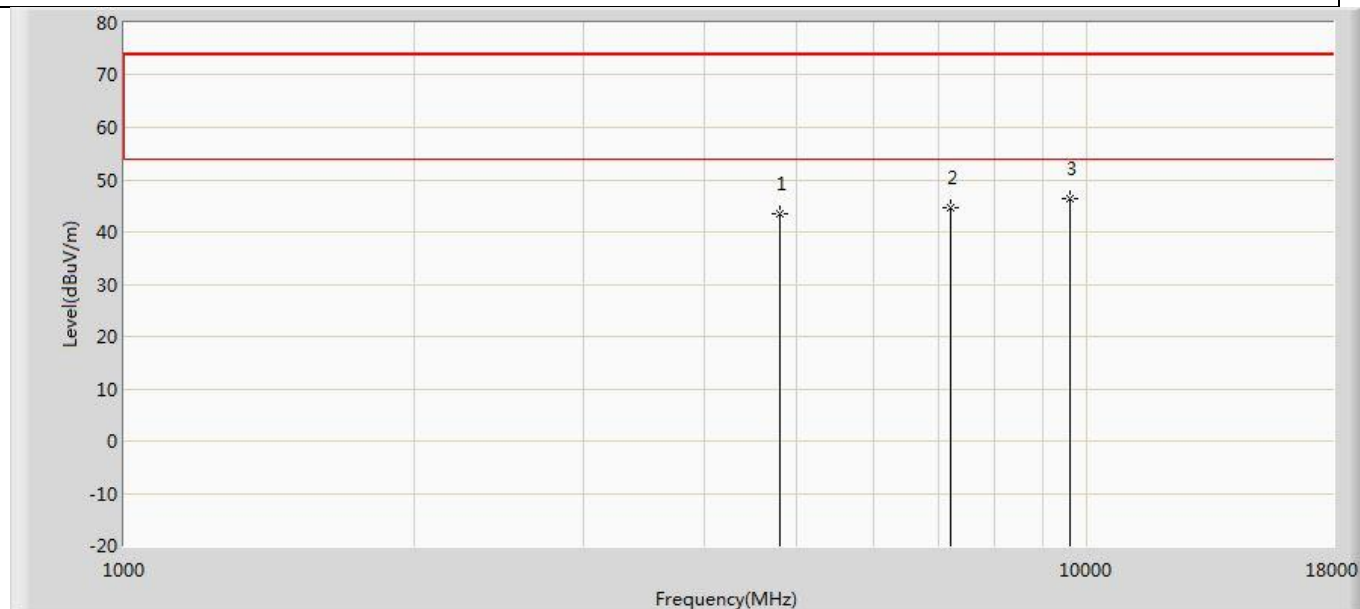
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	42.118	51.970	-31.882	74.000	-9.851	PK
2		7440.000	46.146	52.274	-27.854	74.000	-6.128	PK
3	*	9920.000	48.791	51.529	-25.209	74.000	-2.739	PK

Profile: 2190372R	Page No.: 36
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by 2DH5	



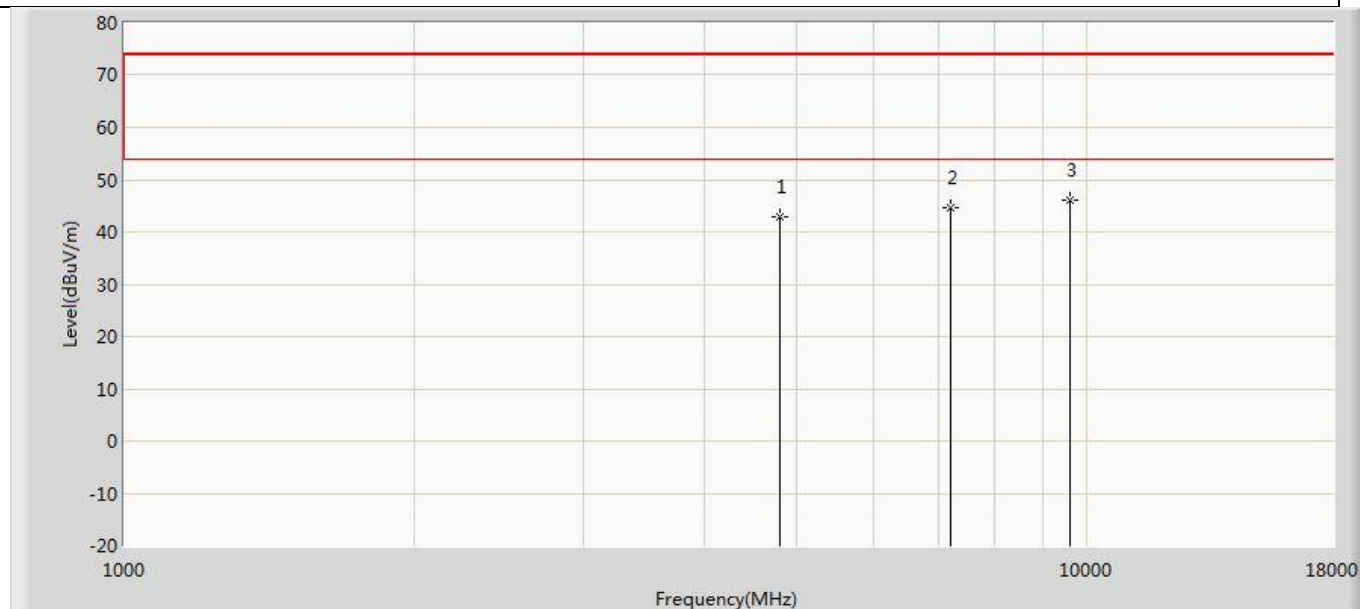
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	42.252	52.104	-31.748	74.000	-9.851	PK
2		7440.000	45.601	51.729	-28.399	74.000	-6.128	PK
3	*	9920.000	48.357	51.095	-25.643	74.000	-2.739	PK

Profile: 2190372R	Page No.: 37
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by 3DH5	



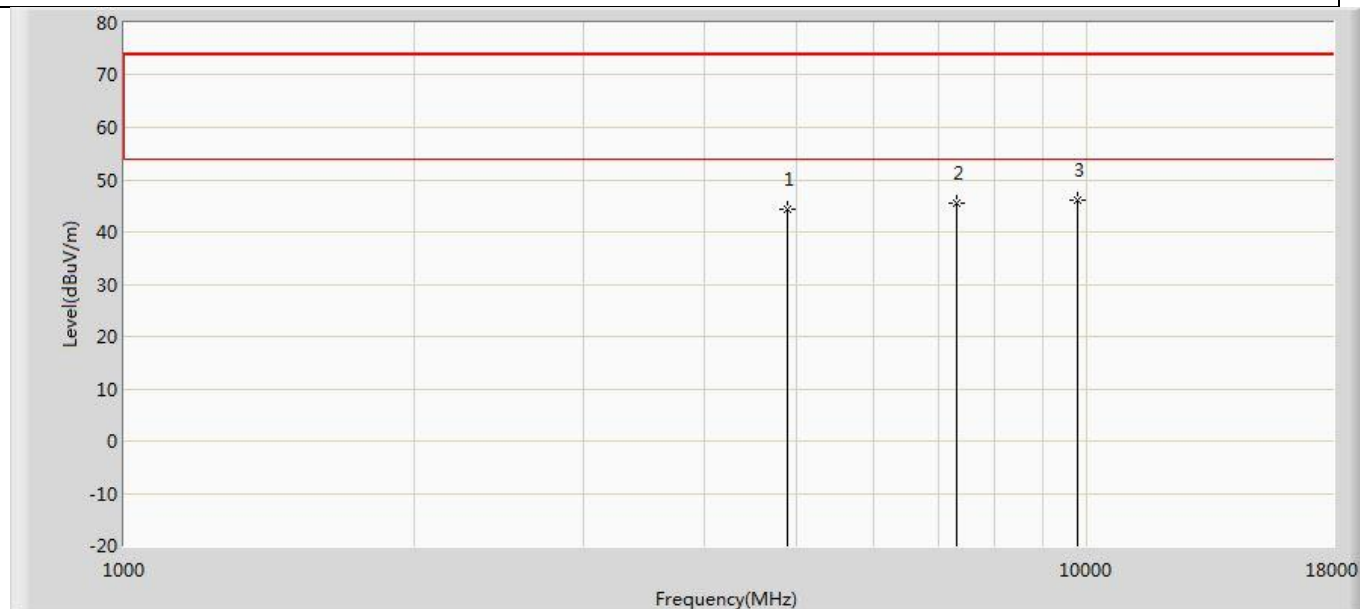
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	43.421	53.107	-30.579	74.000	-9.686	PK
2		7206.000	44.508	50.576	-29.492	74.000	-6.068	PK
3	*	9608.000	46.510	50.437	-27.490	74.000	-3.927	PK

Profile: 2190372R	Page No.: 38
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by 3DH5	



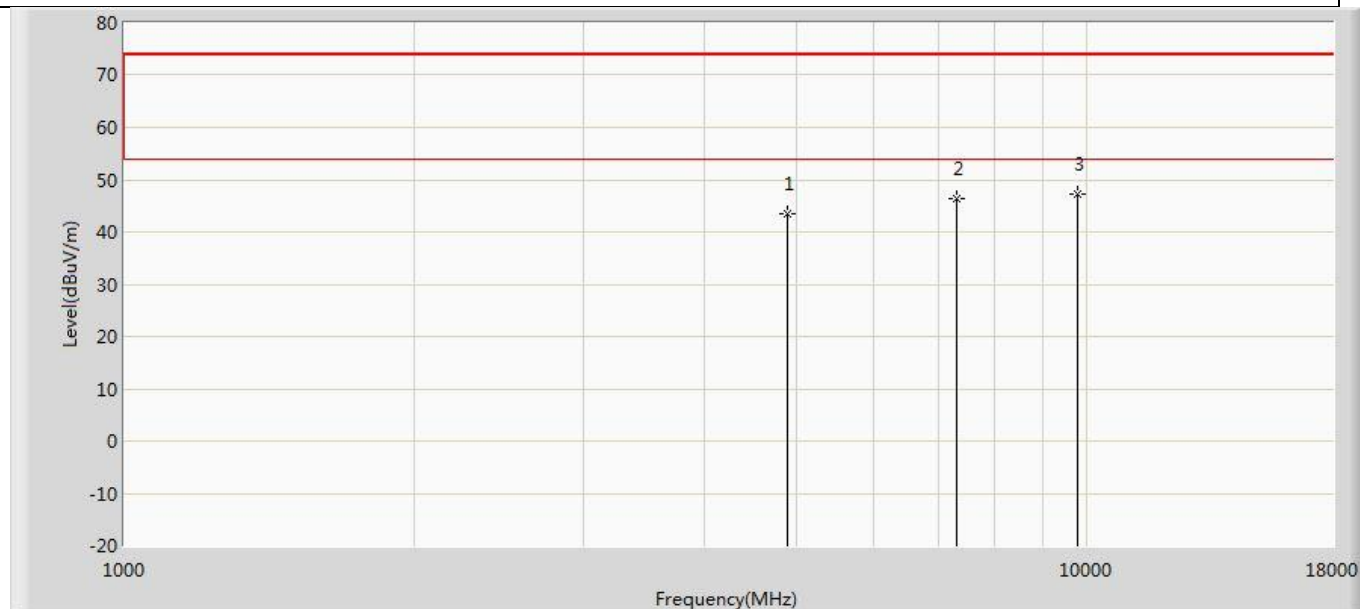
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	42.956	52.642	-31.044	74.000	-9.686	PK
2		7206.000	44.620	50.688	-29.380	74.000	-6.068	PK
3	*	9608.000	45.970	49.897	-28.030	74.000	-3.927	PK

Profile: 2190372R	Page No.: 39
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2441MHz by 3DH5	



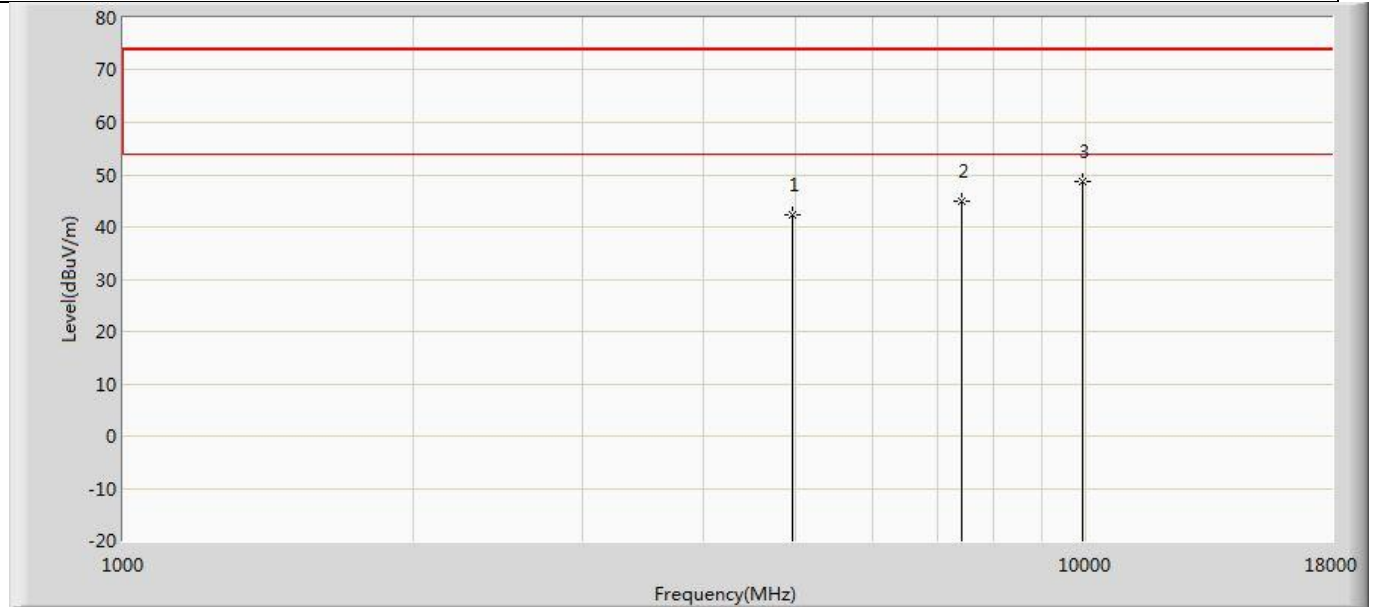
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	44.427	53.783	-29.573	74.000	-9.356	PK
2		7323.000	45.612	51.315	-28.388	74.000	-5.703	PK
3	*	9764.000	45.975	49.664	-28.025	74.000	-3.689	PK

Profile: 2190372R	Page No.: 40
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2441MHz by 3DH5	



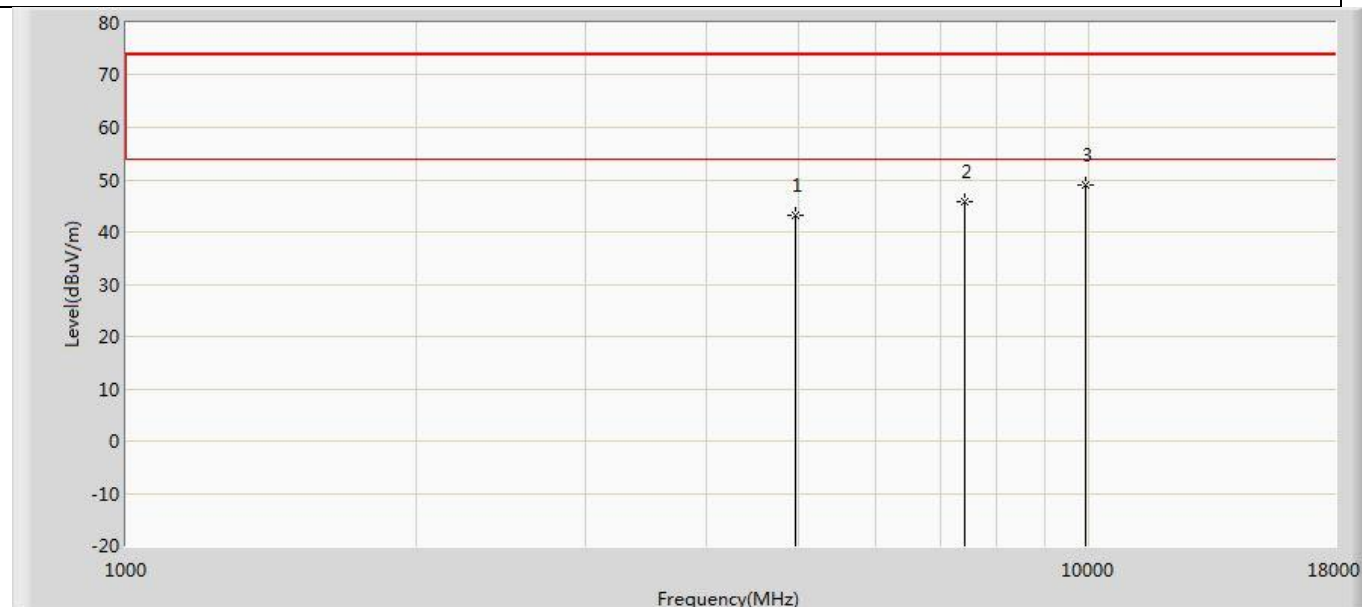
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4882.000	43.412	52.768	-30.588	74.000	-9.356	PK
2		7323.000	46.473	52.176	-27.527	74.000	-5.703	PK
3	*	9764.000	47.293	50.982	-26.707	74.000	-3.689	PK

Profile: 2190372R	Page No.: 41
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	42.371	52.223	-31.629	74.000	-9.851	PK
2		7440.000	44.836	50.964	-29.164	74.000	-6.128	PK
3	*	9920.000	48.811	51.549	-25.189	74.000	-2.739	PK

Profile: 2190372R	Page No.: 42
Engineer: Carlos shen	
Site: AC5	Time: 2021/12/17 - 04:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by 3DH5	



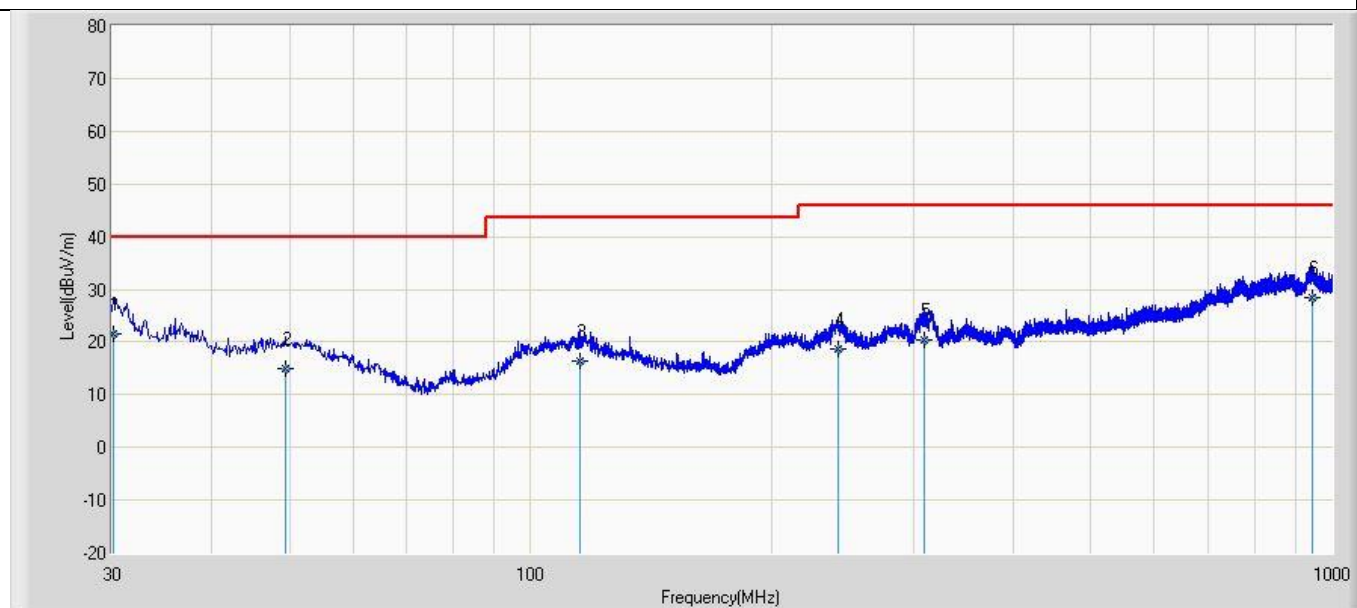
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	43.255	53.107	-30.745	74.000	-9.851	PK
2		7440.000	45.703	51.831	-28.297	74.000	-6.128	PK
3	*	9920.000	49.003	51.741	-24.997	74.000	-2.739	PK

Note:

1. Measured Level = Reading Level + Factor.
2. The test frequency range, 9kHz~30MHz, worst case are at least 20dB below the limits, therefore no data appear in the report.
3. The test frequency range, 18GHz~26GHz test result on peak is lower than average limit, all is the noise base, therefore no data appear in the report.
4. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.
5. As the radiated emission was performed, so conducted emission was not tested.

The worst case of Radiated Emission below 1GHz:

Profile: 2190372R	Page No.: 21
Engineer: Carlos shen	
Site: AC2	Time: 2022/03/07 - 10:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Horizontal
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode1	

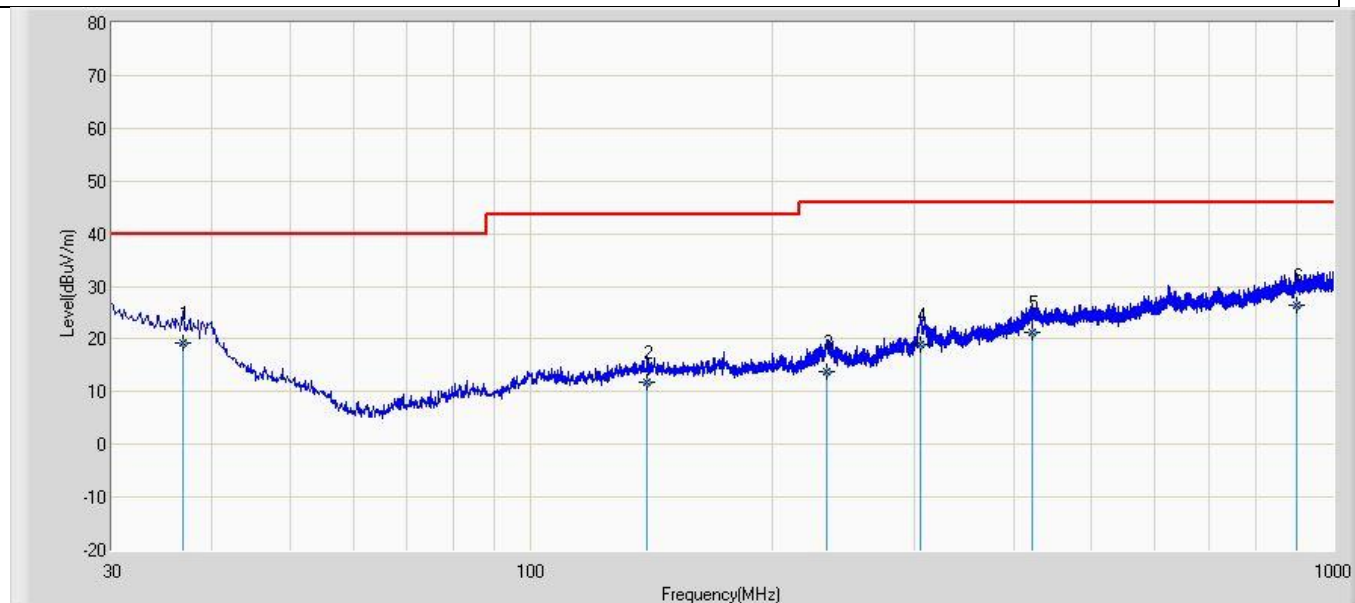


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		30.122	21.634	-2.300	-18.366	40.000	17.612	6.323	0.000	121	91	QP
2		49.422	14.935	-3.000	-25.065	40.000	11.465	6.470	0.000	199	38	QP
3		115.216	16.278	-4.400	-27.222	43.500	13.855	6.822	0.000	239	125	QP
4		241.415	18.542	-4.600	-27.458	46.000	15.836	7.306	0.000	346	8	QP
5		309.622	20.482	-4.800	-25.518	46.000	17.758	7.524	0.000	233	306	QP
6	*	945.426	28.517	-5.800	-17.483	46.000	25.292	9.025	0.000	199	237	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp)

Profile: 2190372R	Page No.: 22
Engineer: Carlos shen	
Site: AC2	Time: 2022/03/07 - 10:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Vertical
EUT: M8 DESKPHONE	Power: AC 120V/60Hz
Note: Mode1	



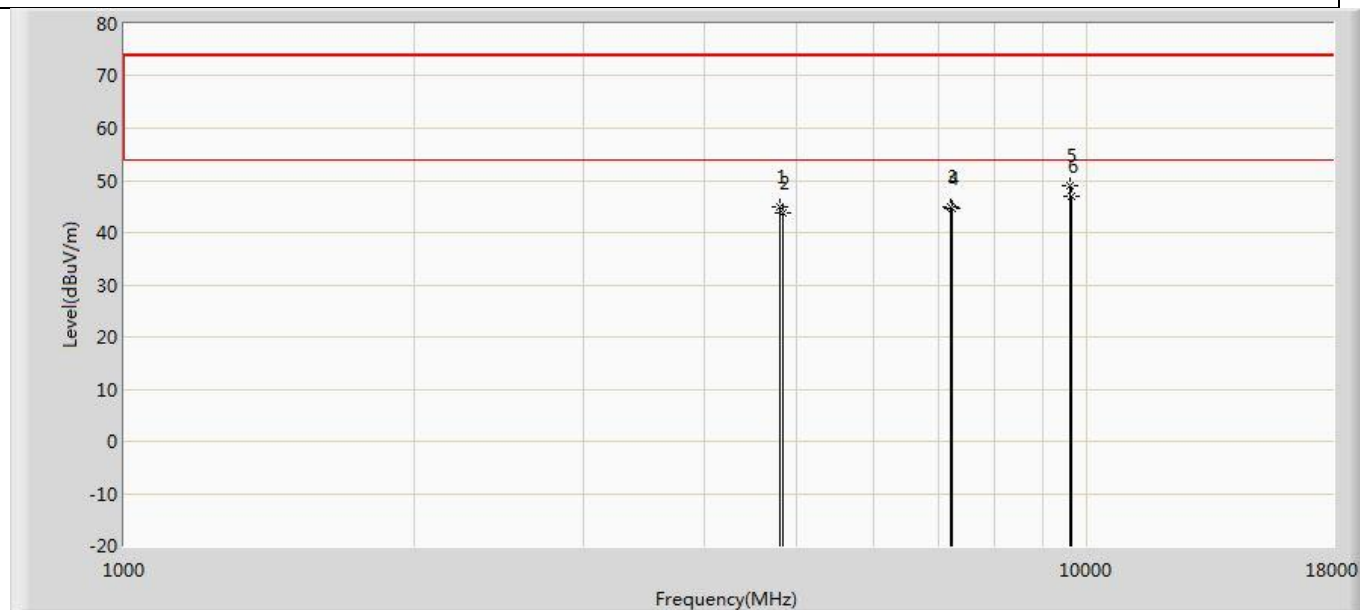
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		36.821	19.389	-5.400	-20.611	40.000	18.411	6.378	0.000	220	17	QP
2		139.516	11.782	-5.800	-31.718	43.500	10.653	6.928	0.000	160	229	QP
3		233.321	13.878	-4.300	-32.122	46.000	10.904	7.274	0.000	200	336	QP
4		305.425	18.866	-1.600	-27.134	46.000	12.970	7.496	0.000	300	42	QP
5		421.211	21.162	-5.900	-24.838	46.000	19.222	7.839	0.000	138	31	QP
6	*	900.238	26.351	-5.400	-19.649	46.000	22.819	8.932	0.000	100	43	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp)

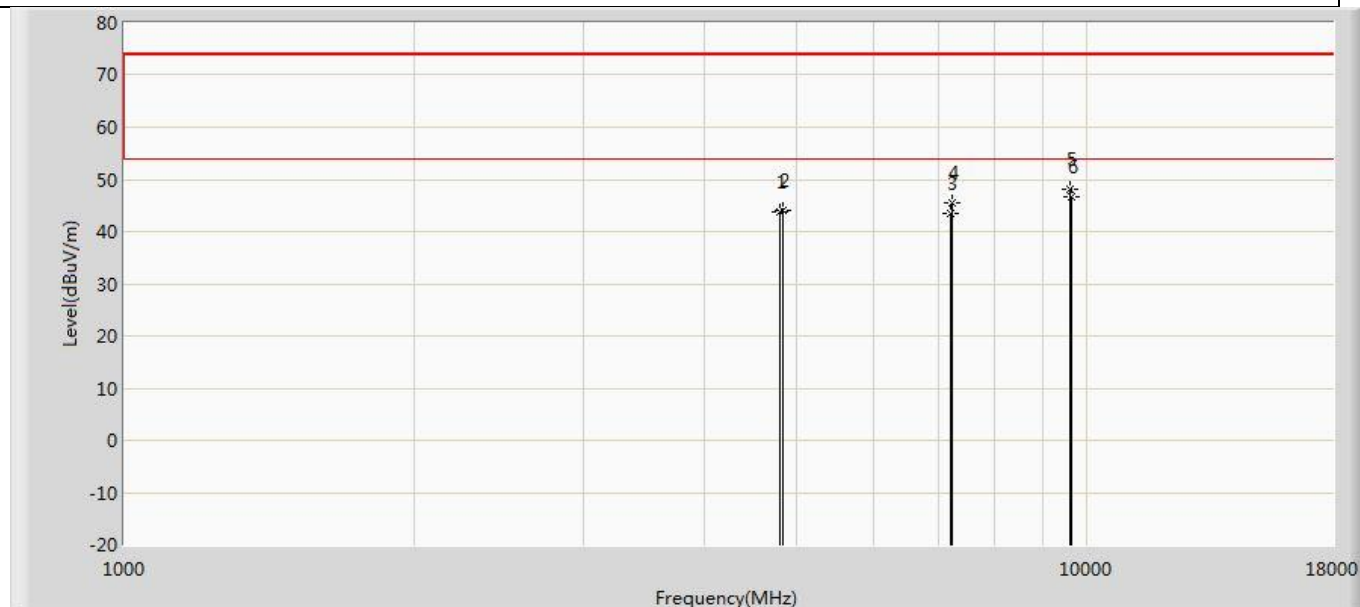
The worst case of Simultaneous Radiated Emission:

Profile: 2190372R	Page No.: 125
Engineer: Carlos shen	
Site: AC5	Time: 2022/01/05 - 14:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: M8 DeskPhone	Power: AC 120V/60Hz
Note: Mode 1: Simultaneous transmission with BT (2402MHz) +2.4G WIFI 11b (2412MHz)	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	44.808	50.950	-29.192	74.000	-6.143	PK
2		4824.000	43.884	49.924	-30.116	74.000	-6.039	PK
3		7206.000	44.843	47.165	-29.157	74.000	-2.322	PK
4		7236.000	44.539	46.773	-29.461	74.000	-2.233	PK
5	*	9608.000	48.885	46.434	-25.115	74.000	2.451	PK
6		9648.000	46.824	45.289	-27.176	74.000	1.535	PK

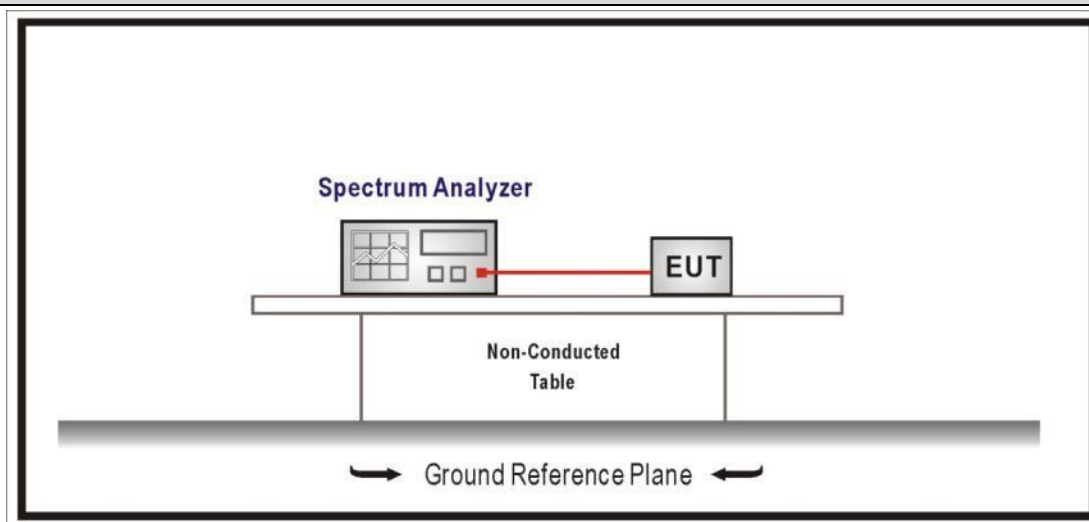
Profile: 2190372R	Page No.: 126
Engineer: Carlos shen	
Site: AC5	Time: 2022/01/05 - 14:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: M8 DeskPhone	Power: AC 120V/60Hz
Note: Mode 1: Simultaneous transmission with BT (2402MHz) +2.4G WIFI 11b (2412MHz)	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	43.805	49.947	-30.195	74.000	-6.143	PK
2		4824.000	44.105	50.145	-29.895	74.000	-6.039	PK
3		7206.000	43.557	45.879	-30.443	74.000	-2.322	PK
4		7236.000	45.575	47.809	-28.425	74.000	-2.233	PK
5	*	9608.000	48.054	45.603	-25.946	74.000	2.451	PK
6		9648.000	46.575	45.040	-27.425	74.000	1.535	PK

4.3 20dB Bandwidth**VERDICT: PASS****4.3.1 Limit**

Standard		FCC Part 15 Subpart C Paragraph 15.247(a)
☒	For frequency hopping systems operating in 2400-2483.5 MHz band, within frequency range.	
☐	For frequency hopping systems operating in 902-928 MHz band, the maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.	
☐	For frequency hopping systems operating in 5725-5850 MHz band, the maximum 20 dB bandwidth of the hopping channel is 1 MHz.	

4.3.2 Test Setup**4.3.3 Test Procedure**

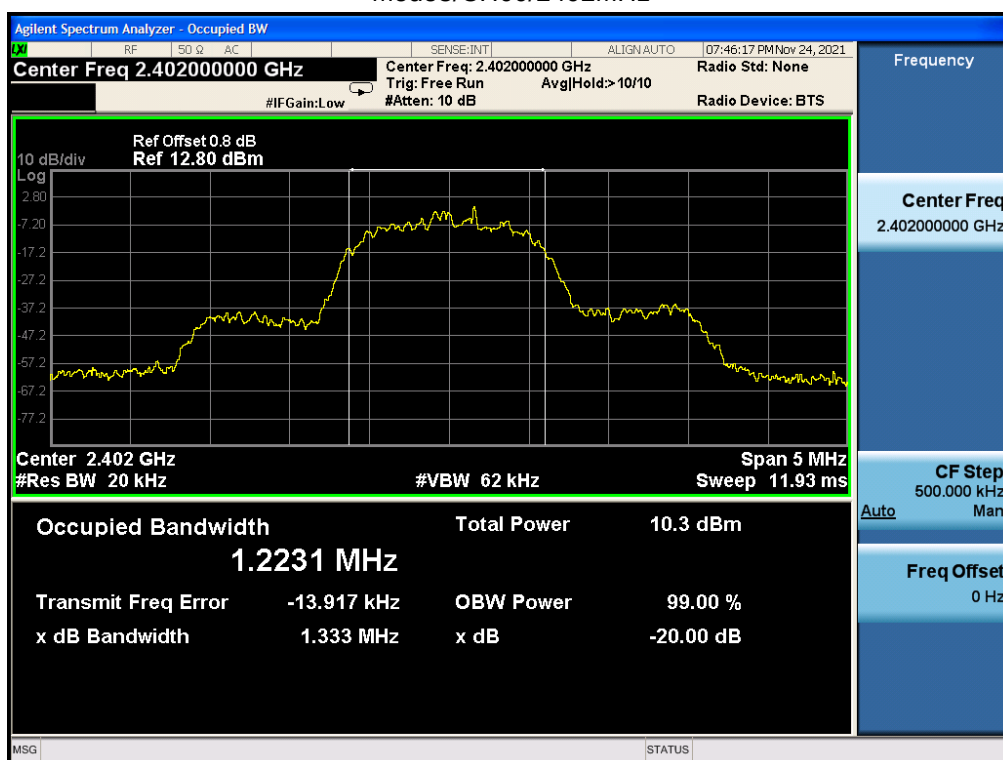
References Rule		Chapter	Description
☒	ANSI C63.10	6.9	Occupied bandwidth tests
☒	ANSI C63.10	6.9.2	Occupied bandwidth—relative measurement procedure

4.3.4 Test Data

Mode	Channel	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
1	00	2402	928.2	899.44
	39	2441	927.7	895.78
	79	2480	927.7	900.51
2	00	2402	1346	1219.4
	39	2441	1343	1225.4
	79	2480	1346	1217.4
3	00	2402	1333	1223.1
	39	2441	1314	1222.2
	79	2480	1316	1219.9

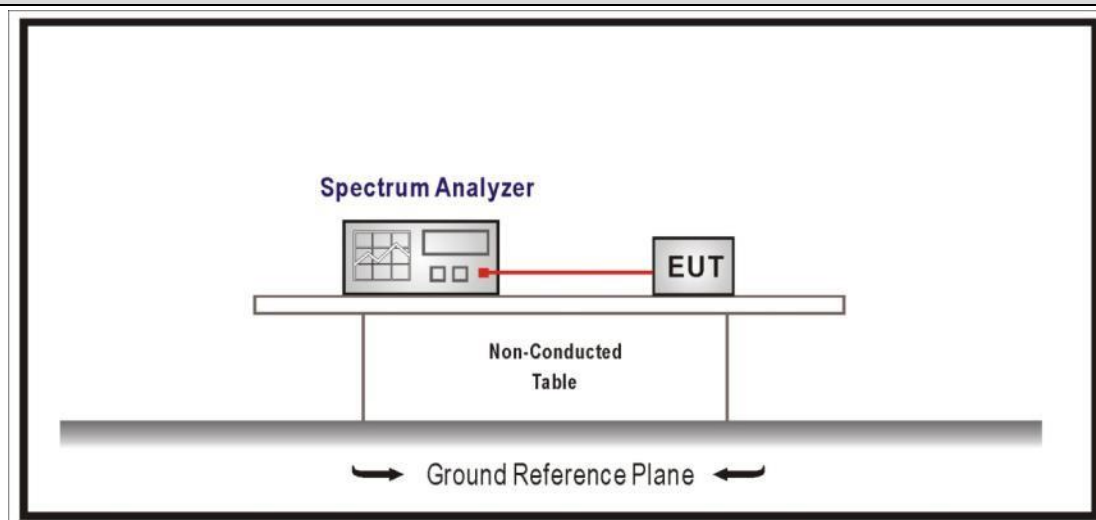
Note 1: The worst data plot as below:

Mode3/CH00/2402MHz



4.4 CarrierFrequencySeparation**VERDICT: PASS****4.4.1 Limit**

Standard	FCC Part 15 Subpart C Paragraph 15.247(a)
☐	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.
☒	Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel.
☐	The 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4
☐	The 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4
☐	Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz.

4.4.2 Test Setup**4.4.3 Test Procedure**

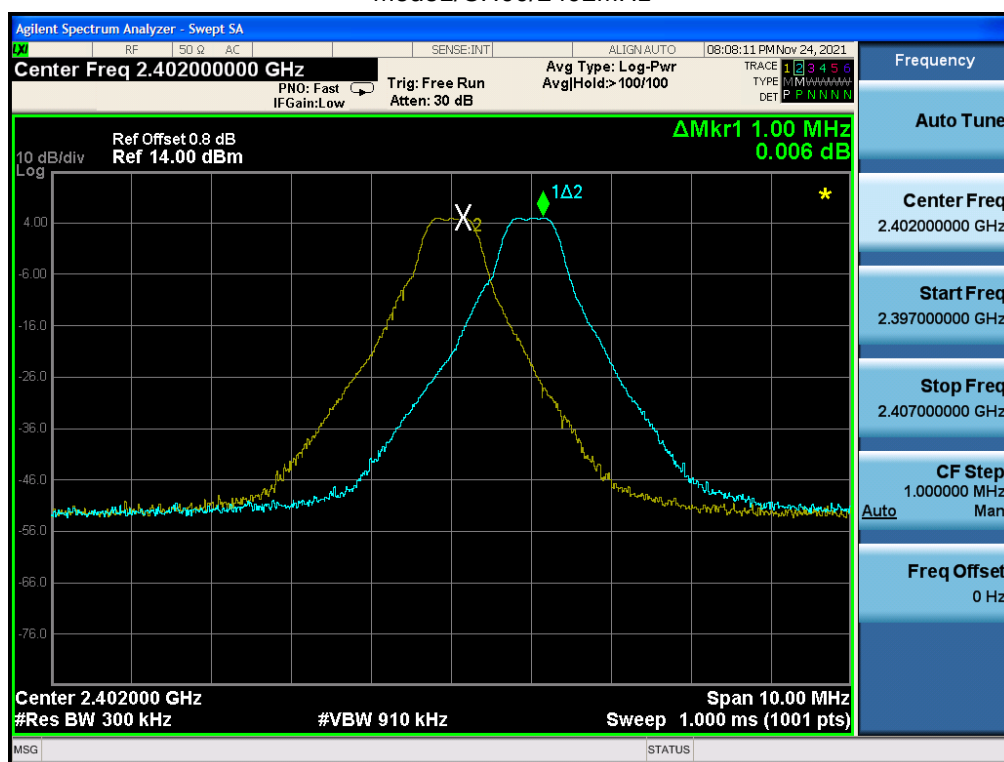
References Rule	Chapter	Description
☒ ANSI C63.10	7.8	Evaluation of frequency-hopping device parameters
☒ ANSI C63.10	7.8.2	Carrier frequency separation

4.4.4 Test Data

Mode	Channel	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
1	00	2402	1000	928.2	Pass
	39	2441	1000	927.7	Pass
	78	2480	1000	927.7	Pass
2	00	2402	1000	897.3	Pass
	39	2441	1000	895.3	Pass
	78	2480	1000	897.3	Pass
3	00	2402	1000	888.7	Pass
	39	2441	1000	876.0	Pass
	78	2480	1000	877.3	Pass

Note 1: The worst data plot as below:

Mode1/CH00/2402MHz



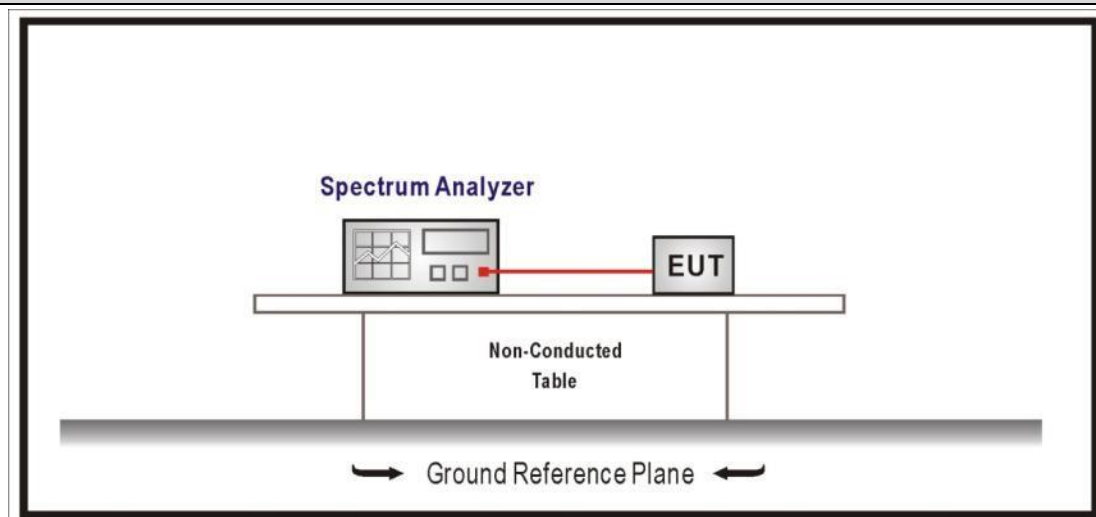
4.5 Number of hopping Frequencies

VERDICT: PASS

4.5.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.247(a)
☒	For frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies.
☐	For frequency hopping systems operating in 902-928 MHz band, if the 20 dB bandwidth of the hopping channel is less than 250 kHz, shall use at least 50 hopping frequencies.
☐	For frequency hopping systems operating in 902-928 MHz band, if the 20 dB bandwidth of the hopping channel is higher than 250 kHz, shall use at least 25 hopping frequencies.
☐	For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

4.5.2 Test Setup



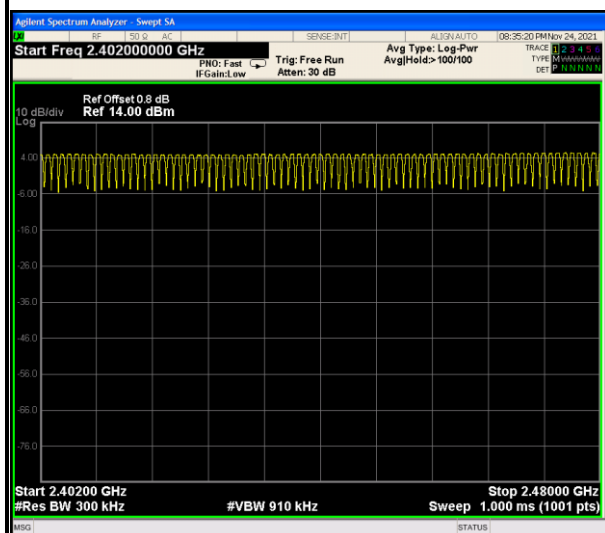
4.5.3 Test Procedure

References Rule	Chapter	Description
☒ ANSI C63.10	7.8.	Evaluation of frequency-hopping device parameters
☒ ANSI C63.10	7.8.3	Number of Hopping Frequencies

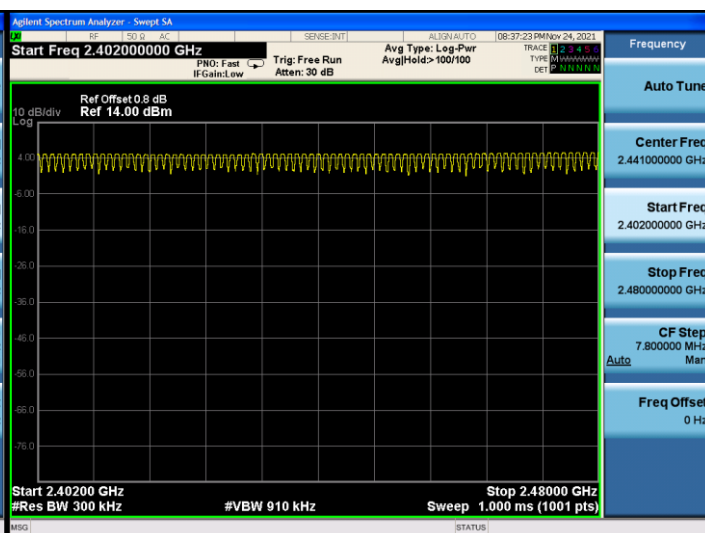
4.5.4 Test Data

Mode	Number of Hopping Frequencies	Limit	Result
1	79	>15	Pass
2	79	>15	Pass
3	79	>15	Pass

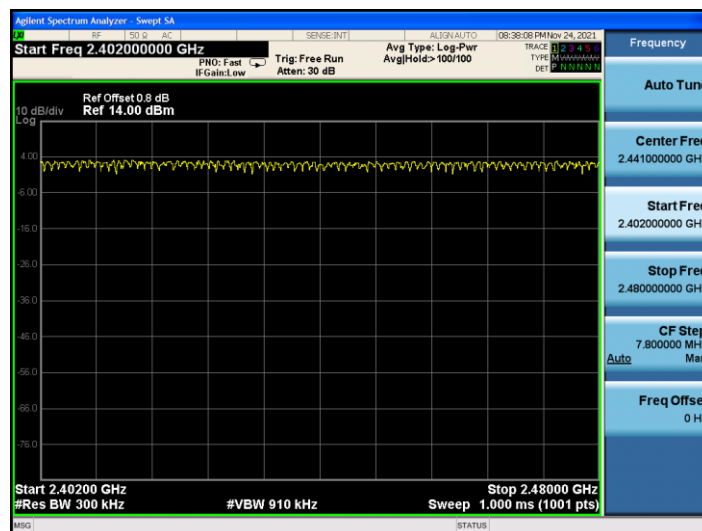
Mode 1



Mode2

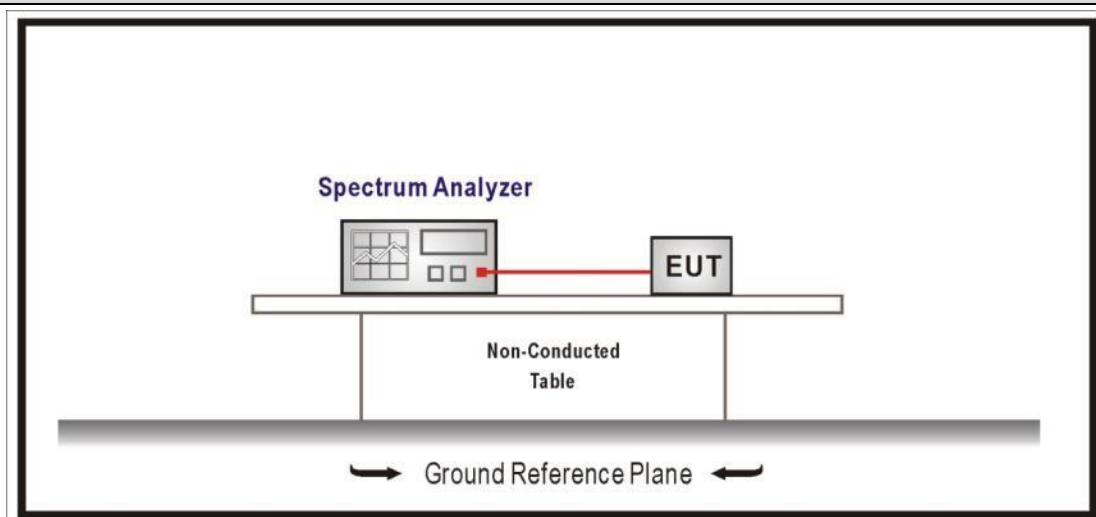


Mode 3



4.6 Time of Occupancy(Dwell Time)**VERDICT: PASS****4.6.1 Limit**

Standard	FCC Part 15 Subpart C Paragraph 15.247(a)
☒	Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.
☐	For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period
☐	For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.
☐	Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

4.6.2 Test Setup**4.6.3 Test Procedure**

References Rule	Chapter	Description
☒ ANSI C63.10	7.8	Evaluation of frequency-hopping device parameters
☒ ANSI C63.10	7.8.4	Time of occupancy (dwell time)

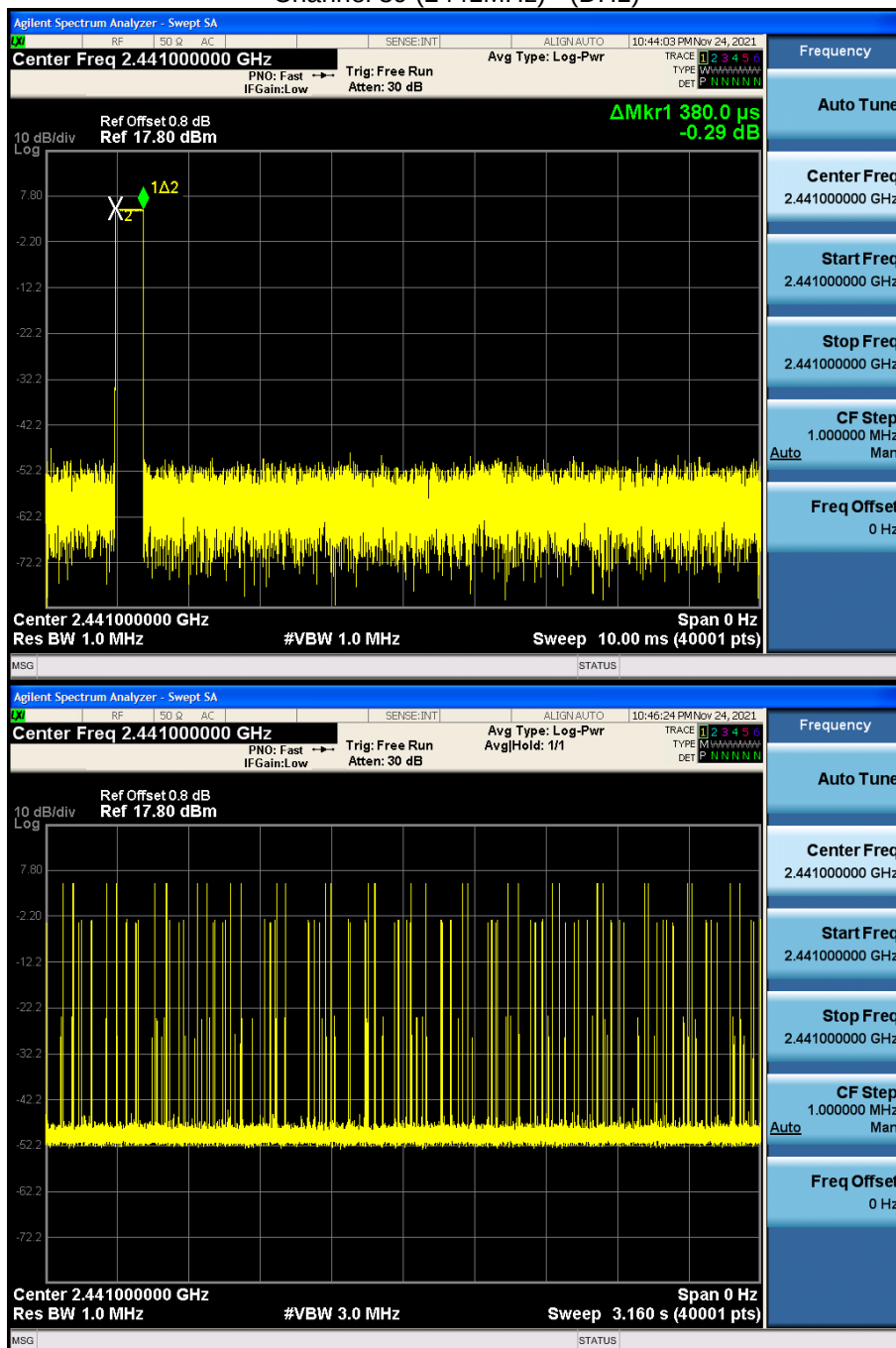
4.6.4 Test Data

Mode	Channel	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
1	39	2441	121.6	< 400	Pass

Note1: Test Time Period: $0.4 \times 79 = 31.6 \text{ sec}$ Note2: Time of Occupancy = $0.38 \times 32 \times 31.6 / 3.16 = 121.6 \text{ ms}$

Note3: We have evaluated different packet type, shown in the report is the worst data.

Channel 39 (2441MHz) - (DH1)



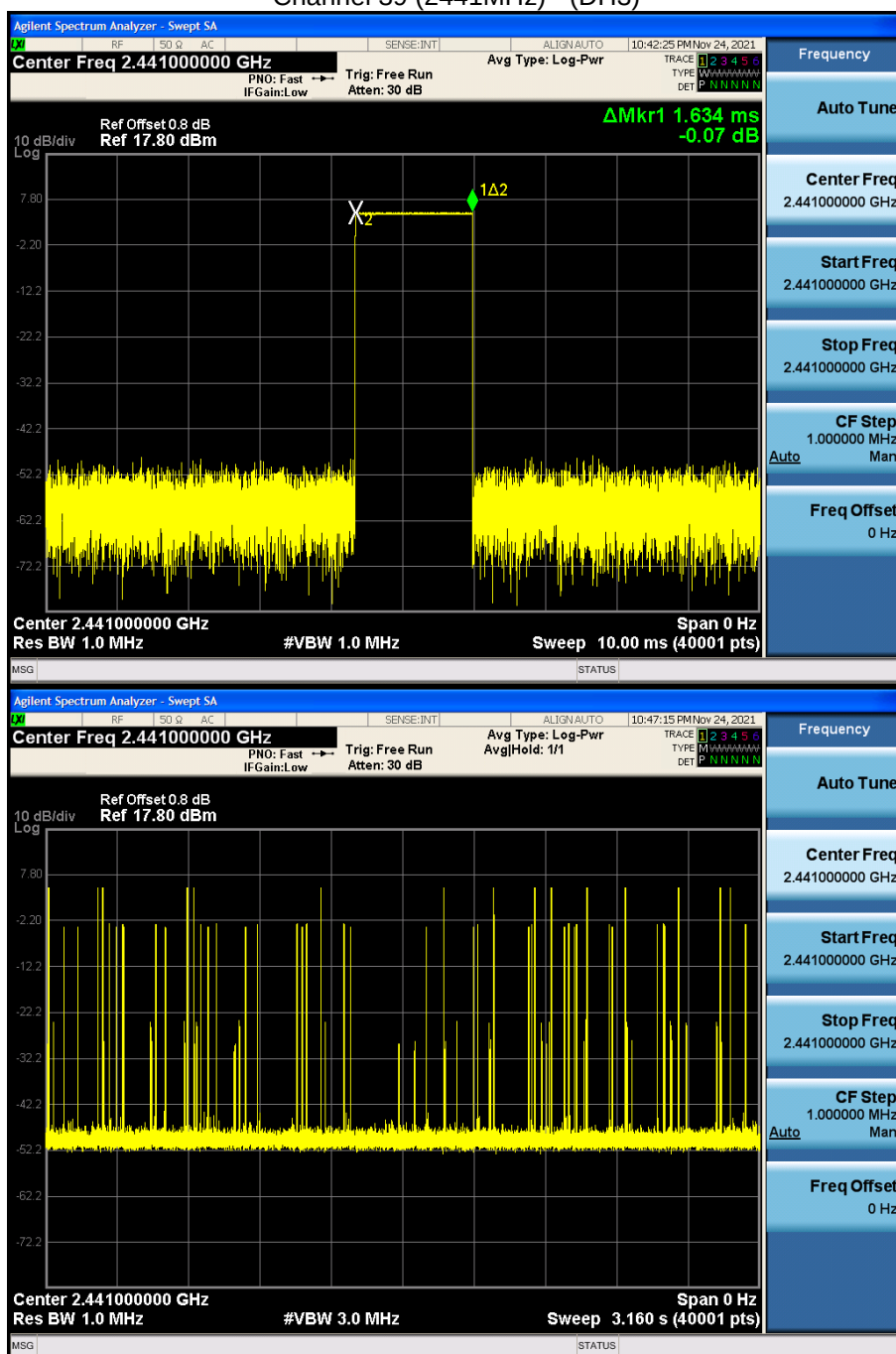
Mode	Channel	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
1	39	2441	245.1	< 400	Pass

Note1: Test Time Period: $0.4 \times 79 = 31.6 \text{ sec}$

Note2: Time of Occupancy = $1.634 \times 15 \times 31.6 / 3.16 = 245.1 \text{ ms}$

Note3: We have evaluated different packet type, shown in the report is the worst data.

Channel 39 (2441MHz) - (DH3)



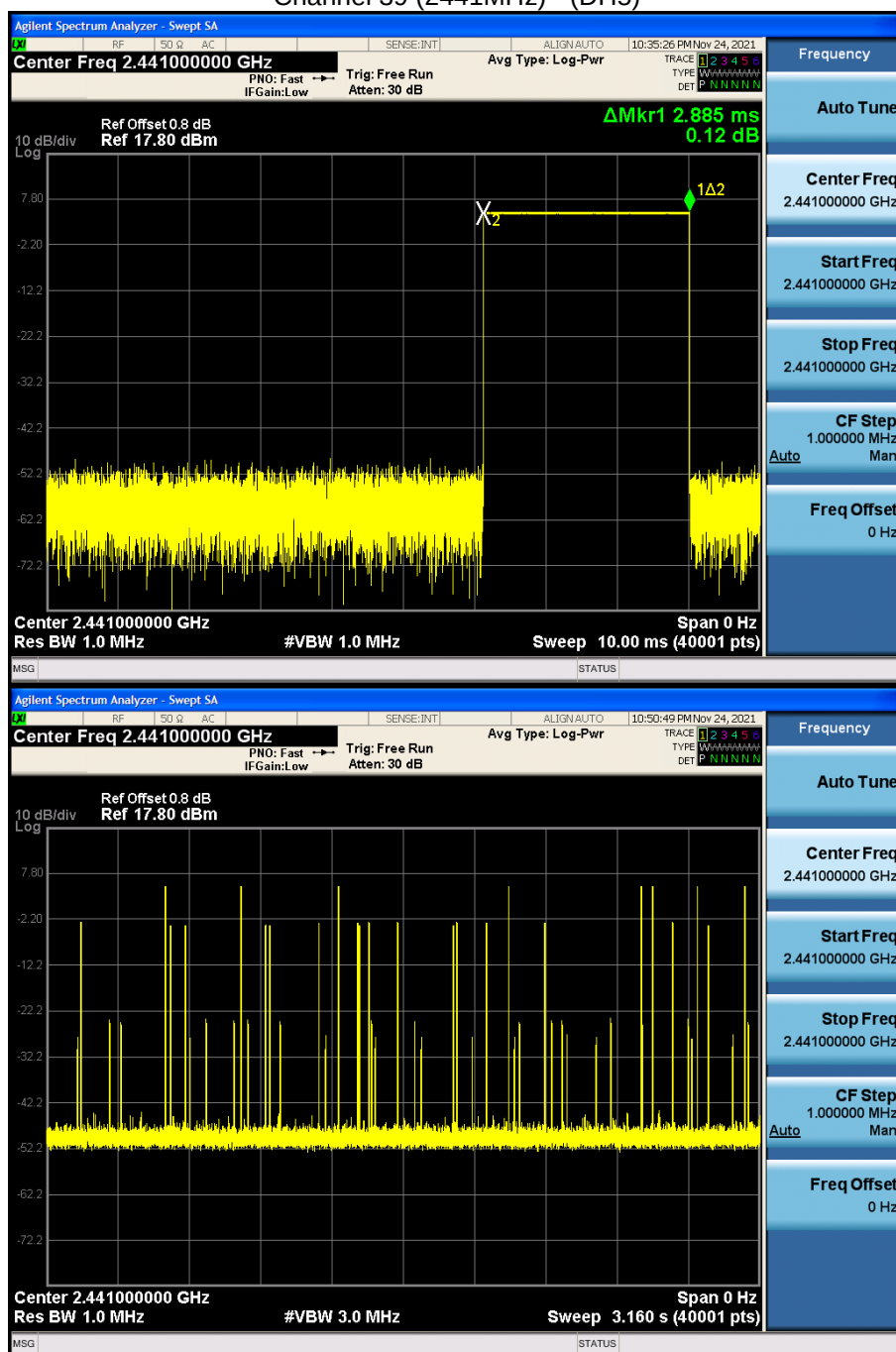
Mode	Channel	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
1	39	2441	203.8	< 400	Pass

Note1: Test Time Period: $0.4 \times 79 = 31.6 \text{ sec}$

Note2: Time of Occupancy = $2.885 \times 8 \times 31.6 / 3.16 = 203.8 \text{ ms}$

Note3: We have evaluated different packet type, shown in the report is the worst data.

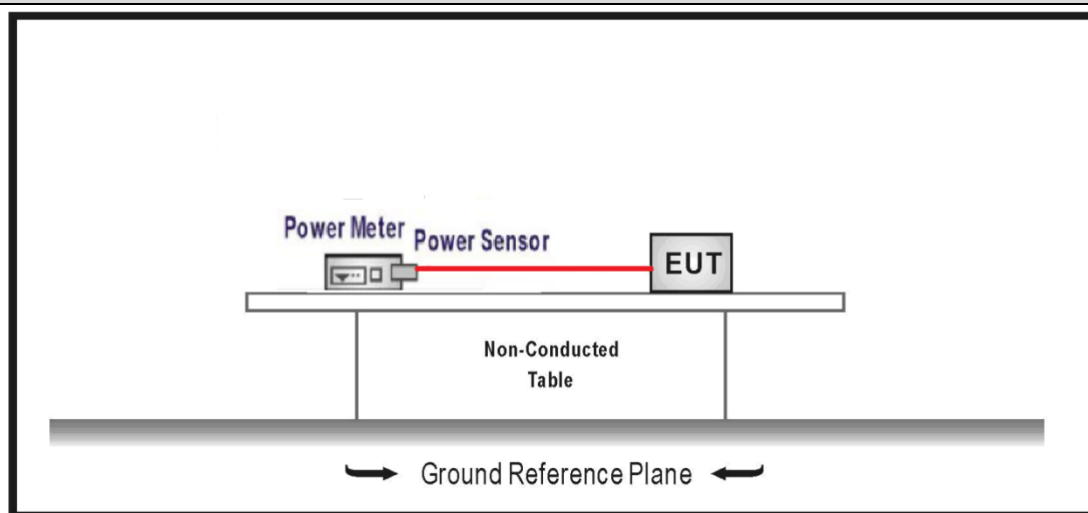
Channel 39 (2441MHz) - (DH5)



Note: The packet time of AFH mode is same as normal mode, due to the packet time of AFH mode multiply with lesser factor is dwell time of $0.4 \times 20 = 8 \text{ S}$, the dwell time of AFH mode comply with the limit.

4.7 Peak Output Power**VERDICT: PASS****4.7.1 Limit**

Standard		FCC Part 15 Subpart C Paragraph 15.247 (a)(1)
☒	Frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.	
☒	Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.	
☐	For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels	

4.7.2 Test Setup

4.7.3 Test Procedure

	References Rule		Chapter	Description
☒	ANSI C63.10		7.8	Evaluation of frequency-hopping device parameters
	☒	ANSI C63.10	7.8.5	Output power test procedure for frequency-hopping spread-spectrum (FHSS) devices

4.7.4 Test Data

Mode	Channel	Test Frequency (MHz)	Conducted Power (dBm)	Conducted Power Limit (dBm)	Result
Mode 1	00	2402	6.52	≤ 30	Pass
	39	2441	7.01	≤ 30	Pass
	78	2480	6.79	≤ 30	Pass
Mode 2	00	2402	4.02	≤ 21	Pass
	39	2441	4.35	≤ 21	Pass
	78	2480	3.86	≤ 21	Pass
Mode 3	00	2402	4.01	≤ 21	Pass
	39	2441	4.31	≤ 21	Pass
	78	2480	3.87	≤ 21	Pass

4.8 Emissions in non-restricted frequency band

VERDICT: PASS

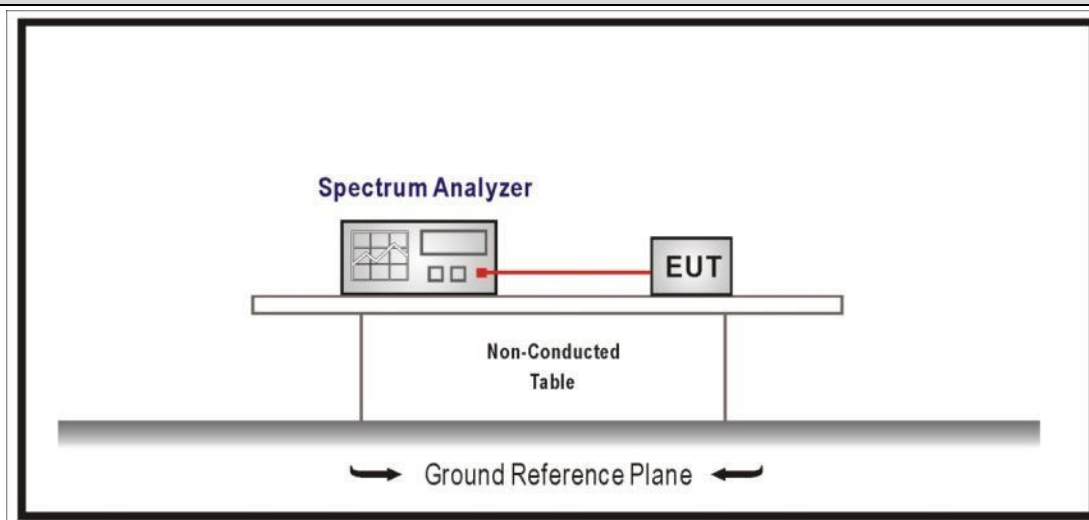
4.8.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.247(d)
RF Output power (Detection methods)	Limit(dB)
RF Output power(Average detector)	30dBc(Note1)
RF Output power(PK detector)	20dBc(Note2)

Note 1: If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).

Note 2: If the maximum peak conducted output power procedure was used, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).

4.8.2 Test Setup

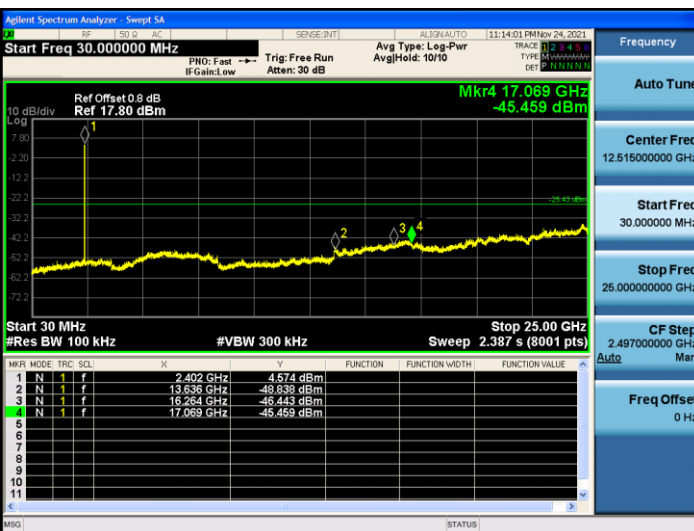


4.8.3 Test Procedure

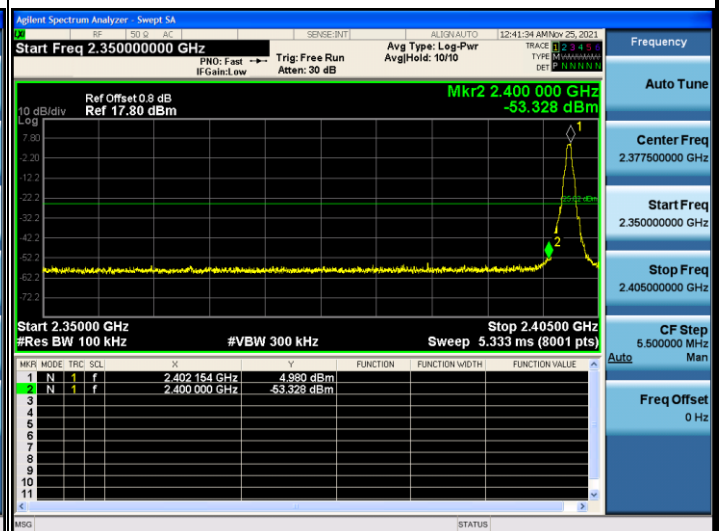
References Rule	Chapter	Description
☒ ANSI C63.10	7.8	Evaluation of frequency-hopping device parameters
☒ ANSI C63.10	7.8.6	Band-edge measurements for RF conducted emissions

4.8.4 Test Data

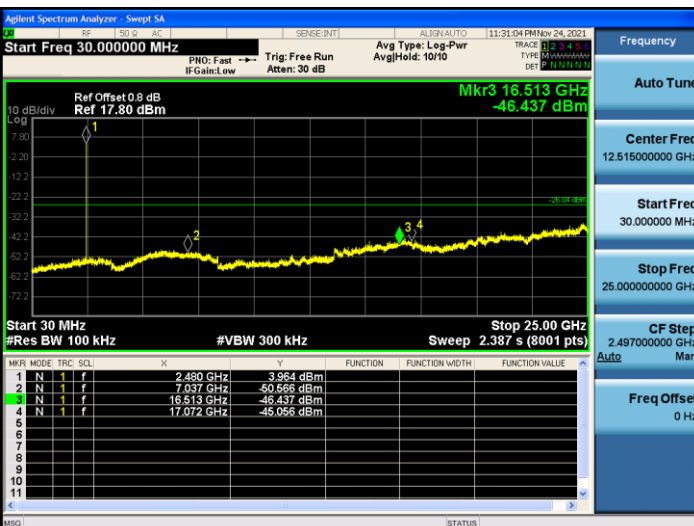
Mode 1 CH00(2402MHz)



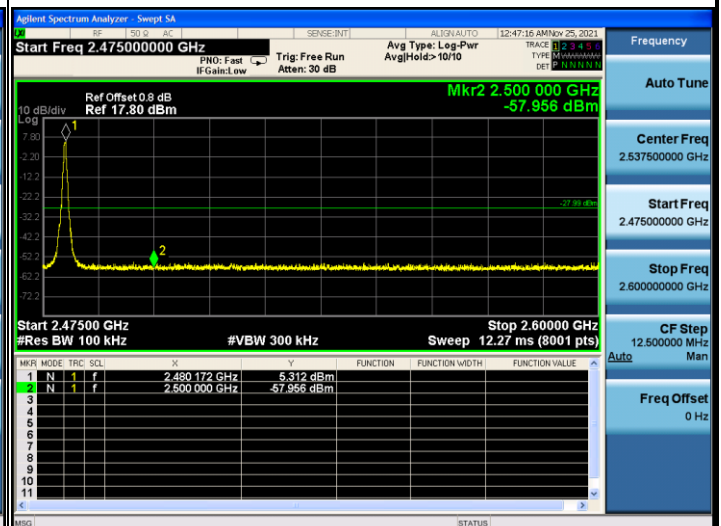
Mode 1 CH00(2402MHz)



Mode 1 CH78(2480MHz)



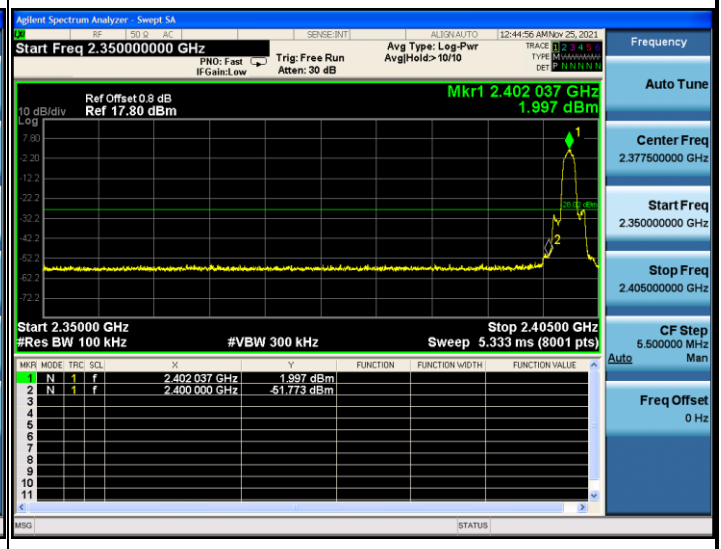
Mode 1 CH78(2480MHz)



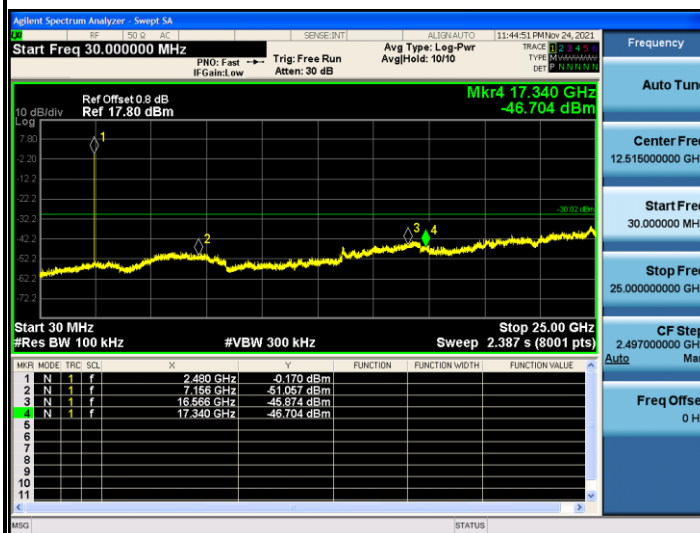
Mode 2 CH00(2402MHz)



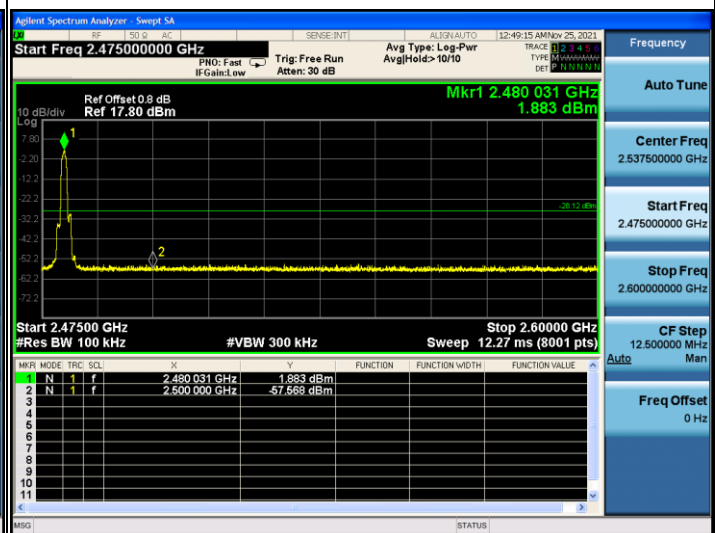
Mode 2 CH00(2402MHz)



Mode 2 CH78(2480MHz)



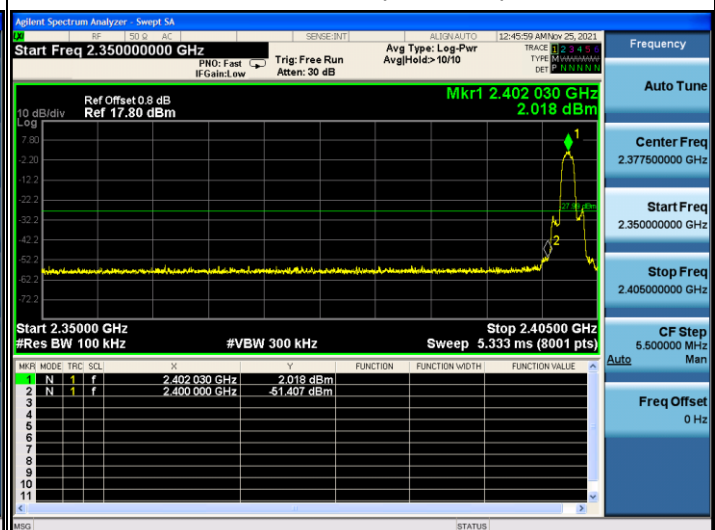
Mode 2 CH78(2480MHz)



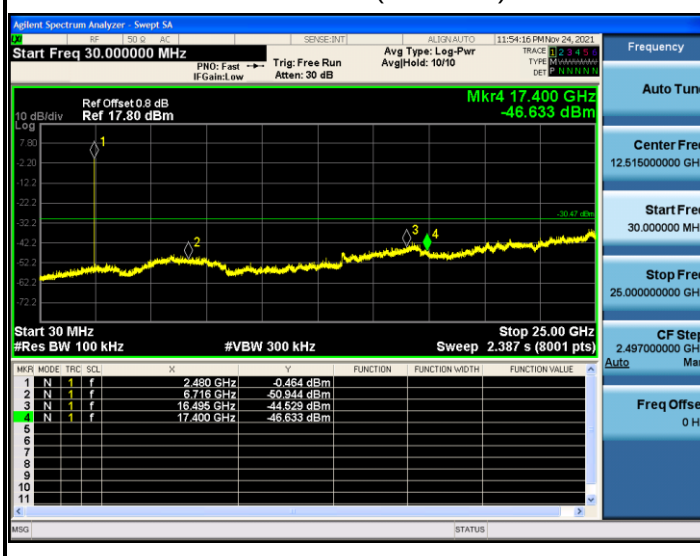
Mode 3 CH00(2402MHz)



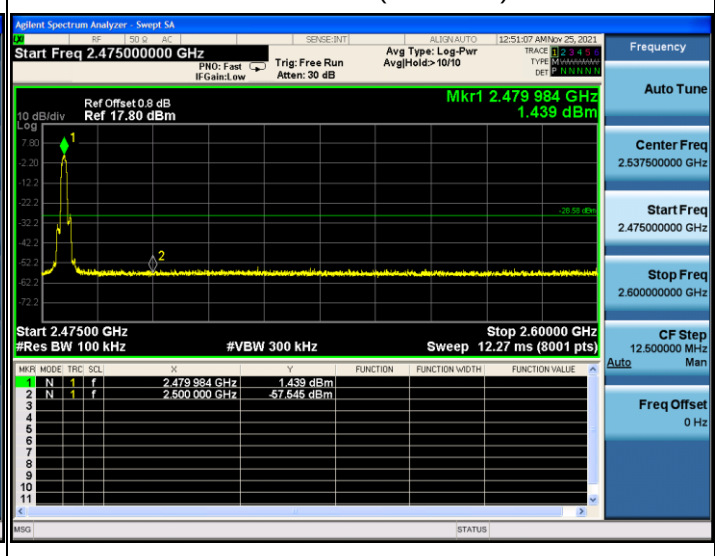
Mode 3 CH00(2402MHz)



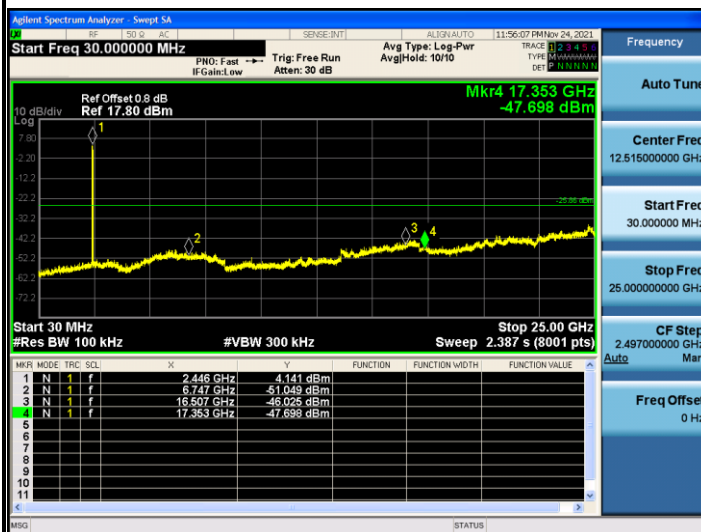
Mode 3 CH78(2480MHz)



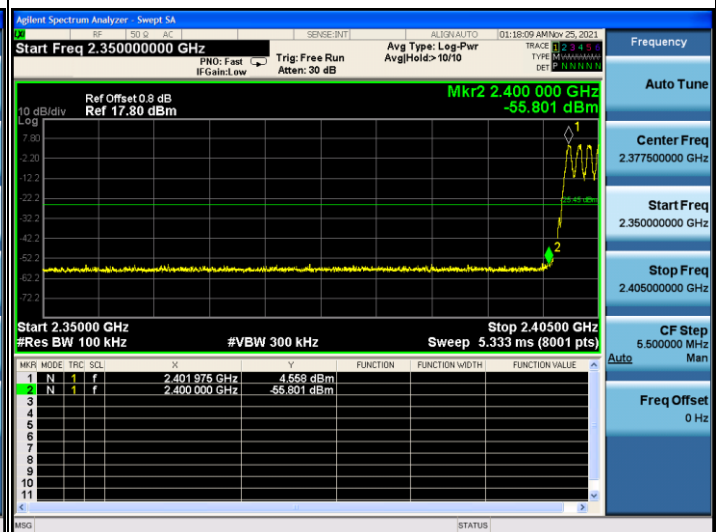
Mode 3 CH78(2480MHz)



Mode 4 (DH5-1)



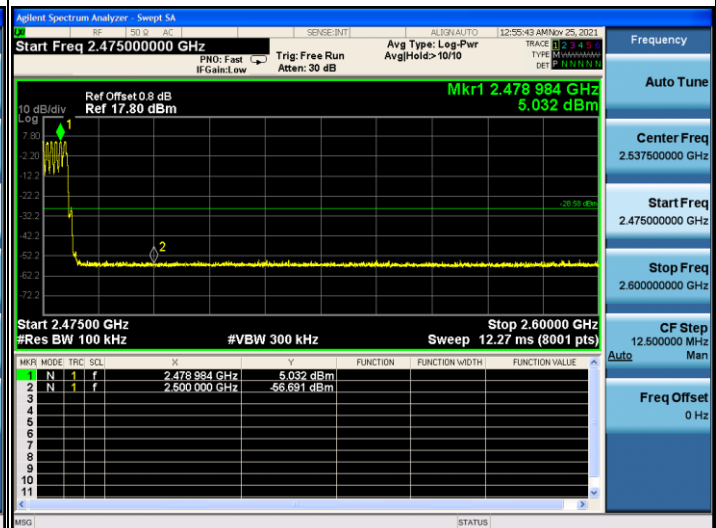
Mode 4 (DH5-1)



Mode 4 (DH5-2)



Mode4 (DH5-2)



Mode 5 (2DH5-1)



Mode 5 (2DH5-1)

