



# FCC Test Report

Report No: FCS202104047W01

Issued for

Applicant:	Enping Heng da Electronic Industry Co., Ltd
Address:	No.8, B District,Dongan Industry Zone,Enping,Jiangmen,Guangdong,China
Product Name:	wireless microphone
Brand Name:	N/A
Model Name:	HD-069
Series Model:	D-450, HT-450, LT-450, U-422, ACT-362, U-616, U-3002, U-3003, ACT-312, ACT-313, ACT-315, SU-12, U-723, U-412, U-33D, U-611, ACT-8098, ACT-1609J, ACT-919, MU-300i, MU-885i, MU-1182, MU-113, MU-116, HS-1080, HS-1090, BG-68S, D-850, HT-850, LT-850
FCC ID:	2AD2T-HD069
Issued By: Flux Compliance Service Laboratory Add: Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan Tel: 769-27280901 Fax:769-27280901 <a href="http://www.fcs-lab.com">http://www.fcs-lab.com</a>	

## TEST RESULT CERTIFICATION

Applicant's Name.....: Enping Heng da Electronic Industry Co., Ltd

Address.....: No.8, B District,Dongan Industry Zone,Enping,Jiangmen,Guangdong,China

Manufacture's Name.....: Enping Heng da Electronic Industry Co., Ltd

Address.....: No.8, B District,Dongan Industry Zone,Enping,Jiangmen,Guangdong,China

### Product Description

Product Name.....: wireless microphone

Brand Name .....: N/A

Model Name.....: HD-069

Series Model.....: D-450, HT-450, LT-450, U-422, ACT-362, U-616, U-3002, U-3003, ACT-312, ACT-313, ACT-315, SU-12, U-723, U-412, U-33D, U-611, ACT-8098, ACT-1609J, ACT-919, MU-300i, MU-885i, MU-1182, MU-113, MU-116, HS-1080, HS-1090, BG-68S, D-850, HT-850, LT-850

Test Standards.....: FCC Rules and Regulations Part 15 Subpart C section 15.236

Test Procedure.....: ANSI C63.10:2013

This device described above has been tested FCS, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of FCS, this document may be altered or revised by FCS, personal only, and shall be noted in the revision of the document..

Date of Test.....:

Date (s) of performance of tests.: 17 Apr. 2021 ~ 27 Apr. 2021

Date of Issue.....: 27 Apr. 2021

Test Result.....: Pass

Tested by : 

(Chris Chen)

Reviewed by : 

(Jack Chen)

Approved by : 

(Andy Yue)

**Table of Contents**

	<b>Page</b>
1. SUMMARY OF TEST RESULTS	<b>5</b>
1.1 TEST FACTORY	6
1.2 MEASUREMENT UNCERTAINTY	6
2. GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF THE EUT	7
2.2 DESCRIPTION OF THE TEST MODES	9
2.3 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS	10
2.4 EQUIPMENTS LIST	11
3 MAXIMUM RADIATED POWER	<b>12</b>
3.1 LIMIT	12
3.3 TEST SETUP	12
3.4 TEST RESULTS	12
4. OCCUPIED BANDWIDTH	<b>13</b>
4.1 LIMIT	13
4.2 TEST PROCEDURE	13
4.3 TEST SETUP	13
4.4 TEST RESULTS	14
5 NECESSARY BANDWITH	<b>15</b>
5.1 LIMIT	15
5.2 TEST PROCEDURE	15
5.3 TEST SETUP	15
6. TRANSMITTER UNWANTED EMISSIONS	<b>17</b>
6.1 LIMIT	17
6.2 TEST PROCEDURE	17
6.3 TEST SETUP	17
6.4 TEST RESULTS	18
7. FREQUENCY STABILITY	<b>22</b>
7.1 LIMIT	22
7.2 TEST PROCEDURE	22
7.3 TEST SETUP	22
7.4 TEST RESULTS	23

### Revision History

Rev.	Issue Date	Effect Page	Contents
00	27 Apr. 2021	All	Initial Issue

## 1. SUMMARY OF TEST RESULTS

FCC Part 15 Subpart C section 15.236			
Standard Section	Test Item	Judgment	Remark
FCC Part 15.236(d)	Maximum Radiated Power	PASS	--
FCC Part 15.236(f)(2)	Occupied Bandwidth	PASS	--
FCC Part 15.236(g)	Necessary bandwidth	PASS	--
FCC Part 15.236(f)(3)	Frequency stability	PASS	--
FCC Part 15.236(g)	Emission within the band and outside this band	PASS	--
FCC Part 207(a)	Conducted Emission	NA	--

### NOTE:

- (1)" N/A" denotes test is not applicable in this Test Report
- (2) All tests are according to ANSI C63.10:2013

## 1.1 TEST FACTORY

Company Name:	Flux Compliance Service Laboratory
Address:	Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan
Telephone:	+86-769-27280901
Fax:	+86-769-27280901
FCC Test Firm Registration Number:	514908
Designation number:	CN0127
A2LA accreditation number:	5545.01

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95 %**.

No.	Item	Uncertainty
1	RF output power, conducted	$\pm 0.71$ dB
2	Unwanted Emissions, conducted	$\pm 2.98$ dB
3	Conducted Emission (9KHz-150KHz)	$\pm 4.13$ dB
4	Conducted Emission (150KHz-30MHz)	$\pm 4.74$ dB
5	All emissions, radiated(<1G) 30MHz-1000MHz	$\pm 3.2$ dB
6	All emissions, radiated (1GHz -18GHz)	$\pm 3.66$ dB
7	All emissions, radiated (18GHz -40GHz)	$\pm 4.31$ dB

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	wireless microphone
Brand Name	N/A
Model Name	HD-069
Series Model	D-450, HT-450, LT-450, U-422, ACT-362, U-616, U-3002, U-3003, ACT-312, ACT-313, ACT-315, SU-12, U-723, U-412, U-33D, U-611, ACT-8098, ACT-1609J, ACT-919, MU-300i, MU-885i, MU-1182, MU-113, MU-116, HS-1080, HS-1090, BG-68S, D-850, HT-850, LT-850
Channel List	Please refer to the Note 2.
Operation frequency	Channel: 515MHz- 599MHz
Modulation Type	FM
Antenna Type	PCB Antenna
Antenna Gain (dBi)	1.0
Power Supply	Input: DC 3V (2 X 1.5AA)
Hardware version number	V1.1
Software version number	V1.1
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

## 2. Channel List

Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	515.15	02	554.75	03	598.85

Ant.	Atnenna Brand	Antenna Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	HGGD	PCB Antenna	N/A	1.0	Antenna

## 2.2 DESCRIPTION OF THE TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

### Test software:FCC tools

The test software was used to control EUT work in continuous TX mode, and select test channel, Wireless mode as below table, the following operating modes were applied for the related test items. All test modes were tested, only the result of the worst case was recorded in the report.

Tested mode, channel , information		
Mode	Channel	Frequency (MHz)
Channel	CH 01	515.15
	CH 02	554.75
	CH 03	598.85

### 2.3 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

#### Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note

#### Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note

#### Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) "YES" is means "shielded" "with core"; "NO" is means "unshielded" "without core".

## 2.4 EQUIPMENTS LIST

### Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESRP 3	FCS-E001	2020. 06.26	2021. 06.25
Signal Analyzer	R&S	FSV40-N	FCS-E012	2020.06.05	2021.06.04
Active loop Antenna	ZHINAN	ZN30900C	FCS-E013	2020.08.09	2021.08.10
Bilog Antenna	SCHWARZBECK	VULB 9168	FCS-E002	2020.08.26	2021.08.25
Horn Antenna	SCHWARZBECK	BBHA 9120D	FCS-E003	2020.08.26	2021.08.25
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	FCS-E018	2020.06.26	2021.06.25
Pre-Amplifier(0.1M-3G Hz)	EMCI	EM330N	FCS-E004	2020.06.26	2021.06.25
Pre-Amplifier (1G-18GHz)	N/A	TSAMP-0518SE	FCS-E014	2020.06.03	2021.06.02
Pre-Amplifier (18G-40GHz)	TERA-MW	TRLA-0400	FCS-E019	2020.08.08	2021.08.07
Temperature & Humidity	HTC-1	victor	FCS-E005	2020.08.26	2021.08.25

### Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESPI	FCS-E020	2020.06.03	2021.06.02
LISN	R&S	ENV216	FCS-E007	2020.08.08	2021.08.07
LISN	ETS	3810/2NM	FCS-E009	2020.06.03	2021.06.02
Temperature & Humidity	HTC-1	victor	FCS-E008	2020.08.08	2021.08.07

### RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
Spectrum Analyzer	Keysight	N9020A	FCS-E015	2020.06.03	2021.06.02
Spectrum Analyzer	Agilent	E4447A	MY50180039	2020.08.08	2021.08.07
Spectrum Analyzer	R&S	FSV-40	101499	2020.08.26	2021.08.25

### 3 MAXIMUM RADIATED POWER

#### 3.1 LIMIT

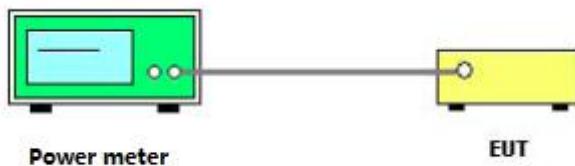
Refer to FCC 15.236(d)

In the bands allocated and assigned for broadcast television and in the 600 MHz service band: 50 mW EIRP

#### 3.2 TEST PROCEDURE

A · Connect each EUT's antenna output to power sensor by RF cable and attenuator

#### 3.3 TEST SETUP



#### 3.4 TEST RESULTS

Test mode	Channel	Frequency (MHz)	Peak Output Power (dBm)	Atnenna Gain (dBi)	EIRP(dBm)	Limit(dBm)	Verdict
Channel	01	515.15	6.226	1.0	7.226	16.99	PASS
	02	554.75	6.319	1.0	7.319		
	03	598.85	6.229	1.0	7.229		

## 4. OCCUPIED BANDWIDTH

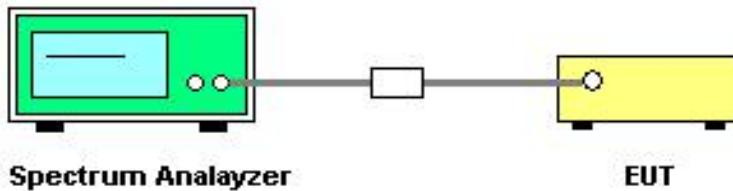
### 4.1 LIMIT

One or more adjacent 25 kHz segments within the assignable frequencies may be combined to form a channel whose maximum bandwidth shall not exceed 200 kHz. The operating bandwidth shall not exceed 200 kHz

### 4.2 TEST PROCEDURE

Parameter	Setting
Detector	Peak/AV
Sweep time	Auto
Resolution bandwidth	1 % to 5 % of the occupied bandwidth
Video bandwidth:	3 x resolution bandwidth
Span:	2 x emission bandwidth
Trace mode:	Max. hold
Analyzer function:	99% power occupied bandwidth function
EUT:	Modulated signal with max. frequency deviation

### 4.3 TEST SETUP



## 4.4 TEST RESULTS

Test mode	Channel	Frequency (MHz)	99% Bandwidth (KHz)	Limit(KHz)	Verdict
Channel	Low CH	515.15	91.174KHz	200	PASS
	Middle CH	554.75	90.681KHz		
	High CH	598.85	90.681KHz		



## 5 NECESSARY BANDWIDTH

### 5.1 LIMIT

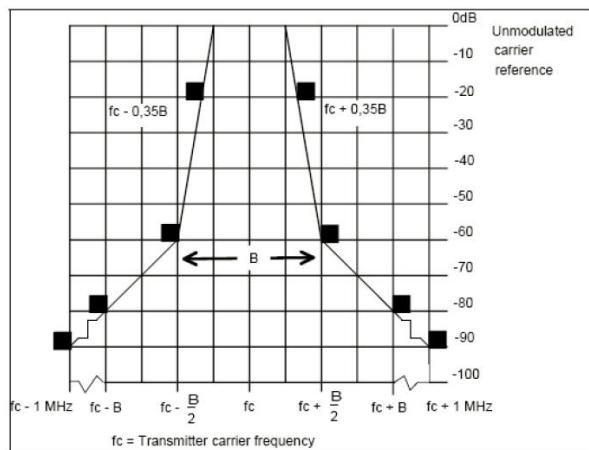
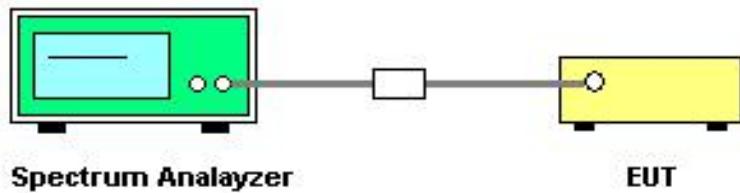


Figure 1: Spectrum mask for analogue systems in all bands

### 5.2 TEST PROCEDURE

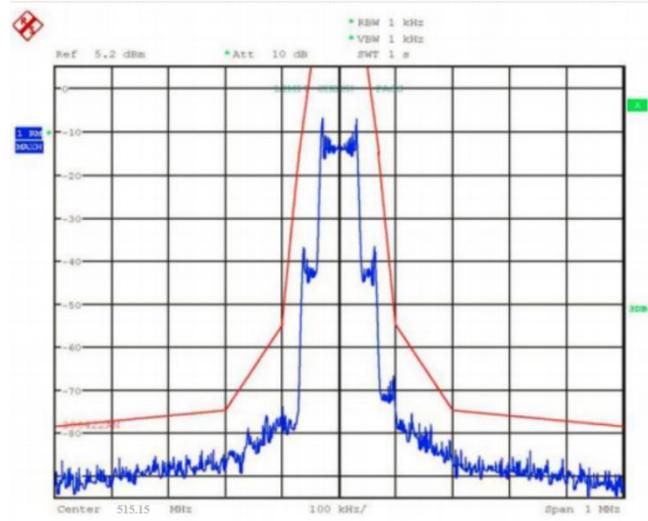
EN300422-1 V1.4.2 Clause 8.3.

### 5.3 TEST SETUP

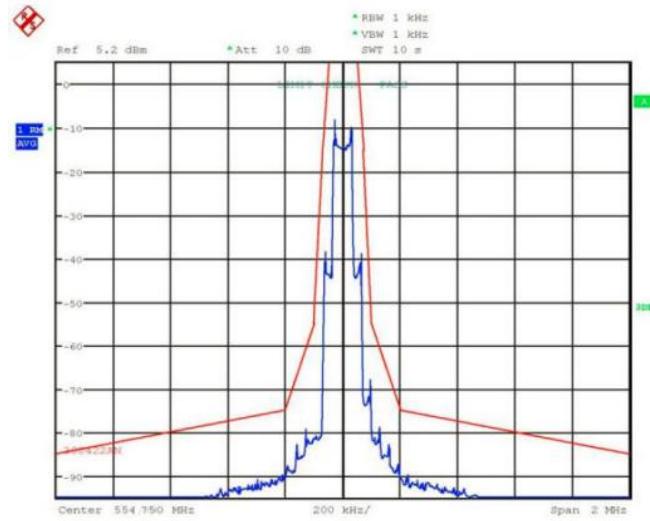


### 5.4 TEST RESULT

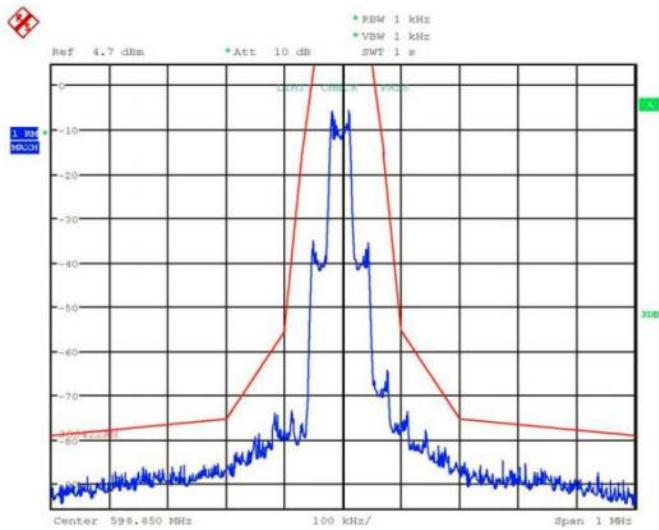
Emission Mask  
Channel  
Low CH



Middle CH



High CH



## 6. TRANSMITTER UNWANTED EMISSIONS

### 6.1 LIMIT

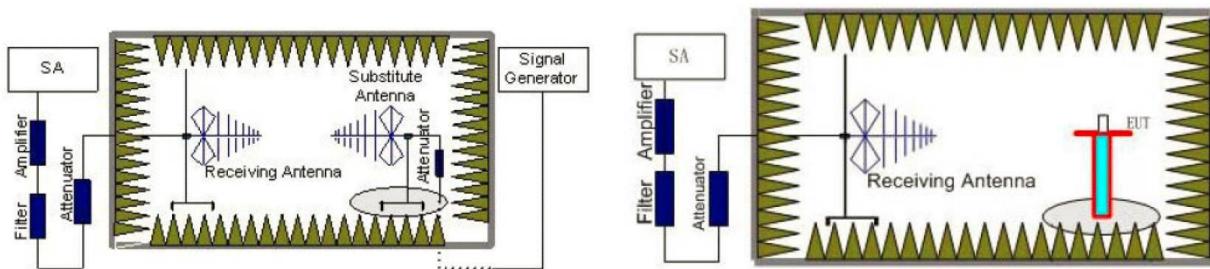
Spurious emissions are emissions outside the frequency range(s) of the equipment. The power of the spurious emissions shall not exceed the limits of table as below:

State	Frequency		
	47MHz to 74MHz, 87.5MHz to 137MHz 174MHz to 230MHz, 470MHz to 862MHz	Other Frequencies below 1000MHz	Frequencies above 1000MHz
Operation	4nW	250nW	1uW
Standby	2nW	2nW	20nW

### 5.2 TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer through an attenuator. Set spectrum analyzer start 2400MHz to 2483.5MHz with 100 KHz RBW and 300 KHz VBW
2. Please refer to ETSI EN 300 422-1 V1.4.2 (2011-08) clause 6.1 for the test conditions.
3. Please refer to ETSI EN 300 422-1 V1.4.2 (2011-08) clause 8.4.2 for the measurement method.

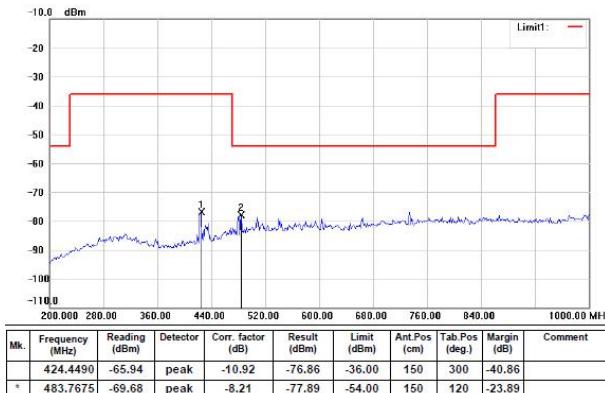
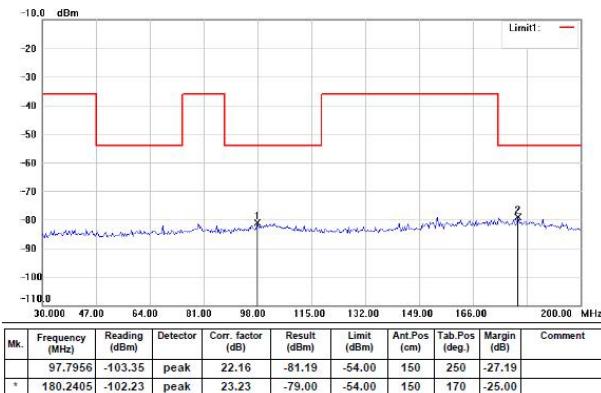
### 5.3 TEST SETUP



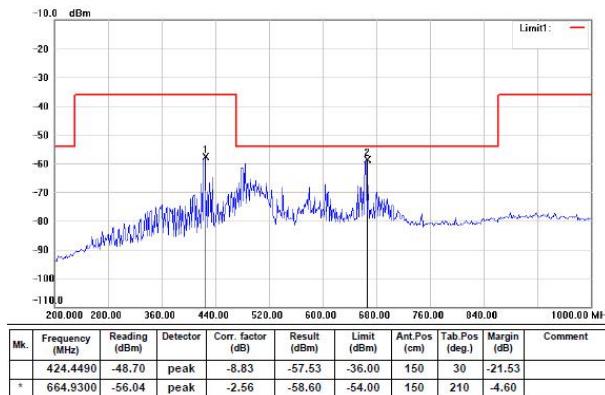
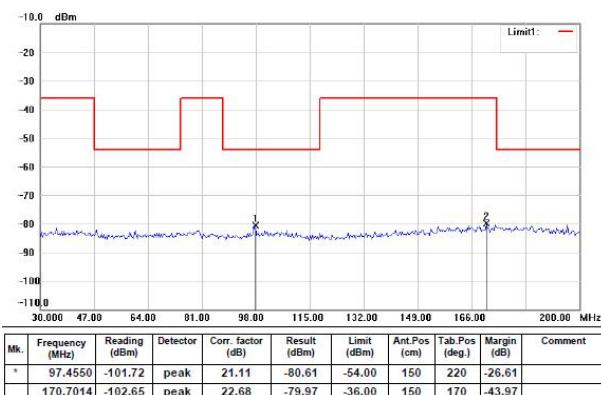
## 6.4 TEST RESULTS

### CHANNEL -LOW CH-30MHZ-1000MHZ

#### Vertical



#### Horizontal



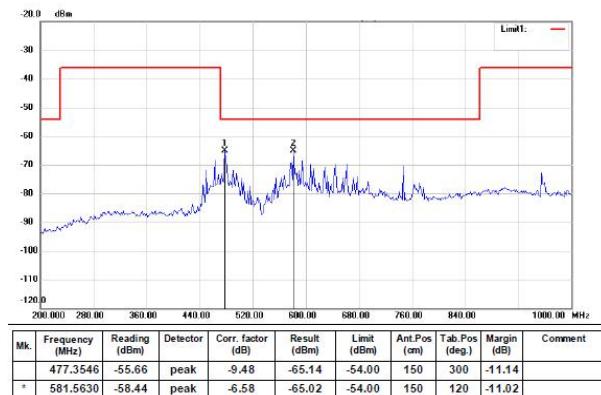
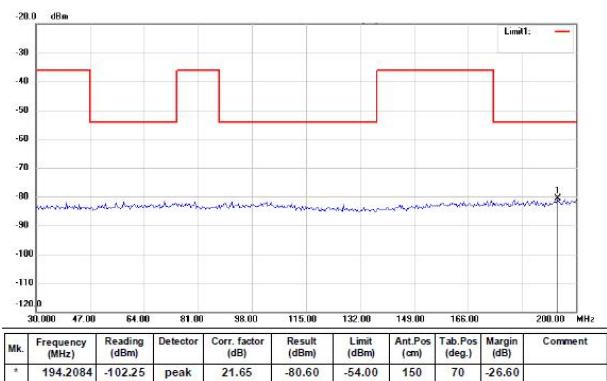
#### Note :

1. Result = Reading + Corrected Factor Note :

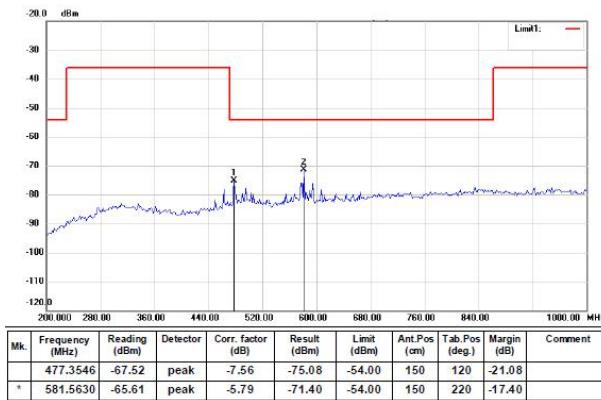
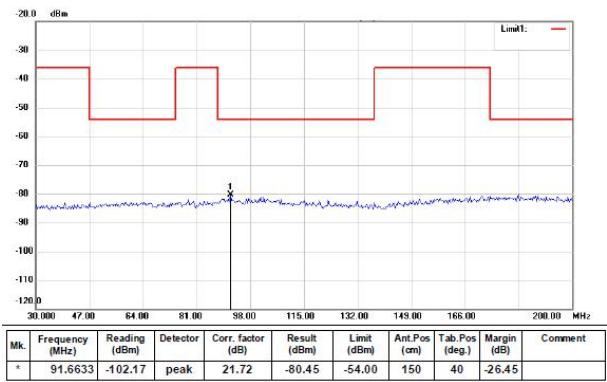
2. The fundamental wave filtered out during the test.

## CHANNEL -MIDDLE CH-30MHZ-1000MHZ

### Vertical

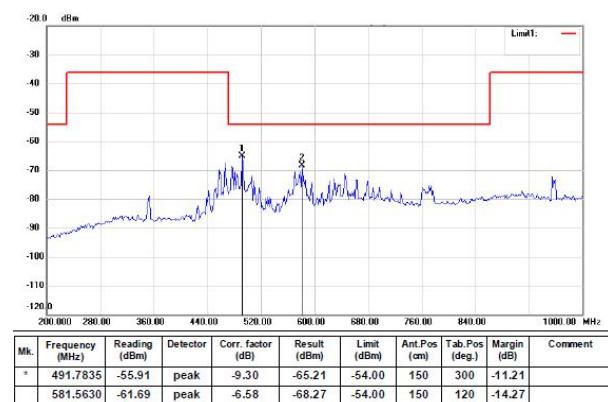
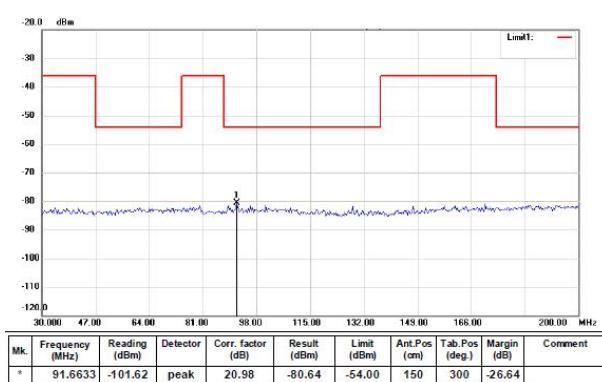
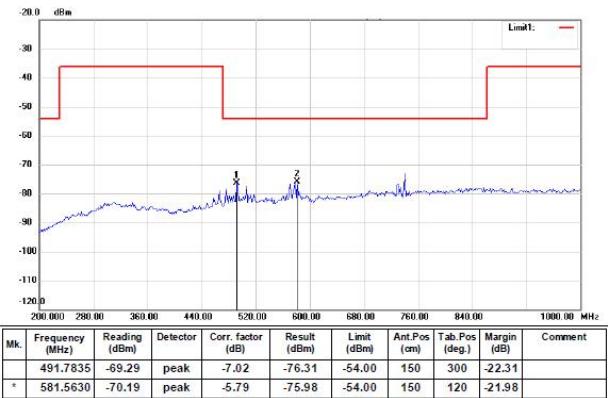
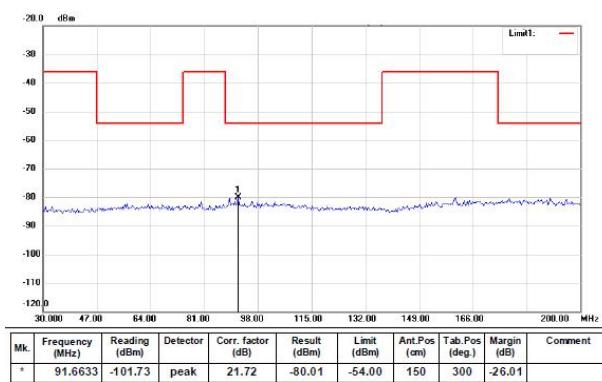


### Horizontal



#### Note :

1. Result = Reading + Corrected Factor Note :
2. The fundamental wave filtered out during the test.

**CHANNEL -HIGH CH-30MHZ-1000MHZ**
**Vertical**

**Horizontal**

**Note :**

1. Result = Reading + Corrected Factor Note :
2. The fundamental wave filtered out during the test.

## CHANNEL 1GHZ-6GHZ

Low Channel 515.15MHz							
No.	Frequency	Reading	Correct	Result	Limit	Margin	Polarity
	(MHz)	(dBm)	Factor(dBm)	(dBm)	(dBm)	(dBm)	
1	1030.13	-48.32	5.45	-42.87	-30	-12.87	H
2	1545.51	-46.21	5.91	-40.30	-30	-10.30	H
3	2060.24	-43.19	4.99	-38.20	-30	-8.20	H
4	1030.13	-48.13	5.45	-42.68	-30	-12.68	V
5	1545.51	-45.39	5.91	-39.48	-30	-9.48	V
6	2060.24	-42.17	4.99	-37.18	-30	-7.18	V
Mid Channel 554.75MHz							
No.	Frequency	Reading	Correct	Result	Limit	Margin	Polarity
	(MHz)	(dBm)	Factor(dBm)	(dBm)	(dBm)	(dBm)	
1	1109.59	-49.54	5.45	-44.09	-30	-14.09	H
2	1664.35	-47.95	5.91	-42.04	-30	-12.04	H
3	2219.37	-46.38	4.99	-41.39	-30	-11.39	H
4	1109.59	-48.99	5.45	-43.54	-30	-13.54	V
5	1664.35	-47.35	5.91	-41.44	-30	-11.44	V
6	2219.37	-47.12	4.99	-42.13	-30	-7.18	V
High Channel 598.85MHz							
No.	Frequency	Reading	Correct	Result	Limit	Margin	Polarity
	(MHz)	(dBm)	Factor(dBm)	(dBm)	(dBm)	(dBm)	
1	1197.35	-49.65	5.45	-44.20	-30	-14.20	H
2	1794.24	-47.39	5.91	-41.48	-30	-11.48	H
3	2391.08	-47.81	4.99	-42.82	-30	-12.82	H
4	1197.35	-48.79	5.45	-43.34	-30	-13.34	V
5	1794.24	-46.93	5.91	-41.02	-30	-11.02	V
6	2391.08	-45.47	4.99	-40.48	-30	-10.48	V

## 7. FREQUENCY STABILITY

### 7.1 LIMIT

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.005\%$  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

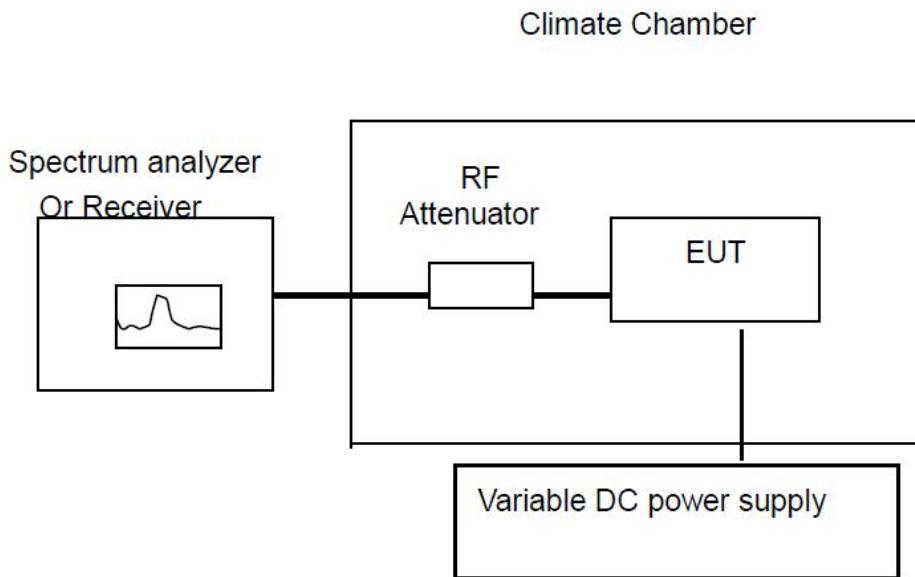
### 7.2 TEST PROCEDURE

a. The EUT was connected to an external DC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber. The DC leads and the RF output cable, exited the chamber through an opening made for that purpose.

After the temperature stabilized the frequency output was recorded from the counter. An external variable DC power supply was connected to the battery terminals of the equipment under test.

b. For hand carried, battery powered equipment primary supply voltage was reduced to the battery operating end point as specified by the manufacturer. The output frequency was recorded for each battery voltage.

### 7.3 TEST SETUP



## 7.4 TEST RESULTS

- (1) Frequency stability versus input voltage (Supply Nominal voltage is DC 3V)
- (2) Frequency stability versus input voltage (Supply battery operating end point which shall be specified by the manufacturer DC 2.7V)

Refernce Frequency: 515.15MHz			
Power supply	Environment Temperature(°C)	Frequency Error (Hz)	Frequency Error (%)
DC 2.55V	20	1010	0.000197
DC 3.0V	20	1008	0.000196
DC 3.45V	20	1015	0.000198

Refernce Frequency: 515.15MHz				
Frequency Deviation measured with time Elapse(30 minutes)				
Environment Temperature(°C)	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Results
50	1021	0.000199	0.005	Pass
40	1008	0.000197		
30	1005	0.000196		
20	1008	0.000197		
10	1007	0.000197		
0	1009	0.000197		
-10	1008	0.000197		
-20	1009	0.000197		
-30	1010	0.000197		

Refernce Frequency: 554.75MHz			
Power supply	Environment Temperature(°C)	Frequency Error (Hz)	Frequency Error (%)
DC 2.55V	20	1009	0.000194
DC 3.0V	20	1006	0.000194
DC 3.45V	20	1010	0.000194

Refernce Frequency: 554.75MHz				
Frequency Deviation measured with time Elapse(30 minutes)				
Environment Temperature(°C)	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Results
50	1011	0.000195	0.005	Pass
40	1006	0.000195		
30	1006	0.000195		
20	1008	0.000194		
10	1007	0.000194		
0	1008	0.000194		
-10	1008	0.000194		
-20	1006	0.000195		
-30	1011	0.000195		

Referne Frequency: 598.85MHz			
Power supply	Environment Temperature(°C)	Frequency Error (Hz)	Frequency Error (%)
DC 2.55V	20	1013	0.000192
DC 3.0V	20	1011	0.000192
DC 3.45V	20	1010	0.000191

Referne Frequency: 595.85MHz				
Frequency Deviation measured with time Elapse(30 minutes)				
Environment Temperature(°C)	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Results
50	1010	0.000191	0.00500	Pass
40	1005	0.000191		
30	1005	0.000191		
20	1006	0.000191		
10	1007	0.000192		
0	1006	0.000191		
-10	1007	0.000192		
-20	1006	0.000191		
-30	1010	0.000191		

\*\*\*\*\*END OF THE REPORT\*\*\*\*\*