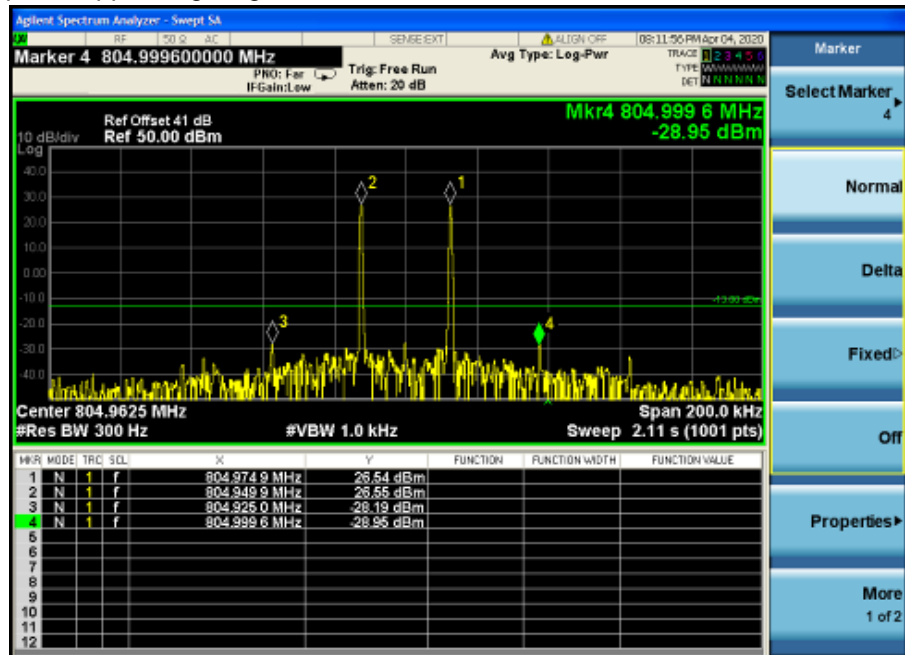


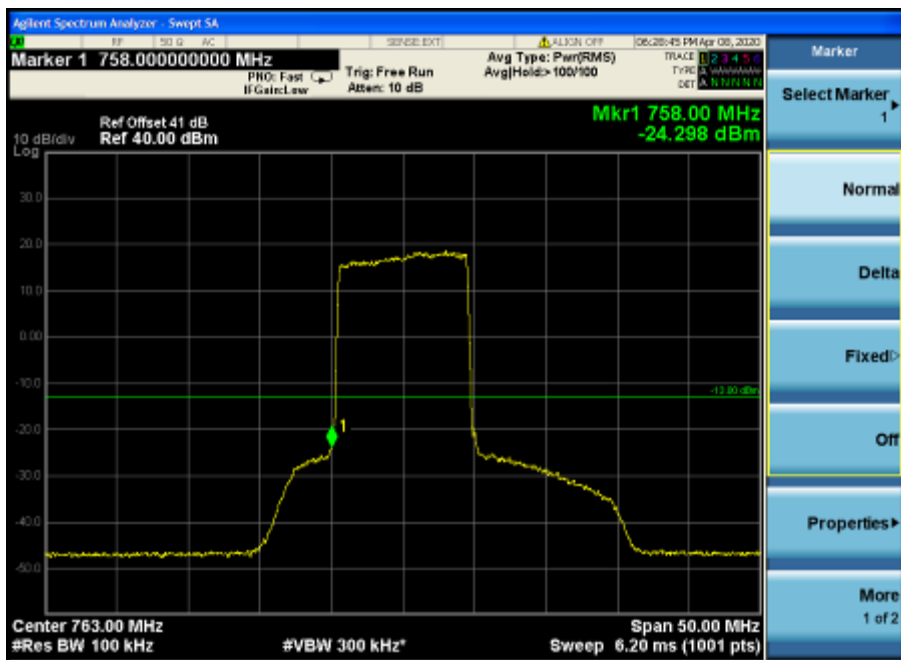
### 1.2 two signal input —Upper Edge high channel.



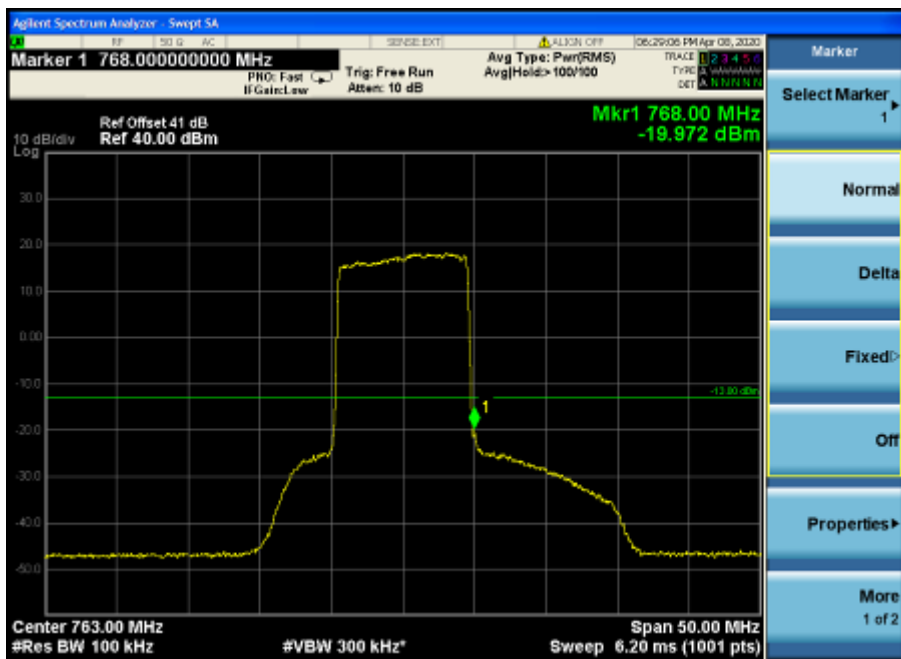
### Class B model number:

### 700MHz broad band Downlink: 758MHz to 768MHz

#### 1.1 one signal input —Lower Edge

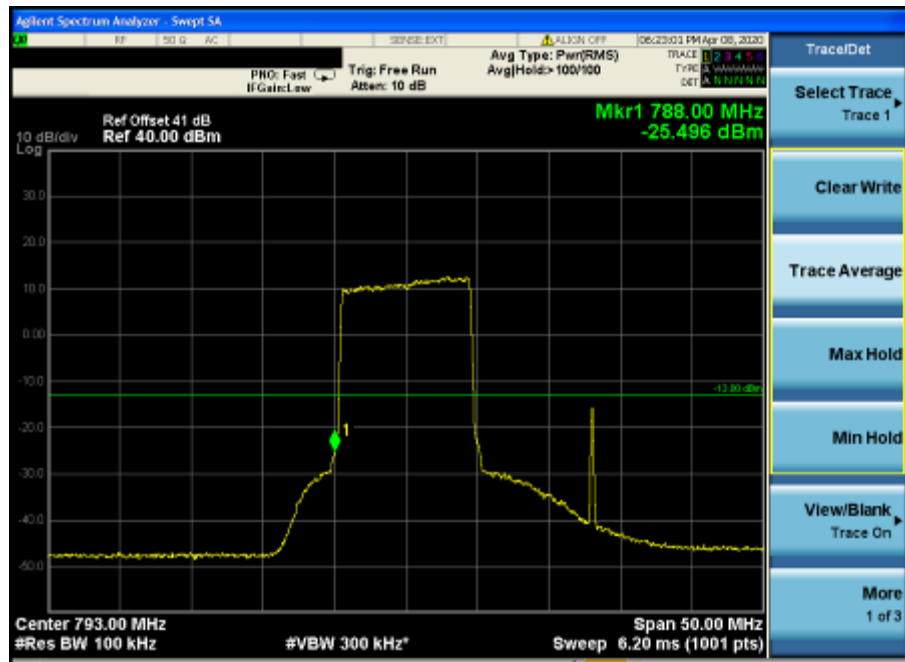


#### 1.2 one signal input —Upper Edge

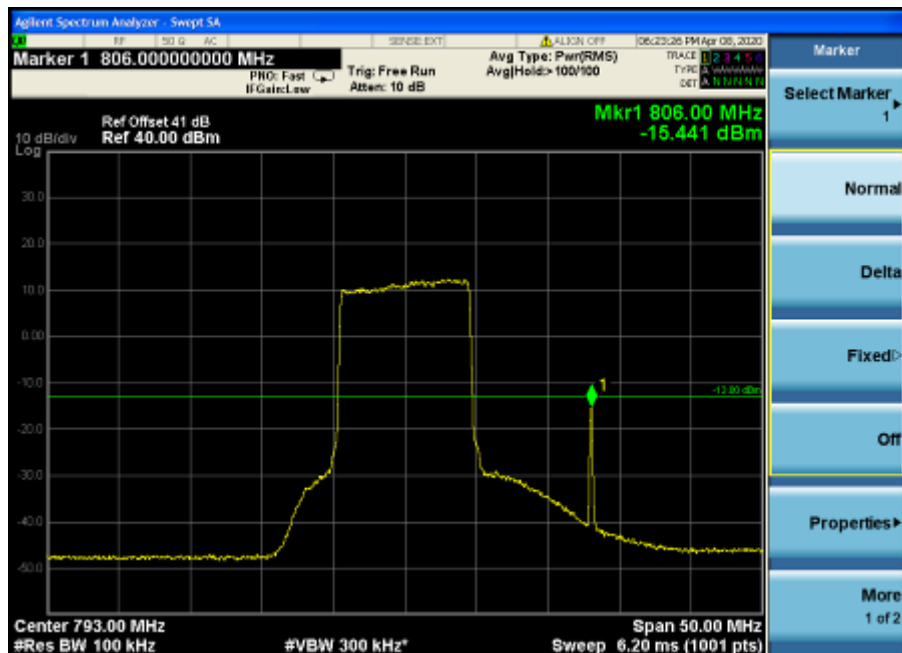


### 700MHz broad band Uplink: 788MHz to 798MHz

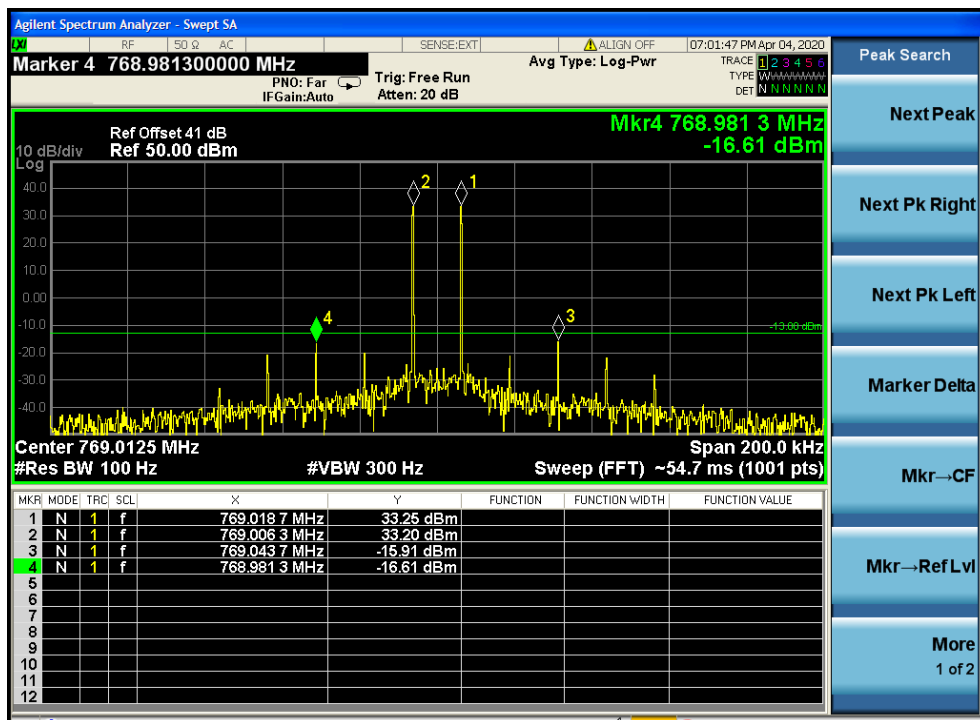
#### 1.1 one signal input —Lower Edge



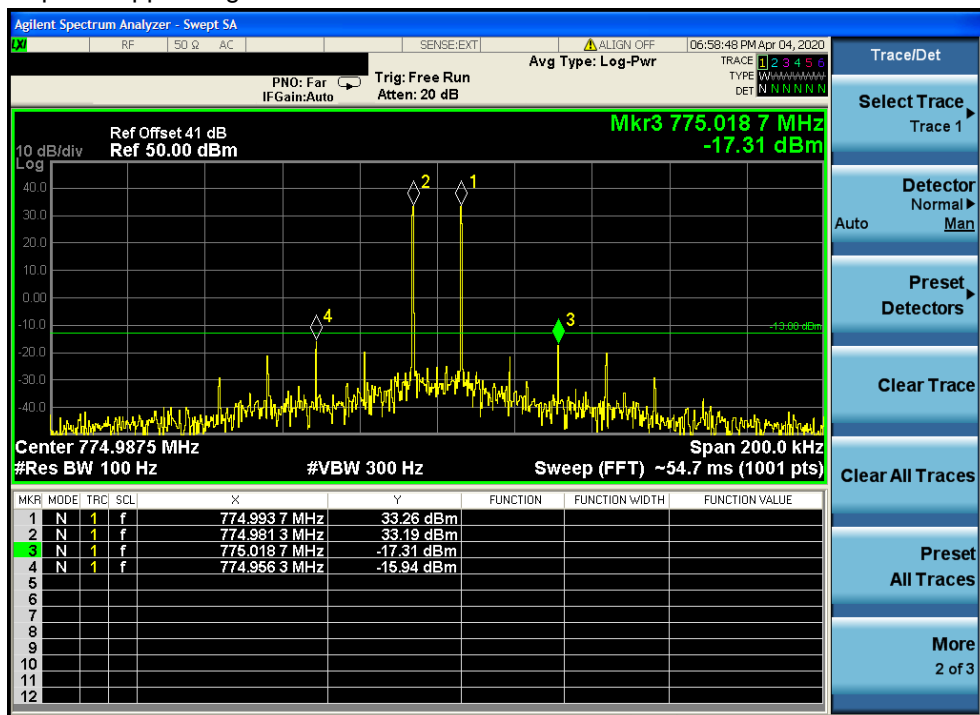
#### 1.2 one signal input —Upper Edge



Downlink: 769MHz to 775MHz  
Channel spacings:12.5kHz  
1.1 two signal input —Lower Edge



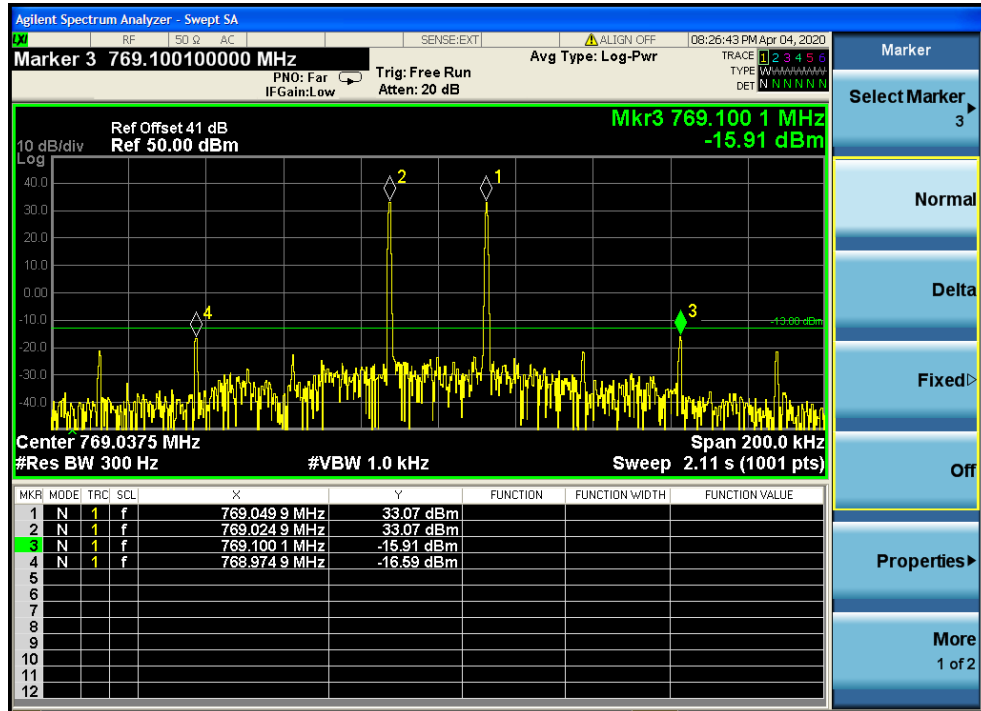
1.2 two signal input —Upper Edge



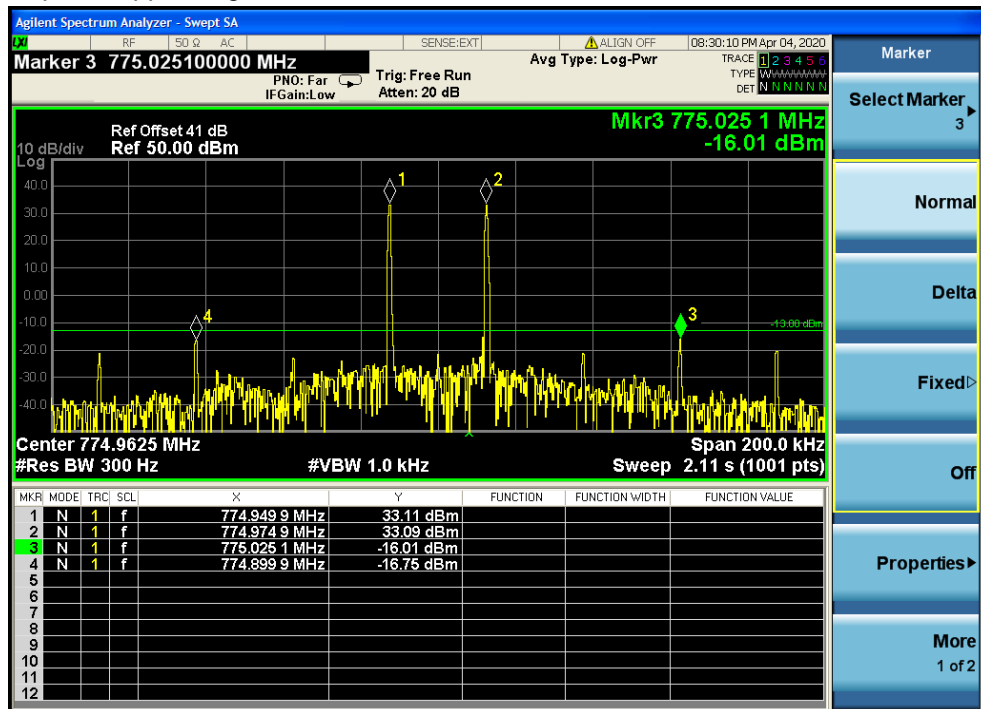


Channel spacings:25kHz

1.1 two signal input —Lower Edge



1.2 two signal input —Upper Edge



Downlink: 799MHz to 805MHz



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-a-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

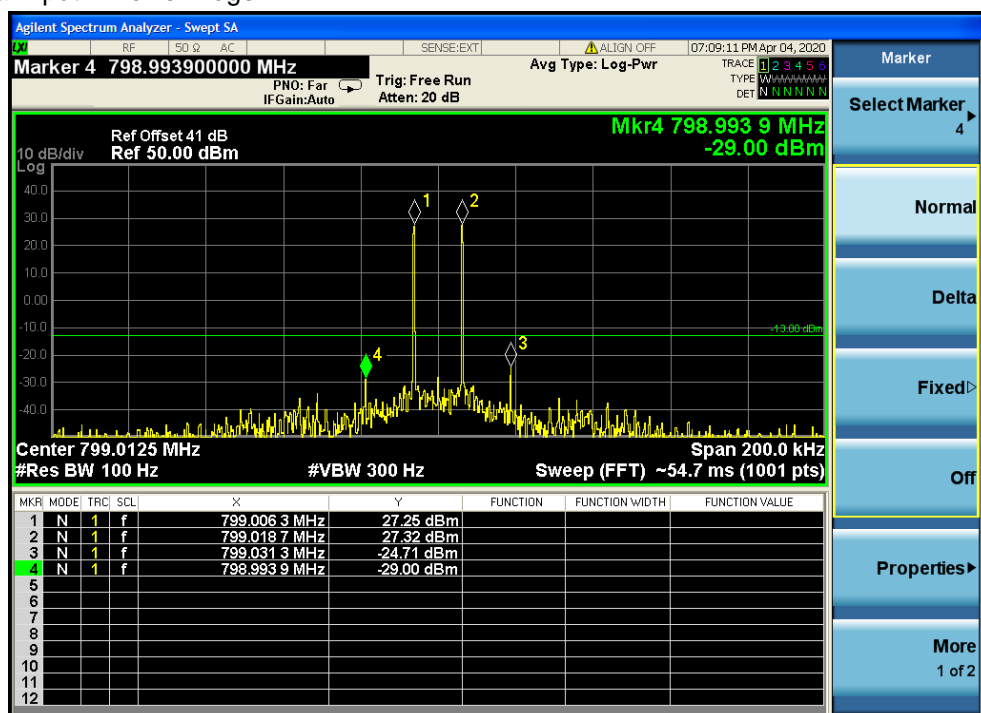
Attention: To check the authenticity of testing (inspection) report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

SGS-CSTC Standards Technical Services Co., Ltd.  
Shenzhen Branch Inspection & Testing Laboratory

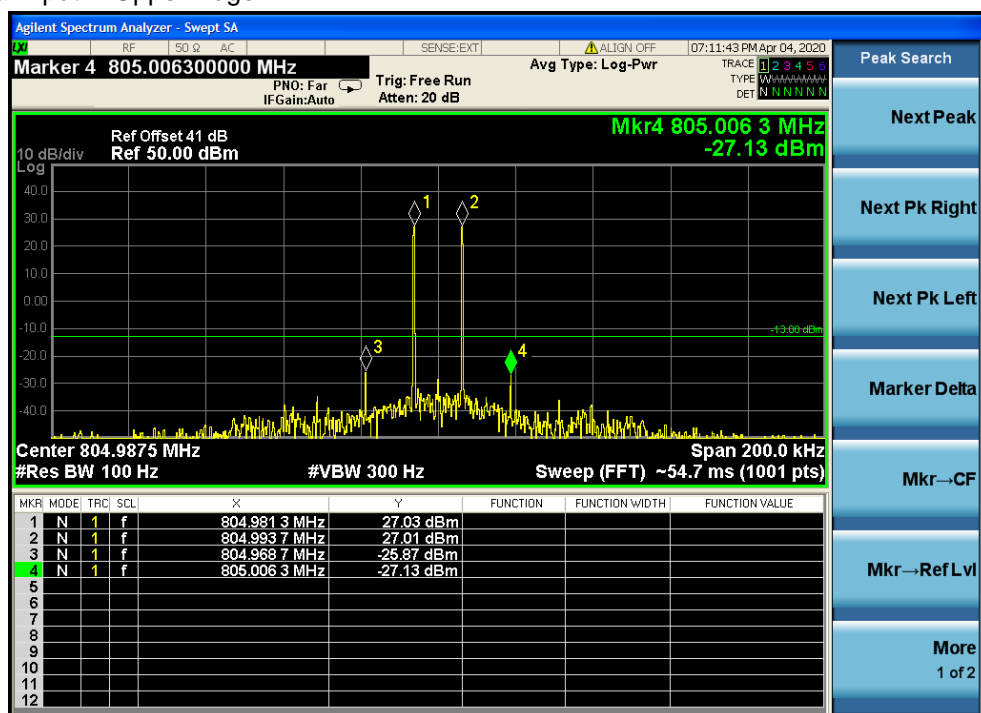
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 1 (86-755) 26012053 1 (86-755) 26710594 [www.sgs.com.cn](http://www.sgs.com.cn)  
中国·深圳·科技园中区M-10楼一号厂房 邮编: 518057 1 (86-755) 26012053 1 (86-755) 26710594 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

Channel spacings:12.5kHz

1.1 two signal input —Lower Edge

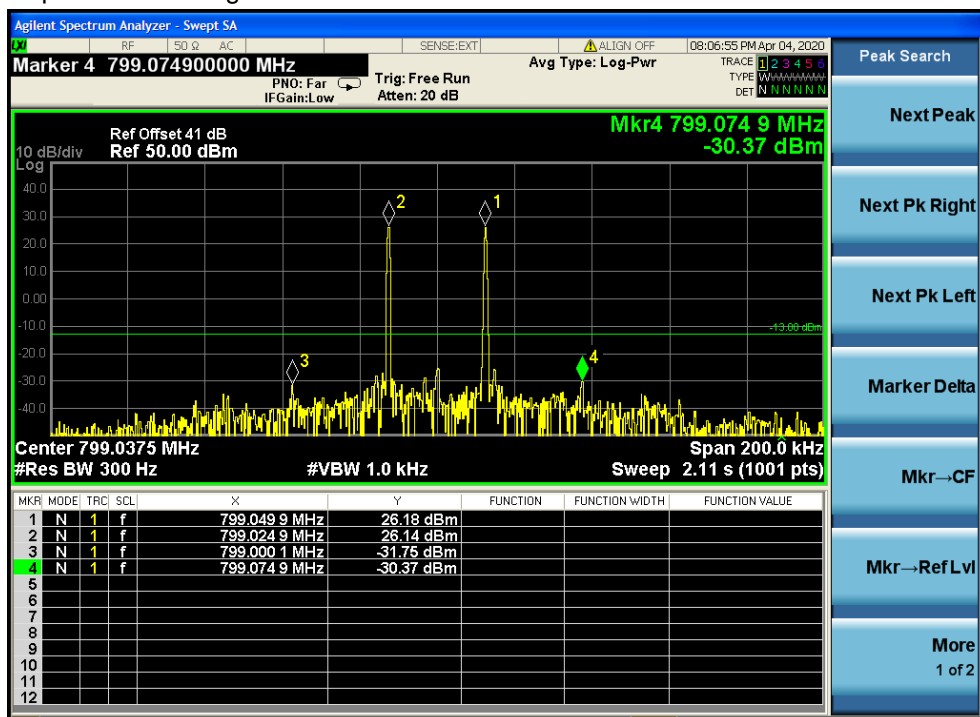


1.2 two signal input —Upper Edge

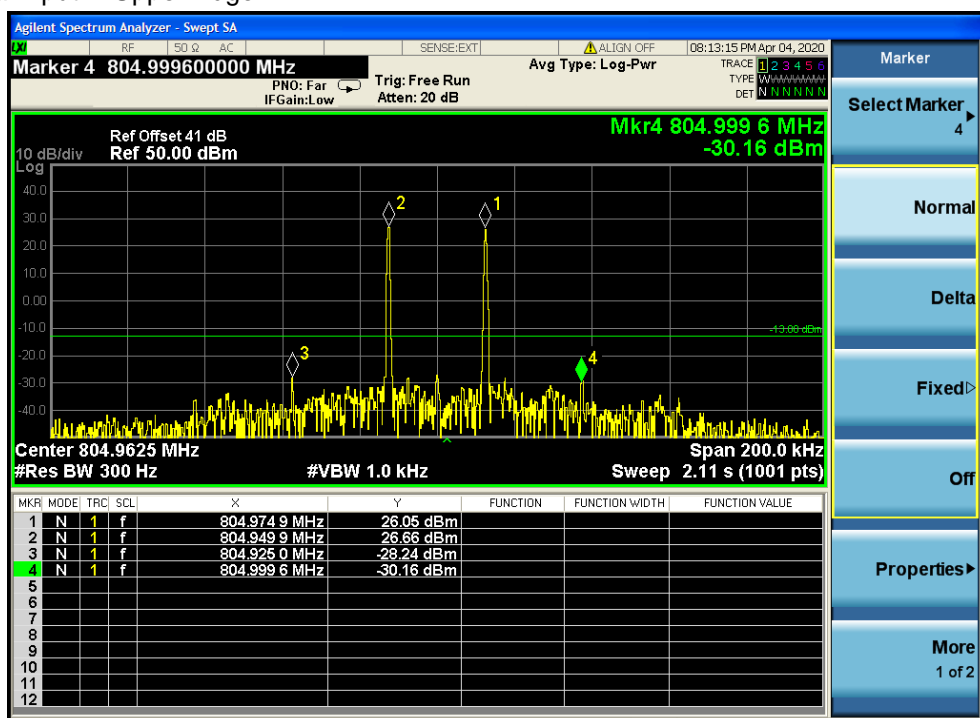


Channel spacings:25kHz

1.1 two signal input —Lower Edge



1.2 two signal input —Upper Edge



## 6.2.6 Noise Figure

Test Requirement: FCC part 90.219(e)  
 90.219(e)  
 A signal booster must meet  
 (2) The noise figure of a signal booster must not exceed 9dB in either direction.

Test Method: KDB 935210 D05 V01r04

EUT Operation:  
 Status: Drive the EUT to maximum output power.  
 Conditions: Normal conditions  
 Application: Cellular Band RF output ports

Test Configuration:

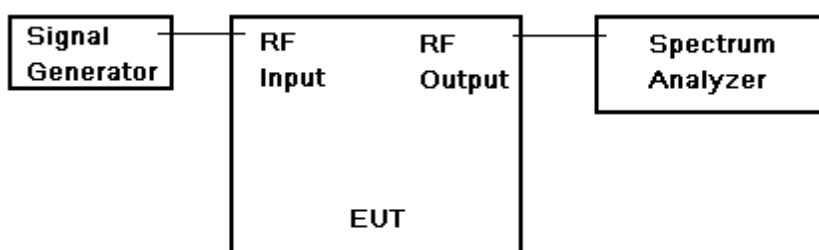
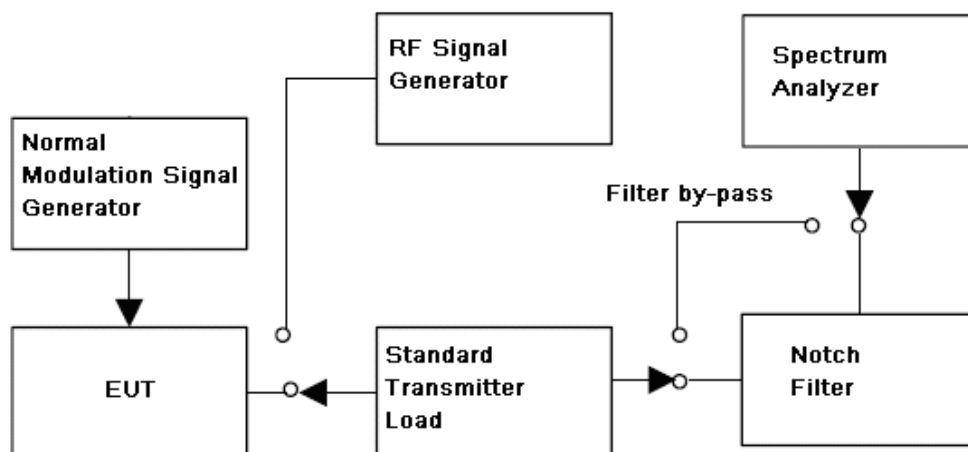


Fig.3. Band edge and Intermodulation test configuration





**Test Procedure:**

Measurements were in accordance with the test methods section 3.5.2 of KDB 935210 D05v01.

- a) Connect a signal generator to the input of the EUT.
- b) Configure to generate the AWGN (broadband) test signal.
- c) The frequency of the signal generator shall be set to the frequency of (f0) as determined from 3.3.
- d) Connect a spectrum analyzer or power meter to the output of the EUT using appropriate attenuation as necessary.
- e) Set the signal generator output power to a level that produces an EUT output level that is just below the AGC threshold (see 3.2), but not more than 0.5 dB below.
- f) Measure the output power of the EUT and record (Power measurement with a spectrum
- g) Remove the EUT from the measurement setup and using the same signal generator settings, repeat the power measurement on the input signal to the EUT and record as input power.
- h) Repeat the procedure with the narrowband test signal.
- i) Repeat the procedure for both test signals with input signal amplitude set to 3 dB above the AGC threshold level.
- j) Repeat for all frequency bands authorized for use by the EUT.

**Power measurement Method :**

Guidance for performing input/output power measurements using a spectrum or signal analyzer is provided in 5.2 of KDB Publication 971168

**Remark:**

The notch filter is used for avoid the EUT fundamental carrier output power making the spectrum overload and the harmonic spurious brought by it.

When the EUT fundamental carrier is not enough to make the status, the notch filter could be not used.



**Class A model number:**

:

**Downlink(Max.channel band 75kHz) 769-775MHz**

Frequency range	Test data(dB)	Limit(dB)	Result
769.0125	3.73	9	Pass
772.0125	3.63	9	Pass
774.9875	4.92	9	Pass

**Uplink(Max.channel band 75kHz) 799-805MHz**

Frequency range	Test data(dB)	Limit(dB)	Result
799.0125	3.12	9	Pass
802.0125	2.95	9	Pass
804.9875	2.59	9	Pass

**Class B model number:**

**Band 700MHz**

Frequency range	Test data(dB)	Limit(dB)	Result
Downlink: 758~768	4.46	9	Pass
Uplink: 788~798	3.55	9	Pass
Downlink: 769~775	4.02	9	Pass
Uplink: 799~805	3.52	9	Pass



## 6.2.7 Radiated Spurious Emissions

Test Requirement: FCC part 90.543 (c)(e) (f)

(c) Out-of-band emission limit. On any frequency outside of the frequency ranges covered by the ACP tables in this section,

the power of any emission must be reduced below the mean output power (P) by at least  $43 + 10 \log (P)$  dB measured in a 100

kHz bandwidth for frequencies less than 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz

(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's

frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation,

measured in watts, in accordance with the following:

(1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than  $76 + 10 \log (P)$  dB in a 6.25 kHz

band segment, for base and fixed stations.

(2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than  $65 + 10 \log (P)$  dB in a 6.25 kHz

band segment, for mobile and portable stations.

(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least  $43 + 10 \log (P)$  dB.

(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement

instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy

in a 6.25 kHz segment.

(5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation

employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to

the frequency block, a resolution bandwidth of 30 kHz may be employed.

(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610

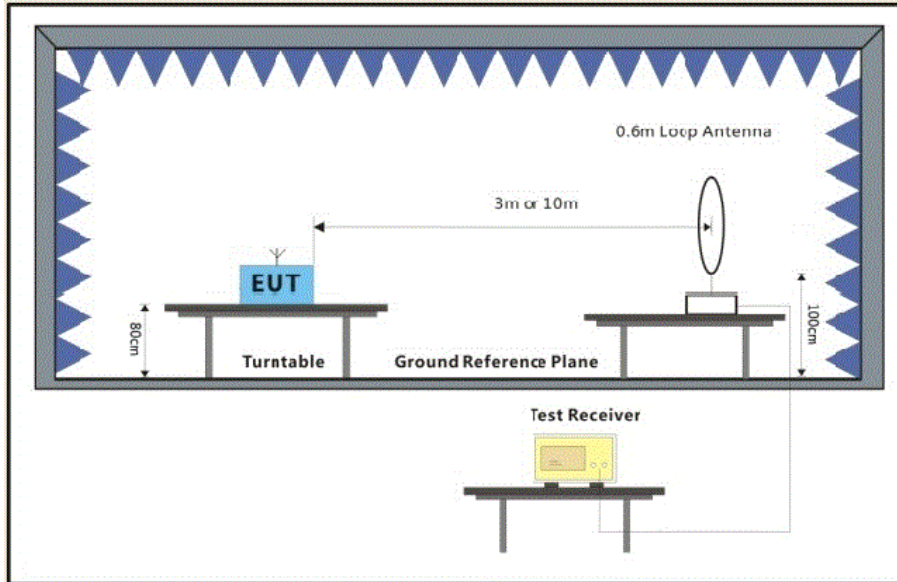
MHz shall be limited to – 70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and – 80 dBW EIRP

for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested

with an antenna that is representative of the type that will be used with the equipment in normal operation

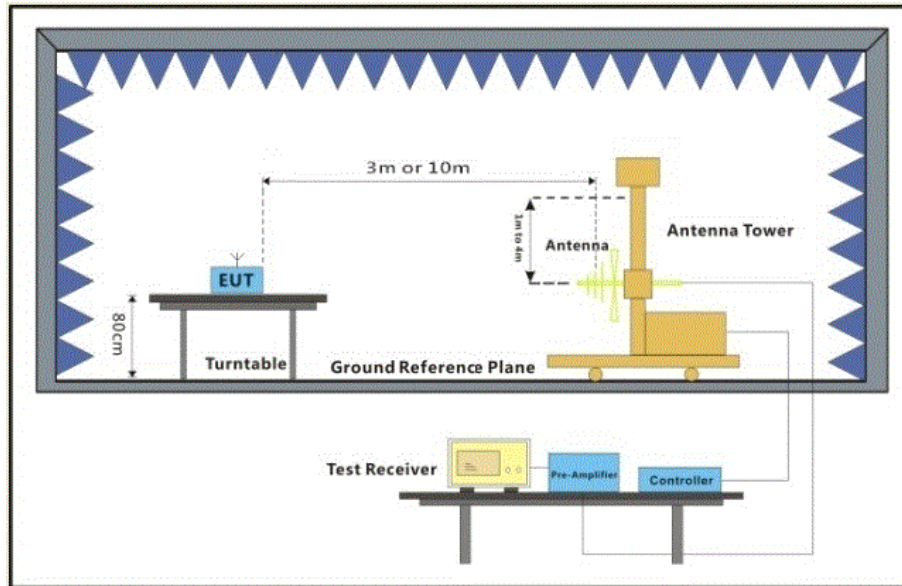


Test Method: KDB 935210 D05 V01r04  
 EUT Operation:  
     Status: Drive the EUT to maximum output power.  
     Conditions: Normal conditions  
     Application: Enclosure  
 Test Configuration:  
     9 kHz to 30 MHz emissions:

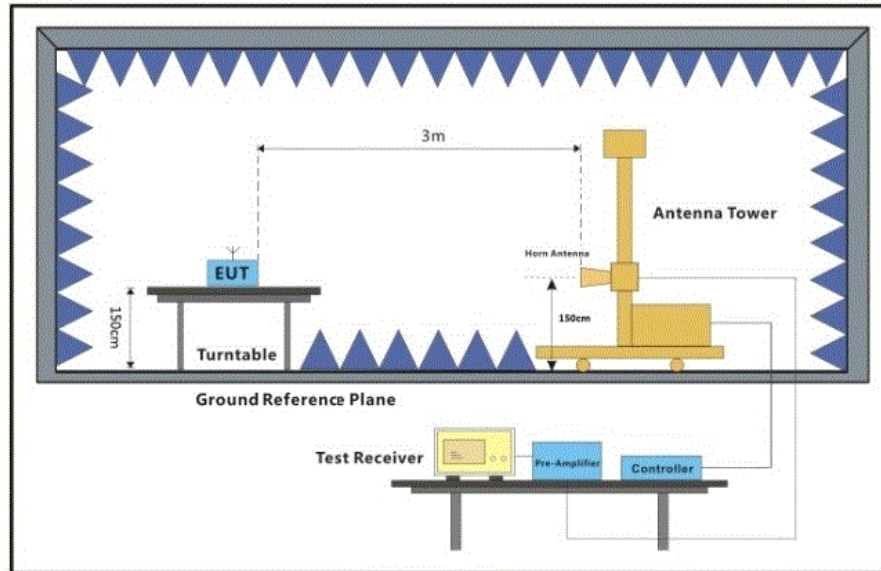




30MHz to 1GHz emissions:



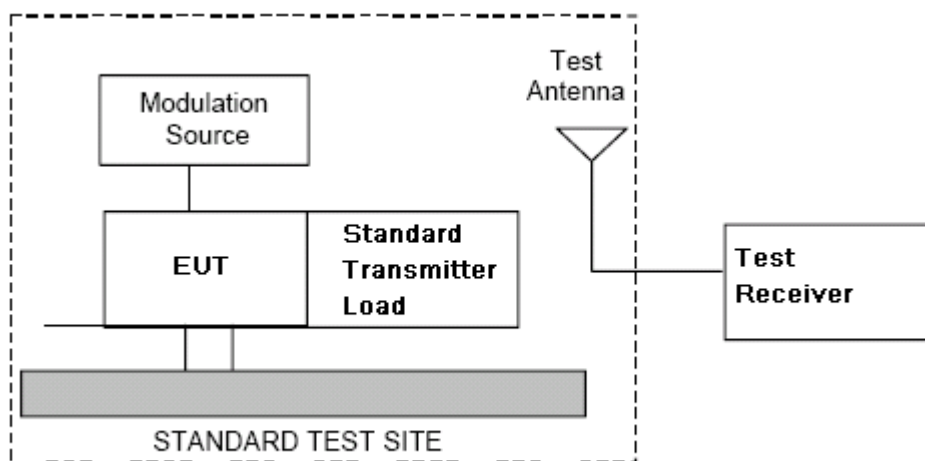
1GHz to 40GHz emissions:



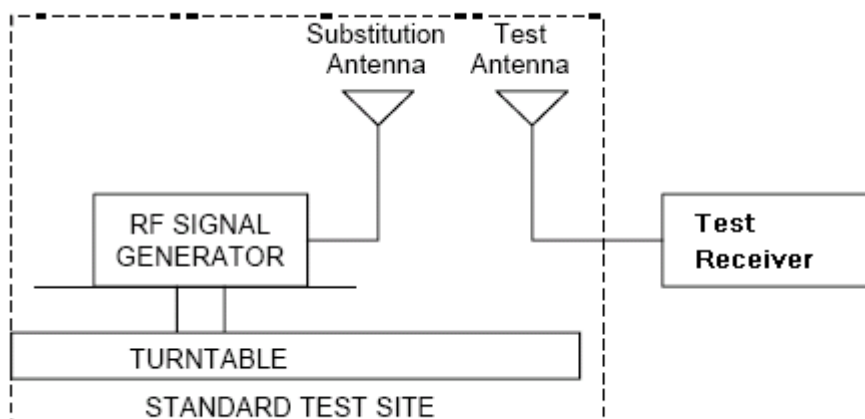
**Test Procedure:**

1. Test the background noise level with all the test facilities;
2. Keep one transmitting path, all other connectors shall be connected by normal power or RF leads;
3. Select the suitable RF notch filter to avoid the test receiver or spectrum analyzer produce unwanted spurious emissions;
4. Keep the EUT continuously transmitting in max power;
5. Read the radiated emissioins of the EUT enclosure.

**Radiated Emissions Test Procedure:**



- a) Connect the equipment as illustrated.
- b) Adjust the spectrum analyzer for the following settings:
  - 1) Resolution Bandwidth = 100 kHz for spurious emissions below 1 GHz, and 1 MHz for spurious emissions above 1GHz.
  - 2) Video Bandwidth = 300 kHz for spurious emissions below 1 GHz, and 3 MHz for spurious emissions above 1 GHz.
  - 3) Sweep Speed slow enough to maintain measurement calibration.
  - 4) Detector Mode = Positive Peak.
- c) Place the transmitter to be tested on the turntable in the standard test site, The transmitter is transmitting into a nonradiating load that is placed on the turntable. The RF cable to this load should be of minimum length.
- d) Measurements shall be made from 30MHz to 10 times of fundamental carrier, except for the region close to the carrier equal to  $\pm$  the carrier bandwidth.
- e) Key the transmitter without modulation or normal modulation base the standard.
- f) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Then the turntable should be rotated 360° to determine the maximum reading. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.
- g) Repeat step f) for each spurious frequency with the test antenna polarized vertically.



- h) Reconnect the equipment as illustrated.
- i) Keep the spectrum analyzer adjusted as in step b).
- j) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At the lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.
- k) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.
- l) Repeat step k) with both antennas vertically polarized for each spurious frequency.
- m) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps k) and l) by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole

antenna by the following formula:

$$Pd(\text{dBm}) = Pg(\text{dBm}) - \text{cable loss (dB)} + \text{antenna gain (dB)}$$

where:

$Pd$  is the dipole equivalent power and

$Pg$  is the generator output power into the substitution antenna.

NOTE: It is permissible to use other antennas provided they can be referenced to a dipole.

NOTE: Effective radiated power (e.r.p) refers to the radiation of a half wave tuned dipole instead of an isotropic antenna. There is a constant difference of 2.15 dB between e.i.r.p. and e.r.p.

$$\text{e.r.p (dBm)} = \text{e.i.r.p. (dBm)} - 2.15$$

### 6.2.7.1 Measurement Record:

Test frequency band and frequency point summary:

#### Class B model number:

Band	Link	9k-30MHz	30MHz-1GHz	Above 1GHz	Test frequency
700MHz band	UL: 799-805MHz	Pass	Pass	Pass	802.0125MHz
	DL: 769 -775MHz	Pass	Pass	Pass	772.0125MHz
	UL: 788-798MHz	Pass	Pass	Pass	793.0MHz
	DL: 758 -768MHz	Pass	Pass	Pass	763.0MHz

#### Class A model number:

Band	Link	9k-30MHz	30MHz-1GHz	Above 1GHz	Test frequency
700MHz band	UL: 799-805MHz	Pass	Pass	Pass	802.0125MHz
	DL: 769 -775MHz	Pass	Pass	Pass	772.0125MHz

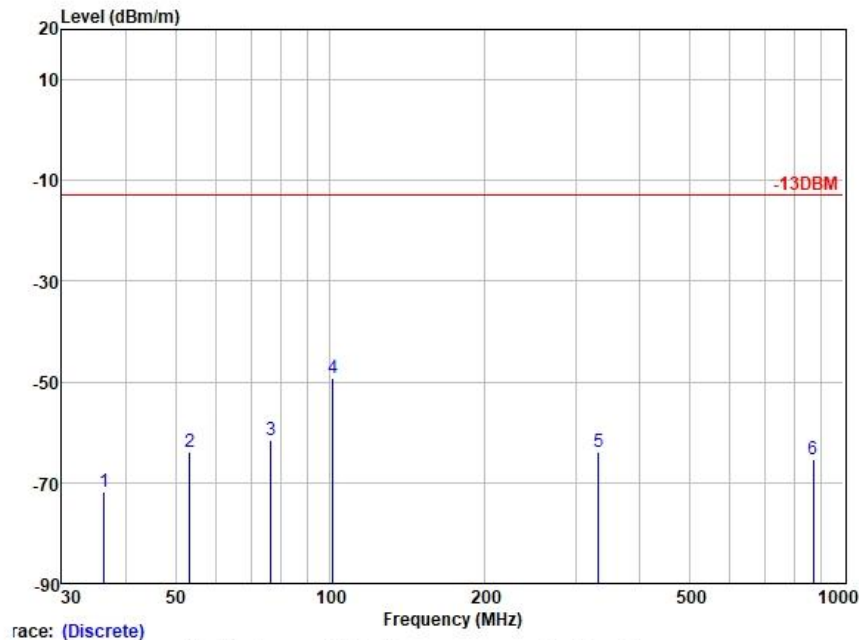
Pretest the 700MHz uplink and downlink for RXA3748 and RXB3748 in lowest/middle/ highest chanel, found no emissions were detected within 20dB below the limit. So only the worst case band 700MHz downlink frequency point 772.0125MHz data for RXB3748 were recored in the report.



**30 MHz~1 GHz**

**Vertical**

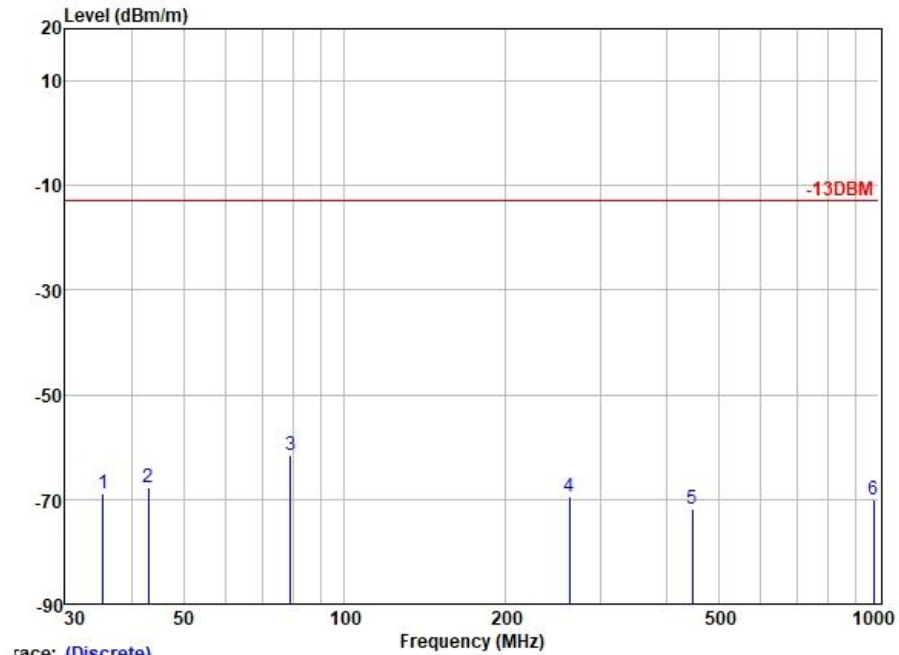
Model number RXB3792 with 120V /50Hz AC power supply



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark	
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB		
1	36.301	-63.89	-7.82	0.00	0.00	-71.71	-13.00	-58.71	VERTICAL	Peak
2	53.203	-58.34	-5.64	0.00	0.00	-63.98	-13.00	-50.98	VERTICAL	Peak
3	76.521	-51.65	-9.82	0.00	0.00	-61.47	-13.00	-48.47	VERTICAL	Peak
4	101.098	-44.19	-5.10	0.00	0.00	-49.29	-13.00	-36.29	VERTICAL	Peak
5	332.822	-61.59	-2.35	0.00	0.00	-63.94	-13.00	-50.94	VERTICAL	Peak
6	873.108	-74.07	8.61	0.00	0.00	-65.46	-13.00	-52.46	VERTICAL	Peak

### Horizontal:



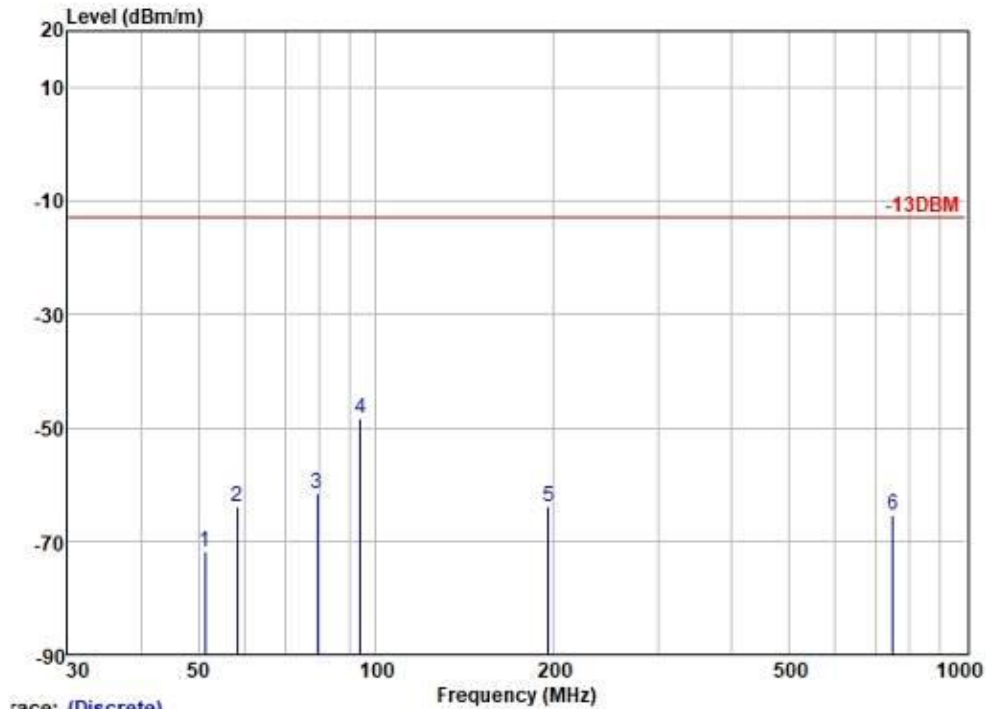
Trace: (Discrete)

	ReadAntenna	Cable	Preamp	Limit	Over				
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB		
1	35.301	-71.63	2.84	0.00	0.00	-68.79	-13.00	-55.79	HORIZONTAL Peak
2	42.887	-65.35	-2.27	0.00	0.00	-67.62	-13.00	-54.62	HORIZONTAL Peak
3	79.113	-51.78	-9.82	0.00	0.00	-61.60	-13.00	-48.60	HORIZONTAL Peak
4	263.137	-65.72	-3.75	0.00	0.00	-69.47	-13.00	-56.47	HORIZONTAL Peak
5	446.525	-72.11	0.24	0.00	0.00	-71.87	-13.00	-58.87	HORIZONTAL Peak
6	976.305	-80.44	10.44	0.00	0.00	-70.00	-13.00	-57.00	HORIZONTAL Peak



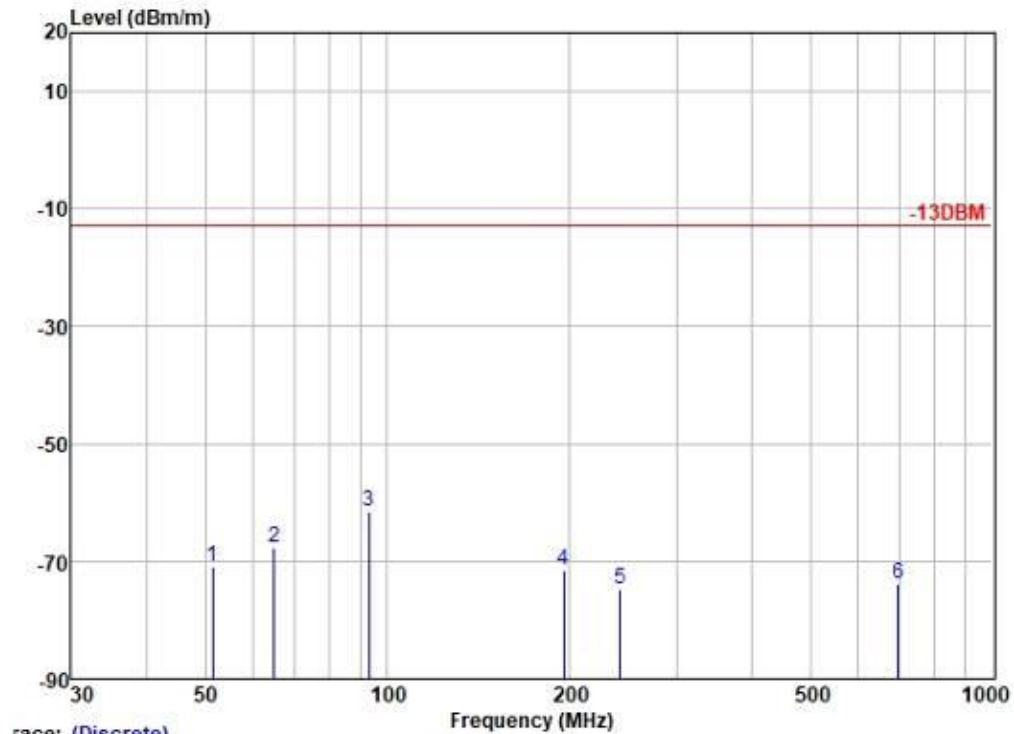
Model number RXB3748 is with DC power supply:

**Vertical:**



Peak	Frequency (MHz)	Read Level (dBm)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBm/m)	Limit (dBm/m)	Over Limit (dB)	Pol/Phase	Remark
1	51.301	-65.30	-6.41	0.00	0.00	-71.71	-13.00	-58.71	VERTICAL	Peak
2	58.203	-61.35	-2.63	0.00	0.00	-63.98	-13.00	-50.98	VERTICAL	Peak
3	79.521	-51.19	-10.28	0.00	0.00	-61.47	-13.00	-48.47	VERTICAL	Peak
4	94.098	-42.16	-6.13	0.00	0.00	-48.29	-13.00	-35.29	VERTICAL	Peak
5	195.822	-59.30	-4.64	0.00	0.00	-63.94	-13.00	-50.94	VERTICAL	Peak
6	750.108	-71.55	6.09	0.00	0.00	-65.46	-13.00	-52.46	VERTICAL	Peak

**Horizontal:**



Trace: (Discrete)

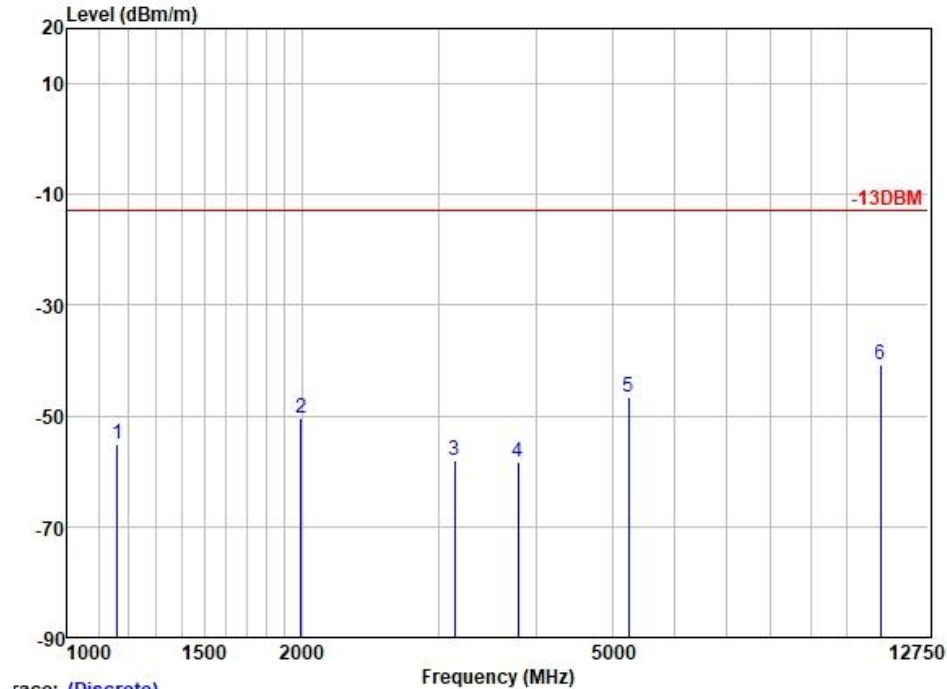
	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB		
1	51.301	-69.42	-1.37	0.00	0.00	-70.79	-13.00	-57.79	HORIZONTAL Peak
2	64.887	-63.13	-4.49	0.00	0.00	-67.62	-13.00	-54.62	HORIZONTAL Peak
3	93.113	-51.88	-9.72	0.00	0.00	-61.60	-13.00	-48.60	HORIZONTAL Peak
4	195.137	-64.98	-6.49	0.00	0.00	-71.47	-13.00	-58.47	HORIZONTAL Peak
5	242.525	-68.87	-6.00	0.00	0.00	-74.87	-13.00	-61.87	HORIZONTAL Peak
6	699.305	-78.34	4.34	0.00	0.00	-74.00	-13.00	-61.00	HORIZONTAL Peak



**Above 1G :**

Model number RXB3792 is with 120V /50Hz AC power supply

**Horizontal**

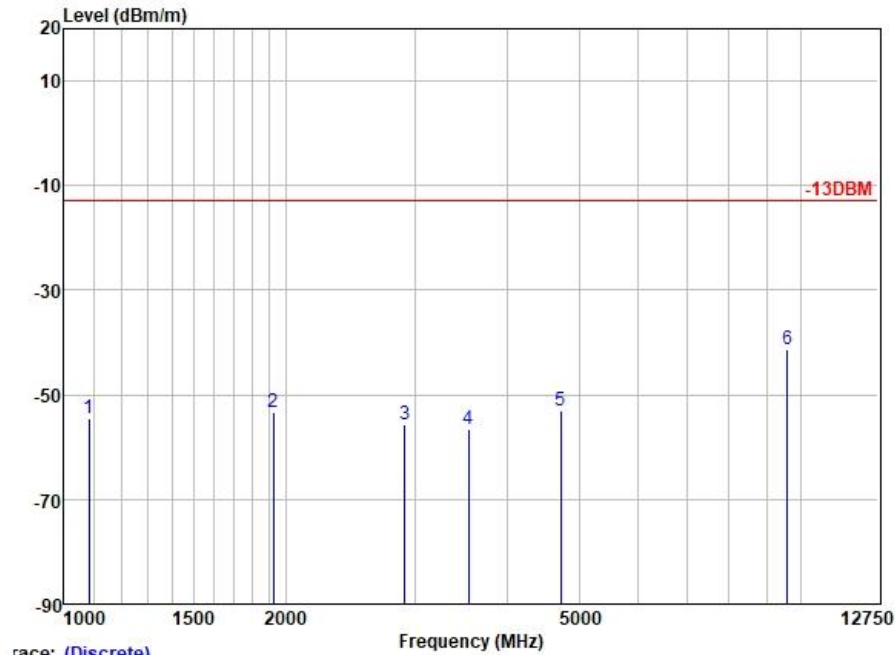


race: (Discrete)

	ReadAntenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	1160.344	-58.50	3.26	0.00	0.00	-55.24	-13.00	-42.24 HORIZONTAL
2	1993.371	-60.08	9.73	0.00	0.00	-50.35	-13.00	-37.35 HORIZONTAL
3	3136.610	-60.22	2.29	0.00	0.00	-57.93	-13.00	-44.93 HORIZONTAL
4	3785.876	-61.59	3.28	0.00	0.00	-58.31	-13.00	-45.31 HORIZONTAL
5	5254.943	-58.94	12.22	0.00	0.00	-46.72	-13.00	-33.72 HORIZONTAL
6	11058.950	-64.62	23.84	0.00	0.00	-40.78	-13.00	-27.78 HORIZONTAL



Vertical:



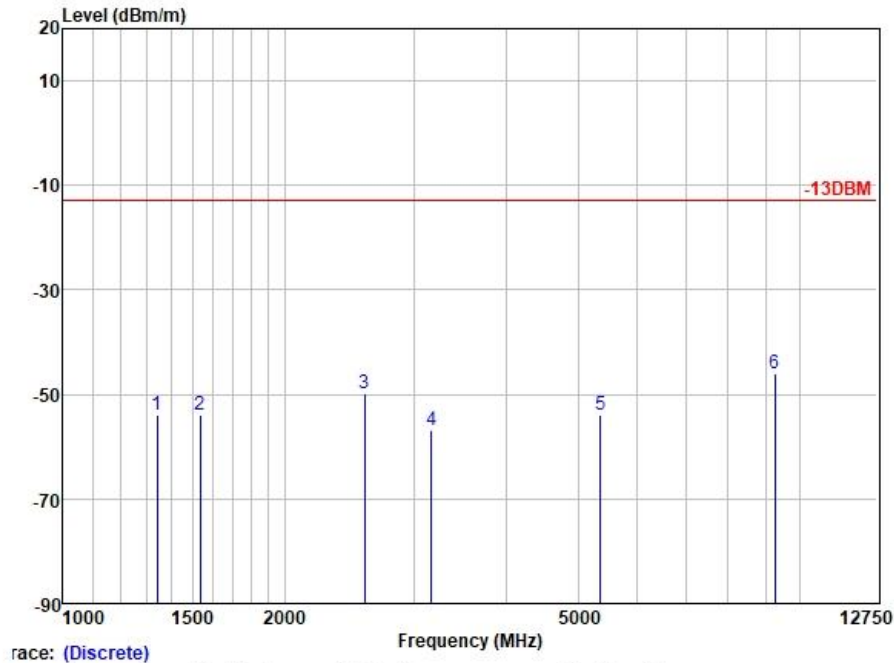
Trace: (Discrete)

	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB		
1 1080.091	-58.48	3.88	0.00	0.00	-54.60	-13.00	-41.60	VERTICAL	Peak
2 1923.203	-60.58	7.22	0.00	0.00	-53.36	-13.00	-40.36	VERTICAL	Peak
3 2904.023	-60.46	4.78	0.00	0.00	-55.68	-13.00	-42.68	VERTICAL	Peak
4 3543.030	-61.18	4.49	0.00	0.00	-56.69	-13.00	-43.69	VERTICAL	Peak
5 4727.779	-61.25	8.16	0.00	0.00	-53.09	-13.00	-40.09	VERTICAL	Peak
6 9585.262	-59.02	17.86	0.00	0.00	-41.16	-13.00	-28.16	VERTICAL	Peak



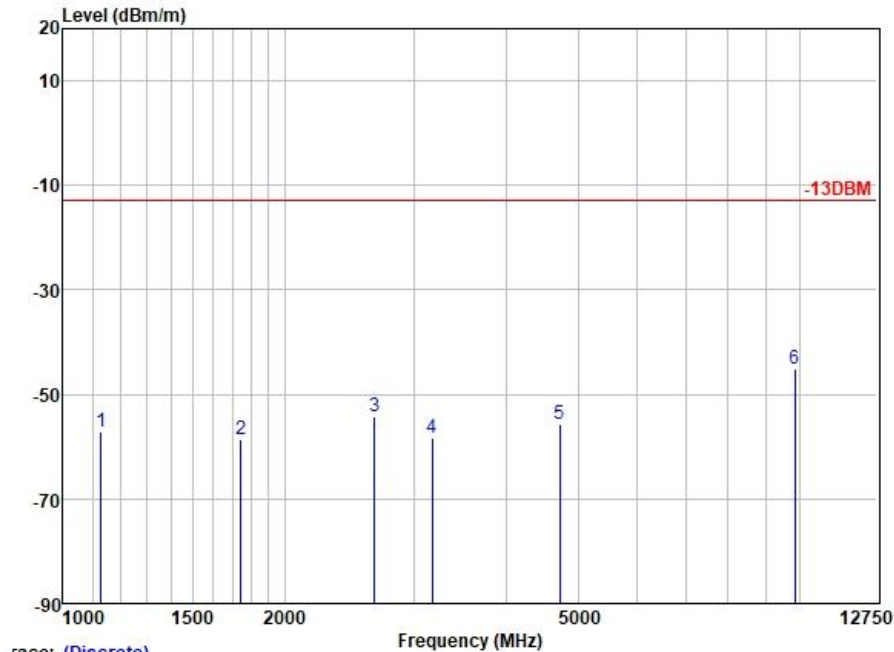
Model number RXB3748 is with DC power supply:

Horizontal:



	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB		
1	1342.618	-57.94	4.17	0.00	0.00	-53.77	-13.00	-40.77	VERTICAL Peak
2	1534.250	-60.22	6.35	0.00	0.00	-53.87	-13.00	-40.87	VERTICAL Peak
3	2564.692	-56.07	6.20	0.00	0.00	-49.87	-13.00	-36.87	VERTICAL Peak
4	3159.687	-59.48	2.65	0.00	0.00	-56.83	-13.00	-43.83	VERTICAL Peak
5	5368.315	-67.09	13.23	0.00	0.00	-53.86	-13.00	-40.86	VERTICAL Peak
6	9245.586	-63.18	17.10	0.00	0.00	-46.08	-13.00	-33.08	VERTICAL Peak

### Vertical:



race: (Discrete)									
	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB		
1	1125.175	-61.08	3.85	0.00	0.00	-57.23	-13.00	-44.23	HORIZONTAL Peak
2	1742.509	-64.70	6.12	0.00	0.00	-58.58	-13.00	-45.58	HORIZONTAL Peak
3	2647.251	-59.28	5.21	0.00	0.00	-54.07	-13.00	-41.07	HORIZONTAL Peak
4	3174.281	-60.59	2.25	0.00	0.00	-58.34	-13.00	-45.34	HORIZONTAL Peak
5	4725.505	-63.51	7.89	0.00	0.00	-55.62	-13.00	-42.62	HORIZONTAL Peak
6	9852.530	-64.19	18.97	0.00	0.00	-45.22	-13.00	-32.22	HORIZONTAL Peak

### Remark:

The cabinet radiation was measured with the equipment transmitting a CW signal into a non-radiating 50 Ohm load at maximum output power on a signal frequency .

Measured were performed in the lowest, middle and highest frequency for the Downlink of products which included AC and DC Unit.



## 6.2.8 Occupied Bandwidth

Test Requirement: FCC part 90.543  
 Test Method: KDB 935210 D05 V01r04

A signal booster must be designed such that all signals that it retransmits meet the following requirements:

(i) The signals are retransmitted on the same channels as received. Minor departures from the exact provider or reference frequencies of the input signals are allowed, provided that the retransmitted signals meet the requirements of 90.213.

(ii) There is no change in the occupied bandwidth of the retransmitted signals.

(iii) The retransmitted signals continue to meet the unwanted emissions limits of 90.210 applicable to the corresponding received signals (assuming that these received signals meet the applicable unwanted emissions limits by a reasonable margin)

EUT Operation:

Status: Drive the EUT to maximum output power. The EUT was pretested at compression and 10dB into compression to show AGC operation, worse case results taken.

Conditions: Normal conditions

Application: Cellular Band RF output ports

Test Configuration:

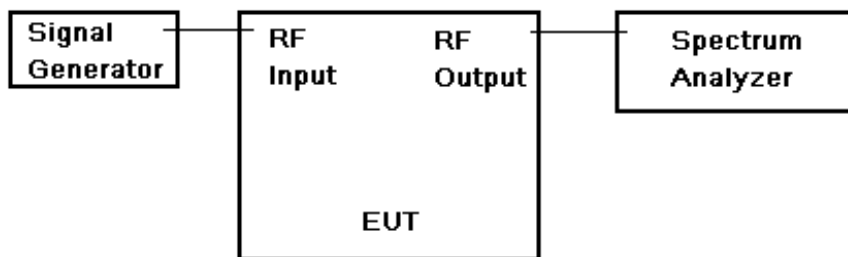


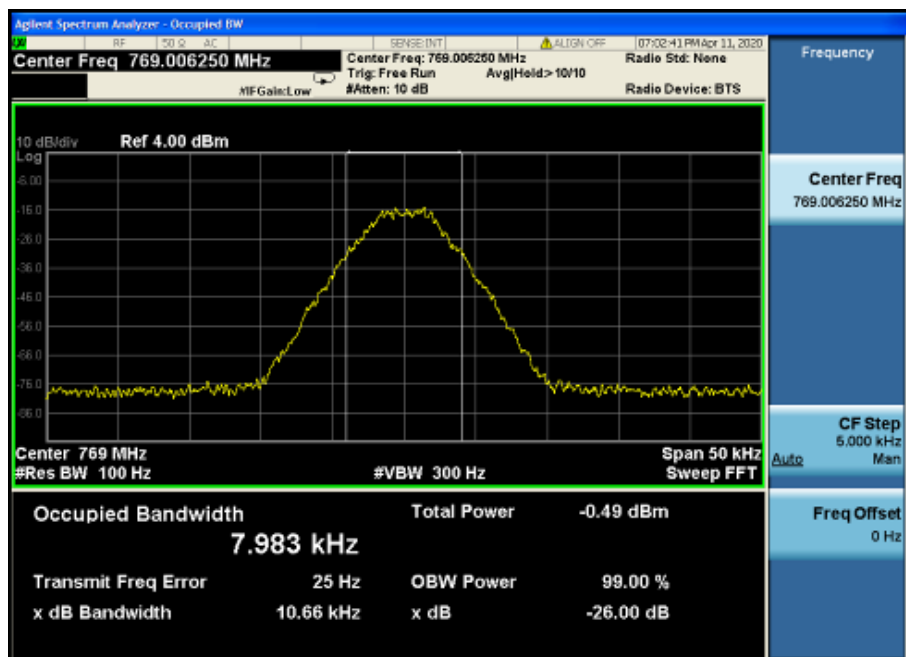
Fig.2. Conducted Spurious Emissions test configuration

Test Procedure:

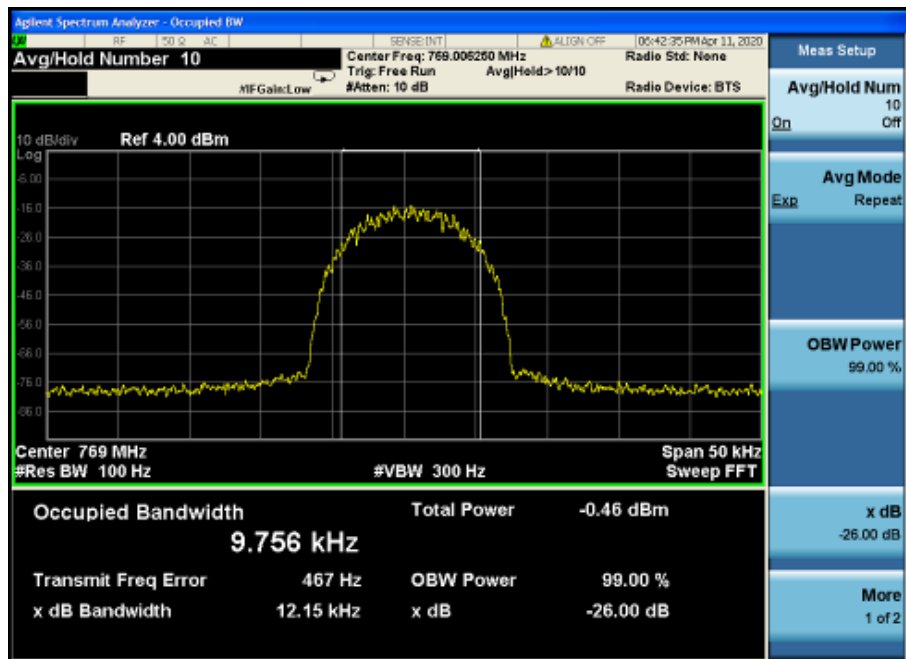
- Set the spectrum analyzer RBW 300 Hz or  $>1\% < 2\%$  emission bandwidth of carrier.
- Capture the trace of input signal;
- Connect the equipment as illustrated;
- Capture the trace of output signal;

### 6.2.8.1 Measurement Record:

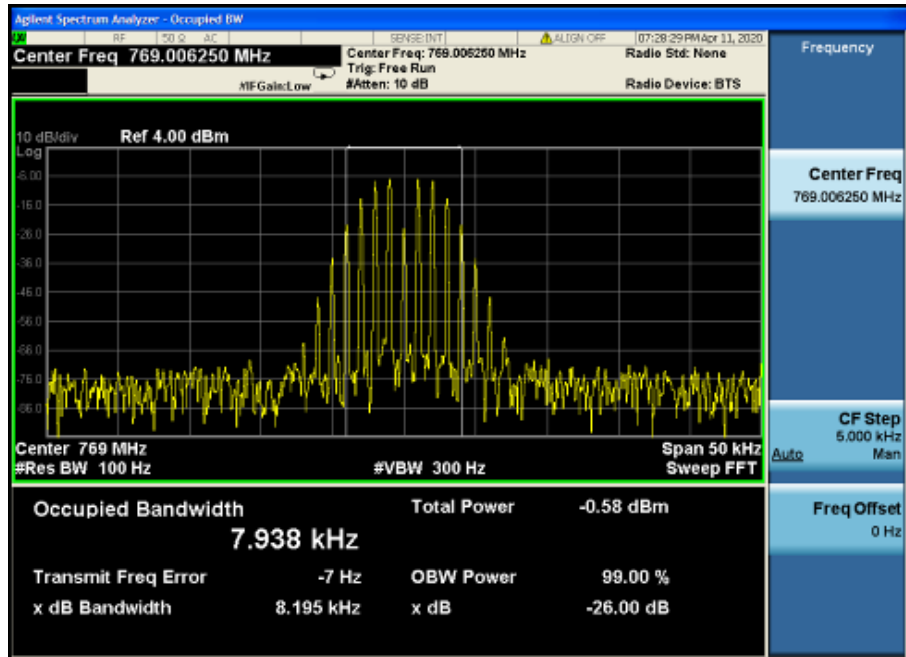
Input Signal Sample:  
for C4FM mode



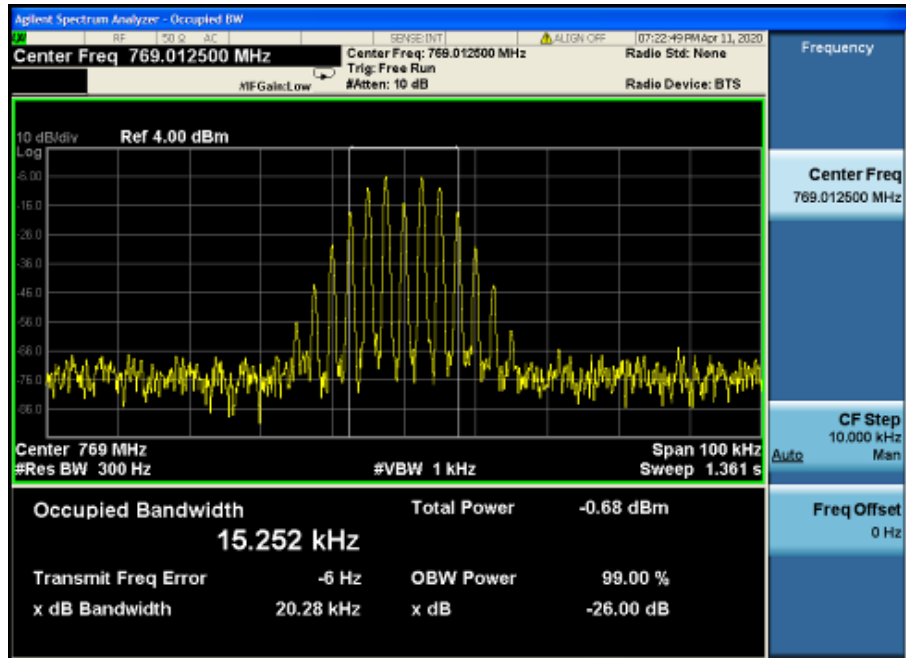
for HDQPSK mode



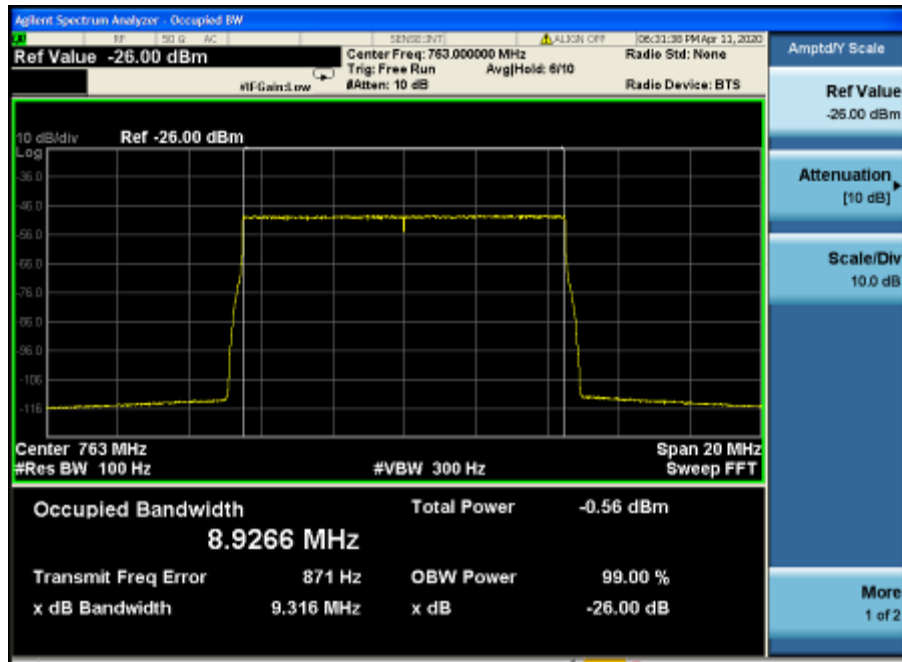
For FM-12.5K mode



For FM-25K mode



For LTE 10MHz mode :





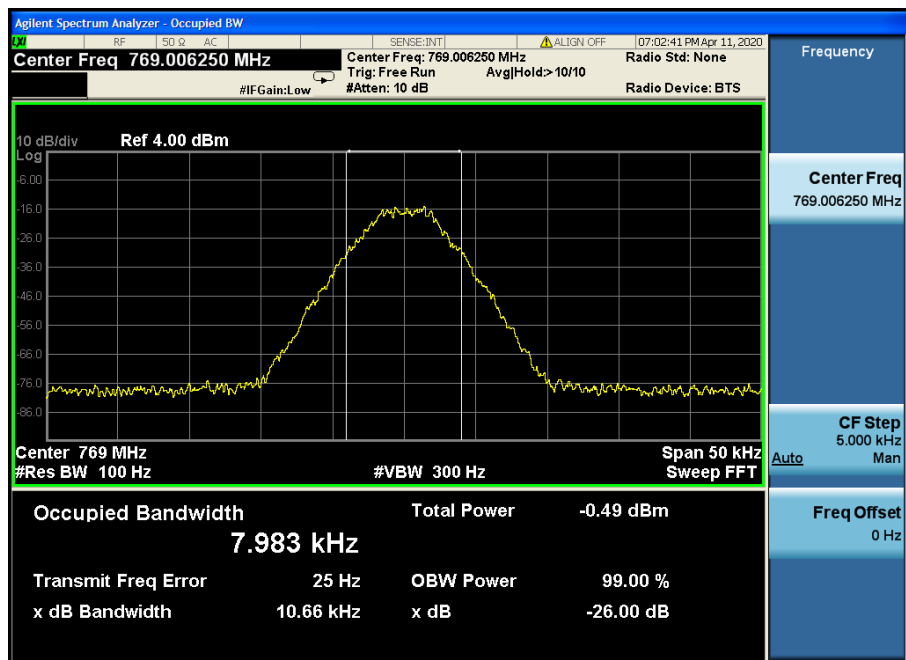
Class A model number:

1、700MHz band Downlink:769MHz to 775MHz

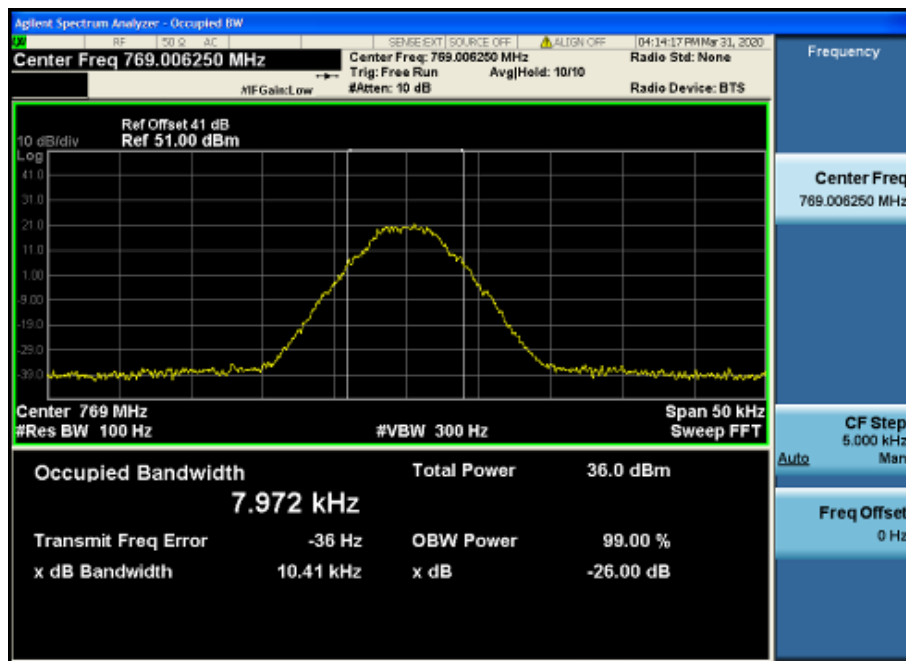
1.1 for C4FM mode

1.1.1 lowest frequency

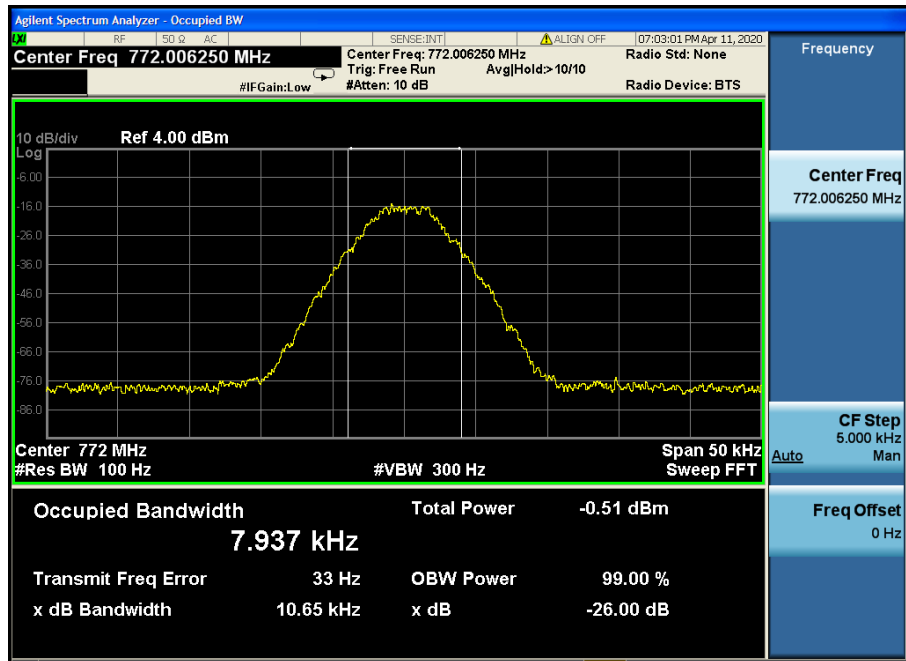
input



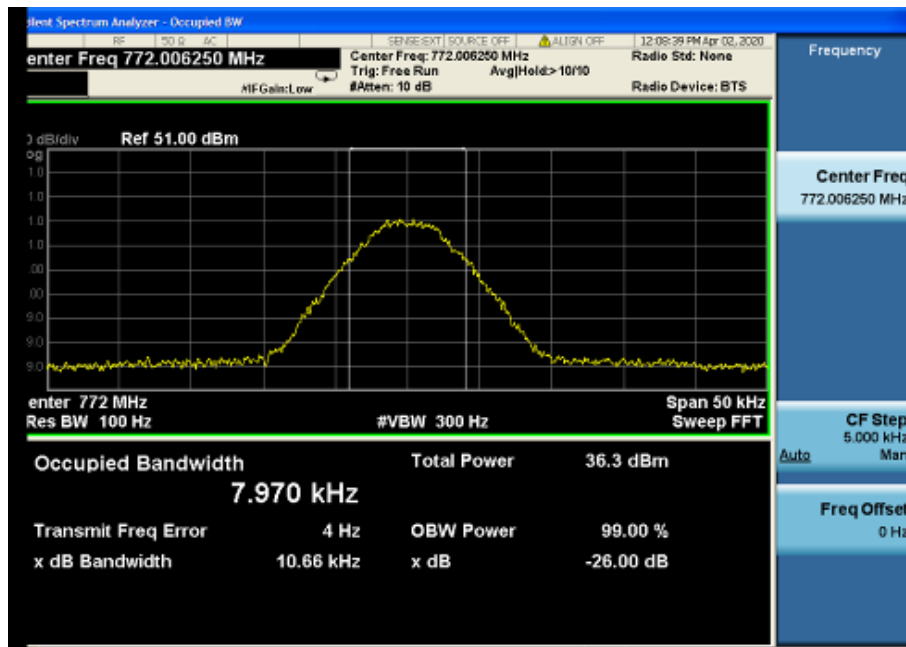
output



### 1.1.2 middle frequency Input

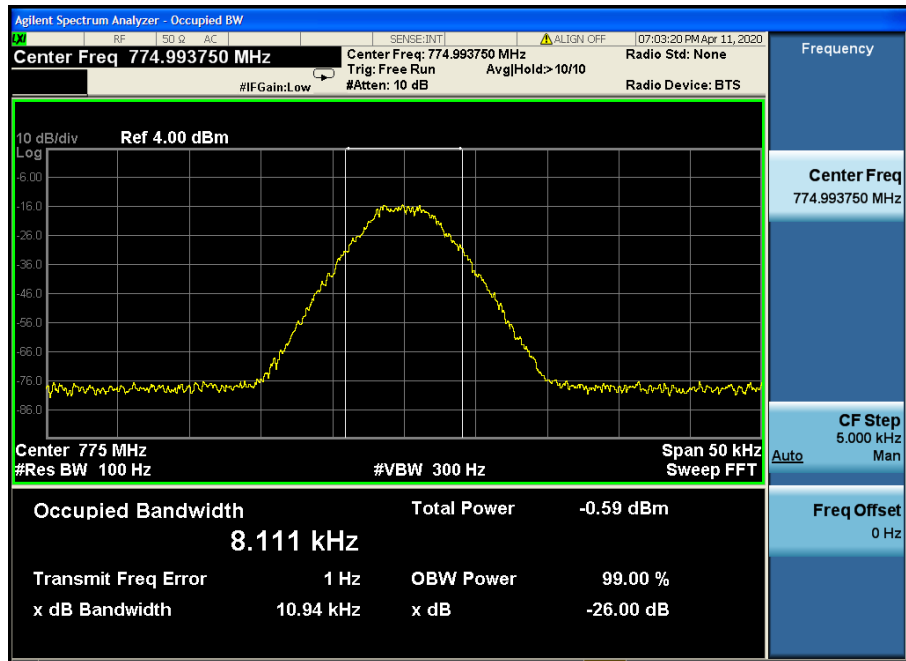


### output

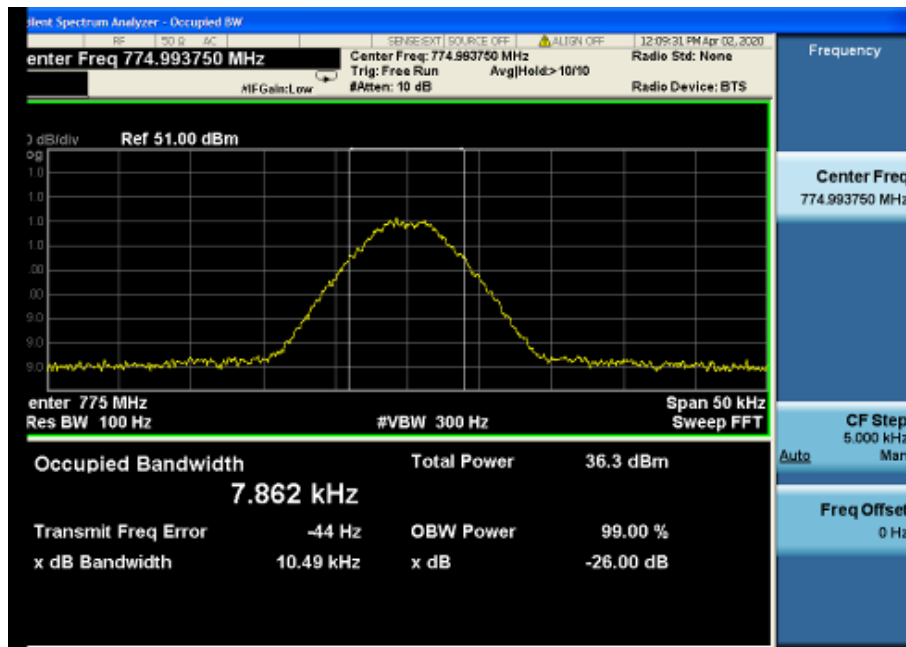


### 1.1.3 highest frequency

Input



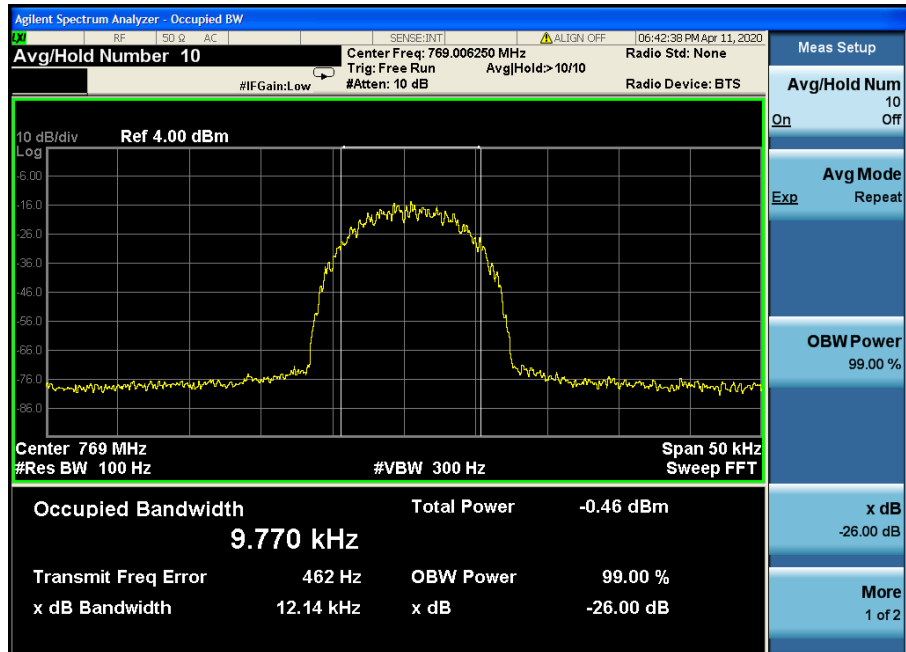
Output



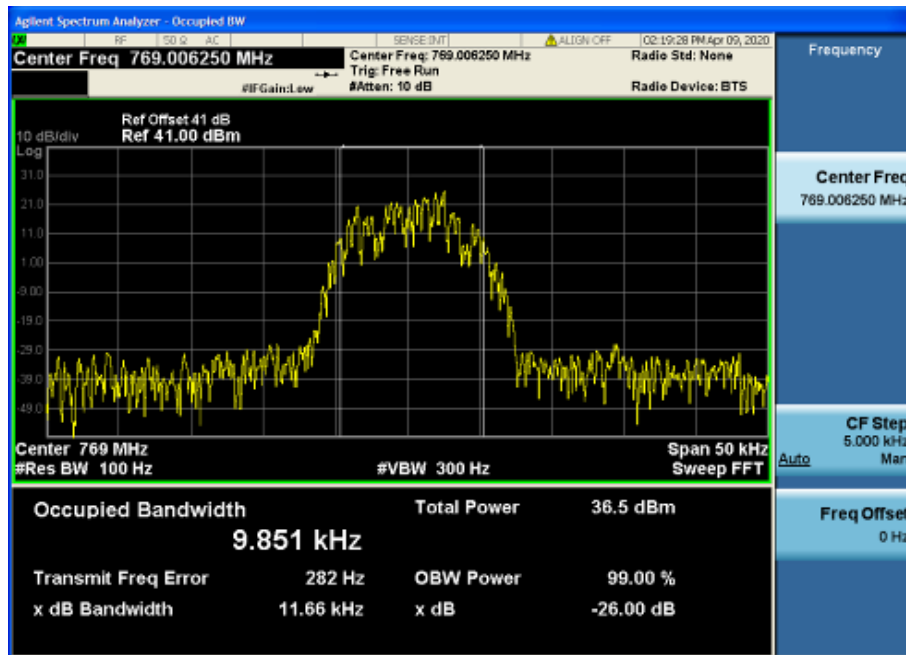
### 1.2 for HDQPSK mode

#### 1.2.1 lowest frequency

Input

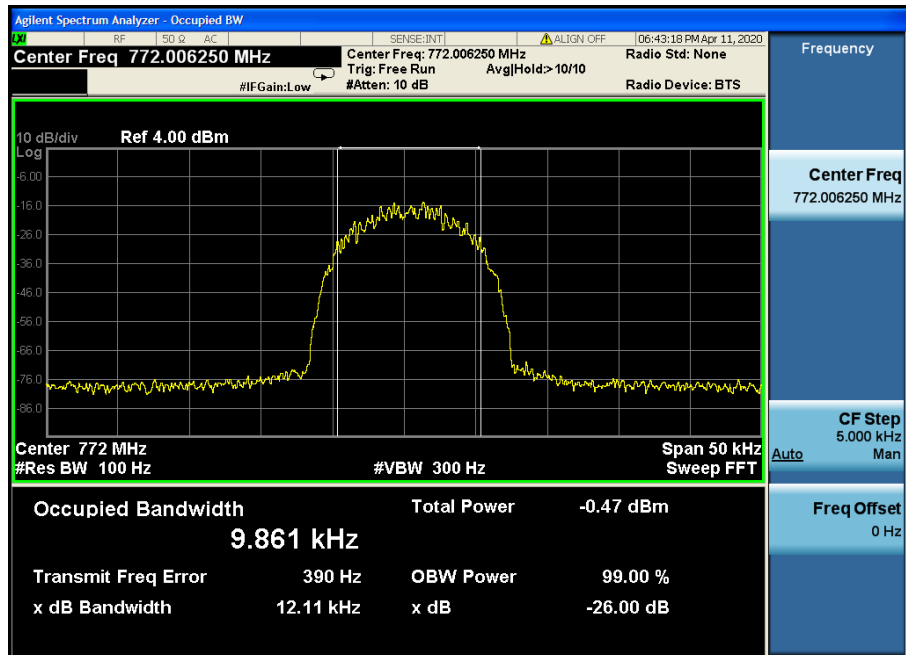


Output

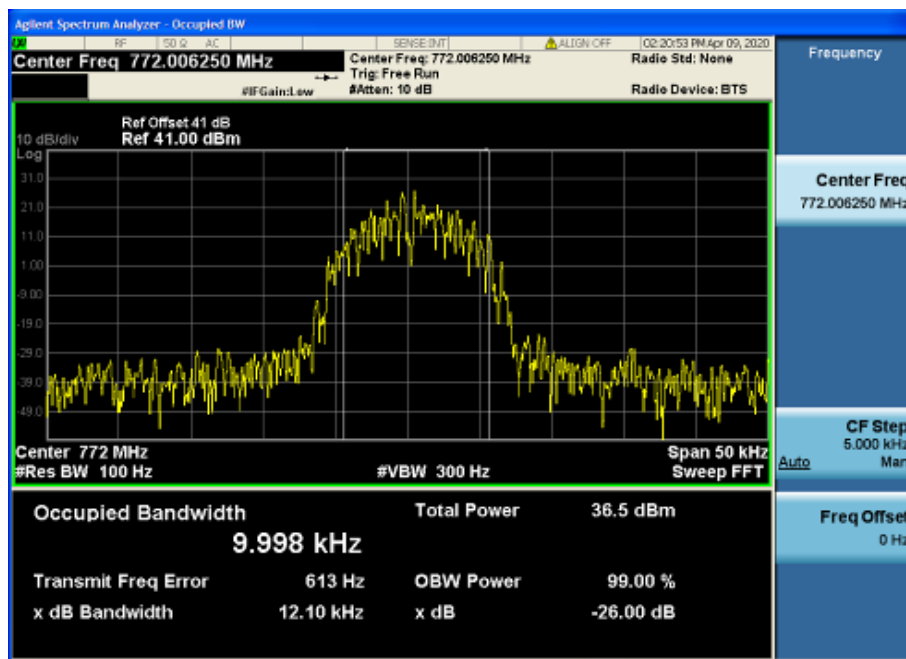




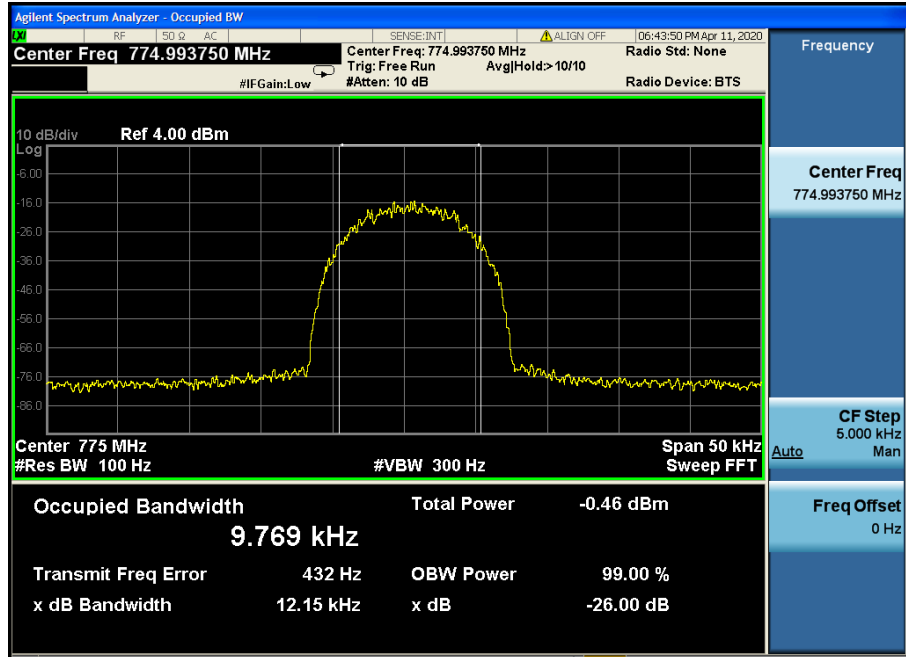
### 1.2.2 middle frequency Input



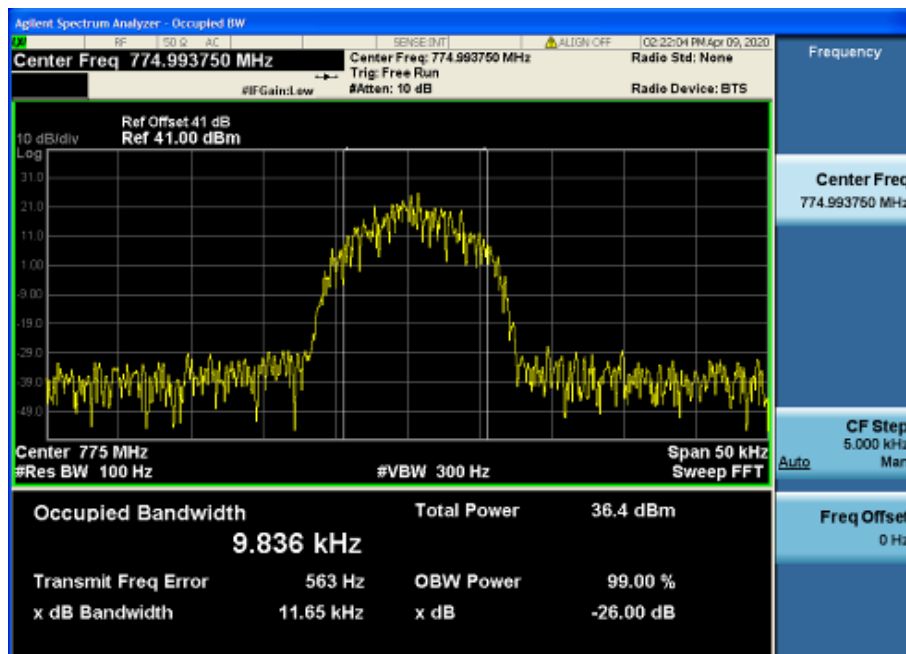
### Output



### 1.2.3 highest frequency Input



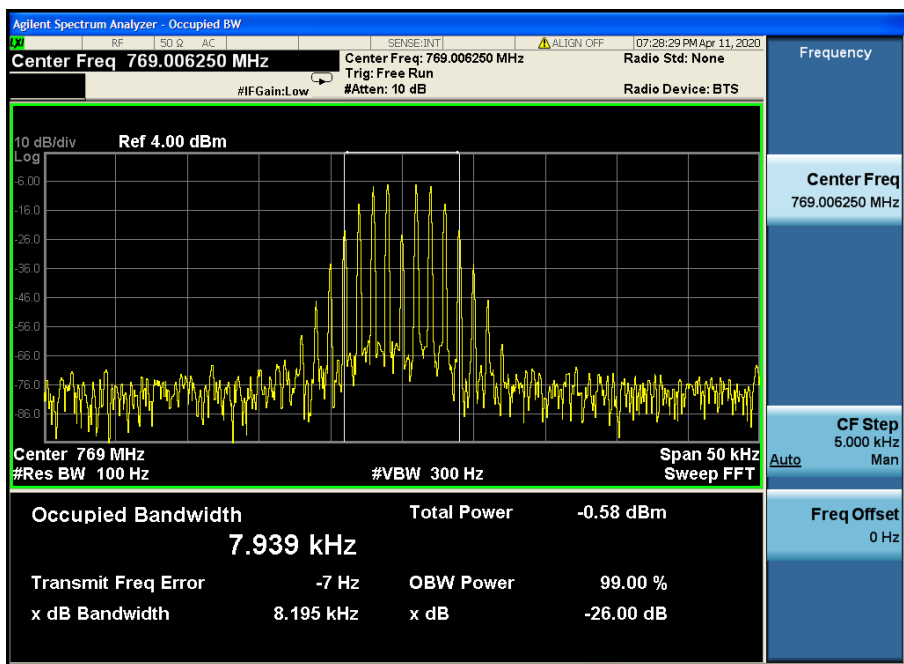
### Output



### 1.3 FM-12.5K mode

#### 1.3.1 lowest frequency

Input



Output

