



**SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch**

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Report No.: GZEM180600312101

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FCC ID: PX8COMFLEX-6Q00

TEST REPORT

Application No.:	GZEM1806003121CR
Applicant:	Comba Telecom Ltd
FCC ID:	PX8COMFLEX-6Q00
Product Description:	ComFlex Series Distributed Antenna System
Model No.:	ComFlex-6Q00
Standards:	FCC Part 27, FCC Part 2
Date of Receipt:	2018-06-07
Date of Test:	2018-06-07 to 2018-06-22
Date of Issue:	2018-07-06
Test Result :	Pass*

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.



Keny Xu

EMC Laboratory Manager



2018-07-06

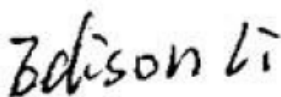
The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2018-07-06		Original

Authorized for issue by:				
Tested By		 Edison Li /Project Engineer		2018-06-07 to 2018-06-22 Date
Checked By		 Eric Fu /Reviewer		2018-06-22 Date



3 Test Summary

Test Item	Test Requirement	Test Method	Result ♣
AGC Threshold Level	Not specified	KDB935210 D05	PASS
Out of Band Rejection& Gain	KDB935210 D05	KDB935210 D05	PASS
99% Occupied Bandwidth	FCC part 2.1049	FCC part 2.1049 KDB935210 D05	PASS
Output Power & PAPR	FCC part 27.50(a) FCC part 27.50(h)	FCC part 2.1046 KDB935210 D05	PASS
Band Edge & Intermodulation	FCC part 27.53(a) FCC part 27.53(m)	FCC part 2.1051 KDB935210 D05	PASS
Conducted Spurious Emissions	FCC part 27.53(a) FCC part 27.53(m)	FCC part 2.1051 KDB935210 D05	PASS
Frequency Stability	FCC part 27.54	FCC part 2.1055	PASS
Radiated Spurious Emissions	FCC part 27.53(a) FCC part 27.53(m)	FCC part 2.1053 KDB935210 D05	PASS

Remark:

Tx: (or tx) means Transmitter in this whole report.

Rx: (or rx) means Receiver in this whole report.

EUT: means Equipment Under Test in this whole report.

♣ Measurement results, unless otherwise noted, are only attached worst case (e.g., occupied bandwidth comparison and intermodulation tests were done with and without any AGC circuitry activated, only report worst case results; moreover, the EUT was supported power supply both of AC and DC, only worst results were reported. etc.).

The term “signal booster” as used in the Order and the associated rule sections includes all manner of distributed antenna systems and in-building radiation systems that serve to amplify signals between a device and a wireless network. A distributed antenna system (DAS) is a system of spatially separated antennas connected via cables (i.e., coaxial or fiber optic cable) to a signal source, such as a base station or an external antenna capable of communicating with a base station wirelessly. DAS are used to distribute wireless signals through large structures such as skyscrapers, hospitals, hotels, arenas and tunnels where the signal coverage may be lacking or to increase the capacity of the wireless system by achieving channel reuse on a smaller scale. Some DAS configurations may be considered signal boosters when the network of internal antennas achieves communication through the use of an amplifier that is connected to an external antenna that communicates with a base station wirelessly. **So the EUT belongs to Industrial Booster and B2I class.**

According to the declaration from manufacturer, the EUT can connect directly to BTS via coaxial cable and coupler without air radiation, therefore **only downlink was tested and uplink was ignored in this report.**



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5 General Information

5.1 Client Information

Applicant Name: Comba Telecom Ltd.
Applicant Address: 611 East Wing, No. 8 Science Park West Avenue, Hong Kong Science Park, Tai Po, Hong Kong.
Manufacturer: Comba Telecom Systems(China) Ltd.
Address of Manufacturer: No.10 Shenzhou Road, Guangzhou Science City, Guangzhou 510663, Guangdong, P.R. China

5.2 General Description of E.U.T.

Product Name: ComFlex Series Distributed Antenna System.
Model No.: ComFlex-6Q00
Power Supply: AC 100-240V 50/60Hz
DC -28V transfer AC 120V 60Hz
Test power: AC 120V 60Hz
Operating Temperature: -40 °C to +70°C
Operating Humidity: ≤ 95%

5.3 Details of E.U.T.

Type of Modulation: LTE
Emission Designator: G7D
Frequency Band: Downlink 617MHz to 652MHz include the Modulation:LTE
Downlink 2350MHz to 2360MHz include the Modulation:LTE
Downlink 2496MHz to 2690MHz include the Modulation:LTE

Nominal Power Output: 37dBm for downlink
Nominal System Gain: 27dB for downlink



5.4 Product Description

The ComFlex-6Q00 Distributed Antenna System is an RF over fiber solution that enhances a wireless network's coverage by extending cellular services from existing cell sites to an indoor environment. The system consists of the Master Unit (MU) and medium power Remote Unit (RU). The MU includes the Chassis, Power Supply Unit (PSU), Fiber Optical Unit (FOU) and RF Unit (RFU). With a modular design, it can support up to independent RF inputs and 8 Remote Units. The Remote Unit is designed with a compact and slim form factor for easy installation; it is an integrated design which supports 3 independent bands: 600MHz, 2300MHz, and 2500MHz.

This solution is an effective point-to-multipoint distributed antenna system that provides effective coverage enhancement. The Comba Tri-Band DAS offers service providers an optimal solution for variable venue sizes such as single buildings, office campuses, megamalls and sports arenas..

5.5 Standards Applicable for Testing

The standard used was FCC part 20 & FCC part 2 & FCC part 27

5.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

5.7 Other Information Requested by the Customer

None.



5.8 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.



6 Equipment Used during Test

RF conducted test						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
1	DC Power Supply	ZhaoXin	PS-3005D	SEM011-05	2017-09-27	2018-09-26
2	Spectrum Analyzer (20Hz-43GHz)	Rohde & Schwarz	FSU43	SEM004-08	2018-04-13	2019-04-12
3	Signal Generator (9kHz-40GHz)	KEYSIGHT	N5173B	SEM006-05	2017-09-27	2018-09-26
4	Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.6	N/A	N/A	N/A
5	Coaxial Cable	SGS	N/A	SEM031-01	2017-07-13	2018-07-12
6	Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A

RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-08-05	2020-08-04
2	MXE EMI Receiver (20Hz-8.4GHz)	Agilent Technologies	N9038A	SEM004-05	2017-09-27	2018-09-26
3	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017-06-27	2020-06-26
4	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2018-04-02	2019-04-01
5	Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
6	Coaxial Cable	SGS	N/A	SEM025-01	2017-07-13	2018-07-12

General used equipment						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
1	Humidity/Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2017-09-29	2018-09-28
2	Humidity/Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2017-09-29	2018-09-28
3	Humidity/Temperature Indicator	Mingle	N/A	SEM002-08	2017-09-29	2018-09-28
4	Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2018-04-08	2019-04-07



7 Test Results

7.1 E.U.T. test conditions

Input Voltage: AC 120V 60Hz
DC -48V

Operating Environment:

Temperature: 22°C ~26°C

Humidity: 46%~56% RH

Atmospheric Pressure: 990~1005M Modulationbar

Test Requirement: The RF output power of the EUT was measured at the antenna port, by adjusting the input power of signal generter to drive the EUT to get to maximum output power point and keep the EUT at maximum gain setteing for all tests. The device should be tested on downlink.

For detail test Modulation and Frequency, please refer to 7.2.



7.2 Test Procedure & Measurement Data

Test Modulation and Frequency

Downlink: 617MHz to 652MHz(5M Modulation)

Modulation	Lowest frequency	Middle frequency	Highest frequency
LTE	619.5	634.5	649.5

Downlink: 617MHz to 652MHz(20M Modulation)

Modulation	Lowest frequency	Middle frequency	Highest frequency
LTE	627	634.5	642

Downlink: 2350MHz to 2360MHz(5M Modulation)

Modulation	Lowest frequency	Middle frequency	Highest frequency
LTE	2352.5	2355	2357.5

Downlink: 2350MHz to 2360MHz(10M Modulation)

Modulation	Middle frequency
LTE	2355

Downlink: 2496MHz to 2690MHz(5M Modulation)

Modulation	Lowest frequency	Middle frequency	Highest frequency
LTE	2498.5	2593	2687.5

Downlink: 2496MHz to 2690MHz(20M Modulation)

Modulation	Lowest frequency	Middle frequency	Highest frequency
LTE	2506	2593	2680

Remark:

- 1) We test the downlink in the lowest band; the middle band; the highest band and test the respective frequency as above table;



7.2.1 AGC Threshold level

Test Method: KDB935210 D05

Test Requirement: Not specified

EUT Operation:

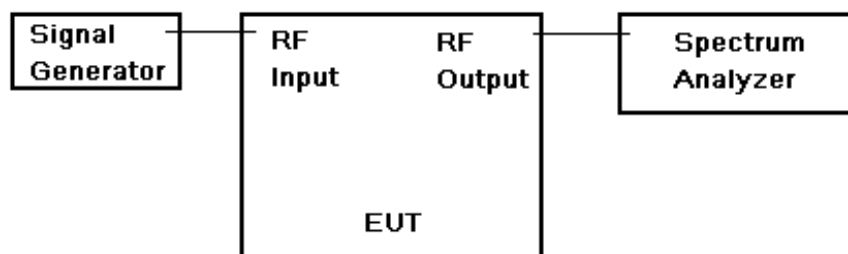
Status: Drive the EUT to maximum output power. Pretest was performed in both channels, only kept the final measurement data of worse case.

Conditions: Normal conditions

Application: Cellular Band RF output ports

Test

Configuration:



AGC threshold test configuration



Test Procedure:

- a) Connect a signal generator to the input of the EUT.
- b) Connect a spectrum analyzer or power meter to the output of the EUT using appropriate attenuation as necessary.
- c) The signal generator should initially be configured to produce either of the required test signals (i.e., broadband or narrowband).
- d) Set the signal generator frequency to the center frequency of the EUT operating band.
- e) While monitoring the output power of the EUT, measured using the methods of 3.5.3 or 3.5.4, increase the input level until a 1 dB increase in the input signal power no longer causes a 1 dB increase in the output signal power.
- f) Record this level as the AGC threshold level.
- g) Repeat the procedure with the remaining test signal.



7.2.1.1 Measurement Record:

Downlink: 617MHz ~652MHz(5M Modulation)

Test items	Modulation	Lowest frequency	Middle frequency	Highest frequency
AGC Threshold	LTE	10.05dBm	9.95dBm	9.89dBm

Downlink: 617MHz ~652 (20M Modulation)

Test items	Modulation	Lowest frequency	Middle frequency	Highest frequency
AGC Threshold	LTE	10.09dBm	9.98dBm	10.12dBm

Downlink: 2350MHz ~2360MHz(5M Modulation)

Test items	Modulation	Lowest frequency	Middle frequency	Highest frequency
AGC Threshold	LTE	9.96dBm	9.93dBm	10.00dBm

Downlink:2350MHz ~2360MHz(10M Modulation)

Test items	Modulation	Middle frequency		
AGC Threshold	LTE	9.97dBm		

Downlink: 2496MHz ~ 2690MHz(5M Modulation)

Test items	Modulation	Lowest frequency	Middle frequency	Highest frequency
AGC Threshold	LTE	9.92dBm	9.90dBm	9.97dBm

Downlink: 2496MHz ~ 2690MHz(20M Modulation)

Test items	Modulation	Lowest frequency	Middle frequency	Highest frequency
AGC Threshold	LTE	9.93dBm	9.92dBm	9.85dBm

7.2.2 Out of Band Rejection & Gain

Test Requirement: KDB935210 D05

Test for rejection of out of band signals. Filter frequency response plots are acceptable.

Test Method: KDB935210 D05

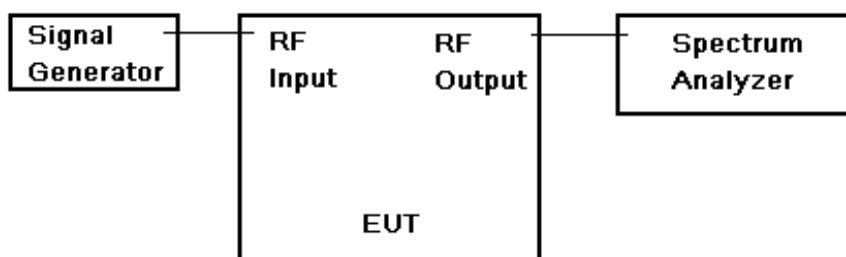
EUT Operation:

Status: Drive the EUT to maximum output power. .

Conditions: Normal conditions

Application: Cellular Band RF output ports

Test Configuration:



Out of Band rejection test configuration

Test Procedure:

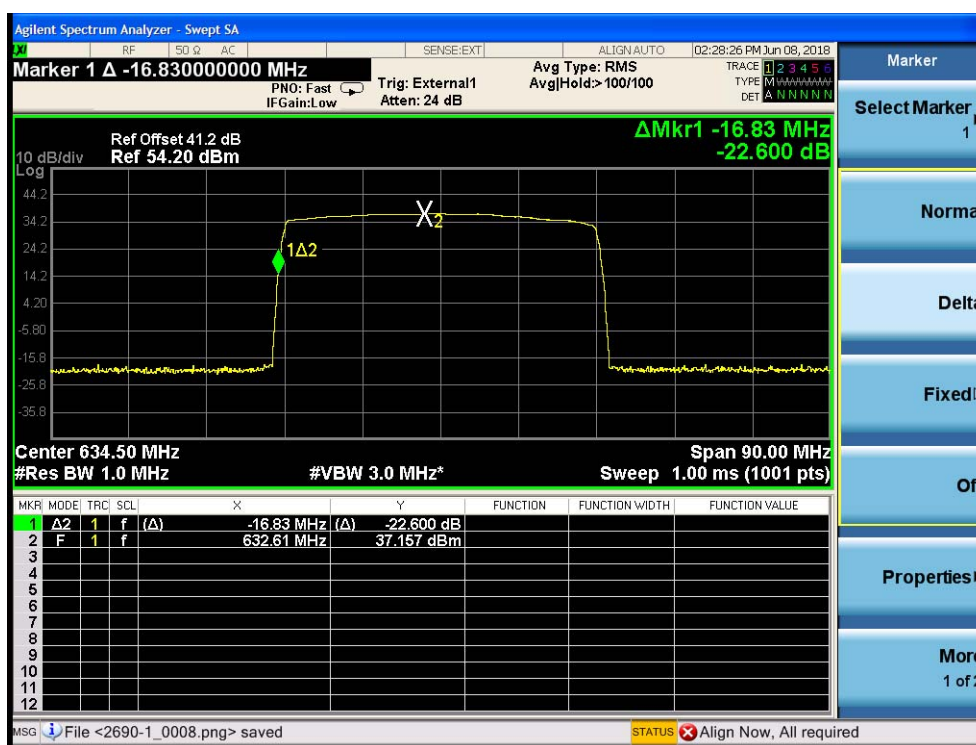
1. Connect the equipment as illustrated;
 2. Test the background noise level with all the test facilities;
 3. Keep one transmitting path, all other connectors shall be connected by normal power or RF leads;
 4. Select the attenuator to avoid the test receiver or spectrum analyzer being destroyed;
 5. Keep the EUT continuously transmitting in max power;
 6. Signal generator sweep from the frequency more lower than the product frequency to the frequency more higher than it, find the product band filter characteristic;
- CW signal rather than typical signal is acceptable (for FM).
 - Multiple band filter will need test each other.



7.2.2.1 Measurement Record:

20dB point frequency (MHz)	Output power(dBm)	Gain(dB)
615.78~653.22	37.16	27.8
2348.75~2361.25	37.10	27.6
2494.5~2692.0	37.21	26.3

1.Test for Downlink: 617MHz to 652MHz

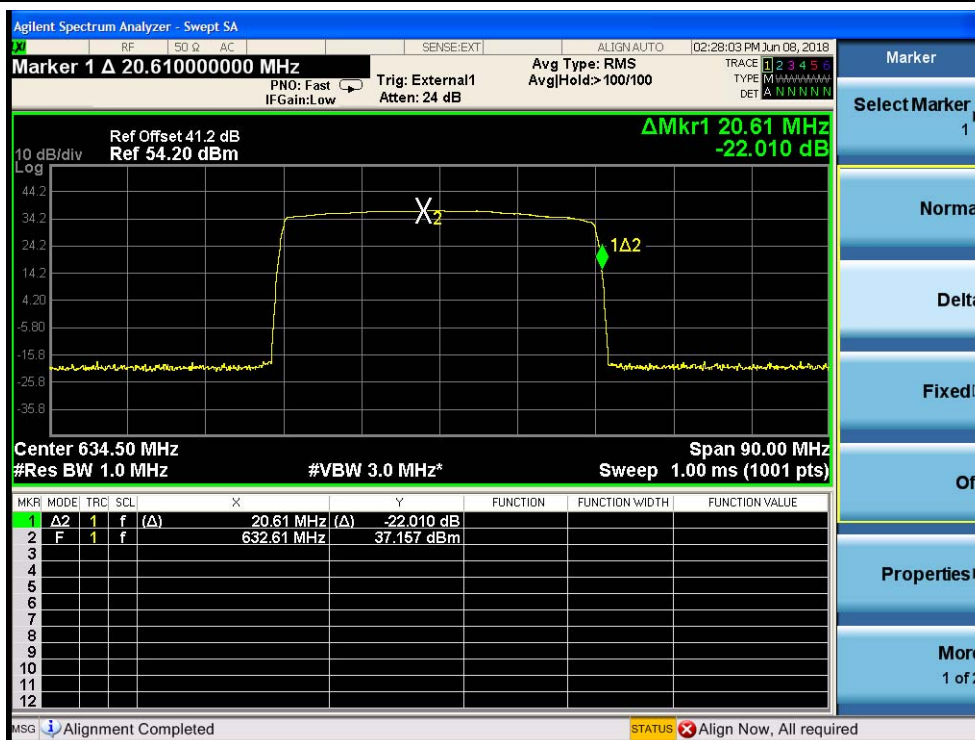




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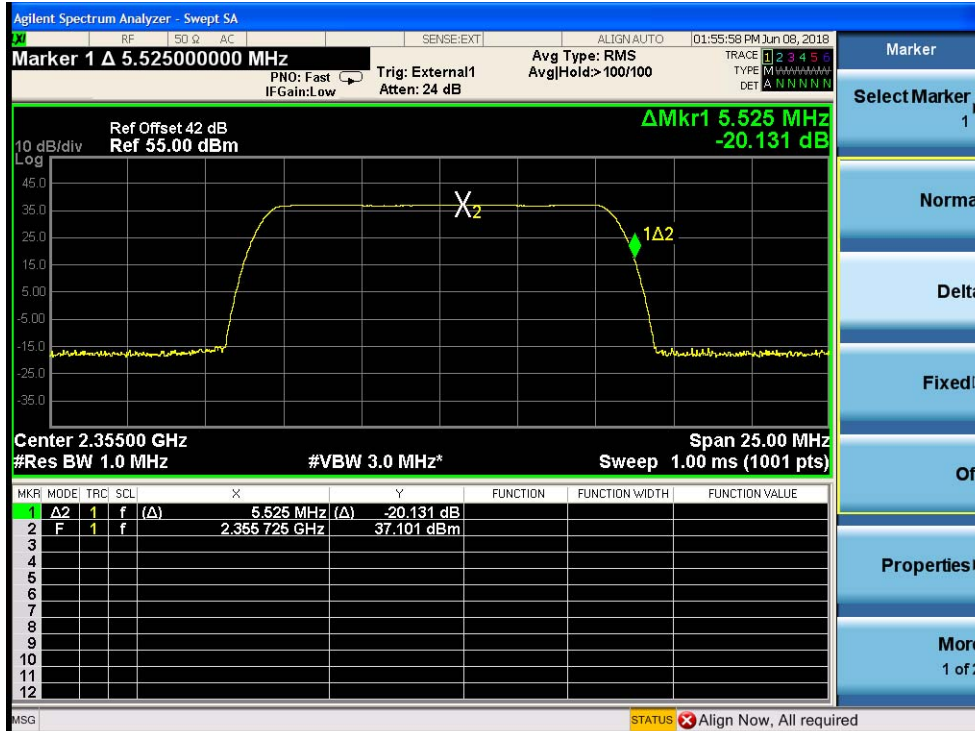
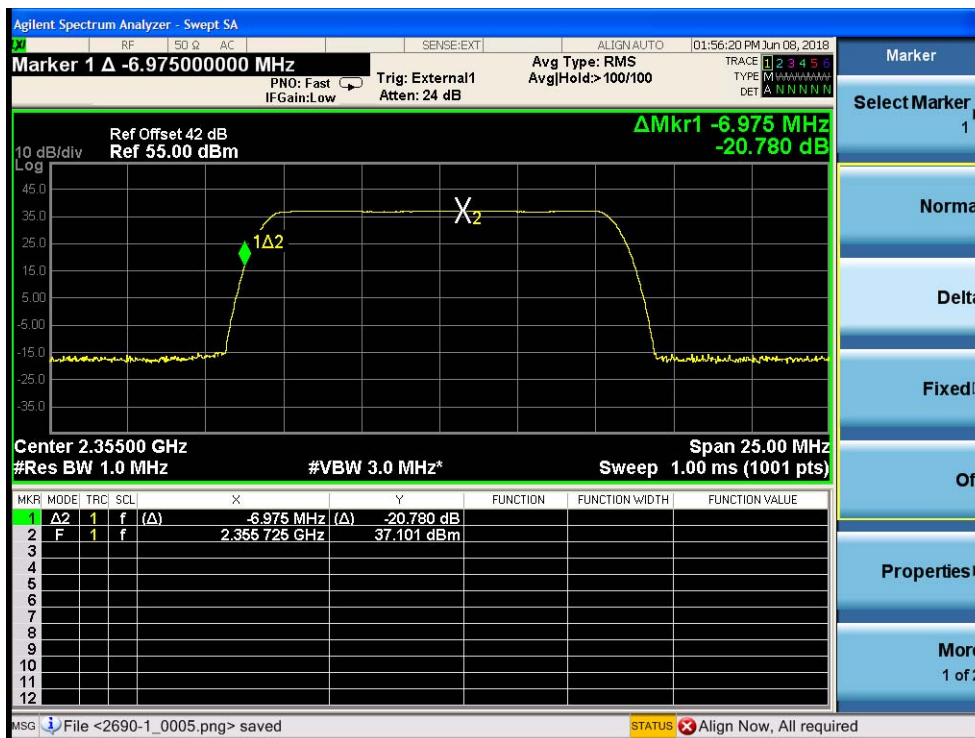
Report No.: GZEM180600312101

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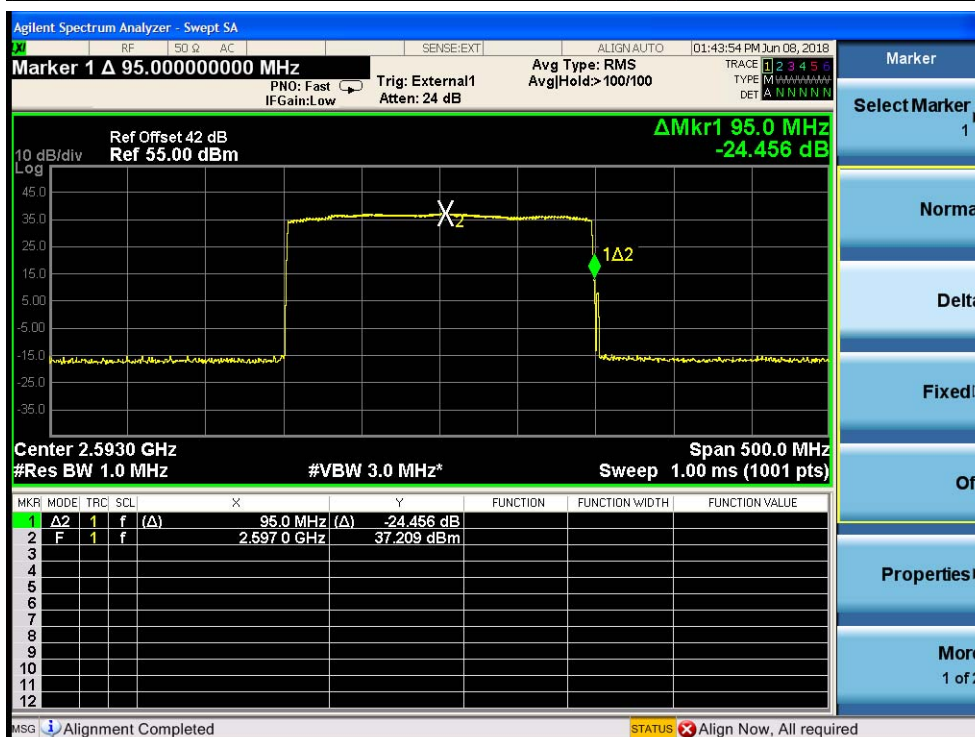
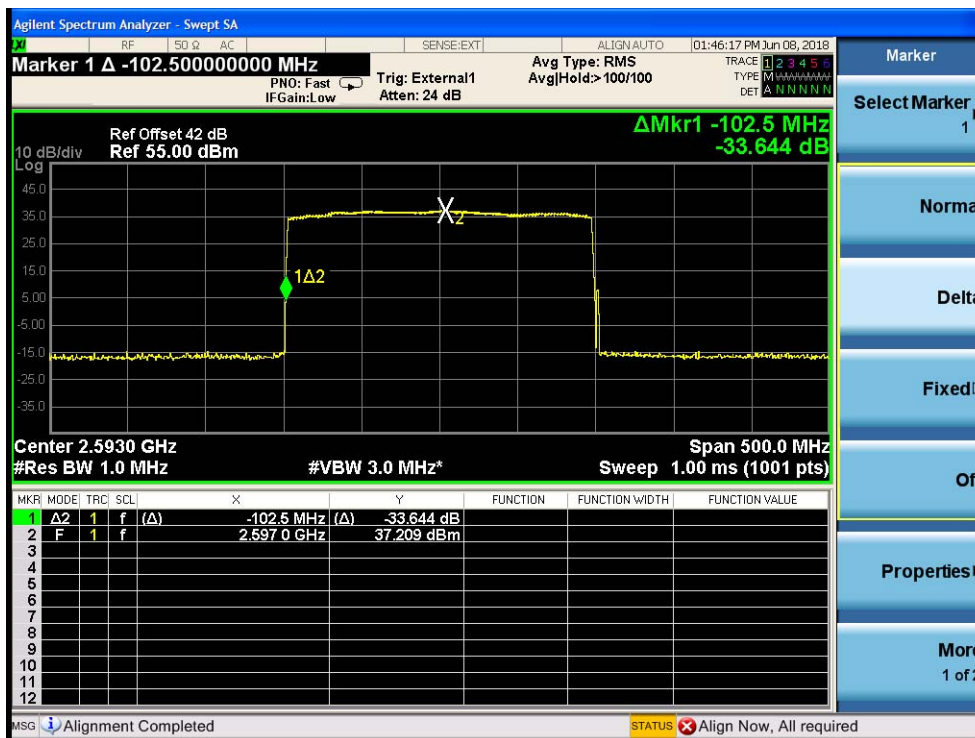


2. Test for Downlink: 2350MHz to 2360MHz





3. Test for Downlink: 2496MHz to 2690MHz





7.2.3 99% Occupied Bandwidth

Test Requirement: KDB935210 D02

Test Method: FCC part 2.1049

The spectral shape of the output should look similar to input for all modulations.

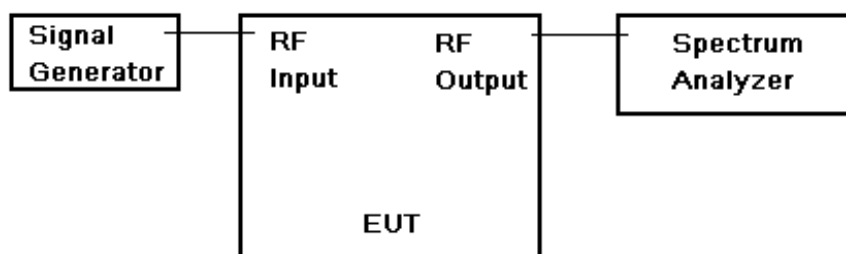
EUT Operation:

Status: Drive the EUT to maximum output power. .

Conditions: Normal conditions

Application: Cellular Band RF output ports

Test Configuration:



Occupied Bandwidth test configuration

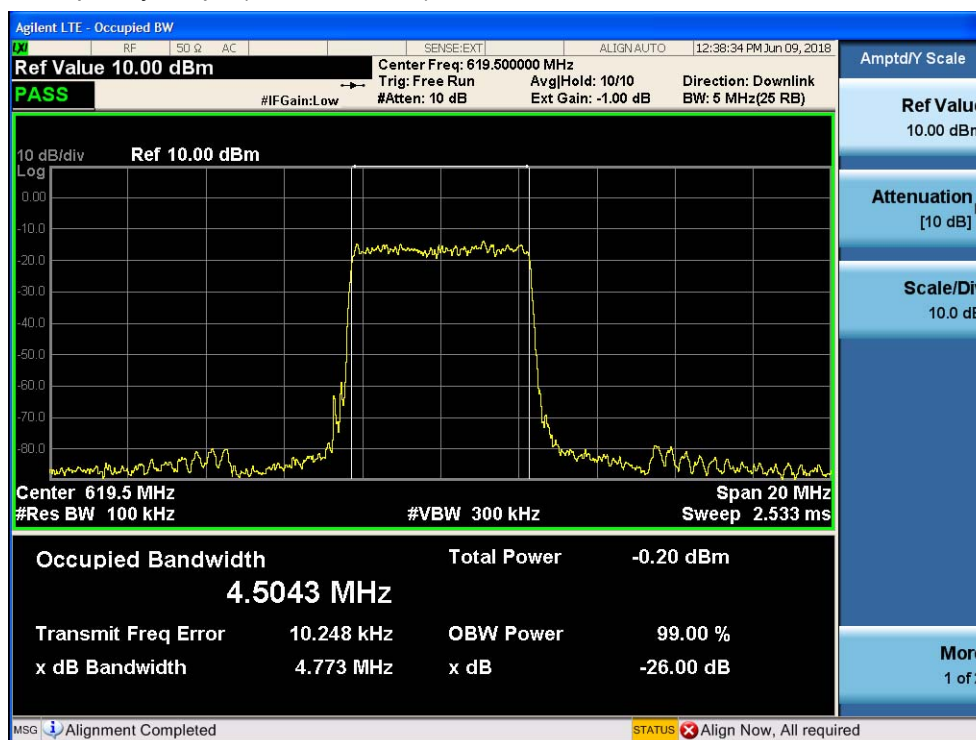
- Test Procedure:
- Set the spectrum analyzer RBW 300 Hz or $>1\%$ & $<2\%$ emission bandwidth of carrier.
 - Capture the trace of input signal;
 - Connect the equipment as illustrated;
 - Capture the trace of output signal;



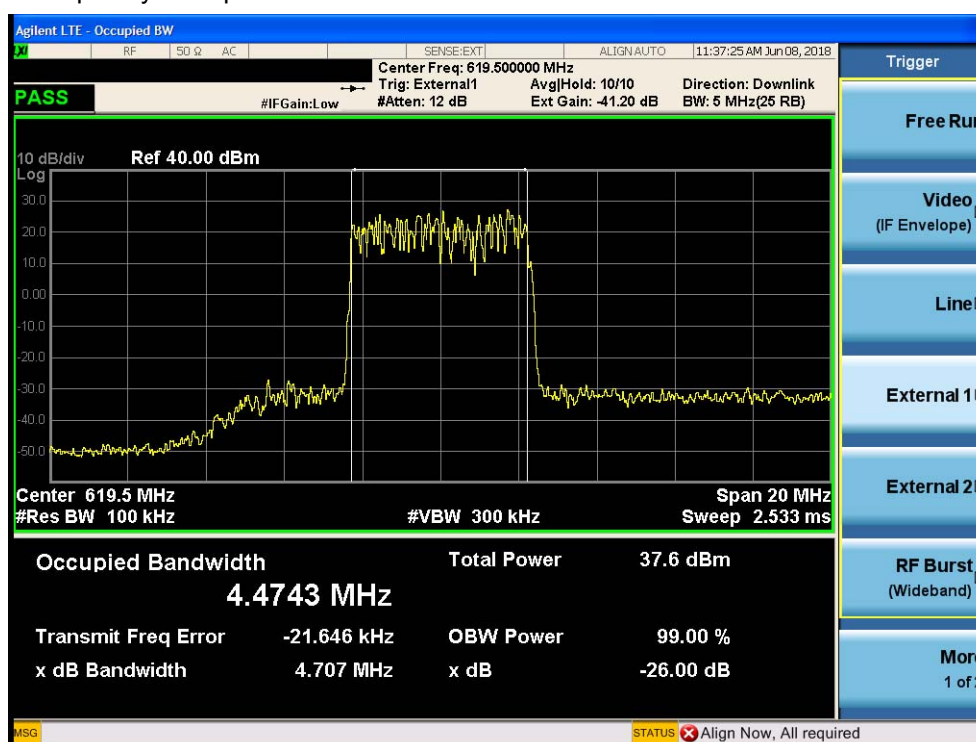
7.2.3.1 Measurement Record:

1.Downlink: 617MHz to 652MHz

1.3.1 Lowest frequency—Input(5M Modulation)

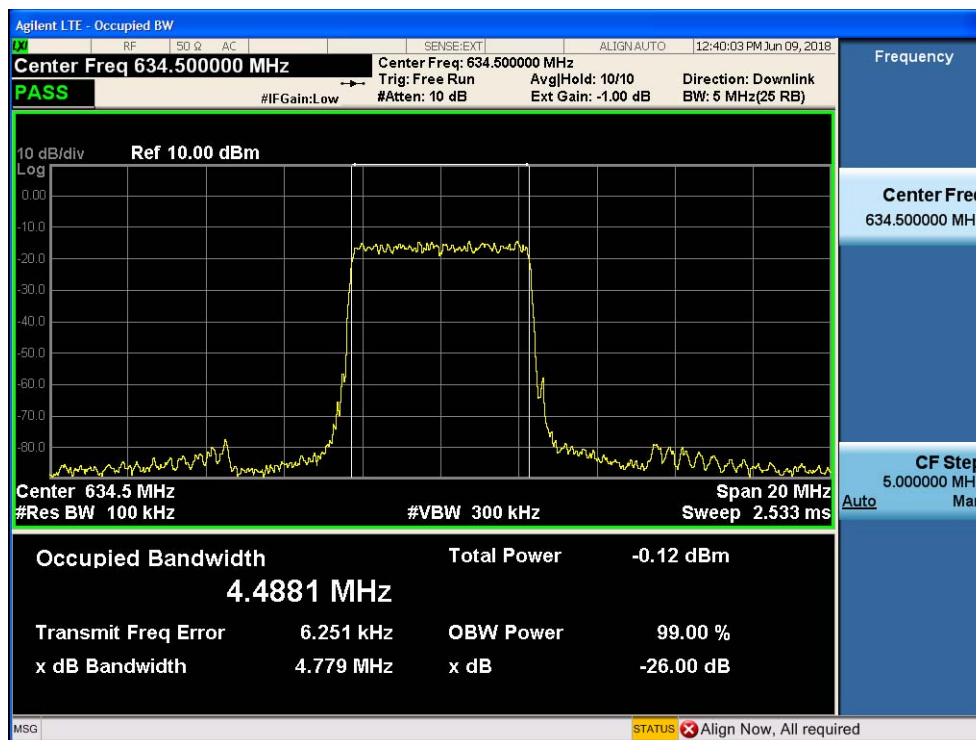


1.3.2 Lowest frequency—Output

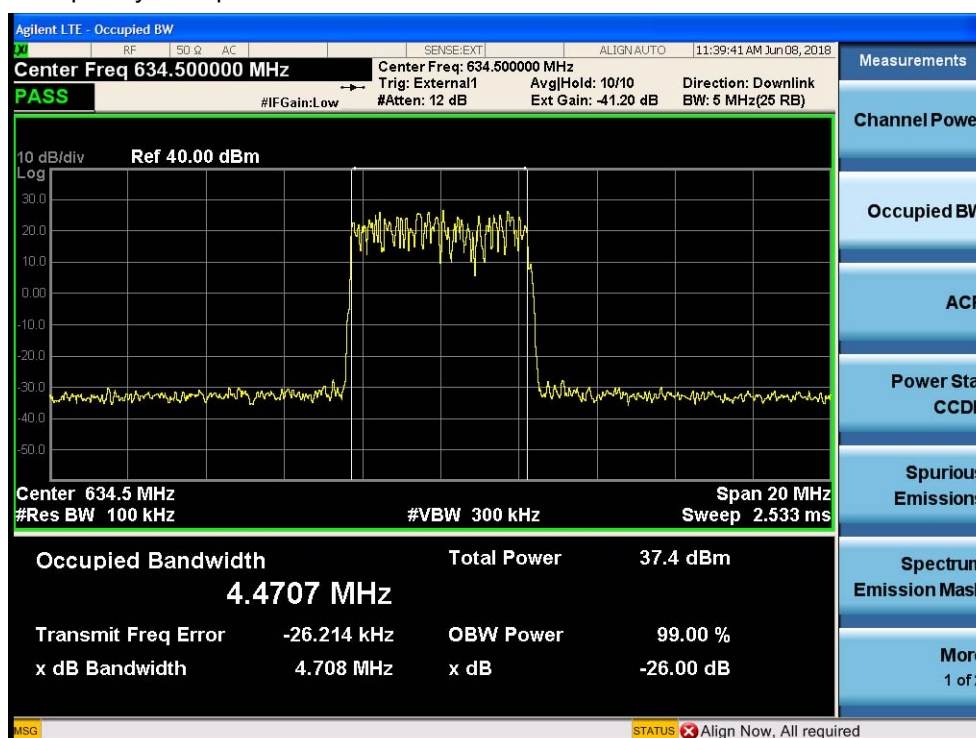




1.3.3 middle frequency-- Input

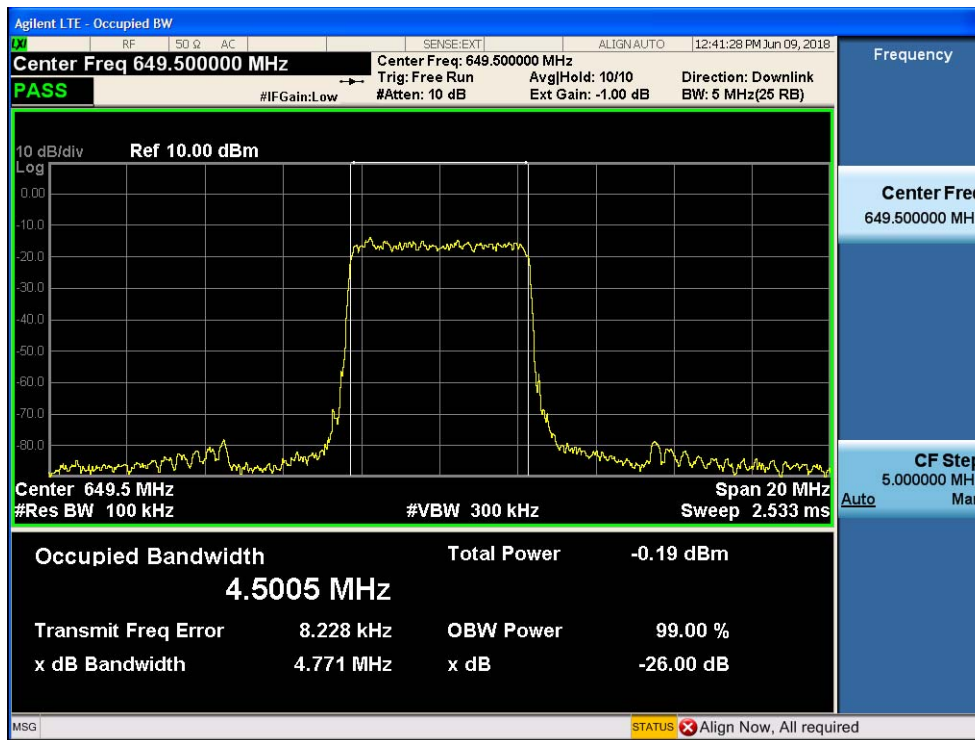


1.3.4 middle frequency-- Output

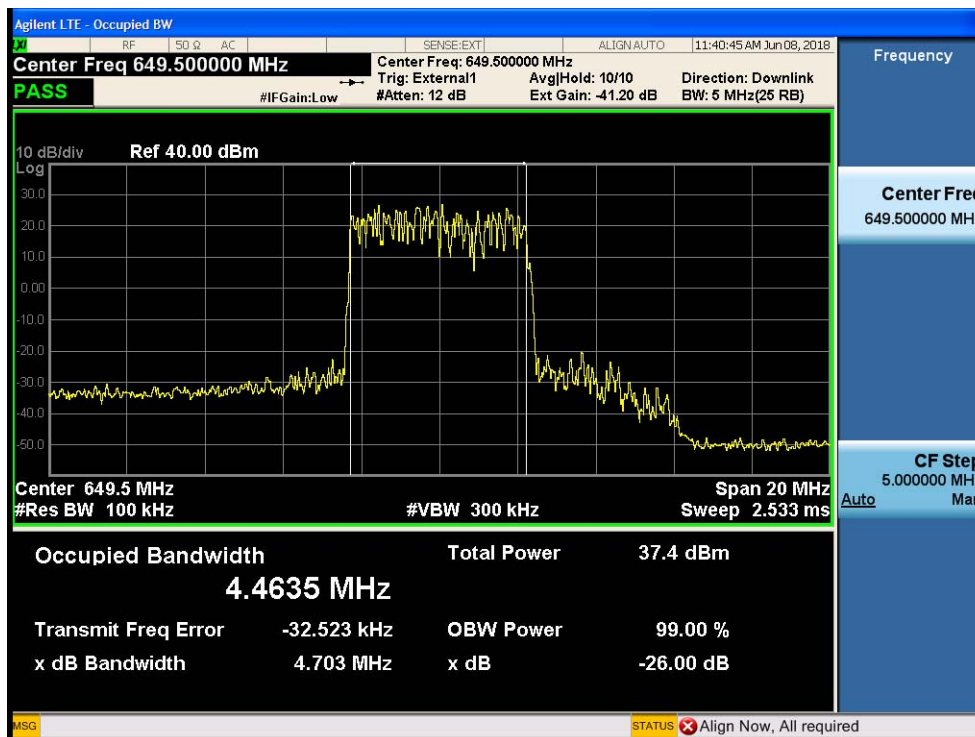




1.3.5 highest frequency-- Input

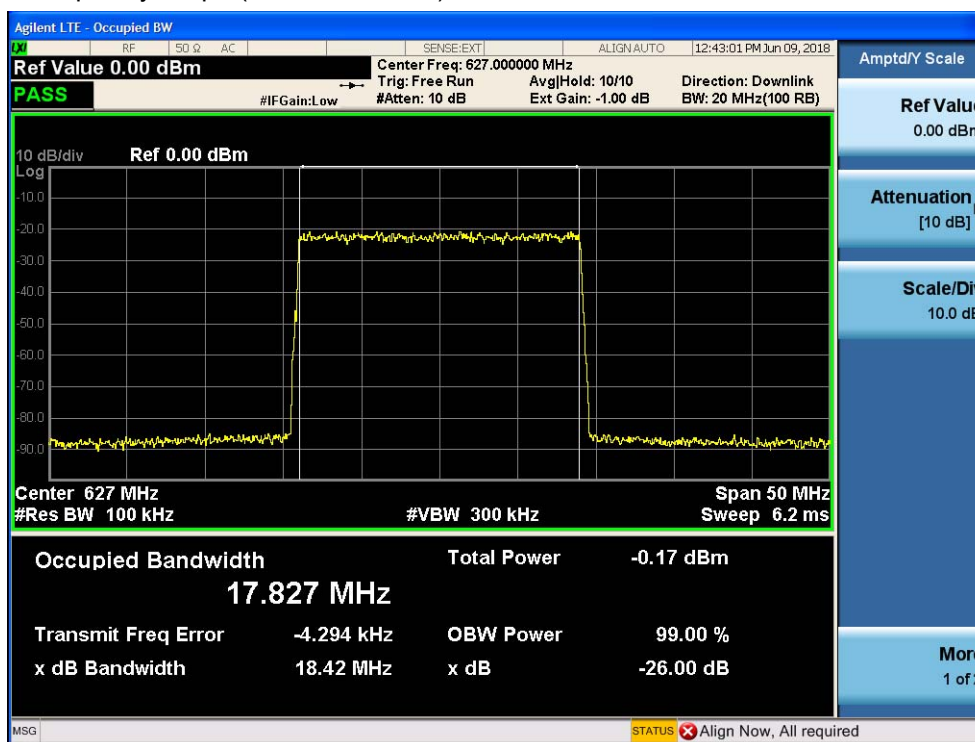


1.3.6 highest frequency-- Output

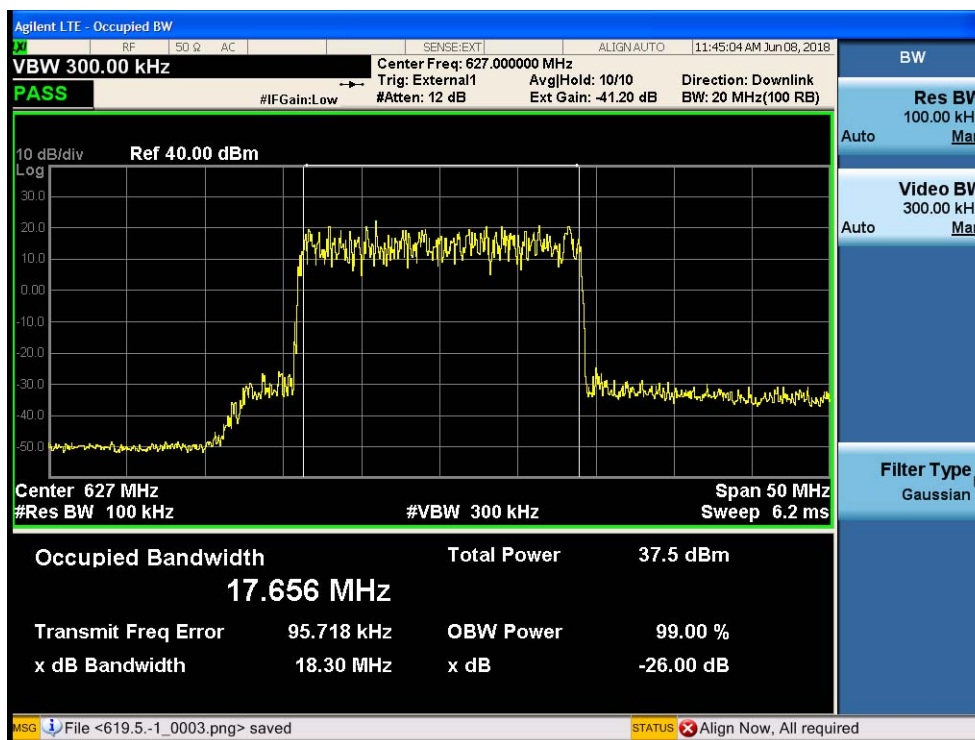




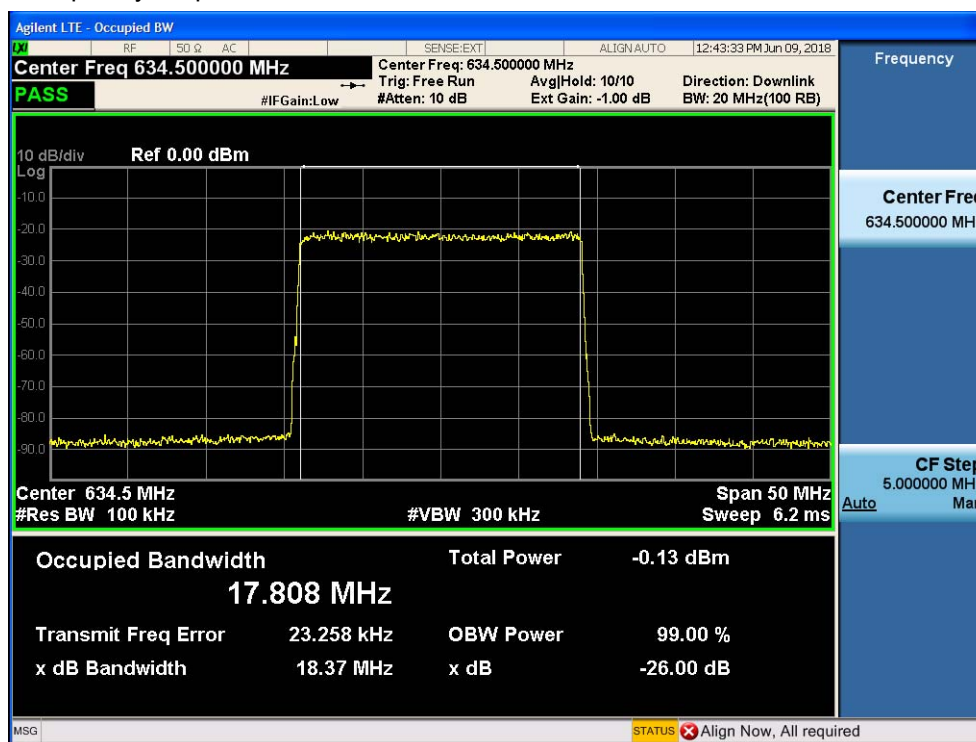
1.3.7 Lowest frequency—Input(20M Modulation)



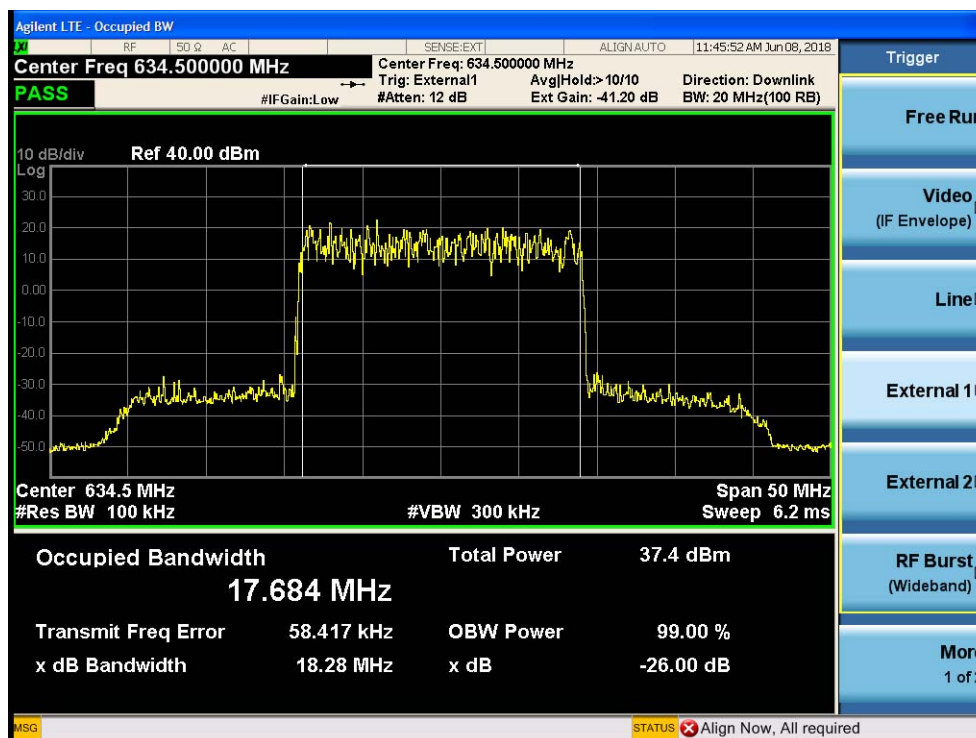
1.3.8 Lowest frequency—Output



1.3.9 middle frequency-- Input

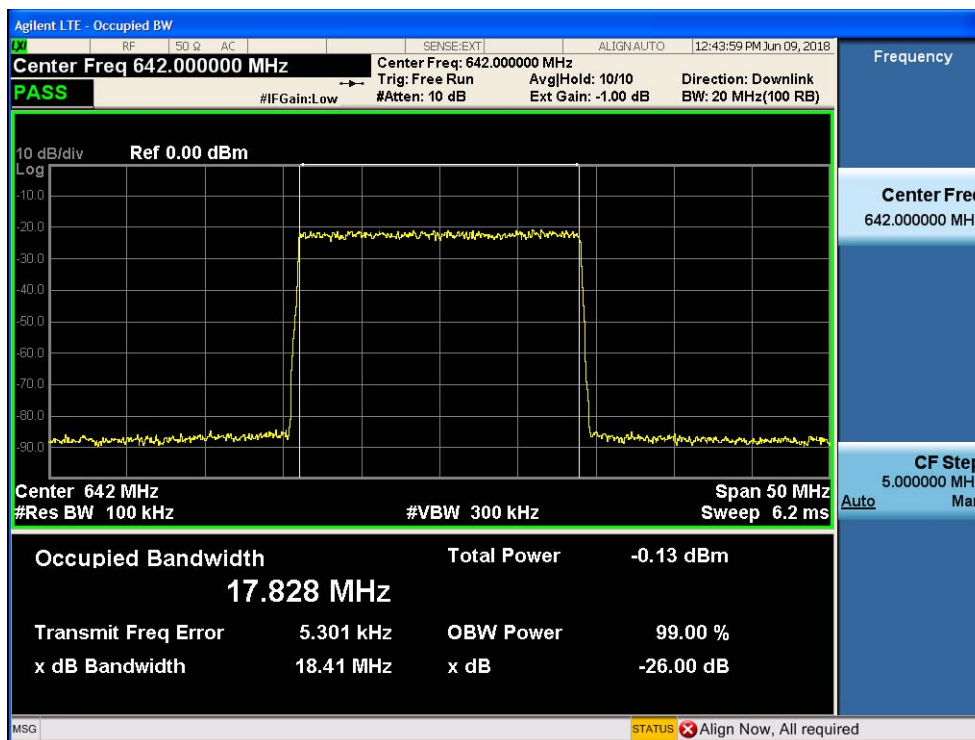


1.3.10 middle frequency-- Output

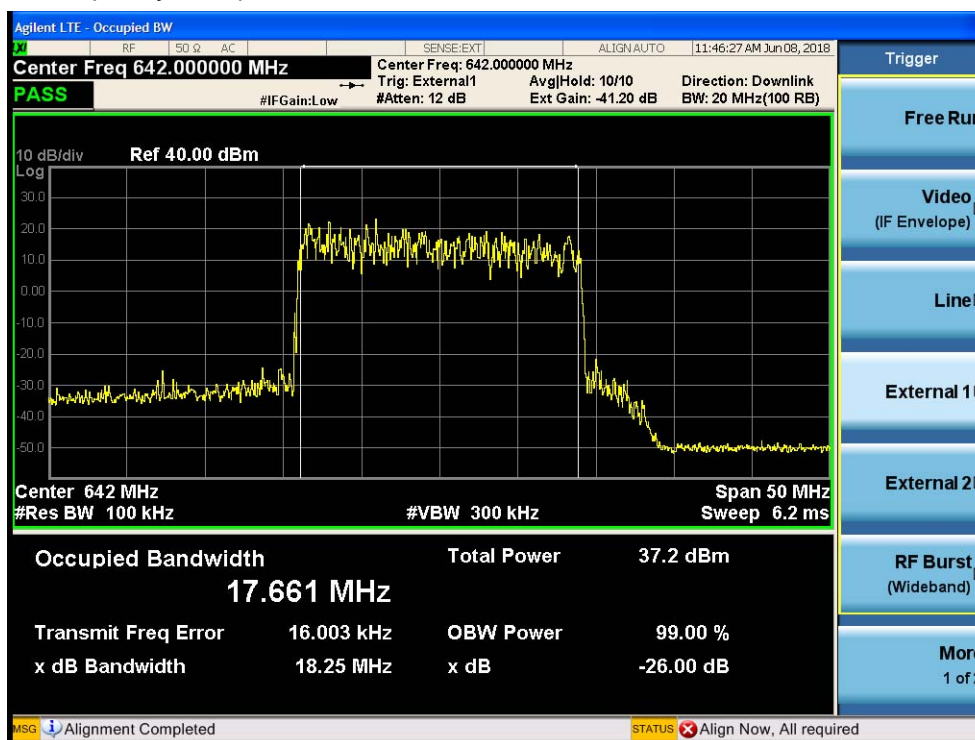




1.3.11 highest frequency-- Input



1.3.12 highest frequency-- Output





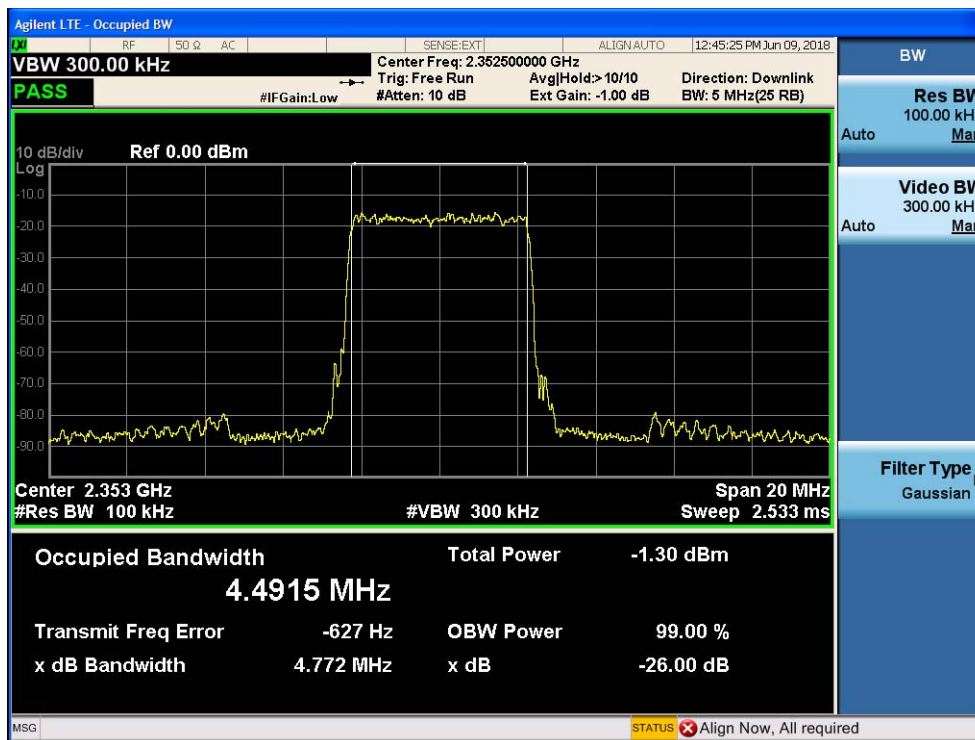
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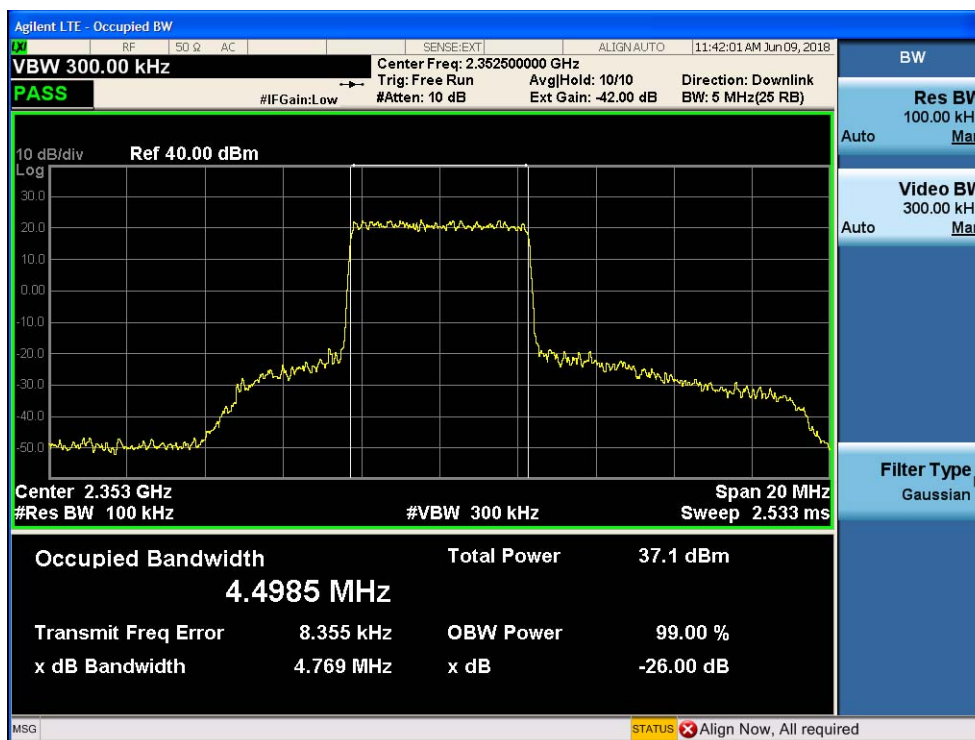
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1. Downlink: 2350 MHz to 2360 MHz (LTE mode)

1.1 lowest frequency – Input

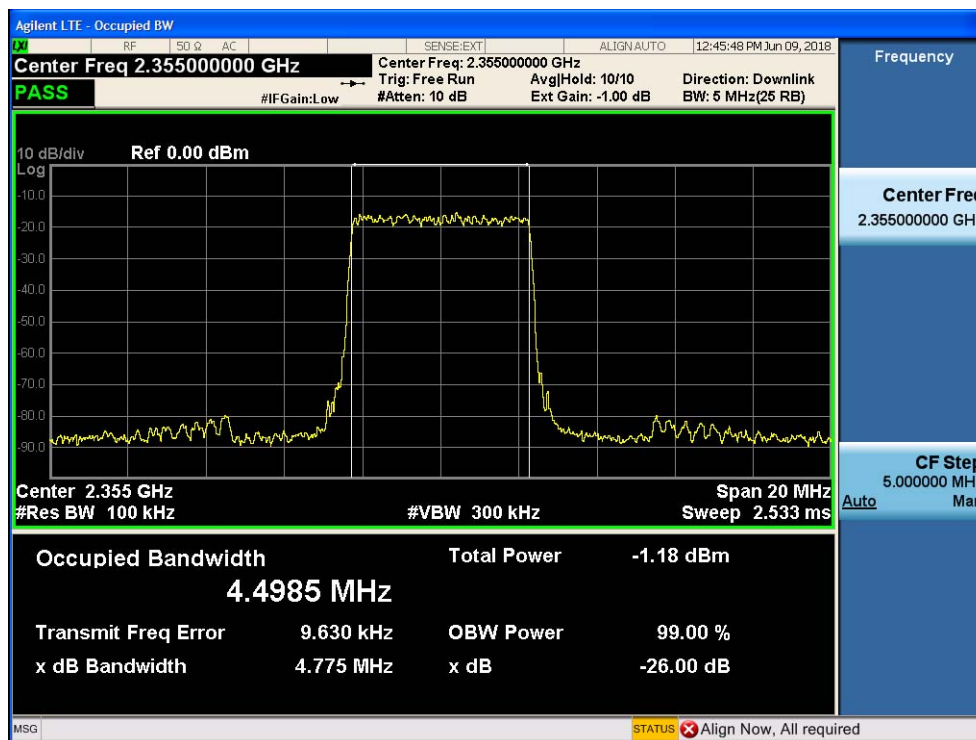


1.2 lowest frequency—Output

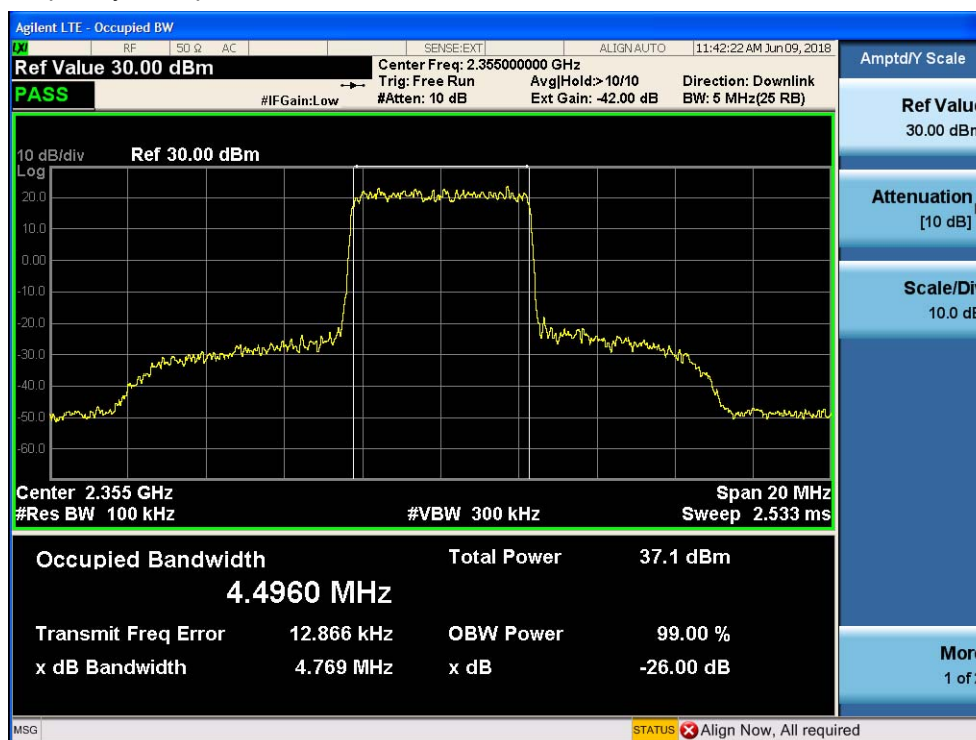




1.3 middle frequency—Input



1.4 middle frequency—Output



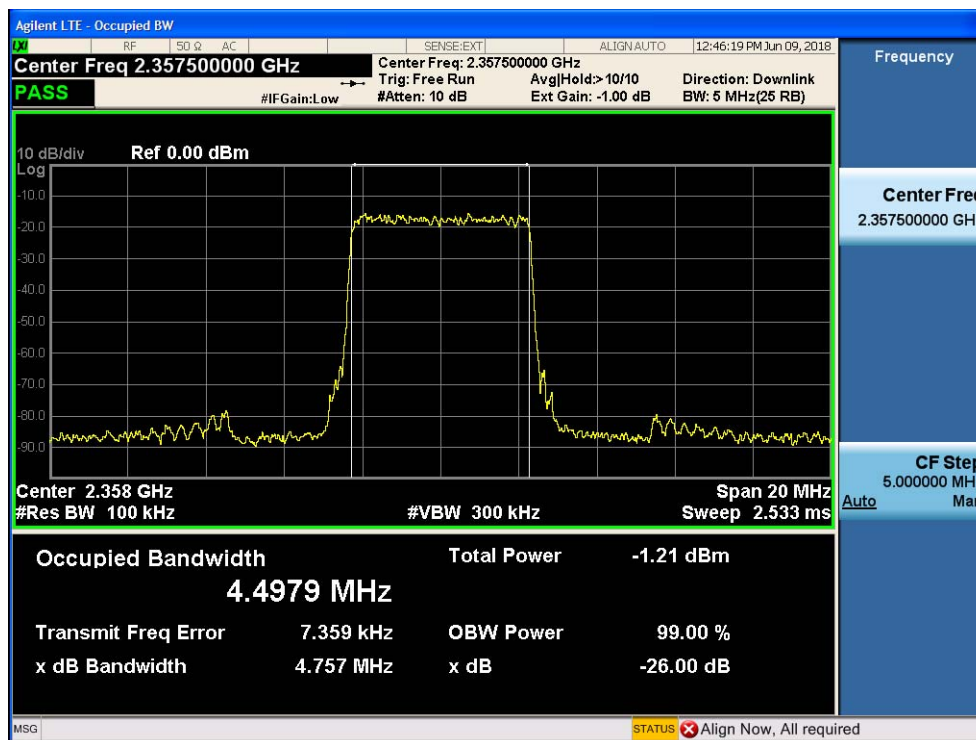


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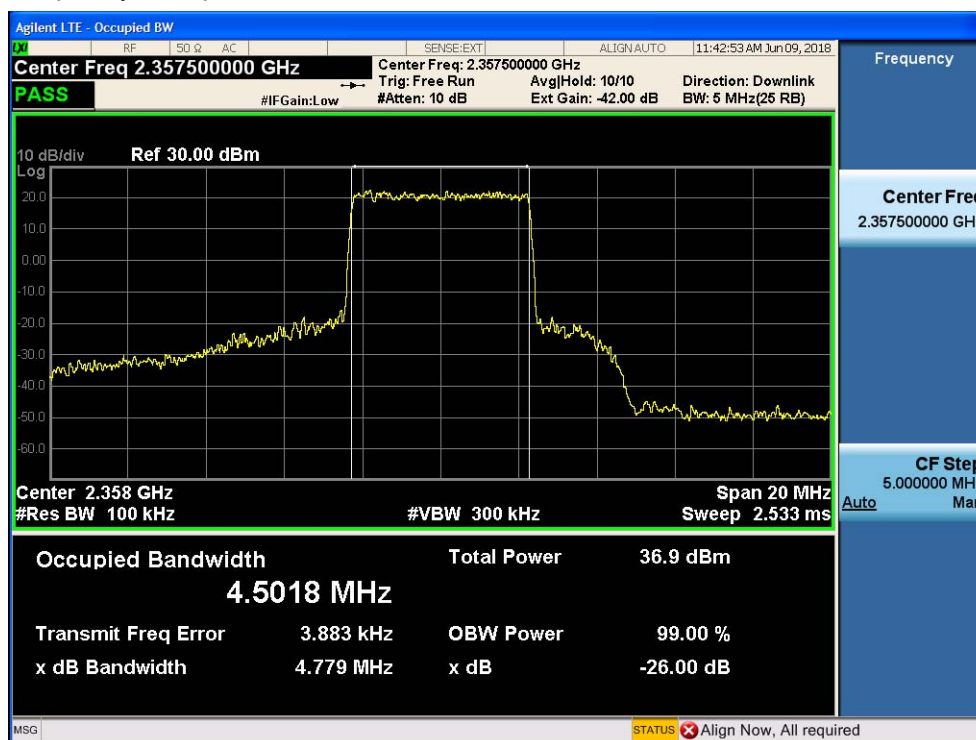
Report No.: GZEM180600312101

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1.5 highest frequency—Input

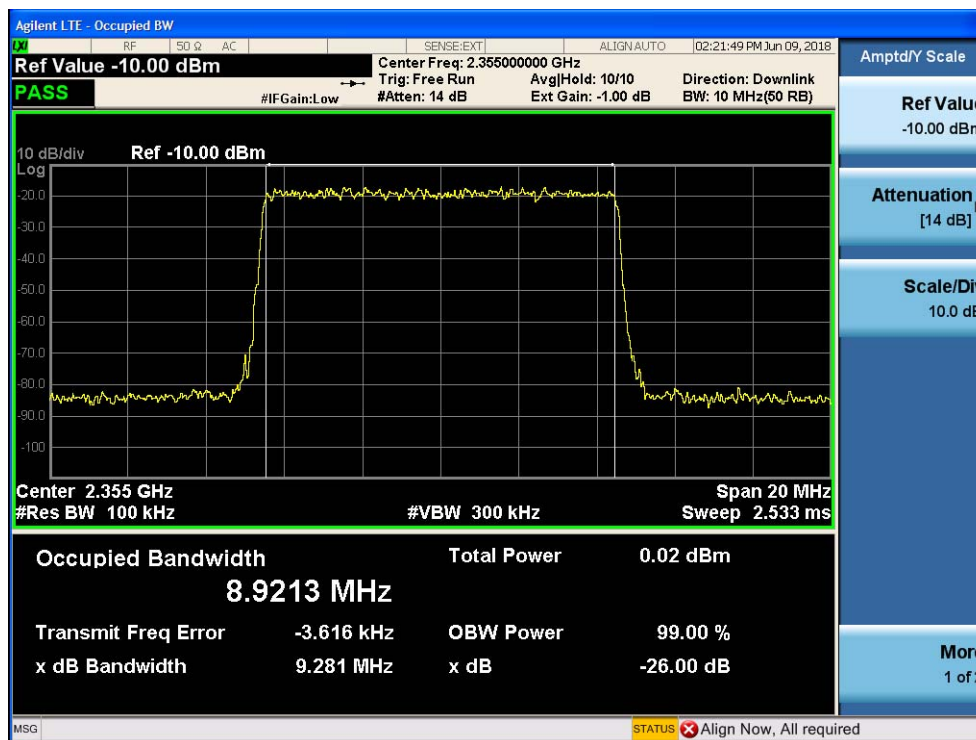


1.6 highest frequency—Output

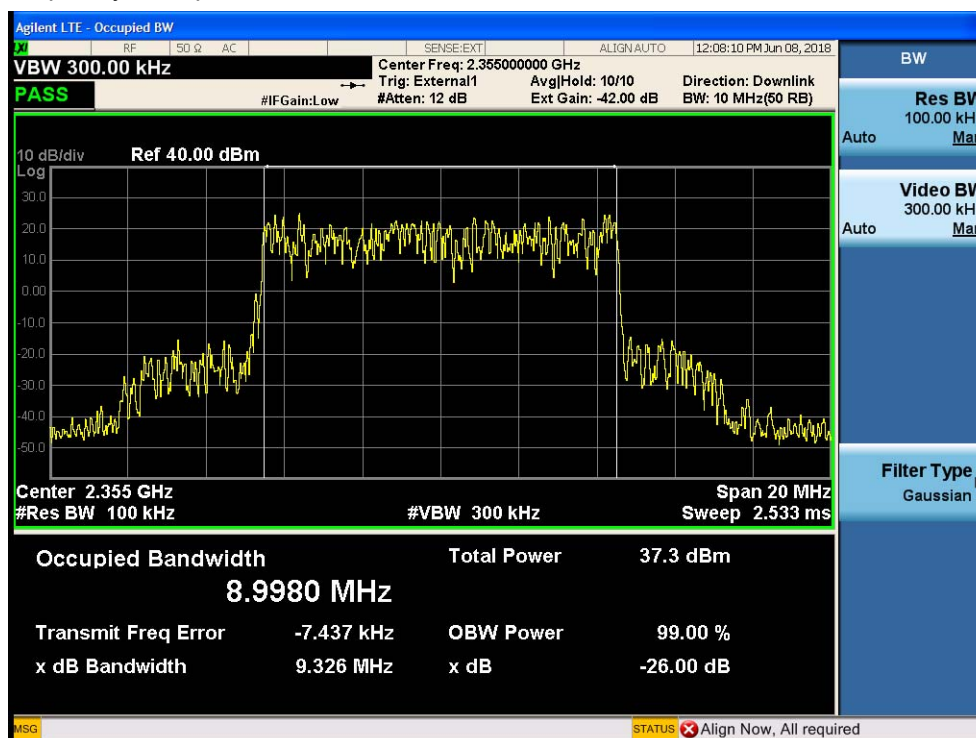




1.1 middle frequency – Input(10M Modulation)



1.2 middle frequency—Output





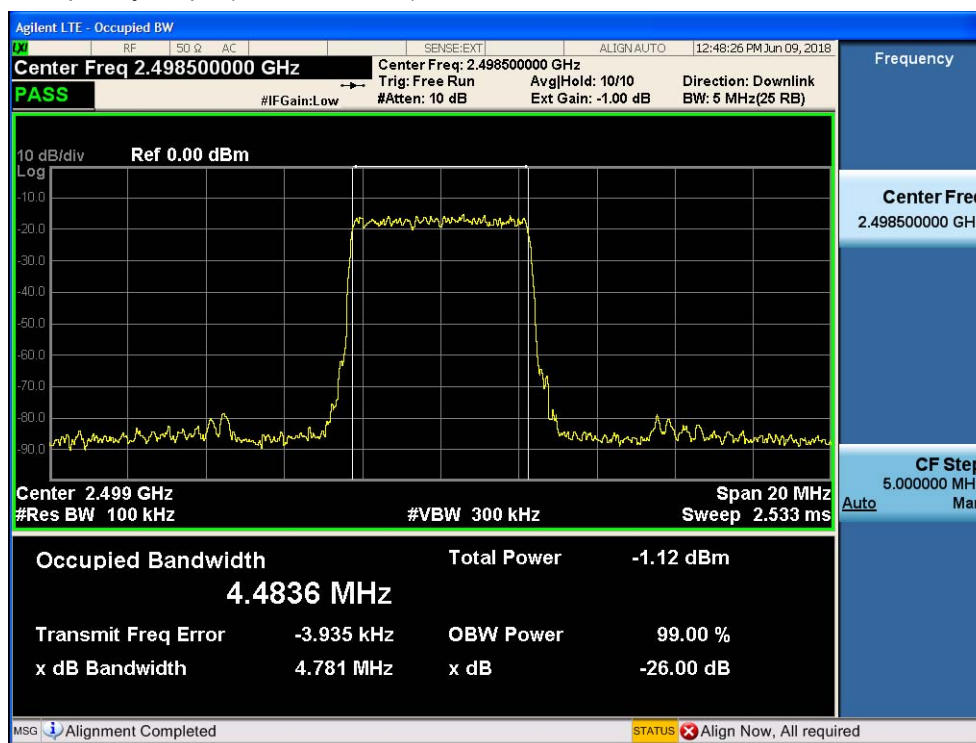
SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

Report No.: GZEM180600312101

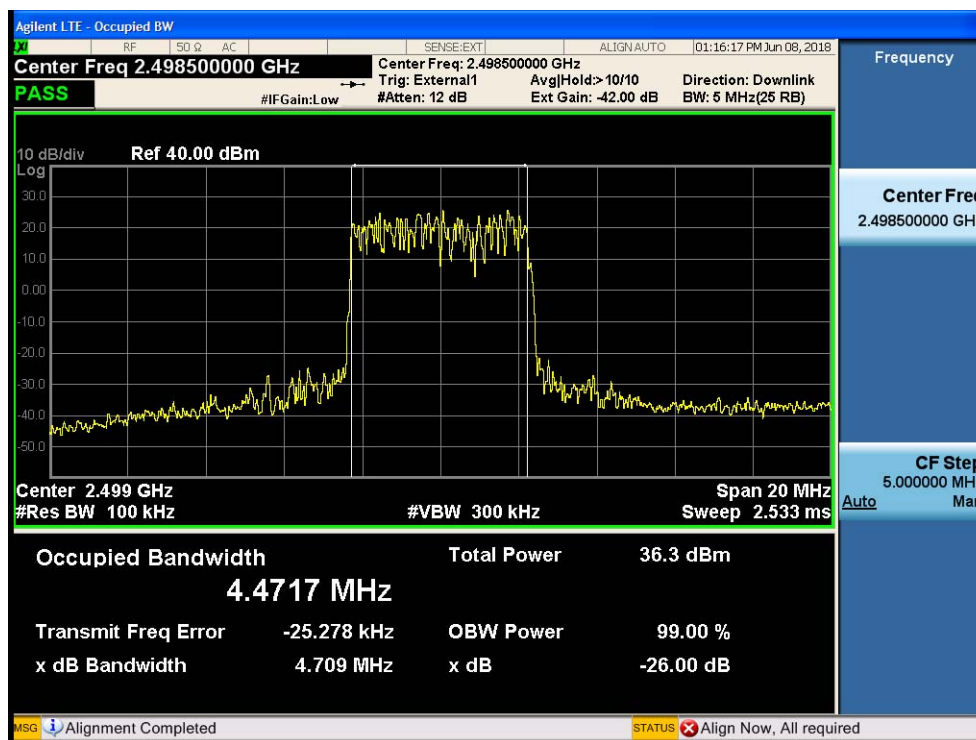
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3. Downlink: 2496MHz to 2690MHz(LTE)

3.4.1 lowest frequency— Input(5M Modulation)

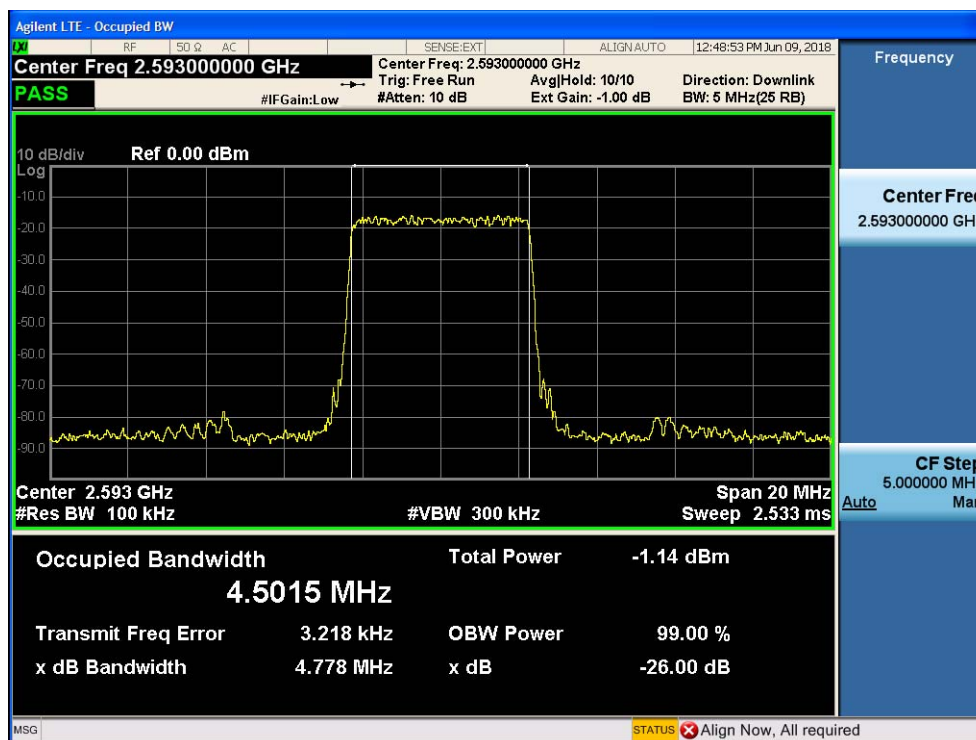


3.4.2 lowest frequency—Output

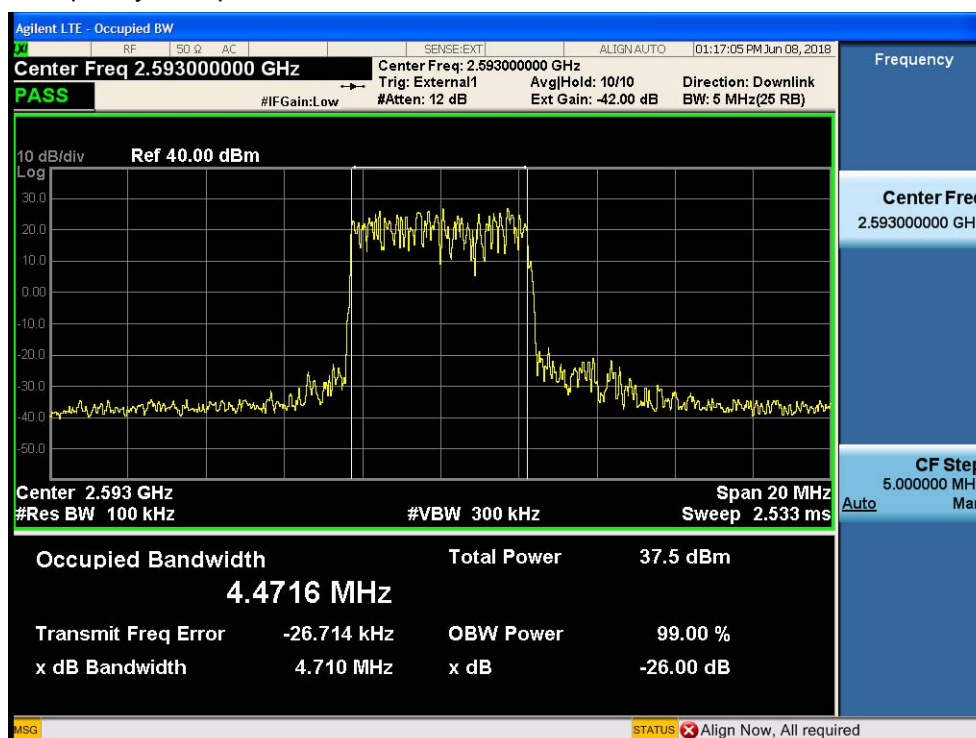




3.4.3 middle frequency—Input

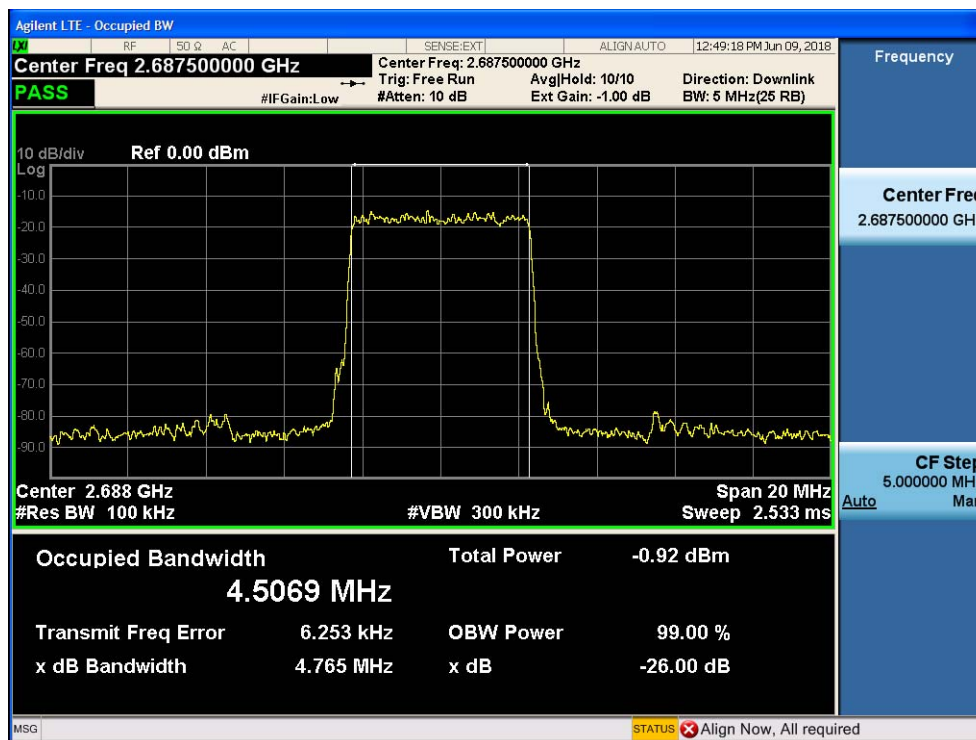


3.4.4 middle frequency—Output

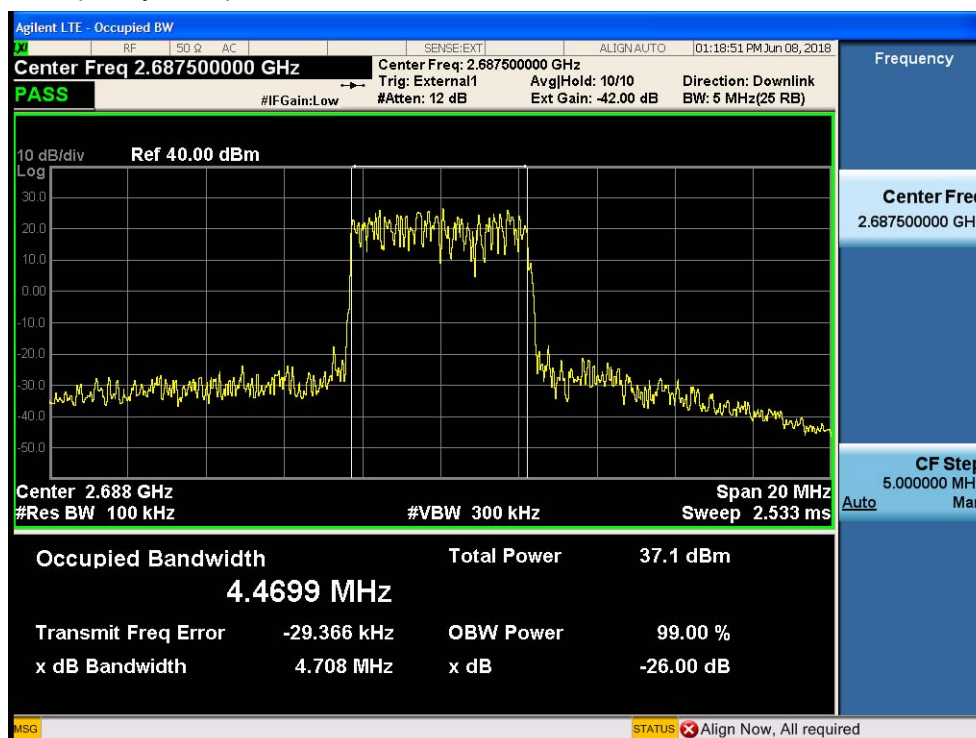




3.4.5 highest frequency—Input



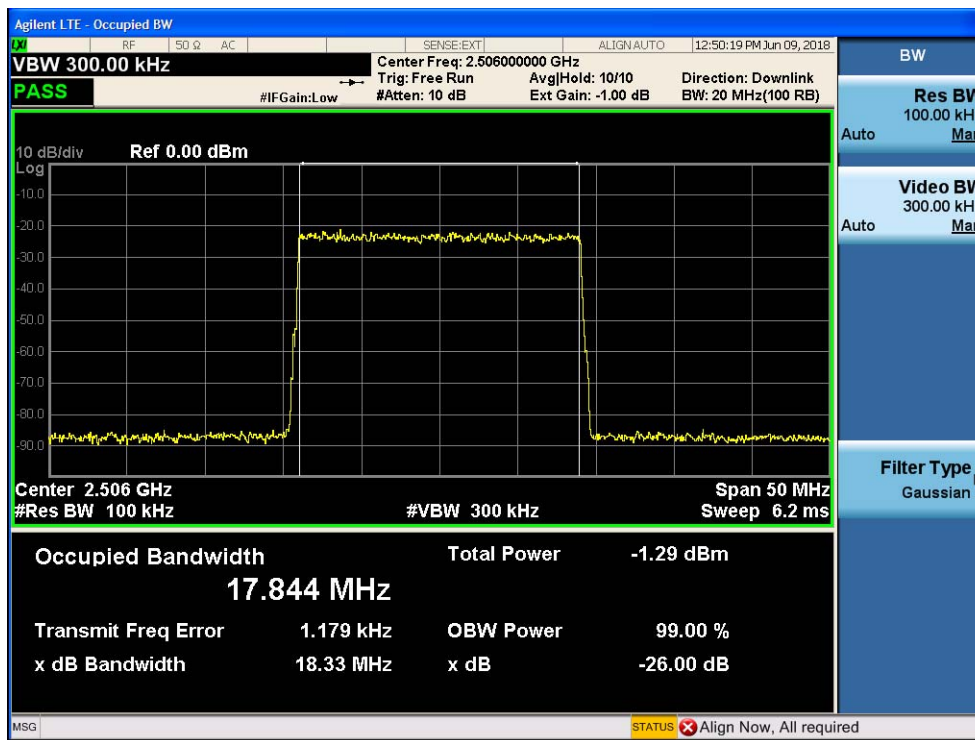
3.4.6 highest frequency—Output



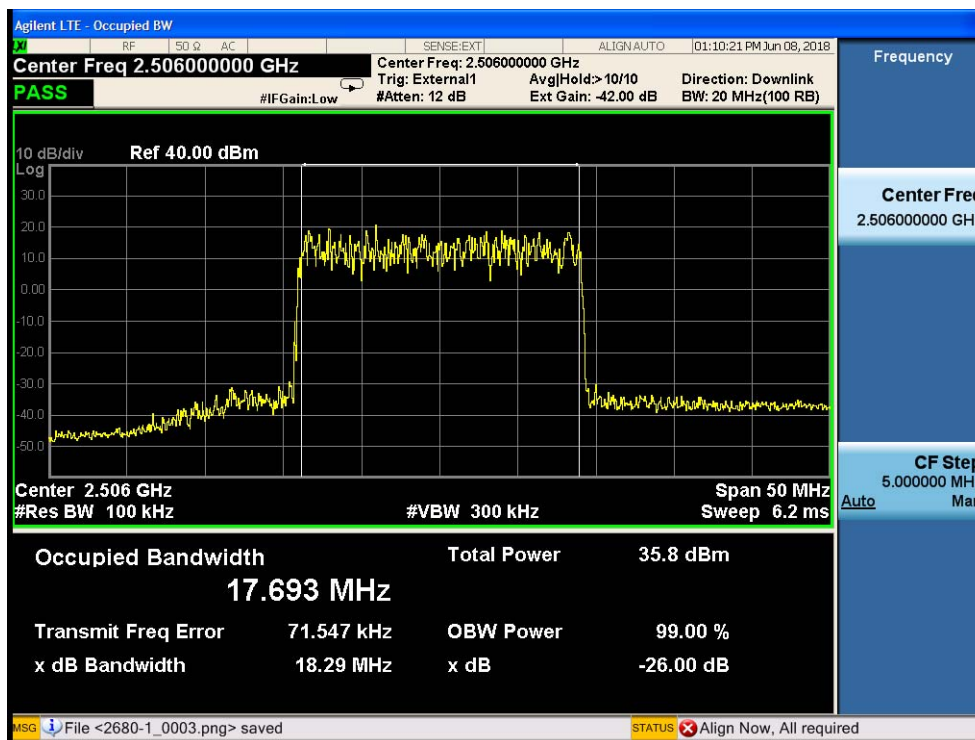


3.4 LTE Mode:20M Modulation

3.4.1 lowest frequency—Input

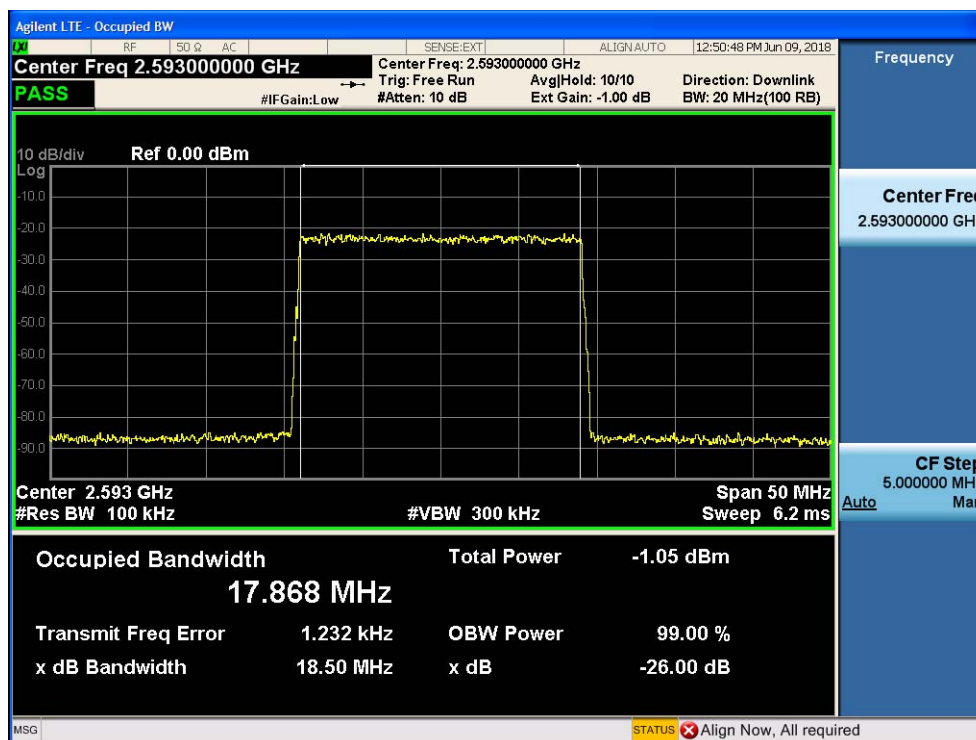


3.4.2 lowest frequency—Output

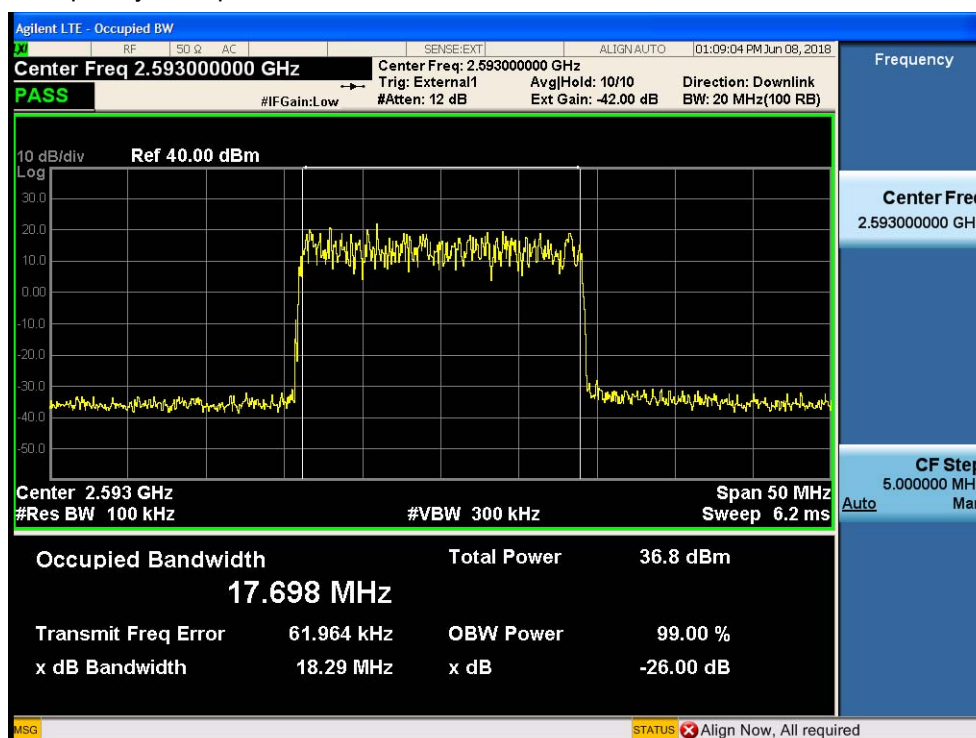




3.4.3 middle frequency—Input

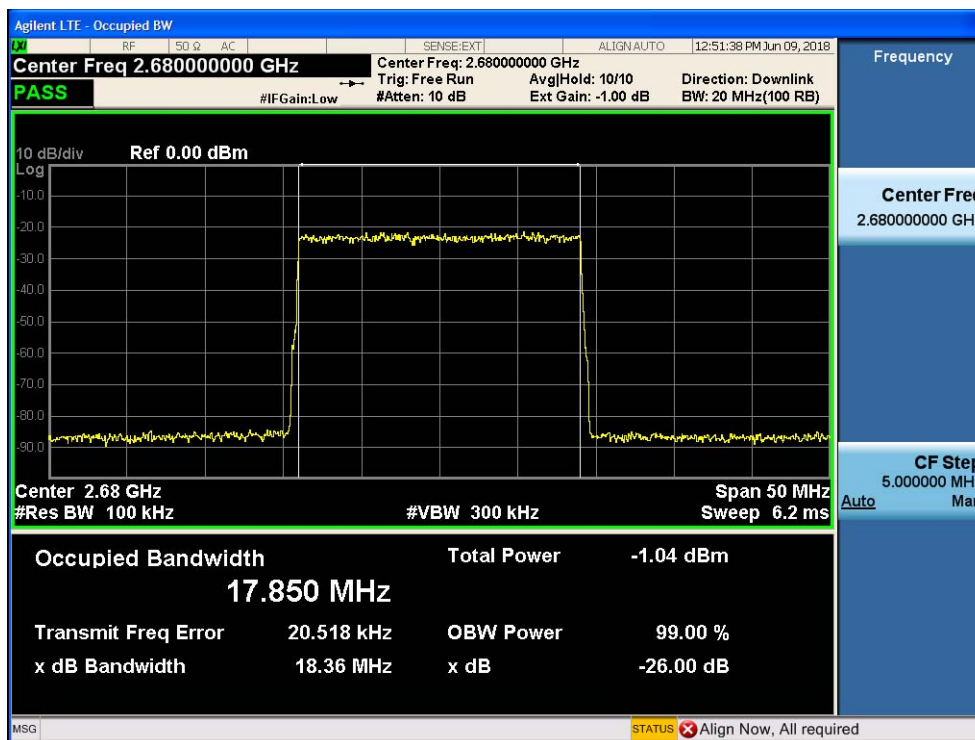


3.4.4 middle frequency—Output

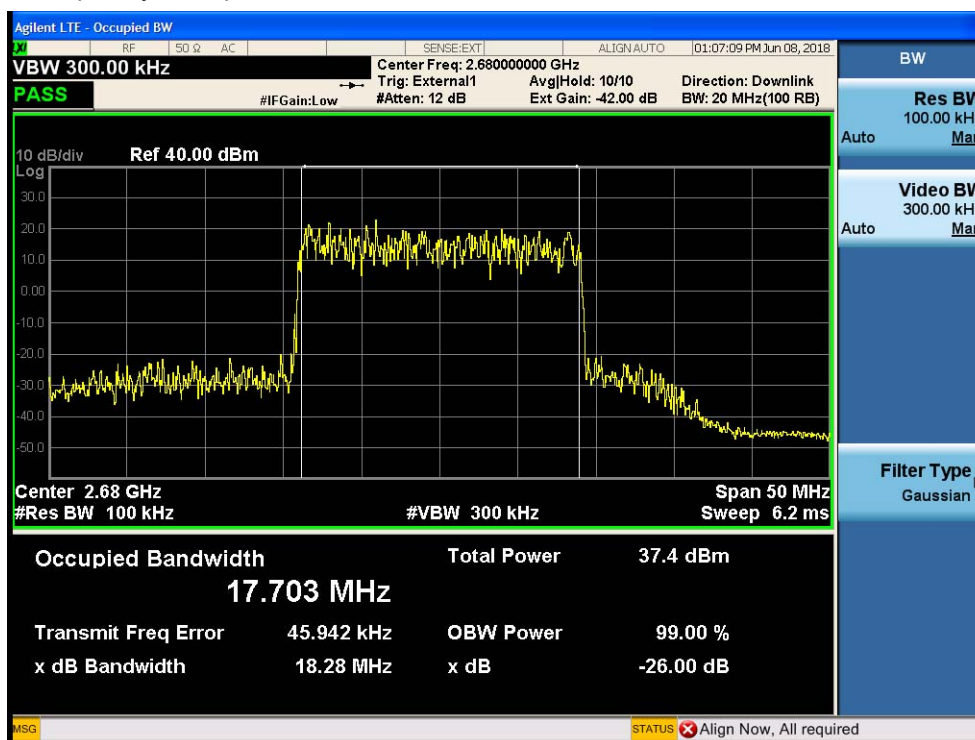




3.4.5 highest frequency—Input



3.4.6 highest frequency—Output





7.2.4 RF Output Power & PAPR

Test Requirement: FCC part 27.50(a) and part 27.50(h)

WCS:2350-2360MHz: 600MHz: 617-652MHz

(c) The following power and antenna height requirements apply to stations transmitting in the 600 MHz band and the 698-746 MHz band:

(3) Fixed and base stations transmitting a signal with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts/MHz ERP in accordance with Table 3 of this section;

Table 3 to §27.50—Permissible Power and Antenna Heights for Base and Fixed Stations in the 600 MHz, 698-757 MHz, 758-763 MHz, 776-787 MHz and 788-793 MHz Bands Transmitting a Signal With an Emission Bandwidth Greater than 1 MHz

Antenna height (AAT) in meters (feet)	Effective radiated power (ERP) per MHz (watts/MHz)
Above 1372 (4500)	65
Above 1220 (4000) To 1372 (4500)	70
Above 1067 (3500) To 1220 (4000)	75
Above 915 (3000) To 1067 (3500)	100
Above 763 (2500) To 915 (3000)	140
Above 610 (2000) To 763 (2500)	200
Above 458 (1500) To 610 (2000)	350
Above 305 (1000) To 458 (1500)	600
Up to 305 (1000)	1000

(2) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal with an emission bandwidth of 1 MHz or less must not exceed an ERP of 2000 watts and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts ERP in accordance with Table 4 of this section;

(3) Fixed and base stations transmitting a signal with an emission bandwidth greater than 1 MHz must not exceed an ERP of 1000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 1000 watts/MHz ERP in accordance with Table 3 of this section;

(4) Fixed and base stations located in a county with population density of 100 or fewer persons per square mile upon the most recently available population statistics from the Bureau of the Census, and transmitting a signal with an emission bandwidth greater than 1 MHz must not exceed an ERP of 2000 watts/MHz and an antenna height of 305 m HAAT, except that antenna heights greater than 305 m HAAT are permitted if power levels are reduced below 2000 watts/MHz ERP in accordance with Table 4 of this section;

(a) The following power limits and related requirements apply to stations transmitting in the 2305-2320 MHz band or the 2345-2360 MHz band.

(1) *Base and fixed stations.* (i) For base and fixed stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band:

(A) The average equivalent isotropically radiated power (EIRP) must not exceed 2,000 watts within any 5 megahertz of authorized bandwidth and must not exceed 400 watts



within any 1 megahertz of authorized bandwidth.

(B) The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

(ii) For base and fixed stations transmitting in the 2315-2320 MHz band or the 2345-2350 MHz band, the peak EIRP must not exceed 2,000 watts.

BRS and EBS: 2496-2690MHz

(h) The following power limits shall apply in the BRS and EBS:

(1) Main, booster and base stations.

(i) The maximum EIRP of a main, booster or base station shall not exceed 33 dBW+10log(X/Y) dBW, where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is

in the LBS and UBS following transition, except as provided in paragraph (h)(1)(ii) of this section.

(ii) If a main or booster station sectorizes or otherwise uses one or more transmitting antennas with a non-omnidirectional horizontal plane radiation pattern, the maximum EIRP in dBW in a given direction shall be determined by the following formula: EIRP = 33 dBW+10 log(X/Y) dBW +10 log(360/beamwidth) dBW, where X is the actual channel width in

MHz, Y is either (i) 6 MHz if prior to transition or the station is in the MBS following transition or (ii) 5.5 MHz if the station is in the LBS and UBS following transition, and beamwidth is the total horizontal plane beamwidth of the individual transmitting antenna for the station or any sector measured at the half-power points.

Test Method: FCC part 2.1046

EUT

Operation:

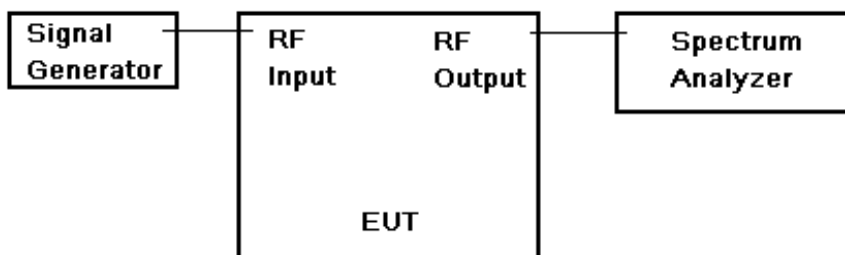
Status : Drive the EUT to maximum output power. Pretest was performed in both channels, only kept the final measurement data of worse case.

Conditions: Normal conditions

Application: Cellular Band RF output ports

Test

Configuration:



RF Output Power test configuration

Test Procedure: RF output power test procedure:

1.
 - a) Connect the equipment as illustrated, when the output power is over the max value of the Spectrum Analyzer, add the attenuator to avoid destroying the facility.
 - b) Set the center frequency of the spectrum analyzer to the assigned transmitter frequency, key the transmitter, and set the level of the carrier to the full scale reference line.
 - c) do not apply any tone to modulate the EUT.
 - d1) Adjust the spectrum analyzer for the following settings:
 - 1) Resolution Bandwidth >> the carrier bandwidth,
 - 2) Video Bandwidth refer to standard requirement.
 - d2) Use spectrum analyzer channel power measurement function;
 - e) Record the frequencies and levels of carrier power;
 - f) Calculate the signal link way loss and final power value.
- Or 2.
 - a) Connect the equipment as illustrated;
 - b) Read the value from the power meter;
 - c) Calculate the signal link way loss and final power value.

Calculating Gain

After the output power have been measured, the gain of the EUT can be determined from :

$$\text{Gain (dB)} = \text{output power (dBm)} - \text{input power (dBm)}.$$



7.2.4.1 Measurement Record:

The graph will be showed at later page

Downlink: 617MHz ~652MHz(5M Modulation)

Test items	Modulation	Lowest frequency	Middle frequency	Highest frequency
Output Power	LTE	37.84dBm	37.73dBm	36.95dBm
PAPR	LTE	6.89dB	6.80 dB	6.99 dB

Downlink: 617MHz ~652MHz(20M Modulation)

Test items	Modulation	Lowest frequency	Middle frequency	Highest frequency
Output Power	LTE	37.83dBm	37.69dBm	37.45dBm
PAPR	LTE	7.87dB	7.84dB	8.18dB

Downlink: 2350MHz ~2360MHz(5M Modulation)

Test items	Modulation	Lowest frequency	Middle frequency	Highest frequency
Output Power	LTE	36.65dBm	36.57dBm	36.46dBm
PAPR	LTE	7.55dB	7.62dB	7.65dB

Downlink: 2350MHz ~2360MHz(10M Modulation)

Test items	Modulation	Middle frequency		
Output Power	LTE	37.33dBm		
PAPR	LTE	7.31dB		

Downlink: 2496MHz ~ 2690MHz(5M Modulation)

Test items	Modulation	Lowest frequency	Middle frequency	Highest frequency
Output Power	LTE	34.89dBm	36.05dBm	36.42dBm
PAPR	LTE	5.85dB	5.79dB	5.39 dB

Downlink: 2496MHz ~ 2690MHz(20M Modulation)

Test items	Modulation	Lowest frequency	Middle frequency	Highest frequency
Output Power	LTE	36.36dBm	36.69dBm	35.85dBm
PAPR	LTE	7.80 dB	8.19dB	8.36 dB

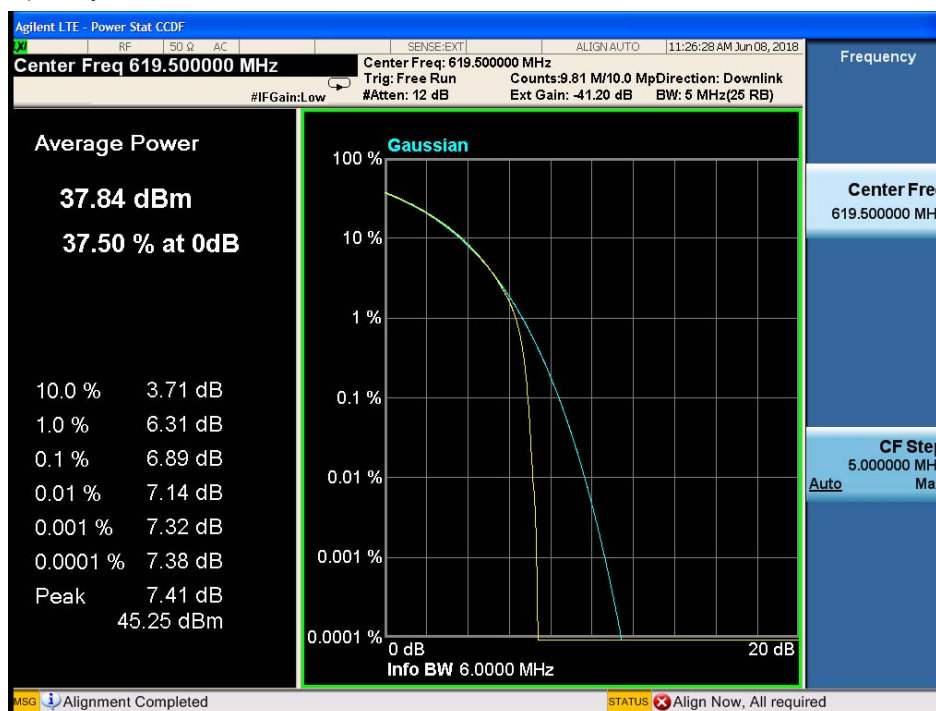


7.2.4.2 Measurement Record:

1) Output power

1.Downlink:617MHz to 652MHz(5M Modulation)

1.1 lowest frequency



1.2 middle frequency