

FCC Test Report

(PART 2/20/24/27)

Report No.: RF181212C37

FCC ID: OUIFDSP19U21U

Test Model: IFDSP19U21U

Received Date: Dec. 12, 2018

Test Date: Jan. 04 ~ Jan. 18, 2019

Issued Date: Jan. 23, 2019

Applicant: TranSystem INC.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City
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FCC Registration / 788550 / TW0003

Designation Number:



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Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty	6
2.2 Test Site and Instruments	7
3 General Information	9
3.1 General Description of EUT	9
3.2 Configuration of System under Test	10
3.2.1 Description of Support Units	10
3.3 Test Mode Applicability and Tested Channel Detail	11
3.4 EUT Operating Conditions	12
3.5 Test Setup	12
3.6 Procedure for AGC	13
3.7 Automatic Gain Control Levels	14
3.8 General Description of Applied Standards	15
4 Test Types and Results	16
4.1 Effective Radiated Power, Mean Output Power and Zone Enhancer Gain	16
4.1.1 Test Requirements / Limits	16
4.1.2 Test Procedures	16
4.1.3 Test Setup	16
4.1.4 Test Results	17
4.2 Peak to Average Ratio	38
4.2.1 Test Requirements / Limits	38
4.2.2 Test Procedure	38
4.2.3 Test Setup	38
4.2.4 Test Results	39
4.3 Occupied Bandwidth / Input–Versus-Output Spectrum	47
4.3.1 Test Requirements / Limits	47
4.3.2 Test Procedure	47
4.3.3 Test Setup	47
4.3.4 Test Result	48
4.4 Conducted Spurious Emission at Antenna Terminal	62
4.4.1 Test Requirements / Limits	62
4.4.2 Test Procedure	62
4.4.3 Test Setup	62
4.4.4 Test Result	63
4.5 Out-of-Band / Out-of-Block (Including Intermodulation) Emissions Limits	75
4.5.1 Test Requirements / Limits	75
4.5.2 Test Procedure	75
4.5.3 Test Setup	75
4.5.4 Test Result	76
4.6 Out-of-Band Rejection	132
4.6.1 Test Requirements / Limits	132
4.6.2 Test Procedure	132
4.6.3 Test Setup	132
4.6.4 Test Result	133
4.7 Frequency Stability	135
4.7.1 Limits of Oscillation Detection Measurement	135
4.7.2 Test Procedure	136
4.7.3 Test Setup	136
4.7.4 Test Result	136

4.8	Field Strength of Spurious Radiation	137
4.8.1	Test Requirements / Limits	137
4.8.2	Test Procedure	137
4.8.3	Deviation from Test Standard	137
4.8.4	Test Setup	138
4.8.5	Test Results	139
5	Pictures of Test Arrangements	191
	Appendix – Information of the Testing Laboratories	192

Release Control Record

Issue No.	Description	Date Issued
RF181212C37	Original release	Jan. 23, 2019

1 Certificate of Conformity

Product: sDAS+

Brand: TranSystem

Test Model: IFDSP19U21U

Sample Status: Engineering sample

Applicant: TranSystem INC.

Test Date: Jan. 04 ~ Jan. 18, 2019

Standards: FCC Part 2, FCC Part 20, FCC Part 24E, FCC Part 27L
ANSI C63.26:2015 and KDB 935210 D05 v01r02

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Pettie Chen, **Date:** Jan. 23, 2019
Pettie Chen / Senior Specialist

Approved by : Bruce Chen, **Date:** Jan. 23, 2019
Bruce Chen / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 2/20/24/27			
Clause	Test Item	Result	Remarks
2.1046 24.232 27.50 KDB 935210 D05 v01r02:3.5	Effective Radiated Power, Mean Output Power and Zone Enhancer Gain	Pass	Meet the requirement of limit.
24.232 27.50	Peak to Average Ratio	Pass	Meet the requirement of limit.
2.1049 KDB 935210 D05 v01r02:3.4	Occupied Bandwidth / Input-Versus-Output Spectrum	Pass	Meet the requirement of limit.
2.1051 24.238 27.53 KDB 935210 D05 v01r02 Section 3.6	Conducted Spurious Emission at Antenna Terminal	Pass	Meet the requirement of limit.
24.238 27.53 KDB 935210 D05 v01r02:3.6	Out-of-Band / Out-of-Block Emissions Limits	Pass	Meet the requirement of limit.
2.1055 24.235 27.54	Frequency Stability	Not Required	The EUT does not alter the input signal in any way.
2.1053 24.238 27.53	Field Strength of Spurious Radiation	Pass	Meet the requirement of limit. Minimum passing margin is -4.8dB at 8450.00MHz.
KDB 935210 D05 v01r02:3.3	Out-of-Band Rejection	Pass	Meet the requirement of limit.

NOTE: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

For the test methods, according to ANSI C63.26 standard, the measurement uncertainty figures shall be calculated in accordance with ETSI TR 100 028-1 (2001-12) and ETSI TR 100 028-2 (2001-12) and shall correspond to an expansion factor (coverage factor) $k = 1.96$ or $k = 2$ (which provide confidence levels of respectively 95 % and 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian))

Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Parameter	Uncertainty
Radio Frequency	$\pm 1.13 \times 10^{-8}$
RF power, conducted	± 0.65 dB
Radiated emission, up to 1 GHz	± 5.0 dB
Radiated emission, above 1 GHz	± 5.0 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 11, 2018	Apr. 10, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	May 29, 2018	May 28, 2019
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 21, 2018	Nov. 20, 2019
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 25, 2018	Nov. 24, 2019
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Aug. 08, 2018	Aug. 07, 2019
Preamplifier Agilent (Above 1GHz)	8449B	3008A01638	Feb. 22, 2018	Feb. 21, 2019
Pre-amplifier (18GHz- 40GHz) EMC	EMC184045B	980175	Nov. 14, 2018	Nov. 13, 2019
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 21, 2018	Aug. 20, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	Aug. 08, 2018	Aug. 07, 2019
RF signal cable Woken	8D-FB	Cable-CH9-01	Jul. 31, 2018	Jul. 30, 2019
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 04, 2018	Jun. 03, 2019
Spectrum Analyzer Keysight	N9030A	MY53120770	Jan. 19, 2018	Jan. 18, 2019
MXG Vector signal generator KEYSIGHT	N5182B	MY53052282	Dec. 24, 2018	Dec. 23, 2019
Vector signal generator Agilent	E4438C	MY47271120	Nov. 06, 2018	Nov. 05, 2019
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA

- Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 9.
 3. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
 4. The IC Site Registration No. is 7450F-9.

3 General Information

3.1 General Description of EUT

Product	sDAS+
Brand	TranSystem
Test Model	IFDSP19U21U
Status of EUT	Engineering sample
Power Supply Rating	48Vdc (PoE)
Operating Frequency	Downlink Extended PCS, 1930~1995MHz (band 25) Extended AWS, 2110~2180MHz (band 66)
Max. EIRP Power	Band 25: 2454.709mW (33.90dBm) Band 66: 1513.561mW(31.80dBm)
Antenna Type	Panel antenna with 9dBi gain Omni antenna with 4dBi gain
Antenna Connector	N-female
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. The EUT is a RAU.

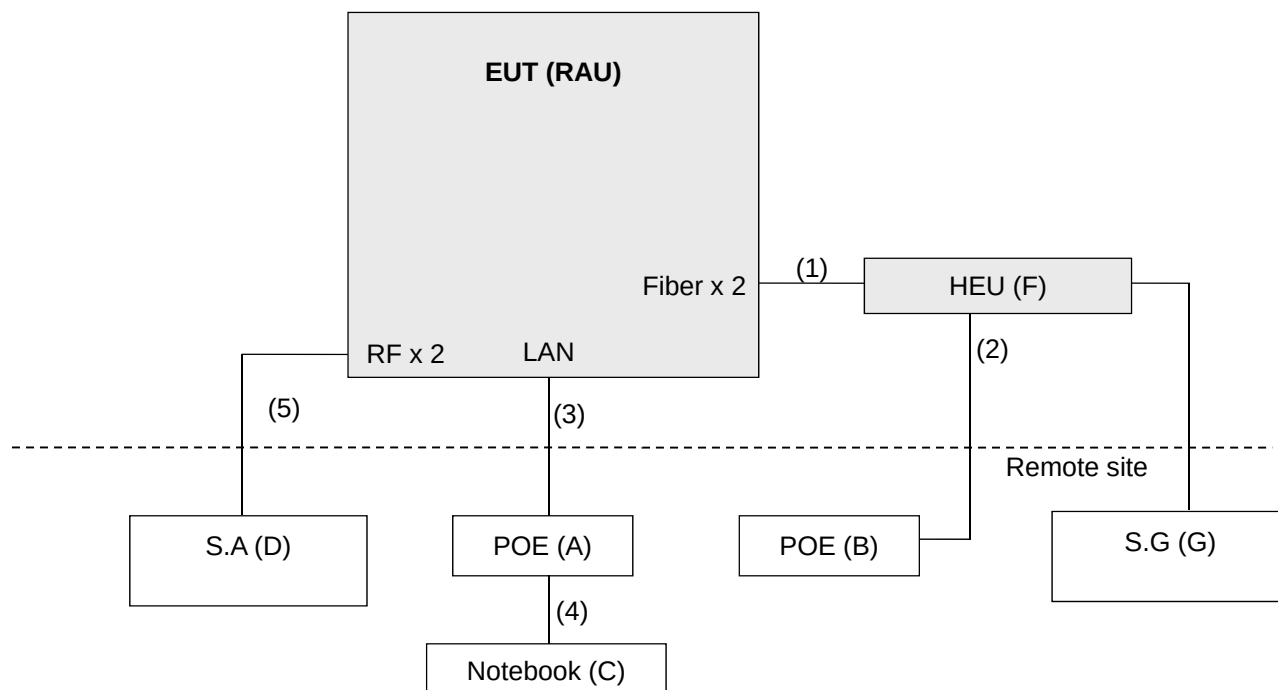
Brand	Model	Description
TranSystem	IFDSP19U21U	RAU-25/66_01NC (External N-type connector)
		RAU-25/66_01OA (Built-in Omni antenna)

2. The EUT consumes power from the following POE. (Support unit only)

POE	
Brand	CINCON ELECTRONICS., LTD.
Model	TR60A-POE-L
Input Power	100-240Vac, ~1.5A, 47-63Hz
Output Power	48Vdc, 1.2A

3. SW version is REV: 1.1.5
4. HW version is REV: A00
5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or User's Manual.

3.2 Configuration of System under Test



3.2.1 Description of 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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	POE	CINCON ELECTRONICS., LTD.	TR60A-POE-L	NA	NA	Provided by client
B.	POE	CINCON ELECTRONICS., LTD.	TR60A-POE-L	NA	NA	Provided by client
C.	Notebook	DELL	E6440	6QLNM32	FCC DoC Approved	-
D.	Spectrum Analyzer	Keysight	N9030A	MY53120770	NA	-
E.	Signal Generator	Agilent	MXG	NA	NA	-
F.	HEU	TranSystem	IFDSP19U21U	NA	NA	Provided by client

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item D acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Fiber cable	2	12	N	0	Provided by client
2.	Cat5e cable	1	10	N	0	-
3.	Cat5e cable	1	10	N	0	-
4.	Cat5e cable	1	1.8	N	0	-
5.	Antenna cable	2	10	Y	0	-

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports

The worst case was found when positioned on X-plane. Following channel(s) was (were) selected for the final test as listed below:

Test results are presented in the report as below.

Test Mode	Test Condition
A	EUT with External antenna
B	EUT with Internal antenna

EUT Configure Mode	Test Item	Frequency Band	Tested Frequency	Direction	Input Power	Signal Type
A, B	Effective Radiated Power, Mean Output Power and Zone Enhancer Gain	25	CH8065 (1932.5MHz) CH8365 (1962.5MHz) CH8665 (1992.5MHz)	Downlink	0.3dB < AGC, 3dB > AGC	Narrowband, Wideband
A, B		66	CH66461 (2112.5MHz) CH66886 (2155.0MHz) CH67311 (2197.5MHz)			
A	Peak to Average Ratio	25	CH8065 (1932.5MHz) CH8365 (1962.5MHz) CH8665 (1992.5MHz)	Downlink	0.3dB < AGC, 3dB > AGC	Narrowband, Wideband
A		66	CH66461 (2112.5MHz) CH66886 (2155.0MHz) CH67311 (2197.5MHz)			
A	Occupied Bandwidth / Input-Versus-Output Spectrum	25	CH8065 (1932.5MHz) CH8365 (1962.5MHz) CH8665 (1992.5MHz)	Downlink	0.3dB < AGC, 3dB > AGC	Narrowband, Wideband
A		66	CH66461 (2112.5MHz) CH66886 (2155.0MHz) CH67311 (2197.5MHz)			
A	Conducted Spurious Emission at Antenna Terminal	25	CH8065 (1932.5MHz) CH8365 (1962.5MHz) CH8665 (1992.5MHz)	Downlink	0.3dB < AGC	Narrowband, Wideband
A		66	CH66461 (2112.5MHz) CH66886 (2155.0MHz) CH67311 (2197.5MHz)			
A	Out-of-Band / Out-of-Block Emissions Limits	25	CH8042 (1930.2MHz) CH8065 (1932.5MHz) CH8365 (1962.5MHz) CH8665 (1992.5MHz) CH8688 (1994.8MHz)	Downlink	0.3dB < AGC, 3dB > AGC	Narrowband, Wideband
A		66	CH66461 (2112.5MHz) CH66438 (2110.2MHz) CH66886 (2155.0MHz) CH67311 (2197.5MHz) CH67334 (2199.8MHz)			
A, B	Field Strength of Spurious Radiation (Frequency below 1GHz)	25	CH8365 (1962.5MHz)	Downlink	0.3dB < AGC	Narrowband, Wideband
A, B		66	CH66461 (2112.5MHz)			
A, B	Field Strength of Spurious Radiation (Frequency above 1GHz)	25	CH8065 (1932.5MHz) CH8365 (1962.5MHz) CH8665 (1992.5MHz)	Downlink	0.3dB < AGC	Narrowband, Wideband
A, B		66	CH66461 (2112.5MHz) CH66886 (2155.0MHz) CH67311 (2197.5MHz)			
A	Out-of-Band Rejection	25	1930~1995MHz	Downlink	Sufficient level	CW
A		66	2110~2180MHz			

Test Condition:

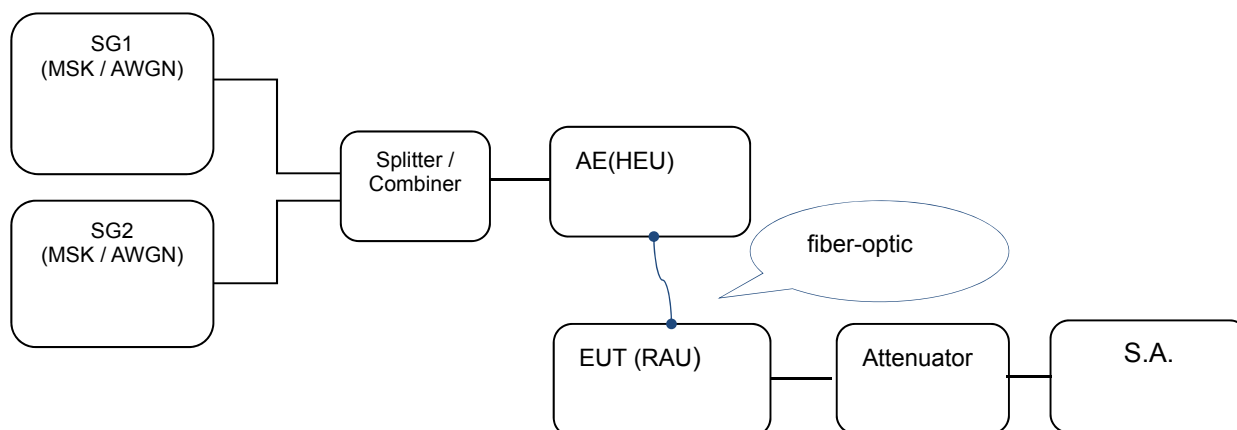
Test Item	Environmental Conditions	Input Power	Tested By
Effective Radiated Power, Mean Output Power and Zone Enhancer Gain	25deg. C, 65%RH	120Vac, 60Hz	James Yang
Peak to Average Ratio	25deg. C, 65%RH	120Vac, 60Hz	James Yang
Occupied Bandwidth / Input-Versus-Output Spectrum	25deg. C, 65%RH	120Vac, 60Hz	James Yang
Conducted Spurious Emission at Antenna Terminal	25deg. C, 65%RH	120Vac, 60Hz	James Yang
Out-of-Band / Out-of-Block Emissions Limits	25deg. C, 65%RH	120Vac, 60Hz	James Yang
Field Strength of Spurious Radiation	24deg. C, 66%RH	120Vac, 60Hz	Greg Lin
Out-of-Band Rejection	25deg. C, 65%RH	120Vac, 60Hz	James Yang

3.4 EUT Operating Conditions

The EUT is the remote antenna unit (RAU), the part of a fiber Distribution Antenna System which extends the RF signal through the single mode fiber to head end unit (HEU) to extend the RF signal coverage into any indoor/outdoor environment.

- Connected control notebook to RAU via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency and power.
- RAU was link to HEU via fiber-optic to act as a fiber Distribution Antenna System.

3.5 Test Setup



3.6 Procedure for AGC

- 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.

3.7 Automatic Gain Control Levels

Band	Direction	Signal Type	AGC Threshold Pin* (dBm)	AGC Threshold Pin* - 0.3 dB (dBm)	AGC Threshold Pin* + 3 dB (dBm)	Frequency (MHz)	Notes
25	Downlink	Narrowband	12	11.7	15	1962.5	Mid
25	Downlink	Wideband	8	7.7	11	1962.5	Mid
25	Downlink	Narrowband	15	14.7	18	1932.5	Low
25	Downlink	Wideband	11	10.7	14	1932.5	Low
25	Downlink	Narrowband	12	11.7	15	1992.5	High
25	Downlink	Wideband	6	5.7	9	1992.5	High
66	Downlink	Narrowband	6	5.7	9	2155	Mid
66	Downlink	Wideband	7	6.7	10	2155	Mid
66	Downlink	Narrowband	4	3.7	7	2112.5	Low
66	Downlink	Wideband	6	5.7	9	2112.5	Low
66	Downlink	Narrowband	3	2.7	6	2197.5	High
66	Downlink	Wideband	4	3.7	7	2197.5	High

* For fiber-optic distribution systems, the RF input port of the EUT refers to the RF input of the support RF to optical convertor.

For Intermodulation:

Band	Direction	Signal Type	AGC Threshold Pin* (dBm)	AGC Threshold Pin* - 0.3 dB (dBm)	AGC Threshold Pin* + 3 dB (dBm)	Frequency (MHz)	Notes
25	Downlink	Narrowband	15	14.7	18	1935	Low
25	Downlink	Wideband	11	10.7	14	1935	Low
25	Downlink	Narrowband	12	11.7	15	1990	High
25	Downlink	Wideband	6	5.7	9	1990	High
66	Downlink	Narrowband	4	3.7	7	2115	Low
66	Downlink	Wideband	6	5.7	9	2115	Low
66	Downlink	Narrowband	3	2.7	6	2195	High
66	Downlink	Wideband	4	3.7	7	2195	High

* For fiber-optic distribution systems, the RF input port of the EUT refers to the RF input of the support RF to optical convertor.

3.8 General Description of Applied Standards

The EUT is an Industrial Signal Booster. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 20

FCC 47 CFR Part 24

FCC 47 CFR Part 27

KDB 935210 D05 v01r02

ANSI C63.26: 2015

NOTE: All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Effective Radiated Power, Mean Output Power and Zone Enhancer Gain

4.1.1 Test Requirements / Limits

FCC 2.1046 Measurements required: RF power output:

- (a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in §2.1033(c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.
- (c) For measurements conducted pursuant to paragraphs (a) and (b) of this section, all calculations and methods used by the applicant for determining carrier power or peak envelope power, as appropriate, on the basis of measured power in the radio frequency load attached to the transmitter output terminals shall be shown. Under the test conditions specified, no components of the emission spectrum shall exceed the limits specified in the applicable rule parts as necessary for meeting occupied bandwidth or emission limitations.

FCC 24.232 Power and antenna height limits:

- (a)(1) Base stations with an emission bandwidth of 1 MHz or less are limited to 1640 watts equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT,

FCC 27.50 Power limits and duty cycle:

- (d) The following power and antenna height requirements apply to stations transmitting in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz and 2180-2200 MHz bands:
 - (2) The power of each fixed or base station transmitting in the 1995-2000 MHz, the 2110-2155 MHz 2155-2180 MHz band, or 2180-2200 MHz band and situated in any geographic location other than that described in paragraph (d)(1) of this section is limited to:
 - (i) An equivalent isotropically radiated power (EIRP) of 1640 watts when transmitting with an emission bandwidth of 1 MHz or less;
 - (ii) An EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.

4.1.2 Test Procedures

Refer to KDB 935210 D05 v01r02: 3.5 Mean output power and amplifier/booster gain.

4.1.3 Test Setup

Refer to clause 3.4.

4.1.4 Test Results

LTE Band 25:

Signal Type	AGC threshold level	Frequency (MHz)	Input Power (dBm)	Maximum Average Output Power (dBm)	Limit Average Output Power (dBm)	Margin (dB)	Gain (dB)
Wideband	0.3 dB < AGC	1932.5	9.61	17.95	62.14	-44.19	8.34
Wideband	3 dB > AGC	1932.5	12.71	21.03	62.14	-41.11	8.32
Narrowband	0.3 dB < AGC	1932.5	14.67	23.36	62.14	-38.78	8.69
Narrowband	3 dB > AGC	1932.5	17.98	26.1	62.14	-36.04	8.12
Wideband	0.3 dB < AGC	1962.5	6.6	21.79	62.14	-40.35	15.19
Wideband	3 dB > AGC	1962.5	9.84	24.9	62.14	-37.24	15.06
Narrowband	0.3 dB < AGC	1962.5	11.58	27.09	62.14	-35.05	15.51
Narrowband	3 dB > AGC	1962.5	14.94	29.59	62.14	-32.55	14.65
Wideband	0.3 dB < AGC	1992.5	5.61	21.34	62.14	-40.80	15.73
Wideband	3 dB > AGC	1992.5	8.91	24.5	62.14	-37.64	15.59
Narrowband	0.3 dB < AGC	1992.5	11.58	27.39	62.14	-34.75	15.79
Narrowband	3 dB > AGC	1992.5	14.92	29.96	62.14	-32.18	15.04

* Margin = Output Power – Limit

Frequency: 1932.5MHz

Wideband

AGC threshold level: 0.3 dB < AGC

Input power



Maximum Average Output Power



AGC threshold level: 3 dB > AGC

Input power



Maximum Average Output Power



Narrowband

AGC threshold level: 0.3 dB < AGC

Input power



Maximum Average Output Power



AGC threshold level: 3 dB > AGC

Input power



Maximum Average Output Power



Frequency: 1962.5MHz

Wideband

AGC threshold level: 0.3 dB < AGC

Input power



Maximum Average Output Power



AGC threshold level: 3 dB > AGC

Input power



Maximum Average Output Power



Narrowband

AGC threshold level: 0.3 dB < AGC

Input power



Maximum Average Output Power



AGC threshold level: 3 dB > AGC

Input power



Maximum Average Output Power



Frequency: 1992.5MHz

Wideband

AGC threshold level: 0.3 dB < AGC

Input power



Maximum Average Output Power



AGC threshold level: 3 dB > AGC

Input power



Maximum Average Output Power



Narrowband

AGC threshold level: 0.3 dB < AGC

Input power



Maximum Average Output Power



AGC threshold level: 3 dB > AGC

Input power



Maximum Average Output Power



LTE Band 66:

Signal Type	AGC threshold level	Frequency (MHz)	Input Power (dBm)	Maximum Average Output Power (dBm)	Limit Average Output Power (dBm)	Margin (dB)	Gain (dB)
Wideband	0.3 dB < AGC	2112.5	5.67	20.22	62.14	-41.92	14.55
Wideband	3 dB > AGC	2112.5	8.88	22.6	62.14	-39.54	13.72
Narrowband	0.3 dB < AGC	2112.5	3.51	18.45	62.14	-43.69	14.94
Narrowband	3 dB > AGC	2112.5	6.83	21.64	62.14	-40.50	14.81
Wideband	0.3 dB < AGC	2155	6.62	20.03	62.14	-42.11	13.41
Wideband	3 dB > AGC	2155	9.95	22.8	62.14	-39.34	12.85
Narrowband	0.3 dB < AGC	2155	5.53	19.45	62.14	-42.69	13.92
Narrowband	3 dB > AGC	2155	8.78	22.58	62.14	-39.56	13.8
Wideband	0.3 dB < AGC	2197.5	3.62	11.49	62.14	-50.65	7.87
Wideband	3 dB > AGC	2197.5	6.95	14.5	62.14	-47.64	7.55
Narrowband	0.3 dB < AGC	2197.5	2.46	10.64	62.14	-51.50	8.18
Narrowband	3 dB > AGC	2197.5	5.87	13.86	62.14	-48.28	7.99

* Margin = Output Power – Limit

Frequency: 2112.5MHz

Wideband

AGC threshold level: 0.3 dB < AGC

Input power



Maximum Average Output Power



AGC threshold level: 3 dB > AGC

Input power



Maximum Average Output Power



Narrowband

AGC threshold level: 0.3 dB < AGC

Input power



Maximum Average Output Power



AGC threshold level: 3 dB > AGC

Input power



Maximum Average Output Power



Frequency: 2155MHz

Wideband

AGC threshold level: 0.3 dB < AGC

Input power



Maximum Average Output Power



AGC threshold level: 3 dB > AGC

Input power



Maximum Average Output Power



Narrowband

AGC threshold level: 0.3 dB < AGC

Input power



Maximum Average Output Power



AGC threshold level: 3 dB > AGC

Input power



Maximum Average Output Power



Frequency: 2197.5MHz

Wideband

AGC threshold level: 0.3 dB < AGC

Input power



Maximum Average Output Power



AGC threshold level: 3 dB > AGC

Input power



Maximum Average Output Power



Narrowband

AGC threshold level: 0.3 dB < AGC

Input power



Maximum Average Output Power



AGC threshold level: 3 dB > AGC

Input power



Maximum Average Output Power



For External antenna:

Band / BW	AGC Level	Conducted Power			E.I.R.P		
		Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
		1932.5	1962.5	1992.5	1932.5	1962.5	1992.5
		MHz	MHz	MHz	MHz	MHz	MHz
25 / Wideband	AGC-0.3	17.95	21.79	21.34	26.95	30.79	30.34
	AGC+3	21.03	24.90	24.50	30.03	33.90	33.50

Band / BW	AGC Level	Conducted Power			E.I.R.P		
		Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
		1932.5	1962.5	1992.5	1932.5	1962.5	1992.5
		MHz	MHz	MHz	MHz	MHz	MHz
25 / Narrowband	AGC-0.3	23.36	27.09	27.39	32.36	36.09	36.39
	AGC+3	26.10	29.59	29.96	35.10	38.59	38.96

Band / BW	AGC Level	Conducted Power			E.I.R.P		
		Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
		2112.5	2155	2197.5	2112.5	2155	2197.5
		MHz	MHz	MHz	MHz	MHz	MHz
66 / Wideband	AGC-0.3	20.22	20.03	11.49	29.22	29.03	20.49
	AGC+3	22.60	22.80	14.50	31.60	31.80	23.50

Band / BW	AGC Level	Conducted Power			E.I.R.P		
		Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
		2112.5	2155	2197.5	2112.5	2155	2197.5
		MHz	MHz	MHz	MHz	MHz	MHz
66 / Narrowband	AGC-0.3	18.45	19.45	10.64	27.45	28.45	19.64
	AGC+3	21.64	22.58	13.86	30.64	31.58	22.86

*E.I.R.P = Conducted Power + gain (9dBi)

For internal antenna:

LTE Band 25, Wideband

12 Band 2G, Wireless

Mode		TX channel 8065 (1932.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1932.50	-25.79	14.81	-0.21	14.60	62.14	-47.54
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1932.50	-16.59	24.41	-0.21	24.20	62.14	-37.94

Mode		TX channel 8365 (1962.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1962.50	-23.49	17.01	-0.31	16.70	62.14	-45.44
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1962.50	-14.20	27.01	-0.31	26.70	62.14	-35.44

Mode		TX channel 8665 (1992.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1992.50	-25.19	15.22	-0.42	14.80	62.14	-47.34
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1992.50	-16.22	25.22	-0.42	24.80	62.14	-37.34

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 66, Wideband

Mode		TX channel 66461 (2112.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-22.11	19.64	-0.34	19.30	62.14	-42.84
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-13.81	28.74	-0.34	28.40	62.14	-33.74

Mode		TX channel 66886 (2155MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2155.00	-24.87	17.09	-0.29	16.80	62.14	-45.34
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2155.00	-16.83	25.59	-0.29	25.30	62.14	-36.84

Mode		TX channel 67311 (2197.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2197.50	-37.52	4.63	-0.23	4.40	62.14	-57.74
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2197.50	-29.76	12.53	-0.23	12.30	62.14	-49.84

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 25 + LTE Band 66, Wideband

Mode		TX channel 8365 (1962.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-22.81	18.94	-0.34	18.60	62.14	-43.54
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-14.61	27.94	-0.34	27.60	62.14	-34.54

Mode		TX channel 66461 (2112.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1962.50	-24.09	16.41	-0.31	16.10	62.14	-46.04
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1962.50	-14.70	26.51	-0.31	26.20	62.14	-35.94

LTE Band 25, Narrowband

Mode		TX channel 8065 (1932.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1992.50	-20.59	19.82	-0.42	19.40	62.14	-42.74
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1992.50	-11.42	30.02	-0.42	29.60	62.14	-32.54

Mode		TX channel 8365 (1962.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1962.50	-19.49	21.01	-0.31	20.70	62.14	-41.44
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1962.50	-10.20	31.01	-0.31	30.70	62.14	-31.44

Mode		TX channel 8665 (1992.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1932.50	-24.09	16.51	-0.21	16.30	62.14	-45.84
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1932.50	-14.49	26.51	-0.21	26.30	62.14	-35.84

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 66, Narrowband

Mode		TX channel 66461 (2112.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-24.51	17.24	-0.34	16.90	62.14	-45.24
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-15.11	27.44	-0.34	27.10	62.14	-35.04

Mode		TX channel 66886 (2155MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2155.00	-27.47	14.49	-0.29	14.20	62.14	-47.94
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2155.00	-17.93	24.49	-0.29	24.20	62.14	-37.94

Mode		TX channel 67311 (2197.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2197.50	-38.32	3.83	-0.23	3.60	62.14	-58.54
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2197.50	-30.46	11.83	-0.23	11.60	62.14	-50.54

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 25 + LTE Band 66, Narrowband

Mode		TX channel 8365 (1962.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1962.50	-20.19	20.31	-0.31	20.00	62.14	-42.14
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1962.50	-10.80	30.41	-0.31	30.10	62.14	-32.04

Mode		TX channel 66461 (2112.5MHz)					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-25.31	16.44	-0.34	16.10	62.14	-46.04
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	2112.50	-15.81	26.74	-0.34	26.40	62.14	-35.74

4.2 Peak to Average Ratio

4.2.1 Test Requirements / Limits

FCC 24.232 Power and antenna height limits:

- (d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
- (e) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

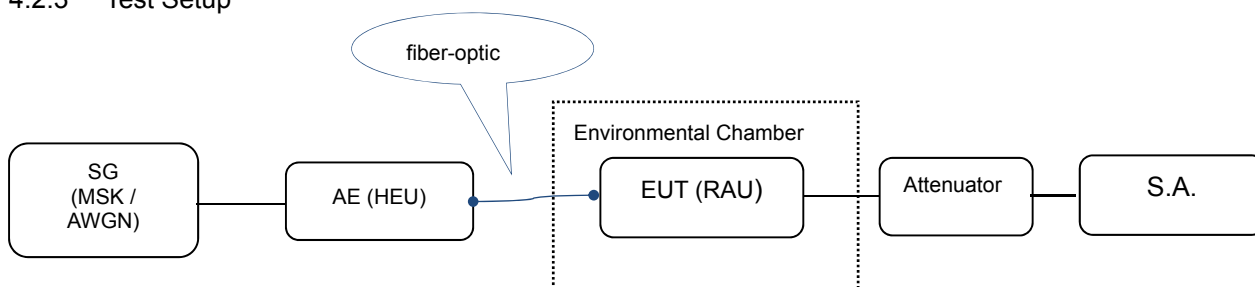
FCC 27.50 Power limits and duty cycle:

- (d)(5) Equipment employed must be authorized in accordance with the provisions of §24.51. Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
- (6) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

4.2.2 Test Procedure

- a. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
- b. Set the number of counts to a value that stabilizes the measured CCDF curve;
- c. Record the maximum PAPR level associated with a probability of 0.1%.

4.2.3 Test Setup



4.2.4 Test Results

LTE Band 25:

Signal Type	AGC threshold level	Frequency (MHz)	PAPR (dB)	Limit (PAPR) (dB)	Margin (dB)
Wideband	0.3 dB < AGC	1932.5	8.05	13	-4.95
Wideband	3 dB > AGC	1932.5	6.7	13	-6.3
Narrowband	0.3 dB < AGC	1932.5	0.11	13	-12.89
Narrowband	3 dB > AGC	1932.5	0.08	13	-12.92
Wideband	0.3 dB < AGC	1962.5	7.99	13	-5.01
Wideband	3 dB > AGC	1962.5	6.62	13	-6.38
Narrowband	0.3 dB < AGC	1962.5	0.12	13	-12.88
Narrowband	3 dB > AGC	1962.5	0.07	13	-12.93
Wideband	0.3 dB < AGC	1992.5	8.06	13	-4.94
Wideband	3 dB > AGC	1992.5	6.86	13	-6.14
Narrowband	0.3 dB < AGC	1992.5	0.09	13	-12.91
Narrowband	3 dB > AGC	1992.5	0.06	13	-12.94

* Margin = PAPR – Limit

Frequency: 1932.5MHz

Wideband

AGC threshold level: 0.3 dB < AGC



AGC threshold level: 3 dB > AGC



Narrowband

AGC threshold level: 0.3 dB < AGC



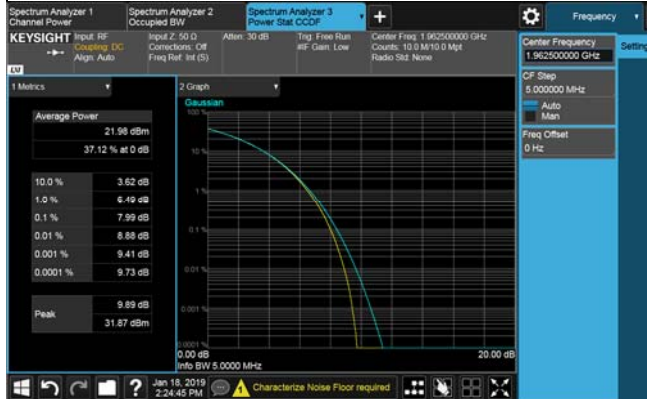
AGC threshold level: 3 dB > AGC



Frequency: 1962.5MHz

Wideband

AGC threshold level: 0.3 dB < AGC



AGC threshold level: 3 dB > AGC

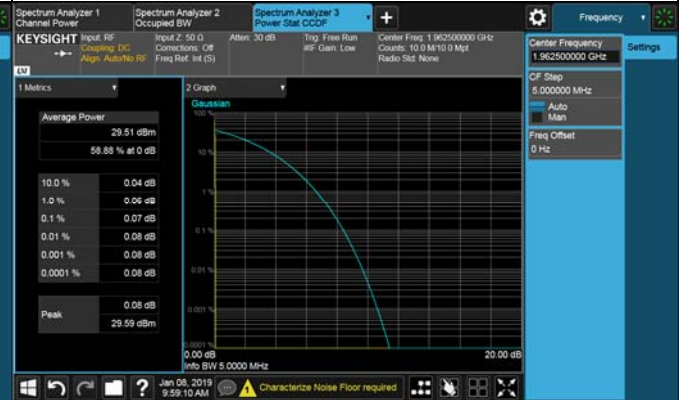


Narrowband

AGC threshold level: 0.3 dB < AGC



AGC threshold level: 3 dB > AGC



Frequency: 1992.5MHz

Wideband

AGC threshold level: 0.3 dB < AGC



AGC threshold level: 3 dB > AGC



Narrowband

AGC threshold level: 0.3 dB < AGC



AGC threshold level: 3 dB > AGC



LTE Band 66:

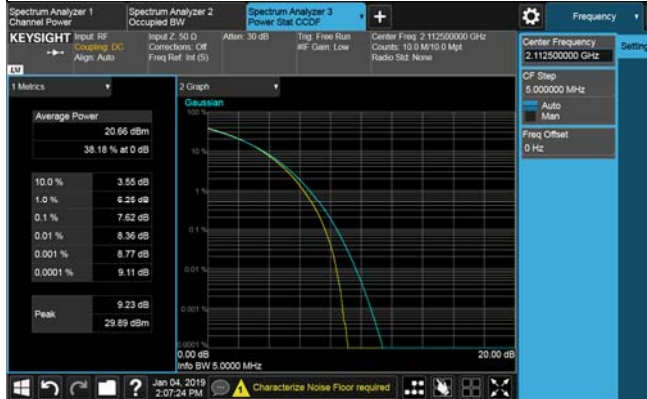
Signal Type	AGC threshold level	Frequency (MHz)	PAPR (dB)	Limit (PAPR) (dB)	Margin (dB)
Wideband	0.3 dB < AGC	2112.5	7.62	13	-5.38
Wideband	3 dB > AGC	2112.5	6.24	13	-6.76
Narrowband	0.3 dB < AGC	2112.5	0.1	13	-12.9
Narrowband	3 dB > AGC	2112.5	0.1	13	-12.9
Wideband	0.3 dB < AGC	2155	7.28	13	-5.72
Wideband	3 dB > AGC	2155	6.02	13	-6.98
Narrowband	0.3 dB < AGC	2155	0.11	13	-12.89
Narrowband	3 dB > AGC	2155	0.11	13	-12.89
Wideband	0.3 dB < AGC	2197.5	7.64	13	-5.36
Wideband	3 dB > AGC	2197.5	6.94	13	-6.06
Narrowband	0.3 dB < AGC	2197.5	0.14	13	-12.86
Narrowband	3 dB > AGC	2197.5	0.13	13	-12.87

* Margin = Output Power – Limit

Frequency: 2112.5MHz

Wideband

AGC threshold level: 0.3 dB < AGC



AGC threshold level: 3 dB > AGC

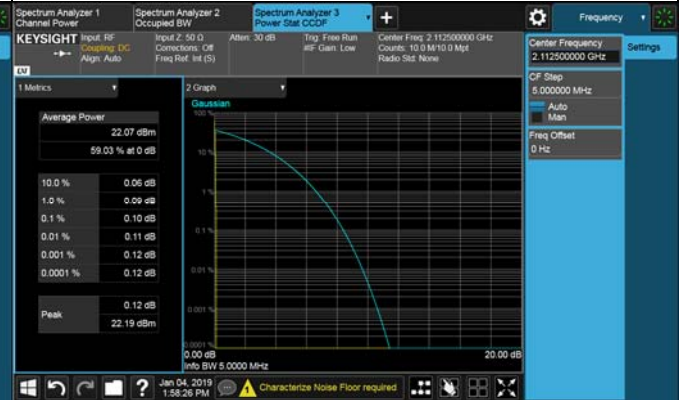


Narrowband

AGC threshold level: 0.3 dB < AGC



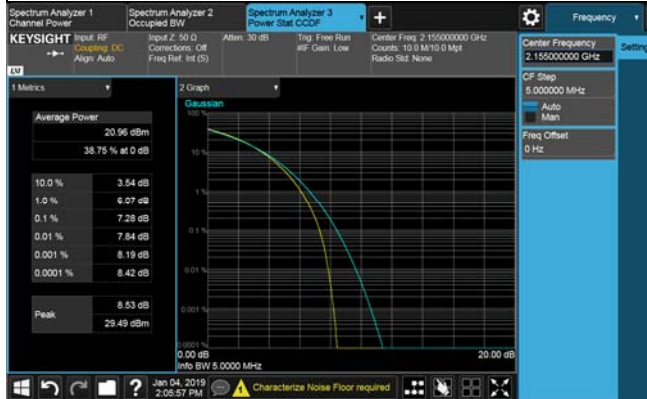
AGC threshold level: 3 dB > AGC



Frequency: 2155MHz

Wideband

AGC threshold level: 0.3 dB < AGC

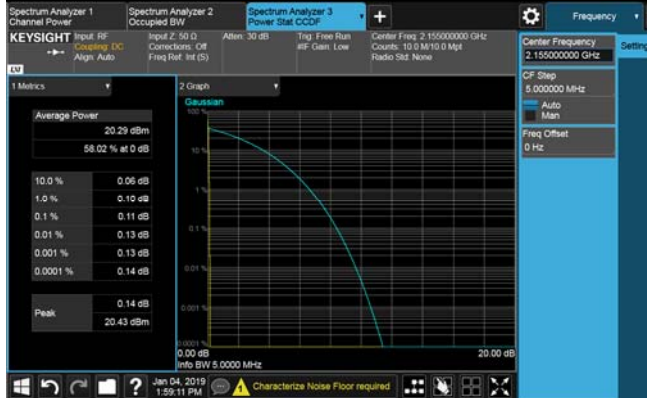


AGC threshold level: 3 dB > AGC



Narrowband

AGC threshold level: 0.3 dB < AGC



AGC threshold level: 3 dB > AGC



Frequency: 2197.5MHz

Wideband

AGC threshold level: 0.3 dB < AGC

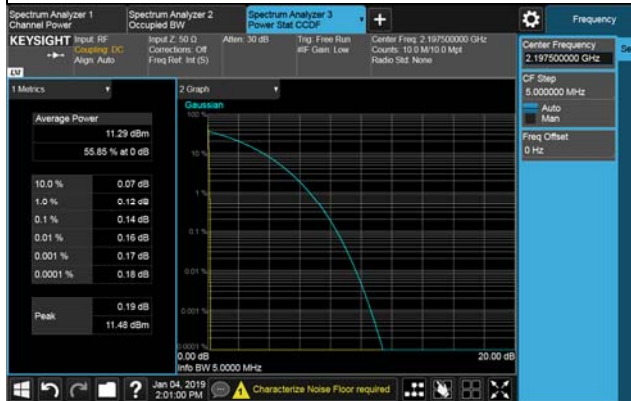


AGC threshold level: 3 dB > AGC



Narrowband

AGC threshold level: 0.3 dB < AGC



AGC threshold level: 3 dB > AGC



4.3 Occupied Bandwidth / Input–Versus-Output Spectrum

4.3.1 Test Requirements / Limits

FCC 2.1049 Measurements required: Occupied bandwidth(OBW):

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the following conditions as applicable:

- (h) Transmitters employing digital modulation techniques—when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated. The signal shall be applied through any filter networks, pseudo-random generators or other devices required in normal service. Additionally, the occupied bandwidth shall be shown for operation with any devices used for modifying the spectrum when such devices are optional at the discretion of the user.
- (i) Transmitters designed for other types of modulation—when modulated by an appropriate signal of sufficient amplitude to be representative of the type of service in which used. A description of the input signal should be supplied.

4.3.2 Test Procedure

Refer to ANSI C63.26, KDB 935210 D05 v01r02: 3.4.

4.3.3 Test Setup

Refer to clause 3.4.

4.3.4 Test Result

LTE Band 25:

Signal Type	Input Power	Frequency (MHz)	OBW SG (kHz)	OBW Booster (kHz)	Delta OBW (kHz)	Limit (5% OBW) (kHz)	Margin to Limit (kHz)
Wideband	0.3 dB < AGC	1932.5	4122.6	4118.1	4.5	205	-200.5
Wideband	3 dB > AGC	1932.5	4124.6	4219.7	95.1	205	-109.9
Narrowband	0.3 dB < AGC	1932.5	357.25	355.43	1.82	17.5	-15.68
Narrowband	3 dB > AGC	1932.5	354.29	358.37	4.08	17.5	-13.42
Wideband	0.3 dB < AGC	1962.5	4109.8	4121.5	11.7	205	-193.3
Wideband	3 dB > AGC	1962.5	4120.7	4140.9	20.2	205	-184.8
Narrowband	0.3 dB < AGC	1962.5	357.88	356.44	1.44	17.5	-16.06
Narrowband	3 dB > AGC	1962.5	356.37	360.99	4.62	17.5	-12.88
Wideband	0.3 dB < AGC	1992.5	4128.2	4133.7	5.5	205	-199.5
Wideband	3 dB > AGC	1992.5	4130.4	4148.4	18	205	-187
Narrowband	0.3 dB < AGC	1992.5	354.82	356.06	1.24	17.5	-16.26
Narrowband	3 dB > AGC	1992.5	357.09	355.45	1.64	17.5	-15.86

* Margin = Limit - Delta

Frequency: 1932.5MHz

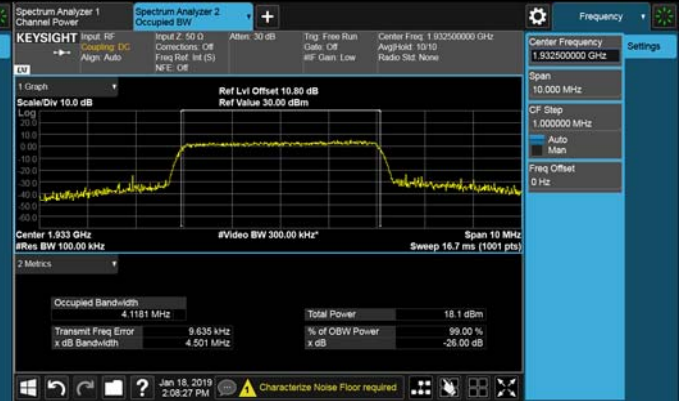
Wideband

AGC threshold level: 0.3 dB < AGC

OBW SG

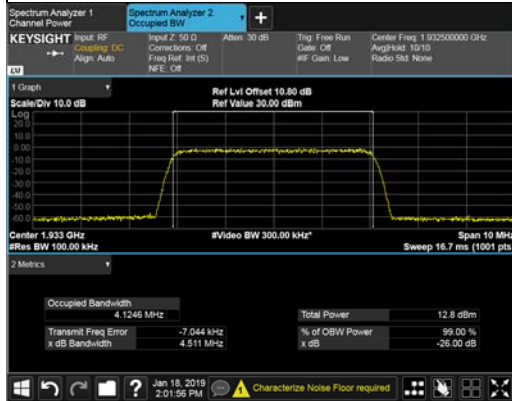


OBW Booster

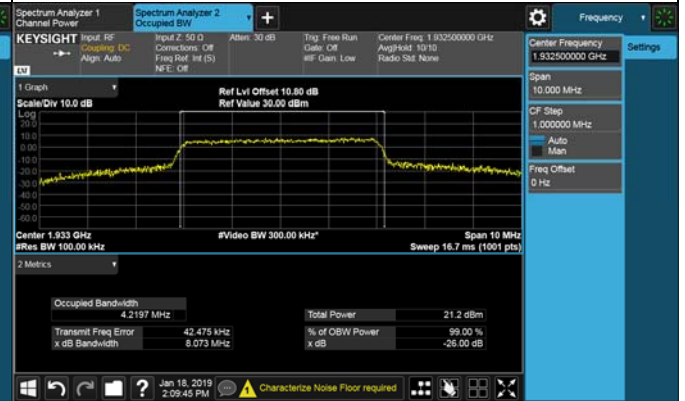


AGC threshold level: 3 dB > AGC

OBW SG



OBW Booster



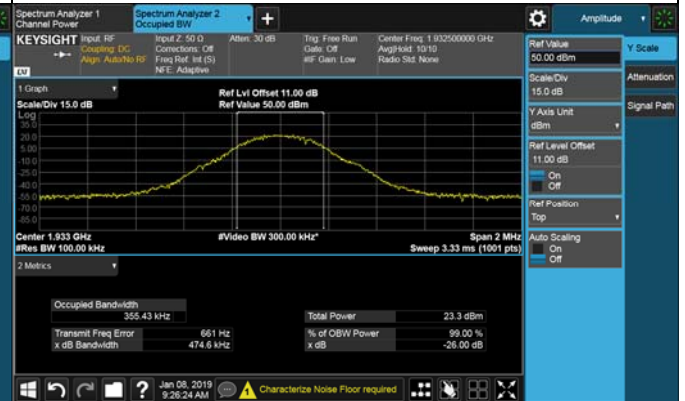
Narrowband

AGC threshold level: 0.3 dB < AGC

OBW SG



OBW Booster

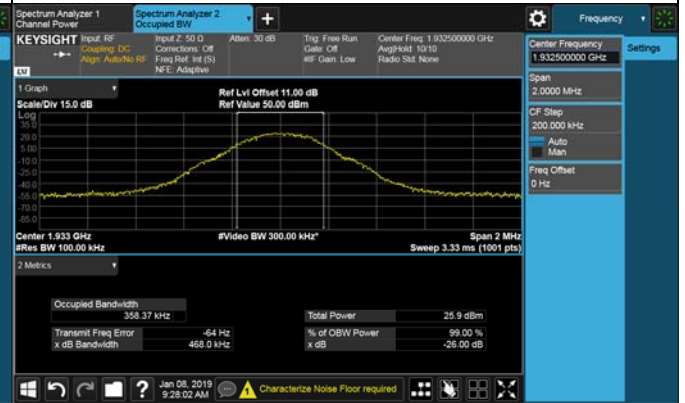


AGC threshold level: 3 dB > AGC

OBW SG



OBW Booster



Frequency: 1962.5MHz

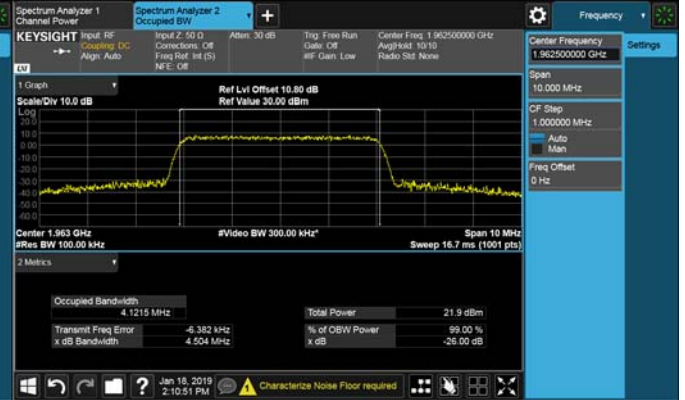
Wideband

AGC threshold level: 0.3 dB < AGC

OBW SG



OBW Booster

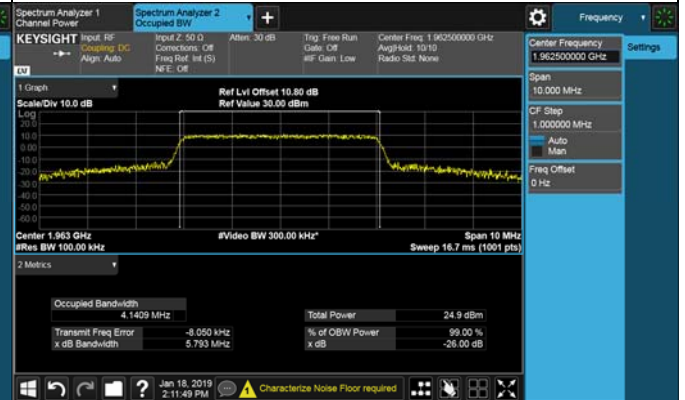


AGC threshold level: 3 dB > AGC

OBW SG



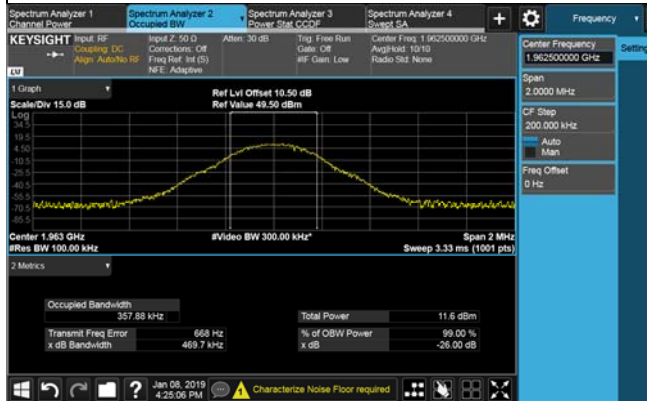
OBW Booster



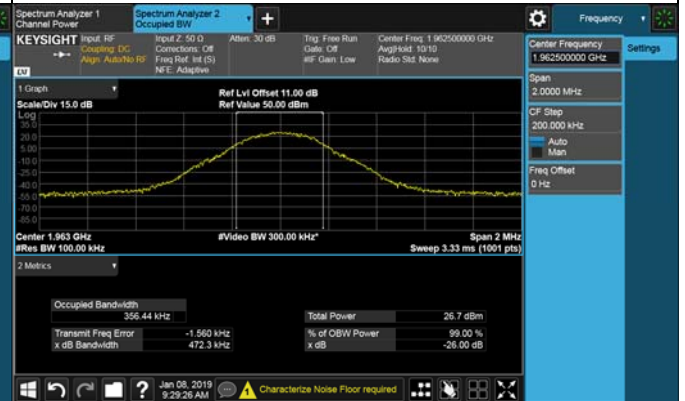
Narrowband

AGC threshold level: 0.3 dB < AGC

OBW SG

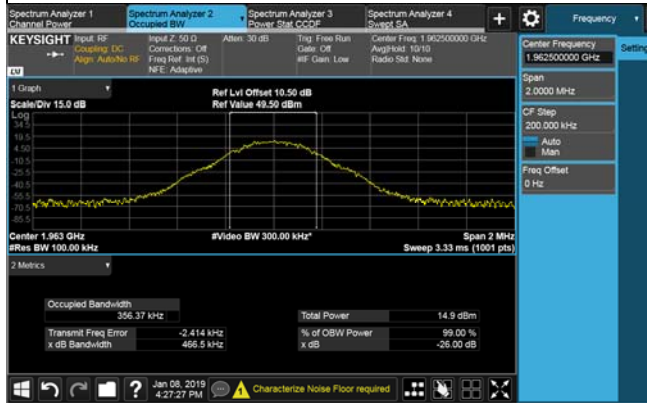


OBW Booster

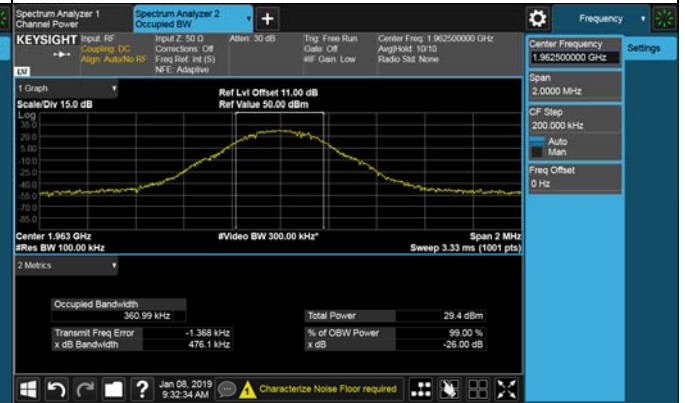


AGC threshold level: 3 dB > AGC

OBW SG



OBW Booster



Frequency: 1992.5MHz

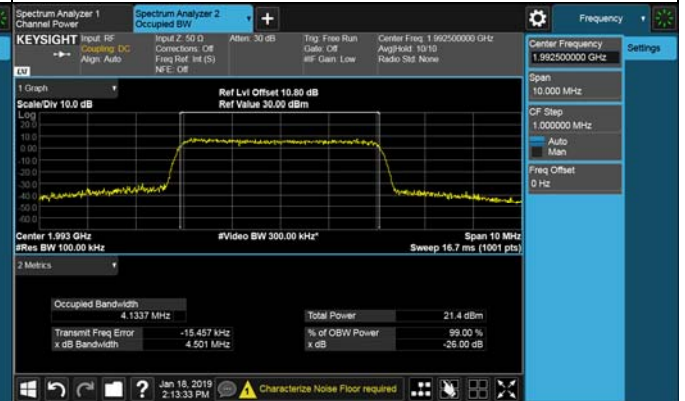
Wideband

AGC threshold level: 0.3 dB < AGC

OBW SG

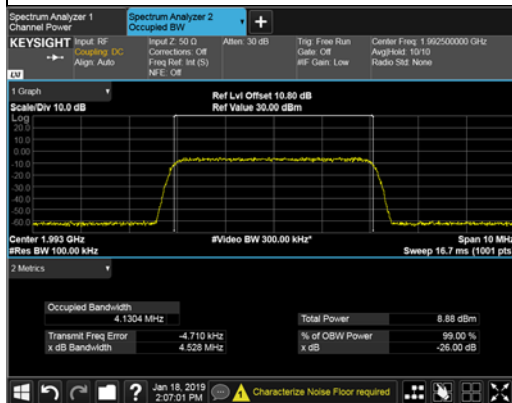


OBW Booster

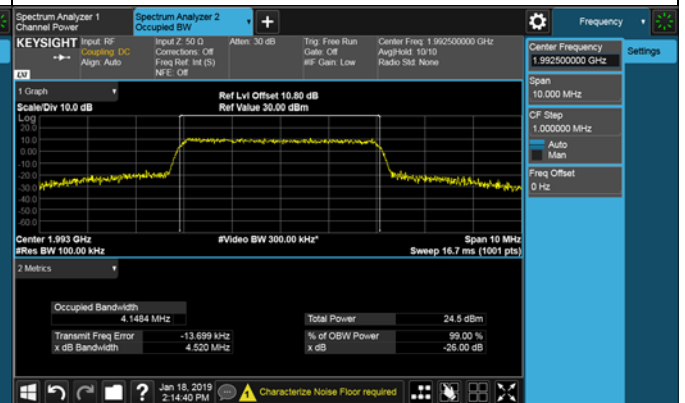


AGC threshold level: 3 dB > AGC

OBW SG



OBW Booster



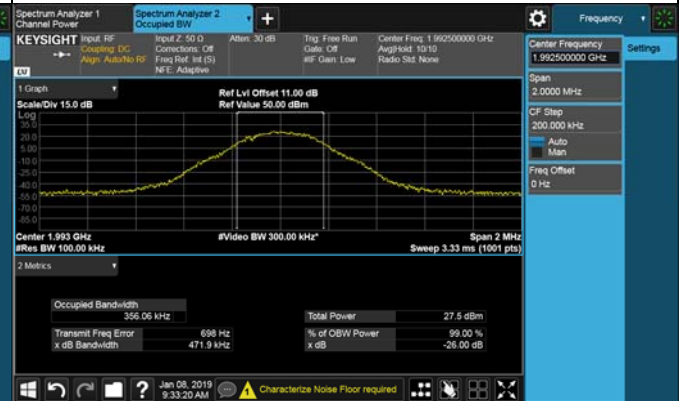
Narrowband

AGC threshold level: 0.3 dB < AGC

OBW SG



OBW Booster

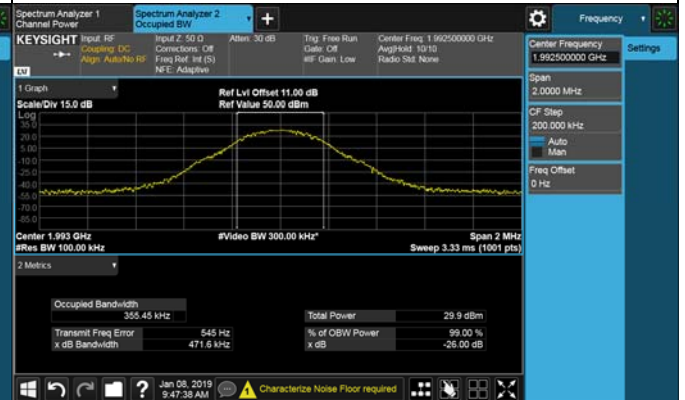


AGC threshold level: 3 dB > AGC

OBW SG



OBW Booster



LTE Band 66:

Signal Type	Input Power	Frequency (MHz)	OBW SG (kHz)	OBW Booster (kHz)	Delta OBW (kHz)	Limit (5% OBW) (kHz)	Margin to Limit (kHz)
Wideband	0.3 dB < AGC	2112.5	4123.7	4124.4	0.7	205	-204.93
Wideband	3 dB > AGC	2112.5	4120.9	4207.7	86.8	205	-119
Narrowband	0.3 dB < AGC	2112.5	329.93	331.63	1.7	17.5	-15.8
Narrowband	3 dB > AGC	2112.5	327.89	327.38	0.51	17.5	-17.1
Wideband	0.3 dB < AGC	2155	4122.7	4136.2	13.5	205	-191.5
Wideband	3 dB > AGC	2155	4118.3	4299.6	181.3	205	-23.7
Narrowband	0.3 dB < AGC	2155	324.7	327.43	2.73	17.5	-14.77
Narrowband	3 dB > AGC	2155	328.18	326.04	2.14	17.5	-15.36
Wideband	0.3 dB < AGC	2197.5	4119.5	4109.9	9.6	205	-195.4
Wideband	3 dB > AGC	2197.5	4128.2	4121.5	6.7	205	-198.3
Narrowband	0.3 dB < AGC	2197.5	331.08	329.52	1.56	17.5	-15.94
Narrowband	3 dB > AGC	2197.5	330.42	328.53	1.89	17.5	-15.61

* Margin = Limit - Delta

Frequency: 2112.5MHz

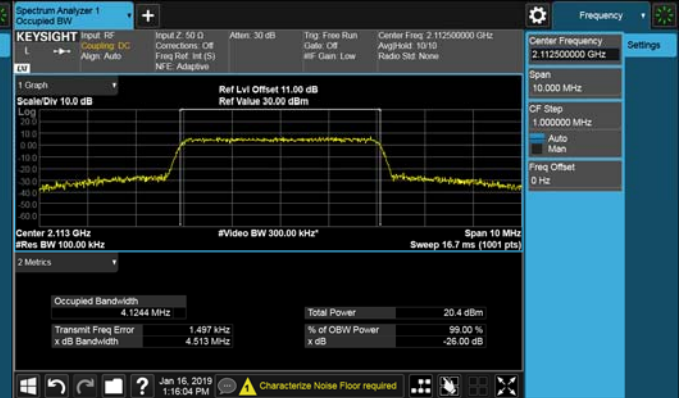
Wideband

AGC threshold level: 0.3 dB < AGC

OBW SG

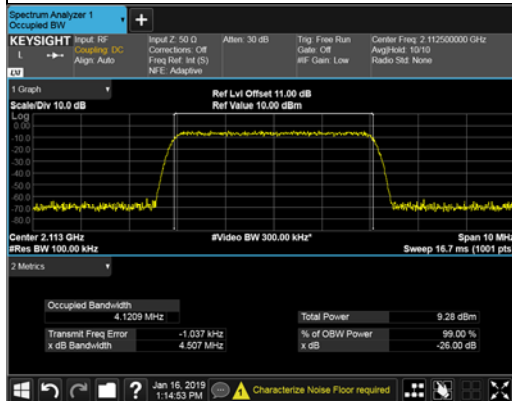


OBW Booster

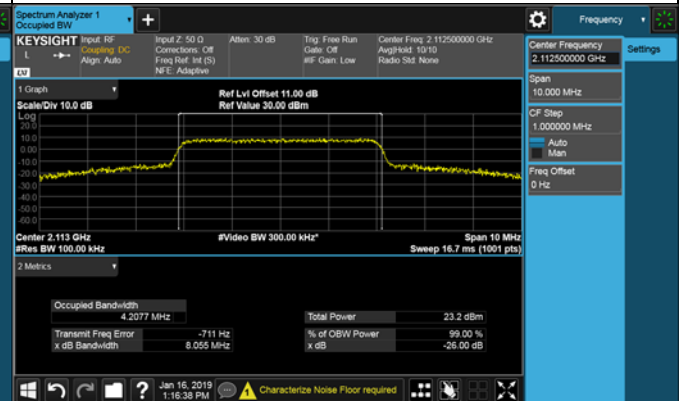


AGC threshold level: 3 dB > AGC

OBW SG



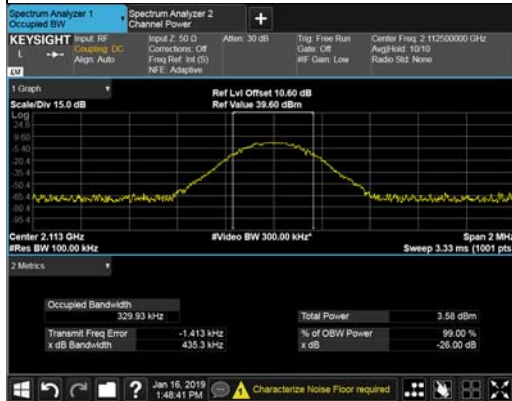
OBW Booster



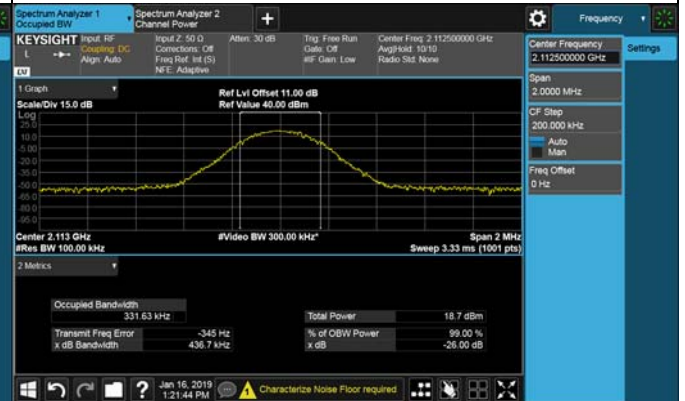
Narrowband

AGC threshold level: 0.3 dB < AGC

OBW SG

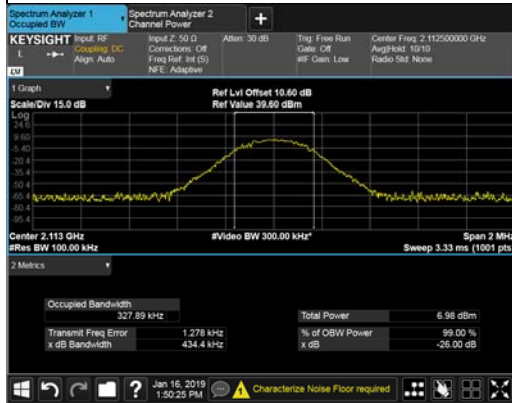


OBW Booster

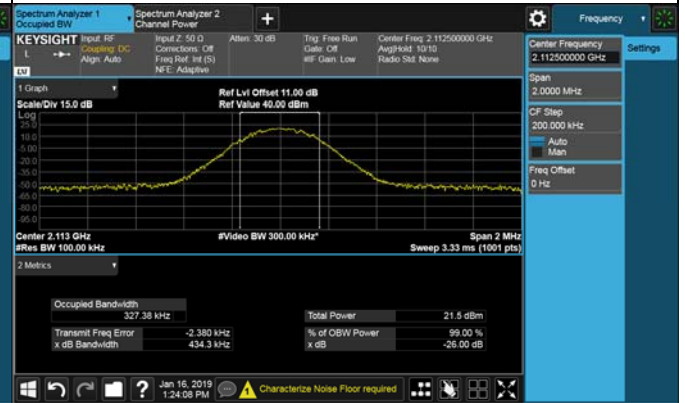


AGC threshold level: 3 dB > AGC

OBW SG



OBW Booster



Frequency: 2155MHz

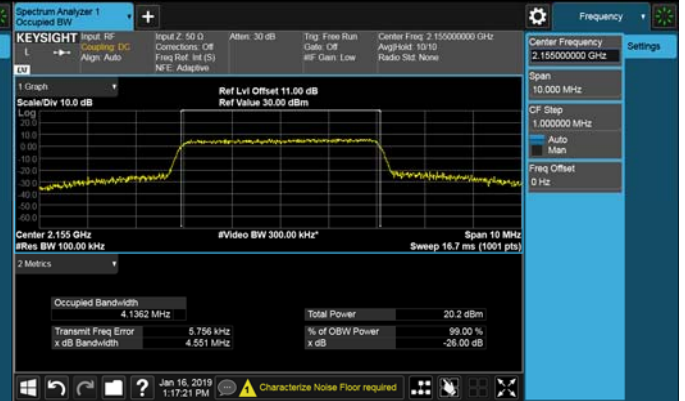
Wideband

AGC threshold level: 0.3 dB < AGC

OBW SG

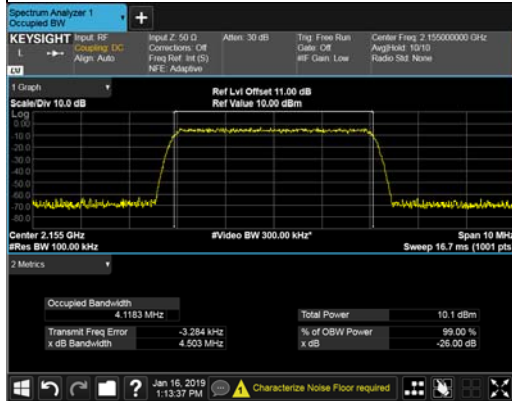


OBW Booster

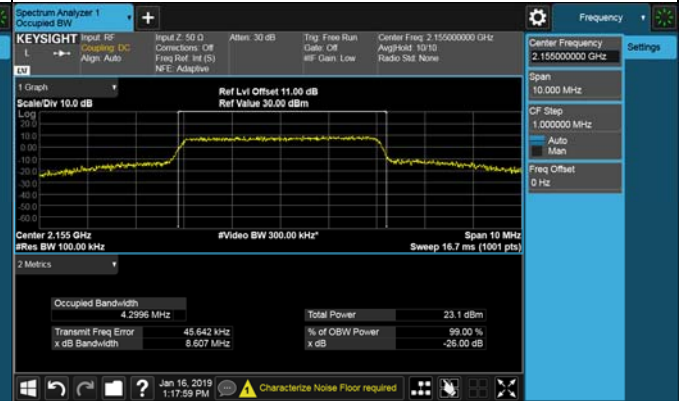


AGC threshold level: 3 dB > AGC

OBW SG



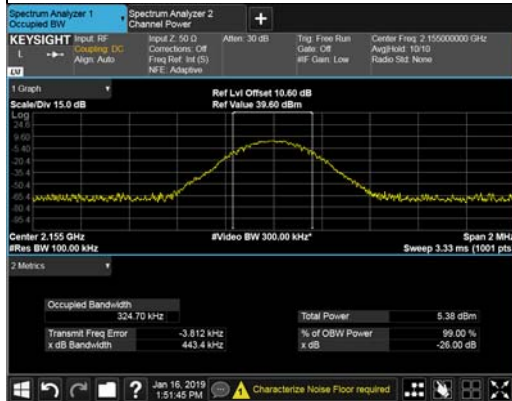
OBW Booster



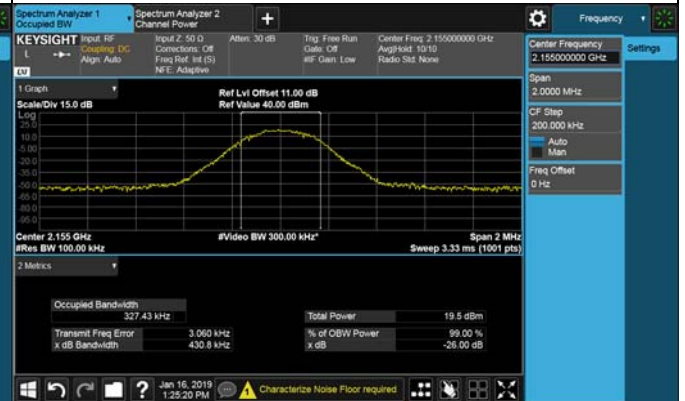
Narrowband

AGC threshold level: 0.3 dB < AGC

OBW SG



OBW Booster

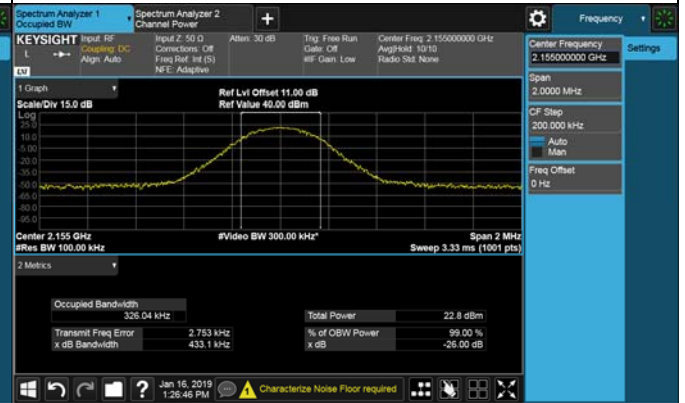


AGC threshold level: 3 dB > AGC

OBW SG



OBW Booster

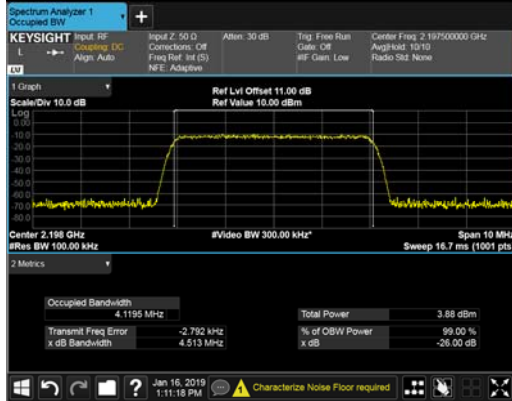


Frequency: 2197.5MHz

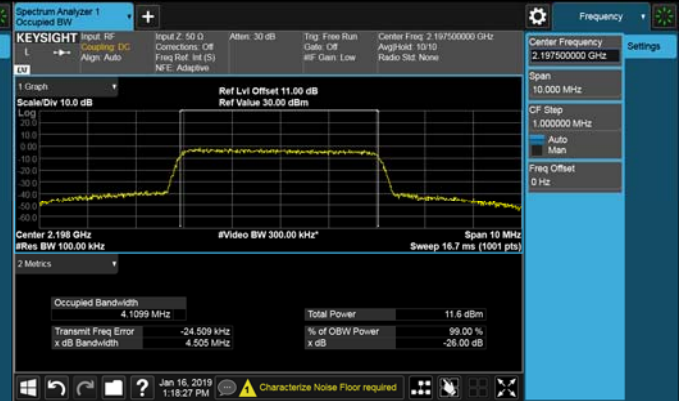
Wideband

AGC threshold level: 0.3 dB < AGC

OBW SG

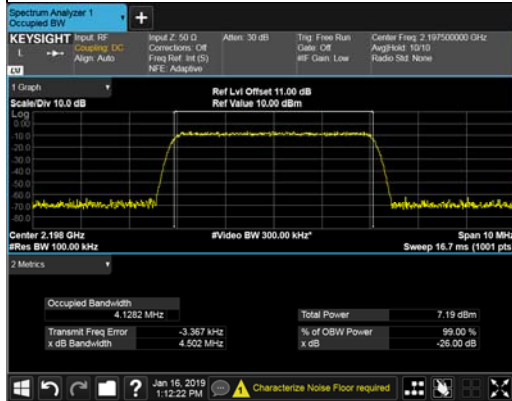


OBW Booster

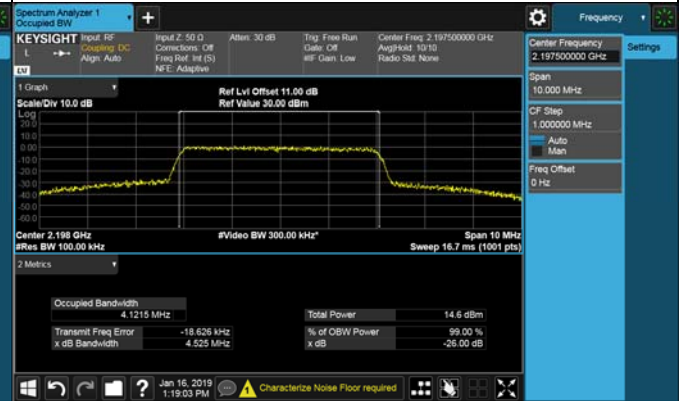


AGC threshold level: 3 dB > AGC

OBW SG



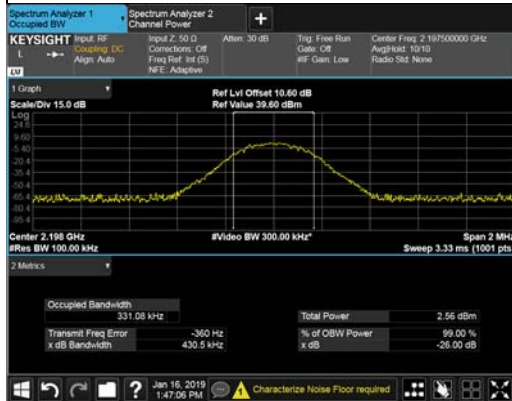
OBW Booster



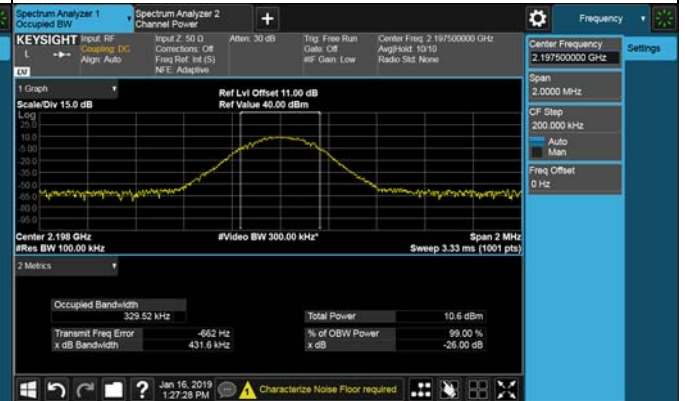
Narrowband

AGC threshold level: 0.3 dB < AGC

OBW SG



OBW Booster

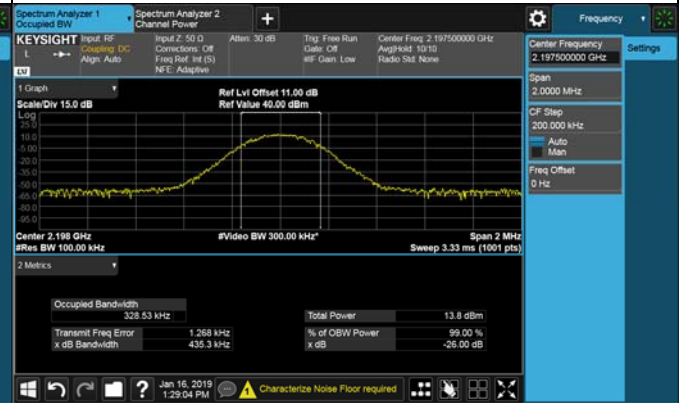


AGC threshold level: 3 dB > AGC

OBW SG



OBW Booster



4.4 Conducted Spurious Emission at Antenna Terminal

4.4.1 Test Requirements / Limits

FCC 2.1051 Measurements required: Spurious emissions at antenna terminals:

The radio frequency voltage or powers generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminals when properly loaded with a suitable artificial antenna. Curves or equivalent data shall show the magnitude of each harmonic and other spurious emission that can be detected when the equipment is operated under the conditions specified in §2.1049 as appropriate. The magnitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be specified.

FCC 24.238 Emission limitations for Broadband PCS equipment:

- (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

FCC 27.53 Emission limits

- (h) AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

4.4.2 Test Procedure

Refer to ANSI C 63.26.

4.4.3 Test Setup

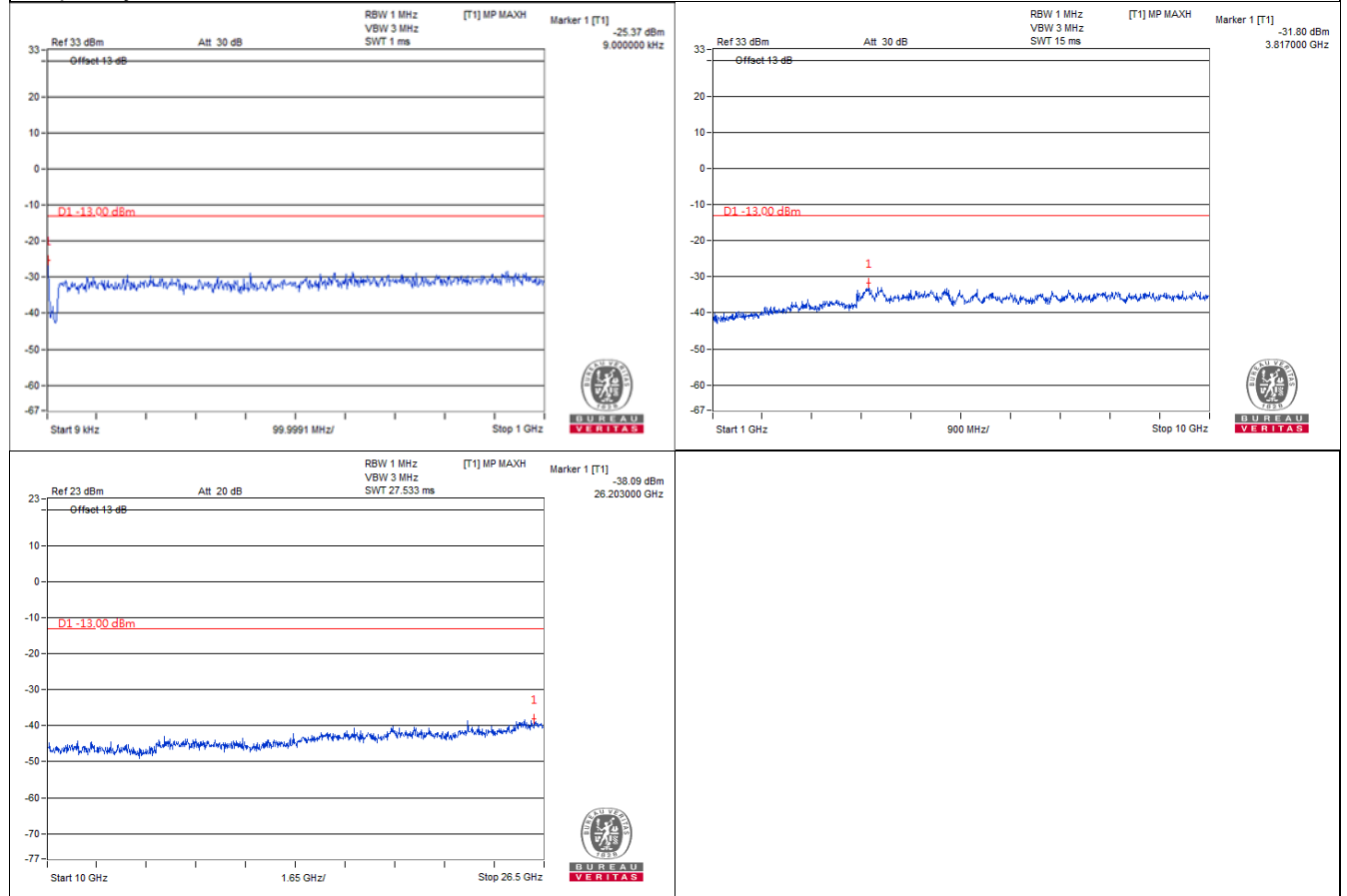
Refer to clause 3.4.

4.4.4 Test Result

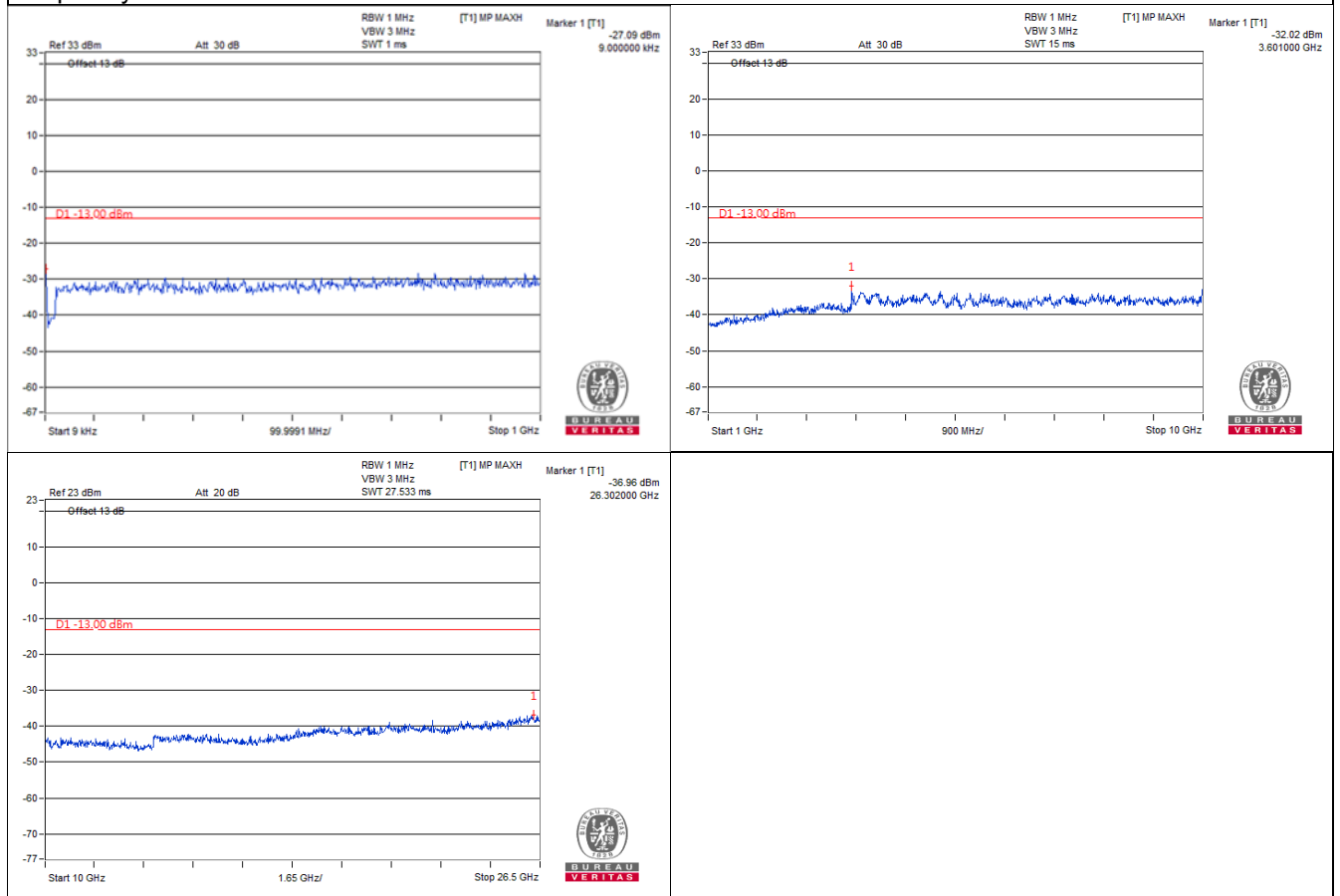
LTE Band 25:

Wideband

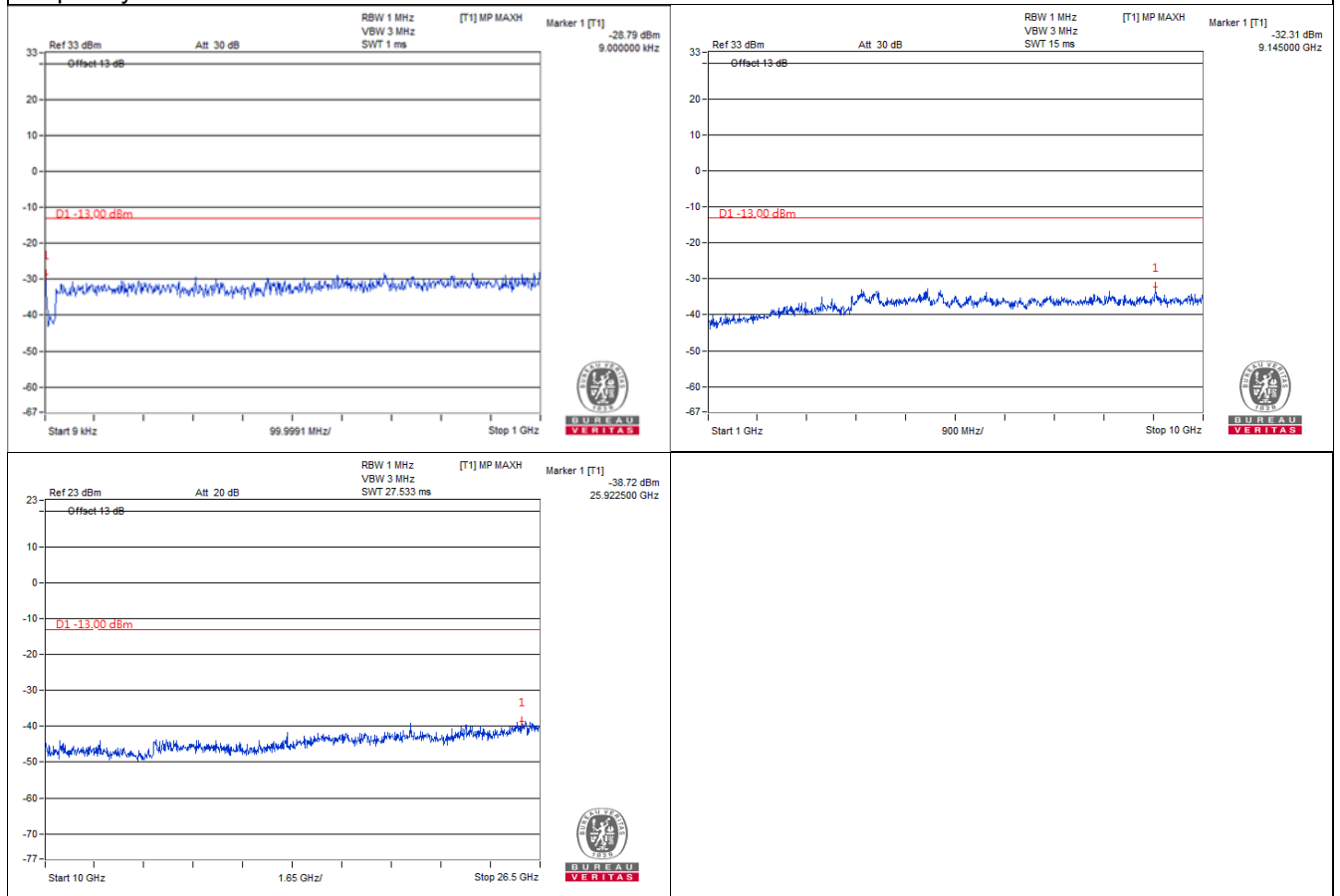
Frequency: 1932.5MHz



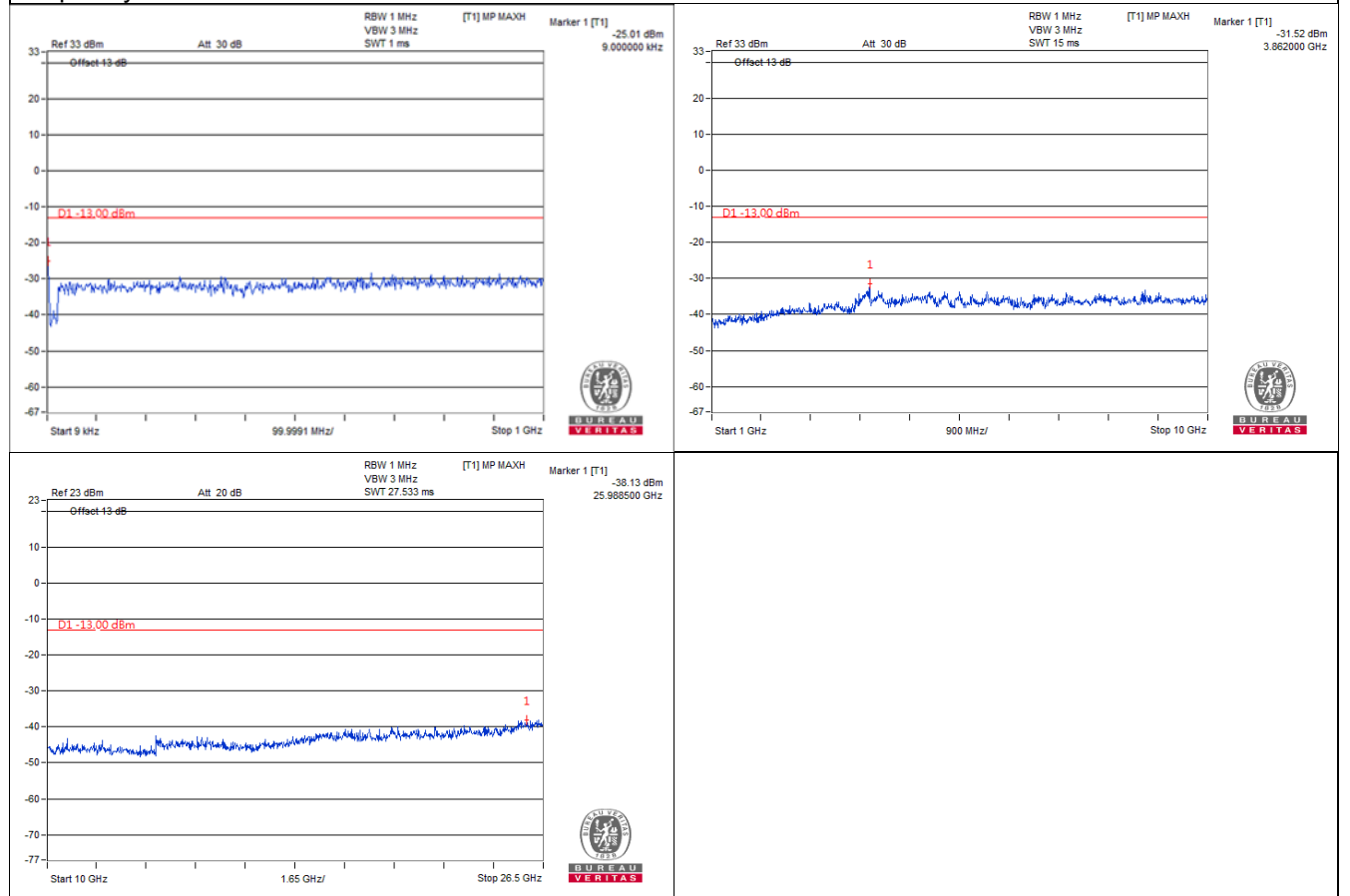
Frequency: 1962.5MHz



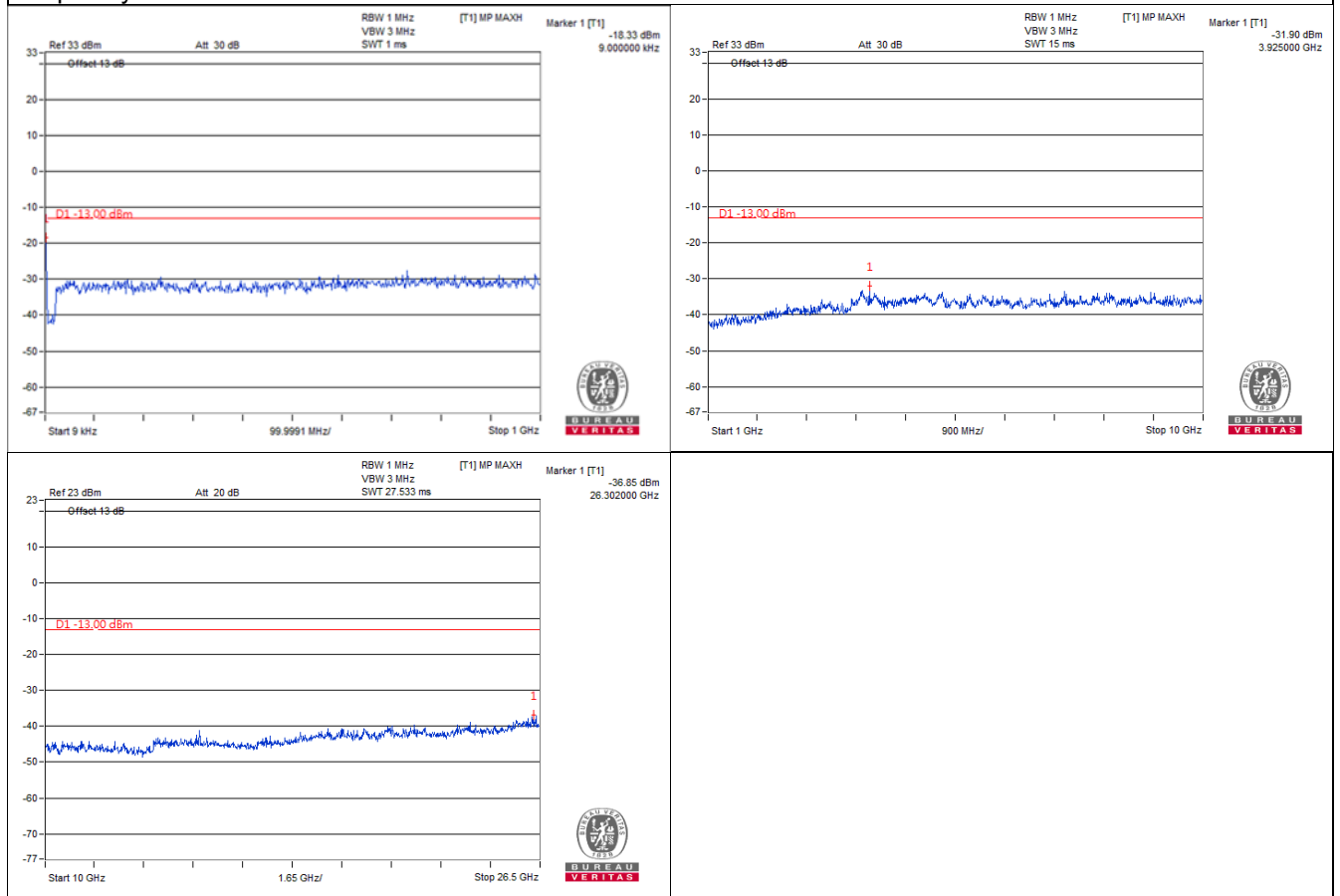
Frequency: 1992.5MHz



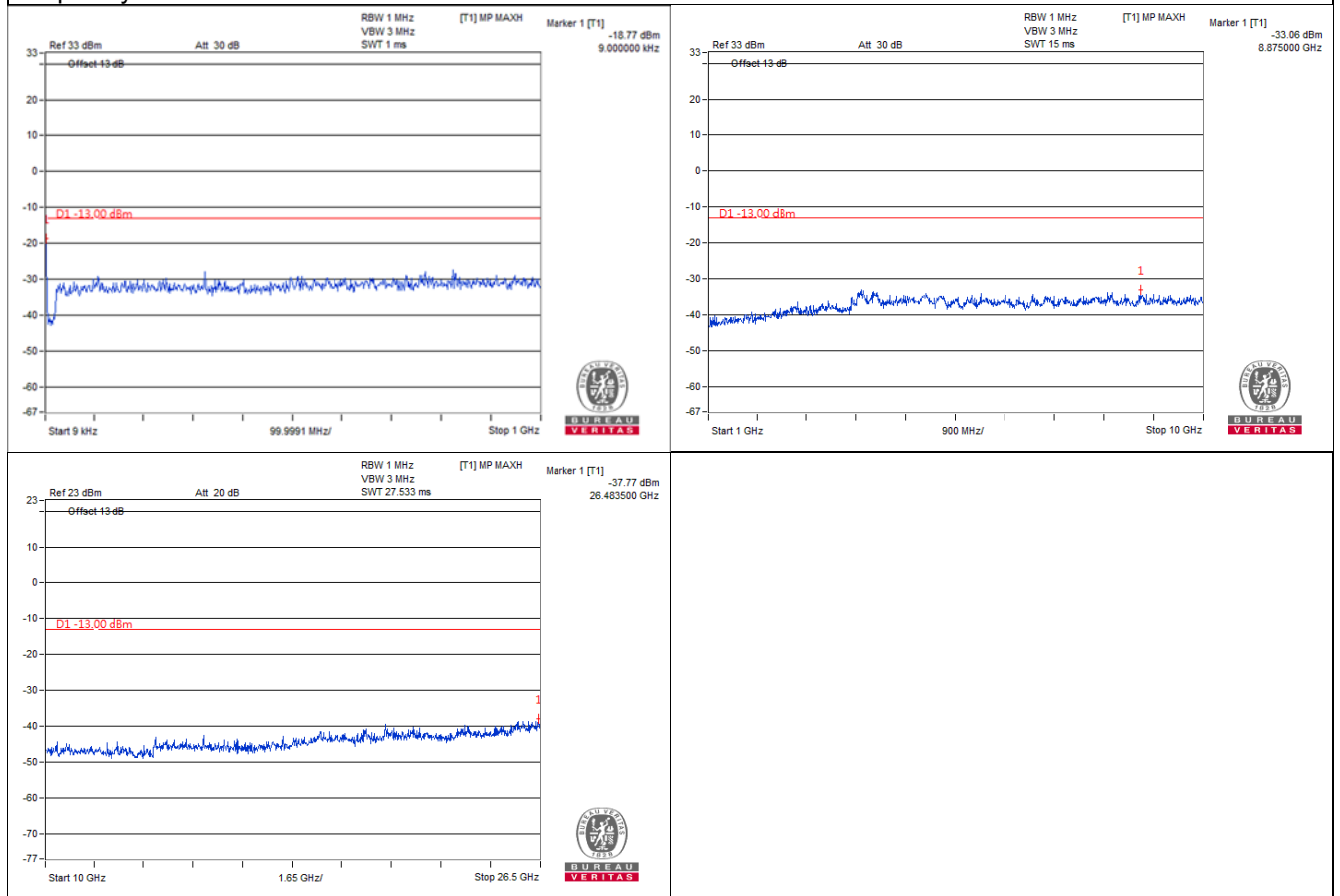
LTE Band 25:
Narrowband
Frequency: 1932.5MHz



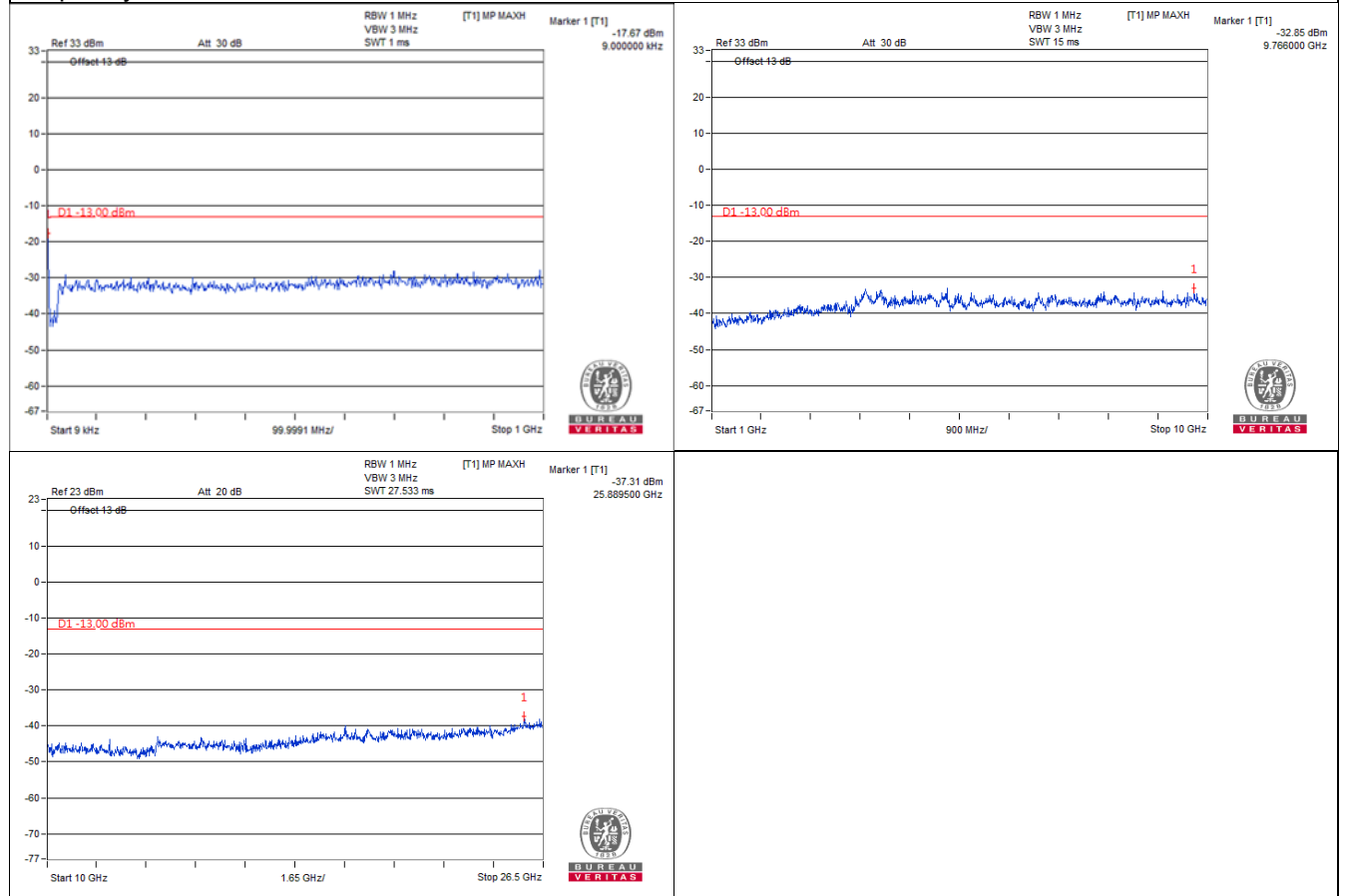
Frequency: 1962.5MHz



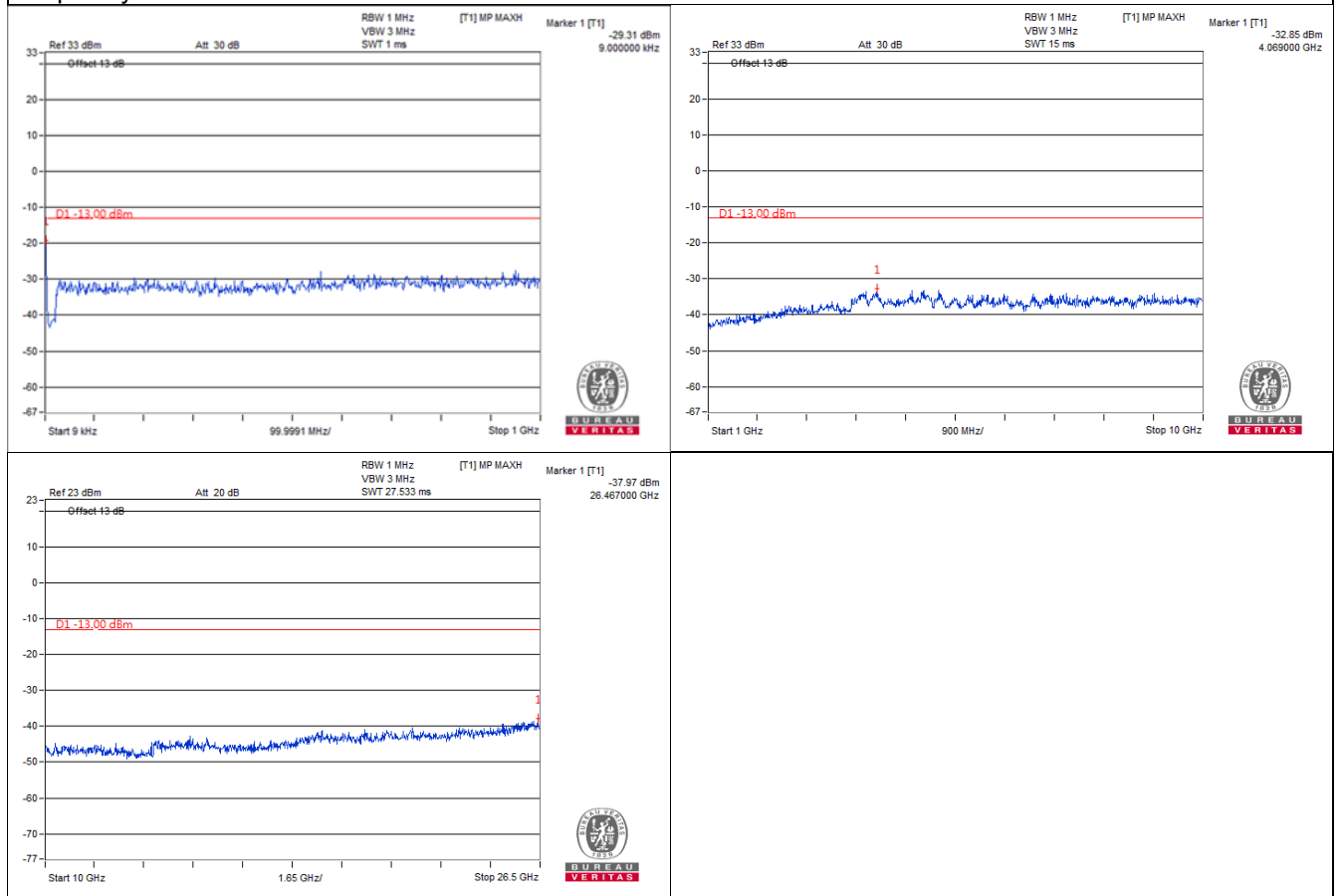
Frequency: 1992.5MHz



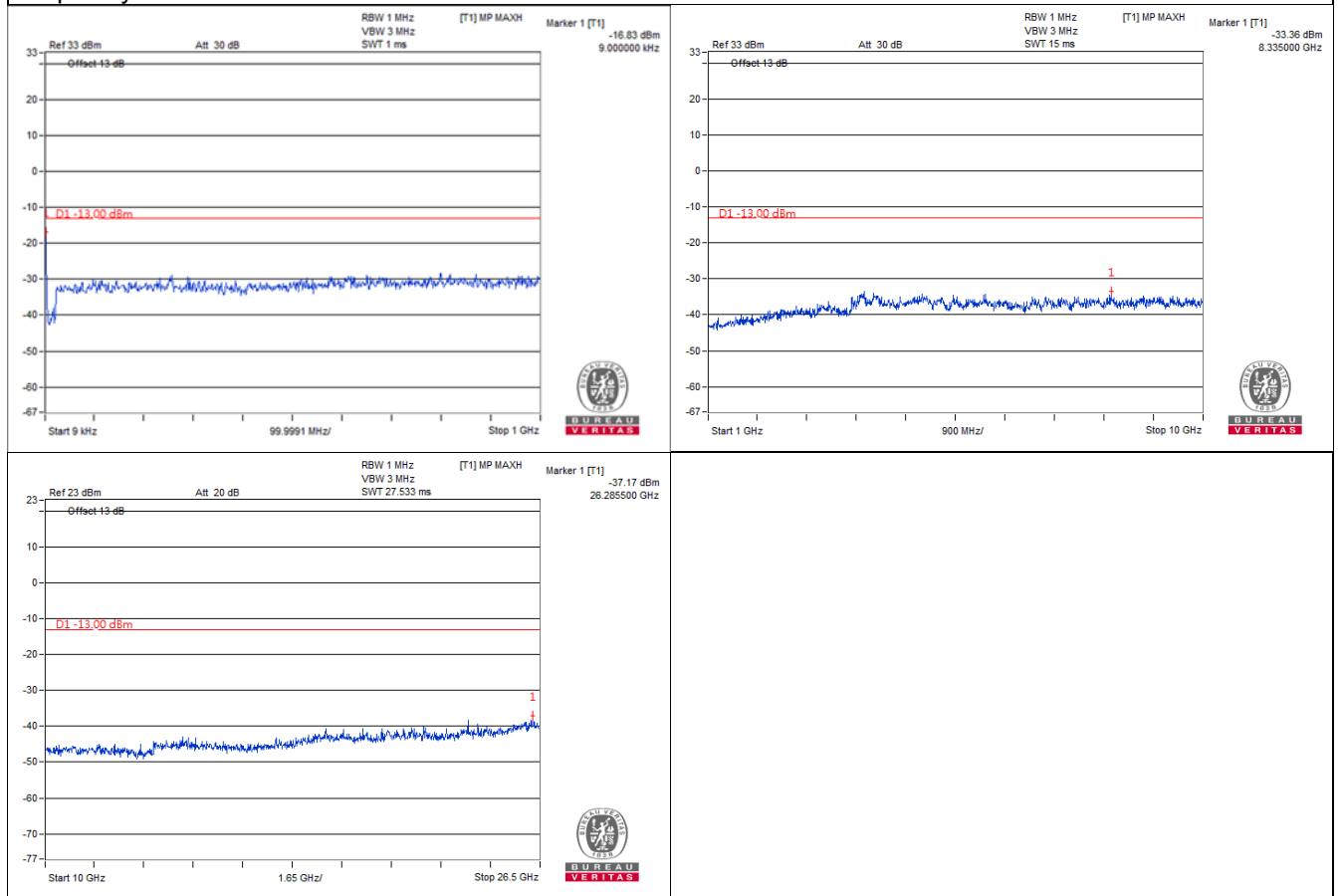
LTE Band 66:
Wideband
Frequency: 2112.5MHz



Frequency: 2155MHz

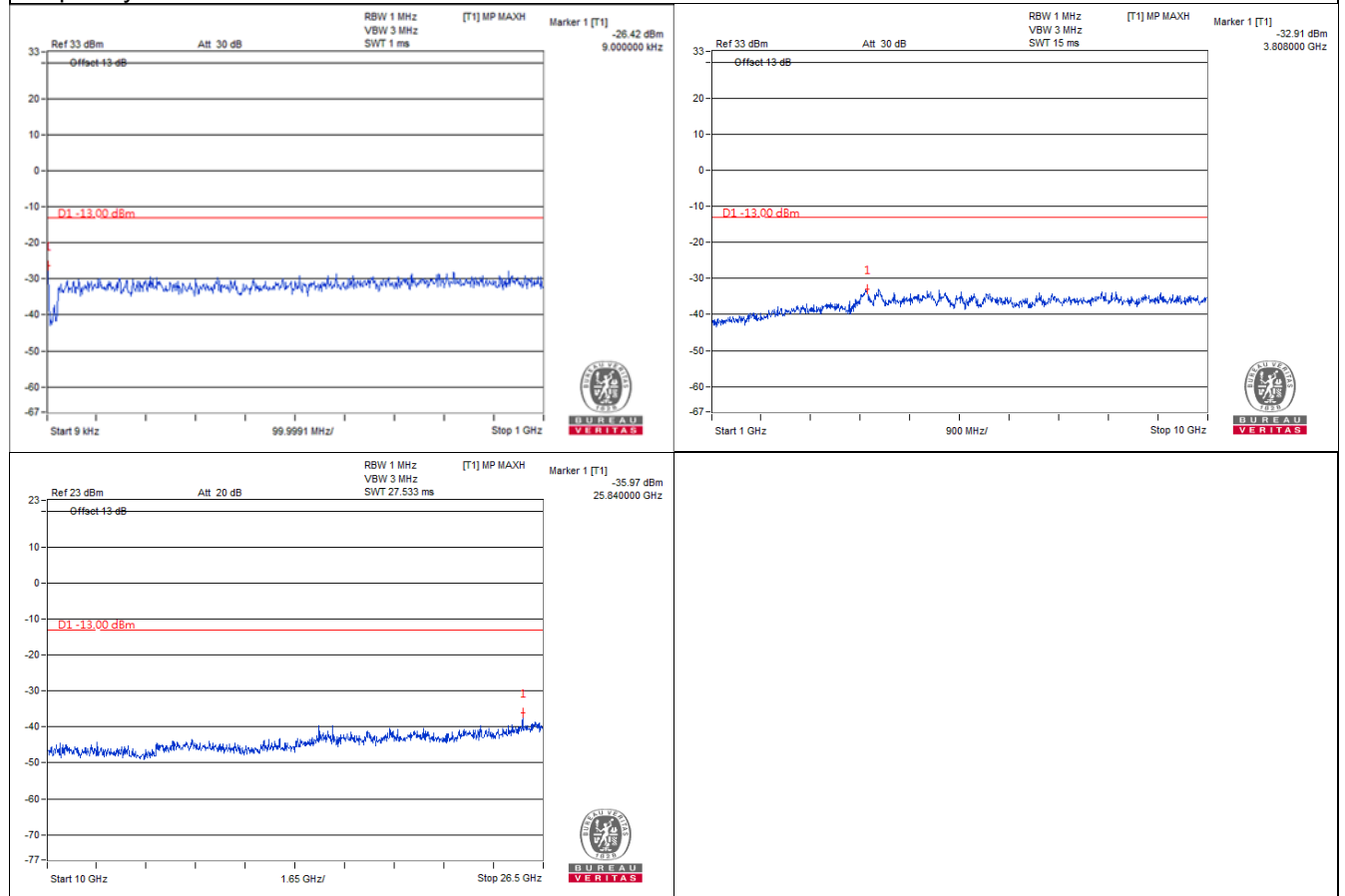


Frequency: 2197.5MHz

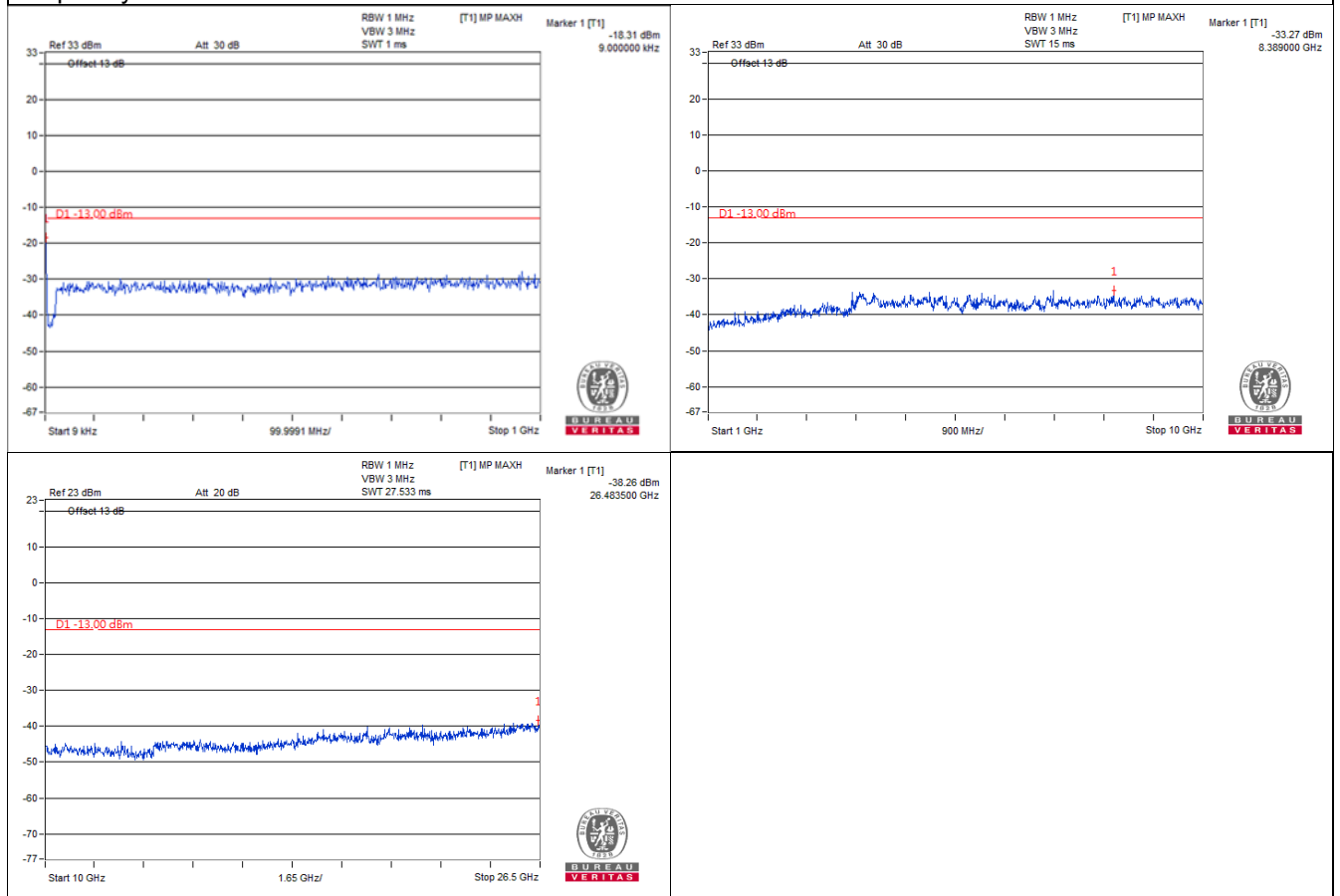


LTE Band 66:
Narrowband

Frequency: 2112.5MHz



Frequency: 2155MHz



Frequency: 2197.5MHz

