



RADIO TEST REPORT

FCC ID : Z8H89FT0064

Equipment : 2 GHz cnRanger 201 SM

Brand Name : Cambium Networks

Model Name : 2 GHz cnRanger 201 SM

Applicant : Cambium Networks Inc.
3800 Golf Road, Suite 360 Rolling Meadows, IL 60008,
USA

Manufacturer : Cambium Networks, Ltd.
Ashburton, TQ13 7UP, UK

Standard : 47 CFR Part 27

The product was received on Mar. 11, 2021, and testing was started from Mar. 19, 2021 and completed on Mar. 22, 2021. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A15_1 Ver1.3



Summary of Test Result

Report Clause	Band	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	41	2.1046	Conducted Output Power	Reporting only	-
	41	2.1046 27.50(h)	Equivalent Isotropic Radiated Power	PASS	-
3.2	41	-	Peak-to-Average Ratio	PASS	-
3.3	41	2.1049	Occupied Bandwidth	PASS	-
3.4	41	2.1051 27.53(m)	Conducted Band Edge	PASS	-
3.5	41	2.1051 27.53(m)	Conducted Spurious Emission	PASS	-
3.6	41	2.1053	Radiated Spurious Emission	PASS	-
3.7	41	2.1055 27.54	Frequency Stability for Temperature & Voltage	PASS	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Wendy Pan



1 General Description

1.1 Information

1.1.1 RF General Information

Items	Description
EUT Power Type	From PoE
TX Frequency (MHz)	LTE Band 41: 2498.5 ~ 2687.5
RX Frequency (MHz)	LTE Band 41: 2498.5 ~ 2687.5
Bandwidth (MHz)	LTE Band 41: 5 / 10 / 15 / 20
Type of Modulation	LTE: QPSK
RF Test Tool Software of EUT	PuTTY [v0.62]、DOS [ver 6.1.7601]

Note: The above information was declared by manufacturer.

1.1.2 Antenna Information

Ant.	Port	Brand	Part Number	Antenna Type	Connector	Gain (dBi)
1	1	Cambium	2LTE-SM-201	High gain parabolic dish	Micro coaxial connector	17
	2					

Note: The above information was declared by manufacturer.

The EUT supports the Port 1 and Port 2 with TX diversity function.

Port 1 generated the worst case than Port 2, so it is tested and recorded in the report.

Port 1 and Port 2 could receive simultaneously.

1.1.3 Maximum EIRP Power, Frequency Tolerance, and Emission Designator

LTE										
Band	Bandwidth (MHz)	TX Frequency (MHz)	Type of Modulation	Max. Conducted Power		Max. EIRP Power		99% Occupied Bandwidth (MHz)	Emission Designator	Frequency Tolerance (ppm)
				(dBm)	(W)	(dBm)	(W)			
41	5	2498.5~2687.5	QPSK	23.88	0.244	40.88	12.246	4.487	4M49G7D	0.0052
	10	2501~2685	QPSK	27.30	0.537	44.30	26.915	8.963	8M96G7D	
	15	2503~2682.5	QPSK	27.10	0.513	44.10	25.704	13.413	13M4G7D	
	20	2506~2680	QPSK	28.29	0.675	45.29	33.806	17.914	17M9G7D	



1.2 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 27
- ANSI/TIA-603-E (2016)
- ANSI C63.26-2015
- FCC KDB 971168 D01 v03r01

The following reference test guidance is not within the scope of accreditation of TAF.

- 47 CFR FCC Part 2
- FCC KDB 412172 D01 v01r01
- FCC KDB 414788 D01 v01r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

1.3 Testing Location

Testing Location Information	
Test Lab. : Sporton International Inc. Hsinchu Laboratory	
Hsinchu	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)
(TAF: 3787)	TEL: 886-3-656-9065 FAX: 886-3-656-9085
	Test site Designation No. TW3787 with FCC.
	Test site registered number IC 4086D with Industry Canada.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH01-CB	Ron Huang	21.8-23.7 / 59-60	Mar. 19, 2021
Radiated	03CH05-CB	Cola Fan	22.4-23.8 / 57-62	Mar. 22, 2021

1.4 Measurement Uncertainty

Test Items	Uncertainty	Remark
Radiated Emission (30MHz ~ 1,000MHz)	5.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	5.0 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.9 dB	Confidence levels of 95%
Conducted Emission	2.8 dB	Confidence levels of 95%



2 Test Configuration of Equipment Under Test

2.1 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	Conducted Output Power Equivalent Isotropic Radiated Power (EIRP) Occupied Bandwidth Conducted Band Edge Conducted Spurious Emission Frequency Stability
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests	
Tests Item	Radiated Spurious Emission
Test Condition	Radiated measurement
Operating Mode < 1GHz	EUT + PoE
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.	
Operating Mode > 1GHz	
1	EUT

Note: 1.The EUT can only be used at Z axis.

2.The EUT was powered by PoE, and the PoE was for measurement only, would not be marked.

Equipment	Brand Name	Model Name	FCC ID
PoE	Cambium	NET-P15-30IN	N/A



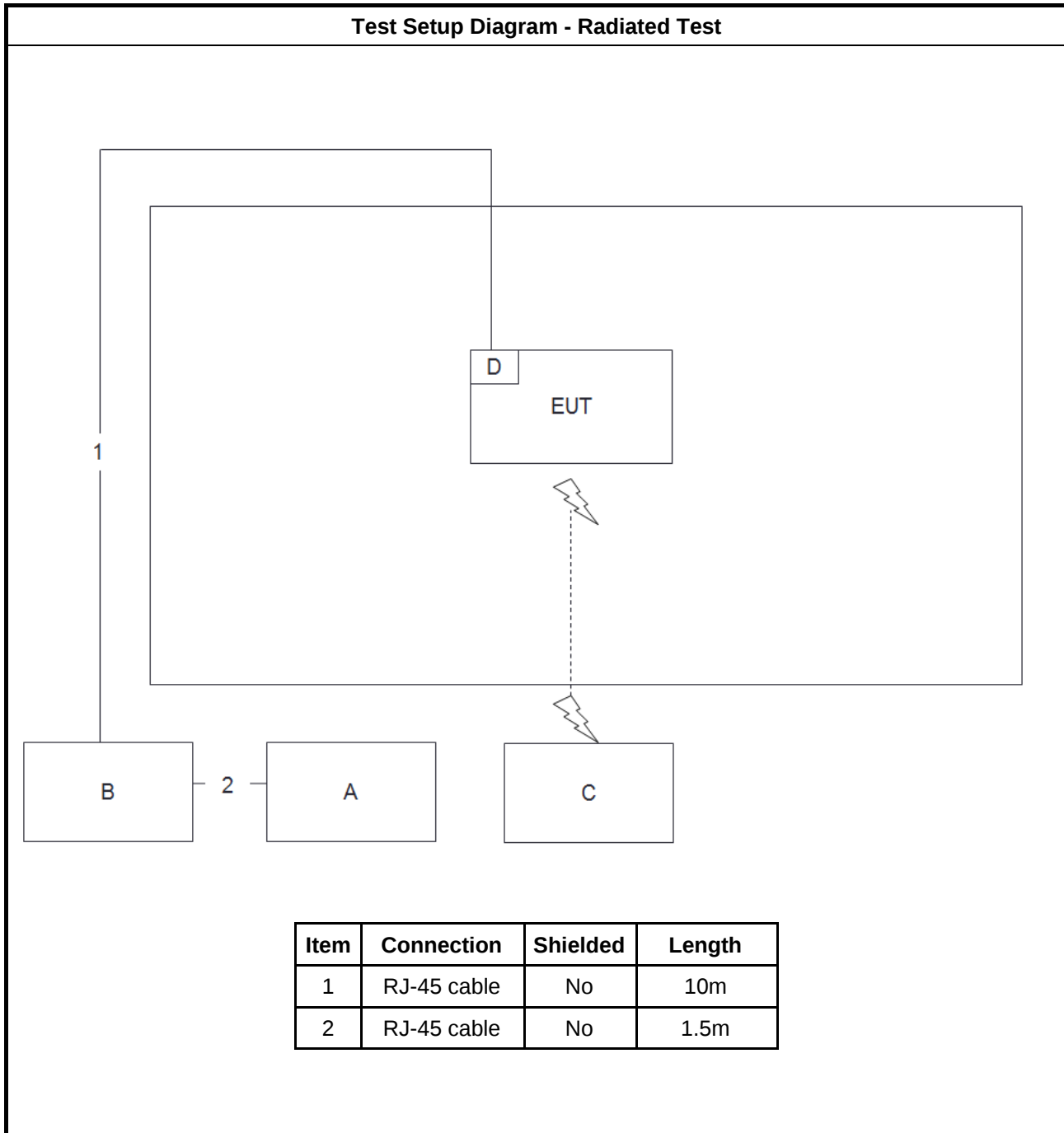
2.2 Accessories

Accessories
Bracket*1 Sealing Collar*1

2.3 Support Equipment

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Notebook	DELL	E4300	N/A
B	PoE	Cambium Networks	NET-P15-30IN	N/A
C	LTE base station	Anritsu	MT8820C	N/A
D	SIM Card	R&S	N/A	N/A

2.4 Test Setup Diagram





2.5 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

The following shows an offset computation example with RF cable loss 1 dB and a 20dB attenuator.

Example:

Offset (dB) = RF cable loss (dB) + attenuator factor (dB).

$$= 1 + 20 = 21 \text{ (dB)}$$

3 Test Result

3.1 Conducted Output Power and EIRP Measurement

3.1.1 Description of the Conducted Output Power and ERP/EIRP Measurement

Conducted Output Power Limit	
Band 41: All user stations: 2 Watts	
Equivalent Isotropic Radiated Power (EIRP) Limit	
Band 41	Base Station: $33 \text{ dBW} + 10 \log(X/Y) \text{ dBW} + 10 \log(360/\text{beamwidth}) \text{ dBW}$, where $X = \text{ChBW(MHz)}$, $Y = 5.5(\text{B and T channel})$ or $6(\text{M channel}) \text{ MHz}$ Mobile Station: 2 Watts Fixed Subscriber Station: N/A
Note 1: A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported. Note 2: According to FCC KDB 412172 D01 v01r01 Power Approach, $\text{EIRP} = P_T + G_T - L_c$, $\text{ERP} = \text{EIRP} - 2.15$, where P_T = transmitter output power in dBm G_T = gain of the transmitting antenna in dBi L_c = signal attenuation in the connecting cable between the transmitter and antenna in dB	

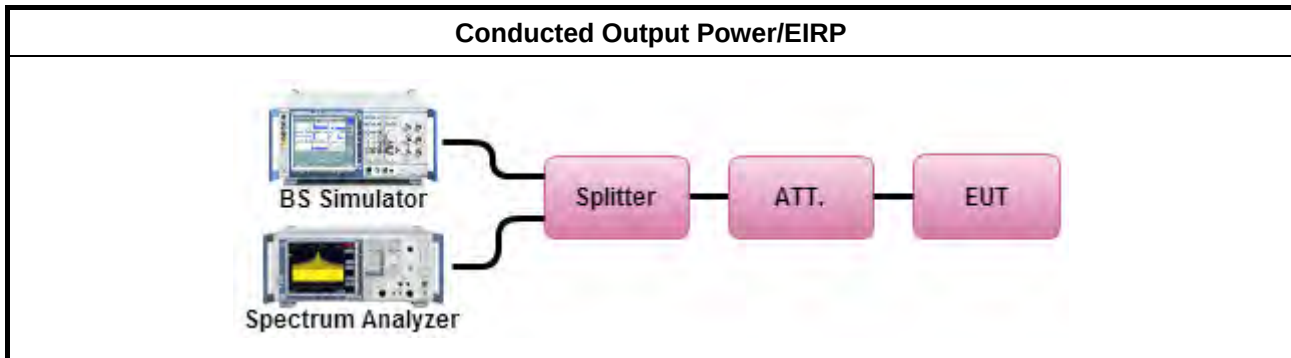
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

Refer as Appendix A

3.1.6 Test Result of EIRP

Refer as Appendix A

3.2 Peak-to-Average Ratio Measurement

3.2.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

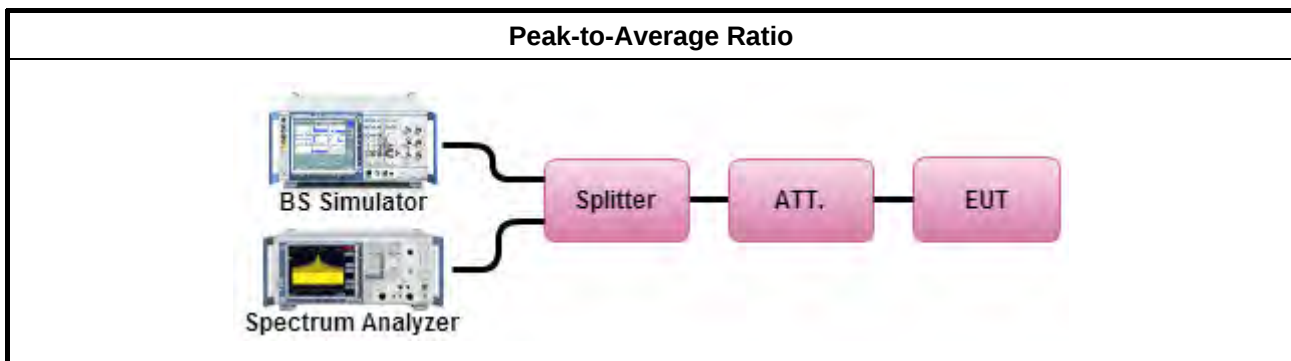
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The EUT was connected to spectrum and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.

3.2.4 Test Setup



3.2.5 Test Result of Peak-to-Average Ratio

Refer as Appendix B



3.3 Occupied Bandwidth Measurement

3.3.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

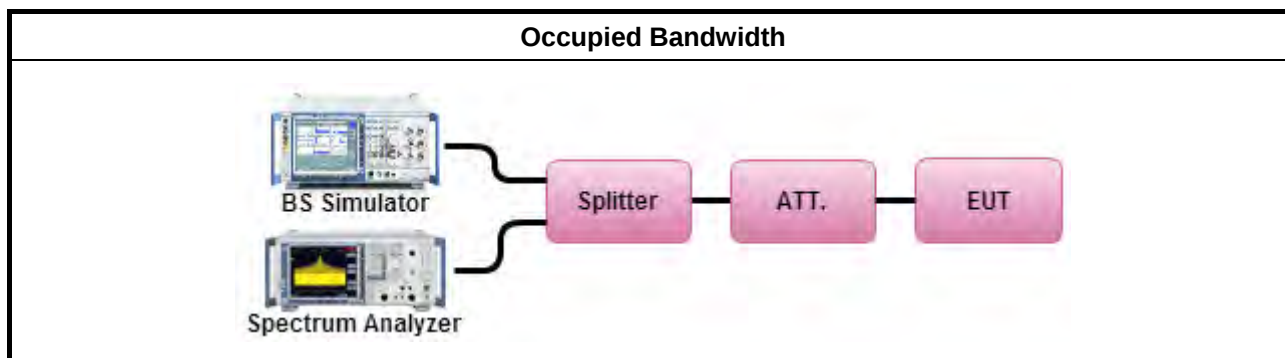
3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency.
The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
3. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
4. Set the detection mode to peak, and the trace mode to max hold.
5. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)
6. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
7. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.3.4 Test Setup



3.3.5 Test Result of Occupied Bandwidth

Refer as Appendix C

3.4 Conducted Band Edge Measurement

3.4.1 Description of Conducted Band Edge Measurement

Conducted Band Edge	
Band 41	For digital base stations: The attenuation shall be not less than $43 + 10 \log (P)$ dB. For mobile digital stations: The attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Note : Limit : $10 \log P - \{43 + 10 \log P\}$ dBW = -43dBW = -13dBm.

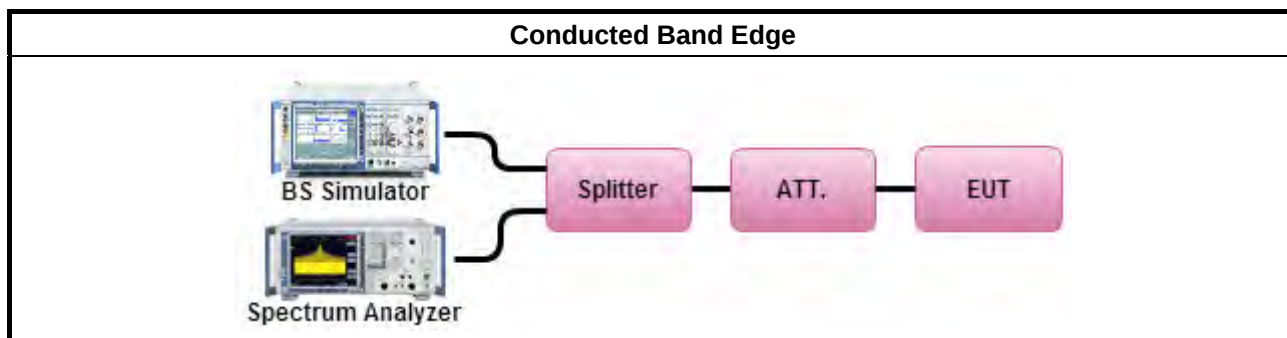
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. Set RBW $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
5. Set spectrum analyzer with RMS detector.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. Checked that all the results comply with the emission limit line.

3.4.4 Test Setup



3.4.5 Test Result of Conducted Band Edge

Refer as Appendix D

3.5 Conducted Spurious Emission Measurement

3.5.1 Description of Conducted Spurious Emission Measurement

Conducted Band Edge	
Band 41	For digital base stations: The attenuation shall be not less than $43 + 10 \log (P)$ dB. For mobile digital stations: The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least $55 + 10 \log (P)$ dB.
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10 th harmonic.	

Note : Limit : $10 \log P - \{43 + 10 \log P\}$ dBW = -43dBW = -13dBm.

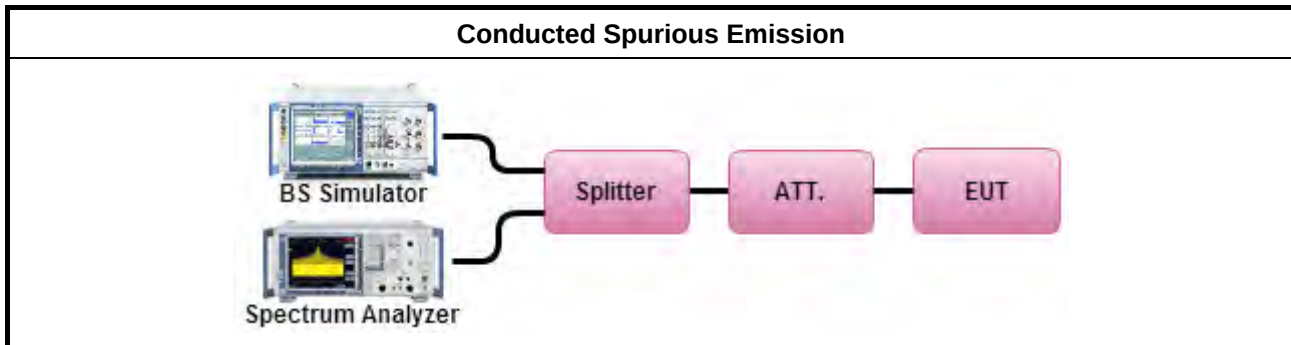
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
6. Set spectrum analyzer with RMS detector.
7. Taking the record of maximum spurious emission.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.5.4 Test Setup



3.5.5 Test Result of Conducted Spurious Emission

Refer as Appendix D

3.6 Radiated Spurious Emission Measurement

3.6.1 Description of Radiated Spurious Emission Measurement

Radiated Spurious Emission	
The radiated spurious emission was measured by substitution method according to ANSI C63.26-2015. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.	
Band 41	The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $55 + 10 \log (P)$ dB.

Note :

Conducted Limit : $10 \log P - \{43 + 10 \log P\}$ dBW = -43dBW = -13dBm.

Radiated Limit = -13 dBm + 95.2 dB = 82.2 dBuV/m at 3m.

3.6.2 Measuring Instruments

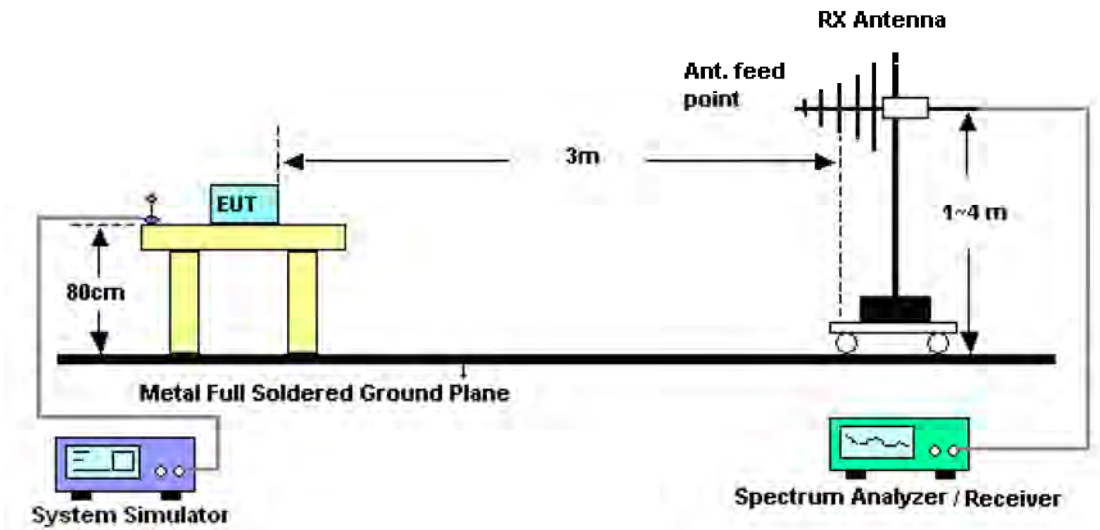
The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

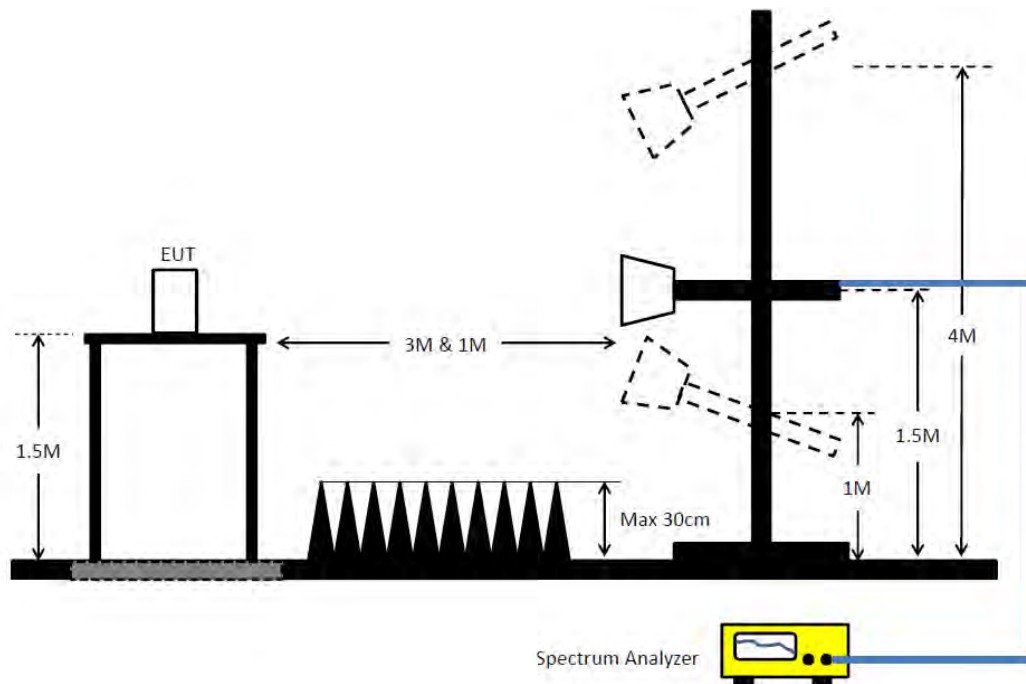
1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.6.4 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





3.6.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

3.6.6 Test Result of Radiated Spurious Emission (Below 1GHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

3.6.7 Test Result of Radiated Spurious Emission (Above 1GHz)

Refer as Appendix E

3.7 Frequency Stability Measurement

3.7.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) of the center frequency.

3.7.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

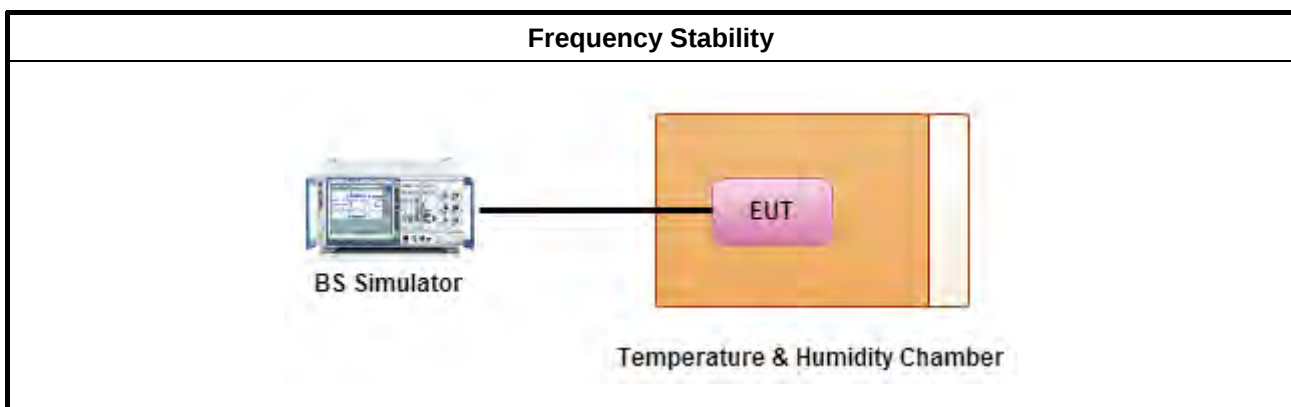
3.7.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in -30°C steps up to 50°C . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.7.4 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at $20 \pm 5^{\circ}\text{C}$ and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85 to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

3.7.5 Test Setup



3.7.6 Test Result of Frequency Stability

Refer as Appendix F



4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 10, 2020	Aug. 09, 2021	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH05-CB	1GHz ~18GHz 3m	Nov. 08, 2020	Nov. 07, 2021	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 27, 2020	Mar. 26, 2021	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120 D-1291	1GHz~18GHz	Sep. 05, 2020	Sep. 04, 2021	Radiation (03CH05-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2020	Jul. 20, 2021	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 28, 2020	Apr. 27, 2021	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630SE	980287	1GHz ~ 26.5GHz	Jul. 03, 2020	Jul. 02, 2021	Radiation (03CH05-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 2021	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Nov. 10, 2020	Nov. 09, 2021	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 13, 2020	May 12, 2021	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-28	1GHz~18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+28	1GHz~18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)
WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	141962	-	Oct. 14, 2020	Oct. 13, 2021	Radiation (03CH05-CB)
Radio Communication Analyzer	Anritsu	MT8820C	6201300619	1GHz~3.8GHz	Nov. 23, 2020	Nov. 22, 2021	Radiation (03CH05-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	May 05, 2020	May 04, 2021	Conducted (TH01-CB)
Signal analyzer	Keysight	N9020A	MY55400138	10 Hz up to 26.5 GHz	Jan. 13, 2021	Jan. 12, 2022	Conducted (TH01-CB)



Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	May 28, 2020	May 27, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz~26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz~26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz~26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz~26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz~26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-30	1 GHz~26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Feb. 23, 2021	Feb. 22, 2022	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Feb. 23, 2021	Feb. 22, 2022	Conducted (TH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH01-CB)
MW Analog Signal Generator	Keysight	N5183A	MY50142965	100kHz~20GHz	Nov. 22, 2020	Nov. 21, 2021	Conducted (TH01-CB)
Vector Signal Generator	Keysight	N5182B	MY53052408	9kHz~6GHz	Jan. 20, 2021	Jan. 19, 2022	Conducted (TH01-CB)
Radio Communication Analyzer	Anritsu	MT8820C	6201300619	1GHz~3.8GHz	Nov. 23, 2020	Nov. 22, 2021	Conducted (TH01-CB)
Vector Signal generator	Agilent	E4438C	MY49072778	250kHz-6GHz	Aug. 24, 2020	Aug. 23, 2021	Conducted (TH01-CB)
WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	141962	-	Oct. 14, 2020	Oct. 13, 2021	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

N.C.R. means Non-Calibration required.



Average Power

Appendix A

Summary

Mode	Power (dBm)	Power (W)	EIRP (dBm)	EIRP (W)
Band 41	-	-	-	-
LTE_5MHz_Nss1,QPSK_1TX	23.88	0.244	40.88	12.246
LTE_10MHz_Nss1,QPSK_1TX	27.30	0.537	44.30	26.915
LTE_15MHz_Nss1,QPSK_1TX	27.10	0.513	44.10	25.704
LTE_20MHz_Nss1,QPSK_1TX	28.29	0.675	45.29	33.806

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Power (dBm)	Power (W)	Power Lim. (W)	EIRP (dBm)	EIRP (W)	EIRP Lim. (W)
Band 41_LTE_5MHz_Nss1,QPSK_1TX	-	-	-	-	-	-	-	-	-
2498.5MHz_RB 25,#RB 0	Pass	17.00	23.88	23.88	0.244	2	40.88	12.246	Inf
2593MHz_RB 25,#RB 0	Pass	17.00	23.63	23.63	0.231	2	40.63	11.561	Inf
2687.5MHz_RB 25,#RB 0	Pass	17.00	23.48	23.48	0.223	2	40.48	11.169	Inf
Band 41_LTE_10MHz_Nss1,QPSK_1TX	-	-	-	-	-	-	-	-	-
2501MHz_RB 50,#RB 0	Pass	17.00	26.73	26.73	0.471	2	43.73	23.605	Inf
2593MHz_RB 50,#RB 0	Pass	17.00	27.30	27.30	0.537	2	44.30	26.915	Inf
2685MHz_RB 50,#RB 0	Pass	17.00	27.04	27.04	0.506	2	44.04	25.351	Inf
Band 41_LTE_15MHz_Nss1,QPSK_1TX	-	-	-	-	-	-	-	-	-
2503.5MHz_RB 75,#RB 0	Pass	17.00	26.74	26.74	0.472	2	43.74	23.659	Inf
2593MHz_RB 75,#RB 0	Pass	17.00	27.07	27.07	0.509	2	44.07	25.527	Inf
2682.5MHz_RB 75,#RB 0	Pass	17.00	27.10	27.10	0.513	2	44.10	25.704	Inf
Band 41_LTE_20MHz_Nss1,QPSK_1TX	-	-	-	-	-	-	-	-	-
2506MHz_RB 100,#RB 0	Pass	17.00	27.67	27.67	0.585	2	44.67	29.309	Inf
2593MHz_RB 100,#RB 0	Pass	17.00	28.11	28.11	0.647	2	45.11	32.434	Inf
2680MHz_RB 100,#RB 0	Pass	17.00	28.29	28.29	0.675	2	45.29	33.806	Inf

DG = Directional Gain; Port n = Port n output power



Peak to Average Power Ratio (PAPR)

Appendix B

Summary

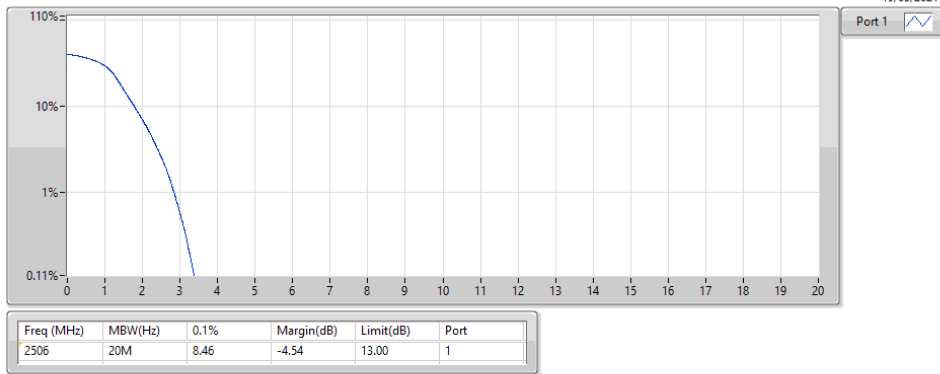
Mode	Result	Freq (MHz)	Limit (dB)	0.1%	Port
Band 41	-	-	-	-	-
LTE_20MHz_Nss1,QPSK_1TX	Pass	2680	13.00	8.66	1

Result

Mode	Result	Freq (MHz)	Limit (dB)	0.1%	Port
Band 41_LTE_20MHz_Nss1,QPSK_1TX	-	-	-	-	-
2506MHz_RB 100,#RB 0	Pass	2506	13.00	8.46	1
2593MHz_RB 100,#RB 0	Pass	2593	13.00	8.27	1
2680MHz_RB 100,#RB 0	Pass	2680	13.00	8.66	1

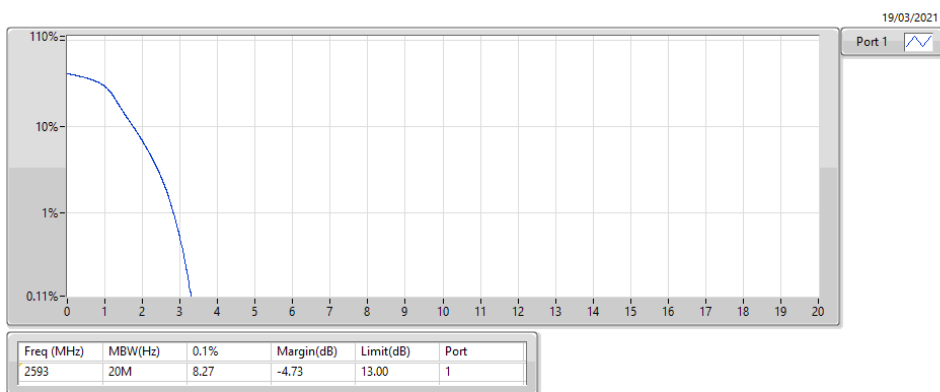
Band 41_LTE_20MHz_Nss1,QPSK_1TX
2506MHz_QPSK_RB 100,#RB 0

PAR



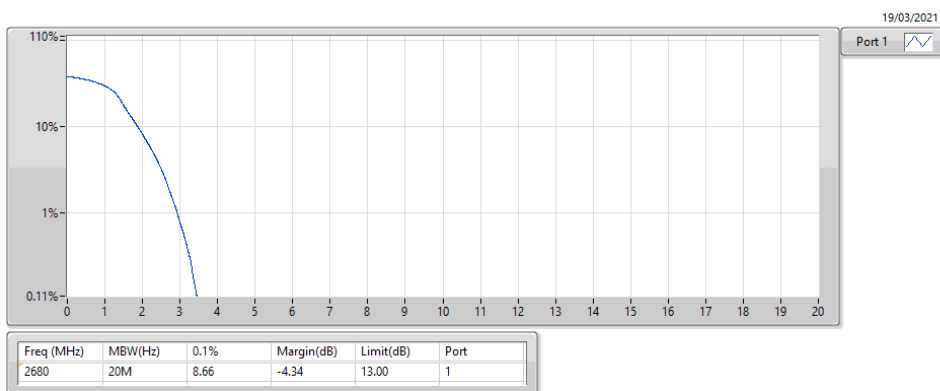
Band 41_LTE_20MHz_Nss1,QPSK_1TX
2593MHz_QPSK_RB 100,#RB 0

PAR



Band 41_LTE_20MHz_Nss1,QPSK_1TX
2680MHz_QPSK_RB 100,#RB 0

PAR



Summary

Mode	Max-NdB (Hz)	Max-OBW (Hz)	ITU-Code	Min-NdB (Hz)	Min-OBW (Hz)
Band 41	-	-	-	-	-
LTE_5MHz_Nss1,QPSK_1TX	5.525M	4.487M	4M49G7D	5.244M	4.478M
LTE_10MHz_Nss1,QPSK_1TX	10.738M	8.963M	8M96G7D	10.688M	8.939M
LTE_15MHz_Nss1,QPSK_1TX	15.769M	13.413M	13M4G7D	15.6M	13.391M
LTE_20MHz_Nss1,QPSK_1TX	20M	17.914M	17M9G7D	19.95M	17.883M

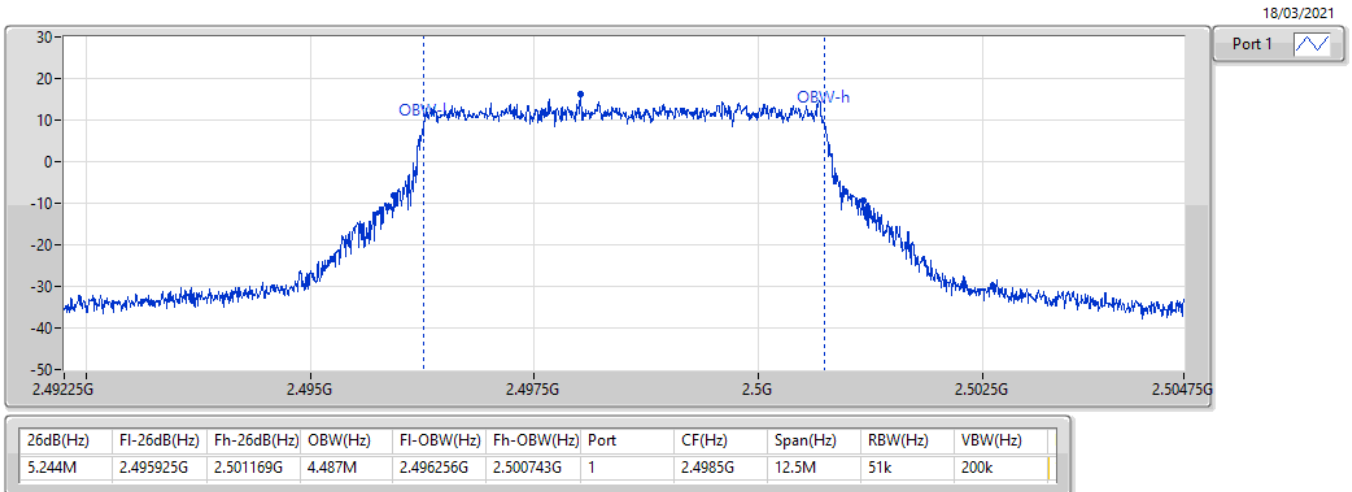
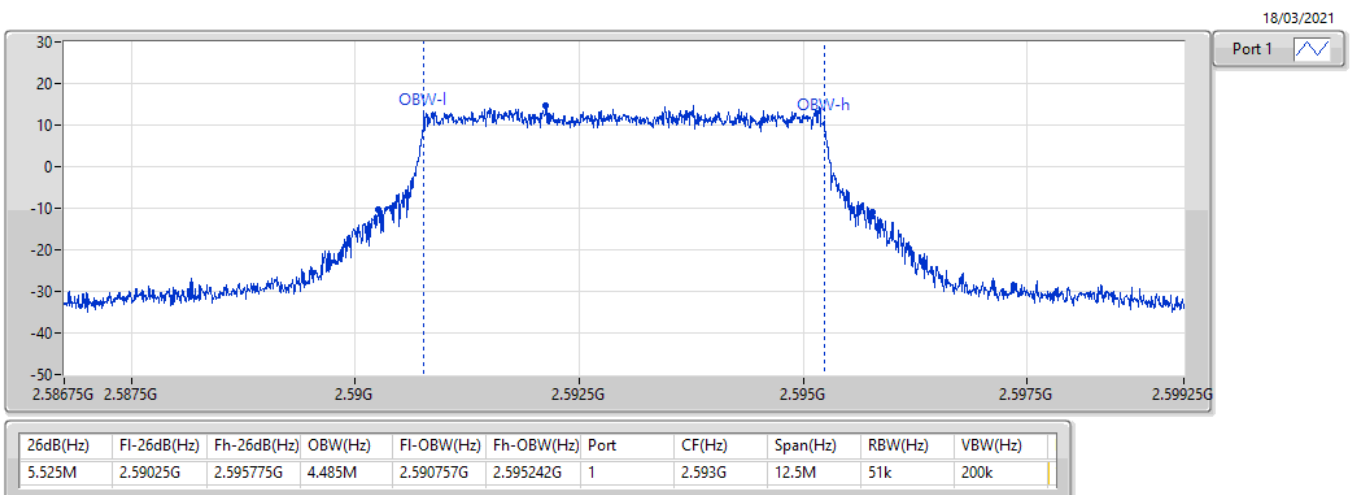
Max-N dB = Maximum 26dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 26dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

Result

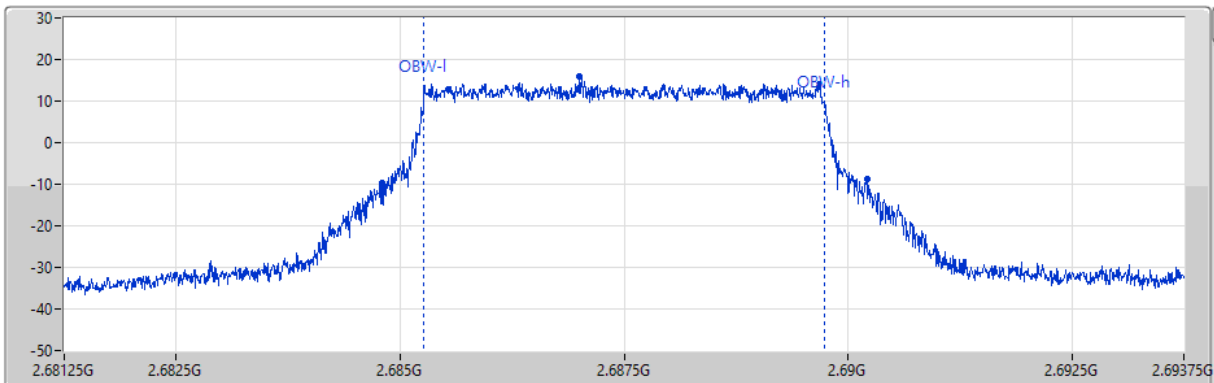
Mode	Result	Port 1-NdB (Hz)	Port 1-OBW (Hz)	Limit (Hz)
Band 41_LTE_5MHz_Nss1,QPSK_1TX	-	-	-	-
2498.5MHz_RB 25,#RB 0	Pass	5.244M	4.487M	Inf
2593MHz_RB 25,#RB 0	Pass	5.525M	4.485M	Inf
2687.5MHz_RB 25,#RB 0	Pass	5.413M	4.478M	Inf
Band 41_LTE_10MHz_Nss1,QPSK_1TX	-	-	-	-
2501MHz_RB 50,#RB 0	Pass	10.688M	8.939M	Inf
2593MHz_RB 50,#RB 0	Pass	10.713M	8.963M	Inf
2685MHz_RB 50,#RB 0	Pass	10.738M	8.947M	Inf
Band 41_LTE_15MHz_Nss1,QPSK_1TX	-	-	-	-
2503.5MHz_RB 75,#RB 0	Pass	15.6M	13.391M	Inf
2593MHz_RB 75,#RB 0	Pass	15.694M	13.413M	Inf
2682.5MHz_RB 75,#RB 0	Pass	15.769M	13.404M	Inf
Band 41_LTE_20MHz_Nss1,QPSK_1TX	-	-	-	-
2506MHz_RB 100,#RB 0	Pass	19.975M	17.883M	Inf
2593MHz_RB 100,#RB 0	Pass	20M	17.91M	Inf
2680MHz_RB 100,#RB 0	Pass	19.95M	17.914M	Inf

Port X-N dB = Port X 26dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

Band 41_LTE_5MHz_Nss1,QPSK_1TX
EBW
2498.5MHz_QPSK_RB 25,#RB 0

Band 41_LTE_5MHz_Nss1,QPSK_1TX
EBW
2593MHz_QPSK_RB 25,#RB 0


Band 41_LTE_5MHz_Nss1,QPSK_1TX
EBW
2687.5MHz_QPSK_RB 25,#RB 0

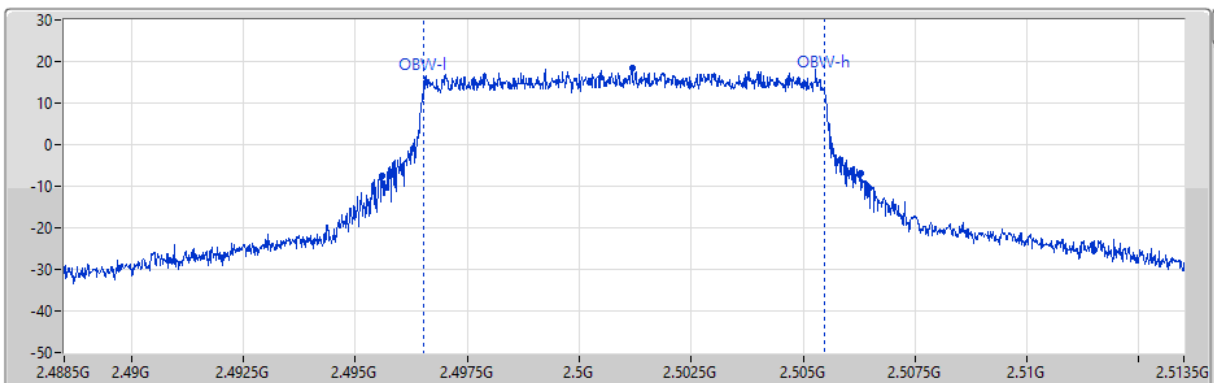
18/03/2021



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
5.413M	2.6848G	2.690213G	4.478M	2.685261G	2.689739G	1	2.6875G	12.5M	51k	200k

Band 41_LTE_10MHz_Nss1,QPSK_1TX
EBW
2501MHz_QPSK_RB 50,#RB 0

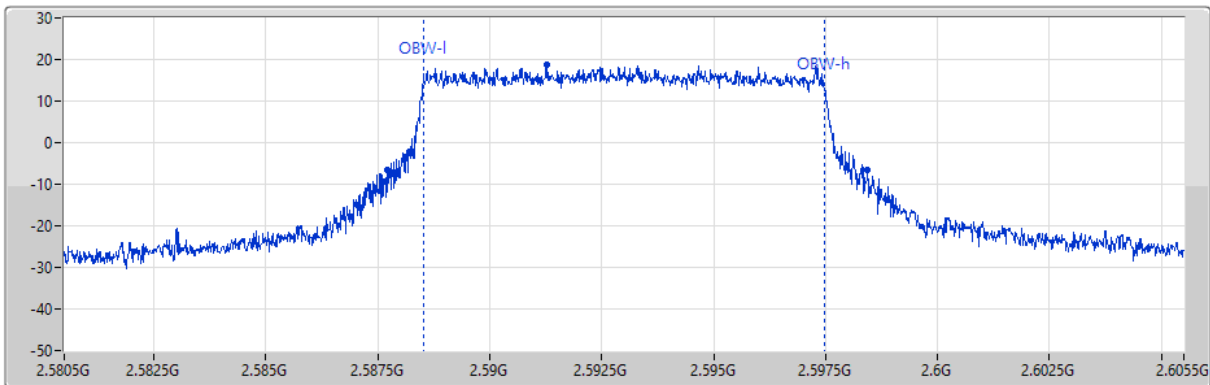
19/03/2021



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
10.688M	2.495588G	2.506275G	8.939M	2.496531G	2.50547G	1	2.501G	25M	100k	300k

Band 41_LTE_10MHz_Nss1,QPSK_1TX
EBW
2593MHz_QPSK_RB 50,#RB 0

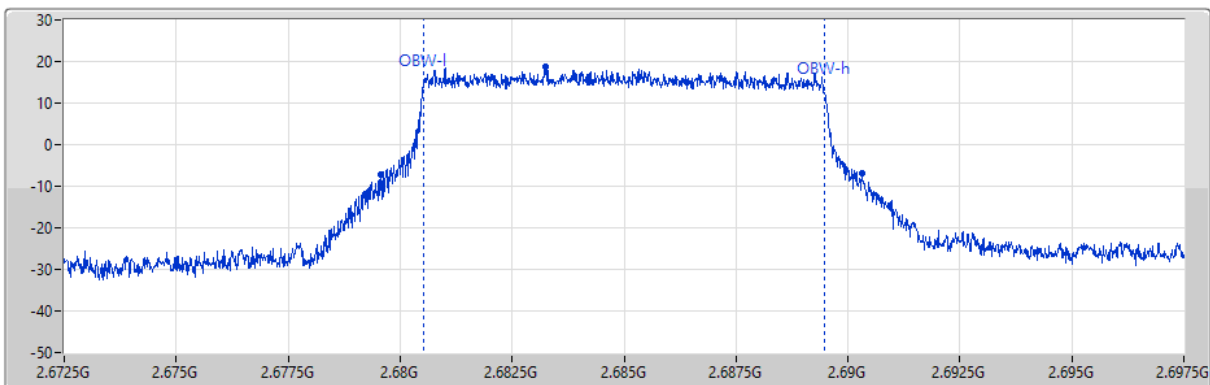
19/03/2021



26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
10.713M	2.587725G	2.598438G	8.963M	2.588512G	2.597475G	1	2.593G	25M	100k	300k

Band 41_LTE_10MHz_Nss1,QPSK_1TX
EBW
2685MHz_QPSK_RB 50,#RB 0

19/03/2021

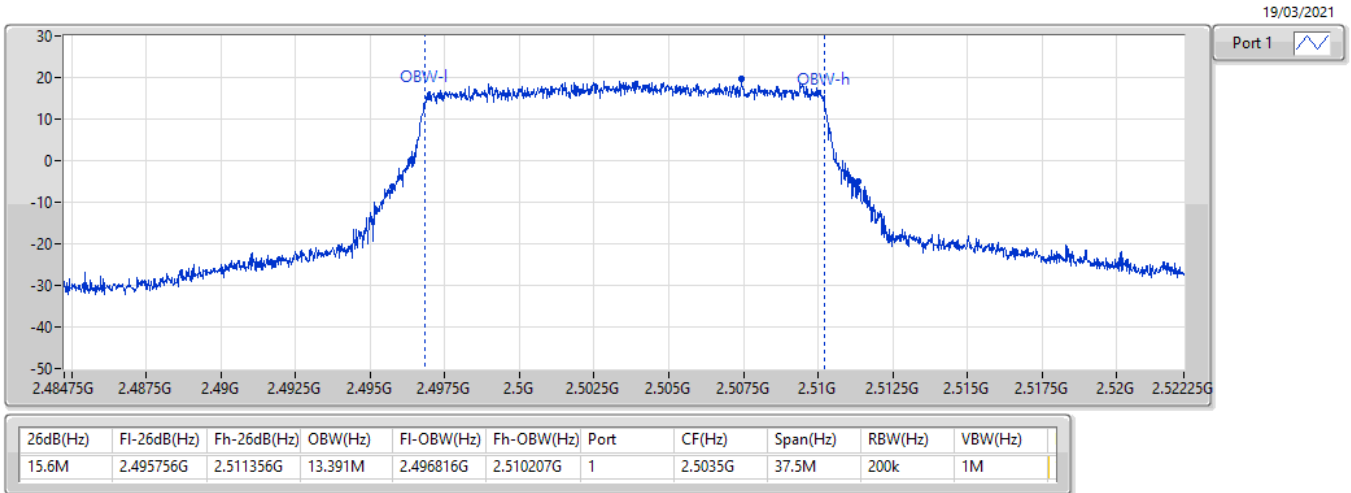


26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
10.738M	2.679575G	2.690313G	8.947M	2.680517G	2.689463G	1	2.685G	25M	100k	300k

Band 41_LTE_15MHz_Nss1,QPSK_1TX

EBW

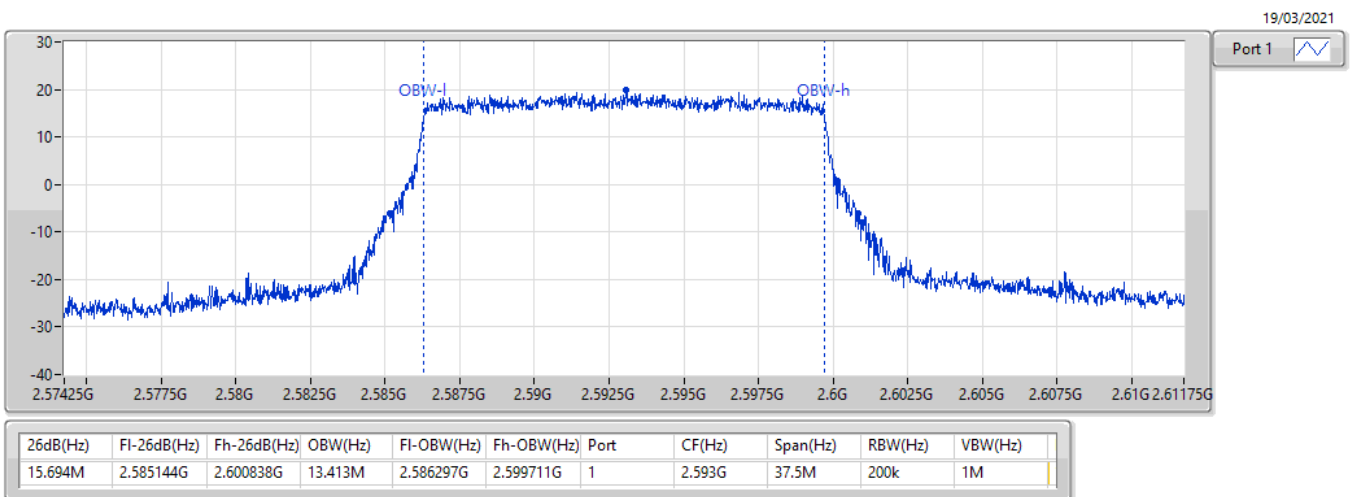
2503.5MHz_QPSK_RB 75,#RB 0



Band 41_LTE_15MHz_Nss1,QPSK_1TX

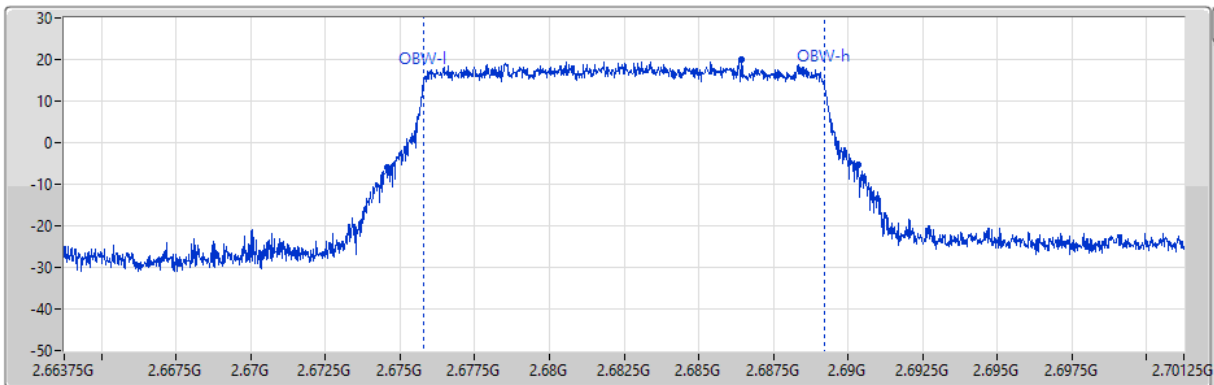
EBW

2593MHz_QPSK_RB 75,#RB 0



Band 41_LTE_15MHz_Nss1,QPSK_1TX
EBW
2682.5MHz_QPSK_RB 75,#RB 0

19/03/2021

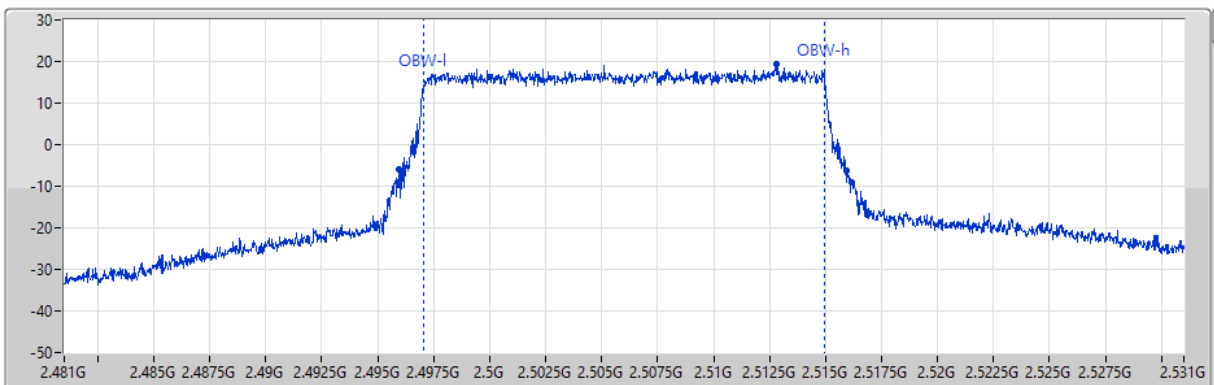


Port 1

26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
15.769M	2.674569G	2.690338G	13.404M	2.6758G	2.689204G	1	2.6825G	37.5M	200k	1M

Band 41_LTE_20MHz_Nss1,QPSK_1TX
EBW
2506MHz_QPSK_RB 100,#RB 0

19/03/2021



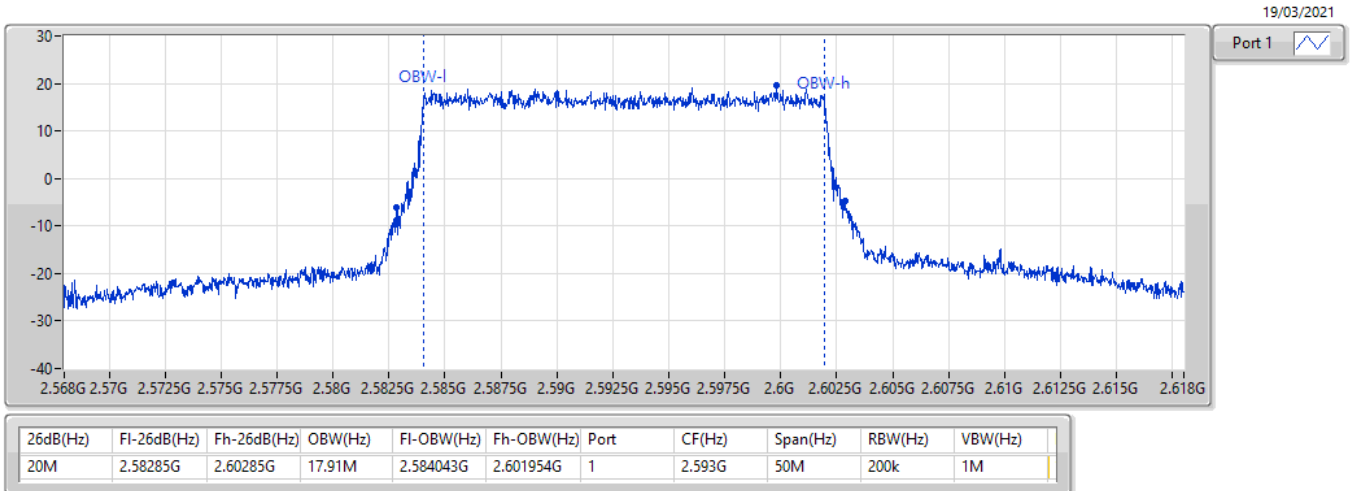
Port 1

26dB(Hz)	Fl-26dB(Hz)	Fh-26dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Port	CF(Hz)	Span(Hz)	RBW(Hz)	VBW(Hz)
19.975M	2.49595G	2.515925G	17.883M	2.497072G	2.514955G	1	2.506G	50M	200k	1M

Band 41_LTE_20MHz_Nss1,QPSK_1TX

EBW

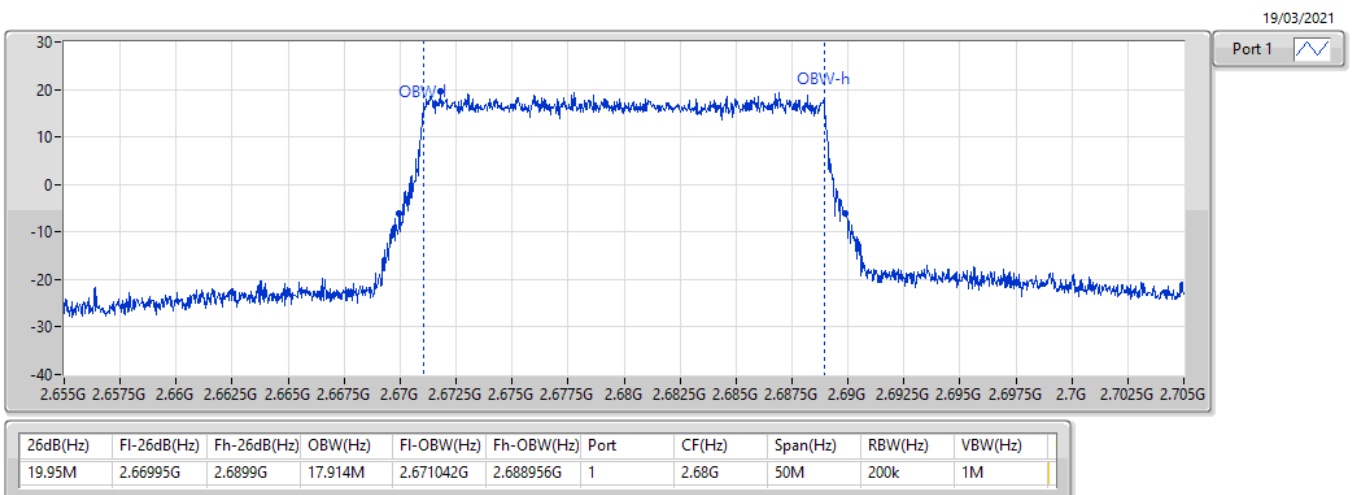
2593MHz_QPSK_RB 100,#RB 0



Band 41_LTE_20MHz_Nss1,QPSK_1TX

EBW

2680MHz_QPSK_RB 100,#RB 0



Summary

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Remark	Ref.Limit (dB)
Band 41	-	-	-	-	-	-	-	-	-	-	-	-
LTE_5MHz_Nss1,QPSK_1TX	Pass	2.5895G	2.5905G	51k	150k	RMS	2.59G	-21.94	-13.00	-8.94	MBW 1M	-
LTE_10MHz_Nss1,QPSK_1TX	Pass	2.506G	2.507G	100k	300k	RMS	2.5065G	-19.47	-13.00	-6.47	MBW 1M	-
LTE_15MHz_Nss1,QPSK_1TX	Pass	2.511G	2.512G	150k	470k	RMS	2.5115G	-22.56	-13.00	-9.56	MBW 1M	-
LTE_20MHz_Nss1,QPSK_1TX	Pass	2.604G	2.643G	200k	620k	RMS	2.6045G	-21.13	-13.00	-8.13	MBW 1M	-

Result

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Remark	Ref.Limit (dB)
Band 41_LTE_5MHz_Nss1,QPSK_1TX	-	-	-	-	-	-	-	-	-	-	-	-
2498.5MHz_RB 25,#RB 0	Pass	9k	150k	1k	3k	RMS	34.204k	-67.29	-13.00	-54.29	-	-
2498.5MHz_RB 25,#RB 0	Pass	150k	30M	10k	30k	RMS	150k	-39.80	-13.00	-26.80	-	-
2498.5MHz_RB 25,#RB 0	Pass	30M	2.3G	1M	3M	RMS	2.21175G	-54.99	-13.00	-41.99	-	-
2498.5MHz_RB 25,#RB 0	Pass	2.3G	2.486G	1M	3M	RMS	2.48405G	-50.06	-13.00	-37.06	-	-
2498.5MHz_RB 25,#RB 0	Pass	2.486G	2.495G	51k	150k	RMS	2.4945G	-29.50	-13.00	-16.50	MBW 1M	-
2498.5MHz_RB 25,#RB 0	Pass	2.495G	2.496G	51k	150k	RMS	2.4955G	-24.74	-13.00	-11.74	MBW 1M	-
2498.5MHz_RB 25,#RB 0	Pass	2.501G	2.502G	51k	150k	RMS	2.5015G	-26.37	-13.00	-13.37	MBW 1M	-
2498.5MHz_RB 25,#RB 0	Pass	2.502G	2.511G	51k	150k	RMS	2.5025G	-30.43	-13.00	-17.43	MBW 1M	-
2498.5MHz_RB 25,#RB 0	Pass	2.511G	6G	1M	3M	RMS	2.6523G	-55.06	-13.00	-42.06	-	-
2498.5MHz_RB 25,#RB 0	Pass	6G	27G	1M	3M	RMS	26.99213G	-47.73	-13.00	-34.73	-	-
2593MHz_RB 25,#RB 0	Pass	9k	150k	1k	3k	RMS	46.718k	-67.53	-13.00	-54.53	-	-
2593MHz_RB 25,#RB 0	Pass	150k	30M	10k	30k	RMS	150k	-41.02	-13.00	-28.02	-	-
2593MHz_RB 25,#RB 0	Pass	30M	2.3G	1M	3M	RMS	30.85M	-52.00	-13.00	-39.00	-	-
2593MHz_RB 25,#RB 0	Pass	2.3G	2.5805G	1M	3M	RMS	2.58008G	-46.16	-13.00	-33.16	-	-
2593MHz_RB 25,#RB 0	Pass	2.5805G	2.5895G	51k	150k	RMS	2.589G	-26.20	-13.00	-13.20	MBW 1M	-
2593MHz_RB 25,#RB 0	Pass	2.5895G	2.5905G	51k	150k	RMS	2.59G	-21.94	-13.00	-8.94	MBW 1M	-
2593MHz_RB 25,#RB 0	Pass	2.5955G	2.5965G	51k	150k	RMS	2.596G	-22.53	-13.00	-9.53	MBW 1M	-
2593MHz_RB 25,#RB 0	Pass	2.5965G	2.6055G	51k	150k	RMS	2.597G	-26.22	-13.00	-13.22	MBW 1M	-
2593MHz_RB 25,#RB 0	Pass	2.6055G	6G	1M	3M	RMS	2.6055G	-53.91	-13.00	-40.91	-	-
2593MHz_RB 25,#RB 0	Pass	6G	27G	1M	3M	RMS	26.9685G	-47.85	-13.00	-34.85	-	-
2687.5MHz_RB 25,#RB 0	Pass	9k	150k	1k	3k	RMS	10.41k	-67.13	-13.00	-54.13	-	-
2687.5MHz_RB 25,#RB 0	Pass	150k	30M	10k	30k	RMS	164.925k	-41.96	-13.00	-28.96	-	-
2687.5MHz_RB 25,#RB 0	Pass	30M	2.3G	1M	3M	RMS	128.75M	-54.01	-13.00	-41.01	-	-
2687.5MHz_RB 25,#RB 0	Pass	2.3G	2.675G	1M	3M	RMS	2.67463G	-47.07	-13.00	-34.07	-	-
2687.5MHz_RB 25,#RB 0	Pass	2.675G	2.684G	51k	150k	RMS	2.6835G	-28.24	-13.00	-15.24	MBW 1M	-
2687.5MHz_RB 25,#RB 0	Pass	2.684G	2.685G	51k	150k	RMS	2.6845G	-22.95	-13.00	-9.95	MBW 1M	-
2687.5MHz_RB 25,#RB 0	Pass	2.69G	2.691G	51k	150k	RMS	2.6905G	-24.09	-13.00	-11.09	MBW 1M	-
2687.5MHz_RB 25,#RB 0	Pass	2.691G	2.7G	51k	150k	RMS	2.6915G	-27.97	-13.00	-14.97	MBW 1M	-
2687.5MHz_RB 25,#RB 0	Pass	2.7G	6G	1M	3M	RMS	2.7G	-50.90	-13.00	-37.90	-	-
2687.5MHz_RB 25,#RB 0	Pass	6G	27G	1M	3M	RMS	26.98163G	-48.02	-13.00	-35.02	-	-
Band 41_LTE_10MHz_Nss1,QPSK_1TX	-	-	-	-	-	-	-	-	-	-	-	-
2501MHz_RB 50,#RB 0	Pass	9k	150k	1k	3k	RMS	9.564k	-67.36	-13.00	-54.36	-	-
2501MHz_RB 50,#RB 0	Pass	150k	30M	10k	30k	RMS	150k	-41.46	-13.00	-28.46	-	-
2501MHz_RB 50,#RB 0	Pass	30M	2.3G	1M	3M	RMS	2.24439G	-54.64	-13.00	-41.64	-	-
2501MHz_RB 50,#RB 0	Pass	2.3G	2.476G	1M	3M	RMS	2.47543G	-41.71	-13.00	-28.71	-	-
2501MHz_RB 50,#RB 0	Pass	2.476G	2.495G	100k	300k	RMS	2.4945G	-22.65	-13.00	-9.65	MBW 1M	-
2501MHz_RB 50,#RB 0	Pass	2.495G	2.496G	100k	300k	RMS	2.4955G	-21.59	-13.00	-8.59	MBW 1M	-
2501MHz_RB 50,#RB 0	Pass	2.506G	2.507G	100k	300k	RMS	2.5065G	-19.47	-13.00	-6.47	MBW 1M	-
2501MHz_RB 50,#RB 0	Pass	2.507G	2.526G	100k	300k	RMS	2.5075G	-20.29	-13.00	-7.29	MBW 1M	-
2501MHz_RB 50,#RB 0	Pass	2.526G	6G	1M	3M	RMS	2.526G	-51.55	-13.00	-38.55	-	-
2501MHz_RB 50,#RB 0	Pass	6G	27G	1M	3M	RMS	26.9685G	-47.87	-13.00	-34.87	-	-
2593MHz_RB 50,#RB 0	Pass	9k	150k	1k	3k	RMS	67.304k	-67.48	-13.00	-54.48	-	-
2593MHz_RB 50,#RB 0	Pass	150k	30M	10k	30k	RMS	150k	-40.81	-13.00	-27.81	-	-
2593MHz_RB 50,#RB 0	Pass	30M	2.3G	1M	3M	RMS	35.39M	-48.92	-13.00	-35.92	-	-
2593MHz_RB 50,#RB 0	Pass	2.3G	2.568G	1M	3M	RMS	2.56331G	-42.03	-13.00	-29.03	-	-
2593MHz_RB 50,#RB 0	Pass	2.568G	2.587G	100k	300k	RMS	2.5865G	-23.09	-13.00	-10.09	MBW 1M	-
2593MHz_RB 50,#RB 0	Pass	2.587G	2.588G	100k	300k	RMS	2.5875G	-22.28	-13.00	-9.28	MBW 1M	-
2593MHz_RB 50,#RB 0	Pass	2.598G	2.599G	100k	300k	RMS	2.5985G	-20.26	-13.00	-7.26	MBW 1M	-
2593MHz_RB 50,#RB 0	Pass	2.599G	2.618G	100k	300k	RMS	2.5995G	-20.90	-13.00	-7.90	MBW 1M	-
2593MHz_RB 50,#RB 0	Pass	2.618G	6G	1M	3M	RMS	2.618G	-47.73	-13.00	-34.73	-	-
2593MHz_RB 50,#RB 0	Pass	6G	27G	1M	3M	RMS	26.98163G	-47.81	-13.00	-34.81	-	-
2685MHz_RB 50,#RB 0	Pass	9k	150k	1k	3k	RMS	21.831k	-67.23	-13.00	-54.23	-	-

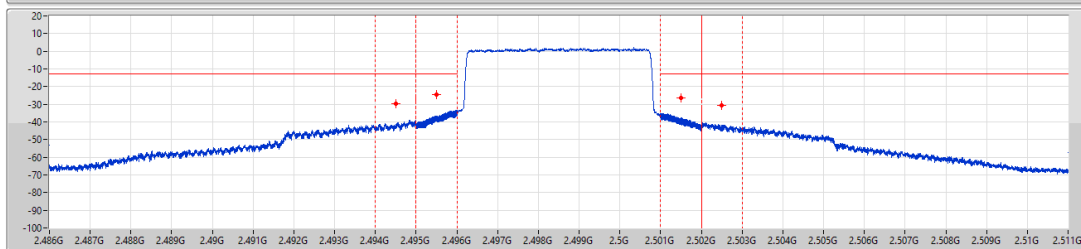
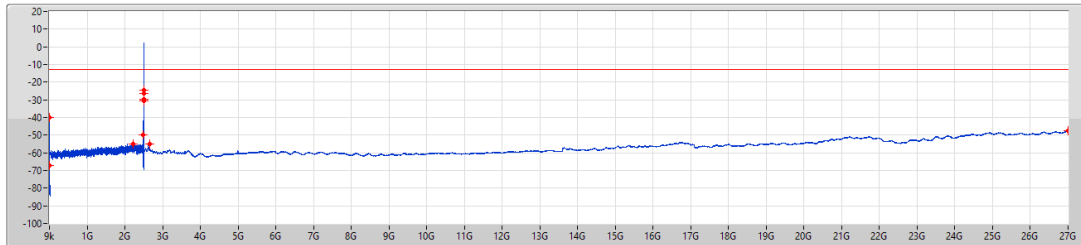
Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Remark	Ref.Limit (dB)
2685MHz_RB 50, #RB 0	Pass	150k	30M	10k	30k	RMS	150k	-41.15	-13.00	-28.15	-	-
2685MHz_RB 50, #RB 0	Pass	30M	2.3G	1M	3M	RMS	124.77M	-50.98	-13.00	-37.98	-	-
2685MHz_RB 50, #RB 0	Pass	2.3G	2.66G	1M	3M	RMS	2.65478G	-46.68	-13.00	-33.68	-	-
2685MHz_RB 50, #RB 0	Pass	2.66G	2.679G	100k	300k	RMS	2.6785G	-27.84	-13.00	-14.84	MBW 1M	-
2685MHz_RB 50, #RB 0	Pass	2.679G	2.68G	100k	300k	RMS	2.6795G	-26.81	-13.00	-13.81	MBW 1M	-
2685MHz_RB 50, #RB 0	Pass	2.69G	2.691G	100k	300k	RMS	2.6905G	-24.04	-13.00	-11.04	MBW 1M	-
2685MHz_RB 50, #RB 0	Pass	2.691G	2.71G	100k	300k	RMS	2.6915G	-24.47	-13.00	-11.47	MBW 1M	-
2685MHz_RB 50, #RB 0	Pass	2.71G	6G	1M	3M	RMS	2.71G	-47.36	-13.00	-34.36	-	-
2685MHz_RB 50, #RB 0	Pass	6G	27G	1M	3M	RMS	26.96588G	-47.81	-13.00	-34.81	-	-
Band 41_LTE_15MHz_Nss1,QPSK_1TX	-	-	-	-	-	-	-	-	-	-	-	-
2503.5MHz_RB 75, #RB 0	Pass	9k	150k	1k	3k	RMS	17.248k	-67.52	-13.00	-54.52	-	-
2503.5MHz_RB 75, #RB 0	Pass	150k	30M	10k	30k	RMS	150k	-40.19	-13.00	-27.19	-	-
2503.5MHz_RB 75, #RB 0	Pass	30M	2.3G	1M	3M	RMS	2.1604G	-55.15	-13.00	-42.15	-	-
2503.5MHz_RB 75, #RB 0	Pass	2.3G	2.466G	1M	3M	RMS	2.4638G	-45.13	-13.00	-32.13	-	-
2503.5MHz_RB 75, #RB 0	Pass	2.466G	2.495G	150k	470k	RMS	2.4945G	-25.76	-13.00	-12.76	MBW 1M	-
2503.5MHz_RB 75, #RB 0	Pass	2.495G	2.496G	150k	470k	RMS	2.4955G	-24.84	-13.00	-11.84	MBW 1M	-
2503.5MHz_RB 75, #RB 0	Pass	2.511G	2.512G	150k	470k	RMS	2.5115G	-22.56	-13.00	-9.56	MBW 1M	-
2503.5MHz_RB 75, #RB 0	Pass	2.512G	2.541G	150k	470k	RMS	2.5125G	-23.08	-13.00	-10.08	MBW 1M	-
2503.5MHz_RB 75, #RB 0	Pass	2.541G	6G	1M	3M	RMS	2.54359G	-52.90	-13.00	-39.90	-	-
2503.5MHz_RB 75, #RB 0	Pass	6G	27G	1M	3M	RMS	26.95538G	-47.76	-13.00	-34.76	-	-
2593MHz_RB 75, #RB 0	Pass	9k	150k	1k	3k	RMS	46.788k	-67.64	-13.00	-54.64	-	-
2593MHz_RB 75, #RB 0	Pass	150k	30M	10k	30k	RMS	150k	-41.85	-13.00	-28.85	-	-
2593MHz_RB 75, #RB 0	Pass	30M	2.3G	1M	3M	RMS	2.23701G	-55.23	-13.00	-42.23	-	-
2593MHz_RB 75, #RB 0	Pass	2.3G	2.5555G	1M	3M	RMS	2.53123G	-45.60	-13.00	-32.60	-	-
2593MHz_RB 75, #RB 0	Pass	2.5555G	2.5845G	150k	470k	RMS	2.584G	-29.15	-13.00	-16.15	MBW 1M	-
2593MHz_RB 75, #RB 0	Pass	2.5845G	2.5855G	150k	470k	RMS	2.585G	-28.38	-13.00	-15.38	MBW 1M	-
2593MHz_RB 75, #RB 0	Pass	2.6005G	2.6015G	150k	470k	RMS	2.601G	-27.94	-13.00	-14.94	MBW 1M	-
2593MHz_RB 75, #RB 0	Pass	2.6015G	2.6305G	150k	470k	RMS	2.602G	-28.35	-13.00	-15.35	MBW 1M	-
2593MHz_RB 75, #RB 0	Pass	2.6305G	6G	1M	3M	RMS	2.6305G	-56.94	-13.00	-43.94	-	-
2593MHz_RB 75, #RB 0	Pass	6G	27G	1M	3M	RMS	26.979G	-47.78	-13.00	-34.78	-	-
2682.5MHz_RB 75, #RB 0	Pass	9k	150k	1k	3k	RMS	16.72k	-67.43	-13.00	-54.43	-	-
2682.5MHz_RB 75, #RB 0	Pass	150k	30M	10k	30k	RMS	150k	-42.26	-13.00	-29.26	-	-
2682.5MHz_RB 75, #RB 0	Pass	30M	2.3G	1M	3M	RMS	2.16607G	-55.23	-13.00	-42.23	-	-
2682.5MHz_RB 75, #RB 0	Pass	2.3G	2.645G	1M	3M	RMS	2.63896G	-50.22	-13.00	-37.22	-	-
2682.5MHz_RB 75, #RB 0	Pass	2.645G	2.674G	150k	470k	RMS	2.6735G	-30.57	-13.00	-17.57	MBW 1M	-
2682.5MHz_RB 75, #RB 0	Pass	2.674G	2.675G	150k	470k	RMS	2.6745G	-29.75	-13.00	-16.75	MBW 1M	-
2682.5MHz_RB 75, #RB 0	Pass	2.69G	2.691G	150k	470k	RMS	2.6905G	-28.60	-13.00	-15.60	MBW 1M	-
2682.5MHz_RB 75, #RB 0	Pass	2.691G	2.72G	150k	470k	RMS	2.6915G	-29.11	-13.00	-16.11	MBW 1M	-
2682.5MHz_RB 75, #RB 0	Pass	2.72G	6G	1M	3M	RMS	2.72164G	-55.18	-13.00	-42.18	-	-
2682.5MHz_RB 75, #RB 0	Pass	6G	27G	1M	3M	RMS	26.97375G	-47.74	-13.00	-34.74	-	-
Band 41_LTE_20MHz_Nss1,QPSK_1TX	-	-	-	-	-	-	-	-	-	-	-	-
2506MHz_RB 100, #RB 0	Pass	9k	150k	1k	3k	RMS	38.398k	-67.07	-13.00	-54.07	-	-
2506MHz_RB 100, #RB 0	Pass	150k	30M	10k	30k	RMS	150k	-40.37	-13.00	-27.37	-	-
2506MHz_RB 100, #RB 0	Pass	30M	2.3G	1M	3M	RMS	2.06846G	-54.68	-13.00	-41.68	-	-
2506MHz_RB 100, #RB 0	Pass	2.3G	2.456G	1M	3M	RMS	2.45436G	-42.69	-13.00	-29.69	-	-
2506MHz_RB 100, #RB 0	Pass	2.456G	2.495G	200k	620k	RMS	2.4945G	-24.75	-13.00	-11.75	MBW 1M	-
2506MHz_RB 100, #RB 0	Pass	2.495G	2.496G	200k	620k	RMS	2.4955G	-24.89	-13.00	-11.89	MBW 1M	-
2506MHz_RB 100, #RB 0	Pass	2.516G	2.517G	200k	620k	RMS	2.5165G	-21.62	-13.00	-8.62	MBW 1M	-
2506MHz_RB 100, #RB 0	Pass	2.517G	2.556G	200k	620k	RMS	2.5175G	-21.42	-13.00	-8.42	MBW 1M	-
2506MHz_RB 100, #RB 0	Pass	2.556G	6G	1M	3M	RMS	2.55686G	-52.63	-13.00	-39.63	-	-
2506MHz_RB 100, #RB 0	Pass	6G	27G	1M	3M	RMS	26.97375G	-47.55	-13.00	-34.55	-	-
2593MHz_RB 100, #RB 0	Pass	9k	150k	1k	3k	RMS	9k	-66.11	-13.00	-53.11	-	-
2593MHz_RB 100, #RB 0	Pass	150k	30M	10k	30k	RMS	150k	-40.96	-13.00	-27.96	-	-
2593MHz_RB 100, #RB 0	Pass	30M	2.3G	1M	3M	RMS	33.97M	-48.67	-13.00	-35.67	-	-

Mode	Result	F-Start (Hz)	F-Stop (Hz)	RBW (Hz)	VBW (Hz)	Detector	Freq (Hz)	Level (dBm)	Limit (dBm)	Margin (dB)	Remark	Ref.Limit (dB)
2593MHz_RB 100, #RB 0	Pass	2.3G	2.543G	1M	3M	RMS	2.54245G	-42.03	-13.00	-29.03	-	-
2593MHz_RB 100, #RB 0	Pass	2.543G	2.582G	200k	620k	RMS	2.5815G	-23.76	-13.00	-10.76	MBW 1M	-
2593MHz_RB 100, #RB 0	Pass	2.582G	2.583G	200k	620k	RMS	2.5825G	-24.52	-13.00	-11.52	MBW 1M	-
2593MHz_RB 100, #RB 0	Pass	2.603G	2.604G	200k	620k	RMS	2.6035G	-21.26	-13.00	-8.26	MBW 1M	-
2593MHz_RB 100, #RB 0	Pass	2.604G	2.643G	200k	620k	RMS	2.6045G	-21.13	-13.00	-8.13	MBW 1M	-
2593MHz_RB 100, #RB 0	Pass	2.643G	6G	1M	3M	RMS	2.643G	-47.40	-13.00	-34.40	-	-
2593MHz_RB 100, #RB 0	Pass	6G	27G	1M	3M	RMS	26.97375G	-47.57	-13.00	-34.57	-	-
2680MHz_RB 100, #RB 0	Pass	9k	150k	1k	3k	RMS	10.798k	-65.87	-13.00	-52.87	-	-
2680MHz_RB 100, #RB 0	Pass	150k	30M	10k	30k	RMS	157.462k	-40.18	-13.00	-27.18	-	-
2680MHz_RB 100, #RB 0	Pass	30M	2.3G	1M	3M	RMS	119.1M	-50.95	-13.00	-37.95	-	-
2680MHz_RB 100, #RB 0	Pass	2.3G	2.63G	1M	3M	RMS	2.62645G	-43.20	-13.00	-30.20	-	-
2680MHz_RB 100, #RB 0	Pass	2.63G	2.669G	200k	620k	RMS	2.6685G	-28.47	-13.00	-15.47	MBW 1M	-
2680MHz_RB 100, #RB 0	Pass	2.669G	2.67G	200k	620k	RMS	2.6695G	-28.98	-13.00	-15.98	MBW 1M	-
2680MHz_RB 100, #RB 0	Pass	2.69G	2.691G	200k	620k	RMS	2.6905G	-24.20	-13.00	-11.20	MBW 1M	-
2680MHz_RB 100, #RB 0	Pass	2.691G	2.73G	200k	620k	RMS	2.6915G	-23.71	-13.00	-10.71	MBW 1M	-
2680MHz_RB 100, #RB 0	Pass	2.73G	6G	1M	3M	RMS	2.73G	-45.98	-13.00	-32.98	-	-
2680MHz_RB 100, #RB 0	Pass	6G	27G	1M	3M	RMS	26.96063G	-47.51	-13.00	-34.51	-	-

Band 41_LTE_5MHz_Nss1,QPSK_1TX
2498.5MHz_QPSK_RB 25,#RB 0

CSE-TX-Sum

19/03/2021

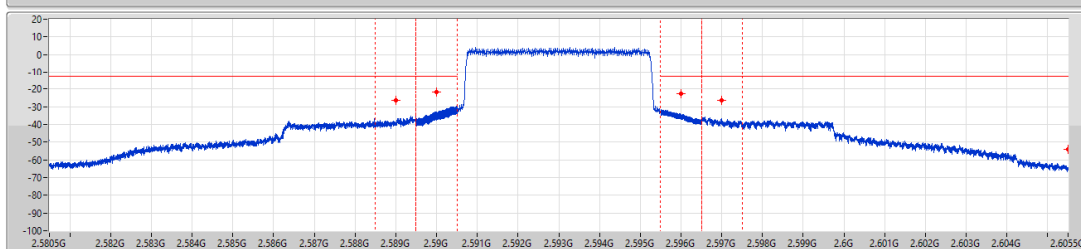
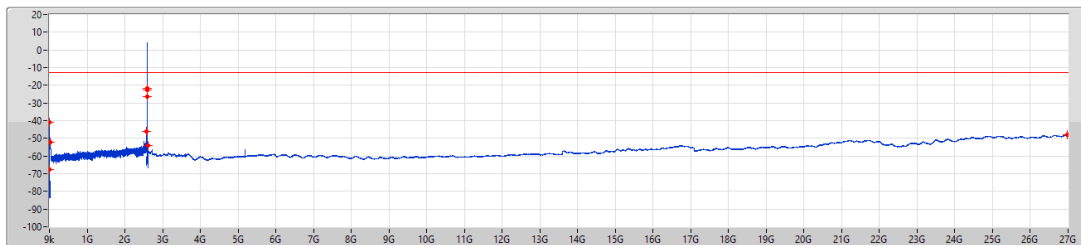


F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Remark	Ref.Limit(dB)
9k	150k	1k	3k	RMS	34.204k	-67.29	-13.00	-54.29	-	-
150k	30M	10k	30k	RMS	150k	-39.80	-13.00	-26.80	-	-
30M	2.3G	1M	3M	RMS	2.21175G	-54.99	-13.00	-41.99	-	-
2.3G	2.486G	1M	3M	RMS	2.48405G	-50.06	-13.00	-37.06	-	-
2.486G	2.495G	51k	150k	RMS	2.4945G	-29.50	-13.00	-16.50	MBW 1M	-
2.495G	2.496G	51k	150k	RMS	2.4955G	-24.74	-13.00	-11.74	MBW 1M	-
2.501G	2.502G	51k	150k	RMS	2.5015G	-26.37	-13.00	-13.37	MBW 1M	-
2.502G	2.511G	51k	150k	RMS	2.5025G	-30.43	-13.00	-17.43	MBW 1M	-
2.511G	6G	1M	3M	RMS	2.6523G	-55.06	-13.00	-42.06	-	-
6G	27G	1M	3M	RMS	26.99213G	-47.73	-13.00	-34.73	-	-

Band 41_LTE_5MHz_Nss1,QPSK_1TX
2593MHz_QPSK_RB 25,#RB 0

CSE-TX-Sum

19/03/2021



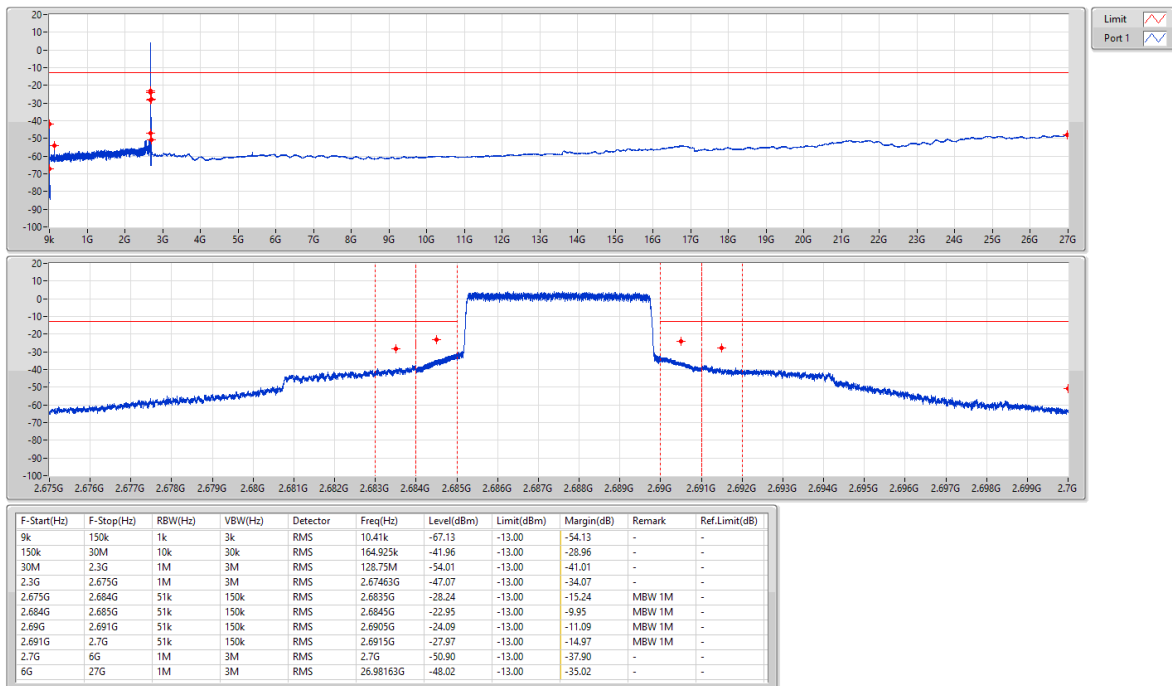
F-Start(Hz)	F-Stop(Hz)	RBW(Hz)	VBW(Hz)	Detector	Freq(Hz)	Level(dBm)	Limit(dBm)	Margin(dB)	Remark	Ref.Limit(dB)
9k	150k	1k	3k	RMS	46.718k	-67.53	-13.00	-54.53	-	-
150k	30M	10k	30k	RMS	150k	-41.02	-13.00	-28.02	-	-
30M	2.3G	1M	3M	RMS	30.85M	-52.00	-13.00	-39.00	-	-
2.3G	2.5805G	1M	3M	RMS	2.58008G	-46.16	-13.00	-33.16	-	-
2.5805G	2.5895G	51k	150k	RMS	2.589G	-26.20	-13.00	-13.20	MBW 1M	-
2.5895G	2.5905G	51k	150k	RMS	2.59G	-21.94	-13.00	-8.94	MBW 1M	-
2.5955G	2.5965G	51k	150k	RMS	2.596G	-22.53	-13.00	-9.53	MBW 1M	-
2.5965G	2.6055G	51k	150k	RMS	2.597G	-26.22	-13.00	-13.22	MBW 1M	-
2.6055G	6G	1M	3M	RMS	2.6055G	-53.91	-13.00	-40.91	-	-
6G	27G	1M	3M	RMS	26.9685G	-47.85	-13.00	-34.85	-	-

Band 41_LTE_5MHz_Nss1,QPSK_1TX

CSE-TX-Sum

2687.5MHz_QPSK_RB 25,#RB 0

19/03/2021

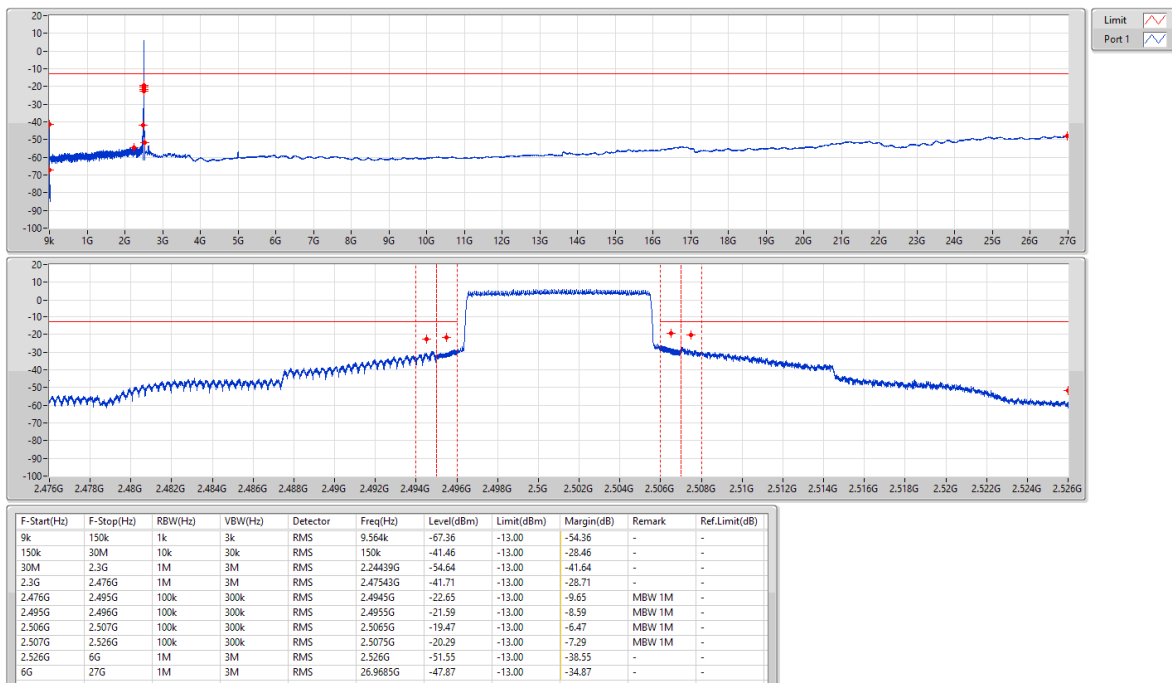


Band 41_LTE_10MHz_Nss1,QPSK_1TX

CSE-TX-Sum

2501MHz_QPSK_RB 50,#RB 0

19/03/2021

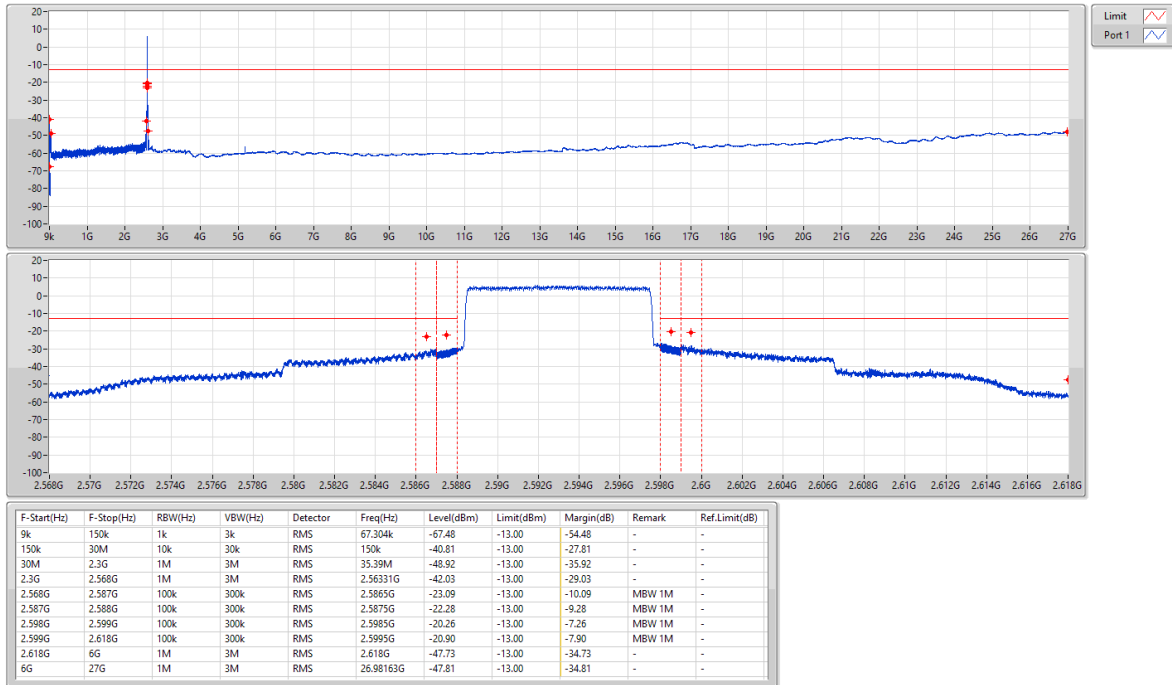


Band 41_LTE_10MHz_Nss1,QPSK_1TX

CSE-TX-Sum

2593MHz_QPSK_RB 50,#RB 0

19/03/2021



Band 41_LTE_10MHz_Nss1,QPSK_1TX

CSE-TX-Sum

2685MHz_QPSK_RB 50,#RB 0

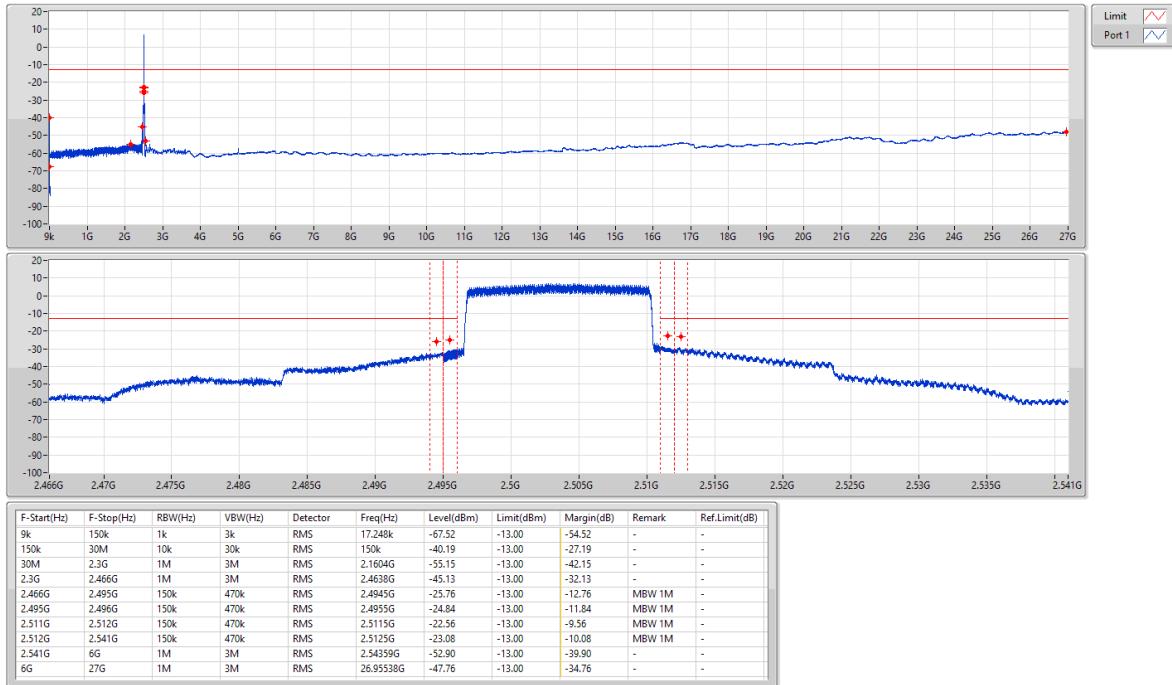
19/03/2021



Band 41_LTE_15MHz_Nss1,QPSK_1TX
2503.5MHz_QPSK_RB 75,#RB 0

CSE-TX-Sum

19/03/2021



Band 41_LTE_15MHz_Nss1,QPSK_1TX
2593MHz_QPSK_RB 75,#RB 0

CSE-TX-Sum

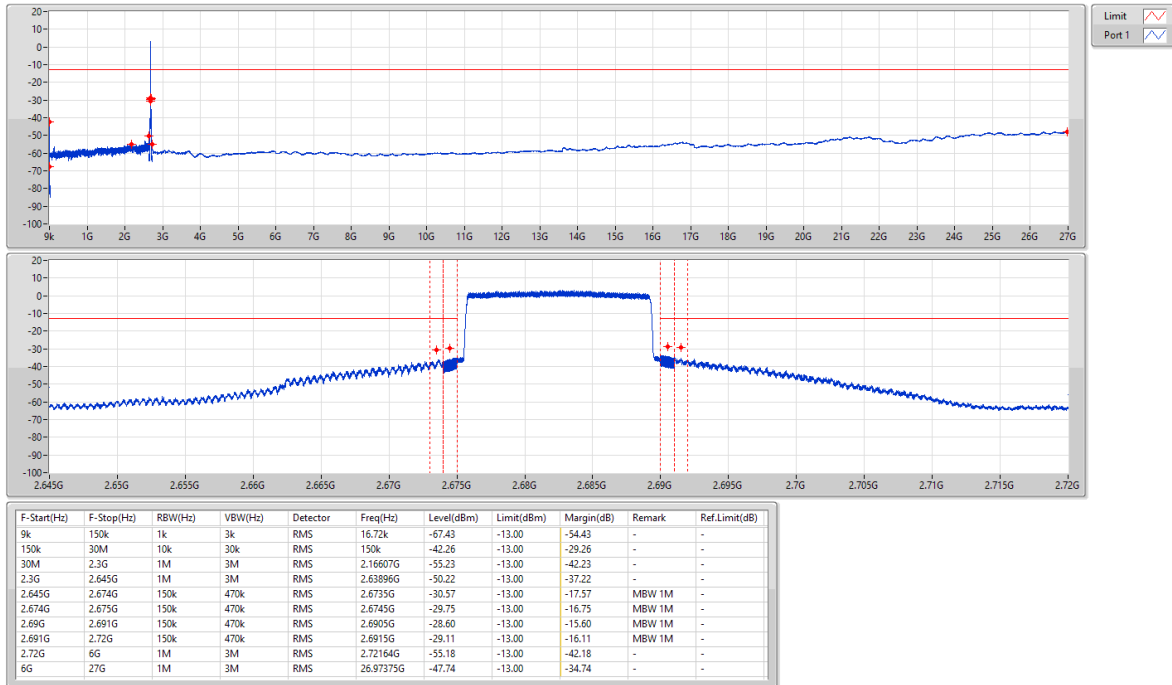
19/03/2021



Band 41_LTE_15MHz_Nss1,QPSK_1TX
2682.5MHz_QPSK_RB 75,#RB 0

CSE-TX-Sum

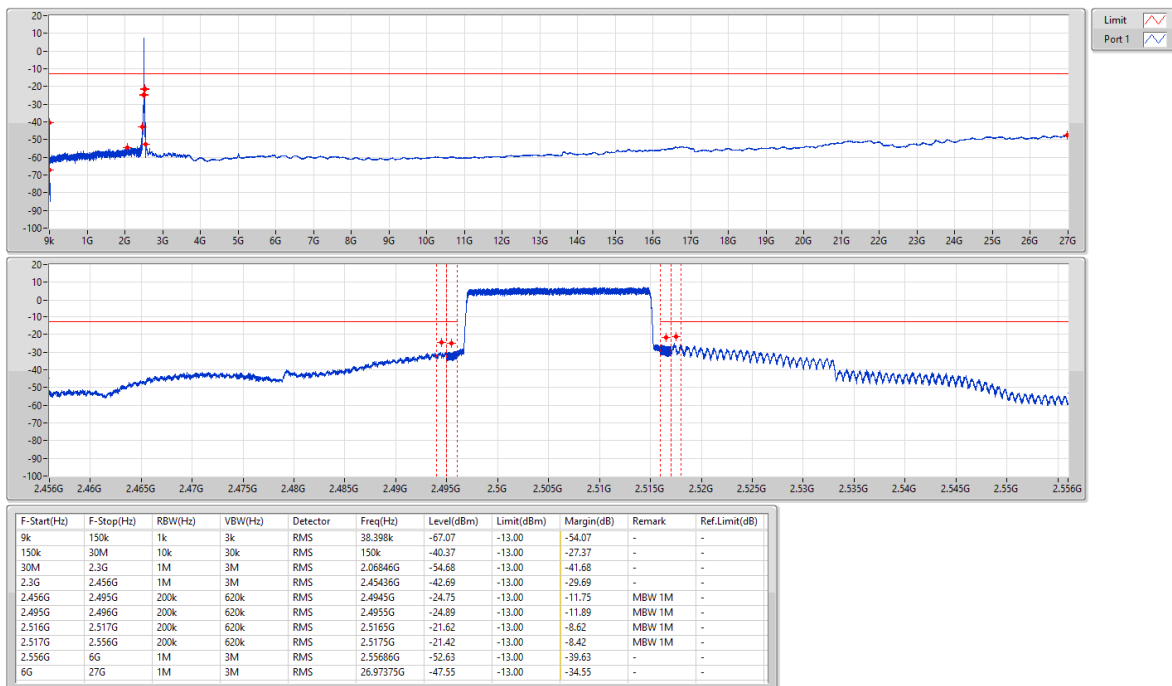
19/03/2021



Band 41_LTE_20MHz_Nss1,QPSK_1TX
2506MHz_QPSK_RB 100,#RB 0

CSE-TX-Sum

19/03/2021

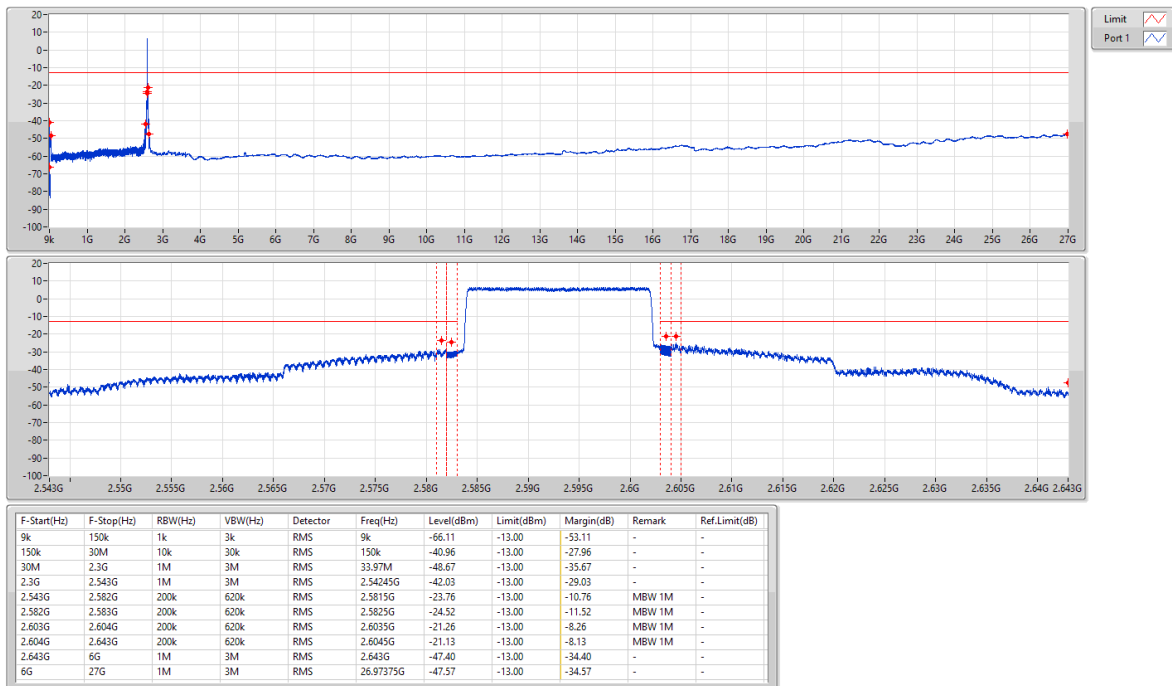


Band 41_LTE_20MHz_Nss1,QPSK_1TX

CSE-TX-Sum

2593MHz_QPSK_RB 100,#RB 0

19/03/2021

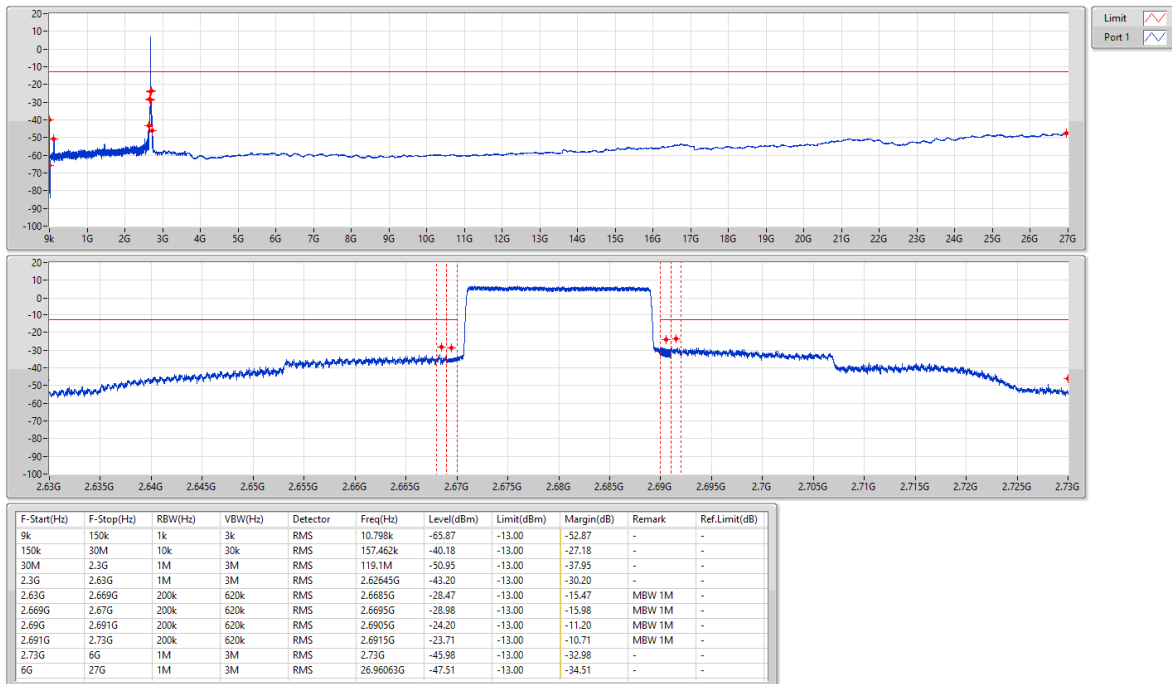


Band 41_LTE_20MHz_Nss1,QPSK_1TX

CSE-TX-Sum

2680MHz_QPSK_RB 100,#RB 0

19/03/2021



Radiated Spurious Emission (Above 1GHz) – Harmonic

Configurations	5MHz / QPSK
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Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5000.12	38.19	82.20	-44.01	36.51	6.30	31.60	36.22	149	172	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4999.77	39.58	82.20	-42.62	37.90	6.30	31.60	36.22	166	197	Peak	VERTICAL

Configurations	10MHz / QPSK
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Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5184.26	37.91	82.20	-44.29	35.94	6.30	31.73	36.06	170	178	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5185.97	38.36	82.20	-43.84	36.39	6.30	31.73	36.06	156	193	Peak	VERTICAL

Configurations	15MHz / QPSK
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Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5365.96	34.56	82.20	-47.64	32.76	6.22	31.47	35.89	142	196	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5363.77	39.63	82.20	-42.57	37.83	6.22	31.47	35.89	151	192	Peak	VERTICAL

Configurations	20MHz / QPSK
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Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5185.06	35.29	82.20	-46.91	33.32	6.30	31.73	36.06	145	185	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5183.47	40.96	82.20	-41.24	38.99	6.30	31.73	36.06	171	184	Peak	VERTICAL



Summary

Mode	Result	Ch (Hz)	Center (Hz)	Fl (Hz)	Fh (Hz)	ppm	Limit (Fl,Fh,ppm)	Port	Remark
Band 41	-	-	-	-	-	-	-	-	-
LTE_20MHz_Nss1,QPSK_1TX	Pass	2.593G	2.593021G	2.584088G	2.601954G	-0.0052	2.496G,2.69G,Inf	1	-

Result

Mode	Result	Ch (Hz)	Center (Hz)	Fl (Hz)	Fh (Hz)	ppm	Limit (Fl,Fh,ppm)	Port	Remark
Band 41_LTE_20MHz_Nss1,QPSK_1TX	-	-	-	-	-	-	-	-	-
2593MHz_RB 100,#RB 0_-30°C	Pass	2.593G	2.593016G	2.584079G	2.601952G	-0.0018	2.496G,2.69G,Inf	1	-
2593MHz_RB 100,#RB 0_-20°C	Pass	2.593G	2.593023G	2.584067G	2.601979G	-0.0041	2.496G,2.69G,Inf	1	-
2593MHz_RB 100,#RB 0_-10°C	Pass	2.593G	2.593021G	2.584088G	2.601954G	-0.0052	2.496G,2.69G,Inf	1	-
2593MHz_RB 100,#RB 0_0°C	Pass	2.593G	2.593007G	2.584058G	2.601956G	-0.0016	2.496G,2.69G,Inf	1	-
2593MHz_RB 100,#RB 0_10°C	Pass	2.593G	2.593009G	2.584068G	2.601951G	-0.004	2.496G,2.69G,Inf	1	-
2593MHz_RB 100,#RB 0_20°C	Pass	2.593G	2.592987G	2.584019G	2.601955G	-0.0037	2.496G,2.69G,Inf	1	-
2593MHz_RB 100,#RB 0_30°C	Pass	2.593G	2.593012G	2.584054G	2.60197G	-0.0028	2.496G,2.69G,Inf	1	-
2593MHz_RB 100,#RB 0_40°C	Pass	2.593G	2.59301G	2.584062G	2.601957G	-0.0047	2.496G,2.69G,Inf	1	-
2593MHz_RB 100,#RB 0_50°C	Pass	2.593G	2.593016G	2.584067G	2.601965G	-0.0045	2.496G,2.69G,Inf	1	-
2593MHz_RB 100,#RB 0_126.5V	Pass	2.593G	2.593001G	2.584064G	2.601939G	-0.0024	2.496G,2.69G,Inf	1	-
2593MHz_RB 100,#RB 0_110V	Pass	2.593G	2.593005G	2.584062G	2.601947G	-0.0041	2.496G,2.69G,Inf	1	-
2593MHz_RB 100,#RB 0_93.5V	Pass	2.593G	2.593003G	2.584049G	2.601957G	-0.0032	2.496G,2.69G,Inf	1	-