

**TEST REPORT
FCC Part 27**

Report Reference No.: HK2111054252-1E

FCC ID.: 2ALKI-P30

Compiled by
(position+printedname+signature): File administrators Gary QianSupervised by
(position+printedname+signature): Technique principal Eden HuApproved by
(position+printedname+signature): Manager Jason Zhou

Date of issue: Nov. 18, 2021

Testing Laboratory Name: Shenzhen HUAKE Testing Technology Co., Ltd.

Address: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park,
Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Applicant's name: Wuhan Tianyu Information Industry Co., Ltd.

Address: HUST Industry Park, East-Lake Development Zone, Wuhan 430223,
Hubei, China

Test specification:

Standard: FCC CFR Title 47 Part 2, Part 27

TRF Originator: Shenzhen HUAKE Testing Technology Co., Ltd.

Shenzhen HUAKE Testing Technology Co., Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen HUAKE Testing Technology Co., Ltd. as copyright owner and source of the material. Shenzhen HUAKE Testing Technology Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test item description: Smart POS Terminal

Trade Mark: N/A

Manufacturer: Shenzhen Eternity Technology Co., Ltd.

Model/Type reference: P30

Listed Models: N/A

Modulation Type: QPSK, 16QAM

Rating: DC5V From TypeC or DC7.4V From Battery

Hardware version: V1.00

Software version: V1.00

Result: PASS

**TEST REPORT****Test Report No. :****HK2111054252-1E**

Nov. 18, 2021

Date of issue

Equipment under Test : Smart POS Terminal**Model /Type** : P30**Listed Models** : N/A**Applicant** : Wuhan Tianyu Information Industry Co., Ltd.**Address** : HUST Industry Park, East-Lake Development Zone,
Wuhan 430223, Hubei, China**Manufacturer** : Shenzhen Eternity Technology Co.,Ltd**Address** : 1F,2F,4F Building A2, Yingzhan Industrial Zone, Longtian
Community, Longtian Road, Pingshan District, Shenzhen,
Guangdong Province, P.R. China**Test Result:****PASS**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



Revision History

Revision	Issue Date	Revisions	Revised By
V1.0	Nov. 18, 2021	Initial Issue	Jason Zhou



Contents

1	TEST STANDARDS	5
2	SUMMARY	6
2.1	General Remarks	6
2.2	Product Description	6
2.3	Equipment under Test	6
2.4	Short description of the Equipment under Test (EUT)	6
2.5	Normal Accessory setting	7
2.6	EUT configuration	7
2.7	Related Submittal(s) / Grant (s)	7
2.8	Modifications	7
2.9	General Test Conditions/Configurations	7
3	TEST ENVIRONMENT	8
3.1	Information of the Test Laboratory	8
3.2	Test Description	8
3.3	Equipments Used during the Test	9
4	TEST CONDITIONS AND RESULTS	10
4.1	Output Power	10
4.2	Peak-to-Average Ratio (PAR)	16
4.3	Occupied Bandwidth and Emission Bandwidth	21
4.4	Band Edge compliance	26
4.5	Spurious Emission on Antenna Port	31
4.6	Radiated Spurious Emission	44
4.7	Frequency Stability	50
5	TEST SETUP PHOTOS OF THE EUT	52
6	EXTERNAL AND INTERNAL PHOTOS OF THE EUT	54



The tests were performed according to following standards:

[FCC Part 2](#): FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

[FCC Part 27](#): MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

[ANSI/TIA-603-E-2016](#): Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

[ANSI C63.26-2015](#): IEEE/ANSI Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

[FCC KDB 971168 D01 v03r01](#): Power Meas License Digital Systems



2 SUMMARY

2.1 General Remarks

Date of receipt of test sample	:	Nov. 05, 2021
Testing commenced on	:	Nov. 05, 2021
Testing concluded on	:	Nov. 18, 2021

2.2 Product Description

The Wuhan Tianyu Information Industry Co., Ltd.'s Model:P30 or the "EUT" as referred to in this report; more general information as follows, for more details, refer to the user's manual of the EUT.

Name of EUT	Smart POS Terminal
Model/Type reference:	P30
Series Model:	N/A
Power supply:	DC5V From TypeC or DC7.4V From Battery
Modulation Type	QPSK, 16QAM
Antenna Type	Internal Antenna
Antenna Gain	1dBi
Operation Frequency Band	LTE Band 41
Operation frequency	LTE Band 41: 2555~2655 MHz
LTE Release	R8
Extreme temp. Tolerance	-30°C to +50°C
Extreme vol. Limits	6.29VDC to 8.51VDC (nominal: 7.4VDC)

2.3 Equipment under Test

Power supply system utilised

Power supply voltage	:	☐ 120V/ 60 Hz	☐ 115V/60Hz
		☐ 12 V DC	☐ 24 V DC
		☒ Other (specified in blank below)	

DC5V From TypeC or DC7.4V From Battery

2.4 Short description of the Equipment under Test (EUT)

2.4.1 General Description

P30 is subscriber equipment in the LTE system. LTE frequency band is band 41; The Smart POS Terminal implements such functions as RF signal receiving/transmitting, LTE protocol processing, voice, video MMS service, etc. Externally it provides microSD card interface, earphone port (to provide voice service) and SIM card interface.



2.5 Normal Accessory setting

Fully charged battery was used during the test.

2.6 EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

○	Power Cable	Length (m) :	/
		Shield :	/
		Detachable :	/
○	Multimeter	Manufacturer :	/
		Model No. :	/

2.7 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: 2ALKI-P30 filing to comply with FCC Part 27, Rules.

2.8 Modifications

No modifications were implemented to meet testing criteria.

2.9 General Test Conditions/Configurations

2.9.1 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VL	6.29V
	VN	7.4V
	VH	8.51V

NOTE: VL=lower extreme test voltage VN=nominal voltage
VH=upper extreme test voltage TN=normal temperature



3 TEST ENVIRONMENT

3.1 Information of the Test Laboratory

Shenzhen HUAKE Testing Technology Co., Ltd.

Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization:

A2LA Accreditation Code is 4781.01.

FCC Designation Number is CN1229.

Canada IC CAB identifier is CN0045.

CNAS Registration Number is L9589.

3.2 Test Description

Test Item	FCCRuleNo.	Verdict
Effective(Isotropic)RadiatedOutputPower	Part 2.1046 27.50(h)(2)	Pass
Peak-AverageRatio	Part 2.1046	Pass
ModulationCharacteristics	§2.1047	N/A
Bandwidth	Part 2.1049	Pass
BandEdgesCompliance	Part 2.1051 27.53(m)	Pass
SpuriousEmissionatAntennaTerminals	Part 2.1051 27.53(m)	Pass
Field Strengthof Spurious Radiation	Part 2.1053 27.53(m)	Pass
Frequency Stability	Part 2.1055 27.54	Pass
NOTE 1:For the verdict,the“N/A”denotes“not applicable”,the“N/T”denotes “nottested”.		

Remark:

1. The measurement uncertainty is not included in the test result.



3.3 Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
LISN	R&S	ENV216	HKE-059	2020/12/10	2021/12/09
LISN	R&S	ENV216	HKE-002	2020/12/10	2021/12/09
Receiver	R&S	ESCI 7	HKE-010	2020/12/10	2021/12/09
Spectrum analyzer	R&S	FSP40	HKE-025	2020/12/10	2021/12/09
Spectrum analyzer	Agilent	N9020A	HKE-048	2020/12/10	2021/12/09
RF automatic control unit	Tonscend	JS0806-1	HKE-060	2020/12/10	2021/12/09
Loop antenna	Schwarzbeck	FMZB 1519 B	HKE-014	2020/12/10	2021/12/09
Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	2020/12/10	2021/12/09
Horn antenna	Schwarzbeck	9120D	HKE-013	2020/12/10	2021/12/09
High gain antenna	Schwarzbeck	LB-180400KF	HKE-054	2020/12/10	2021/12/09
Preamplifier	EMCI	EMC051845SE	HKE-015	2020/12/10	2021/12/09
Preamplifier	Agilent	83051A	HKE-016	2020/12/10	2021/12/09
Preamplifier	Schwarzbeck	BBV 9743	HKE-006	2020/12/10	2021/12/09
Temperature and humidity meter	Boyang	HTC-1	HKE-075	2020/12/10	2021/12/09
High-low temperature chamber	Guangke	HT-80L	HKE-118	2020/12/10	2021/12/09
High pass filter unit	Tonscend	JS0806-F	HKE-055	2020/12/10	2021/12/09
RF Cable(below1GHz)	Times	9kHz-1GHz	HKE-117	2020/12/10	2021/12/09
RF Cable(above 1GHz)	Times	1-40G	HKE-034	2020/12/10	2021/12/09
Power meter	Agilent	E4419B	HKE-085	2020/12/10	2021/12/09
Power Sensor	Agilent	E9300A	HKE-086	2020/12/10	2021/12/09
Conducted test software	Tonscend	TS+ Rev 2.5.0.0	HKE-081	N/A	N/A
Radiated test software	Tonscend	TS+ Rev 2.5.0.0	HKE-082	N/A	N/A
RF test software	Tonscend	JS1120-B Version 2.6	HKE-083	N/A	N/A
RF test software	Tonscend	JS1120-4	HKE-113	N/A	N/A
RF test software	Tonscend	JS1120-3	HKE-114	N/A	N/A
RF test software	Tonscend	JS1120-1	HKE-115	N/A	N/A
Wireless Communication Test Set	R&S	CMW500	HKE-026	2020/12/10	2021/12/09
Wireless Communication Test Set	R&S	CMU200	HKE-029	2020/12/10	2021/12/09

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



4 TEST CONDITIONS AND RESULTS

4.1 Output Power

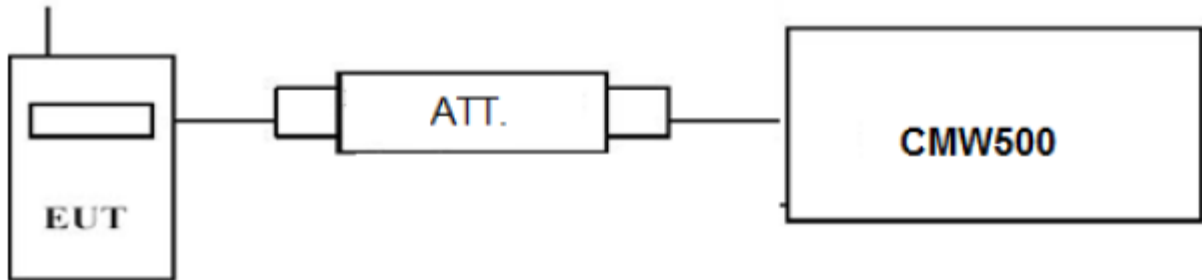
4.1.1 Conducted Output Power

TEST APPLICABLE

Part 27.50(h)(2) , during the process of testing, the EUT was controlled via R&S Digital Radio Communication tester (CMW500) to ensure max power transmission and proper modulation. This result contains output power measurements for the EUT. In all cases, output power is within the specified limits.

TEST CONFIGURATION

Conducted Power Measurement:



TEST PROCEDURE

Conducted Power Measurement:

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a CMW500 by an Att.
- EUT Communicate with CMW500 then selects a channel for testing.
- Add a correction factor to the display CMW500, and then test.

TEST RESULTS



EUT :	Smart POS Terminal	Test Date:	Nov. 12, 2021
Temperature:	25°C	Tested by:	Gary Qian
Humidity:	55 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage- Tx Mode		

Remark:

1. We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41;

LTE Band 41				
TX Channel Bandwidth	Frequency (MHz)	RB Size/Offset	Burst Average Power [dBm]	
			QPSK	16QAM
5 MHz	2557.5	1 RB low	21.89	21.17
		1 RB mid	21.96	21.16
		1 RB high	21.86	21.16
		50% RB low	20.91	19.99
		50% RB mid	20.89	19.97
		50% RB high	20.88	19.95
		100% RB	20.84	19.98
	2600.0	1 RB low	21.84	21.04
		1 RB mid	21.89	21.06
		1 RB high	21.77	21.03
		50% RB low	20.88	19.98
		50% RB mid	20.88	19.95
		50% RB high	20.86	19.94
		100% RB	20.78	20.04
	2652.5	1 RB low	21.88	21.02
		1 RB mid	21.80	21.09
		1 RB high	21.80	20.99
		50% RB low	20.74	19.86
		50% RB mid	20.59	19.86
		50% RB high	20.59	19.87
		100% RB	20.67	19.88
10 MHz	2560.0	1 RB low	22.09	20.92
		1 RB mid	21.95	20.81
		1 RB high	21.98	20.68
		50% RB low	21.18	20.58
		50% RB mid	21.19	20.58
		50% RB high	21.19	20.58
		100% RB	21.18	20.22
	2600.0	1 RB low	21.92	20.97
		1 RB mid	22.01	21.26
		1 RB high	22.18	21.40
		50% RB low	20.88	19.94
		50% RB mid	20.79	19.96
		50% RB high	20.83	19.96
		100% RB	20.90	20.11
	2650.0	1 RB low	23.37	22.38
		1 RB mid	23.63	22.63
		1 RB high	23.32	22.36
		50% RB low	22.41	21.35
		50% RB mid	22.33	21.35
		50% RB high	22.39	21.28
		100% RB	22.34	21.31

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



15 MHz	2562.5	1 RB low	21.84	21.00
		1 RB mid	21.60	20.71
		1 RB high	21.64	20.78
		50% RB low	20.69	19.78
		50% RB mid	20.70	19.79
		50% RB high	20.71	19.79
		100% RB	20.61	19.82
	2600.0	1 RB low	22.36	20.69
		1 RB mid	22.21	20.39
		1 RB high	21.98	20.34
		50% RB low	21.24	20.37
		50% RB mid	21.25	20.37
		50% RB high	21.25	20.37
		100% RB	21.19	20.37
	2647.5	1 RB low	21.98	21.33
		1 RB mid	22.05	21.29
		1 RB high	22.13	21.61
		50% RB low	20.89	19.84
		50% RB mid	20.74	19.84
		50% RB high	20.74	19.84
		100% RB	20.91	20.05
20 MHz	2565.0	1 RB low	21.70	21.23
		1 RB mid	21.50	21.11
		1 RB high	21.72	21.21
		50% RB low	20.72	19.93
		50% RB mid	20.74	19.94
		50% RB high	20.75	19.94
		100% RB	20.61	19.78
	2600.0	1 RB low	23.70	21.40
		1 RB mid	23.17	21.29
		1 RB high	22.04	21.06
		50% RB low	22.31	20.34
		50% RB mid	22.20	20.35
		50% RB high	22.20	20.35
		100% RB	22.10	20.25
	2645.0	1 RB low	21.80	20.48
		1 RB mid	21.77	20.59
		1 RB high	21.98	20.67
		50% RB low	20.85	19.98
		50% RB mid	20.85	19.98
		50% RB high	20.85	19.98
		100% RB	20.81	19.92

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



4.1.2. Radiated Output Power

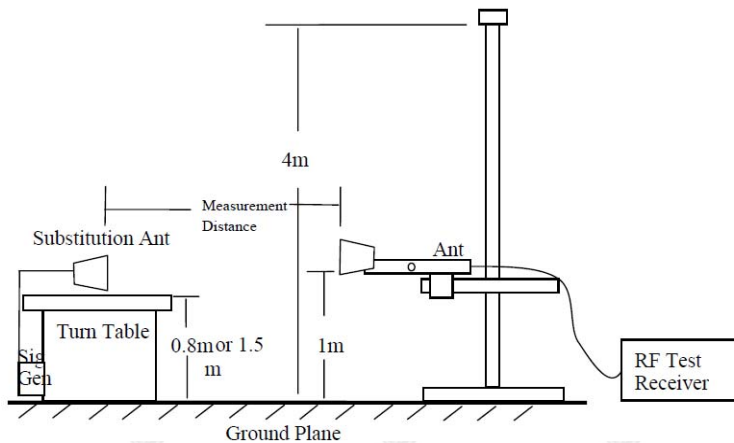
LIMIT

This is the test for the maximum radiated power from the EUT.

TEST CONFIGURATION

Radiated Power Measurement:

remark : 0.8m for below 1GHz, 1.5m for above 1GHz



TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D

- The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter.
- The output of the test antenna shall be connected to the measuring receiver.
- The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- The maximum signal level detected by the measuring receiver shall be noted.
- The transmitter shall be replaced by a substitution antenna.
- The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- The substitution antenna shall be connected to a calibrated signal generator.
- If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- Test site anechoic chamber refer to ANSI C63.4.

**TEST RESULTS**

EUT :	Smart POS Terminal	Test Date:	Nov. 12, 2021
Temperature:	25°C	Tested by:	Gary Qian
Humidity:	55 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage- Tx Mode		

Radiated Measurement:

Remark:

1. We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41; recorded worst case for each Channel Bandwidth of LTE Band 41.
2. $EIRP = P_s(dBm) - P_{cl}(dB) + G_a(dBi)$
3. We measured both Horizontal and Vertical direction, recorded worst case direction.

LTE Band 41 Channel Bandwidth 5MHz_QPSK_1RB#0

Frequency (MHz)	P_s (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2557.5	12.04	3.41	15.12	23.75	33.01	9.26	V
2600.0	11.72	3.49	15.12	23.35	33.01	9.66	V
2652.5	11.18	3.55	15.12	22.75	33.01	10.26	V

LTE Band 41 Channel Bandwidth 10MHz_QPSK_1RB#0

Frequency (MHz)	P_s (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2560.0	12	3.41	15.12	23.71	33.01	9.3	V
2600.0	11.24	3.49	15.12	22.87	33.01	10.14	V
2650.0	12.5	3.55	15.12	24.07	33.01	8.94	V

LTE Band 41 Channel Bandwidth 15MHz_QPSK_1RB#0

Frequency (MHz)	P_s (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2562.5	11.89	3.41	15.12	23.6	33.01	9.41	V
2600.0	12.83	3.49	15.12	24.46	33.01	8.55	V
2647.5	11.58	3.55	15.12	23.15	33.01	9.86	V

LTE Band 41 Channel Bandwidth 20MHz_QPSK_1RB#0

Frequency (MHz)	P_s (dBm)	P_{cl} (dB)	G_a Antenna Gain(dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2565.0	12.2	3.41	15.12	23.91	33.01	9.1	V
2600.0	11.74	3.49	15.12	23.37	33.01	9.64	V
2645.0	11.92	3.55	15.12	23.49	33.01	9.52	V

*LTE Band 41_Channel Bandwidth 5MHz_16QAM_1RB#0*

Frequency (MHz)	P _s (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2557.5	12.1	3.41	15.12	23.81	33.01	9.2	V
2600.0	11.81	3.49	15.12	23.44	33.01	9.57	V
2652.5	12.46	3.55	15.12	24.03	33.01	8.98	V

LTE Band 41_Channel Bandwidth 10MHz_16QAM_1RB#0

Frequency (MHz)	P _s (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2560.0	11.63	3.41	15.12	23.34	33.01	9.67	V
2600.0	12.12	3.49	15.12	23.75	33.01	9.26	V
2650.0	11.83	3.55	15.12	23.4	33.01	9.61	V

LTE Band 41_Channel Bandwidth 15MHz_16QAM_1RB#0

Frequency (MHz)	P _s (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2562.5	11.86	3.41	15.12	23.57	33.01	9.44	V
2600.0	11.88	3.49	15.12	23.51	33.01	9.5	V
2647.5	12.2	3.55	15.12	23.77	33.01	9.24	V

LTE Band 41_Channel Bandwidth 20MHz_16QAM_1RB#0

Frequency (MHz)	P _s (dBm)	P _{cl} (dB)	G _a Antenna Gain(dB)	Burst Average EIRP (dBm)	Limit (dBm)	Margin (dB)	Polarization
2565.0	12.22	3.41	15.12	23.93	33.01	9.08	V
2600.0	11.48	3.49	15.12	23.11	33.01	9.9	V
2645.0	12.69	3.55	15.12	24.26	33.01	8.75	V

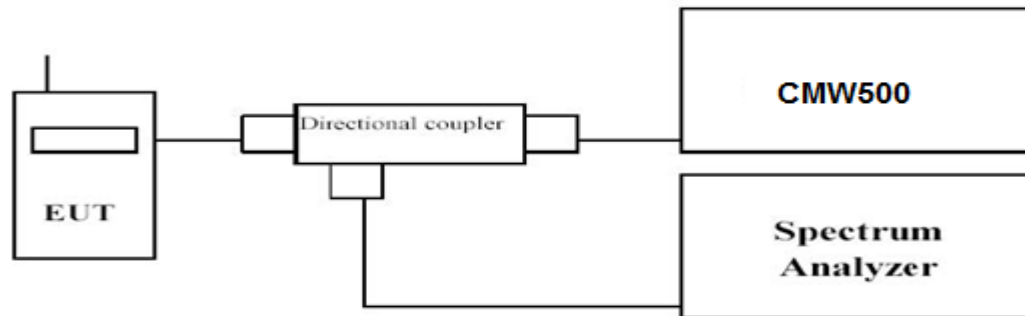


4.2 Peak-to-Average Ratio (PAR)

LIMIT

The Peak-to-Average Ratio (PAR) of the transmission may not exceed 13 dB.

TEST CONFIGURATION



TEST PROCEDURE

1. Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
2. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
3. Set the number of counts to a value that stabilizes the measured CCDF curve;
4. Set the measurement interval as follows:
 - 1). for continuous transmissions, set to 1 ms,
 - 2). for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
5. Record the maximum PAPR level associated with a probability of 0.1%.

TEST RESULTS

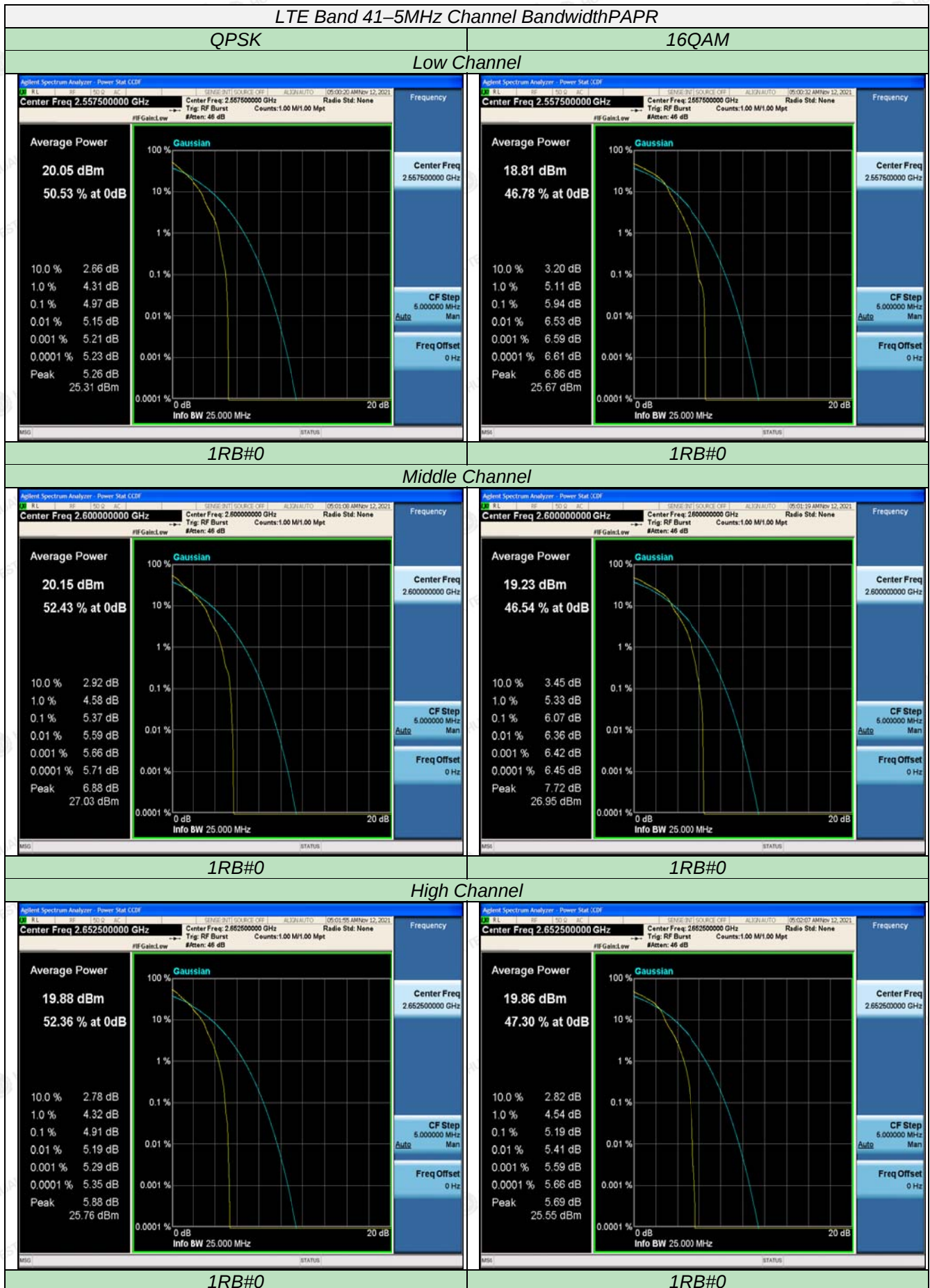
EUT :	Smart POS Terminal	Test Date:	Nov. 12, 2021
Temperature:	25°C	Tested by:	Gary Qian
Humidity:	55 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage- Tx Mode		

Remark:

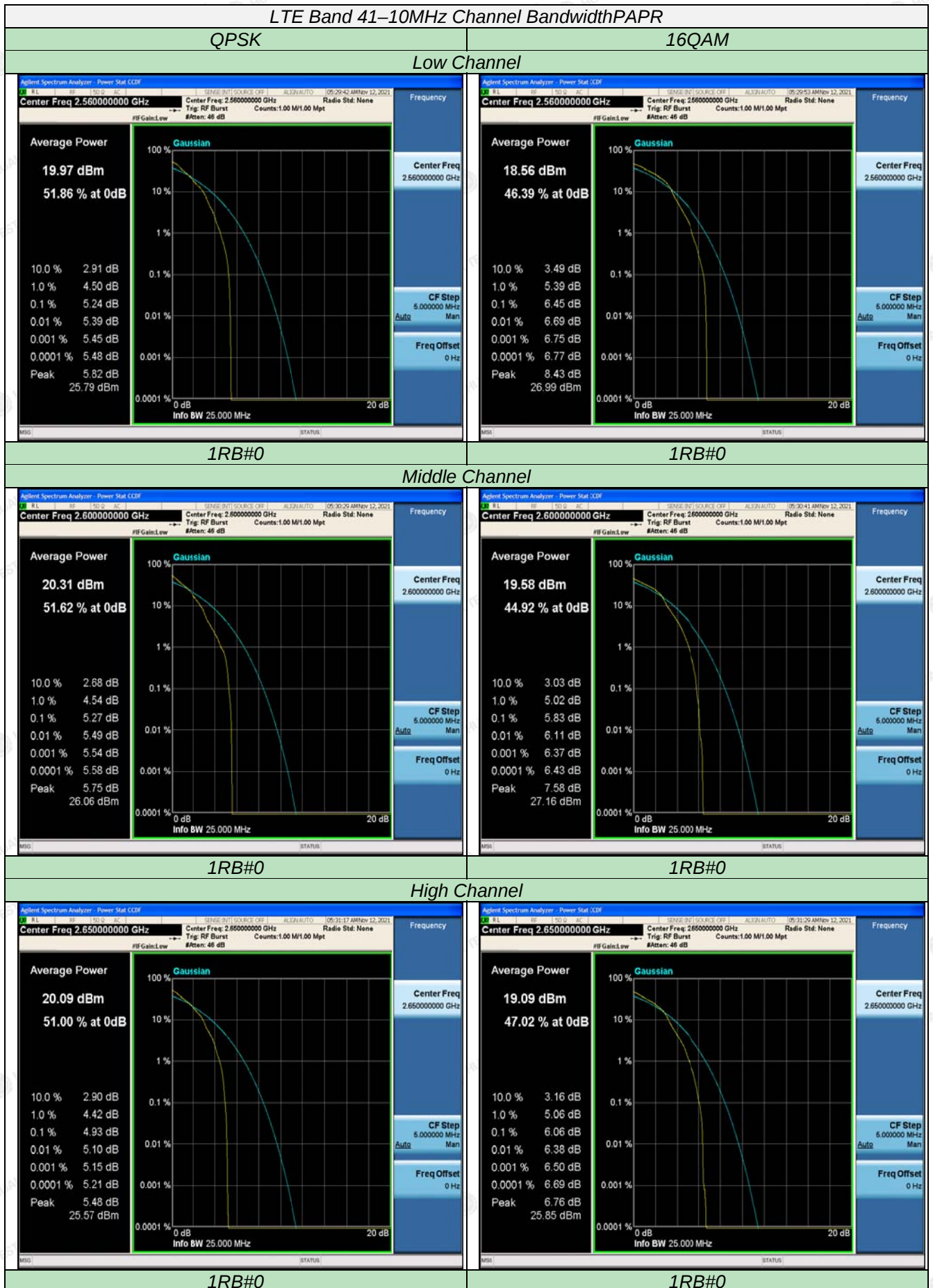
1. We measured all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41; recorded worst case for each Channel Bandwidth of LTE Band 41.

LTE Band 41				
TX Channel Bandwidth	Frequency (MHz)	RB Size/Offset	PAPR(dB)	
			QPSK	16QAM
5 MHz	2557.5	1RB#0	4.97	5.94
	2600.0		5.37	6.07
	2652.5		4.91	5.19
10 MHz	2560.0	1RB#0	5.24	6.45
	2600.0		5.27	5.83
	2650.0		4.93	6.06
15 MHz	2562.5	1RB#0	5.34	6.23
	2600.0		5.08	6.42
	2647.5		4.97	6.28
20 MHz	2565.0	1RB#0	4.69	5.18
	2600.0		5.48	5.98
	2645.0		5.58	5.92

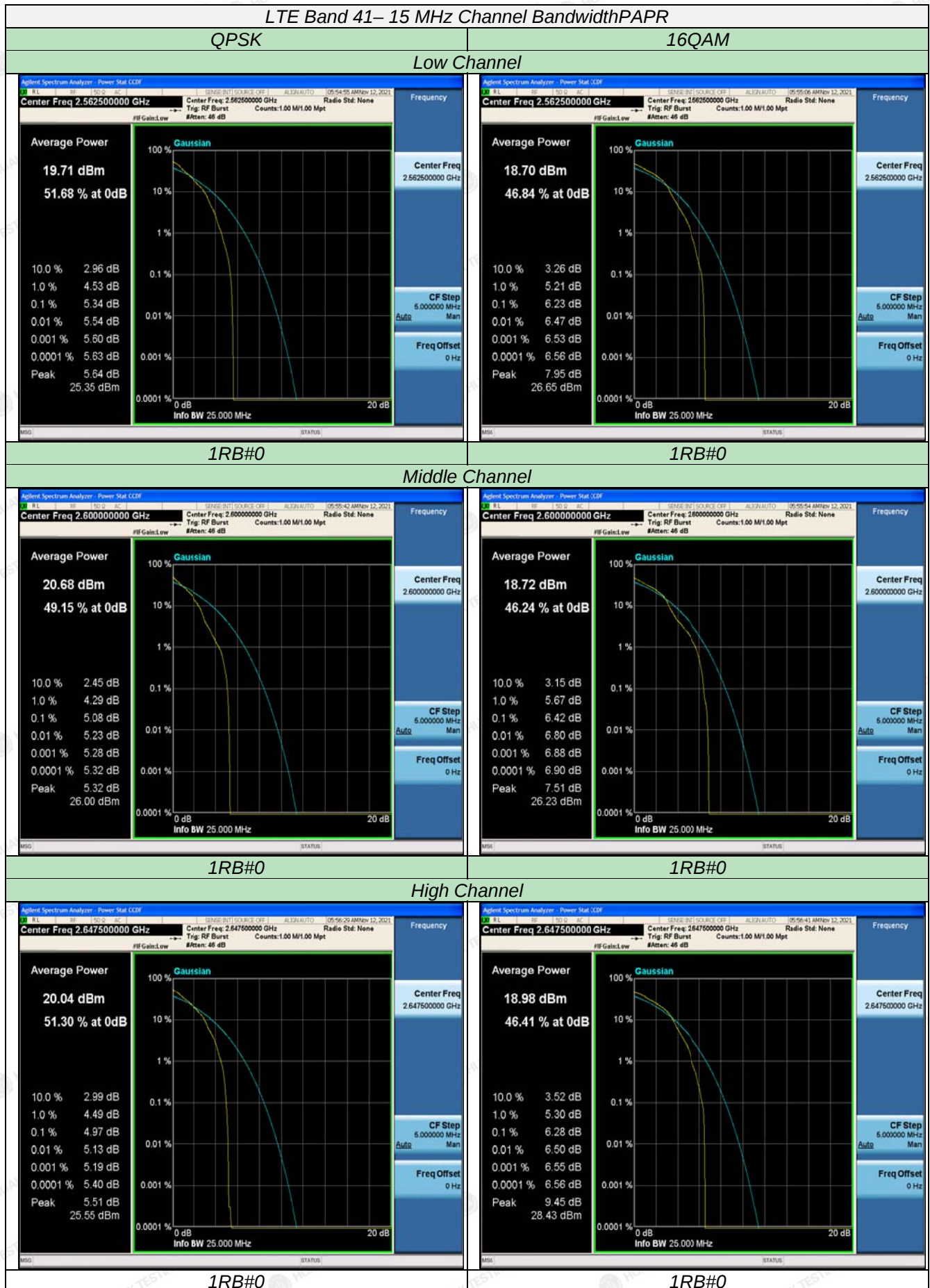
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



LTE Band 41-20MHz Channel BandwidthPAPR

QPSK

16QAM

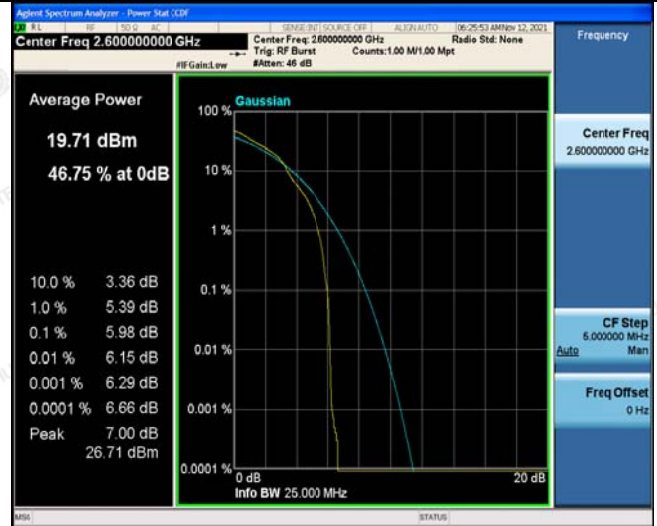
Low Channel



1RB#0

1RB#0

Middle Channel



1RB#0

1RB#0

High Channel



1RB#0

1RB#0

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

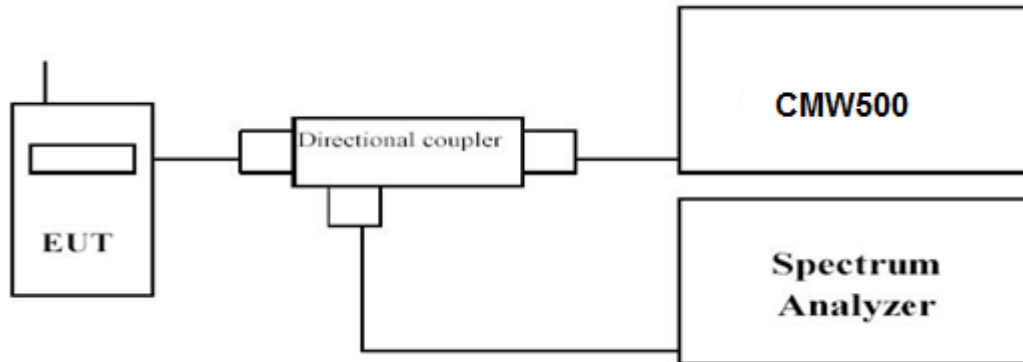


4.3 Occupied Bandwidth and Emission Bandwidth

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at low, middle and high channel in each band. The -26dBc Emission bandwidth was also measured and recorded. Set RBW was set to about 1% of emission BW, VBW ≥ 3 times RBW. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

TEST RESULTS

EUT :	Smart POS Terminal	Test Date:	Nov. 12, 2021
Temperature:	25°C	Tested by:	Gary Qian
Humidity:	55 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage- Tx Mode		

Remark:

- We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41; recorded worst case for each Channel Bandwidth of LTE Band 41.

LTE Band 41						
TX Channel Bandwidth	RB Size/Offset	Frequency (MHz)	99% Occupied bandwidth (MHz)		-26dBc Emission bandwidth (MHz)	
			QPSK	16QAM	QPSK	16QAM
5 MHz	25RB#0	2557.5	4.5043	4.5078	5.123	5.311
		2600.0	4.5257	4.5175	5.521	5.425
		2652.5	4.4922	4.5107	4.969	5.090
10 MHz	50RB#0	2560.0	9.0041	8.9954	10.53	10.17
		2600.0	9.0158	8.9987	10.68	10.35
		2650.0	8.9936	8.9719	10.07	9.958
15 MHz	75RB#0	2562.5	13.535	13.506	16.84	15.25
		2600.0	13.496	13.498	15.90	15.09
		2647.5	13.471	13.552	15.01	15.10
20 MHz	100RB#0	2565.0	17.986	17.967	19.85	19.72
		2600.0	17.998	17.980	20.19	20.06
		2645.0	17.988	17.954	20.03	20.15

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



LTE Band 41-5MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK**16QAM**

Low Channel

**25RB#0****25RB#0**

Middle Channel

**25RB#0****25RB#0**

High Channel

**25RB#0****25RB#0**

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

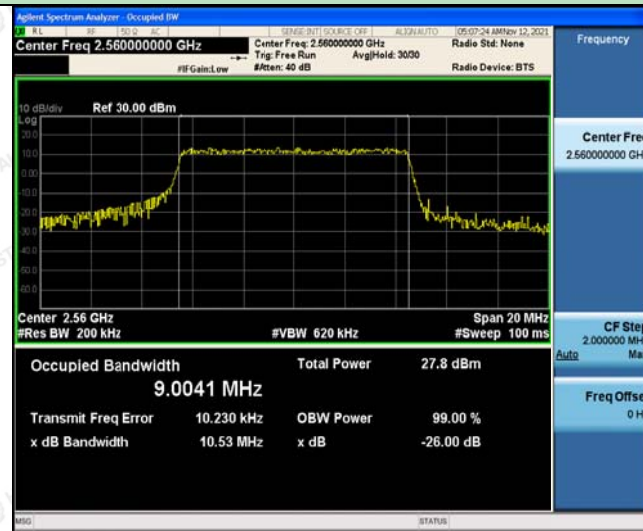


LTE Band 41-10MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK

16QAM

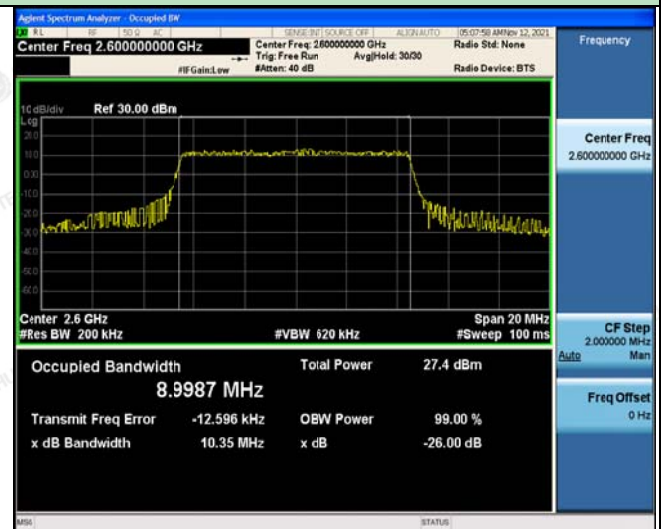
Low Channel



50RB#0

50RB#0

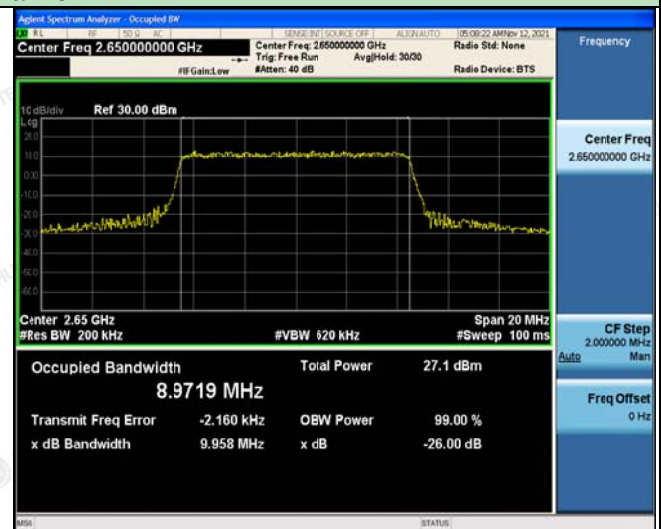
Middle Channel



50RB#0

50RB#0

High Channel



50RB#0

50RB#0

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

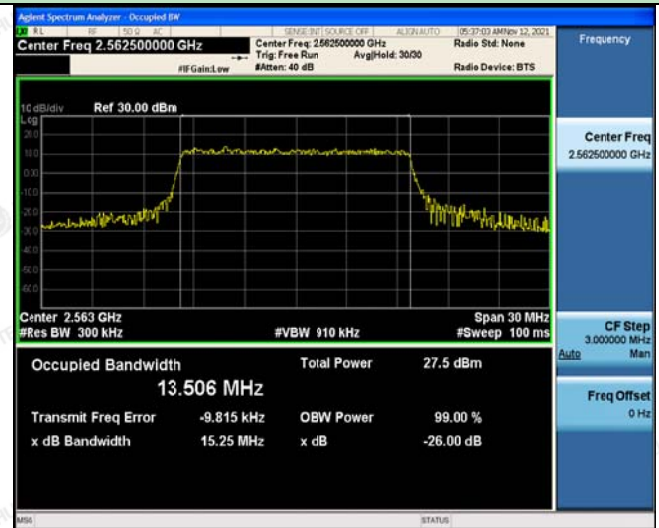


LTE Band 41-15MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK

16QAM

Low Channel



75RB#0

75RB#0

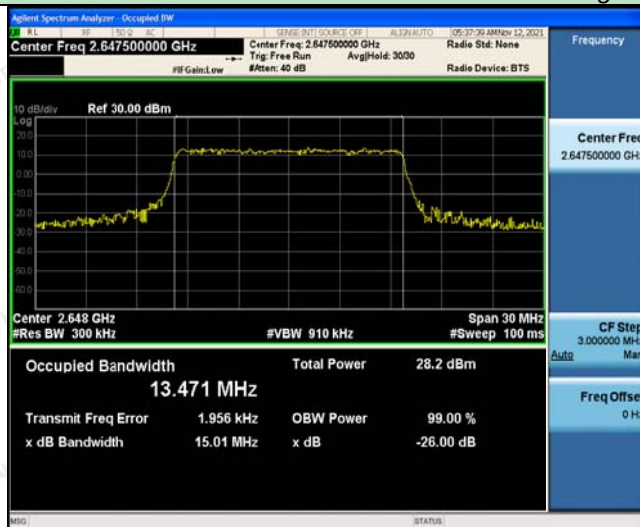
Middle Channel



75RB#0

75RB#0

High Channel



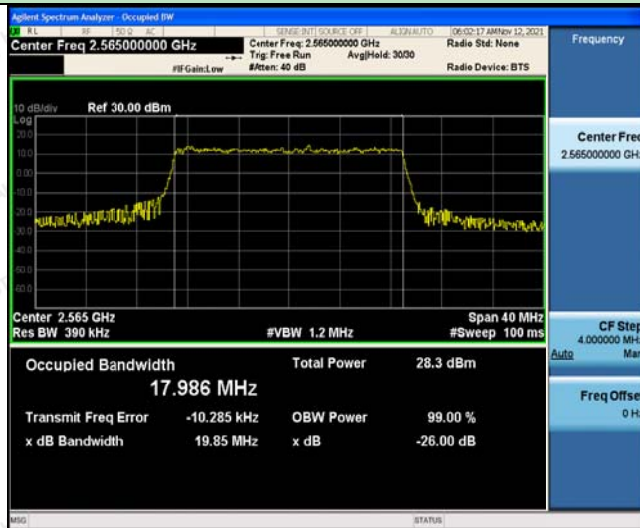
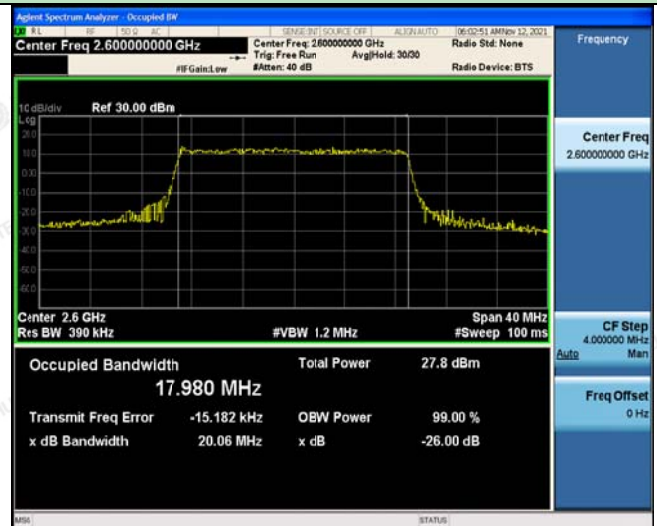
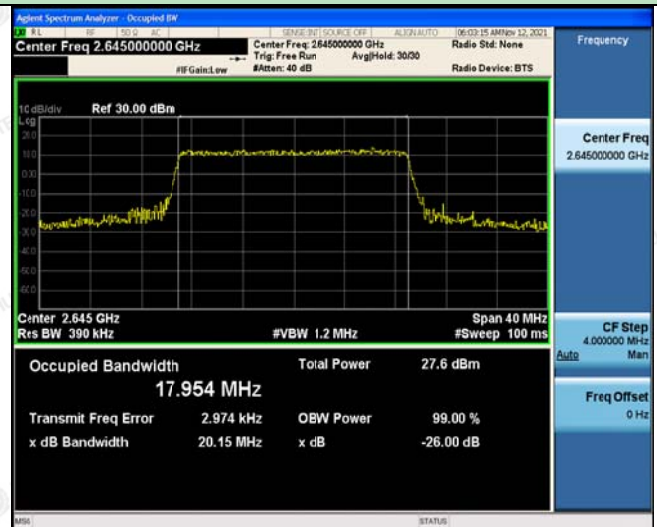
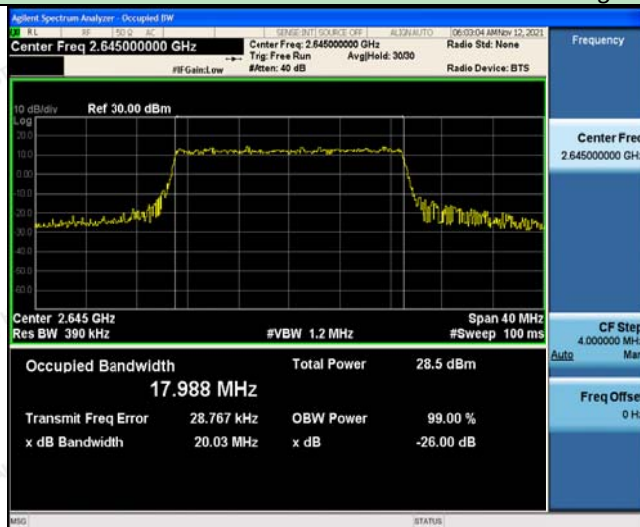
75RB#0

75RB#0

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



LTE Band 41--20MHz Channel Bandwidth Occupied Bandwidth and Emission Bandwidth

QPSK**16QAM****Low Channel****100RB#0****100RB#0****Middle Channel****100RB#0****100RB#0****High Channel****100RB#0****100RB#0**

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

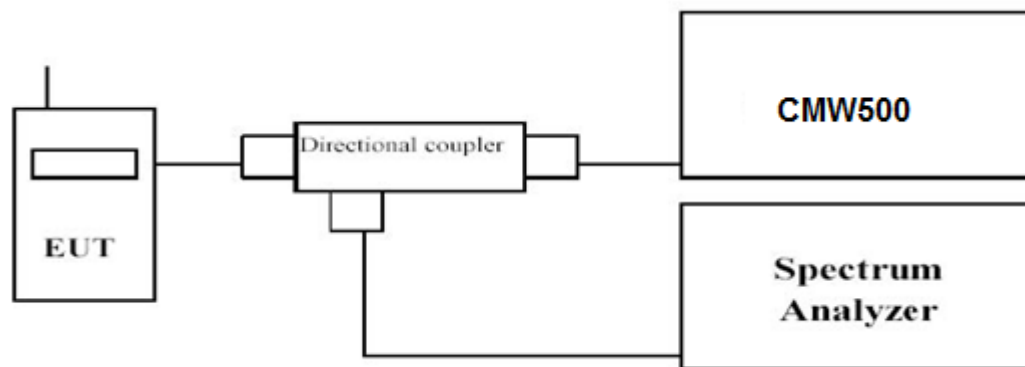


4.4 Band Edge compliance

LIMIT

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 $40 + 10 \log P$ dB (–10 dBm, 100 nW) on all frequencies between the channel edge and 5 MHz from the channel edge, $43 + 10 \log P$ dB (–13 dBm, 50 nW) on all frequencies between 5 MHz and X MHz from the channel edge, and $55 + 10 \log P$ dB (–25 dBm, 3 nW) on all frequencies more than 20 MHz from the channel edge, where XMHz is the greater of 6 MHz or the actual emission bandwidth (26 dB).

TEST CONFIGURATION



TEST PROCEDURE

1. The transmitter output port was connected to base station.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowest and highest channels for each band and different modulation.
5. Measure Band edge using RMS (Average) detector by spectrum
6. Set RBW = 100 kHz, VBW=300 kHz, Span=50MHz Peak Detector.

TEST RESULTS

EUT :	Smart POS Terminal	Test Date:	Nov. 12, 2021
Temperature:	25°C	Tested by:	Gary Qian
Humidity:	55 % RH	Test Voltage	Normal Voltage
Operation Mode:	Normal Voltage- Tx Mode		

Remark:

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of LTE Band 41; recorded worst case for each Channel Bandwidth of LTE Band 41.

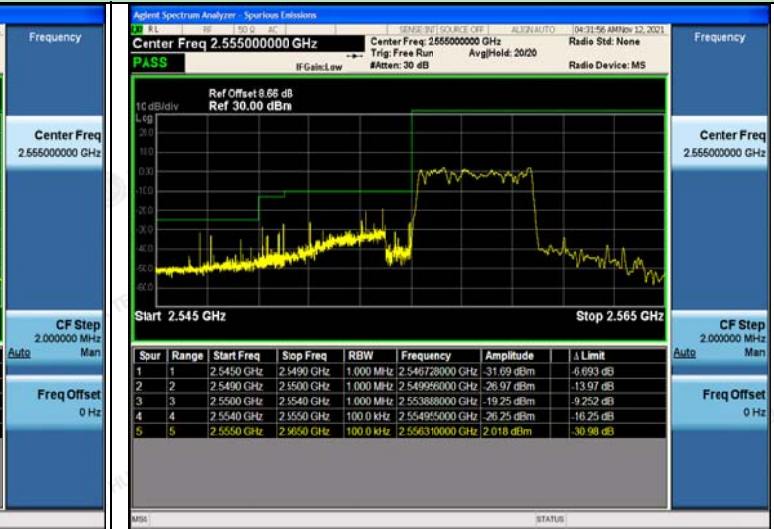
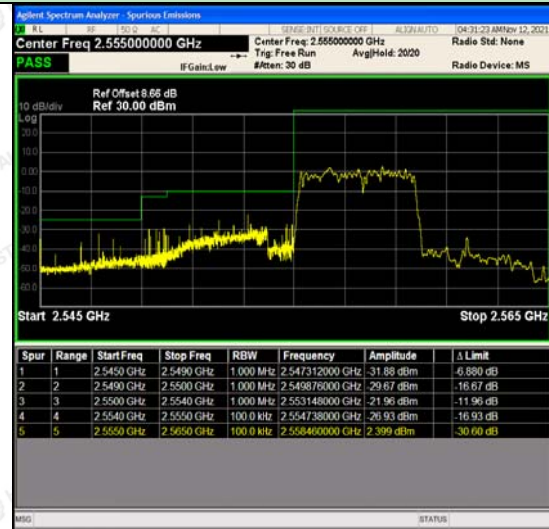


LTE Band 41-5MHz Channel Bandwidth Band Edge Compliance

QPSK

16QAM

Low Channel



25RB#0

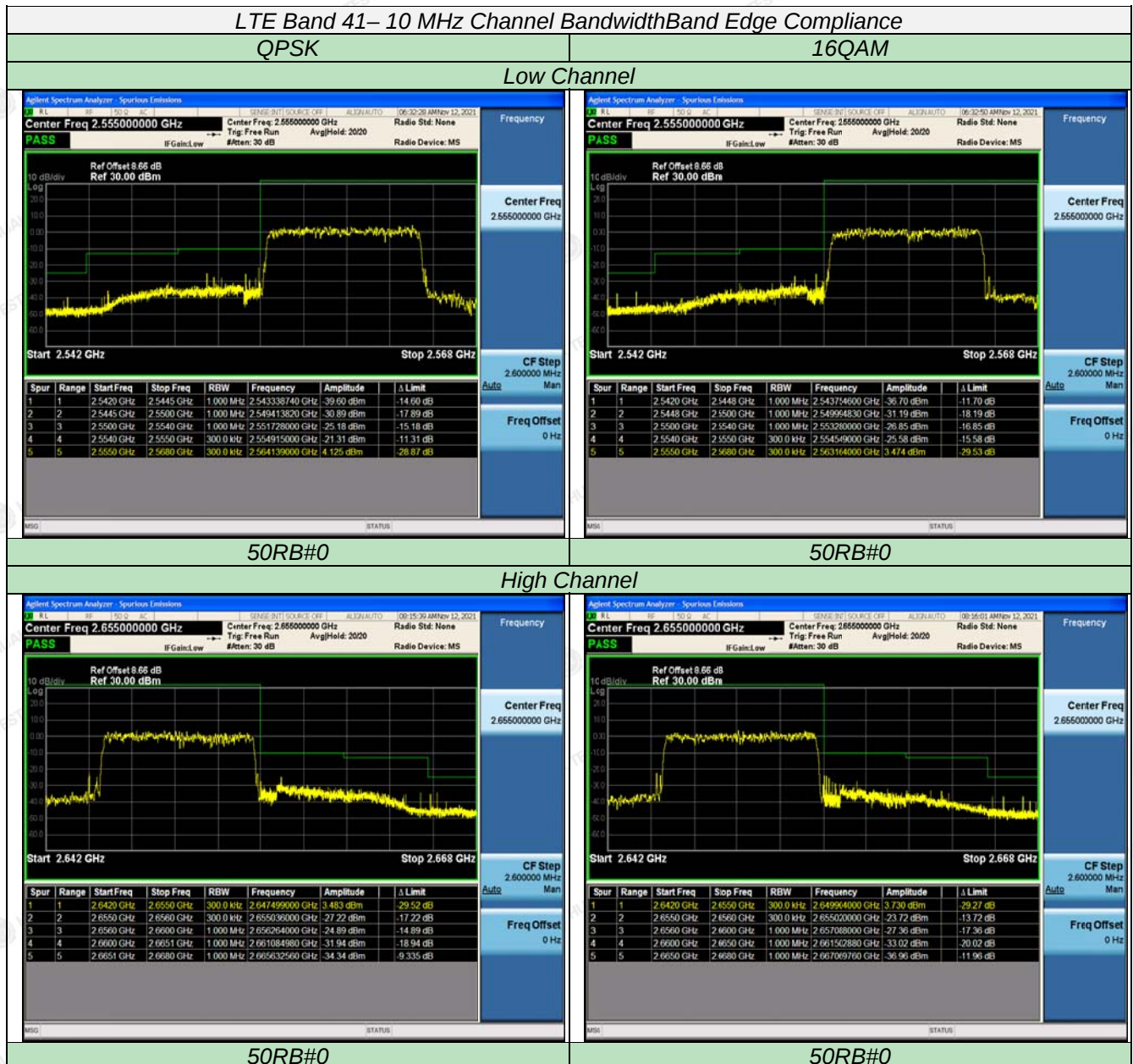
25RB#0

High Channel



25RB#0

25RB#0



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAKE, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

